

INDEX OF SHEETS

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3	SUMMARY OF QUANTITIES
3-A THRU 3-D	GUARDRAIL SUMMARY SHEETS
TCP-1 THRU TCP-7	TRAFFIC CONTROL PLANS

GENERAL NOTES

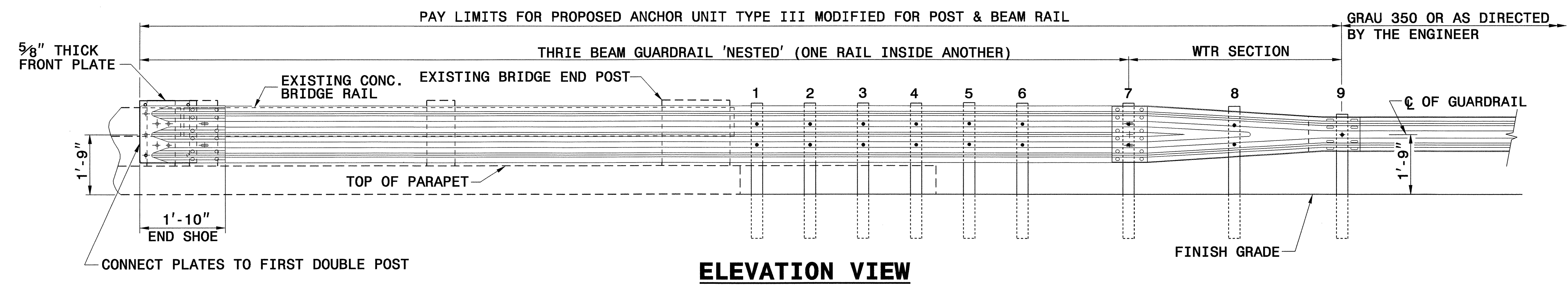
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

EFF. 07-18-06
REV. 01-02-07

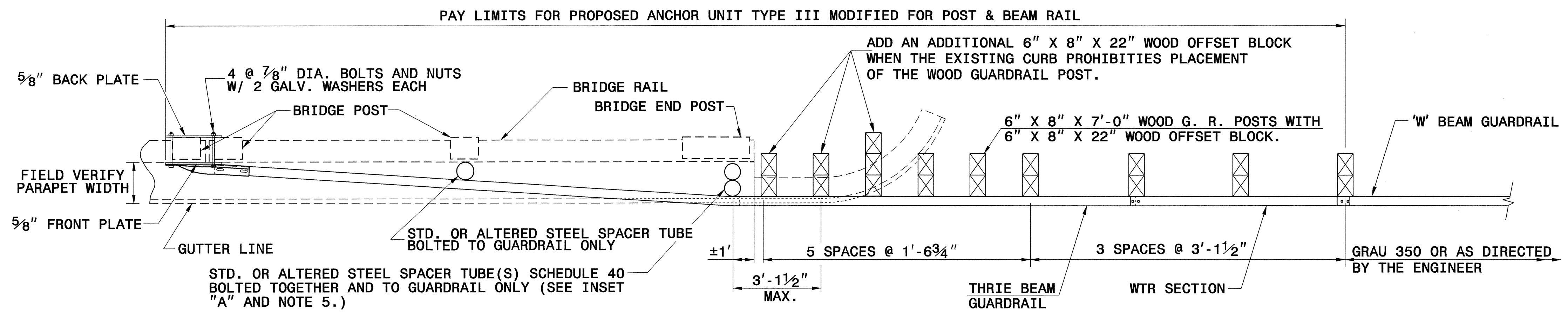
2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

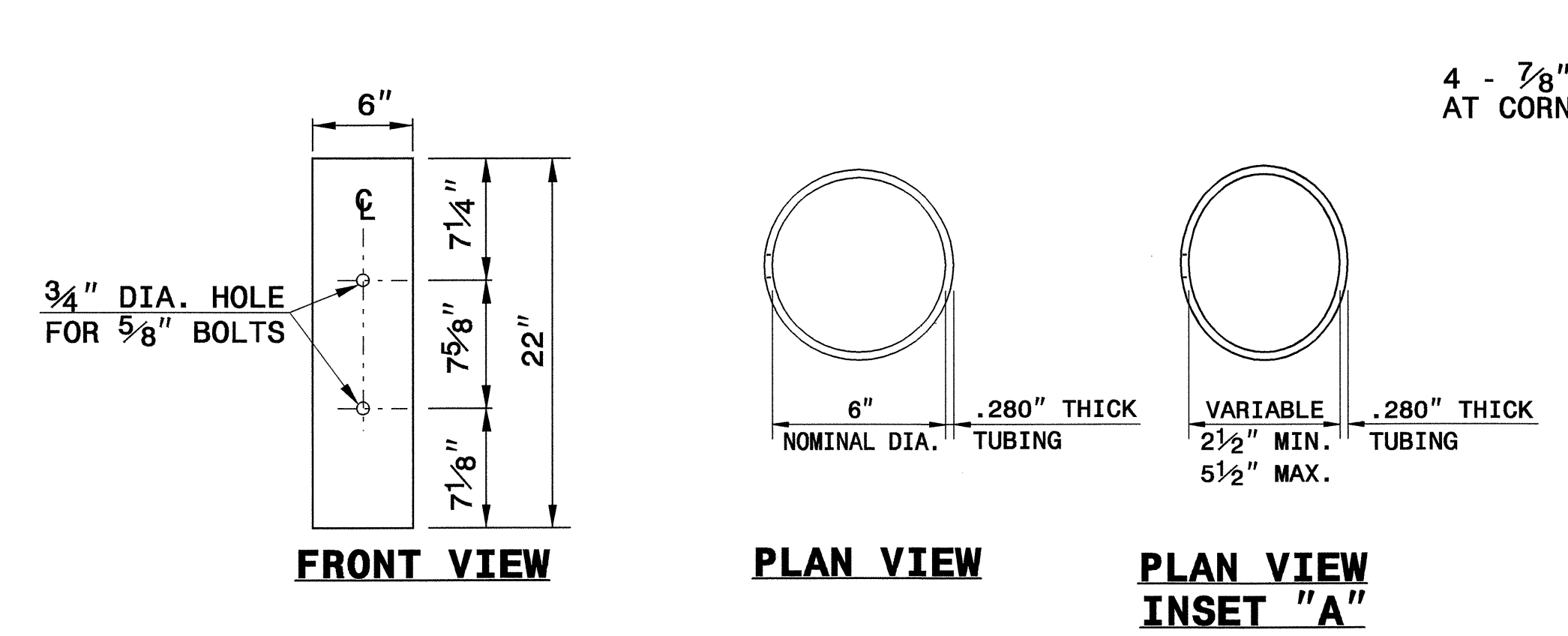
STD.NO.	TITLE
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units



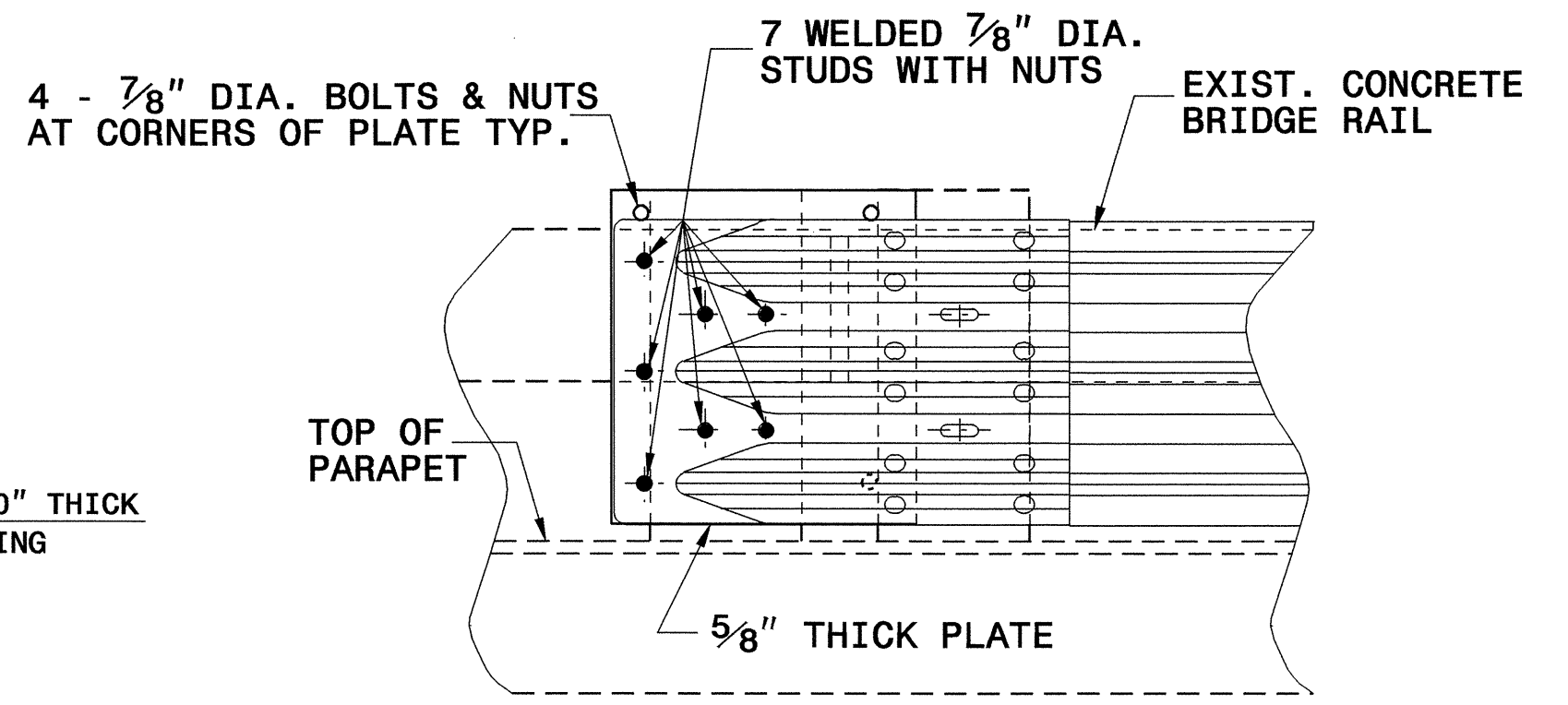
ELEVATION VIEW



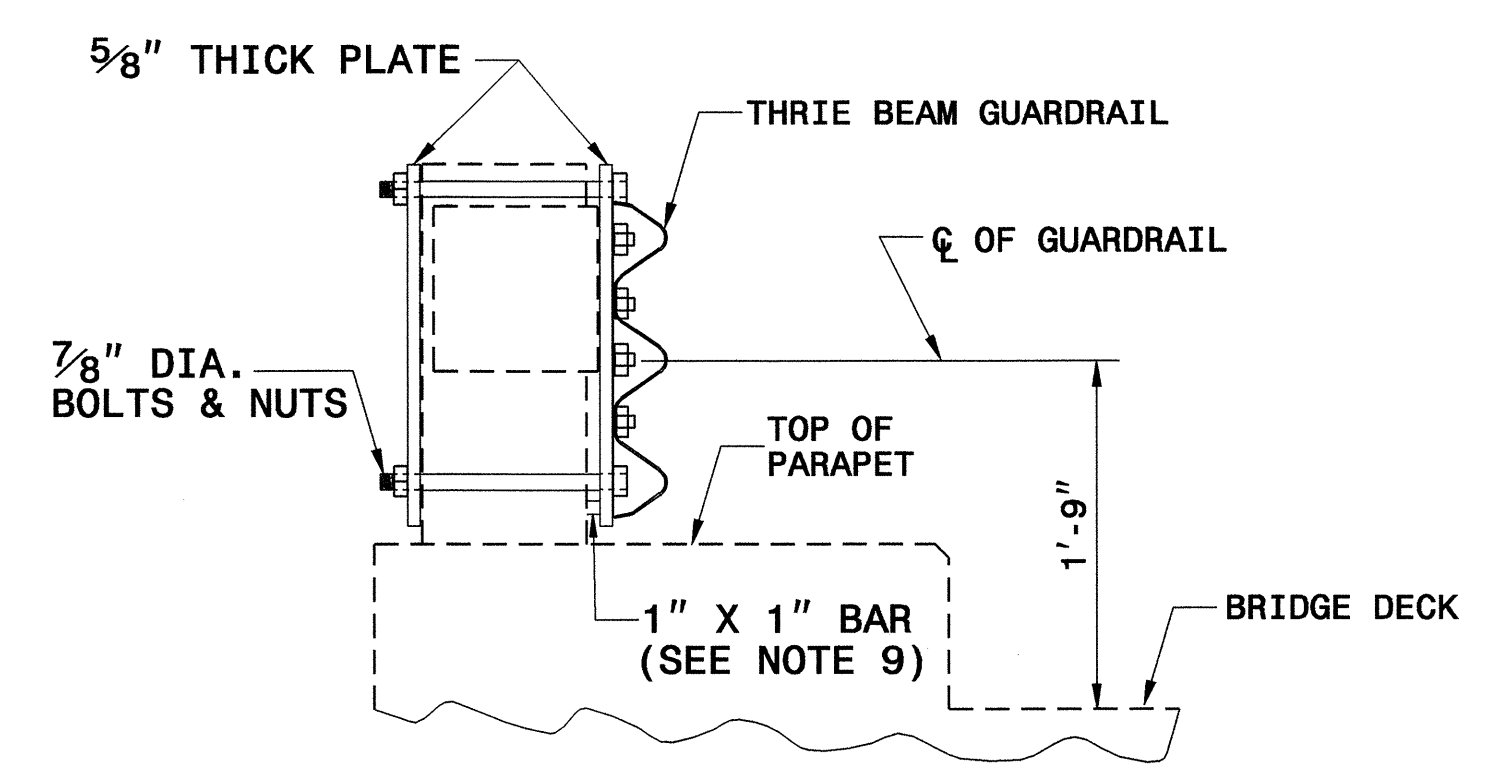
PLAN VIEW



STEEL SPACER TUBE

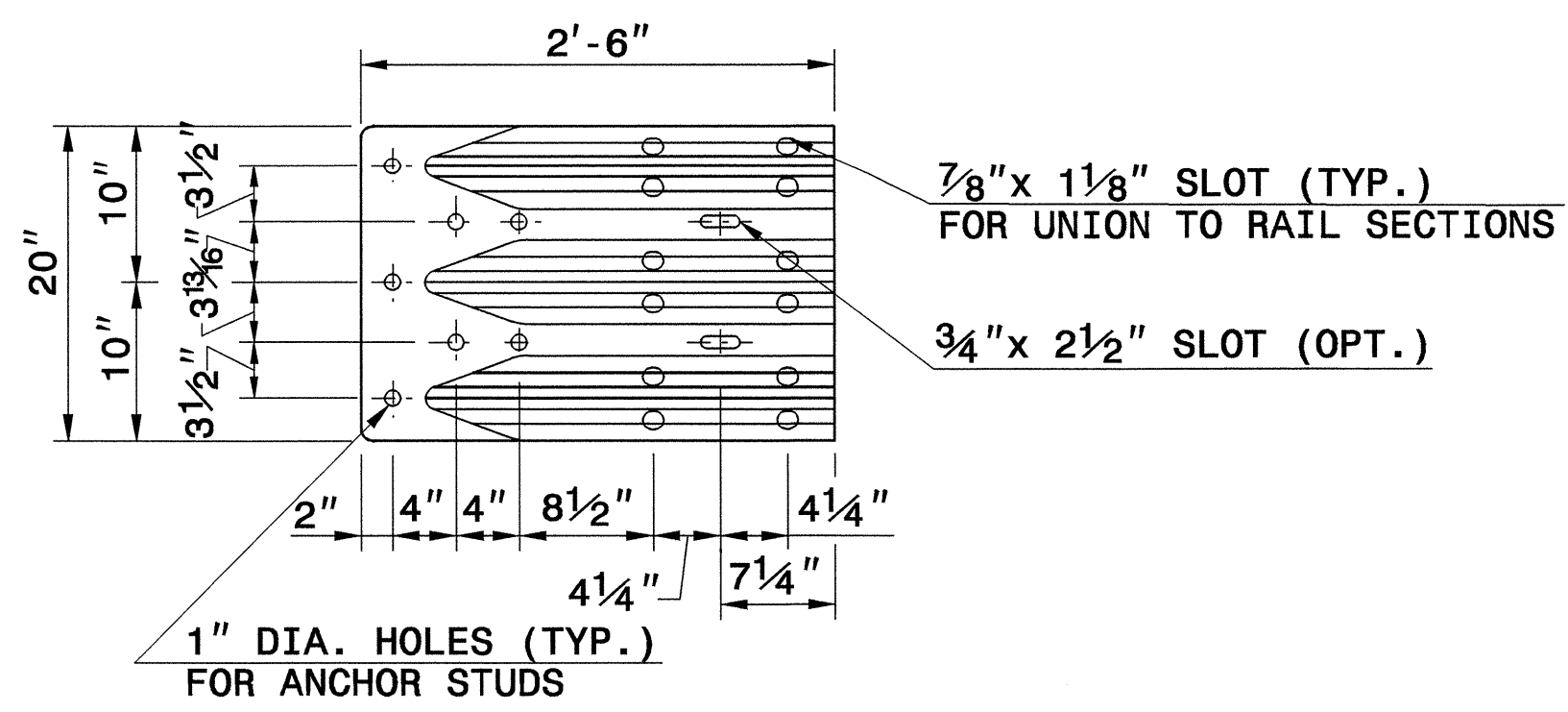


ELEVATION VIEW



SECTION VIEW

GUARDRAIL ATTACHMENT TO BRIDGE POST



END SHOE

- GENERAL NOTES:**
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
 2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
 3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
 4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
 5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
 6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
 7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
 8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
 9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
 10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
 11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 12. SEE ROADWAY STARDARD DRAWING 862.03 SHEET 4 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT

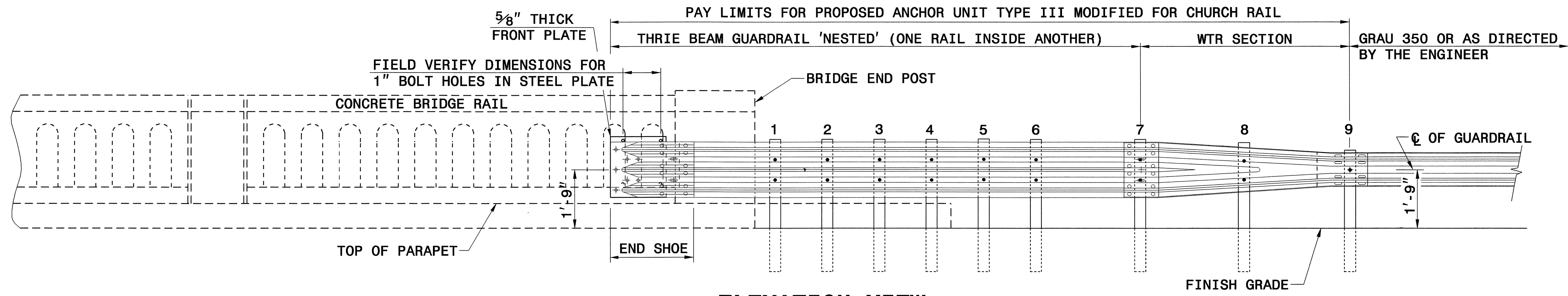
USE WITH DETAIL NO. :
2, 3, 5, 6, 7, 19 & 38



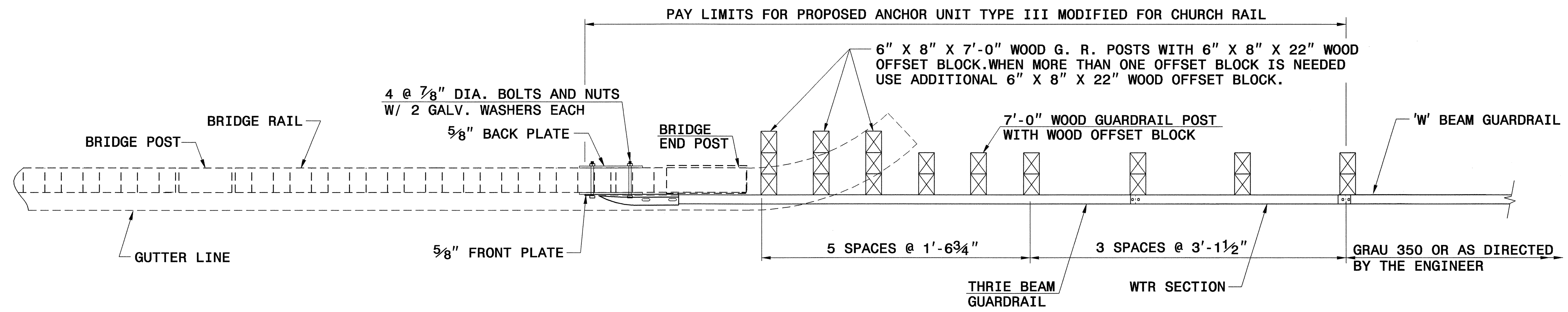
**PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN**
Office 919-250-4128 FAX 919-250-4119

**GUARDRAIL ANCHOR UNIT
TYPE III-A MODIFIED**

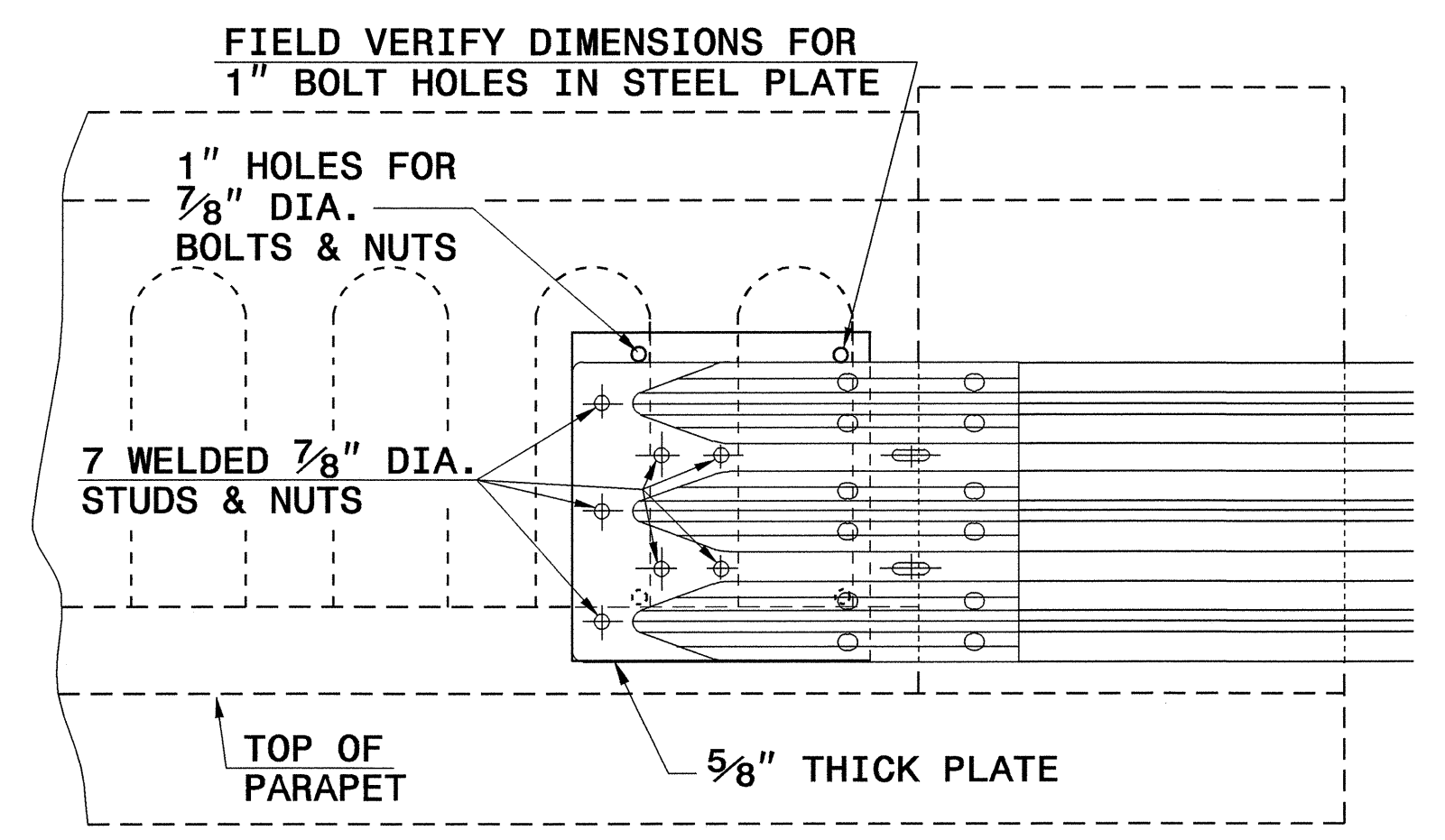
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 MODIFIED BY: E.E. WARD DATE: 02-04
 CHECKED BY: *[Signature]* DATE: 5/5/08
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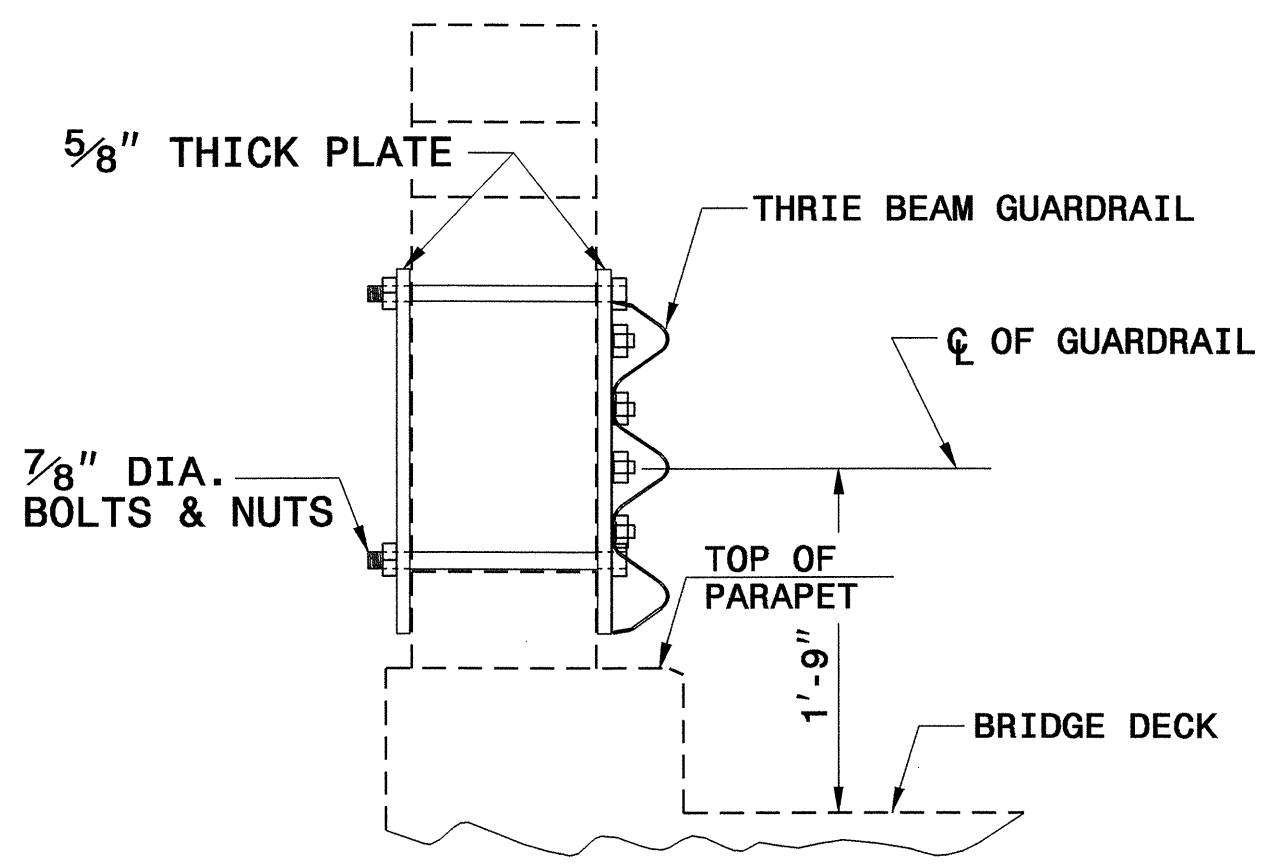
ELEVATION VIEW



PLAN VIEW



ELEVATION VIEW

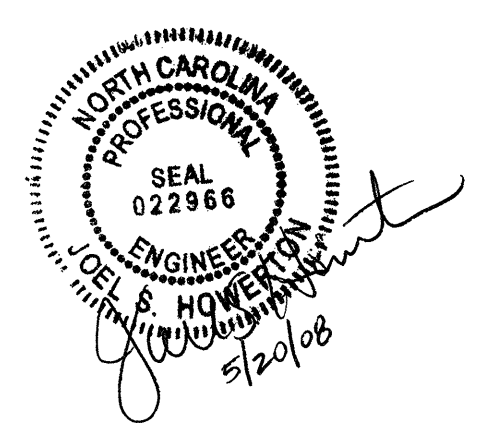


SECTION VIEW

- GENERAL NOTES:**
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 6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
 7. ATTACH THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
 8. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
 9. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 10. SEE ROADWAY STANDARD DRAWING 862.03 SHEET 4 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT.

