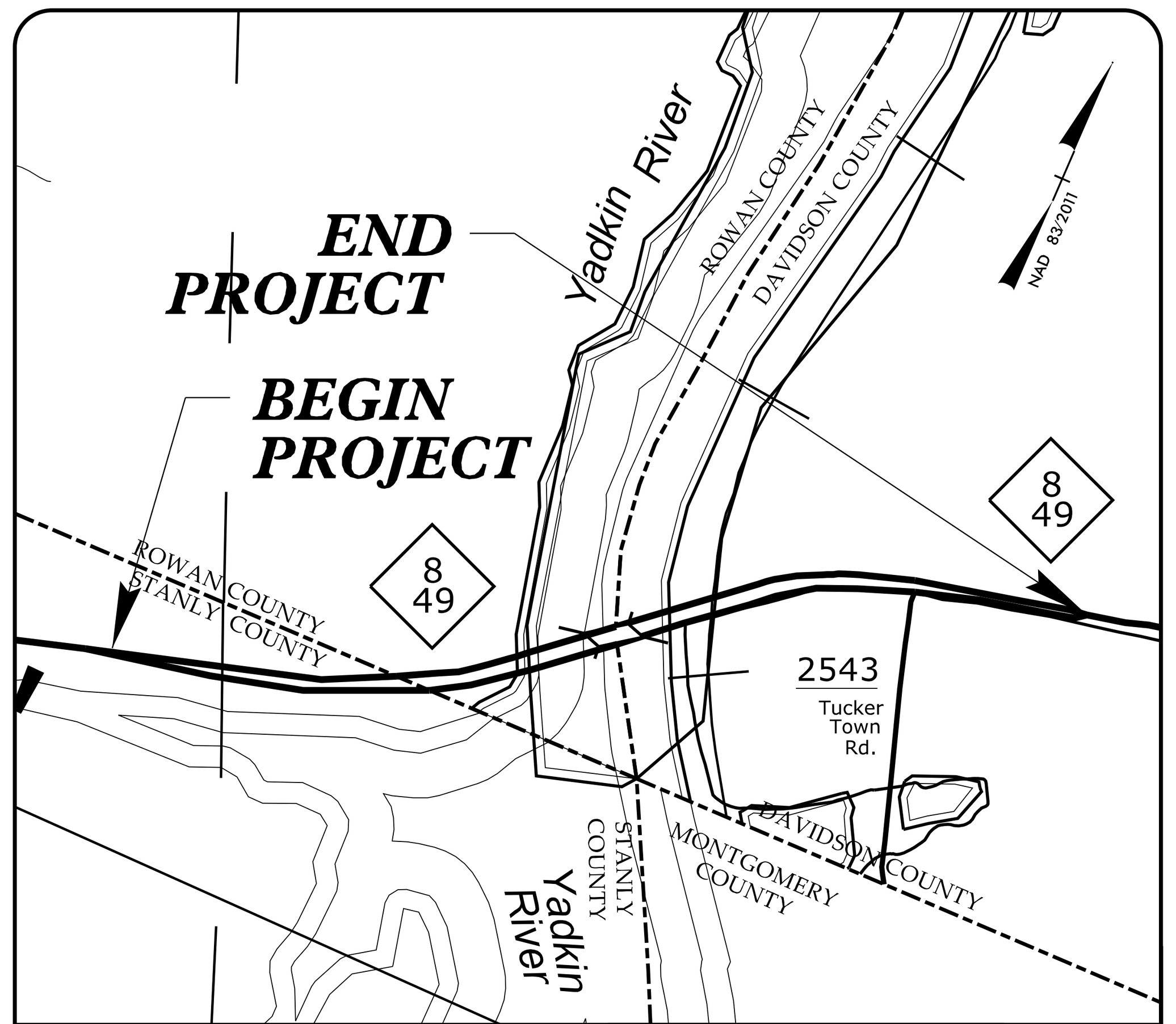
09/08/99

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4626	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38443.1.FS2	BRNHP-0049(33)	PE
38443.2.3	BRNHP-0049(33)	RW/UTIL
38443.3.3		CONST



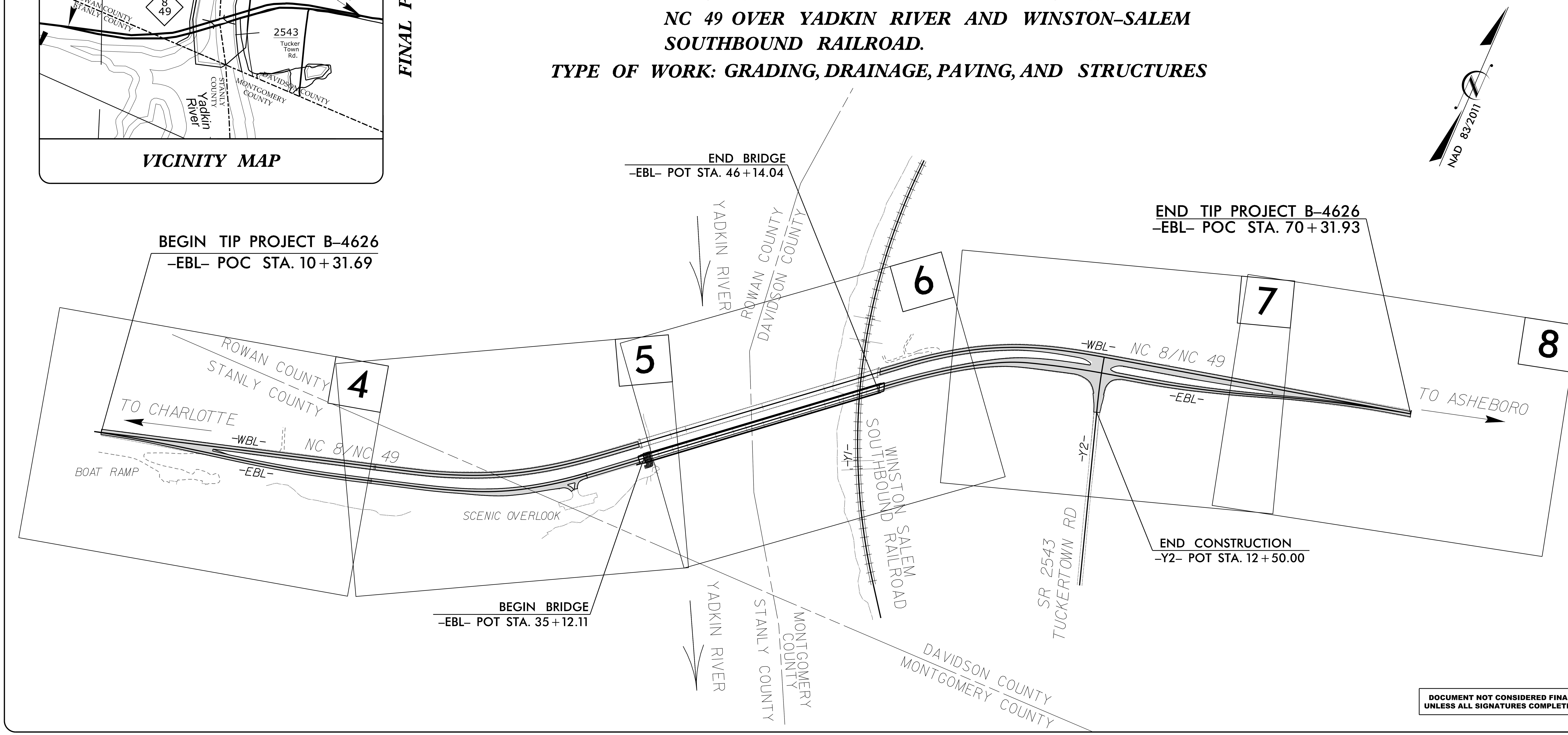
VICINITY MAP

FINAL PLANS

STANLY, ROWAN, AND DAVIDSON COUNTIES

LOCATION: REPLACE BRIDGE 790003 AND APPLY DECK PRESERVATION TREATMENT TO BRIDGE 790008 ON NC 49 OVER YADKIN RIVER AND WINSTON-SALEM SOUTHBOUND RAILROAD.

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: B-4626

CONTRACT: C204446

16-SEP-2021 17:18
\Roadway\Proj\B4626_RDY_TSH.DGN
HNTB

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2021 = 6,865
ADT 2041 = 8,165
K = 9 %
D = 55 %
T = 7 % *
V = 60 MPH
* TTST = 5% DUAL 2%
FUNC CLASS = RURAL ARTERIAL STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P PROJECT B-4626	=	0.927 MILES
LENGTH OF STRUCTURE T.I.P PROJECT B-4626	=	0.209 MILES
TOTAL LENGTH OF T.I.P. PROJECT B-4626	=	1.136 MILES

LENGTH BASED ON -EBL- CENTERLINE

PREPARED IN THE OFFICE OF:

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 22, 2019

LETTING DATE:
OCTOBER 19, 2021

JOHN J. HESS, P.E.
PROJECT ENGINEER

JACQUELYN BOWLES, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Paul H. Cameron
E99339B26CDF4AC
SIGNATURE: P.E. 9/16/2021

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON

ROADWAY DESIGN ENGINEER

DocuSigned by:
6206FBBCA52C43A
SIGNATURE: P.E. 9/16/2021

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4626	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER JOHN J. HESS

DocuSigned by: 9/14/2021

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES & STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1	DETAIL OF GUARDRAIL W-BEAM INSTALLATION
2C-2	DETAIL OF TRAFFIC BEARING 4GI
2C-3	DETAIL OF CONVERTING EXISTING DI TO JB
2D-1 THRU 2D-2	DRAINAGE DETAILS
3B-1	SUMMARY OF EARTHWORK, SHOULDER BERM GUTTER, ASPHALT PAVEMENT REMOVAL, & GUARDRAIL
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX SHEET
4 THRU 8	PLAN SHEETS
9 THRU 14	PROFILE SHEETS
RW01 THRU RW08	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS, AND PROPERTY TIES
TMP-1 THRU TMP-14	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-7	PAVEMENT MARKING PLANS
EC-1 THRU EC-13	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-7	SIGNING PLANS
X-0	CROSS SECTION INDEX SHEET
X-1A	EARTHWORK VOLUME SUMMARY
X-1 THRU X-25	CROSS SECTIONS
S1-1 THRU S1-103	STRUCTURE PLANS - S1
S2-1 THRU S2-22	STRUCTURE PLANS - S2

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 III.

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

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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.

EFF. 01-16-2018
REV.

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	
200.03	Method of Clearing - Method III
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	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.22	Frames and Wide Slot Sag Grates
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.53	Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4626	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- 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 — FLOW
- False Sump

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New 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
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — 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 Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

6/2/99

FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE.
P	PRIME COAT (0.35 GAL/SY)
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING (SEE MILLING DETAIL)
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL NO. 1)

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

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS 9/13/2021	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON 9/14/2021

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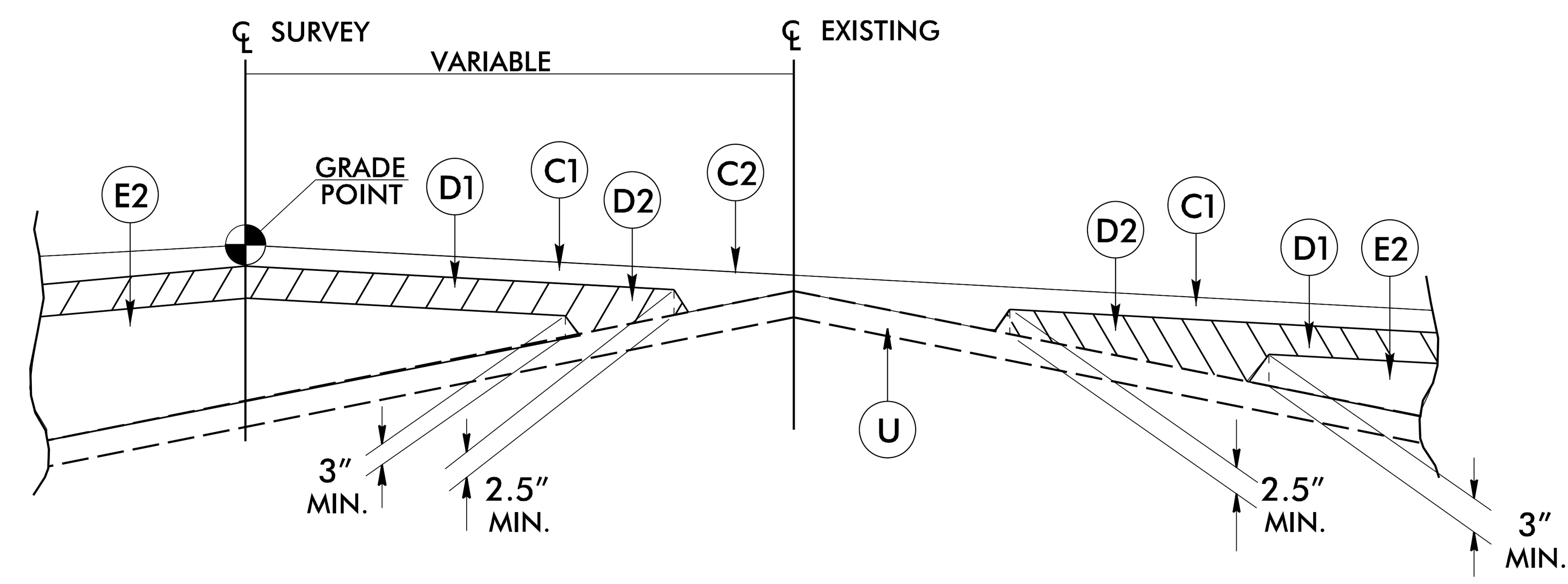
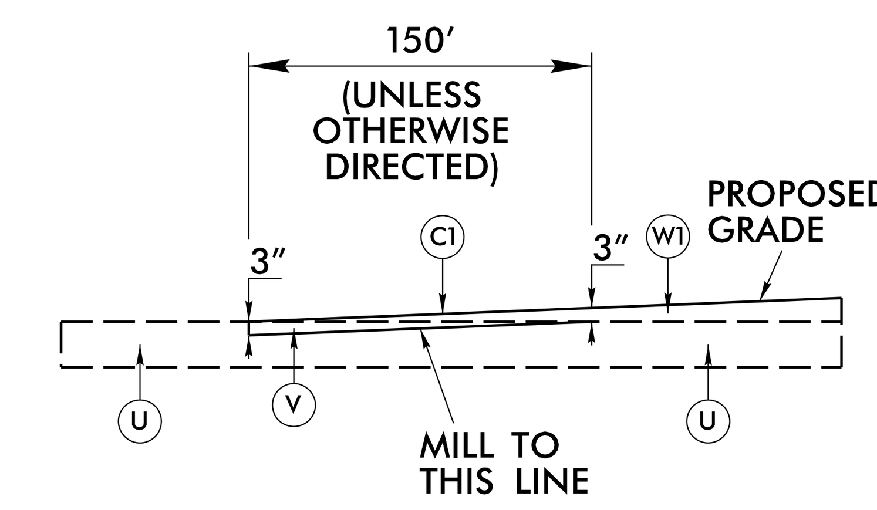
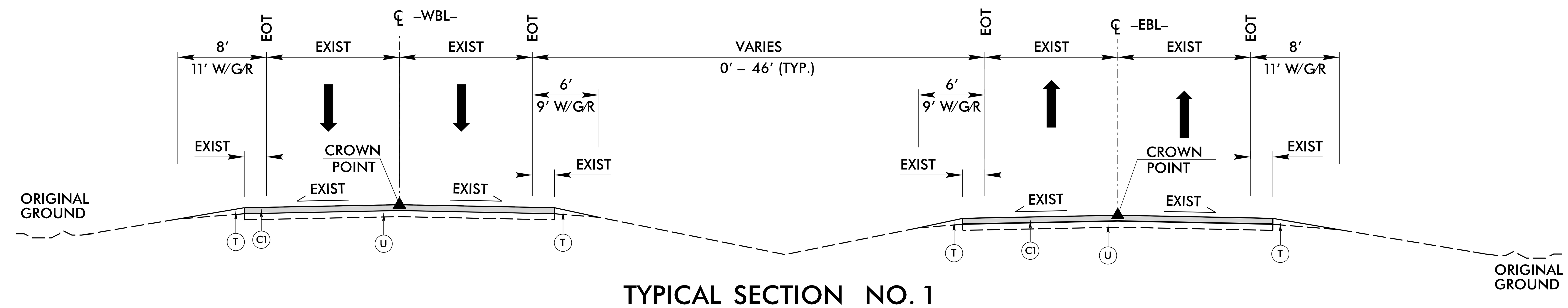


DETAIL SHOWING METHOD OF WEDGING

WEDGING DETAIL NO. 1



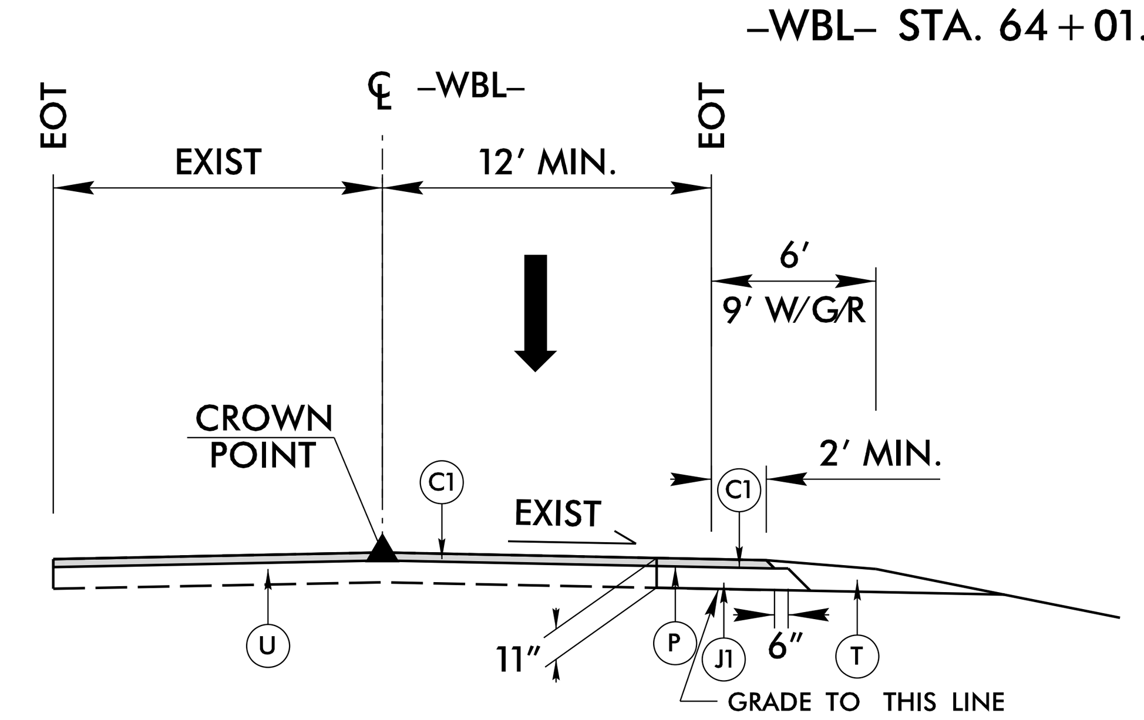
DETAIL FOR INCIDENTAL MILLING



TYPICAL SECTION NO. 1

-WBL- STA. 10+31.68 TO STA. 34+74.26
-WBL- STA. 46+06.70 TO STA. 52+50.00
-WBL- STA. 64+01.72 TO STA. 70+29.95

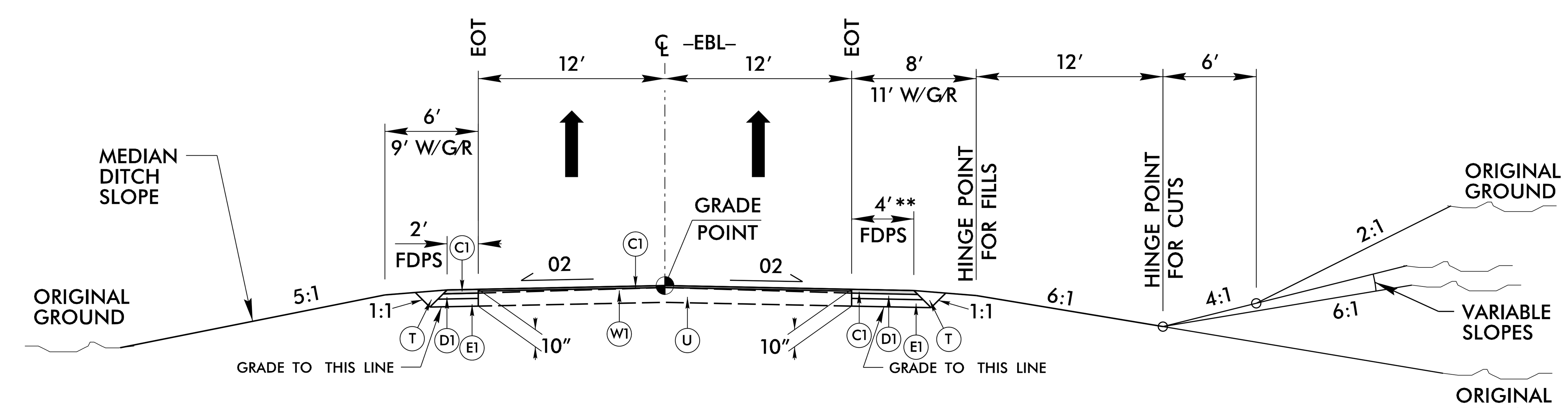
-EBL- STA. 10+31.69 TO STA. 29+10.00
-EBL- STA. 51+00.00 TO STA. 70+31.93



