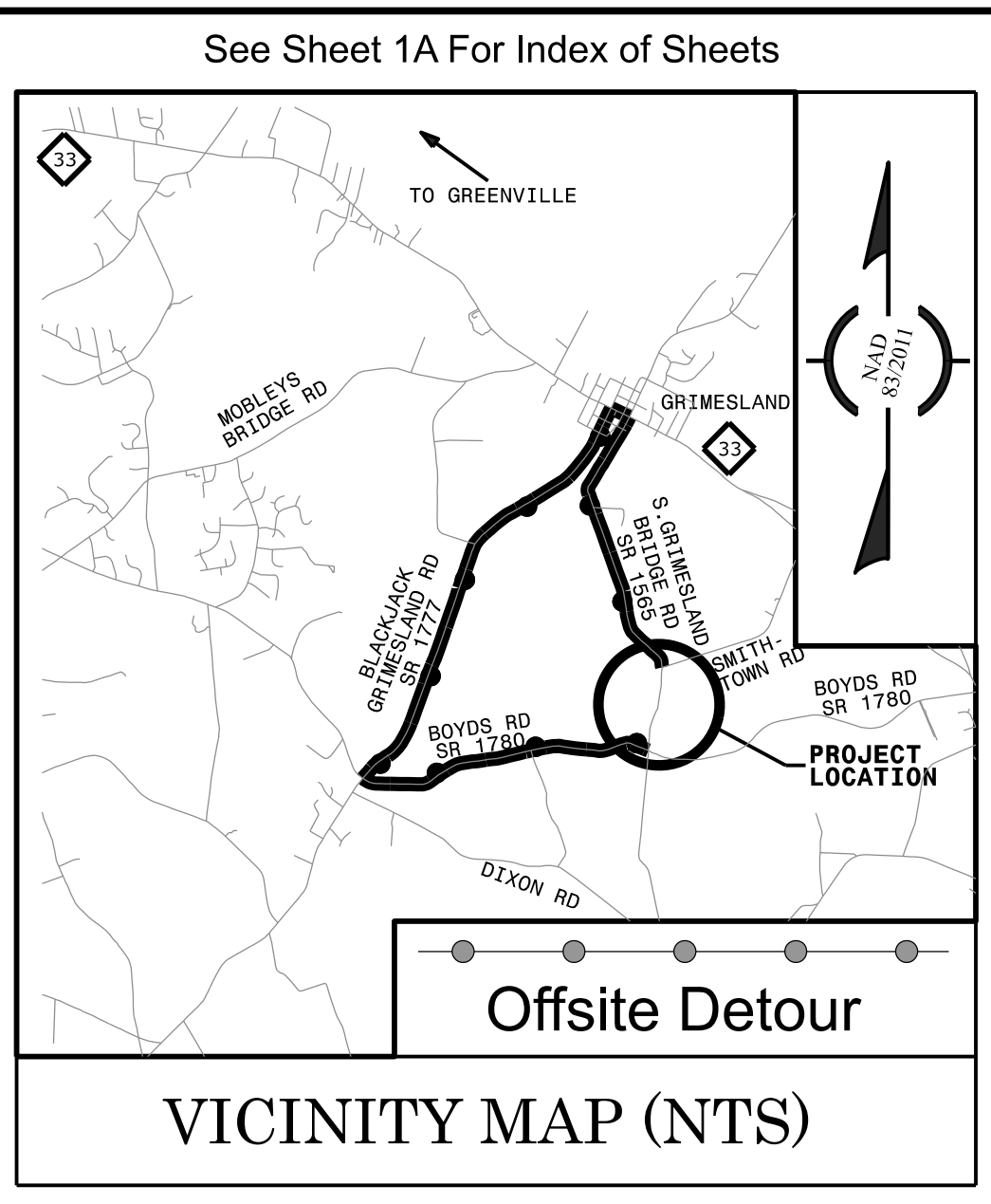


CONTRACT: DB00536 TIP PROJECT: BP2.R018.1

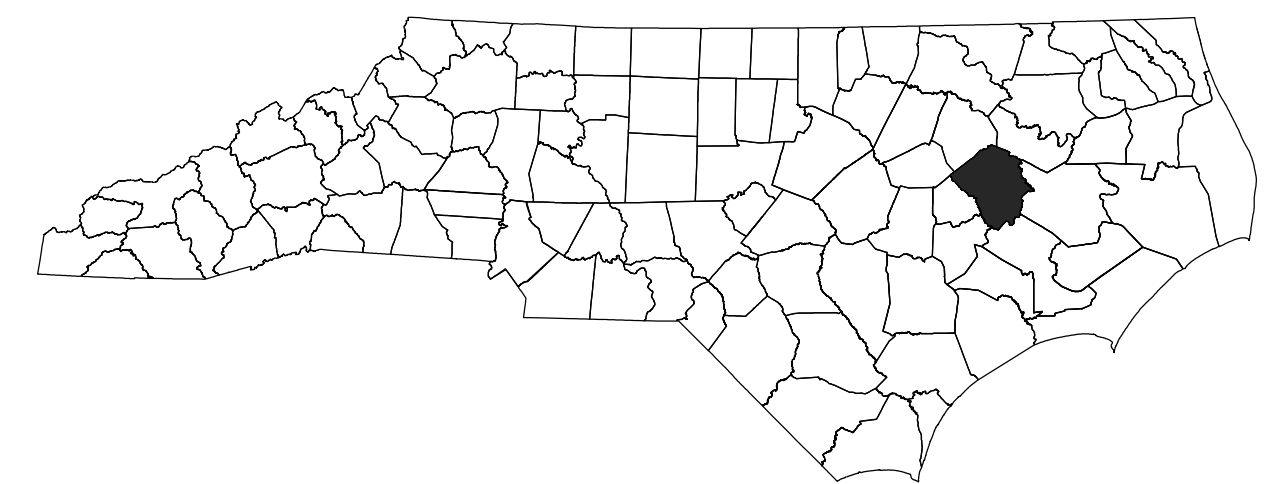


STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PITT COUNTY

LOCATION: *BRIDGE NO. 730015 ON SR 1565 (S. GRIMESLAND BRIDGE ROAD)
OVER CHICOD CREEK*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING AND STRUCTURE*



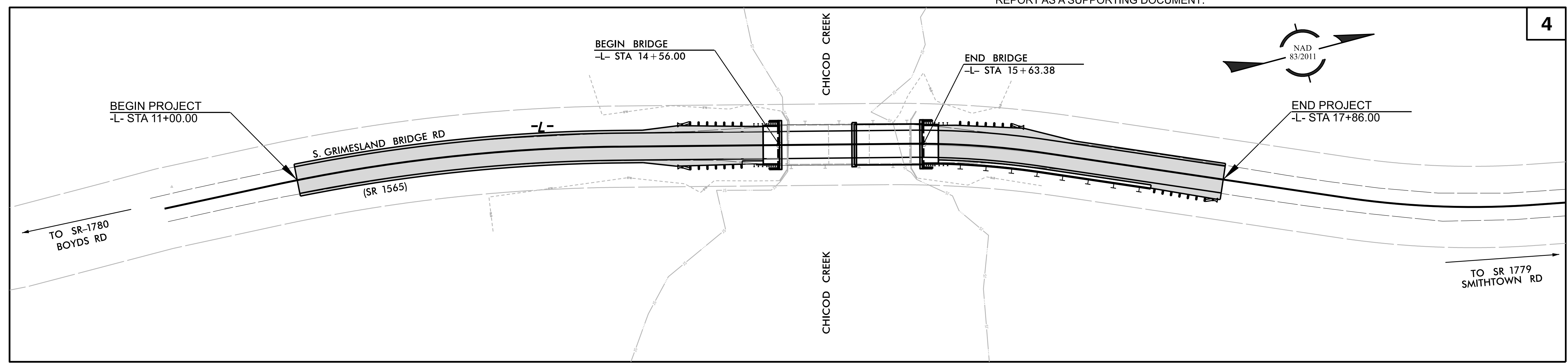
NOTE TO REVIEWER:

PRINT STYLE AND PSET DEVELOPMENT IS STILL IN PROGRESS BY NCDOT FOR ORD DEVELOPED SHEETS AND CROSS SECTIONS. PLOTTING IN THIS SET IS ACCOMPLISHED USING NCDOT'S DEVELOPMENTAL STANDARDS FOR PLAN-ELEVATION AND CROSS SECTION SHEETS. ALL OTHER SHEETS UTILIZE THE FORMER ORD PRINT SYTLE.

THE CROSS SECTION SUMMARY SHEET HAS BEEN REMOVED FROM THIS PLAN SET. THE SUMMARY OF EARTHWORK QUANTITIES ARE SHOWN IN SHEET 3B-1 AND ALL EARTHWORK QUANTITY CALCULATIONS SHALL BE PROVIDED VIA A VOLUMETRIC ORD REPORT AS A SUPPORTING DOCUMENT.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R018.1	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP2.R018.1		PE	
BP2.R018.2		RW, UTILITIES	
BP2.R018.3		CONSTRUCTION	

STAGE 4 PLANS
(4RD1)
Plans Developed with
OpenRoads



**DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL STOPPING SIGHT DISTANCE.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2022 = 480
ADT 2042 = 840

K = N/A %
D = N/A %
T = 6 % *
V = 60 MPH

* TTST =3% DUAL 3%
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

PROJECT LENGTHS FOR TIP PROJECT BP2.R018.1:

LENGTH ROADWAY	=	0.110 MILES
LENGTH STRUCTURES	=	0.020 MILES
TOTAL LENGTH	=	0.130 MILES

NCDOT Contact: CATHRINE HOSSACK-MEYER, PE

Prepared in the Office of: **KCA**
KISHNER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St., Suite 1500
Raleigh, NC 27601
(919)882-7839

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 10/15/2021

LETTING DATE: 06/2022

JOHN P. MAZERES, P.E.
PROJECT ENGINEER

JASON M. DEBONE
PROJECT DESIGN ENGINEER

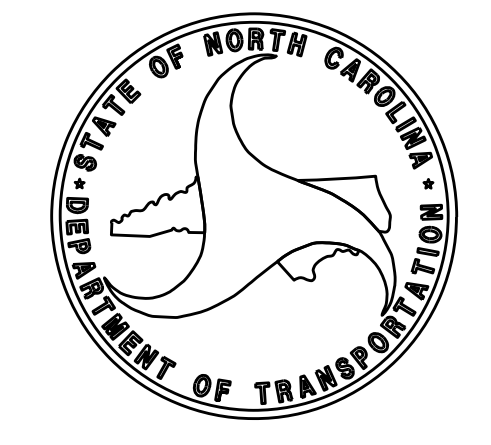
HYDRAULICS ENGINEER
4/25/2022

DocuSigned by:
Erik P. Aadland
SIGNATURE: Erik P. Aadland P.E.

ROADWAY DESIGN ENGINEER
4/25/2022

DocuSigned by:
John Mazereres
SIGNATURE: John Mazereres P.E.

Professional Engineer Seals for Erik P. Aadland and John P. Mazereres.



5/26/20

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C- 3	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN SHEET
4A	RIGHT OF WAY AND EASEMENT MONUMENT PLACEMENT
5	PROFILE SHEET
RW02C-1 THRU RW04	RIGHT OF WAY SHEETS
TMP-1 THRU TMP-2	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
UO-1 THRU UO- 2	UTILITIES BY OTHERS PLANS
X-1 THRU X-5	CROSS-SECTIONS
S-1 THRU S-21	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

EFF. 01-16-2018
REV.

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY CONTRACT.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modified Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

ADDITIONAL NOTES

REFER TO 2018 STANDARD SPECIFICATION 657 SEALING EXISTING PAVEMENT CRACKS AND JOINTS FOR SEALING THE SAW CUT JOINTS AT THE BEGIN/END PROJECT LIMITS.

BP2.R018.1

4RDI IA
STATE OF NORTH CAROLINA



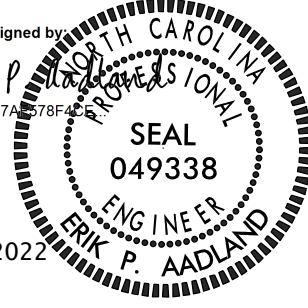
HIGHWAY DIVISION 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN
ENGINEER



HYDRAULICS
ENGINEER



PREPARED BY



NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919) 882-7839

REVISIONS

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

*S.U.E. = Subsurface Utility Engineering

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----	
County Line	-----	
Township Line	-----	
City Line	-----	
Reservation Line	-----	
Property Line	-----	
Existing Iron Pin (EIP)	-----	EP
Computed Property Corner	-----	X
Existing Concrete Monument (ECM)	-----	ECM
Parcel/Sequence Number	-----	(23)
Existing Fence Line	-x-x-x-	
Proposed Woven Wire Fence	-----	
Proposed Chain Link Fence	-----	
Proposed Barbed Wire Fence	-----	
Existing Wetland Boundary	-----	MLB
Proposed Wetland Boundary	-----	MLB
Existing Endangered Animal Boundary	-----	EAB
Existing Endangered Plant Boundary	-----	EPB
Existing Historic Property Boundary	-----	HPB
Known Contamination Area: Soil	-----	
Potential Contamination Area: Soil	-----	
Known Contamination Area: Water	-----	
Potential Contamination Area: Water	-----	
Contaminated Site: Known or Potential	-----	☠ ☢

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	-----	○
Sign	-----	⊙
Well	-----	⊕
Small Mine	-----	⊗
Foundation	-----	▭
Area Outline	-----	▭
Cemetery	-----	⊕
Building	-----	▭
School	-----	▭
Church	-----	⊕
Dam	-----	▭

HYDROLOGY:

Stream or Body of Water	-----	
Hydro, Pool or Reservoir	-----	
Jurisdictional Stream	-----	JS
Buffer Zone 1	-----	BZ 1
Buffer Zone 2	-----	BZ 2
Flow Arrow	-----	←
Disappearing Stream	-----	→
Spring	-----	⊕
Wetland	-----	⊕
Proposed Lateral, Tail, Head Ditch	-----	←
False Sump	-----	▽

RAILROADS:

Standard Gauge	-----	CSX TRANSPORTATION
RR Signal Milepost	-----	MILEPOST 35
Switch	-----	SWITCH
RR Abandoned	-----	
RR Dismantled	-----	

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	-----	⬠
Primary Horiz and Vert Control Point	-----	⬠
Secondary Horiz and Vert Control Point	-----	⬠
Vertical Benchmark	-----	⊕
Existing Right of Way Monument	-----	△
Proposed Right of Way Monument (Rebar and Cap)	-----	▲
Proposed Right of Way Monument (Concrete)	-----	●
Existing Permanent Easement Monument	-----	◇
Proposed Permanent Easement Monument (Rebar and Cap)	-----	◇
Existing C/A Monument	-----	△
Proposed C/A Monument (Rebar and Cap)	-----	▲
Proposed C/A Monument (Concrete)	-----	●
Existing Right of Way Line	-----	-----
Proposed Right of Way Line	-----	⊕
Existing Control of Access Line	-----	⊕
Proposed Control of Access Line	-----	⊕
Proposed ROW and CA Line	-----	⊕
Existing Easement Line	-----	E
Proposed Temporary Construction Easement	-----	E
Proposed Temporary Drainage Easement	-----	TDE
Proposed Permanent Drainage Easement	-----	PDE
Proposed Permanent Drainage/Utility Easement	-----	DUE
Proposed Permanent Utility Easement	-----	PUE
Proposed Temporary Utility Easement	-----	TUE
Proposed Aerial Utility Easement	-----	AUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----	
Existing Curb	-----	
Proposed Slope Stakes Cut	-----	C
Proposed Slope Stakes Fill	-----	F
Proposed Curb Ramp	-----	CR
Existing Metal Guardrail	-----	T T T T
Proposed Guardrail	-----	T T T T
Existing Cable Guiderail	-----	▭ ▭ ▭
Proposed Cable Guiderail	-----	▭ ▭ ▭
Equality Symbol	-----	⊕
Pavement Removal	-----	⊗
Single Tree	-----	⊕
Single Shrub	-----	⊕
Hedge	-----	⊕

VEGETATION:

Woods Line	-----	
Orchard	-----	⊕
Vineyard	-----	Vineyard

EXISTING STRUCTURES:

MAJOR:		
Bridge, Tunnel or Box Culvert	-----	CONC
Bridge Wing Wall, Head Wall and End Wall	-----	CONC WW
MINOR:		
Head and End Wall	-----	CONC HW
Pipe Culvert	-----	
Footbridge	-----	
Drainage Box: Catch Basin, DI or JB	-----	CB
Paved Ditch Gutter	-----	
Storm Sewer Manhole	-----	⊕
Storm Sewer	-----	S

UTILITIES:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A, B, C or D (Accuracy)

POWER:		
Existing Power Pole	-----	●
Proposed Power Pole	-----	⊕
Existing Joint Use Pole	-----	⊕
Proposed Joint Use Pole	-----	⊕
Power Manhole	-----	⊕
Power Line Tower	-----	⊕
Power Transformer	-----	⊕
U/G Power Cable Hand Hole	-----	⊕
H-Frame Pole	-----	●
U/G Power Line Test Hole (SUE - LOS A)*	-----	⊕
U/G Power Line (SUE - LOS B)*	-----	P
U/G Power Line (SUE - LOS C)*	-----	P
U/G Power Line (SUE - LOS D)*	-----	P

TELEPHONE:

Existing Telephone Pole	-----	●
Proposed Telephone Pole	-----	⊕
Telephone Manhole	-----	⊕
Telephone Pedestal	-----	⊕
Telephone Cell Tower	-----	⊕
U/G Telephone Cable Hand Hole	-----	⊕
U/G Telephone Test Hole (SUE - LOS A)*	-----	⊕
U/G Telephone Cable (SUE - LOS B)*	-----	T
U/G Telephone Cable (SUE - LOS C)*	-----	T
U/G Telephone Cable (SUE - LOS D)*	-----	T
U/G Telephone Conduit (SUE - LOS B)*	-----	TC
U/G Telephone Conduit (SUE - LOS C)*	-----	TC
U/G Telephone Conduit (SUE - LOS D)*	-----	TC
U/G Fiber Optics Cable (SUE - LOS B)*	-----	T FO
U/G Fiber Optics Cable (SUE - LOS C)*	-----	T FO
U/G Fiber Optics Cable (SUE - LOS D)*	-----	T FO

WATER:

Water Manhole	-----	⊕
Water Meter	-----	⊕
Water Valve	-----	⊕
Water Hydrant	-----	⊕
U/G Water Line Test Hole (SUE - LOS A)*	-----	⊕
U/G Water Line (SUE - LOS B)*	-----	W
U/G Water Line (SUE - LOS C)*	-----	W
U/G Water Line (SUE - LOS D)*	-----	W
Above Ground Water Line	-----	A/G Water

TV:

TV Pedestal	-----	⊕
TV Tower	-----	⊕
U/G TV Cable Hand Hole	-----	⊕
U/G TV Test Hole (SUE - LOS A)*	-----	⊕
U/G TV Cable (SUE - LOS B)*	-----	TV
U/G TV Cable (SUE - LOS C)*	-----	TV
U/G TV Cable (SUE - LOS D)*	-----	TV
U/G Fiber Optic Cable (SUE - LOS B)*	-----	TV FO
U/G Fiber Optic Cable (SUE - LOS C)*	-----	TV FO
U/G Fiber Optic Cable (SUE - LOS D)*	-----	TV FO

GAS:

Gas Valve	-----	⊕
Gas Meter	-----	⊕
U/G Gas Line Test Hole (SUE - LOS A)*	-----	⊕
U/G Gas Line (SUE - LOS B)*	-----	G
U/G Gas Line (SUE - LOS C)*	-----	G
U/G Gas Line (SUE - LOS D)*	-----	G
Above Ground Gas Line	-----	A/G Gas

SANITARY SEWER:

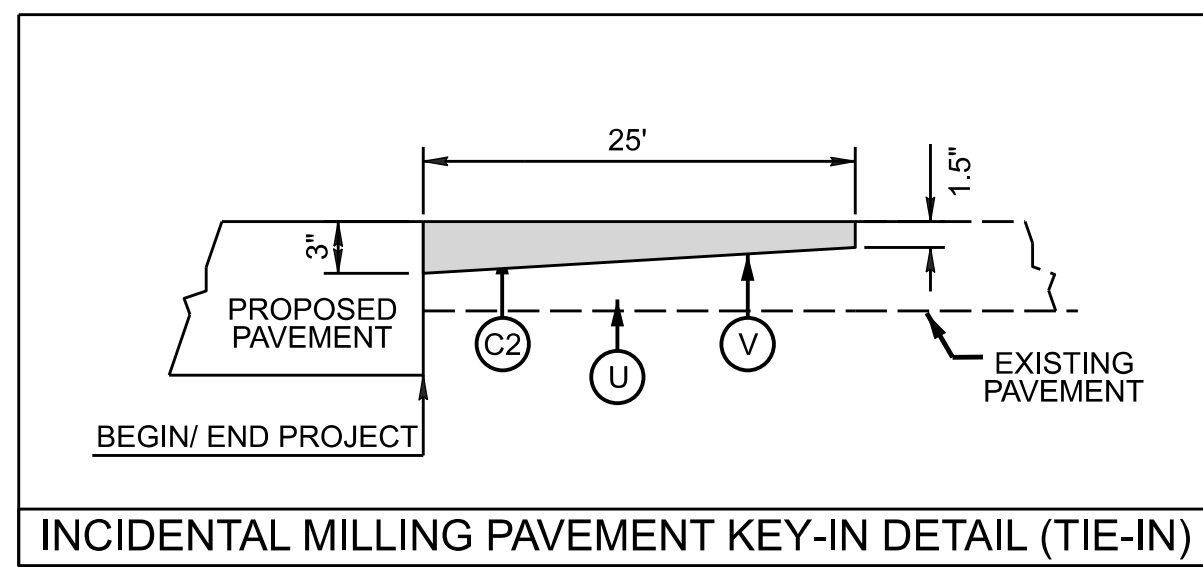
Sanitary Sewer Manhole	-----	⊕
Sanitary Sewer Cleanout	-----	⊕
U/G Sanitary Sewer Line	-----	SS
Above Ground Sanitary Sewer	-----	A/G Sanitary Sewer
SS Force Main Line Test Hole (SUE - LOS A)*	-----	⊕
SS Force Main Line (SUE - LOS B)*	-----	FSS
SS Force Main Line (SUE - LOS C)*	-----	FSS
SS Force Main Line (SUE - LOS D)*	-----	FSS

MISCELLANEOUS:

Utility Pole	-----	●
Utility Pole with Base	-----	⊕
Utility Located Object	-----	⊕
Utility Traffic Signal Box	-----	⊕
Utility Unknown U/G Line (SUE - LOS B)*	-----	U/L
U/G Tank; Water, Gas, Oil	-----	UST
Underground Storage Tank, Approx. Loc.	-----	UST
A/G Tank; Water, Gas, Oil	-----	UST
Geoenvironmental Boring	-----	⊕
Abandoned According to Utility Records	-----	AATUR
End of Information	-----	E.O.I.

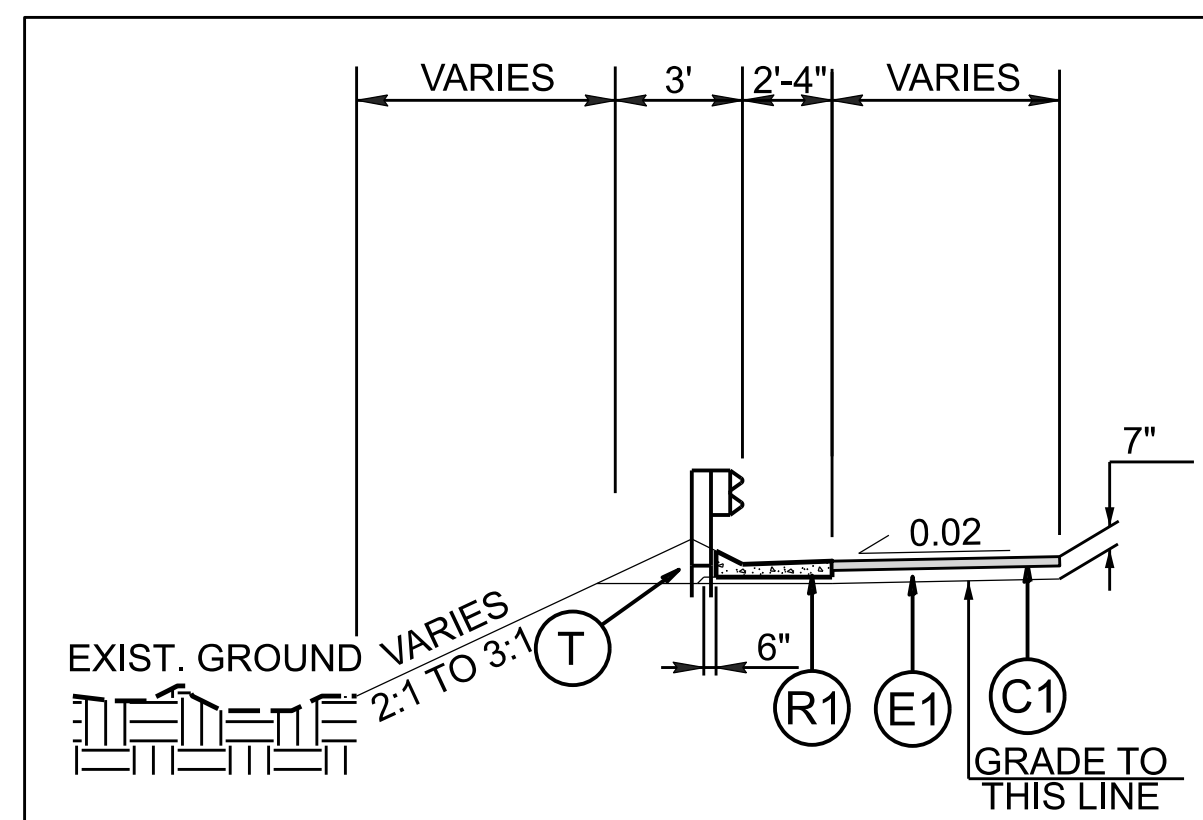
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF THE TWO LAYERS.
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110.0 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" OR TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



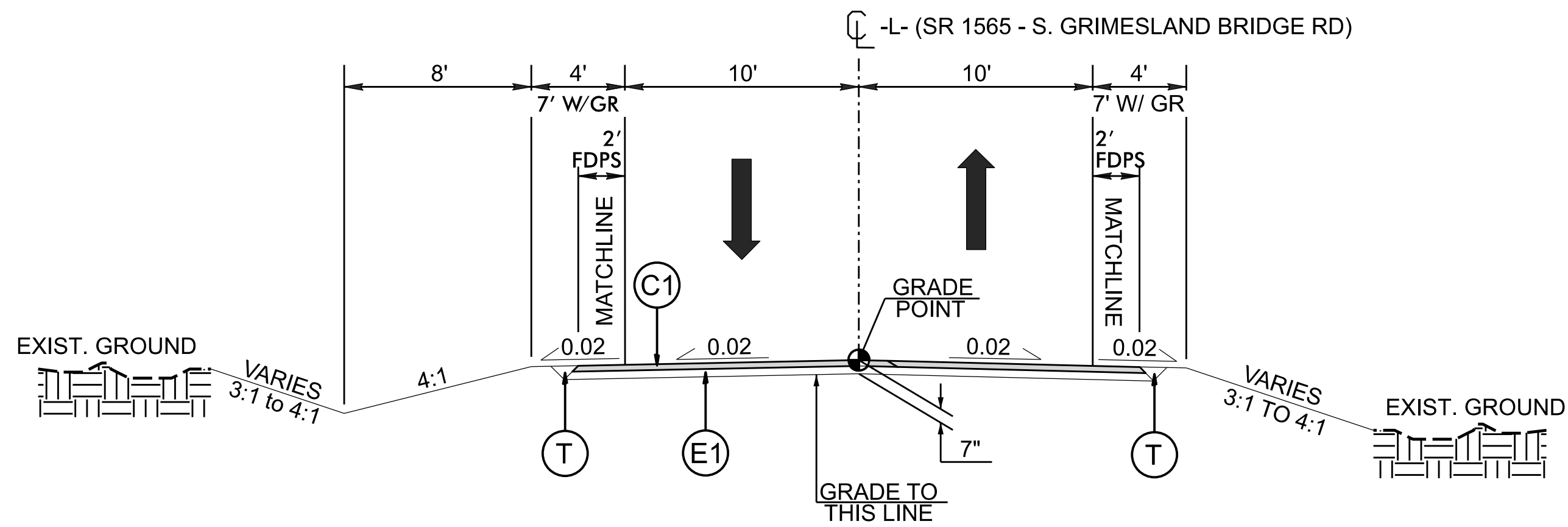
-L- STA. 10+75.00 TO STA. 11+00.00
 -L- STA. 17+86.00 TO STA. 18+11.00

STATION RANGES ARE APPROXIMATE ONLY.
 GRADE AND MILLING LIMITS MAY BE ADJUSTED
 BY THE ENGINEER TO ENSURE A PROPER TIE-IN.



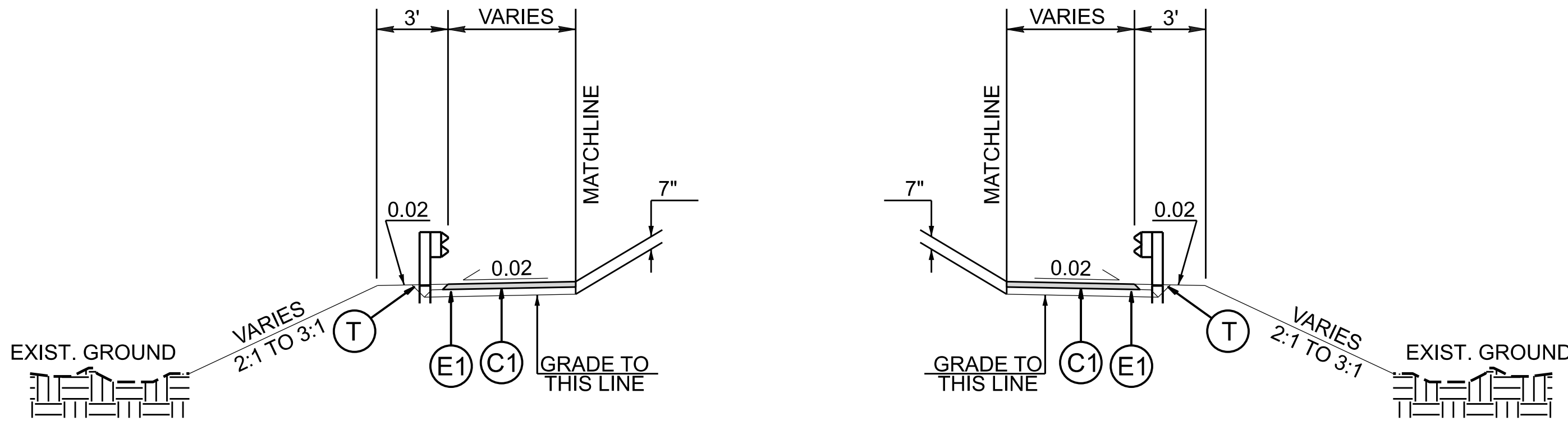
SBG DETAIL

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1
 -L- STA. 14+29.00 (RT) TO STA. 14+45.00 (BEGIN APPROACH SLAB)
 -L- STA. 15+75.00 (END APPROACH SLAB) TO STA. 17+34.00 (RT)



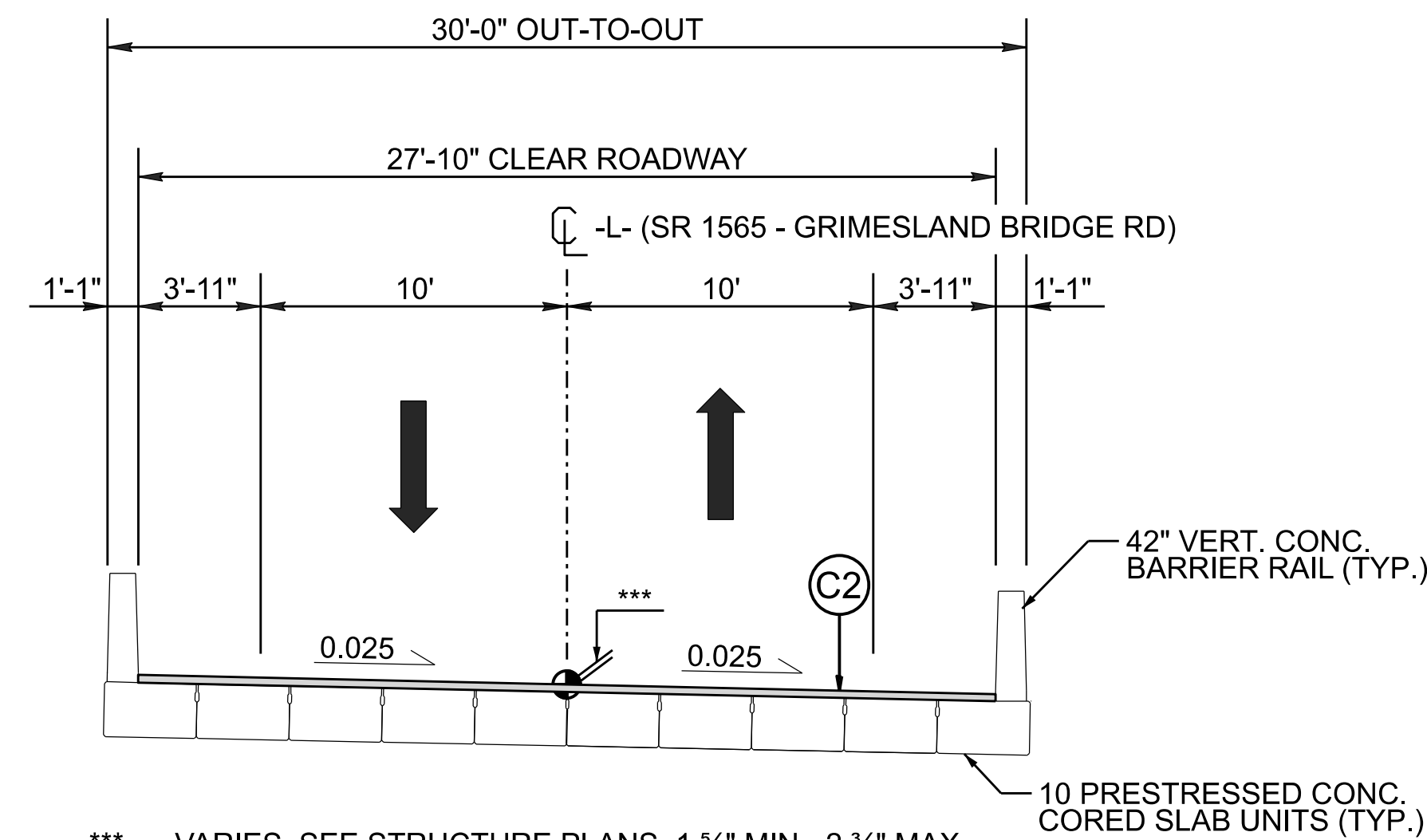
TYPICAL SECTION NO. 1

-L- STA. 11+00.00 TO STA. 14+56.00 (BEGIN BRIDGE)
 -L- STA. 15+63.38 (END BRIDGE) TO STA. 17+86.00



GUARDRAIL DETAIL

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION NO. 1
 -L- STA. 13+81.00 TO STA. 14+56.00 (BEGIN BRIDGE)
 -L- STA. 15+63.38 (END BRIDGE) TO STA. 16+38.38 (LT)
 -L- STA. 15+63.38 (END BRIDGE) TO STA. 17+84.00 (RT)



BRIDGE TYPICAL SECTION

BRIDGE 740015 OVER CHICOD CREEK
 -L- STA. 14+56.00 (BEGIN BRIDGE) TO
 -L- STA. 15+63.38 (END BRIDGE)

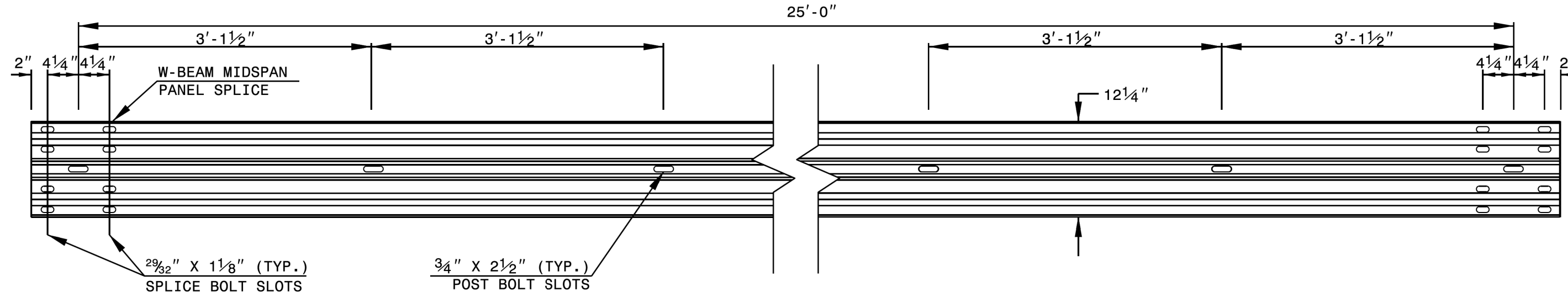
BP2.R018.1
 4RDI 2A-1
 STATE OF NORTH CAROLINA
 HIGHWAY DIVISION 2
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED
 ROADWAY DESIGN
 ENGINEER
 SEAL
 043935
 PREPARED BY
KCA
 KISINGER CAMPO
 & ASSOCIATES
 NC FIRM LICENSE No: C-1506
 301 Fayetteville Street,
 Suite 1500
 Raleigh, NC 27601
 (919) 882-7839

REVISIONS

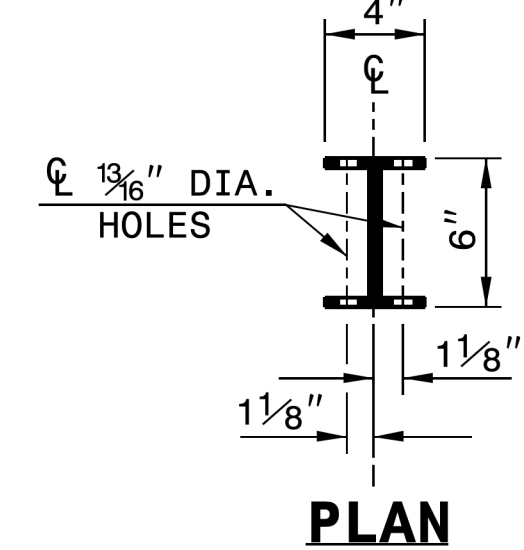
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

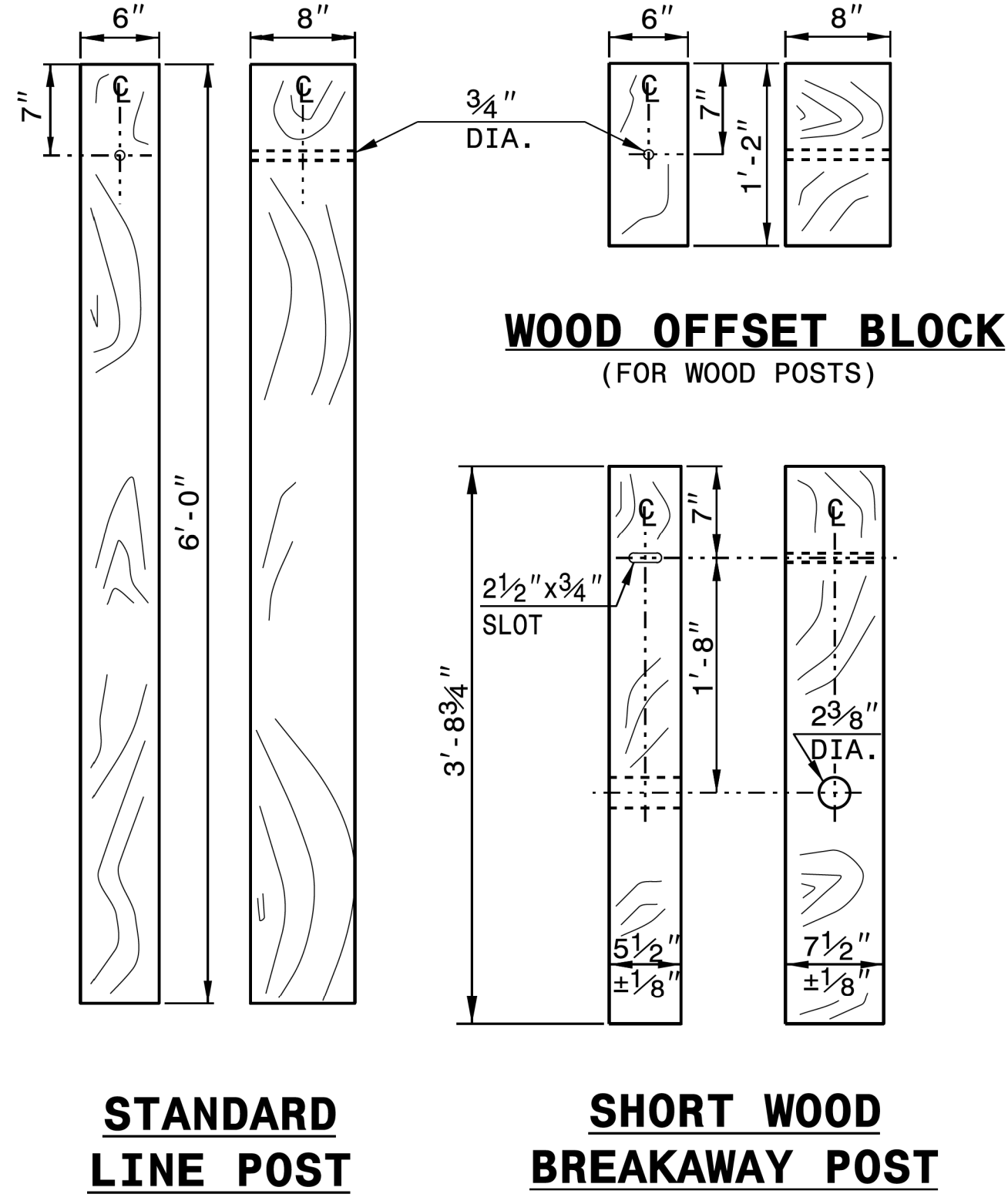
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL

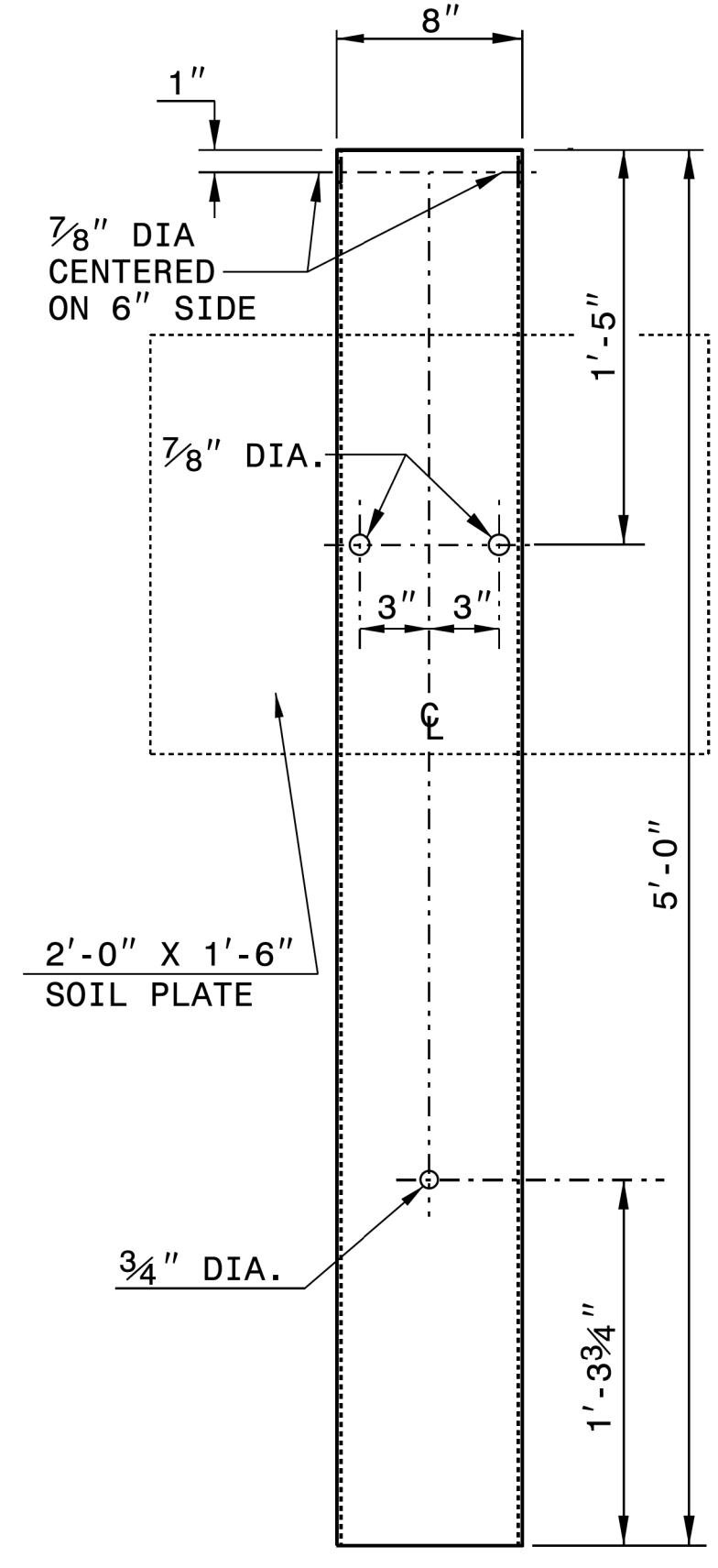


PLAN



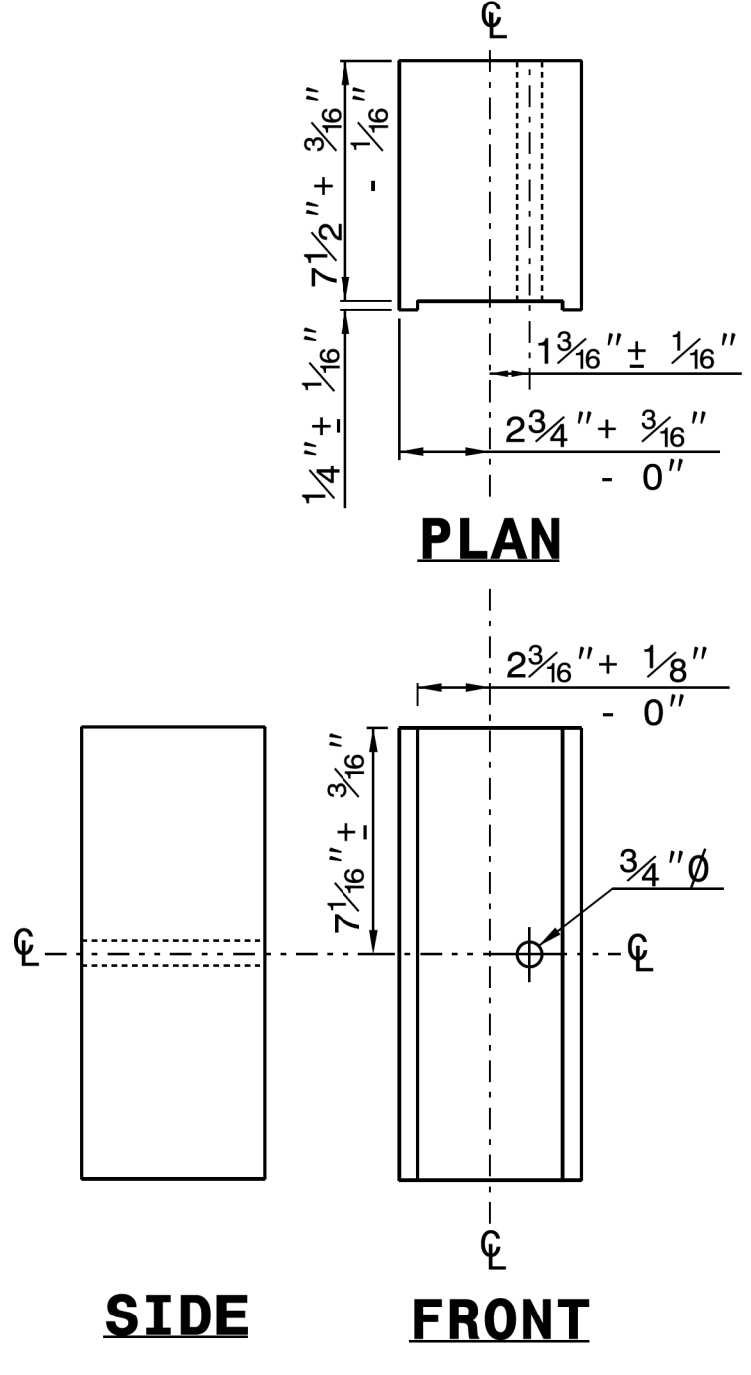
STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"

SYSTEM PARTS

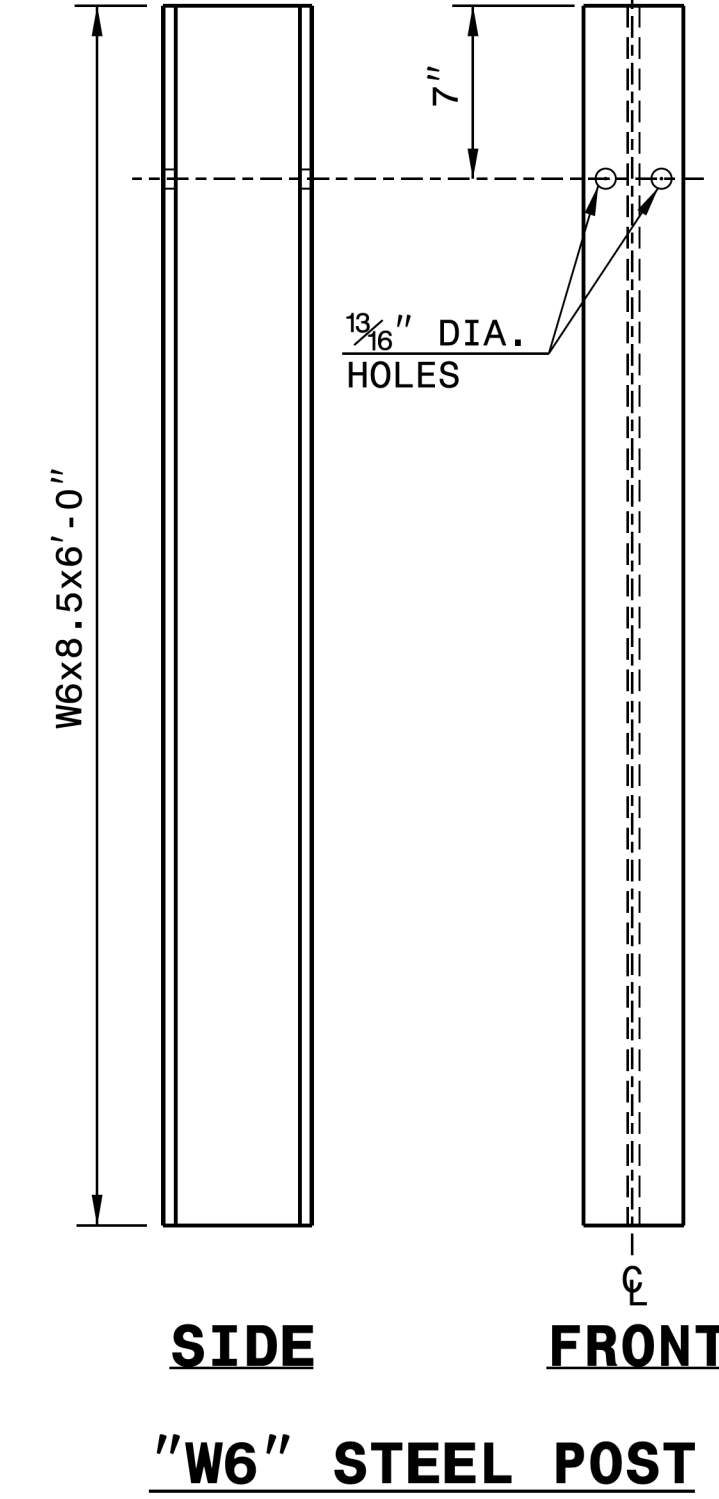


PLAN

SIDE

FRONT

ROUTED OFFSET BLOCK



SIDE

FRONT

"W6" STEEL POST

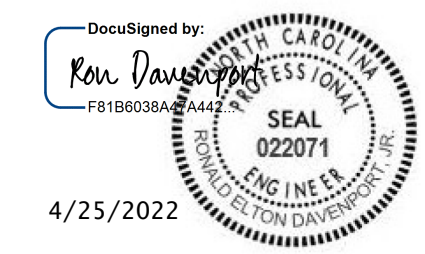
PROJECT REFERENCE NO.	SHEET NO.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

BP2.R018.1
4RD1 2C-1
STATE OF NORTH CAROLINA
HIGHWAY DIVISION 2
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PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919)882-7839



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

SEE TITLE BLOCK

ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

4 DEC 2017 10:36:11 acas AT C:\p22595
jhowertor
Special Details\Howertor\Standard Drawings\Details in Lieu of Standards\Division 8\0662d0301.dgn

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

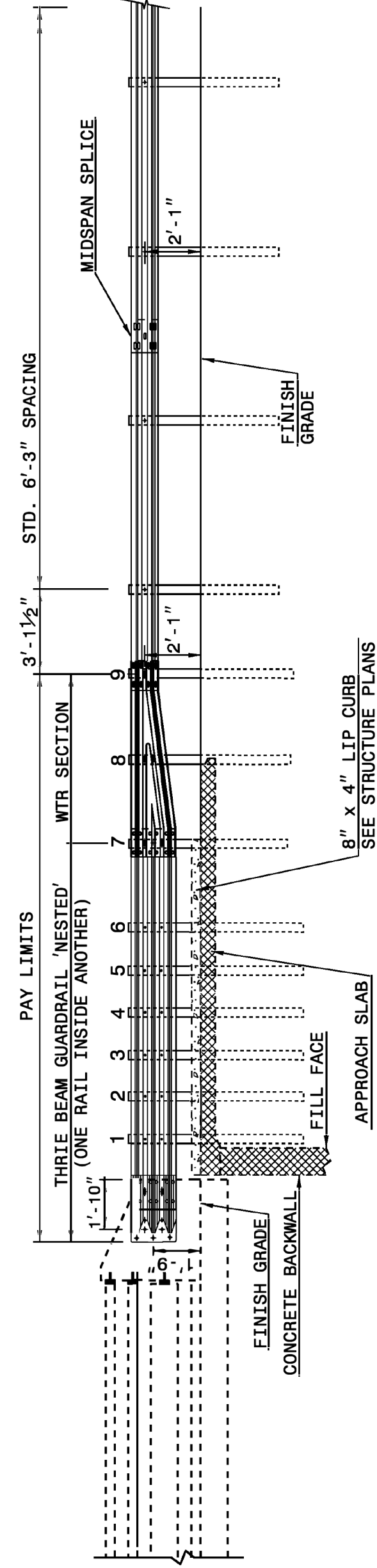
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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

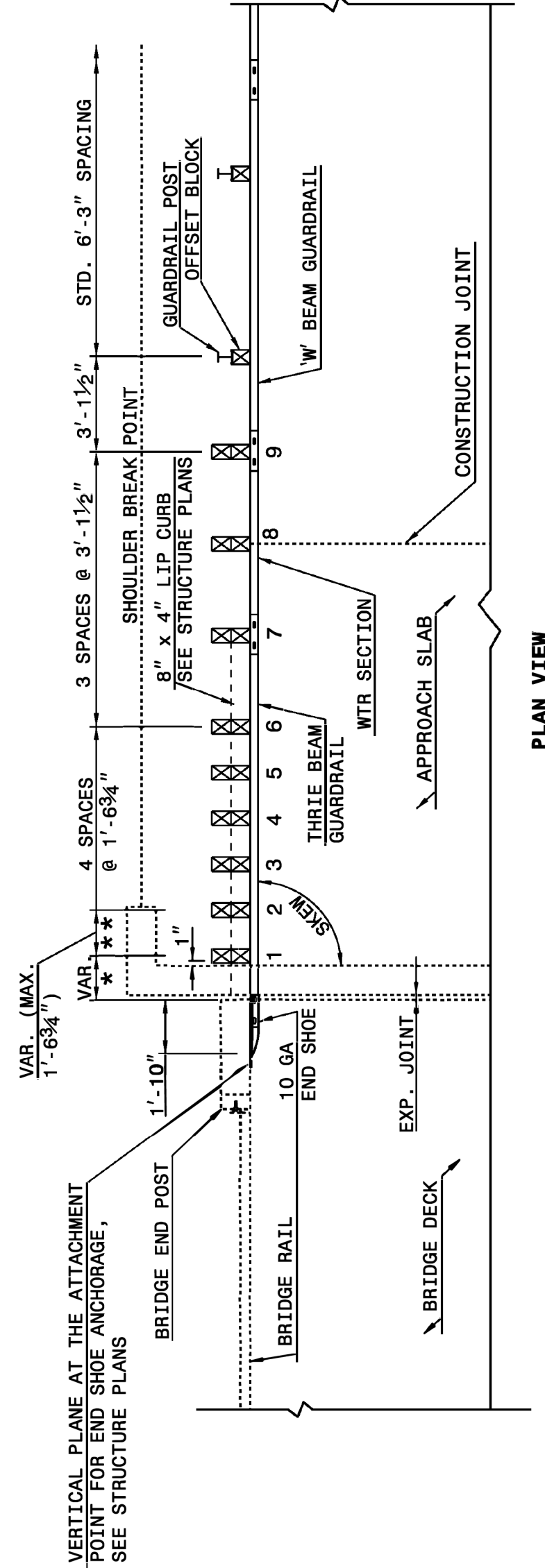
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

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

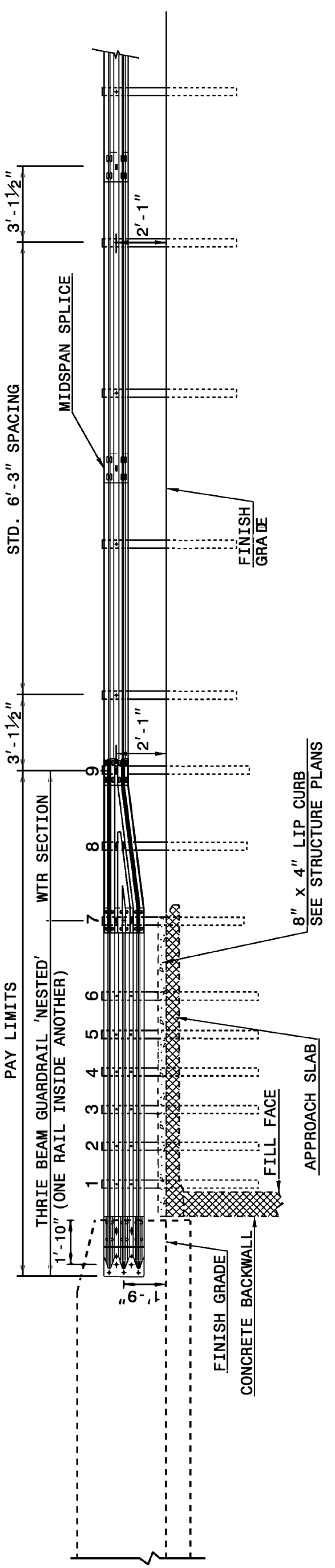
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03

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

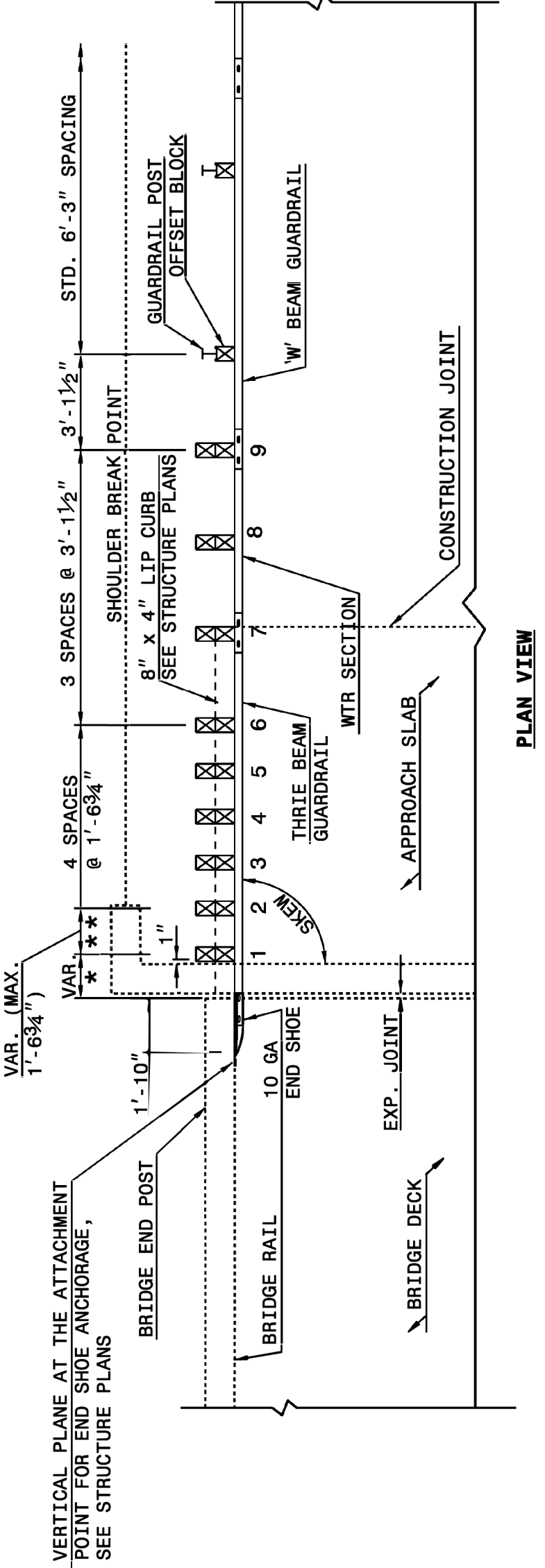
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



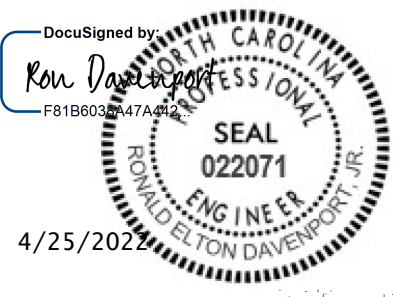
PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



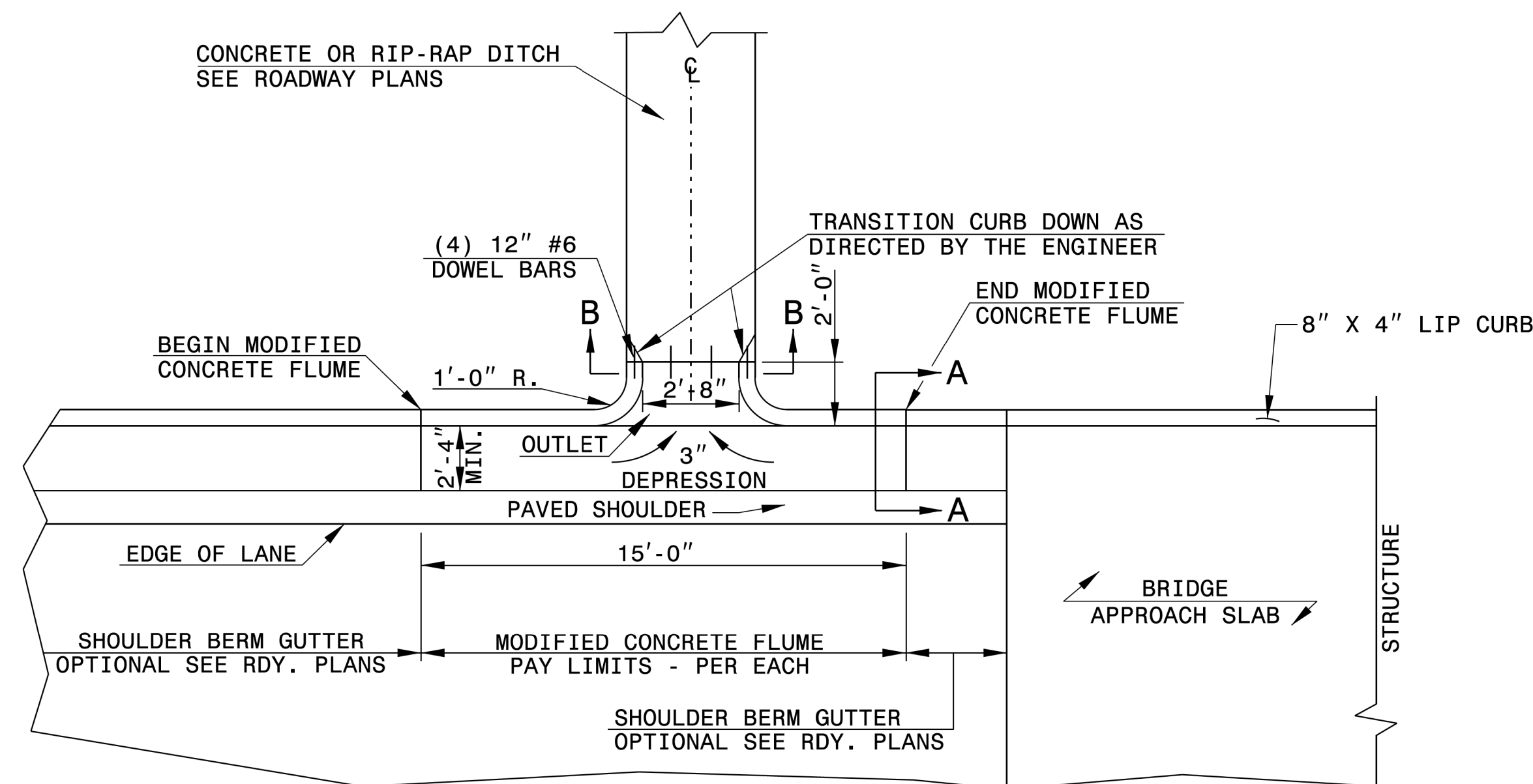
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO. SHEET NO.

