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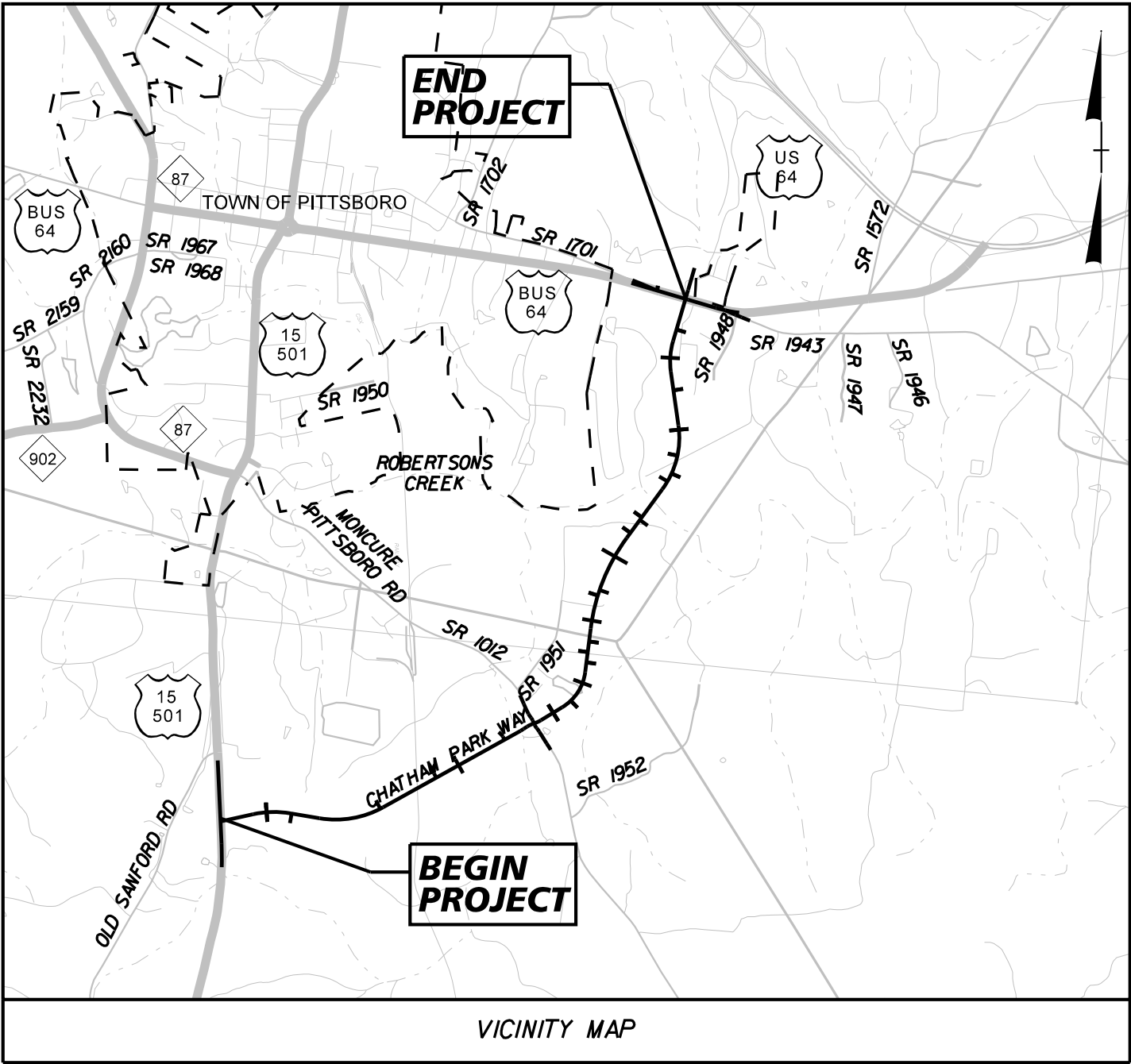
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3/5/2025

TIP PROJECT: R-5963A

CONTRACT: C205032

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

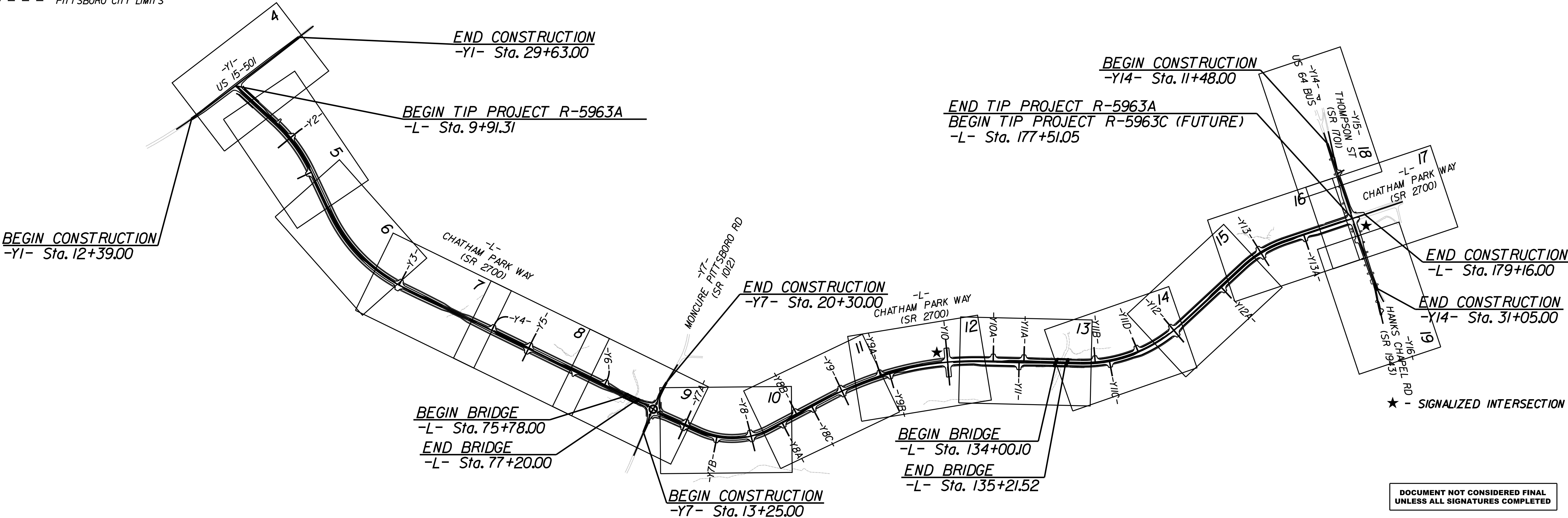


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CHATHAM COUNTY

LOCATION: SR 2700 (CHATHAM PARK WAY) FROM US 15-501 SOUTH OF PITTSBORO TO US 64 BUSINESS, CONSTRUCT ROADWAY ON NEW LOCATION

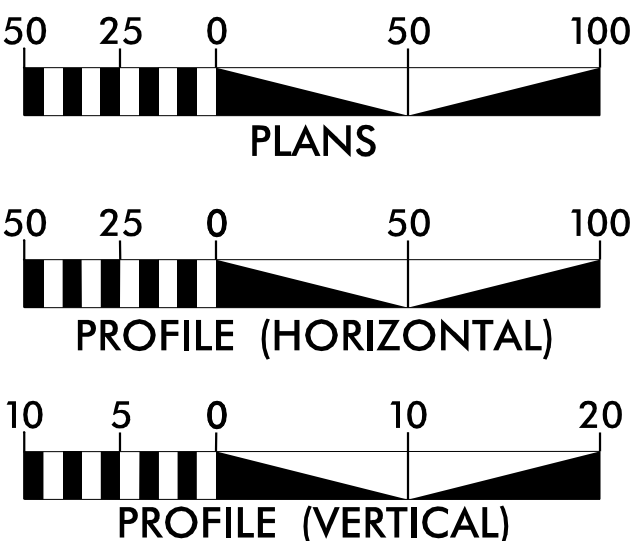
TYPE OF WORK: GRADING, DRAINAGE, UTILITIES, BRIDGES, PAVING, SIGNALS, AND RETAINING WALLS

NC GRID
NAD 1983NA 2011



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



R-5963A DESIGN DATA

ADT 2025 = 0
ADT 2045 = 31000
K = 7%
D = 55
T = 5%*
V = 50 MPH
* (TTST 2% + DUAL 3%)
FUNCTIONAL CLASSIFICATION:
RURAL
MAJOR COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5963A = 3.124 MILES
LENGTH STRUCTURE TIP PROJECT R-5963A = 0.050 MILES
TOTAL LENGTH TIP PROJECT R-5963A = 3.174 MILES

PLANS PREPARED FOR
THE NCDOT BY:

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 19, 2024

LETTING DATE:
MAY 20, 2025

Kimley»Horn

Kimley-Horn and Associates, Inc.
Professional Engineer
No. 056267
Pittsboro, North Carolina 27001
(919) 434-2000

VANCE W. BLANTON, P.E.
PROJECT ENGINEER

TYLER G. SPRING, P.E.
PROJECT DESIGN ENGINEER

JEFFREY A. STRODER, P.E.
PROJECT MANAGER
NCDOT HIGHWAY DIVISION 8

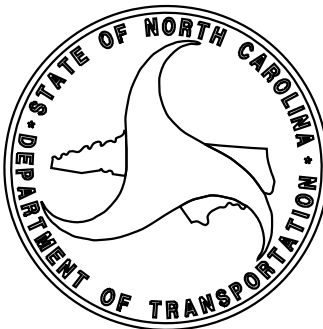
HYDRAULICS ENGINEER

Kimley-Horn and Associates, Inc.
Professional Engineer
No. 056267
Pittsboro, North Carolina 27001
(919) 434-2000

SIGNATURE:
ROADWAY DESIGN ENGINEER

Kimley-Horn and Associates, Inc.
Professional Engineer
No. 038559
Pittsboro, North Carolina 27001
(919) 434-2000

SIGNATURE:
3/20/2025 P.E.



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REVISIONS

3/19/2025

R-5963A
CHATHAM COUNTY

INDEX OF SHEETS

SHEET NUMBER	SHEET
I	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF ROADWAY STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-7	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND MISCELLANEOUS DETAILS
2B-1 THRU 2B-6	INTERSECTION DETAILS
2C-1 THRU 2C-7	ROADWAY DETAILS
2D-1 THRU 2D-3	DRAINAGE DETAILS
2G-1	ROCK EMBANKMENTS - POND DETAIL
3B-1	SUMMARY OF EARTHWORK
3B-2	SUMMARY OF GUARDRAIL, ASPHALT PAVEMENT REMOVAL
3D-1 THRU 3D-12	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEETS
4 THRU 19	PLAN SHEETS
20 THRU 31	PROFILE SHEETS
RW-1 THRU RW-XX	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS, AND PROPERTY TIES
TMP-1 THRU TMP-16	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-17	PAVEMENT MARKING PLANS
EC-1 THRU EC-35	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THRU SIGN-33	SIGNING PLANS
SIG 1.0 THRU SIG 3.5	SIGNAL PLANS
SIG.MIA THRU SIG.M9	METAL SIGNAL POLES PLANS
UC-1 THRU UC-24	UTILITY CONSTRUCTION PLANS
UBO-1 THRU UBO-17	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A THRU X-1D	CROSS-SECTION SUMMARY SHEETS
X-2 THRU X-134	CROSS-SECTIONS
S-TSH	STRUCTURES TITLE SHEET
SI-01 THRU SI-46	BRIDGE (180540) PLANS
S2-01 THRU S2-35	BRIDGE (180541) PLANS
S3-01 THRU S3-35	BRIDGE (180542) PLANS
SN	STRUCTURES NOTES
W-1 THRU W-9	RETAINING WALL PLANS

GENERAL NOTES:
2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

SUBSURFACE DRAINS:

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

GENERAL NOTES

GENERAL NOTES:
2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS 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 RADIUS 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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

POWER: DUKE ENERGY PROGRESS (DISTRIBUTION) - JOCELYN ROBERTSON - 919-573-6753
POWER: DUKE ENERGY PROGRESS (TRANSMISSION) - JAMIE LOY - 919-546-6034
POWER: CENTRAL ELECTRIC (DISTRIBUTION) - NATHAN STEPHENS - 919-708-1648
GAS - DOMINION GAS (DISTRIBUTION): MICHAEL DAVIDSON - 984-365-1172
TELECOMMUNICATIONS - BRIGHTSPEED: NATE VAUSE - 252-268-2781
SPECTRUM (CHARTER/TWC): ROBERT DABROWSKI - 919-288-4867
FIBER - CONTERRA: CHRIS FARR - 903-736-1563
AT&T - DISTRIBUTION: ELIZABETH PATE - 919-788-2752
TRI RIVER WATER: MARY DEPINA - 919-777-1121

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.

ROCK

ROCK IS POSSIBLE AT THE FOLLOWING LOCATIONS. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

-L- STA. 10+25 TO 13+25 -L- STA. 81+25 TO 83+75
-L- STA. 33+25 TO 34+25 -L- STA. 151+75 TO 154+25
-L- STA. 58+75 TO 59+25

2024 ROADWAY ENGLISH STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" CONTRACTS STANDARDS AND DEVELOPMENT UNIT - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY 16, 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
235.01 EMBANKMENT MONITORING
240.01 GUIDE FOR BERM DITCH CONSTRUCTION

DIVISION 3 - PIPE CULVERTS

310.10 DRIVEWAY PIPE CONSTRUCTION

DIVISION 4 - MAJOR STRUCTURES

423.02 BRIDGE APPROACH FILLS - TYPE 1A ALTERNATE APPROACH FILL FOR INTEGRAL BRIDGE ABUTMENT

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS

560.01 METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I

DIVISION 6 - ASPHALT BASES AND PAVEMENTS

654.01 PAVEMENT REPAIRS

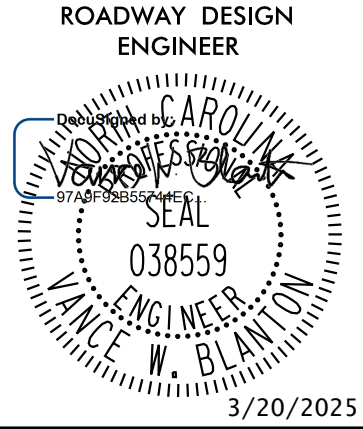
DIVISION 8 - INCIDENTALS

806.01 CONCRETE RIGHT-OF-WAY MARKER
806.02 GRANITE RIGHT-OF-WAY MARKER
806.03 CONCRETE CONTOL OF ACCESS MARKER
815.02 SUBSURFACE DRAIN
816.01 CONCRETE PADS - FOR SHOULDER DRAIN INSTALLATION
816.02 AGGREGATE SHOULDER DRAIN
816.04 MARKERS FOR DRAINAGE STRUCTURE AND CONCRETE PAD
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
838.80 PRECAST CONCRETE ENDWALL
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
840.04 CONCRETE OPEN THROAT CATCH BASIN - 12" THRU 48" PIPE
840.05 BRICK OPEN THROAT CATCH BASIN - 12" THRU 48" PIPE
840.14 CONCRETE DROP INLET - 12" THRU 30" PIPE
840.15 BRICK DROP INLET - 12" THRU 30" PIPE
840.16 DROP INLET FRAME AND GRATES - FOR USE WITH STD. DWG 840.14 AND 840.15
840.17 CONCRETE GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE
840.18 CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.19 CONCRETE GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.24 FRAMES AND NARROW SLOT SAG GRATES
840.25 ANCHORAGE FOR FRAMES - BRICK OR CONCRETE OR PRECAST
840.26 BRICK GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE
840.27 BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.28 BRICK GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.29 FRAMES AND NARROW SLOT FLAT GRATES
840.31 CONCRETE JUNCTION BOX - 12" THRU 66" PIPE
840.32 BRICK JUNCTION BOX - 12" THRU 66" PIPE
840.36 TRAFFIC BEARING GRATED DROP INLET - FOR STEEL (840.37) DOUBLE FRAME AND GRATES
840.37 STEEL GRATE AND FRAME
840.45 PRECAST DRAINAGE STRUCTURE
840.46 TRAFFIC BEARING PRECAST DRAINAGE STRUCTURE
840.54 MANHOLE FRAME AND COVER
840.66 DRAINAGE STRUCTURE STEPS
840.72 PIPE COLLAR
846.01 CONCRETE CURB, GUTTER AND CURB & GUTTER
846.02 DROP INLET INSTALLATION IN EXPRESSWAY GUTTER
848.02 DRIVEWAY TURNOUT - RADIUS TYPE
848.04 STREET TURNOUT
848.06 CURB RAMP (USE DETAILS IN LIEU OF STANDARDS FOR SHEETS 9 AND 10 OF 13)
850.01 CONCRETE PAVED DITCHES
850.10 GUIDE FOR BERM DRAINAGE OUTLET - 15" AND 18" PIPE
852.01 CONCRETE ISLANDS
852.05 MEDIAN CURB FOR CATCH BASIN - FOR USE WITH 1'-6" CURB AND GUTTER
852.06 METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS
862.01 GUARDRAIL PLACEMENT (USE DETAILS IN LIEU OF STANDARDS FOR SHEETS 4, 6, 12, AND 14 OF 15)
862.02 GUARDRAIL INSTALLATION
862.03 STRUCTURE ANCHOR UNITS (USE DETAIL IN LIEU OF STANDARD FOR SHEET 8 OF 9)
862.04 ANCHORING END OF GUARDRAIL - FOR B-77 AND B-83 ANCHOR UNITS
876.01 RIP RAP IN CHANNELS AND DITCHES
876.02 GUIDE FOR RIP RAP AT PIPE OUTLETS
876.04 DRAINAGE DITCHES WITH CLASS 'B' RIP RAP

EFF. 01-16-2024
REV.

PROJECT REFERENCE NO.
R-5963A

SHEET NO.
1-A



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REVISIONS

3/5/2025

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	
Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
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	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

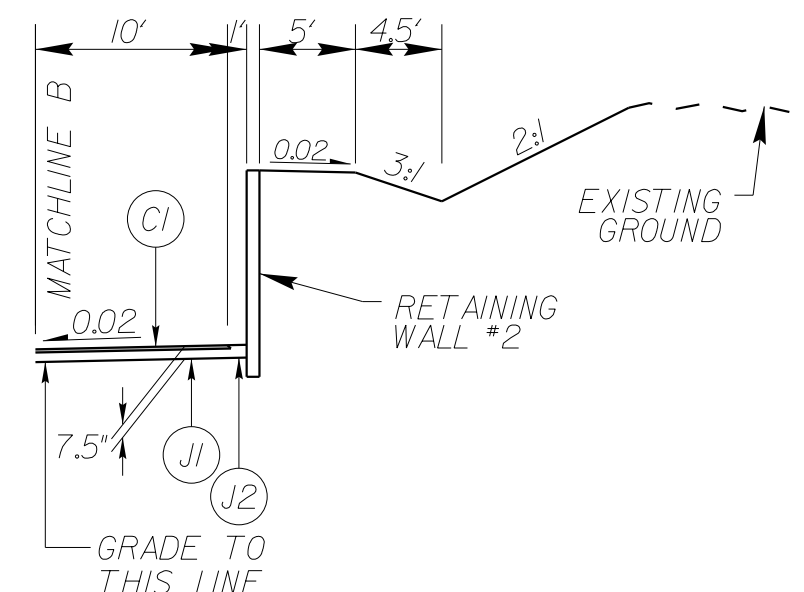
Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE – LOS A)*	
U/G Gas Line (SUE – LOS B)*	
U/G Gas Line (SUE – LOS C)*	
U/G Gas Line (SUE – LOS D)*	
Above Ground Gas Line	

SANITARY SEWER:

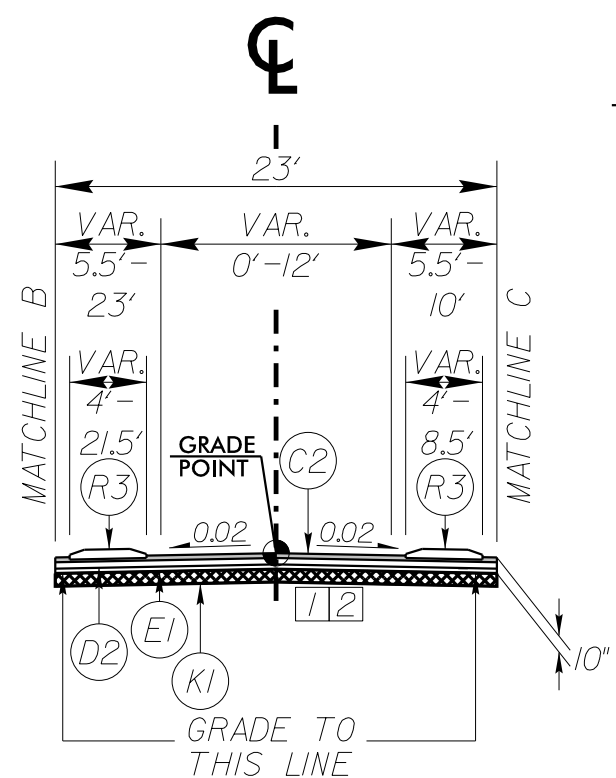
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE – LOS A)*	
SS Force Main Line (SUE – LOS B)*	
SS Force Main Line (SUE – LOS C)*	
SS Force Main Line (SUE – LOS D)*	

MISCELLANEOUS:

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



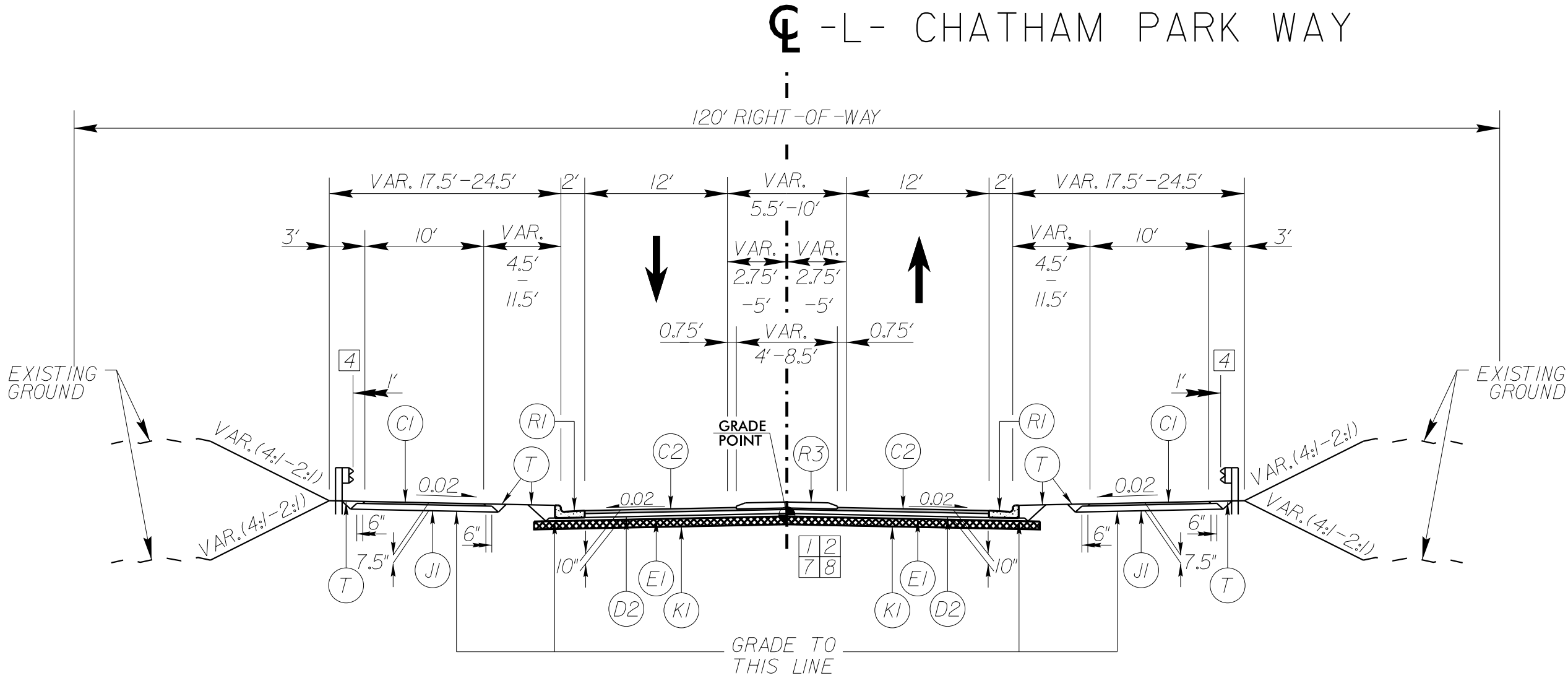
-L- STA 10+65.00 TO 13+50.00

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-L- STA 113+60.00 TO 120+09.99

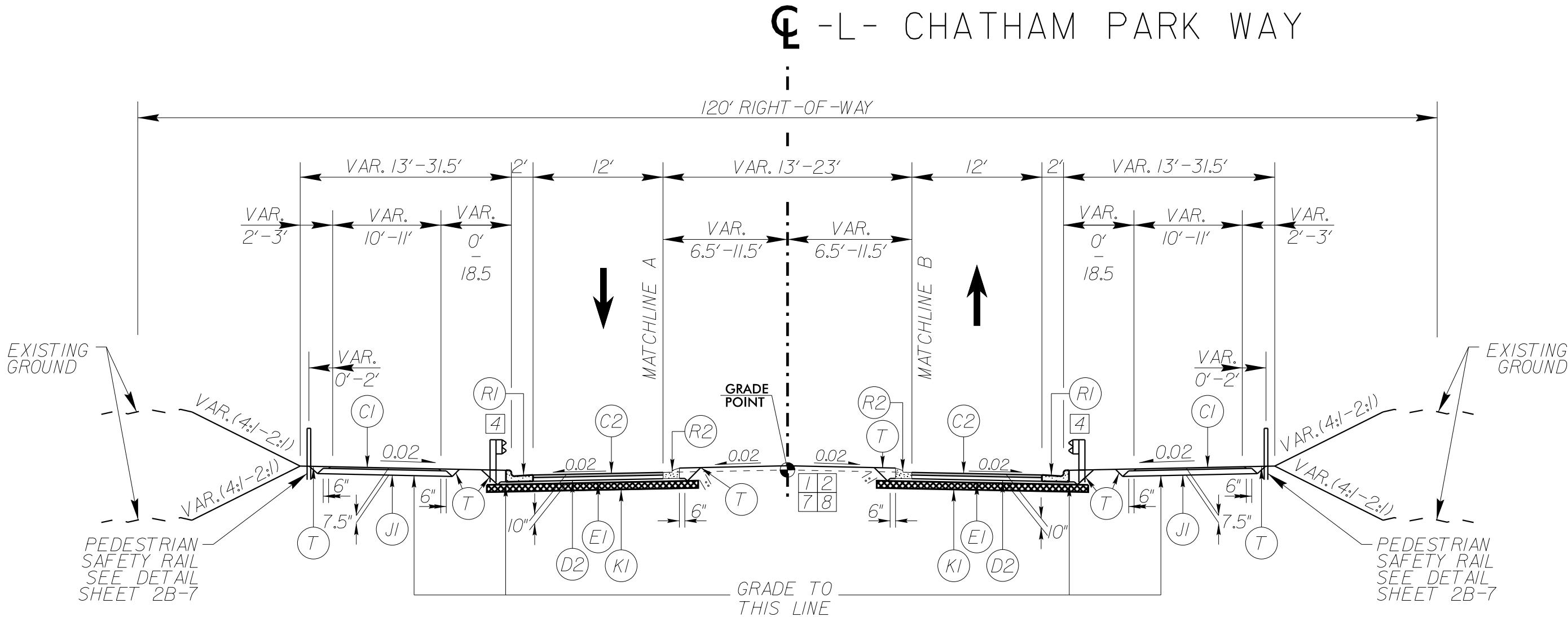
8 CHEMICAL STABILIZATION SHOULD BE APPLIED 1' WIDER THAN THE BASE COURSE SUBGRADE CONTACT AREA ON EACH SIDE.

