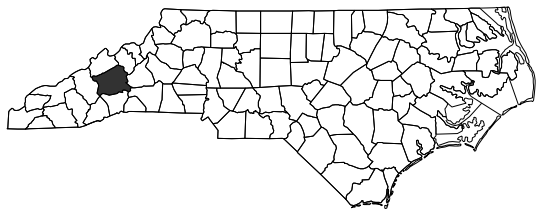


CONTRACT: DM00495 BRIDGE PROJECT: 18313.1011203.PR / 18313.1011211.PR



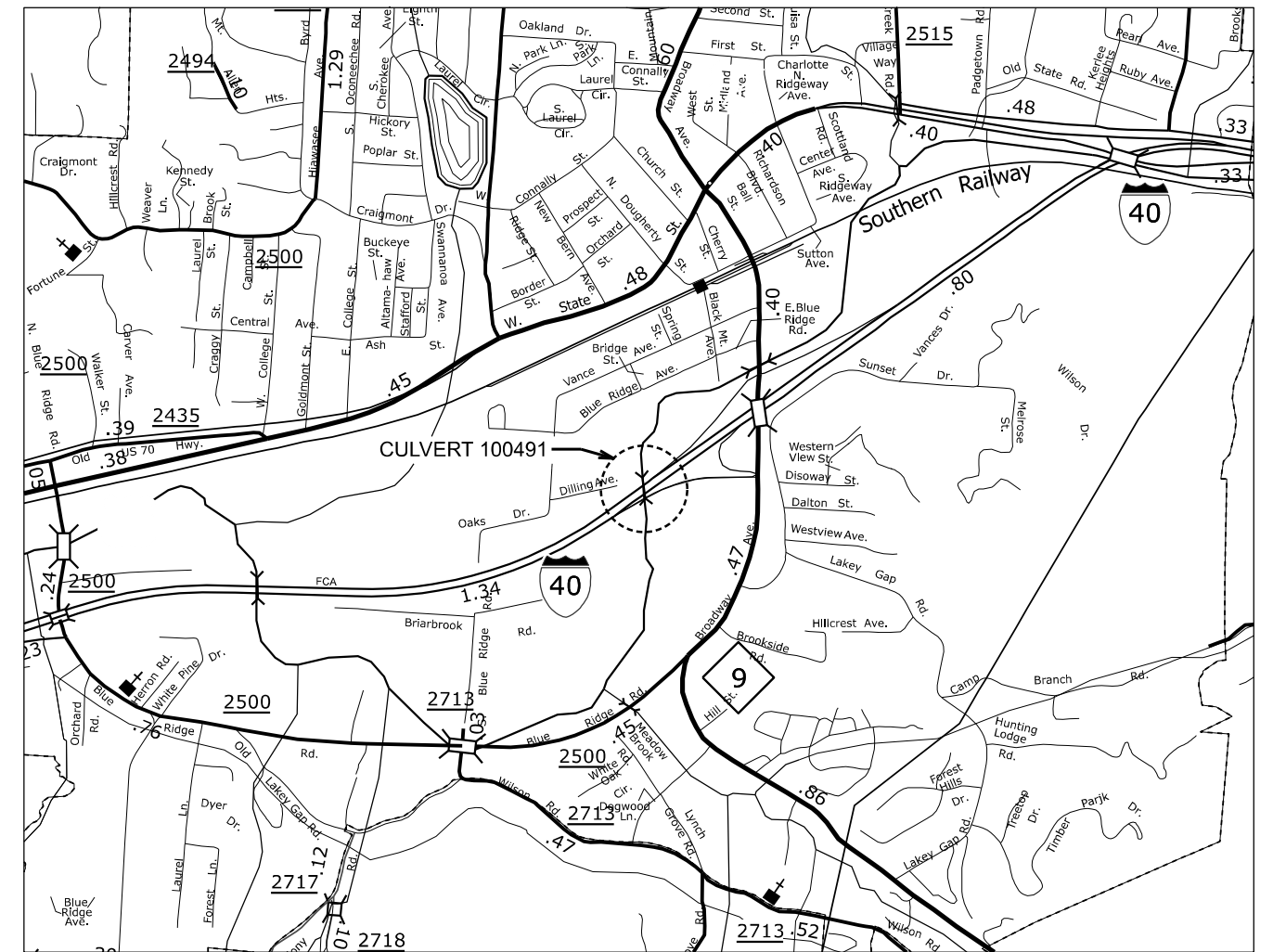
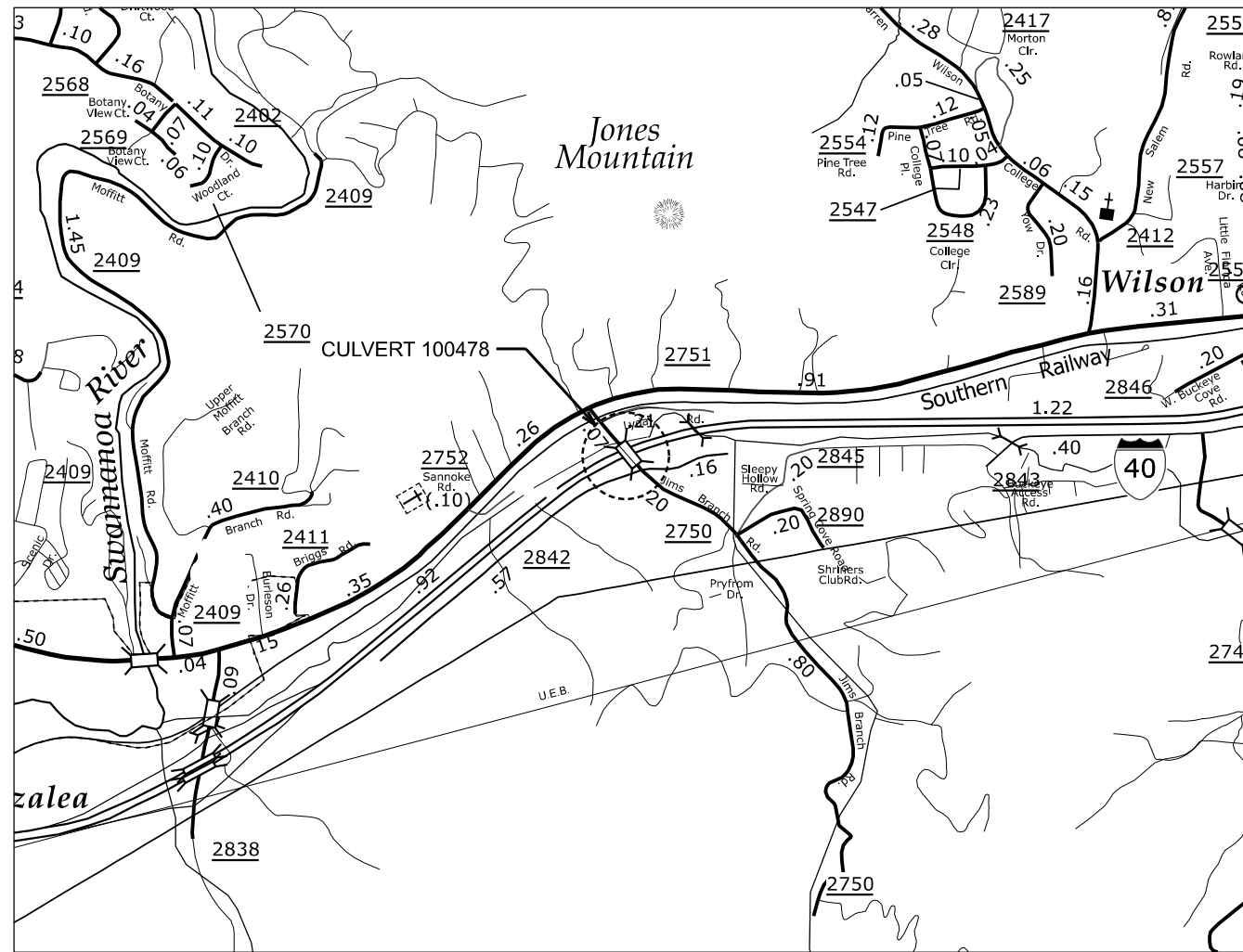
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: *REPAIR CULVERT #100491 ON I-40 CARRYING SWANNANOA RIVER*
REPAIR CULVERT #100478 ON I-40 CARRYING CHRISTIAN CREEK

TYPE OF WORK: *STRUCTURE REPAIRS*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	18313.1011203.PR 18313.1011211.PR		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
18313.1011203.PR	N/A	CULVERT 100491	
18313.1011211.PR	N/A	CULVERT 100478	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**DESIGN DATA
CULVERT 100491**

ADT 2021 = 40000
ADT 2040 = 72000

V = 70 MPH
* TTST = DUAL
FUNC CLASS =
URBAN
INTERSTATE

**DESIGN DATA
CULVERT 100478**

ADT 2019 = 54000
ADT 2040 = 108000

V = 70 MPH
* TTST = DUAL
FUNC CLASS =
URBAN PRINCIPAL
ARTERIAL-INTERSTATE

PROJECT LENGTH

PROJECT LENGTH FOR CULVERT 100491 = 0.012 MILES
PROJECT LENGTH FOR CULVERT 100478 = 0.006 MILES

NCDOT Contact: JOEL M. DAVIS
Prepared in the Office of:

VHB Engineering, Inc. P.O. Box 27050
540 Main Campus Drive, Suite 500
Raleigh, NC 27605

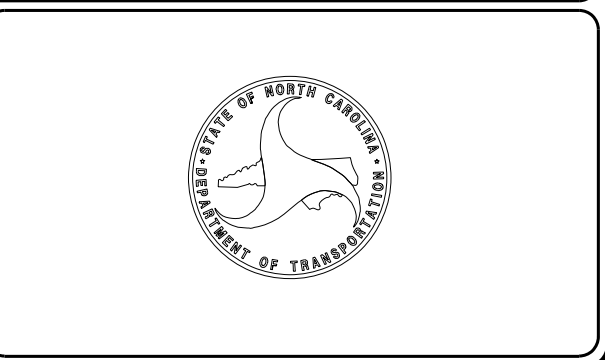
W. KEVIN FISCHER, PE
PROJECT ENGINEER

LETTING DATE:
MARCH 4, 2026

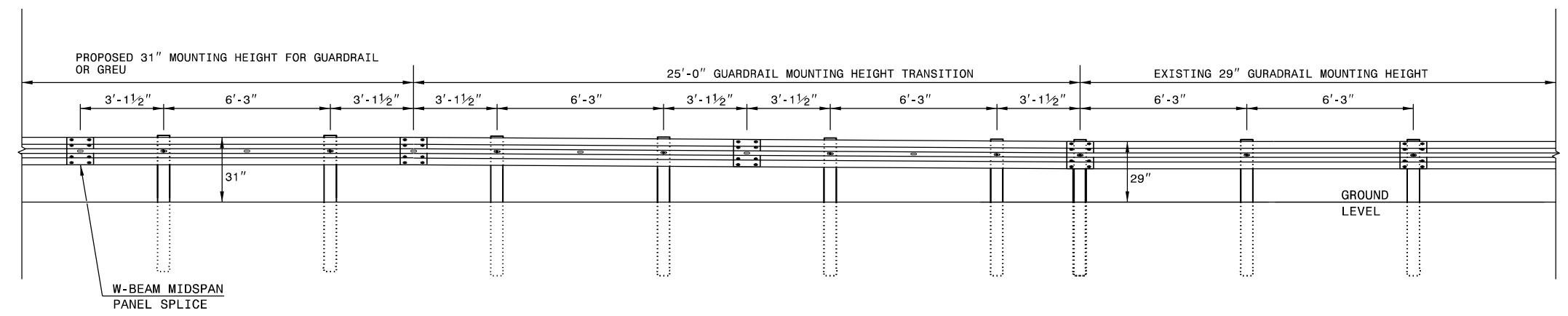
STRUCTURES ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
053485
ENGINEER
CHIRAG S. PATEL

Signed by:
 7/4/2026
CHIRAG PATEL, PE
SIGNATURE:



NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31" GUARDRAIL.



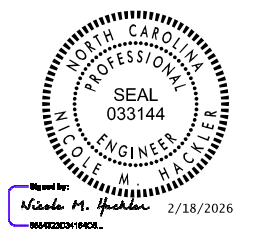
ELEVATION VIEW

TRANSITION FROM 29" TO 31" W-BEAM GUARDRAIL MOUNTING HEIGHT

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 5 OF 9
862D02



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

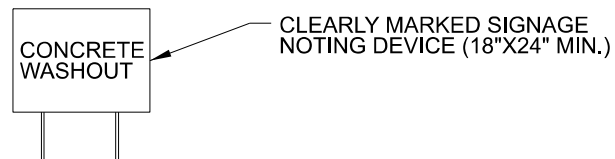
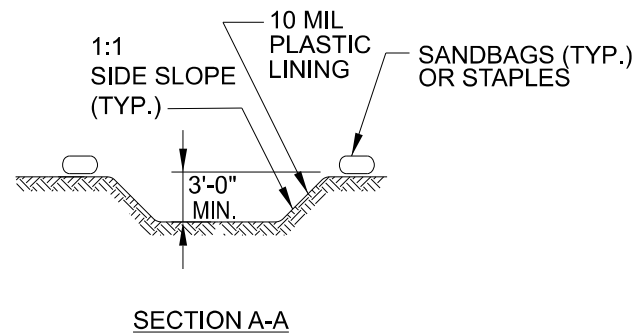
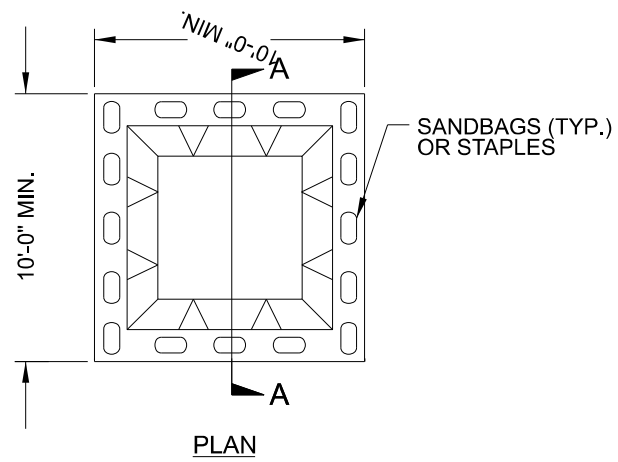
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: K. Aldridge DATE: 02-25
MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

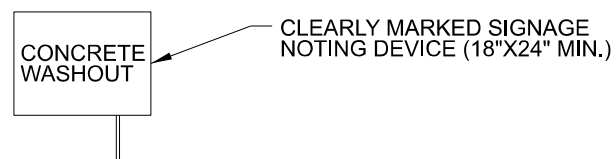
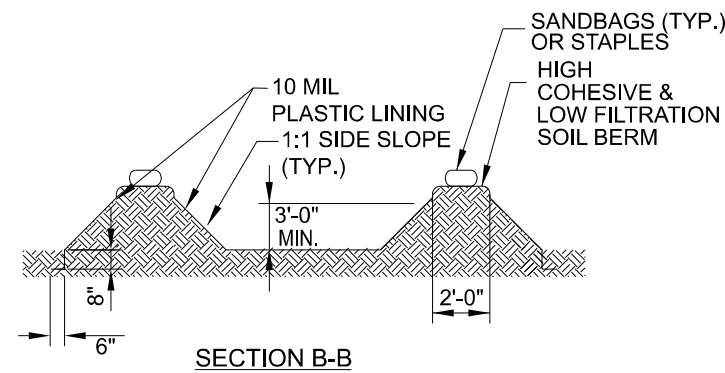
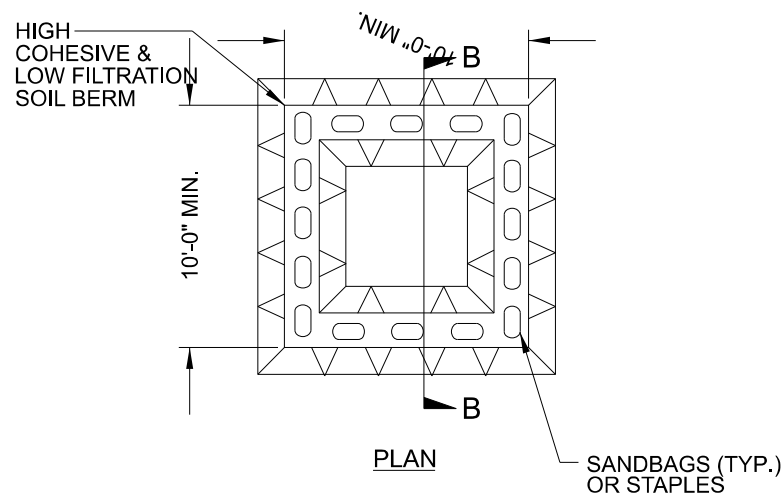
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\$\$\$\$\$USERNAME\$\$\$\$\$

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

PROJECT NO. **18313.1011203.PR**
18313.1011211.PR
BUNCOMBE COUNTY
STATION: _____

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
EROSION CONTROL WASHOUT DETAILS						EC-1
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	11
1			3			
2			4			

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DRAWN BY : GEORGIA REICHLING DATE : 7/2025
CHECKED BY : J.R. HOPSON DATE : 7/2025
DESIGN ENGINEER OF RECORD: _____ DATE : _____

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 TO 4:1	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1. 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES

18313.1011203.PR
PROJECT NO. 18313.1011211.PR
BUNCOMBE COUNTY
STATION: _____



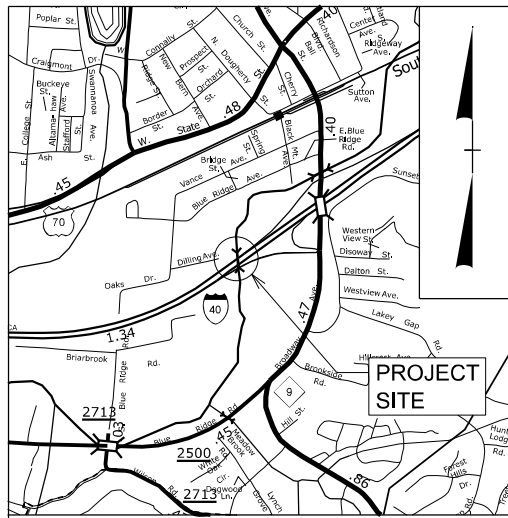
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CHECKED BY : J.R. HOPSON DATE : 7/2025
DESIGN ENGINEER OF RECORD: _____ DATE : _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EROSION CONTROL
SOIL STABILIZATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC-2 TOTAL SHEETS
1			3			11
2			4			

CONTRACT: DM00495 BRIDGE PROJECT: 18313.1011203.PR



VICINITY MAP (NTS)

