STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5720	1	

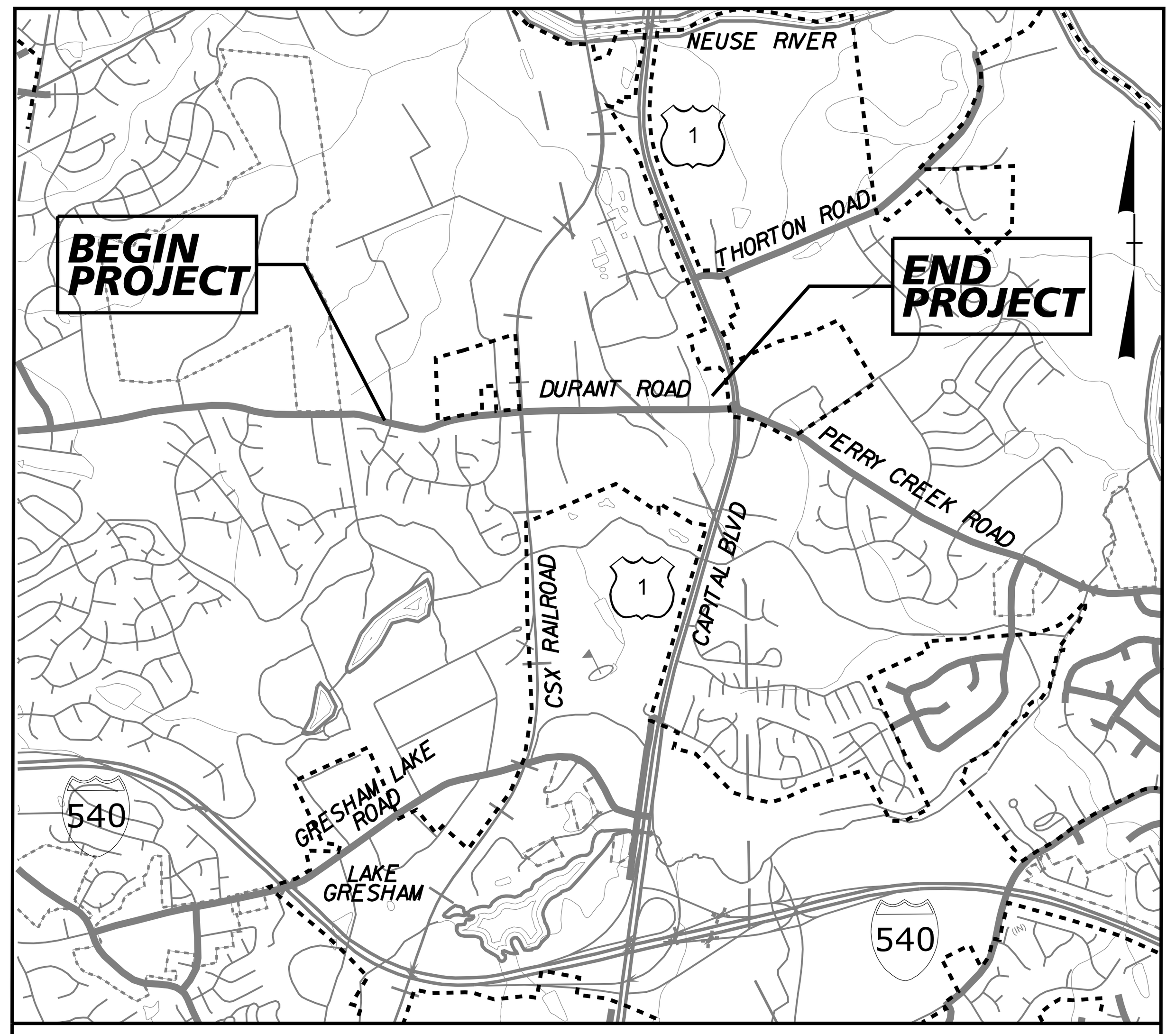
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46932.1.1		PE
46932.2.1		RW & UTIL
46932.3.1		CONST.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: P-5720

CONTRACT: C204204

SEE SHEET 1A FOR INDEX OF SHEETS
SEE SHEET 1B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

-------- RALEIGH CITY LIMITS

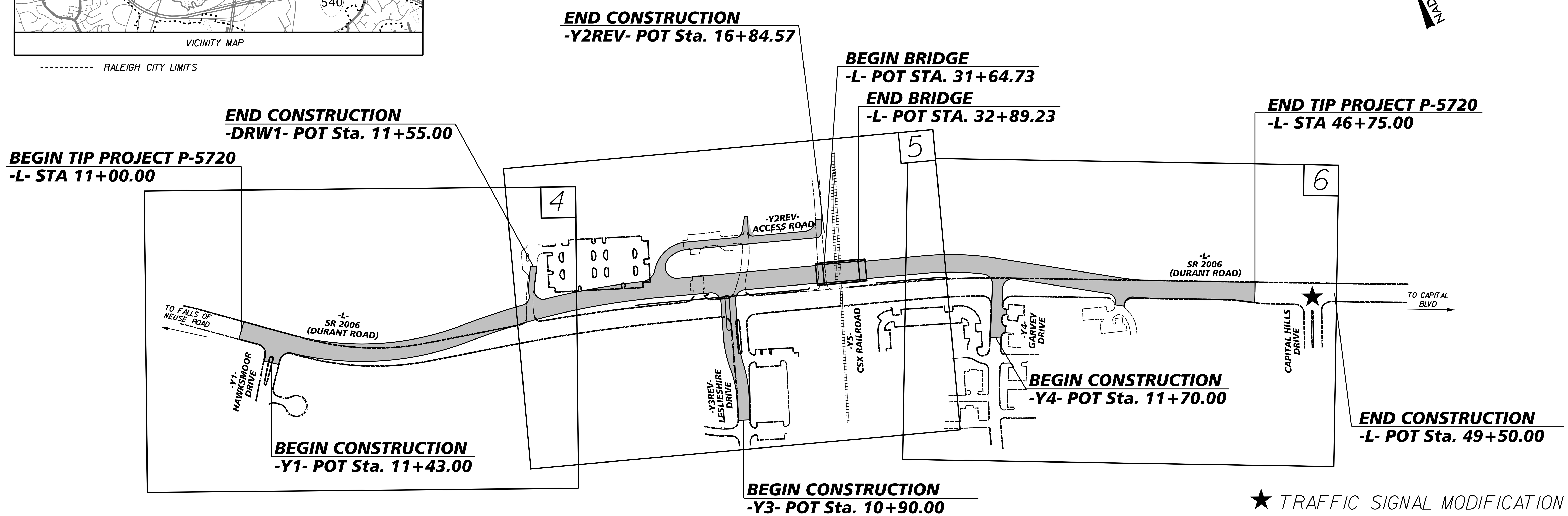
STATE OF NORTH CAROLINA
RAIL DIVISION

WAKE COUNTY

LOCATION: PROPOSED GRADE SEPARATION OF SR 2006 (DURANT ROAD) OVER CSX S LINE IN RALEIGH

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALLS, STRUCTURE AND SIGNALS

NAD 83/NSRS 2007



★ TRAFFIC SIGNAL MODIFICATION

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2021	=	22,000
ADT 2040	=	31,100
K	=	8%
D	=	55%
T	=	3%*
V	=	50 MPH

CLASSIFICATION: URBAN COLLECTOR

* 1% TTST 2% DUAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT P-5720	=	0.653 MILES
LENGTH STRUCTURE TIP PROJECT P-5720	=	0.024 MILES
TOTAL LENGTH TIP PROJECT P-5720	=	0.677 MILES

Prepared In the Office of: Kimley»Horn

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 7, 2018

LETTING DATE: JUNE 18, 2024

GREGORY BREW, PE
PROJECT ENGINEER

EVERETT LOVING, PE
PROJECT DESIGN ENGINEER

BRIAN GACKSTETTER
ENGINEERING COORDINATION MANAGER
NCDOT RAIL DIVISION

HYDRAULICS ENGINEER
6/5/2024
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
P.E.
SIGNATURE:

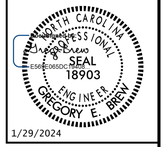
ROADWAY DESIGN ENGINEER
6/5/2024
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
P.E.
SIGNATURE:

NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
ENGINEERING COORDINATION AND SAFETY

6/5/2024

PROJECT REFERENCE NO.	SHEET NO.
P-5720	IA

ROADWAY DESIGN ENGINEER



1/29/2024

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

P-5720
WAKE COUNTY

INDEX OF SHEETS

SHEET NUMBER	SHEET
I	TITLE SHEET
IA	INDEX OF SHEETS, GENERAL NOTES, LIST OF ROADWAY STANDARD DRAWINGS
IB	CONVENTIONAL SYMBOLS SHEET
2A-I THRU 2A-7	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND MISCELLANEOUS DETAILS
2B-I	CROSSING CLOSURE DETAIL
2B-2	SERVICE ROAD DETAILS
2C-I	DETAIL TO CONVERT EXISTING DI, CB, OTCB OR GI TO JUNCTION BOX
2C-2	DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI
2C-3	CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS
2C-4	DETAIL OF TEMPORARY I" STEEL COVER OVER DRAINAGE STRUCTURE
2D-I	DRAINAGE DETAILS
2G-I THRU 2G-3	STANDARD TEMPORARY WALL DETAILS
3B-I	SUMMARY OF EARTHWORK
3B-2	SUMMARY OF GUARDRAIL
3B-3	SUMMARIES OF REMOVAL OF EXISTING ASPHALT PAVEMENT, BREAKING OF ASPHALT PAVEMENT, 48" FABRIC CHAIN LINK FENCE
3D-I THRU 3D-4	SUMMARY OF DRAINAGE QUANTITIES
3G-I	SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION
3P-I	PARCEL INDEX SHEETS
4 THRU 6	PLAN SHEETS
7 THRU 10	PROFILE SHEETS
RW0I	RIGHT OF WAY TITLE SHEET
RW02C-I THRU RW02C-3	SURVEY CONTROL SHEETS
RW02D-I	PROPOPSED ALIGNMENT CONTROL SHEET P-5720
RW03E-I THRU RW03E-2	RIGHT OF WAY CONTROL SHEET
RW04 THRU RW06	RIGHT OF WAY PLAN SHEETS
TMP-I THRU TMP-12	TRANSPORTATION MANAGEMENT PLANS
PMP-I THRU PMP-4	PAVEMENT MARKING PLANS
EC-I THRU EC-9	EROSION CONTROL PLANS
SIGN-I THRU SIGN-5	SIGNING PLANS
SIG. I.0 THRU SIG. 4.3	SIGNAL PLANS
UC-I THRU UC-9	UTILITY CONSTRUCTION PLANS
UO-I THRU UO-4	UTILITIES BY OTHERS PLANS
SL-I THRU SL-4	STREET LIGHTING PLANS
X-0	CROSS-SECTION INDEX
X-IA	CROSS-SECTION SUMMARY SHEETS
X-I THRU X-33	CROSS-SECTIONS
S-I THRU S-32	STRUCTURE PLANS
W-I THRU W-8	WALL PLANS

GENERAL NOTES: 2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

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.

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.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

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:
DUKE ENERGY PROGRESS - POWER (DISTRIBUTION AND TRANSMISSION)
SPECTRUM, AT&T, WINDSTREAM, PSNC GAS, CITY OF RALEIGH PUBLIC UTILITIES (WATER AND SEWER)

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

EFF. 01-16-2024 REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2	- EARTHWORK
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3	- PIPE CULVERTS
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4	- MAJOR STRUCTURES
423.03	Bridge Approach Fills - Type 2 Approach Fill for Bridge Abutment With MSE Wall
DIVISION 5	- SUBGRADE, BASES AND SHOULDERS
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6	- ASPHALT BASES AND PAVEMENT
654.01	Pavement Repairs For Superpave Mix Types
DIVISION 8	- INCIDENTALS
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
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, Grates 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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage For Frames
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
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
848.04	Street Turnout
848.06	Curb Ramp
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

REVISIONS

1/24/2024

PROJECT REFERENCE NO.	SHEET NO.
P-5720	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — 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:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- 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:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

REVISIONS

12/21/2023

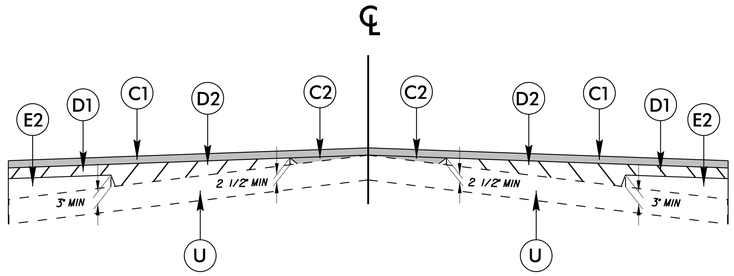
5/14/99

REVISIONS

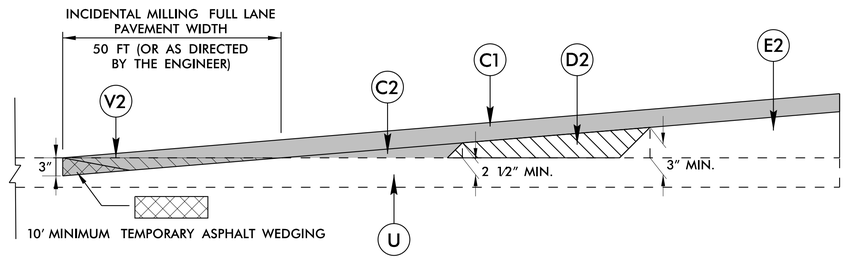
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROPOSED 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 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROPOSED 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" OR GREATER THAN 5.5" IN DEPTH.
J	PROP. VARIABLE DEPTH SHOULDER CONSTRUCTION, TYPE ABC(M), SEE SPECIAL PROVISION
J1	PROP. 6" AGGREGATE BASE COURSE.
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT AT A RATE OF 0.35 GAL. PER SQ. YD.
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER.
S	PROPOSED 4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	PROPOSED 3" MILLING
V2	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD METHOD OF WEDGING DETAIL)

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

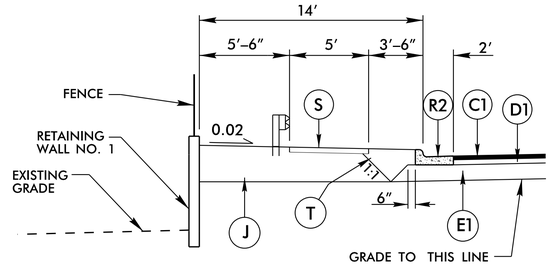


DETAIL SHOWING METHOD OF WEDGING



PROFILE KEY–IN DETAIL

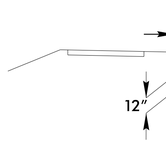
USE AT Y1, Y3, & Y4 TIE-IN WITH EXISTING



INSET 'A'

DETAIL SHOWING RETAINING WALL
(USE IN CONJUNCTION WITH TYPICAL SECTION 2)

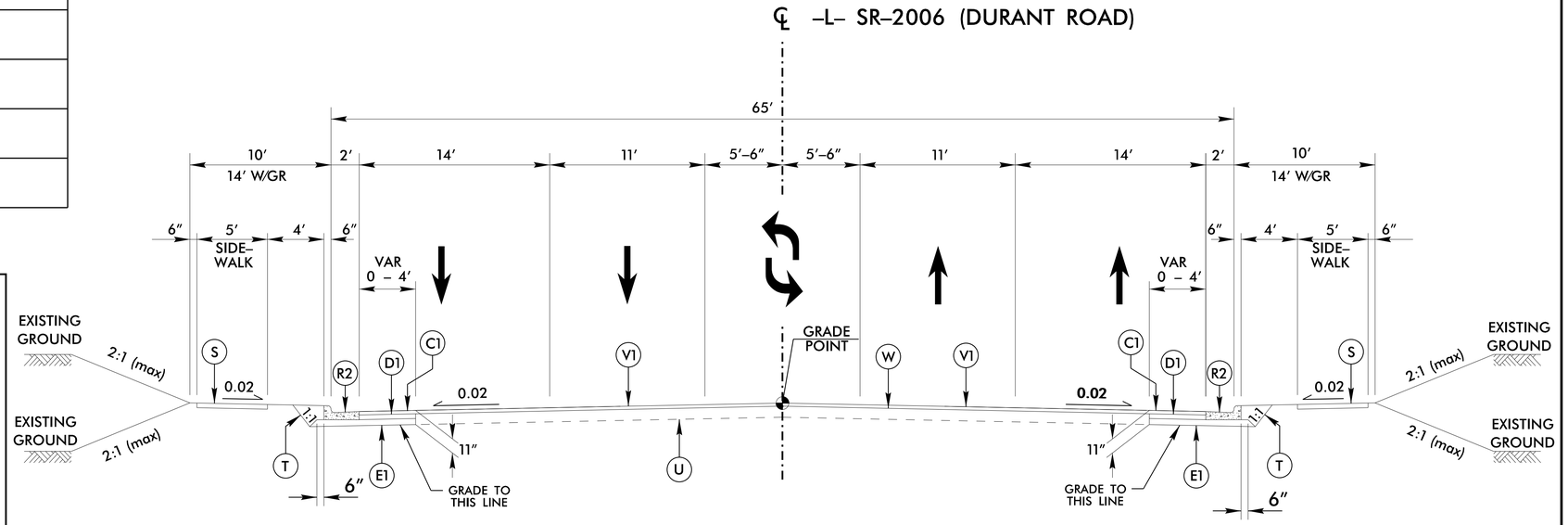
-L- STA. 22+00 TO 25+30 (LT.)



AGGREGATE SUBGRADE DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS AS DIRECTED BY THE RESIDENT ENGINEER AND AT STATIONS:

-L- 16+00.00 TO 18+00.00 (LT.)



TYPICAL SECTION NO. 1

-L- 11+00.00 TO 20+20.00
-L- 39+50.00 TO 46+75.00

1/26/2024

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-1

ROADWAY DESIGN ENGINEER

DocuSigned by: Gregory E. Brew
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1/26/2024

PAVEMENT DESIGN ENGINEER

DocuSigned by: Andrew D. Wargo
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO
1/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

REVISIONS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-2

ROADWAY DESIGN ENGINEER

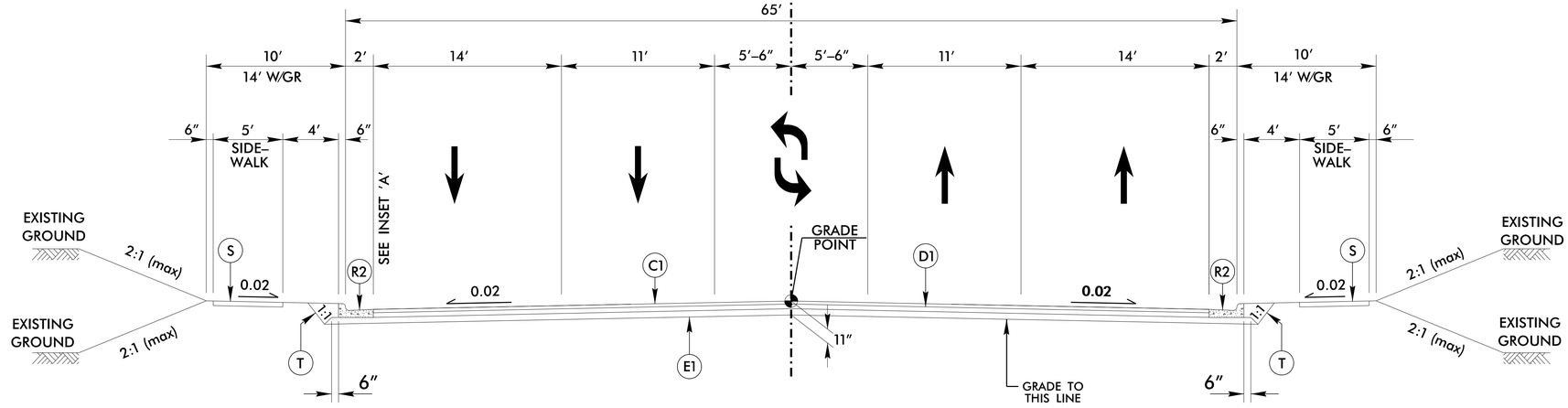
1/26/2024

PAVEMENT DESIGN ENGINEER

1/26/2024

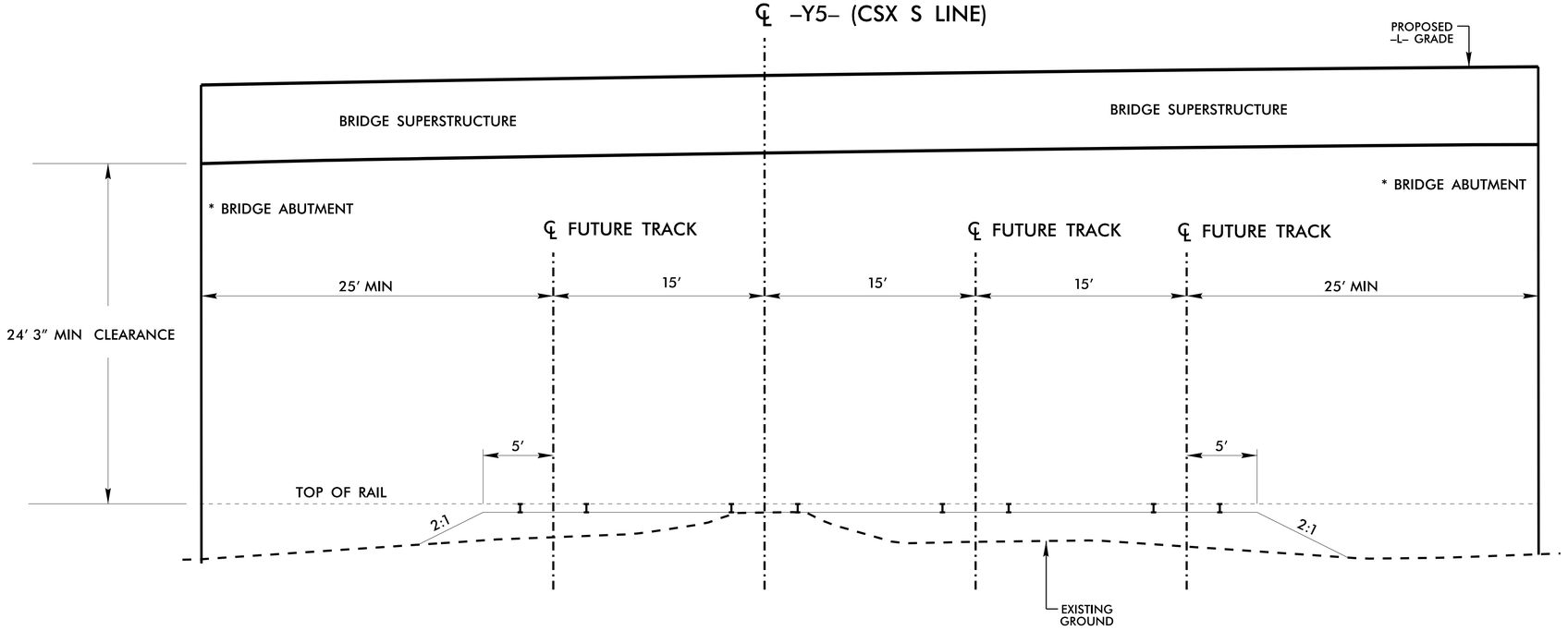
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

℄ –L– SR–2006 (DURANT ROAD)



TYPICAL SECTION NO. 2
-L- 20+20.00 TO 31+64.73
-L- 32+89.23 TO 39+50.00

℄ –Y5– (CSX S LINE)



* ABUTMENT TYPE TO BE DETERMINED BY GEOTECHNICAL ENGINEER

PAVEMENT SCHEDULE

C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4" TYPE 119.0C
D2	VAR. DEPTH 119.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
J1	6" AGGREGATE BASE COURSE
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

