

BRIDGING DECISIONS AND ALIGNMENT REVIEW

US 158 (SHORTCUT ROAD), FROM EAST OF NC 34 (SHAWBORO ROAD) AT BELCROSS TO NC 168 (CARATOKE HIGHWAY) CAMDEN - CURRITUCK COUNTIES TIP PROJECT R-2574

PURPOSE OF THIS MEETING

The purpose of today's meeting is to discuss bridge locations, preliminary alignments, and reach concurrence on bridging decisions and alignment review for Concurrence Point 2A (CP2A).

PROJECT DESCRIPTION

TIP Project R-2574 is included in the amended 2016-2025 North Carolina State Transportation Improvement Program (STIP). The project extends from NC 34 at Belcross in Camden County to NC 168 in Currituck County, a distance of approximately 10.6 miles (Figure 1). Proposed improvements include four 12-foot travel lanes, a 46-foot median and 8-foot grassed shoulders (4-foot paved).

PROJECT SCHEDULE

The project is included in the 2016-2025 STIP and is programmed for planning and environmental studies. Right of way acquisition and construction are unfunded.

PROJECT PURPOSE

Formal concurrence on the purpose of the project (CP 1) was reached at a NEPA/404 Merger Team meeting held on September 19, 2013. Team members agreed on the following purpose statement for the project: The purpose of the proposed project is to improve mobility and increase the roadway carrying capacity of US 158 in the project area to support both regional transportation needs and hurricane evacuation.

ALTERNATIVES FOR DETAILED STUDY

Formal concurrence on the alternatives for detailed study (CP 2) was reached at a NEPA/404 Merger Team meeting held on December 18, 2014. North side, south side, or best fit widening alternatives have been considered within six section of the project in order to analyze potential impacts. Team members agreed on the detailed study alternatives described in Table 1.

Table 1. Alternatives for Detailed Study

Section No.	Figure 2 Sheet	Section Description	Length (miles)	Widening Alternative		
				North Side	South Side	Best Fit
1	1, 2	West end of project to just west of SR 1135	1.5		✓	
2	2, 3	Just west of SR 1135 in Camden County to 0.6 mile west of the western SR 1148 intersection in Currituck County	0.7			✓
3	3, 4, 5, 6, 7	0.6 mile west of the western SR 1148 intersection to 0.7 mile east of the eastern SR 1148 intersection	3.5	✓		✓
4	7, 8, 9	0.7 mile east of the eastern SR 1148 intersection to 0.1 mile east of Maple Road	1.4		✓	
5	9, 10, 11	0.1 mile east of Maple Road to 0.2 mile west of Will Poyner Lane	1.1		✓	
6	11, 12	0.2 mile west of Will Poyner Lane to east end of project	1.6		✓	✓

BRIDGING DECISIONS AND ALIGNMENT REVIEW

CP 2A consists of the identification of potential impacts to jurisdictional areas including streams, wetlands and other surface waters based on the preliminary design. CP 2A also includes a discussion of NCDOT hydraulic requirements and potential bridging locations being proposed at major stream or wetland crossings. Water resources in the study area are part of the Pasquotank River basin. Based on a preliminary hydraulic study, six crossings require structures that are greater than 72 inches wide. All other crossings can be contained in smaller pipes or culverts. The structure locations are described in Tables 2 and 3 and shown on Figures 1, 2, 3, and 4. Based on preliminary designs, impacts to streams and wetlands in these structure locations are described in Table 3. Jurisdictional areas have been surveyed and mapped using GPS. The impact area is defined as the slope stakes plus a 25-foot clearing area.

Table 2. Major Stream Crossings

Site No.	Location	Stream Name	NRTR Map Id	Existing Structure No., Size, Type	Proposed Structure Size, Type
1	Section 2 - 0.6 mile east of SR 1135 Figure 2 - Sheet 2 Figures 3,4 - Sheet 1	Run Swamp Canal	WC/ WU	Bridge #1, 1 span, 42'x45' cored slab bridge	Replace with 2 @ 36'x90' bridges
2	Section 2 - 0.8 mile east of SR 1206 Figure 2 - Sheet 3 Figures 3,4 - Sheet 2	Run Swamp Canal	WC/ WU	Bridge #9, 2 span, 28'x70' cored slab bridge	Replace with 2 @ 36'x110' bridges
3	Section 3 - 0.8 miles east of SR 1148 Figure 2 - Sheet 4 Figures 3,4 - Sheet 3	Drainage Canal #1	SA	Culvert #P005, 117"x79" CMP	Replace with 2@9'x6'x284' RCBC
4A	Section 4 - 3.9 miles west of NC 168 Figure 2 - Sheet 7 Figures 3,4 - Sheet 4	Great Swamp	WI/ WR	2 @ 60" CMP	Retain and extend existing
4B	Section 4 - 3.6 miles west of NC 168 Figure 2 - Sheet 8 Figures 3,4 - Sheet 5	Great Swamp	WI/ WR	2 @ 72" CMP	Retain and extend existing
4C	Section 4 - 3.3 miles west of NC 168 Figure 2 - Sheet 9 Figures 3,4 - Sheet 6	Great Swamp	WI/ WR	2 @ 72" CMP	Retain and extend existing

Note: CMP = Corrugated Metal Pipe; RCBC = Reinforced Concrete Box Culvert

Table 3. Recommended Major Drainage Structures

		STREAM/ WETLAND INFORMATION						EXISTING STRUCTURE	PROPOSED STRUCTURE	PROPOSED 4-LANE WIDENING		
SITE NUMBER	LOCATION	STREAM NAME / NCDWR INDEX # / CLASSIFICATION	NRTR MAP ID	NCWAM CLASSIFICATION	NCDWQ WETLAND RATING	STREAM LENGTH (ft) or WETLAND AREA (ac)	DRAINAGE AREA (sq mi) [acres]	Structure No. Size, Type	Structure Size, Type	Estimated Structure Cost	Estimated Mitigation Cost	Potential Stream (lf) or Wetland (ac) Impact
1	Section 2 - 0.6 mile east of SR 1135 Figure 2 - Sheet 2 Figure 3 - Sheet 1	Run Swamp Canal	WC/ WU	Riverine Swamp Forest	96	WC (20.9) WU (29.4)	8.5 5,440	Bridge #1, 1 span, 42' x 45' cored slab bridge	Replace with 2 @ 36' x 90' bridges (6480 sf) (Best Fit Alignment)	\$XXXXXX	\$382,400 \$140,900	WC (4.7) WU (1.6)
2	Section 2 - 0.8 mile east of SR 1206 Figure 2 - Sheet 3 Figure 3 - Sheet 2	Run Swamp Canal	WC/ WU	Riverine Swamp Forest	96	WC (20.9) WU (29.4)	8.5 5,440	Bridge #9, 2 span, 28' x 70' cored slab bridge	Replace with 2 @ 36' x 110' bridges (7920 sf) (Best Fit Alignment)	\$XXXXXX	\$161,000 \$362,300	WC (1.8) WU (4.5)
3	Section 3 - 0.8 miles east of SR 1148 Figure 2 - Sheet 4 Figure 3 - Sheet 3	Drainage Canal #1 Index # 30-2-1 Perennial - C; SW	SA	n/a	n/a	SA (1,411)	3.6 2304	Culvert #P005, 117"x79" CMP	Replace with 2@9'x6'xXXX' RCBC (XXXX sf) (North Side Alignment)	\$XXXXXX	\$XXXXXX	SA (XXX)
									Replace with 2@9'x6'x284' RCBC (30,670 sf) (Best Fit Alignment)	\$XXXXXX	\$198,900	SA (336)
4A	Section 4 - 3.9 miles west of NC 168 Figure 2 - Sheet 7 Figure 3 - Sheet 4	Great Swamp	WI/ WR	Riverine Swamp Forest	96	WI (51.7) WR (51.3)	10.5 6,720	2 @ 60" CMP	Retain and extend existing by 142' (South Side Alignment)	\$XXXXXX	\$120,800 \$362,300	WI (1.5) WR (4.5)
4B	Section 4 - 3.6 miles west of NC 168 Figure 2 - Sheet 8 Figure 3 - Sheet 5	Great Swamp	WI/ WR	Riverine Swamp Forest	96	WI (51.7) WR (51.3)	10.5 6,720	2 @ 72" CMP	Retain and extend existing by 67' (South Side Alignment)	\$XXXXXX	\$20,100 \$644,100	WI (0.1) WR (7.9)
4C	Section 4 - 3.3 miles west of NC 168 Figure 2 - Sheet 9 Figure 3 - Sheet 6	Great Swamp	WI/ WR	Riverine Swamp Forest	96	WI (51.7) WR (51.3)	10.5 6,720	2 @ 72" CMP	Retain and extend existing by 105' (South Side Alignment)	\$XXXXXX	\$20,100 \$402,600	WI (0.1) WR (4.8)

NOTES:

CMP = Corrugated Metal Pipe; RCBC = Reinforced Concrete Box Culvert

Stream/wetland impacts are measured 25 feet beyond slopestakes.

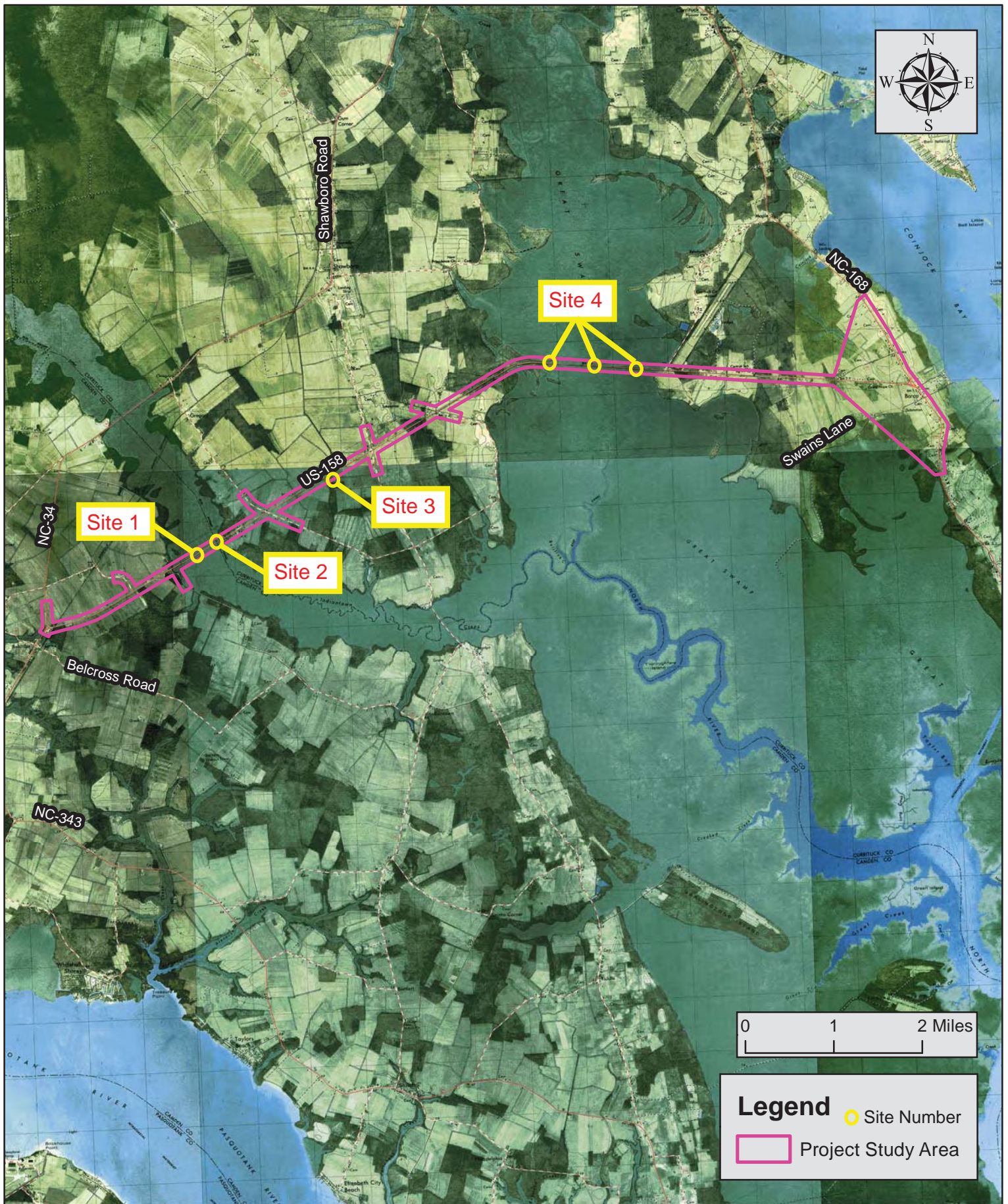
Cost estimates are based on unit costs and bid averages provided by NCDOT.