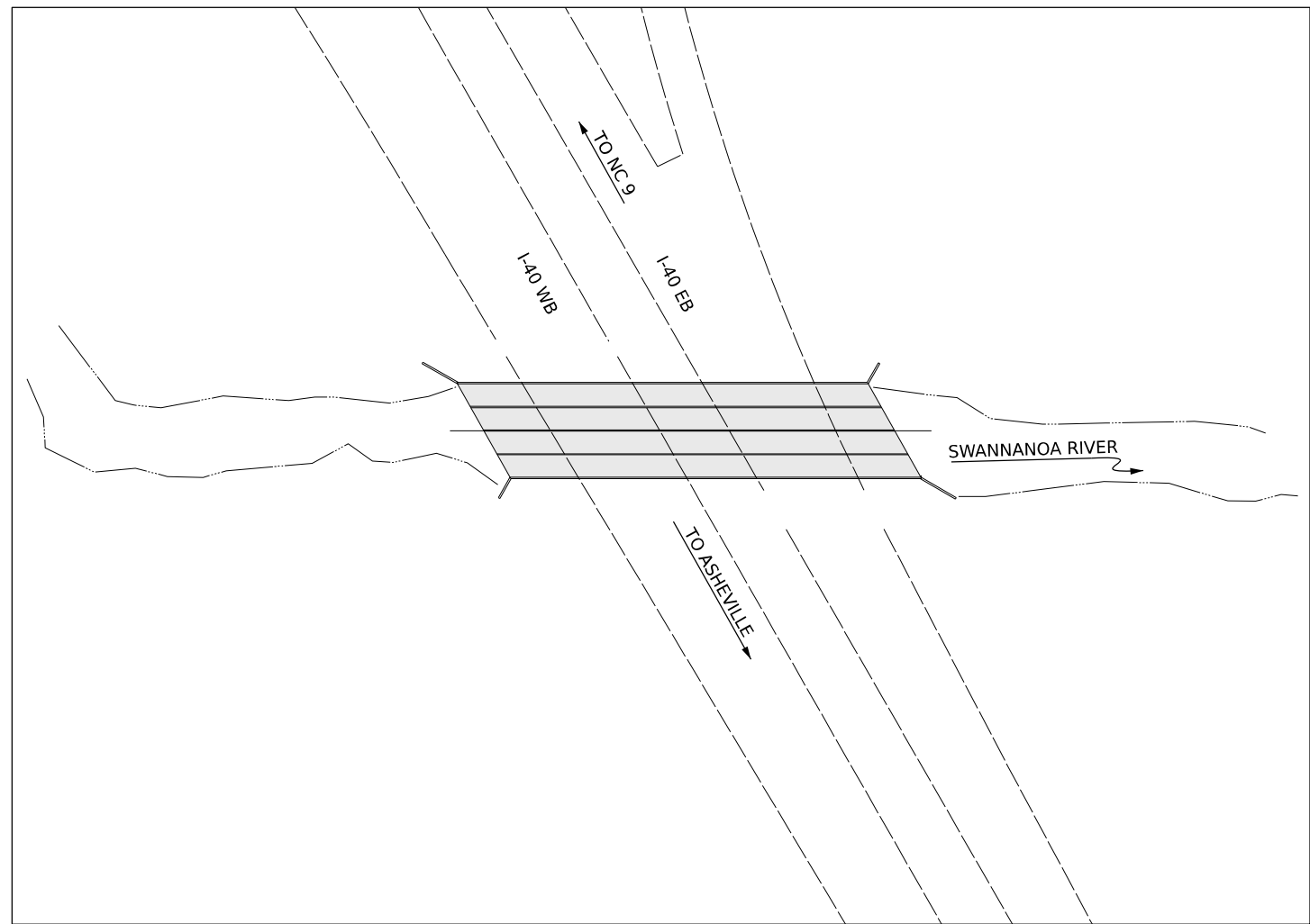
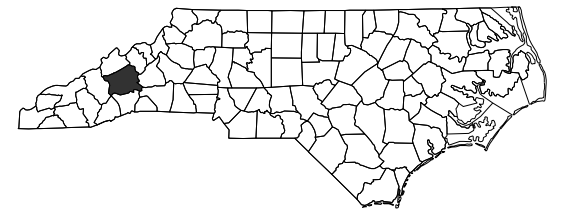
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: *REPAIR CULVERT #100491 ON I-40
CARRYING SWANNANOVA RIVER*

TYPE OF WORK: *STRUCTURE REPAIR*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	18313.1011203.PR		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
18313.1011203.PR	N/A	CONSTRUCTION	




DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA
 ADT 2021 = 40000
 ADT 2040 = 72000

 V = 70 MPH
 * TTST = DUAL
 FUNC CLASS =
 URBAN
 INTERSTATE

PROJECT LENGTH
 PROJECT LENGTHS FOR BRIDGE PROJECT 18313.1011203.PR:
 TOTAL LENGTH PROJECT 18313.1011203.PR = 0.012 MILES


NCDOT Contact: JOEL M. DAVIS
 Prepared in the Office of:  VHB Engineering NC, P.C. (C-3705)
 640 Main Campus Drive, Suite 500
 Raleigh, NC 27606

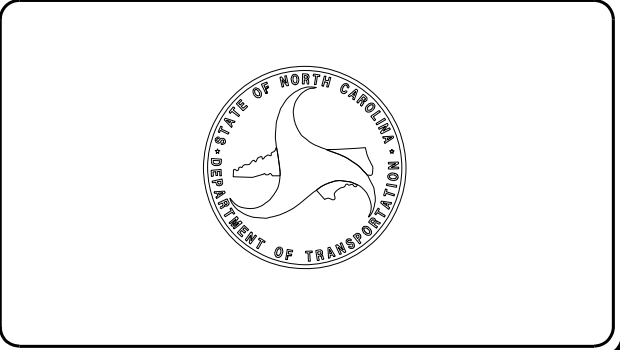
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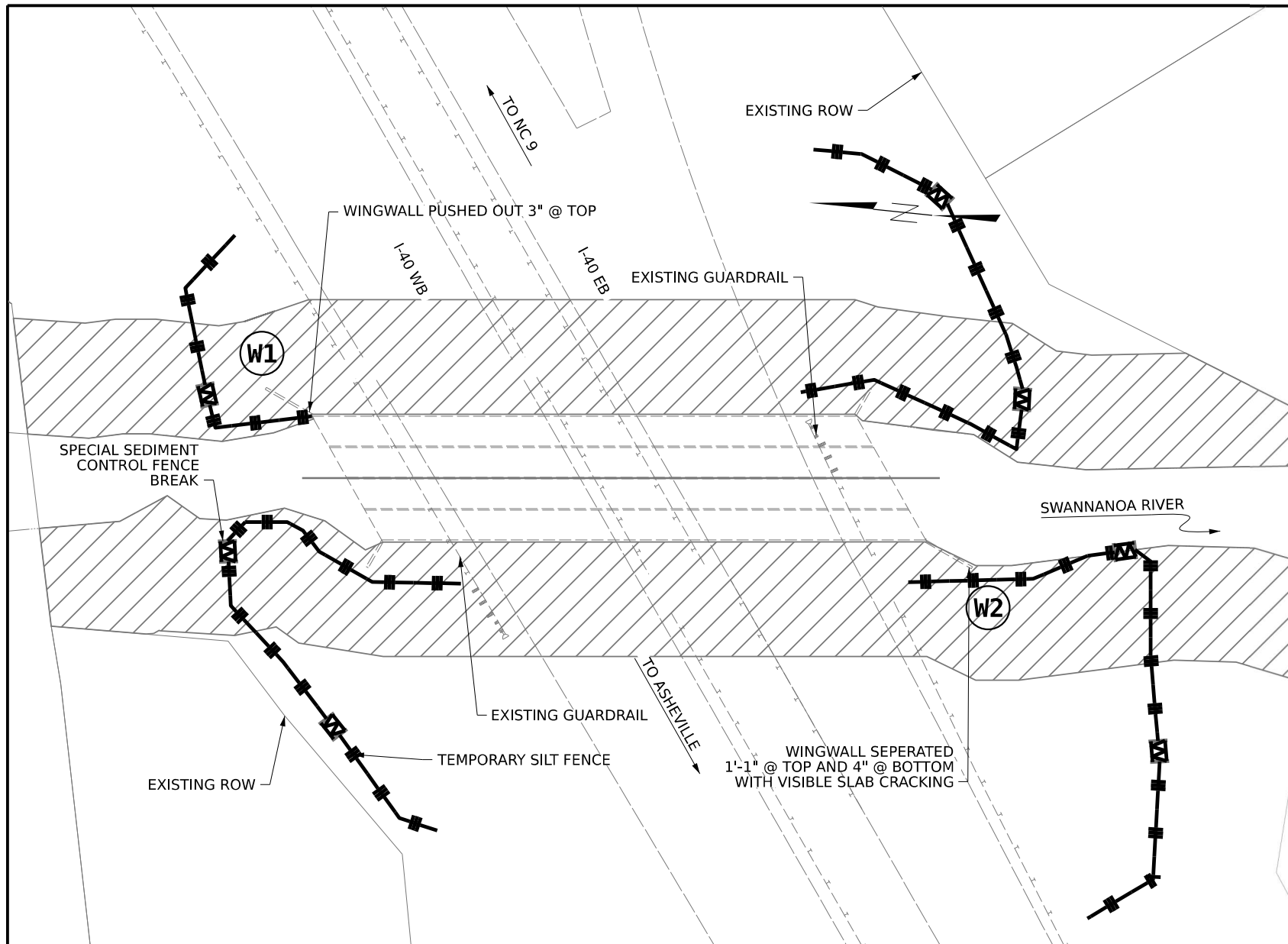
 W. KEVIN FISCHER, PE
 PROJECT ENGINEER

 LETTING DATE:
 MARCH 4, 2026

STRUCTURES ENGINEER


 Signed by:
 Chirag Patel
 18CA210059043F
 2/4/2026
 CHIRAG PATEL, PE
 SIGNATURE:





EROSION CONTROL SKETCH



ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.

EC NOTES:

EROSION CONTROL SKETCH WAS NOT BASED ON ACTUAL SURVEY. CONTRACTOR TO FIELD VERIFY PLACEMENT OF PROPOSED EROSION CONTROL DEVICES AND QUANTITIES REQUIRED FOR THIS PROJECT

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DRAWN BY : GEORGIA REICHLING DATE : 7/2025
CHECKED BY : J.R. HOPSON DATE : 7/2025
DESIGN ENGINEER OF RECORD: _____ DATE : _____

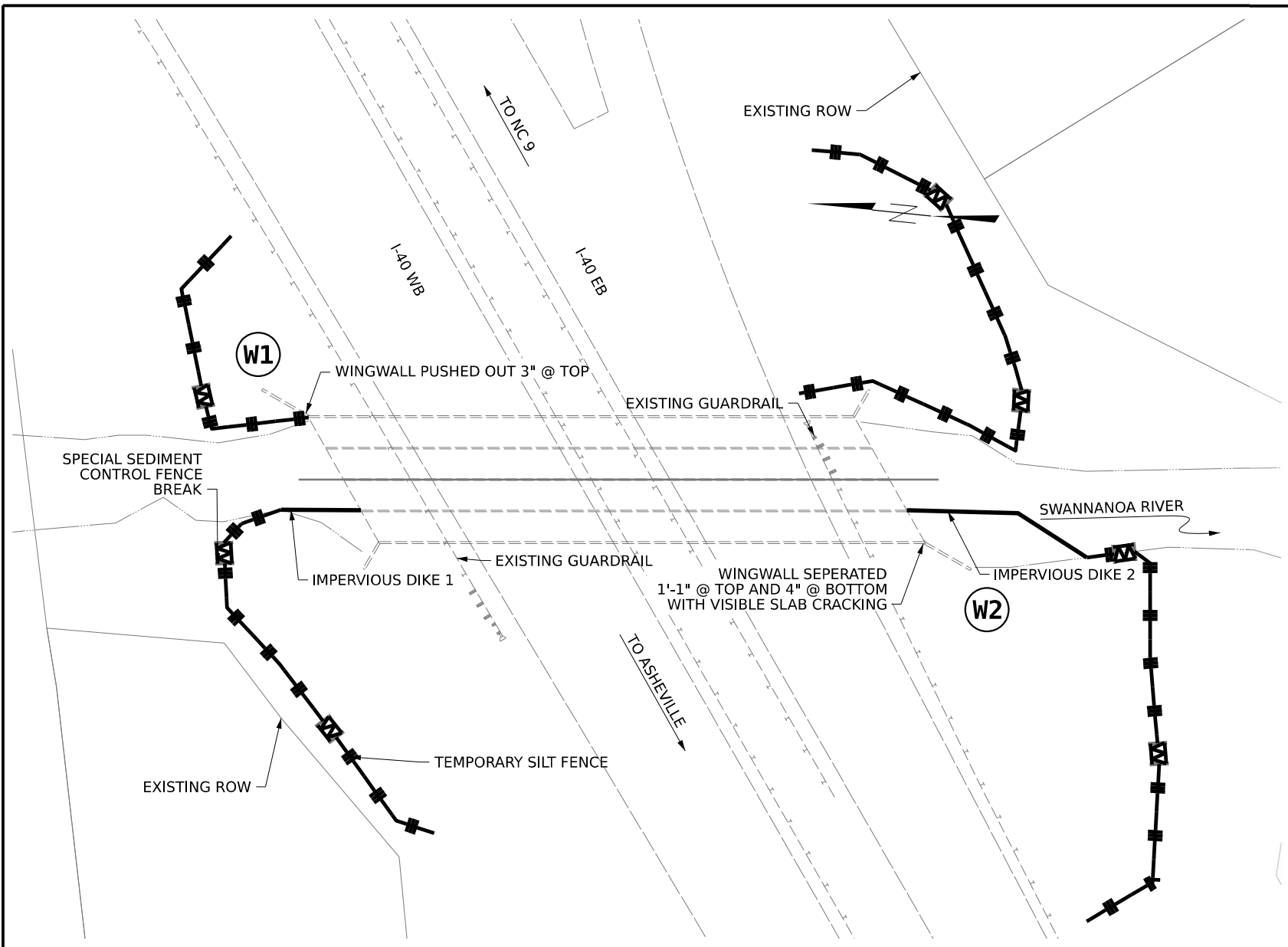
ITEM NUMBER	SECTION	TRNS-PORT ITEM DESCRIPTION	QUANTITY	UNIT
3656000000-E	876	GEOTEXTILE FOR DRAINAGE	95	SY
6000000000-E	1605	TEMPORARY SILT FENCE	1405	LF
6006000000-E	1610	EROSION CONTROL STONE, CLASS A	35	TON
6012000000-E	1610	SEDIMENT CONTROL STONE	30	TON
6015000000-E	1615	TEMPORARY MULCHING	1.5	ACR
6018000000-E	1620	SEED FOR TEMPORARY SEEDING	100	LB
6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.5	TON
6024000000-E	1622	TEMPORARY SLOPE DRAINS	200	LF
6029000000-E	SP	SAFETY FENCE	60	LF
6036000000-E	1631	MATTING FOR EROSION CONTROL	6250	SY
6042000000-E	1632	1/4" HARDWARE CLOTH	135	LF
6070000000-N	1639	SPECIAL STILLING BASINS	1	EA
6084000000-E	1660	SEEDING AND MULCHING	3	ACR
6087000000-E	1660	MOWING	3	ACR
6090000000-E	1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50	LB
6108000000-E	1665	FERTILIZER TOPDRESSING	1	TON
6111000000-E	SP	IMPERVIOUS DIKE	120	LF
6114500000-N	1667	SPECIALIZED HAND MOWING	10	MHR
6117000000-N	1675	RESPONSE FOR EROSION CONTROL	13	EA
6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	1	EA
6132000000-N	SP	GENERIC EROSION CONTROL ITEM - PREFABRICATED CONCRETE WASHOUT	2	EA

PROJECT NO. 18313.1011203.PR
BUNCOMBE COUNTY
STATION: _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC1-1
1			3			TOTAL SHEETS
2			4			11



EROSION CONTROL SKETCH



CONSTRUCTION SEQUENCE

1. INSTALL IMPERVIOUS DIKES 1 AND 2 TO DIRECT FLOW INTO THE 3 EASTERN CULVERT BARRELS
2. DEWATER SITE UTILIZING SPECIAL STILL BASIN.
3. REPLACED SOUTHWESTERN WINGWALL AND REPAIR NORTHEAST WINGWALL USING SOIL NAILS AND TIE BACKS.
4. REMOVE IMPERVIOUS DIKES 1 AND 2, RECONSTRUCT SLOPE AND REPLACE GUARDRAIL

PROJECT NO. **18313.1011203.PR**

BUNCOMBE COUNTY

STATION: _____



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

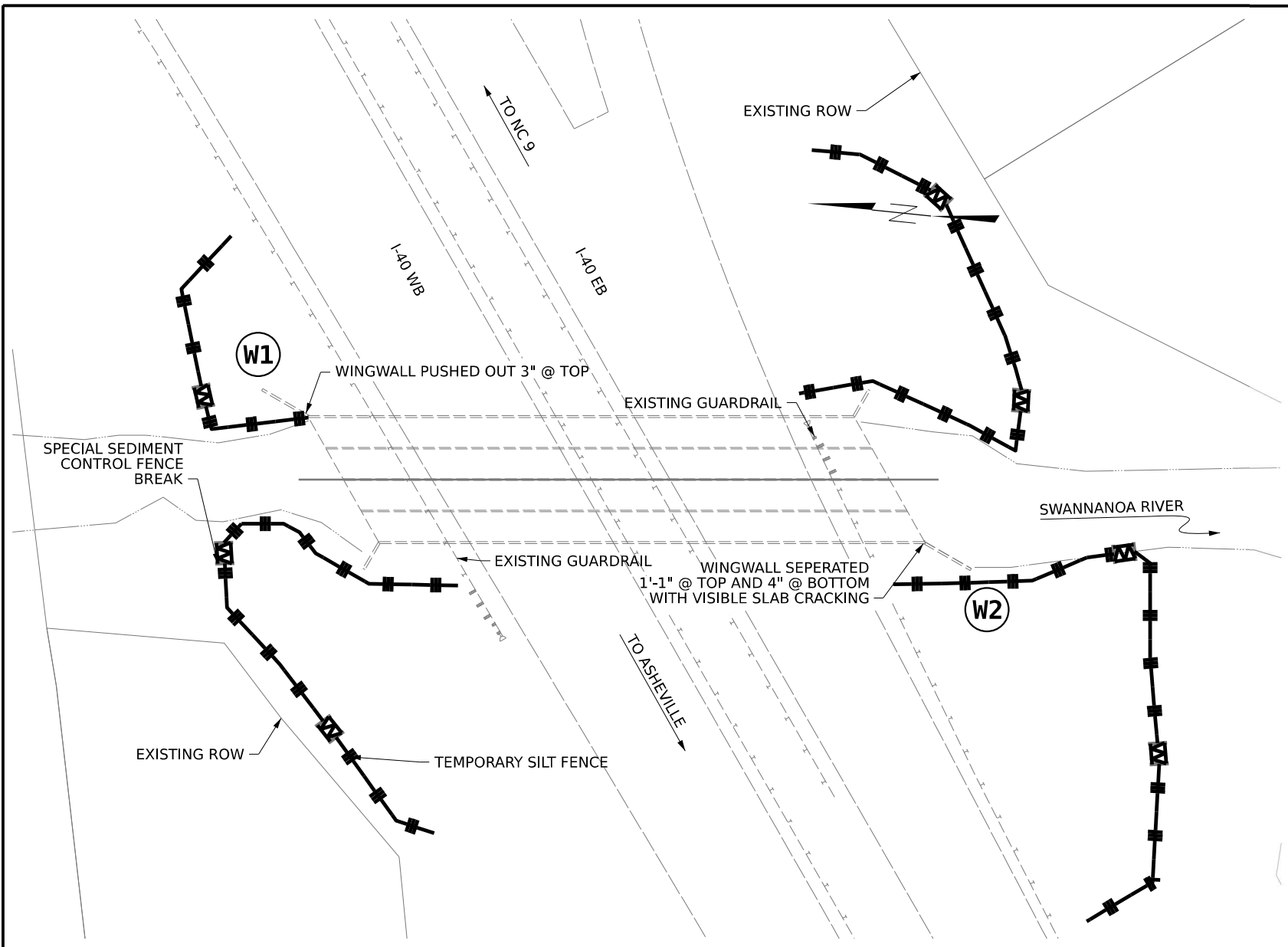
DRAWN BY : <u>GEORGIA REICHLING</u>	DATE : <u>7/2025</u>
CHECKED BY : <u>J.R. HOPSON</u>	DATE : <u>7/2025</u>
DESIGN ENGINEER OF RECORD: _____	DATE : _____

2/4/2026
c:\bms\vhb-pw-01\d0272834\100491 Repair 02 EC ECI-02.dgn
dhinnant

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	ECI-2
1			3			TOTAL SHEETS
2			4			11



EROSION CONTROL SKETCH



EC NOTES:
 EROSION CONTROL SKETCH WAS NOT BASED ON ACTUAL SURVEY.
 CONSTRUCTOR TO FIELD VERIFY PLACEMENT OF PROPOSED EROSION CONTROL
 DEVICES AND QUANTITIES REQUIRED FOR THIS PROJECT