1/24/2024

5/14/99

REVISIONS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-3

ROADWAY DESIGN ENGINEER

DocuSigned by: [signature] 1/26/2024

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

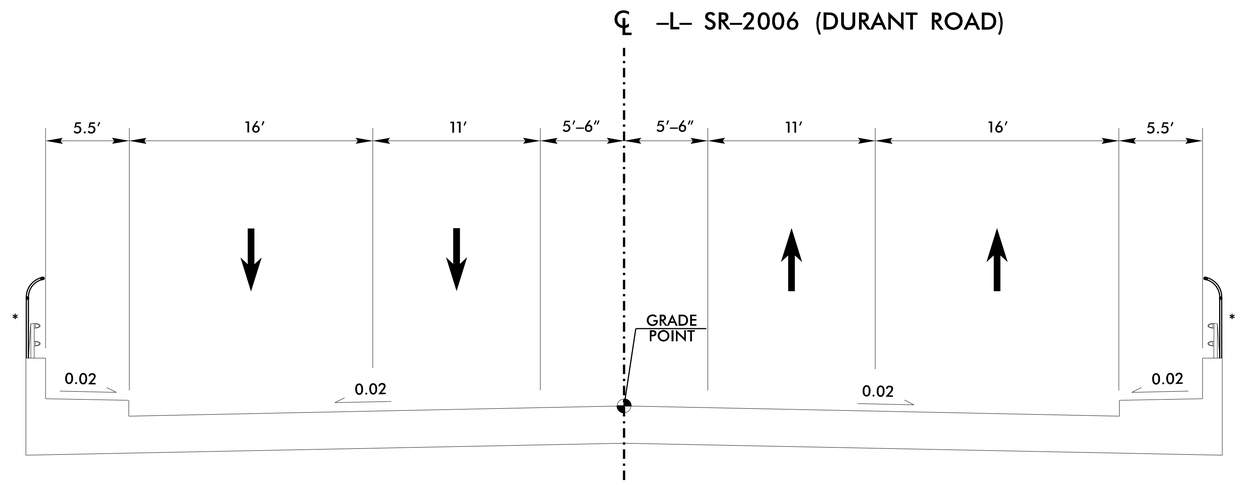
PAVEMENT DESIGN ENGINEER

DocuSigned by: [signature] 1/26/2024

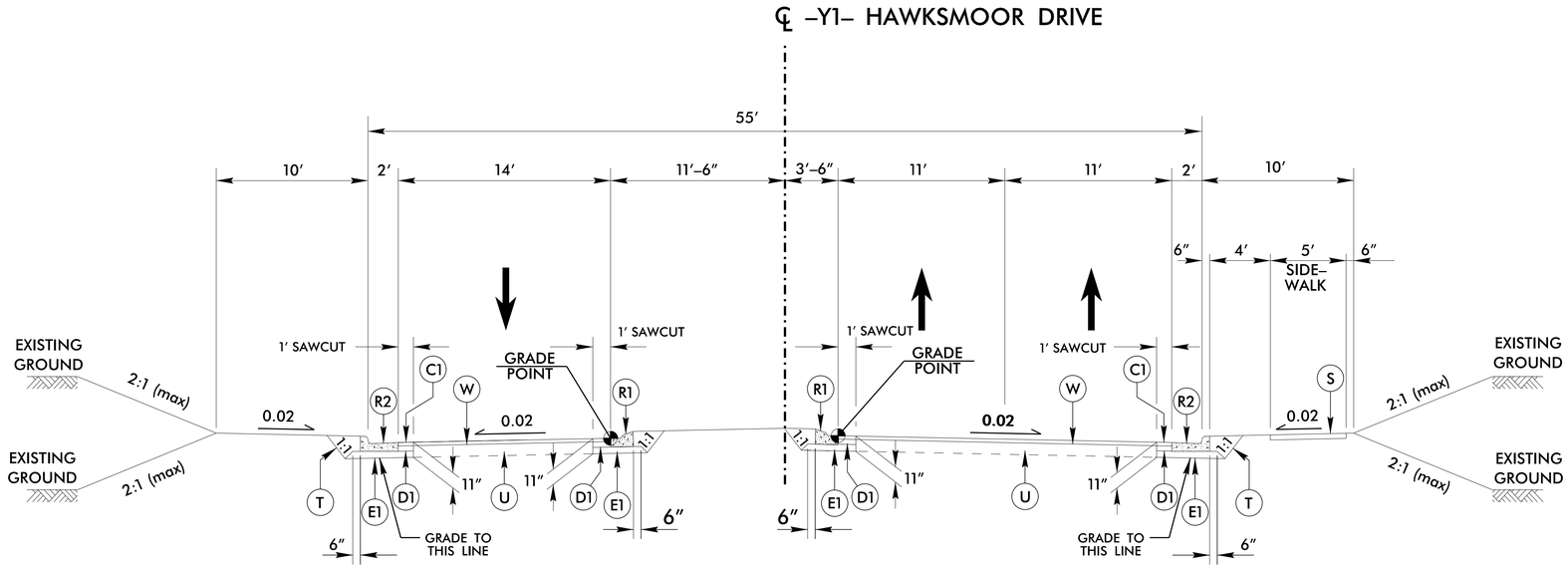
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN



TYPICAL SECTION NO. 3
-L- 31+64.73 TO 32+89.23



TYPICAL SECTION NO. 4
-Y1- 11+43.00 TO 11+60.00

PAVEMENT SCHEDULE

C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4" TYPE 119.0C
D2	VAR. DEPTH 119.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
J1	6" AGGREGATE BASE COURSE
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

1/24/2024

5/14/99

REVISIONS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

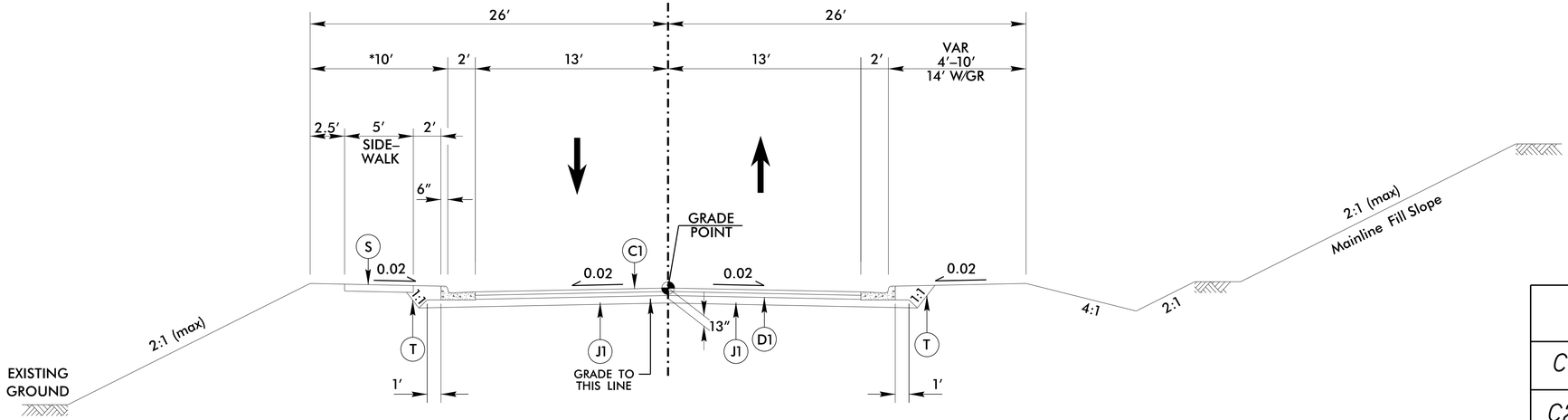
PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-4

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1/26/2024

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO
1/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

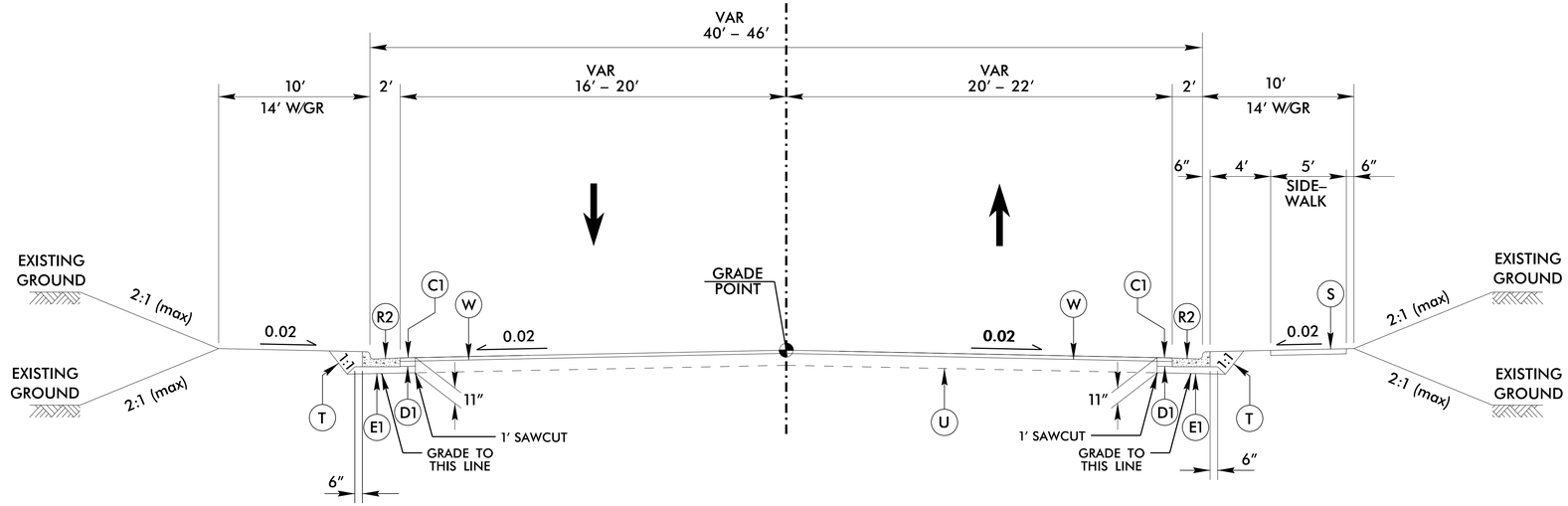
℄ –Y2REV– ACCESS ROAD



TYPICAL SECTION NO. 5
-Y2REV- 10+60.00 TO 16+67.41

* BERM REMAINS 10′ WHEN GUARDRAIL IS ADDED
SEE PLANS FOR GUARDRAIL LOCATION

℄ –Y3– LESLIESHIRE DRIVE



TYPICAL SECTION NO. 6
-Y3- 10+90.00 TO 11+65.00

PAVEMENT SCHEDULE

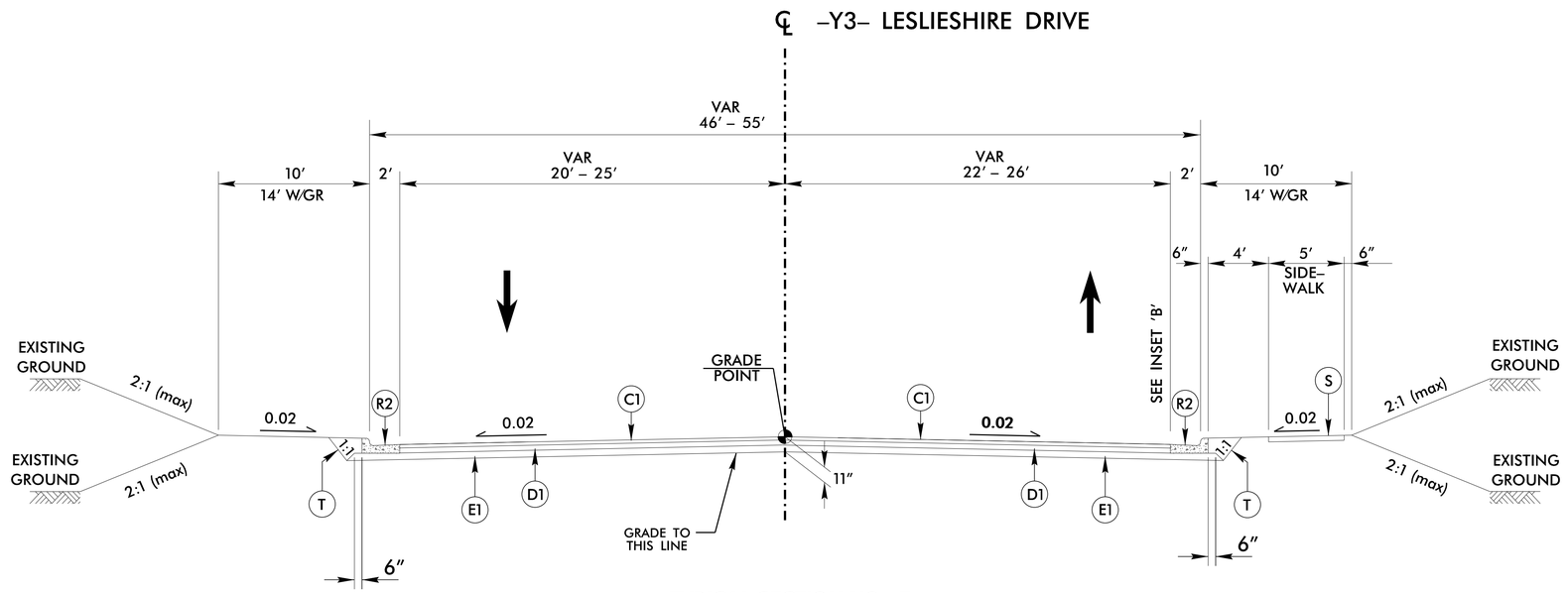
C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
J1	6" AGGREGATE BASE COURSE
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
R1	1′-6" CONCRETE CURB AND GUTTER
R2	2′-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

1/24/2024

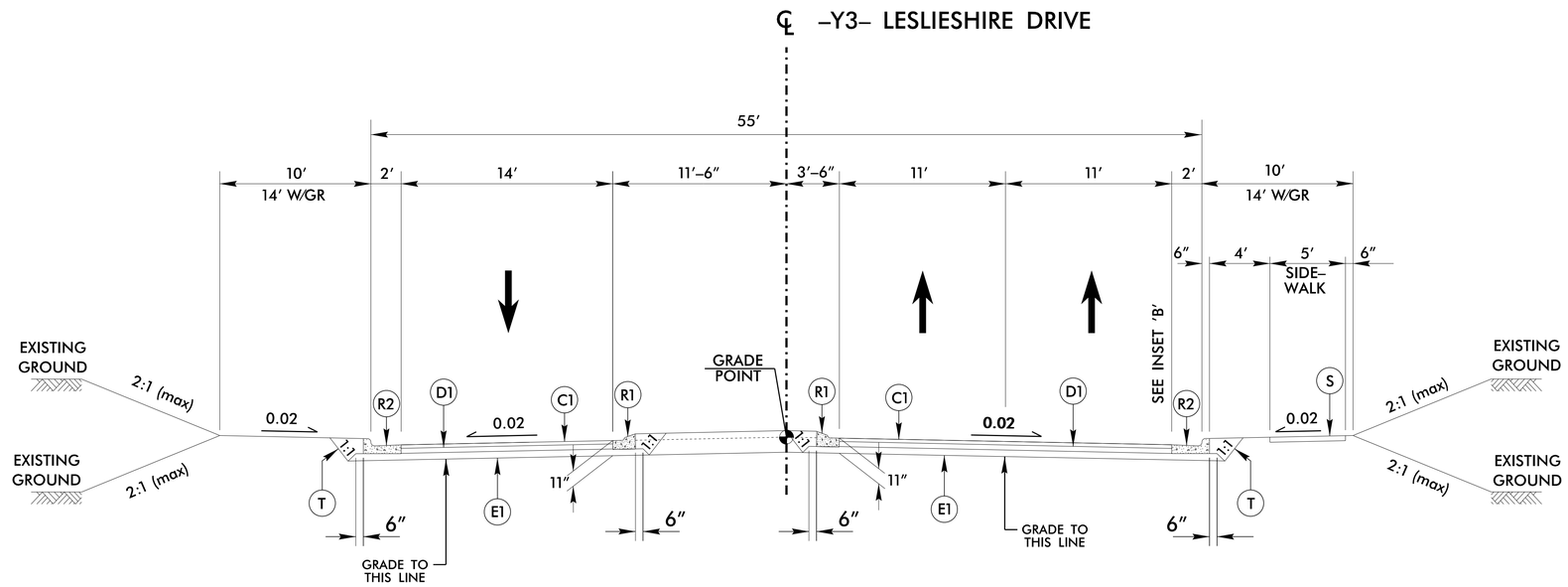
5/14/99

REVISIONS



TYPICAL SECTION NO. 7

-Y3- 11+65.00 TO 14+07.50



TYPICAL SECTION NO. 8

-Y3- 14+07.50 TO 15+06.00

1/24/2024

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

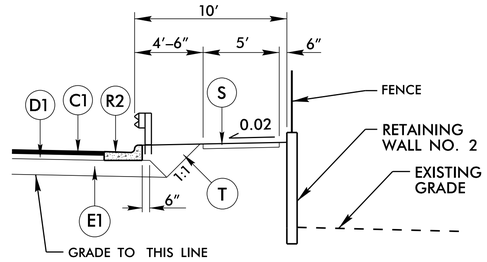
1/26/2024

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO

1/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



INSET 'B'

DETAIL SHOWING RETAINING WALL

(USE IN CONJUNCTION WITH TYPICAL SECTIONS 7 & 8)

-Y3- STA. 12+75 TO 14+75 (RT.)

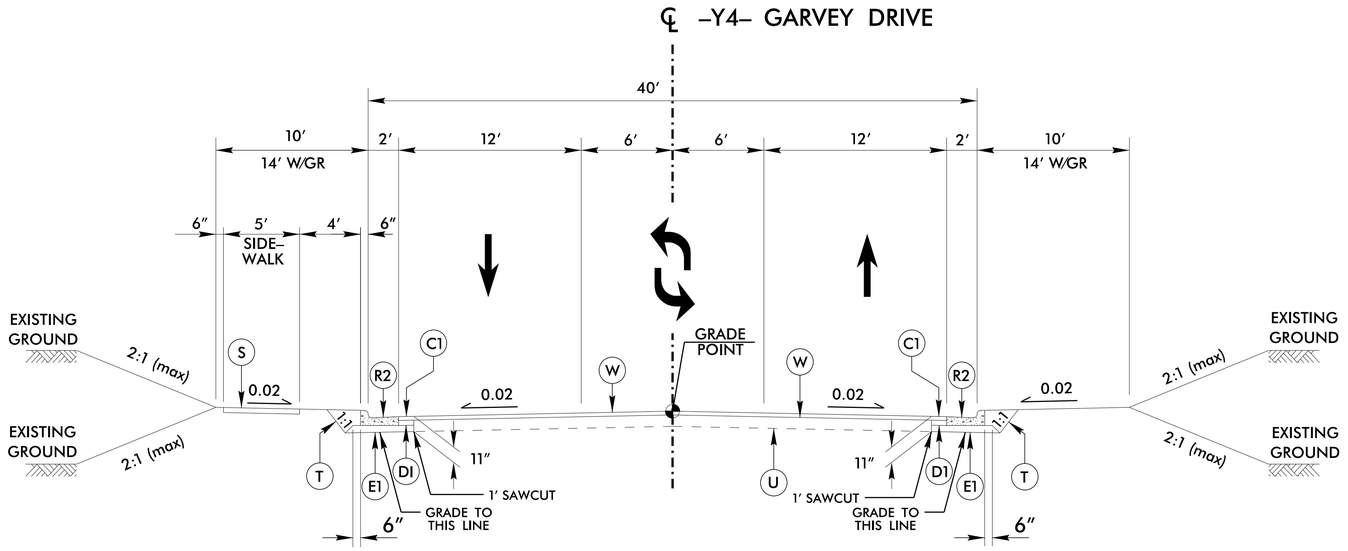
PAVEMENT SCHEDULE

C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4" TYPE 119.0C
D2	VAR. DEPTH 119.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
J1	6" AGGREGATE BASE COURSE
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

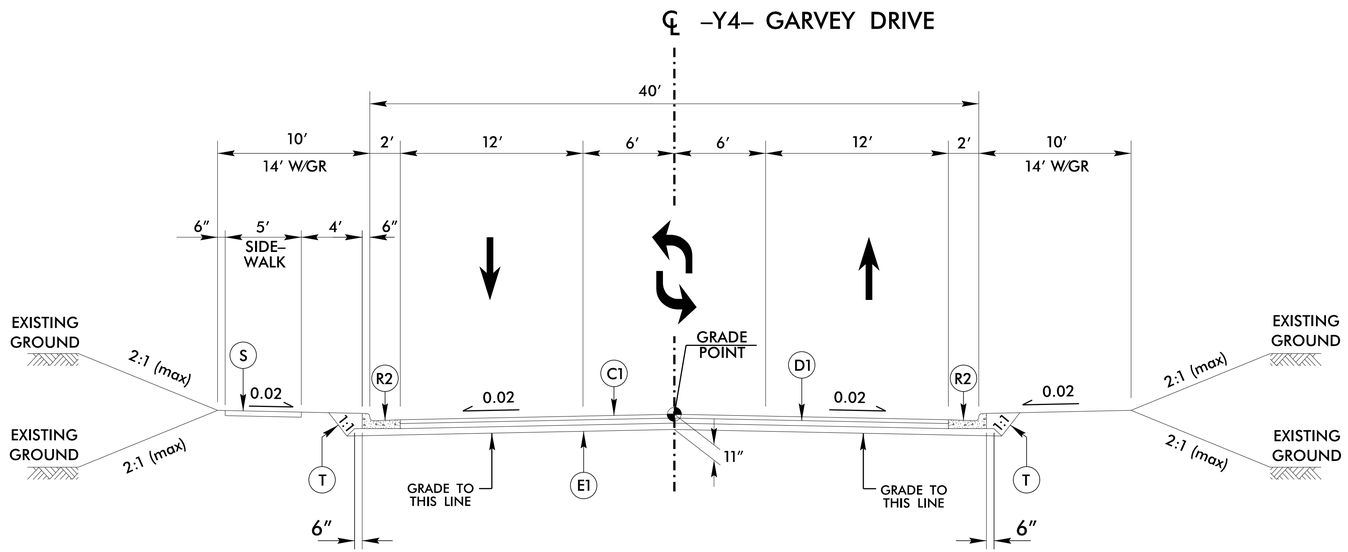
NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

5/14/99

REVISIONS



TYPICAL SECTION NO. 9
-Y4- 11+70.00 TO 12+25.00



TYPICAL SECTION NO. 10
-Y4- 12+25.00 TO 13+40.00

1/24/2024

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-6

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1/26/2024

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 044590 ENGINEER ANDREW D. WARGO
1/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
DI	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
JI	6" AGGREGATE BASE COURSE
LI	CLASS IV SUBGRADE STABILIZATION
NI	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
RI	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
VI	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

