LOCATION HYDRAULICS REPORT

I-75 (SR 93) PD&E Study

From North of SR 52 to South of CR 476B
(Pasco, Hernando, and Sumter Counties)
FAP No.: 0751-120I
WPI No.: 411014-1

June 2007

Florida Department of Transportation
District Seven

LOCATION HYDRAULIC REPORT

I-75 (SR 93)
PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
from north of SR 52 to south of CR 476B
Pasco, Hernando, and Sumter Counties; Florida

Work Program Item Segment Number: 411014 1
Federal Aid Program Number: 0751-120I

Prepared for:

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District Seven
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June 2007

PROJECT DEVELOPMENT and ENVIRONMENT STUDY
I-75 (SR 93)
FROM NORTH OF SR 52 TO SOUTH OF CR 476B
Pasco, Hernando and Sumter Counties, Florida

W. P. I. Segment Number: 411014 1
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LOCATION HYDRAULIC REPORT
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The Florida Department of Transportation (FDOT) has conducted a Project Development and Environment (PD&E) Study to evaluate capacity improvements along the segment of Interstate 75 (I-75) -State Road (SR) 93- that extends from just north of SR 52 in Pasco County to just south of County Road (CR) 476B in Sumter County, Florida. The length of this segment is approximately 20.8 miles. The design year for the improvements is Year 2030. **Exhibit 1-1** illustrates the location and limits of this project. I-75 is an interstate, limited access freeway. It is included in the State Highway System (SHS), designated as SR 93, the Florida Intrastate Highway System (FIHS), the Strategic Intermodal System (SIS), and the Federal Aid Interstate System. According to FIHS standards, all of the I-75 components (mainline, ramps, merge/diverge areas) should provide adequate capacity to operate at level of service (LOS) "C" or better.

The objective of this PD&E Study is to document the engineering and environmental analyses that were performed for this project so that the FDOT and the Federal Highway Administration (FHWA) can reach a decision on the type, location, and conceptual design of the necessary improvements of I-75 to accommodate future traffic demand in a safe and efficient manner. Design criteria were established and preliminary alternatives were developed. The comparison of alternatives was based on a variety of parameters utilizing a matrix format. This process identified the alternative that would have minimal impacts, while providing the necessary improvements.

Presently, within the project limits, I-75 is a four-lane, divided, limited access, rural highway that generally occupies 300 feet of right of way. **Exhibit 1-2** displays the existing typical section of I-75. No major improvements have been made to this segment of I-75 since its original construction in the 1960s.

The study area includes two interchanges and two rest areas (one in each direction). More specifically, a partial cloverleaf interchange is currently provided at Blanton Road (CR 41) approximately 6.3 miles north of SR 52 in Pasco County and a diamond interchange is present at Cortez Road (SR 50/US 98), approximately 9.3 miles north of

CR 41 in Hernando County. The rest areas are located approximately 4.9 miles north of SR 50, in Sumter County.

From north of SR 50 to the northern terminus of the project, the Withlacoochee State Forest abuts the entire western border of I-75 and most of its eastern border. At the Hernando/Sumter county line, approximately 1.5 miles from the northern project terminus, I-75 crosses the Withlacoochee River.

Based on the current FDOT design criteria, the widening of I-75 to provide eight through lanes –four in each direction– can be accommodated within its existing 300-foot-wide right-of-way. Additional right-of-way, however, may be required for interchange improvements and for stormwater management facilities (SMFs). Depending on where the additional through lanes will be placed in relation to the existing lanes, three typical section alternatives were developed. To minimize costs and impacts to natural resources, the final recommendation for widening I-75 may consist of a combination of the alternatives described below:

- As shown in **Exhibit 1-3**, the "Inside" Widening Alternative proposes the widening of the additional four lanes into the existing median. An additional narrow 5' widening will also be necessary along the outside of the roadway. Since the remaining median after construction of the four new lanes will be 26 feet wide, 38 feet less that the standard minimum median width for this type of facility, concrete median barrier will need to be placed along the center of the roadway and a design variation will be required. The outside border width will also be reduced from 94 feet to 89 feet which will require an additional design variation. **Exhibit 1-4** depicts the typical section for widening the existing bridge structures under this alternative.

- As shown in **Exhibit 1-5**, the "Centered" Widening Alternative proposes, for each direction, the placement of one additional lane within the median and one additional lane to the outside where the existing outside shoulder is located. Since the remaining median after the construction of the four new lanes will be 40 feet wide, 24 less than the standard minimum median width for this type of facility, guardrail will need to be placed along the median and a design variation will be required. The outside border width will also be reduced from 94 feet to 82 feet which will require an additional design variation. **Exhibit 1-6** depicts the typical section for widening the existing bridge structures under this alternative.

- As shown in **Exhibit 1-7**, the "Outside" Widening Alternative proposes, for each direction, the placement of two additional lanes along the two existing lanes where the existing outside shoulder is located. Since the remaining outside border width after the construction of the two new lanes will be 70 feet wide, 24 feet less that the standard minimum border width for this type of facility, a design variation and/or acquisition of additional right-of-way will be required. **Exhibit 1-8** depicts the typical section for widening the existing bridge structures under this alternative.

This Location Hydraulic Report has been prepared to present the degree to which floodplains will be impacted for the Recommended Improvement Alternative in accordance with Executive Order 11988 "Floodplain Management", USDOT Order 5650.2 "Floodplain Management and Protection", and 23 CFR 650 mandate protection of floodplains and floodways. As outlined in Chapter 24 (rev. 4-22-98) of the FDOT PD&E Manual, these regulations are intended to "minimize highway encroachments within the 100-year base floodplain, where practicable, and to avoid supporting land use development which is incompatible with floodplain values." Southwest Florida Water Management District (SWFWMD) and applicable local floodplain criteria will be met. The following ten items have been addressed to document that the floodplain encroachments will not be significant:

1. Flooding History:

FDOT drainage maps, USGS Quadrangle maps, SWFWMD 1-foot contour aerial maps, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) were used to identify flood-prone areas within the I-75 project corridor. Field inspections were conducted in July 2005 to identify obvious drainage problems. Additionally, persons knowledgeable about local drainage conditions (FDOT maintenance personnel) were interviewed in September 2005 and February 2006. As a result of this evaluation and coordination, no flooding problems associated with existing drainage conditions have been identified for the length of this project.

2. Flood Insurance Rate Maps (FIRM):

Appendix A includes the FIRM's compiled by the Federal Emergency Management Agency (FEMA) illustrating the limits of the 100-year base floodplain. FEMA has prepared FIRM's along the I-75 project corridor in Pasco County dated November 18, 1981 and September 30, 1982. FIRM's along I-75 for Hernando County are dated April 17, 1984. FIRM's for the remainder of the project corridor in Sumter County are dated March 15, 1982.

3. Floodplain Development:

The proposed I-75 improvements will not directly or indirectly support incompatible floodplain development, or result in any floodplain encroachments that significantly affect the human environment, since the project is a component of the County's adopted comprehensive plan. Future land uses will be developed in accordance with the adopted comprehensive plan and its implemented Land Development Regulations, which, in compliance with the National Flood Insurance Program, prohibit development in the base floodplain.

4. Natural and Beneficial Floodplain Values:

The proposed drainage improvements associated with the project are consistent with local floodplain development plans and will provide compensating storage equivalent to the proposed encroachments, as necessary. Also, the proposed cross-drain structures will perform hydraulically in a manner equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial floodplain values.

5. Base Floodplain Impacts:

A Recommended Alternative has been identified and is presented in the Preliminary Engineering Report, prepared for this study. Portions of the improvements within the existing and proposed right-of-way for the recommended alternative will encroach upon the 100-year base mapped floodplain areas in eight locations along the I-75 project corridor, which is designated by FEMA. After further investigation of the characteristics of the proposed widening, it is estimated that only three locations result in an encroachment to the 100-year floodplain, which is summarized in **Table 1**.