<i>A1</i>	PROPOSED 12" JOINTED CONCRETE TRUCK APRON WITH 15" RADIAL JOINT SPACING REINFORCED WITH 4X4 W5.5 X W5.5 WELDED WIRE MESH
<i>C1</i>	PROPOSED APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
<i>C2</i>	PROPOSED APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
<i>C3</i>	PROPOSED VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
<i>D1</i>	PROPOSED APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
<i>D2</i>	PROPOSED APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
<i>D3</i>	PROPOSED VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
<i>E1</i>	PROPOSED APPROX. 3.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
<i>E2</i>	PROPOSED APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
<i>E3</i>	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" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
<i>J1</i>	PROPOSED 6" AGGREGATE BASE COURSE
<i>J2</i>	PROPOSED 7.5" AGGREGATE BASE COURSE
<i>K1</i>	PROPOSED 8" LIME STABILIZATION (METHOD-SLURRY) AT A RATE OF 24 LBS. PER SQ. YD. OR 7" CEMENT STABILIZATION AT A RATE OF 56 LBS. PER SQ. YD. 50/50 SPLIT TO BE USED AT THE DISCRETION OF THE ENGINEER.
<i>K2</i>	PROPOSED 8" CLASS IV SUBGRADE STABILIZATION
<i>N</i>	GEOTEXTILE FOR SUBGRADE STABILIZATION
<i>R1</i>	PROPOSED 2'-6" CONCRETE CURB & GUTTER
<i>R2</i>	PROPOSED 1'-6" CONCRETE CURB & GUTTER
<i>R3</i>	PROPOSED 5' MONOLITHIC CONCRETE ISLAND (KEYED-IN)
<i>R4</i>	PROPOSED CONCRETE EXPRESSWAY GUTTER
<i>R5</i>	PROPOSED 9' X 18" CONCRETE CURB
<i>T</i>	EARTH MATERIAL
<i>U</i>	EXISTING PAVEMENT
<i>V1</i>	PROPOSED 1.5" MILLING
<i>V2</i>	PROPOSED 2.5" MILLING
<i>V3</i>	INCIDENTAL MILLING
<i>W</i>	VARIABLE DEPTH ASPHALT PAVEMENT



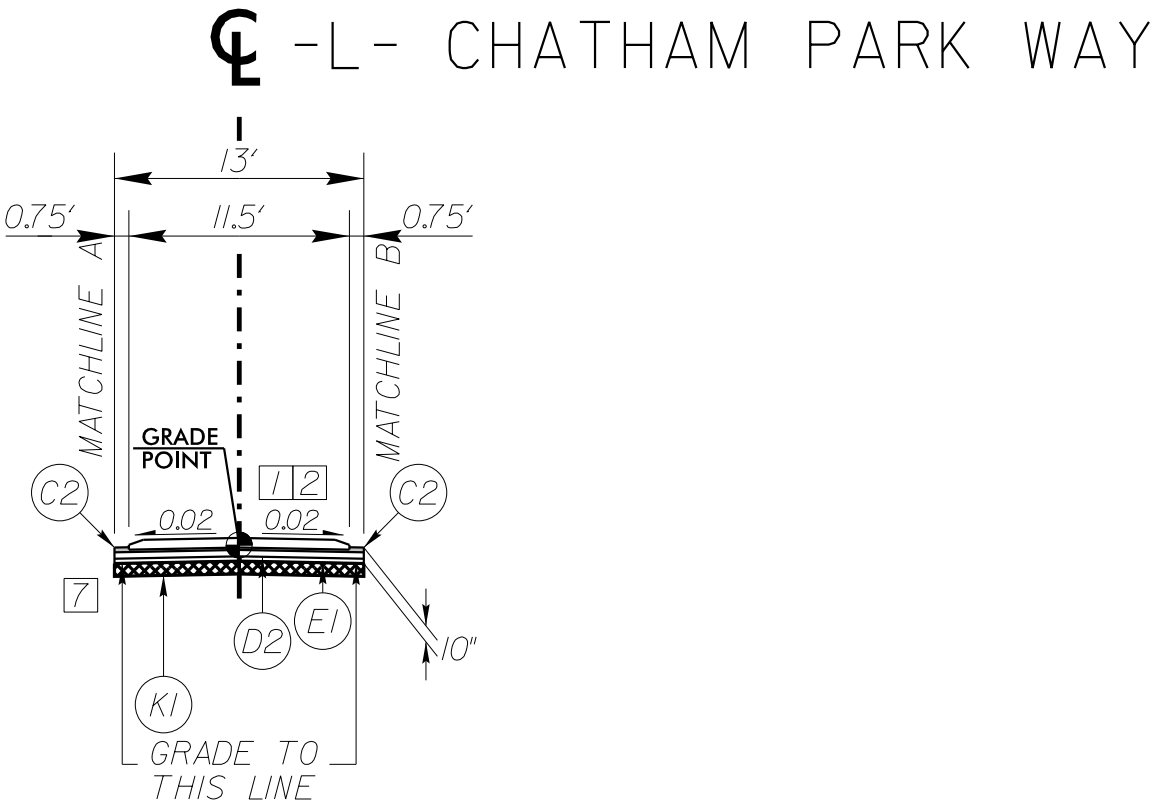
TYPICAL SECTION NO. 3

-L- STA 49+61.80 TO 53+43.21



TYPICAL SECTION NO. 4

-L- STA 72+07.00 TO 75+78.00 (BEGIN BRIDGE)
-L- STA 77+20.00 (END BRIDGE) TO 78+91.82
-L- STA 80+41.91 TO 81+15.63 (LT)
-L- STA 80+41.91 TO 81+87.28 (RT)



TYPICAL SECTION NO. 4A

-L- STA 75+30.00 TO 75+78.00 (BEGIN BRIDGE)
-L- STA 77+20.00 (END BRIDGE) TO 77+65.00

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KIMLEY-HORN & ASSOCIATES, INC.
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601; PE NO. F-0102

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.

R-5963A

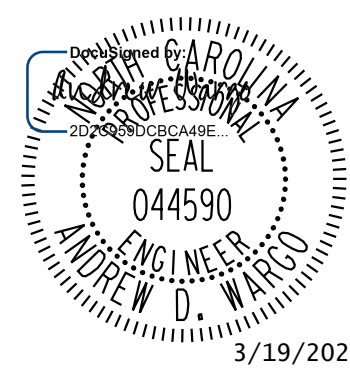
SHEET NO.

2A-2

ROADWAY DESIGN
ENGINEER



PAVEMENT DESIGN
ENGINEER



3/19/2025 3/19/2025
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

A1	12" REINFORCED CONCRETE TRUCK APRON
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" 119.0C
D2	4" 119.0C
D3	VAR. DEPTH 119.0C
E1	3" B25.0C
E2	4" B25.0C
E3	VAR. DEPTH B25.0C
J1	6" ABC
J2	7.5" ABC
K1	CHEMICALLY STABILIZED SUBGRADE
K2	8" CLASS IV SUBGRADE STABILIZATION
N	GEOTEXTILE FOR SUBGRADE STAB.
R1	2'-6" CONCRETE CURB & GUTTER
R2	1'-6" CONCRETE CURB & GUTTER
R3	5" MONO. CONC. ISLAND (KEYED-IN)
R4	CONCRETE EXPRESSWAY GUTTER
R5	9' x 18" CONCRETE CURB
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING
V2	2.5" MILLING
V3	INCIDENTAL MILLING
W	VAR. DEPTH ASPHALT PAVEMENT

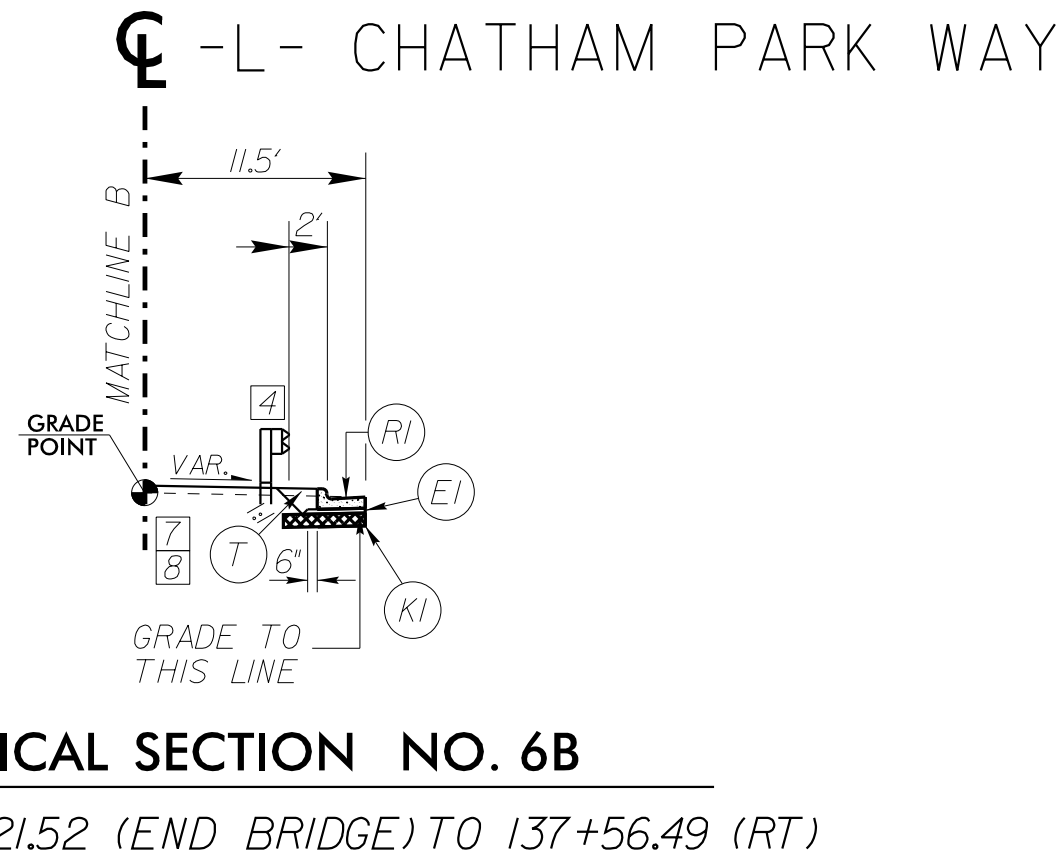
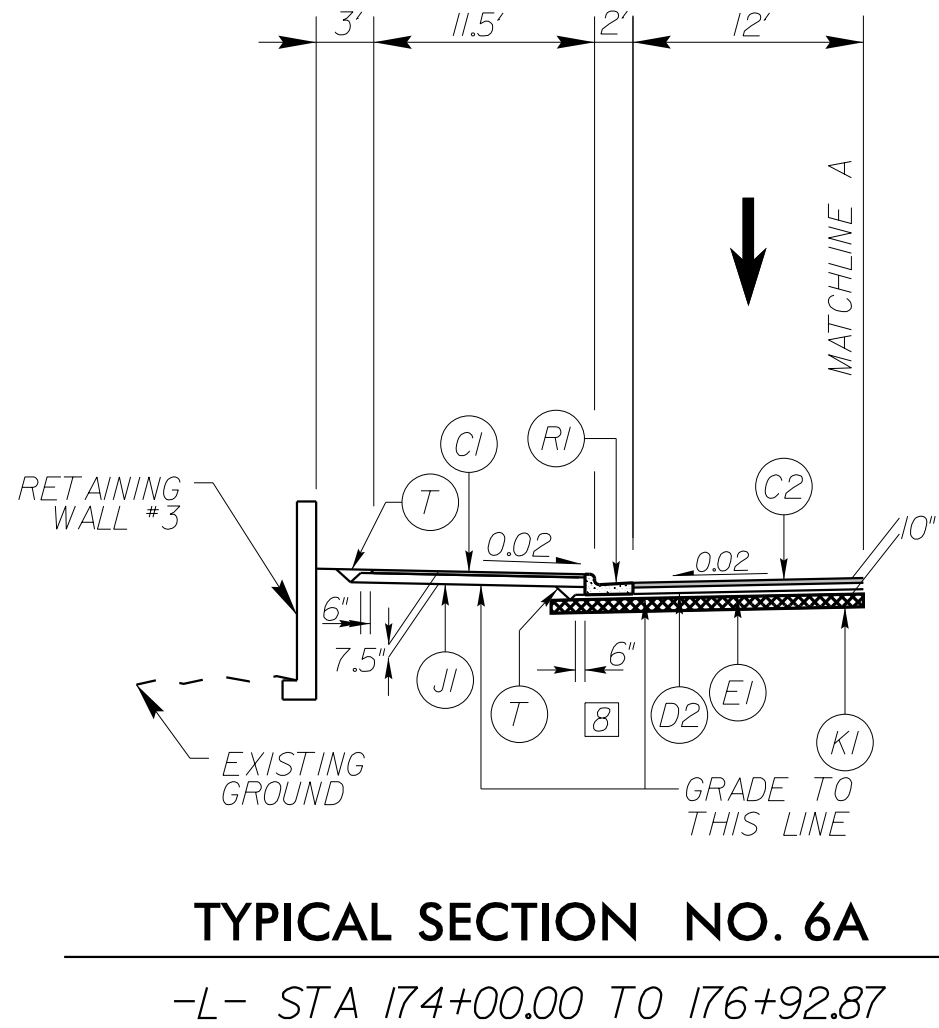
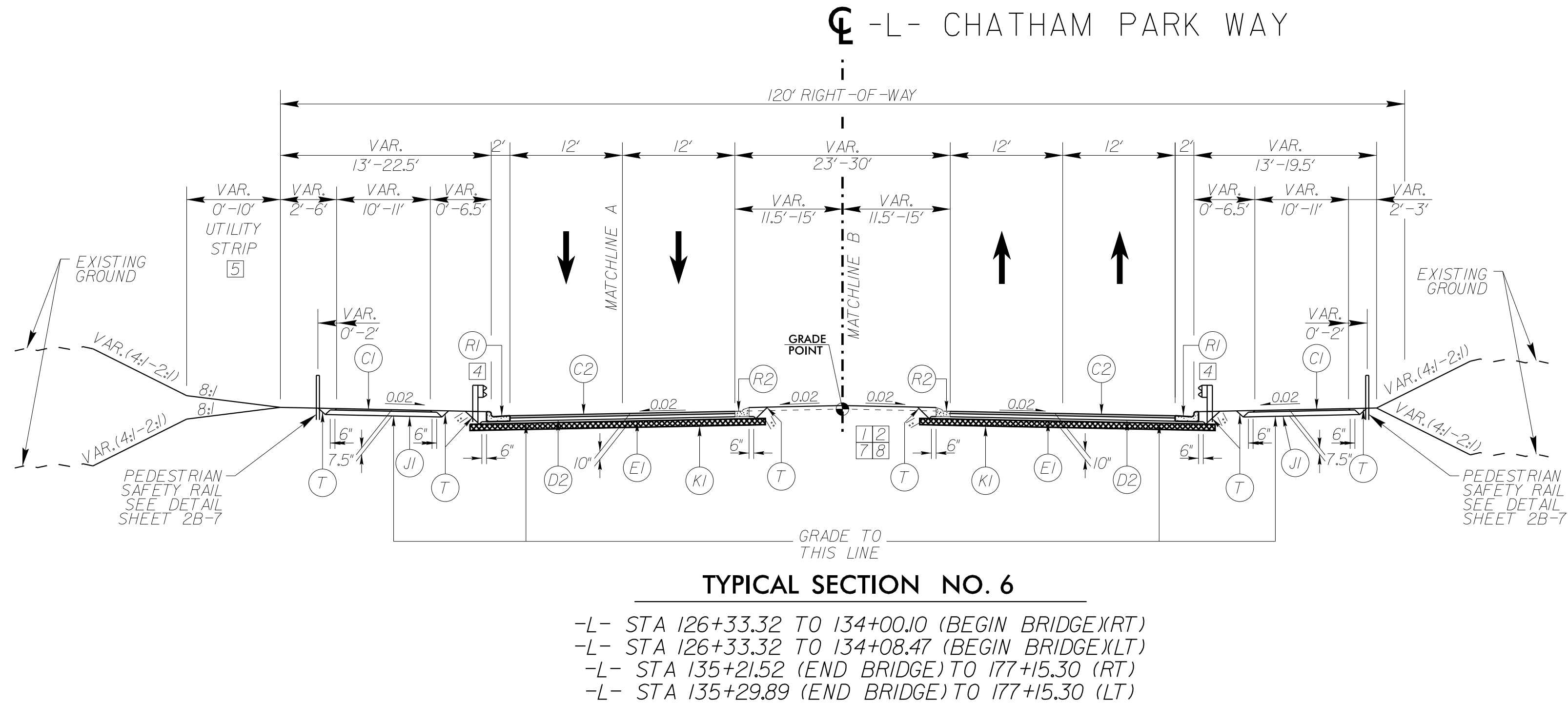
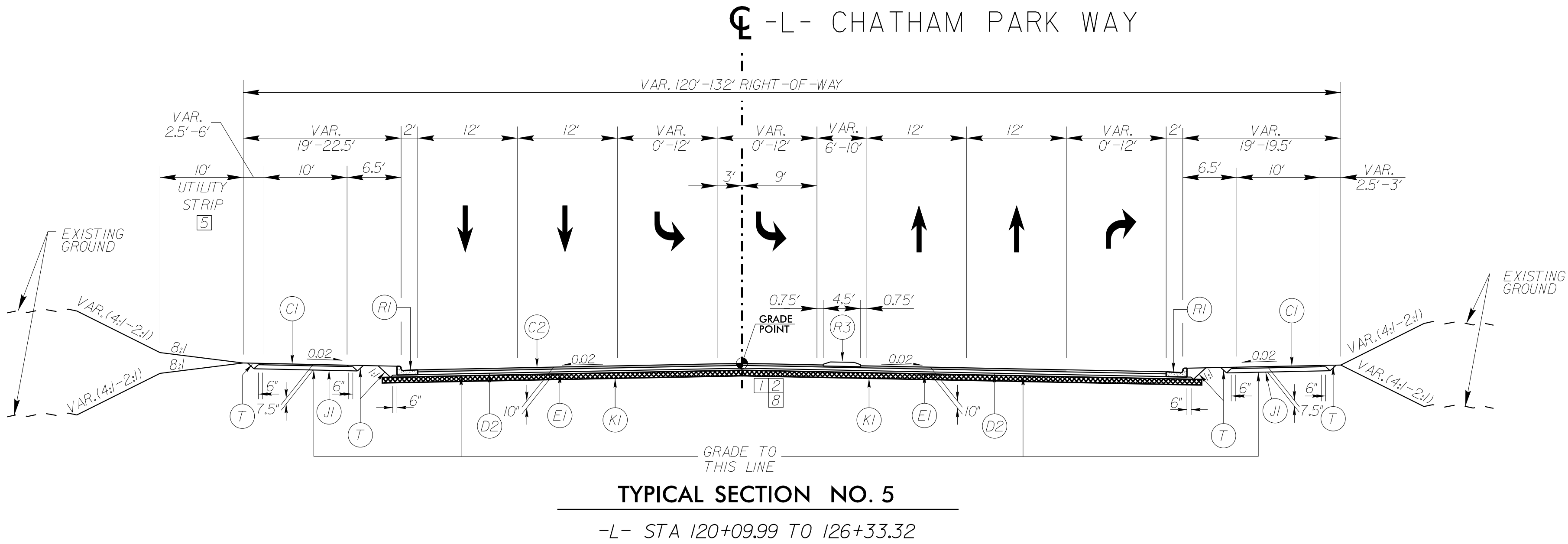
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED

- SEE PLANS AND CROSS SECTIONS FOR MEDIAN TYPES AND LOCATIONS. ALL MONOLITHIC CONCRETE ISLANDS SHALL BE KEYED-IN UNLESS OTHERWISE NOTED
- SEE PLANS FOR TURN LANE LOCATIONS
- SEE DETAIL SHOWING METHOD OF SAWCUT, SHEET 2A-5
- FACE OF GUARDRAIL TO BE PLACED 1' BEHIND MULTI-USE PATH (MUP) EXCEPT WHEN MUP IS ON THE BACK OF CURB. WHEN MUP IS ON THE BACK OF CURB, MUP SHALL BE 11' WIDE AND THE FACE OF GUARDRAIL SHALL BE AT THE BACK OF MUP. SEE PLANS FOR SPECIFIC GUARDRAIL LOCATIONS
- DO NOT CONSTRUCT 10' WIDE UTILITY STRIP BEHIND GUARDRAIL OR FROM STATION 164+97.18 TO STATION 168+00.00
- ASPHALT DRIVEWAYS SHALL BE PAVED WITH 6" OF ABC WITH PRIME COAT AND 2" S9.5B CONCRETE DRIVEWAYS SHALL BE PAVED WITH 6" OF JOINTED CONCRETE WITH WIRE MESH. STONE DRIVEWAYS SHALL BE PAVED WITH 6" OF ABC
- INSTALL AGGREGATE SUBGRADE - TYPE II PER DETAIL ON SHEET 2A-7 IN LIEU OF CHEMICALLY STABILIZED SUBGRADE IN AREAS AS SHOWN IN THE "SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION", SHEET 3G-1
- CHEMICAL STABILIZATION SHOULD BE APPLIED 1' WIDER THAN THE BASE COURSE SUBGRADE CONTACT AREA ON EACH SIDE

5/14/99

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3/19/2025



- PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED
- 1 SEE PLANS AND CROSS SECTIONS FOR MEDIAN TYPES AND LOCATIONS. ALL MONOLITHIC CONCRETE ISLANDS SHALL BE KEYED-IN UNLESS OTHERWISE NOTED
 - 2 SEE PLANS FOR TURN LANE LOCATIONS
 - 3 SEE DETAIL SHOWING METHOD OF SAWCUT, SHEET 2A-5
 - 4 FACE OF GUARDRAIL TO BE PLACED 1' BEHIND MULTI-USE PATH (MUP) EXCEPT WHEN MUP IS ON THE BACK OF CURB. WHEN MUP IS ON THE BACK OF CURB, MUP SHALL BE 11' WIDE AND THE FACE OF GUARDRAIL SHALL BE AT THE BACK OF MUP. SEE PLANS FOR SPECIFIC GUARDRAIL LOCATIONS
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 - 8 CHEMICAL STABILIZATION SHOULD BE APPLIED 1' WIDER THAN THE BASE COURSE SUBGRADE CONTACT AREA ON EACH SIDE

Kimley » Horn

KIMLEY-HORN & ASSOCIATES, INC.
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601; PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

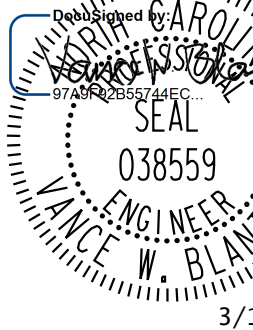
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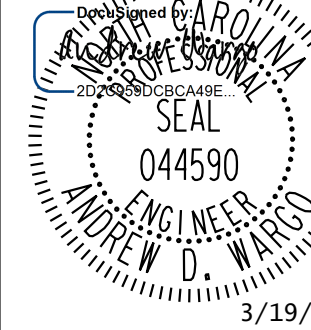
SHEET NO.

2A-3

ROADWAY DESIGN ENGINEER



PAVEMENT DESIGN ENGINEER

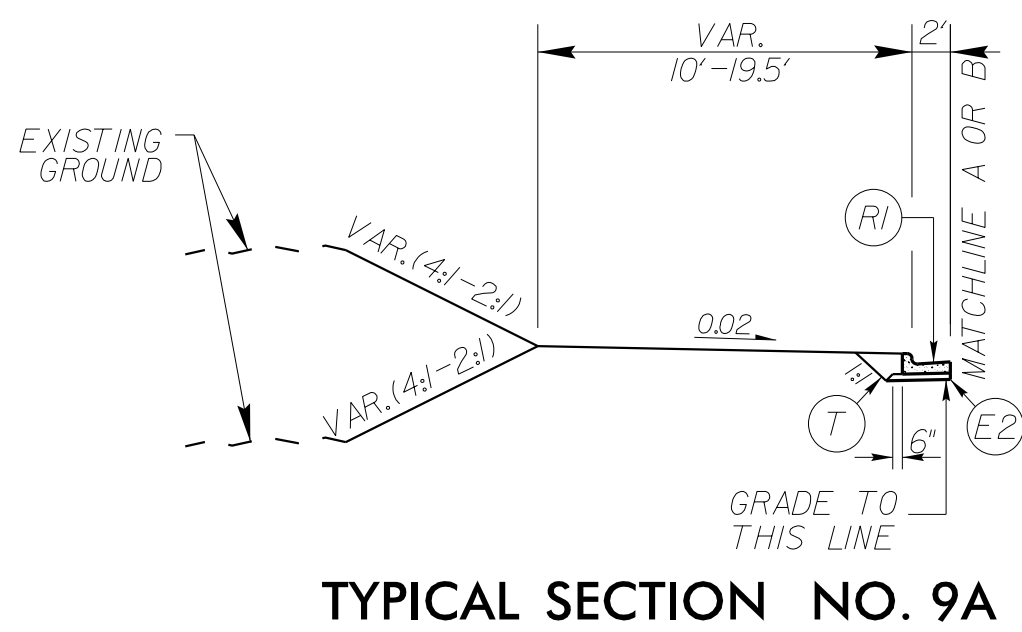
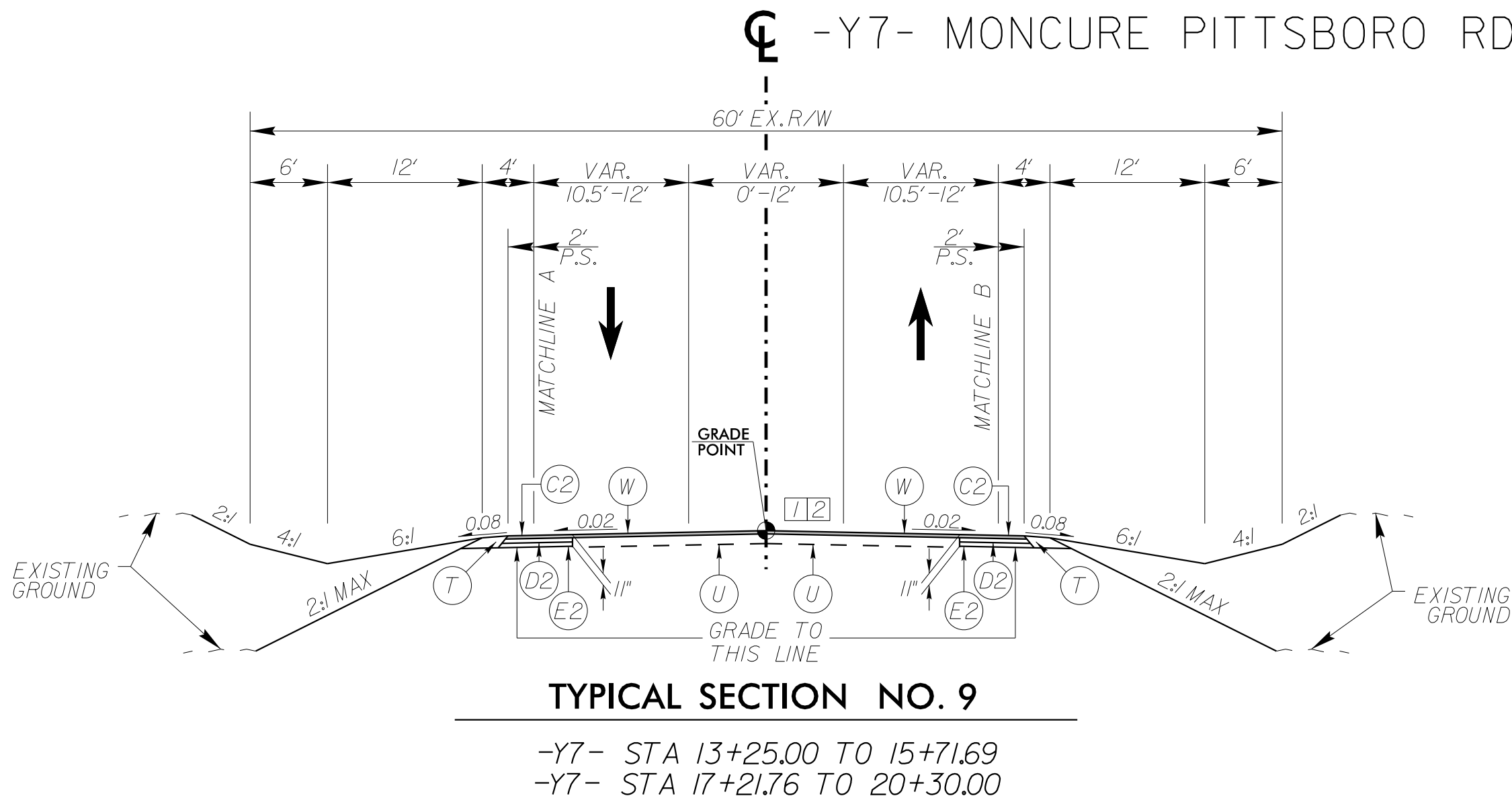
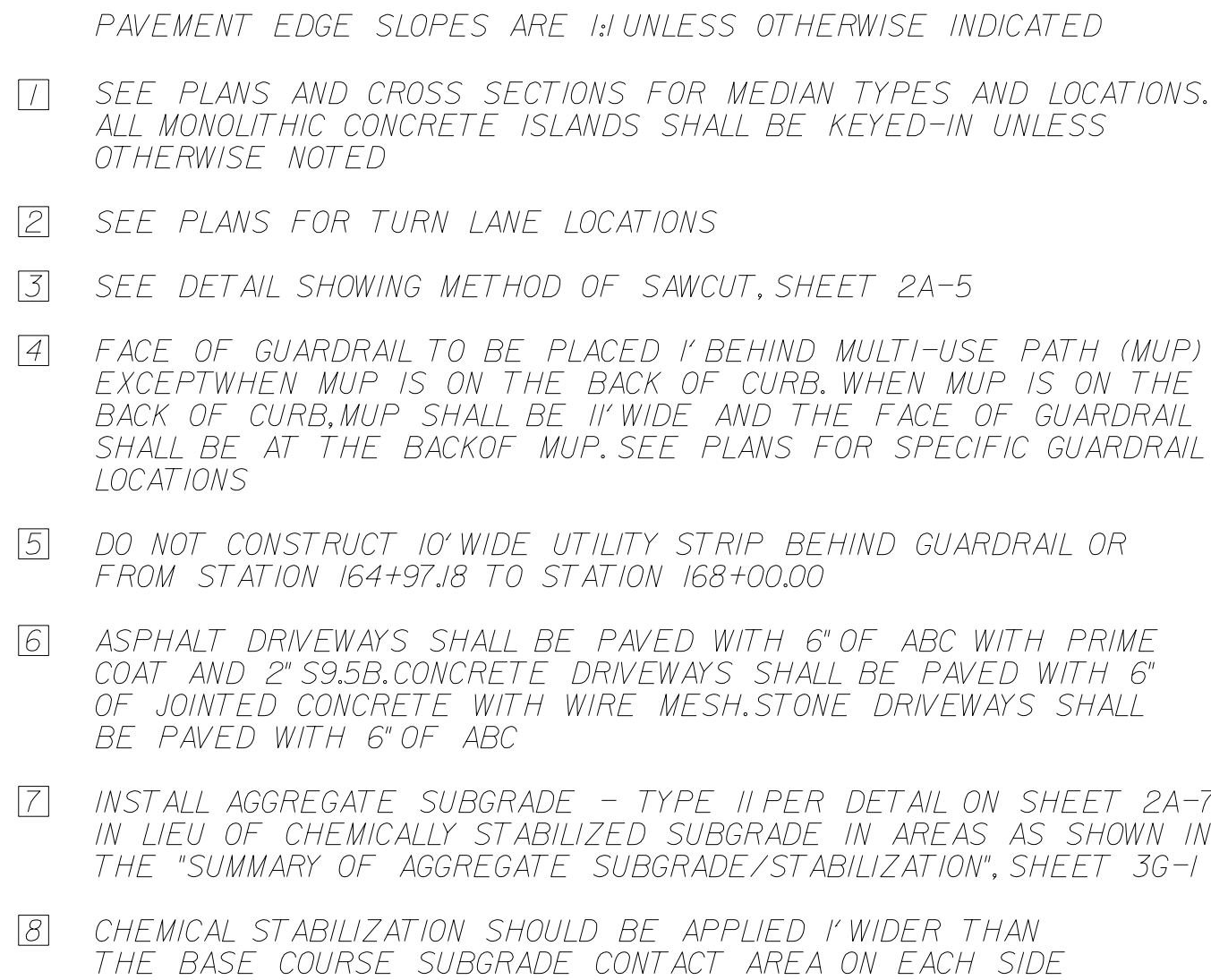