5/14/99

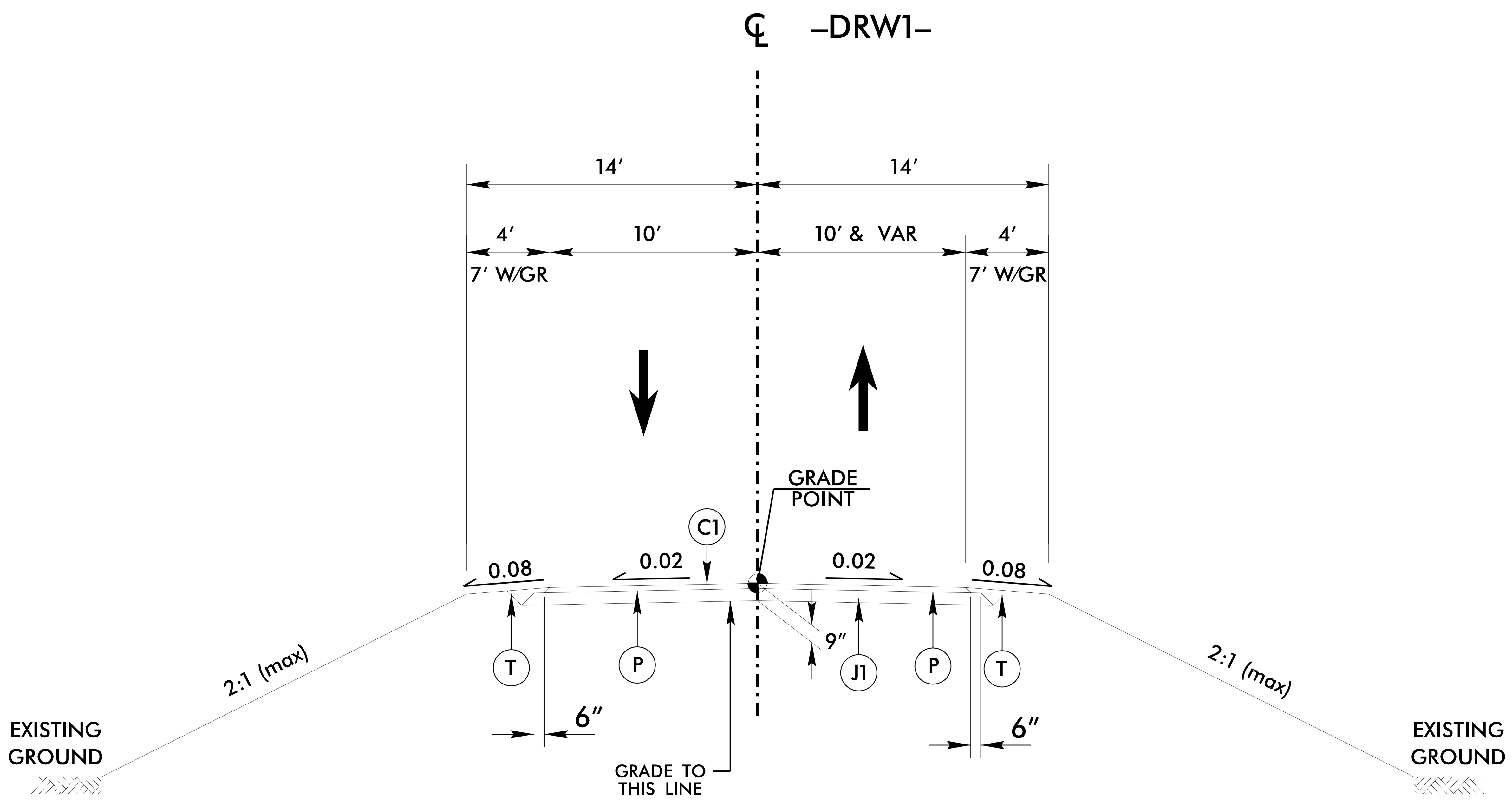
REVISIONS

Kimley»Horn ©2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

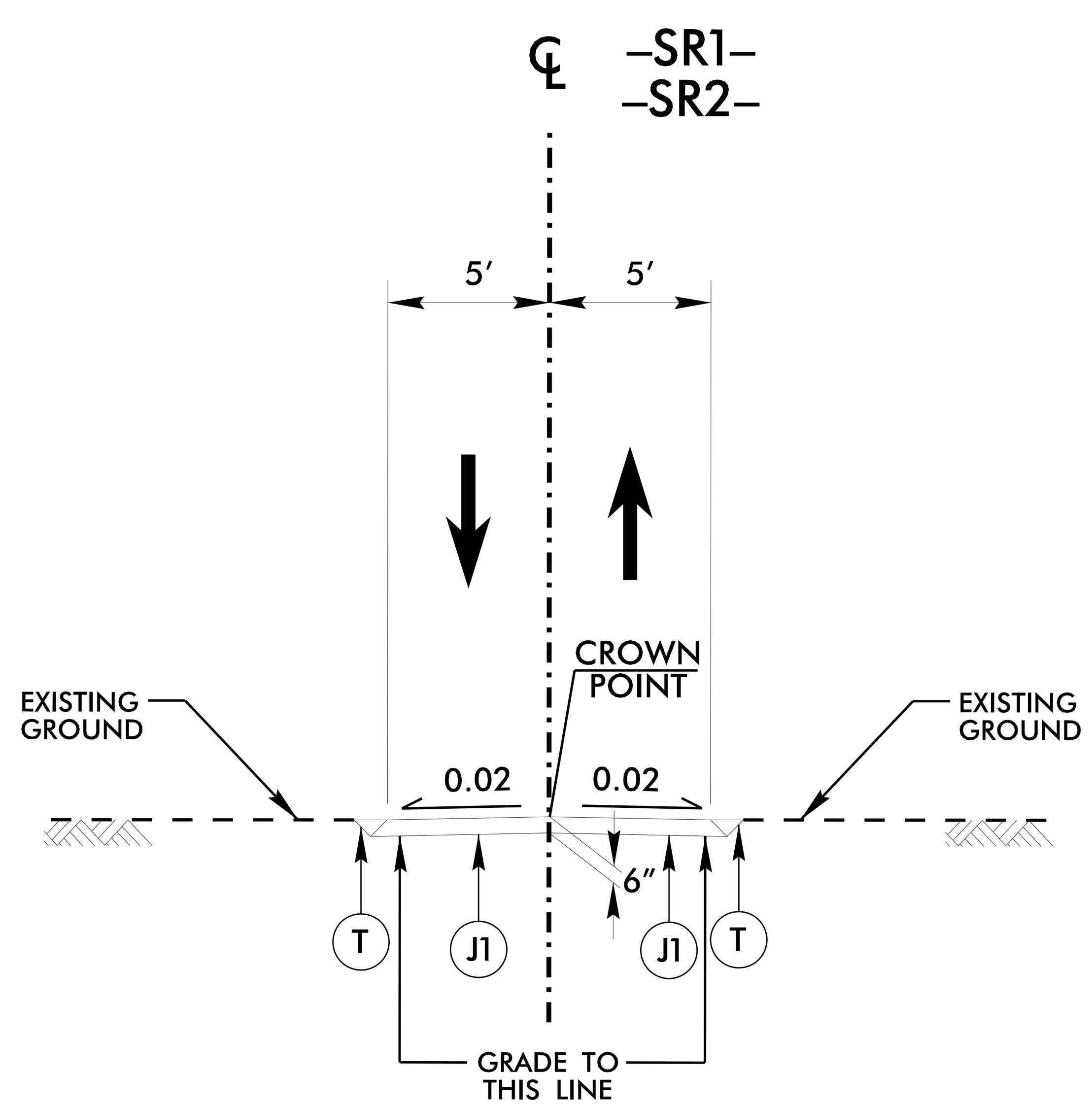
PROJECT REFERENCE NO.	SHEET NO.
P-5720	2A-7

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW 1/26/2024	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW D. WARGO 1/26/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 11
-DRW1- 10+30.50 TO 11+55.00



TYPICAL SECTION NO. 12
-SR1- 10+34.52 TO 17+62.72
-SR2- 10+23.67 TO 14+43.57

PAVEMENT SCHEDULE

C1	3" TYPE S9.5B
C2	VAR. DEPTH S9.5B
D1	4" TYPE I19.0C
D2	VAR. DEPTH I19.0C
E1	4" TYPE B25.0C
E2	VAR. DEPTH B25.0C
J1	6" AGGREGATE BASE COURSE
L1	CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	3" MILLING
V2	INCIDENTAL MILLING
W	WEDGING

NOTE: PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

1/24/2024

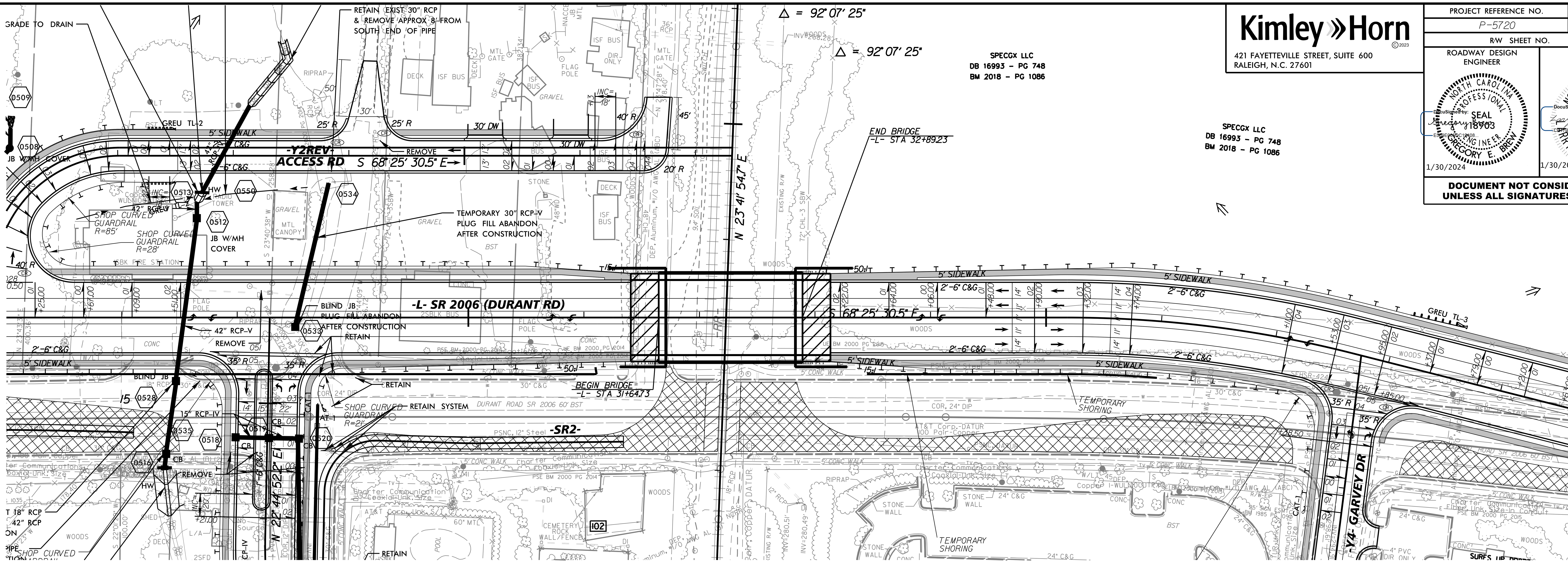
REVISIONS

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 018903 GREGORY E. BREW 1/30/2024	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026480 GARY D. ROBINSON, JR. 1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



REMOVAL

REMOVAL BY OTHERS

NOTE: ALL WORK WITHIN CSX CORRIDOR TO BE COORDINATED WITH NCDOT AND CSX

NOTES:

1. CONTACT THE NCDOT RESIDENT ENGINEER TO SCHEDULE THE CLOSURE OF DURANT ROAD.

2. THE EXISTING PAVEMENT WITHIN APPROXIMATELY 40' OF THE CENTERLINE OF THE TRACK WILL BE REMOVED BY OTHERS. THE TIMBER SURFACE AND RAIL SEAL FLANGES WILL ASO BE REMOVED BY OTHERS. THE EXISTING CROSSBUCKS, GATES, AND FLASHERS WILL BE REMOVED BY OTHERS.

3. CONTRACTOR SHALL SEED AND MULCH THE DISTURBED AREA OUTSIDE THE RAILROAD BALLAST LINE.

4. CONTRACTOR SHALL CONTACT NORTH CAROLINA 811 TO LOCATE ALL UNDERGROUND UTILITIES IN THE WORK AREA. CONTRACTOR SHALL ALSO CONTACT CSX RAILWAY TO LOCATE ANY UNDERGROUND RAILROAD UTILITIES IN THE WORK AREA PRIOR TO COMMENCEMENT OF WORK ON THE NCRR CORRIDOR.

5. CONTRACTOR SHALL REMOVE EXISTING HIGHWAY ROADBED AND GRADE AREA TO MATCH ADJACENT TOPOGRAPHY. ANY EXISTING CULVERTS IN THE RAILROAD DITCHES SHALL BE REMOVED AND GRADE EXISTING DITCHES TO DRAIN. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER ON HAULING AWAY ANY ASPHALT LEFT BY THE REMOVAL OF OTHERS. ALL PAVEMENT WITHIN THE RAILROAD CORRIDOR IS TO BE REMOVED PRIOR TO THE CONCLUSION OF THE PROJECT.

6. PROVIDE PERMANENT SIGNING AS SHOWN.

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

8. ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERNATING ANY TRAFFIC PATTERN.

CROSSING CLOSURE DETAIL

DURANT ROAD

1/24/2024

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2B-2

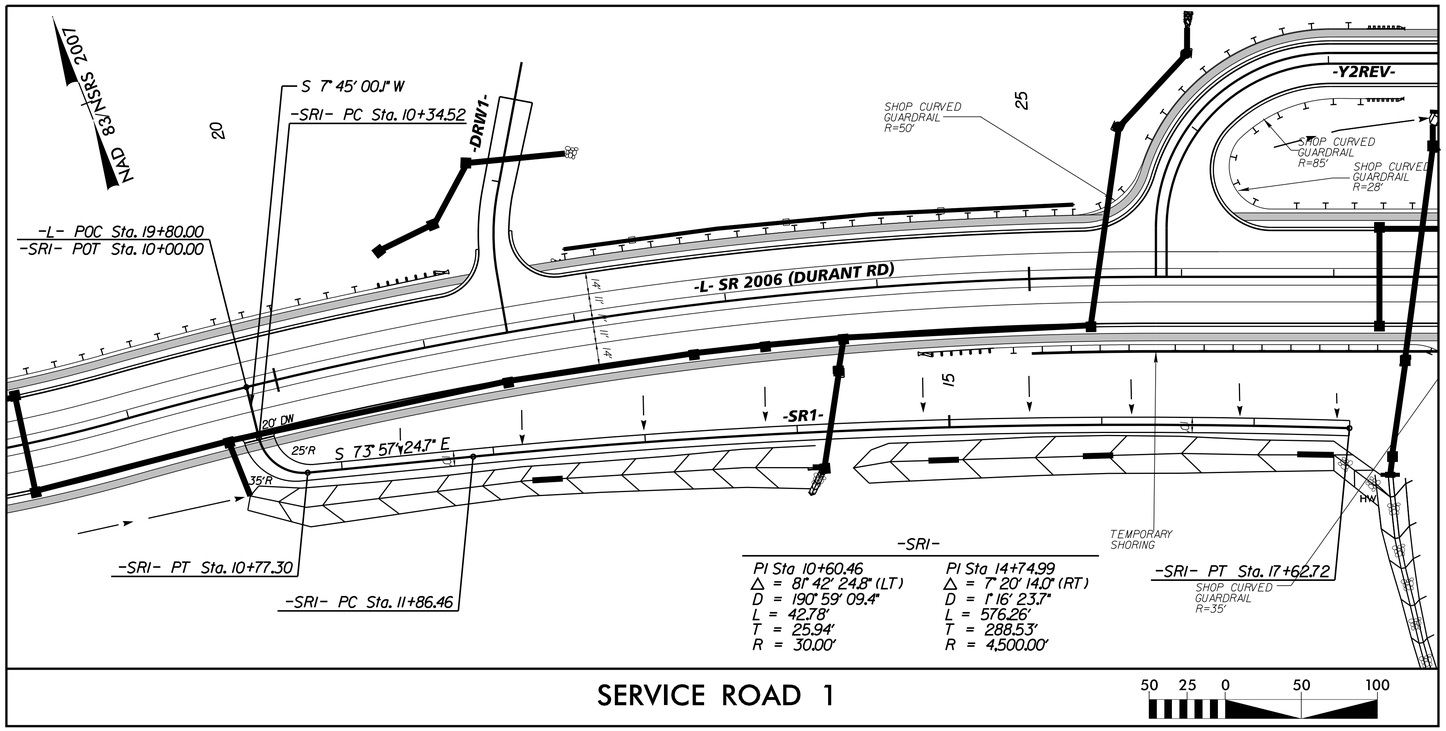
ROADWAY DESIGN ENGINEER

DocuSigned by: MARK CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW

1/30/2024

REVISIONS

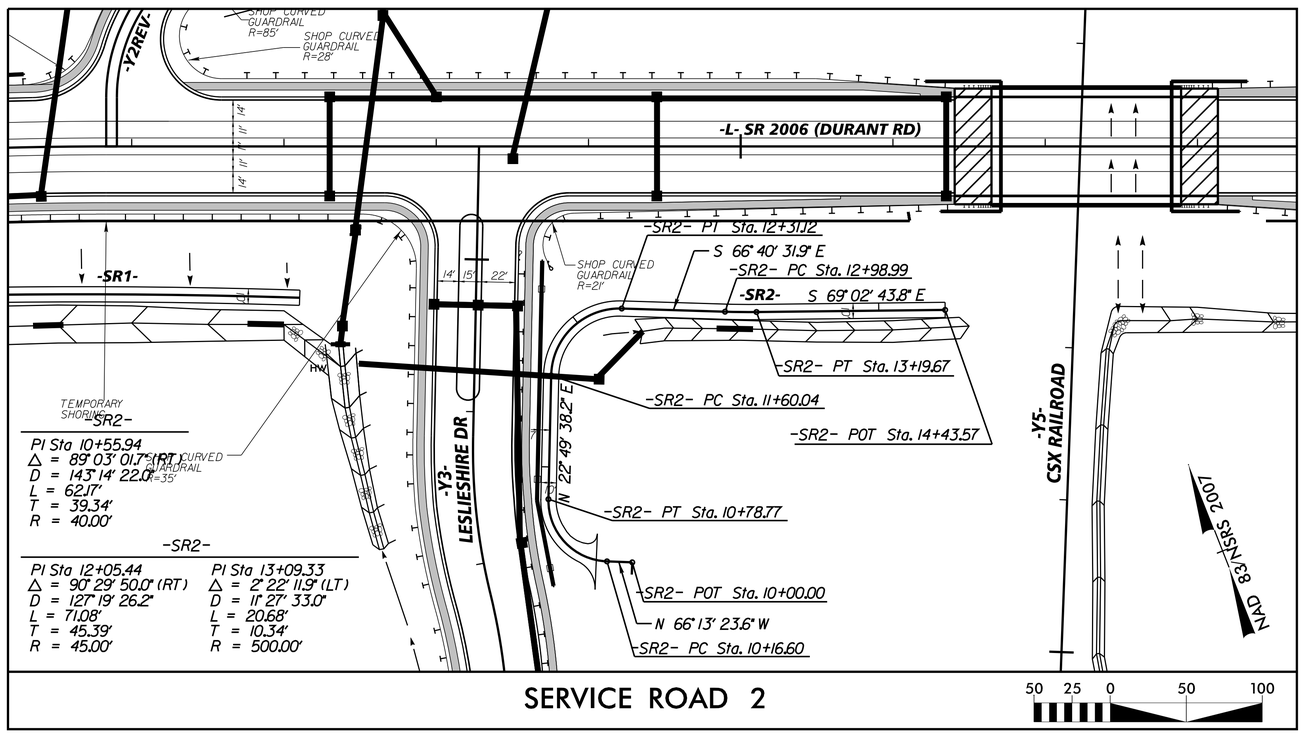
12/21/2023



SERVICE ROAD 1

USE FOR SERVICE ROAD HORIZONTAL DESIGN AND LOCATION ONLY

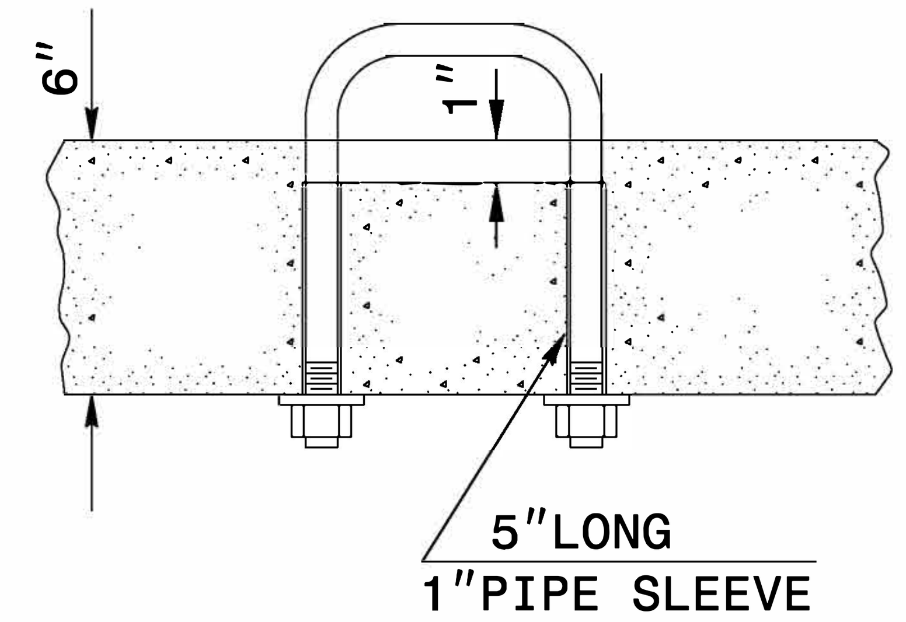
SEE PLAN SHEETS 4 AND 5



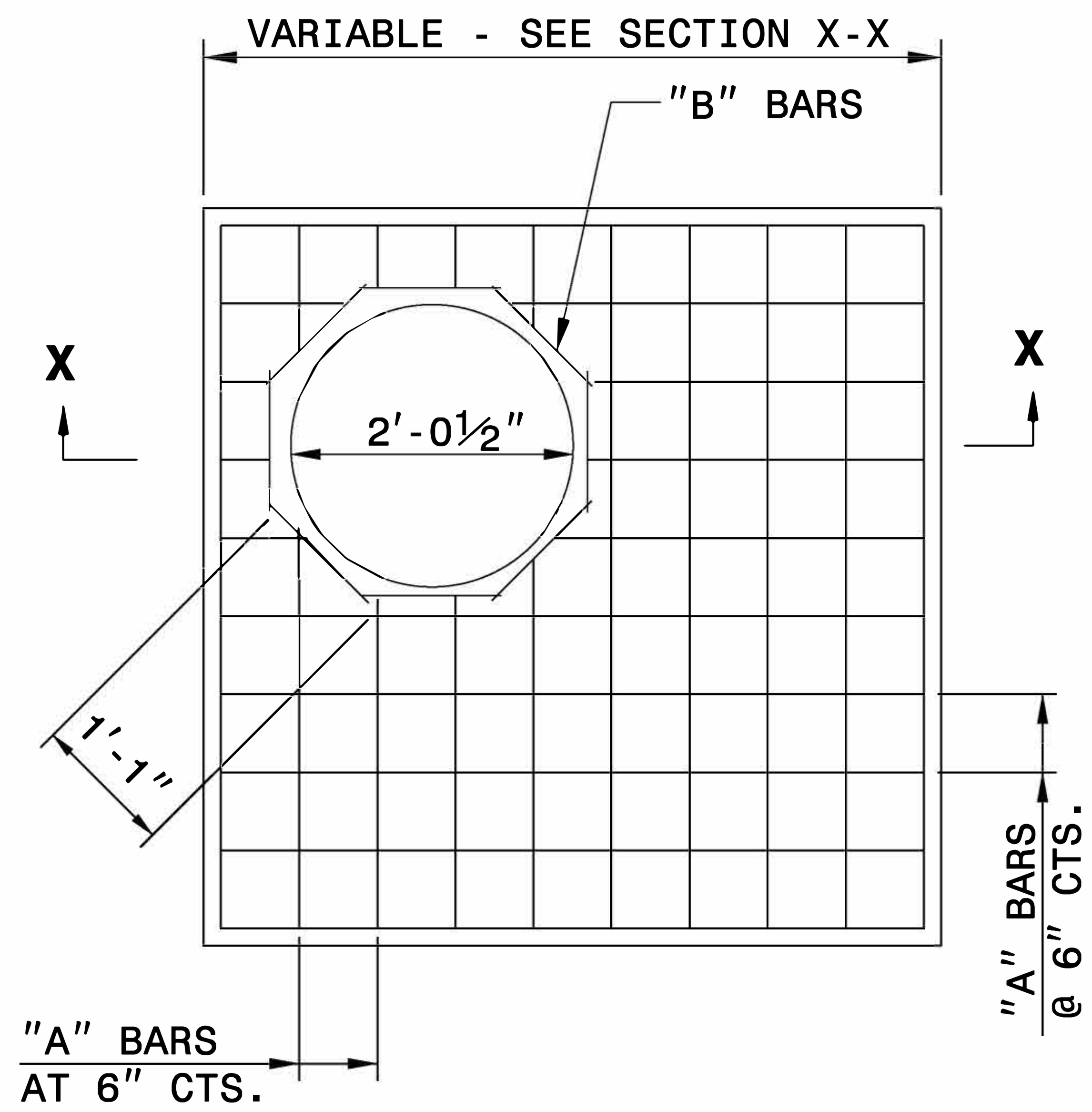
SERVICE ROAD 2

SEE PLAN SHEETS 5

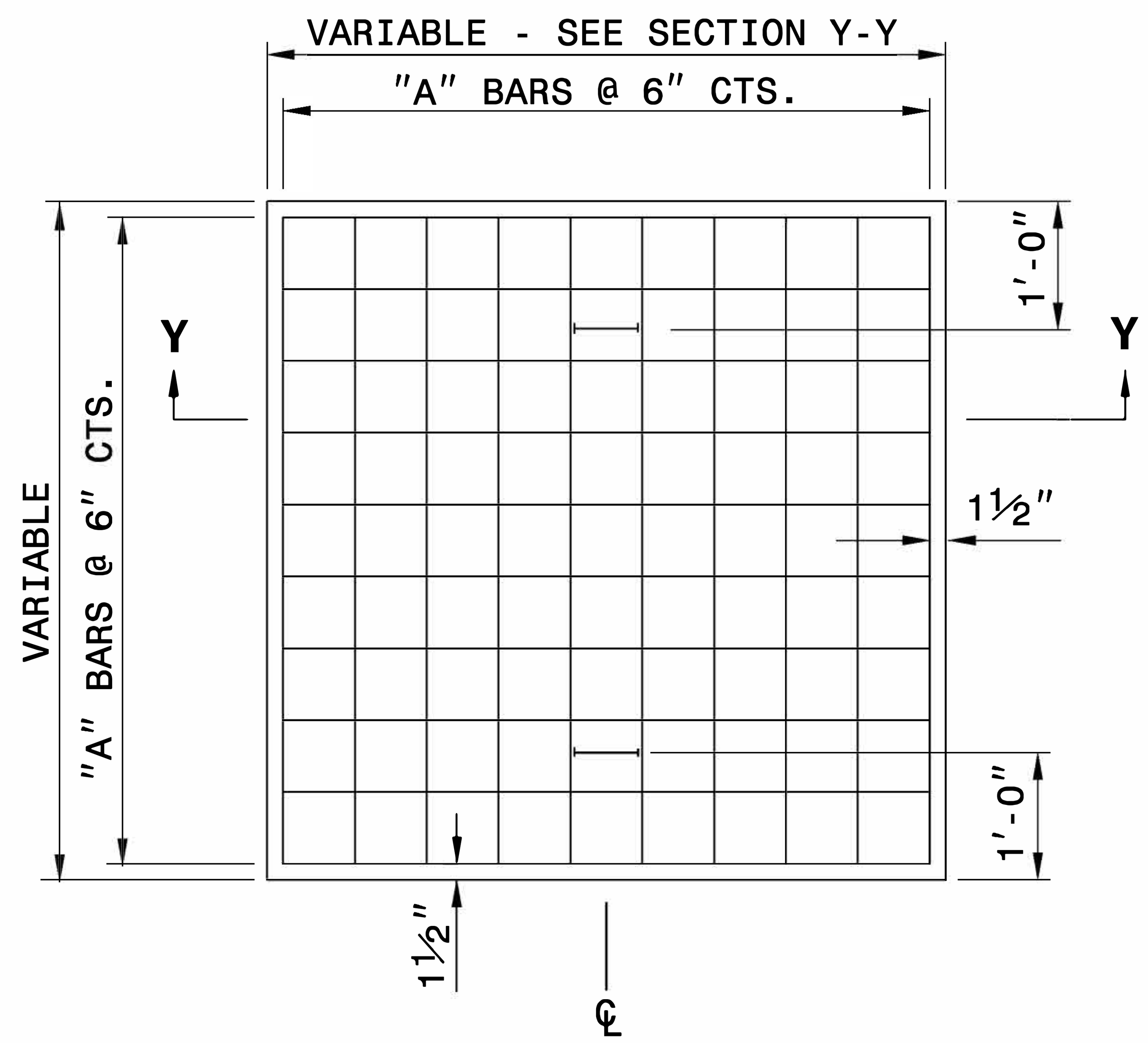
PROJECT REFERENCE NO.	SHEET NO.
P-5720	2C-1



