

TIP PROJECT: I-5826

CONTRACT: C204363

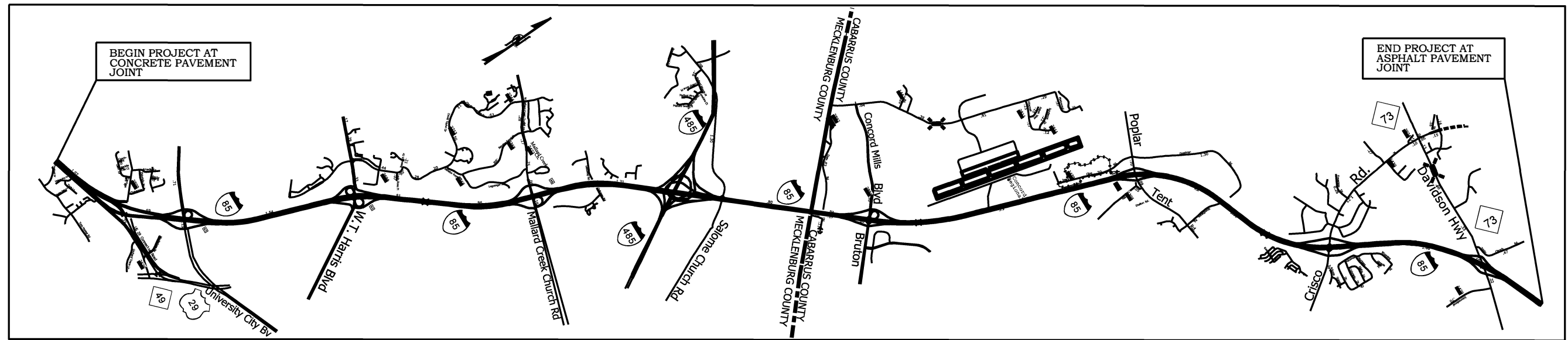
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG & CABARRUS COUNTY

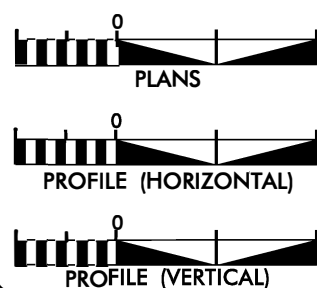
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50469.3.GV1	NHPIM-0085(047)		

LOCATION: I-85 PAVEMENT REHABILITATION FROM JUST SOUTH OF US 29 BY PASS CONNECTOR ROAD IN MECKLENBURG COUNTY TO JUST NORTH OF NC 73 DAVIDSON HWY IN CABARRUS COUNTY MP 42.05 TO MP 55.97

TYPE OF WORK: MILLING, PAVING WITH HOT MIX ASPHALT
CONCRETE PAVEMENT REPAIR, PAVEMENT MARKINGS
SNOWPLOWABLE PAVEMENT MARKERS, PPC OVERLAY
FOR CONCRETE BRIDGE DECKS



GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 150,000
ADT =
K = %
D = %
T = % *
V = 65 MPH
* TTST = DUAL

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 50469.3.GV1 = 13.88 MILES
TOTAL LENGTH OF STATE PROJECT 50469.3.GV1 = 13.92 MILES

Prepared in the Office of
DIVISION OF HIGHWAYS

DIVISION 10

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

N/A

LETTING DATE:
MARCH 17, 2020

JOHN H. EDMONDS
PROJECT ENGINEER

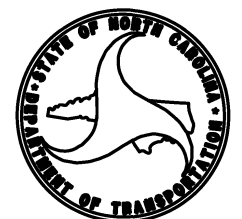
JOHN H. EDMONDS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

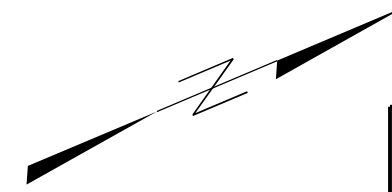
SIGNATURE: _____ P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: _____ P.E.



STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	2	
WBS NO. 50469.3.GV1			

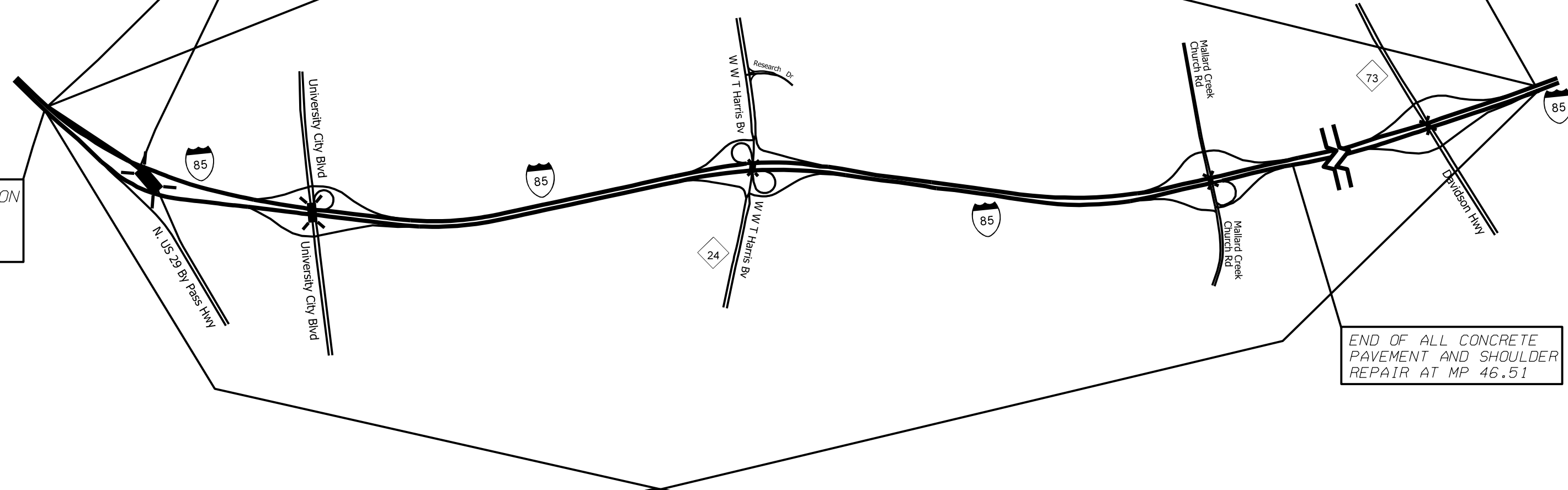


MILL & FILL RAMP LANES FROM FLYOVER BRIDGE JOINT SOUTH BOUND TO ADJACENT CONCRETE JOINT ON MAINLINE

END CONSTRUCTION AT ASPHALT PAVEMENT JOINT MP 55.97

BEGIN CONSTRUCTION AT CONCRETE PAVEMENT JOINT MP 42.05

END OF ALL CONCRETE PAVEMENT AND SHOULDER REPAIR AT MP 46.51



2

1

MAP

DESCRIPTION

- # 1 I-85 NORTH BOUND
- # 2 I-85 SOUTH BOUND

FROM ASPHALT PAVEMENT JOINT JUST SOUTH OF US 29 BY PASS CONNECTOR RD TO ASPHALT PAVEMENT JOINT JUST NORTH OF NC 73 DAVIDSON HWY

FROM ASPHALT PAVEMENT JOINT JUST NORTH OF NC 73 DAVIDSON HWY TO ASPHALT PAVEMENT JOINT JUST SOUTH OF US 29 BY PASS CONNECTOR RD

CONSTRUCTION NOTES:

THE CONTRACTOR SHALL REPAIR AND SEAL ALL LONGITUDINAL AND TRANSVERSE CONCRETE JOINTS FROM MP 42.05 TO MP 46.51 AS DIRECTED BY THE ENGINEER.

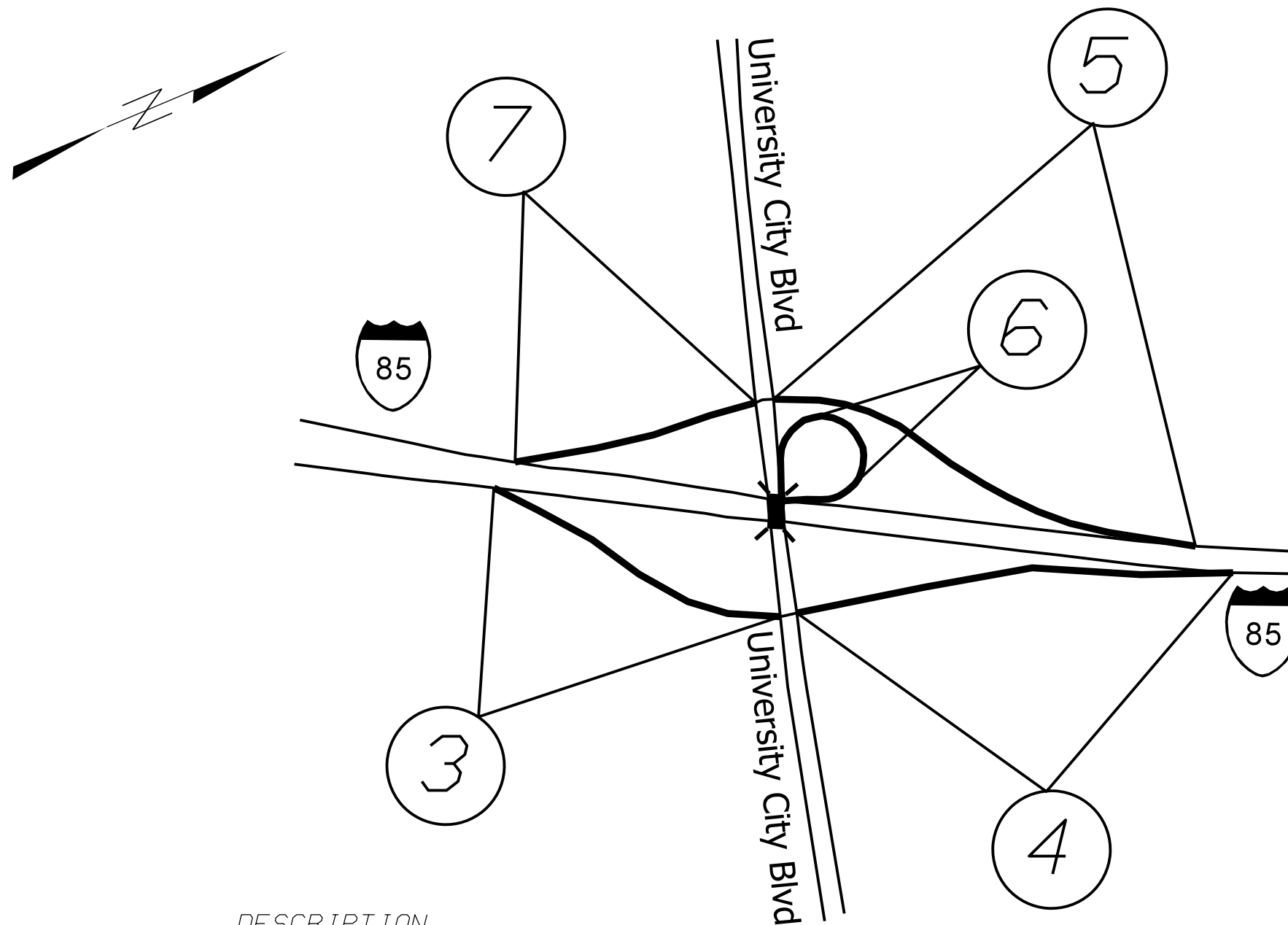
THE CONTRACTOR SHALL SEAL ALL LONGITUDINAL AND TRANSVERSE PAVEMENT CRACKS ALONG EXISTING ASPHALT SHOULDERS FROM MP 42.05 TO MP 46.51 AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL REMOVE ALL EXISTING RAISED PAVEMENT MARKINGS PRIOR TO THE INSTALLATION OF NEW SNOWPLOWABLE MARKERS.

**I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY**

SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	3	
WBS NO. 50469.3.GV1			



MAP

DESCRIPTION

3 NB OFF RAMP

FROM PHYSICAL GORE TO EB UNIVERSITY CITY BLVD

4 NB ON RAMP

FROM WB UNIVERSITY CITY BLVD TO PHYSICAL GORE

5 SB OFF RAMP

FROM PHYSICAL GORE TO WB UNIVERSITY CITY BLVD

6 SB LOOP ON RAMP

FROM WB UNIVERSITY CITY BLVD TO PHYSICAL GORE

7 SB ON RAMP

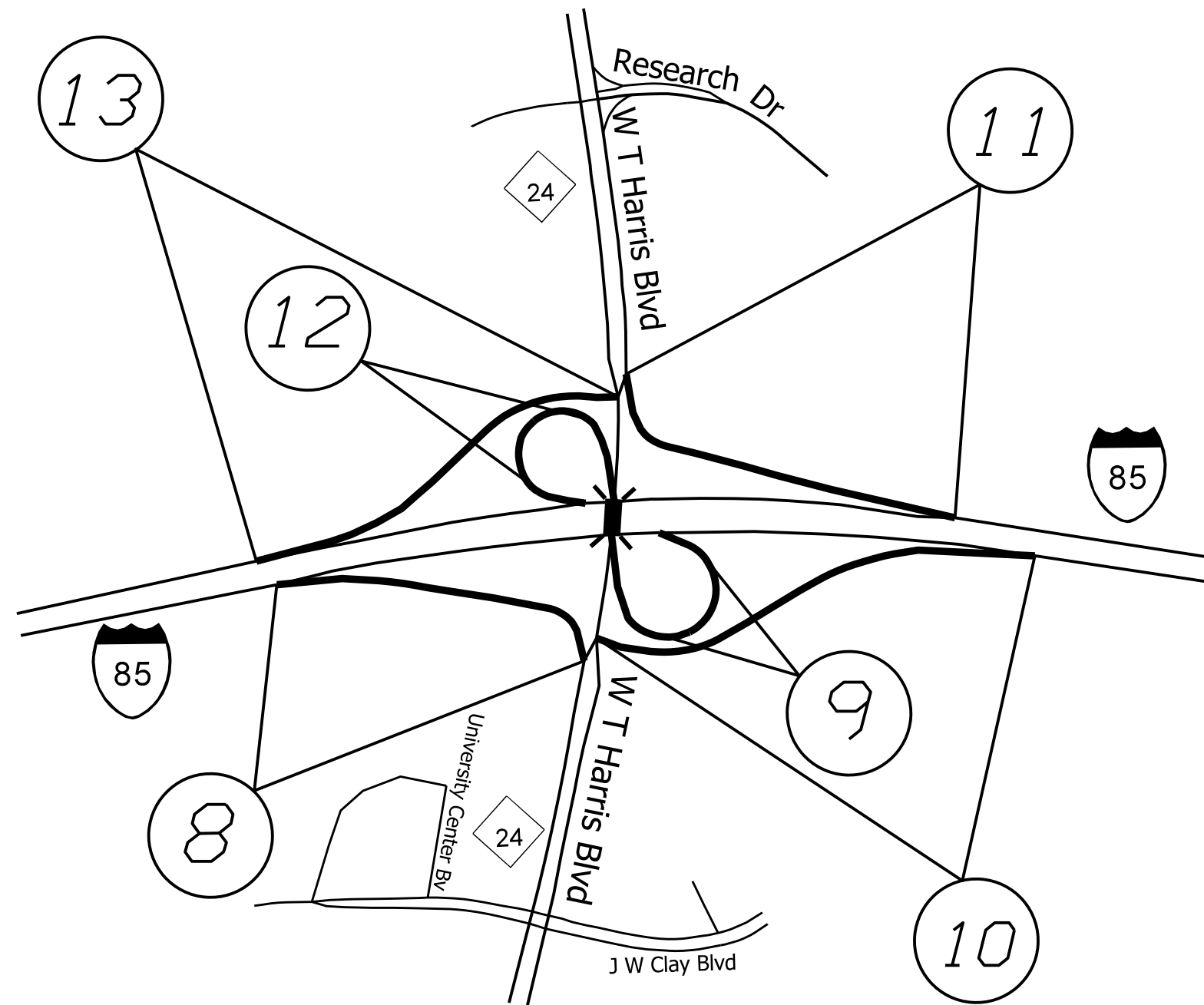
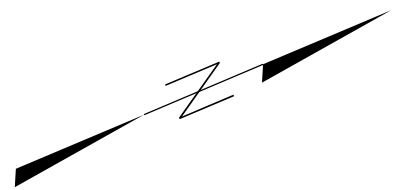
FROM EB UNIVERSITY CITY BLVD TO PHYSICAL GORE

I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

SCALE	-NA-	REVISIONS
DATE	9/18	
DWG. BY	JHE	
DESIGN BY	JHE	
APPROVED		



STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	4	
WBS NO. 50469.3.GV1			

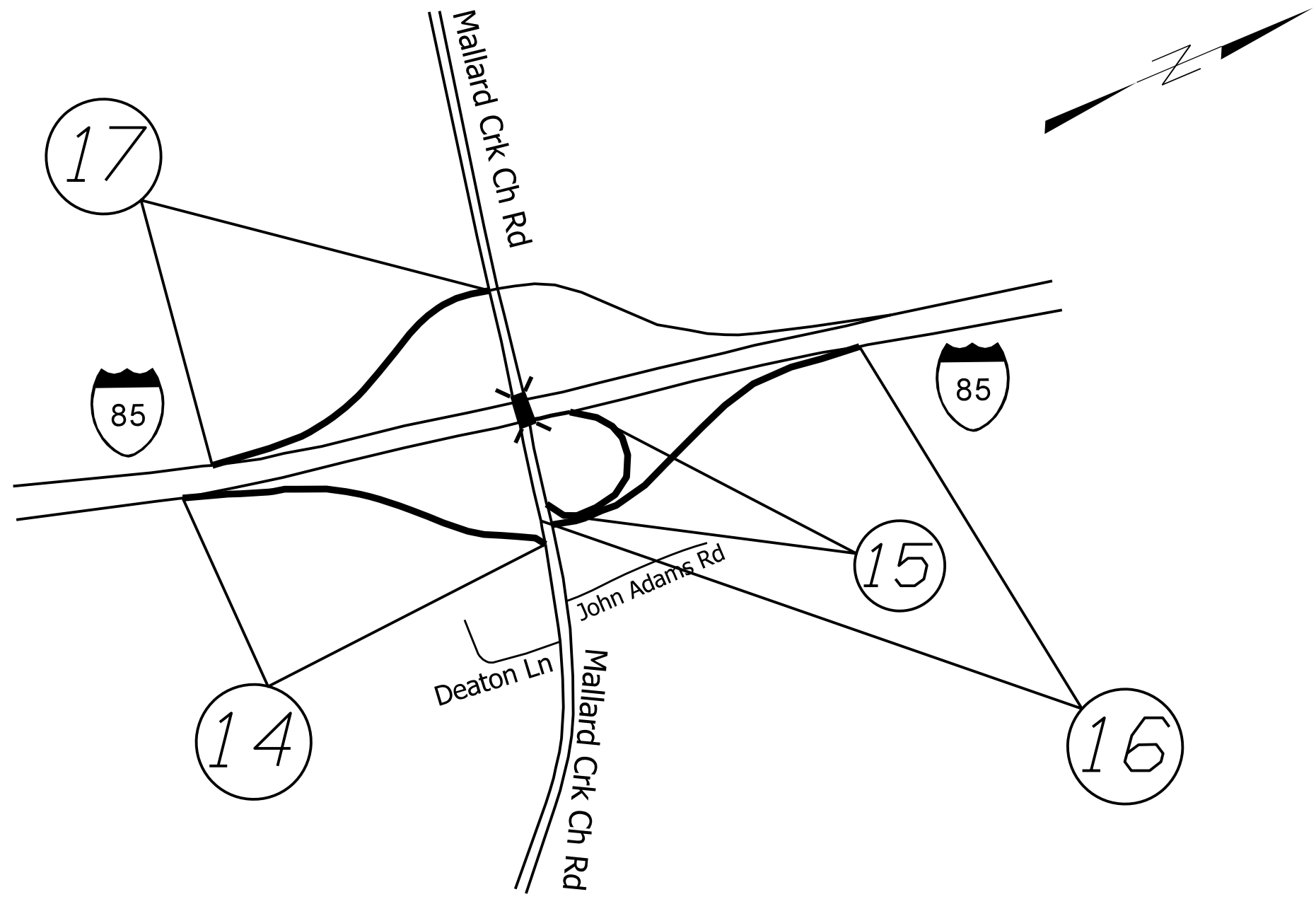


MAP	DESCRIPTION
# 8 NB OFF RAMP	FROM PHYSICAL GORE TO EB HARRIS BLVD
# 9 NB LOOP OFF RAMP	FROM PHYSICAL GORE TO WB HARRIS BLVD
# 10 NB ON RAMP	FROM WB HARRIS BLVD TO PHYSICAL GORE
# 11 SB OFF RAMP	FROM PHYSICAL GORE TO WB HARRIS BLVD
# 12 SB LOOP OFF RAMP	FROM PHYSICAL GORE TO EB HARRIS BLVD
# 13 SB ON RAMP	FROM EB HARRIS BLVD TO PHYSICAL GORE

**I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY**

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DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	5	
WBS NO. 50469.3.GV1			



MAP

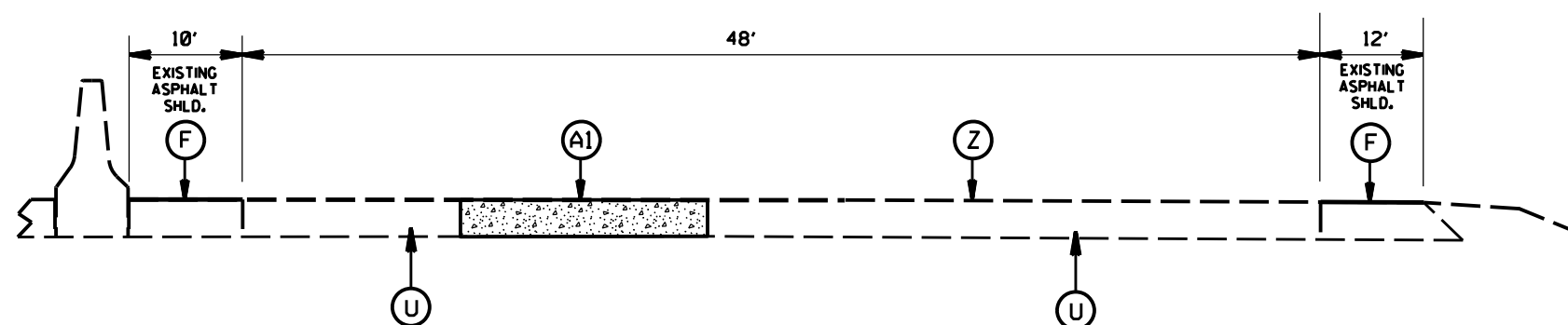
DESCRIPTION

- # 14 NB OFF RAMP FROM PHYSICAL GORE TO EB MALLARD CRK CH RD
- # 15 NB LOOP OFF RAMP FROM PHYSICAL GORE TO WB MALLARD CRK CH RD
- # 16 NB ON RAMP FROM WB MALLARD CRK CH RD TO PHYSICAL GORE
- # 17 SB ON RAMP FROM EB MALLARD CRK CH RD TO PHYSICAL GORE