**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

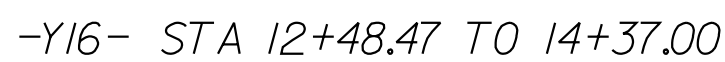
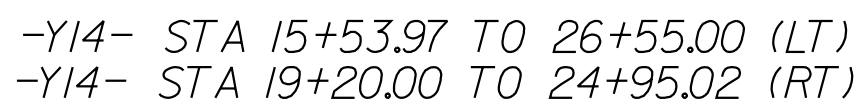
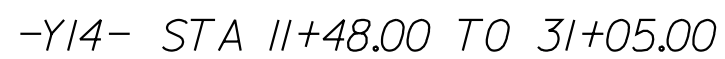
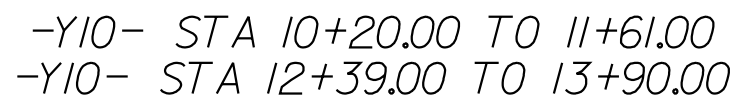
A1	12" REINFORCED CONCRETE TRUCK APRON
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" 119.0C
D2	4" 119.0C
D3	VAR. DEPTH 119.0C
E1	3" B25.0C
E2	4" B25.0C
E3	VAR. DEPTH B25.0C
J1	6" ABC
J2	7.5" ABC
K1	CHEMICALLY STABILIZED SUBGRADE
K2	8" CLASS IV SUBGRADE STABILIZATION
N	GEOTEXTILE FOR SUBGRADE STAB.
R1	2'-6" CONCRETE CURB & GUTTER
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R3	5" MONO. CONC. ISLAND (KEYED-IN)
R4	CONCRETE EXPRESSWAY GUTTER
R5	9' x 18" CONCRETE CURB
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING
V2	2.5" MILLING
V3	INCIDENTAL MILLING
W	VAR. DEPTH ASPHALT PAVEMENT

PROJECT REFERENCE NO.		SHEET NO.	
R-5963A		2A-4	
ROADWAY DESIGN ENGINEER		PAVEMENT DESIGN ENGINEER	
			
3/19/2025		3/19/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



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N	GEOTEXTILE FOR SUBGRADE STAB.
R1	2'-6" CONCRETE CURB & GUTTER
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R3	5' MONO. CONC. ISLAND (KEYED-IN)
R4	CONCRETE EXPRESSWAY GUTTER
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T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING
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U	EXISTING PAVEMENT
V1	1.5" MILLING
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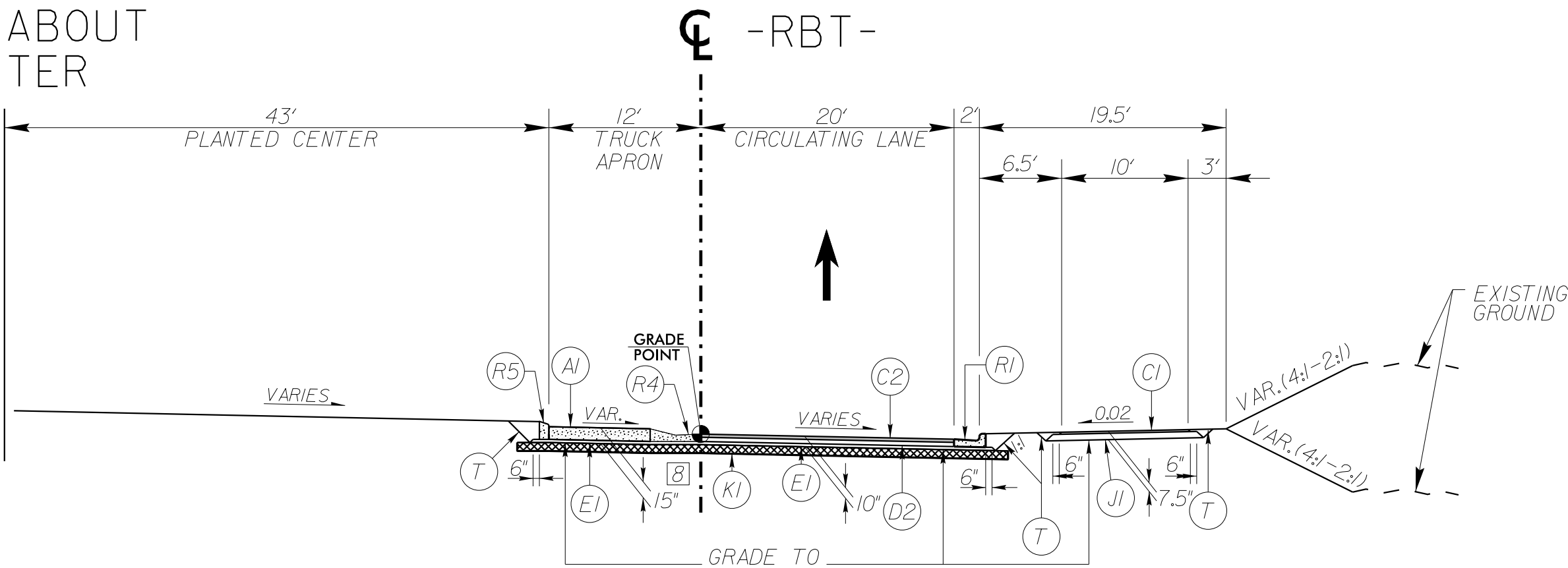


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3/19/2025

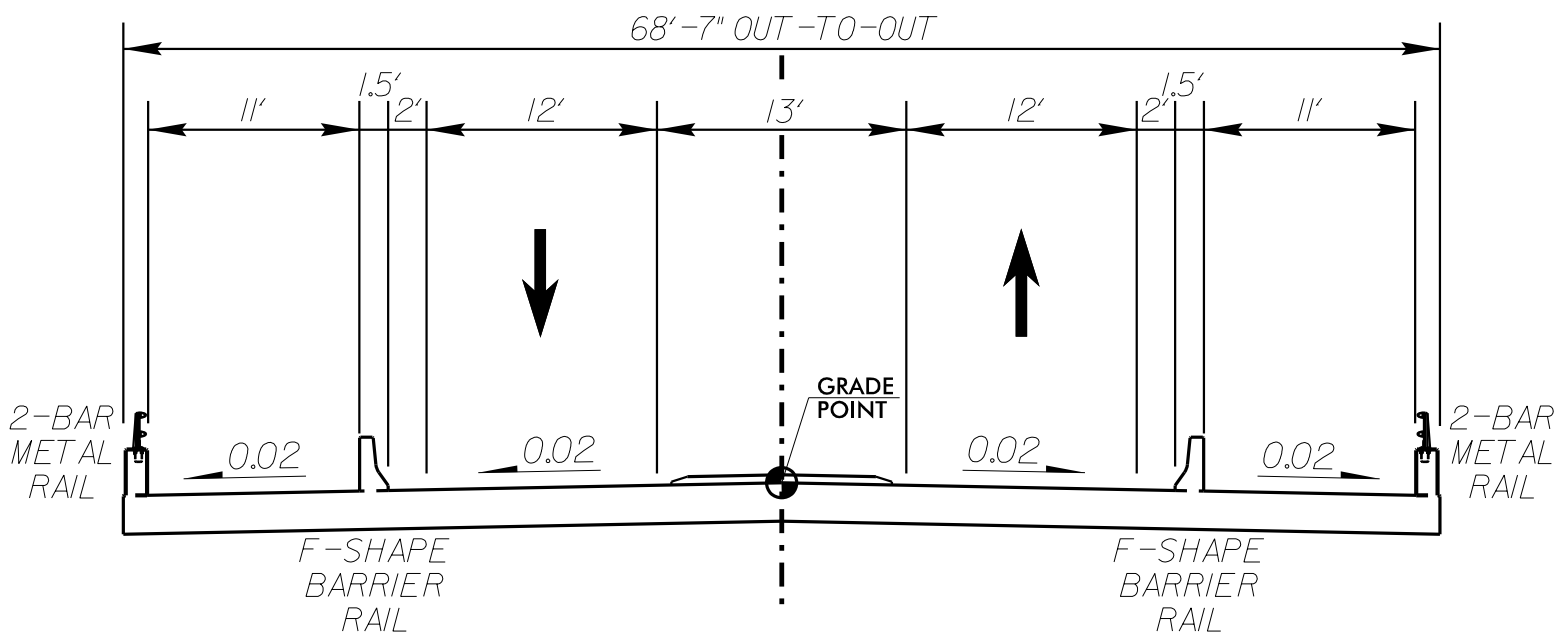
ROUNDBABOUT
CENTER



TYPICAL SECTION NO. 14

-RBT- STA 10+00.00 TO 13+45.57

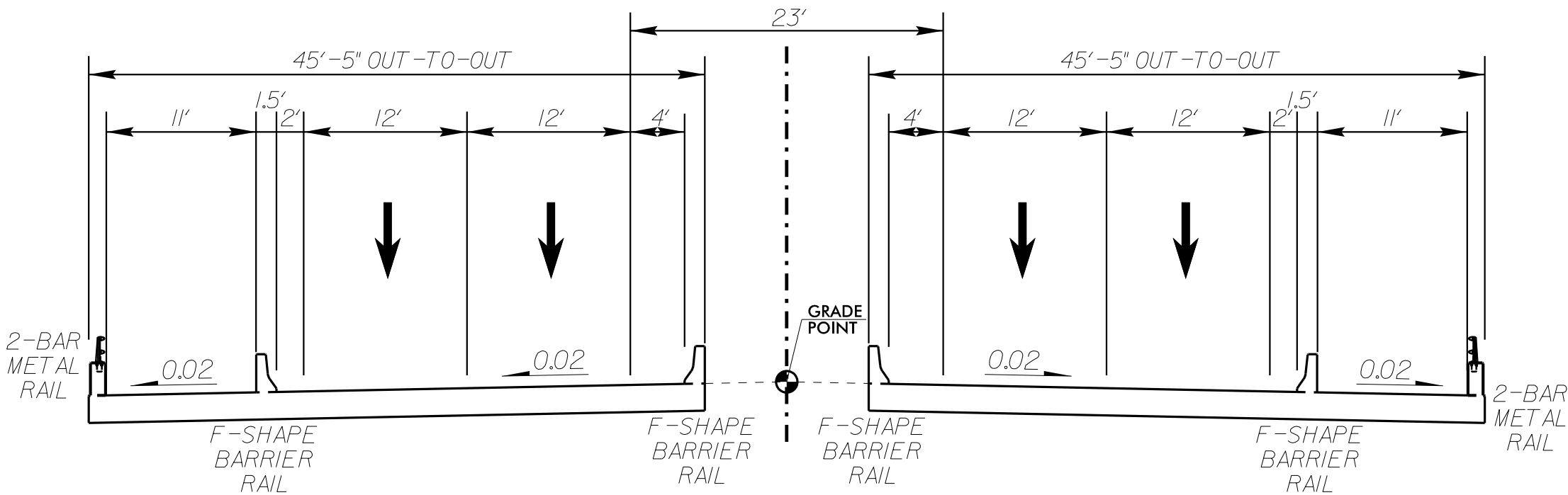
-L- CHATHAM PARK WAY



BRIDGE TYPICAL SECTION NO. 1

-L- STA 75+78.00 TO 77+20.00

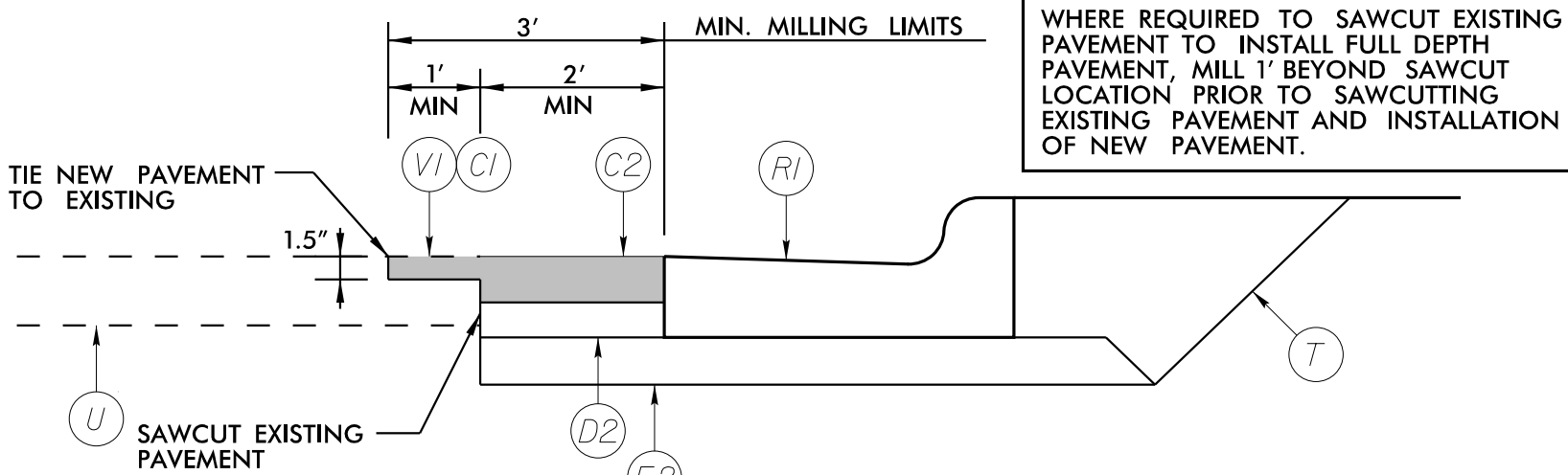
-L- CHATHAM PARK WAY



BRIDGE TYPICAL SECTION NO. 2

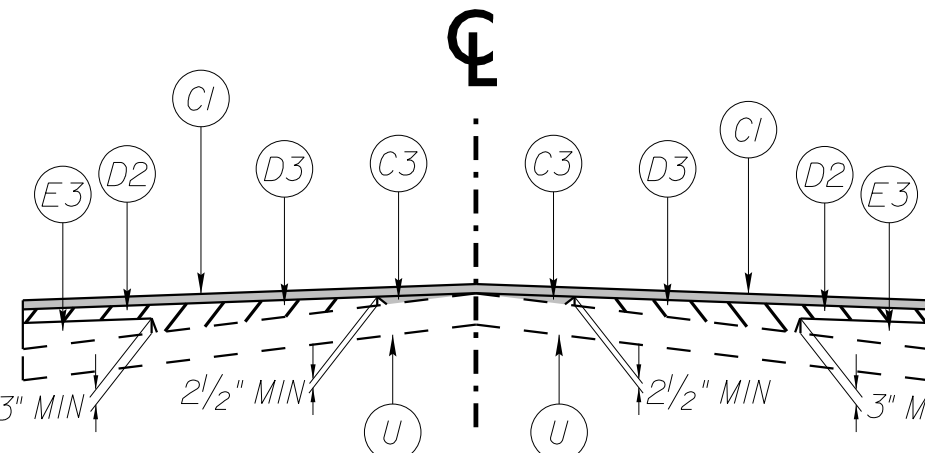
-L- STA 134+00.10 TO 135+21.52 (RT)

-L- STA 134+08.47 TO 135+29.89 (LT)

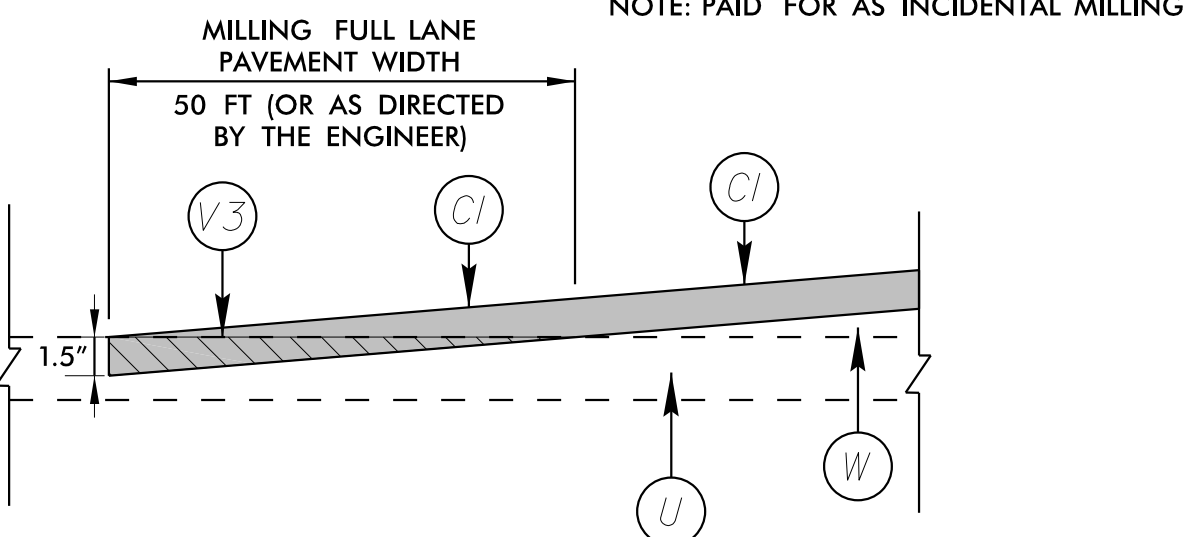


DETAIL SHOWING METHOD OF SAWCUT

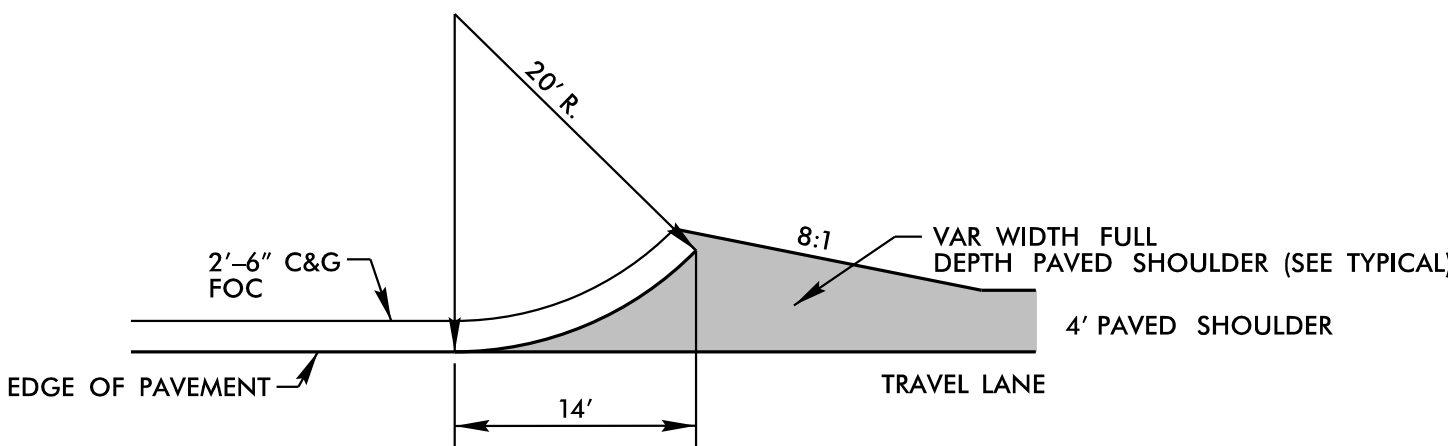
NOTE:
WHERE REQUIRED TO SAWCUT EXISTING PAVEMENT TO INSTALL FULL DEPTH PAVEMENT, MILL 1' BEYOND SAWCUT LOCATION PRIOR TO SAWCUTTING EXISTING PAVEMENT AND INSTALLATION OF NEW PAVEMENT.



DETAIL SHOWING METHOD OF WEDGING



DETAIL SHOWING METHOD OF PROFILE KEY-IN



DETAIL SHOWING CURB & GUTTER FLARE

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE INDICATED

- SEE PLANS AND CROSS SECTIONS FOR MEDIAN TYPES AND LOCATIONS. ALL MONOLITHIC CONCRETE ISLANDS SHALL BE KEYED-IN UNLESS OTHERWISE NOTED
- SEE PLANS FOR TURN LANE LOCATIONS
- SEE DETAIL SHOWING METHOD OF SAWCUT, SHEET 2A-5
- FACE OF GUARDRAIL TO BE PLACED 1' BEHIND MULTI-USE PATH (MUP) EXCEPT WHEN MUP IS ON THE BACK OF CURB. WHEN MUP IS ON THE BACK OF CURB, MUP SHALL BE 11' WIDE AND THE FACE OF GUARDRAIL SHALL BE AT THE BACK OF MUP. SEE PLANS FOR SPECIFIC GUARDRAIL LOCATIONS
- DO NOT CONSTRUCT 10' WIDE UTILITY STRIP BEHIND GUARDRAIL OR FROM STATION 164+97.18 TO STATION 168+00.00
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- INSTALL AGGREGATE SUBGRADE - TYPE II PER DETAIL ON SHEET 2A-7 IN LIEU OF CHEMICALLY STABILIZED SUBGRADE IN AREAS AS SHOWN IN THE "SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION", SHEET 3G-1
- CHEMICAL STABILIZATION SHOULD BE APPLIED 1' WIDER THAN THE BASE COURSE SUBGRADE CONTACT AREA ON EACH SIDE

Kimley » Horn

KIMLEY-HORN & ASSOCIATES, INC.
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601; PE NO. F-0102

RIGHT-OF-WAY REV.

CONST. REV.

PROJECT REFERENCE NO.

R-5963A

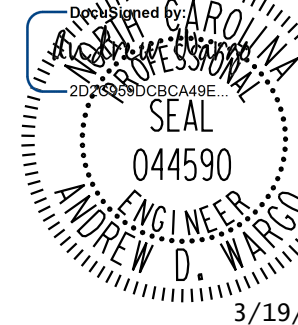
SHEET NO.

2A-6

ROADWAY DESIGN
ENGINEER



PAVEMENT DESIGN
ENGINEER



3/19/2025

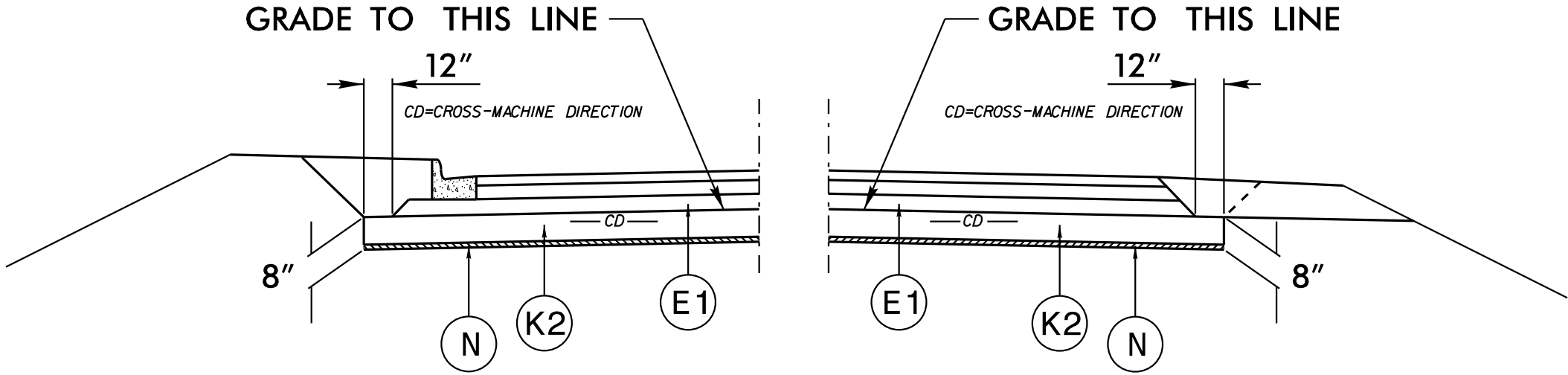
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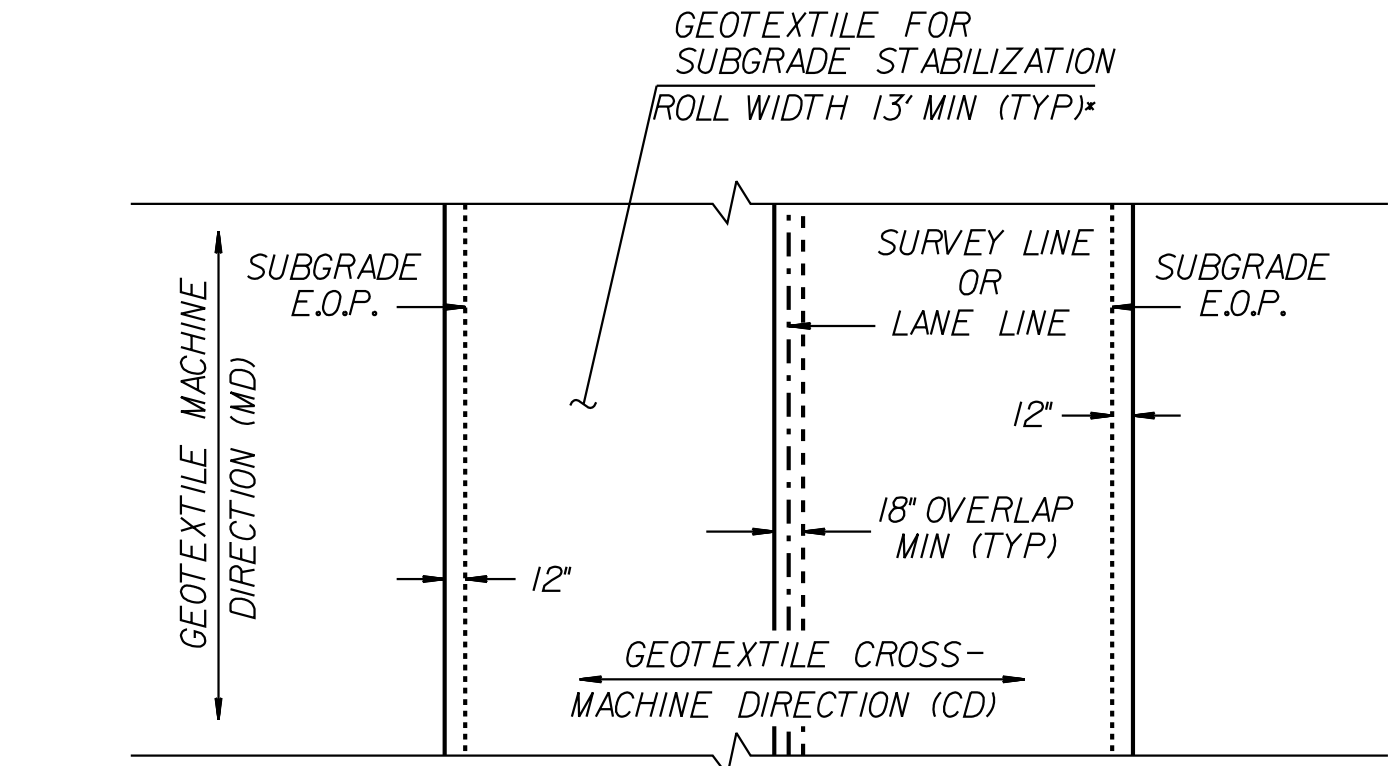
PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

A1	12" REINFORCED CONCRETE TRUCK APRON
C1	1.5" S9.5C
C2	3" S9.5C
C3	VAR. DEPTH S9.5C
D1	2.5" 119.0C
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K1	CHEMICALLY STABILIZED SUBGRADE
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R4	CONCRETE EXPRESSWAY GUTTER
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T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING
V2	2.5" MILLING
V3	INCIDENTAL MILLING
W	VAR. DEPTH ASPHALT PAVEMENT

AGGREGATE SUBGRADE TYPE II



8" CLASS IV SUBGRADE STABILIZATION



GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT
(PLAN VIEW)
(100% COVERAGE REQUIRED)

*INSTALL GEOTEXTILE FOR SUBGRADE STABILIZATION WITH MINIMUM ROLL WIDTH UNDER ROADWAY EDGES AND SHOULDERS ADJACENT TO FILL SLOPES

Kimley»Horn

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RIGHT-OF-WAY REV.

CONST. REV.

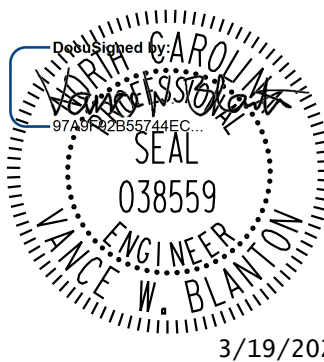
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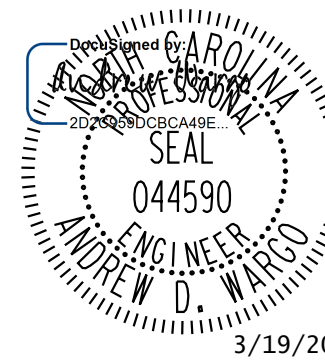
SHEET NO.