Culvert Costs: single RCBC - \$XX/sf, double RCBC- \$XX/square foot (sf), CMP extension - \$XX/ linear foot (lf)

Bridge Costs: \$XXX/sf

Estimated mitigation costs are based on the 2015 schedule of mitigation fees from the NC Division of Mitigation Services (NCDMS) at <http://portal.ncdenr.org/web/eep/stream-wetland-buffer-fee-info>.

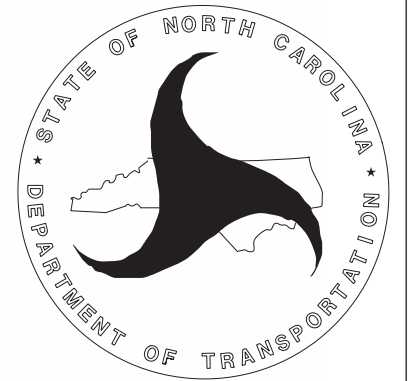
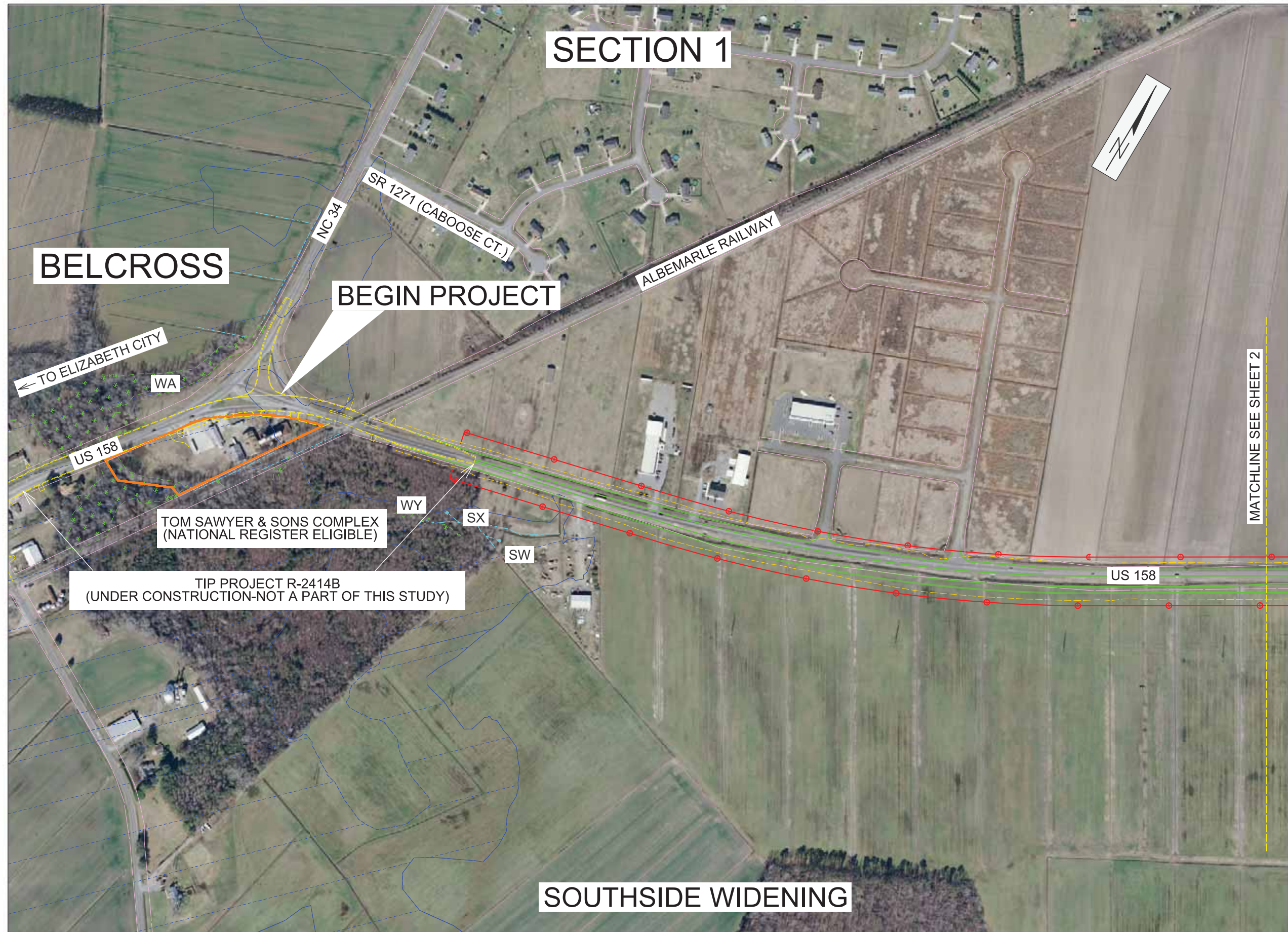
Estimated mitigation costs assume a 2:1 mitigation ratio at a cost of \$592/linear foot of stream and \$80,512/acre of riparian wetlands (rounded up to the nearest 0.25 acre increment).



North Carolina
Department
of
Transportation

Figure 1: Project Study Area Map
TIP Project R-2574

Widening of US 158 from NC 34 at Belcross to NC 168 at Barco
Camden and Currituck Counties, North Carolina



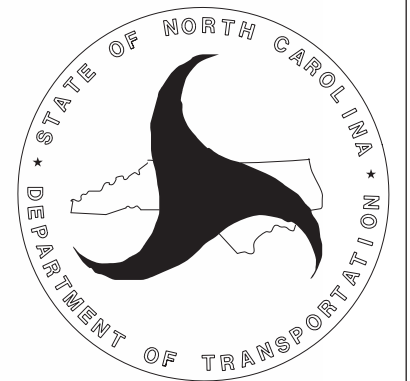
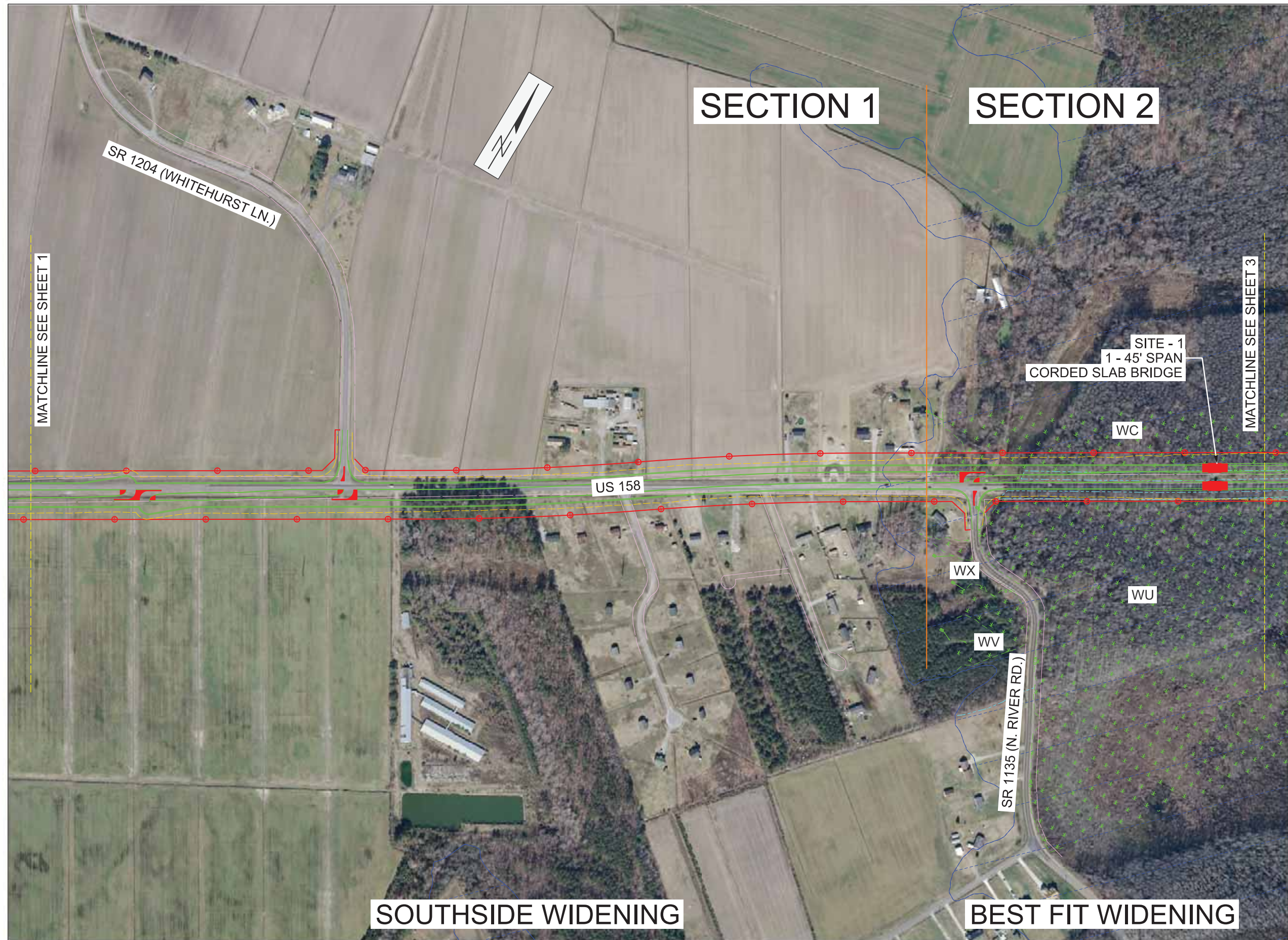
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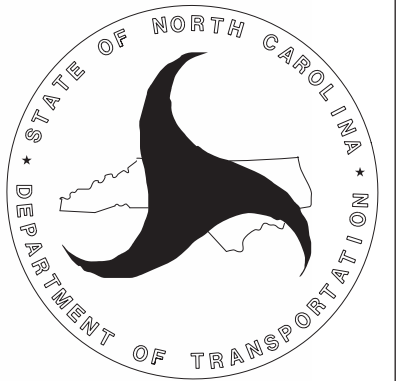
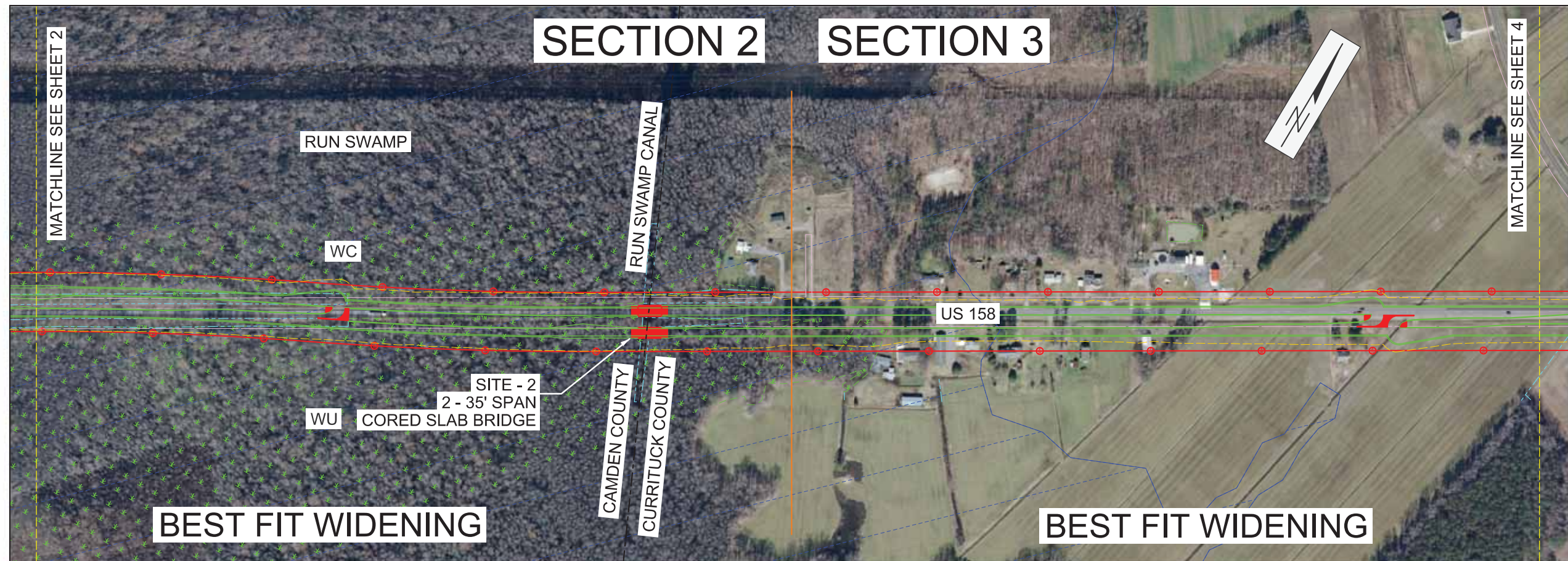
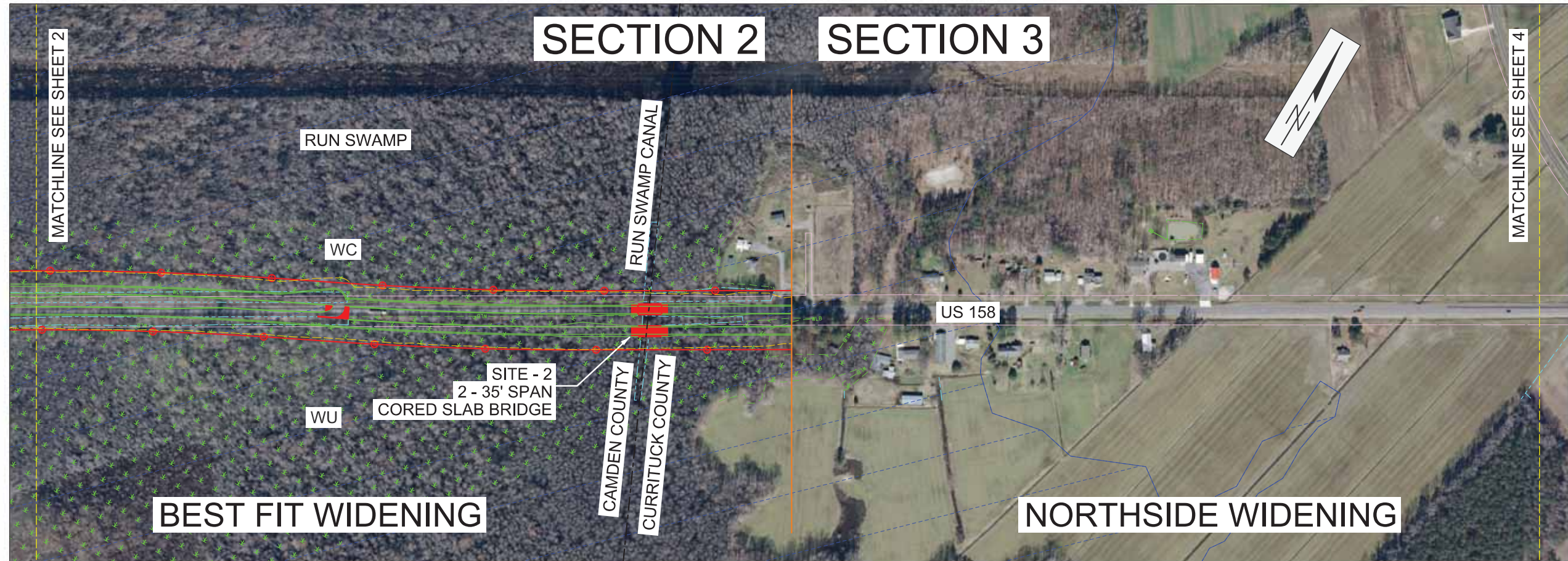
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SHEET 2 OF 12
FIGURE 2