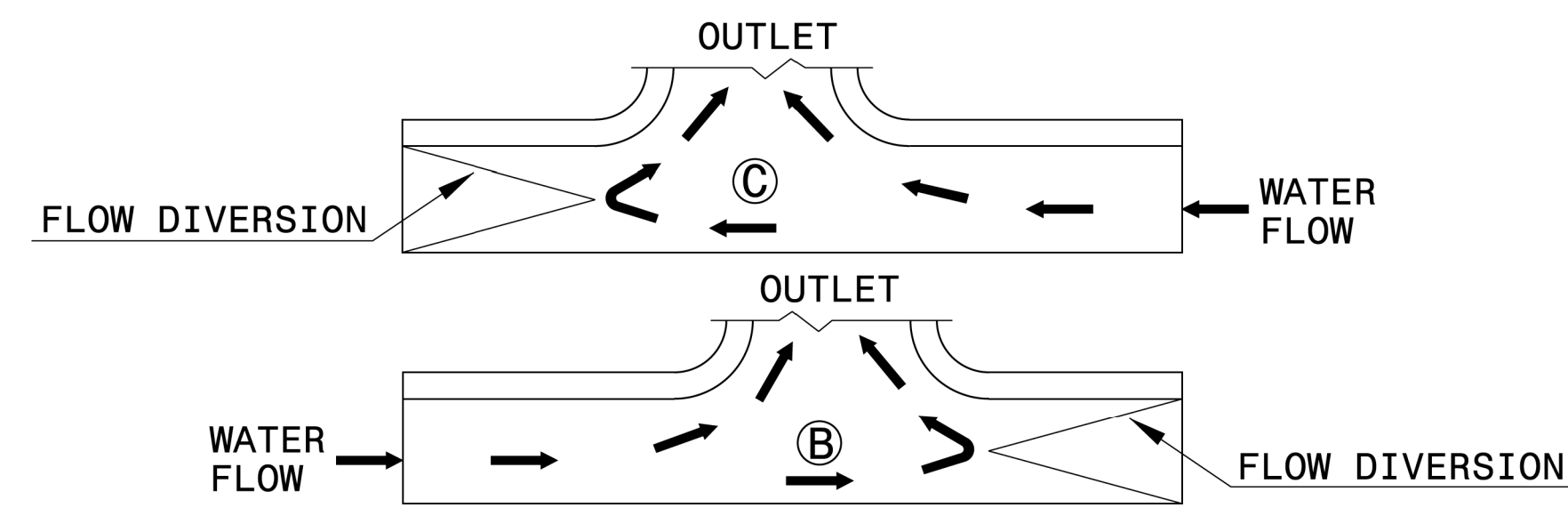
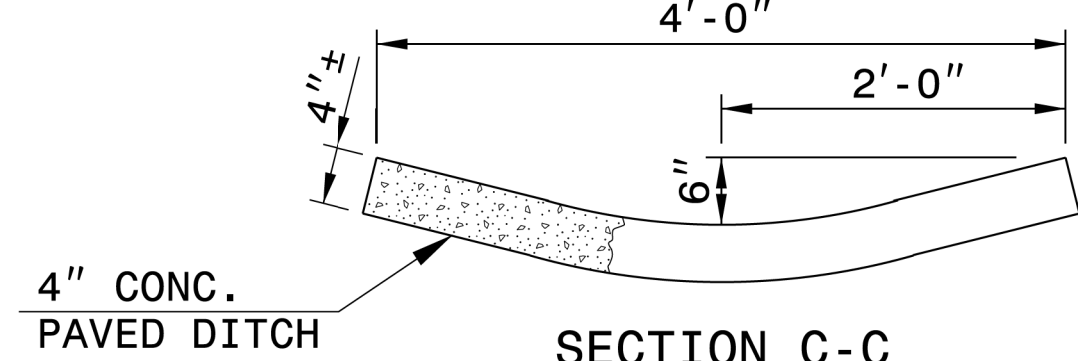
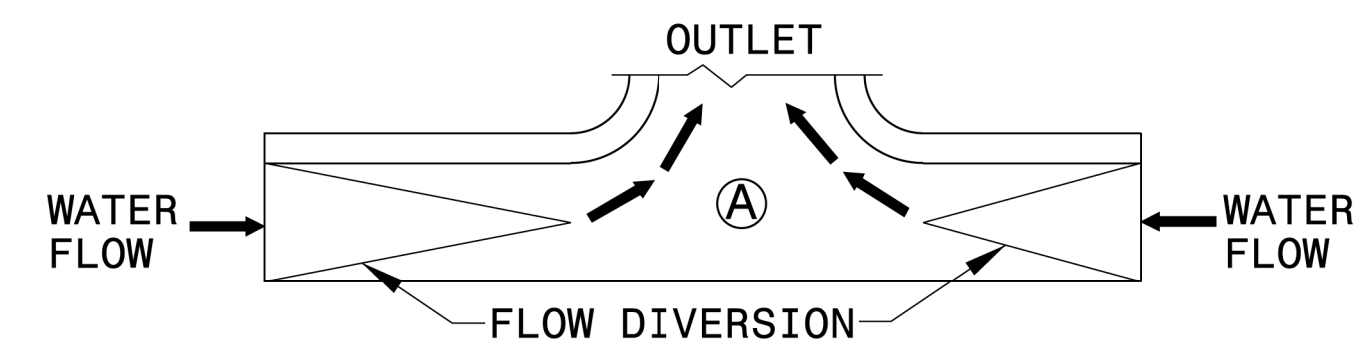
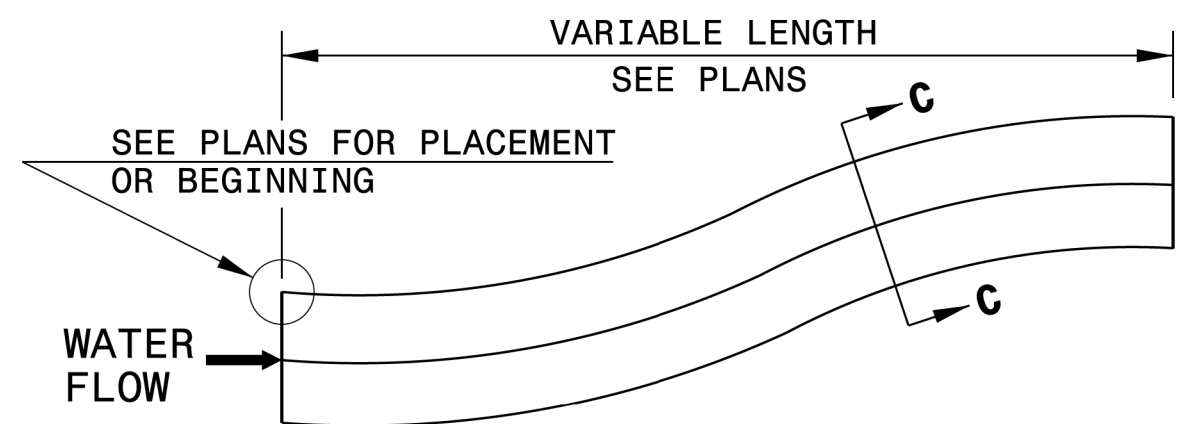
BP2.R018.1
4RD1 2C-2
STATE OF NORTH CAROLINA
HIGHWAY DIVISION 2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)882-7839

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

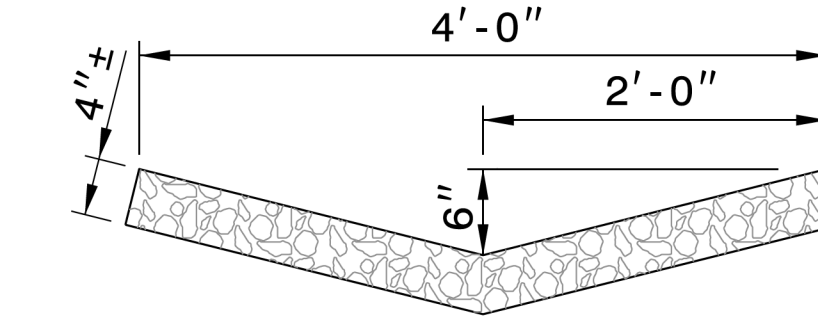
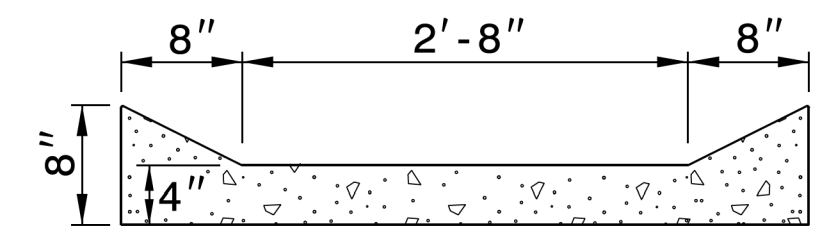
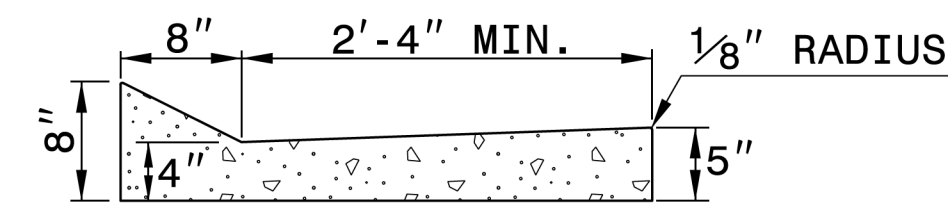
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH



PLAN VIEW



FLOW DIVERSION EXAMPLES



NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

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

SEE PLATE FOR TITLE

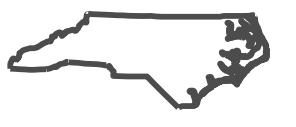
ORIGINAL BY: E.E. Ward DATE: Apr. 2002
MODIFIED BY: E.E. Ward DATE: July 2004
CHECKED BY: DATE:
FILE SPEC.: w:\details\stand\modifiedflume.dgn

BP2.R018.1
4RD1 2C-3
STATE OF NORTH CAROLINA
HIGHWAY DIVISION 2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
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KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street, Suite 1500
Raleigh, NC 27601
(919)862-7839

DESIGNED BY: [Signature]
4/25/20
SEAL
049338
ENGINEER
ERIK P. AADLAND

5/26/20
 COMPUTED BY: JMD DATE: 02/2021
 CHECKED BY: JPM DATE: 02/2021

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

BP2.R018.1
 4RD1 3B-1
 STATE OF NORTH CAROLINA

 HIGHWAY DIVISION 2
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 (919) 882-7839

SUMMARY OF EARTHWORK IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+00.00	-L- 14+56.00	139	445	356	
-L- 15+63.38	-L- 17+86.00	183	330	147	
PROJECT TOTALS:		322	775	503	
Replace Topsoil on Borrow Pit (5%)				25	
GRAND TOTALS:		322	775	528	
SAY:		330		530	

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING CLEARING AND GRUBBING AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

ALL EARTHWORK QUANTITIES WERE DERIVED FROM ORD QUANTITIES BY NAMED BOUNDARY REPORTS AS DESCRIBED IN THE ORD QUICKSTART TRAINING.

PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	11+00.00	14+62.77		806.16			
-L-	15+54.24	17+86.00		515.02			
TOTAL:				1321.18			
SAY:				1330			

SHOULDER BERM GUTTER SUMMARY IN LINEAR FEET

LINE	Station	Station	LENGTH
-L- RT	14+29.00	14+45.00	16
-L- RT	15+75.00	17+34.00	159
TOTAL:			175
SAY:			180

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS							ADDITIONAL GUARDRAIL POSTS	IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS				
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	M-350	TYPE III	CAT-1	VI MOD	BIC	G		NG									
-L-	13+81.00	14+56.00	LT	75			14+56.00	13+81.00	4	7	50		1					1														
-L-	13+81.00	14+56.00	RT	75			13+81.00	14+56.00	4	7		50		1				1														
-L-	15+63.38	16+38.38	LT	75			16+38.38	15+63.38	4	7	50		1					1														
-L-	15+63.38	17+82.13	RT	218.75			15+63.38	16+38.38	4	7		50						1														
SUBTOTAL:				443.75														4		4												
				Less GREU TL-3 @ 50' Each	200																											
				Less Type III @ 18.75' Each	75																											
PROJECT TOTALS:				168.75														4		4												


REVISIONS

COMPUTED BY: Tyler Bottoms DATE: 8/26/21
 CHECKED BY: Jinyoung Park DATE: 10/12/21

(12-17-19)

PROJECT NO. SF-730015 SHEET NO. 3G-1

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

BP2.R018.1
 4RDI 3G-1
 STATE OF NORTH CAROLINA

 HIGHWAY DIVISION 2
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 301 Fayetteville Street, Suite 1500
 Raleigh, NC 27601
 (919) 882-7839

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	700
				TOTAL LF:	700

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
			TOTAL SY/TONS:	0 0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY									
			TOTAL CY/TONS/SY:		0	0**	0**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY	
-L-	2.75:1	13+85 ±	2:1	14+30 ±	RT	1	2	50	
-L-	2:1	15+70 ±	2.75:1	16+78 ±	LT	1	2	130	
-L-	2.75:1	15+81 ±	2.75:1	16+12 ±	RT	1	2	20	
								TOTAL SY:	200

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
						TOTAL SY:	0	0*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY	
						TOTAL SY:	0

SUMMARY OF HORIZONTAL DRAINS

LINE	Approximate Station	Location LT/RT	Elevation Above or Below Grade (+/-) FT	Inclination Angle DEGREES	PVC Pipe Schedule 40/80 or NO PIPE	Horizontal Drain FT	Horizontal Drain W/O Pipe FT
CONTINGENCY							
			TOTAL FT:		0	0	

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
		TOTAL GAUGES (EACH):	

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

REVISIONS

BP2.R018.1

4RDI 4

STATE OF NORTH CAROLINA

HIGHWAY DIVISION 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN ENGINEER

DocuSign
 SEAL 043935
 ENGINEER
 JOHN P. MAZUR
 4/25/2022

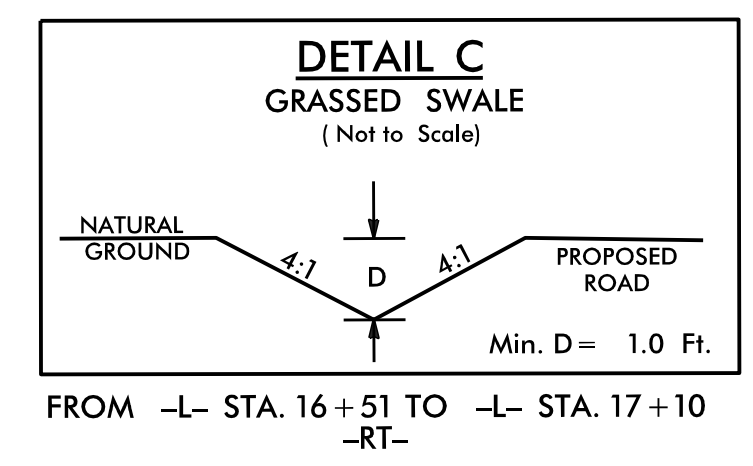
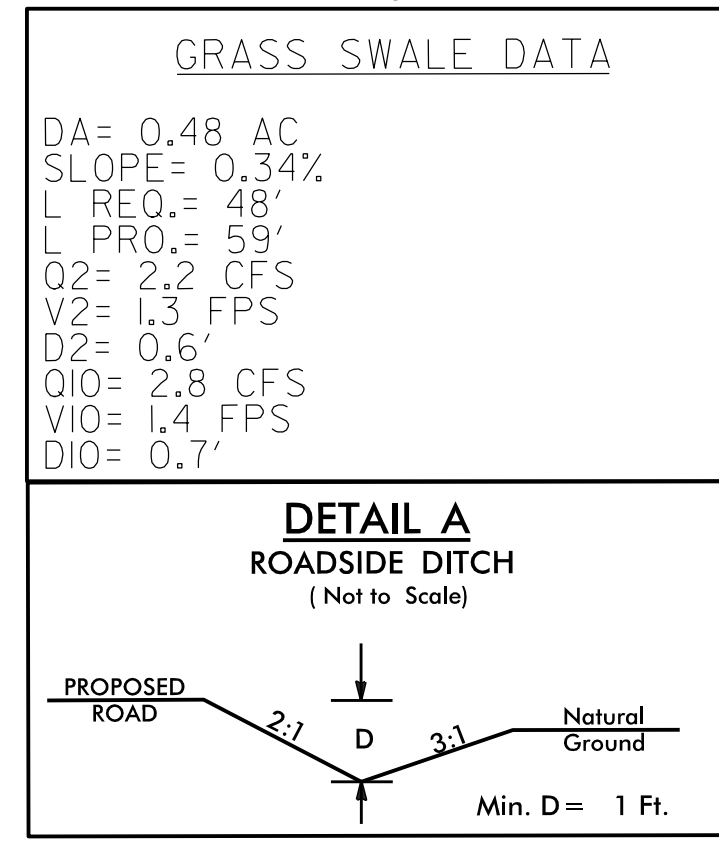
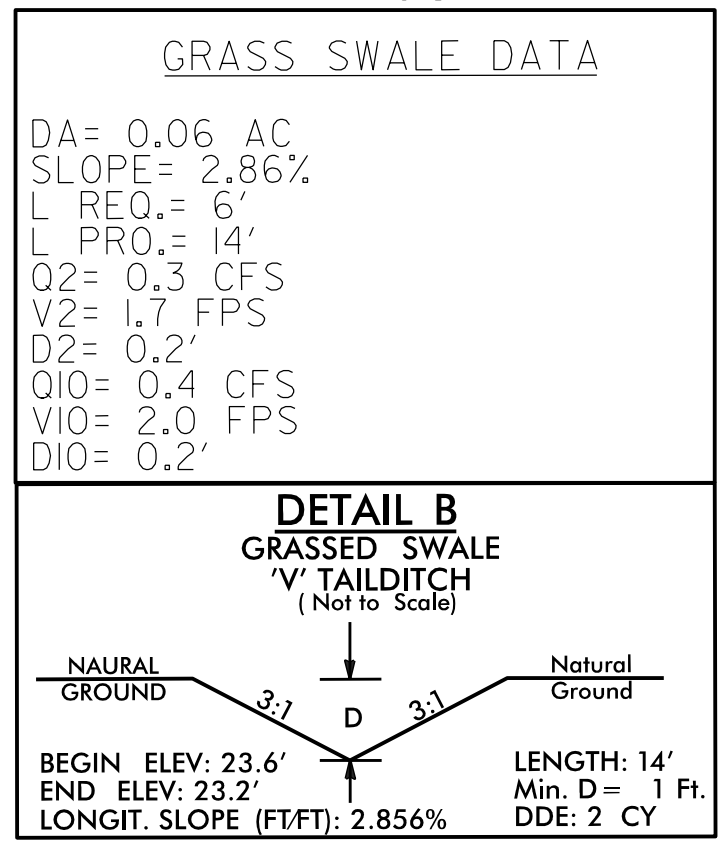
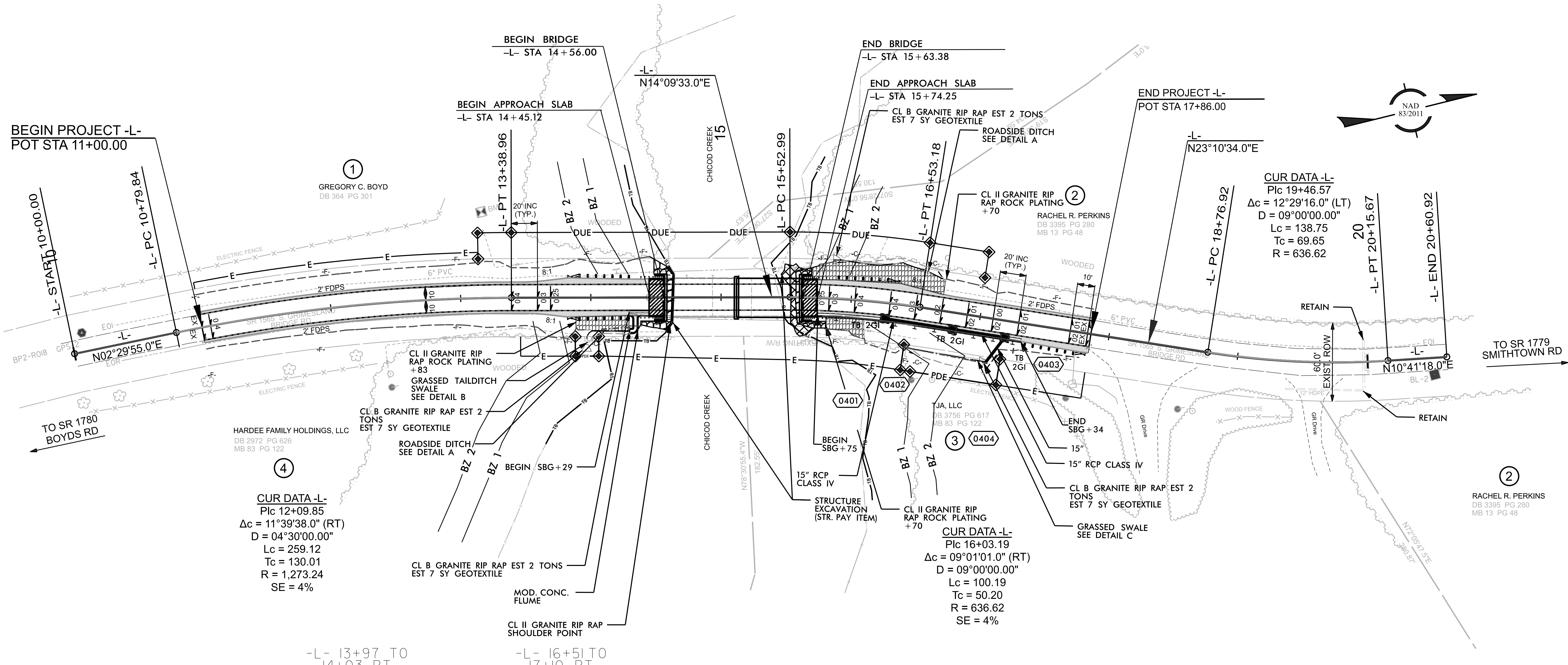
HYDRAULICS ENGINEER

DocuSign
 SEAL 049338
 ENGINEER
 JOHN P. AADLAND
 4/25/2022

PREPARED BY

KCA
 KISINGER CAMPO & ASSOCIATES

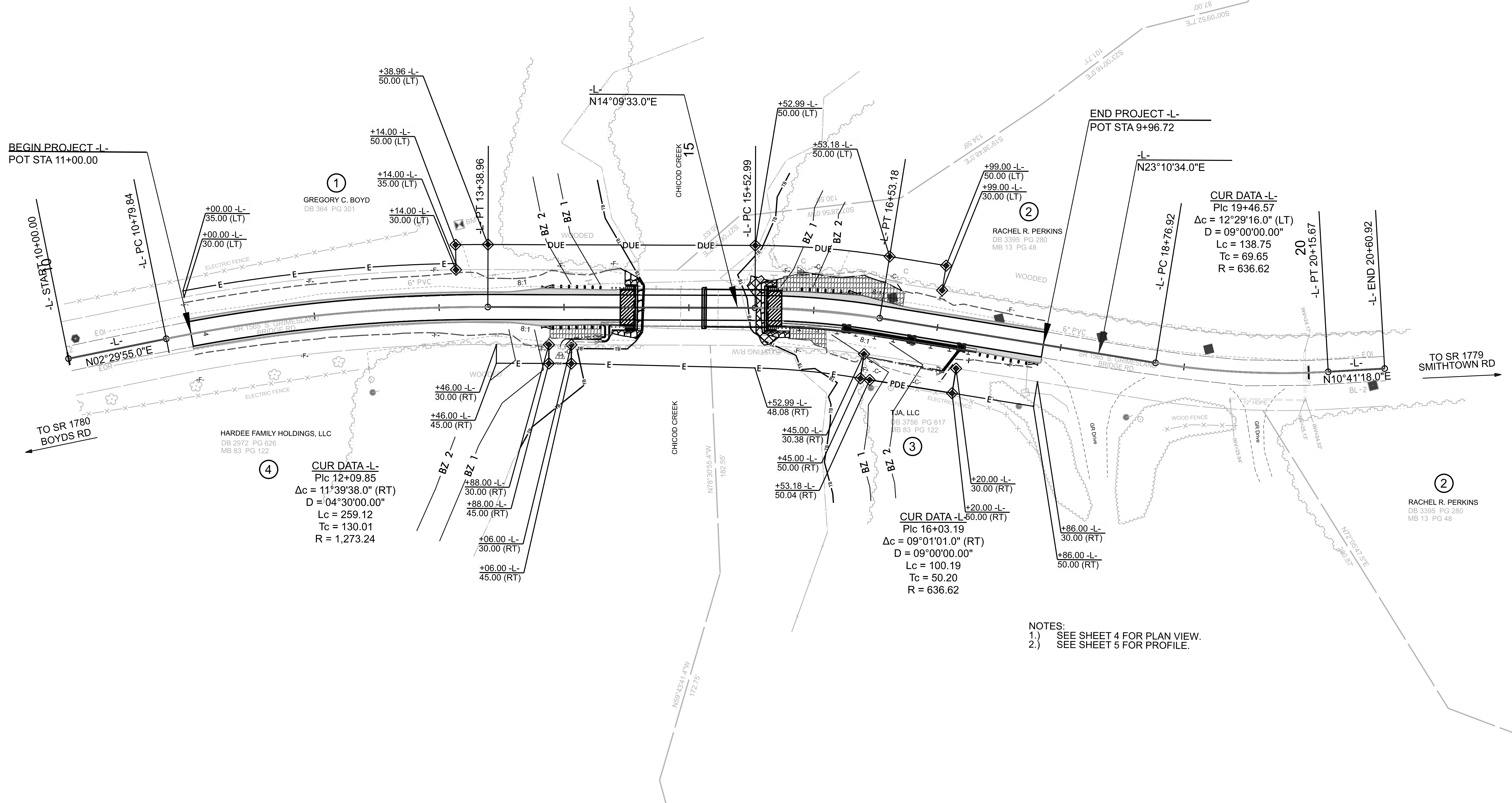
NC FIRM LICENSE No: C-1506
 301 Fayetteville Street, Suite 1500
 Raleigh, NC 27601
 (919) 882-7839



- NOTES:**
- ALL BRIDGE GUARDRAIL ANCHOR UNITS ARE TYPE III.
 - ALL GUARDRAIL ANCHOR UNITS ARE GREU TL-3.
 - EXISTING PAVEMENT LANE WIDTHS AT THE BEGINNING AND END OF PROJECT ARE APPROXIMATELY 10.0 FT WIDE.
 - DESIGN EXCEPTION REQUIRED FOR MINIMUM HORIZONTAL CURVE RADIUS AND HORIZONTAL STOPPING SIGHT DISTANCE.
 - BENCHMARK INFORMATION:
 EASTING: 2538979.9855'
 NORTHING: 653782.9415'
 ELEVATION: 20.5450'
 - SEE SHEET 4A FOR R/W AND EASEMENT STATIONING.
 - SEE SHEET 5 FOR PROFILE.
 - SEE GENERAL NOTES FOR SEALING TIE IN JOINTS AT BEGIN/END PROJECT.
- HYDRAULICS NOTE:**
- PERMISSION WAS GIVEN BY NCDEQ WASHINGTON REGIONAL OFFICE - DOT COORDINATOR TO USE SOUTHEAST QUADRANT JS LINE AS TOP OF BANK

PARCEL ROW INDEX TABLE								
PARCEL No.	SHEET No.	PROPERTY OWNER NAME	TCE AREA (SF)	TCE AREA (AC)	DUE AREA (SF)	DUE AREA (AC)	PDE AREA (SF)	PDE AREA (AC)
1	4	GREGORY C. BOYD	1097	0.025	3,776	0.087		
2	4	RACHEL R. PERKINS			4,129	0.095		
3	4	TJA, LLC	3536	0.081			1488	0.034
4	4	HARDEE FAMILY HOLDINGS, LLC	2433	0.056			270	0.006

DETAIL FOR RIGHT OF WAY AND EASEMENT MONUMENT PLACEMENT (DESIGN FOR INFORMATION ONLY)



①
GREGORY C. BOYD
DB 364 PG 301

②
RACHEL R. PERKINS
DB 3395 PG 280
MB 13 PG 48

④
HARDEE FAMILY HOLDINGS, LLC
DB 2972 PG 626
MB 83 PG 122

④
CUR DATA -L-
Plc 12+09.85
 $\Delta c = 11^{\circ}39'38.0''$ (RT)
D = 04°30'00.00"
Lc = 259.12
Tc = 130.01
R = 1,273.24

③
CUR DATA -L-
Plc 16+03.19
 $\Delta c = 09^{\circ}01'01.0''$ (RT)
D = 09°00'00.00"
Lc = 100.19
Tc = 50.20
R = 636.62

CUR DATA -L-
Plc 19+46.57
 $\Delta c = 12^{\circ}29'16.0''$ (LT)
D = 09°00'00.00"
Lc = 138.75
Tc = 69.65
R = 636.62

②
RACHEL R. PERKINS
DB 3395 PG 280
MB 13 PG 48

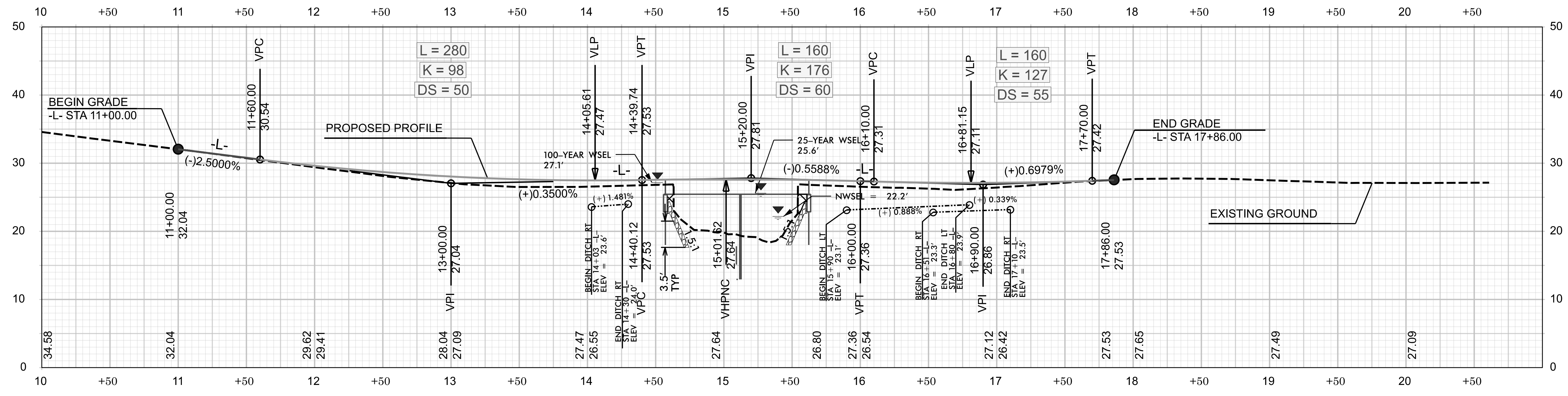
- NOTES:
1.) SEE SHEET 4 FOR PLAN VIEW.
2.) SEE SHEET 5 FOR PROFILE.

BP2.R018.1
4RDI 4A
STATE OF NORTH CAROLINA
HIGHWAY DIVISION 2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ROADWAY DESIGN ENGINEER
SEAL 043935
4/25/2022
HYDRAULICS ENGINEER
SEAL 049338
4/25/2022
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville Street,
Suite 1500
Raleigh, NC 27601
(919) 882-7839

REVISIONS

BP2.R018.1
 4RDI 5
 STATE OF NORTH CAROLINA
 HIGHWAY DIVISION 2
 DOCUMENT NOT CONSIDERED FINAL
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 ENGINEER
 SEAL
 043935
 ENGINEER
 JOHN P. MAZUR
 4/25/2020
 HYDRAULICS
 ENGINEER
 SEAL
 049338
 ENGINEER
 JOHN P. AADLAND
 4/25/2020
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 & ASSOCIATES
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-L- SR 1565 (S. GRIMESLAND BRIDGE RD)



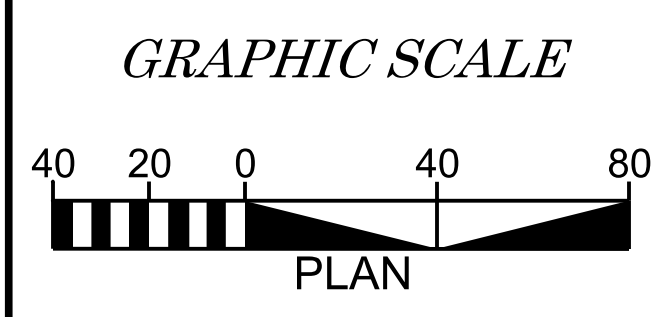
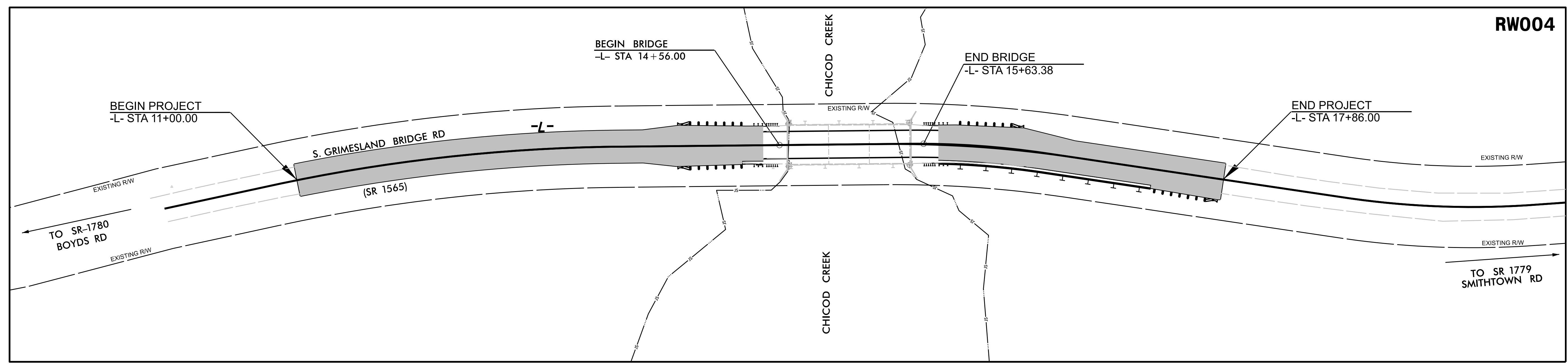
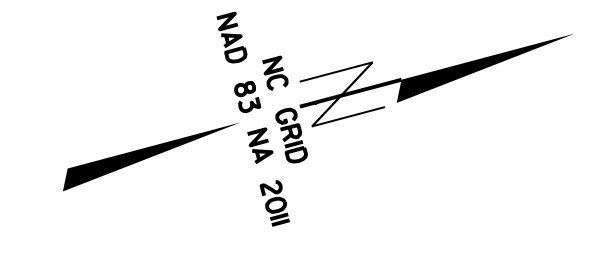
BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1400 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 25.6 FT
BASE DISCHARGE	= 2603 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 27.1 FT
OVERTOPPING DISCHARGE	= 2850 CFS
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING ELEVATION	= 27.3 FT

- NOTES:
 1.) SEE SHEET 4 FOR PLAN VIEW.
 2.) FOR STRUCTURES PLANS, SEE SHEETS S-1 THRU S-21

TIP PROJECT: BP2.R018.1

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R018.1	RW01	

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
 PITT COUNTY



DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS1" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 652738.670(ft) EASTING: 2538951.073(ft) ELEVATION: 37.95(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998882468
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS1" TO -L- STATION 10+00 IS N 04°35'21.6" E 718.13'(ft)
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

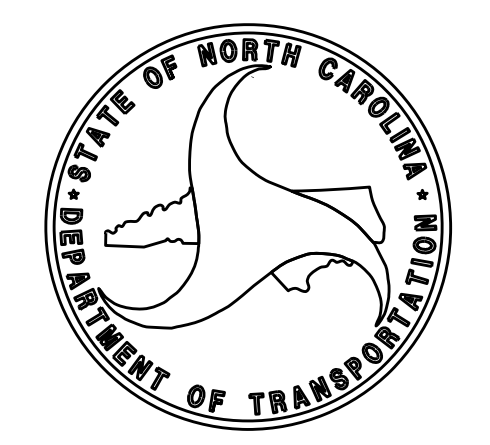
License No. F-1407
 2200 Gateway Centre Blvd Morrisville, NC 27560
 2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 08/03/2021
 LETTING DATE: 05/11/2022

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

PROFESSIONAL LAND SURVEYOR

DATE: 3/25/2022



SIGNATURE: _____ DATE: _____

02/24/2022

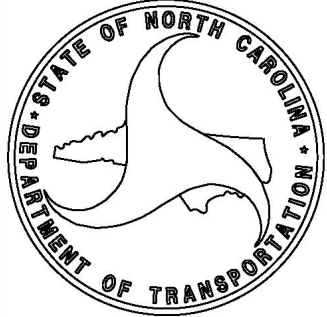
SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENT PRIOR TO CONSTRUCTION

BP2.R018.1

R/W 02C-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



2018 STANDARD
SPECIFICATIONS

TIP PROJECT: BP2.R018.1
COUNTY: PITT

I, Jimmy E. Liverman Jr., PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
Type of GPS field procedure: RTN (VRS)
Dates of survey: November 2020
Datum/Epoch: NAD83 (2011)
Published/Fixed-control use: N/A
Localized around: GPS1
Northing: 652738.670
Easting: 2538951.073
Combined grid factor: 0.9998882468
Geoid model: Geoid12B
Units: US Survey Feet

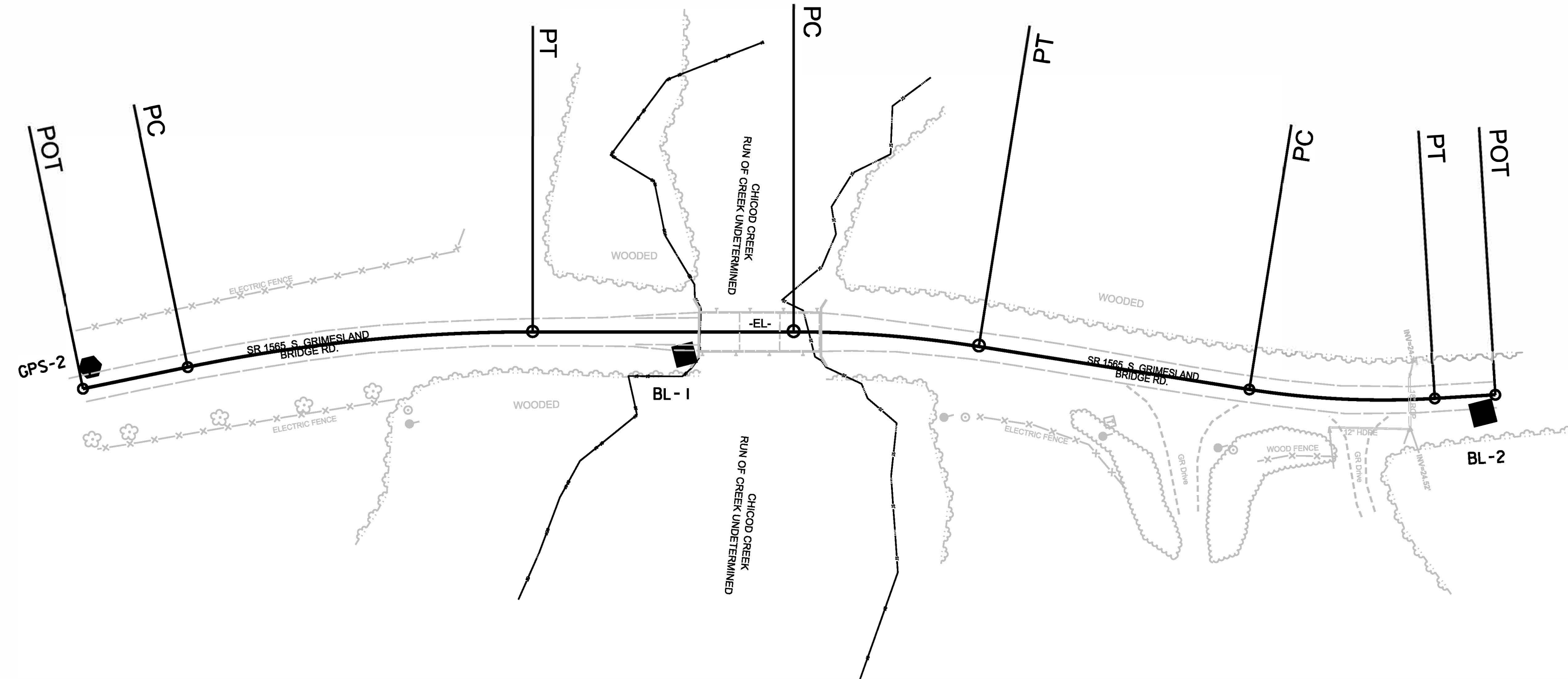
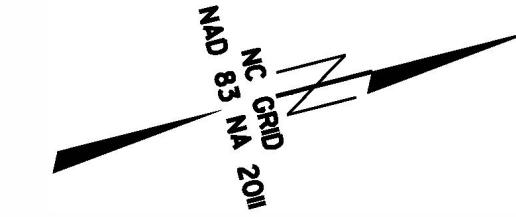
I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed in November 2020, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 28th day of march, 2022.

DocuSigned by:
Jimmy Liverman, Jr.
Professional Land Surveyor L-4866



Jimmy E. Liverman JR.
NCDOT Division 1
Locating Engineer



SEE SHEET RW2C-2
FOR FURTHER
ALIGNMENT DETAILS

NOTES:

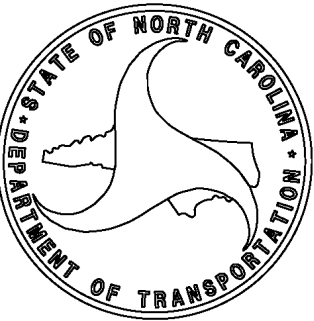
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. PLAN SHEET PREPARED BY ESP ASSOCIATES, INC.
4. NOT TO SCALE

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENT PRIOR TO CONSTRUCTION

BP2.R018.1

R/W | 02C-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION2018 STANDARD
SPECIFICATIONS

TIP PROJECT: BP2.R018.1
COUNTY: PITT

BL POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	653895.0000	2539093.5720	26.03
2	BL-2	654461.8880	2539281.4650	27.09
GPS1	BP2R006-1	652738.6695	2538951.0730	37.95
GPS2	BP2R006-2	653462.7551	2538994.2631	33.49

BM1 ELEVATION = 20.54
N 653782 E 2538979
STA 13+17.04 OFFSET -65.97
BENCHTIE IN 30" OAK

EL

POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
POT	653453.497	2539008.453							
LINE			N02°29'55.0"E	79.84					
PC	653533.263	2539011.933							
CURVE					11°39'38.0" Right	04°30'00.0"	259.12	130.01	1273.24
PT	653789.211	2539049.404							
LINE			N14°09'33.0"E	214.03					
PC	653996.734	2539101.758							
CURVE					09°01'01.0" Right	09°00'00.0"	100.19	50.20	636.62
PT	654091.554	2539133.793							
LINE			N23°10'34.0"E	223.74					
PC	654297.235	2539221.847							
CURVE					12°29'16.0" Left	09°00'00.0"	138.75	69.65	636.62
PT	654429.710	2539262.177							
LINE			N10°41'18.0"E	45.25					
POT	654474.176	2539270.570							

I, Jimmy E. Liverman Jr., PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

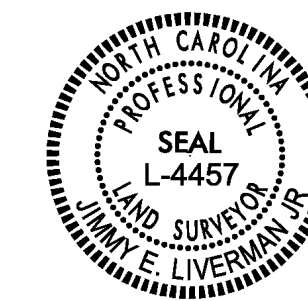
Class of survey: **AA**
Type of GPS field procedure: RTN (VRS)
Dates of survey: November 2020
Datum/Epoch: NAD83 (2011)
Published/Fixed-control use: N/A
Localized around: GPS1
Northing: 652738.670
Easting: 2538951.073
Combined grid factor: 0.9998882468
Geoid model: Geoid12B
Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed in November 2020, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 28th day of March, 2022

DocuSigned by:
Jimmy Liverman, Jr.
C79245921967420

Professional Land Surveyor L-4457



Jimmy E. Liverman Jr.
NCDOT Division 1
Locating Engineer

NOTES:

- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- PLAN SHEET PREPARED BY ESP ASSOCIATES, INC.

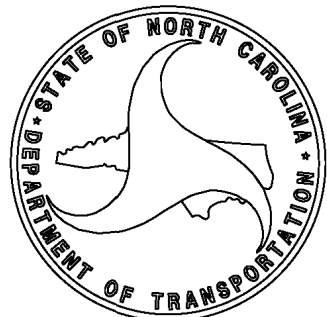
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROPOSED ALIGNMENT CONTROL SHEET

BP2.R018.1

R/W | 020-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



2018 STANDARD
SPECIFICATIONS

TIP PROJECT: BP2.R018.1
COUNTY: PITT

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	653453.4972	2539008.4527
PC	10+79.84	653533.2627	2539011.9334
PT	13+38.96	653789.2108	2539049.4040
PC	15+52.99	653996.7344	2539101.7582
PT	16+53.18	654091.5540	2539133.7932
PC	18+76.92	654297.2348	2539221.8466
PT	20+15.67	654429.7104	2539262.1772
POT	20+60.92	654474.1764	2539270.5697

I, Jimmy E. Liverman Jr., PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 28th day of March, 2022.

DocuSigned by:
Jimmy Liverman, Jr.

Professional Land Surveyor L-4457



Jimmy E. Liverman
NCDOT Division 1
Locating Engineer

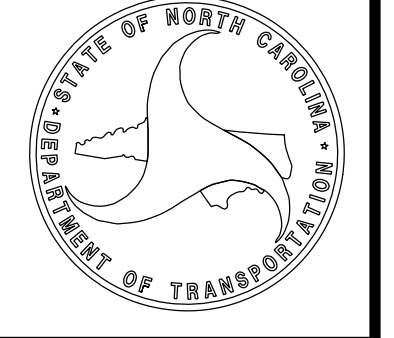
NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. PLAN SHEET PREPARED BY ESP ASSOCIATES, INC.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

RIGHT OF WAY CONTROL SHEET

BP2.R018.1
R/W 03E-1
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



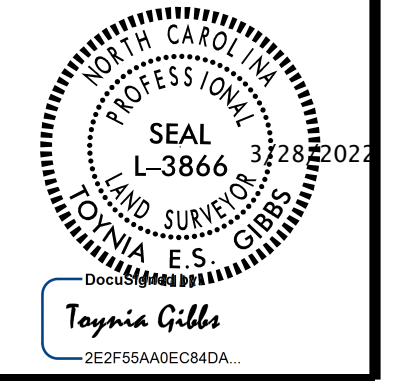
2018 STANDARD SPECIFICATIONS

TIP PROJECT: BP2.R018.1
COUNTY: PITT



2200 Gateway Centre Blvd Morrisville, NC 27560
License No. F-1407

PROFESSIONAL
LAND
SURVEYOR



PERMANENT DRAINAGE EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
13+88.00	45.00	653825.7486	2539105.0317
13+88.00	30.00	653829.4179	2539090.4874
14+06.00	45.00	653843.2018	2539109.4348
14+06.00	30.00	653846.8710	2539094.8905
16+45.00	50.00	654064.9290	2539176.8367
16+45.00	30.38	654072.4178	2539158.7035
16+53.18	50.04	654071.8589	2539179.7981
17+20.00	50.00	654133.3048	2539206.0562
17+20.00	30.00	654141.1760	2539187.6703

OBSTRUCTED BY ASPHALT MATERIAL PILE. SET MAG NAIL.

NOT SET. SUBMERGED UNDER WATER.

DRAINAGE UTILITY EASEMENT MARKER IRON PIN AND CAP: L			
STATION	OFFSET	NORTH	EAST
13+14.00	-30.00	653771.7129	2539014.3080
13+14.00	-50.00	653776.2241	2538994.8234
13+38.96	-50.00	653801.4416	2539000.9230
15+52.99	-50.00	654008.9652	2539053.2772
16+53.18	-50.00	654111.2319	2539087.8282
16+99.00	-50.00	654153.3554	2539105.8616
16+99.00	-30.00	654145.4842	2539124.2475

NOT SET. SUBMERGED UNDER WATER.

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED IN JANUARY 2022.

I, Tonyia Gibbs, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on January 26th, 2022 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This date of 3/28/2022

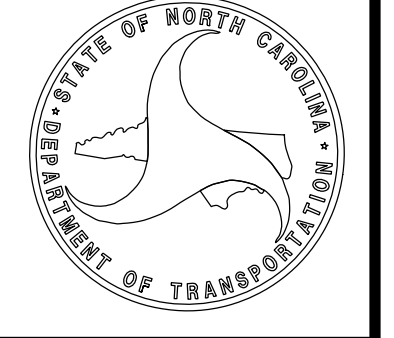
DocuSigned by:
Tonyia Gibbs
2E2F55AA0E0C84DA

Professional Land Surveyor L-3866

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

RIGHT OF WAY CONTROL SHEET

BP2.R018.1
 R/W 03E-1
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION



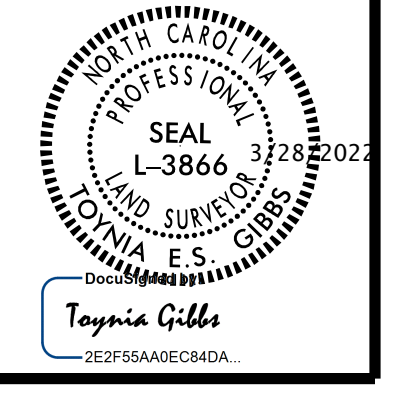
2018 STANDARD SPECIFICATIONS

TIP PROJECT: BP2.R018.1
COUNTY: PITT



2200 Gateway Centre Blvd Morrisville, NC 27560
 License No. F-1407

PROFESSIONAL
 LAND
 SURVEYOR



TONYIA E.S. GIBBS
 L-3866
 3/28/2022

PERMANENT DRAINAGE EASEMENT MARKER IRON PIN AND CAP: L

STATION	OFFSET	NORTH	EAST
13+88.00	45.00	653825.7486	2539105.0317
13+88.00	30.00	653829.4179	2539090.4874
14+06.00	45.00	653843.2018	2539109.4348
14+06.00	30.00	653846.8710	2539094.8905
16+45.00	50.00	654064.9290	2539176.8367
16+45.00	30.38	654072.4178	2539158.7035
16+53.18	50.04	654071.8589	2539179.7981
17+20.00	50.00	654133.3048	2539206.0562
17+20.00	30.00	654141.1760	2539187.6703

OBSTRUCTED BY ASPHALT MATERIAL PILE. SET MAG NAIL.

NOT SET. SUBMERGED UNDER WATER.

DRAINAGE UTILITY EASEMENT MARKER IRON PIN AND CAP: L

STATION	OFFSET	NORTH	EAST
13+14.00	-30.00	653771.7129	2539014.3080
13+14.00	-50.00	653776.2241	2538994.8234
13+38.96	-50.00	653801.4416	2539000.9230
15+52.99	-50.00	654008.9652	2539053.2772
16+53.18	-50.00	654111.2319	2539087.8282
16+99.00	-50.00	654153.3554	2539105.8616
16+99.00	-30.00	654145.4842	2539124.2475

NOT SET. SUBMERGED UNDER WATER.

NOTES:

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2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED IN JANUARY 2022.

I, Tonyia Gibbs, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on January 26th, 2022 and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This date of 3/28/2022

DocuSigned by:
Tonyia Gibbs
 2E2F5AA0E0C84DA

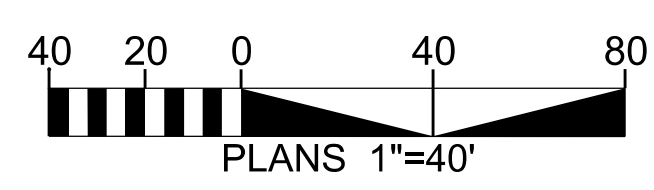
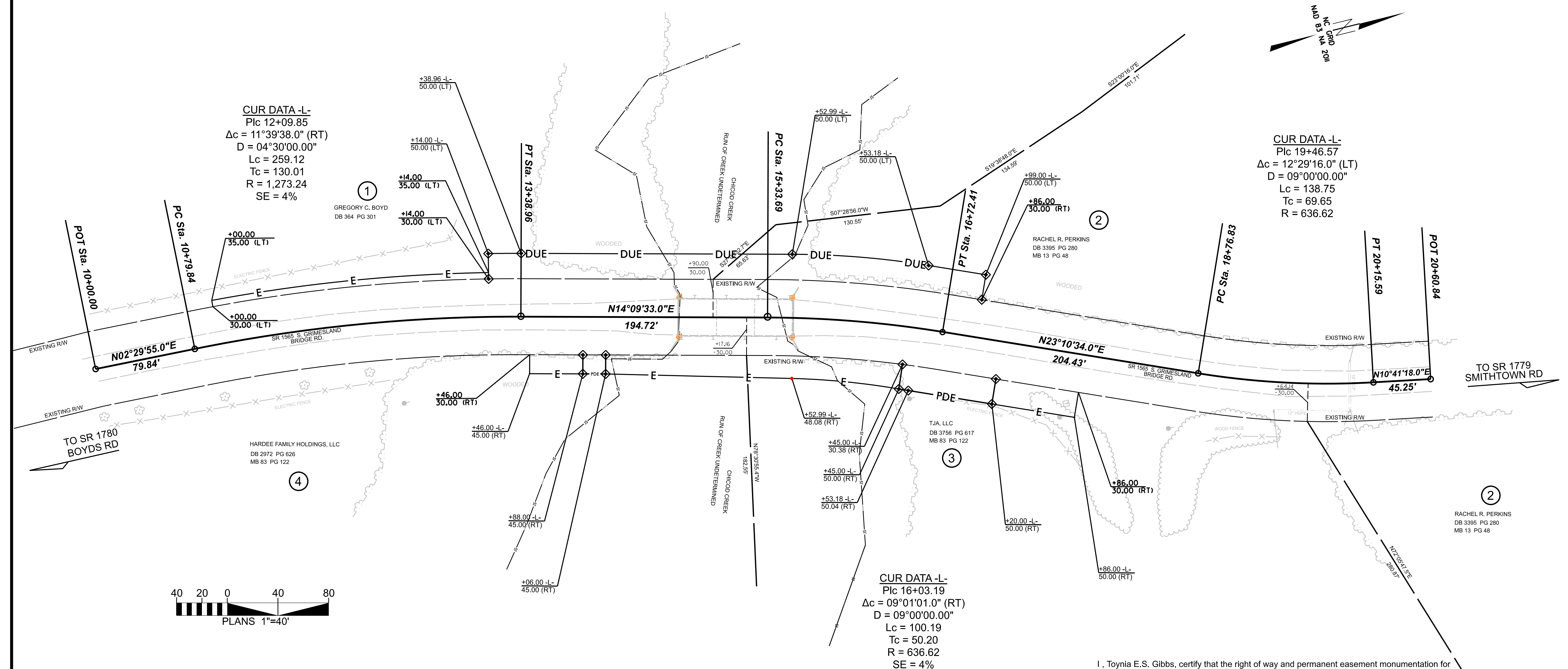
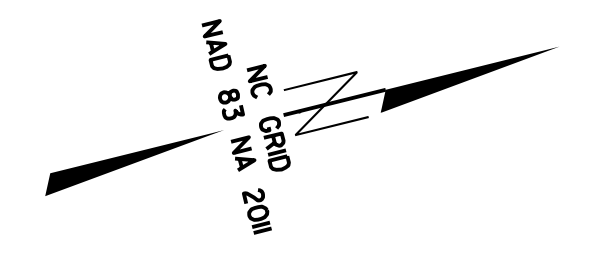
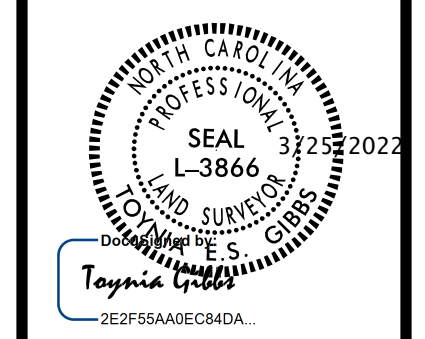
Professional Land Surveyor L-3866

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: BP2.R018.1
COUNTY: PITT



PROFESSIONAL LAND SURVEYOR



NOTES:

- PROJECT CONTROL WAS ESTABLISHED USING THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION LOCATION AND SURVEYS UNIT PROVIDED CONTROL.
- THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- RIGHT OF WAY MONUMENTATION ESTABLISHED IN JANUARY 2022.

I, Toynia E.S. Gibbs, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed from ___ to ___, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

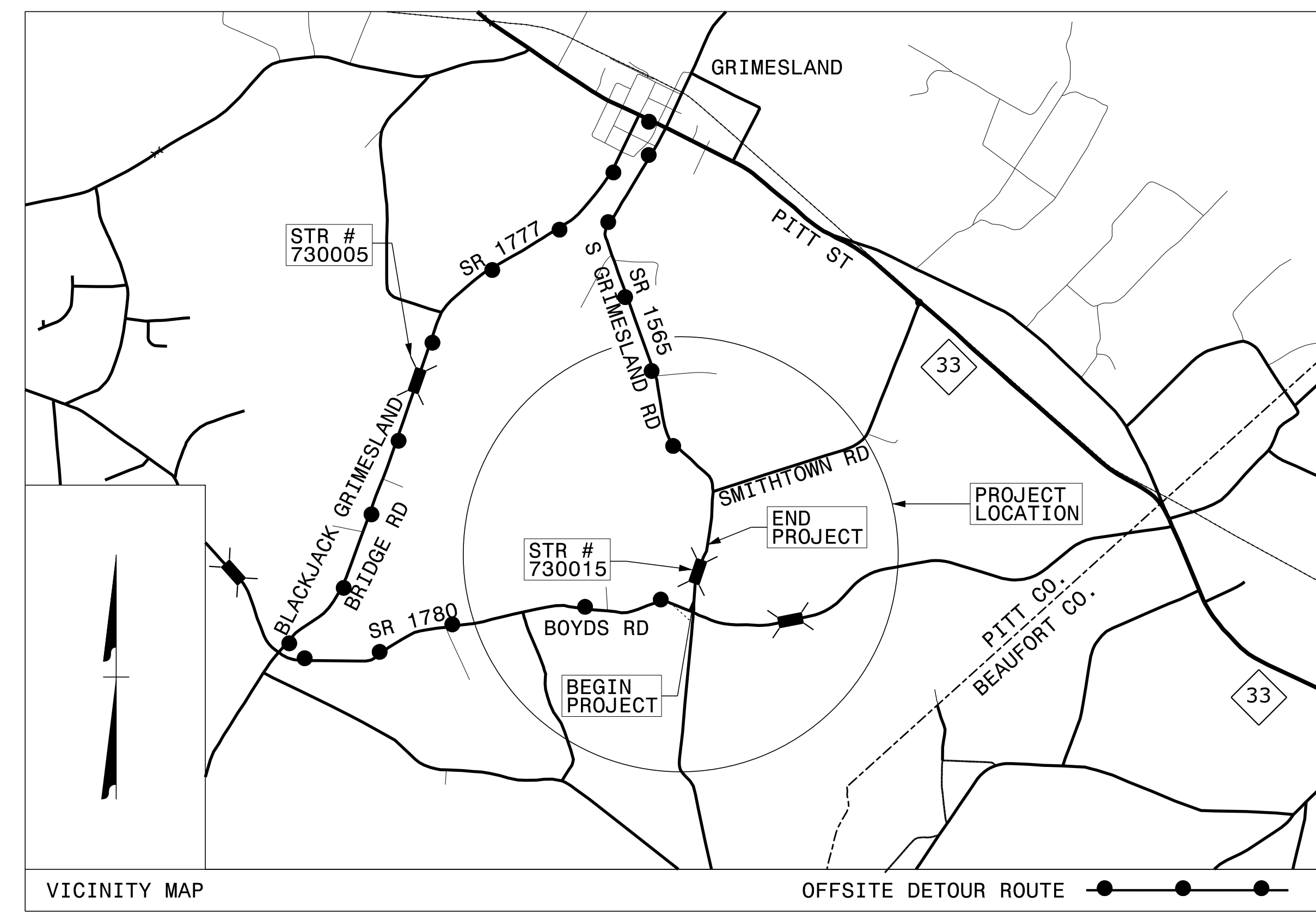
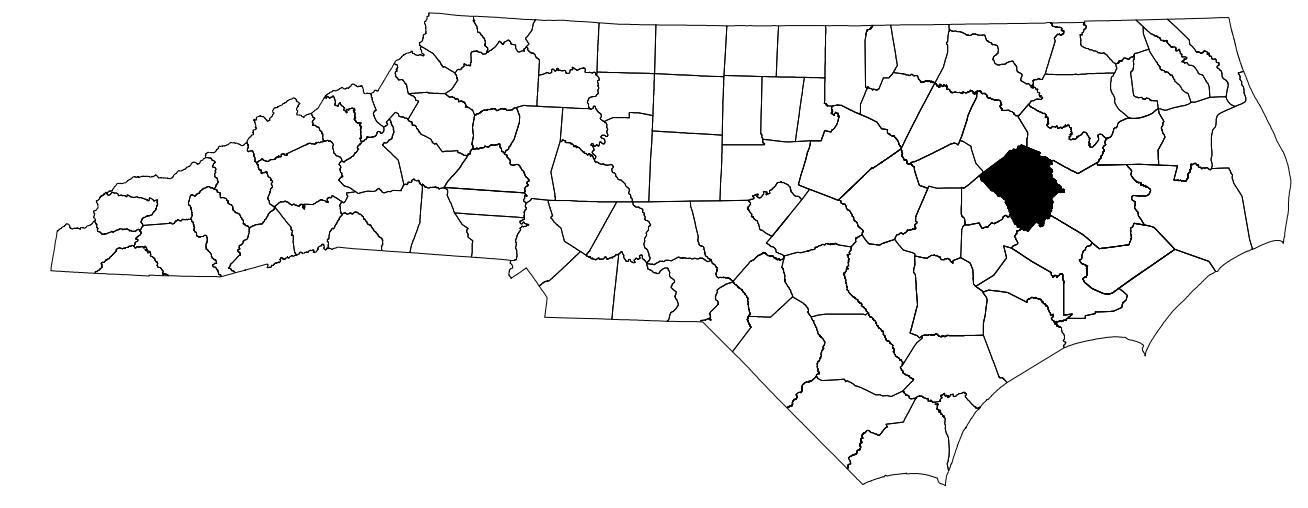
This day of 3/25/2022

DocuSigned by:
Toynia Gibbs
2E2F55A40EC84DA
Professional Land Surveyor L-3866

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

PITT COUNTY



INDEX OF SHEETS

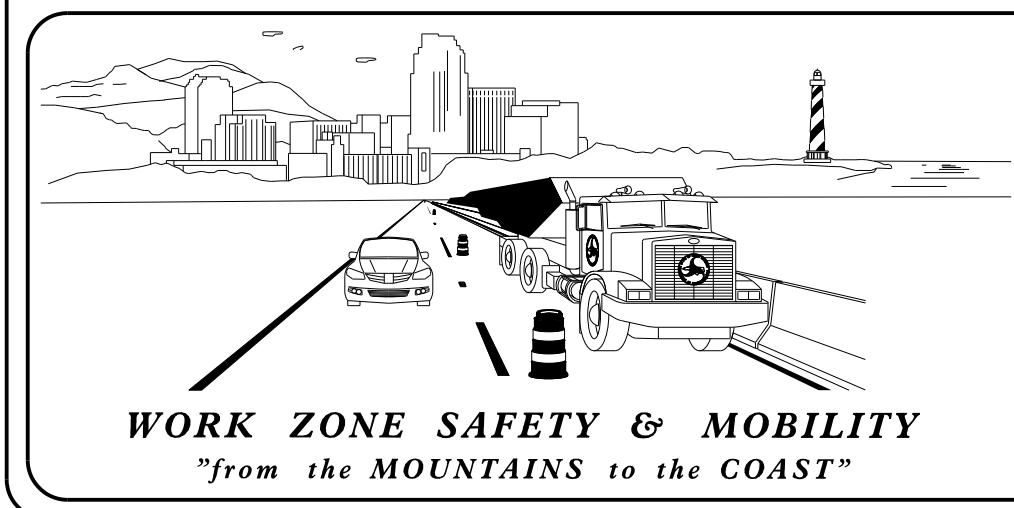
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LEGEND, ROADWAY STANDARD DRAWINGS, GENERAL NOTES, AND PHASING NOTES
TMP-2	OFFSITE DETOUR

SHEET NO.
TMP-1

BP2.R018.1

TIP PROJECT:

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



PLANS PREPARED BY:

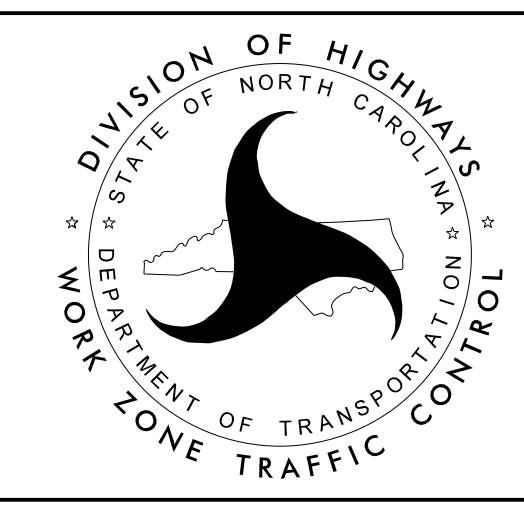
Jacob H. Duke, P.E.
WZC PROJECT ENGINEER

Allen J. McSwain
WZC PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

Kenneth C. Thornewell, P.E.
PROJECT ENGINEER

Spencer B. Jennings
PROJECT DESIGN ENGINEER



KCA
KISINGER CAMPO
& ASSOCIATES

301 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
(919) 882-7839
NC FIRM LICENSE: C-1506

APPROVED: _____

DATE: _____

SEAL

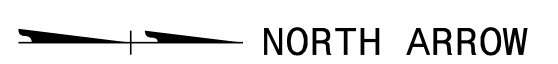
10/28/2021

10/28/2021
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User: jidebone



LEGEND

GENERAL



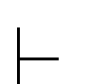
NORTH ARROW

TRAFFIC CONTROL DEVICES



BARRICADE (TYPE III)

TEMPORARY SIGNING



STATIONARY SIGN

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS.

