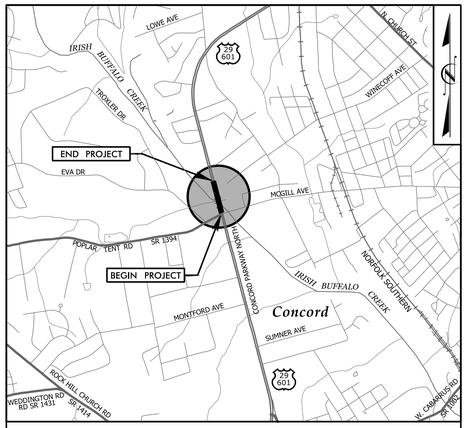
TIP PROJECT: B–5808

CONTRACT: C204741

See Sheet 1A For Index of Sheets
See Sheet 1B For Standard Symbology Sheet



VICINITY MAP N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5808	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45762.1.1	NHP–0029(062)	P.E.
45762.2.1	NHP–0029(062)	R / W & UTIL.
45762.3.1	NHP–0029(062)	CONSTRUCTION

LOCATION: BRIDGES #057 & #059 OVER IRISH BUFFALO CREEK ON US 29 /US 601

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE & SIGNALS

★ TRAFFIC SIGNAL

NAD 83 / 2011

BEGIN TIP PROJECT B–5808
–L– STA. 16 + 55.00

SR 1394 POPLAR TENT RD
TO CHARLOTTE

4

BEGIN BRIDGE
–L– STA. 19 + 69.35

5

6

END CONSTRUCTION
–L– STA. 26 + 20.00

TO HARRISBURG US 29 /US 601 CONCORD PARKWAY S

–L–

–L– TO KANNAPOLIS

US 29 /US 601 CONCORD PARKWAY N

IRISH BUFFALO CREEK

END BRIDGE
–L– STA. 21 + 59.35

END TIP PROJECT B–5808
–L– STA. 25 + 94.00

PARKWAY AVE NW

IRISH BUFFALO CREEK

SR 1394 MCGILL AVE

TO MOUNT PLEASANT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

DESIGN DATA

ADT 2022 = 36,820
ADT 2042 = 53,020
K = 10%
D = 55%
T = 4%*
V = 50 MPH
FUNC. CLASSIFICATION:
URBAN ARTERIAL
* (TTST 1% + DUALS 3%)
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–5808 = 0.142 MILES

LENGTH OF STRUCTURE TIP PROJECT B–5808 = 0.036 MILES

TOTAL LENGTH OF TIP PROJECT B–5808 = 0.178 MILES

NCDOT CONTACT: ADAM COLE, PE
Structure Management Unit

PLANS PREPARED FOR THE NCDOT BY:

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F–0991

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 13, 2021

LETTING DATE:
APRIL 18, 2023

NIKKI T. HONEYCUTT, PE
PROJECT ENGINEER

MAAMOON K. ABDELAZIZ
PROJECT DESIGNER

HYDRAULICS ENGINEER
2/23/2023
DocuSigned by: Shishant Sharma
C5EEA107SAAE461...
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 040590 ENGINEER SHISHANT SHARMA P.E.

ROADWAY DESIGN ENGINEER
5/3/2023
DocuSigned by: Nikki T. Honeycutt
E8E3E4EA9F44473...
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 039234 ENGINEER NIKKI T. HONEYCUTT P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/6/2023
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mabdelaziz

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 ENGINEER NANCY T. HONEYCUTT
3/3/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2012

GRADE LINE:
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 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.

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS 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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE POWER-CITY OF CONCORD, CONCORD FIBER, AT&T, SEGRA, WINDSTREAM, DOMINION ENERGY. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS AND BY CONTRACT IN ACCORDANCE WITH DESIGNATED SYMBOLS.

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD. 848.05 and/or 848.06.

STANDARD DRAWINGS

2018 ROADWAY ENGLISH STANDARD DRAWINGS EFF. 01-16-2018

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
225.05	Method of Obtaining Superelevation - Divided Highways
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
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Gates and Hood - for Use on Standard Catch Basin
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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.30	Driveway Drop Inlet
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.45	Precast Drainage Structure
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
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

2/10/2023
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mabdelaziz

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
B-5808	1B

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.

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2A-1
R/W SHEET NO.	

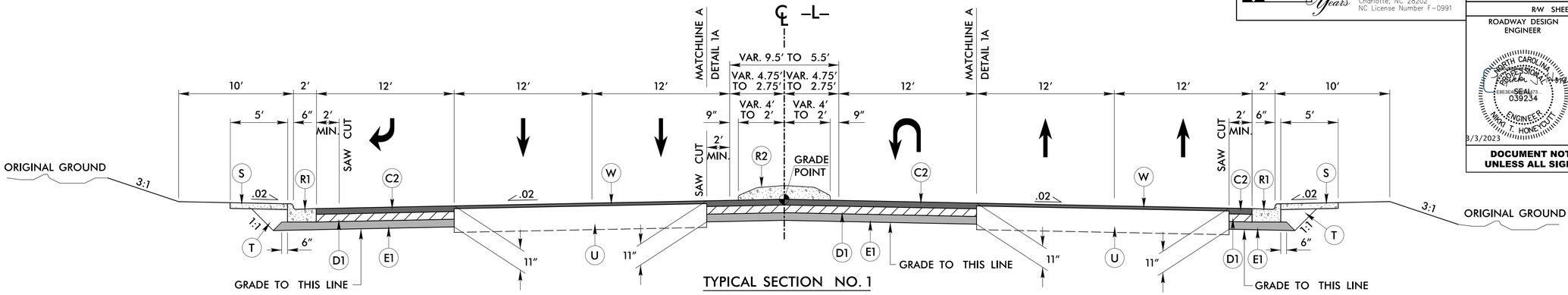
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 ENGINEER MICHAEL T. HONEYCUTT
3/3/2023

PAVEMENT DESIGN ENGINEER

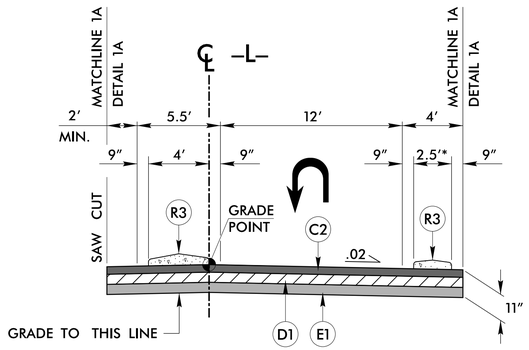
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 ENGINEER CLARK S. MORRISON
2/22/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

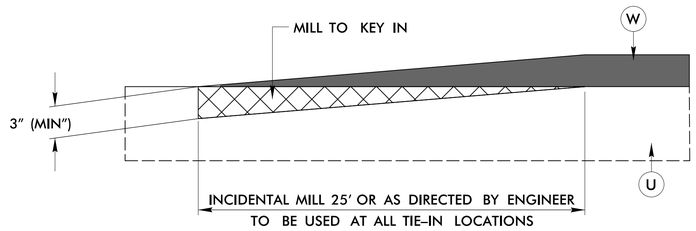
–L– STA. 18+04.80 TO 19+45.76 (BEGIN APPROACH SLAB)
–L– STA. 21+82.93 (END APPROACH SLAB) TO 25+94.00



DETAIL A

–L– STA. 23+46.00 TO 25+94.00

*NOTE: SEE PLAN SHEET 6 FOR CONCRETE ISLAND (R3) AT U-TURN BULB

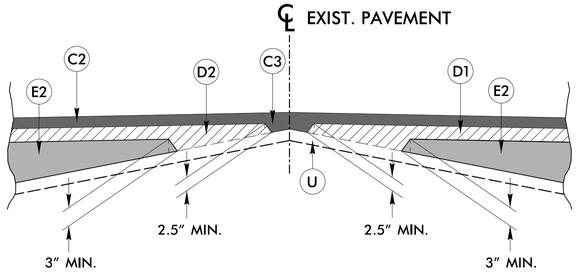


INCIDENTAL MILLING DETAIL B

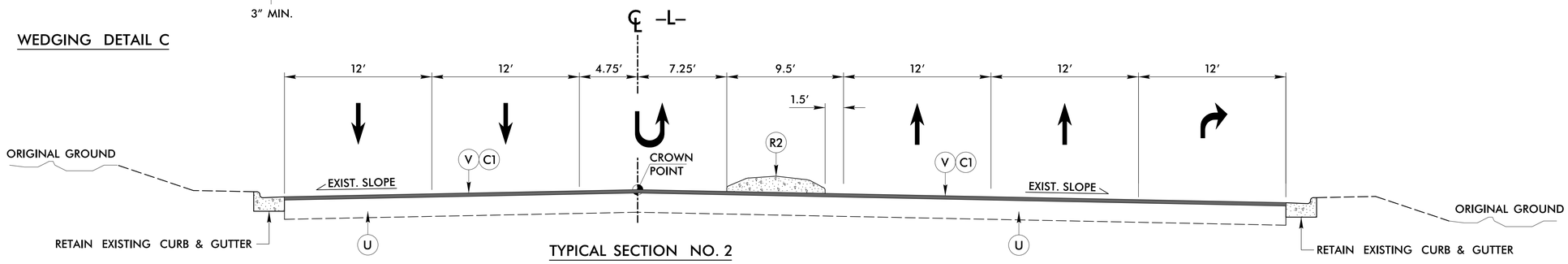
–L– STA. 16+55.00 TO 16+80.00
–L– STA. 17+35.00 TO 17+97.00, OFFSET 89′± LT
–L– STA. 17+49.00 TO 18+12.00, OFFSET 85′± RT
–L– STA. 25+69.00 TO 25+94.00

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.0″ IN DEPTH OR GREATER THAN 1.5″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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 3.0″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
R1	2′-6″ CURB & GUTTER
R2	5″ MONOLITHIC CONCRETE ISLAND (KEYED IN)
R3	5″ MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R4	PORTABLE CONCRETE BARRIER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING 1.5″ IN DEPTH
W	WEDGING (SEE WEDGING DETAIL, SHEET 2A-1)

ALL PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



WEDGING DETAIL C



TYPICAL SECTION NO. 2

–L– STA. 16+55.00 TO 18+04.80
INCLUDES TIE–INS AT POPLAR TENT ROAD AND MCGILL AVENUE

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 ENGINEER MICHAEL T. HONEYCUTT
3/3/2023

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 ENGINEER CLARK S. MORRISON
2/22/2023

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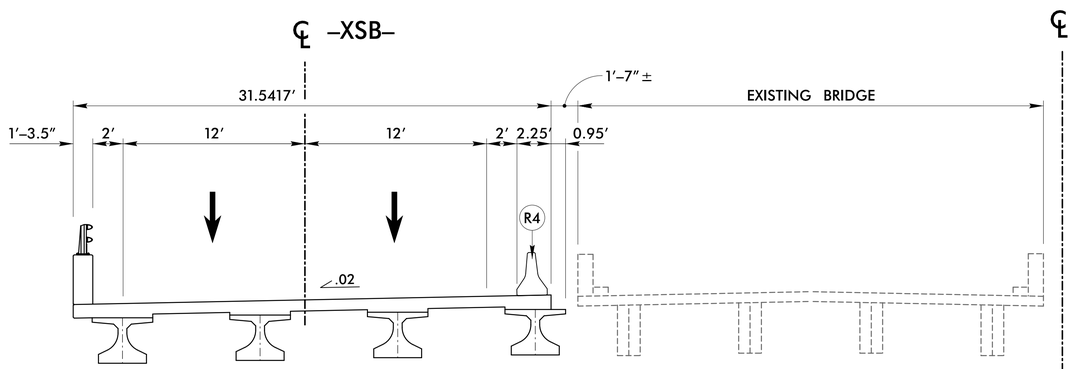

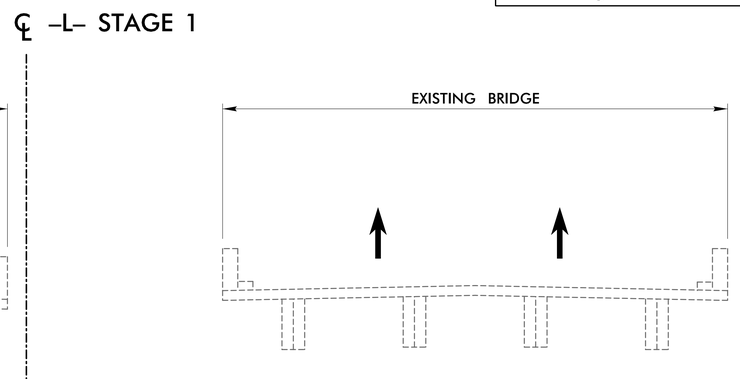

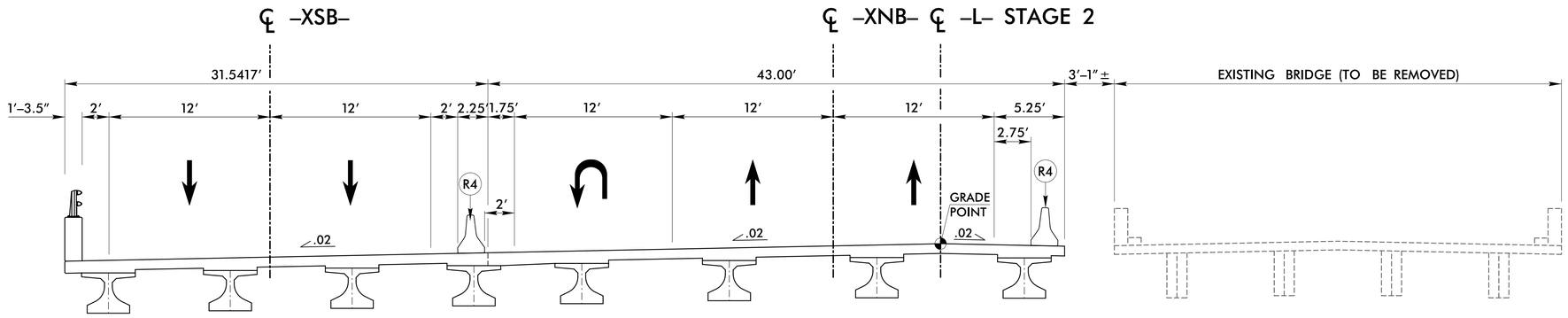

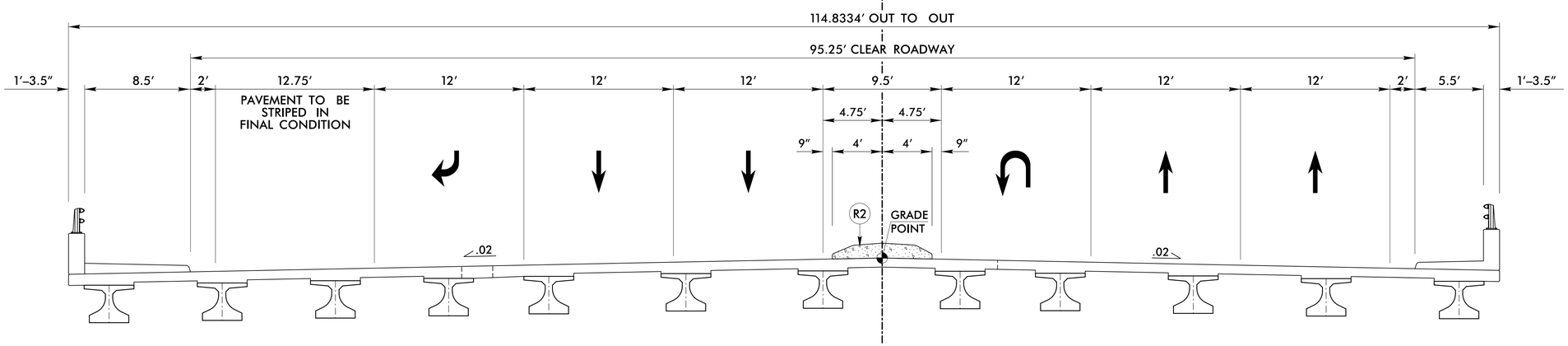

TYPICAL SECTION NO. 3

–L– STA. 19+45.76 (BEGIN APPROACH SLAB) TO 21+82.93 (END APPROACH SLAB)

PAVEMENT SCHEDULE	
R2	5″ ISLAND (KEYED IN)
R4	PCB

ALL PAVEMENT SLOPES 1:1 UNLESS NOTED OTHERWISE

2/16/2023
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mabdelaziz

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STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2A-3
R/W SHEET NO.	

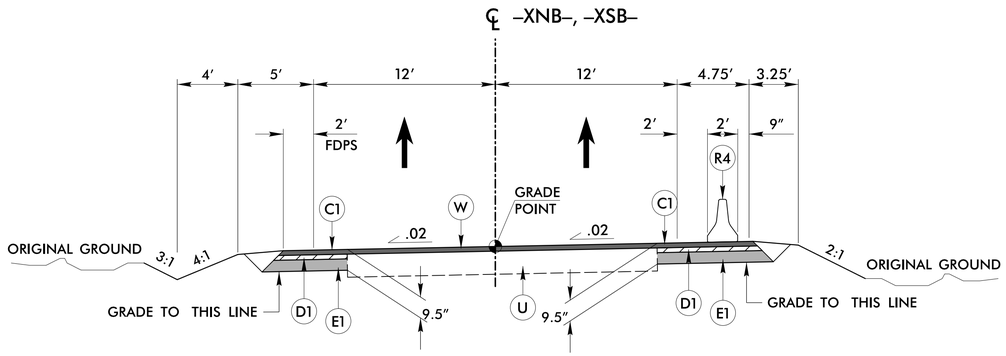
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 MICHAEL T. HONEYCUTT
3/3/2023

PAVEMENT DESIGN ENGINEER

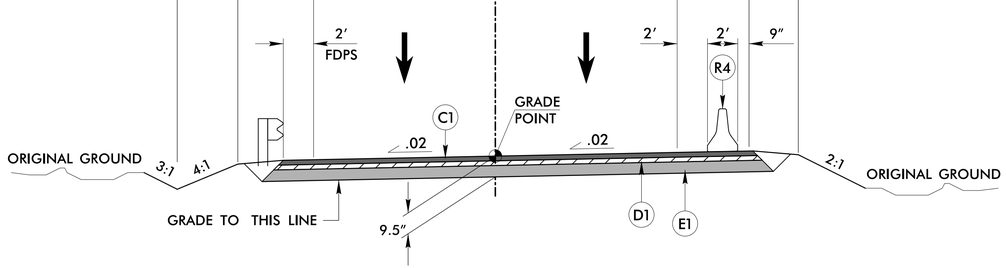
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON
2/22/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



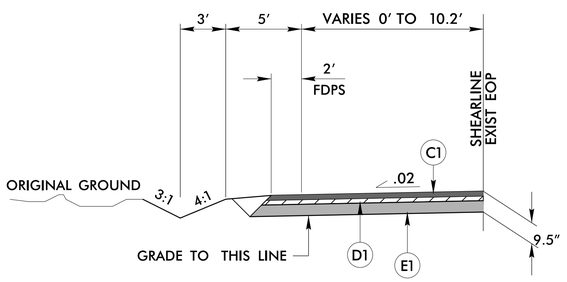
TYPICAL SECTION NO. 4

–XNB– STA. 18+15.00 TO 19+56.81 (BEGIN APPROACH SLAB)
–XNB– STA. 21+93.98 (END APPROACH SLAB) TO 23+90.00
–XSB– STA. 18+30.00 TO 19+05±
–XSB– STA. 23+80± TO 23+90.00



TYPICAL SECTION NO. 5

–XSB– STA. 19+05± TO 19+98.25 (BEGIN APPROACH SLAB)
–XSB– STA. 22+35.25 (END APPROACH SLAB) TO 23+80±



DETAIL 2

–XSB– STA. 18+11.19 TO 18+30.00 LT
–XSB– STA. 23+90.00 TO 24+85.14 LT

PAVEMENT SCHEDULE	
C1	1.5″ S9.5C
C2	3.0″ S9.5C
C3	VAR. S9.5C
D1	4.0″ I19.0C
D2	VAR. I19.0C
E1	4.0″ B25.0C
E2	VAR. B25.0C
R1	2′-6″ CURB & GUTTER
R2	5″ ISLAND (KEYED IN)
R3	5″ ISLAND (SURFACE)
R4	PCB
S	4″ CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING 1.5″
W	WEDGING (SHT. 2A-1)

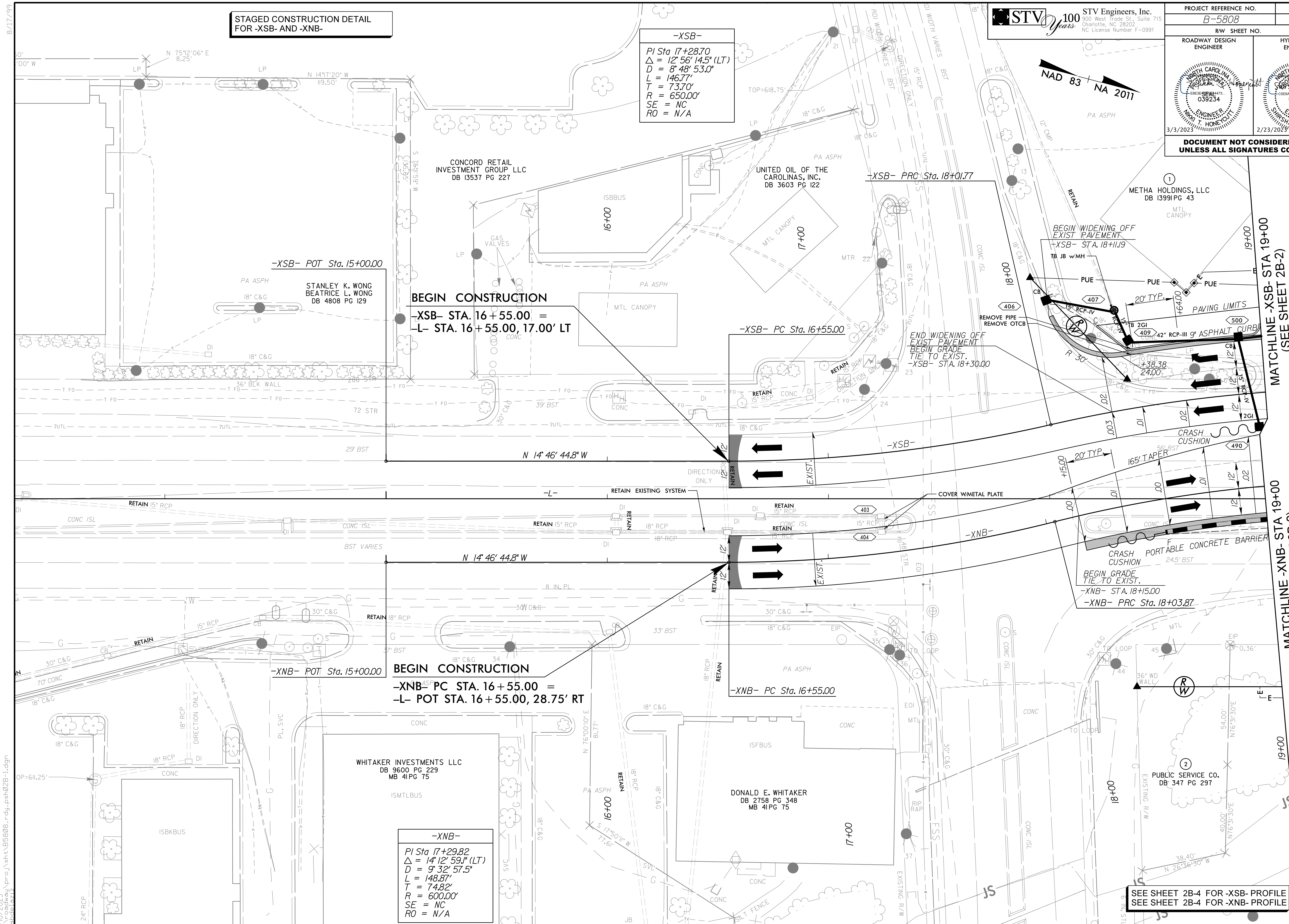
ALL PAVEMENT SLOPES 1:1
UNLESS NOTED OTHERWISE

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/3/2023	2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STAGED CONSTRUCTION DETAIL FOR -XSB- AND -XNB-



-XSB-
PI Sta 17+28.70
Δ = 12° 56' 14.5" (LT)
D = 8° 48' 53.0"
L = 146.77'
T = 73.70'
R = 650.00'
SE = NC
RO = N/A
NAD 83 / NA 2011
CONCORD RETAIL INVESTMENT GROUP LLC
DB 13537 PG 227
UNITED OIL OF THE CAROLINAS, INC.
DB 3603 PG 122
METHA HOLDINGS, LLC
DB 13991 PG 43
STANLEY K. WONG
BEATRICE L. WONG
DB 4808 PG 129
-XSB- POT Sta. 15+00.00
BEGIN CONSTRUCTION
-XSB- STA. 16+55.00 =
-L- STA. 16+55.00, 17.00' LT
-XSB- PC Sta. 16+55.00
-XSB- PRC Sta. 18+01.77
BEGIN WIDENING OFF EXIST PAVEMENT
-XSB- STA. 18+11.19
END WIDENING OFF EXIST PAVEMENT
BEGIN GRADE
TIE TO EXIST.
-XSB- STA. 18+30.00
REMOVE PIPE
REMOVE OTCB
PAVING LIMITS
9" ASPHALT CURB
CRASH CUSHION
165' TAPER
20' TYP.
N 14° 46' 44.8" W
RETAIN EXISTING SYSTEM
COVER W/METAL PLATE
CRASH CUSHION
PORTABLE CONCRETE BARRIER
BEGIN GRADE
TIE TO EXIST.
-XNB- STA. 18+15.00
-XNB- PRC Sta. 18+03.87
MATCHLINE -XSB- STA 19+00 (SEE SHEET 2B-2)
MATCHLINE -XNB- STA 19+00 (SEE SHEET 2B-2)
-XNB- POT Sta. 15+00.00
BEGIN CONSTRUCTION
-XNB- PC STA. 16+55.00 =
-L- POT STA. 16+55.00, 28.75' RT
-XNB- PC Sta. 16+55.00
WHITAKER INVESTMENTS LLC
DB 9600 PG 229
MB 41 PG 75
DONALD E. WHITAKER
DB 2758 PG 348
MB 41 PG 75
PUBLIC SERVICE CO.
DB 347 PG 297
-XNB-
PI Sta 17+29.82
Δ = 14° 12' 59.1" (LT)
D = 9° 32' 57.5"
L = 148.87'
T = 74.82'
R = 600.00'
SE = NC
RO = N/A

SEE SHEET 2B-4 FOR -XSB- PROFILE
SEE SHEET 2B-4 FOR -XNB- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2B-2
R/W SHEET NO.	