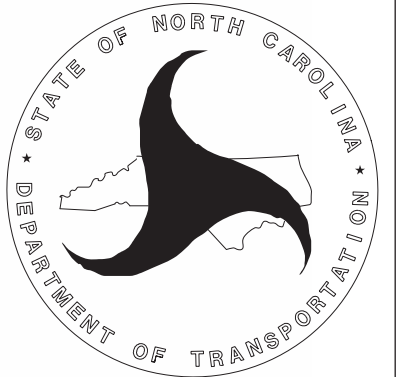
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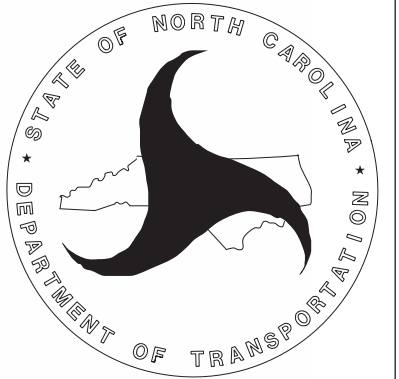
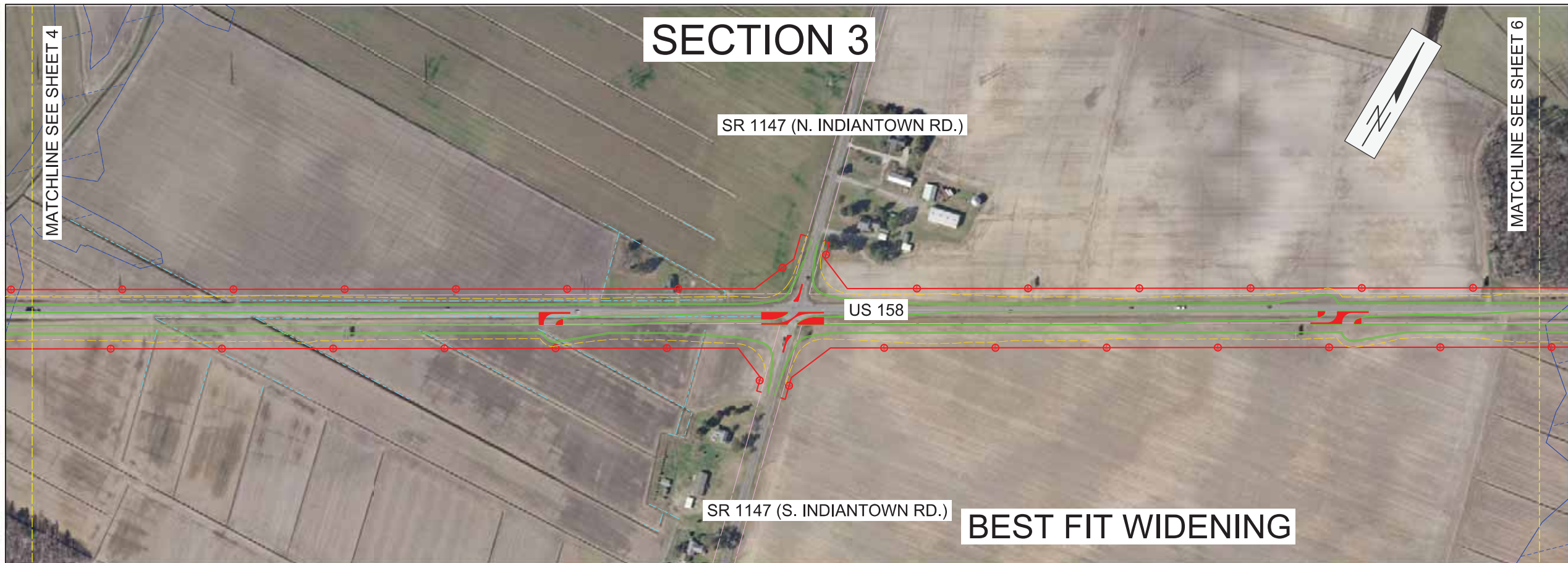
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SHEET 4 OF 12
FIGURE 2



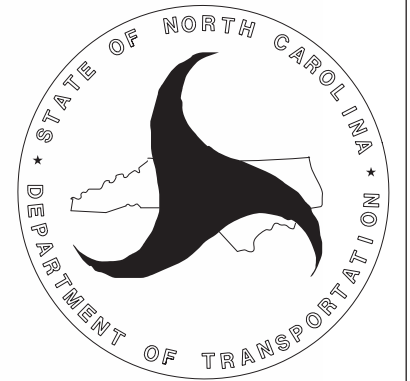
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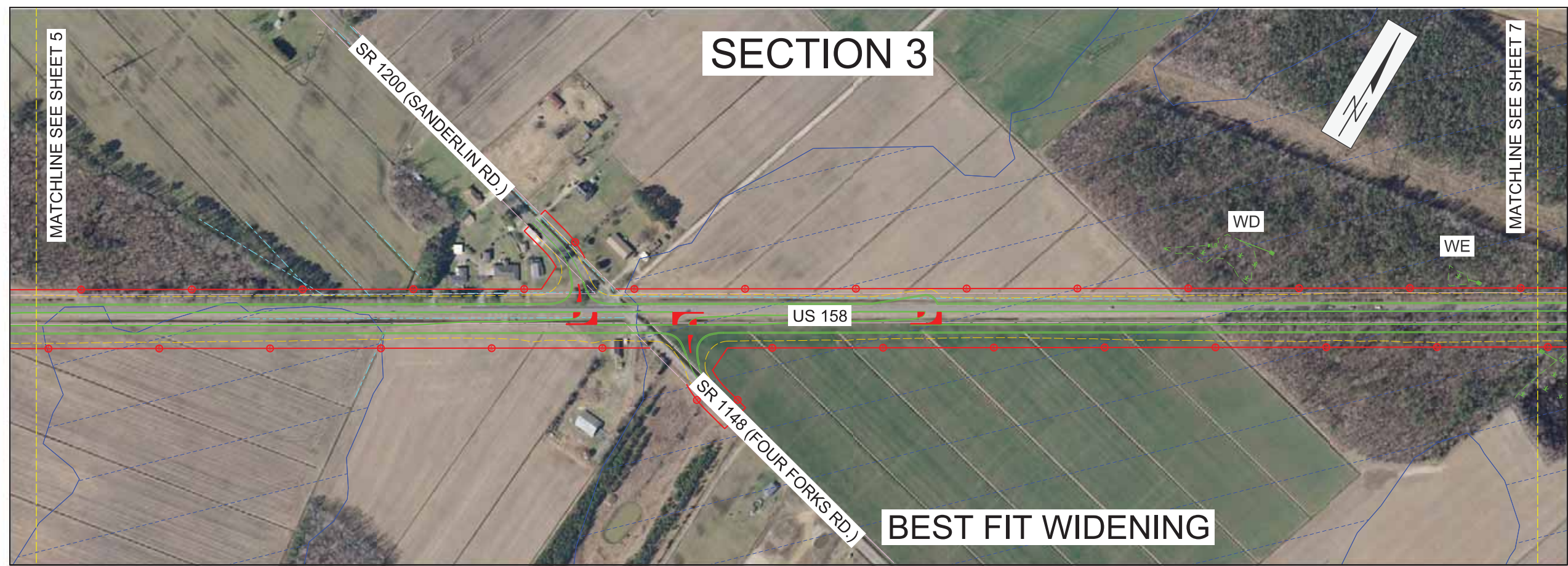
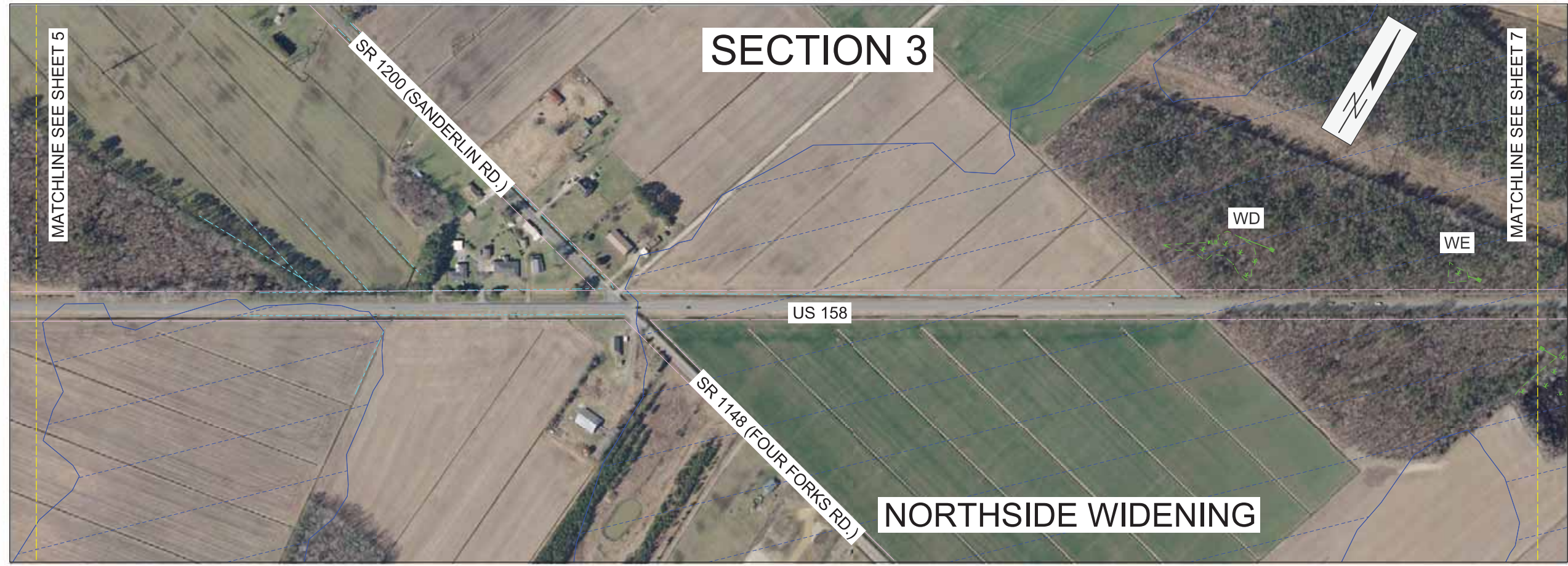
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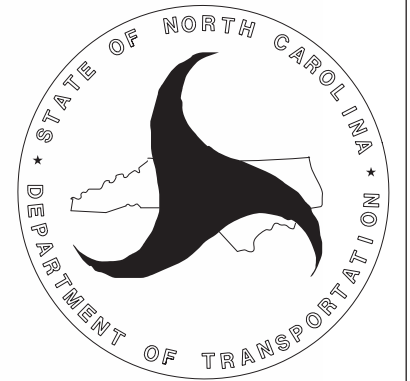
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FIGURE 2