2A-7

ROADWAY DESIGN
ENGINEER



PAVEMENT DESIGN
ENGINEER



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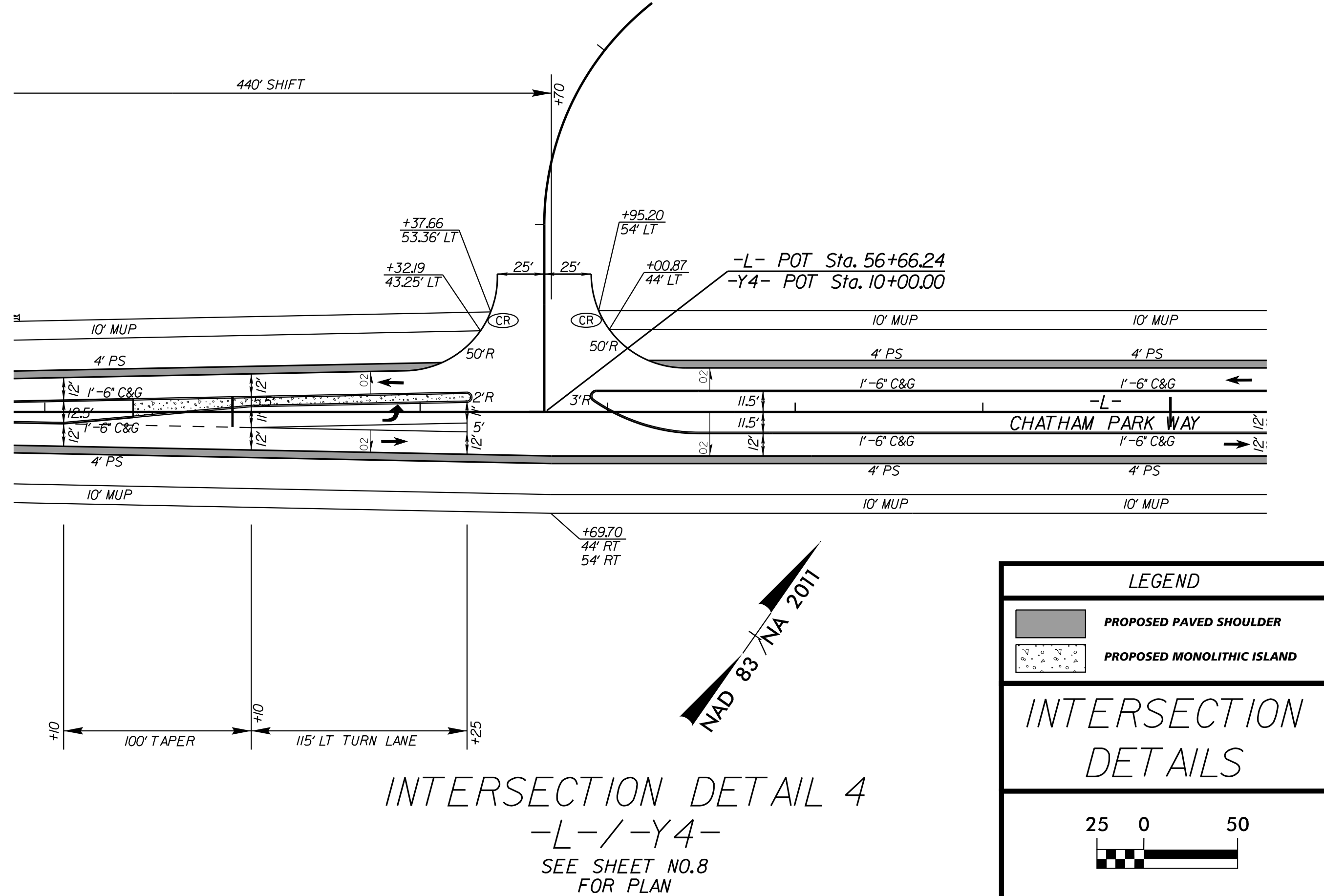
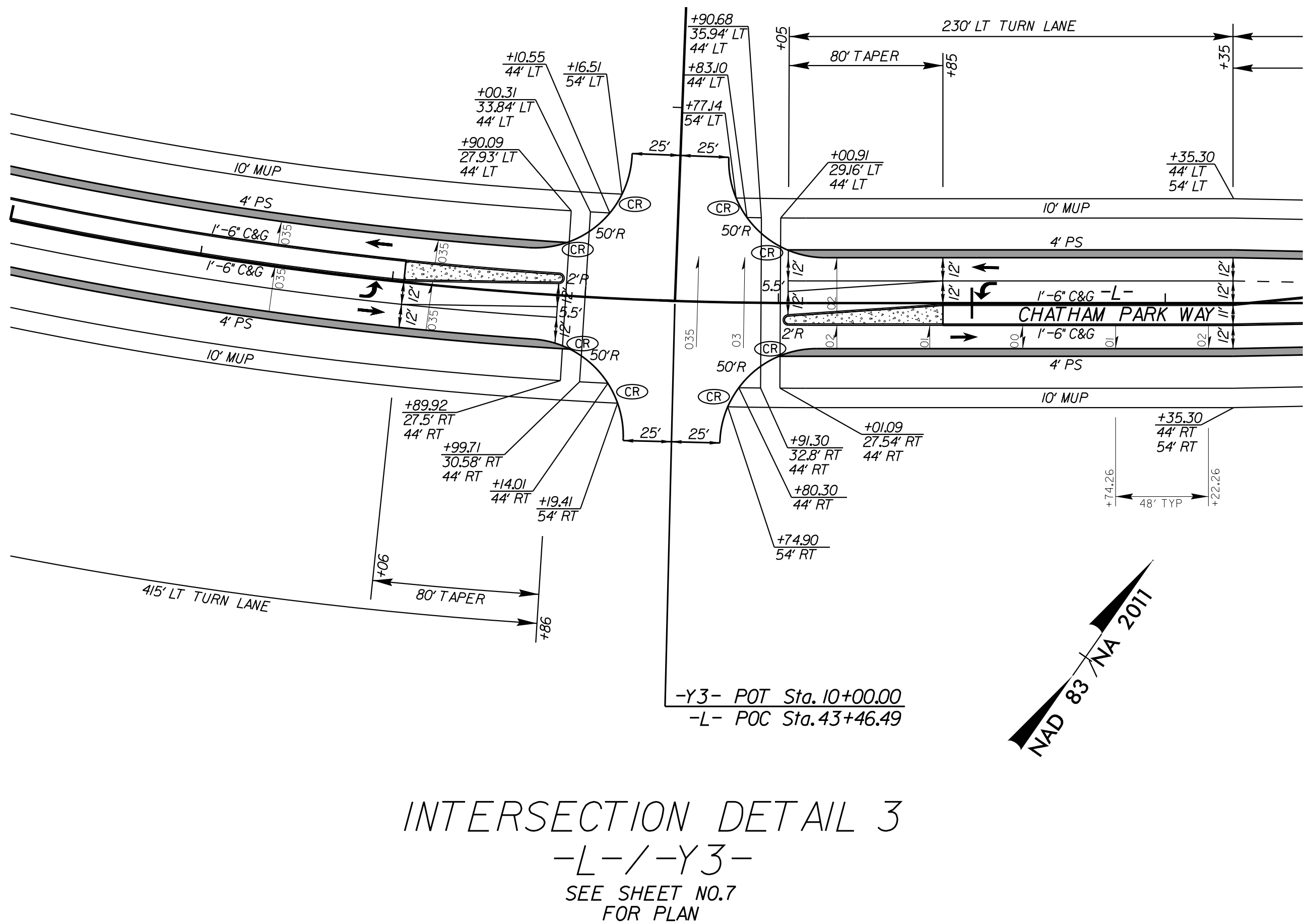
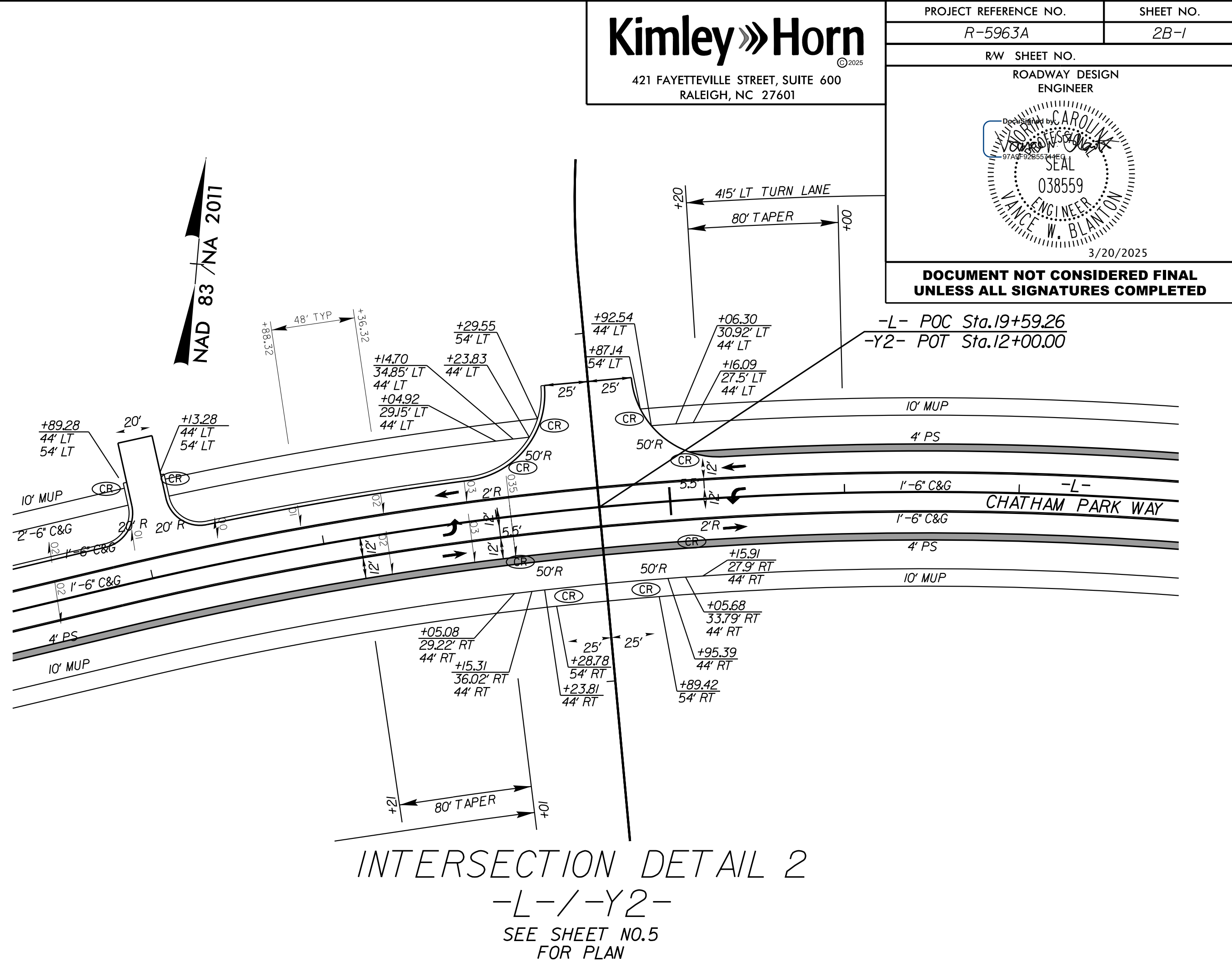
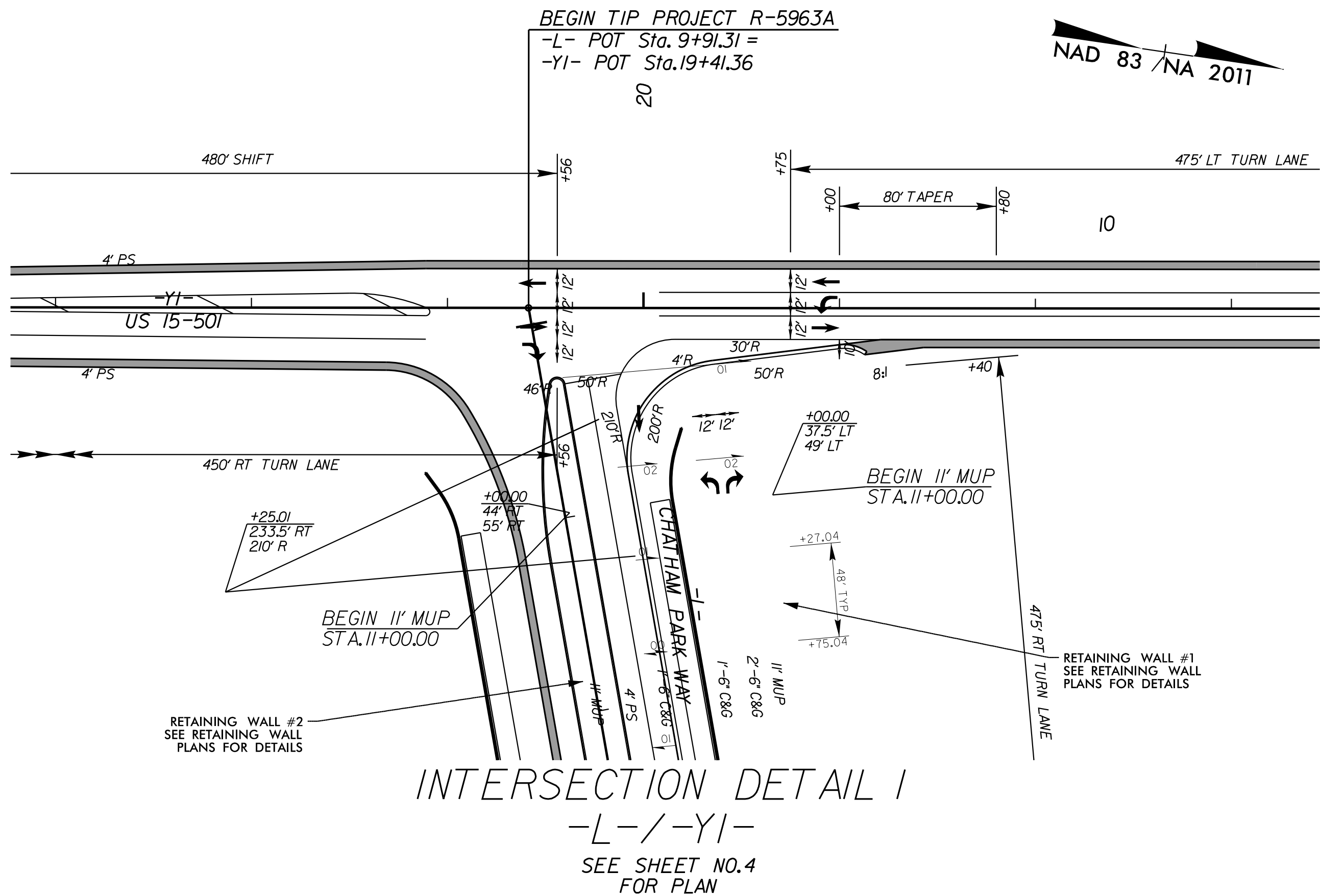
PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

A1	12" REINFORCED CONCRETE TRUCK APRON
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R4	CONCRETE EXPRESSWAY GUTTER
R5	9' x 18" CONCRETE CURB
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1.5" MILLING
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W	VAR. DEPTH ASPHALT PAVEMENT

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- FACE OF GUARDRAIL TO BE PLACED 1' BEHIND MULTI-USE PATH (MUP) EXCEPT WHEN MUP IS ON THE BACK OF CURB. WHEN MUP IS ON THE BACK OF CURB, MUP SHALL BE 11' WIDE AND THE FACE OF GUARDRAIL SHALL BE AT THE BACK OF MUP. SEE PLANS FOR SPECIFIC GUARDRAIL LOCATIONS
- DO NOT CONSTRUCT 10' WIDE UTILITY STRIP BEHIND GUARDRAIL OR FROM STATION 164+97.18 TO STATION 168+00.00
- ASPHALT DRIVEWAYS SHALL BE PAVED WITH 6" OF ABC WITH PRIME COAT AND 2" S9.5B. CONCRETE DRIVEWAYS SHALL BE PAVED WITH 6" OF JOINTED CONCRETE WITH WIRE MESH. STONE DRIVEWAYS SHALL BE PAVED WITH 6" OF ABC
- INSTALL AGGREGATE SUBGRADE - TYPE II PER DETAIL ON SHEET 2A-7 IN LIEU OF CHEMICALLY STABILIZED SUBGRADE IN AREAS AS SHOWN IN THE "SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION", SHEET 3G-1
- CHEMICAL STABILIZATION SHOULD BE APPLIED 1' WIDER THAN THE BASE COURSE SUBGRADE CONTACT AREA ON EACH SIDE

5/14/99



LEGEND

PROPOSED PAVED SHOULDER

PROPOSED MONOLITHIC ISLAND

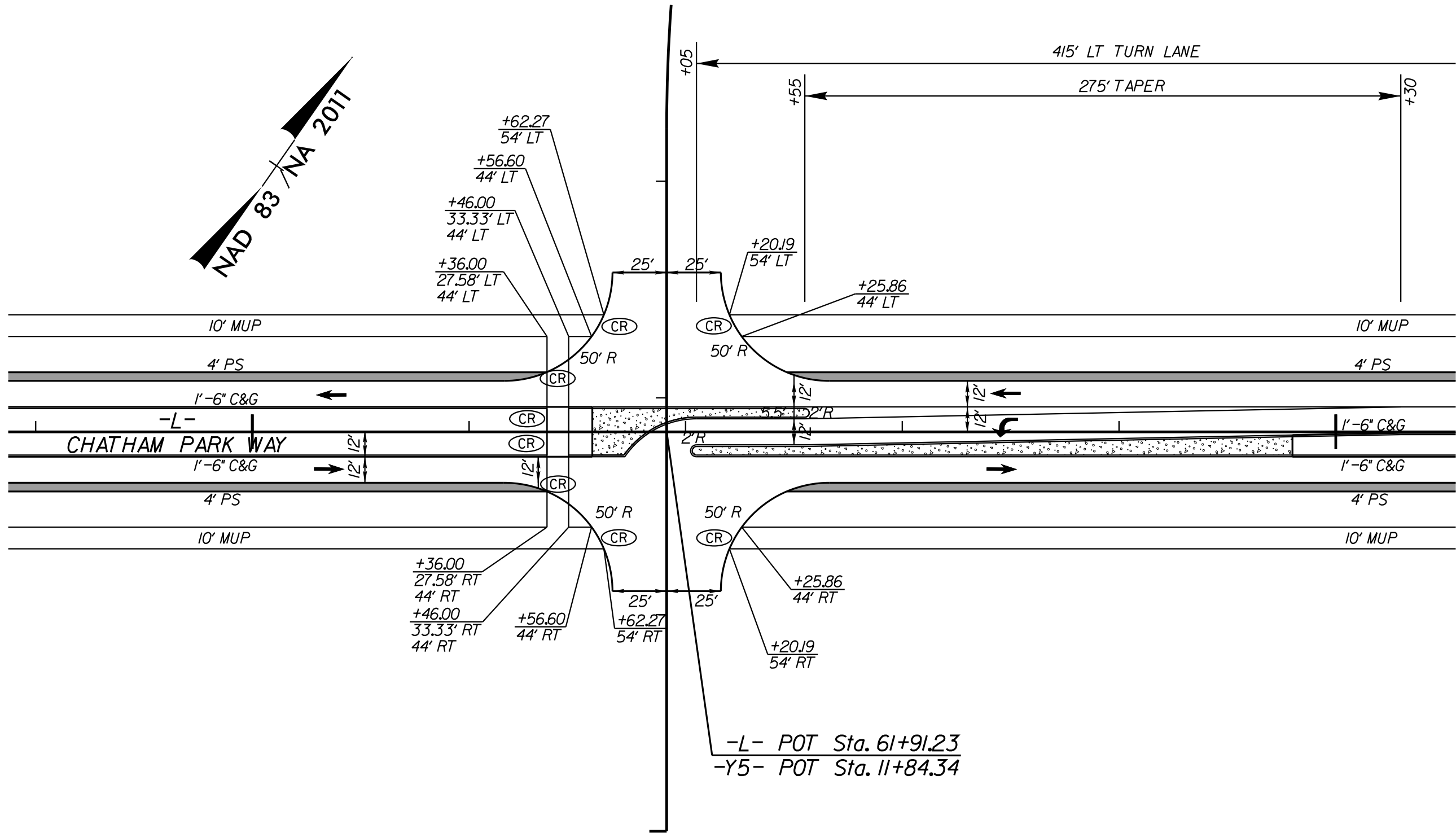
INTERSECTION DETAILS

25 0 50

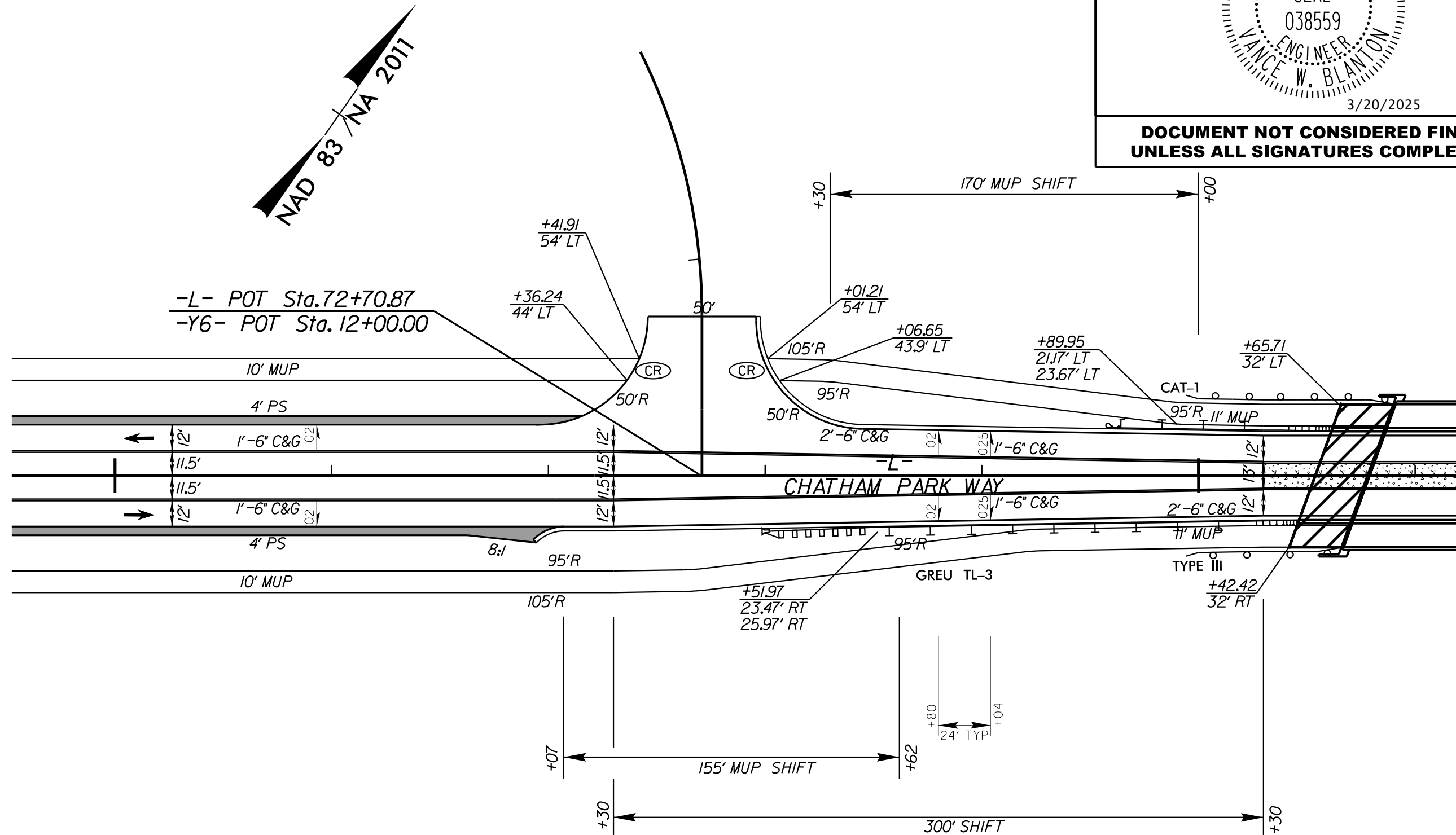
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3/5/2025

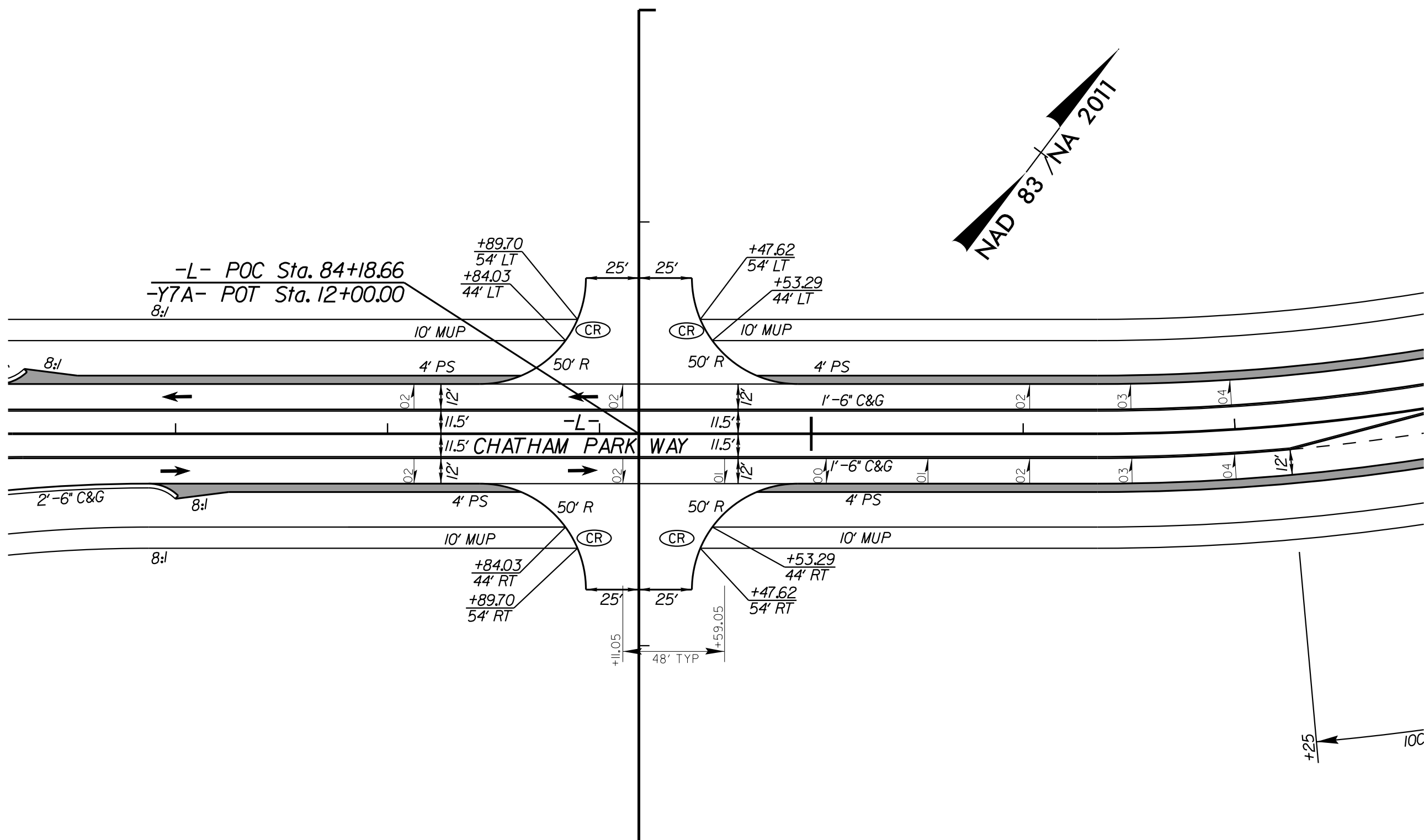
5/14/2025



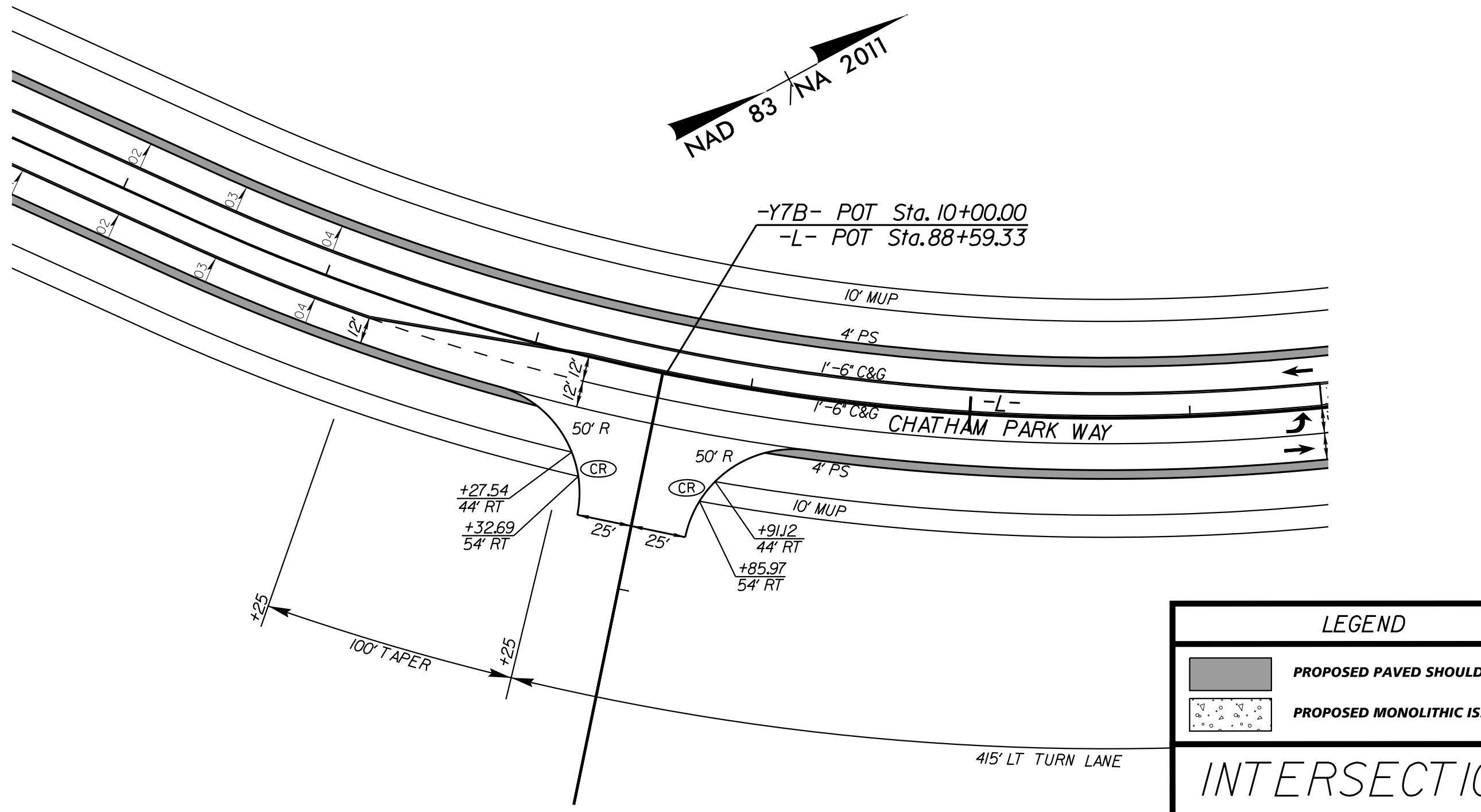
INTERSECTION DETAIL 5
-L-/-Y5-
SEE SHEET NO.8
FOR PLAN