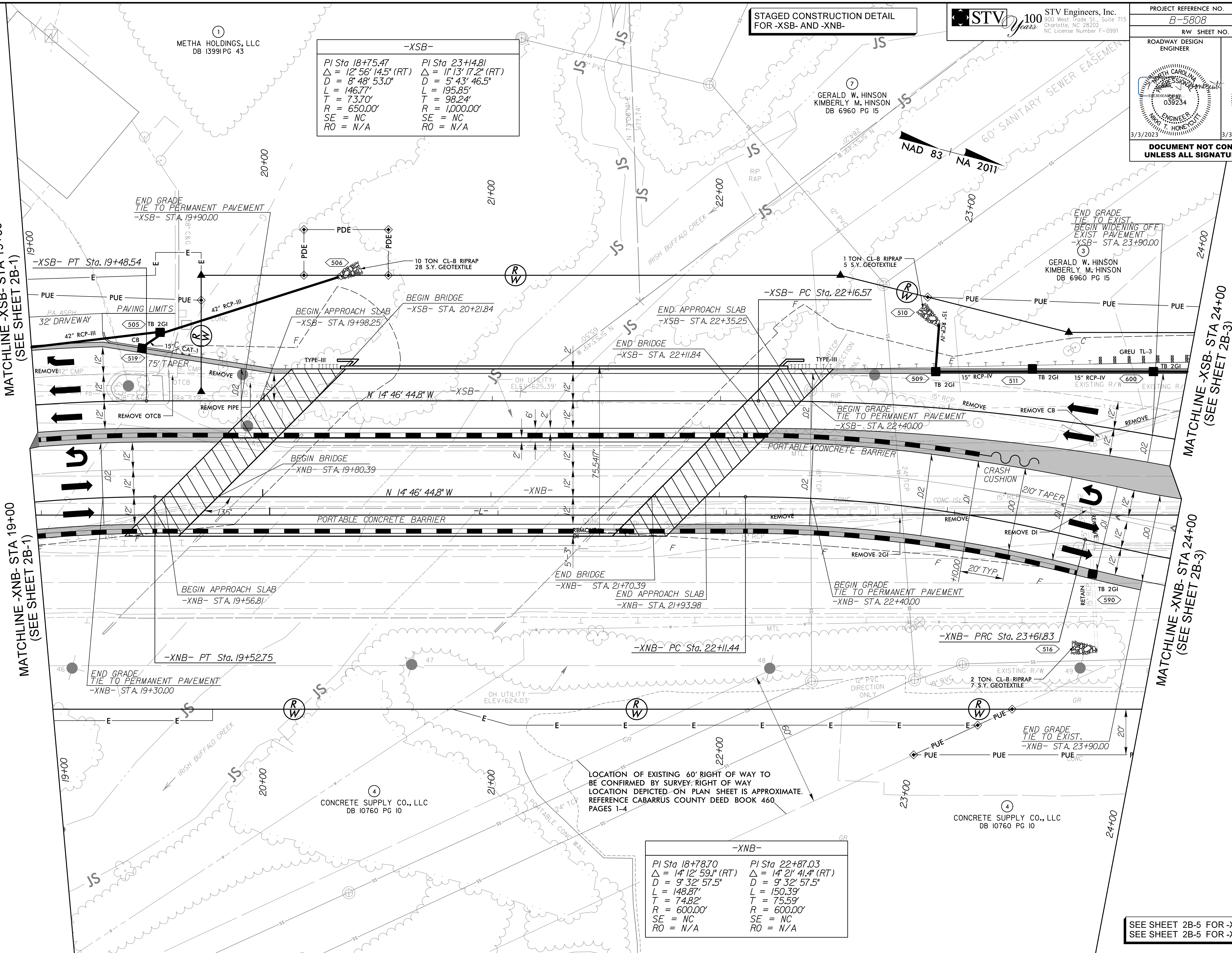
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

ROADWAY DESIGN ENGINEER — SEAL 039234 — NIKKI T. HONEYCUTT — 3/3/2023

HYDRAULICS ENGINEER — SEAL 040590 — SHIRSHANT SHARMA — 3/3/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STAGED CONSTRUCTION DETAIL FOR -XSB- AND -XNB-



METHA HOLDINGS, LLC
DB 13991 PG 43
GERALD W. HINSON
KIMBERLY M. HINSON
DB 6960 PG 15
CONCRETE SUPPLY CO., LLC
DB 10760 PG 10
NAD 83 NA 2011
60' SANITARY SEWER EASEMENT
IRISH BUFFALO CREEK
MATCHLINE -XSB- STA 19+00 (SEE SHEET 2B-1)
MATCHLINE -XNB- STA 19+00 (SEE SHEET 2B-1)
MATCHLINE -XSB- STA 24+00 (SEE SHEET 2B-3)
MATCHLINE -XNB- STA 24+00 (SEE SHEET 2B-3)
END GRADE TIE TO PERMANENT PAVEMENT -XSB- STA. 19+90.00
-XSB- PT Sta. 19+48.54
PAVING LIMITS
32' DRIVEWAY
10 TON CL-B RIPRAP 28 S.Y. GEOTEXTILE
BEGIN APPROACH SLAB -XSB- STA. 19+98.25
BEGIN BRIDGE -XSB- STA. 20+21.84
END BRIDGE -XSB- STA. 22+11.84
END APPROACH SLAB -XSB- STA. 22+35.25
-XSB- PC Sta. 22+16.57
1 TON CL-B RIPRAP 5 S.Y. GEOTEXTILE
END GRADE TIE TO EXIST. BEGIN WIDENING OFF EXIST PAVEMENT -XSB- STA. 23+90.00
N 14° 46' 44.8" W -XSB-
BEGIN GRADE TIE TO PERMANENT PAVEMENT -XSB- STA. 22+40.00
PORTABLE CONCRETE BARRIER
BEGIN BRIDGE -XNB- STA. 19+80.39
N 14° 46' 44.8" W -XNB-
CRASH CUSHION
210' TAPER
75' TAPER
BEGIN APPROACH SLAB -XNB- STA. 19+56.81
END BRIDGE -XNB- STA. 21+70.39
END APPROACH SLAB -XNB- STA. 21+93.98
BEGIN GRADE TIE TO PERMANENT PAVEMENT -XNB- STA. 22+40.00
-XNB- PT Sta. 19+52.75
-XNB- PC Sta. 22+11.44
-XNB- PRC Sta. 23+61.83
2 TON CL-B RIPRAP 7 S.Y. GEOTEXTILE
END GRADE TIE TO PERMANENT PAVEMENT -XNB- STA. 19+30.00
END GRADE TIE TO EXIST. -XNB- STA. 23+90.00
GREU TL-3
TB 2GI
REMOVE OTCB
REMOVE PIPE
REMOVE CB
REMOVE DI
REMOVE 2GI
OH UTILITY ELEV=625.39'
OH UTILITY ELEV=624.03'
12" PVC DIRECTION ONLY
20' TYP
75.541'
LOCATION OF EXISTING 60' RIGHT OF WAY TO BE CONFIRMED BY SURVEY. RIGHT OF WAY LOCATION DEPICTED ON PLAN SHEET IS APPROXIMATE. REFERENCE CABARRUS COUNTY DEED BOOK 460 PAGES 1-4

-XSB-

PI Sta 18+75.47	PI Sta 23+14.81
Δ = 12° 56' 14.5" (RT)	Δ = 11° 13' 17.2" (RT)
D = 8° 48' 53.0"	D = 5° 43' 46.5"
L = 146.77'	L = 195.85'
T = 73.70'	T = 98.24'
R = 650.00'	R = 1,000.00'
SE = NC	SE = NC
RO = N/A	RO = N/A

-XNB-

PI Sta 18+78.70	PI Sta 22+87.03
Δ = 14° 12' 59.1" (RT)	Δ = 14° 21' 41.4" (RT)
D = 9° 32' 57.5"	D = 9° 32' 57.5"
L = 148.87'	L = 150.39'
T = 74.82'	T = 75.59'
R = 600.00'	R = 600.00'
SE = NC	SE = NC
RO = N/A	RO = N/A

SEE SHEET 2B-5 FOR -XSB- PROFILE
SEE SHEET 2B-5 FOR -XNB- PROFILE

3/3/2023
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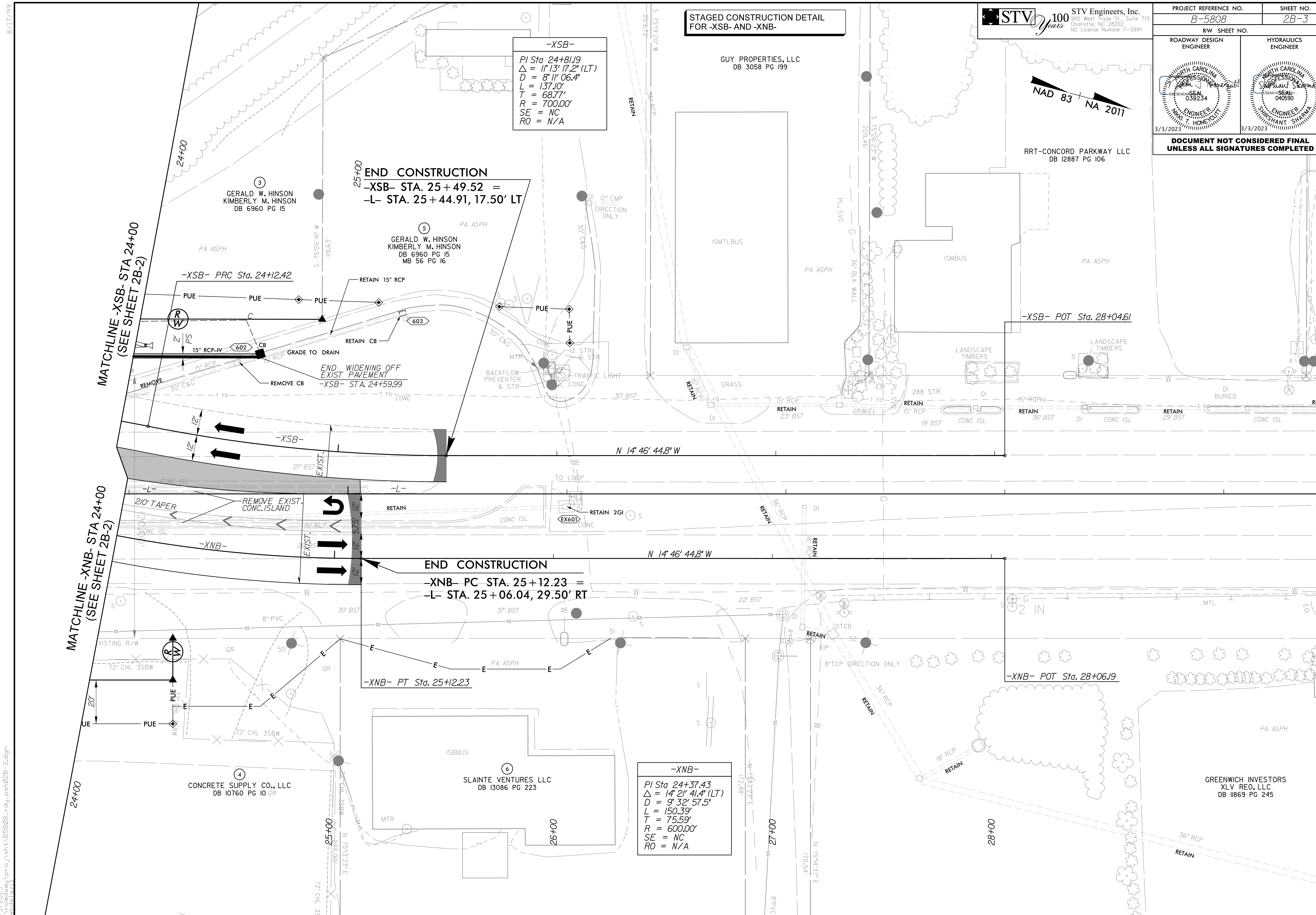


5/28/99

-XSB-

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2B-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 ENGINEER NINA T. HONEYCUTT
3/3/2023

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040590 ENGINEER SHIRISHANT SHARMA
2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

632 628 624 620 616 612 608 604 600 596

BEGIN GRADE
–XSB– STA 18+30.00
EL. 612.05'

PROPOSED GRADE

PI = 19+10.00
EL = 610.84'
VC = 120'
K = 64
DS = 40 MPH

(–)1.5125%

EXISTING GROUND

15+00 16+00 17+00 18+00 19+00

SEE SHEET 2B-1 FOR -XSB- PLAN

-XNB-

632 628 624 620 616 612 608 604 600 596

BEGIN GRADE
–XNB– STA 18+15.00
EL. 612.10'

PI = 19+00.00
EL = 611.84'
VC = 120'
K = 193
DS = 70 MPH

PROPOSED GRADE

(–)0.3059%

EXISTING GROUND

LOW POINT
–XNB– STA 18+98.96
EL = 611.93'

15+00 16+00 17+00 18+00 19+00

SEE SHEET 2B-1 FOR -XNB- PLAN

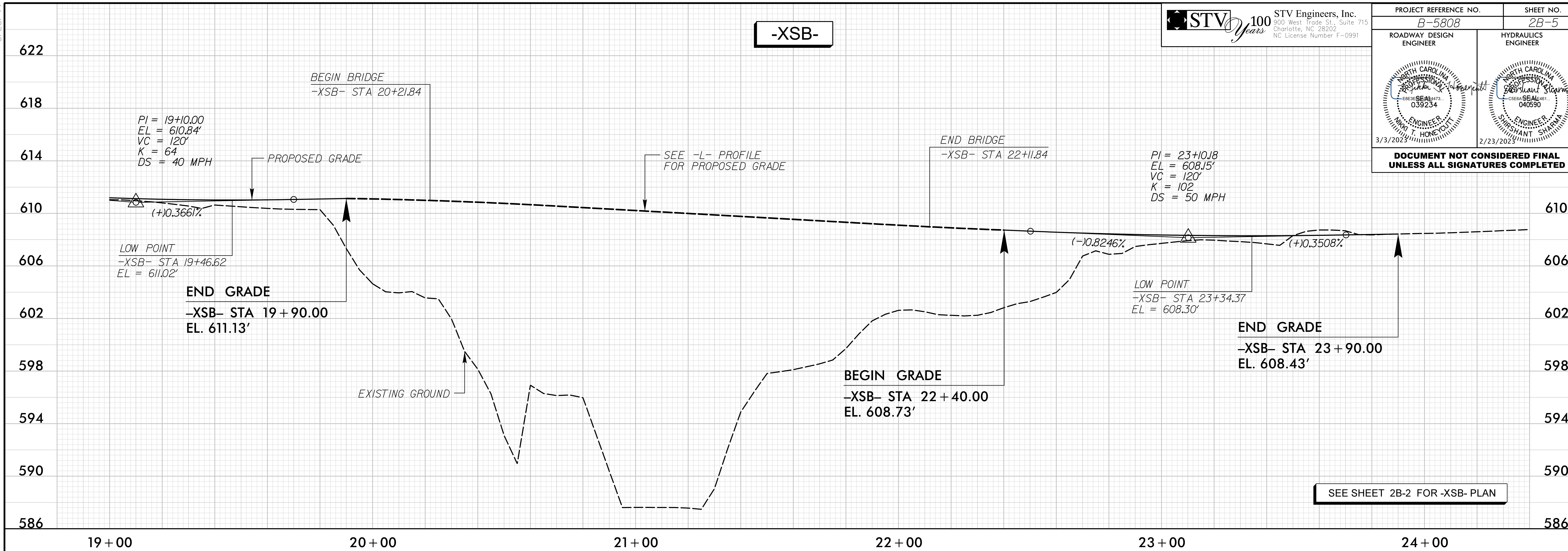
2/10/2023
n:\roadway\proj\sht\B5808_rdy_psh02B-4.dgn
mbrooks

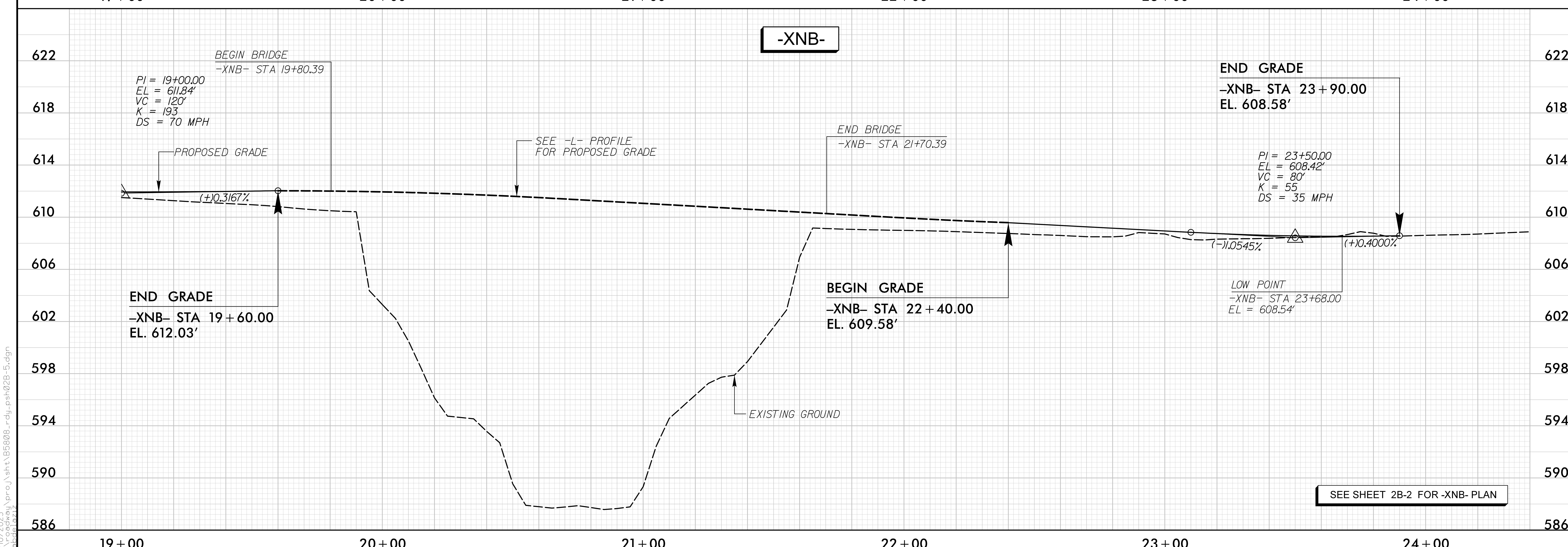
STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2B-5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI T. HONEYCUTT 3/3/2023	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040590 SHIRSHANT SHARMA 2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





5/28/99

2/10/2023
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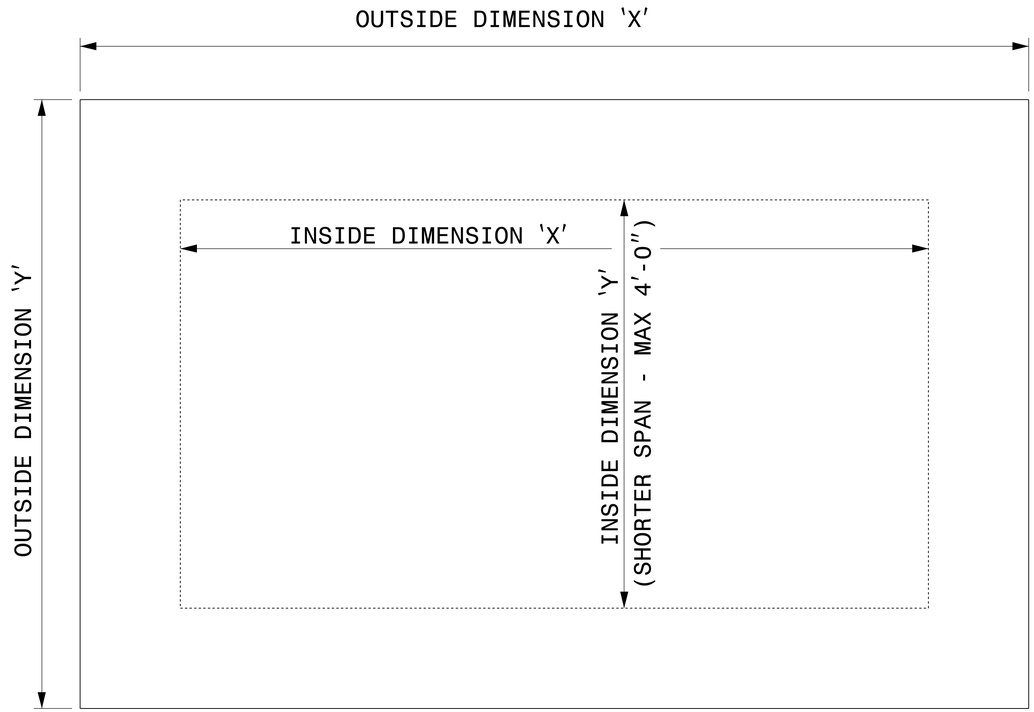
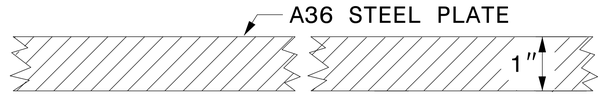
PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-1