<u>STD. NO.</u>	<u>TITLE</u>
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULT-ILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

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.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

B) 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.

C) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFFSITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

D) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFFSITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

E) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

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

LOCAL NOTES

G) PITT COUNTY EMERGENCY SERVICES SHALL BE NOTIFIED OF PROJECT CONSTRUCTION AT LEAST ONE (1) MONTH PRIOR TO BEGINNING OF CONSTRUCTION. CONTACT PITT COUNTY EMERGENCY SERVICES AT 252-902-3950.

PHASING NOTES

PHASE 1

SEE CONSTRUCTION MORATORIUM.

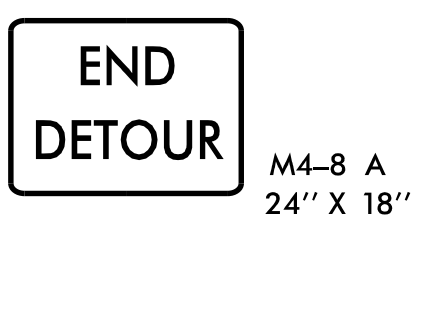
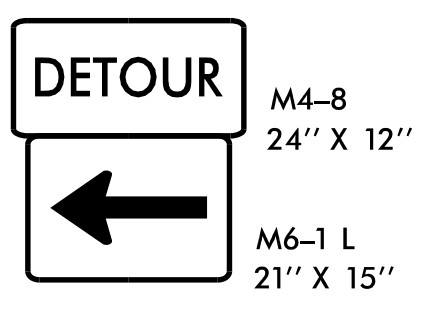
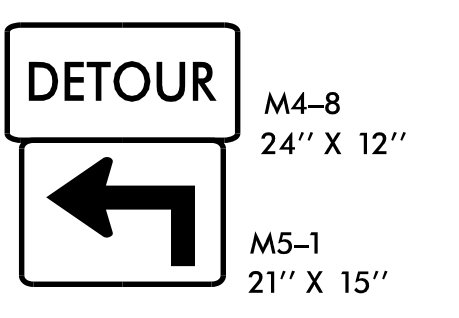
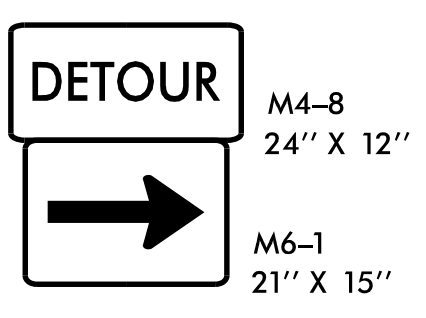
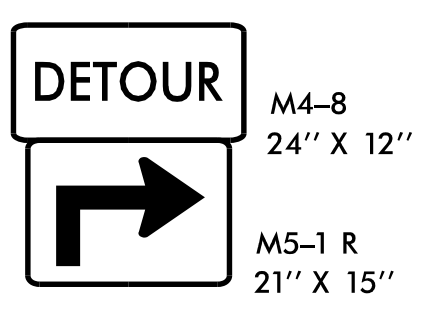
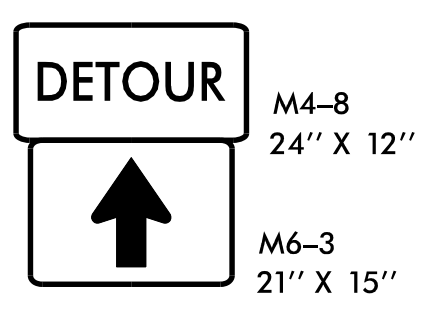
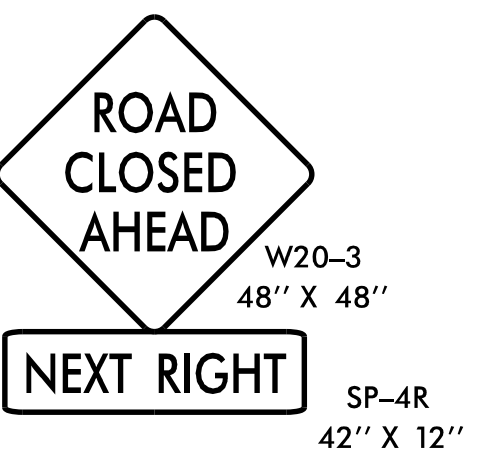
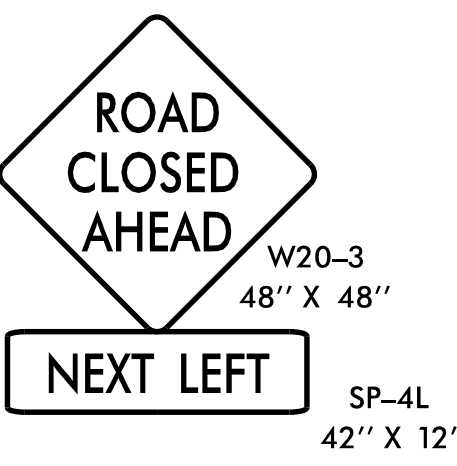
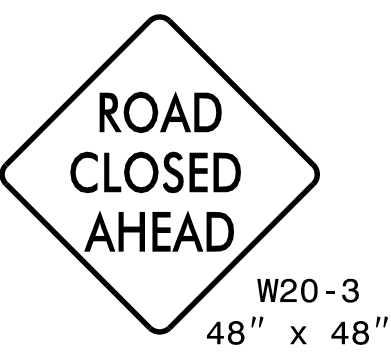
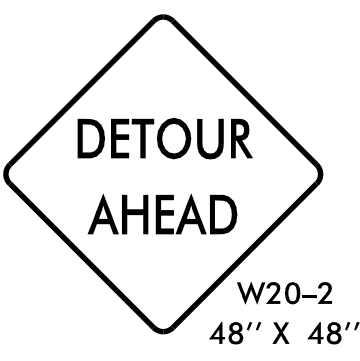
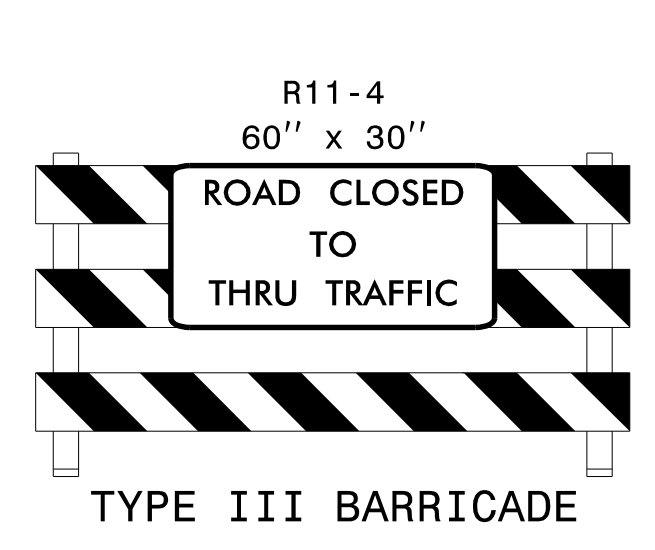
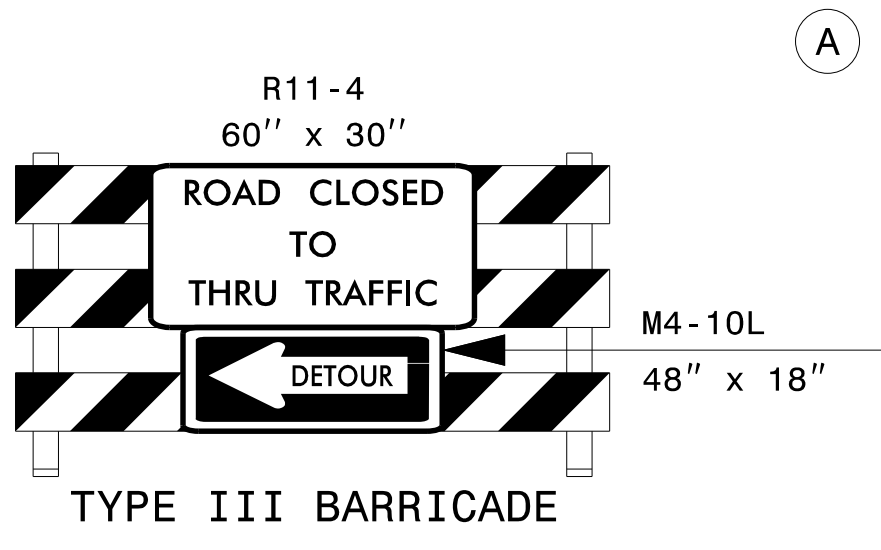
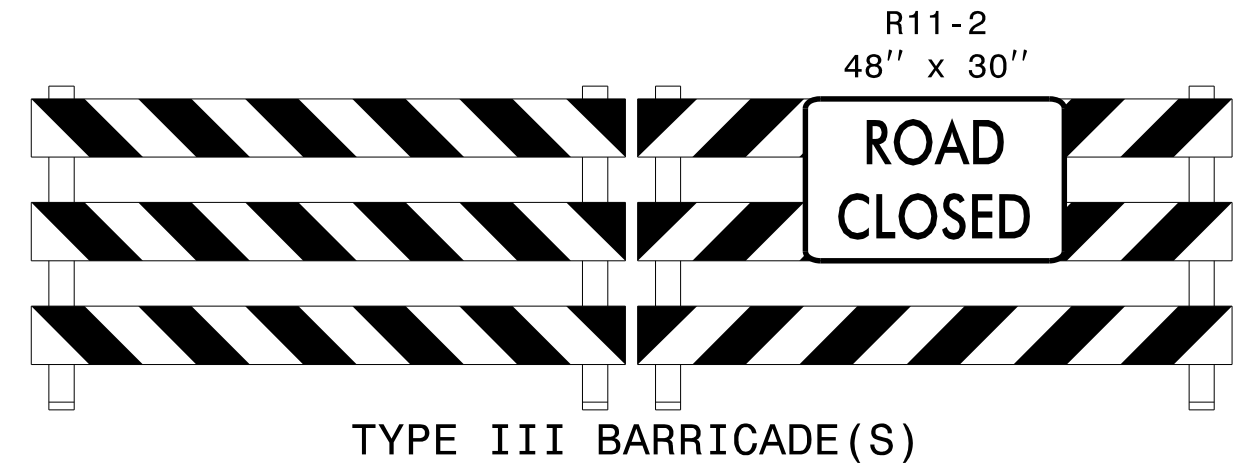
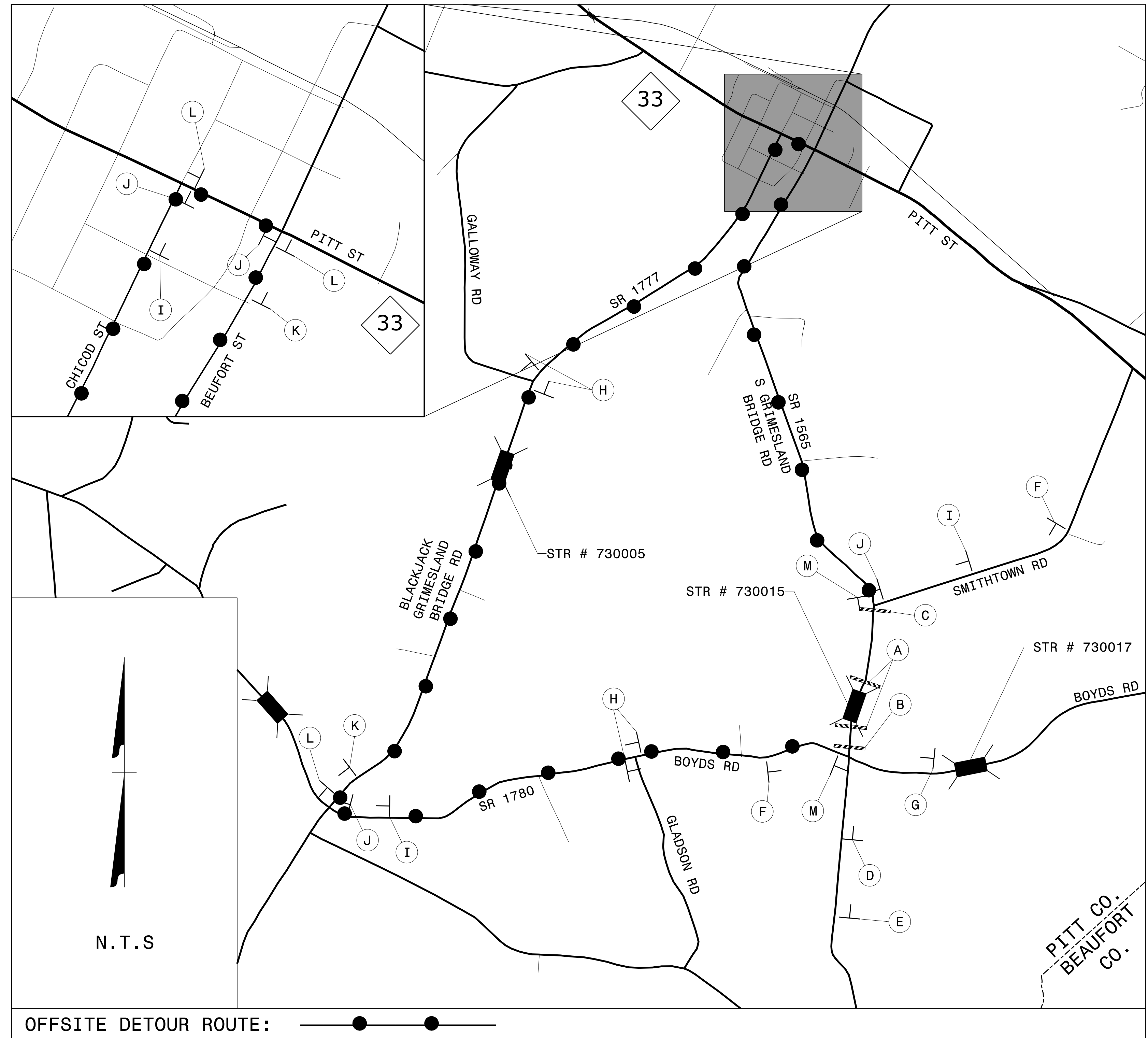
STEP 1: PRIOR TO ANY CONSTRUCTION OPERATIONS, PLACE AND COVER OFFSITE DETOUR SIGNS AND DEVICES FOR S GRIMESLAND BRIDGE RD (SR 1565), BEAUFORT ST (SR 1565), BOYDS RD (SR 1780), BLACKJACK GRIMESLAND BRIDGE RD (SR 1777), CHICOD ST (SR 1777), SMITHTOWN RD, AND PITT ST (NC 33) AS SHOWN ON TMP-2. PLACE ADVANCE WARNING SIGNS PER RSD 1101.01 (SHEET 3 OF 3).

STEP 2: USING THE OFFSITE DETOUR, AS SHOWN ON TMP-2, UNCOVER DETOUR SIGNS, CLOSE -L- (S GRIMESLAND RD/SR 1565) TO TRAFFIC AND CONSTRUCT PROPOSED BRIDGE AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE PER ROADWAY AND STRUCTURE PLANS.

STEP 3: UPON COMPLETION OF BRIDGE AND ROADWAY CONSTRUCTION, PLACE FINAL PAVEMENT MARKINGS AND MARKERS PER PAVEMENT MARKING PLANS. REMOVE ALL SIGNS AND DEVICES AND OPEN -L- (S GRIMESLAND RD/SR 1565) TO TRAFFIC.

12/2/2021 12:14:00 PM User: jideboine C:\Users\jideboine\Documents\NCDOT\BP2\BP2.R018\1\Work Zone Traffic Control\BP2.R018.LTC_3.TML_01A.dgn

APPROVED: _____ DATE: _____ 		LEGEND, ROADWAY STANDARD DRAWINGS, GENERAL NOTES, AND PHASING NOTES
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



DETOUR DESCRIPTION:

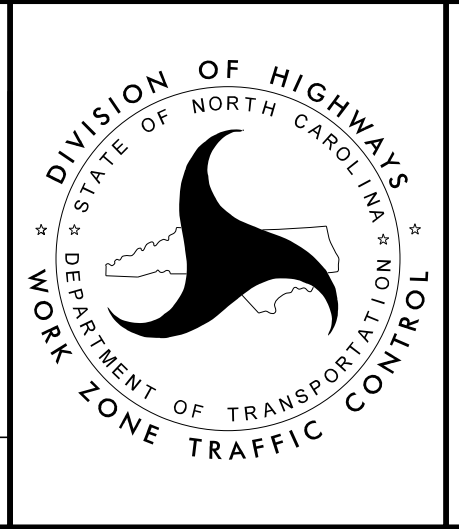
S GRIMESLAND BRIDGE ROAD (SR 1565) TO BOYDS ROAD (SR 1780) TO BLACKJACK GRIMESLAND BRIDGE ROAD (SR 1777) TO CHICOD STREET (SR 1777) TO PITT STREET (NC 33) TO BEAUFORT STREET (SR 1565).

NOTES:

1. TRAFFIC CONTROL DEVICES (A) THRU (M) SHALL BE INSTALLED PER ENGINEER'S INSTRUCTIONS.
2. ALL SIGNAGE IS SPACED AT 500 FOOT INTERVALS UNLESS OTHERWISE NOTED.
3. USE THIS SHEET IN CONJUNCTION WITH RSD 1101.01 SHEET 3 OF 3.

APPROVED: _____
 DATE: _____

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



OFFSITE DETOUR

10/28/2021 C:\NCDOT\en\worksets\WCDOT\BP2-R018\Work Zone Traffic Control\BP2-R018.L1.TC_3TMI_02.dgn User: jfabbone

T.I.P.: BP2.R018.1

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
PITT COUNTY**

TIP NO. BP2.R018.1	SHEET NO. PMP-1
APPROVED: _____	
DATE: _____	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

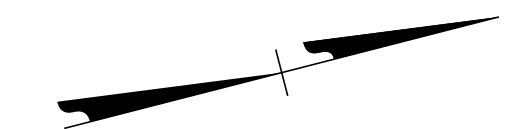
STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

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.

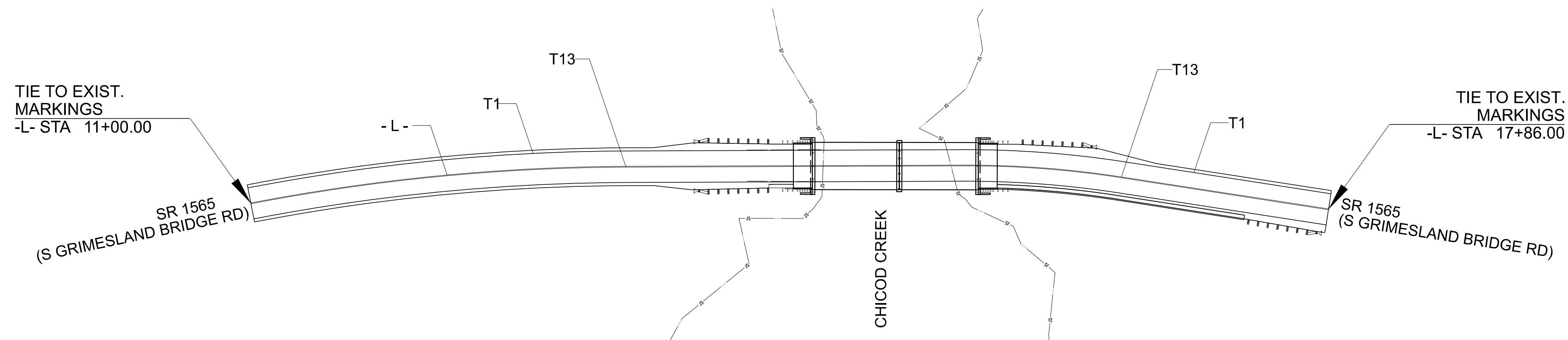
- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1565 (S GRIMESLAND BRIDGE RD)	THERMOPLASTIC	RAISED
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
- E) REMOVE ALL RESIDUE AND SURFACE LAITANCE BY ACCEPTABLE METHODS ON CONCRETE BRIDGE DECKS PRIOR TO PLACING (insert marking material) PAVEMENT MARKING MATERIAL.
- F) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.
- G) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF COLD APPLIED PLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS ON ASPHALT OR CONCRETE ROADWAYS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE COLD APPLIED PAY ITEM.



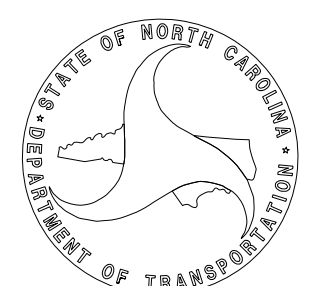
PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
THERMOPLASTIC		
T1	WHITE EDGELINE (4", 90 MIL)	1372 LF
T13	YELLOW DOUBLE CENTER (4", 90 MIL)	1372 LF



PLAN SUBMITTED TO:

AYMAN I. ALQUDWAH, P.E. - SIGNING AND DELINEATION REGIONAL ENGINEER



PLAN PREPARED BY: KISINGER CAMPO & ASSOCIATES

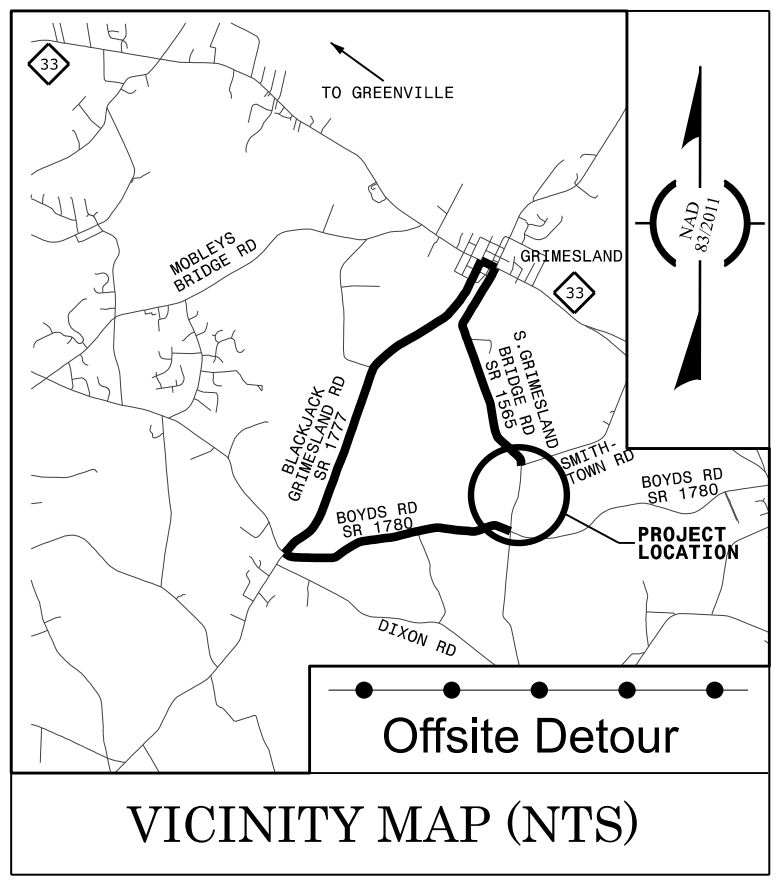
JACOB H. DUKE, PE PROJECT ENGINEER

ALLEN J. MCSWAIN PROJECT DESIGNER



NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

TIP PROJECT: BP2.R018.1



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL**
PITT COUNTY

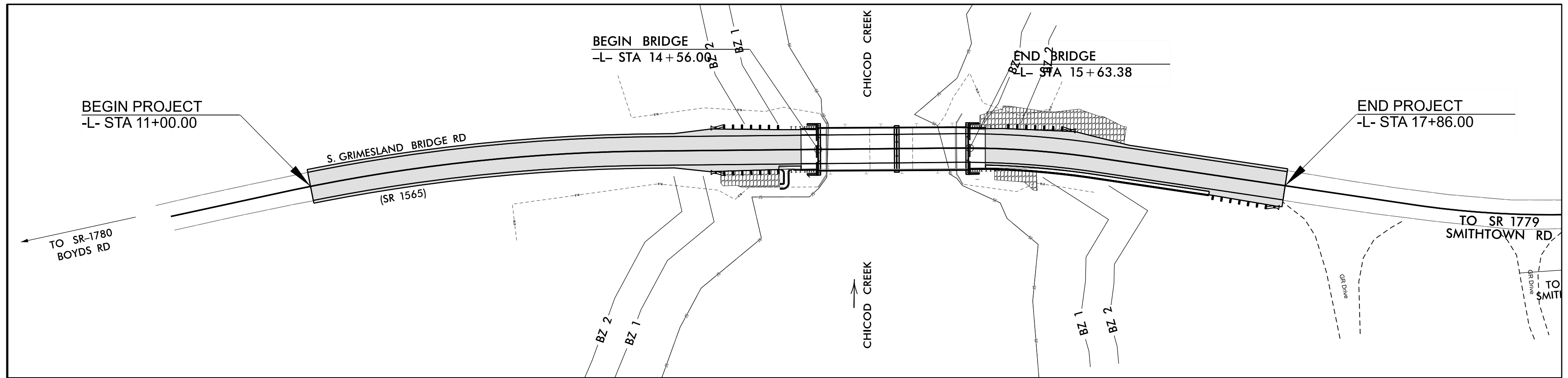
LOCATION: BRIDGE NO. 730015 ON SR 1565 (S. GRIMESLAND BRIDGE ROAD)
OVER CHICOD CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R018.1	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP2.R018.1		PE	
BP2.R018.2		R/W, UTILITIES	
BP2.R018.3		CONSTRUCTION	

EROSION AND SEDIMENT CONTROL MEASURES

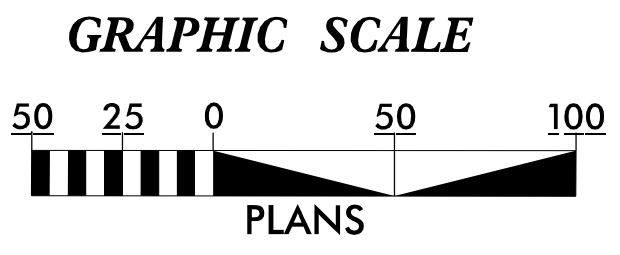
Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	▲▲▲▲▲
1622.01	Temporary Berms and Slope Drains	— T —
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▩
1633.02	Temporary Rock Silt Check Type-B	▩
	Wattle / Coir Fiber Wattle	— W —
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	— W —
1634.01	Temporary Rock Sediment Dam Type-A	▩
1634.02	Temporary Rock Sediment Dam Type-B	▩
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⊓
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⊓
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭



THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

ENVIRONMENTALLY SENSITIVE AREAS ON THIS PROJECT
REFER TO E.C. SPECIAL PROVISIONS FOR SPECIAL CONSIDERATIONS.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.

Prepared in the Office of:
KCA
KISINGER CAMPO & ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919) 882-7839

Designed by:
JOHN MCNULTY 4263
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

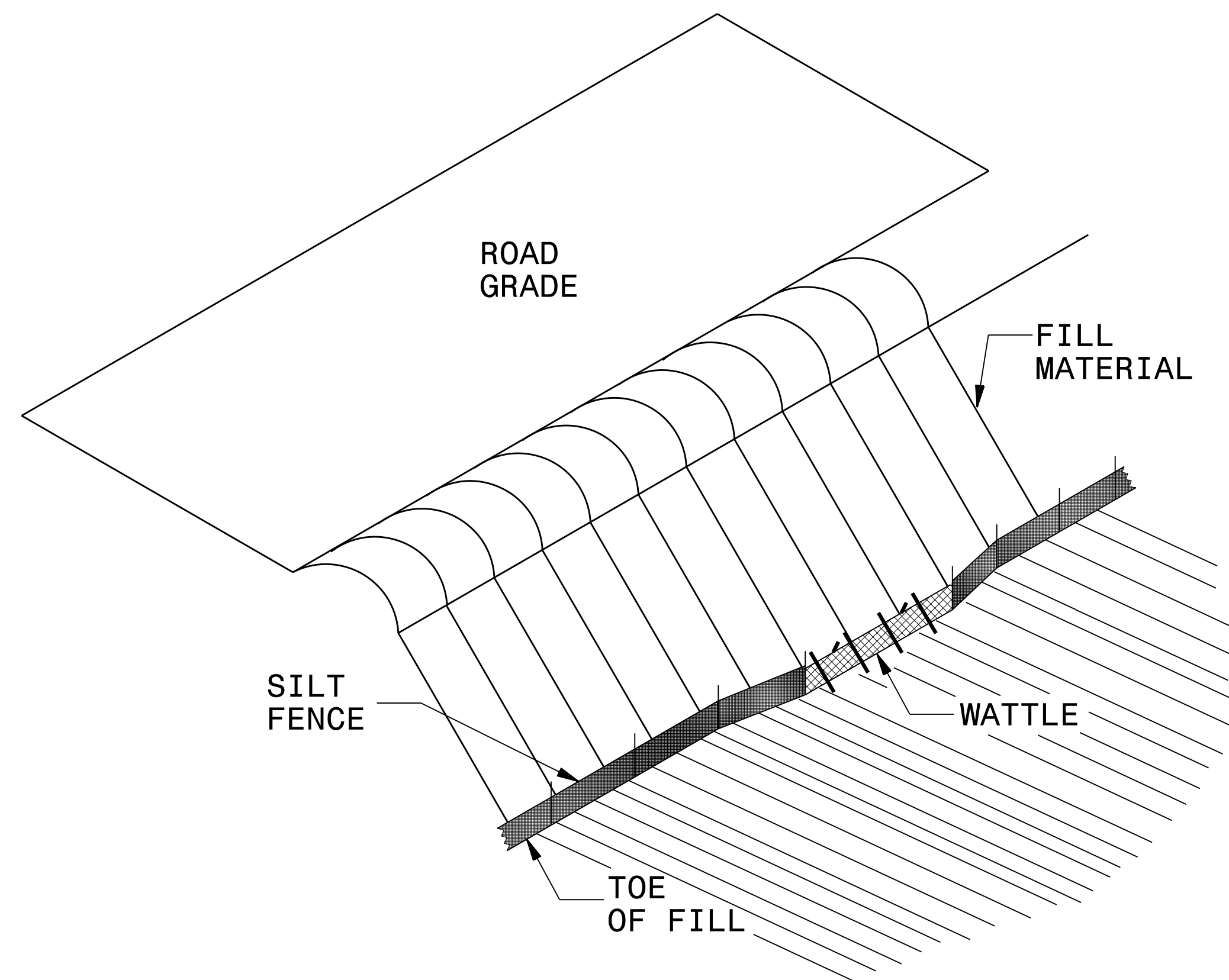
The following roadway english standards as appear in "Roadway Standard Drawings"— Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type 3
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type 3
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type 3	1634.02 Temporary Rock Sediment Dam Type 3
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type 3
1630.05 Temporary Diversion	1640.01 Coir Fiber Jaffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

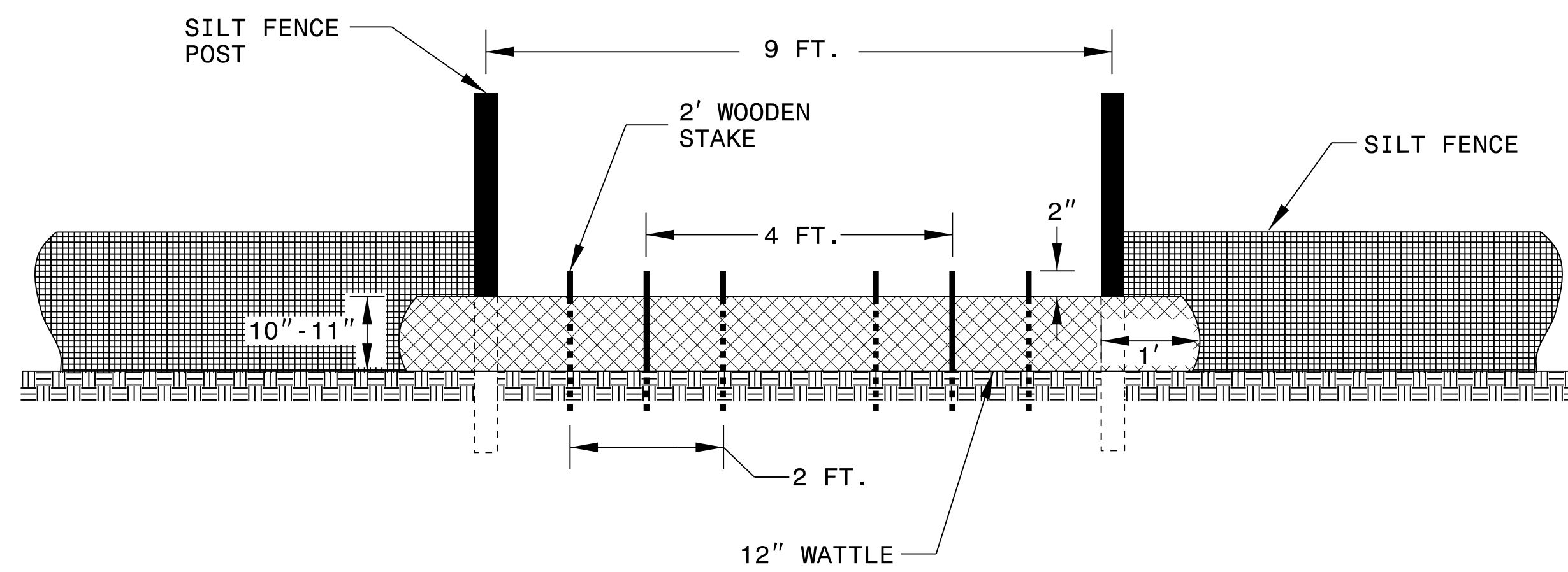
29-OCT-2021 10:06 J:\proj\17\Boys Rd Erosion Control\Environmental\Erosion Control\Design\BP2.R018.1.EC.tsh.dgn

SILT FENCE COIR FIBER WATTLE BREAK DETAIL

PROJECT REFERENCE NO. <i>BP2.R018J</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

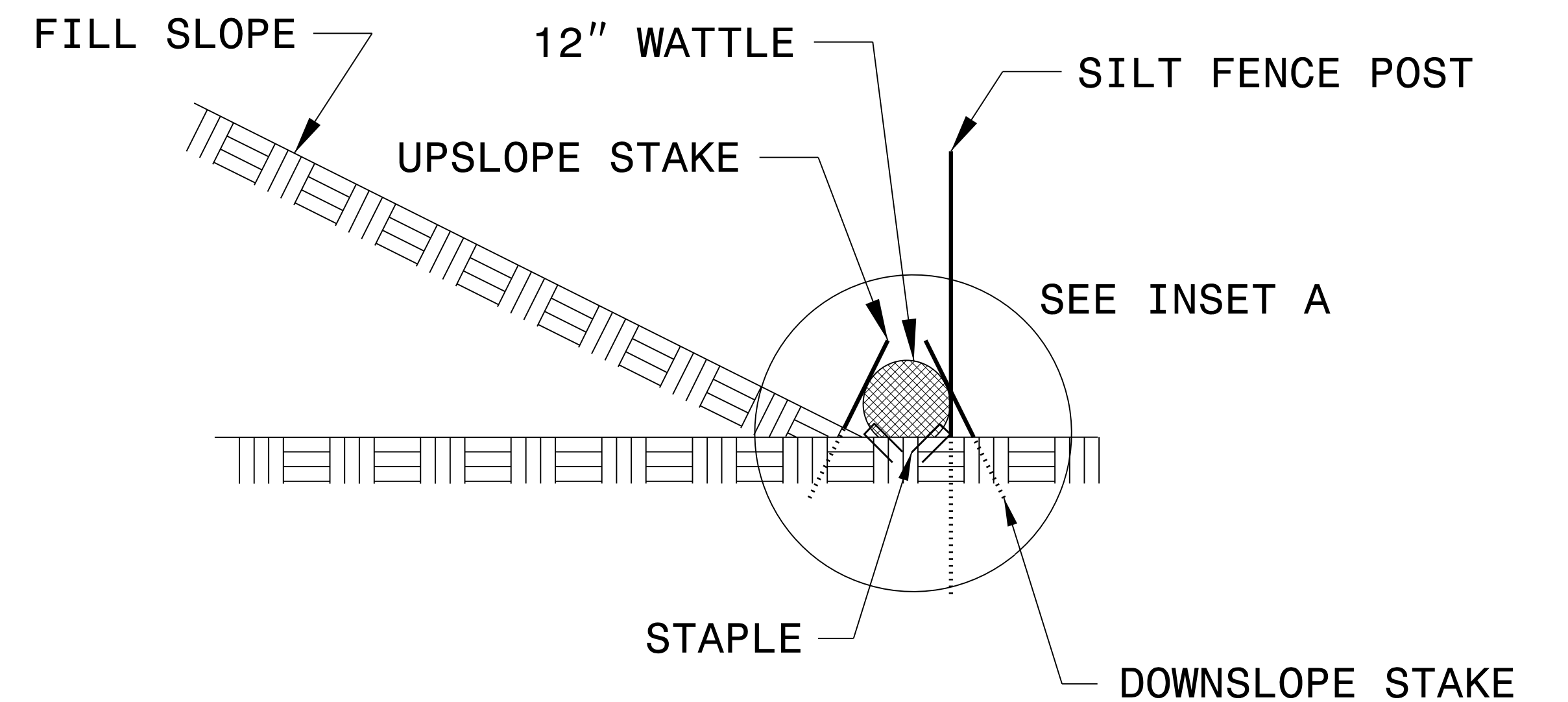
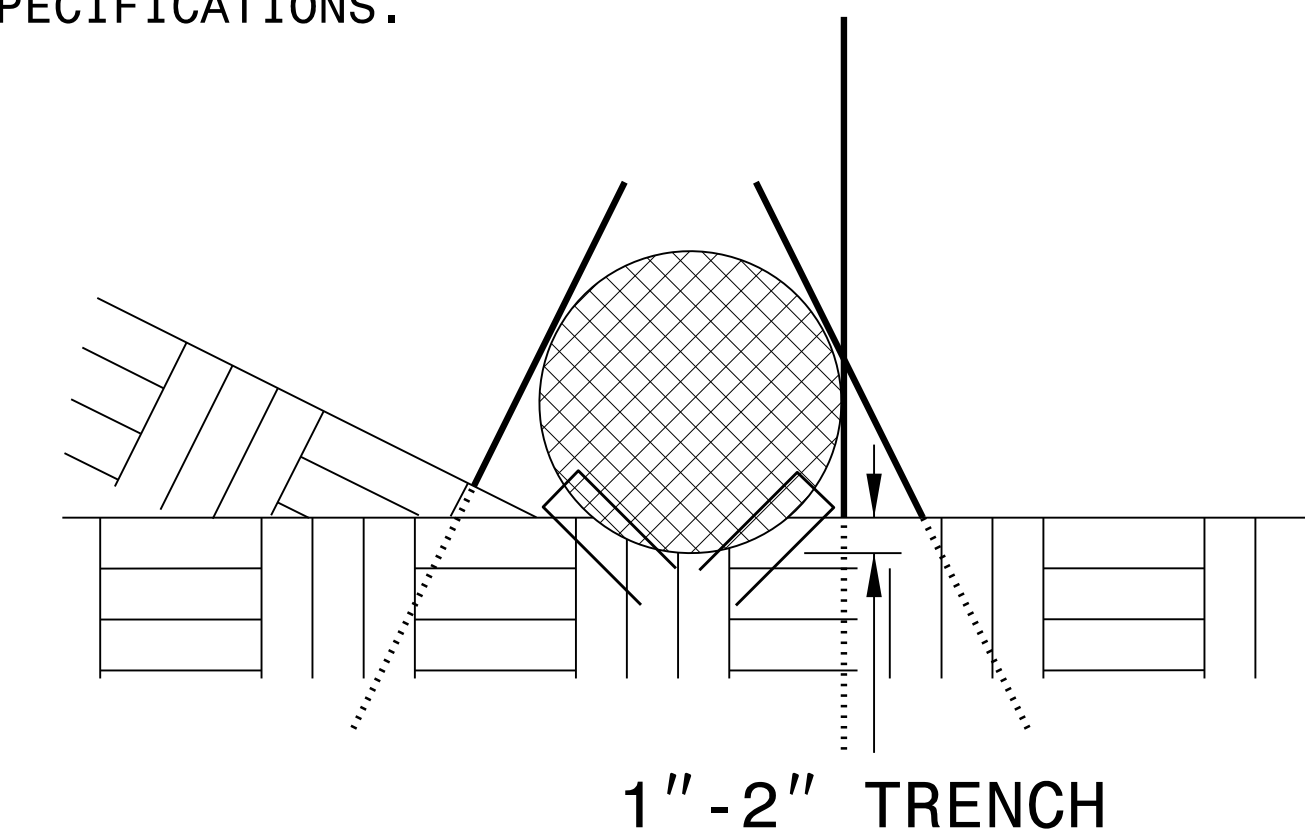
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

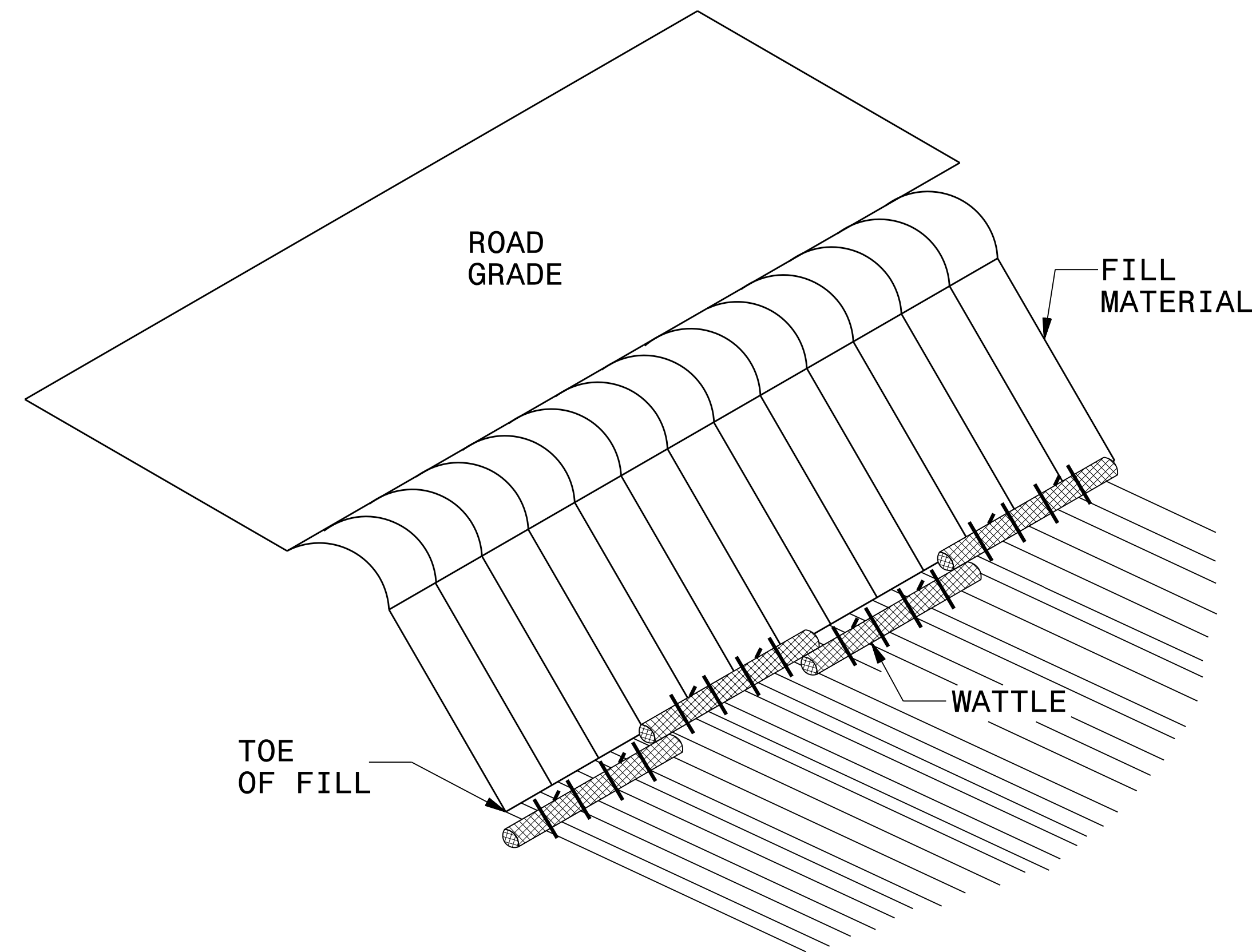
INSET A



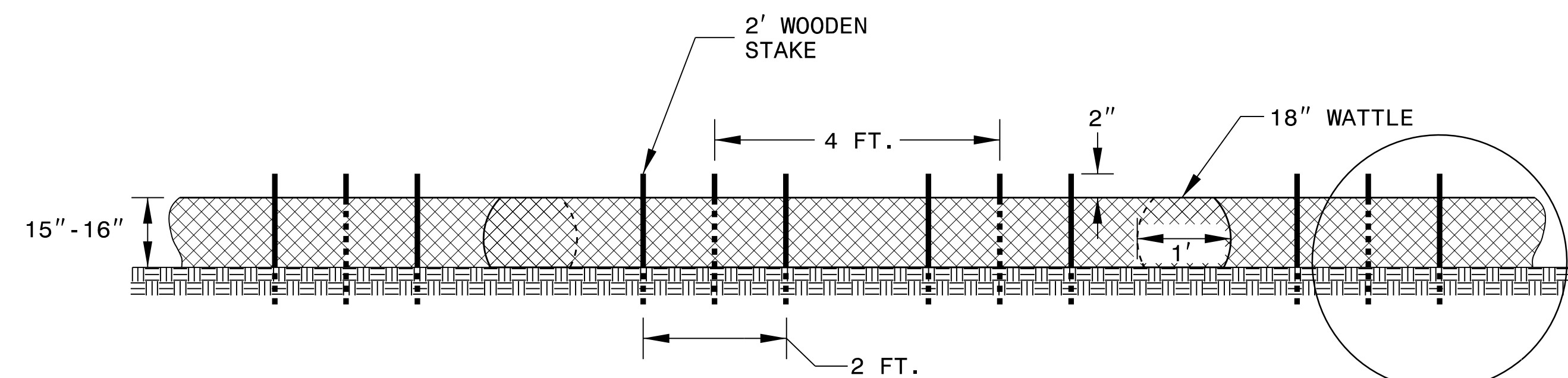
SIDE VIEW

PROJECT REFERENCE NO. <i>B2R, R018J</i>	SHEET NO. <i>EC-2B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

COIR FIBER WATTLE BARRIER DETAIL



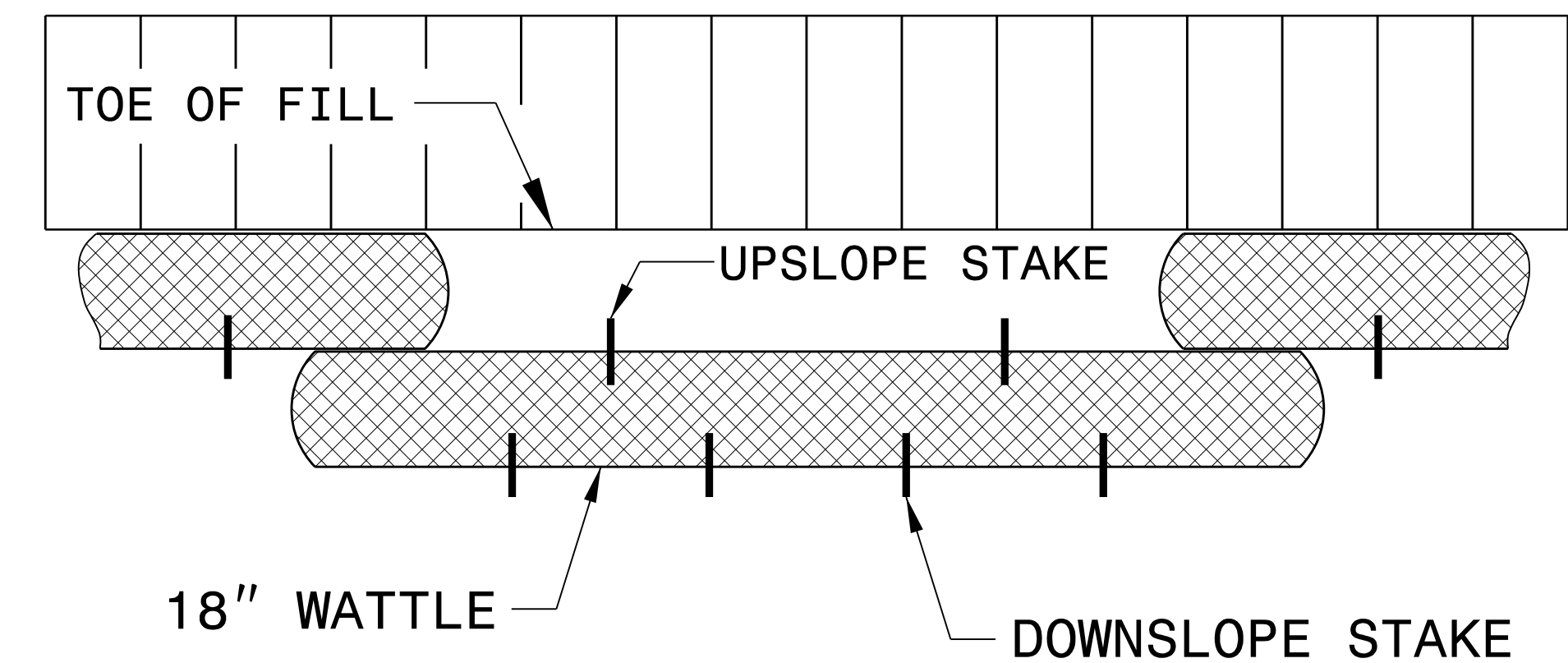
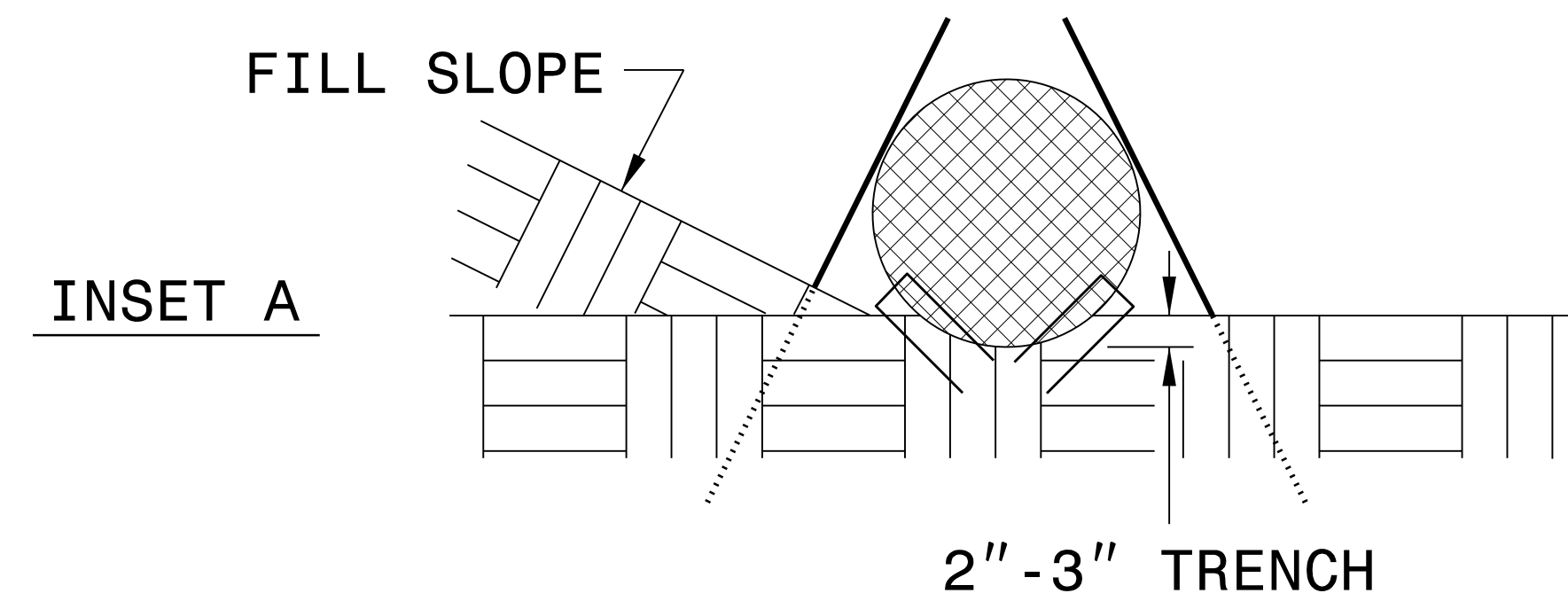
ISOMETRIC VIEW



FRONT VIEW

NOTES:

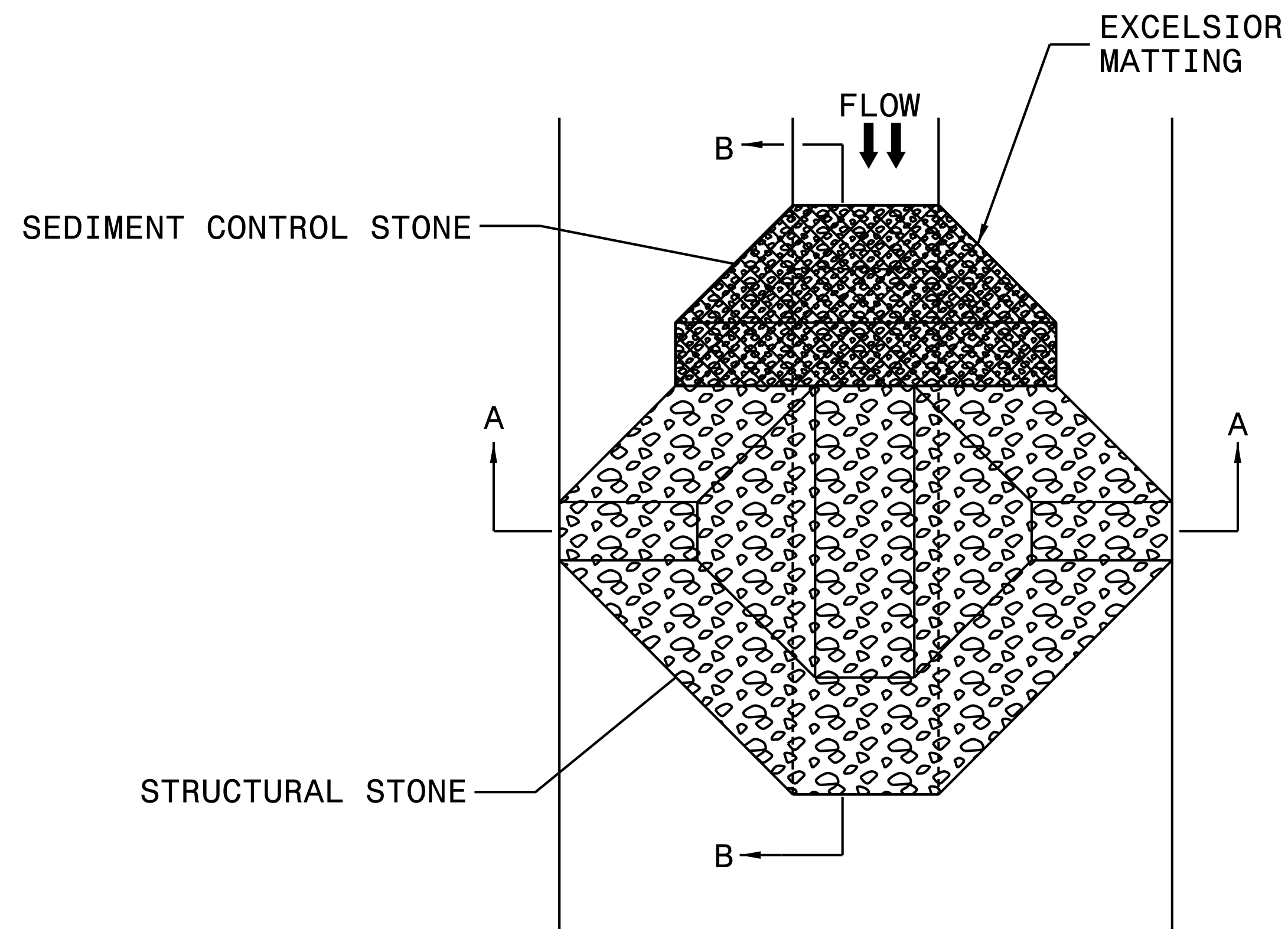
- USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLES ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- 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.
- FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



TOP VIEW

PROJECT REFERENCE NO. <i>BR2,RO18J</i>	SHEET NO. <i>EC-2C</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

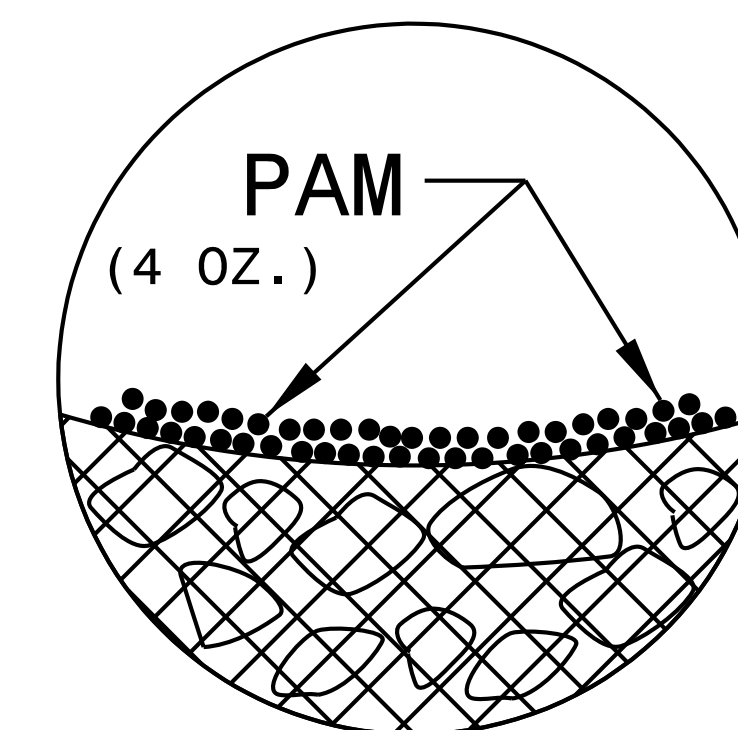
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

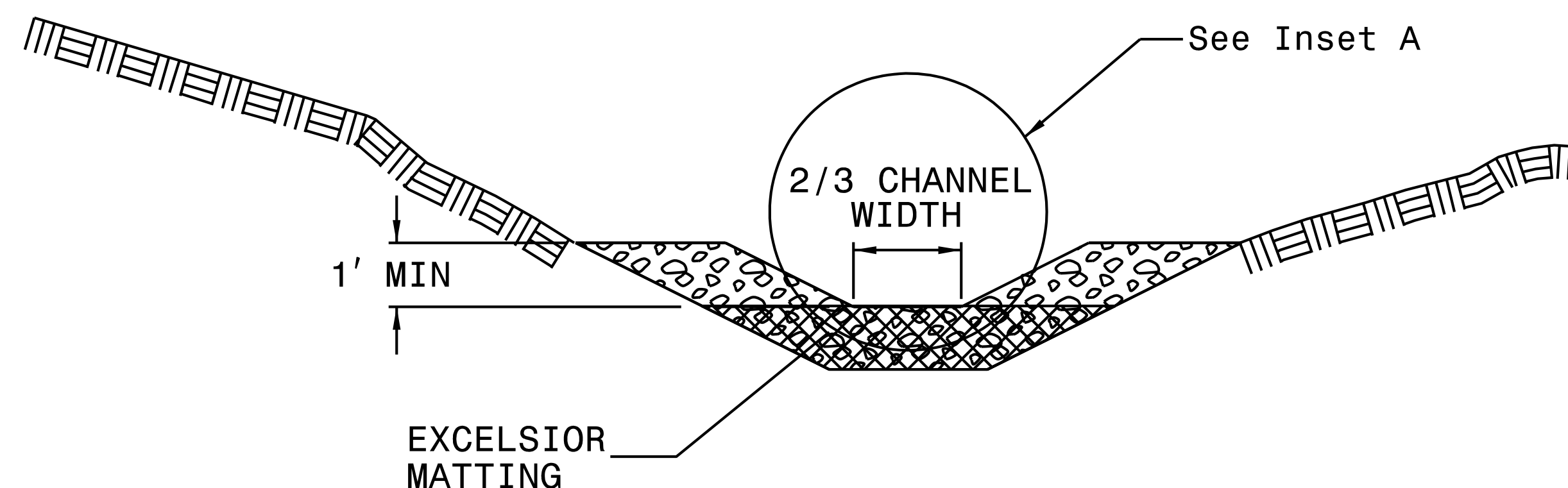
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

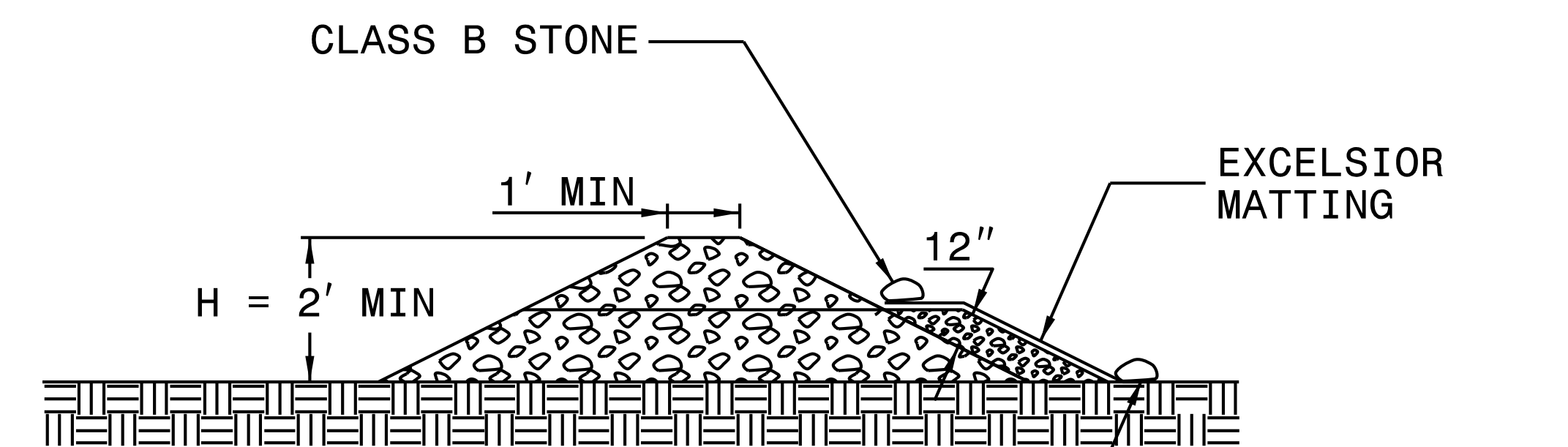
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

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 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

**JOHN MCNULTY
EROSION CONTROL
LEVEL III
CERTIFICATION #4263**

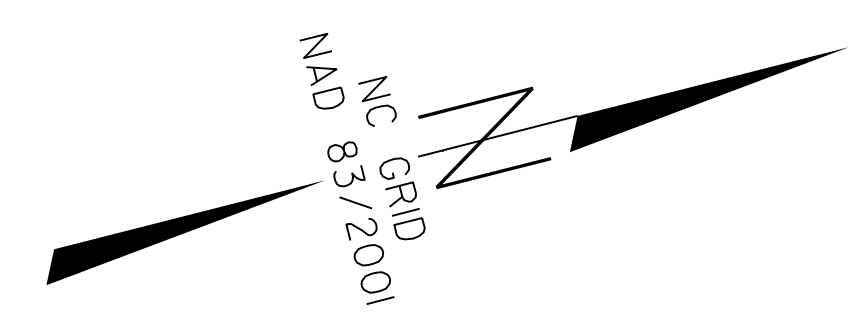
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PREPARED IN THE OFFICE OF: **KCA** KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1508
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