Table 1
Floodplain Encroachment Summary

Location	Estimated 100-Year Floodplain Elevation (ft)	Estimated Floodplain Encroachment Volume (ac-ft)
F-1	90	0.66
F-2	95	0.18
F-3	106	1.51
Total		**2.35**

Four of the five areas did not result in any encroachment into the 100-year floodplain (F-4, F-5, F-6, and F-8) since the I-75 alignment is above the estimated 100-year floodplain elevation. The fifth potential area of encroachment (location F-7) at Sta. 1817+00 (LT) is minimal (0.04 acre), which is less than 2 percent of the total 100-year floodplain area. In this case, avoidance measures can be used to eliminate any impacts and/or floodplain compensation can be provided in the preferred SMF for this basin if necessary.

The SWFWMD Environmental Resource Permit (ERP) Information Manual (Section 4.4, 3/11/2004 version) states that no net encroachment into the floodplain, up to that encompassed by the 100-year event, which will adversely affect either conveyance, storage, water quality or adjacent lands, will be allowed and required compensating storage shall be equivalently provided. Compliance with "Historic Basin Storage" (Section 4.7, ERP) and "Offsite Lands" (Section 4.8, ERP) criteria will also be necessary. Therefore, floodplain compensating storage will be provided as required by the SWFWMD and as a result, no significant changes in base flood elevations or limits will occur.

6. Avoidance Alternatives:

These encroachments may be decreased (minimized) through adjustment to the typical section in the vicinity of the floodplain areas. Minimization and/or avoidance measures will be taken in the design phase to minimize any impacts to the 100-year floodplain by steepening the side slopes or possibly adding retaining walls. Each of the floodplain encroachments will be minimal due to the proposed roadway alignment following the same general alignment as the existing roadway.

7. Regulatory Floodway:

There are no regulatory floodways within the limits of this project.

8. Emergency Services and Evacuations:

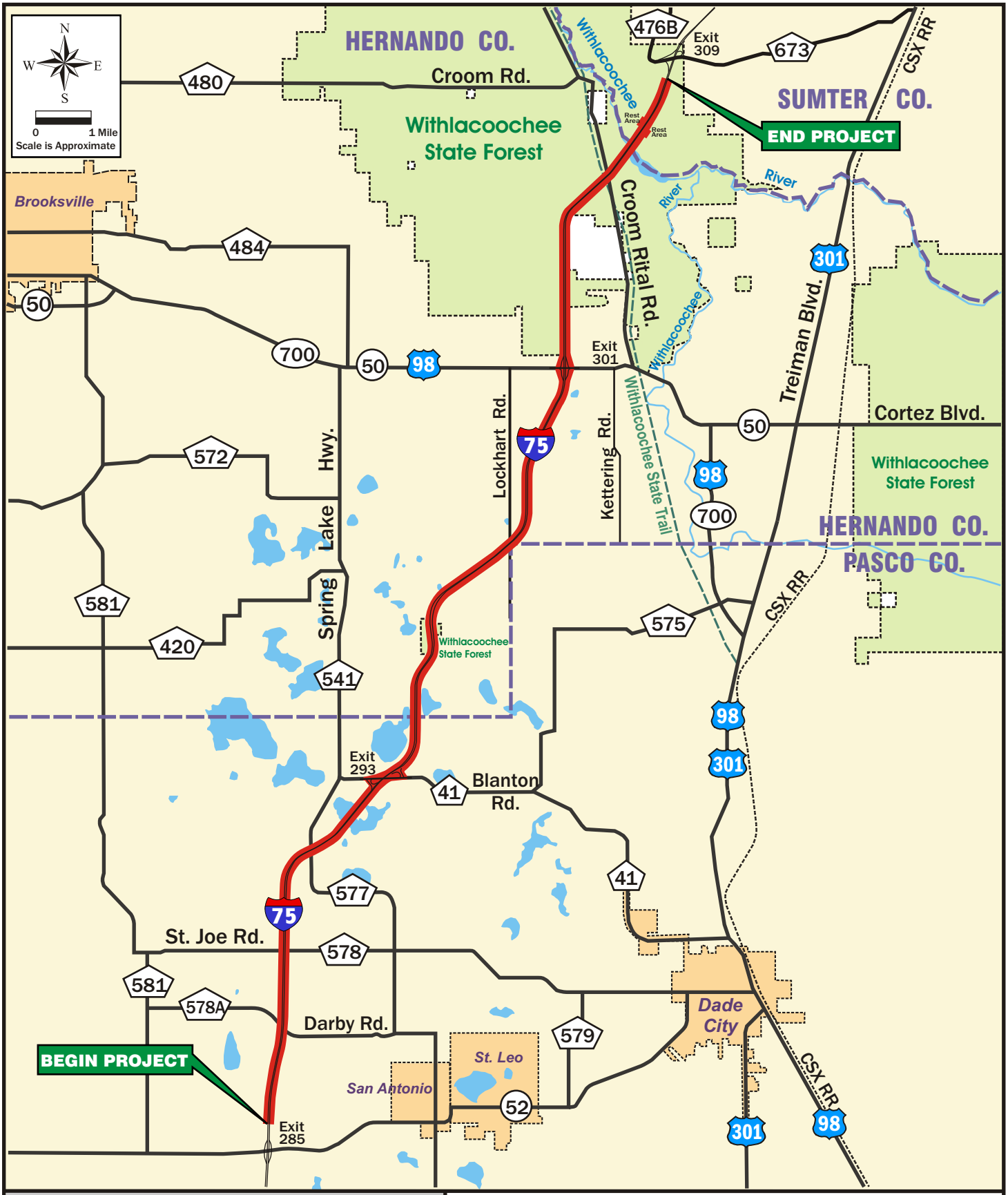
I-75 also serves as a major evacuation route throughout the state. As noted previously, no flooding problems associated with the existing base floodplain or drainage conditions have been identified for the length of this project; therefore, there will be no adverse affects on emergency services or evacuation opportunities.

9. Longitudinal or Transverse Floodplain Encroachments:

The floodplain encroachments at locations F-1, F-2, and F-3 are all transverse encroachments. The floodplain encroachment at F-3 will also affect the fringe of the existing zone 'A' area.

10. Risk Assessment:

The modifications to drainage structures included in this project will result in an insignificant change in their capacity to carry floodwater. This change may cause minimal increases in flood heights and flood limits. These minimal increases will not result in any significant change in flood risks or damage. There will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that each encroachment is not significant.