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

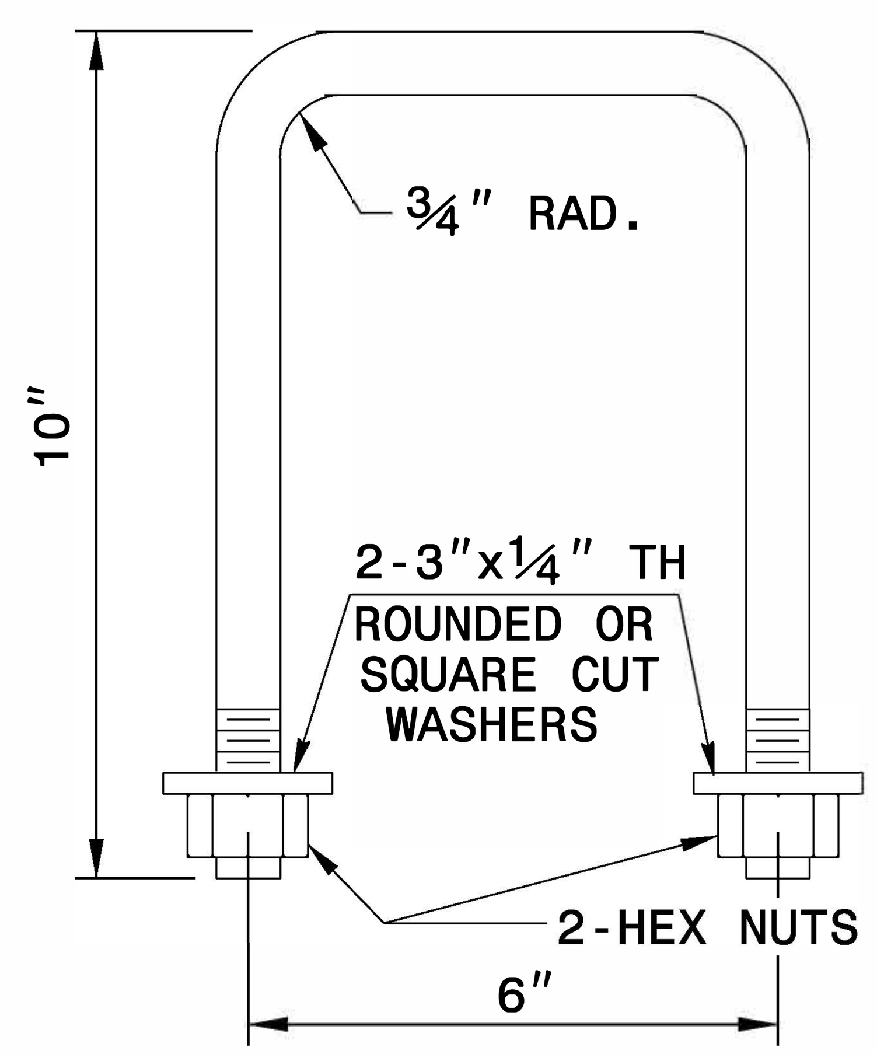
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

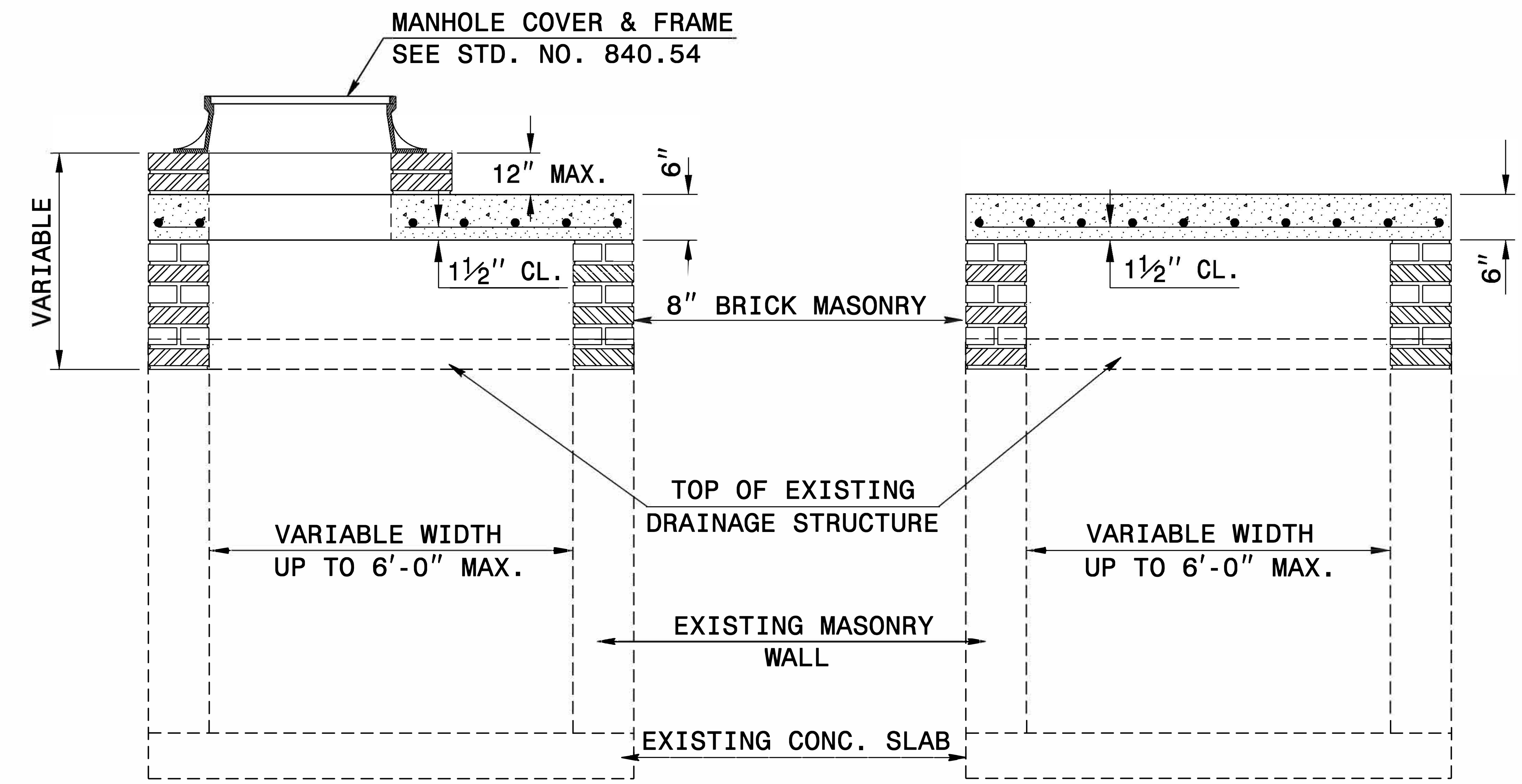
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

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

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



DETAIL OF HANDLE



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

1/26/2024

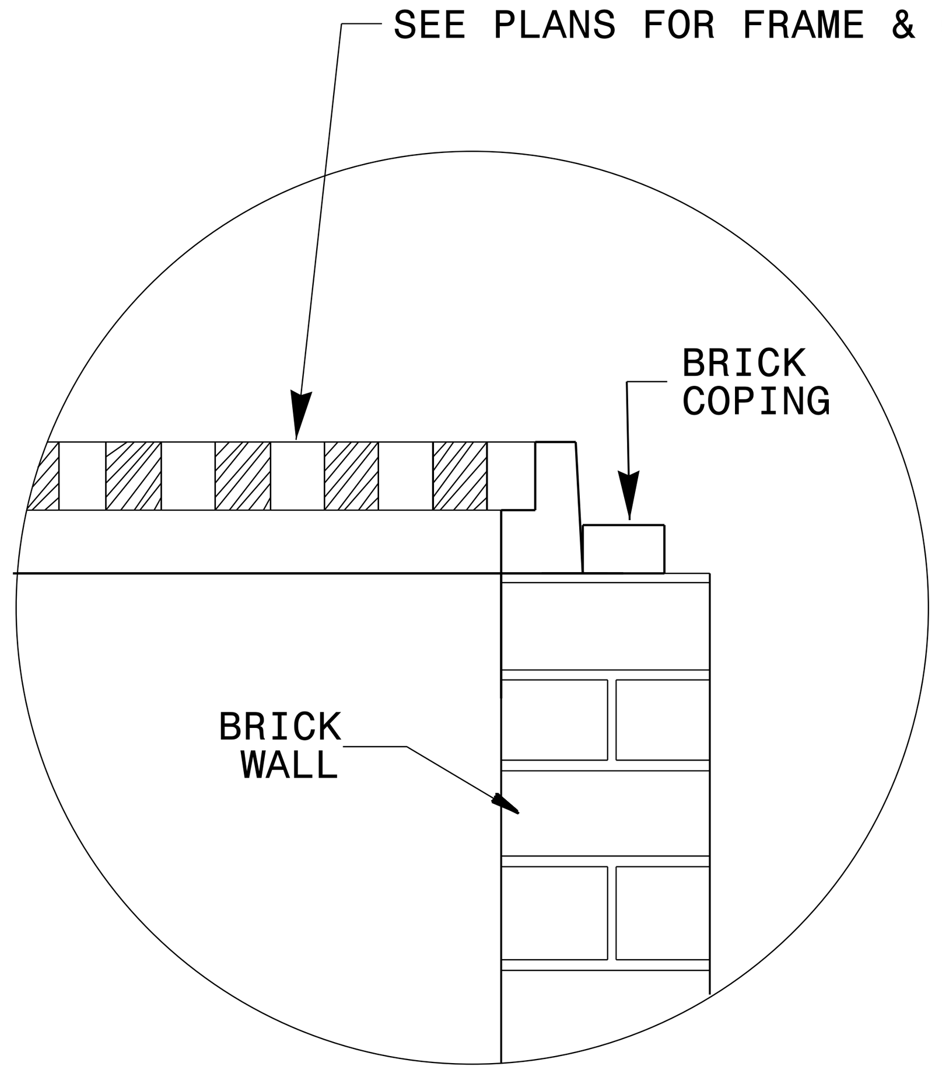
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

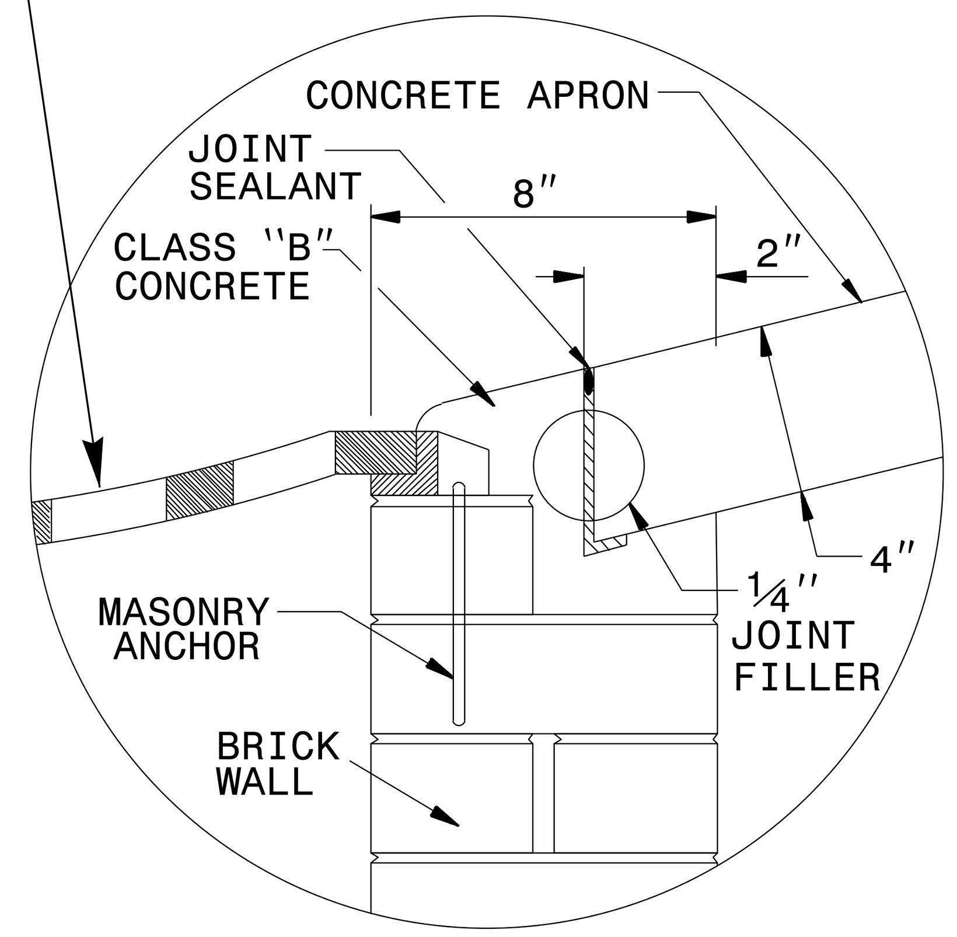
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2C-2



GRATE PLACEMENT DETAIL

FOR DROP INLETS

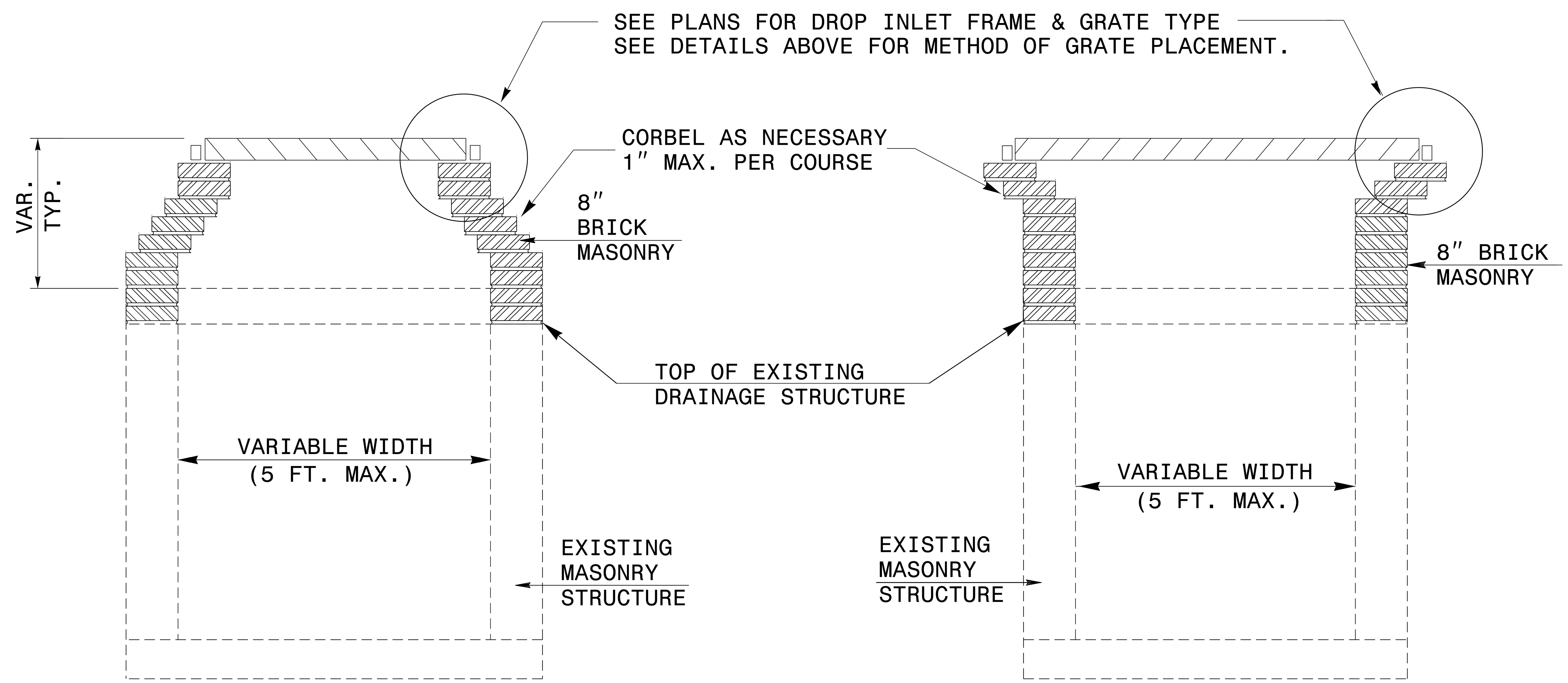


GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

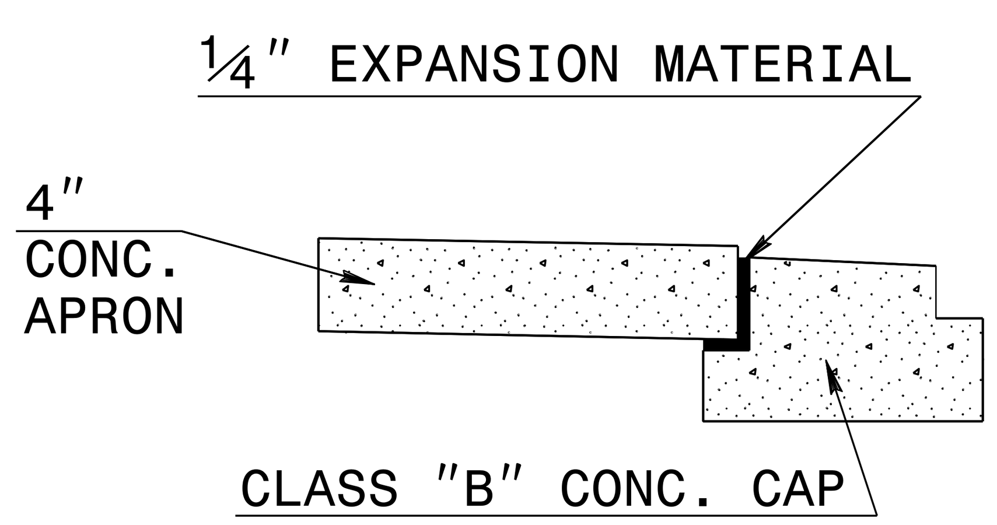
GENERAL NOTES:

- -CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
- -USE CLASS B CONCRETE.
- -THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.
- -JUMBO CONCRETE BRICK WILL BE PERMITTED. 4″ CONCRETE BRICK OR 8″ SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.
- -INCLUDE 18″ CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.
- -SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.
- -CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.
- -SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



TYPICAL SECTION

TYPICAL SECTION



EXPANSION JOINT DETAIL

SEAL 33144 — NORTH CAROLINA PROFESSIONAL ENGINEER — NICOLE M. HACKLER

1/26/2024

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

DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI

ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/cbtodi02.dgn		

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2C-3

GENERAL NOTES:

* ALL CORNERS TO BE CHAMFERED 1".
* THE CONTRACTOR WILL BE REQUIRED TO PLACE 2 - #6 BARS "Y" IN THE TOP OF ALL ENDWALLS FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL.
* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
* WALL THICKNESS (T) SHOWN IS NOT TO BE INTERPRETED TO MEAN THE THICKNESS ACCEPTABLE, BUT ARE USED ONLY IN COMPUTING ENDWALL QUANTITIES.
* IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR X (DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS TO BE APPROXIMATELY 12" CENTERS UNLESS ENGINEER DIRECTS OTHERWISE.
* WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPERATELY, THE TOP BASE SHALL BE LEFT ROUGH.
* WHEN SKEW ANGLE OF PIPE IS OVER/UNDER 30° USE G-1 DIMENSION FOR 30° PLUS/MINUS 3° FOR EACH 5° OVER/UNDER 30°. G2 DIMENSION WILL BE THE NEW DIMENSION DIVIDED BY THE COSINE OF THE ANGLE OF PIPE SKEW.
* CLASS "B" CONCRETE SHALL BE USED.