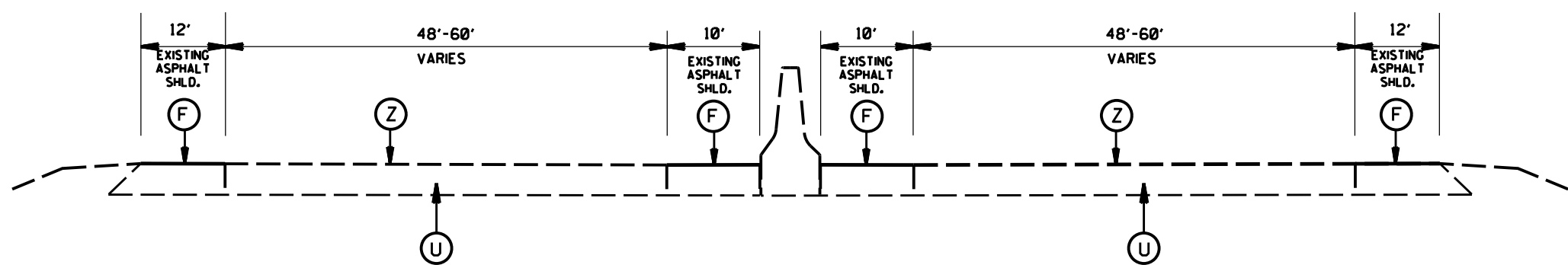
I-5826 INTERSTATE I-85 PAVEMENT REHABILITATION MECKLENBURG COUNTY										
SCALE	-NA-									
DATE	9/18									
DWG. BY	JHE									
DESIGN BY	JHE									
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REVISIONS										

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	6	
WBS NO. 50469.3.GVI			

PAVEMENT SCHEDULE	
A1	APPROX. 12" PCC SLAB REPAIR
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 2.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D1	PROP. APPROX. 3.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
F	FOG SEAL, TARGET APPLICATION RATE OF DILUTED EMULSION 0.12 GAL/SY +/- 0.03 GAL/SY.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	MILLING, 2.0" DEPTH
V3	MILLING, 7.0" DEPTH
Z	JOINT CONSTRUCTION REPAIR AND SEALING



TYPICAL SECTION NO.1
 APPROX. LOCATION OF SLAB REPAIR
 NB AT MP 42.5 INSIDE MIDDLE LANE
 MAINLINE



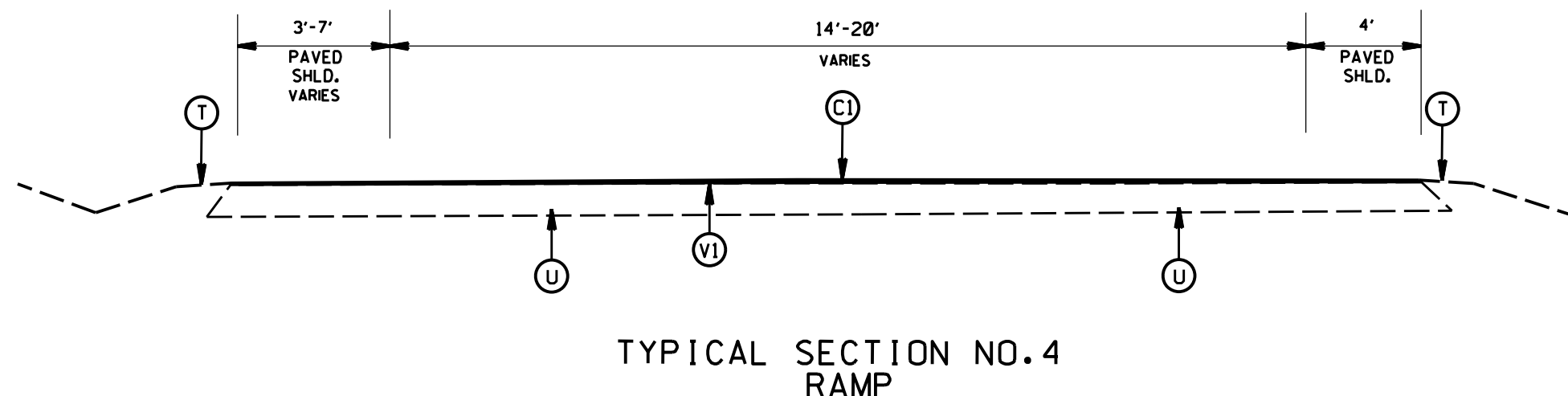
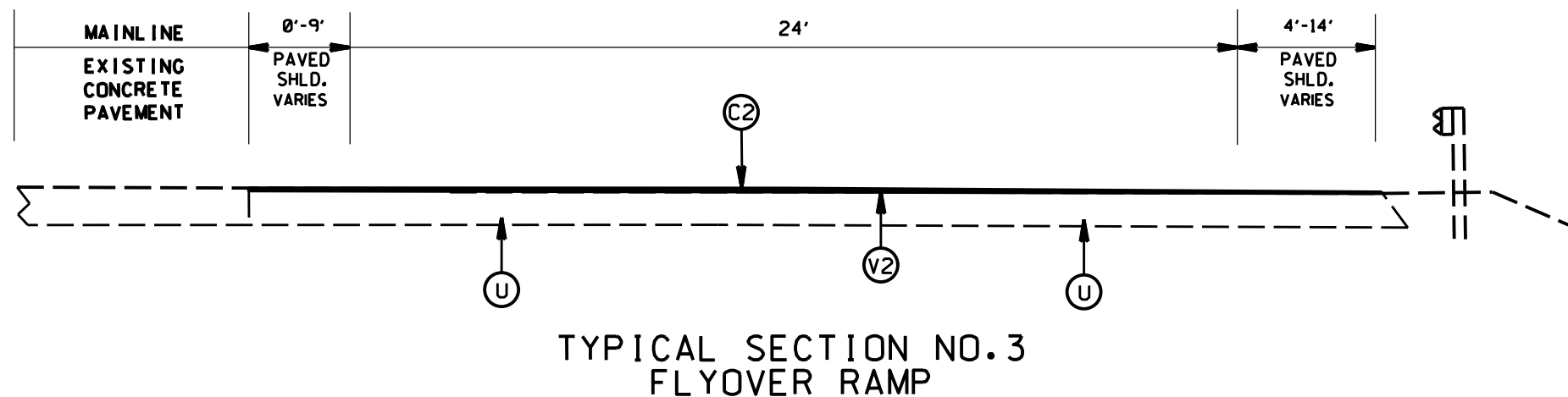
TYPICAL SECTION NO.2
 NB & SB MAINLINE

1-5826 INTERSTATE I-85
 PAVEMENT REHABILITATION
 MECKLENBURG COUNTY

SCALE	-NA-		REVISIONS
DATE	10/19		
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DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	7	
WBS NO. 50469.3.GVI			

PAVEMENT SCHEDULE	
A1	APPROX. 12" PCC SLAB REPAIR
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U	EXISTING PAVEMENT
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V3	MILLING, 7.0" DEPTH
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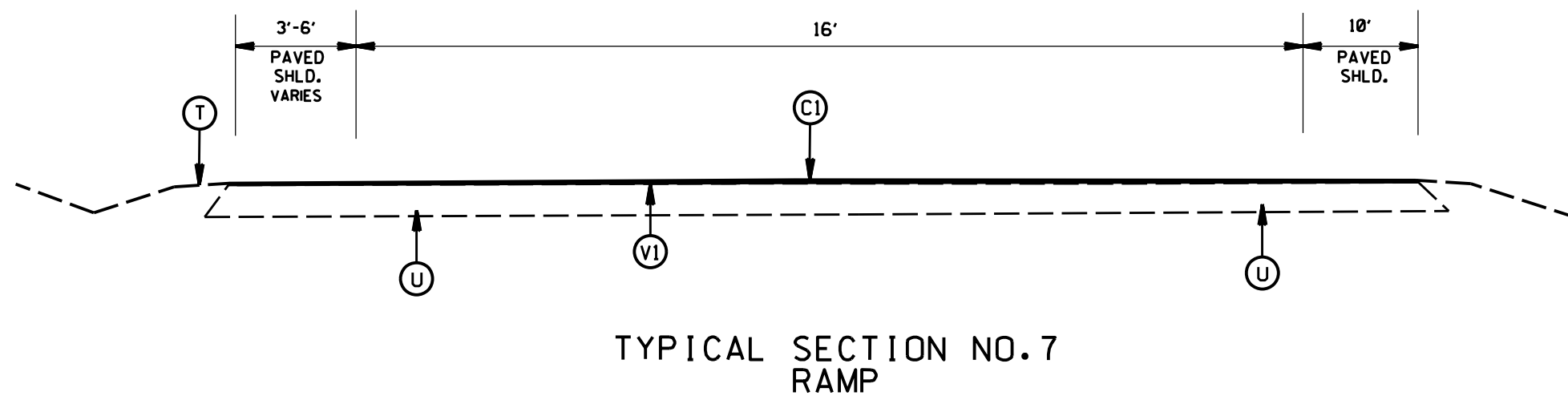
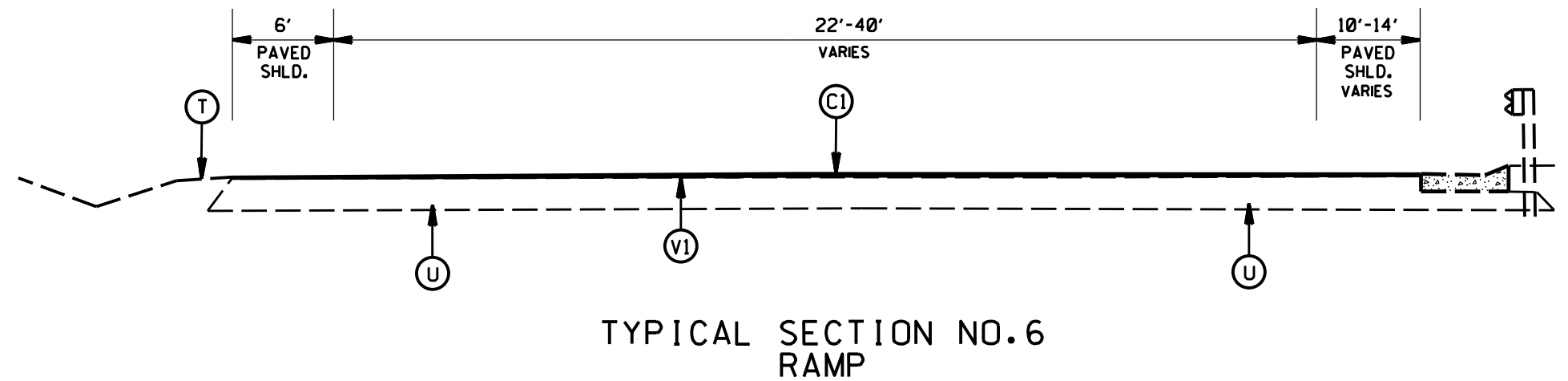
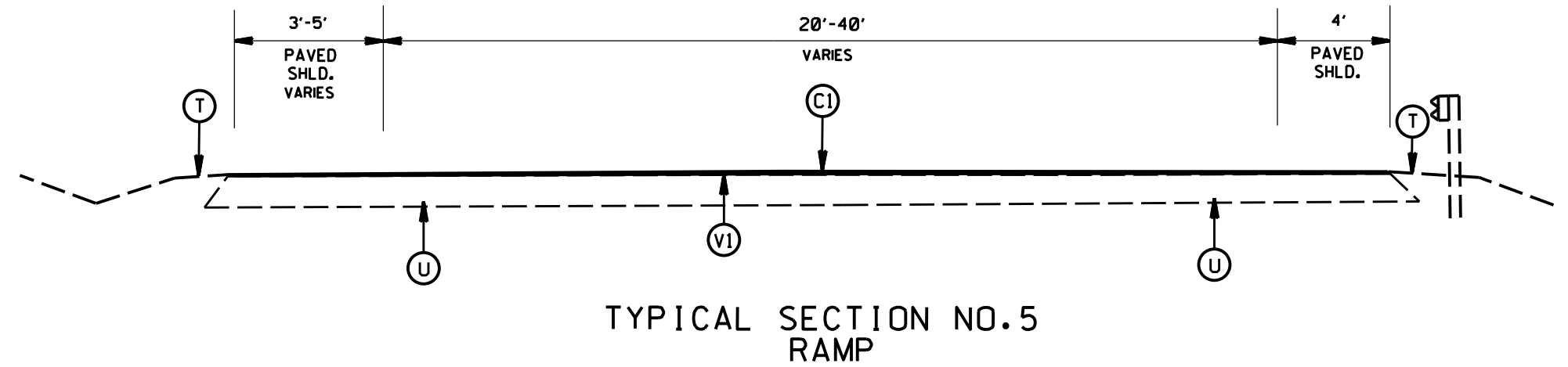


I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-5826	8	
WBS NO.	50469.3.GVI		

PAVEMENT SCHEDULE	
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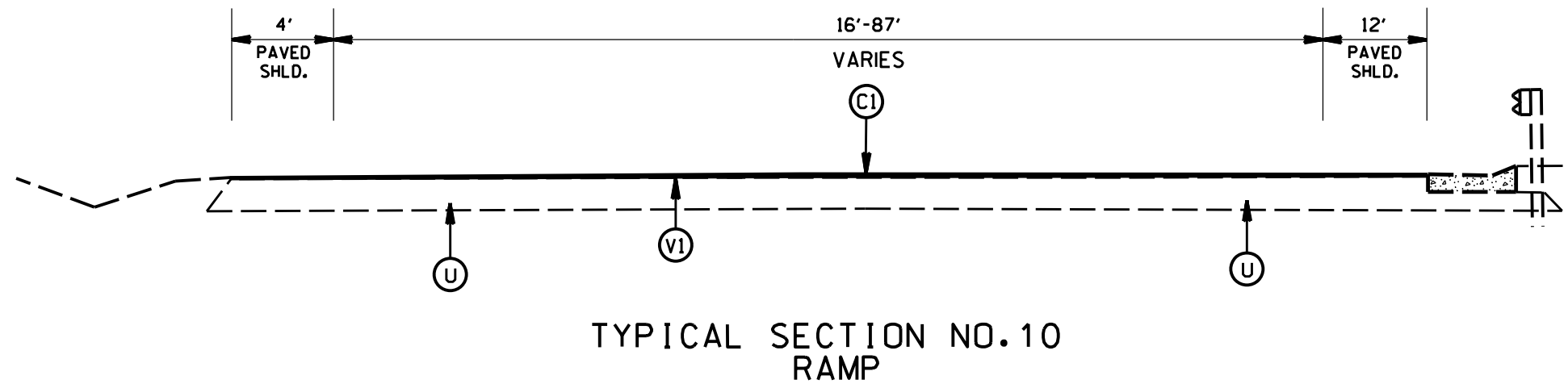
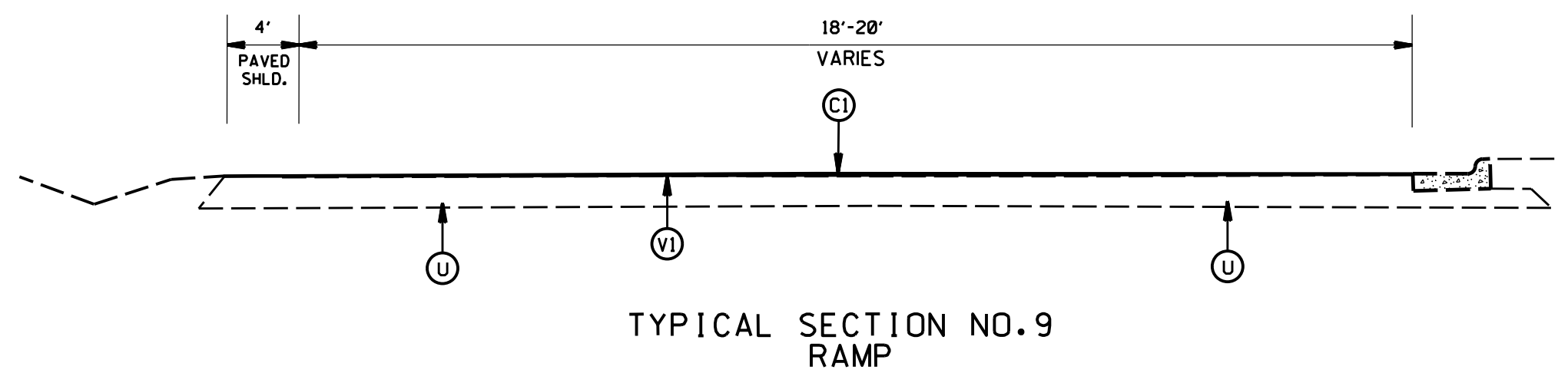
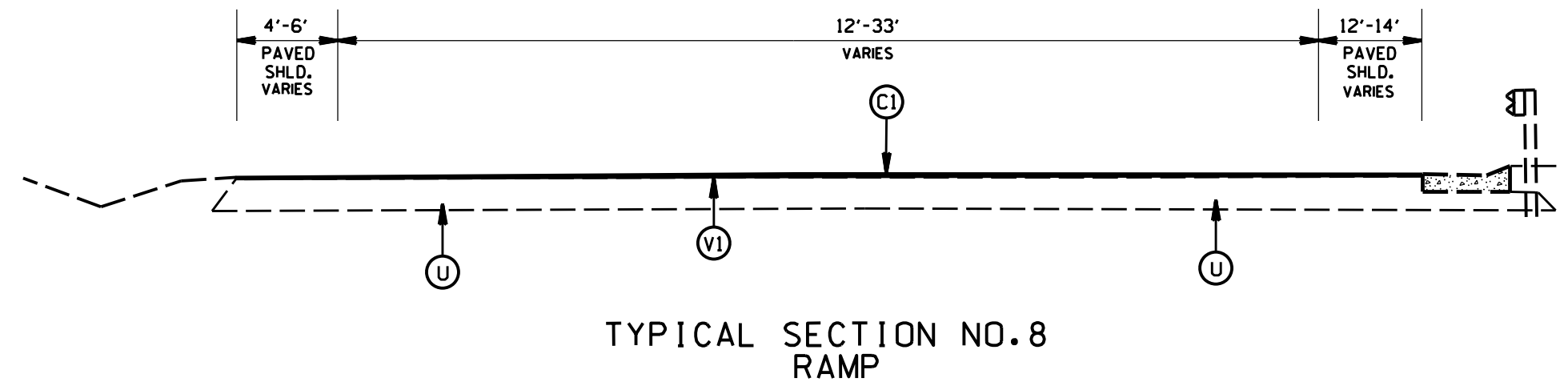


1-5826 INTERSTATE 1-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY


SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-5826	9	
WBS NO. 50469.3.GVI			

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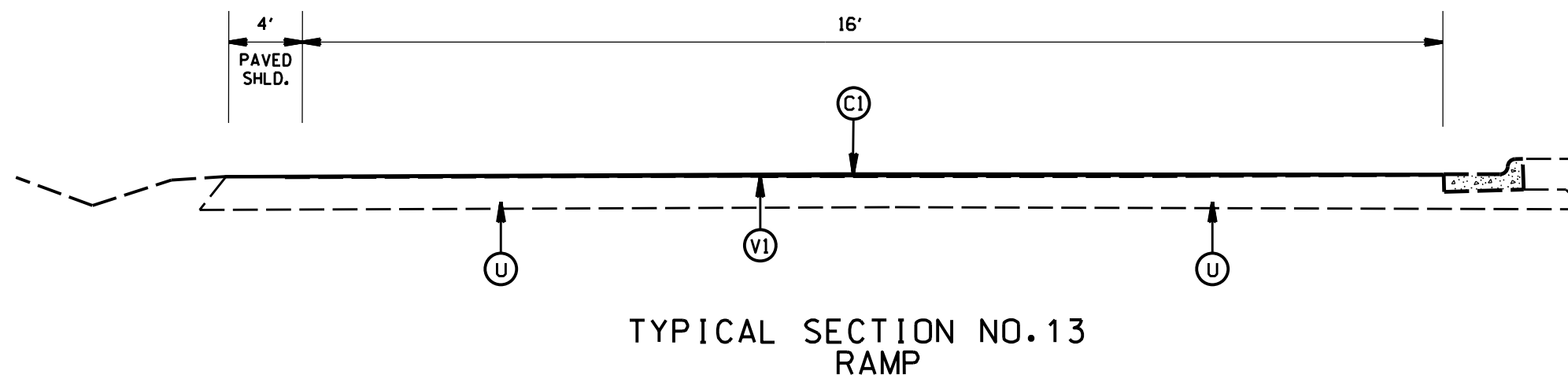
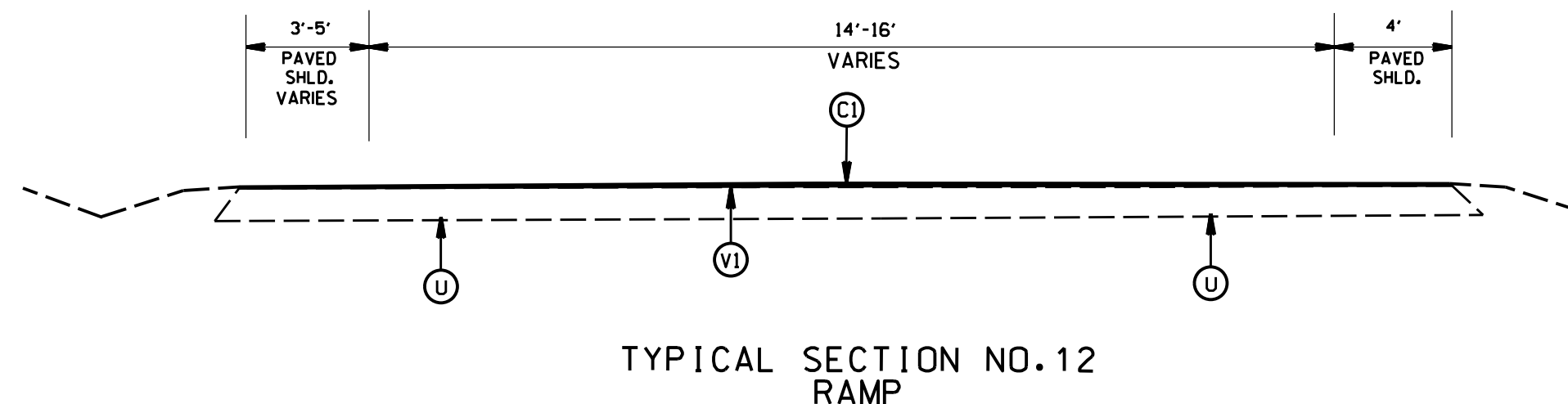
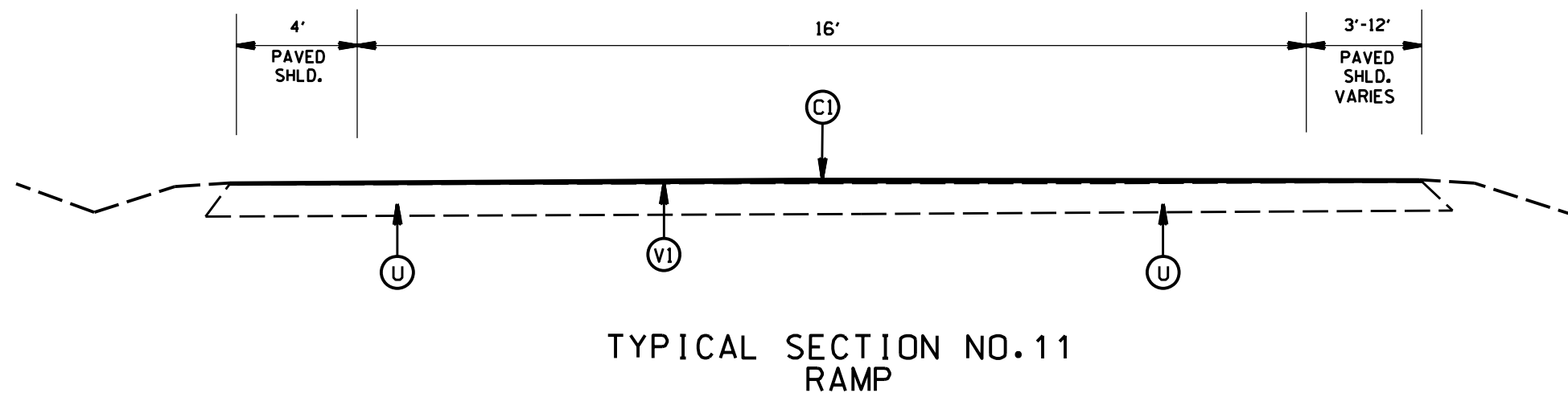