I-75 PD&E Study

From N. of SR 52 to S. of CR 476B

Pasco, Hernando & Sumter Counties

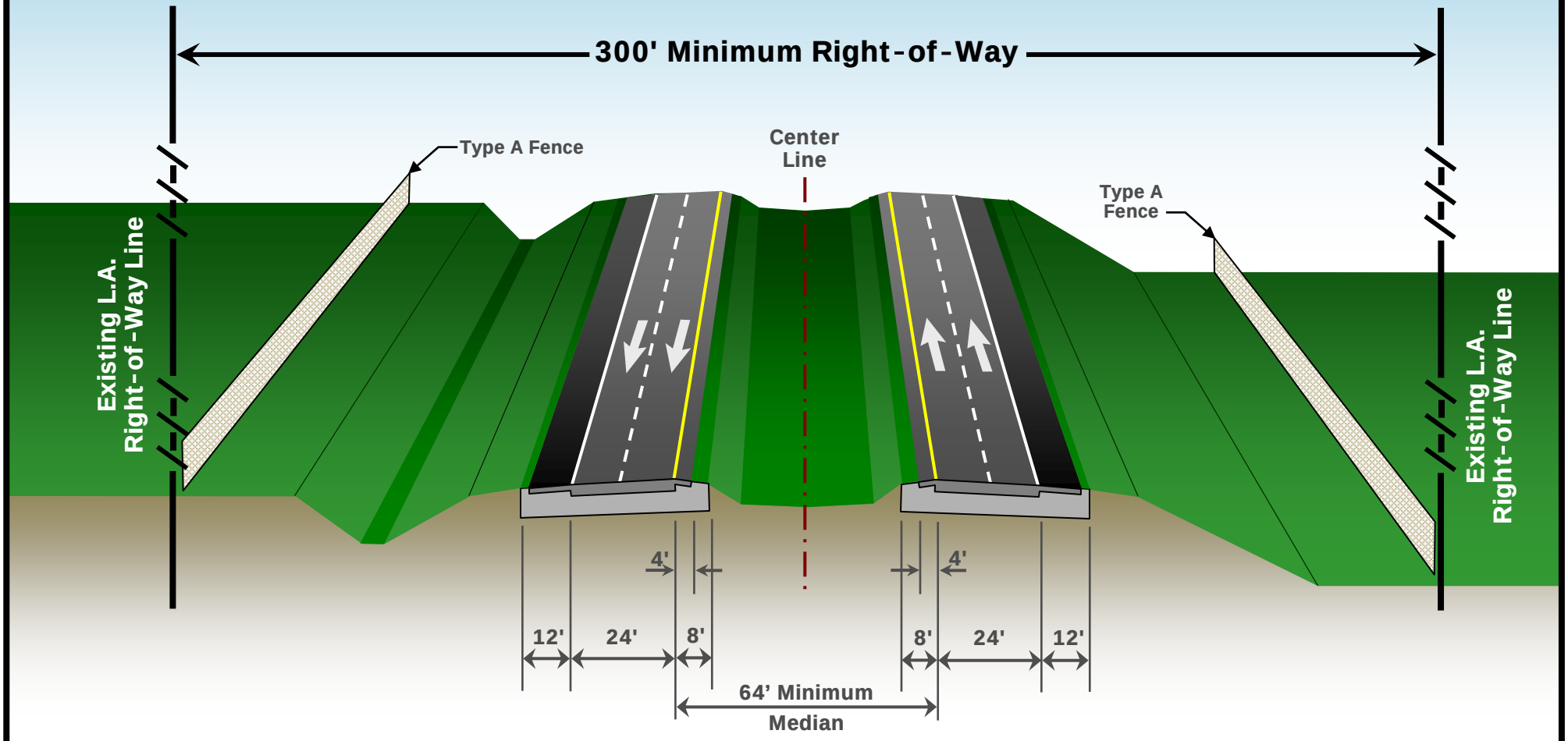
WPI Seg. No.: 411014 1

FAP No: 0751-120I

Project Location Map

Exhibit 1-1

Roadway Typical Section



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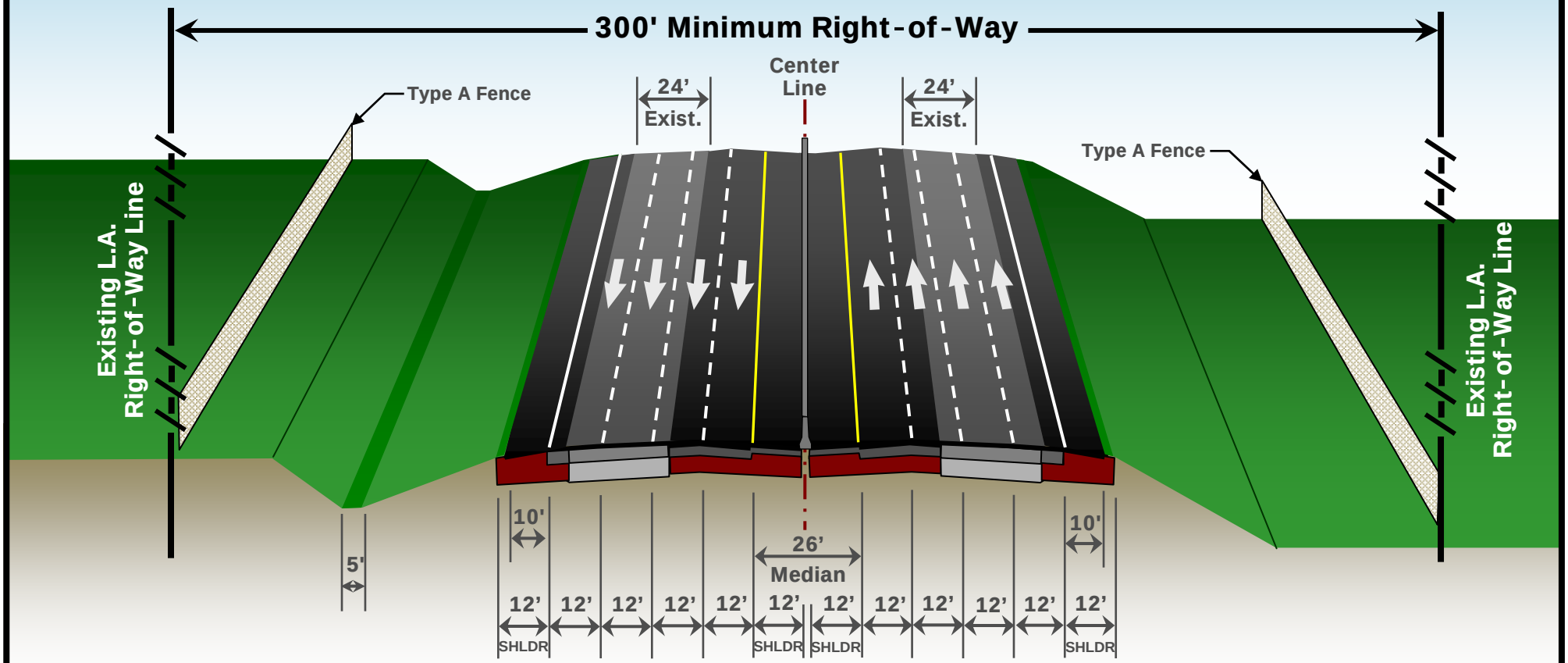
I-75 Mainline
Existing Typical Section

Exhibit 1-2

Roadway Typical Section



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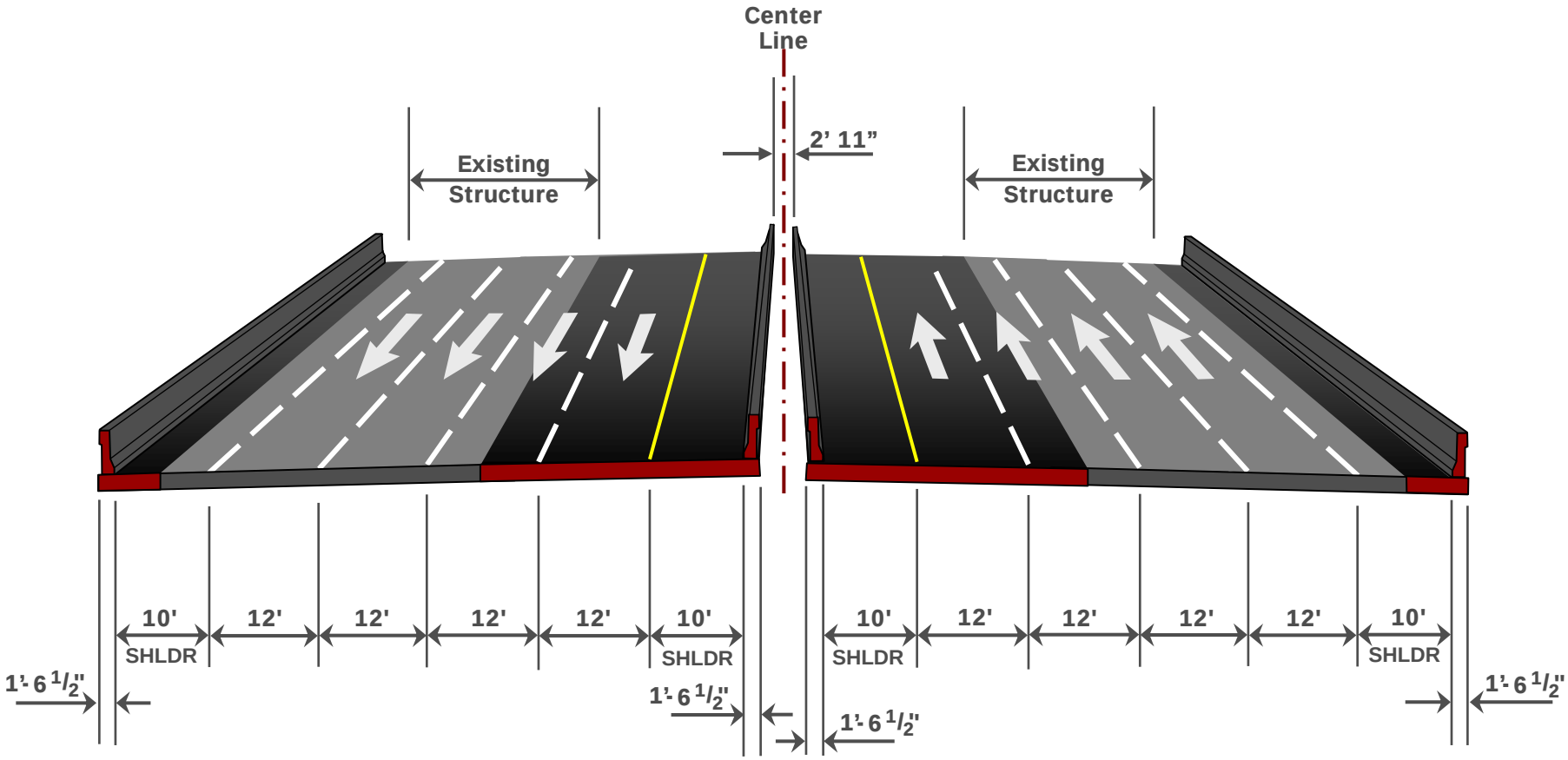
I-75 Mainline Typical Section
"Inside" Widening Alternative