INTERSECTION DETAIL 6
-L-/-Y6-
SEE SHEET NO.9
FOR PLAN



INTERSECTION DETAIL 7
-L-/-Y7A-
SEE SHEET NO.10
FOR PLAN



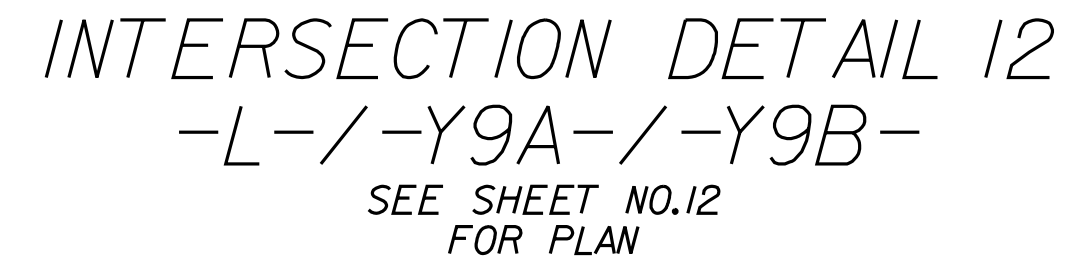
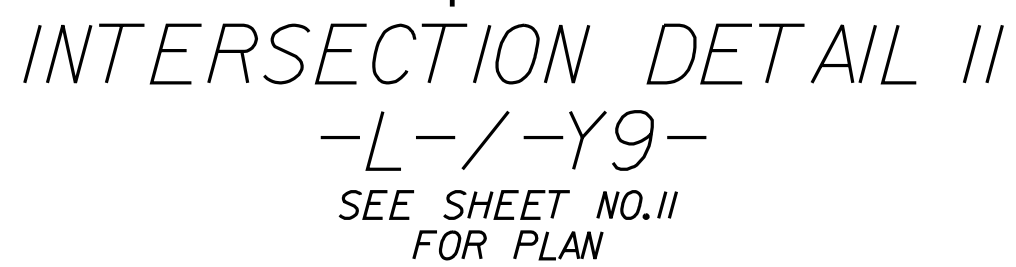
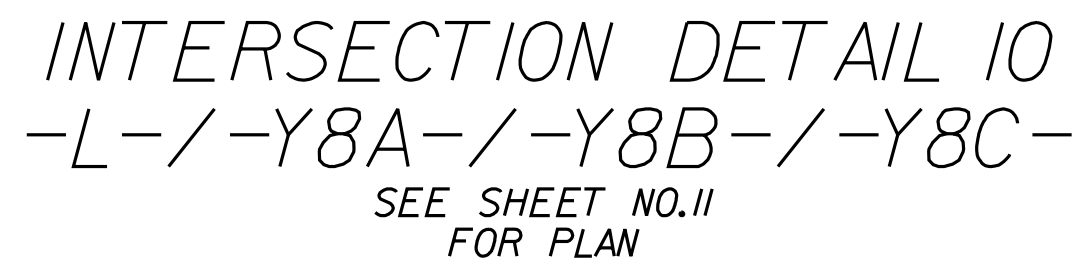
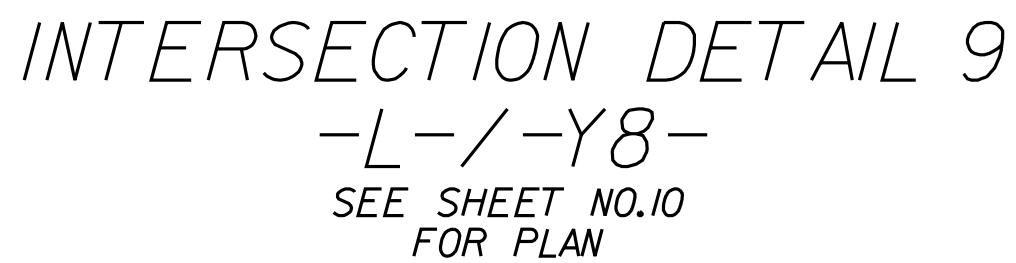
INTERSECTION DETAIL 8
-L-/-Y7B-
SEE SHEET NO.10
FOR PLAN

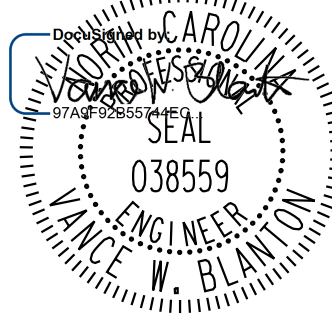
PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

LEGEND	
	PROPOSED PAVED SHOULDER
	PROPOSED MONOLITHIC ISLAND
INTERSECTION DETAILS	

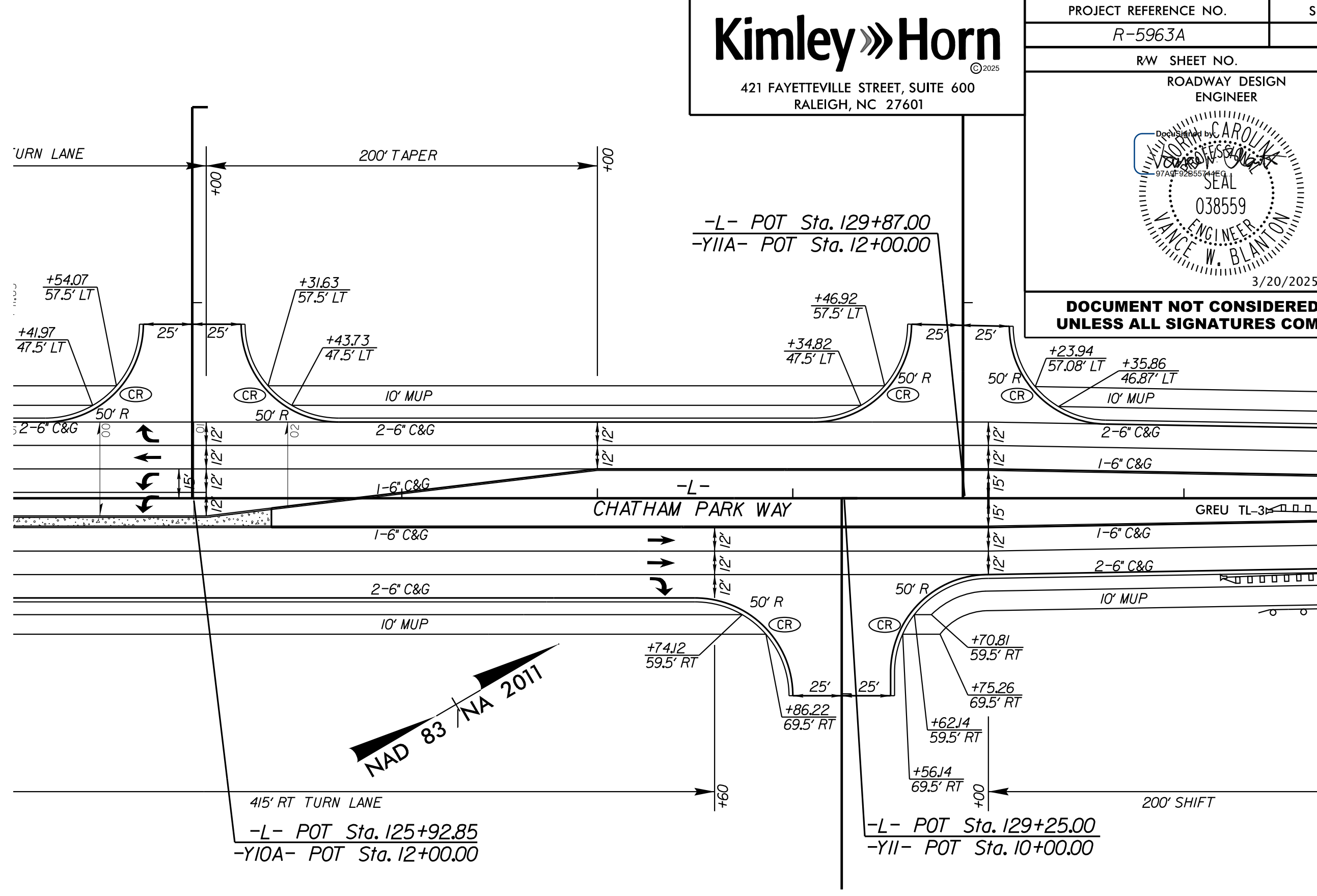
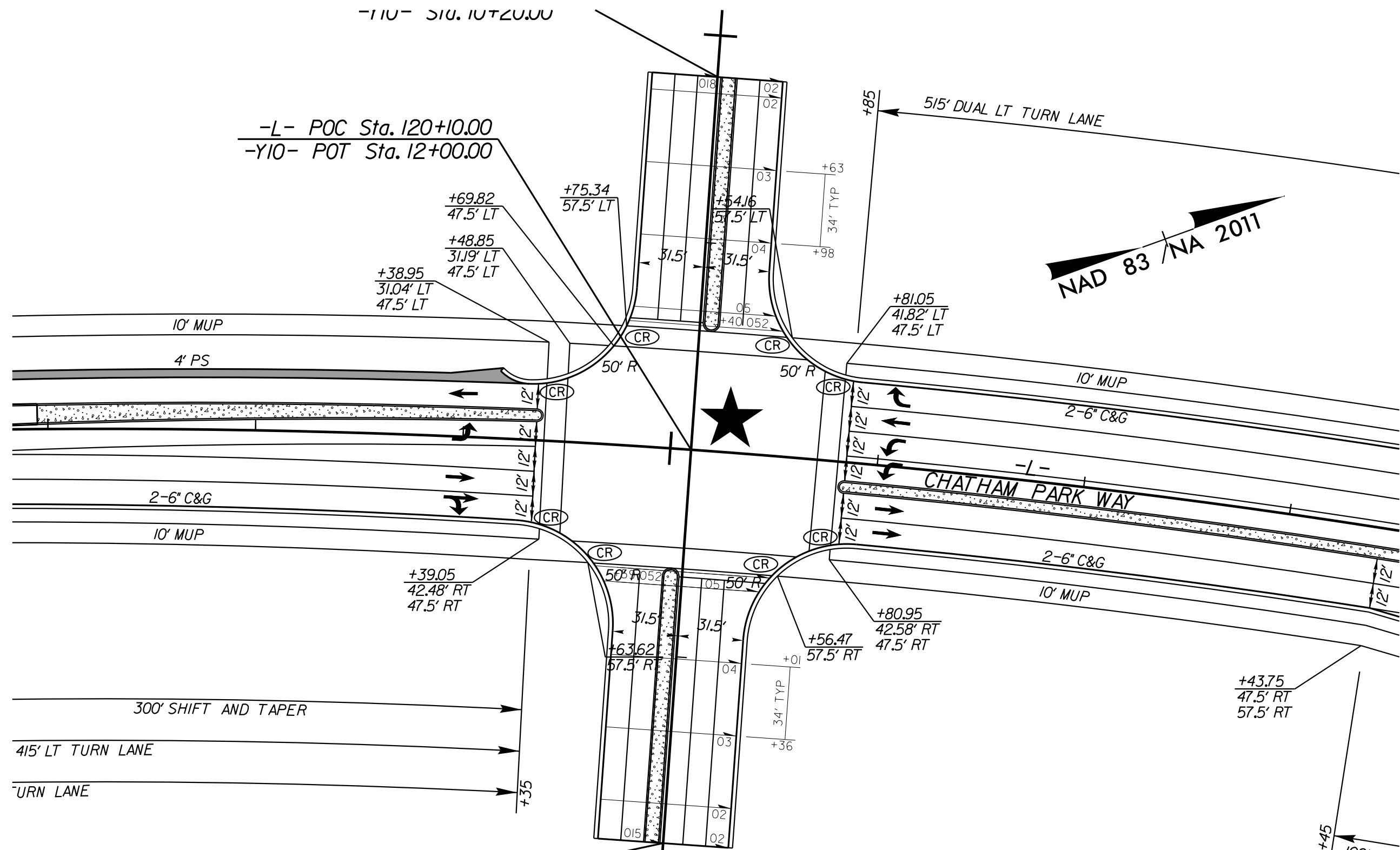
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3/5/2025



Kimley»Horn © 2025 421 FAYETTEVILLE STREET, SUITE 600 RALEIGH, NC 27601	PROJECT REFERENCE NO.		SHEET NO.
	R-5963A		2B-3
	RW SHEET NO.		
	ROADWAY DESIGN ENGINEER		
			
	3/20/2025		
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

5/14/99



Kimley»Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.
R-5963A

SHEET NO.
2B-4

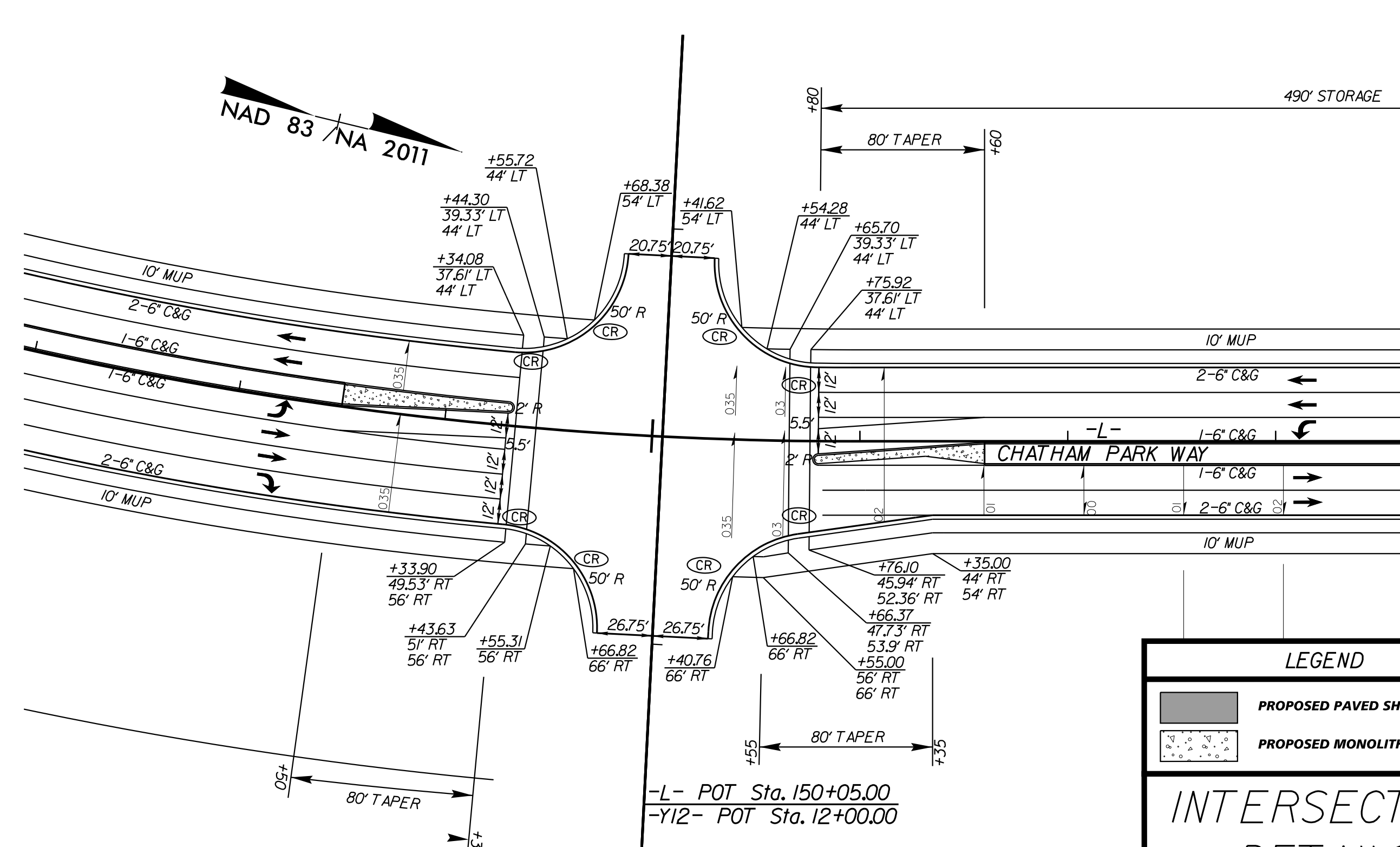
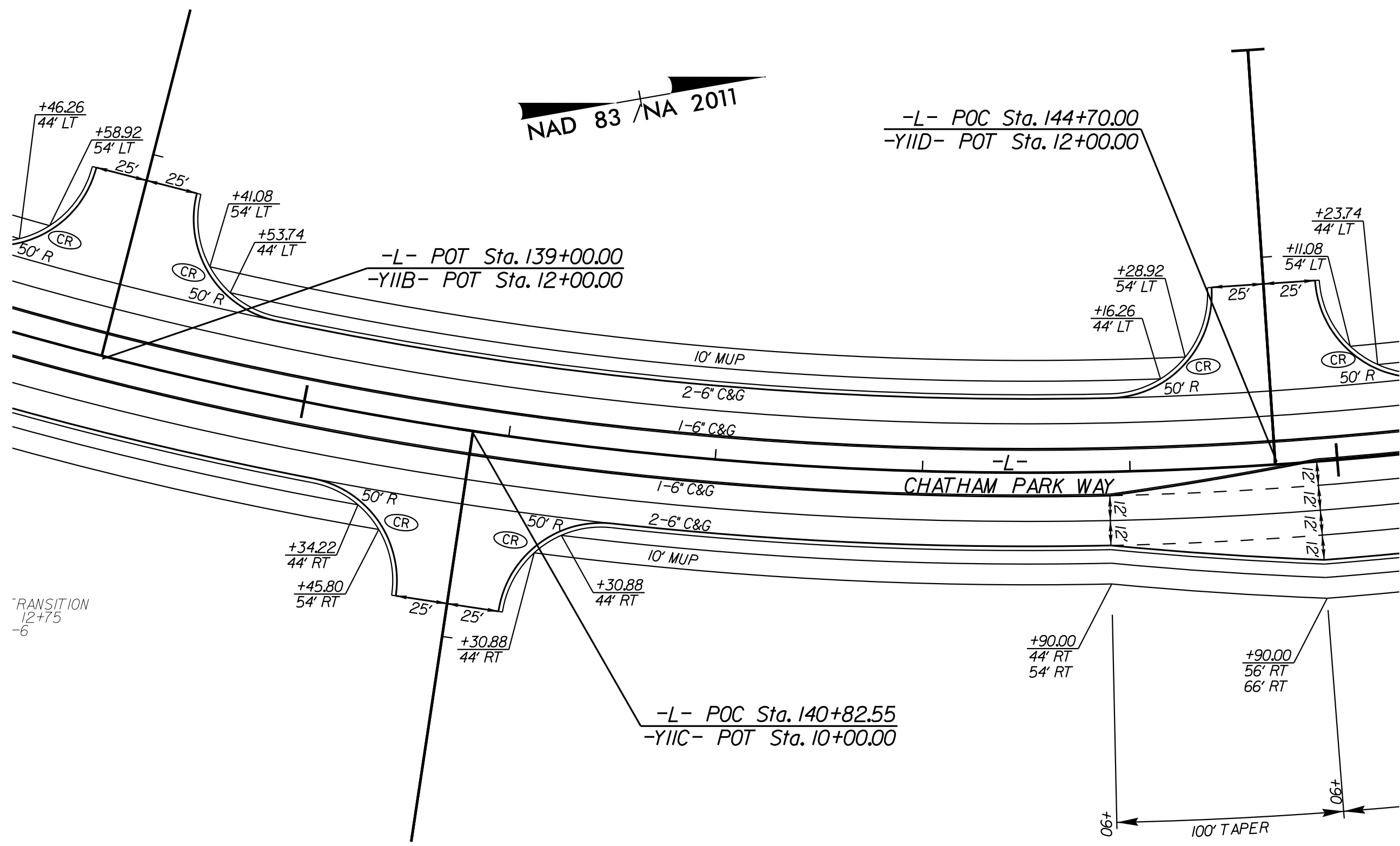
ROADWAY DESIGN
ENGINEER

3/20/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Seal: 038559
W. BLANTON

K:\RAL_Roadway\01036734 - R-5963A&B\Roadway\Proj\R-5963A&B\rdy_psh_2B-4.dgn



LEGEND

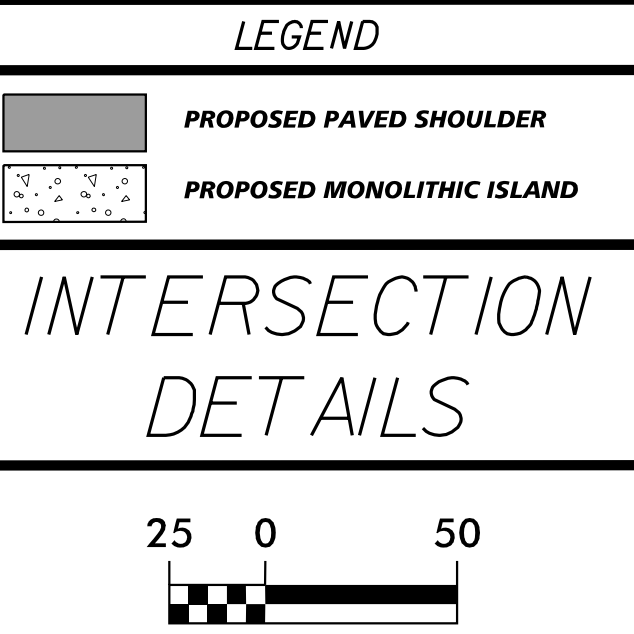
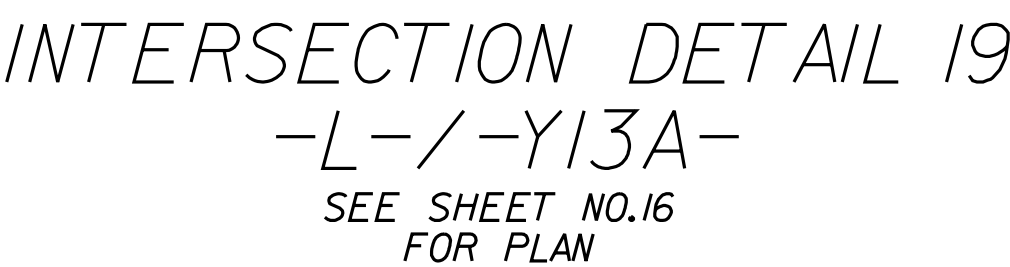
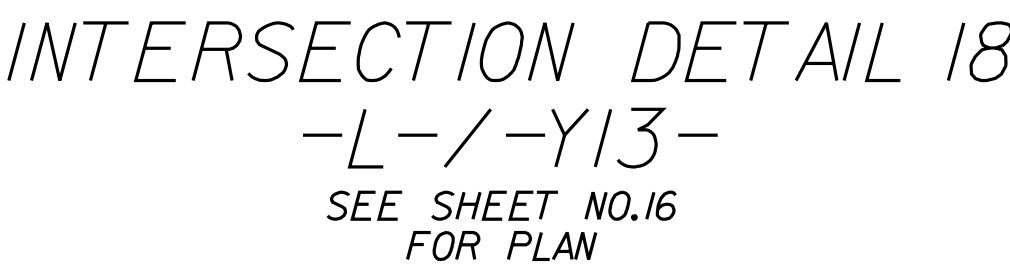
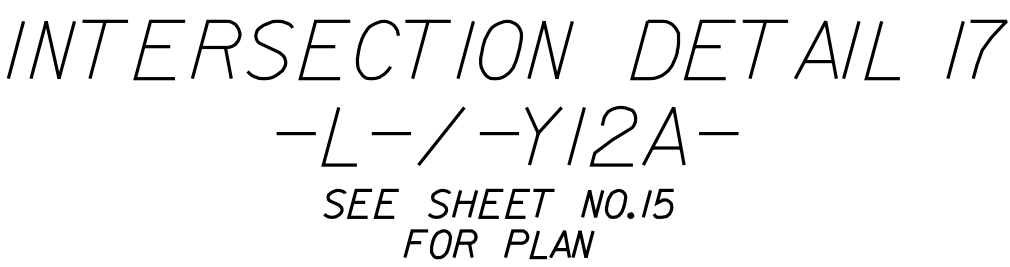
PROPOSED PAVED SHOULDER

PROPOSED MONOLITHIC ISLAND

INTERSECTION
DETAILS

25 0 50

3/5/2025

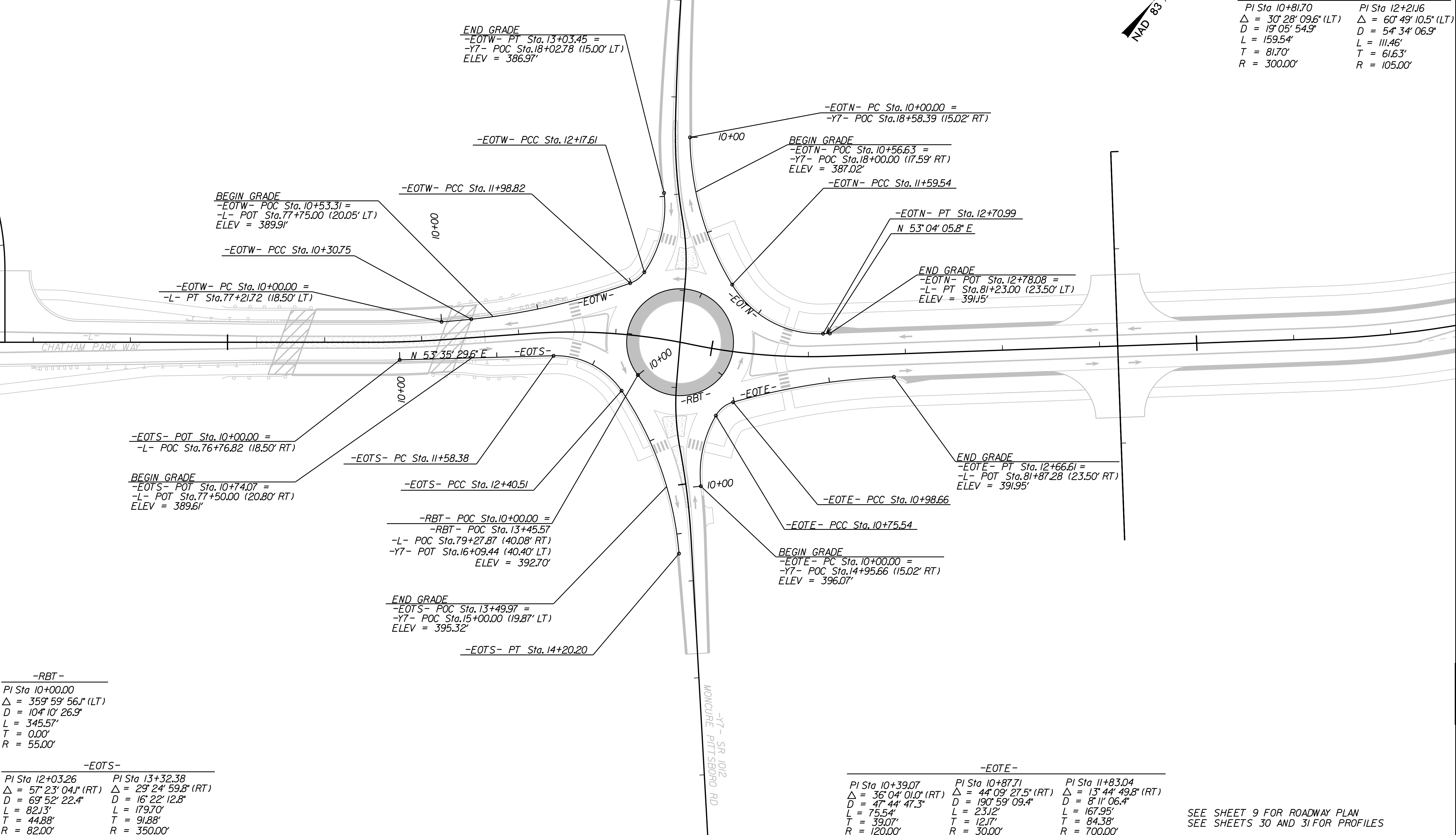


5/14/99

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3/5/2025

-EOTW-		
PI Sta 10+15.38 Δ = 1° 47' 43.2" (LT) D = 5° 50' 15.3" L = 30.75' T = 15.38' R = 981.50'	PI Sta 11+15.19 Δ = 13° 45' 22.6" (LT) D = 8° 11' 06.4" L = 168.06' T = 84.44' R = 700.00'	PI Sta 12+08.54 Δ = 35° 53' 26.9" (LT) D = 190° 59' 09.3" L = 18.79' T = 9.72' R = 30.00'
PI Sta 12+62.46 Δ = 40° 59' 11.1" (LT) D = 47° 44' 47.3" L = 85.84' T = 44.85' R = 120.00'		



Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.
R-59634

SHEET NO.
2B-6

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER

SEAL
038559
ENGINEER
VINCE W. BLANTON
3/20/2025

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

-EOTN-

PI Sta 10+81.70 Δ = 30° 28' 09.6" (LT) D = 19° 05' 54.9" L = 159.54' T = 81.70' R = 300.00'	PI Sta 12+21.16 Δ = 60° 49' 10.5" (LT) D = 54° 34' 06.9" L = 111.46' T = 61.63' R = 105.00'
--	--

-EOTE-

PI Sta 10+39.07 Δ = 36° 04' 01.0" (RT) D = 47° 44' 47.3" L = 75.54' T = 39.07' R = 120.00'	PI Sta 10+87.71 Δ = 44° 09' 27.5" (RT) D = 190° 59' 09.4" L = 23.12' T = 12.17' R = 30.00'	PI Sta 11+83.04 Δ = 13° 44' 49.8" (RT) D = 8° 11' 06.4" L = 167.95' T = 84.38' R = 700.00'
---	---	---

SEE SHEET 9 FOR ROADWAY PLAN
SEE SHEETS 30 AND 31 FOR PROFILES

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 3'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

ROCK

O.D. + 3'

**ROCK FOUNDATION
PIPE IN TRENCH**

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

TYPE 4a
GEOTEXTILE

$\frac{1}{2}$ " PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGR.