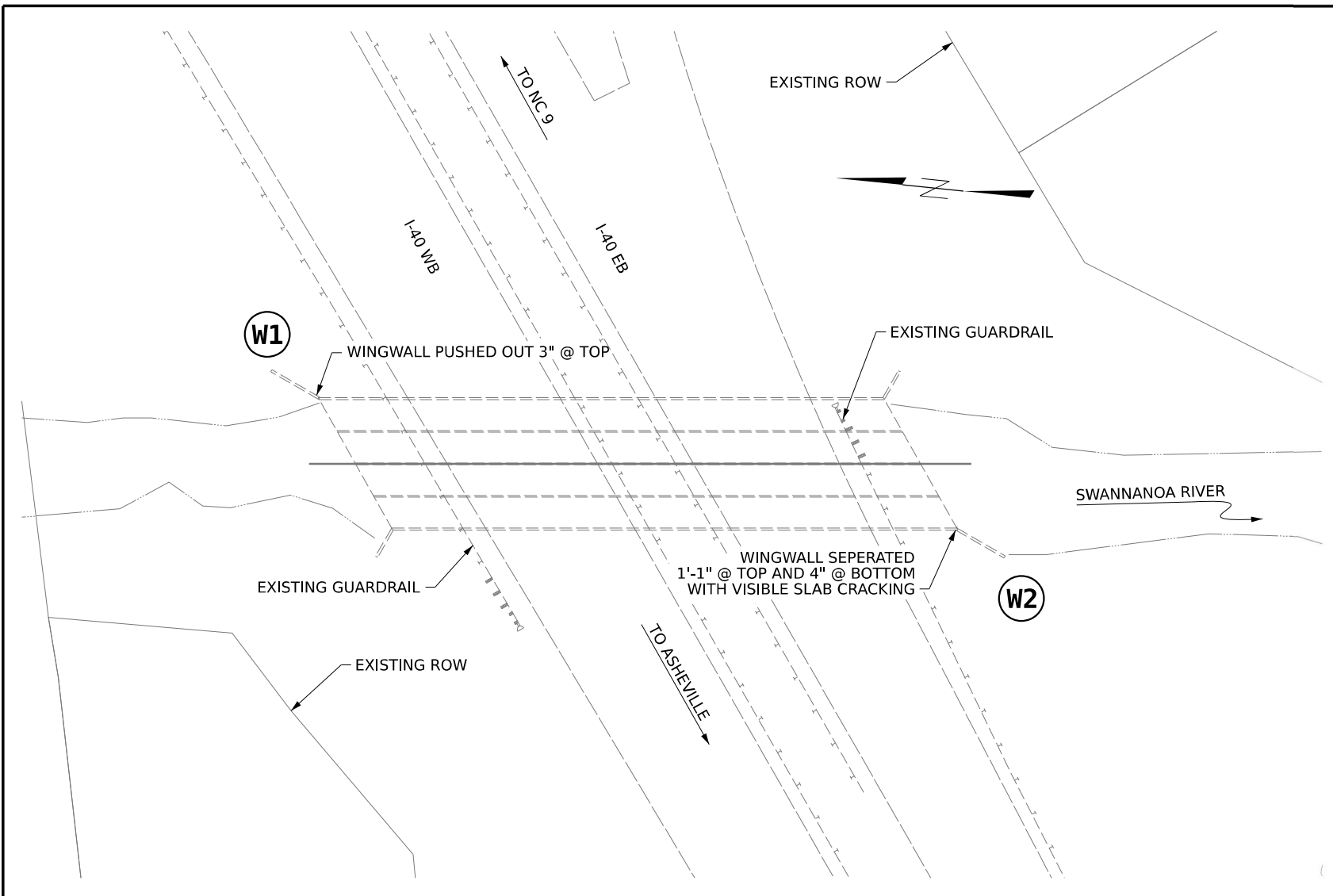
PROJECT NO. 18313.1011203.PR
BUNCOMBE COUNTY
 STATION: _____



DRAWN BY : GEORGIA REICHLING DATE : 7/2025
 CHECKED BY : J.R. HOPSON DATE : 7/2025
 DESIGN ENGINEER OF RECORD: _____ DATE : _____

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**REPAIRS FOR REINFORCED
 CONCRETE BOX CULVERT
 100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC1-3
1			3			TOTAL SHEETS
2			4			11



LOCATION SKETCH



SCOPE OF WORK

- PLACE REQUIRED TRAFFIC CONTROL, REMOVE GUARDRAIL AS NECESSARY AND GRADE ACCESS FROM I-40.
- DIVERT WATER FROM WEST BARREL AND INSTALL IMPERVIOUS DIKE FOR WINGWALL REPAIR.
- REMOVE ROW FENCING, EXISTING WING, AND ANY FILL NECESSARY.
- INSTALL SHEET PILE WING AND GROUND ANCHORS AT W2.
- FORM AND POUR NEW CONCRETE CONNECTION BETWEEN SHEET PILE WING AND CULVERT BARREL AND CONCRETE COPING AT SOUTHEAST CORNER OF THE CULVERT.
- BACKFILL BEHIND WING WITH FLOWABLE FILL AS NECESSARY.
- REPAIR NORTHEAST W1 USING GROUND ANCHORS.
- RETURN FLOW TO WEST BARRELL AND REINSTALL GUARDRAIL AND TRANSITIONS ALONG I-40 AND REMOVE ALL TRAFFIC CONTROL DEVICES.

Line Item	Sec No.	Description	Quantity	Unit
8847000000-E	SP	ANCHORED SHEET PILE RETAINING WALL	600	SF
8832000000-N	SP	GROUND ANCHORS	2	EA
8035000000-N	402	REMOVAL OF EXISTING STRUCTURE (CULVERT #100491)	1	LS
8196000000-E	420	CLASS A CONCRETE (CULVERT)	4	CY
8245000000-E	425	REINFORCING STEEL (CULVERT)	230	LB
2275000000-E	SP	FLOWABLE FILL	5	CY
3135000000-N	862	W-TR SBGR TRANS SECTIONS	4	EA
3345000000-E	864	REMOVE EXISTING GUARDRAIL	100	LF

NOTES

EXISTING DIMENSIONS AND BRIDGE CONDITIONS ARE FROM BEST INFORMATION AVAILABLE; THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER; THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONSTRUCTION SURVEY IS NOT ANTICIPATED FOR THIS PROJECT, BUT A PAY ITEM IS INCLUDED AS A CONTINGENCY SHOULD IT BE REQUIRED DURING CONSTRUCTION.

PROJECT NO. **18313.1011203.PR**
BUNCOMBE COUNTY
 STATION: _____



VHB Engineering NC, P.C. (C-3705)
 940 Main Campus Drive, Suite 500
 Raleigh, NC 27606

DRAWN BY : D.B. HINNANT	DATE : 7/2025
CHECKED BY : K. FISCHER	DATE : 7/2025
DESIGN ENGINEER OF RECORD: C.S. PATEL	DATE : 2/2026

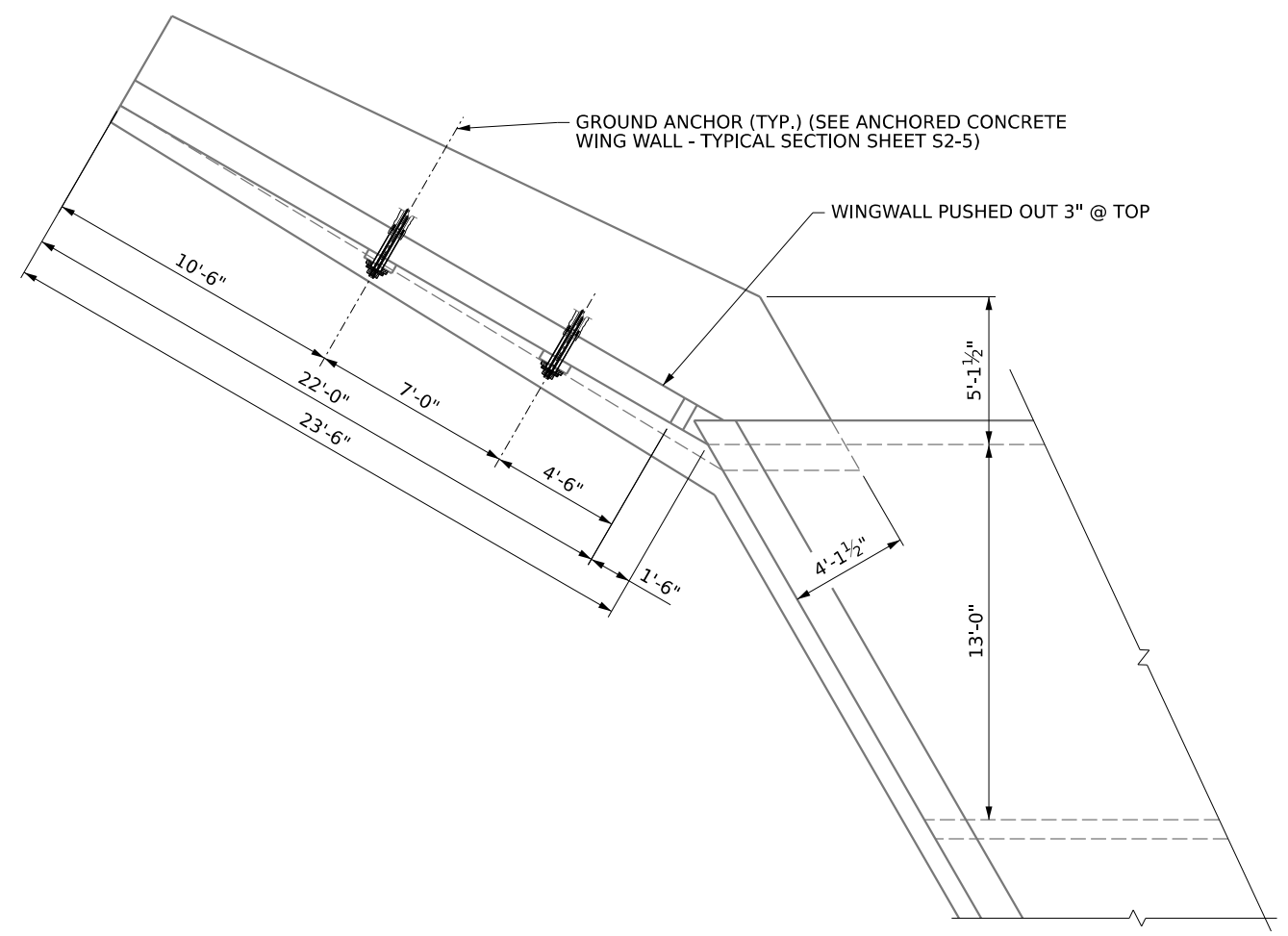


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

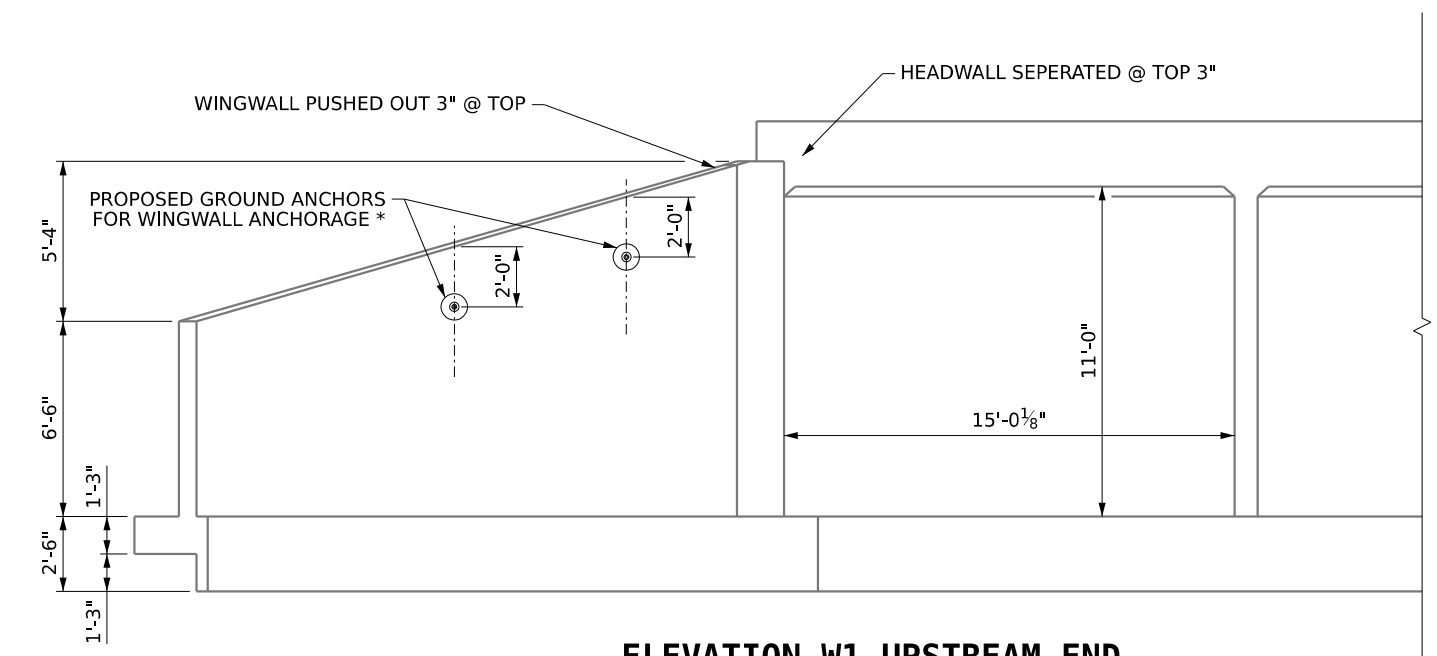
**REPAIRS FOR REINFORCED
 CONCRETE BOX CULVERT
 100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			11

NOTES:
FOR GROUND ANCHORS, SEE GROUND ANCHORS PROVISION.



PLAN W1 UPSTREAM END



ELEVATION W1 UPSTREAM END

* CORED HOLES FOR GROUND ANCHORS SHALL BE OF SUFFICIENT SIZE TO INSTALL AND GROUT THE GROUND ANCHORS. ANCHORAGE PLATES SHALL BE OF SUFFICIENT SIZE FOR CONCRETE BEARING STRENGTH TO REMAIN BELOW 1500PSI. LOCATION OF THE ANCHORAGES MAY BE SHIFTED TO AVOID REINFORCING BARS IN THE WING.

PROJECT NO. **18313.1011203.PR**
BUNCOMBE COUNTY
STATION: _____

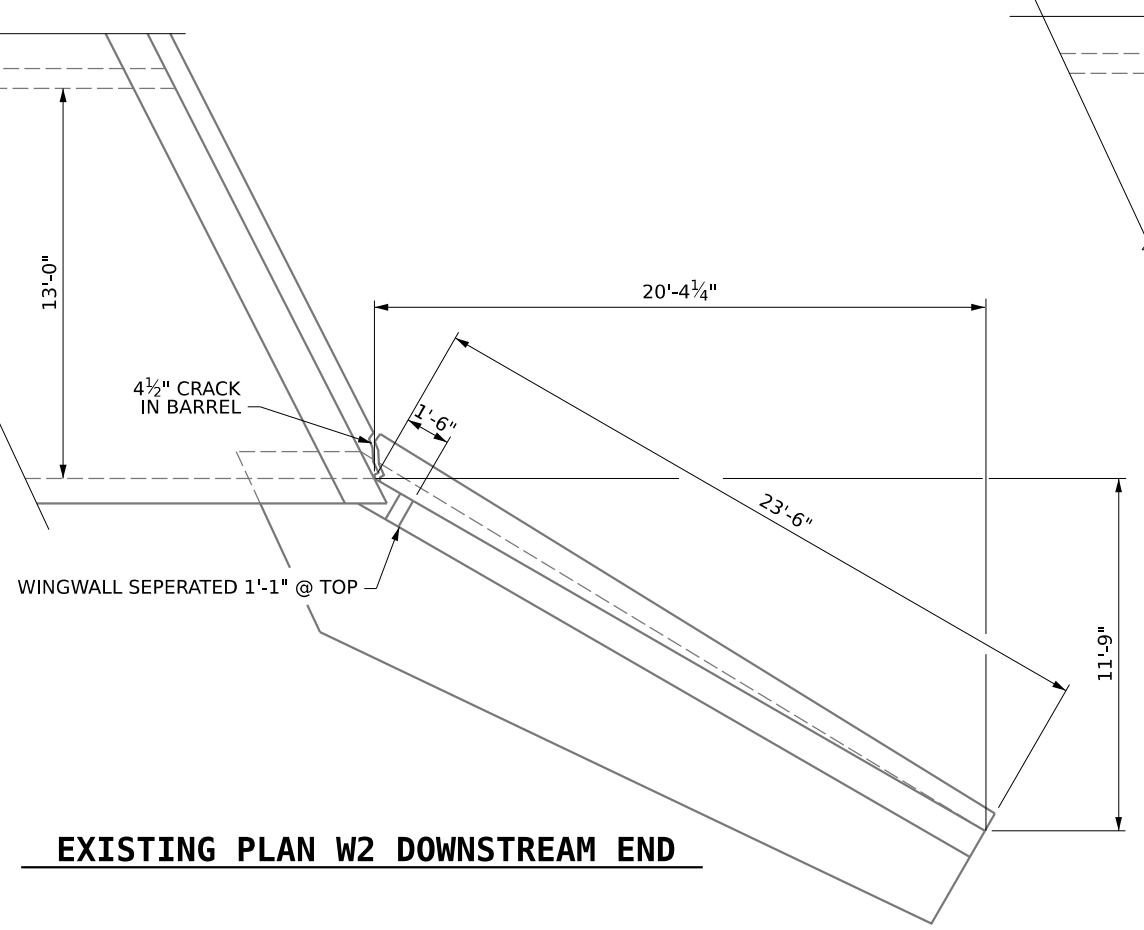


DRAWN BY : **D.B. HINNANT** DATE : **7/2025**
CHECKED BY : **K. FISCHER** DATE : **7/2025**
DESIGN ENGINEER OF RECORD: **C.S. PATEL** DATE : **2/2026**

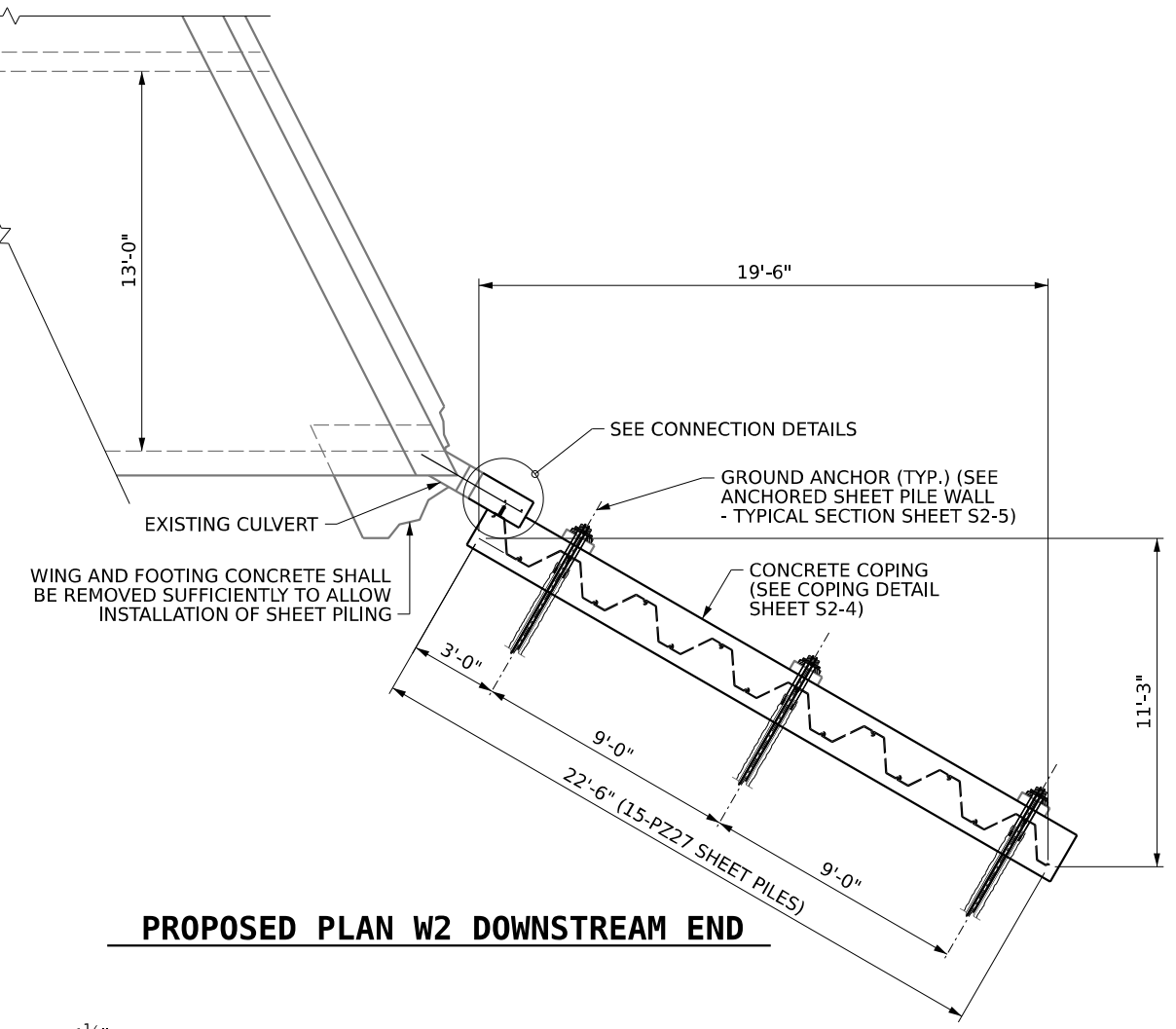


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100491**

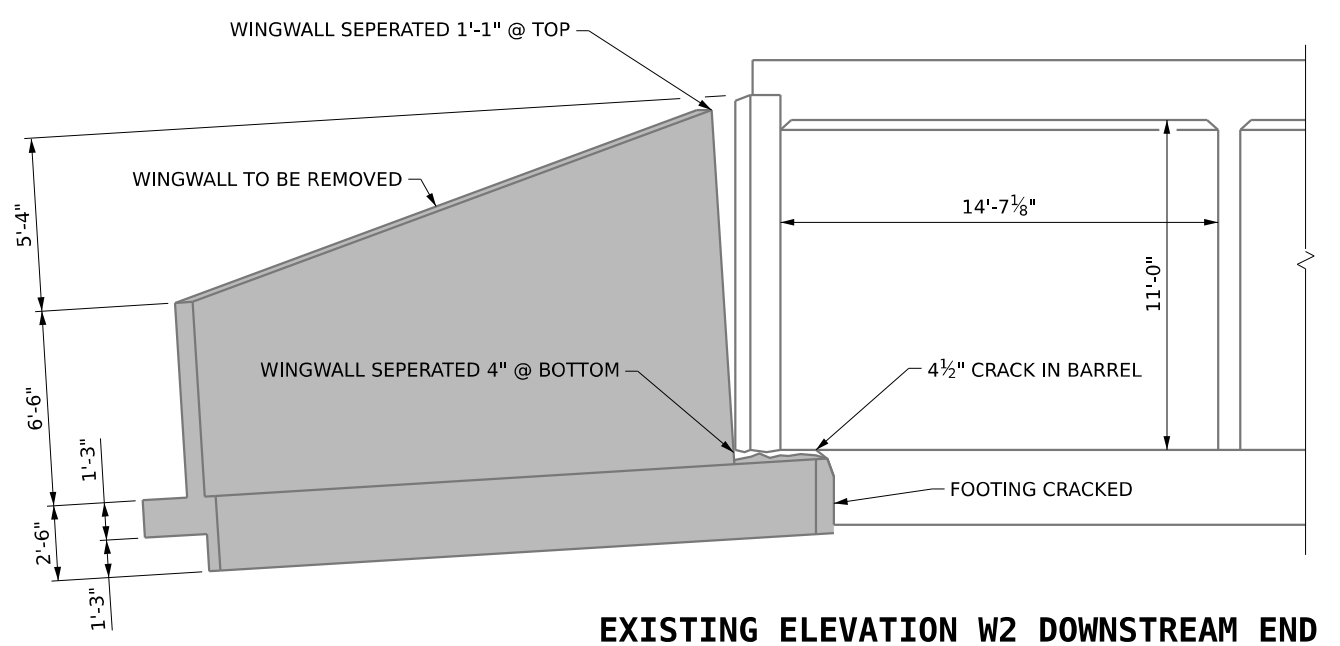
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			11
2			4			