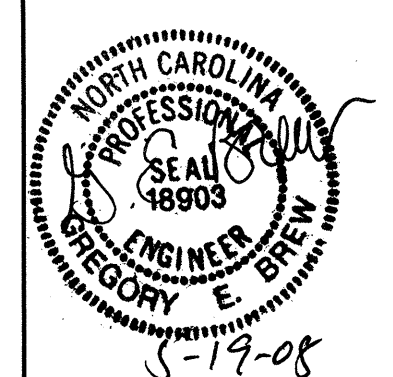
USE WITH DETAIL NO.:
4

**GUARDRAIL ATTACHMENT
TO BRIDGE POST**

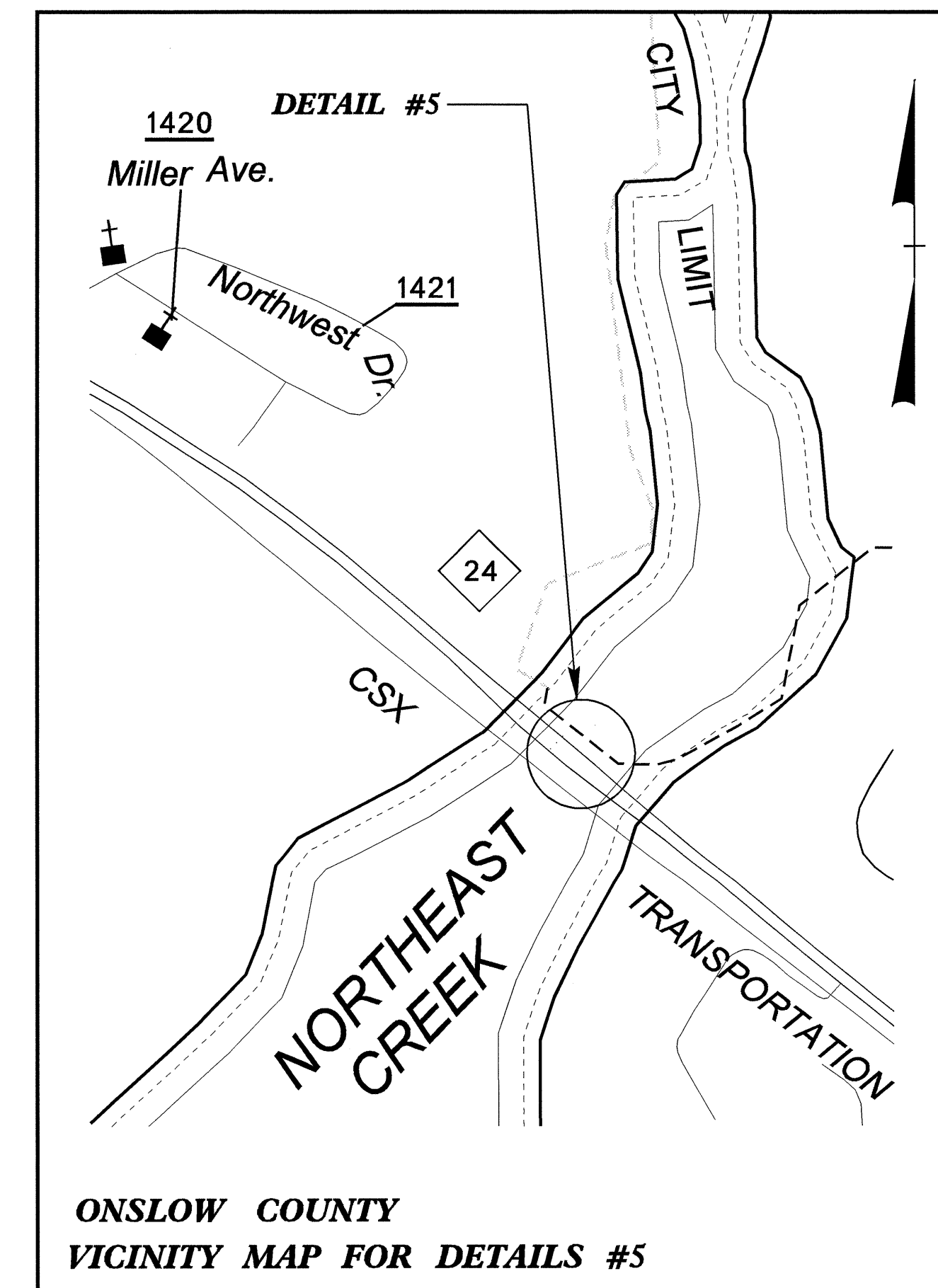
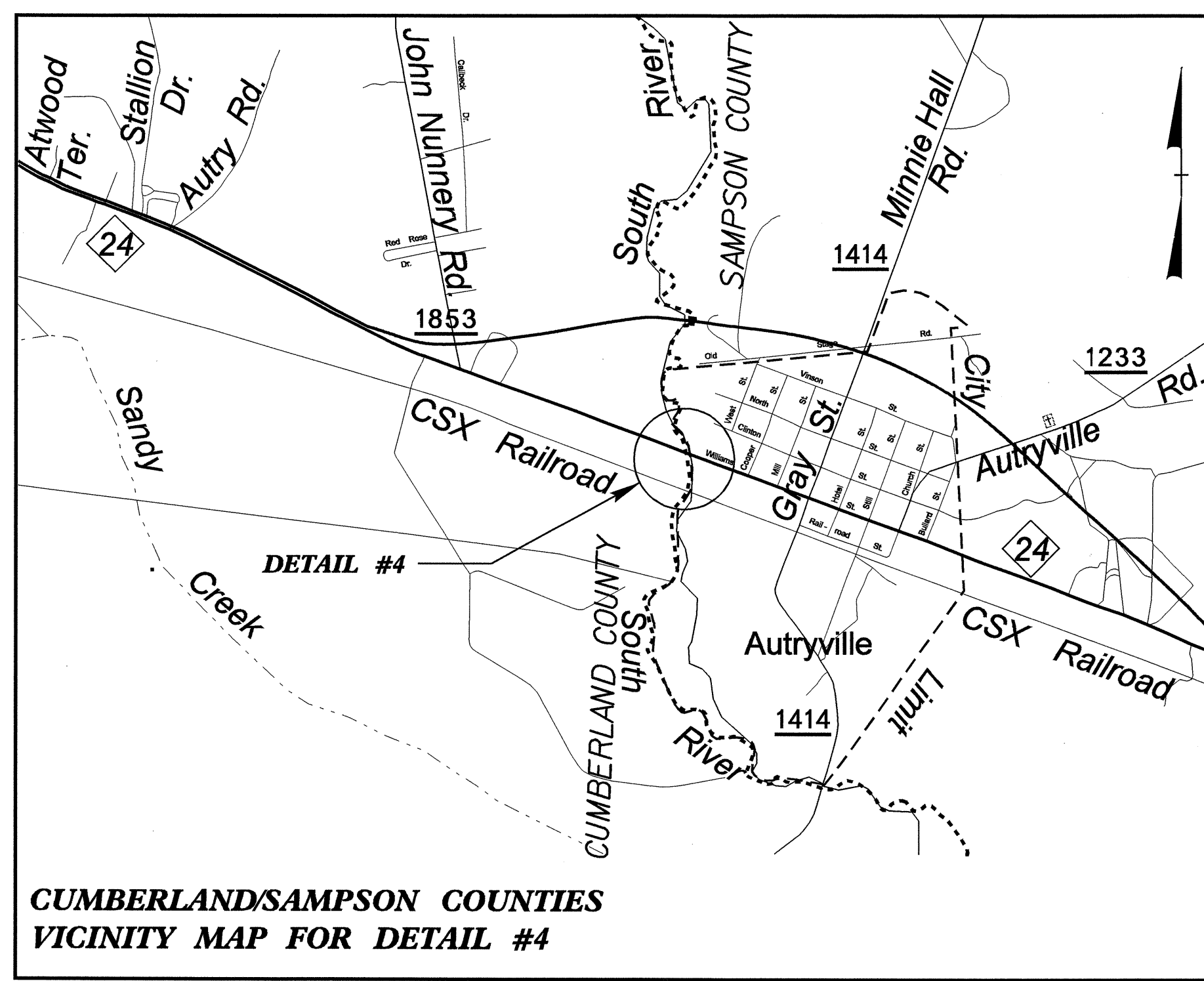
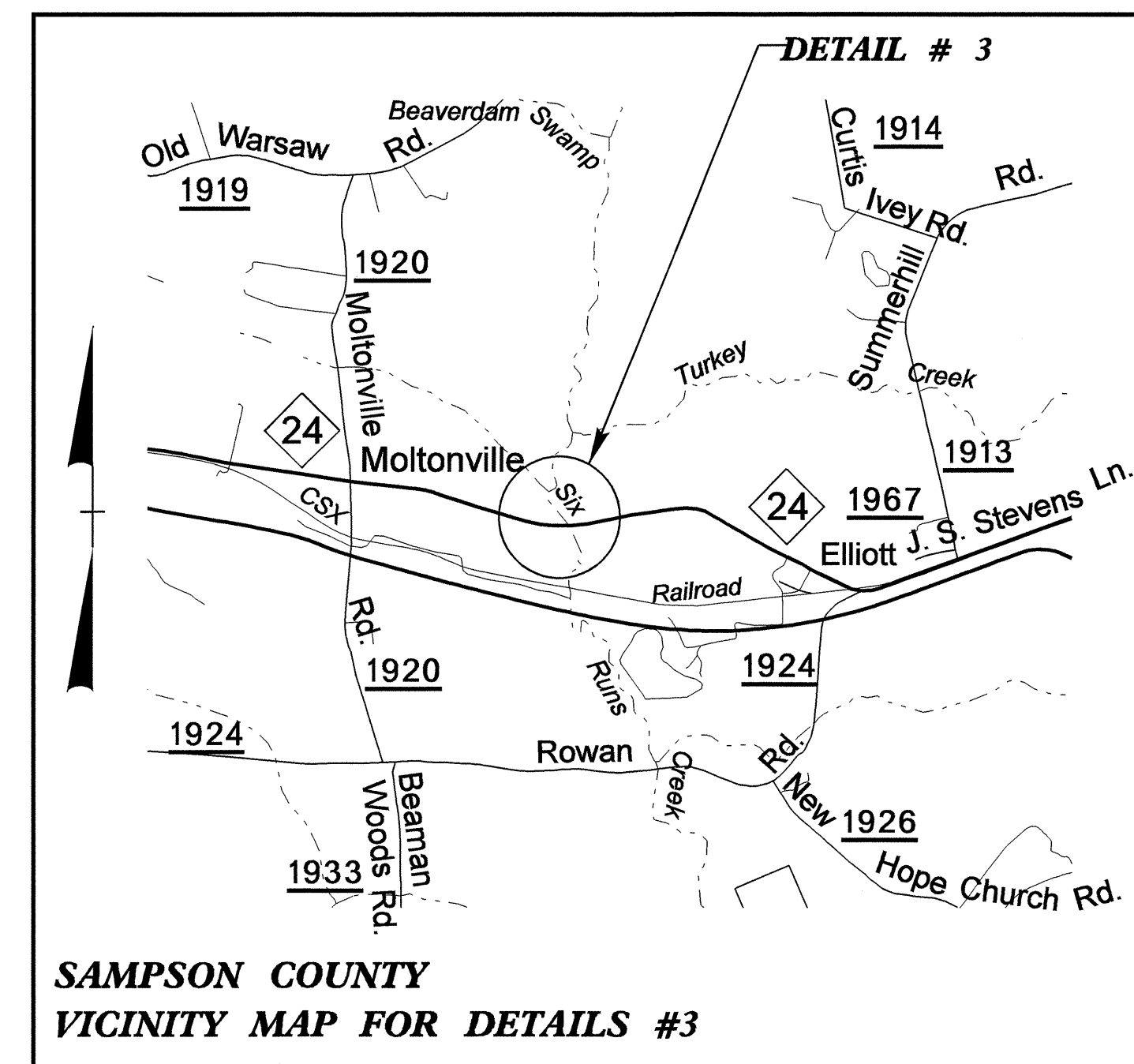
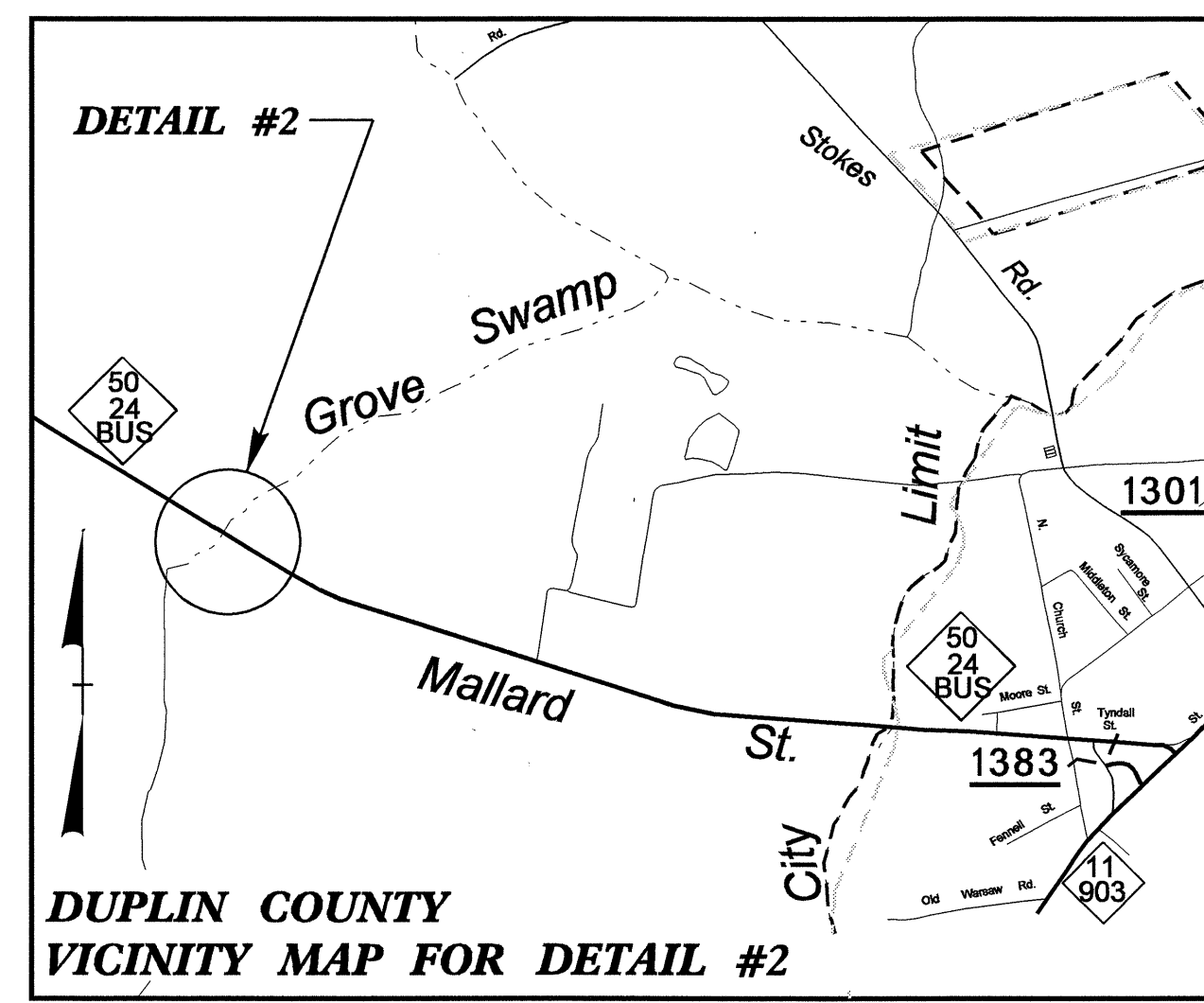
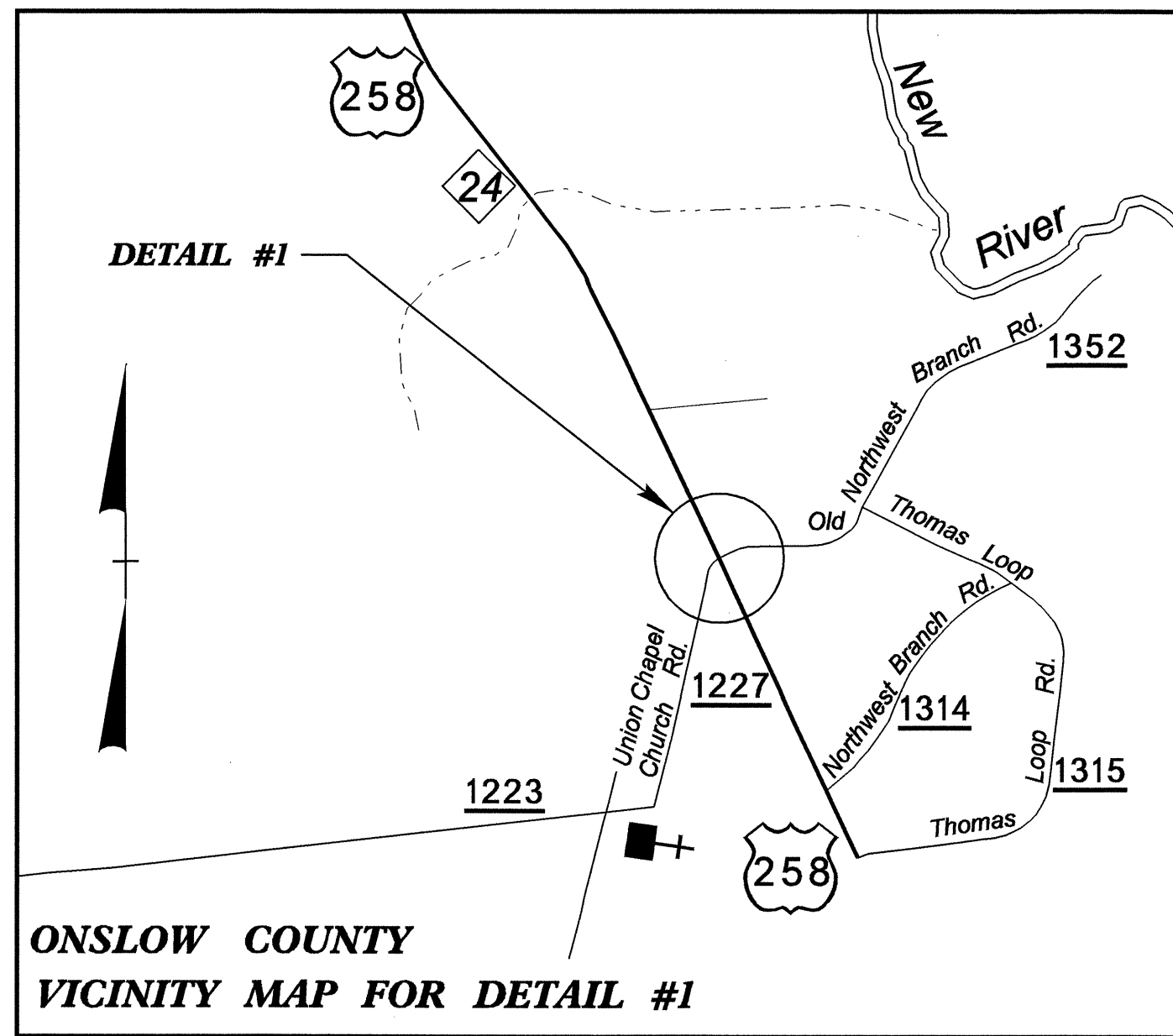


PROJECT SERVICES UNIT STANDARDS AND SPECIAL DESIGN Office 919-250-4128 FAX 919-250-4119	
GUARDRAIL ANCHOR UNIT TYPE III-C MODIFIED	
ORIGINAL BY: E.E. WARD	DATE: 10-02
MODIFIED BY: E.E. WARD	DATE: 02-04
CHECKED BY: <i>[Signature]</i>	DATE: 5/5/08
FILE SPEC.: \usr\details\stand\bp111.dgn	

SYSTEMS
DESIGN
INCORPORATED



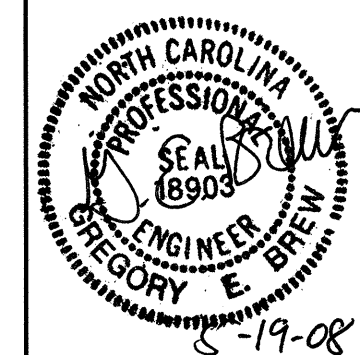
GUARDRAIL PLACEMENT VICINITY MAPS



REVISIONS

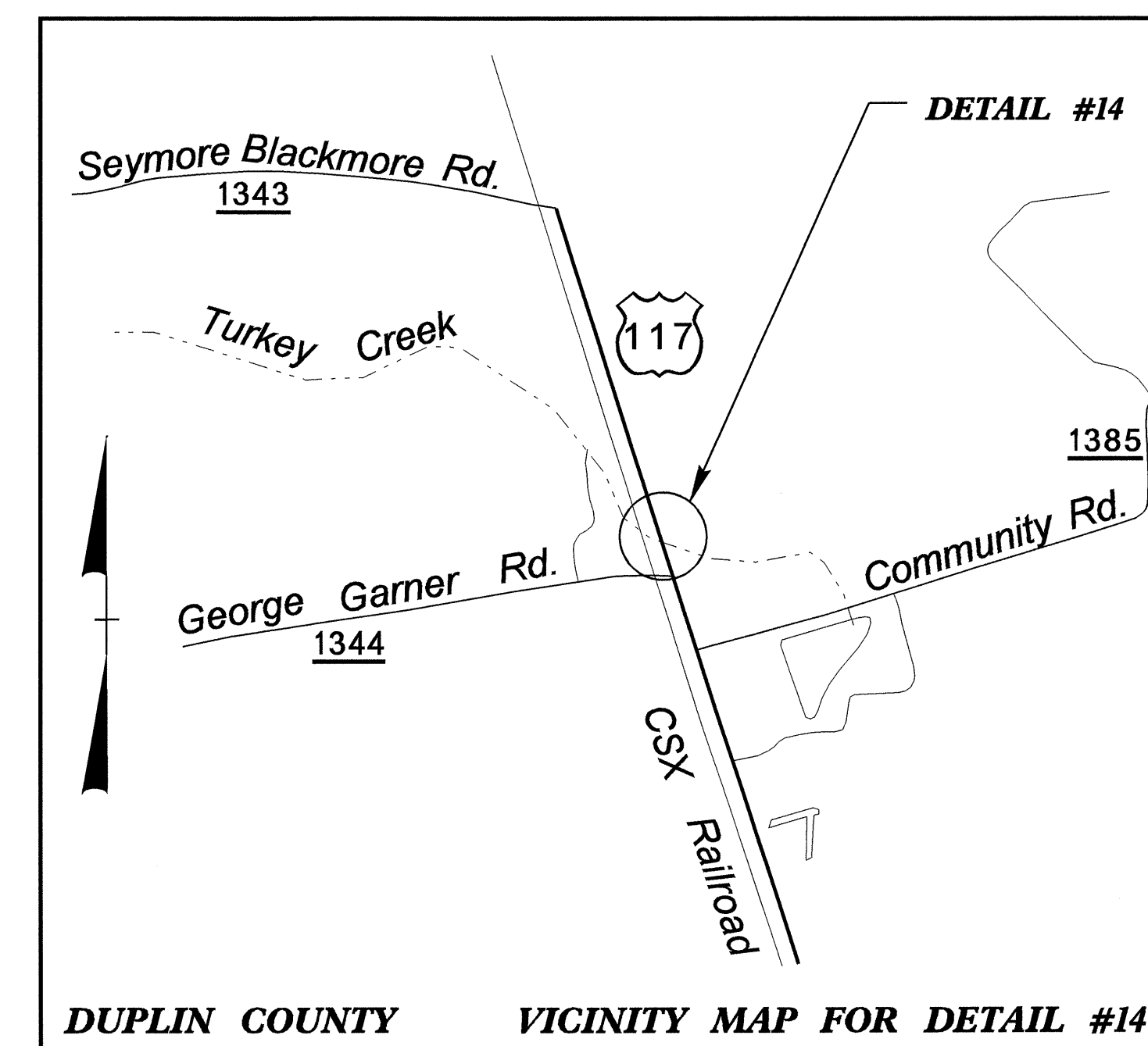
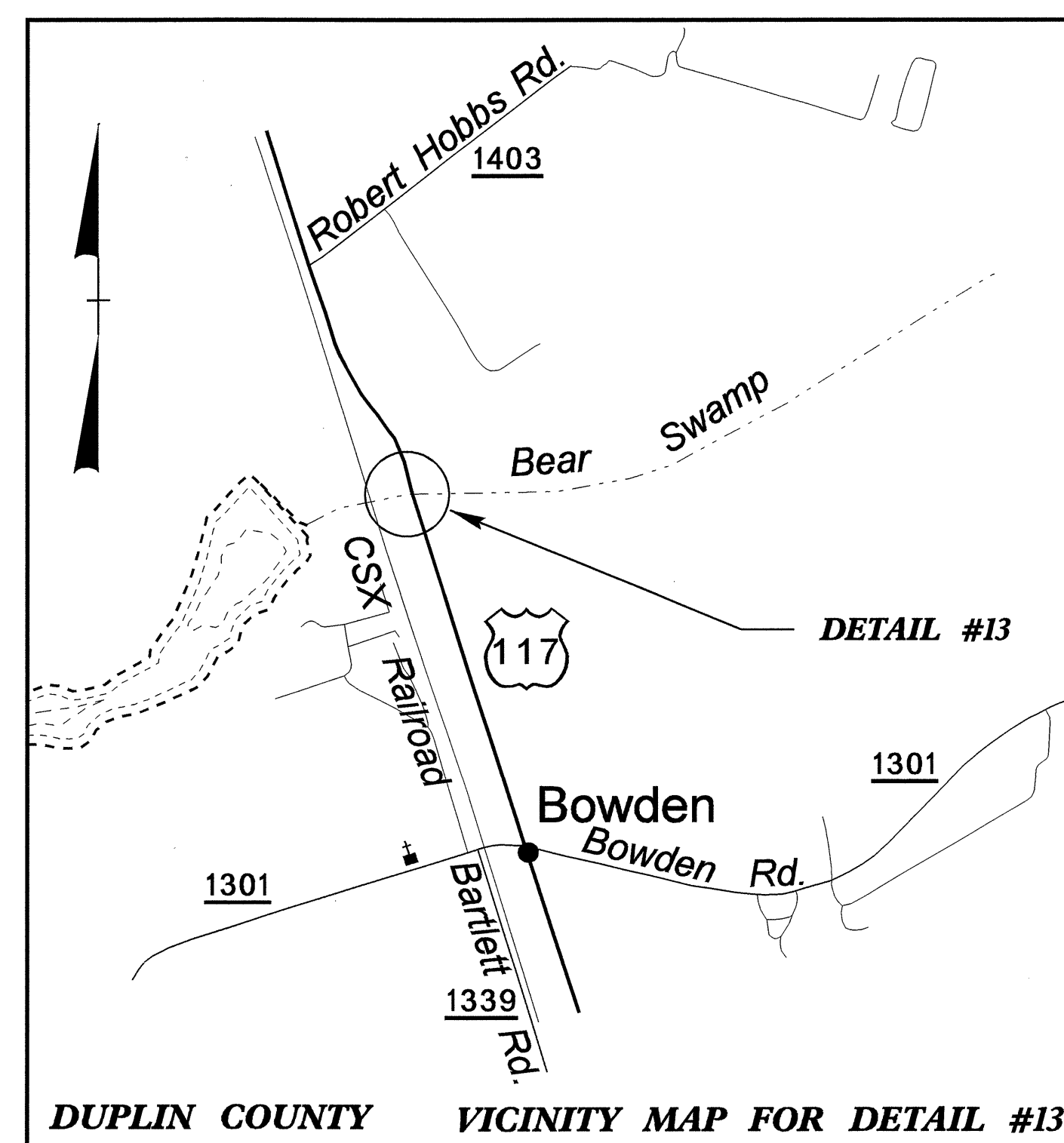
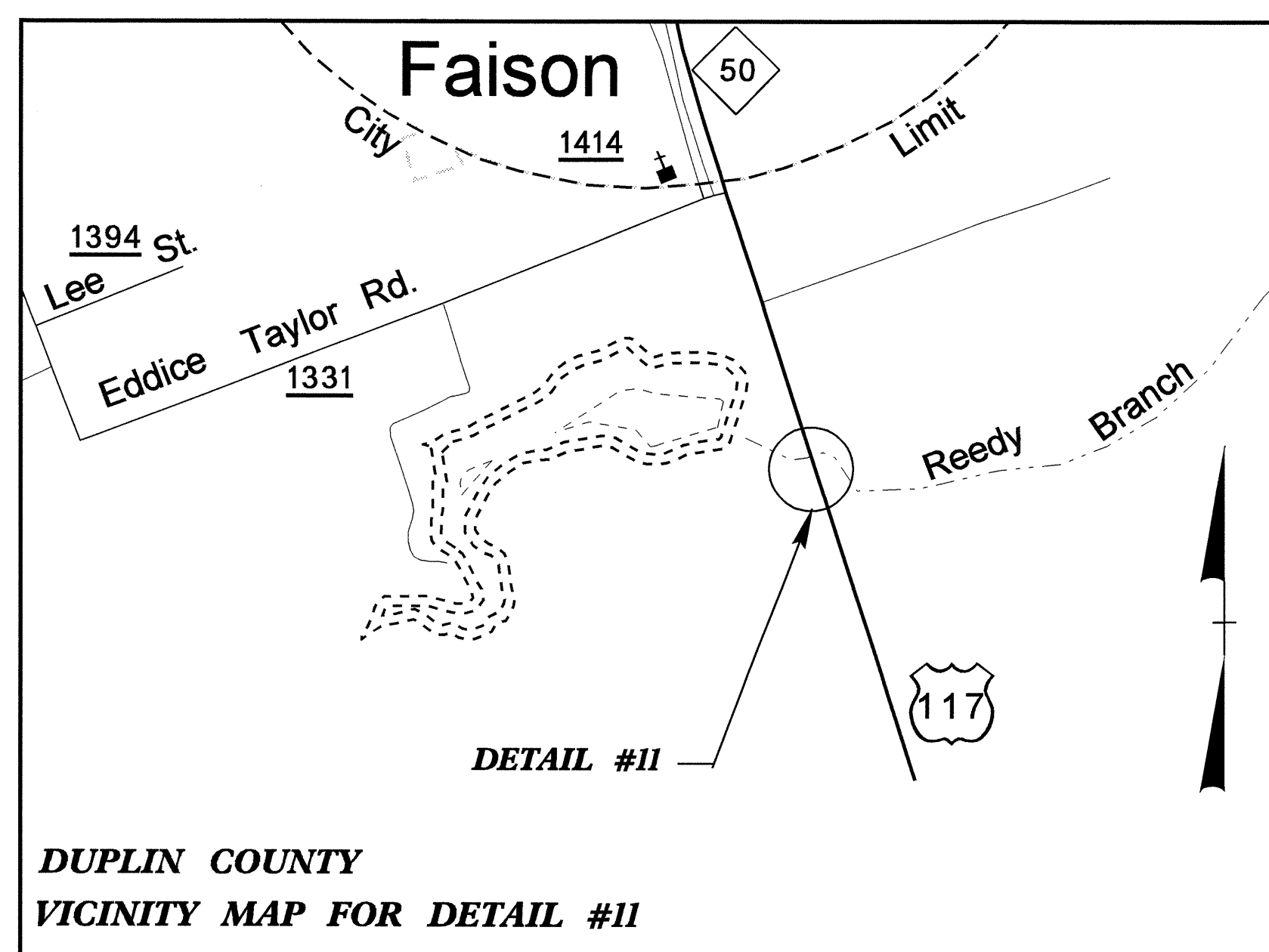
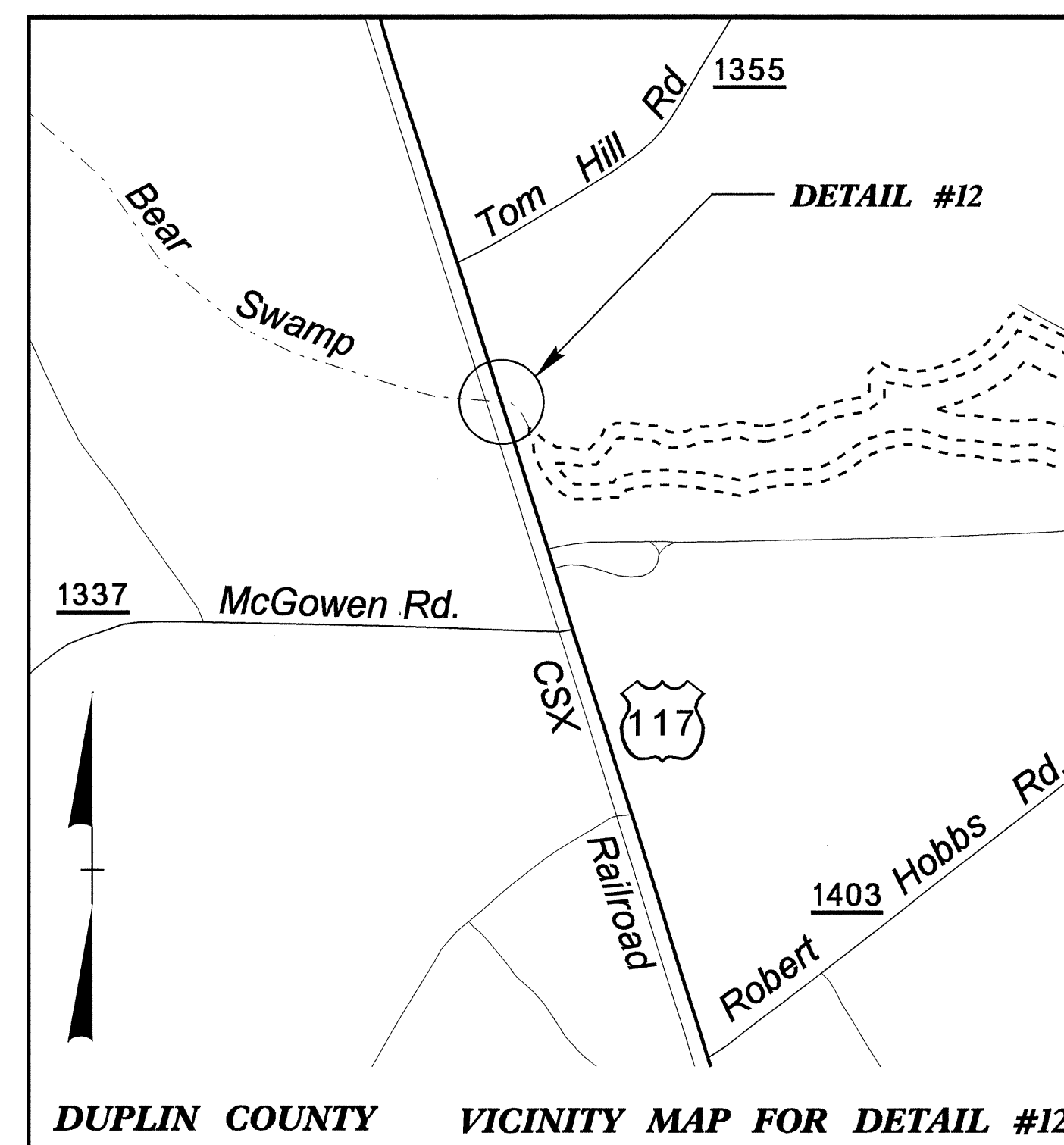
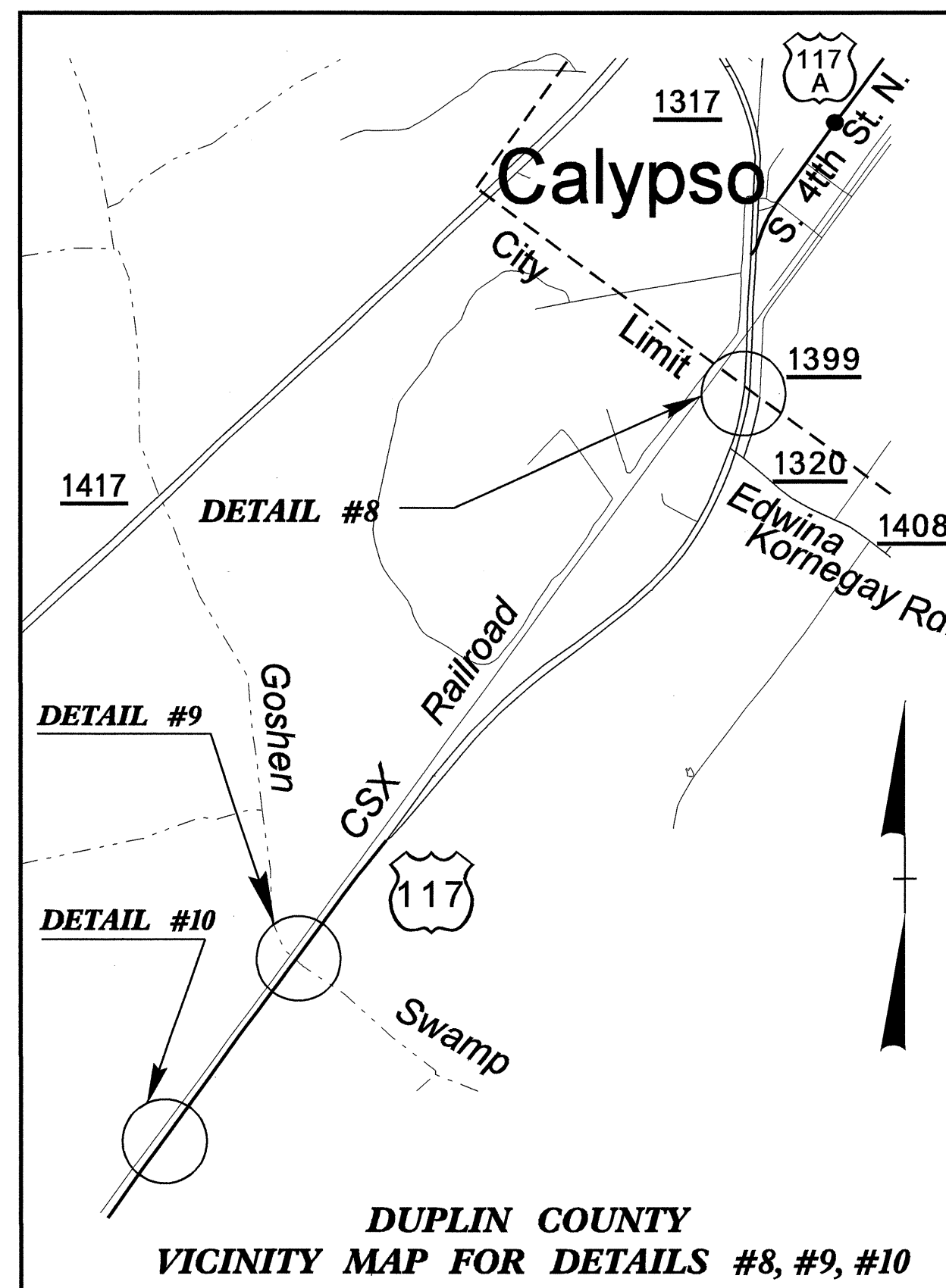
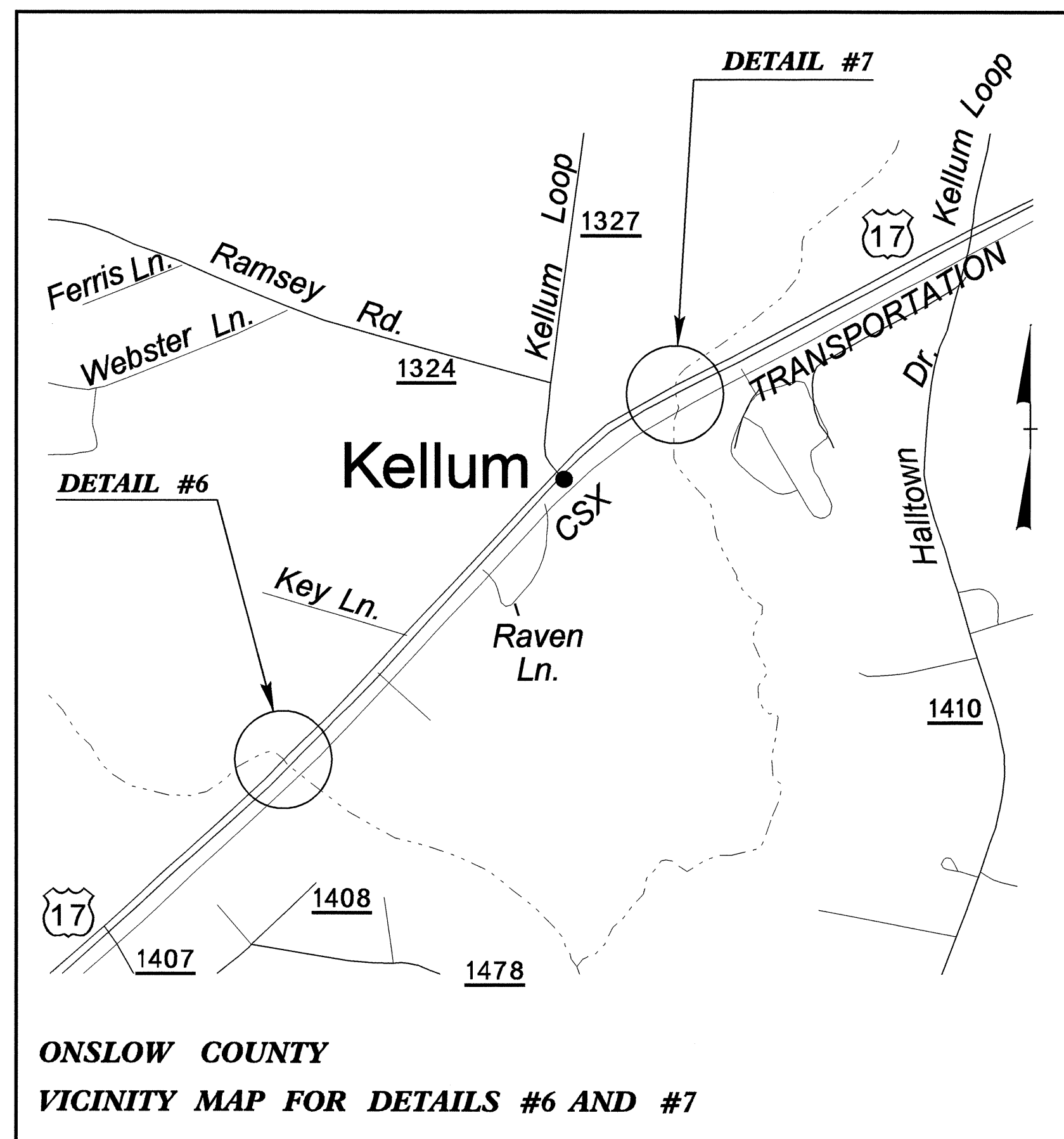
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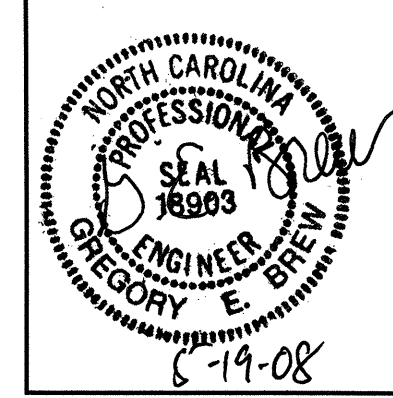