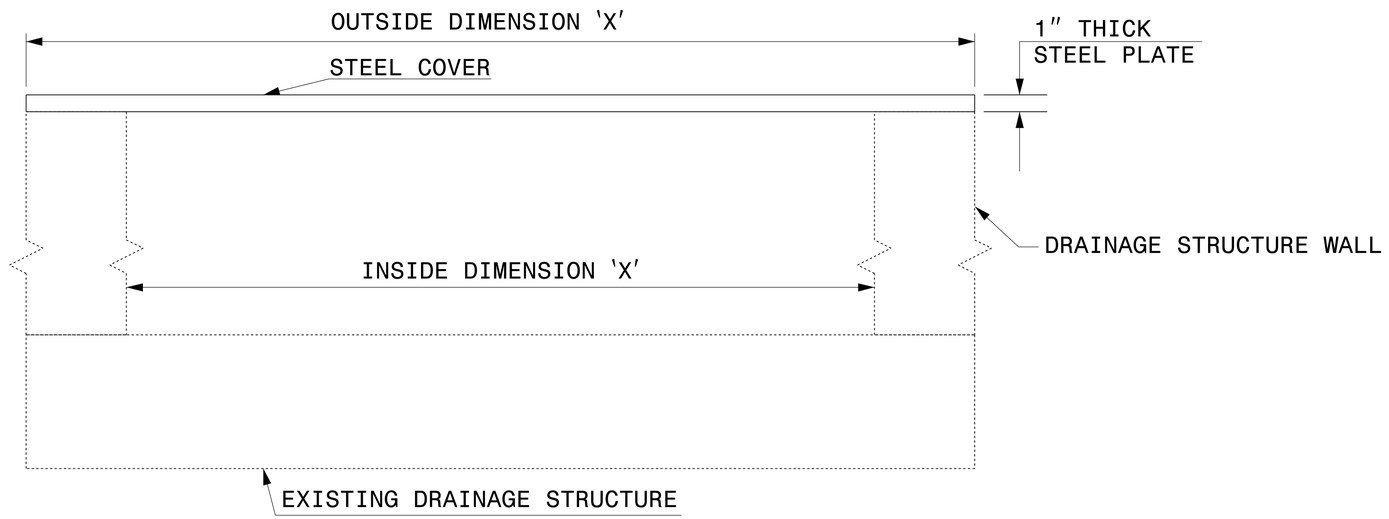
PLAN VIEWS

GENERAL NOTES:

-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 ENGINEER
2/22/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

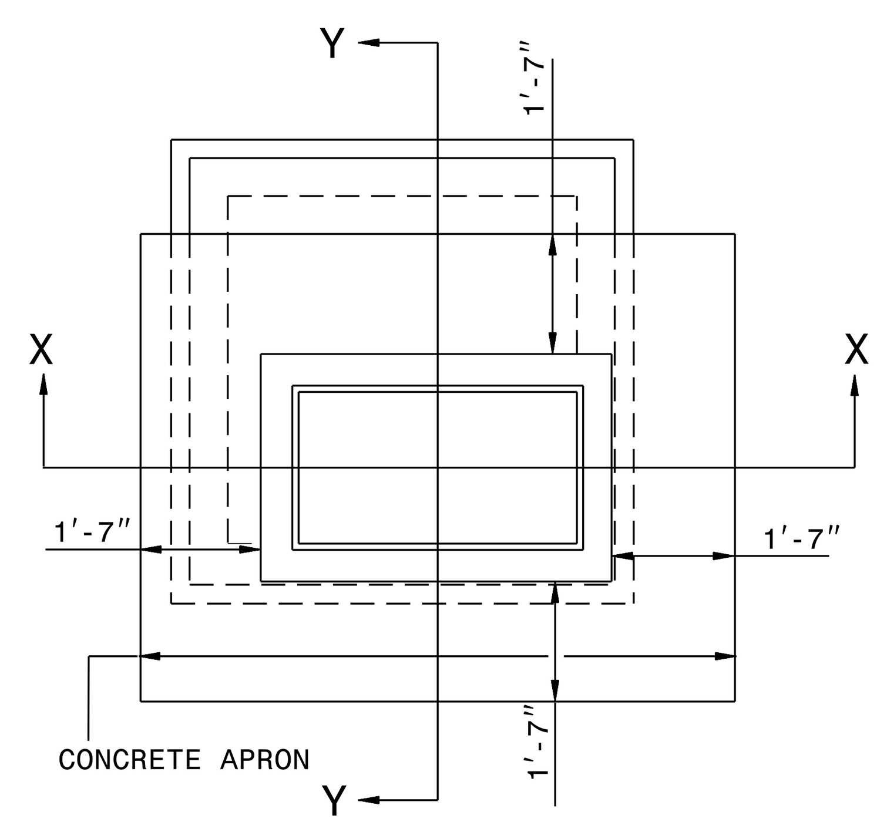
DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

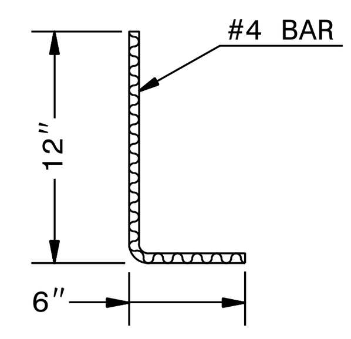
$$$$SYSTIME$$$$
$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$USERNAME$$$$

11-SEP-2017 11:55
S:\Contracts\Contracts\Special Details\jhowerton\840D17 Minimum Depth Type A.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-2



PLAN



DOWEL-A

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

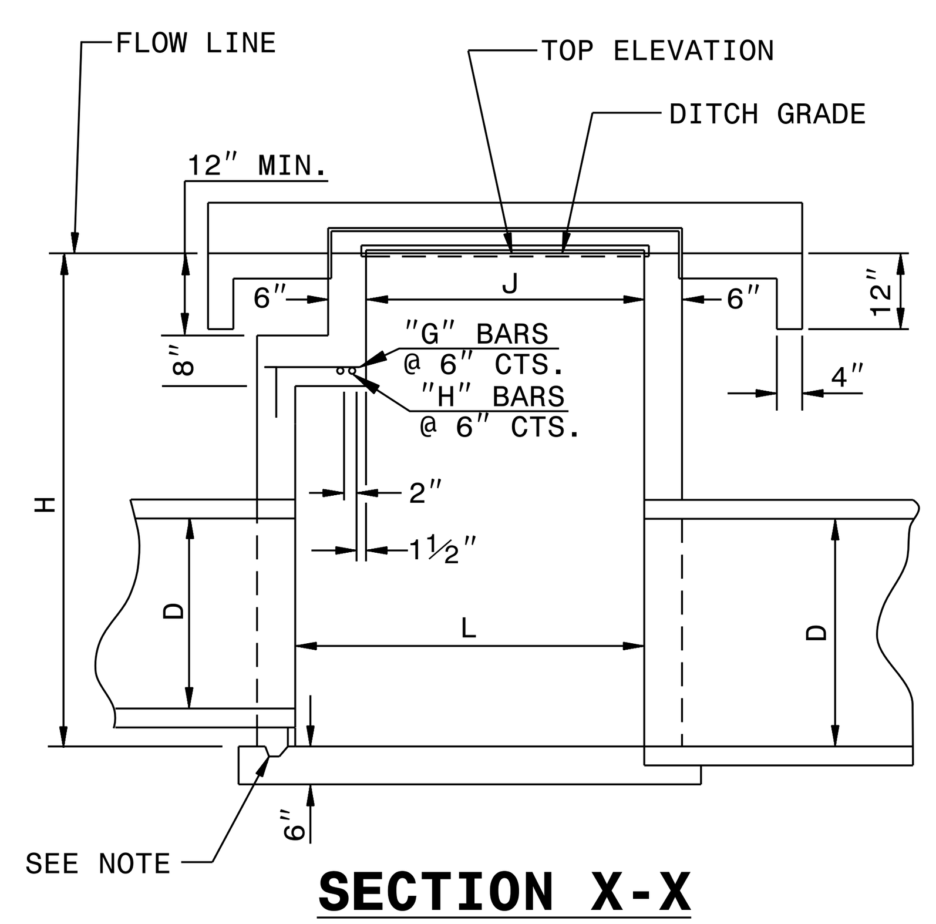
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20 (NOT SHOWN) OR 840.29 (NOT SHOWN).

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.

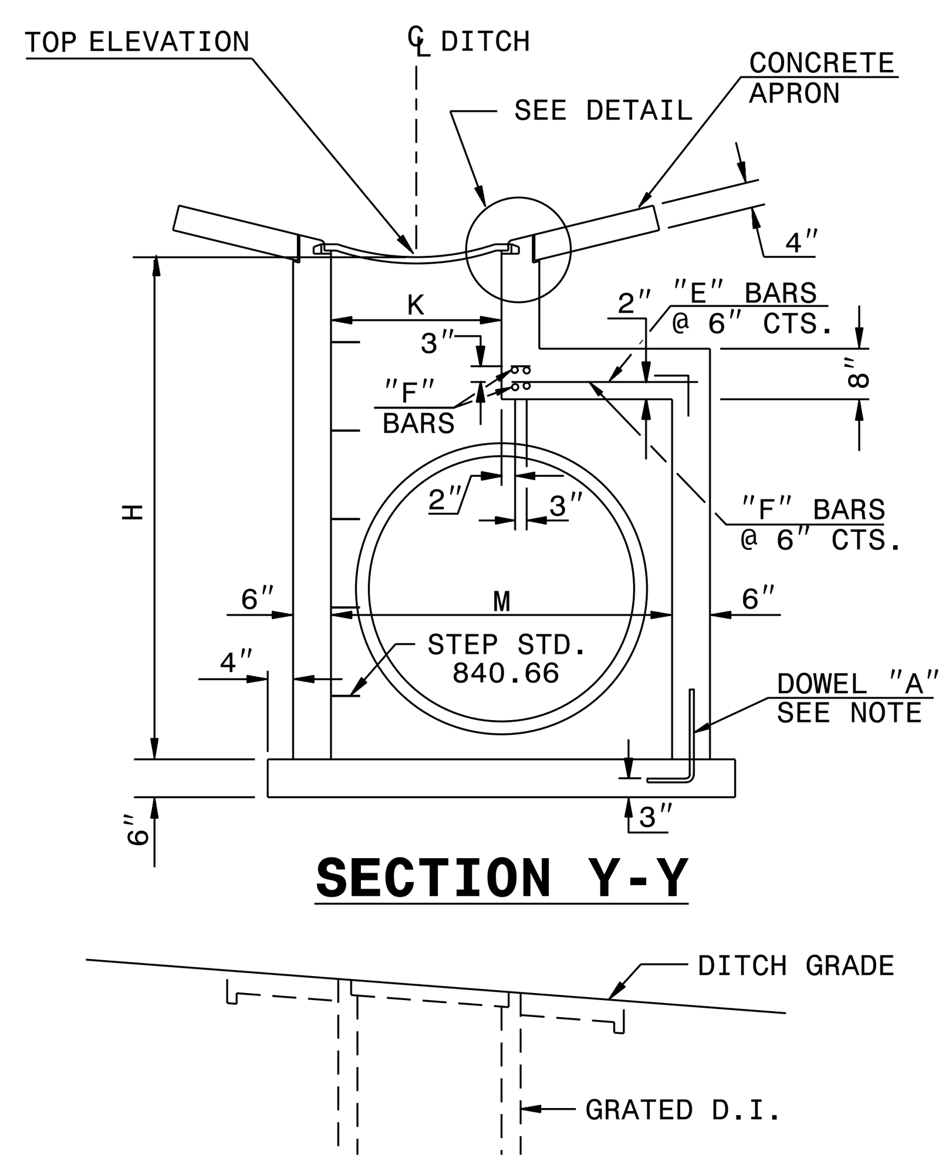
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

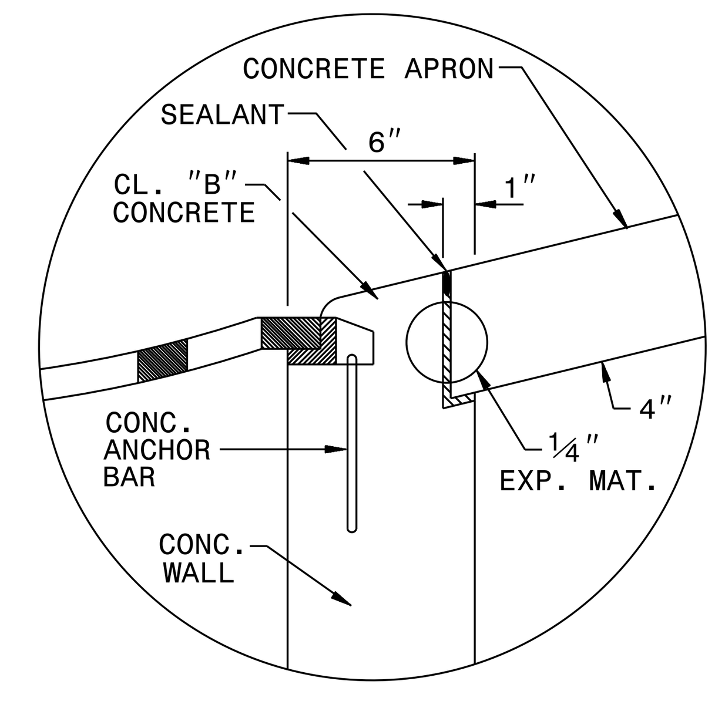
MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.



SECTION X-X



SECTION Y-Y

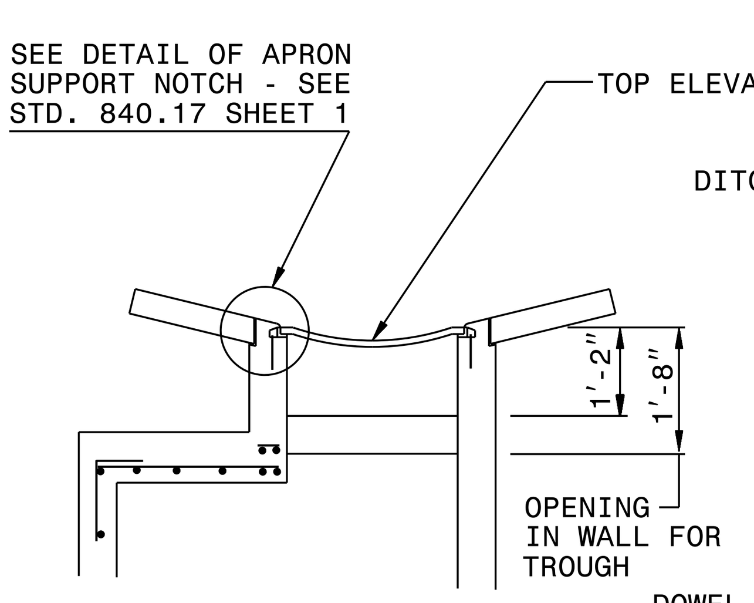


DETAIL

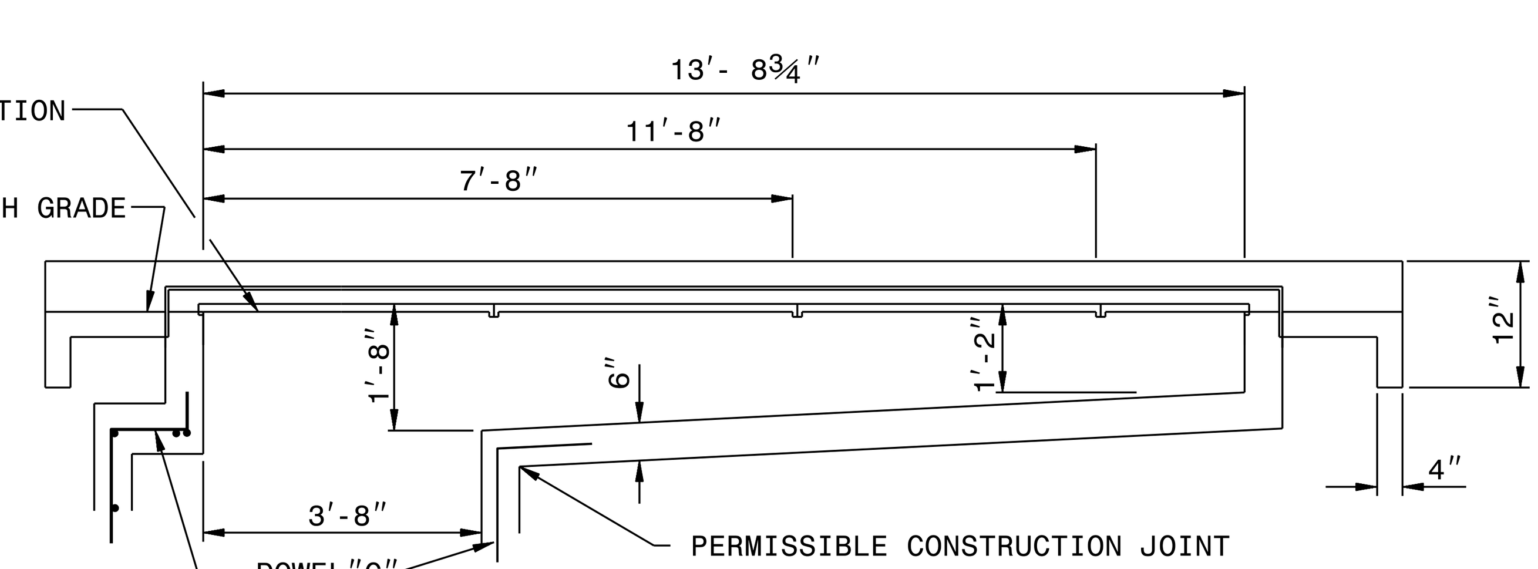
(APRON SUPPORT NOTCH)

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A'** **MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 1 OF 2 **840d17**

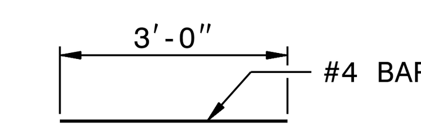
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A'** **MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 1 OF 2 **840d17**



PART SECTION V-V

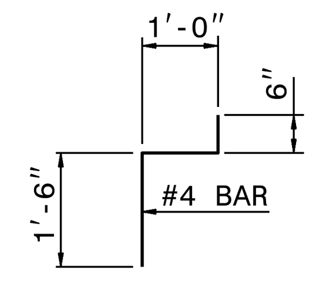


PART SECTION U-U



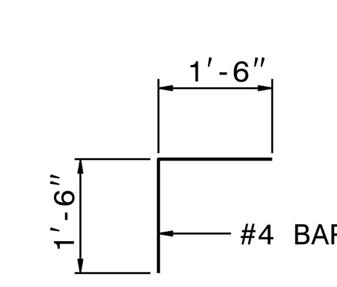
DOWEL-B¹

FOR 15" THRU 36" INLET

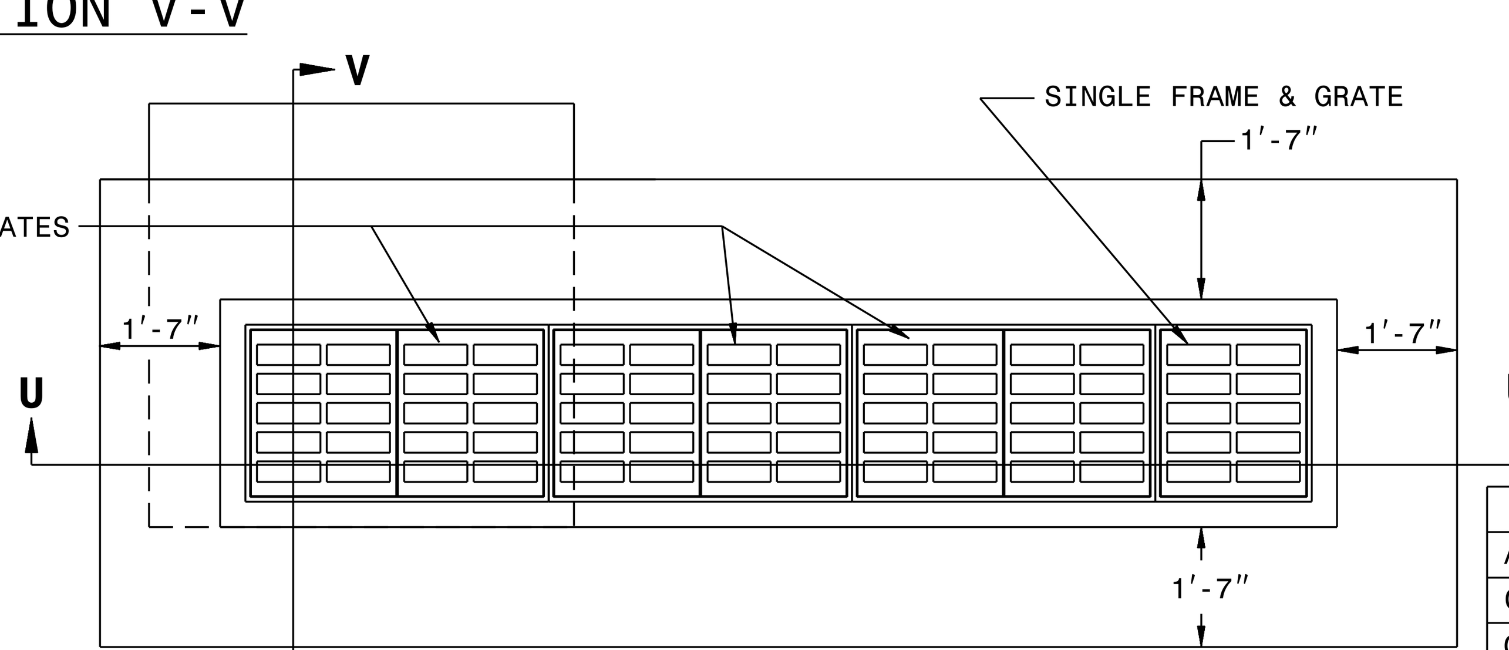


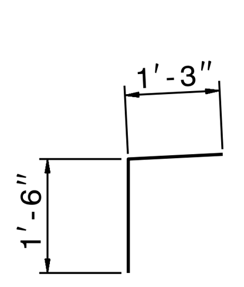
DOWEL-B²

FOR 42" INLET



DOWEL-B³





DOWEL-C

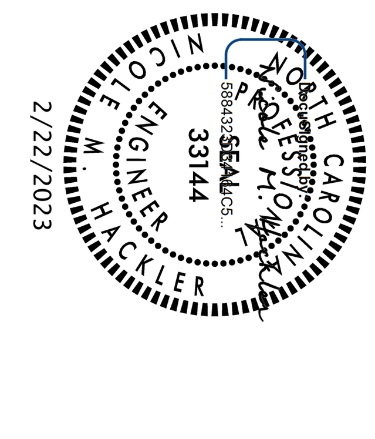
QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING						
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX AND PIPE						REINFORCING STEEL - NO. 4 BARS									CU YDS CONC. IN BOX					DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	SPAN	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		TOTAL	BOTTOM SLAB	H TOTAL	H PER FT HT	APRON	TOTAL		
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.						C.S.	R.C.
12"	3'-8"	2'-0"	3'-8"	2'-0"	2'-3"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	2'-5"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	2'-8"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	3'-3"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	3'-10"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	4'-4"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	5'-0"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	5'-6"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	6'-0"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	6'-7"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	7'-1"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	7'-8"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	0.395	7.868	0.528	0.713