1-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	10	
WBS NO.		50469.3.GVI	

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I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

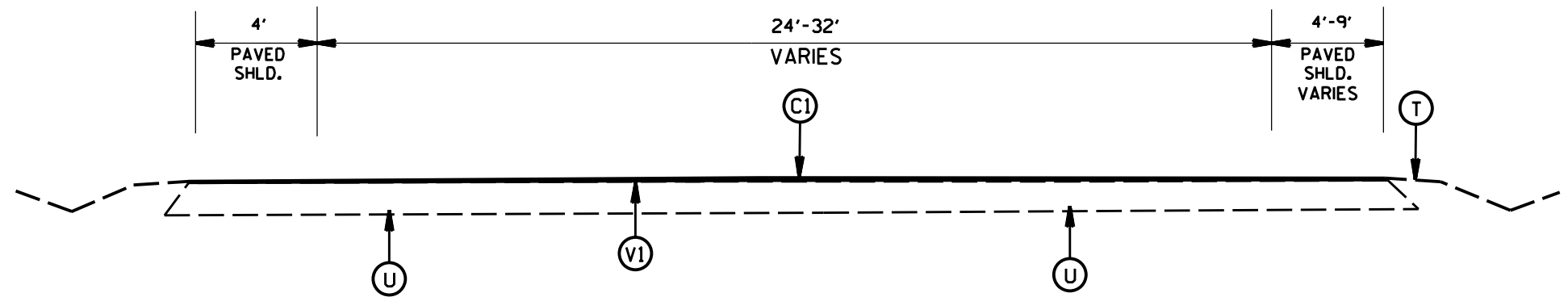
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DWG. BY	JME
DESIGN BY	JME
APPROVED	



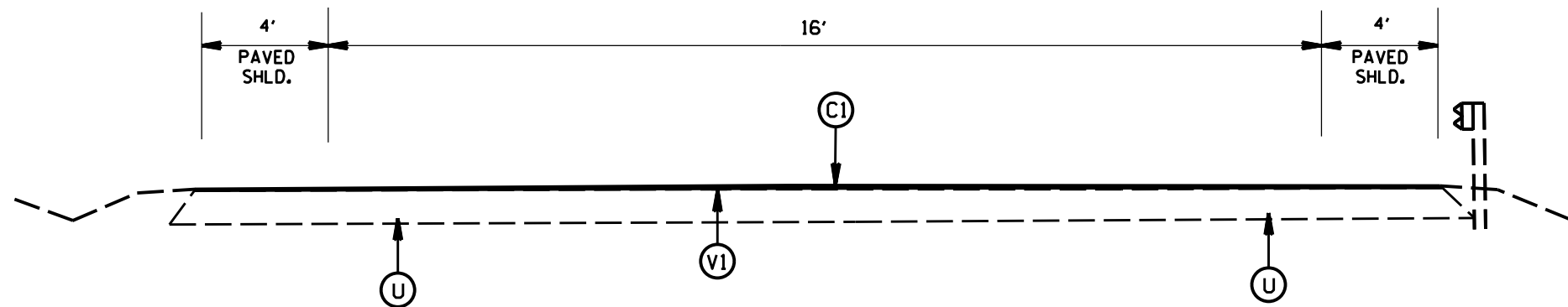
REVISIONS	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	11	
WBS NO. 50469.3.GVI			

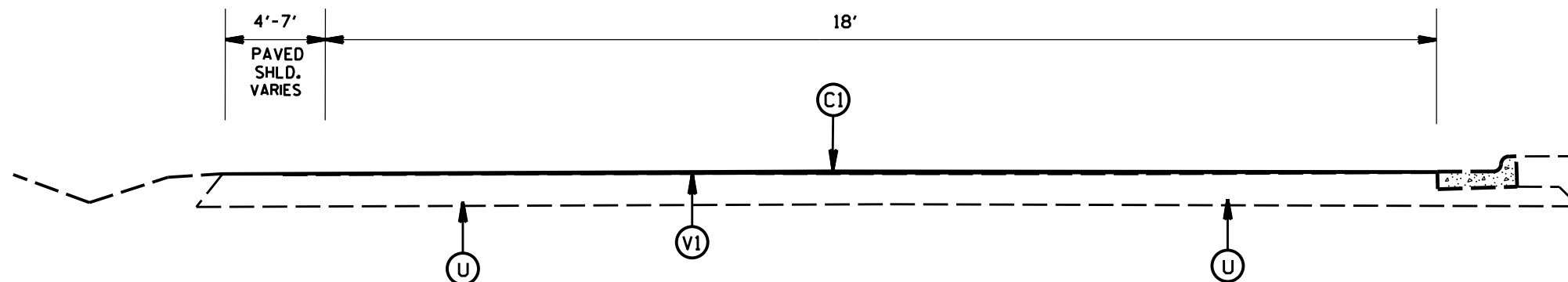
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TYPICAL SECTION NO.14
RAMP



TYPICAL SECTION NO.15
RAMP



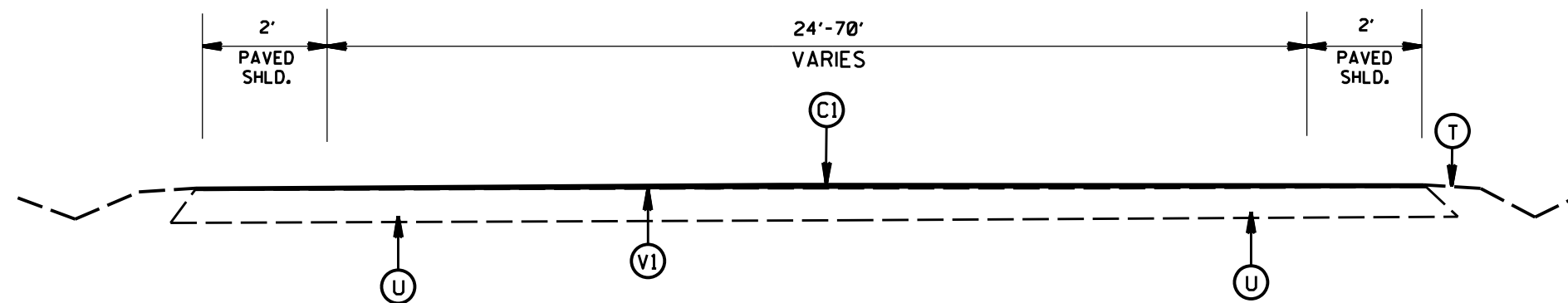
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I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

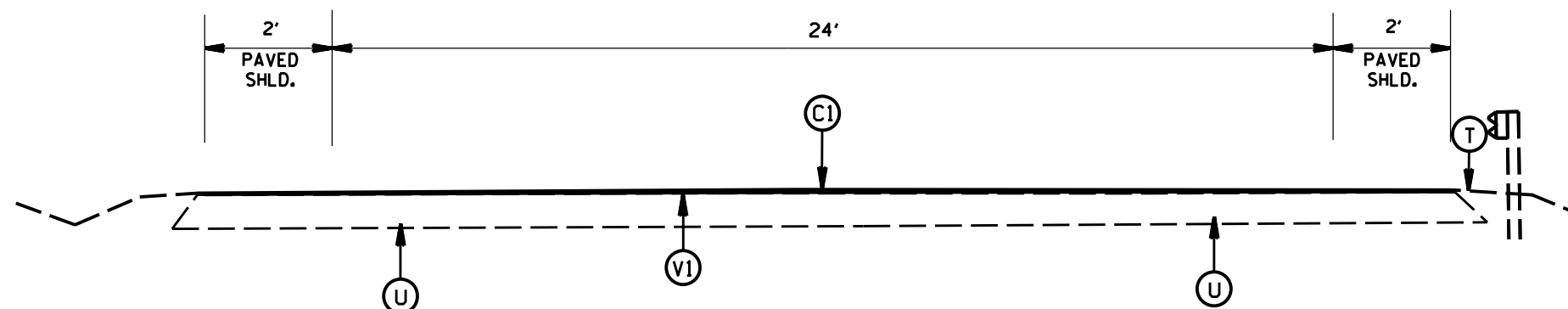
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DWG. BY	JHE		
DESIGN BY	JHE		
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STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	12	
WBS NO.		50469.3.GVI	

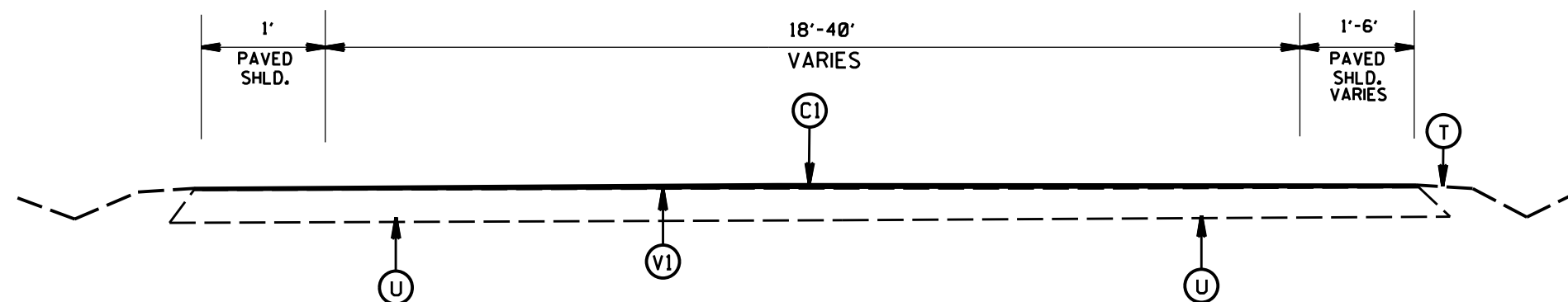
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Z	JOINT CONSTRUCTION REPAIR AND SEALING



TYPICAL SECTION NO.17
RAMP



TYPICAL SECTION NO.18
RAMP



TYPICAL SECTION NO.19
RAMP

I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY

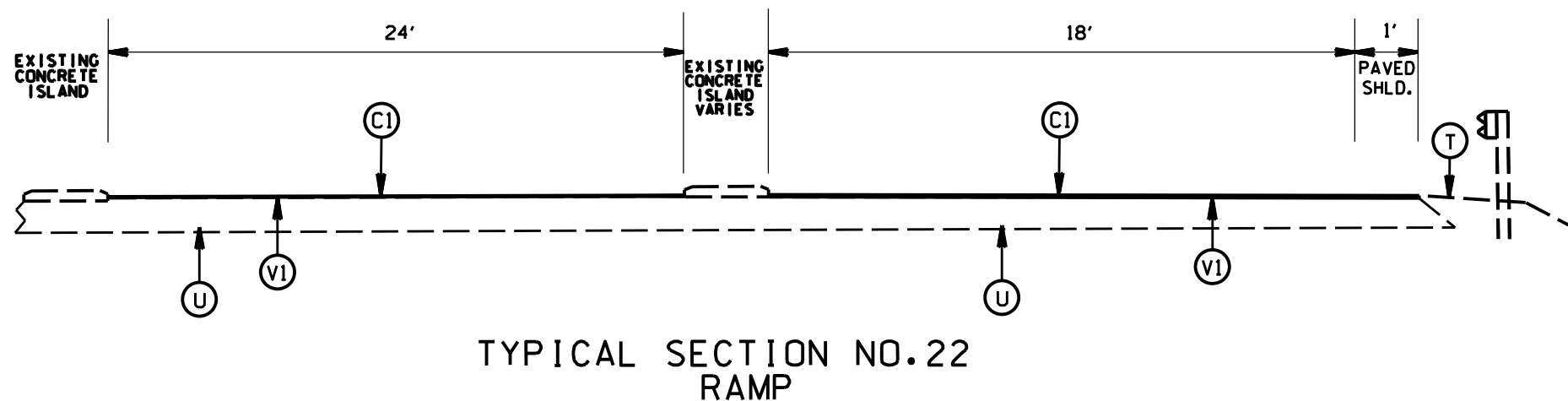
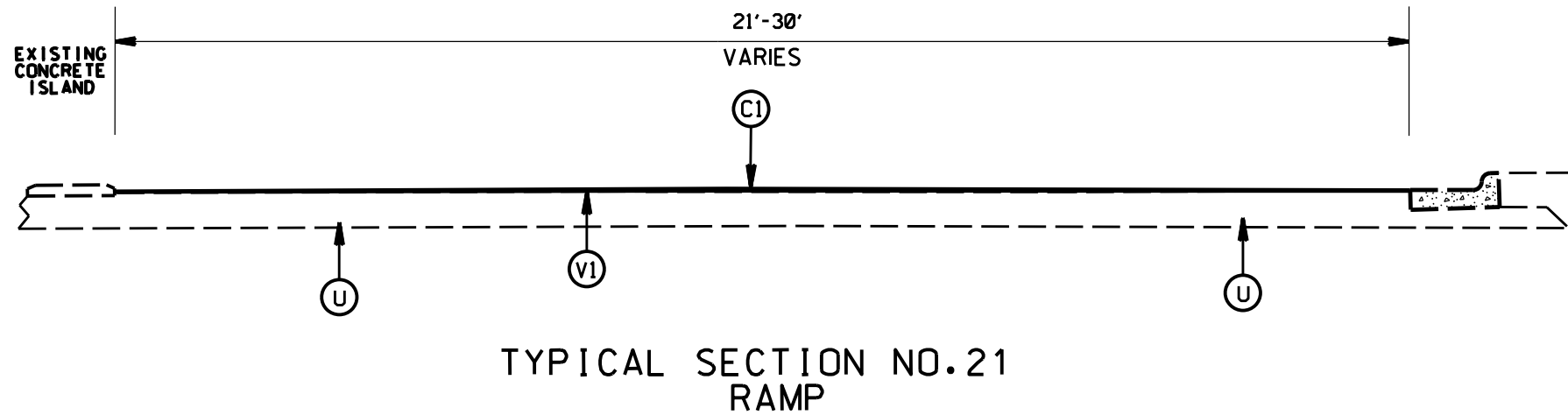
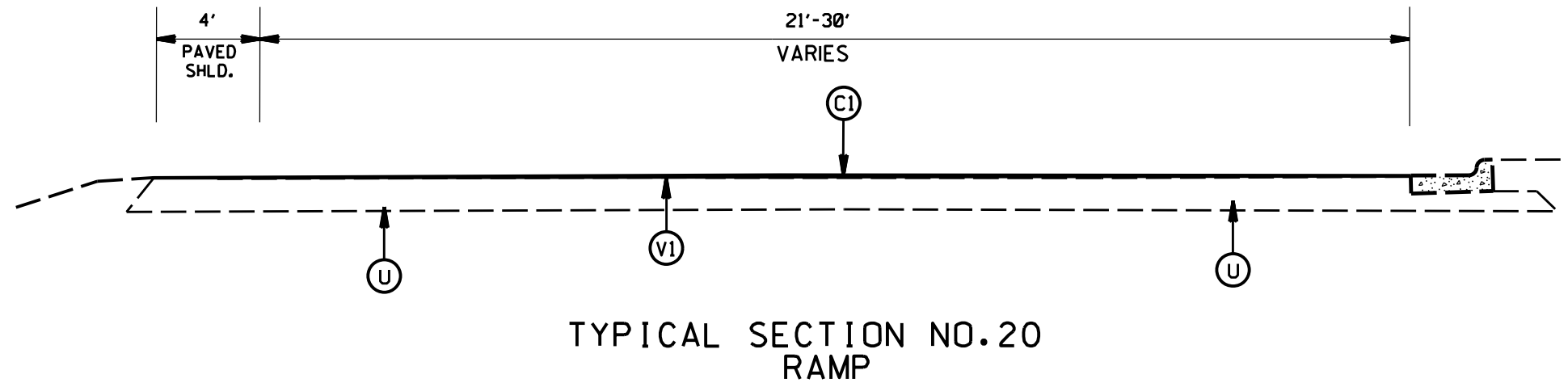
SCALE	-NA-
DATE	10/19
DWG. BY	JHE
DESIGN BY	JHE
APPROVED	



REVISIONS	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	1-5826	13	
WBS NO.	50469.3.GVI		

PAVEMENT SCHEDULE	
A1	APPROX. 12" PCC SLAB REPAIR
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 2.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D1	PROP. APPROX. 3.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
F	FOG SEAL, TARGET APPLICATION RATE OF DILUTED EMULSION 0.12 GAL/SY +/- 0.03 GAL/SY.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	MILLING, 2.0" DEPTH
V3	MILLING, 7.0" DEPTH
Z	JOINT CONSTRUCTION REPAIR AND SEALING

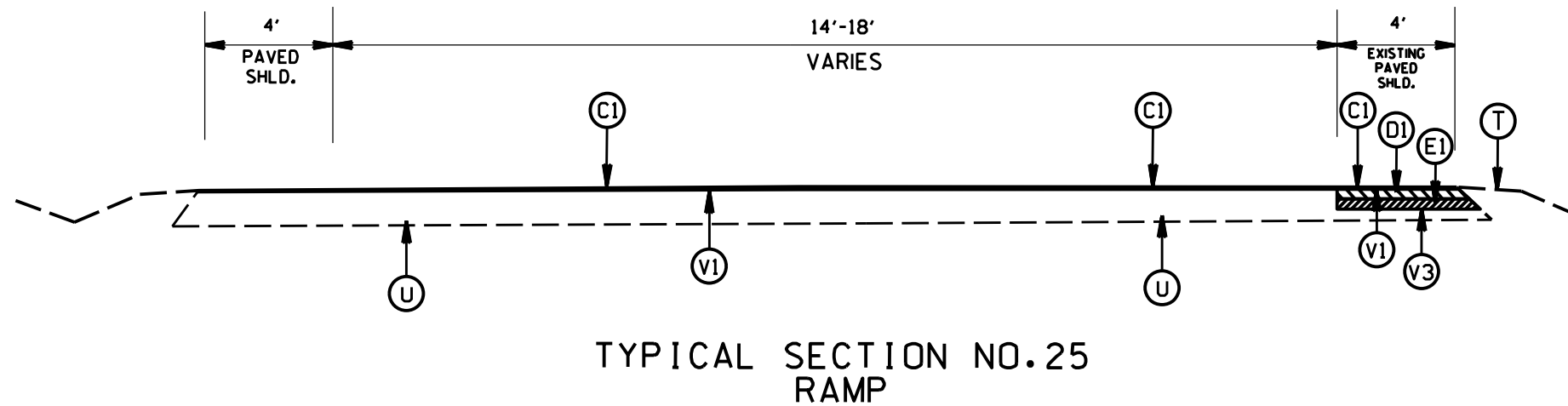
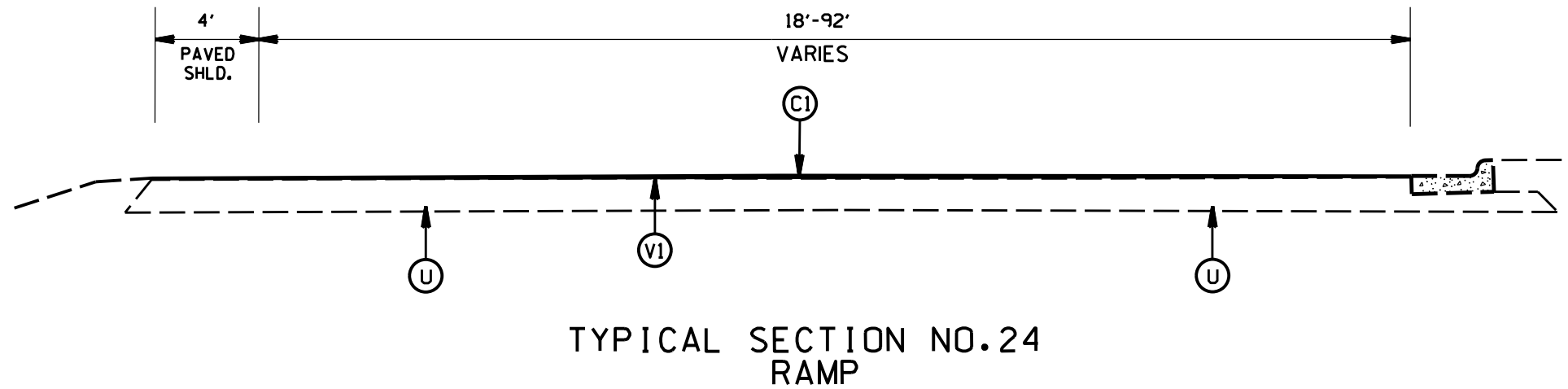
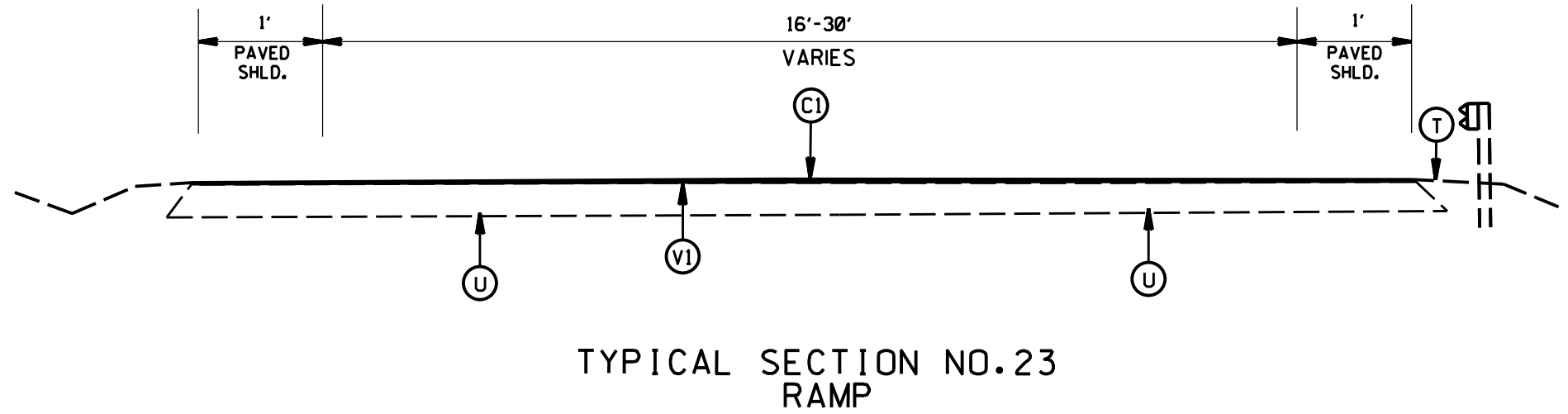