GUARDRAIL PLACEMENT VICINITY MAPS

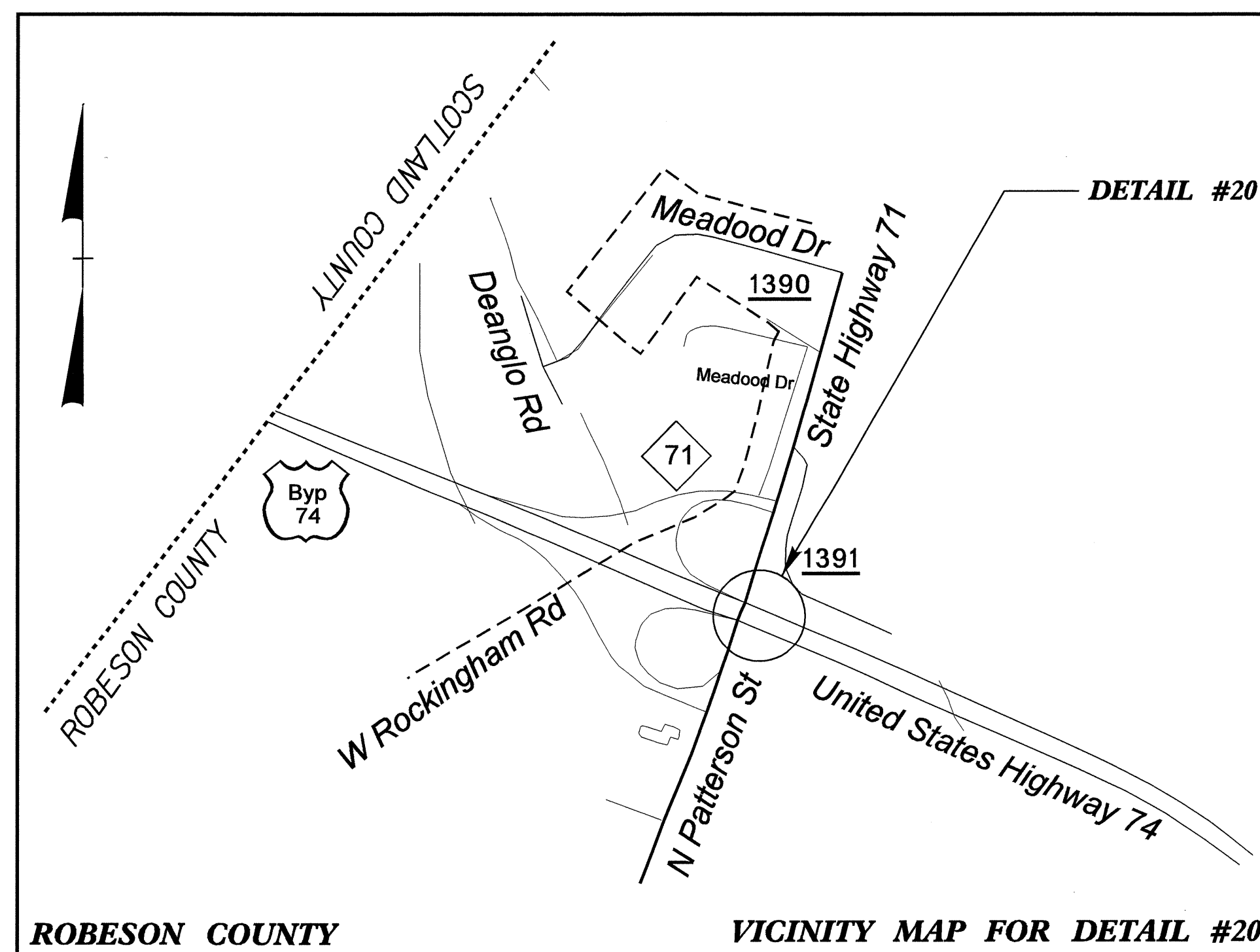
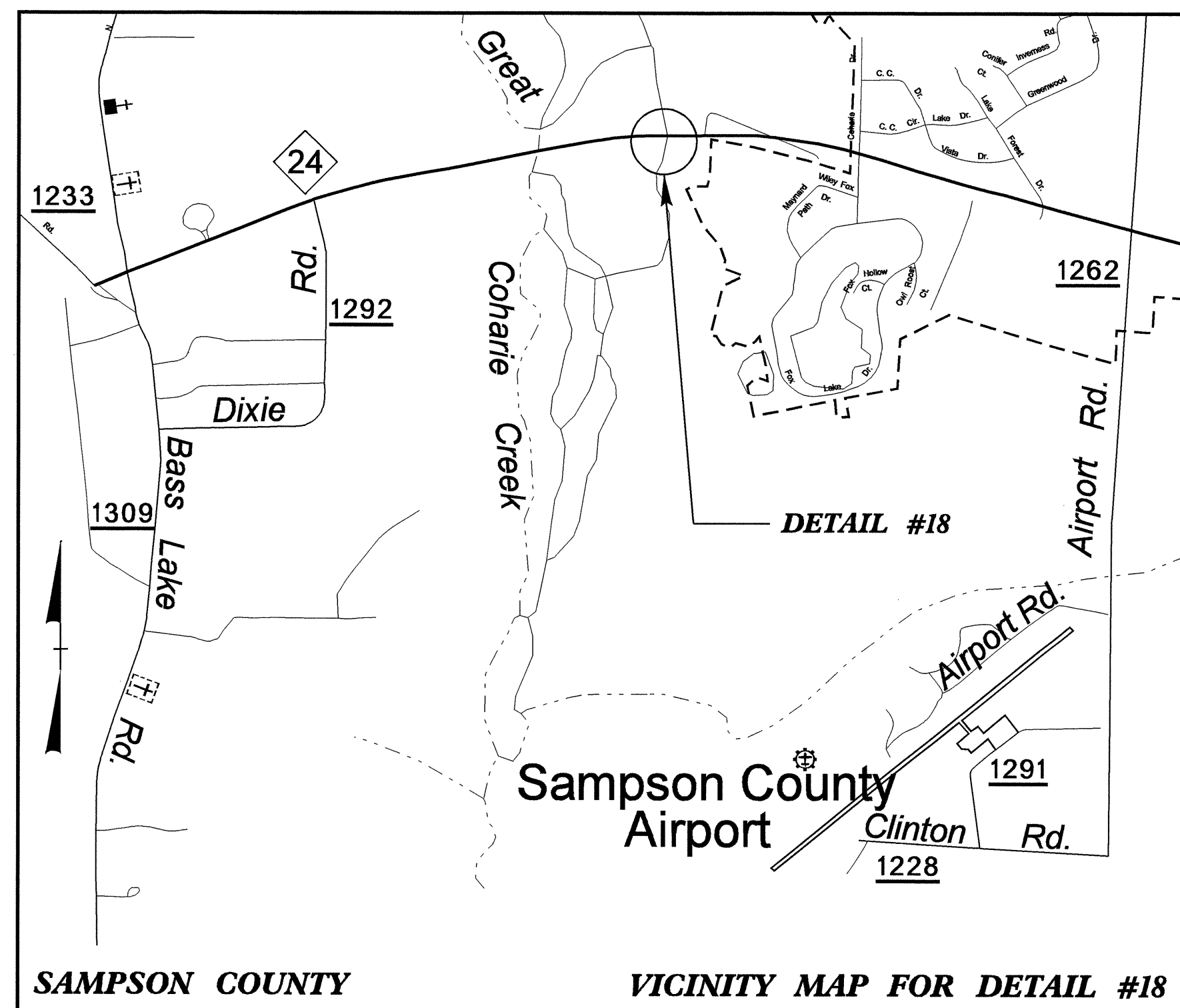
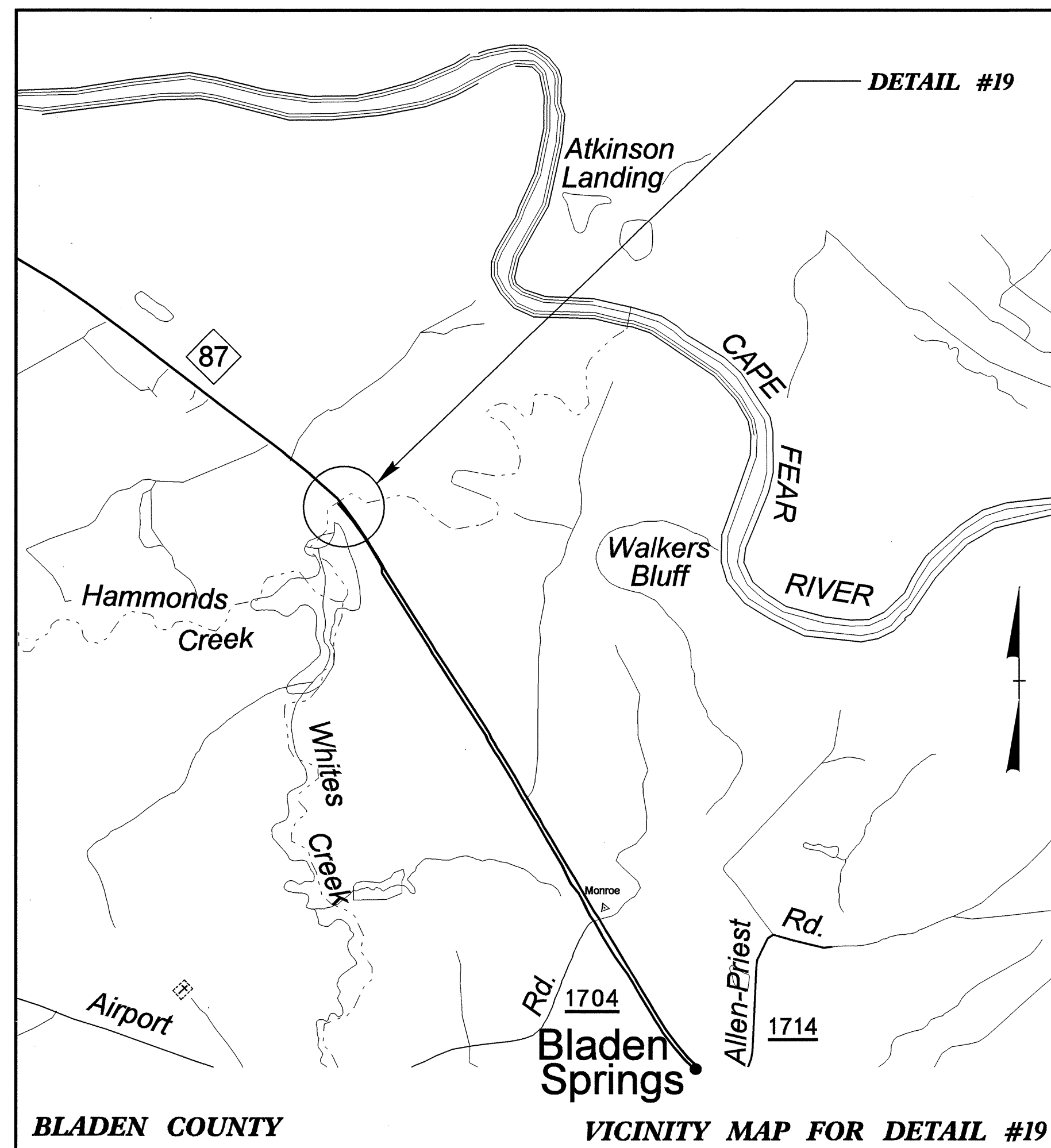
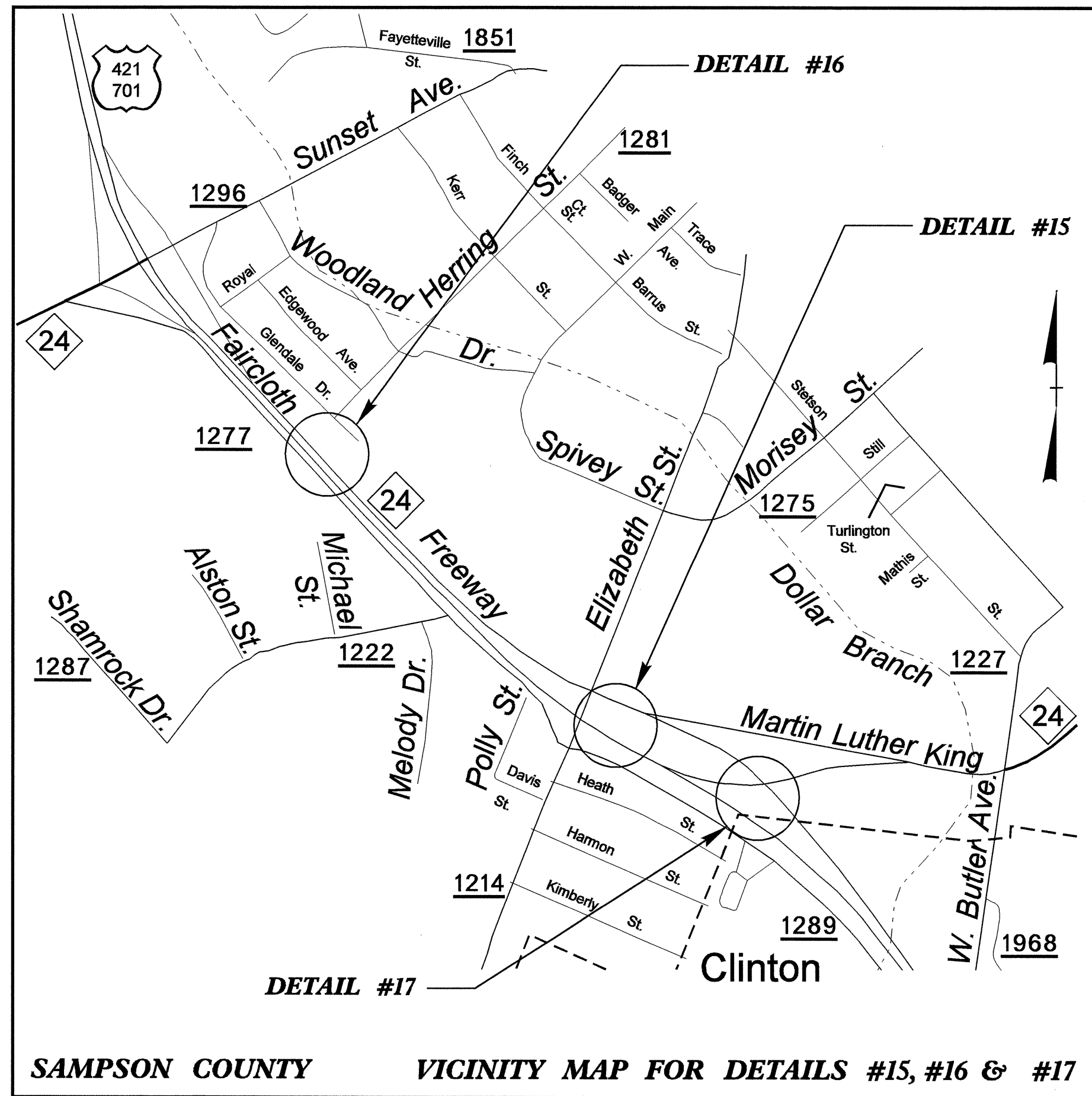
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GREGORY E. BREW



GUARDRAIL PLACEMENT VICINITY MAPS

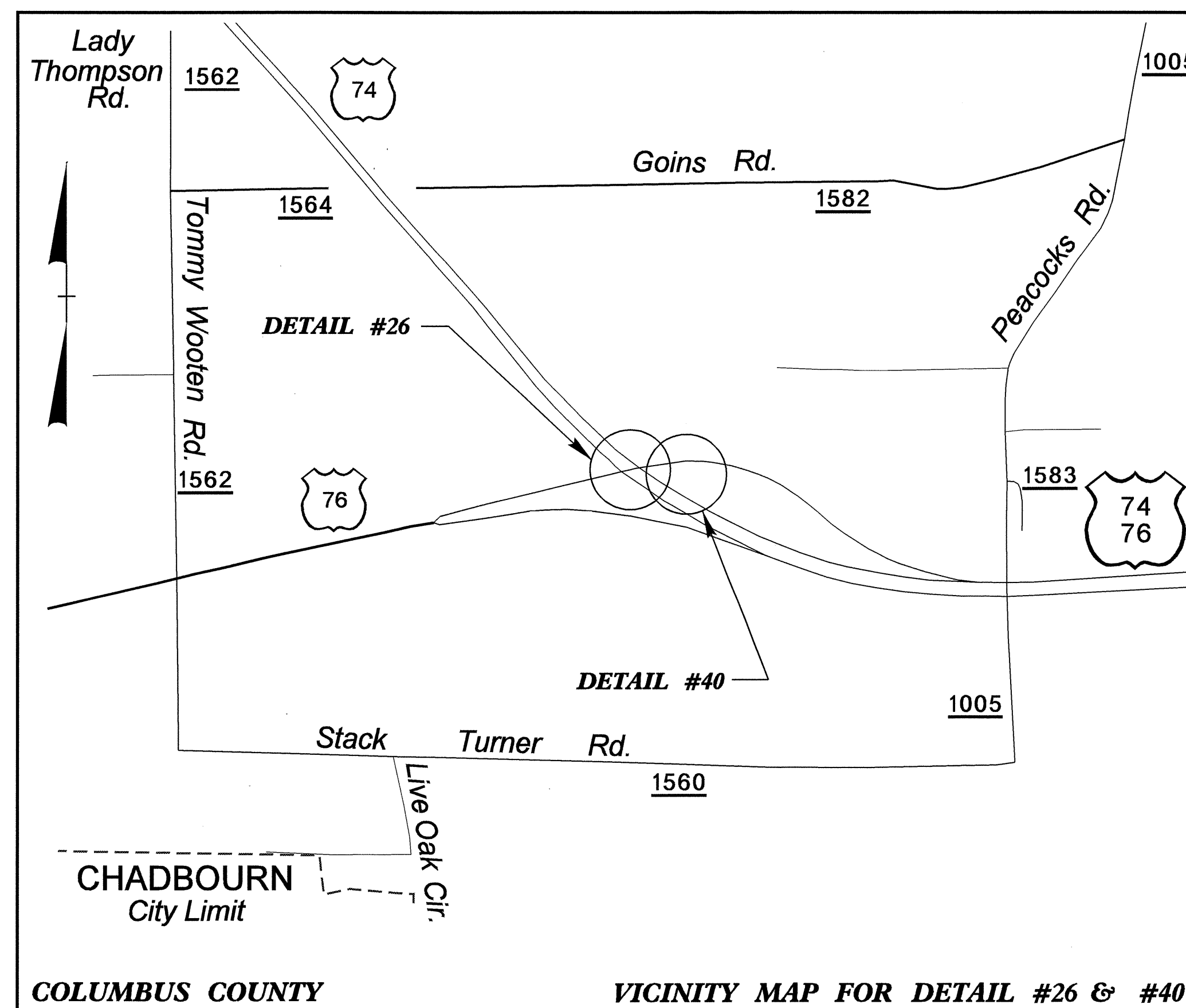
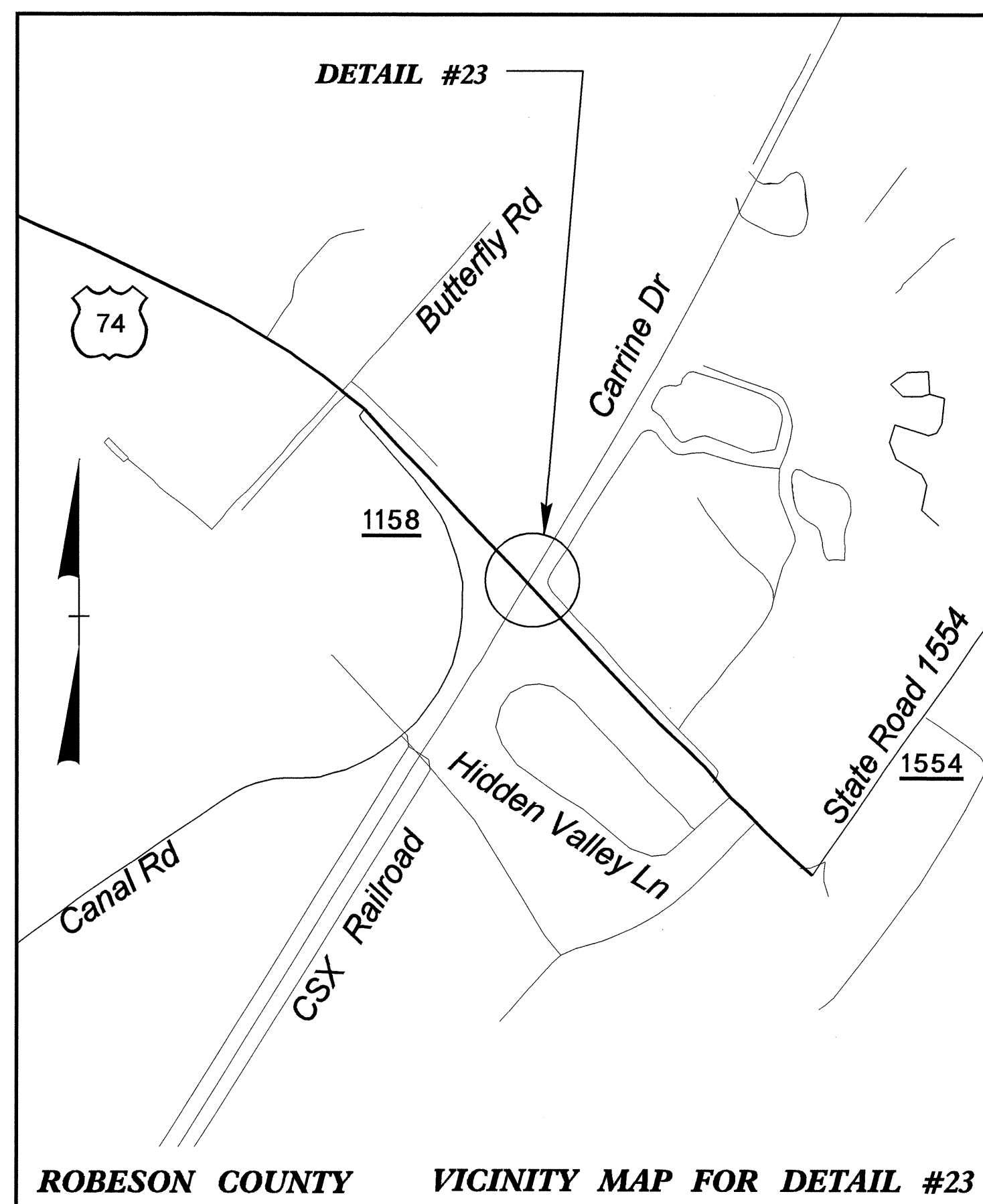
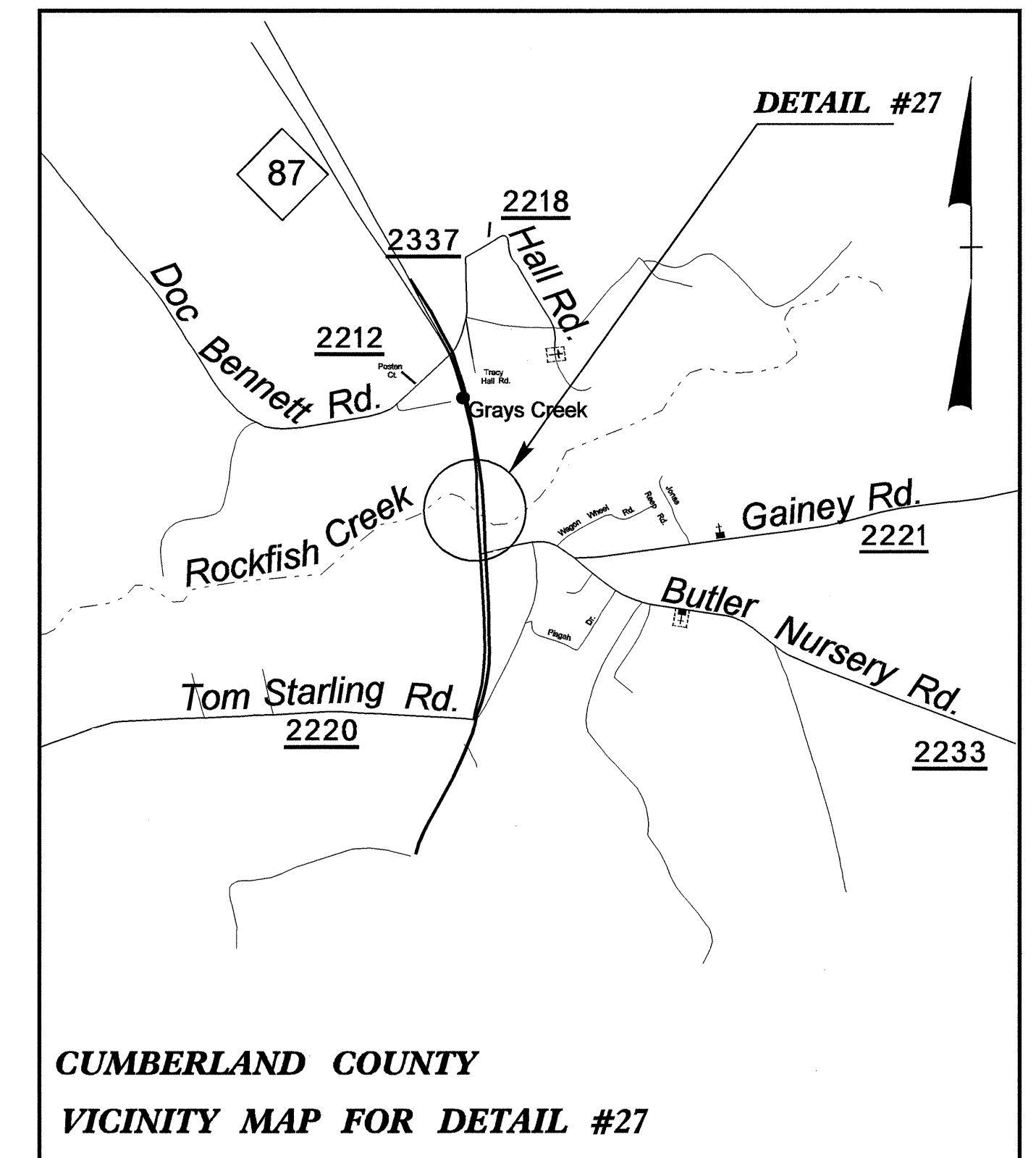
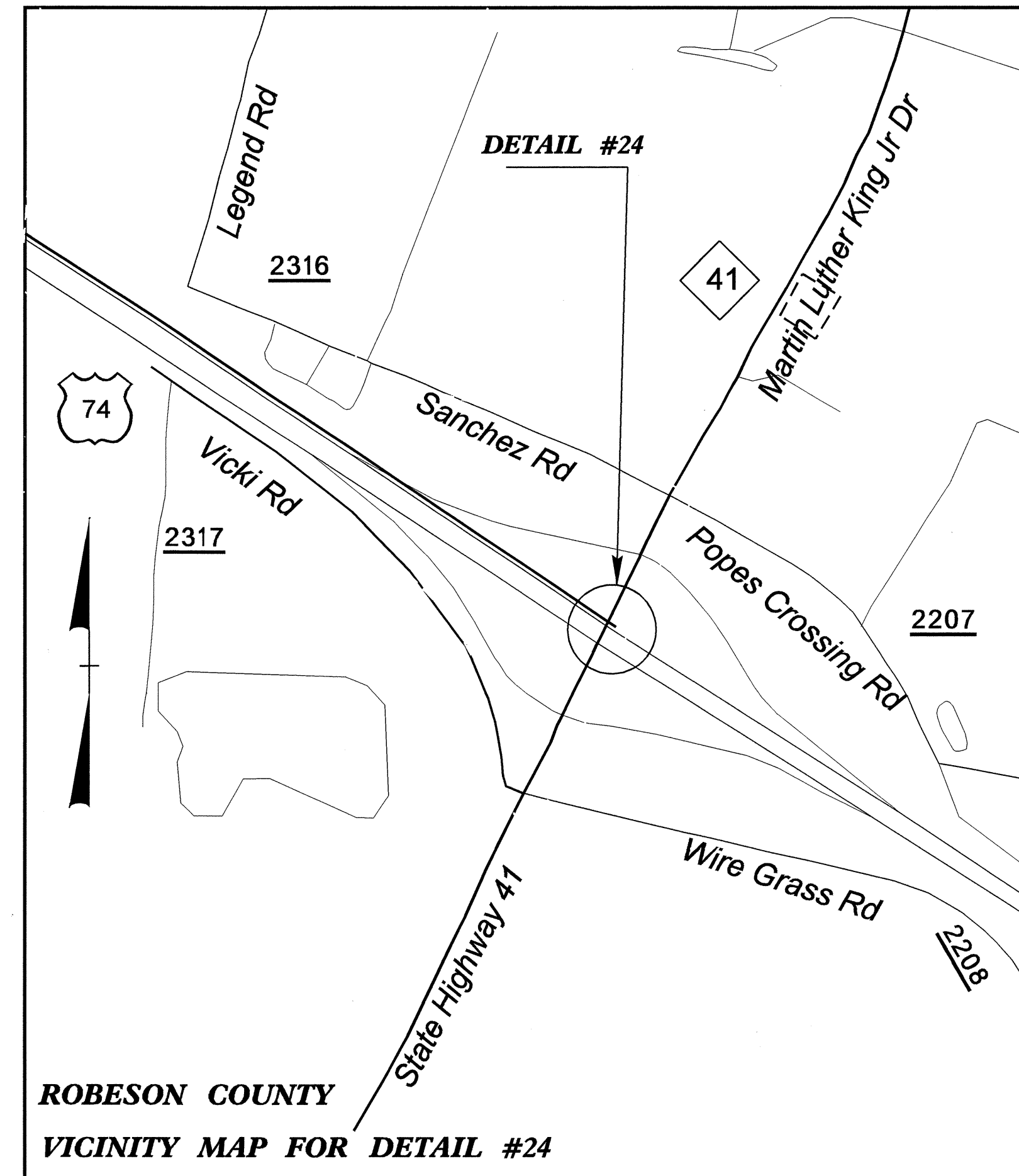
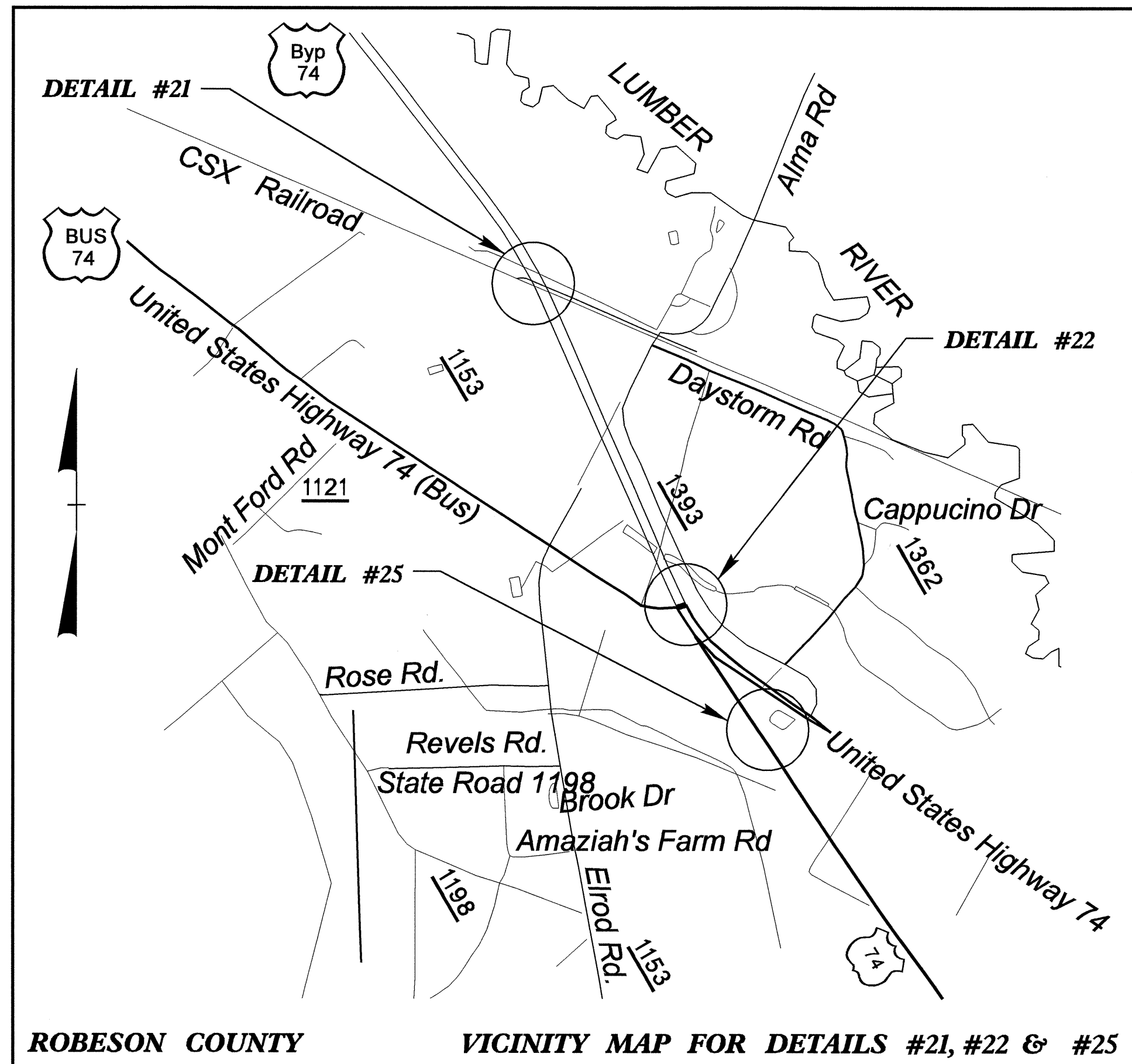
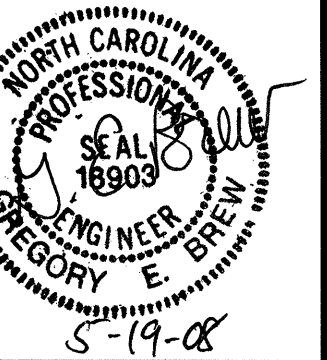


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GUARDRAIL PLACEMENT VICINITY MAPS