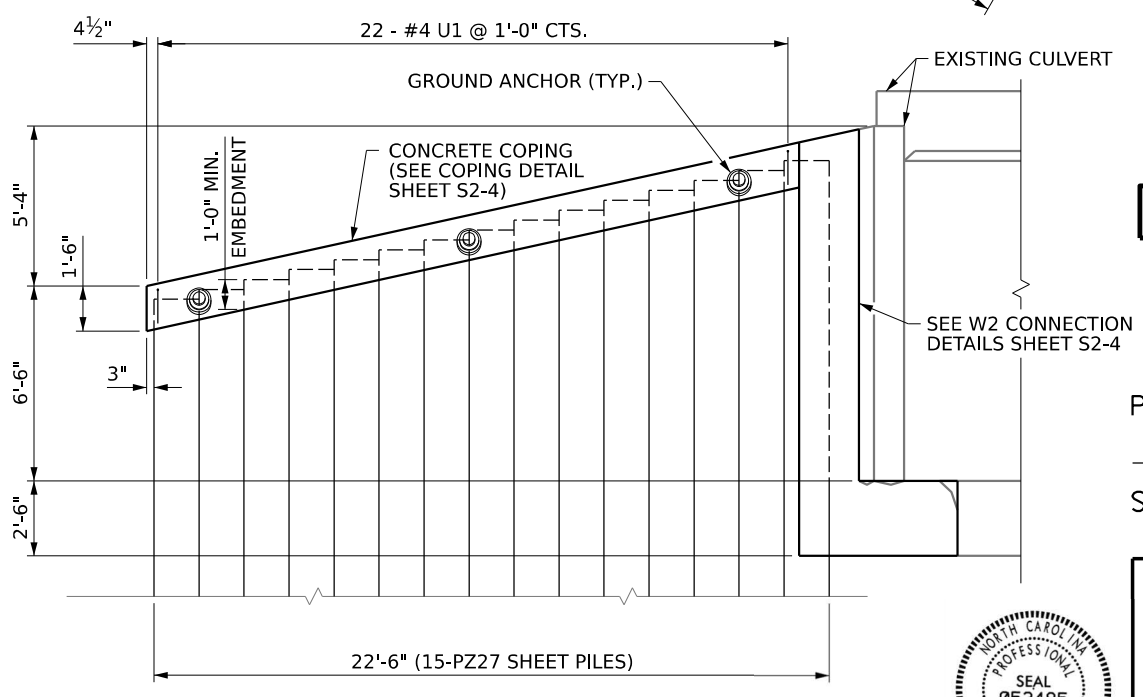
EXISTING PLAN W2 DOWNSTREAM END



PROPOSED PLAN W2 DOWNSTREAM END



EXISTING ELEVATION W2 DOWNSTREAM END



PROPOSED ELEVATION W2 DOWNSTREAM END

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

PROJECT NO. 18313.1011203.PR
BUNCOMBE COUNTY
STATION: _____

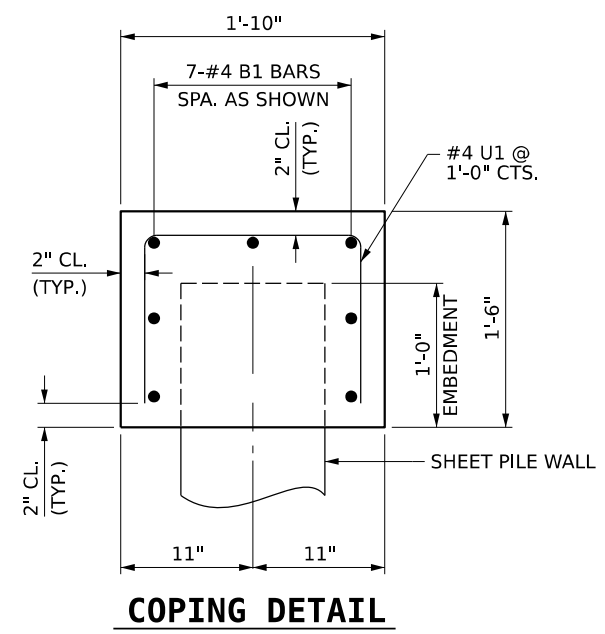


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100491**

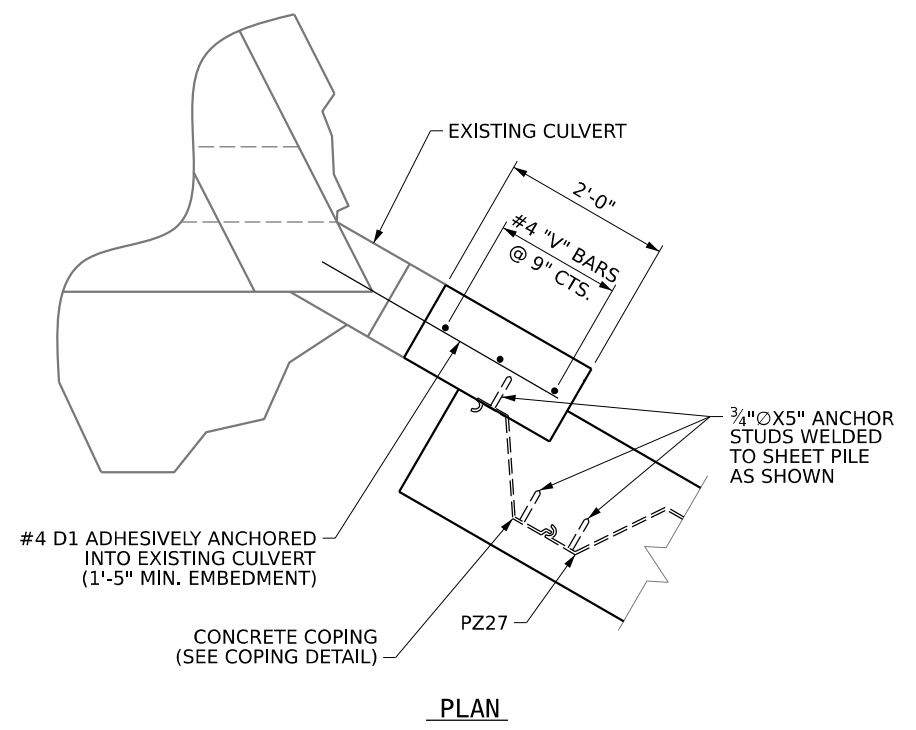
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			11



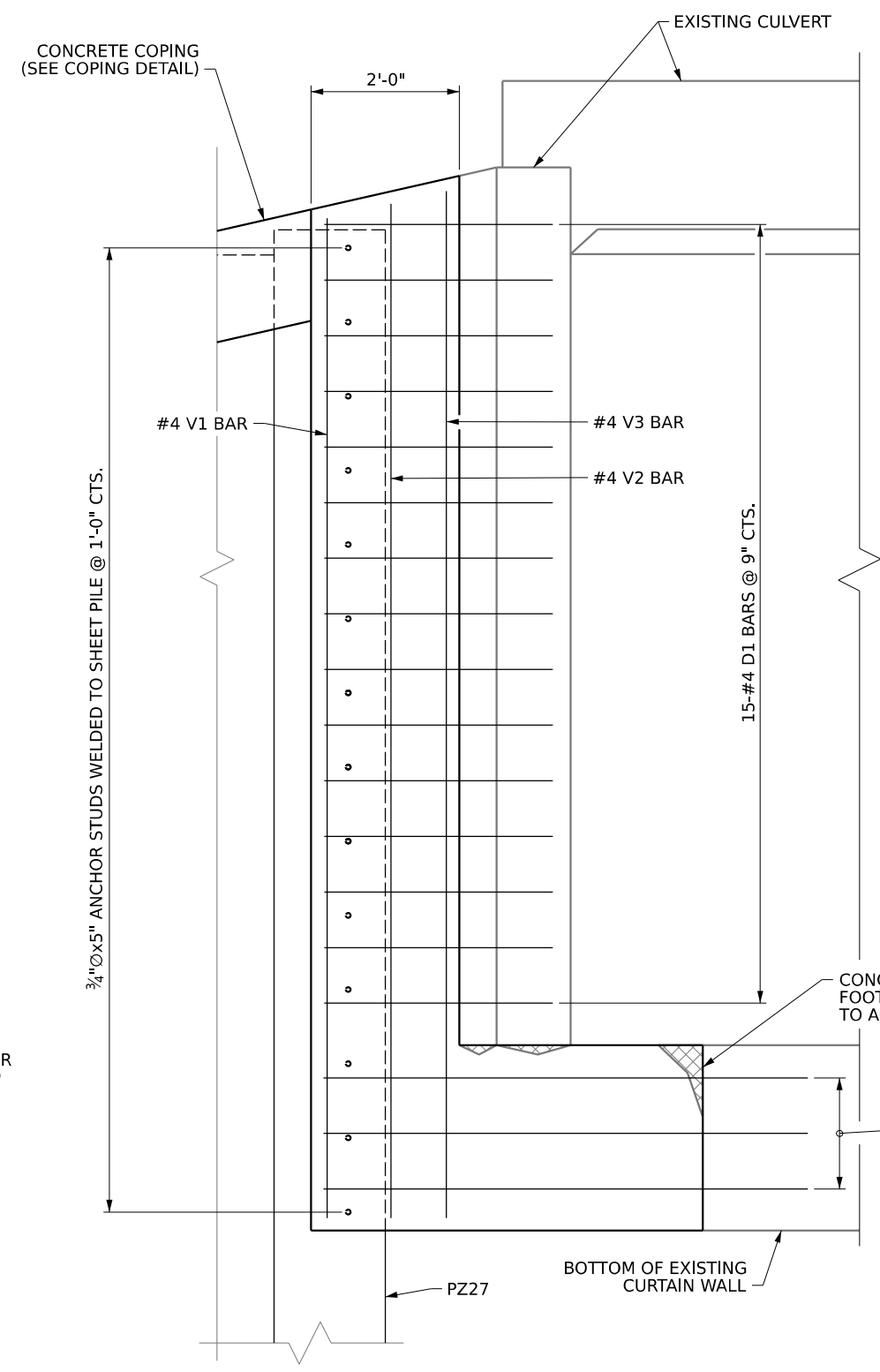
DRAWN BY : <u>D.B. HINNANT</u>	DATE : <u>7/2025</u>
CHECKED BY : <u>K. FISCHER</u>	DATE : <u>7/2025</u>
DESIGN ENGINEER OF RECORD: <u>C.S. PATEL</u>	DATE : <u>2/2026</u>



COPING DETAIL



PLAN

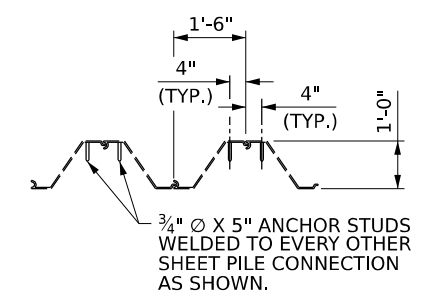


ELEVATION

CONNECTION DETAILS

BAR TYPES		BILL OF MATERIAL			
		WING W2			
		BAR NO	SIZE	TYPE	LENGTH
B1	7	#4	STR	21' - 11"	102
D1	15	#4	STR	3' - 3"	33
D2	3	#4	STR	4' - 0"	8
V1	1	#4	STR	13' - 5"	9
V2	1	#4	STR	13' - 8"	9
V3	1	#4	STR	13' - 10"	9
U1	22	#4	1	3' - 10"	56
REINFORCING STEEL LBS.					226
CLASS A CONCRETE C.Y.					
CONNECTION =					1.0
COPING =					2.4
TOTAL =					3.4

ALL BAR DIMENSIONS ARE OUT TO OUT



ANCHOR STUD DETAIL

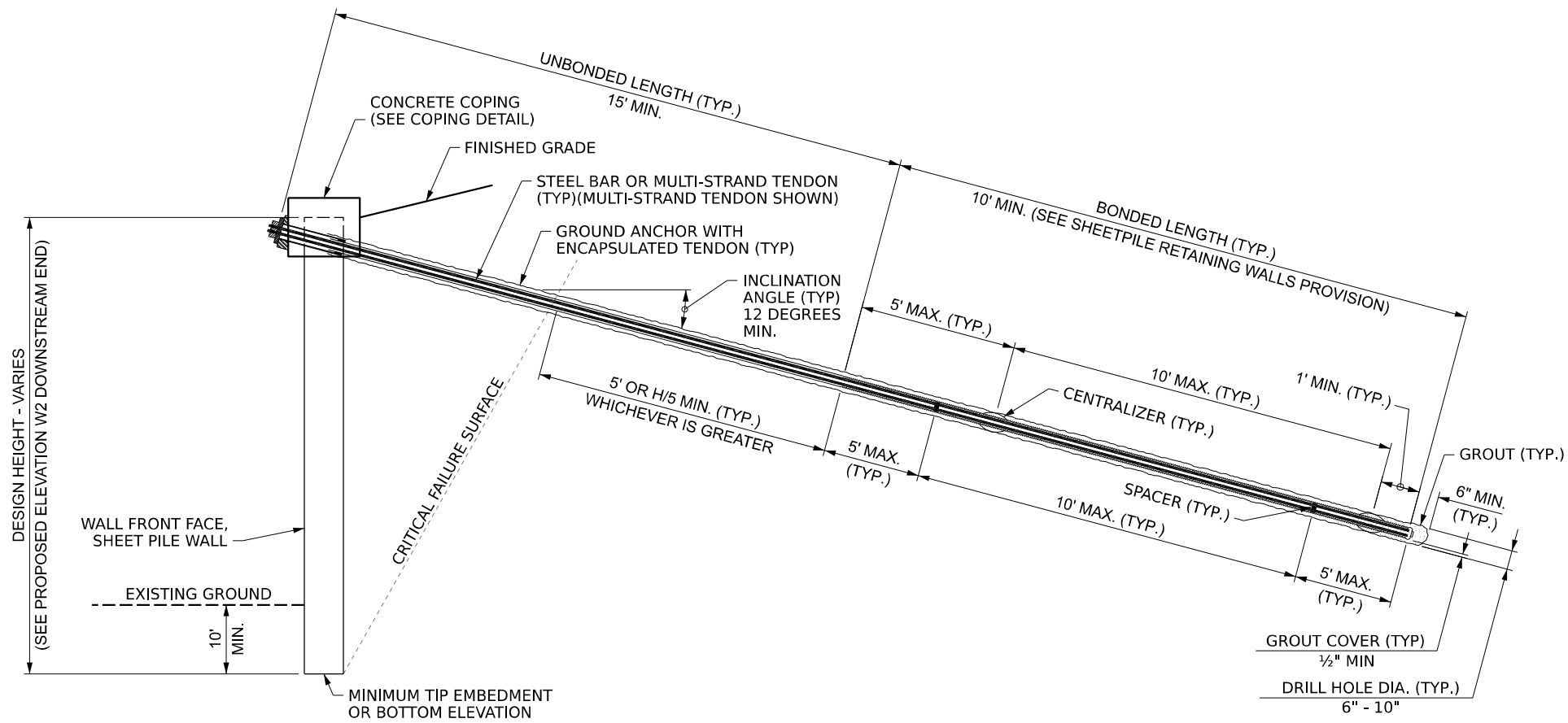
PROJECT NO. **18313.1011203.PR**
BUNCOMBE COUNTY
 STATION: _____



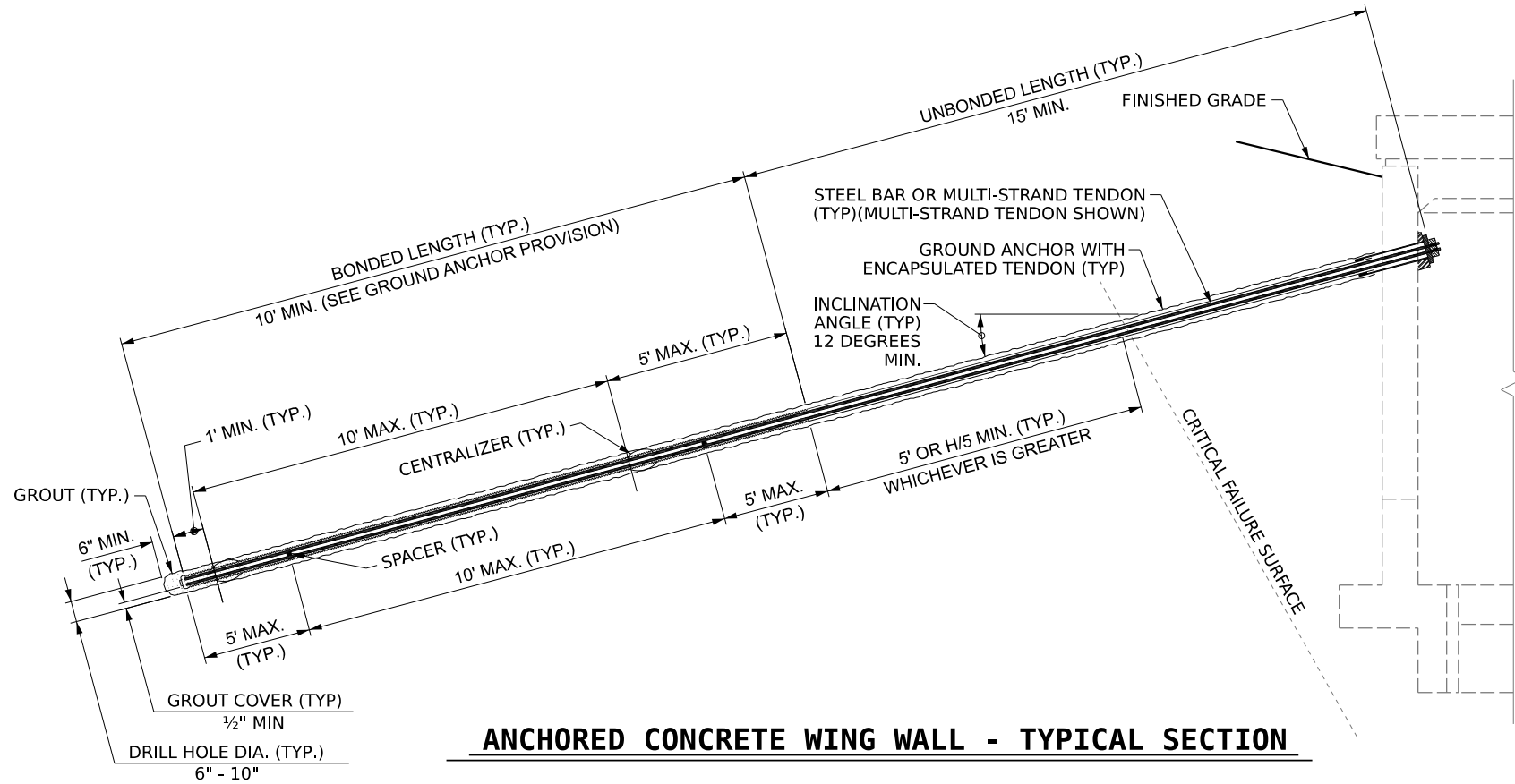
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
REPAIRS FOR REINFORCED CONCRETE BOX CULVERT 100491					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S1-4
TOTAL SHEETS					11

vhb
 VHB Engineering NC, P.C. (C-3705)
 940 Main Campus Drive, Suite 500
 Raleigh, NC 27606

DRAWN BY : D.B. HINNANT	DATE : 7/2025
CHECKED BY : K. FISCHER	DATE : 7/2025
DESIGN ENGINEER OF RECORD: C.S. PATEL	DATE : 2/2026



ANCHORED SHEET PILE WALL - TYPICAL SECTION



ANCHORED CONCRETE WING WALL - TYPICAL SECTION

NOTES:

FOR ANCHORED SHEET PILE RETAINING WALLS, SEE ANCHORED SHEET PILE RETAINING WALLS PROVISION.
 FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

DESIGN GROUND ANCHOR FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.