1-5826 INTERSTATE 1-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY


SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			

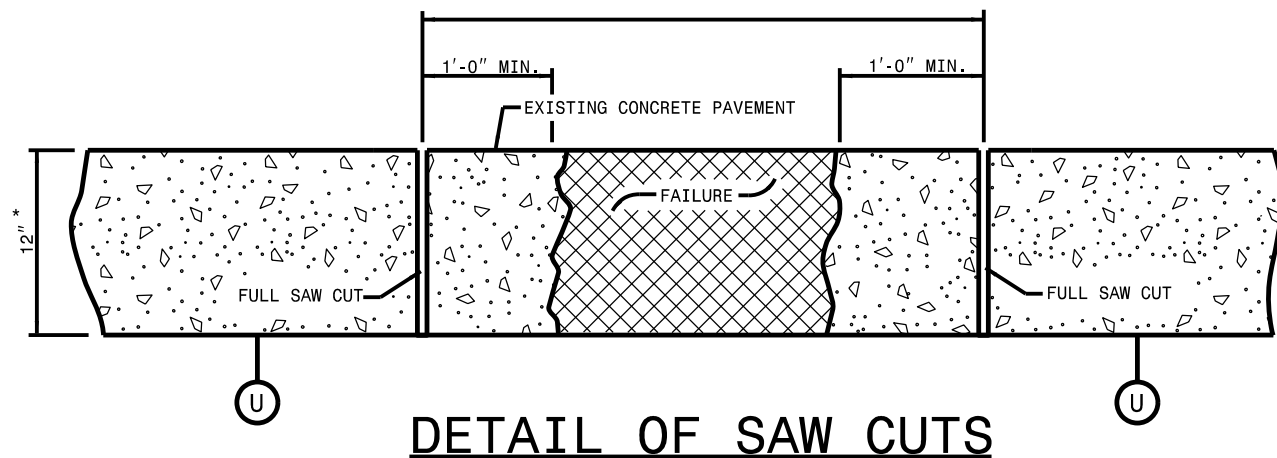
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	14	
WBS NO. 50469.3.GVI			

PAVEMENT SCHEDULE	
A1	APPROX. 12" PCC SLAB REPAIR
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
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F	FOG SEAL, TARGET APPLICATION RATE OF DILUTED EMULSION 0.12 GAL/SY +/- 0.03 GAL/SY.
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	MILLING, 1.5" DEPTH
V2	MILLING, 2.0" DEPTH
V3	MILLING, 7.0" DEPTH
Z	JOINT CONSTRUCTION REPAIR AND SEALING



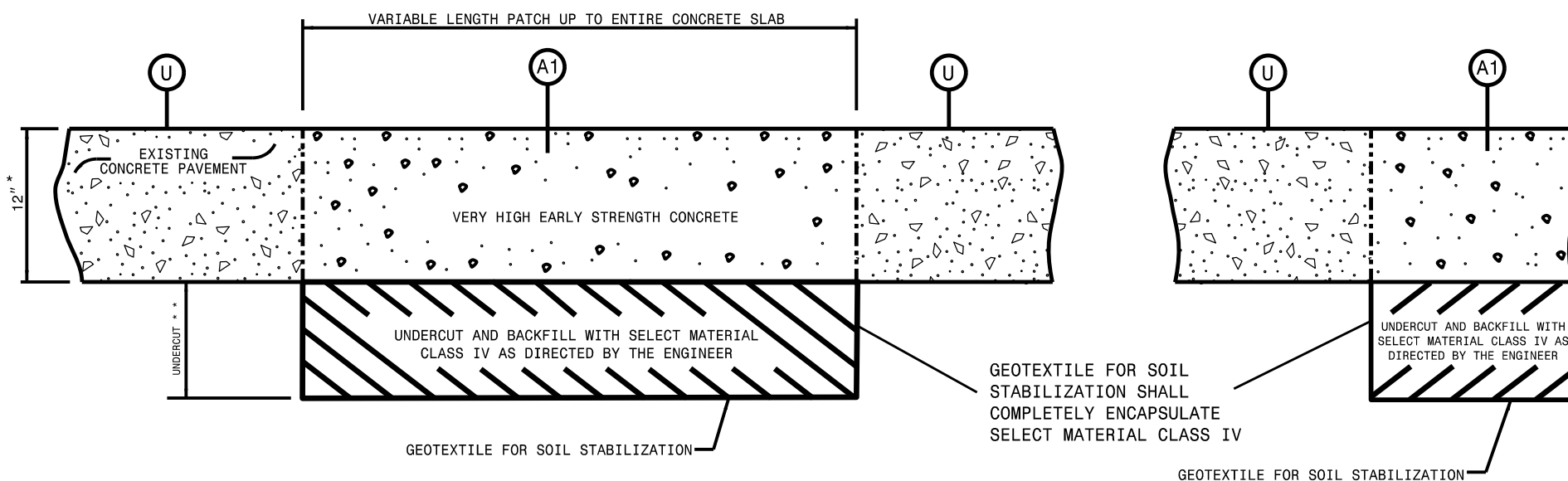
**I-5826 INTERSTATE I-85
PAVEMENT REHABILITATION
MECKLENBURG COUNTY**

SCALE	-NA-		REVISIONS
DATE	10/19		
DWG. BY	JHE		
DESIGN BY	JHE		
APPROVED			



DETAIL OF SAW CUTS

PAVEMENT SCHEDULE	
A1	APPROX. 12" PCC SLAB REPAIR - VERY HIGH EARLY STRENGTH
U	EXISTING PAVEMENT



DETAIL OF CONCRETE PAVEMENT REPAIR

* DIMENSIONS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED
 ** UNDERCUT REQUIRED IN AREAS AS DIRECTED BY THE ENGINEER

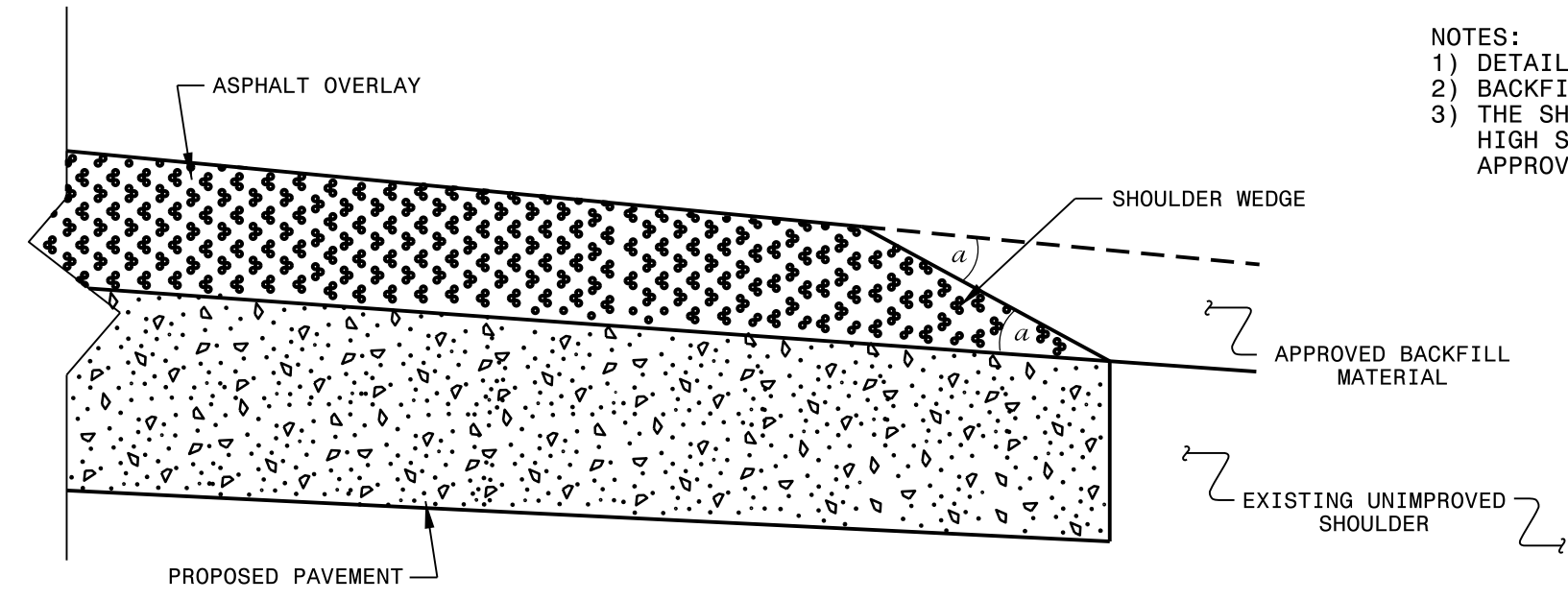
Refer to the North Carolina Department of Transportation "Partial and Full Depth Repair Manual" when Replacing Slabs and when Repairing Concrete Pavement.

DETAIL FOR REPAIR OF CONCRETE PAVEMENT

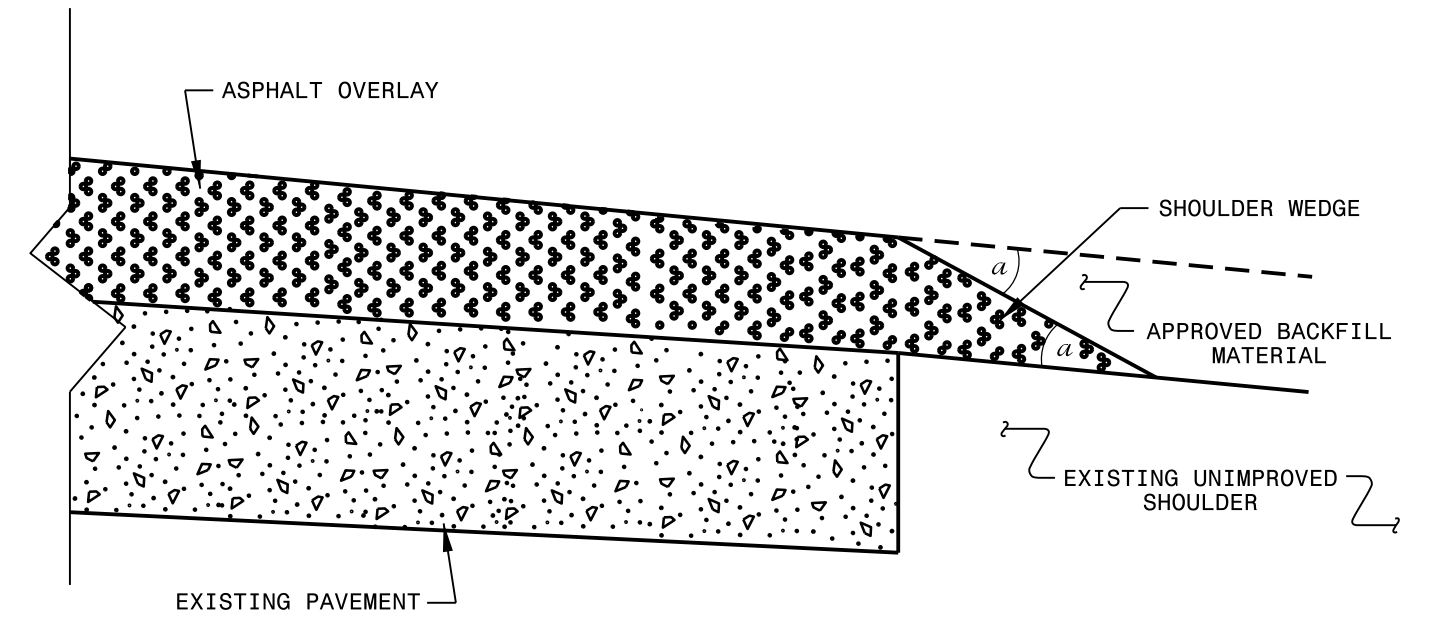
1-5826 INTERSTATE I-85
 PAVEMENT REHABILITATION
 MECKLENBURG COUNTY

SCALE	-NA-		REVISIONS
DATE			
DWG. BY			
DESIGN BY			
APPROVED			

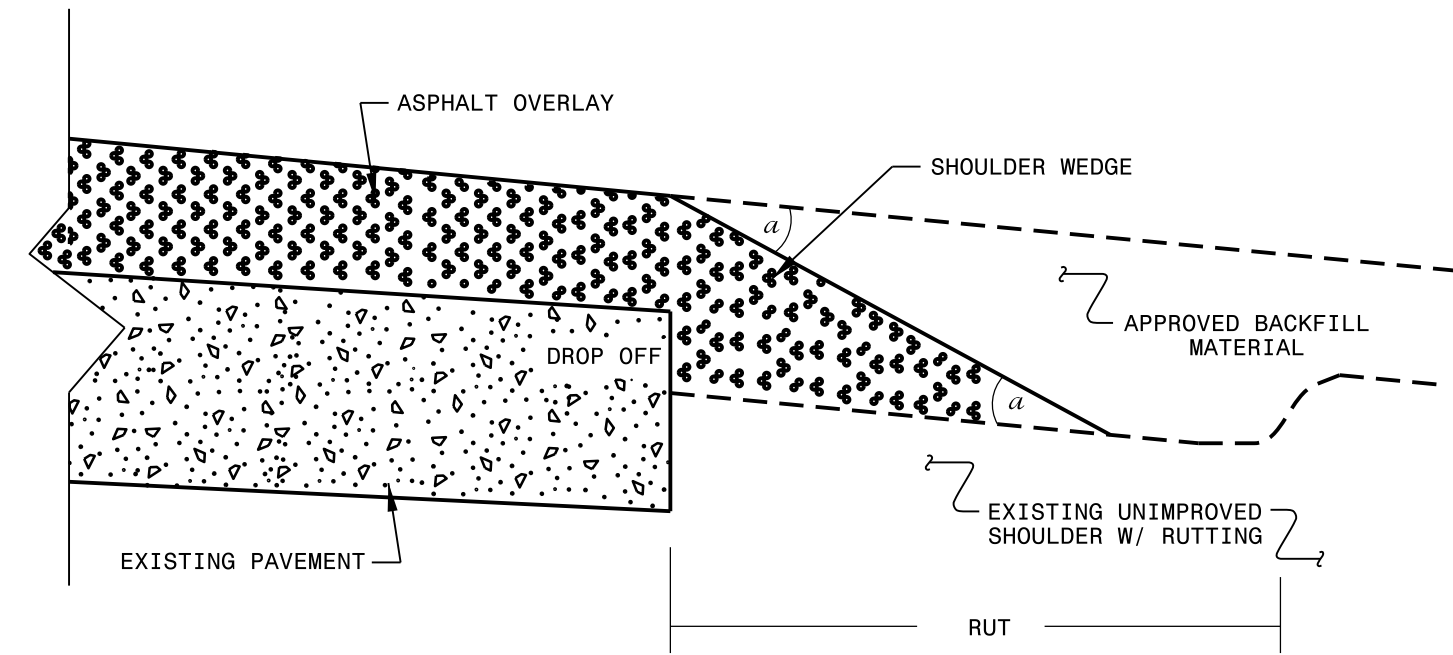
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFc AND ULTRA-THIN BONDED WEARING COURSE.
 - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



SHOULDER WEDGE DETAIL
 (Resurfacing Projects w/ Widening or
 with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL
 (Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL
 (Resurfacing Adjacent to
 Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

**CONTRACT STANDARDS
 AND DEVELOPMENT UNIT**
 Office 919-707-6950 FAX 919-250-4119

**SHOULDER WEDGE
 DETAILS**

ORIGINAL BY: T.SPELL DATE: 7-19-11
 MODIFIED BY: DATE: 2/2/16
 CHECKED BY: DATE:
 FILE SPEC.: s:\usr\details\stand\shoulderwedgedetail.dgn

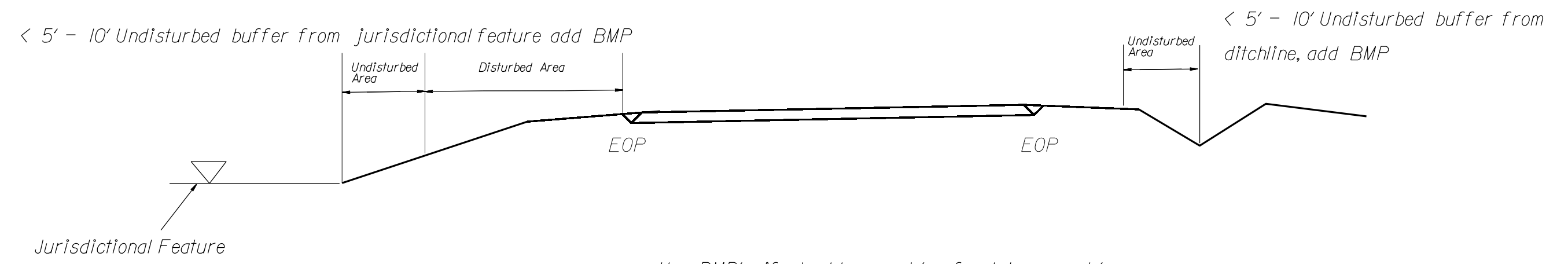
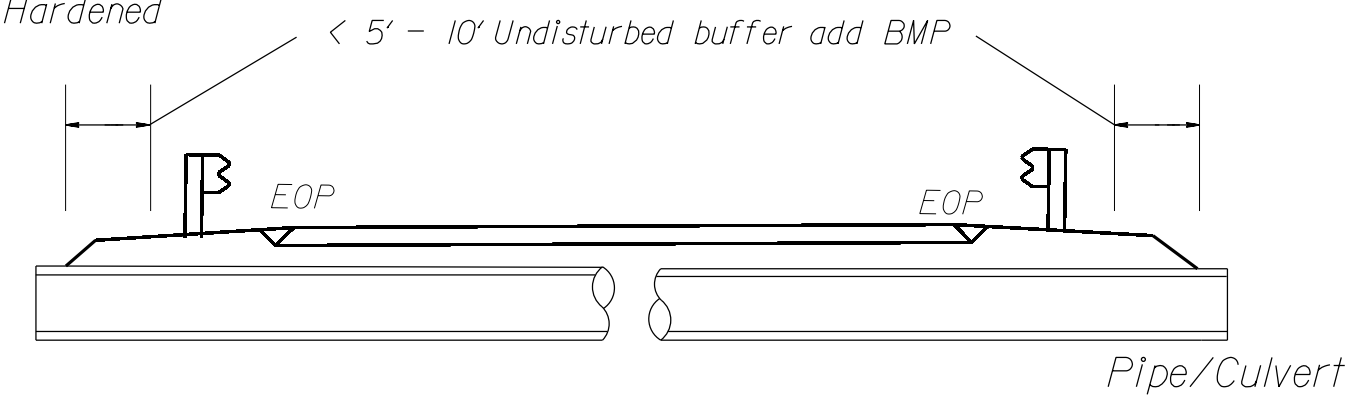
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

27-JAN-2020 09:35
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 AT CSD-320966
 p\rochester

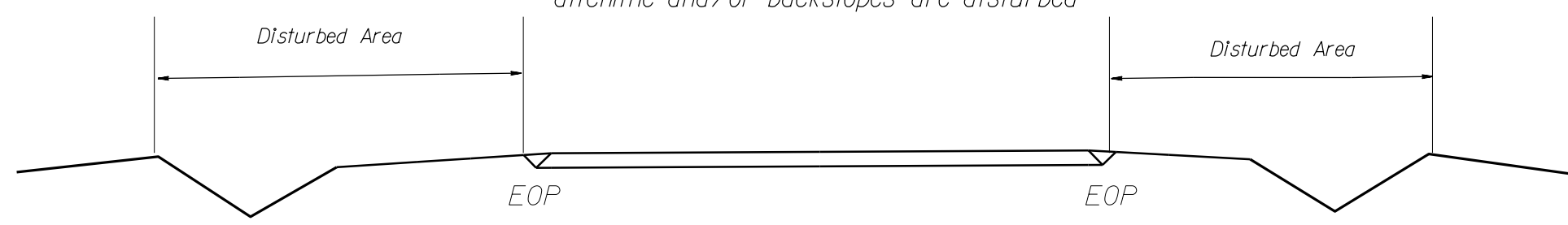
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

EROSION CONTROL DETAIL

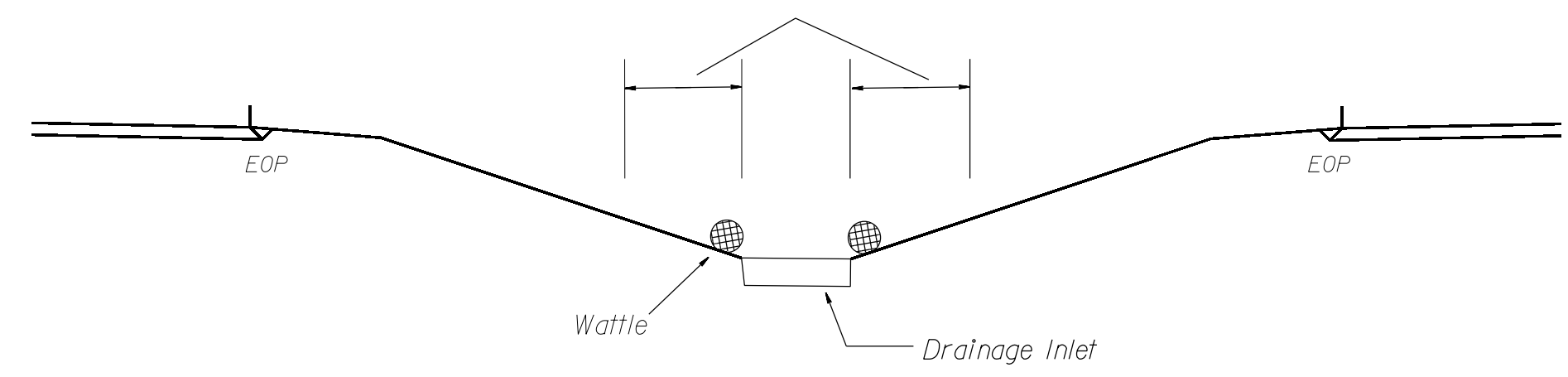
BMP Options: Wattle, Silt Fence or Hardened Aggregate.



Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed

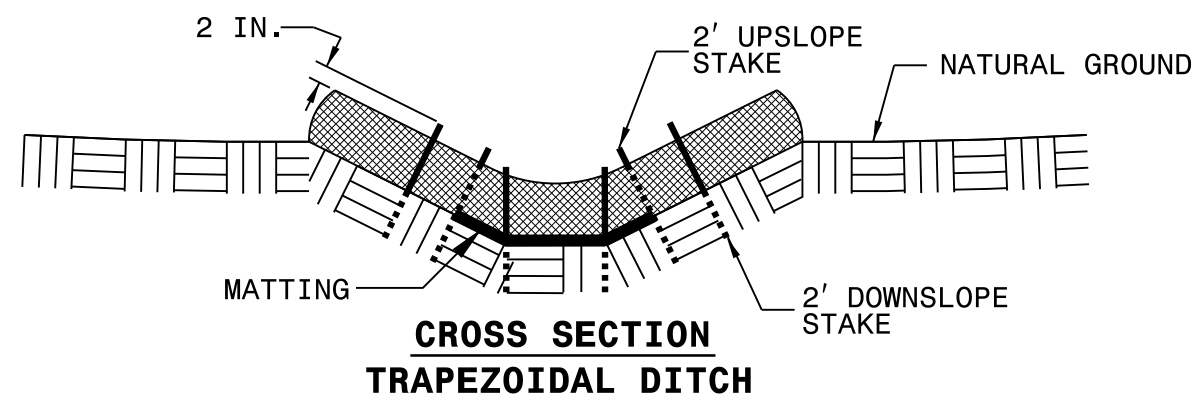
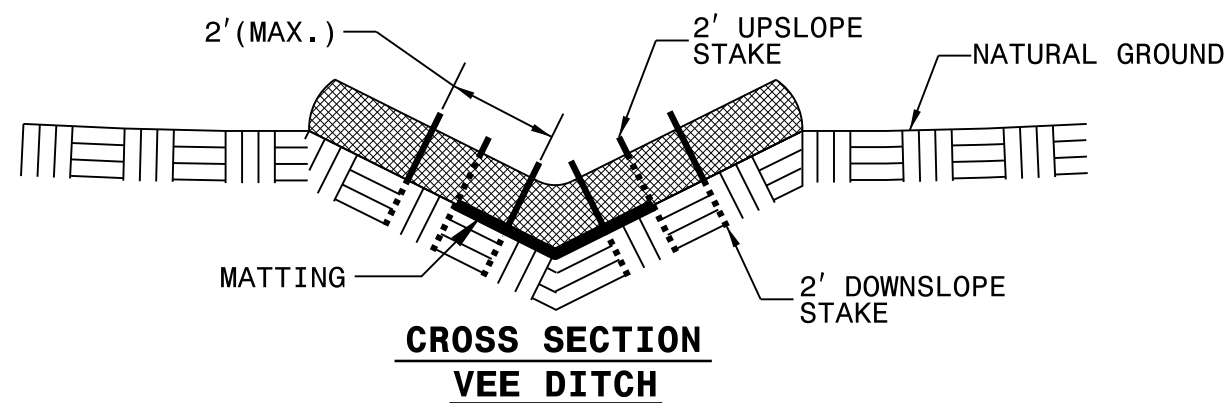
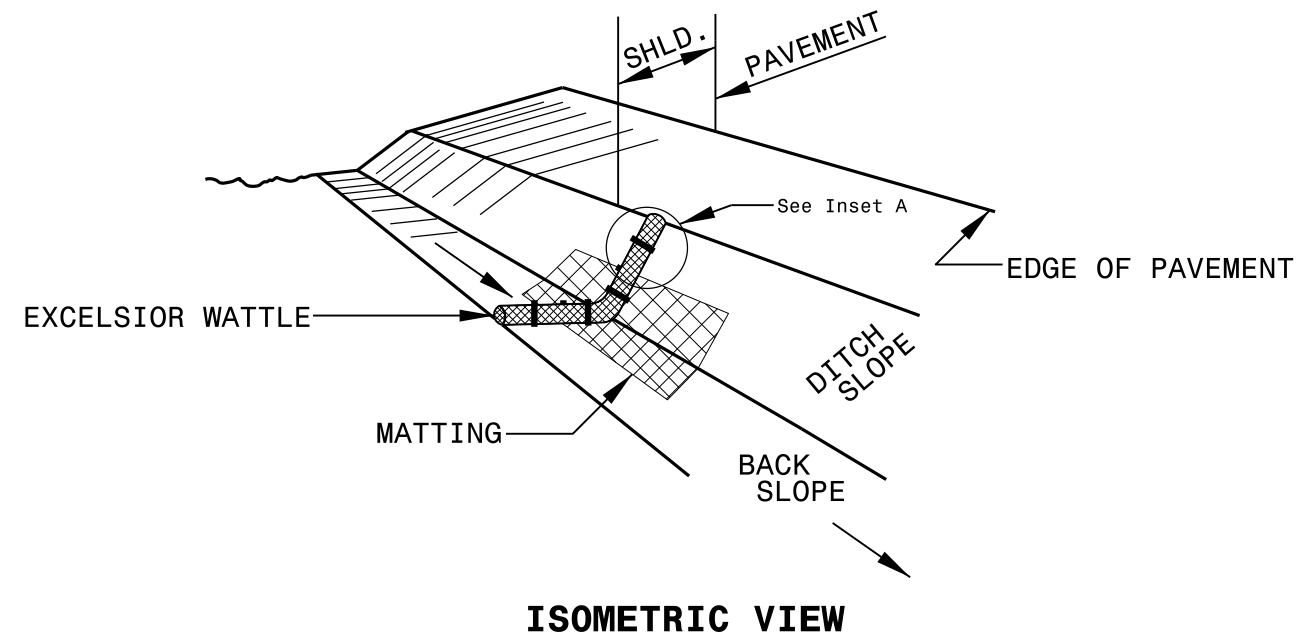


< 5' - 10' Undisturbed buffer from inlet, add wattle



NOT TO SCALE

WATTLE DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

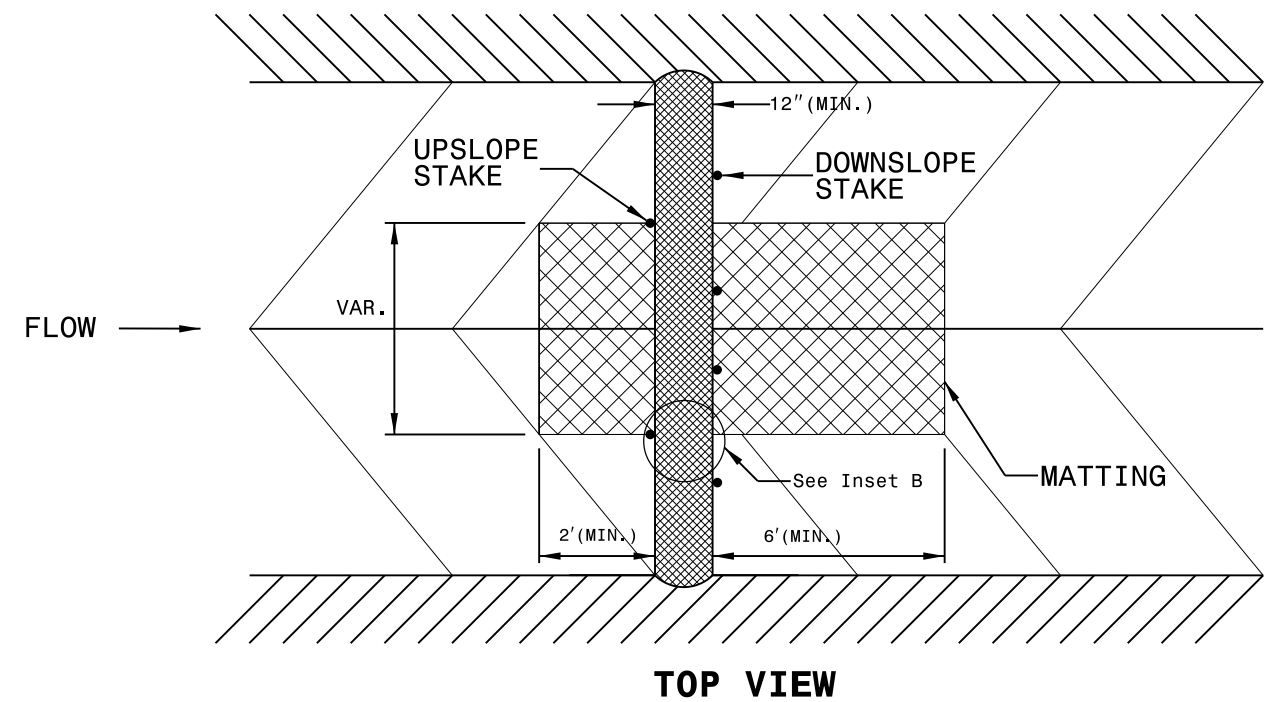
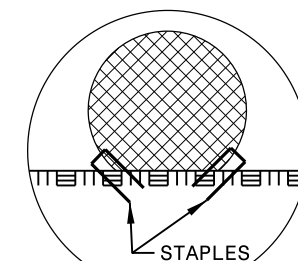
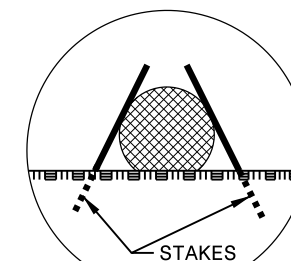
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

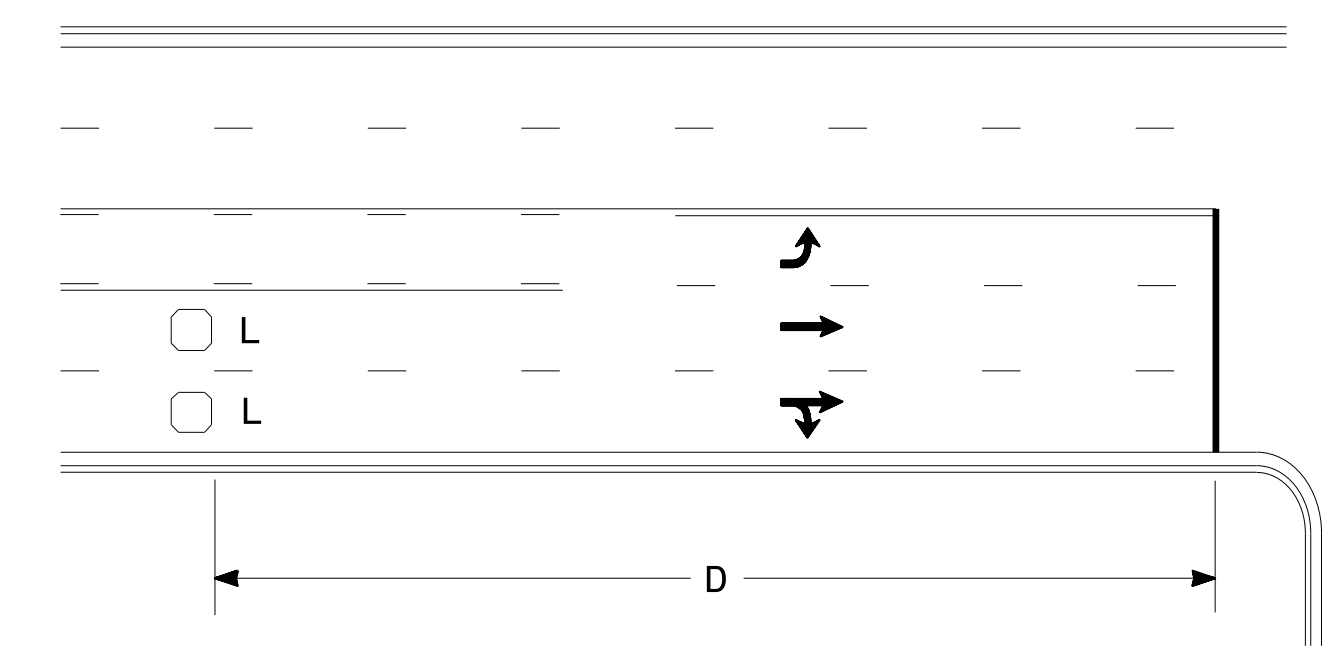
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



High Speed Detection (≥40 mph)

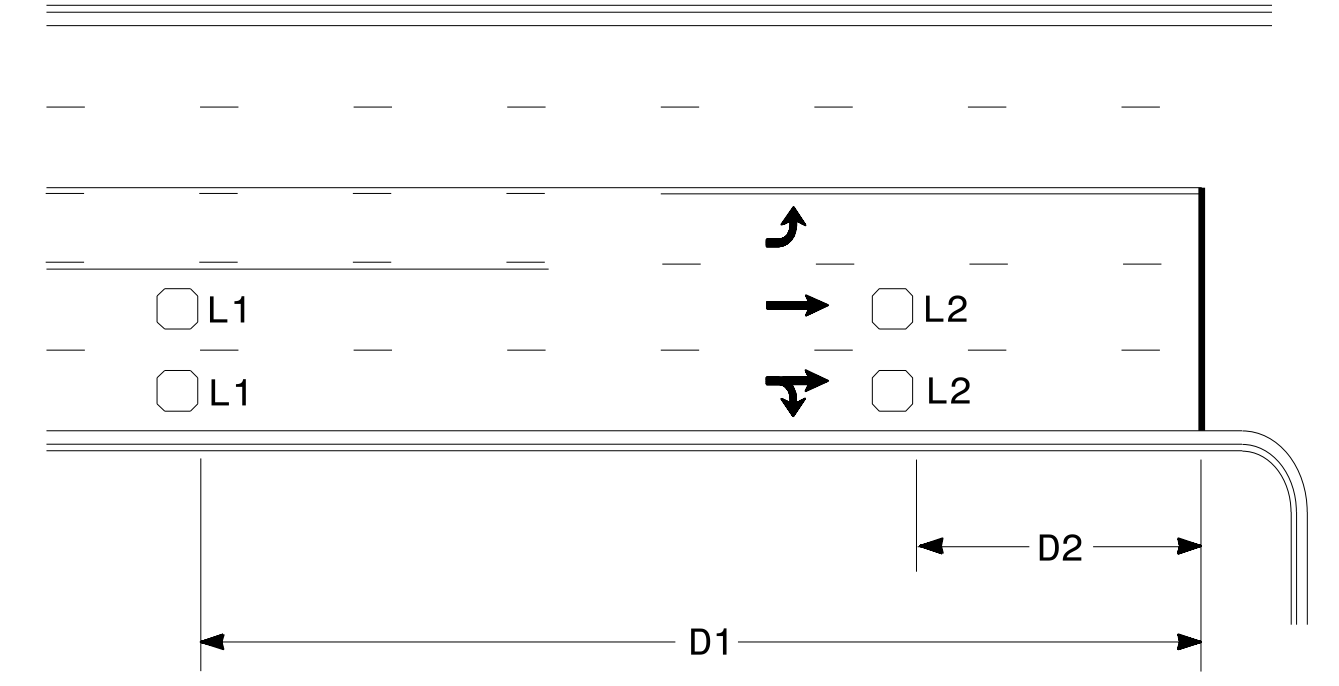


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

L = 6ft X 6ft
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

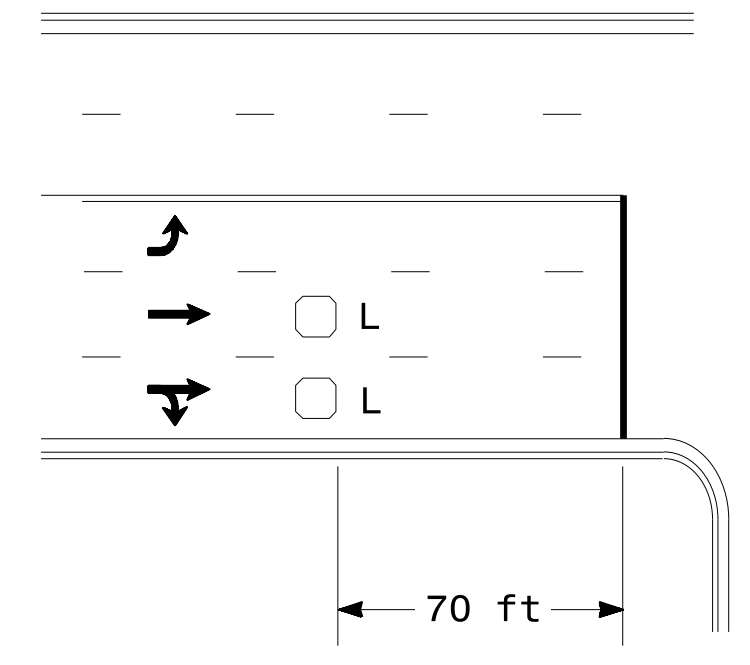


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

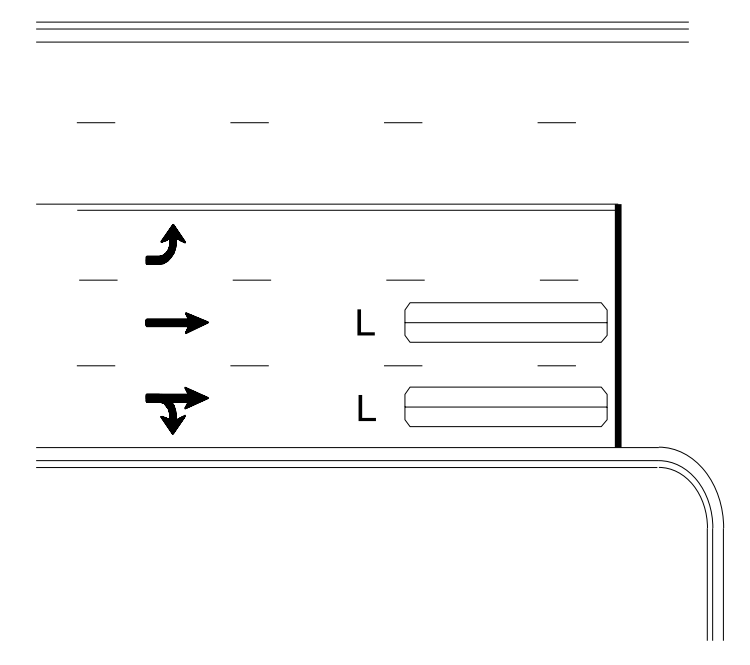
"Stretch" Operation

Low Speed Detection (≤35 mph)



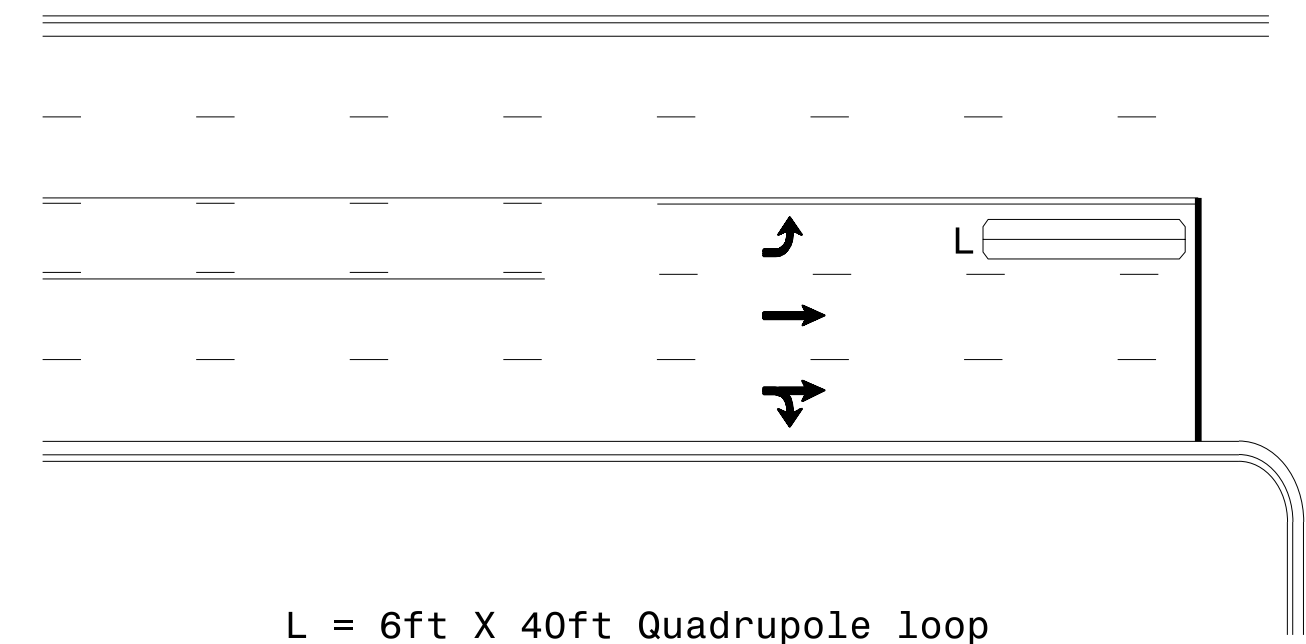
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