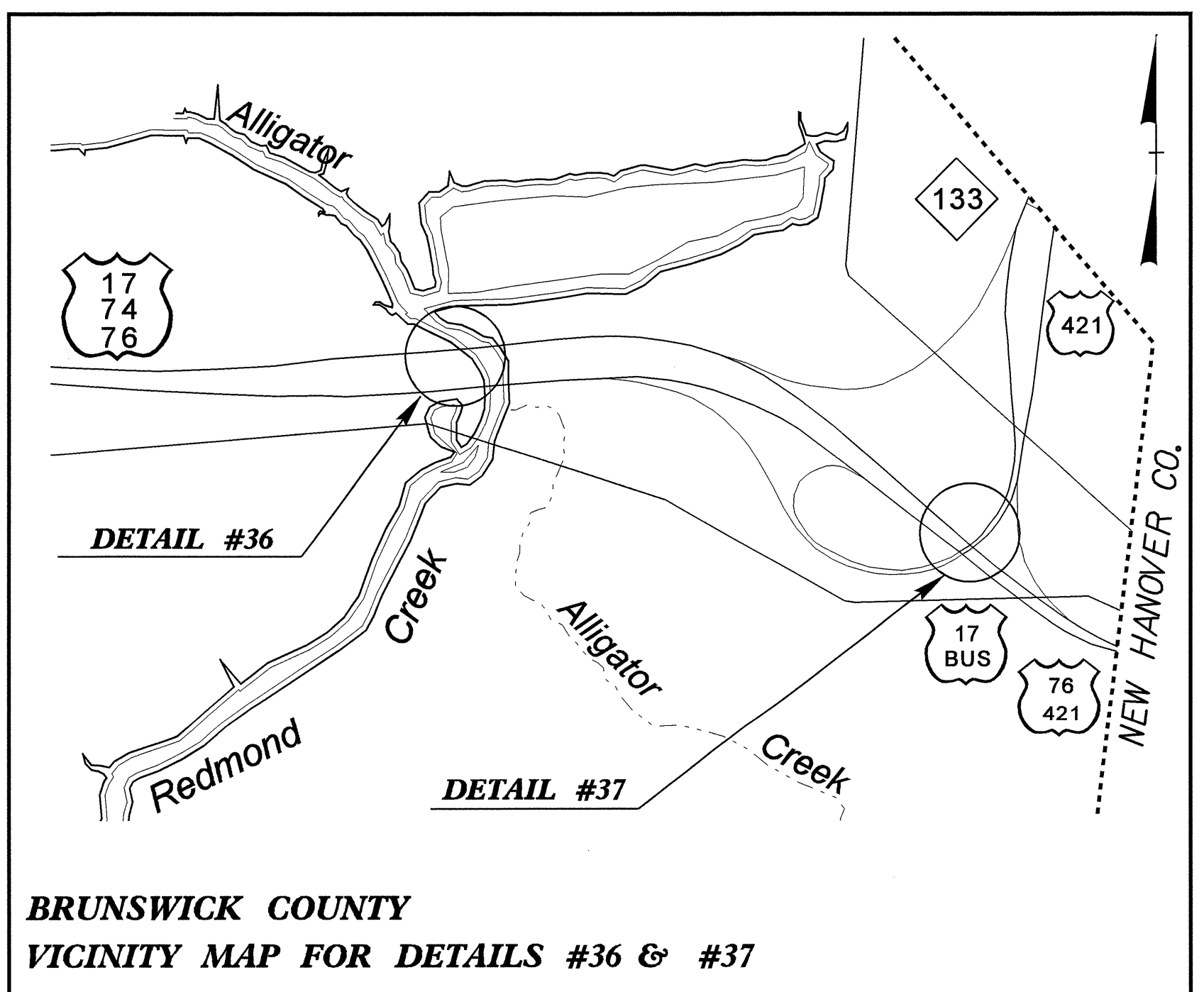
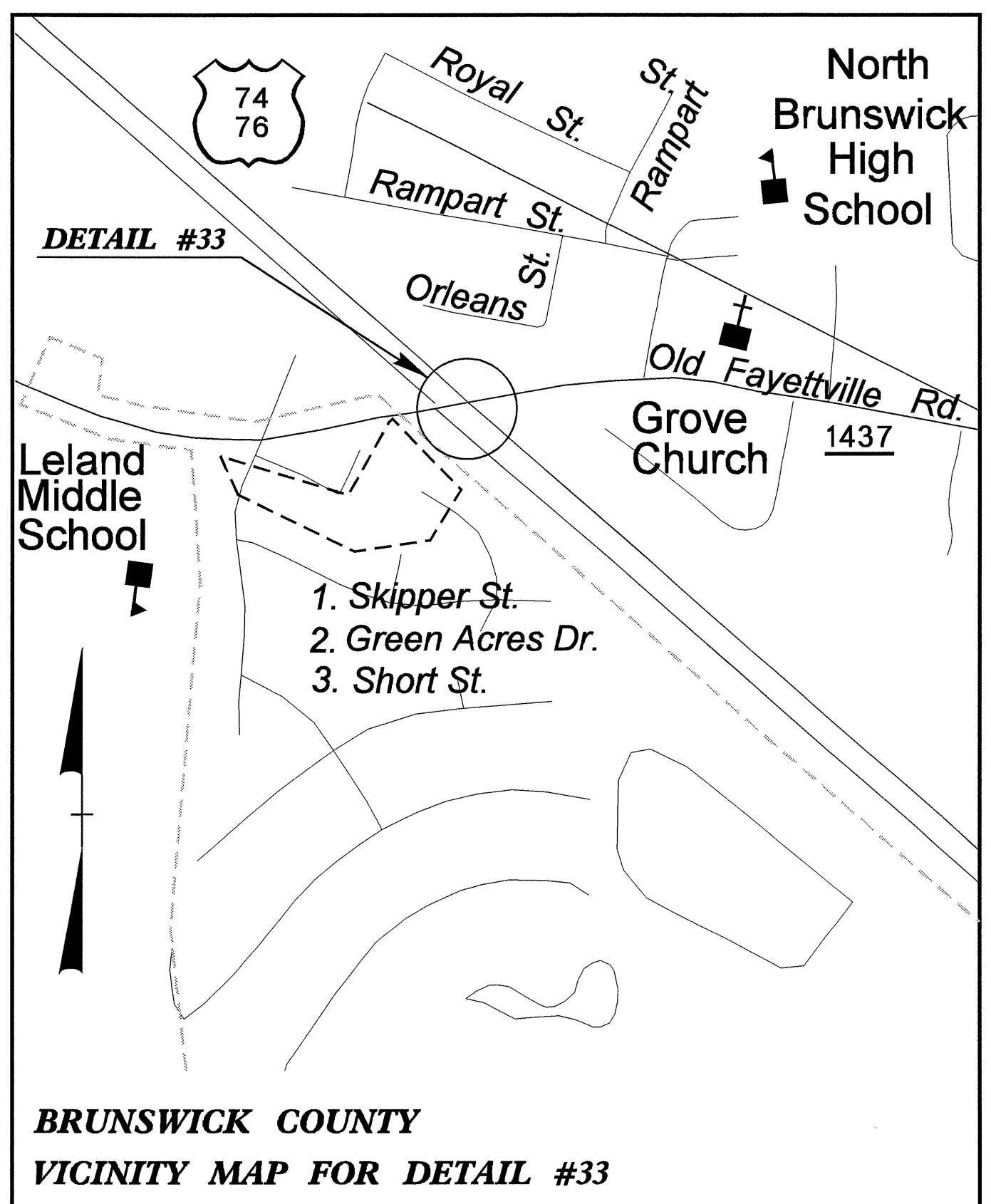
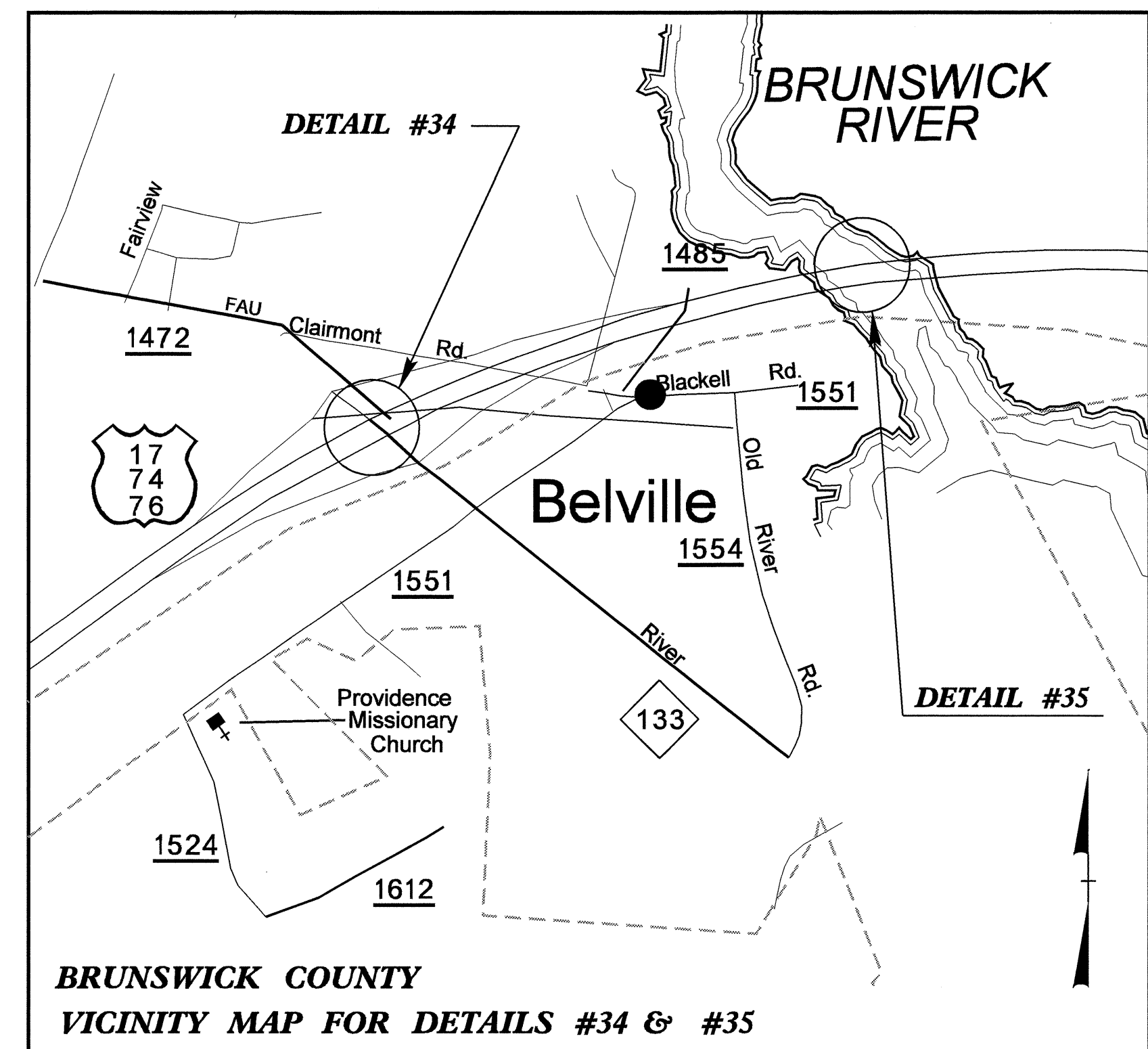
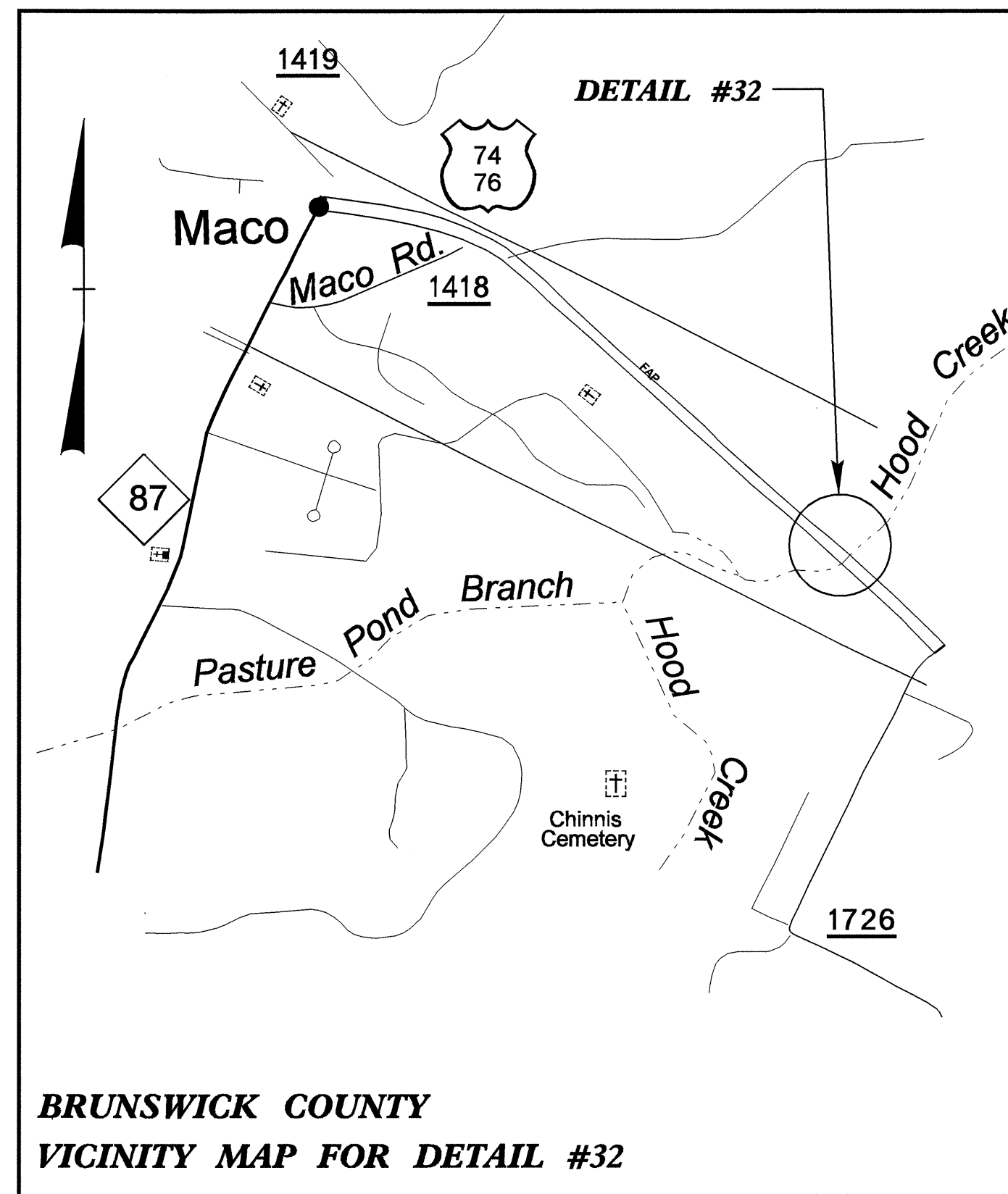
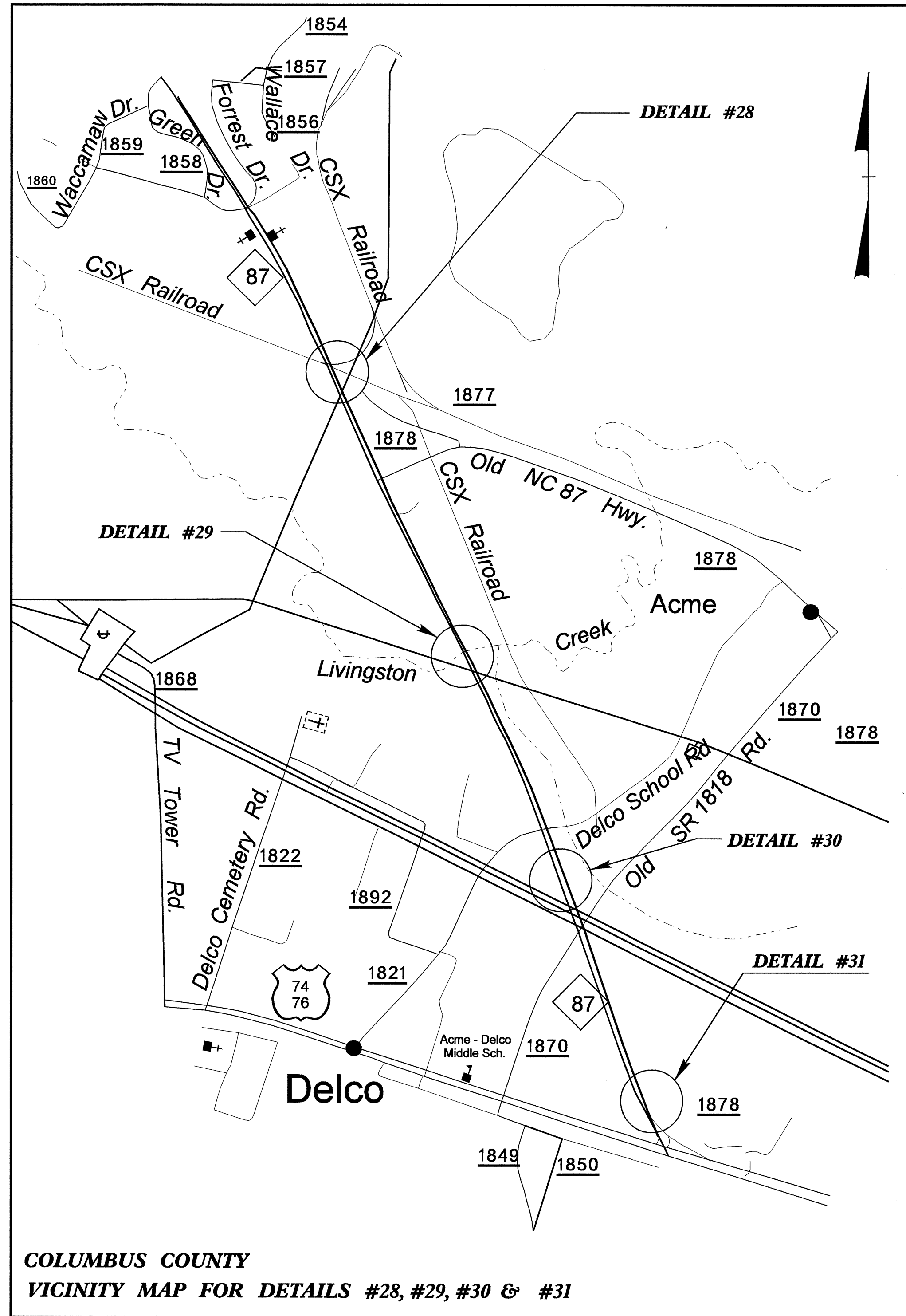
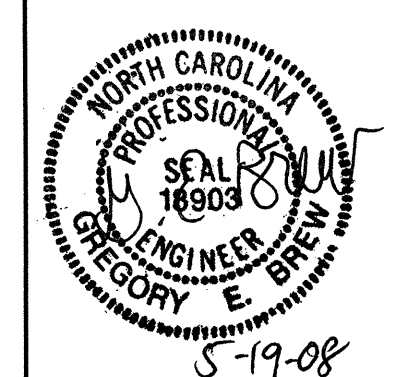


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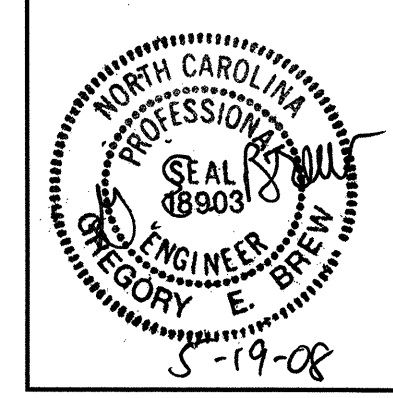
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GUARDRAIL PLACEMENT VICINITY MAPS

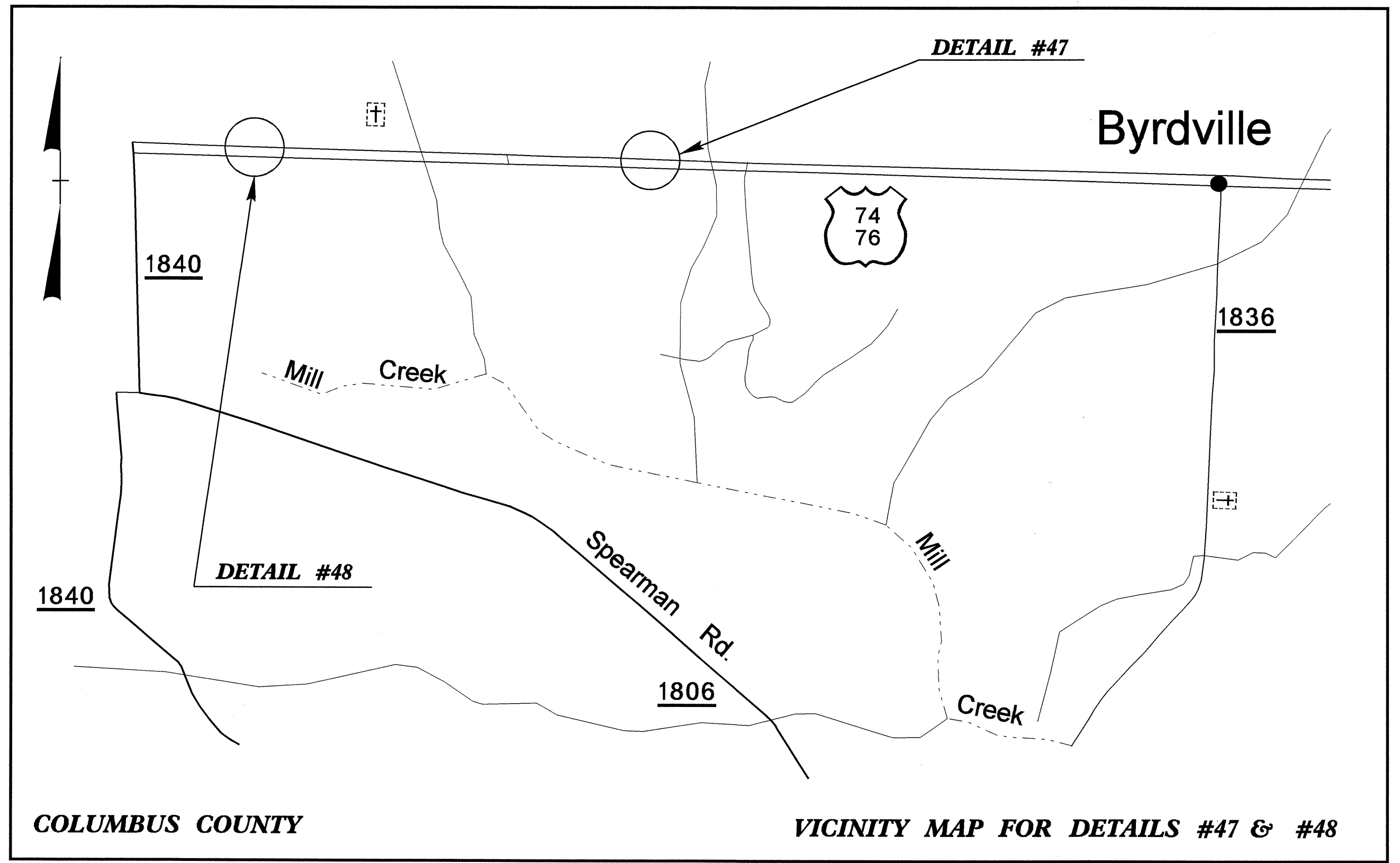
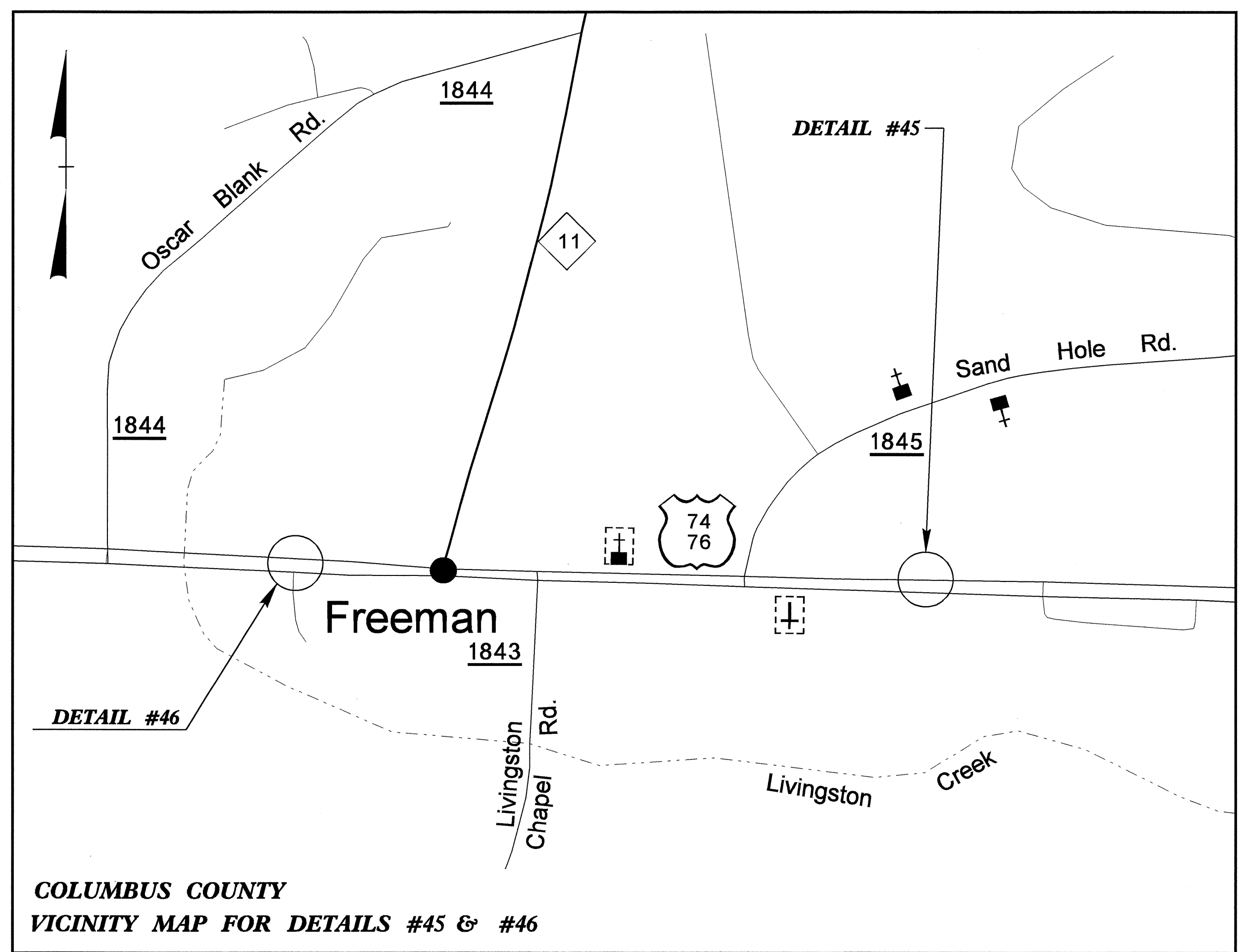
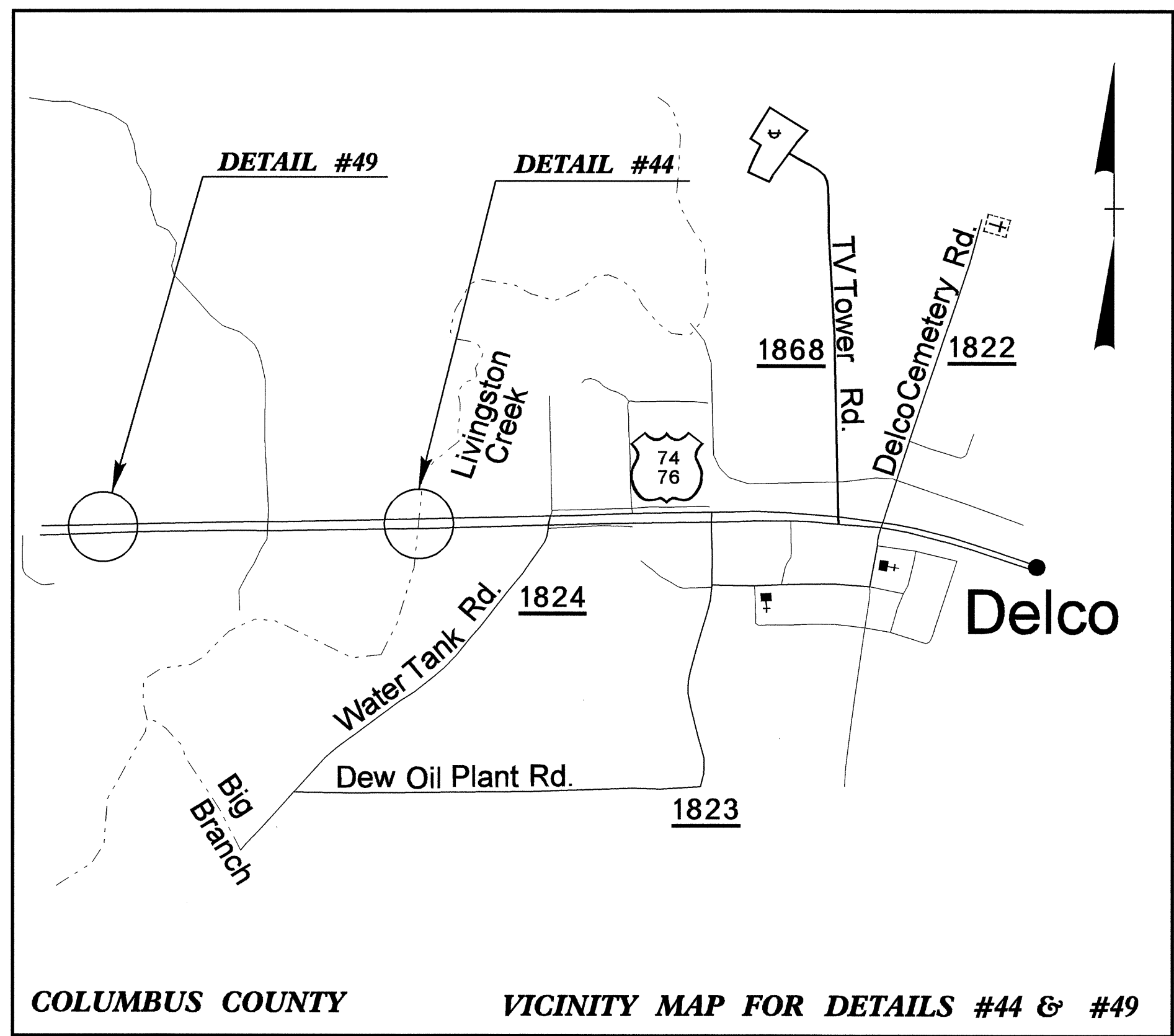


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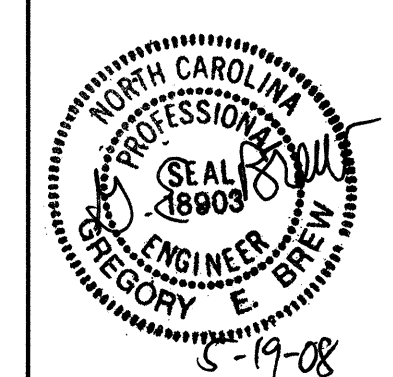
GUARDRAIL PLACEMENT VICINITY MAPS



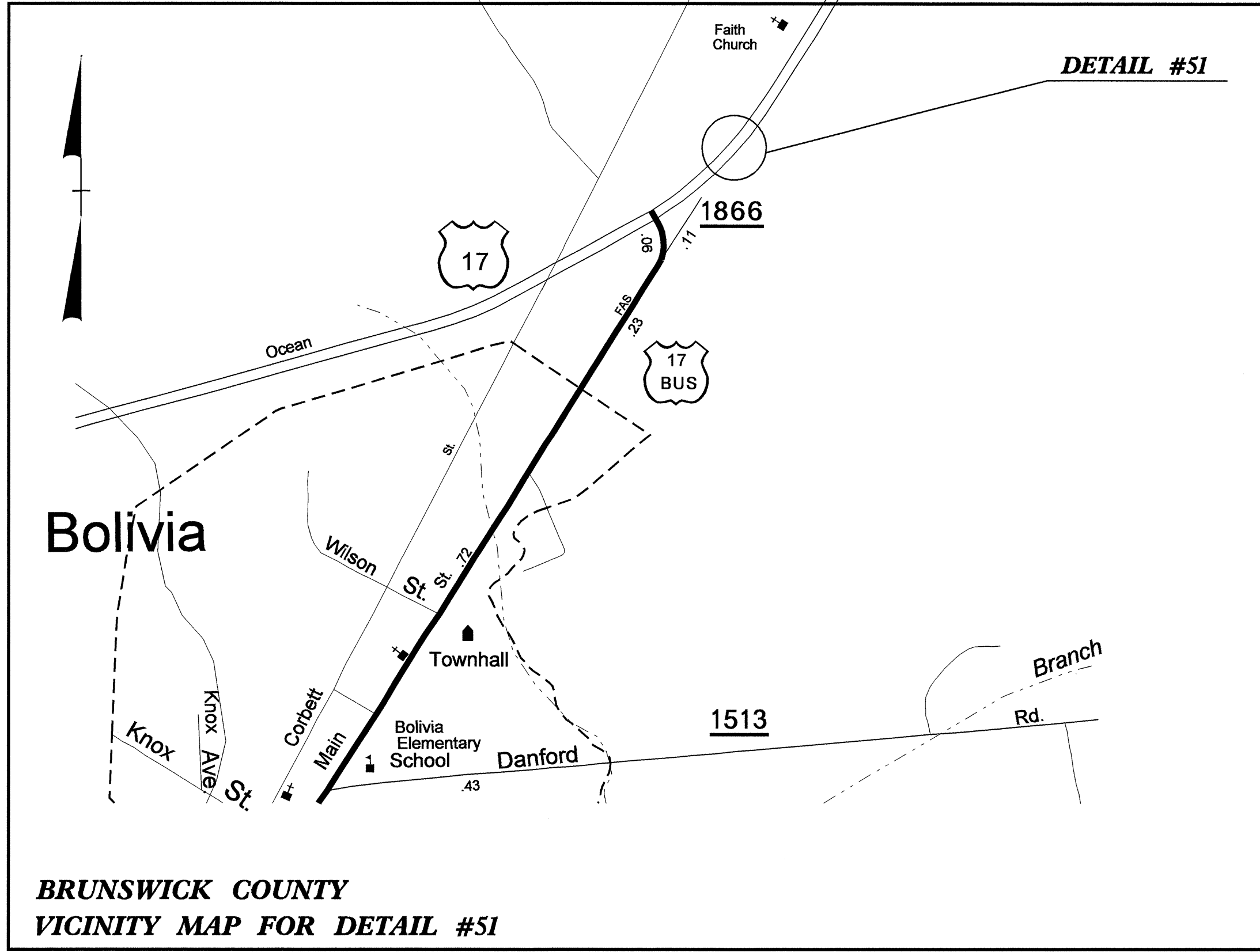
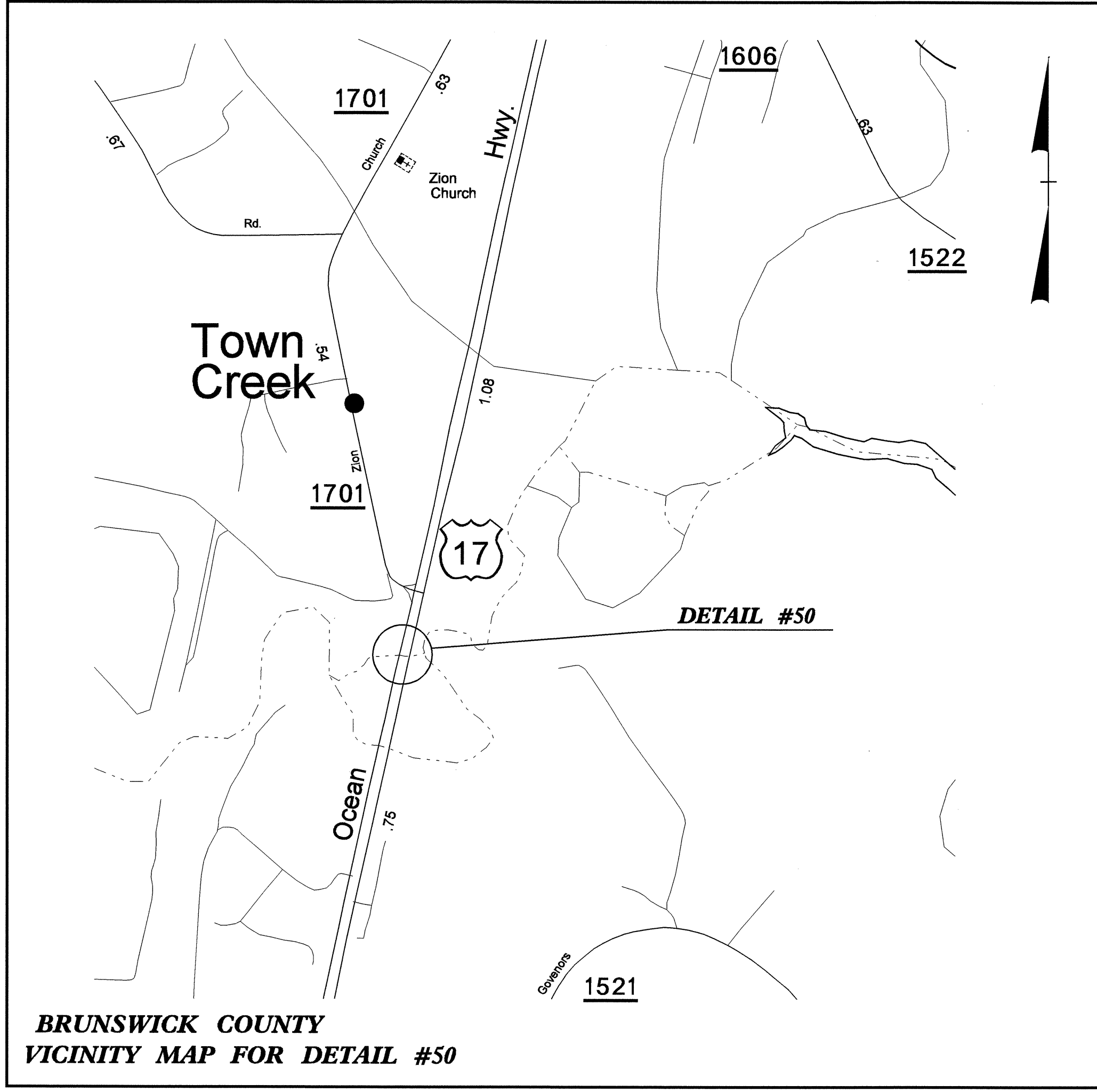
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GREGORY E. BRUM



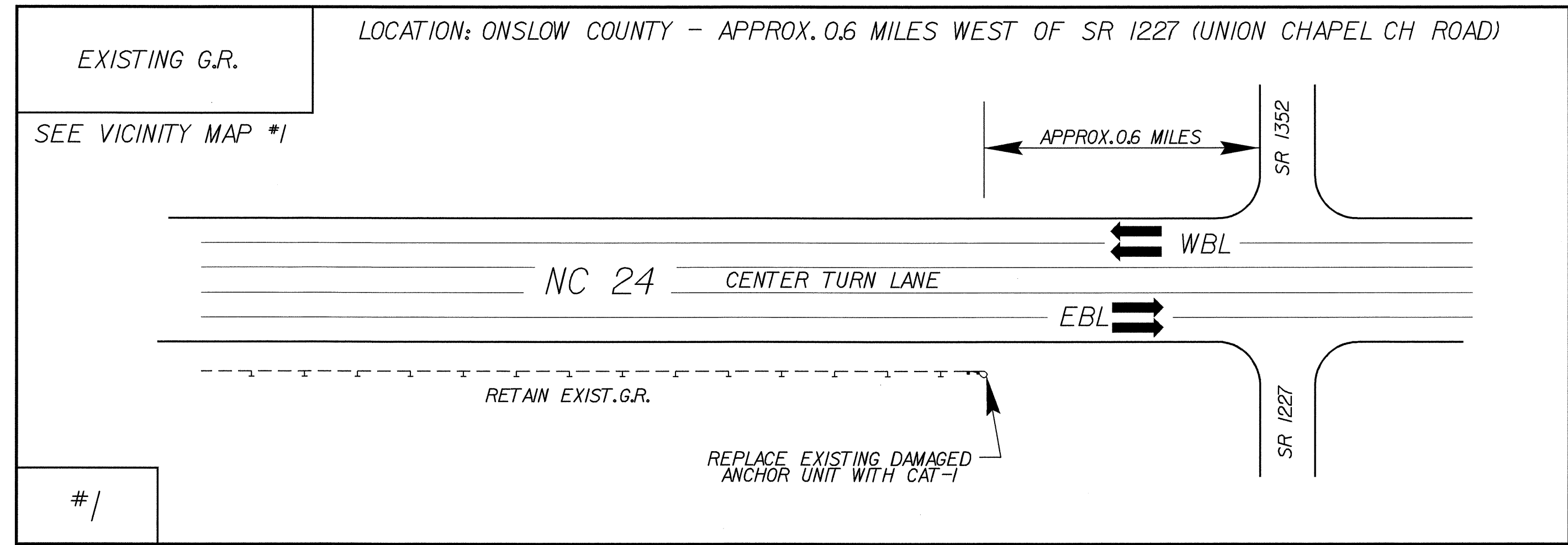
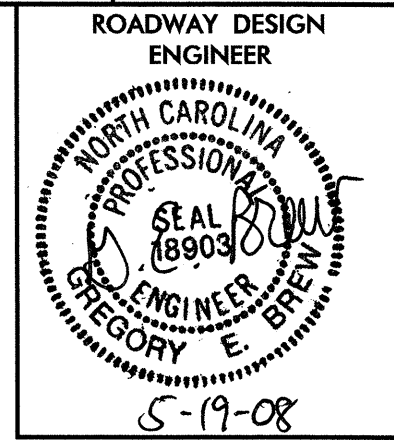
GUARDRAIL PLACEMENT VICINITY MAPS