Exhibit 1-3



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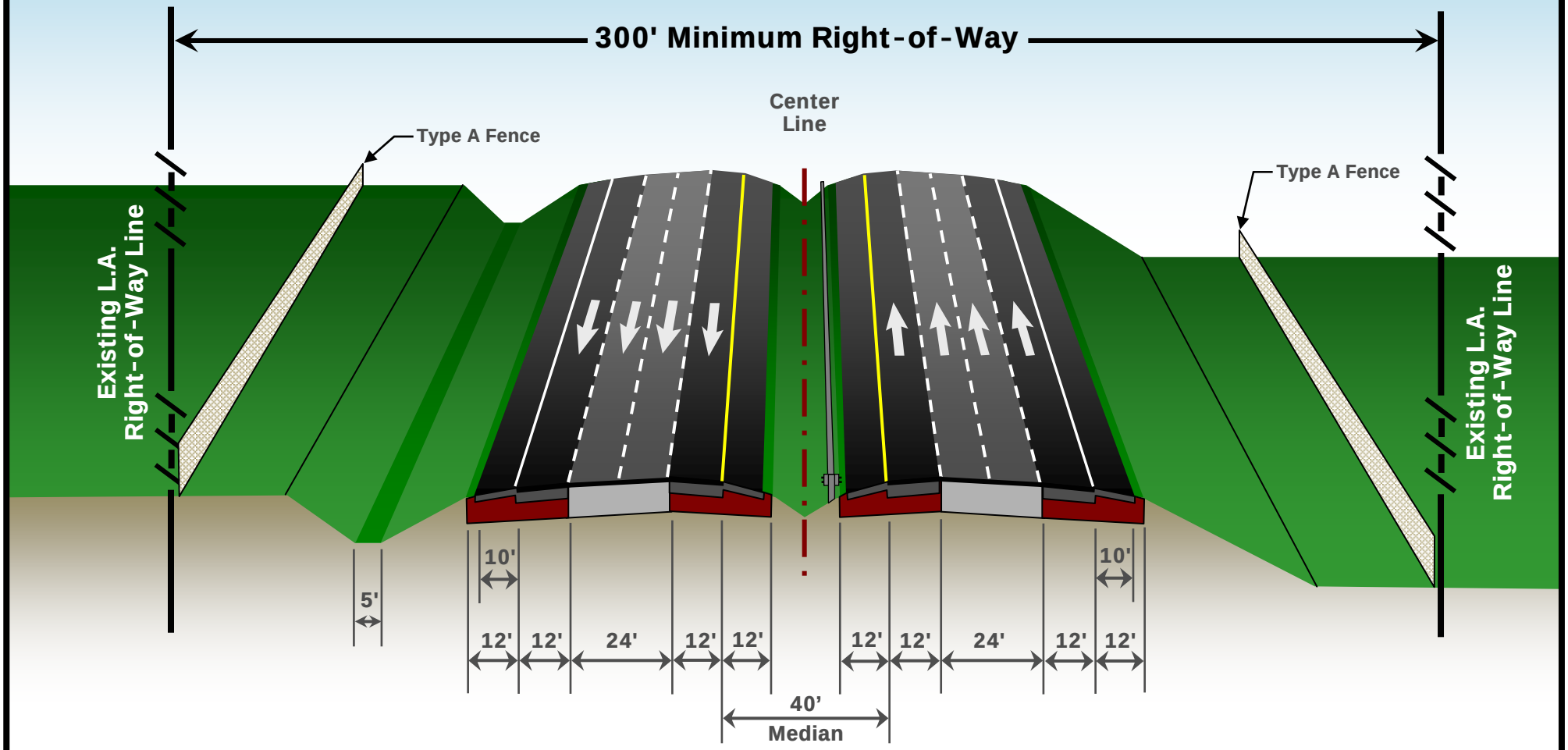
I-75 Bridge Typical Section
"Inside" Widening Alternative

Exhibit 1 -4

Roadway Typical Section



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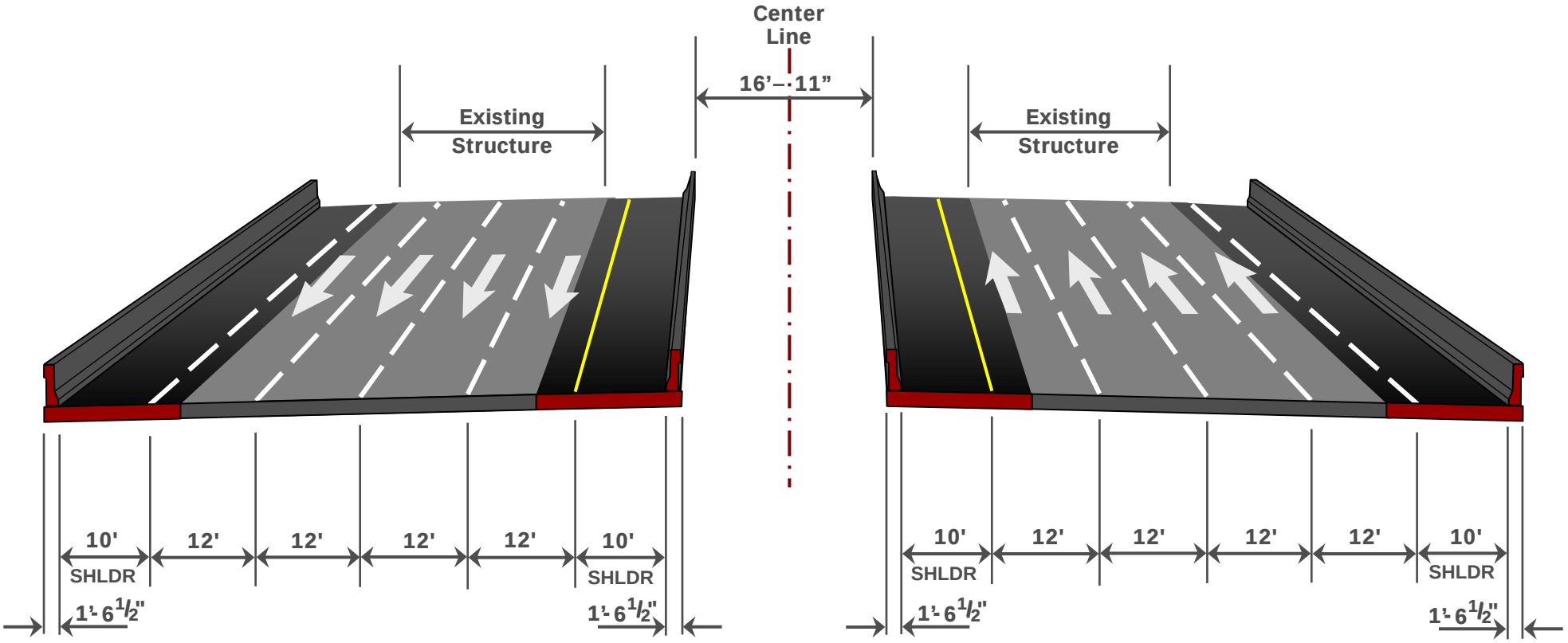
I-75 Mainline Proposed Typical Section
"Inside & Outside" Widening Alternative