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A'** **MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 2 OF 2 **840d17**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A'** **MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 2 OF 2 **840d17**



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
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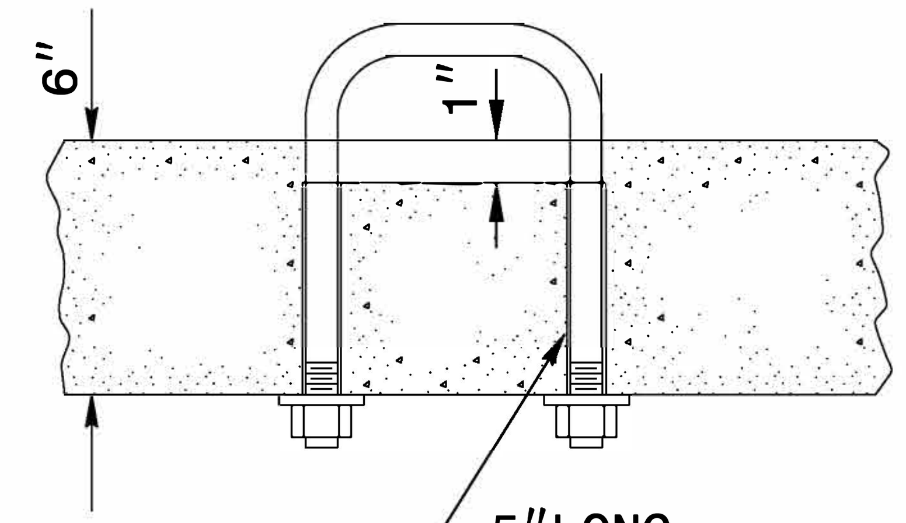
SEE TITLE BLOCK

ORIGINAL BY: J. Howerton DATE: 1/22/14
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton\minimum depth type A.dgn



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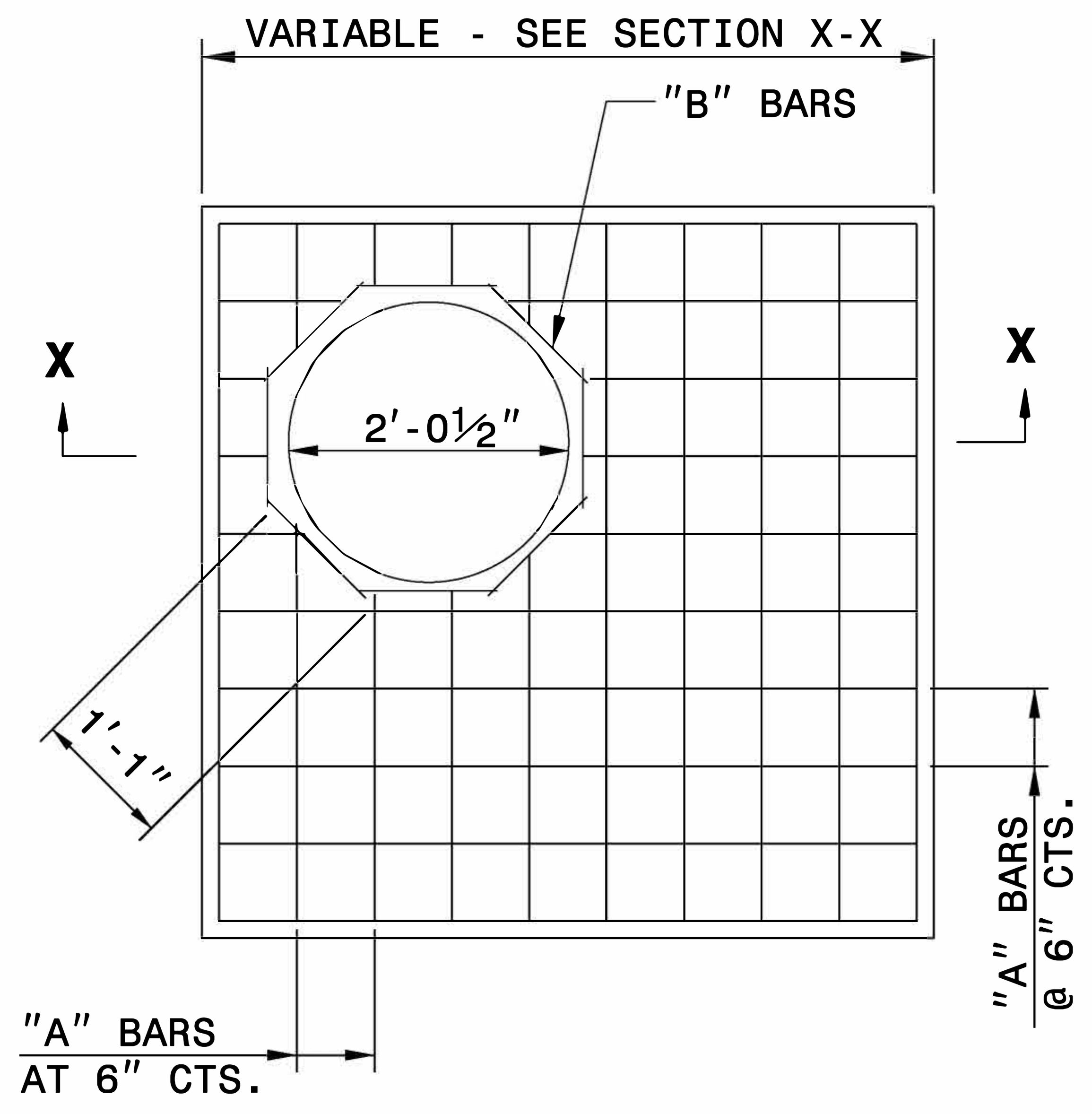
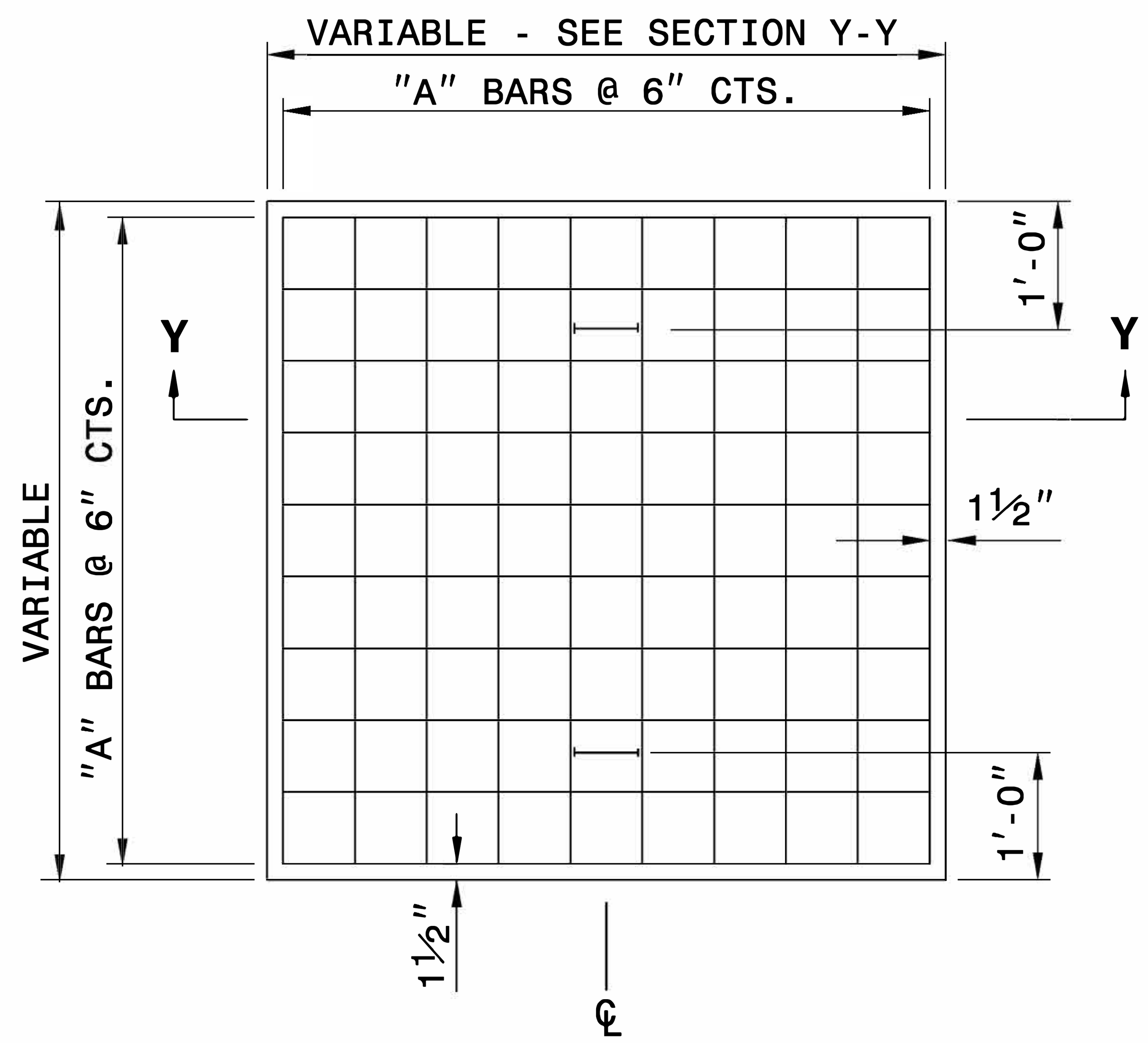


PLAN



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.

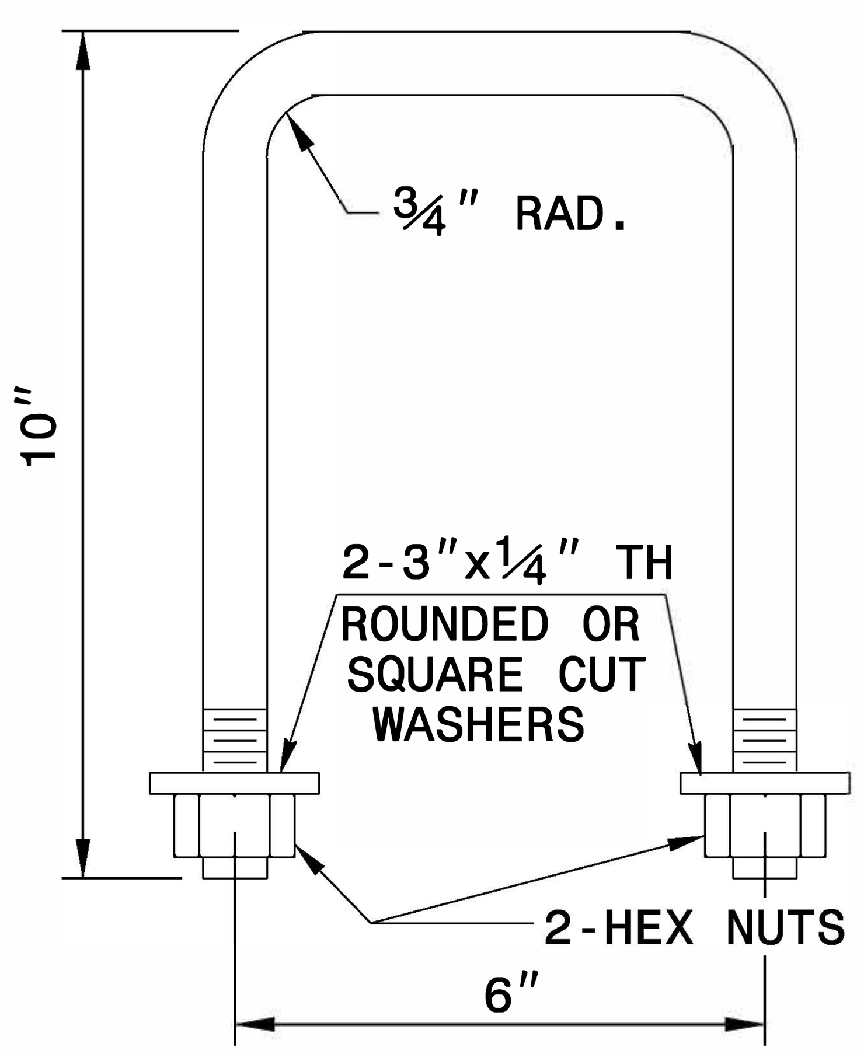
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

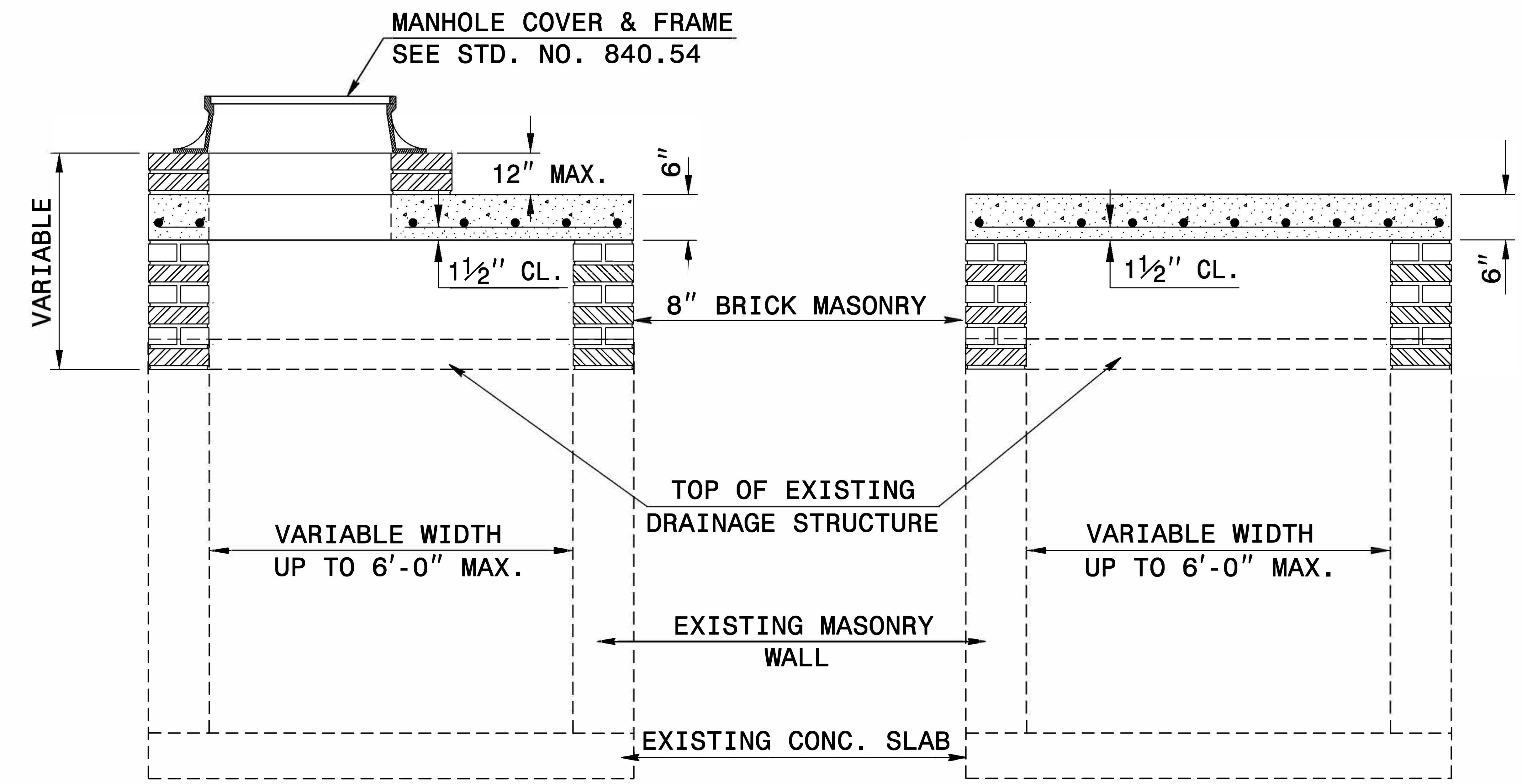
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

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

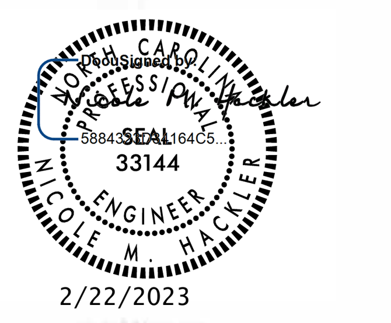
* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.



DETAIL OF HANDLE



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



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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

$$$$SYSTIME$$$$ $$$$USERNAME$$$$ $$$$DGN$$$$

13-AUG-2018 09:00
S:\Contracts\Contracts\Special Details\jhowerton\840d35 TBDI Up to 54in.dgn
jhowerton AT CSD-292595

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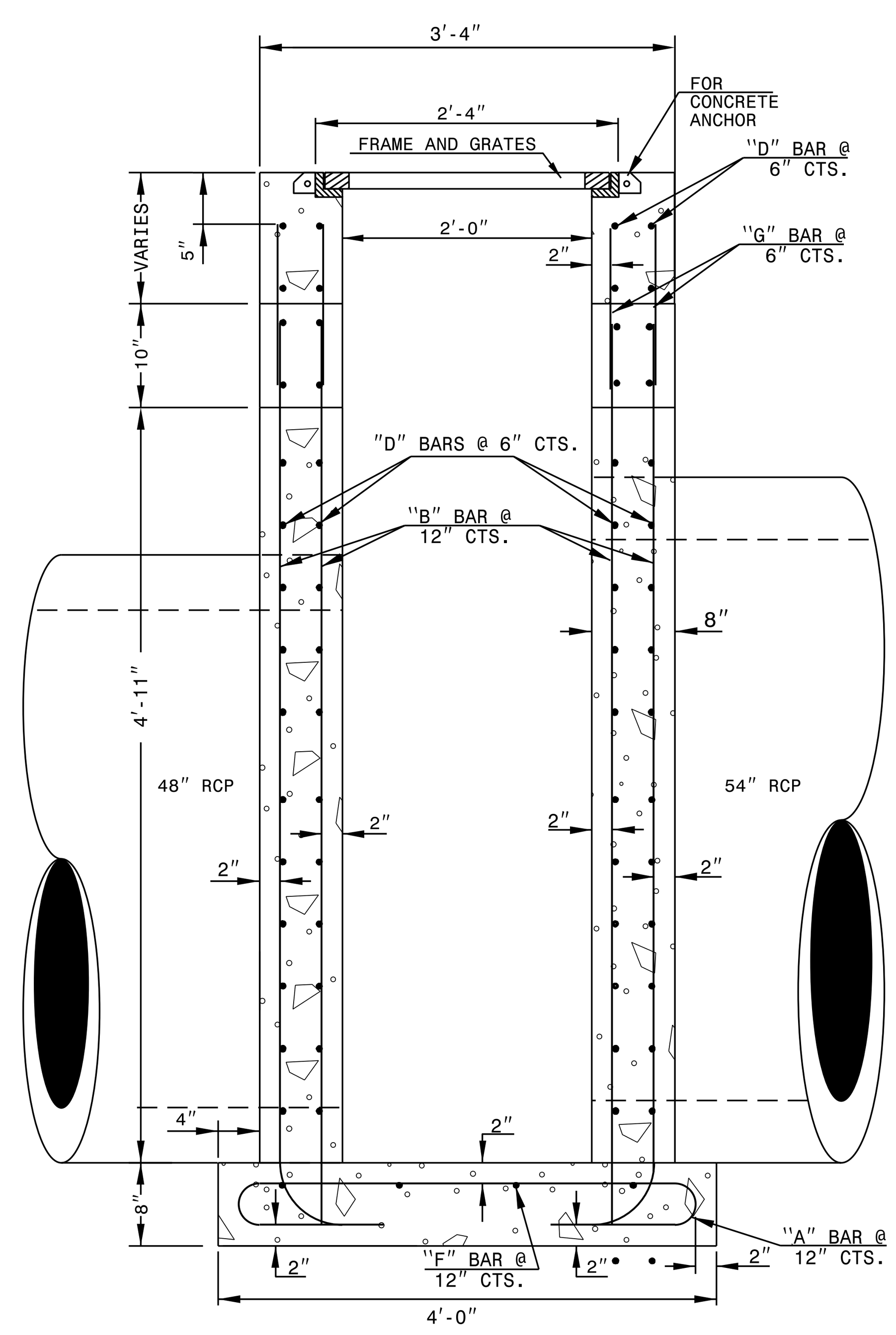
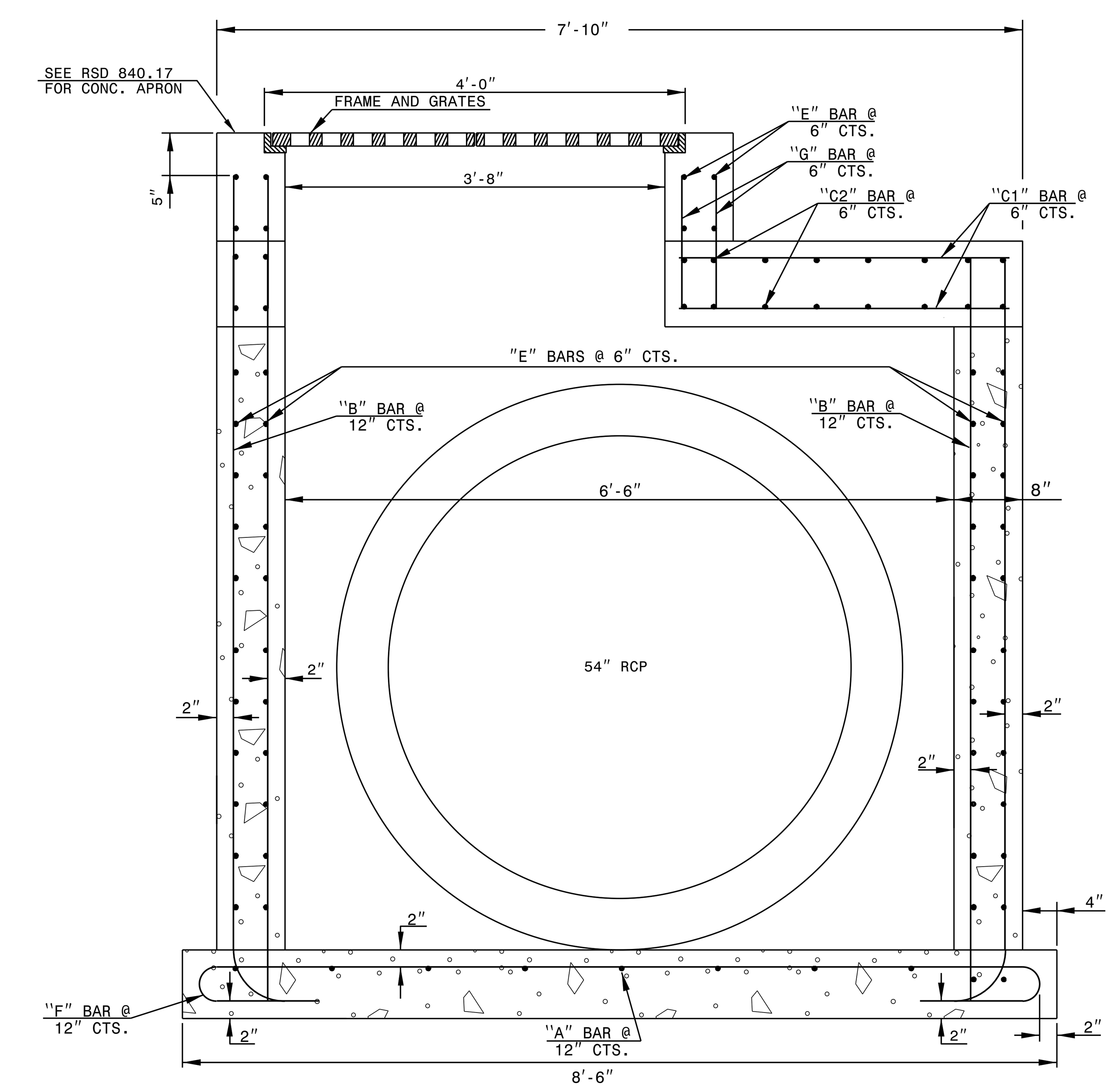
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING GRATED INLET
FOR PIPES UP TO 54"

SHEET 1 OF 2
840D35



SECTION Y-Y



SECTION X-X

GENERAL NOTES:
- BUILD WITH CLASS 'AA' CONCRETE
- CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- PRECAST UNITS CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.
- REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
- FRAME AND GRATES ARE SEPARATE CONTRACT ITEM.