TYPICAL SECTION NO. 1A

USE TYPICAL SECTION 1A IN CONJUNCTION WITH TYPICAL SECTION 1

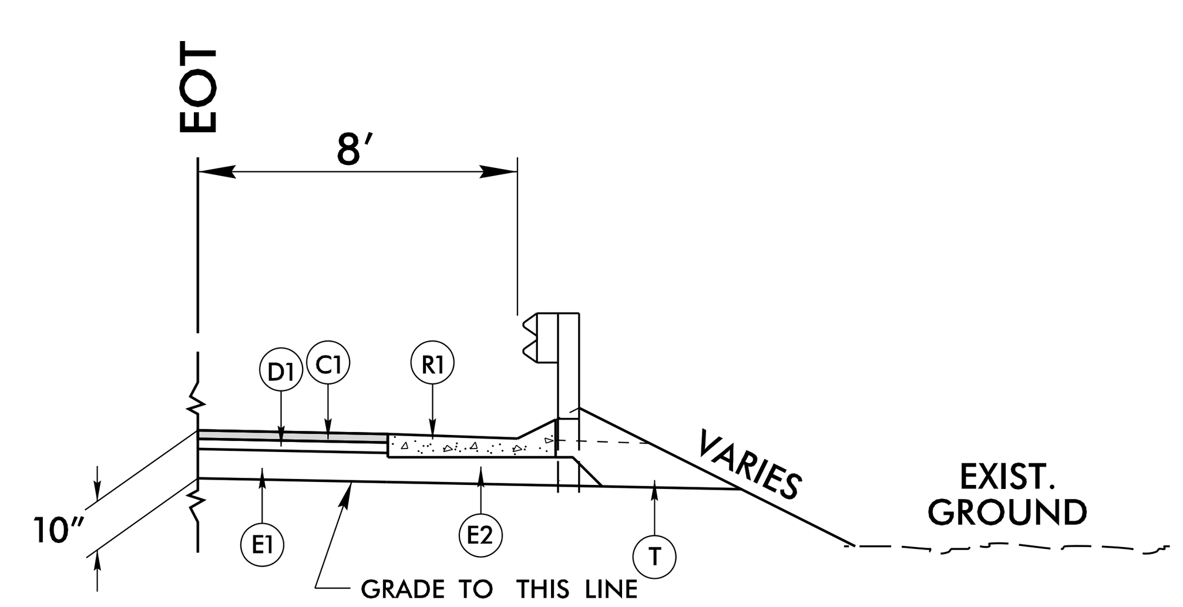
-WBL- STA. 15+39.47 TO STA. 16+92.02



TYPICAL SECTION NO. 2

** NOTE: PAVE TO FACE OF GUARDRAIL

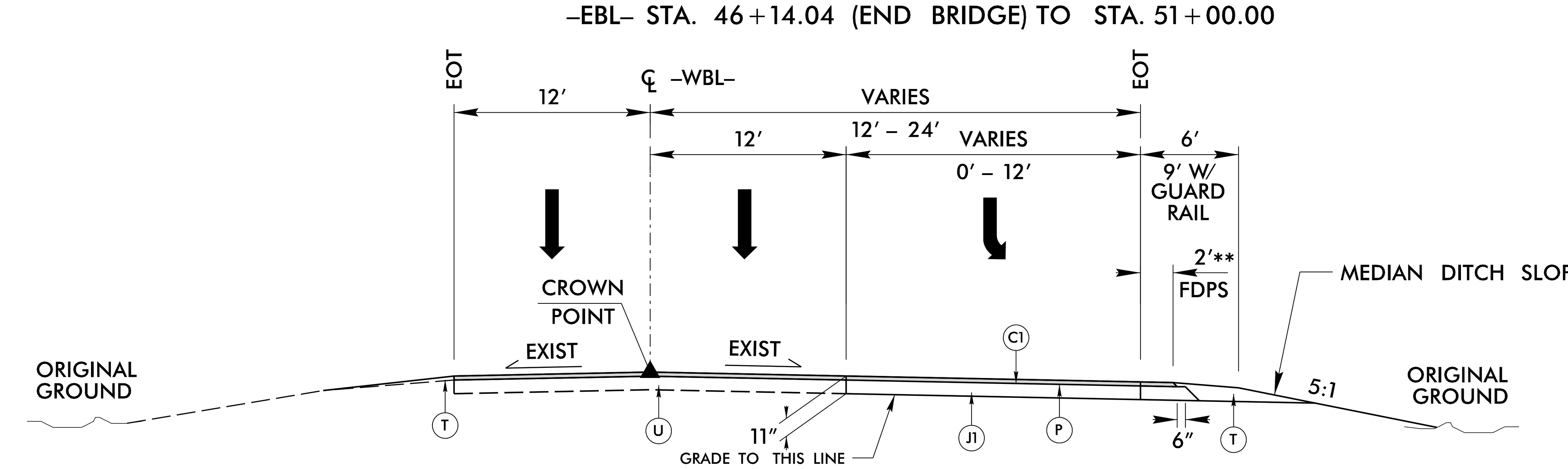
-EBL- STA. 29+10.00 TO STA. 35+12.11 (BEGIN BRIDGE)
-EBL- STA. 46+14.04 (END BRIDGE) TO STA. 51+00.00



TYPICAL SECTION NO. 2A

USE TYPICAL SECTION 2A IN CONJUNCTION WITH TYPICAL SECTION 2

-EBL- STA. 34+69.65 TO STA. 34+88.11 (BEGIN APPROACH SLAB)



TYPICAL SECTION NO. 3

-WBL- STA. 52+50.00 TO STA. 64+01.72

** NOTE: PAVE TO FACE OF GUARDRAIL

13-SEP-2021 12:59
\Roadway\Proj\B4626_RDY_TYP.dgn
HNTB

PROJECT REFERENCE NO.	SHEET NO.
B-4626	2C-1

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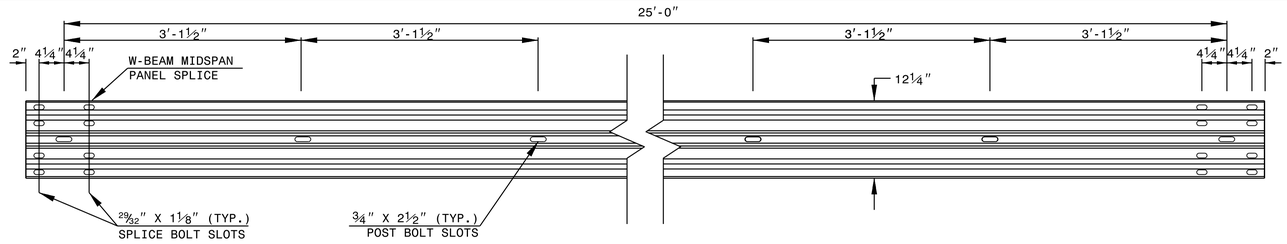
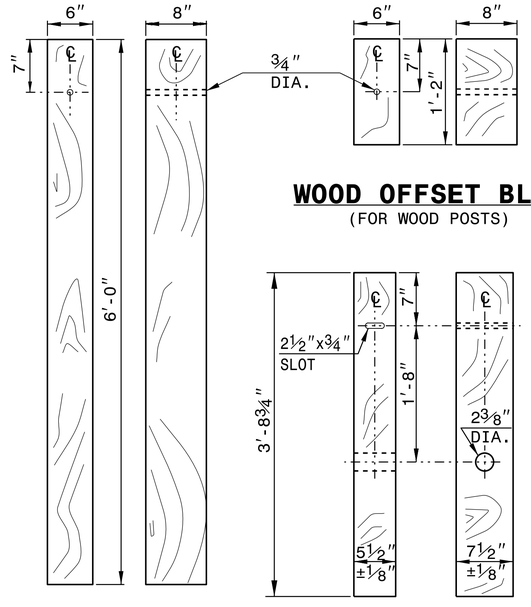
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



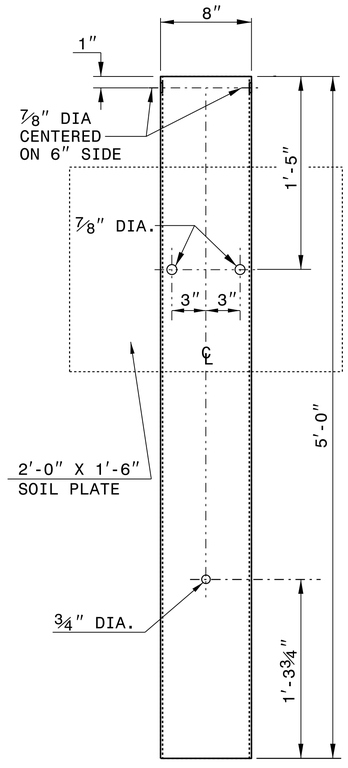
STANDARD W-BEAM GUARDRAIL



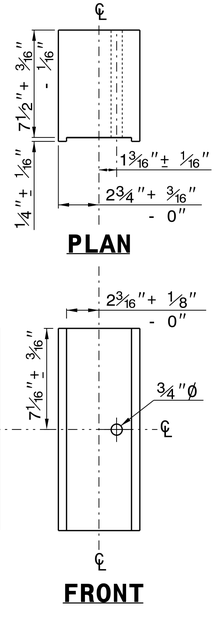
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

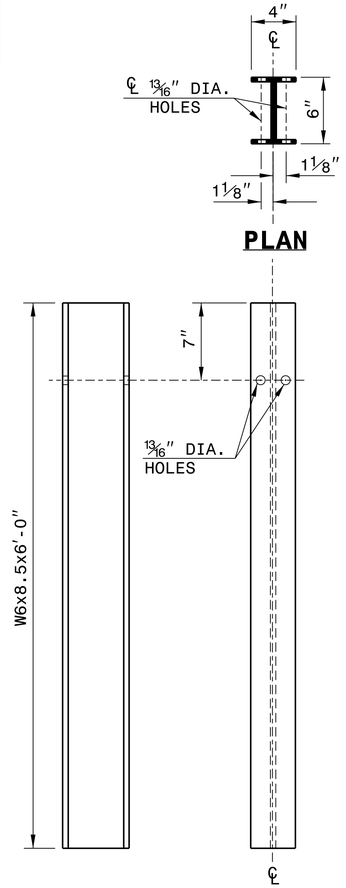
SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"



ROUTED OFFSET BLOCK



"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

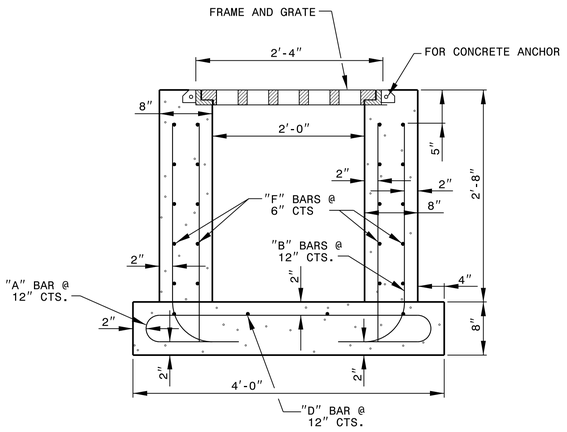
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON
9/13/2021
DocuSigned by: 673F3D17DCDC45F...

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

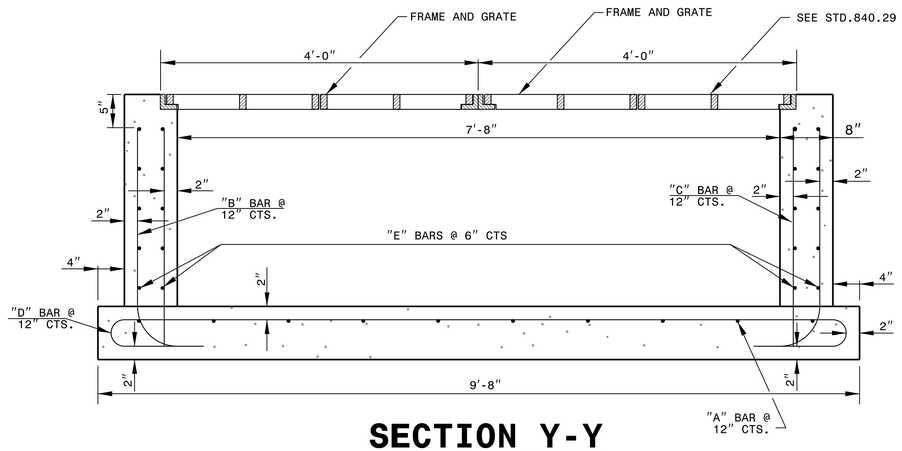
SEE TITLE BLOCK

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

PROJ. REFERENCE NO.	SHEET NO.
B-4626	2C-2



SECTION X-X



SECTION Y-Y

GENERAL NOTES:
-ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1".

-FORMS SHALL BE USED TO CONSTRUCT THE BOTTOM SLAB.

-IF PIPES ARE SET IN THE BASE SHALL FOLLOW CONSTRUCTION PROCEDURE SHOWN BY STD. DWG. 840.00.

-PRECAST UNITS MADE OF CLASS "AA" CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION.

-REINFORCING STEEL COST SHALL BE INCLUSIVE IN THE UNIT OR PER METER BID PRICE FOR "MASONRY DRAINAGE STRUCTURE".

-REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.

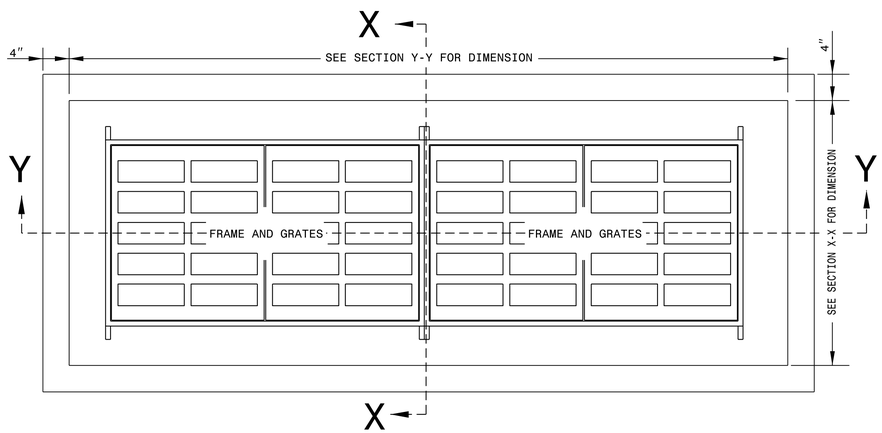
-DROP INLETS OVER 3'-6" DEEP SHALL BE PROVIDED WITH STEPS AS DIRECTED BY STD. DWG. 840.66.

-FRAME AND GRATES SHALL BE SEPARATE CONTRACT ITEM.

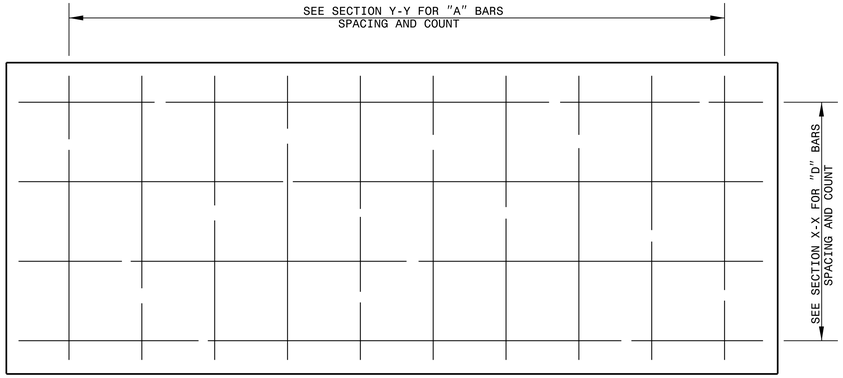
-HORIZONTAL AND VERTICAL DIMENSION MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.

-MAXIMUM HEIGHT FOR THIS STRUCTURE SHALL BE 15'.

-ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.
-DEPTH OF STEEL GRATE WILL REQUIRE DEEPER SEAT ALONG SHORT WALLS.