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS** 15" THRU 48" PIPE	SHEET 2 OF 2 **838d02s1**

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

ENGLISH DETAIL DRAWING FOR **CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS** 15" THRU 48" PIPE

SHEET 2 OF 2 **838d02s1**

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE

LOC.	PIPE DIA.	SINGLE PIPE 15"	18"	24"	30"	36"	42"	48"		DOUBLE PIPE 15"	18"	24"	30"	36"	42"	48"	
	BARS	"X"	"Y"	"Y"	"X"	"Y"	"Y"	"X"	Y*	"X"	"Y"	"Y"	"X"	"Y"	"Y"	"X"	Y*
G1	QTY.	2	2	2	2	3	3	4		2	2	2	2	3	3	4	
S	QTY.	-	-	-	-	-	-	-	2					2	2	2	3
G2	QTY.	3	4	4	5	6	6	7		3	4	4	5	6	6	7	
TOT. lbs.		11.7	13.9	13.9	16.3	20.9	20.9	70.3	60.4	11.7	13.9	13.9	20.9	25.6	25.6	85.3	102.1

DOWELS IN ENDWALL WITH CORRUGATED STEEL PIPE

LOC.	PIPE DIA.	SINGLE PIPE 16"	18"	24"	32"	36"	40"	48"		DOUBLE PIPE 16"	18"	24"	32"	36"	40"	48"	
	BARS	"X"	"Y"	"X"	"Y"	"X"	"X"	"X"	Y*	"X"	"X"	"X"	"Y"	"X"	"X"	"X"	Y*
G1	QTY.	2	2	2	3	3		4		2	2	2	3	3		4	
S	QTY.	-	-	-	-	-	2	-	2					2	2	2	2
G2	QTY.	3	3	4	5	5	6	7		3	3	4	5	5	6	7	
TOT. lbs.		11.7	11.7	13.9	16.3	18.5	57.4	67.0		11.7	5.3	13.9	16.3	23.1	80.7	92.8	

DIMENSIONS AND CONCRETE QUANTITIES

D	COMMON DIMS. H	B	T	USING CONCRETE PIPE SINGLE PIPE G1	G2	L 30	YD³	G1	G2	DOUBLE PIPE S	S 30	L 30	YD³
15"	3'-4"	1'-8"	1⅞"	2'-9"	3'-2"	5'-11"	0.792	2'-9"	3'-2"	2'-2"	2'-6"	8'-5"	1.054
18"	3'-7"	1'-10"	2"	3'-2"	3'-8"	6'-10"	1.023	3'-2"	3'-8¼"	2'-7"	2'-11¾"	9'-10"	1.390
24"	4'-2"	2'-1"	2½"	4'-0"	4'-8"	8'-8"	1.613	4'-0"	4'-8"	3'-5"	3'-11½"	12'-8"	2.207
30"	4'-9"	2'-5"	2¾"	4'-7"	5'-4"	9'-11"	2.289	4'-7"	5'-4"	4'-3"	4'-10¾"	14'-10"	3.186
36"	5'-3"	2'-8"	3"	5'-6"	6'-4"	11'-10"	3.220	5'-6"	6'-4⅜"	5'-0"	5'-9¼"	17'-8"	4.447
42"	5'-10"	2'-11"	3½"	6'-4"	7'-4"	13'-8"	4.375	6'-4"	7'-4"	5'-10"	6'-8¾"	20'-5"	6.012
48"	6'-5"	3'-3"	4"	7'-2"	8'-3"	15'-5"	5.580	7'-2"	8'-3¼"	6'-8"	7'-8¼"	23'-2"	8.062

USING CORRUGATED STEEL PIPE

COMMON DIMS. H	B	SINGLE PIPE G1	G2	L 30	YD³	G1	G2	DOUBLE PIPE S	S 30	L 30	YD³
3'-0"	1'-6"	2'-6"	2'-11"	5'-5"	0.616	2'-6"	2'-11"	2'-0"	2'-4"	7'-9"	0.848
3'-3"	1'-8"	2'-11"	3'-4"	6'-3"	0.816	2'-11⅛"	3'-4⅜"	2'-3½"	2'-8"	8'-11"	1.109
3'-9"	1'-11"	3'-8"	4'-3"	7'-11"	1.282	3'-8¼"	4'-3¼"	3'-0"	3'-5½"	11'-5"	1.747
4'-3"	2'-2"	4'-5"	5'-1"	9'-6"	1.868	4'-5⅛"	5'-1⅛"	3'-8"	4'-2¾"	13'-9"	2.531
4'-9"	2'-5"	5'-2"	6'-0"	11'-2"	2.621	5'-2⅜"	6'-0⅜"	4'-3"	4'-10¼"	16'-5"	3.596
5'-3"	2'-8"	5'-11"	6'-10"	12'-9"	3.517	5'-11¼"	6'-10⅛"	5'-3"	6'-0¾"	18'-10"	4.820
5'-9"	2'-11"	6'-8"	7'-8"	14'-4"	4.591	6'-8⅜"	7'-6⅞"	6'-0"	6'-11¼"	21'-4"	6.320

*SEE SHEET 2

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS** 15" THRU 48" PIPE 60° OR 120° SKEW	SHEET 1 OF 2 **838d02s1**

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

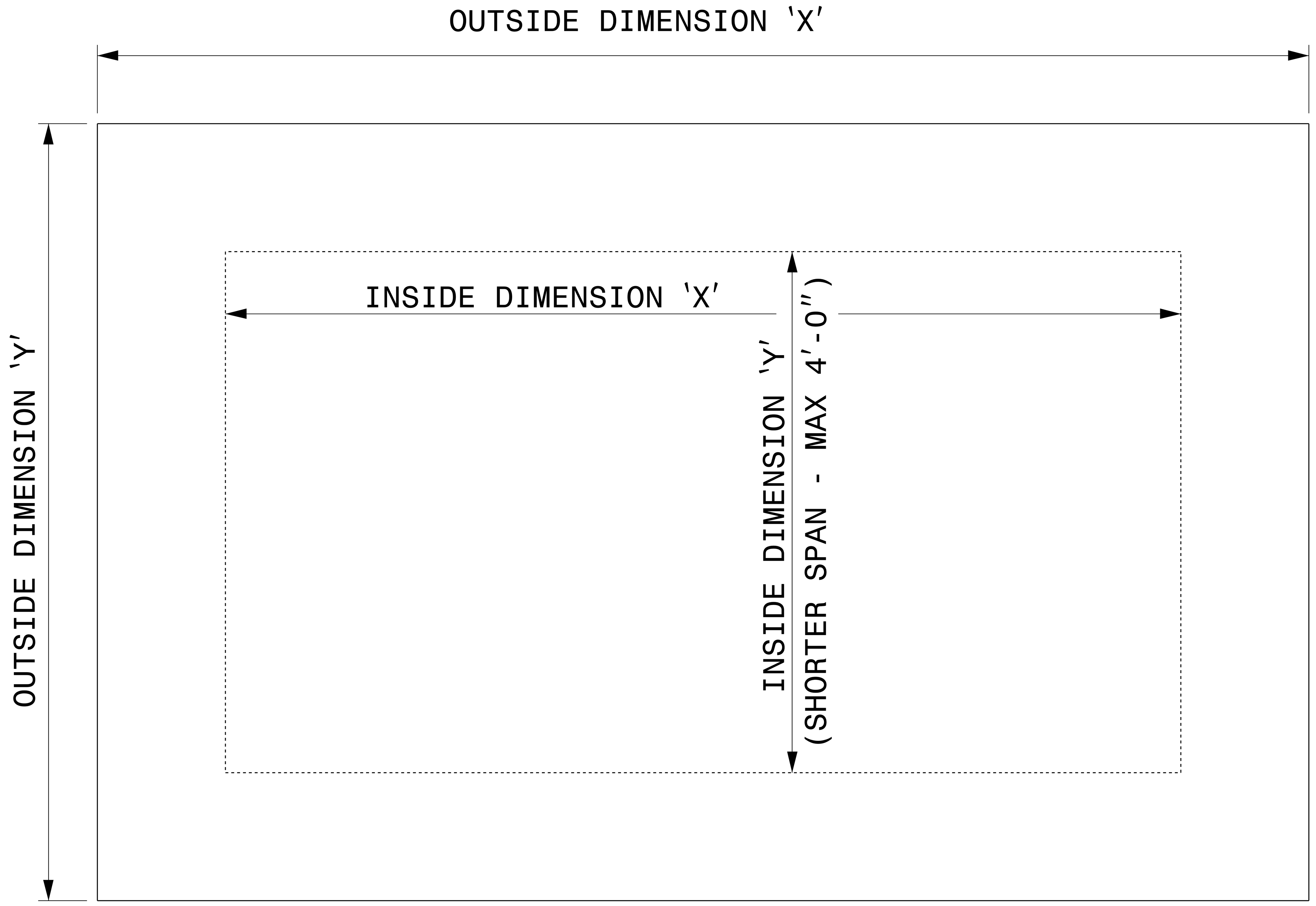
ENGLISH DETAIL DRAWING FOR **CONCRETE ENDWALL FOR SINGLE AND DOUBLE PIPE CULVERTS** 15" THRU 48" PIPE 60° OR 120° SKEW

SHEET 1 OF 2 **838d02s1**

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

SEE PLATE FOR TITLE

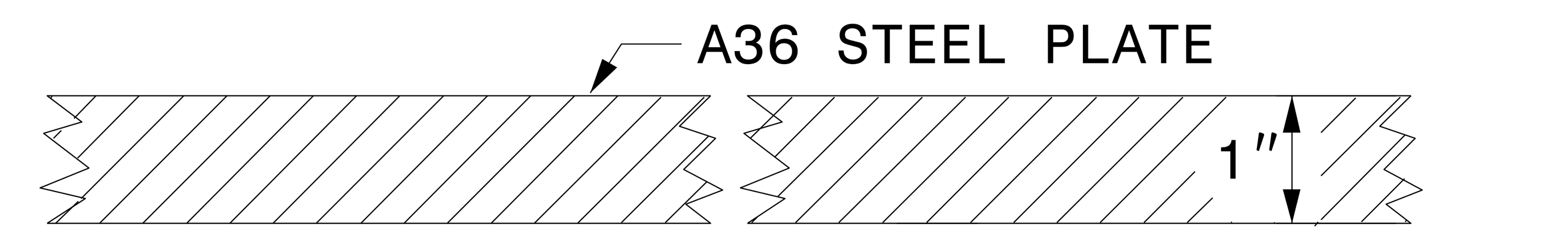
ORIGINAL BY: STD.NO.838.01 DATE: 4-17-99
MODIFIED BY: T.S. SPELL DATE: 12-10-08
CHECKED BY: DATE:
FILE SPEC.: s:user/details/metric/stand/838d02s1.dgn



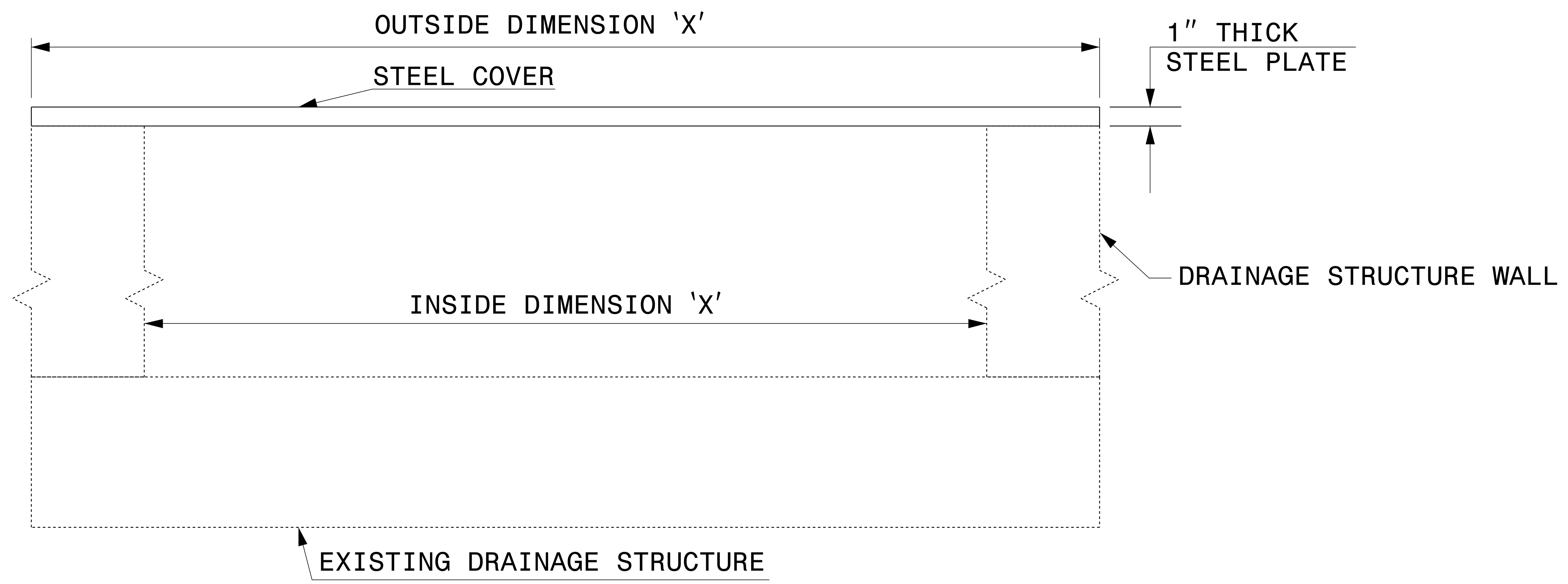
PLAN VIEWS

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

1/26/2024

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

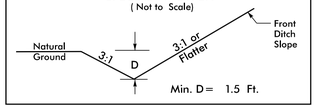
DETAIL OF TEMPORARY
1" STEEL COVER
OVER DRAINAGE STRUCTURE

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

5/14/99

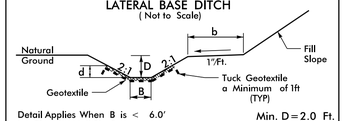
REVISIONS

DETAIL 1
SPECIAL 'V' DITCH
(Not to Scale)



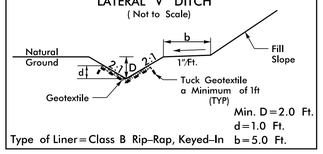
FROM STA. 12+00 TO STA. 13+00 –Y3– (LT)

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



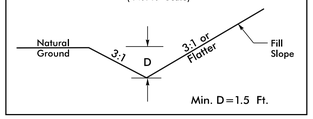
FROM STA. 13+00 TO STA. 14+68 –Y3– (LT)

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



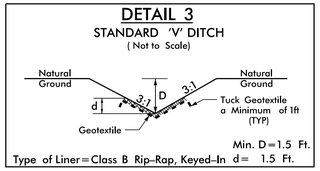
FROM STA. 32+75 TO STA. 34+00 –L– (RT)

DETAIL 8
SPECIAL 'V' DITCH
(Not to Scale)



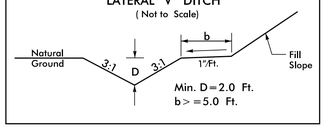
FROM STA. 18+50 TO STA. 19+65 –L– (RT)

DETAIL 3
STANDARD 'V' DITCH
(Not to Scale)



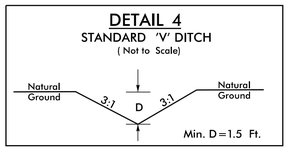
FROM STA. 34+00 TO STA. 36+00 –L– (RT)

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



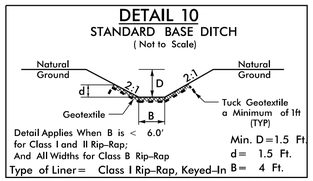
FROM STA. 19+65 TO STA. 23+45 –L– (RT)
FROM STA. 23+75 TO STA. 27+00 –L– (RT)

DETAIL 4
STANDARD 'V' DITCH
(Not to Scale)



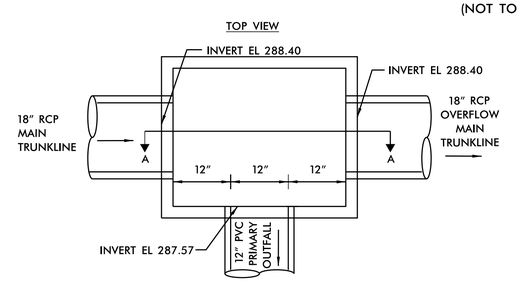
FROM STA. 36+00 TO STA. 37+40 –L– (RT)
STA. 37+00 –L– (RT)
FROM STA. 38+30 TO STA. 40+22 –L– (RT)

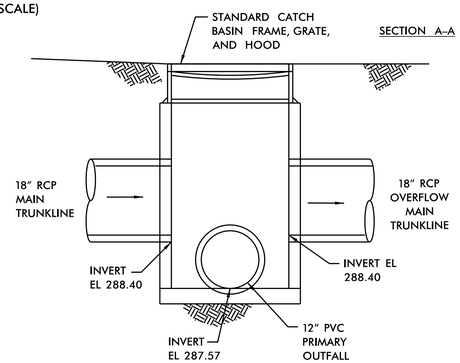
DETAIL 10
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 13+14 TO STA. 13+43 –Y2REV– (LT)

DETAIL 12
DRAINAGE STRUCTURE 0407, CB AND SPLITTER BOX
(NOT TO SCALE)

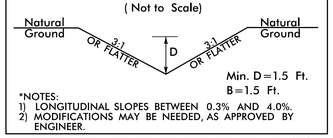




NOTES:
1. USE NCDOT STANDARD DRAWING 840.02. USE STRUCTURE THAT ALLOWS FOR MIN. DIMENSIONS SHOWN IN SECTION A–A.
2. GROUT BOTTOM OF STRUCTURE FOR POSITIVE FLOW LINE.
3. PROVIDE MINIMUM OF 12 INCHES BETWEEN INTERIOR PIPE WALL AND ANY DRAINAGE STRUCTURE WALL FACE.

STA. 19+60 –L– (RT)

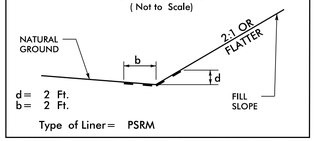
DETAIL 5
STANDARD V GRASSED SWALE
(Not to Scale)



*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

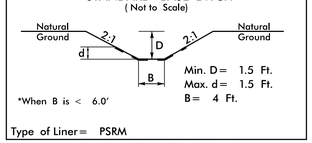
FROM STA. 29+50 TO STA. 31+50 –L– (RT)

DETAIL 11
TOE PROTECTION
(Not to Scale)



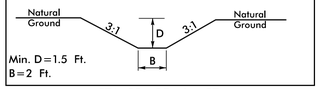
FROM STA. 42+50 TO STA. 44+00 –L– (LT)

DETAIL 14
STANDARD BASE DITCH
(Not to Scale)



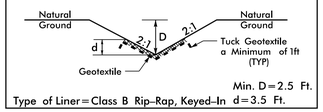
STA. 12+80 –Y2REV– (RT)

DETAIL 6
STANDARD BASE DITCH
(Not to Scale)



STA. 32+35 –L– (RT)

DETAIL 13
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 27+00 TO STA. 27+40 –L– (RT)

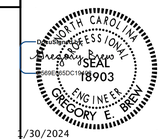
1/5/2024

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2D-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER



1/30/2024

HYDRAULICS ENGINEER

1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
P-5720	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

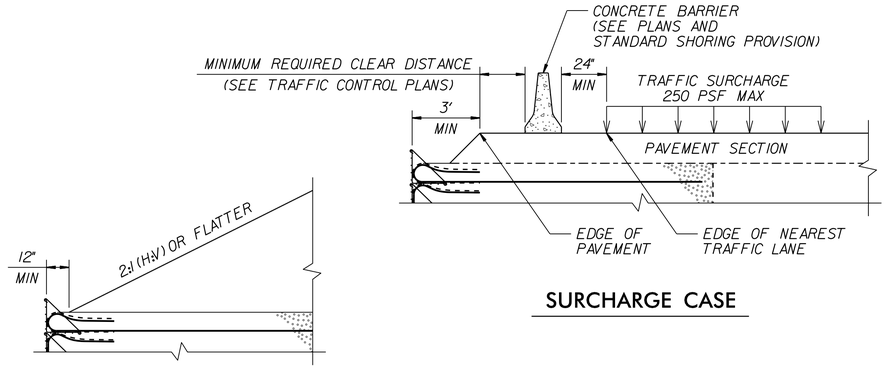
DocuSigned by: Scott A. Hidden F760CAEB96FC4D3... 8/31/2021

SIGNATURE DATE

ENGINEER

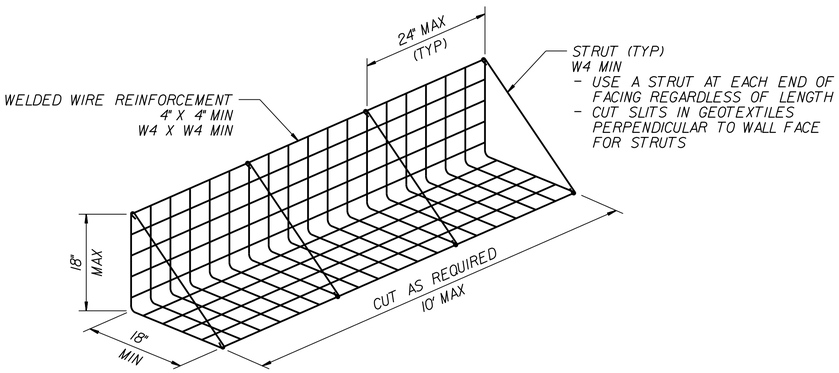
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

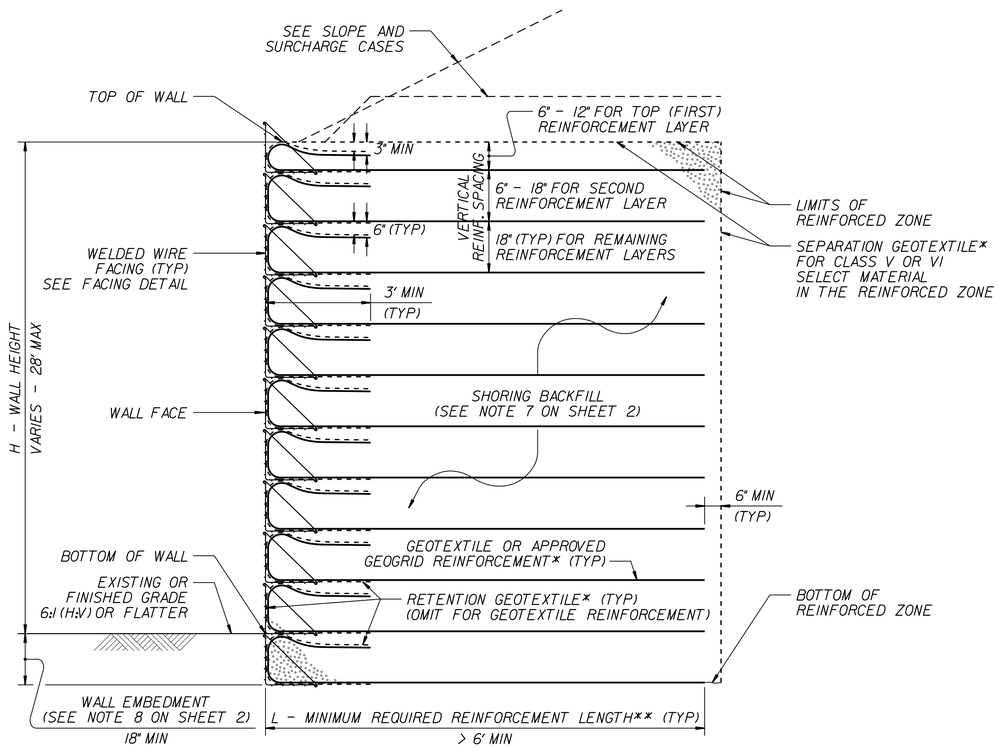


SURCHARGE CASE

SLOPE CASE

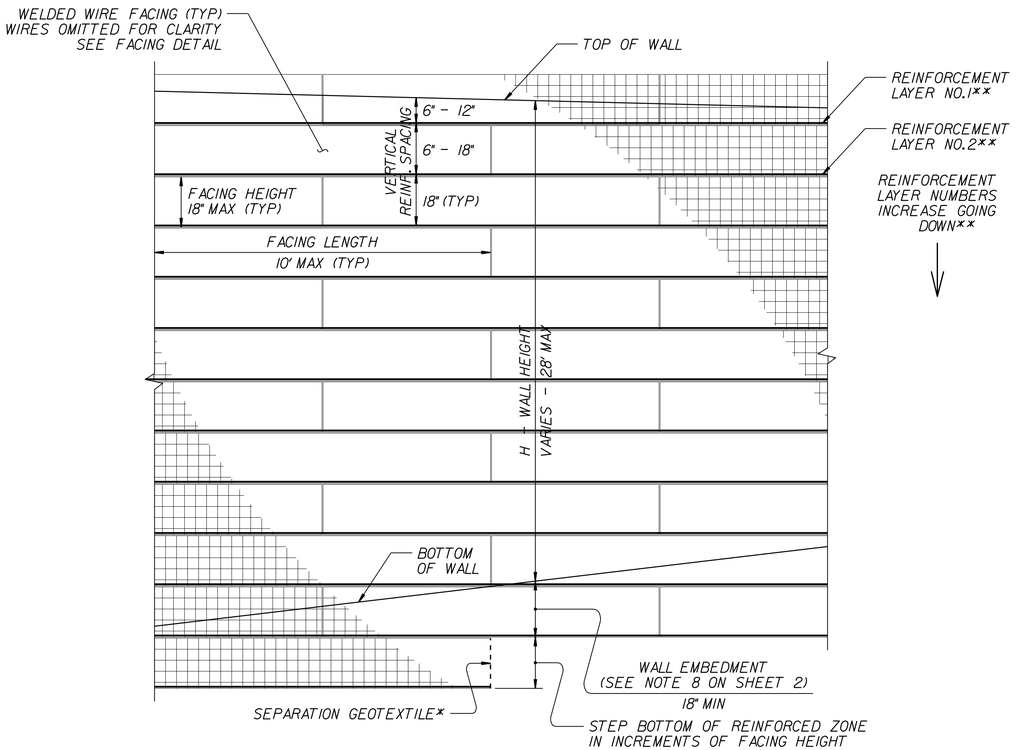


FACING DETAIL



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.
P-5720	2G-2

GEOTECHNICAL ENGINEER

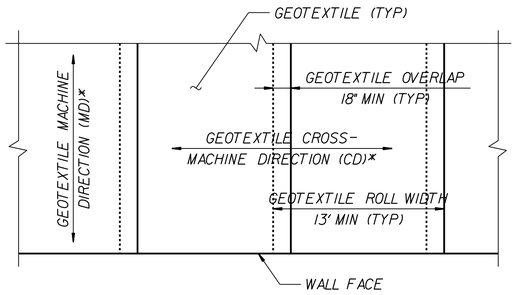
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 8/31/2021
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

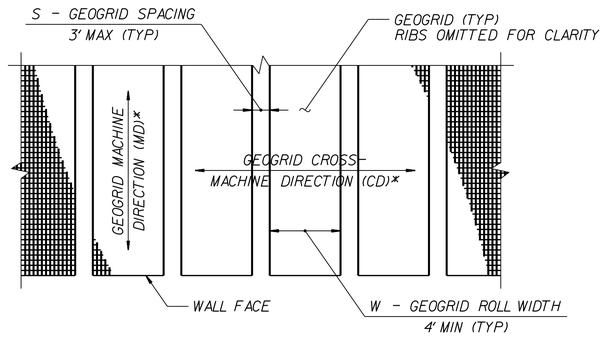
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

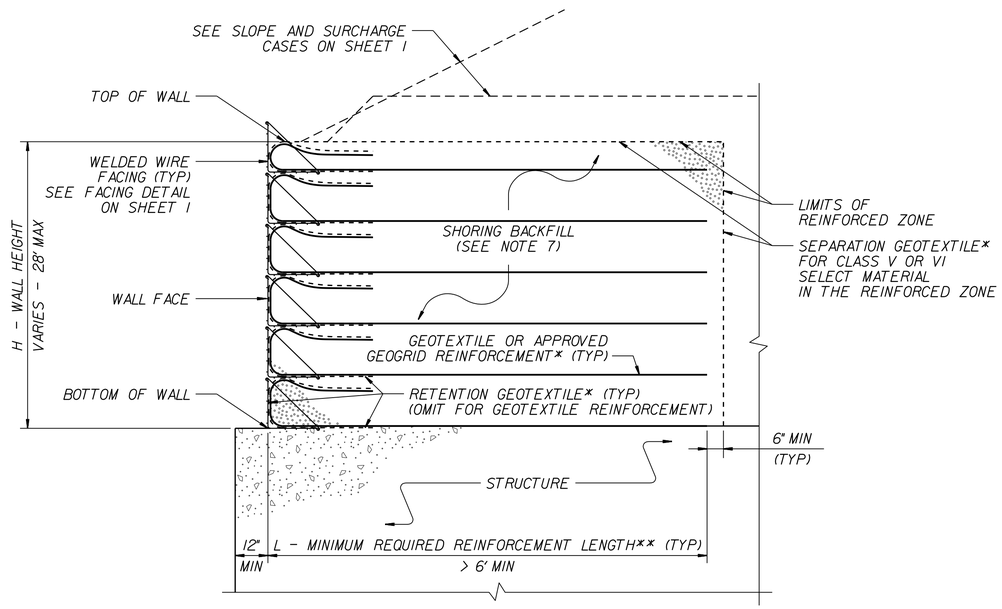


GEOGRID PLACEMENT

(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 I 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.
P-5720	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 8/31/2021 F760CAEB96FC4D3...