NOTES:
- HORIZONTAL (UP TO 10' MAX. IN BOTH DIRECTIONS) AND VERTICAL (UP TO 20' MAX.) DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGNS REQUIRE.
- ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

STATE OF
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RALEIGH, N.C.

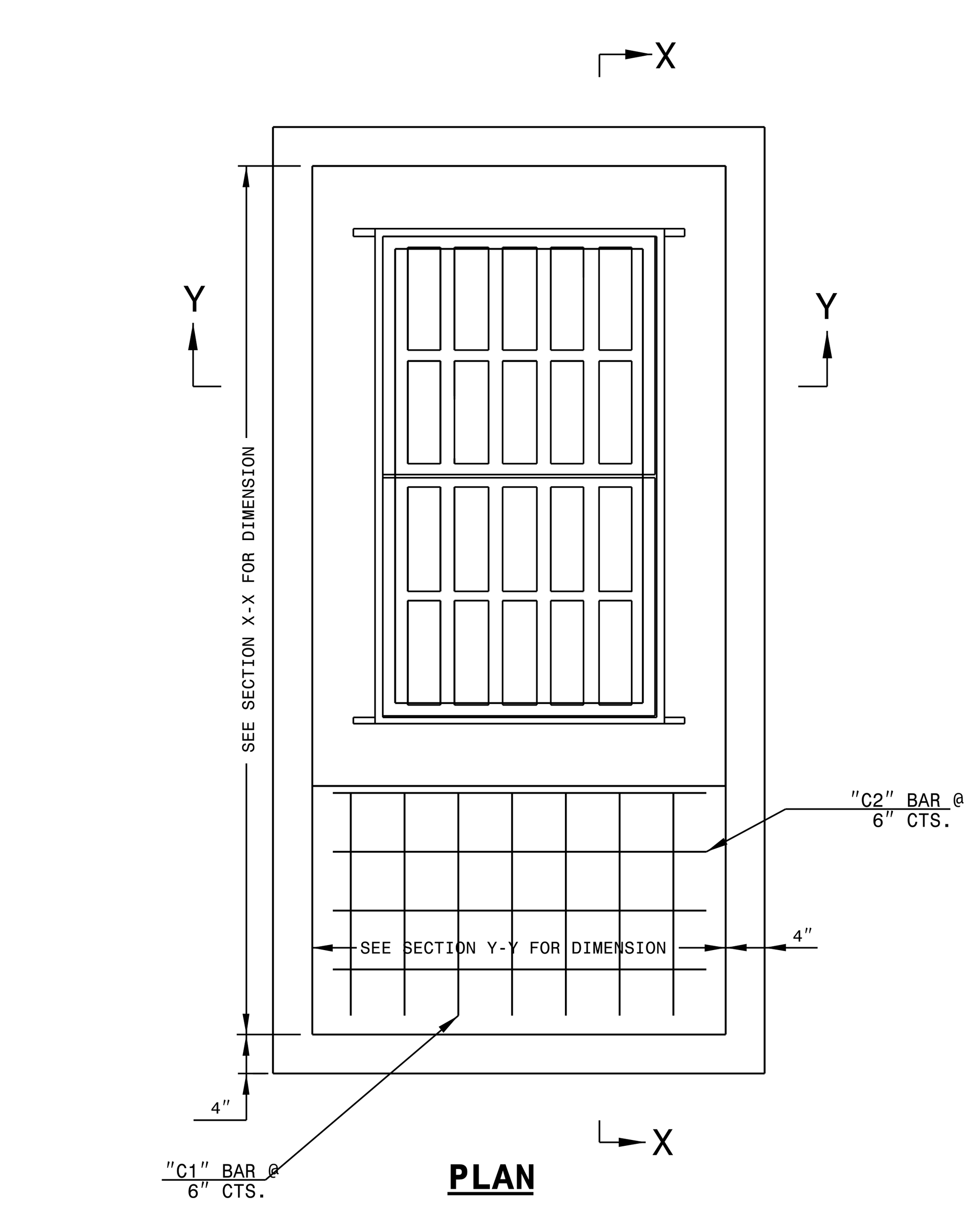
ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING GRATED INLET
FOR PIPES UP TO 54"

SHEET 1 OF 2
840D35

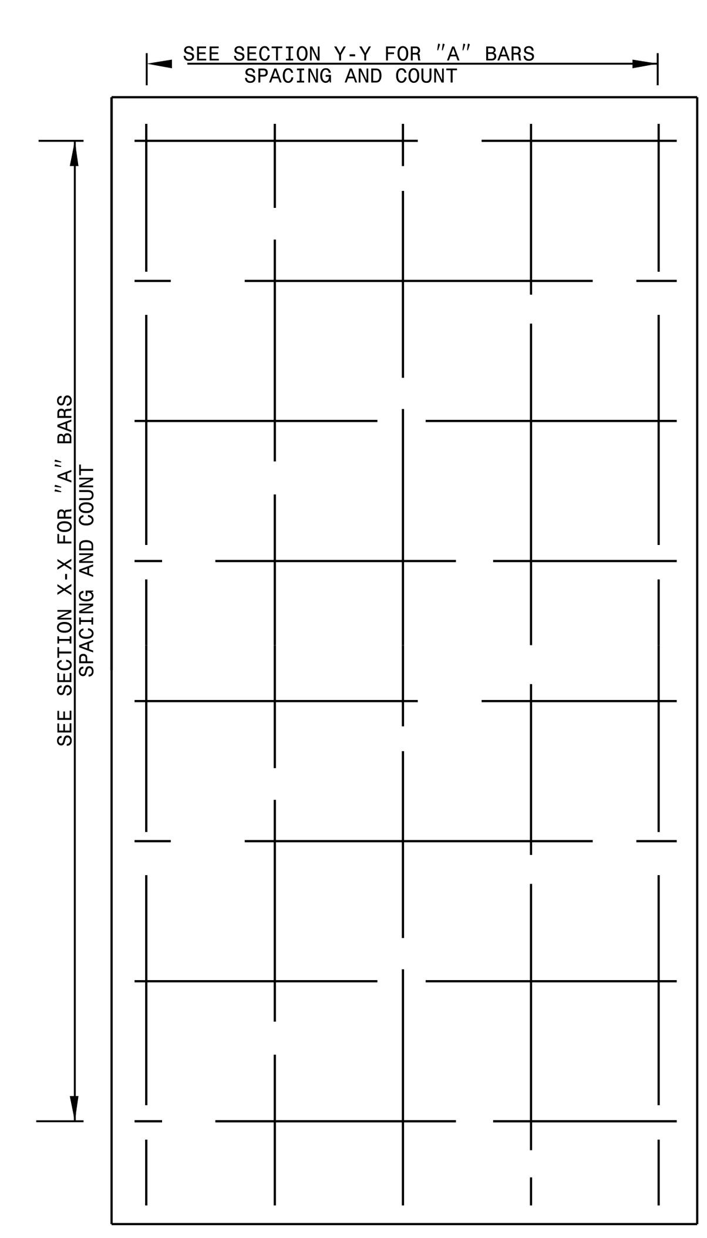
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING GRATED INLET
FOR PIPES UP TO 54"

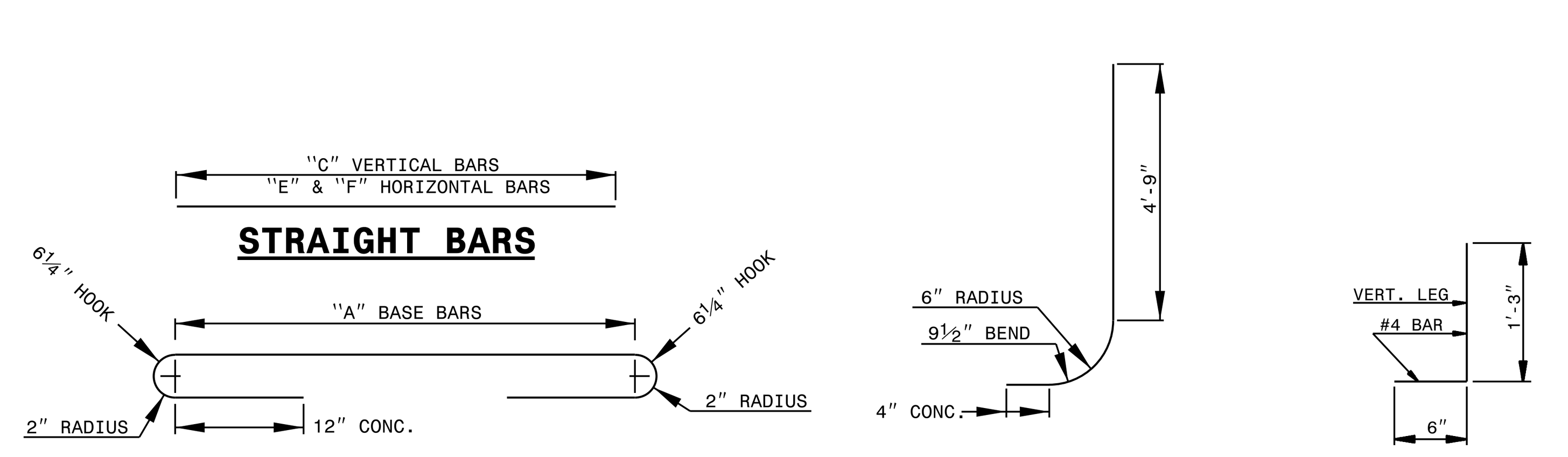
SHEET 2 OF 2
840D35



PLAN



PLAN OF BASE



STRAIGHT BARS **BASE BARS** **CORNER BARS** **DOWEL-H**

BILL OF MATERIALS				
BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#5	5'-0"	42	47
B	#5	7'-6"	104	780
C1	#5	3'-4"	9	32
C2	#5	3'-0"	6	19
D	#5	7'-6"	48	376
E	#5	3'-0"	48	151
F	#5	10'-0"	4	42
G	#5	1'-8"	104	181
REINF. STEEL (TOTAL WEIGHT LBS.)				1628
CONCRETE TOTAL (CU.YDS.) CLASS 'AA'				5.1
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

FOR EVERY 1 FOOT OF RISER USE 0.41 CU.YDS CONCRETE AND 390 LBS STEEL.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING GRATED INLET
FOR PIPES UP TO 54"

SHEET 2 OF 2
840D35

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-4

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER 2/22/2023

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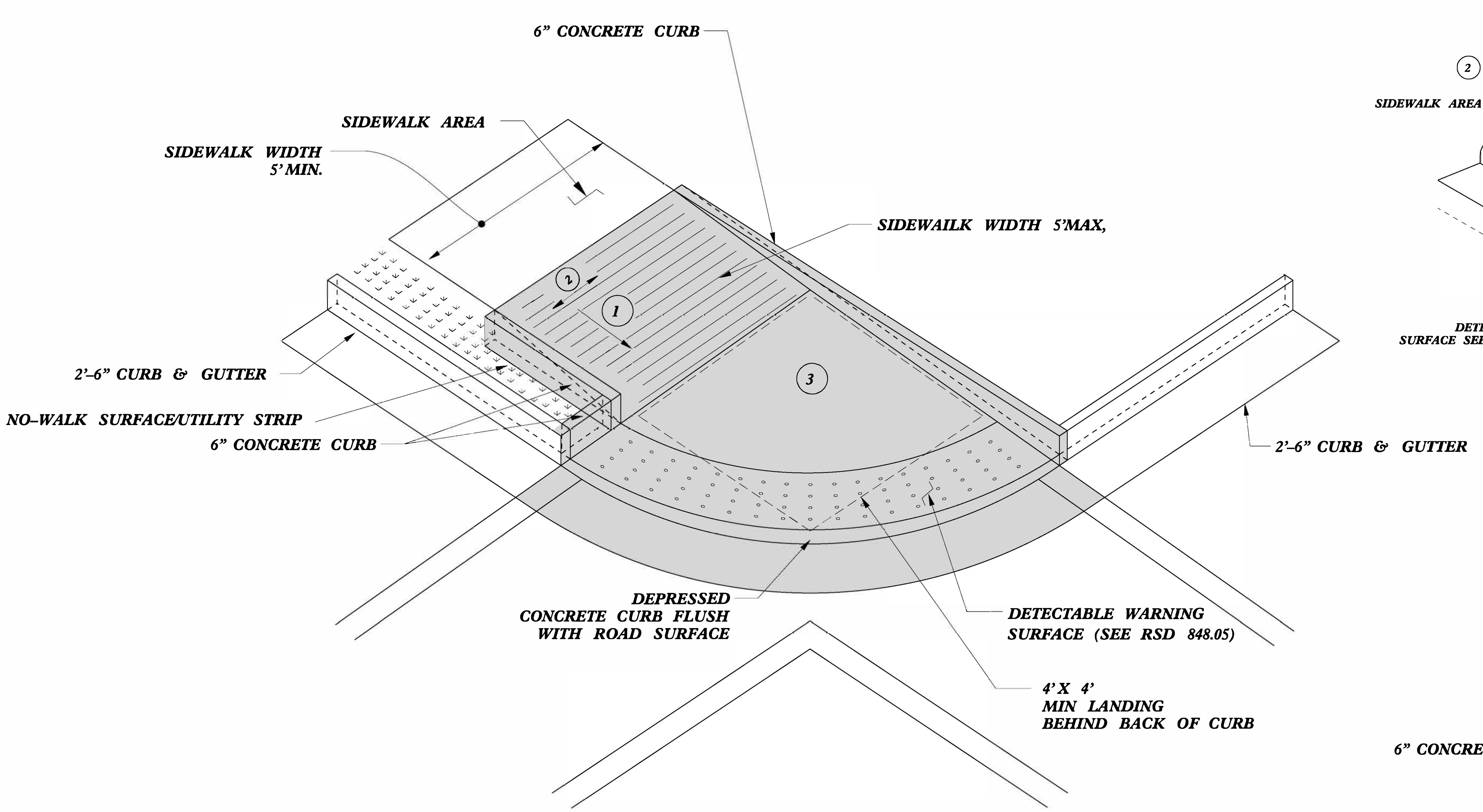
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

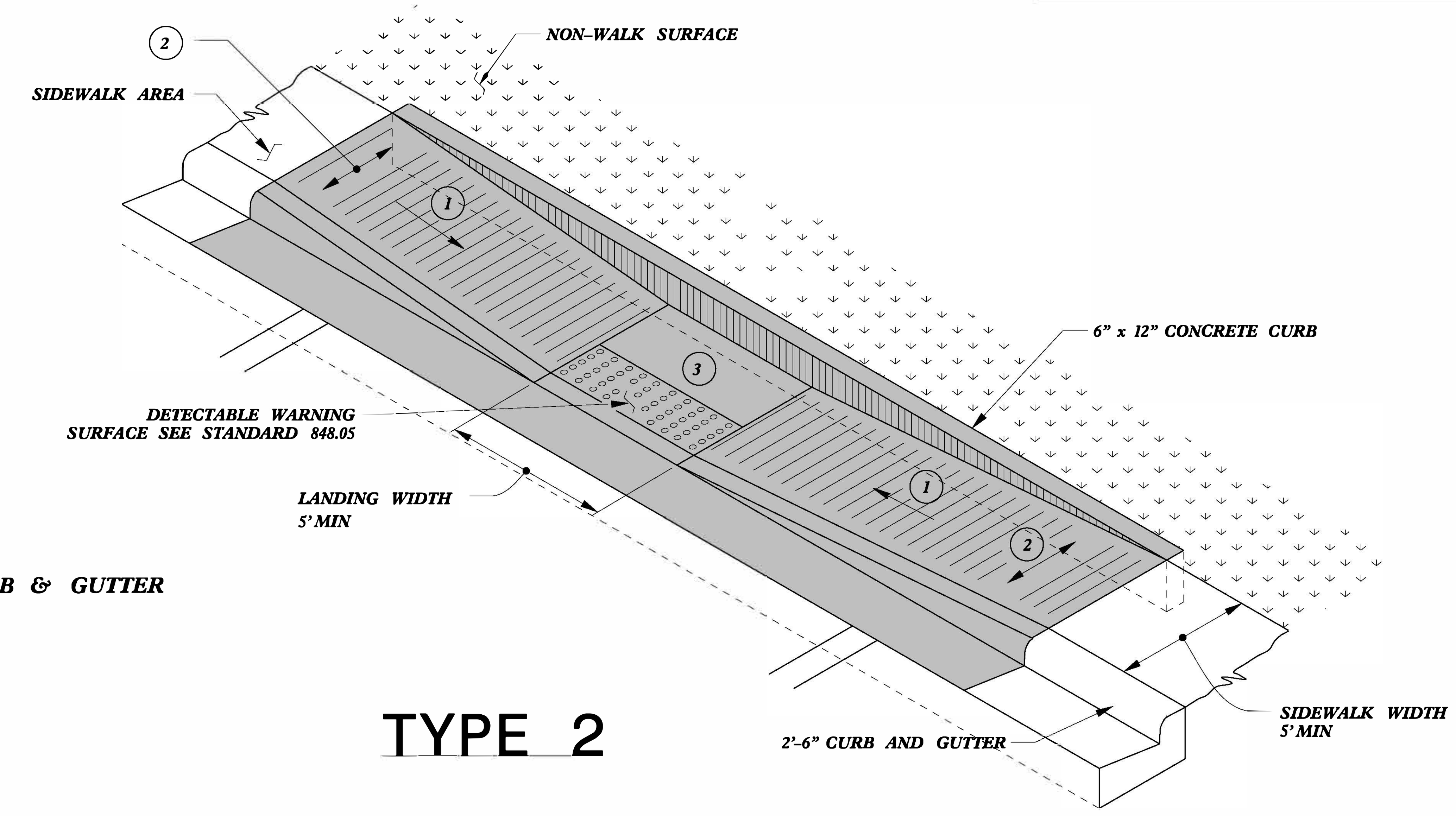
ORIGINAL BY: K. KEMPF DATE: 03-03-2015
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton/840d35 TBDI Up to 54in.dgn

5/14/99

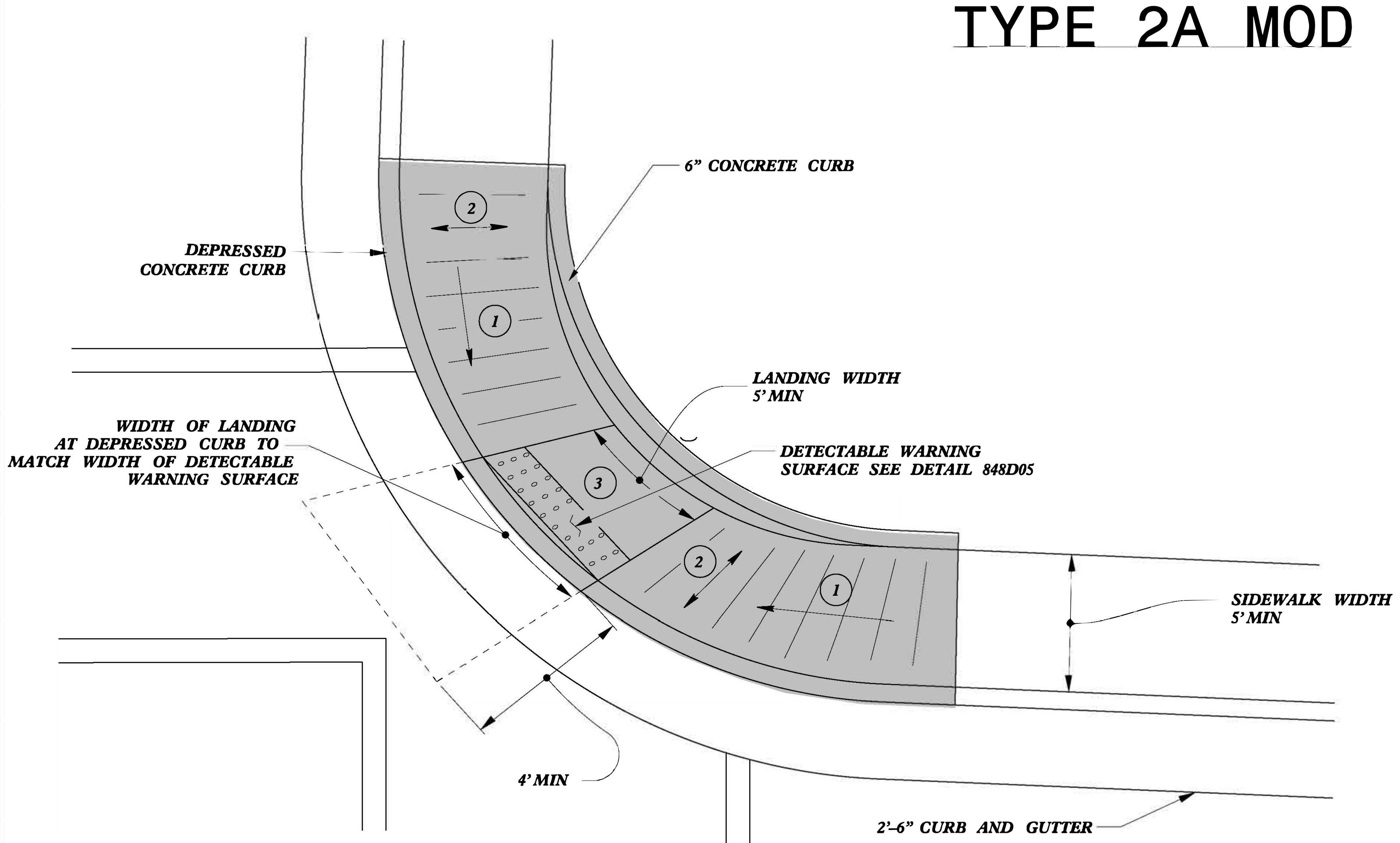
PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-5