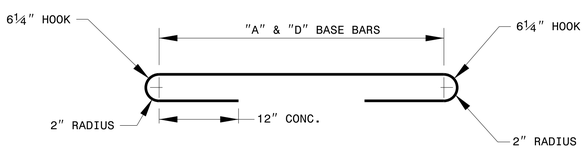
PLAN



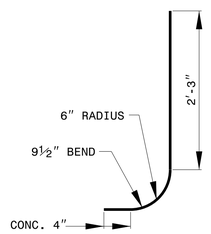
PLAN OF BASE

BILL OF MATERIALS							
COMMON		CONCRETE ALT.					
BAR	SIZE	LENGTH	QUANTITY	WEIGHT			
A	#5	6'-4½"	10	67			
B	#5	3'-4½"	24	84			
C	#5	2'-8"	24	67			
D	#5	12'-6"	4	22			
E	#5	3'-0"	20	62			
F	#5	8'-6"	20	179			
REINF. STEEL (TOTAL WEIGHT LBS.)				481			
CONCRETE IN BASE (CU.YDS.)				0.93			
CONCRETE IN WALLS (CU.YDS.)				1.42			
CONCRETE TOTAL (CU.YDS.)				2.35			
CONC. CU.YDS. PER WALL/FOOT OF HEIGHT				1.74			
LBS. OF REINF. STEEL IN WALL/FOOT OF HEIGHT				494			

STRAIGHT BARS



BASE BARS



CORNER BARS

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

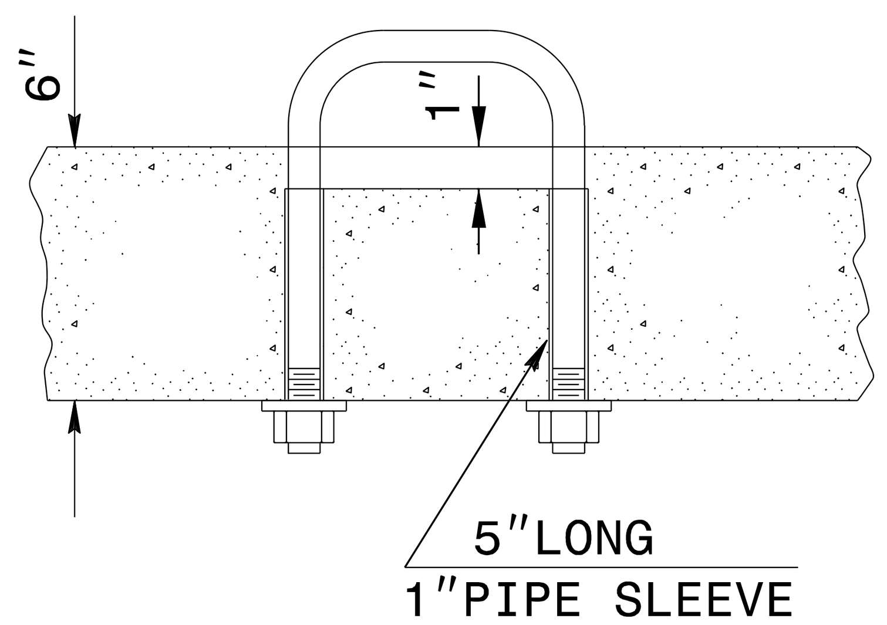
DocuSigned by:
873F3D17DCDC45F...
9/13/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

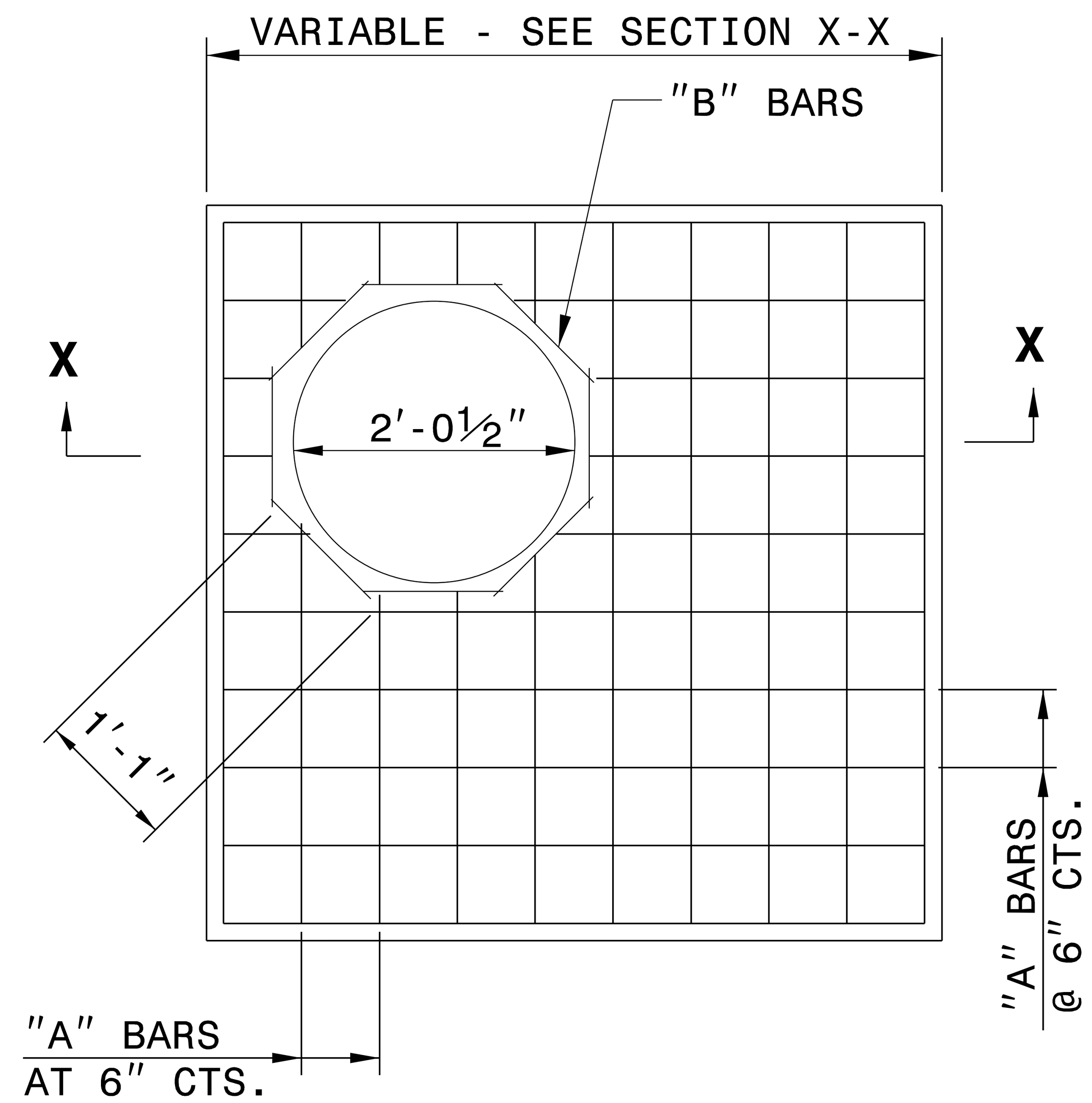
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

TRAFFIC BEARING 4GI

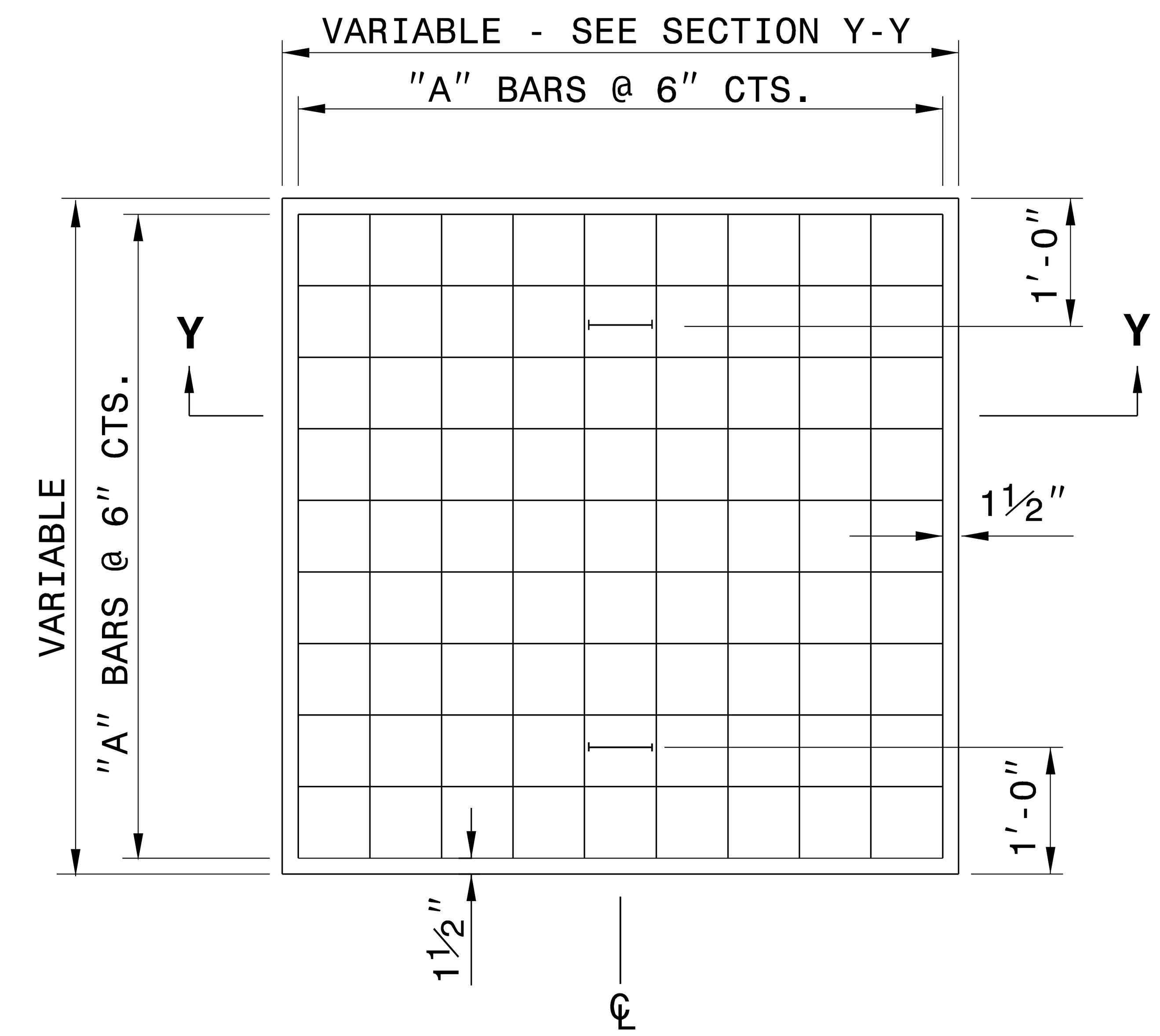
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 6-15-16
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/nbritt/english/urban./u2810ctb4gi.dgn



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

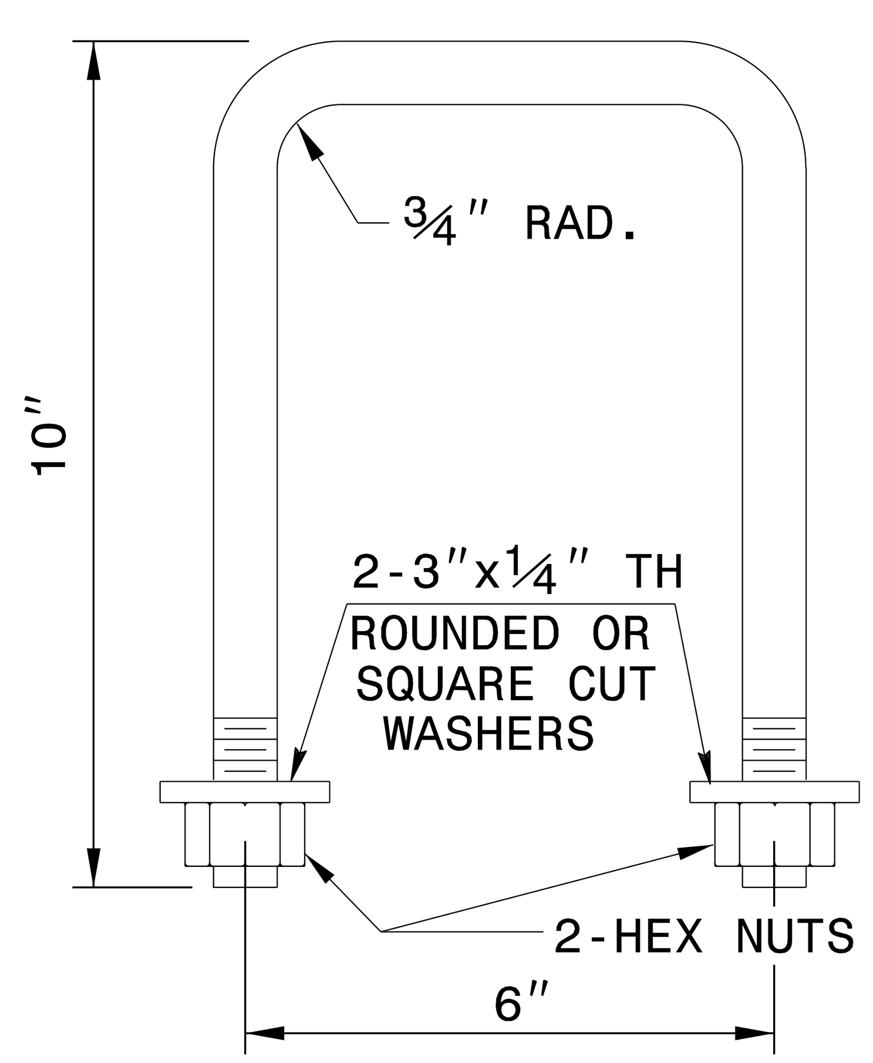
BILL OF MATERIALS

REINFORCING STEEL

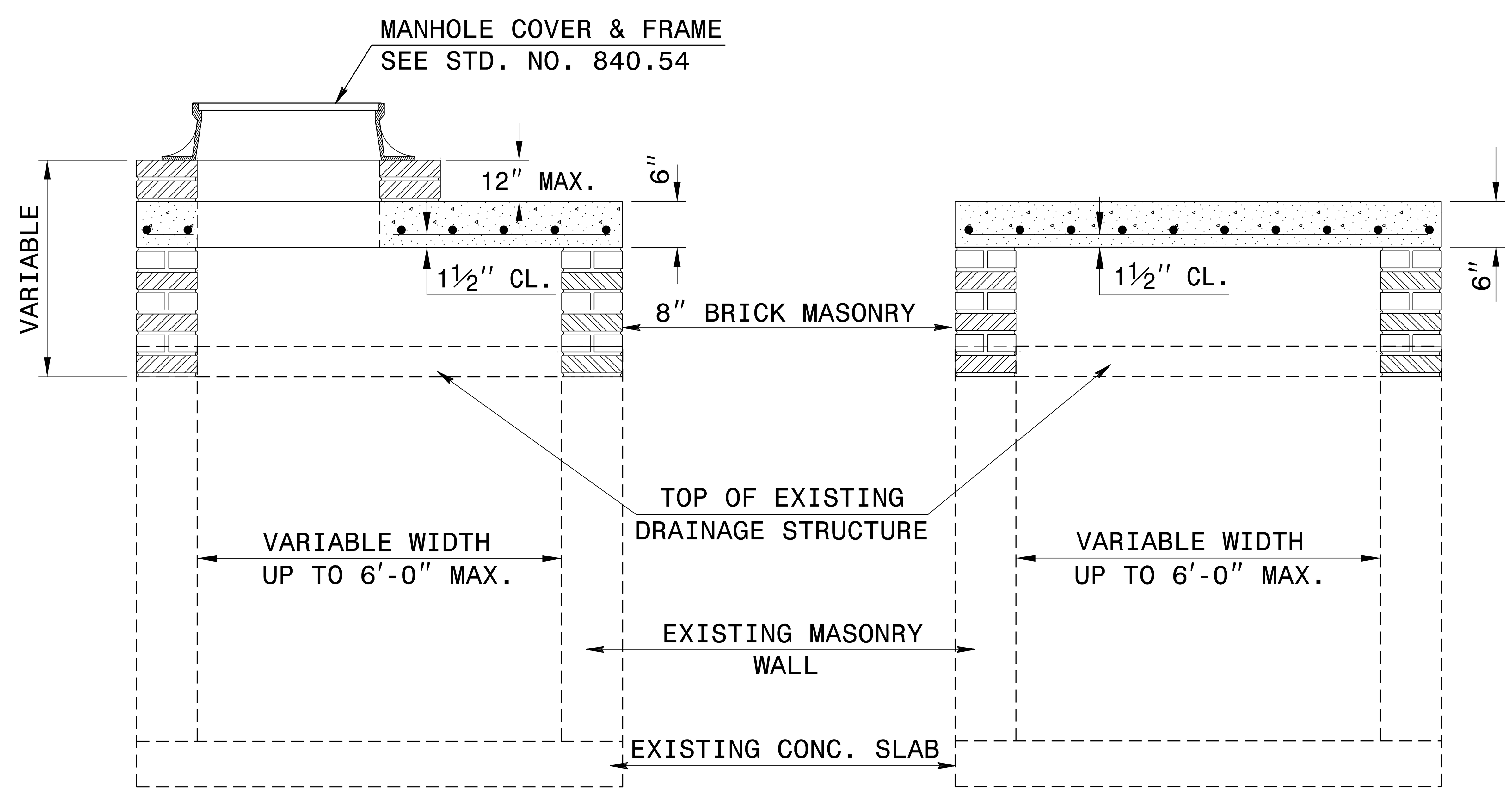
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