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

COMPUTED BY: SRR DATE: 08/31/21
CHECKED BY: GEB DATE: 09/02/21

PROJECT REFERENCE NO.	SHEET NO.
P-5720	3B-1

Kimley»Horn ©2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

REVISIONS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	EXCAVATION		EMBANKMENT		WASTE
		TOTAL UNCLASSIFIED	UNDERCUT	EMBANKMENT +%	BORROW	TOTAL
PHASE I						
SUMMARY NO. 1						
–L– (NORTH SIDE) 11+00.00	–L– (NORTH SIDE) 31+65.00	458		107264	106956	150
–Y2– 10+31.00	–Y2– 16+67.00	37		9733	9696	
–DRW1– 10+30.00	–DRW1– 11+55.00	17		918	901	
TOTAL SUMMARY NO. 1						
	SUBTOTAL	512		117915	117553	150
PHASE II						
SUMMARY NO. 2						
–L– (NORTH SIDE) 32+89.00	–L– (NORTH SIDE) 46+75.00	1642		44972	43330	
TOTAL SUMMARY NO. 2						
	SUBTOTAL	1642		44972	43330	
PHASE III						
SUMMARY NO. 3						
–L– (SOUTH SIDE) 11+00.00	–L– (SOUTH SIDE) 31+65.00	291		14308	14017	
–Y3– 10+90.00	–Y3– 15+43.00	299		21145	20846	
TOTAL SUMMARY NO. 3						
	SUBTOTAL	590		35453	34863	
PHASE IV						
SUMMARY NO. 4						
–L– (SOUTH SIDE) 32+89.00	–L– (SOUTH SIDE) 46+75.00	35		11830	11795	
–Y4– 11+70.00	–Y4– 13+85.00	69		2353	2284	
TOTAL SUMMARY NO. 4						
	SUBTOTAL	104		14183	14079	
	TOTAL	2848		212523	209825	150
REPLACE UNSUITABLE WASTE CONTENGENCY					150	150
LOSS DUE TO CLEARING & GRUBBING		–1400			1400	
PROJECT TOTAL		1448		212523	211375	300
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT					10569	
GRAND TOTAL		1448		212523	221944	300
SAY		1500			222000	

CLASS IV SUBGRADE STABILIZATION= 500 TONS

UNDERCUT= 4750 CY

SHALLOW UNDERCUT= 250 CY

DDE= 2260 CY

SELECT GRANULAR MATERIAL= 4700 CY

THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY FALCON ENGINEERING.

12/21/2023

COMPUTED BY: SRR DATE: 08/31/21
CHECKED BY: GEB DATE: 09/02/21

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
P-5720	3B-2

Kimley»Horn
© 2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

"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 TL-3
NG = NON-GATING IMPACT ATTENUATOR TYPE TL-3

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE TL-3			REMOVE EXISTING GUARDRAIL	REMOVE AND RESET EXISTING GUARDRAIL		REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	CAT-1	AT-1	TYPE III	GREU TL-2	GREU TL-3	EA	G	NG				
-L-	17+25.00	21+25.00	LT	400.00'			20+25.00	18+25.00	12'	14'					1				1							
-L-/Y2REV-	21+90.00	12+50.00	LT	575.00'	50.00'		11+75.00	22+90.00	VAR	VAR					1			1								R=28' AND R=85' SHOP CURVED
-Y2REV/-L-	12+50.00	31+64.73	LT	550.00'	137.50'		31+64.73	11+75.00	VAR	VAR	325'		6.5'				1	1								
-L-/-Y3-	24+25.00	12+00.00	RT	625.00'	50.00'		25+25.00	12+75.00	14'	14'					1				1							
-Y3-/-L-	15+00.00	31+64.73	RT	275.00'	50.00'		15+00.00	31+64.73	VAR	VAR		97.5'		6.5'		1	1									
-Y3-	12+00.00	15+00.00	RT	300.00'			12+75.00	15+00.00	2'	12'	25'		1'		1			1								
-L-	32+89.23	38+64.23	LT	575.00'			37+89.23	32+89.23	14'	14'	325'		6.5'				1		1							
-L-/-Y4-	32+89.23	12+75.00	RT	500.00'	50.00'		32+89.23	12+75.00	14'	14'		97.5'		6.5'	1		1									
			SUBTOTAL	3800.00'	337.50'										5	1	4	3	3							
	LESS ANCHOR DEDUCTIONS																									
	CAT-1	5 @ 6.25'	=	-31.25'																						
	AT-1	1 @ 6.25'	=	-6.25'																						
	GREU TL-3	3 @ 50.00'	=	-150.00'																						
	TYPE III	4 @ 18.75'	=	-75.00'																						
	GREU TL-2	3 @ 25.00'	=	-75.00																						
			PROJ. TOTAL	3462.50'	337.50'																					
			SAY	3475.00'	337.50'																					
			ADDITIONAL GUARDRAIL POSTS SAY 5 EA																							

REVISIONS

1/24/2024

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

REVISIONS

1/26/2024

REMOVAL OF EXISTING ASPHALT PAVEMENT			
LINE	STATION TO STATION	LOCATION	SQ. YDS.
–L–	17+55 TO 27+51	RT	4411
–L–	28+69 TO 32+05	RT	1060
–L–	32+35 TO 37+38	RT	1527
–L–	38+33 TO 41+21	RT	581
–Y2REV–	12+11 TO 13+23	LT	95
–Y2REV–	12+14 TO 12+46	RT	9
–Y2REV–	13+33 TO 13+63	RT	7
TOTAL			7690
SAY			7700
WITHIN RAILROAD R/W – REMOVAL BY OTHERS			
–L–	32+05 TO 32+35	RT	158
SAY			160

BREAKING OF EXISTING ASPHALT PAVEMENT			
LINE	STATION TO STATION	LOCATION	SQ. YDS.
–L–	12+81 TO 24+31	RT	1783
–L–	24+76 TO 28+01	RT	870
–L–	27+11 TO 27+47	LT	8
–L–	28+52 TO 31+70	RT	1625
–L–	28+75 TO 29+01	LT	226
–L–	32+83 TO 37+65	RT	1898
–L–	38+09 TO 41+97	RT	1044
–L–	42+30 TO 43+01	RT	11
–DRW1–	10+33 TO 11+55	LT	85
–Y2REV–	11+93 TO 13+94	LT	293
–Y2REV–	12+14 TO 12+56	RT	61
–Y2REV–	13+15 TO 13+65	RT	66
–Y2REV–	13+96 TO 14+21	RT	38
–Y2REV–	16+55 TO 16+77	RT	55
–Y3–	11+35 TO 15+10	RT	410
TOTAL			8473
SAY			8500

CHAIN LINK FENCE, 48" FABRIC					
STATION	STATION	LT or RT	FABRIC (LF)	LINE POST	TERMINAL POST
22+00 –L–	25+30 –L–	LT	336	28	2
12+75 –Y3–	15+00 –Y3–	RT	215	18	2
TOTAL			551	45	4
SAY			560	47	4

L21785

COMPUTED BY: DLH DATE: 08/31/21

CHECKED BY: DWT DATE: 09/02/21

PROJECT NO.	SHEET NO.
P-5720	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	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12	15	18	24	30	36	42	48
L 11+97	32	LT	0401		311.9											
			0401	0402		308.7	307.2									
L 13+50	33	LT	0402		310.4											
			0402	0403		307.2	302.0									
L 15+50	33	LT	0403		305.4											
			0403	0404		302.0	295.2									
L 17+50	33	LT	0404		298.4											
			0404	0405		295.2	293.0	0.6								
L 18+30	32	LT	0405		296.2											
			0405	0406		293.0	292.3	0.3								
L 18+30	32	RT	0406		296.7											
			0406	0407		292.3	288.4	0.3								
L 19+60	33	RT	0407		291.7											
			0407	0412		288.4	282.7	0.4								
L 19+62	52		0408	0407		288.9	286.0		40							
L 20+83	68	LT	0409		278.5											
			0409	0410		276.5	275.5									
L 21+20	78	LT	0410		277.5											
			0410	0411		275.5	275.1									
L 21+48	114	LT	0411		277.5											
			0411	0501		275.1	274.0									
L 21+50	33	RT	0412		285.9											
			0412	0502		282.7	280.3	0.6								
L 21+65	100	RT	0413			281.4	280.9									
L 22+75	33	RT	0502		284.5											
			0502	0503		280.3	279.4	0.8								
L 23+23	32	RT	0503		284.4											
			0503	0504		279.4	277.4	1.0								
L 23+75	32	RT	0504		284.5											
			0504	0506		275.0	273.4									
L 23+55	116	RT	0505		280.8											
			0505	0514		276.5	275.3	0.3								
L 25+40	33	RT	0506		287.1											
			0506	0507		273.4	269.0									
Y2REV 10+80	47	LT	0507		276.8											
			0507	0508		269.0	266.2									
Y2REV 11+37	41	LT	0508		274.5											
			0508	0509		266.2	266.0									
L 27+30	33	LT	0510		293.5											
			0510	0517		289.4	288.7									
L 27+30	32	RT	0511		293.3											
			0511	0510		290.0	289.4									
L 27+65	86	LT	0512		276.0											
			0512	0513		265.0	264.7	0.3								
L 23+70	53	RT	0514		279.5											
			0514	0504		275.3	275.0	0.3								
			0515	0505		276.8	276.7	1.1								
L 27+37	130	RT	0516		270.5											
			0516	0535		270.5	270.3									
L 28+00	33	LT	0517		296.5											
					SHEET TOTALS				40							

Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
		x	x		

C. S. PIPE SIZE	12	15	18	24	30	36	42	48
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109
L 11+97								
L 13+50								
L 15+50								
L 17+50								
L 18+30								
L 18+30								
L 19+60								
L 19+62								
L 20+83								
L 21+20								
L 21+48								
L 21+50								
L 21+65								
L 22+75								
L 23+23								
L 23+75								
L 23+55								
L 25+40								
Y2REV 10+80								
Y2REV 11+37								
L 27+30								
L 27+30								
L 27+65								
L 23+70								
L 27+37								
L 28+00								
SHEET TOTALS								

R. C. PIPE CLASS III SIZE 12	15	18	24	30	36	42	48
L 11+97							
L 13+50							
L 15+50							
L 17+50							
L 18+30							
L 18+30							
L 19+60							
L 19+62							
L 20+83							
L 21+20							
L 21+48							
L 21+50							
L 21+65							
L 22+75							
L 23+23							
L 23+75							
L 23+55							
L 25+40							
Y2REV 10+80							
Y2REV 11+37							
L 27+30							
L 27+30							
L 27+65							
L 23+70							
L 27+37							
L 28+00							
SHEET TOTALS							

R. C. PIPE CLASS IV SIZE 12	15	18	24	30	36	42	48
L 11+97							
L 13+50							
		148					
L 15+50							
		192					
L 17+50							
		192					
L 18+30							
		76					
L 18+30							
			64				
L 19+60							
			132				
L 19+62							
L 20+83							
			188				
L 21+20							
L 21+48							
L 21+50							
			124				
L 21+65		20					
L 22+75							
			48				
L 23+23							
			52				
L 23+75							
					160		
L 23+55							
				64			
L 25+40							
					132		
Y2REV 10+80							
					64		
Y2REV 11+37							
					16		
L 27+30							
			68				
L 27+30							
			64				
L 27+65							
						16	
L 23+70							
				20			
			8				
L 27+37							
						12	
L 28+00							
SHEET TOTALS		628	748	84	372	28	

R. C. PIPE CLASS V SIZE 12	15	18	24	30	36	42	48
L 11+97							
L 13+50							
L 15+50							
L 17+50							
L 18+30							
L 18+30							
L 19+60							
L 19+62							
L 20+83							
L 21+20							
L 21+48							
L 21+50							
L 21+65							
L 22+75							
L 23+23							
L 23+75							
L 23+55							
L 25+40							
Y2REV 10+80							
Y2REV 11+37							
L 27+30							
L 27+30							
L 27+65							
L 23+70							
L 27+37							
L 28+00							
SHEET TOTALS							

ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS
CY	CY
L 11+97	
L 13+50	
L 15+50	
L 17+50	
L 18+30	
L 18+30	
L 19+60	
L 19+62	
L 20+83	
L 21+20	
L 21+48	
L 21+50	
L 21+65	
L 22+75	
L 23+23	
L 23+75	
L 23+55	
L 25+40	
Y2REV 10+80	
Y2REV 11+37	
L 27+30	
L 27+30	
L 27+65	
L 23+70	
L 27+37	4.500
L 28+00	
SHEET TOTALS	4.500

DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.
L 11+97	1		
L 13+50	1		
L 15+50	1		
L 17+50	1		
L 18+30	1		
L 18+30	1		
L 19+60	1		
L 19+62			
L 20+83	1		
L 21+20	1		
L 21+48	1		
L 21+50	1		
L 21+65			
L 22+75	1		
L 23+23	1		
L 23+75	1	4.5	
L 23+55	1		
L 25+40	1	5.0	3.7
Y2REV 10+80	1	2.8	
Y2REV 11+37	1	3.4	
L 27+30	1		
L 27+30	1		
L 27+65	1	5.0	1.0
L 23+70	1		
L 27+37			
L 28+00	1	2.8	
SHEET TOTALS	23	23.5	4.7

CB. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G
L 11+97	1		
L 13+50	1		
L 15+50	1		
L 17+50	1		
L 18+30	1		
L 18+30	1		
L 19+60	1		
L 19+62			
L 20+83	1		
L 21+20	1		
L 21+48	1		
L 21+50	1		
L 21+65			
L 22+75	1		
L 23+23	1		
L 23+75	1		
L 23+55	1		
L 25+40	1		
Y2REV 10+80	1		
Y2REV 11+37	1		
L 27+30	1		
L 27+30	1		
L 27+65	1		
L 23+70	1		
L 27+37			
L 28+00	1		
SHEET TOTALS	17	1	8

D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.20	J.B. STD. 840.31 OR STD. 840.32	M.H. FRAME AND COVER STD. 840.54	CONVERT EXIST C.B. TO 2 G.I.	CONVERT EXISTING C.B. TO J.B.	ADJUST C.B.	ADJUST J.B.	15" C.S. ELBOW	18" C.S. ELBOW
L 11+97													
L 13+50													
L 15+50													
L 17+50													
L 18+30													
L 18+30													
L 19+60													
L 19+62													
L 20+83	1	1											
L 21+20	1	1											
L 21+48	1	1											
L 21+50													
L 21+65													
L 22+75													
L 23+23													
L 23+75													
L 23+55													
L 25+40													
Y2REV 10+80							1	1					
Y2REV 11+37							1	1					
L 27+30													
L 27+30													
L 27+65							1	1					
L 23+70											1		
L 27+37													
L 28+00													
SHEET TOTALS	3	3					3	3		1			

FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 11+97		
L 13+50		
L 15+50		
L 17+50		
L 18+30		
L 18+30		
L 19+60		
L 19+62		
L 20+83		
L 21+20		
L 21+48		
L 21+50		
L 21+65		
L 22+75		
L 23+23		
L 23+75		
L 23+55		TEMP C.B. REMOVE FOR FINAL
L 25+40		
Y2REV 10+80		
Y2REV 11+37		
L 27+30		
L 27+30		
L 27+65		RAISE FOR FINAL
L 23+70		TEMP C.B. CONVERT TO J.B. FOR FINAL. SEE SHEET 2C-1
		TEMP PIPE. REMOVE FOR FINAL
L 27+37		
L 28+00		
SHEET TOTALS		

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

LL21785

COMPUTED BY:	DLH	DATE:	08/31/21
CHECKED BY:	DWT	DATE:	09/02/21

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
P-5720	3D-2

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	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %
		0517	0512		288.7	271.6	0.9
Y3 14+70	27 LT	0518		294.9			
		0518	0519		291.6	291.4	
Y3 14+70	2 RT	0519		295.9			
		0519	0520		291.4	291.1	
Y3 14+70	28 RT	0520		295.8			
		0520	0521		291.1	284.0	
Y3 13+09	27 RT	0521		287.3			
		0521	0524		284.0	282.4	
Y3 12+02	23 LT	0522		285.7			
		0522	0523		282.0	281.7	
Y3 12+02	25 RT	0524		286.6			
		0524	0522		282.4	282.0	0.4
Y3 14+23	82 RT	0525		275.2			
		0525	0526		271.8	271.0	
		0527	0525		273.8	272.0	
L 27+47	55 RT	0528		275.2			
		0528	0512		269.2	266.3	0.3
L 29+45	33 LT	0529		303.8			
		0529	0517		300.0	292.3	
L 29+45	33 RT	0530		303.8			
		0530	0529		300.6	300.0	
L 31+35	33 LT	0531		310.7			
		0531	0529		306.8	300.0	
L 31+35	32 RT	0532		310.7			
		0532	0531		307.5	306.8	
L 28+50	8 RT	0533		271.9			
		0533	0534		268.1	262.7	
L 27+39	118 RT	0535		276.1			
		0535	0528		270.3	269.2	0.3
L 29+96	120 RT	0536			275.5	274.8	
L 24+37	116 RT	0537			276.8	276.6	
L 25+43	117 RT	0538			275.6	275.4	
Y2REV 12+98	15 LT	0540		270.3			
Y2REV 12+83	15 RT	0541		271.1			
Y2REV 13+80	15 LT	0543		267.4			
Y2REV 13+84	15 RT	0544		267.3			
Y2REV 14+31	15 RT	0545		266.9			
		0545	0544		263.8	262.6	
Y2REV 14+50	16 LT	0546		266.9			
		0546	0543		263.9	262.2	
Y2REV 14+40	15 RT	0547		266.9			
		0547	0545		263.9	263.8	
Y2REV 15+50	15 LT	0548		269.6			
		0548	0546		266.6	263.9	
L 26+88	117 RT	0549			274.0	273.7	
Y2REV 12+94	6 LT	0550			264.2	263.3	
L 35+75	32 RT	0601		309.6			
		0601	0602		306.6	301.5	
L 37+00	32 RT	0602		305.3			
							SHEET TOTALS

FROM	TO	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 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	C. S. PIPE 12 .064	15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	
0517	0512																64						
0518																							
0518	0519																						
0519																							
0519	0520																						
0520																							
0520	0521																						
0521																							
0521	0524																						
0522																							
0522	0523																						
0524																							
0524	0522																						
0525																							
0525	0526																						
0527	0525																						
0528																							
0528	0512																						
0529																							
0529	0517																						
0530																							
0530	0529																						
0531																							
0531	0529																						
0532																							
0532	0531																						
0533																							
0533	0534																						
0535																							
0535	0528																						
0536																							
0537																							
0538																							
0540																							
0541																							
0543																							
0544																							
0545																							
0545	0544																						
0546																							
0546	0543																						
0547																							
0547	0545																						
0548																							
0548	0546																						
0549																							
0550																							
0601																							
0601	0602																						
0602																							
SHEET TOTALS																	64						

FROM	TO	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	
0517	0512																		
0518																			
0518	0519											28							
0519																			
0519	0520											24							
0520																			
0520	0521											156							
0521																			
0521	0524											108							
0522																			
0522	0523												28						
0524																			
0524	0522											48							
0525																			
0525	0526													160					
0527	0525												44						
0528																			
0528	0512																		
0529																			
0529	0517												144						
0530																			
0530	0529												64						
0531																			
0531	0529												188						
0532																			
0532	0531												64						
0533																			
0533	0534																		
0535																			
0535	0528																		
0536												24							
0537												20							
0538												20							
0540																			
0541																			
0543																			
0544																			
0545																			
0545	0544											48							
0546																			
0546	0543											68							
0547																			
0547	0545											8							
0548																			
0548	0546											100							
0549												24							
0550																	88		
0601																			
0601	0602											120							
0602																			
SHEET TOTALS												796	532	160			88		

FROM	TO	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY
0517	0512												
0518													
0518	0519												
0519													
0519	0520												
0520													
0520	0521												
0521													
0521	0524												
0522													
0522	0523												
0524													
0524	0522												
0525													
0525	0526												
0527	0525												
0528													
0528	0512							140					
0529													
0529	0517												
0530													
0530	0529												
0531													
0531	0529												
0532													
0532	0531												
0533													
0533	0534					128							
0535													
0535	0528							60					
0536													
0537													
0538													
0540													
0541													
0543													
0544													
0545													
0545	0544												
0546													
0546	0543												
0547													
0547	0545												
0548													
0548	0546												
0549													
0550											4.500		
0601													
0601	0602												
0602													
SHEET TOTALS						128		200			4.500		

FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
0517	0512								
0518		1			1		1		
0518	0519								
0519		1			1		1		
0519	0520								
0520		1			1			1	
0520	0521								
0521		1			1			1	
0521	0524								
0522		1			1	1			
0522	0523								
0524		1			1	1			
0524	0522								
0525		1							
0525	0526								
0527	0525								
0528		1	1.0						
0528	0512								
0529		1			1		1		
0529	0517								
0530		1			1			1	
0530	0529								
0531		1			1		1		
0531	0529								
0532		1			1			1	
0532	0531								
0533		1							
0533	0534								
0535		1	0.8		1			1	
0535	0528								
0536									
0537									
0538									
0540		1	1.7		1			1	
0541		1	2.2		1		1		
0543		1	0.2		1			1	
0544		1			1		1		
0545		1			1	1			
0545	0544								
0546		1			1	1			
0546	0543								
0547		1			1			1	
0547	0545								
0548		1			1		1		
0548	0546								
0549									
0550									
0601		1			1		1		
0601	0602								
0602		1			1		1		
SHEET TOTALS		24	5.9		21	4	9	8	

FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	J.B. STD. 840.31 OR STD. 840.32		M.H. FRAME AND COVER STD. 840.54	CONVERT EXIST C.B. TO 2 G.I.	CONVERT EXISTING C.B. TO J.B.	ADJUST C.B.	ADJUST J.B.	15" C.S. ELBOW	18" C.S. ELBOW		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
0517	0512															2				
0518																				
0518	0519																			
0519																				
0519	0520																			
0520																				
0520	0521																			
0521																				
0521	0524																			
0522																				
0522	0523																			
0524																				
0524	0522																			
0525					1		1													
0525	0526																			
0527	0525																			
0528								1												
0528	0512																			
0529																				
0529	0517																			
0530																				
0530	0529																			
0531																				
0531	0529																			
0532																				
0532	0531																			
0533								1												
0533	0534																			TEMP PIPE. PFA AFTER CONSTRUCTION
0535										1		1								TEMP C.B. CONVERT TO J.B. FOR FINAL. SEE SHEET 2C-1
0535	0528																			
0536																				
0537																				
0538																				
0540																				
0541																				
0543																				
0544																				
0545																				
0545	0544																			
0546																				
0546	0543																			
0547																				
0547	0545																			
0548																				
0548	0546																			
0549																				
0550																				SEE SPECIAL HEADWALL DETAIL SHEET 2C-3
0601																				
0601	0602																			
0602																				
SHEET TOTALS					1		1	2		1		1				2				