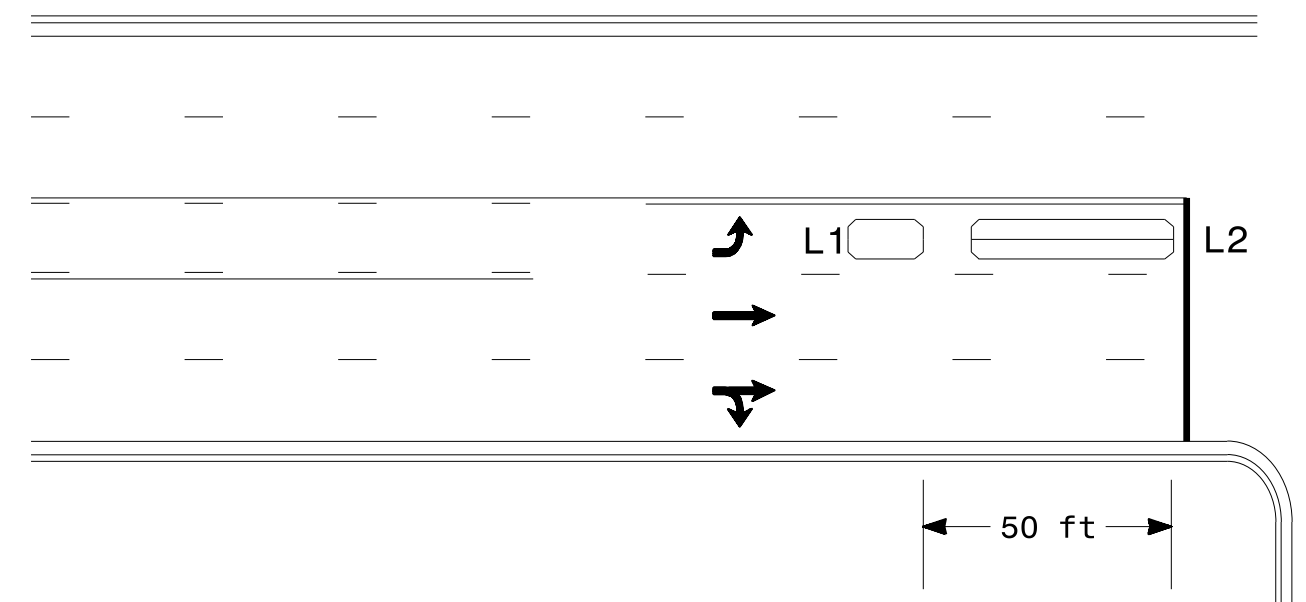
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

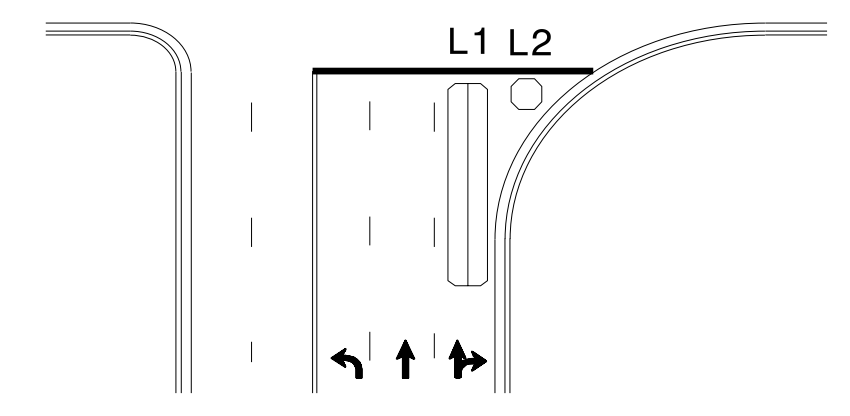
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

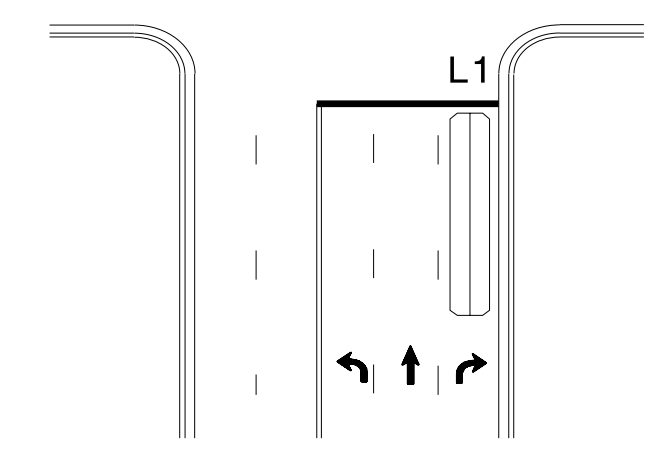
Queue Loop Detection

Right Turn Lane Detection

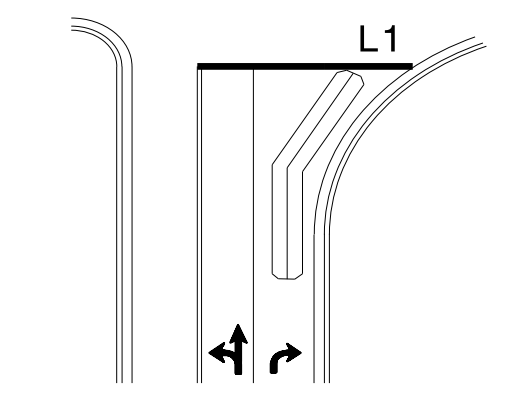


Shared Lane/
Wide Radius Turn

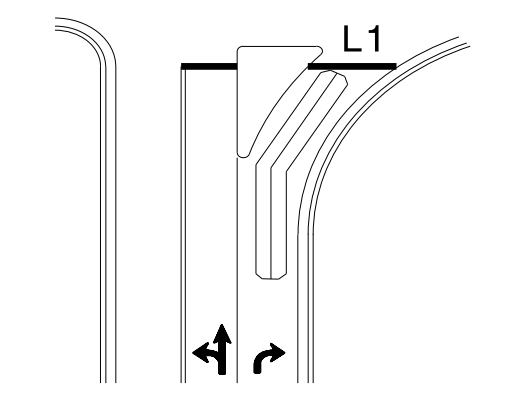
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

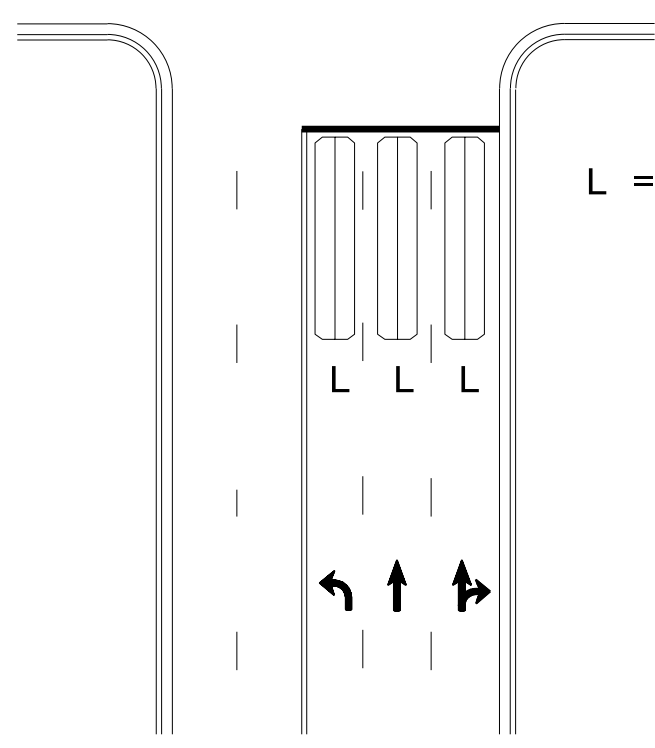


Wide Radius Turn



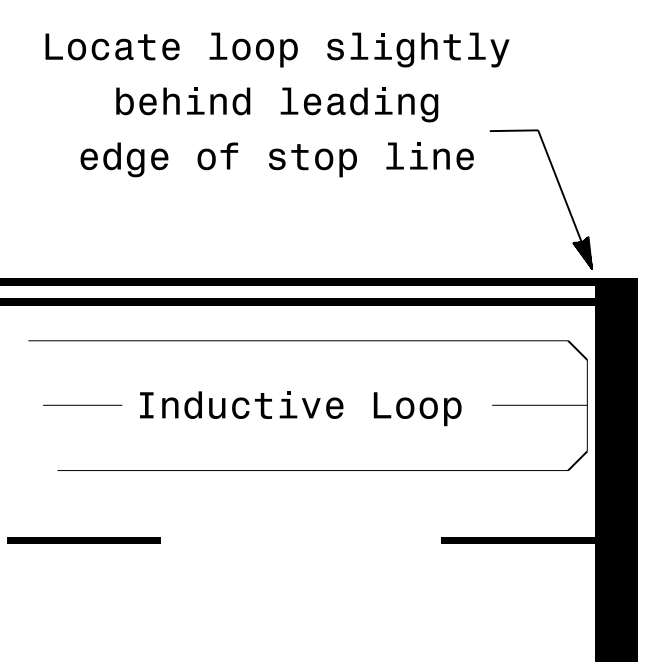
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate
detectors/channels

Presence Loop Placement at Stop Lines



Locate loop slightly
behind leading
edge of stop line

Note:
Loop may be located in advance
of stop line under any of the
following conditions:
1) stop line is greater than 15'
from edge of intersecting
roadway
2) loop detects a permissive or
protected/permissive left turn
3) for an exclusive right turn
lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns
6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

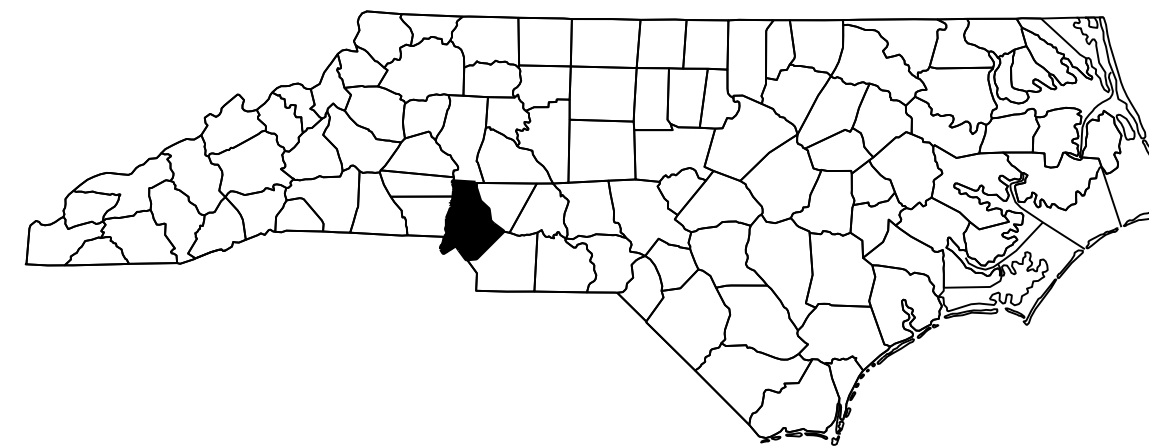
DocuSigned by:
P. Alexander
1/30/2015 10:44:44 AM
DATE

SIG. INVENTORY NO.

3D:\4146-2015-12-29
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 paalexander

PROJECT: I-5826

CONTRACT NO: C204363



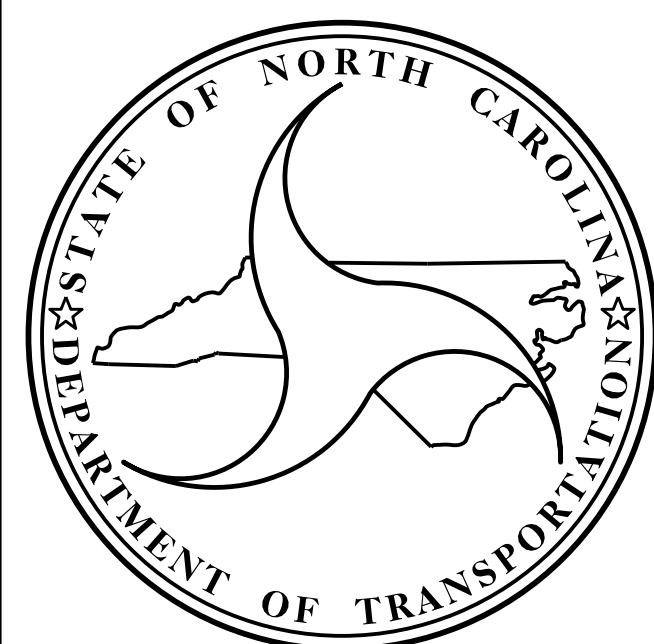
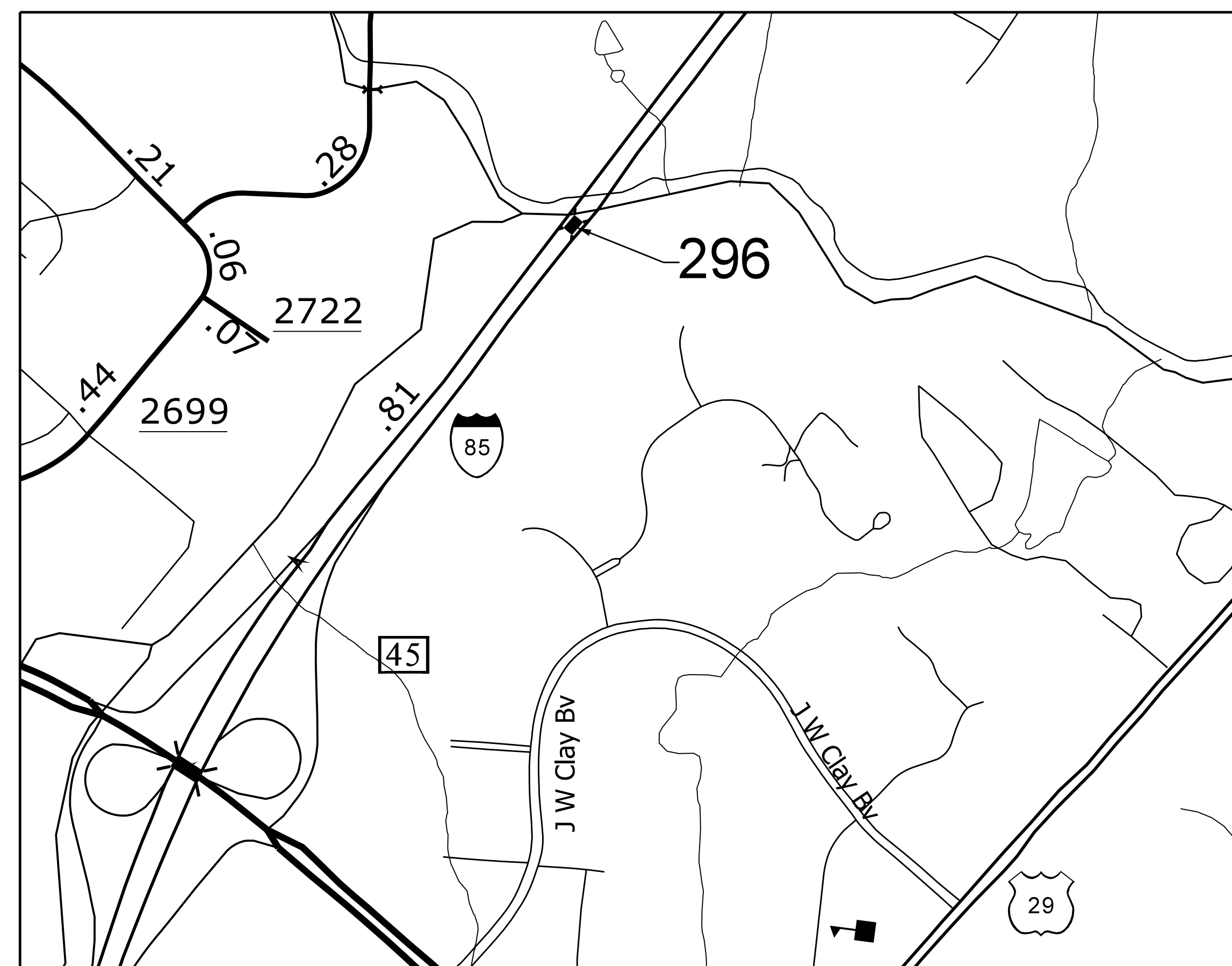
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MECKLENBURG COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5826	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50469.1.1		P.E.	
50469.3.GVI	—	CONST.	

LOCATION: BRIDGE #590296 ON I-85 OVER MALLARD CREEK

TYPE OF WORK: BRIDGE PRESERVATION – SILANE DECK TREATMENT,
FOAM JOINT REPLACEMENT, SHOTCRETE REPAIR.



DESIGN DATA

BRIDGE #590296 – ADT 2015 – 138,000

PROJECT LENGTH

BRIDGE #590296 – .04 MILE

Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

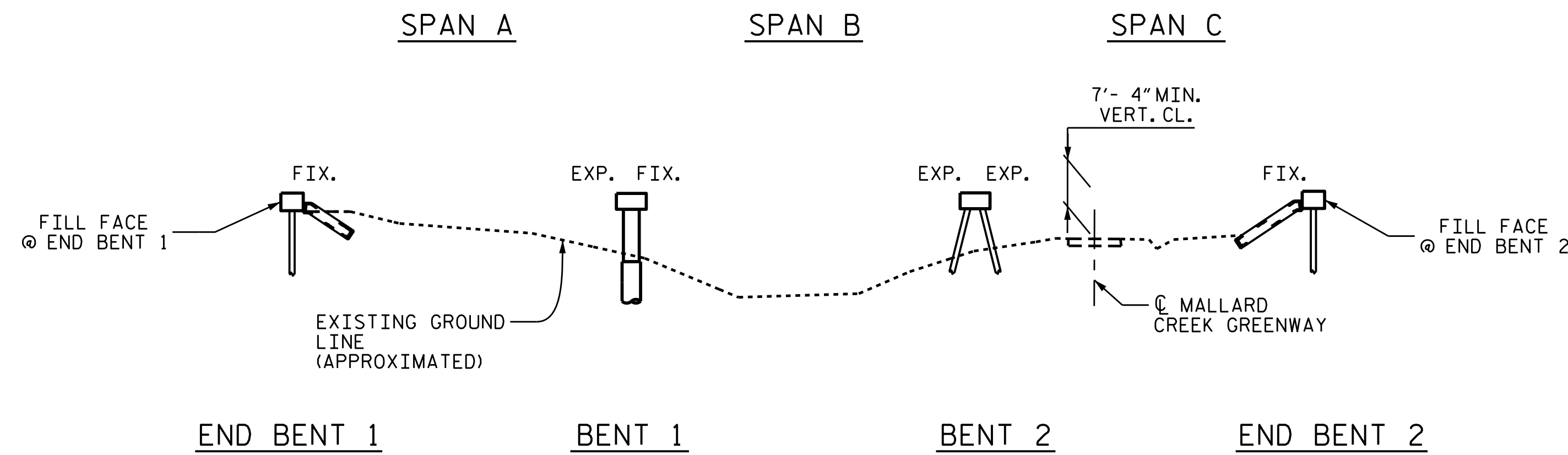
2018 STANDARD SPECIFICATIONS

LETTING DATE :

MARCH 17, 2020

A. KEITH PASCHAL, PE
PROJECT ENGINEER

ADAM A. COLE, PE
PROJECT DESIGN ENGINEER



SECTION ALONG C BRIDGE

NOTES

PROFILE INFORMATION IS TAKEN FROM THE ORIGINAL PLANS AND THE ROUTINE INSPECTION REPORT DATED 9/7/2017.

BRIDGE ORIENTATION CONFORMS TO EXISTING BRIDGE PLANS.

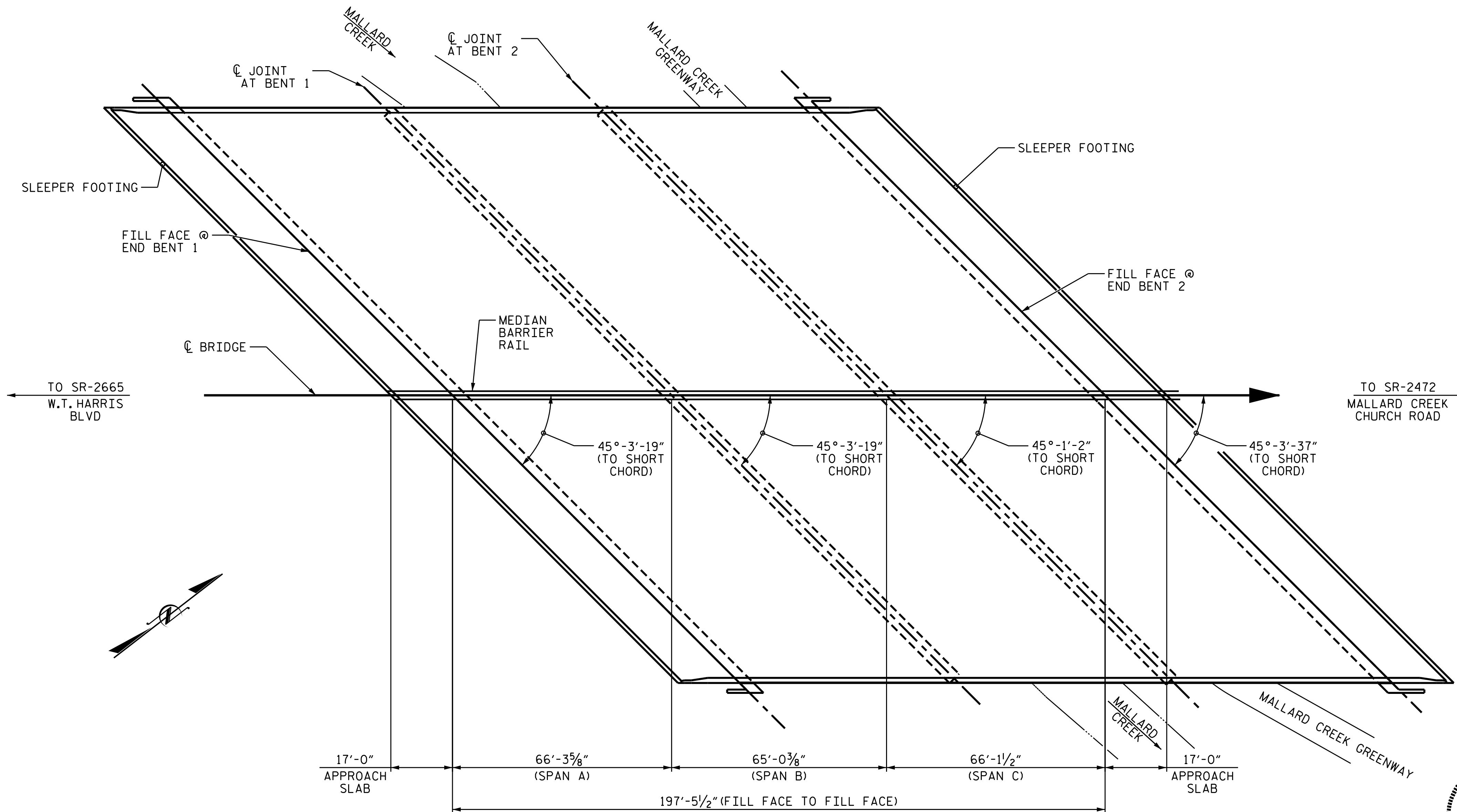
SCOPE OF WORK

- PERFORM SHOTCRETE REPAIRS IN PREPARED AREAS.
- REPAIR CONCRETE DECK AREAS.
- PREPARE CONCRETE DECK SURFACE BY SHOTBLASTING.
- PREPARE BRIDGE JOINTS AND INSTALL JOINT SEALS.
- APPLY SILANE DECK TREATMENT.
- EPOXY COAT CAPS AND GIRDER ENDS.
- CLEAN AND REPAIR DECK DRAINS.