SEAL 022966 NORTH CAROLINA PROFESSIONAL ENGINEER Joel S. Howerton

DocuSigned by: 9/13/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

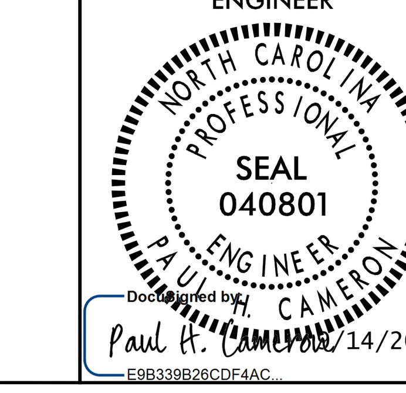
8/17/99

REVISIONS

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER



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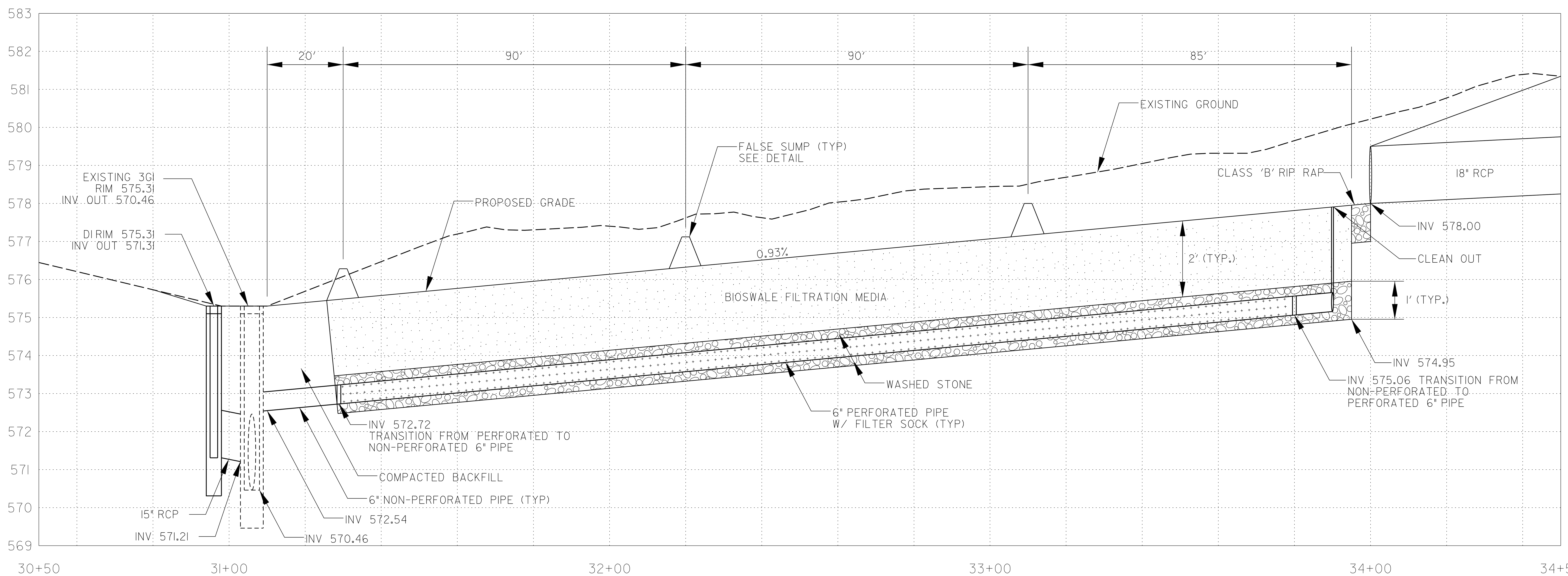
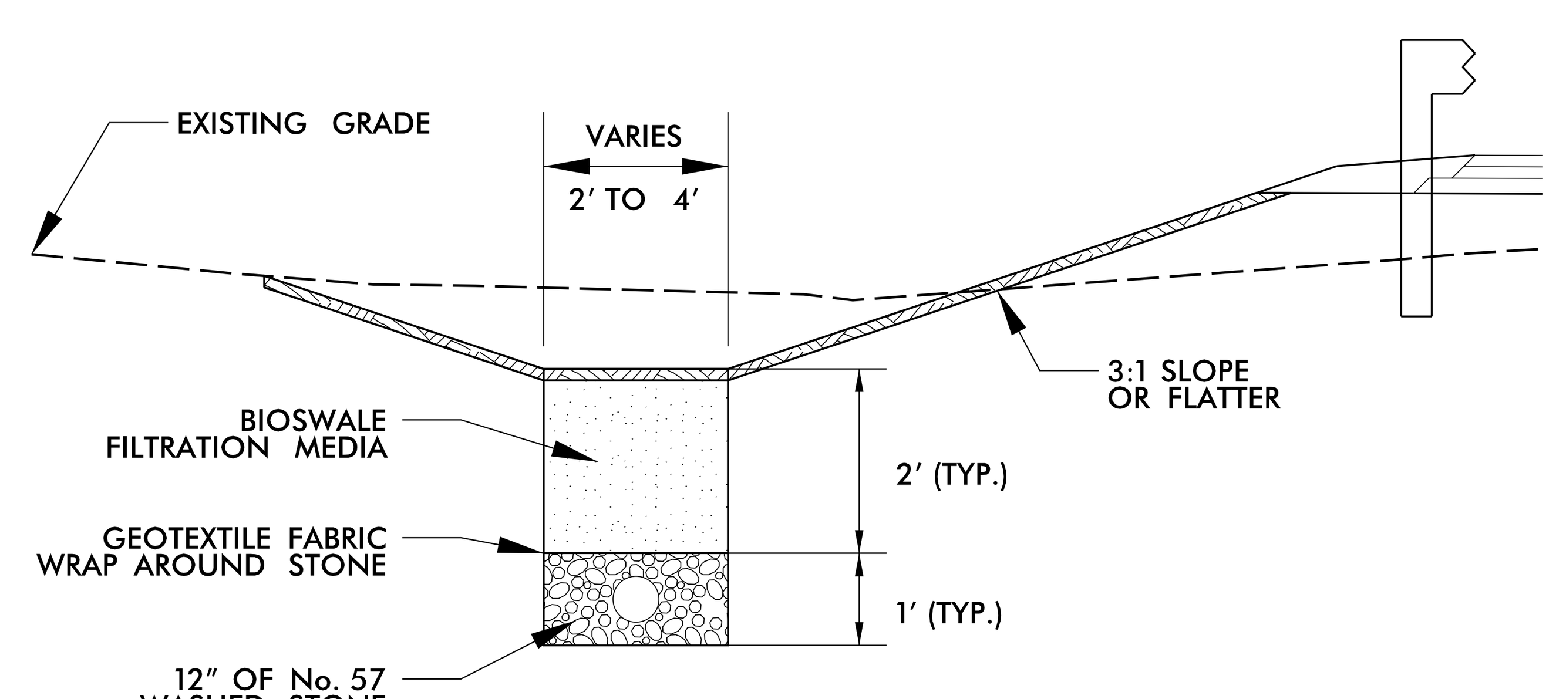
BIOSWALE PROFILE – STA. 31+00 to STA. 34+00 MEDIAN



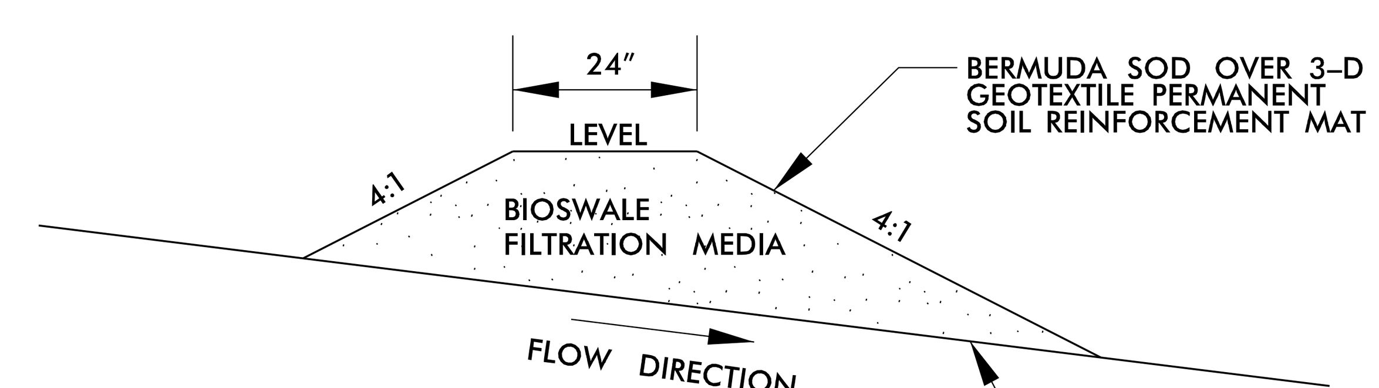
DETAIL A
TYPICAL BIOSWALE CROSS-SECTION
(Not to Scale)



NOTES:

1. PERFORATED, NON-PERFORATED, AND CLEANOUT PIPE MATERIAL SHALL MEET THE AASHTO SPECIFICATIONS FOR EITHER HDPE (SECT. 1032-7 AASHTO M294 FOR TYPE S OR FOR TYPE D – SECT. 1044-7 AASHTO M252) OR PVC (SECT. 1032-8 AASHTO M304, SECT. 1044-6, ASTM D1785).
2. PERFORATED UNDERDRAIN PIPES SHALL HAVE A MINIMUM OF 4 ROWS OF PERFORATIONS AT 3/8-IN DIAMETER PLACED 6-INCHES ON CENTER WITHIN EACH ROW. WRAP WITH FILTER SOCK.
3. PROVIDE WATER TIGHT CONNECTIONS USING WATERSTOP OR COMPRESSION GASKET APPROVED BY ENGINEER ON ALL STRUCTURE PENETRATIONS.

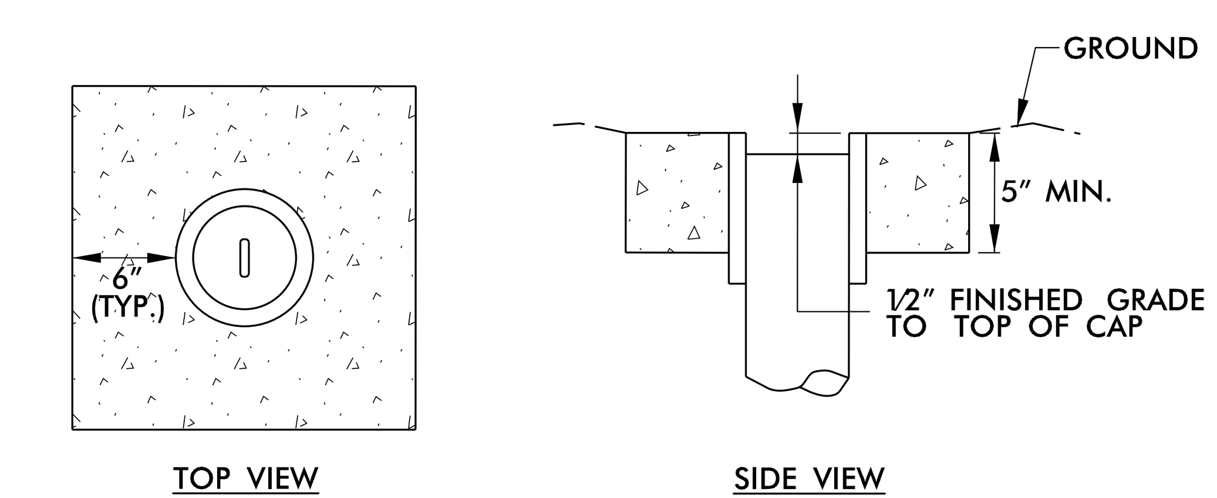
DETAIL B
FALSE SUMP LONGITUDINAL SECTION
(Not to Scale)



NOTES:

1. TOP ELEVATION OF BERM SHALL EXTEND ACROSS SWALE/BASIN SECTION UNTIL IT INTERSECTS WITH EXISTING GRADE.
2. BERM SHALL BE COVERED WITH 3-D GEOTEXTILE PERMANENT SOIL REINFORCEMENT MAT (PSRM) AND BERMUDA SOD. PSRM & BERMUDA SOD SHALL EXTEND 2 FEET BEYOND TOE OF SLOPE.
3. 3-D GEOTEXTILE PERMANENT SOIL REINFORCEMENT MAT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS AND IN ACCORDANCE WITH PROJECT SPECIFICATIONS, SPECIAL PROVISIONS AND DETAILS.
4. 3-D GEOTEXTILE PERMANENT SOIL REINFORCEMENT MAT MATERIAL, ANCHORING METHOD ANDS INSTALLATION PLAN SHALL BE APPROVED BY NCDOT PRIOR TO INSTALLATION

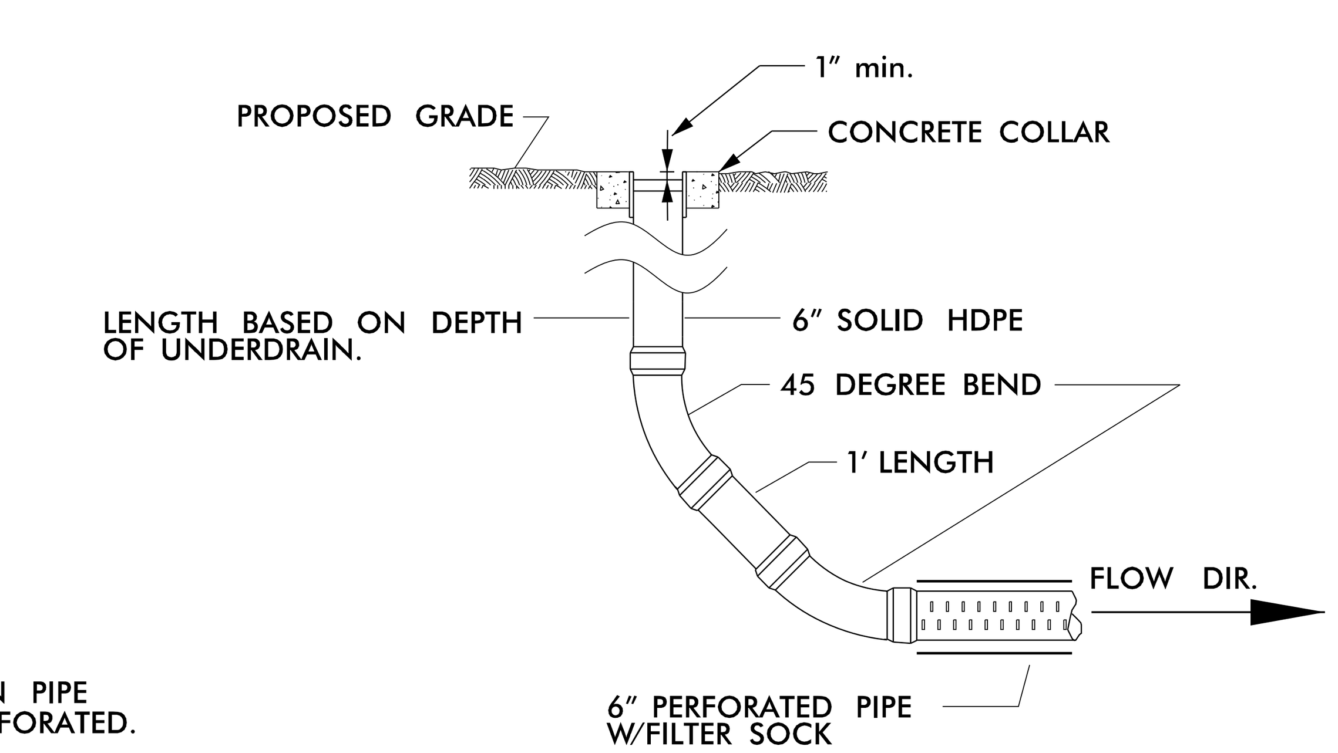
DETAIL C
RECESSED CLEANOUT W/CONCRETE COLLAR
(Not to Scale)



NOTES:

1. CLEANOUT CAP SHALL BE RECESSED 1" MIN. BELOW GROUND, REMOVABLE, WATER TIGHT, AND CLOSED UNDER NORMAL CONDITIONS.
2. CONCRETE SHALL BE 3,000 PSI.
3. THIS CONCRETE COLLAR DETAIL SHALL BE APPLIED TO ALL CLEANOUTS ON PROJECT.
4. USE 45 DEG ELBOWS AT ALL BENDS IN PIPE CLEANOUTS.

DETAIL D
PERFORATED PIPE END CLEANOUT
(Not to Scale)



NOTE:

1. ONLY UNDERDRAIN PIPE SHOULD BE PERFORATED.

14-SEP-2021 12:13
\B-4626\Drainage\B-4626_hyd_2D-1.dgn
HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	2D-2
RW SHEET NO.	

HYDRAULICS ENGINEER

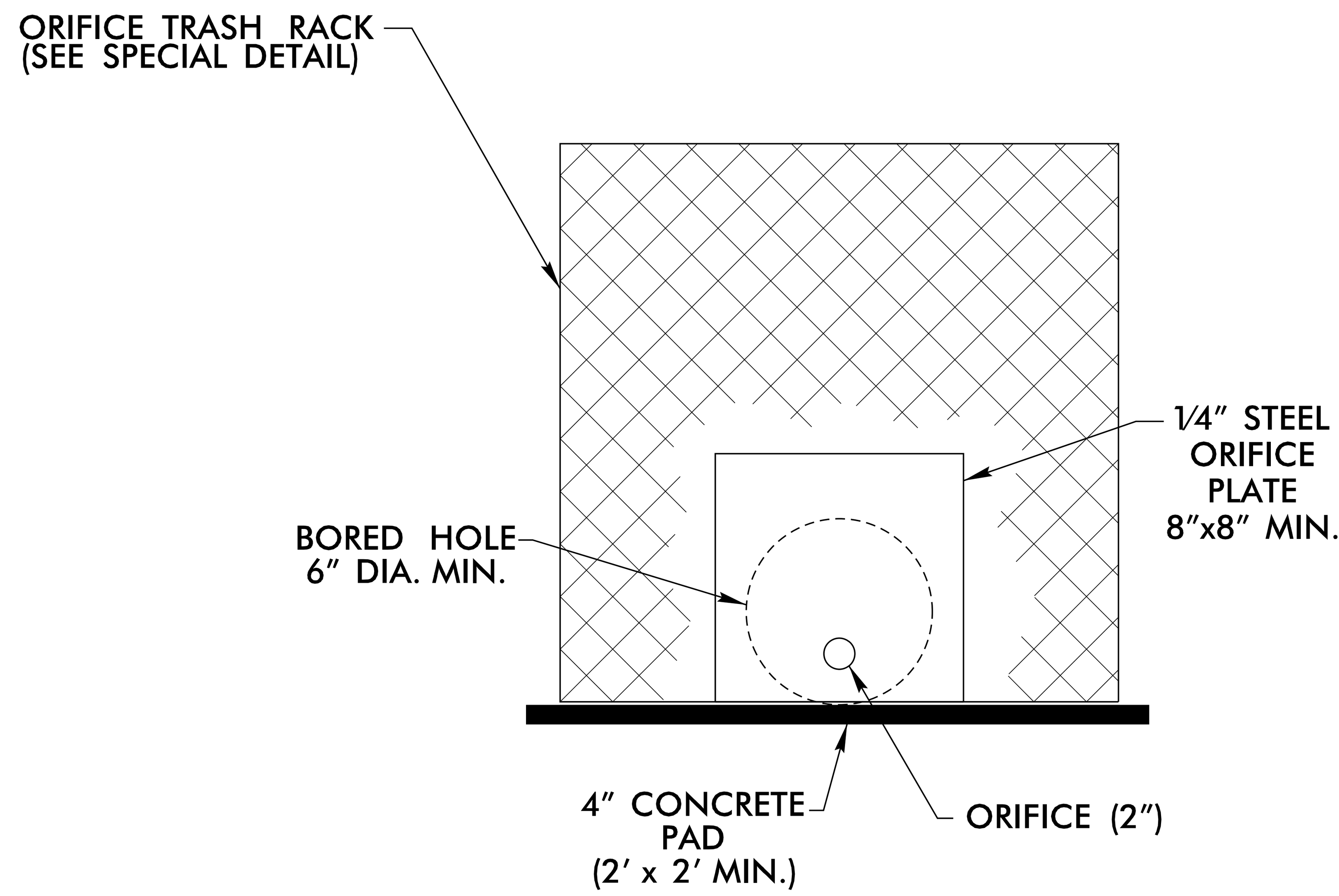
NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL H. CAMERON
Paul H. Cameron 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

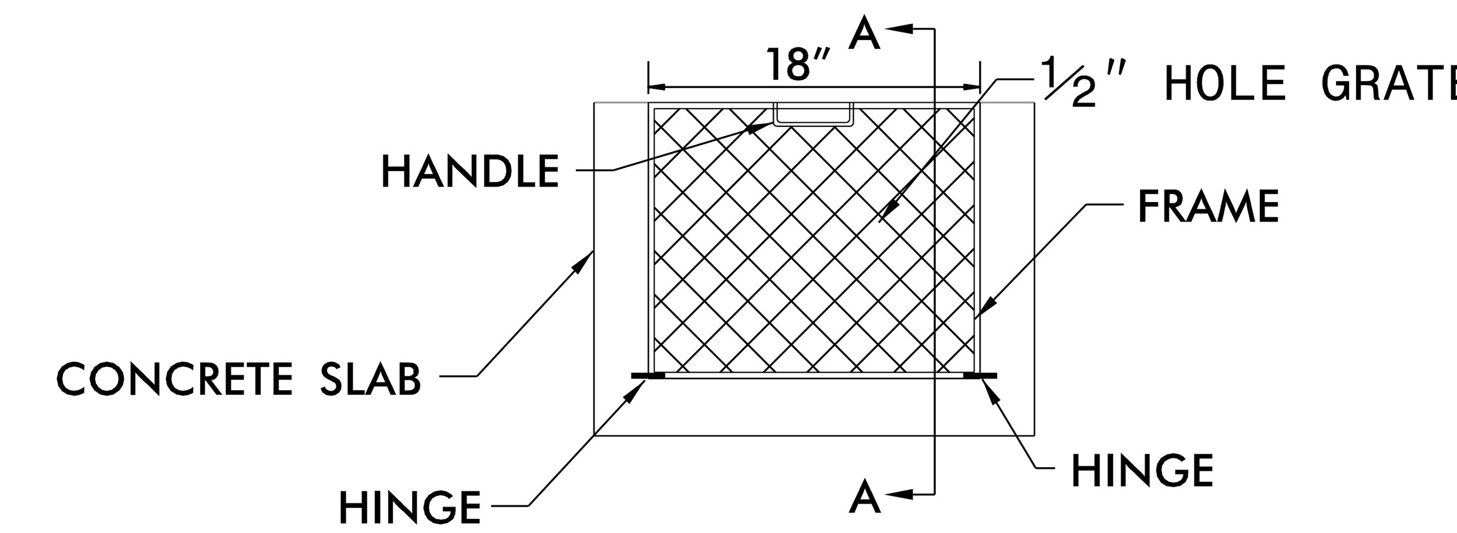
REVISIONS

ORIFICE TRASH RACK
(N.T.S.)