**INSTALL MATTING FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.**

-L-
13+97 TO 14+30 RT
15+90 TO 16+80 LT



BEGIN PROJECT -L-
POT STA 11+00.00

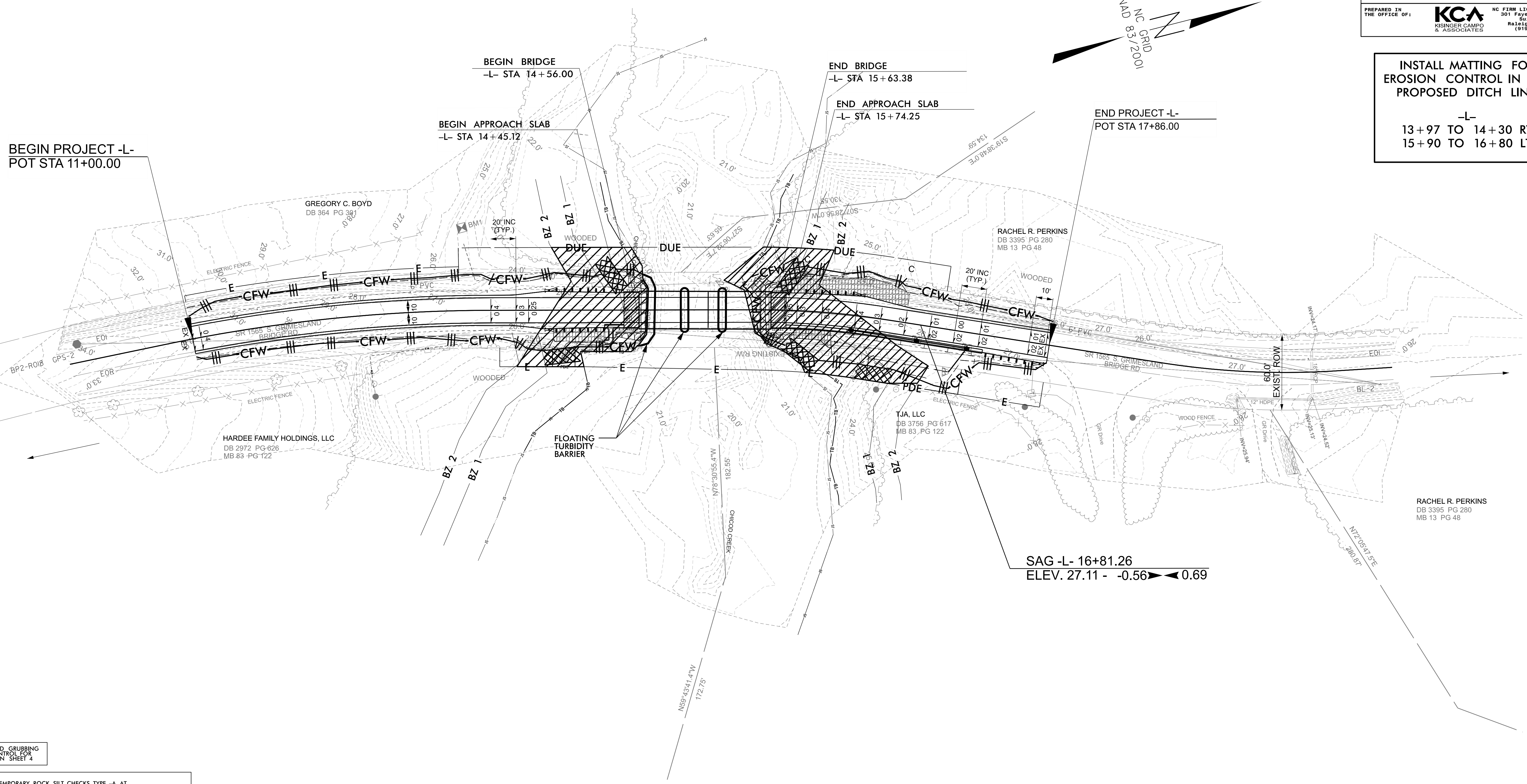
BEGIN BRIDGE
-L- STA 14+56.00

BEGIN APPROACH SLAB
-L- STA 14+45.12

END BRIDGE
-L- STA 15+63.38

END APPROACH SLAB
-L- STA 15+74.25

END PROJECT -L-
POT STA 17+86.00



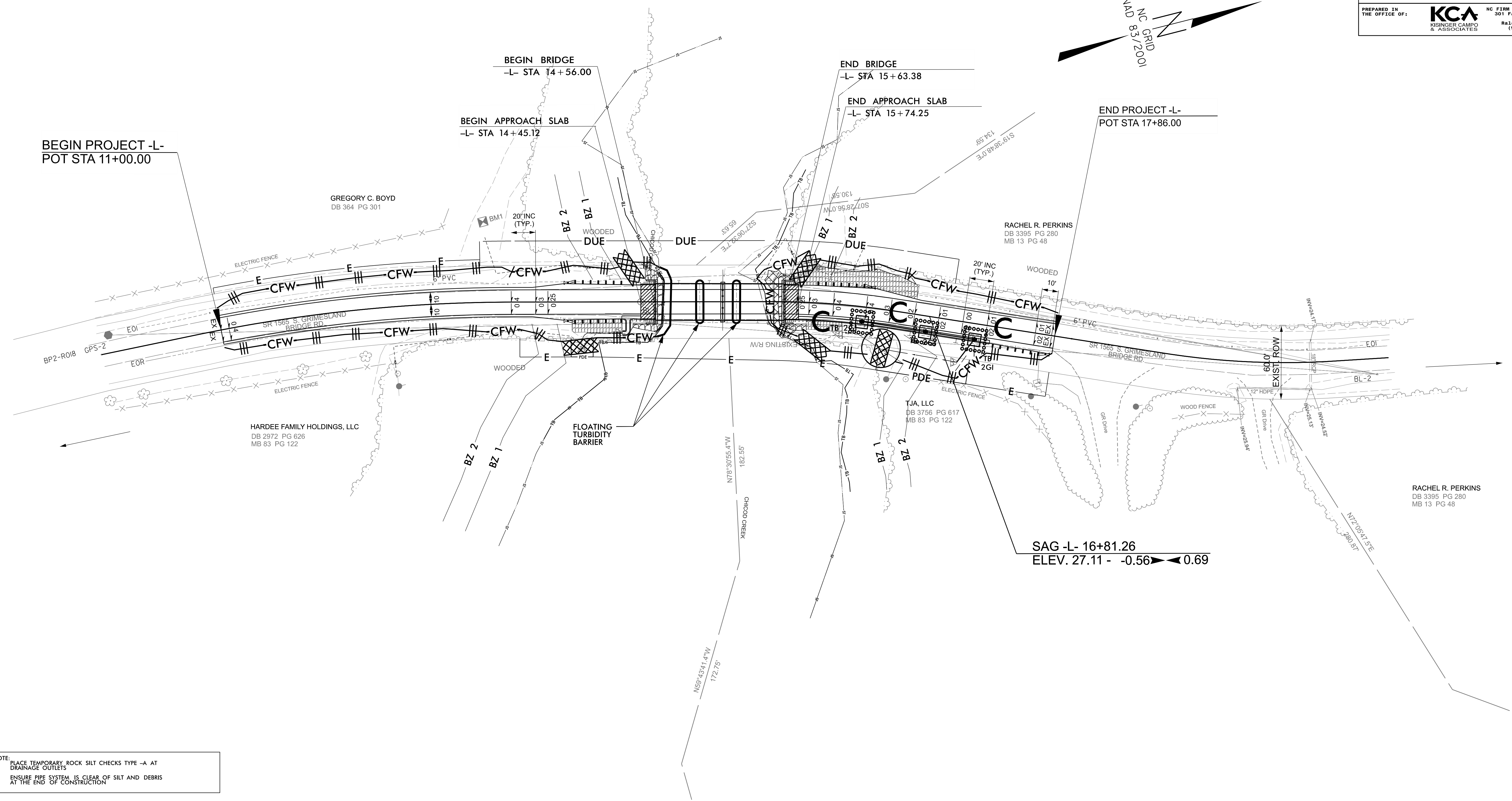
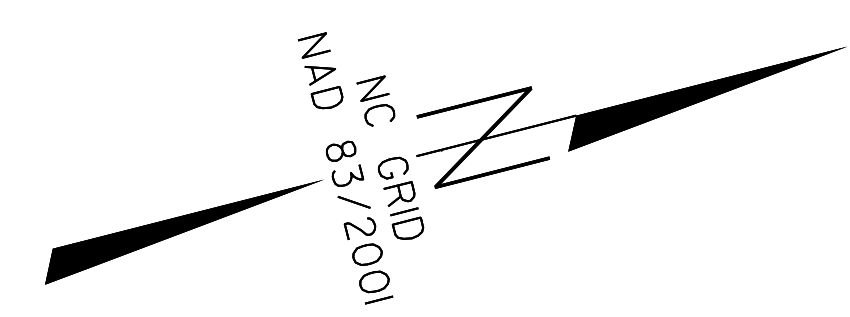
SAG -L- 16+81.26
ELEV. 27.11 - -0.56 <> 0.69

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE -A AT
DRAINAGE OUTLETS



HYDRAULICS NOTE:
1.) PERMISSION WAS GIVEN BY NCDEQ
WASHINGTON REGIONAL OFFICE - DOT COORDINATOR
TO USE SOUTHEAST QUADRANT JS LINE AS
TOP OF BANK



NOTE:
PLACE TEMPORARY ROCK SILT CHECKS TYPE -A AT DRAINAGE OUTLETS
ENSURE PIPE SYSTEM IS CLEAR OF SILT AND DEBRIS AT THE END OF CONSTRUCTION

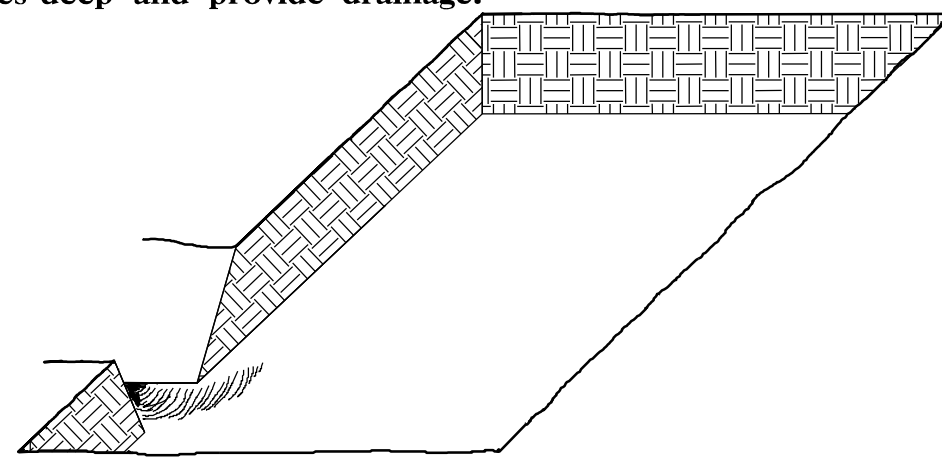
HYDRAULICS NOTE:
1.) PERMISSION WAS GIVEN BY NCDEQ WASHINGTON REGIONAL OFFICE - DOT COORDINATOR TO USE SOUTHEAST QUADRANT JS LINE AS TOP OF BANK

PLANTING DETAILS

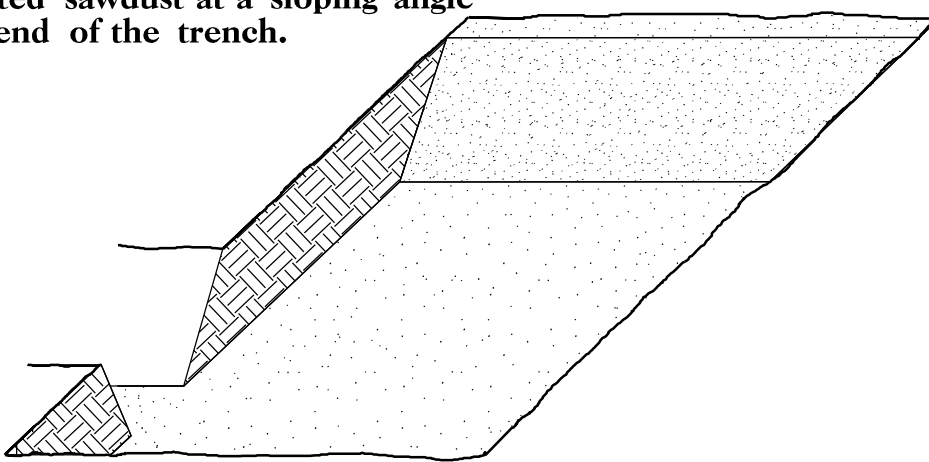
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

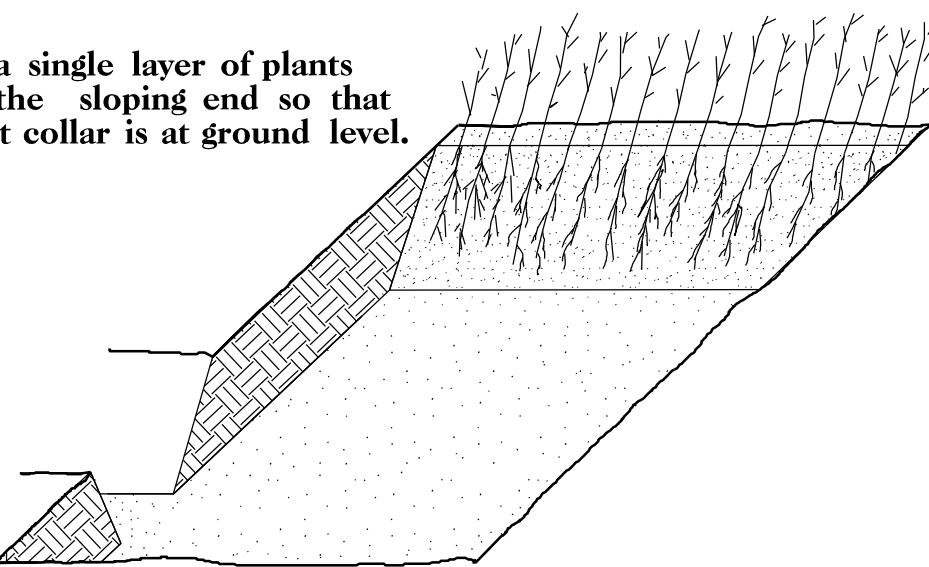
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



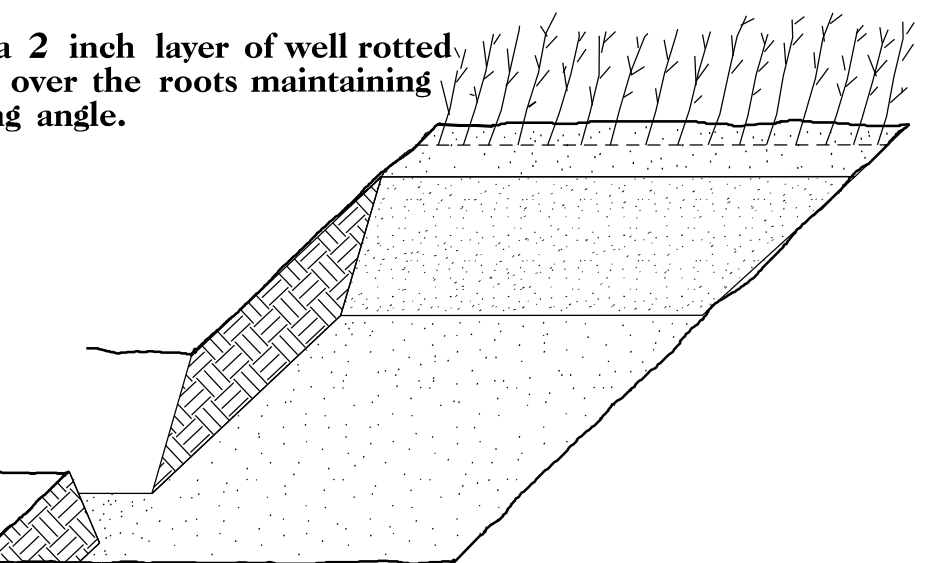
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

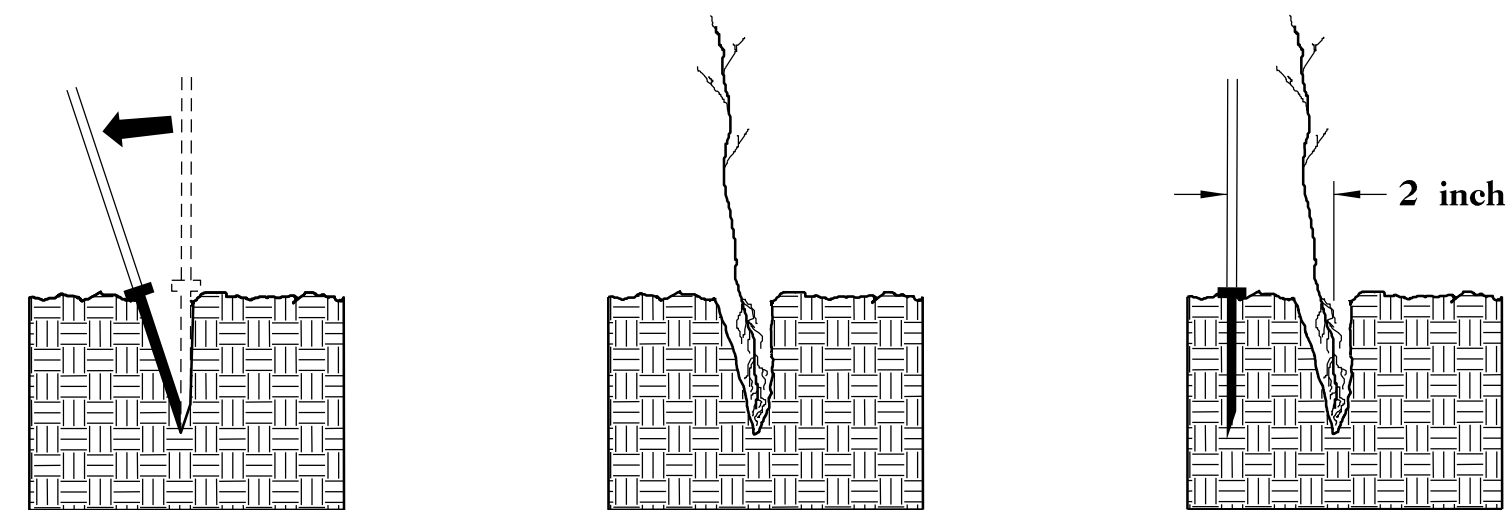


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.



6. Repeat layers of plants and sawdust as necessary and water thoroughly.

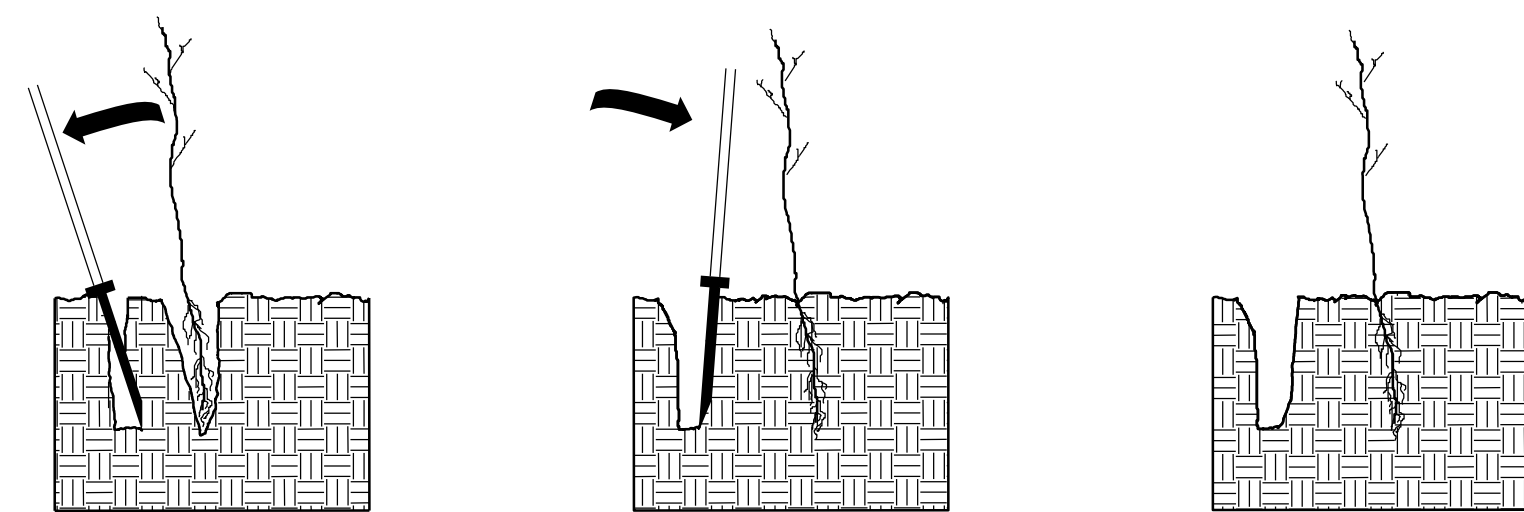
DOUBLE PLANTING METHOD USING THE K3C PLANTING BAR



1. Insert planting bar as shown and pull handle toward planter.

2. Remove planting bar and place seedling at correct depth.

3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.

5. Push handle forward firming soil at top.

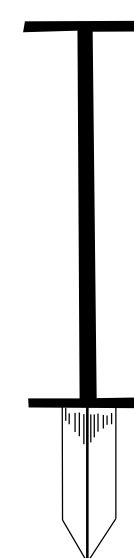
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25%	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in 3R
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

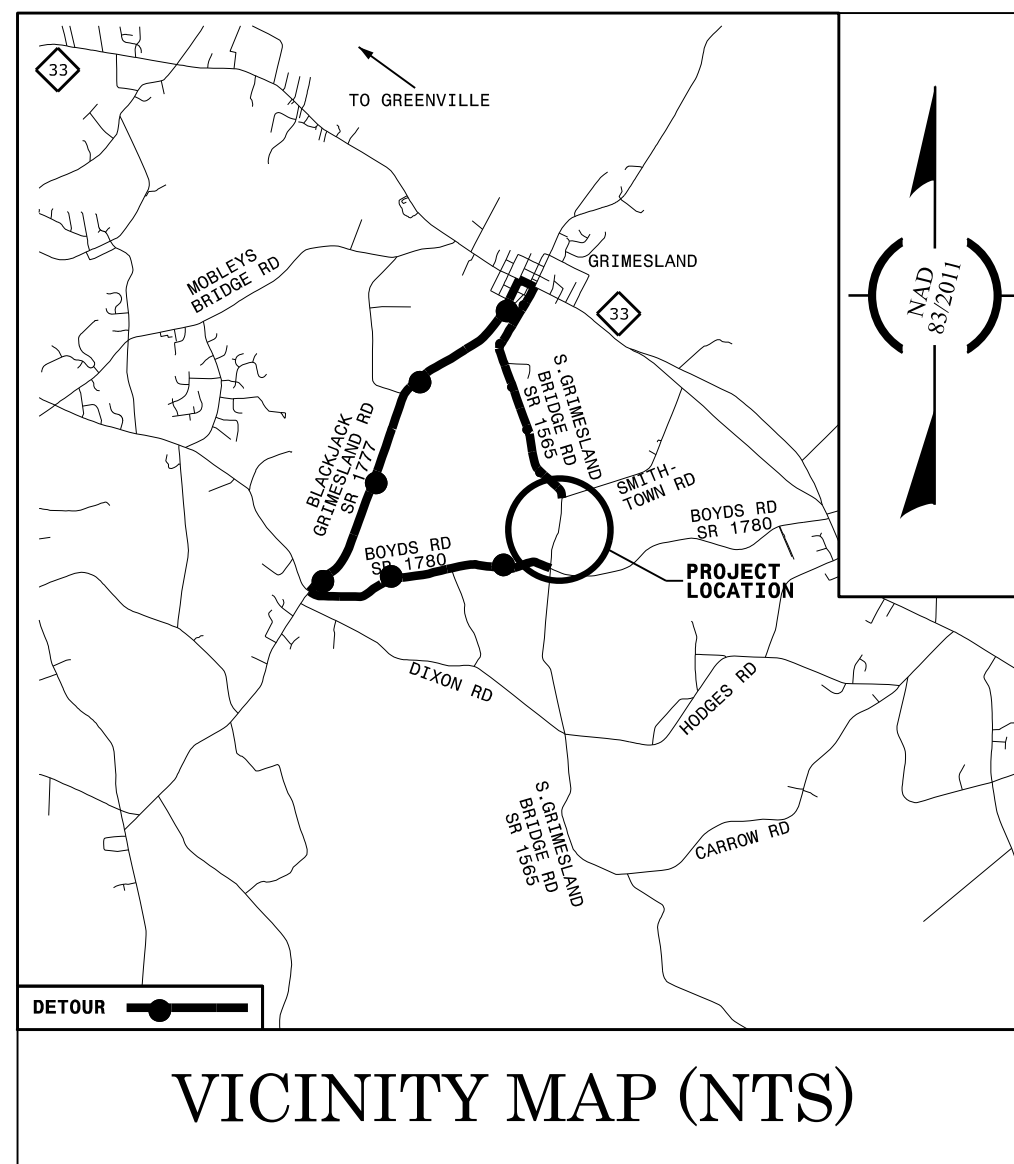
REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

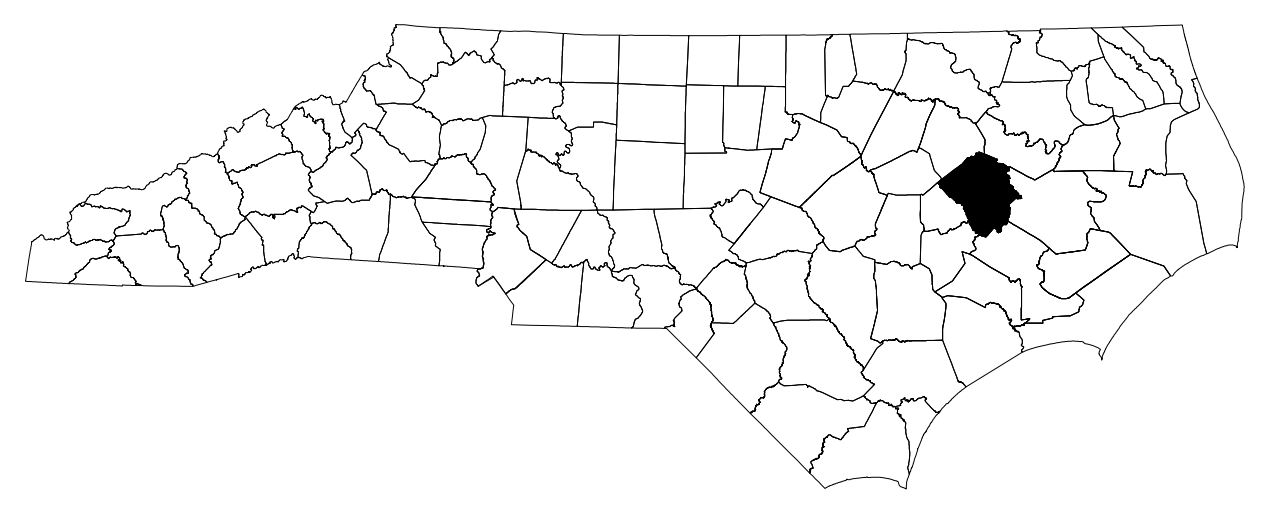
09/08/09
TIP PROJECT: BP2.R018.1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**UTILITIES BY OTHERS
PITT COUNTY**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R018.1	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP2.R018.1		PE	
BP2.R018.2		R/W, UTILITIES	
BP2.R018.3		CONSTRUCTION	

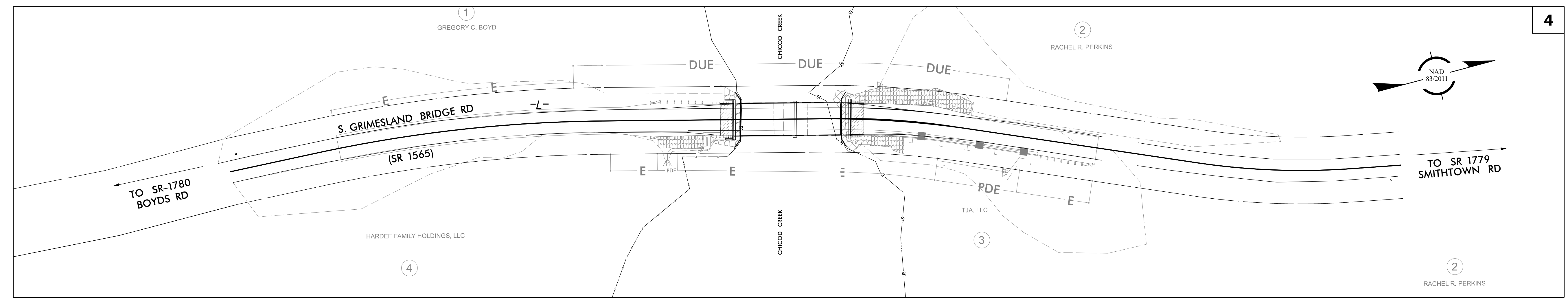


LOCATION: *BRIDGE NO. 730015 ON SR 1565 (S GRIMESLAND BRIDGE ROAD)
OVER CHICOD CREEK*
TYPE OF WORK: WATER, COMMUNICATIONS

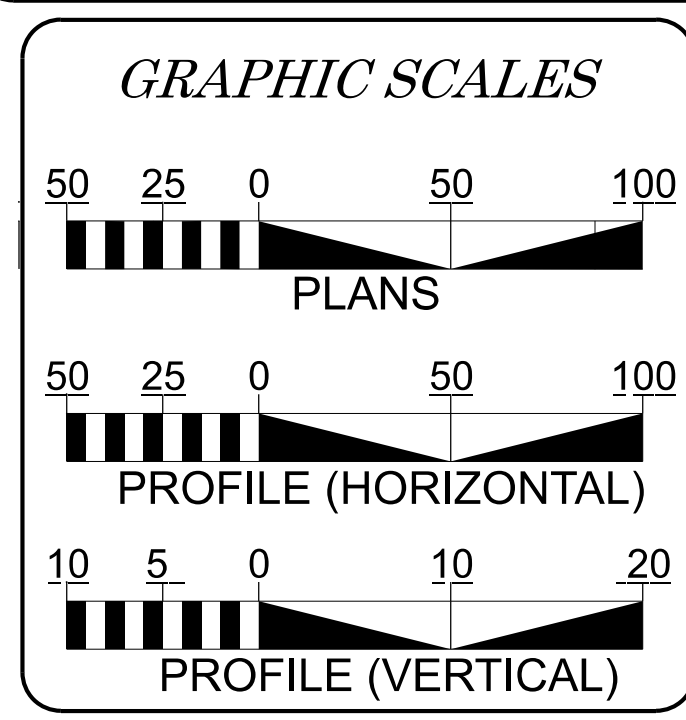


UBO PLANS
(4UT1)
Plans Developed with
OpenRoads

NOTE TO REVIEWER:
PRINT STYLE AND PSET DEVELOPMENT IS STILL IN PROGRESS BY NCDOT FOR ORD DEVELOPED SHEETS AND CROSS SECTIONS. PLOTTING IN THIS SET IS ACCOMPLISHED USING NCDOT'S DEVELOPMENTAL STANDARDS FOR PLAN-ELEVATION AND CROSS SECTION SHEETS. ALL OTHER SHEETS UTILIZE THE FORMER ORD PRINT SYTLE.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE
UO-2	UBO PLAN SHEET

UTILITY OWNERS WITH CONFLICTS

(A) WATER - EASTERN PINES WATER CORP.
(B) COMMUNICATIONS - CENTURYLINK

PREPARED IN THE OFFICE OF:

KCA
KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

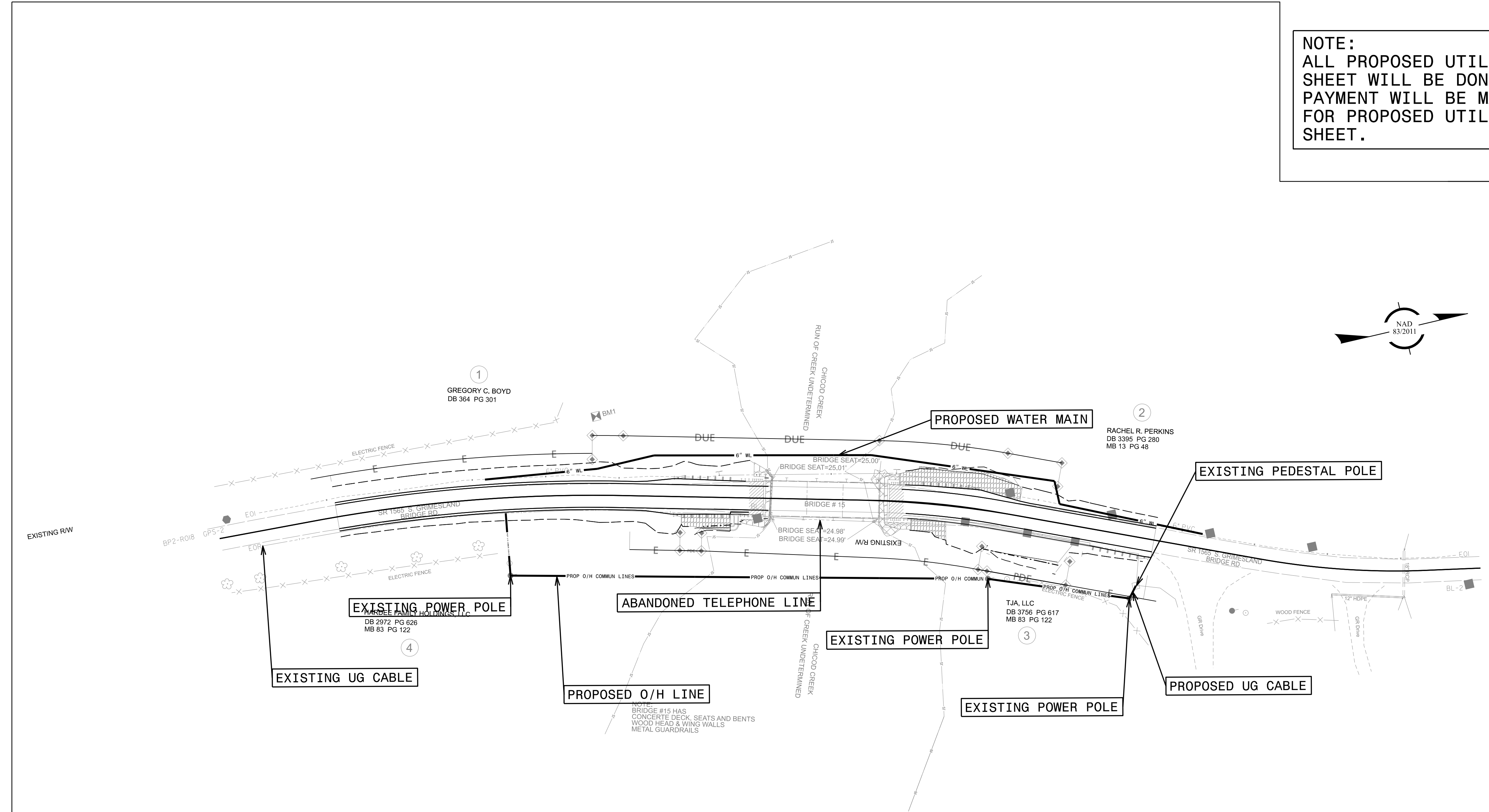
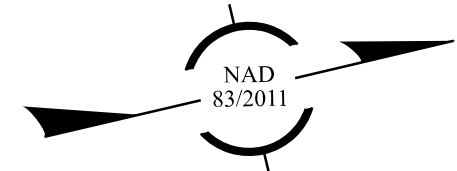
SAMUEL CULLUM P.E. UTILITY PROJECT MANAGER
STEPHEN CHAMBERS PROJECT UTILITY COORDINATOR

DIVISION OF HIGHWAYS
DIVISION 2
2815 ROUSE ROAD EXTENSION
KINSTON, NC 28504
PHONE -
FAX (252) 208-7862

DAVID KRAMER UTILITIES COORDINATOR
- UTILITIES ENGINEER
- UTILITIES REGIONAL ENGINEER
- UTILITIES COORDINATOR

UTILITIES BY OTHERS

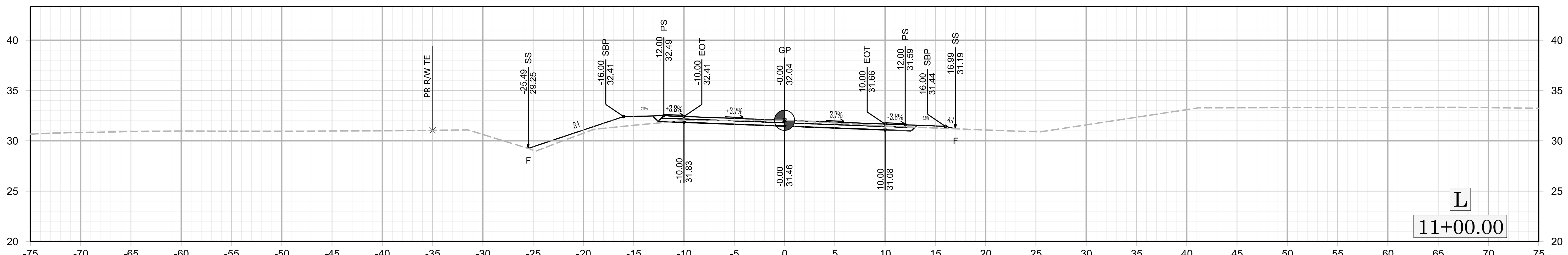
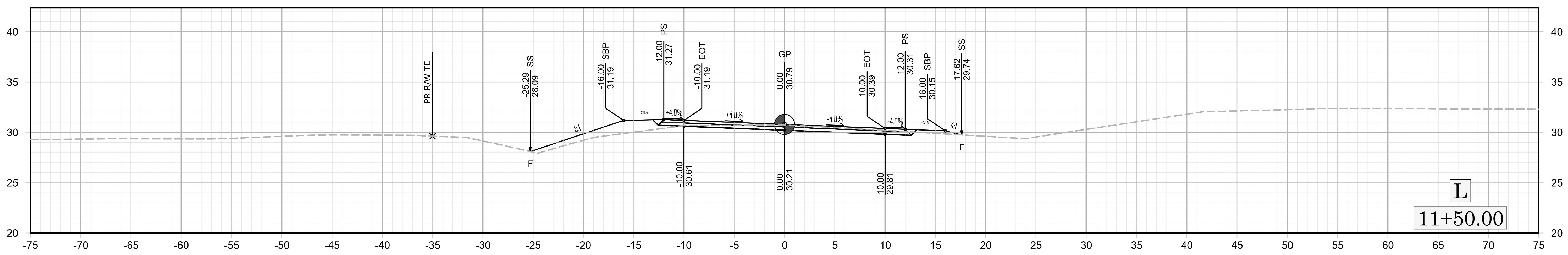
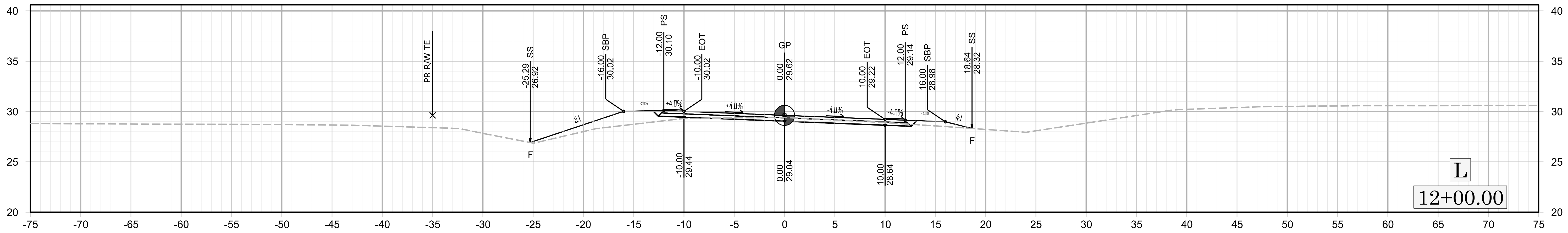
NOTE:
 ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



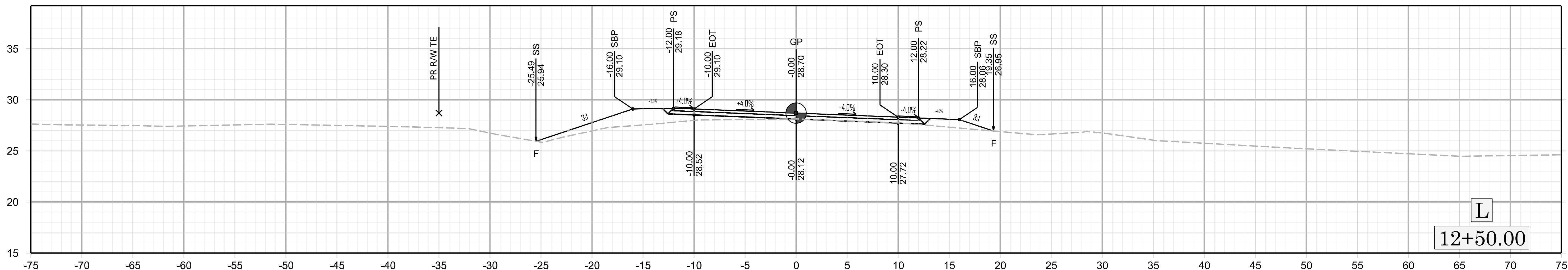
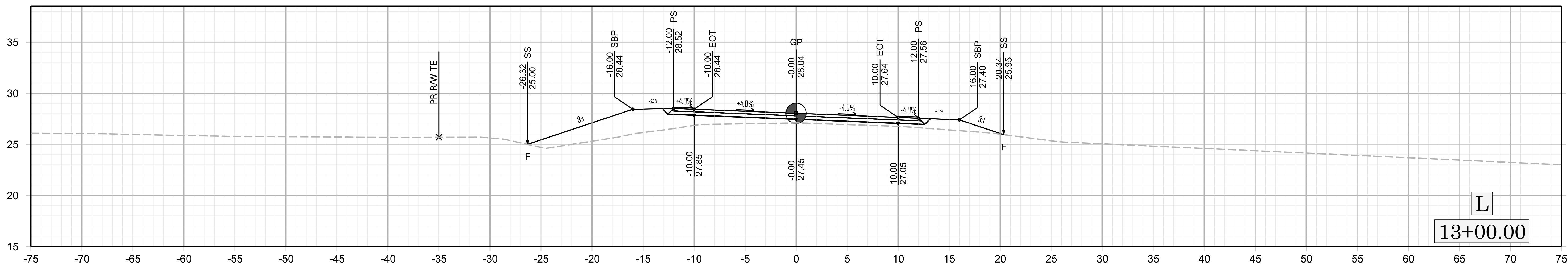
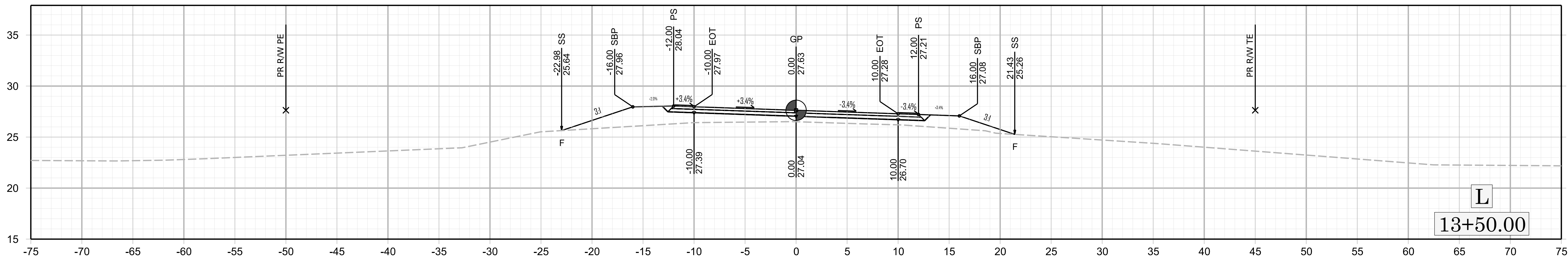
UTILITY CONTACTS:
 LUMEN - STEPHEN JACKSON
 252.214.7008 (OFFICE)
 252.214.8475 (CELL)
 CONGRUEX - ASHLEY FREELAND
 240.418.0904
 EASTERN PINES WATER CORP - BARRY SUTTON
 252.752.7420

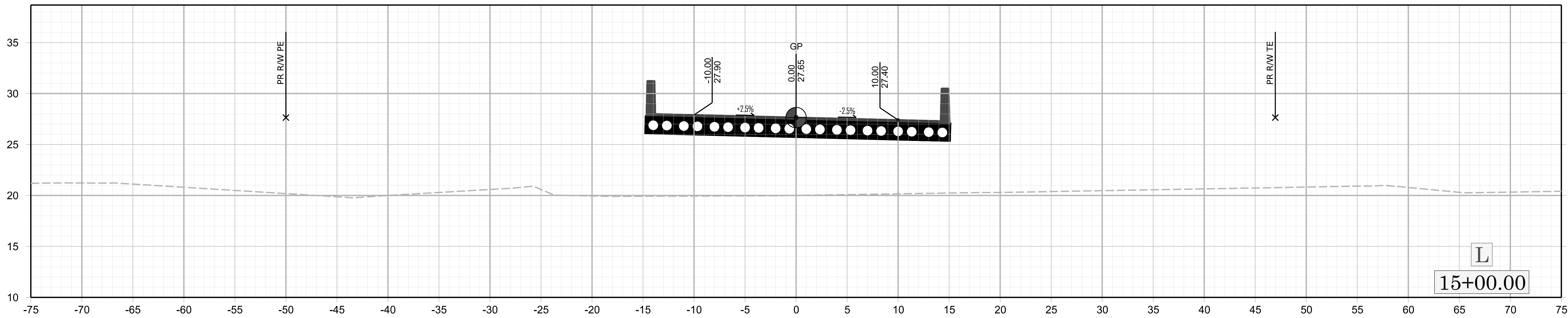
8/17/99

7-FEB-2022 15:14
 BP2.R018.1_Ut_4_U02_psh.dgn
 iduke

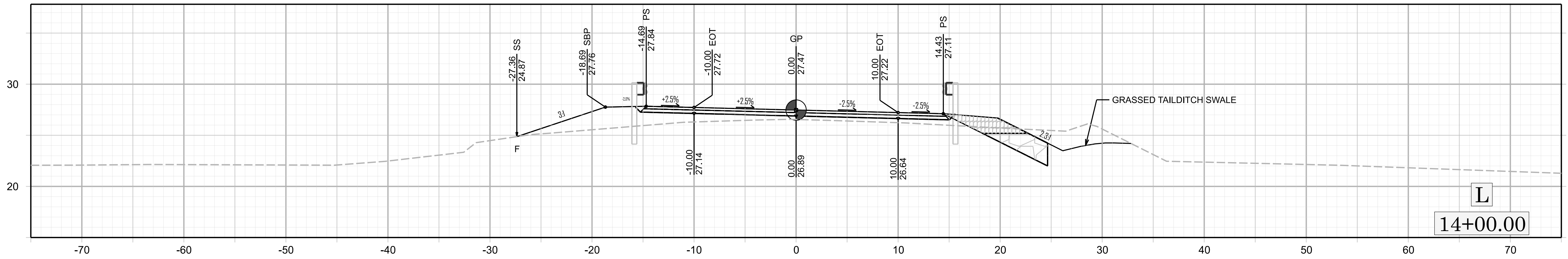
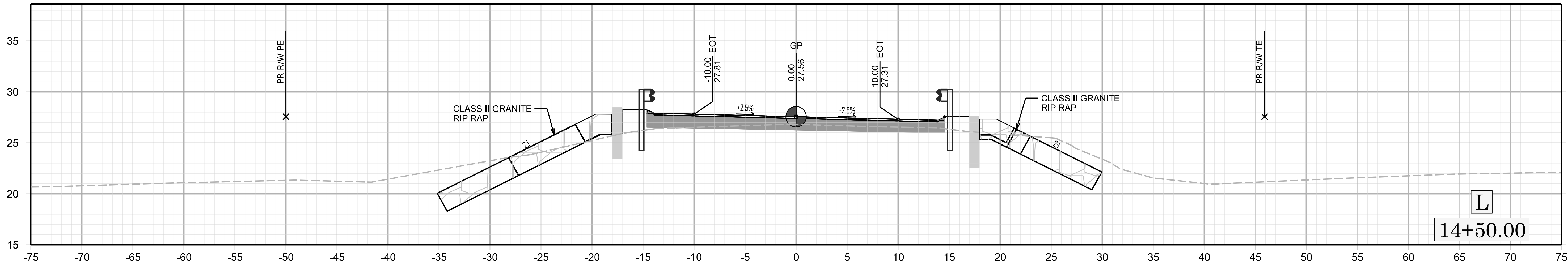


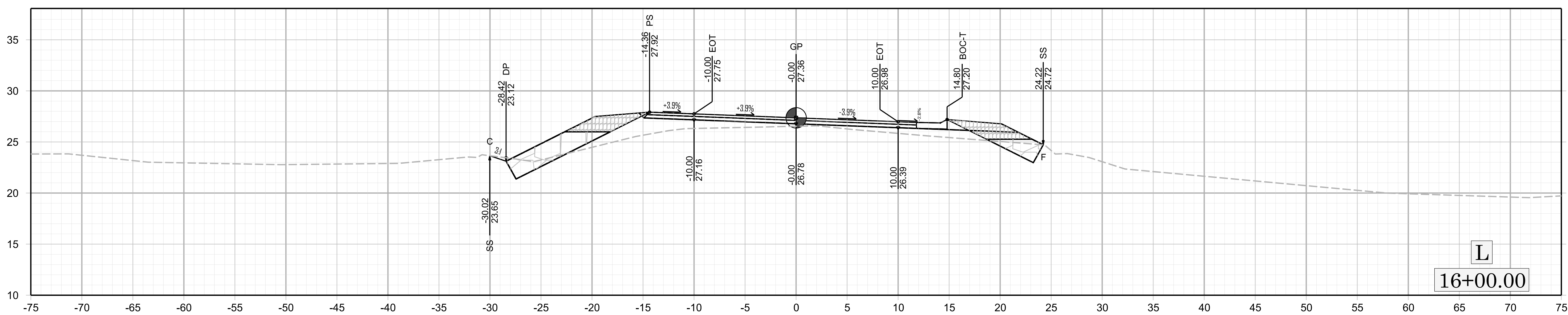
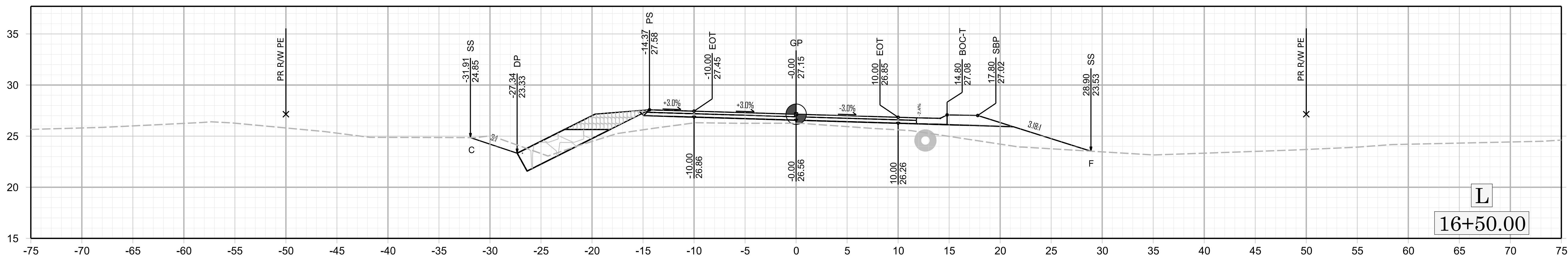
BEGIN PROJECT -L- 11+00.00



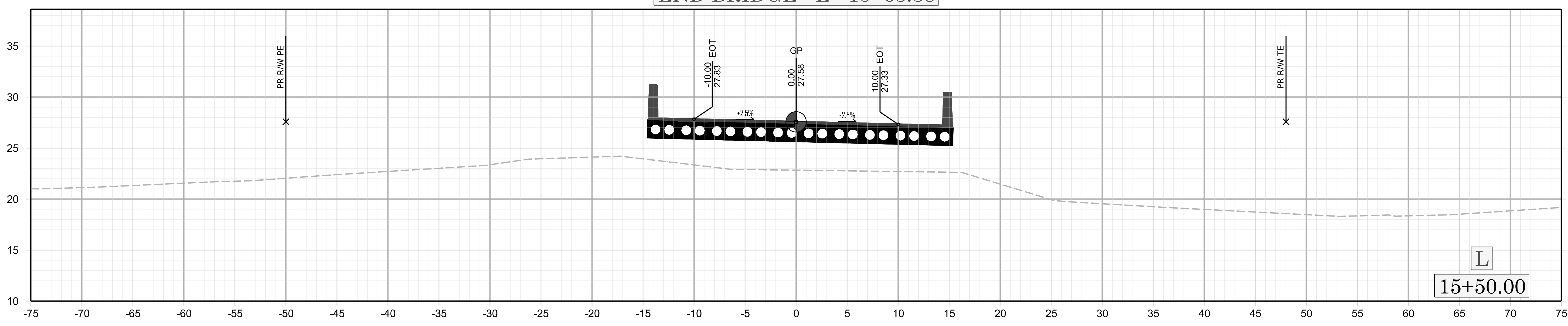


BEGIN BRIDGE -L- 14+56.00

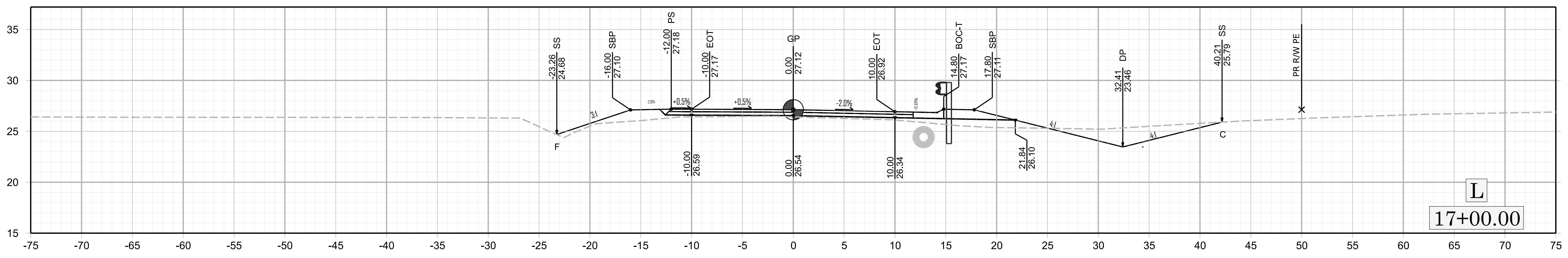
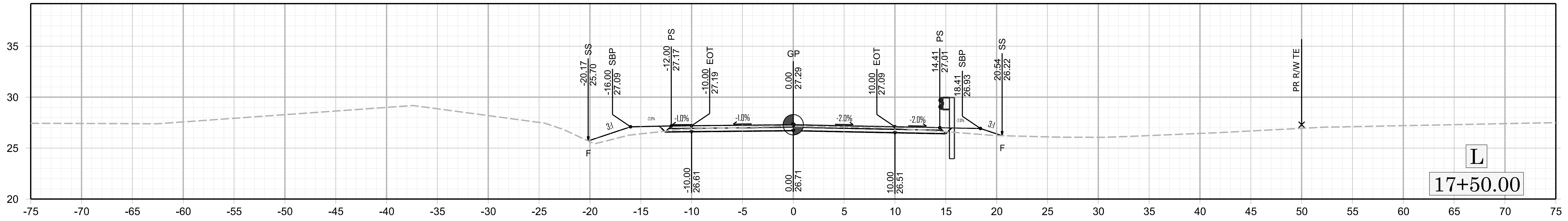




END BRIDGE -L- 15+63.38



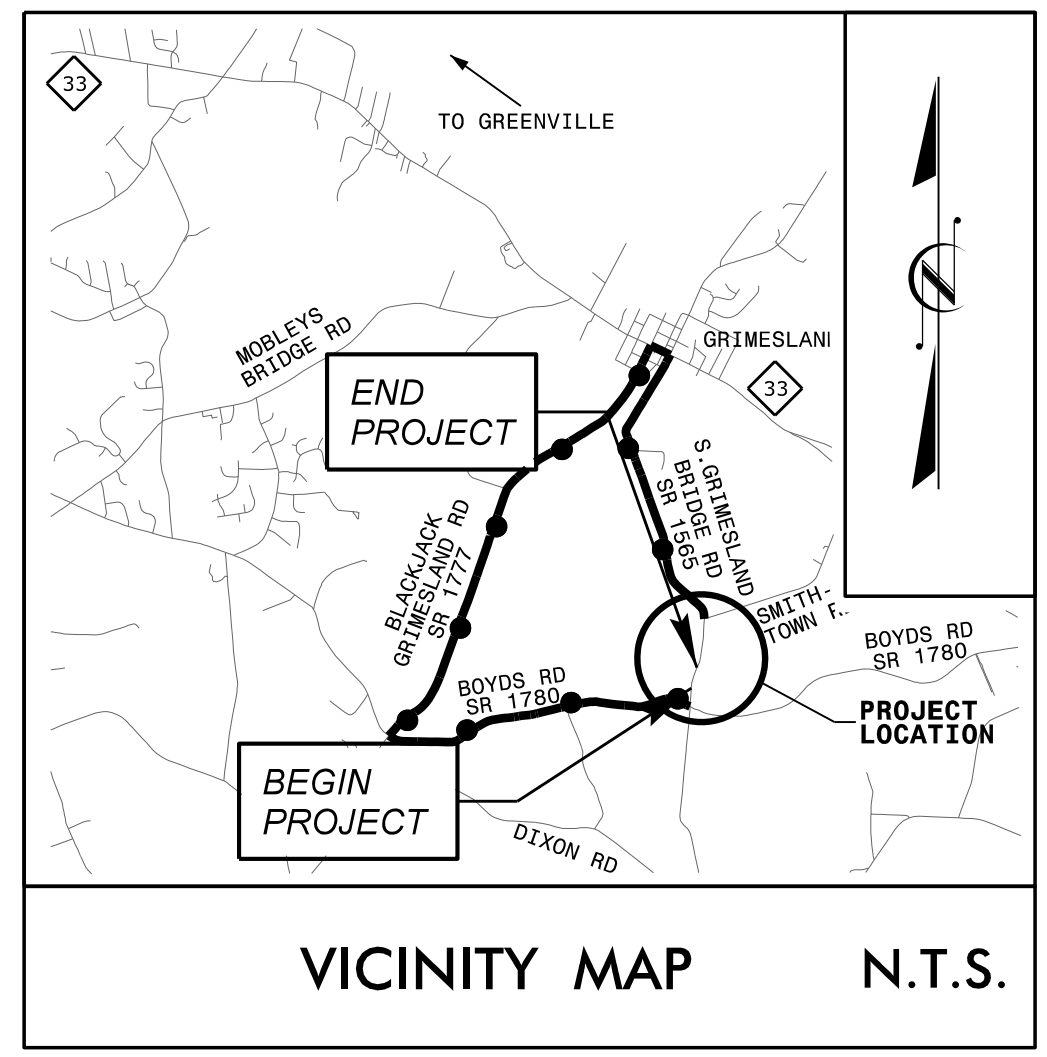
END PROJECT -L- 17+86.00



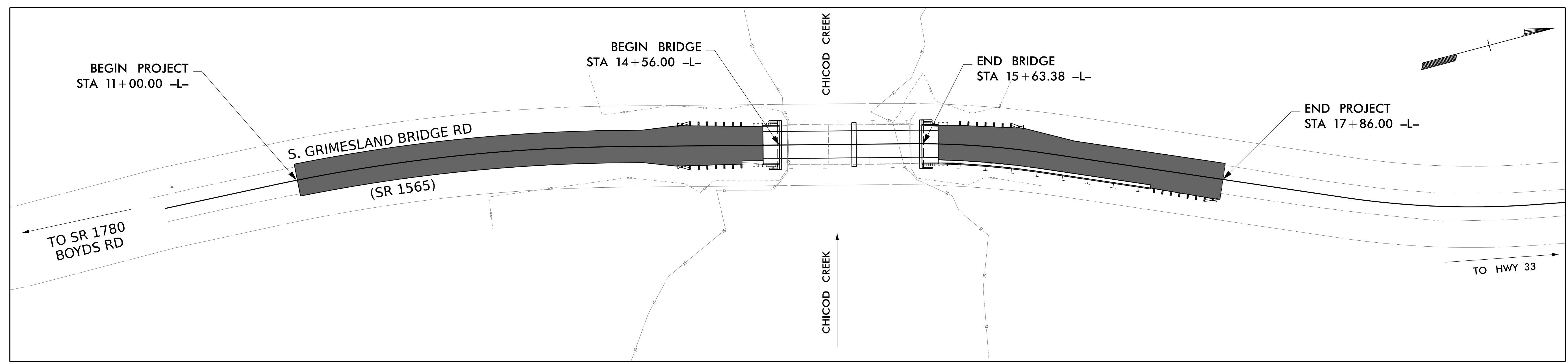
TIP PROJECT: BP2.R018.1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PITT COUNTY

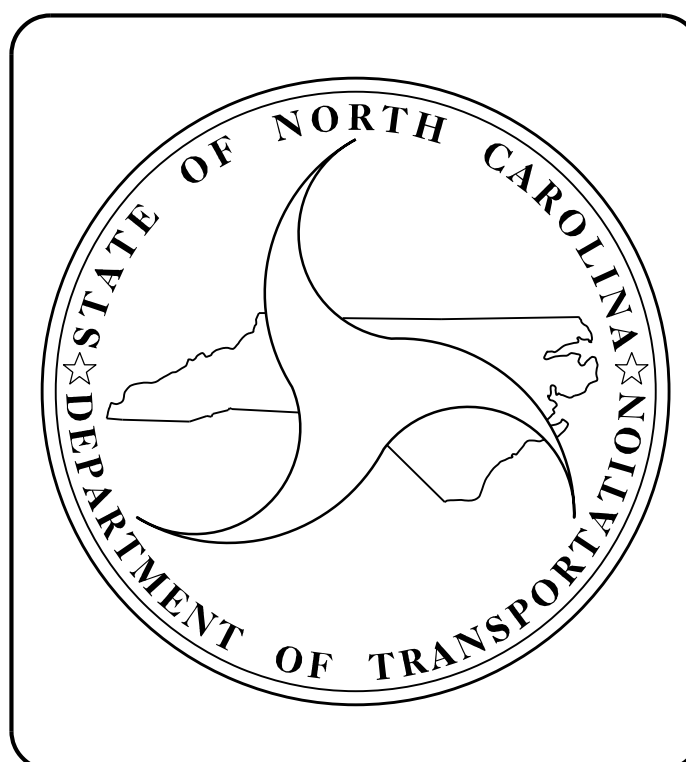
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP2.R018.1	1	21
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP2.R018.1	-	P.E.	
BP2.R018.3	-	CONST.	