Exhibit 1-5



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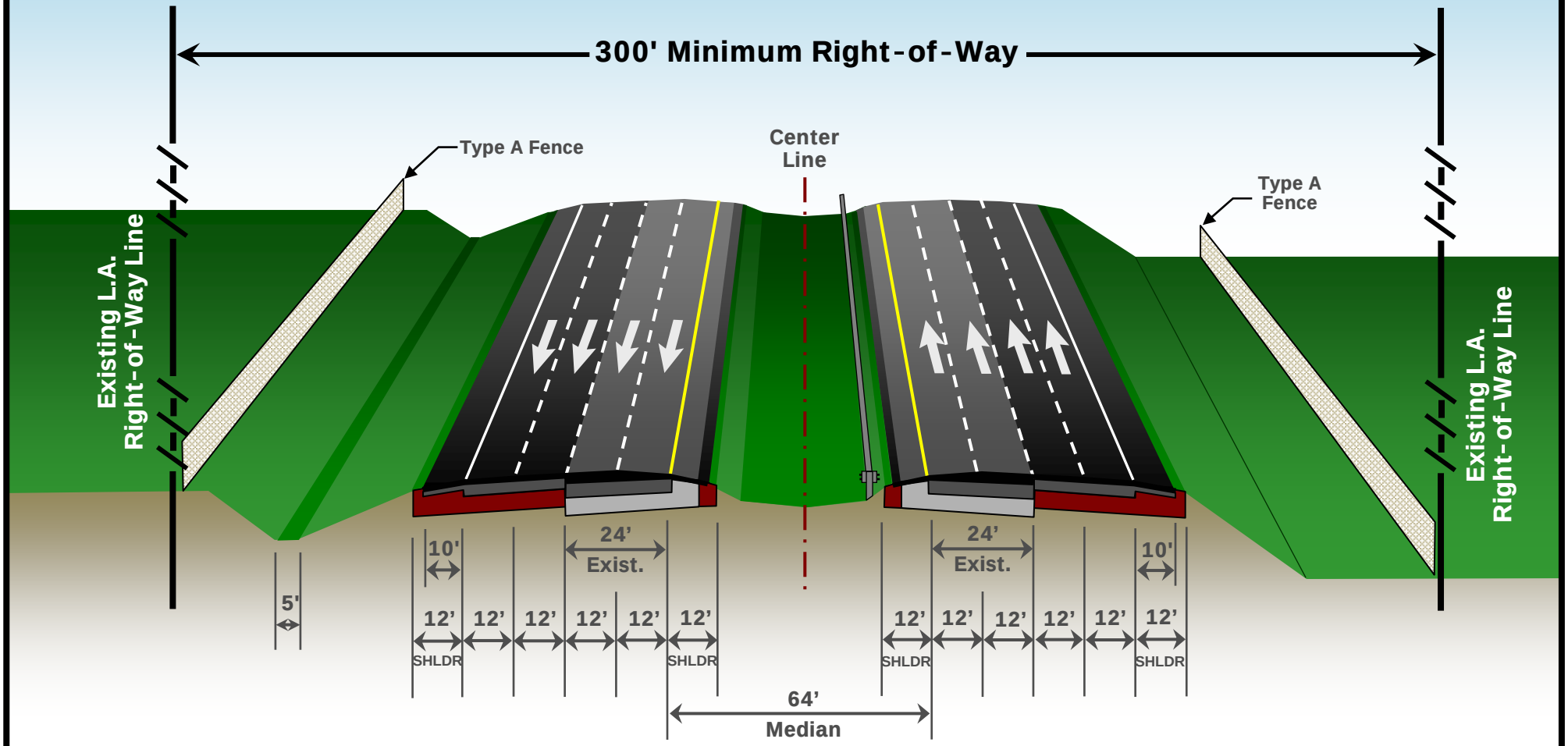
I-75 Bridge Typical Section
"Inside & Outside" Widening Alternative

Exhibit 1-6

Roadway Typical Section



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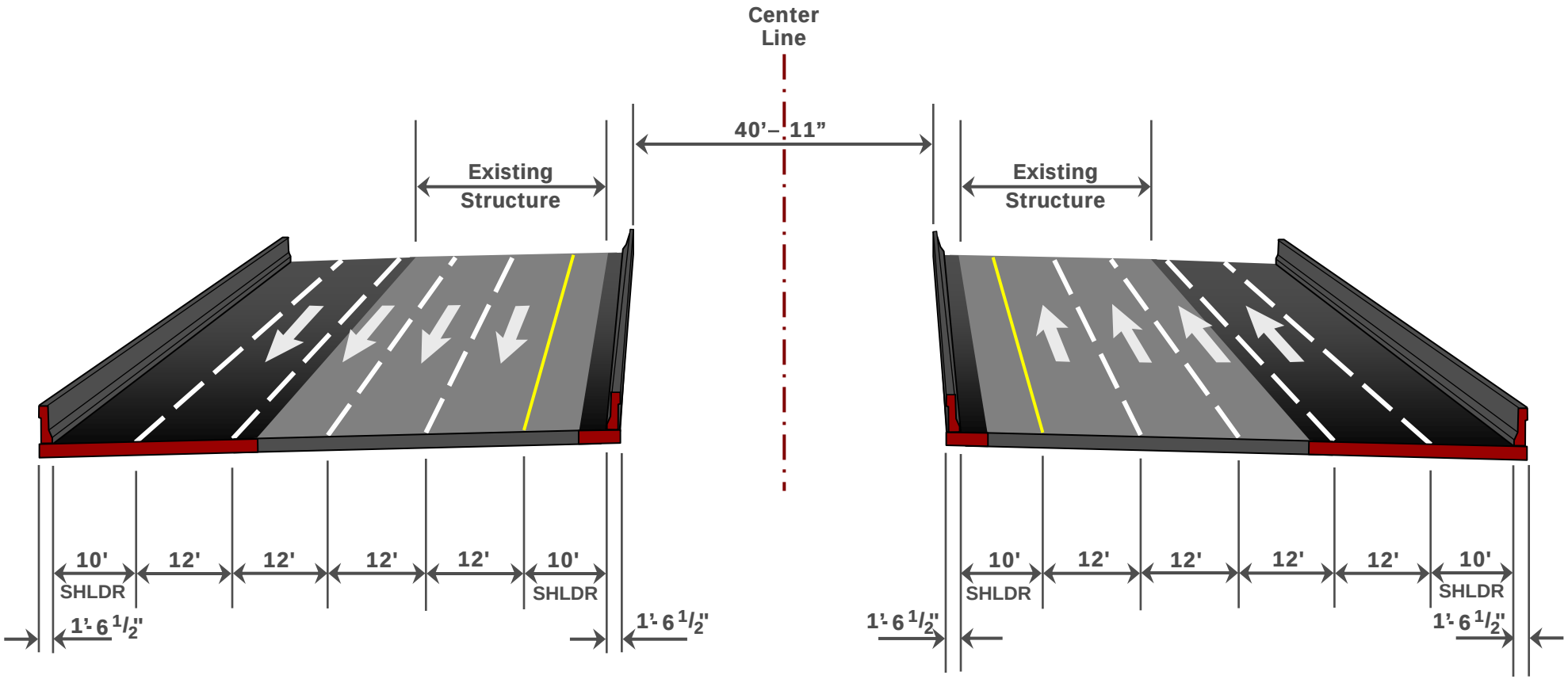
I-75 Mainline Typical Section "Outside" Widening Alternative