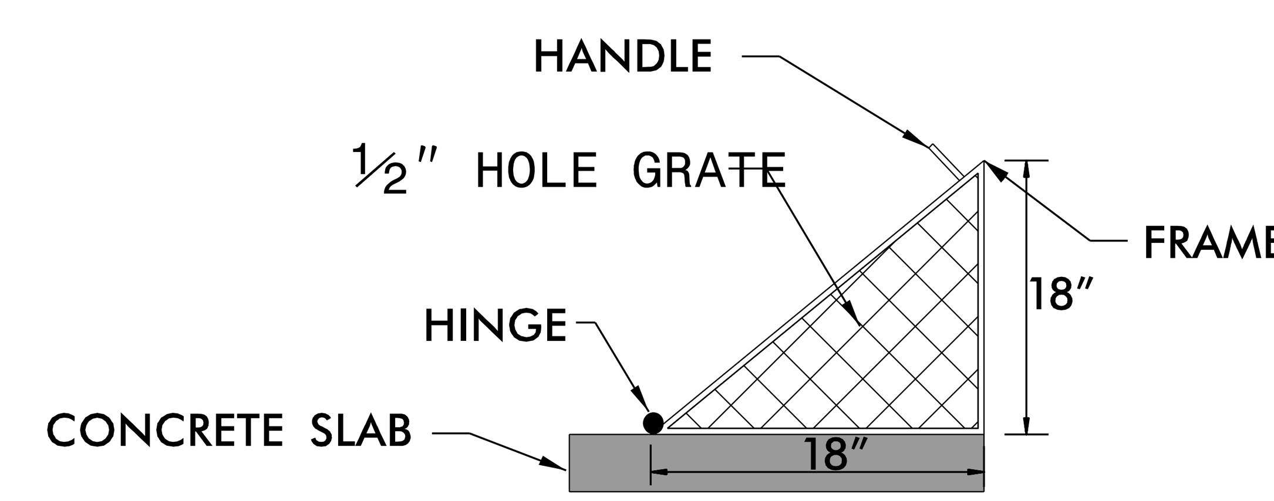
ORIFICE TRASH RACK NOTES:
1) ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A , 1/4" BEAD.
2) IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3) REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4) RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.



ORIFICE PLATE DETAIL



PLAN



SECTION A-A

SUMMARY OF COMPONENT ITEMS
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY	
		MEDIAN BIOSWALE	PROJECT TOTALS
BIOSWALE FILTRATION MEDIA	CY	90	90
POLYMER CONCRETE CLEANOUT BOXES	EA	1	1
NO. 57 STONE, WASHED	TONS	50	50
POLYPROPYLENE NON-WOVEN GEOTEXTILE FABRIC	SY	250	250
BIOSWALE UNDERDRAIN PIPE	SY	300	300

8/17/99
14-SEP-2021 12:17
...\B-4626\Drainage\B-4626_hyd_2D-2.dgn
HNTB

COMPUTED BY: ANDREW B. HALL, EI DATE: 8/13/2018
CHECKED BY: ROY H. TELLIER, PE DATE: 8/13/2018

PROJECT	SHEET NO.
B-4626	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
EBL						
-EBL- STA. 29+10 TO 35+12.11		188	0	218	30	0
-EBL- STA. 46+14.04 TO 51+00		36	0	414	378	0
-EBL- SUBTOTALS:		224	0	632	408	0
WBL						
-WBL- STA. 52+50 TO 55+50 CL		90	0	18	0	72
-WBL- STA. 57+00 TO 64+00 CL		170	0	26	0	144
-WBL- SUBTOTALS:		260	0	44	0	216
TOTALS		484	0	676	408	216
LOSS DUE TO CLEARING AND GRUBBING		-200	0		200	0
ESTIMATED SHOULDER MATERIAL				276	276	
WASTE IN LIEU OF BORROW					-216	-216
PROJECT TOTALS:		284	0	952	668	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					34	
GRAND TOTALS:		284	0	952	702	0
SAY:		300			800	

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BASED ON ROADWAY DESIGN UNIT GUIDELINES.
THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

EST. SHALLOW UNDERCUT = 200 CY (BY CONTINGENCY)
EST. UNDERCUT EXCAVATION = 500 CY (BY CONTINGENCY)
EST. SELECT GRANULAR MATERIAL = 400 CY (BY CONTINGENCY)

SUMMARY OF SHOULDER BERM GUTTER

LOCATION	LOCATION	BEG. STA.	END STA.	LENGTH
EBL	RT	34+69.65	34+88.11	18.46
			TOTAL	18.46
			SAY	20

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LOCATION	LOCATION	BEG. STA.	END STA.	AREA (SY)
-EBL-	C/L	34+88.00	35+11.00	75.68
-EBL-	C/L	46+06.00	46+30.00	76.53
			TOTAL	152.21
			SAY	160

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Asphalt Pavement will be paid for at the contract lump sum price for "Grading".

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.		LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS				EXISTING GUARDRAIL TO BE REMOVED	RELAPPING GUARDRAIL
					STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	CAT-1		
-EBL-	16+36.85	28+43.10		RT	1206.25'			FILL SLOPE		7	10	50'		1'				1	1	1205'	
-EBL-	31+63.73	35+02.11		LT	338.38'			BRIDGE		6	9	50'		1'			1	1		145'	
-EBL-	32+55.93	35+02.11		RT	246.18'			BRIDGE		8	11	50'		1'			1	1		275'	
-EBL-	46+16.33	47+36.57		RT	120.24'				BRIDGE	8	11		50'		1'		1	1		135'	
-EBL-	46+30.21	48+43.91		LT	213.70'				BRIDGE	6	9		50'		1'		1		1	260'	
-WBL-	24+25.00	27+37.50		LT	312.50'			FILL SLOPE	FILL SLOPE	12	15	50'	50'	1'	1'			2		105'	
-WBL-	31+79.38	34+85.63		RT	306.25'				BRIDGE	6.3	9'		50'		1		1	1		255'	306.25'
-WBL-	33+41.53	34+85.28		LT	143.75'				BRIDGE	5	8'		50'		1		1	1		125'	
-WBL-	45+88.27	47+32.02		RT	143.75'			BRIDGE				50'		1'			1	1		130'	143.75'
-WBL-	46+02.47	48+45.97		LT	243.5			BRIDGE				50'		1'			1	1		245'	
		SUBTOTAL			3274.50'											0	8	10	2	2880'	450'
LESS ANCHOR DEDUCTIONS																					
	GREU, TL-3	10 @ 50.00'		=	500.00'																
	CAT-1	2 @ 6.25'		=	12.50'																
	B-77	8 @ 22.875'		=	183.00'																
TOTAL					2579.00'															2880'	450'
				SAY	2600'															2900'	450'
10 ADDITIONAL GUARDRAIL POSTS																					

RAIL207

COMPUTED BY: AJM DATE: 09/10/2019

CHECKED BY: RHT DATE: 09/10/2019

PROJECT NO.	SHEET NO.
B-4626	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	C. S. PIPE								R. C. PIPE CLASS III						
SIZE		FROM	TO	FT.	FT.	FT.	%	12	15	18	24	30	36	42	48	12	15	18	24	30	36	
THICKNESS OR GAUGE								.064	.064	.064	.064	.079	.079	.109	.109							
EBL 31+00	51 RT	0501		576.1																		
EBL 34+79	19 RT	0502		583.1																		
		0502	0505		579.4	579.0												56				
EBL 34+79	35 LT	0505		582.0																		
		0505	0506		579.0	578.0	0.7											80				
EBL 30+96	38 LT	0507		575.3																		
		0507	EX-01		571.0	570.9											8					
EBL 44+90	7 RT	0601			568.3	567.8													16			
EBL 46+10	36 RT	0602		604.5																		
		0602	EX-E6		601.9	570.7	1.1			76												
WBL 50+34	22 RT	0701		615.9																		
		0701	0705		612.0	611.8	0.3											12				
WBL 59+26	19 LT	0702		652.7																		
		0702	EX-E5		649.7	649.0			48													
WBL 53+48	32 RT	0703		628.9	625.6																	
WBL 57+05	43 RT	0704		643.2	636.6																	
WBL 50+33	35 RT	0705		617.3	611.7																	
WBL 50+36	34 LT	0706		618.3	615.2																	
WBL 59+25	33 LT																					
EBL 28+19	0 CL																					
WBL 28+34	51 RT																					
WBL 46+67	0 CL																					
SHEET TOTALS									48	76							8	148	16			
PROJECT TOTALS									48	76							8	148	16			

LINE & STATION	OFFSET	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28
EBL 31+00	51 RT	0501		1												1	1			
EBL 34+79	19 RT	0502		1																
		0502	0505																	
EBL 34+79	35 LT	0505		1																
		0505	0506																	
EBL 30+96	38 LT	0507		1												1	1			
		0507	EX-01																	
EBL 44+90	7 RT	0601																		
EBL 46+10	36 RT	0602		1												1	1			
		0602	EX-E6																	
WBL 50+34	22 RT	0701		1												1	1			
		0701	0705																	
WBL 59+26	19 LT	0702		1																
		0702	EX-E5																	
WBL 53+48	32 RT	0703		1												1	1			
WBL 57+05	43 RT	0704		1	1.6											1	1			
WBL 50+33	35 RT	0705		1	0.6															
WBL 50+36	34 LT	0706																		
WBL 59+25	33 LT																			
EBL 28+19	0 CL																			
WBL 28+34	51 RT																			
WBL 46+67	0 CL																			
SHEET TOTALS				10	2.2											6	6			
PROJECT TOTALS				10	2.2											6	6			

LINE & STATION	OFFSET	FROM	TO	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35, OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	T.B. 4GI (SEE DETAIL SHEET 2C-2)	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54		
EBL 31+00	51 RT	0501																								
EBL 34+79	19 RT	0502									2											1				
		0502	0505																							
EBL 34+79	35 LT	0505												1										1		
		0505	0506																							
EBL 30+96	38 LT	0507																								
		0507	EX-01																							
EBL 44+90	7 RT	0601																								
EBL 46+10	36 RT	0602																								
		0602	EX-E6																							
WBL 50+34	22 RT	0701																								
		0701	0705																							
WBL 59+26	19 LT	0702									1						1									
		0702	EX-E5																							
WBL 53+48	32 RT	0703																								
WBL 57+05	43 RT	0704																								
WBL 50+33	35 RT	0705																								
WBL 50+36	34 LT	0706					1																			
WBL 59+25	33 LT																									
EBL 28+19	0 CL																									
WBL 28+34	51 RT																									
WBL 46+67	0 CL																									
SHEET TOTALS							1				3			1			1					1		1		
PROJECT TOTALS							1				3			1			1					1		1		

LINE & STATION	OFFSET	FROM	TO	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW		BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	PIPE CLEANOUT EA	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
EBL 31+00	51 RT	0501																							
EBL 34+79	19 RT	0502																							
		0502	0505																						
EBL 34+79	35 LT	0505																							
		0505	0506																						
EBL 30+96	38 LT	0507																							
		0507	EX-01																						
EBL 44+90	7 RT	0601																				0.5526			
EBL 46+10	36 RT	0602																							
		0602	EX-E6									2													
WBL 50+34	22 RT	0701																							
		0701	0705																						
WBL 59+26	19 LT	0702																							
		0702	EX-E5																						
WBL 53+48	32 RT	0703																							
WBL 57+05	43 RT	0704																							
WBL 50+33	35 RT	0705				1																			
WBL 50+36	34 LT	0706																							
WBL 59+25	33 LT																							29	
EBL 28+19	0 CL																			1					
WBL 28+34	51 RT																			1					
WBL 46+67	0 CL																			1					
SHEET TOTALS						1						2								3		0.5526		29	
PROJECT TOTALS						1						2								3		0.5526		29	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: NCDOT GEOTECHNICAL UNIT DATE: 12/12/17
CHECKED BY: RHT DATE: 1/29/19

(5-15-18)

PROJECT NO.	SHEET NO.
B-4626	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	500
				TOTAL LF:	500

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

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			1	18	200	400	600	0	0
			TOTAL CY/TONS/SY:		200	400**	600**	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.

PROJ. REFERENCE NO.	SHEET NO.
B-4626	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	5 & 6	CUBE YADKIN GENERATION LLS
2	6 & 7	ALCOA POWER GENERATING INC.
3	5	ALCOA POWER GENERATING INC.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

8/17/99

REVISIONS

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HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

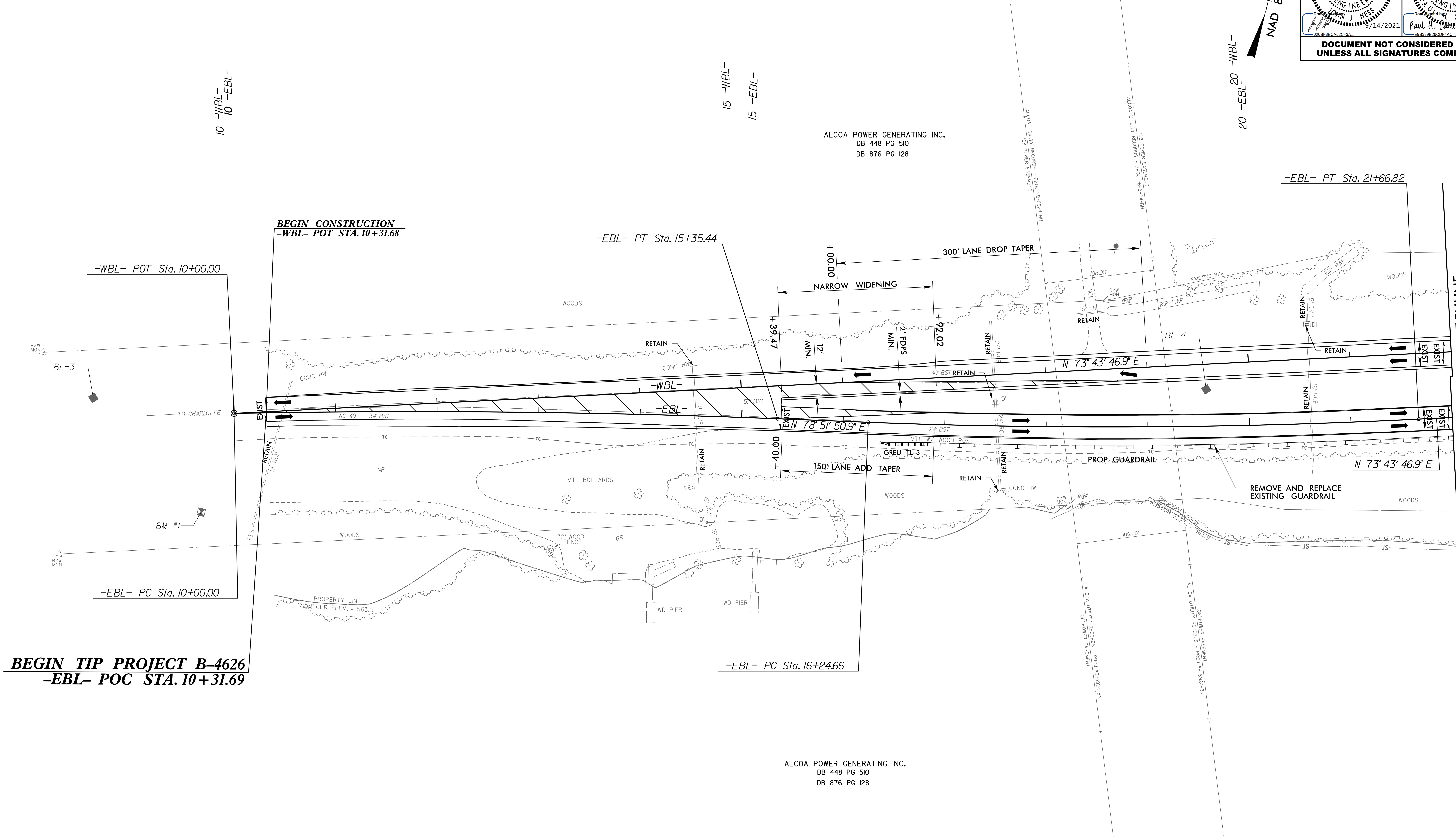
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS 9/14/2021

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-EBL-

PI Sta 12+67.80	PI Sta 18+95.92
Δ = 3° 21' 18.4" (RT)	Δ = 5° 08' 04.0" (LT)
D = 0° 37' 35.8"	D = 0° 56' 49.3"
L = 535.44'	L = 542.16'
T = 267.80'	T = 271.26'
R = 9,143.80'	R = 6,050.00'


NAD 83/2011
10 -WBL-
10 -EBL-
15 -WBL-
15 -EBL-
20 -WBL-
20 -EBL-
ALCOA POWER GENERATING INC.
DB 448 PG 510
DB 876 PG 128
BEGIN CONSTRUCTION
-WBL- POT STA. 10+31.68
-WBL- POT Sta. 10+00.00
-EBL- PT Sta. 15+35.44
-EBL- PT Sta. 21+66.82
300' LANE DROP TAPER
NARROW WIDENING
150' LANE ADD TAPER
N 73° 43' 46.9" E
N 78° 51' 50.9" E
-WBL-
-EBL-
BL-3
BL-4
BM #1
TO CHARLOTTE
WOODS
RETAIN
CONC HW
MTL BOLLARDS
GREU TL-3
PROP. GUARDRAIL
REMOVE AND REPLACE EXISTING GUARDRAIL
MATCHLINE -WBL- STA 22+00 SEE SHEET 5
MATCHLINE -EBL- STA 22+00 SEE SHEET 5
-EBL- PC Sta. 10+00.00
-EBL- PC Sta. 16+24.66
BEGIN TIP PROJECT B-4626
-EBL- POC STA. 10+31.69
PROPERTY LINE
CONTOUR ELEV. = 563.9
WD PIER
ALCOA POWER GENERATING INC.
DB 448 PG 510
DB 876 PG 128

FOR -EBL- PROFILE, SEE SHEET 9

FOR -WBL- PROFILE, SEE SHEET 12

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS 9/14/2021	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