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

LL21785

COMPUTED BY: DLH DATE: 08/31/21

CHECKED BY: DWT DATE: 09/02/21

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
P-5720	3D-3

**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	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 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	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)	
			0602	0603		301.5	292.0	0.8															40							
Y4 13+24	20	LT	0604		300.4																									
			0604	0605		294.6	292.3																							
Y4 13+25	20	RT	0606		299.8																									
			0606	0607		294.5	292.0																							
Y4 12+26	20	LT	0608		298.6																									
			0608	0604		295.6	294.6																							
Y4 12+26	20	RT	0609		298.6																									
			0609	0606		295.6	294.5																							
L 39+00	32	RT	0610		295.3																									
			0610	0611		292.3	285.6																							
L 40+17	32	RT	0611		288.6																									
			0611	0612		285.6	284.6																							
L 40+22	66	RT	0612		286.6																									
L 41+65	46	RT	0613		281.3																									
L 42+00	33	LT	0614		277.3																									
			0614	0615		273.9	264.0																							
L 43+75	33	LT	0615		268.5																									
L 43+75	32	RT	0616		269.7																									
L 45+00	33	LT	0617		263.8																									
			0617	0618		260.8	258.6																							
L 45+86	33	LT	0618		261.6																									
L 45+93	32	RT	0620		261.4																									
Y2REV 14+27	16	LT																												
Y3 14+43	30	RT																												
Y3 14+24	14	LT																												
Y3 14+59	73	RT																												
Y3 14+93	55	RT																												
L 14+22	27	LT																												
L 16+00	19	LT																												
L 17+70	8	LT																												
L 19+80	21	RT																												
L 22+29	47	RT																												
L 23+45	84	RT																												
L 22+65	111	RT																												
L 21+34	101	RT																												
L 23+44	124	RT																												
L 24+64	57	RT																												
L 24+79	57	RT																												
L 25+87	45	RT																												
L 27+52	55	RT																												
L 28+54	52	RT																												
Y3 14+59	13	RT																												
Y3 14+54	104	LT																												
L 25+84	119	RT																												
Y3 14+43	58	RT																												
L 29+02	52	RT																												
L 28+65	29	RT																												
L 27+45	28	LT																												
L 27+81	23	LT																												
SHEET TOTALS																							40							

LINE & STATION	FROM	TO	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		R. C. PIPE CLASS V 12	15	18	24	30	36	42	48
	0602	0603																										
Y4 13+24	0604																											
	0604	0605											28															
Y4 13+25	0606																											
	0606	0607											28															
Y4 12+26	0608																											
	0608	0604											96															
Y4 12+26	0609																											
	0609	0606											96															
L 39+00	0610																											
	0610	0611											116															
L 40+17	0611																											
	0611	0612											32															
L 40+22	0612																											
L 41+65	0613																											
L 42+00	0614																											
	0614	0615											168															
L 43+75	0615																											
L 43+75	0616																											
L 45+00	0617																											
	0617	0618											84															
L 45+86	0618																											
L 45+93	0620																											
Y2REV 14+27																												
Y3 14+43																												
Y3 14+24																												
Y3 14+59																												
Y3 14+93																												
L 14+22																												
L 16+00																												
L 17+70																												
L 19+80																												
L 22+29																												
L 23+45																												
L 22+65																												
L 21+34																												
L 23+44																												
L 24+64																												
L 24+79																												
L 25+87																												
L 27+52																												
L 28+54																												
Y3 14+59																												
Y3 14+54																												
L 25+84																												
Y3 14+43																												
L 29+02																												
L 28+65																												
L 27+45																												
L 27+81																												
SHEET TOTALS													648															

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	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		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	J.B. STD. 840.31 OR STD. 840.32		M.H. FRAME AND COVER STD. 840.54	CONVERT EXIST C.B. TO 2 G.I.	CONVERT EXISTING C.B. TO J.B.	ADJUST C.B.	ADJUST J.B.	15" C.S. ELBOW	18" C.S. ELBOW		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
	0602	0603																									2					
Y4 13+24	0604					1	0.8		1		1																					
	0604	0605																														
Y4 13+25	0606					1	0.3		1			1																				
	0606	0607																														
Y4 12+26	0608					1			1	1																						
	0608	0604																														
Y4 12+26	0609					1			1	1																						
	0609	0606																														
L 39+00	0610					1			1		1																					
	0610	0611																														
L 40+17	0611					1			1		1																					
	0611	0612																														
L 40+22	0612					1													1				1									SEE SHEET 2C-2
L 41+65	0613																					1		1								SEE SHEET 2C-1
L 42+00	0614					1			1			1																				
	0614	0615																														
L 43+75	0615					1			1			1																				
L 43+75	0616					1	2.7		1		1																					
L 45+00	0617					1			1			1																				
	0617	0618																														
L 45+86	0618																								1							
L 45+93	0620																								1							
Y2REV 14+27																															34	
Y3 14+43																															62	
Y3 14+24																															36	
Y3 14+59																															32	
Y3 14+93																															63	
L 14+22																															166	
L 16+00																															176	
L 17+70																															155	
L 19+80																															263	
L 22+29																															225	
L 23+45																															61	
L 22+65																															151	
L 21+34																															96	
L 23+44																															17	
L 24+64																															233	
L 24+79																															206	
L 25+87																															21	
L 27+52																															145	
L 28+54																														4		
Y3 14+59																															86	
Y3 14+54																															143	
L 25+84																															128	
Y3 14+43																															33	
L 29+02																														1		
L 28+65																														5		
L 27+45																															13	
L 27+81																															60	
SHEET TOTALS						11	3.8		10	2	4	4							1			1	1	1	2		2			10	2605	

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

LL21785

COMPUTED BY:	DLH	DATE:	08/31/21
CHECKED BY:	DWT	DATE:	09/02/21

PROJECT NO.	SHEET NO.
P-5720	3D-4

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	STRUCTURE NUMBER TO	TOP ELEVATION (FT.)	INVERT ELEVATION (FT.)	INVERT ELEVATION (FT.)	MINIMUM REQUIRED SLOPE (%)	FLOWABLE FILL (CY)	PIPE REMOVAL (LIN. FT.)	REMARKS
L 28+19	24	LT								18	
L 28+39	20	LT								21	
L 28+29	26	LT								7	
L 33+98	118	RT								297	
Y2REV 13+84	19	RT								8	
L 21+02	69	LT								40	
L 28+50	8	RT							24		PFA TEMP PIPE
SHEET TOTALS									24	391	
PROJECT TOTALS									34	2996	

Pipe columns (SIZE / THICKNESS OR GAUGE):

TOTALS	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 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
SHEET TOTALS													
PROJECT TOTALS	40												

TOTALS	C. S. PIPE 12 (.064)	15 (.064)	18 (.064)	24 (.064)	30 (.079)	36 (.079)	42 (.109)	48 (.109)	
SHEET TOTALS									
PROJECT TOTALS		40	64						

TOTALS	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	
SHEET TOTALS									
PROJECT TOTALS	152								

TOTALS	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	
SHEET TOTALS									
PROJECT TOTALS		2072	1280	160	84	372	88		

TOTALS	R. C. PIPE CLASS V 12	15	18	24	30	36	42	48	
SHEET TOTALS									
PROJECT TOTALS					128		228		

Structure columns:

TOTALS	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) (CY)	REINFORCED ENDWALLS (CY)	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	
SHEET TOTALS											
PROJECT TOTALS	9.000			58	39.3		48	7	21	20	

TOTALS	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	J.B. STD. 840.31 OR STD. 840.32		M.H. FRAME AND COVER STD. 840.54	CONVERT EXIST C.B. TO 2 G.I.	CONVERT EXISTING C.B. TO J.B.	ADJUST C.B.	ADJUST J.B.	15" C.S. ELBOW	18" C.S. ELBOW	
SHEET TOTALS																
PROJECT TOTALS	3	3		1		2	5		5	1	3	2		2	2	

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: Jinyoung Park DATE: 01/04/2024
CHECKED BY: Tom Santee DATE: 01/04/2024

(2-3-23)

PROJECT NO.	SHEET NO.
P-5720	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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
-L-	16+00±	18+00±	ASU(1)	12	150	300	450		
CONTINGENCY					100	200	300		
			TOTAL CY/TONS/SY:		250	500**	750**	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.**

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Grade-Separation of Durant Road (SR 2006) Over CSX S-Line Railroad	End Bent 1	1
Grade-Separation of Durant Road (SR 2006) Over CSX S-Line Railroad	End Bent 2	1

PROJ. REFERENCE NO.	SHEET NO.
P-5720	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME	DEED BOOK
1	4,5,6	MALLINCKRODT INC.	DB 8529 PG 944
1A	5	SPECGX LLC	DB 16993 PG 748
2	4,5	LIFEPOINTE CHRISTIAN CHURCH INC.	DB 14386 PG 2347
3	4	TODD P. YOUNG & WIFE MICHELE E.	DB 16299 PG 526
4	4	SUSAN D. BRYAN	DB 12727 PG 1655
5	5	CITY OF RALEIGH	DB 7663 PG 643
6	5	WASTE INDUSTRIES LLC	DB 14701 PG 1893
7	5	K & ASSOCIATES OF RALEIGH INC.	DB 7708 PG 432
8	5	CAH 2015-1 BORROWER LLC	DB 16053 PG 2063
9	5	JOSEPH A. MATTEIS & WIFE ELLEN	DB 6683 PG 857
10	5	SCOTT STCLAIR & WIFE JEANETTE	DB 11617 PG 2395
11	5	RUDOLPH JONES AND WIFE SUSAN M.	DB 6288 PG 908
12	5	WINDSOR FOREST HOME OWNERS ASSOCIATION INC.	DB 8515 PG 2748
13	5,6	MICHAEL PROPERTIES LLC	DB 9483 PG 279
14	6	SURFS UP PROPERTIES LLC	DB 12623 PG 2187
15	6	THE REDEEMED CHRISTIAN CHURCH OF GOD INC.	DB 13273 PG 2600
16	6	IMPORT CAR CENTER LLC	DB 11529 PG 592
17	6	MLC AUTOMOTIVE LLC	DB 8488 PG 263

5/14/99

REVISIONS

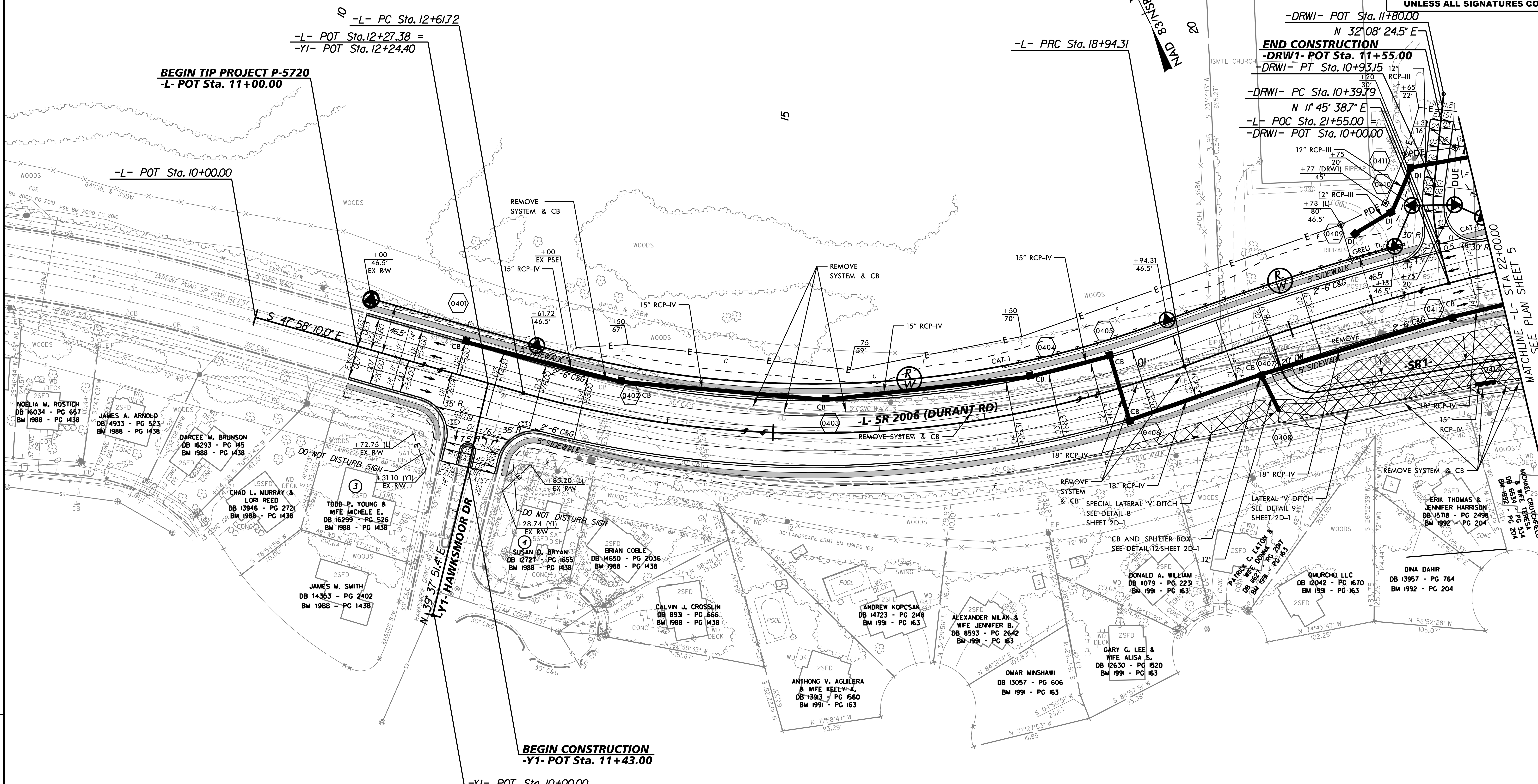
-L-	
PI Sta 15+89.00	PI Sta 22+40.96
△ = 36° 14′ 39.9″ (LT)	△ = 15° 47′ 19.4″ (RT)
D = 5° 43′ 46.5″	D = 2° 17′ 30.6″
L = 632.58′	L = 688.91′
T = 327.28′	T = 346.65′
R = 1,000.00′	R = 2,500.00′
SE = 0.04	SE = 0.03

-DRW1-
PI Sta 10+66.76
△ = 20° 22′ 45.8″ (RT)
D = 38° 11′ 49.9″
L = 53.35′
T = 26.96′
R = 150.00′

Kimley»Horn ©2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — DocuSigned by: Gregory Brew — 1/30/2024	NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR. — DocuSigned by: Larry D. Robinson — 1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



REMOVE EXISTING PAVEMENT

SEE SHEET NO. 7 FOR -L- PROFILE
SEE SHEET NO. 8 FOR -Y1- PROFILE
SEE SHEET NO. 10 FOR -DRW1- PROFILE

SEE SHEET NO. 2B-1 FOR -SR1- DETAIL

12/21/2023

5/14/99

REVISIONS

NAD 83/NSRS 2007

-L-
PI Sta 22+40.96
Δ = 15° 47' 19.4" (RT)
D = 2° 17' 30.6"
L = 688.91'
T = 346.65'
R = 2,500.00'
SE = 0.03

-Y2REV-
PI Sta 11+40.00
Δ = 90° 00' 00.0" (RT)
D = 53° 03' 05.9"
L = 169.65'
T = 108.00'
R = 108.00'
SE = 0.04

-Y2-
PI Sta 11+47.00
Δ = 90° 00' 00.0" (RT)
D = 49° 49' 20.7"
L = 180.64'
T = 115.00'
R = 115.00'

ALL RIGHT OF WAY & EASEMENT STATION OFFSETS ARE DEFINED OFF OF -Y2-

-Y3-
PI Sta 12+21.27
Δ = 16° 38' 57.7" (LT)
D = 14° 19' 26.2"
L = 116.23'
T = 58.53'
R = 400.00'
SE = RC

PI Sta 13+31.52
Δ = 14° 58' 04.0" (RT)
D = 14° 19' 26.2"
L = 104.49'
T = 52.55'
R = 400.00'
SE = RC

(IA) SPECGX LLC
DB 16993 - PG 748
BM 2018 - PG 1086

(6) WASTE INDUSTRIES LLC
DB 14701 - PG 1893
BM 1986 - PG 1435
BM 2000 - PG 2014

(7) K & ASSOCIATES OF RALEIGH INC.,
DB 7708 - PG 432
BM 1986 - PG 1435
BM 2000 - PG 2014

(2) LIFEPOINTE CHRISTIAN CHURCH INC.
DB 14386 - PG 2347
BM 2013 - PG 104
BM 2000 - PG 2013

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 17349 - 2390

STANDARD 4' BASE DITCH W/CLASS I RIP RAP
SEE DETAIL 10-SHEET 2D-1
EST 50 TONS
EST 75 SY GFD
DDE=70 CY

STANDARD 4' BASE DITCH
SEE DEATAIL 14-SHEET 2D-1
EST 35 SY PSRM
DDE= 90 CY
SLOPE=2.13%

OUTLET PROTECTION CLASS I RIP RAP
EST 15 TONS
EST 30 SY GFD

OUTLET PROTECTION CLASS B RIP RAP
EST 2 TONS
EST 5 SY GFD

OUTLET PROTECTION CLASS I RIP RAP
EST 20 TONS
EST 39 SY GFD

OUTLET PROTECTION CLASS I RIP RAP
EST 7 TONS
EST 17 SY GFD

GRADE TO DRAIN

RETAIN 36" RCP-IV

RETAIN 24" RCP-IV

-Y2REV- PT Sta. 12+01.65

-Y2REV- PC Sta. 10+52.00

N 21° 34' 29.5" E

BEGIN RETAINING WALL #1
BEGIN FENCE (SEE NOTE 1) -Y2REV- POT Sta. 10+00.00

-L- PT Sta. 25+83.22 =
-Y2- POT Sta. 10+00.00

END RETAINING WALL #1
END FENCE (SEE NOTE 1)

-L- POT Sta. 25+90.22

SHOP CURVED GUARDRAIL R=50'

SHOP CURVED GUARDRAIL R=85'

SHOP CURVED GUARDRAIL R=28'

RETAIN AND RAISE JB W/MH COVER

JB W/MH COVER

REMOVE TEMP CB AND TEMP 18" PIPE & CONSTRUCT PROPOSED 'V' DITCH AND TIE INTO EXIST 30" RCP W/CLASS I RIP RAP
EST 10 TONS
EST 15 SY GFD
SLOPE=0.3%

-Y2REV- ACCESS RD S 68° 25' 30.5" E

-L- POT Sta. 28+28.13 =
-Y3- POT Sta. 15+74.27

-L- SR 2006 (DURANT RD)

-L- PT Sta. 25+83.22

-SR1-

-SR2-

-Y3- PT Sta. 13+83.47

-Y3- PRC Sta. 12+78.97

-Y3- PC Sta. 11+62.74

BEGIN CONSTRUCTION
-Y3- POT Sta. 10+90.00

-Y3- POT Sta. 10+00.00

-Y5- POT Sta. 17+09.35

-Y5- CSX RAILROAD

-Y2- POT Sta. 17+42.88=
-Y5- POT Sta.14+79.48

-Y2REV- POT Sta. 17+31.63=
-Y5- POT Sta.14+72.47
Δ = 92° 07' 25"

-L- POT Sta.32+23.01 =
-Y5- POT Sta. 13+32.38
Δ = 92° 07' 25"

GRADE AREA UNDER BRIDGE TO DRAIN AND REMOVE GRAVEL BERM AND ALLOW TO DRAIN INTO NATURAL SWALE

+28.09 (L)
116.27'
END BRIDGE
-L- STA 32+89.23

N 23° 41' 54.7" E

S 68° 25' 30.5" E

-Y5- POT Sta. 9+00.00

MATCHLINE -L- STA 22+00.00
SEE PLAN SHEET 4

MATCHLINE -L- STA 35+00.00
SEE PLAN SHEET 6

(8)	CAH 2015-1 BORROWER LLC DB 16053 - PG 2063 BM 1992 - PG 1035 BM 2000 - PG 2014		
(9)	JOESPH A. MATTEIS & WIFE ELLEN DB 6683 - PG 857 BM 1992 - PG 1035		
(10)	SCOTT STCLAIR & WIFE JEANETTE DB 1167 - PG 2395 BM 1992 - PG 1035		
(11)	RUDOLPH JONES & WIFE SUSAM M. DB 6288 - PG 908 BM 1992 - PG 1035		
101	THOMAS DUDLEY & WIFE SARAH L. DB 15658 - PG 2601 BM 1992 - PG 1035 BM 2000 - PG 2013	107	LOUISE G. OVERTON DB 1323I - PG 1414 BM 1999 - PG 524
102	DURANT TRAILS DB 6231 - PG 124 BM 1999 - PG 524	108	SARAH M. FLEMING DB 8317 - PG 2440 BM 1999 - PG 524
103	DAVID W. MILLER DB 8477 - PG 1096 BM 1999 - PG 524	109	CAITLYN R. DEBONA DB 16047 - PG 163 BM 1999 - PG 524
104	DANIELLE R. TRICARIO DB 16635 - PG 789 BM 1999 - PG 524	110	HENRY ZIMMERMAN & WIFE PATRICIA DB 12583 - PG 2639 BM 1999 - PG 524
105	GARY S. FLOHR DB 8477- PG 1110 BM 1999 - PG 524	111	BONNIE B. WALKER DB 12706 - PG 2602 BM 1999 - PG 524
106	GLORIA H TARKENTON & REBEKAH E. DB 8477- PG 1110 BM 1999 - PG 524	112	LORI A. DUPAW DB 11500 - PG 2110 BM 1999 - PG 524
113	NADER A. WAKIM DB 8288 - PG 1946 BM 1999 - PG 524		
114	JOHN BOWERS DB 16023 - PG 1414 BM 1999 - PG 524		
115	BRENDA G. AUSTIN DB 14144 - PG 1452 BM 1999 - PG 524		
116	MAX DRUMMOND DB 15083 - PG 333 BM 1999 - PG 524		
117	JAMES B. KRITZER DB 13158 - PG 227 BM 1999 - PG 524		
118	STACY L. KESSLER DB 12026 - PG 775 BM 1999 - PG 524		

JERRY L. MCSWAIN & WIFE BEVERLY
DB 16374 - PG 1197
BM 1992 - PG 204

CHESTER WEST & WIFE PHYLLIS W.
DB 6190 - PG 929
BM 1992 - PG 1035

SHAWN SHEFTE & WIFE JENNIFER
DB 12404 - PG 1350
BM 1992 - PG 1035
BM 2000 - PG 2013

DAVID TURNER
DB 5829 - PG 81
BM 1992 - PG 1035

DAVID P. BROWN & WIFE GWEN C.
DB 5985 - PG 874
BM 1992 - PG 1035

WINDSOR FOREST HOME OWNERS ASSOCIATION INC.
DB 8515 - PG 2748
BM 1999 - PG 524
BM 2000 - PG 2014

MICHAEL PROPERTIES LLC
DB 9483 - PG 279
BM 1985 - PG 1097
BM 2000 - PG 2015

BYNUM PROPERTIES LLC
DB 15998 - PG 1633
BM 1985 - PG 1097

2019 ADT
2040 ADT

-Y3- LESLIESHIRE DRIVE
DHV = 14%
DIR = 55%
TTST = 2%
DUAL = 5%
208 / 300

-L- SR 2006 (DURANT RD)
20139 / 30000
100 / 100
108 / 200
20556 / 30600
DHV = 8%
DIR = 55%
TTST = 1%
DUAL = 2%
600 / 600
1008 / 1100
1608 / 1700
DHV = 12%
DIR = 85%
TTST = 1%
DUAL = 2%

PAVEMENT REMOVAL BY OTHERS

REMOVE EXISTING PAVEMENT

SEE SHEET NO. 7 FOR -L- PROFILE
SEE SHEET NO. 9 FOR -Y2REV- PROFILE
SEE SHEET NO. 9 FOR -Y3- PROFILE
SEE SHEET NO. 10 FOR -Y5- PROFILE

FOR RETAINING WALLS SEE SHEETS W-1 AND W-2

SEE SHEET NO. 2B-1 FOR -SR1- AND -SR2- DETAILS

NOTES:

1) CONTRACTOR TO SUBMIT DETAIL FOR 48" CHAIN LINK FENCE ANCHOR TO RETAINING WALL

BEGIN APPROACH SLAB -L- STA 31+40.57
END APPROACH SLAB -L- STA 33+13.40
BEGIN BRIDGE -L- STA 31+64.73
END BRIDGE -L- STA 32+89.23

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

3/11/2024

Kimley»Horn © 2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
3/19/2024

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
3/19/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 5/14/99

NAD 83/NSRS 2007

ONLY USE THIS SHEET FOR INTERIM DRAINAGE DURING TRAFFIC PHASING

Kimley»Horn ©2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	5A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 1/30/2024

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER ARRY D. ROBINSON, JR. — 1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y5- POT Sta. 17+09.35

POT Sta. 17+31.63

-Y5- CSX RAILROAD

-Y2- POT Sta. 17+42.88=
-Y5- POT Sta.14+79.48
-Y2REV- POT Sta. 17+31.63=
-Y5- POT Sta.14+72.41