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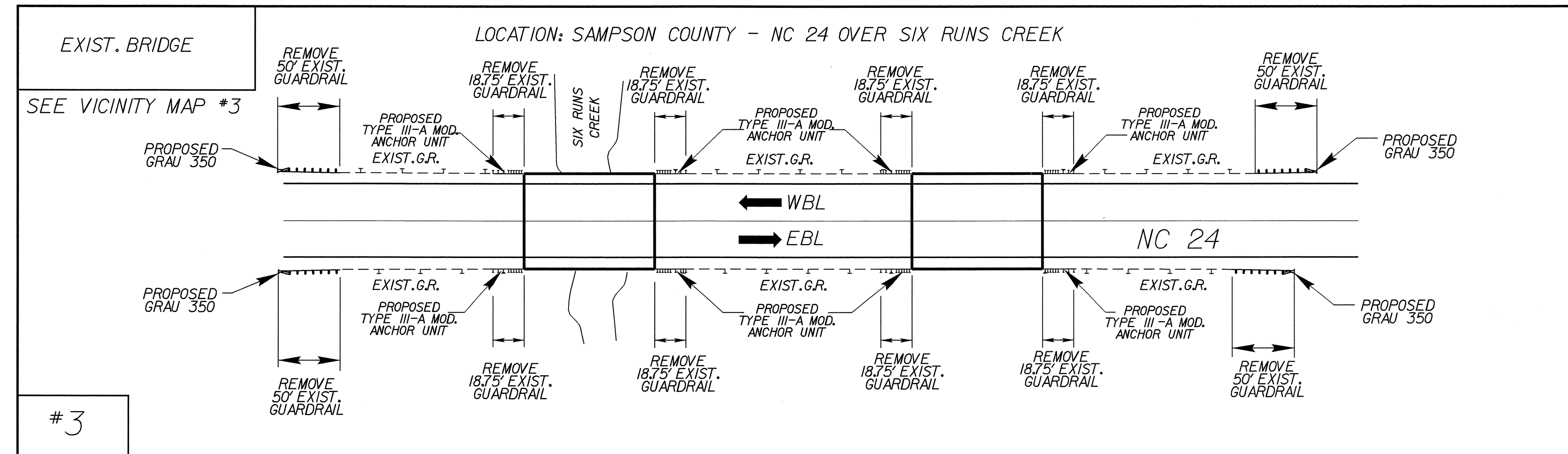
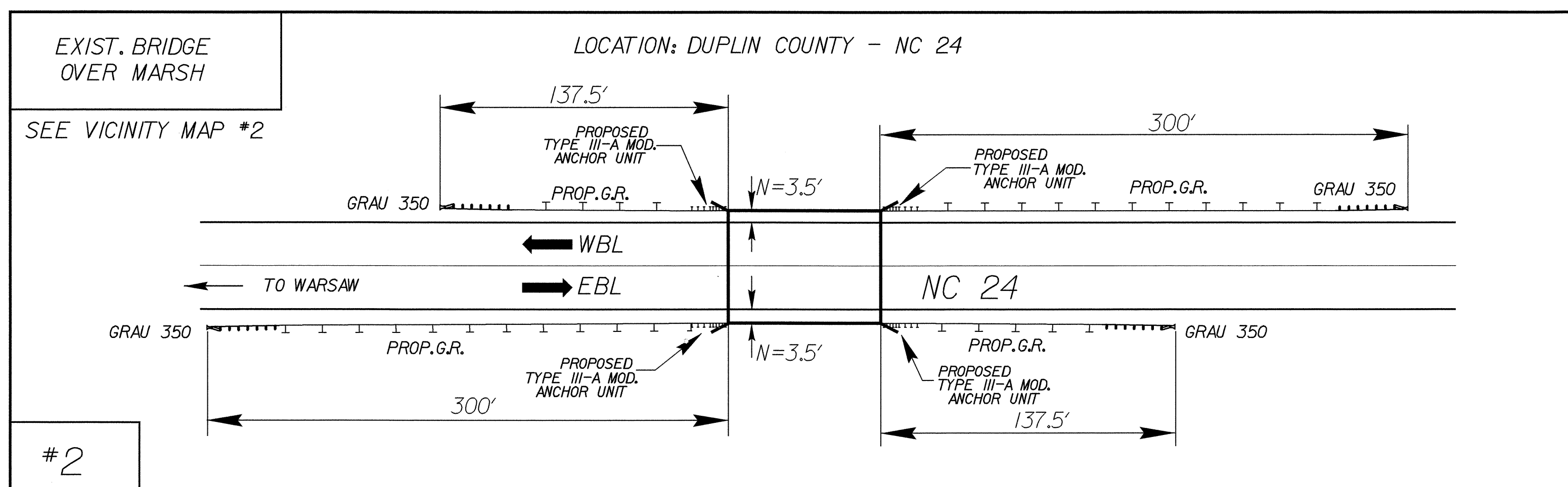
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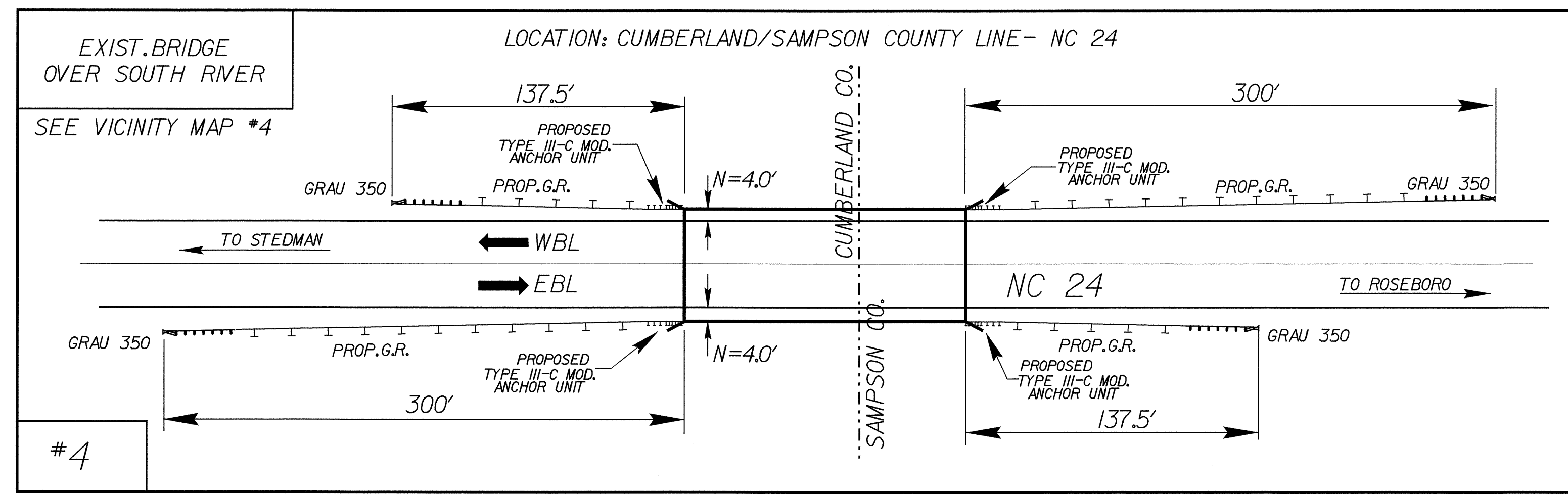
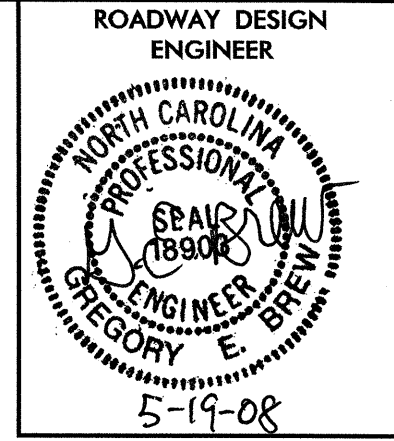
SEE SHEET 2-C FOR VICINITY MAPS

- NOTES:**
- 1) ADJUSTMENT TO DETAILS WILL BE REQUIRED TO MEET FIELD CONDITIONS. ALL LOCATIONS AND DIMENSIONS OF EXISTING FEATURES DEPICTED IN DETAILS ARE APPROXIMATE AND SUBJECT TO CHANGE BY FIELD ENGINEER TO ACCOMMODATE FIELD CONDITIONS.
 - 2) FIELD ADJUSTMENTS SHOULD BE MADE AS NECESSARY TO PREVENT CONFLICT WITH PAVED DITCHES, DRAINAGE STRUCTURES, PIPES, ETC.
 - 3) FIELD DRILLING OR PUNCHING AND SPLICING OF GUARDRAIL WILL BE REQUIRED FOR THE ATTACHMENT OF PROPOSED GUARDRAIL TO EXISTING GUARDRAIL.
 - 4) DETAILS ARE NOT DRAWN TO SCALE



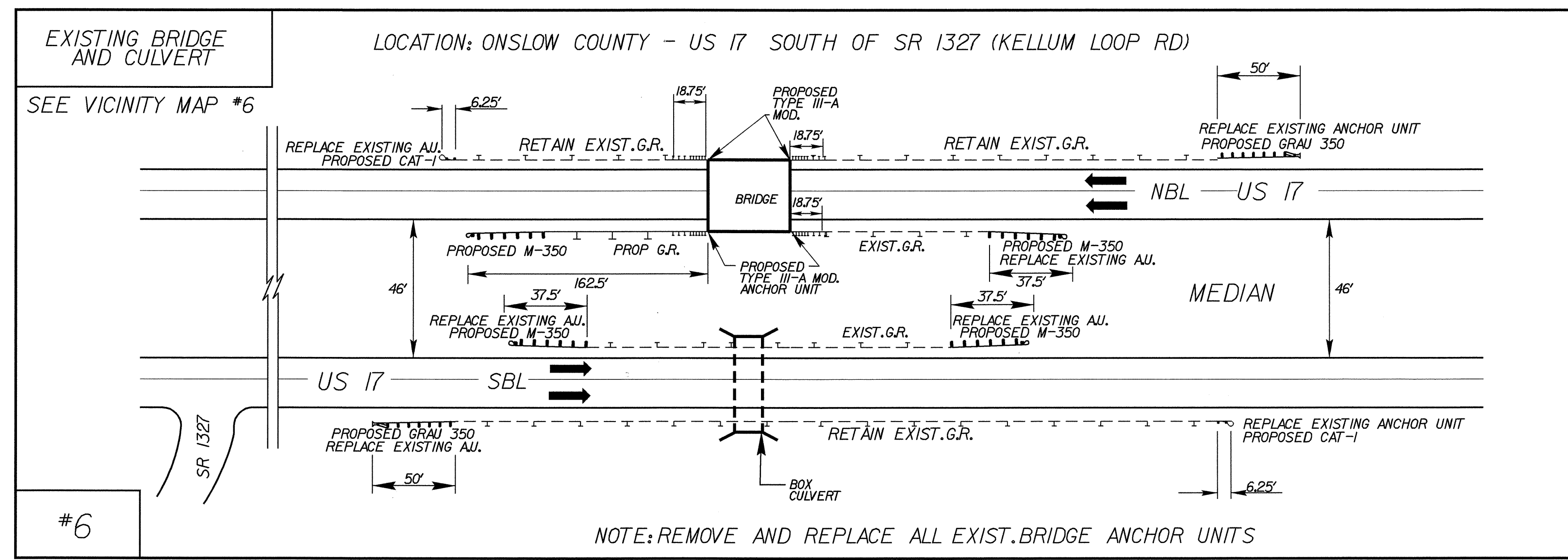
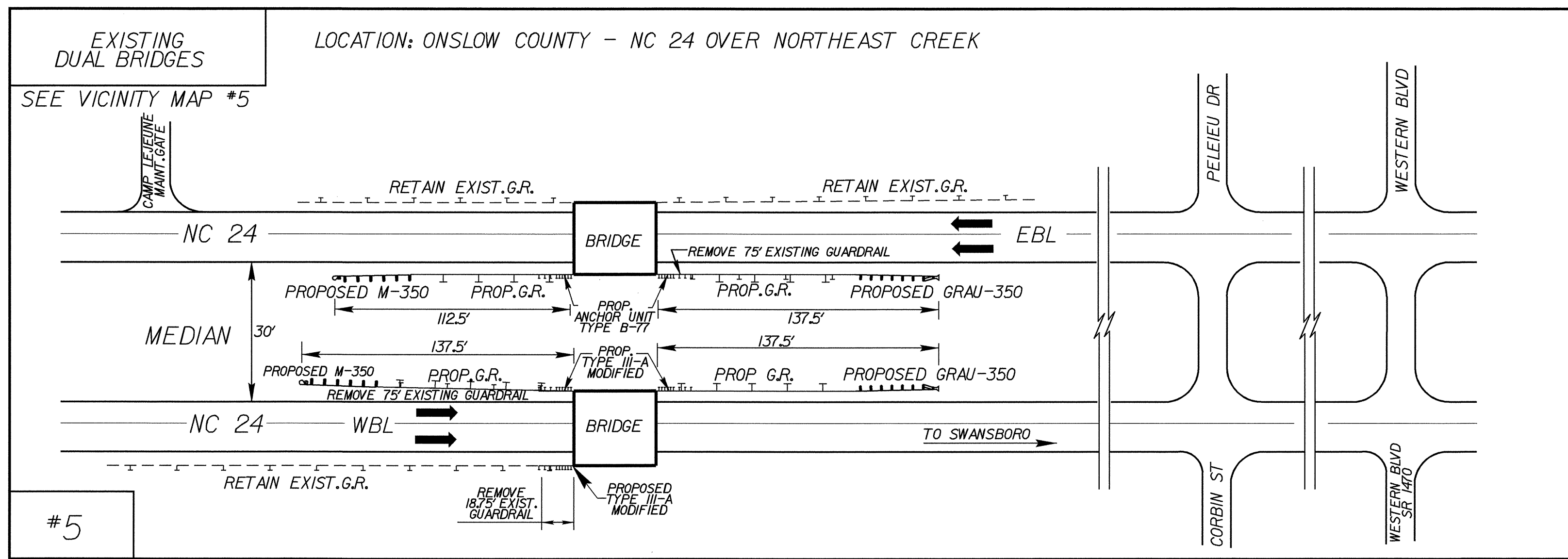
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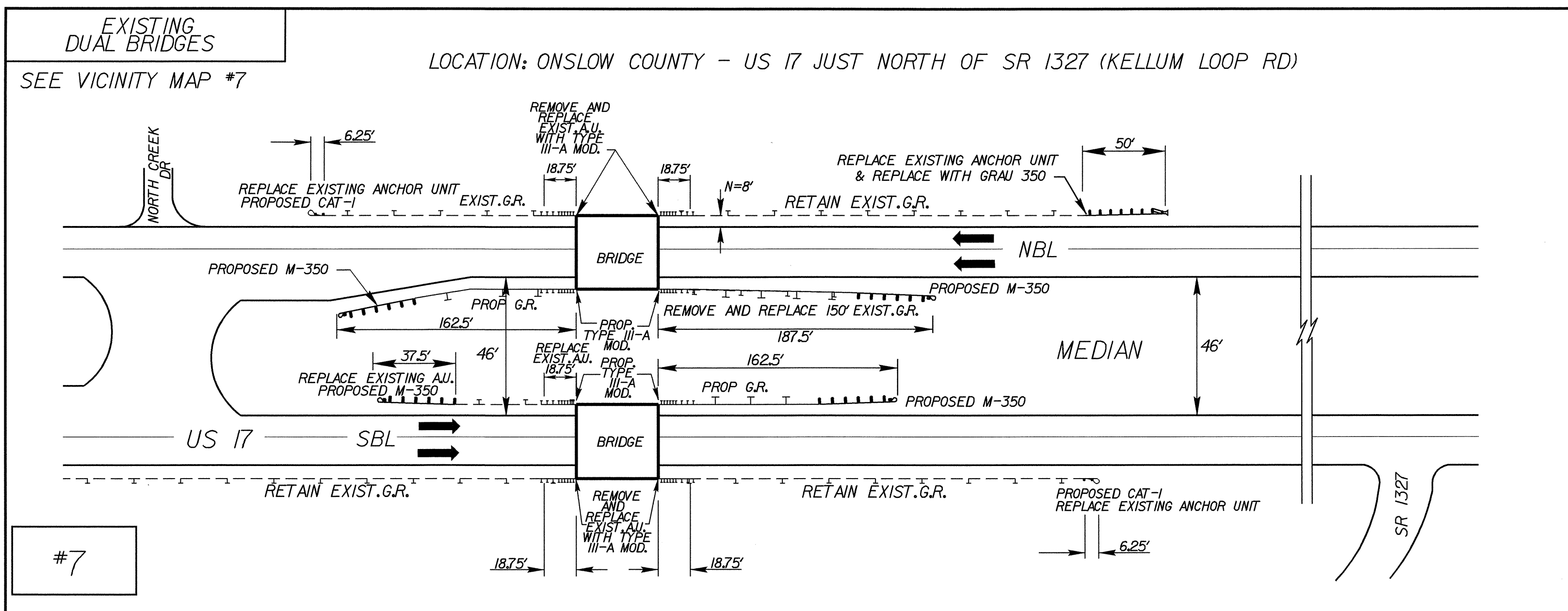
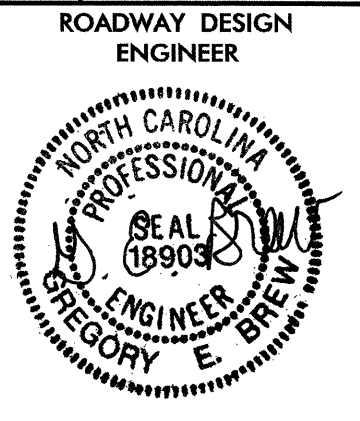
SEE SHEETS 2-C & 2-D FOR VICINITY MAPS

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 - FIELD ADJUSTMENTS SHOULD BE MADE AS NECESSARY TO PREVENT CONFLICT WITH PAVED DITCHES, DRAINAGE STRUCTURES, PIPES, ETC.
 - FIELD DRILLING OR PUNCHING AND SPLICING OF GUARDRAIL WILL BE REQUIRED FOR THE ATTACHMENT OF PROPOSED GUARDRAIL TO EXISTING GUARDRAIL.
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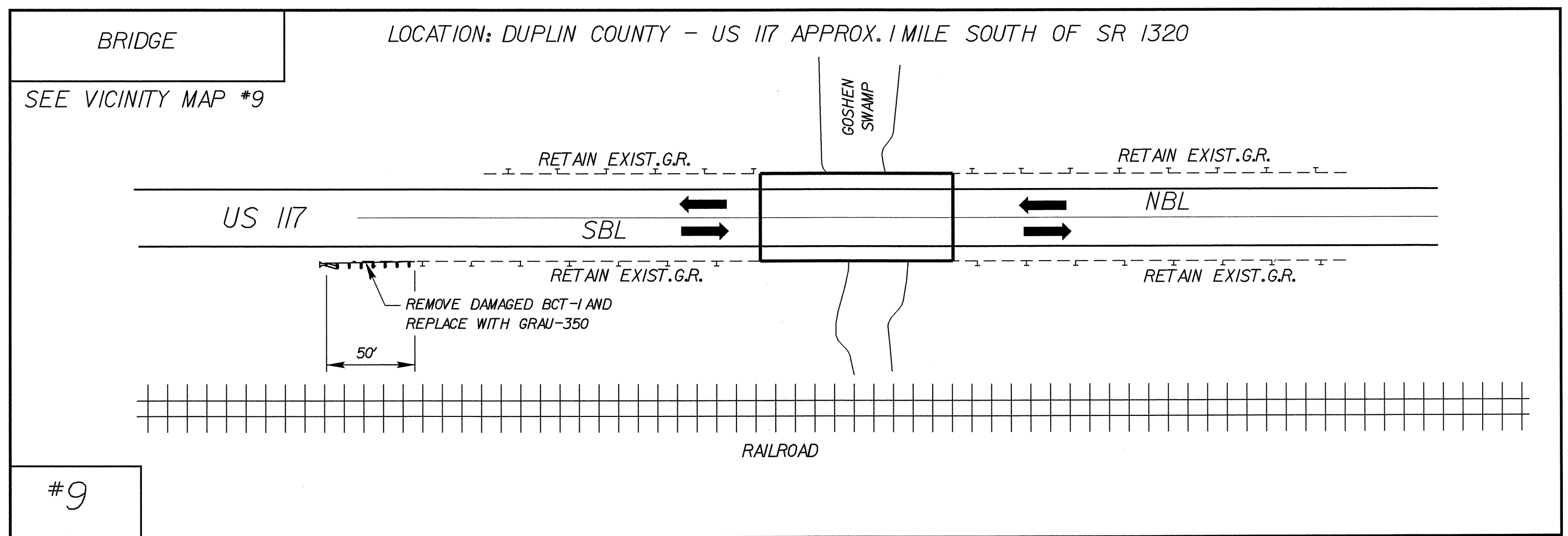
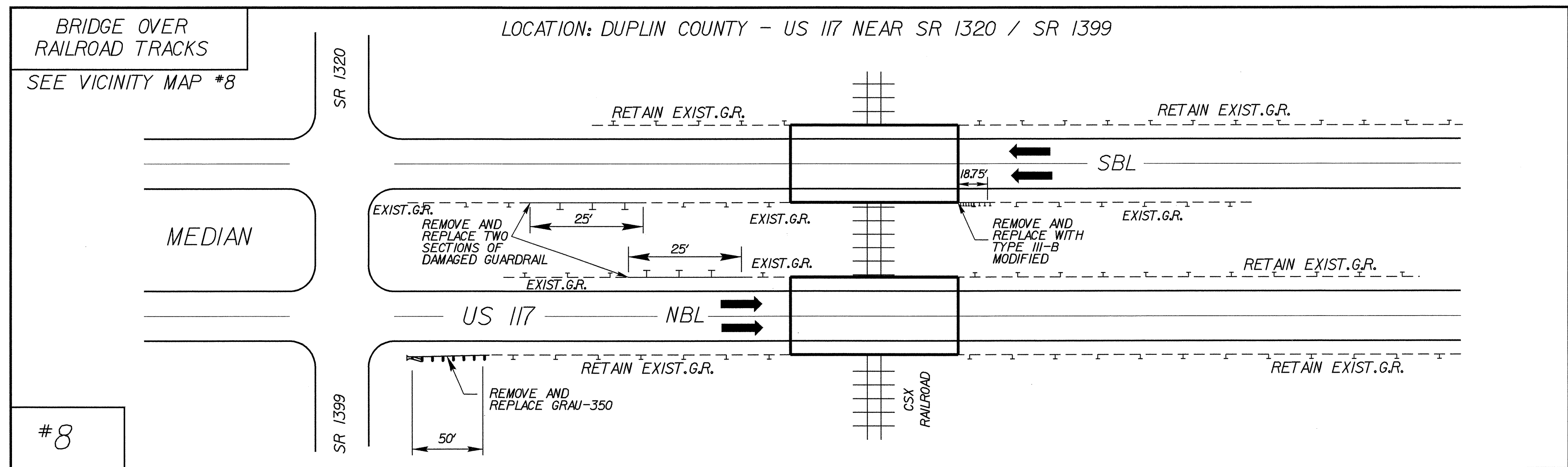
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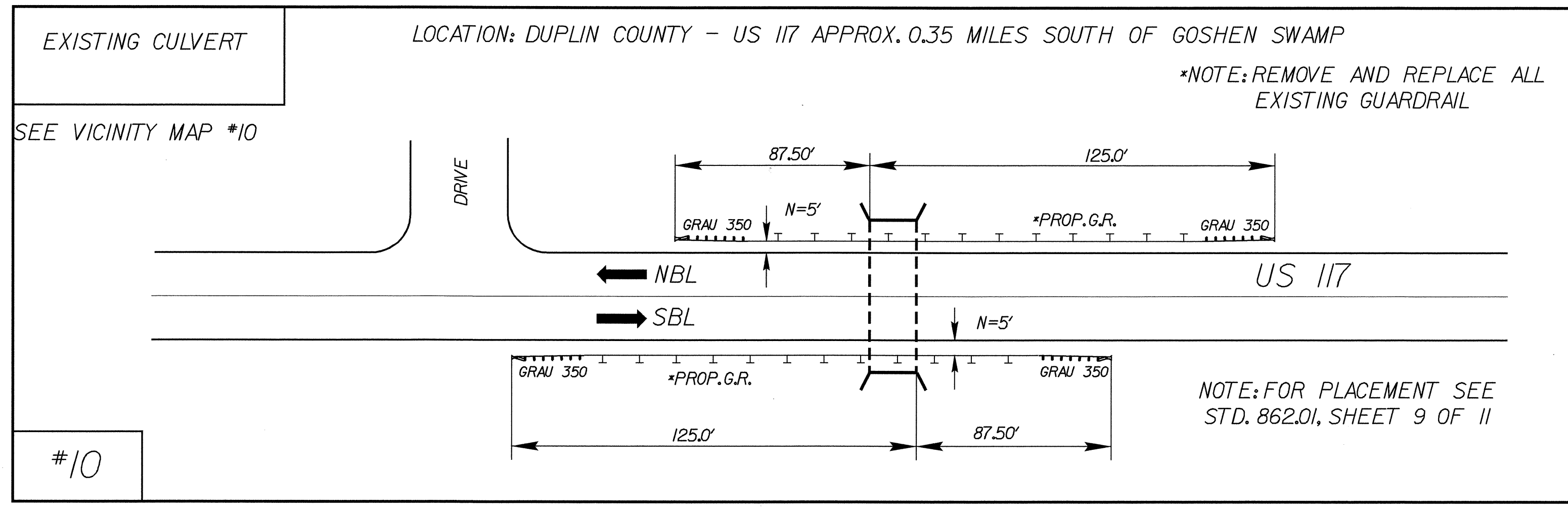
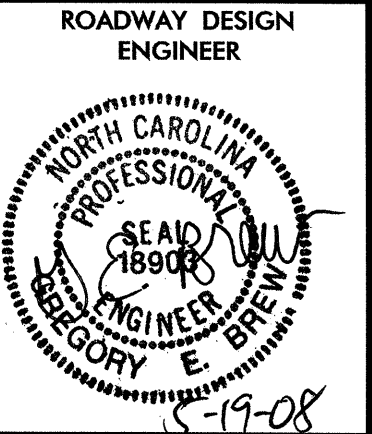
SEE SHEET 2-D FOR VICINITY MAPS

- NOTES:**
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 - 4) DETAILS ARE NOT DRAWN TO SCALE



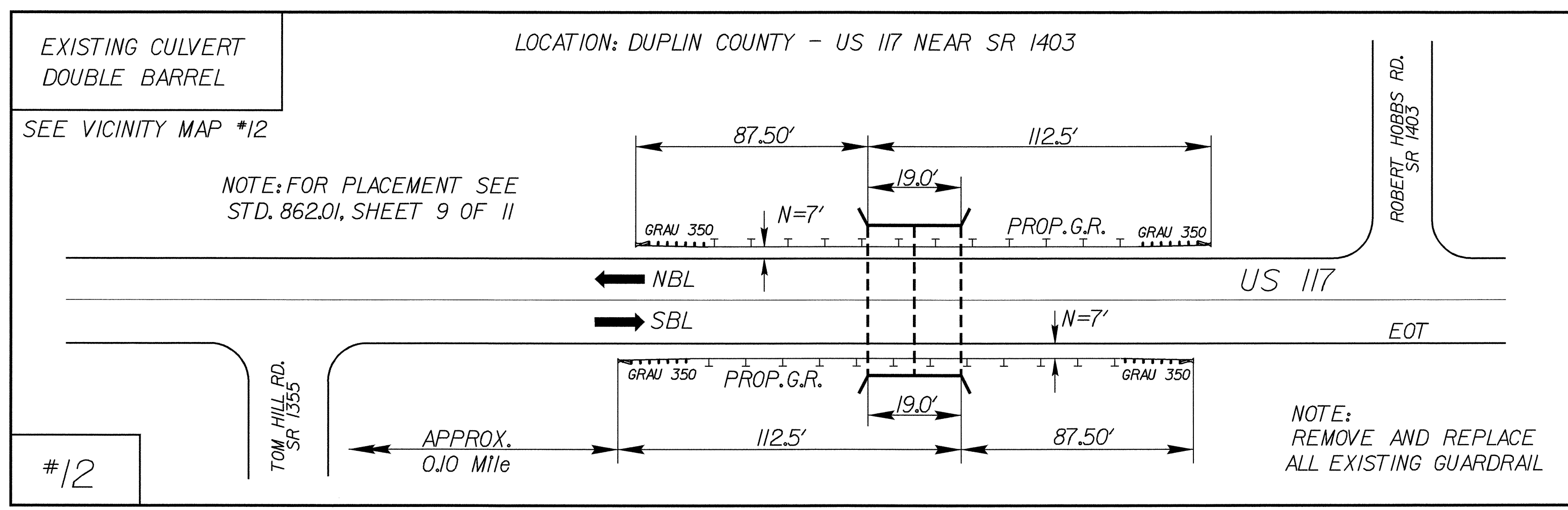
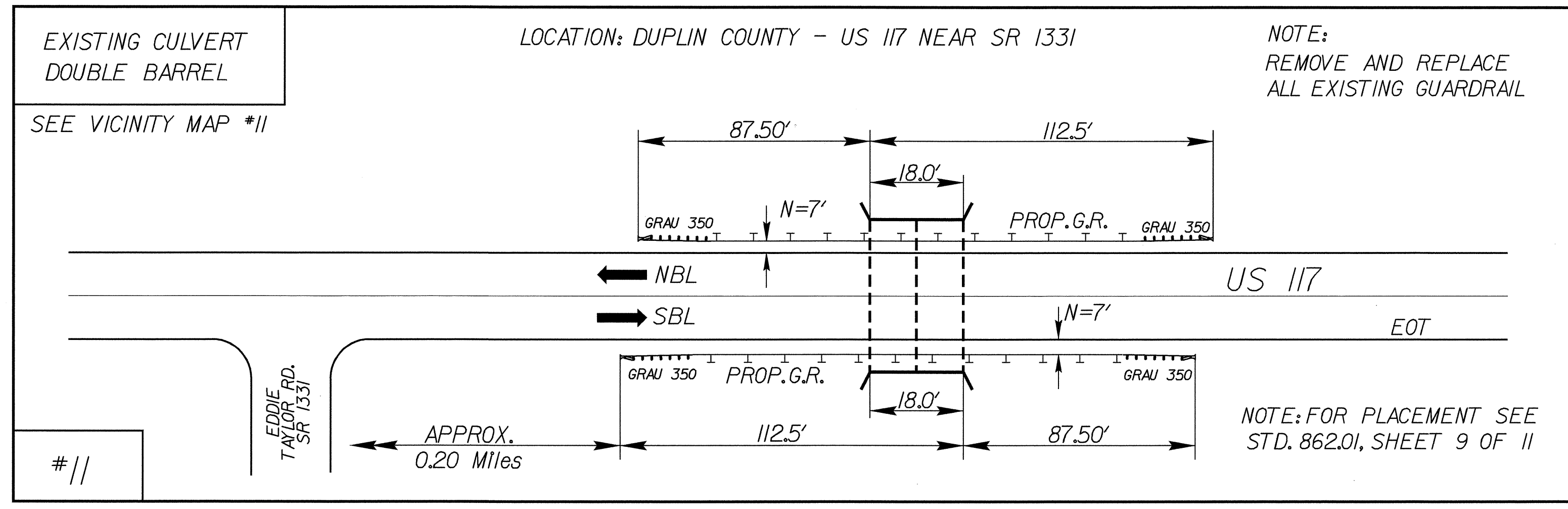
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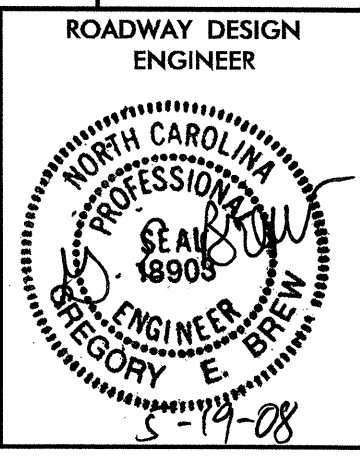
SEE SHEET 2-D FOR VICINITY MAPS