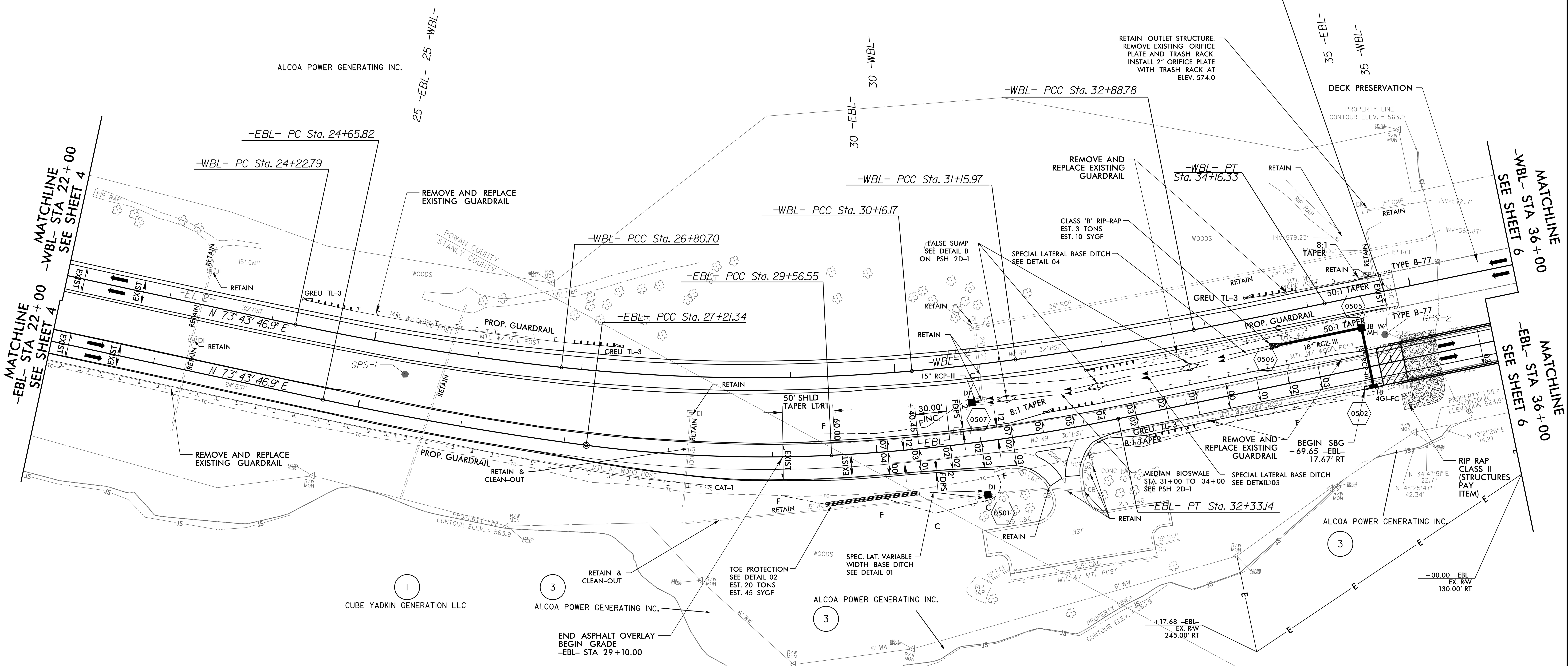
NAD 83/2011

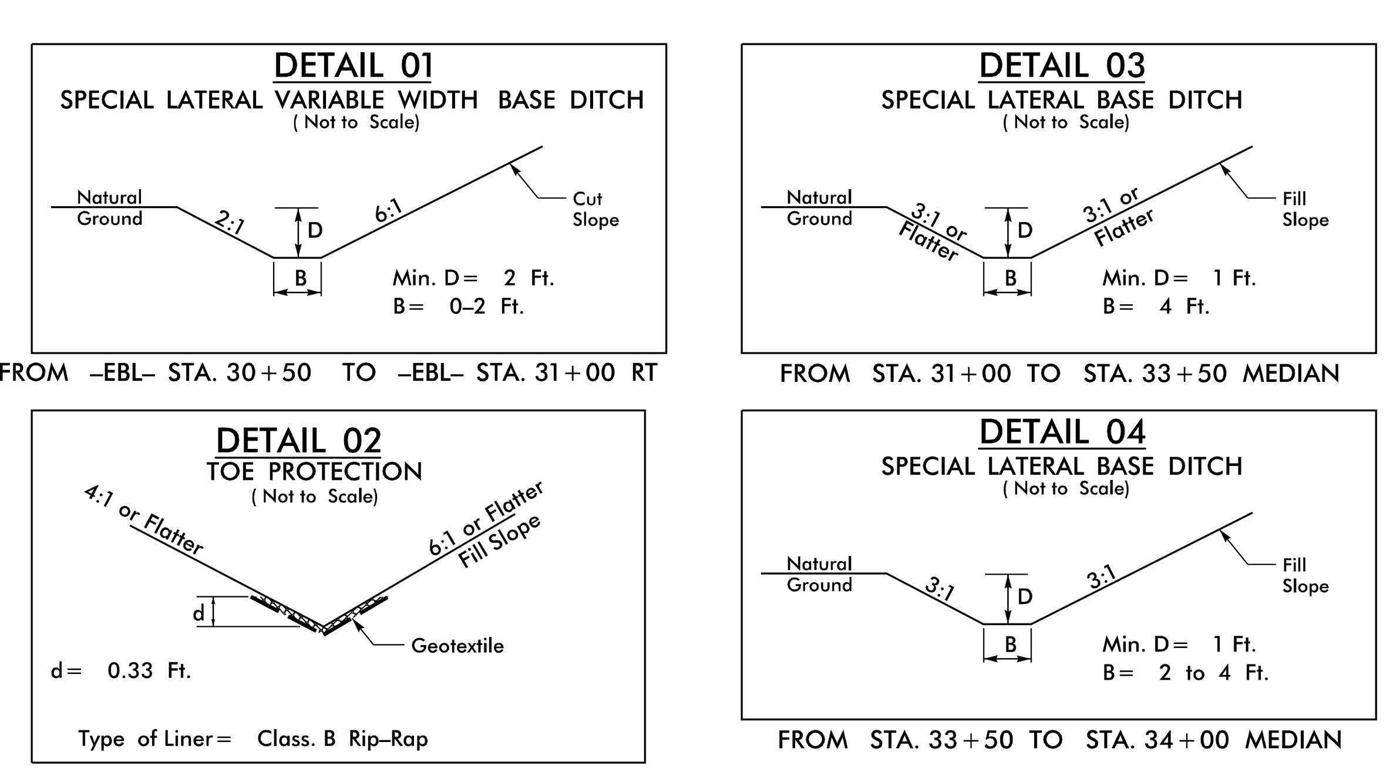
-WBL-

PI Sta 25+51.87	PI Sta 28+48.95	PI Sta 30+66.08	PI Sta 32+02.40	PI Sta 33+52.55
△ = 6° 03' 22.4" (LT)	△ = 10° 59' 00.6" (LT)	△ = 2° 51' 32.7" (LT)	△ = 3° 24' 50.7" (LT)	△ = 0° 29' 13.9" (LT)
D = 2° 20' 53.5"	D = 3° 16' 26.6"	D = 2° 51' 53.2"	D = 1° 58' 32.6"	D = 0° 22' 55.1"
L = 257.91'	L = 335.47'	L = 99.80'	L = 172.80'	L = 127.55'
T = 129.08'	T = 168.25'	T = 49.91'	T = 86.43'	T = 63.77'
R = 2,440.00'	R = 1,750.00'	R = 2,000.00'	R = 2,900.00'	R = 15,000.00'

-EBL-

PI Sta 25+93.65	PI Sta 28+39.26	PI Sta 30+95.12
△ = 4° 37' 37.7" (LT)	△ = 10° 21' 59.0" (LT)	△ = 8° 49' 45.4" (LT)
D = 1° 48' 39.1"	D = 4° 24' 26.5"	D = 3° 11' 31.7"
L = 255.52'	L = 235.21'	L = 276.59
T = 127.83'	T = 117.92'	T = 138.57
R = 3,164.00'	R = 1,300.00'	R = 1,794.90


END OVERLAY
-WBL- POT STA. 34+74.26
RETAIN OUTLET STRUCTURE. REMOVE EXISTING ORIFICE PLATE AND TRASH RACK. INSTALL 2" ORIFICE PLATE WITH TRASH RACK AT ELEV. 574.0
DECK PRESERVATION
ALCOA POWER GENERATING INC.
-WBL- PCC Sta. 32+88.78
-EBL- PC Sta. 24+65.82
-WBL- PC Sta. 24+22.79
REMOVE AND REPLACE EXISTING GUARDRAIL
-WBL- PCC Sta. 31+15.97
-WBL- PT Sta. 34+16.33
-WBL- PCC Sta. 30+16.17
CLASS 'B' RIP-RAP EST. 3 TONS EST. 10 SYGF
FALSE SUMP SEE DETAIL B ON PSH 2D-1
SPECIAL LATERAL BASE DITCH SEE DETAIL 04
-WBL- PCC Sta. 26+80.70
-EBL- PCC Sta. 29+56.55
-EBL- PCC Sta. 27+21.34
MATCHLINE -WBL- STA 22+00 SEE SHEET 4
MATCHLINE -EBL- STA 22+00 SEE SHEET 4
MATCHLINE -WBL- STA 36+00 SEE SHEET 6
MATCHLINE -EBL- STA 36+00 SEE SHEET 6
ROWAN COUNTY
STANLY COUNTY
GPS-1
GPS-2
N 73° 43' 46.9" E
PROP. GUARDRAIL
GREU TL-3
TYPE B-77
8:1 TAPER
50:1 TAPER
50' SHLD TAPER LT/RT
+40.45 30.00' INC.
+60.00
BEGIN SBG +69.65 -EBL- 17.67' RT
SPECIAL LATERAL BASE DITCH SEE DETAIL 03
MEDIAN BIOSWALE STA. 31+00 TO 34+00 SEE PSH 2D-1
-EBL- PT Sta. 32+33.14
RIP RAP CLASS II (STRUCTURES PAY ITEM)
RETAIN & CLEAN-OUT
TOE PROTECTION SEE DETAIL 02 EST. 20 TONS EST. 45 SYGF
SPEC. LAT. VARIABLE WIDTH BASE DITCH SEE DETAIL 01
CUBE YADKIN GENERATION LLC
END ASPHALT OVERLAY BEGIN GRADE -EBL- STA 29+10.00
+17.68 -EBL- EX. R/W 245.00' RT
+00.00 -EBL- EX. R/W 130.00' RT
PROPERTY LINE CONTOUR ELEV. = 563.9


DETAIL 01
SPECIAL LATERAL VARIABLE WIDTH BASE DITCH
(Not to Scale)
Natural Ground
Cut Slope
Min. D= 2 Ft.
B= 0-2 Ft.
FROM -EBL- STA. 30+50 TO -EBL- STA. 31+00 RT
DETAIL 02
TOE PROTECTION
(Not to Scale)
4:1 or Flatter
6:1 or Flatter Fill Slope
Geotextile
d= 0.33 Ft.
Type of Liner= Class. B Rip-Rap
FROM -EBL- STA. 29+50 TO STA. 30+50 RT.
DETAIL 03
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1 or Flatter
Fill Slope
Min. D= 1 Ft.
B= 4 Ft.
FROM STA. 31+00 TO STA. 33+50 MEDIAN
DETAIL 04
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1 Ft.
B= 2 to 4 Ft.
FROM STA. 33+50 TO STA. 34+00 MEDIAN

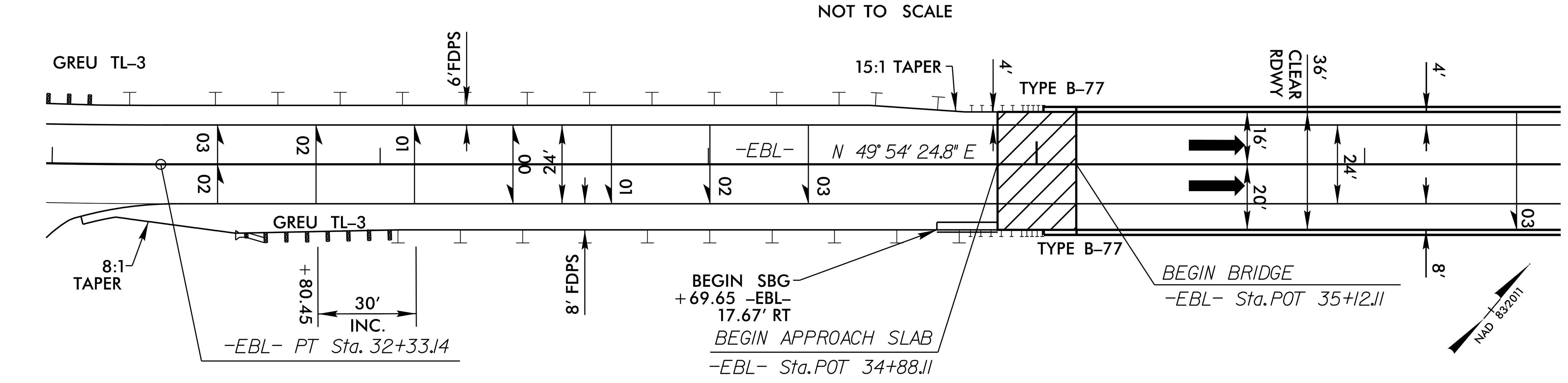
FOR -EBL- PROFILE, SEE SHEET 9

FOR -WBL- PROFILE, SEE SHEET 12

FOR STRUCTURE PLANS, SEE SHEET S1-1 THRU S2-22

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT

NOT TO SCALE



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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 042452, JOHN J. HESS — 9/14/2021

HYDRAULICS ENGINEER — SEAL 040801, PAUL H. CAMERON — 9/14/2021

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-EBL-

PI Sta 47+74.47
△ = 4° 11' 21.0" (RT)
D = 1° 35' 59.1"
L = 261.86'
T = 130.99'
R = 3,581.52'

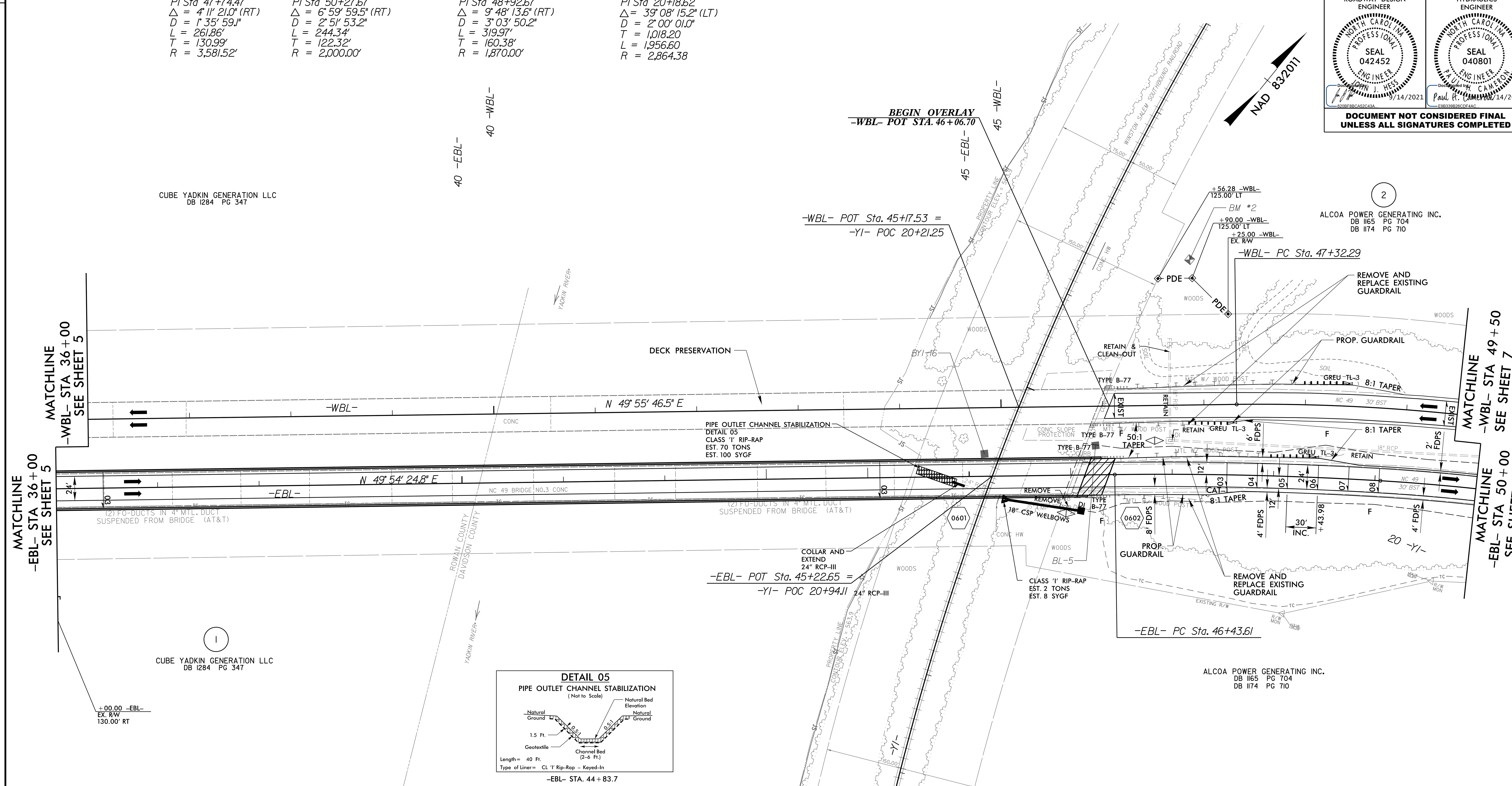
PI Sta 50+27.67
△ = 6° 59' 59.5" (RT)
D = 2° 51' 53.2"
L = 244.34'
T = 122.32'
R = 2,000.00'

-WBL-

PI Sta 48+92.67
△ = 9° 48' 13.6" (RT)
D = 3° 03' 50.2"
L = 319.97'
T = 160.38'
R = 1,870.00'

-Y1-

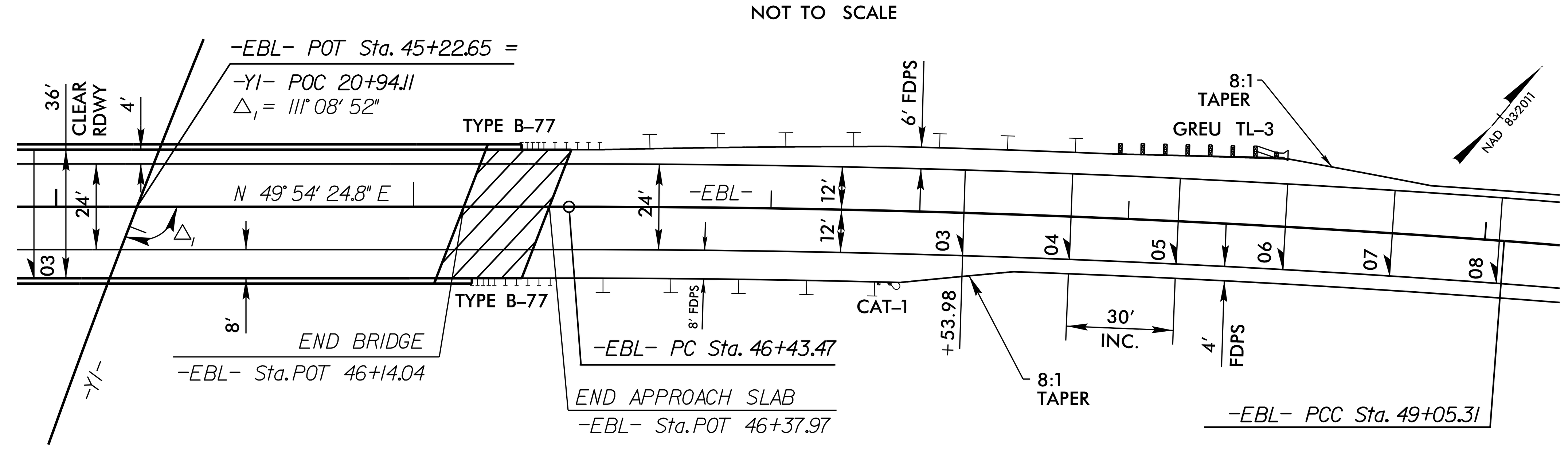
PI Sta 20+18.62
△ = 39° 08' 15.2" (LT)
D = 2° 00' 01.0"
T = 1,018.20
L = 1,956.60
R = 2,864.38