I HEREBY CERTIFY THAT THIS STRUCTURE WAS REHABILITATED ACCORDING TO THESE PLANS OR AS NOTED HEREIN.

RESIDENT ENGINEER _____

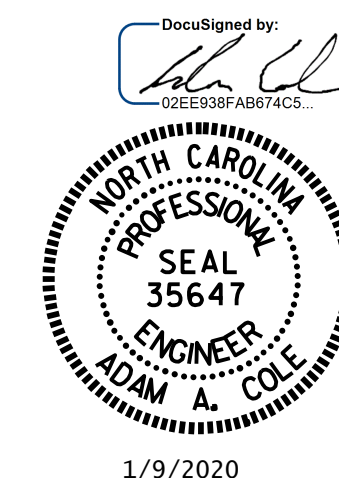
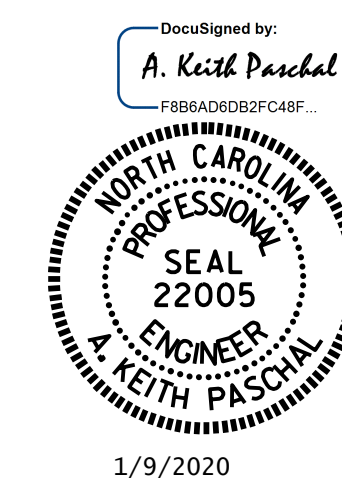
DATE _____



PLAN

PROJECT NO. I-5826
MECKLENBURG COUNTY
 BRIDGE NO. 590296

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR
 BRIDGE ON I-85(NBL/SBL)
 OVER MALLARD CREEK

DRAWN BY : C. RUIZ DATE : 01/2019
 CHECKED BY : A. SORESENGINH DATE : 02/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



LATITUDE: 35.31971944
 LONGITUDE: -80.75199167

LOCATION SKETCH

INFORMATION INDICATED ON THE LOCATION SKETCH SHALL BE CONSIDERED GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL CONFIRM, THROUGH OTHER SOURCES, SPECIFIC INFORMATION REGARDING BRIDGES, ROADWAYS, UTILITIES, THE SURROUNDING AREA, AND ANY OTHER ASPECTS THAT MAY BE NECESSARY TO PERFORM AND COMPLETE THE PROJECT.

TOTAL BILL OF MATERIAL

REPAIR OF EXISTING DECK DRAINS	BRIDGE JOINT DEMOLITION	ELASTOMERIC CONCRETE FOR PRESERVATION	FOAM JOINT SEALS FOR PRESERVATION	SHOTCRETE REPAIRS	CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	EPOXY COATING	EPOXY COATING CONCRETE GIRDER ENDS	SHOTBLASTING BRIDGE DECK	SILANE DECK TREATMENT
LUMP SUM	SO.FT.	CU.FT.	LIN. FT.	CU. FT.	SO. FT.	SO. FT.	SO. FT.	SO. YDS.	SO. YDS.
LUMP SUM	238.0	59.5	238.0	0.7	5.0	1031	1244	4,353	4,353

NOTE:
 AT THE TIME OF PREPARATION OF THESE PLANS, IT WAS NOT ANTICIPATED THAT CONCRETE REPAIRS WOULD BE REQUIRED. HOWEVER, IT MAY BE DETERMINED IN THE FIELD THAT CONCRETE REPAIRS, OR OTHER WORK WILL BE NECESSARY TO PROPERLY COMPLETE THE INTENDED BRIDGE PRESERVATION/REHABILITATION WORK. THE CONTRACTOR SHALL BE PREPARED TO PERFORM SUCH WORK IN A TIMELY MANNER, AS DETERMINED IN THE FIELD. SUCH WORK SHALL BE CONSIDERED EXTRA WORK AND SHALL BE ADDRESSED AS PER ARTICLE 104-7 OF THE STANDARD SPECIFICATIONS. PROJECT SPECIAL PROVISIONS THAT OUTLINE REQUIREMENTS FOR THESE POTENTIAL ADDITIONAL WORK ITEMS HAVE BEEN PROVIDED IN PROJECT DOCUMENTS, BUT NO QUANTITIES HAVE BEEN LISTED. ACTUAL PAY ITEMS, QUANTITIES, AND COSTS WILL BE ESTABLISHED, AS REQUIRED, IF EXTRA WORK IS ENCOUNTERED.

UNANTICIPATED ITEMS:

ITEM NO	DESCRIPTION	UNIT
1	CONCRETE REPAIRS	CU. FT.

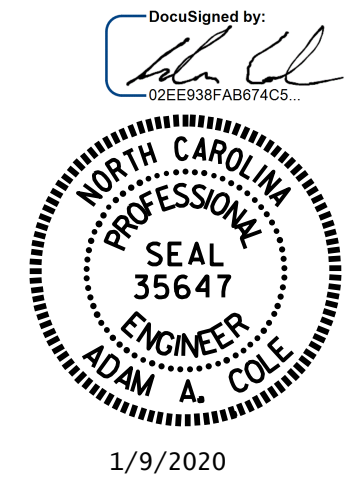
DRAWN BY : C. RUIZ DATE : 01/2019
 CHECKED BY : A. SORSENGINH DATE : 02/2019

NOTES

- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL STATE AND FEDERAL SAFETY REQUIREMENTS.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIR OF BRIDGE DECKS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR CONCRETE REPAIRS, SEE SPECIAL PROVISIONS.
- FOR SHOTCRETE REPAIR, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR SILANE DECK TREATMENT, SEE SPECIAL PROVISIONS.
- FOR ELASTOMERIC CONCRETE FOR PRESERVATION, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT, SEE SPECIAL PROVISIONS.
- FOR REPAIR OF EXISTING DECK DRAINS, SEE SPECIAL PROVISIONS.
- FOR SHOTBLASTING OF BRIDGE DECK, SEE PROVISIONS FOR SILANE DECK TREATMENT.
- FOR EXPOXY COATING AND DEBRIS REMOVAL, SEE SPECIAL PROVISIONS.
- FOR EXPOXY COATING CONCRETE GIRDER ENDS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-5826
MECKLENBURG COUNTY
 BRIDGE NO. 590296

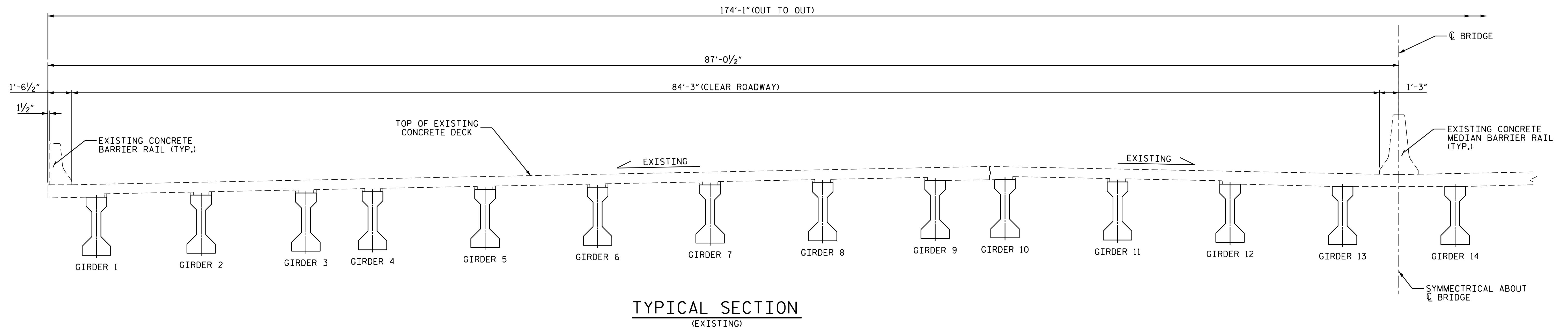
SHEET 2 OF 2



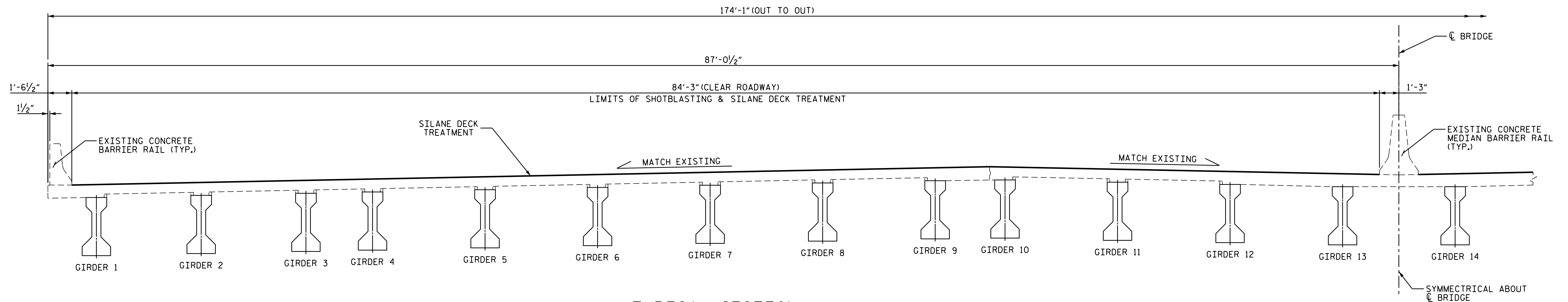
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR
 BRIDGE ON I-85(NBL/SBL)
 OVER MALLARD CREEK

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

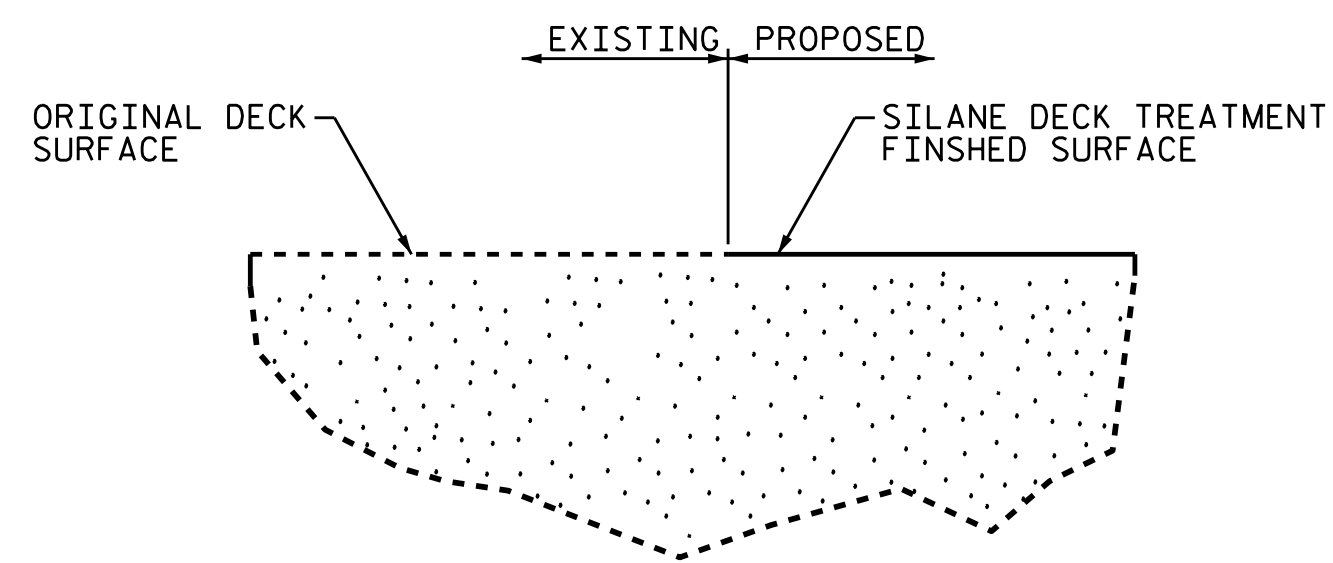
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TYPICAL SECTION
(EXISTING)

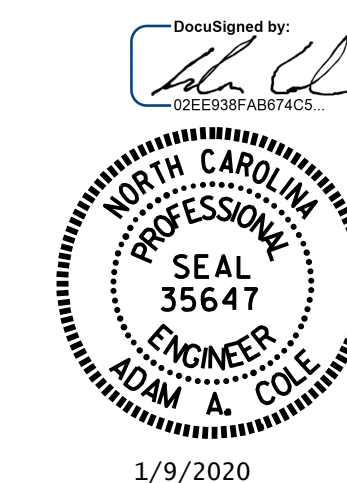


TYPICAL SECTION
(PROPOSED)



DETAIL OF SILANE DECK TREATMENT

PROJECT NO. I-5826
MECKLENBURG COUNTY
 BRIDGE NO. 590296

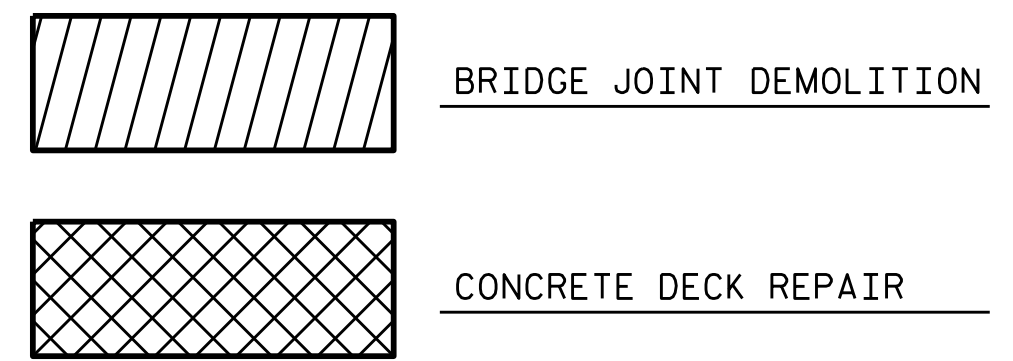


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION &
 SILANE DECK TREATMENT
 DETAIL

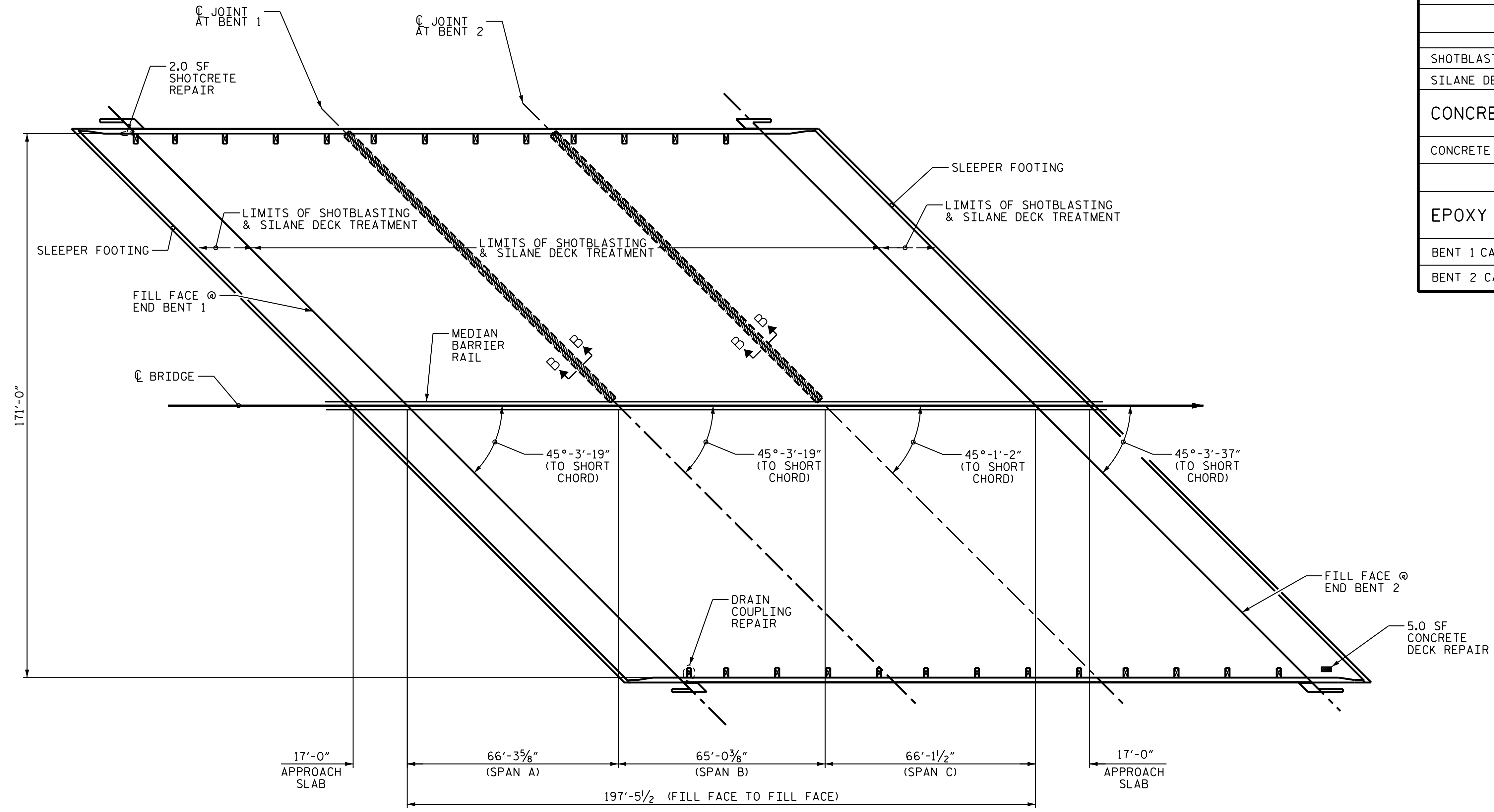
DRAWN BY : C. RUIZ DATE : 01/2019
 CHECKED BY : A. SORSENGINH DATE : 02/2019

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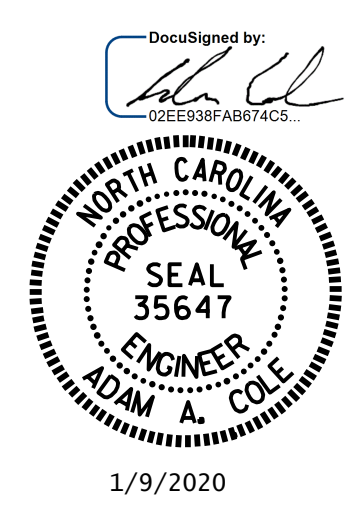
NOTES:
 REPAIR LOCATIONS AND ESTIMATED QUANTITIES ARE GIVEN WITH THE BEST INFORMATION AVAILABLE. IF ADDITIONAL REPAIRS NOT SHOWN ON THE DRAWINGS ARE DEEMED NECESSARY BY THE ENGINEER, THE ENGINEER WILL NOTE ON THE DRAWINGS THE APPROXIMATE LOCATIONS AND DESCRIPTION OF THE REPAIRS AND ADJUST THE ACTUAL QUANTITIES ENTERED INTO THE AS-BUILT REPAIR QUANTITY TABLE.
 FOR SECTION B-B, SEE "JOINT DETAILS" SHEET.



PLAN

AS-BUILT REPAIR QUANTITY TABLE				
BRIDGE DECK QUANTITIES				
	ESTIMATE		ACTUAL	
SHOTBLASTING BRIDGE DECK	3,659 SY			
SILANE DECK TREATMENT	3,659 SY			
SHOTCRETE REPAIRS	AREA SF	VOLUME CF	AREA SF	VOLUME CF
CONCRETE BARRIER RAIL	2.0	0.7		
BRIDGE JOINT DEMOLITION	238.0			
ELASTOMERIC CONCRETE		59.5		
SUPERSTRUCTURE QUANTITIES				
EPOXY COATING CONCRETE GIRDER ENDS	ESTIMATE		ACTUAL	
	AREA SF		AREA SF	
GIRDERS AT BENT 1	622			
GIRDERS AT BENT 2	622			
APPROACH SLABS				
	ESTIMATE		ACTUAL	
SHOTBLASTING BRIDGE DECK	694 SY			
SILANE DECK TREATMENT	694 SY			
CONCRETE REPAIRS	AREA SF		AREA SF	
CONCRETE DECK REPAIR FOR SILANE DECK TREATMENT	5.0			
SUBSTRUCTURE QUANTITIES				
EPOXY COATING	ESTIMATE		ACTUAL	
	AREA SF		AREA SF	
BENT 1 CAP	513			
BENT 2 CAP	518			