LOCATION: BRIDGE NO. 730015 ON SR 1565 (S. GRIMESLAND BRIDGE ROAD) OVER CHICOD CREEK
TYPE OF WORK: DRAINAGE, PAVING, STRUCTURE



STRUCTURES



DESIGN DATA

ADT (2022) =	480
ADT (2042) =	840
K =	N/A %
D =	N/A %
T =	6 % **
* V =	60 MPH
** (TTST 3 %, DUAL 3 %)	
FUNC CLASS =	LOCAL
SUB-REGIONAL TIER	

PROJECT LENGTH

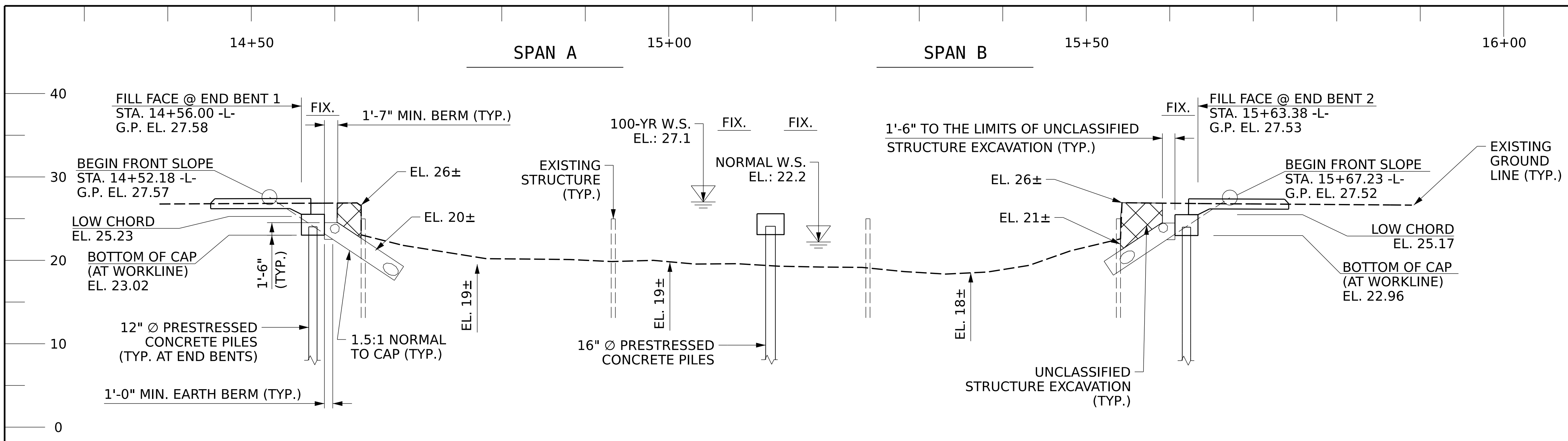
LENGTH ROADWAY TIP PROJECT BP2.R018.1 =	0.110 MILES
LENGTH STRUCTURE TIP PROJECT BP2.R018.1 =	0.020 MILES
TOTAL LENGTH TIP PROJECT BP2.R018.1 =	0.130 MILES

Prepared In the Office of:

KCA
KISINGER CAMPO & ASSOCIATES
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

2018 STANDARD SPECIFICATIONS

<p>LETTING DATE :</p> <p style="text-align: center;">June, 2022</p>	<p>DIEGO A. AGUIRRE P.E. <i>PROJECT ENGINEER</i></p> <p>FIDEL L. FLORES <i>PROJECT DESIGN ENGINEER</i></p>
--	--



VERTICAL CURVE DATA

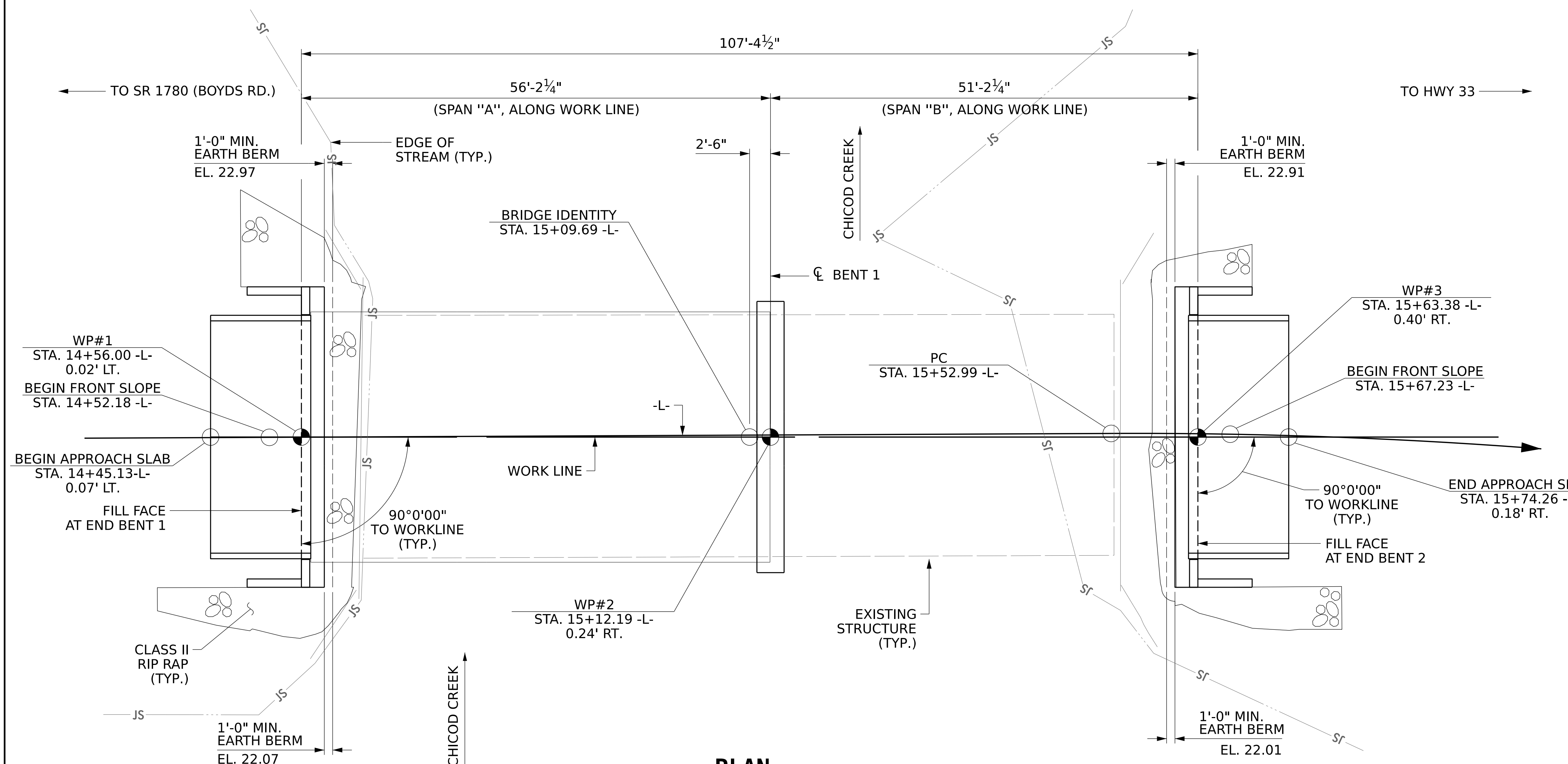
PI	=	15+20.00
EL.	=	27.81
VC	=	160'

+0.3500% -0.5600%

HORIZONTAL CURVE DATA

PI	=	16+03.19
D	=	9°01'01.0" (RT)
L	=	100.19'
T	=	50.20'
R	=	636.62'

SECTION ALONG -L-
(SECTIONS AT END BENTS ARE @ RIGHT ANGLES)

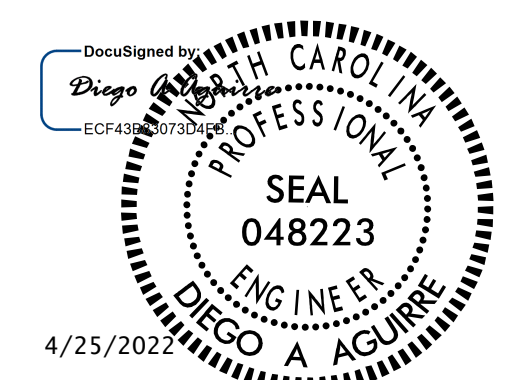


PLAN

(PILES NOT SHOWN FOR CLARITY)
(SEE SHEET S-3 AND ROADWAY PLANS FOR ROCK PLATING DETAILS)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. **BP2.R018.1**
PITT COUNTY
STATION: **15+09.69 -L-**
SHEET 1 OF 3 REPLACES BRIDGE NO. 730015



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

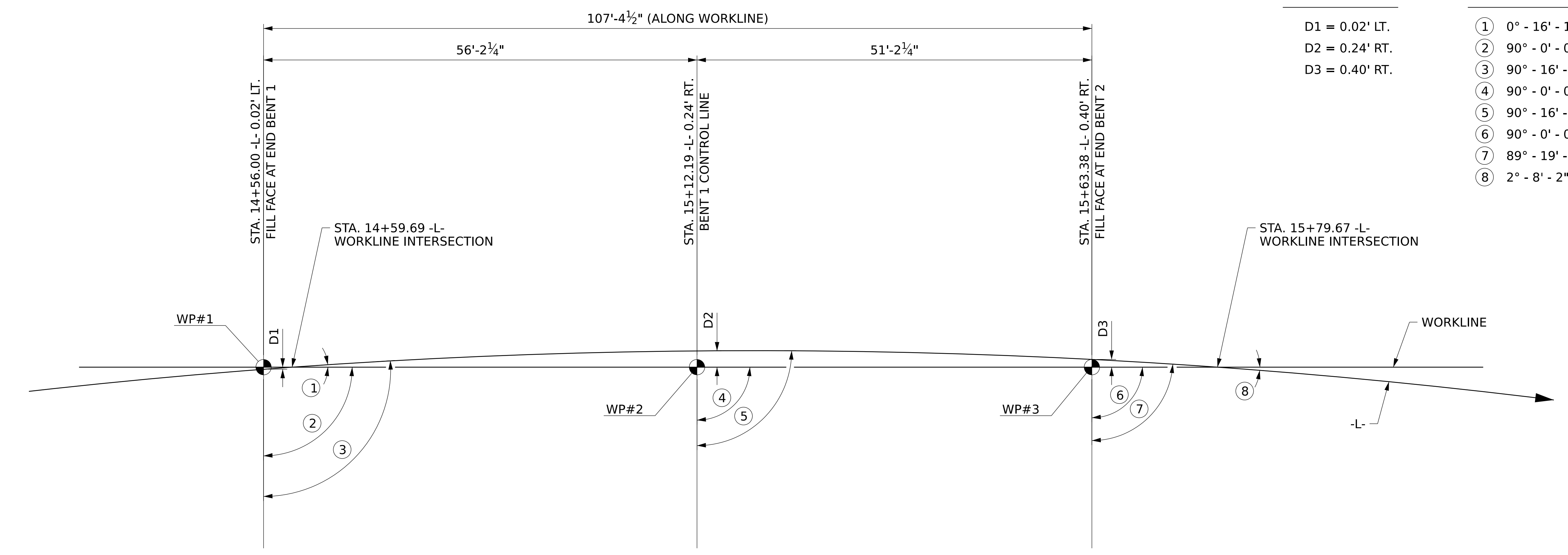
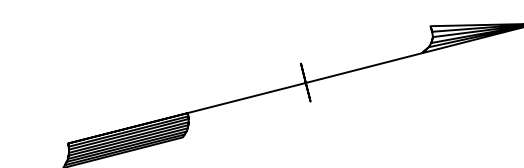
GENERAL DRAWING
FOR BRIDGE ON SR 1565
(S. GRIMESLAND BRIDGE RD.)
OVER CHICOD CREEK BETWEEN
HWY 33 AND SR 1780 (BOYDS RD)

DRAWN BY :	FIDEL L. FLORES	DATE :	06/2021
CHECKED BY :	JACOB H. DUKE	DATE :	06/2021
DESIGN ENGINEER OF RECORD :	DIEGO A. AGUIRRE	DATE :	06/2021

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			21
2			4			



OFFSETS

- D1 = 0.02' LT.
- D2 = 0.24' RT.
- D3 = 0.40' RT.

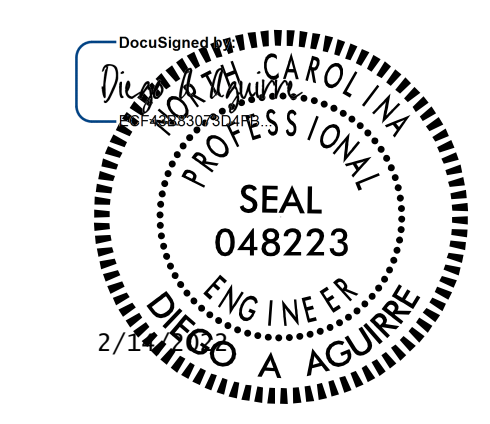
ANGLES

- ① 0° - 16' - 1"
- ② 90° - 0' - 0"
- ③ 90° - 16' - 1" TO TANGENT
- ④ 90° - 0' - 0"
- ⑤ 90° - 16' - 1" TO TANGENT
- ⑥ 90° - 0' - 0"
- ⑦ 89° - 19' - 56" TANGENT TO CURVE
- ⑧ 2° - 8' - 2" TANGENT TO CURVE

WORKLINE LAYOUT
(ALL BENTS ARE PARALLEL)

PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1565
 (S. GRIMESLAND BRIDGE RD.)
 OVER CHICOD CREEK BETWEEN
 HWY 33 AND SR 1780 (BOYDS RD)

DRAWN BY :	DIEGO A. AGUIRRE	DATE :	09/2021
CHECKED BY :	JACOB H. DUKE	DATE :	09/2021
DESIGN ENGINEER OF RECORD:	DIEGO A. AGUIRRE	DATE :	09/2021

2/14/2022
 BP2.R018.1.SMU.GD02.730015.dgn
 jauke

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			21

SUMMARY OF PILE INFORMATION/INSTALLATION
(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) ## (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Lenth per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Exc Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-5	85	See Substr. Plans	35			145							
Bent 1, Piles 1-7	120	See Substr. Plans	35	11	-5.0	205							
End Bent 2, Piles 1-5	81	See Substr. Plans	35			140							

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length

RDR = $\frac{\text{Factored Resistance} + \text{Factored Down Drag}}{\text{Dynamic Resistance Factor}}$ **401_015_BP2.R018.01_SMU_PFT_3_730015

SUMMARY OF PDA/PILE ORDER LENGTHS
(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1, Piles 1-5	MAYBE	40	2	End Bent 1, Piles 1-5	EST
Bent 1, Piles 1-7	YES	40		Bent 1, Piles 1-7	EST
End Bent 2, Piles 1-5	MAYBE	40		End Bent 2, Piles 1-5	EST

*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

PILE DESIGN INFORMATION
(Blank entries indicate item is not applicable to structure)


End Bent/ Bent No, Pile(s) ## (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-5	85	0.8		0.60	0.6		
Bent 1, Piles 1-7	120		0.6	0.60		3.5	1.00
End Bent 2, Piles 1-5	81	0.4		0.60	0.3		

*Factored Dead Load is factored weight of pile above the ground line.

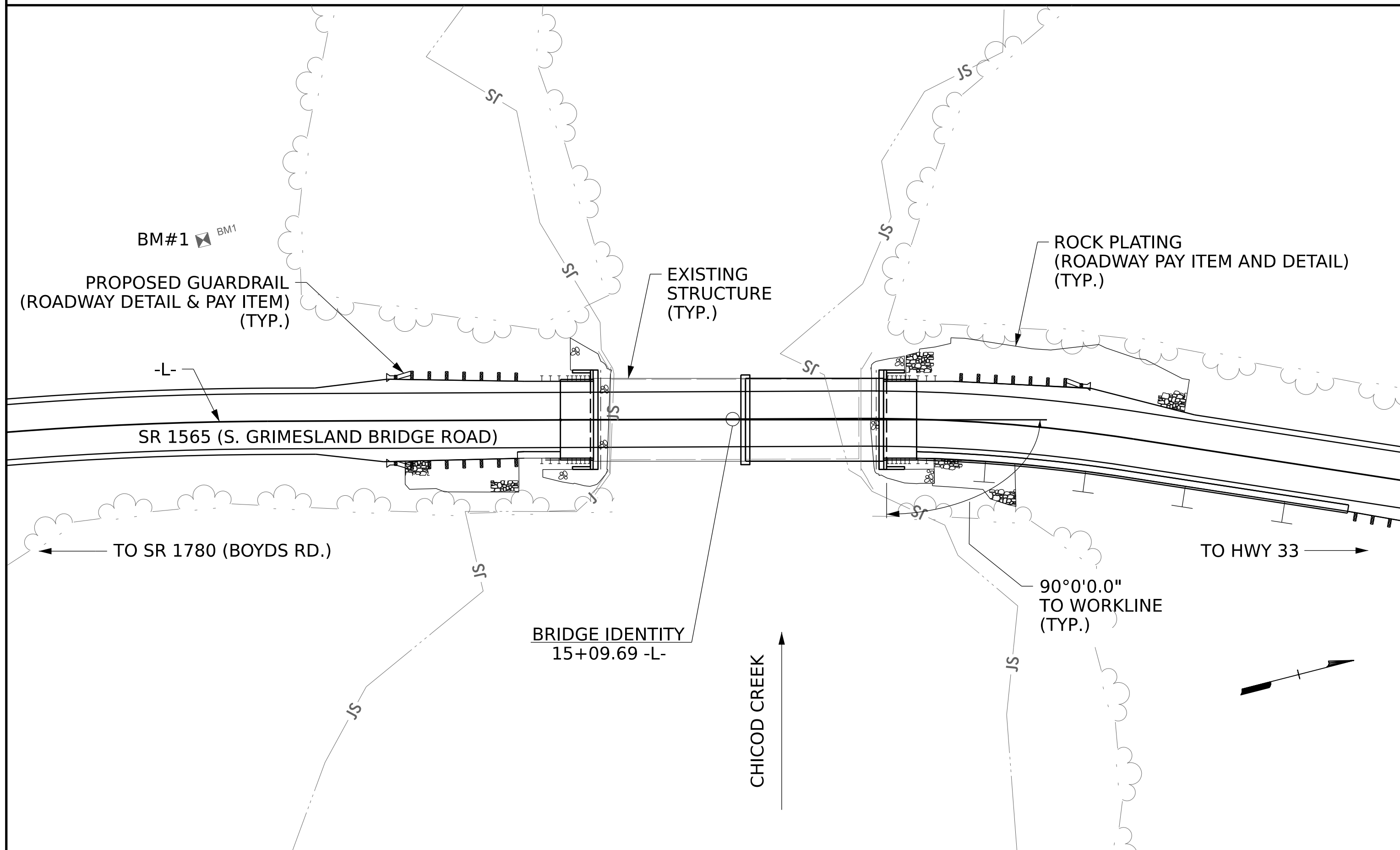
PROJECT NO. BP2.R018.1 (SF-730015)
PITT COUNTY
 STATION: 15+09.69 -L-

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jinyoung Park, PE# 032171) on 11-4-2021.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer will determine the need for PDA Testing when PDAs may be required.

 Documented by: <i>Diego A. Aguirre</i> 2/14/2022 SIGNATURE DATE	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH PILE FOUNDATION TABLES		SHEET NO. S-3																	
	REVISIONS	TOTAL SHEETS																		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	<table border="1"> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </table>	NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4			21
NO.	BY:	DATE:	NO.	BY:	DATE:															
1			3																	
2			4																	

BM#1 - STA. 13+17.04, 65.974' LT NORTHING: 653782.9415' EASTING: 2538979.9855'



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF APPROXIMATELY 30FT EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARDSPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF THREE 30FT SPANS CONSISTING OF A CONCRETE DECK ON PRESTRESSED CONCRETE CHANNEL BEAMS WITH A CLEAR ROADWAY WIDTH OF 29'-2" SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT No. 1 IS ELEVATION 13.5'. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITIES ON ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	1400 CFS
FREQUENCY OF DESIGN FLOOD	25 YRS.
DESIGN HIGH WATER ELEVATION	25.6'
DRAINAGE AREA	17.5 SQ. MI.
BASE DISCHARGE (Q100)	2603 CFS
BASE HIGH WATER ELEVATION	27.1'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	2850 CFS
FREQUENCY OF OVERTOPPING FLOOD	100 + YRS.
OVERTOPPING FLOOD ELEVATION	27.3'

@ STA. 16+81.00 -L- LT

TOTAL BILL OF MATERIAL

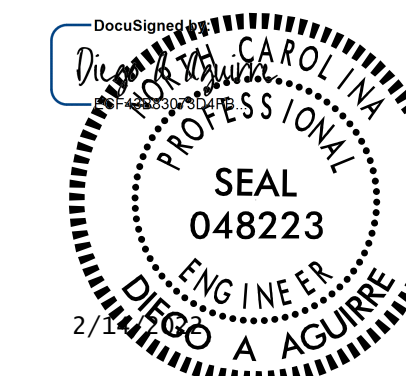
	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	REINFORCING STEEL (BRIDGE)	PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR 16" PRESTRESSED CONCRETE PILES
	LUMP SUM	LUMP SUM	EA.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	EA.
SUPERSTRUCTURE									
END BENT No. 1			*		13.0		1965	5	
BENT No. 1			1		9.3		1937		7
END BENT No. 2			*		13.0		1965	5	
TOTAL	LUMP SUM	LUMP SUM	2	LUMP SUM	35.3	LUMP SUM	5867	10	7

* SEE "PILE FOUNDATION TABLES" SHEET FOR QUANTITIES.

	12" PRESTRESSED CONCRETE PILES		16" PRESTRESSED CONCRETE PILES		VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0") THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB	
	No.	LIN. FT.	No.	LIN. FT.	LIN. FT.	TONS.	SQ. YDS.	LUMP SUM	No.	LIN. FT.
SUPERSTRUCTURE					210.5			LUMP SUM	20	1050
END BENT No. 1	5	175				152.3	170			
BENT No. 1			7	245						
END BENT No. 2	5	175				135.7	151			
TOTAL	10	350	7	245	210.5	288.0	321	LUMP SUM	20	1050

DRAWN BY : DIEGO A. AGUIRRE DATE : 06/2021
 CHECKED BY : JACOB H. DUKE DATE : 06/2021
 DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 06/2021

2/14/2022
 BP2.R018.1.SMU.C003.730015.dgn
 jauke



PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1565
 (S. GRIMESLAND BRIDGE RD.)
 OVER CHICOD CREEK BETWEEN
 HWY 33 AND SR 1780 (BOYDS RD)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS 21
2			4			

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.055	--	1.75	0.275	1.23	55'	EL	27	0.523	1.23	55'	EL	5.4	0.80	0.275	1.05	55'	EL	27		
	HL-93(0pr)	N/A	--	1.591	--	1.35	0.275	1.59	55'	EL	27	0.523	1.59	55'	EL	5.4	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.322	47.585	1.75	0.275	1.54	55'	EL	27	0.523	1.47	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27		
	HS-20(0pr)	36.000	--	1.9	68.396	1.35	0.275	1.99	55'	EL	27	0.523	1.9	55'	EL	5.4	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.776	37.476	1.4	0.275	4.04	55'	EL	27	0.523	4.17	55'	EL	5.4	0.80	0.275	2.78	55'	EL	27	
		SNGARBS2	20.000	--	2.155	43.095	1.4	0.275	3.14	55'	EL	27	0.523	3.02	55'	EL	5.4	0.80	0.275	2.15	55'	EL	27	
		SNAGRIS2	22.000	--	2.079	45.734	1.4	0.275	3.03	55'	EL	27	0.523	2.83	55'	EL	5.4	0.80	0.275	2.08	55'	EL	27	
		SNCOTTS3	27.250	--	1.384	37.708	1.4	0.275	2.01	55'	EL	27	0.523	2.09	55'	EL	5.4	0.80	0.275	1.38	55'	EL	27	
		SNAGGRS4	34.925	--	1.189	41.527	1.4	0.275	1.73	55'	EL	27	0.523	1.77	55'	EL	5.4	0.80	0.275	1.19	55'	EL	27	
		SNS5A	35.550	--	1.16	41.255	1.4	0.275	1.69	55'	EL	27	0.523	1.82	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		SNS6A	39.950	--	1.079	43.102	1.4	0.275	1.57	55'	EL	27	0.523	1.68	55'	EL	5.4	0.80	0.275	1.08	55'	EL	27	
	TTST	SNS7B	42.000	--	1.028	43.175	1.4	0.275	1.5	55'	EL	27	0.523	1.67	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27	
		TNAGRIT3	33.000	--	1.32	43.556	1.4	0.275	1.92	55'	EL	27	0.523	1.98	55'	EL	5.4	0.80	0.275	1.32	55'	EL	27	
		TNT4A	33.075	--	1.33	43.979	1.4	0.275	1.94	55'	EL	27	0.523	1.91	55'	EL	5.4	0.80	0.275	1.33	55'	EL	27	
		TNT6A	41.600	--	1.101	45.811	1.4	0.275	1.6	55'	EL	27	0.523	1.83	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
		TNT7A	42.000	--	1.114	46.804	1.4	0.275	1.62	55'	EL	27	0.523	1.71	55'	EL	5.4	0.80	0.275	1.11	55'	EL	27	
		TNT7B	42.000	--	1.163	48.848	1.4	0.275	1.69	55'	EL	27	0.523	1.62	55'	EL	5.4	0.80	0.275	1.16	55'	EL	27	
		TNAGRIT4	43.000	--	1.101	47.33	1.4	0.275	1.6	55'	EL	27	0.523	1.56	55'	EL	5.4	0.80	0.275	1.10	55'	EL	27	
TNAGT5A	45.000	--	1.031	46.405	1.4	0.275	1.5	55'	EL	27	0.523	1.58	55'	EL	5.4	0.80	0.275	1.03	55'	EL	27			
TNAGT5B	45.000	3	1.013	45.582	1.4	0.275	1.47	55'	EL	27	0.523	1.48	55'	EL	5.4	0.80	0.275	1.01	55'	EL	27			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

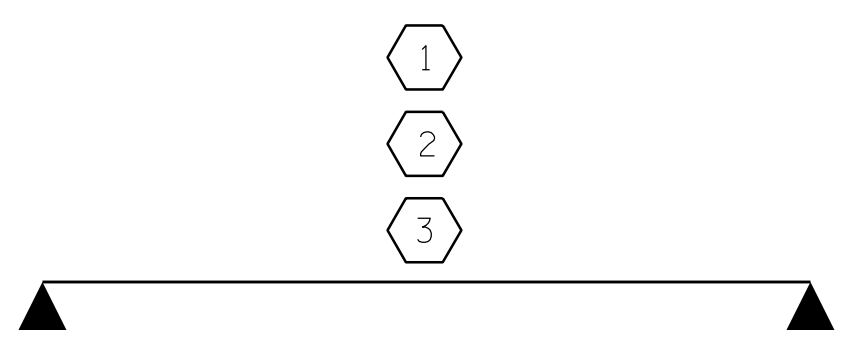
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

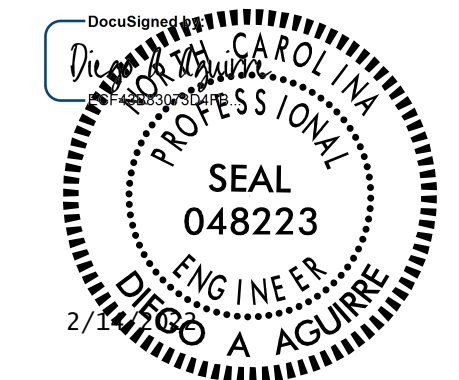
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN "A"

PROJECT NO. BP2.R018.1
PITT COUNTY
STATION: 15+09.69 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
**LRFR SUMMARY FOR
55' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)
SPAN A**

DESIGN ENGINEER OF RECORD: <u>DIEGO A. AGUIRRE</u> DATE : <u>11/2021</u>	
ASSEMBLED BY : <u>DIEGO A. AGUIRRE</u> DATE : <u>11/2021</u>	CHECKED BY : <u>JACOB H. DUKE</u> DATE : <u>11/2021</u>
DRAWN BY : <u>CVC</u> 6/10	CHECKED BY : <u>DNS</u> 6/10

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			21

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.394	--	1.75	0.276	1.57	50'	EL	24.5	0.531	1.39	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5		
	HL-93(0pr)	N/A	--	1.807	--	1.35	0.276	2.03	50'	EL	24.5	0.531	1.81	50'	EL	2.45	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.667	60.007	1.75	0.276	1.95	50'	EL	24.5	0.531	1.67	50'	EL	2.45	0.80	0.276	1.79	50'	EL	24.5		
	HS-20(0pr)	36.000	--	2.161	77.787	1.35	0.276	2.52	50'	EL	24.5	0.531	2.16	50'	EL	2.45	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.635	49.079	1.4	0.276	4.95	50'	EL	24.5	0.531	4.7	50'	EL	2.45	0.80	0.276	3.64	50'	EL	24.5	
		SNGARBS2	20.000	--	2.871	57.42	1.4	0.276	3.91	50'	EL	24.5	0.531	3.42	50'	EL	2.45	0.80	0.276	2.87	50'	EL	24.5	
		SNAGRIS2	22.000	--	2.778	61.109	1.4	0.276	3.78	50'	EL	19.6	0.531	3.21	50'	EL	2.45	0.80	0.276	2.78	50'	EL	24.5	
		SNCOTTS3	27.250	--	1.814	49.418	1.4	0.276	2.47	50'	EL	24.5	0.531	2.36	50'	EL	2.45	0.80	0.276	1.81	50'	EL	24.5	
		SNAGGRS4	34.925	--	1.577	55.063	1.4	0.276	2.15	50'	EL	24.5	0.531	2.01	50'	EL	2.45	0.80	0.276	1.58	50'	EL	24.5	
		SNS5A	35.550	--	1.537	54.657	1.4	0.276	2.09	50'	EL	24.5	0.531	2.07	50'	EL	2.45	0.80	0.276	1.54	50'	EL	24.5	
		SNS6A	39.950	--	1.438	57.43	1.4	0.276	1.96	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.44	50'	EL	24.5	
	SNS7B	42.000	--	1.370	57.54	1.4	0.276	1.87	50'	EL	24.5	0.531	1.91	50'	EL	2.45	0.80	0.276	1.37	50'	EL	24.5		
	TTST	TNAGRIT3	33.000	--	1.761	58.118	1.4	0.276	2.4	50'	EL	24.5	0.531	2.25	50'	EL	2.45	0.80	0.276	1.76	50'	EL	24.5	
		TNT4A	33.075	--	1.777	58.759	1.4	0.276	2.42	50'	EL	24.5	0.531	2.17	50'	EL	2.45	0.80	0.276	1.78	50'	EL	24.5	
		TNT6A	41.600	--	1.480	61.558	1.4	0.276	2.01	50'	EL	24.5	0.531	2.08	50'	EL	2.45	0.80	0.276	1.48	50'	EL	24.5	
		TNT7A	42.000	--	1.502	63.087	1.4	0.276	2.05	50'	EL	24.5	0.531	1.94	50'	EL	2.45	0.80	0.276	1.50	50'	EL	24.5	
		TNT7B	42.000	--	1.566	65.773	1.4	0.276	2.13	50'	EL	24.5	0.531	1.84	50'	EL	2.45	0.80	0.276	1.57	50'	EL	24.5	
		TNAGRIT4	43.000	--	1.486	63.902	1.4	0.276	2.02	50'	EL	24.5	0.531	1.77	50'	EL	2.45	0.80	0.276	1.49	50'	EL	24.5	
TNAGT5A		45.000	--	1.388	62.47	1.4	0.276	1.89	50'	EL	24.5	0.531	1.8	50'	EL	2.45	0.80	0.276	1.39	50'	EL	24.5		
TNAGT5B	45.000	3	1.360	61.206	1.4	0.276	1.85	50'	EL	24.5	0.531	1.68	50'	EL	2.45	0.80	0.276	1.36	50'	EL	24.5			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

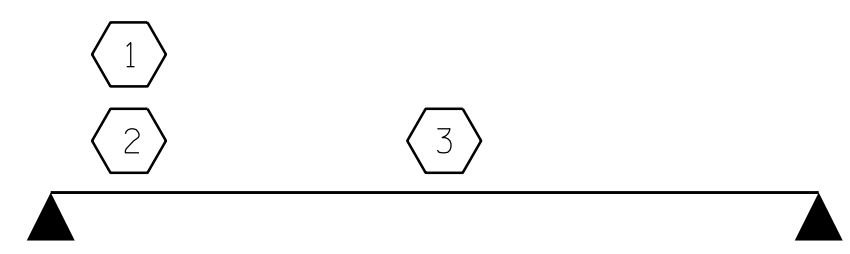
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

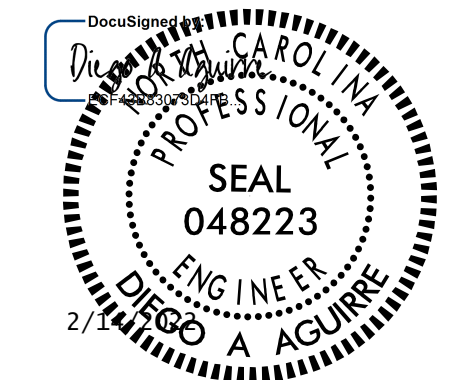
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY
FOR SPAN "B"

PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

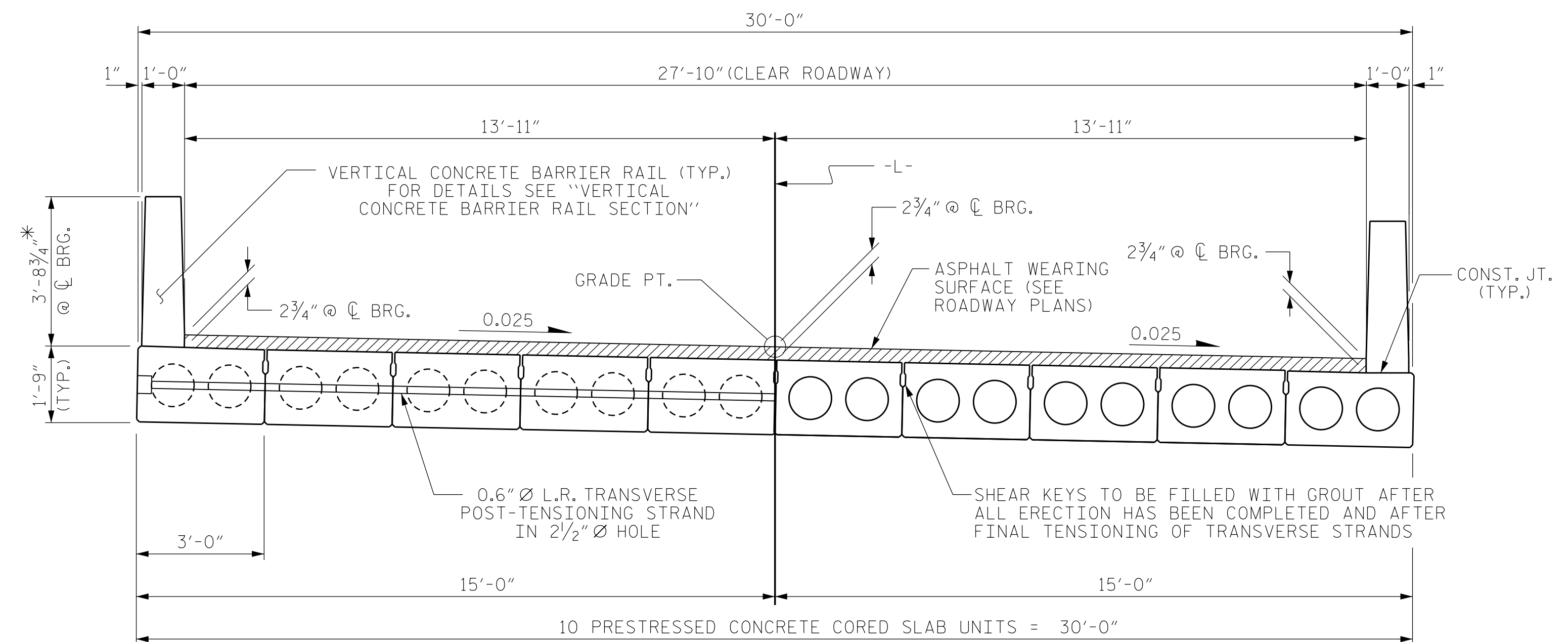
STANDARD
**LRFR SUMMARY FOR
 50' CORED SLAB UNIT
 90° SKEW**
 (NON-INTERSTATE TRAFFIC)
 SPAN B

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 11/2021	
ASSEMBLED BY : DIEGO A. AGUIRRE DATE : 11/2021	CHECKED BY : JACOB H. DUKE DATE : 11/2021
DRAWN BY : CVC 6/10	CHECKED BY : DNS 6/10

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

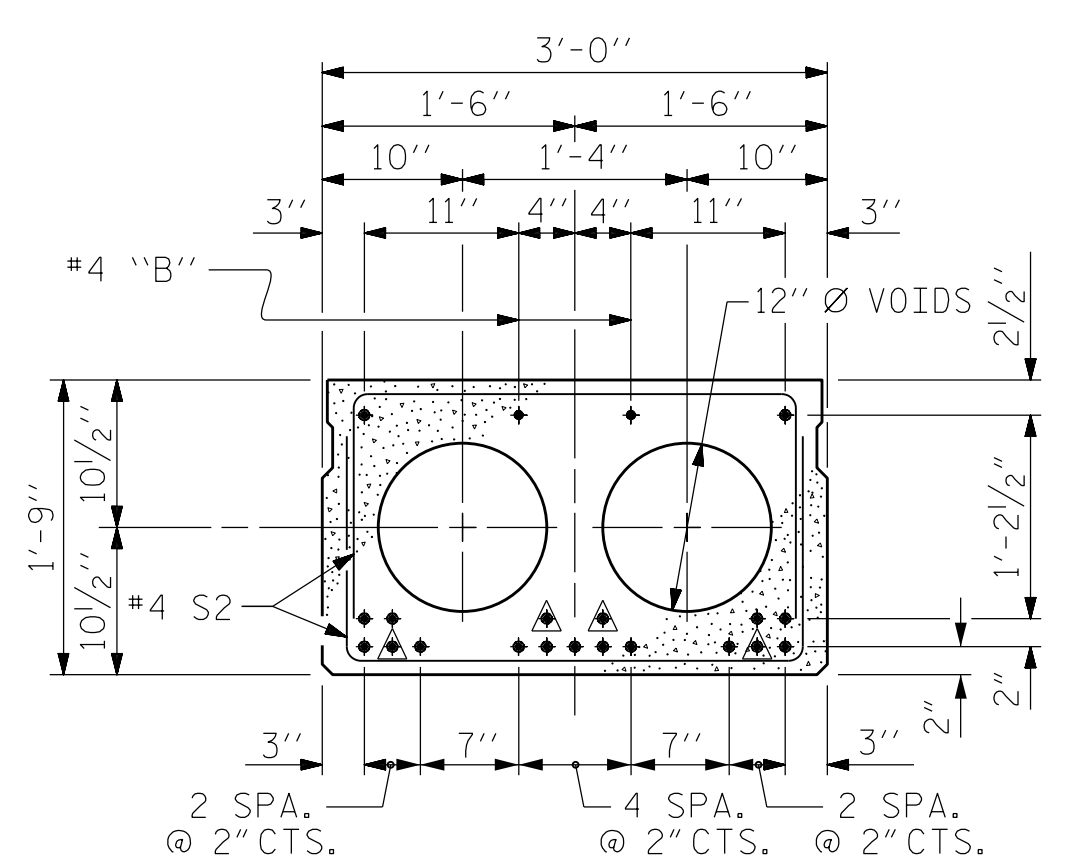
301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

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

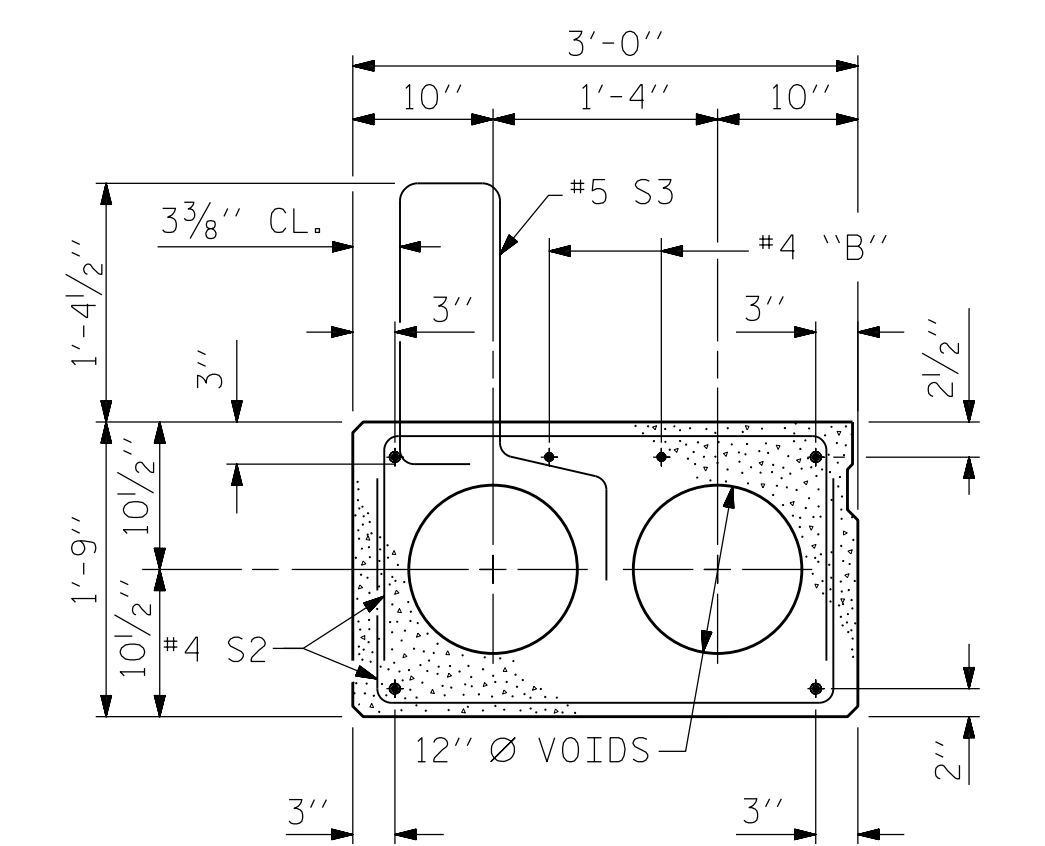


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS
TYPICAL SECTION

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



INTERIOR SLAB SECTION
 (50' & 55' UNIT)
 (19 STRANDS REQUIRED)

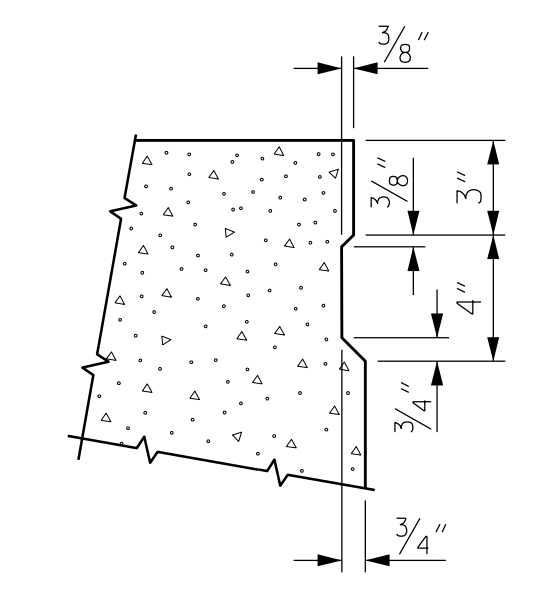


EXT. SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

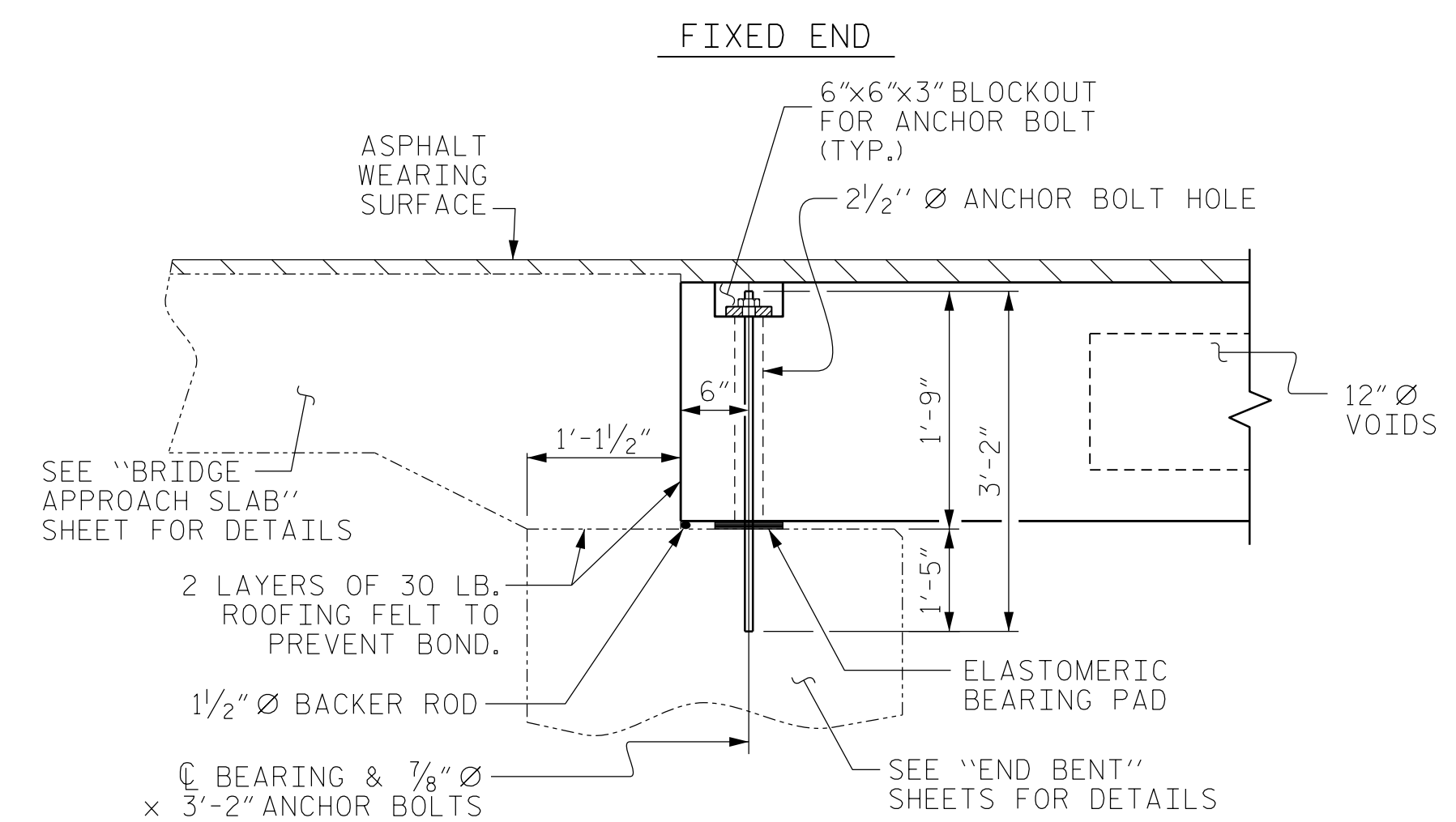
0.6" Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

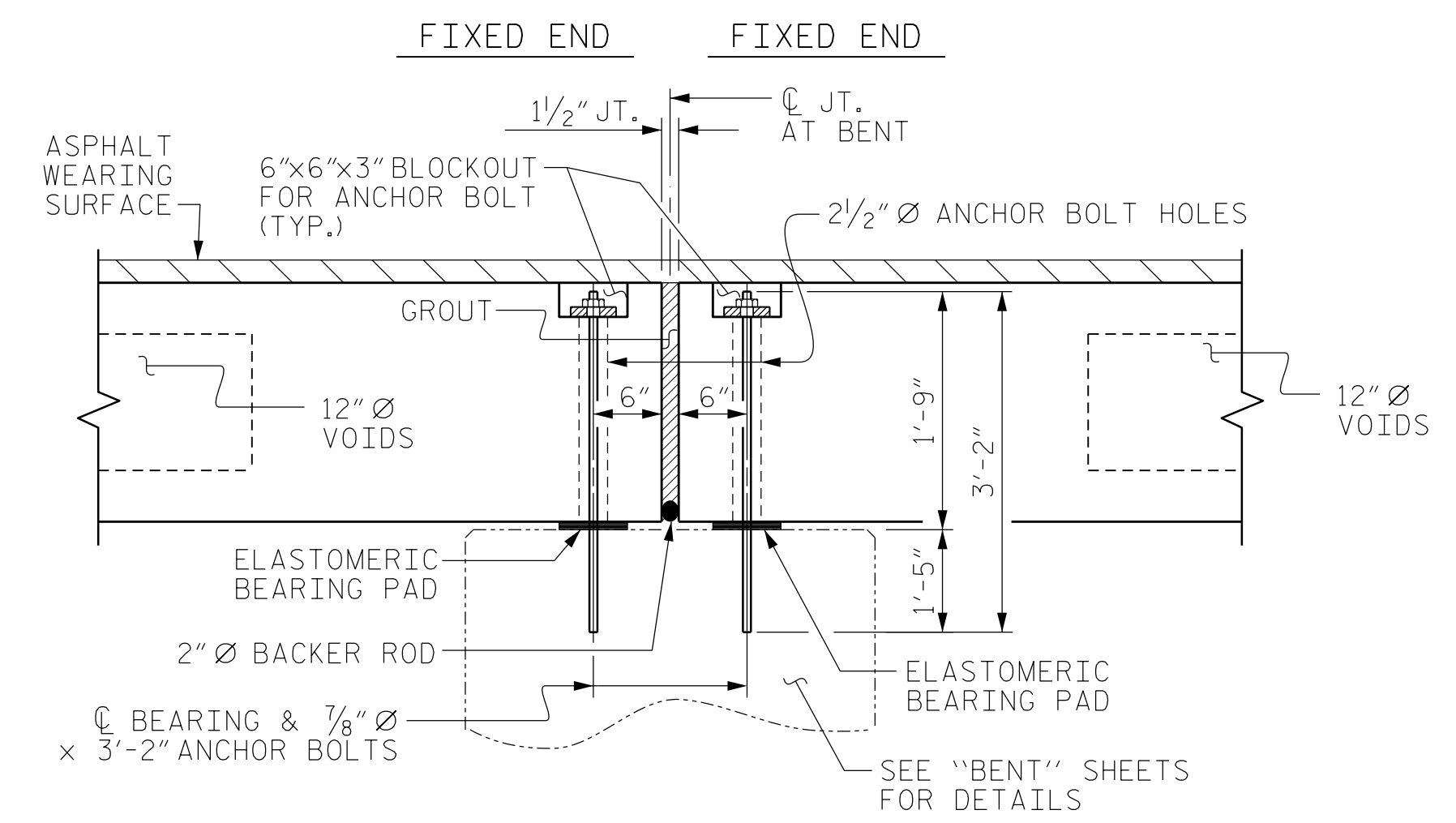
DEBONDING LEGEND



SHEAR KEY DETAIL
 NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



SECTION AT END BENT



SECTION AT BENT

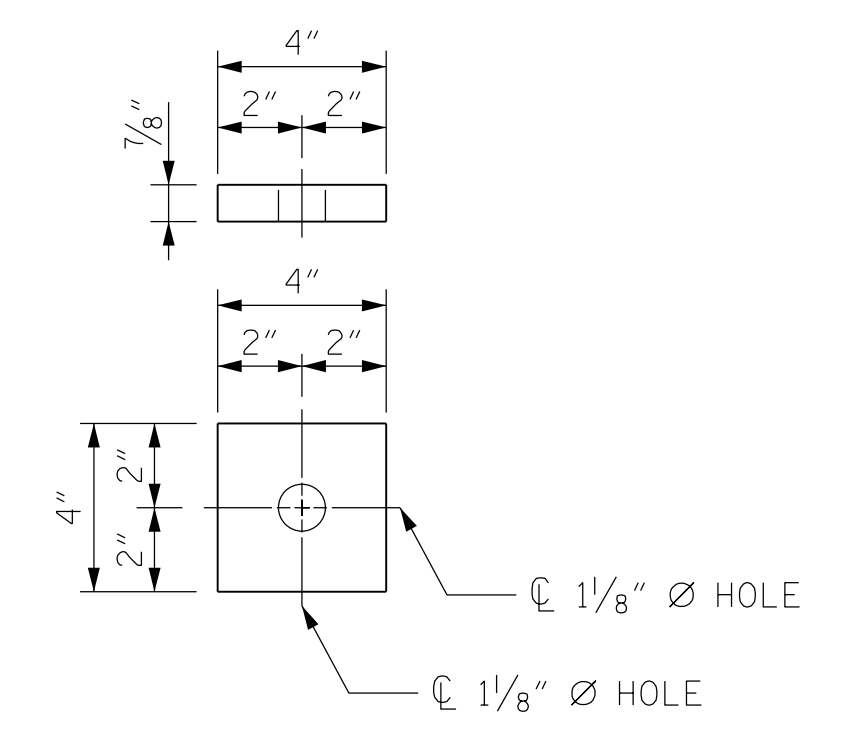
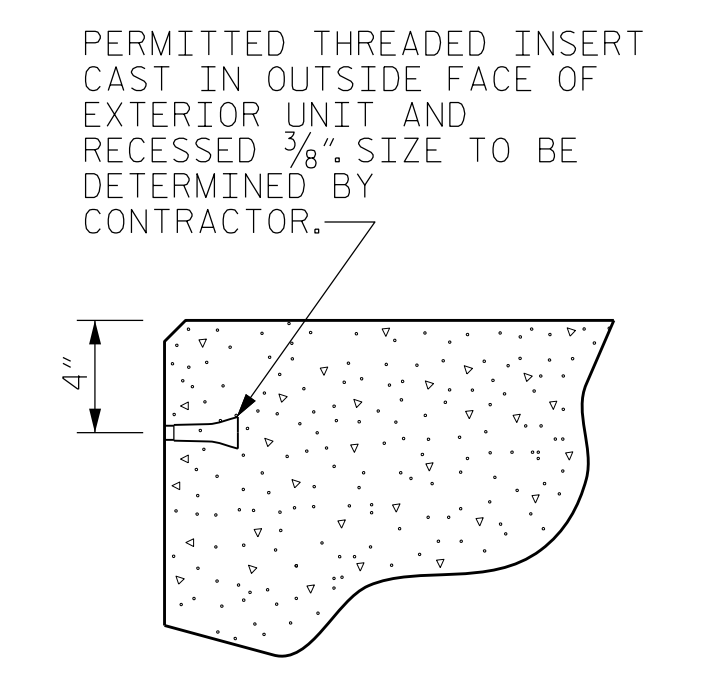
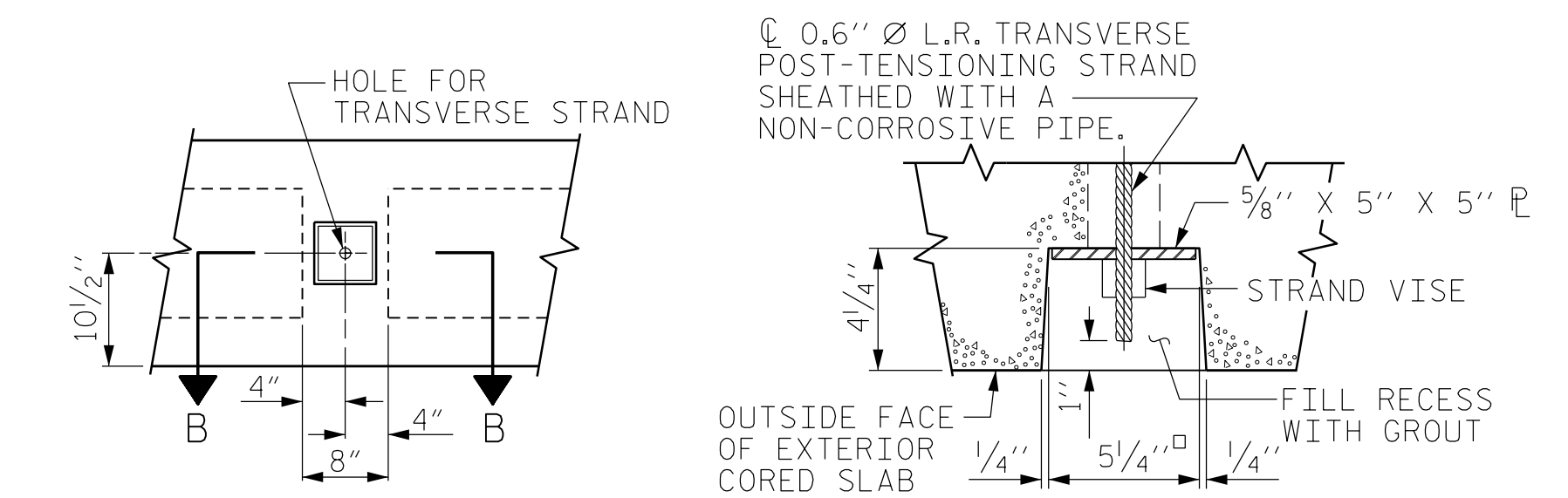


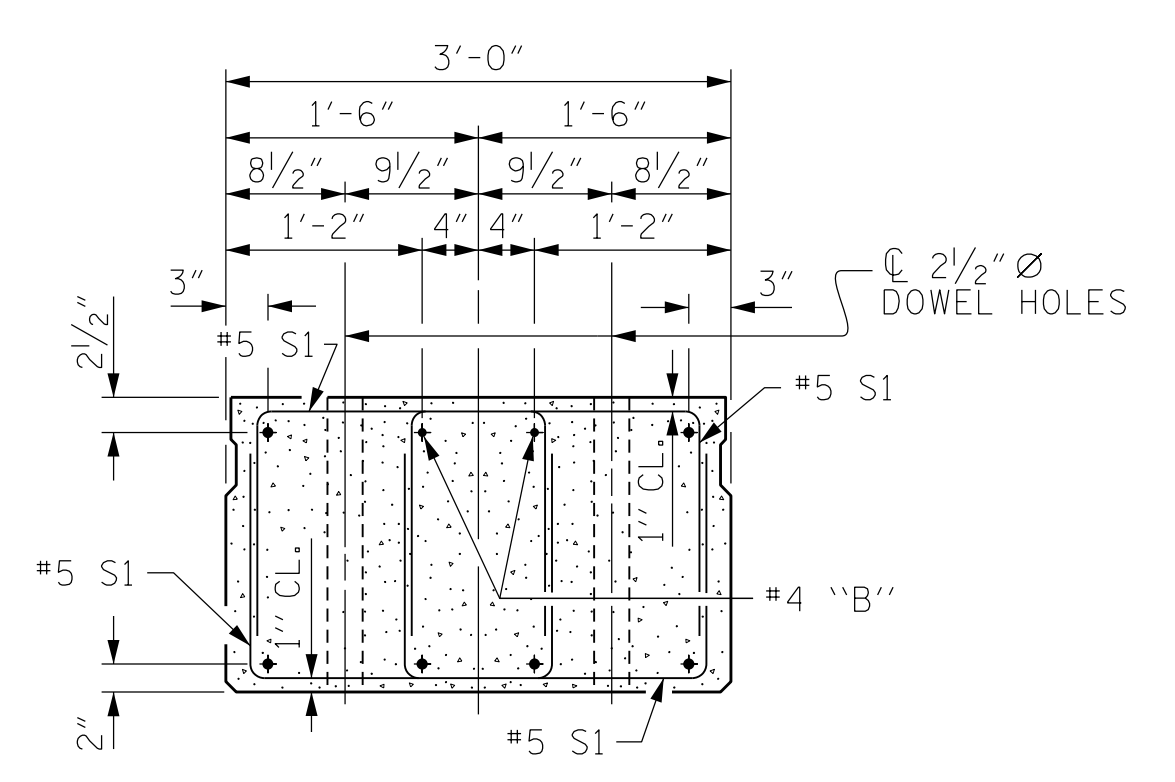
PLATE "P1" DETAILS
 (80 REQUIRED)



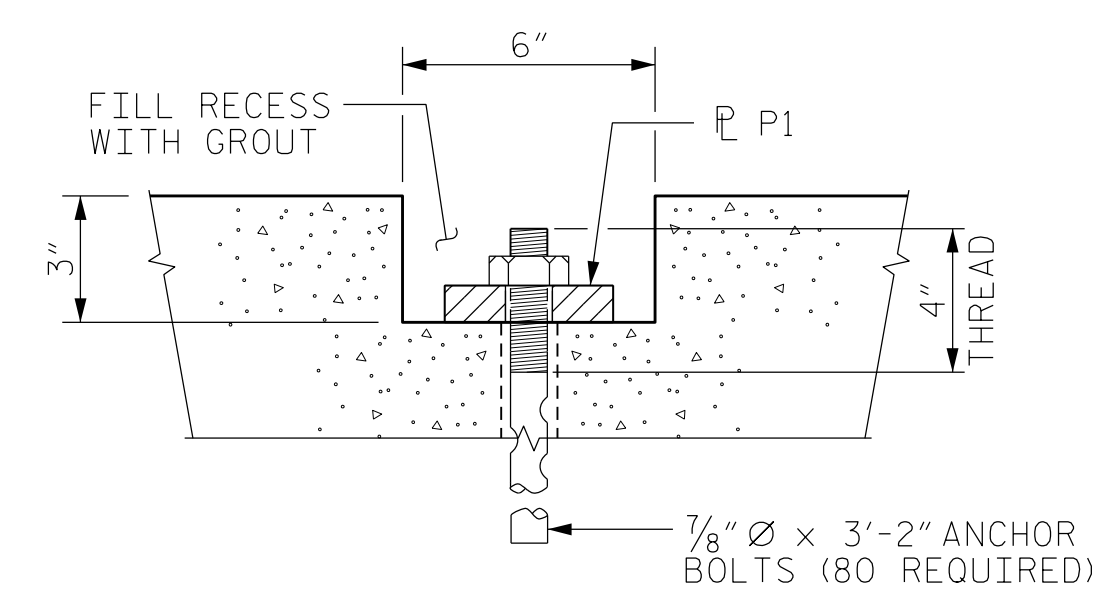
THREADED INSERT DETAIL



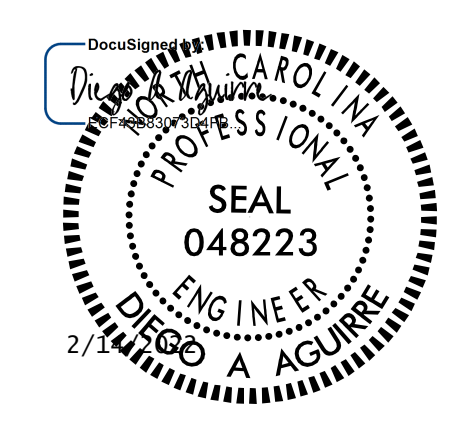
ELEVATION VIEW
SECTION B-B
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



BLOCKOUT DETAIL FOR ANCHOR BOLTS



PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

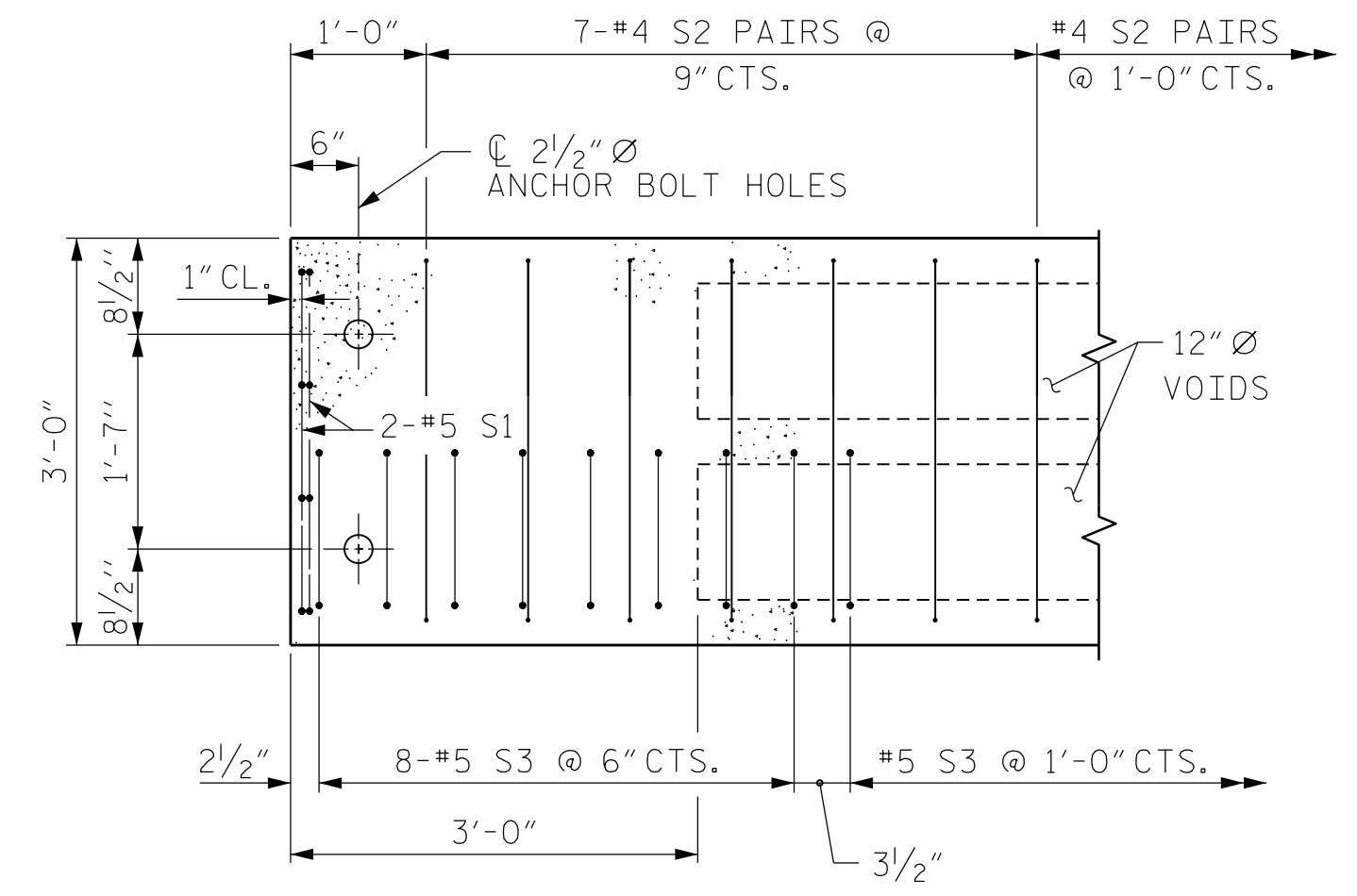
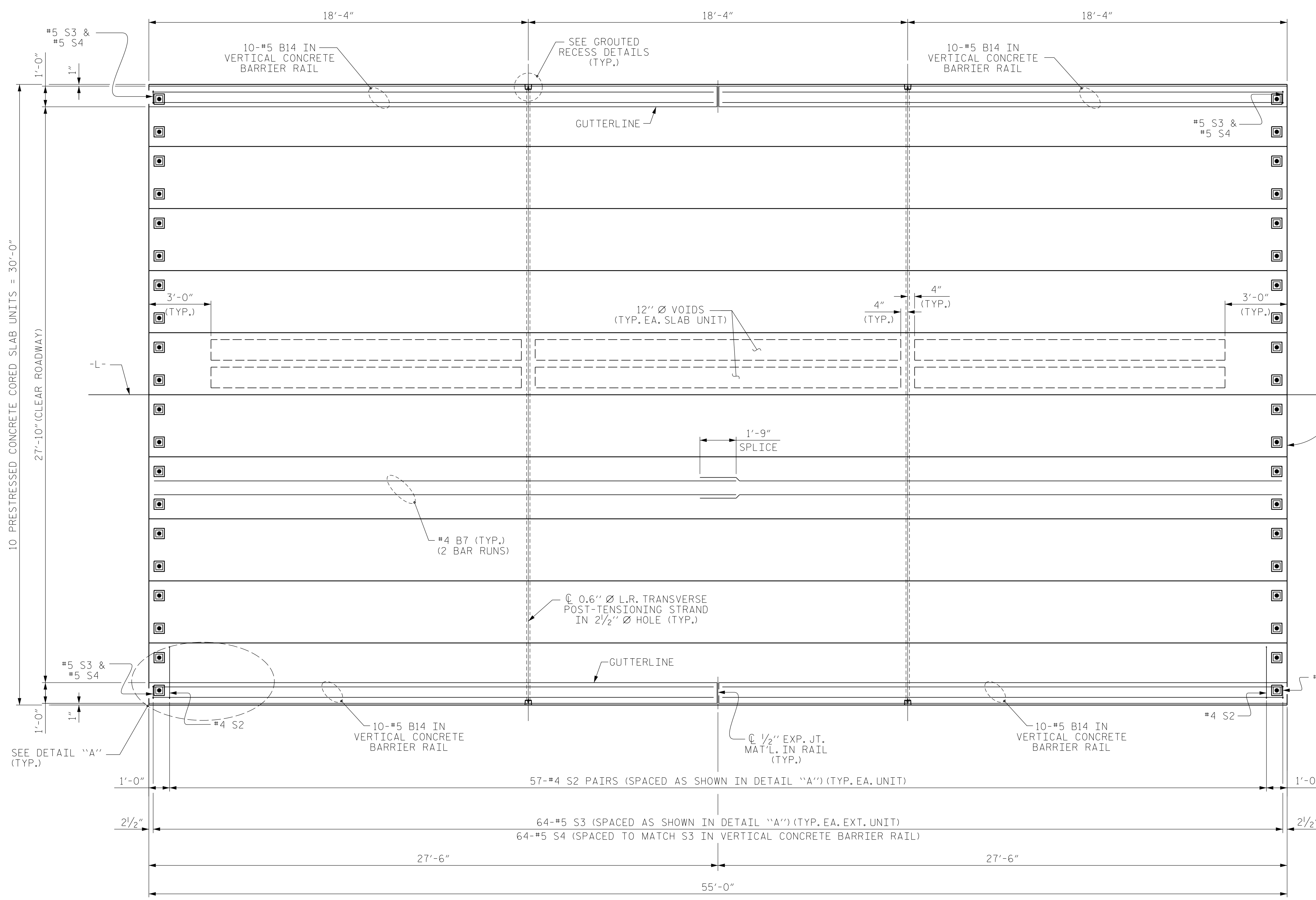
SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS 21
2			4			