NAD 83/2011
BEGIN OVERLAY
-WBL- POT STA. 46+06.70
45 -WBL-
45 -EBL-
40 -WBL-
40 -EBL-
CUBE YADKIN GENERATION LLC
DB 1284 PG 347
-WBL- POT Sta. 45+17.53 =
-Y1- POC 20+21.25
+56.28 -WBL-
125.00' LT
BM #2
+90.00 -WBL-
125.00' LT
+25.00 -WBL-
EX. R/W
-WBL- PC Sta. 47+32.29
ALCOA POWER GENERATING INC.
DB 1165 PG 704
DB 1174 PG 710
PDE
REMOVE AND REPLACE EXISTING GUARDRAIL
PROP. GUARDRAIL
DECK PRESERVATION
RETAIN & CLEAN-OUT
TYPE B-77
GREU TL-3
8:1 TAPER
MATCHLINE -WBL- STA 36+00 SEE SHEET 5
MATCHLINE -EBL- STA 36+00 SEE SHEET 5
MATCHLINE -WBL- STA 49+50 SEE SHEET 7
MATCHLINE -EBL- STA 50+00 SEE SHEET 7
-WBL-
N 49° 55' 46.5" E
-EBL-
N 49° 54' 24.8" E
NC 49 BRIDGE NO.3 CONC
PIPE OUTLET CHANNEL STABILIZATION
DETAIL 05
CLASS 'I' RIP-RAP
EST. 70 TONS
EST. 100 SYGF
(2) FO-DUCTS IN 4" MTL. DUCT SUSPENDED FROM BRIDGE (AT&T)
RETAIN
50:1 TAPER
REMOVE
18" CSP W/ELBOWS
0601
0602
COLLAR AND EXTEND 24" RCP-III
-EBL- POT Sta. 45+22.65 =
-Y1- POC 20+94.11
24" RCP-III
CLASS 'I' RIP-RAP
EST. 2 TONS
EST. 8 SYGF
CAT-1
30' INC.
+43.98
4' FDPS
8' FDPS
6' FDPS
2' FDPS
20 -Y1-
-EBL- PC Sta. 46+43.61
ROWAN COUNTY
DAVIDSON COUNTY
YADKIN RIVER
WINSTON SALEM SOUTHBOUND RAILROAD
CUBE YADKIN GENERATION LLC
DB 1284 PG 347
+00.00 -EBL-
EX. R/W
130.00' RT
25 -Y1-
-Y1-
DETAIL 05
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)
Natural Ground
Natural Bed Elevation
Natural Ground
1.5 Ft.
Geotextile
Channel Bed (2-6 Ft.)
Length = 40 Ft.
Type of Liner = CL 'I' Rip-Rap - Keyed-In
-EBL- STA. 44+83.7

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT

NOT TO SCALE



-EBL- POT Sta. 45+22.65 =
-Y1- POC 20+94.11
△1 = 111° 08' 52"
36' CLEAR RDWY
TYPE B-77
6' FDPS
8:1 TAPER
GREU TL-3
NAD 83/2011
N 49° 54' 24.8" E
-EBL-
24'
12'
CAT-1
30' INC.
8' FDPS
4' FDPS
+53.98
END BRIDGE
-EBL- Sta.POT 46+14.04
-EBL- PC Sta. 46+43.47
END APPROACH SLAB
-EBL- Sta.POT 46+37.97
8:1 TAPER
-EBL- PCC Sta. 49+05.31
-Y1-

FOR -EBL- PROFILE, SEE SHEETS 9 & 10

FOR -WBL- PROFILE, SEE SHEETS 12 & 13

FOR STRUCTURE PLANS, SEE SHEETS S1-1 THRU S2-22

-Y1- ALIGNMENT SHOWN FOR INFORMATION ONLY

REVISIONS

8/17/99

14-SEP-2021 12:28
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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER — 9/14/2021

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER — 9/14/2021

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REVISIONS

8/17/99

NAD 83(2011)

2
ALCOA POWER GENERATING INC.
DB 1165 PG 704
DB 1174 PG 710

-WBL- PT Sta. 56+33.48

-EBL- PT Sta. 56+40.60

-WBL- PCC Sta. 51+52.52

-WBL- PCC Sta. 54+31.11

-WBL- PCC Sta. 50+52.26

END GRADE
BEGIN ASPHALT OVERLAY
-EBL- STA 51+00.00

-WBL- POC Sta. 56+29.30 =
-Y2- POC 10+00.00

RETAIN & INSTALL NEW 2GI FRAME AND GRATE

+16.61 -WBL-
120.97' RT
100.0' R

+72.54 -WBL-
47.06' RT
5.0' R

+21.49 -WBL-
103.88' RT
80.0' R

270' SHIFT

600' SHIFT

MATCHLINE
-WBL- STA 49+50
SEE SHEET 6

MATCHLINE
-EBL- STA 50+00
SEE SHEET 6

MATCHLINE
-WBL- STA 63+00
SEE SHEET 8

MATCHLINE
-EBL- STA 63+00
SEE SHEET 8

N 77° 00' 57.4" E

N 76° 55' 09.6" E

S 17° 47' 45.5" E

+69.30 -WBL-
41.16' RT
10.0' R

BL-6

-EBL- POC Sta. 56+29.67 =
-Y2- POC Sta. 10+71.61

END FDPS
+67.36 -Y2-

END FDPS
+70.04 -Y2-

-Y2- PT Sta. 12+17.22

END OVERLAY
-Y2- STA. 12+50.00

-EBL- PCC Sta. 51+49.71

-EBL- PCC Sta. 53+01.01

-EBL- PRC Sta. 59+13.15

-EBL- PC Sta. 58+44.36

ALCOA POWER GENERATING INC.
DB 1165 PG 704
DB 1174 PG 710

ALCOA POWER GENERATING INC.
DB 1165 PG 704
DB 1174 PG 710

-WBL-

PI Sta 51+02.41	PI Sta 52+92.17	PI Sta 55+32.32
Δ = 4° 15' 18.2" (RT)	Δ = 9° 58' 34.1" (RT)	Δ = 3° 07' 00.2" (RT)
D = 4° 14' 38.9"	D = 3° 34' 51.6"	D = 1° 32' 24.4"
L = 100.26'	L = 278.59'	L = 202.37'
T = 50.15'	T = 139.65'	T = 101.21'
R = 1,350.00'	R = 1,600.00'	R = 3,720.27'

-Y2-

PI Sta 11+08.67
Δ = 4° 47' 12.6" (LT)
D = 2° 12' 13.3"
L = 217.22'
T = 108.67'
R = 2,600.00'

-EBL-

PI Sta 50+27.67	PI Sta 52+25.56	PI Sta 54+70.84	PI Sta 58+78.63	PI Sta 61+54.30
Δ = 6° 59' 59.5" (RT)	Δ = 10° 50' 09.3" (RT)	Δ = 4° 59' 15.0" (RT)	Δ = 1° 34' 36.2" (RT)	Δ = 4° 36' 19.3" (LT)
D = 2° 51' 53.2"	D = 7° 09' 43.1"	D = 1° 28' 08.8"	D = 2° 17' 30.6"	D = 0° 57' 17.7"
L = 244.34'	L = 151.30'	L = 339.49'	L = 68.80'	L = 482.27'
T = 122.32'	T = 75.88'	T = 169.85'	T = 34.40'	T = 241.27'
R = 2,000.00'	R = 800.00'	R = 3,900.00'	R = 2,500.00'	R = 6,000.00'

FOR -EBL- PROFILE, SEE SHEET 10

FOR -WBL- PROFILE, SEE SHEET 13

-Y2- ALIGNMENT SHOWN FOR INFORMATION ONLY

8/17/99

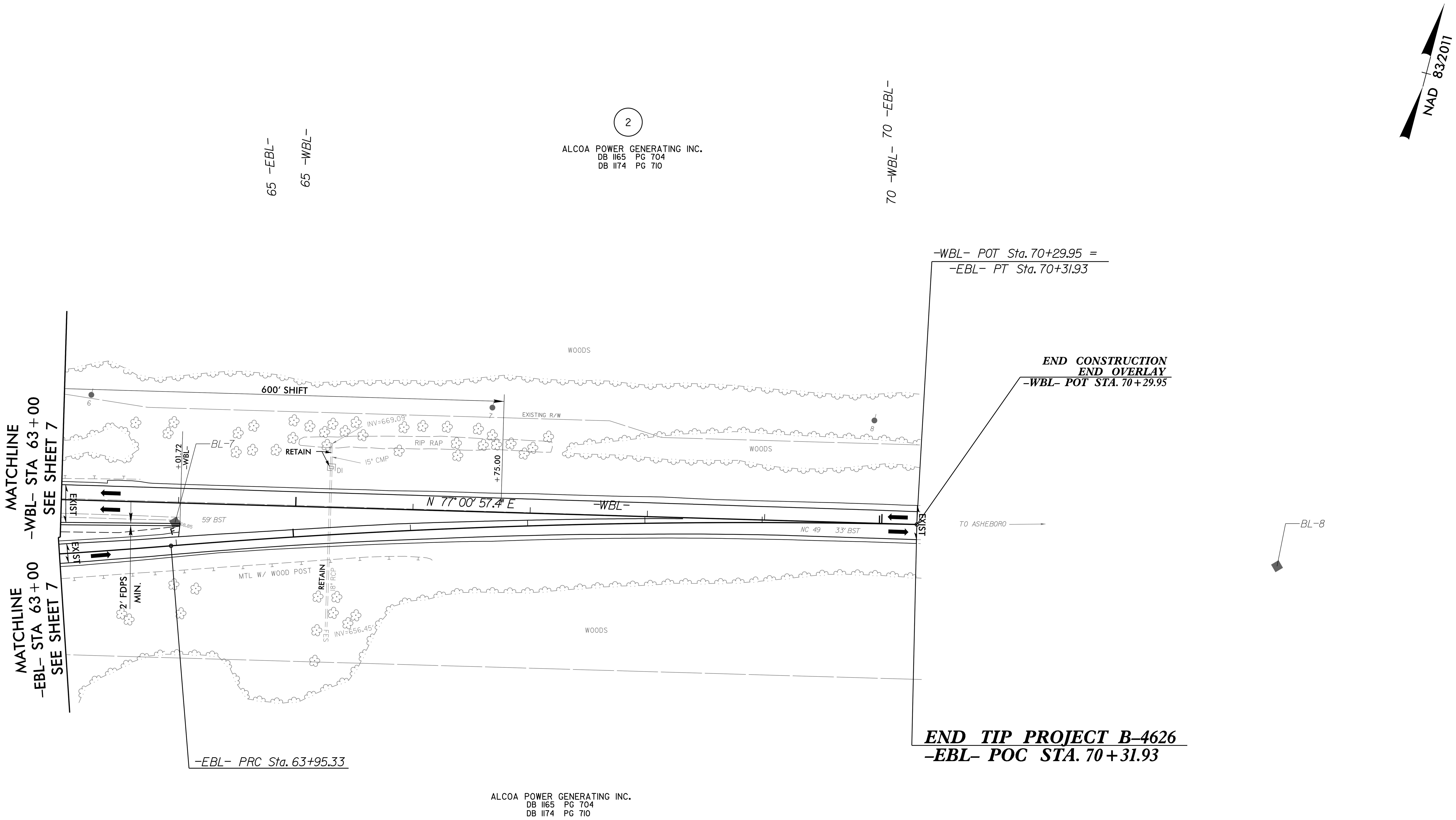
REVISIONS

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
B-4626	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER JOHN J. HESS 9/14/2021	NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL H. CAMERON 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-EBL-

PI Sta 61+54.30	PI Sta 67+13.90
Δ = 4° 36' 19.3" (LT)	Δ = 5° 56' 22.4" (RT)
D = 0° 57' 17.7"	D = 0° 55' 58.7"
L = 482.27'	L = 636.63'
T = 241.27'	T = 318.60'
R = 6,000.00'	R = 6,141.19'

FOR -EBL- PROFILE, SEE SHEETS 10 & 11

FOR -WBL- PROFILE, SEE SHEETS 13 & 14

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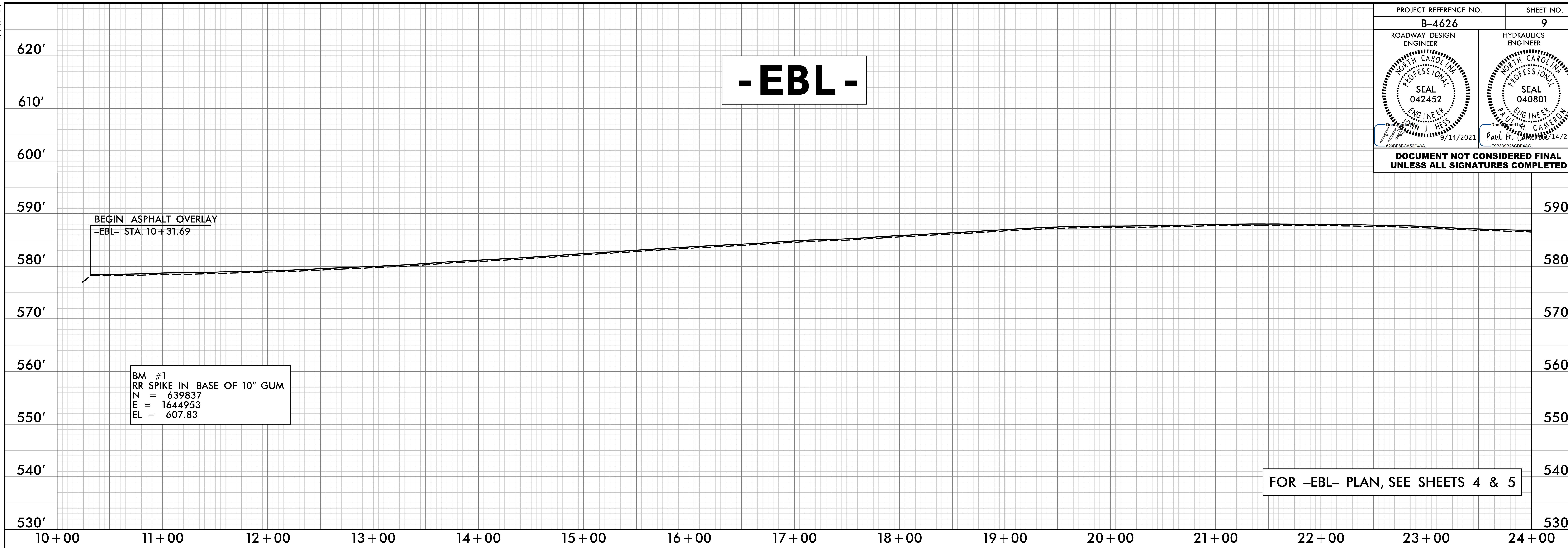
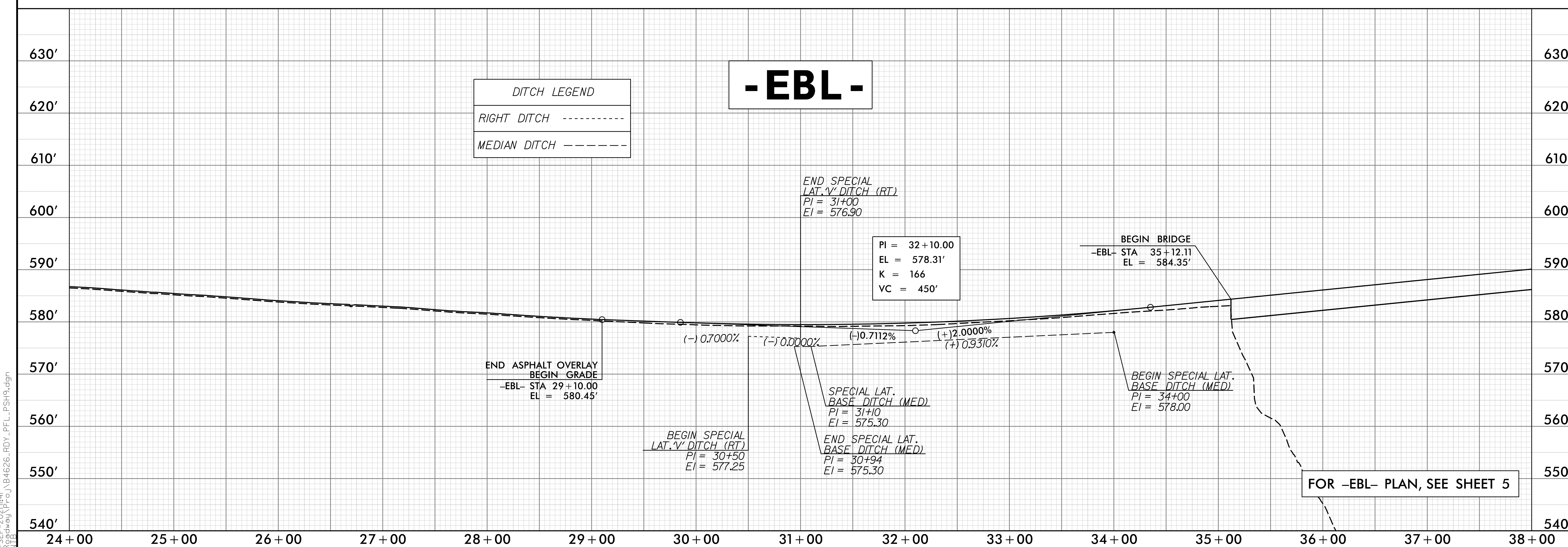
PROJECT REFERENCE NO.	SHEET NO.
B-4626	9

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS — 9/14/2021

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON — Paul H. Cameron 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





-EBL-
630′
620′
610′
600′
590′
580′
570′
560′
550′
540′
DITCH LEGEND
RIGHT DITCH
MEDIAN DITCH
END SPECIAL
LAT.'V' DITCH (RT)
PI = 31+00
El = 576.90
PI = 32+10.00
EL = 578.31′
K = 166
VC = 450′
BEGIN BRIDGE
-EBL- STA 35+12.11
EL = 584.35′
(−) 0.7000%
(−) 0.0000%
(−)0.7112%
(+)2.0000%
(+) 0.9310%
END ASPHALT OVERLAY
BEGIN GRADE
-EBL- STA 29+10.00
EL = 580.45′
SPECIAL LAT.
BASE DITCH (MED)
PI = 31+10
El = 575.30
BEGIN SPECIAL LAT.
BASE DITCH (MED)
PI = 34+00
El = 578.00
BEGIN SPECIAL
LAT.'V' DITCH (RT)
PI = 30+50
El = 577.25
END SPECIAL LAT.
BASE DITCH (MED)
PI = 30+94
El = 575.30
FOR -EBL- PLAN, SEE SHEET 5
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00
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PROJECT REFERENCE NO.	SHEET NO.
B-4626	10