Exhibit 1-7



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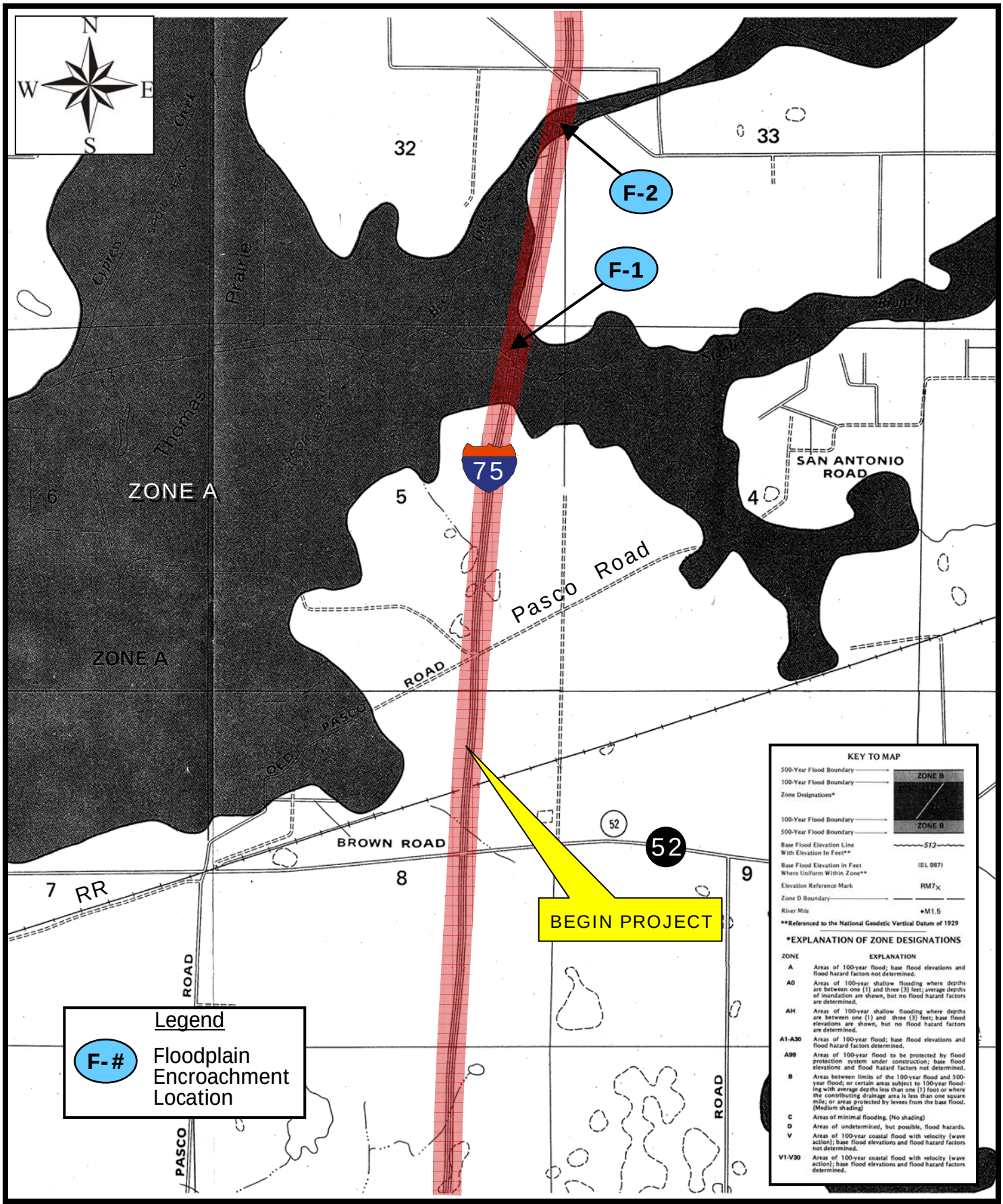
I-75 Bridge Typical Section "Outside" Widening Alternative

Exhibit 1-8

APPENDIX A

FEMA Flood Maps



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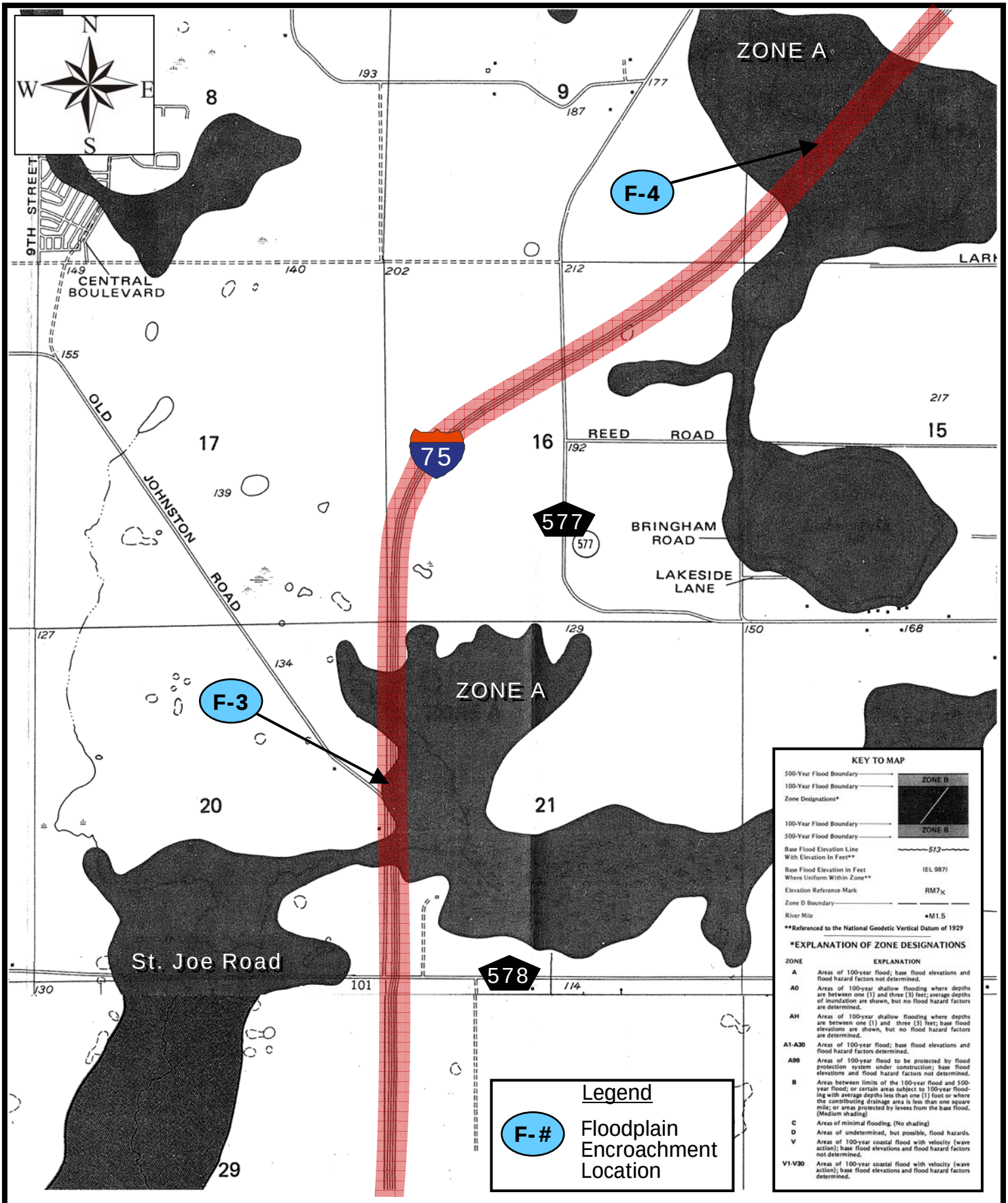
FEMA Flood Maps