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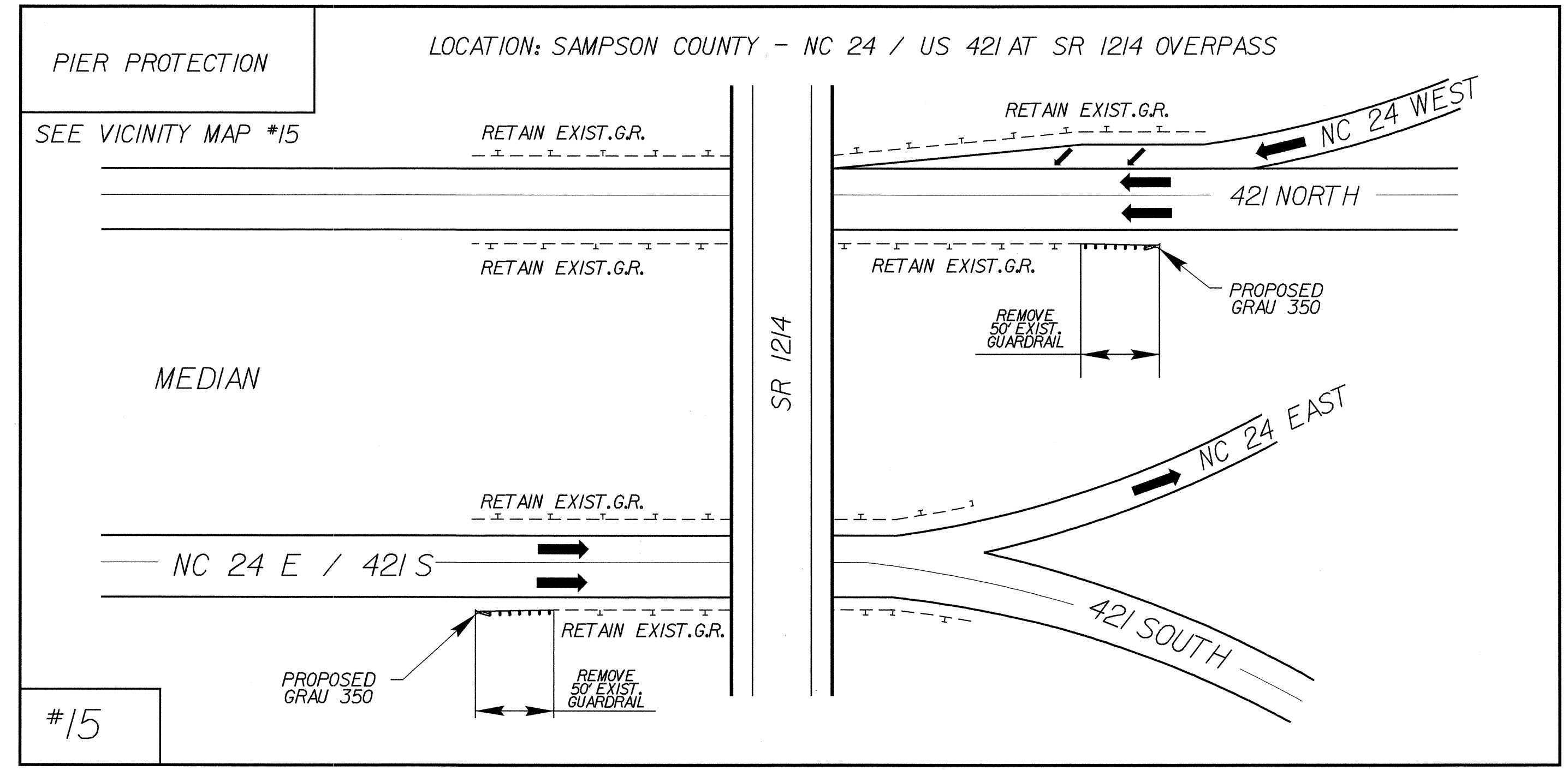
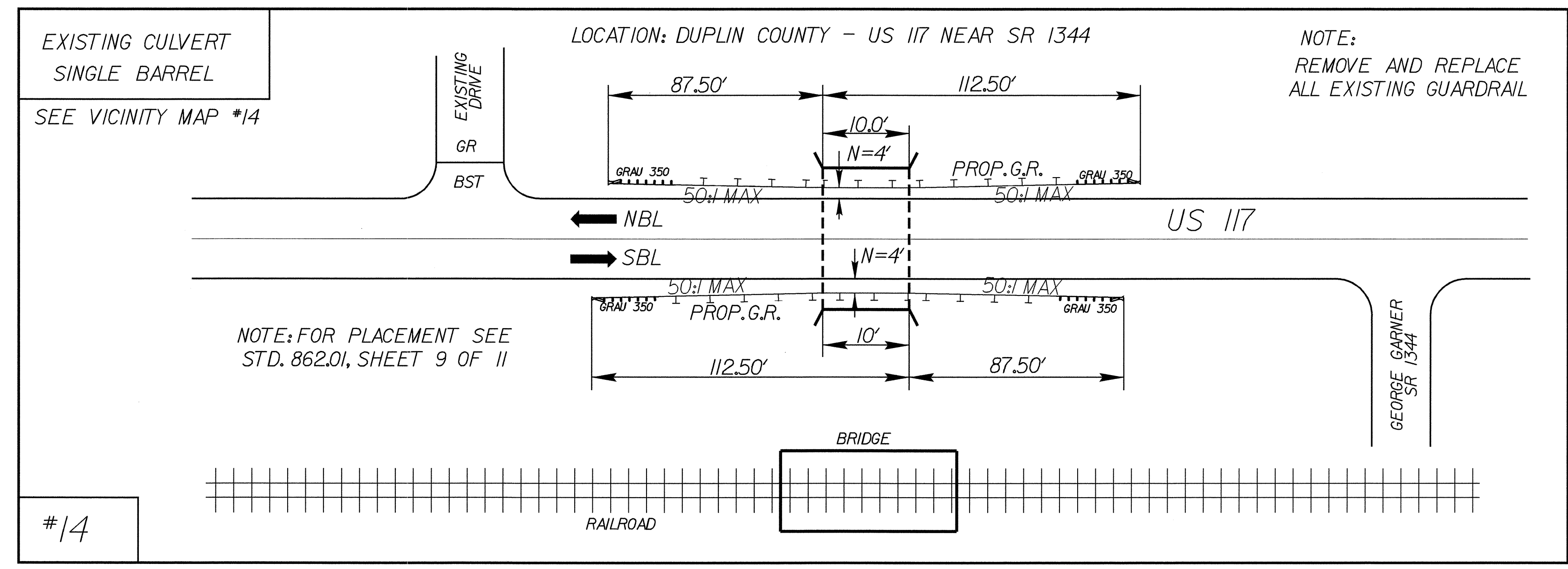
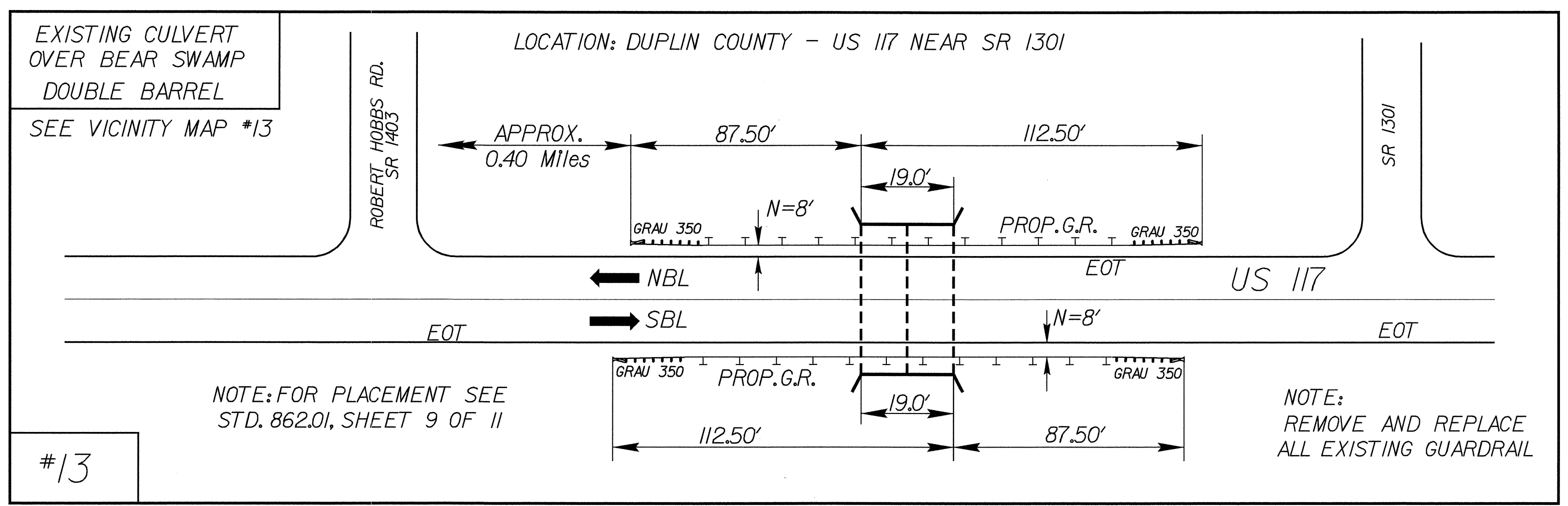
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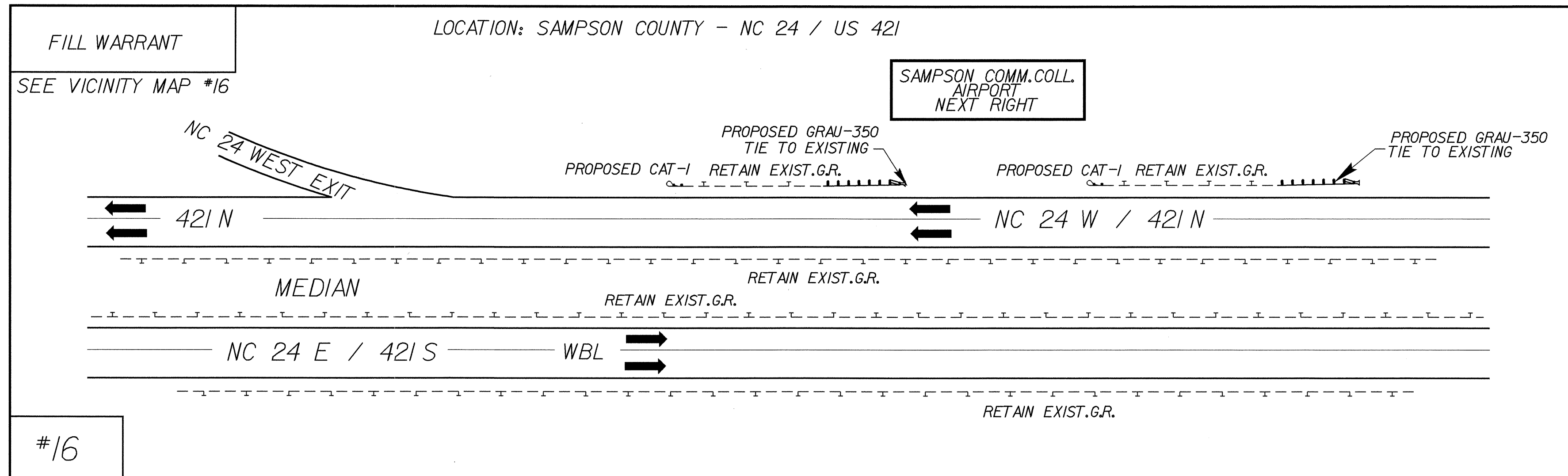
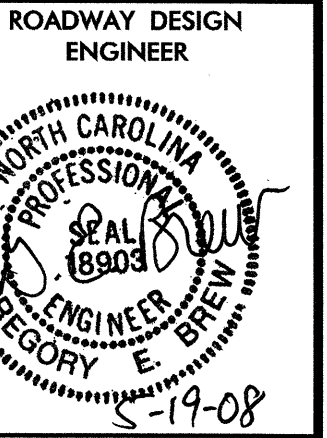
SEE SHEETS 2-D & 2-E FOR VICINITY MAPS

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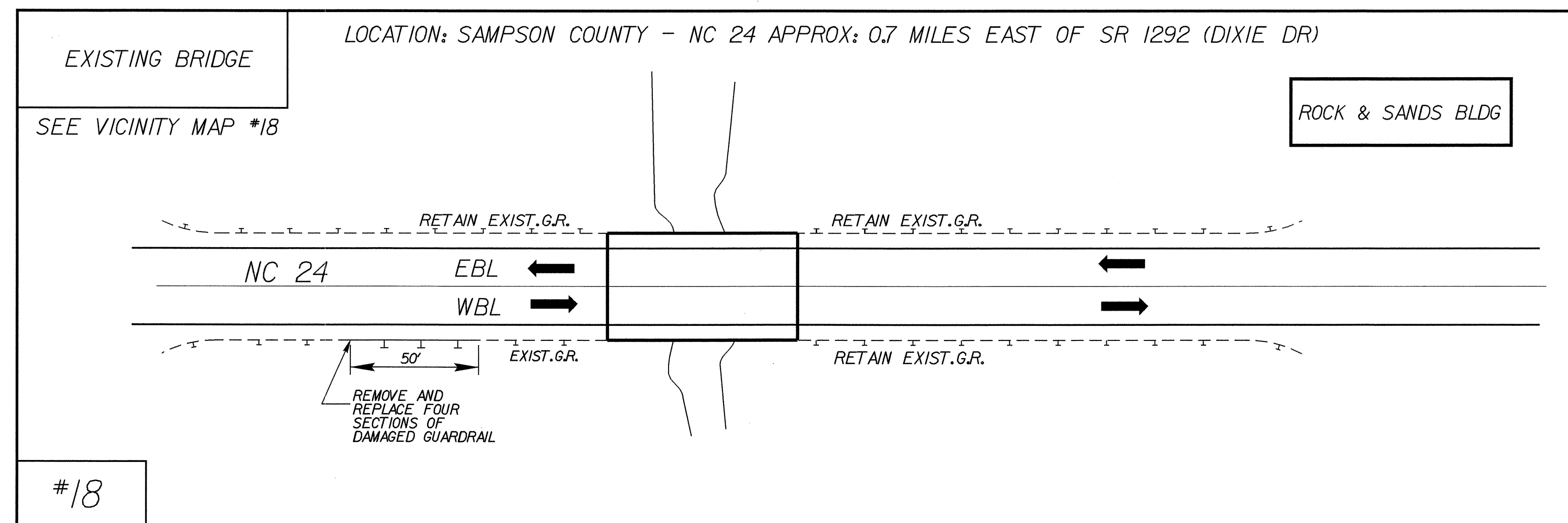
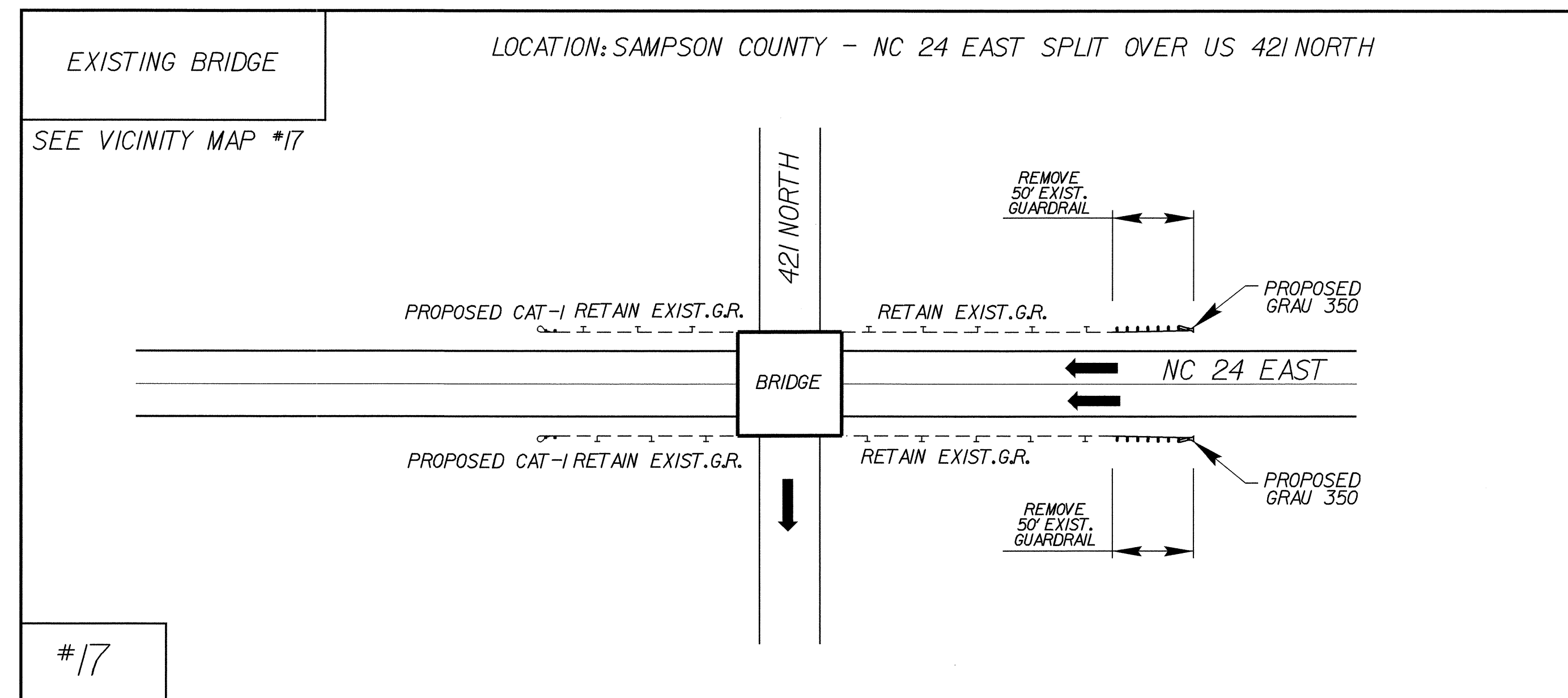
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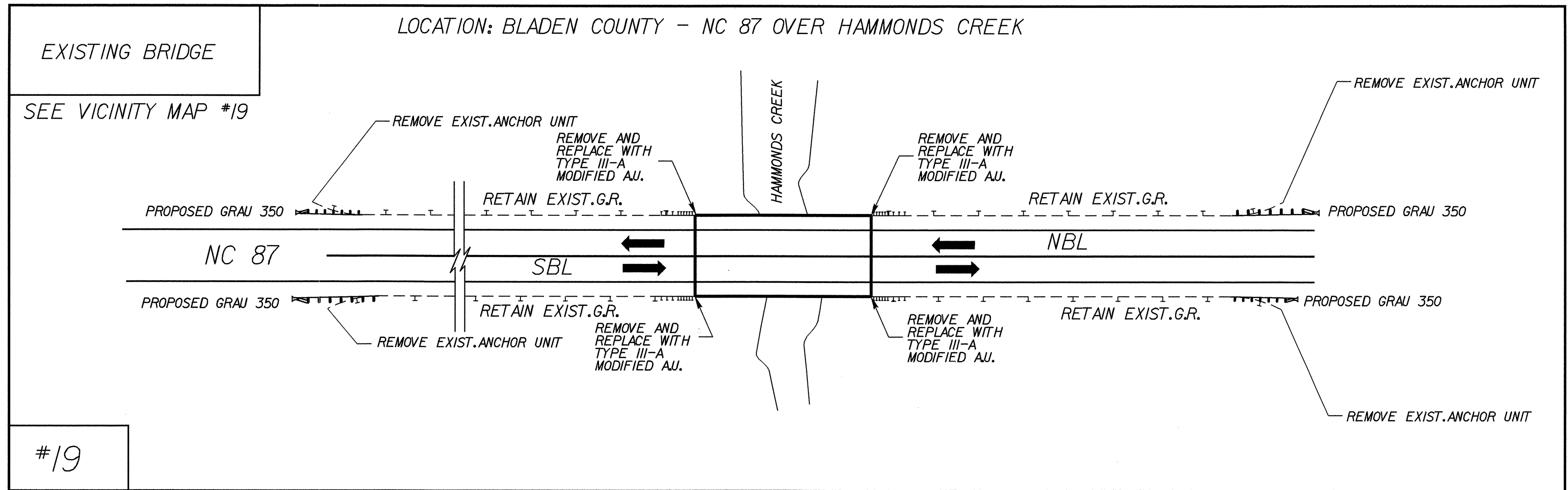
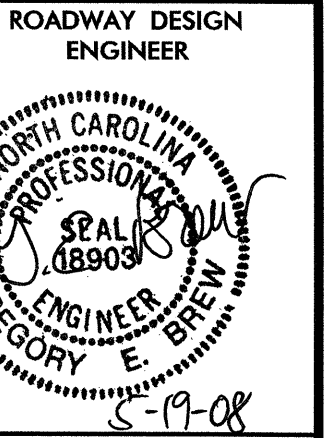
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GREGORY E. GREEN



SEE SHEET 2-E FOR VICINITY MAPS

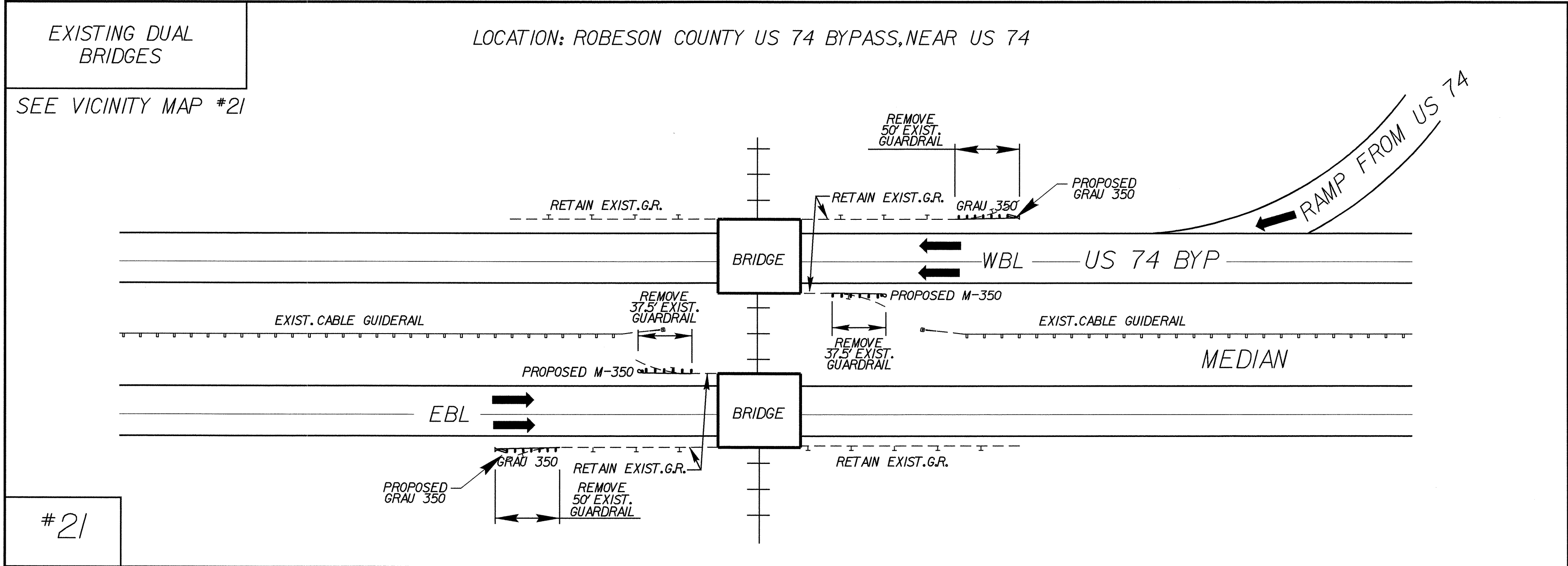
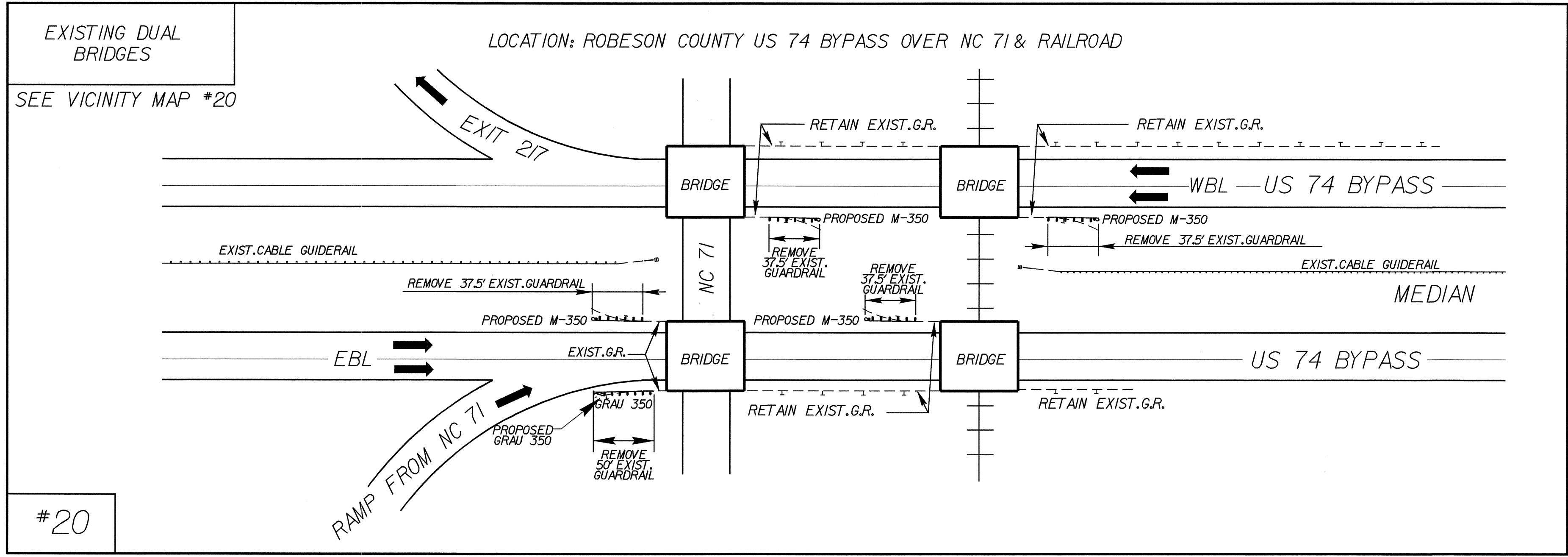
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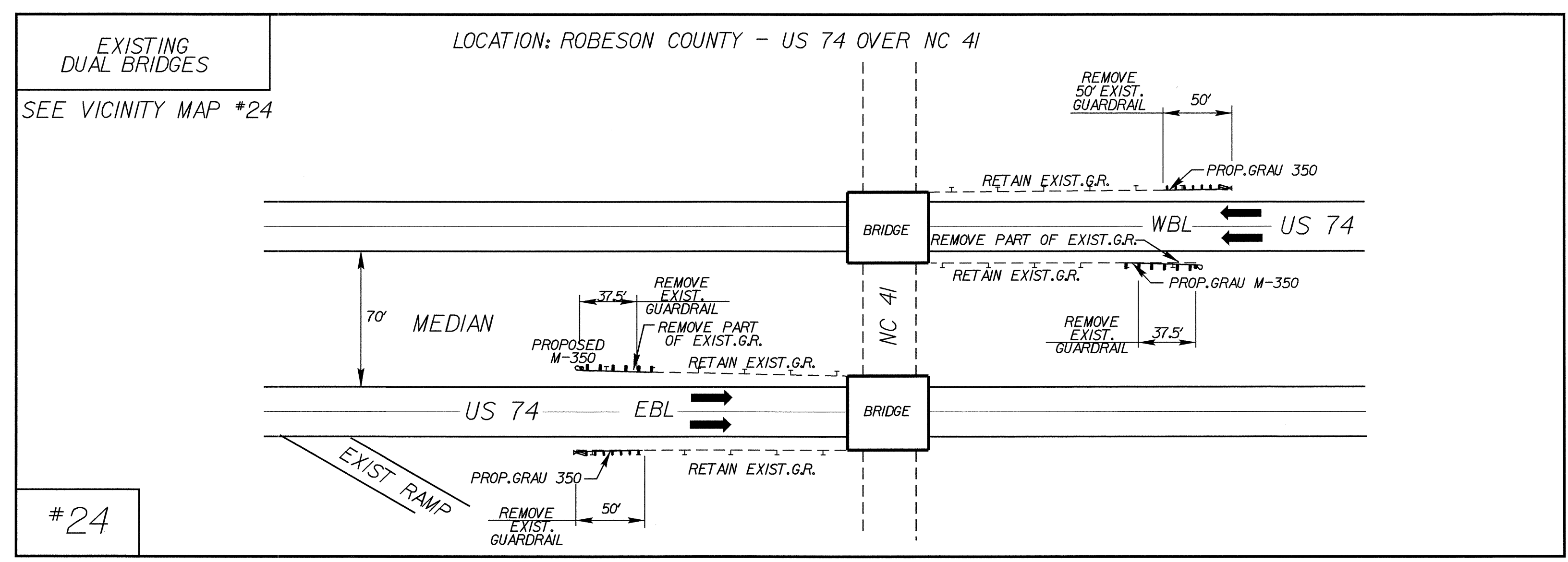
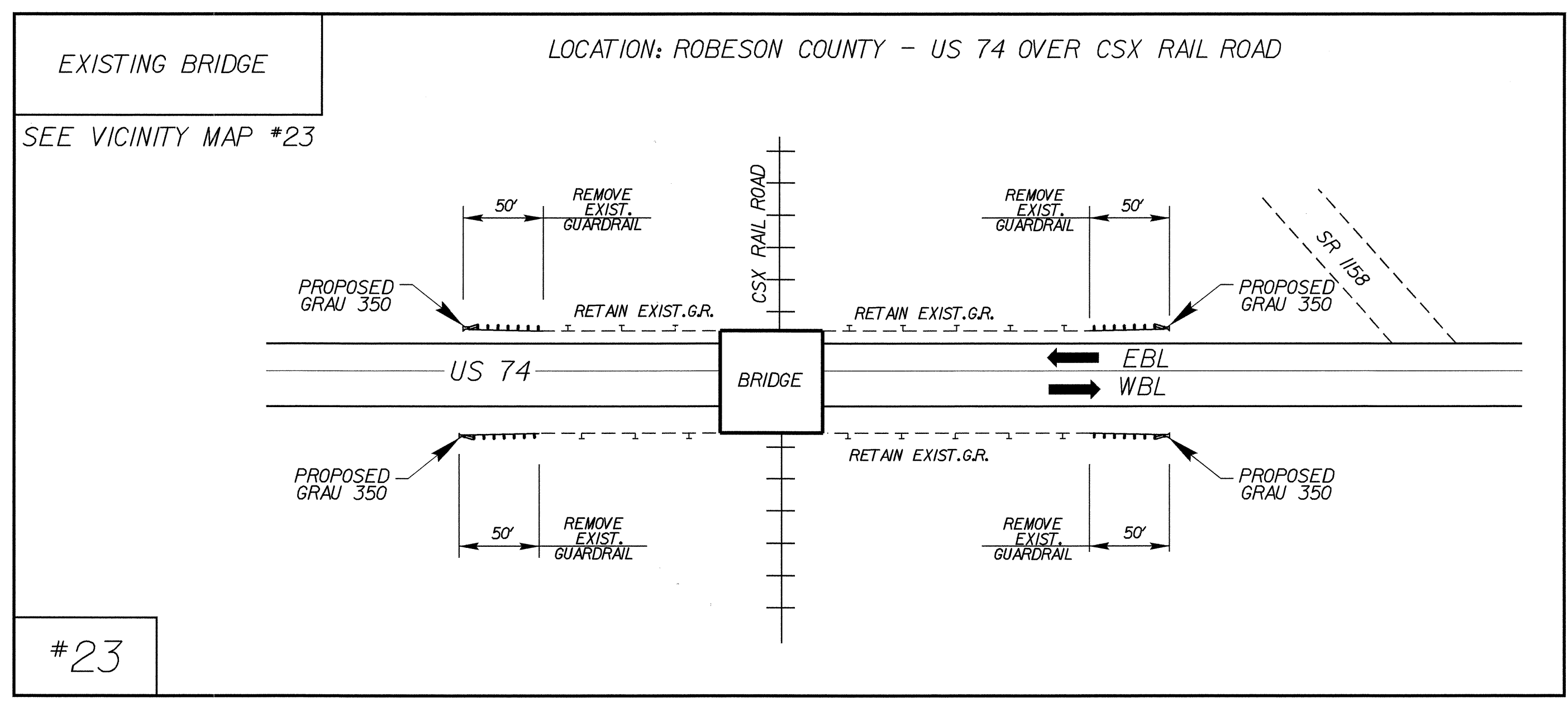
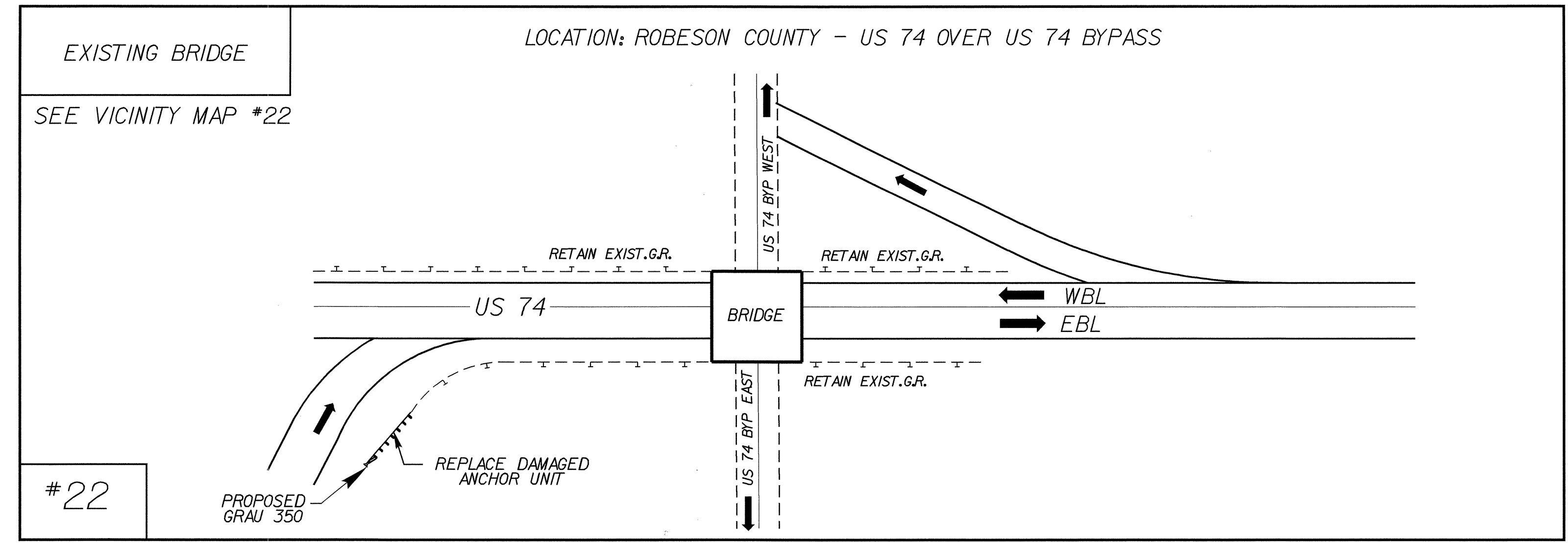
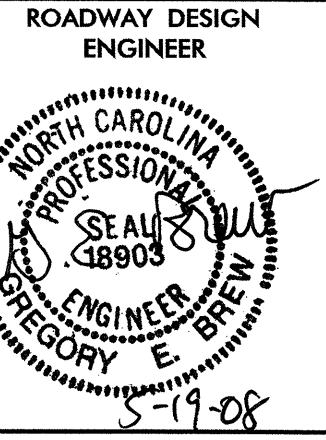
SEE SHEETS 2-E & 2-F FOR VICINITY MAPS

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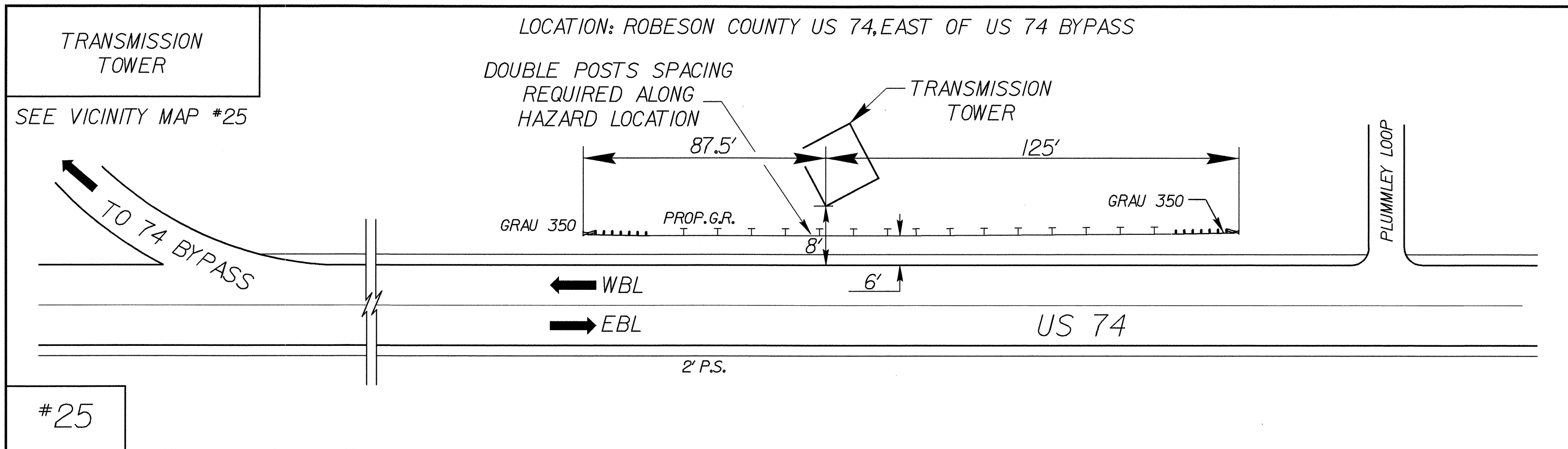
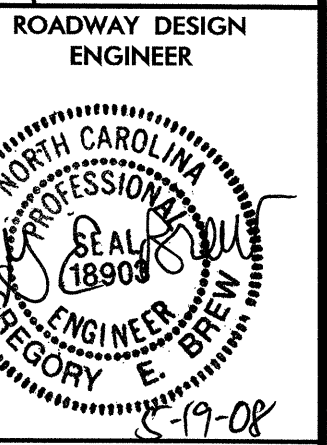