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021		
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021	CHECKED BY: JACOB H. DUKE DATE: 11/2021	
DRAWN BY: DGE 5/09	REV. 8/14	MAA/TMG
CHECKED BY: BCH 6/09		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC FIRM LICENSE: C-1506

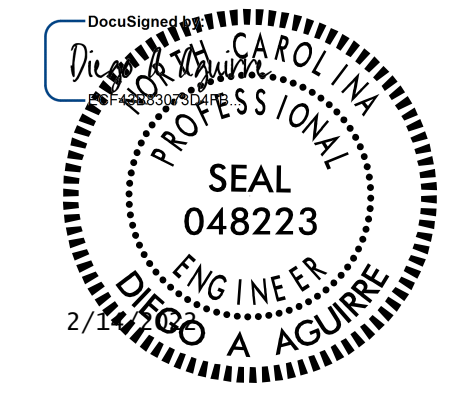


DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

PLAN OF UNIT
 SPAN "A"

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

SHEET 2 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
PLAN OF 55' UNIT
27'-10" CLEAR ROADWAY
90° SKEW
SPAN "A"

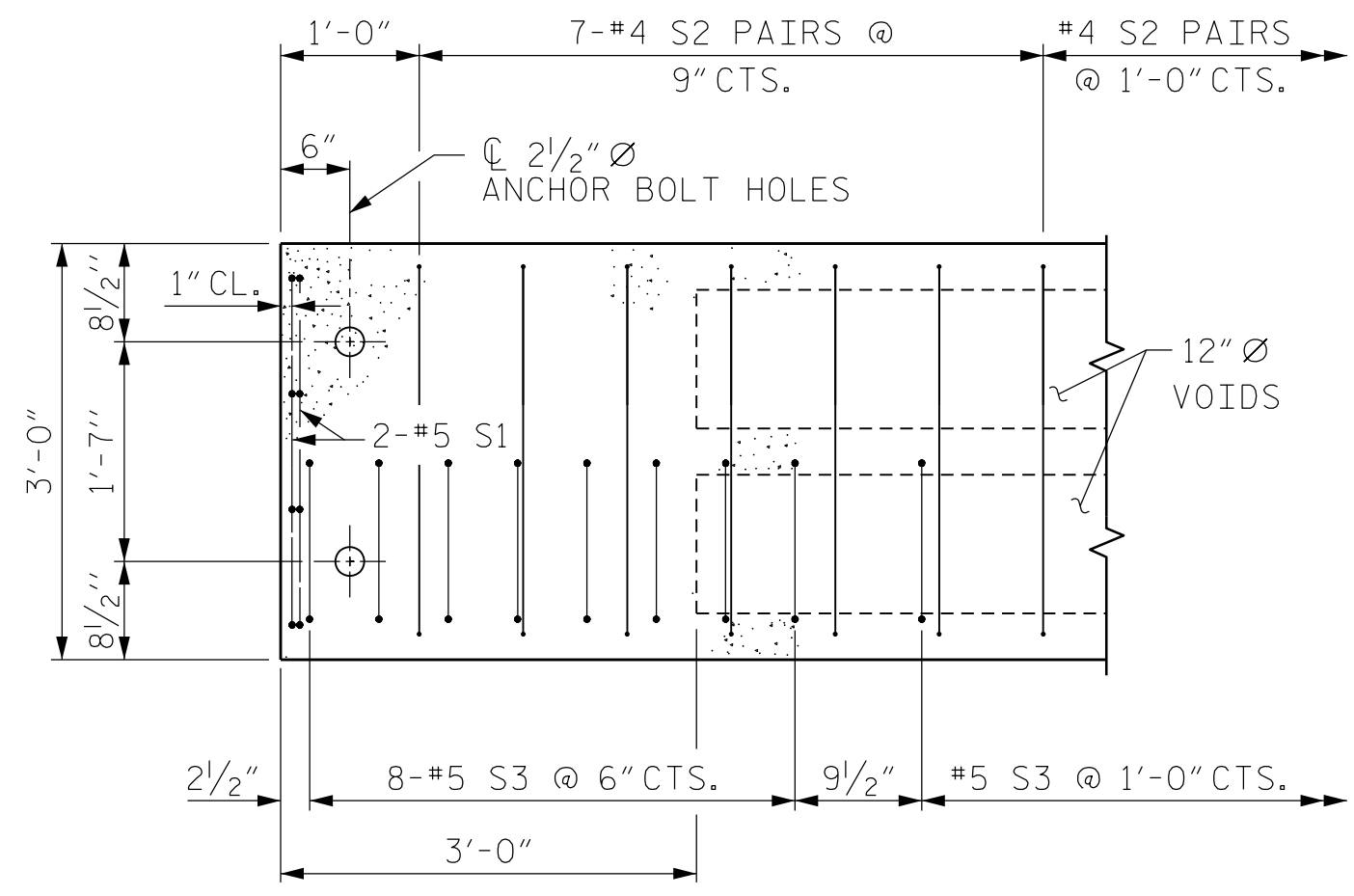
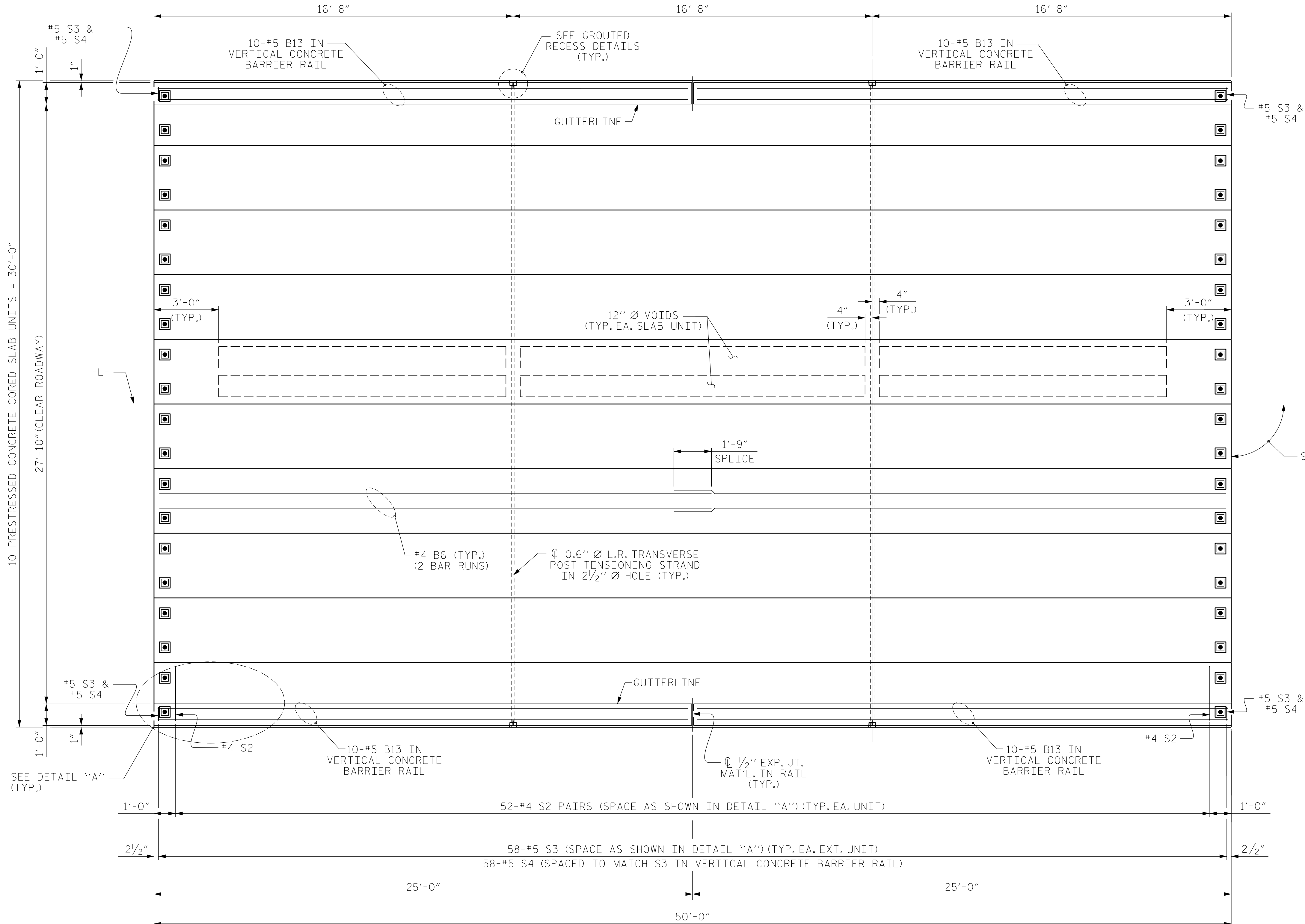


DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY:	DIEGO A. AGUIRRE	DATE:	11/2021
CHECKED BY:	JACOB H. DUKE	DATE:	11/2021
DRAWN BY:	DGE 3/09	REV. 12/5/11	MAA/AAC
CHECKED BY:	BCH 3/09	REV. 8/14	MAA/TMG

DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			21



DETAIL "A"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

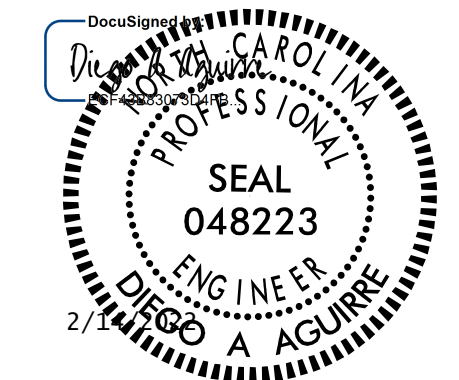
PLAN OF UNIT
 SPAN "B"

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 50' UNIT
 27'-10" CLEAR ROADWAY
 90° SKEW
 SPAN "B"



DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY:	DIEGO A. AGUIRRE	DATE:	11/2021
CHECKED BY:	JACOB H. DUKE	DATE:	11/2021
DRAWN BY:	DGE 3/09	REV. 12/5/11	MAA/AAC
CHECKED BY:	BCH 3/09	REV. 8/14	MAA/TMG

DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			21

BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT

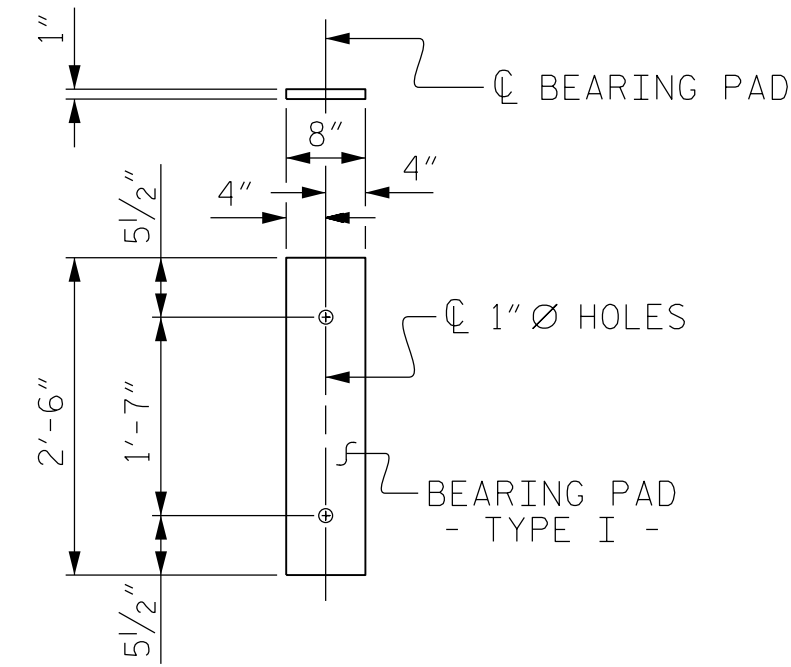
Table with 8 columns: BAR, NUMBER, SIZE, TYPE, EXTERIOR UNIT LENGTH, EXTERIOR UNIT WEIGHT, INTERIOR UNIT LENGTH, INTERIOR UNIT WEIGHT. Includes rows for B6, S1, S2, *S3 and totals for REINFORCING STEEL, EPOXY COATED REINFORCING STEEL, 6500 P.S.I. CONCRETE, and 0.6" L.R. STRANDS.

BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT

Table with 8 columns: BAR, NUMBER, SIZE, TYPE, EXTERIOR UNIT LENGTH, EXTERIOR UNIT WEIGHT, INTERIOR UNIT LENGTH, INTERIOR UNIT WEIGHT. Includes rows for B7, S1, S2, *S3 and totals for REINFORCING STEEL, EPOXY COATED REINFORCING STEEL, 6500 P.S.I. CONCRETE, and 0.6" L.R. STRANDS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

Table with 3 columns: ASPHALT OVERLAY THICKNESS, RAIL HEIGHT, and a row for 50' & 55' UNITS with values 1 5/8" and 3'-7 5/8" @ MID-SPAN.



FIXED END (TYPE I - 40 REQ'D) ELASTOMERIC BEARING DETAILS

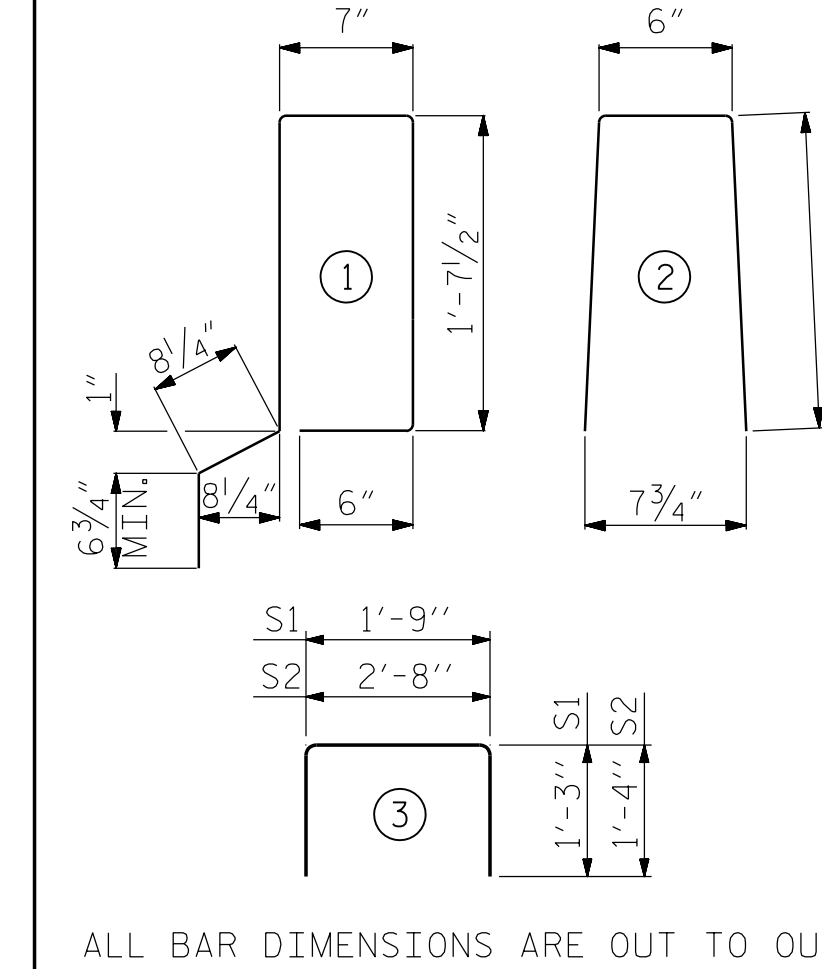
ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER

Table with 2 columns: 50' & 55' CORED SLAB UNIT and 3'-0" x 1'-9" 0.6" L.R. STRAND. Rows for CAMBER, DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD, and FINAL CAMBER.

** INCLUDES FUTURE WEARING SURFACE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" ANCHOR BOLT HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

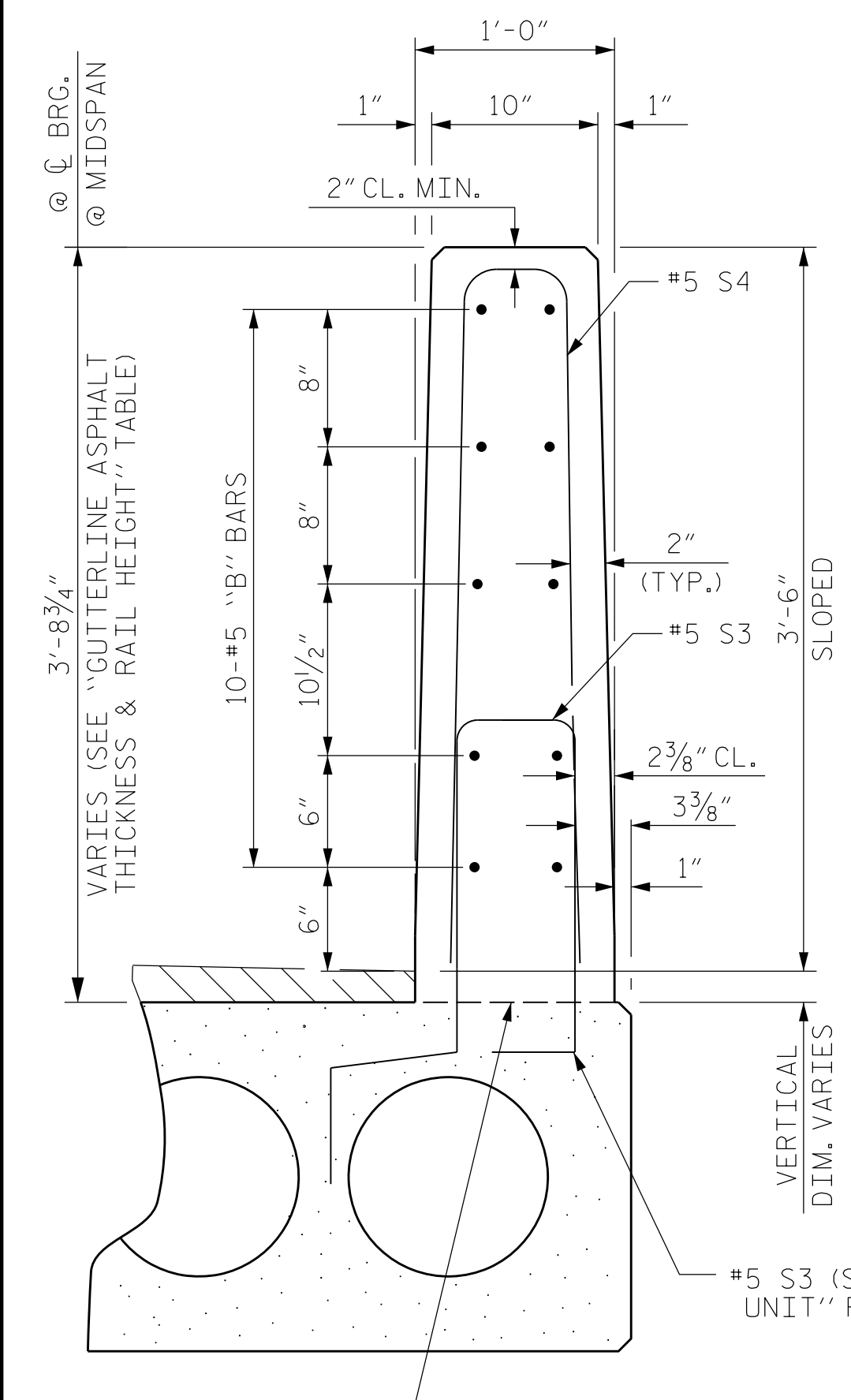
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

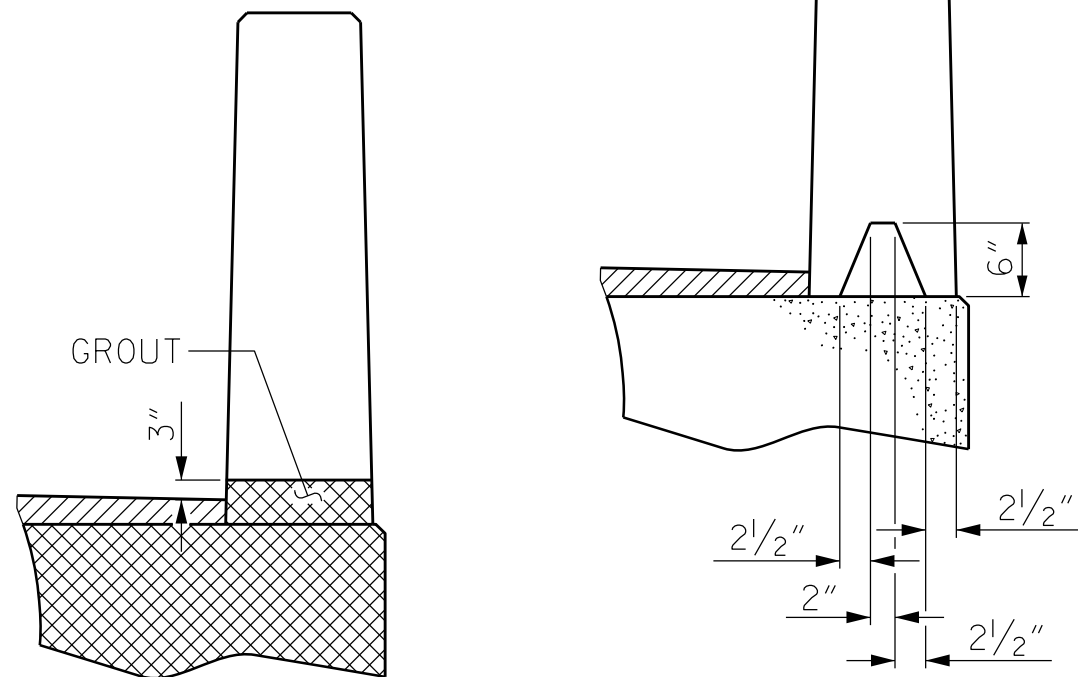
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

THE 7/8" ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307.

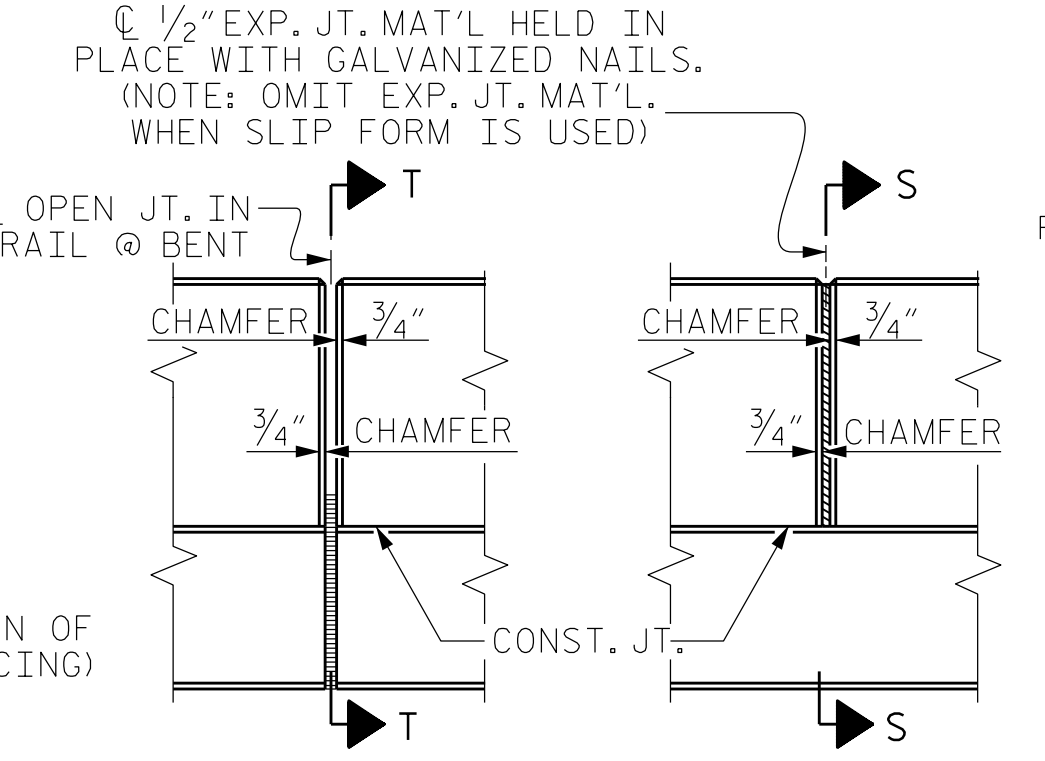
THE COST OF THE 7/8" ANCHOR BOLTS, NUTS, WASHERS AND PLATES CAST WITH THE END BENT CAPS AND BENT CAP SHALL BE INCLUDED IN THE CORED SLAB PAY ITEM.



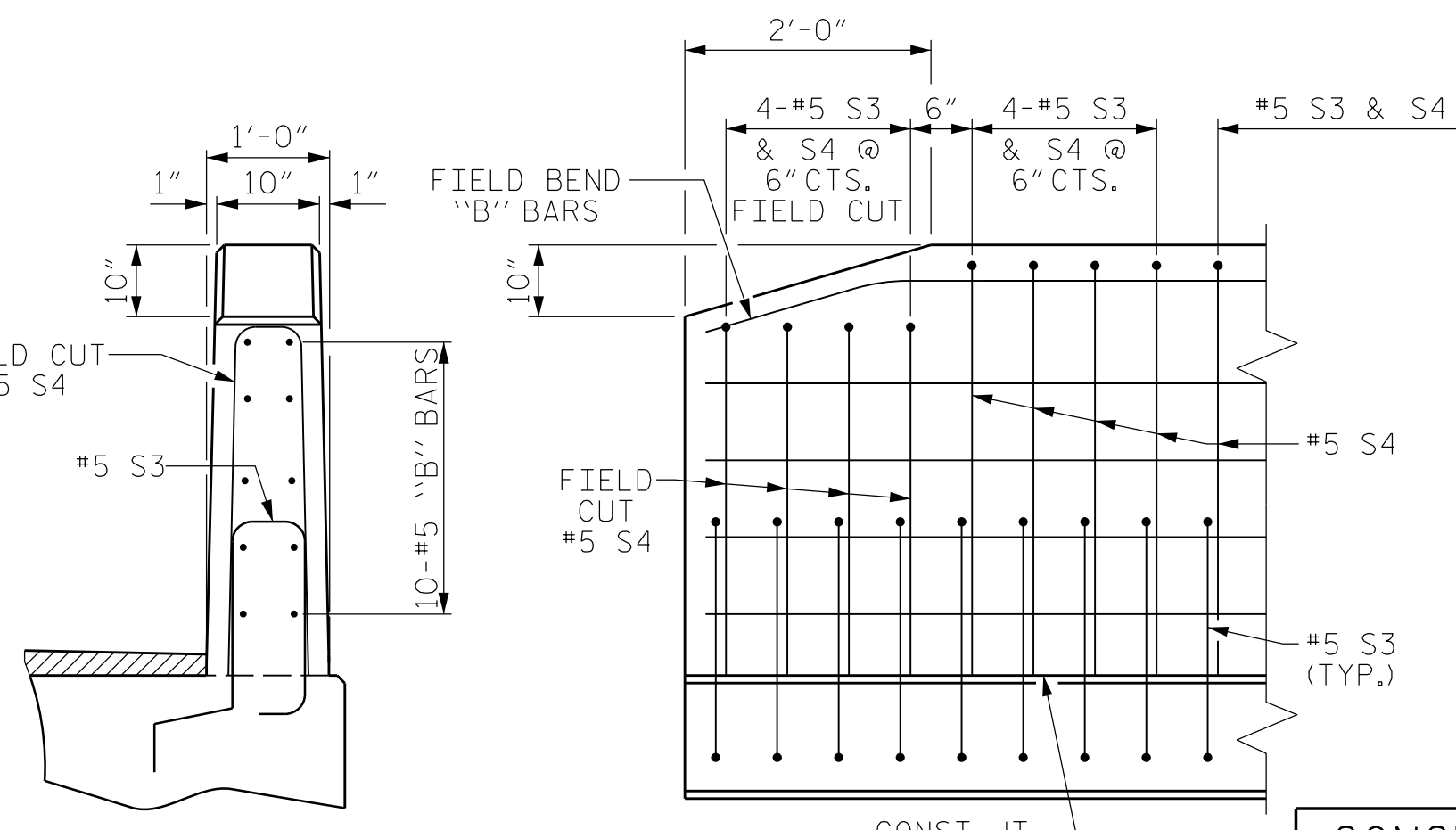
VERTICAL CONCRETE BARRIER RAIL SECTION



SECTION T-T AT OPEN JOINT AT BENT (THIS IS TO BE USED WHERE FOAM JOINT IS NOT USED) SECTION S-S AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END OF RAIL DETAILS

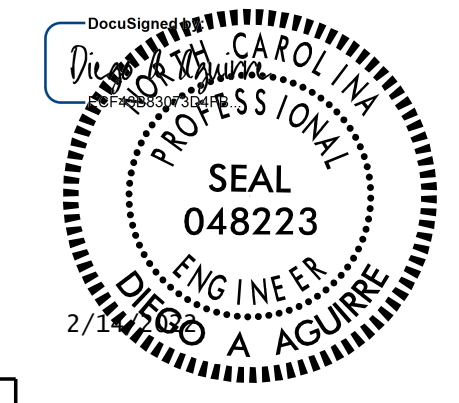
Table for BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL (55' UNIT) showing bars per pair, total number, size, type, length, and weight for bars #B14 and #S4.

Table for CORED SLABS REQUIRED (50' UNIT) showing number, length, and total length for exterior and interior c.s.

Table for CORED SLABS REQUIRED (55' UNIT) showing number, length, and total length for exterior and interior c.s.

Table for GRADE 270 STRANDS showing area, ultimate strength, and applied prestress.

Table for CONCRETE RELEASE STRENGTH showing unit and PSI for 50' & 55' units.



PROJECT NO. BP2.R018.1 PITT COUNTY STATION: 15+09.69 -L-

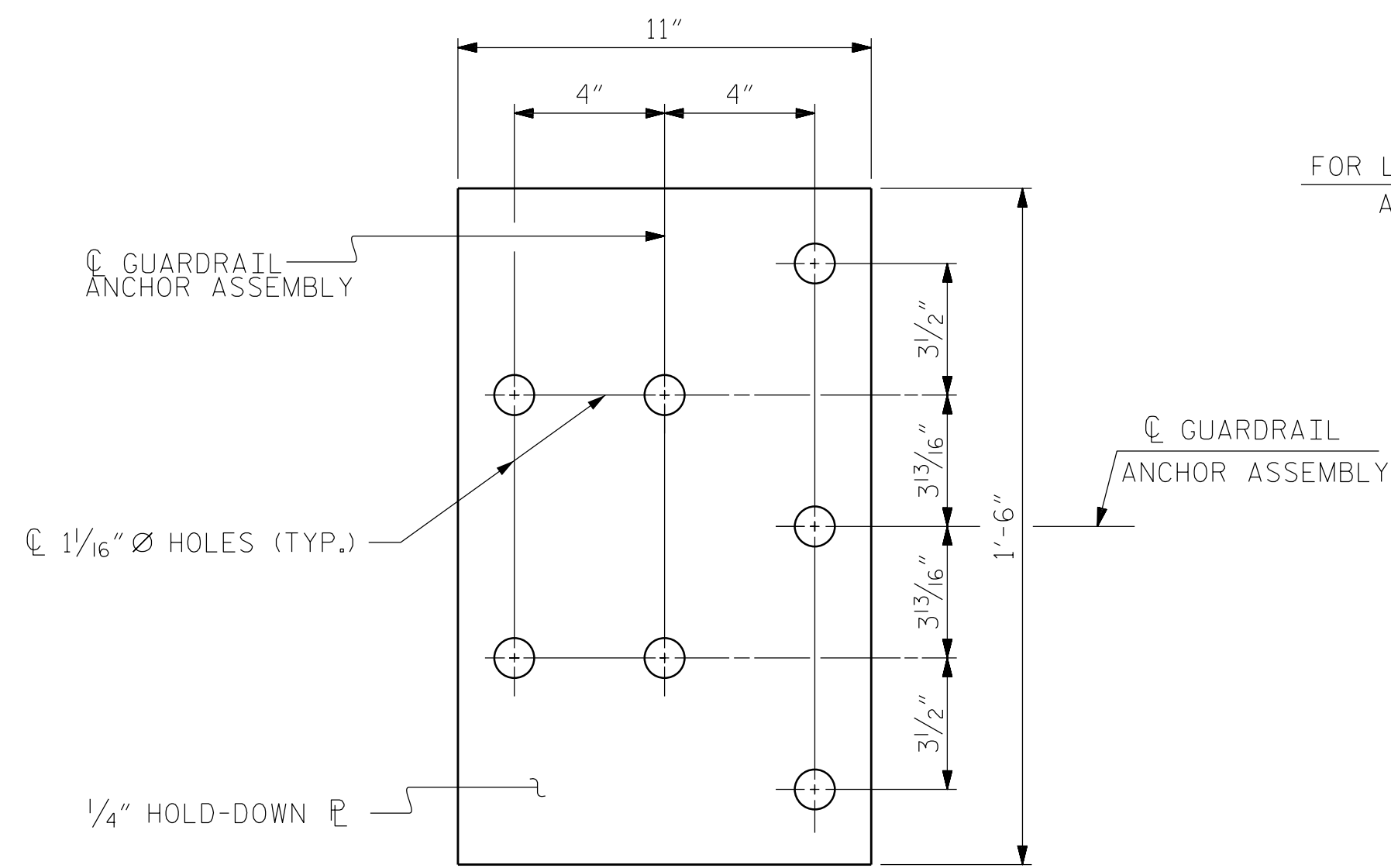
DEPARTMENT OF TRANSPORTATION STANDARD 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW SPANS 'A' & 'B'

Table for REVISIONS and SHEET NO. (S-10) with columns for NO., BY, DATE.

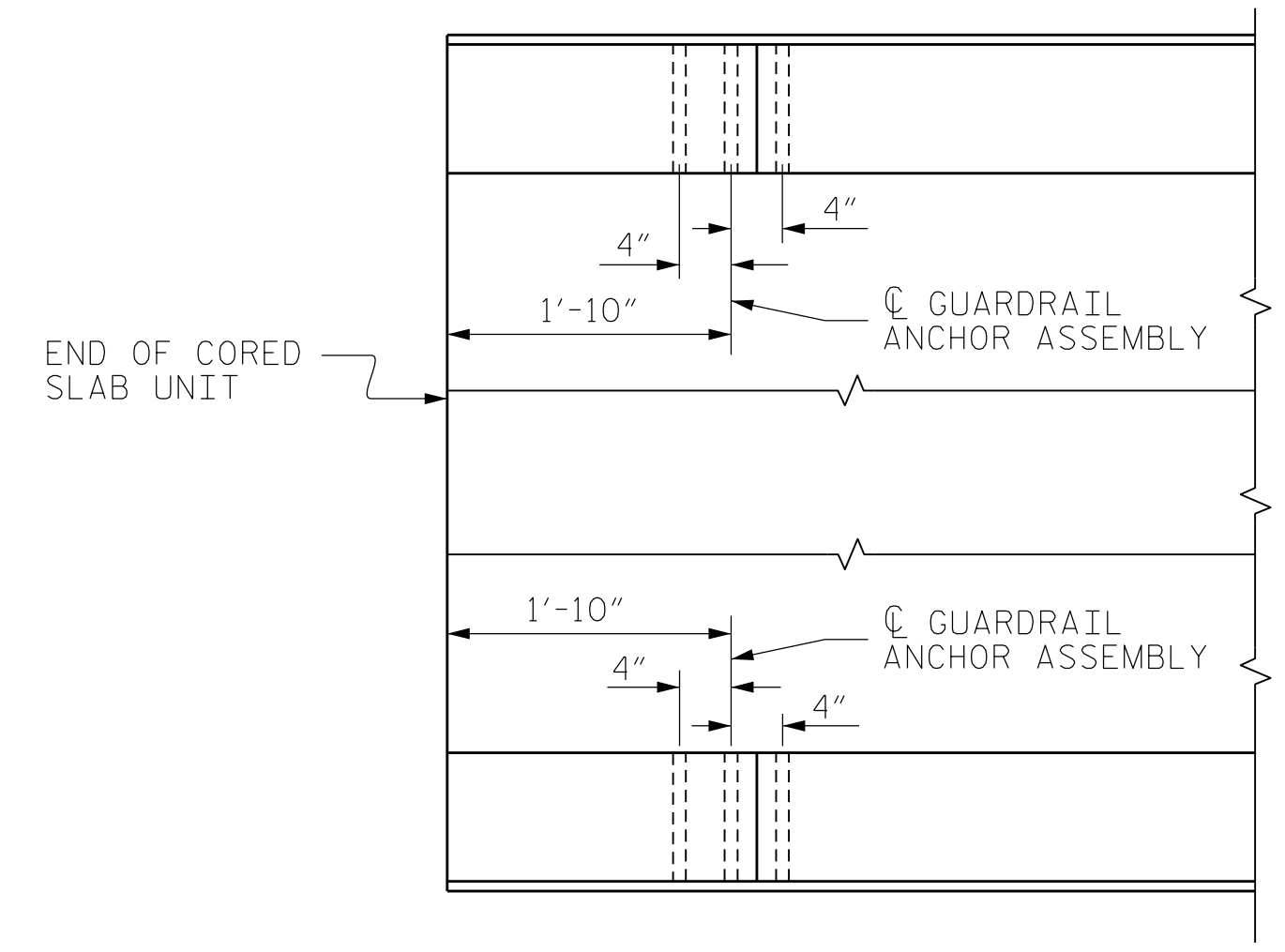
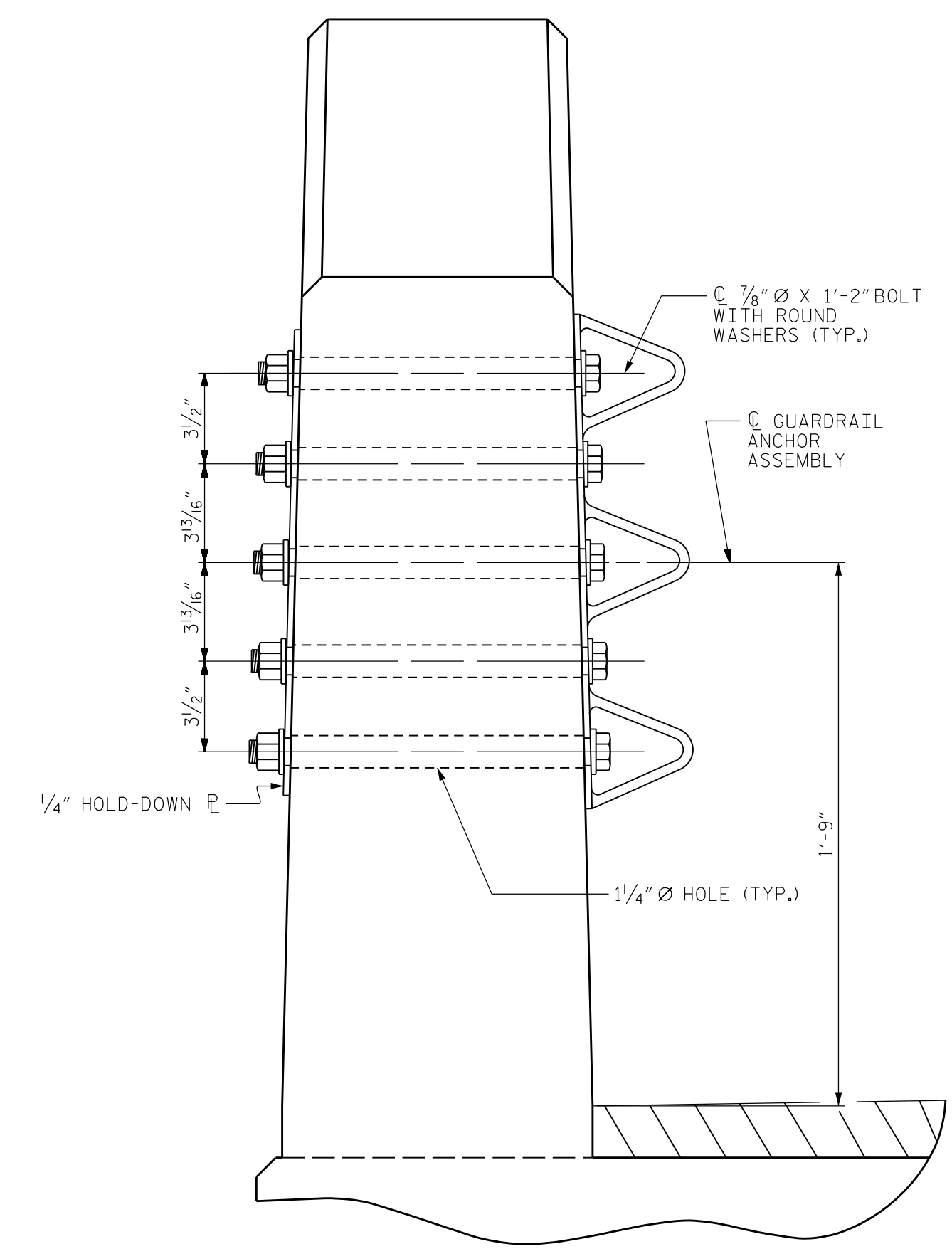
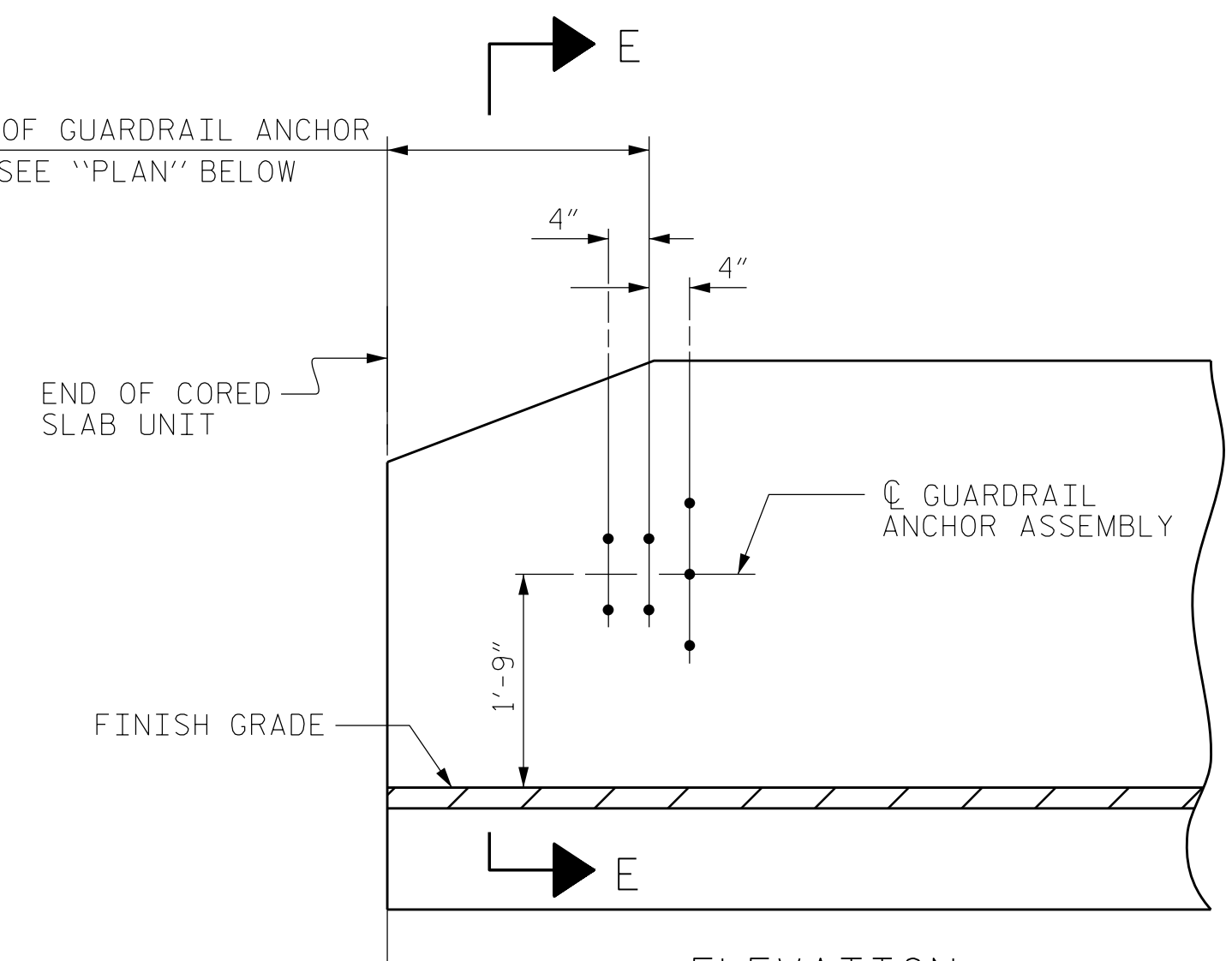
Table for ASSEMBLED BY, CHECKED BY, DRAWN BY, and DESIGN ENGINEER OF RECORD (DIEGO A. AGUIRRE).

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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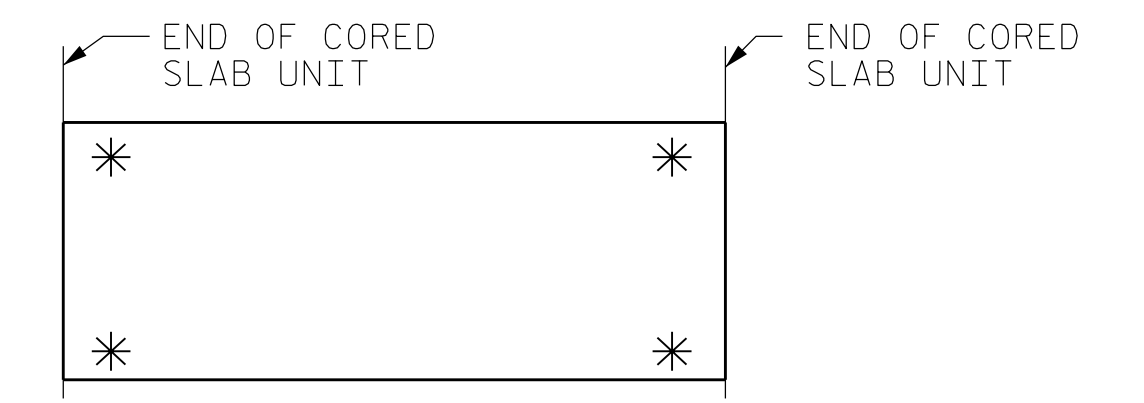


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

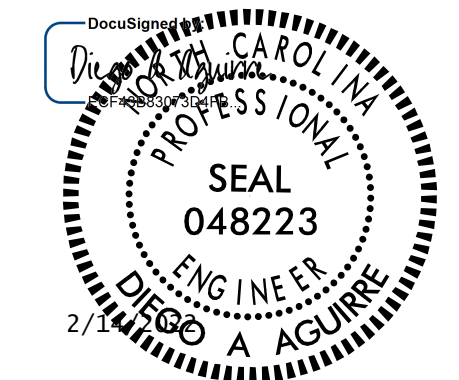


* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GUARDRAIL ANCHORAGE
 DETAILS
 FOR VERTICAL CONCRETE
 BARRIER RAIL

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021		
ASSEMBLED BY: DIEGO A. AGUIRRE	DATE: 11/2021	
CHECKED BY: JACOB H. DUKE	DATE: 11/2021	
DRAWN BY: MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY: GM 5/10	REV. 12/17	MAA/THC
	REV. 5/18	MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			21
2			4			

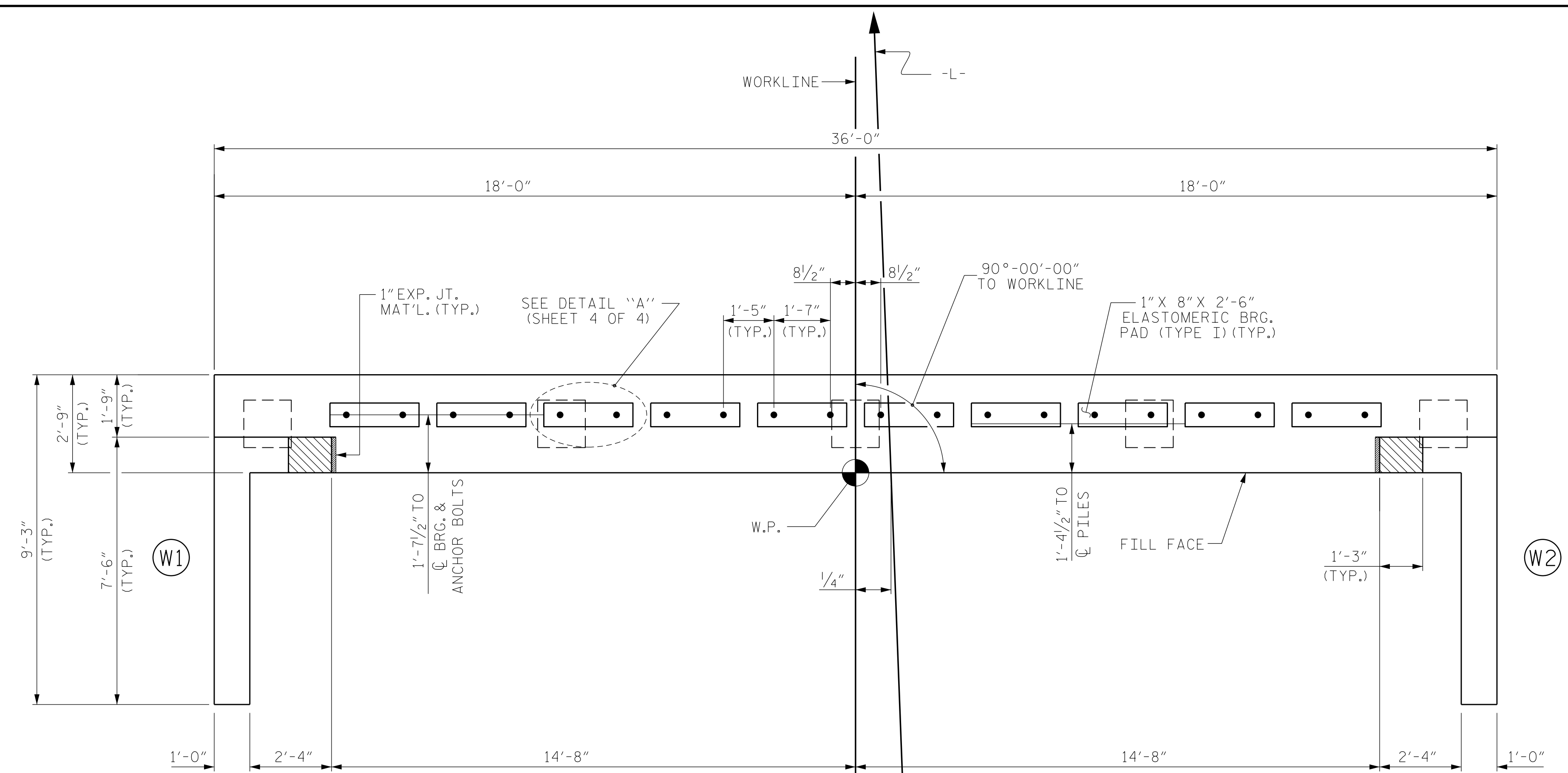
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

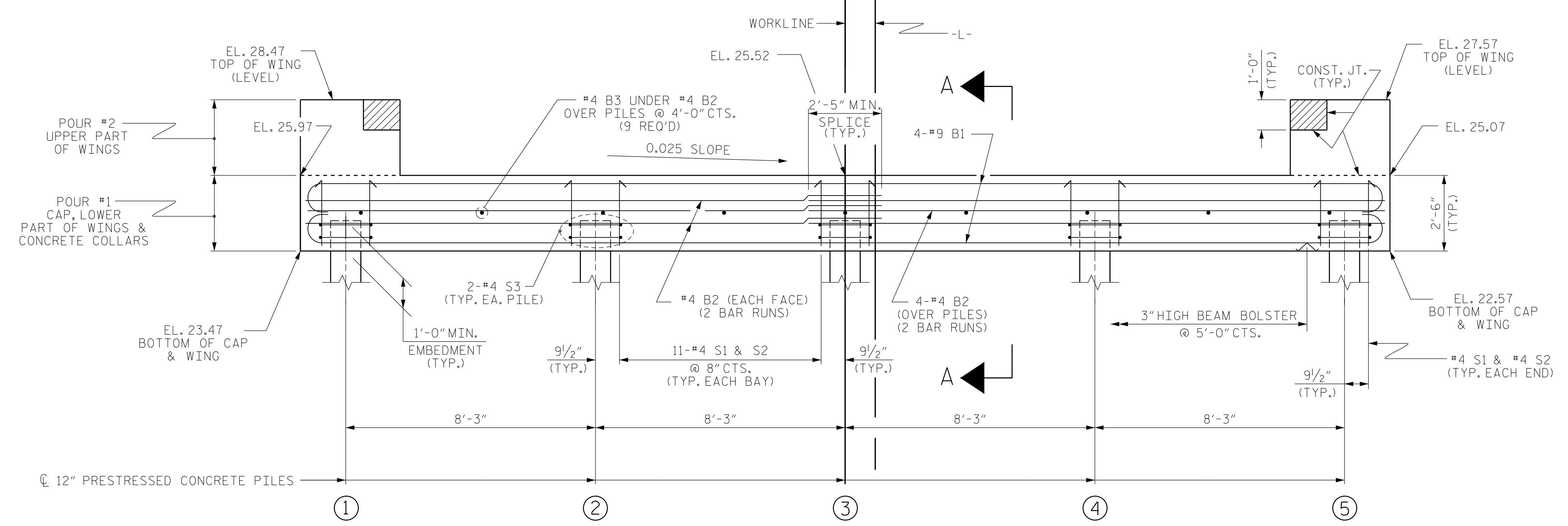
FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR DETAILS REGARDING THE 7/8" Ø ANCHOR BOLTS, SEE SHEET S-10.



PLAN

TOP OF PILE ELEVATIONS	
①	24.43
②	24.22
③	24.02
④	23.81
⑤	23.61

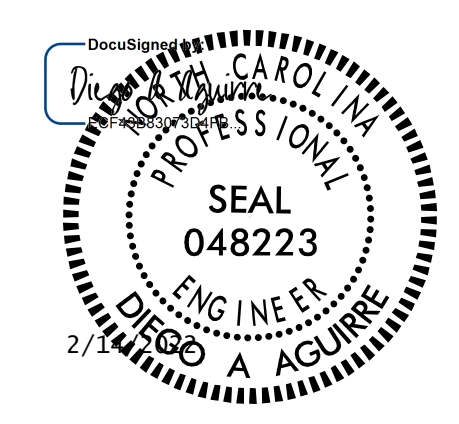


ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

SHEET 1 OF 4



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-12
					TOTAL SHEETS 21

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021		CHECKED BY: JACOB H. DUKE DATE: 11/2021	
DRAWN BY: DGE 01/10	REV. 4/15	MAA/TMG	
CHECKED BY: MKT 01/10			

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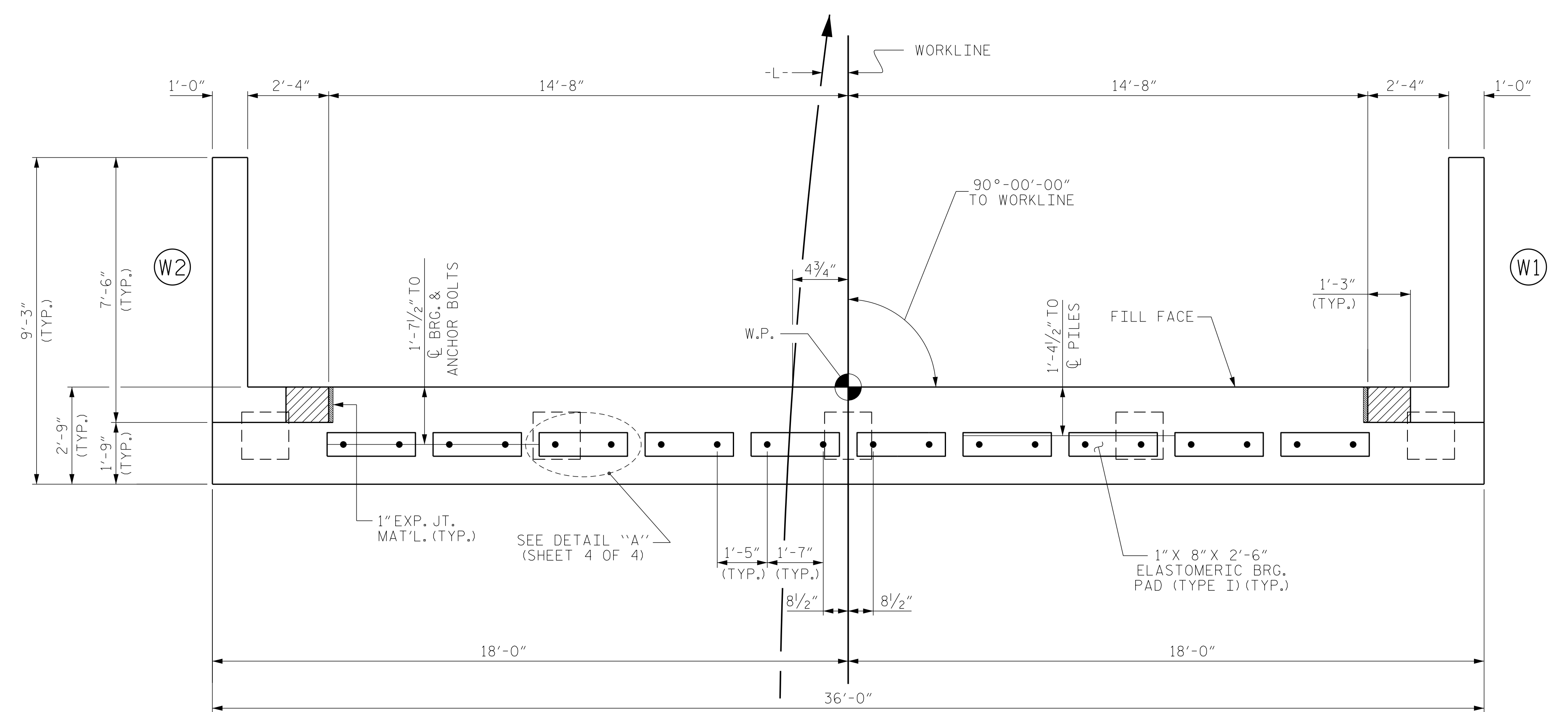
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

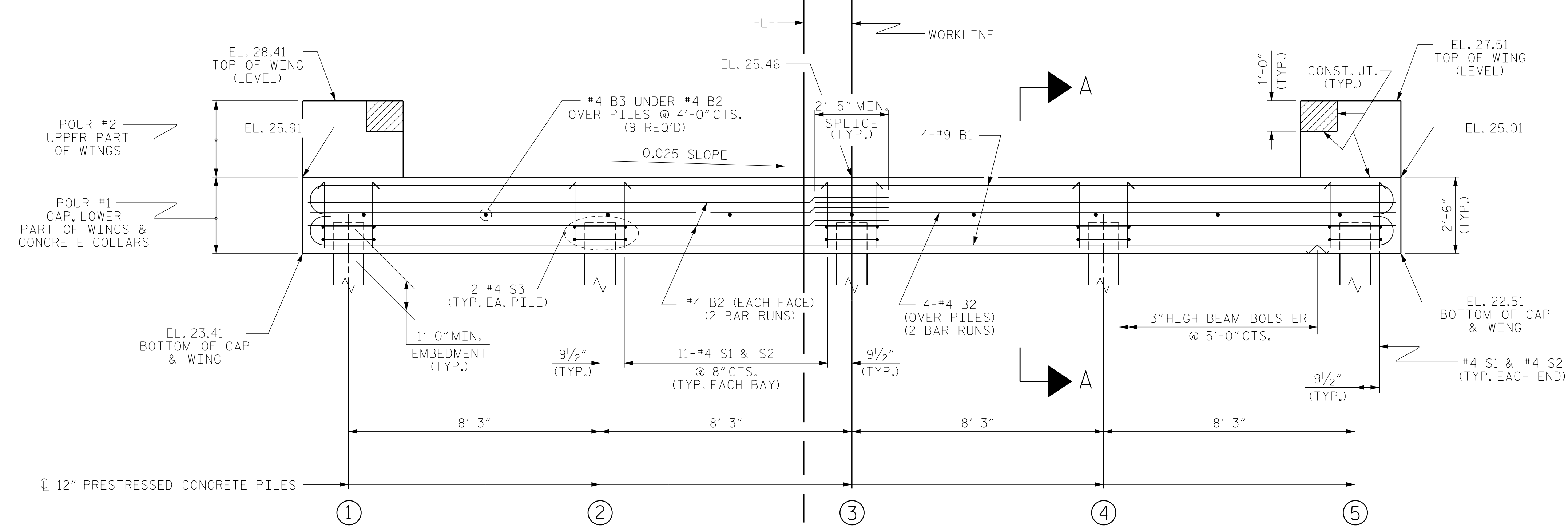
FOR WING DETAILS, SEE SHEET 3 OF 4.

FOR NOTES REGARDING THE 7/8" Ø ANCHOR BOLTS, SEE SHEET S-10.



PLAN

TOP OF PILE ELEVATIONS	
①	24.37
②	24.17
③	23.96
④	23.75
⑤	23.55

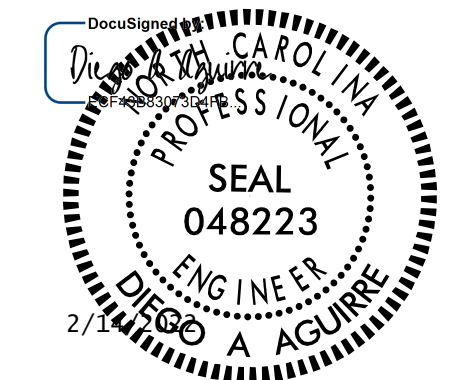


ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

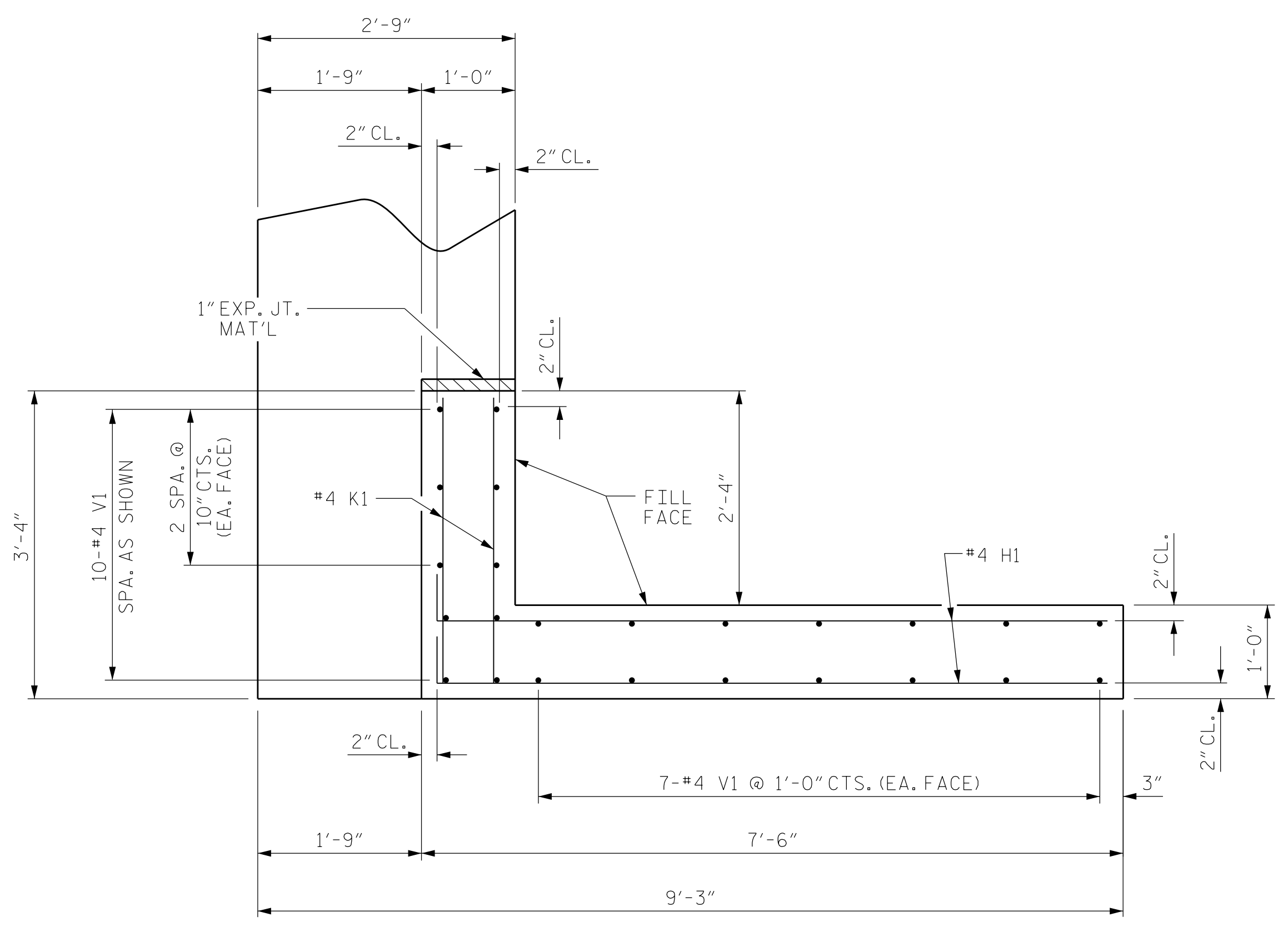
**SUBSTRUCTURE
 END BENT No. 2**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 21
2			4			

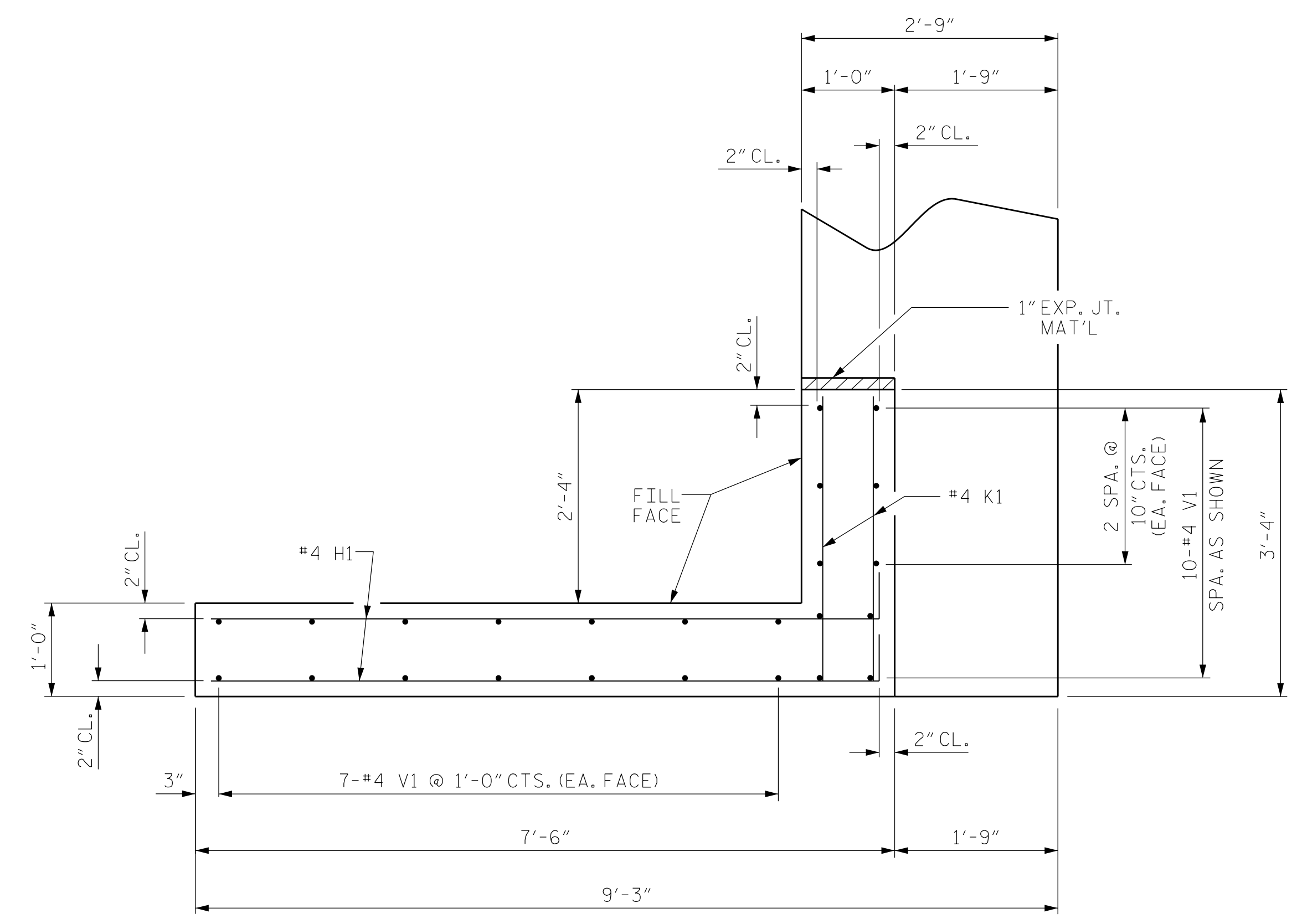
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021		CHECKED BY: JACOB H. DUKE DATE: 11/2021	
DRAWN BY: DGE 01/10	REV. 4/15	MAA/TMG	
CHECKED BY: MKT 01/10			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

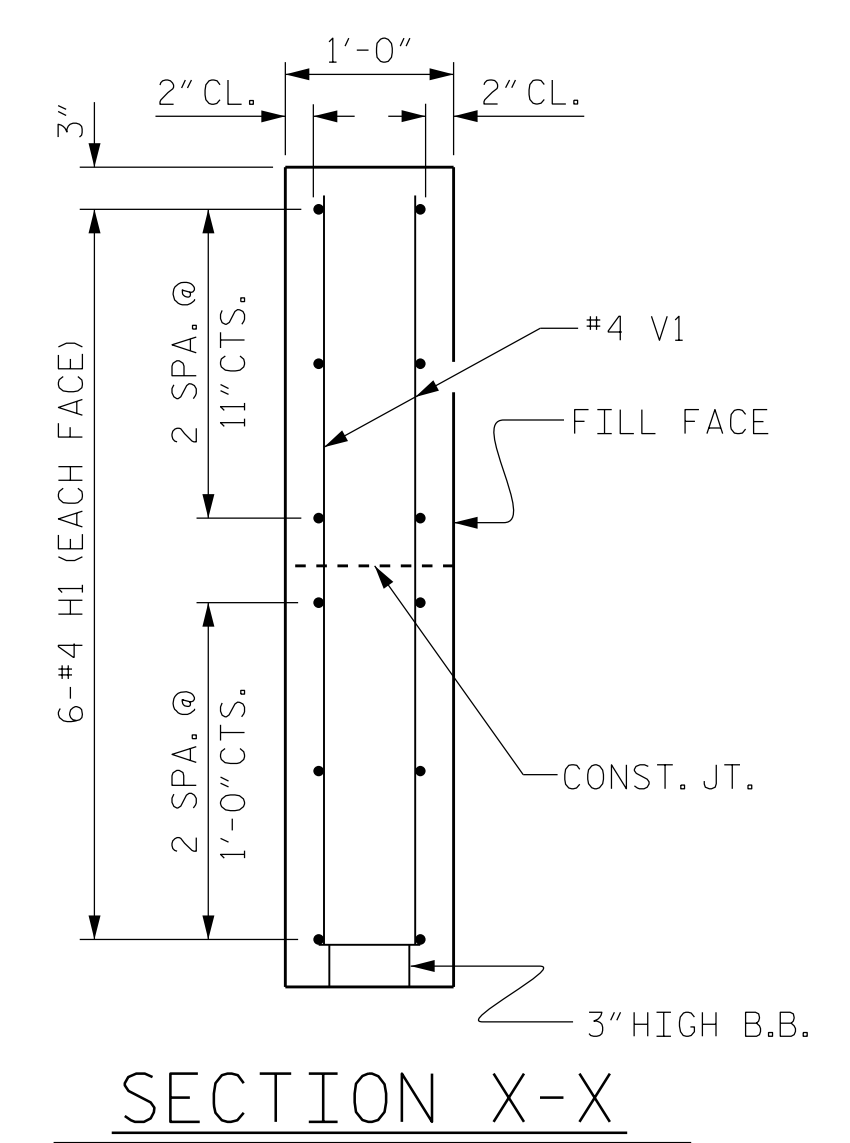
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 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506



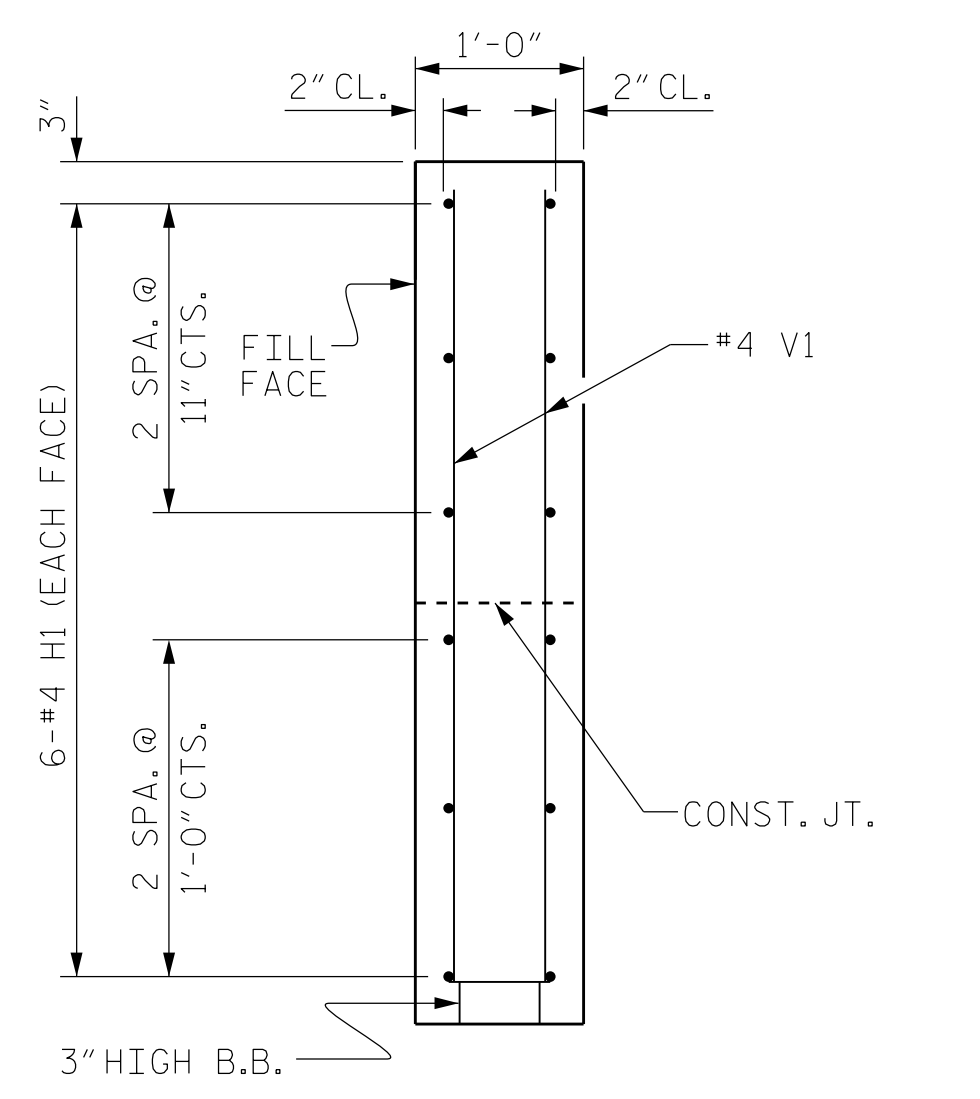
PLAN OF WING (W1)



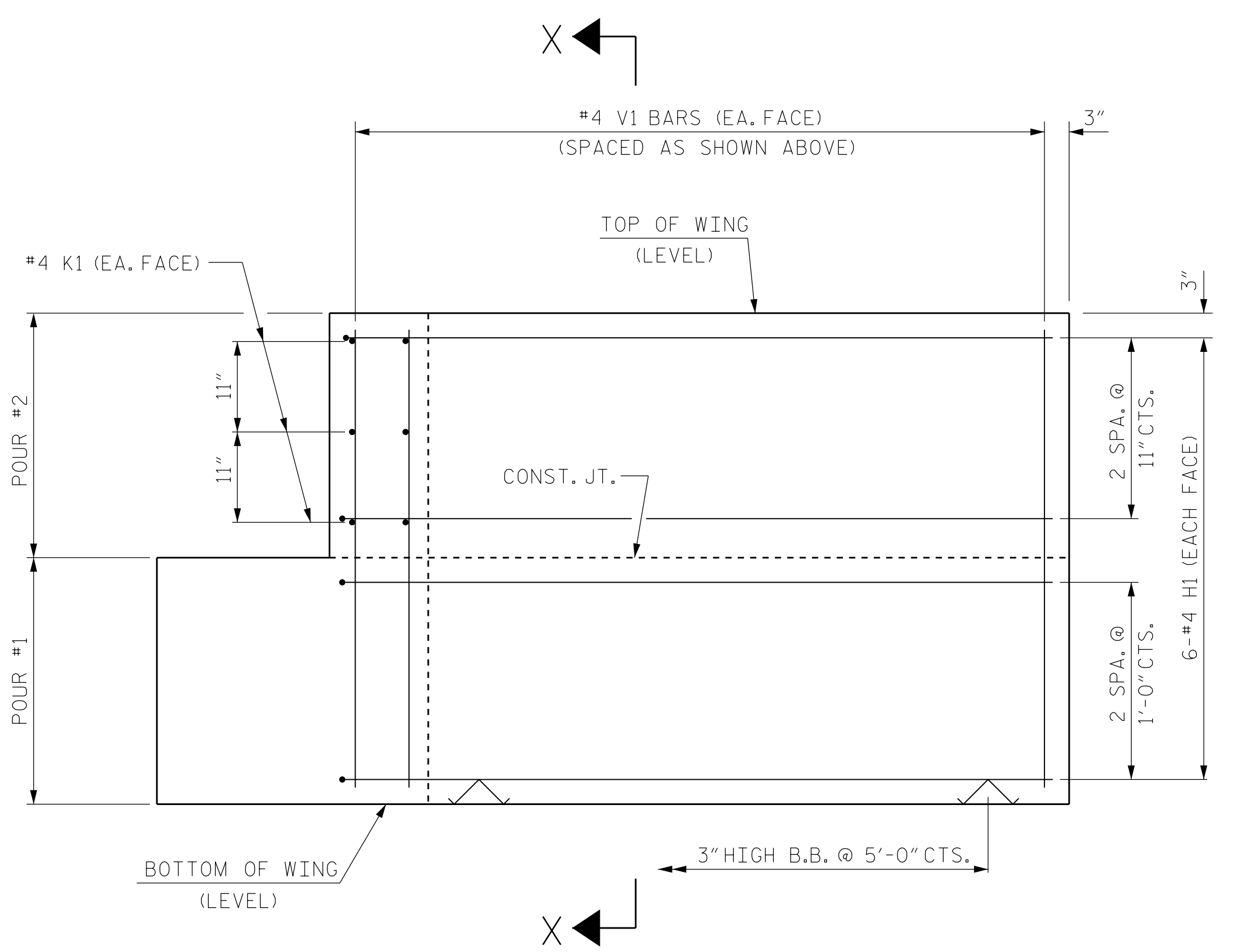
PLAN OF WING (W2)



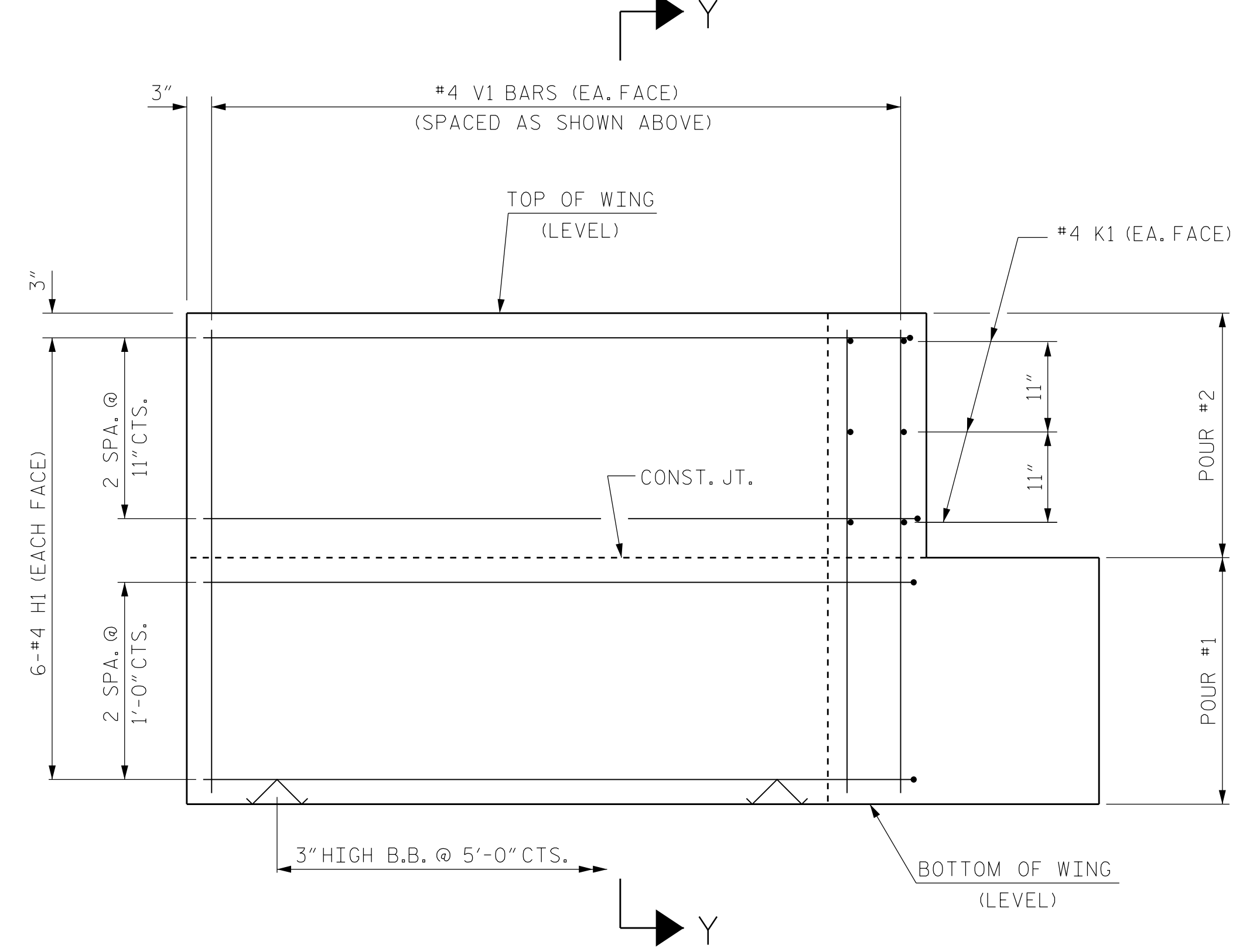
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



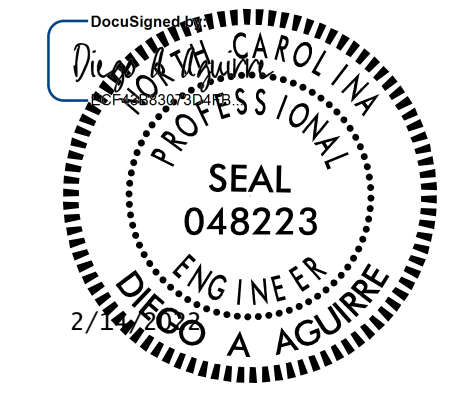
ELEVATION OF WING (W2)

WING DETAILS

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021	
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021	CHECKED BY: JACOB H. DUKE DATE: 11/2021
DRAWN BY: DGE 02/10	CHECKED BY: MKT 02/10
REV. 4/15	MAA/TMG

2/14/2022
BP2.R018.1.SMU.E03.730015.dgn
jduke

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



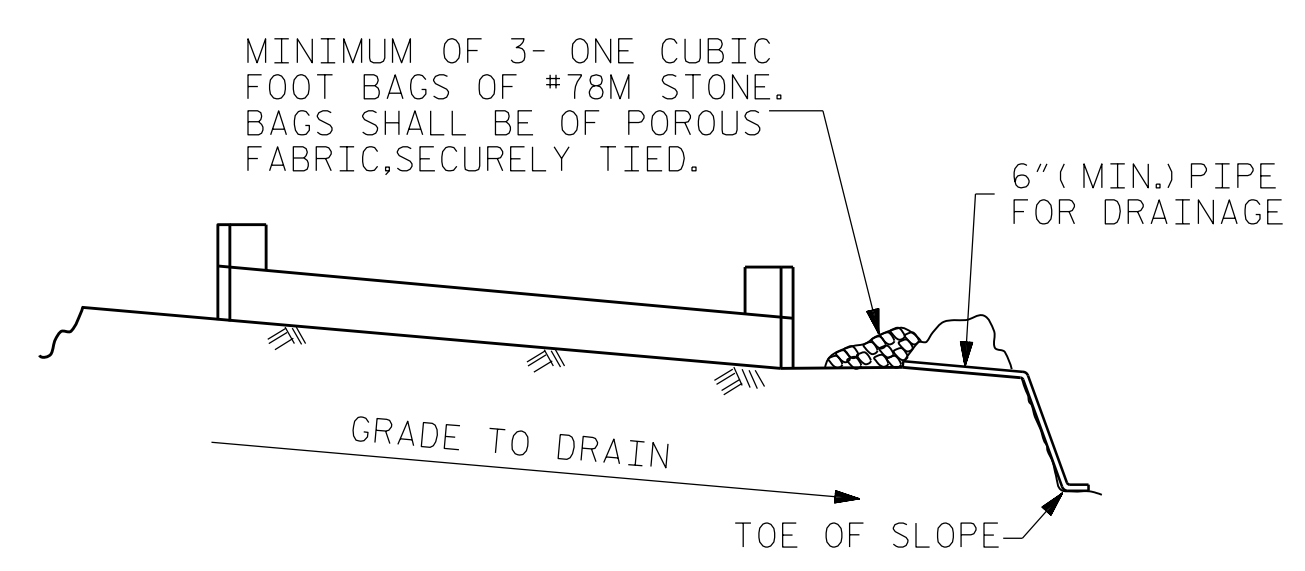
301 FAYETTEVILLE ST., SUITE 1500
RALEIGH, NC 27601 (919) 882-7839
NC FIRM LICENSE: C-1506

PROJECT NO. **BP2.R018.1**
PITT COUNTY
STATION: **15+09.69 -L-**

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-14 TOTAL SHEETS 21

STD. NO. EB_30_90S

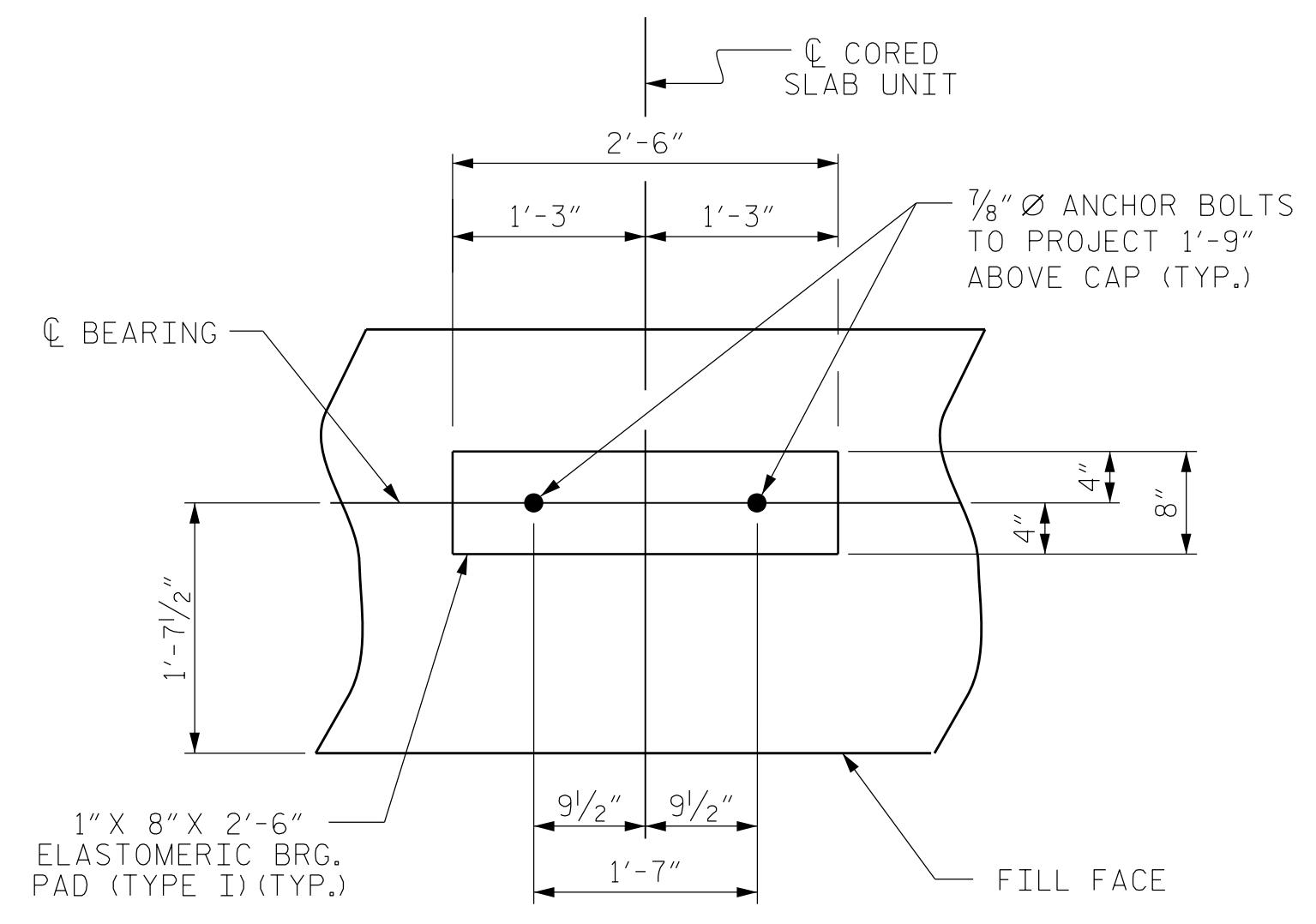


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

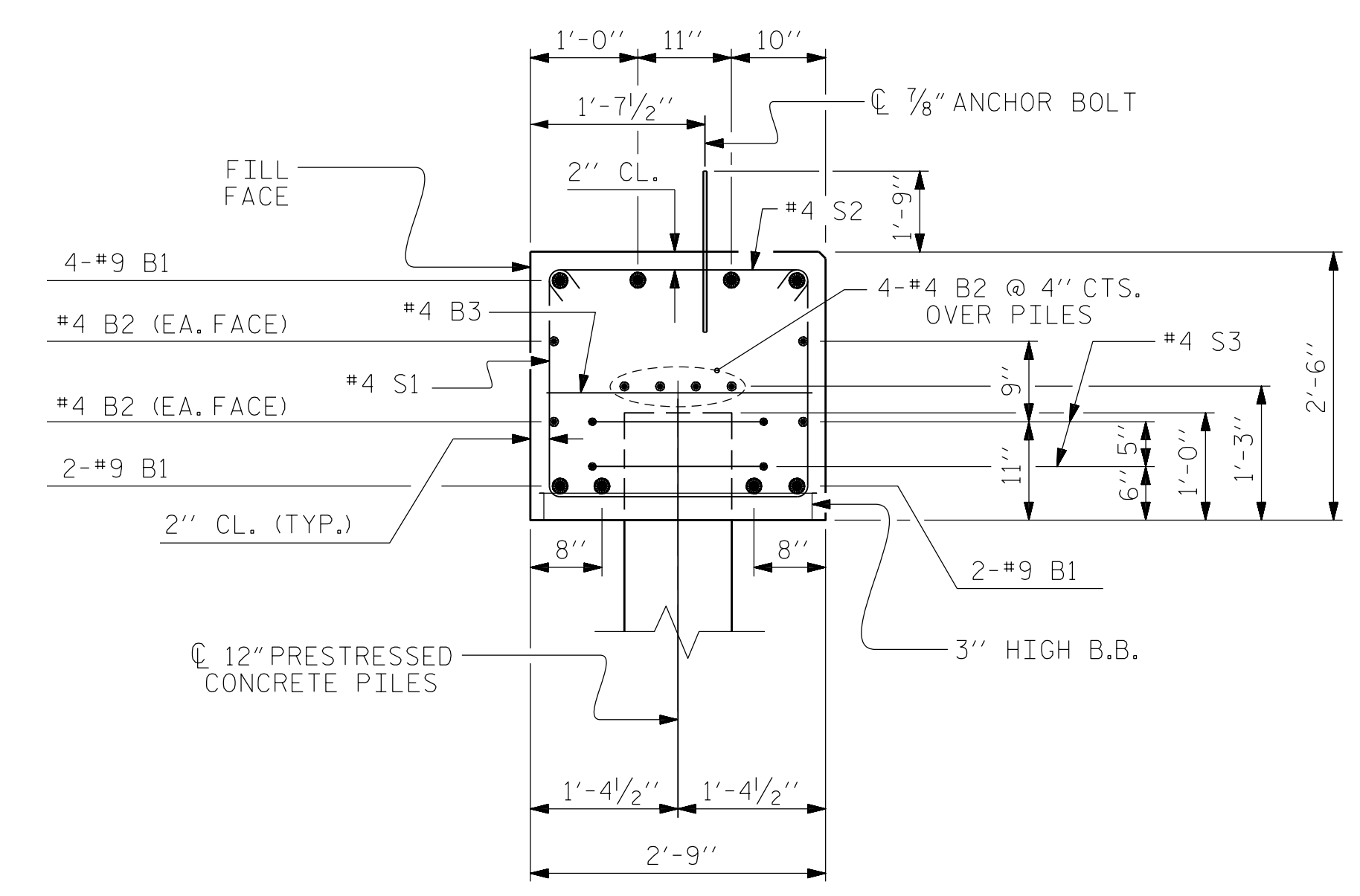
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

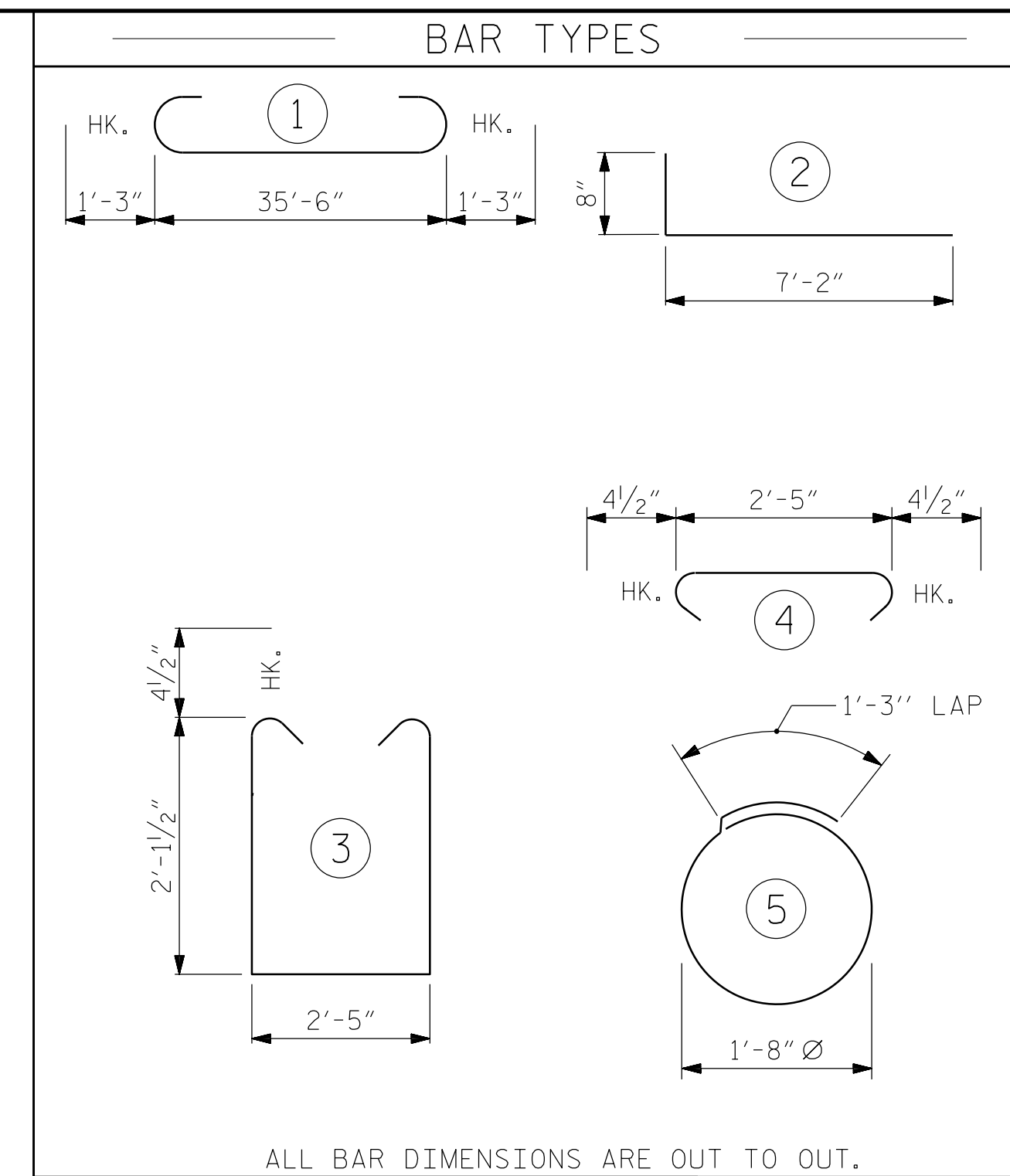


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



SECTION A-A

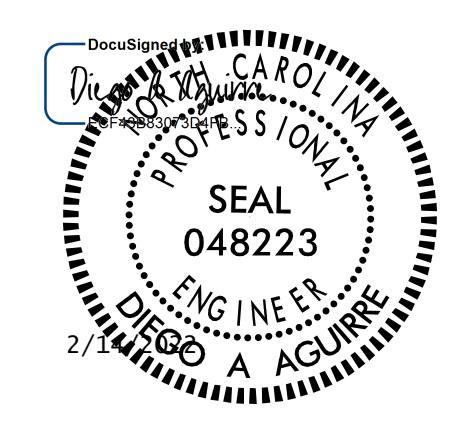


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE END BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		38'-0"	1034
B2	16	#4	STR	19'-1"	204
B3	9	#4	STR	2'-5"	15
D1	20	#6	STR	1'-6"	45
H1	24	#4		7'-10"	126
K1	12	#4	STR	2'-11"	23
S1	46	#4		7'-5"	228
S2	46	#4		3'-2"	97
S3	10	#4		6'-6"	43
V1	48	#4	STR	4'-8"	150
REINFORCING STEEL (FOR ONE END BENT)					1965 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			11.2 C.Y.	
POUR #2	UPPER PART OF WINGS			1.8 C.Y.	
TOTAL CLASS A CONCRETE				13.0 C.Y.	
END BENT No. 1					
12" PRESTRESSED CONCRETE PILES NO: 5				LIN. FT.= 175	
PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES NO: 5					
PILE REDRIVES NO: 0					
END BENT No. 2					
12" PRESTRESSED CONCRETE PILES NO: 5				LIN. FT.= 175	
PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES NO: 5					
PILE REDRIVES NO: 0					

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY:	DIEGO A. AGUIRRE	DATE:	11/2021
CHECKED BY:	JACOB H. DUKE	DATE:	11/2021
DRAWN BY:	DGE 12/09	REV.	4/17
CHECKED BY:	MKT 01/10	MAA/THC	

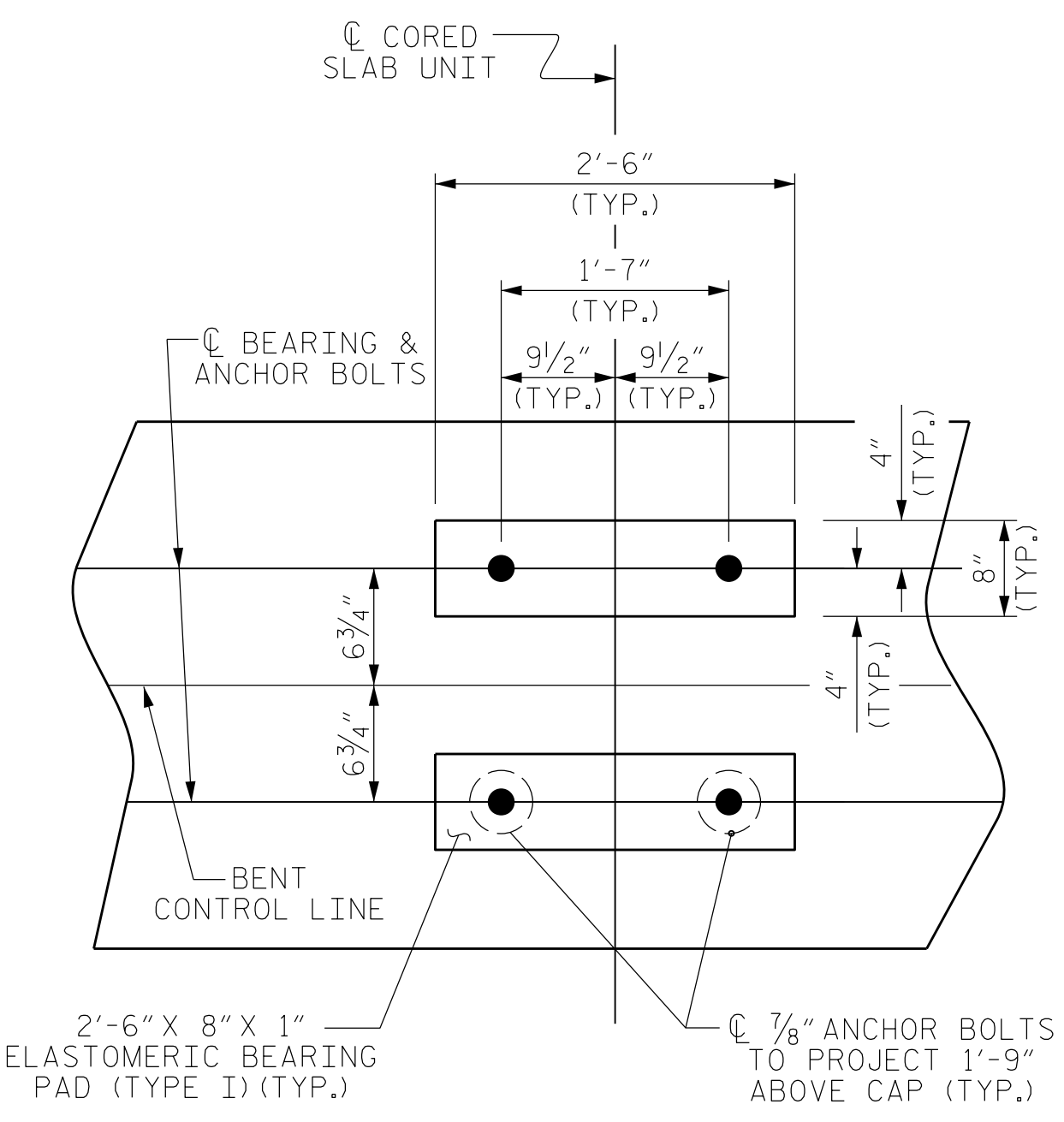
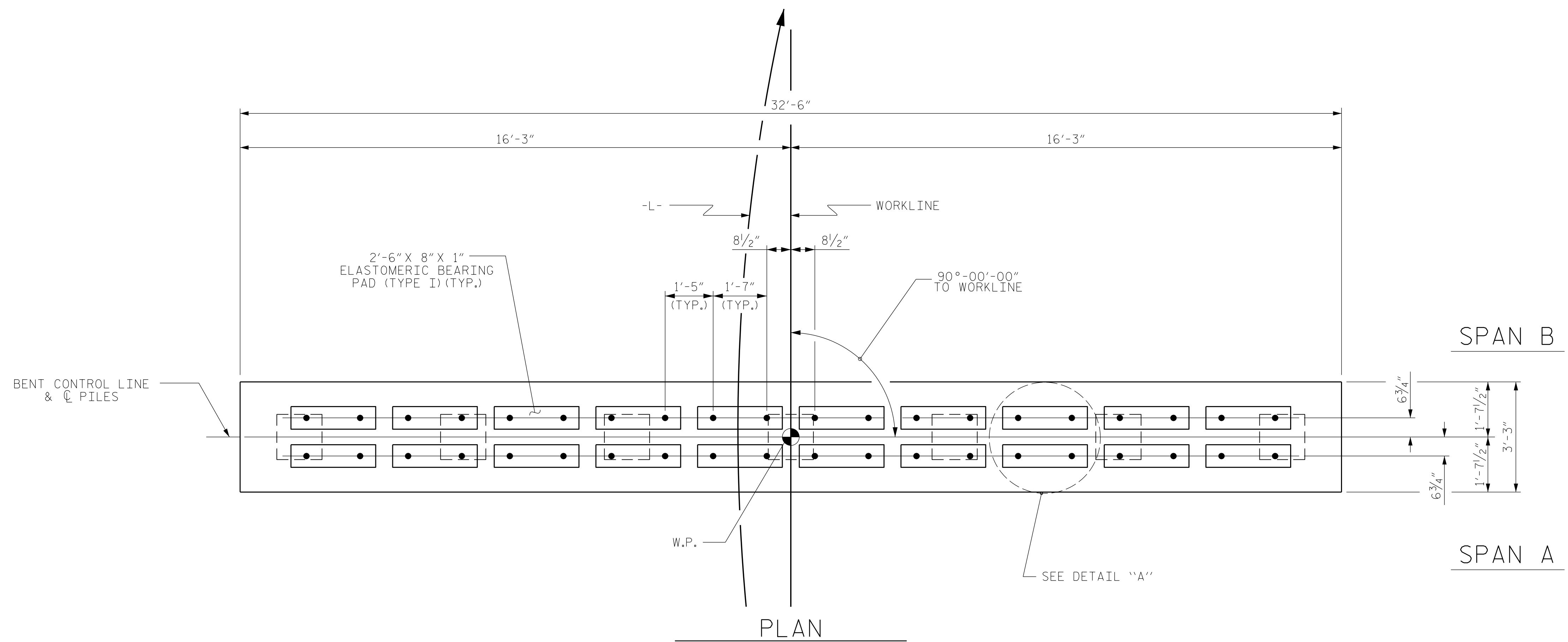
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			21
2			4			

NOTES

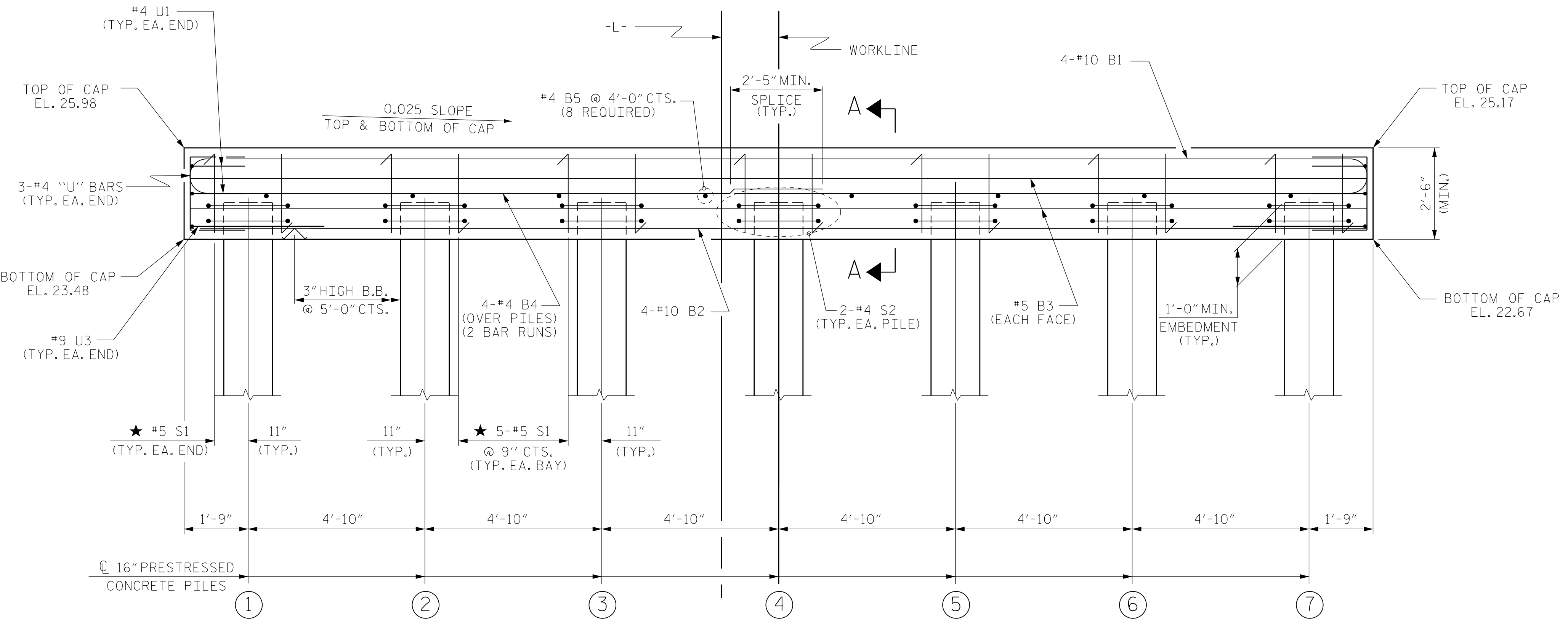
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- ★ INVERT ALTERNATE STIRRUPS.
- FOR NOTES REGARDING THE 7/8" Ø ANCHOR BOLTS, SEE SHEET S-10.



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)

TOP OF PILE ELEVATIONS	
①	24.43
②	24.31
③	24.19
④	24.07
⑤	23.95
⑥	23.83
⑦	23.71

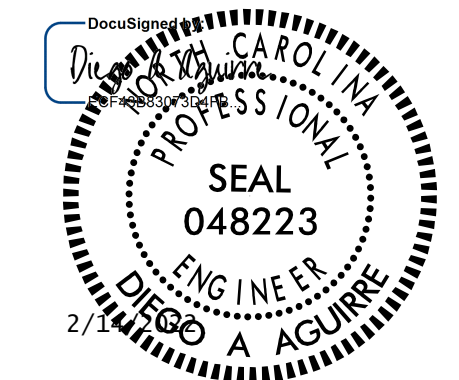


ELEVATION

FOR SECTION A-A, SEE SHEET 2 OF 2

PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

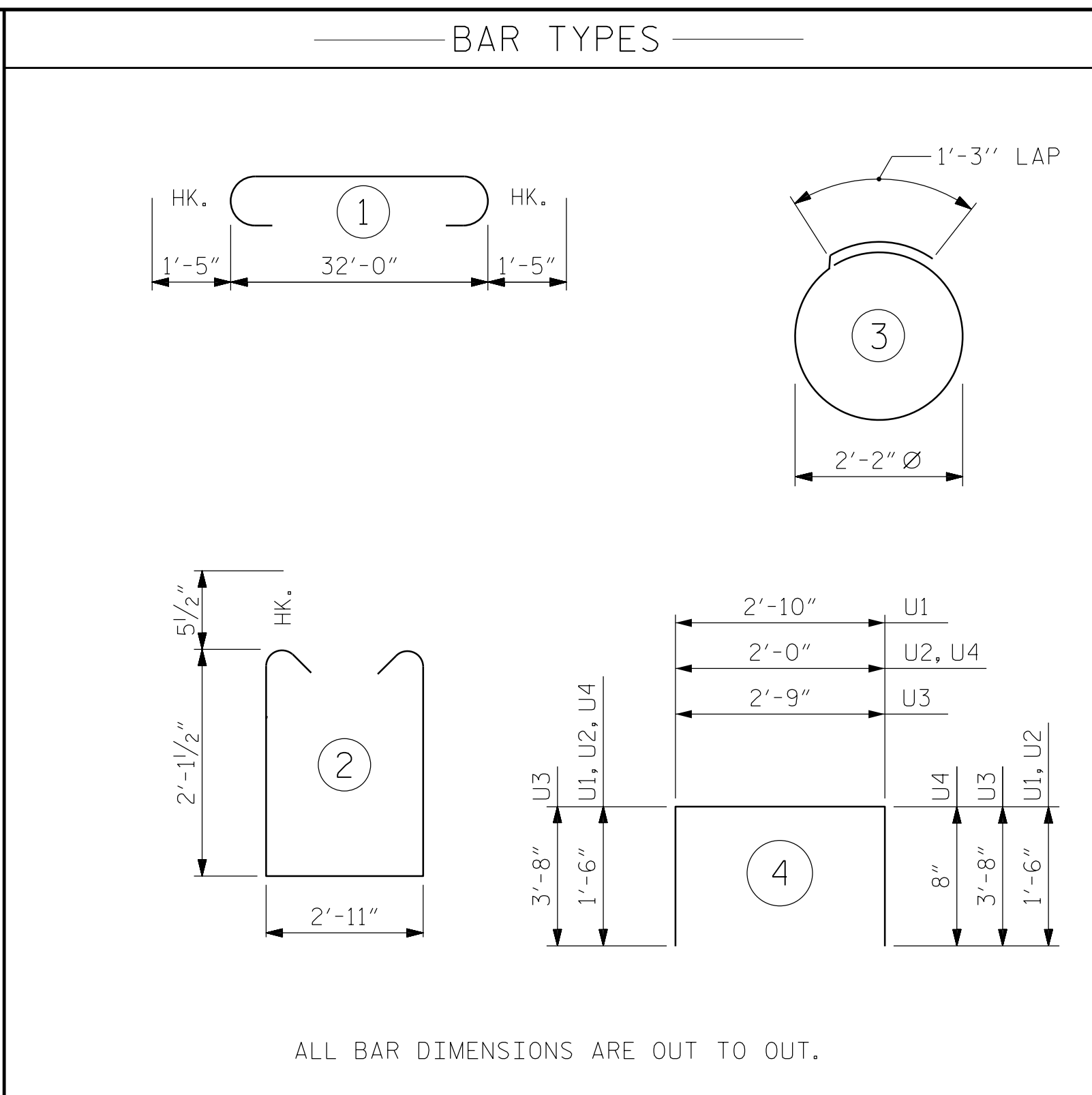
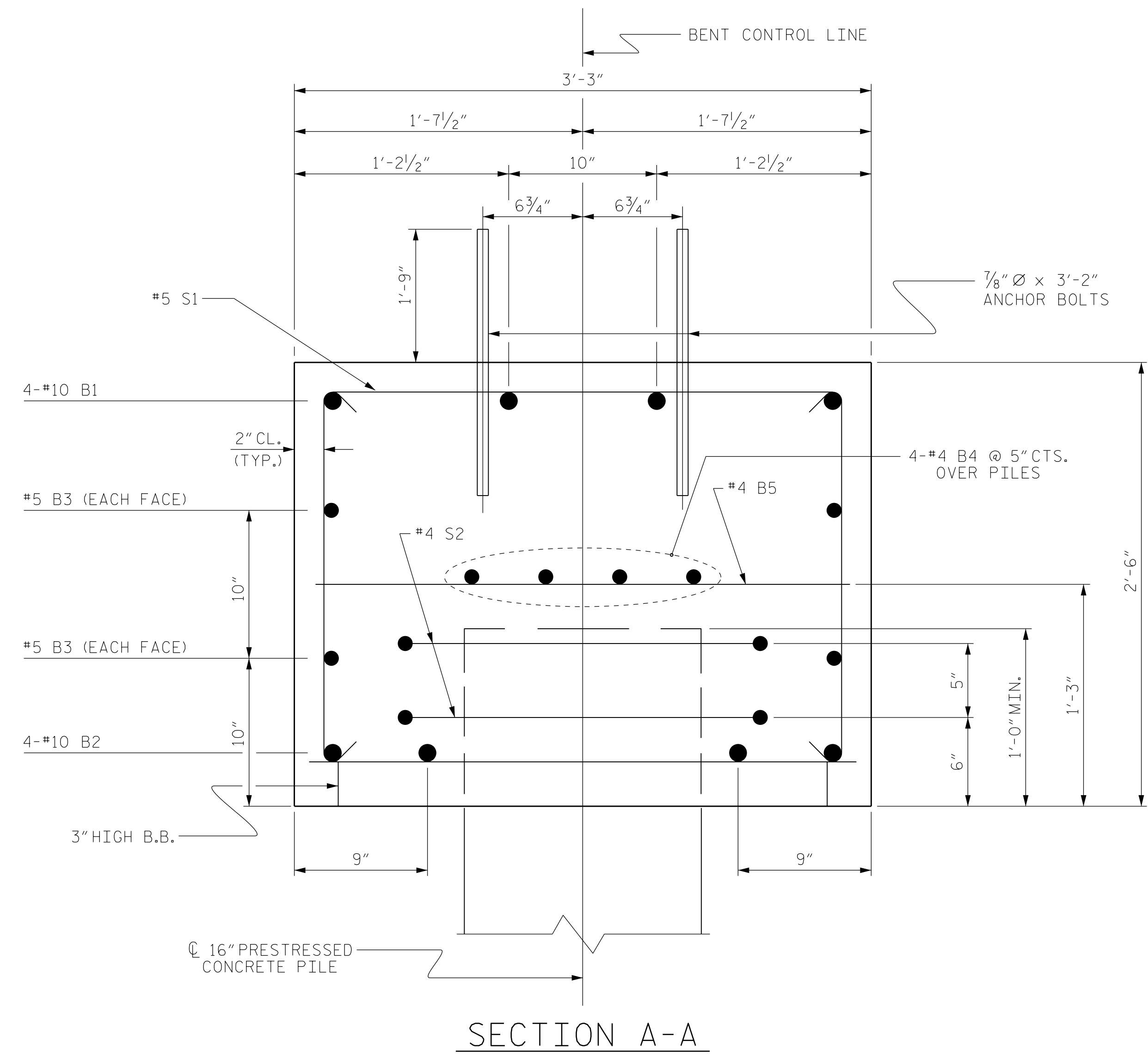
SUBSTRUCTURE BENT No. 1

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021			
ASSEMBLED BY :	DIEGO A. AGUIRRE	DATE :	11/2021
CHECKED BY :	JACOB H. DUKE	DATE :	11/2021
DRAWN BY :	DGE 5/10	REV. 6/17	MAA/THC
CHECKED BY :	MKT 5/10		

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

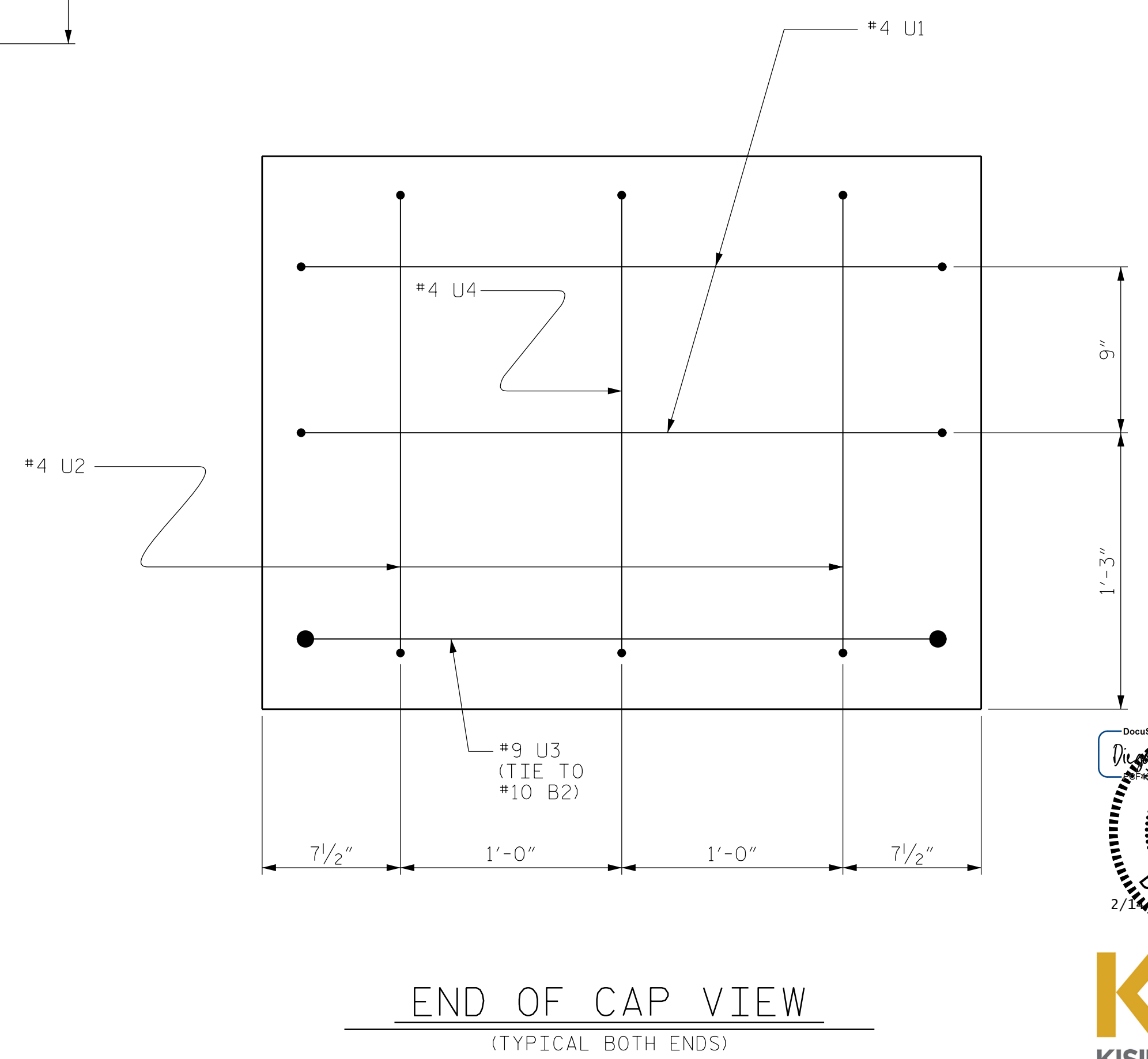
301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			21

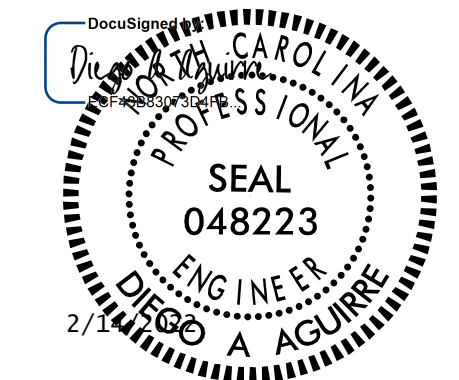


BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	34'-10"	600
B2	4	#10	STR	32'-2"	554
B3	4	#5	STR	32'-2"	134
B4	8	#4	STR	17'-4"	93
B5	8	#4	STR	2'-11"	16
D1	40	#6	STR	1'-6"	90
S1	32	#5	2	8'-1"	270
S2	14	#4	3	8'-1"	76
U1	4	#4	4	5'-10"	16
U2	4	#4	4	5'-0"	13
U3	2	#9	4	10'-1"	69
U4	2	#4	4	4'-2"	6
REINFORCING STEEL (FOR ONE BENT)					1937 LBS
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
TOTAL CLASS A CONCRETE					▲ 9.3 C.Y.
16" PRESTRESSED CONCRETE PILES (FOR ONE BENT)					
No. 7					LIN. FT. 245
PILE DRIVING EQUIPMENT SETUP FOR 16" PRESTRESSED CONCRETE PILES (FOR ONE BENT)					No. 7
PILE REDRIVES					NO: 0

ALL BAR DIMENSIONS ARE OUT TO OUT.



PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-



SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

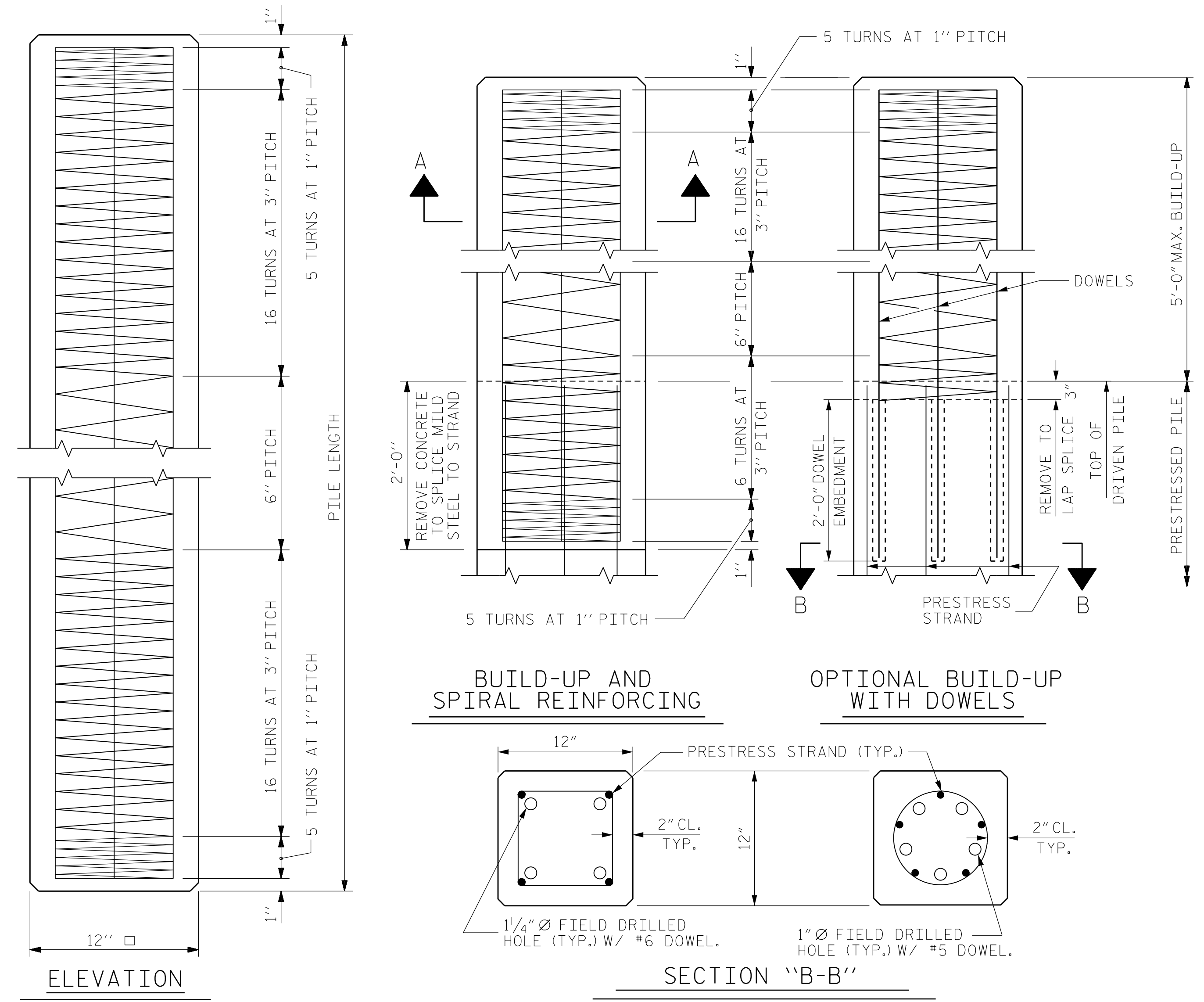
SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			TOTAL SHEETS 21

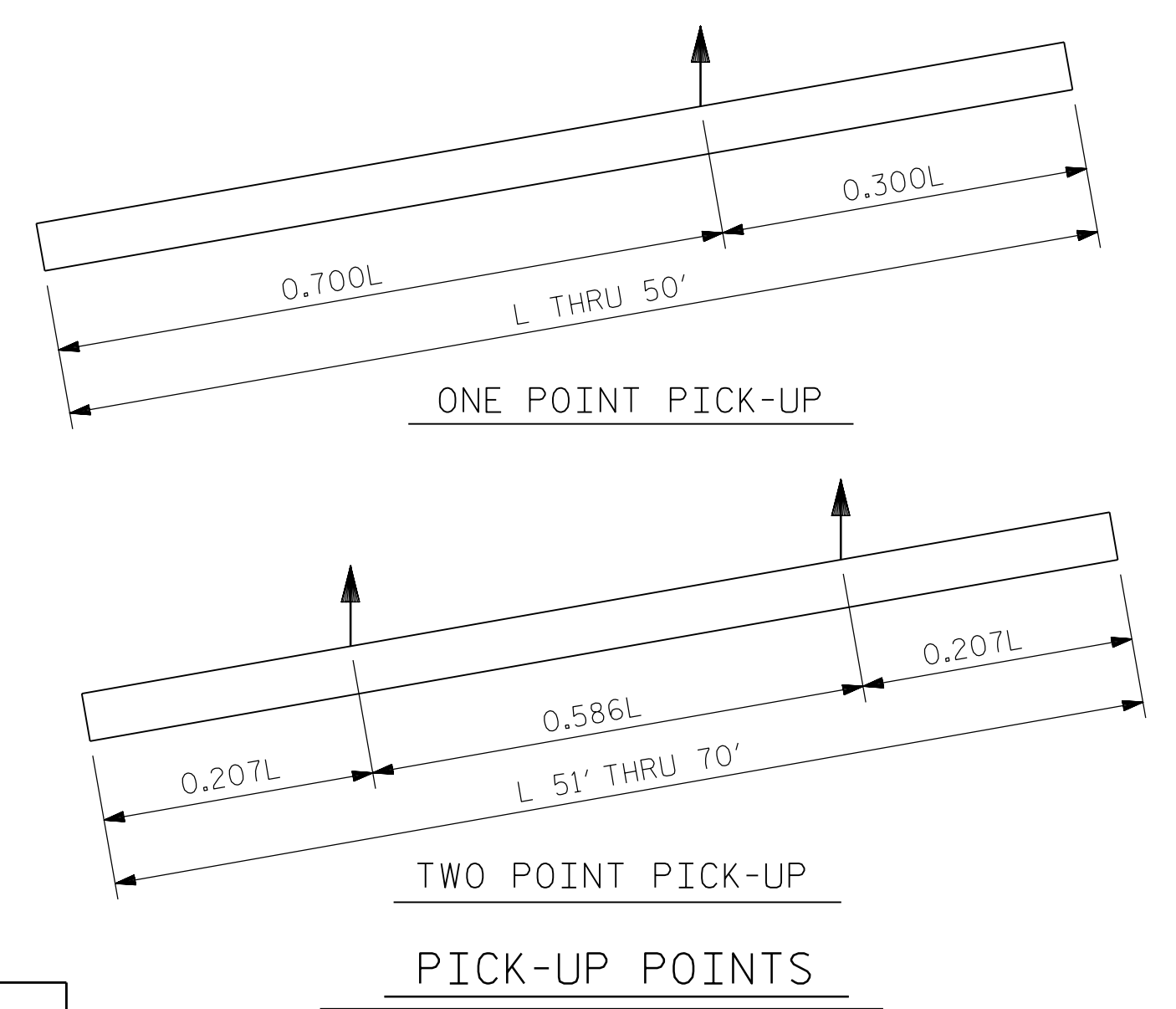
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021		
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021		
CHECKED BY: JACOB H. DUKE DATE: 11/2021		
DRAWN BY: DGE 05/10	REV. 6/17	MAA/THC
CHECKED BY: MKT 05/10		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

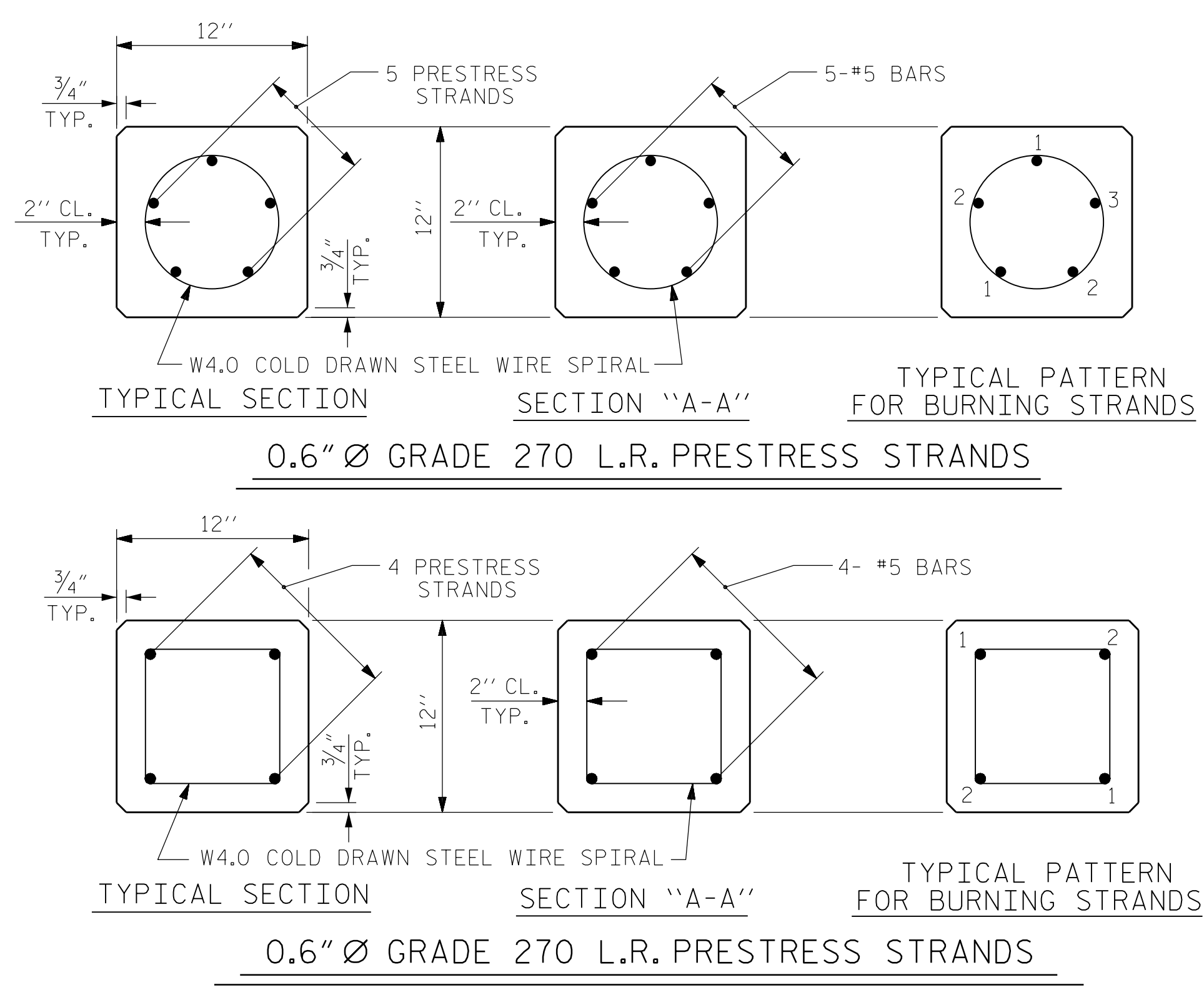
301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506



(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



LENGTH	QUANTITIES FOR ONE 12" PRESTRESSED PILE					
	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"



NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

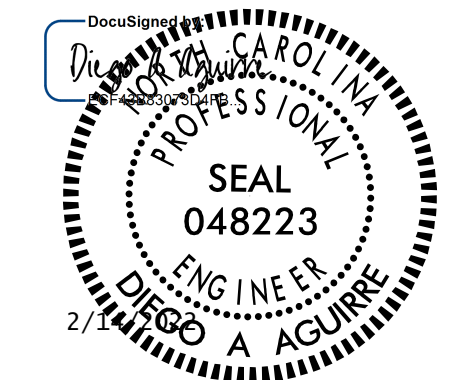
FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE : 11/2021	
ASSEMBLED BY : DIEGO A. AGUIRRE DATE : 11/2021	CHECKED BY : JACOB H. DUKE DATE : 11/2021
DRAWN BY : FCJ 7/88	REV. 12/14 MAA/TMG
CHECKED BY : CRK 3/89	REV. 12/17 MAA/THC
	REV. 12/20 BNB/THC

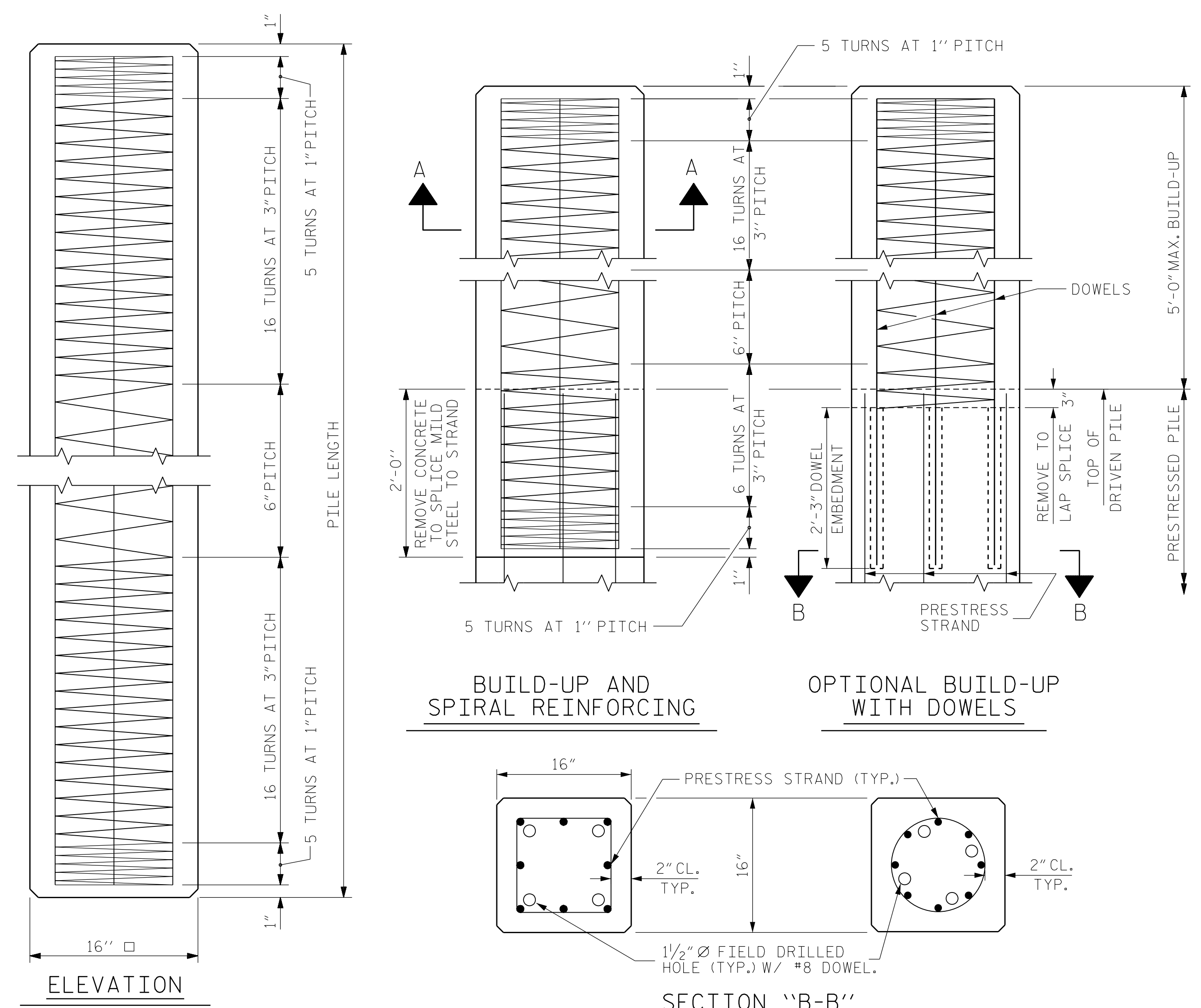
DOCUMENT NOT CONSIDERED
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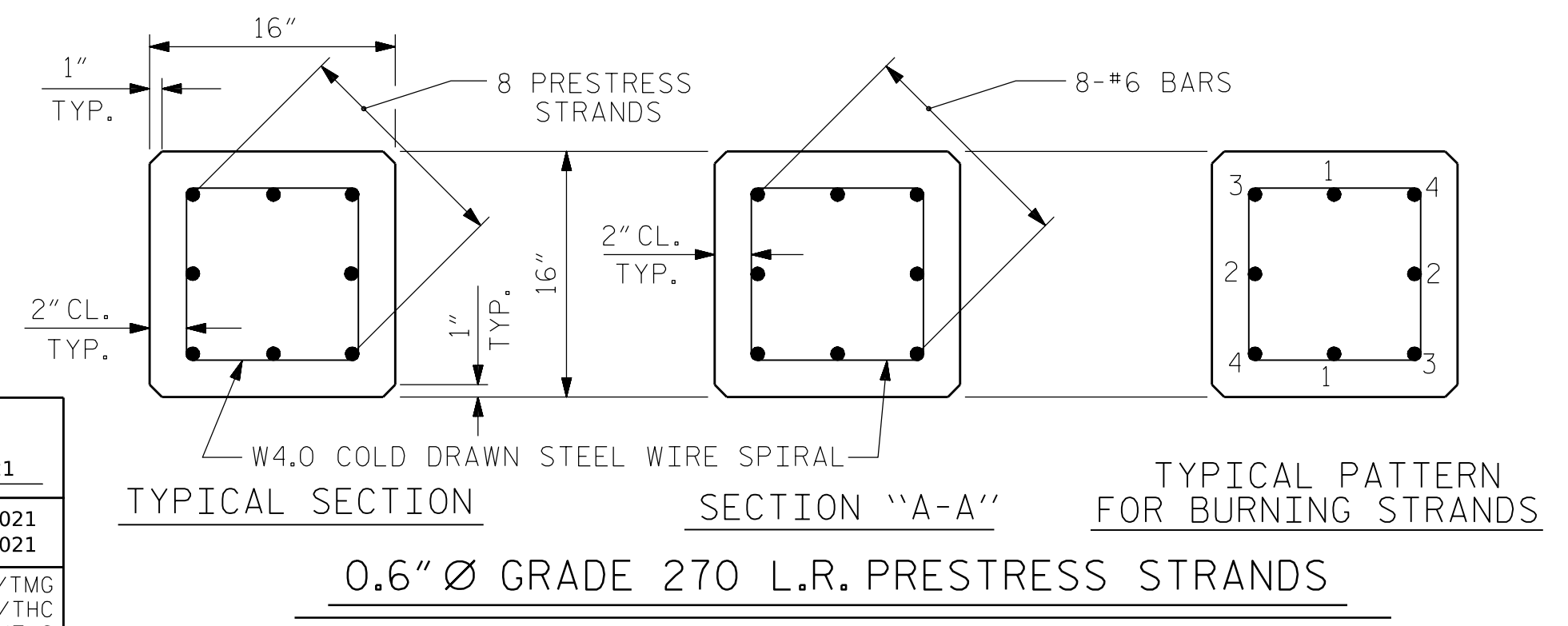
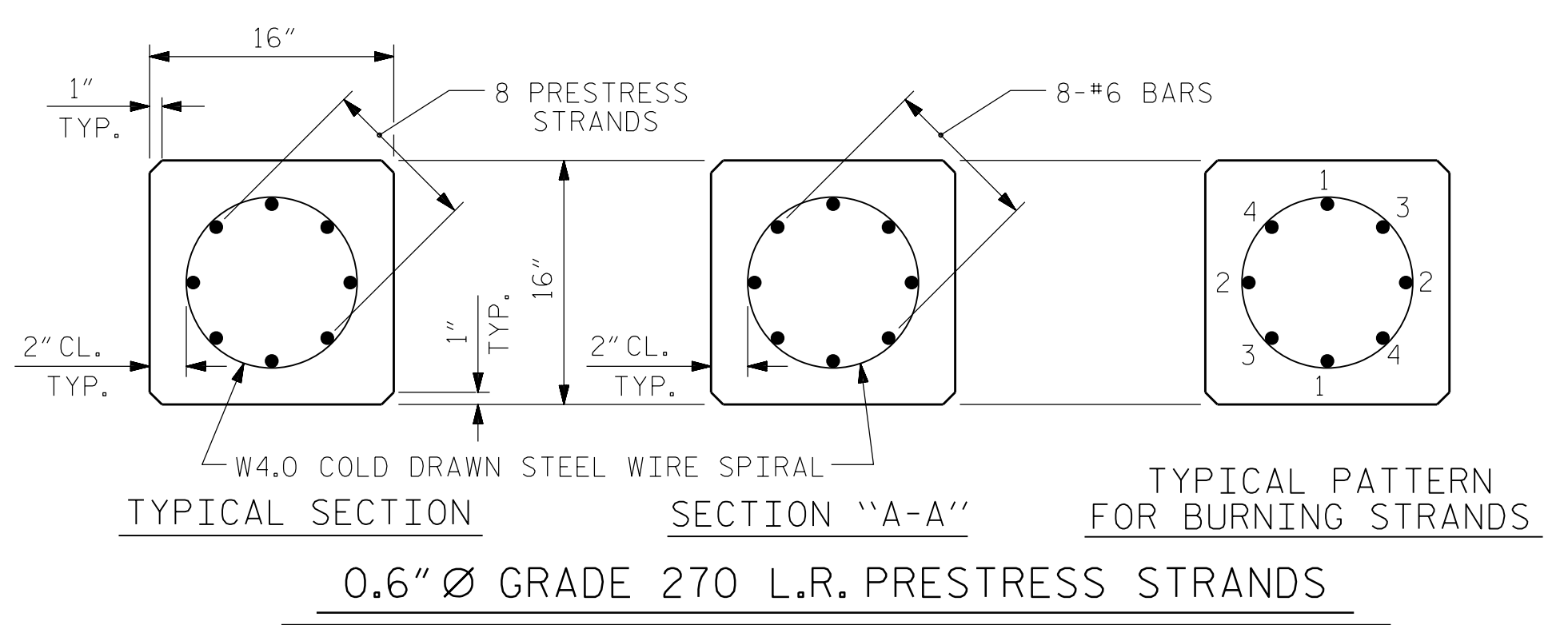
301 FAYETTEVILLE ST., SUITE 1500
 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506

PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 12" PRESTRESSED CONCRETE PILE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-18					TOTAL SHEETS 21



(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)

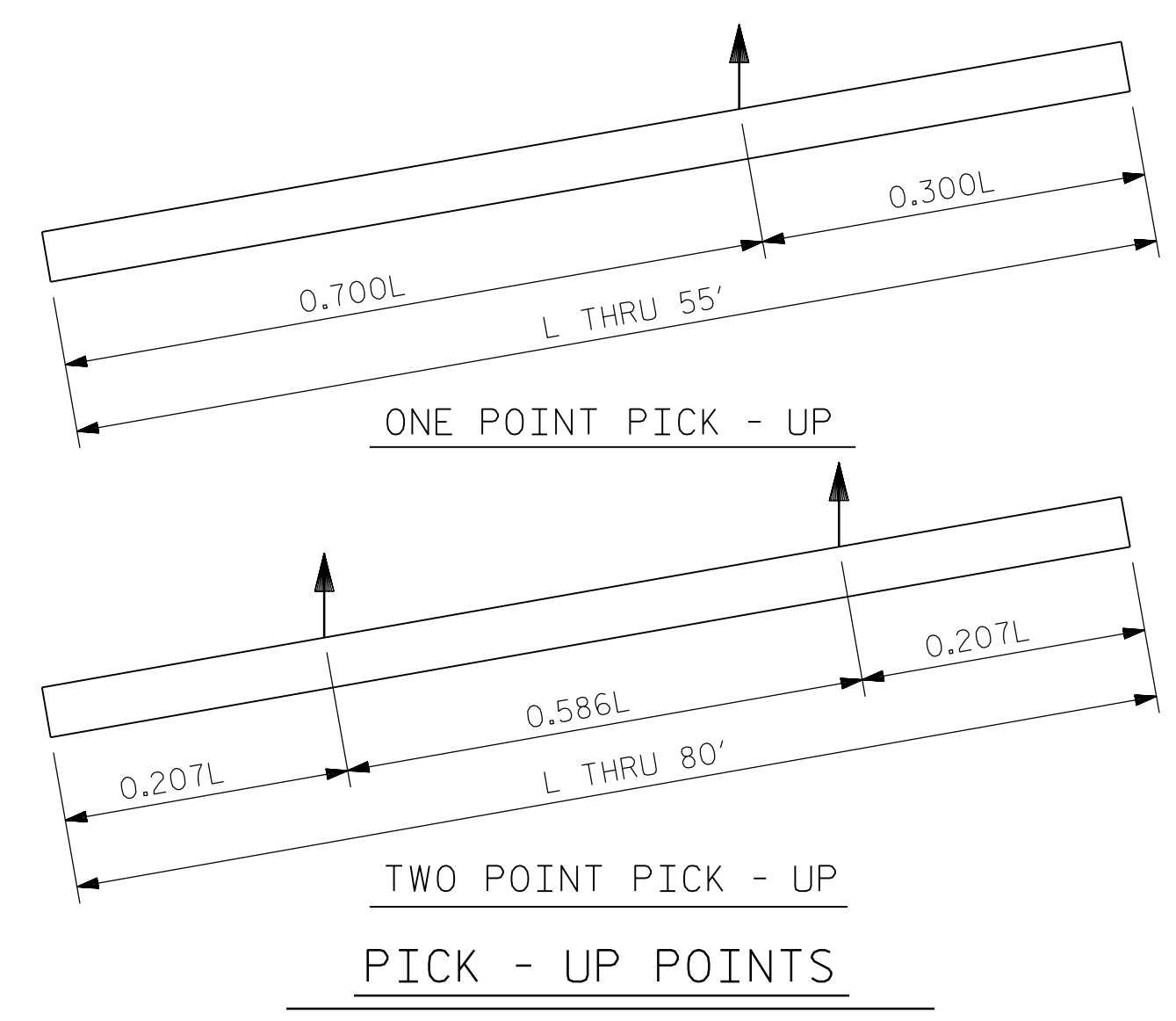


DESIGN ENGINEER OF RECORD:
 DIEGO A. AGUIRRE DATE: 11/2021
 ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/2021
 CHECKED BY: JACOB H. DUKE DATE: 11/2021
 DRAWN BY: RH 9/98
 CHECKED BY: LES 10/98
 REV. 12/14 MAA/TMG
 REV. 12/17 MAA/THC
 REV. 12/20 BNB/THC

2/14/2022
 BP2.R018.1.SMU.PP02.730015.dgn
 jauke

QUANTITIES FOR ONE 16" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"



NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

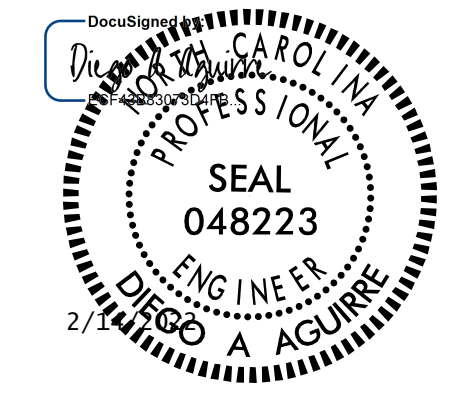
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. BP2.R018.1
PITT COUNTY
 STATION: 15+09.69 -L-



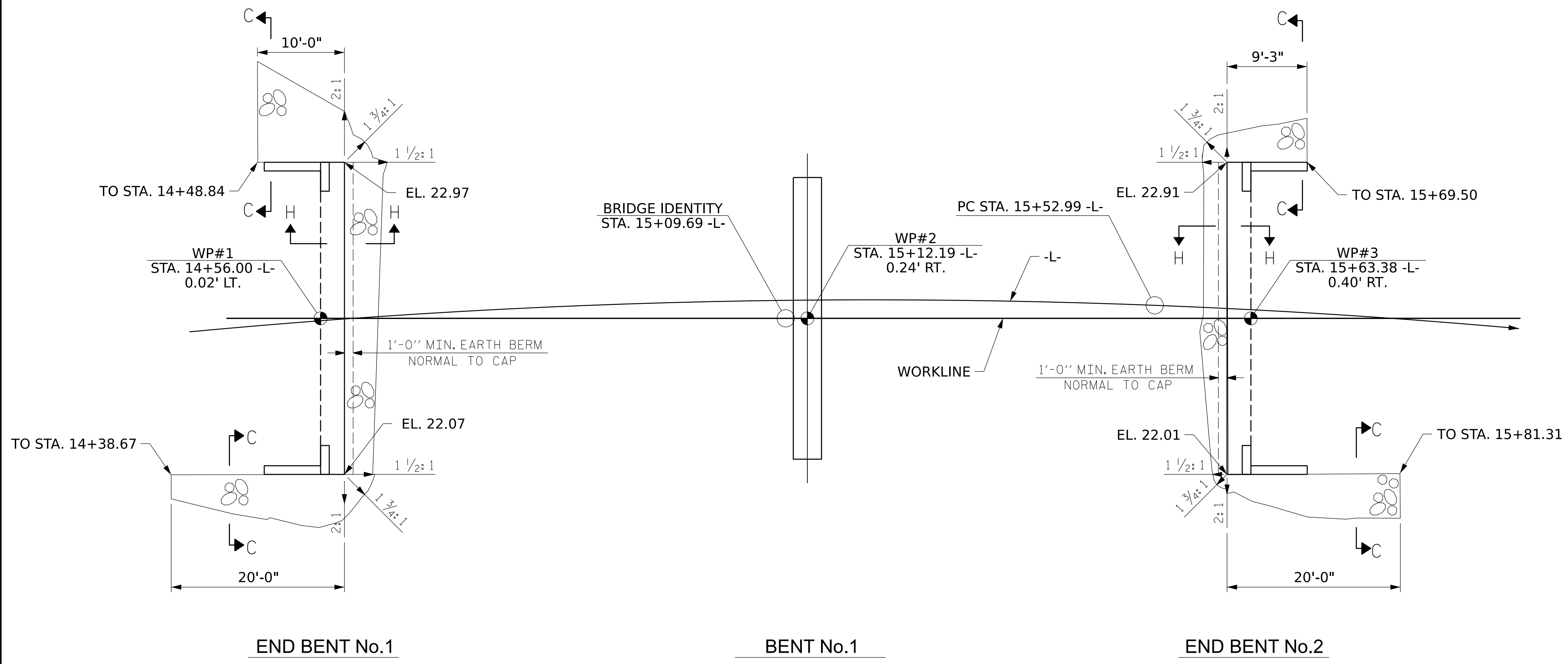
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
16" PRESTRESSED
CONCRETE PILE

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

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 NC FIRM LICENSE: C-1506

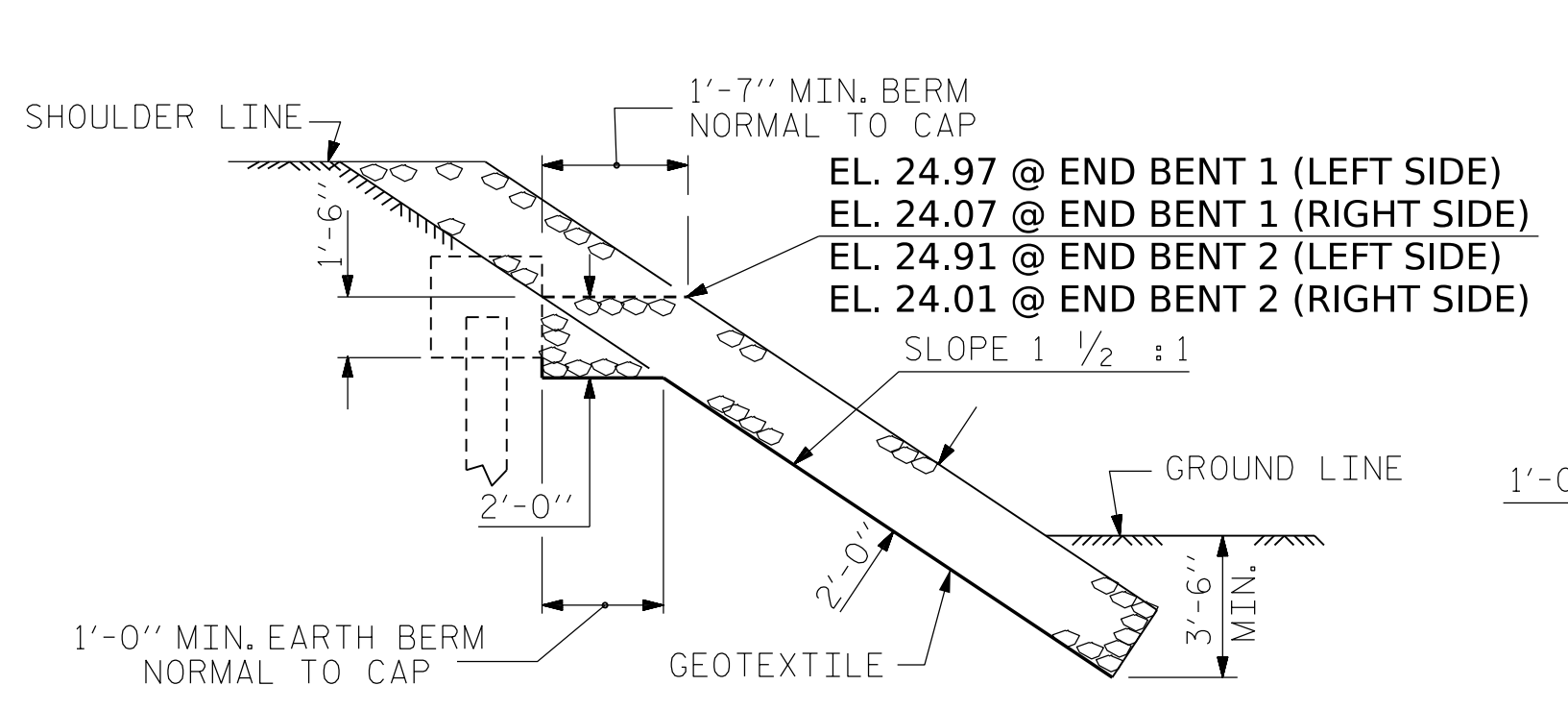
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-19 TOTAL SHEETS 21
2			4			

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

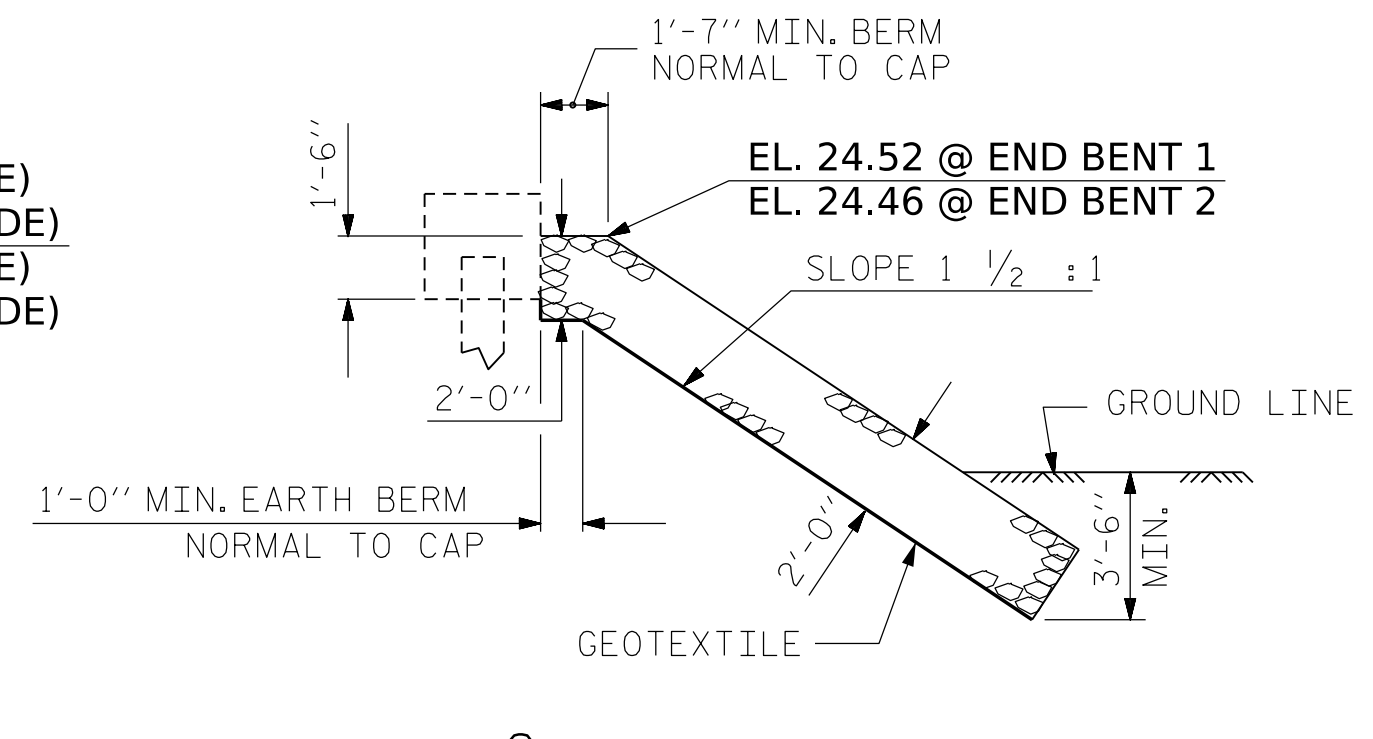


PLAN VIEW
(SEE SHEET S-3 AND ROADWAY PLANS FOR ROCK PLATING DETAILS)

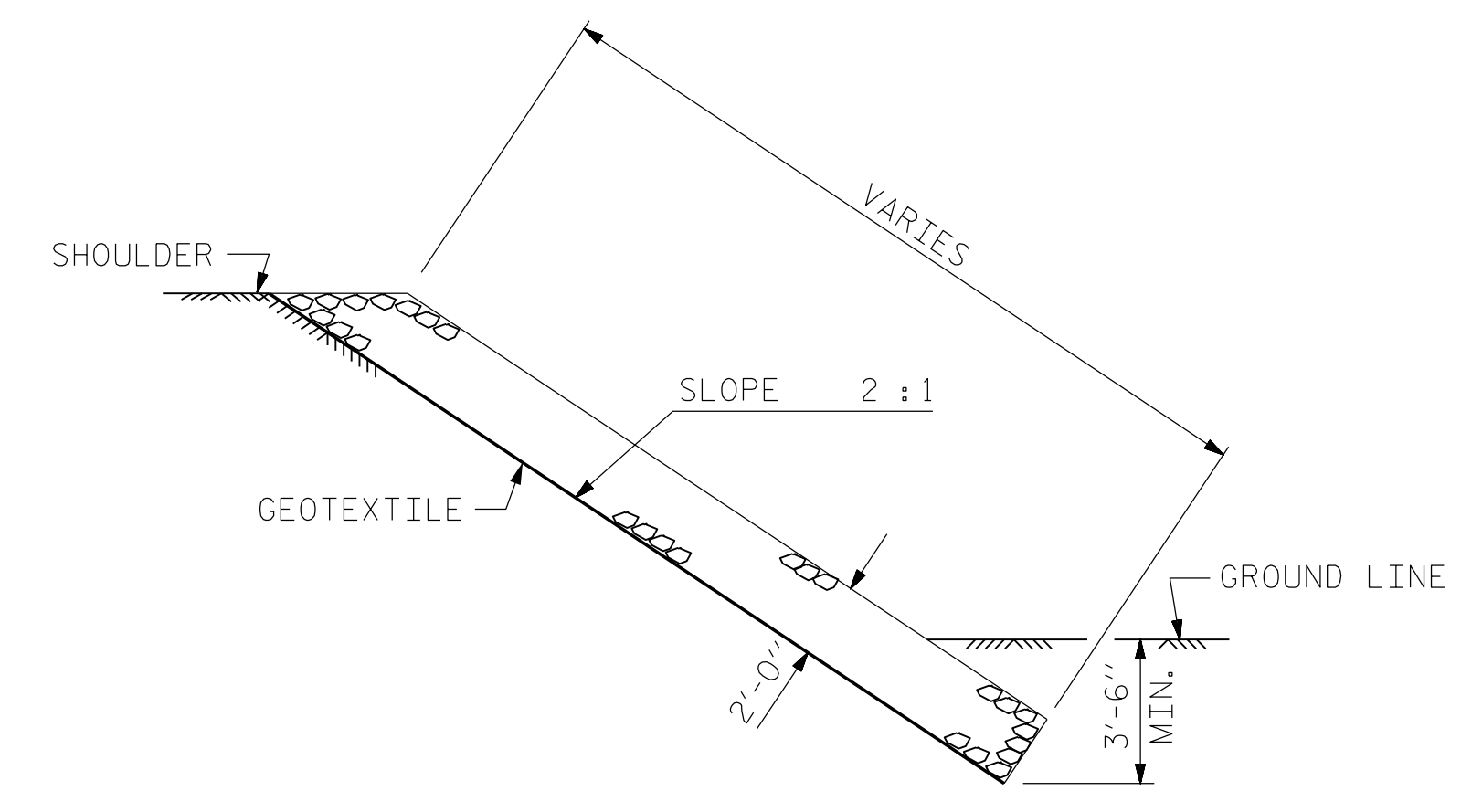
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+09.69 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	152.3	170
END BENT 2	135.7	151



SECTION H-H

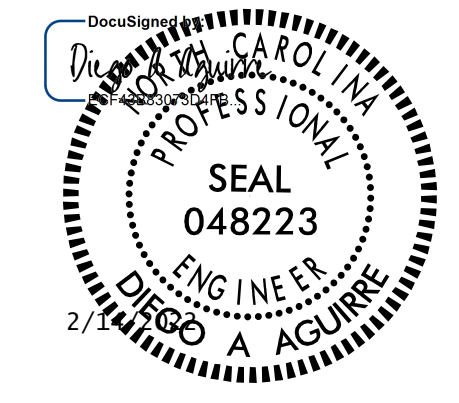


SECTION C-C
BERM RIP RAPPED



SECTION C-C
(WING WALL NOT SHOWN FOR CLARITY)

PROJECT NO. **BP2.R018.1**
PITT COUNTY
STATION: **15+09.69 -L-**

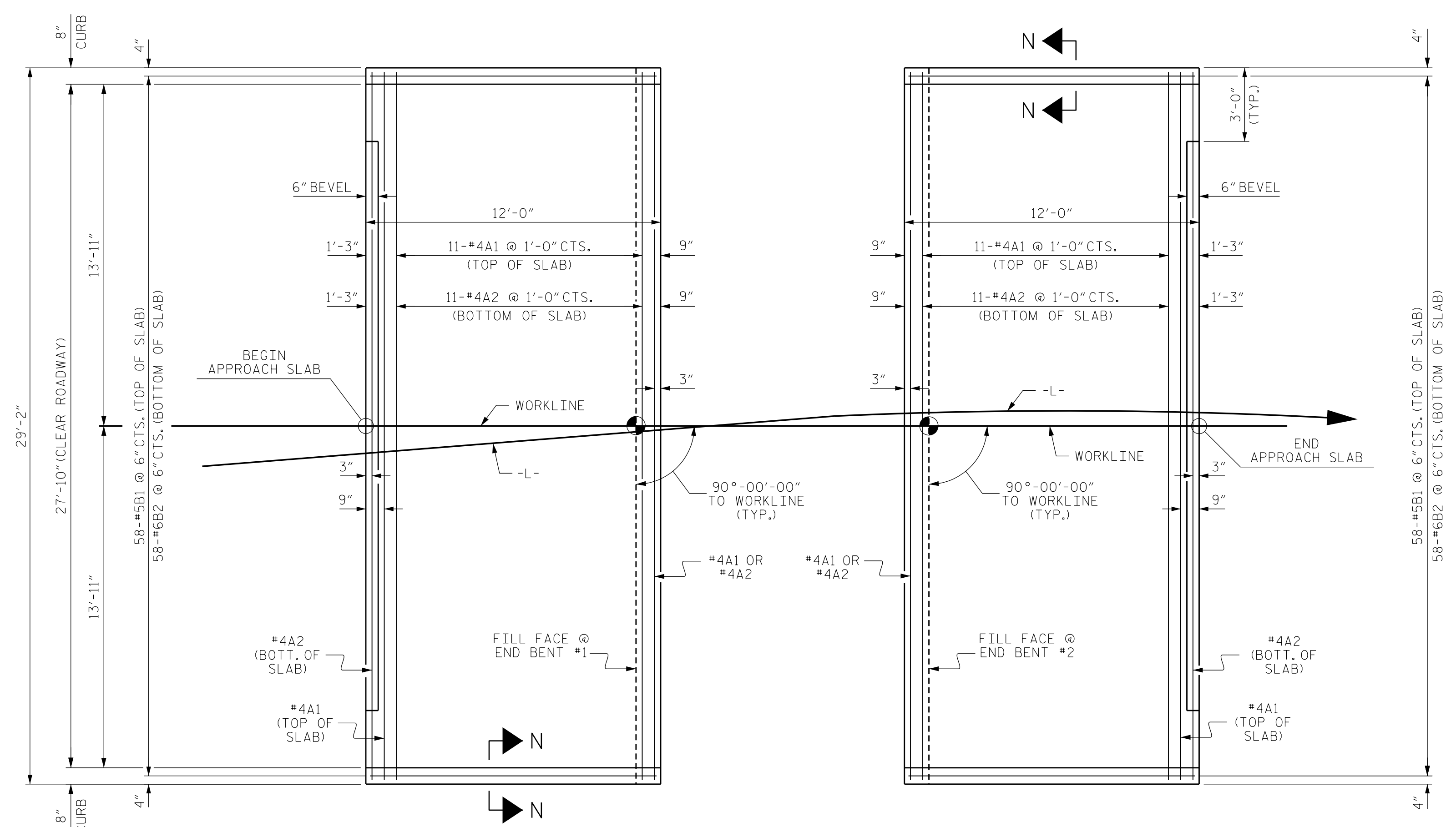


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		STANDARD RIP RAP DETAILS			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-20			TOTAL SHEETS 21		

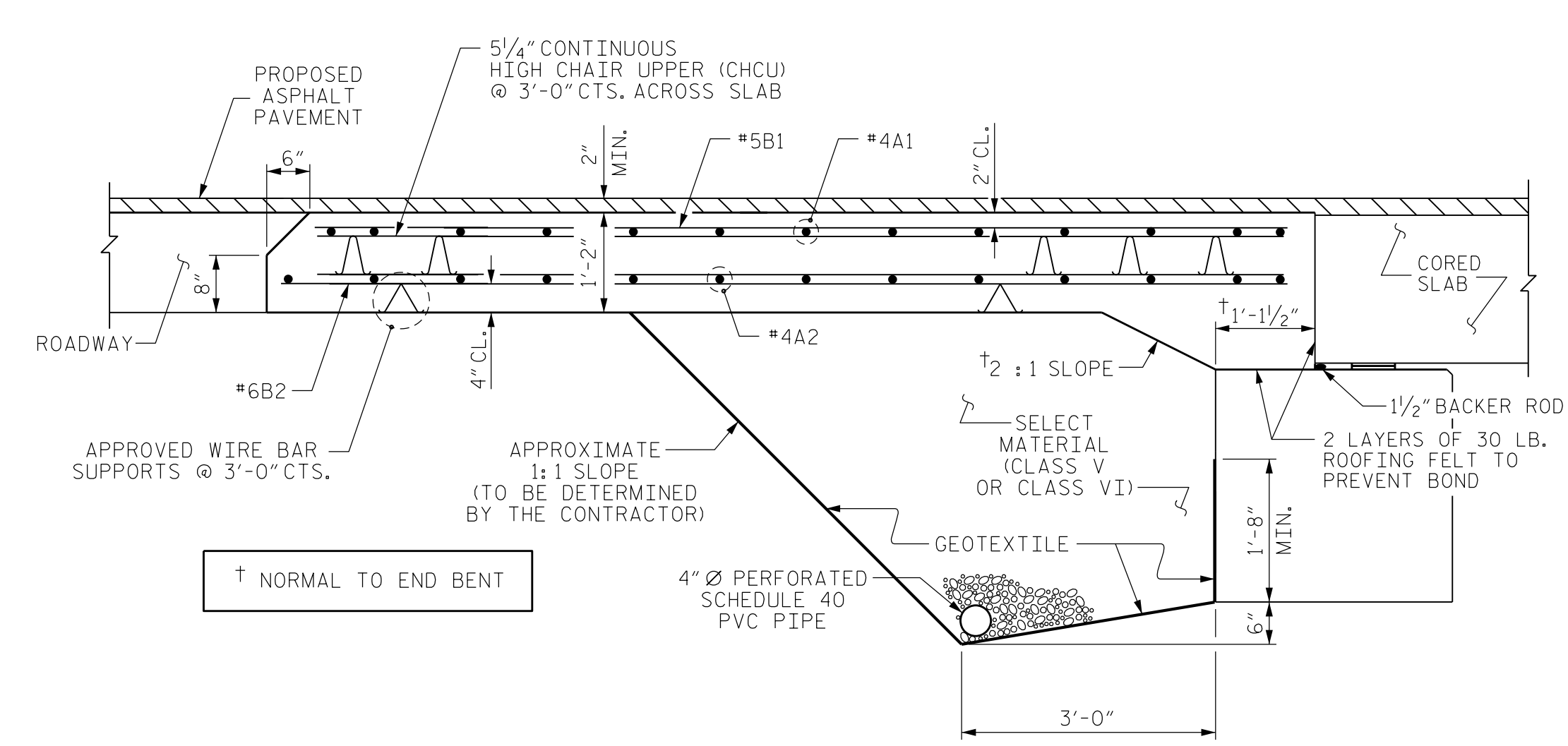
DESIGN ENGINEER OF RECORD: DIEGO A. AGUIRRE DATE: 11/2021	
ASSEMBLED BY: DIEGO A. AGUIRRE DATE: 11/21	CHECKED BY: JACOB H. DUKE DATE: 11/21
DRAWN BY: REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY: RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

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NC FIRM LICENSE: C-1506



PLAN @ END BENT #1 **PLAN @ END BENT #2**
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
 (TYPE II - MODIFIED APPROACH FILL)

DESIGN ENGINEER OF RECORD:
DIEGO A. AGUIRRE DATE : **11/2021**

ASSEMBLED BY : **DIEGO A. AGUIRRE** DATE : **11/21**
 CHECKED BY : **JACOB H. DUKE** DATE : **11/21**

DRAWN BY : SHS/MAA 5-09 REV. 12-17 MAA/THC
 CHECKED BY : BCH 5-09 REV. 08-19 BNB/THC

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

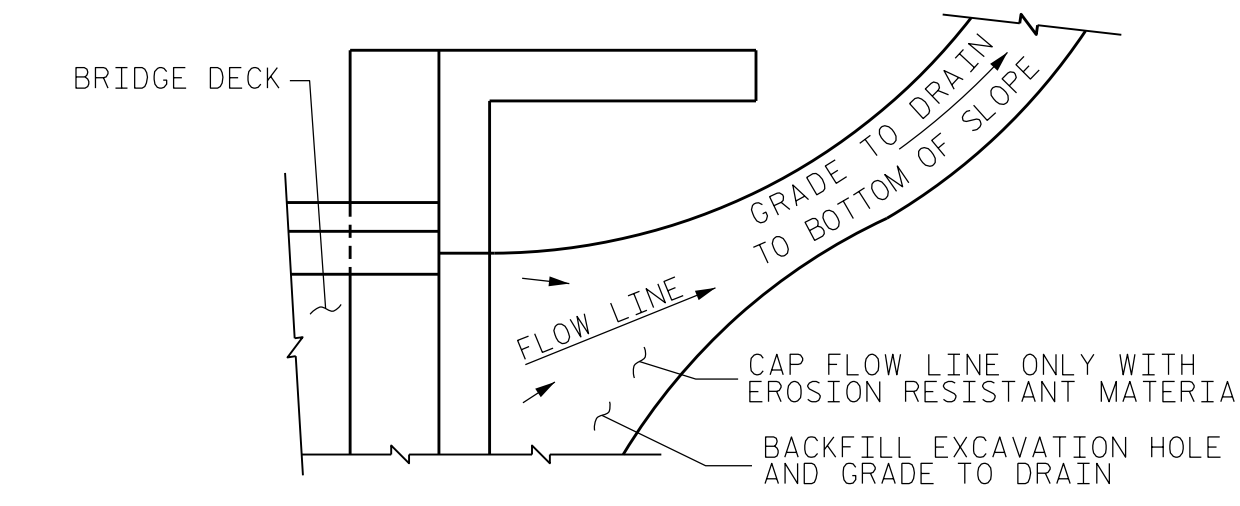
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

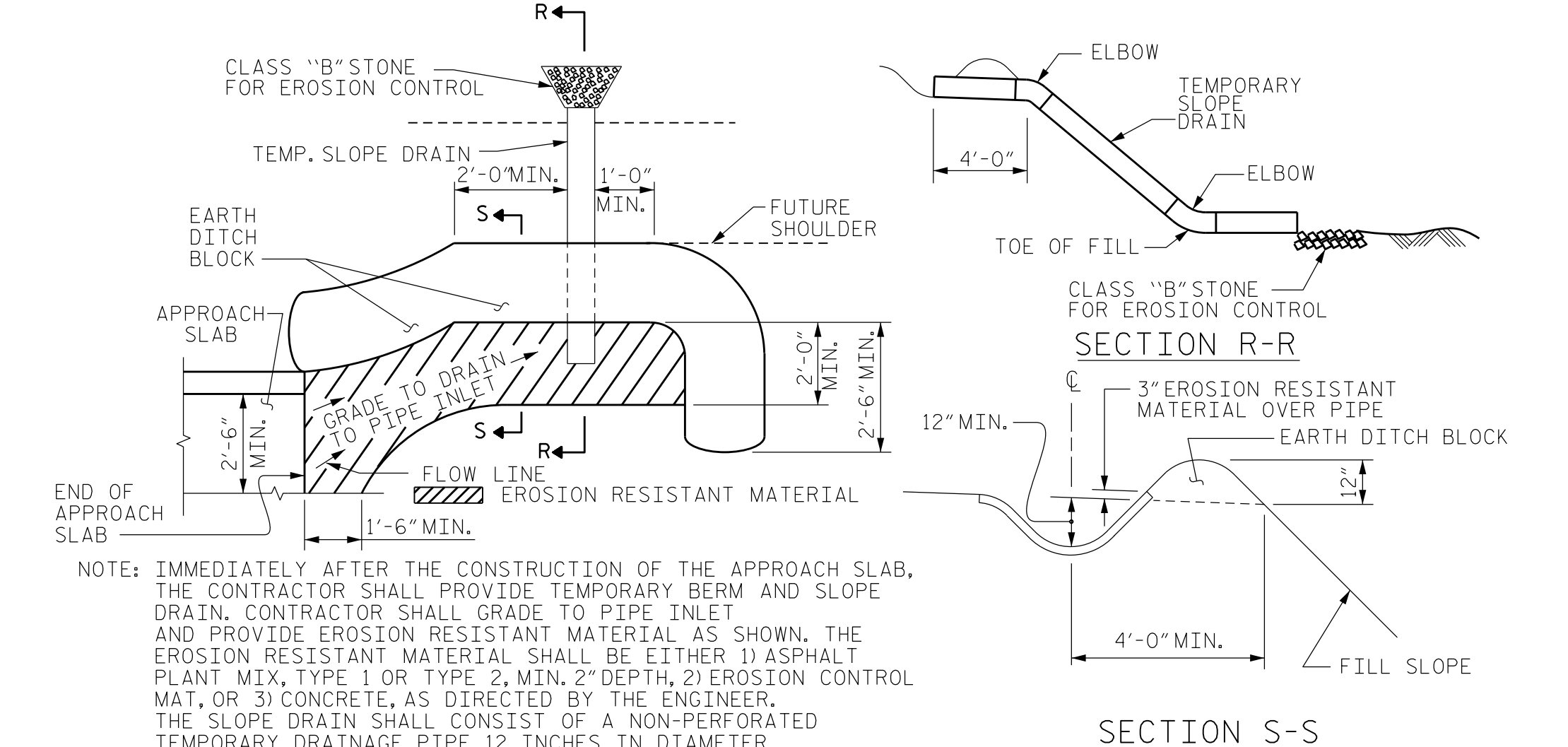
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

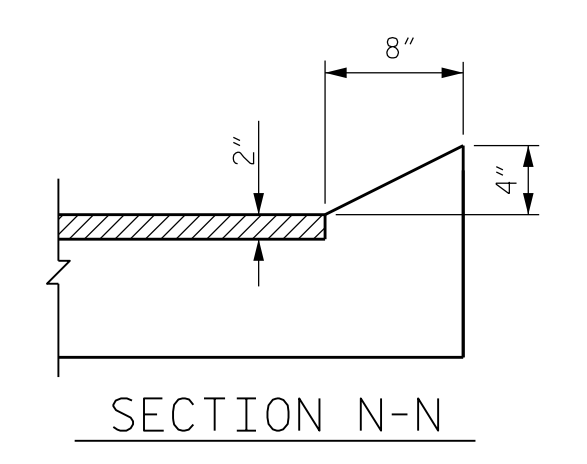


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

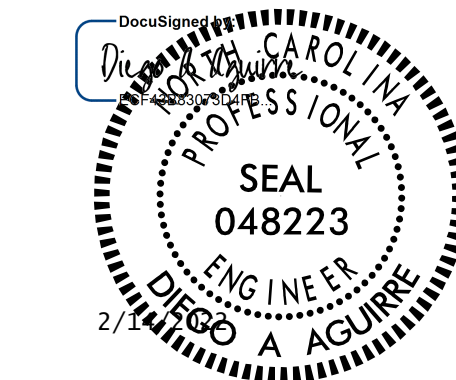
TEMPORARY DRAINAGE DETAIL



PLAN VIEW
TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N
CURB DETAILS



PROJECT NO. **BP2.R018.1**
PITT COUNTY
 STATION: **15+09.69 -L-**

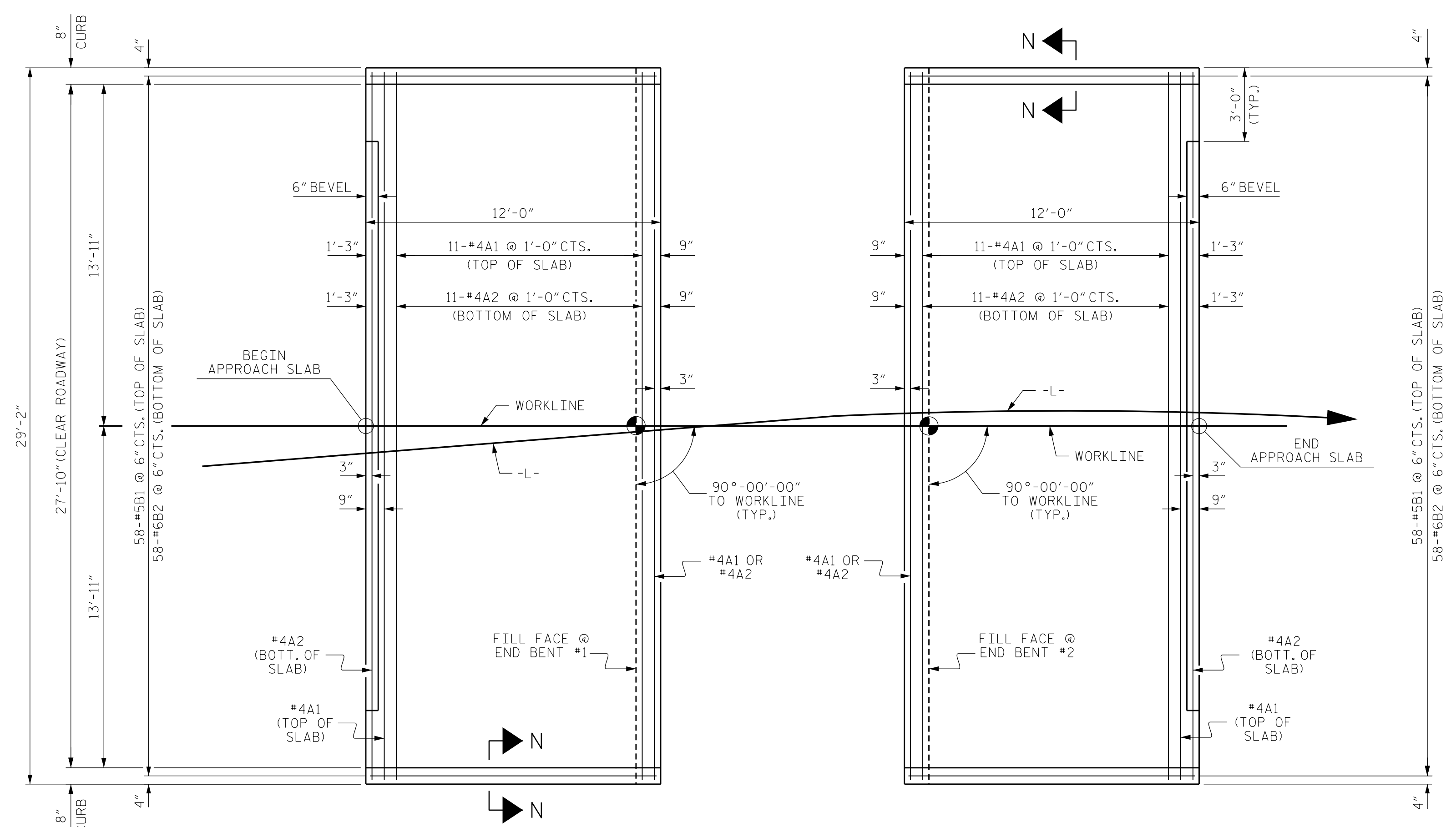
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

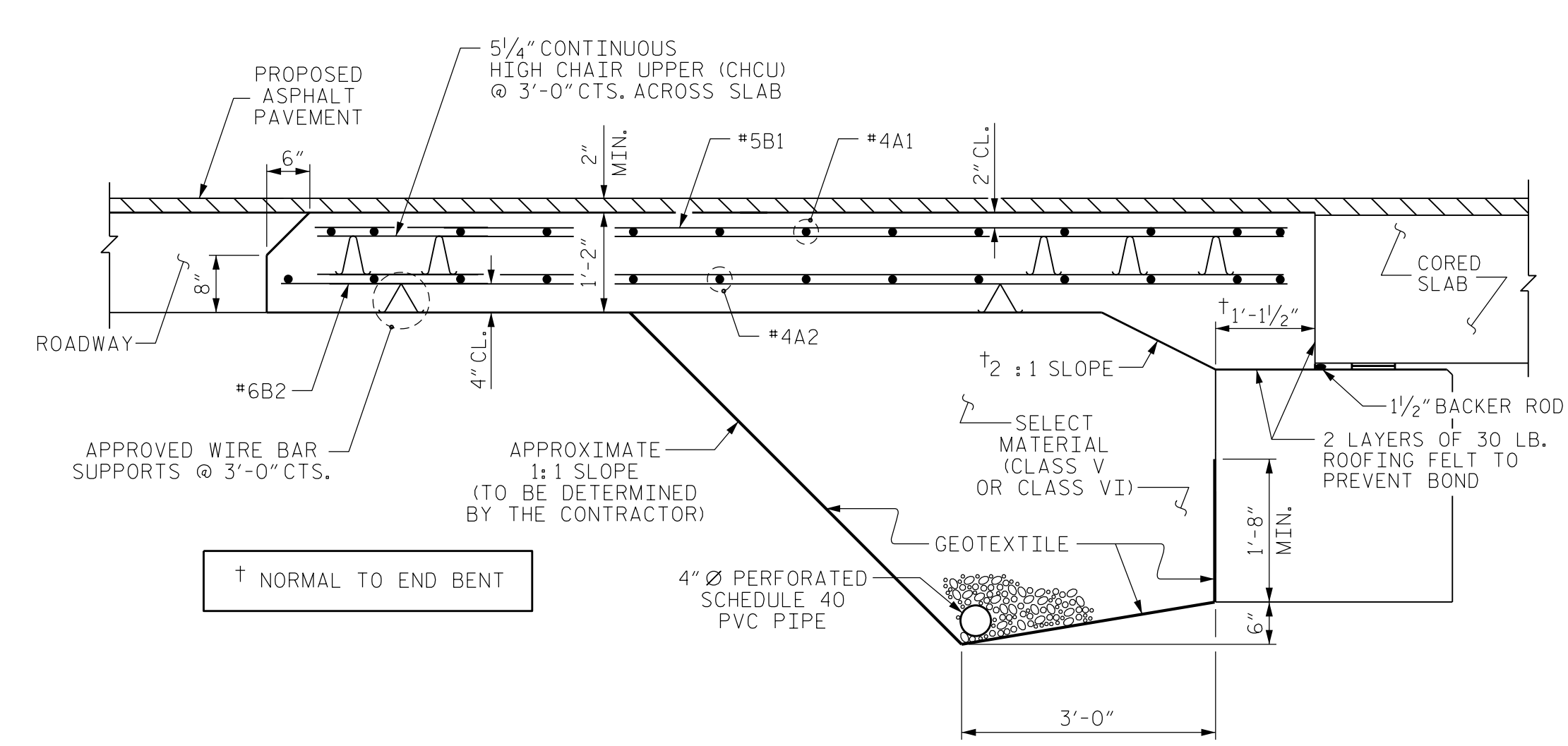
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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 RALEIGH, NC 27601 (919) 882-7839
 NC FIRM LICENSE: C-1506



PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
(TYPE II - MODIFIED APPROACH FILL)

DESIGN ENGINEER OF RECORD:
DIEGO A. AGUIRRE DATE: **11/2021**

ASSEMBLED BY: **DIEGO A. AGUIRRE** DATE: **11/21**
CHECKED BY: **JACOB H. DUKE** DATE: **11/21**

DRAWN BY: SHS/MAA 5-09 REV. 12-17 MAA/THC
CHECKED BY: BCH 5-09 REV. 08-19 BNB/THC

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
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#5	2'-5"	2'-0"
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NOTES

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GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

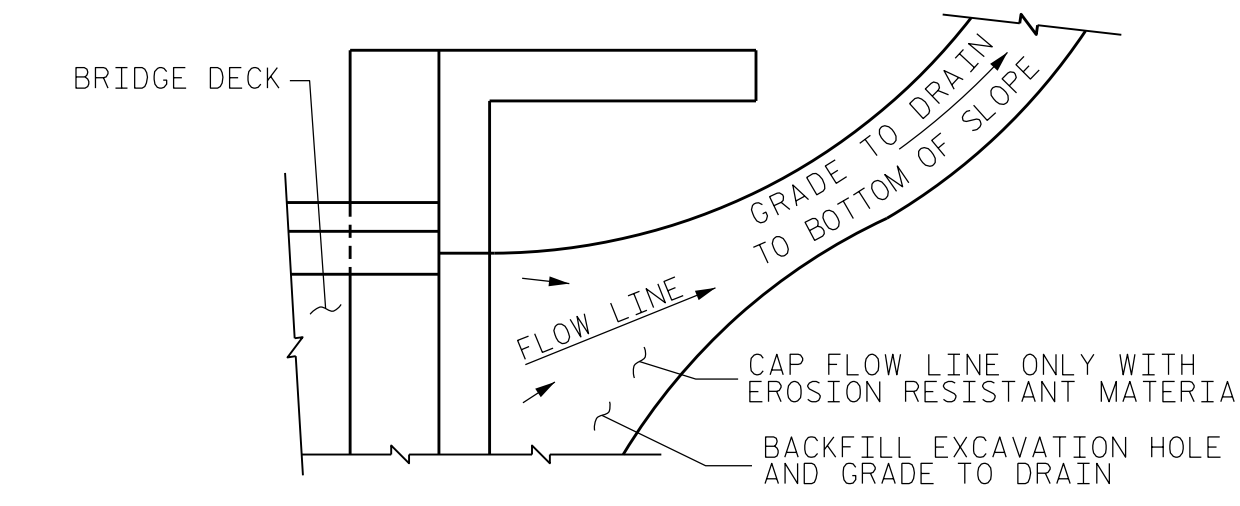
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SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

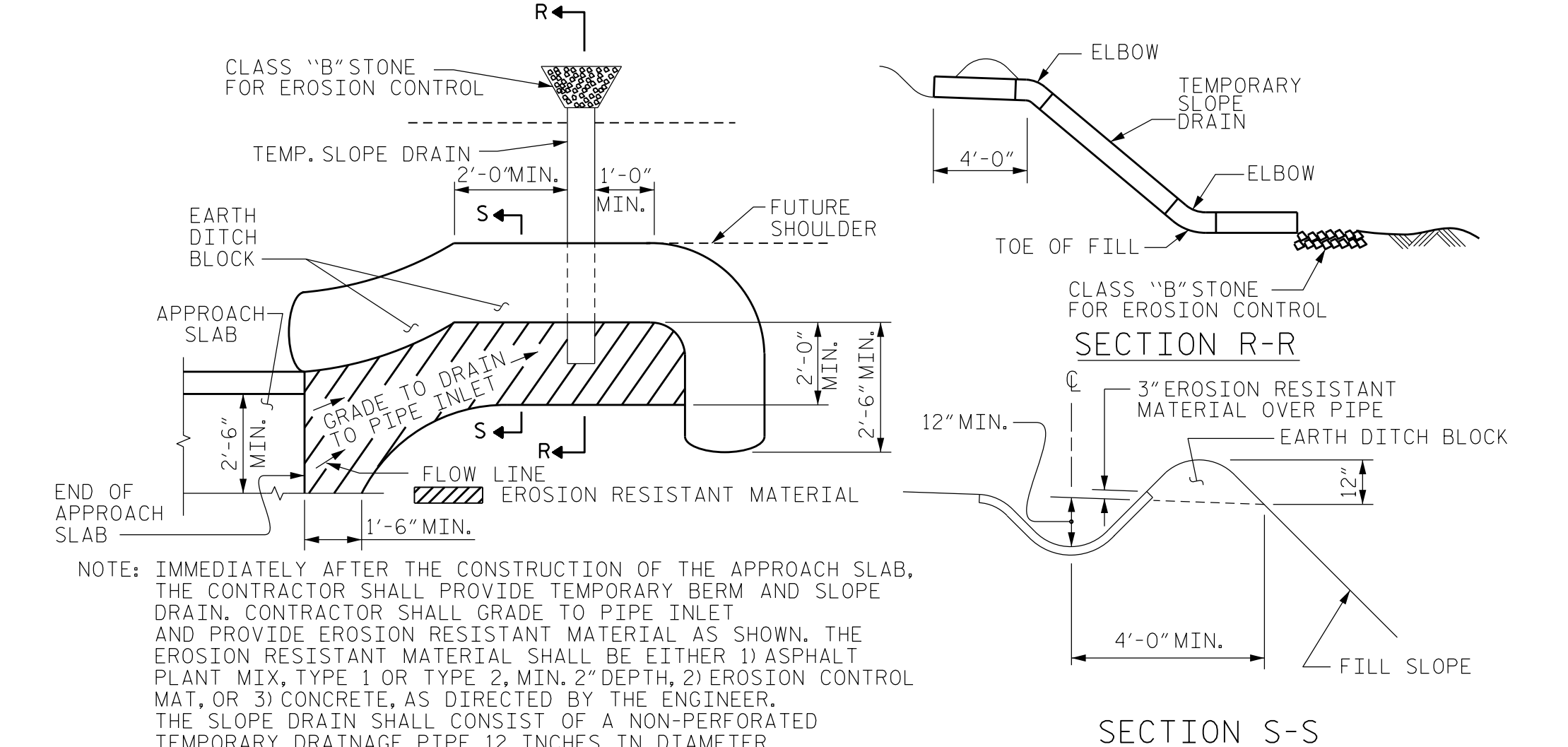
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

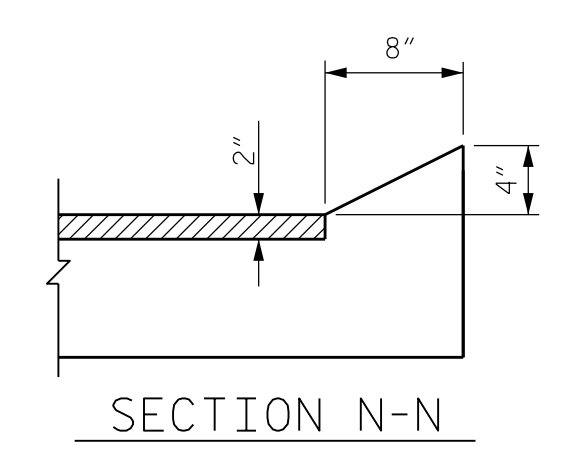


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

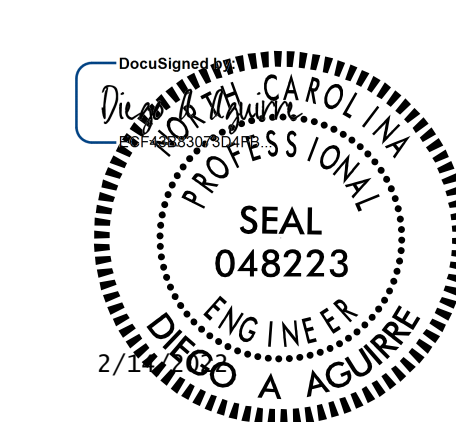


PLAN VIEW
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION N-N
CURB DETAILS

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
*EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.7
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	28'-10"	250	
A2	13	#4	STR	28'-10"	250	
*B1	58	#5	STR	11'-2"	676	
B2	58	#6	STR	11'-8"	1016	
REINFORCING STEEL					LBS.	1266
*EPOXY COATED REINFORCING STEEL					LBS.	926
CLASS AA CONCRETE					C. Y.	16.7



PROJECT NO. **BP2.R018.1**
PITT COUNTY
STATION: **15+09.69 -L-**

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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NC FIRM LICENSE: C-1506

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.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	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 $1\frac{1}{2}$ " 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. FINS 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