A1



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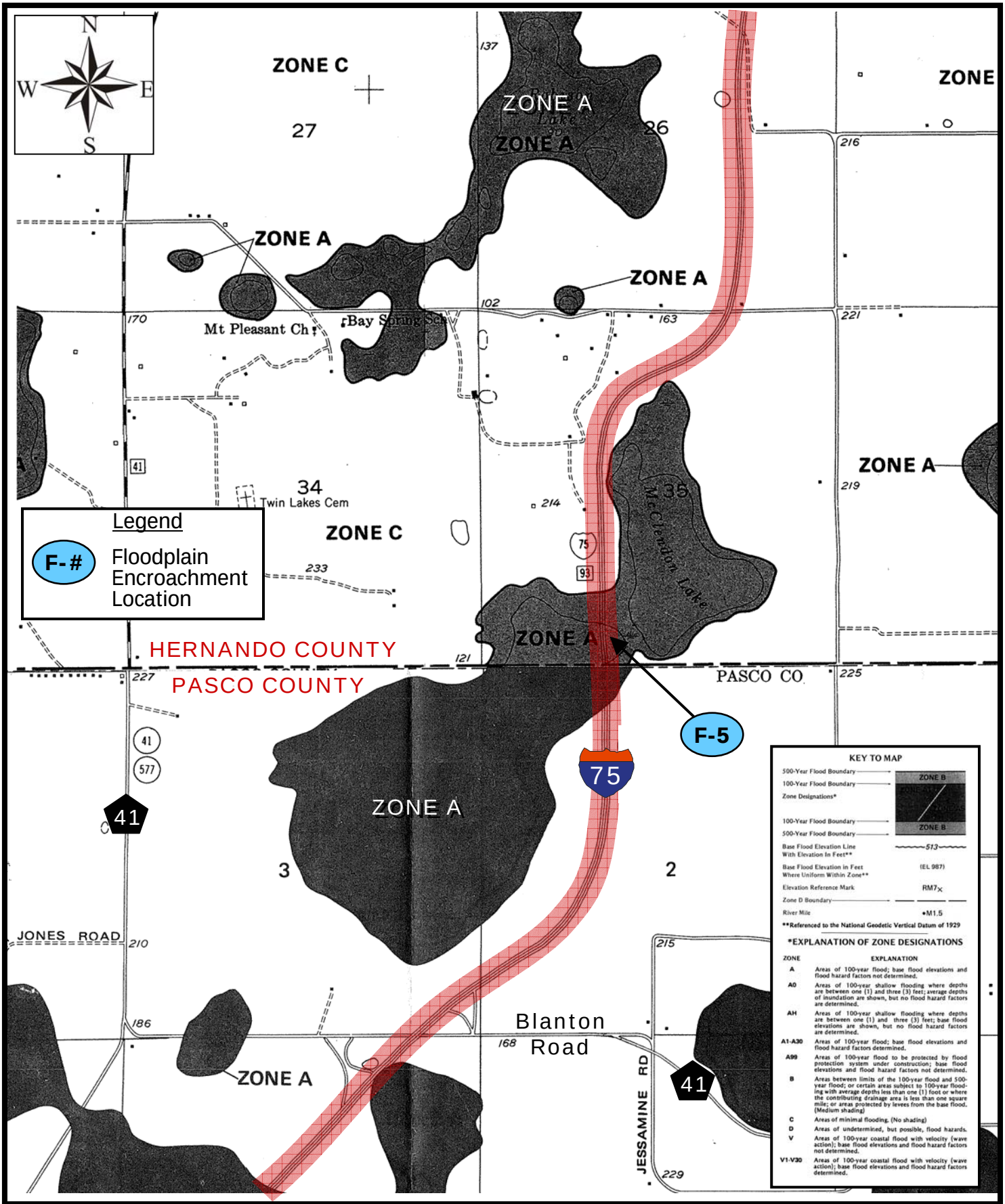
FEMA Flood Maps

A2



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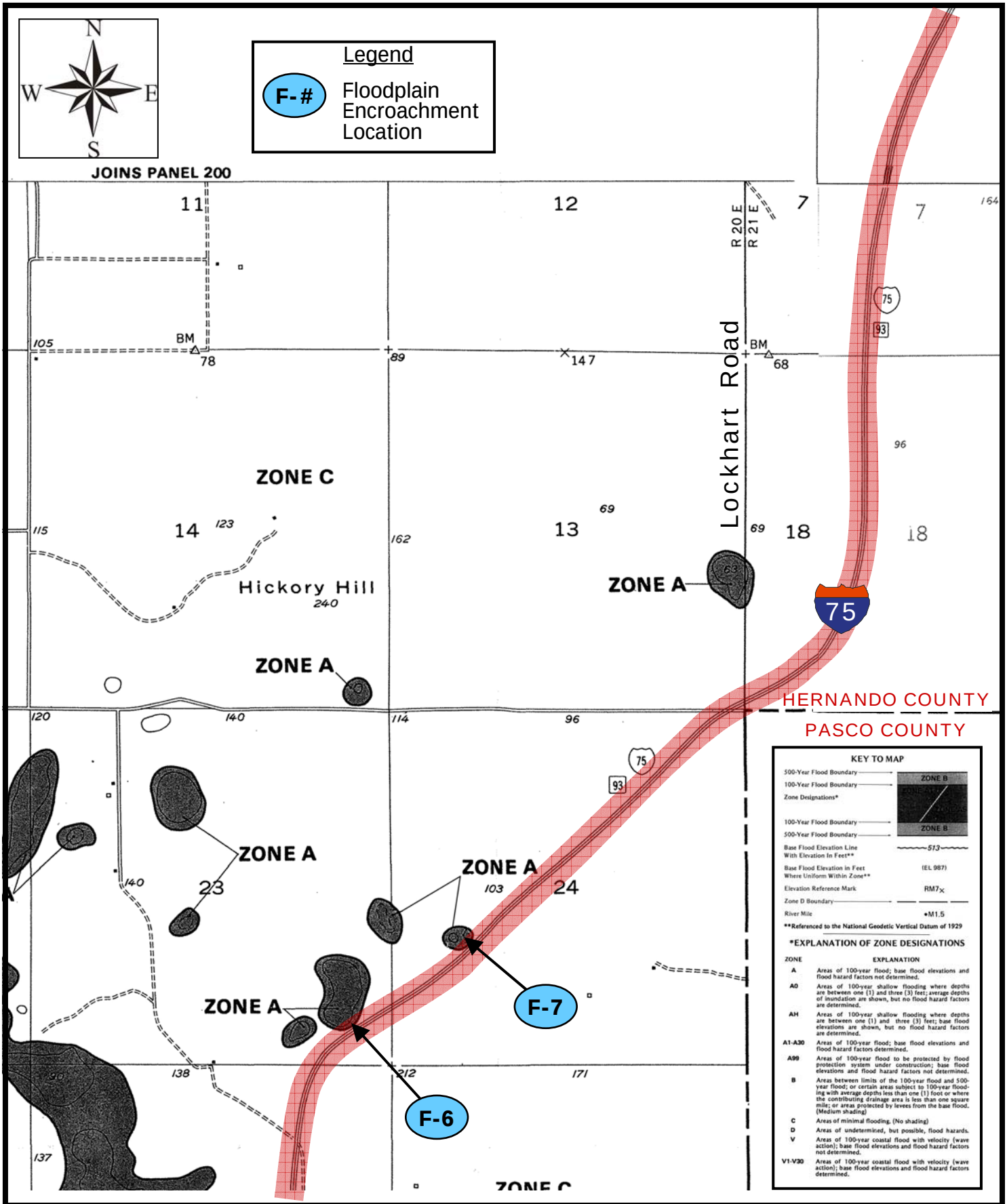
FEMA Flood Maps