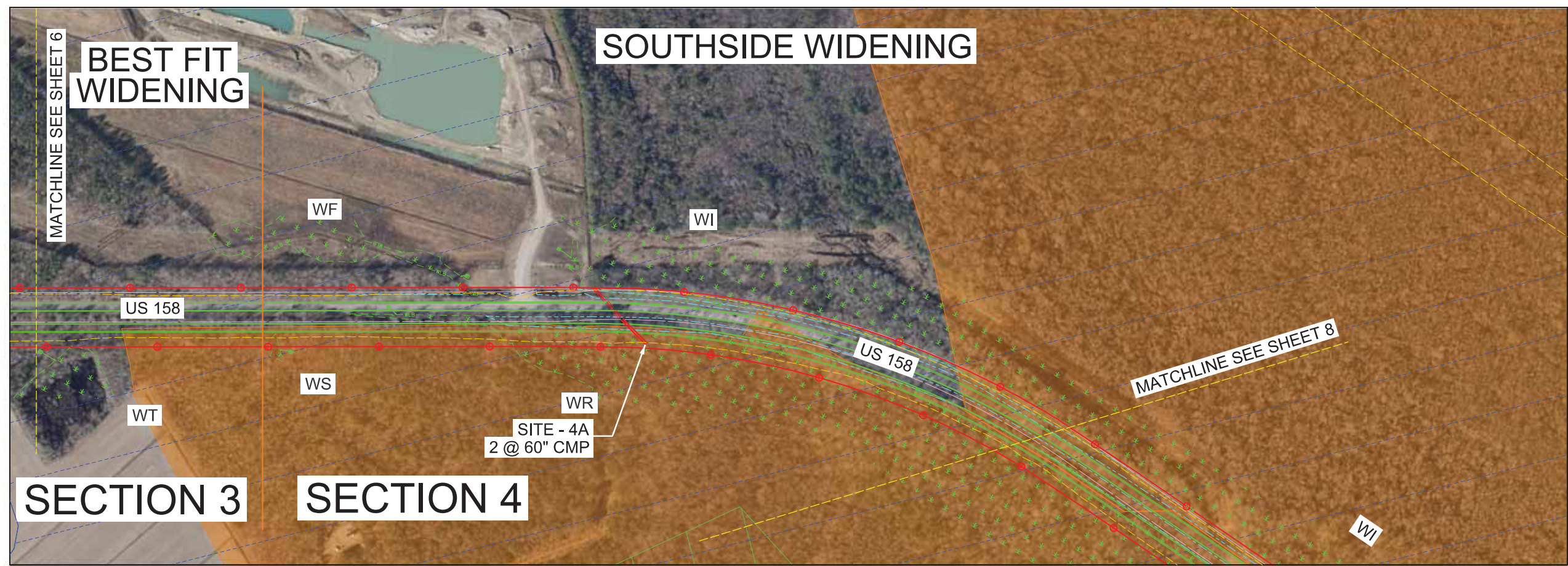
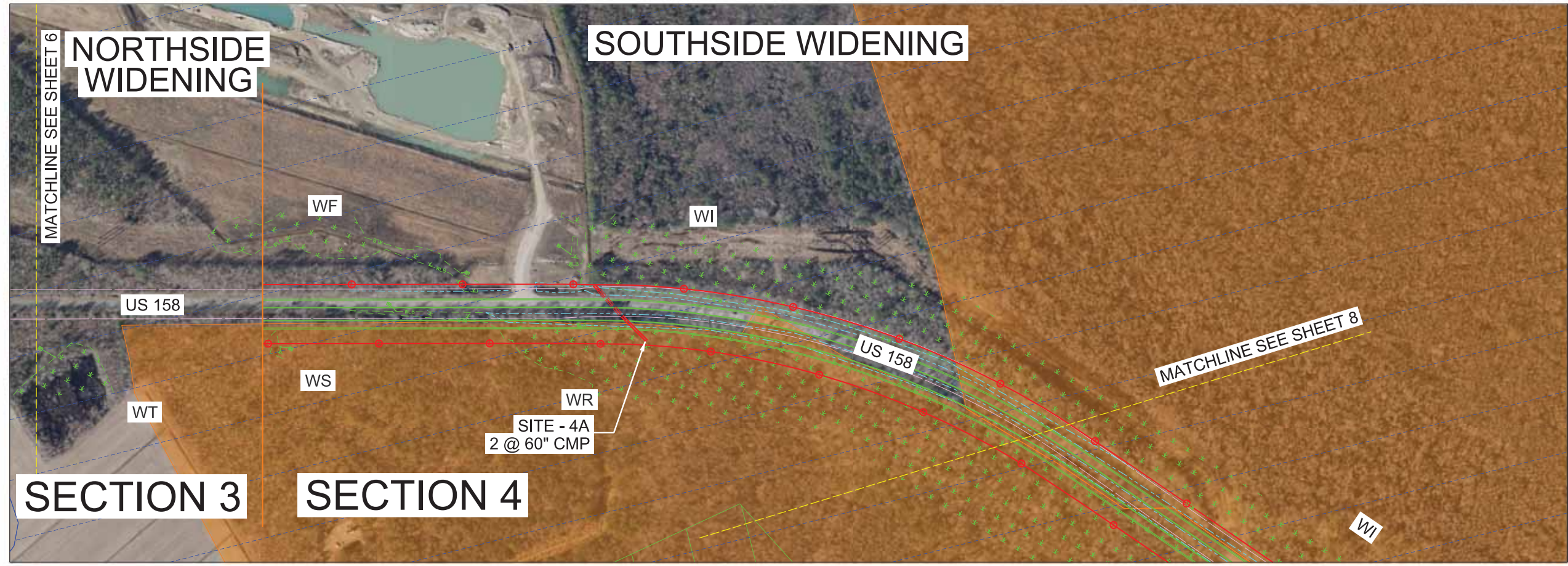


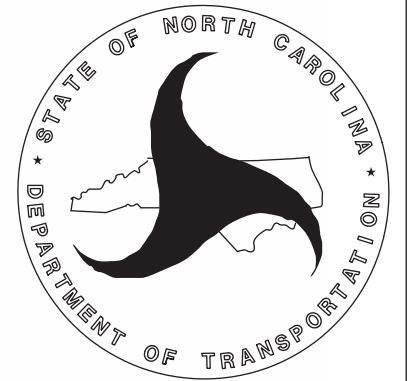
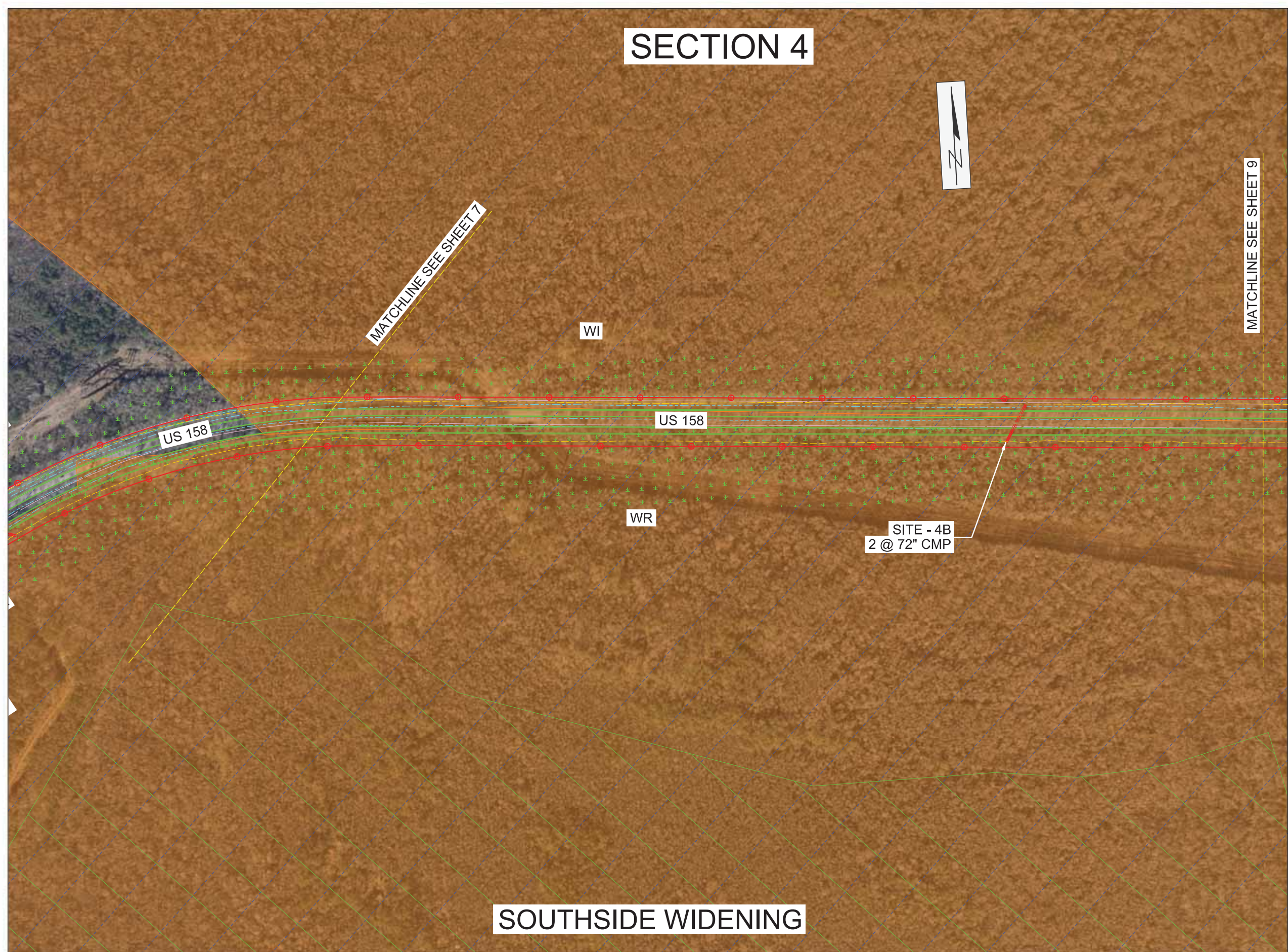