BEFORE BEGINNING ANCHORED WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 100 YEARS
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS (SOIL):
 UNIT WEIGHT, $g = 120$ LB/CF
 FRICTION ANGLE, $f = 30$ DEGREES
 COHESION, $c = 0$ LB/SF
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK):
 COHESION, $c = 50$ LB/SF
 UNIT WEIGHT, $= 135$ LB/CF
 FRICTION ANGLE, $= 40$ DEGREES

DESIGN WINGWALL W2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXTEND SHEET PILES 10 FT. BELOW STREAM BED

IN LIEU OF A DRILLED AND GROUTED ANCHOR, A CANTILEVERED OR DEAD MAN ALTERNATIVE MAY BE CONSIDERED. IF ONE OF THESE OPTIONS ARE PREFERRED, A DESIGN SUBMITTAL INCLUDING REQUIRED ANCHOR CAPACITY, ANCHOR LOCATION, BAR OR TENDON PROPOSED, WALL ANCHORAGE DETAILS AND THE INSTALLATION PROCEDURE WILL NEED TO BE APPROVED PRIOR TO BEGINNING CONSTRUCTION.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. 18313.1011203.PR
BUNCOMBE COUNTY
 STATION: _____



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**REPAIRS FOR REINFORCED
 CONCRETE BOX CULVERT
 100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			51-5
2			4			11



DRAWN BY : <u>D.B. HINNANT</u>	DATE : <u>7/2025</u>
CHECKED BY : <u>K. FISCHER</u>	DATE : <u>7/2025</u>
DESIGN ENGINEER OF RECORD: <u>C.S. PATEL</u>	DATE : <u>2/2026</u>

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:

- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- NIGHT WORK
- WEEKEND WORK
- WORK HOUR RESTRICTIONS FOR PEAK TRAVEL

WORK ZONE SAFETY & MOBILITY STRATEGIES:

- SEQUENTIAL LIGHTING
- PRESENCE LIGHTING

TRAFFIC / INCIDENT MANAGEMENT & SPEED ENFORCEMENT STRATEGIES:

- ITS FOR TRAFFIC MONITORING / MANAGEMENT (SMART WORKZONE)
- COORDINATION WITH STATE TRAFFIC OPERATIONS CENTER (STOC)

CONTRACTING & INNOVATIVE CONSTRUCTION STRATEGIES:

- INTERMEDIATE CONTRACT TIMES / LIQUIDATED DAMAGES

PHASING

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

PHASE I

STEP 1 - USING RSD 1101.02, SHEET 3 AND 11 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 EB AND INSTALL UNANCHORED PCB AND I-40 EB USING UNANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND TEMPORARY CRASH CUSHION TO CLOSE THE SHOULDER IN ACCORDANCE WITH RSD 1101.04, SHEET 1 OF 2.

STEP 2 - AWAY FROM TRAFFIC AND BEHIND BARRIER, REMOVE EXISTING GUARDRAIL AS NEEDED FOR ACCESS, COMPLETE THE REPAIR, AND REINSTALL THE GUARDRAIL.

STEP 3 - USING RSD 1101.02, SHEET 3 AND 11 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 EB AND REMOVE THE SHOULDER CLOSURE.

PHASE II

STEP 1 - USING RSD 1101.02, SHEET 3 AND 10 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 WB AND INSTALL UNANCHORED PCB AND I-40 WB USING UNANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND TEMPORARY CRASH CUSHION TO CLOSE THE SHOULDER IN ACCORDANCE WITH RSD 1101.04, SHEET 1 OF 2.

STEP 2 - AWAY FROM TRAFFIC AND BEHIND BARRIER, REMOVE EXISTING GUARDRAIL AS NEEDED FOR ACCESS, COMPLETE THE REPAIR, AND REINSTALL THE GUARDRAIL.

STEP 3 - USING RSD 1101.02, SHEET 3 AND 10 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 WB AND REMOVE THE SHOULDER CLOSURE.

STEP 4 - REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND MARKINGS AND OPEN ALL LANES TO TRAFFIC.

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRABLE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER. THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
I-40 AND RAMPS	6:00 A.M. TO 7:00 P.M. MONDAY THRU SUNDAY

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
I-240 AND RAMPS

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DRAWN BY :	<u>G. Atkins</u>	DATE :	<u>7/2025</u>
CHECKED BY :	<u>J. Townsend</u>	DATE :	<u>7/2025</u>
DESIGN ENGINEER OF RECORD:	<u>J. Townsend</u>	DATE :	<u>2/2026</u>

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
9. FOR LEAF SEASON, BETWEEN THE HOURS OF 6:00 A.M. AND 7:00 P.M. EACH DAY FOR THE FIRST THREE WEEKS IN OCTOBER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 10 FT OF AN OPEN TRAVEL LANE ON A DIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) USE SEQUENTIAL FLASHING WARNING LIGHTS ON DRUMS USED FOR THE MERGING TAPERS OF NIGHTTIME LANE CLOSURES IN ACCORDANCE WITH SECTION 1140 IN THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- G) NOTIFY THE NCDOT STATEWIDE TRANSPORTATION OPERATIONS CENTER (STOC) AT 877-627-7862 APPROXIMATELY 30 MINUTES PRIOR TO INSTALLING AND WITHIN 15 MINUTES AFTER REMOVING LANE CLOSURES ON INTERSTATES, FREEWAYS, CONTROLLED ACCESS FACILITIES, AND US ROUTES.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- H) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- J) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- K) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

- M) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

- N) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

- O) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADIUS, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- P) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

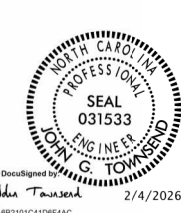
PAVEMENT MARKINGS AND MARKERS

- Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
I-40	PAINT	NONE

- R) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PROJECT NO. 18313.1011203.PR
BUNCOMBE COUNTY
STATION: _____



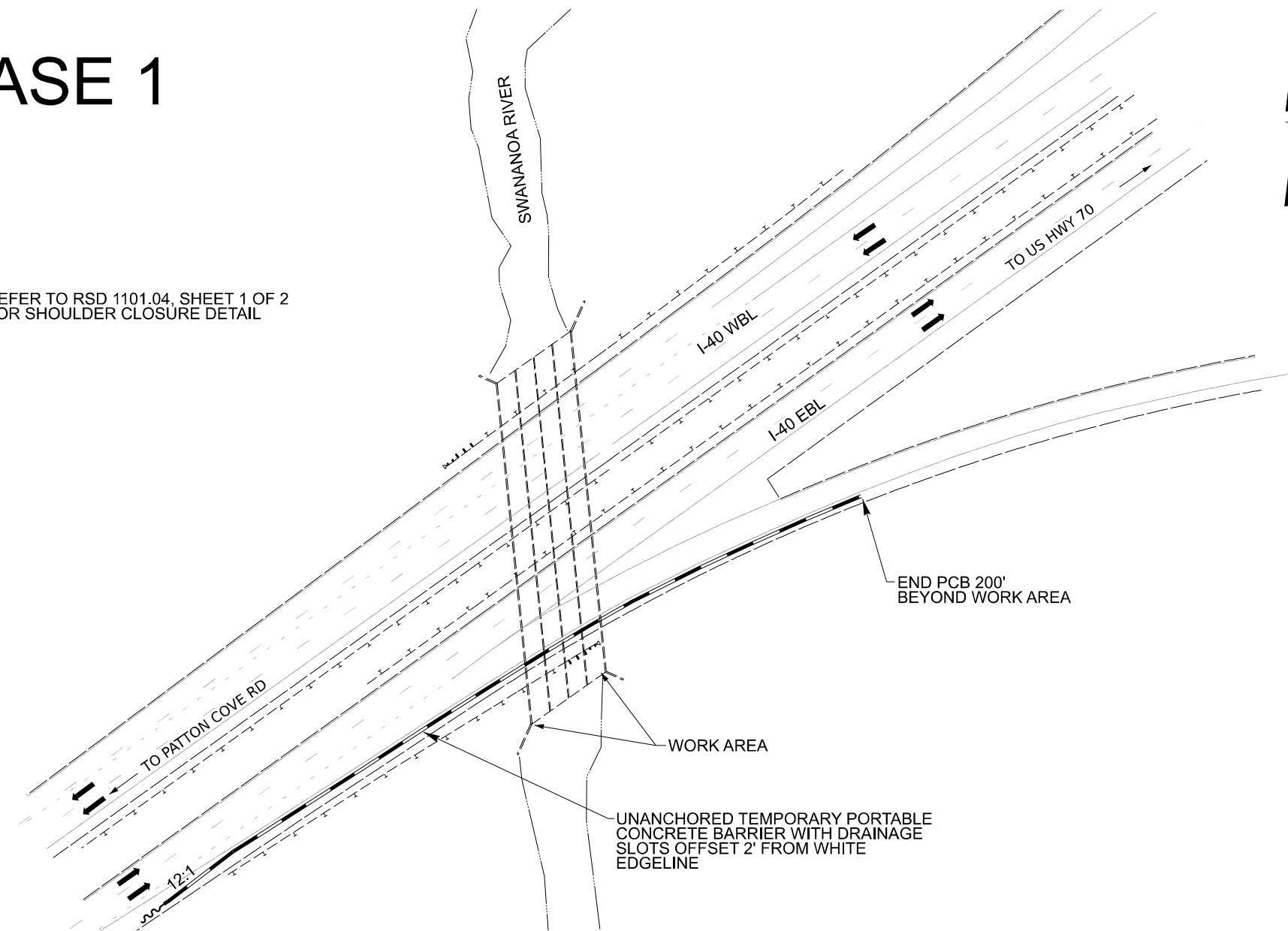
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REPAIRS FOR REINFORCED CONCRETE BOX CULVERT 100491

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			11
2			4			

PHASE 1

REFER TO RSD 1101.04, SHEET 1 OF 2 FOR SHOULDER CLOSURE DETAIL



PROJECT NO. 18313.1011203.PR

BUNCOMBE COUNTY

STATION: _____



VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

DRAWN BY :	<u>G. Atkins</u>	DATE :	<u>7/2025</u>
CHECKED BY :	<u>J. Townsend</u>	DATE :	<u>7/2025</u>
DESIGN ENGINEER OF RECORD:	<u>J. Townsend</u>	DATE :	<u>2/2026</u>

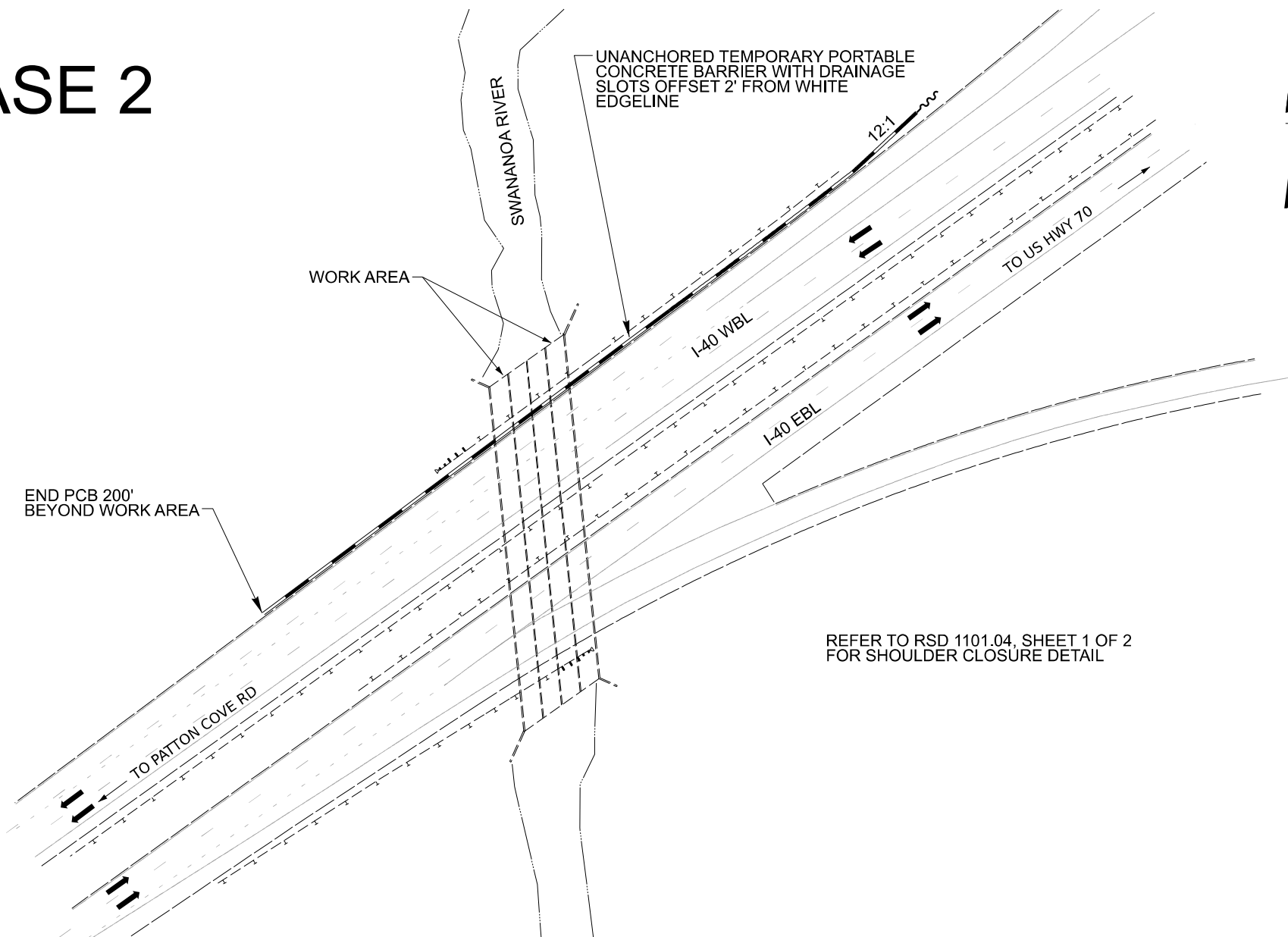


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100491**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TC1-2
1			3			TOTAL SHEETS
2			4			11

PHASE 2



REFER TO RSD 1101.04, SHEET 1 OF 2 FOR SHOULDER CLOSURE DETAIL

Line Item	Pay Item No.	Sec No.	Description	Quantity	Unit	Price	Amount
Traffic Control							
	4402000000-E	SP	HIGH VISIBILITY STATIONARY SIGNS	144	SF		
	4415000000-N	1115	FLASHING ARROW BOARD	1	EA		
	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	1	EA		
	4424000000-N	SP	WORK ZONE PRESENCE LIGHTING	14	EA		
	4432000000-N	SP	HIGH VISIBILITY DRUMS	85	EA		
	4434000000-N	1140	SEQUENTIAL FLASHING WARNING LIGHTS	30	EA		
	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	2	EA		
	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	1	EA		
	4480000000-N	1165	TMA	1	EA		
	4485000000-E	1170	PORTABLE CONCRETE BARRIER	565	LF		
	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	565	LF		
	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM - CONNECTED LANE CLOSURE SYSTEM	1	EA		

PROJECT NO. **18313.1011203.PR**
BUNCOMBE COUNTY
 STATION: _____



STATE OF NORTH CAROLINA
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 CONCRETE BOX CULVERT
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DRAWN BY : G. Atkins DATE : 7/2025
 CHECKED BY : J. Townsend DATE : 7/2025
 DESIGN ENGINEER OF RECORD: J. Townsend DATE : 2/2026

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			11
2			4			

CONTRACT: DM00495 BRIDGE PROJECT: 18313.1011211.PR

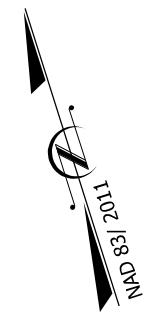
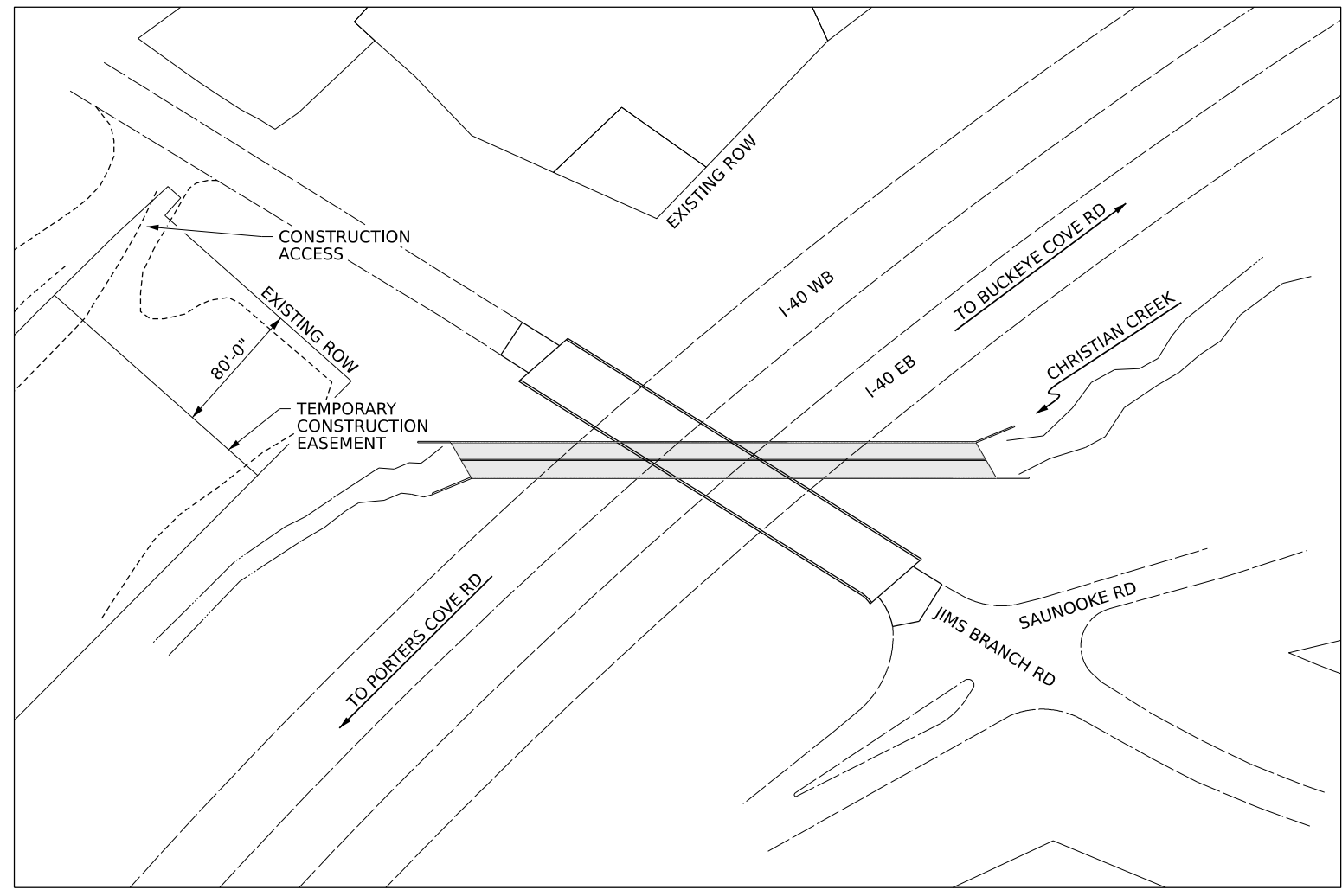
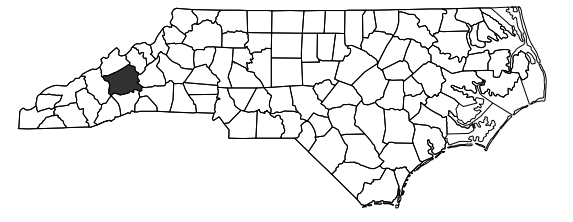
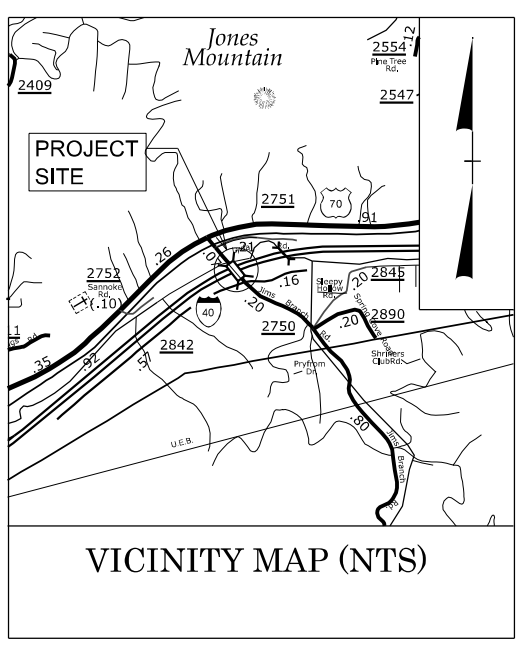
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: *REPAIR CULVERT #100478 ON I-40
CARRYING CHRISTIAN CREEK*