-L- POT Sta.32+23.01 =
-Y5- POT Sta.13+32.38

GRADE AREA UNDER BRIDGE TO DRAIN AND REMOVE GRAVEL BERM AND ALLOW TO DRAIN INTO NATURAL SWALE

N 23° 41' 54.7" E

STANDARD 4' BASE DITCH
SEE DEATAIL 14/SHEET 2D-1
EST 35 SY PSRM
DDE= 90 CY
SLOPE=2.13%

GRADE TO DRAIN

TIE SLOPE STAKES INTO HEADWALL

STANDARD 4' BASE DITCH
W/CLASS I RIP RAP
SEE DETAIL 10/SHEET 2D-1
EST 50 TONS
EST 75 SY GFD
DDE=70 CY

RETAIN

END CONSTRUCTION
-Y2REV- POT Sta. 16+84.57

OUTLET PROTECTION
CLASS I RIP RAP
EST 15 TONS
EST 30 SY GFD

GRADE TO DRAIN
-Y2REV- PT Sta. 12+01.65

36" RCP-IV
36" RCP-IV

-Y2REV- PC Sta. 10+32.00
N 21° 34' 29.5" E

OUTLET PROTECTION
CLASS B RIP RAP
EST 2 TONS
EST 5 SY GFD

RETAIN EXIST 30" RCP & REMOVE APPROX 8' FROM SOUTH END OF PIPE

-Y2REV- POT Sta. 16+66.27

BEGIN RETAINING WALL #1
BEGIN FENCE (SEE NOTE 1)

-L- POT Sta. 25+90.22 =
-Y2REV- POT Sta. 10+00.00

-L- PT Sta. 25+83.22 =
-Y2- POT Sta. 10+00.00

JB W/MH COVER

-Y2REV- ACCESS RD
S 68° 25' 30.5" E

REMOVE

END RETAINING WALL #1
END FENCE (SEE NOTE 1)

42" RCP-V

TEMPORARY 30" RCP-V PLUG FILL ABANDON AFTER CONSTRUCTION

-L- POT Sta.28+28.13 =
-Y3- POT Sta. 15+74.27

6" PVC

BLIND JB PLUG FILL ABANDON AFTER CONSTRUCTION RETAIN

-L- SR 2006 (DURANT RD)

S 68° 25' 30.5" E

MATCHLINE -L- STA 22+00.00
SEE PLAN SHEET 4

MATCHLINE -L- STA 35+00.00
SEE PLAN SHEET 6

30" RCP-IV

CB

REMOVE

-SR1-

-SR2-

-L- PT Sta. 25+83.22

REMOVE SYSTEM OUTLET DURING CONSTRUCTION

TIE BLIND JB TO EXIST 18" RCP TO DIVERT FLOW TO 42" RCP DURING CONSTRUCTION

REMOVE 73' LF OF PIPE DURING CONSTRUCTION

RETAIN SYSTEM +43 (L) EX. RW

GRADE TO DRAIN

END RETAINING WALL #2
END FENCE (SEE NOTE 1)

N 22° 44' 52.2" E

-Y3- PT Sta. 13+83.47

STANDARD 'V' GRASSED SWALE SEE 5/SHEET 2D-1

+52.53 145'

+29.97 (L) 145'

2GI TYPE B 24" RCP-IV

+93.35 (L)

RETAIN 88.09'

TEMP CB TIE TO EXIST 24" RCP DURING CONSTRUCTION & CONVERT TO BLIND JB FOR FINAL

TIE PROPOSED TEMP CB TO EXIST CB W/18" RCP TO ALLOW FOR SYSTEM CONNECTION DURING CONSTRUCTION

LATERAL BASE DITCH W/CLASS B RIP RAP
EST 60 TONS RIP RAP
EST 140 SY GFD
SEE DETAIL 7 SHEET 2D-1
SPECIAL CUT DITCH
SEE DETAIL 1 SHEET 2D-1

TEMP CB TO DIVERT FLOW TO 42" RCP DURING CONSTRUCTION

GRADE TO DRAIN TO HW

-Y3- PRC Sta. 12+78.97

OUTLET PROTECTION
CLASS I RIP RAP
EST 4 TONS
EST 10 SY GFD

BEGIN RETAINING WALL #2
BEGIN FENCE (SEE NOTE 1)

-Y3- PC Sta. 11+62.74

-Y5- POT Sta. 9+00.00

LATERAL 'V' DITCH W/CLASS B RIPRAP
SEE DETAIL 2/SHEET 2D-1
EST 85 TONS
EST 185 SY GFD

STANDARD 'V' DITCH W/CLASS B RIPRAP
SEE DETAIL 3/SHEET 2D-1
EST 130 TONS
EST 290 SY GFD

STANDARD 2' BASE DITCH
SEE DETAIL 6/SHEET 2D-1

BEGIN CONSTRUCTION
-Y3- POT Sta. 10+90.00

-Y3- POT Sta. 10+00.00

-Y3- LESLIESHIRE DR

N 24° 25' 45.9" E

PAVEMENT REMOVAL BY OTHERS

REMOVE EXISTING PAVEMENT

SEE SHEET NO. 5 FOR PLANS
SEE SHEET NO. 7 FOR -L- PROFILE
SEE SHEET NO. 9 FOR -Y2REV- PROFILE
SEE SHEET NO. 9 FOR -Y3- PROFILE
SEE SHEET NO. 10 FOR -Y5- PROFILE

FOR RETAINING WALLS SEE SHEETS W-1 AND W-2

SEE SHEET NO. 2B-1 FOR -SR1- AND -SR2- DETAILS

12/21/2023

Kimley»Horn ©2023
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

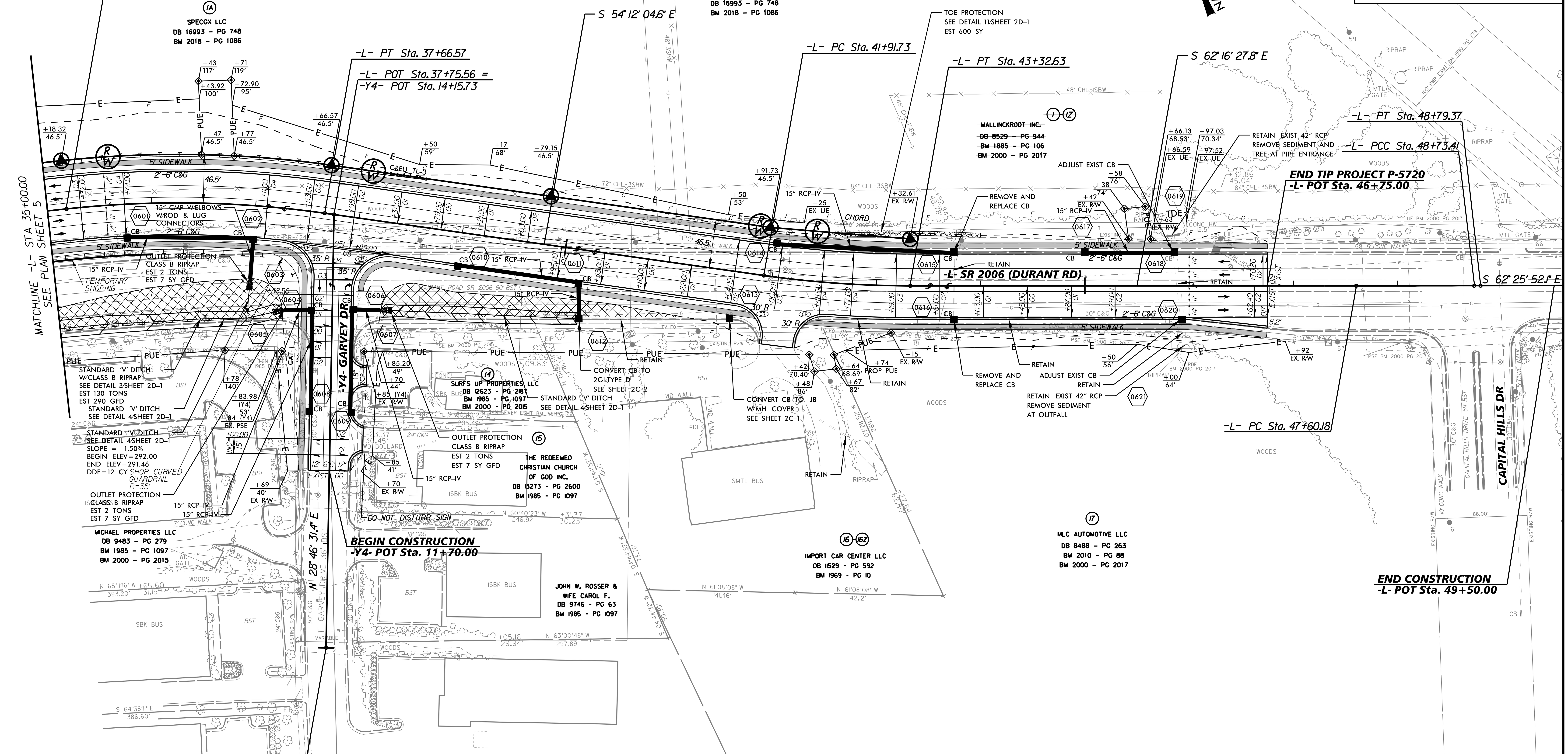
PROJECT REFERENCE NO.	SHEET NO.
P-5720	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW — DocuSigned by: Gregory Brew — 1/30/2024	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026480 LARRY D. ROBINSON, JR. — DocuSigned by: Larry D. — 1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PI Sta 36+43.09	PI Sta 42+62.30	PI Sta 48+16.79	PI Sta 48+76.39
Δ = 14° 13' 25.9" (RT)	Δ = 8° 04' 23.2" (LT)	Δ = 0° 08' 53.8" (LT)	Δ = 0° 00' 30.5" (LT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"	D = 0° 07' 51.5"	D = 0° 08' 31.4"
L = 248.25'	L = 140.90'	L = 113.23'	L = 5.96'
T = 124.77'	T = 70.57'	T = 56.62'	T = 2.98'
R = 1,000.00'	R = 1,000.00'	R = 43,751.02'	R = 40,336.05'
SE = 0.04	SE = 0.04		



NAD 83/NSRS 2007
-L- PC Sta. 35+18.32
-L- PT Sta. 37+66.57
-L- POT Sta. 37+75.56 = -Y4- POT Sta. 14+15.73
S 54° 12' 04.6" E
-L- PC Sta. 41+91.73
-L- PT Sta. 43+32.63
S 62° 16' 27.8" E
-L- PT Sta. 48+79.37
-L- PCC Sta. 48+73.41
END TIP PROJECT P-5720
-L- POT Sta. 46+75.00
-L- SR 2006 (DURANT RD)
S 62° 25' 52.1" E
-L- PC Sta. 47+60.18
END CONSTRUCTION
-L- POT Sta. 49+50.00
BEGIN CONSTRUCTION
-Y4- POT Sta. 11+70.00
-Y4- POT Sta. 10+00.00
-Y4- GARVEY DR
N 28° 46' 31.4" E
CAPITAL HILLS DR
MATCHLINE -L- STA 35+00.00 SEE PLAN SHEET 5
SPECGX LLC DB 16993 - PG 748 BM 2018 - PG 1086
MALLINCKRODT INC. DB 8529 - PG 944 BM 1885 - PG 106 BM 2000 - PG 2017
SURFS UP PROPERTIES LLC DB 12623 - PG 2187 BM 1985 - PG 1097 BM 2000 - PG 2015
THE REDEEMED CHRISTIAN CHURCH OF GOD INC. DB 13273 - PG 2600 BM 1985 - PG 1097
MICHAEL PROPERTIES LLC DB 9483 - PG 279 BM 1985 - PG 1097 BM 2000 - PG 2015
JOHN W. ROSSER & WIFE CAROL F. DB 9746 - PG 63 BM 1985 - PG 1097
IMPORT CAR CENTER LLC DB 11529 - PG 592 BM 1969 - PG 10
MLC AUTOMOTIVE LLC DB 8488 - PG 263 BM 2010 - PG 88 BM 2000 - PG 2017
TOE PROTECTION SEE DETAIL 11/SHEET 2D-1 EST 600 SY
RETAIN EXIST 42" RCP REMOVE SEDIMENT AND TREE AT PIPE ENTRANCE
15" CMP W/ELBOWS W/ROD & LUG CONNECTORS
OUTLET PROTECTION CLASS B RIPRAP EST 2 TONS EST 7 SY GFD
STANDARD 'V' DITCH W/CLASS B RIPRAP SEE DETAIL 3/SHEET 2D-1 EST 130 TONS EST 290 GFD
STANDARD 'V' DITCH SEE DETAIL 4/SHEET 2D-1
STANDARD 'V' DITCH SEE DETAIL 4/SHEET 2D-1 SLOPE = 1.50% BEGIN ELEV=292.00 END ELEV=291.46 DDE=12 CY
SHOP CURVED GUARDRAIL R=35'
CONVERT CB TO 2GI TYPE D SEE SHEET 2C-2
CONVERT CB TO JB W/MH COVER SEE SHEET 2C-1
REMOVE AND REPLACE CB
ADJUST EXIST CB
RETAIN EXIST 42" RCP REMOVE SEDIMENT AT OUTFALL
DO NOT DISTURB SIGN
TEMPORARY SHORING

2019 ADT / 2040 ADT	
-L- SR 2006 (DURANT RD), west	20556 / 30600; DHV = 8%, DIR = 55%, TTST = 1%, DUAL = 2%
-L- SR 2006 (DURANT RD), east	20965 / 31100; DHV = 8%, DIR = 55%, TTST = 1%, DUAL = 2%
Turning movements	900 / 900; 1308 / 1400
-Y4- GARVEY DRIVE	2208 / 2300; DHV = 7%, DIR = 80%, TTST = 1%, DUAL = 2%

2019 ADT / 2040 ADT	
CAPITAL HILLS DRIVE (north)	– / 3600; DHV = 9%, DIR = 55%, TTST = 4%, DUAL = 4%
-L- SR 2006 (DURANT RD), west	20965 / 31100; DHV = 8%, DIR = 55%, TTST = 1%, DUAL = 2%
-L- SR 2006 (DURANT RD), east	20026 / 30800; DHV = 8%, DIR = 55%, TTST = 1%, DUAL = 2%
Turning movements	– / 500; – / 2000; 3256 / 7000; 2187 / 5200
CAPITAL HILLS DRIVE (south)	5539 / 13300; DHV = 10%, DIR = 70%, TTST = 1%, DUAL = 4%

REMOVE EXISTING PAVEMENT

SEE SHEET NOS. 7 & 8 FOR -L- PROFILE
SEE SHEET NO. 10 FOR -Y4- PROFILE

REVISIONS

5/14/99

12/21/2023

5/14/99

BEGIN CONSTRUCTION
-L- Sta. 11+00.00
ELEV = 312.20'

BEGIN GRADE
-L- Sta. 11+50.00
ELEV = 312.55'

-L- POT Sta.12+27.38 =
-Y1- POT Sta.12+24.40
ELEV = 312.86'

VC = 360'
PI = 13+45.00
EL = 313.91'
DS = 50
K = 85

VPC Sta.11+65.00
EL.=312.65'

VPT Sta.15+25.00
EL.=307.61'

(+)0.7000%

(-)3.5000%

PROPOSED GRADE

EXISTING GROUND

VC = 830'
PI = 24+00.00
EL = 276.99'
K = 96
DS = 50

VPC Sta.19+85.00
EL.=291.51'

(-)3.50%

EXISTING GROUND

(-)3.5000%

(-)2.42%

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 18+50
ELEV = 290.00'

-L- STA 19+65
ELEV = 286.00'

SEE SHEET NO. 4 AND 5 FOR -L- PLAN

-L- SR 2006 (DURANT RD)

BM #1 ELEV. 321.41
-BL- STA 5+00 S 55° 24'43.18" W Dist 160.67
BENCH TIE NAIL IN 12" SWEET GUM

PIPE HYDRAULIC DATA
1 @ 42" RCP
(DO NOT BURY)

DESIGN DISCHARGE	= 48.20 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 274.05 FT
BASE DISCHARGE	= 51.00 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 274.18 FT
OVERTOPPING DISCHARGE	= 103.39 FT
OVERTOPPING FREQUENCY	= >100 YR
OVERTOPPING ELEVATION	= 277.40 FT

-L- POT Sta.28+28.13 =
-Y3- POT Sta.15+74.27
ELEV = 300.81'

VC = 930'
PI = 33+80.00
EL = 326.97'
K = 84
DS = 50

VC = 830'
PI = 24+00.00
EL = 276.99'
K = 96
DS = 50

VPT Sta.28+15.00
EL.=298.15'

VPC Sta.29+15.00
EL.=303.25'

-L- PT Sta.25+92.72 =
-Y2- POT Sta. 10+00.00
ELEV = 289.38'

PROPOSED GRADE

BEGIN BRIDGE
-L- STA 31+64.73

END BRIDGE
-L- STA 32+89.23

(+)5.1000%

(-)5.9124%

5.5' BRIDGE DEPTH

24'-7.8" CLEARANCE PROVIDED

FUTURE TRACK
CSX TRACK
FUTURE TRACK
FUTURE TRACK

(-)3.5000%
(-)2.42%

(+)5.1000%

(-)11.13%

(-)5.60%

42" RCP

EXISTING GROUND

(+)12.83%

(+)3.00%

(+)3.17%

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 23+75
ELEV = 277.40'

END SPECIAL
DITCH GRADE RT
-L- STA 23+45
ELEV = 276.80'

-L- STA 27+00 RT
ELEV = 273.73'

END SPECIAL
DITCH GRADE RT
-L- STA 27+37
ELEV = 271.50'

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 29+50
ELEV = 273.83'

END SPECIAL
DITCH GRADE RT
-L- STA 31+50
ELEV = 279.50'

BEGIN SPECIAL
DITCH GRADE RT
-L- STA 32+75
ELEV = 279.50'

-L- STA 34+50 RT
ELEV = 284.75'

-L- STA 36+00 RT
ELEV = 289.50'

SEE SHEET NO. 5 AND 6 FOR -L- PLAN

-L- SR 2006 (DURANT RD)

12/21/2023

Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

PROJECT REFERENCE NO.	SHEET NO.
P-5720	7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1/30/2024

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER ARRY D. ROBINSON, JR.
1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/99

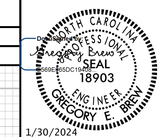
Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

RIGHT-OF-WAY REV.

CONST. REV.

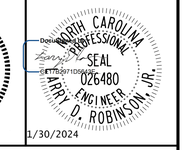
PROJECT REFERENCE NO.	SHEET NO.
P-5720	8

ROADWAY DESIGN ENGINEER



Gregory Brew
1/30/2024

HYDRAULICS ENGINEER



1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM #2 ELEV. 250.05
-BL- STA 56+10.65 S 12° 46' 21.91" E Dist 112.46
BENCH TIE NAIL IN 10" PINE

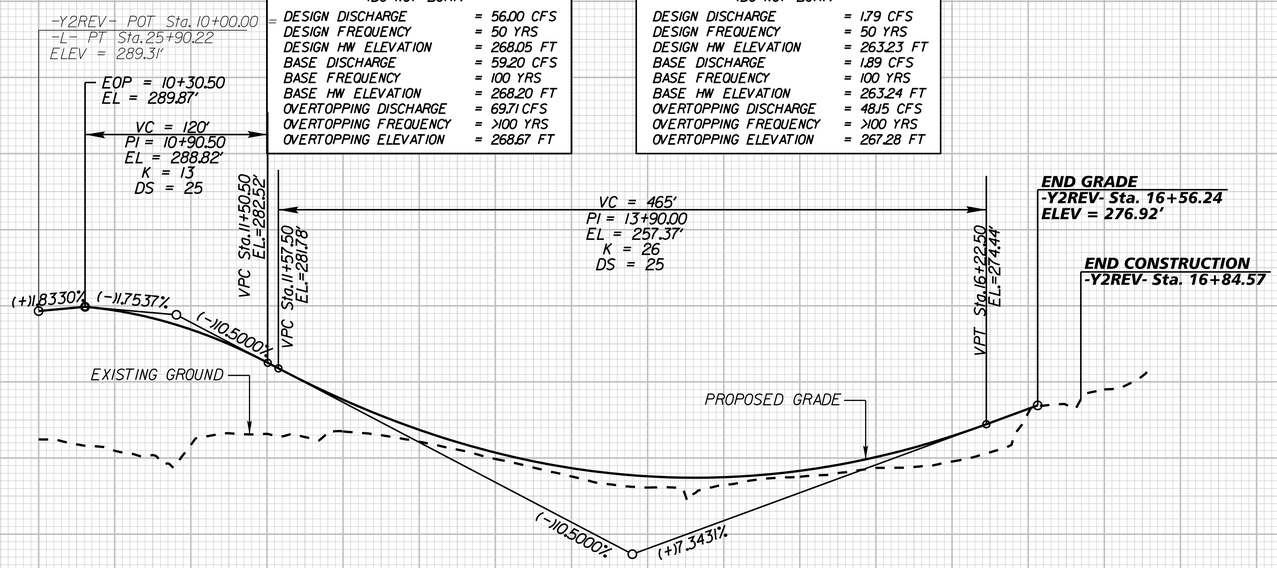
SEE SHEET NO. 4 FOR -Y1- PLAN
-Y1- HAWKSMOOR DR

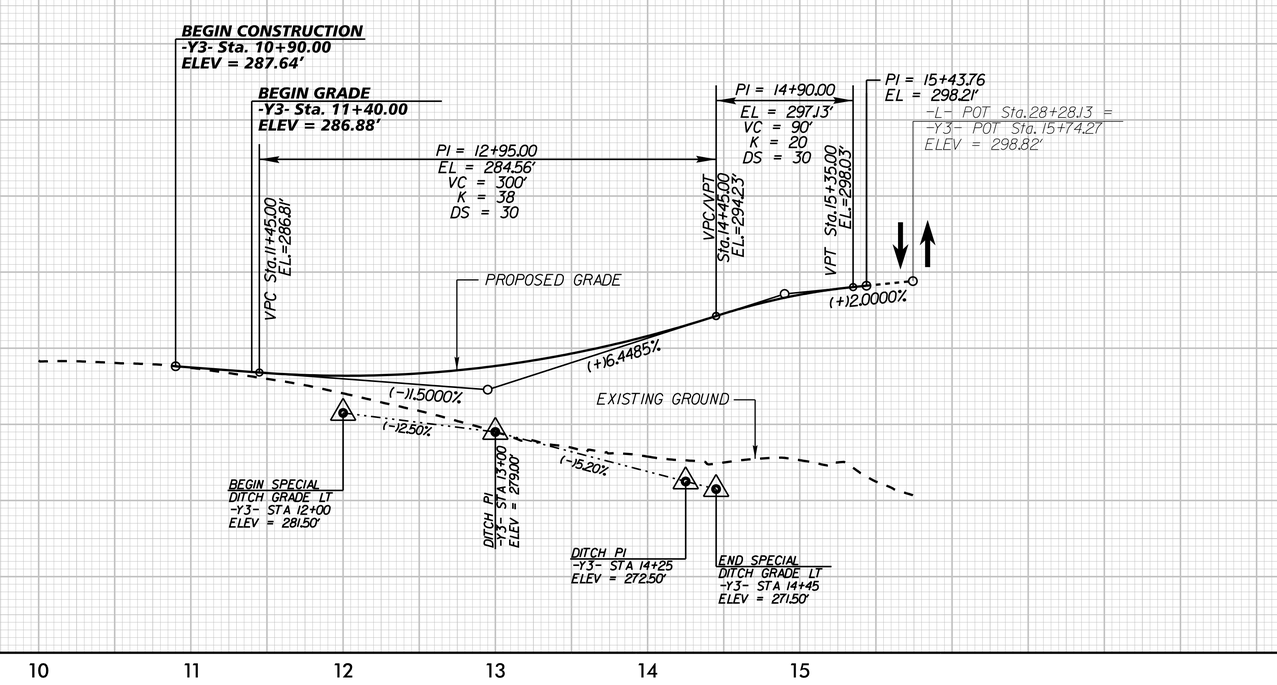
12/21/2023

5/14/99

PIPE HYDRAULIC DATA 1 @ 42" RCP (DO NOT BURY)	
DESIGN DISCHARGE	= 56.00 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 268.05 FT
BASE DISCHARGE	= 59.20 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 268.20 FT
OVERTOPPING DISCHARGE	= 69.71 CFS
OVERTOPPING FREQUENCY	= >100 YRS
OVERTOPPING ELEVATION	= 268.67 FT

PIPE HYDRAULIC DATA 1 @ 30" RCP (DO NOT BURY)	
DESIGN DISCHARGE	= 1.79 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 263.23 FT
BASE DISCHARGE	= 1.89 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 263.24 FT
OVERTOPPING DISCHARGE	= 48.15 CFS
OVERTOPPING FREQUENCY	= >100 YRS
OVERTOPPING ELEVATION	= 267.28 FT





12/21/2023

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, N.C. 27601

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.	SHEET NO.
P-5720	9

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18903 GREGORY E. BREW
1/30/2024

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 026480 TERRY D. ROBINSON, JR.
1/30/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET NO. 5 FOR -Y2- PLAN

-Y2REV- ACCESS RD

SEE SHEET NO. 5 FOR -Y3- PLAN

-Y3- LESLIESHIRE DR

DocuSign Envelope ID: 5E64731B-7822-4816-88D4-3690FE21E37D