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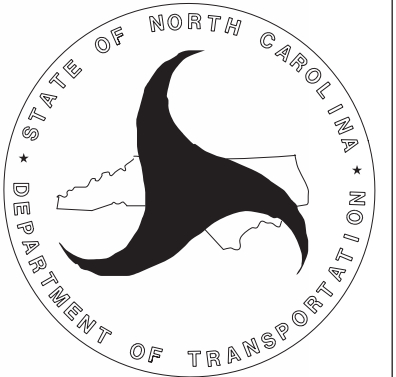
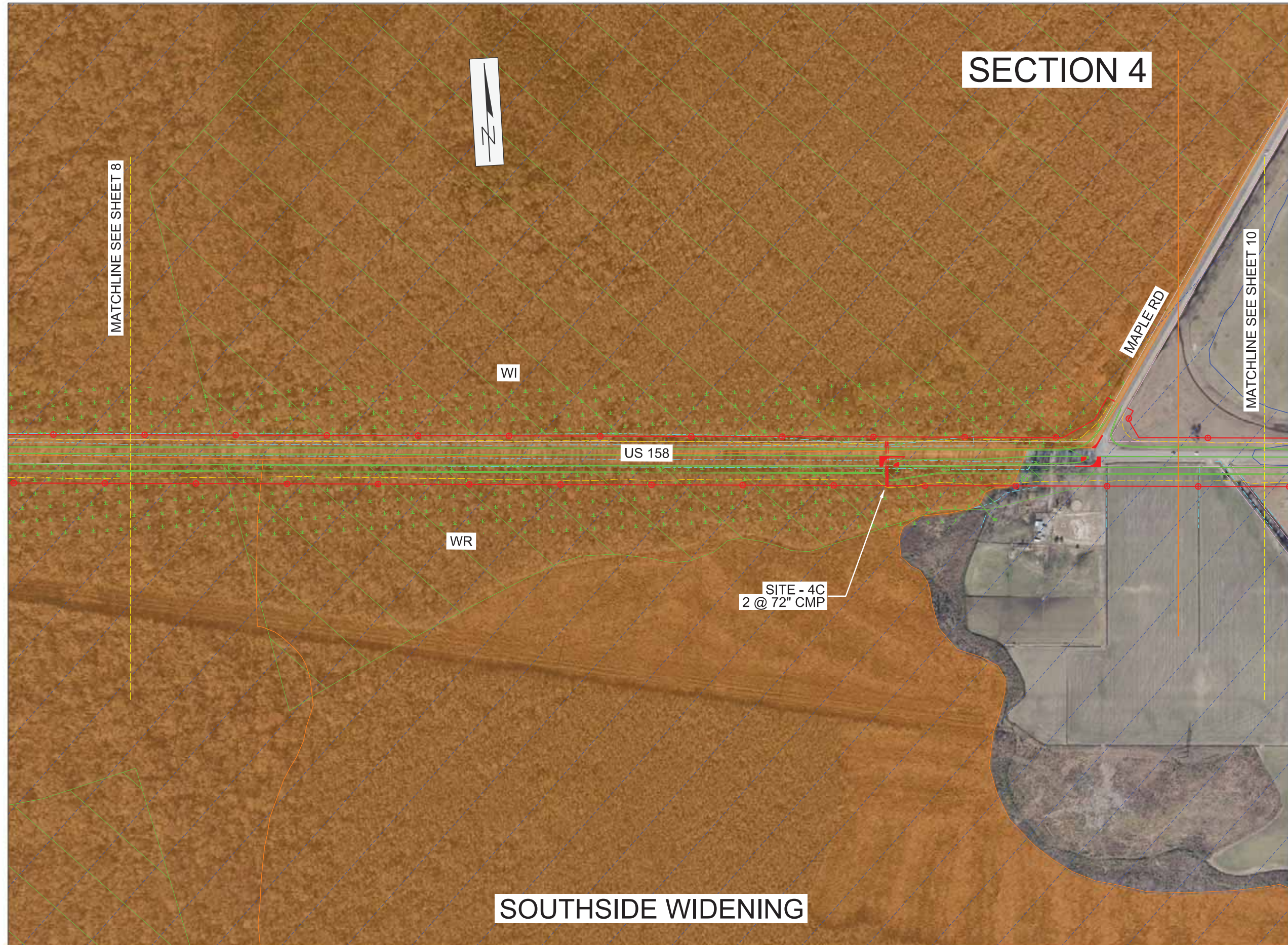
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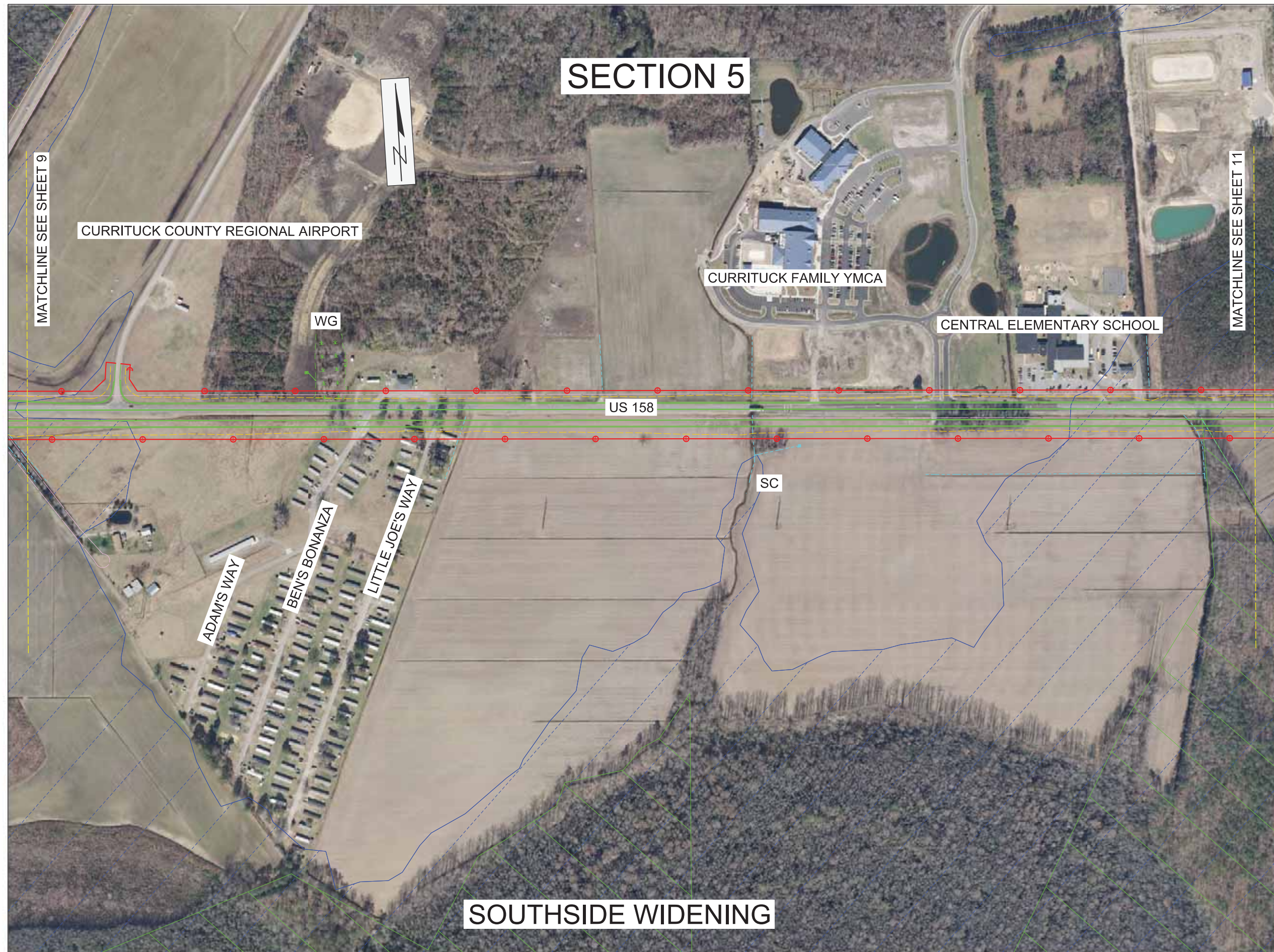