TYPE OF WORK: *STRUCTURE REPAIR*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	18313.1011211.PR		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
18313.1011211.PR	N/A	CONSTRUCTION	




DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA
ADT 2019 = 54000
ADT 2040 = 108000

V = 70 MPH
* TTST = DUAL
FUNC CLASS =
URBAN PRINCIPAL
ARTERIAL-INTERSTATE

PROJECT LENGTH
PROJECT LENGTHS FOR BRIDGE PROJECT 18313.1011211.PR:
TOTAL LENGTH PROJECT 18313.1011211.PR = 0.006 MILES



NCDOT Contact: JOEL M. DAVIS
Prepared in the Office of:  VHB Engineering, Inc. P.C. (C-3705)
640 Main Campus Drive, Suite 500
Raleigh, NC 27606

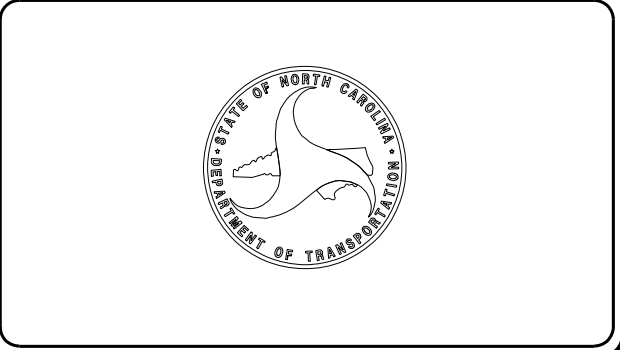
2024 STANDARD SPECIFICATIONS

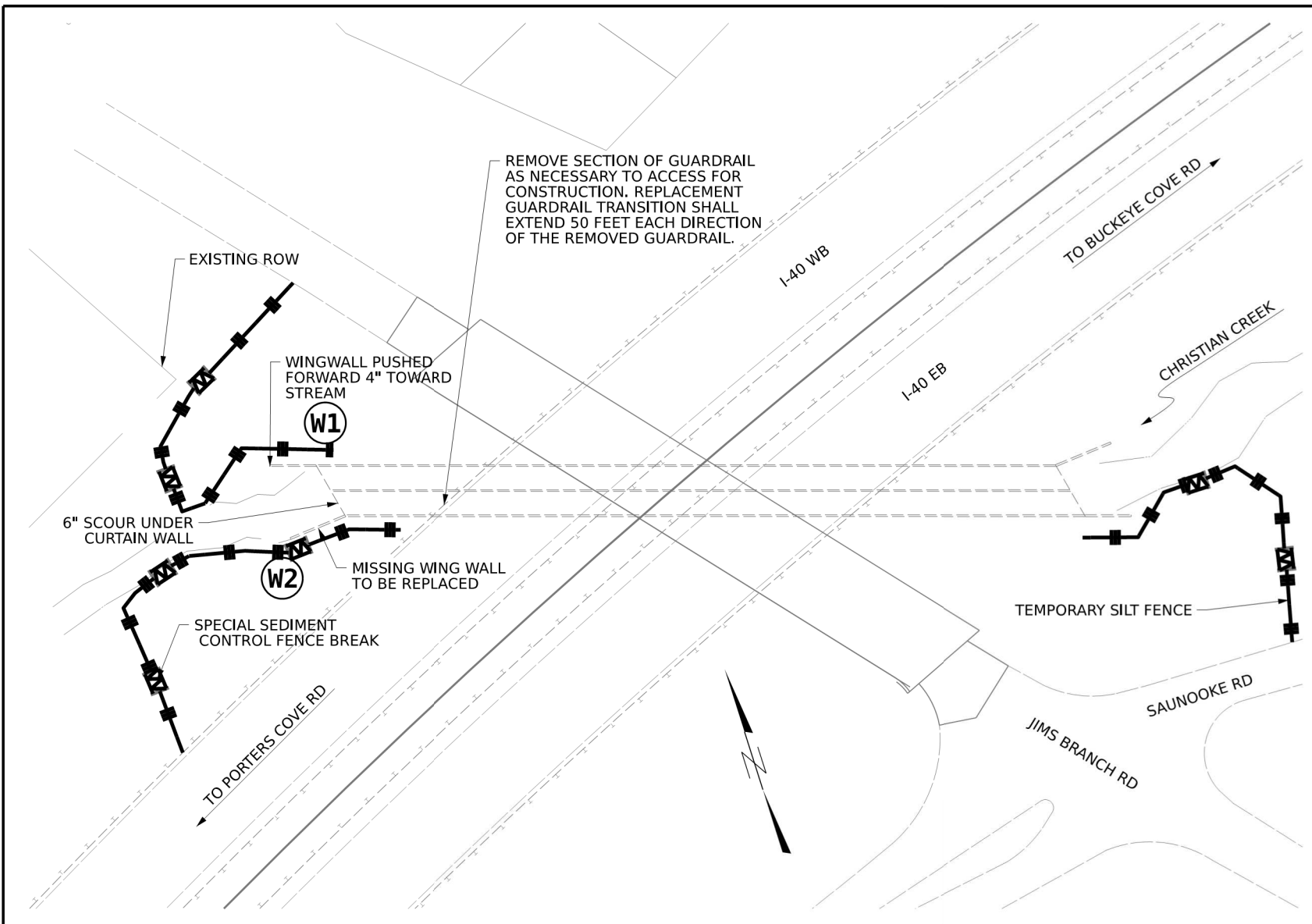
W. KEVIN FISCHER, PE
PROJECT ENGINEER

LETTING DATE:
MARCH 4, 2026

STRUCTURES ENGINEER


SIGNED BY:  2/4/2026
CHIRAG PATEL, PE
SIGNATURE:





EROSION CONTROL SKETCH



EC NOTES:

EROSION CONTROL SKETCH WAS NOT BASED ON ACTUAL SURVEY. CONTRACTOR TO FIELD VERIFY PLACEMENT OF PROPOSED EROSION CONTROL DEVICES AND QUANTITIES REQUIRED FOR THIS PROJECT

ITEM NUMBER	SECTION	TRNS-PORT ITEM DESCRIPTION	QUANTITY	UNIT
3656000000-E	876	GEOTEXTILE FOR DRAINAGE	95	SY
6000000000-E	1605	TEMPORARY SILT FENCE	880	LF
6006000000-E	1610	EROSION CONTROL STONE, CLASS A	35	TON
6012000000-E	1610	SEDIMENT CONTROL STONE	30	TON
6015000000-E	1615	TEMPORARY MULCHING	0.5	ACR
6018000000-E	1620	SEED FOR TEMPORARY SEEDING	100	LB
6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	0.5	TON
6024000000-E	1622	TEMPORARY SLOPE DRAINS	200	LF
6029000000-E	SP	SAFETY FENCE	60	LF
6030000000-E	1630	SILT EXCAVATION	20	CY
6036000000-E	1631	MATTING FOR EROSION CONTROL	6250	SY
6042000000-E	1632	1/4" HARDWARE CLOTH	135	LF
6070000000-N	1639	SPECIAL STILLING BASINS	1	EA
6084000000-E	1660	SEEDING AND MULCHING	3	ACR
6087000000-E	1660	MOWING	0.5	ACR
6090000000-E	1661	SEED FOR REPAIR SEEDING	50	LB
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.25	TON
6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	50	LB
6108000000-E	1665	FERTILIZER TOPDRESSING	0.5	TON
6111000000-E	SP	IMPERVIOUS DIKE	138	LF
6114500000-N	1667	SPECIALIZED HAND MOWING	10	MHR
6117000000-N	1675	RESPONSE FOR EROSION CONTROL	13	EA
6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	1	EA
6132000000-N	SP	GENERIC EROSION CONTROL ITEM - PREFABRICATED CONCRETE WASHOUT	2	EA

PROJECT NO. 18313.1011211.PR
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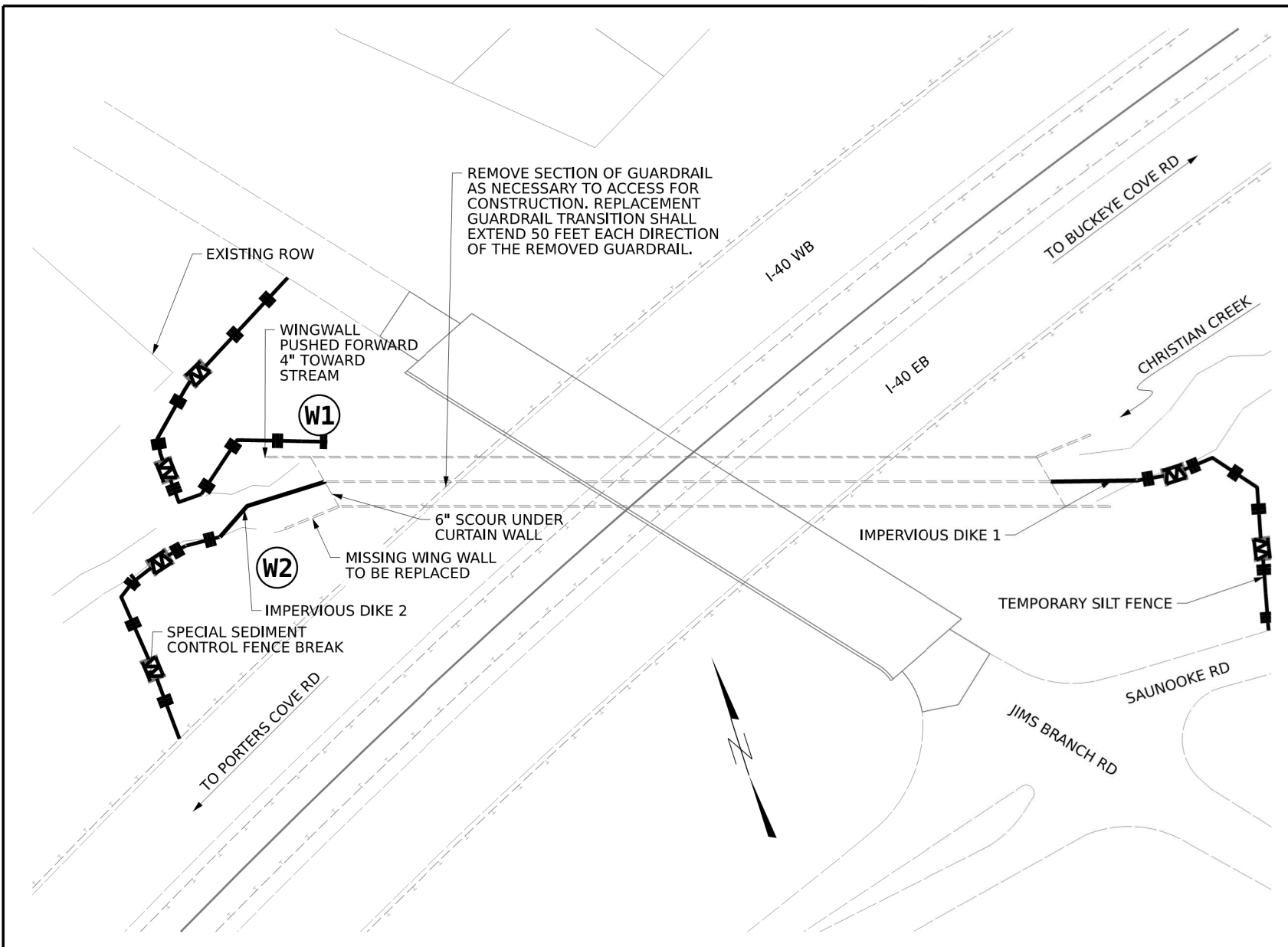
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**REPAIRS FOR REINFORCED
 CONCRETE BOX CULVERT
 100478**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	EC2-1
1			3			TOTAL SHEETS
2			4			9



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 CHECKED BY : J.R. HOPSON DATE : 7/2025
 DESIGN ENGINEER OF RECORD: _____ DATE : _____



EROSION CONTROL SKETCH



- CONSTRUCTION SEQUENCE
1. INSTALL IMPERVIOUS DIKES 1 AND 2 TO DIRECT FLOW INTO THE NORTH CULVERT BARREL
 2. DEWATER SITE UTILIZING SPECIAL STILLING BASIN
 3. REPLACE MISSING WING WALL AND FILL SCOUR BENEATH SOUTHERN BARRELL OF CULVERT
 4. REMOVE IMPERVIOUS DIKES 1 AND 2 RECONSTRUCT SLOPE AND REPLACE GUARDRAIL

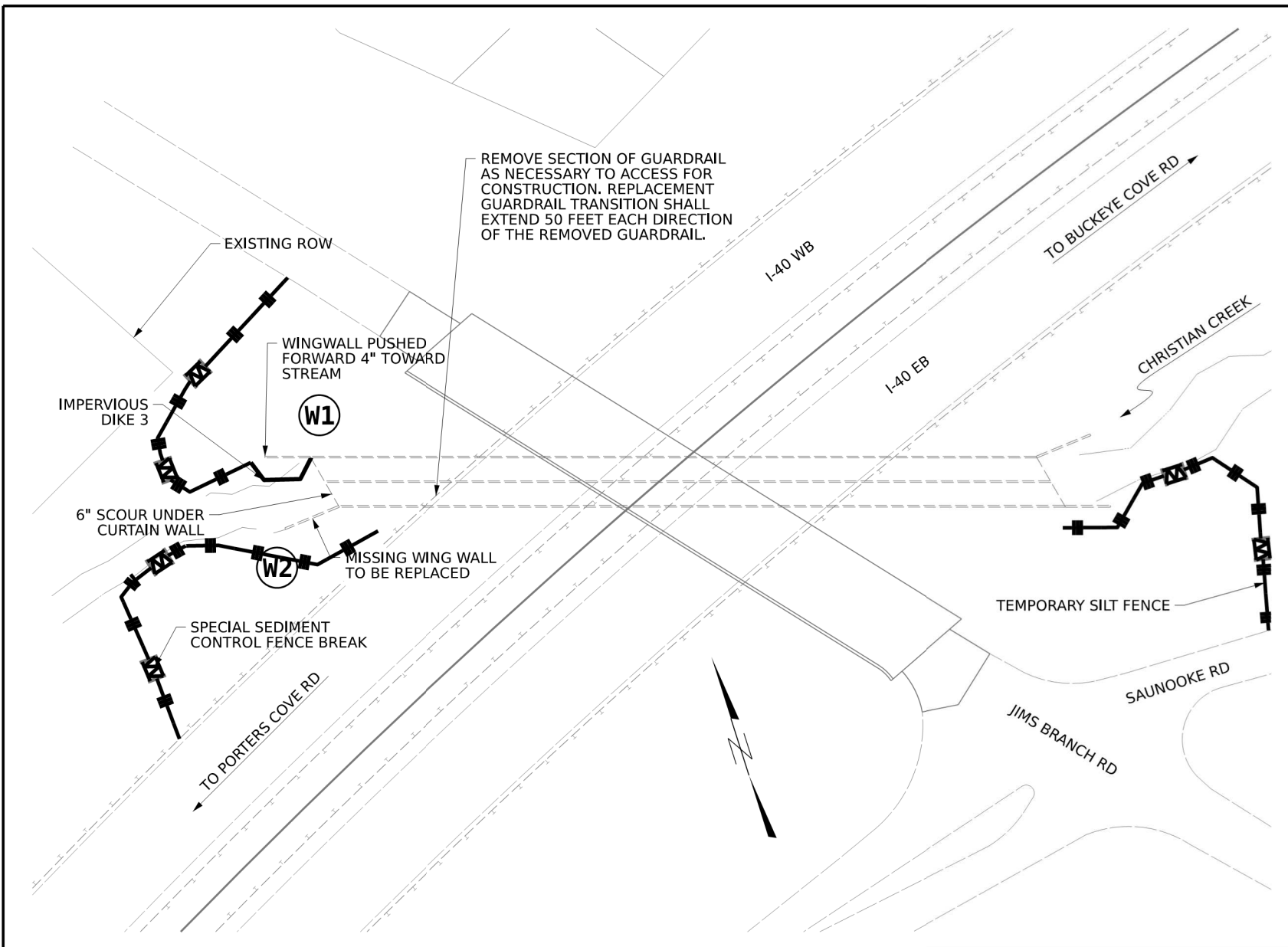
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2			4			9



EROSION CONTROL SKETCH



CONSTRUCTION SEQUENCE:

1. INSTALL IMPERVIOUS DIKE 3 TO ALLOW DRY WORKING AREA.
2. INSTALL SOIL NAILS AND TIE BACK IN NORTHWEST WING WALL.
3. DEWATER SITE UTILIZING SPECIAL STILLING BASIN.
4. REMOVE IMPERVIOUS DIKE.