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS — 9/14/2021

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON — Paul H. Cameron 9/14/2021

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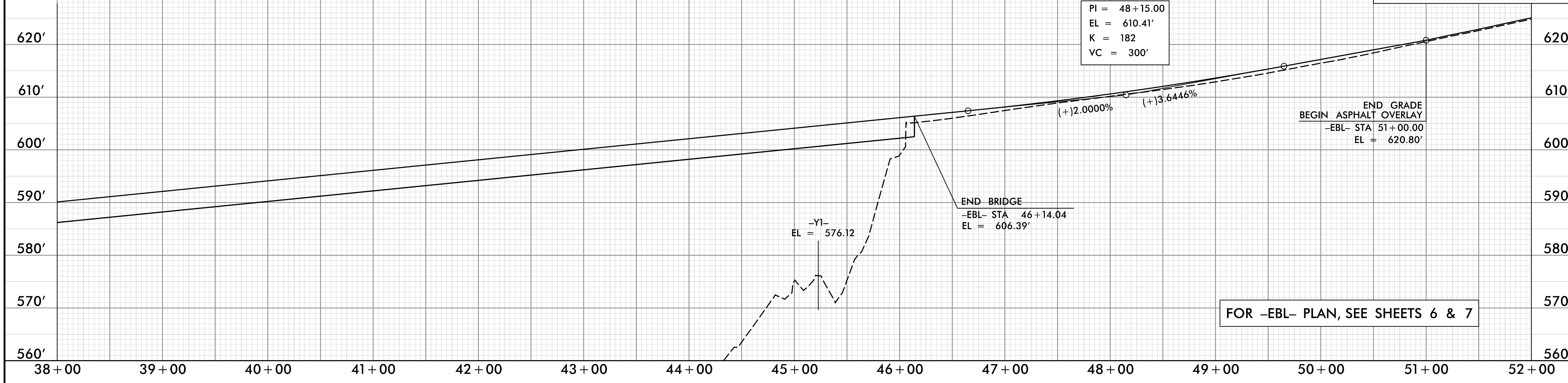

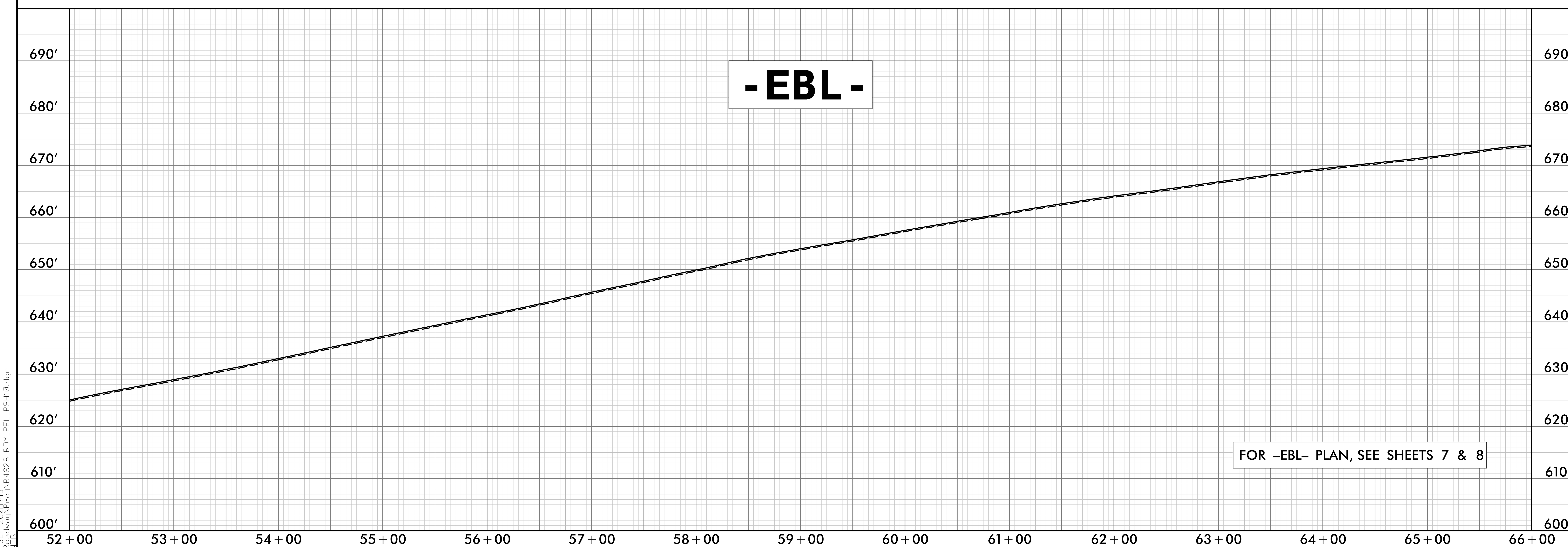

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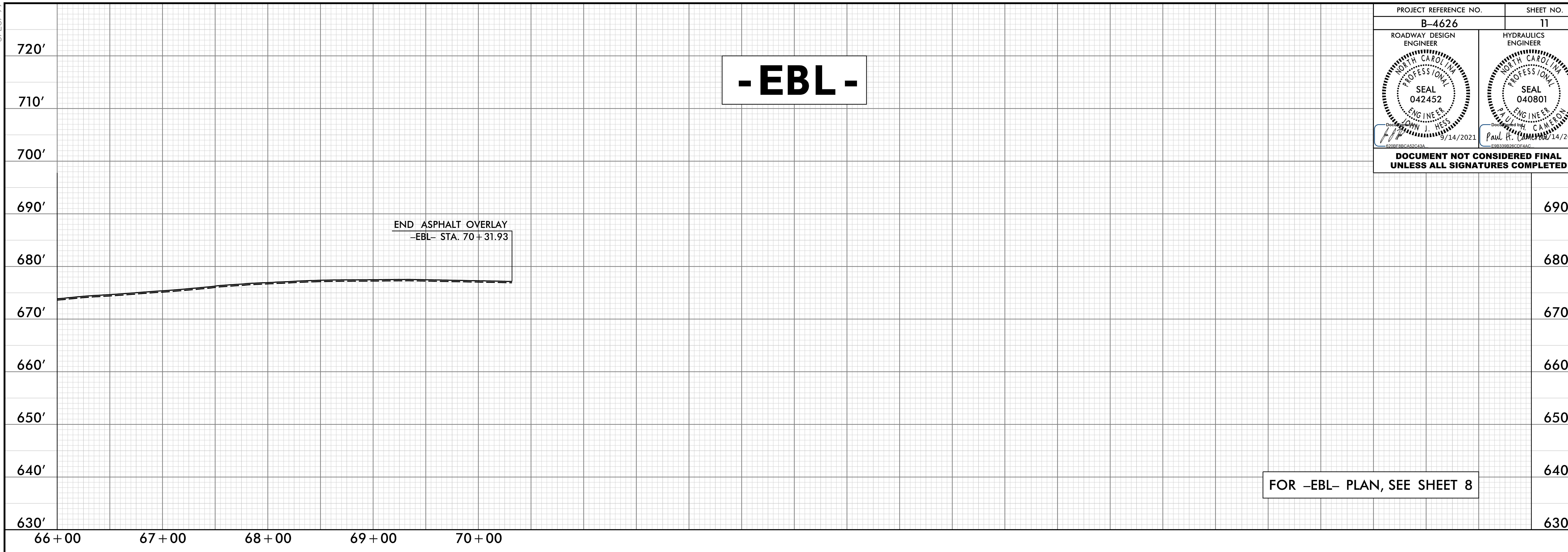
PROJECT REFERENCE NO.	SHEET NO.
B-4626	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER JOHN J. HESS 9/14/2021	NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL H. CAMERON 9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-EBL-



FOR -EBL- PLAN, SEE SHEET 8

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PROJECT REFERENCE NO.	SHEET NO.
B–4626	12

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER JOHN J. HESS	NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL H. CAMERON
DocuSigned by: 620BF8BCA52C43A... 9/14/2021	DocuSigned by: Paul H. Cameron E9B339B26CDF4AC... 9/14/2021

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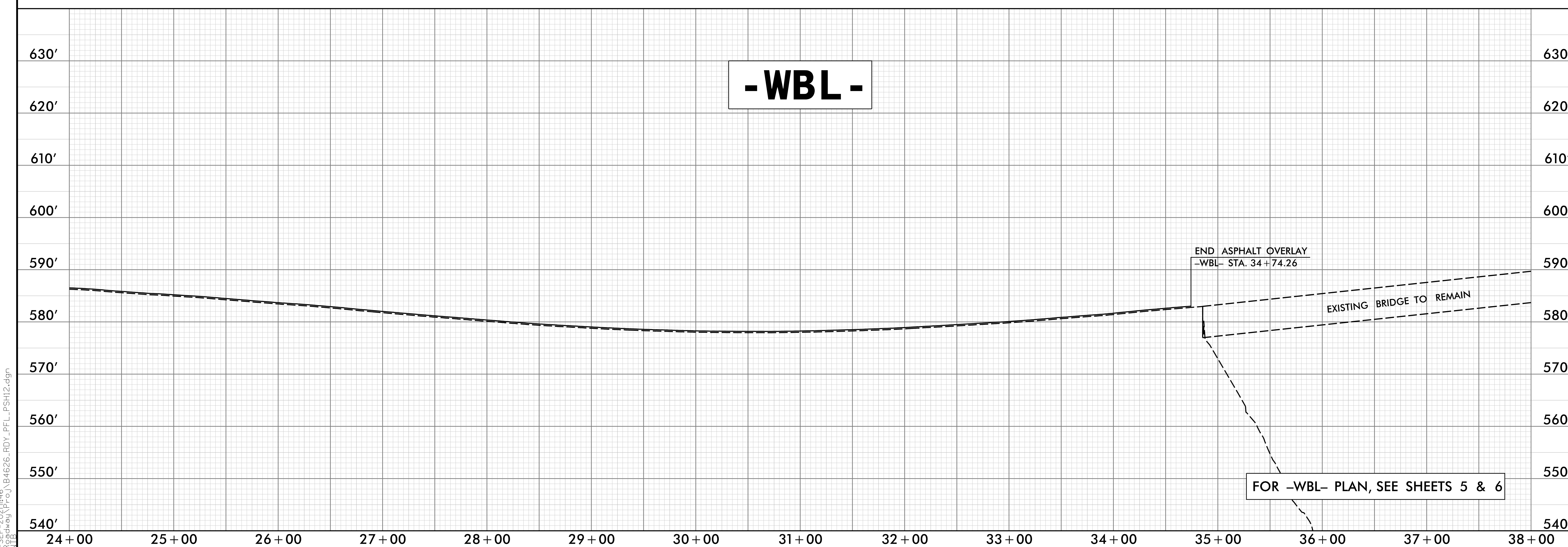

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PROJECT REFERENCE NO.	SHEET NO.
B-4626	13

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042452 ENGINEER JOHN J. HESS	NORTH CAROLINA PROFESSIONAL SEAL 040801 ENGINEER PAUL H. CAMERON
DocuSigned by: 620BF8BCA52C43A... 9/14/2021	DocuSigned by: Paul H. Cameron E9B339B26CDF4AC... 9/14/2021

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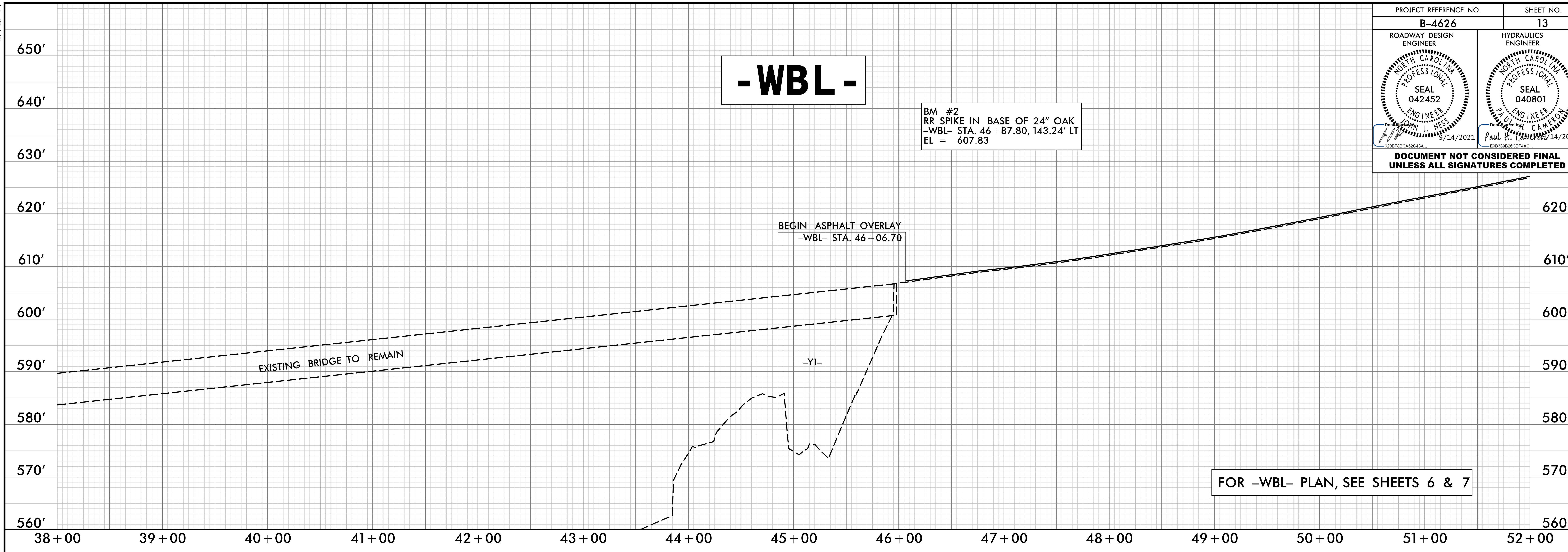

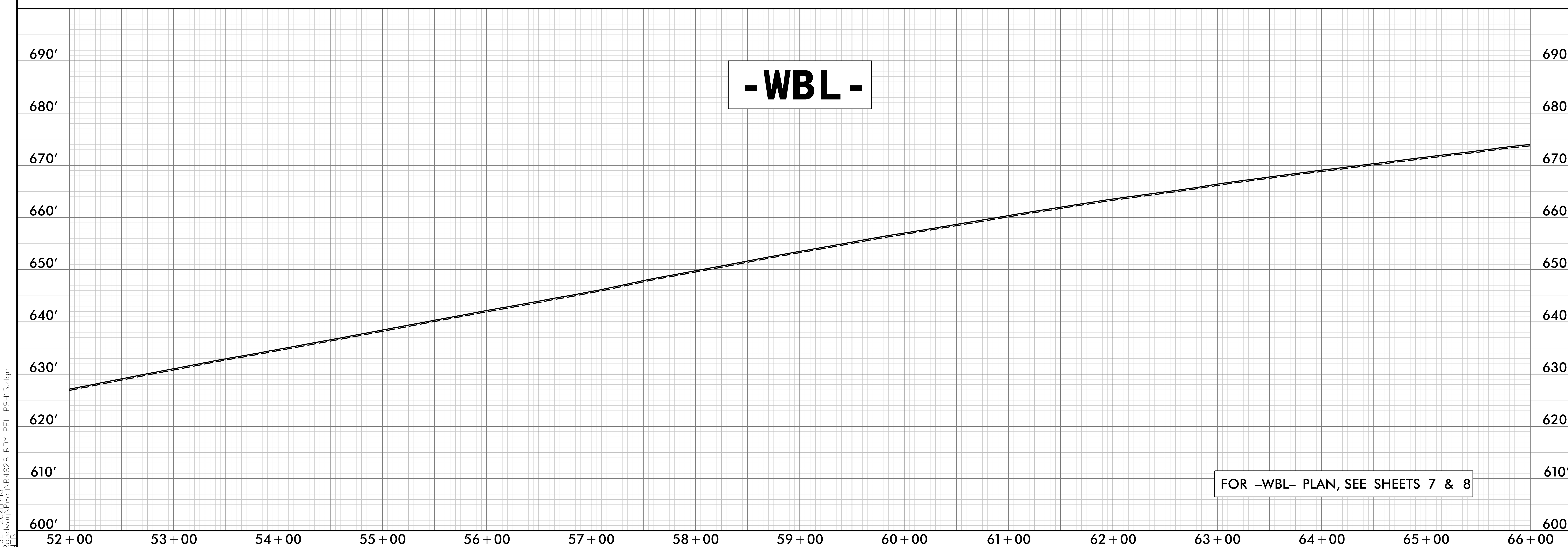

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4626	14

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042452 JOHN J. HESS — 9/14/2021

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040801 PAUL H. CAMERON — Paul H. Cameron 9/14/2021

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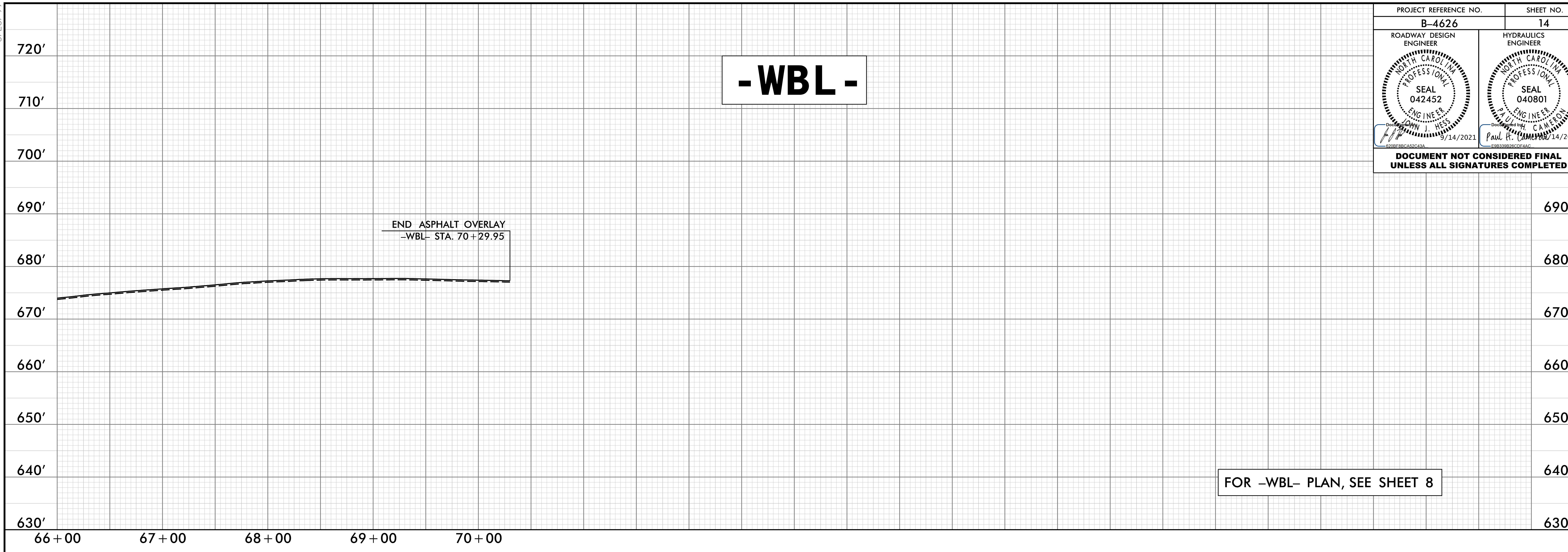
-WBL-



FOR -WBL- PLAN, SEE SHEET 8

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