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SECTION 5

CURRITUCK COUNTY REGIONAL AIRPORT

CURRITUCK FAMILY YMCA

CENTRAL ELEMENTARY SCHOOL

US 158

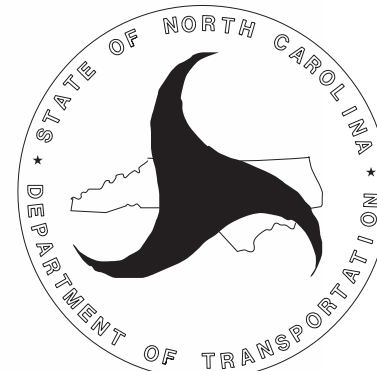
SC

ADAM'S WAY

BEN'S BONANZA

LITTLE JOE'S WAY

SOUTHSIDE WIDENING

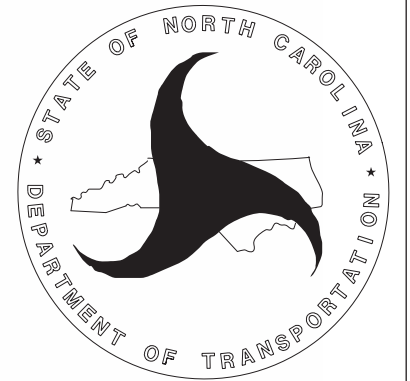


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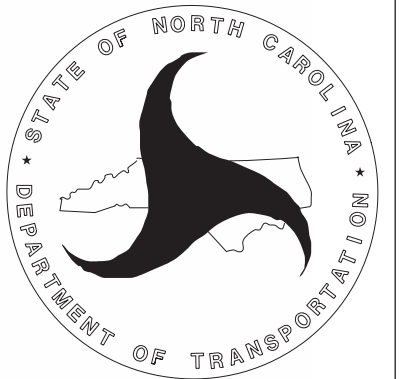
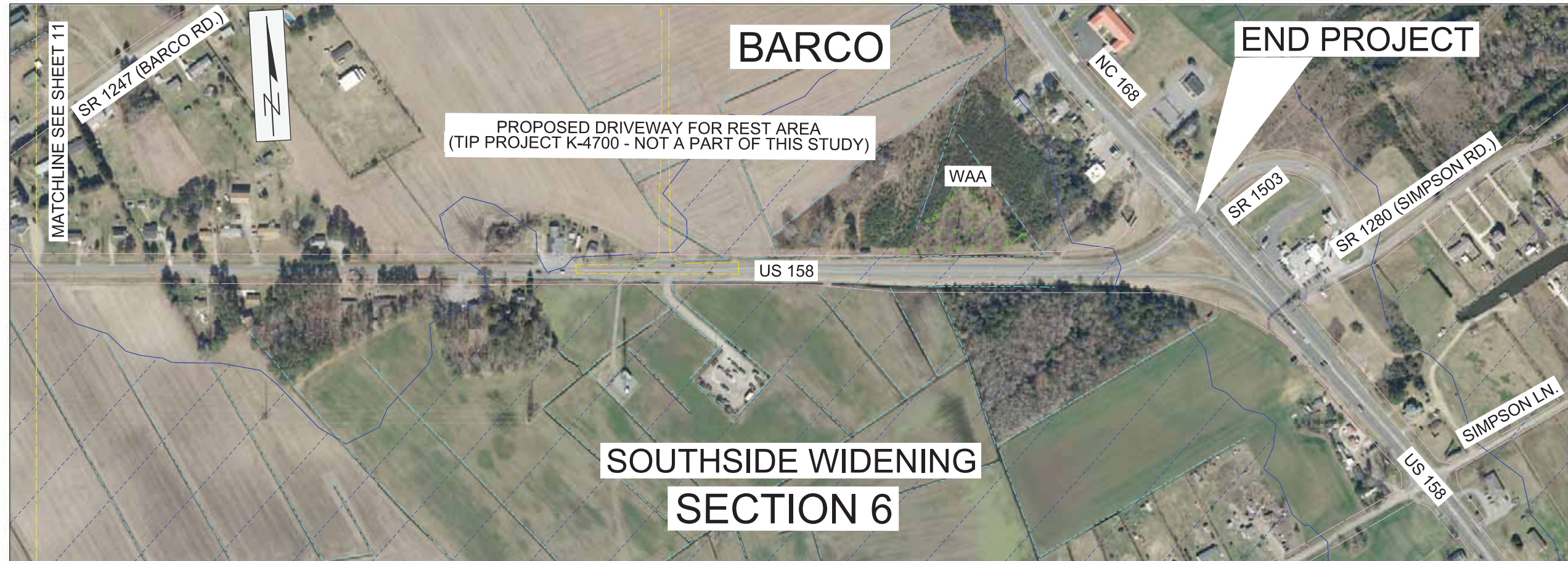
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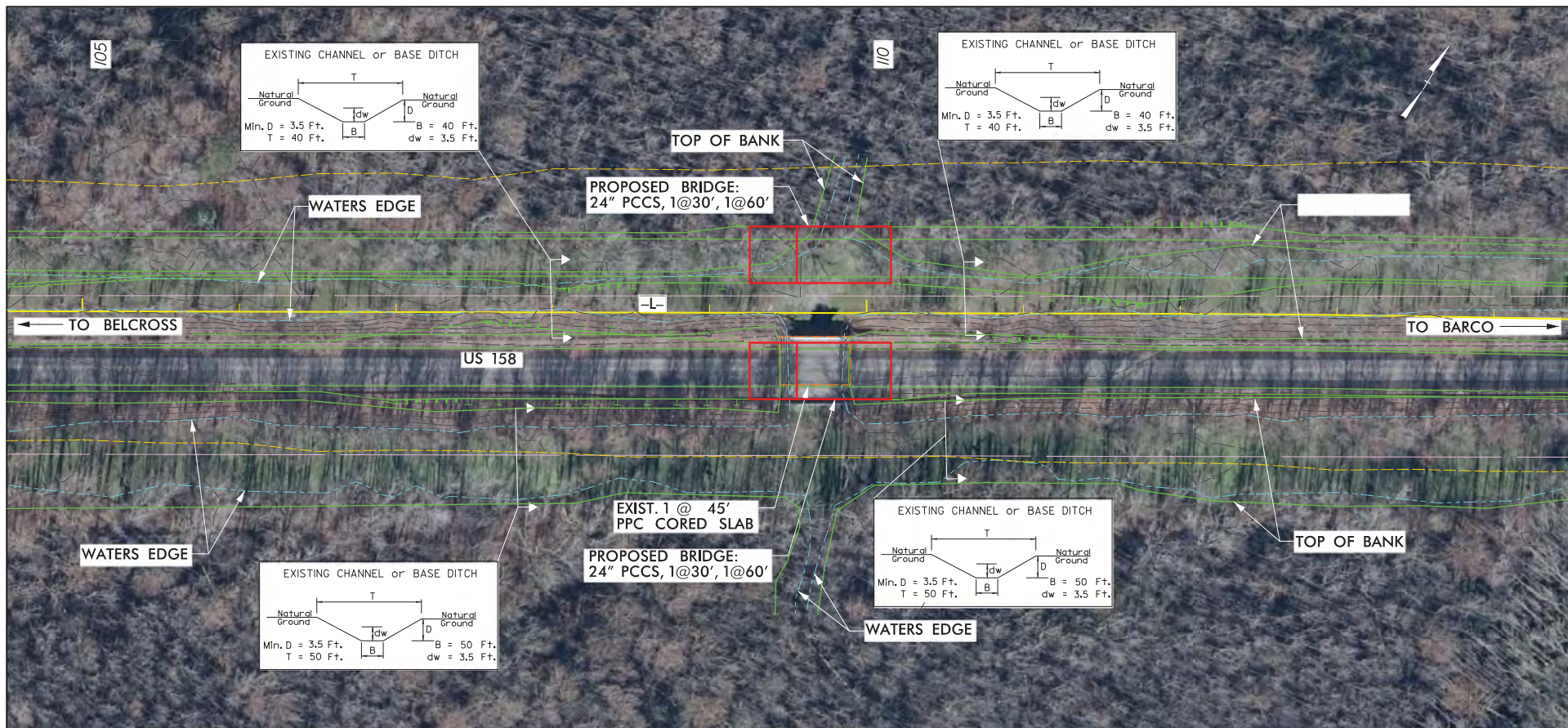
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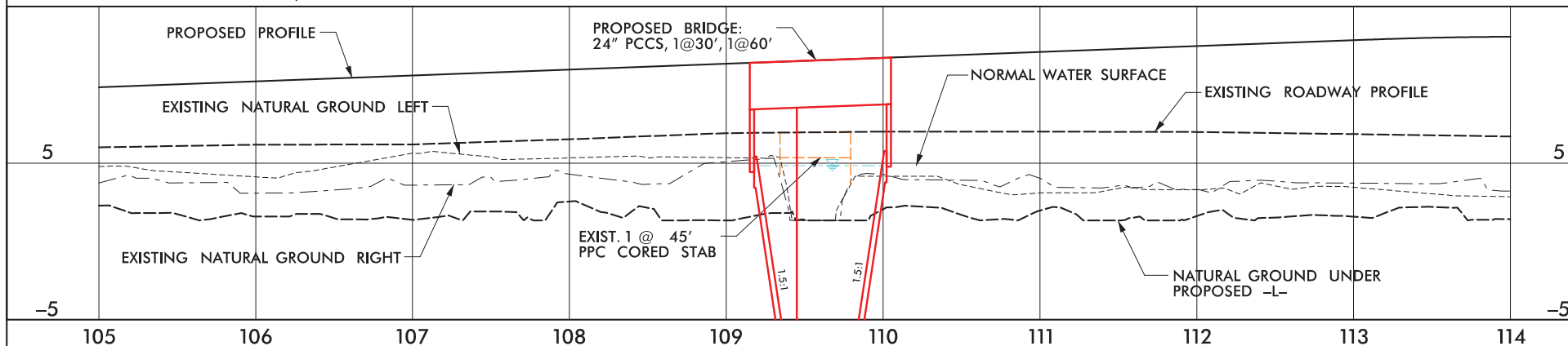
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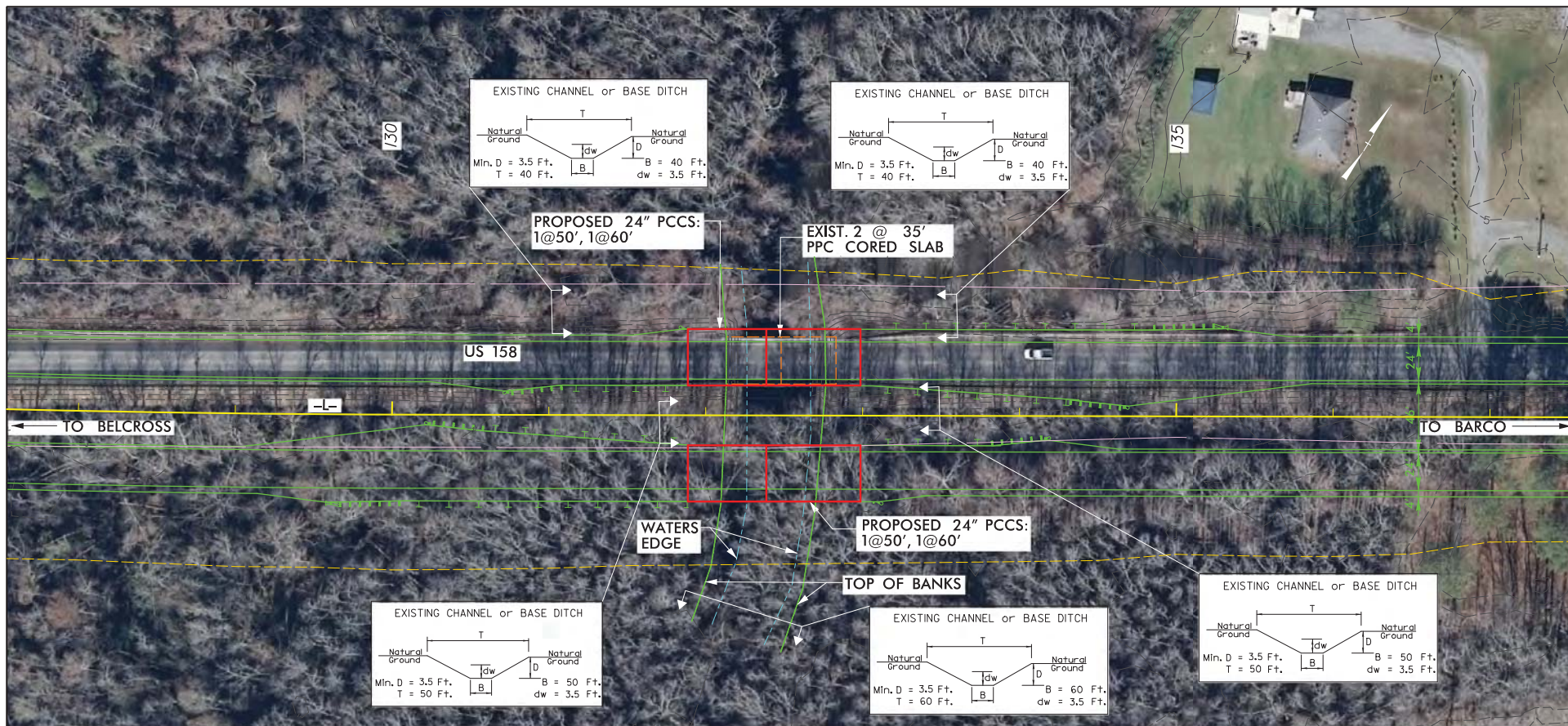
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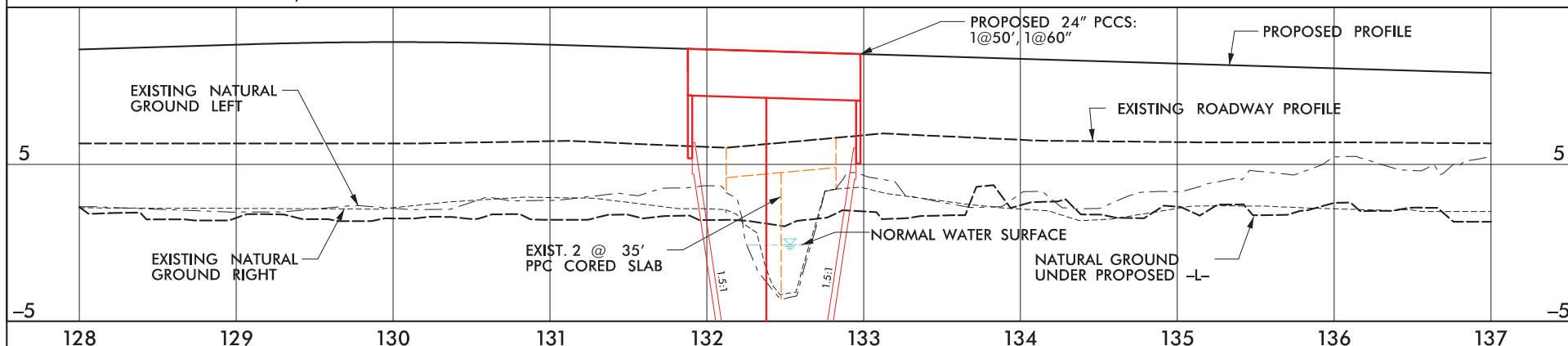
R-2574: SITE - 1
BRIDGE NO. 1 (CAMDEN)