A3



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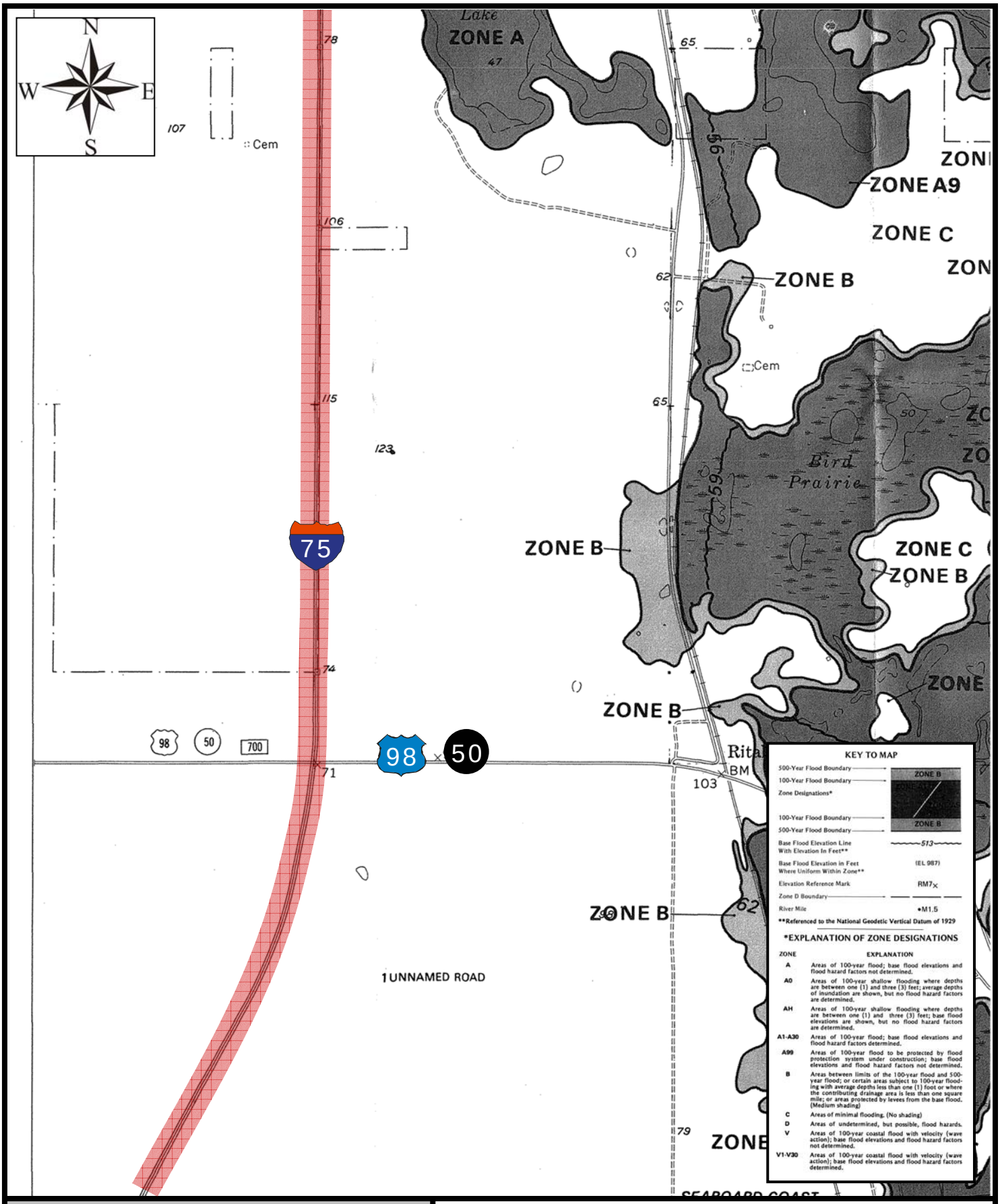
FEMA Flood Maps

A4



STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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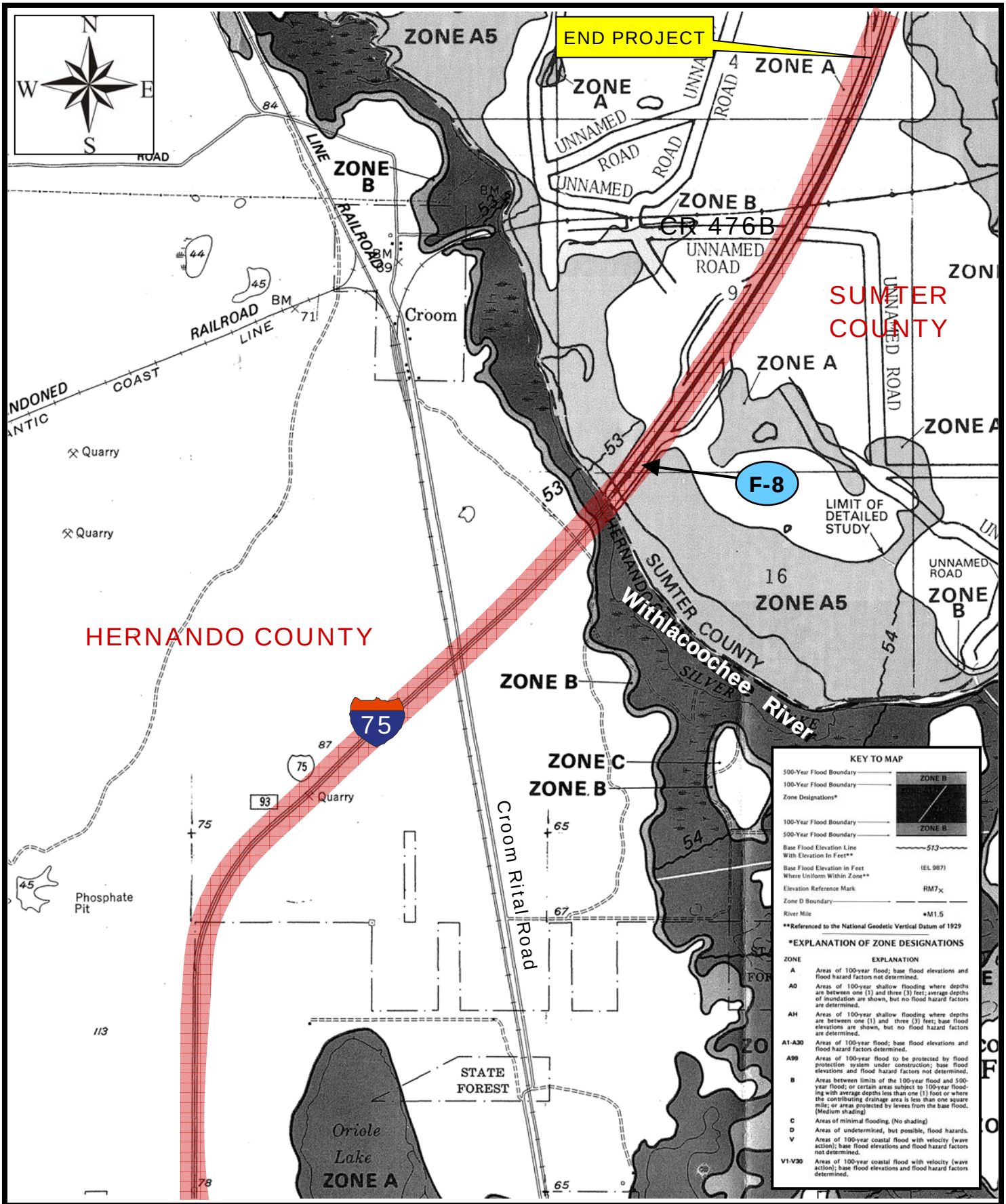
FEMA Flood Maps

A5



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