SEE SHEET 2-F FOR VICINITY MAPS

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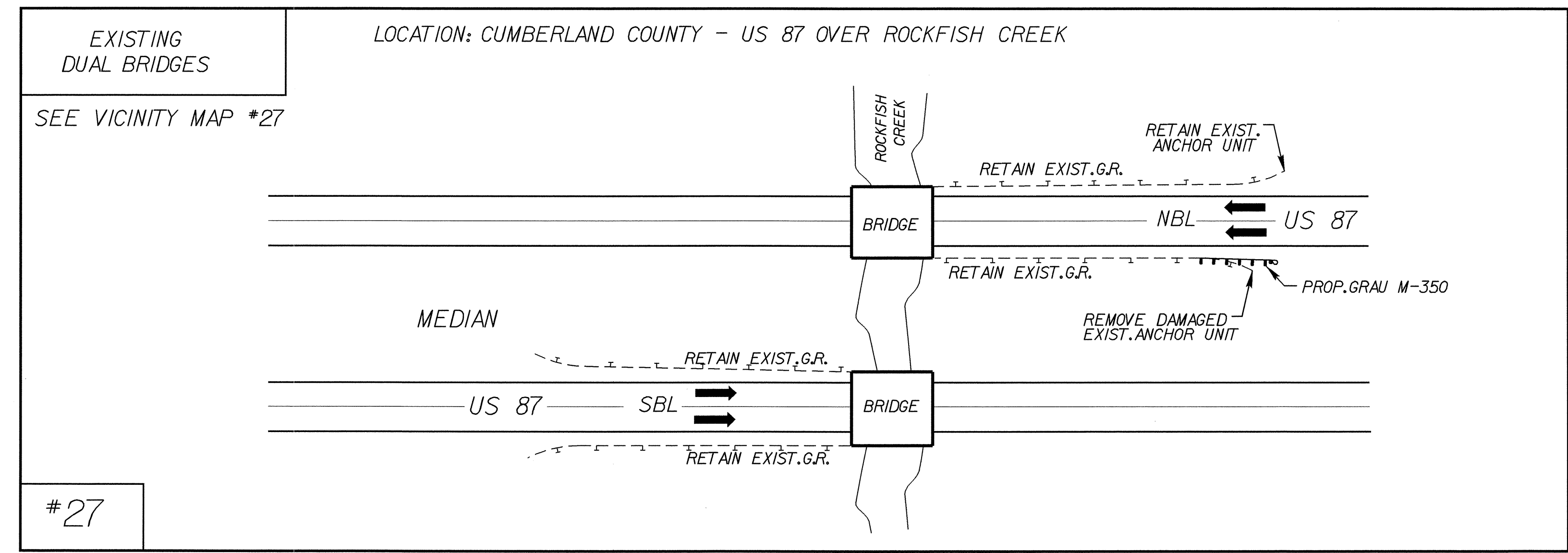
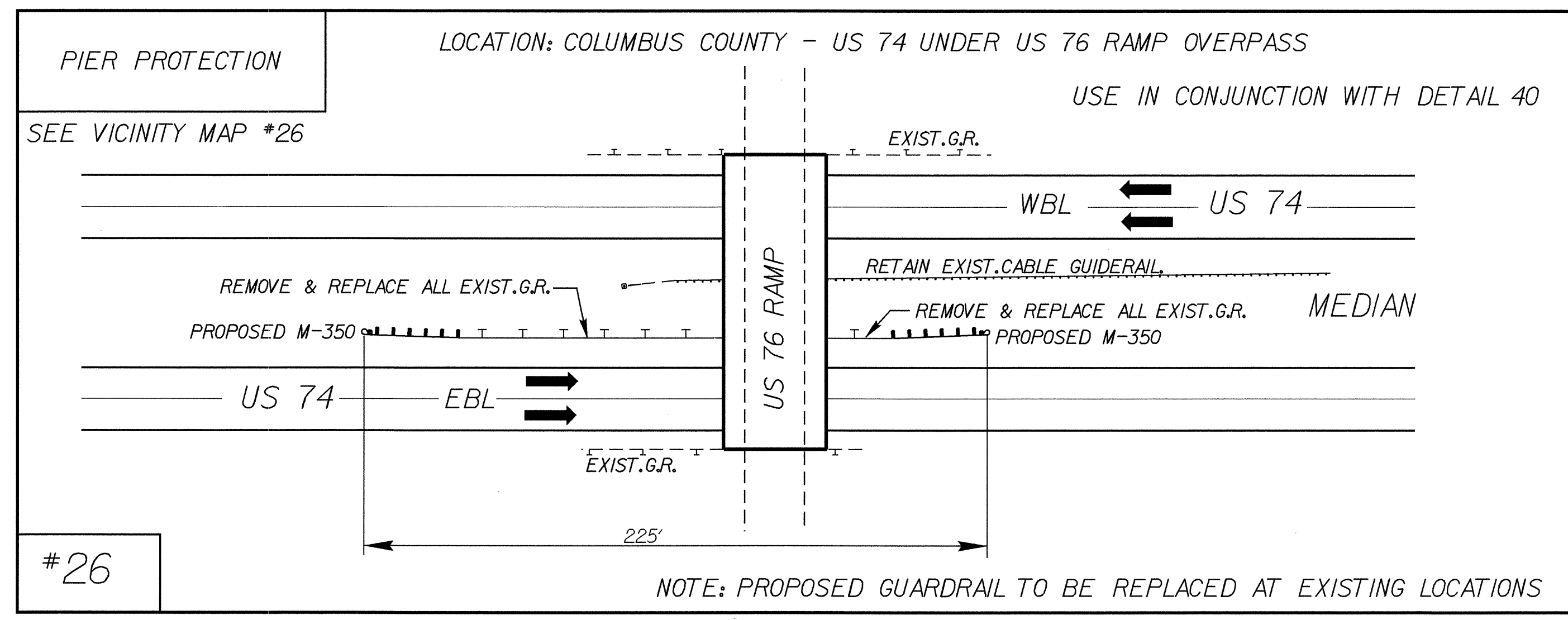
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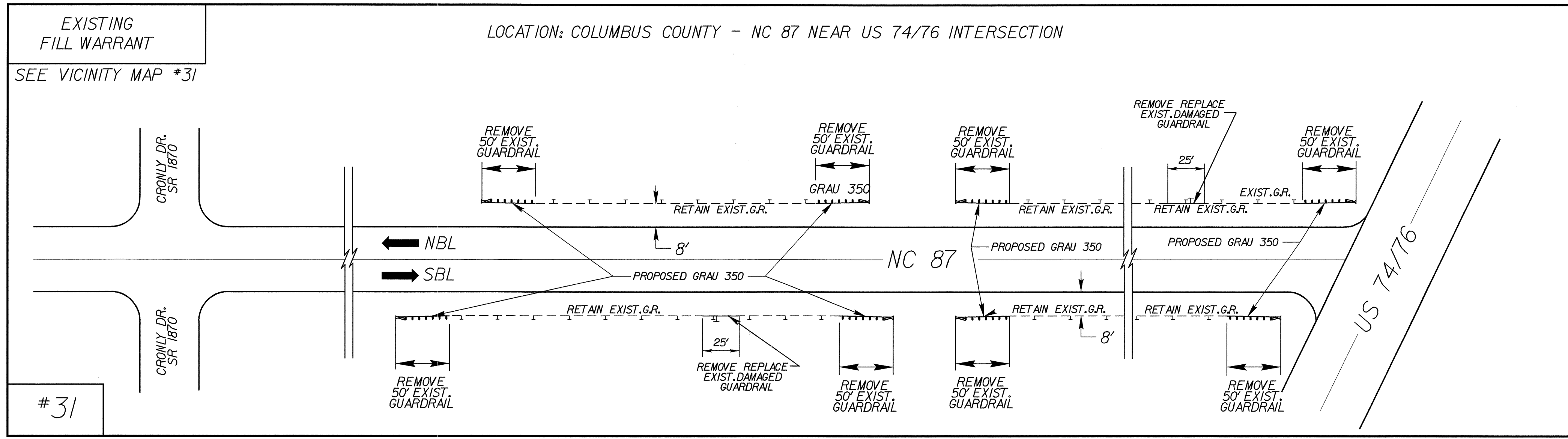
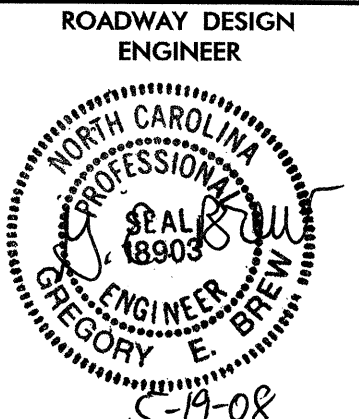
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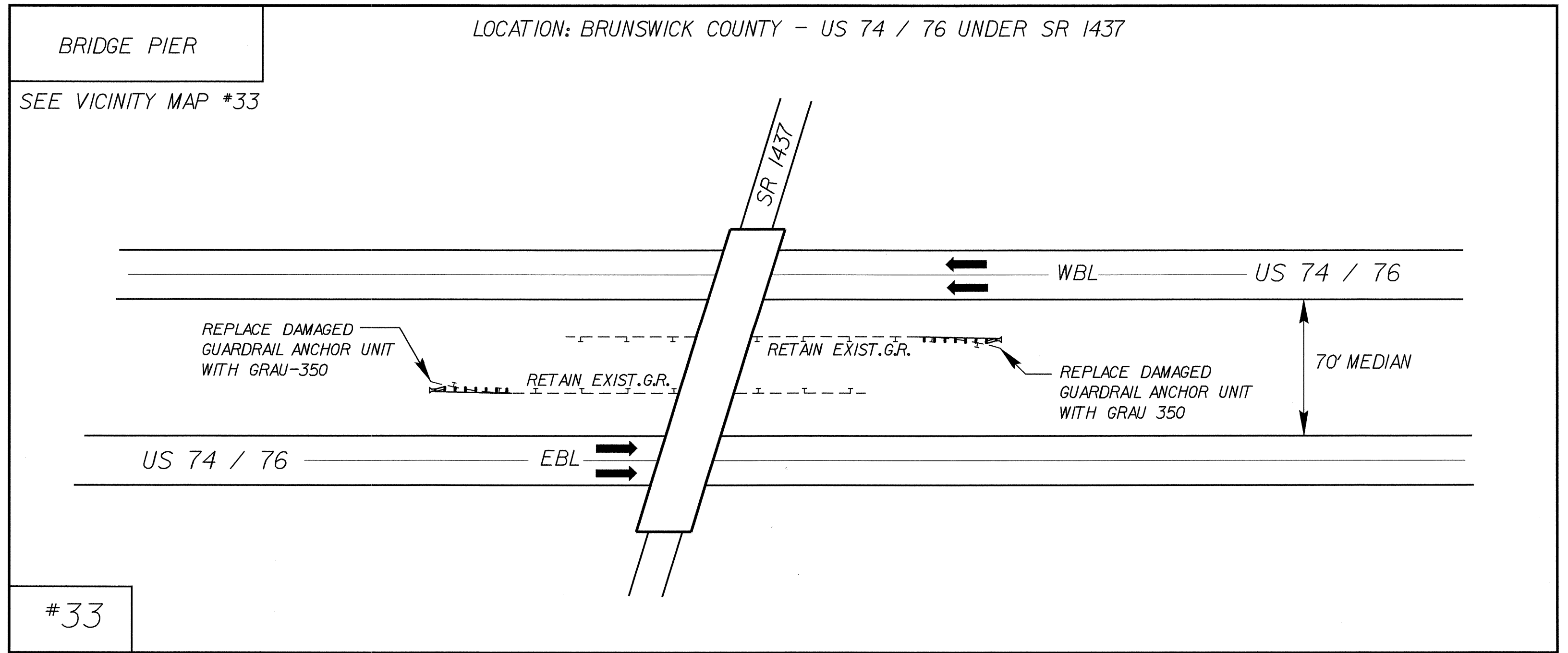
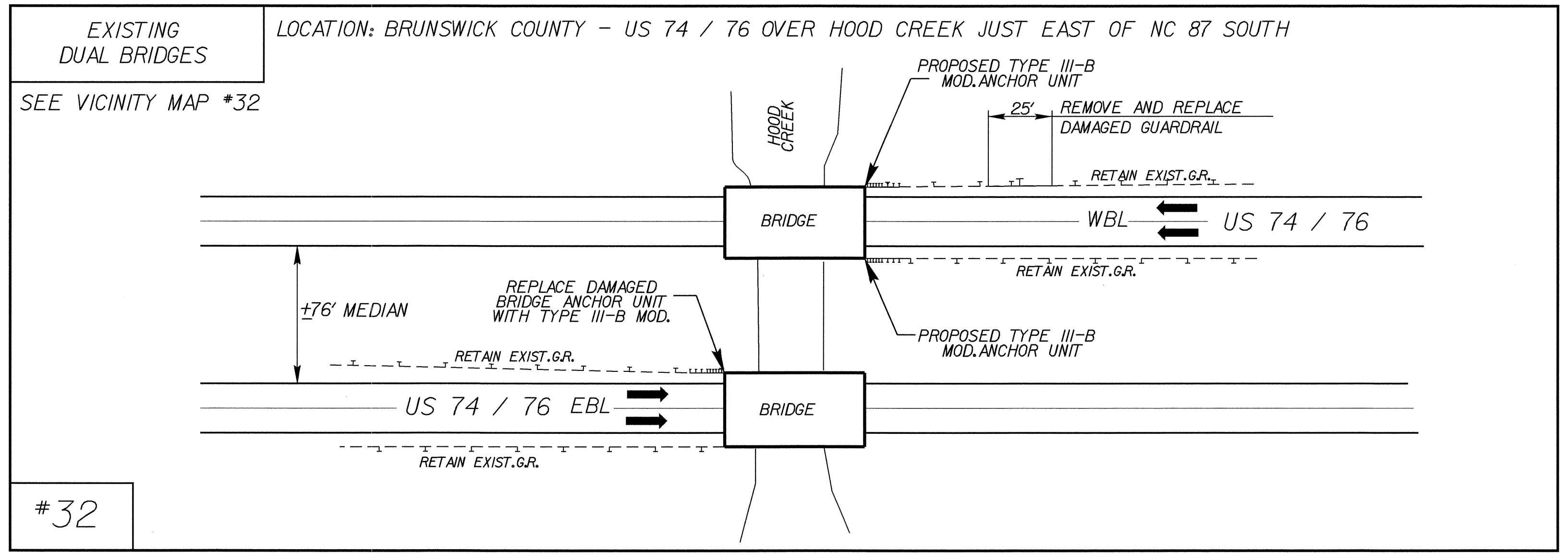
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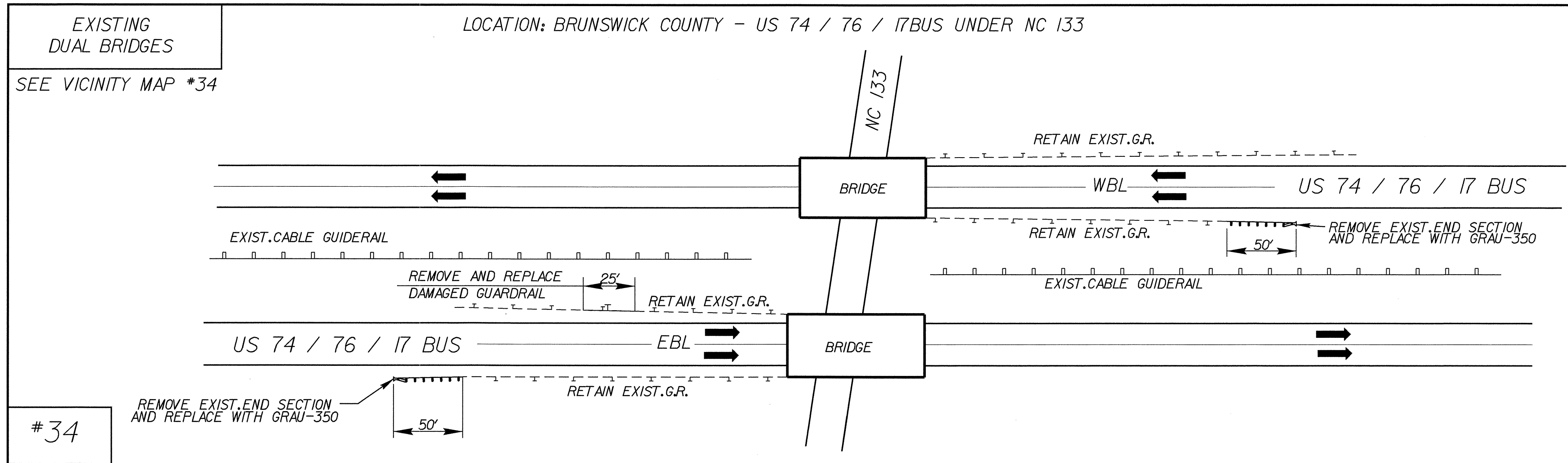
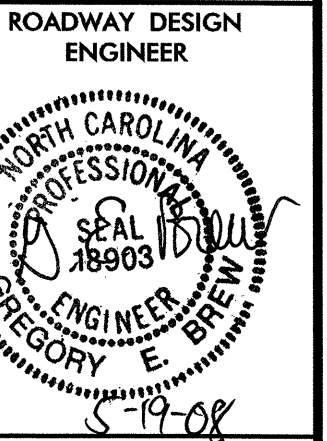
SEE SHEET 2-G FOR VICINITY MAPS

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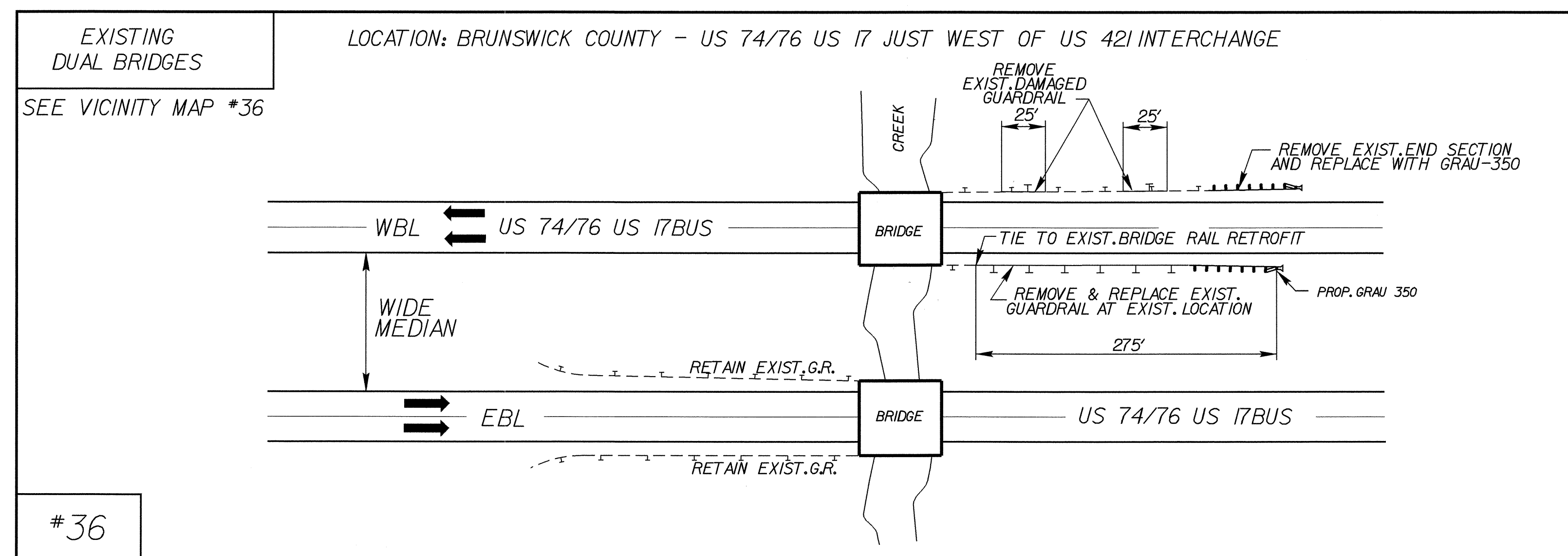
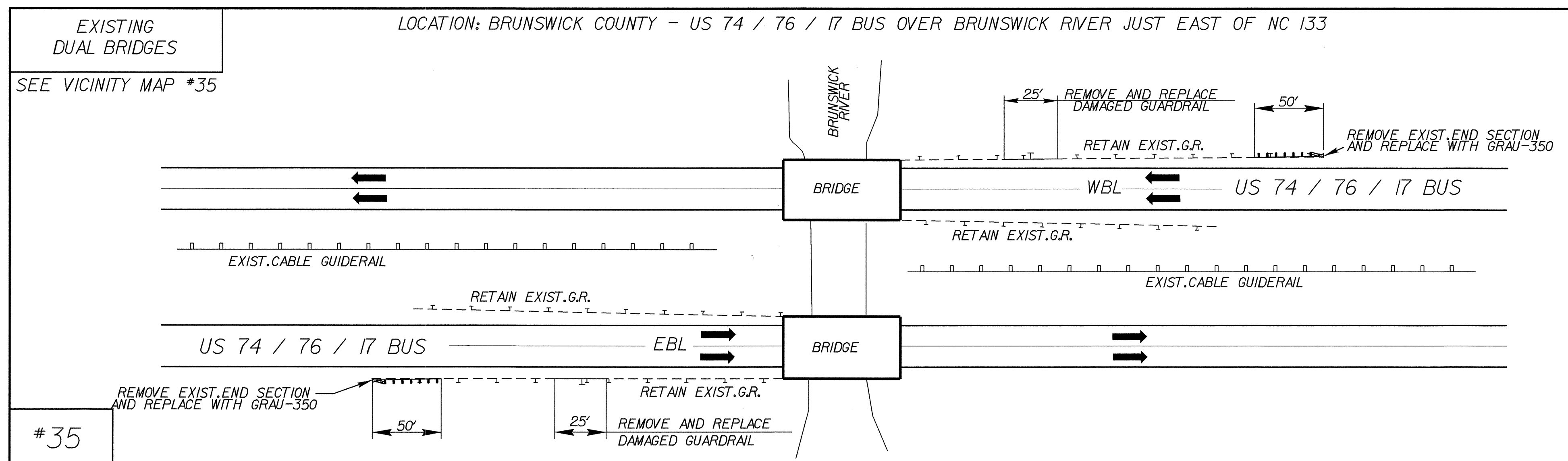
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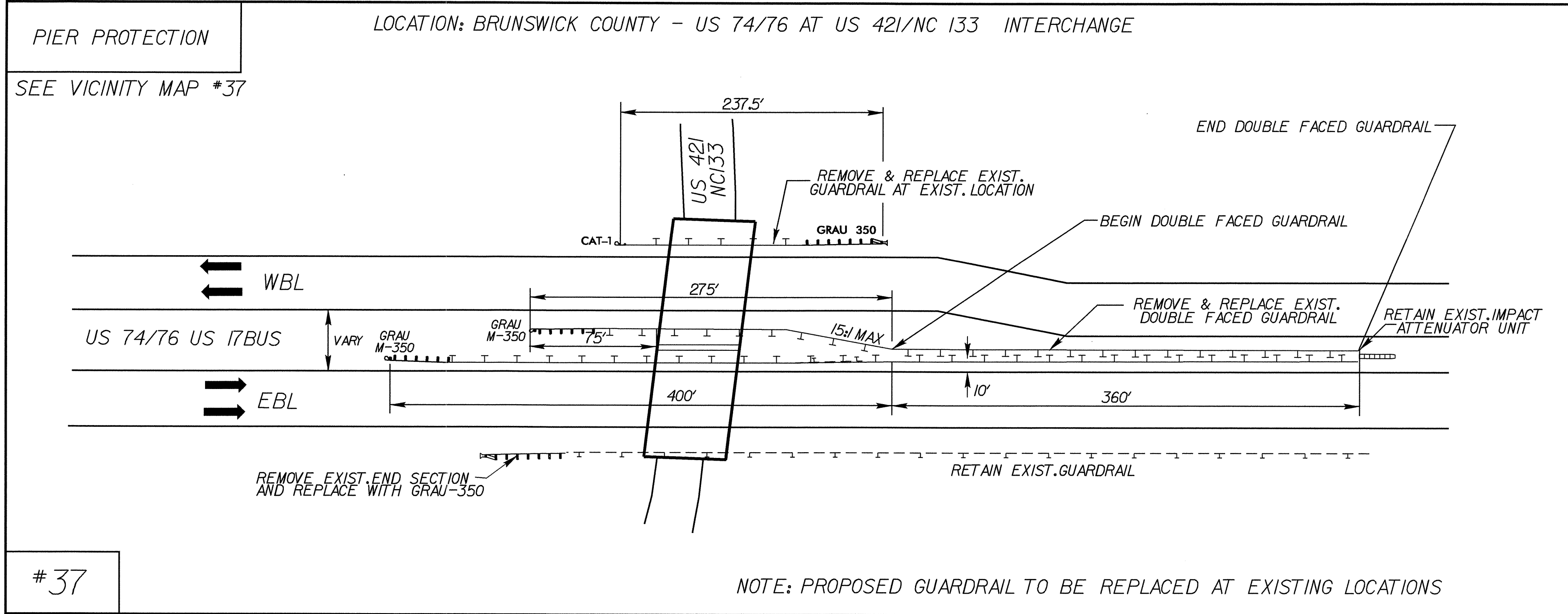
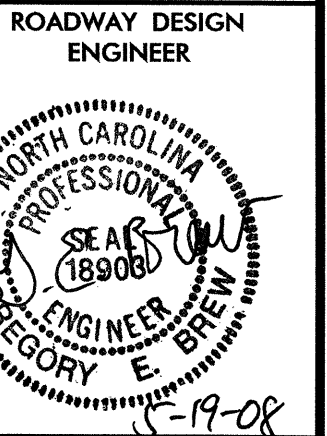
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SEE SHEET 2-G FOR VICINITY MAPS

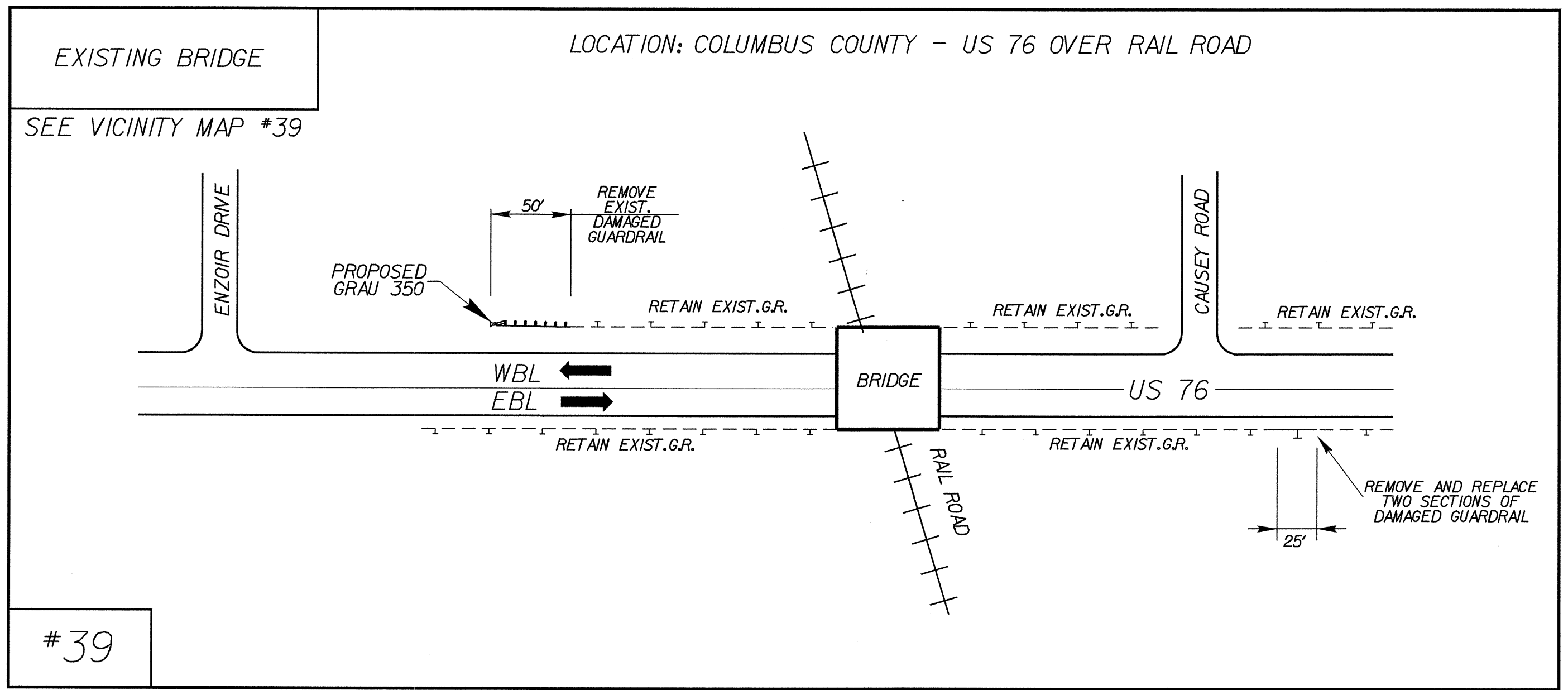
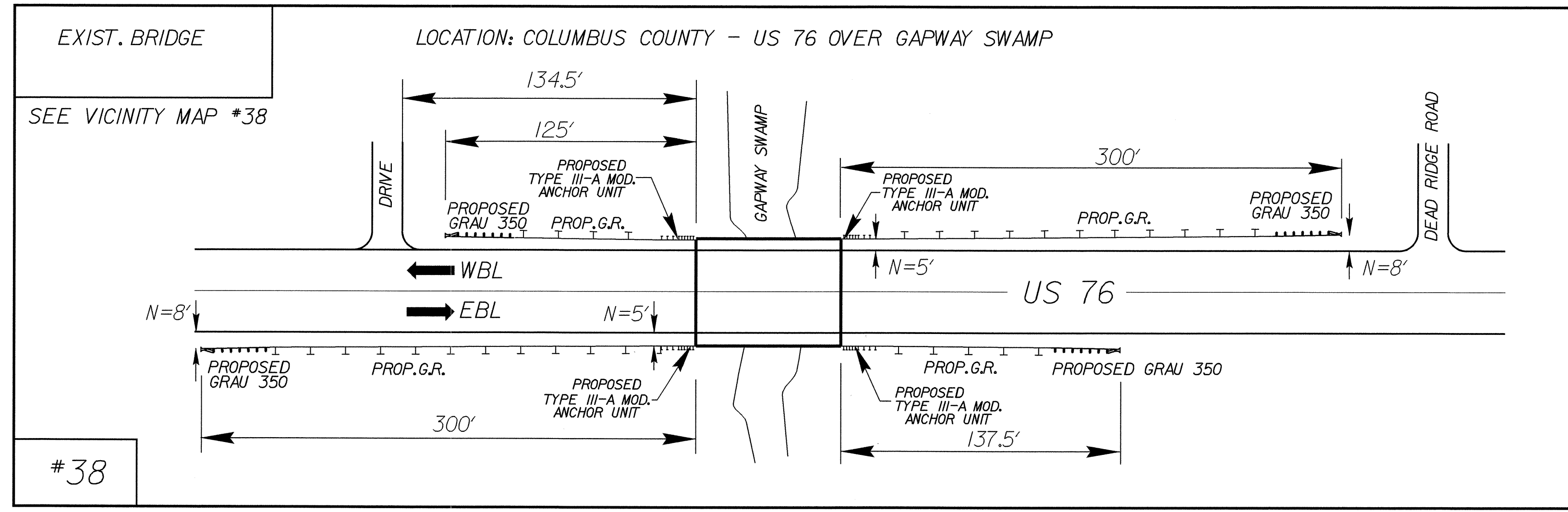
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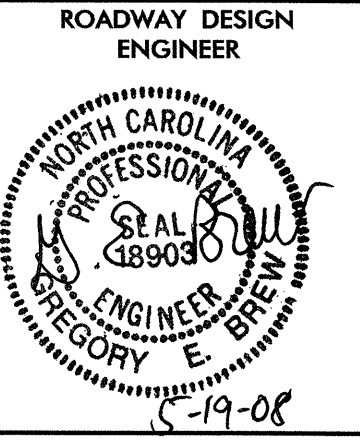
SEE SHEET 2-G & 2-H FOR VICINITY MAPS

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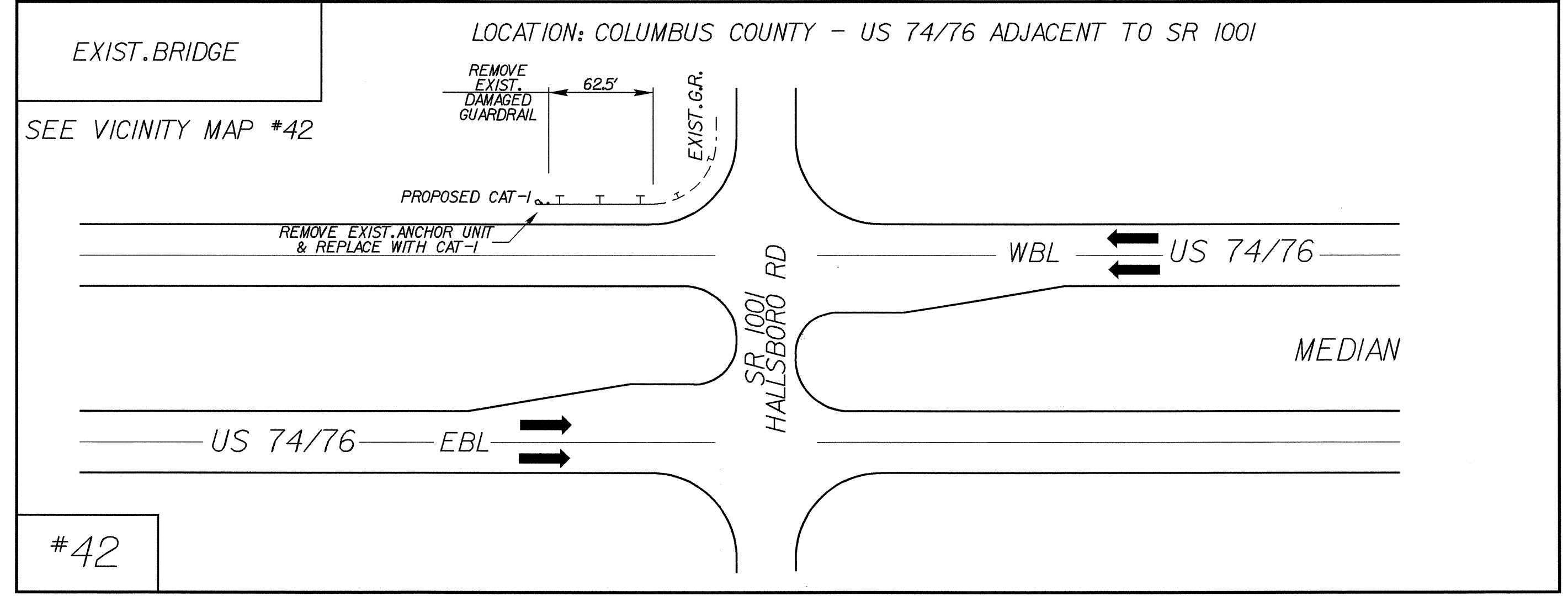
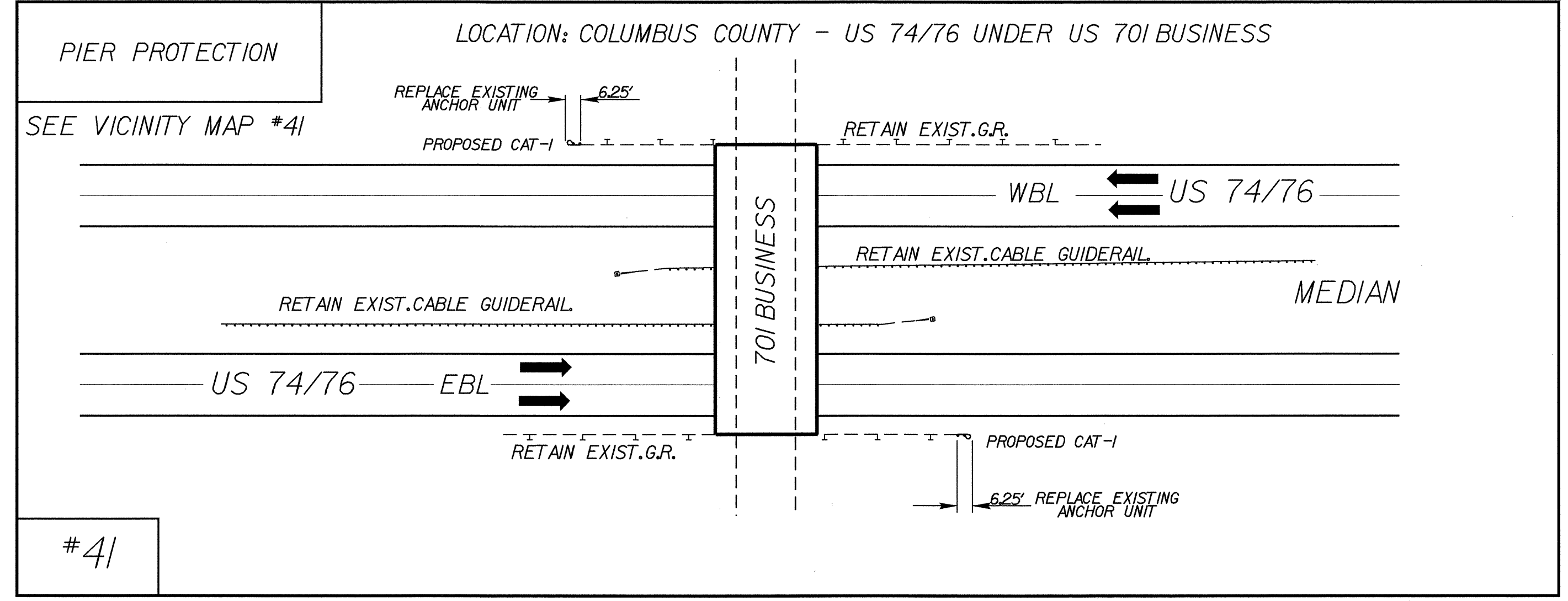
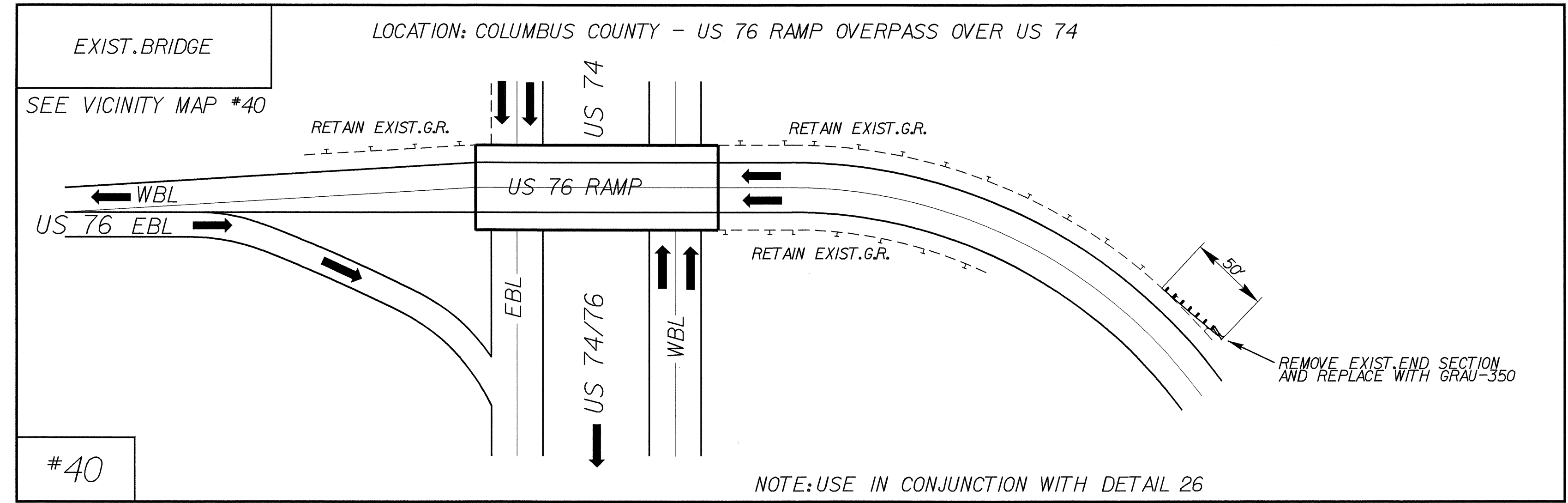
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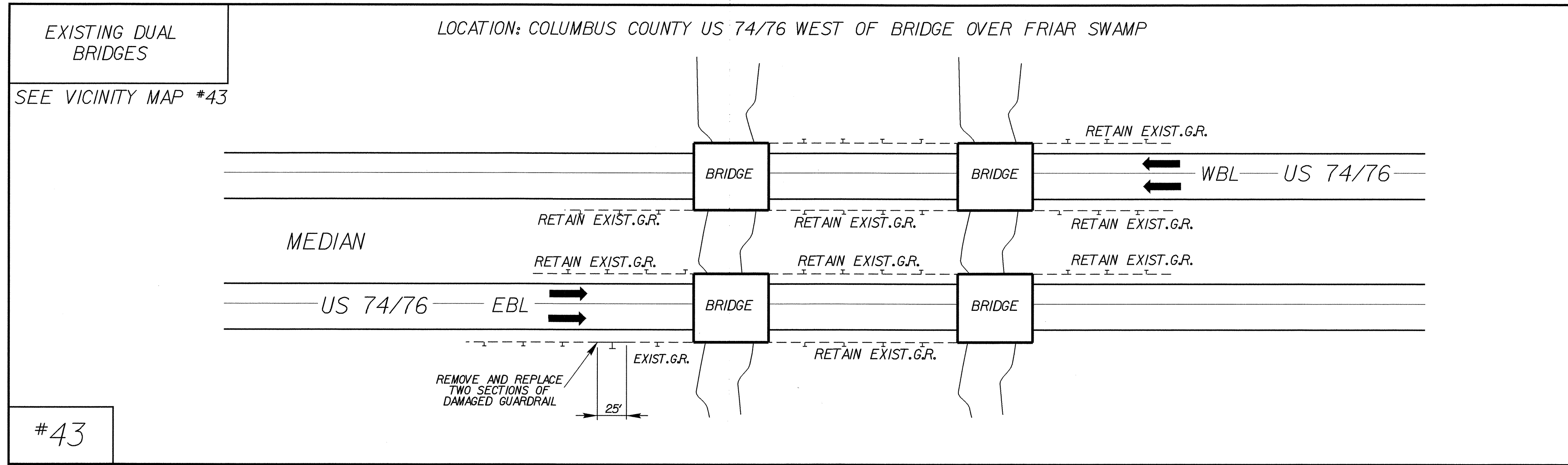
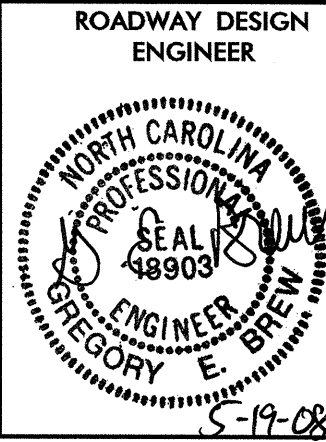
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SEE SHEET 2-F & 2-H FOR VICINITY MAPS