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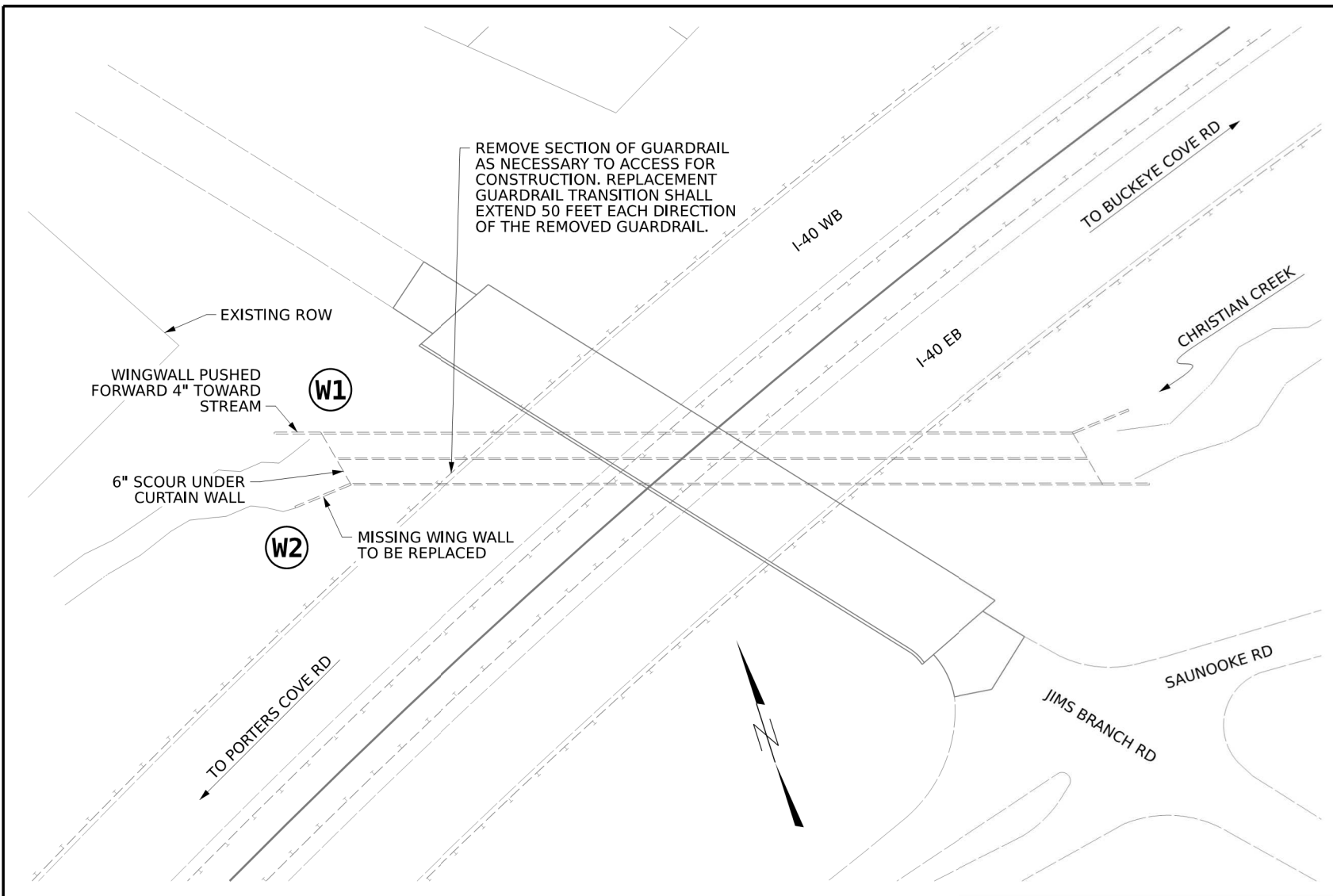
BUNCOMBE COUNTY

STATION: _____

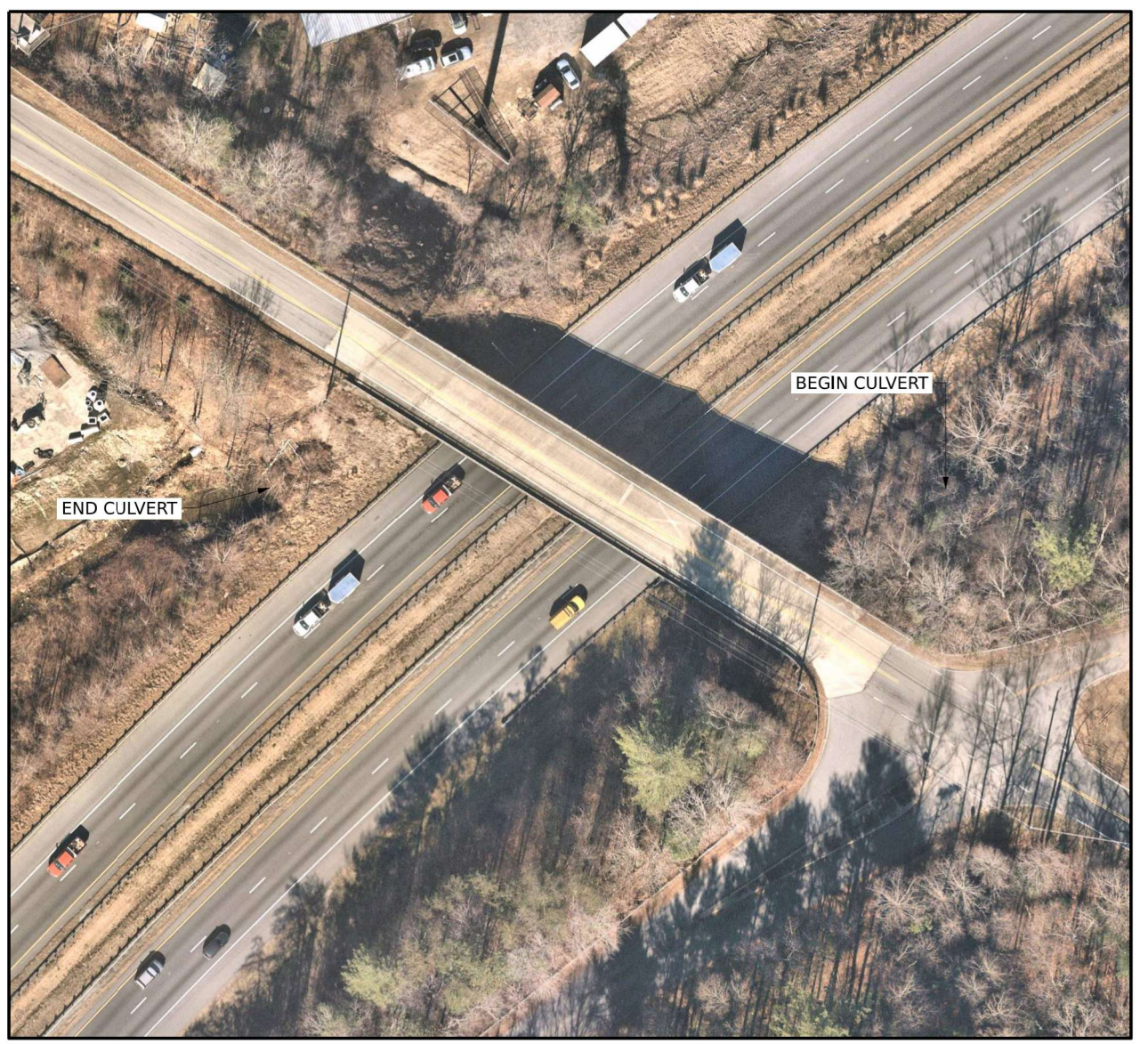
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LOCATION SKETCH



SCOPE OF WORK

- PLACE REQUIRED TRAFFIC CONTROL, REMOVE GUARDRAIL AS NECESSARY AND GRADE ACCESS FROM I-40.
- DIVERT WATER FROM SOUTH BARREL AND INSTALL IMPERVIOUS DIKE FOR WINGWALL REPAIR.
- INSTALL SHEET PILE WING AND GROUND ANCHORS PARALLEL TO I-40 FOR SUPPORT OF ROADWAY EMBANKMENT.
- FORM AND POUR NEW CONCRETE CONNECTION BETWEEN SHEET PILE WING AND CULVERT BARREL AND CONCRETE COPING AT SOUTHEAST CORNER OF THE CULVERT.
- REPAIR NORTHWEST WING USING GROUND ANCHORS.
- FILL SCOUR BENEATH OUTLET END OF CULVERT.
- RETURN FLOW TO SOUTH BARREL AND REINSTALL GUARDRAIL AND TRANSITIONS ALONG I-40.

LINE ITEM	SEC NO.	DESCRIPTION	QUANTITY	UNIT
8847000000-E	SP	ANCHORED SHEET PILE RETAINING WALL	640	SF
8832000000-N	SP	GROUND ANCHORS	2	EA
8196000000-E	420	CLASS A CONCRETE (CULVERT)	4	CY
8245000000-E	425	REINFORCING STEEL (CULVERT)	230	LB
2275000000-E	SP	FLOWABLE FILL	5	CY
3135000000-N	862	W-TR SBGR TRANS SECTIONS	2	EA
3345000000-E	864	REMOVE EXISTING GUARDRAIL	100	LF

NOTES

EXISTING DIMENSIONS AND BRIDGE CONDITIONS ARE FROM BEST INFORMATION AVAILABLE; THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER; THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THAT SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

CONSTRUCTION SURVEY IS NOT ANTICIPATED FOR THIS PROJECT, BUT A PAY ITEM IS INCLUDED AS A CONTINGENCY SHOULD IT BE REQUIRED DURING CONSTRUCTION.

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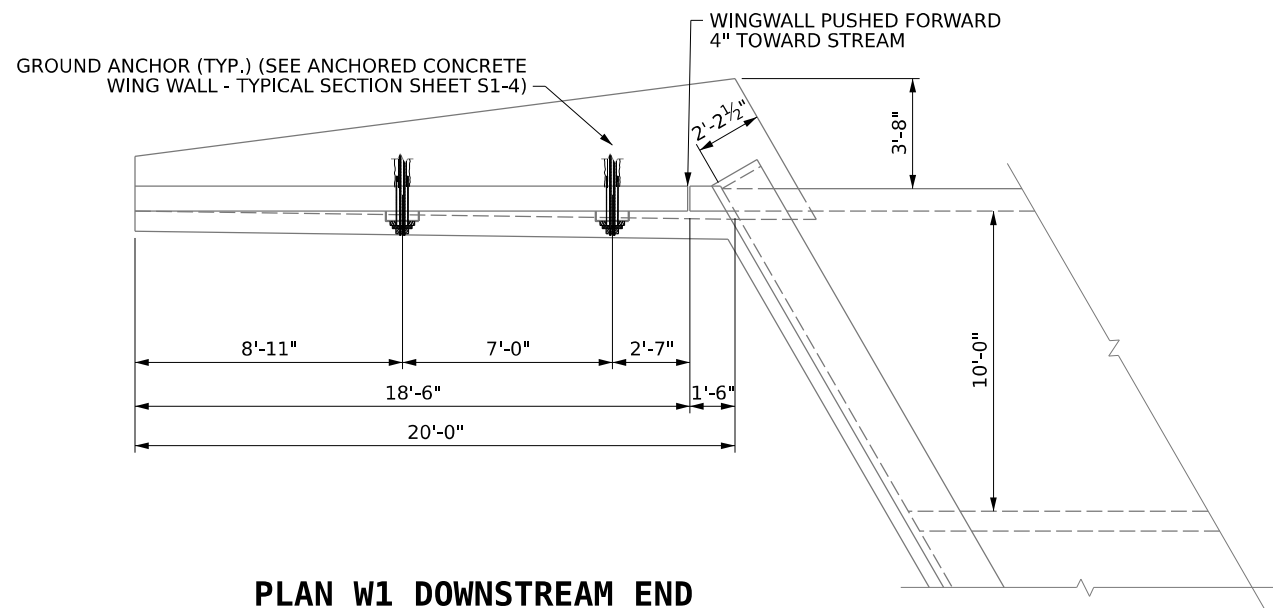
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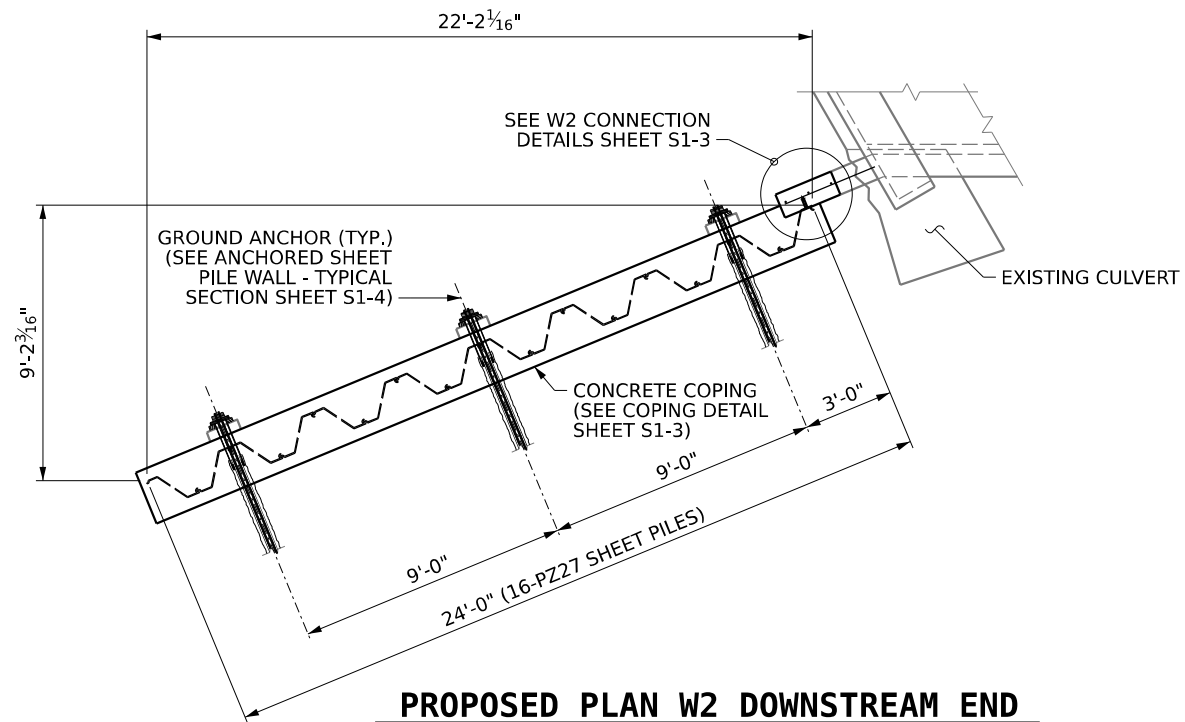
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REPAIRS FOR REINFORCED CONCRETE BOX CULVERT 100478

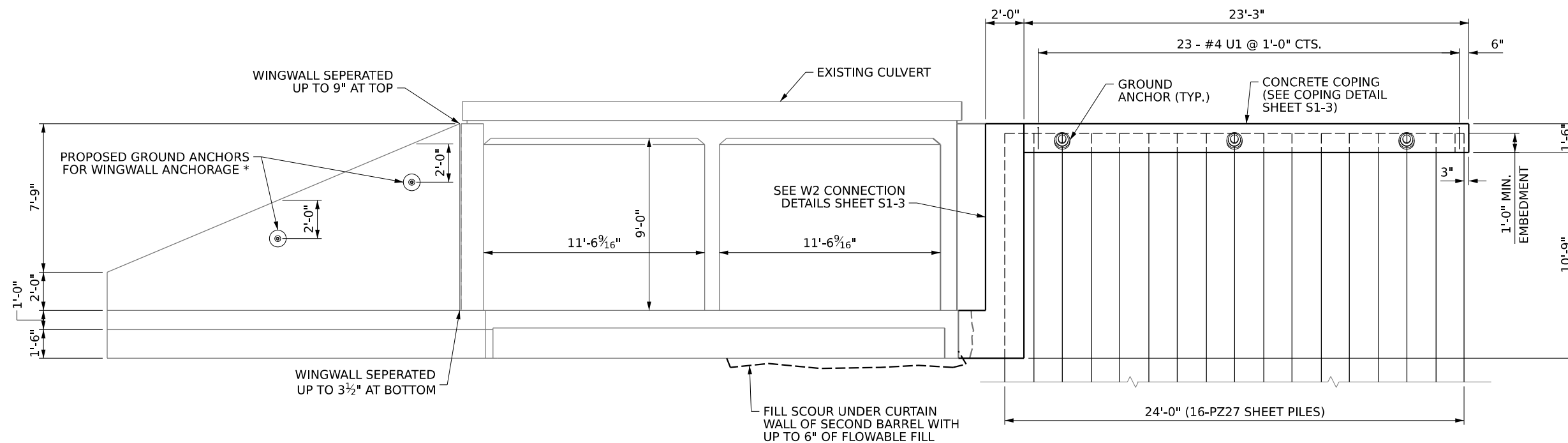
REVISIONS						SHEET NO.
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PLAN W1 DOWNSTREAM END



PROPOSED PLAN W2 DOWNSTREAM END



ELEVATION W1 DOWNSTREAM END

PROPOSED ELEVATION W2 DOWNSTREAM END

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* CORED HOLES FOR GROUND ANCHORS SHALL BE OF SUFFICIENT SIZE TO INSTALL AND GROUT THE GROUND ANCHORS. ANCHORAGE PLATES SHALL BE OF SUFFICIENT SIZE FOR CONCRETE BEARING STRENGTH TO REMAIN BELOW 1500PSI. LOCATION OF THE ANCHORAGES MAY BE SHIFTED TO AVOID REINFORCING BARS IN THE WING.



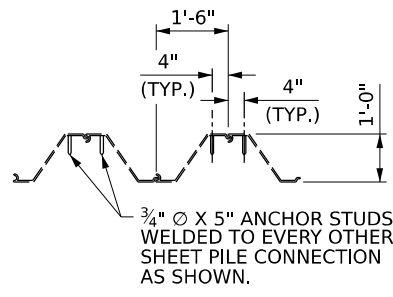
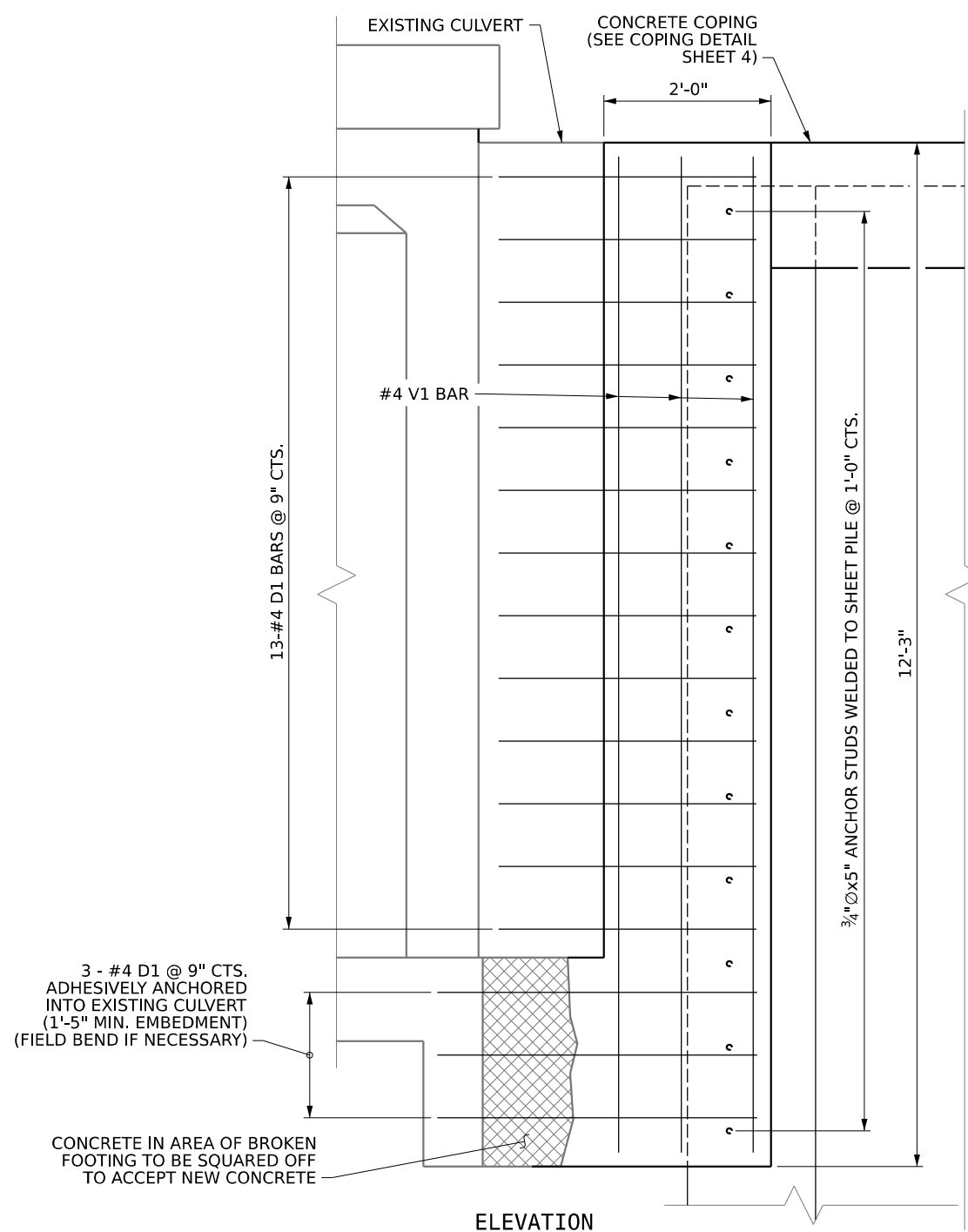
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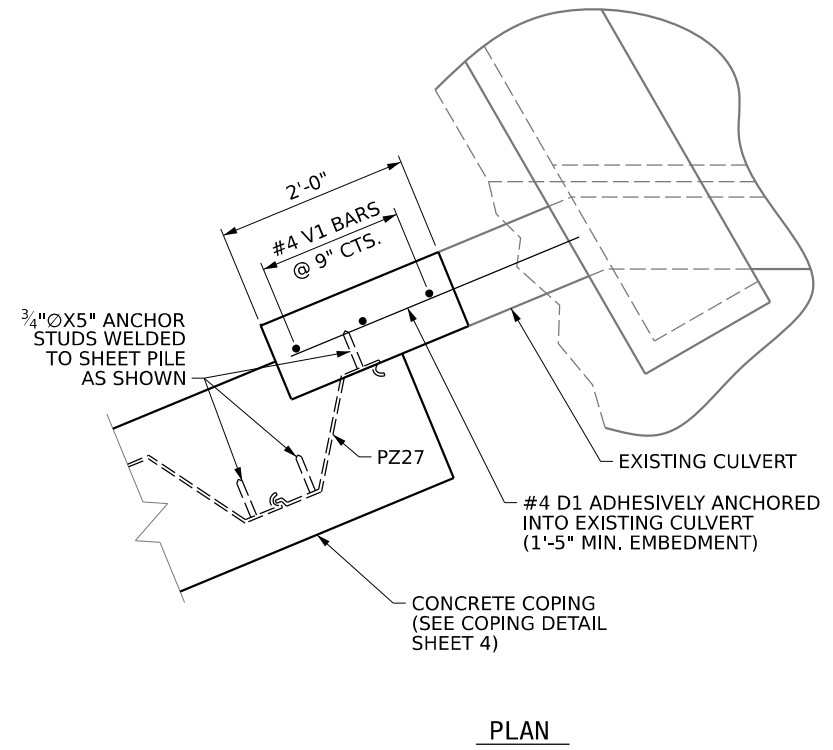
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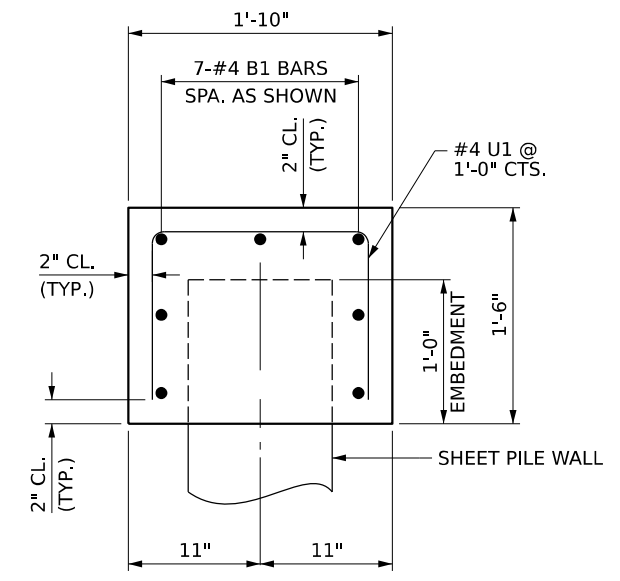
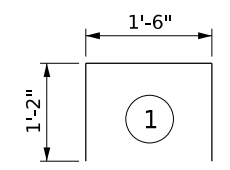
ANCHOR STUD DETAIL