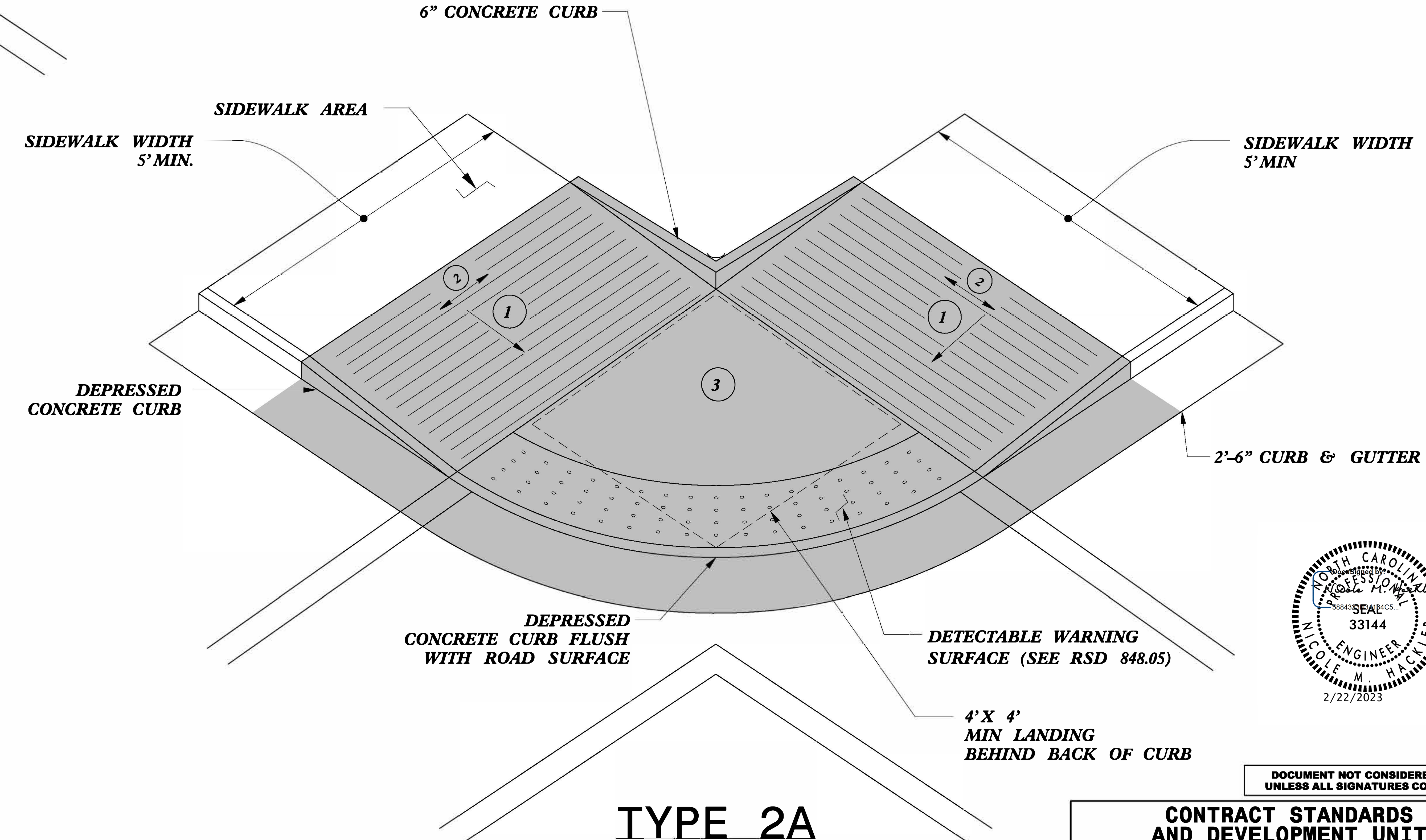
TYPE 2A MOD



TYPE 2



TYPE 2B



TYPE 2A

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER
2/22/2023

(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

(3) *CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*

PAY LIMITS FOR 1 CURB RAMP

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CONTRACT STANDARDS AND DEVELOPMENT UNIT
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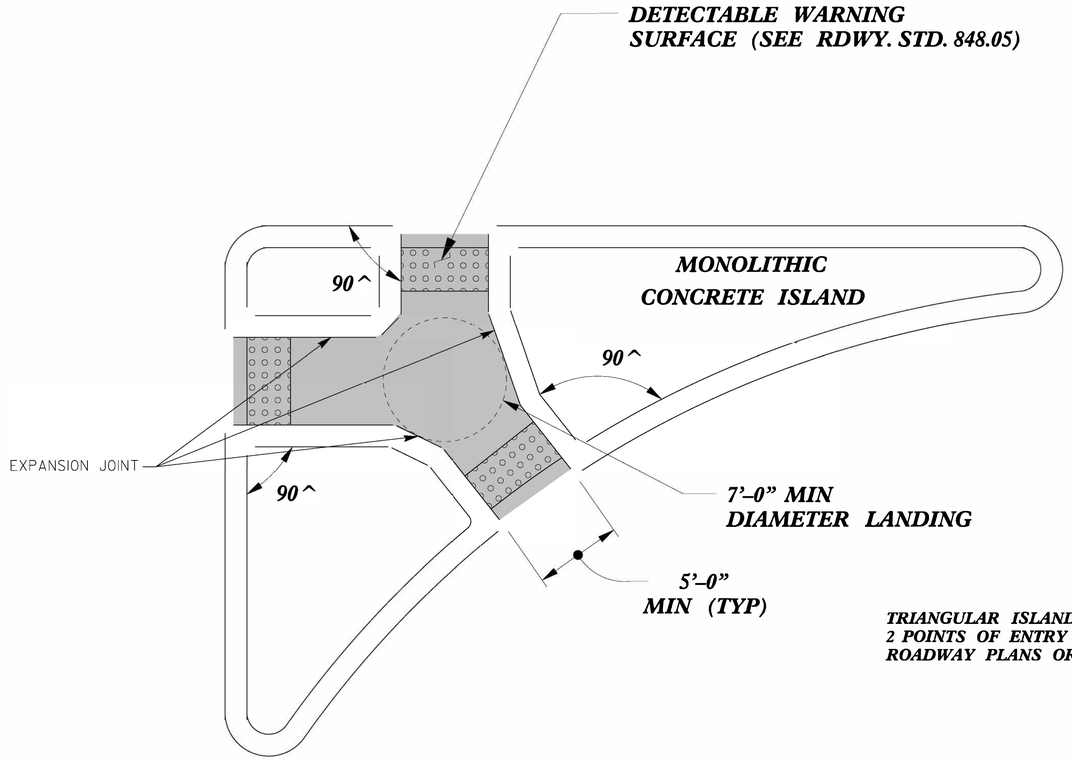
CURB RAMPS

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-6

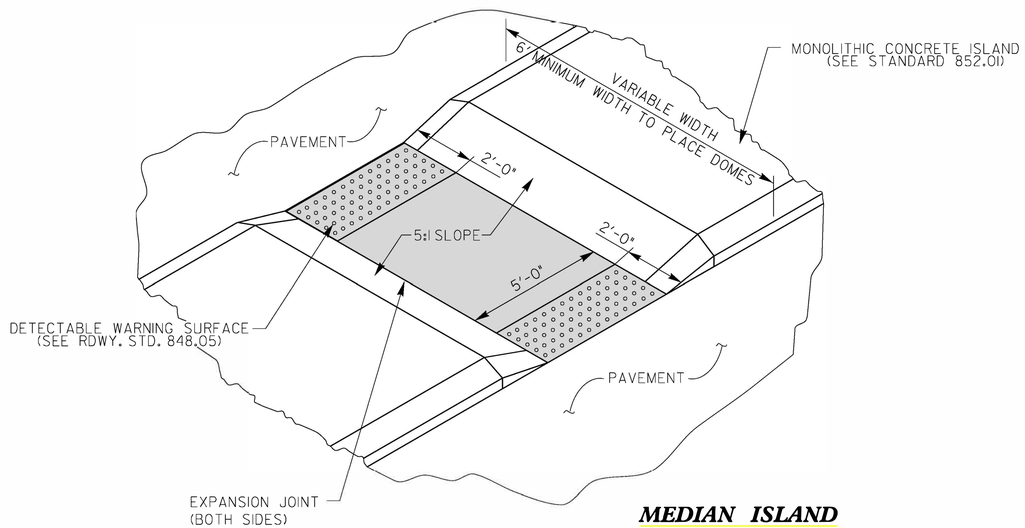


PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

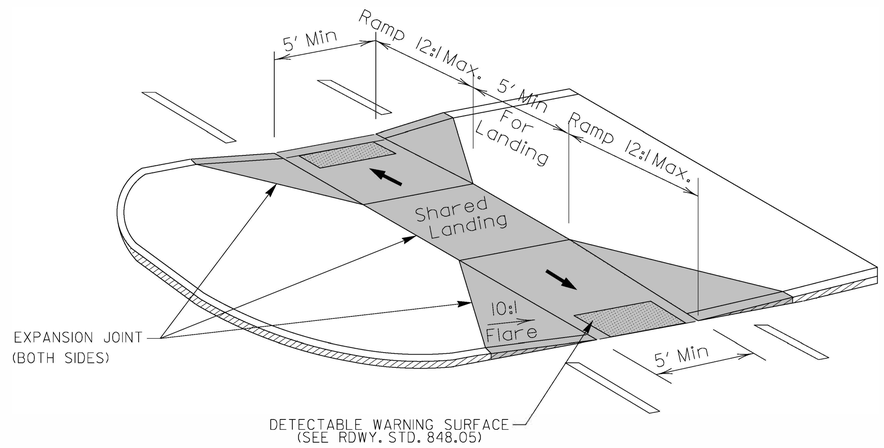
TRIANGULAR ISLAND WITH CUT THROUGH

TYPE 6



MEDIAN ISLAND WITH CUT THROUGH

TYPE 7



MEDIAN ISLAND CURB RAMPS

TYPE 8

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER
2/22/2023

CONTRACT STANDARDS AND DEVELOPMENT UNIT
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CURB RAMPS

Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-7

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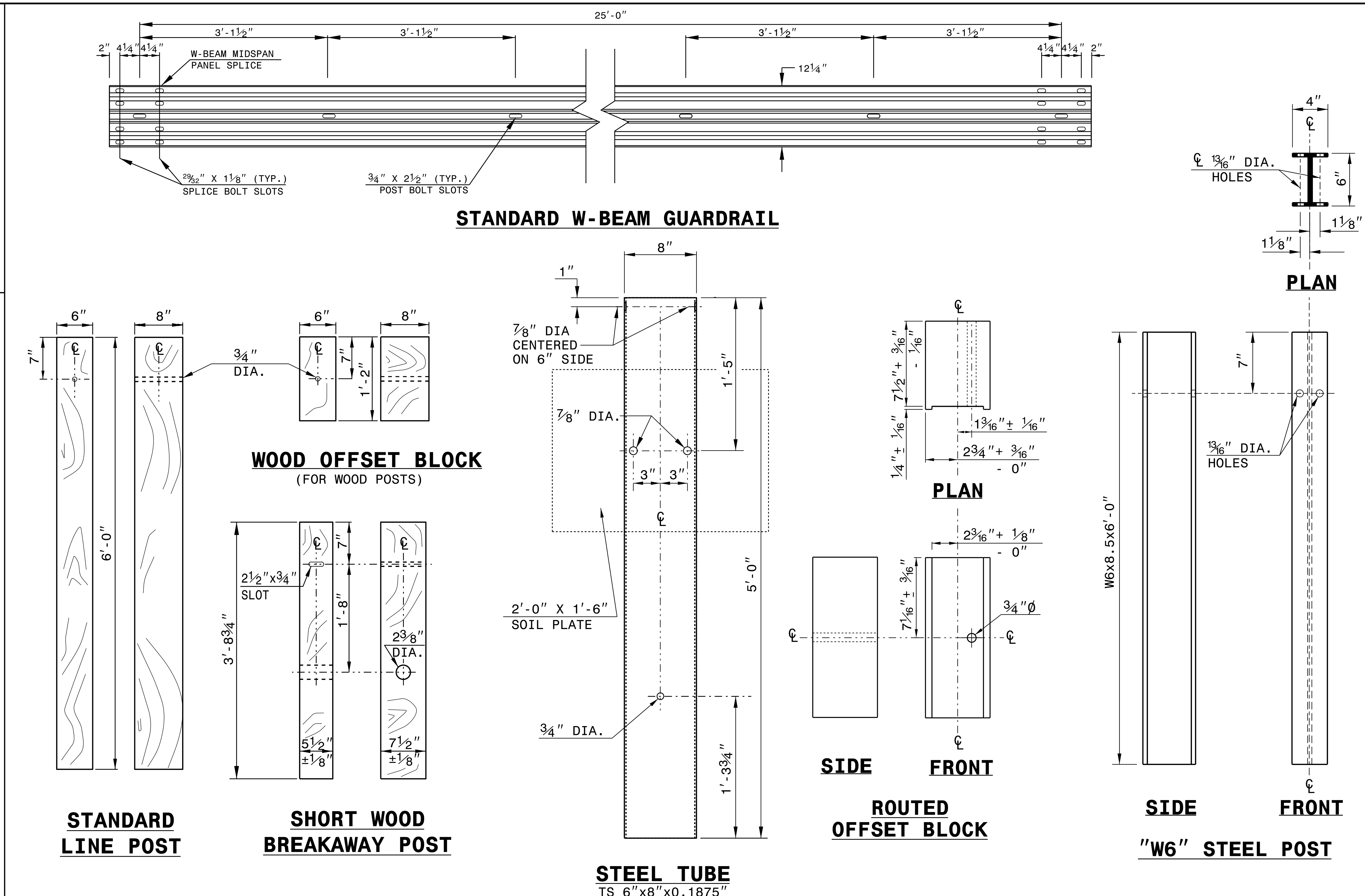
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



SYSTEM PARTS

SHEET 6 OF 8
862D02

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

SEE TITLE BLOCK

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER
2/22/2023

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

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2C-8

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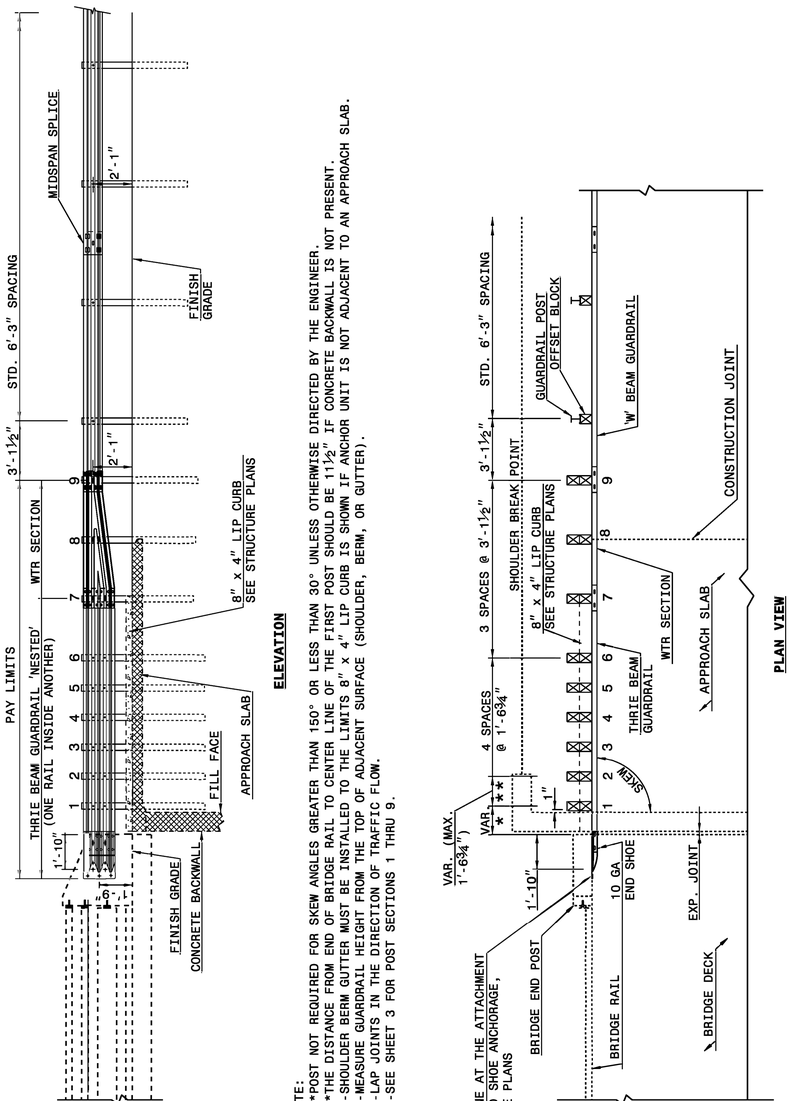
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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 11½" 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.

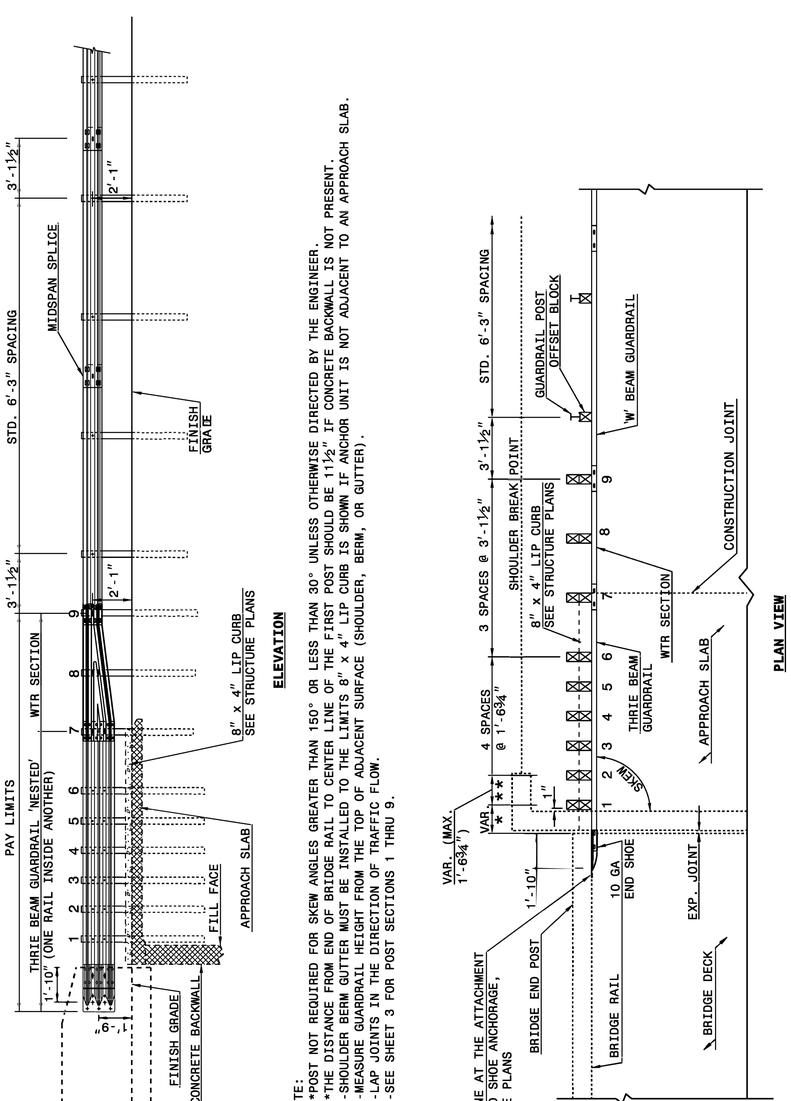
PLAN VIEW

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



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 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
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-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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M HACKLER
2/22/2023

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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.:

14-DEC-2017 10:36
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2018 Standard Drawings\Details in Lieu of Standards\Division 8\D862d0301.dgn
jhowerton AT CSD-2925595

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER

2/23/2023

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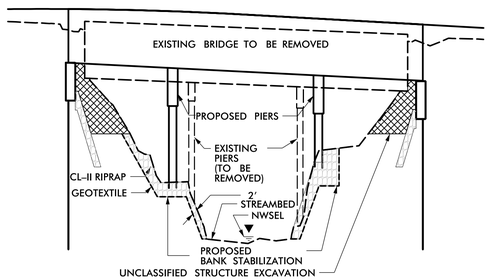
DRAINAGE DETAILS

DETAIL E
BANK STABILIZATION
(Not to Scale)



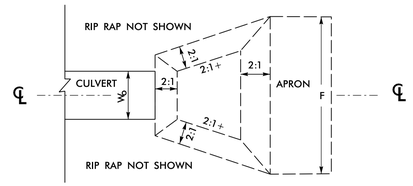
Type of Liner = 925 TONS, CL-II Rip-Rap
Geotextile = 1070 SY

FROM STA. 19+75 TO STA. 21+00 –L–
FROM STA. 20+40 TO STA. 21+52 –L–

DETAIL F
RIP-RAPPED ENERGY DISSIPATOR BASIN

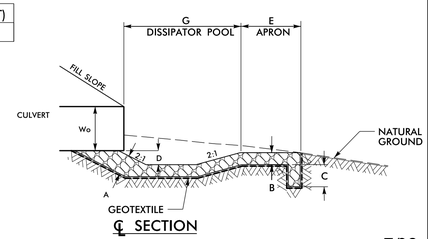
DIM. (ft)	RIP RAP BASIN
A	2
B	1.5
C	2
D	6
E	5
F	15
G	10

ALL DIMENSIONS APPROXIMATE



PLAN

BASIN 05	LOCATION (AT OUTLET)
1	–L– 20+21, 76' LT



℄ SECTION

7/08

FROM STA. 20+27 LT TO STA. 20+42 LT

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2G-1

GEOTECHNICAL ENGINEER

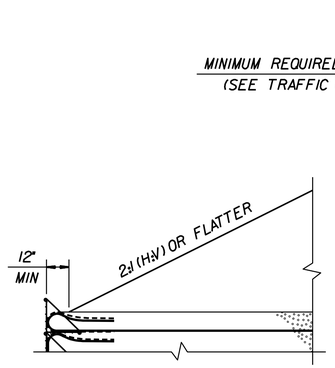
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 02/23/2023
F760CAEB96FC4D3... SIGNATURE DATE

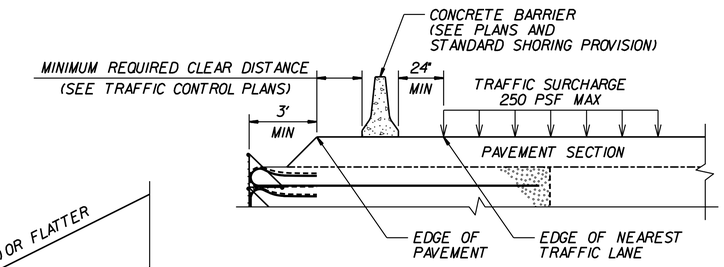
ENGINEER

SIGNATURE DATE

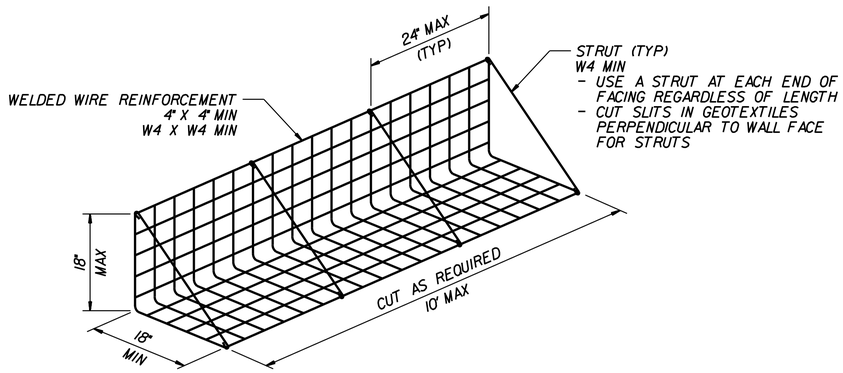
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