O.D. + 3'

UNSUITABLE MATERIAL FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

I.D. /6 MIN.
NOT LESS THAN 6"

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

I.D. /6 MIN.
NOT LESS THAN 6"

**ROCK FOUNDATION
PIPE ABOVE GROUND**

TOP OF FILL

GROUND LINE

H

MIN. O.D.

1:1

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

O.D. + 2'

I.D. /6 MIN.
NOT LESS THAN 6"

$\frac{1}{2}$ " PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGINEER

UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT
ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP
OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1
FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE
UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL
ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS
BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

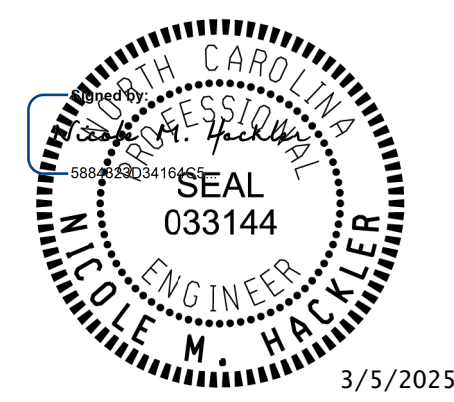
REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS
FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1
ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE
WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.



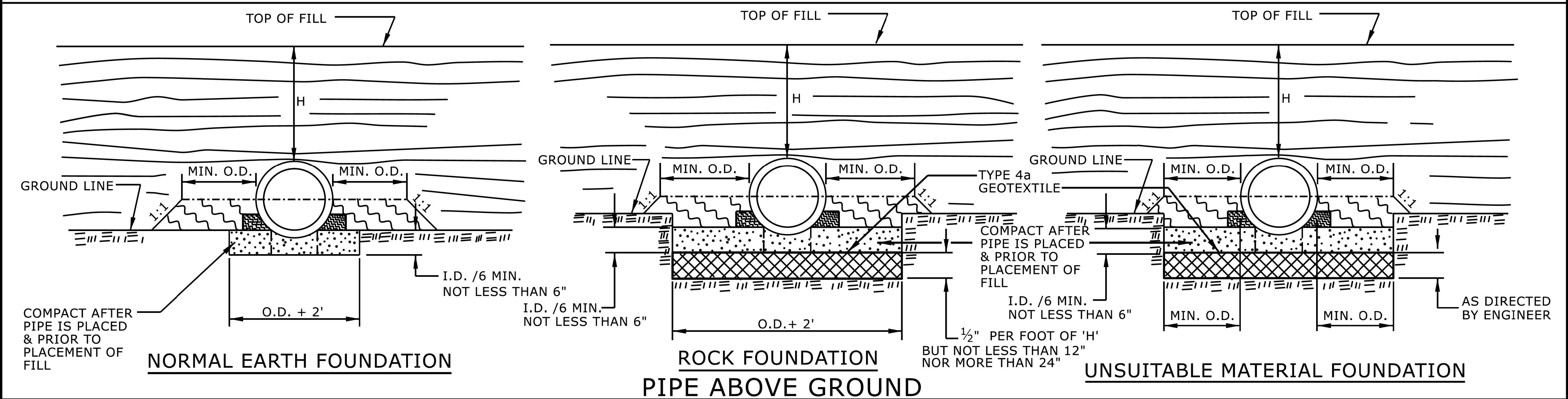
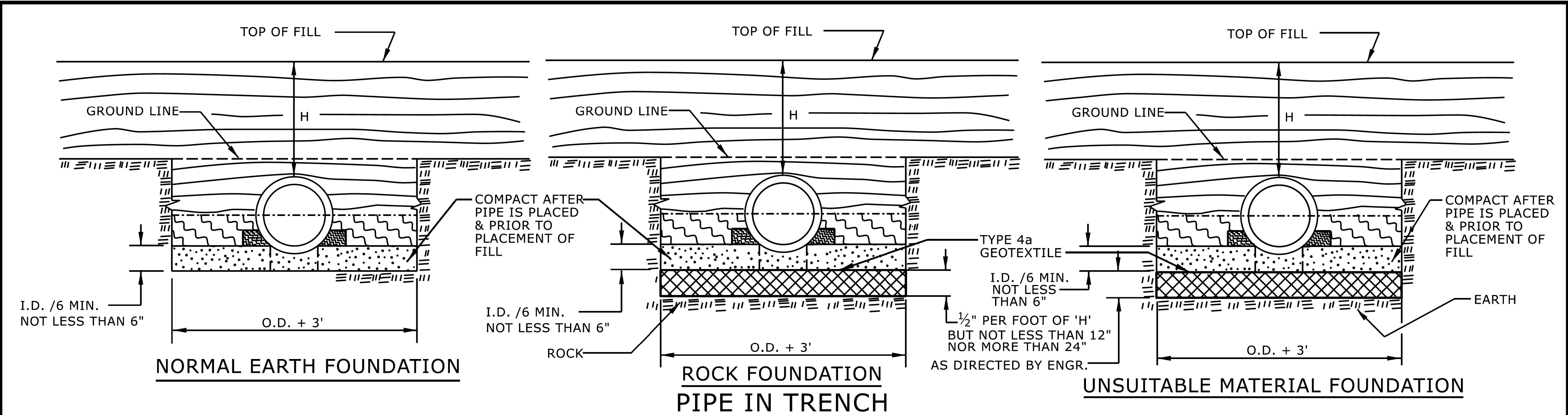
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DATE:



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01



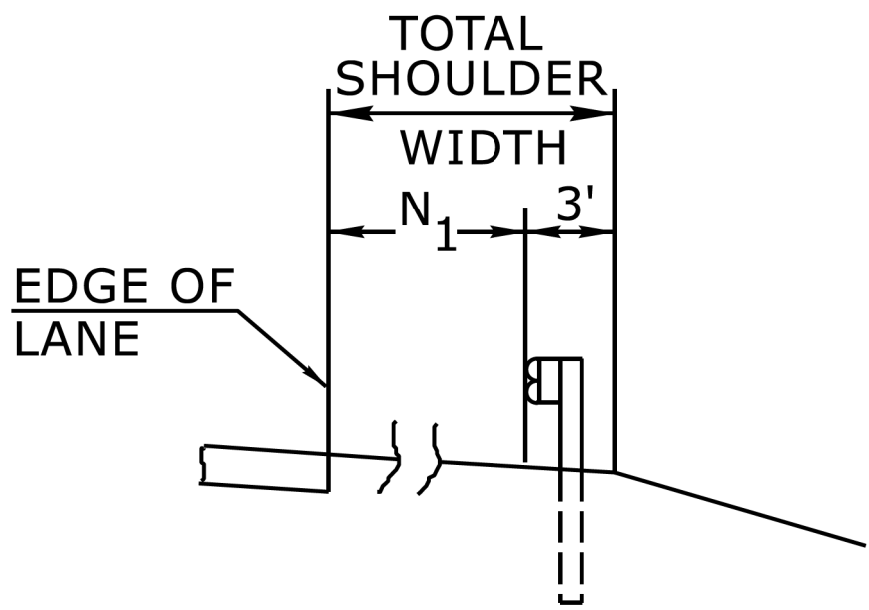
DOCUMENT NOT CONSIDERED FINAL
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**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

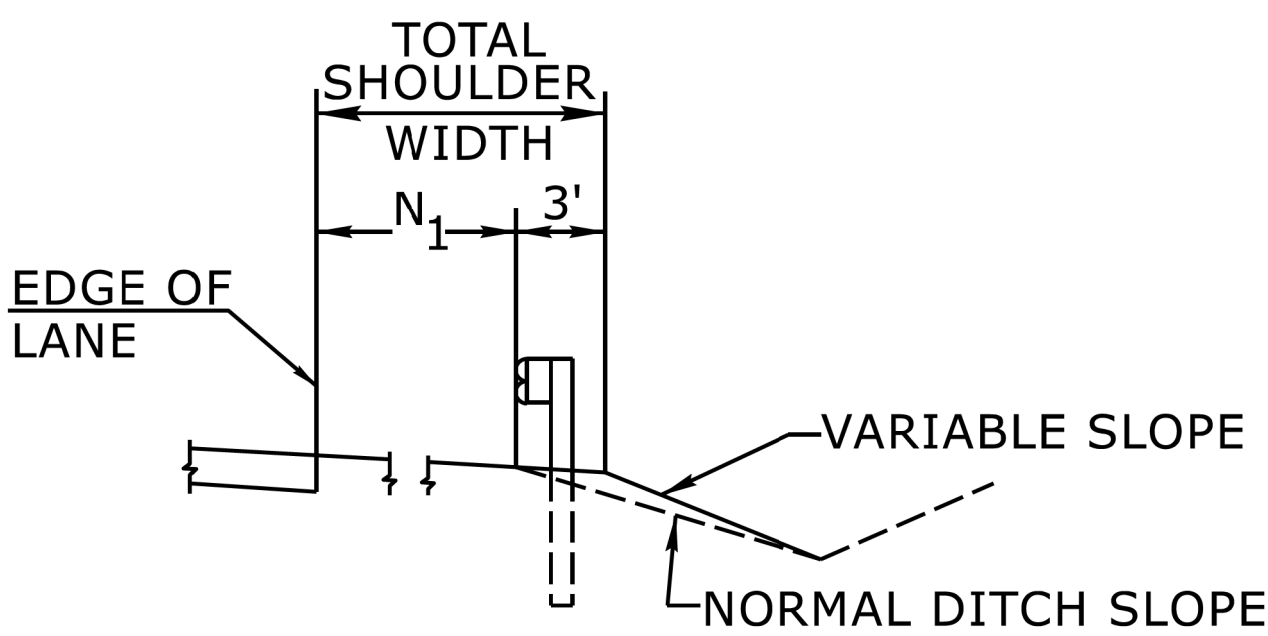
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MODIFIED BY:	DATE:
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FILE SPEC.:	

PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2C-3

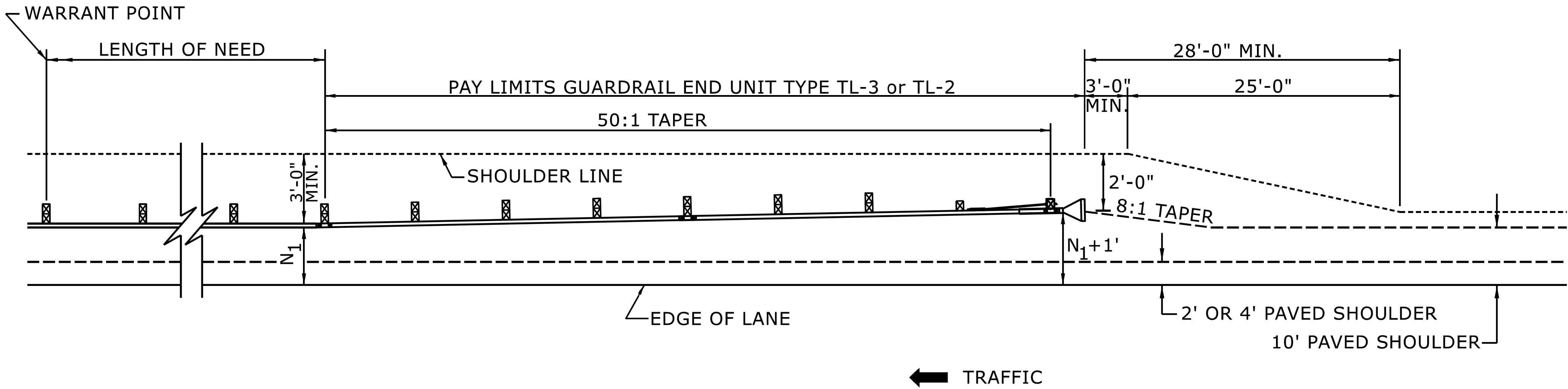


FILL SECTION



CUT SECTION

"N₁"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

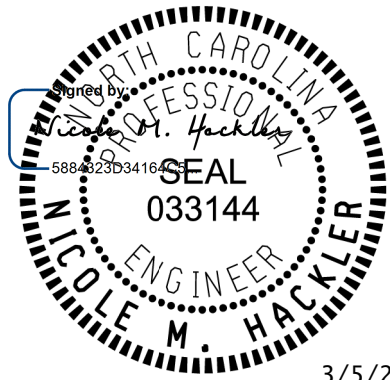


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



3/5/2025

SHEET 6 OF 15

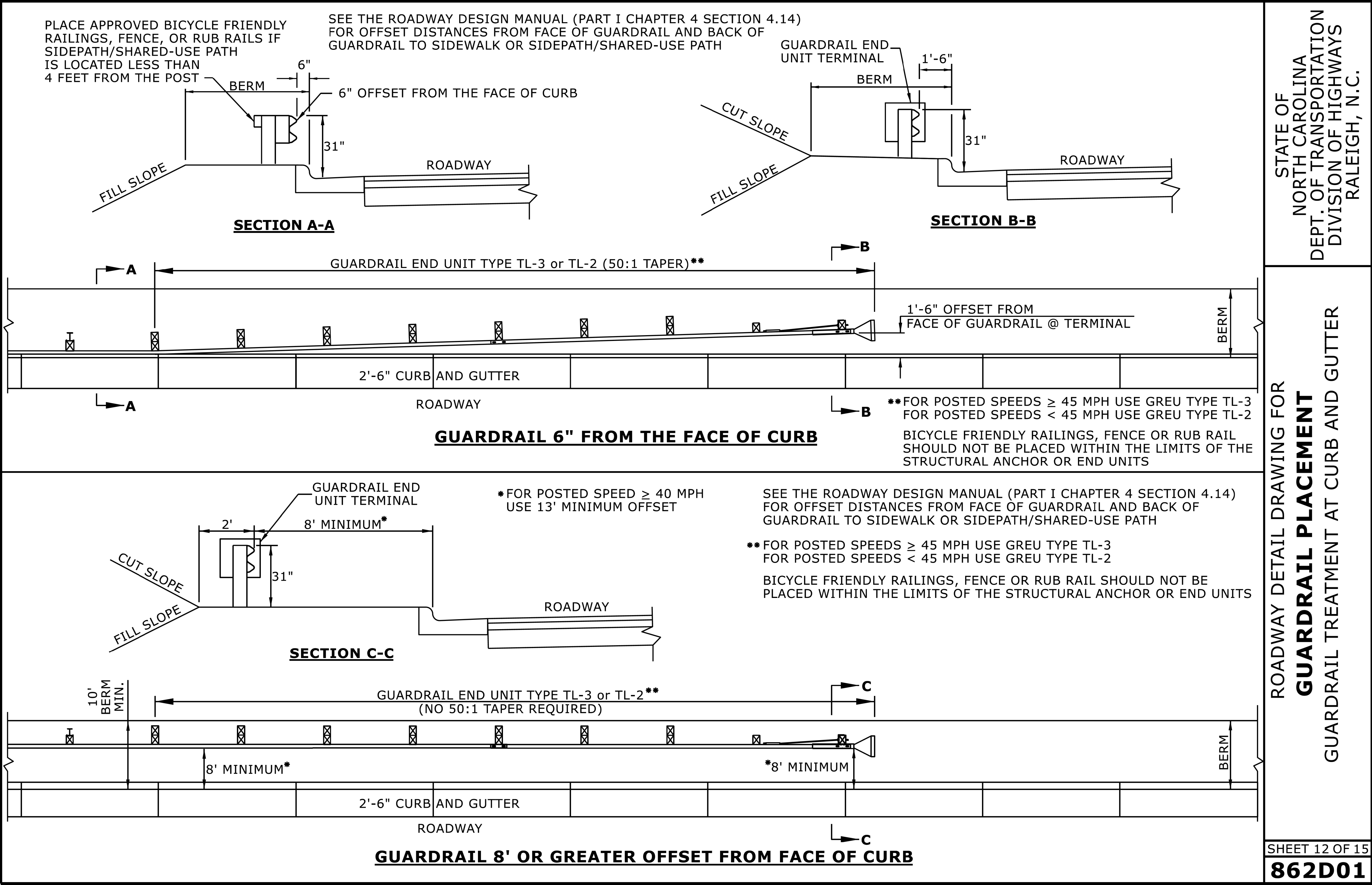
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

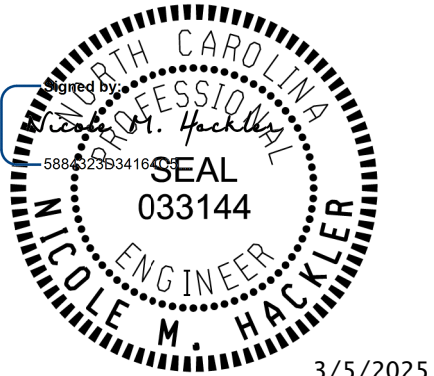
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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15
862D01



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UNLESS ALL SIGNATURES COMPLETED

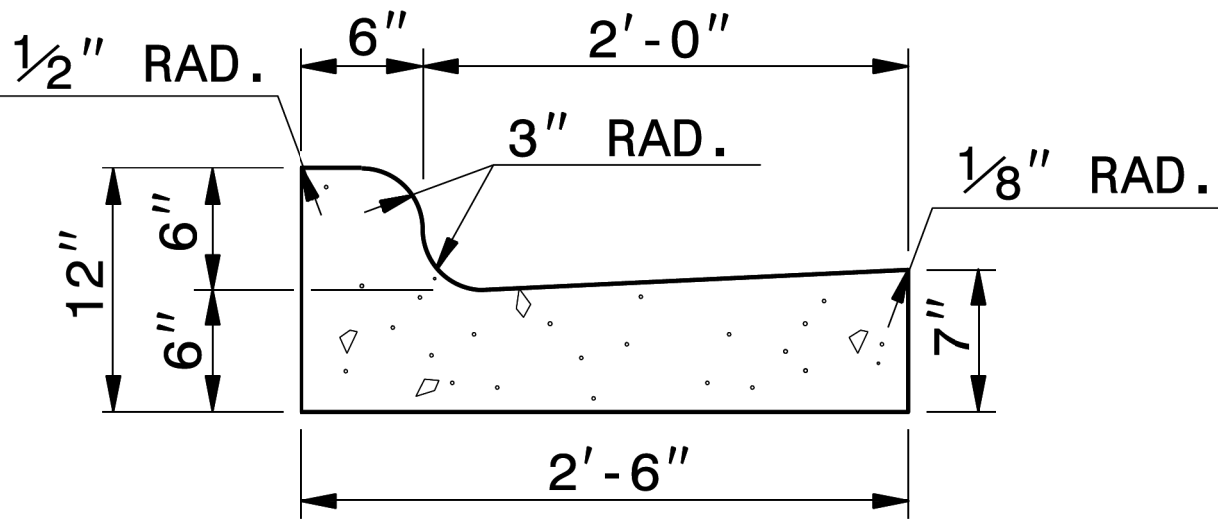
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

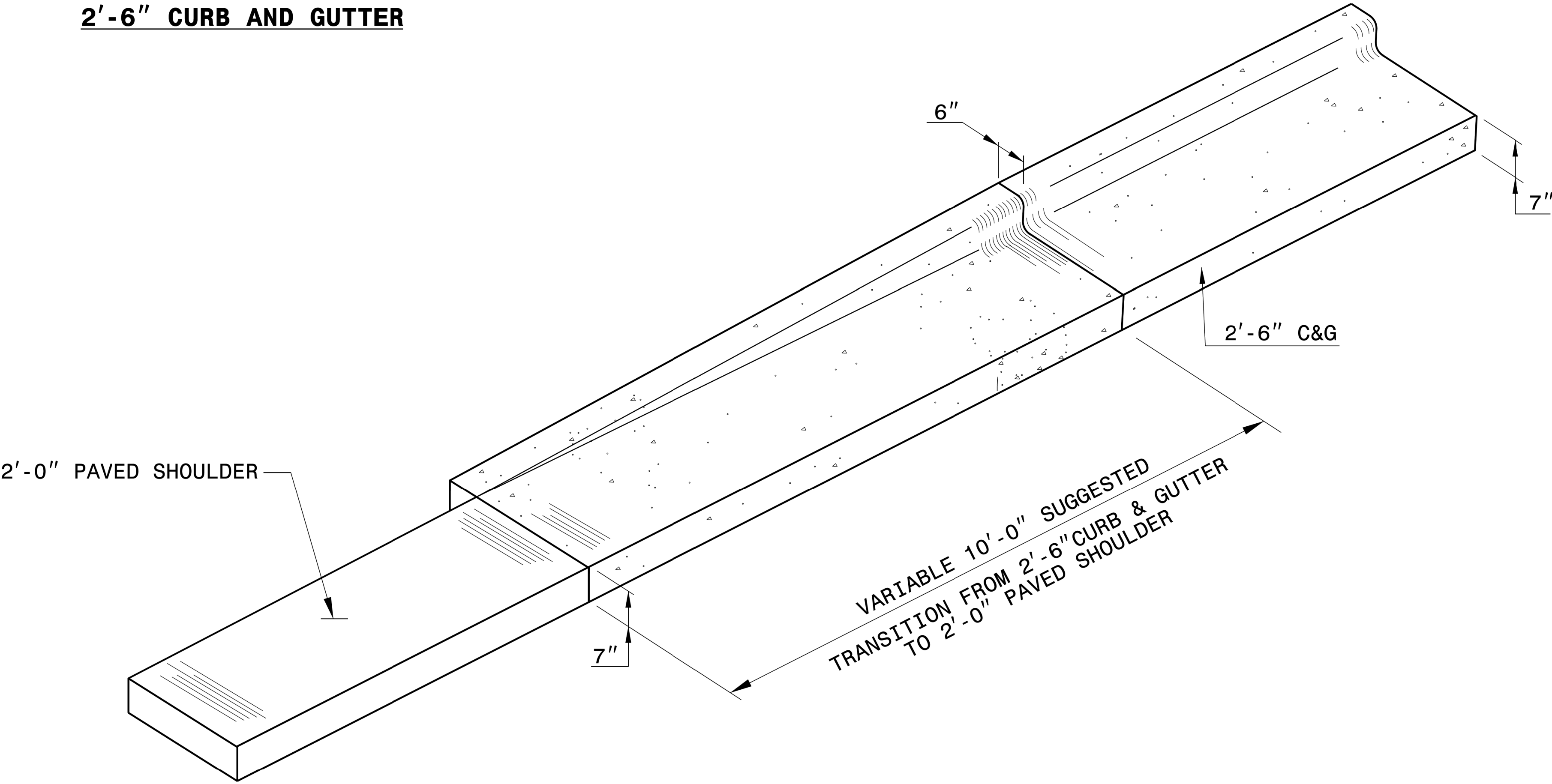
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PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2C-5

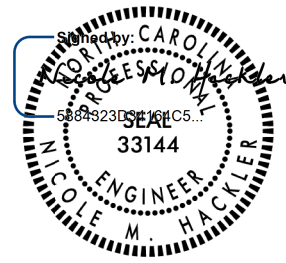
*NOTE: SEE STD. DWG. 846.01
FOR GENERAL NOTES



2'-6" CURB AND GUTTER



ISOMETRIC VIEW OF TRANSITION



3/5/2025

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UNLESS ALL SIGNATURES COMPLETED

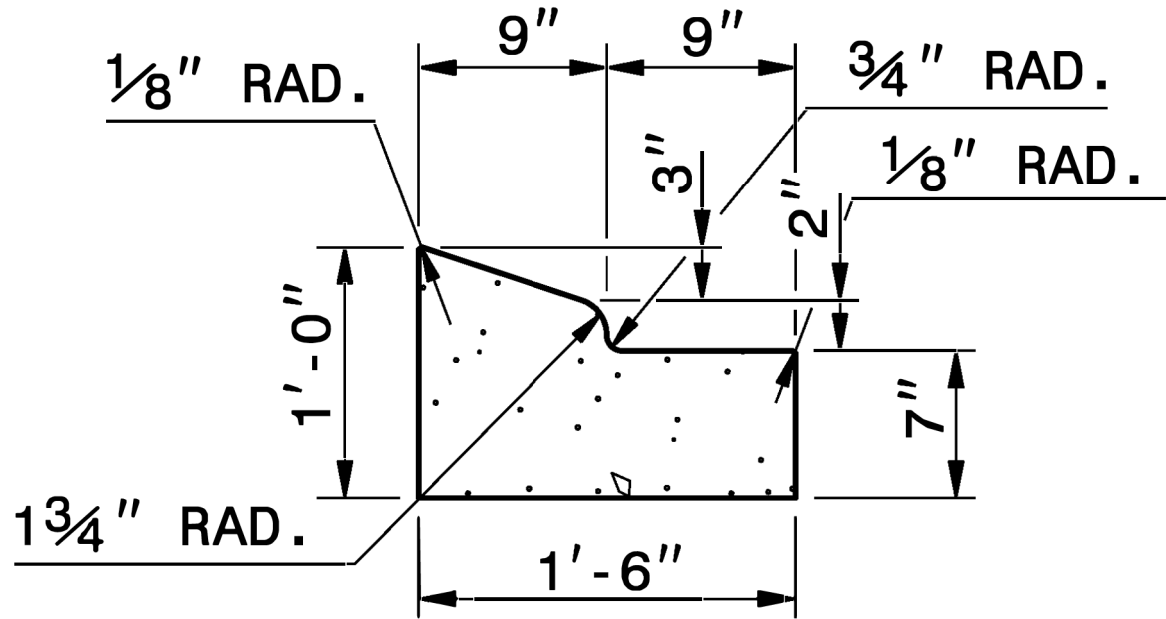
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

**DETAIL OF 10' TRANSITION
FROM 2'-6" CURB & GUTTER
TO 2'-0" PAVED SHOULDER**

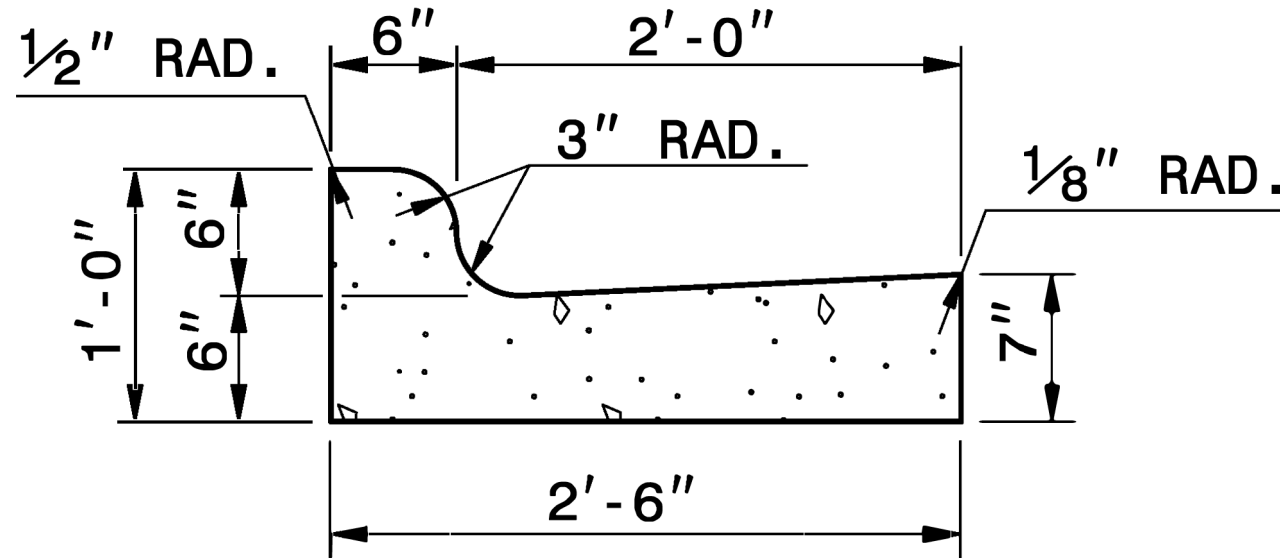
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MODIFIED BY: rnbritt DATE: 04-13-2016
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/nbritt/english/misc/c&g transition sections.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2C-6