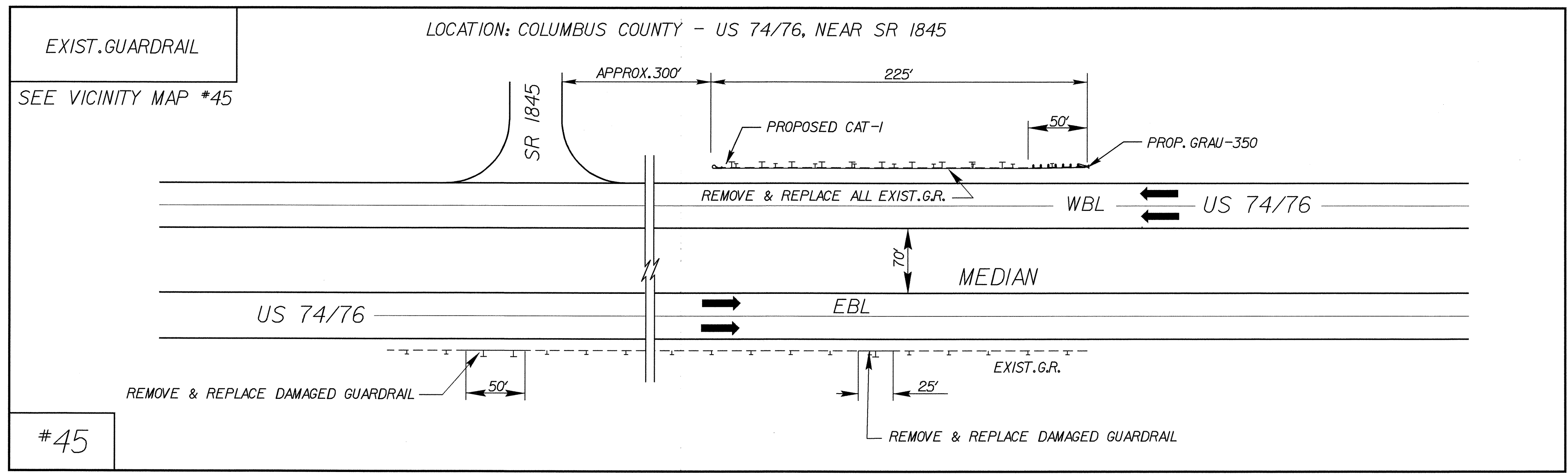
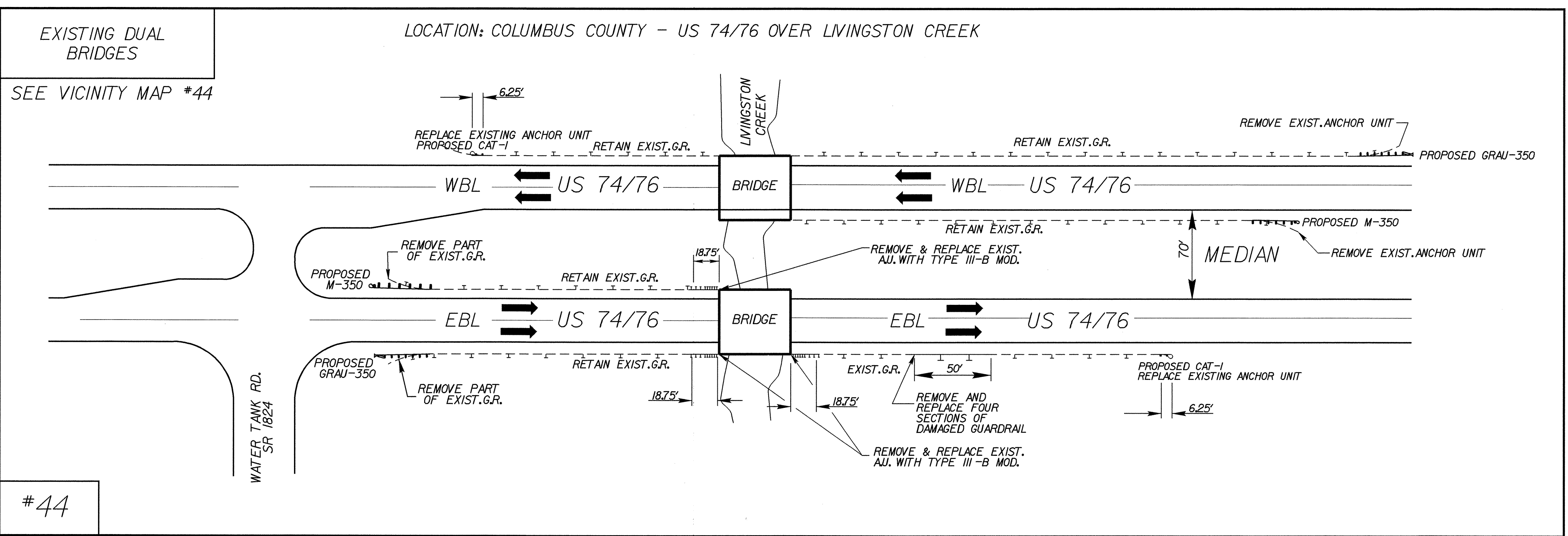
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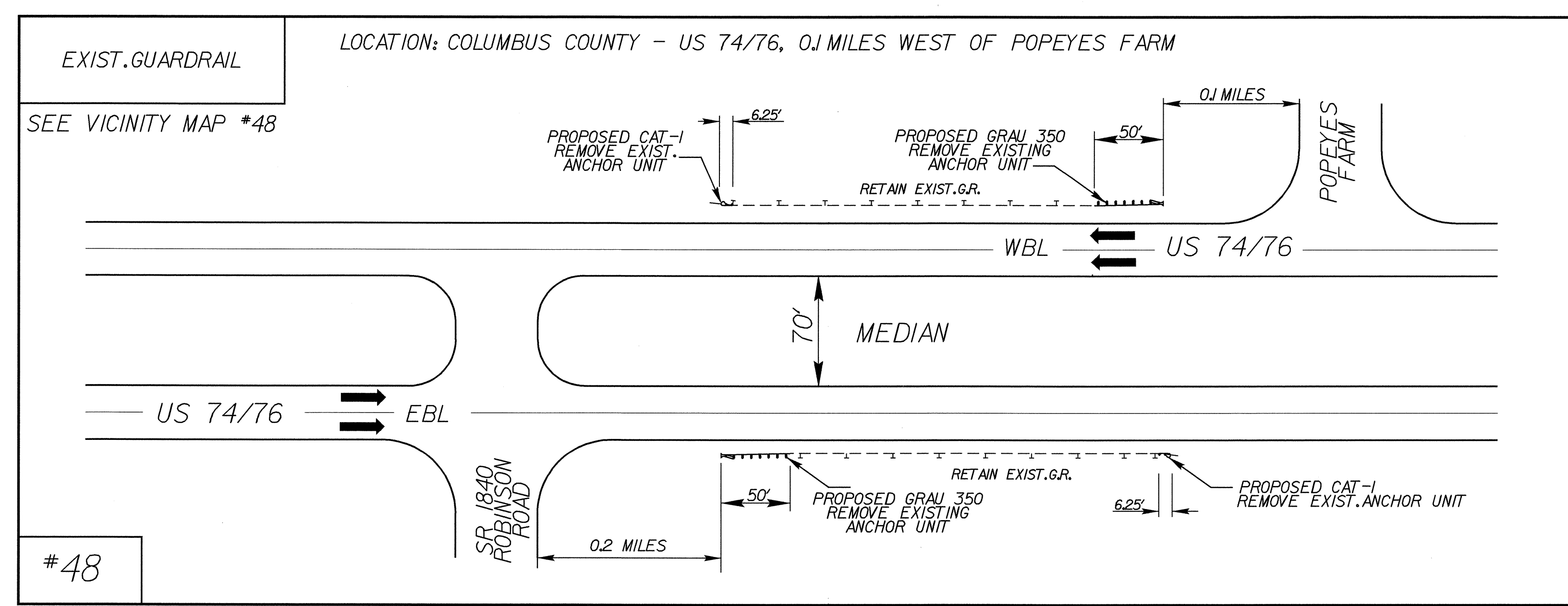
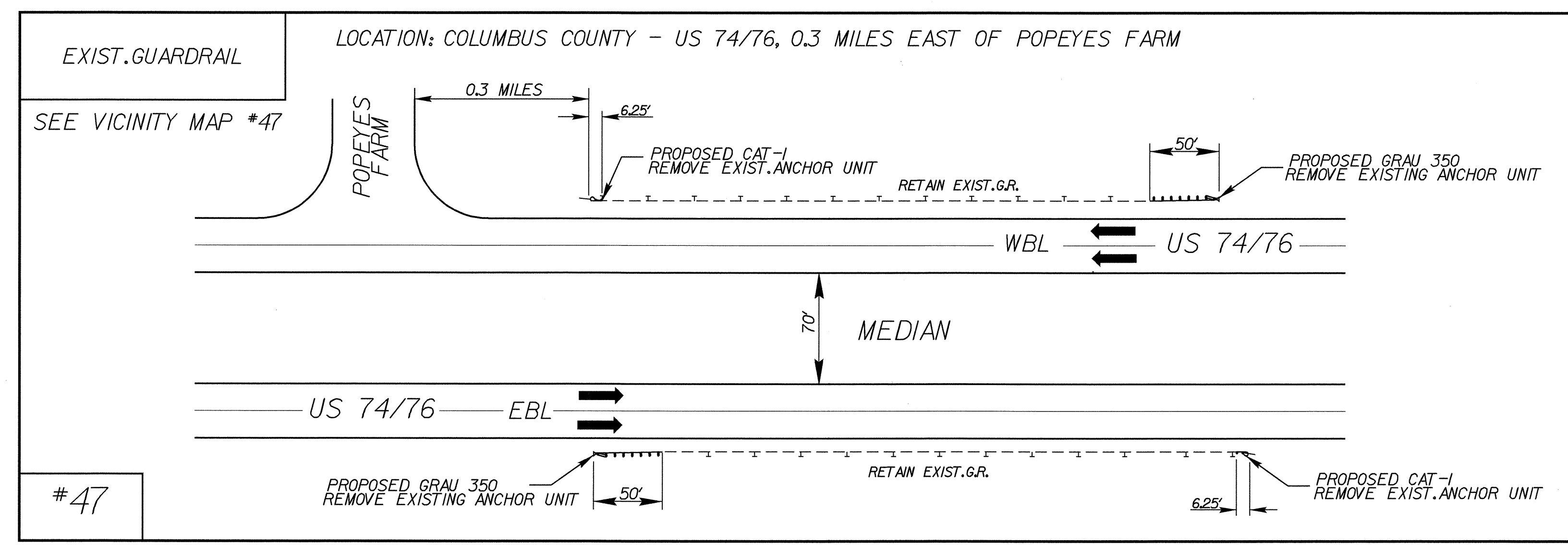
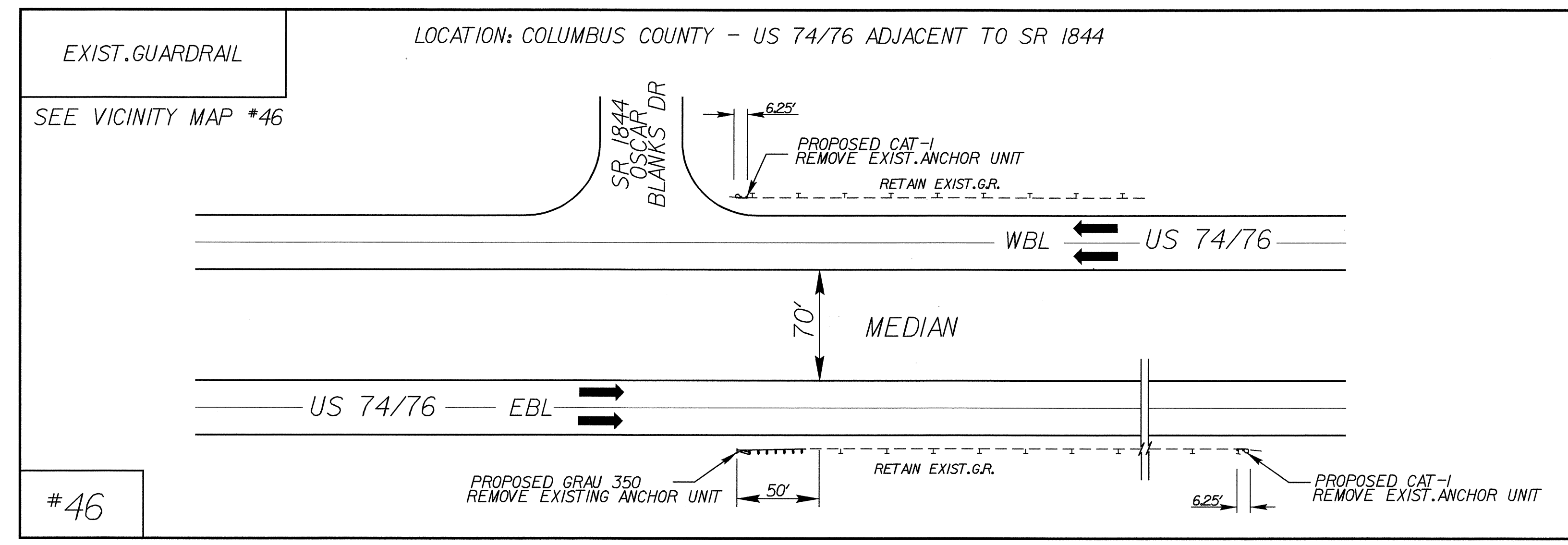
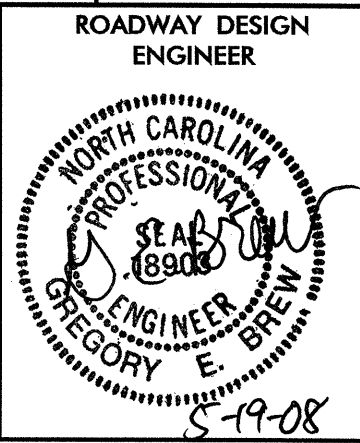
SEE SHEETS 2-H & 2-I FOR VICINITY MAPS

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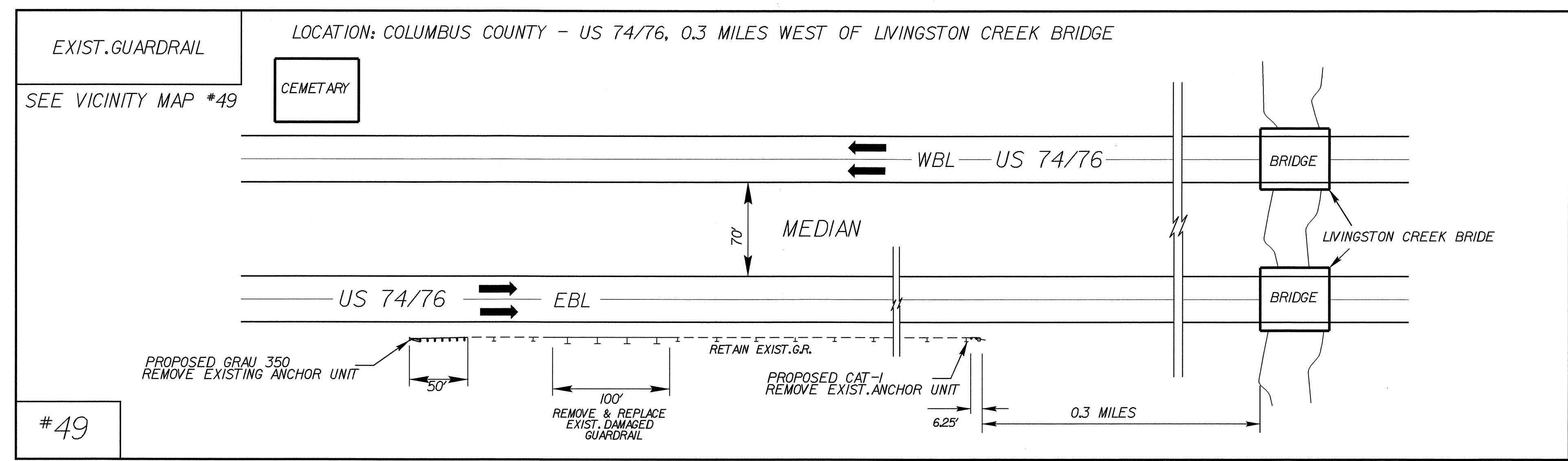
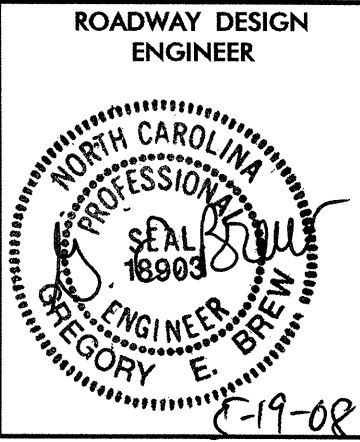


SEE SHEET 2-1 FOR VICINITY MAPS

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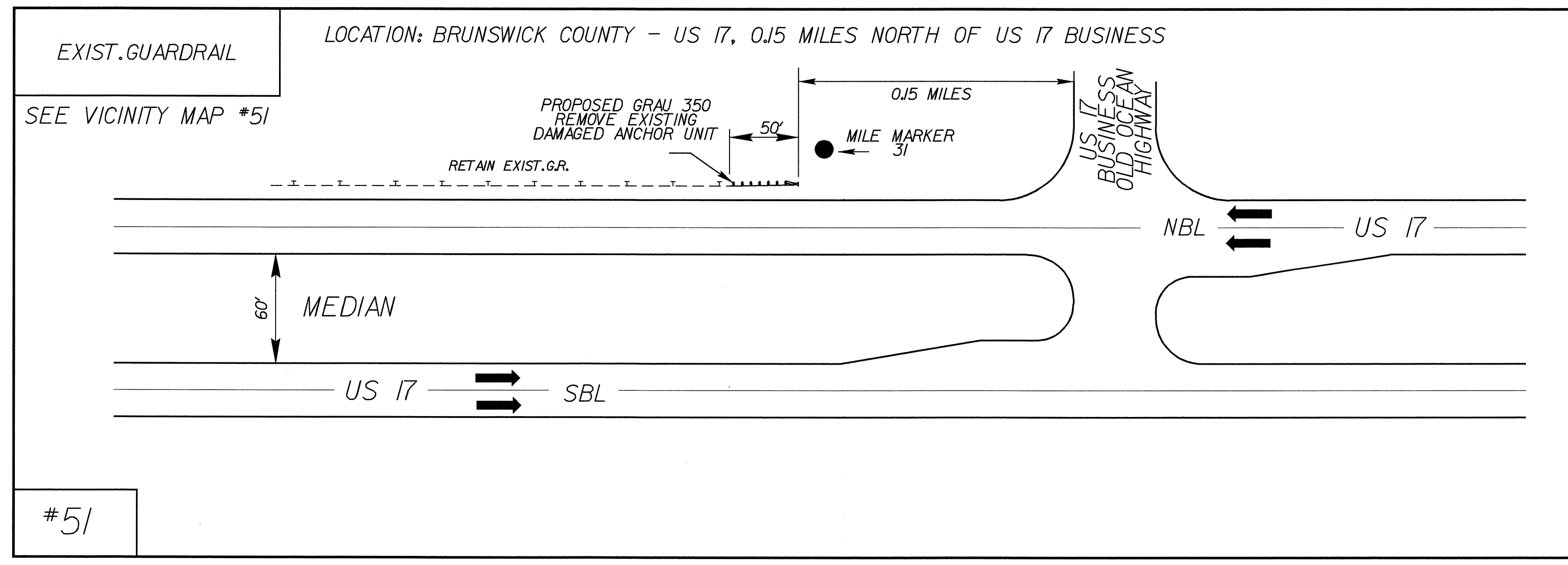
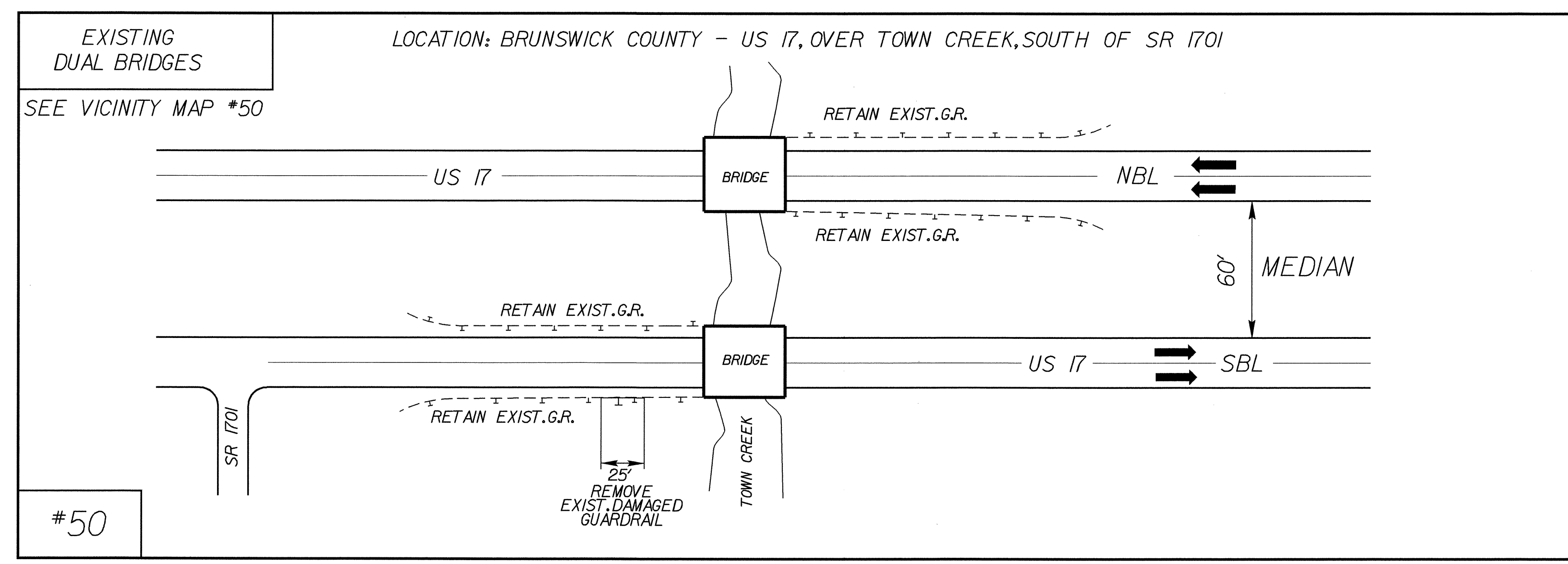
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SEE SHEETS 2-I & 2-J FOR VICINITY MAPS

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PROJECT REFERENCE NO.	SHEET NO.
R-4405	3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201903

ItemNumber	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
303000000-E	862	4,700	LF	STEEL BM GUARDRAIL
306000000-E	862	360	LF	STEEL BM GUARDRAIL, DOUBLE FACED
315000000-N	862	25	EA	ADDITIONAL GUARDRAIL POSTS
318000000-N	862	35	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (III-A MOD)
318000000-N	862	7	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (III-B MOD)
318000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** (III-C MOD)
319500000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
321000000-N	862	23	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
327000000-N	SP	110	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
328500000-N	SP	29	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
331700000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
336000000-E	863	9,300	LF	REMOVE EXISTING GUARDRAIL
343500000-N	SP	10	EA	GENERIC GUARDRAIL ITEM 25' CLEAR SPAN
440500000-E	1110	2,560	SF	WORK ZONE SIGNS (PORTABLE)
441500000-N	1115	8	EA	FLASHING ARROW PANELS, TYPE C
442000000-N	1120	8	EA	CHANGEABLE MESSAGE SIGN
443000000-N	1130	344	EA	DRUMS
443500000-N	1135	152	EA	CONES
445000000-N	1150	960	HR	FLAGGER
448000000-N	1165	10	EA	TMA
451000000-N	SP	360	HR	POLICE
451600000-N	1180	424	EA	SKINNY DRUM
525500000-N	1413	Lump Sum		PORTABLE LIGHTING

ItemNumber	Sec #	Quantity	Unit	Description
608400000-E	1660	2	ACR	SEEDING & MULCHING
611400000-N	SP	20	HR	SPECIALIZED HAND MOWING

6/16/09

COMPUTED BY: CJT DATE: 3/14/2008
 CHECKED BY: IY DATE: 4/30/2008

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. R-4405
 SHEET NO. 3-C

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	COUNTY	LOCATION	LENGTH (FT)			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS (EA)						25' CLEAR SPAN (EACH)	IMPACT ATTENUATOR TYPE 350			LENGTH DEDUCTION FOR ANCHOR UNIT	REMOVE EXIST. GUARDRAIL	REMARKS						
			STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	B-77	M-350	CAT-1	AT-1	GRAU TYPE III-A MODIFIED SHEET 2		GRAU TYPE III-B MODIFIED SHEET 2-A	GRAU TYPE III-C MODIFIED SHEET 2-B	NO.				G	NG				
US 7476	BRUNSWICK	DETAIL 32	WBL-RT	25'			BRIDGE WARRANT																					43.75'	REP. EXIST. DAMAGED GUARDRAIL & ADD ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 32	WBL-MED				BRIDGE WARRANT																					18.75'	ADD BRIDGE ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 32	EBL-MED				BRIDGE WARRANT																					18.75'	REPLACE DAMAGED BRIDGE ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 33	EBL-MED				BRIDGE PIER																					50'	REPLACE DAMAGED ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 33	WBL-MED				BRIDGE PIER																					50'	REPLACE DAMAGED ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 34	EBL-RT				BRIDGE WARRANT																					50'	REMOVE & REPLACE EXIST. END SECTION			
US 7476	BRUNSWICK	DETAIL 34	EBL-MED	25'			BRIDGE WARRANT																					25'	REP. EXIST. DAMAGED GUARDRAIL			
US 7476	BRUNSWICK	DETAIL 34	WBL-MED				BRIDGE WARRANT																					50'	REMOVE & REPLACE EXIST. END SECTION			
US 7476	BRUNSWICK	DETAIL 35	EBL-RT	25'			BRIDGE WARRANT																					75'	REMOVE & REP. EXIST. END SECT. & DAMAGED GUARDRAIL			
US 7476	BRUNSWICK	DETAIL 35	WBL-RT	25'			BRIDGE WARRANT																					75'	REMOVE & REP. EXIST. END SECT. & DAMAGED GUARDRAIL			
US 7476	BRUNSWICK	DETAIL 36	WBL-RT	50'			BRIDGE WARRANT																					100'	REP. EXIST. DAMAGED GUARDRAIL & ADD ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 36	WBL-MED	275'			BRIDGE WARRANT																		X			275'	REP. EXIST. DAMAGED GUARDRAIL & ADD ANCHOR UNIT			
US 7476	BRUNSWICK	DETAIL 37	WBL-RT	237.5'			BRIDGE PIER																					237'	REPLACE AT EXIST. LOCATION			
US 7476	BRUNSWICK	DETAIL 37	WBL-MED	275'			BRIDGE PIER																					275'	REMOVE ALL EXISTING GUARDRAIL			
US 7476	BRUNSWICK	DETAIL 37	EBL-RT				BRIDGE PIER																					50'	REMOVE AND REPLACE EXIST. END SECTION			
US 7476	BRUNSWICK	DETAIL 37	EBL-MED	400'			BRIDGE PIER	10'																				400'	TIE TO DOUBLE FACED GUARDRAIL			
US 7476	BRUNSWICK	DETAIL 37	EBL-MED			360'	BRIDGE PIER	10'																				360'	TIE TO IMPACT ATTENUATOR UNIT			
US 76	COLUMBUS	DETAIL 38	EBL-RT	300'			BRIDGE	5'																								
US 76	COLUMBUS	DETAIL 38	EBL-RT	137.5'			BRIDGE	5'																								
US 76	COLUMBUS	DETAIL 38	WBL-RT	300'			BRIDGE	5'																								
US 76	COLUMBUS	DETAIL 38	WBL-RT	125'			BRIDGE	5'																								
US 76	COLUMBUS	DETAIL 39	WBL-RT				BRIDGE																						50'	REP. EXIST. DAMAGED ANCHOR UNIT		
US 76	COLUMBUS	DETAIL 39	EBL-RT	25'			BRIDGE																						25'	REP. EXIST. DAMAGED GUARDRAIL		
US 76	COLUMBUS	DETAIL 40	WBL-RT				BRIDGE																						50'	REMOVE AND REPLACE EXIST. ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 41	EBL-RT				BRIDGE PIER																						6.25	REP. EXIST. DAMAGED ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 41	WBL-RT				BRIDGE PIER																						6.25	REP. EXIST. DAMAGED ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 42	WBL-RT	62.5'			CULVERT																						62.5'	REPLACE EXIST. DAMAGED GUARDRAIL AND ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 43	EBL-RT	25'			BRIDGE																						25'	REMOVE AND REPLACE EXIST. DAMAGED GUARDRAIL		
US 7476	COLUMBUS	DETAIL 44	EBL-RT				BRIDGE																						68.75'	REMOVE AND REPLACE EXIST. ANCHOR UNITS		
US 7476	COLUMBUS	DETAIL 44	EBL-RT	50'			BRIDGE																						93.75'	REPLACE EXIST. DAMAGED GUARDRAIL AND ANCHOR UNITS		
US 7476	COLUMBUS	DETAIL 44	EBL-MED				BRIDGE																						56.25'	REMOVE AND REPLACE EXIST. ANCHOR UNITS		
US 7476	COLUMBUS	DETAIL 44	WBL-RT				BRIDGE																						50'	REMOVE AND REPLACE EXIST. ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 44	WBL-RT				BRIDGE																						25'	REMOVE AND REPLACE EXIST. ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 44	WBL-MED				BRIDGE																						37.5'	REMOVE AND REPLACE EXIST. ANCHOR UNIT		
US 7476	COLUMBUS	DETAIL 45	EBL-RT	75'			FILL /CULVERT																						75'	REMOVE AND REPLACE EXIST. DAMAGED GUARDRAIL		
US 7476	COLUMBUS	DETAIL 45	WBL-RT	225'			FILL /CULVERT																						225'	REMOVE AND REPLACE ALL EXISTING GUARDRAIL		
US 7476	COLUMBUS	DETAIL 46	EBL-RT				FILL /CULVERT																						75'	REMOVE AND REPLACE EXIST. END UNITS		
US 7476	COLUMBUS	DETAIL 46	WBL-RT				FILL /CULVERT																						25	REMOVE AND REPLACE EXIST. END UNIT		
US 7476	COLUMBUS	DETAIL 47	EBL-RT				FILL /CULVERT																							75'	REMOVE AND REPLACE EXIST. END UNITS	
US 7476	COLUMBUS	DETAIL 47	WBL-RT				FILL /CULVERT																							75'	REMOVE AND REPLACE EXIST. END UNITS	
US 7476	COLUMBUS	DETAIL 48	EBL-RT				FILL /CULVERT																							75'	REMOVE AND REPLACE EXIST. END UNITS	
US 7476	COLUMBUS	DETAIL 48	WBL-RT				FILL /CULVERT																							75'	REMOVE AND REPLACE EXIST. END UNITS	
US 7476	COLUMBUS	DETAIL 49	EBL-RT	100'			FILL /CULVERT																							175'	REPLACE EXIST. DAMAGED GUARDRAIL AND ANCHOR UNITS	
US 17	BRUNSWICK	DETAIL 50	SBL-RT	25'			BRIDGE																						25'	REPLACE EXIST. DAMAGED GUARDRAIL		
US 17	BRUNSWICK	DETAIL 51	NBL-RT				FILL /CULVERT																							50'	REMOVE AND REPLACE EXIST. ANCHOR UNITS	
			SHEET TOTAL	2787.50'		360'																							3659.50'	SHEET TOTAL		

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