SHEET 1 OF 6
FIGURE 3

BY: ICA ENGINEERING, INC.
 DATE: JULY 2015



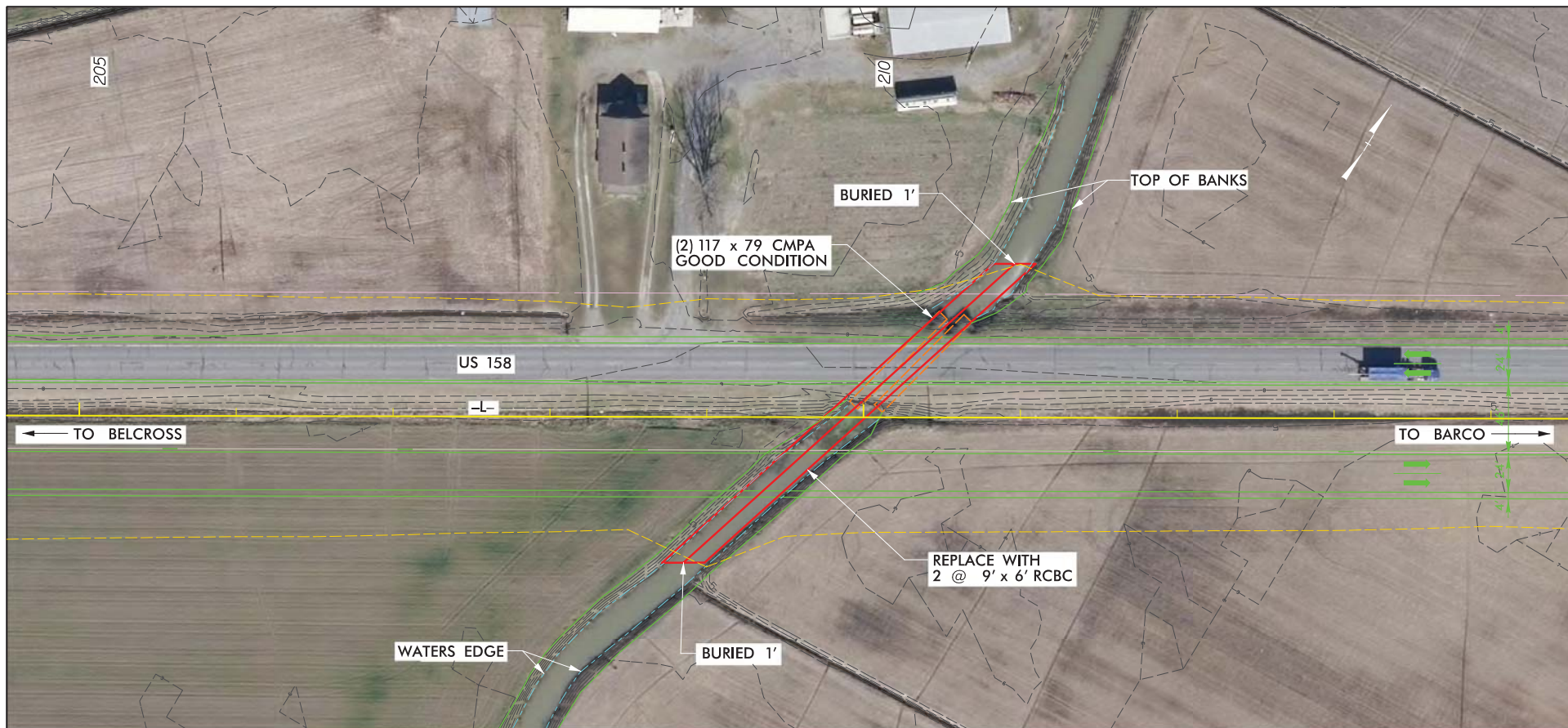
SCALE:
1" = 100' HORIZ, 1" = 10' VERT.



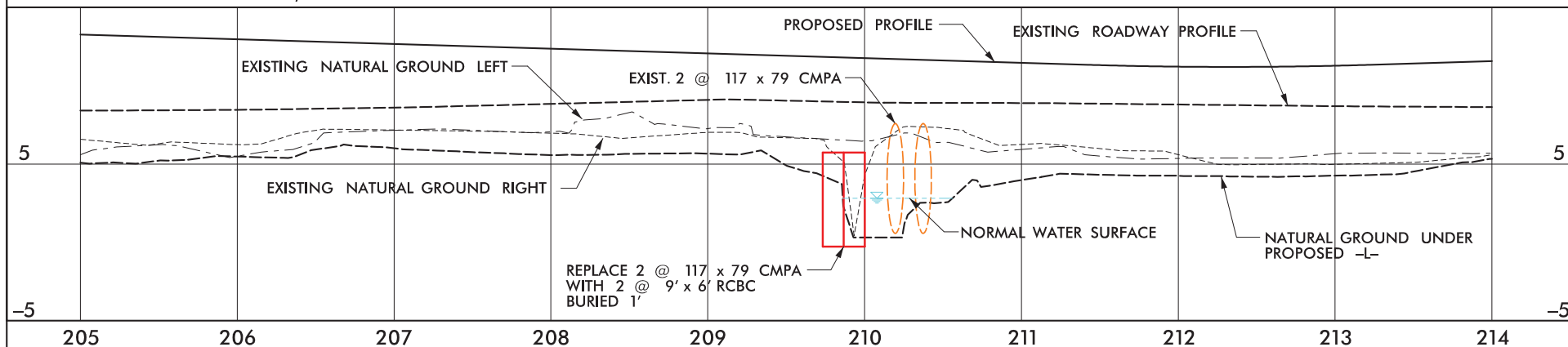
R-2574: SITE - 2
BRIDGE NO. 9 (CAMDEN)

SHEET 2 OF 6
FIGURE 3

BY: ICA ENGINEERING, INC.
DATE: JULY 2015



SCALE:
1" = 100' HORIZ, 1" = 10' VERT.



R-2574: SITE - 3
DOUBLE 117 x 79 CMPA

SHEET 3 OF 6
FIGURE 3

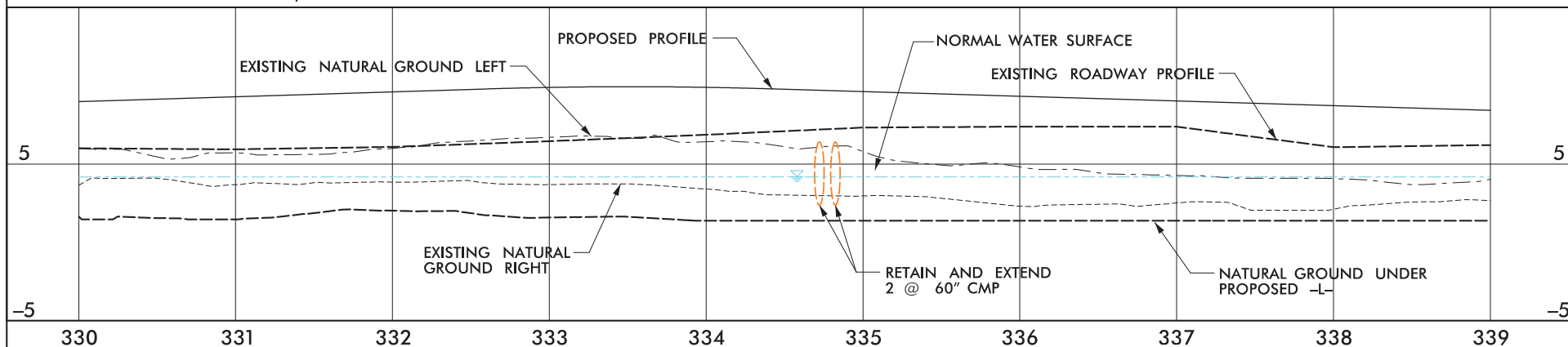
BY: ICA ENGINEERING, INC.
DATE: JULY 2015



SCALE:
1" = 100' HORIZ, 1" = 10' VERT.