PROJECT NO. I-5826
MECKLENBURG COUNTY
 BRIDGE NO. 590296

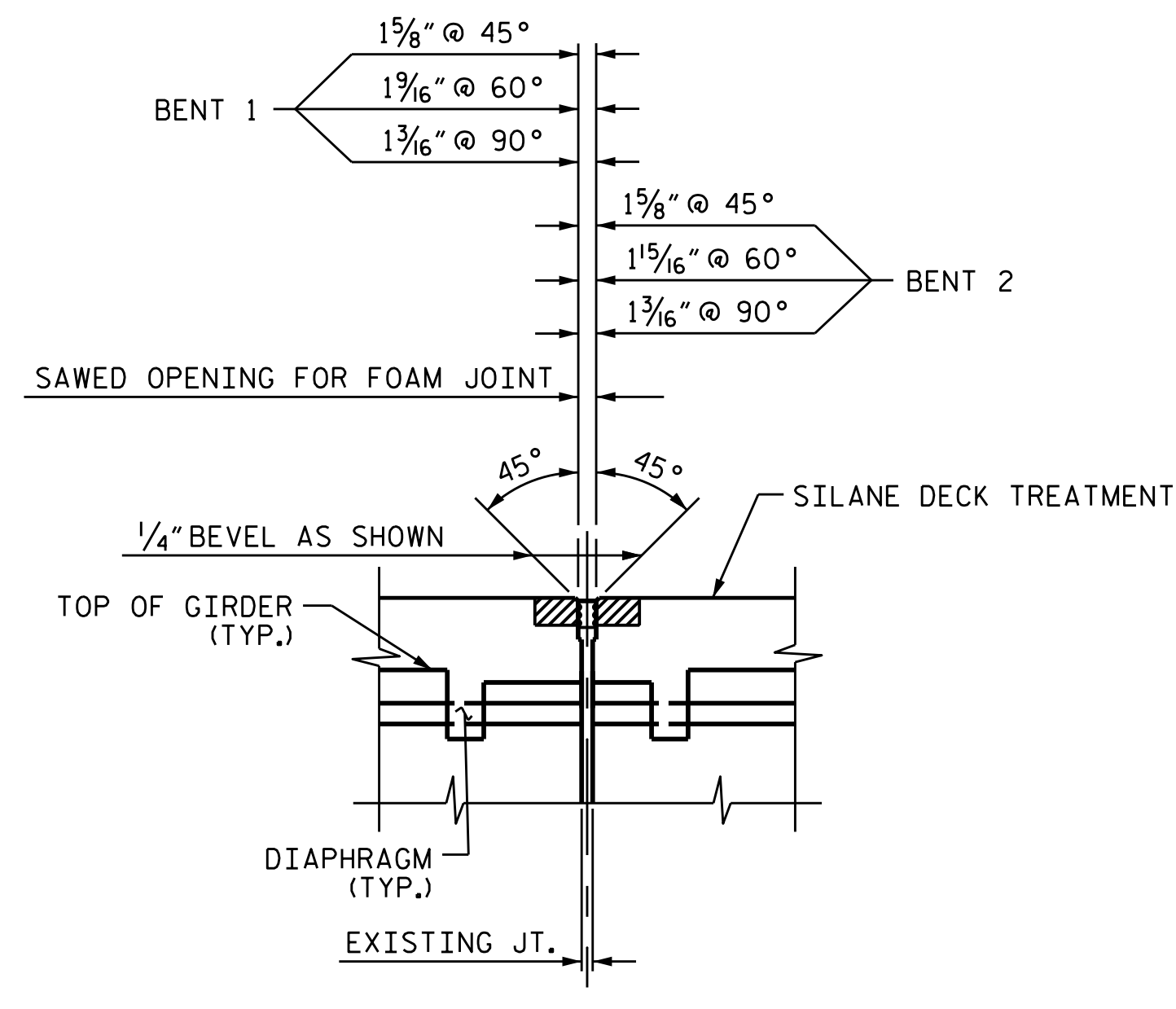
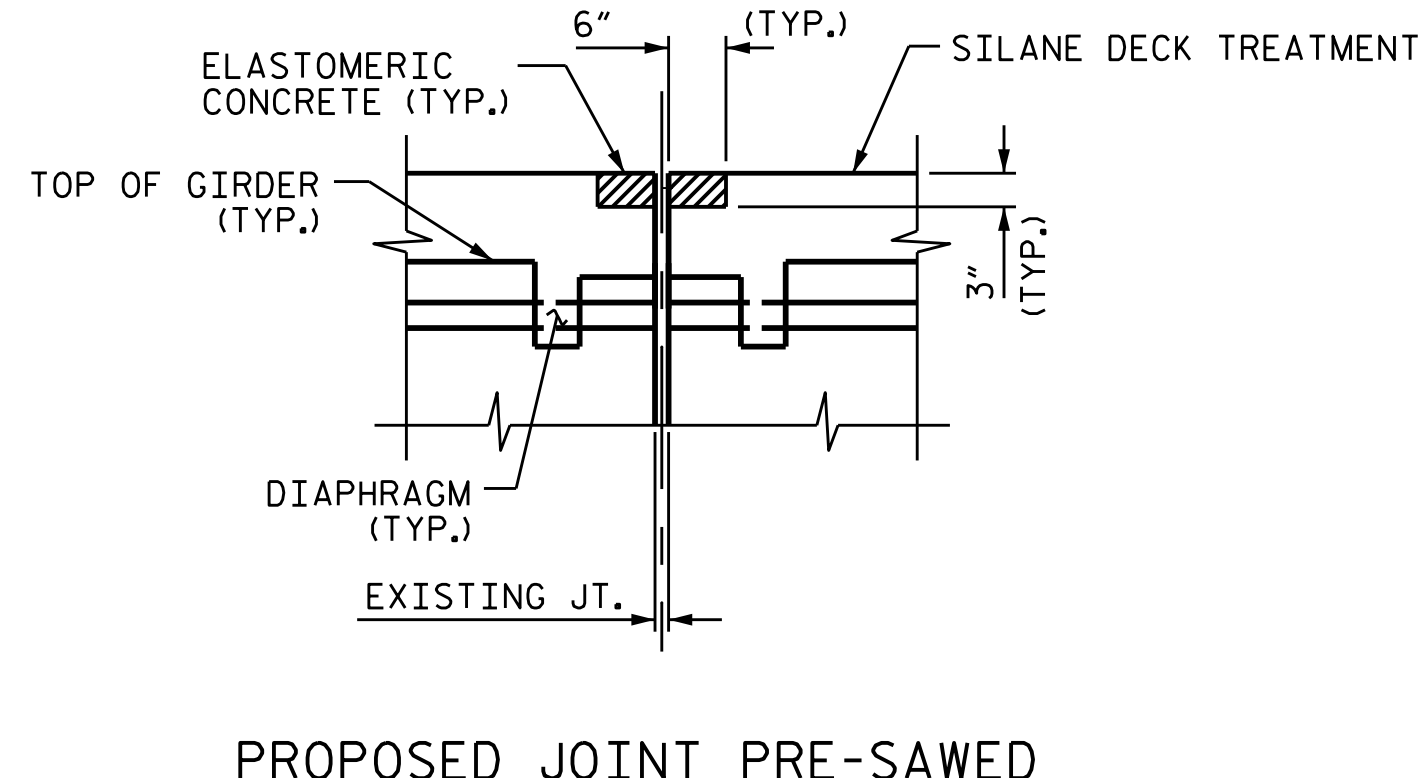
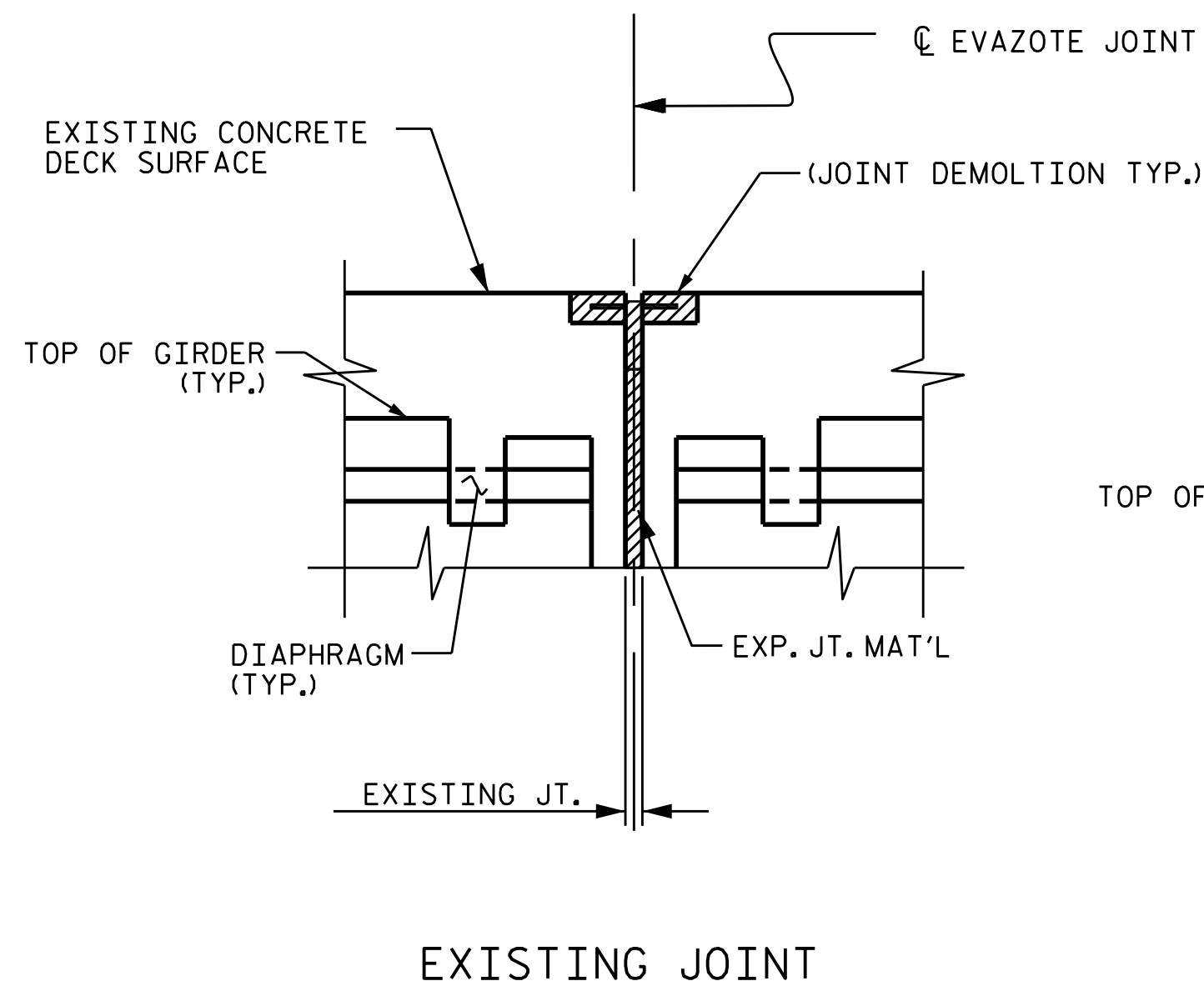


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SURFACE PREPARATION
 &
 SILANE DECK
 TREATMENT**

DRAWN BY : C. RUIZ DATE : 01/2019
 CHECKED BY : A. SORSENGINH DATE : 02/2019

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1			3			TOTAL SHEETS
2			4			5

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NOTES:

CONTRACTOR SHALL FIELD VERIFY THE EXISTING JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF ACTUAL JOINT OPENING VARIES FROM OPENING INDICATED IN DETAIL BY MORE THAN 1/4", NOTIFY ENGINEER.

THE MANUFACTURER IS TO PROVIDE THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING ON THE PLANS AND ACCOMMODATE THE MINIMUM EXPANSION SHOWN ON THE PLANS.

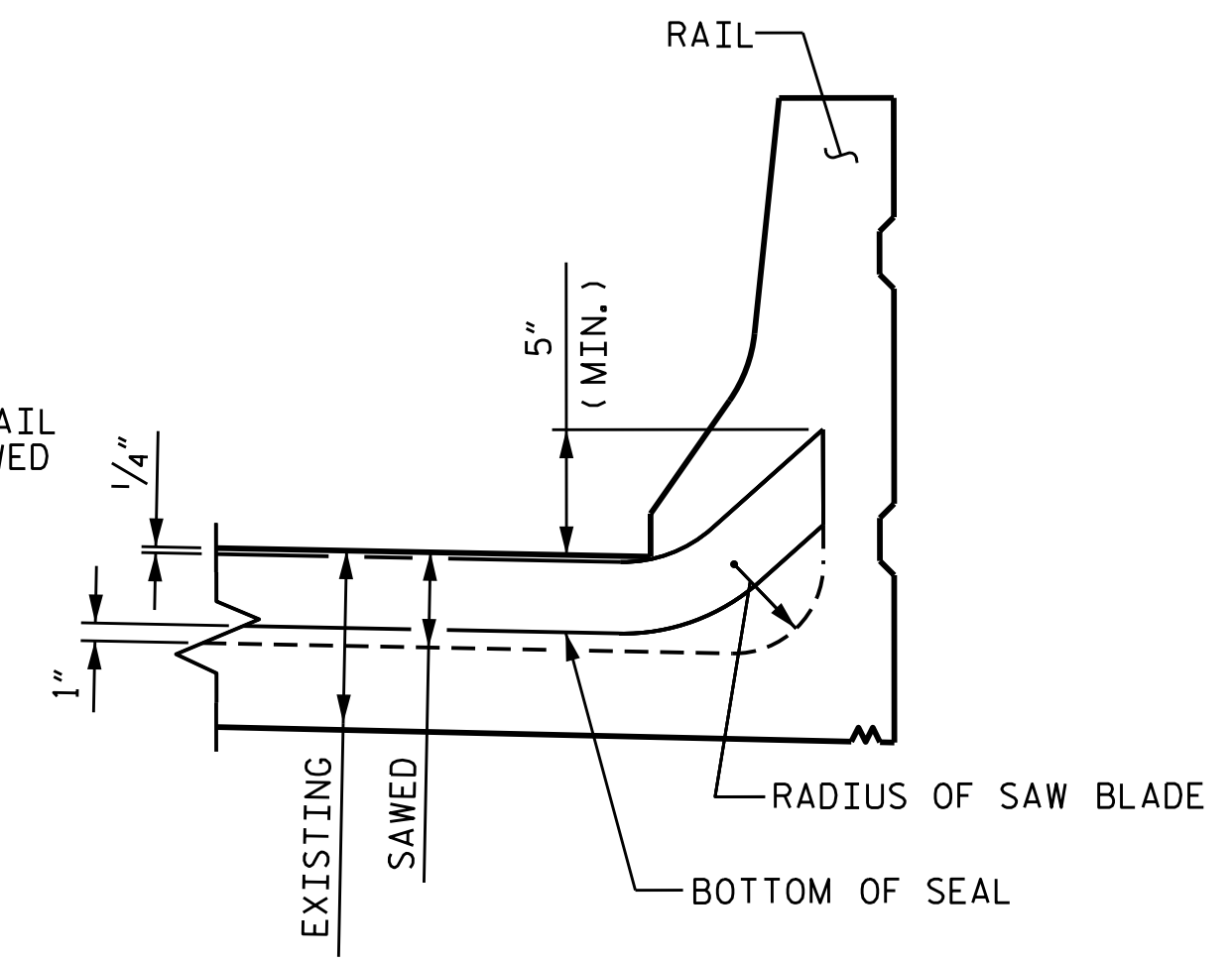
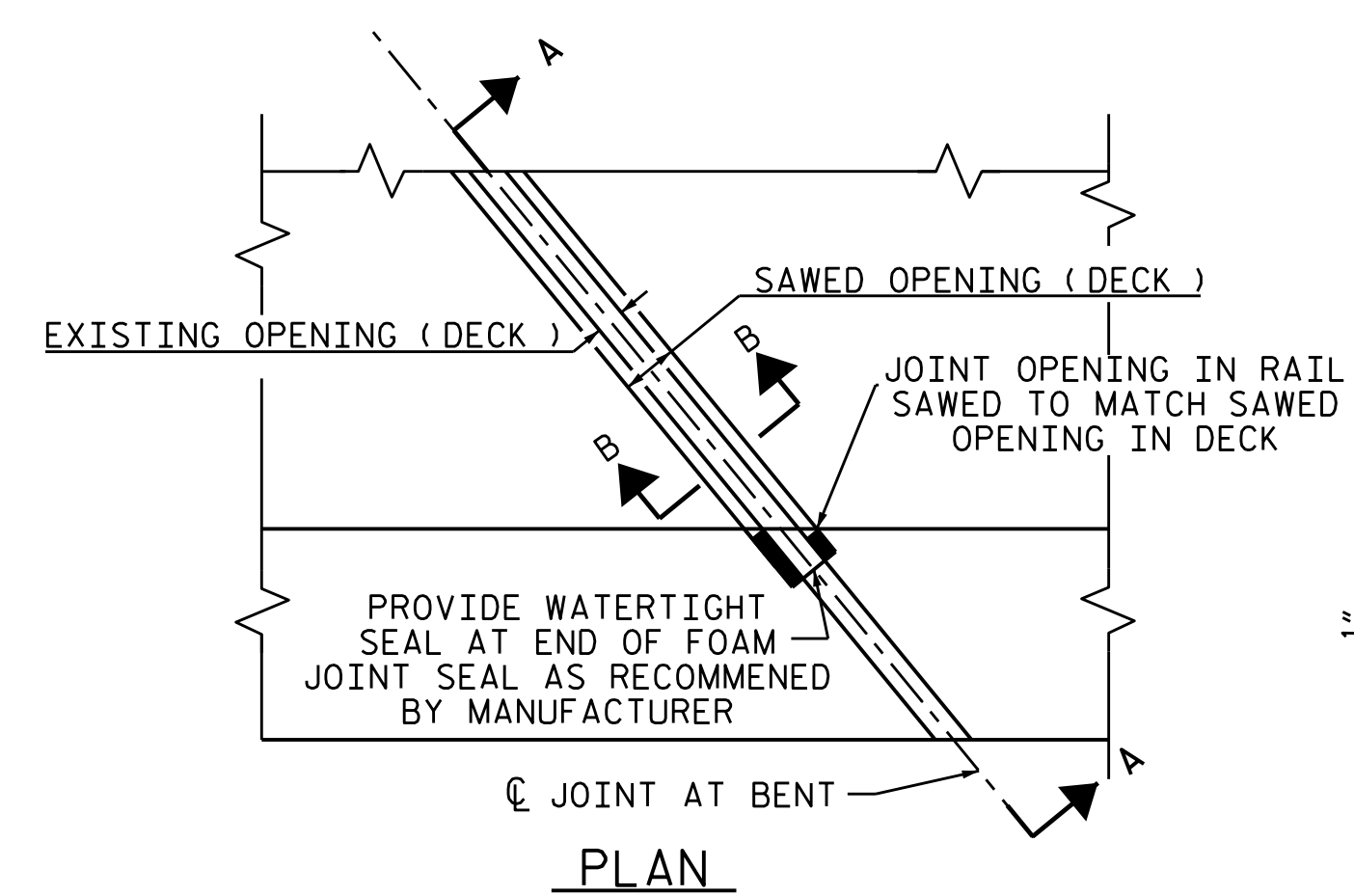
FOAM JOINTS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHAB OPERATIONS NOT TO DROP ANY MATERIAL BELOW THE BRIDGE, WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR NOT BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

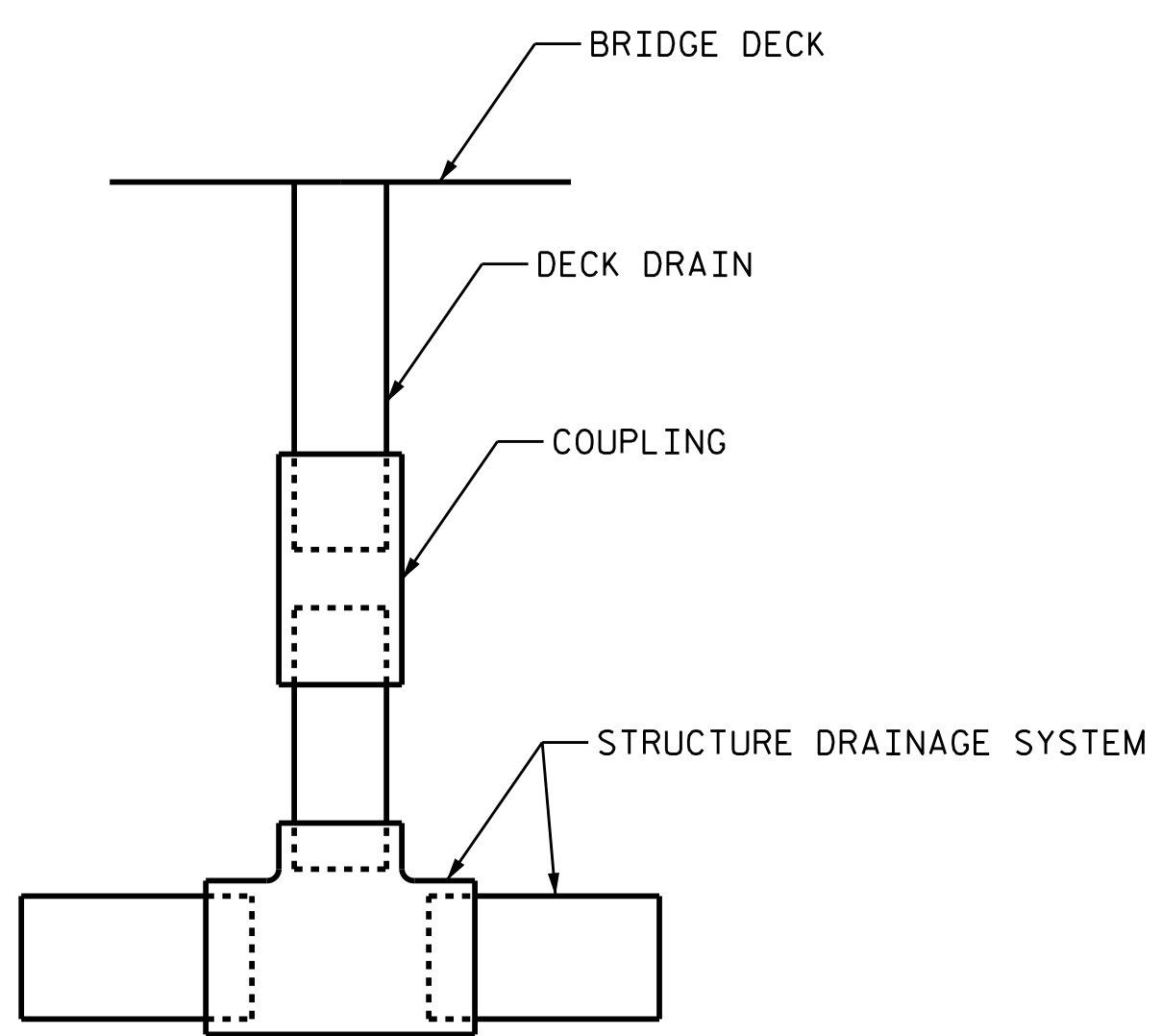
THE INSTALLED FOAM JOINT SEAL SHALL BE WATER TIGHT.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

SECTION B-B



FOAM JOINT SEAL SHALL BE FACTORY FORMED OR CUT HEAT WELDED AND TURNED UP PARALLEL TO FACE OF RAIL.



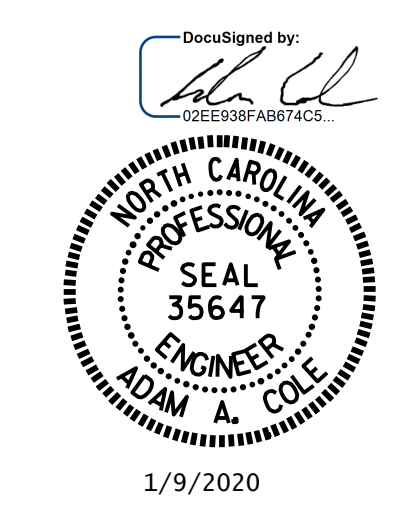
NOTES

REATTACH COUPLING TO STRUCTURE DRAIN SYSTEM.

USE OTHER COUPLINGS ON STRUCTURE AS EXAMPLE IF COUPLING NEEDS TO BE REPLACED.

JOINT REPAIR QUANTITY TABLE		
	ESTIMATED	ACTUAL
FOAM JOINT SEALS FOR PRESERVATION	238.0 FT.	

PROJECT NO. I-5826
MECKLENBURG COUNTY
 BRIDGE NO. 590296



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

JOINT AND DRAINAGE DETAILS

DRAWN BY : C. RUIZ DATE : 01/2019
 CHECKED BY : A. SORSENGINH DATE : 02/2019

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	--	20,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
	--	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	----	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$ " INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN