Appendix A

I-40 Highway Operations Improvement Plan

Appendix A: I-40 Highway Operations Improvement Plan, Milepost 0 to 150

Prepared for
New Mexico Department of Transportation

October 2024

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Prepared for

New Mexico Department of Transportation

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ATTACHMENTS

Acronyms and Abbreviations

AASHTO	Association of State Highways and Transportation Officials
BIA	Bureau of Indian Affairs
CAMP	Culvert Assessment Management Program
CBC	concrete box culvert
CCTV	Closed-Circuit Television
CE	categorical exclusion
CN	Control Number
CWB	concrete wall barrier
DMS	Dynamic Message Sign
DPAS	Dynamic Parking Availability Signs
EA	environmental assessment
FHWA	Federal Highway Administration
HOIP	I-40 Highway Operations Improvement Plan
HPMS	Highway Performance Monitoring System
I-40 Corridor Study	I-40 Phase I-A/B Corridor Study
IACR	Interchange Access Control Request
ITS	intelligent transportation systems
La	acceleration length
Lg	acceptance length
LOS	level of service
MP	milepost
mph	miles per hour
NEPA	National Environmental Policy Act
NM DPS	New Mexico Department of Public Safety
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMSA	New Mexico Statute Annotated
ODOT	Oregon Department of Transportation

Acronyms and Abbreviations (Continued)

PCEs	passenger car equivalents
SAMM	*State Access Management Manual*
SHPO	State Historic Preservation Officer
STIP	Statewide Transportation Improvement Program
TMC	Traffic Management Center
TPAS	Truck Parking Availability System
USFWS	US Fish and Wildlife Service
VSAS	Variable Speed Advisory Signs

1. Report Purpose and Organization

1.1 Report Purpose

The purpose of this I-40 Highway Operations Improvement Plan (HOIP) is to provide a roadmap for implementing the preferred alternative on the I-40 corridor from milepost (MP) 0 at the Arizona State Line to MP 150 at the Atrisco Vista Interchange in Albuquerque for the next 25+ years. Exhibit 1-1 provides a map showing the study areas for the I-40 Phase I-A/B Corridor Study (I-40 Corridor Study), which includes I-40 from MP 0 to 150, as well as adjacent alternate routes/frontage roads.

Exhibit 1-1. I-40 Corridor Study Map

This HOIP builds on information from the I-40 Corridor Study to provide direction on the following:

- The I-40 corridor preferred alternative and how to implement it
- Design guidelines for the I-40 corridor
- Guidance on construction and maintenance practices
- Recommendations for I-40 corridor priorities, phasing, and projects

In addition, the I-40 Corridor Study project team compiled, generated, and analyzed an extensive amount of data to develop the I-40 Corridor Study and this HOIP. One purpose of this HOIP is to provide a clear roadmap on the following:

- The information that has been developed
- Where that information is located
- How the New Mexico Department of Transportation (NMDOT) and consultant staff can access this information to identify, define, scope, and advance projects in the I-40 corridor to achieve the vision identified in the I-40 Corridor Study

The sections below provide an overview of the I-40 corridor information contained in the I-40 Corridor Study, this HOIP, the I-40 GIS Web Portal, and other supporting resources. These information sources should be used as a starting point for identifying and scoping roadway projects in the I-40 corridor from MP 0 to 150.

1.1.1 I-40 Corridor Study

Exhibit 1-2 provides a listing and description for information contained in the I-40 Corridor Study.

Exhibit 1-2. I-40 Corridor Study Information and Resources

Item	Description
Executive Summary	▪ A stand-alone document that provides a high-level summary of the I-40 Corridor Study.
Chapter 1, Introduction	▪ Introduces the study area and explains how the document is organized.
Chapter 2, Stakeholder Coordination and Public Involvement	▪ Describes public and stakeholder engagement, comments, and input received.
Chapter 3, Existing Conditions and Project Future Traffic	▪ Describes existing conditions for I-40 and adjacent frontage roads. Provides a discussion of roadway, bridges, drainage, geotechnical conditions, utilities, intelligent transportation systems (ITS), freight, traffic, crashes, and environmental considerations.
Chapter 4, Alternatives Development and Phase I-A Screening	▪ Identifies the purpose and need, initial alternatives, and the initial alternatives screening process.
Chapter 5, Phase I-B Detailed Alternatives Analysis	▪ Provides a detailed analysis, screening, and comparison of viable alternatives, including the Enhanced 2-lane with Added Lanes Alternative (Enhanced 2-Lane) and the 3-Lane Alternative.
Chapter 6, Phase I-B Operational Enhancements	▪ Provides a detailed analysis of operational enhancements including ITS improvements, minimizing lane closures, incident management, and alternate route improvements.
Chapter 7, Phase I-B Recommendations and Implementation	▪ Provides a summary of recommendations, including the preferred alternative and proposed operational enhancements.
Chapter 8, References	▪ Provides a list of references.
Appendix A – I-40 Highway Operations Improvement Plan	▪ Provides a roadmap for implementing the preferred alternative on the I-40 corridor from MP 0 to 150.
Appendix B – Environmental Scoping Report	▪ Provides environmental considerations in the I-40 corridor, including a discussion of existing conditions, potential environmental impacts, and environmental considerations for future projects.
Appendix C – Ramp Turning Movement Counts	▪ Provides turning movement counts that were collected in July and August 2022 at exits 16, 20, 22, and 26 in Gallup; 79, 81, and 85 in Grants; and 140 at the Route 66 Casino.
Appendix D – Geometrics	▪ Provides information on horizontal and vertical curve deficiencies. Provides proposed reconstruction limits by combining pavement condition, vertical and horizontal curve corrections.
Appendix E – Geotechnical Scoping Report	▪ Provides scoping-level information on geological and pavement conditions.
Appendix F – Bridges	▪ Provides information on I-40 and frontage road bridges, including locations, condition, construction year, material type, and clearances.

(Table Continues)

Exhibit 1-2. I-40 Corridor Study Information and Resources (Continued)

Item	Description
Appendix G – Drainage	▪ Provides a summary of drainage reports.
Appendix H – Utilities	▪ Includes maps showing subsurface utility engineering Quality Level D information compiled in 2022 on I-40 and adjacent frontage roads.
Appendix I, I-40 Existing Typical Sections	▪ Provides existing typical sections for the I-40 mainline, bridges, and overpasses from MP 0 to 150.
Appendix J, I-40 Proposed Typical Sections	▪ Includes an overview of where widening is proposed for the (to the inside, the outside, or both) Enhanced 2-Lane and 3-Lane Alternatives; provides proposed typical sections and construction sequencing; shows proposed roadway layouts for incident, maintenance, and construction; and provides a typical section and plan for proposed crossovers.
Appendix K, I-40 Conceptual Alternatives	▪ Provides conceptual design plans for the Enhanced 2-Lane and 3-Lane Alternatives. Conceptual plans include proposed typical section locations; right-of-way limits; pavement condition; deficient horizontal and vertical curves; proposed reconstruction limits; bridges in poor condition; existing and proposed crossover locations; and potential terrain constraints.
Appendix L, I-40 Interchange Layouts	▪ Provides results of the interchange and ramp analysis. Identifies ramps that do not meet current guidelines and need additional length. Provides information on the estimated ramp lengths needed and provides plans showing needed lengths.
Appendix M, Alternate Routes	▪ Provides information on I-40 alternate routes/frontage roads, including typical sections, posted speeds, access points, bridges in poor condition, vertical clearance constraints for trucks, and land ownership.
Appendix N, Preliminary Costs	▪ Provides preliminary cost estimates for the No Build, the Enhanced 2-Lane, the Enhanced 2-Lane with Added Lanes, and the 3-Lane alternatives.
Appendix O, Public Meeting #1 Summary	▪ Provides notes, comments, and responses for the first public meeting that was held on November 15, 2022.
Appendix P, Public Meeting #2 Summary	▪ Provides notes, comments, and responses for the second public meeting that was held on April 25, 2023.
Appendix Q, Public Meeting #3 Summary	▪ Provides notes, comments, and responses for the third public meeting that was held on February 27, 2024.
Appendix R, Stakeholder Outreach	▪ Provides meeting notes from stakeholder discussions that occurred with tribes, Regional Transportation Planning Organizations, and State Patrol from 2022 through 2024. Includes information presented to elected officials from 2022 to 2024.

MP = milepost

1.1.2 I-40 Highway Operations Improvement Plan

Exhibit 1-3 provides a listing and description for information contained in this document, the HOIP.

Exhibit 1-3. I-40 Highway Operations Improvement Plan Information and Resources

Item	Description
Chapter 1, Report Purpose and Organization	▪ Summarizes the report purpose and organization and provides a summary of available I-40 corridor information.
Chapter 2, Preferred Alternative Overview and Recommendations	▪ Identifies the key findings from the I-40 Corridor Study, elements of the I-40 preferred alternative, and other recommendations for minimizing lane closures during construction and maintenance activities, improving incident management, and improving alternate routes.
Chapter 3, Design Guidance	▪ Provides design guidance for I-40 corridor from MP 0 to 150.
Chapter 4, Project Phasing and Prioritization Framework	▪ Provides a framework for phasing and prioritizing projects in the I-40 corridor.
Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations	▪ Explains the methods, results, and limitations of culvert information collected, assessed, and evaluated to identify culvert and drainage priorities, risks, and recommendations in the I-40 corridor. Priorities and recommendations have been incorporated into this HOIP.
Attachment B, Intelligent Transportation Systems	▪ Provides guidance and recommendations for short-term (0 to 5 years) and long-term (5 to 25 years) ITS improvements in the I-40 corridor from MP 0 to 150. Priorities and recommendations have been incorporated into this report, and Attachment B contains the complete ITS recommendations broken out by short-term (0 to 5 years) and long term (5 to 25 years) improvements.
Attachment C, Design Criteria	▪ Provides detailed design criteria for the I-40 mainline.
Attachment D, 2013 Incident Management Plan	▪ Provides the signed District 3 Incident Management Program for I-40 that was developed by the NMDOT in 2013 between MP 134 and 148. This information could serve as a useful tool for incident management planning in the I-40 corridor.

ITS = Intelligent Transportation Systems, MP = milepost

1.1.3 I-40 GIS Web Portal

The I-40 GIS Web Portal includes a scoping tool that can help NMDOT determine what improvements are needed in a specific area of the 150-mile corridor. In addition, the I-40 GIS Web Portal includes the following:

General I-40 Corridor Information:

- As-built plans
- Right-of-way lines
- Land ownership
- Boundaries for cities, counties, and NMDOT districts
- I-40 alternate routes and observations of various conditions on alternate routes
- Existing and proposed ITS resources and utilities
- Environmental information, including soils, farmlands, wetlands, and floodplains

Traffic and Roadway Information:

- Pavement condition, geometric and interchange ramp deficiencies
- Traffic information, including crashes from 2016 through 2021, locations of hard braking, truck travelsheds, passenger and truck speeds, and New Mexico 2022 Highway Performance Monitoring System data

I-40 Culvert Assessment Management Program (CAMP) Information:

- I-40 culvert locations and physical condition information from the 2022 culvert inventory
- Watersheds, basins, streams, floodplains, and corrosive soils
- Results of the I-40 culvert capacity analysis and risk assessment results

1.1.4 Other Supporting I-40 Resources

In addition to the resources listed above, the following initial survey information was collected for the I-40 mainline and frontage roads within 1,000 feet between the Arizona State line at MP 0 and the Atrisco Vista Interchange at MP 150:

- Lidar point clouds and a Civil 3D surface elevation model
- Photogrammetry consisting of design-level orthophotos

This information will serve as a starting point for future project-level design, but supplemental processing and survey will be needed to provide planimetric data. The survey data can be requested from NMDOT Survey and Lands Engineering. Information is also available on the I-40 GIS Web Portal.

2. Preferred Alternative and I-40 Corridor Recommendations

2.1 I-40 Corridor Study Key Findings and Preferred Alternative

This section summarizes key findings from the I-40 Corridor Study, and it provides an overview of the preferred alternative. The rest of this chapter provides detailed information on recommended I-40 corridor improvements.

2.1.1 Key Findings

Key findings from the I-40 Corridor Study are summarized below:

- Roadway Capacity and Growth – In most areas, I-40 with 2 travel lanes in each direction will have sufficient capacity through 2050. A third lane will be needed in Gallup and on several isolated steep grades. In addition, there are multiple interchange on- and off-ramps that will need to be lengthened to meet 2050 capacity needs and to address geometric deficiencies. While 2 lanes are expected to be sufficient in most areas until 2050, it is critical that NMDOT improve data collection and monitor traffic and truck volumes to confirm that I-40 capacity with 2 lanes remains sufficient over time. The preferred alternative has been developed and designed on a 3-lane footprint to provide NMDOT with the flexibility to easily expand I-40 to 3 lanes when it becomes warranted. The intent of this approach is to maximize investments made on I-40 so they meet the expected needs through 2050 and beyond.
- Operations and Reliability - Traffic backups on I-40 are caused by construction, maintenance, and crashes, not recurring congestion from high traffic volumes. Backups typically occur on I-40 when it is reduced to 1 lane during daytime hours (specifically, when traffic volumes exceed about 1,500 vehicles per hour in a single direction). This is a very important finding of the study. Specifically, it drives recommendations to accomplish the following:
    - → Maintain 2 lanes during construction.
    - → Maintain 2 lanes during maintenance activities, where feasible. Specifically, this means considering conducting maintenance activities that require lane closures to nighttime or off-peak hours and days.
- Safety - Fatal and serious injury crash rates are higher than state averages. I-40 has multiple interchange ramps that need to be extended and horizontal and vertical curves that need corrections.
- Roadway and Infrastructure Condition - Pavement needs to be improved and is deteriorating rapidly. In many areas, pavement overlays or mill and inlays will not be sufficient to address needed improvements to the pavement subgrade. In addition, several bridges need repair or replacement, and many drainage structures are undersized, need to be cleaned out to restore hydraulic capacity, or need repair.
- Other I-40 Needs – Other supporting improvements to ITS, incident management, and alternate routes are also needed to maintain or improve operations in the I-40 corridor.

2.1.2 Preferred Alternative Overview

The preferred alternative identified for I-40 from MP 0 to 150 is to construct the Enhanced 2-Lane with Added Lanes Alternative. This alternative would accomplish the following:

- Widen inside and outside shoulders on I-40 to 12-feet on both sides, and continue to provide 2 lanes of travel in each direction,
- Address future I-40 roadway capacity constraints in Gallup by building auxiliary lanes or a third lane for up to 10 miles in Gallup for interchanges located between MP 16 and 26.
- Address I-40 capacity constraints by adding a truck climbing lane on isolated steep grades at 5 locations.
- Lengthen interchange ramps at 87 locations to address design deficiencies and capacity constraints at 25 of these 87 locations by 2050.
- Address geometric deficiencies on the I-40 mainline, which includes 70 horizontal curves and 48 vertical curves.
- Address bridge, pavement, and drainage deficiencies, which includes replacing 5 bridges that are identified as being in poor condition; reconstructing pavement identified as being in poor or very poor condition; and addressing drainage needs, including damaged drainage structures and culverts not meeting hydraulic capacity needs for the 50-year or 100-year design storm.
- Build crossovers to accommodate snowplows and emergency vehicles to reverse directions on I-40. The crossovers would also provide a pathway to allow law enforcement to set up a connection for vehicles from one side of I-40 to cross to the other side to keep traffic moving in the event of a crash that requires a closure of 1 direction of I-40. The combination of 12-foot shoulders on both sides of the travel lanes and periodic crossovers would provide flexibility for how I-40 could be managed in cases of lane closures related to incidents, maintenance, or construction.

In addition, the preferred alternative includes the following operational enhancements to address I-40 corridor needs:

- ITS improvements
- Minimize lane closures during construction and maintenance
- Incident management improvements
- Alternate route improvements

2.2 Preferred Alternative: I-40 Mainline and Ramp Recommendations

This section contains additional detail on specific recommendations for how to implement the preferred alternative, including the following:

- Proposed typical sections
- Locations where 3 lanes are recommended
- Proposed locations for geometric and pavement improvements
- Proposed locations for interchange improvements

- Proposed locations for crossovers
- Bridges in need of repair or replacement
- I-40 corridor drainage needs
- ITS recommendations
- Construction and maintenance practice recommendations
- Incident management recommendations

Information is organized by MP beginning at MP 0 at the Arizona State line and continuing east to MP 150 at the Atrisco Vista Interchange in Albuquerque. NMDOT District 6 covers most of the study area from MP 0 to 132, and NMDOT District 3 covers the remaining portion from MP 132 to 150.

2.2.1 I-40 Typical Section Recommendations

Roadway typical sections vary throughout the I-40 corridor. Appendix I, I-40 Existing Typical Sections, provides more information about existing typical sections. In general, I-40 has 2, 12-foot lanes in each direction with an outside shoulder width of 6 to 12 feet and an inside shoulder width of 4 to 6 feet; however, there are locations where the inside shoulder is less than 4 feet, particularly on bridges. The median width in the study area varies from about 10 feet to more than 100 feet. There are also many areas where I-40's eastbound and westbound lanes are not at the same elevation, which is a key consideration in implementing any type of roadway widening on I-40.

The proposed typical section for I-40 is an Enhanced 2-Lane, which would widen the outside and inside shoulders to 12 feet. The 12-foot shoulders are being recommended to improve safety, maintenance and construction operations, and incident management. The wider shoulders are expected to provide a reduction in crashes. The 12-foot shoulders will also make it easier to expand I-40 to 3 lanes, since it will require adding an additional 12 feet to both eastbound and westbound I-40 by installing pavement on either the inside or outside of the existing lanes once the Enhanced 2-Lane typical section has been built.

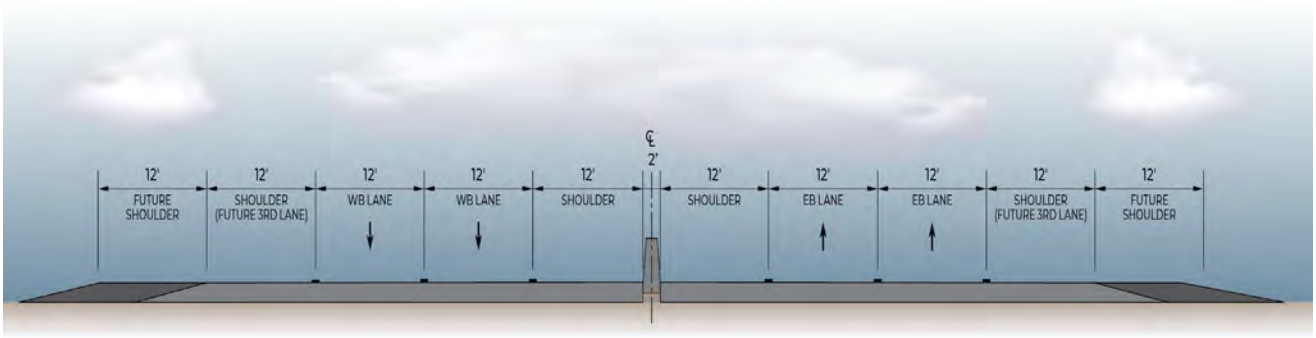
There are some critical elements for implementing the widened Enhanced 2-Lane typical section in the current I-40 corridor:

- Design Future I-40 Roadway Improvements on a 3-Lane Footprint — Appendix K, I-40, Conceptual Alternatives, provides conceptual design plans for both the Enhanced 2-Lane and the 3-Lane Alternatives. When designing projects on the I-40 corridor with the Enhanced 2-Lane Preferred Alternative, it is critical that designers assume an eventual 3- lane footprint using the I-40 Conceptual Plans as a guide to where widening should occur.
- Proposed I-40 Typical Sections and Potential Construction Sequencing — The proposed typical sections for the widened I-40 corridor vary depending on the width of the existing median. Appendix J, I-40 Proposed Typical Sections provides an overview of where widening is proposed for the Enhanced 2-Lane and 3-Lane Alternatives; proposed typical sections and construction sequencing; roadway layouts for incident, maintenance, and construction; and a typical section for proposed crossovers.

2.2.1.1 I-40 Typical Section 1

Exhibit 2-1 shows the I-40 proposed typical section 1 that applies to about **50 miles** of I-40 in the study area. This typical section applies to I-40 segments with a narrow existing median (i.e., medians that are 26 to 64 feet wide). In these areas, the Enhanced 2-Lane typical section would be built by widening and realigning I-40 to the median and building a concrete wall barrier (CWB) in the median to maintain safe separation of opposing traffic. For the 3-Lane Alternative, the third lane would be constructed to the outside of I-40.

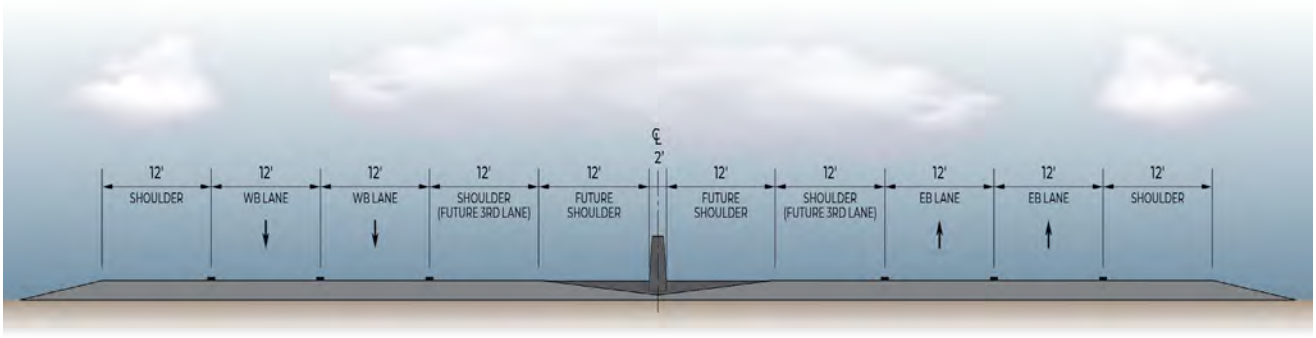
Exhibit 2-1. Enhanced 2-Lane with Flush Median and CWB, Future 3-Lane Widening to the Outside of I-40



2.2.1.2 Proposed Typical Section 2

Exhibit 2-2 shows the second typical section that applies to about **41 miles** of I-40 in the study area. This typical section applies to I-40 segments with existing median widths of 54 to 64 feet. In these areas, the Enhanced 2-Lane typical section would be built by widening and realigning I-40 to the median, while maintaining a 50-foot minimum separation between opposing lanes (measured from the outside edges of the driving lanes). A third lane could be added to the median, but this would require construction of CWB to maintain safe separation of opposing traffic lanes.

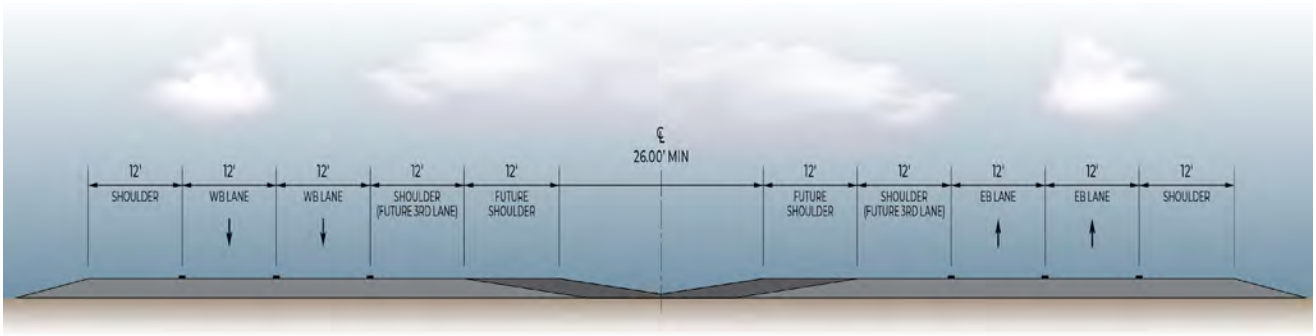
Exhibit 2-2. Enhanced 2-Lane with Depressed Median, Future 3-Lane Widening to the Inside of I-40 with Flush Median with CWB



2.2.1.3 Proposed Typical Section 3

Exhibit 2-3 shows the third typical section that applies to about 59 miles of I-40 in the study area. This typical section applies to I-40 segments with median widths of 80 feet or more. In these areas, all widening would occur to the median, and a minimum of 50 feet of separation would be maintained between the edge of traveled way of the opposing lanes, so a CWB would not be needed.

Exhibit 2-3. Enhanced 2-Lane Alternative with Depressed Median, Future 3-Lane Widening to the Inside of I-40, No CWB



2.2.1.4 Typical Section Proposed Locations

Exhibit 2-4 shows what typical section applies along the I-40 corridor. These typical sections apply to either an Enhanced 2-Lane or a 3-Lane typical section. In areas where a third lane is proposed with the Enhanced 2-Lane with Added Lanes Alternative, the 3-Lane typical section would apply.

- Orange shows typical section 1 where widening for the Enhanced 2-Lane would occur to the I-40 median, and any widening for the 3-Lane Alternative would occur to the outside.
- Green shows typical section 2 where widening would occur to inside of I-40, and CWB would need to be constructed for the 3-Lane Alternative.
- Blue shows typical section 3 where all widening would occur to the I-40 median for both alternatives, and no CWB would be required.

Exhibit 2-4. I-40 Proposed Typical Sections MP 0 to 150

Begin MP	End MP	Segment Length	Proposed I-40 Typical Section
0.0	1.6	1.6	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
1.6	7.5	5.9	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
7.5	10.0	2.5	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widening to outside.
10.0	14.6	4.6	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
14.6	30.3	15.7	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
30.3	38.0	7.7	Enhanced 2-Lane widen to inside with 50-foot median. Future 3-Lane widen to inside with median CWB.
38.0	50.8	12.8	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
50.8	58.8	8.0	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
58.8	59.8	1.0	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
59.8	84.4	24.6	Enhanced 2-Lane widen to inside' maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
84.4	89.7	5.3	Enhanced 2-Lane widen to inside with 50-foot median. Future 3-Lane widen to inside with median CWB.
89.7	92.0	2.3	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
92.0	93.9	1.9	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
93.9	95.1	1.2	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
95.1	103.0	7.9	Enhanced 2-Lane widen to inside with 50-foot median. Future 3-Lane widen to inside with median CWB.
103.0	107.1	4.1	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
107.1	108.1	1.0	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside, maintain depressed median, no CWB.
108.1	117.2	9.1	Enhanced 2-Lane widen to inside with median CWB. Future 3-Lane widen to outside.
117.2	137.2	20.0	Enhanced 2-Lane widen to inside with 50-foot median. Future 3-Lane widen to inside with median CWB.
137.2	150.0	12.8	Enhanced 2-Lane widen to inside; maintain depressed median. Future 3-Lane widen to inside; maintain depressed median, no CWB.

MP = milepost, CWB = concrete wall barrier

2.2.2 I-40 Recommended Locations for 3 Lanes

Based on capacity and operational analysis, 3 lanes are recommended in the I-40 corridor by or before 2050, as described in Exhibit 2-5.

Exhibit 2-5. I-40 Proposed 3-Lane Sections MP 0 to 150

Location	Description and Other Considerations
Gallup, MP 16 to 26	The I-40 study team examined areas where 3 lanes or auxiliary lanes may be required to address future capacity constraints on the I-40 mainline in Gallup between MP 16 and 26 where the I-40 mainline level of service (LOS) is expected to degrade below LOS C by 2050. A continuous third lane may eventually be built in Gallup between approximately MP 16 and 26. However, initially it is assumed that ramps would be extended, followed by the construction of auxiliary lanes. Information on phasing and prioritization is provided in Chapter 4.
MP 76.5 to 77.5	Westbound, should cover the 3.02% grade for at least 2,889 feet from MP 76.5 to 77.1.
MP 103.5 to 104.5	Westbound, should cover the 3.83% grade for at least 3,580 feet from MP 103.7 to 104.4.
MP 115 to 116	Westbound, should cover the 4.01% grade for at least 2,136 feet from MP 115.2 to 115.6. Should also incorporate the 4% grade at MP 114.9 that is 405 feet long.
MP 138.5 to 140	Westbound, should cover the 3.99% grade for at least 2,977 feet from MP 138.6 to 139.2.
MP 141.5 to 143	Eastbound, should cover the 3.01% grade for at least 4,176 feet from MP 141.4 to 142.2. Should extend to the existing eastbound climbing lane at MP 143.1.

MP = milepost, LOS = level of service

2.2.3 I-40 Geometric and Pavement Recommendations

Multiple geometric deficiencies and pavement needs were identified on I-40 in the I-40 Corridor Study. These deficiencies and the recommended corrective actions are summarized in the text below:

- 48 vertical curves – The corrective action for vertical curves requires fully reconstructing that section of the roadway to reduce either the crest or the sag in the curve.
- 70 horizontal curves (39 eastbound and 31 westbound) – The corrective action for horizontal curves is to increase the radius of the curve or to improve the superelevation of the curve through a mill and inlay or full reconstruction, depending on the extent of the needed correction. Recommended corrections were identified for the 70 horizontal curve deficiencies. In all cases, the recommendation is to improve the superelevation. Most of the deficiencies can be corrected by improving the superelevation with a mill and inlay with the exception of the following:
  - → Eastbound, 6 horizontal curves will require full reconstruction and 4 additional curves will require reconstruction because they occur within the limits of a bridge. The remaining 29 horizontal curves can be corrected with a mill and inlay.
  - → Westbound, 2 horizontal curves will require full reconstruction and 3 additional curves will require reconstruction because they occur within the limits of a bridge. The remaining 26 horizontal curves can be corrected with a mill and inlay.
- Pavement – Many miles of pavement in the study area, including 36 miles eastbound and 39 miles westbound, are identified as being in poor or very poor condition based on the NMDOT *Pavement Condition Assessment Report*, dated 2023.[1] Per NMDOT, the suggested pavement treatment for pavements receiving a rating of very poor is pavement reconstruction. For a rating of poor, NMDOT's suggested pavement treatment consists of major rehabilitation. However, pavement currently rated as being in poor condition will likely deteriorate to very poor within a short time period (a few years), as suggested by changes

[1] NMDOT Pavement Management and Design Bureau, *Pavement Condition Assessment Report*, I-40 MP 0-150 Corridor Study, CN 6101580, September 26, 2023.

seen in I-40 pavement condition from 2022 to 2023. Therefore, for budget, planning, and constructability purposes, the recommendation is to reconstruct areas currently identified as being in very poor and poor condition.

Exhibit 2-6 compiles the recommended corrections for pavement and vertical and horizontal curve deficiencies into recommended reconstruction limits. Reconstruction is recommended for just over half (or 77.5 miles) of I-40 due to various pavement and geometric deficiencies. The following assumptions were used to define the recommended reconstruction limits:

- The minimum length for a full reconstruction segment is 1 mile.
- Both eastbound and westbound sections of I-40 are shown to be reconstructed within the limits, regardless of which side the deficiency is located.
- If the gap between two segments was less than 1.5 miles, the segments were combined.
- The beginning and end MPs of each segment were rounded to the nearest mile or half mile. If a horizontal or vertical deficiency defines the limits of a segment, typically a buffer of 0.1 mile was added to ensure that the limits are adequate to correct the curve. Since pavement deficiencies are defined in 1-mile increments, no buffer was added.

Additional details regarding reconstruction limits can be found in the following documents:

- Appendix D, Geometrics; this document provides additional information on horizontal and vertical curve deficiencies.
- Appendix E, Geotechnical Scoping Report; this document provides information on pavement conditions.
- Appendix K, I-40 Conceptual Alternatives; this document provides conceptual design plans for the Enhanced 2-Lane and a 3-Lane section. The plans identify and map areas with poor and very poor pavement conditions, deficient horizontal and vertical curves, and proposed reconstruction limits.

Exhibit 2-6. I-40 Recommended Reconstruction Limits

Begin MP	End MP	Length (miles)	Deficiency Type	EB/WB	Begin MP	End MP	Length (miles)	Conflicts
0.0	3.0	3.0	Horizontal (Bridge)	EB	0.3	0.7	0.39	Bridge 6294
			Vertical (Crest)	WB	0.6	0.7	0.12	-
			Vertical (Crest)	EB	0.6	0.7	0.13	-
			Vertical (Crest)	EB	0.7	0.8	0.06	Bridge 6294
			Vertical (Crest)	WB	0.8	0.8	0.04	Bridge 6293
			Vertical (Sag)	WB	0.9	1.0	0.11	Bridge 6295
			Vertical (Sag)	EB	0.9	1.0	0.12	Bridge 6296
			Horizontal	EB	2.1	2.8	0.66	CBC
5.0	6.0	1.0	Vertical (Crest)	WB	5.4	5.7	0.26	-
			Vertical (Crest)	EB	5.4	5.7	0.27	-
8.0	12.0	4.0	Pavement (Very Poor)	EB	8.0	12.0	4.0	-
			Pavement (Very Poor)	WB	8.0	12.0	4.0	-
17.5	21.5	4.0	Horizontal (Bridge)	WB	17.7	18.3	0.53	Bridge 8845
			Horizontal (Bridge)	EB	17.7	18.3	0.53	Bridge 8846
			Vertical (Crest)	WB	18.9	19.0	0.05	-
			Vertical (Sag)	WB	19.1	19.1	0.03	-
			Vertical (Sag)	EB	19.1	19.1	0.04	-
			Vertical (Crest)	EB	19.1	19.2	0.03	-
			Vertical (Crest)	WB	19.1	19.2	0.03	-
			Vertical (Crest)	EB	21.2	21.3	0.03	Bridge 7612
26.0	31.0	5.0	Pavement	WB	26.0	27.0	1.0	-
			Pavement	EB	26.0	27.0	1.0	-
			Vertical (Crest)	WB	28.2	28.4	0.18	Bridge 6710, CBC
			Vertical (Crest)	EB	28.2	28.4	0.14	Bridge 6710, CBC
			Pavement	WB	30.0	31.0	1.0	-
			Vertical (Crest)	WB	30.3	30.6	0.27	Bridges 6361, 6364
			Vertical (Crest)	EB	30.3	30.6	0.26	Bridges 6362, 6365
38.0	39.0	1.0	Pavement	WB	38.0	39.0	1.0	-
41.0	43.5	2.5	Vertical (Crest)	EB	41.4	41.8	0.38	-
			Vertical (Crest)	WB	41.4	41.8	0.37	-
			Vertical (Crest)	EB	42.9	43.2	0.30	-
			Vertical (Crest)	WB	43.0	43.3	0.29	-
45.5	46.5	1.0	Vertical (Crest)	EB	46.0	46.1	0.04	-
50.0	51.0	1.0	Pavement	WB	50.0	51.0	1.0	-
53.5	58.0	4.5	Vertical (Sag)	WB	53.5	53.6	0.06	Exit 53 WB Off-ramp
			Pavement (Very Poor)	EB	54.0	55.0	1.0	-
			Pavement	EB	56.0	57.0	1.0	-
			Pavement (Very Poor)	WB	56.0	57.0	1.0	-
			Pavement	WB	57.0	58.0	1.0	-

(Table Continues)

Exhibit 2-6. I-40 Recommended Reconstruction Limits (Continued)

Begin MP	End MP	Length (miles)	Deficiency Type	EB/WB	Begin MP	End MP	Length (miles)	Conflicts
61.0	64.5	3.5	Pavement	EB	61.0	63.0	2.0	–
			Vertical (Crest)	EB	64.3	64.3	0.04	–
66.0	67.0	1.0	Pavement	WB	66.0	67.0	1.0	–
78.0	85.0	7.0	Pavement	WB	78.0	80.0	2.0	–
			Horizontal (Bridge)	WB	78.8	79.2	0.35	Bridge 7315
			Horizontal (Bridge)	EB	78.8	79.1	0.35	Bridge 7314
			Horizontal (Bridge)	WB	79.8	80.6	0.77	Bridge 7318
			Horizontal (Bridge)	EB	79.8	80.6	0.78	Bridge 7317
			Vertical (Crest)	WB	79.9	80.2	0.29	Bridge 7318
			Vertical (Crest)	EB	79.9	80.2	0.28	Bridge 7317
			Pavement (Very Poor)	WB	80.0	81.0	1.0	
			Pavement	EB	82.0	85.0	3.0	–
91.5	96.0	4.5	Horizontal	EB	91.8	92.1	0.28	CBC
			Horizontal	WB	91.8	92.0	0.28	CBC
			Pavement	WB	92.0	93.0	1.0	–
			Horizontal	EB	92.6	92.7	0.16	CBC
			Pavement (Very Poor)	EB	93.0	94.0	1.0	–
			Horizontal	EB	93.7	94.4	0.75	CBC
			Pavement	WB	95.0	96.0	1.0	–
97.5	100.0	2.5	Vertical (Sag)	EB	97.5	97.6	0.07	Bridge 6889, CBC
			Pavement (Very Poor)	EB	99.0	100.0	1.0	–
103.0	109.0	6.0	Horizontal	WB	103.1	104.1	1.00	–
			Vertical (Crest)	EB	103.4	103.7	0.24	–
			Vertical (Crest)	WB	103.4	103.7	0.24	–
			Pavement (Very Poor)	WB	105.0	106.0	1.0	–
			Pavement (Very Poor)	EB	106.0	107.0	1.0	–
			Pavement	WB	106.0	109.0	3.0	–
			Vertical (Crest)	EB	107.0	107.2	0.24	–
			Vertical (Crest)	WB	107.0	107.3	0.23	–
112.0	113.0	1.0	Vertical (Crest)	EB	112.6	112.8	0.18	CBC
			Vertical (Crest)	WB	112.6	112.8	0.19	CBC

(Table Continues)

Exhibit 2-6. I-40 Recommended Reconstruction Limits (Continued)

Begin MP	End MP	Length (miles)	Deficiency Type	EB/WB	Begin MP	End MP	Length (miles)	Conflicts
116.0	139.0	23.0	Pavement	WB	116.0	118.0	2.0	–
			Pavement	EB	116.0	119.0	3.0	–
			Vertical (Crest)	EB	116.2	116.2	0.02	–
			Vertical (Crest)	WB	116.2	116.2	0.02	–
			Vertical (Sag)	WB	116.3	116.3	0.01	–
			Pavement (Very Poor)	WB	118.0	119.0	1.0	–
			Horizontal	EB	119.0	119.9	0.84	Bridge 6122 Over I-40
			Pavement (Very Poor)	EB	119.0	122.0	3.0	–
			Pavement	WB	119.0	124.0	5.0	–
			Vertical (Crest)	EB	119.4	119.4	0.06	–
			Vertical (Crest)	WB	121.7	122.0	0.30	Bridge 5987
			Vertical (Crest)	EB	121.7	121.8	0.10	Bridge 5986
			Vertical (Crest)	EB	121.8	122.0	0.18	Bridge 5986
			Pavement	EB	122.0	124.0	2.0	–
			Pavement (Very Poor)	WB	124.0	125.0	1.0	–
			Pavement (Very Poor)	EB	124.0	126.0	2.0	–
			Pavement	WB	125.0	132.0	7.0	–
			Pavement	EB	126.0	131.0	5.0	–
			Vertical (Crest)	EB	130.2	130.5	0.23	–
			Vertical (Crest)	WB	130.3	130.5	0.19	–
			Pavement (Very Poor)	EB	131.0	132.0	1.0	–
			Pavement	EB	132.0	137.0	5.0	–
			Vertical (Crest)	EB	132.2	132.3	0.12	–
			Vertical (Crest)	WB	132.2	132.3	0.12	–
			Pavement	WB	136.0	138.0	2.0	–
			Vertical (Crest)	WB	138.3	138.6	0.34	–
144.5	145.5	1.0	Vertical (Crest)	WB	144.8	145.2	0.38	–
			Vertical (Crest)	EB	144.8	145.1	0.31	–
			Horizontal	EB	145.1	145.2	0.09	–
148.0	149.0	1.0	Pavement (Very Poor)	WB	148.0	149.0	1.0	–
	Total	**77.5**						

CBC = concrete box culvert, EB = eastbound, MP = milepost, WB = westbound

Exhibit 2-7 and Exhibit 2-8 identify horizontal curve correction recommendations, pavement recommendations, and potential conflicts such as bridges or concrete box culverts (CBCs). For areas where bridge conflicts have been identified, bridge reconstruction will be necessary to correct adjacent pavement superelevation. Areas highlighted in grey are identified for reconstruction in Exhibit 2-6. There are several horizontal curves that are located outside of the areas identified for reconstruction. These curves will require mill and inlay to correct the deficiency. Information from Exhibit 2-7 and Exhibit 2-8 can be used to identify areas where NMDOT could consider correcting horizontal curves with mill and inlay projects in advance of full reconstruction. Note that the posted speeds in the I-40 corridor are 75 miles per hour (mph) in all areas except for Gallup from MP 15.5 to 26.5, where the posted speed is 65 mph.

Exhibit 2-7. I-40 Horizonal Curve Correction Recommendations - Eastbound

#	MP Begin	MP End	Design Speed[1] (mph)	Curve Correction	Pavement Rec.	Conflicts/Correction
1	0.0	0.2	65	Mill & Inlay	Rehab	–
2	0.3	0.7	60	Mill & Inlay	Rehab	Bridge 6294/Reconstruct
3	2.1	2.8	50	Reconstruct	Rehab	CBC
4	5.3	5.5	50	Mill & Inlay	Rehab	–
5	7.3	7.7	45	Mill & Inlay	Rehab	–
6	9.5	10.0	70	Mill & Inlay	Reconstruct	–
7	17.7	18.3	50	Mill & Inlay	Rehab	Bridge 8846/Reconstruct
8	18.5	18.7	55	Mill & Inlay	Rehab	–
9	20.6	21.0	55	Mill & Inlay	Rehab	Exit 20
10	23.0	23.2	60	Mill & Inlay	Rehab	Exit 22 EB On
11	26.0	26.4	60	Mill & Inlay	Reconstruct	Exit 26
12	26.9	27.3	55	Mill & Inlay	Rehab	–
13	29.9	30.2	60	Mill & Inlay	Reconstruct	–
14	41.6	41.9	70	Mill & Inlay	Rehab	–
15	47.1	47.2	55	Mill & Inlay	Rehab	–
16	47.2	47.3	60	Mill & Inlay	Rehab	–
17	65.6	66.4	70	Mill & Inlay	Reconstruct	–
18	68.3	68.5	55	Mill & Inlay	Rehab	–
19	70.9	71.2	55	Mill & Inlay	Rehab	–
20	78.8	79.1	65	Mill & Inlay	Reconstruct	Exit 79, Bridge 7314/Reconstruct
21	79.8	80.6	65	Mill & Inlay	Reconstruct	Bridge 7317/Reconstruct
22	82.0	82.0	60	Mill & Inlay	Reconstruct	Exit 81
23	82.4	82.5	55	Mill & Inlay	Reconstruct	–
24	83.1	83.4	50	Mill & Inlay	Reconstruct	–
25	84.3	84.4	55	Mill & Inlay	Reconstruct	–
26	89.2	89.3	65	Mill & Inlay	Rehab	Exit 89
27	90.2	90.6	50	Mill & Inlay	Rehab	–
28	91.8	92.1	45	Reconstruct	Reconstruct	CBC
29	92.6	92.7	45	Reconstruct	Reconstruct	CBC
30	93.7	94.4	45	Reconstruct	Reconstruct	CBC
31	94.9	95.3	70	Mill & Inlay	Reconstruct	–
32	103.1	104.0	55	Mill & Inlay	Rehab	–
33	104.4	105.1	55	Mill & Inlay	Rehab	Exit 104
34	117.1	117.3	55	Mill & Inlay	Reconstruct	–
35	119.0	119.9	50	Reconstruct	Reconstruct	Bridge 6122 (Over I-40)
36	128.7	129.3	70	Mill & Inlay	Reconstruct	–
37	137.1	137.3	65	Mill & Inlay	Reconstruct	–
38	145.1	145.2	50	Reconstruct	Rehab	–
39	148.9	149.3	70	Mill & Inlay	Rehab	Exit 150 EB Off

CBC = concrete box culvert, EB = eastbound, mph = miles per hour, MP = milepost, rec. = recommendation

Areas highlighted in grey are recommended for full reconstruction as shown in Exhibit 2-6.

1 Based on the *2018 AASHTO Green Book*, Emax = 6% superelevation table, design speed can be assessed using other methods.

Exhibit 2-8. I-40 Horizonal Curve Correction Recommendations - Westbound

#	MP Begin	MP End	Design Speed[1] (mph)	Curve Correction	Pavement Rec.	Conflicts/Correction
1	0.0	0.2	50	Mill & Inlay	Rehab	
2	0.3	0.7	70	Mill & Inlay	Rehab	
3	2.1	2.8	50	Mill & Inlay	Rehab	CBC
4	5.3	5.5	50	Mill & Inlay	Rehab	
5	7.4	7.7	45	Mill & Inlay	Rehab	
6	17.7	18.3	50	Mill & Inlay	Rehab	Bridge 8845/ Reconstruct
7	18.5	18.7	55	Mill & Inlay	Rehab	
8	20.6	21.0	50	Mill & Inlay	Rehab	Exit 20
9	23.1	23.2	55	Mill & Inlay	Rehab	Exit 22 WB Off
10	23.5	23.8	55	Mill & Inlay	Rehab	
11	26.9	27.3	60	Mill & Inlay	Rehab	
12	29.9	30.2	50	Mill & Inlay	Reconstruct	
13	47.0	47.1	65	Mill & Inlay	Rehab	
14	65.7	66.4	55	Mill & Inlay	Reconstruct	
15	68.3	68.5	55	Mill & Inlay	Rehab	
16	70.9	71.2	50	Mill & Inlay	Rehab	
17	78.8	79.2	65	Mill & Inlay	Reconstruct	Exit 79, Bridge 7315/ Reconstruct
18	79.8	80.6	65	Mill & Inlay	Reconstruct	Bridge 7318/ Reconstruct
19	83.2	83.7	70	Mill & Inlay	Reconstruct	
20	84.3	84.6	60	Mill & Inlay	Reconstruct	
21	90.2	90.7	45	Mill & Inlay	Rehab	
22	91.8	92.0	45	Reconstruct	Rehab	CBC
23	92.5	92.9	70	Mill & Inlay	Reconstruct	CBC
24	93.7	94.4	60	Mill & Inlay	Reconstruct	CBC
25	94.9	95.3	55	Mill & Inlay	Reconstruct	
26	103.1	104.1	40	Reconstruct	Rehab	
27	104.5	105.1	50	Mill & Inlay	Rehab	Exit 104
28	117.1	117.3	70	Mill & Inlay	Reconstruct	
29	119.1	119.9	45	Mill & Inlay	Reconstruct	Bridge 6122 (Over I-40)
30	137.2	137.4	55	Mill & Inlay	Reconstruct	
31	145.1	145.2	60	Mill & Inlay	Rehab	

CBC = concrete box culvert, mph = miles per hour, MP = milepost, rec. = recommendation, WB = westbound

Areas highlighted in grey are recommended for full reconstruction as shown in Exhibit 2-6.

1 Based on the 2018 *AASHTO Green Book*, Emax = 6% superelevation table, design speed can be assessed using other methods.

2.2.4 I-40 Interchange and Ramp Improvement Recommendations

There are 30 unique access points for I-40 between MP 0 and 150. A total of 28 of the access points are interchanges, 1 of the access points is associated with a rest area (eastbound at MP 3), and 1 is

associated with the Port of Entry located at MP 12. There are 119 on- or off-ramps associated with the 30 access points. Of the 30 access point locations, there are 26 locations with 87 ramps that do not meet the 2018 *American Association of State Highways and Transportation Officials (AASHTO Green Book*[2] requirements for acceleration length (La), gap acceptance length (Lg) or recommended deceleration length. Appendix L, I-40 Interchange Layouts, identifies the specific on- and off-ramps that do not meet 2018 *AASHTO Green Book* guidelines, and it provides recommendations for the additional ramp and taper lengths needed. Exhibit 2-9 identifies the interchanges where additional ramp or merge length is needed, the total number of ramps at the interchange, and the number of ramps at the interchange that need improvements.

Exhibit 2-9. I-40 Access Points/Interchanges that Need Additional Length

Exit	Description	# of Ramps Needing Improvements
3	Eastbound Rest Area	2/2
8	Defiance/Manuelito	4/4
12	Westbound Pullout	2/2
16	West Gallup	1/4
20	Downtown Gallup	5/5
22	Gallup	4/4
26	East Gallup	4/4
33	McGaffey	4/4
36	Iyanbito	4/4
39	Refinery	3/4
47	Continental Divide	1/4
63	Prewitt	4/4
79	Milan	4/4
81 A/B	Grants/San Rafael	5/5
85	Grants/Mt. Taylor	5/5
89	Quemado	4/4
96	McCartys	3/4
100	San Fidel	4/4
102	Acoma/Sky City	3/4
104	Cubero/Budville/Seama	2/4
108	Casa Blanca/Paraje	4/4
117	Mesita	2/4
126	Los Lunas/NM 6	4/4
131	To'hajiilee	4/4
140	Rio Puerco/ Route 66 Casino	4/4
149	Atrisco Vista Boulevard	1/2

[2] AASHTO 2018. *A Policy on Geometric Design of Highways and Streets (AASHTO Green Book)*. 7th Edition. 2018.

2.2.5 I-40 Crossover Recommendations

Throughout the I-40 corridor, crossovers are recommended to provide periodic locations where maintenance and official vehicles such as snowplows and emergency vehicles can reverse directions on I-40. Because there are limited adjacent alternate routes that can be used to detour traffic when major incidents occur, the proposed crossovers should be designed so that they can also be used to cross a single lane of traffic from the opposite side of I-40 to keep traffic moving in the case of a complete I-40 closure in a single direction. The recommendation is to place crossovers approximately 2 miles apart to make the deployment of traffic control devices reasonable when establishing 2-way traffic on a single direction of I-40. This approach has been used on I-40 in District 3, as shown in Attachment D, 2013 Incident Management Plan.

Exhibit 2-10 provides recommendations for modifying or building 61 crossovers, which includes modifying 24 existing crossovers, building 37 new crossovers, and removing 7 existing crossovers that do not provide sufficient width to use for incident management. Appendix J, I-40 Proposed Typical Sections, provides a crossover plan view and Appendix K, I-40 Conceptual Alternatives, shows locations of existing and proposed crossovers.

Exhibit 2-10. I-40 Mainline Existing and Proposed Crossovers

Number	Milepost	Remove Existing Crossover	Modify Existing Crossover	Proposed New Crossover
1	0		X	
2	1.2	X		
3	2			X
4	3	X		
5	4.6			X
6	5.6	X		
7	6.4			X
8	7.8		X	
9	9.5			X
10	10.5	X		
11	11.2			X
12	12.3	X		
13	13.5			X
14	18.4		X	
15	24.2		X	
16	29.9		X	
17	32			X
18	34.8			X
19	38.3			X
20	41.2			X
21	42.7		X	
22	45.7			X

(Table Continues)

Exhibit 2-10. I-40 Mainline Existing and Proposed Crossovers (Continued)

Number	Milepost	Remove Existing Crossover	Modify Existing Crossover	Proposed New Crossover
23	46.4	X		
24	47.2			X
25	49.2			X
26	51.5			X
27	54.6			X
28	56.5			X
29	58.3		X	
30	60.7			X
31	62.3			X
32	64.7		X	
33	66.4			X
34	69.1		X	
35	70.9		X	
36	73.6		X	
37	76		X	
38	77.8			X
39	80.4			X
40	82.5	X		
41	84.2			X
42	86.5			X
43	88.7			X
44	90.4			X
45	92		X	
46	94.3			X
47	97.6			X
48	99.3			X
49	103.8			X
50	106.4		X	
51	109			X
52	111			X
53	115.3			X
54	116.2			X
55	118.9			X
56	121		X	
57	124		X	
58	125.9			X
59	127.6			X

(Table Continues)

Exhibit 2-10. I-40 Mainline Existing and Proposed Crossovers (Continued)

Number	Milepost	Remove Existing Crossover	Modify Existing Crossover	Proposed New Crossover
60	129.3			X
61	132		X	
62	134.6		X	
63	137.1		X	
64	139.9		X	
65	142.2		X	
66	144.4		X	
67	146.4		X	
68	147.8		X	

Existing and proposed crossovers are shown in Appendix K, I-40 Conceptual Alternatives

2.2.6 I-40 Bridge Needs

There are 154 bridges in the study area. Detailed information on all 154 bridges is contained in Appendix F, Bridges. Of the 154 existing bridges, 128 carry I-40 over waterways, roadways, or railroads. The other 26 bridges carry roadways or railroads over the top of I-40, including a pedestrian bridge that crosses over I-40 at MP 79.6 near Milan. Of the 154 bridges, 148 (96%) are in good or fair condition, and 5 (3%) are described as being in poor condition. The condition of BNSF Bridge 6226 that travels over I-40 at MP 94.77 is unknown. Recommendations for bridges on or over I-40 include the following:

- Repair or replace bridges in poor condition.
- Request bridge condition information from the BNSF for Bridge 6226 at MP 94.77.
- Consider increasing vertical clearances to meet typical required bridge clearance minimums bridges as they are replaced.

2.2.6.1 Repair or Replace Bridges in Poor Condition

The 5 bridges identified as being in poor condition are all located in District 6 and are listed below:

- Bridge 6365 carrying the I-40 westbound lanes at MP 31.03
- Bridge 6366 carrying the I-40 eastbound lanes at MP 31.04
- Bridge 6388 carrying the I-40 eastbound lanes and ramp at MP 99.84
- Bridge 6389 carrying the I-40 westbound lanes at MP 99.87
- Bridge 6122 carrying Frontage Road 4012 near MP 119.38

Currently, NMDOT has a project identified for 2027 to replace Bridge 6122 (Control Number [CN] 6100843), the other bridges listed in poor condition do not have any specific funding or future improvement plans identified. It is recommended that these bridges be assessed to determine what is required to improve their condition to at least a “fair” bridge condition rating (maintenance or replacement).

2.2.6.2 Request Bridge Condition Information from BNSF for Bridge 6226 at MP 94.77

NMDOT currently does not have information on the condition of Bridge 6226, located at MP 94.77. It appears that Bridge 6226 was constructed in 1961. Any widening of I-40 in this area will require its replacement. It is recommended that NMDOT coordinate with BNSF to determine if there is any available information on this bridge related to its condition and if BNSF has any plans to repair or replace the bridge in the near future.

2.2.6.3 I-40 Overpass Considerations

There are 26 bridges in the study area that are overpasses carrying roadways, railroads, and pedestrians over I-40. A preliminary analysis was done to identify potential conflicts with these overpasses due to either widening to the inside or the outside of I-40. Potential widening conflicts that cannot be avoided were identified for 6 of the 26 bridges crossing over I-40 for the Enhanced 2-Lane with Added Lanes Alternative and 11 of 26 bridges crossing over I-40 with the 3-Lane Alternative. These potential conflicts should be considered if the overpasses are replaced.

All of the following overpasses would likely need to be replaced with either of the proposed build alternatives:

1. Bridge 9616 at MP 36.80, carrying NM 118, includes the I-40 interchange at Exit 36 Iyanbito.
2. Bridge 6380 at MP 63.4, carrying NM 412, includes the interchange at Exit 63 Prewitt.
3. Bridge 7143 at MP 81.94, carrying NM 53, includes the interchange at Exit 81 A/B Grants/San Rafael.
4. Bridge 6226 at MP 94.77, carrying the BNSF Railroad.
5. Bridge 6490 at MP 108, carrying 06-C12A, includes the interchange at Exit 108 Casa Blanca/Paraje.
6. Bridge 6491 at MP 114.26, carrying NM 124, includes the interchange at Exit 114 Laguna.

In addition, bridge 9330 at MP 20.84 carrying US 491, is a potential conflict with inside widening for both of the build alternatives. This overpass, which includes the I-40 interchange at US 491, is a potential conflict, but it is assumed that impacts to this overpass could potentially be avoided as part of additional design for either of the proposed build alternatives.

For the 3-Lane Alternative, the following 5 additional bridges over I-40 would likely require replacement:

1. Bridge 9659 at MP 48.0, carrying NM 122, includes the interchange at Exit 47 Continental Divide.
2. Bridge 5973 at MP 89.47, carrying NM 117, includes the interchange at Exit 89 Quemado.
3. Bridge 6390 at MP 100.09, carrying Frontage Road 4011, includes the interchange at Exit 100 San Fidel.
4. Bridge 6121 at MP 117.76, carrying Frontage Road 4012, includes the interchange at Exit 117 Mesita.
5. Bridge 6122 at MP 119.38, carrying Frontage Road 4012.

2.2.6.4 Increase Vertical Bridge Clearances

In total, 24 of the existing 154 bridges in the I-40 corridor do not meet typical minimum vertical clearances required for interstate, railroad, and local road bridges, which are 16 feet, 23.5 feet, and 14.5 feet, respectively. All of these bridges are located in District 6 and are summarized below:

- Two bridges over I-40 have less than 16 feet vertical clearance.
- Eleven I-40 bridges over railroads have less than 23.5 feet vertical clearance. NMDOT may accept a minimum vertical clearance of 22.5 feet for existing bridges; however, 7 bridges over railroads have less than this clearance.
- Eleven bridges over crossroads have less than 14.5 feet vertical clearance. In addition, 7 of these crossroad bridges have less than 2 feet of horizontal clearance, which is considered the minimum for acceptable operation.

Bridges that do not meet the desired minimums are listed below in Exhibit 2-11, and additional details are provided in Appendix F, Bridges. NMDOT should consider raising the vertical clearances of these bridges on a case-by-case basis as these bridges are replaced.

Exhibit 2-11. I-40 Vertical Bridge Clearance Considerations

#	Milepost	Bridge	Description	Desired Minimum Clearance	Actual Minimum Clearance	<2 Feet of Horizontal Clearance
Bridges Over I-40						
1	81.94	7143	NM 53 bridge over I-40	16 feet	15.8 feet	
2	108.00	6490	Exit 108 over I-40	16 feet	15.8 feet	
I-40 Bridges Over Railroads						
1	0.78	6293	I-40 bridge over BNSF Railroad	23.5 feet	22.2 feet	
2	0.79	6294	I-40 bridge over BNSF Railroad	23.5 feet	22.1 feet	
3	16.68	6554	I-40 bridge over BNSF Railroad	23.5 feet	22.6 feet	
4	16.72	6553	I-40 bridge over BNSF Railroad	23.5 feet	22 feet	
5	30.40	6361	I-40 bridge over BNSF Railroad Spur	23.5 feet	22.8 feet	
6	30.43	6362	I-40 bridge over BNSF Railroad Spur	23.5 feet	22 feet	
7	30.47	6364	I-40 bridge over BNSF Railroad Spur	23.5 feet	22.4 feet	
8	30.47	6363	I-40 bridge over BNSF Railroad	23.5 feet	22.9 feet	
9	105.97	6489	I-40 bridge over BNSF Railroad	23.5 feet	23.2 feet	
10	121.87	5987	I-40 bridge over BNSF Railroad	23.5 feet	22.3 feet	
11	121.90	5986	I-40 bridge over BNSF Railroad	23.5 feet	22.3 feet	
I-40 Bridges Over Local Roadways						
1	8.41	6502	I-40 bridge over NM 118	14.5 feet	13.9 feet	X
2	19.67	6730	I-40 bridge over Allison Road	14.5 feet	13.6 feet	X
3	26.96	6706	I-40 bridge over local road	14.5 feet	13.7 feet	X
4	28.33	6710	I-40 bridge over Sundance Road	14.5 feet	13.9 feet	X
5	44.75	6009	I-40 bridge over local road	14.5 feet	13.6 feet	X
6	57.84	9571	I-40 bridge over South Chavez Road	14.5 feet	14 feet	

(Table Continues)

Exhibit 2-11. I-40 Vertical Bridge Clearance Considerations (Continued)

#	Milepost	Bridge	Description	Desired Minimum Clearance	Actual Minimum Clearance	<2 Feet of Horizontal Clearance
7	57.86	9572	I-40 bridge over South Chavez Road	14.5 feet	14 feet	
8	73.85	7253	I-40 bridge over Roberts Road	14.5 feet	13.1 feet	
9	73.86	7254	I-40 bridge over Roberts Road	14.5 feet	14.1 feet	
10	90.59	6307	I-40 bridge over NM 124	14.5 feet	13.4 feet	X
11	106.44	6897	I-40 bridge over local road	14.5 feet	12.3 feet	X

2.2.7 I-40 Drainage Recommendations

Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations, provides specific recommendations for drainage structures and systems located in the study area from MP 0 to 150. A summary of the recommendations identified in Attachment A is provided below. Individuals planning or designing projects in the I-40 corridor should check Attachment A to ensure that high-risk drainage structures and maintenance issues are addressed as part of upcoming projects.

2.2.7.1 I-40 Corridor-Wide Recommendations

1. Conduct a culvert inventory for alternate routes/frontage roads adjacent to I-40 and add this information to the I-40 CAMP GIS database. Consider reassessing I-40 basins, hydrology, and the culvert risk assessment with the frontage road information, or incorporate frontage road information as part of an additional assessment of the highest risk culverts and as individual projects are undertaken.
2. Ensure the I-40 CAMP GIS database is updated with information as projects are designed and built (per Special Provision 802-A: CAMP Data Collection) and as drainage assessments are completed.

2.2.7.2 I-40 Corridor Location-specific Recommendations

Location-specific recommendations fall into the categories listed below, and they are described in greater detail in this section.

1. Address high-risk culverts and drainage areas with additional analysis.
2. Assess culverts that may be undercapacity as part of project drainage analysis.
3. Clean out culverts with silting greater than 60%.
4. Address damaged culverts.

Address High Risk Culverts and Drainage Areas with Additional Analysis

The highest risk area for flooding and drainage-related issues is the Fort Wingate area near MP 30 to 36. A detailed report and proposed solutions have been identified to address routine flooding in this area that often leads to roadway closures of both I-40 and NM 118. Due to the ongoing threat of I-40 closure, addressing flooding issues at Fort Wingate is one of the highest priority issues that needs to be addressed in the study area.

In addition, the report identifies 32 culvert locations representing 50 culverts in the study area that pose the most significant risk of failure based on the culvert risk analysis conducted. Generally, these culverts are large, do not have capacity for 50-year and 100-year design storm flows, are

located in a floodplain, are in an area with a high or moderate risk of corrosive soils, or have a history of flooding. Additional analyses are needed for these culvert locations to determine how to address potential drainage risks in these areas. At a minimum, these areas and their possible drainage risks should be assessed as construction projects are designed and implemented.

Exhibit 2-12. I-40 Highest Risk Culverts Organized by MP

Milepost	ID	Priority	Size (inches)	# of Culverts	Meets 50-year and 100-year Capacity	Recommendations
0.12	I40-1	15	24	4	No-No	Clean channel, conduct drainage analysis
0.29	I40-3	16	24	1	No-No	Clean culvert, conduct drainage analysis
0.36	I40-4	17	24	1	No-No	Clean culvert, conduct drainage analysis
0.48	I40-5	18	24	1	No-No	Clean culvert, conduct drainage analysis
0.57	I40-6	6	48	1	No-No	Clean culvert, conduct drainage analysis
2.5	I40-17	14	24	6	No-No	Clean culvert, conduct drainage analysis
2.99	I40-21	30	36	6	No-No	Clean culvert and channel, conduct drainage analysis
3.94	I40-29	2	48	3	No-No	Clean culvert, conduct drainage analysis
4.2	I40-31	11	30	1	No-No	Clean culvert, conduct drainage analysis
6.44	I40-44	9	30	2	No-No	Clean channel, conduct drainage analysis
7.66	I40-58	19	24	1	No-No	Repair culvert, conduct drainage analysis
10.22	I40-74	20	24	1	No-No	Clean culvert, conduct drainage analysis
10.42	I40-77	12	30	1	No-No	Clean channel, conduct drainage analysis
13.08	I40-93	13	30	1	No-No	Clean and repair culvert, conduct drainage analysis
33.85	I40-203	3	24	1	No-No	Clean culvert, conduct drainage analysis
34.18	I40-204	4	24	1	No-No	Clean culvert, conduct drainage analysis
52.58	I40-281	10	30	2	No-No	Clean and repair culvert, conduct drainage analysis
53.90	I40-286	21	24	1	No-No	Clean culvert, conduct drainage analysis
67.96	I40-342	31	24	1	No basin	Clean culvert
72.95	I40-357	32	24	1	No basin	Clean channel
77.88	I40-400	22	24	1	No-No	Clean culvert, conduct drainage analysis
80.98	I40-411	1	60	1	No-No	Clean channel, conduct drainage analysis
84.58	I40-414	23	24	1	No-No	Clean culvert, conduct drainage analysis
84.92	I40-416	24	24	1	No-No	Clean culvert, conduct drainage analysis
86.03	I40-420	25	24	1	No-No	Clean culvert, conduct drainage analysis
88.01	I40-427	26	24	1	No-No	Clean culvert, conduct drainage analysis
88.96	I40-430	27	24	1	No-No	Clean culvert, conduct drainage analysis
106.78	I40-516	28	24	1	No-No	Clean culvert, conduct drainage analysis
113.16	I40-560	5	96	1	No-No	Clean culvert, conduct drainage analysis
114.84	I40-574	8	36	1	No-No	Repair concrete, conduct drainage analysis
120.99	I40-620	7	36	3	No-No	Replace or slipline culvert, conduct drainage analysis
135.36	I40-693	29	48	1	No-No	Clean culvert, conduct drainage analysis

Entries highlighted in grey are located in District 3.

In addition, recommendations for culverts identified as part of specific upcoming projects are provided in Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations, for the following areas and NMDOT projects that are under design:

- CN 6100849, MP 8.7 to 9.7
- CN 6100930 and CN 6100931, MP 17.9 to MP 21.9
- CN 6100932, MP 21.9 to MP 25.7
- CN 6101581, MP 42.1 to MP 44.8

Assess Culverts that May be Undercapacity as Part of Project Drainage Analysis.

Attachment A, Supplement B, Hydraulic Analysis, and the I-40 CAMP GIS database identify culverts that may not have sufficient drainage capacity based on a conceptual-level hydraulic analysis. As projects are scoped, studied, and constructed in the I-40 corridor, these culverts should be assessed in more detail to determine if additional hydraulic capacity is needed, and expansion should occur as part of project implementation.

Clean Out Culverts with Silting Greater than 60%.

Culverts that are 60% or more silted are at a high risk for drainage issues such as overtopping, erosion at the culvert entrance, and flows bypassing the inlet and continuing downstream. There are 64 locations where culverts are 90% or more silted and 55 culverts that are silted between 60% to 90%. Most of the blocked pipes are located in District 6. Blocked culverts should be cleaned out, either as part of ongoing maintenance activities, or as specific projects are designed, The largest culverts requiring clean outs that are 90% or more silted are listed below, and all culverts that are 60% more silted are listed in Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations.

- Culvert ID I40-29, located at MP 3.94, consisting of 3, 48-inch culverts, these culverts are located in an area where NMDOT patrols have seen water that spills onto I-40
- Culvert ID I40-179, located at MP 28.4, consisting of 3, 48-inch by 48-inch CBCs
- Culvert ID I40-560, located at MP 113.16, consisting of a 96-inch arch pipe

Address Damaged Culverts.

Many damaged culverts were identified in the study area. Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations, identifies the culvert locations with heavy and moderately damaged culverts. Most of the damaged culverts are located with District 6. Pipes with the most severe damage include the following:

- There are 15 metal culverts with heavy damage. All of these culverts are smaller-diameter culverts ranging from 24 to 36 inches. There are an additional 39 metal culverts with moderate damage.
- There are 27 damaged concrete culverts in the I-40 corridor. Culverts with the most severe damage (e.g., severe concrete cracks >1/4”) are at a high-risk for drainage issues. These culverts include the following:
    - → Culvert ID I40-37, located at MP 4.81, consisting of 1, 120”-inch x 96-inch CBC
    - → Culvert ID I40-50, located at MP 7.1, consisting of 1, 168-inch x 168-inch CBC
    - → Culvert ID I40-51, located at MP 7.2, consisting of 1, 168-inch x 168-inch CBC

2.2.8 Data Collection and ITS Recommendations

2.2.8.1 ITS Devices

Exhibit 2-13 provides a summary of existing and proposed ITS devices and recommendations. Additional information about proposed ITS improvements, including priorities and estimated costs, is provided in Attachment B, Intelligent Transportation Systems.

Exhibit 2-13. I-40 Summary of Existing and Proposed ITS Devices

Location	MP	Data Stations	CCTV	DMS	VSAS	(DPAS/ TPAS	RWIS	License Plate Reader
Manuelito	1.8					P (2 EB+WB)		
West of Port of Entry	10.7	R						
EB Port of Entry	11.8							E
Port of Entry	12.0		P					
WB Port of Entry	12.7							E
EB West of Gallup	14.2			R (EB)				
Gallup/US 491	20.8	P	E (2 EB+WB)					
WB at Fire Rock Casino	28.5			R (WB)				
East of Gallup	30.0	P						
EB/WB at Exit 36	36.8		E (2 EB+WB)					
Refinery Exit	39.0	P	P	P (EB)	P (EB)			
Near Continental Divide	45.0				P			
Continental Divide	48.0		E				E	
West of Thoreau	50.0				P			
East of Thoreau	54.0	P	P	P (WB)	P (WB)			
Near Prewitt	63.0	P	P					
EB West of Milan	78.8			P (EB)				
Milan	80.7	R						
Grants	82.0		P (Dual)					
WB East of Grants	90.8			R (WB)				
East of Grants	96.9	R	P					
West of Mesita*	115.5	P	P					
EB West of NM 6	125.3			R (EB)				
NM 6	126.9		E				E	
East of NM 6	130.0	P						
Rio Puerco	140.4	P	E					
West of Atrisco Vista	148.0		E	R (EB)				

(Table Continues)

Exhibit 2-13. I-40 Summary of Existing and Proposed ITS Devices (Continued)

Location	MP	Data Stations	CCTV	DMS	VSAS	DPAS/ TPAS	RWIS	License Plate Reader
West of Atrisco Vista	148.9	R						
East of Atrisco Vista	149.5		E					
Total Proposed or Replaced		**12**	**7**	**8**	**4**	**2**	**0**	**0**
Total Proposed + Existing		**12**	**16**	**8**	**4**	**2**	**2**	**2**

CCTV = closed-circuit television, E = existing, EB = eastbound, DMS = dynamic message sign, DPAS = dynamic parking availability sign, ITS = intelligent transportation system, MP = milepost, P = proposed, R = replace, RWIS = road weather information system, TPAS = truck parking availability system, VSAS = variable speed advisory sign, WB = westbound

* Potential alternate location near MP 118 if MP 115.5 is not feasible.

2.2.8.2 Other Supporting ITS Improvements

In addition to the proposed devices, the study team recommends other supporting improvements that are described in Attachment B, Intelligent Transportation Systems. These improvements include the following:

- Fiber Optic Communication Network — A high-speed fiber optic communication network is proposed to connect ITS devices throughout the study area. Completing the fiber optic network in the study area would require adding fiber optic cable from MP 0 to 125. NMDOT has existing fiber optic cable along I-40 from MP 125 to 150. As projects are built in the I-40 corridor, conduit should be placed to help advance the construction of the full fiber network. The fiber network should not be placed in the median of I-40 since the proposed improvements will widen to the median, and the median is less accessible for maintenance. In general, it is recommended that the fiber line be constructed on the north side of I-40, though there may be areas where it would cross to the south side to avoid environmental or other impacts.
- District 6 Traffic Management Center (TMC) — Development of a TMC in District 6 is proposed to enable remote ITS operations and management and to coordinate with key stakeholders such as police state patrol, emergency services, and other NMDOT TMCs.
- Truck Parking Availability System (TPAS) — The TPAS system would add ITS devices at parking and truck rest stops, wireless or wireline communications, and a back-end application to provide information on available truck parking in the study area. Truck parking is currently available for eastbound drivers in New Mexico at the Manuelito rest area near MP 3 and for westbound drivers in Arizona just west of the Arizona/New Mexico border. Dynamic Parking Availability Signs (DPAS) would be placed in both the eastbound and westbound direction near MP 1.8 to inform drivers of how many spaces are available.
- Applications and Integration — Application and integration is needed to configure, connect, and integrate proposed ITS systems with the NMDOT Southwest Research Institute Advanced Traffic Management System platform.

2.2.9 Recommendations for Minimizing Lane Closures during Construction and Maintenance

One of the most important findings of the I-40 Corridor Study is that reducing I-40 to a single lane in 1 direction is problematic during most daytime hours. Roadway construction and maintenance are some of the primary activities NMDOT conducts in the I-40 corridor. As I-40 traffic volumes have increased over time, traditional maintenance of traffic procedures that reduce I-40 to 1 lane are causing traffic congestion and backups. As projects are constructed, it is essential that 2 lanes are provided in each direction. Appendix J, I-40 Proposed Typical Sections, provides construction approaches for the study area that would maintain 2 lanes of traffic in each direction for the proposed build alternatives. Similarly, for maintenance projects, it is critical that 2 lanes be maintained where feasible. Section 4.2.2 provides a summary of key findings from the I-40 Corridor Study and specific recommendations for immediate development and implementation. Chapter 6 of the I-40 Corridor Study provides additional analysis on when I-40 backups can be expected when I-40 is reduced to a single lane in 1 direction.

2.2.10 Incident Management Recommendations

Incident management recommendations include possible concepts that could be developed further to reduce the number of lane closures and/or the duration of closures on I-40 due to crashes in the study area. There are 2 primary ways that lane reductions due to incidents could be improved in the I-40 corridor:

1. Reducing incidents on I-40
2. Improving incident response

The ultimate goal is to reduce the overall number of incidents occurring on I-40. Improvements proposed with the preferred alternative would improve safety with the goal of reducing the number of incidents that occur in the study area. Reducing the overall number of crashes in the study area is something that will take time, but many of the proposed improvements are expected to reduce crashes once constructed. Specific improvements that are expected to reduce incidents include the following:

- Lengthening interchange on- and off-ramps and merge areas
- Widening roadway shoulders to improve recovery areas
- Addressing geometric deficiencies

In addition, improvements proposed with the preferred alternative would improve incident response efforts, as described below:

- Wider shoulders would provide more space for emergency response vehicles to reach crash sites. Current shoulder widths on some areas of I-40, particularly on bridges, are constrained, and it can be difficult for emergency responders to reach crash sites once a crash has occurred, and traffic is backing up.
- A wider roadway section would provide emergency responders more space to maneuver I-40 traffic around crashes.
- In cases where I-40 is closed in a single direction due to an incident, proposed crossovers would provide a way to move traffic from one side of I-40 to the other, potentially opening up at least 1 lane of traffic in each direction until the incident could be cleared. This benefit is

possible, but it would take additional planning and traffic control resources to implement, including the development and adoption of an incident management plan.

- Proposed ITS improvements would provide improved opportunities to warn drivers of lane or roadway closures before they reach the area. In addition, establishing a District 6 TMC, as proposed with the recommended ITS improvements, would provide additional resources to help monitor I-40 traffic operations.

Incident response is challenging in a rural area, given the time it can take to get police, medical services, and tow trucks to the crash site. It also requires coordination between multiple agencies, including the New Mexico Department of Public Safety (NM DPS), local and tribal law enforcement agencies, emergency responders, tow truck operators, and the NMDOT. The NMDOT supports incident response efforts in the study area, and communication with the NM DPS and other agencies is ongoing. The NM DPS has authority and jurisdiction for incident response and traffic enforcement, and the NMDOT supports these efforts as directed by NM DPS. Any efforts specifically related to implementing new policies and procedures related to incident response would require additional collaboration and coordination with NM DPS, as the lead agency; the state legislature; and other key partners to fund, develop, and implement changes to existing protocols.

There are numerous ways to improve incident response, but funding, coordination, and implementation can be challenging. Potential incident management approaches and solutions are discussed below.

2.2.10.1 Develop a Corridor-Wide Incident Management Plan

As part of discussions with NM DPS, the I-40 study team learned that state and local law enforcement agencies have limited resources to establish traffic control on I-40 when crashes occur. Per discussions with State Patrol, when a crash occurs, 1 officer and 1 patrol car typically respond to the incident. If there are available resources, 2 officers and 2 patrol cars may be provided. Resources for setting up detours and clearing accidents are limited since there may be just 1 officer able to be on the scene. The responding officer uses roadway shoulders to get to the crash site if traffic is backed up. Officers use their patrol lights to warn people of the crash, and they use their vehicles as barriers at crash sites. Officers do not have any equipment other than their vehicle and light-emitting diode pucks to manage traffic (they cannot use flares). The officer dispatches the needed resources (e.g., ambulances and tow trucks) to the area. In some cases, it can take 30 to 60 minutes for a tow truck to be able to get to the site. Law enforcement may contact NMDOT to assist with providing traffic control devices; however, NMDOT may or may not be able to assist, depending on their proximity to the crash, the time of the crash, and the availability of staff and traffic control devices. Responding law enforcement officers do what they can to keep traffic moving, but there are times when they must close I-40 in 1 or both directions to respond to the crash.

There are ways that incident management could be improved in the study area, but any efforts specifically related to implementing new policies and procedures related to incident response would require additional collaboration and coordination with NM DPS, as the lead agency; the state legislature for funding; and other key partners to fund, develop, and implement changes to existing protocols. Possible solutions that could be considered include the following:

- Develop an I-40 Corridor Incident Management Plan — A corridor-wide incident management plan could be established to formalize cross-agency incident management protocols, clarify roles and responsibilities, and/or establish consistent corridor-wide training. Aside from established law enforcement protocols for responding to incidents, there are no current, well-established, formal, multiagency plans in New Mexico, particularly in rural areas. The Mid-Region Council of Governments recently developed an Incident Management Plan for the Albuquerque Metropolitan Area. This type of plan could be developed for I-40 in the study

area to formalize roles, relationships, and protocols and to improve overall incident response. The development and implementation of an incident management plan requires extensive multiagency coordination, a champion and established lead agency, funding, and resources. This could be considered for the study area, and it could be done in phases, as suggested below.

- **Phase 1** — Refine, formalize, and implement the 2013 District 3 Incident Management Program NMDOT developed in 2013. This plan is provided in Attachment D, 2013 Incident Management Plan. The 2013 District 3 Incident Management Program provides procedures for managing incidents on I-40 through District 3 in cases when a complete closure of 1 direction of travel is required between MP 134 and 148. To date, the crossovers identified in the 2013 District 3 Incident Management Program have been constructed, and they could be used to run 2-way traffic on a single side of I-40; however, this portion of the plan has not been practiced or implemented. This plan could be a useful tool and initial concept for improving incident management in the study area. An incident management program will be needed to use the proposed crossovers to establish 2-way traffic on 1 side of I-40 in the case of an incident that requires a closure for multiple hours.
- **Phase 2** — Build additional crossovers in District 6 and develop and implement an Incident Management Program that provides for establishing 2-way traffic on I-40 in cases when a single direction of I-40 is closed due to an incident. Prioritize areas where there are no existing alternate routes (e.g., MP 37 to 48 and MP 114 up to the District 3 and 6 border at MP 132).
- **Phase 3** — Establish additional incident management protocols, including traffic control support, training, or other desired actions. This could include stocking trailers at NMDOT patrol yards with additional traffic control devices that could be used at crash sites when needed. It could also include having NMDOT staff assist in establishing traffic control in these cases. Some formalized plan for storing and deploying temporary traffic control devices (such as traffic barrels or traffic panels) would be needed to establish 2-way traffic, as discussed above in Phases 1 and 2, or to be able to set up an I-40 lane detour using the wider shoulders once the wider Enhanced 2-Lane typical section is constructed. This phase could also include specific training for law enforcement personnel, including NMDOT staff and local and tribal police, or providing a courtesy patrol to assist drivers of disabled vehicles, or those involved with crashes.

2.2.10.2 Push/Pull Legislation

Currently, New Mexico state law does not provide a provision permitting NMDOT employees to move wrecked vehicles from I-40 and other roadways at the scene of a crash As such, wrecked vehicles on I-40 are currently moved by tow truck operators under the direction of law enforcement personnel, as specific in New Mexico Statute Annotated (NMSA) 66-7-350. It can take 30 to 60 minutes to get a tow truck to a crash site to keep travel lanes open. In rural areas, providing law enforcement with the option to contact the NMDOT and request assistance could reduce incident response times in instances where tow truck vehicles are unavailable. Having additional resources available through the NMDOT could help improve incident response, not only on I-40, but throughout New Mexico, particularly in rural areas. Including this provision in state law would require legislative action, but doing so could help improve incident management and reduce response times by providing law enforcement with other options to remove crashed vehicles from I-40 and other roadways. In the 2023 legislative session, House Bill 334 was introduced, which would have amended NMSA 66-3-852 to include a provision to allow NMDOT or anyone acting under the direction of an NMDOT employee to remove vehicles, cargo, and debris that are obstructing traffic from travel lanes. This bill

passed in the House of Representatives, but it did not pass through the Senate, so it was not signed into law in 2023.

2.2.10.3 Incident Management Recommendations

Specific incident management recommendations are not provided as part of the I-40 Corridor Study and this HOIP because NMDOT's jurisdiction is limited as it pertains to providing incident response. However, traffic operations and incident response in the study area would benefit from the following:

- **Establishing incident management as a priority in the study area** and working with the New Mexico State Legislature, the NM DPS, the NMDOT, and other law enforcement agencies to improve incident response – As described previously, there are multiple ways that incident response could be improved and formalized in the study area, but it would require direction at the legislative level to establish it as a priority and provide funding resources. Reducing incident response times will become more critical as traffic volumes increase on I-40 between now and 2050. In addition, a formal incident response plan will be needed to develop and implement incident management strategies, such as establishing 2-way traffic detours on I-40 or using the proposed wider shoulders for traffic.
- **Supporting push/pull legislation** — Continue to work with the legislature to support push/pull legislation.

2.3 Alternate Route Recommendations

The I-40 Corridor Study included consideration of adjacent frontage roads/alternate routes. Currently about 113 miles of the I-40 corridor have nearby adjacent alternate routes. Those roads are shown on Exhibit 1-1, and more detailed information about these routes is provided in Chapter 3 of the I-40 Corridor Study and Appendix M, Alternate Routes. Recommendations for these routes are discussed below.

2.3.1 Pavement Reconstruction

The following areas listed below are identified as potentially having poor pavement conditions that may require reconstruction based on a visual field reconnaissance conducted in 2022. Additional analysis is required to confirm these areas and determine if full reconstruction is needed or if pavement rehabilitation is feasible. Alternate route pavement recommendations for reconstruction are listed below by approximate I-40 MP, and are all located in District 6:

- MP 8 to 12 — This roadway is NM 118 located west of Gallup.
- MP 25 to 30 — This roadway is NM 118/Route 66, located east of Gallup.

2.3.2 Addressing Bridges

The following alternate route bridges have been identified as being in poor condition. Maintenance, rehabilitation, and/or replacement should be considered:

- Bridge 5664 carrying NM 122 at MP 27.08 (near I-40 MP 74)
- Bridge 1778 carrying NM 124 at MP 3.567 (near I-40 MP 93)
- Bridge 3091 carrying NM 124 at MP 19.35 (near I-40 MP 108)
- Bridge 3089 carrying NM 124 at MP 22.82 (near I-40 MP 112)

- Bridge 3088 carrying NM 124 at MP 22.95 (near I-40 MP 112)
- Bridge 6122 carrying Frontage Road 4012 at MP 0.004 (near I-40 MP 119.38; note that this bridge is on the replacement list for I-40 and work is planned for 2027).

In addition, there are 2 structures that cross over alternate routes that do not meet vertical clearance requirements of 14.5 feet, and they provide less than 28 feet of horizontal clearance, as shown below:

- Bridge 6502 carrying I-40 at MP 8.4 intersecting with NM 118 — This concrete box culvert has a vertical clearance of 13.9 feet and an estimated total horizontal clearance of 18.75 feet, based on a review of Google Earth.
- Bridge 6307 carrying I-40 at MP 90.58 intersecting with NM 124 — This bridge has a vertical clearance of 13.4 feet and an estimated total horizontal clearance of 20.95 feet, based on a review from Google Earth.

Addressing these vertical and horizontal constraints should be considered for these structures in the long-term. In the short-term, these vertical restrictions are listed in NMDOT's 2012 Bridge Map, which is a resource for the trucking industry to use when planning routes, so they can avoid these bridges if they exceed the height requirements.

2.3.3 Alternate Route Drainage Considerations

A culvert inventory for I-40 alternate routes/frontage roads has not been conducted. Many of these routes are directly adjacent to I-40, and the drainage basins and possibly the drainage systems are complimentary. These adjacent drainage systems were not included as part of the Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations. A culvert inventory should be conducted for frontage roads adjacent to I-40. Information collected from any additional analyses should be added to the I-40 CAMP GIS database. If NMDOT inventories culverts on adjacent frontage roads, it is recommended the agency consider reassessing I-40 basins, hydrology, and the culvert risk evaluation assessment with the new frontage road information.

Please see additional drainage recommendations for I-40 and NM 118/Route 66 in the vicinity of Fort Wingate, west of Gallup, near MP 29.5 to 36.5.

2.3.4 Approaches for Addressing Areas Where Alternate Routes are Not Provided

There are currently about 37 miles along the I-40 corridor where there are no existing alternate routes. These sections include the following:

- MP 37 to 48, An 11-mile area of I-40 west of Gallup near the Continental Divide
- MP 114.4 to MP 140.1, a 25.7-mile area of I-40 between Laguna exit 114 and the Rio Puerco/Route 66 Casino exit

These areas should be considered a high priority for improved incident management, the construction of crossovers, and implementation of an incident management response plan. In addition, the areas without alternate routes should be considered when prioritizing locations where the wider Enhanced 2-Lane typical section is built.

3. Design Guidance

3.1 Design Guidance

This chapter provides design guidance for current projects under design and new projects in the I-40 corridor from MP 0 to 150. This guidance is consistent with I-40 Corridor Study recommendations.

3.2 Project Definition and Scoping

As projects are scoped, designed, and constructed in the I-40 corridor between MP 0 and 150, they will follow NMDOT's project development process as outlined in the *NMDOT Design Manual*[3] and summarized below:

- Project definition (*NMDOT Design Manual* Section 120.4.3)
- Project Scoping Report (*NMDOT Design Manual* Section 130.4)
- Location Study Procedures Phase I-A/B Report (*NMDOT Design Manual* Section 130.5)
- Phase I-C Environmental Documentation (*NMDOT Design Manual* Section 130.6)
- Phase I-D Preliminary Design and Phase II Final Design (*NMDOT Design Manual* Section 140)
- Phase III Construction

Section 3.5 at the end of this chapter, provides a checklist that can be used to identify the type of information available as part of this HOIP and the I-40 Corridor Study to advance project development in the I-40 corridor from MP 0 to 150.

3.3 Roadway Design

3.3.1 Roadway Design Criteria

The design criteria for the preferred alternative for 80 mph, 75 mph, 70 mph, and 65 mph are provided in Attachment C, Design Criteria. Information from Attachment C can be used to develop the Design Criteria Report that is required for NMDOT projects, as described in Section 200.5 of the *NMDOT Design Manual*. Design criteria for a range of speeds has been provided, since design speeds vary throughout the I-40 corridor. For most areas of I-40, the posted speed is 75 mph, and a design speed of 80 mph, or 5 mph over the posted speed is desired per the NMDOT *Design Manual*. From MP 15.5 to 26.5, through Gallup, the posted speed is 65 mph, and a design speed of 70 mph is desired. However, there may be areas where, based on engineering judgment, it may be beneficial to use the posted speed design criteria of 75 or 65 mph, to minimize impacts to right-of-way or environmental resources. NMDOT should identify and approve the appropriate design speed as projects are developed.

3.3.2 Roadway Typical Section

The Enhanced 2-Lane typical section provided in Appendix J, I-40 Proposed Typical Sections, is to be used as the base design for projects in the I-40 corridor. The proposed typical section for the Enhanced 2-Lane, I-40 roadway is to widen the outside and inside shoulders to 12 feet. Critical elements for designing the widened Enhanced 2-Lane typical section include the following:

[3] *NMDOT Design Manual*, March 2020.

- **Design I-40 roadway improvements on a 3-Lane footprint to accommodate potential future widening** - Appendix K, I-40, Conceptual Alternatives, provides conceptual design plans for both the Enhanced 2-Lane and a 3-Lane typical section. It is critical that the I-40 roadway is designed on a 3-lane footprint using Appendix K as a guide to where widening should occur. The typical section needs to be laid out on an ultimate 3 lane typical section to accommodate potential future widening by either converting the inside shoulder or the outside shoulder to a new through lane and adding a new shoulder.

Exhibit 3-1. I-40 Proposed 3-Lane Sections MP 0 to 150

Location	Description and Other Considerations
Gallup, MP 16 to 26	The I-40 study team examined areas where 3 lanes or auxiliary lanes may be required to address future capacity constraints on the I-40 mainline in Gallup between MP 16 and 26 where the I-40 mainline LOS is expected to degrade below LOS C by 2050. A contiguous third lane may eventually be built in Gallup between approximately MP 16 and 26. However, initially it is assumed that ramps would be extended, followed by the construction of auxiliary lanes. Information on phasing and prioritization is provided in Chapter 4.
MP 76.5 to 77.5	Westbound, should cover the 3.02% grade for at least 2,889 feet from MP 76.5 to 77.1.
MP 103.5 to 104.5	Westbound, should cover the 3.83% grade for at least 3,580 feet from MP 103.7 to 104.4
MP 115 to 116	Westbound, should cover the 4.01% grade for at least 2,136 feet from MP 115.2 to 115.6, should also incorporate the 4% grade at MP 114.9 that is 405 feet long.
MP 138.5 to 140	Westbound, should cover the 3.99% grade for at least 2,977 feet from MP 138.6 to 139.2.
MP 141.5 to 143	Eastbound, should cover the 3.01% grade for at least 4,176 feet from MP 141.4 to 142.2. Should extend to the existing eastbound climbing lane at MP 143.1.

MP = milepost, LOS = level of service

- **Proposed I-40 Typical Sections and Potential Construction Sequencing** – The proposed typical sections for the widened I-40 corridor vary depending on the width of the existing median. Appendix J, I-40, Proposed Typical Sections, provides an overview of where widening is proposed; proposed typical sections and construction sequencing; roadway layouts for incident, maintenance, and construction; and a typical section and plan for proposed crossovers.
- The location of the new typical section relative to the existing typical section should consider constructability and should ensure that 2 travel lanes are maintained in each direction throughout construction. Appendix J, I-40 Proposed Typical Sections provides conceptual construction phasing recommendations for the I-40 corridor.

3.3.3 Horizontal and Vertical Alignment

The proposed alignment should follow the existing I-40 alignment. Attention needs to be given to confirming that the design speed of all horizontal and vertical curves meet or exceed a 75 mph posted speed (or 65 mph in Gallup from MP 16.5 to 26.5). Ideally, all curves will meet or exceed a design speed for 80 mph (or 70 mph in Gallup). Curves meeting a 75 mph posted speed should be reviewed, and design criteria should be identified on a case-by-case basis. If any of the curves do not meet these criteria, the alignment should be modified, as needed.

3.3.4 Drainage Structures

A drainage report and analysis will be needed for each project. Drainage structures should be assessed to determine if they have sufficient hydraulic capacity, or if they need to be upsized to meet the 100-year design storm. In addition, drainage structures need to be cleaned of sediment

and repaired and/or replaced, depending on their condition. Please see Attachment A, I-40, Culvert Risk Assessment, Priorities, and Recommendations, and the I-40 GIS Web Portal for specific information.

3.3.5 Construction Phasing

Construction phasing needs to be developed to maintain 2 lanes of travel in both directions throughout construction. Appendix J, I-40, Proposed Typical Sections, provides preliminary phasing plans for various typical sections encountered in the corridor. These sequencing concepts are for I-40 roadway sections. Specific phasing for bridges will need to be developed based on the existing and proposed bridge types. Most of the existing bridges on I-40 are not wide enough to accommodate more than 2 lanes of traffic. This makes maintaining 2 travel lanes in each direction more difficult during bridge replacement. To maintain 2 travel lanes in each direction, it may be necessary to look at modifying the horizontal alignment to establish a phasing plan that will provide for 2 travel lanes in each direction.

3.3.6 Bridge Design

3.3.6.1 Bridges/Overpasses Crossing Over I-40

For any overpasses between MP 0 to 150, each span over the I-40 mainline needs to provide a minimum clear width of 60 feet in each direction of I-40, with a minimum vertical clearance of 16.5 feet for the interstate travel lanes and shoulders. Bridges should be designed in accordance with the NMDOT *Bridge Procedures and Design Guide*[4]. In general, existing structures that will be widened should maintain a vertical clearance of at least the following:

- 23.5 feet over railroad tracks
- 16.0 feet over I-40
- 14.5 feet over local roadways

New bridges should have a vertical clearance of at least the following:

- 16.5 feet over I-40 and local roadways
- 23.5 feet for railroads

Information on existing bridge heights and potential deficiencies are provided in Appendix F, Bridges, and Exhibit 2-11 in this report. For bridges over railroads or local roadways, coordination needs to be conducted to provide sufficient clear space for existing and future needs, including drainage or utilities.

3.3.6.2 I-40 Mainline Bridges

The minimum deck width on any I-40 mainline bridge needs to be 52 feet from the face-of-barrier to the face-of-barrier to accommodate the Enhanced 2-Lane typical section. This does not include any additional width needed to accommodate barriers or construction sequencing. Because of the design life of a bridge, consideration could be given to adding deck width to allow for a 60-foot-wide bridge from the face-of-barrier to the face-of-barrier, which would accommodate 3 lanes in a single direction or additional width for construction sequencing.

[4] NMDOT *Bridge Procedures and Design Guide*, 2018

To facilitate and document the appropriate deck width, an assessment of several considerations is needed. The following steps are recommended for conducting this assessment and making a formal recommendation:

1. The freeway centerline for the proposed project area needs to be established for the Enhanced 2-Lane typical section set upon a 3-lane typical section design.
2. The starting assumption is a deck width of 52 feet from the face-of-barrier to the face-of-barrier.
3. Identify and quantify various issues that may affect constructability, costs, and impacts. These should include, but not be limited to:
    a) Evaluate the feasibility of widening the existing bridge in terms of foundation and girder placement and spacing. If future widening would be impractical due to proximity, building additional substructure and, possibly, superstructure should be considered.
    b) Evaluate the impacts of future widening on horizontal and vertical clearances for roadways, waterways, and railroads.
    c) Determine the potential impacts of railroad operations.
    d) Consider terrain that would affect widening.
    e) Construction constraints for future widening including the following:
        i. Difficulties adding piles because of space limitations
        ii. Terrain constraints
        iii. Abutment widening
        iv. Pile placement and construction
    f) Construction phasing and maintenance of traffic needs, in some cases additional width may be needed for construction sequencing.
4. If it is determined that abridge width of more than 52 feet from face-of-barrier to face-of-barrier is needed, present value and life cycle costs[5] should be developed for the following options:
    a) 52-foot-wide deck bridge
    b) The desired bridge deck width
    c) Widening from the desired bridge width to a 60-foot-wide bridge (for a 3-lane roadway)
    d) 60-foot-wide deck bridge
    e) 60-foot-wide abutment with a 52-foot-wide deck or alternate width (depending on span and beam spacing requirements)
    f) Any additional alternatives identified that are not included in this list

[5] Costs at a minimum should include agency costs, user costs, industry costs, right-of-way costs, and remaining service live values.

5. Provide a summary of the assessment. If a wider bridge is recommended, include the present value and life-cycle costs and factors considered. A sample outline is provided in Attachment C, Design Criteria.

3.3.7 Interchange Improvements and Modifications

Most of the interchange ramps in the I-40 corridor require improvements, specifically additional length, to meet current AASHTO and NMDOT design requirements. Appendix L, I-40, Interchange Layouts, identifies recommended improvements for interchange ramps in the I-40 corridor. Project staff working on interchange improvements should reference Section 210.3 of the *NMDOT Design Manual* for specific information on required documentation and Federal Highway Administration (FHWA) coordination for interchange modifications. Modifications to interchanges can require specific documentation and FHWA approval for a formal Interchange Access Control Request (IACR). The IACR policy applies to all proposed changes to an interstate facility regardless of whether or not they are financed partly or wholly by the state, tribal government, local municipality, or private developer. IACR analyses should take place concurrently with Phase I-C, Environmental Documentation activities.

A summary of information from Section 210.3 of the *NMDOT Design Manual* is provided below to provide information on when a formal IACR is or is not required. Many of the interchange ramp improvements in the I-40 corridor will require extending acceleration/deceleration areas, which is unlikely to require formal FHWA approval through the IACR process. However, potential modifications to interchanges and ramps should be discussed with District and FHWA staff on a project-by-project basis to confirm requirements for specific projects.

3.3.7.1 Guidance on When an IACR is Required

General information on when IACR's are and are not required is provided below:

- IACR documentation is always required when the change in access involves a new interchange, new partial interchange, new ramps to or from frontage roads, or a new locked gate access.

The following modifications to an existing interstate access location always require submittal of an IACR:

- Major modification of an existing interchange (i.e., adding new ramps, removing ramps, changing the interchange configuration/type, completing basic movements at a partial interchange
- Locked gate access to the interstate
- Abandonment of ramps or an interchange
- Decreasing the length of any deceleration lane or acceleration lane on any existing ramp
- Modifications involving frontage roads, which also serve as ramps, where the ramp is not affected
- Modifications to existing interchanges involving access control revisions for new ramps or relocation or elimination of existing ramps

The following modifications do not require an IACR:

- Modifications involving frontage roads that do not also serve as ramps or where the ramps are not affected

- Modifications involving new or revised (widened, replaced, etc.) crossings over or under interstate freeways where there are no ramps
- Modifications to the crossroads over or under the interstate at existing interchanges where the ramps are not affected (analysis may be required to demonstrate that these ramps are not affected)
- Modifications involving ramp metering
- The addition of an auxiliary lane between two interchange ramps
- Increasing the length of any deceleration or acceleration lane on any existing ramp, provided there is sufficient space between the next adjacent interchange(s)
- Increasing the length of existing turn lanes at the intersection with the crossroad
- Adding lanes to an entrance or exit ramp provided there is sufficient space between the next adjacent interchange(s)
- Maintenance activities that do not change existing geometrics or operational features of the roadway

Any other modifications that do not fall into one of these categories will have to be investigated by FHWA to determine whether an IACR is needed.

3.4 Environmental Considerations

Appendix B, Environmental Scoping Report, documents the following environmental analysis NMDOT conducted in support of the I-40 Corridor Study and the HOIP:

- Existing environmental conditions
- Phase I-B alternatives evaluation
- Environmental considerations for future projects

Supporting environmental GIS information is found on the I-40 GIS Portal.

Project implementation for I-40 will be a long-term effort occurring over many years. The types of projects proposed range from simple maintenance activities that can be completed in a few days to major projects covering multiple miles of I-40 with a construction schedule lasting more than 1 year. The environmental requirements, level of effort, and public engagement will vary by project type and magnitude. Exhibit 3-2 provides a summary of information that NMDOT District staff and project managers can use to anticipate the likely level of environmental effort, cost, and schedule for environmental review for projects expected in the I-40 corridor.

Key considerations in determining the environmental level of effort include the following:

- **The type of environmental document to be prepared to meet National Environmental Policy Act (NEPA) requirements.** Most projects can be authorized using a categorical exclusion (CE), although the level of supporting technical studies may vary. Most simple projects, such as smaller-scale pavement rehabilitation that does not involve widening, culvert maintenance and repair, and other simple actions completed over several days or a week, may be authorized with a Programmatic CE. Projects requiring more extensive disruption to traffic or impacts to nearby habitat or development will typically require a CE with supporting technical studies. An environmental assessment (EA) may be required in instances where the extent of impact may be more substantial, or the project may result in public controversy. In every

instance, the NMDOT District and project manager should consult with the NMDOT Environmental Bureau to determine the appropriate level of environmental documentation.

- **Logical termini and independent utility** should be considered for projects that involve adding a traffic lane or a major interchange reconfiguration. Projects should not force the need for other improvements and should be able to function independently.
- **Authorizations and approvals from outside agencies** can affect project schedules and, in some instances, the level of effort and types of investigations needed. These typically include consultation with the State Historic Preservation Officer (SHPO) and coordination with the U.S. Fish and Wildlife Service (USFWS), New Mexico Department of Game and Fish (NMDGF), Bureau of Indian Affairs, and the United States Army Corps of Engineers. Coordination with tribal governments is always necessary for projects on I-40 within the boundaries of tribal lands.

Exhibit 3-2. I-40 Corridor Environmental Considerations by Project Type

Project Type		NEPA Compliance[1]	Logical Termini	Permits, Consultations, & Approvals	Public Outreach Considerations	Resource Investigations	Other Considerations
Widening Projects	Enhanced 2-Lane (widen mostly to median) Widen to 3-Lanes (widen mostly to the median) Add Climbing Lanes	▪ Likely a CE with supporting studies[1]. ▪ Potentially an EA depending on length and location of project and if public controversy is expected.	Termini should be defined so that individual projects: ▪ Satisfy the Purpose and Need. ▪ Function appropriately without the need to construct additional projects. ▪ Do not exclude consideration of alternatives for future adjacent or nearby projects.	▪ SHPO concurrence is needed if the project has the potential to affect cultural resources. ▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species ▪ Potential for consultation with other land-managing agencies or tribes if the project is located on a right-of-way easement. ▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below).	▪ Public outreach should provide information and opportunities for input on the project scope, purpose and need, and construction schedule. ▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR) 630 Subpart J.	Often requires consideration of: ▪ Traffic noise if the project is adjacent to developed areas with noise sensitive land uses ▪ Cultural resources ▪ Natural resources ▪ Hazardous materials ▪ Demographics and environmental justice	▪ When defining the extent of resource field investigations, the NMDOT Environmental Bureau will consider the condition of the median. Completely disturbed medians often do not require field investigation. However, sometimes critical resources, such as wetlands or archeological sites, can still be intact in the median and should be investigated.
Pavement Projects[2]	Pavement Reconstruction Pavement Rehabilitation Crossovers in the median	▪ Typically cleared with a Programmatic CE or CE; assumes that I-40 remains open to traffic at all times[1].	▪ Logical termini do not typically apply because the project maintains an existing roadway. ▪ Termini are defined by roadway condition and funding constraints.	▪ Typically, this is not necessary.	▪ May include public notification of project scope and construction schedule. ▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J.	▪ For projects constructing crossovers and major rehabilitation or reconstruction, environmental review will typically be limited to desktop investigation of cultural resources, natural resources, hazardous materials, and demographics to identify possible concerns.	▪ Programmatic CEs are applicable to projects that remain in the existing roadway prism. For crossovers or reconstructions that are located out of the existing roadway prism, a Programmatic CE may still be applicable, depending on the existing condition of the median. See the note above.
Interchanges	Modification (could include footprint adjustment) Ramp Extension	▪ Likely a CE with supporting studies[1]. ▪ Potentially an EA if the project involves residential or business relocations in disadvantaged communities, Section 4(f) impacts, or substantial cultural or natural resource mitigation needs.	Termini are centered around the interchange and defined by the extent of improvements. Termini should be defined so that projects: ▪ Satisfy the Purpose and Need. ▪ Function appropriately without the need to construct additional projects. ▪ Do not exclude consideration of alternatives for future adjacent or nearby projects.	▪ SHPO concurrence is needed if the project has the potential to affect cultural resources. ▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species. ▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below). ▪ An Interchange Access Change Request is typically required by FHWA.	▪ Public outreach should provide information and opportunities for input on the project scope, purpose and need, and construction schedule. ▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J.	Often requires consideration of: ▪ Traffic impacts if project results in permanent changes in traffic circulation ▪ Traffic noise ▪ Cultural resources ▪ Natural resources ▪ Hazardous materials ▪ Demographics and environmental justice	
Bridge Projects (I-40 Mainline & Overpasses)[2]	Replacement and/or reconstruction Widening Repair	▪ Bridge replacement and widening projects are likely CEs with supporting studies[1]. ▪ Bridge repairs may qualify for a Programmatic CE.	▪ Project termini and scope are defined based on bridge condition and geometry. ▪ Termini are centered around the bridge and include roadway approaches.	▪ Potential CWA Section 404 permitting if any material is placed in WOUS regulated by the United States Army Corps of Engineers. Similarly, a CWA Section 401 Water Quality Certification may be required from the New Mexico Environment Department. ▪ SHPO concurrence is needed if the project has the potential to affect cultural resources, including historic bridges. ▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species.	▪ Update the public and stakeholders on the need for the project, the project scope, and the construction schedule. ▪ For interstate projects disrupting traffic for more than 3 days, public notification may be required per the Transportation Management Plan required by 23 CFR 630 subpart J.	Often requires consideration of: ▪ Cultural resources ▪ Natural resources, especially for bats, nesting birds, and impacts to important habitat near the bridge. ▪ Hazardous materials ▪ Demographics and environmental justice	

(Table Continues)

Exhibit 3-2. I-40 Corridor Environmental Considerations by Project Type (Continued)

	Project Type	NEPA Compliance[1]	Logical Termini	Permits, Consultations, & Approvals	Public Outreach Considerations	Resource Investigations	Other Considerations
Culvert Projects	New Culverts Culvert Extensions Culvert Cleanout/ Maintenance	▪ Culvert replacements and widening projects are likely CEs with supporting studies[1]. ▪ Culvert cleanout and maintenance projects may qualify for a Programmatic CE.	▪ Project termini and scope are defined based on culvert condition and geometry. ▪ Termini are centered around the culverts, and they include roadway approaches and possibly areas up and down stream.	▪ Potential CWA Section 404 permitting if any material is placed in WOUS regulated by the United States Army Corps of Engineers. Similarly, CWA Section 401, Water Quality Certification, may be required from the New Mexico Environment Department. ▪ SHPO concurrence is needed if the project has the potential to affect cultural resources. ▪ Potential for USFWS and NMDGF consultation if the project has the potential to affect federal or state-listed species.	▪ Update the public and stakeholders on the need for the project, the project scope, and the construction schedule. ▪ If culvert replacement or repair disrupts traffic on I-40 for more than 3 days, public notification may be required per the Transportation Management Plan, as required by 23 CFR 630 subpart J.	Often requires consideration of: ▪ Cultural resources ▪ Natural resources ▪ Hazardous materials ▪ Demographics and environmental Justice ▪ Visual impacts	
ITS Projects	Install Fiber Optic Cable Install Data Collection Stations and ITS Devices	▪ Likely a CE with supporting studies[1].	▪ Project termini are defined based on data collection and/or fiber optic connection needs. ▪ Projects should function appropriately without the need to construct additional projects.	▪ SHPO concurrence is needed if the project has the potential to affect cultural resources. ▪ Potential for USFWS and NMDGF consultation if project has the potential to affect federal or state-listed species. ▪ Potential for consultation with other land-managing agencies or tribes if the project is located on a right-of-way easement. ▪ Potential for CWA Section 404/401 permitting (see Bridge and Culvert projects below).	▪ May require public notification of the project scope and construction schedule. ▪ If construction of ITS disrupts traffic on I-40 for more than 3 days, public notification may be required per the Transportation Management Plan, as required by 23 CFR 630 subpart J.	Often requires consideration of: ▪ Cultural resources ▪ Natural resources ▪ Hazardous materials ▪ Visual impacts	▪ Several components of ITS projects, such as fiber optic installation may be designed and environmentally cleared as part of larger projects for lane widening, bridge replacement, interchange improvements, etc.

CE = Categorical Exclusion, CFR = Code of Federal Regulations, CWA = Clean Water Act, EA = Environmental Assessment, FHWA = Federal Highway Administration, NEPA = National Environmental Policy Act, NMDGF = New Mexico Department of Game and Fish, SHPO = State Historic Preservation Officer, USFWS = United States Fish and Wildlife Service, WOUS = Waters of the United States

1 Always confirm information and approach through coordination with NMDOT Environmental Bureau.

2 Project type and considerations could also apply to alternate route/frontage road improvements. Most of the frontage roads and many frontage road bridges are listed on the National Register of Historic Places, which will require consideration by the SHPO.

- **Environmental investigations, analysis, and reporting required** will affect the project schedule and budget. In most instances, resources of concern include cultural, water quality, protected plant and animal species, wildlife habitat, visual resources, and Section 4(f) properties. Additional common considerations include addressing impacts to disadvantaged communities, traffic noise, and hazardous materials. However, other resources and considerations are present within the I-40 corridor and may require investigation.
- **Public outreach needs** should follow guidelines published by the NMDOT Environmental Bureau. Minor projects may not require public notification or involvement; however, projects that disrupt traffic flow on I-40 for more than 3 days must also comply with 23 Code of Federal Regulations (CFR) 630, subpart J, which may require a Traffic Management Plan and public notification.

The recommended actions in Exhibit 3-2 are based on environmental rules and practices in effect at the time the I-40 Corridor Study was completed, including 23 CFR 771, FHWA Technical Advisory T6640.8, and the NMDOT *Location Study Procedures*. However, environmental requirements and procedures are continually updated, so it is important for project managers to consult with the NMDOT Environmental Bureau as part of the scoping process.

3.5 I-40 Corridor Project Scoping Checklist

The purpose of this checklist is to direct I-40 project managers, engineers, consultants, and supporting team members to existing information that can be used as part of project definition, scoping, and preliminary design to advance the development of specific projects in the I-40 corridor. This checklist provides a summary of issues to consider as part of project scoping and a summary of where information can be found to support project scoping and development. This checklist has been developed using the Scoping Report Content Outline provided in the *NMDOT Design Manual,* Section 130.4. In addition to this checklist, the I-40 GIS Web Portal includes a scoping tool that can be used to identify key issues in a specific area of the 150-mile corridor.

Please use the following resources to find information on existing conditions and design recommendations for the I-40 corridor between MP 0 and 150.

- ☐ Preliminary survey information and photogrammetry: Contact the NMDOT Survey and Lands Engineering group.
- ☐ Roadway typical sections: See I-40 Corridor Study, Chapter 3 and Appendix I, I-40 Existing Typical Sections. The locations of existing auxiliary lanes (existing climbing lanes), transit, and bicycle facilities are provided in I-40 Corridor Study, Chapter 3. Information on adjacent frontage roads/alternate routes is provided in I-40 Corridor Study, Chapter 3 and Appendix M, Alternate Routes. Proposed I-40 typical sections are provided in Appendix J, I-40 Proposed Typical Sections.
- ☐ Clear zone obstructions and infrastructure and terrain constraints: See Chapter 3 of the I-40 Corridor Study and the I-40 GIS Web Portal for I-40 clear zone obstructions. See Appendix K, I-40 Conceptual Alternatives and the I-40 GIS Web Portal for the locations of infrastructure and terrain constraints.
- ☐ Geotechnical conditions: See Appendix E, Geotechnical Scoping Report.
- ☐ Pavement condition (from a 2023 report based on 2022 data): See Appendix E, Geotechnical Scoping Report and the I-40 GIS Web Portal.
- ☐ Horizontal and vertical alignment: See Section 2.2.3 of this HOIP and Appendix D, Geometrics for information on the horizontal and vertical alignment, including horizontal and

vertical deficiencies and proposed corrections. This information is also provided in Appendix K, I-40 Conceptual Alternatives and on the I-40 GIS Web Portal.

- Interchanges: See Appendix D, Geometrics; Appendix L, I-40 Interchange Layouts; I-40 Corridor Study, Chapter 5; and the I-40 GIS Web Portal for information on existing interchanges, existing and future level of service (LOS), ramp deficiencies, and proposed ramp corrections.
- Right-of-Way: See Appendix K, I-40 Conceptual Alternatives and the I-40 GIS Web Portal.
- Major Structures (bridges >20 foot span): See Appendix F, Bridges for information on bridges on I-40 and adjacent alternate routes. See Chapter 2 of the HOIP for a discussion of I-40 and frontage road bridge needs, including a list of bridges in poor condition. The I-40 GIS Web Portal shows bridge locations and includes a web map with the location of bridges in poor condition.
- Other Structures: For existing conditions see the I-40 Corridor Study, Chapter 3; HOIP Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations; and the I-40 GIS Web Portal, I-40 Culvert Assessment Management Program page. Recommendations for drainage improvements are provided in the HOIP, Chapter 2 and in HOIP Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations. Detailed information on drainage structures is provided on the I-40 GIS Web Portal I-40 Culvert Assessment Management Program page.
- ITS: See the I-40 Corridor Study, Chapters 3 and 6, Attachment B of this HOIP, and the I-40 GIS Web Portal.
- Utilities: See I-40 Corridor Study, Chapter 3; Appendix H, Utilities; and the I-40 GIS Web Portal.
- Environmental Factors: See I-40 Corridor Study, Chapters 3 and 5; Appendix B, Environmental Scoping Report; and the I-40 GIS Web Portal.
- Traffic volumes and fleet characteristics (2022 data): See I-40 Corridor Study, Chapter 3; Appendix C, Ramp Turning Movement Counts; and the I-40 GIS Web Portal I-40 Transportation and Freight page.
- Traffic LOS (based on 2022 data): See I-40 Corridor Study, Chapter 3 for 2022 Existing Conditions, see Chapter 5 for projected 2025 LOS. LOS information is also available on the I-40 GIS Web Portal I-40 Transportation and Freight page.
- Traffic Crash Data (2016 to 2021): See I-40 Corridor Study, Chapter 3 and the I-40 GIS Web Portal I-40 Transportation and Freight page.
- Previous construction: I-40 As-Builts are provided on the I-40 GIS Web Portal.
- Posted speed and design speed: Posted speeds are 75 miles from MP 0 to 150, except for I-40 through Gallup, which has a posted speed of 65 mph. Design criteria and speeds are provided in HOIP, Chapter 3 (this chapter) and the HOIP Attachment C, Design Criteria.
- Design guidance, proposed typical sections, and construction sequencing: See the HOIP Chapters 2 and 3 (this chapter); HOIP Attachment C, Design Criteria; Appendix J, I-40 Proposed Typical Sections; Appendix K, I-40 Conceptual Alternatives; and Appendix L, I-40 Interchange Layouts.
- Proposed Improvements/Preferred Alternative: See Chapter 2 of the HOIP.
- Stakeholder and public comments: See I-40 Corridor Study, Chapter 2 and Appendix R, Stakeholder Outreach.

4. Priority Projects and Phasing

4.1 Project Phasing and Prioritization Framework Overview

This section provides an initial phasing of activities for the I-40 corridor from MP 0 to 150. The intent is to provide a prioritization framework that identifies a range of projects and policies that will address existing I-40 needs while recognizing that flexibility is needed to adapt to changing conditions, since conditions such as traffic volumes and pavement and bridge conditions will change.

An extensive list of needed improvements is provided in Chapter 2. These needs substantially exceed funding currently identified for NMDOT construction projects in the study area, which, from 2024 through 2027, is about $87 million or about $22 million a year, as discussed in Section 4.2.3 and listed in Exhibit 4-7. Implementation of the Enhanced 2-Lane with Added Lanes Alternative is estimated to cost of between $3.7 and $4.0 billion, which does not include costs for project development, right-of-way, or New Mexico Gross Receipts Tax. At a funding rate of $22 million a year, it would take about 150 years to implement the preferred alternative. Maintaining the existing roadway (the No Build Alternative) is expected to cost between $1.8 and $2.0 billion, which would take just over 72 years at an investment rate of $22 million a year. The improvements have been identified based on a 25-year horizon. In order to build the needed infrastructure and make the operational and safety improvements identified, a significant increase in funding will be needed.

As identified in Chapter 2, there are several immediate needs that must be addressed on I-40 to keep it functioning in its current condition and to provide the data needed to make informed decisions. Critical needs include the following:

- Data Collection — It is essential that the NMDOT have functional, reliable data collection stations that collect daily traffic volume and vehicle classification information to manage I-40 now and into the future. The NMDOT currently has 4 data collection stations in the study area; however, 3 of these data stations are not currently working and there are no data stations in the study area currently collecting vehicle classification data. In addition, the historic data collected from the existing data collection stations has been intermittent and unreliable, particularly as it pertains to identifying vehicle classifications. Since 2017, none of the existing data collection stations have collected continuous data, making it difficult to understand trends and changing conditions.
- Maintaining 2 Lanes during Construction and Maintenance — One of the most important findings of the I-40 Corridor Study is that reducing I-40 to a single lane in 1 direction is problematic during most daytime hours. Roadway construction and maintenance are some of the primary activities the NMDOT conducts in the I-40 corridor. As I-40 traffic volumes have increased over time, traditional maintenance of traffic procedures that reduce I-40 to 1 lane are causing traffic congestion and backups. As projects are designed and constructed, it is essential that 2 lanes are provided in each direction. Similarly, for maintenance projects, it is critical that 2 lanes be maintained, where feasible, or that maintenance work is shifted to off-peak travel hours.
- Pavement Condition and Geometric Deficiencies — About 78 miles, or just over half of the I-40 corridor needs reconstruction due to failing pavement and/or to correct deficient curves. The remaining (72) miles will need some type of rehabilitation or potential reconstruction over the next 25 years. Based on a 25-year horizon, the NMDOT would need to reconstruct about 3.1 miles and rehabilitate 2.9 miles of I-40 each year. Pavement is deteriorating rapidly in the study area. The NMDOT is doing what it can to keep I-40 operational, but in most cases, the agency does not have the funding to fully reconstruct the pavement, which is

needed in cases where pavement is in very poor condition. The NMDOT assessed pavement in the study area in 2022 (based on 2021 data) and 2023 (based on 2022 data), and the data show that pavement listed in poor or very poor condition more than doubled in that 1 year period, as shown below in Exhibit 4-1 and Exhibit 4-2. Mill and inlays are not sufficient for addressing pavement in very poor or poor condition, and they often require closing a lane of I-40 down for an extended period, which causes long backups and delays for drivers. Projects are needed to fully reconstruct pavement in areas where pavement conditions are poor or very poor.

Exhibit 4-1. I-40 Pavement Condition Changes from 2022 to 2023 - Westbound

Year	Very Poor	Poor	Total
2022	7 miles	9 miles	16 miles
2023	10 miles	29 miles	39 miles

Exhibit 4-2. I-40 Pavement Condition Changes from 2022 to 2023 - Eastbound

Year	Very Poor	Poor	Total
2022	7 miles	13 miles	20 miles
2023	14 miles	22 miles	36 miles

- **Deficient Ramps** — Many of the crashes in the corridor occur at interchanges where traffic merges on and off the highway. There are 87 ramps that do not meet current design criteria and need to be extended. In addition, the operating LOS for at least 25 of these ramps is expected to degrade from an acceptable level of LOS B to LOS D or E, which is below the NMDOT's target threshold of LOS C. Extending the ramps will improve safety and will provide the capacity needed to maintain an acceptable level of service.
- **Bridges** — Five bridges on I-40 are currently in poor condition and likely need to be replaced and another 5 bridges on adjacent frontage roads are in poor condition. Over the next 25 years, the existing 154 bridges and overpasses will continue to deteriorate and will need maintenance and, in some cases, replacement to keep I-40 operational. Additional funding and a long-term bridge plan are needed to maintain existing bridges in the study area.
- **Culverts/Drainage** - There are 119 culvert locations that are 60% or more silted and 81 damaged culverts that need repair. In addition, based on a conceptual-level analysis as many as 336 culvert locations may not have sufficient hydraulic capacity, and additional study is needed to determine if hydraulic capacity improvements are warranted. Funding and a long-term plan is needed to address these issues.

Based on this information, the following framework is recommended for prioritizing improvements on I-40 in the study area:

- Address immediate needs, maintain existing infrastructure on I-40, and improve traffic management.
- Implement small projects such as ramp and ITS Improvements.
- Identify additional future projects based on addressing study area needs including pavement condition, geometric deficiencies, improving safety, addressing capacity constraints, and implementing the Enhanced 2-Lane typical section throughout the study area.

4.2 Address Immediate Needs - Maintain Existing Infrastructure and Improve Traffic Management

Immediate needs in the I-40 corridor are listed below with the highest-priority needs listed first. It is, however, assumed that NMDOT will address these many I-40 needs concurrently. The NMDOT is already addressing many of these needs (e.g., building funded projects).

1. Replace existing I-40 data collection stations.
2. Minimize lane closures during construction and maintenance.
3. Build funded projects, reassess proposed projects beyond those that are currently funded as identified in the New Mexico Statewide Transportation Improvement Program (STIP) in planning years beyond 2027.
4. Address flooding at Fort Wingate (MP 29.5 to 36).
5. Address bridges in poor condition on I-40 and adjacent frontage roads.
6. Address drainage maintenance needs and determine next steps for at-risk culverts.
7. Address pavement needs.
8. Improve incident management, initial recommendations.

4.2.1 Replace Existing Data Collection Stations

The NMDOT must have functional, reliable data collection stations that collect daily traffic volume and vehicle classification information to manage I-40 now and into the future. The NMDOT currently has 4 data collection stations, as listed in Exhibit 4-3; however, 3 of these data stations are not currently operational. In addition, the historic data collected from these data collection stations has been intermittent and unreliable, particularly as it pertains to identifying vehicle classifications. Since 2017, none of the existing data collection stations have collected continuous data, making it difficult to understand trends and changing conditions. Furthermore, the existing data collection stations are outdated, and NMDOT is currently evaluating the use of video analytics using artificial intelligence to collect traffic data using video sensors (cameras). It is recommended that NMDOT adopt this technology for data collection at all data collection locations in the I-40 study area. Regardless of the technology used, one of the first actions that needs to be advanced in the I-40 study area is to replace the existing data collection stations. This will allow for the continuous collection of traffic volume and vehicle classification data that is needed for the NMDOT to better understand current conditions in the study area, seek funding for corridor improvements, and predict and plan for the future. Having reliable traffic volume counts and vehicle classifications is critical for project design and implementation. A solid data foundation will provide NMDOT with the information needed to make data-driven decisions for improvements in the I-40 corridor and will inform corridor priorities over time.

A total of 12 data collection stations are recommended in the study area, as described previously in Section 2.2.8. In the immediate term, it is recommended that the NMDOT replace the 4 existing data stations listed below in Exhibit 4-3, Within the next 5 years, it is recommended that that the NMDOT install 5 additional data collection stations, as listed in Exhibit 4-4. Costs for each data station are estimated at $100,000 per location, which does not include project development, right-of-way, or New Mexico Gross Receipts Tax. Additional details are provided in Attachment B, Intelligent Transportation Systems.

Exhibit 4-3. I-40 Immediate Recommended Locations for Replacing Existing Data Collection Stations

Location	Milepost	Need	Available Utilities
West of Port of Entry	10.7	Monitoring Port of Entry traffic volumes and speeds, vehicle classification, etc.	Power, Data
Milan	80.7	Monitoring Grants and west of NM 117 traffic volumes and speeds, vehicle classification, etc.	Power (within 0.5 mile), Phone, Data
East of Grants	96.9	Monitoring Grants and east of NM 117 traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data is closer to MP 96 at Santa Maria Drive
West of Atrisco Vista	148.9	Monitoring east of NM 6 and west Albuquerque traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data

Exhibit 4-4. I-40 Near-Term (1 to 5 years) Recommended Locations for Adding Data Collection Stations

Location	Milepost	Need	Available Utilities
Gallup/NM 491	20.8	Monitoring Gallup traffic volumes and speeds, vehicle classification, etc.	Power, Data
East of Gallup	30.0	Monitoring east of Gallup traffic volumes and speeds, vehicle classification, etc.	Power, Data
Refinery Exit	39.0	Monitoring Continental Divide and NM 371 traffic volumes and speeds, vehicle classification, etc.	Power
East of Thoreau	54.0	Monitoring Continental Divide and NM 371 traffic volumes and speeds, vehicle classification, etc.	Power (within 0.5 mile), Phone, Data
West of Mesita	115.5	Monitoring west of NM 6 traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data

4.2.2 Minimize Lane Closures during Construction and Maintenance

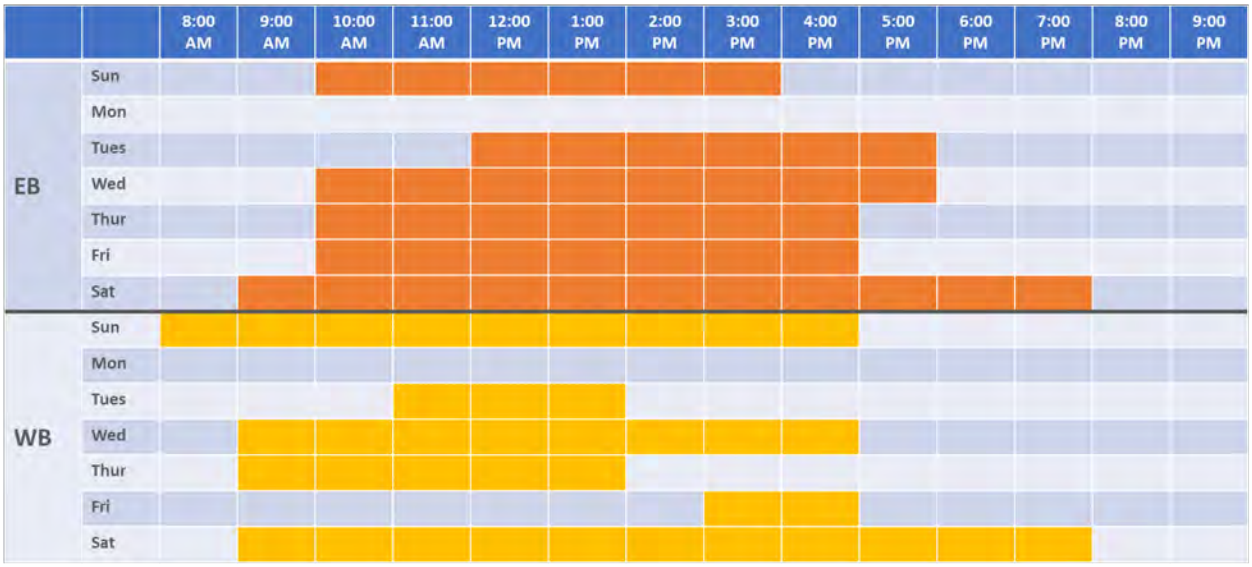
One of the most important findings of the I-40 Corridor Study is that reducing I-40 to a single lane in 1 direction is problematic during most daytime hours. Roadway construction and maintenance are some of the primary activities the NMDOT conducts in the I-40 corridor. As I-40 traffic volumes have increased over time, traditional maintenance of traffic procedures that reduce I-40 to 1 lane are causing traffic congestion and backups. These backups sometimes extend for miles, and they can result in substantial traffic delays for roadway users. Additionally, this traffic buildup can result in crashes that occur at the 1 lane merge areas and at the beginning of the queues when a lane is dropped. The underlying issue is that traffic has increased such that for several hours of the day, 1 travel lane is not sufficient to keep traffic flowing.

As part of public and stakeholder feedback, many people reported that they are frustrated by delays that result from lane closures on I-40. Specific concerns were identified by the Laguna and Acoma Pueblos since emergency medical needs on the Pueblos often require ambulance transport to Grants or Albuquerque. In addition, lane closures sometimes occur in multiple different locations in a single direction of the I-40 study area. When this happens, I-40 drivers experience cumulative delay, since most I-40 travel is through-trips heading between the Arizona State line or from Gallup to Albuquerque.

Because of this, it is critical that the NMDOT minimize lane closures during construction and maintenance activities and that there is improved coordination and consistency in construction and maintenance work zone traffic management. This section provides a summary of key findings from the I-40 Corridor Study and recommendations for immediate development and implementation. Chapter 6 of the I-40 Corridor Study provides additional analysis on when I-40 backups can be expected when I-40 is reduced to a single lane in 1 direction.

In general, backups occur on I-40 when only 1 lane is provided in a single direction, and traffic volumes exceed a capacity of 1,500 passenger car equivalents (PCEs) per hour. As shown in Exhibit 4-5, hourly traffic volumes on I-40 in the study area may exceed 1,500 PCEs per hour in a single direction for many days of the week and several hours per day. The information presented in Exhibit 4-5 is a conservative review, and it represents they areas studied at MPs 15, 63, 93, 120, and 141. Lower traffic volumes are documented on I-40 closer to the Arizona State line, and traffic volumes increase as drivers head east toward Albuquerque.

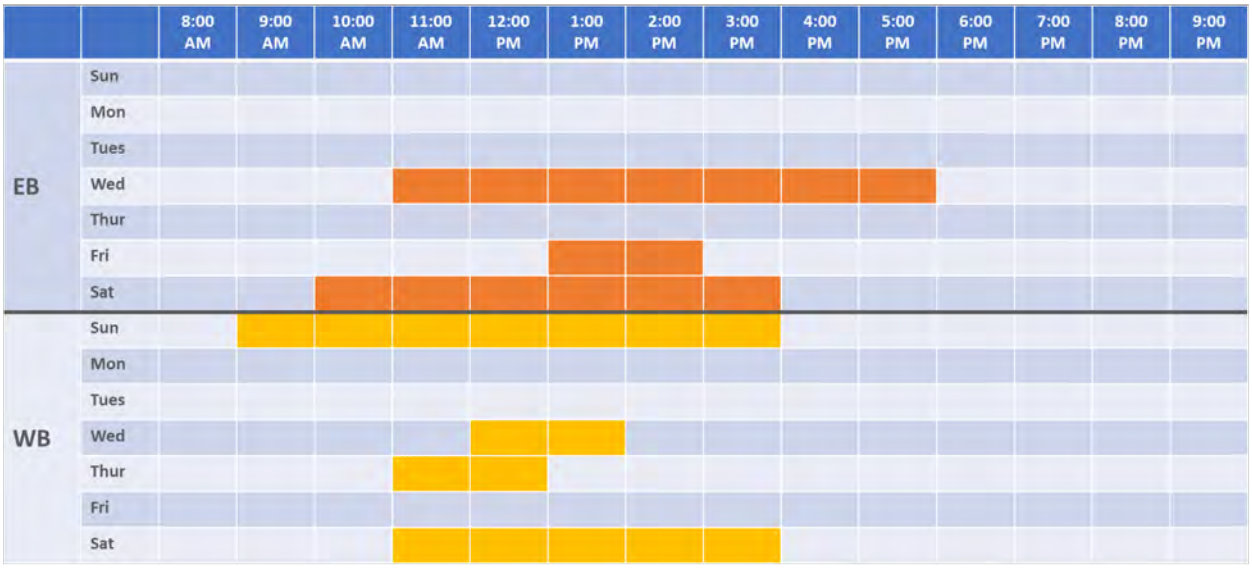
Exhibit 4-5. I-40 MP 0 to 150 Daily Times when Existing (2022) Traffic Volumes Exceed 1,500 PCEs Per Hour



EB = eastbound shown in orange, WB = westbound shown in yellow

Exhibit 4-6 shows traffic volumes at MP 63 near Prewitt, where I-40 traffic volumes are lower and there are more times when I-40 is not expected to exceed a capacity of 1,500 PCEs per hour in a single direction.

Exhibit 4-6. I-40 MP 63 Daily Times when Existing (2022) Traffic Volumes Exceed 1,500 PCEs Per Hour



EB = eastbound shown in orange, WB = westbound is shown in yellow

Basic trends and conclusions from the I-40 Corridor Study indicate the following:

- Congestion and delay on I-40 are caused by lane reductions on I-40 due to construction, maintenance, or incidents.
- Reducing I-40 to 1 lane when traffic volumes exceed 1,500 PCEs per hour in a single direction is problematic.
- Traffic volumes are lowest west of Gallup near the Arizona State line, and they increase moving east toward Albuquerque.
- The lowest volume travel days are Monday and Tuesday. Traffic volumes start to rise on Wednesday, and peak on the weekends. Travel volumes are highest during the midday hours from about 9 AM to 5 PM.
- As traffic volumes increase between now and 2035 or 2050, potential queues from I-40 lane closures are expected to increase substantially and cause extensive delay.

The following sections discuss recommendations during I-40 maintenance and construction operations from MP 0 to 150.The recommendations in this section are provided as guidelines, and they should be refined as traffic volumes change, and successful strategies are implemented in the I-40 corridor.

4.2.2.1 Recommendations for Construction and Planned Maintenance Activities

The following recommendations are proposed for both construction and planned maintenance activities in the study area:

- Assess the applicability of work zone planning requirements for federal-aid projects on a project-by-project basis as construction and maintenance projects are planned and built. Work zone requirements are outlined in 23 CFR Part 360 Subpart J and the *NMDOT Design Manual*, Section 900.

- Observe construction work zone conditions and collect information on traffic delays and other observations as maintenance and construction occurs. Consider using work zone planning tools, such as the Oregon Department of Transportation Work Zone Traffic Analysis Tool[6] or other microsimulation applications, to inform work zone and traffic management planning. Use this data to refine and modify practices when needed as projects are implemented, and conditions change over time.
- Improve communication and coordination, both internally within the NMDOT and with affected stakeholders, when there are construction and maintenance activities and planned lane closures.
    - → Improve NMDOT internal coordination between Districts 3 and 6 for I-40 planned lane closures, maintenance, and construction activities. Most I-40 trips in the study area are through trips, with origins and destinations beyond Albuquerque and Gallup. As such, understanding and coordinating construction and maintenance efforts to avoid having multiple maintenance or construction activities with lane closures in a single direction of travel would help minimize delays for roadway users.
    - → Improve notification and the accuracy of lane closure information on NMRoads. Work with contractors and maintenance crews to provide accurate locations and times of expected lane closures.
    - → Improve stakeholder communication and outreach, particularly with local and tribal law enforcement and emergency providers, about planned construction projects, maintenance activities, and lane closures.

4.2.2.2 Recommendations for Construction Activities

The following recommendations are proposed for construction activities:

- Maintain 2 lanes in each direction during construction. Appendix J, I-40 Proposed Typical Sections, provides proposed construction sequencing to maintain 2 lanes in each direction. The typical sections address both the varying median widths and the potential differences in vertical profile elevations of eastbound and westbound I-40. Implementing this policy over the next 25+ years will be critical to minimizing backups and delays, particularly since traffic volumes are expected to increase between now and 2050. In cases where 2 lanes in each direction cannot be maintained, nighttime or off-hours construction should be considered.
- Consider implementing Smart Construction Work Zones, as discussed in Attachment B, Intelligent Transportation Systems, on construction projects as part of project specifications or special provisions. These special provisions could include the desired functionality for smart work zones, such as dynamic speed advisory, advanced queue warning, and detection and alerting of high-speed approaching vehicles.

4.2.2.3 Recommendations for Planned Maintenance Activities

Maintenance activities include both planned maintenance for activities, such as cable-barrier repair or paving operations, and emergency repairs, such as pothole repair, that must be made immediately. The recommendation below is focused on planned maintenance activities, since emergency repairs must be made immediately:

- Where possible, maintain 2 lanes in each direction during maintenance activities. In cases when it is not possible to maintain 2 lanes, work to conduct maintenance operations during

[6] Oregon Department of Transportation, Work Zone Traffic Analysis Manual. https://www.oregon.gov/odot/engineering/pages/work-zone.aspx. January 2023.

off-peak or nighttime hours (i.e., when traffic volumes are less than 1,500 vehicles per hour in a single direction). Please see the text below for specific considerations.

Based on the information presented in Exhibit 4-5 and Exhibit 4-6, the following recommendations are made for the NMDOT to consider any time when 2 lanes cannot be maintained on I-40 through the study area. Traffic volumes are dynamic, and they vary depending upon the location, year, month, day, and time; therefore, traffic management practices during maintenance activities should be monitored, evaluated, and modified on a regular basis to best meet the needs in the study area. The recommendations provided below will need to be updated as conditions change over time:

- No routine maintenance should be planned on Saturdays or Sundays.
- The best days for lane closures for maintenance activities are Mondays and Tuesdays.

If possible, limit 1-lane reductions to off-peak or nighttime hours. Avoid reducing I-40 to 1 lane for planned maintenance activities between the hours of 10 AM and 5 PM Wednesdays through Fridays, particularly between Grants and Albuquerque.

4.2.3 Build Funded Projects; Reassess Projects in Future Planning Years

NMDOT has several projects identified on I-40 as part of the New Mexico STIP that already are funded, as listed in Exhibit 4-7. These projects should continue as planned, and they should be designed to meet the design guidance provided in Chapter 3 of this report.

Exhibit 4-7. I-40 NMDOT Funded Projects 2024 to 2027

#	CN	Location	Description	Funding/Year
1	6101391	I-40/US 491, MP 20.4 – 21.2	Ramp realignment	$7,400,000/2027
2	6100932	I-40, MP 21.9 – 25.7	Pavement rehabilitation	$10,656,393/2027
3	6101500	I-40, MP 30.0 – 31.0	Bridge rehabilitation for bridges 6361, 6362, 6363, and 6364	$4,000,000/2027
4	6101581	I-40, MP 39.8 – 44.8	Roadway widening	$41,657,539/2025
5	6101550	I-40, MP 72.2 & 85.1	Deck overlay for bridges 7251 and 7393	$10,700,000/2026
6	6101551	I-40, MP 76.1	Bridge 7183 rehabilitation	$1,500,000/2024
7	6100838	I-40, MP 105.9 – 106.4	Bridge 6488 and 6489 replacements	$9,983,680/2024 & 2026
8	6100843	FR 4012, I-40 Overpass, MP 119.38	Bridge 6122 replacement	$900,000/2027
9	6101630	I-40, MP 121.8	Bridge 5986 and 5987 repair	$750,000/2024
			Total	**$87,347,612**

CN = control number, MP = milepost; Information reflects projects identified in the New Mexico STIP as of February 2024.

Projects listed in Exhibit 4-8 do not yet have committed funds, and they are listed for funding years beyond 2027. Five of the projects shown in Exhibit 4-8 are located in the Fort Wingate area where flooding has been an ongoing problem for both I-40 and NM 118. These projects should also incorporate the design guidance contained in this HOIP and this list should be reassessed and updated as needed to reflect priorities and recommendations of this HOIP.

Exhibit 4-8. I-40 NMDOT Potential Projects for Funding Years Beyond 2027

#	CN	Location	Description	Funding/Year
1	6100849	I-40, MP 8.7 – 9.7	Bridge 3487 and 6128 replacement	$50,723,925/2028
2	6101510	I-40, Exit 16 in Gallup	Bridge 8835 and 8836 rehabilitation	$2,000,000/2029
3	6100931	I-40, MP 17.9 – 21.9	Roadway reconstruction	$60,010,315/2028
4	6101320	I-40, MP 23.0 – 23.7	Miyamura interchange reconstruction (bridge 7618)	$14,641,254/2029
5	6101151	I-40, MP 29.7	Bridge replacement and drainage improvements (I-40 bridges 6560 and 6561; NM 118 bridge 5394)	$25,948,802/2029
6	6101152	I-40, MP 30.5 – 31.5, NM 118	Corridor drainage improvement 2, replacing culverts on I-40 and raise NM 118	$1,000,000/2029
7	6101153	I-40, MP 31.6 - 33.7	Corridor drainage improvement 3, building sediment basins	$17,900,000/2029
8	6101154	I-40, MP 34.5 – 35.5	Bridge replacement and drainage improvements (bridges 5849 and 5848)	$28,000,000/2028
9	6101156	I-40, MP 36.3	Corridor drainage improvement 6, building sediment basins	$1,000,000/2029
			Total	**$201,224,296**

CN = Control Number, Information Reflects projects identified in the New Mexico STIP as of February 2024

Projects listed in Exhibit 4-7 and Exhibit 4-8 do not reflect transportation studies that are led by the NMDOT and currently underway for the following areas:

- CN 6101600 — I-40 MP 8.0, NM 118 Phase I-B/C/D study to lower NM 118 to improve truck clearance at Bridge 6502.
- CN 6101390 — I-40, MP 20.5–21.5, I-40/US 491 Interchange Phase I-A/B Study
- CN 6101320 — I-40, MP 23.0–23.7, Miyamura Interchange Study (Bridge 7618)

They also do not reflect studies that may be led by local agencies for interchange or other improvements related to I-40. Projects identified in Exhibit 4-7 and Exhibit 4-8 address 1 of the 5 I-40 bridges that are identified as being in poor condition (CN 6100843 for the replacement of bridge 6122, the overpass at MP 119.38). The STIP currently identifies $900,000 for this bridge replacement. Additional discussion related to bridge needs is provided in Section 4.2.5.

4.2.4 Address Flooding at Fort Wingate

The highest priority issue in the study area has been to address the recurring flooding in the Fort Wingate area east of Gallup. Based on observations from NMDOT maintenance patrols, flooding occurs on I-40 from roughly MP 32 to 34 and the adjacent frontage road, NM 118. NMDOT maintenance patrols indicated that NM 118 floods every year, resulting in road closures. In some cases, water spills onto I-40 and results in I-40 closures. When both roadways are closed, there are no other nearby viable east-west routes.

In 2022, the NMDOT completed a drainage study of the area from MP 29.5 to MP 36.5 to evaluate the cause of drainage issues and flooding. The study determined that flooding is caused by significant sediment-laden flows that cause overtopping, as well as several structures that do not

meet current NMDOT drainage design criteria.[7] The study identifies improvements to help alleviate flooding, and the NMDOT is currently seeking funding to implement these improvements. About $78 million of improvements for the Fort Wingate area are listed in the STIP in Exhibit 4-7 and Exhibit 4-8, and most of these improvements are in future years and are currently not funded. Funded improvements are listed in Exhibit 4-7, and they include $4,000,000 for bridge rehabilitation for bridges 6361, 6362, 6363, and 6364 between MP 30 and 31. Additional proposed improvements are not funded, and they are listed in Exhibit 4-8.

I-40 is a critical interstate highway for freight and travel to and through New Mexico. The route must be open and not subject to closure due to flooding events. As such, improvements to alleviate flooding and eliminate roadway closures are a high-priority need.

The I-40 Corridor Study and this HOIP identify several specific deficiencies, needs, and improvements in the Fort Wingate area that may or may not be included in current preliminary improvement plans. Specific needs and proposed improvements are summarized below, and they should be considered as part of project planning and development in this area. Additional details are provided throughout Chapter 2 and in Appendix K, I-40, Conceptual Alternatives. Other identified needs and improvements in the Fort Wingate area from MP 29.5 to 36.5 include the following:

- Bridge improvements - Bridge 6365, carrying the I-40 westbound lanes at MP 31.03, and bridge 6366, carrying the I-40 eastbound lanes at MP 31.04, are identified as 2 of the 5 bridges on I-40 that are in poor condition. At this time, there are no plans or identified funds to address the condition of these bridges. Improvements to bridges 6365 and 6366 would eliminate 40% of the bridges identified on I-40 that are in poor condition. Bridge rehabilitation is included in the STIP (see Exhibit 4-7) for nearby bridges 6361, 6362, 6363, and 6364. Funding has not been identified to address bridges 6365 and 6366. NMDOT should assess these bridges to determine what improvements are needed in the short and long term to improve their current condition and any recommended improvements should be programmed, if appropriate.
- Westbound pavement from MP 30 to 31 is in poor condition, and there are 2 deficient vertical curves (1 in each direction) from MP 30.3 to 30.6 that will require full reconstruction to address. There are also 2 deficient horizontal curves (1 in each direction) from MP 29.9 to 30.2 that should be corrected from MP 30 to 31.
- There are multiple culverts that need to be cleaned out (more than 60% silted) and/or are damaged and need repair. In addition, there are several locations where conceptual-level hydraulic analysis indicates that culverts are undersized for 50- and 100-year design storms. Please see Chapter 2 and Attachment A, I-40, Culvert Risk Assessment, Priorities, and Recommendations, for specific information.
- All 4 of the on- and off-ramps at the McGaffey interchange at MP 33 are deficient and need to be extended. The current LOS on these ramps is identified as being sufficient at LOS B. By 2050, all of the ramps except for the eastbound on-ramp, are expected to degrade to LOS D. Extending the ramps is expected to improve the ramp LOS to LOS B for 2050. Appendix I, Interchanges provides additional information about the additional lengths recommended for these ramps.

[7] Bohannan-Huston. 2022. *Drainage Study Summary Report for the NM 118 Drainage Study NMDOT CN 6101150, MP 29.5 to 36.5*. May 2022.

- Appendix K, I-40, Conceptual Alternatives, recommends crossover improvements including modifying the existing official crossover at MP 29.9 and constructing a new crossover at MP 32.
- Attachment B, Intelligent Transportation Systems recommends installing a data collection station at MP 30 in addition to installing proposed fiber optics beginning near MP 30.

Many issues in addition to flooding should be addressed in the Fort Wingate area; however, given other needs in the I-40 corridor and the cost to address all of the issues, improvements in this area will likely need to be phased. As such, it is recommended that the NMDOT look at information from the 2022 Drainage Study, as well as recommendations in this report, to develop a phased scope of work for this area. Critical issues that should be addressed as soon as funding becomes available include the following:

- Culvert clean-outs and repairs - Until meaningful improvements can be made to drainage structures, the culverts in this area should be cleaned out and maintained to the extent practicable. A total of 9 culvert locations in this area were identified as being 90% or more silted in addition to 6 metal culvert locations and 1 concrete culvert location. Given issues with ongoing siltation, culvert clean-outs and repair are only short-term solutions, but they can reduce the potential for flooding until longer-term improvements are funded.
- Completing drainage improvements identified by the NMDOT for this area.
- Addressing pavement and bridges in poor condition from MP 30 to 31.04. As part of pavement reconstruction from MP 30 to 31, deficient vertical and horizontal curves should be corrected.

Other improvements discussed in this section should be funded and programmed over time, but the most pressing issues are implementing improvements that will eliminate road closures due to flooding and addressing pavement and bridges that are in poor condition.

4.2.5 Address Bridges in Poor Condition

4.2.5.1 Develop a Plan for Bridges in Poor Condition on I-40 and Adjacent Frontage Roads

There are 10 bridges along I-40 and adjacent frontage roads that are identified as being in poor condition.

Bridges along I-40 identified as in poor condition include the following:

1. Bridge 6365 carrying the I-40 westbound lanes at MP 31.03 (Fort Wingate area)
2. Bridge 6366 carrying the I-40 eastbound lanes at MP 31.04 (Fort Wingate area)
3. Bridge 6388 carrying the I-40 eastbound lanes and ramp at MP 99.84
4. Bridge 6389 carrying the I-40 westbound lanes at MP 99.87
5. Bridge/I-40 Overpass 6122 carrying Frontage Road 4012 near MP 119.38

Bridges in poor condition located along frontage roads include the following:

1. Bridge 5664 carrying NM 122 at MP 27.08 (near I-40 MP 74)
2. Bridge 1778 carrying NM 124 at MP 3.567 (near I-40 MP 93)
3. Bridge 3091 carrying NM 124 at MP 19.35 (near I-40 MP 108)

4. Bridge 3089 carrying NM 124 at MP 22.82 (near I-40 MP 112)
5. Bridge 3088 carrying NM 124 at MP 22.95 (near I-40 MP 112)

The NMDOT should further assess these bridges to determine what improvements are needed to address them before they become unsafe. Currently, funding and improvements are proposed for 1 of these 10 bridges. NMDOT has a project identified in the STIP for Bridge 6122 (CN 6100843) with allocated funding of $900,000. In addition, NMDOT is working to develop a plan to address frontage road bridges 3091, 3089, and 3088; however, no funding has been identified. The remaining bridges listed in poor condition do not have improvement plans or identified funding sources.

4.2.5.2 Request Bridge Condition Information from the BNSF for Bridge 6226 at MP 94.77

NMDOT currently does not have information on the condition of bridge 6226, located at MP 94.77. It appears that Bridge 6226 was constructed in 1961. Any widening of I-40 in this area will require bridge replacement. It is recommended that NMDOT coordinate with BNSF to determine if there is any available information on this bridge related to its condition and if BNSF has any plans to repair or replace the bridge in the near future. No widening can be done in this area without addressing this bridge. Any improvements will require close coordination with the railroad and will be challenging to design and construct, so advance planning is recommended.

4.2.6 Address Drainage Maintenance Needs and At-Risk Culverts

Numerous culvert maintenance needs, at-risk culverts, and drainage capacity constraints were identified in Attachment A, I-40 Culvert Risk Assessment, Priorities, and Recommendations. It is recommended that the NMDOT use the information in Attachment A to develop a long-term plan to maintain existing culvert assets and to assess, monitor, and address potential drainage risks. The most critical drainage and flooding issue to address is the ongoing flooding at Fort Wingate. Other issues that should be addressed in the long-term plan include:

- Developing a plan and funding for culvert maintenance
  - → Culvert maintenance is an ongoing issue that will change over time. As part of this study, 119 culvert locations (each location may have more than 1 culvert) were found to be 60% or more silted, and 81 culvert locations have damaged culverts that need repair. These culverts need to be cleaned and repaired to maintain their drainage capacity and function.
- Managing culvert risks and assessing areas that may not have sufficient drainage capacity
  - → The culvert risk assessment identified 32 culvert locations, (representing 50 culverts) that pose the highest potential risk of failure. Generally, these culverts do not have capacity for 50-year and 100-year design storm flows, have a history of flooding, and are heavily silted. In addition, 277 culvert locations may be undersized, and they may not meet the 50- and 100-year design storm. An additional 59 culvert locations were found potentially to not meet the 50-year design storm. Additional analyses are needed to determine how to address potential drainage risks in these areas. Ongoing observations by NMDOT maintenance staff should be used to help prioritize key areas of focus. At a minimum, potential drainage risks should be assessed as construction projects are designed and implemented.

- Considering conducting a culvert inventory and risk analysis for adjacent alternate routes/frontage roads. The risk assessment conducted for the I-40 Corridor Study did not include an inventory and analysis of culverts on nearby frontage roads that often have drainage systems that work in conjunction with I-40 drainage, As such, the NMDOT could consider the following:
  - → Conducting a culvert inventory for alternate routes/frontage roads adjacent to I-40 and adding this information to the I-40 CAMP GIS database. Consider reassessing I-40 basins, hydrology, and the culvert risk assessment with the frontage road information, or incorporate frontage road information as part of any additional assessments done for high-risk areas on I-40 or as individual projects on I-40 are undertaken.
  - → Ensure the I-40 CAMP GIS database is updated with information as projects are designed and built (per Special Provision 802-A: CAMP Data Collection) and as drainage assessments are completed.

4.2.7 Address Pavement Needs

One of the biggest challenges in the I-40 study area is determining how to address immediate pavement needs and start implementing the Enhanced Two-Lane typical section, which has wider roadway shoulders and will require shifting the existing roadway alignment to the median to maintain 2 lanes during construction. From a constructability standpoint, it is advisable to try to complete this realignment and paving work in at least 3-mile stretches. A similar typical section was constructed in 2021 in the Laguna area from MP 114 to 116.5. The project included correcting deficient curves and extending ramps to meet current design criteria. Crash data from 2022 indicates that there were fewer crashes after the improvements were made in 2021 as compared to previous years, but additional years of crash data are needed to confirm a reduced crash rate over time.

Exhibit 4-9 lists areas with poor and very poor pavement identified in NMDOT's 2023 *Pavement Condition Assessment Report*. Currently, 51 miles of the study area are identified as being in very poor (19 miles) or poor (32 miles) condition. Per NMDOT, the suggested pavement treatment for pavement condition that is very poor is pavement reconstruction. For pavement ratings of poor, the NMDOT suggested pavement treatment consists of major rehabilitation. However, due to the time frame that will likely occur for the start of new construction projects and the rapid deterioration of pavements documented in NMDOT's *Pavement Condition Assessment Report* from 2022 to 2023. It is recommended that pavement in poor condition be considered for reconstruction.

Reconstructing more than 50 miles of pavement will take many years, given funding and other constraints. As such, several of the areas listed in Exhibit 4-9 will require mill and inlay projects to keep I-40 operational until all these areas can be addressed. Given the magnitude of pavement needs, it is recommended that the NMDOT begin developing projects in increments of 3 or more miles that start the process of fully reconstructing pavement where needed and incorporating the wider Enhanced 2-Lane typical section. As part of reconstruction, deficient vertical and horizontal curves should be addressed.

Exhibit 4-9. I-40 Pavement Condition

Milepost	EB	WB	EB Poor or V Poor (in miles)	WB Poor or V Poor (in miles)	Total V Poor or Poor (in miles)	Total V Poor (in miles)	Total Poor (in miles)	Alternate Route
8 to 12	V Poor	V Poor	4	4	4	4		Yes
26 to 27	Poor	Poor	1	1	1		1	Yes
30 to 31	Fair	Poor		1	1		1	Yes
38 to 39	Fair	Poor		1	1		1	No
50 to 51	Fair	Poor		1	1		1	Yes
54 to 55	V Poor	Fair	1		1	1		Yes
56 to 57	Poor	V Poor	1	1	1	1		Yes
57 to 58	Fair	Poor		1	1		1	Yes
61 to 63	Poor	Fair	2		2		2	Yes
66 to 67	Fair	Poor		1	1		1	Yes
78 to 80	Fair	Poor		2	2		2	Yes
80 to 81	Fair	V Poor		1	1	1		Yes
82 to 85	Poor	Fair	3		3		3	Yes
92 to 93	Fair	Poor		1	1		1	Yes
93 to 94	V Poor	Fair	1		1	1		Yes
95 to 96	Fair	Poor		1	1		1	Yes
99 to 100	V Poor	Fair	1		1	1		Yes
105 to 106	Fair	V Poor		1	1	1		Yes
106 to 107	V Poor	Poor	1	1	1	1		Yes
107 to 109	Fair	Poor		2	2		2	Yes
116 to 118	Poor	Poor	2	2	2		2	No
118 to 119	Poor	V Poor	1	1	1	1		No
119 to 122	V Poor	Poor	3	3	3	3		No
122 to 124	Poor	Poor	2	2	2		2	No
124 to 125	V Poor	V Poor	1	1	1	1		No
125 to 126	V Poor	Poor	1	1	1	1		No
126 to 131	Poor	Poor	5	5	5		5	No
131 to 132	V Poor	Poor	1	1	1	1		No
132 to 136	Poor	Fair	4		4		4	No
136 to 137	Poor	Poor	1	1	1		1	No
137 to 138	Fair	Poor		1	1		1	No
148 to 149	Fair	V Poor		1	1	1		Yes
		Total	**36**	**39**	**51**	**19**	**32**	

Pavement condition information is from NMDOT's 2023 Pavement Condition Assessment Report, based on 2022 data. Additional information is provided in Appendix E, Geotechnical Scoping Report.

EB = eastbound, V poor = very poor, WB = westbound

The following criteria were considered in developing recommendations of how pavement reconstruction should be prioritized:

- Where is the worse pavement condition? Are there contiguous areas/sections of I-40 where reconstruction is needed, or are the areas isolated? Contiguous areas needing reconstruction like the section from MP 116 to 138 was ranked higher than areas like MP 50 to 51, where pavement reconstruction is needed for just a 1 mile section.
- Is there an adjacent alternate route available? Thirty-seven miles of I-40 do not have nearby alternate routes that can be used if I-40 is closed due to a crash in 1 or both directions. Areas with poor or very poor pavement conditions that have no available alternate routes were ranked higher than areas with adjacent alternate routes, since implementing the wider Enhanced 2-Lane typical section will provide wider shoulders that can temporarily be used as traffic lanes during incident response or construction and maintenance activities to keep traffic moving on I-40.
- Are there bridges that will require widening within the recommended reconstruction area? Areas without bridges were rated higher than areas with bridges, since roadway reconstruction costs significantly less than bridge reconstruction; therefore areas without bridges could be funded and designed more quickly than areas where there are bridges that would require reconstruction or widening.
- Other factors, such as the number of crashes in an area or the number of curve deficiencies were also considered.

Based on this information, it is recommended that pavement reconstruction begin at MP 116 where pavement condition is poor and there are no alternate routes and it should continue east to MP 138. In this 22-mile section of roadway, there are 3 miles (MP 119 to 122) that have several bridges. The remaining sections from MP 116 to 119 and 122 to 138 have no bridges. Reconstructing pavement from MP 116 to 138 would address 22 miles, or 43% of the pavement in the study area that is in poor condition. The wider typical section would provide more space to manage incidents, construction, and maintenance activities in an area that does not have alternate routes. It would also improve safety by correcting about 15% of the deficient horizontal curves and 23% of the vertical curves in the study area.

As shown in Exhibit 4-9, pavement condition is the worst from MP 119 to 122, followed by 124 to 126, followed by 131 to 132. Ideally, construction would start at MP 119 to 122 since the pavement condition is the worst at that location, and the overpass (Bridge 6122) is in poor condition and needs reconstruction. However, in addition to the overpass, there are 4 inline bridges on I-40, 2 at MP 120.3 and 2 at MP 121.9 that will need to be rebuilt or widening to accommodate the wider typical section. Given the number of bridges in this area, additional time may be needed to design and fund construction of the 3-mile section from MP 119 to 122. As such, the recommendation is to start reconstruction at MP 116 to 119, an area that is adjacent to the wider I-40 typical section that was recently constructed at Laguna and continue to work east to create a contiguous section of I-40 with the wider Enhanced 2-Lane typical section.

Project priorities in the I-40 corridor will likely continue to be driven by pavement condition for many years. Addressing the section from MP 116 to 138 would address a large section of the pavement that is in the worst condition in the study area, but it would not address all areas. Additional pavement prioritization considerations are provided in Section 4.4.1. The recommendation is to start with the section from MP 116 to 138.

4.2.8 Improve Incident Management – Initial Recommendations

Specific incident management recommendations are not provided because NMDOT's jurisdiction is limited as it pertains to providing incident response. However, reducing incident response times will become more critical as traffic volumes increase on I-40 between now and 2050. Suggested recommendations are provided in Section 2.2.10 of this report, and initial recommendations that would require minimal up front funding are provided below:

- Improve coordination with law enforcement agencies including affected tribal law enforcement agencies. One of the messages from tribal law enforcement agencies, specifically the Acoma and Laguna Pueblos, is that they would appreciate more coordination and notice of construction and maintenance activities involving lane closures. These agencies and the Pueblo communities are affected by lane reductions, and more notice would be helpful. Tribal representatives indicated that I-40 lane closures result in increased enforcement costs for local law enforcement and increased impacts and congestion on adjacent frontage roads (that are typically state highways) and other local, tribal roads.
- Improve Knowledge of Existing Training Resources — FHWA provides free, online incident management training. It would be beneficial to have more NMDOT and law enforcement staff complete this training.
- Review and determine next steps for the 2013 District 3 Incident Management Program that the NMDOT developed in 2013 and is provided in Attachment D, 2013 Incident Management Plan. The 2013 District 3 Incident Management Program provides procedures for managing incidents on I-40 through District 3 in cases when a complete closure of 1 direction of travel is required between MP 134 and 148. To date, crossovers from MP 134 to 148 have been constructed, and they could be used to run 2-way traffic on a single side of I-40; however, this portion of the plan has not been practiced or implemented. The 2013 plan could be a useful tool and initial concept for improving incident management in the study area. An incident management program be needed to use the proposed crossovers to establish 2-way traffic on 1 side of I-40, and recommendations in this HOIP propose to build additional crossovers for this purpose.
- Establish incident management as a priority in the study area and work with the state legislature, the NM DPS, the NMDOT, and other law enforcement agencies to improve incident response. There are multiple ways that incident response could be improved and formalized in the study area, but it would require direction at the legislative level to establish it as a priority and provide funding resources. Reducing incident response times will become more critical as traffic volumes increase on I-40 between now and 2050. In addition, a formal incident response plan will be needed to develop and implement incident management strategies, such as establishing 2-way traffic detours on I-40 using crossovers or using the proposed wider shoulders for traffic.
- Support push/pull legislation — Continue to work with the legislature to support push/pull legislation.

4.3 Small Projects: Ramp and ITS Improvements

Recommendations in Section 4.2 are based on addressing immediate needs in the I-40 corridor that are critical to maintaining existing infrastructure. In addition to several policy-related recommendations, building projects that are already designed and funded, and making other smaller-scale investments in data collection and drainage, recommendations in Section 4.2 contain 3 specific investments that could take many years to fully fund and implement, including addressing

flooding at Fort Wingate, improving bridges in poor condition, and reconstructing 22 miles of pavement from MP 116 to 138. The recommendations in this section focus on smaller-scale projects and investments that require less up-front design work and coordination. These improvements could be implemented through the life of this HOIP. The idea with these projects is to have some smaller-scale projects that will improve safety and highway operations, so that NMDOT has a range of project types readily available. NMDOT could develop a shelf-program for I-40 with projects identified in this section that could be implemented quickly any time funds become available. The improvements in this section include addressing the dozens of interchange ramps that need to be extended to improve safety and ramp capacity. It also includes ITS improvements that are less costly to implement than larger-scale highway construction projects.

4.3.1 Interchange Ramp Improvements and Priorities

There are 30 unique access points for I-40 between MP 0 and 150. Of the 30 access point locations, 26 of them have 87 ramps that do not meet 2018 *AASHTO Green Book* requirements for acceleration length (La), gap acceptance length (Lg), or recommended deceleration length. The deficient ramps are likely contributing factors to several high-crash areas in the study area. As indicated in the I-40 Corridor Study, addressing these deficiencies by lengthening on- and off-ramps offers an opportunity to substantially improve safety. Lengthening these ramps also provides additional capacity for merging traffic, which can improve ramp LOS. For on-ramps, a crash reduction of up to 29% and up to 5% for off-ramps has been documented in the Highway Safety Manual.[8]

Appendix L, I-40 Interchange Layouts, identifies the specific on- and off-ramps that do not meet 2018 *AASHTO Green Book* guidelines, and it provides recommendations for the additional ramp and taper lengths needed. Exhibit 4-10 ranks and prioritizes 22 of the 26 deficient interchanges/access points by first considering the total number of fatal and serious crashes that occurred in the 1-mile vicinity of these interchanges from 2016 to 2021 and then by assessing the total number of crashes that occurred.

Four interchanges with ramp deficiencies were not included in this prioritization for the reasons described below:

- Exit 8, Manuelito — The Manuelito interchange was not included in this prioritization because this interchange needs to be redesigned to improve safety, and interchange ramp extensions would require reconstructing bridges 6280 and 6281. As such, addressing these ramps will be a multi-million dollar project, rather than a small-scale project.
- Exit 20 and 26 in Gallup — These interchanges both have bridges that will require reconstruction, as well as other constraints that will involve large-scale, rather than small-scale reconstruction. In addition, $7.4 million is currently programmed for improvements in 2027 under CN 6101391 to realign ramps at Exit 20.
- Exit 149, Atrisco Vista Interchange — NMDOT and Bernalillo County have looked at this interchange and have various recommendations for improvements that would be constructed as part of a separate project outside of this I-40 Corridor Study.

In addition, there are 4 interchanges where all the ramps meet 2018 *AASHTO Green Book* guidelines. Therefore, these ramps do not need improvements, and were not included in the rankings. They include Exit 44 Coolidge, Exit 53 Thoreau, Exit 72 Bluewater Village, and Exit 114 Laguna.

[8] AASHTO Highway Safety Manual, Part C. 2014.

Exhibit 4-10. I-40 Interchange Ramp Extension Ranking

Rank	Exit	Description	# of Ramps Needing Improvements
1	140	Rio Puerco/ Route 66 Casino	4/4
2	104	Cubero/Budville/Seama	2/4
3	108	Casa Blanca/Paraje	4/4
4	36	Iyanbito	4/4
5	102	Acoma/Sky City	3/4
6	39	Refinery	3/4
7	3	Eastbound Rest Area	2/2
8	16	West Gallup	1/4
9	12	Westbound Pullout	4/4
10	47	Continental Divide	1/4
11	100	San Fidel	4/4
12	63	Prewitt	4/4
13	85	Grants/Mt. Taylor	5/5
14	117	Mesita	2/4
15	81	Grants/San Rafael	4/4
16	89	Quemado	4/4
17	79	Milan	4/4
18	96	McCartys	3/4
19	126	Los Lunas/NM 6	4/4
20	33	McGaffey	4/4
21	131	To'hajiilee	4/4
22	22	Gallup	2/4

It is assumed that NMDOT would extend all deficient ramps at a particular interchange in a single project to decrease mobilization costs associated with construction. However, if available funding is not sufficient to address all deficiencies, NMDOT could improve individual ramps at its discretion. If ramp extensions are phased for an interchange, it is recommended that on-ramps be prioritized ahead of off-ramps, since they are expected to provide a greater safety improvement.

4.3.2 ITS Improvements and Phasing

The ITS improvement plan for the study area includes numerous recommendations that will improve operations and traffic management. Estimated costs for ITS plan implementation are about $35 million. Current ITS infrastructure in the study area is limited, and this was discussed in Section 2.2.8. Attachment B, Intelligent Transportation Systems, provides ITS recommendations and prioritizes these investments. Exhibit 4-11 and Exhibit 4-12 provide information on short- and long-term ITS recommendations. Please refer to Attachment B for a detailed description of the proposed ITS phasing and improvements.

Exhibit 4-11. I-40 Initial ITS Recommendations and Costs

Item	Unit	Unit Cost	Quantity	Subtotal
Data Stations[1]	Each Unit	$100,000	9	$900,000
Closed-Circuit Television CCTV)	Each Unit	$130,000	3	$390,000
Dynamic Message Sign (DMS)	Each Unit	$150,000	8	$1,200,000
Variable Speed Advisory Signs (VSAS)	Each Unit	$100,000	4	$400,000
Fiber Optic	Miles	$125,000	44	$5,500,000
District 6 Traffic Management Center[2]	Lump Sum	$100,000	1	$100,000
Truck Parking Availability System (TPAS)	Lump Sum	$1,000,000	1	$1,000,000
Applications and Integration[3]	Lump Sum	$250,000	1	$250,000
			Rounding and 20% Contingency[4]	$2,260,000
			Total[4]	**$12,000,000**

1 Includes replacement for existing data stations. Cost includes two video cameras.

2 Assumes server and communication equipment in an existing NMDOT facility to connect to field devices, cloud platform, and other districts. Does not include cost of labor or annual operation costs.

3 Includes applications and integration to provide linkages to field devices, cloud platform, and other districts.

4 Total is rounded and includes a 20% contingency. Costs do not include right-of-way, project development, or New Mexico Gross Receipts Tax.

Exhibit 4-12. I-40 Longer-Term ITS Recommendations and Costs

Item	Unit	Unit Cost[4]	Quantity	Subtotal
Data Stations[1]	Each Unit	$130,000	3	$390,000
Closed-Circuit Television	Each Unit	$170,000	4	$680,000
Fiber Optic (New)	Miles	$162,500	81	$13,162,500
Fiber Optic (Relocate MP 125 to 150)	Miles	$162,500	25	$4,062,500
District 6 Traffic Management Center[2]	Lump Sum	$300,000	1	$300,000
Applications and Integration[3]	Lump Sum	$325,000	1	$325,000
			Rounding and 20% Contingency[4]	$4,080,000
			Total[5]	**$23,000,000**

1 Cost includes two video cameras.

2 Cost for future expansion as intelligent transportation system expands along I-40. Assumes server and communication equipment in an existing NMDOT office to connect to field devices, cloud platform, and other districts. Does not include cost of labor or annual operation costs.

3 Includes applications and integration to provide linkages to field device, cloud platform, and other districts.

4 Long-term unit costs are adjusted +30% to account for future pricing.

5 Total is rounded and includes a 20% contingency. Costs do not include right-of-way, project development, or New Mexico Gross Receipts Tax.

As projects are built in the I-40 corridor, it is recommended that conduit be placed to help advance the construction of the full fiber network. The fiber network should not be placed in the median of I-40 since the proposed improvements will widen to the median, and the median is less accessible for maintenance. Impacts from constructing the fiber line on either the north or south side were considered and while there are slight differences between the alignment options, none were identified that would suggest one alignment over the other. In general, it is recommended that the fiber line be constructed on the north side of I-40, since it would be in closer proximity to established development in the study area, though there may be areas where it would cross to the south side to avoid environmental or other impacts.

4.4 Framework for Identifying Additional Future Projects

The goal of the I-40 Corridor Study and this HOIP is to meet I-40 needs by implementing the Enhanced 2-Lane typical section through study area, which requires reconstructing or rehabilitating the entire 150-mile study area. This report section provides a flexible framework for identifying and prioritizing additional projects beyond those identified in Sections 4.2 and 4.3.

Projects identified in Section 4.2 include implementing the Enhanced 2-Lane typical section in about 29 miles (22%) of the study area, leaving 121 miles left to improve. Specifically, the following projects are identified:

- Section 4.2.3 identifies 1 funded project where the Enhanced 2-Lane typical section would be built for 5 miles from MP 39.8 to 44.8 at Continental Divide. In addition, bridge overlays are funded from MP 30 to 31, which will improve the pavement condition in the Fort Wingate area. Additional improvements in the 6-mile section at Fort Wingate are a high priority, but they are unfunded. For estimating purposes, it is assumed that approximately 2 miles of this 6-mile section will be rebuilt by 2030 to address some of the most critical flooding risks and to implement a small section of the Enhanced 2-Lane typical section. Implementing these 3 funded projects would result in 7 miles of I-40 where the Enhanced 2-Lane typical section would be in place.
- Section 4.2.7 identifies reconstructing the 22-mile section from MP 116 to 138 where 100% of the pavement needs to be reconstructed.

Together, these projects would accomplish the following:

- Implement the Enhanced 2-Lane typical section in about 29 miles (19%) of the study area, which includes providing the Enhanced 2-Lane typical section in 27 of the 37 miles of I-40 (73%) where there are currently no alternate routes, reconstructing 23 of the 51 miles (45%) of pavement that is in poor or very poor condition, and addressing 25.5 of the 77.5 miles (34%) of the recommended reconstruction limits identified in Exhibit 2-6.
- Address 14% (10 of 70) deficient horizontal curves and 35% (17 of 48) deficient vertical curves in study area.
- In addition, projects identified in Section 4.2 and 4.3 would rehabilitate 4 miles of pavement in Gallup and correct 3 horizontal curves, replace at least 4 existing data collection stations, upgrade ITS, begin identifying funding and developing improvement plans for bridges and drainage, and start addressing ramp deficiencies. The extent of these improvements will depend on available funding.

The next question is what other projects should be developed in the study area? There are many ways that additional projects could be identified and prioritized, but conditions in the study area will continue to change, and addressing pavement in poor and very poor condition will continue to drive project development. Therefore, it is critical that the NMDOT have a flexible framework that can be used to adapt to changing conditions. As such, this section does not prioritize projects that would come next; rather, it provides a framework that NMDOT could use for prioritizing projects beyond those identified in Sections 4.2 and 4.3, and it identifies specific projects that could be developed as part of a shelf program. Developing projects as part of a shelf program would provide the NMDOT with projects that could be implemented quickly any time funds become available.

The most critical element implementing this framework is that NMDOT will have to continue to collect and review conditions in the I-40 corridor to prioritize improvements where the needs are greatest. Specific information that will need to be updated and assessed on an ongoing basis includes the following:

- Pavement assessment data
- Bridge inspection reports
- Traffic volume and classification information

It is recommended that future projects be developed by considering the following:

1. Addressing Pavement — This section provides an approach for addressing areas with poor and very poor pavement condition.
2. Improving safety in high crash areas — This section identifies areas that have higher than average crash rates, and it identifies potential improvements in these areas.
3. Addressing I-40 mainline capacity — This section provides an approach for addressing I-40 mainline capacity including Gallup and several isolated locations with steep roadway inclines.
4. Completing the Enhanced 2-Lane Typical Section — This section focuses on implementing the Enhanced 2-Lane Typical Section in the remaining portions of the I-40 corridor.

4.4.1 Addressing Pavement

Given the rapid deterioration of pavement in the study area seen between 2021 and 2022, it is assumed that the NMDOT will need to continue to prioritize projects based addressing areas of poor and very poor pavement condition. This will be an iterative process as pavement information is updated.

Once projects identified in Section 4.2 have been implemented, 121 miles of I-40 will require reconstruction and rehabilitation to fully implement the wider Enhanced 2-Lane typical section. Pavement conditions in the study area will continue to deteriorate, and many areas will likely require mill and inlays over the next several years to keep I-40 operational. These mill and inlays will be necessary, but they are not preferred since it is challenging to keep 2 lanes open to traffic when mill and inlay projects are constructed within the narrow existing typical section. It is advised that the NMDOT continue to advance roadway projects that build the Enhanced 2-Lane typical section, which has construction phasing that allows for maximizing maintaining 2 lanes of traffic in each direction throughout construction.

Several considerations should be made when identifying and prioritizing areas for pavement reconstruction and rehabilitation:

- The NMDOT should consider identifying areas where pavement would be reconstructed in 3- to 5-mile increments for constructability purposes.
- Address pavement in areas without adjacent alternate routes. Projects identified in Section 4.2 would address all but 10 miles of I-40 where there are no adjacent frontage roads. Building the wider Enhanced 2-Lane typical section in these areas would assist with better accommodations for maintaining traffic during incidents, maintenance, and construction.
- In areas where pavement is in poor or very poor condition, prioritize areas where there are fewer bridges. Construction costs on a per mile basis would be much lower in these areas than in areas that would require bridge widening or replacement.

- Other characteristics to consider are the number of fatal and serious crashes, total crashes, and deficient horizontal and vertical curves. Areas with a higher number of crashes and deficiencies should be prioritized over areas with fewer or no deficiencies.

Sections 4.4.1.1 and 4.4.1.2 provide additional information and rankings for addressing pavement in areas without alternate routes and prioritizing areas with fewer bridges.

4.4.1.1 Remaining I-40 Areas Without Alternate Routes

Exhibit 4-13 lists the remaining sections of I-40 that could be considered for implementation of the Enhanced 2-Lane typical section where there are no alternate routes.

Exhibit 4-13. I-40 Remaining Areas Without Alternate Routes

MP	# of Miles	# of Bridges	Miles of Pavement in Very Poor or Poor Condition	Average Fatal & Serious Crashes Per Mile[1]	Average Crashes per Mile[2]	# of Deficient Horizontal Curves	# of Deficient Vertical Curves
37 to 40	3	0	1 (33%)	3.0	31.0	0	0
45 to 48	3	0	0 (0%)	1.0	27.0	3	1
114 to 116[3]	2	1	0 (0%)	1.0	34.5	0	0
138 to 140	2	0	0 (0%)	2.0	17.5	0	0

1 From 2016 to 2021, the average number of fatal and serious crashes per mile was about 1.4 (210 crashes/150 miles).

2 From 2016 to 2021, the average number of crashes per mile was about 23 (3422 crashes/150 miles).

3 In 2021, this area was reconstructed. The roadway was widened to have 10-foot inside and outside shoulders, and all ramp and curve deficiencies were addressed. Initial 2022 crash results showed a decrease in the number of crashes in this area.

Based on the information presented in Exhibit 4-13, it is suggested that the remaining areas without alternate routes should be prioritized as listed below:

1. MP 37 to 40
2. MP 138 to 140
3. MP 45 to 48
4. MP 114 to 116 — This area was part of a roadway reconstruction and rehabilitation project in 2021 from about MP 112 to 116. As part of the project, the roadway was widened to have 10-foot inside and outside shoulders, and all ramp and curve deficiencies were addressed. While it is recommended that the shoulders be expanded at some point to 12 feet on each side, doing so would require replacing Bridge 6491 (MP 114.26) and realigning the interchange at Exit 114 Laguna. Because pavement, ramp, and curve deficiencies have recently been addressed in this area, it is assumed that widening between MP 114 and 116 would be a lower priority than improving other sections of I-40.

4.4.1.2 I-40 Areas Without Bridges

Exhibit 4-14 lists all sections of I-40 that have areas of 5 miles or more where there are no I-40 inline bridges or overpasses that would require widening or replacement to implement the Enhanced 2-Lane typical section. There are 8 areas of the I-40 corridor covering 79 miles that have 5 or more miles of roadway without any adjacent bridges. As pavement continues to deteriorate over time, these areas could be prioritized over areas with bridges because construction would be less expensive and likely faster to design and implement.

Exhibit 4-14. I-40 Areas of 5 Miles or More Without I-40 Inline Bridges

MP	# of Miles	Miles of Pavement in Poor Condition	Alternate Route	Average Fatal & Serious Crashes per Mile[1]	Average Crashes per Mile[2]	# of Deficient Horizontal Curves	# of Deficient Vertical Curves
37 to 53[3]	16	2 (13%)	No (from MP 37 to 48)	1.1	29.1	4	5
54 to 63	9	5 (56%)	Yes	1.2	25.2	0	0
64 to 73	9	1 (11%)	Yes	0.9	15.6	6	1
74 to 79	5	1 (20%)	Yes	0.6	15.2	2	0
82 to 94	12	5 (42%)	Yes	1.2	15.6	15	0
109 to 114	5	0 (0%)	Yes	1.4	18	0	2
122 to 136[4]	14	14 (100%)	No	0.8	16.2	1	4
141 to 150	9	1 (11%)	Yes	3.1	21.1	3	2

1 From 2016 to 2021, the average number of fatal and serious crashes per mile was about 1.4 (210 crashes/150 miles).

2 From 2016 to 2021, the average number of crashes per mile was about 23 (3422 crashes/150 miles).

3 MP 39.8 to 44.8 will be reconstructed as part of funded improvements identified in Section 4.2.3.

4 MP 116 to 136 would be reconstructed as part of recommended improvements identified in Section 4.2.7

A prioritization for implementing the Enhanced 2-Lane typical section in areas without bridges is not proposed, since pavement conditions will continue to degrade and will change over the next several years. However, the information provided in Exhibit 4-14 can be used to help identify 3- to 5-mile areas where pavement could be addressed as it deteriorates, and construction costs on a per mile basis will be much lower to implement the Enhanced 2-Lane typical section.

4.4.2 Improving Safety

This section identifies additional projects that could be considered that would address safety issues in areas where crash rates, and, specifically, fatal and serious crash rates, are substantially higher than study area averages.

- Based on data from 2016 to 2021, the average number of fatal and serious crashes per mile in the study area was about 1.4 (210 crashes/150 miles).
- Based on data from 2016 to 2021, the average number of crashes per mile was about 23 (3,422 crashes/150 miles).

When considering this information, 3 areas stood out as having a much higher instance of fatal and serious crashes and overall crashes than other locations:

- MP 140 to 145
- MP 102 to 105
- Exit 26 Interchange

4.4.2.1 MP 140 to 145

Based on crash data collected from 2016 to 2021:

- I-40 from MP 140 to 145 had 22 fatal and serious crashes, which is an average of 4.4 fatal/serious crashes per mile. This is about 3.1 times higher than the study area average of 1.4 fatal/serious crashes per mile.
- The overall crash rate was about 27.2 crashes per mile, which is slightly higher than the study area average of 23 crashes per mile.

The study team took a closer look at this area to identify potential safety improvements that could help address the high number of fatal and serious crashes in this area:

- All 4 of the interchange ramps at the Exit 140, Rio Puerco/Route 66 interchange do not meet current recommended design criteria, and the ramps need to be extended. Extending these ramps or reconfiguring the interchange to be a standard diamond configuration would improve safety in this area. One of the challenges for drivers in this area is that eastbound traffic moves downhill as it approaches the Exit 140 eastbound off-ramp. Drivers exiting the eastbound off-ramp must slow down quickly to navigate a 20-mph exit ramp. Interchange improvements would improve safety in this high-crash area.
- There are 2 deficient vertical curves from MP 144 to 145 that need to be addressed.
- Eastbound from MP 141.4 to 142.3 there is a 3% grade that is over 4,100 feet long. Adding a climbing lane would likely improve safety in this area.

4.4.2.2 MP 102 to 105

Based on crash data collected from 2016 to 2021:

- I-40 from MP 102 to 105 had 12 fatal and serious crashes, which is an average of 4.0 fatal/serious crashes per mile and is about 2.9 times higher than the study area average of 1.4 fatal/serious crashes per mile.
- The overall crash rate was about 26.7 crashes per mile, which is slightly higher than the study area average of 23 crashes per mile.

The study team took a closer look at this area to identify potential safety improvements that could help address the high number of fatal and serious crashes in this area:

- There are 2 interchanges in this area; 1 is located at MP 102 and another at MP 104. The interchange at MP 102 has 3 of 4 ramps that are deficient and need to be extended. The interchange at MP 104 has 2 of 4 ramps that are deficient and need to be extended.
- There are 4 deficient horizontal curves and 2 deficient vertical curves that need to be addressed. Full reconstruction is needed to address these curve deficiencies.

It is worth noting that pavement from MP 105 to 109 is identified as being in poor or very poor condition, and it will require full reconstruction. There are 2 additional vertical curves in this section, and all 4 of the ramps at Exit 108 are deficient and need to be extended. A project could be considered that would cover the entire area from MP 102 to 109; however, if phasing were needed, addressing the section from MP 102 to 105 first is recommended.

4.4.2.3 Exit 26 in Gallup

Based on crash data collected from 2016 to 2021:

- With a total of 72 crashes, the 1-mile section near the East Gallup interchange at Exit 26 is about 3.1 times the study area average of 23 crashes per mile.
- This area has had 2 fatal and serious crashes, which is above the study area average of 1.4 per mile.

All 4 of the interchange ramps for this interchange are deficient and need to be extended.

- There are 4 deficient horizontal curves and 2 deficient vertical curves that need to be addressed. Full reconstruction is needed to address these curve deficiencies. The ramps that are more challenging for drivers are the eastbound off-ramp and the westbound on-ramp that are located on section of I-40 that is built on a bridge. Improving safety will require rebuilding at least 2 bridges. Ramp extensions could be built to improve safety for the eastbound on-ramp and the westbound off-ramp without impacting bridges or other critical infrastructure.
- There is 1 deficient horizontal curve in the eastbound direction that needs to be corrected.
- Pavement in both the eastbound and westbound direction is identified as being in poor condition and will require full reconstruction.

4.4.3 Addressing I-40 Mainline Capacity

Areas where 3-lanes are recommended on I-40 were identified in Section 2.2.2, and they include providing climbing lanes at 5 locations listed below and an auxiliary lane in Gallup from MP 16 to 26. Considerations for prioritizing and phasing these improvements are discussed in Sections 4.4.3.1 and 4.4.3.2.

4.4.3.1 Climbing Lanes

Areas where climbing lanes are proposed should be considered on a case-by-case basis as the Enhanced 2-Lane typical section is implemented across the study area. Climbing lanes should not be considered before the implementation of the Enhanced 2-Lane typical section because the I-40 alignment will change as the Enhanced 2-Lane typical section is built, and the investment made to build the climbing lanes would likely be lost as the typical section moves to the median.

Exhibit 4-15 summarizes information on the proposed climbing lanes. The proposed climbing lanes are all located outside of areas where the pavement condition is in poor or very poor condition, and there are no bridges on these sections of I-40. Because of this, it is suggested that the climbing lanes be built as the Enhanced 2-Lane typical section is implemented in the areas. Adding climbing lanes is expected to improve operations and safety. Considerations for prioritizing the addition of climbing lanes should include the following:

- The location of the proposed climbing lane — Climbing lanes closer to Albuquerque (MP 150) where traffic volumes are higher should be built before climbing lanes further west where traffic volumes are lower (MP 0).
- The length of the steep grade — Adding climbing areas where grades are longer will provide a greater benefit.
- The number of total crashes and fatal and serious crashes in the proposed area.

Exhibit 4-15 provides the information listed above for the proposed climbing lane areas. This information can be used to help prioritize climbing lane development and construction.

Exhibit 4-15. I-40 Proposed Climbing Lanes

Milepost	Direction	Length (feet)	Grade	Average Fatal & Serious Crashes Per Mile[1]	Average Crashes per Mile[2]
MP 76.5 to 77.5	WB	2,889	3.02%	0	9
103.5 to 104.4	WB	3,580	3.83%	1.5	11
115 to 116	WB	2,136	4.01%	0.5	13
138.5 to 140	WB	2,977	3.99%	0.5	7
141.5 to 143	EB	4,176	3.01%	2.5	9

1 From 2016 to 2021, the average number of fatal and serious crashes per mile was about 0.7 in a single direction (210 crashes/ 150 miles/2 directions).

2 From 2016 to 2021, the average number of crashes per mile was about 11.5 in a single direction (3,422 crashes/150 miles/ 2 directions).

Based on the information presented in Exhibit 4-15, the suggested prioritization of the proposed climbing lanes based on the criteria listed above is as follows:

1. Eastbound MP 141.5 to 143
2. Westbound MP 103.5 to 104.5
3. Westbound MP 115 to 116 — This climbing lane should cover the 4.01% grade for at least 2,136 feet from MP 115.2 to 115.6, and it should also incorporate the 4% grade at MP 114.9 that is 405 feet long.
4. Westbound MP 138.5 to 140
5. Westbound MP 76.5 to 77.5

4.4.3.2 Adding a Third Lane in Gallup

Ongoing assessment of I-40 traffic volume data and operations will be critical for determining when a third lane should be constructed in Gallup between MP 16 and 26. Construction in Gallup will be challenging, and it will cost more than other areas because there are 18 inline bridges on I-40 and 2 overpasses located at Exit 20 and Exit 22. The bridges through this section make it challenging to widen I-40 and address existing interchange ramp deficiencies. The 6 bridges located between Exit 20 and Exit 22 are the area where the most operational and ramp improvements are needed, and bridge widening is necessary to allow capacity and ramp improvement. All 4 of the interchanges in this area at Exit 16, 20, 22, and 26 have at least 1 or more ramps that are deficient. A total of 14 of the 17 interchange ramps are deficient and need to be extended. In addition, current I-40 mainline capacity analysis shows that the I-40 section through Gallup is currently operating at LOS B, but sections from MP 16 to 26 are expected to degrade to LOS D by 2050, which is below the target of LOS C. Based on analyses conducted for I-40 mainline capacity, Gallup is expected to move to LOS D in the following approximate timeframes:

- MP 20 to 22 by 2037
- MP 22 to 26 by 2041
- MP 16 to 20 by 2045

LOS D is considered the failure threshold for rural interstate highway and ramp segments located in areas where the population is less than 5,000, as established by the *State Access Management Manual (SAMM).*[9] LOS E is considered the failure threshold for urban interstate highway and ramp

[9] NMDOT 2001, State Access Management Manual Table 15.C-1.

segments located in areas where the population is 5,000 people or more. Urban area boundaries defined by FHWA, based on 2020 United States Census data, identify the area in Gallup from about MP 13.5 to 29.7 as being "urban;" therefore, the failure threshold per the *SAMM* is LOS E, rather than LOS D. However, LOS C was identified as being an appropriate target LOS, since most of the study area is defined as rural, and the desire is to have similar operating conditions through the I-40 corridor between the Arizona State line at MP 0 and the eastern edge of Albuquerque at the Atrisco Vista Interchange at MP 150.

The I-40 study team examined areas where 3 lanes or auxiliary lanes may be needed to address future capacity constraints on the I-40 mainline in Gallup between MP 16 and 26 where the I-40 mainline LOS is expected to degrade below LOS C to LOS D by 2050. A contiguous third lane may eventually be desired in Gallup. However, it is initially assumed that ramps would be extended, followed by the construction of auxiliary lanes, which is different than building a contiguous 3-lane section. The difference is that the auxiliary lanes would provide a third lane between on- and off-ramps, and they would not provide a third lane under overpasses between the interchange off-ramps and on-ramps where there is no merging traffic. Auxiliary lanes were found to result in LOS C operations by 2050. As improvements are made to I-40 overpasses in Gallup and other areas, they should be built with the assumption that they would need a minimum of 60 feet of clear-span width for each direction of travel (totaling 120 feet) to provide the ability for 3-lanes to be easily constructed, if needed, in the future. It was assumed that auxiliary lanes would be built in the locations summarized in Exhibit 4-16 and Exhibit 4-17. Auxiliary lanes totaling 8.7 miles are proposed for eastbound I-40, and 8.4 miles of auxiliary lanes are proposed in the westbound direction.

Exhibit 4-16. I-40 Proposed Auxiliary Lanes - Eastbound

Description	Length
Eastbound On-Ramp at Exit 16, W Gallup to Eastbound B Off-Ramp at Exit 20, US 491	4.2 miles
Eastbound On-Ramp at Exit 20, US 491 to Eastbound Off-Ramp at Exit 22, Miyamura	1.6 miles
Eastbound On-Ramp at Exit 22, Miyamura to Eastbound Off-Ramp at Exit 26, E. Gallup	2.9 miles
Total	**8.7 miles**

Exhibit 4-17. I-40 Proposed Auxiliary Lanes - Westbound

Description	Length
Westbound On-Ramp at Exit 26, E. Gallup to Westbound Off-Ramp at Exit 22, Miyamura	3.0 miles
Westbound On-Ramp at Exit 22, Miyamura to Westbound Off-Ramp at Exit 20, US 491	1.4 miles
Westbound On-Ramp at Exit 20, US 491 to Westbound Off-Ramp at Exit 16, W Gallup	4.0 miles
Total	**8.4 miles**

From an operational perspective, adding an auxiliary lane or a third lane in Gallup should be considered once deficient ramps have been extended to meet current design standards and once the Enhanced 2-Lane typical section has been constructed. Current funded improvements identified in the STIP for the Gallup area from 2024 to 2027 include about $18 million for the following projects:

- CN 6101391 at Exit 20 — This project will realign ramps at this interchange and is programmed for 2027.

- CN 6100932 from MP 21.9 to 25.7 – This project will rehabilitate pavement , and it is programmed for 2027.
- In addition, studies are currently underway to identify and design improvements to the interchanges at Exit 20 (US 491 interchange) and Exit 22, Gallup/Miyamura.

Potential unfunded projects identified in the STIP for the Gallup area for future funding years include about $77 million for the following projects:

- CN 6101510 at Exit 16 — This project would rehabilitate bridges 8835 and 8836 located in the vicinity of Exit 16.
- CN 6100931 from MP 17.9 to 21.9 — This project would reconstruct I-40 and construct the wider Enhanced 2-Lane typical section.
- CN 6101320 from MP 23.0 to 23.7 — This project would improve Exit 22 and reconstruct the overpass, bridge 7618.

Improvements in Gallup will need to be phased over the 25-year life of this HOIP ,and they will need to be balanced with other needs in the I-40 corridor, particularly in areas requiring pavement reconstruction. It is recommended that improvements in Gallup be phased as follows:

1. Address all deficient ramps by extending them to meet current AASHTO guidelines for ramp lengths. There are 4 interchanges in Gallup, Exits 16, 20, 22, and 26. Exit 16 has 1 of 4 ramps that need to be extended, Exit 20 (US 491) has 5 of 5 ramps, Exit 22 and 26 both have 4 of 4 ramps that need to be extended. Extending ramps for Exit 20 and 26 will require bridge reconstruction, which will increase construction cost and complexity. Section 4.3.1 ranks ramp improvements in the study area, and it includes improvement needs at Exits 16 and 22; however, these improvements do not rank as high as other interchanges. Specific improvements for the Exit 22 interchange (Gallup/Miyamura) are being studied and developed as part of ongoing studies in the area. An additional study is underway for interchange improvements at Exit 20 (Gallup/US 491), and about $7.4 million is funded to improve and realign ramps in this area. Additional improvements and funding will likely be needed at this location. Improvements at Exit 26 are discussed in Section 4.4.2.3, and they are a high priority. Appendix L, I-40 Interchange Layouts, identifies the specific on- and off-ramps that do not meet 2018 *AASHTO Green Book* guidelines, and it provides recommendations for the additional ramp and taper lengths needed.
2. Construct the Enhanced 2-lane typical section through Gallup, as feasible. This will realign the roadway and make it easier to add auxiliary lanes when they are needed.
3. Add auxiliary lanes in Gallup between interchanges. Based on traffic volumes and conditions, it is recommended that the auxiliary lanes would first be built from MP 20 to 22, followed by the section from MP 22 to 26, and then MP 16 to 20.

4.4.4 Completing Enhanced 2-Lane Typical Section

As discussed in Section 4.4.1, 121 miles of I-40 will require reconstruction and rehabilitation to fully implement the wider Enhanced 2-Lane typical section in the study area. Implementation of the Enhanced 2-Lane typical section will be driven mostly by pavement condition. The NMDOT will need to continually assess pavement conditions to phase and prioritize the implementation of the Enhanced 2-Lane typical section. Bridges will continue to be the primary constraint to widening I-40. As such, it is advised that the NMDOT develop a long-term bridge program to address widening the 66 inline bridges on I-40 and the 6 overpasses identified as constraints to I-40 widening in Section 2.2.6.3.

4.5 Additional Considerations

4.5.1 Alternate Route Improvements

Section 2.3 lists recommended improvements for alternate routes adjacent to I-40. The project phasing and prioritization presented in this chapter incorporates the following recommendations from Section 2.3:

- Section 4.2.4 includes addressing flooding at Fort Wingate, which includes both I-40 and the adjacent alternate route, NM 118.
- Section 4.2.5 includes addressing alternate route bridges in poor condition.
- Section 4.2.6 includes drainage recommendations for additional study of drainage on adjacent frontage roads.

Other alternate route recommendations identified in Section 2.3 that are not included in the prioritization framework include addressing pavement needs and increasing the vertical clearance for Bridge 6502 carrying I-40 at MP 8.4 intersecting with NM 118 and Bridge 6307 carrying I-40 at MP 90.58 intersecting with NM 124.

Maintaining existing infrastructure, including pavement and bridges on adjacent alternate routes, is important to address transportation needs of local traffic and the communities that these roads serve. These routes have a limited ability to accommodate I-40 traffic, particularly given the high volume of heavy truck traffic. While these routes are sometimes used as detours during incidents when I-40 is shut down, it is preferable to improve incident management on I-40 and to provide a wider typical section so that I-40 traffic can stay on I-40 rather than detour to adjacent alternate routes due to the impacts to adjacent communities and the local roadway network.

NMDOT must continue to maintain these roads for local traffic and adjacent communities. Ongoing funding and coordination with local governments and tribes will be needed to maintain these routes and implement any needed improvements. It is assumed that any additional alternate route improvements beyond those identified in this chapter would be prioritized with other NMDOT projects in Districts 3 and 6.

4.5.2 Truck Parking

The results of the truck parking demand analysis conducted as part of the I-40 Corridor Study indicate a potential deficit of truck parking spaces to accommodate the peak hour truck parking demand. Nearly all of the truck parking in the I-40 study area is provided at privately operated truck stops. TA total of 1,420 truck parking spaces are provided in the I-40 study area, and 1,389 of them are provided at privately owned truck stops. The NMDOT provides 21 truck spaces at the Manuelito Rest Area, located at MP 3 west of Gallup. As truck volumes in the study area continue to grow, additional truck parking will be needed to accommodate truck parking demand. The NMDOT plans to study truck parking on critical freight routes throughout New Mexico, including this section of I-40. Recommendations from NMDOT's study should be incorporated into long-term plans for this corridor. A potential deficit of truck parking spaces was identified in the I-40 Corridor Study, as shown in Exhibit 4-18.

Exhibit 4-18. Truck Parking Demand

Segment of I-40	Average Truck Daily Traffic	Existing Truck Parking Spaces	Peak Hour Truck Parking Demand	Shortage/Surplus
Arizona State line to Atrisco Vista Boulevard	11,000	1,420	1,540	-120

Attachment A

I-40 Culvert Risk Assessment, Priorities, and Recommendations

Attachment A: I-40 Culvert Risk Assessment, Priorities, and Recommendations

Prepared for
New Mexico Department of Transportation

October 2024

Parametrix

Attachment A: I-40 Culvert Risk Assessment, Priorities, and Recommendations

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LIST OF EXHIBITS

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SUPPLEMENTS

Acronyms and Abbreviations

CAMP	Culvert Asset Management Program
CBC	concrete box culvert
CMP	corrugated metal pipe
CoF	Consequence of Failure
DEM	digital elevation model
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
HUC	hydrologic unit code
hw/d	headwater-to-diameter
ID	identification
LoF	Likelihood of Failure
MP	milepost
NHD	National Hydrography Dataset
NMDOT	New Mexico Department of Transportation
Risk Tool	Culvert Risk Evaluation Tool
USDA	United States Department of Agriculture
USGS	United States Geologic Survey

1. Report Purpose, Instructions for Use, and Recommendations

1.1 Report Purpose and Organization

This report does the following:

- **Chapter 1 (this chapter)** summarizes the report purpose and organization; explains how the report should be used; and summarizes drainage recommendations for the I-40 corridor study area between milepost (MP) 0 at the Arizona State Line and MP 150 at the Atrisco Vista Interchange.
- **Chapters 2, 3, and 4** document the I-40 culvert information that was collected, assessed, and evaluated to support the New Mexico Department of Transportation's (NMDOT's) on-going statewide Culvert Asset Management Program (CAMP) as part of the I-40 Corridor Study.
- **Chapters 5, 6, and 7** explain how the I-40 culvert data was evaluated and identifies recommendations for addressing the highest risk areas where culvert condition, hydraulic capacity, and other factors should be considered to manage drainage risks to I-40.

1.2 How Should this Report and Other I-40 Drainage Information be Used for I-40 Project Planning and Roadway Design?

1.2.1 This Report

This report provides specific recommendations for drainage structures located in the I-40 corridor study area from MP 0 to MP 150. Section 1.3 provides a summary of the recommendations, including I-40 corridor-wide recommendations and location-specific recommendations. Individuals planning or designing projects in the I-40 corridor study area should check the following resources found in this report to ensure that high risk drainage structures and maintenance issues are addressed. Specifically, the following information should be reviewed:

- Exhibit 3 and Exhibit 4, I-40 High Risk Culverts - These tables identify the 32 highest risk culvert locations in the I-40 study area. Check this table to determine if the proposed project limits are located in these high-risk areas. If they are, plan to conduct additional analysis and incorporate drainage improvements as needed.
- Undercapacity Culverts – Check the proposed project limits for culverts that may not have enough capacity using the I-40 CAMP GIS Database (described in Section 1.2.2) or Supplement B, Hydraulic Analysis. Conduct additional drainage analysis where needed to determine drainage capacity needs.
- Exhibit 5 and Exhibit 6 Silted Culverts – Check the proposed project limits for culverts that may need to be cleaned out due to excessive silting, and incorporate culvert cleanouts into construction and maintenance projects.
- Exhibit 7 and Exhibit 8 Damaged Culverts – Check the proposed project limits for culverts that may need maintenance, and incorporate needed improvements into construction and maintenance projects.

- Exhibit 9, Scour Damage – Check the proposed project limits for culverts that may need improvements due to scour damage, and incorporate needed improvements into construction and maintenance projects.
- Exhibit 10, Culvert Considerations for Specific Upcoming Projects – Check this table for consolidated recommendations for specific upcoming projects.

1.2.2 I-40 CAMP GIS Database

The information discussed above in Section 1.2.1 is available in NMDOT's GIS system for access by NMDOT staff. For information on how to access CAMP information please contact the NMDOT Drainage Design Bureau at CAMP@dot.nm.gov

Exhibit 1 provides a summary of the culvert and the drainage-related information available in the I-40 CAMP GIS database. Updates to the I-40 CAMP database will be the responsibility of NMDOT staff or others working on the I-40 corridor.

Exhibit 1. Summary of Drainage Information Available in the I-40 CAMP GIS Database

Item	Description
I-40 CAMP Collection Points	Identifies culverts assessed as part of the I-40 Corridor Study using the CAMP data schema and assessment methodology NMDOT provided. The following web map layers were produced using this data: ▪ I-40 CAMP Risk Assessment – Silted Culverts (Greater than 60%) ▪ I-40 CAMP Risk Assessment – Physical Damage (Metal) ▪ I-40 CAMP Risk Assessment – Physical Damage (Concrete)
I-40 CAMP Risk Assessment Results	Provides the results of the culvert risk assessment. The following web map layers were produced using this data: ▪ I-40 CAMP Risk Assessment – Total Score ▪ I-40 CAMP Risk Assessment – Consequence of Failure Score ▪ I-40 CAMP Risk Assessment – Likelihood of Failure Score ▪ I-40 CAMP Risk Assessment – Hydraulic Capacity Results
I-40 State Patrol Drainage Observations	Provides New Mexico State Patrol drainage observations for I-40. This layer provides information on drainage observations from NMODT staff. See additional information in Section 2.2.3, Patrol Meetings.
I-40 CAMP Region 6 and 9 Basins	Shows the drainage basins that were identified for specific culverts as part of the hydrology work described in Chapter 3.
I-40 Culvert Material	Indicates the culvert material type including concrete, corrugated metal, or other.
I-40 Project Corridor	Shows lines representing the east and westbound lanes of I-40 through the study area.
I-40 Mileposts	Shows I-40 mileposts in 1-mile increments.
Bridges	Identifies bridge locations for I-40 and adjacent roadways.

(Table Continues)

Exhibit 1. Summary of Drainage Information Available in the I-40 CAMP GIS Database (Continued)

Item	Description
I-40 General Field Observation	Includes notes of field observations from field crews collecting culvert data in 2022.
I-40 Alternate Routes	Shows alternate routes adjacent to I-40.
Streams (NHD)	Shows streams as identified by the United States Geological Survey (USGS) National Hydrography Dataset (NHD).
Waterbodies (NHD)	Shows waterbodies as identified in the USGS National Hydrography Dataset (NHD).
Subbasins (Hydrologic Unit Code [HUC] 8)	Identifies USGS 8-digit Hydrologic Units (subbasins)
Subwatersheds (HUC 12)	Identifies USGS 12-digit Hydrologic Units (subwatersheds)
Federal Emergency Management Agency (FEMA) Floodplains	Identifies FEMA flood hazard zones
Corrosive Soils – Concrete Culverts	Identifies soils that may be corrosive to concrete culverts.
Corrosive Soils – Steel Culverts	Identifies soils that may be corrosive to metal culverts.

1.3 Summary of I-40 Drainage Recommendations

A summary of culvert and drainage recommendations for the I-40 corridor study area from MP 0 to 150 are listed below:

1.3.1 I-40 Corridor-Wide Recommendations

- Conduct a culvert inventory for alternate routes/frontage roads adjacent to I-40, and add this information to the I-40 CAMP GIS database. Consider reassessing I-40 basins, hydrology, and the culvert risk assessment with the frontage road information, or incorporate frontage road information as part of additional assessment of the highest risk culverts and as individual projects are undertaken.
- Ensure the I-40 CAMP GIS database is updated with information as projects are designed and built (per Special Provision 802-A: CAMP Data Collection) and as drainage assessments are completed.

1.3.2 I-40 Corridor Location-Specific Recommendations

Location-specific recommendations fall into the 4 categories listed below that are described in greater detail in this section.

1. Address high risk culverts and drainage areas with additional analyses
2. Assess culverts that may be undercapacity as part of project drainage analysis
3. Clean out culverts with silting greater than 60%
4. Address damaged culverts

1.3.2.1 Address High Risk Culverts and Drainage Areas with Additional Analyses

The highest risk area for flooding and drainage-related issues is the Fort Wingate area near MP 30 to MP 36. A detailed report and proposed solutions have been identified to address routine flooding in this area that often leads to roadway closures of both I-40 and NM 118. Due to the ongoing threat of I-40 closure, addressing flooding issues at Fort Wingate is listed as one of the highest priority issues that needs to be addressed in the I-40 study area.

In addition, Exhibit 3 and Exhibit 4 of this report identify 32 culvert locations, representing 50 culverts in the I-40 study area that pose the most significant risk of failure based on the culvert risk analysis documented in this report. Generally, these culverts are large, do not have capacity for 50-year and 100-year design storm flows, are located in a floodplain, are in an area with a high or moderate risk of corrosive soils, or have a history of flooding. Additional analyses are needed for these culvert locations to determine how to address potential drainage risks in these areas. At a minimum, these areas and potential drainage risks should be assessed as potential construction projects are designed and implemented.

In addition, recommendations for culverts identified as part of specific upcoming projects are provided in Exhibit 10 for the following areas:

- MP 8.7 to 9.7
- MP 17.9 to 21.9
- MP 21.9 to 25.7
- MP 42.1 to 44.8
- MP 72.2 to 85.1

1.3.2.2 Assess Culverts that May be Undercapacity as Part of Project Drainage Analysis

Supplement B, Hydraulic Analysis, and the I-40 CAMP GIS database identify culverts that may not have enough drainage capacity based on a conceptual-level hydraulic analysis. As projects are scoped, studied, and constructed in the I-40 corridor study area, these culverts should be assessed in more detail to determine if additional hydraulic capacity is needed and whether expansion should occur as part of project implementation.

1.3.2.3 Clean Out Culverts with Silting Greater than 60%

Culverts that are 60% or more silted are at a high risk for drainage issues such as overtopping, erosion at the culvert entrance, and flows bypassing the inlet and continuing downstream. There are 64 locations where culverts are 90% or more silted, as listed in Exhibit 5, and 55 culverts that are silted between 60% to 90%, as listed in Exhibit 6. Most of the blocked pipes are located in District 6. Blocked culverts should be cleaned out, either as part of ongoing maintenance activities, or as specific projects are designed, The largest culverts requiring clean-outs that are 90% or more silted are listed below, and all culverts needing sediment removal are listed in Exhibit 5 and Exhibit 6.

- Culvert Identification (ID) I40-29, located at MP 3.94, consisting of three, 48-inch culverts
- Culvert ID I40-179, located at MP 28.4, consisting of three, 48-inch by 48-inch concrete box culverts (CBC's)
- Culvert ID I40-560, located at MP 113.16, consisting of one 96-inch arch pipe

1.3.2.4 Address Damaged Culverts

Many damaged culverts were identified in the I-40 study area. Exhibit 7 identifies the culvert locations with heavy and moderately damaged metal pipes, and Exhibit 8 identifies damaged concrete pipes. Most of the damaged pipes are located within District 6. Pipes with the most severe damage are discussed below:

- There are 15 metal culverts with severe damage. All of these culverts are smaller culverts with diameters ranging from 24 inches to 36 inches.
- Concrete culverts with severe physical damage (e.g., severe concrete cracks >1/4") that are greater than 48 inches in diameter or span are at a high risk for drainage issues. These culverts are all located in District 6 and include the following:
  - → Culvert ID I40-37, located at MP 4.81, consisting of one 120-inch x 96-inch CBC
  - → Culvert ID I40-50, located at MP 7.1, consisting of one 168-inch x 168-inch CBC
  - → Culvert ID I40-51, located at MP 7.2, consisting of one 168-inch x 168-inch CBC

2. I-40 Culvert and Drainage Information Collected

2.1 Culvert Inventory

The culvert inventory consisted of a field crew walking both sides of I-40 and actively searching for culverts. Culverts were discovered by direct observation, finding a single t-post with 3 amber reflectors facing oncoming traffic, or finding elongated rectangular signs with diagonal black and yellow stripes (indicators of culverts per the *NMDOT Culvert Asset Management Program Culvert Identification Handbook (NMDOT 2022)*.

Due to the high volume of traffic on I-40 and the speed of that traffic, the field crews did not cross the traffic lanes to survey culverts in the median. However, the crews were able to visually assess many of the median drainage structures, typically inlets, from the side of I-40. In most cases, median inlets are connected to a culvert with an outlet that the crew was able to find and assess. The median inlet was noted in the GIS data for that outlet point. In these cases, the culvert outlet was collected as the GIS point, since the inlet was inaccessible.

In 2021, NMDOT crews performed a culvert survey of the culverts on I-40 from MP 117.8 to MP 150. These culverts were re-inventoried as part of the I-40 Corridor Study to confirm the previous information. In addition, the previous survey collected GIS points at both the inlet and outlet of each culvert. NMDOT has changed its methodology and is currently only collecting GIS points for the inlet side of culverts, where possible. The new inventory followed the current methodology, and it only collected a GIS point for culvert inlets, where possible (see explanation regarding median inlets above).

Culvert data inputs collected in the field are listed in Exhibit 2. The inventoried data is provided in the I-40 CAMP GIS database.

Exhibit 2. CAMP Culvert Inventory Data Inputs

Field	Description
Object ID	This is autogenerated with default unique ID.
Shape	This is autogenerated with default shape type field (point, line, polygon).
Culvert ID Original	This field is a temporary culvert ID that was only populated for culverts that were updated from the 2021 data collection effort.
Culvert ID	This is unique ID for CAMP assessed culverts.
Route ID	This is unique ID for NMDOT highway routes; it is used for linear referencing systems.
Measure	This is measured distance from the highway's origin; it is used for linear referencing systems.
Distance	This is measured distance from a fixed location. This is a placeholder for linear referencing system calculations.
Culvert Accessibility	Is the culvert accessible? A yes or no response is needed.
Reason for Inaccessibility	Identify reasons for inaccessibility such as traffic is too heavy/dangerous, culvert cannot be found, is covered in debris or vegetation, has steep slopes, is below water, is outside right-of-way fence, or is silted up.
GPS Point Location	Identify culvert characteristics. Options include inlet, outlet, MDI/SDI/CDI, slotted drain, turnout, or private/commercial driveway.

(Table Continues)

Exhibit 2. CAMP Culvert Inventory Data Inputs (Continued)

Field	Description
Drop Inlet Details	Identify the drop inlet pipe connection configuration such as 1 pipe, 2 pipes or 3 pipes in a lateral or straight down configuration.
Culvert Shape	Identify if the culvert is a box, circular, arch pipe, or elliptical.
Inlet is MDI or SDI	Identity if the drop inlet is connected to a median or shoulder drop inlet.
Inlet End Section Type	Identify end section types. Options include metal or concrete end sections, aprons for CBC, headwalls with or without wingwalls, concrete slope blankets with or without safety grates, MDI/SDI/CDI, or protruding.
Outlet End Section Type	Identify end section types. Options include metal or concrete end sections, aprons for CBC, headwalls with or without wingwalls, concrete slope blankets with or without safety grates, MDI/SDI/CDI, or protruding.
Span (inches)	Identify the culvert span in inches.
Rise (inches)	Identify the culvert rise in inches.
Number of Culverts	Identify the number of barrels.
Width of Culvert (feet)	Measure the width of the culvert in feet for multi-barrel culverts. If the crossing is normal, measure the crossings with width < 20 feet. If the crossing is skewed, measure crossings with width < 30 feet.
Material	Identify if culvert is corrugated metal, concrete, plastic, timber, or other.
Skew	Identify if culvert is normal, right forward, or left forward.
Degrees of Skew	If the culvert has a skewed alignment, use values: 22.5 or 45 or 67.5.
Erosion Control	Identify the type of erosion control. Options include wire closed riprap pad, gabions, loose riprap, grouted riprap, concrete structure, not evident, or none.
Silting	Describe the presence and severity of silting – clean, minor, 10 to 30%, 30 to 60%, 60 to 90%, or >90%.
Physical Damage	Describe the presence of physical damage. Options include none, minor damage (metal), moderate damage (metal), heavy damage (metal), circular concrete pipe damage, spalling, exposed rebar, cracks on headwall/apron, or other.
Corrosion	Describe the presence of corrosion. Options include none, minor damage (metal), moderate damage (metal), heavy damage (metal), circular concrete pipe damage, spalling, exposed rebar, cracks on headwall/apron, or other.
Channel Type	Describe the type of channel in which the culvert lies. Options include dry arroyo/ephemeral, no channel evident, running water, roadside/median ditch, concrete/asphalt lined, irrigation, or other.
Scour	Describe the presence and severity of channel scour. Options include little to no scour (<1 foot), minor 1 foot to 3 feet, major 3 feet to 8 feet, or severe scour (>8 feet).
Channel Condition	Describe the condition of the channel. Options include good, dry/heavily vegetated, swampy/heavily vegetated, weeds and/or debris, or channel degrading.
Comment	Enter any additional comments.
Collector	Provide the name of the person collecting GPS location.
Creation Date / Time	Provide the date and the time GPS data was collected (Automated).
Update Date / Time	Provide the date and the time the outlet attributes were updated (Automated).
Horizontal Accuracy (feet)	Reference the accuracy statement on iPad in feet (Automated).
Created User	Provide the name of the person collecting outlet attributes.

CBC = concrete box culvert; CDI = curb drop inlet; GPS = global positioning system; ID = identification; MDI = median drop inlet; SDI = shoulder drop inlet

As part of pre-field planning, the project team developed a Health and Safety Plan and obtained a work permit from NMDOT Districts 3 and 6. In preparation of the field work, a drainage engineer identified the direction of expected water flow in the culverts to help field staff identify inlets and outlets. A culvert inventory training was conducted with field staff in the field. As part of this training, the Health and Safety Plan and conditions of the permit were reviewed, field equipment was tested, and field staff assessed a couple of culverts together to ensure that consistent data was collected in the field. Once all the culverts had been inventoried and documented with photos attached, the data was submitted and uploaded to an adaptive GIS field map, and field map users could see (and update) the point on the map in real time. After the field inventory was completed, culvert inventory data was reviewed as part of quality control to ensure that inventory fields were completed and that photos were consistent with the conditions identified in the inventory form.

2.2 Desktop Analysis

Parametrix conducted a desktop analysis of the following conditions to supplement the culvert field inventory:

- Identified potentially corrosive soils for concrete or metal structures using United States Department of Agriculture (USDA) Web Soil Survey information.
- Identified the approximate age of culverts using as-built information NMDOT provided.
- Identified whether culverts are located within a FEMA floodplain or floodway using FEMA Flood Maps.
- Identified if the roadway is urban or rural, as defined by NMDOT. NMDOT defines urban areas as a community of over 5,000 people.
- Identified traffic volumes based on NMDOT's Roadway Functional Classification System (available on the NMDOT Public Map Gallery Website).
- Interviewed patrol supervisors for the area to determine if there is a history of flooding or other drainage concerns within the project limits.

The information collected in the desktop analysis was added to the culvert data in the I-40 CAMP GIS database. The information was then entered into a culvert risk evaluation tool (Risk Tool) to assess and evaluate the relative risk of the culverts. Limited information was available for the approximate age of the culverts. Therefore, culvert age was not found to be a distinguishing factor, and it was not included in the I-40 CAMP GIS database or the Risk Tool.

2.2.1 Corrosive Soils Assessment

The USDA Web Soil Survey was used to identify areas in the study area with soils that potentially could be corrosive to concrete or steel structures. This information was added to the I-40 CAMP GIS database. In addition, the information was used as part of the culvert risk assessment to assess the future risk of failure for each culvert. Maps showing the high, moderate, and low risk soils for steel and concrete are located in Supplement A, Corrosive Soils.

2.2.2 Culvert Age

The age of the culverts was determined using as-builts NMDOT provided. Unfortunately, due to the age of I-40 and the time when it was originally constructed, as-builts were not available for the entire study area. In addition, many of the as-builts found were for newer paving reconstruction projects,

and they were not useful for determining the culvert ages. Therefore, culvert age was not found to be a distinguishing factor, and it was not included in the I-40 CAMP GIS database or the Risk Tool.

2.2.3 Patrol Meetings

The I-40 corridor study area passes through both NMDOT District 6 and District 3. The study team met with NMDOT patrol supervisors for both districts to identify areas or recurring flooding or other drainage concerns. The major areas of concern are listed below, and they are included in the I-40 CAMP GIS database.

- From the Arizona state line at MP 0 to the Port of Entry near MP 12, erosion control has been used to protect I-40.
- From MP 4 to 4.5, the rest area has a drainage issue along Lupton Road, which is south of I-40. There is no V-ditch for drainage, so it comes across Lupton Road, sediment clogs the drainage structures, and water runs across I-40. Lupton Road is not identified as one of the potential alternate routes, since there is a state route; NM 118/Historic Route 66 located on the north side of I-40.
- From MP 22 to MP 22.5 eastbound and MP 24.5 westbound, erosion control has been used to protect I-40.
- At MP 29.5, there is a rockfall area on I-40 eastbound.
- From MP 32 to MP 34 (Fort Wingate area), flooding occurs every year on the frontage road (NM 118) at this location, and water often runs onto the I-40 lanes and can cause closures on I-40. Bohannon Huston has studied the area from MP 29.5 to 36.5 and recommended improvements to help alleviate flooding. A brief summary of the report is provided in Appendix G, Drainage.
- From MP 134 and 137, flooding occurs at the twin bridges (bridges 5815 and 5816) area. NMDOT maintenance goes out when it rains to look for washouts around the embankments on the north side of the bridge. The shoulders in this area erode when there is heavy rainfall.
- From MP 144 to MP 145, the median erodes near the hillside due to heavy rainfall.

2.2.4 Planned Culvert Improvements

NMDOT provided a list of future planned projects along the study area that had available design plans for review. Parametrix staff reviewed the design plans NMDOT provided and identified culvert improvements proposed for the various projects. Parametrix staff also identified culverts located within the study areas of the proposed projects and identified potential culverts that are at risk or could benefit from culvert cleanouts or other maintenance. The projects evaluated are listed below and are discussed in greater detail in Chapter 7 of this report:

- CN 6101581, MP 42.11 to 44.7, I-40 Reconstruction and Widening
- CN 6101550 and CN 6101551, MP 76.1 to 85.1, Bridge Rehabilitation for Multiple Bridges (bridges 7183, 7251, 7317, and 7393)
- CN 6100849, MP 8.7 to MP 9.7, Bridge Replacement over the Rio Puerco (bridges 3487 and 6128)
- CN 6100930 and 6100931, MP 17.8 to 21.9, Roadway Reconstruction
- CN 6100932, MP 21.9 to 25.7, Pavement Rehabilitation

3. Hydrology

Culvert basins and flows (hydrology) were identified as part of the culvert assessment in order to conduct a hydraulic analysis to determine culvert capacities. Given the large size of the study area, design-level hydrologic and hydraulic analysis was not conducted; rather, approximate methods were used to estimate the hydrology and hydraulics for each culvert as part of a conceptual-level analysis. The work done to identify culvert basins in the study area is discussed below. Results showing the basins that were identified are provided in the I-40 CAMP GIS database.

3.1 Methods

The Streamstats Program developed by the USGS) (https://streamstats.usgs.gov/ss/) can be used to delineate a watershed for a specific culvert location and produce a basin area and flow rate for various storm return periods. However, due to the length and the number of culverts in the study area, it was determined, in consultation with NMDOT, that the Streamstats Program would be too labor-intensive and time-consuming to be practical. Therefore, the study team developed a process to streamline the basin delineation using GIS tools, as described in the following sections.

3.1.1 Basin Delineation Workflow

Basins were delineated by using specific automated tools within ESRI ArcPro 3.0 that were available in the program toolboxes. The ESRI ArcPro tools used were Project Raster, Snap Pour Point, the Watershed tool, and Derive Continuous Flow. The NMDOT Drainage Bureau is developing a detailed explanation of the delineation process and how each tool was used.

3.1.2 Basin Delineation Preparation

As part of using the ESRI ArcPro 3.0 tools, the study team identified additional steps that were taken for the tools to identify possible basin areas and flows, as summarized below:

- Culvert inventory points that would not produce an upstream basin were removed. In addition, before delineating the basins using ESRI ArcPro, the project team identified and pulled out non-crossing structures from the database. These items included rundowns associated with bridges, median drop inlets without an upland basin, and CBCs used for vehicle or livestock access.
- Missing data points (culverts) were identified, and the field team assessed the missing data points to document culverts that were not originally inventoried.

3.1.3 Basin Flows

USGS regression equations were used to estimate drainage flows for each basin. Regional regression equations are based on the USGS report, *Analysis of the Magnitude and Frequency of Peak Discharge and Maximum Observed Peak Discharge in New Mexico and Surrounding Areas* (Waltemeyer 2008). The western portion of the study area from MP 0 to approximately MP 48 is located within the Northeastern Arizona Flood Region 9, and the eastern portion from MP 48 to 150 is within Central Mountain-Valley Region 6. Region 9 requires two parameters – area and slope – to be input into the equations, while Region 6 only requires an area. Areas and slopes (where needed) are provided in Supplement B, Hydraulic Analysis.

3.2 Results

The study team delineated 421 drainage basins for the 821 culvert locations that were identified in the study area. A drainage basin was not identified for each culvert for the reasons summarized below. Culverts without an upstream basin were excluded from the basin delineation process. Results showing the basins that were identified are provided in the I-40 CAMP GIS database.

- Basins for culverts that function as outlets for median-drop inlets were not identified because they do not have an upstream basin, median flows are typically minor, and these pipes are expected to have capacity for the median flows that they are conveying. There are approximately 120 median-drop inlets in the study area.
- Only inlet pipes were used for the analysis, so points labeled as an outlet were excluded. There are 190 outlets identified in the study area, though several of these outlets were associated with median-drop inlets.
- Culverts associated with bridge rundowns were excluded because these culverts typically convey local flows near the bridges and interchanges, and they do not have an upstream basin.
- In some locations, culverts were inventoried individually, but act in concert to pass basin flows. For the hydrologic analysis, only 1 culvert from each culvert bank was used to identify drainage basins and the excess culverts were excluded. For the hydraulic capacity analysis discussed in Chapter 4, all culverts in a culvert bank were included. Note that a single drainage basin may flow to more than 1 culvert location, so the number of culvert locations assessed for hydraulic capacity is greater than the number of drainage basins.

3.3 Limitations

There are several limitations to identifying culvert basins using streamlined GIS tools as discussed below:

- Drainage areas and structures associated with adjacent facilities, including the BNSF railroad and frontage roads were not included in this analysis; however, these adjacent facilities can influence flow patterns. This can be mitigated by examining the study area through Google Earth (or a similar program) before the field inventory is conducted to determine if this situation exists. If so, discuss it with NMDOT staff to determine if additional culverts should be inventoried. In the case of the I-40 study area, there are adjacent railroad and frontage road areas that are likely influencing drainage basis and hydraulics for I-40 culverts. However, due to the large size of the study area and the conceptual-level of the I-40 culvert analysis, drainage basins and hydraulic capacities were identified for drainage structures inventoried on only I-40.
- The analysis may indicate locations with missing data points/culverts. This usually requires further field investigation to determine if a culvert was missed during the original field inventory.
- The ESRI ArcPro program has limitations such as resampling the Digital Elevation Model (DEM) data and edge effects.

4. Hydraulic Analysis

4.1 Methods

The culvert capacity analysis was performed using an inlet control analysis applying equations provided in *HDS-5, Hydraulic Design of Highway Culverts, Third Edition, Appendix A* (Federal Highway Administration [FHWA] 2012). The NMDOT Drainage Bureau reviewed and approved use of this approach. The hydraulic and hydrologic data for each culvert is provided in a tabular format in Supplement B, Hydraulic Analysis, and it is provided visually in the I-40 CAMP GIS database.

The spreadsheet used for the culvert capacity analysis requires the basin flow (see Section 3, Hydrology), the material of the culvert, such as concrete or corrugated metal pipe (CMP), and the type of end section. The spreadsheet identifies the maximum headwater depth. If the headwater depth (distance from the invert of the pipe to the roadway shoulder) is not known, the headwater-to-diameter ratio (hw/d) should not be greater than 2. If the headwater depth is known, it can be used for a more precise analysis. For the I-40 study, the headwater depth was not known, so the headwater to diameter ratio of 2 was used for all culverts within the study area.

4.2 Results

The hydraulic analysis of the culverts within the I-40 study area was conducted at a conceptual level. Many of the existing culverts are undersized, and they do not have the capacity needed for the anticipated 50-year and 100-year storm flows. Specific results for culvert hydraulic capacity analysis are provided in Supplement B, Hydraulic Analysis, and the I-40 CAMP GIS database. There are 821 locations where culverts were identified on I-40 in the study area. Of these 821 culvert locations, the following descriptions apply:

- 146 culvert locations have the capacity for both the 50-year and the 100-year storms.
- 277 culvert locations do not have the capacity for the 50-year or the 100-year storm; 22 of these culvert locations are in District 3, and 255 are in District 6.
- 59 culvert locations have capacity for the 50-year storm, but not the 100-year storm; all of them are within District 6.
- 339 culvert locations did not have a drainage basin to analyze the capacity based on the GIS tools that were used to delineate basins. Many of these are in median areas, are bridge rundowns, or are culverts used as vehicle crossings.

4.3 Limitations

A more detailed drainage analysis should be completed during the design phase of any projects in the I-40 study area. Although new culverts should not be designed using the conceptual-level hydrology and hydraulics analysis, the information is sufficient for planning drainage improvements in the study area. This analysis is generally conservative, and some culverts may have more capacity than the conceptual-level analysis shows.

5. Culvert Risk Assessment Tool and Recommendations

The Risk Tool was developed to help the NMDOT Drainage Bureau identify and prioritize improvements to culvert structures. The Risk Tool was designed to evaluate the relative risk of the culverts that are part of the NMDOT's CAMP program. The purpose of the Risk Tool is to provide an objective risk assessment, combined with engineering judgement, to help identify where projects or maintenance actions should be focused. The Risk Tool was not designed to decide what actions should be taken, but to identify culverts in the drainage system that may need additional study and further action. Culverts with high scores have the greatest need for further investigation.

5.1 Methods

The Risk Tool is used to evaluate culvert characteristics based on field data collected in the culvert inventory and desktop data as part of the culvert risk assessment. Evaluation criteria were defined, developed, and then refined after consultation with the NMDOT Drainage Bureau staff. The team then worked together to determine the preferred scoring for each criterion. The culvert criteria were grouped into 2 scoring categories, the Likelihood of Failure (LoF) and the Consequence of Failure (CoF).The LoF score is based on the physical culvert conditions such as accessibility, material, erosion control, silting, physical damage, corrosion, scour, and channel condition. The LoF score is a measurement of how likely it is that a culvert could fail. The CoF score is based on the community and environmental impacts of a culvert failure, such as population (rural vs. urban areas), traffic volume, and detour/alternate route options. Information about the evaluation process is provided below:

5.1.1 LOF Score

5.1.1.1 Criteria

The LoF rating is derived from the physical field inventory and additional information obtained from the desktop resources described below. Each item discussed below receives a rating in the Risk Tool. A table with these attributes and ratings is provided in Supplement C, Risk Ratings.

- Physical Culvert Attributes – This information comes from CAMP inventoried field data such as accessibility, material, erosion control, silting, physical damage, corrosion, scour, and channel condition. The maximum score of any one attribute is used for the risk assessment. This score was weighted by a factor of 2 to provide a score more evenly ranked with the other attributes included in the LoF rating.
- Corrosion Potential – The USDA Web Soil Survey information was used to identify potential corrosive soils for concrete or metal structures. Maps of the I-40 study area showing the soil corrosivity for concrete and steel are provided in Supplement A, Corrosive Soils.
- History of Flooding –This information was obtained from discussions of observations of the area from maintenance patrols and district engineering staff. Culverts with a past historical record of flooding events are rated higher than culverts with no history of flooding.
- Hydraulic capacity of the culverts – Chapter 4, Hydraulic Analysis, contains a description of how this information was developed. Culverts were given scores to indicate whether they met the capacity criteria for both the design and check storms, met only the design storm criteria, or did not meet any hydraulic capacity criteria.

- Floodplains – Culverts were given a rating based on whether they are in a FEMA-identified floodway, 100-year floodplain, 500-year floodplain, or are not within any floodplains. Floodplain maps are available on the CAMP GIS database.

5.1.2 COF Score

5.1.2.1 Criteria

The CoF rating is based on the community and environmental impacts of a culvert failure. This information was determined from a desktop analysis, and it was included in the Risk Tool spreadsheet. Ratings and categories were determined in consultation with the NMDOT Drainage Bureau staff. A table listing the attributes and scoring is provided in Supplement C, Risk Ratings. Categories are listed below:

- Rural vs. Urban: It was determined whether each culvert was in a rural or urban area, based on the Urban Area Boundary GIS data NMDOT provided. Rural areas are rated higher because these areas have fewer detour options and less access to alternate routes in the event of catastrophic failure.
- Traffic Flow Disruption: This is based on NMDOT's roadway functional class. Minor collectors are rated the lowest and interstates the highest. A map of the state with the NMDOT roadway functional classes is located on the NMDOT Public Map Gallery website.
- Emergency Access: This criterion was scored by identifying if the roadway is used for emergency access and the availability of nearby routes that can be used as detours. Highways with no alternative emergency access are ranked higher than roadways that have potential alternate routes.

5.1.3 Total Risk Score

The LoF and CoF scores were multiplied together to calculate the Total Risk Score. The project team then reviewed the culvert data and scores to find a reasonable cutoff for the groupings of critical, high, moderate, and low risk. For the I-40 study area, working with the NMDOT Drainage Bureau, it was decided that all culverts that scored less than 111 were low risk. These culverts are generally in good physical condition that either meets the drainage capacity criteria, or they are located in an area with no upland basin. Culverts receiving moderate ratings (111 to 142) are usually culverts that have issues identified in the physical inventory such as silting, having minor damage to pipes, being located in a floodplain, or not meeting drainage criteria. High (143 to 186) and critical (>186) risk culverts are usually culverts that do not meet the drainage criteria, have more physical damage such as spalling and cracks in concrete, or have a prior history of flooding.

5.2 Results

Exhibit 3 and Exhibit 4 list the 32 culvert locations that pose the most significant risk of failure based on the evaluation conducted with the Risk Tool. The 32 culvert locations represent 50 culverts. Generally, these culverts do not have capacity for the 50-year and 100-year storm flows, are silted in, are damaged, or have a history of flooding. Exhibit 3 lists the 32 culvert locations in the I-40 study area with the highest risk assessment ratings organized by the highest risk culverts to the lowest, and it provides a description of why the culvert is at risk and the recommended actions. Exhibit 4 provides the same information, only it is organized by MP starting at MP 0 and continuing to MP 150. The ratings for all the culverts evaluated are provided in Supplement C, Risk Ratings.

Of the 32 culvert locations identified as being at a higher risk of failure, 31 are in District 6 (between MP 0 and 132), and one is in District 3 (between MP 132 and 150).

5.3 Limitations

The Risk Tool provides an objective method that, together with engineering judgement, helps identify where projects or maintenance actions should be focused. The Risk Tool is not designed to decide what action should be taken, but rather points out culverts in the system that need attention. Therefore, culverts with high risk scores should not be interpreted as needing immediate replacement. Instead, high scores indicate the greatest need for further investigation.

The Risk Tool is only as good as the data entered into it. Incomplete data will result in an inaccurate assessment. Care has been taken to ensure that the culvert inventory data is as complete as possible, and the desktop analysis is accurate.

Exhibit 3. I-40 Highest Risk Culverts Organized by Risk Rating

Priority	Risk Assessment Score	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Comments	Recommendations
1	220	80.98	I40-411	60	1	Corrugated Metal Circular	No-No	Channel heavily vegetated, high corrosion potential, in floodway	Clean channel, further drainage analysis
2	220	3.94	I40-29	48	3	Corrugated Metal Circular	No-No	90% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
3	209	33.85	I40-203	24	1	Corrugated Metal Circular	No-No	90% silted, past history of flooding	Clean culvert, further drainage analysis
4	209	34.18	I40-204	24	1	Corrugated Metal Circular	No-No	90% silted, past history of flooding	Clean culvert, further drainage analysis
5	198	113.16	I40-560	96	1	Corrugated Metal Arch Pipe	No-No	90% silted	Clean culvert, further drainage analysis
6	198	0.57	I40-6	48	1	Corrugated Metal Circular	No-No	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
7	198	120.99	I40-620	36	3	Corrugated Metal Circular	No-No	Major corrosion, high corrosive soils	Further drainage analysis, replace, or slipline culvert
8	198	114.84	I40-574	36	1	Corrugated Metal Circular	No-No	Severe cracks	Repair concrete, further drainage analysis
9	198	6.44	I40-44	30	2	Corrugated Metal Circular	No-No	Past history of flooding, channel heavily vegetated	Clean channel, further drainage analysis
10	198	52.58	I40-281	30	2	Corrugated Metal Circular	No-No	>90% Silted, heavy damage	Clean and repair culvert, further drainage analysis
11	198	4.2	I40-31	30	1	Corrugated Metal Circular	No-No	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
12	198	10.42	I40-77	30	1	Corrugated Metal Circular	No-No	Past history of flooding, channel heavily vegetated	Clean channel, further drainage analysis
13	198	13.08	I40-93	30	1	Corrugated Metal Circular	No-No	>90% Silted, spalling,	Clean and repair culvert, further drainage analysis

(Table Continues)

Exhibit 3. I-40 Highest Risk Culverts Organized by Risk Rating (Continued)

Priority	Risk Assessment Score	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Comments	Recommendations
14	198	2.5	I40-17	24	6	Corrugated Metal Circular	No-No	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
15	198	0.12	I40-1	24	4	Corrugated Metal Circular	No-No	Swampy channel, past history of flooding	Clean channel, further drainage analysis
16	198	0.29	I40-3	24	1	Corrugated Metal Circular	No-No	30-60% silted, past history of flooding	Clean culvert, further drainage analysis
17	198	0.36	I40-4	24	1	Corrugated Metal Circular	No-No	30-60% silted, past history of flooding	Clean culvert, further drainage analysis
18	198	0.48	I40-5	24	1	Corrugated Metal Circular	No-No	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
19	198	7.66	I40-58	24	1	Corrugated Metal Circular	No-No	Past history of flooding, minor scour and rusting	Repair culvert, further drainage analysis
20	198	10.22	I40-74	24	1	Corrugated Metal Circular	No-No	60-90% silted, past history of flooding	Clean culvert, further drainage analysis
21	198	53.9	I40-286	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
22	198	77.88	I40-400	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
23	198	84.58	I40-414	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
24	198	84.92	I40-416	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
25	198	86.03	I40-420	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
26	198	88.01	I40-427	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
27	198	88.96	I40-430	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
28	198	106.78	I40-516	24	1	Corrugated Metal Circular	No-No	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis

(Table Continues)

Exhibit 3. I-40 Highest Risk Culverts Organized by Risk Rating (Continued)

Priority	Risk Assessment Score	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Comments	Recommendations
29	187	135.36	I40-693	48	1	Corrugated Metal Circular	No-No	60-90% silted, history of flooding	Clean culvert, further drainage analysis
30	187	2.99	I40-21	36	6	Corrugated Metal Circular	No-No	30-60% silted, channel heavily vegetated, history of flooding	Clean culvert and channel, further drainage analysis
31	187	67.96	I40-342	24	1	Corrugated Metal Circular	No basin	>90% silted, in 100-yr floodplain	Clean culvert
32	187	72.95	I40-357	24	1	Corrugated Metal Circular	No basin	Channel heavily vegetated, in 100-yr floodplain	Clean channel

Entries highlighted in grey are located in District 3.

Exhibit 4. I-40 Highest Risk Culverts Organized by MP

MP	Culvert ID	Priority	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Risk Assessment Score	Comments	Recommendations
0.12	I40-1	15	24	4	Corrugated Metal Circular	No-No	198	Swampy channel, past history of flooding	Clean channel, further drainage analysis
0.29	I40-3	16	24	1	Corrugated Metal Circular	No-No	198	30-60% silted, past history of flooding	Clean culvert, further drainage analysis
0.36	I40-4	17	24	1	Corrugated Metal Circular	No-No	198	30-60% silted, past history of flooding	Clean culvert, further drainage analysis
0.48	I40-5	18	24	1	Corrugated Metal Circular	No-No	198	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
0.57	I40-6	6	48	1	Corrugated Metal Circular	No-No	198	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
2.5	I40-17	14	24	6	Corrugated Metal Circular	No-No	198	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
2.99	I40-21	30	36	6	Corrugated Metal Circular	No-No	187	30-60% silted, channel heavily vegetated, history of flooding	Clean culvert and channel, further drainage analysis
3.94	I40-29	2	48	3	Corrugated Metal Circular	No-No	220	90% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
4.2	I40-31	11	30	1	Corrugated Metal Circular	No-No	198	30-60% silted, high corrosion potential, past history of flooding	Clean culvert, further drainage analysis
6.44	I40-44	9	30	2	Corrugated Metal Circular	No-No	198	Past history of flooding, channel heavily vegetated	Clean channel, further drainage analysis
7.66	I40-58	19	24	1	Corrugated Metal Circular	No-No	198	Past history of flooding, minor scour and rusting	Repair culvert, further drainage analysis
10.22	I40-74	20	24	1	Corrugated Metal Circular	No-No	198	60-90% silted, past history of flooding	Clean culvert, further drainage analysis
10.42	I40-77	12	30	1	Corrugated Metal Circular	No-No	198	Past history of flooding, channel heavily vegetated	Clean channel, further drainage analysis

(Table Continues)

Exhibit 4. I-40 Highest Risk Culverts Organized by MP (Continued)

MP	Culvert ID	Priority	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Risk Assessment Score	Comments	Recommendations
13.08	I40-93	13	30	1	Corrugated Metal Circular	No-No	198	>90% Silted, spalling,	Clean and repair culvert, further drainage analysis
33.85	I40-203	3	24	1	Corrugated Metal Circular	No-No	209	90% silted, past history of flooding	Clean culvert, further drainage analysis
34.18	I40-204	4	24	1	Corrugated Metal Circular	No-No	209	90% silted, past history of flooding	Clean culvert, further drainage analysis
52.58	I40-281	10	30	2	Corrugated Metal Circular	No-No	198	>90% Silted, heavy damage	Clean and repair culvert, further drainage analysis
53.9	I40-286	21	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
67.96	I40-342	31	24	1	Corrugated Metal Circular	No basin	187	>90% silted, in 100-yr floodplain	Clean culvert
72.95	I40-357	32	24	1	Corrugated Metal Circular	No basin	187	Channel heavily vegetated, in 100-yr floodplain	Clean channel
77.88	I40-400	22	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
80.98	I40-411	1	60	1	Corrugated Metal Circular	No-No	220	Channel heavily vegetated, high corrosion potential, in floodway	Clean channel, further drainage analysis
84.58	I40-414	23	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
84.92	I40-416	24	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
86.03	I40-420	25	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
88.01	I40-427	26	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
88.96	I40-430	27	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis
106.78	I40-516	28	24	1	Corrugated Metal Circular	No-No	198	>90% Silted, high corrosion potential	Clean culvert, further drainage analysis

(Table Continues)

Exhibit 4. I-40 Highest Risk Culverts Organized by MP (Continued)

MP	Culvert ID	Priority	Size (inches)	# of Culverts	Culvert Type	Meets 50-year and 100-year Capacity	Risk Assessment Score	Comments	Recommendations
113.16	I40-560	5	96	1	Corrugated Metal Arch Pipe	No-No	198	90% silted	Clean culvert, further drainage analysis
114.84	I40-574	8	36	1	Corrugated Metal Circular	No-No	198	Severe cracks	Repair concrete, further drainage analysis
120.99	I40-620	7	36	3	Corrugated Metal Circular	No-No	198	Major corrosion, high corrosive soils	Further drainage analysis, replace or slipline culvert
135.36	I40-693	29	48	1	Corrugated Metal Circular	No-No	187	60-90% silted, history of flooding	Clean culvert, further drainage analysis

Entries highlighted in grey are located in District 3.

6. Culvert Maintenance Recommendations

6.1 Culvert Cleanout Recommendations

Many existing culverts on I-40 in the study area have restricted capacity caused by silting from upstream sediment. Culverts that are more than 90% blocked are at a high risk for drainage issues such as overtopping the roadway, erosion at the culvert entrance, and flows bypassing the inlet and continuing downstream, which could cause problems at downstream inlets. Inlets blocked with 60% to 90% silting should also be a maintenance priority, but they are not as high risk as the culverts that are more than 90% blocked. Priority should be given to larger culverts as they typically convey larger flows under I-40, and they have more risk of flooding impacting the roadway or other nearby facilities.

There are 64 locations where culverts are 90% or more silted, as listed in Exhibit 5. A total of 59 of the silted-in culvert locations are in District 6 (between MP 0 and 132), and 5 are in District 3 (between MP 132 and 150). Culverts located in District 3 are highlighted in Exhibit 5.

Culvert cleanouts should be prioritized by cleaning out the largest culverts first; therefore, Exhibit 5 is organized by MP, and it highlights the larger culverts (culverts greater than 48 inches in diameter) and the locations where there is more than one culvert. Most of the culverts are 30 inches or less in diameter, and all the culvert locations that are more than 90% silted in District 3 are 24-inch culverts. Two of the culverts do not have a size listed because the culverts were too silted-in to determine their size.

There are another 55 culverts that are silted between 60% to 90%, as listed in Exhibit 6. A total of 45 of these culverts are in District 6, and 10 are in District 3. One of the culverts does not have a size listed because it was too silted-in to determine its size.

Exhibit 5. I-40 Culverts Silted 90% or More

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Channel Type
1	0.20	I40-2	24	1	Circular	Roadside/Median Ditch
2	2.84	I40-20	24	1	Circular	Dry Arroyo/Ephemeral
3	3.73	I40-27	24	1	Circular	Dry Arroyo/Ephemeral
4	3.94	I40-29	48	3	Circular	Dry Arroyo/Ephemeral
5	6.61	I40-45	30	1	Circular	Dry Arroyo/Ephemeral
6	7.28	I40-52	24	1	Circular	Dry Arroyo/Ephemeral
7	9.72	I40-70	24	1	Circular	Dry Arroyo/Ephemeral
8	13.08	I40-93	30	1	Circular	Dry Arroyo/Ephemeral
9	15.66	I40-126	24	1	Circular	Dry Arroyo/Ephemeral
10	18.17	I40-138	30	1	Circular	Dry Arroyo/Ephemeral
11	18.91	I40-141	30	1	Circular	Dry Arroyo/Ephemeral
12	23.52	I40-160	24	1	Circular	Dry Arroyo/Ephemeral
13	24.23	I40-163	30	1	Circular	Dry Arroyo/Ephemeral
14	28.4	I40-179	48 x 48	3	Box	No Channel Evident
15	30.38	I40-185	12	1	Circular	Concrete/Asphalt Lined
16	30.42	I40-187	12	1	Circular	Concrete/Asphalt Lined
17	30.43	I40-188	12	1	Circular	Concrete/Asphalt Lined
18	30.46	I40-190	12	1	Circular	Roadside/Median Ditch
19	32.55	I40-200	24	1	Circular	Dry Arroyo/Ephemeral
20	33.19	I40-202	24	1	Circular	Dry Arroyo/Ephemeral
21	33.85	I40-203	24	1	Circular	Dry Arroyo/Ephemeral
22	34.18	I40-204	24	1	Circular	Dry Arroyo/Ephemeral
23	34.23	I40-205	40	1	Circular	Dry Arroyo/Ephemeral
24	41.43	I40-238	30	1	Circular	Dry Arroyo/Ephemeral
25	48.36	I40-266	36 x 36	1	Box	No Channel Evident
26	48.8	I40-268	36 x 36	1	Box	Dry Arroyo/Ephemeral
27	50.57	I40-276	30	1	Circular	Dry Arroyo/Ephemeral
28	50.91	I40-277	30	1	Circular	Dry Arroyo/Ephemeral
29	51.56	I40-278	24	1	Circular	Dry Arroyo/Ephemeral
30	52.58	I40-281	30	2	Circular	Dry Arroyo/Ephemeral
31	53.67	I40-285	24	1	Circular	Running Water
32	53.9	I40-286	24	1	Circular	Dry Arroyo/Ephemeral
33	67.96	I40-342	24	1	Circular	Dry Arroyo/Ephemeral
34	72.95	I40-357	24	1	Circular	Dry Arroyo/Ephemeral
35	77.88	I40-400	24	1	Circular	Dry Arroyo/Ephemeral
36	79.46	I40-405	24	1	Circular	Dry Arroyo/Ephemeral

(Table Continues)

Exhibit 5. I-40 Culverts Silted 90% or More (Continued)

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Channel Type
37	79.61	I40-406	24	1	Circular	Dry Arroyo/Ephemeral
38	79.76	I40-407	24	1	Circular	Dry Arroyo/Ephemeral
39	80.22	I40-408	24	1	Circular	Dry Arroyo/Ephemeral
40	81.21	I40-412	24	1	Circular	Dry Arroyo/Ephemeral
41	84.58	I40-414	24	1	Circular	Dry Arroyo/Ephemeral
42	84.76	I40-415	24	1	Circular	Dry Arroyo/Ephemeral
43	84.92	I40-416	24	1	Circular	Dry Arroyo/Ephemeral
44	85.74	I40-419	24	1	Circular	Dry Arroyo/Ephemeral
45	86.03	I40-420	24	1	Circular	Dry Arroyo/Ephemeral
46	87.23	I40-423	24	1	Circular	Roadside/Median Ditch
47	87.44	I40-425	24	1	Circular	Dry Arroyo/Ephemeral
48	87.69	I40-426	24	1	Circular	Dry Arroyo/Ephemeral
49	88.01	I40-427	24	1	Circular	Dry Arroyo/Ephemeral
50	88.35	I40-429	24	1	Circular	No Channel Evident
51	88.96	I40-430	24	1	Circular	Dry Arroyo/Ephemeral
52	91.61	I40-436	24	1	Circular	Dry Arroyo/Ephemeral
53	94.68	I40-440	36	1	Circular	Dry Arroyo/Ephemeral
54	102.98	I40-477	24	1	Circular	Other
55	106.78	I40-516	24	1	Circular	Running Water
56	107.61	I40-522	24	1	Circular	Dry Arroyo/Ephemeral
57	113.16	I40-560	96	1	Arch Pipe	Dry Arroyo/Ephemeral
58	119.77	I40-614	Unknown	1	Circular	Dry Arroyo/Ephemeral
59	126.27	I40-652	24	1	Circular	Dry Arroyo/Ephemeral
60	133.49	I40-686	Unknown	1	Circular	Other
61	133.77	I40-687	24	1	Circular	Dry Arroyo/Ephemeral
62	143.37	I40-753	24	1	Circular	Dry Arroyo/Ephemeral
63	148.63	I40-794	24	1	Circular	No Channel Evident
64	148.96	I40-796	24	1	Circular	Other

Entries highlighted in grey are in District 3, Entries in red are culverts with a size of 48 inches or more, indicating larger culverts that are a higher priority.

Exhibit 6. I-40 Culverts, 60% to 90% Silted

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Channel Type
1	3.15	I40-22	30	1	Arch Pipe	No Channel Evident
2	5.71	I40-38	24	1	Circular	Dry Arroyo/Ephemeral
3	7.42	I40-56	24	1	Circular	Dry Arroyo/Ephemeral
4	8.24	I40-62	12	1	Circular	No Channel Evident
5	8.34	I40-63	30	1	Circular	No Channel Evident
6	8.49	I40-65	24	1	Circular	Dry Arroyo/Ephemeral
7	9.60	I40-69	24	1	Circular	Running Water
8	10.22	I40-74	24	1	Circular	Dry Arroyo/Ephemeral
9	11.80	I40-85	24	1	Circular	Dry Arroyo/Ephemeral
10	13.73	I40-98	24	1	Circular	Dry Arroyo/Ephemeral
11	14.50	I40-101	24	1	Circular	Dry Arroyo/Ephemeral
12	15.99	I40-128	30	1	Circular	Dry Arroyo/Ephemeral
13	19.12	I40-142	42	1	Circular	No Channel Evident
14	19.86	I40-144	30	1	Circular	Dry Arroyo/Ephemeral
15	20.20	I40-146	24	1	Unknown	No Channel Evident
16	22.03	I40-151	30	1	Unknown	Dry Arroyo/Ephemeral
17	28.40	I40-178	48 x 48	1	Box	Running Water
18	42.38	I40-242	30	1	Circular	Dry Arroyo/Ephemeral
19	42.53	I40-243	30	1	Circular	Dry Arroyo/Ephemeral
20	46.64	I40-259	30	1	Circular	Dry Arroyo/Ephemeral
21	50.33	I40-275	36	1	Circular	Dry Arroyo/Ephemeral
22	60.24	I40-315	24	1	Circular	Dry Arroyo/Ephemeral
23	67.16	I40-340	24	1	Circular	Dry Arroyo/Ephemeral
24	67.51	I40-341	24	1	Circular	Dry Arroyo/Ephemeral
25	70.73	I40-353	72 x 36	1	Box	Irrigation
26	74.74	I40-385	48	1	Circular	Dry Arroyo/Ephemeral
27	78.25	I40-402	30	1	Circular	Dry Arroyo/Ephemeral
28	80.60	I40-410	24	1	Circular	Dry Arroyo/Ephemeral
29	85.30	I40-417	24	1	Circular	Dry Arroyo/Ephemeral
30	85.57	I40-418	24	1	Circular	Dry Arroyo/Ephemeral
31	90.18	I40-433	24	1	Circular	Dry Arroyo/Ephemeral
32	90.33	I40-434	24	1	Circular	Dry Arroyo/Ephemeral
33	105.21	I40-496	24	1	Circular	Unknown
34	106.51	I40-512	24	1	Circular	Dry Arroyo/Ephemeral
35	107.02	I40-518	24	1	Circular	Dry Arroyo/Ephemeral
36	108.14	I40-526	24	1	Circular	Roadside/Median Ditch
37	113.00	I40-556	72	1	Circular	Dry Arroyo/Ephemeral
38	113.18	I40-561	24	1	Circular	Roadside/Median Ditch
39	118.14	I40-601	30	1	Circular	Dry Arroyo/Ephemeral

(Table Continues)

Exhibit 6. I-40 Culverts, 60% to 90% Silted (Continued)

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Channel Type
40	119.15	I40-610	Unknown	1	Circular	Dry Arroyo/Ephemeral
41	120.47	I40-618	24	1	Circular	Dry Arroyo/Ephemeral
42	121.76	I40-627	24	1	Circular	Dry Arroyo/Ephemeral
43	126.57	I40-653	30	1	Circular	Dry Arroyo/Ephemeral
44	129.62	I40-668	24	1	Circular	Dry Arroyo/Ephemeral
45	130.63	I40-672	24	1	Circular	Dry Arroyo/Ephemeral
46	134.05	I40-688	24	1	Circular	Dry Arroyo/Ephemeral
47	135.36	I40-693	48	1	Circular	Dry Arroyo/Ephemeral
48	139.42	I40-707	24	1	Circular	Roadside/Median Ditch
49	139.95	I40-711	24	1	Circular	Dry Arroyo/Ephemeral
50	141.61	I40-733	24	1	Circular	Dry Arroyo/Ephemeral
51	141.77	I40-735	24	1	Circular	Roadside/Median Ditch
52	141.88	I40-740	24	1	Circular	Roadside/Median Ditch
53	145.69	I40-764	24	1	Unknown	Dry Arroyo/Ephemeral
54	145.82	I40-766	48	1	Circular	Dry Arroyo/Ephemeral
55	149.27	I40-801	48 x 24	1	Arch Pipe	Dry Arroyo/Ephemeral

Entries highlighted in grey are in District 3. Entries in red are culverts with a size of 48 inches or more, indicating larger culverts that are a higher priority.

6.2 Culvert Repair Recommendations

Physical damage to culverts was evaluated based on a field assessment of culvert inlets and outlets. The culvert assessment did not include an inspection of the area inside of the pipes, so the internal condition of the culverts is unknown. Physical damage was assessed separately for metal and concrete culverts. The results of the assessment are discussed below.

6.2.1 Metal Culverts

Although there was some evidence of corrosion and rust on several metal culverts and inlets, most culverts in the study area appeared to be in good physical condition. Structures with observed physical damage in need of repairs are listed in Exhibit 7. While there is no immediate need to replace culverts due to physical damage, repairs should be made. The *NMDOT Culvert Asset Management Program*

Example of a Heavily Damage Metal Pipe

Culvert Identification Handbook (May 2022) was used to determine if the damage to culverts was classified as "heavy" or "moderate." The handbook acknowledges that the difference between heavy and moderate damage is somewhat subjective, and it provides photos of examples of different types and extents of culvert damage. Examples of moderate damage show very evident spalling around concrete end sections and significant deformation of pipe openings. Heavy damage includes examples of exposed rebar, considerable spalling, complete deformation of pipe ends, or signs of culverts bulging or collapsing interiors.

Culverts in need of repair are listed in Exhibit 7. Exhibit 7 is organized by MP, and it highlights larger culverts (culverts greater than 48 inches in diameter). Priority should be given repairing the largest culverts, followed by locations of multiple culverts. All the heavily damaged culverts are between 12 and 36 inches in diameter, and they are corrugated metal culverts. The sizes of 2 culverts could not be determined due to the extensive damage observed. There are 15 culvert locations that were noted as having heavy damage. One of the heavily damaged culvert locations is in District 3, and the remaining 14 culvert locations are in District 6.

A total of 39 culvert locations were identified as having moderate damage. The moderately damaged culverts were also all corrugated metal with sizes ranging from 12 to 56 inches in diameter. The sizes of 2 of the culverts could not be determined. Two of the moderately damaged culverts are located in District 3. The remaining 37 culvert locations needing repairs are located in District 6.

Exhibit 7. I-40 Culverts, Physical Damage – Metal

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Culvert Material	Channel Type
Heavy Damage (Metal)							
1	10.22	I40-74	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
2	23.35	I40-159	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
3	26.03	I40-168	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
4	30.42	I40-187	12	1	Circular	Corrugated Metal	Concrete/Asphalt Lined
5	31.83	I40-196	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
6	32.55	I40-200	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
7	32.85	I40-201	24	1	Circular	Corrugated Metal	No Channel Evident
8	52.58	I40-281	30	2	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
9	95.48	I40-442	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
10	117.85	I40-598	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
11	118.92	I40-608	Unknown	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
12	120.47	I40-618	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
13	125.47	I40-647	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
14	126.12	I40-651	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
15	149.06	I40-797	Unknown	1	Circular	Corrugated Metal	No Channel Evident
Moderate Damage (Metal)							
1	7.28	I40-52	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
2	8.34	I40-63	30	1	Circular	Corrugated Metal	No Channel Evident
3	10.11	I40-72	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
4	10.33	I40-75	36	1	Circular	Corrugated Metal	No Channel Evident
5	12.23	I40-90	24	1	Unknown	Corrugated Metal	Dry Arroyo/Ephemeral
6	13.15	I40-558	24	1	Circular	Corrugated Metal	Concrete/Asphalt Lined
7	18.17	I40-138	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
8	25.14	I40-166	24	1	Circular	Corrugated Metal	No Channel Evident
9	27.08	I40-172	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
10	29.04	I40-182	56	1	Circular	Corrugated Metal/Concrete	Dry Arroyo/Ephemeral
11	32.36	I40-199	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
12	37.67	I40-221	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
13	47.47	I40-263	30	1	Circular	Corrugated Metal	Running Water
14	52.86	I40-282	24	1	Circular	Corrugated Metal	No Channel Evident
15	55.27	I40-289	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
16	58.83	I40-304	42	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
17	59.66	I40-310	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
18	67.51	I40-341	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
19	69.11	I40-346	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
20	69.68	I40-347	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
21	71.39	I40-355	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral

(Table Continues)

Exhibit 7. I-40 Culverts, Physical Damage – Metal (Continued)

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Culvert Material	Channel Type
Moderate Damage (Metal)							
22	86.03	I40-420	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
23	88.96	I40-430	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
24	104.64	I40-487	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
25	105.07	I40-494	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
26	105.13	I40-495	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
27	106.78	I40-516	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
28	108.14	I40-526	24	1	Circular	Corrugated Metal	Roadside/Median Ditch
29	117.63	I40-596	12	1	Circular	Corrugated Metal	Concrete/Asphalt Lined
30	117.66	I40-594	12	1	Circular	Corrugated Metal	Concrete/Asphalt Lined
31	118.14	I40-601	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
32	119.77	I40-614	Unknown	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
33	121.67	I40-625	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
34	121.76	I40-627	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
35	122.25	I40-633	36	2	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
36	122.52	I40-635	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
37	123.09	I40-638	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
38	133.49	I40-686	Unknown	1	Unknown	Other	Other
39	149.68	I40-807	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral

Entries highlighted in grey are in District 3, Entries in red are culverts with a size of 48 inches or more, indicating larger culverts that are a higher priority.

6.2.2 Concrete Culverts

Damage to concrete culverts was determined by field observations of culvert outlets and inlets. Damaged concrete culverts were grouped into three categories: 1) Severe concrete cracks, 2) Severe spalling and exposed rebar, and 3) Spalling and cracks on headwalls/aprons. These can most likely be repaired without replacing the entire structure. The study team recommends prioritizing repairs by addressing the culvert locations in Category 1, followed by Categories 2 and 3. Within each category, priority should be given to larger culverts (culverts that are 48 inches in diameter or larger) and those with multiple culverts at the same location.

Example of a Broken Concrete End Section

Concrete culverts with damage are organized and listed by MP in Exhibit 8. Higher priority culverts that are larger than 48 inches in diameter are highlighted in red. There are 4 culvert locations identified as Category 1 damage with severe concrete cracks of >1/4 of an inch and all of them are in District 6. There are 13 culvert locations with severe spalling. A total of 9 of these culvert locations are in District 6, and the remaining 4 culvert locations are in District 3. There are 10 culvert locations were

identified as having spalling and cracks on headwalls and aprons. A total of 7 of these locations are in District 6. The remaining 3 locations are in District 3.

Exhibit 8. I-40 Culverts, Physical Damage – Concrete

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Culvert Material	Channel Type
Severe Concrete Cracks (>1/4 in.)							
1	4.81	I40-37	120 x 96	1	Box	Concrete	Dry Arroyo/Ephemeral
2	7.10	I40-50	168 x 168	1	Box	Concrete	Dry Arroyo/Ephemeral
3	7.20	I40-51	168 x 168	1	Box	Concrete	Dry Arroyo/Ephemeral
4	114.84	I40-574	36	1	Circular	Corrugated Metal, Concrete End	Roadside/Median Ditch
Severe Spalling, Exposed Rebar							
1	18.34	I40-139	30	1	Circular	Concrete	Dry Arroyo/Ephemeral
2	19.23	I40-143	32	2	Circular	Concrete	No Channel Evident
3	46.39	I40-258	48 x 48	2	Box	Concrete	Dry Arroyo/Ephemeral
4	99.02	I40-454	48	1	Circular	Concrete	Dry Arroyo/Ephemeral
5	105.17	I40 – 823	54 x 42	1	Box	Concrete	Concrete/Asphalt Lined
6	107.79	I40-523	18	1	Circular	Concrete	Roadside/Median Ditch
7	108.20	I40-527	120 x 96	1	Box	Concrete	Dry Arroyo/Ephemeral
8	113.09	I40-557	24	1	Circular	Corrugated Metal	Roadside/Median Ditch
9	119.01	I40-609	72 x 36	1	Box	Concrete	Dry Arroyo/Ephemeral
10	146.66	I40-773	24	1	Circular	Corrugated Metal, Concrete End	Dry Arroyo/Ephemeral
11	147.75	I40-781	24	3	Circular	Concrete	Dry Arroyo/Ephemeral
12	148.15	I40-783	24	2	Circular	Concrete	Roadside/Median Ditch
13	148.56	I40-791	36	1	Circular	Concrete	Dry Arroyo/Ephemeral
Spalling and Cracks on Headwalls/Aprons							
1	7.31	I40-53	48	2	Box	Concrete	No Channel Evident
2	29.35	I40-184	120	1	Box	Concrete	Dry Arroyo/Ephemeral
3	46.24	I40-257	96	2	Box	Concrete	Dry Arroyo/Ephemeral
4	118.67	I40-605	120	1	Box	Concrete	Dry Arroyo/Ephemeral
5	125.91	I40-649	120	1	Box	Concrete	Dry Arroyo/Ephemeral
6	127.75	I40-661	84	1	Box	Concrete	Dry Arroyo/Ephemeral
7	128.81	I40-664	120	1	Box	Concrete	Dry Arroyo/Ephemeral
8	132.82	I40-684	96	1	Box	Concrete	Dry Arroyo/Ephemeral
9	136.12	I40-695	96	1	Box	Concrete	Dry Arroyo/Ephemeral
10	145.89	I40-768	24	1	Circular	Corrugated Metal, Concrete End	Dry Arroyo/Ephemeral

Entries highlighted in grey are in District 3, Entries in red are culverts with a size of 48 inches or more, indicating larger culverts that are a higher priority.

6.3 Culvert Scour

Scour depth for each culvert was assessed based on a field assessment of culvert outlets. Scour was evaluated from little to no scour to severe scour with depths of greater than 8 feet. There is one culvert with severe scour issues within the study area. There are 28 culverts with major scour with depths ranging from 3 to 8 feet. A total of 28 of these culvert locations are in District 6 and 1 culvert location is in District 3. Culverts with severe and major scour issues are listed in Exhibit 9. Priority should be given to repairing the largest culverts, followed by locations of multiple culverts.

Exhibit 9. I-40 Culverts, Scour Damage

#	MP	Culvert ID	Size (inches)	# of Culverts	Culvert Shape	Culvert Material	Channel Type
Severe Scour (>8 feet)							
1	130.84	I40-673	24	1	Circular	Corrugated metal	Dry Arroyo/Ephemeral
Major Scour (3 feet to 8 feet)							
1	5.80	I-39	36	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
2	6.06	I-40	146 x 146	1	Box	Concrete	Dry Arroyo/Ephemeral
3	6.11	I-41	64	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
4	6.16	I-42	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
5	6.61	I-45	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
6	7.10	I-48	30	2	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
7	7.28	I-52	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
8	7.35	I-55	96 x 48	2	Box	Concrete	No Channel Evident
9	7.42	I-56	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
10	11.80	I-85	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
11	18.17	I-138	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
12	18.34	I-139	30	1	Circular	Concrete	Dry Arroyo/Ephemeral
13	18.91	I-141	30	1	Circular	Concrete	Dry Arroyo/Ephemeral
14	22.54	I-154	30	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
15	23.52	I-160	24	1	Unknown	Other	Running Water
16	32.36	I-199	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
17	32.55	I-200	24	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
18	33.19	I-202	24	1	Circular	Corrugated Metal	No Channel Evident
19	34.23	I-205	40	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
20	37.77	I-222	108 x 100	1	Box	Concrete	Dry Arroyo/Ephemeral
21	42.67	I-244	96 x 120	2	Box	Concrete	Dry Arroyo/Ephemeral
22	43.74	I-249	54	1	Circular	Corrugated Metal	Dry Arroyo/Ephemeral
23	49.55	I-271	96 x 96	1	Box	Concrete	Dry Arroyo/Ephemeral
24	104.06	I-484	36	1	Circular	Concrete	Dry Arroyo/Ephemeral
25	106.35	I-511	72 x 72	1	Box	Concrete	Concrete/Asphalt Lined
26	108.20	I-527	120 x 96	1	Box	Concrete	Dry Arroyo/Ephemeral
27	115.80	I-578	24	1	Circular	Concrete	Dry Arroyo/Ephemeral
28	138.78	I-704	48	1	Circular	Concrete	Dry Arroyo/Ephemeral

Entries highlighted in grey are in District 3, Entries in red are culverts with a size of 48 inches or more, indicating larger culverts that are a higher priority.

7. Additional Design Considerations for Planned and Funded Projects

There are 5 upcoming projects on I-40 that fall within the study area. The design plans for these projects range from 30% to the final design. NMDOT provided plans for these projects. Parametrix reviewed the plans and noted culverts in the study area that were at risk based on our risk assessment, had culvert capacity issues, or had maintenance needs. See Exhibit 10 below for a summary of the analysis.

Exhibit 10. Culvert Considerations for Specific Upcoming Projects

MP	Summary	# of Culverts	Risk Assessment	Culvert Capacity	Culvert Recommendations
8.7-9.7	**6100849** **Bridge Replacement** No culvert improvements are proposed.	5 culverts: I40-66 to I40-70	▪ 1 high risk: I40-70 ▪ 3 medium risk: I40-66, 68, 69 ▪ 1 low risk: I40-67	▪ 1 culvert has capacity: I40-69. ▪ All others not analyzed.	▪ Assess high risk culverts. ▪ No physical damage identified. ▪ Clean culverts 90% or more silted: I40-70. ▪ Clean culverts 60%-90% Silted: I40-69.
17.9-21.9	**6100930, 6100931** **Roadway Reconstruction**	13 culverts: I40-138 to I40-150	▪ 3 high risk: I40-139, 141, 143 ▪ 7 medium risk: I40-138, 140, 142, 145, 146, 148, 149 ▪ 3 low risk: I40-144, 147, 150	▪ 6 culverts are undersized: I40-139, 140, 141, 142, 143, 148. ▪ 2 culverts have capacity: I40-144, 145 ▪ 5 culverts not analyzed: I40-138, 146, 147, 149, 150.	▪ Assess high risk and undersized culverts. ▪ 1 metal culvert with moderate damage: I40-138 ▪ 2 concrete culverts with severe spalling and exposed rebar: I40-139, 143 ▪ Clean culverts 90% or more silted: I40-138, 141. ▪ Clean culverts 60%-90% silted: I40-142, 144, 146.
21.9-25.7	**6100932** **Pavement Rehabilitation** I40-159: Remove and replace 10 feet, build new left end section. I40-165: Extend 9 feet, build new left end section. I40-166: Remove and replace left end section.	17 culverts: I40-151 to 40-167	▪ 5 low risk: I40-152, 154, 160, 161, 163 ▪ 9 medium risk: I40-151, 153, 155, 156, 157, 158, 159, 161, 167 ▪ 3 high risk: I40-164, 165, 166	▪ 11 culverts are undersized: I40-151, 153, 153, 157, 158, 159, 162, 164, 165, 166, 167. ▪ 4 culverts have capacity: I40-155, 156, 160, 161. ▪ 2 culverts not analyzed: I40-154, 163.	▪ Assess high risk and undersized culverts. ▪ Proposed plans include cleaning all culverts and replacing damaged culverts I40-159 and I40-165.

(Table Continues)

Exhibit 10. Culvert Considerations for Specific Upcoming Projects (Continued)

MP	Summary	# of Culverts	Risk Assessment	Culvert Capacity	Culvert Recommendations
42.1-44.8	**6101581** **Roadway Widening** Extend CBC's I40-244,245 right and left.	10 culverts: I40-241 to I40-250	▪ 6 high risk: I40-242, 243, 244, 245, 246, 250 ▪ 3 medium risk: I40-241, 248, 249 ▪ 1 low risk: I40-247 ▪	▪ 4 culverts are undersized: I40-242, 243, 246, 250. ▪ 5 have capacity: I40-241, 244, 245, 248, 249. ▪ 1 culvert was not analyzed: I40-247.	▪ Assess high risk and undersized culverts. ▪ No physical damage identified. ▪ Clean culverts 60%-90% silted: I40-242, I40-243.
72,2-85.1	**6101550, 6101551** **Bridge Rehabilitation** (6 bridges) No culvert improvements proposed.	No existing culverts	▪ NA	▪ NA	▪ NA

8. References

FHWA. 2012. *HDS-5, Hydraulic Design of Highway Culverts, Third Edition, Appendix A*. April 2012.

NMDOT. 2022. *Culvert Asset Management Program Culvert Identification Handbook*. May 2022.

Waltemeyer, S.D. 2008. *Analysis of the Magnitude and Frequency of Peak Discharge and Maximum Observed Peak Discharge in New Mexico and Surrounding Areas*. USGS Scientific Investigations Report 2008–5119.

Supplement A

Corrosive Soils

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000
Feet

- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Concrete
- High
- Low
- Moderate
- N/A

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 1 - I-40 Soil Corrosion Potential - Concrete
Milepost 1 - 15

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Gallup

20

30

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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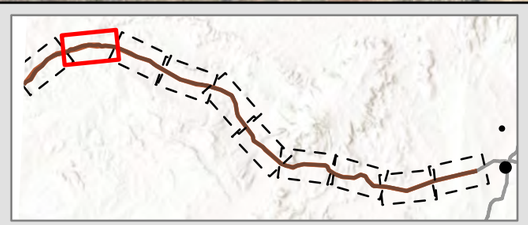
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Concrete
High
Low
Moderate
N/A

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 2 - I-40 Soil Corrosion Potential - Concrete
Milepost 15 - 30

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Gallup

30

40

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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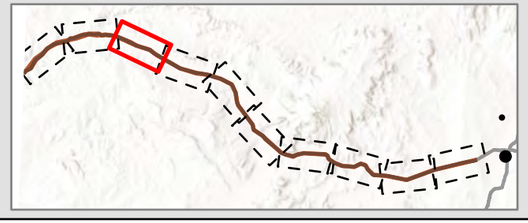
New Mexico Department of Transportation

0 1,500 3,000 6,000
Feet



County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Concrete
High
Low
Moderate
N/A

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 3 - I-40 Soil Corrosion Potential - Concrete
Milepost 30 - 45

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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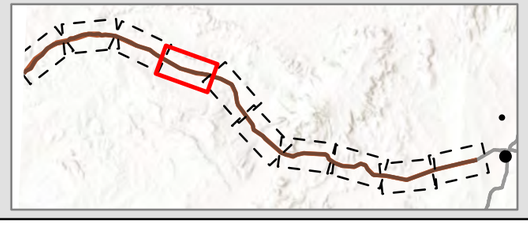

County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Concrete
High
Low
Moderate
N/A

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 4 - I-40 Soil Corrosion Potential - Concrete
Milepost 45 - 60

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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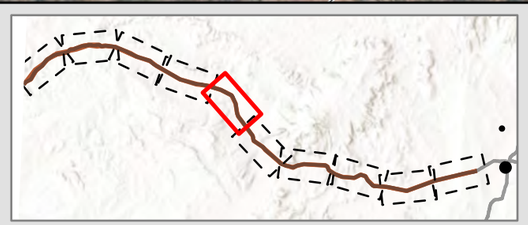
New Mexico TRANSPORTATION

0 1,500 3,000 6,000 Feet



- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Concrete
- High
- Low
- Moderate
- N/A

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 5 - I-40 Soil Corrosion Potential - Concrete
Milepost 60 - 75

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Milan

Grants

80

90

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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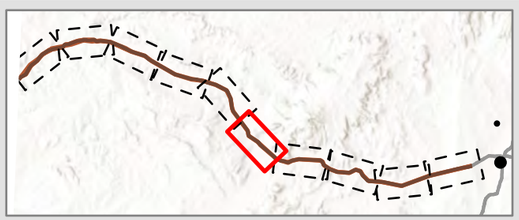
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Concrete
High
Low
Moderate
N/A

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 6 - I-40 Soil Corrosion Potential - Concrete
Milepost 75 - 90

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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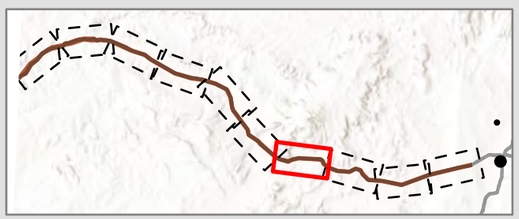
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



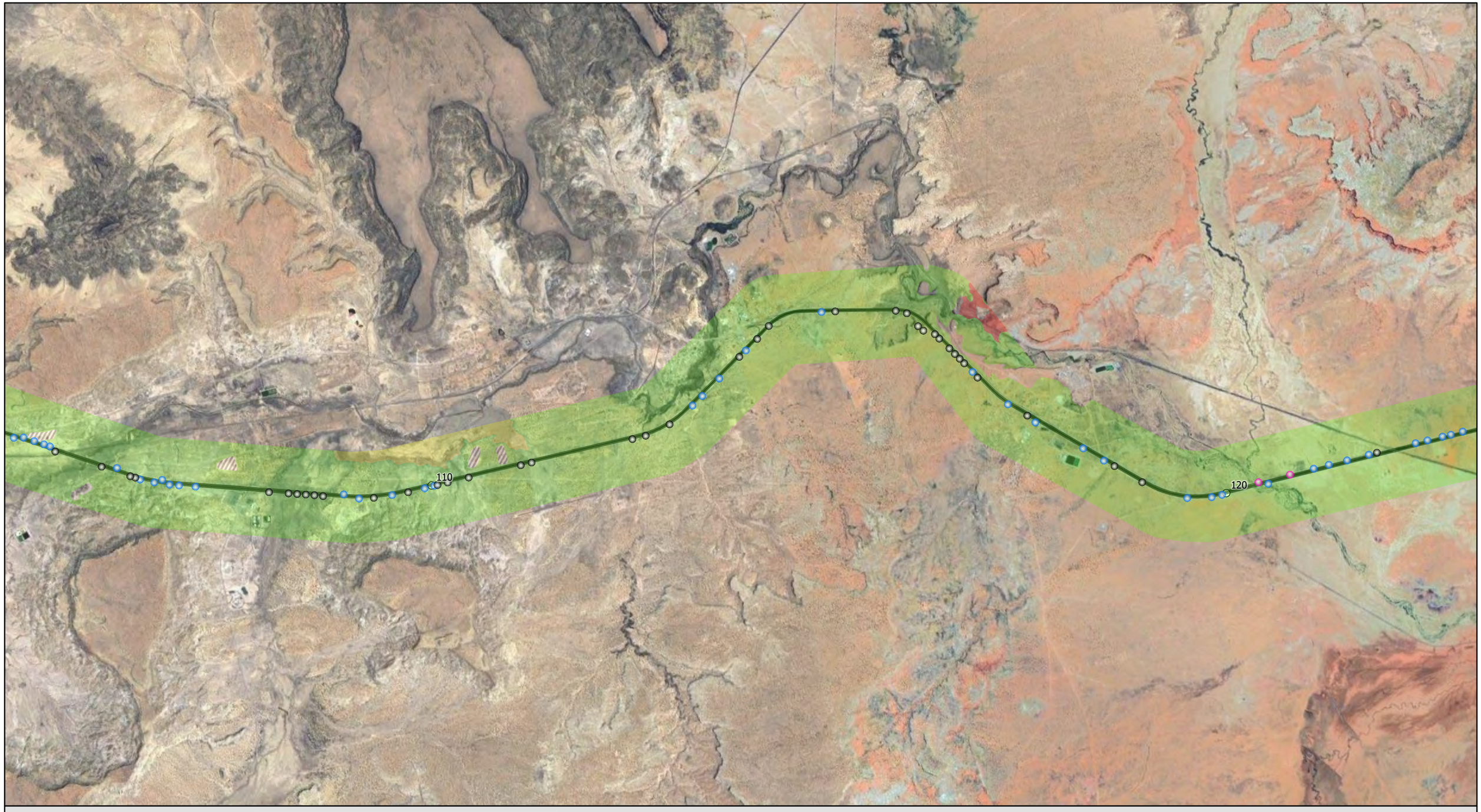
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Concrete
- High
- Low
- Moderate
- N/A

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 7 - I-40 Soil Corrosion Potential - Concrete
Milepost 90 - 105

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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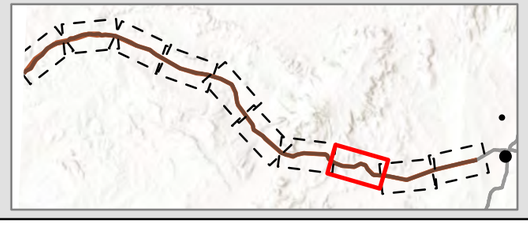
New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



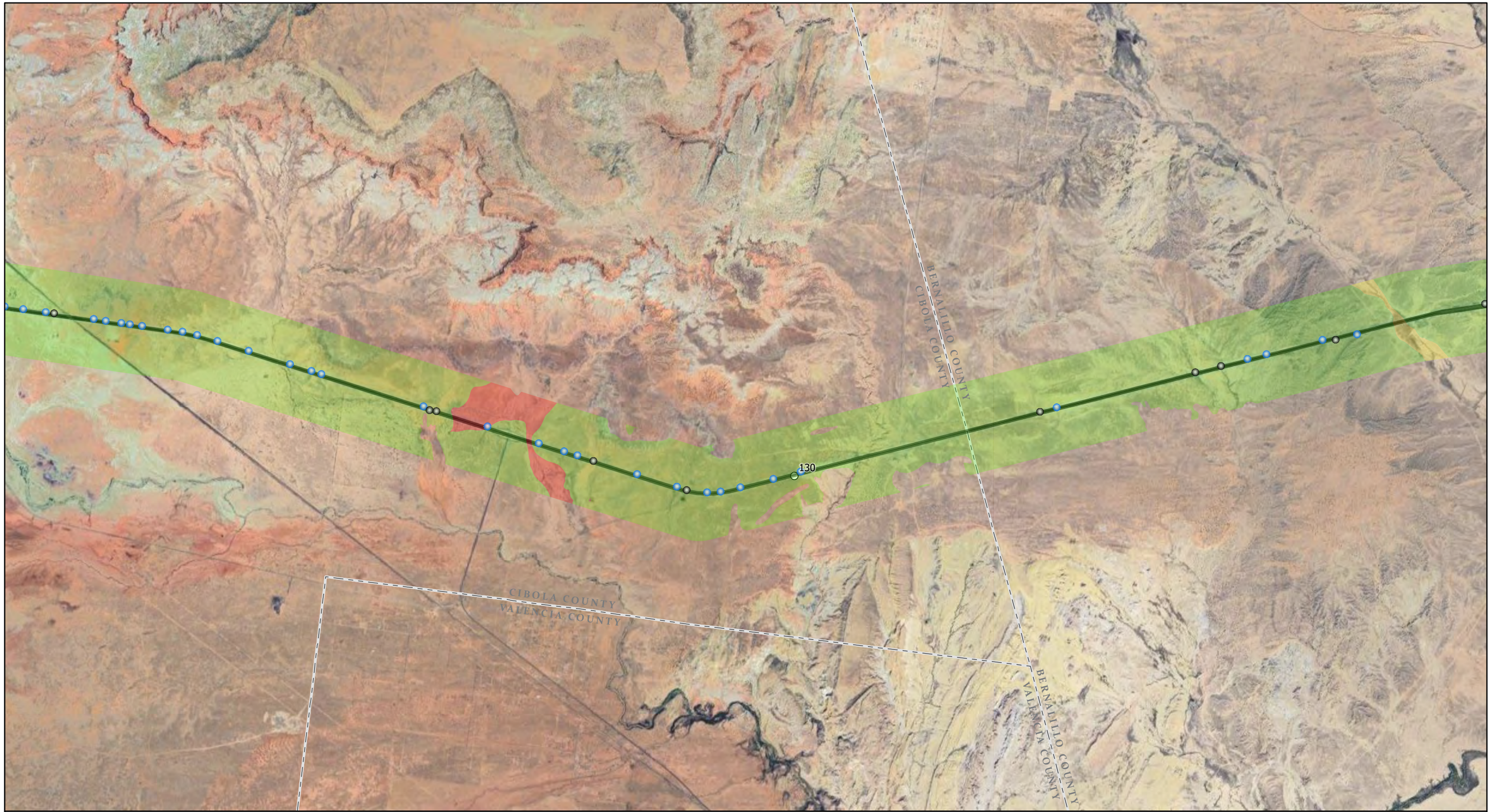
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Concrete
- High
- Low
- Moderate
- N/A

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 8 - I-40 Soil Corrosion Potential - Concrete
Milepost 105 - 120

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/24/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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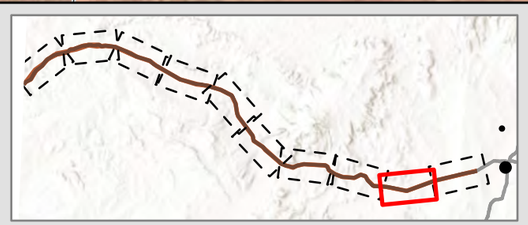
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



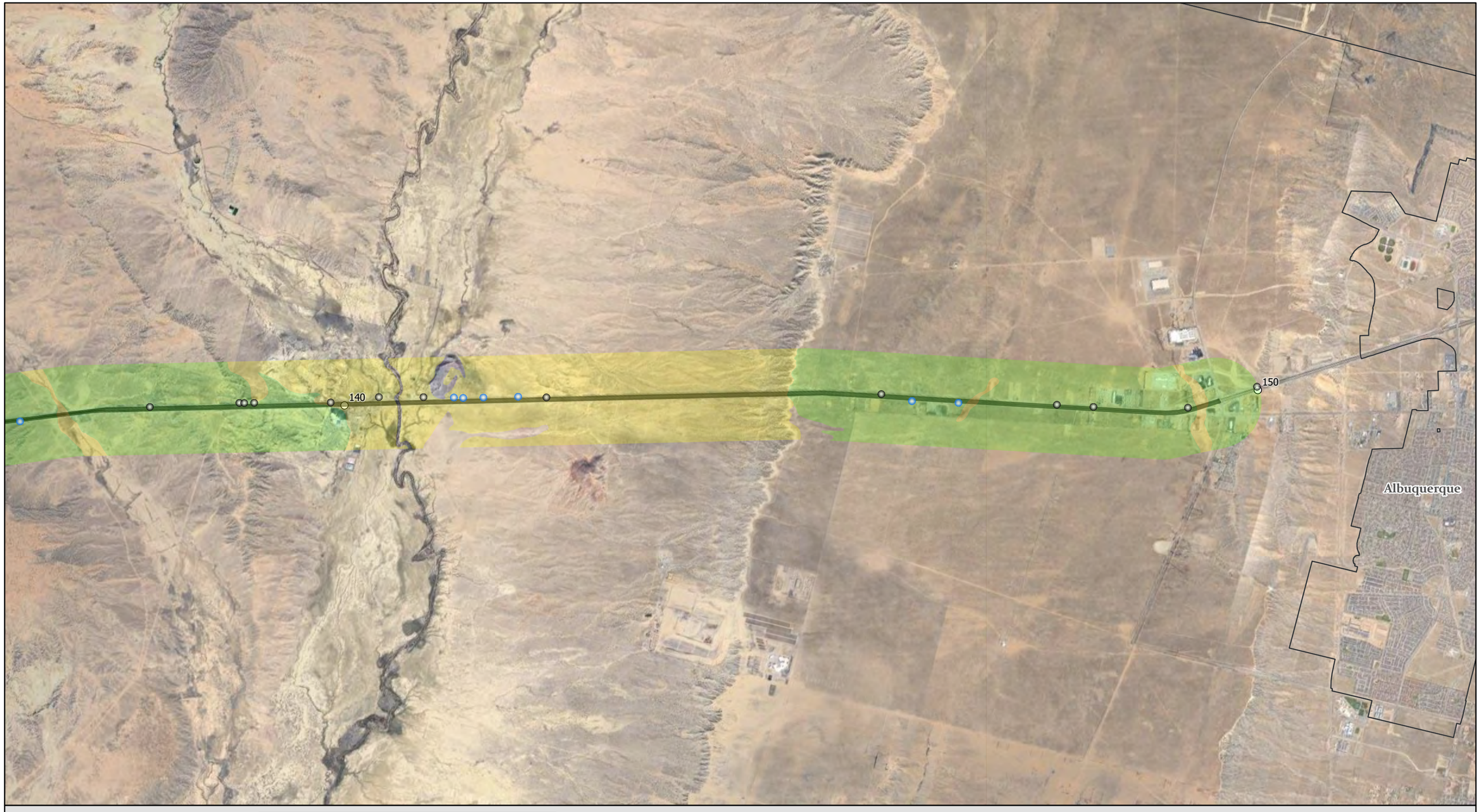
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Concrete
- High
- Low
- Moderate
- N/A

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 9 - I-40 Soil Corrosion Potential - Concrete
Milepost 120 - 135

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



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Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet

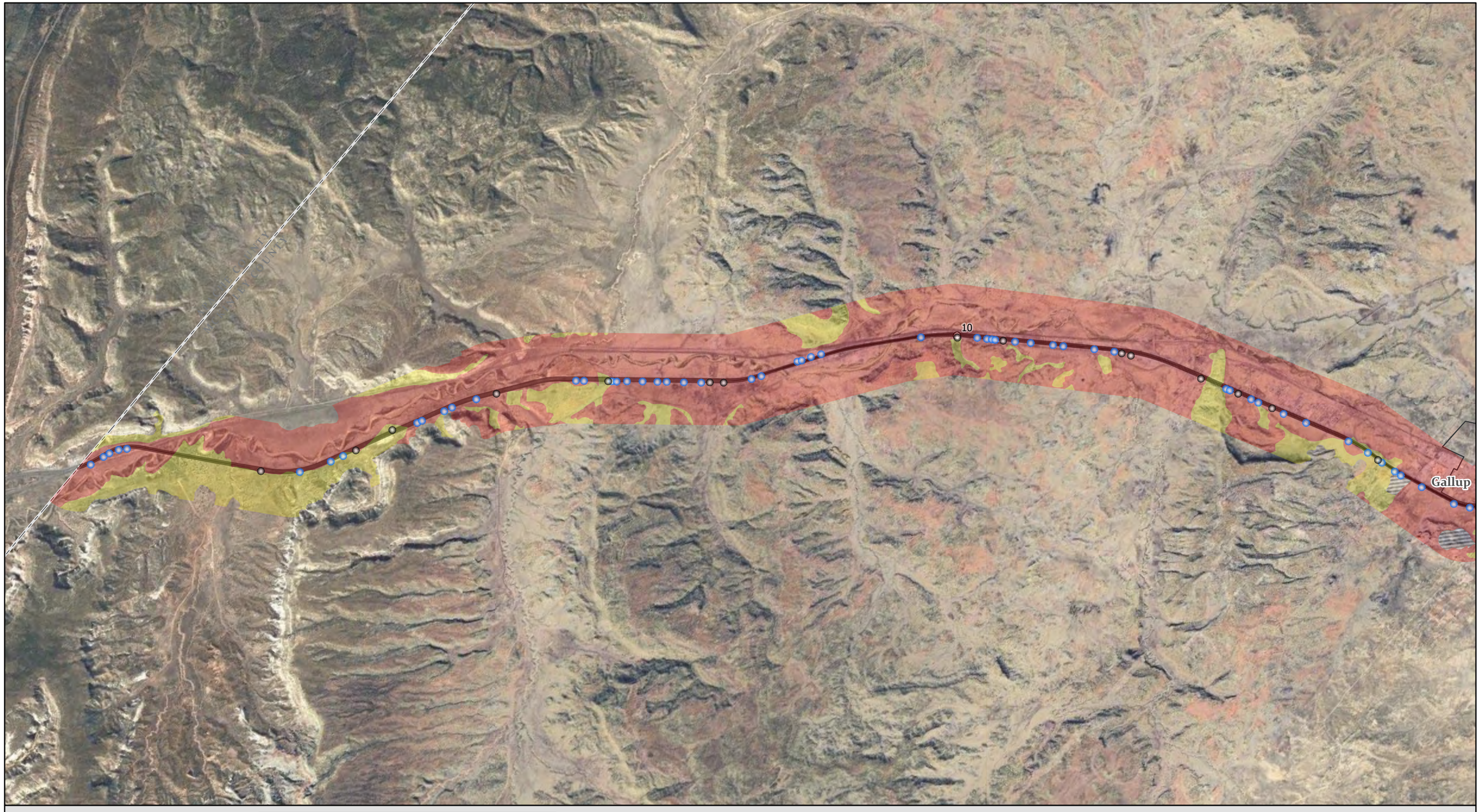
County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Concrete
High
Low
Moderate
N/A

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 10 - I-40 Soil Corrosion Potential - Concrete
Milepost 135 - 150

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



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Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet

- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 11 - I-40 Soil Corrosion Potential - Steel
Milepost 1 - 15

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Gallup

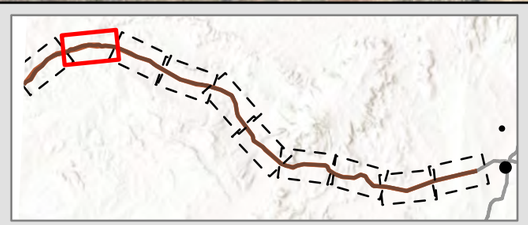
20

30

Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Steel
High
Low
Moderate
NA

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 12 - I-40 Soil Corrosion Potential - Steel
Milepost 15 - 30

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Gallup

30

40

Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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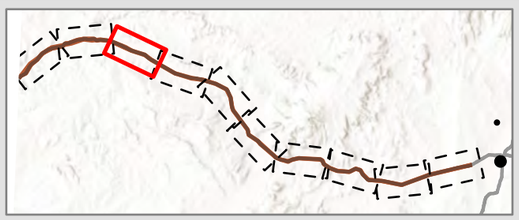
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000
Feet



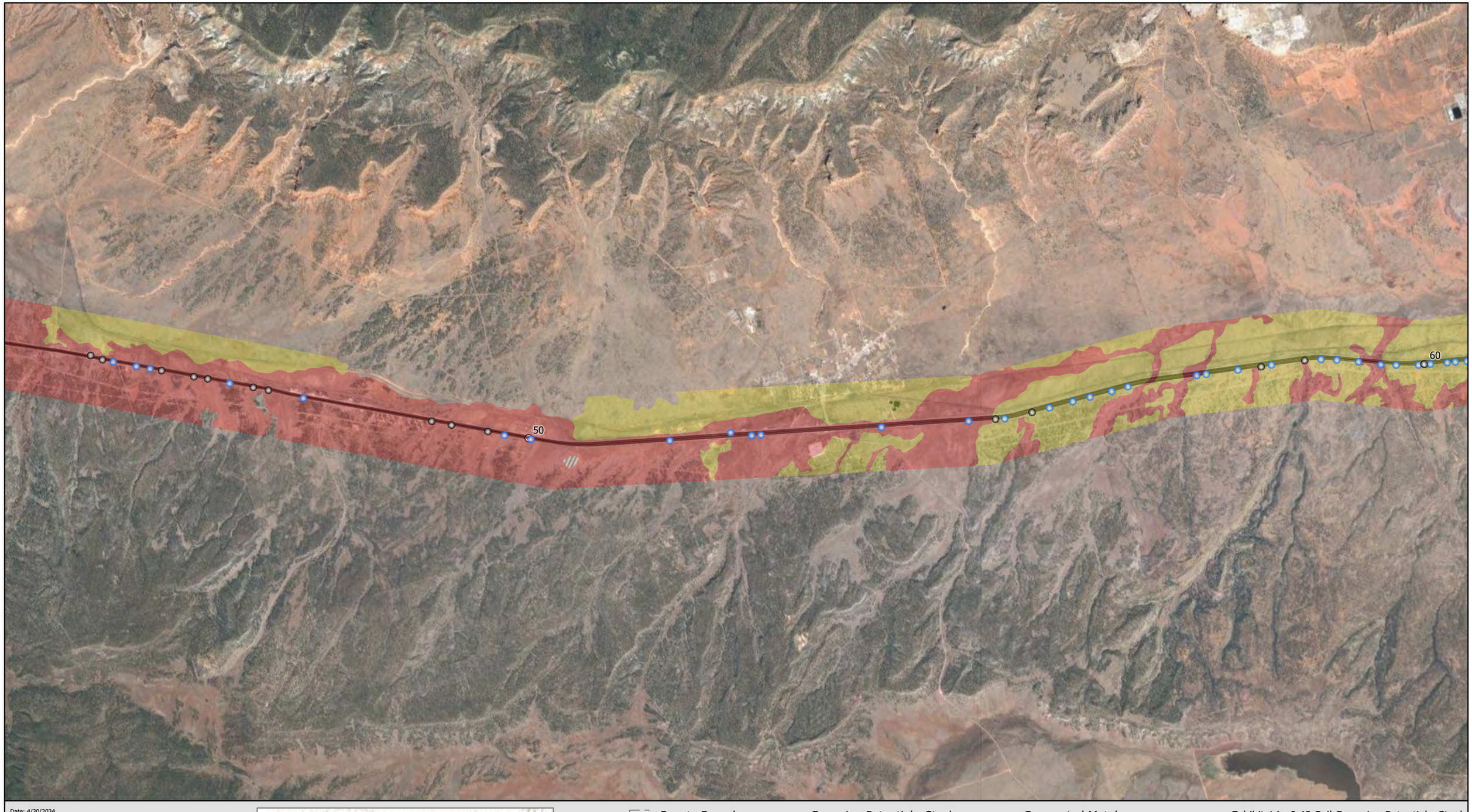
County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Steel
High
Low
Moderate
NA

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 13 - I-40 Soil Corrosion Potential - Steel
Milepost 30 - 45

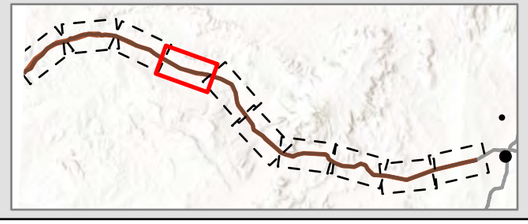
I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

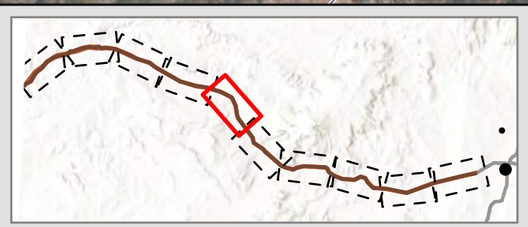
Exhibit 14 - I-40 Soil Corrosion Potential - Steel
Milepost 45 - 60

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Steel
High
Low
Moderate
NA

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 15 - I-40 Soil Corrosion Potential - Steel
Milepost 60 - 75

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Milan

Grants

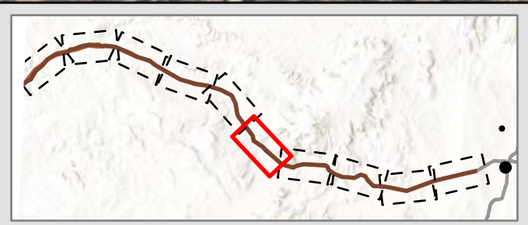
80

90

Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



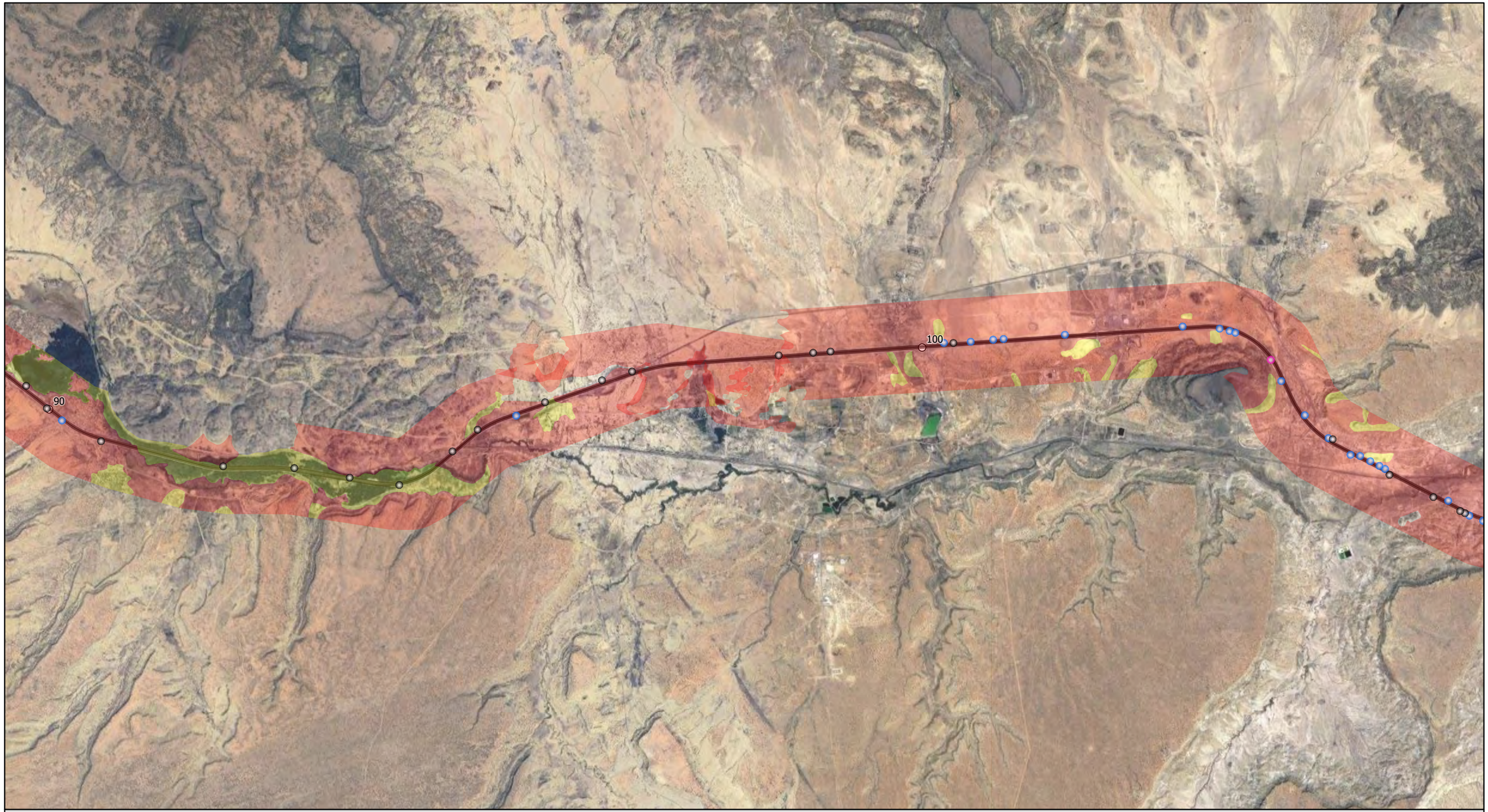
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 16 - I-40 Soil Corrosion Potential - Steel
Milepost 75 - 90

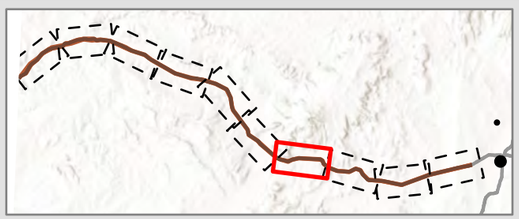
I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000 Feet



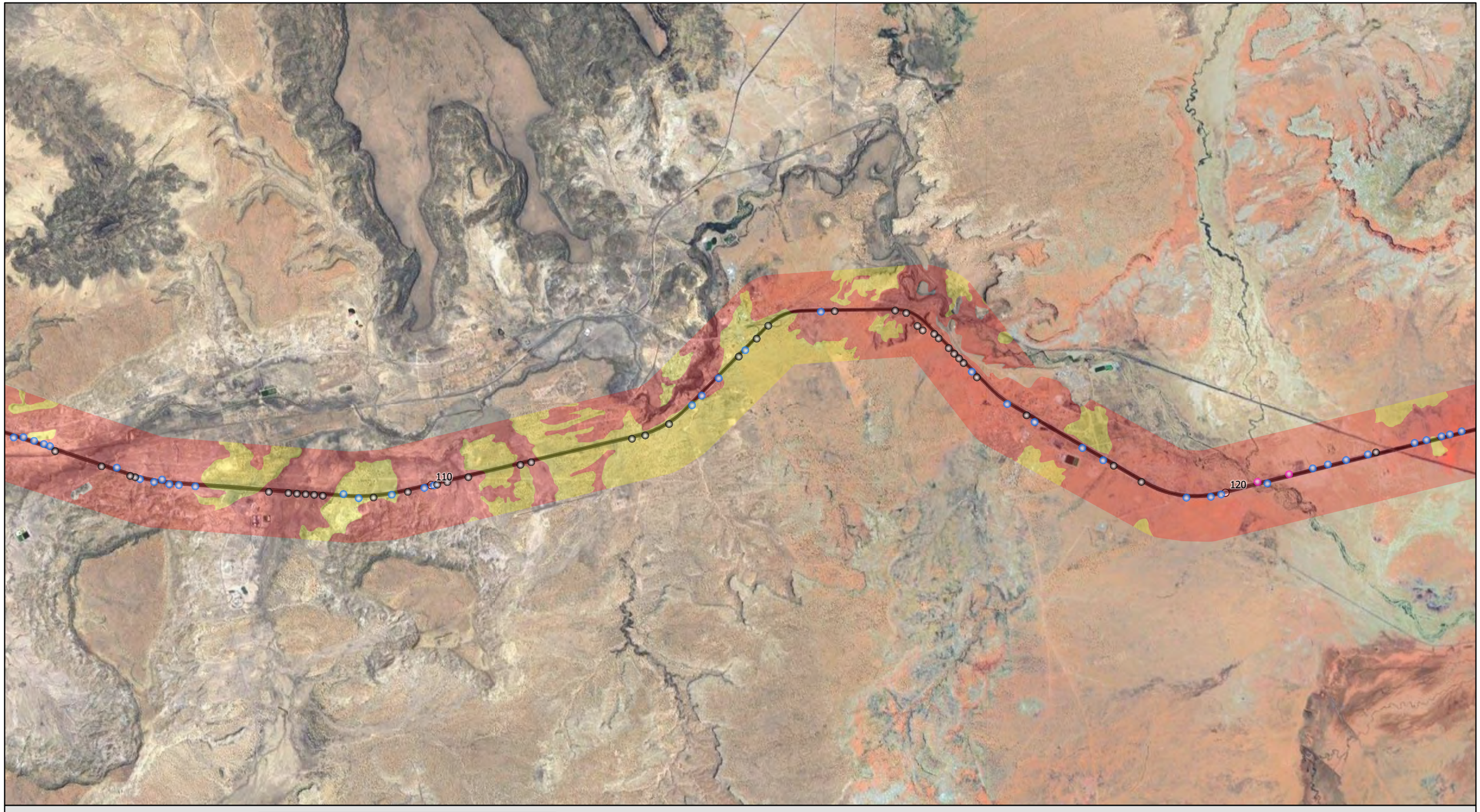
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 17 - I-40 Soil Corrosion Potential - Steel
Milepost 90 - 105

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
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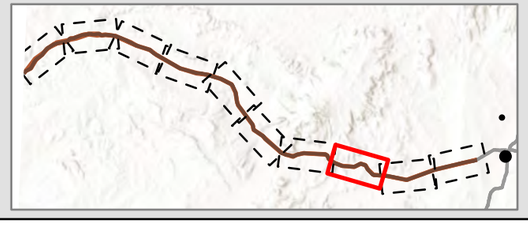
New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



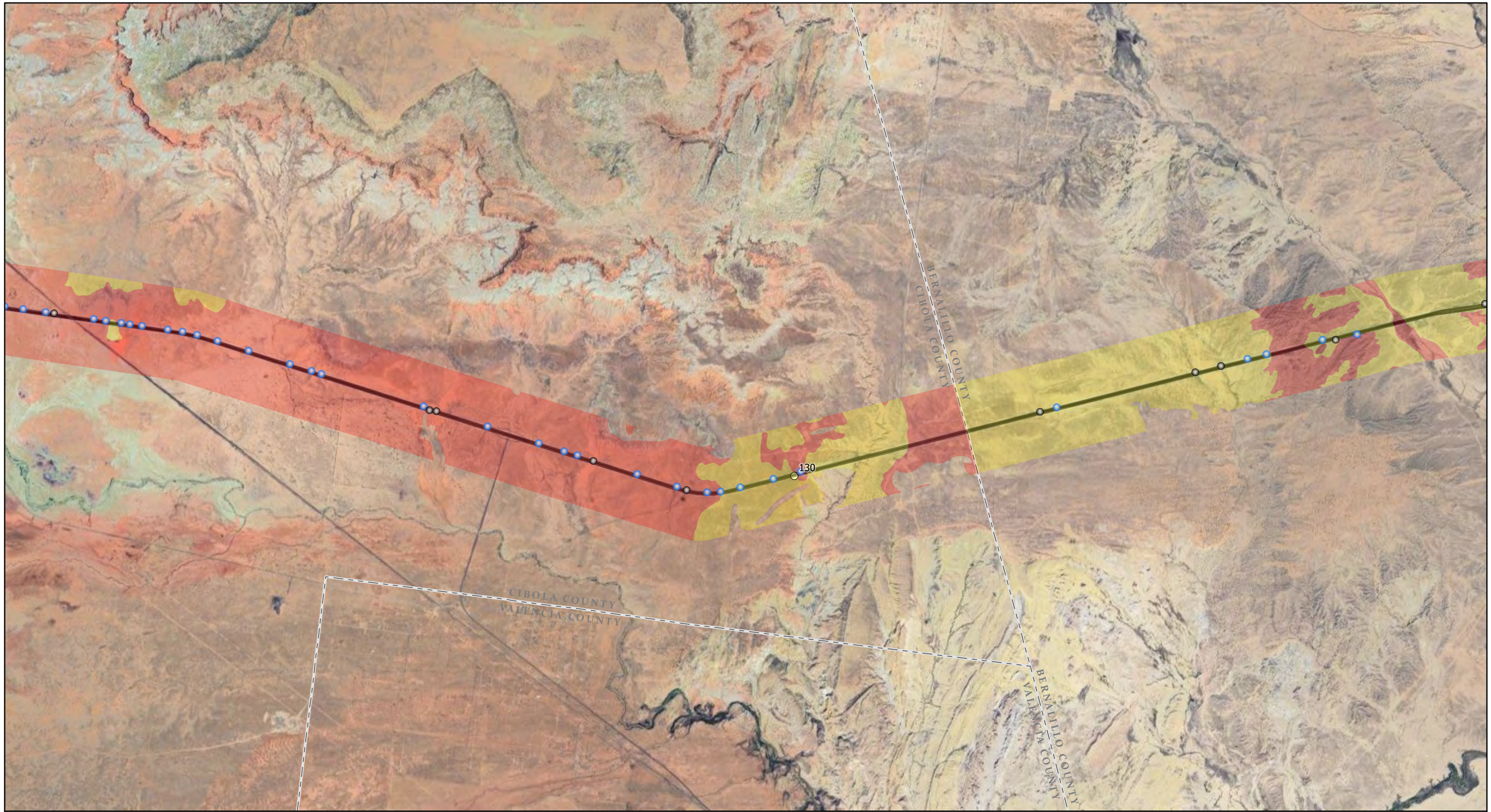
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 18 - I-40 Soil Corrosion Potential - Steel
Milepost 105 - 120

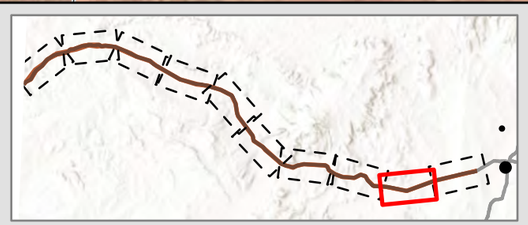
I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico DEPARTMENT OF TRANSPORTATION

0 1,500 3,000 6,000 Feet



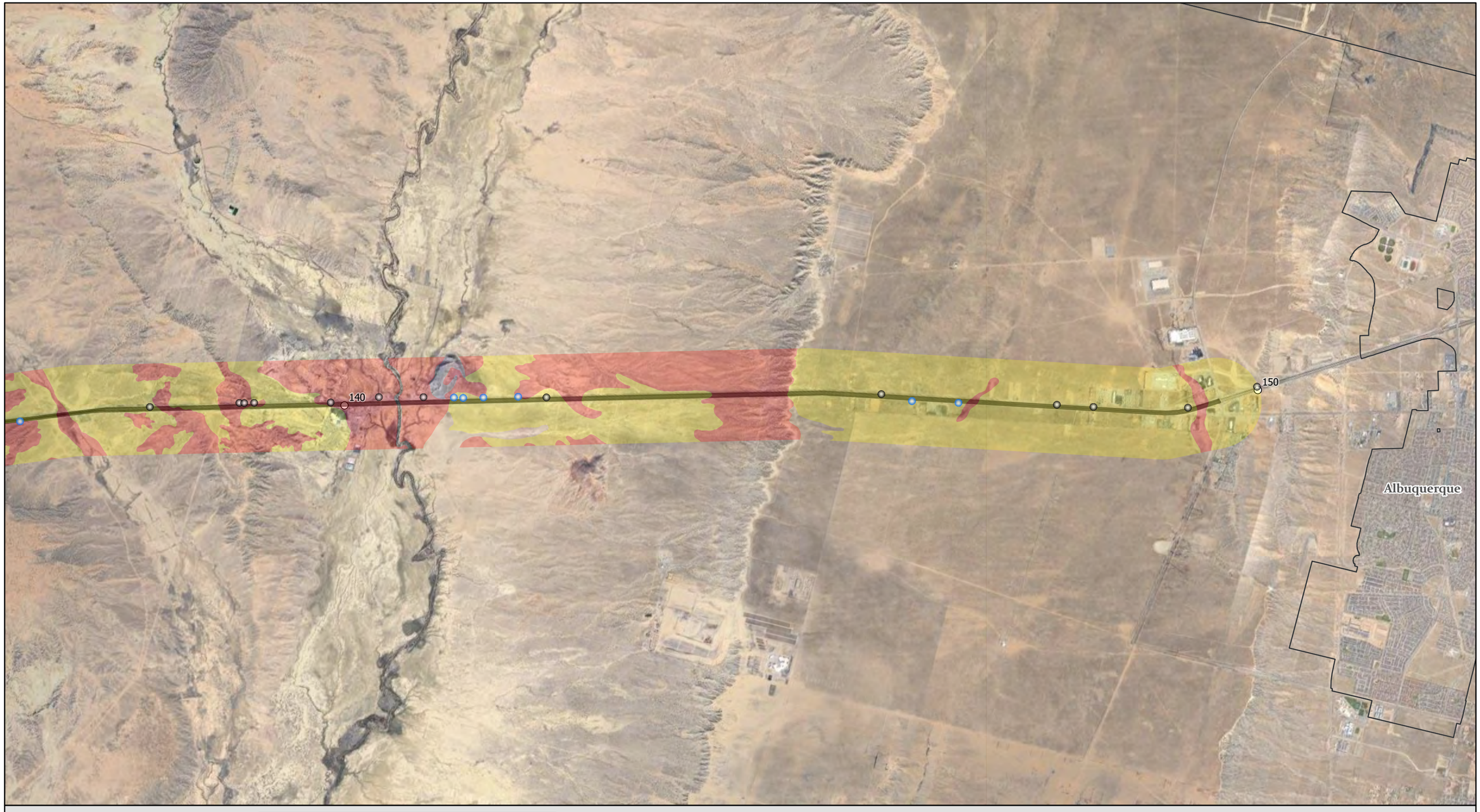
- County Boundary
- I-40
- City Limits
- I-40 Mileposts

Corrosion Potential - Steel
- High
- Low
- Moderate
- NA

- Corrugated Metal Culvert
- Concrete Culvert
- Other Material Culvert

Exhibit 19 - I-40 Soil Corrosion Potential - Steel
Milepost 120 - 135

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)



Date: 4/30/2024
Sources: United States Department of Agriculture, Web Soil Survey
PCS: NAD 1983 UTM Zone 13N
Disclaimer: This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes.

New Mexico Department of Transportation

0 1,500 3,000 6,000
Feet

County Boundary
I-40
City Limits
I-40 Mileposts

Corrosion Potential - Steel
High
Low
Moderate
NA

Corrugated Metal Culvert
Concrete Culvert
Other Material Culvert

Exhibit 20 - I-40 Soil Corrosion Potential - Steel
Milepost 135 - 150

I-40 Corridor Study
Arizona to Albuquerque, MP 0 to 150 (CN 6101580)

Supplement B

Hydraulic Analysis

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
Northeastern Arizona Flood Region 9, MP 0-48																		
I40 - 1	0.12		29.0	249	348	4	2		CMP	1	Headwall/end section	21	8.42	16.84	No	22.92	45.84	No
I40 - 3	0.29		21.2	154	215	1	2		CMP	2	Mitered	22	4894.18	9788.36	No	33317.40	66634.80	No
I40 - 4	0.36		46.7	295	411	1	2		CMP	2	Mitered	22	192293.57	384587.13	No	1151169.56	2302339.12	No
I40 - 5	0.48		11.2	147	207	1	2		CMP	3	Projecting	23	189.69	379.38	No	1729.44	3458.89	No
I40 - 6	0.57		31.8	265	371	1	4		CMP	2	Mitered	22	6.00	23.99	No	23.01	92.03	No
I40 - 11	2.08		90.2	166	227	1	10	5	CBC	1	30-75 degree wingwalls	81	0.63	3.17	Yes	0.78	3.90	Yes
I40 - 17	2.50		242.7	614	847	6	2		CMP	2	Mitered	22	390.81	781.62	No	2909.29	5818.59	No
I40 - 20	2.84		2.2	8	11	1	2		CMP	2	Mitered	22	0.74	1.48	Yes	0.90	1.80	Yes
I40 - 21	2.99		324.9	748	1032	6	3		CMP	2	Mitered	22	5.55	16.66	No	17.57	52.72	No
I40 - 22	3.15		63.3	303	421	1	2.5		RCP	1	Sq. edge w/ headwall/end section	11	2664.10	6660.26	No	18183.46	45458.64	No
I40 - 26	3.61		92.7	344	477	1	16	16	CBC	1	30-75 degree wingwalls	81	0.23	3.69	Yes	0.29	4.56	Yes
I40 - 28	3.88		6.8	117	165	1	2.5		CMP	2	Mitered	22	25.88	64.71	No	232.19	580.48	No
I40 - 29	3.94		124.6	410	568	3	4		CMP	2	Mitered	22	2.11	8.45	No	3.37	13.49	No
I40 - 31	4.20		11.2	112	156	1	2.5		CMP	2	Mitered	22	19.92	49.80	No	162.23	405.57	No
I40 - 32	4.30		20.8	198	278	3	3		CMP	2	Mitered	22	2.09	6.26	No	3.39	10.18	No
I40 - 34	4.58		104.8	318	438	1	2.5		CMP	2	Mitered	22	12890.81	32227.02	No	79432.71	198581.77	No
I40 - 37	4.81		5.0	21	29	1	10	8	CBC	1	30-75 degree wingwalls	81	0.12	0.95	Yes	0.14	1.09	Yes
I40 - 38	5.71		0.8	23	32	1	2		CMP	2	Mitered	22	1.95	3.89	Yes	3.18	6.36	No
I40 - 39	5.80		0.4	13	19	1	3		CMP	3	Projecting	23	0.58	1.74	Yes	0.71	2.13	Yes
I40 - 40	6.06		103.7	190	260	1	12.16667	12.1667	CBC	1	30-75 degree wingwalls	81	0.24	2.97	Yes	0.30	3.66	Yes
I40 - 41	6.11		3.0	27	37	1	5.333333		CMP	3	Projecting	23	0.40	2.12	Yes	0.47	2.49	Yes
I40 - 42	6.16		1.6	17	24	1	2.5		CMP	3	Projecting	23	0.90	2.25	Yes	1.16	2.89	Yes
I40 - 43	6.27		9.5	35	48	1	4		CMP	2	Mitered	22	0.64	2.57	Yes	0.77	3.09	Yes
I40 - 44	6.44		189.8	327	447	2	2.5		CMP	2	Mitered	22	219.71	549.26	No	1603.61	4009.03	No
I40 - 45	6.61		18.3	24	33	1	2.5		CMP	2	Mitered	22	1.11	2.77	Yes	1.52	3.79	Yes
I40 - 46	6.70		339.9	446	609	2	2.5		CMP	2	Mitered	22	1579.92	3949.80	No	10109.85	25274.63	No
I40 - 48	6.89		27.5	21	28	2	2.5		CMP	2	Mitered	22	0.64	1.59	Yes	0.75	1.88	Yes
I40 - 49	7.10		13.6	15	20	1	2		CMP	2	Mitered	22	1.17	2.33	Yes	1.62	3.23	Yes
I40 - 51	7.20		3139.0	1489	2012	1	14	14	CBC	1	30-75 degree wingwalls	81	0.78	10.91	Yes	0.96	13.42	Yes
Culverts (53, 54, 55, 57) are acting together	I40 - 55	7.31			203	278	8	8	4	CBC	1	30-75 degree wingwalls	81	0.26	1.03	Yes	0.32	1.27	Yes
I40 - 58	7.66		32.4	64	87	1	2		CMP	2	Mitered	22	20.07	40.14	No	136.84	273.69	No
I40 - 59	7.75		53.8	199	275	2	2		CMP	2	Mitered	22	329.85	659.70	No	2489.95	4979.89	No
I40 - 60	8.18		3.4	29	40	1	2.5		CMP	2	Mitered	22	1.32	3.29	Yes	1.98	4.95	Yes
I40 - 61	8.23		1.7	13	19	1	2.5		CMP	2	Mitered	22	0.73	1.82	Yes	0.89	2.22	Yes
I40 - 63	8.34		4.3	19	26	1	2.5		CMP	2	Mitered	22	0.91	2.29	Yes	1.19	2.98	Yes
I40 - 64	8.46		1.3	18	25	5	3		CMP	2	Mitered	22	0.26	0.79	Yes	0.32	0.95	Yes
I40 - 69	9.60		0.1	2	2	1	2		CMP	2	Mitered	22	0.31	0.63	Yes	0.38	0.75	Yes
I40 -71	10.00		403.9	346	468	1	8	6	CBC	1	30-75 degree wingwalls	81	1.01	6.05	Yes	1.29	7.75	Yes
I40 - 74	10.22		11.5	116	163	1	2		CMP	2	Mitered	22	885.67	1771.33	No	6783.97	13567.94	No
I40 - 75	10.33		9.9	100	140	1	3.5	3	ARCH	2	Mitered	342	2.98	8.94	No	6.03	18.08	No
I40 - 76	10.38		7.4	71	99	1	2.5		CMP	2	Mitered	22	4.58	11.45	No	11.35	28.36	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 77	10.42		3.4	58	82	1	2.5		CMP	2	Mitered	22	3.36	8.40	No	6.03	15.08	No
I40 - 78	10.51		260.6	318	432	1	14	14	CBC	1	30-75 degree wingwalls	81	0.27	3.80	Yes	0.33	4.69	Yes
I40 - 79	10.64		2.5	16	23	1	5.583333	5.58333	CMP	2	Mitered	22	0.26	1.45	Yes	0.31	1.73	Yes
I40 - 80	10.82		6.8	17	23	1	2.5		CMP	2	Mitered	22	0.84	2.11	Yes	1.06	2.65	Yes
I40 - 81	11.06		9.9	22	29	1	2.5		CMP	3	Projecting	23	1.08	2.69	Yes	1.42	3.54	Yes
I40 - 82	11.17		10.8	9	12	1	2.5		CMP	2	Mitered	22	0.57	1.43	Yes	0.67	1.68	Yes
I40 - 83	11.51		10.6	17	23	1	2.5		CMP	2	Mitered	22	0.85	2.12	Yes	1.06	2.65	Yes
I40 - 84	11.74		18.4	21	28	1	2.5		CMP	2	Mitered	22	0.96	2.41	Yes	1.25	3.13	Yes
I40 - 86	11.82		631.1	486	658	1	8	8	CBC	1	30-75 degree wingwalls	81	0.94	7.55	Yes	1.19	9.54	Yes
I40 - 88	11.93		23.1	26	35	1	4	8	CBC	1	30-75 degree wingwalls	81	0.21	1.66	Yes	0.25	2.00	Yes
I40 - 91	12.74		13.0	124	173	1	3		RCP	1	Sq. edge w/ headwall/end section	11	4.71	14.14	No	9.69	29.08	No
I40 - 92	13.04		4.9	90	127	1	2.5		CMP	2	Mitered	22	7.87	19.68	No	43.41	108.53	No
I40 - 93	13.08		4.1	77	109	1	2.5		CMP	2	Mitered	22	5.27	13.19	No	17.26	43.15	No
I40 - 94	13.18		93.1	356	493	1	8	8	CBC	1	30-75 degree wingwalls	81	0.76	6.10	Yes	0.95	7.63	Yes
I40 - 95	13.34		14.5	87	120	1	3.75		CMP	2	Mitered	22	1.44	5.39	Yes	2.21	8.27	No
I40 - 96	13.42		15.6	82	114	1	3.75		CMP	2	Mitered	22	1.35	5.07	Yes	2.04	7.65	No
I40 - 97	13.59		1019.4	753	1021	1	8	8	CBC	1	30-75 degree wingwalls	81	1.35	10.77	Yes	1.88	15.06	Yes
I40 - 98	13.73		4.7	12	17	1	2		CMP	2	Mitered	22	0.99	1.98	Yes	1.31	2.63	Yes
I40 - 99	13.99		11.4	13	17	1	2.5		CMP	2	Mitered	22	0.70	1.75	Yes	0.84	2.09	Yes
I40 - 101	14.50		6.8	70	97	1	2		CMP	2	Mitered	22	32.85	65.70	No	281.51	563.02	No
I40 - 103	14.75		3.7	21	29	1	2.5		CMP	2	Mitered	22	0.99	2.47	Yes	1.33	3.33	Yes
I40 - 104	14.89		35.1	55	75	1	8	2.08333	CBC	1	30-75 degree wingwalls	81	0.85	1.76	Yes	1.05	2.19	Yes
I40 - 105	14.94		8.1	36	50	1	2		CMP	2	Mitered	22	3.79	7.58	No	7.04	14.07	No
I40 - 106	15.11		20.2	53	72	1	2.5		CMP	2	Mitered	22	2.89	7.23	No	4.63	11.57	No
I40 - 107	15.18		2.1	19	26	1	2.5		CMP	2	Mitered	22	0.91	2.27	Yes	1.19	2.98	Yes
109 to 124 acting together (16 culverts)	I40 - 118	15.45	3005.2	857	1145	16	4		CMP	1	Headwall/end section	21	0.81	3.23	Yes	0.98	3.93	Yes
I40 - 127	15.84		29.0	127	176	1	2.5		CMP	1	Headwall/end section	21	12.39	30.99	No	44.91	112.29	No
I40 - 128	15.99		82.1	207	284	1	2.5		CMP	2	Mitered	22	986.53	2466.33	No	6731.69	16829.21	No
I40 - 129	16.15		4.9	38	52	1	2.5		CMP	2	Mitered	22	1.80	4.51	Yes	2.86	7.15	No
I40 - 133	16.50		6022.8	1122	1492	2	12		CMP	2	Mitered	22	0.65	7.84	Yes	0.77	9.24	Yes
I40 - 137	17.40		118.0	46	61	1	3.75		RCP	1	Sq. edge w/ headwall/end section	11	0.83	3.10	Yes	0.99	3.72	Yes
I40 - 139	18.34		18.0	158	220	1	2.5		RCP	3	Groove end projecting	13	36.99	92.47	No	292.94	732.35	No
I40 - 140	18.52		143.8	305	418	2	2.5		RCP	3	Groove end projecting	13	30.54	76.35	No	209.93	524.83	No
I40 - 141	18.91		8.6	97	136	1	2.5		RCP	3	Groove end projecting	13	5.80	14.50	No	17.10	42.75	No
I40 - 142	19.12		21.5	152	212	1	3.5		RCP	3	Groove end projecting	13	2.96	10.37	No	5.13	17.95	No
I40 - 143	19.23		37.8	132	181	2	2.666667		RCP	3	Groove end projecting	13	2.34	6.25	No	3.82	10.19	No
I40 - 144	19.86		4.4	20	27	1	2.5		RCP	3	Groove end projecting	13	0.88	2.21	Yes	1.08	2.71	Yes
I40 - 145	20.14		54.2	35	46	1	2.833333		RCP	1	Sq. edge w/ headwall/end section	11	1.10	3.11	Yes	1.42	4.02	Yes
I40 - 148	20.42		329.2	216	291	1	2.833333		RCP	3	Groove end projecting	13	37.67	106.73	No	234.81	665.28	No
No outlet shown in photos, just DI, assumed projecting	I40 - 151	22.03	12.8	92	128	1	2.5		CMP	3	Projecting	23	8.26	20.64	No	13.94	34.85	No
I40 - 152	22.27		4.1	43	61	1	2.5	2.5	CBC	1	30-75 degree wingwalls	81	1.42	3.55	Yes	2.10	5.25	No
I40 - 153	22.37		231.8	294	400	1	5		RCP	1	Sq. edge w/ headwall/end section	11	2.44	12.21	No	3.96	19.81	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 155	22.61		267.9	452	620	1	8	10	CBC	1	30-75 degree wingwalls	81	0.72	7.16	Yes	0.89	8.85	Yes
I40 - 156	22.98		643.6	741	1011	1	10	8	CBC	1	30-75 degree wingwalls	81	1.09	8.76	Yes	1.44	11.56	Yes
I40 - 157	23.08		97.6	171	234	1	2.5		CMP	1	Headwall/end section	21	39.58	98.94	No	229.96	574.89	No
I40 - 158	23.31		21.2	78	107	1	2		CMP	3	Projecting	23	15.40	30.81	No	33.81	67.61	No
I40 - 159	23.35		36.1	73	100	1	2.5		CMP	1	Headwall/end section	21	4.10	10.25	No	7.08	17.69	No
Unknown material, assumed CMP based on culvert size and other culverts nearby																		
I40 - 160	23.52		7.0	12	15	1	2	2	CMP		Groove end projecting	20	0.89	1.78	Yes	1.08	2.15	Yes
I40 - 161	23.61		6.6	12	16	1	2.5		CMP	1	Headwall/end section	21	0.65	1.63	Yes	0.78	1.96	Yes
I40 - 162	23.71		133.6	167	226	1	2.5		CMP	1	Headwall/end section	21	34.55	86.39	No	188.36	470.89	No
I40 - 164	24.87		82.1	431	600	1	3		CMP	1	Headwall/end section	21	589.73	1769.19	No	4289.50	12868.51	No
I40 - 165	25.04		145.7	356	490	1	5		CMP	1	Headwall/end section	21	3.21	16.03	No	5.47	27.34	No
I40 - 166	25.14		5.9	30	41	1	2		CMP	1	Headwall/end section	21	2.40	4.80	No	3.95	7.90	No
I40 - 167	25.31		153.0	201	274	1	5		CMP	1	Headwall/end section	21	1.49	7.46	Yes	2.17	10.85	No
I40 - 169	26.37		3.4	14	19	2	10	2.5	CBC	1	30-75 degree wingwalls	81	0.16	0.39	Yes	0.19	0.46	Yes
I40 - 170	26.41		1.8	6	9	1	2		CMP	2	Mitered	22	0.66	1.31	Yes	0.78	1.57	Yes
I40 - 171	26.62		19.7	55	75	1	2		CMP	2	Mitered	22	9.60	19.20	No	50.85	101.70	No
I40 - 172	27.08		6.8	65	90	1	2		CMP	2	Mitered	22	21.25	42.50	No	171.41	342.82	No
I40 - 173	27.27		37.7	75	102	1	2		CMP	2	Mitered	22	50.42	100.84	No	373.99	747.98	No
I40 - 174	27.48		17.3	43	58	1	3		CMP	2	Mitered	22	1.22	3.67	Yes	1.76	5.28	Yes
I40 - 175	27.55		16.4	40	54	1	3		CMP	2	Mitered	22	1.14	3.42	Yes	1.60	4.80	Yes
I40 - 176	27.78		19.6	37	51	1	3		CMP	2	Mitered	22	1.08	3.24	Yes	1.48	4.44	Yes
I40 - 177	28.05		7.7	38	53	1	2.5		CMP	2	Mitered	22	1.85	4.62	Yes	2.91	7.27	No
I40 - 178	28.40		215.8	198	268	1	4	4	CBC	1	30-75 degree wingwalls	81	2.13	8.52	No	3.34	13.36	No
I40 - 180	28.82		82.0	117	159	1	5	4	CBC	1	30-75 degree wingwalls	81	1.00	4.01	Yes	1.29	5.15	Yes
I40 - 182	29.04		80.9	122	165	1	4.666667		RCP	3	Groove end projecting	13	1.04	4.83	Yes	1.32	6.18	Yes
I40 - 183	29.35		36.4	91	125	1	2.5		CMP	2	Mitered	22	8.22	20.55	No	38.99	97.47	No
I40 - 184	30.18		1295.1	1002	1362	1	10	6.83333	CBC	1	30-75 degree wingwalls	81	1.87	12.78	Yes	2.88	19.67	No
I40 - 192	30.71		5.5	20	27	1	2.5		CMP	1	Headwall/end section	21	0.92	2.29	Yes	1.16	2.90	Yes
I40 - 193	31.00		5.4	31	43	1	1		CMP	1	Headwall/end section	21	1202.39	1202.39	No	7979.94	7979.94	No
I40 - 194	31.19		5.3	13	18	1	3		CMP	1	Headwall/end section	21	0.54	1.62	Yes	0.64	1.93	Yes
I40 - 195	31.34		16.6	25	34	1	2.5		CMP	2	Mitered	22	1.15	2.87	Yes	1.60	3.99	Yes
I40 - 196	31.83		17.6	23	31	1	2.5		CMP	3	Projecting	23	1.14	2.84	Yes	1.51	3.78	Yes
I40 - 197	32.07		17.1	21	29	1	2.5		CMP	1	Headwall/end section	21	0.96	2.41	Yes	1.22	3.04	Yes
I40 - 199	32.36		7.4	12	16	1	2		CMP	2	Mitered	22	0.96	1.92	Yes	1.25	2.51	Yes
I40 - 200	32.55		12.5	15	20	1	2		CMP	2	Mitered	22	1.16	2.32	Yes	1.61	3.22	Yes
I40 - 201	32.85		12.7	19	25	1	2		CMP	1	Headwall/end section	21	1.37	2.74	Yes	1.92	3.84	Yes
I40 - 203	33.85		6.9	29	40	1	2		CMP	2	Mitered	22	2.74	5.48	No	4.38	8.76	No
I40 - 204	34.18		2.6	29	40	1	2		CMP	2	Mitered	22	2.74	5.47	No	4.49	8.97	No
I40 - 205	34.23		0.4	19	28	1	3.333333	2.5	CMP	2	Mitered	22	0.76	1.91	Yes	0.97	2.41	Yes
I40 - 206	34.32		9.8	42	58	1	2.5		CMP	2	Mitered	22	2.11	5.27	No	3.33	8.34	No
I40 - 207	34.39		0.6	7	9	1	2		CMP	2	Mitered	22	0.67	1.35	Yes	0.82	1.63	Yes
I40 - 208	34.50		19.3	33	45	1	2		CMP	2	Mitered	22	3.33	6.66	No	5.47	10.94	No
I40 - 209	34.64		582.5	197	262	1	2		CMP	2	Mitered	22	20236.05	40472.09	No	100568.27	201136.54	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
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Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 210	34.72		10.8	14	19	1	2.5		CMP	2	Mitered	22	0.76	1.90	Yes	0.92	2.29	Yes
I40 - 211	34.84		9.2	13	17	1	2		CMP	2	Mitered	22	1.03	2.07	Yes	1.38	2.76	Yes
I40 - 212	34.95		50.4	79	107	1	2		CMP	1	Headwall/end section	21	15.89	31.78	No	62.58	125.17	No
I40 - 214	35.57		7.8	21	29	1	2.5		CMP	1	Headwall/end section	21	0.95	2.37	Yes	1.21	3.02	Yes
I40 - 215	35.83		36.4	72	98	1	4		CMP	2	Mitered	22	1.02	4.08	Yes	1.37	5.50	Yes
I40 - 216	36.00		311.8	224	301	3	6	4	CBC	1	30-75 degree wingwalls	81	0.65	2.61	Yes	0.80	3.18	Yes
I40 - 218	37.03		266.2	170	228	1	5	5	CBC	2	30-75 degree wingwalls	82	1.03	5.17	Yes	1.32	6.61	Yes
I40 - 219	37.26		724.2	479	647	1	9	8.33333	CBC	2	30-75 degree wingwalls	82	0.83	6.88	Yes	1.02	8.51	Yes
I40 - 220	37.44		18.1	22	30	1	2.5		CMP	2	Mitered	22	1.02	2.54	Yes	1.35	3.37	Yes
I40 - 222	37.77		444.2	211	282	1	9	8.33333	CBC	1	30-75 degree wingwalls	81	0.47	3.95	Yes	0.58	4.82	Yes
I40 - 223	38.28		86.5	93	125	1	4		CMP	2	Mitered	22	1.29	5.17	Yes	1.86	7.46	Yes
I40 - 224	38.55		9.2	12	16	1	2		CMP	2	Mitered	22	0.98	1.96	Yes	1.28	2.56	Yes
I40 - 225	38.91		43.0	27	37	1	3		CMP	2	Mitered	22	0.85	2.56	Yes	1.06	3.17	Yes
I40 - 226	39.14		33.9	34	45	1	3		CMP	2	Mitered	22	0.99	2.96	Yes	1.29	3.87	Yes
I40 - 227	39.28		1069.4	486	653	2	6	4	CBC	1	30-75 degree wingwalls	81	1.65	6.61	Yes	2.43	9.71	No
I40 - 228	39.52		91.3	87	117	3	6		RCP	1	Sq. edge w/ headwall/end section	11	0.29	1.77	Yes	0.36	2.14	Yes
I40 - 229	39.75		417.9	231	310	1	3		Plastic *	1	Headwall/end section	21	19.74	59.21	No	82.47	247.40	No
I40 - 231	40.00		377.7	236	317	1	4	6	CBC	1	30-75 degree wingwalls	81	1.30	7.80	Yes	1.78	10.68	Yes
I40 - 232	40.07		34.5	51	68	1	3		CMP	1	Headwall/end section	21	1.34	4.02	Yes	1.88	5.63	Yes
I40 - 234	40.25		161.1	136	184	1	5		Plastic *	1	Headwall/end section	21	1.05	5.24	Yes	1.36	6.78	Yes
I40 - 236	41.16		110.1	139	189	1	2		CMP	1	Headwall/end section	21	295.35	590.70	No	1866.34	3732.68	No
I40 - 237	41.30		52.4	82	112	1	2.5		CMP	1	Headwall/end section	21	5.02	12.56	No	9.01	22.52	No
I40 - 238	41.43		2.9	30	42	1	2.5		CMP	1	Headwall/end section	21	1.28	3.20	Yes	1.83	4.57	Yes
I40 - 239	41.55		3.4	28	39	1	2		CMP	1	Headwall/end section	21	2.22	4.43	No	3.64	7.29	No
I40 - 240	41.90		233.2	128	172	1	5		Plastic *	1	Headwall/end section	21	1.00	5.01	Yes	1.27	6.36	Yes
I40 - 241	42.20		104.3	122	165	1	5		CMP	1	Headwall/end section	21	0.97	4.83	Yes	1.23	6.14	Yes
I40 - 242	42.38		48.9	111	152	1	2.5		CMP	3	Projecting	23	11.30	28.24	No	18.89	47.22	No
I40 - 243	42.53		4.2	43	60	1	2.5		CMP	3	Projecting	23	2.29	5.73	No	3.93	9.83	No
I40 - 244	42.67		1702.6	602	807	2	8	10	CBC	1	30-75 degree wingwalls	81	0.54	5.44	Yes	0.66	6.63	Yes
I40 - 245	42.93		159.6	124	167	1	6	4	CBC	1	30-75 degree wingwalls	81	0.92	3.68	Yes	1.15	4.60	Yes
I40 - 246	43.15		3.7	35	48	1	2		CMP	1	Headwall/end section	21	3.01	6.01	No	5.18	10.35	No
I40 - 248	43.54		51.1	88	120	1	4.5		CMP	1	Headwall/end section	21	0.92	4.16	Yes	1.17	5.26	Yes
I40 - 249	43.74		55.0	72	98	1	4.5		CMP	1	Headwall/end section	21	0.81	3.66	Yes	1.00	4.49	Yes
I40 - 250	43.98		192.7	105	140	1	2		CMP	1	Headwall/end section	21	55.49	110.98	No	302.03	604.05	No
I40 - 251	45.08		680.7	449	606	1	8	5	CBC	1	30-75 degree wingwalls	81	1.64	8.18	Yes	2.41	12.07	No
I40 - 252	45.22		209.9	173	233	1	3	6	CBC	1	30-75 degree wingwalls	81	1.27	7.64	Yes	1.74	10.43	Yes
I40 - 253	45.34		13.3	34	46	1	2.5		CMP	1	Headwall/end section	21	1.42	3.56	Yes	2.05	5.13	No
I40 - 254	45.60		35.7	59	81	1	2		CMP	1	Headwall/end section	21	7.66	15.32	No	17.05	34.09	No
I40 - 255	45.76		74.0	98	132	1	5		CMP	1	Headwall/end section	21	0.83	4.15	Yes	1.03	5.13	Yes
I40 - 256	45.88		231.3	180	243	1	6	4	CBC	1	30-75 degree wingwalls	81	1.23	4.90	Yes	1.65	6.61	Yes
I40 - 257	46.24		971.9	434	583	2	8	6	CBC	1	30-75 degree wingwalls	81	0.73	4.39	Yes	0.89	5.36	Yes
I40 - 258	46.39		575.9	308	413	2	4	4	CBC	1	30-75 degree wingwalls	81	1.56	6.24	Yes	2.26	9.02	No
I40 - 259	46.64		16.6	42	57	1	2.5		CMP	1	Headwall/end section	21	1.80	4.51	Yes	2.77	6.93	No
I40 - 260	46.91		179.7	116	155	1	4	6	CBC	1	30-75 degree wingwalls	81	0.76	4.59	Yes	0.93	5.60	Yes

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		MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
	I40 - 261	47.08		342.2	214	288	1	8	4	CBC	1	30-75 degree wingwalls	81	1.11	4.45	Yes	1.45	5.81	Yes
	I40 - 263	47.47		19.1	43	58	1	2.5		CMP	1	Headwall/end section	21	1.85	4.63	Yes	2.86	7.14	No
	Central Mountain-Valley Flood Region 6, MP 48-150																		
	I40 - 269	48.91		328.5	824	1081	1	4	4	CBC	1	30-75 degree wingwalls	81	88.85	355.40	No	470.43	1881.73	No
	I40 - 270	49.14		247.6	743	977	1	6	8	CBC	1	30-75 degree wingwalls	81	1.81	14.51	Yes	2.64	21.10	No
	I40 - 271	49.55		819.7	1150	1502	1	8	8	CBC	1	30-75 degree wingwalls	81	2.20	17.64	No	3.29	26.30	No
	I40 - 273	49.73		176.9	657	866	1	4.5		CMP	1	Headwall/end section	21	22.43	100.92	No	89.12	401.05	No
	I40 - 274	50.03		50.0	414	550	1	3		CMP	1	Headwall/end section	21	467.18	1401.55	No	2570.76	7712.29	No
No Photos	I40 - 278	51.56		0.02	25	34	1	2		CMP		Groove end projecting	20	1.67	3.33	Yes	2.59	5.19	No
	I40 - 279	52.24		304.0	801	1052	1	2.5		CMP	1	Headwall/end section	21	277174.42	692936.05	No	1188434.04	2971085.09	No
	I40 - 280	52.48		65.2	457	605	2	2.5		CMP	1	Headwall/end section	21	199.16	497.90	No	1098.99	2747.46	No
	I40 - 281	52.58		26.8	330	440	2	2.5		CMP	1	Headwall/end section	21	33.02	82.54	No	159.30	398.25	No
	I40 - 286	53.90		3244.9	1901	2461	1	2		CMP	1	Headwall/end section	21	##########	909005609.37	No	##########	#########	No
	I40 - 287	54.87		14.6	264	353	1	3.5		CMP	1	Headwall/end section	21	9.38	32.82	No	23.15	81.02	No
	I40 - 288	55.17		311.4	808	1061	1	4	4	CBC	1	30-75 degree wingwalls	81	79.23	316.93	No	417.48	1669.90	No
	I40 - 289	55.27		43.3	393	523	1	3		CMP	1	Headwall/end section	21	340.07	1020.22	No	1894.49	5683.47	No
	I40 - 290	55.58		248.1	744	978	2	8	4	CBC	1	30-75 degree wingwalls	81	1.95	7.82	Yes	2.89	11.55	No
	I40 - 291	55.77		101.7	537	710	1	5		CMP	1	Headwall/end section	21	6.46	32.31	No	11.95	59.75	No
	I40 - 292	56.04		9.8	229	307	1	2.5		CMP	1	Headwall/end section	21	201.89	504.72	No	1192.92	2982.31	No
	I40 - 293	56.23		110.6	554	731	1	5		CMP	1	Headwall/end section	21	6.84	34.22	No	13.01	65.07	No
	I40 - 294	56.48		17.3	282	376	1	2.5		CMP	1	Headwall/end section	21	711.96	1779.89	No	4016.36	10040.91	No
	I40 - 295	56.67		9.6	227	304	1	2		CMP	1	Headwall/end section	21	5451.80	10903.60	No	29106.89	58213.78	No
	I40 - 296	57.45		6.4	196	264	1	2.5		CMP	1	Headwall/end section	21	81.76	204.40	No	477.20	1192.99	No
	I40 - 297	57.56		11.4	241	323	1	2.5		CMP	1	Headwall/end section	21	278.70	696.74	No	1634.19	4085.47	No
	I40 - 298	57.91		3.6	158	213	1	2.5		CMP	1	Headwall/end section	21	27.21	68.02	No	133.14	332.85	No
	I40 - 299	58.16		453.7	927	1214	1	10	6	CBC	1	30-75 degree wingwalls	81	2.18	13.09	No	3.27	19.60	No
	I40 - 301	58.28		16.4	276	369	1	2.5		CMP	2	Mitered	22	5694.57	14236.43	No	30353.50	75883.74	No
	I40 - 302	58.65		3510.1	1956	2531	2	10		RCP	1	Sq. edge w/ headwall/end section	11	1.29	12.88	Yes	1.69	16.93	Yes
	I40 - 304	58.83		39.8	381	507	1	3.5		RCP	1	Sq. edge w/ headwall/end section	11	61.66	215.82	No	357.77	1252.19	No
	I40 - 305	59.00		42.6	391	520	1	5		CMP	1	Headwall/end section	21	3.73	18.67	No	6.08	30.40	No
	I40 - 306	59.25		13.2	255	341	1	3		CMP	2	Mitered	22	202.11	606.32	No	1291.72	3875.16	No
	I40 - 309	59.50		1538.4	1448	1882	1	8.833333		CMP	2	Mitered	22	3.65	32.24	No	5.74	50.71	No
	I40 - 310	59.66		19.4	293	391	1	3		CMP	2	Mitered	22	503.49	1510.46	No	3019.50	9058.51	No
	I40 - 311	59.91		16.6	277	370	1	3		CMP	2	Mitered	22	350.37	1051.12	No	2156.24	6468.73	No
	I40 - 312	59.97		49.0	411	546	1	10	10	CBC	1	30-75 degree wingwalls	81	0.58	5.78	Yes	0.70	6.99	Yes
	I40 - 314	60.06		9.5	226	303	1	3		CMP	2	Mitered	22	92.30	276.89	No	616.56	1849.68	No
	I40 - 315	60.24		15.9	273	365	1	2		CMP	2	Mitered	22	126459.96	252919.91	No	608930.96	1217861.92	No
	I40 - 316	60.33		7.5	207	278	1	2		CMP	2	Mitered	22	27258.76	54517.53	No	140523.61	281047.23	No
	I40 - 317	60.46		21.7	306	408	1	3.5		CMP	1	Headwall/end section	21	13.77	48.18	No	45.05	157.69	No
	I40 - 318	60.86		362.6	854	1120	1	10	10	CBC	1	30-75 degree wingwalls	81	0.95	9.48	Yes	1.17	11.67	Yes
	I40 - 319	61.68		73.4	477	631	1	10	10	CBC	1	30-75 degree wingwalls	81	0.64	6.39	Yes	0.77	7.71	Yes
	I40 - 321	62.11		14.9	267	357	1	2.5		CMP	2	Mitered	22	4643.45	11608.63	No	25054.42	62636.04	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 322	62.44		45.0	399	530	1	5		CMP	1	Headwall/end section	21	3.86	19.29	No	6.30	31.52	No
I40 - 323	62.69		83.9	501	662	1	5		CMP	2	Mitered	22	7.40	37.02	No	26.19	130.97	No
I40 - 324	63.54		11.4	242	324	1	2		CMP	2	Mitered	22	64686.78	129373.56	No	320379.95	640759.90	No
I40 - 325	64.02		9.9	229	307	1	2.5		CMP	2	Mitered	22	1872.28	4680.69	No	10705.42	26763.54	No
I40 - 326	64.07		2.0	128	173	1	2		CMP	2	Mitered	22	1577.24	3154.47	No	9624.04	19248.08	No
I40 - 327	64.16		425.3	905	1187	1	10	8	CBC	1	30-75 degree wingwalls	81	1.30	10.38	Yes	1.72	13.78	Yes
I40 - 328	64.26		6.4	196	263	1	2		CMP	2	Mitered	22	19855.82	39711.63	No	103995.90	207991.80	No
I40 - 329	64.41		14.5	264	353	1	3		CMP	2	Mitered	22	256.56	769.68	No	1613.63	4840.88	No
I40 - 330	64.51		618.5	1038	1357	1	3		CMP	2	Mitered	22	723182.52	2169547.56	No	2993828.74	8981486.22	No
I40 - 331	64.65		73.9	478	633	1	10	8	CBC	1	30-75 degree wingwalls	81	0.80	6.40	Yes	0.97	7.78	Yes
I40 - 332	64.76		14.1	261	349	1	3		CMP	2	Mitered	22	237.60	712.80	No	1502.23	4506.68	No
I40 - 333	64.98		934.2	1207	1574	1	10	10	CBC	1	30-75 degree wingwalls	81	1.24	12.44	Yes	1.62	16.21	Yes
I40 - 335	65.23		48.6	410	545	1	5		CMP	3	Projecting	23	5.45	27.26	No	8.93	44.64	No
I40 - 336	65.53		368.4	859	1127	1	12		CMP	3	Projecting	23	0.90	10.79	Yes	1.10	13.20	Yes
I40 - 337	65.61		16.0	273	365	1	3.5		CMP	2	Mitered	22	27.27	95.43	No	173.10	605.86	No
I40 - 338	65.69		3.6	158	213	1	2		CMP	2	Mitered	22	5666.94	11333.88	No	31820.98	63641.97	No
I40 - 346	69.11		21.7	305	407	1	3		CMP	2	Mitered	22	651.22	1953.65	No	3834.41	11503.22	No
I40 - 347	69.68		11.5	242	324	1	3		CMP	2	Mitered	22	146.02	438.05	No	952.44	2857.33	No
I40 - 348	69.90		13.0	253	339	1	2.5		CMP	2	Mitered	22	3428.19	8570.47	No	18846.53	47116.32	No
I40 - 349	70.08		4.2	168	226	3	3		CMP	2	Mitered	22	1.67	5.01	Yes	2.52	7.57	No
I40 - 350	70.27		304.2	801	1052	1	3		CMP	1	Headwall/end section	21	22535.18	67605.53	No	102413.78	307241.33	No
351 & 352 acting together (2 culverts)	I40 - 351	70.65	7.5	207	278	2	2		CMP	1	Headwall/end section	21	52.43	104.86	No	290.36	580.72	No
	I40 - 353	70.73	421.5	902	1183	1	6	3	CBC	1	30-75 degree wingwalls	81	180.12	540.37	No	960.11	2880.34	No
	I40 - 360	74.13	69.7	468	620	1	2.5		CMP	2	Mitered	22	113949.67	284874.17	No	524569.17	1311422.92	No
362 to 391 acting together (30 culverts)	I40 - 376	74.71	17996.4	3552	4552	30	4		RCP	1	Sq. edge w/ headwall/end section	11	1.55	6.18	Yes	2.11	8.43	No
	I40 - 393	74.96	77.8	487	645	1	3		CMP	2	Mitered	22	10964.81	32894.44	No	54012.90	162038.71	No
	I40 - 395	75.27	50.8	417	553	1	3		CMP	2	Mitered	22	4394.83	13184.49	No	22799.96	68399.89	No
	I40 - 396	75.41	17.3	282	376	1	3		CMP	2	Mitered	22	388.72	1166.16	No	2374.68	7124.03	No
	I40 - 397	75.75	427.6	907	1189	1	10	8	CBC	1	30-75 degree wingwalls	81	1.30	10.40	Yes	1.73	13.81	Yes
	I40 - 398	75.86	16.0	274	366	1	3		CMP	2	Mitered	22	322.52	967.55	No	1996.45	5989.35	No
	I40 - 400	77.88	380.8	870	1140	1	2		CMP	2	Mitered	22	57314919.36	114629838.72	No	229856518.80	#########	No
	I40 - 401	78.07	16.7	278	371	1	2.5		CMP	2	Mitered	22	5877.54	14693.84	No	31270.45	78176.13	No
	I40 - 402	78.25	71.2	471	625	1	2.5		CMP	2	Mitered	22	119002.01	297505.03	No	546876.28	1367190.70	No
	I40 - 404	78.62	33.0	356	474	3	2.5		CMP	2	Mitered	22	28.41	71.03	No	176.09	440.23	No
	I40 - 409	80.41	0.0	32	44	1	2		CMP	1	Headwall/end section	21	2.65	5.30	No	4.47	8.93	No
	I40 - 411	80.98	39237.7	4721	6022	1	5		CMP	1	Headwall/end section	21	345959.16	1729795.79	No	1266323.65	6331618.27	No
	I40 - 414	84.58	1.6	119	161	1	2		CMP	1	Headwall/end section	21	113.44	226.88	No	708.57	1417.13	No
	I40 - 416	84.92	52.0	420	558	1	2		CMP	3	Projecting	23	116575.64	233151.29	No	555924.47	1111848.95	No
	I40 - 420	86.03	3.0	149	201	1	2		CMP	3	Projecting	23	207.25	414.51	No	1455.08	2910.16	No
	I40 - 421	86.27	145.7	612	808	1	10	8	CBC	1	30-75 degree wingwalls	81	0.95	7.60	Yes	1.17	9.39	Yes
	I40 - 422	86.97	671.9	1070	1398	1	10	8	CBC	1	30-75 degree wingwalls	81	1.53	12.26	Yes	2.12	16.97	No
	I40 - 424	87.35	1304.0	1363	1774	1	10	8	CBC	1	30-75 degree wingwalls	81	2.05	16.40	No	3.01	24.06	No
	I40 - 427	88.01	24.4	319	425	1	2		CMP	1	Headwall/end section	21	37812.92	75625.83	No	183961.37	367922.74	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

	Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
		MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
	I40 - 428	88.31		240.5	735	967	1	10	8	CBC	1	30-75 degree wingwalls	81	1.09	8.71	Yes	1.38	11.05	Yes
	I40 - 430	88.96		92.4	519	686	1	2		CMP	1	Headwall/end section	21	537199.53	1074399.07	No	2364372.22	4728744.43	No
	I40 - 431	89.19		9866.9	2852	3668	1	12	12	CBC	1	30-75 degree wingwalls	81	1.92	22.99	Yes	2.73	32.71	No
	I40 - 432	89.97		87.9	509	674	1	10	10	CBC	1	30-75 degree wingwalls	81	0.67	6.67	Yes	0.81	8.05	Yes
	I40 - 433	90.18		57.4	436	578	1	2		CMP	3	Projecting	23	142564.80	285129.59	No	673696.72	1347393.45	No
	I40 - 435	90.66		477.9	945	1237	1	10	8	CBC	1	30-75 degree wingwalls	81	1.35	10.81	Yes	1.81	14.49	Yes
	I40 - 437	92.04		537.9	986	1291	1	10	8	CBC	1	30-75 degree wingwalls	81	1.41	11.27	Yes	1.91	15.28	Yes
	I40 - 438	93.43		2105.9	1623	2107	1	10	10	CBC	1	30-75 degree wingwalls	81	1.68	16.80	Yes	2.36	23.57	No
	I40 - 439	93.98		251.9	748	983	1	8	12	CBC	1	30-75 degree wingwalls	81	0.83	10.02	Yes	1.01	12.15	Yes
	I40 - 440	94.68		11.5	242	324	1	3		RCP	1	Sq. edge w/ headwall/end section	11	41.58	124.73	No	244.16	732.49	No
	I40 - 441	95.03		825.8	1153	1506	1	8	8	CBC	1	30-75 degree wingwalls	81	2.21	17.70	No	3.30	26.42	No
	I40 - 442	95.48		133.2	593	782	1	3		CMP	3	Projecting	23	2203.49	6610.47	No	12074.59	36223.77	No
	I40 - 445	95.82		279.3	777	1020	1	3		RCP	1	Sq. edge w/ headwall/end section	11	43894.16	131682.47	No	197674.51	593023.54	No
	I40 - 447	98.43		13.2	255	341	1	2.5		RCP	1	Sq. edge w/ headwall/end section	11	936.59	2341.47	No	5401.48	13503.71	No
448 & 449 acting together (2 culverts)	I40 - 448	98.82		295.5	793	1041	2	4		RCP	1	Sq. edge w/ headwall/end section	11	14.08	56.34	No	54.03	216.14	No
450 to 455 acting together (6 culverts)	I40 - 453	99.00		2788.5	1798	2331	6	4		RCP	1	Sq. edge w/ headwall/end section	11	6.44	25.75	No	13.06	52.24	No
	I40 - 458	100.25		235.2	729	959	1	3		CMP	1	Headwall/end section	21	13226.58	39679.74	No	61589.43	184768.28	No
	I40 - 459	100.35		17.0	280	374	1	3		RCP	1	Sq. edge w/ headwall/end section	11	97.34	292.02	No	592.43	1777.30	No
	I40 - 460	100.53		9.7	228	305	1	3		CMP	2	Mitered	22	98.03	294.08	No	653.10	1959.31	No
	I40 - 461	100.78		43.5	394	523	1	3		CMP	2	Mitered	22	3137.60	9412.79	No	16616.63	49849.90	No
	I40 - 462	100.90		412.4	895	1173	1	3		CMP	2	Mitered	22	326646.72	979940.17	No	1388850.42	4166551.26	No
465 to 467 acting together (3 culverts)	I40 - 466	101.57		67.4	462	612	3	2.5		CMP	2	Mitered	22	149.16	372.90	No	909.57	2273.93	No
	I40 - 476	102.85		9.8	229	306	1	3		CMP	2	Mitered	22	100.16	300.49	No	666.67	2000.00	No
	I40 - 479	103.25		7.9	211	284	1	2.5		CMP	2	Mitered	22	1130.18	2825.46	No	6690.32	16725.80	No
	I40 - 480	103.37		13.4	256	342	1	2.5		CMP	2	Mitered	22	3635.18	9087.95	No	19911.31	49778.27	No
	I40 - 481	103.44		7.0	202	271	4	2.5		CMP	2	Mitered	22	2.73	6.81	No	4.22	10.54	No
	I40 - 483	104.21		89.0	512	677	1	7		CMP	2	Mitered	22	1.89	13.23	Yes	2.81	19.68	No
485 to 491 acting together (7 culverts)	I40 - 488	104.66		1506.8	1437	1868	7	3		CMP	1	Headwall/end section	21	13.25	39.75	No	37.20	111.59	No
No Photos	I40 - 494	105.07		31.1	349	464	1	2.5	2.5	CMP	3	Projecting	23	1368.06	3420.16	No	8114.19	20285.47	No
	I40 - 498	105.37		29.7	343	456	1	3		CMP	1	Headwall/end section	21	147.57	442.71	No	835.53	2506.58	No
	I40 - 499	105.48		2.3	135	182	1	4		CMP	2	Mitered	22	2.06	8.26	No	3.19	12.74	No
	I40 - 500	105.60		20.9	301	402	1	2.5		CMP	2	Mitered	22	9542.07	23855.17	No	49384.30	123460.74	No
	I40 - 501	105.71		2.0	128	173	2	2		CMP	2	Mitered	22	19.88	39.76	No	130.60	261.20	No
	I40 - 503	105.78		77.1	485	643	1	4		CMP	2	Mitered	22	124.73	498.92	No	762.11	3048.42	No
	I40 - 504	105.85		23.9	316	422	1	3	5	CBC	1	30-75 degree wingwalls	81	4.05	20.27	No	6.66	33.28	No
	I40 - 511	106.35		43.0	392	521	1	6	6	CBC	1	30-75 degree wingwalls	81	1.44	8.63	Yes	2.00	11.99	Yes
	I40 - 512	106.51		4.6	174	234	1	2		CMP	2	Mitered	22	10002.24	20004.48	No	54343.31	108686.61	No
	I40 - 514	106.67		10.7	236	317	1	2.5		RCP	3	Groove end projecting	13	455.18	1137.94	No	2739.73	6849.31	No
	I40 - 515	106.73		337.4	832	1092	1	7		RCP	3	Groove end projecting	13	2.82	19.71	No	4.34	30.38	No
	I40 - 516	106.78		53.2	424	562	1	2		CMP	3	Projecting	23	122003.70	244007.40	No	580600.14	1161200.28	No
	I40 - 517	106.94		2.1	131	177	1	2		CMP	1	Headwall/end section	21	199.53	399.06	No	1246.12	2492.23	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

These inlets are acting in parallel. Flows added together and divided evenly to each structure.

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 518	107.02		35.5	366	486	1	2	2	CMP	1	Headwall/end section	21	80799.66	161599.32	No	380847.47	761694.95	No
I40 - 519	107.11		4.2	167	226	1	2		CMP	2	Mitered	22	7993.39	15986.79	No	43984.93	87969.85	No
I40 - 520	107.21		7.0	202	272	1	3		CMP	1	Headwall/end section	21	12.68	38.04	No	40.52	121.55	No
I40 - 521	107.39		7.8	210	282	1	3		CMP	1	Headwall/end section	21	14.22	42.66	No	49.13	147.39	No
I40 - 527	108.20		162.9	638	841	1	10	8	CBC	1	30-75 degree wingwalls	81	0.98	7.82	Yes	1.21	9.72	Yes
I40 - 528	108.42		0.0	1645	2097	1	6	4	CBC	1	30-75 degree wingwalls	81	513.69	2054.74	No	2264.37	9057.48	No
I40 - 529	108.52		7.8	1645	2097	1	6	4	CBC	1	30-75 degree wingwalls	81	513.69	2054.74	No	2264.37	9057.48	No
I40 - 530	108.61		127661.1	1645	2097	1	6	4	CBC	1	30-75 degree wingwalls	81	513.69	2054.74	No	2264.37	9057.48	No
I40 - 531	108.70		6.2	1645	2097	1	6	4	CBC	1	30-75 degree wingwalls	81	513.69	2054.74	No	2264.37	9057.48	No
I40 - 532	108.80		98.1	1645	2097	1	6	4	CBC	1	30-75 degree wingwalls	81	513.69	2054.74	No	2264.37	9057.48	No
I40 - 533	109.19		7.3	206	276	1	2.5		CMP	2	Mitered	22	958.52	2396.31	No	5740.56	14351.39	No
I40 - 534	109.36		86.4	506	670	1	10	8	CBC	1	30-75 degree wingwalls	81	0.83	6.66	Yes	1.01	8.11	Yes
I40 - 536	109.56		93.8	521	690	2	3		CMP	2	Mitered	22	236.21	708.64	No	1392.66	4177.99	No
I40 - 538	109.74		160.9	635	837	1	2		RCP	1	Sq. edge w/ headwall/end section	11	3514240.93	7028481.87	No	14844905.39	#########	No
I40 - 539	109.92		29.1	340	453	1	2		CMP	2	Mitered	22	418878.23	837756.46	No	1928232.32	3856464.64	No
I40 - 540	110.03		10.4	233	313	1	3		CMP	2	Mitered	22	114.14	342.41	No	754.78	2264.35	No
I40 - 541	110.07		73.9	478	633	1	4		RCP	1	Sq. edge w/ headwall/end section	11	33.50	133.99	No	177.83	711.34	No
I40 - 542	110.18		126.0	581	767	1	10	8	CBC	1	30-75 degree wingwalls	81	0.91	7.32	Yes	1.13	9.00	Yes
I40 - 544	110.42		378.3	867	1138	2	6	4	CBC	1	30-75 degree wingwalls	81	3.78	15.10	No	5.98	23.91	No
I40 - 545	111.00		133.4	593	783	1	10	8	CBC	1	30-75 degree wingwalls	81	0.93	7.42	Yes	1.14	9.15	Yes
I40 - 546	111.12		155.4	627	827	2	8	4	CBC	1	30-75 degree wingwalls	81	1.59	6.37	Yes	2.25	9.02	No
I40 - 551	112.25		1164.4	1308	1703	1	10	8	CBC	1	30-75 degree wingwalls	81	1.94	15.53	Yes	2.82	22.59	No
I40 - 552	112.40		86.1	505	669	1	4		RCP	1	Sq. edge w/ headwall/end section	11	45.58	182.34	No	250.73	1002.93	No
I40 - 554	112.69		8322.1	2681	3451	1	16.33333	16.3333	CBC	1	30-75 degree wingwalls	81	0.89	14.61	Yes	1.08	17.57	Yes
I40 - 556	113.00		2225.6	1656	2149	1	6		CMP	3	Projecting	23	32.79	196.73	No	125.58	753.51	No
I40 - 560	113.16		1753.2	1518	1973	1	8		CMP	2	Mitered	22	6.20	49.57	No	16.52	132.14	No
I40 - 562	113.43		197.8	685	901	1	12		CMP	2	Mitered	22	0.73	8.78	Yes	0.87	10.41	Yes
I40 - 566	113.85		37.7	374	497	1	3		CMP	2	Mitered	22	2284.88	6854.64	No	12346.95	37040.86	No
I40 - 567	114.03		83.3	499	661	1	5		RCP	1	Sq. edge w/ headwall/end section	11	5.86	29.28	No	11.90	59.50	No
I40 - 570	114.22		37.9	area was added	0	1	2		RCP	1	Sq. edge w/ headwall/end section	11	#VALUE!	#VALUE!	Yes	0.09	0.17	Yes
I40 - 574	114.84		14.2	262	350	1	3		CMP	2	Mitered	22	242.04	726.12	No	1528.38	4585.14	No
I40 - 575	115.02		56.9	435	576	1	10	8	CBC	1	30-75 degree wingwalls	81	0.75	6.01	Yes	0.91	7.28	Yes
I40 - 576	115.69		481.5	947	1241	1	10	8	CBC	2	30-75 degree wingwalls	82	1.35	10.84	Yes	1.82	14.54	Yes
I40 - 577	115.82		79.9	492	651	1	7		CMP	2	Mitered	22	1.79	12.54	Yes	2.66	18.61	No
I40 - 582	116.19		16.3	275	368	1	3		RCP	1	Sq. edge w/ headwall/end section	11	88.04	264.13	No	535.76	1607.29	No
I40 - 583	116.26		9.8	229	306	1	2.5		RCP	1	Sq. edge w/ headwall/end section	11	473.98	1184.94	No	2845.72	7114.31	No
I40 - 584	116.42		356.1	849	1113	1	10	8	CBC	1	30-75 degree wingwalls	81	1.22	9.80	Yes	1.60	12.81	Yes
I40 - 585	116.51		1.6	117	159	1	2		RCP	3	Groove end projecting	13	182.36	364.71	No	1220.94	2441.87	No
I40 - 586	116.58		2.3	134	181	1	2		RCP	3	Groove end projecting	13	420.19	840.38	No	2685.08	5370.16	No
I40 - 587	116.65		8.1	213	287	1	2		RCP	3	Groove end projecting	13	7183.01	14366.01	No	38570.94	77141.87	No
I40 - 588	116.78		22.1	308	410	1	4	3	ARCH	1	Headwall/end section	341	41.66	124.97	No	142.10	426.31	No
I40 - 590	116.86		96.5	527	697	1	5		RCP	1	Sq. edge w/ headwall/end section	11	6.52	32.60	No	14.42	72.12	No
I40 - 591	117.30		10.2	232	311	1	2		CMP	1	Headwall/end section	21	6166.64	12333.29	No	32712.93	65425.86	No
I40 - 593	117.55		242.5	738	970	1	8	4	CBC	1	30-75 degree wingwalls	81	5.69	22.76	No	9.72	38.89	No
I40 - 595	117.66		9.6	227	304	1	4	5	ARCH	1	Headwall/end section	341	4.58	22.91	No	7.71	38.53	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 602	118.27		17.2	281	375	1	2.5		CMP	1	Headwall/end section	21	698.00	1744.99	No	3941.41	9853.52	No
I40 - 604	118.54		142.3	607	801	1	3.5		CMP	1	Headwall/end section	21	456.69	1598.43	No	2422.68	8479.39	No
I40 - 605	118.67		773.0	1126	1470	1	10	8	CBC	1	30-75 degree wingwalls	81	1.62	12.97	Yes	2.27	18.19	No
I40 - 609	119.01		244.7	740	973	1	6	3	CBC	1	30-75 degree wingwalls	81	55.72	167.17	No	286.85	860.56	No
I40 - 612	119.53		7.5	208	279	1	2.5		CMP	1	Headwall/end section	21	113.30	283.26	No	669.40	1673.49	No
I40 - 615	119.79		7.9	211	284	1	2.5		CMP	1	Headwall/end section	21	125.75	314.36	No	744.21	1860.51	No
I40 - 616	119.91		84.4	502	664	1	2.5		CMP	1	Headwall/end section	21	21041.39	52603.47	No	99941.57	249853.93	No
I40 - 617	120.40		10.1	231	309	1	2	2	Plastic *	1	Headwall/end section	21	6025.72	12051.44	No	32003.68	64007.37	No
I40 - 618	120.47		113.4	559	738	1	2		CMP	3	Projecting	23	560831.49	1121662.99	No	2505710.06	5011420.13	No
I40 - 619	120.73		13.4	256	343	3	2		CMP	2	Mitered	22	121.68	243.36	No	794.95	1589.90	No
I40 - 620	120.99		88.0	510	674	3	3		CMP	2	Mitered	22	16.49	49.47	No	89.43	268.30	No
I40 - 621	121.14		2250.4	1663	2158	9	4		CMP	2	Mitered	22	3.26	13.02	No	4.89	19.56	No
I40 - 622	121.34		23.9	317	422	1	2.5		CMP	1	Headwall/end section	21	1445.18	3612.96	No	7860.93	19652.33	No
I40 - 624	121.59		26.0	326	435	5	3		CMP	2	Mitered	22	2.05	6.15	No	3.10	9.29	No
I40 - 626	121.68		556.4	999	1307	1	14	14	CBC	1	30-75 degree wingwalls	81	0.60	8.35	Yes	0.71	10.00	Yes
I40 - 632	122.12		19.7	295	394	2	2.5		CMP	2	Mitered	22	111.84	279.60	No	722.39	1805.97	No
I40 - 633	122.25		21.3	304	405	2	3		CMP	2	Mitered	22	9.90	29.71	No	45.94	137.82	No
I40 - 634	122.42		29.7	343	456	2	3		CMP	2	Mitered	22	17.27	51.81	No	98.91	296.72	No
I40 - 635	122.52		31.1	349	464	1	3		CMP	1	Headwall/end section	21	163.79	491.37	No	927.19	2781.57	No
I40 - 636	122.65		1037.8	1254	1634	10	3		CMP	2	Mitered	22	5.63	16.88	No	13.63	40.90	No
I40 - 637	122.93		27.5	333	444	1	3		CMP	1	Headwall/end section	21	125.53	376.58	No	709.89	2129.67	No
I40 - 638	123.09		8.8	220	295	1	3		CMP	1	Headwall/end section	21	16.47	49.42	No	62.21	186.64	No
I40 - 639	123.25		255.1	751	988	1	3		CMP	1	Headwall/end section	21	15666.43	46999.30	No	72379.03	217137.09	No
I40 - 640	123.48		186.9	671	883	5	2.5		CMP	2	Mitered	22	60.56	151.39	No	362.84	907.11	No
I40 - 641	123.84		206.4	695	915	5	3		CMP	2	Mitered	22	7.32	21.97	No	24.85	74.55	No
I40 - 642	124.32		39.5	380	506	1	4		CMP	1	Headwall/end section	21	10.07	40.29	No	25.66	102.62	No
I40 - 643	124.56		25.6	325	433	1	2.5		CMP	1	Headwall/end section	21	1675.90	4189.75	No	9044.33	22610.82	No
I40 - 644	124.58		3.8	162	219	1	2.5		CMP	1	Headwall/end section	21	30.31	75.79	No	153.14	382.85	No
I40 - 648	125.83		450.4	925	1211	2	3		CMP	2	Mitered	22	8091.13	24273.40	No	38009.90	114029.71	No
I40 - 649	125.91		30.1	344	459	1	10	8	CBC	1	30-75 degree wingwalls	81	0.64	5.14	Yes	0.78	6.23	Yes
I40 - 650	125.99		1103.7	1282	1671	1	10	8	CBC	1	30-75 degree wingwalls	81	1.89	15.15	Yes	2.74	21.94	No
I40 - 653	126.57		29.0	340	452	1	2.5		CMP	1	Headwall/end section	21	2194.58	5486.46	No	11674.21	29185.54	No
I40 - 658	127.12		10.9	238	318	1	2.5		CMP	2	Mitered	22	2326.98	5817.46	No	13114.80	32786.99	No
I40 - 659	127.41		52.9	423	561	2	2.5		CMP	2	Mitered	22	1134.22	2835.56	No	6277.32	15693.30	No
I40 - 660	127.56		6.7	199	267	1	2.5		CMP	2	Mitered	22	766.32	1915.81	No	4663.56	11658.89	No
I40 - 661	127.75		267.1	764	1004	1	7	8	CBC	1	30-75 degree wingwalls	81	1.57	12.53	Yes	2.20	17.57	No
I40 - 662	128.24		11.3	241	323	1	2.5		CMP	2	Mitered	22	2529.73	6324.33	No	14179.93	35449.82	No
I40 - 663	128.70		76.5	484	641	1	4.5		CMP	2	Mitered	22	19.71	88.68	No	112.01	504.04	No
I40 - 664	128.81		665.5	1066	1393	1	10	10	CBC	1	30-75 degree wingwalls	81	1.12	11.20	Yes	1.42	14.24	Yes
I40 - 665	129.05		21.9	306	409	1	2.5		CMP	2	Mitered	22	10484.58	26211.46	No	53982.40	134956.00	No
I40 - 666	129.20		88.4	510	675	4	3		CMP	2	Mitered	22	5.85	17.54	No	15.96	47.87	No
I40 - 667	129.42		170.9	649	855	1	3		CMP	2	Mitered	22	56065.57	168196.70	No	255316.19	765948.57	No
I40 - 669	129.79		212.2	702	924	5	3		CMP	2	Mitered	22	7.55	22.65	No	26.32	78.97	No
I40 - 671	130.08		49.1	412	547	1	2		CMP	2	Mitered	22	1162819.68	2325639.35	No	5174464.30	#########	No

CULVERT INLET CONTROL CALCULATION SPREADSHEET
BASED ON INFORMATION FROM HY-8 COMPUTER PROGRAM DOCUMENTATION
REQUIRED INPUT IS SHOWN IN BLUE, OUTPUT IS SHOWN IN GREEN

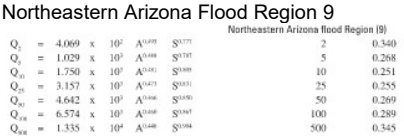
Culvert ID	Milepost	STATION	D.A.	Q_{50}	Q_{100}	No. of	Diameter or Span	RISE	Structure Type	HDS-5 nomo. Scale	INLET	(LOOKUP NO.- INTERNAL USE ONLY)	Q50 HW/D	HW 50	Design Storm Capacity*	Q100 HW/D	HW 100	Check Storm Capacity*
	MP		(ac.)	(cfs)	(cfs)	Barrels	(ft.)	(ft.)			TREATMENT			(FT)	Y/N		(FT)	Y/N
I40 - 684	132.82		275.3	772	1015	1	8		CBC	1	30-75 degree wingwalls	81	1.38	11.04	Yes	1.87	14.95	Yes
I40 - 685	133.00		19.4	293	392	1	2		CMP	2	Mitered	22	188233.34	376466.68	No	892306.36	1784612.72	No
I40 - 690	134.56		956.8	1217	1587	2	8	8	CBC	1	30-75 degree wingwalls	81	1.12	8.94	Yes	1.42	11.34	Yes
I40 - 691	134.85		674.8	1072	1400	1	8	10	CBC	1	30-75 degree wingwalls	81	1.37	13.70	Yes	1.84	18.39	Yes
I40 - 692	135.15		23.0	312	416	1	4		CMP	1	Headwall/end section	21	6.65	26.60	No	12.79	51.18	No
I40 - 693	135.36		24.6	320	426	1	4		CMP	2	Mitered	22	10.99	43.97	No	53.76	215.03	No
I40 - 694	135.99		39.9	382	507	1	4.5		CMP	1	Headwall/end section	21	5.61	25.24	No	9.92	44.65	No
I40 - 695	136.12		98.4	531	702	1	8	4	CBC	1	30-75 degree wingwalls	81	3.29	13.14	No	5.22	20.88	No
I40 - 696	136.36		6.8	201	269	1	3.5		CMP	2	Mitered	22	6.92	24.23	No	25.00	87.50	No
I40 - 700	137.80		7.2	204	275	1	2		RCP	1	Sq. edge w/ headwall/end section	11	7033.22	14066.45	No	37975.87	75951.74	No
I40 - 704	138.78		37.6	373	497	1	4		RCP	3	Groove end projecting	13	8.99	35.97	No	31.58	126.31	No
I40 - 705	138.84		16.9	279	373	1	2		RCP	3	Groove end projecting	13	33131.14	66262.29	No	164703.91	329407.82	No
I40 - 706	138.95		0.2	50	69	1	2		RCP	3	Groove end projecting	13	4.77	9.54	No	10.46	20.93	No
I40 - 710	139.77		195.0	681	897	1	10	4	CBC	1	30-75 degree wingwalls	81	3.43	13.71	No	5.42	21.69	No
I40 - 714	140.20		25.4	323	431	1	10	10	CBC	1	30-75 degree wingwalls	81	0.49	4.90	Yes	0.60	5.97	Yes
I40 - 718	140.87		61.1	446	591	1	10	12	CBC	1	30-75 degree wingwalls	81	0.51	6.08	Yes	0.61	7.37	Yes
I40 - 725	141.12		37.2	372	495	2	2.083333	1.41667	CMP	2	Mitered	22	210092.68	297631.30	No	973137.00	1378610.75	No
I40 - 727	141.23		18.4	288	384	1	3		CMP	2	Mitered	22	444.09	1332.26	No	2687.28	8061.84	No
I40 - 729	141.45		16.2	275	367	1	2.5		CMP	2	Mitered	22	5530.79	13826.96	No	29531.37	73828.42	No
I40 - 737	141.85		11.1	239	320	1	2		CMP	2	Mitered	22	60687.38	121374.77	No	301416.89	602833.79	No
I40 - 743	142.14		12.4	249	333	1	14	14	CBC	1	30-75 degree wingwalls	81	0.23	3.25	Yes	0.28	3.93	Yes
I40 - 766	145.82		900.5	1191	1553	1	4		RCP	1	Sq. edge w/ headwall/end section	11	8318.14	33272.58	No	37943.11	151772.44	No
I40 - 771	146.15		114.4	561	740	1	4.5		CMP	2	Mitered	22	47.18	212.29	No	287.13	1292.07	No
Drop Inlet	I40 - 774	146.66	1394.6	1397	1817	1	2		CMP	1	Headwall/end section	21	94202113.36	188404226.72	No	361580631.64	#########	No
I40 - 779	147.75		131.5	590	778	3	1.5		RCP	1	Sq. edge w/ headwall/end section	11	315397.70	473096.55	No	1390876.88	2086315.32	No
I40 - 784	148.15		141.3	606	799	1	2		RCP	1	Sq. edge w/ headwall/end section	11	2739517.82	5479035.64	No	11654495.95	#########	No
I40 - 798	149.20		9054.1	2764	3557	3	4		RCP	2	Groove end w/ headwall	12	1828.07	7312.26	No	8102.70	32410.79	No
I40 - 808	150.00		1868.5	1554	2019	1	30	4.16667	CBC	1	30-75 degree wingwalls	81	2.08	8.67	No	3.05	12.71	No
I40 - 814	64.20		184.5	667	879	1	10	4	CBC	1	30-75 degree wingwalls	81	3.32	13.27	No	5.24	20.96	No
I40 - 815	77.50		169.4	647	853	1	2	2	CMP	2	Mitered	22	12439834.37	24879668.73	No	51769752.53	#########	No
I40 - 816	89.40		50147.5	5163	6576	1	10	8	CBC	1	30-75 degree wingwalls	81	45.02	360.16	No	184.67	1477.34	No
I40 - 817	89.80		87.1	508	672	1	10	4.66	CBC	1	30-75 degree wingwalls	81	1.65	7.67	Yes	2.36	11.01	No
I40 - 818	92.80		10021.9	2869	3689	1	10	10	CBC	1	30-75 degree wingwalls	81	3.80	38.00	No	5.81	58.13	No
I40 - 819	96.50		34.8	363	483	1	4	4	RCP	1	Sq. edge w/ headwall/end section	11	10.40	41.61	No	35.44	141.74	No
I40 - 820	96.80		264.5	761	1000	3	4	22.5	RCP	1	Sq. edge w/ headwall/end section	11	0.43	9.70	Yes	0.51	11.57	Yes
No culvert found	I40 - 821	103.90	9.9	230	308						#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
I40 - 822	109.00		17.3	281	376	1	2	2	CMP	2	Mitered	22	149524.62	299049.25	No	715195.63	1430391.27	No
I40 - 823	105.17		6.7	199	267	1	4.5	3.5	CBC	1	30-75 degree wingwalls	81	2.40	8.39	No	3.79	13.27	No

Plastic pipe analyzed using CMP nomographs due to similar Manning's n values

Hydrology Calculations - Regression Equations

Regression Equations

Northeastern Arizona Flood Region 9



Central Mountain-Valley Flood Region 6

Region 9 out of range variables
Region 6 out of range variables

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
Northeastern Arizona Flood Region 9							
1	0.12	29.0	0.0453	17.425	0.174	248.5	348.1
3	0.29	21.2	0.0331	11.777	0.118	154.0	214.7
4	0.36	46.7	0.0730	16.379	0.164	294.6	411.0
5	0.48	11.2	0.0175	15.855	0.159	147.2	207.0
6	0.57	31.8	0.0497	17.840	0.178	264.8	370.8
11	2.08	90.2	0.1410	5.833	0.058	166.4	227.2
17	2.50	242.7	0.3792	15.743	0.157	613.7	847.2
20	2.84	2.2	0.0035	1.231	0.012	7.9	10.7
21	2.99	324.9	0.5076	16.925	0.169	747.7	1031.6
22	3.15	63.3	0.0989	14.343	0.143	303.1	421.2
26	3.61	92.7	0.1448	13.515	0.135	344.2	476.6
28	3.88	6.8	0.0106	15.939	0.159	116.9	164.9
29	3.94	124.6	0.1947	14.133	0.141	410.4	567.8
31	4.20	11.2	0.0175	11.456	0.115	111.6	156.0
32	4.30	20.8	0.0326	16.001	0.160	198.2	277.7
34	4.58	104.8	0.1637	11.492	0.115	317.5	438.1
37	4.81	5.0	0.0078	2.541	0.025	21.3	29.1
38	5.71	0.8	0.0013	7.314	0.073	22.8	32.1
39	5.80	0.4	0.0006	6.126	0.061	13.1	18.5
40	6.06	103.7	0.1621	6.327	0.063	190.3	259.9
41	6.11	3.0	0.0047	4.442	0.044	26.9	37.4
42	6.16	1.6	0.0024	3.696	0.037	17.1	23.7
43	6.27	9.5	0.0148	3.206	0.032	35.0	48.0
44	6.44	189.8	0.2966	8.586	0.086	326.9	447.3
45	6.61	18.3	0.0287	1.462	0.015	24.4	32.9
46	6.70	339.9	0.5312	8.995	0.090	446.2	608.9
48	6.89	27.5	0.0429	0.996	0.010	21.3	28.4
49	7.10	13.6	0.0213	0.954	0.010	14.8	19.8
51	7.20	3139.0	4.9047	10.976	0.110	1489.0	2011.7
55	7.31	86.7	0.1354	7.527	0.075	202.8	278.2
58	7.66	32.4	0.0506	3.322	0.033	64.0	87.0
59	7.75	53.8	0.0840	9.573	0.096	199.3	275.2
60	8.18	3.4	0.0053	4.506	0.045	29.1	40.3
61	8.23	1.7	0.0026	2.683	0.027	13.4	18.5
63	8.34	4.3	0.0068	2.435	0.024	19.3	26.4
64	8.46	1.3	0.0021	4.275	0.043	18.0	25.1
69	9.60	0.1	0.0001	1.243	0.012	1.8	2.5
71	10.00	403.9	0.6311	6.057	0.061	345.5	467.9
74	10.22	11.5	0.0180	11.819	0.118	116.4	162.8
75	10.33	9.9	0.0154	10.767	0.108	100.0	139.8
76	10.38	7.4	0.0115	8.497	0.085	71.3	99.5
77	10.42	3.4	0.0053	10.213	0.102	58.3	82.0
78	10.51	260.6	0.4072	6.972	0.070	317.5	432.1
79	10.64	2.5	0.0040	2.709	0.027	16.4	22.6
80	10.82	6.8	0.0107	1.654	0.017	17.1	23.2

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
81	11.06	9.9	0.0155	1.781	0.018	21.7	29.4
82	11.17	10.8	0.0168	0.586	0.006	8.8	11.7
83	11.51	10.6	0.0166	1.314	0.013	17.3	23.3
84	11.74	18.4	0.0288	1.200	0.012	20.7	27.8
86	11.82	631.1	0.9860	7.083	0.071	485.9	657.9
88	11.93	23.1	0.0361	1.372	0.014	25.8	34.6
91	12.74	13.0	0.0203	11.884	0.119	123.6	172.7
92	13.04	4.9	0.0077	14.020	0.140	90.2	127.3
93	13.08	4.1	0.0064	12.865	0.129	77.0	108.6
94	13.18	93.1	0.1455	14.025	0.140	356.0	493.3
95	13.34	14.5	0.0226	7.379	0.074	86.6	120.1
96	13.42	15.6	0.0244	6.653	0.067	82.2	113.6
97	13.59	1019.4	1.5928	9.119	0.091	753.1	1021.2
98	13.73	4.7	0.0073	1.370	0.014	12.3	16.6
99	13.99	11.4	0.0178	0.870	0.009	12.6	16.8
101	14.50	6.8	0.0106	8.652	0.087	69.6	97.2
103	14.75	3.7	0.0058	2.997	0.030	21.4	29.4
104	14.89	35.1	0.0548	2.669	0.027	55.1	74.7
105	14.94	8.1	0.0127	3.632	0.036	36.2	49.8
106	15.11	20.2	0.0316	3.416	0.034	52.6	71.8
107	15.18	2.1	0.0032	3.615	0.036	19.1	26.5
118	15.45	3005.2	4.6956	5.865	0.059	856.5	1145.2
127	15.84	29.0	0.0454	7.910	0.079	127.1	175.7
128	15.99	82.1	0.1283	7.931	0.079	206.8	284.0
129	16.15	4.9	0.0077	5.005	0.050	37.7	52.2
133	16.50	6022.8	9.4107	5.504	0.055	1121.9	1492.2
137	17.40	118.0	0.1844	1.100	0.011	45.7	60.5
139	18.34	18.0	0.0281	13.247	0.132	157.7	220.5
140	18.52	143.8	0.2247	9.208	0.092	304.9	418.3
141	18.91	8.6	0.0135	11.217	0.112	97.2	136.1
142	19.12	21.5	0.0336	11.509	0.115	152.1	211.8
143	19.23	37.8	0.0590	7.127	0.071	131.5	181.1
144	19.86	4.4	0.0068	2.521	0.025	19.9	27.3
145	20.14	54.2	0.0847	1.214	0.012	34.6	46.1
148	20.42	329.2	0.5144	3.906	0.039	216.4	291.1
151	22.03	12.8	0.0200	8.455	0.085	91.9	127.8
152	22.27	4.1	0.0064	6.560	0.066	43.5	60.6
153	22.37	231.8	0.3622	6.785	0.068	293.8	399.8
155	22.61	267.9	0.4186	10.412	0.104	452.3	619.5
156	22.98	643.6	1.0057	11.506	0.115	740.7	1011.1
157	23.08	97.6	0.1525	5.782	0.058	171.4	233.8
158	23.31	21.2	0.0331	5.284	0.053	77.9	107.1
159	23.35	36.1	0.0564	3.662	0.037	73.1	99.6
160	23.52	7.0	0.0109	1.024	0.010	11.5	15.5
161	23.61	6.6	0.0102	1.078	0.011	11.7	15.7
162	23.71	133.6	0.2087	4.712	0.047	166.7	226.2
164	24.87	82.1	0.1283	18.800	0.188	430.7	600.2
165	25.04	145.7	0.2277	10.962	0.110	355.8	489.6
166	25.14	5.9	0.0092	3.436	0.034	29.8	40.9
167	25.31	153.0	0.2390	5.466	0.055	201.4	273.8
169	26.37	3.4	0.0054	1.846	0.018	13.7	18.7
170	26.41	1.8	0.0028	1.095	0.011	6.4	8.7
171	26.62	19.7	0.0307	3.628	0.036	54.7	74.7
172	27.08	6.8	0.0106	7.910	0.079	64.6	90.1
173	27.27	37.7	0.0589	3.663	0.037	74.6	101.6
174	27.48	17.3	0.0270	2.920	0.029	42.8	58.3
175	27.55	16.4	0.0257	2.753	0.028	39.8	54.1
176	27.78	19.6	0.0306	2.334	0.023	37.5	50.8
177	28.05	7.7	0.0120	4.009	0.040	38.3	52.8
178	28.40	215.8	0.3372	4.445	0.044	198.3	268.1
180	28.82	82.0	0.1281	4.053	0.041	116.8	158.6
182	29.04	80.9	0.1264	4.286	0.043	121.7	165.4
183	29.35	36.4	0.0569	4.742	0.047	91.4	125.1
184	30.18	1295.1	2.0236	11.191	0.112	1002.1	1361.5
192	30.71	5.5	0.0085	2.246	0.022	20.0	27.3
193	31.00	5.4	0.0085	3.782	0.038	31.1	42.8
194	31.19	5.3	0.0083	1.402	0.014	13.2	17.9
195	31.34	16.6	0.0259	1.619	0.016	25.4	34.3
196	31.83	17.6	0.0276	1.410	0.014	23.3	31.3
197	32.07	17.1	0.0268	1.303	0.013	21.5	28.9
199	32.36	7.4	0.0116	1.020	0.010	11.8	15.9

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
200	32.55	12.5	0.0196	0.993	0.010	14.7	19.7
201	32.85	12.7	0.0199	1.309	0.013	18.8	25.3
203	33.85	6.9	0.0108	3.053	0.031	29.0	39.8
204	34.18	2.6	0.0040	5.233	0.052	29.0	40.3
205	34.23	0.4	0.0007	8.881	0.089	19.5	27.6
206	34.32	9.8	0.0153	3.922	0.039	42.2	58.0
207	34.39	0.6	0.0010	2.016	0.020	6.7	9.3
208	34.50	19.3	0.0301	2.039	0.020	33.2	44.9
209	34.64	582.5	0.9101	2.553	0.026	196.6	261.8
210	34.72	10.8	0.0169	1.049	0.010	14.4	19.4
211	34.84	9.2	0.0144	1.009	0.010	12.9	17.4
212	34.95	50.4	0.0787	3.335	0.033	78.9	107.1
214	35.57	7.8	0.0122	1.956	0.020	21.1	28.6
215	35.83	36.4	0.0568	3.576	0.036	71.9	97.9
216	36.00	311.8	0.4872	4.184	0.042	223.6	301.4
218	37.03	266.2	0.4159	3.303	0.033	169.9	228.3
219	37.26	724.2	1.1316	6.463	0.065	479.3	647.4
220	37.44	18.1	0.0282	1.312	0.013	22.1	29.7
222	37.77	444.2	0.6940	3.211	0.032	210.6	281.9
223	38.28	86.5	0.1351	2.994	0.030	92.6	125.0
224	38.55	9.2	0.0144	0.933	0.009	12.1	16.2
225	38.91	43.0	0.0672	1.049	0.010	27.4	36.5
226	39.14	33.9	0.0530	1.517	0.015	33.6	45.1
227	39.28	1069.4	1.6709	5.307	0.053	486.1	652.9
228	39.52	91.3	0.1426	2.700	0.027	86.9	117.1
229	39.75	417.9	0.6530	3.700	0.037	230.9	310.0
231	40.00	377.7	0.5901	4.005	0.040	235.6	316.9
232	40.07	34.5	0.0539	2.435	0.024	50.6	68.5
234	40.25	161.1	0.2517	3.355	0.034	136.3	183.7
236	41.16	110.1	0.1721	4.248	0.042	139.5	189.2
237	41.30	52.4	0.0818	3.441	0.034	82.5	111.9
238	41.43	2.9	0.0045	5.247	0.052	30.5	42.4
239	41.55	3.4	0.0053	4.333	0.043	28.1	39.0
240	41.90	233.2	0.3645	2.550	0.025	128.2	171.6
241	42.20	104.3	0.1630	3.738	0.037	122.0	165.2
242	42.38	48.9	0.0765	5.092	0.051	111.5	152.4
243	42.53	4.2	0.0066	6.422	0.064	43.3	60.4
244	42.67	1702.6	2.6602	5.292	0.053	602.2	806.6
245	42.93	159.6	0.2493	3.024	0.030	124.2	167.1
246	43.15	3.7	0.0057	5.315	0.053	34.6	48.0
248	43.54	51.1	0.0799	3.767	0.038	88.1	119.8
249	43.74	55.0	0.0859	2.877	0.029	72.5	98.0
250	43.98	192.7	0.3010	2.231	0.022	104.7	140.0
251	45.08	680.7	1.0637	6.190	0.062	448.9	606.2
252	45.22	209.9	0.3280	3.837	0.038	172.8	233.0
253	45.34	13.3	0.0208	2.577	0.026	34.1	46.4
254	45.60	35.7	0.0558	2.881	0.029	59.3	80.5
255	45.76	74.0	0.1156	3.472	0.035	97.6	132.3
256	45.88	231.3	0.3614	3.822	0.038	180.2	242.9
257	46.24	971.9	1.5186	4.898	0.049	434.3	582.8
258	46.39	575.9	0.8999	4.351	0.044	307.7	413.4
259	46.64	16.6	0.0259	2.923	0.029	42.0	57.3
260	46.91	179.7	0.2808	2.612	0.026	115.9	155.5
261	47.08	342.2	0.5346	3.775	0.038	214.0	287.7
263	47.47	19.1	0.0298	2.776	0.028	42.9	58.4
Central Mountain - Valley Flood Region 6							
269	48.91	328.5	0.5133			823.9	1081.5
270	49.14	247.6	0.3868			743.1	977.0
271	49.55	819.7	1.2807			1150.3	1501.6
273	49.73	176.9	0.2763			657.2	865.9
274	50.03	50.0	0.0781			414.5	550.2
278	51.56	0.0	0.0000			24.7	34.4
279	52.24	304.0	0.4750			800.9	1051.8
280	52.48	65.2	0.1019			456.6	605.2
281	52.58	26.8	0.0419			330.2	439.9
286	53.90	3244.9	5.0701			1900.8	2460.9
287	54.87	14.6	0.0228			264.2	353.4
288	55.17	311.4	0.4865			808.0	1060.9
289	55.27	43.3	0.0677			393.4	522.7
290	55.58	248.1	0.3876			743.6	977.7

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
291	55.77	101.7	0.1589			537.1	709.9
292	56.04	9.8	0.0153			228.8	306.7
293	56.23	110.6	0.1727			553.7	731.5
294	56.48	17.3	0.0271			281.6	376.2
295	56.67	9.6	0.0150			226.9	304.2
296	57.45	6.4	0.0101			196.2	263.7
297	57.56	11.4	0.0178			241.4	323.3
298	57.91	3.6	0.0056			158.2	213.4
299	58.16	453.7	0.7088			926.9	1214.3
301	58.28	16.4	0.0257			276.0	368.9
302	58.65	3510.1	5.4845			1956.1	2531.3
304	58.83	39.8	0.0622			381.3	506.9
305	59.00	42.6	0.0666			391.0	519.5
306	59.25	13.2	0.0206			254.6	340.7
309	59.50	1538.4	2.4038			1447.5	1882.5
310	59.66	19.4	0.0303			293.2	391.5
311	59.91	16.6	0.0259			277.1	370.3
312	59.97	49.0	0.0765			411.3	546.1
314	60.06	9.5	0.0148			225.8	302.7
315	60.24	15.9	0.0249			272.9	364.8
316	60.33	7.5	0.0117			207.2	278.2
317	60.46	21.7	0.0339			305.6	407.7
318	60.86	362.6	0.5665			854.1	1120.5
319	61.68	73.4	0.1147			476.8	631.5
321	62.11	14.9	0.0233			266.7	356.6
322	62.44	45.0	0.0704			398.9	529.9
323	62.69	83.9	0.1310			500.6	662.4
324	63.54	11.4	0.0178			241.7	323.7
325	64.02	9.9	0.0154			229.4	307.5
326	64.07	2.0	0.0031			127.7	172.8
327	64.16	425.3	0.6646			905.4	1186.5
328	64.26	6.4	0.0100			196.0	263.4
329	64.41	14.5	0.0227			264.1	353.2
330	64.51	618.5	0.9664			1038.0	1357.3
331	64.65	73.9	0.1155			478.0	633.1
332	64.76	14.1	0.0220			261.0	349.1
333	64.98	934.2	1.4597			1206.6	1573.8
335	65.23	48.6	0.0760			410.3	544.8
336	65.53	368.4	0.5756			859.1	1126.8
337	65.61	16.0	0.0250			273.4	365.5
338	65.69	3.6	0.0056			157.9	212.9
346	69.11	21.7	0.0338			305.4	407.4
347	69.68	11.5	0.0179			242.2	324.4
348	69.90	13.0	0.0203			253.5	339.2
349	70.08	4.2	0.0066			168.0	226.4
350	70.27	304.2	0.4753			801.1	1052.0
351	70.65	7.5	0.0117			207.2	278.2
353	70.73	421.5	0.6586			902.4	1182.7
360	74.13	69.7	0.1088			467.8	619.7
376	74.71	17996.4	28.1194			3552.1	4551.8
393	74.96	77.8	0.1216			487.0	644.8
395	75.27	50.8	0.0794			416.8	553.3
396	75.41	17.3	0.0271			281.6	376.2
397	75.75	427.6	0.6681			907.1	1188.8
398	75.86	16.0	0.0250			273.6	365.7
400	77.88	380.8	0.5951			869.6	1140.4
401	78.07	16.7	0.0260			277.5	370.8
402	78.25	71.2	0.1112			471.5	624.5
404	78.62	33.0	0.0516			356.2	474.0
409	80.41	0.0	0.0001			31.8	44.1
411	80.98	39237.7	61.3090			4721.2	6021.5
414	84.58	1.6	0.0026			118.9	161.1
416	84.92	52.0	0.0813			420.4	558.0
420	86.03	3.0	0.0048			149.2	201.5
421	86.27	145.7	0.2276			612.4	807.7
422	86.97	671.9	1.0499			1069.8	1398.2
424	87.35	1304.0	2.0376			1362.8	1774.0
427	88.01	24.4	0.0381			318.8	425.0
428	88.31	240.5	0.3758			735.3	967.0
430	88.96	92.4	0.1444			518.6	685.9
431	89.19	9866.9	15.4171			2852.5	3668.4

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
432	89.97	87.9	0.1374			509.3	673.8
433	90.18	57.4	0.0897			435.8	578.1
435	90.66	477.9	0.7468			944.7	1237.3
437	92.04	537.9	0.8405			986.4	1290.9
438	93.43	2105.9	3.2905			1623.3	2107.1
439	93.98	251.9	0.3935			747.8	983.1
440	94.68	11.5	0.0179			242.2	324.4
441	95.03	825.8	1.2903			1153.5	1505.7
442	95.48	133.2	0.2082			592.7	782.2
445	95.82	279.3	0.4365			776.6	1020.3
447	98.43	13.2	0.0207			255.2	341.5
448	98.82	295.5	0.4617			792.7	1041.1
453	99.00	2788.5	4.3571			1798.5	2330.5
458	100.25	235.2	0.3675			729.3	959.2
459	100.35	17.0	0.0266			279.8	373.8
460	100.53	9.7	0.0152			227.9	305.5
461	100.78	43.5	0.0680			394.0	523.4
462	100.90	412.4	0.6443			895.2	1173.4
466	101.57	67.4	0.1053			462.1	612.4
476	102.85	9.8	0.0153			228.6	306.5
479	103.25	7.9	0.0123			211.4	283.7
480	103.37	13.4	0.0209			256.0	342.5
481	103.44	7.0	0.0109			201.9	271.3
483	104.21	89.0	0.1391			511.6	676.7
488	104.66	1506.8	2.3544			1436.6	1868.5
494	105.07	31.1	0.0486			348.6	464.1
498	105.37	29.7	0.0463			342.5	456.1
499	105.48	2.3	0.0036			134.6	182.0
500	105.60	20.9	0.0327			301.4	402.3
501	105.71	2.0	0.0031			127.7	172.8
503	105.78	77.1	0.1204			485.4	642.6
504	105.85	23.9	0.0373			316.5	422.0
511	106.35	43.0	0.0672			392.2	521.2
512	106.51	4.6	0.0072			174.0	234.2
514	106.67	10.7	0.0168			236.5	316.8
515	106.73	337.4	0.5271			832.0	1091.8
516	106.78	53.2	0.0831			423.9	562.4
517	106.94	2.1	0.0033			130.7	176.9
518	107.02	35.5	0.0554			365.6	486.4
519	107.11	4.2	0.0065			167.4	225.6
520	107.21	7.0	0.0109			202.2	271.6
521	107.39	7.8	0.0121			210.1	282.0
527	108.20	162.9	0.2545			637.8	840.7
528	108.42	0.0	0.0001	These inlets are acting in parallel. Flows are added together and divided evenly to each structure. Q50 = (31.8+210.1+7262+193.2+530)/5 = 1645.4 Q100 = (44.1+282.0+9196.9+259.7+700.7)/5 = 2096.7		31.8	44.1
529	108.52	7.8	0.0121			210.1	282.0
530	108.61	127661.1	199.4704			7262.0	9196.9
531	108.70	6.2	0.0097			193.2	259.7
532	108.80	98.1	0.1532			530.0	700.7
533	109.19	7.3	0.0115			205.8	276.4
534	109.36	86.4	0.1350			506.1	669.6
536	109.56	93.8	0.1466			521.5	689.7
538	109.74	160.9	0.2515			635.0	837.1
539	109.92	29.1	0.0455			340.2	453.1
540	110.03	10.4	0.0162			233.3	312.6
541	110.07	73.9	0.1155			478.0	633.0
542	110.18	126.0	0.1969			580.7	766.7
544	110.42	378.3	0.5911			867.5	1137.7
545	111.00	133.4	0.2084			593.0	782.5
546	111.12	155.4	0.2428			626.9	826.6
551	112.25	1164.4	1.8194			1307.6	1703.4
552	112.40	86.1	0.1345			505.4	668.7
554	112.69	8322.1	13.0033			2680.6	3450.9
556	113.00	2225.6	3.4776			1656.4	2149.3
560	113.16	1753.2	2.7394			1518.3	1972.9
562	113.43	197.8	0.3091			684.7	901.4
566	113.85	37.7	0.0589			373.9	497.1
567	114.03	83.3	0.1302			499.4	660.9
570	114.22	37.9	0.0591			570's area was added to 567	
574	114.84	14.2	0.0222			261.7	350.1

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
575	115.02	56.9	0.0890			434.6	576.5
576	115.69	481.5	0.7523			947.3	1240.5
577	115.82	79.9	0.1248			491.7	650.9
582	116.19	16.3	0.0255			275.2	367.8
583	116.26	9.8	0.0153			228.6	306.5
584	116.42	356.1	0.5564			848.6	1113.2
585	116.51	1.6	0.0024			117.1	158.7
586	116.58	2.3	0.0035			133.7	180.8
587	116.65	8.1	0.0127			213.5	286.5
588	116.78	22.1	0.0345			307.6	410.4
590	116.86	96.5	0.1508			526.9	696.7
591	117.30	10.2	0.0159			231.8	310.7
593	117.55	242.5	0.3789			737.5	969.8
595	117.66	9.6	0.0150			226.7	304.0
602	118.27	17.2	0.0269			280.7	375.0
604	118.54	142.3	0.2223			607.1	800.9
605	118.67	773.0	1.2078			1126.0	1470.3
609	119.01	244.7	0.3824			739.9	973.0
612	119.53	7.5	0.0118			207.6	278.8
615	119.79	7.9	0.0123			211.4	283.7
616	119.91	84.4	0.1319			501.7	663.9
617	120.40	10.1	0.0157			230.9	309.4
618	120.47	113.4	0.1772			558.9	738.3
619	120.73	13.4	0.0210			256.4	343.1
620	120.99	88.0	0.1376			509.5	674.1
621	121.14	2250.4	3.5162			1663.1	2157.9
622	121.34	23.9	0.0374			316.7	422.3
624	121.59	26.0	0.0406			326.2	434.8
626	121.68	556.4	0.8693			998.6	1306.6
632	122.12	19.7	0.0307			294.8	393.6
633	122.25	21.3	0.0333			303.6	405.1
634	122.42	29.7	0.0464			342.7	456.4
635	122.52	31.1	0.0486			348.6	464.1
636	122.65	1037.8	1.6215			1253.8	1634.4
637	122.93	27.5	0.0430			333.3	444.0
638	123.09	8.8	0.0137			219.7	294.7
639	123.25	255.1	0.3986			751.3	987.6
640	123.48	186.9	0.2920			670.6	883.2
641	123.84	206.4	0.3225			695.4	915.3
642	124.32	39.5	0.0617			380.3	505.6
643	124.56	25.6	0.0400			324.6	432.7
644	124.58	3.8	0.0060			162.1	218.5
648	125.83	450.4	0.7038			924.5	1211.2
649	125.91	30.1	0.0470			344.4	458.6
650	125.99	1103.7	1.7245			1282.3	1670.9
653	126.57	29.0	0.0453			339.6	452.3
658	127.12	10.9	0.0170			237.7	318.5
659	127.41	52.9	0.0826			423.0	561.3
660	127.56	6.7	0.0104			198.6	266.9
661	127.75	267.1	0.4173			763.9	1004.0
662	128.24	11.3	0.0177			241.0	322.8
663	128.70	76.5	0.1195			484.0	640.9
664	128.81	665.5	1.0399			1066.1	1393.4
665	129.05	21.9	0.0341			306.4	408.7
666	129.20	88.4	0.1381			510.2	675.0
667	129.42	170.9	0.2671			649.1	855.4
669	129.79	212.2	0.3316			702.4	924.4
671	130.08	49.1	0.0768			411.8	546.7
684	132.82	275.3	0.4302			772.5	1015.0
685	133.00	19.4	0.0303			293.5	391.8
690	134.56	956.8	1.4950			1217.1	1587.4
691	134.85	674.8	1.0544			1071.5	1400.4
692	135.15	23.0	0.0359			312.2	416.3
693	135.36	24.6	0.0384			319.8	426.3
694	135.99	39.9	0.0624			381.7	507.4
695	136.12	98.4	0.1538			530.7	701.6
696	136.36	6.8	0.0107			200.5	269.4
700	137.80	7.2	0.0113			204.5	274.6
704	138.78	37.6	0.0587			373.5	496.6
705	138.84	16.9	0.0264			278.9	372.6
706	138.95	0.2	0.0002			50.3	69.1

I40 ID Number	MP	Drainage Area (acre)	Area (sq. mi.)	Slope (%)	Slope (ft/ft)	Q50 (cfs)	Q100 (cfs)
710	139.77	195.0	0.3046			681.0	896.7
714	140.20	25.4	0.0396			323.5	431.2
718	140.87	61.1	0.0955			446.0	591.4
725	141.12	37.2	0.0581			371.9	494.6
727	141.23	18.4	0.0287			287.5	384.0
729	141.45	16.2	0.0253			274.7	367.1
737	141.85	11.1	0.0173			238.9	320.1
743	142.14	12.4	0.0193			249.0	333.3
766	145.82	900.5	1.4071			1190.5	1553.2
771	146.15	114.4	0.1787			560.6	740.5
774	146.66	1394.6	2.1791			1396.6	1817.3
779	147.75	131.5	0.2054			589.8	778.4
784	148.15	141.3	0.2209			605.6	798.9
798	149.20	9054.1	14.1470			2764.4	3556.9
808	150.00	1868.5	2.9196			1554.0	2018.5
814	64.20	184.5	0.2883			667.5	879.1
815	77.50	169.4	0.2646			647.0	852.6
816	89.40	50147.5	78.3555			5163.4	6575.9
817	89.80	87.1	0.1361			507.6	671.5
818	92.80	10021.9	15.6591			2868.8	3689.0
819	96.50	34.8	0.0544			363.0	483.0
820	96.80	264.5	0.4133			761.2	1000.5
821	103.90	9.9	0.0155			229.8	308.0
822	109.00	17.3	0.0270			281.4	375.9
823	105.17	6.7	0.0104			198.6	266.9

Supplement C

Risk Ratings

Functional Likelihood of Failure (LoF) Rating - Flooding or Collapse	
Consequence Description	**Failure Score**
Hydraulic Function - Failure: Flooding	
Culvert meets 50- and 100-year drainage criteria	1
Culvert meets 50-year criteria, does not meet 100-year criteria	3
Culvert does not meet 50- or 100-year drainage criteria	5
Culvert has no basin	1
Culvert is not within any FEMA floodplains	1
Culvert is within area in which flood hazards are undertermined, but possible, Zone D	2
Culvert is within 500-year flood plain (0.2% annual chance flood), Zone X	3
Culvert is within 100-year flood plain (1% annual chance flood), Zones A, AE, AH, AO, AR, A99, V, VE	4
Culvert is within a FEMA floodway	5
Culvert has no history of flooding	1
Culvert has minor history of flooding (infrequent, not severe)	2
Culvert has history of flooding (medium severity/frequency)	3
Culvert has history of flooding (frequent or severe)	4
Culvert failure caused by flood event	5
Physical Condition - Failure: Collapse	
Concrete Corrosion Potential	
High	3
Moderate	2
Low	1
Steel Corrosion Potential	
High	3
Moderate	2
Low	1
Timber	3
All other materials Corrosion Potential = none	1
Consequence of Failure (CoF) Rating	
Social Impacts	
Culvert is within Rural Area	3
Culvert is within Urban Area	1
Emergency Access Disrupt?	
No	1
Yes	3
Traffic Flow Disrupt	
Minor Collector	1
Major Collector	1
Minor Arterial	2
Principal Arterial - Other	3
Principal Arterial - Other Freeways or Expressways	4
Interstate	5

Likelihood of Failure (LoF) = LoF Rating + Flooding + Collapse (Highest Values)
Consequence of Failure (CoF) = Social Impact + Project Coordination (Highest Values)
Risk of Failure (RoF) Score = Likelihood of Failure Rating (LoF) * Consequence of Failure (CoF)
RoF </= 110 - Low Risk
RoF from 111 to 142 - Medium Risk
RoF from 143 to 186 - High Risk
RoF of 186 + - Critical Risk

Likelihood of Failure (LoF) Rating

Field	Condition		1	2	3	4
CulvertAccessibility	Yes		1			
CulvertAccessibility	No			2		
ReasonforInaccessibility	not found			2		
ReasonforInaccessibility	weeds, debris, heavy vegetation			2		
ReasonforInaccessibility	outside of ROW fence				3	
ReasonforInaccessibility	steep slopes			2		
ReasonforInaccessibility	silted up				3	
ReasonforInaccessibility	below water			2		
ReasonforInaccessibility	other		1			
Material	corrugated metal		1			
Material	concrete		1			
Material	plastic		1			
Material	metal (other)		1			
Material	timber (wood)					4
Material	other			2		
Silting	Clean		1			
Silting	minor silting (<10%)		1			
Silting	10% to 30% silted			2		
Silting	30% to 60% silted				3	
Silting	60% to 90% silted				3	
Silting	> 90% silted					4
PhysicalDamage	None		1			
PhysicalDamage	minor damage (metal)		1			
PhysicalDamage	moderate damage (metal)			2		
PhysicalDamage	heavy damage (metal)				3	
PhysicalDamage	spalling, no exposed rebar (concrete)			2		
PhysicalDamage	severe spalling, exposed rebar (concrete)					4
PhysicalDamage	moderate cracks on wingwalls or headwall (<1/4 in.)			2		
PhysicalDamage	cracks on wingwalls or headwall (> 1/4 in.)				3	
PhysicalDamage	Circular Concrete Pipe Damage			2		
PhysicalDamage	Spalling and Cracks on Headwall/Aprons				3	
PhysicalDamage	Severe Cracks on Concrete (>1/4 in.)				3	
PhysicalDamage	Other		1			
PhysicalDamage	<null>	0				
Corrosion	none evident		1			
Corrosion	minor (rusting on inside OR outside)			2		
Corrosion	moderate (rusting on inside AND outside)				3	
Corrosion	major					4
Corrosion	not known			2		
Corrosion	minor damage (metal)			2		
Scour	little or no scour (< 1 ft.)		1			
Scour	minor scour (1 to 3 ft)			2		
Scour	major scour (3 > 8 ft)				3	
Scour	severe scour (> 8 ft)					4
Channel Condition	good		1			
Channel Condition	weeds and/or debris			2		
Channel Condition	Dry/Heavily Vegetated				3	
Channel Condition	Channel Degrading				3	
Channel Condition	Swampy/Heavily Vegetated				3	
Assign culvert the highest score based on the conditions above.			**1 - Good**	**2 - Fair**	**3 - Poor**	**4 - Critical**

Risk Rating Assessment

Individual Scoring - Field Inventory

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score
I40 -411	80.98	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	60	2	Corrugated Metal Circular	0
I40 -29	3.94	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0
I40 -203	33.85	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -204	34.18	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -560	113.16	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	96	3	Corrugated Metal Arch Pipe	0
I40 -6	0.57	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Corrugated Metal Circular	0
I40 -620	120.99	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Major	4	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0
I40 -574	114.84	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Severe Cracks on Concrete (>1/4 in.)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0
I40 -44	6.44	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0
I40 -281	52.58	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Heavy Damage (metal)	3	Moderate (Rusting on Inside AND Outside)	3	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0
I40 -31	4.20	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0
I40 -77	10.42	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0
I40 -93	13.08	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0
I40 -17	2.50	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -1	0.12	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -3	0.29	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0
I40 -4	0.36	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0
I40 -5	0.48	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -58	7.66	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0
I40 -74	10.22	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Heavy Damage (metal)	3	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -286	53.90	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -400	77.88	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -414	84.58	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -416	84.92	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -420	86.03	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0
I40 -427	88.01	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -430	88.96	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -516	106.78	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0
I40 -693	135.36	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0
I40 -21	2.99	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -342	67.96	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -357	72.95	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0
I40 -309	59.50	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	106	3	Corrugated Metal <Null>	0
I40 -695	136.12	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	96	0	Concrete Box	4
I40 -609	119.01	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	72	0	Concrete Box	4
I40 -273	49.73	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	54	2	Corrugated Metal Circular	0
I40 - 823	105.17	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	54	0	Concrete Box	4
I40 -454	99.02	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0
I40 -75	10.33	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	42	1	Corrugated Metal Circular	0
I40 -337	65.61	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	42	1	Corrugated Metal Circular	0
I40 -604	118.54	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	42	1	Corrugated Metal Circular	0
I40 -666	129.20	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -32	4.30	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0
I40 -274	50.03	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -346	69.11	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -350	70.27	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -440	94.68	Yes	1	No Action	1	Concrete	1	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Concrete Circular	0
I40 -442	95.48	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Heavy Damage (metal)	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0
I40 -460	100.53	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -491	104.71	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0
I40 -635	122.52	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0
I40 -637	122.93	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0
I40 -639	123.25	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0

Individual Scoring - Desktop Analysis / **Group Scoring**

	Individual Scoring - Desktop Analysis																		Group Scoring: Max of Physical Inventory		Drainage Criteria + Floodplain + Drainage History	Corrosion Potential	Urban/Rural + Emergency Access + Traffic Flow		Social Impacts + Hydrology Flooding	
Culvert ID	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -411	0.02	1	No	No	No-No	5	Floodway	5	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	11	3	11	20	11	220
I40 -29	124.61	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	9	3	11	20	11	220
I40 -203	6.91	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	9	2	11	19	11	209
I40 -204	2.58	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	9	2	11	19	11	209
I40 -560	1753.21	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -6	31.80	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -620	88.04	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -574	14.19	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -44	189.81	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -281	26.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -31	11.17	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -77	3.42	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -93	4.08	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -17	242.67	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -1	28.98	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -3	21.21	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -4	46.75	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -5	11.19	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -58	32.36	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -74	11.54	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	9	3	11	18	11	198
I40 -286	3244.87	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -400	380.84	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -414	1.63	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -416	52.00	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -420	3.05	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -427	24.37	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -430	92.41	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -516	53.17	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	7	3	11	18	11	198
I40 -693	24.57	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	9	2	11	17	11	187
I40 -21	324.89	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	9	2	11	17	11	187
I40 -342	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	6	3	11	17	11	187
I40 -357	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	6	3	11	17	11	187
I40 -309	1538.41	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -695	0.02	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	9	1	11	16	11	176
I40 -609	244.70	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -273	176.86	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 - 823	0.11	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -454	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -75	9.89	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -337	16.00	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -604	142.29	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -666	88.37	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -32	20.84	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -274	50.01	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -346	21.65	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -350	304.19	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -440	11.48	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -442	133.22	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -460	9.71	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -491	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -635	31.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -637	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -639	255.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -143	19.23	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	32	1	Concrete Circular	0	37.79	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -280	52.48	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	65.20	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -22	3.15	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Concrete Arch Pipe	0	63.30	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	9	1	11	16	11	176
I40 -28	3.88	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	6.75	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -34	4.58	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	104.75	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -45	6.61	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	18.34	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -76	10.38	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	7.37	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -92	13.04	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	4.90	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -127	15.84	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	Clean	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	29.05	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -128	15.99	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	82.11	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -139	18.34	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Major Scour (3 ft to 8 ft)	3	Swampy/Heavily Vegetated	3	30	1	Concrete Circular	0	18.01	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -141	18.91	Yes	1	No Action	1	Concrete	1	>90% Silted	4	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	8.63	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	7	1	11	16	11	176
I40 -237	41.30	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	52.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -242	42.38	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	48.93	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -243	42.53	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	4.22	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -296	57.45	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	6.44	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -360	74.13	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal <Null>	0	69.63	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -401	78.07	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -402	78.25	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	71.16	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -465	101.56	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -466	101.57	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	67.38	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -602	118.27	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	17.19	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -612	119.53	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	7.53	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -616	119.91	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	84.40	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -653	126.57	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	28.98	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -660	127.56	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -59	7.75	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	53.79	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	9	3	11	16	11	176
I40 -2	0.2	No	2	Not Found	2	Corrugated Metal	1	>90% Silted	4	Other	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -20	2.84	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	2.23	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -27	3.73	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -38	5.71	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	0.84	1	Yes	No	Yes-No	3	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -52	7.28	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	None Evident	1	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -70	9.72	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 -101	14.50	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	6.78	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -171	26.62	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	19.67	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -236	41.16	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	110.14	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -254	45.60	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	35.73	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -278	51.56	No	2	Not Found	2	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	0.02	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	5	3	11	16	11	176
I40 - 815	77.50	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	169.37	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -433	90.18	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	57.39	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -436	91.61	No	2	Not Found	2	Corrugated Metal	1	>90% Silted	4	None	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	6	2	11	16	11	176
I40 -512	106.51	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	4.63	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -518	107.02	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	35.47	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -539	109.92	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	29.11	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -618	120.47	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Heavy Damage (metal)	3	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	113.42	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -671	130.08	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	49.13	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 -737	141.85	No	2	Outside of ROW Fence	3	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	11.06	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	7	3	11	16	11	176
I40 - 818	92.80	Yes	1	Below Water	2	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	<Null>	0	Good	1	120	0	Concrete Box	4	10021.82	3	No	No	No-No	5	100-year Floodplain	4	No	1	Concrete - N/A	1	Rural	3	Yes	3	Interstate	5	2	2	10	1	11	15	11	165
I40 -710	139.77	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	194.96	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -718	140.87	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	0.02	1	Yes	Yes	Yes-Yes	1	Floodway	5	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -556	113.00	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	3	Corrugated Metal Circular	0	2225.62	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -165	25.04	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	60	2	Corrugated Metal Circular	0	145.74	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -305	59.00	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	60	2	Corrugated Metal Circular	0	42.62	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -694	135.99	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	54	2	Corrugated Metal Circular	0	39.90	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	9	2	11	15	11	165
I40 -771	146.15	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	54	2	Corrugated Metal Circular	0	114.37	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -692	135.15	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0	23.00	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	9	2	11	15	11	165
I40 -669	129.79	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	212.19	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -536	109.56	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	93.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -164	24.87	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	82.11	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	9	2	11	15	11	165
I40 -289	55.27	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	43.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -329	64.41	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	14.54	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -727	141.23	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	18.36	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -183	29.35	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	36.42	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	9	2	11	15	11	165
I40 -206	34.32	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	9.80	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -292	56.04	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	9.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -297	57.56	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	11.37	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -298	57.91	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	3.58	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -325	64.02	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Spalling, No Exposed Rebar (concrete)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	9.89	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -725	141.12	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	25	1	Corrugated Metal Arch Pipe	0	37.17	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -105	14.94	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	8.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -166	25.14	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Moderate Damage (metal)	2	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	5.89	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -172	27.08	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	6.80	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -209	34.64	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	582.48	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -212	34.95	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	50.39	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -295	56.67	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	9.60	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -315	60.24	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -316	60.33	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	7.48	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -324	63.54	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	11.41	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -326	64.07	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	1.99	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -328	64.26	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	6.40	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -338	65.69	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	3.55	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -355	71.39	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	6	3	11	15	11	165
I40 -356	72.67	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	6	3	11	15	11	165
I40 -358	73.23	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	6	3	11	15	11	165
I40 -359	73.49	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	6	3	11	15	11	165
I40 - 822	109.00	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	17.30	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	7	2	11	15	11	165
I40 -717	140.64	No	2	Outside of ROW Fence	3	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	6	3	11	15	11	165
I40 -409	80.41	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	500-year Floodplain	3	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	9	3	9	18	9	162
I40 -50	7.10	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Cracks on Concrete (>1/4 in.)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -51	7.20	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Severe Cracks on Concrete (>1/4 in.)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	3139.00	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -713	140.38	No	2	Outside of ROW Fence	3	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	6	2	11	14	11	154
I40 -37	4.81	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Cracks on Concrete (>1/4 in.)	4	Major	4	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	120	0	Concrete Box	4	4.97	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -184	30.18	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	1295.12	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -424	87.35	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	1304.04	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 - 816	89.40	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -714	140.38	No	2	Outside of ROW Fence	3	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	25.36	1	Yes	Yes	Yes-Yes	1	100-year Floodplain	4	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	6	2	11	14	11	154
I40 -271	49.55	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	819.66	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -441	95.03	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	825.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -483	104.21	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	84	3	Corrugated Metal Circular	0	89.01	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -544	110.42	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	72	0	Concrete Box	4	378.30	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -353	70.73	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	72	0	Concrete Box	4	421.50	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -528	108.42	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	72	0	Concrete Box	4	0.04	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -529	108.52	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	72	0	Concrete Box	4	7.77	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -530	108.61	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	72	0	Concrete Box	4	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -532	108.80	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	72	0	Concrete Box	4	98.06	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -79	10.64	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	67	2	Corrugated Metal Circular	0	2.54	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -663	128.70	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	54	2	Corrugated Metal Circular	0	76.50	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -621	121.14	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	2250.39	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -258	46.39	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Severe Spalling, Exposed Rebar (concrete)	4	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	575.93	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -269	48.91	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	0	Concrete Box	4	328.53	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -448	98.82	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	295.51	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -449	98.84	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -499	105.48	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -503	105.78	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0	77.07	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -541	110.07	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	73.89	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -552	112.40	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	86.10	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -595	117.66	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Ellipse	0	9.58	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -704	138.78	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	48	2	Concrete Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -766	145.82	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	900.53	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -798	149.20	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	9054.06	3	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -95	13.34	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	45	1	Corrugated Metal Circular	0	14.48	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -142	19.12	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	42	1	Concrete Circular	0	21.52	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -287	54.87	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	42	1	Corrugated Metal Circular	0	14.54	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -636	122.65	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	1037.75	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -64	8.46	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	1.35	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -624	121.59	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Corrugated Metal Circular	0	25.96	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -641	123.84	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	206.41	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -18	2.68	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -633	122.25	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Corrugated Metal Circular	0	21.32	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -634	122.42	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	29.71	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -648	125.83	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	450.41	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -39	5.80	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Major Scour (3 ft to 8 ft)	3	Good	1	36	1	Corrugated Metal Circular	0	0.35	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -347	69.68	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	11.48	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -395	75.27	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	50.79	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -459	100.35	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -462	100.90	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Corrugated Metal Circular	0	412.38	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -485	104.60	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -486	104.62	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -487	104.64	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -488	104.66	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	1506.78	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -489	104.67	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -490	104.69	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -638	123.09	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -24	3.37	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -640	123.48	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	30	1	Corrugated Metal Circular	0	186.86	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -481	103.44	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	30	1	Corrugated Metal Circular	0	6.97	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -46	6.70	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	339.94	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	9	3	11	14	11	154
I40 -48	6.89	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	27.48	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -140	18.52	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	143.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -659	127.41	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	52.86	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -42	6.16	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	30	1	Corrugated Metal Circular	0	1.57	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -60	8.18	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	3.42	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -61	8.23	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	1.68	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -63	8.34	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Moderate Damage (metal)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	4.35	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -68	9.60	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -84	11.74	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	18.41	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -138	18.17	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	Not Known	2	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -238	41.43	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	2.87	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -259	46.64	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	16.60	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -263	47.47	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	19.09	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -277	50.91	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -279	52.24	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	304.01	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -348	69.90	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	13.00	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -480	103.37	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	30	1	Corrugated Metal Circular	0	13.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -494	105.07	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	31.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -514	106.67	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Concrete Circular	0	10.75	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -615	119.83	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	7.90	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -622	121.34	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	23.93	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -643	124.56	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	25.60	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -644	124.68	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	3.82	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -658	127.12	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	10.90	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -662	128.24	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	11.32	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -665	129.05	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	21.85	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -763	145.46	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	6	2	11	14	11	154
I40 -16	2.55	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -619	120.73	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Metal (other) Circular	0	13.42	1	No	No	No-No	5	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -56	7.42	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -7	0.89	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Channel Degrading	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -15	2.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Channel Degrading	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -30	4.08	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -49	7.10	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	13.62	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -65	8.49	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -69	9.60	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	0.09	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -73	10.17	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -85	11.80	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -200	32.55	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	>90% Silted	4	Heavy Damage (metal)	3	Not Known	2	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	12.54	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -202	33.19	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	4	2	5	1	11	14	11	154
I40 -246	43.15	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	3.66	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -250	43.98	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	192.66	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -408	80.22	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -412	81.21	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -415	84.76	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -419	85.74	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -423	87.23	No	2	Not Found	2	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -425	87.44	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -426	87.69	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -429	88.35	No	2	Not Found	2	Corrugated Metal	1	>90% Silted	4	None	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -477	102.98	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -517	106.94	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	2.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -519	107.11	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Corrugated Metal Circular	0	4.13	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -557	113.09	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -617	120.40	Yes	1	No Action	1	Plastic	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Plastic Circular	0	10.06	1	No	No	No-No	5	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -652	126.27	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -705	138.84	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Concrete Circular	0	16.88	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -706	138.95	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Concrete Circular	0	0.04	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -762	145.36	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	6	2	11	14	11	154
I40 -784	148.15	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Concrete Circular	0	141.34	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -779	147.75	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	18	1	Concrete Circular	0	131.46	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	7	1	11	14	11	154
I40 -62	8.24	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Other	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	5	3	11	14	11	154
I40 -185	30.38	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -187	30.42	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Heavy Damage (metal)	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -188	30.43	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -190	30.46	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -193	31.00	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal Circular	0	5.43	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	7	3	11	14	11	154
I40 -600	117.82	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Major	4	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -614	119.77	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Moderate Damage (metal)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	0	0	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	4	2	3	3	11	14	11	154
I40 -178	28.40	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	0	Concrete Box	4	215.81	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -404	78.62	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	33.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -151	22.03	Yes	1	No Action	1	Metal (other)		60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Metal (other) Unknown	0	12.82	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	None	1	Urban	1	Yes	3	Interstate	5	3	2	9	1	9	16	9	144
I40 -157	23.08	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	97.62	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -159	23.35	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Heavy Damage (metal)	3	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	36.11	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -162	23.71	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	133.55	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -163	24.23	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Urban	1	Yes	3	Interstate	5	4	2	5	3	9	16	9	144
I40 -158	23.31	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	21.19	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	7	3	9	16	9	144
I40 -251	45.08	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	680.74	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -41	6.11	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	64	2	Corrugated Metal Circular	0	2.98	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -167	25.31	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	60	2	Corrugated Metal Circular	0	152.98	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -291	55.77	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	60	2	Corrugated Metal Circular	0	101.70	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -322	62.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	60	2	Corrugated Metal Circular	0	45.03	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -323	62.69	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	60	2	Corrugated Metal Circular	0	83.87	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -335	65.23	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	60	2	Corrugated Metal Circular	0	48.65	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -304	58.83	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	42	1	Corrugated Metal Circular	0	39.79	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -317	60.46	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	42	1	Corrugated Metal Circular	0	21.70	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -696	136.36	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	42	1	Corrugated Metal Circular	0	6.84	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	9	2	11	13	11	143
I40 -205	34.23	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	40	1	Corrugated Metal Circular	0	0.42	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -306	59.25	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	13.15	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -310	59.66	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	19.38	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -311	59.91	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Corrugated Metal Circular	0	16.53	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -314	60.06	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	9.47	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -330	64.51	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	618.53	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -332	64.76	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	14.08	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -566	113.85	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	37.70	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -667	129.42	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	170.94	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -106	15.11	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	20.20	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -321	62.11	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	14.94	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -533	109.19	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	7.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -729	141.45	No	2	Other	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	16.20	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -760	145.32	No	2	Outside of ROW Fence	3	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	6	1	11	13	11	143
I40 -8	1.24	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -25	3.49	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -146	20.20	No	2	Silted Up	3	Concrete	1	60% to 90% Silted	3	Spalling, No Exposed Rebar (concrete)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	6	1	11	13	11	143
I40 -173	27.27	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	37.68	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -208	34.50	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Corrugated Metal Circular	0	19.27	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -510	106.25	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	6	1	11	13	11	143
I40 -522	107.61	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -673	130.84	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Severe Scour (> 8 ft)	4	Channel Degrading	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -685	133.00	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	19.42	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -688	134.05	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	5	2	11	13	11	143
I40 -720	140.87	No	2	Other	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Not Known	2	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	6	3	11	13	11	143
I40 -753	143.37	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -773	146.66	No	2	Traffic	1	Corrugated Metal	1	Minor Silting (<10%)	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -774	146.66	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	1394.62	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	7	2	11	13	11	143
I40 -796	148.96	Yes	1	No Action	1	Corrugated Metal	1	>90% Silted	4	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	4	2	3	2	11	13	11	143
I40 -133	16.50	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	144	3	Corrugated Metal Circular	0	6022.83	2	Yes	Yes	Yes-Yes	1	100-year Floodplain	4	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	6	3	9	15	9	135
I40 -808	150.00	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	360	0	Concrete Box	4	1868.51	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -26	3.61	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	196	0	Concrete Box	4	92.66	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -40	6.06	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	146	0	Concrete Box	4	103.71	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -169	26.37	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	120	0	Concrete Box	4	3.44	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -11	2.08	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	120	0	Concrete Box	4	90.23	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 - 814	64.20	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	120	0	Concrete Box	4	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 - 817	89.80	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	87.12	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -527	108.20	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Major Scour (3 ft to 8 ft)	3	Swampy/Heavily Vegetated	3	120	0	Concrete Box	4	162.89	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -605	118.67	No	2	Outside of ROW Fence	3	Concrete	1	Minor Silting (<10%)	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	772.96	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -54	7.34	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	96	0	Concrete Box	4	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -55	7.35	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	96	0	Concrete Box	4	86.65	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -690	134.56	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	96	0	Concrete Box	4	956.77	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -71	10.00	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	403.93	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -515	106.73	No	2	Steep Slopes	2	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	84	3	Concrete Circular	0	337.36	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -661	127.75	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	84	0	Concrete Box	4	267.06	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -270	49.14	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	72	0	Concrete Box	4	247.55	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -531	108.70	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	72	0	Concrete Box	4	6.18	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -181	28.82	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	60	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -241	42.20	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	60	2	Corrugated Metal Circular	0	104.31	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -255	45.76	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	60	2	Corrugated Metal Circular	0	74.00	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -567	114.03	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	2	Concrete Circular	0	83.34	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -590	116.86	Yes	1	Weeds, Debris, Heavy Vegetation	2	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	2	Concrete Circular	0	96.52	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -249	43.74	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	54	2	Corrugated Metal Circular	0	55.00	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -53	7.31	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -14	2.35	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -43	6.27	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	9.49	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -124	15.52	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -215	35.83	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Corrugated Metal Circular	0	36.37	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -363	74.64	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -364	74.64	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -365	74.65	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -366	74.65	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -368	74.66	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -369	74.67	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -371	74.68	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -372	74.68	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -373	74.69	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -374	74.69	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -375	74.70	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -376	74.71	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	17996.32	3	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -377	74.71	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -379	74.72	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -378	74.72	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -380	74.73	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -381	74.73	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -382	74.74	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -383	74.74	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -384	74.75	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -385	74.75	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -387	74.76	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -388	74.77	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -389	74.77	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -390	74.78	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -391	74.78	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 - 819	96.50	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Concrete Circular	0	34.78	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -455	99.04	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	48	2	Concrete Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -588	116.78	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Ellipse	0	22.09	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -642	124.32	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	39.51	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -96	13.42	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	45	1	Corrugated Metal Circular	0	15.60	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -13	2.27	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -229	39.75	Yes	1	No Action	1	Plastic	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Plastic Circular	0	417.92	1	No	No	No-No	5	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -266	48.36	No	2	Weeds, Debris, Heavy Vegetation	2	Metal (other)		>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -268	48.80	Yes	1	No Action	1	Metal (other)		>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -393	74.96	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	77.80	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -396	75.41	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	17.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -398	75.86	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	15.94	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -399	75.97	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -458	100.25	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	235.17	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -461	100.78	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	43.52	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -476	102.85	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -497	105.32	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	36	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -498	105.37	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	29.66	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -504	105.85	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	0	Concrete Box	4	23.88	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -520	107.21	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	7.00	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -521	107.39	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	7.77	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -540	110.03	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	10.33	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -582	116.19	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	16.29	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -656	126.77	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -791	148.56	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -148	20.42	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	34	1	Concrete Circular	0	329.22	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -632	122.12	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	19.67	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -80	10.82	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	6.82	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -82	11.17	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	10.77	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -83	11.51	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	30	1	Corrugated Metal Circular	0	10.62	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -99	13.99	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	11.39	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -100	14.25	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -192	30.71	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	5.45	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -272	49.55	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -276	50.57	Yes	1	Weeds, Debris, Heavy Vegetation	2	Concrete	1	>90% Silted	4	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -361	74.50	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -447	98.43	Yes	1	No Action	1	Concrete	1	Clean	1	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete Circular	0	13.24	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -467	101.58	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -479	103.25	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	7.90	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -500	105.60	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	20.90	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -598	117.85	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Heavy Damage (metal)	3	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -601	118.14	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -623	121.49	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -654	126.66	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	28	1	Corrugated Metal Arch Pipe	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -781	147.75	Yes	1	No Action	1	Concrete	1	Clean	1	Severe Spalling, Exposed Rebar (concrete)	4	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -501	105.71	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	1.99	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -783	148.15	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -36	4.71	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -66	8.86	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -72	10.11	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	5	3	11	12	11	132
I40 -98	13.73	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	4.70	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -168	26.03	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Heavy Damage (metal)	3	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Channel Degrading	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -170	26.41	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	1.77	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -198	32.21	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -199	32.36	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Major Scour (3 ft to 8 ft)	3	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	7.44	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -201	32.85	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Heavy Damage (metal)	3	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	12.74	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	3	2	5	1	11	12	11	132
I40 -221	37.67	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Moderate Damage (metal)	2	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -239	41.55	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	3.42	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -282	52.86	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -285	53.67	No	2	Weeds, Debris, Heavy Vegetation	2	Other	2	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Other Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -340	67.16	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -345	69.03	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -351	70.65	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	7.48	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -352	70.66	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -354	71.06	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -394	75.12	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 - 825	77.72	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -410	80.60	Yes	1	Outside of ROW Fence	3	Corrugated Metal	1	60% to 90% Silted	3	Minor Damage (metal)	1	Not Known	2	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -413	84.44	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -417	85.30	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -418	85.57	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -434	90.33	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -471	102.05	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -472	102.07	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -475	102.75	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -496	105.21	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -547	111.18	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -561	113.18	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -585	116.51	Yes	1	No Action	1	Concrete	1	Clean	1	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	1.57	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -586	116.58	Yes	1	No Action	1	Concrete	1	Clean	1	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	2.25	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -587	116.65	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Circular Concrete Pipe Damage	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Concrete Circular	0	8.12	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -591	117.30	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	10.17	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	7	3	11	12	11	132
I40 -603	118.38	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -607	118.85	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -611	119.45	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -625	121.67	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -627	121.76	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -647	125.47	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Heavy Damage (metal)	3	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -651	126.12	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Heavy Damage (metal)	3	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -679	131.43	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -687	133.77	No	2	Silted Up	3	Other	2	>90% Silted	4	Spalling, No Exposed Rebar (concrete)	2	Not Known	2	Little or no Scour (< 1 ft)	1	<Null>	0	24	1	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -700	137.80	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	7	1	11	12	11	132
I40 -722	140.96	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -739	141.88	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -740	141.88	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -794	148.63	Yes	1	No Action	1	Concrete	1	>90% Silted	4	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -523	107.79	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Severe Spalling, Exposed Rebar (concrete)	4	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	18	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -599	117.85	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	18	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -597	117.80	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -608	118.92	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Heavy Damage (metal)	3	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	0	0	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -610	119.15	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	0	0	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	3	2	3	3	11	12	11	132
I40 -686	133.49	Yes	1	No Action	1	Other	2	>90% Silted	4	Moderate Damage (metal)	2	Not Known	2	Little or no Scour (< 1 ft)	1	<Null>	0	0	0	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	4	2	3	1	11	12	11	132
I40 -153	22.37	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	60	2	Concrete Circular	0	231.79	1	No	No	No-No	5	Outside Floodzones	1	Yes	3	Concrete - Low	1	Urban	1	Yes	3	Interstate	5	2	2	9	1	9	14	9	126
I40 -179	28.40	Yes	1	No Action	1	Concrete	1	>90% Silted	4	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - High	3	Urban	1	Yes	3	Interstate	5	4	2	3	3	9	14	9	126
I40 -154	22.54	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Not Known	2	Major Scour (3 ft to 8 ft)	3	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	5	3	9	14	9	126
I40 -712	140.30	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	360	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -431	89.19	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	144	0	Concrete Box	4	9866.74	3	Yes	No	Yes-No	3	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	8	1	11	11	11	121
I40 -437	92.04	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	537.94	1	Yes	Yes	Yes-Yes	1	100-year Floodplain	4	No	1	Concrete - N/A	1	Rural	3	Yes	3	Interstate	5	2	2	6	1	11	11	11	121
I40 -438	93.43	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	2105.93	1	Yes	No	Yes-No	3	100-year Floodplain	4	No	1	Concrete - N/A	1	Rural	3	Yes	3	Interstate	5	1	2	8	1	11	11	11	121
I40 -293	56.23	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	2	Corrugated Metal Circular	0	110.56	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	7	2	11	11	11	121
I40 -108	15.37	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	6	3	11	11	11	121
I40 -801	149.27	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Arch Pipe	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -537	109.56	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -174	27.48	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	17.28	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -175	27.55	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	16.44	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -232	40.07	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	34.48	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -761	145.32	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	6	1	11	11	11	121
I40 -790	148.55	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -792	148.58	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -145	20.14	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	34	1	Concrete Circular	0	54.21	1	Yes	Yes	Yes-Yes	1	100-year Floodplain	4	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	6	1	11	11	11	121
I40 -177	28.05	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	7.66	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	5	2	11	11	11	121
I40 -195	31.34	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	16.55	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -235	40.45	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -294	56.48	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	17.35	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	7	2	11	11	11	121
I40 -301	58.28	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	16.42	1	No	No	No-No	5	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	7	2	11	11	11	121
I40 -334	65.08	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -675	130.89	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -734	141.65	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -793	148.63	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -9	1.46	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	5	2	11	11	11	121
I40 -211	34.84	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	9.20	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -213	35.33	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -341	67.51	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Moderate Damage (metal)	2	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -526	108.14	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -548	111.68	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -668	129.62	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -672	130.63	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -689	134.30	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	5	2	11	11	11	121
I40 -697	137.08	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	5	2	11	11	11	121
I40 -707	139.42	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -708	139.59	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -711	139.95	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -733	141.61	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -735	141.77	Yes	1	No Action	1	Corrugated Metal	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -742	142.10	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -745	142.33	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -746	142.59	No	2	Not Found	2	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -750	143.02	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -754	143.56	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -757	144.17	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	5	2	11	11	11	121
I40 -767	145.89	No	2	Outside of ROW Fence	3	Corrugated Metal	1	30% to 60% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -768	145.89	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -772	146.22	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -782	147.75	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -788	148.48	No	2	Outside of ROW Fence	3	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -789	148.52	No	2	Outside of ROW Fence	3	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -738	141.88	No	2	Outside of ROW Fence	3	Concrete	1	30% to 60% Silted	3	<Null>	0	Not Known	2	<Null>	0	Weeds and/or Debris	2	0	0	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -797	149.06	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Heavy Damage (metal)	3	Not Known	2	Little or no Scour (< 1 ft)	1	<Null>	0	0	0	Corrugated Metal Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	3	2	3	2	11	11	11	121
I40 -336	65.53	No	2	Steep Slopes	2	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	144	3	Corrugated Metal Circular	0	368.37	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -303	58.65	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -299	58.16	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	453.65	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -421	86.27	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	145.69	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -428	88.31	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	120	0	Concrete Box	4	240.53	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -545	111.00	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	120	0	Concrete Box	4	133.40	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -551	112.25	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	1164.44	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -649	125.91	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	0.02	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -650	125.99	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	1103.65	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -664	128.81	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	665.54	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -222	37.77	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Swampy/Heavily Vegetated	3	108	0	Concrete Box	4	444.18	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -244	42.67	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	96	0	Concrete Box	4	1702.56	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -257	46.24	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	971.91	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -546	111.12	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	96	0	Concrete Box	4	155.38	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -104	14.89	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	35.09	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -261	47.08	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	342.17	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -593	117.55	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	242.52	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -684	132.82	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling and Cracks on Headwall/Aprons	3	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	96	0	Concrete Box	4	275.30	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -245	42.93	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	72	0	Concrete Box	4	159.58	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -511	106.35	No	2	Steep Slopes	2	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Channel Degrading	3	72	0	Concrete Box	4	42.99	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -180	28.82	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	60	0	Concrete Box	4	81.97	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -248	43.54	No	2	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	54	2	Corrugated Metal Circular	0	51.14	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -109	15.37	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -110	15.38	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -111	15.39	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -115	15.43	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -117	15.45	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -118	15.46	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	3005.18	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -119	15.47	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -120	15.48	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -121	15.49	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -123	15.51	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -125	15.53	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -260	46.91	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	48	0	Concrete Box	4	179.73	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -288	55.17	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	311.38	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -392	74.72	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	48	2	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -386	74.76	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -450	98.95	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -451	98.97	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -452	98.99	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -453	99.00	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete <Null>	0	2788.51	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -802	149.32	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -349	70.08	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	4.22	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -91	12.74	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	13.00	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -194	31.19	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Corrugated Metal Circular	0	5.30	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -265	48.31	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -275	50.33	Yes	1	No Action	1	Metal (other)		60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	36	1	Metal (other) Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -445	95.82	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	0.02	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -446	96.48	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -484	104.06	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 - 824	105.18	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -629	121.86	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -81	11.06	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	9.93	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -89	12.02	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -107	15.19	Yes	1	No Action	1	Corrugated Metal	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Corrugated Metal Circular	0	2.07	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - NA	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -136	16.65	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -144	19.86	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	30	1	Concrete Circular	0	4.37	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -196	31.83	No	2	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	Minor Silting (<10%)	1	Heavy Damage (metal)	3	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	17.63	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -197	32.07	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	17.15	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Steel - Low	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -220	37.44	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	18.05	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -253	45.34	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	13.33	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -403	78.54	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -443	95.59	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -444	95.65	Yes	1	Weeds, Debris, Heavy Vegetation	2	Concrete	1	30% to 60% Silted	3	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -457	100.08	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -495	105.13	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -583	116.26	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete Circular	0	9.80	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -657	127.01	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	<Null>	0	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -775	146.82	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	6	2	11	10	11	110
I40 -502	105.71	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -12	2.17	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -19	2.77	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -23	3.26	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -33	4.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -35	4.71	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -47	6.80	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -67	9.03	Yes	1	No Action	1	Other	2	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Other Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	None	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -90	12.23	Yes	1	Weeds, Debris, Heavy Vegetation	2	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -224	38.55	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	9.23	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -247	43.43	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -262	47.40	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -264	47.87	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -469	101.84	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -470	101.93	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -474	102.60	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -478	103.16	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 - 826	104	No	2	No Action	1	Other	2	Clean	1	<Null>	0	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -513	106.60	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -538	109.74	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	160.94	1	No	No	No-No	5	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	7	1	11	10	11	110
I40 -558	113.15	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -571	114.27	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -578	115.80	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Major Scour (3 ft to 8 ft)	3	Dry/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -606	118.73	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -613	119.59	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -645	124.93	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -698	137.33	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -699	137.50	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Concrete Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -701	137.80	Yes	1	No Action	1	Other	2	Clean	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -721	140.93	No	2	Other	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -723	140.98	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -747	142.66	Yes	1	Outside of ROW Fence	3	Other	2	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Dry/Heavily Vegetated	3	24	1	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -751	143.18	No	2	Outside of ROW Fence	3	Other	2	Clean	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Other Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -759	144.39	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	<Null>	0	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	5	3	11	10	11	110
I40 -764	145.69	Yes	1	No Action	1	Concrete	1	60% to 90% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -778	147.47	Yes	1	No Action	1	Metal (other)		30% to 60% Silted	3	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Metal (other) Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -787	148.39	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -776	147.22	No	2	Outside of ROW Fence	3	Metal (other)		Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	<Null>	0	Good	1	16	1	Metal (other) Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -186	30.40	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -189	30.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -191	30.47	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -506	105.96	No	2	Steep Slopes	2	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	12	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -596	117.63	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -594	117.66	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	2	2	3	3	11	10	11	110
I40 -732	141.50	No	2	Outside of ROW Fence	3	Plastic	1	Minor Silting (<10%)	1	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	8	1	Plastic Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	3	2	3	1	11	10	11	110
I40 -756	143.94	Yes	1	No Action	1	Other	2	Clean	1	<Null>	0	Not Known	2	<Null>	0	<Null>	0	0	0	Other <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	None	1	Rural	3	Yes	3	Interstate	5	2	2	5	1	11	10	11	110
I40 -129	16.15	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	4.92	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	2	2	5	3	9	12	9	108
I40 -152	22.27	Yes	1	No Action	1	Metal (other)		10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Metal (other) Box	0	4.08	1	Yes	No	Yes-No	3	Outside Floodzones	1	Yes	3	None	1	Urban	1	Yes	3	Interstate	5	2	2	7	1	9	12	9	108
I40 -161	23.61	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Moderate (Rusting on Inside AND Outside)	3	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	6.56	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	3	2	3	3	9	12	9	108
I40 -126	15.66	Yes	1	No Action	1	Concrete	1	>90% Silted	4	Spalling, No Exposed Rebar (concrete)	2	Not Known	2	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Urban	1	Yes	3	Interstate	5	4	2	3	1	9	12	9	108
I40 -160	23.52	Yes	1	No Action	1	Other	2	>90% Silted	4	None	1	Not Known	2	Major Scour (3 ft to 8 ft)	3	Swampy/Heavily Vegetated	3	24	1	Other Unknown	0	6.97	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	4	2	3	1	9	12	9	108
I40 -405	79.46	Yes	1	No Action	1	Other	2	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Other Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	4	2	3	1	9	12	9	108
I40 -406	79.61	Yes	1	No Action	1	Other	2	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Other Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	4	2	3	1	9	12	9	108
I40 -407	79.76	Yes	1	No Action	1	Other	2	>90% Silted	4	Other	1	Not Known	2	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	24	1	Other Unknown	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	4	2	3	1	9	12	9	108
I40 -709	139.77	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	96	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -135	16.61	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	100-year Floodplain	4	No	1	None	1	Urban	1	Yes	3	Interstate	5	2	2	6	1	9	11	9	99
I40 -806	149.68	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Arch Pipe	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -674	130.87	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -176	27.78	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	19.56	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -728	141.23	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -803	149.46	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -804	149.47	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -724	141.12	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -103	14.75	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	3.71	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -210	34.72	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	10.84	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -214	35.57	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	7.84	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -670	129.90	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	26	1	Corrugated Metal Ellipse	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -10	1.67	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	5	2	11	9	11	99
I40 -102	14.62	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -207	34.39	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	0.64	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -553	112.48	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	Minor (Rusting on Inside OR Outside)	2	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -572	114.30	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -676	131.16	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -678	131.16	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	<Null>	0	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -682	132.00	No	2	Traffic	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -683	132.62	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -726	141.12	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -731	141.45	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -736	141.81	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	Not Known	2	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -741	142.06	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -744	142.25	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -748	142.66	No	2	Not Found	2	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -752	143.18	No	2	Traffic	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -755	143.75	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -758	144.35	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	5	2	11	9	11	99
I40 -765	145.69	No	2	Traffic	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -805	149.58	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -785	148.15	No	2	Traffic	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	0	0	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	2	2	3	2	11	9	11	99
I40 -156	22.98	No	2	Outside of ROW Fence	3	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	643.62	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Urban	1	Yes	3	Interstate	5	3	2	3	1	9	10	9	90
I40 -155	22.61	Yes	1	No Action	1	Concrete	1	30% to 60% Silted	3	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Swampy/Heavily Vegetated	3	96	0	Concrete Box	4	267.92	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Urban	1	Yes	3	Interstate	5	3	2	3	1	9	10	9	90
I40 -131	16.36	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	30	1	Corrugated Metal Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	2	2	3	3	9	10	9	90
I40 -134	16.59	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Weeds and/or Debris	2	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Urban	1	Yes	3	Interstate	5	2	2	3	3	9	10	9	90
I40 -78	10.51	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	260.62	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -562	113.43	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	144	3	Corrugated Metal Circular	0	197.80	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -308	59.38	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -327	64.16	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	425.34	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -331	64.65	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	73.87	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -397	75.75	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	120	0	Concrete Box	4	0.02	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -422	86.97	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	671.92	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -509	106.03	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -534	109.36	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	120	0	Concrete Box	4	86.43	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -290	55.58	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	248.06	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -57	7.37	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -86	11.82	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	631.06	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -97	13.59	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	1019.36	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -439	93.98	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	251.86	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -691	134.85	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	674.81	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -577	115.82	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	84	3	Concrete Circular	0	79.88	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -227	39.28	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	0	Concrete Box	4	1069.35	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -87	11.88	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -256	45.88	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	0	Concrete Box	4	231.31	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -218	37.03	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	0	Concrete Box	4	266.18	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -182	29.04	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Moderate Damage (metal)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	56	2	Concrete Circular	0	80.89	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 - 820	96.80	Yes	1	Weeds, Debris, Heavy Vegetation	2	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	48	2	Concrete Arch Pipe	0	264.48	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -88	11.93	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	23.11	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	Yes	3	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -112	15.40	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -113	15.41	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -114	15.42	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -116	15.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -122	15.50	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -223	38.28	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Corrugated Metal Circular	0	86.48	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -362	74.63	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -367	74.66	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -370	74.67	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Concrete Circular	0	<Null>	1	Yes	No	Yes-No	3	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	5	1	11	8	11	88
I40 -150	20.89	No	2	Not Found	2	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -225	38.91	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	43.04	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -252	45.22	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	0	Concrete Box	4	209.94	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -456	99.96	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -482	103.95	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Minor Scour (1 to 3 ft)	2	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -628	121.81	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -630	121.87	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -631	121.92	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -646	125.17	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	32	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -147	20.39	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -283	53.11	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -339	65.89	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -493	104.94	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -769	146.15	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Concrete <Null>	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -780	147.75	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -217	36.17	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -233	40.20	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -343	68.31	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -344	68.60	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -463	101.03	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -464	101.41	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -468	101.78	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -473	102.43	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 - 821	103.90	Yes	1	No Action	1	Other	2	Clean	1	<Null>	0	Not Known	2	<Null>	0	<Null>	0	24	1	Other <Null>	0	0.02	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -543	110.32	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -559	113.14	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -569	114.16	Yes	1	No Action	1	Concrete	1	Clean	1	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -570	114.22	Yes	1	No Action	1	Concrete	1	10% to 30% Silted	2	Spalling, No Exposed Rebar (concrete)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -581	116.09	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	Circular Concrete Pipe Damage	2	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -592	117.44	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -655	126.69	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	<Null>	0	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -680	131.43	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -681	131.89	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -715	140.38	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -716	140.39	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -719	140.86	Yes	1	No Action	1	Metal (other)	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Metal (other) Other	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -770	146.15	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	Not Known	2	<Null>	0	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88

Culvert ID	MP	Culvert Accessibility	Culvert Accessibility Score	Accessibility	Accessibility Score	Material	Material Score	Silting	Silting Score	Physical Damage	Physical Damage Score	Corrosion	Corrosion Score	Scour	Column8	Channel Condition	Channel Condition Score	Span*	Span Score	Material 2	Material 2 Score	Basin Area	Basin Area Score	Drainage Criteria 1	Drainage Criteria 2	Drainage Criteria 3	Drainage Criteria Score	Floodplains	Floodplain Score	Flooding History	Flooding History Score	Corrosion Potential	Corrosion Potential Score	Urban vs Rural	Urban vs Rural Score	Emergency Access	Emergency Access Score	Traffic Flow Disrupt	Traffic Flow Disrupt Score	Likelihood of Failure	Likelihood of Failure Weight	Hydraulic - Flooding	Physical - Collapse	Social Impacts	Likelihood of Failure - Composite	Consequence of Failure - Composite	Total Risk Score
I40 -800	149.19	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -777	147.30	Yes	1	No Action	1	Metal (other)		Minor Silting (<10%)	1	None	1	Minor (Rusting on Inside OR Outside)	2	Little or no Scour (< 1 ft)	1	Good	1	16	1	Metal (other) Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -505	105.91	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -507	105.95	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -508	105.98	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -589	116.61	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	12	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - High	3	Rural	3	Yes	3	Interstate	5	1	2	3	3	11	8	11	88
I40 -786	148.15	No	2	Traffic	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	0	0	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	2	2	3	1	11	8	11	88
I40 -807	149.68	Yes	1	No Action	1	Corrugated Metal	1	10% to 30% Silted	2	Moderate Damage (metal)	2	None Evident	1	Little or no Scour (< 1 ft)	1	Weeds and/or Debris	2	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Urban	1	Yes	3	Interstate	5	2	2	3	2	9	9	9	81
I40 -743	142.14	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	12.38	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -226	39.14	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	33.95	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -730	141.45	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -230	39.86	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -535	109.42	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	Minor Damage (metal)	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -549	112.07	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -555	112.94	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -563	113.62	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -564	113.75	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -573	114.36	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -677	131.16	Yes	1	No Action	1	Corrugated Metal	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -702	138.08	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -749	142.83	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -795	148.94	Yes	1	No Action	1	Corrugated Metal	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Corrugated Metal Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Steel - Moderate	2	Rural	3	Yes	3	Interstate	5	1	2	3	2	11	7	11	77
I40 -550	112.10	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	196	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -554	112.69	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	196	0	Concrete Box	4	0.02	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -565	113.75	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -626	121.68	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	168	0	Concrete Box	4	556.37	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -302	58.65	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	3	Concrete Circular	0	3510.06	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -300	58.19	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -307	59.38	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -312	59.97	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	48.98	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -313	59.97	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -318	60.86	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	362.59	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -319	61.68	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	73.41	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -320	61.68	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -333	64.98	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	934.19	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -432	89.97	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	87.93	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -435	90.66	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	477.93	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -542	110.18	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	126.00	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -575	115.02	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	56.94	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -576	115.69	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	481.46	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -584	116.42	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	120	0	Concrete Box	4	356.12	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -219	37.26	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	108	0	Concrete Box	4	724.20	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -94	13.18	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	93.10	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -580	116.00	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	96	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -579	116.00	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	81	3	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -216	36.00	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	0	Concrete Box	4	311.82	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -228	39.52	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	72	3	Concrete Circular	0	91.29	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -234	40.25	Yes	1	No Action	1	Plastic	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	2	Plastic Circular	0	161.10	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -240	41.90	Yes	1	No Action	1	Plastic	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	60	2	Plastic Circular	0	233.25	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -231	40.00	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	377.68	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -524	108.06	Yes	1	No Action	1	Concrete	1	Minor Silting (<10%)	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -525	108.06	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -137	17.40	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	45	1	Concrete Circular	0	118.04	1	Yes	Yes	Yes-Yes	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -267	48.66	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -492	104.89	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -703	138.10	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	36	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -284	53.48	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	30	1	Metal (other) Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -799	149.19	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -149	20.65	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	0	Concrete Box	4	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -568	114.05	Yes	1	No Action	1	Concrete	1	Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	24	1	Concrete Circular	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	Concrete - Low	1	Rural	3	Yes	3	Interstate	5	1	2	3	1	11	6	11	66
I40 -130	16.28	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	1	2	3	1	9	6	9	54
I40 -132	16.38	Yes	1	No Action	1	Metal (other)		Clean	1	None	1	None Evident	1	Little or no Scour (< 1 ft)	1	Good	1	48	2	Metal (other) Box	0	<Null>	1	<Null>	<Null>	<Null>-<Null>	1	Outside Floodzones	1	No	1	None	1	Urban	1	Yes	3	Interstate	5	1	2	3	1	9	6	9	54
Integer		Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	50-yr Value	100-yr Value	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Value	Score	Failure - Score	Weight	Hydra Flooding - Score	Collapse - Score	Failure - Score	LOF - Composite Score	COF - Composite Score	Total Risk - Score

Attachment B

Intelligent Transportation Systems

Parametrix
let's create tomorrow, together

Technical Memorandum

DATE:	August 1, 2024
TO:	Summer Herrera, NMDOT PE
FROM:	Hicham Chatila, Parametrix PE
SUBJECT:	I-40 ITS Short-Term and Long-Term Recommendations
PROJECT NUMBER:	564-4756-044
PROJECT NAME:	I-40 Corridor Study, Arizona to Albuquerque, Milepost 0 to 150

Introduction

This memorandum provides guidance and recommendations for short-term (0 to 5 years) and long-term (5 to 25 years) intelligent transportation system (ITS) improvements from I-40 from milepost (MP) 0 to 150. The proposed recommendations are based on a review of existing ITS conditions; review of the New Mexico Broadband Plan, the New Mexico Department of Transportation's (NMDOT) Strategic ITS Plan for the State of New Mexico, and the NMDOT Statewide ITS Architecture; a needs assessment conducted I-40 Corridor Study team; and input from NMDOT's ITS Group and NMDOT's Traffic Monitoring Program Staff Manager (data collection and equipment are managed as part of NMDOT's Traffic Monitoring Program and not the NMDOT ITS Group).

The identified ITS service area needs for I-40 include:

1. Traffic management (includes data collection).
2. Road and weather information.
3. Traveler information.
4. Commercial vehicle operations.
5. Maintenance and construction.
6. Active traffic management.

Existing ITS systems are outlined in Exhibit 1 and a summary of proposed ITS improvements and costs are provided in the ITS Recommendations Summary. ITS systems identified by NMDOT as initial department recommendations are outlined in Exhibit 5. The proposed ITS systems are divided into short-term (immediate and near-term) and long-term recommendations. Short-term recommendations are intended to be implemented within 5 years, with immediate recommendations implemented within 1 year and near-term recommendations implemented within 1 to 5 years. Long-term recommendations are intended to be implemented within 5 to 25 years.

ITS Recommendations Summary

Existing Conditions

Exhibit 1 lists existing ITS infrastructure along I-40 between MP 0 and 150. In addition to this equipment, there is existing fiber optic from MP 125 to 150.

Exhibit 1. I-40 Existing ITS Infrastructure

Location	MP	Data Stations	CCTV	DMS	RWIS	License Plate Reader
West of Port of Entry	10.7	1				
EB Port of Entry	11.8					1
WB Port of Entry	12.7					1
EB West of Gallup	14.2			1 (EB)		
Gallup/US 491	20.8		2 (EB/WB)			
WB at Fire Rock Casino	28.5			1 (WB)		
EB/WB at Exit 36	36.8		2 (EB/WB)			
Continental Divide	48.0		1		1	
Milan	80.7	1				
WB East of Grants	90.8			1 (WB)		
East of Grants	96.9	1				
EB West of NM 6	125.3			1 (EB)		
NM 6	126.9		1		1	
Rio Puerco	140.4		1			
West of Atrisco Vista	148.0		1	1 (EB)		
West of Atrisco Vista	148.9	1				
East of Atrisco Vista	149.5		1			
	Total	**4**	**9**	**5**	**2**	**2**

CCTV = closed-circuit television, DMS = dynamic message sign, EB = eastbound, MP = milepost, RWIS = Road Weather Information System, WB = westbound

Proposed ITS Recommendations

Exhibit 2 provides an overview of proposed ITS recommendations in the study area from MP 0 to 150.

Exhibit 2. Summary of Proposed ITS Recommendations

Location	MP	Data Stations	CCTV	DMS	VSAS	DPAS/TPAS	RWIS	License Plate Reader
Manuelito	1.8					2 (EB/WB)		
West of Port of Entry	10.7	1*						
Port of Entry	12.0		1					
EB West of Gallup	14.2			1* (EB)				
Gallup/US 491	20.8	1						
WB at Fire Rock Casino	28.5			1* (WB)				
East of Gallup	30.0	1						
Refinery Exit	39.0	1	1	1 (EB)	1 (EB)			
Near Continental Divide	45.0				1			
West of Thoreau	50.0				1			
East of Thoreau	54.0	1	1	1 (WB)	1 (WB)			
Near Prewitt	63.0	1	1					
EB West of Milan	78.8			1 (EB)				
Milan	80.7	1*						
Grants	82.0		1 (Dual)					
WB East of Grants	90.8			1* (WB)				
East of Grants	96.9	1*	1					
West of Mesita**	115.5	1	1					
EB West of NM 6	125.3			1* (EB)				
East of NM 6	130.0	1						
Rio Puerco	140.4	1						
West of Atrisco Vista	148.0			1* (EB)				
West of Atrisco Vista	148.9	1*						
Total Proposed		**12**	**7**	**8**	**4**	**2**	**0**	**0**
Total Proposed + Existing ITS		**12**	**16**	**8**	**4**	**2**	**2**	**2**

CCTV = closed-circuit television, DMS = dynamic message sign, DPAS = dynamic parking availability sign, EB = eastbound, MP = milepost, RWIS = Road Weather Information System, TPAS = Truck Parking Availability System, VSAS = variable speed advisory sign, WB = westbound

* Indicates existing data collection or DMS that are proposed to be replaced.

** Potential alternate location near MP 118 if MP 115.5 is not feasible.

In addition to the improvements summarized above, the study team recommends other supporting improvements including:

- Fiber Optic – High-speed fiber optic communication network along entire corridor (10 GigE or better). Because the entire corridor communication network will most likely be built over time, commercially available 5G wireless solutions could be used on a case-by-case basis to enable remote management of ITS devices.

- District 6 Traffic Management Center (TMC) – Development of a TMC in District 6 will enable remote ITS operations and management to coordinate with key stakeholders such as police state patrol, emergency services, and other NMDOT TMCs.
- Truck Parking Availability System (TPAS) – This includes field devices at parking and truck rest stops, wireless or wireline communications, and a back-end application to provide information on available truck parking in the study area. Truck parking is currently available for eastbound drivers in New Mexico at the Manuelito rest area near MP 3 and westbound drivers in Arizona just west of the Arizona/New Mexico border. Dynamic Parking Availability Signs (DPAS) would be placed in both the eastbound and westbound direction near MP 1.8 to inform drivers of how many spaces are available.
- Applications and Integration – This includes configuration and integration with NMDOT's Southwest Research Institute (SWRI) ATMS (Advanced Traffic Management System) platform.

These supporting improvements, as well as the proposed ITS equipment and associated costs, are detailed in the sections below.

Cost Estimates

The exhibits below provide planning-level estimates for the proposed ITS recommendations for both short- and long-term recommendations. Exhibit 3 summarizes the costs of proposed short-term ITS improvements (0-to-5-year time frame), and Exhibit 4 summarizes the costs of proposed long-term ITS improvements (5-to-25-year time frame). Total costs are estimated at $35 million.

Exhibit 3. Short-Term ITS Improvements Estimated Costs

Item	Unit	Unit Cost	Quantity	Subtotal
Data Stations[1]	Each Unit	$ 100,000	9	$ 900,000
Closed-Circuit Television (CCTV)	Each Unit	$ 130,000	3	$ 390,000
Dynamic Message Sign (DMS)	Each Unit	$ 150,000	8	$ 1,200,000
Variable Speed Advisory Signs (VSAS)	Each Unit	$ 100,000	4	$ 400,000
Fiber Optic	Miles	$ 125,000	44	$ 5,500,000
District 6 Traffic Management Center[2]	Lump Sum	$ 100,000	1	$ 100,000
Truck Parking Availability System (TPAS)	Lump Sum	$ 1,000,000	1	$ 1,000,000
Applications and Integration[3]	Lump Sum	$ 250,000	1	$ 250,000
			Rounding and 20% Contingency[4]	$ $2,260,000
			Total[4]	**$ 12,000,000**

1 Includes replacement for existing data stations. Cost includes two video cameras.

2 Assumes server and communication equipment in an existing NMDOT facility to connect to field devices, cloud platform, and other districts. Does not include cost of labor or annual operation costs.

3 Includes applications and integration to provide linkages to field devices, cloud platform, and other districts.

4 Total is rounded and includes a 20% contingency. Costs do not include right-of-way, project development, or New Mexico Gross Receipts Tax.

Exhibit 4. Long-Term ITS Improvements Estimated Costs

Item	Unit	Unit Cost[4]	Quantity	Subtotal
Data Stations[1]	Each Unit	$ 130,000	3	$ 390,000
CCTV	Each Unit	$ 170,000	4	$ 680,000
Fiber Optic (New)	Miles	$ 162,500	81	$ 13,162,500
Fiber Optic (Relocate MP 125 to 150)	Miles	$ 162,500	25	$ 4,062,500
District 6 Traffic Management Center[2]	Lump Sum	$ 300,000	1	$ 300,000
Applications and Integration[3]	Lump Sum	$ 325,000	1	$ 325,000
			Rounding and 20% Contingency[4]	$ 4,080,000
			Total[5]	**$ 23,000,000**

1 Cost includes two video cameras.

2 Cost for future expansion as intelligent transportation system expands along I-40. Assumes server and communication equipment in an existing NMDOT office to connect to field devices, cloud platform, and other districts. Does not include cost of labor or annual operation costs.

3 Includes applications and integration to provide linkages to field device, cloud platform, and other districts.

4 Long-term unit costs are adjusted +30% to account for future pricing.

5 Total is rounded and includes a 20% contingency. Costs do not include right-of-way, project development, or New Mexico Gross Receipts Tax.

NMDOT's Identified ITS Needs

As part of the I-40 Corridor Study, NMDOT ITS staff identified ITS needs for I-40 as shown in Exhibit 5.

Exhibit 5. NMDOT Initial Recommendations

Location	MP	CCTV	DMS	Fiber	Comments
AZ State Line to NM 6	0 to 125.6			125.6 mi	Install new fiber backbone from MP 0 to 125 and connect to existing fiber at MP 125.
Refinery Exit	40.0	1			Locate at highpoint in I-40 near Refinery Exit 39, so that vantage is available to east. Equipment from Exit 36 CCTV could be relocated here if needed.
EB at Refinery Exit	40.0		1		DMS to support a VSAS System
WB East of Thoreau	54.0		1		DMS to support a VSAS system
EB West of Milan	78.8		1		DMS EB I-40 @ Milan. Locate just west of Milan so that drivers can exit I-40 at Milan if desired.
Grants	82.0	1			
West of El Rito	117.0	1			Locate west of El Rito: the steep grade on I-40 creates challenges during winter storms.

AZ = Arizona, CCTV = closed-circuit television, DMS = dynamic message sign, EB = eastbound, MP = milepost, VSAS = variable speed advisory sign, WB = westbound

In addition to the needs identified in Exhibit 5, NMDOT ITS staff indicated there is a desire to establish a VSAS system covering the Continental Divide area from about MP 40 to 55 and establish a TMC in District 6 and a TPAS in the study area. Additional information about these systems and their costs are described in this memorandum.

ITS Short-Term Recommendations

The following section provides short-term ITS recommendations based on review of existing I-40 ITS infrastructure, I-40 corridor needs, staff input from NMDOT, and recommendations from the I-40 Corridor Study team.

Data Collection

Immediate Recommendations (0 to 1 Years)

The highest-priority need identified for the I-40 study area is a series of data collection stations that can provide real-time traffic data such as hourly and daily traffic counts, vehicle classification per Federal Highway Administration standards, and traffic speeds. The I-40 study area has 4 existing data stations, and 1 of them is currently operational. The immediate recommendation is to replace the 4 existing data collection stations. Costs for each data collection station assumes the cost of two video cameras. See Exhibit 6 for the locations of these stations.

Exhibit 6. Immediate (First Year) Recommended Locations for Data Collection Stations

Location	MP	Need	Available Utilities
West of Port of Entry	10.7	Monitoring Port of Entry traffic volumes and speeds, vehicle classification, etc.	Power, Data
Milan	80.7	Monitoring Grants and west of NM 117 traffic volumes and speeds, vehicle classification, etc.	Power (within 0.5 mi), Phone, Data
East of Grants	96.9	Monitoring Grants and east of NM 117 traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data is closer to MP 96 at Santa Maria Drive
West of Atrisco Vista	148.9	Monitoring east of NM 6 and west Albuquerque traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data

MP = milepost

NMDOT is currently evaluating the use of video analytics using artificial intelligence to collect traffic data using video sensors (cameras). It is recommended that NMDOT adopt this technology for data collection at all data collection locations in the I-40 corridor for several reasons:

1. It is nonintrusive: It does not require equipment installation in the pavement, which disrupts traffic and poses safety concerns.
2. The video analytics software technology allows for the collection of other operational data NMDOT might find useful in the future, including but not limited to automatic incident detection, wrong-way driving, stopped vehicles, and travel times.
3. Data processing can be done at the edge (on-site), at NMDOT's Monitoring Program, or in the cloud, depending on the locally available communication network and/or local vs remote processing availability and capability.
4. Video cameras are commercial, off-shelf equipment that can be leveraged by multiple video analytics software companies, allowing NMDOT to use multiple vendors and not get locked into a single vendor.

It is assumed that two video cameras would be needed for each data collection location to capture traffic data from both the eastbound and westbound lanes of I-40. A preference would be given to locating the cameras on bridges or on the outer edge of the highway shoulder for access and maintenance purposes. Costs for each data collection station assumes the cost of two video cameras.

Near-Term Recommendations (1 to 5 Years)

Additional data collection stations are recommended in the near term to create a more complete data collection system that can be used to establish and evaluate long-term traffic trends. Having a sufficient, operational data collection system will provide needed information to NMDOT so they can monitor I-40 traffic and operations and adjust their transportation projects as needed to meet changes in traffic demand or vehicle composition. Exhibit 7 provides near-term locations for proposed data collection stations.

Exhibit 7. Near-Term (1 to 5 Years) Recommended Locations for Data Collection Stations

Location	Approx. MP	Need	Available Utilities
Gallup/NM 491	20.8	Monitoring Gallup traffic volumes and speeds, vehicle classification, etc.	Power, Data
East of Gallup	30.0	Monitoring east of Gallup traffic volumes and speeds, vehicle classification, etc.	Power, Data
Refinery Exit	39.0	Monitoring Continental Divide and NM 371 traffic volumes and speeds, vehicle classification, etc.	Power
East of Thoreau	54.0	Monitoring Continental Divide and NM 371 traffic volumes and speeds, vehicle classification, etc.	Power (within 0.5 mi), Phone, Data
West of Mesita	115.5	Monitoring west of NM 6 traffic volumes and speeds, vehicle classification, etc.	Power, Phone, Data

MP = milepost

Closed-Circuit Television

Existing CCTV devices are located on the eastern and western portions of the corridor with no coverage from approximately MP 48 to 126. In the short term, additional CCTVs are recommended where there is no coverage in Grants and locations where there are steep grades. Based on these criteria and in consultation with NMDOT staff, CCTVs are recommended at key locations as noted in Exhibit 8.

Exhibit 8. Short-Term (1 to 5 Years) Recommended Locations for CCTV

Location	Approx. MP	Need	Available Utilities
Refinery Exit	39.0	NMDOT initial recommendation and location with other devices	Power
East of Thoreau	54.0	Spacing and location with other proposed devices	Power (within 0.5 miles), Phone, Data
Grants	82.0	NMDOT initial recommendation	Power, Phone, Data

MP = milepost, NMDOT = New Mexico Department of Transportation

Dynamic Message Signs

DMS are currently used in the study area to provide travel information to the driving public. NMDOT is in the process of upgrading the existing DMS equipment, so all existing DMS in the I-40 study area will need to be replaced as part of the short-term ITS plan. Additional recommendations for the short term are noted in Exhibit 9.

Exhibit 9. Short-Term (1 to 5 Years) Recommended Locations for DMS

Location	MP	Need	Available Utilities
EB West of Gallup	14.2	Existing to be replaced	Power, Data
WB at Fire Rock Casino	28.5	Existing to be replaced	Power, Data
EB at Refinery Exit	39.0	Part of proposed variable speed advisory segment to notify drivers of possible speed changes	Power
WB East of Thoreau	54.0	Part of proposed variable speed advisory segment to notify drivers of possible speed changes	Power, Phone, Data
EB West of Milan	78.8	Notify drivers of adverse road conditions so they can get off in Milan/Grants if desired.	Power, Phone, Data
WB East of Grants	90.8	Existing to be replaced	Power, Phone, Data
EB West of NM 6	125.3	Existing to be replaced	Power, Data
EB West of Atrisco Vista	148.0	Existing to be replaced	Power, Phone, Data

DMS = dynamic message sign, EB = eastbound, MP = milepost, WB = westbound

Variable Speed Advisory Sign System

NMDOT's ITS group suggested that a variable speed advisory sign (VSAS) system be developed in the Continental Divide area between MP 40 and 55 due to variable weather conditions that occur due to the increase and decrease in elevation as drivers travel over the Continental Divide. A VSAS typically is part of a larger alert system as shown in Exhibit 10 and includes DMS and VSAS. VSAS would be located approximately every 5 miles along the Continental Divide area where speed reductions may be advised due to weather or other conditions such as incidents, congestion, and/or construction. New Mexico state law does not allow enforcement of variable speed limits, therefore the VSAS will be advisory signs with yellow sign faces. Recommendations for the VSAS locations are noted in Exhibit 11.

Exhibit 10. Variable Speed Advisory Sign System

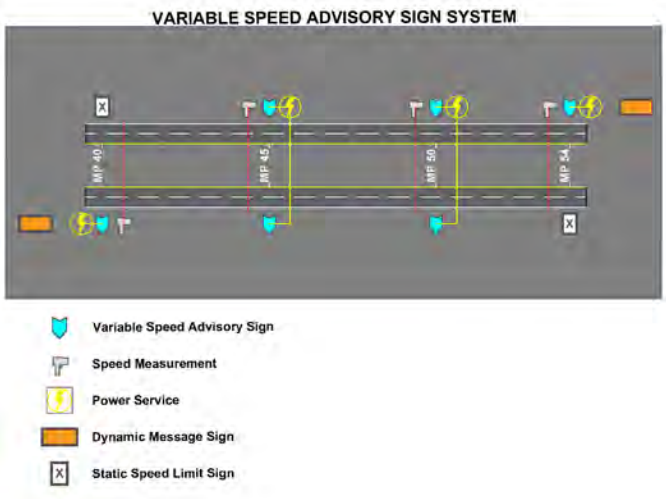


Exhibit 11. Short-Term (1 to 5 Years) Recommended Locations for VSAS

Location	MP	Need	Available Utilities
EB at Refinery Exit	39.0	Regulating travel speeds for EB traffic approaching Continental Divide	Power
Near Continental Divide	45.0	Regulating travel speeds for EB/WB traffic at Continental Divide	Power, Phone
West of Thoreau	50.0	Regulating travel speeds for EB/WB traffic at Continental Divide	Power, Phone
WB East of Thoreau	54.0	Regulating travel speeds for WB traffic approaching Continental Divide	Power (within 0.5 miles), Phone, Data

EB = eastbound, MP = milepost, VSAS = variable speed advisory sign, WB = westbound

Fiber Optic Communication Network

The communication network is essential to any ITS system, enabling the exchange of data, video, and control signals between field devices and traffic management/operation centers. I-40 currently has a limited high-speed fiber optic communication network that stretches from MP 125 to 150. This network connects field devices back to the Regional TMC in Albuquerque. The remaining 125 miles of the study corridor lack a high-speed fiber communication network.

I-40 is a major commercial east-west route, and it is therefore critical that a high-speed fiber optic backbone be constructed in the long term. Most likely this would be done in phases and based on available funding resources. The installation of fiber along the entire corridor could benefit from a coordinated effort from multiple state agencies and possibly the private sector.

In the short term, it is recommended that approximately 44 miles of fiber be installed as noted in Exhibit 12. This fiber will support field implementation of several ITS devices and systems to enhance planning, operations, and maintenance along the corridor. In addition to the fiber optic network, commercial cellular networks (4G and 5G) are available along the length of the highway. The commercial cellular network can be used to connect to low bandwidth field devices such as data collections stations, DMS, or Road Weather Information System devices to central TMCs and cloud-based ITS applications.

It is recommended that the fiber optic communication network utilize industrial standard ethernet protocols with minimum backbone speeds of 10 GigE or better. The network topology, protocols, and speed should be revisited during the design and construction phases of any future fiber optic backbone communication system. For purposes of assessing potential environmental impacts of proposed fiber, the study team assumed a possible trench that would be up to 2 feet wide and 3 feet deep that would be constructed within the right-of-way about 5 feet from the proposed roadway shoulder. In general, it is expected that the fiber would be constructed on the north side of I-40, though there may be areas where it would cross to the south side via directional drilling to avoid environmental or other impacts.

Exhibit 12. Short-Term (1 to 5 Years) Recommended Locations for Fiber Optic Installation

Location	MP to MP	Length	Available Utilities
Continental Divide	30 to 55	25 miles	Power, Phone, Data
Grants	76 to 84	8 miles	Power, Phone, Data
Mesita	114 to 125	11 miles	Power, Phone, Data

MP = milepost

District 6 Traffic Management Center

NMDOT ITS staff indicated there is a desire to establish traffic management centers (TMCs) within each NMDOT district to provide local (within district) central ITS device management to enhance traffic operations and maintenance. NMDOT District 6, which is responsible for I-40 from MP 0 to 132 in the study area, currently does not have a TMC, so this need was identified and incorporated into the ITS recommendations for the I-40 Corridor. The main functions of the TMC are to provide local (within district) central ITS device management to enhance traffic operations and maintenance. The TMC would be set up in an existing NMDOT District 6 office. The following elements are recommended to enable the operations of the proposed TMC in District 6:

- Two workstations with high-speed internet access.
- SWRI ATMS Cloud Platform user accounts with two factor authentication enabled.
- Connectivity to other NMDOT TMCs. This could be accomplished via a secure high-speed internet connection.
- Communication connections to the field ITS devices in District 6. Communication connections will take place incrementally over time as ITS devices are deployed. The communication connection could be a wireline or wireless depending on communication infrastructure availability.

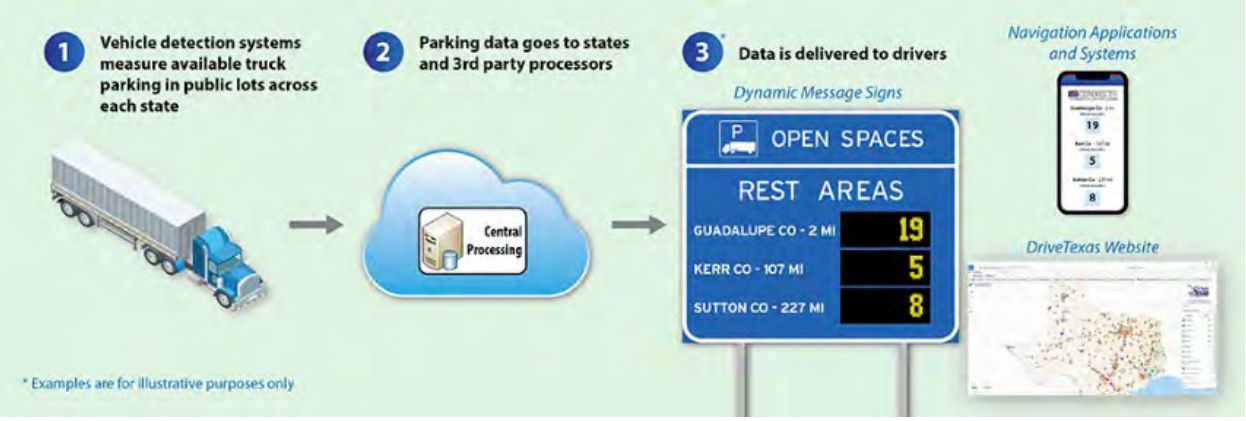
Truck Parking Availability System

I-40 currently has a high volume of commercial vehicle activity because it provides connectivity from West Coast seaports to the Midwest, South, and East Coast of the United States. It is recommended that a real-time truck parking information system be implemented to assist truck drivers and dispatchers in making informed parking decisions and improve safety, mobility, and operations in the study area. NMDOT has deployed such systems on I-10 through the I-10 Corridor Coalition. A TPAS on I-40 could be integrated into these existing TPAS systems, thus providing commercial vehicle operators with valuable information for safer and efficient operations and information on available parking/rest facilities for commercial truck operators. A TPAS ideally would be implemented in coordination with adjacent states for continuity for commercial vehicle operations along the corridor.

The TPAS system consists of data collection and aggregation technologies such as video analytic cameras located at truck stops and/or rest areas to count and classify traffic entering/existing the rest area in addition to providing parking occupancy data. Once this information is collected and processed, it is transmitted via a communication device (wired or wireless) to a cloud-based or on premise server that can push parking availability information in real time to truckers using DPAS and/or mobile applications. A typical TPAS system overview is shown below in Exhibit 13.

Truck parking is currently available for eastbound drivers in New Mexico at the Manuelito rest area near MP 3 and westbound drivers in Arizona just west of the Arizona/New Mexico border. DPAS would be placed in both the eastbound and westbound direction near MP 1.8 to inform drivers of how many spaces are available.

Exhibit 13. Truck Parking Availability System



Source: https://i10connects.com/overview-tpas

Applications and Integration

Back-end ITS applications are necessary to effectively manage ITS field devices and services such as traffic management, data collection, and traveler information. NMDOT has procured an ATMS platform from the SWRI. The platform is currently online but is in the process of being migrated to a cloud-based system, which will enable secure connectivity to field devices and operators with internet connection. This cloud-based solution is ideal for I-40 because it currently has limited connectivity to central operations centers. Once this platform is fully migrated to the cloud, short- and long-term ITS field deployments can be interconnected to the cloud-based application using either commercial cellular networks that are commonly available along the corridor and/or dedicated communication networks. This solution also allows for simultaneous multiuser access from various geographic locations, allowing NMDOT to provide redundancy in operational coverage for I-40.

Custom server-based applications being operated from central offices or TMCs also require cellular communication if a dedicated ITS communication network does not exist, such as is the case on I-40 between MP 0 and 125.

ITS Long-Term Recommendations (5 to 25 Years)

Data Collection

In the long term, it is recommended that data collection stations be installed at regular intervals as resources become available. Gaps in data collection coverage along the corridor should be filled in to reduce data collection station spacing to 10 miles or less. See Exhibit 14 for the recommended long-term data collection station locations.

Exhibit 14. Long-Term (5 to 25 Years) Recommended Locations for Data Collection Stations

Location	Approx. MP	Monitoring Need	Available Utilities
Near Prewitt	63.0	Spacing and location with other devices	Power, Phone
East of NM 6	130.0	Spacing, capture volumes east of NM 6	Power, Phone, Data
Rio Puerco	140.4	Spacing	Power, Phone, Data

MP = milepost

Closed-Circuit Television

In the long term, it is recommended that CCTVs be installed at regular intervals as resources become available. Gaps in CCTV coverage along the corridor should be filled in to reduce CCTV spacing to 10 miles or less. See Exhibit 15 for the recommended long-term CCTV locations.

Exhibit 15. Long-Term (5 to 25 Years) Recommended Locations for CCTV

Location	Approx. MP	Need	Available Utilities
Port of Entry	12.0	Spacing	Power, Data
Near Prewitt	63.0	Spacing and location with other devices	Power, Phone
East of Grants	96.9	Spacing	Power, Phone
West of Mesita*	115.5	Monitoring traffic in location with steep grades	Power (within 0.5 miles), Phone, Data

CCTV = closed-circuit television, MP = milepost

* Potential alternate location near MP 118 if MP 115.5 is not feasible.

Fiber Optic Communication Network

Ultimately, the long-term recommendation for the fiber communication network is to provide fiber through the entire 125 miles where it currently does not exist. It may be necessary to move the existing fiber from MP 125 to 150, because it is in the median where roadway widening is proposed; however, moving the existing fiber is also a long-term recommendation if it is needed.

As previously discussed, it is recommended that the fiber optic communication network utilize industrial standard ethernet protocols with minimum backbone speeds of 10 Gbs. The network topology, protocols, and speed should be revisited during the design and construction phases of any future fiber optic backbone communication system. For purposes of assessing potential environmental impacts of proposed fiber, the study team assumed a possible trench that would be up to 2 feet wide and 3 feet deep that would be constructed within the right-of-way about 5 feet from the proposed roadway shoulder. As projects are constructed in the I-40 corridor, it is recommended that conduit be placed to help advance the construction of the full fiber network. The fiber network should not be placed in the median of I-40 because the proposed improvements will widen to the median, and the median is less accessible for maintenance. In general, it is recommended that the fiber line be constructed on the north side of I-40, though there may be areas where it would cross to the south side to avoid environmental or other impacts.

Exhibit 16. Long-Term (5 to 25 Years) Recommended Locations for Fiber Optic Installation

Location	MP to MP	Length	Comments
Arizona to Continental Divide	0 to 30	30 miles	
Continental Divide to Grants	55 to 76	21 miles	
Grants to Mesita	84 to 114	30 miles	
Mesita to Albuquerque	125 to 150	25 miles	Relocate existing fiber line

MP = milepost

District 6 Traffic Management Center

In the long term, it is recommended that the District 6 TMC be expanded to accommodate the long-term ITS system growth on the corridor. This may include more workstations/operators, expanded connectivity to ITS devices, enhanced connectivity with other TMCs and/or emergency operation centers, in addition to adding more functionality at the TMC via new ITS applications (cloud or locally based).

With the continual advancement and use of artificial intelligence in the transportation industry, the TMCs of the future will play a larger role in automatically collecting, aggregating, analyzing, and disseminating information and insights. Thus, there is the need for big data solutions around safety, traveler information, congestion, and incident management. This will require new technical skill sets and resources that will be needed over the 25-year planning time period.

Applications and Integration

As more and new ITS field devices are installed along I-40, there will be a need to integrate these devices into existing and future back-end ITS applications and solutions. This could include the integration into the SWRI ATMS cloud platform or new specialized applications such as TPAS or other solutions.

The integration between various applications, systems, subsystems, devices, and third-party solutions is where NMDOT can maximize the benefits of its existing and future ITS investments. It is critical that applications and any integration follow national and open standards and protocols such as National Transportation Communications for Intelligent Transportation System Protocol to avoid custom and proprietary solutions.

Other ITS Considerations

Smart Construction Work Zones

Construction work zones are a major source of added delay and sometimes result in increased crash rates. NMDOT could implement Smart Construction Work Zones when construction takes place. This would be accomplished by requiring contractors to implement smart construction work zones on construction projects as part of project specifications or special provisions. These special provisions could include the desired functionality for smart work zones such as dynamic speed advisory, advanced queue warning, detection and alerting of high-speed approaching vehicles, etc. The cost for implementing smart construction work zones depend on each specific construction zone including the length of the construction zone and the duration of construction but could add anywhere from $40,000 per project to as much as $250,000. These systems typically involve installing monitoring cameras and communications equipment.

Mobile CCTV systems can monitor user-defined zones in construction work zones in real time. These cameras are connected to video analytics processors that use machine vision/machine learning algorithms and techniques to monitor user-defined vehicle behavior such as location, speed, direction, etc. The system monitors dangerous driving behaviors in real time (up to 10 times per second) and triggers warning flashing signs and/or audible warning systems wirelessly, providing a very effective solution to prevent accidents in or around construction work zones.

In addition, there are hosted services that enhance NMDOT's ability to manage construction work zones more efficiently and share information with the travelling public. NMDOT is currently using Payver, a hosted service that can digitally monitor and document construction work zones to ensure contractor compliance and to enhance safety in these zones. NMDOT is currently considering another hosted service called One.Network that can create safer work zones and enhance travel in New Mexico through a solution that centralizes the planning, coordination, and communication of disruptions on the road network. These hosted solutions, in combination with the proposed work zone solution mentioned earlier in this section, provide NMDOT with a set of tools that can be used to enhance safety in work zones.

Attachment C

Design Criteria

I-40, MP 0 to 150 Design Criteria, 65 MPH

Criteria Item	Value	Reference	Remarks	Variance Obtained (Yes/No)
Roadway Classification	Interstate	NMDOT Functional Class Data, https://nmdot.maps.arcgis.com/apps/webappviewer/index.html?id=f2fc877d107b4e338deb789f70a8779e		
Design Speed	65 mph			
Average Daily Traffic	To be determined	NMDOT to provide for each project		
Clear Zone	1V:6H or Flatter, 30-34' 1V:5H or 1V:4H, 38-46'	2011 AASHTO Roadside Design Guide Table 3-1		
Mainline Lane Width	12'	9' to 12', 2018 AASHTO Green Book, Section 4.3 11' to 12', 2020 NMDOT Design Manual, Section 1000.6.1		
Auxiliary Lane Width	12' (minimum)	2001 State Access Management Manual Section 18.K.9 2018 AASHTO Green Book, Section 9.7.2		
Inside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width, Auxiliary Lane	6'	6' to 10', 2018 AASHTO Green Book, Section 9.7.1		
Horizontal Curvature and Superelevation	1,660 minimum radius / 6% Superelevation Runoff = 251' Superelevation Runout = 84' 12,600' minimum radius/normal crown	2018 AASHTO Green Book Table 3-9, e_{max}=6%, Table 3-16a, 2020 NMDOT Design Manual 1000.5.4		
Vertical Curvature	K-Crest = 193' minimum K-Sag = 157' minimum Stopping Sight Distance for Both = 645'	2018 AASHTO Green Book Table 3-35 and 3-37		
Roadway Grades	3% for level (maximum) 4% for rolling (maximum) 5% for mountainous (maximum)	2018 AASHTO Green Book Table 7-2		
Roadway Cross Slope	Mainline 2% (minimum) Shoulder 2% (minimum)	1.5% to 2.0% for Mainline, 2018 AASHTO Green Book, Section 4.2.2 2.0% to 6.0% for bituminous and concrete-surfaced shoulders, 2018 AASHTO Green Book, Section 4.4.3 2.0% minimum, 2020 NMDOT Design Manual, Section 1000.6.4		
Bridge Clearance (Vertical)	16' 6" for a New Bridge over the Interstate or a Roadway 23' 6" for a New Bridge over Railroad Track	2018 NMDOT Bridge Procedures and Design Guide, Table 1.1		
Interchange Spacing (Rural)	2 miles (minimum)	2014 Access Management Manual, Second Edition		
Interchange Spacing (Urban)	1 mile (minimum)	2014 Access Management Manual, Second Edition		
Rumble Strips	12' gaps spaced at intervals of 48' 6-inch offset 12-inch length 7-inch ± 1/2-inch width 12-inch spacing 1/2-inch minimum and 5/8-inch maximum depth	NMDOT Standard Drawing 603-01-1/1 Typical Shoulder Installation		
Median Barriers	Median widths < 50', concrete wall barrier should be installed. I-40 conceptual design does not include any cable barrier.	I-40 Corridor-specific design criteria based on 2011 AASHTO Roadside Design Guide and providing for I-40 future expansion		

I-40, MP 0 to 150 Design Criteria, 70 MPH

Criteria Item	Value	Reference	Remarks	Variance Obtained (Yes/No)
Roadway Classification	Interstate	NMDOT Functional Class Data, https://nmdot.maps.arcgis.com/apps/webappviewer/index.html?id=f2fc877d107b4e338deb789f70a8779e		
Design Speed	70 mph			
Average Daily Traffic	To be determined	NMDOT to provide for each project		
Clear Zone	1V:6H or Flatter, 30-34' 1V:5H or 1V:4H, 38-46'	2011 AASHTO Roadside Design Guide Table 3-1		
Mainline Lane Width	12'	9' to 12', 2018 AASHTO Green Book, Section 4.3 11' to 12', 2020 NMDOT Design Manual, Section 1000.6.1		
Auxiliary Lane Width	12' (minimum)	2001 State Access Management Manual Section 18.K.9 2018 AASHTO Green Book, Section 9.7.2		
Inside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width, Auxiliary Lane	6'	6' to 10', 2018 AASHTO Green Book, Section 9.7.1		
Horizontal Curvature and Superelevation	2,040' minimum radius) / 6% Superelevation Runoff = 270' Superelevation Runout = 90' 14,100' minimum radius/normal crown	2018 AASHTO Green Book Table 3-9, e_{max}=6%, Table 3-16a, 2020 NMDOT Design Manual 1000.5.4		
Vertical Curvature	K-Crest = 247' (minimum) K-Sag = 181' (minimum) Stopping Sight Distance for Both = 730'	2018 AASHTO Green Book Table 3-35 and 3-37		
Roadway Grades	3% for level (maximum) 4% for rolling (maximum) 5% for mountainous (maximum)	2018 AASHTO Green Book Table 7-2		
Roadway Cross Slope	Mainline 2% (minimum) Shoulder 2% (minimum)	1.5% to 2.0% for Mainline, 2018 AASHTO Green Book, Section 4.2.2 2.0% to 6.0% for bituminous and concrete-surfaced shoulders, 2018 AASHTO Green Book, Section 4.4.3 2.0% minimum, 2020 NMDOT Design Manual, Section 1000.6.4		
Bridge Clearance (Vertical)	16' 6" for a New Bridge over the Interstate or a Roadway 23' 6" for a New Bridge over Railroad Track	2018 NMDOT Bridge Procedures and Design Guide, Table 1.1		
Interchange Spacing (Rural)	2 miles (minimum)	2014 Access Management Manual, Second Edition		
Interchange Spacing (Urban)	1 mile (minimum)	2014 Access Management Manual, Second Edition		
Rumble Strips	12' gaps spaced at intervals of 48' 6-inch offset 12-inch length 7-inch ± 1/2-inch width 12-inch spacing 1/2-inch minimum and 5/8-inch maximum depth	NMDOT Standard Drawing 603-01-1/1 Typical Shoulder Installation		
Median Barriers	Median widths < 50', concrete wall barrier should be installed. I-40 conceptual design does not include any cable barrier.	I-40 Corridor-specific design criteria based on 2011 AASHTO Roadside Design Guide and providing for I-40 future expansion		

I-40, MP 0 to 150 Design Criteria, 75 MPH

Criteria Item	Value	Reference	Remarks	Variance Obtained (Yes/No)
Roadway Classification	Interstate	NMDOT Functional Class Data, https://nmdot.maps.arcgis.com/apps/webappviewer/index.html?id=f2fc877d107b4e338deb789f70a8779e		
Design Speed	75 mph			
Average Daily Traffic	To be determined	NMDOT to provide for each project		
Clear Zone	1V:6H or Flatter, 30-34' 1V:5H or 1V:4H, 38-46'	2011 AASHTO Roadside Design Guide Table 3-1		
Mainline Lane Width	12'	9' to 12', 2018 AASHTO Green Book, Section 4.3 11' to 12', 2020 NMDOT Design Manual, Section 1000.6.1		
Auxiliary Lane Width	12' (minimum)	2001 State Access Management Manual Section 18.K.9 2018 AASHTO Green Book, Section 9.7.2		
Inside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width, Auxiliary Lane	6'	6' to 10', 2018 AASHTO Green Book, Section 9.7.1		
Horizontal Curvature and Superelevation	2,500' (minimum radius) / 6% Superelevation Runoff = 284' Superelevation Runout = 95' 15,700' minimum radius/normal crown	2018 AASHTO Green Book Table 3-9, e_{max}=6%, Table 3-16a, 2020 NMDOT Design Manual 1000.5.4		
Vertical Curvature	K-Crest = 312 (minimum K-Sag = 206 (minimum) Stopping Sight Distance for Both = 820'	2018 AASHTO Green Book Table 3-35 and 3-37		
Roadway Grades	3% for level (maximum) 4% for rolling (maximum) 5% for mountainous (maximum)	2018 AASHTO Green Book Table 7-2		
Roadway Cross Slope	Mainline 2% (minimum) Shoulder 2% (minimum)	1.5% to 2.0% for Mainline, 2018 AASHTO Green Book, Section 4.2.2 2.0% to 6.0% for bituminous and concrete-surfaced shoulders, 2018 AASHTO Green Book, Section 4.4.3 2.0% minimum, 2020 NMDOT Design Manual, Section 1000.6.4		
Bridge Clearance (Vertical)	16' 6" for a New Bridge over the Interstate or a Roadway 23' 6" for a New Bridge over Railroad Track	2018 NMDOT Bridge Procedures and Design Guide, Table 1.1		
Interchange Spacing (Rural)	2 miles (minimum)	2014 Access Management Manual, Second Edition		
Interchange Spacing (Urban)	1 mile (minimum)	2014 Access Management Manual, Second Edition		
Rumble Strips	12' gaps spaced at intervals of 48' 6-inch offset 12-inch length 7-inch ± 1/2-inch width 12-inch spacing 1/2-inch minimum and 5/8-inch maximum depth	NMDOT Standard Drawing 603-01-1/1 Typical Shoulder Installation		
Median Barriers	Median widths < 50', concrete wall barrier should be installed. I-40 conceptual design does not include any cable barrier.	I-40 Corridor-specific design criteria based on 2011 AASHTO Roadside Design Guide and providing for I-40 future expansion		

I-40, MP 0 to 150 Design Criteria, 80 MPH

Criteria Item	Value	Reference	Remarks	Variance Obtained (Yes/No)
Roadway Classification	Interstate	NMDOT Functional Class Data, https://nmdot.maps.arcgis.com/apps/webappviewer/index.html?id=f2fc877d107b4e338deb789f70a8779e		
Design Speed	80 mph			
Average Daily Traffic	To be determined	NMDOT to provide for each project		
Clear Zone	1V:6H or Flatter, 30-34' 1V:5H or 1V:4H, 38-46'	2011 AASHTO Roadside Design Guide Table 3-1		
Mainline Lane Width	12'	9' to 12', 2018 AASHTO Green Book, Section 4.3 11' to 12', 2020 NMDOT Design Manual, Section 1000.6.1		
Auxiliary Lane Width	12' (minimum)	2001 State Access Management Manual Section 18.K.9 2018 AASHTO Green Book, Section 9.7.2		
Inside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width	12'	10' to 12', 2018 AASHTO Green Book, Section 4.4.2		
Outside Shoulder Width, Auxiliary Lane	6'	6' to 10', 2018 AASHTO Green Book, Section 9.7.1		
Horizontal Curvature and Superelevation	3050' (minimum radius) / 6% Superelevation Runoff = 309' Superelevation Runout = 103' 17,400' minimum radius/normal crown	2018 AASHTO Green Book Table 3-9, e_{max}=6%, Table 3-16a, 2020 NMDOT Design Manual 1000.5.4		
Vertical Curvature	K-Crest = 384' (minimum) K-Sag = 231' (minimum) Stopping Sight Distance for Both = 910'	2018 AASHTO Green Book Table 3-35 and 3-37		
Roadway Grades	3% for level (maximum) 4% for rolling (maximum) 5% for mountainous (maximum)	2018 AASHTO Green Book Table 7-2		
Roadway Cross Slope	Mainline 2% (minimum) Shoulder 2% (minimum)	1.5% to 2.0% for Mainline, 2018 AASHTO Green Book, Section 4.2.2 2.0% to 6.0% for bituminous and concrete-surfaced shoulders, 2018 AASHTO Green Book, Section 4.4.3 2.0% minimum, 2020 NMDOT Design Manual, Section 1000.6.4		
Bridge Clearance (Vertical)	16' 6" for a New Bridge over the Interstate or a Roadway 23' 6" for a New Bridge over Railroad Track	2018 NMDOT Bridge Procedures and Design Guide, Table 1.1		
Interchange Spacing (Rural)	2 miles (minimum)	2014 Access Management Manual, Second Edition		
Interchange Spacing (Urban)	1 mile (minimum)	2014 Access Management Manual, Second Edition		
Rumble Strips	12' gaps spaced at intervals of 48' 6-inch offset 12-inch length 7-inch ± 1/2-inch width 12-inch spacing 1/2-inch minimum and 5/8-inch maximum depth	NMDOT Standard Drawing 603-01-1/1 Typical Shoulder Installation		
Median Barriers	Median widths < 50', concrete wall barrier should be installed. I-40 conceptual design does not include any cable barrier.	I-40 Corridor-specific design criteria based on 2011 AASHTO Roadside Design Guide and providing for I-40 future expansion		

I-40 MP 0 to 150 - Bridge Width Considerations Summary

(Used only when a bridge deck wider than 52 feet from face-of-barrier to face-of barrier is proposed)

1. **Project Information**

   Provide the project name, number, and description.

2. **Site Information**

   Provide a discussion of the project location and key features including existing infrastructure, waterways, utilities, railroads, pedestrian facilities, terrain, and constraints.

3. **Constructability**

   Provide a discussion of constructability concerns including physical features, maintenance of traffic (2 lanes each direction), and other items as needed.

4. **Constraints for Future Widening**

   Provide a discussion of constraints that would make future widening difficult or more costly.

5. **Life-cycle Cost Analysis and Comparison**

   1) Summarize present value and life-cycle costs* for the following options:
      a. 52-foot-wide deck bridge
      b. The desired bridge deck width
      c. Widening from the desired bridge width to a 60-foot-wide deck bridge (for a 3-lane roadway)
      d. 60-foot-wide deck bridge
      e. 60-foot-wide abutment with 52-foot-wide deck or alternate width (depending on span and beam spacing requirements)
      f. Additional project specific alternatives

   **Costs at a minimum should include agency costs, user costs, industry costs, right-of-way costs, and remaining service life values.*

6. **Recommendation**

   Provide a recommendation for bridge deck width to be used.

_____ _____

Engineer of Record Date

_____ _____

NMDOT Date

_____ _____

FHWA Date

Attachment D

2013 Incident Management Plan

New Mexico DEPARTMENT OF TRANSPORTATION

DISTRICT 3
Incident Management Program

June 2013

DISTRICT 3 COPY

June 2013

This document provides the procedures for the management of incidents on Interstate 40 through NMDOT District 3 which require a complete closure of one direction of travel on the Interstate.

Concurrence:

Tim Packer — 9/4/13

NMDOT District 3 – District Engineer — Date

Approved by:

9/4/13

NMDOT District 3 – District Traffic Engineer — Date

Participating Agencies:

New Mexico State Police
City of Albuquerque – Police
City of Albuquerque – Fire
City of Albuquerque – Traffic Engineering
Bernalillo County Sheriff's Office
Valencia County Sheriff's Office
Village of Los Lunas
Sandia Pueblo
Laguna Pueblo
Isleta Pueblo

Table of Contents

Road "Closure" Terminology

The following terms are defined for the District 3 Incident Management Program to ensure consistency and standard usage of terminology by on-scene responders, dispatch operators, public information officers, and others involved in the management of incidents on the corridor.

Terms associated with road "closures/blockages."

Blockage – The highway is blocked by vehicles at the incident site, but traffic is still being allowed to access the highway at all locations upstream of the incident.

Complete Closure – The highway is closed to all traffic at the designated location. No traffic is being allowed to enter the highway at that point, and all traffic on the highway at that location must exit.

Discretionary Closure – Smaller sized vehicles are directed to exit I-40 and take a local detour route, while semi-trucks and vehicles towing trailers are allowed to remain on I-40. The remaining vehicles on I-40 are allowed to move through the incident site in pulses.

Lane Closure – A lane of traffic is closed, but traffic is being diverted around the incident in the adjacent lane(s) or shoulders.

Staged Closure – The highway is blocked by an incident at a location where there is no alternate local detour route available, and the highway is closed to traffic at multiple upstream locations in a progressive fashion as parking and facilities become unavailable in each town. The location and timing of these multiple closures will be described in further detail in accordance with the Staged Closures section of this Manual.

Staged Release – A systematic process of releasing traffic that is queued behind a closure before the road is opened. After all traffic on the mainline and any vehicles in adjacent towns are released, the road can then be officially reopened. The specific process of implementing a staged release is described in the Staged Closures section of this Manual.

Acronym List

23 CFR 630 – Code of Federal Regulations, Title 23, Highways; Chapter I, Federal Highway Administration, Department of Transportation; Subchapter G, Engineering and Traffic Operations; Part 630, Preconstruction Procedures

DMS – Dynamic Message Sign

EOC - Emergency Operations Center
EOP - Emergency Operations Plan

FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration

HAR – Highway Advisory Radio
HAZMAT – Hazardous Materials

IC – Incident Command
ICS – Incident Command System
IMP – Incident Management Plan
ITS – Intelligent Transportation System

JIC – Joint Information Center

LZ – Landing Zone

MAC – Mutual Aid Channel
MM – Mile Marker
MP – Mile Post

NIMS – National Incident Management System
NMDOT – New Mexico Department of Transportation
NMTA – New Mexico Trucking Association

PIO – Public Information Officer
PVMS – Portable Variable Message Sign

D3 – District 3

TMC – Transportation Management Center

UC – Unified Command
USFS – United States Forest Service
UTC – Uniform Traffic Control

VMS – Variable Message Sign

1.0

FIRST RESPONDER

First on Scene

- **Secure own safety**
- **Set up traffic control**
- **Assess situation – Decision Matrix Section 2**
- **Contact your dispatch**
  - Indicate incident level and
  - expected closure time
- **Initiate Incident Class/Action**
- **Items (next page)**

All Other Responders

- **Check in at Command Post or with Incident Commander**

(Recommended Incident Management Guidelines)

Incident Class/Action Items

Minor Incident Class (Impact to traveled roadway **less than 1 hour**)
- Notify Dispatch of the situation
- Establish Incident Command
  - Is it on scene or "virtual"?
- Does DMS/511 need to be initiated?
- Has traffic control been established? (see Section 6.0)
- Notify Dispatch of who is in command (name)

Intermediate Incident Class (Impact to traveled roadway **1 – 3 hours**)
- All action items from above Minor Incident Class PLUS:
  - Provide timely updates to Dispatch
  - Notify Dispatch of who is the Incident Commander
  - Notify Transportation Management Center (TMC)
  - Do local detour routes need to be implemented? (see section 6.0)
  - Does residual traffic need to be turned around? (see section 5.0)

Major Incident Class (Impact to traveled roadway **greater than 3 hours**)
- All action items from above Minor and Intermediate Incident Classes PLUS:
  - Initiate Emergency Operations Center (EOC), if appropriate
  - Initiate I-40 Head to Head Detour Routes (see Sections 7.0: Eastbound – 8.0: Westbound)
  - Inform Dispatch that alternate route is necessary
  - Coordinate with FHWA should the incident exceed 8 hours
  - Does a regional detour need to be implemented? (see Section 9.0)
  - Initiate changes to signal timing on detour routes

Major Long-Term Closure Incident Class (Impact to traveled roadway **greater than 24 hours**).
Incident will cover multiple operational periods.)
- All action items from above Minor, Intermediate, and Major Incident Classes PLUS:
  - Development of Long Term Traffic Control Detour Plan

Incident Wrap-Up Checklist for All Emergency Responders
(As applicable)

- Inform your Dispatch that response is complete. _____
- Inform TMC that response is complete. _____
- Return VMS, 511, and HAR to regular messages _____
- Block off any emergency turnarounds used in incident response _____
- Remove all traffic control equipment if incident is completely wrapped up _____
- Coordinate with general contractor and traffic control company if incident clean-up is still on-going but not impacting I-40 traffic_____
- Inspect all NMDOT traffic control devices prior to storing _____
- Inform all jurisdictions impacted by local detour routes_____
- Confirm press release/broadcast fax has been sent out _____
- Return staging area and command post to previous working condition_____
- Check out all personnel from Incident Command _____
- Return all incident command vests to designated area _____
- Confirm all necessary paper work is completed_____
- Inform everyone on communications flow chart _____
- Schedule debrief meeting (if necessary)_____

NMDOT DISTRICT 3 Incident Management Program

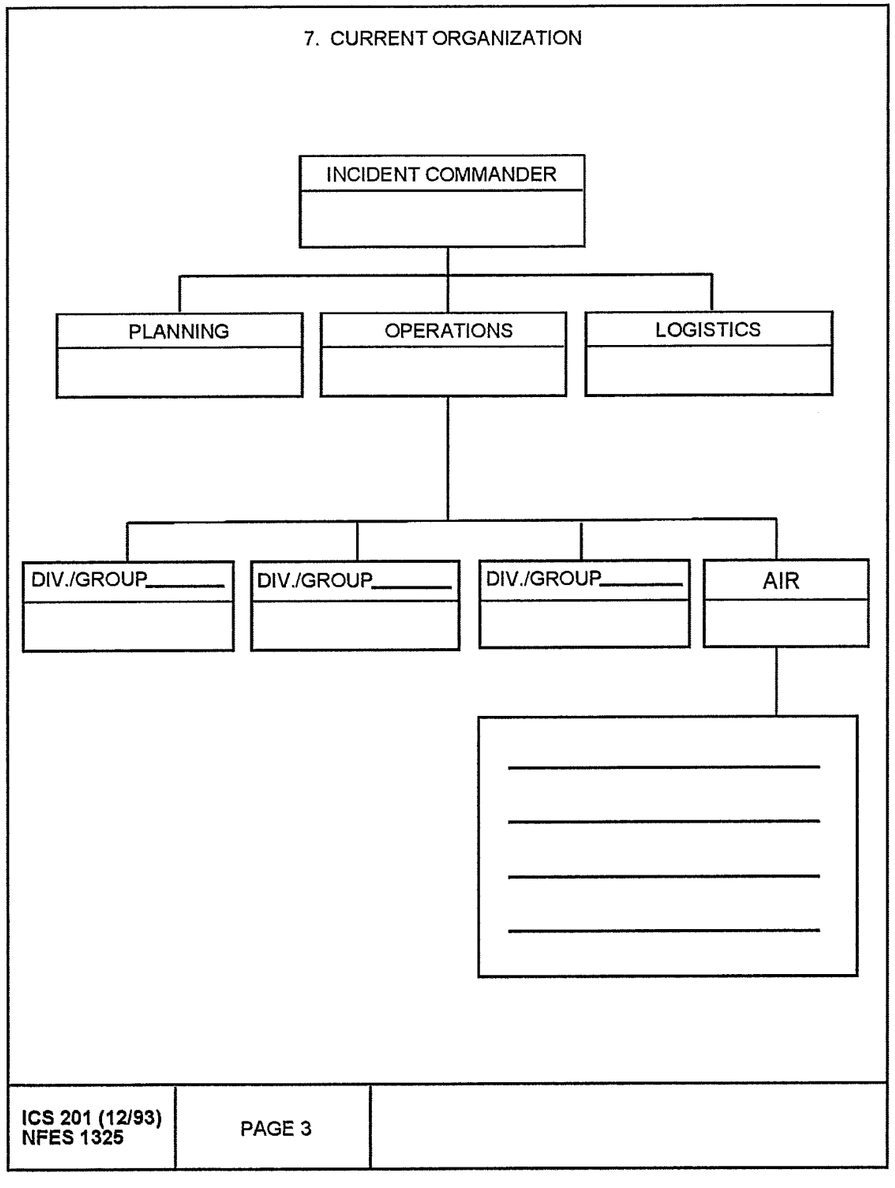
INCIDENT BRIEFING	1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

4. MAP SKETCH

ICS 201 (12/93) NFES 1325	PAGE 1	5. PREPARED BY (NAME AND POSITION)

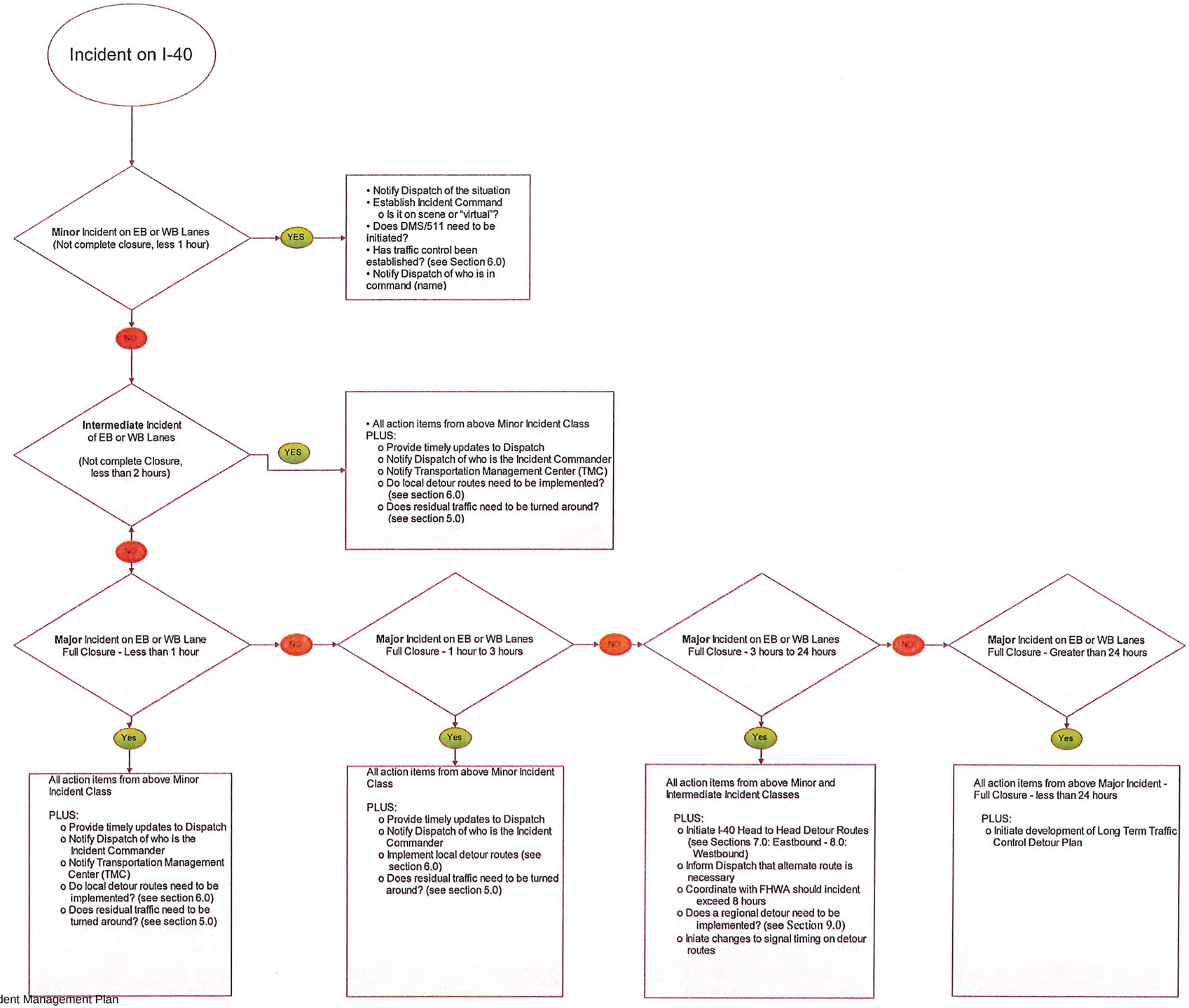
6. SUMMARY OF CURRENT ACTIONS

ICS 201 (12/93) NFES 1325	PAGE 2	


7. CURRENT ORGANIZATION
INCIDENT COMMANDER
PLANNING
OPERATIONS
LOGISTICS
DIV./GROUP_____
DIV./GROUP_____
DIV./GROUP_____
AIR
ICS 201 (12/93)
NFES 1325
PAGE 3

2.0

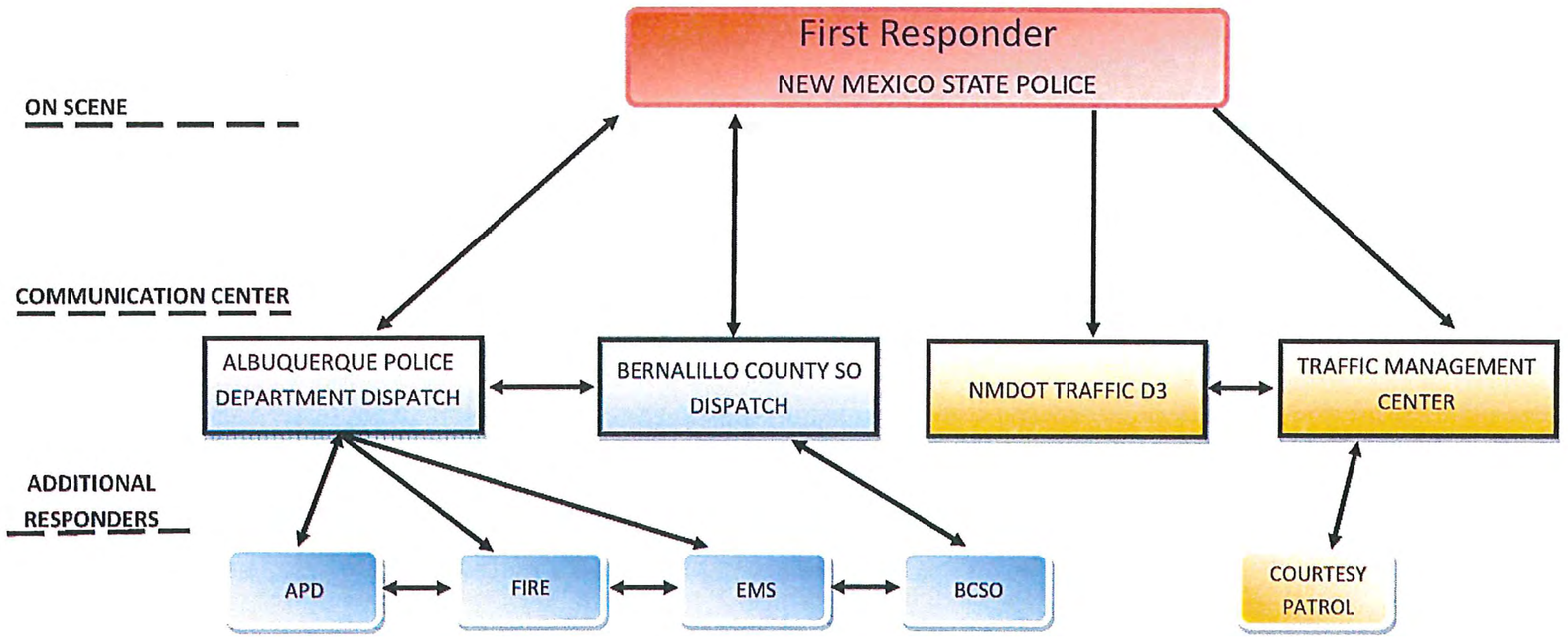
DECISION MATRIX


Incident on I-40
Minor Incident on EB or WB Lanes (Not complete closure, less 1 hour)
YES
• Notify Dispatch of the situation
• Establish Incident Command
o Is it on scene or "virtual"?
• Does DMS/511 need to be initiated?
• Has traffic control been established? (see Section 6.0)
• Notify Dispatch of who is in command (name)
NO
Intermediate Incident of EB or WB Lanes
(Not complete Closure, less than 2 hours)
YES
• All action items from above Minor Incident Class PLUS:
o Provide timely updates to Dispatch
o Notify Dispatch of who is the Incident Commander
o Notify Transportation Management Center (TMC)
o Do local detour routes need to be implemented? (see section 6.0)
o Does residual traffic need to be turned around? (see section 5.0)
NO
Major Incident on EB or WB Lane Full Closure - Less than 1 hour
NO
Major Incident on EB or WB Lanes Full Closure - 1 hour to 3 hours
NO
Major Incident on EB or WB Lanes Full Closure - 3 hours to 24 hours
NO
Major Incident on EB or WB Lanes Full Closure - Greater than 24 hours
Yes
All action items from above Minor Incident Class
PLUS:
o Provide timely updates to Dispatch
o Notify Dispatch of who is the Incident Commander
o Notify Transportation Management Center (TMC)
o Do local detour routes need to be implemented? (see section 6.0)
o Does residual traffic need to be turned around? (see section 5.0)
Yes
All action items from above Minor Incident Class
PLUS:
o Provide timely updates to Dispatch
o Notify Dispatch of who is the Incident Commander
o Implement local detour routes (see section 6.0)
o Does residual traffic need to be turned around? (see section 5.0)
Yes
All action items from above Minor and Intermediate Incident Classes
PLUS:
o Initiate I-40 Head to Head Detour Routes (see Sections 7.0: Eastbound - 8.0: Westbound)
o Inform Dispatch that alternate route is necessary
o Coordinate with FHWA should incident exceed 8 hours
o Does a regional detour need to be implemented? (see Section 9.0)
o Iniate changes to signal timing on detour routes
Yes
All action items from above Major Incident - Full Closure - less than 24 hours
PLUS:
o Initiate development of Long Term Traffic Control Detour Plan

3.0

COMMUNICATIONS and DISPATCH NOTIFICATION

DISPATCH NOTIFICATION TREE
MAJOR INCIDENT ON INTERSTATE



4.0

TRAFFIC NOTIFICATION AND INFORMATION

4.1 NMRoads

The NMDOT supports the website called *NMRoads* (http://nmroads.com) for general information to the public about conditions on selected state routes. The information available on the website includes the following:

- Incident Notification
- Road Construction
- Current Weather Conditions
- Traffic Conditions
- Travel Times
- General Transit
- Rest Area
- Roadway Cameras and Message Signs

NMRoads is also available as a download application for mobile devices and can automatically send requested notifications about specific roadways or incident types.

4.2 New Mexico 511

The U.S, Department of Transportation, with approval of the Federal Communications Commission, developed the Intelligent Transportation System (ITS) in response to 23 CFR 630 to increase traffic efficiency and safety on the nation's roadways.

The NMDOT utilizes 511 as a one-stop phone and web source for general transportation information about incidents and road conditions on selected state routes. The master plan was to have a national system in which individuals throughout the country could simply dial 511 on their cell or landline phones and access this information.

4.3 New Mexico Trucking Association Inc

The New Mexico Trucking Association (NMTA) represents commercial truck and bus operators in New Mexico. The NMTA promotes safe operation and good business practices for the New Mexico trucking industry to ensure the health and viability of their members and the New Mexico economy. Traffic notifications should be made to the following:

Gail Peters
Managing Director
505-884-5575
nmta@truckline.com

4.4 Traffic Control Devices

The management of traffic control devices required for the incident shall comprise of state property and/or supplemental contractor materials. The current State Price Agreement for Traffic Control Management and Barricading shall determine the available vendors.

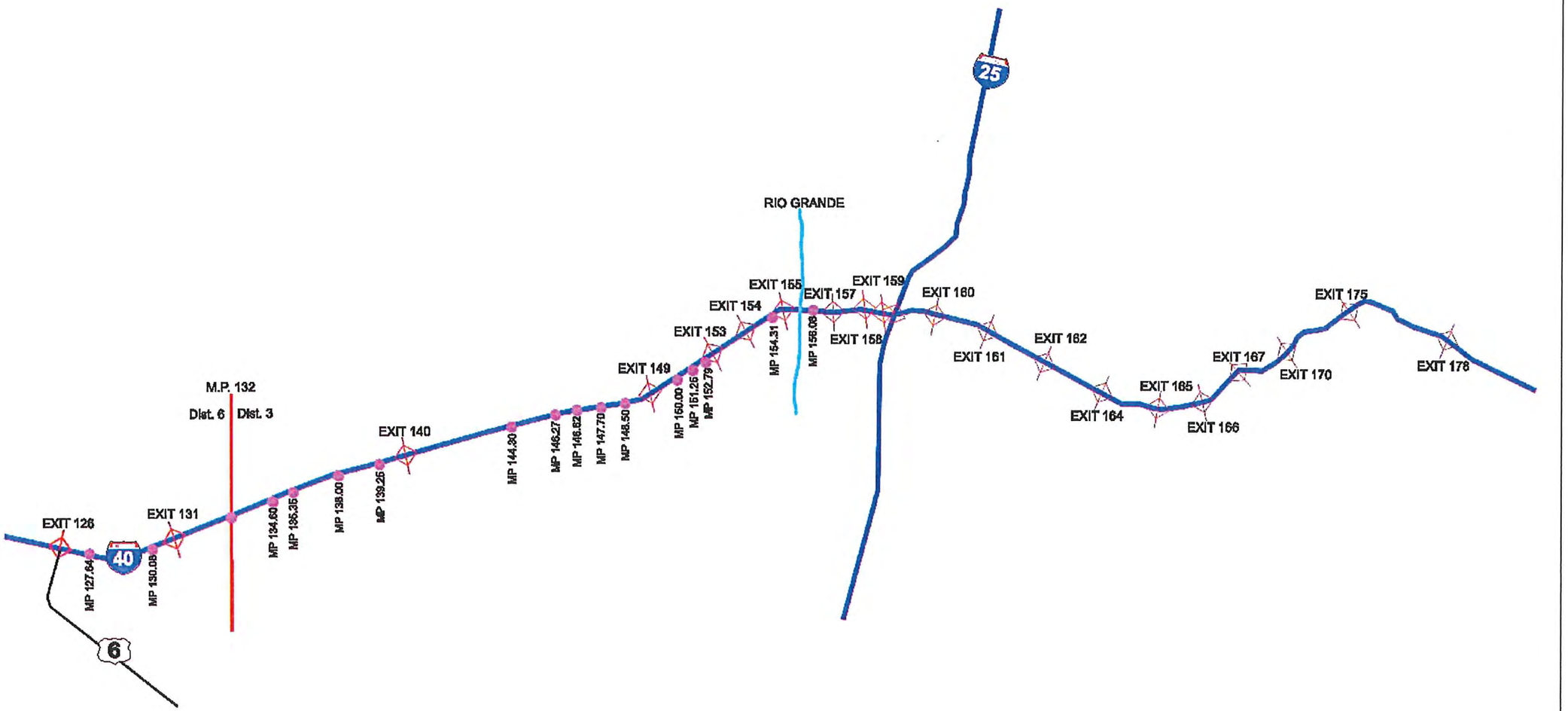
The NMDOT strives to be in compliance with the federal rules FHWA 23 CFR 630 that govern work zone safety to include Work Zone Safety and Mobility Rule (Subpart J); Temporary Traffic Control Devices Rule (Subpart K) and Worker Visibility Rule.

The NMDOT adopted the 2009 Manual of Uniform Traffic Control Devices effective January 2010, for use on all highways in New Mexico. This in in accordance with the State Transportation Commission Resolution No. 2003-5(July), Adopting the Manual of Uniform Traffic Control Devices.

5.0

EMERGENCY TURNAROUND LOCATIONS

Emergency Turnaround Locations



This map shows locations of emergency turnarounds to be used by first responders to gain access to an incident. These are only to be used to turn traffic around as a last measure.

Device	MP	Exit	Name	Inaccessible for:							Comments
				Law	Amb.	Fire Engine	NMDOT Plow	Semi-Trucks	Transit - Bus	Snow/Ice	
Interchange	126.76	126	NM 6								New Mexico 6/I-40 Interchange
Crossover	127.64										Unofficial/Paved
Crossover	130.08										Unofficial/Paved
Interchange	131.26	131	To' hajilee								To' hajilee/I-40 Interchange
Crossover	132.00										Official D.3 Begins/D.6 Ends/Base Course
Crossover	134.60										Official /Base Course
Crossover	135.35										Unofficial/Dirt
Crossover	138.00										Unofficial/Dirt
Crossover	139.25										Unofficial/Dirt
Interchange	140.30	140	Rio Puerco								Rio Puerco/I-40 Interchange
Crossover	144.30										Official/Paved
Crossover	146.27										Unofficial/Dirt
Crossover	146.62										Unofficial/Dirt
Crossover	147.70										Official/Paved
Crossover	148.50										Unofficial/Paved
Interchange	149.50	149	Atrisco Vista								Atrisco Vista/I-40 Interchange
Crossover	150.00										Unofficial/Dirt
Crossover	151.25										Official/Paved
Interchange	152.28	153	98th Street								98th Street/i-40 Interchange
Crossover	152.79										Official/Paved
Interchange	153.35	154	Unser Blvd								Unser Blvd/i-40 Interchange
Crossover	154.31										Official/Paved
Interchange	155.00	155	Coors Blvd								Coors Blvd/I-40 Interchange
Crossover	156.08										Movable Median Barrier
Interchange	156.92	157A	Rio Grande Blvd								Rio Grande Blvd/I-40 Interchange
Interchange	157.70	157B	12th Street								12th Street/I-40 Interchange
Interchange	158.32	158	8th - 6th Street								8th - 6th Street/I-40 Interchange
Interchange	158.65	159A	4th - 2nd Street								4th - 2nd Street/I-40 Interchange

6.0

IMPLEMENTATION OF LOCAL DETOUR ROUTES

IMPLEMENTATION OF LOCAL DETOUR ROUTES

Intermediate and Major Incidents

In anticipation of the need for implementing local detour routes NMDOT has prepared a set of alternate route plans to cover locations through the City of Albuquerque where diversion may be necessary. The local detour routes are to be implemented when an incident occurs on I-40 and an alternate route (typically the I-40 frontage road or parallel arterial streets where available) is available to detour the interstate traffic. For locations on I-40 where no available local detour exists, a regional detour route may need to be recommended during a major incident. In these cases access to the interstate will be limited for the duration of the incident.

WHEN TO ESTABLISH A LOCAL DETOUR

The decision to establish a local detour route is made when the closure of one or more lanes of I-40 through the City of Albuquerque occurs in conjunction with an **Intermediate or Major Incident**. The decision is made by the Incident Commander, in coordination with NMDOT and the City of Albuquerque, and will depend on the estimated duration of the incident, time of day, traffic conditions, and availability of personnel.

SETTING UP A LOCAL DETOUR

Before the route is set up it should be driven along its entire length to ensure that the route is free of construction and other traffic bottlenecks. Also the route should be evaluated to determine whether there are physical or regulatory restrictions to truck traffic, and adjusted accordingly. The local detour route maps on the following pages show the most appropriate locations for the majority of the necessary temporary traffic control devices. Please note that the portable variable message sign (PVMS) locations are shown for the primary route only. If the secondary routes are required, then the PVMS signs should be relocated appropriately.

DETOUR ROUTE(S) IMPLEMENTATION

Once the detour route(s) are established, they should be reviewed with the NMDOT and their Traffic Control Contractor and implemented by the Traffic Control Contractor in the following manner:

- The local detour route signs should be erected or modified in reverse order starting from the end of the detour to the beginning (opposite to the direction of the flow).
- Signs will normally be fastened onto poles or erected on portable sign structures. If possible the signs should be visible above the tops of cars.
- In areas where complicated maneuvering is required or in heavily congested areas, flags should be placed on the detour signs to attract attention.
- Signs will normally be erected on the right side of the roadway.
- When erecting the detour, regulatory, warning or guide signs they should not be obstructed from the view of the motorist. Signs should be placed a minimum of two feet from the edge of the traveled way.
- After clearance of the incident, signs shall be removed in the reverse order they were installed. This is the beginning of the route to the end of the route

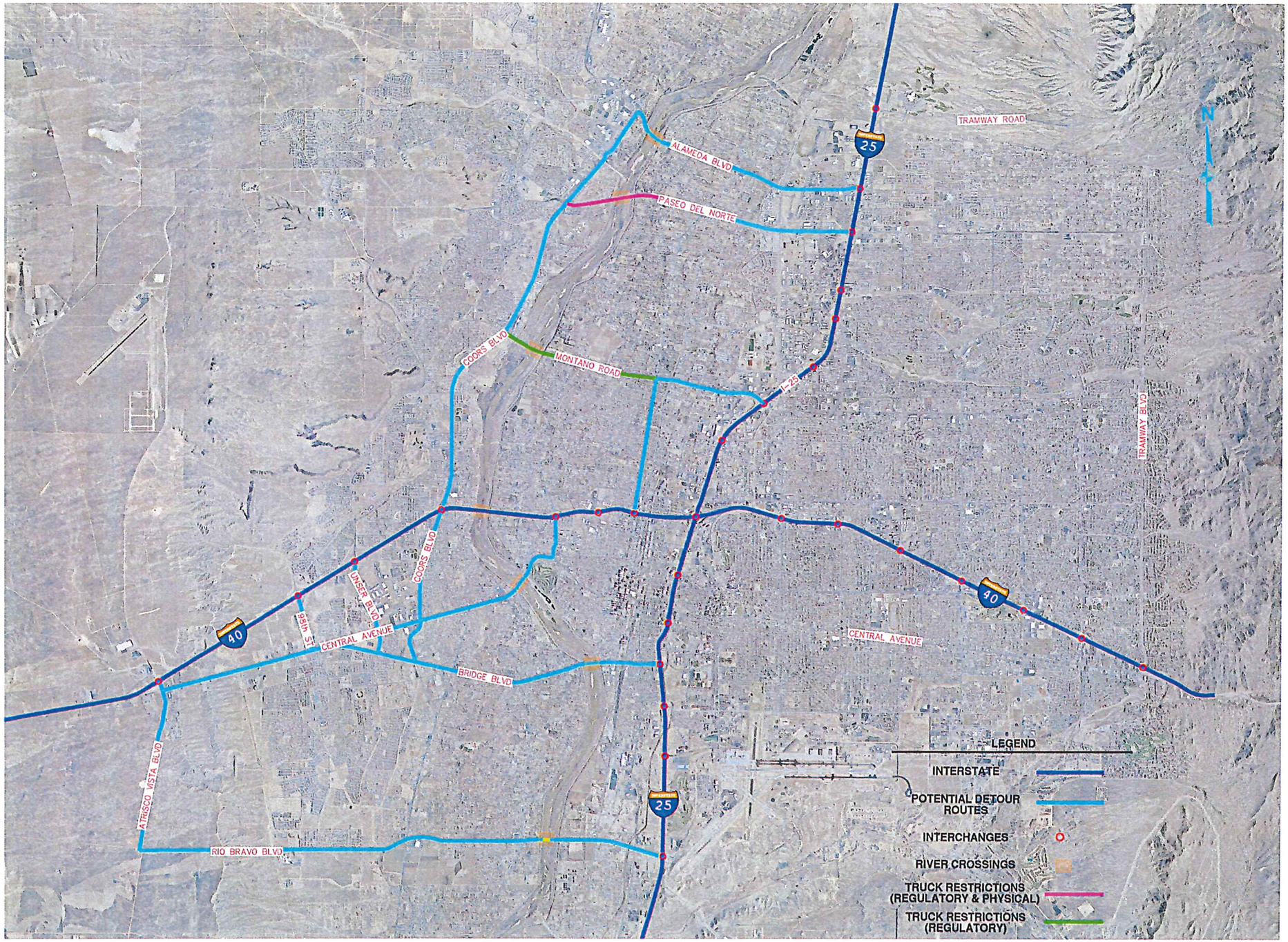
TRAFFIC SIGNALS ON THE LOCAL DETOUR

Even when the detour route plan is set up, major traffic congestion is still expected. The detour routes were never designed to carry the same volume of traffic as the interstate. This situation can be helped (not solved) through proper control of timing at signals along the detour route to facilitate the movement of the detoured traffic. Although it is possible to direct traffic manually, it is preferred to direct traffic using the traffic signal indications. Where possible, the City of Albuquerque and/or Bernalillo County Traffic Engineering should make timing adjustments to compensate for the increased traffic. The traffic signal timing adjustments should be pre-planned and pre-programmed so they can be easily and quickly implemented during an incident.

THE FOLLOWING SECTIONS SHOWS DIAGRAMS OF TYPICAL LANE CLOSURES AS A GUIDE FOR CLOSING ONE OR MORE TRAFFIC LANES.

THE MAPS IDENTIFY THE FOLLOWING:

- The section of freeway assumed to be closed
- Locations of ramps to be closed
- The main path of the detour route
- Recommended sign placement locations
- Number of signs required for the proposed primary and secondary routes
- Signals along the route
- Permanent variable message sign locations

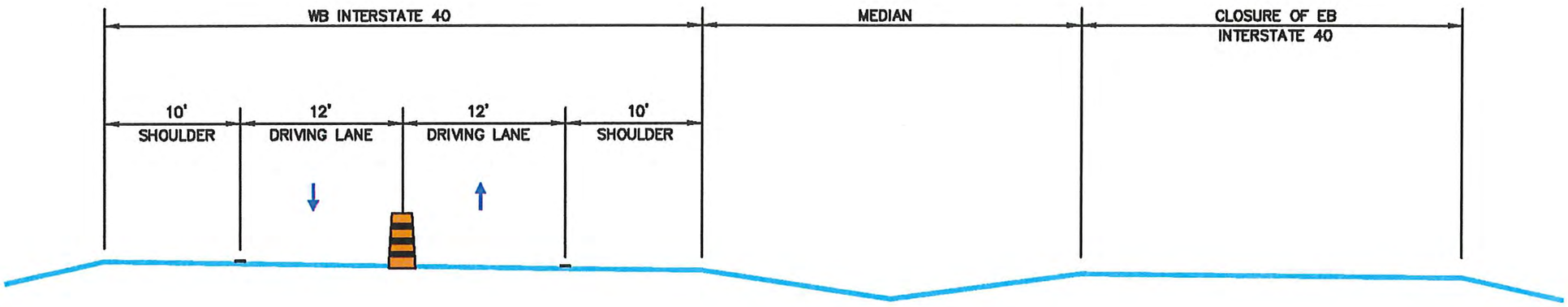

TRAMWAY ROAD
ALAMEDA BLVD
PASEO DEL NORTE
COORS BLVD
MONTANO ROAD
I-25
TRAMWAY BLVD
N
25
40
COORS BLVD
UNSER BLVD
98th ST
CENTRAL AVENUE
BRIDGE BLVD
ATRISCO VISTA BLVD
RIO BRAVO BLVD
LEGEND
INTERSTATE
POTENTIAL DETOUR ROUTES
INTERCHANGES
RIVER CROSSINGS
TRUCK RESTRICTIONS (REGULATORY & PHYSICAL)
TRUCK RESTRICTIONS (REGULATORY)

7.0

MAJOR INCIDENT EB LOCAL DETOUR ROUTES

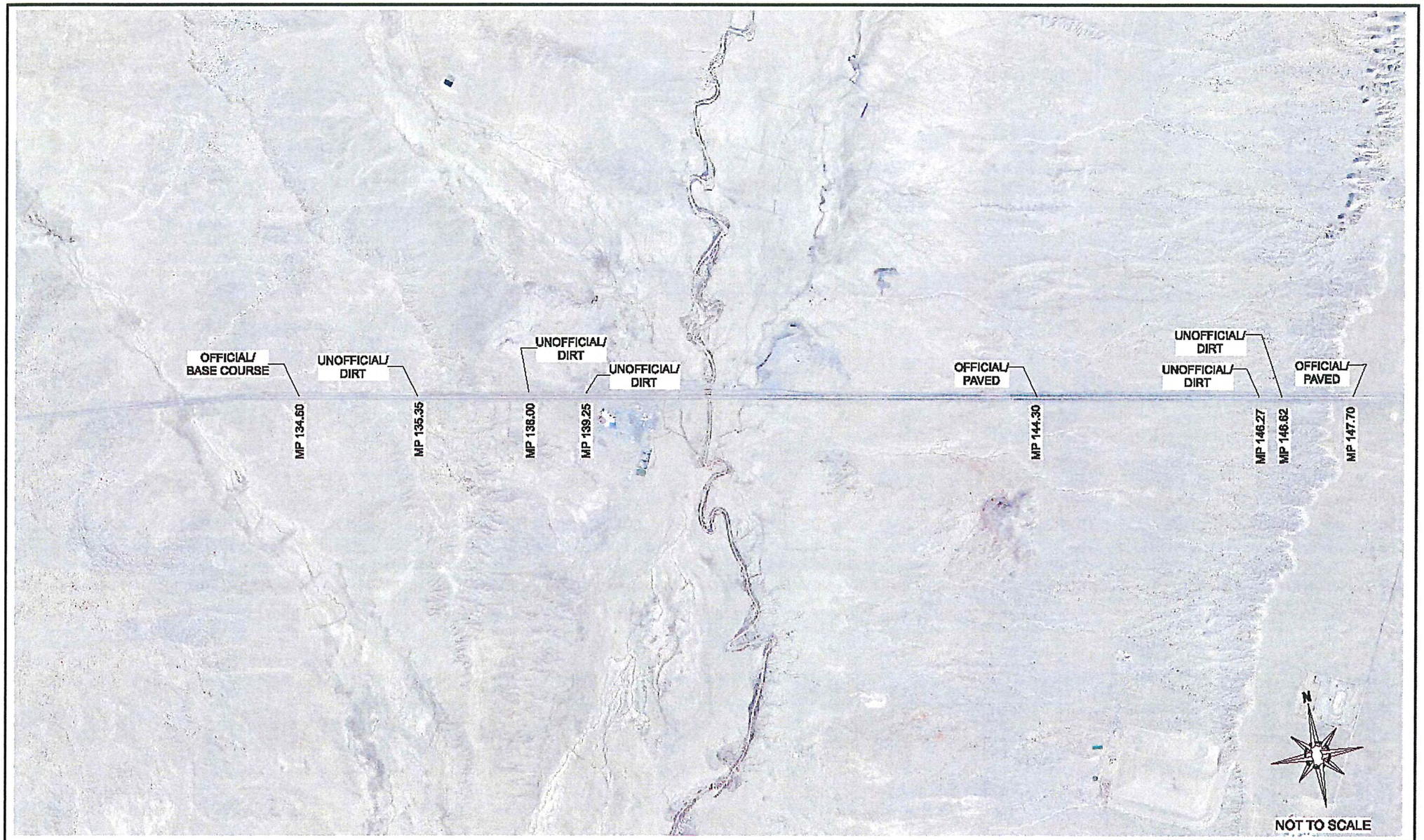
Interstate 40 – Major Incident Head to Head Detour

Milepost 134 to Milepost 148

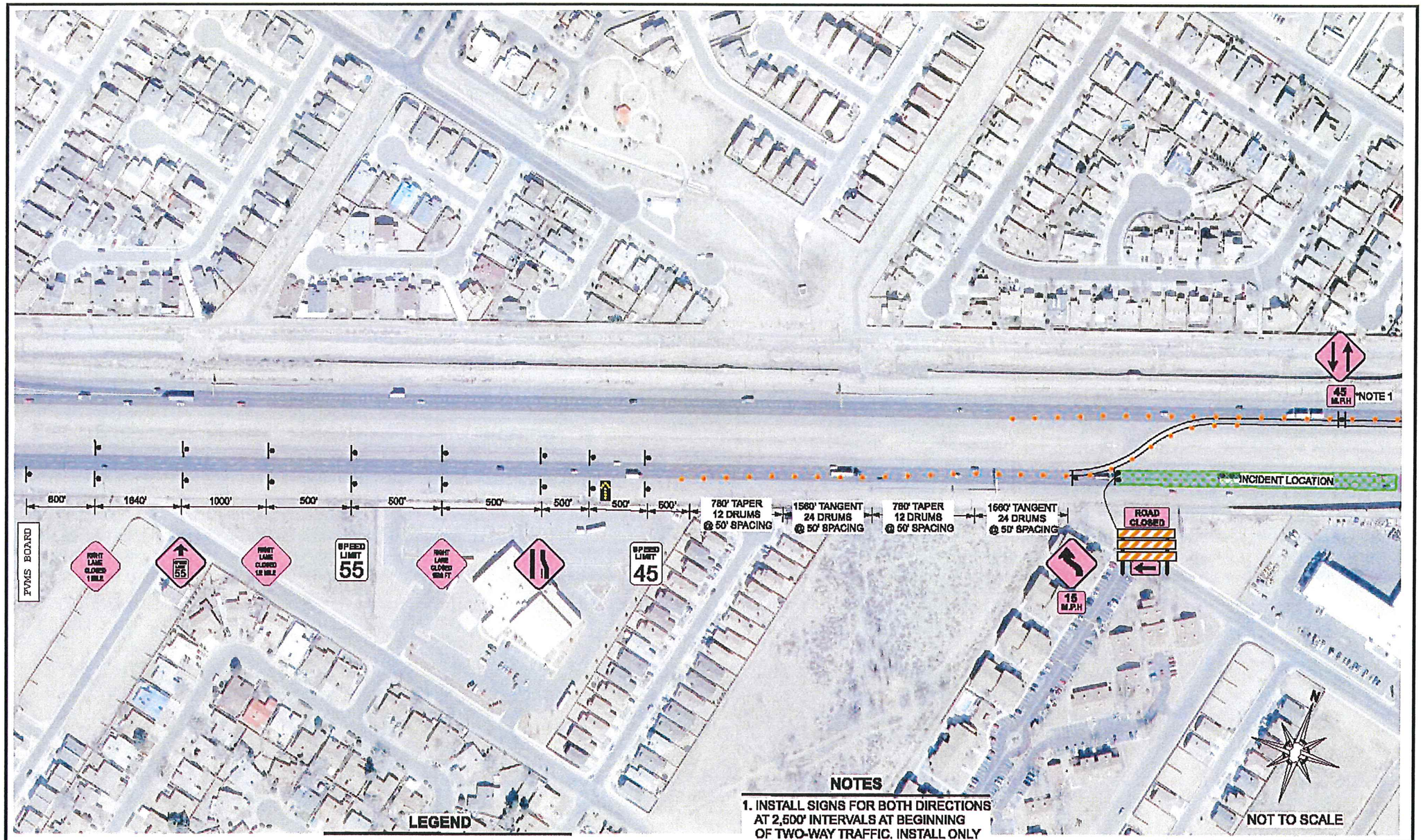


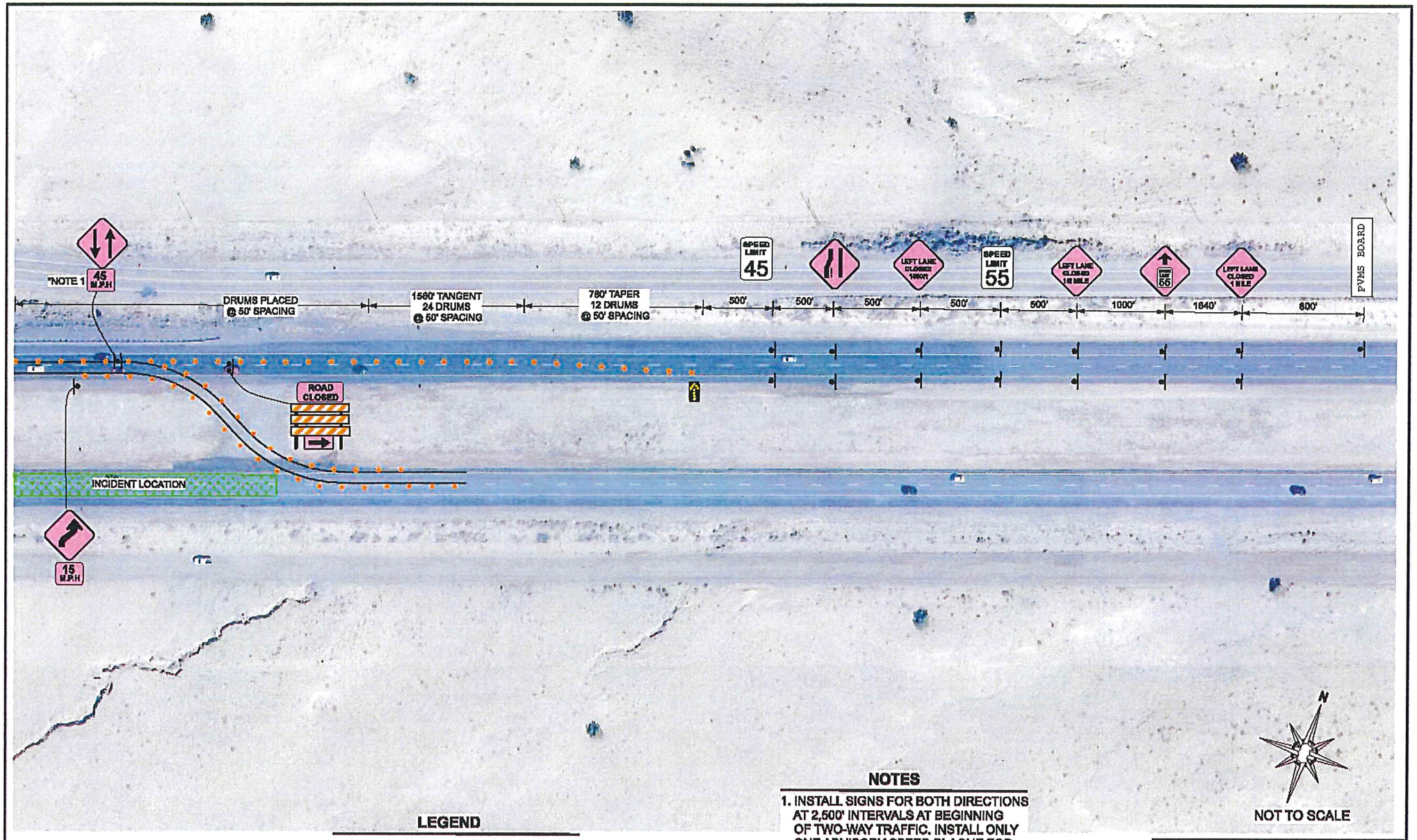
DETOUR TYPICAL SECTION

WB I-40 @ RIO PUERCO



INCIDENT MANAGEMENT PLAN
DETOUR PLAN
EASTBOUND INCIDENT LOCATION
MP 133 TO MP 148


45 M.P.H
NOTE 1
INCIDENT LOCATION
800'
1640'
1000'
500'
500'
500'
500'
500'
500'
780' TAPER 12 DRUMS @ 50' SPACING
1560' TANGENT 24 DRUMS @ 50' SPACING
780' TAPER 12 DRUMS @ 50' SPACING
1660' TANGENT 24 DRUMS @ 50' SPACING
ROAD CLOSED
15 M.P.H
PVMS BOARD
RIGHT LANE CLOSED 1 MILE
RIGHT LANE CLOSED 1/2 MILE
RIGHT LANE CLOSED 500 FT
SPEED LIMIT 55
SPEED LIMIT 45
N
NOT TO SCALE
LEGEND
SIGN FACING ONE DIRECTION
SIGNS FACING TWO DIRECTIONS
DRUM LOCATION
NOTES
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.
INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 134.60



LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

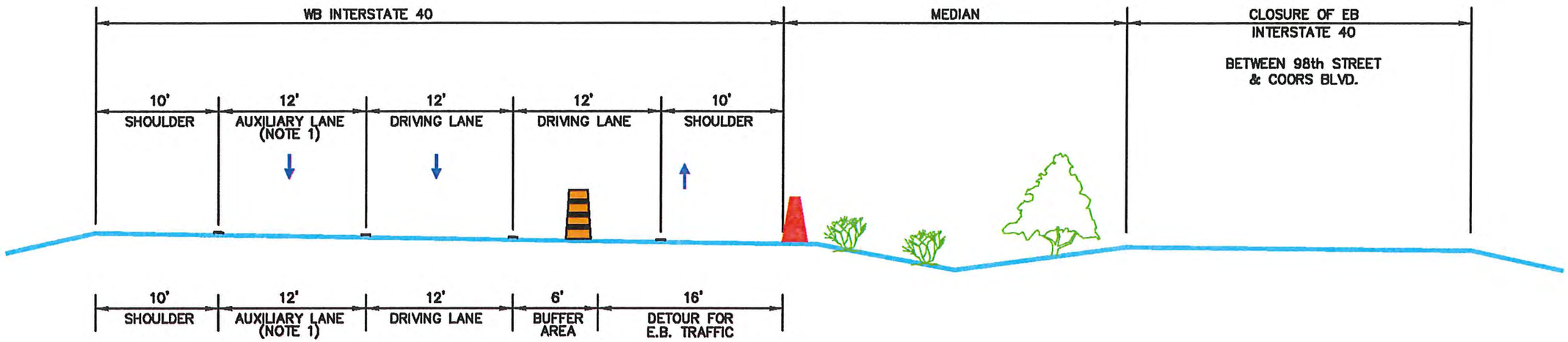
NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
EB INCIDENT @ RIO PUERCO
TRAFFIC CONTROL PLAN
MP 144.30

Interstate 40 – Major Incident Head to Head Detour

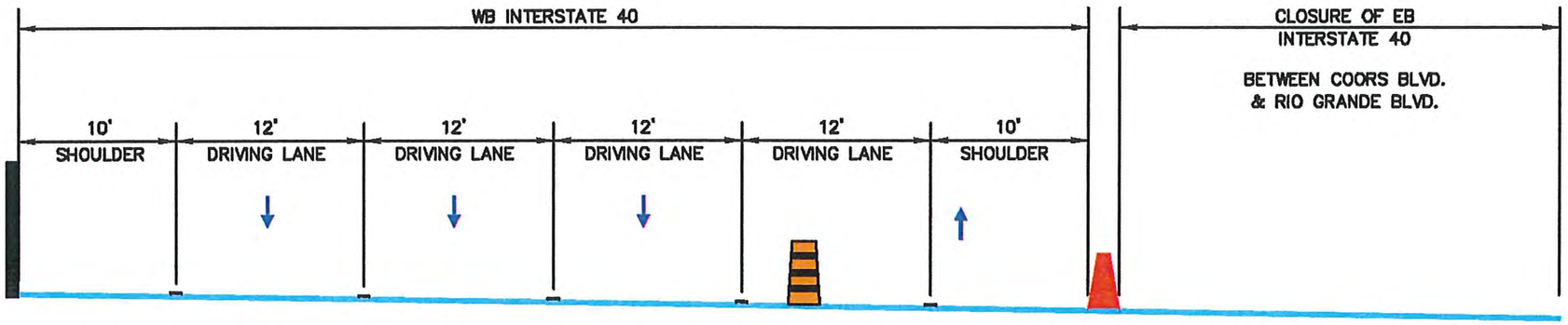
Milepost 153 to Milepost 157



NOTES:
1.) AUXILIARY LANE IS NOT CONTINUOUS FROM 98th ST. TO COORS BLVD.

DETOUR TYPICAL SECTION

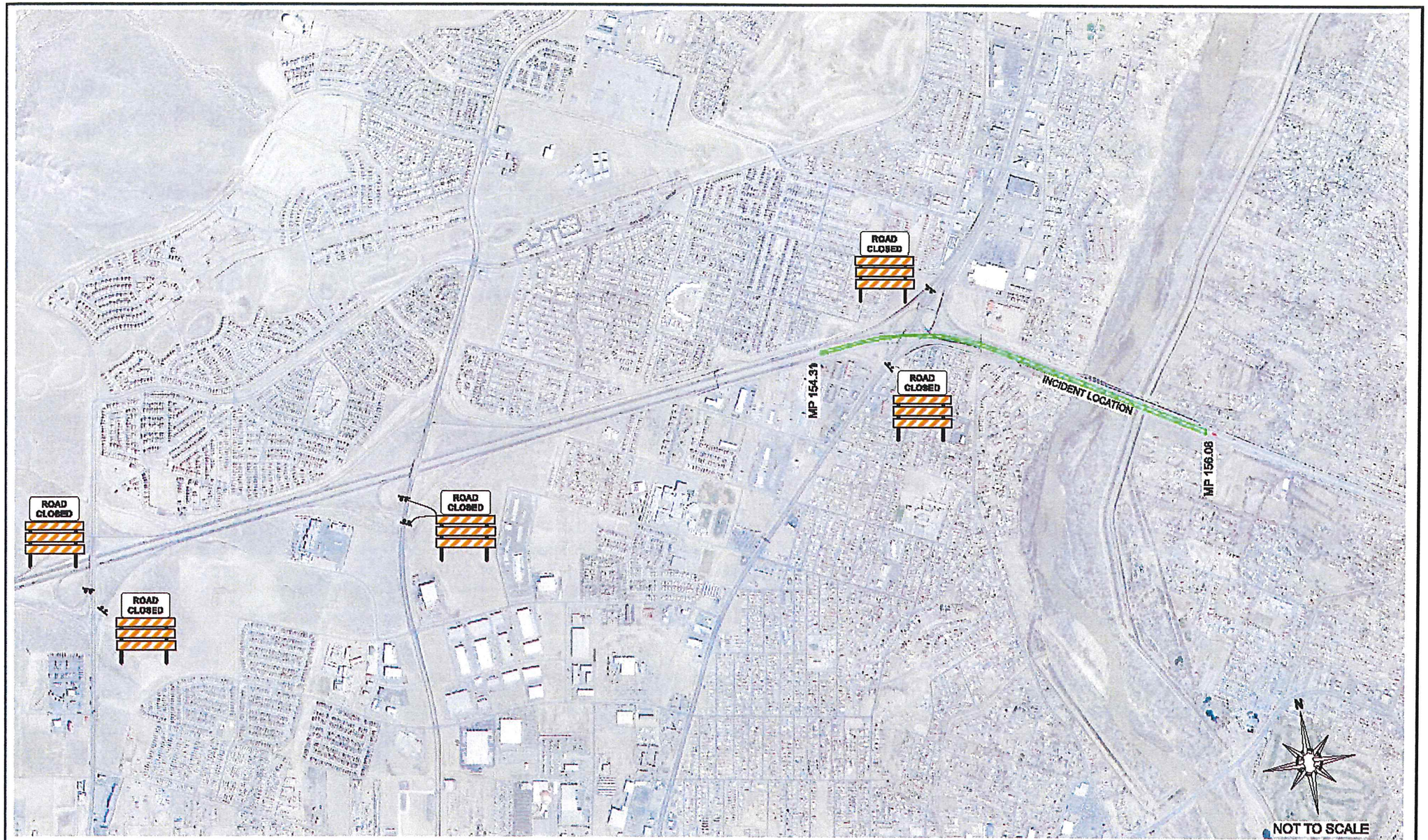
I-40 BETWEEN 98th St. (MP 153)
AND COORS BLVD. (MP 155)



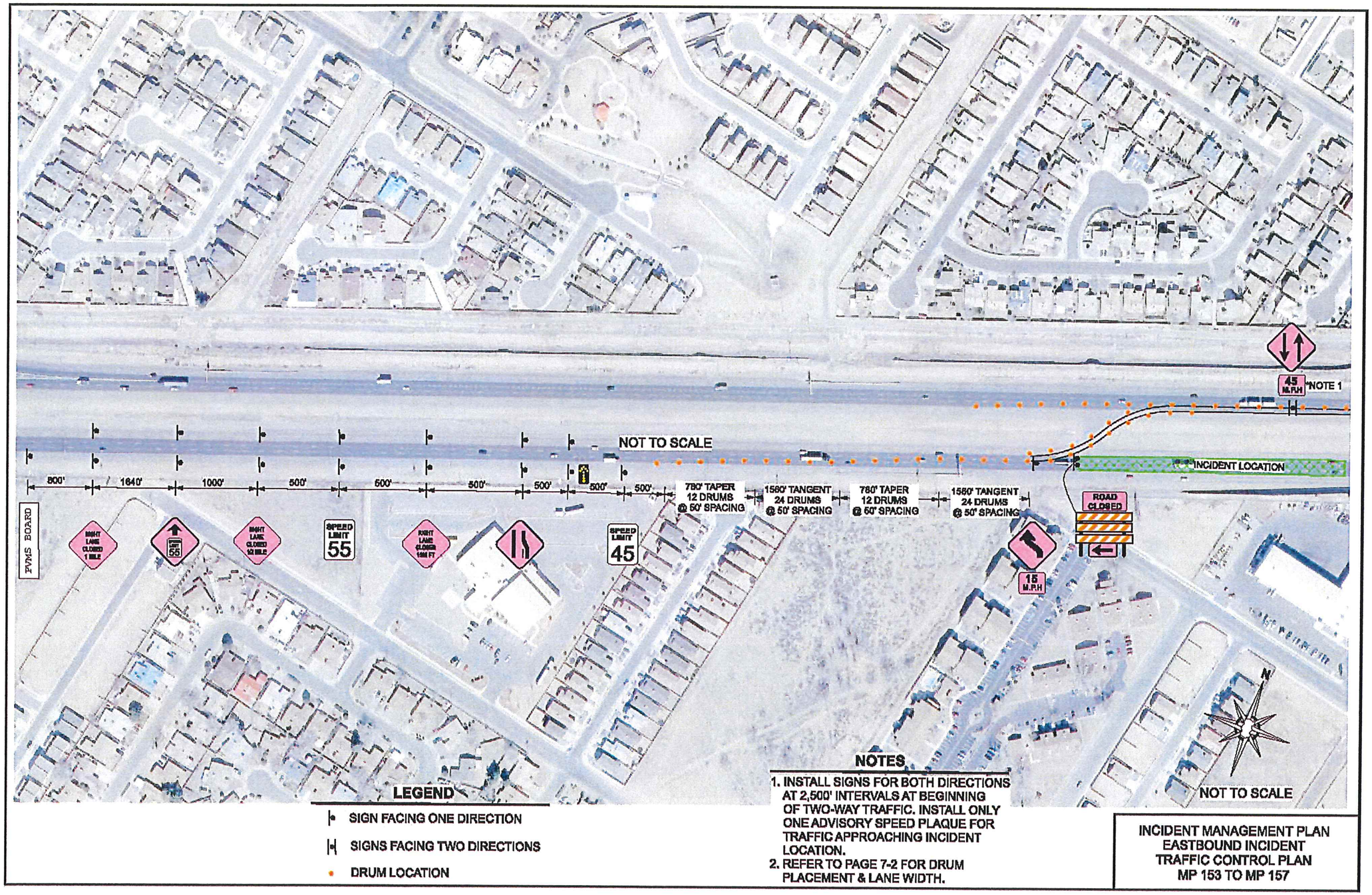
DETOUR TYPICAL SECTION

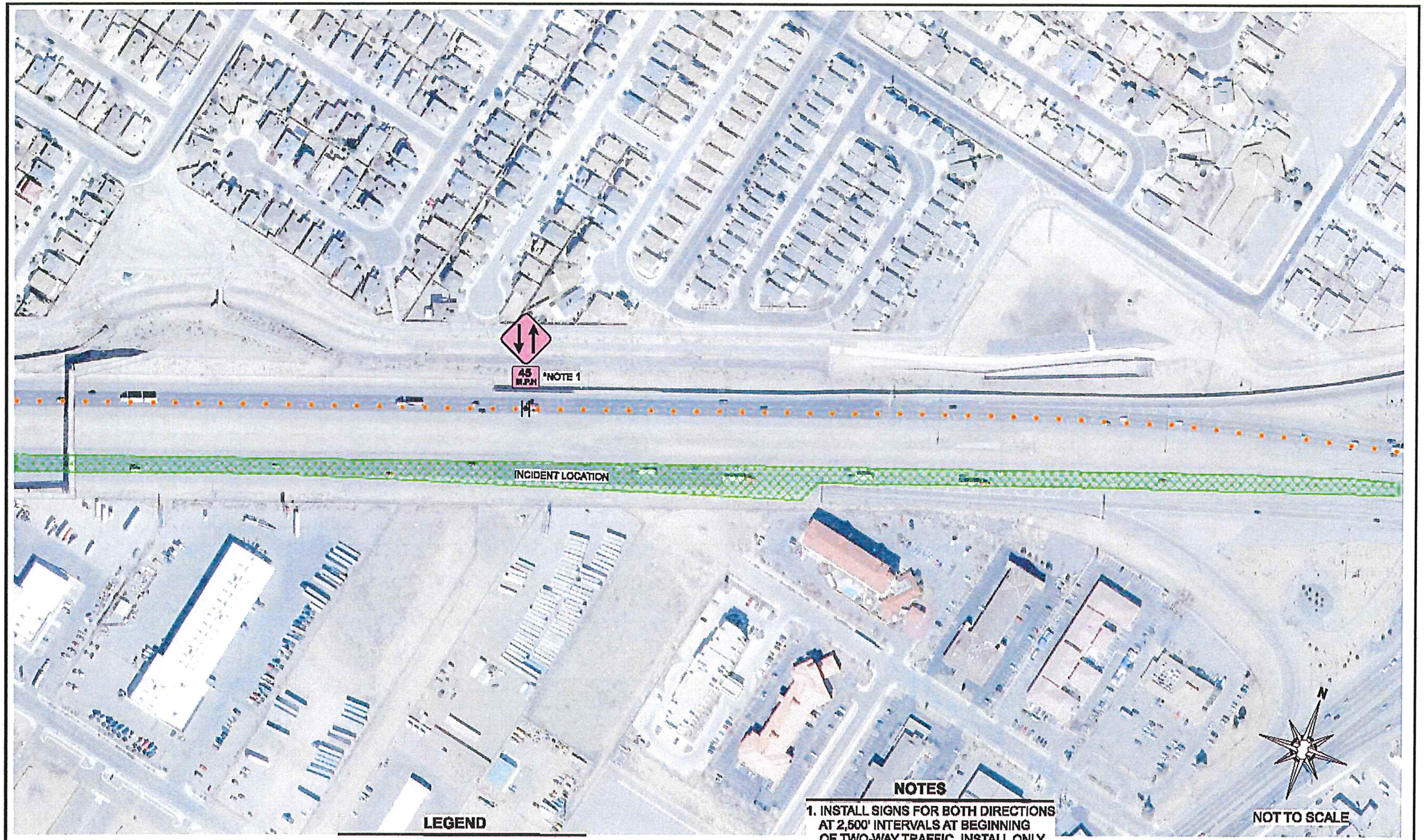
I-40 BETWEEN COORS BLVD. & RIO GRANDE BLVD.
(M.P. 155 TO M.P. 157)

INCIDENT MANAGEMENT PLAN
DETOUR PLAN
EASTBOUND INCIDENT LOCATION
MP 153 TO MP 157



INCIDENT MANAGEMENT PLAN
DETOUR PLAN
EASTBOUND INCIDENT LOCATION
MP 153 TO MP 157


NOT TO SCALE
800'
1640'
1000'
500'
500'
500'
500'
500'
500'
780' TAPER
12 DRUMS
@ 50' SPACING
1560' TANGENT
24 DRUMS
@ 50' SPACING
780' TAPER
12 DRUMS
@ 50' SPACING
1560' TANGENT
24 DRUMS
@ 50' SPACING
PVMS BOARD
RIGHT LANE CLOSED 1 MILE
SPEED LIMIT 55
RIGHT LANE CLOSED 1/2 MILE
SPEED LIMIT 55
RIGHT LANE CLOSED 1000 FT
SPEED LIMIT 45
45 M.P.H
*NOTE 1
INCIDENT LOCATION
ROAD CLOSED
15 M.P.H
N
NOT TO SCALE
LEGEND
SIGN FACING ONE DIRECTION
SIGNS FACING TWO DIRECTIONS
DRUM LOCATION
NOTES
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.
INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 153 TO MP 157



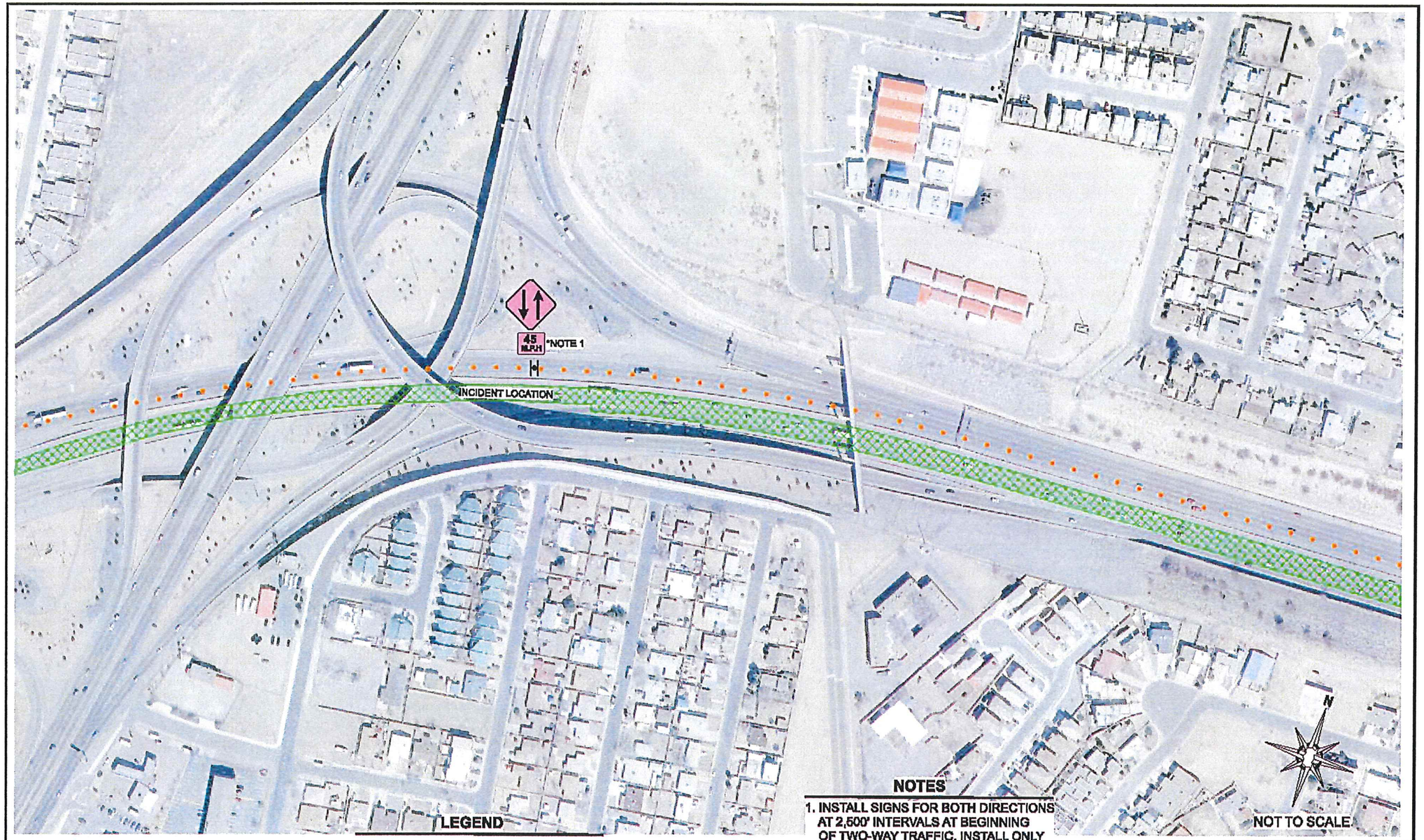
LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 153 TO MP 157



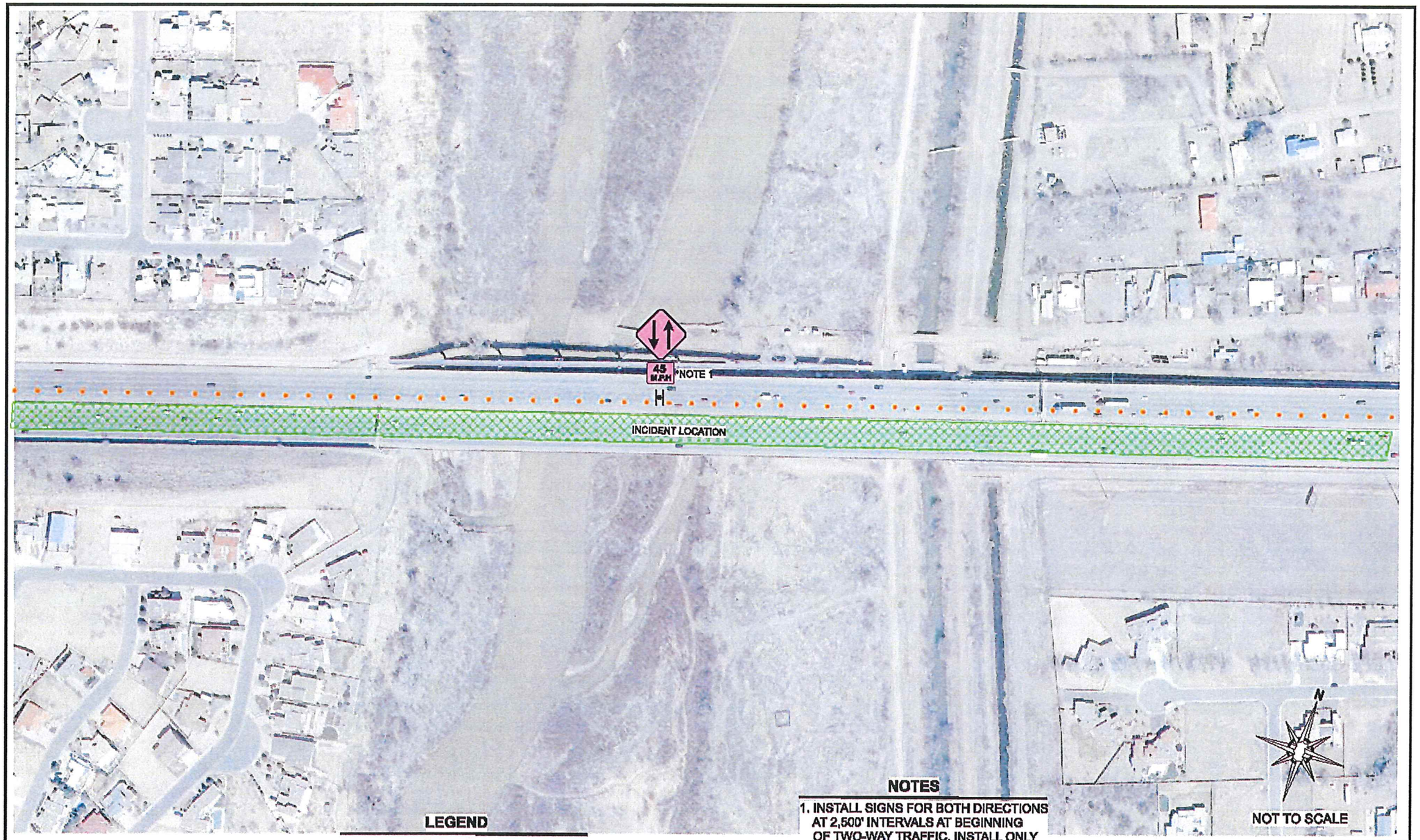
LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 153 TO MP 157



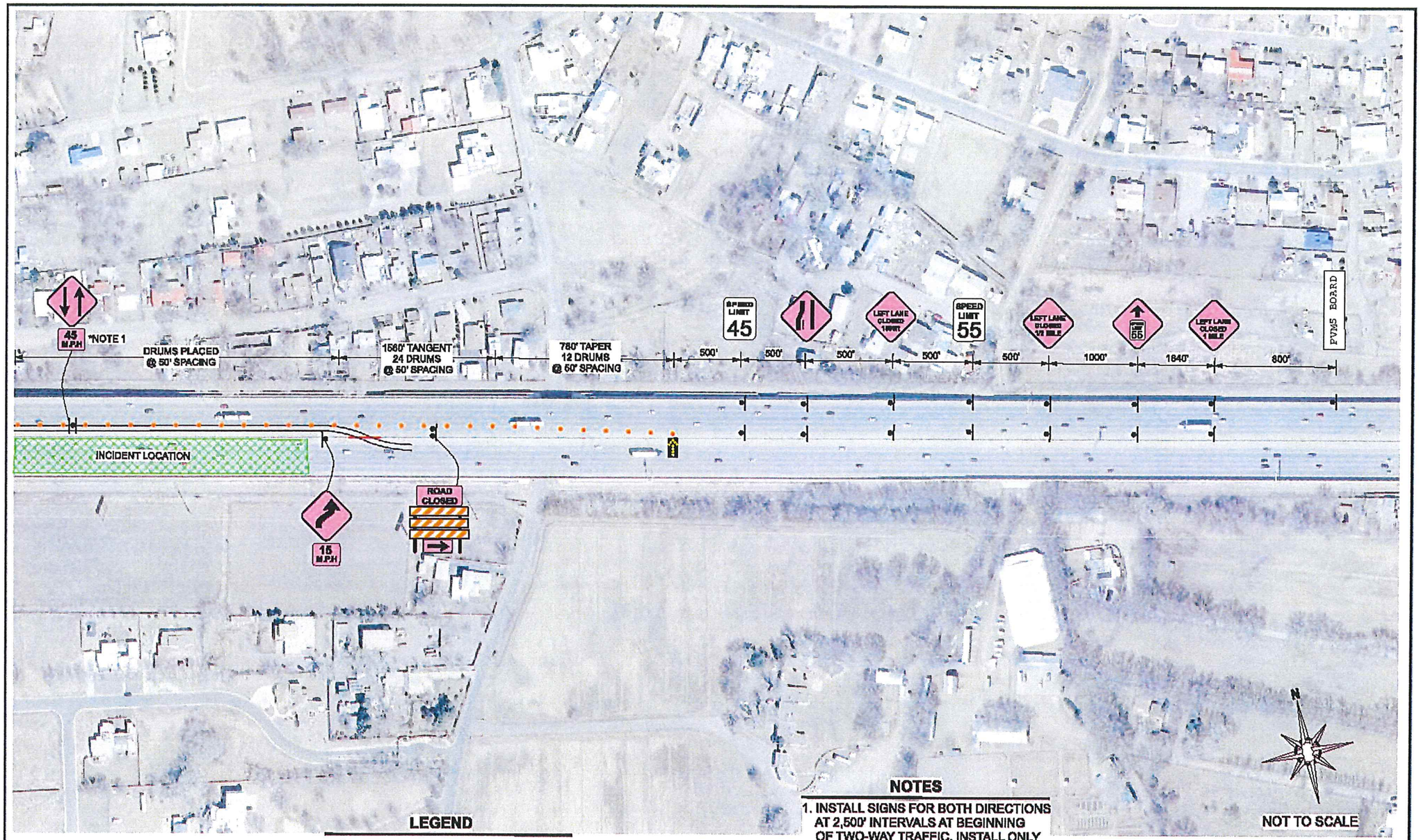
LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-8 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 153 TO MP 157

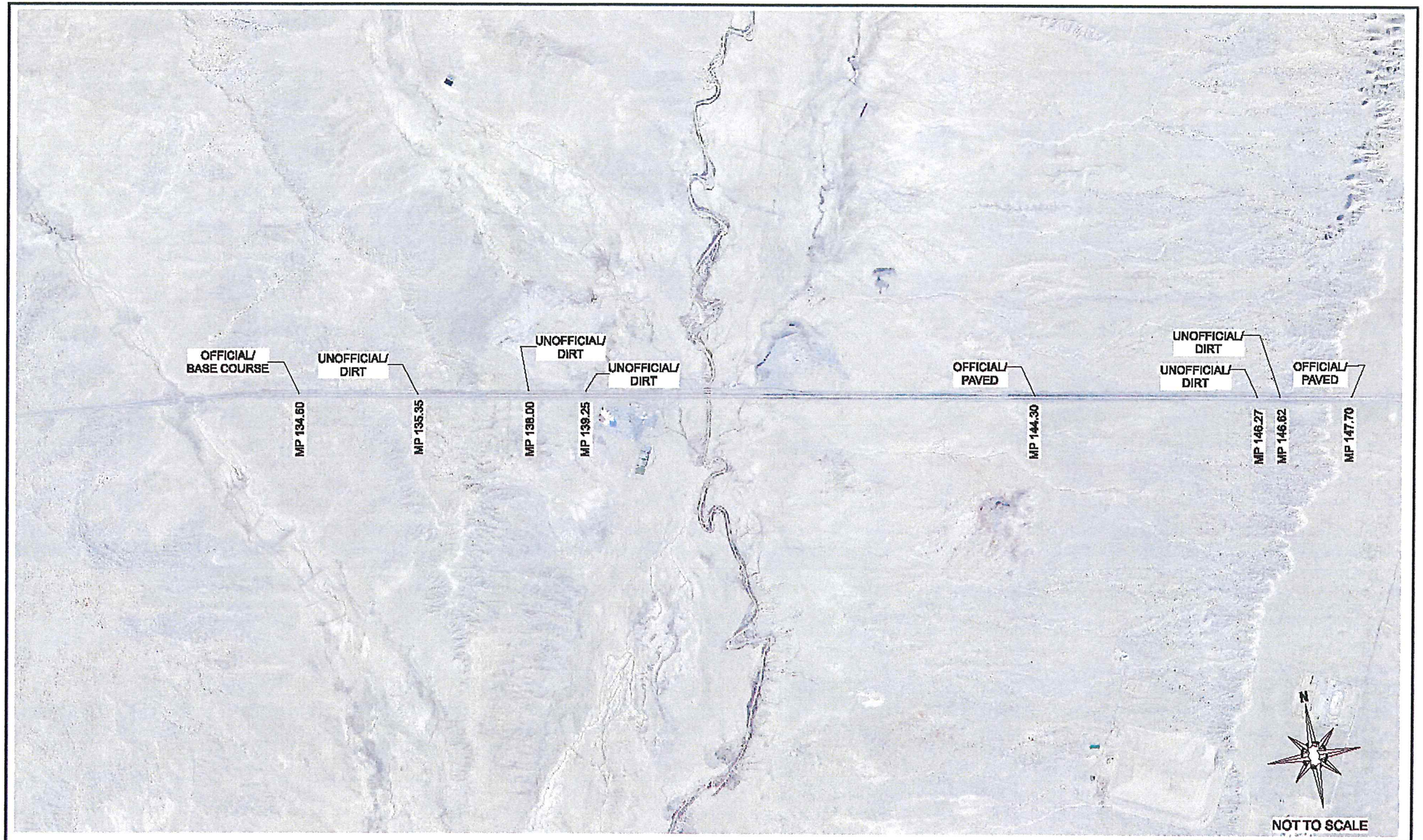

45 M.P.H
*NOTE 1
DRUMS PLACED @ 50' SPACING
1560' TANGENT 24 DRUMS @ 50' SPACING
780' TAPER 12 DRUMS @ 50' SPACING
SPEED LIMIT 45
SPEED LIMIT 55
LEFT LANE CLOSED 1 MILE
LEFT LANE CLOSED 1/2 MILE
LEFT LANE CLOSED 1 MILE
500'
500'
500'
500'
500'
1000'
1640'
800'
PVMS BOARD
INCIDENT LOCATION
ROAD CLOSED
15 M.P.H
N
NOT TO SCALE
LEGEND
SIGN FACING ONE DIRECTION
SIGNS FACING TWO DIRECTIONS
DRUM LOCATION
NOTES
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-8 FOR DRUM PLACEMENT & LANE WIDTH.
INCIDENT MANAGEMENT PLAN
EASTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 153 TO MP 157

8.0

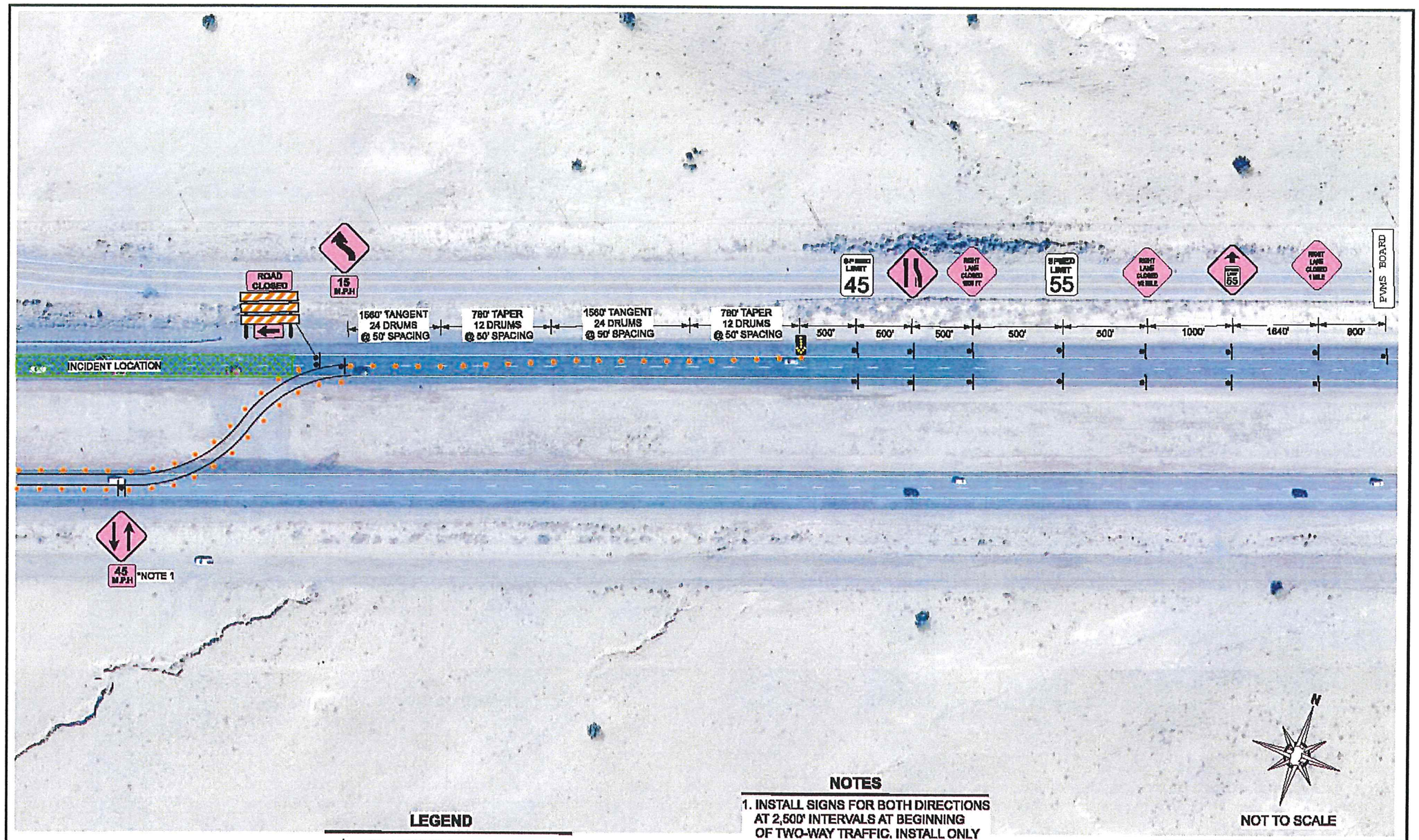
MAJOR INCIDENT WB LOCAL DETOUR ROUTES

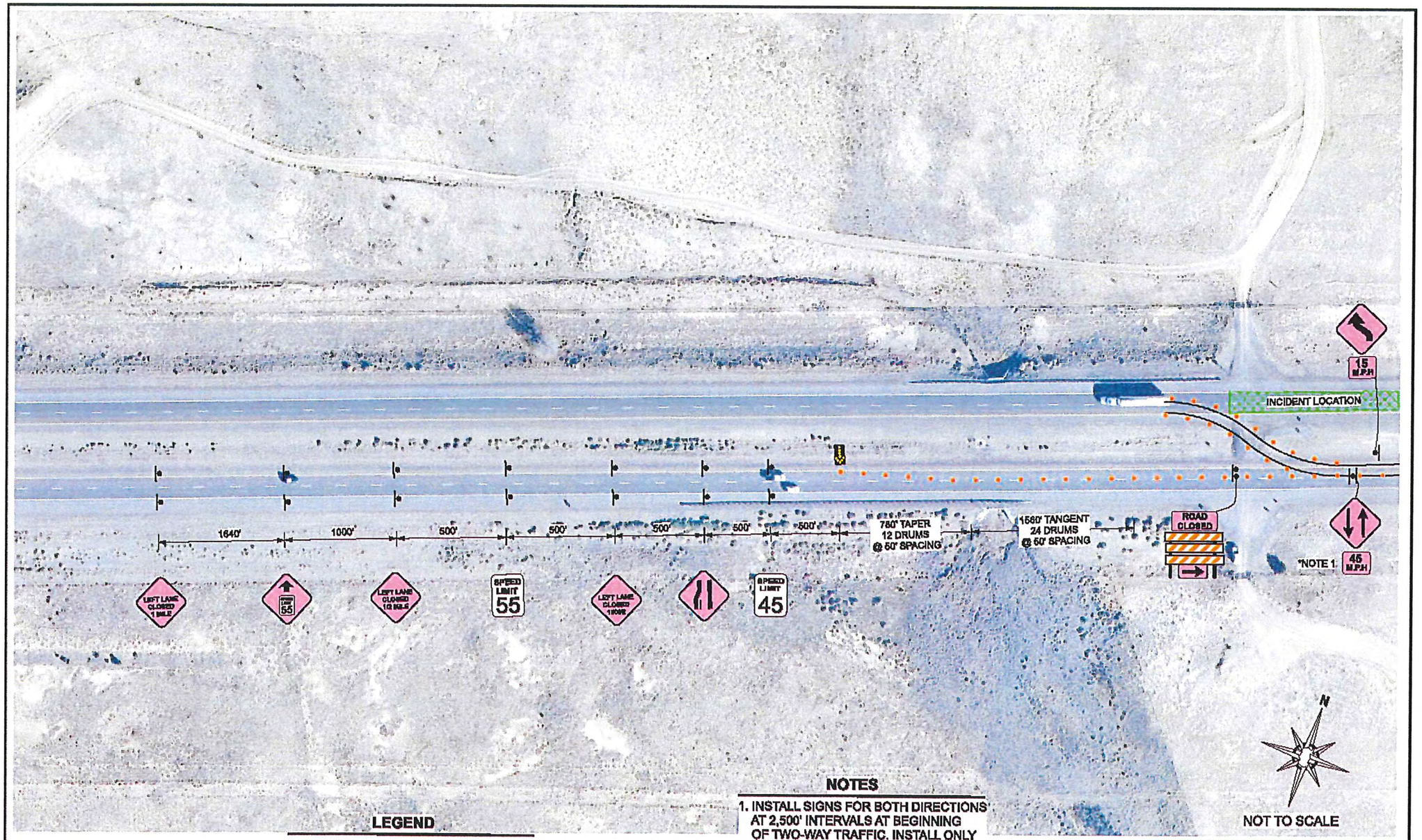
Interstate 40 – Major Incident Head to Head Detour

Milepost 134 to Milepost 148



INCIDENT MANAGEMENT PLAN
DETOUR PLAN
WESTBOUND INCIDENT LOCATION
MP 133 TO MP 148


ROAD CLOSED
15 M.P.H
1560' TANGENT 24 DRUMS @ 50' SPACING
780' TAPER 12 DRUMS @ 50' SPACING
1560' TANGENT 24 DRUMS @ 50' SPACING
780' TAPER 12 DRUMS @ 50' SPACING
SPEED LIMIT 45
RIGHT LANE CLOSED 500 FT
SPEED LIMIT 55
RIGHT LANE CLOSED ½ MILE
AHEAD 55
RIGHT LANE CLOSED 1 MILE
PVMS BOARD
500'
500'
500'
500'
500'
1000'
1640'
800'
INCIDENT LOCATION
45 MPH
*NOTE 1
N
NOT TO SCALE
LEGEND
SIGN FACING ONE DIRECTION
SIGNS FACING TWO DIRECTIONS
DRUM LOCATION
NOTES
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 7-2 FOR DRUM PLACEMENT & LANE WIDTH.
INCIDENT MANAGEMENT PLAN
WB INCIDENT @ RIO PUERCO
TRAFFIC CONTROL PLAN
MP 144.30



LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

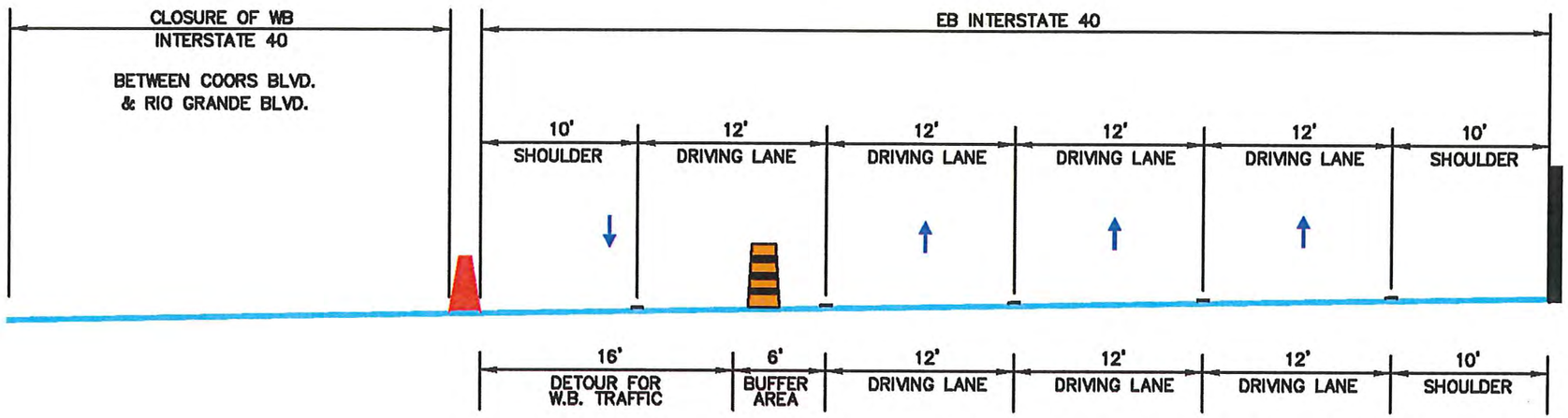
NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-2 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
WB INCIDENT @ RIO PUERCO
TRAFFIC CONTROL PLAN
MP 134.60

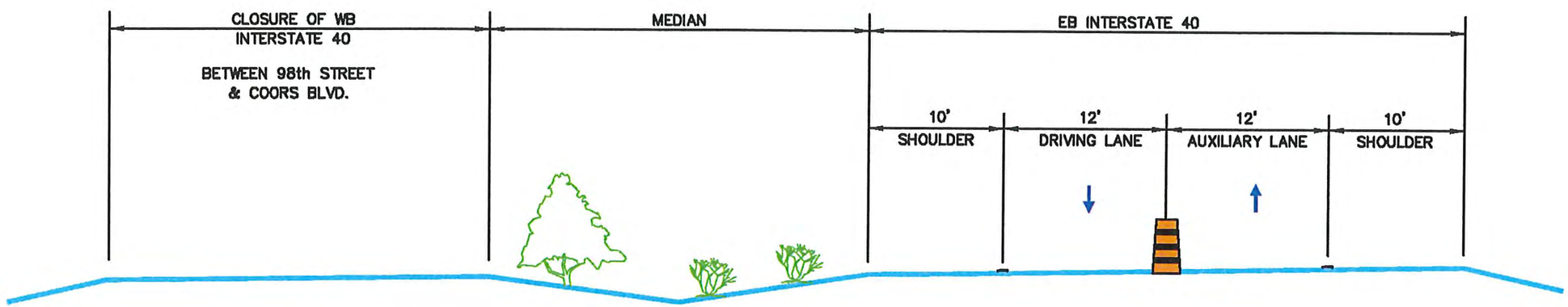
Interstate 40 – Major Incident Head to Head Detour

Milepost 153 to Milepost 157



DETOUR TYPICAL SECTION

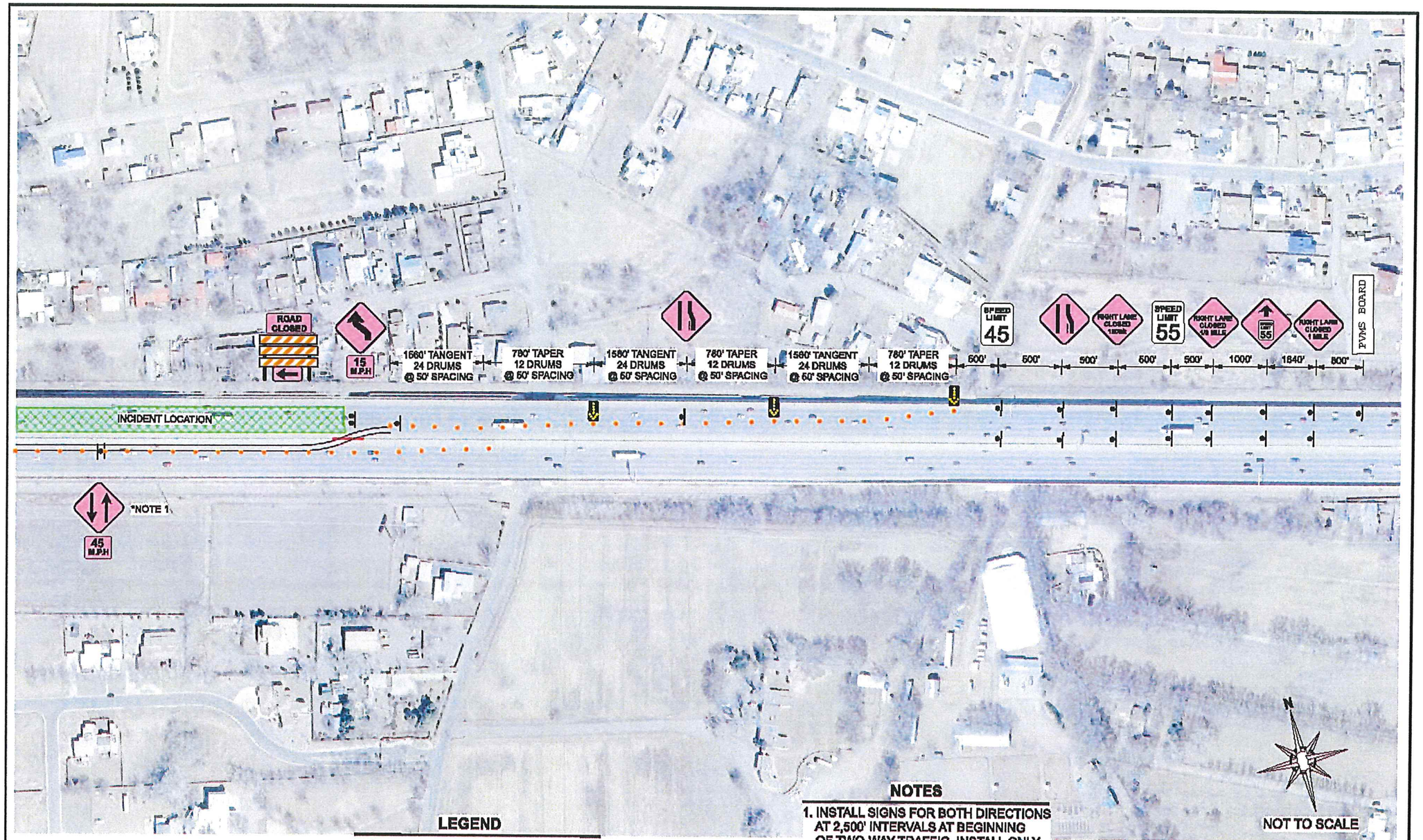
I-40 BETWEEN COORS BLVD. (MP 155)
AND RIO GRANDE BLVD. (MP 157)



DETOUR TYPICAL SECTION

I-40 98th STREET (MP 153) AND
COORS BLVD. (MP 155)

INCIDENT MANAGEMENT PLAN
DETOUR PLAN
WESTBOUND INCIDENT LOCATION
MP 153 TO MP 160



LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-7 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
WESTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 157 TO MP 153

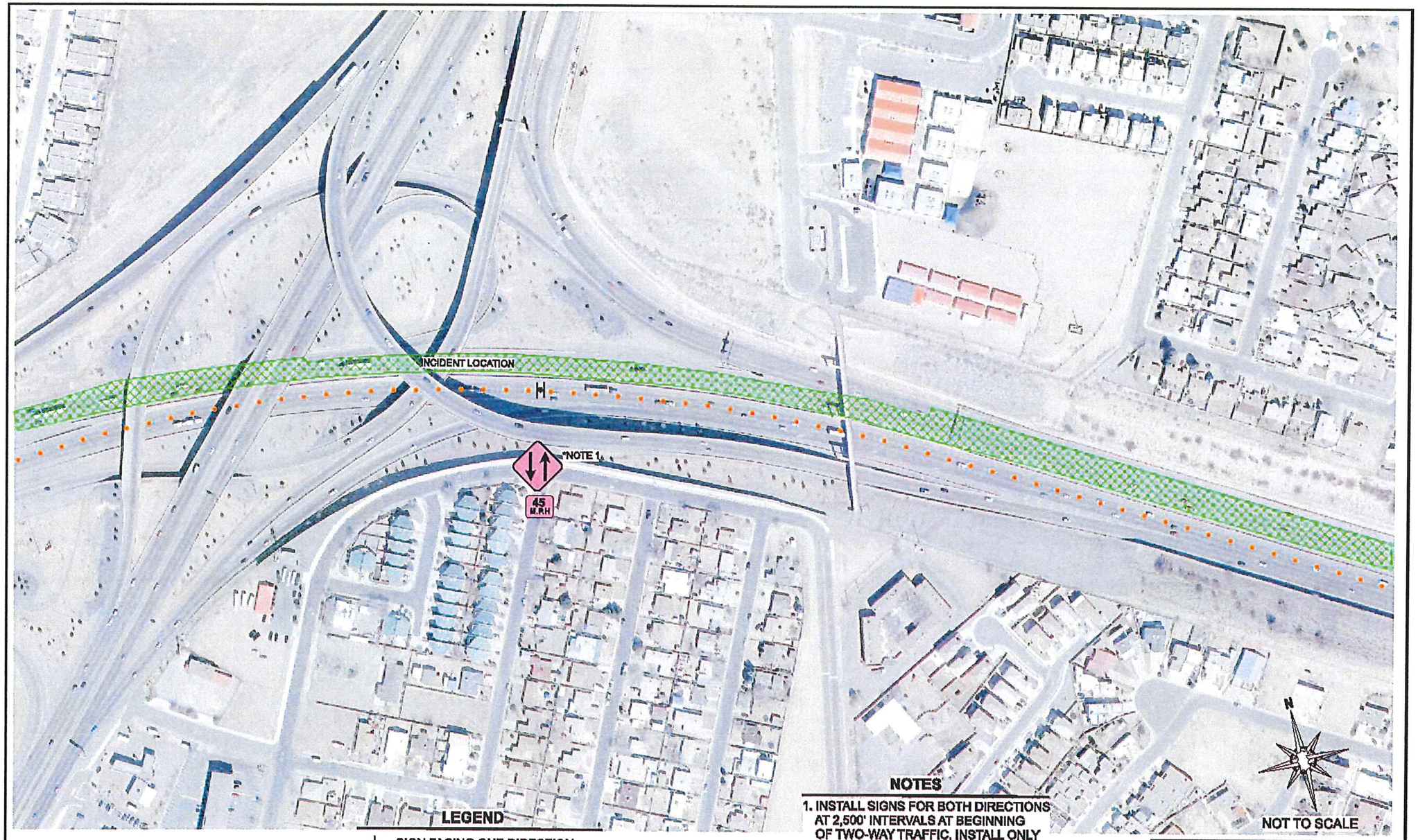
LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-7 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
WESTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 157 TO MP 153



LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-7 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
WESTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 157 TO MP 153

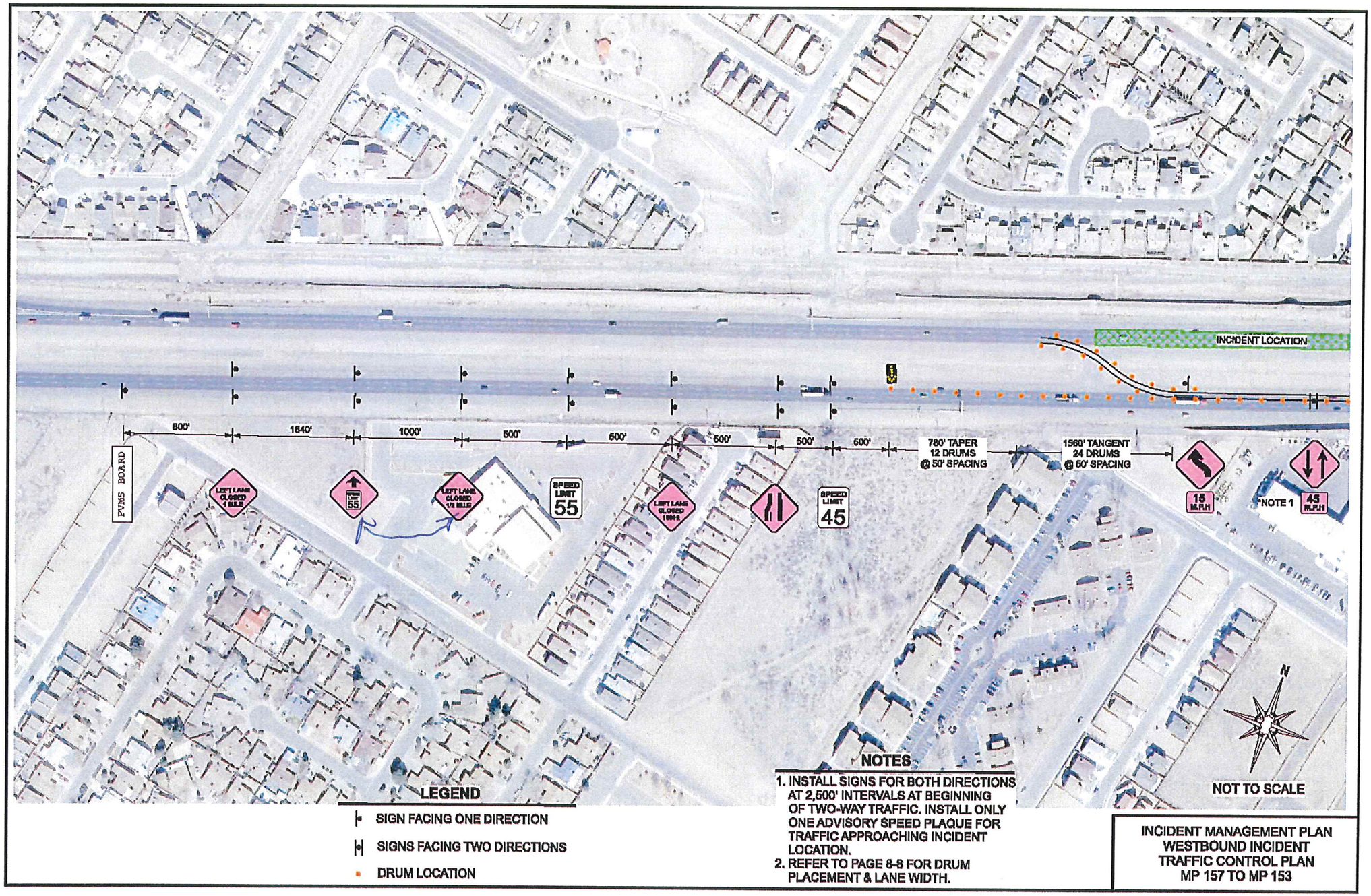
LEGEND

- SIGN FACING ONE DIRECTION
- SIGNS FACING TWO DIRECTIONS
- DRUM LOCATION

NOTES

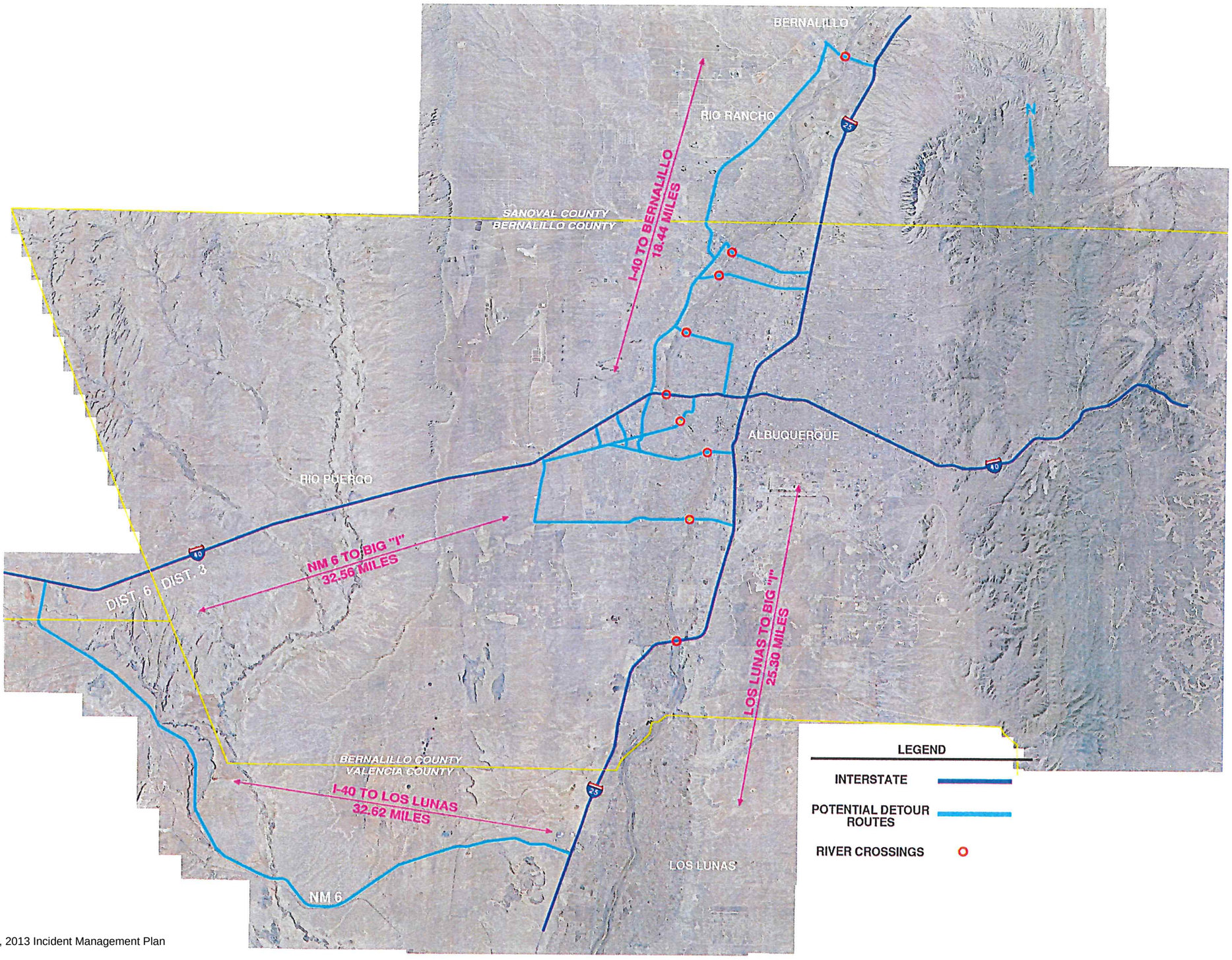
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-7 FOR DRUM PLACEMENT & LANE WIDTH.

INCIDENT MANAGEMENT PLAN
WESTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 157 TO MP 153


INCIDENT LOCATION
800'
1840'
1000'
500'
500'
500'
500'
500'
600'
780' TAPER
12 DRUMS
@ 50' SPACING
1560' TANGENT
24 DRUMS
@ 60' SPACING
PVMS BOARD
LEFT LANE CLOSED 1 MILE
AHEAD 55
LEFT LANE CLOSED 1/2 MILE
SPEED LIMIT 55
LEFT LANE CLOSED 1000'
SPEED LIMIT 45
15 M.P.H.
*NOTE 1
45 M.P.H.
N
NOTES
1. INSTALL SIGNS FOR BOTH DIRECTIONS AT 2,500' INTERVALS AT BEGINNING OF TWO-WAY TRAFFIC. INSTALL ONLY ONE ADVISORY SPEED PLAQUE FOR TRAFFIC APPROACHING INCIDENT LOCATION.
2. REFER TO PAGE 8-8 FOR DRUM PLACEMENT & LANE WIDTH.
NOT TO SCALE
LEGEND
SIGN FACING ONE DIRECTION
SIGNS FACING TWO DIRECTIONS
DRUM LOCATION
INCIDENT MANAGEMENT PLAN
WESTBOUND INCIDENT
TRAFFIC CONTROL PLAN
MP 157 TO MP 153

9.0

MAJOR INCIDENT REGIONAL DETOUR ROUTES


BERNALILLO
RIO RANCHO
SANOVAL COUNTY
BERNALILLO COUNTY
I-40 TO BERNALILLO
18.44 MILES
ALBUQUERQUE
RIO PUERCO
NM 6 TO BIG "I"
32.56 MILES
DIST. 6
DIST. 3
LOS LUNAS TO BIG "I"
25.30 MILES
BERNALILLO COUNTY
VALENCIA COUNTY
I-40 TO LOS LUNAS
32.62 MILES
LOS LUNAS
NM 6
LEGEND
INTERSTATE
POTENTIAL DETOUR ROUTES
RIVER CROSSINGS

10.0

MAJOR INCIDENT STAGED DETOUR

IMPLEMENTATION OF STAGED DETOUR FOR MAJOR INCIDENT

The need to develop a Staged Detour Plan has come about to address the varying length of closures and the ability to implement a staged detour plan to effectively accommodate Interstate 40 traffic when a major incident occurs. Past experiences have shown that car and truck traffic overload the local street river crossings when a closure of I-40 affects the bridge over the Rio Grande, resulting in the streets becoming gridlocked and the inability of local traffic and emergency responders to use the roadway system.

The Staged Detour Plan may be implemented when a Major Incident roadway closure occurs in either direction on I-40 between 98th Street (MP 153) and Rio Grande Boulevard (MP 157).

The Staged Detour Plan will be dependent on time of day/week, weather conditions, available resources, and other factors. The guidelines in this manual should be adjusted based on traffic and resources when the Plan is implemented. Guidelines are provided for general estimates of when certain triggers would cause another Stage to occur, but due to fluctuations in traffic volumes based on time of day and time of year, the potential lack of staffing available to implement the plan, and other factors, it should be understood that these guidelines can be adjusted for each closure situation.

WHEN TO ESTABLISH A STAGED DETOUR

The decision to recommend implementation of the Staged Detour Plan is made by the Incident Commander, in coordination with NMDOT, and will depend on the estimated duration of the incident and traffic conditions on the regional alternate routes.

Information regarding possible alternate routes may be provided to travelers via 511 messages, www.nmroads.gov, VMS messages, and the local media.

MAJOR INCIDENT DETOUR STAGES

The emphasis of the Staged Detour Plan is to help implement the appropriate level of detour for the situation, available resources and time of day. This will be achieved via VMS messaging along the I-40 corridor that will change for each Stage of the detour.

Stage 1 – Interstate closed in at least one direction, but expected to reopen within an hour.

Stage 2 – Interstate closed in at least one direction for a period of one to three hours.

Stage 3 – Interstate closed in at least one direction for greater than three hours but less than 24 hours.

Stage 4 – At least one direction of Interstate expected to be closed for greater than 24 hours.

The Stage procedures are described in the following text.

Stage 1

Stage 1 should be implemented when the Incident Commander determines that a direction of I-40 is completely closed and is not expected to have an immediate reopening for traffic.

Procedures:

- The on-duty police supervisor will call the NMDOT TMC at District 3 to request a VMS message update to implement Stage 1 of the Staged Detour Plan. Motorists will be notified that I-40 is closed along the corridor in advance of the closure.
- Assessment of the incident to determine the predicted length of closure.

Stage 2

Stage 2 should be implemented when the Incident Commander determines that a direction of I-40 is completely closed and is expected to be closed for one to four hours.

Procedures:

- The on-duty police supervisor will call the NMDOT TMC at District 3 to request a VMS message update to implement Stage 2 of the Staged Closure Plan , Motorists will be notified that I-40 is closed along the corridor in advance of the closure
- The on-ramps to I-40 up stream of the incident will be closed:
- Local detour Routes will be set up for traffic
- Continued assessment of the incident to monitor changes in the predicted length of closure.

Stage 3

Stage 3 should be implemented when the Incident Commander determines that a direction of I-40 is completely closed and is expected to be closed for **greater than three hours but less than 24 hours**.

Procedures:

- The on-duty police supervisor will call the NMDOT TMC at District 3 to request a VMS message update to implement Stage 2 of the Staged Closure Plan , Motorists will be notified that I-40 is closed along the corridor in advance of the closure
- The on-ramps to I-40 up stream of the incident will be closed:
- Local detour Routes will be set up for traffic
- The I-40 Head to Head Detour shall be implemented.
- Continued assessment of the incident to monitor changes in the predicted length of closure.

Stage 4

Stage 4 should be implemented when the Incident Commander determines that a direction of I-40 is completely closed and is expected to be closed for **greater than 24 hours**.

Procedures:

- The on-duty police supervisor will call the NMDOT TOC at District 3 to request a VMS message update to implement Stage 2 of the Staged Closure Plan , Motorists will be notified that I-40 is closed along the corridor in advance of the closure
- The on-ramps to I-40 up stream of the incident will be closed:
- Local detour Routes will be set up for traffic
- The I-40 Head to Head Detour shall be implemented.
- Initiate the development of a long term traffic control plan to be implemented to address the long term closure of the interstate.
- Continued assessment of the incident to monitor changes in the predicted length of closure.

COMMUNICATION WITH THE PUBLIC DURING STAGED DETOUR

Throughout the development of the Staged Detour Implementation, it is desired to provide as much information to the public regarding closures a possible. A component of this public information is the ability for 511 to be effective and informative.

It may be useful to have an option to go directly to an I-40 closure on the introductory menu when a long-term closure occurs. In addition, information regarding alternate routes, parking availability for cars, truck parking at Rio Puerco, and estimated time of closure would all be useful to include.

VMS message sign signs need to display information regarding the expected closure time. This would provide drivers with more information to make a decision of whether to take an alternate route or to wait. Potential information on the VMS messages could include:

- I-40 EB (WB) CLOSED FOR AT LEAST *X* HOURS
- I-40 EB (WB) CLOSED FOR A MINIMUM *X* HOURS
- I-40 EB (WB) WILL NOT REOPEN UNTIL AT LEAST *X* AM/PM