15

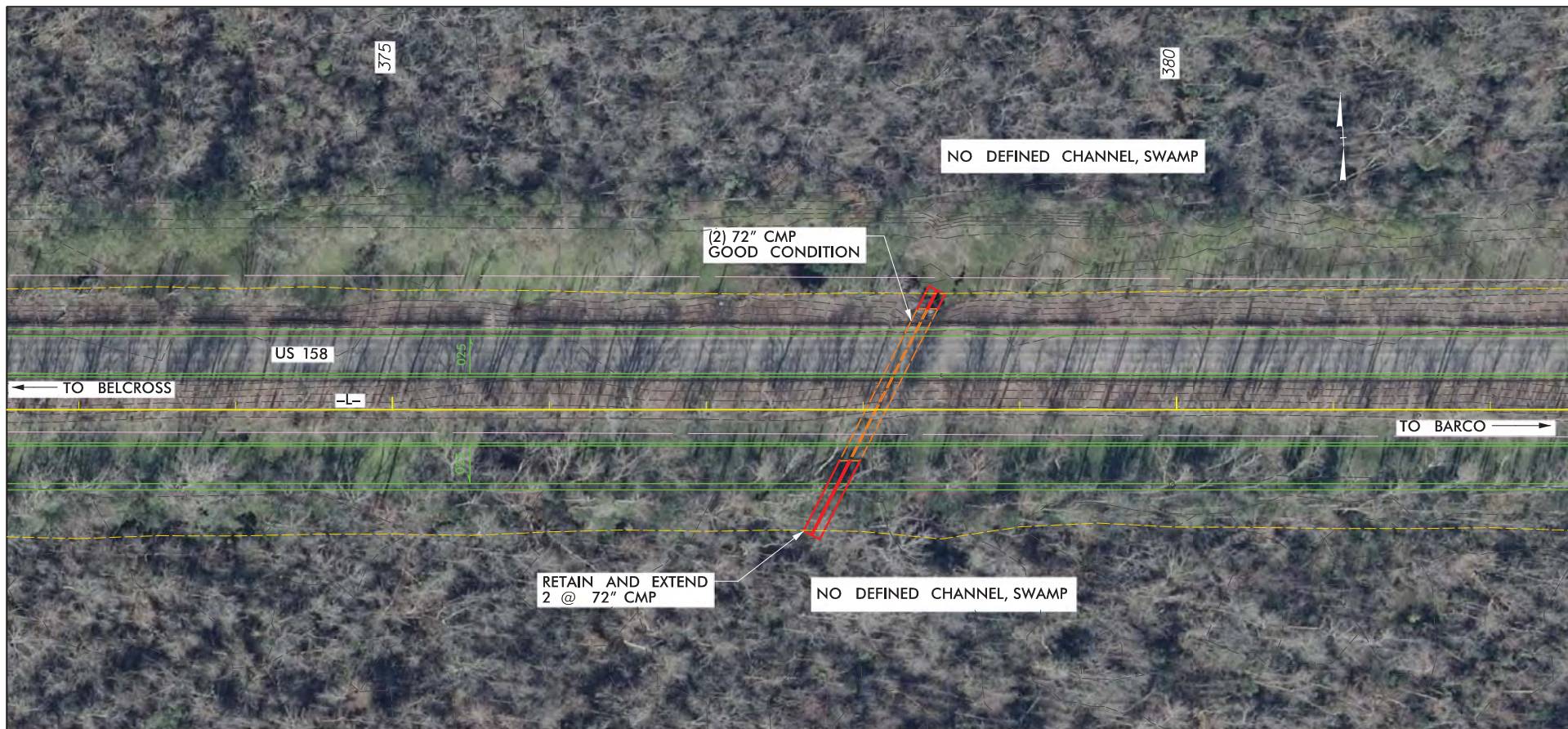
15



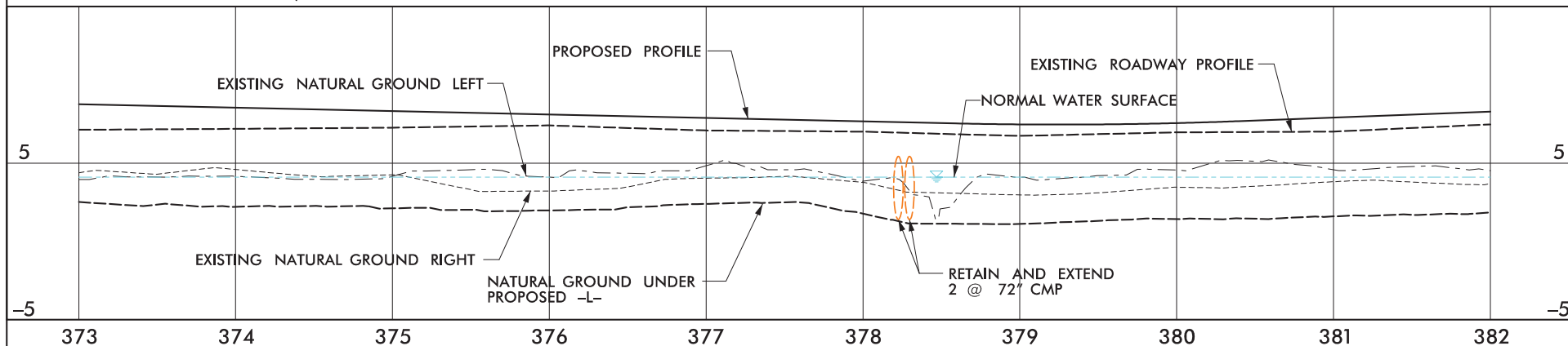
R-2574: SITE - 4A
2 @ 60" CMP

SHEET 4 OF 6
FIGURE 3

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DATE: JULY 2015



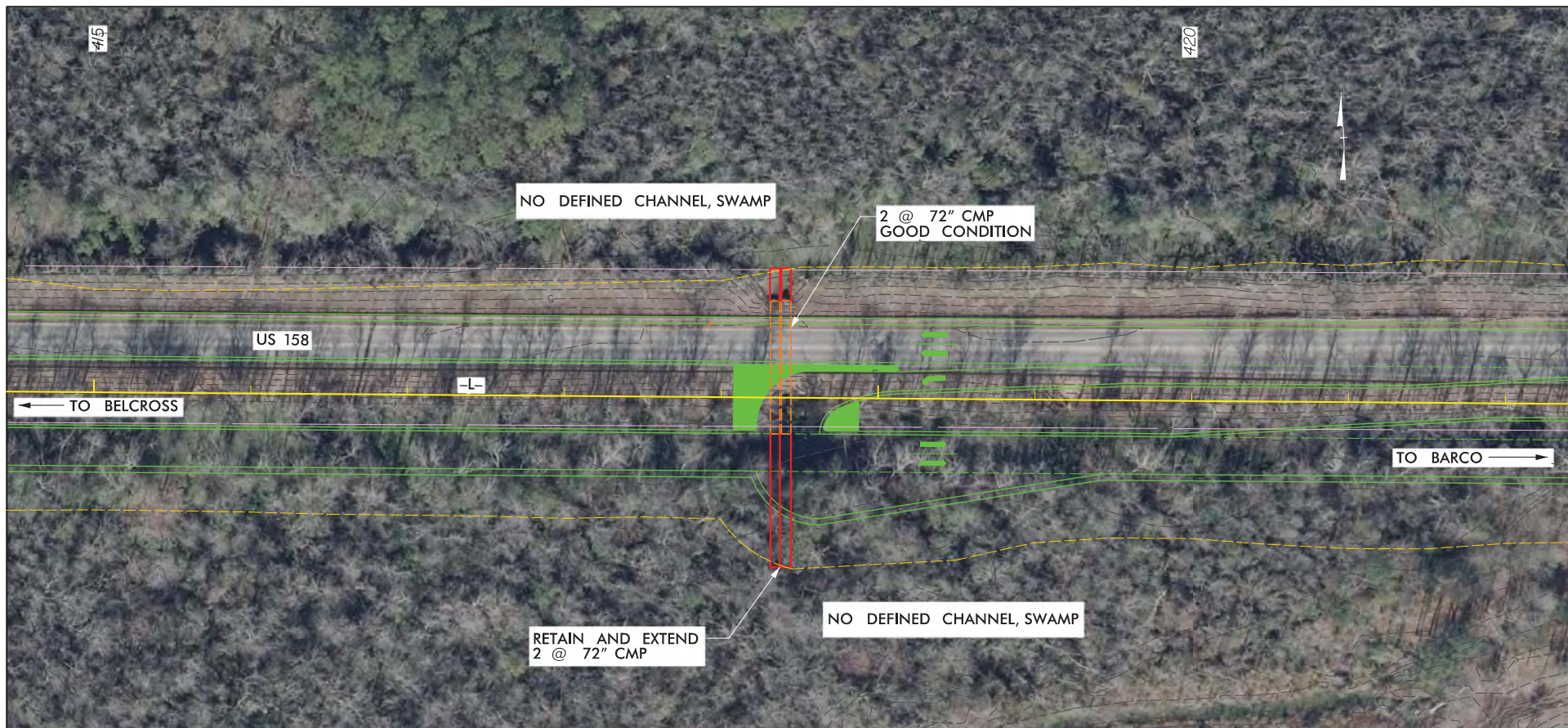
15 SCALE: 1" = 100' HORIZ, 1" = 10' VERT. 15



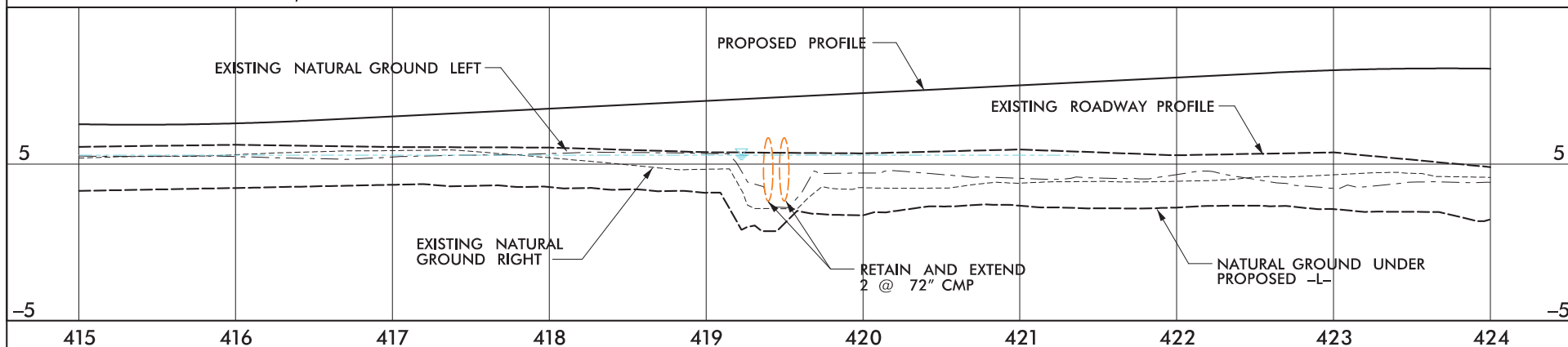
R-2574: SITE - 4B
2 @ 72" CMP

SHEET 5 OF 6
FIGURE 3

BY: ICA ENGINEERING, INC.
 DATE: JULY 2015



SCALE:
1" = 100' HORIZ, 1" = 10' VERT.



R-2574: SITE - 4C
2 @ 72" CMP

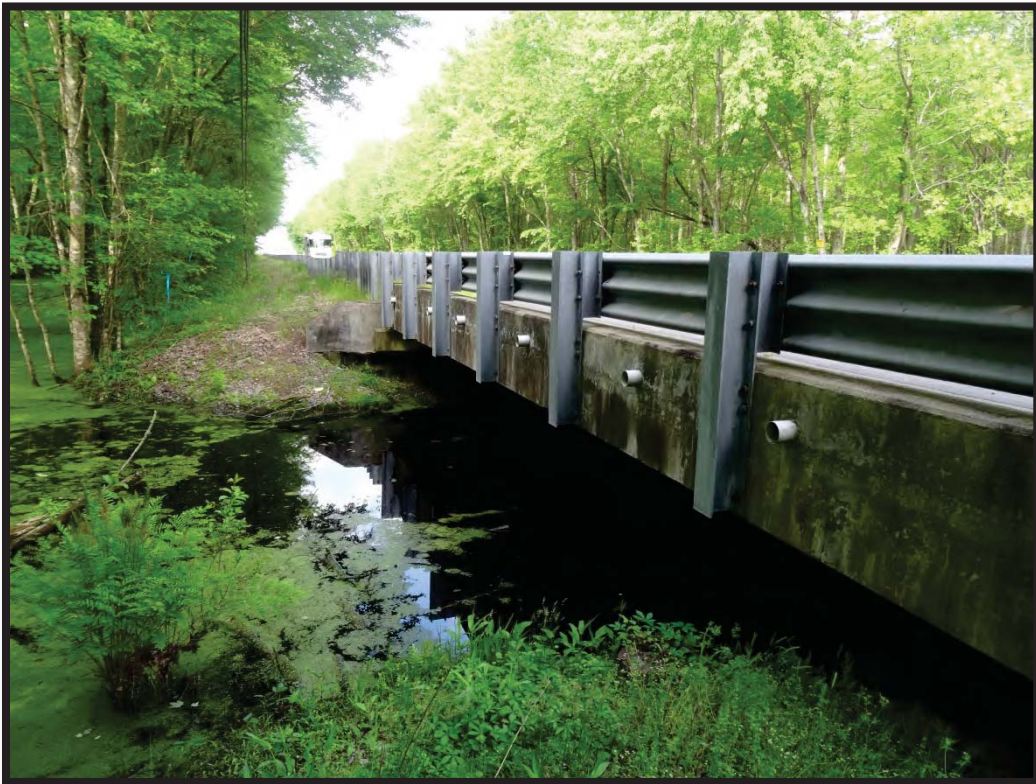
SHEET 6 OF 6
FIGURE 3

BY: ICA ENGINEERING, INC.
DATE: JULY 2015

Site #1 – HWY 158



Looking Downstream of Structure



Looking West at Downstream Structure

Site #2 – HWY US 158



Looking South at Downstream Structure



Looking West at Downstream Structure

Site #3 – HWY US 158



Looking at Downstream Structure



Looking Downstream

Site #4 – HWY US 158

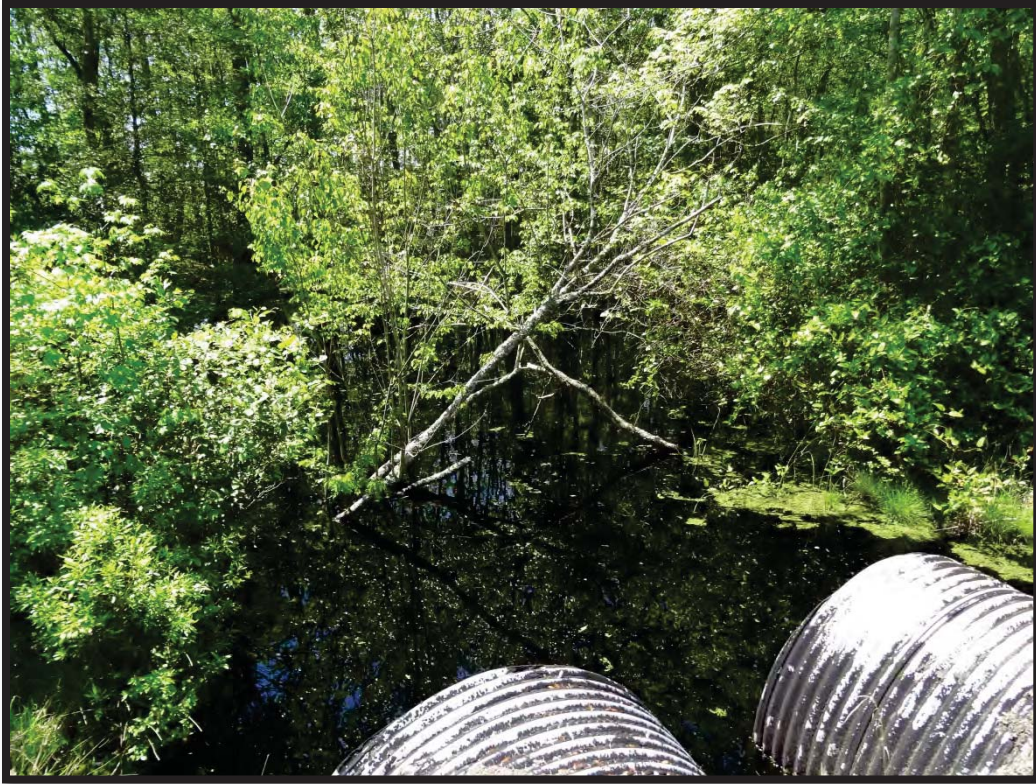


Looking West at Upstream Structure (4A)



Looking West at Downstream Structure (4A)

Site #4 – HWY US 158



Looking at Downstream Structure (4B)



Looking at Upstream Structure (4B)

Site #4 – HWY US 158



Looking at Upstream Structure (4C)



Looking at Downstream Structure (4C)