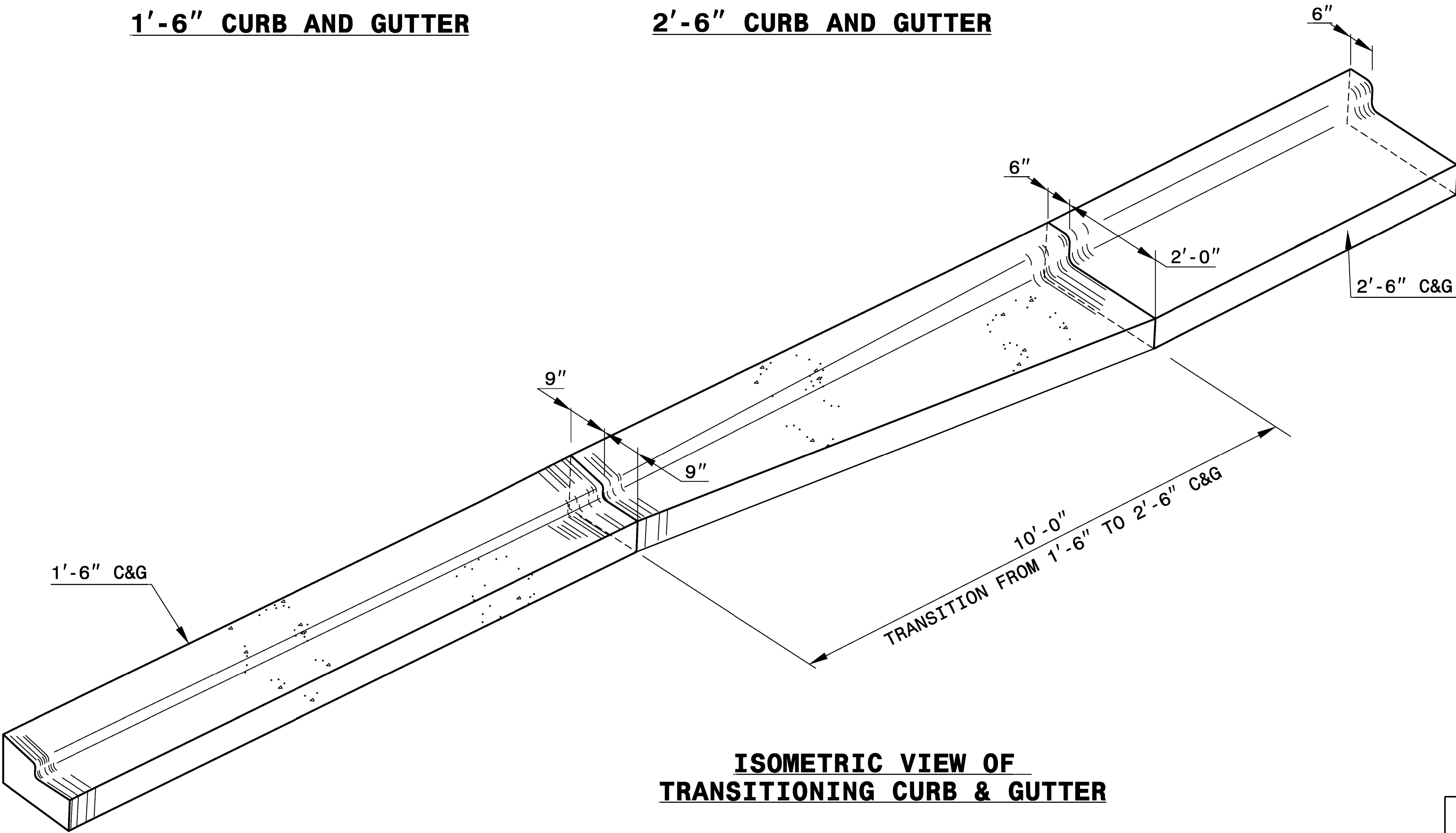
1'-6" CURB AND GUTTER



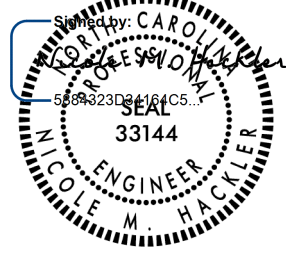
2'-6" CURB AND GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



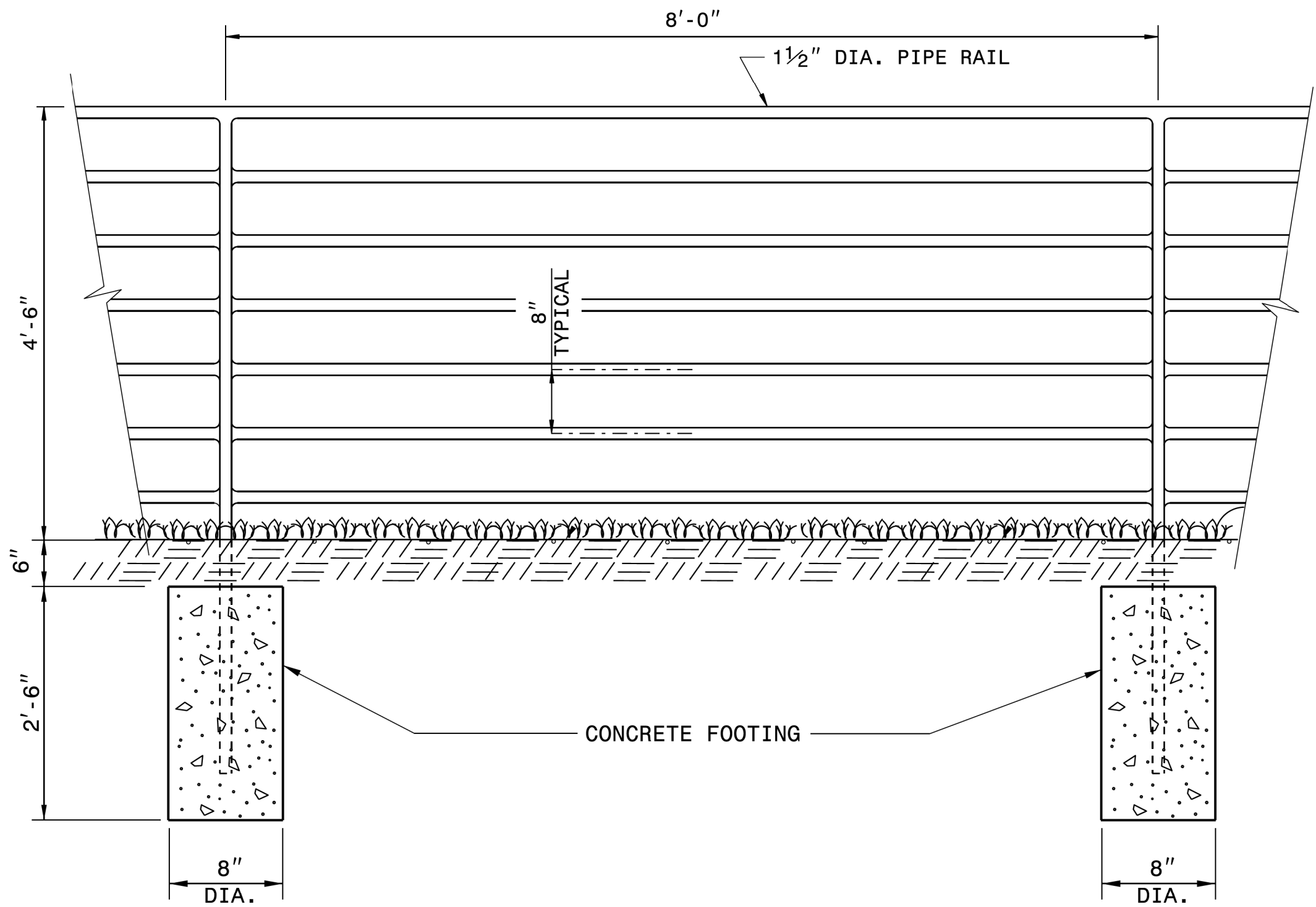
**ISOMETRIC VIEW OF
TRANSITIONING CURB & GUTTER**



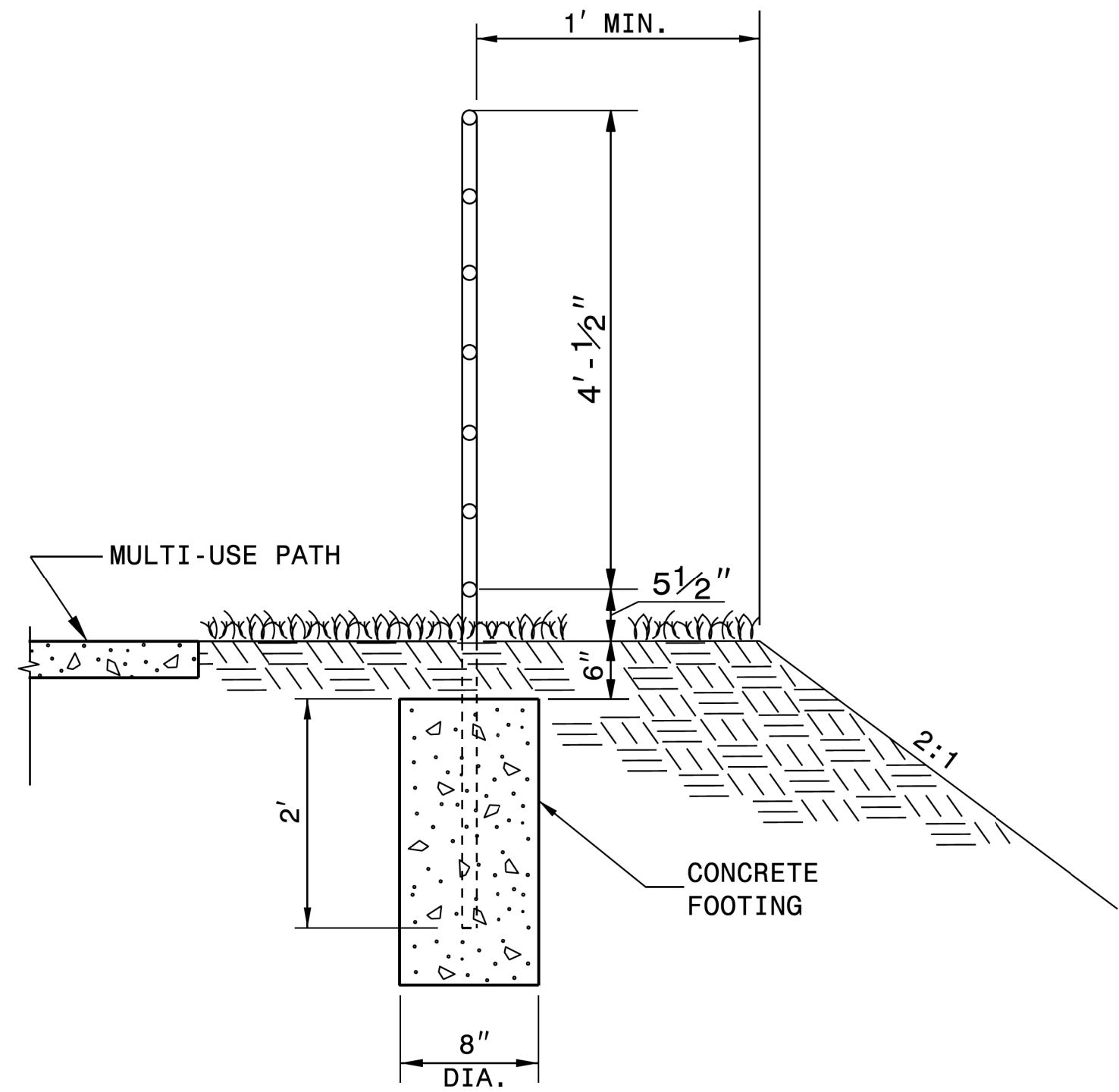
3/5/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6950 FAX 919-250-4119			
DETAIL OF 1'-6" TO 2'-6" CURB & GUTTER TRANSITION SECTION			
ORIGINAL BY: T.S.SPELL		DATE: MARCH 3, 2000	
MODIFIED BY:		DATE:	
CHECKED BY:		DATE:	
FILE SPEC.: DS174:/usr/details/stand/cgtransit.dgn			

PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2C-7



ELEVATION



SECTION VIEW

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1 1/2" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

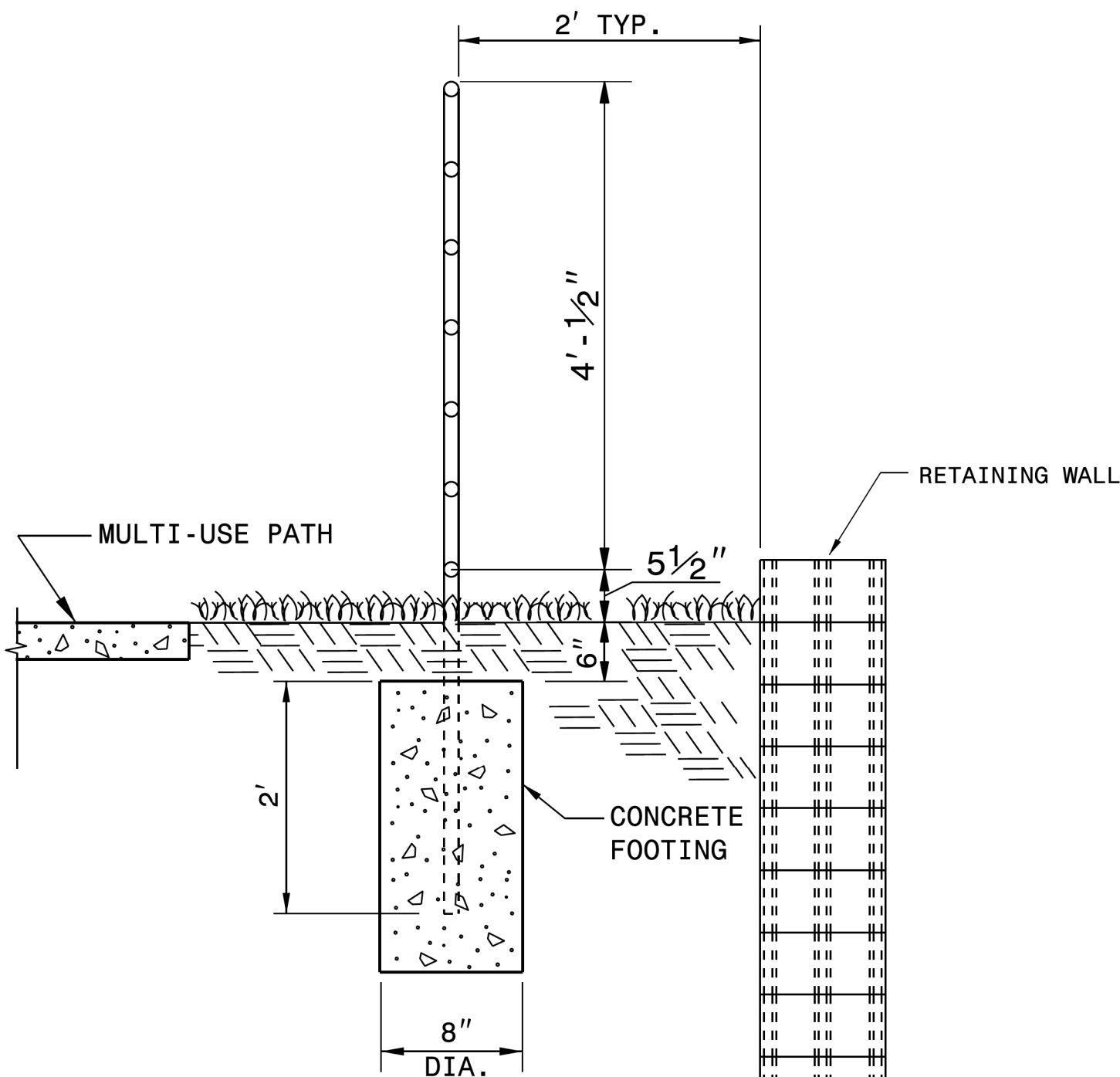
REPAIR GALVANIZING IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1076.

PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1080.

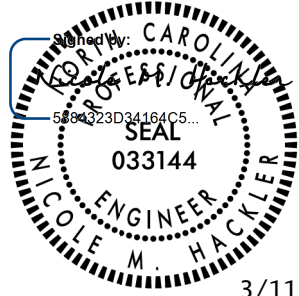
WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

PLACEMENT OF HANDRAIL IN RELATION TO SHOULDER BREAK POINT AND PATH MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.



SECTION VIEW
ADJACENT TO
RETAINING WALL



3/11/2025

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**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119
**BICYCLE / PEDESTRIAN
SAFETY RAIL**

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: K.A. KEMPF DATE: 7-20-23
CHECKED BY: _____ DATE: _____
FILE SPEC.: details\kkempf\english\safety_rails 2024.dgn

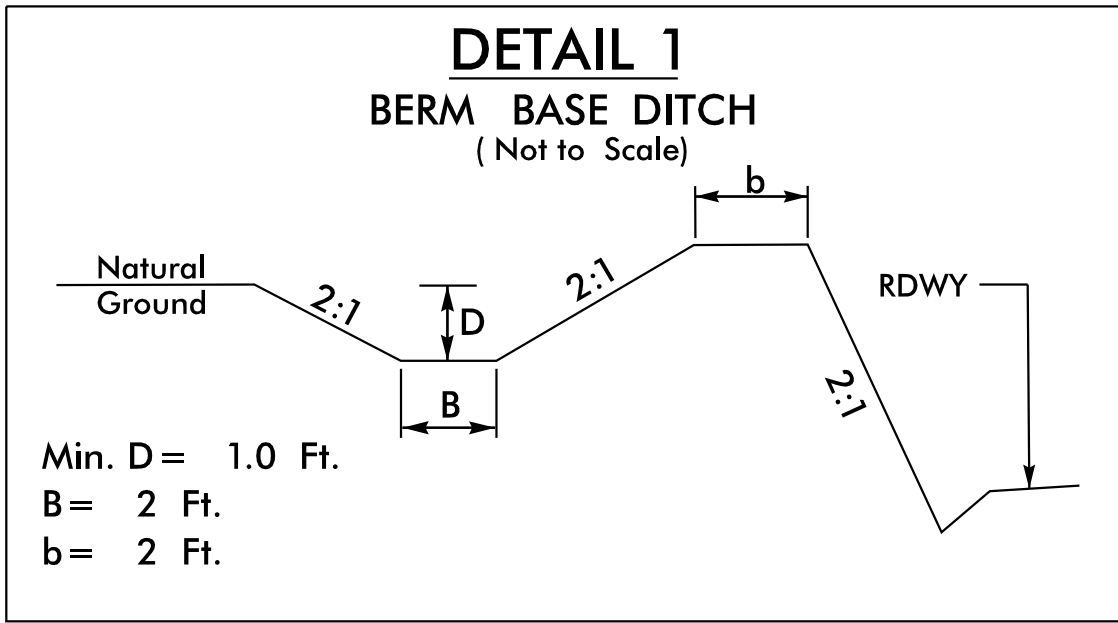
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K.KEMPF
ATTN: CSD-22067

5/14/99

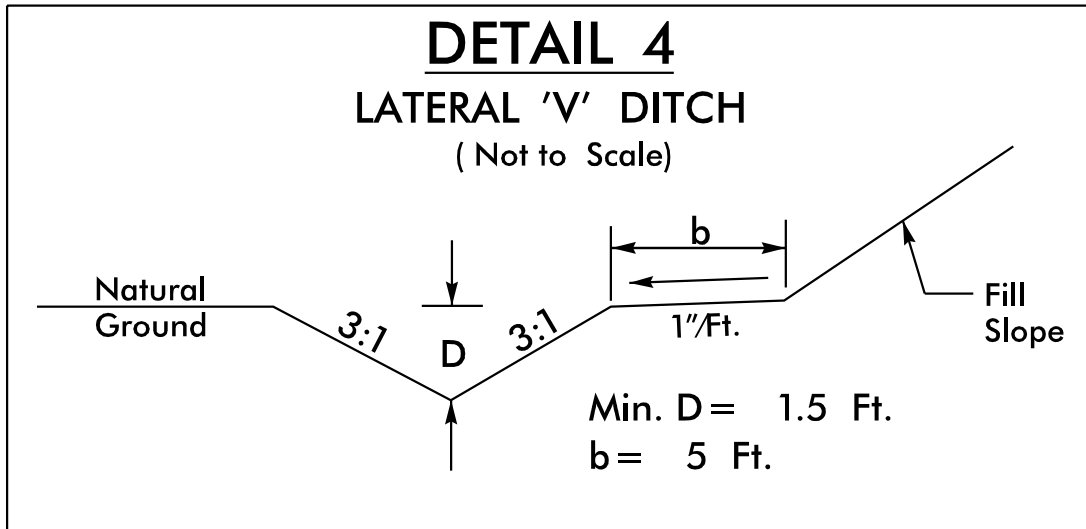
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REVISIONS

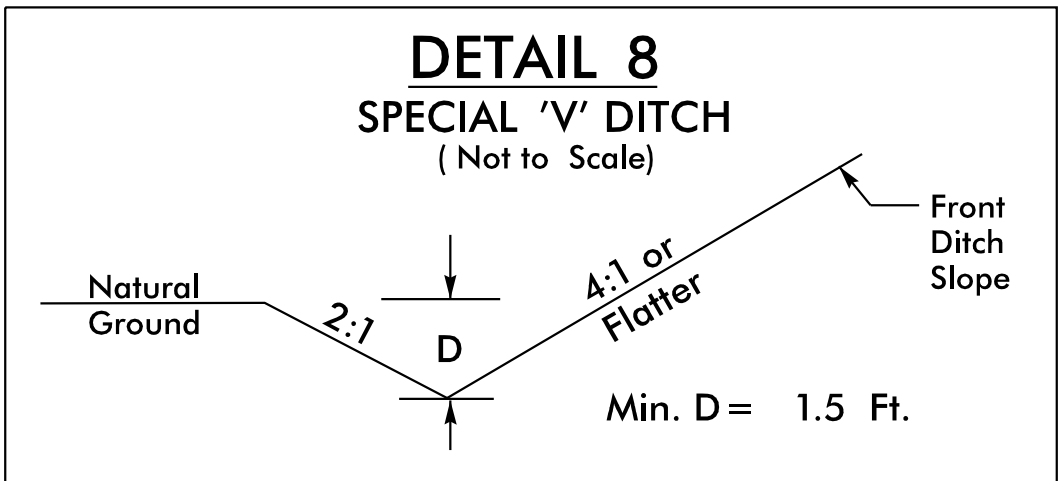
3/5/2025



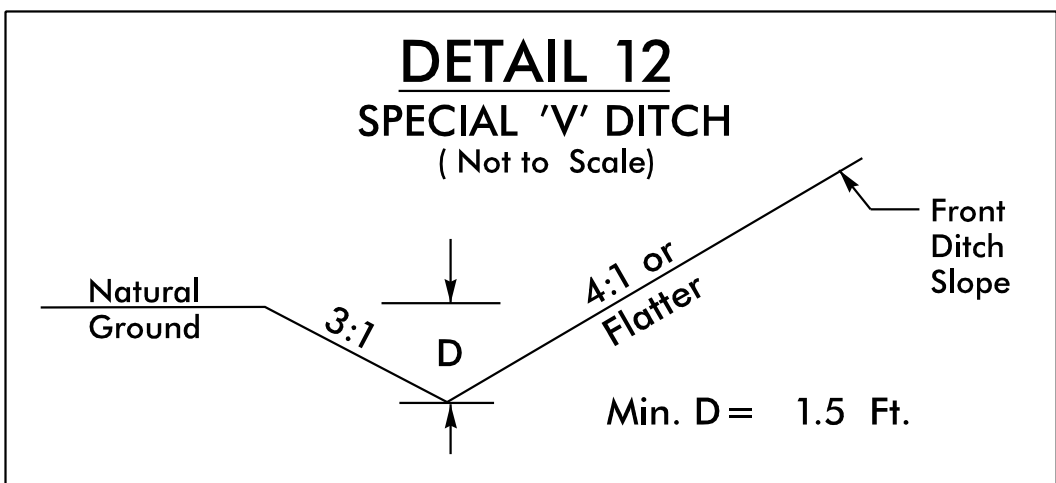
FROM STA. 13+50 TO STA. 16+50 -L- (LT)
FROM STA. 56+50 TO STA. 59+29 -L- (RT)



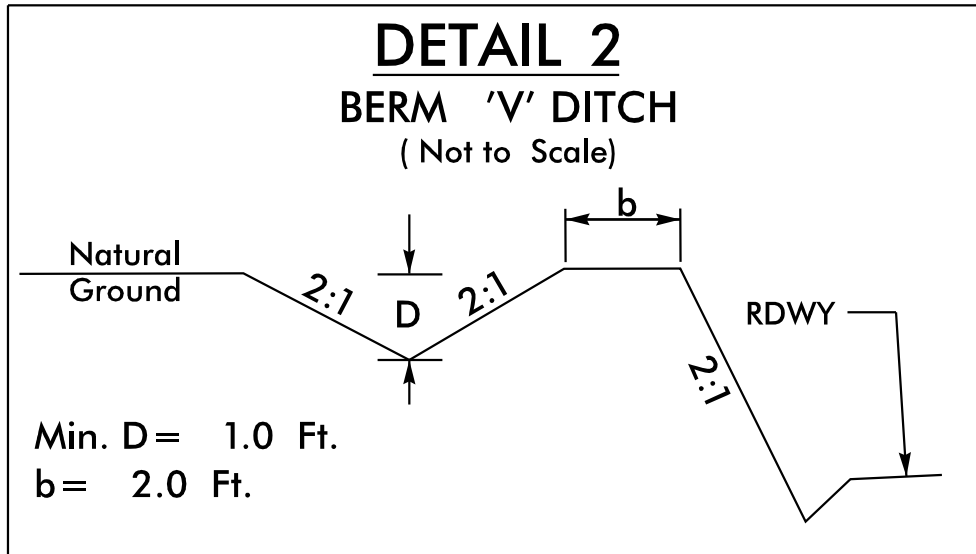
FROM STA. 144+50 TO STA. 145+00 -L- (RT)
FROM STA. 148+50 TO STA. 149+20 -L- (RT)
FROM STA. 150+00 TO STA. 151+00 -L- (RT)



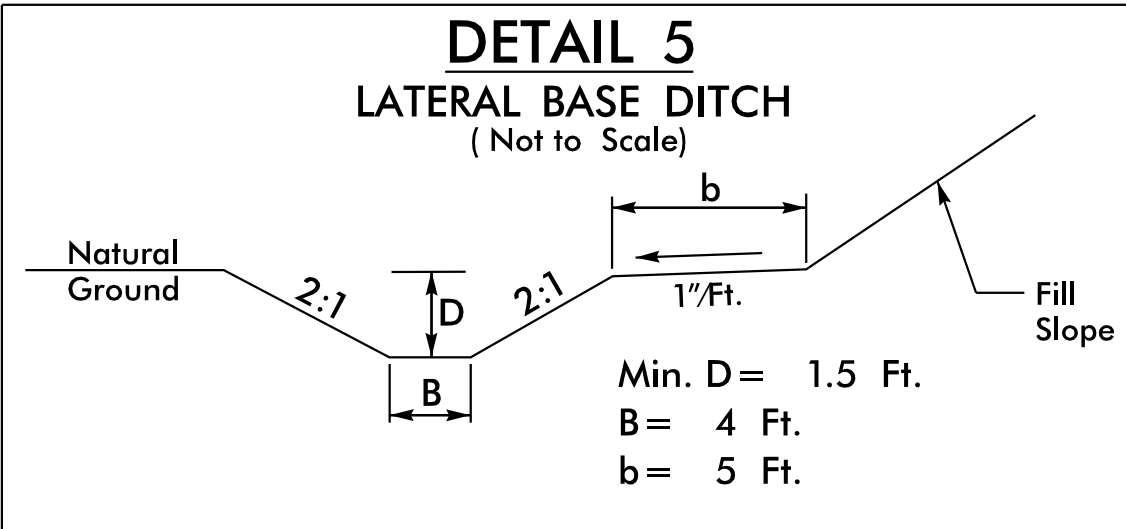
FROM STA. 15+50 TO STA. 17+47 -Y1- (RT)
FROM STA. 17+80 TO STA. 19+00 -Y1- (RT)