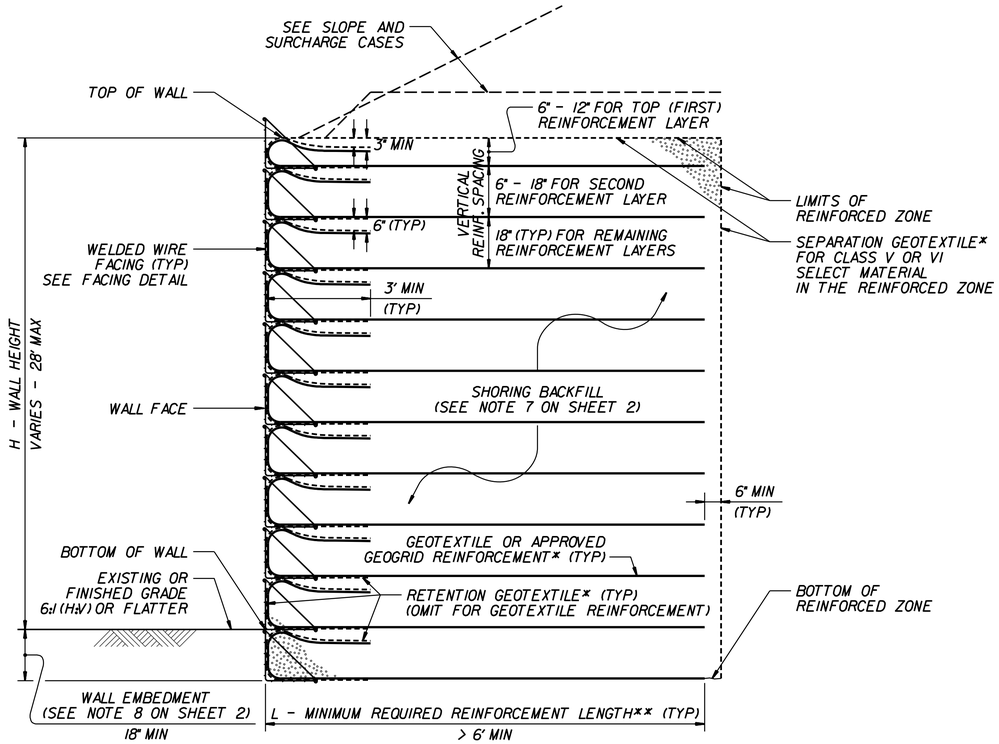
SLOPE CASE



SURCHARGE CASE

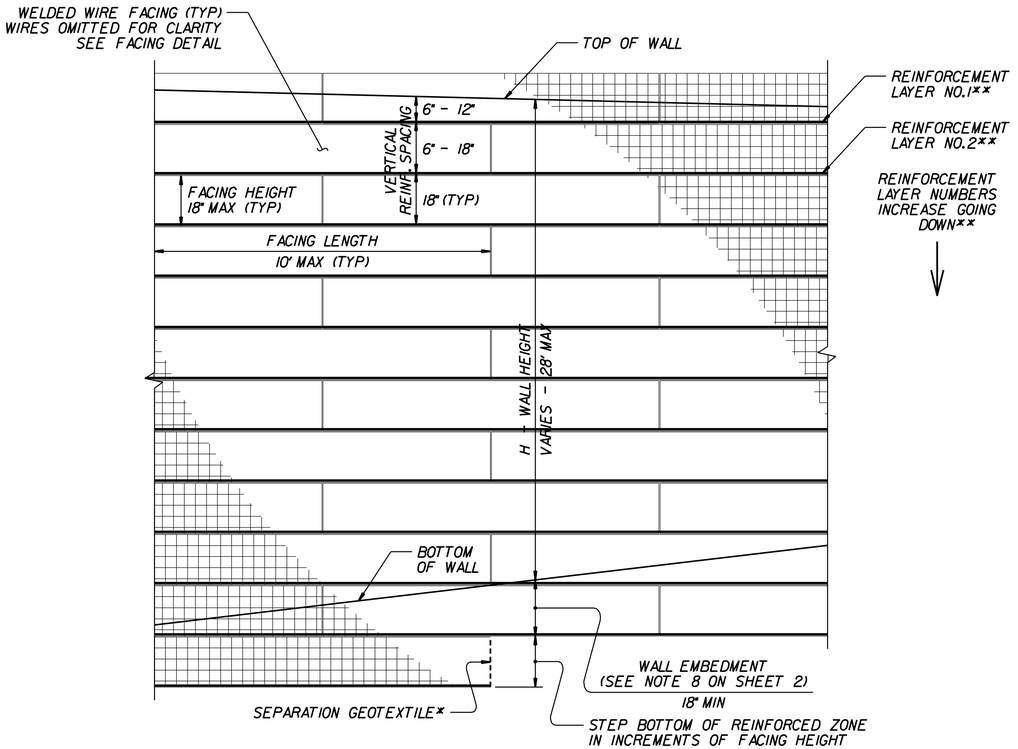


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 02/23/2023

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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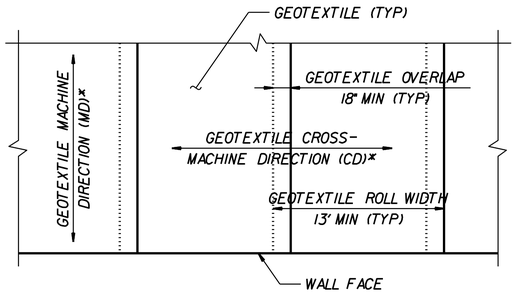
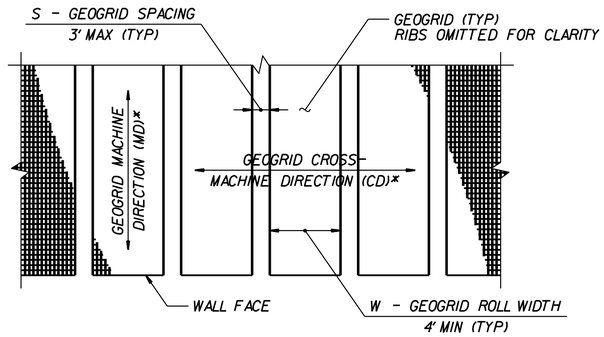


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

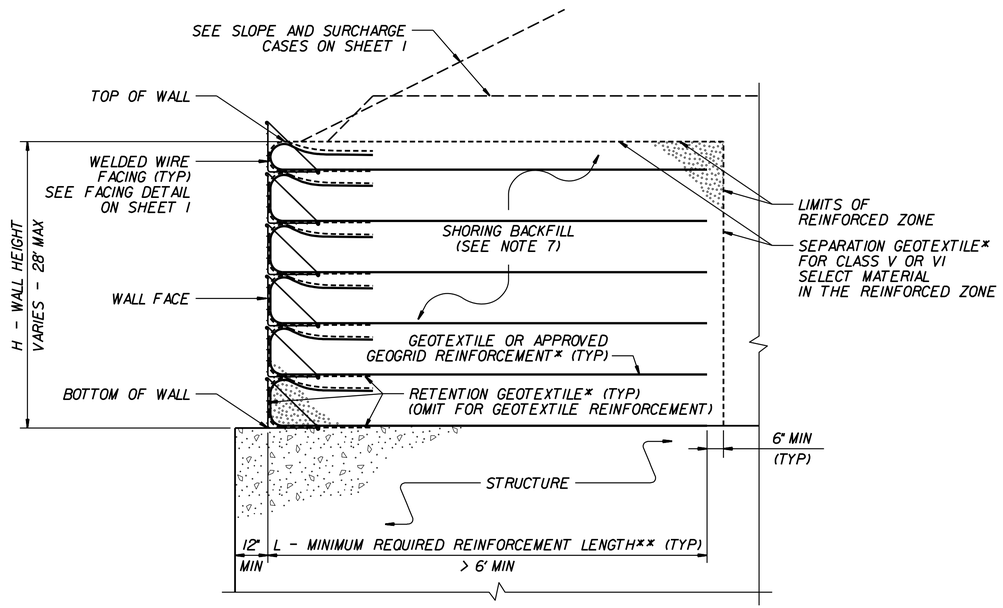


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
B-5808	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAEB96FC4D3... 02/23/2023 SIGNATURE DATE

_ ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	3B-1
R/W SHEET NO.	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

EARTHWORK SUMMARY (IN CUBIC YARDS)

CHAIN	FROM STATION	TO STATION	SIDE	PHASE	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-XSB-	16+55.00	20+21.84	LT & RT	PHASE 1	219		457	238	
-XSB-	22+11.84	25+49.52	LT & RT	PHASE 1	242		224		18
-L-	16+55.00	19+69.35	LT	PHASE 1	32		100	68	
-L-	21+59.35	25+94.00	LT	PHASE 1	73		1,375	1,302	
-L-	16+55.00	19+69.35	RT	PHASE 3	61		551	490	
-L-	21+59.35	25+94.00	RT	PHASE 3	237		905	668	
TOTAL					864		3,612	2,766	18
MATERIAL FOR SHOULDER CONSTRUCTION									
LOSS DUE TO CLEARING AND GRUBBING									
ADDITIONAL UNDERCUT									
ROCK WASTE TO REPLACE BORROW									
ADJUST FOR ROCK WASTE									
WASTE IN LIEU OF BORROW								-18	-18
PROJECT TOTAL					864		3,612	2,748	
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS								137	
GRAND TOTAL					864		3,612	2,885	
SAY					900			3,000	

DDE = 70 CY
CONTINGENCY UNDERCUT = 450 CY
CONTINGENCY SELECT GRANULAR MATERIAL = 400 CY

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."

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	17+99	18+94	LT	203
-L-	19+29	20+97	LT	158
-L-	22+39	24+60	LT	431
			TOTAL:	792
			SAY:	800

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	GREU TL-3	GREU TL-2	TYPE III	CAT-1	TEMP GREU TL-3	TEMP TYPE III	TEMP CAT-1	EA	G NG				
-L-	19+95.87	20+31.01	LT	35.16				20+31.01	23.25	25.25		0.0		0.0					1	1								
-L-	18+18.26	19+17.47	RT	74.63	44.21		19+17.47		9.5	11.5	0.0		0.0						1							324.00		R=36' SHOP CURVED
-L-	22+26.98	24+10.86	LT	183.88				22+26.98	7.5 - 23.25	10.5 - 26.25	50.0		1.0				1		1							292.00		
-L-	21+13.43	21+48.60	RT	35.16				21+13.43	7.5	10.5		0.0		0.0					1	1						314.00		
			TOTAL:	328.83	44.21												1 EA		4 EA	2 EA						930.00 LF		
			DEDUCTION FOR ANCHOR UNITS:																									
			(2 CAT-1 @ 6.25')	-12.50																								
			(4 TYPE-III @ 18.75')	-75.00																								
			(1 GREU TL-3 @ 50')	-50.00																								
			TOTAL GUARDRAIL LENGTH:	191.33	44.21																							
			SAY:	200.00 LF	50.00 LF																							
			ADDITIONAL GUARDRAIL POSTS = 5 EA.																									

TEMPORARY GUARDRAIL SUMMARY

-XSB-	19+61.34	20+04.49	LT	43.75				20+31.01	2.0	5.0													1					REMOVE DURING TRAFFIC CONTROL
-L-	19+73.41	20+10.76	LT	25	12.5			19+78.00	2.0	4.0												1	1					REMOVE DURING TRAFFIC CONTROL
-L-	21+81.02	22+74.77	LT	93.75				22+16.53	2.0	4.0											1	1						REMOVE DURING TRAFFIC CONTROL
			TOTAL:	162.50	12.5																1 EA	2 EA	2 EA					
			DEDUCTION FOR ANCHOR UNITS:																									
			(2 CAT-1 @ 6.25')	-12.50																								
			(2 TYPE-III @ 18.75')	-37.50																								
			(1 GREU TL-3 @ 50')	-50.00																								
			TOTAL GUARDRAIL LENGTH:	62.50	12.50																							
			SAY:	62.50 LF	12.50 LF																							

6TGB7G3

COMPUTED BY:	MSP	DATE:	1/5/2023
CHECKED BY:	EJV	DATE:	1/6/2023

PROJECT NO.	SHEET NO.
B-5808	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 FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
XNB 17+26	16 LT	0403																																											
L 17+24	9 RT	0403		612.7																																									
XNB 17+26	11 LT	0404																																											
L 17+24	14 RT	0404		612.6																																									
XSB 18+11	55 LT	0406		613.6																																									
		0406	0407		609.0	608.4																																	32						
XL 18+51	86 LT	0407		612.5																																									
		0407	0409		608.4	608.3																																	12						
L 18+30	3 LT	0408		611.7																																									
		0408	0412		608.5	606.5																																	40						
XL 18+54	71 LT	0409		612.2																																									
		0409	0500		605.3	605.2																														52									
L 18+71	44 RT	0410		611.1																																									
		0410	0412		606.8	606.5																																	44						
L 18+71	43 LT	0411		611.4																																									
		0411	0503		606.3	606.1																																	68						
L 18+71	3 LT	0412		612.0																																									
		0412	0411		606.5	606.3																																	40						
L 18+75	44 RT	0413		611.1																																									
		0413	0410		606.8	606.8																																	4						
XNB 19+00	27 LT	0490		611.2																																									
		0490	0500		608.7	605.2																																	40						
XSB 18+90	26 LT	0500		618.4																																									
		0500	0505		605.2	604.3																														64									
L 18+85	73 LT	0500		618.4																																									
		0500	0505		605.2	604.3																																							
L 18+86	63 LT	0501		611.6																																									
		0501	0500		605.3	605.2																																	8						
L 19+24	47 LT	0502		612.2																																									
		0502	0501		605.4	605.3																18																							
L 19+38	43 LT	0503		611.2																																									
		0503	0504		606.1	605.5																																	28						
L 19+51	64 LT	0504		609.8																																									
		0504	0505		605.5	605.0																																	16						
XSB 19+55	30 LT	0505		610.8																																									
		0505	0506		604.3	599.2																														80									
		0505	0506		604.3	599.2																																							
L 21+87	43 RT	0507		609.2																																									
		0507	0515		605.8	602.9																																	180						
L 22+77	47 LT	0508		608.3																																									
		0508	0512		605.5	604.9																																	64						
XSB 22+93	17 LT	0509		607.8																																									
		0509	0510		603.8	603.0																																	20						
L 22+92	64 LT	0509		608.7																																									
		0509	0510		603.8	603.0																																							
XSB 23+34	21 LT	0511		607.7																																									
		0511	0509		604.0	603.8																																	40						
L 23+34	64 LT	0511		608.5																																									
		0511	0509		604.0	603.8																																							
L 23+41	43 LT	0512		608.2																																									
SHEET TOTALS																						18														196			636						

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	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. (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	T.B.G.I STD. 840D35 (SEE PLANS)	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	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	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	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	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
XNB 17+26	0403																															1														Installed During Traffic Shift - Adjust For Final
L 17+24	0403											1					1																							1						Final Condition
XNB 17+26	0404											1																				1														Installed During Traffic Shift - Adjust For Final
L 17+24	0404																1																							1						Final Condition
XSB 18+11	0406			1			1			1																																				Final Condition - Installed During Traffic Shift
	0406	0407																																												Final Condition - Installed During Traffic Shift
XL 18+51	0407			1								1															1								1											Final Condition - Installed During Traffic Shift
	0407	0409																																												Final Condition - Installed During Traffic Shift
L 18+30	0408			1								1				1	1																													Final Condition
	0408	0412																																												Final Condition
XL 18+54	0409			1	1.9																					1				1																Final Condition - Installed During Traffic Shift
	0409	0500																																												Final Condition - Installed During Traffic Shift
L 18+71	0410			1			1	1																																						Final Condition
	0410	0412																																												Final Condition
L 18+71	0411			1	0.1		1	1																																						Final Condition
	0411	0503																																												Final Condition
L 18+71	0412			1	0.5											1	1																													Final Condition
	0412	0411																																												Final Condition
L 18+75	0413			1			1	1																																						Final Condition
	0413	0410																																												Final Condition
XNB 19+00	0490			1															1	1																										Temporary - Installed During Traffic Shift
	0490	0500																																											40	Temporary - Installed During Traffic Shift
XSB 18+90	0500			1	5.0	3.2	1		1																																					Installed During Traffic Shift - Convert For Final
	0500	0505																																												Installed During Traffic Shift - Convert For Final
L 18+85	0500																										1									1										Final Condition
	0500	0505																																												Final Condition
L 18+86	0501			1	1.3																							1		1																Final Condition
	0501	0500																																												Final Condition
L 19+24	0502			1	1.8																		1	36																						Final Condition
	0502	0501																																												Final Condition
L 19+38	0503			1	0.1		1		1																																					Final Condition
	0503	0504																																												Final Condition
L 19+51	0504			1																								1		1																Final Condition
	0504	0505																																												Final Condition
XSB 19+55	0505			1	1.5																					1				1																Final Condition - Installed During Traffic Shift
	0505	0506																																												Installed During Traffic Shift Convert For Final
	0505	0506																																								1				Final Condition
L 21+87	0507			1			1		1																																					Final Condition
	0507	0515																																												Final Condition
L 22+77	0508			1			1			1																																				Final Condition
	0508	0512																																												Final Condition
XSB 22+93	0509			1																								1	1																	Installed During Traffic Shift - Convert For Final
	0509	0510																																												Installed During Traffic Shift - Convert For Final
L 22+92	0509																																		1			1								Final Condition
	0509	0510																																												Final Condition
XSB 23+34	0511			1																								1	1																	Installed During Traffic Shift - Convert For Final
	0511	0509																																												Installed During Traffic Shift - Convert For Final
L 23+34	0511																																		1			1								Final Condition
	0511	0509																																												Final Condition
L 23+41	0512			1			1	1																																						Final Condition
SHEET TOTALS				20	12.2	3.2	9	4	3	2		4				2	4		1	1			1	36		2	2	4	2	4	2			3	1		2			2		1			40	

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

6TGB7G3

COMPUTED BY: MSP DATE: 1/5/2023

CHECKED BY: EJV DATE: 1/6/2023

PROJECT NO.	SHEET NO.
B-5808	3D-2

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 / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	DRAINAGE STRUCTURE MASONRY CY	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. (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	T.B.G.I STD. 840D35 (SEE PLANS)	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	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	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	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	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
		0512	0511		604.9	604.2																																	24																																																Final Condition
L 23+66	43 LT	0513		608.1																																											1			1	1																																								Final Condition
		0513	0512		605.1	604.9																																	24																																																Final Condition
L 23+66	15 RT	0514		608.9																																											1	0.9							1				1	1																															Final Condition
		0514	0515		603.0	602.9																																	28																																																Final Condition
L 23+66	43 RT	0515		608.1																																											1	0.3		1	1																																								Final Condition
		0515	0516		604.8	602.8																	36																																																															2					Final Condition
L 23+70	43 RT	0517		608.1																																											1			1	1																																								Final Condition
		0517	0515		604.8	604.8																																	4																																																Final Condition
L 23+72	15 RT	0518		608.9																																											1	0.8							1				1	1																															Final Condition
		0518	0514		603.1	603.0																																	4																																																Final Condition
XSB 19+47	23 LT	0519		618.4																																											1			1	1																																								Temporary - Installed During Traffic Shift
		0519	0505		615.4	605.0																	12																																																																	12	Temporary - Installed During Traffic Shift
XSB 23+74	64 RT	0590		608.0																																																											1																											Temporary - Installed During Traffic Shift
XSB 23+86	29 LT	0600		607.6																																											1																									1	1																		Installed During Traffic Shift - Convert For Final
		0600	0511		604.2	604.0																																	52																																																Installed During Traffic Shift - Convert For Final
L 23+87	64 LT	0600		609.2																																																																									1			1										Final Condition
		0600	0511		604.2	604.0																																																																																			Final Condition
L 23+89	43 LT	0601		609.0																																											1			1	1																																								Final Condition
		0601	0513		605.3	605.1																																	20																																																Final Condition
XSB 24+59	41 LT	0602		607.9																																											1			1			1																																						Final Condition - Installed During Traffic Shift
		0602	0600		604.8	604.2																																	72																																																Final Condition - Installed During Traffic Shift
L 18+37	68 LT																																																																																								8	12" CMP Removal
L 18+99	63 LT																																																																																								116	42" CMP Removal
L 22+15	4 RT																																																																																								118	15" RCP Removal
L 23+17	1 LT																																																																																								80	15" RCP Removal
L 19+78	60 LT																																																																																								40	12" CMP Removal
L 23+59	6 RT																																																																																								15	15" RCP Removal
L 23+61	37 RT																																																																																								44	15" RCP Removal
L 24+06	47 LT																																																																																								87	15" RCP Removal
L 23+14	45 LT																																																																																								99	15" RCP Removal
SHEET TOTALS																							48																228								9	2.0		6	5		1		2				2	2			1									1	1					1			1					2				619	
PROJECT TOTALS																						18	48													196			864								29	18.4		15	9	3	3		6				4	6		1	2			1	36		2	2	5	3	4	2			4	1		3				2	2	1			659	

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: Kevin Miller, PG DATE: July 11, 2019
CHECKED BY: Michael Stephens, PE DATE: July 11, 2019
REVISED BY: Shane Clark, PE DATE: March 3, 2023

(5-15-18)

PROJECT NO.	SHEET NO.
45762.1.1(B-5808)	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	200
				TOTAL LF:	200

*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 Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	18	100	200	200		
				TOTAL CY/TONS/SY:	100	200**	200**	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 Subgrade 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.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

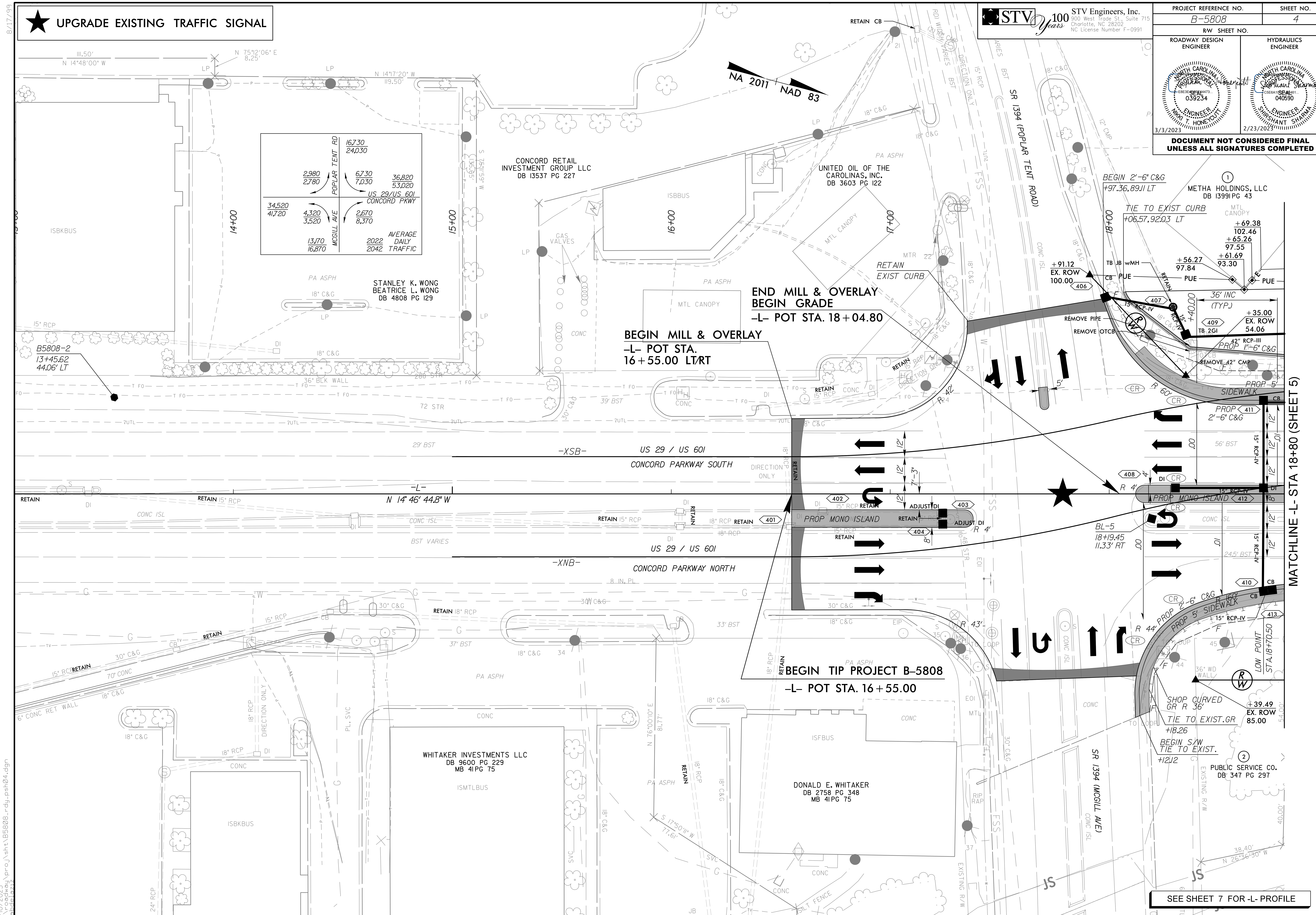
PROJECT REFERENCE NO.	SHEET NO.
B-5808	3P-1
R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNER NAME
1	4 & 5	MARTHA HOLDINGS, LLC
2	4	PUBLIC SERVICE CO.
3	5 & 6	GERALD W. HINSON & KIMBERLY M. HINSON
4	5 & 6	CONCRETE SUPPLY CO., LLC
5	6	GERALD W. HINSON & KIMBERLY M. HINSON
6	6	SLAINTE VENTURES LLC
7	5	GERALD W. HINSON & KIMBERLY M. HINSON