W2 CONNECTION DETAILS

BAR TYPES		BILL OF MATERIAL				
		WING W2				
BAR NO	SIZE	TYPE	LENGTH	WEIGHT		
B1	7 #4	STR	22' - 11"		107	
D1	13 #4	STR	3' - 3"		28	
D2	3 #4	STR	4' - 0"		8	
V1	3 #4	STR	11' - 11"		24	
U1	23 #4	1	3' - 10"		59	
REINFORCING STEEL				LBS.	226	
CLASS A CONCRETE				C.Y.		
CONNECTION				=	0.9	
COPING				=	2.4	
TOTAL				=	3.4	

ALL BAR DIMENSIONS ARE OUT TO OUT



COPING DETAIL

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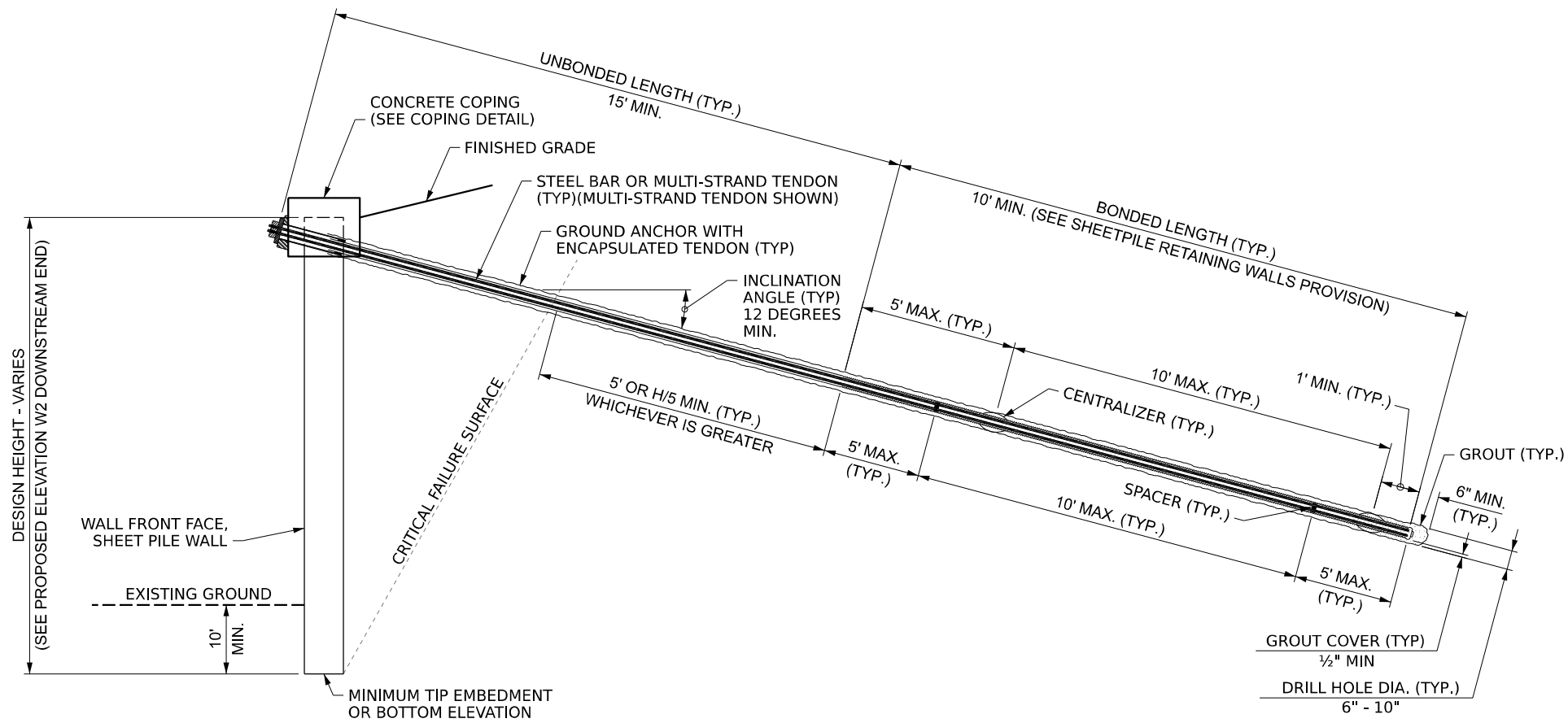
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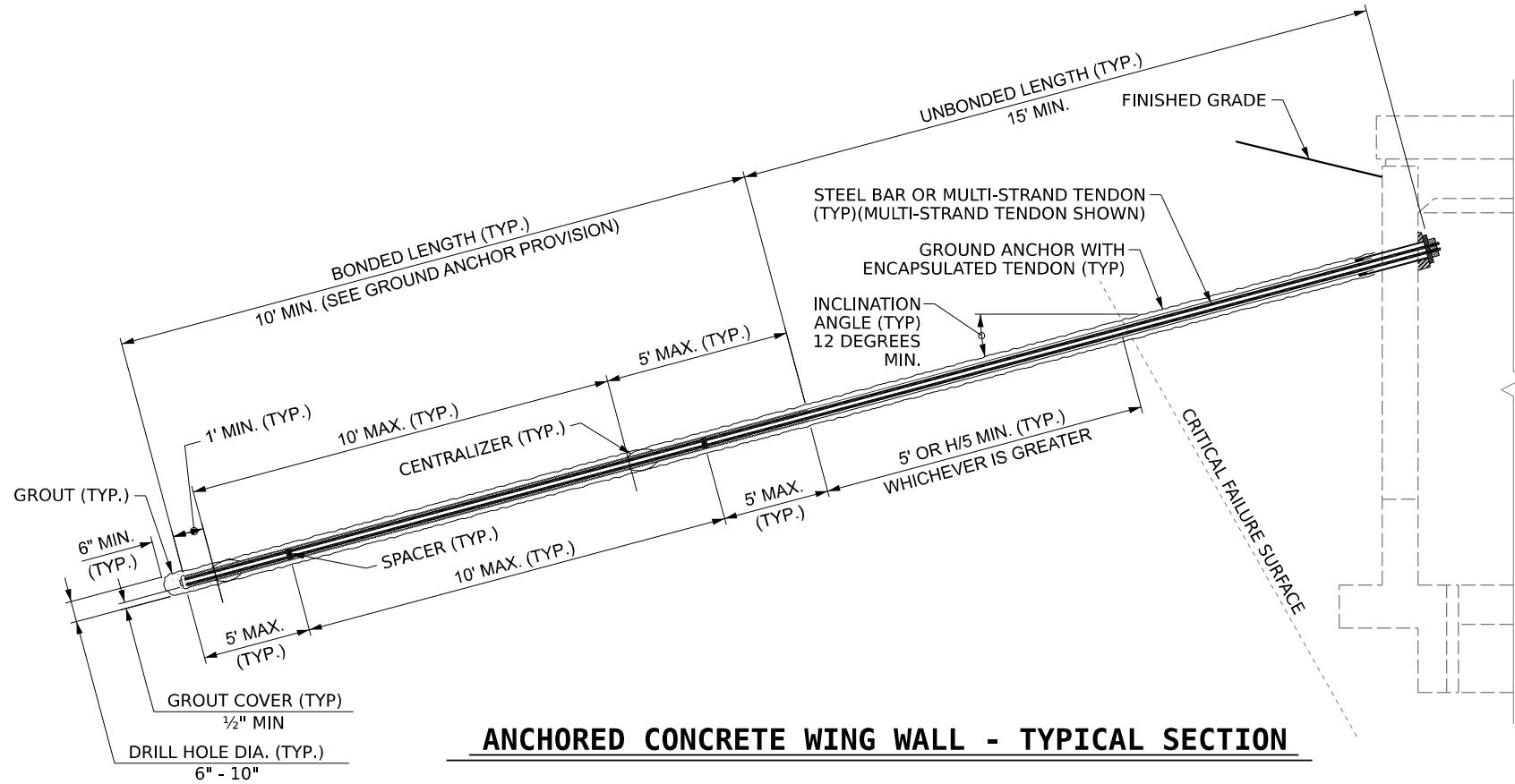
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ANCHORED SHEET PILE WALL - TYPICAL SECTION



ANCHORED CONCRETE WING WALL - TYPICAL SECTION

NOTES:

FOR ANCHORED SHEET PILE RETAINING WALLS, SEE ANCHORED SHEET PILE RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

DESIGN GROUND ANCHOR FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.

BEFORE BEGINNING ANCHORED WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

- DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:
- 1) H = DESIGN HEIGHT + EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) IN-SITU ASSUMED MATERIAL PARAMETERS (SOIL):
 UNIT WEIGHT, $g = 120$ LB/CF
 FRICTION ANGLE, $f = 30$ DEGREES
 COHESION, $c = 0$ LB/SF
 - 4) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK):
 COHESION, $c = 50$ LB/SF
 UNIT WEIGHT, $= 135$ LB/CF
 FRICTION ANGLE, $= 40$ DEGREES

DESIGN WINGWALL W2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXTEND SHEET PILES 10 FT. BELOW STREAM BED

IN LIEU OF A DRILLED AND GROUTED ANCHOR, A CANTILEVERED OR DEAD MAN ALTERNATIVE MAY BE CONSIDERED. IF ONE OF THESE OPTIONS ARE PREFERRED, A DESIGN SUBMITTAL INCLUDING REQUIRED ANCHOR CAPACITY, ANCHOR LOCATION, BAR OR TENDON PROPOSED, WALL ANCHORAGE DETAILS AND THE INSTALLATION PROCEDURE WILL NEED TO BE APPROVED PRIOR TO BEGINNING CONSTRUCTION.

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MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:

- LANE SHIFTS OR CLOSURES
- SHOULDER CLOSURES
- NIGHT WORK
- WEEKEND WORK
- WORK HOUR RESTRICTIONS FOR PEAK TRAVEL

WORK ZONE SAFETY & MOBILITY STRATEGIES:

- SEQUENTIAL LIGHTING
- PRESENCE LIGHTING

TRAFFIC / INCIDENT MANAGEMENT & SPEED ENFORCEMENT STRATEGIES:

- ITS FOR TRAFFIC MONITORING / MANAGEMENT (SMART WORKZONE)
- COORDINATION WITH STATE TRAFFIC OPERATIONS CENTER (STOC)

CONTRACTING & INNOVATIVE CONSTRUCTION STRATEGIES:

- INTERMEDIATE CONTRACT TIMES / LIQUIDATED DAMAGES

PHASING

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

PHASE 1

- USING RSD 1101.02, SHEET 4 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 WB AND INSTALL UNANCHORED PCB AND I-40 WB USING UNANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND TEMPORARY CRASH CUSHION TO CLOSE THE SHOULDER IN ACCORDANCE WITH RSD 1101.04, SHEET 1 OF 2.

- AWAY FROM TRAFFIC AND BEHIND BARRIER, REMOVE EXISTING GUARDRAIL AS NEEDED FOR ACCESS, COMPLETE THE REPAIR, AND REINSTALL THE GUARDRAIL.

- USING RSD 1101.02, SHEET 4 OF 19, TEMPORARILY CLOSE THE OUTSIDE TRAVEL LANE ON I-40 WB AND REMOVE THE SHOULDER CLOSURE.

- REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND MARKINGS AND OPEN ALL LANES TO TRAFFIC.

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER. THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

- A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
I-40 AND RAMPS	6:00 A.M. TO 7:00 P.M. MONDAY THRU SUNDAY

- B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
I-240 AND RAMPS

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.
9. FOR LEAF SEASON, BETWEEN THE HOURS OF 6:00 A.M. AND 7:00 P.M. EACH DAY FOR THE FIRST THREE WEEKS IN OCTOBER.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 10 FT OF AN OPEN TRAVEL LANE ON A DIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) USE SEQUENTIAL FLASHING WARNING LIGHTS ON DRUMS USED FOR THE MERGING TAPERS OF NIGHTTIME LANE CLOSURES IN ACCORDANCE WITH SECTION 1140 IN THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- G) NOTIFY THE NCDOT STATEWIDE TRANSPORTATION OPERATIONS CENTER (STOC) AT 877-627-7862 APPROXIMATELY 30 MINUTES PRIOR TO INSTALLING AND WITHIN 15 MINUTES AFTER REMOVING LANE CLOSURES ON INTERSTATES, FREEWAYS, CONTROLLED ACCESS FACILITIES, AND US ROUTES.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- H) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

- I) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- J) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- K) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- L) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC BARRIER

- M) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

- N) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 – 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

- O) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

- P) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- Q) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING PAINT	MARKER
I-40		NONE

- R) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- S) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PROJECT NO. 18313.1011211.PR

BUNCOMBE COUNTY

STATION: _____



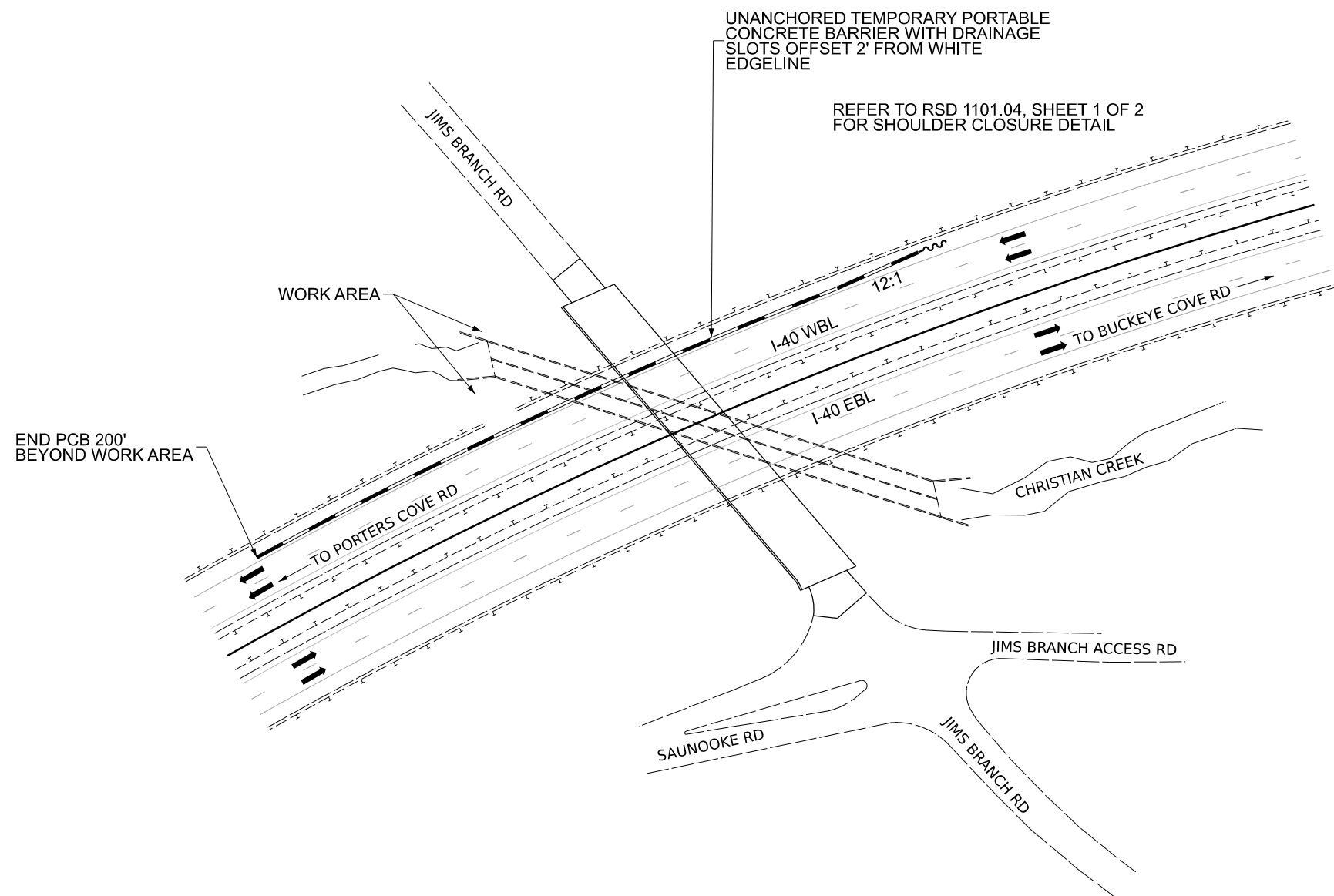
DRAWN BY : J. TOWNSEND	DATE : 6/2025
CHECKED BY : K. FISCHER	DATE : 6/2025
DESIGN ENGINEER OF RECORD: J. TOWNSEND	DATE : 2/2026



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**REPAIRS FOR REINFORCED
CONCRETE BOX CULVERT
100478**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			TC2-1
2			4			9



Pay Item No.	Sec No.	Description	Quantity	Unit
4402000000-E	SP	HIGH VISIBILITY STATIONARY SIGNS	186	SF
4407000000-E	SP	HIGH VISIBILITY PORTABLE SIGNS	96	SF
4415000000-N	1115	FLASHING ARROW BOARD	3	EA
4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2	EA
4424000000-N	SP	WORK ZONE PRESENCE LIGHTING	14	EA
4432000000-N	SP	HIGH VISIBILITY DRUMS	40	EA
4434000000-N	1140	SEQUENTIAL FLASHING WARNING LIGHTS	31	EA
4465000000-N	1160	TEMPORARY CRASH CUSHIONS	1	EA
4480000000-N	1165	TMA	1	EA
4485000000-E	1170	PORTABLE CONCRETE BARRIER	492	LF
4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM - CONNECTED LANE CLOSURE SYSTEM	1	EA

PROJECT NO. 18313.1011211.PR
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