2/10/2023
R:\Roadway\Proj\SHT\B5808_rdy_psh03P-1.dgn
mabdelaziz



STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 ENGINEER NIKKI T. HONEYCUTT
3/3/2023

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040590 ENGINEER CHIRSHANT SHARMA
2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

MATCHLINE -L- STA 18+80.00 (SHEET 4)

MATCHLINE -L- STA 23+80.00 (SHEET 6)

NA 2011 NAD 83

1 METHA HOLDINGS, LLC
DB 13991 PG 43

7 GERALD W. HINSON
KIMBERLY M. HINSON
DB 6960 PG 15

3 GERALD W. HINSON
KIMBERLY M. HINSON
DB 6960 PG 15

4 CONCRETE SUPPLY CO., LLC
DB 10760 PG 10

BEGIN APPROACH SLAB
-L- STA. 19+45.76

BEGIN BRIDGE
-L- STA. 19+69.35

END APPROACH SLAB
-L- STA. 21+82.93

END BRIDGE
-L- STA. 21+59.35

BM-2
19+78.83
71.56' LT

HIGH POINT
STA. 19+56.70

LOW POINT
STA. 23+66.21

-L-
N 14° 46' 44.8" W

US 29 / US 601
CONCORD PARKWAY SOUTH

US 29 / US 601
CONCORD PARKWAY NORTH

REMOVE EXISTING STRUCTURE

-XSB-

-XNB-

PROP MONO ISLAND

PROP 8' SIDEWALK

PROP 5' SIDEWALK

PROP 2'-6" C&G

PROP 1'-6" C&G

160' TAPER

60' SANITARY SEWER

IRISH BUFFALO CREEK

RIP RAP

RIPRAP DISSIPATOR BASIN
EST. 16 TON CL-I RIPRAP
EST. 28 SY GEOTEXTILE
(SEE SHEET 2D-1, DETAIL F)

BANK STABILIZATION
EST. 310 TON CL-II RIPRAP
EST. 360 SY GEOTEXTILE
(SEE SHEET 2D-1, DETAIL E)

CL-II RIPRAP (TYP.)
(STRUC. PAY ITEM)

EST. 305 CY UNCLASSIFIED
STRUCTURE EXCAVATION
(STRUC. PAY ITEM)

1 TON CL-B RIPRAP
5 S.Y. GEOTEXTILE

2 TON CL-B RIPRAP
7 S.Y. GEOTEXTILE

BANK STABILIZATION
EST. 615 TON CL-II RIPRAP
EST. 710 SY GEOTEXTILE
(SEE SHEET 2D-1, DETAIL E)

RIP RAP AT EMBANKMENT
STA. 20+38 TO 20+50 RT
7 TON CL-II RIPRAP
11 SY GEOTEXTILE
(SEE DETAIL A)

LATERAL 'V' DITCH
STA. 20+50 TO 21+50 RT
55 C.Y. DDE
50 TON CL-B RIPRAP
90 SY GEOTEXTILE
(SEE DETAIL B)

SPECIAL LATERAL 'V' DITCH
STA. 21+50 TO 23+66 RT
205 SY PSRM
(SEE DETAIL C)

SPECIAL LATERAL 'V' DITCH
STA. 23+66 TO 23+80 RT
9 TON CL-B RIPRAP
13 SY GEOTEXTILE
(SEE DETAIL D)

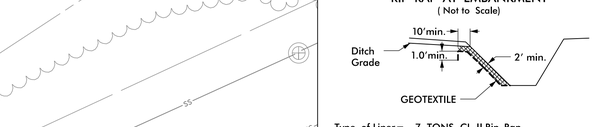
EST. 125 CY UNCLASSIFIED
STRUCTURE EXCAVATION
(STRUC. PAY ITEM)

LOCATION OF EXISTING 60' RIGHT OF WAY TO BE CONFIRMED BY SURVEY. RIGHT OF WAY LOCATION DEPICTED ON PLAN SHEET IS APPROXIMATE. REFERENCE CABARRUS COUNTY DEED BOOK 460 PAGES 1-4

SEE SHEETS S-1 THRU S-30 FOR STRUCTURE PLANS

SEE SHEET 8 FOR -L- PROFILE

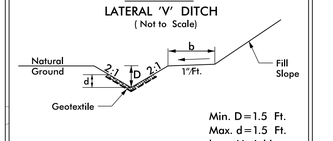
DETAIL A
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 7 TONS, CL-II Rip-Rap
Geotextile = 11 SY

FROM STA. 20+38 RT TO STA. 20+50 RT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)

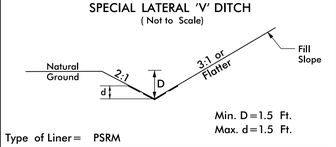


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = Variable

Type of Liner = CL-B Rip-Rap

FROM STA. 20+50 RT TO STA. 21+50 RT

DETAIL C
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

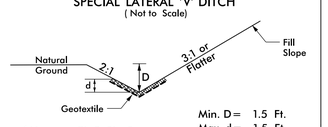


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.

Type of Liner = PSRM

FROM STA. 21+50 RT TO STA. 23+66 RT

DETAIL D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.

Type of Liner = CL-B Rip-Rap

FROM STA. 23+66 RT TO STA. 23+80 RT

2/6/2023
rcrosley \proj\sht\B5808_rdy_pst05.dgn
mabdelaziz

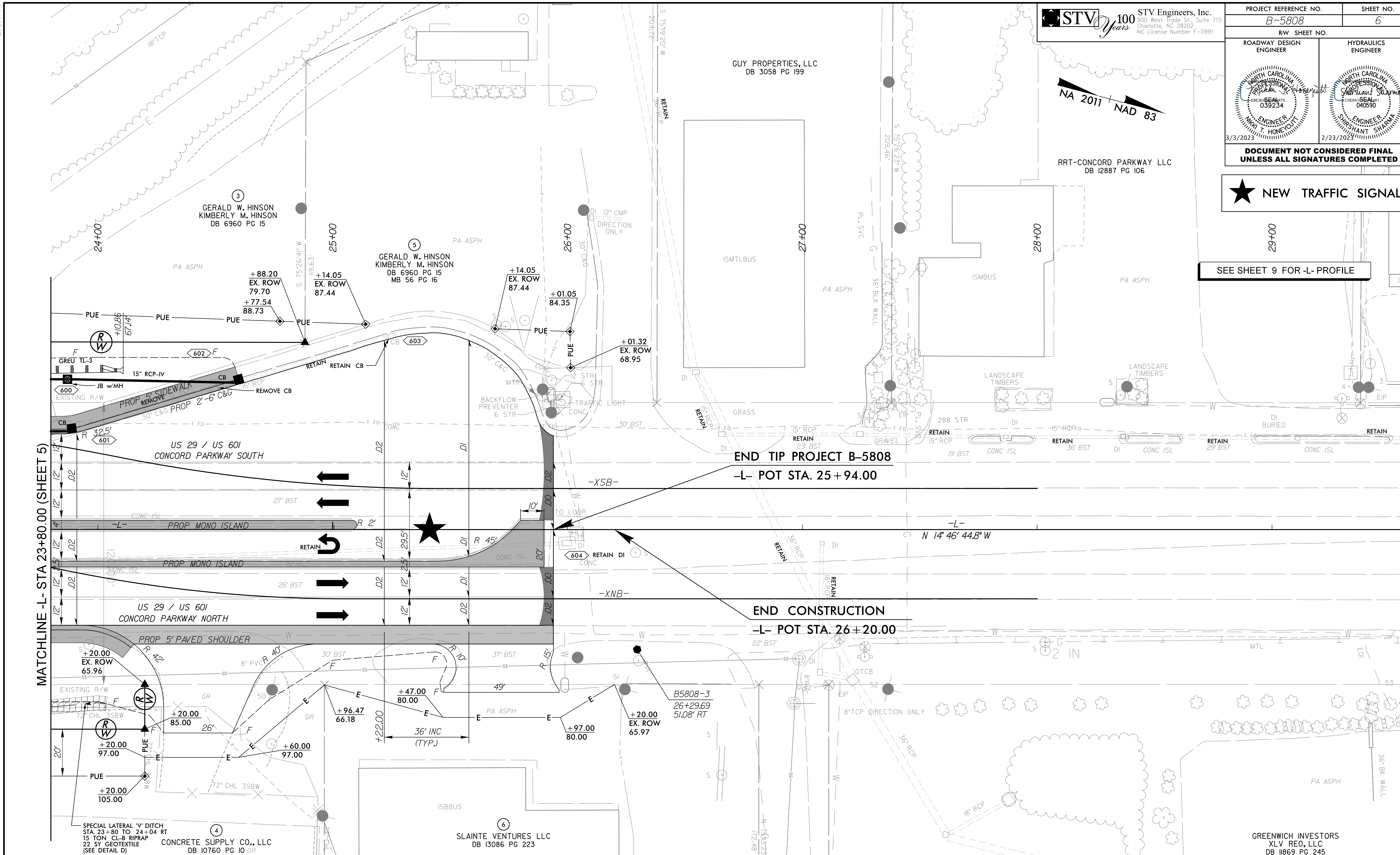
PROJECT REFERENCE NO.	SHEET NO.
B-5808	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
3/3/2023	2/23/2023

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

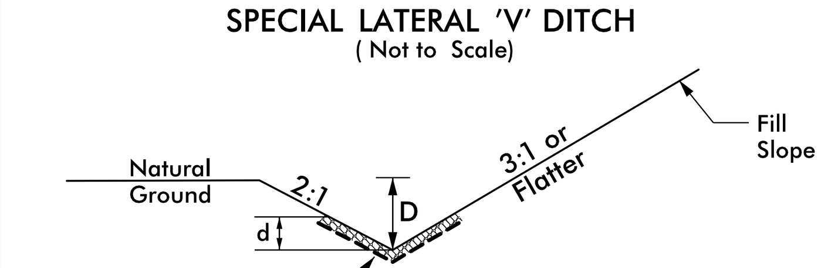
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

★ NEW TRAFFIC SIGNAL

SEE SHEET 9 FOR -L- PROFILE



DETAIL D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.

Type of Liner = CL-B Rip-Rap

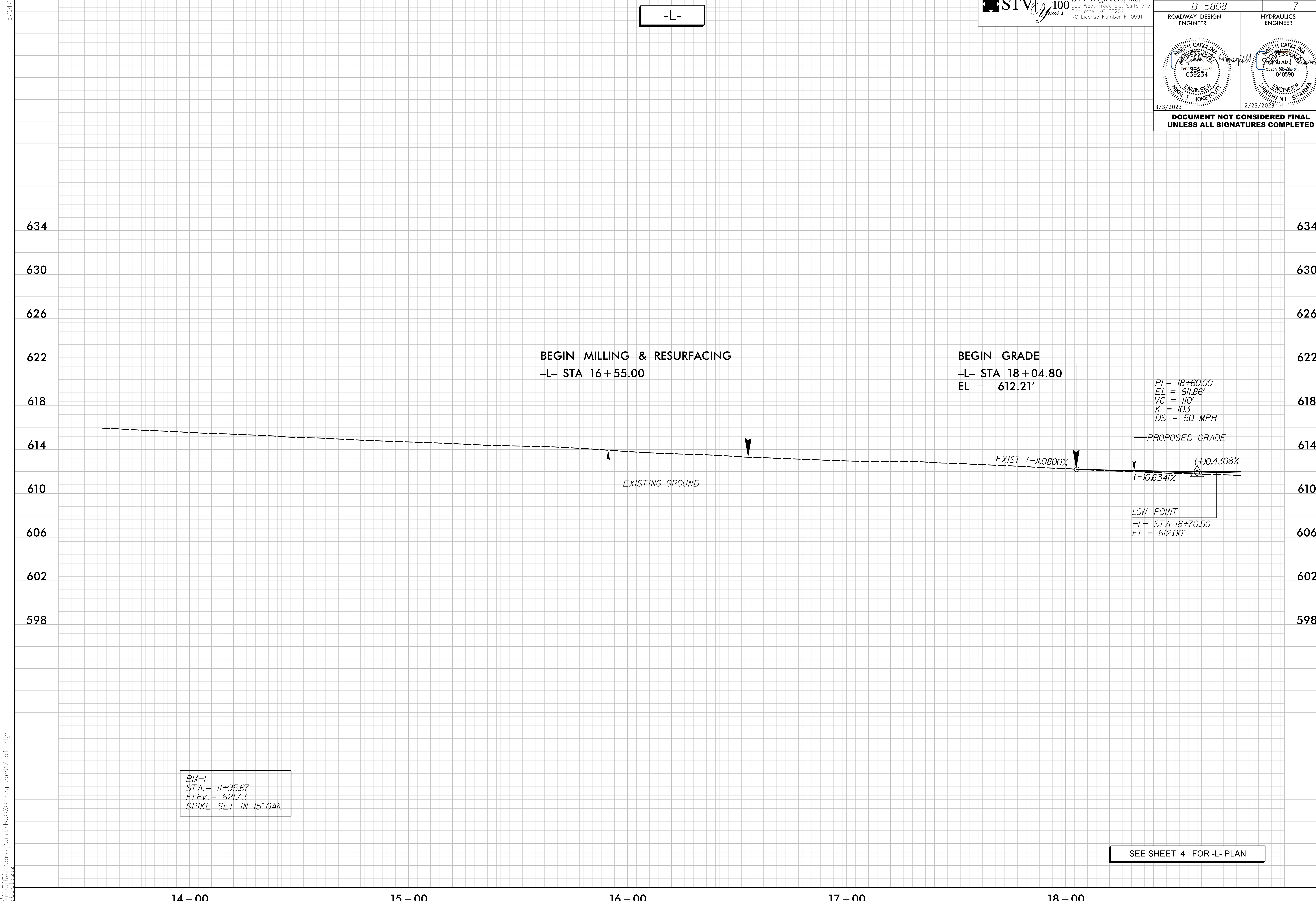
FROM STA. 23+80 TO STA. 24+04 RT

STV 100 Years — STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	7

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI T. HONEYCUTT — 3/3/2023	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040590 SHIRSHANT SHARMA — 2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 4 FOR -L- PLAN

STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

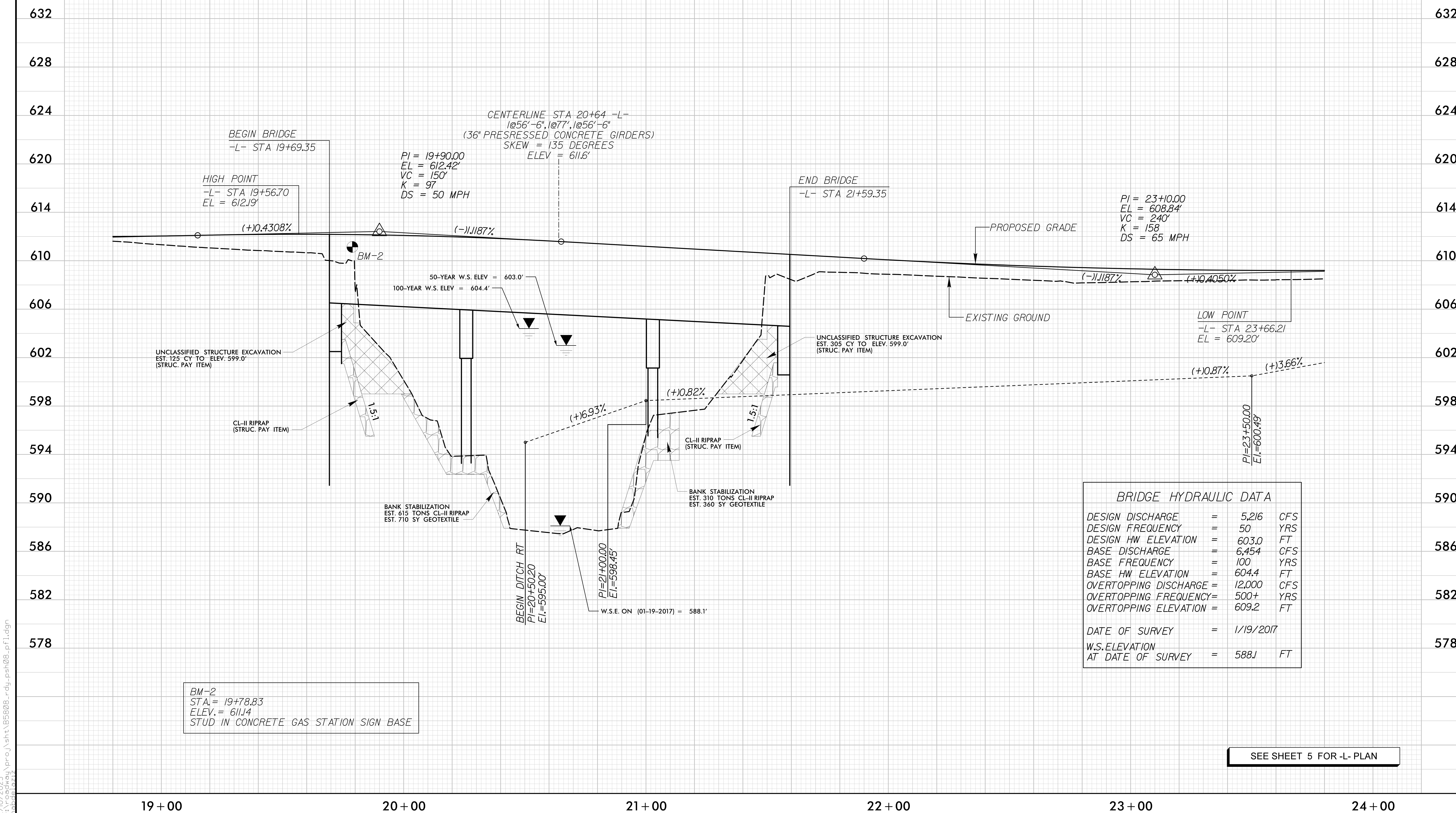
PROJECT REFERENCE NO.	SHEET NO.
B-5808	8

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI T. HONEYCUTT — 3/3/2023

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040590 SHIRSHANT SHARMA — 2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	5,216	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	603.0	FT
BASE DISCHARGE	=	6,454	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	604.4	FT
OVERTOPPING DISCHARGE	=	12,000	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	609.2	FT
DATE OF SURVEY	=	1/19/2017	
W.S. ELEVATION AT DATE OF SURVEY	=	588.1	FT

BM-2
STA. = 19+78.83
ELEV. = 611.14
STUD IN CONCRETE GAS STATION SIGN BASE

SEE SHEET 5 FOR -L- PLAN

DocuSign Envelope ID: 4C4F10F1-01CE-4AB7-BA27-99700332C69C

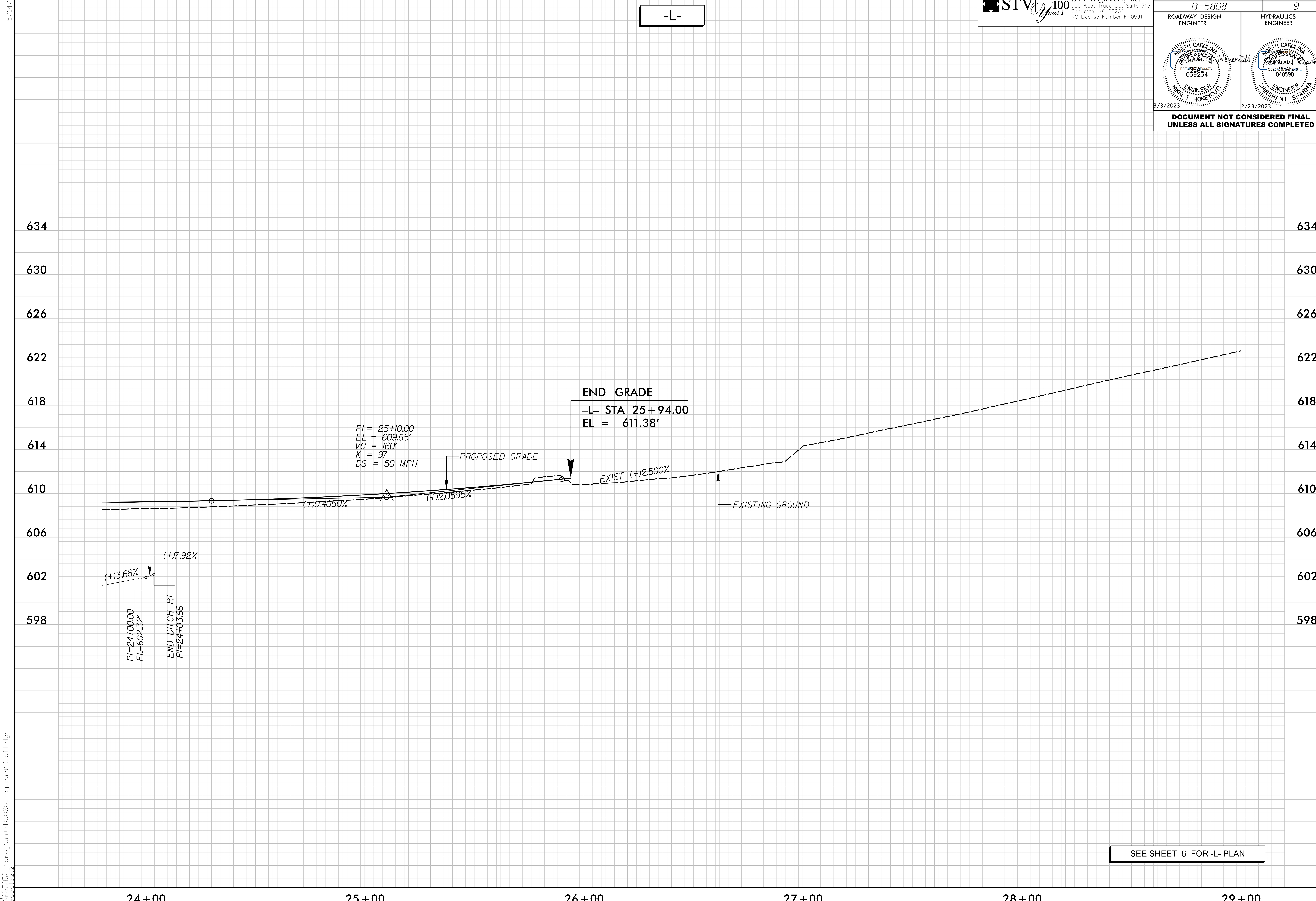
STV 100 Years STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
B-5808	9

ROADWAY DESIGN ENGINEER — SEAL 039234 — NIKKI T. HONEYCUTT — 3/3/2023

HYDRAULICS ENGINEER — SEAL 040590 — SHIRSHANT SHARMA — 2/23/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 6 FOR -L- PLAN

5/14/99

2/10/2023
r:\roadway\proj\sht\B5808_rdy_psh09_pfl.dgn