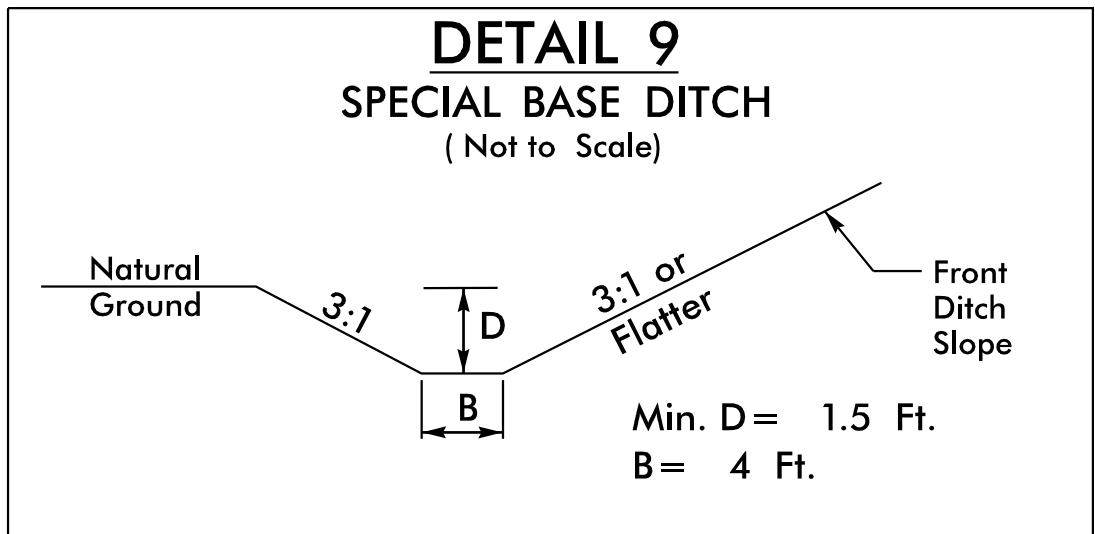
FROM STA. 13+50 TO STA. 15+40 -Y1- (RT)
FROM STA. 93+00 TO STA. 95+00 -L- (RT)
FROM STA. 97+00 TO STA. 98+50 -L- (LT)
FROM STA. 16+50 TO STA. 17+10 -Y14- (RT)



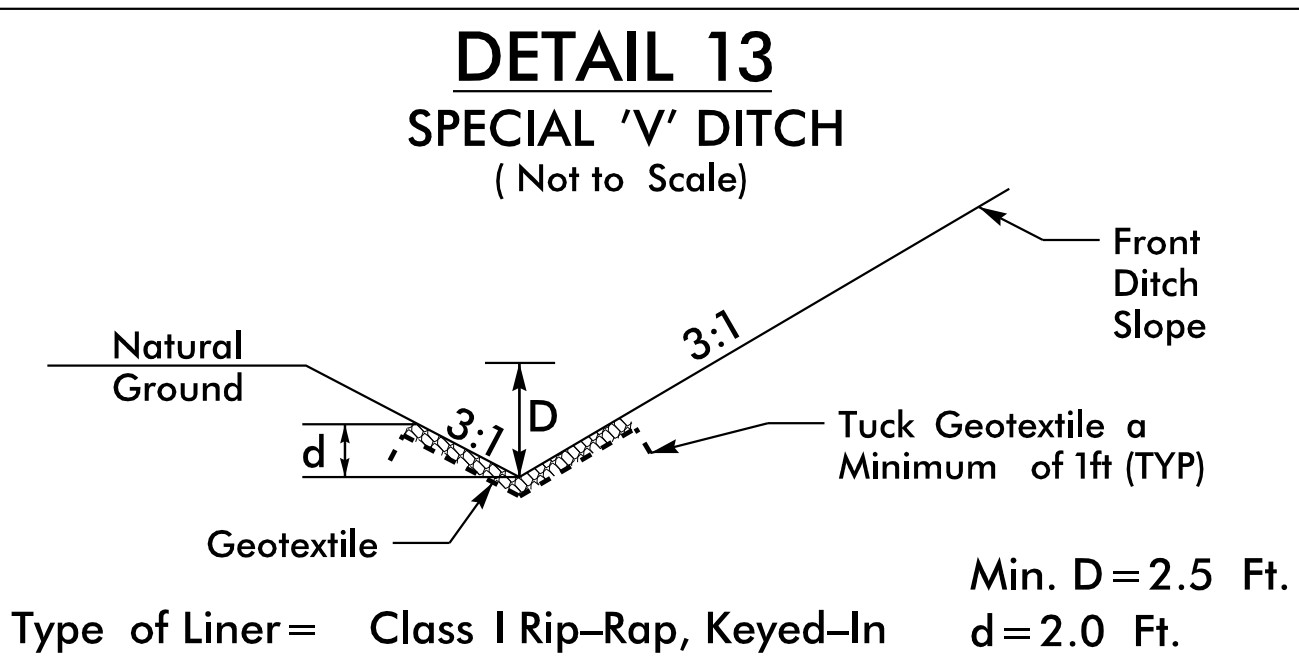
FROM STA. 39+07 TO STA. 41+00 -L- (LT)
FROM STA. 41+00 TO STA. 43+00 -L- (LT)
FROM STA. 59+29 TO STA. 61+00 -L- (RT)
FROM STA. 68+50 TO STA. 73+85 -L- (LT)
FROM STA. 118+50 TO STA. 119+45 -L- (RT)
FROM STA. 121+00 TO STA. 123+00 -L- (RT)



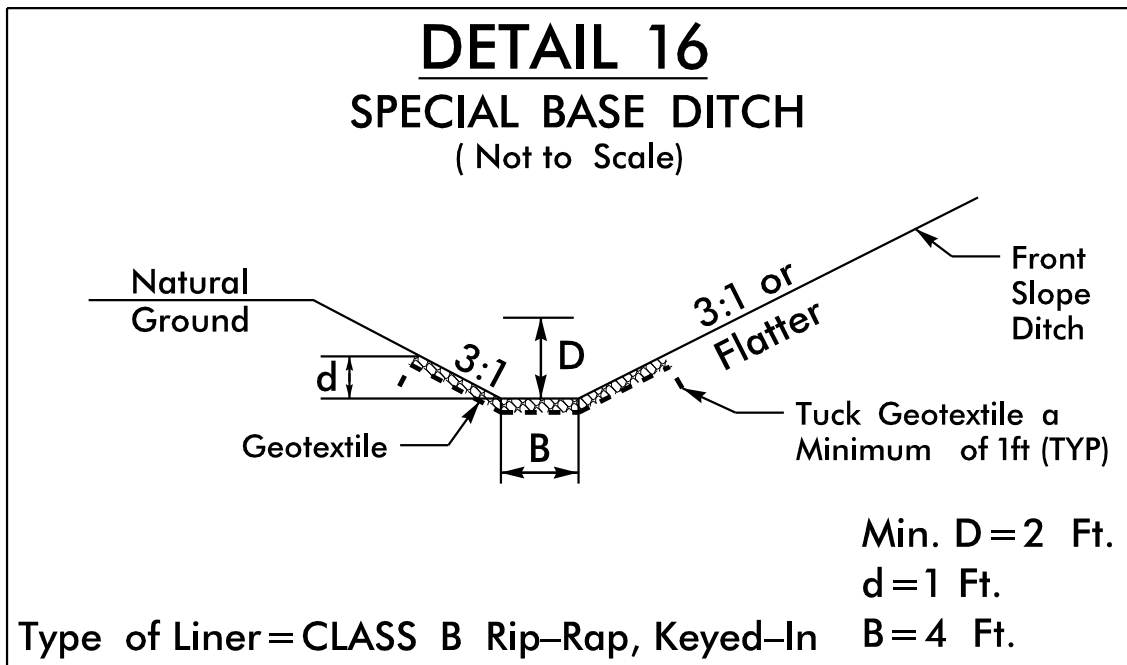
FROM STA. 132+50 TO STA. 134+10 -L- (LT)



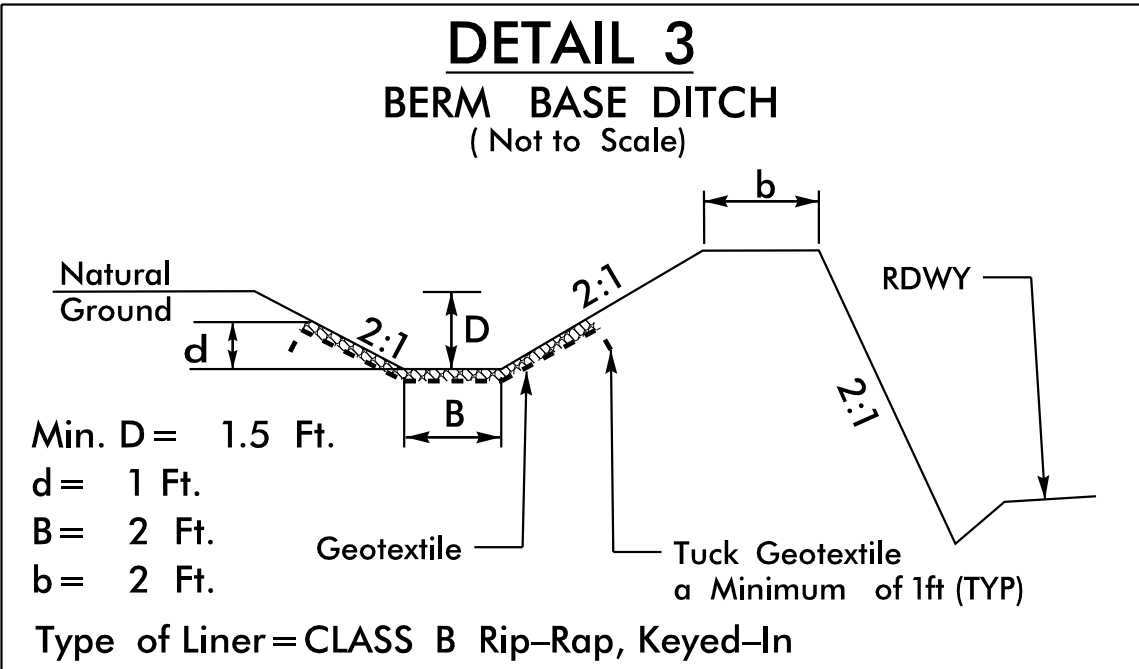
FROM STA. 68+00 TO STA. 68+50 -L- (LT)



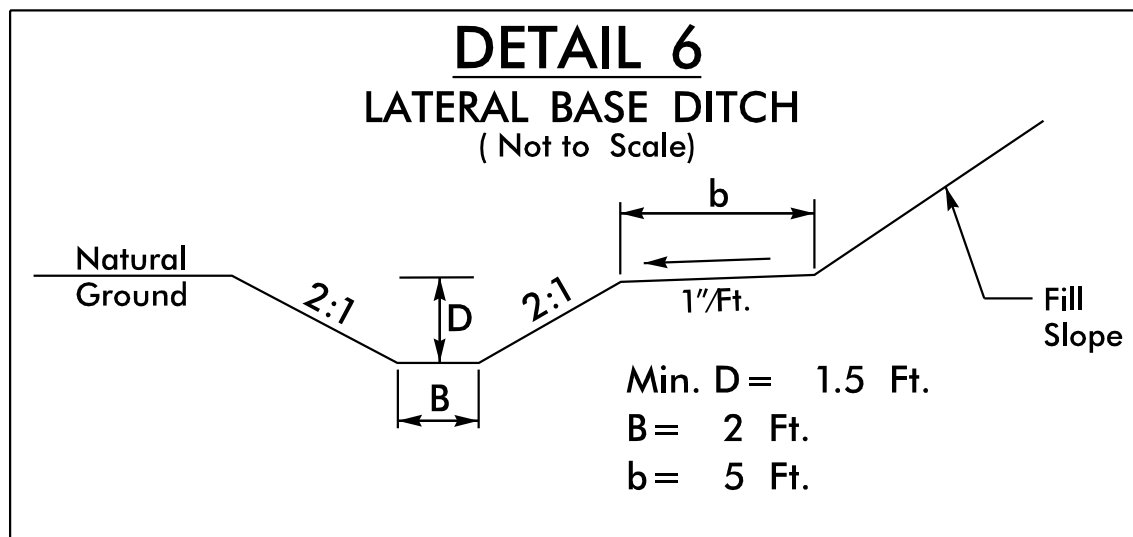
FROM STA. 97+50 TO STA. 98+20 -L- (RT)



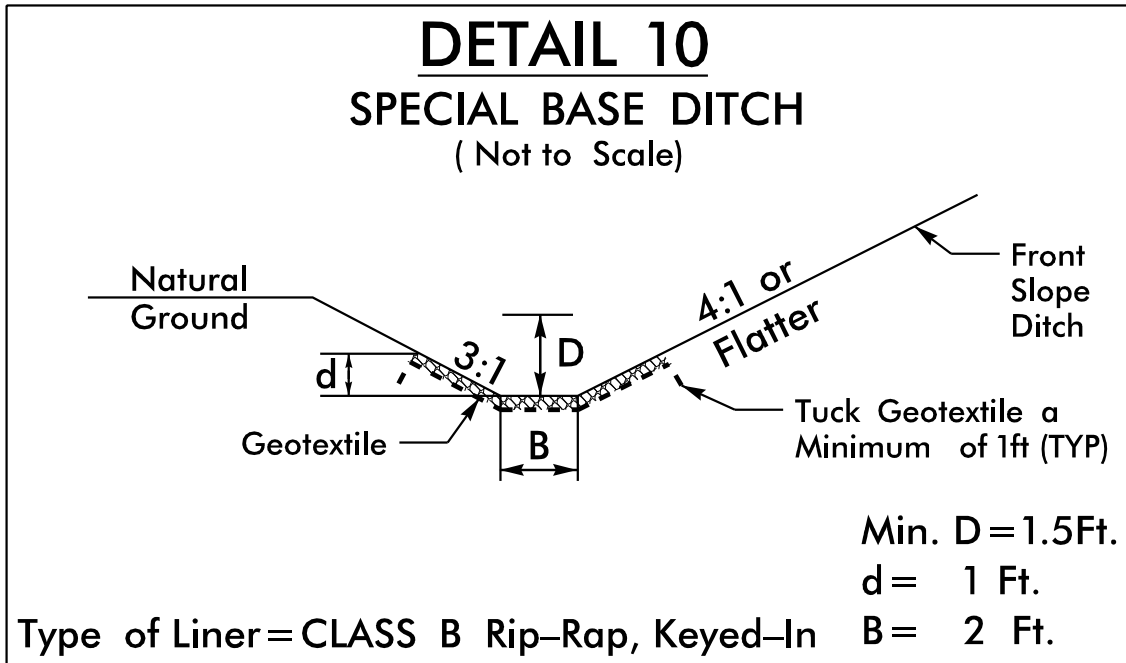
FROM STA. 50+50 TO STA. 51+00 -L- (LT)
FROM STA. 67+50 TO STA. 68+00 -L- (LT)
FROM STA. 167+75 TO 170+50 -L- (RT)



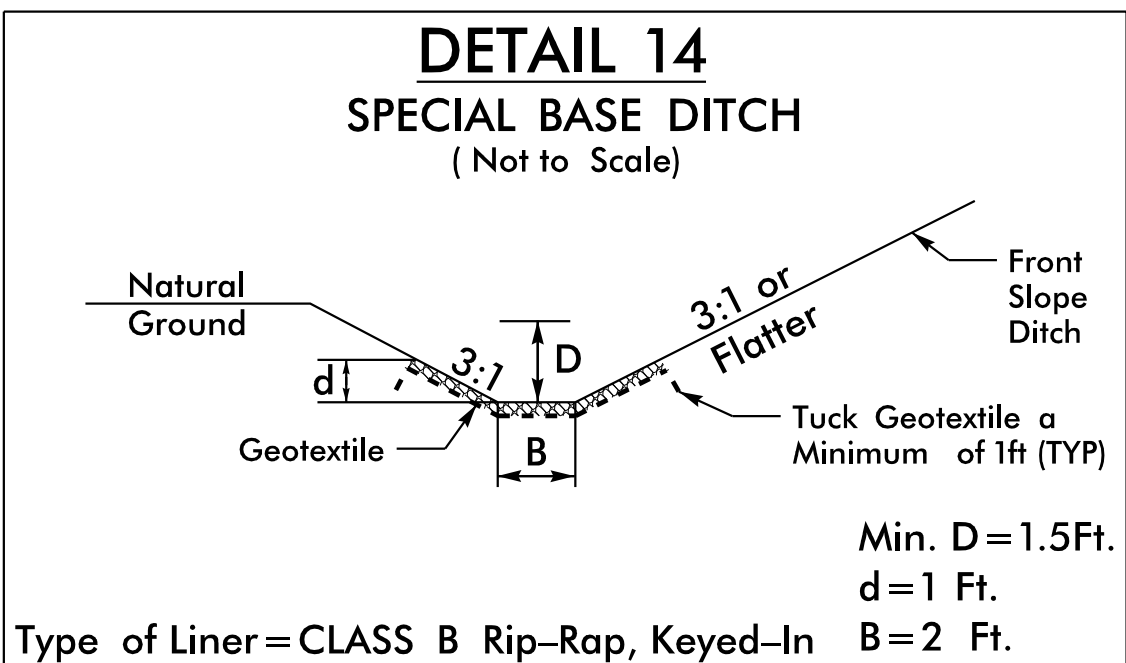
FROM STA. 53+50 TO STA. 56+50 -L- (RT)
FROM STA. 61+00 TO STA. 64+50 -L- (RT)



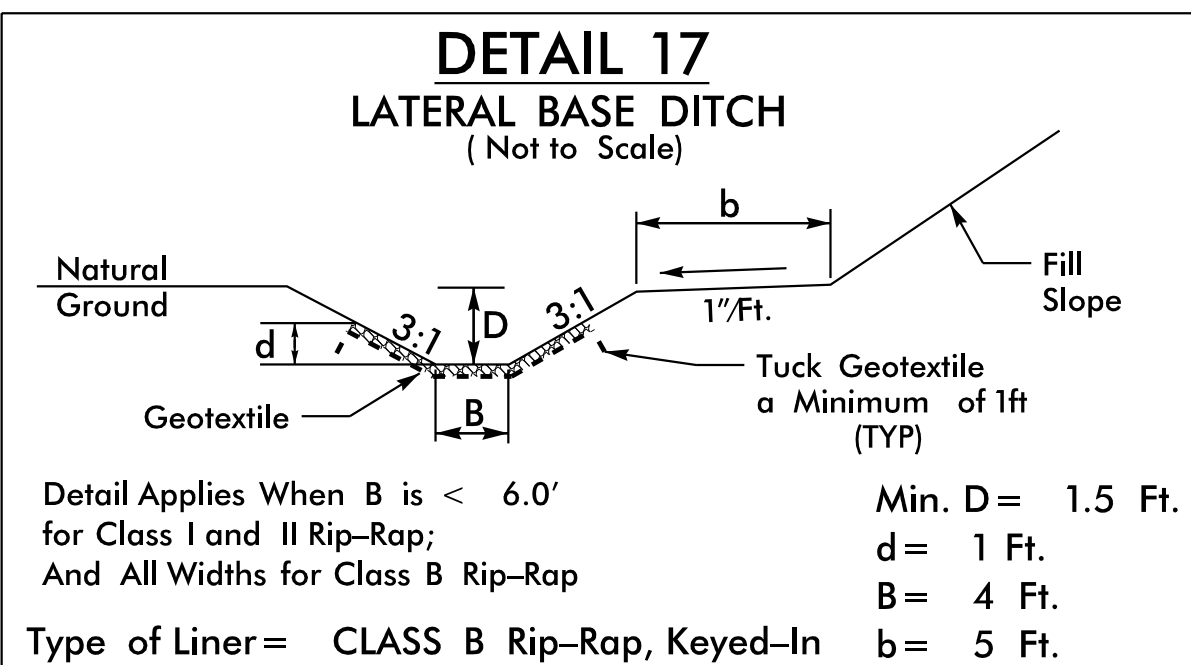
FROM STA. 167+25 TO STA. 172+50 -L- (LT)



FROM STA. 64+50 TO STA. 65+50 -L- (RT)



FROM STA. 18+00 TO STA. 19+00 -L- (RT)
FROM STA. 52+00 TO STA. 53+50 -L- (RT)
FROM STA. 65+50 TO STA. 68+75 -L- (RT)
FROM STA. 124+50 TO STA. 126+00 -L- (RT)
FROM STA. 170+50 TO STA. 171+50 -L- (RT)



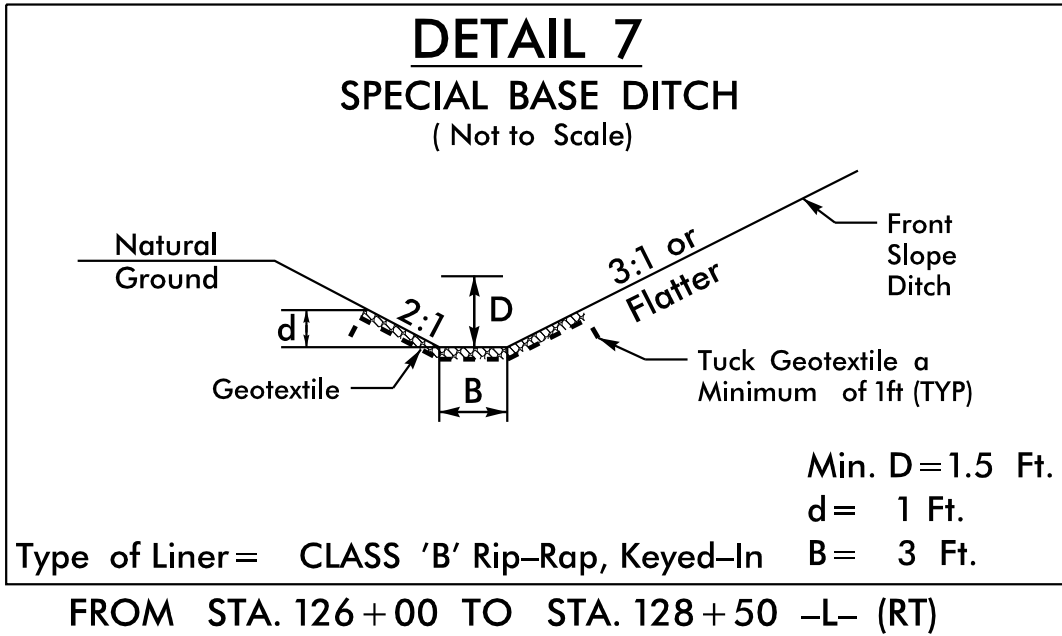
FROM STA. 51+00 TO STA. 52+21 -L- (LT)
FROM STA. 130+00 TO STA. 133+35 -L- (RT)

Kimley»Horn

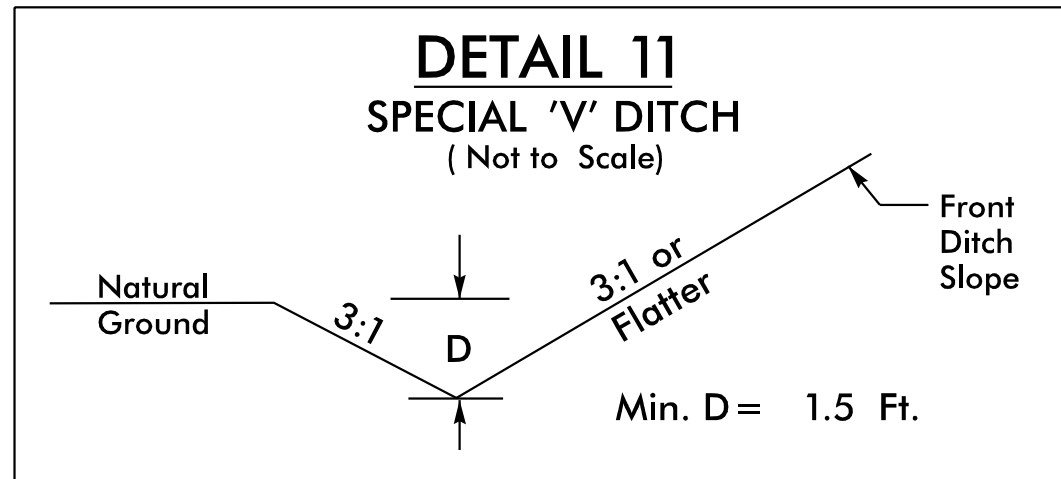
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

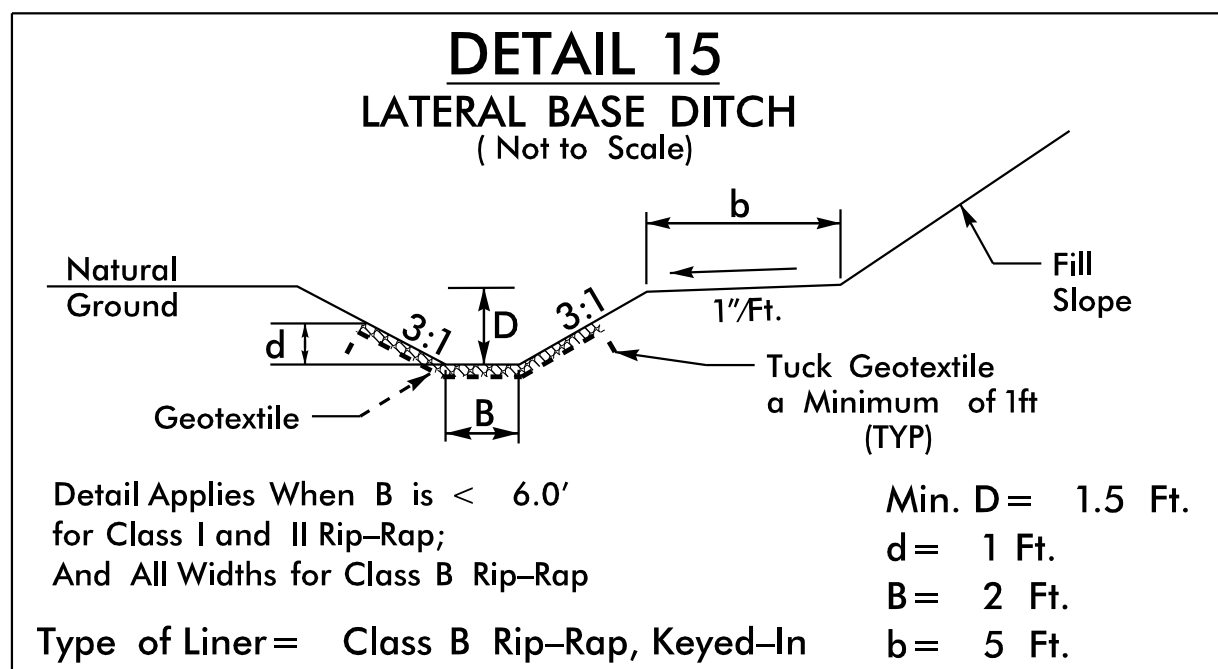
PROJECT REFERENCE NO.	SHEET NO.
R-5963A	2D-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



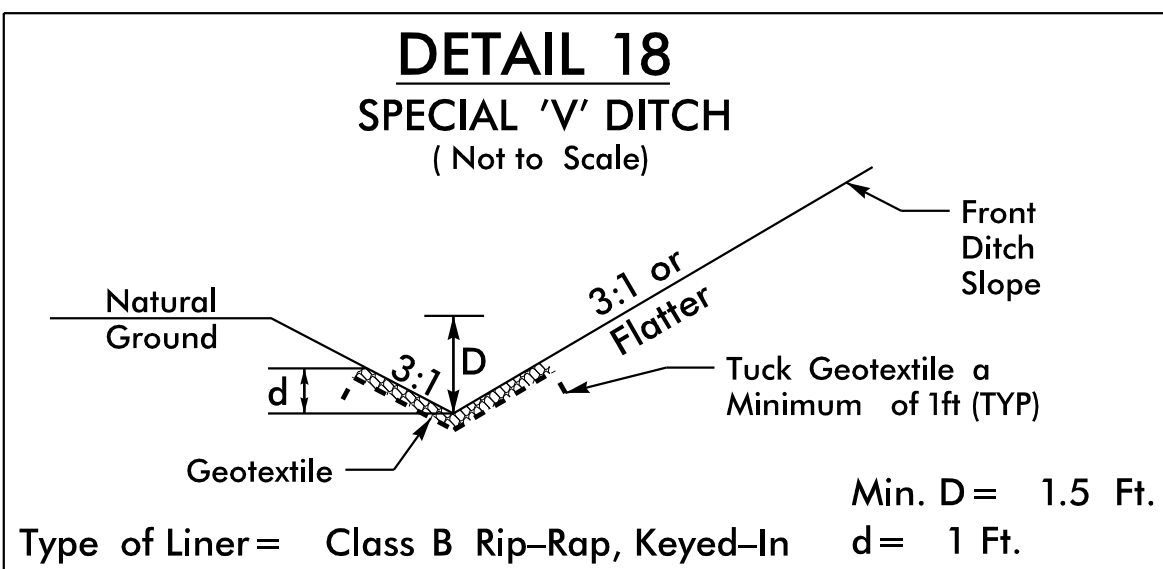
FROM STA. 126+00 TO STA. 128+50 -L- (RT)



FROM STA. 17+30 TO STA. 19+50 -L- (LT)
FROM STA. 17+50 TO STA. 18+00 -L- (RT)
FROM STA. 24+50 TO STA. 26+50 -L- (LT)
FROM STA. 49+50 TO STA. 50+50 -L- (LT)
FROM STA. 89+50 TO STA. 91+15 -L- (RT)
FROM STA. 91+80 TO STA. 93+00 -L- (RT)
FROM STA. 144+00 TO STA. 144+50 -L- (RT)
FROM STA. 151+00 TO STA. 151+50 -L- (RT)
FROM STA. 163+00 TO STA. 164+50 -L- (RT)
FROM STA. 165+50 TO STA. 167+75 -L- (RT)
FROM STA. 18+00 TO STA. 20+90 -Y14- (LT)
FROM STA. 25+50 TO STA. 26+00 -Y14- (LT)
FROM STA. 28+50 TO STA. 30+49 -Y14- (LT)



FROM STA. 149+20 TO STA. 150+00 -L- (RT)



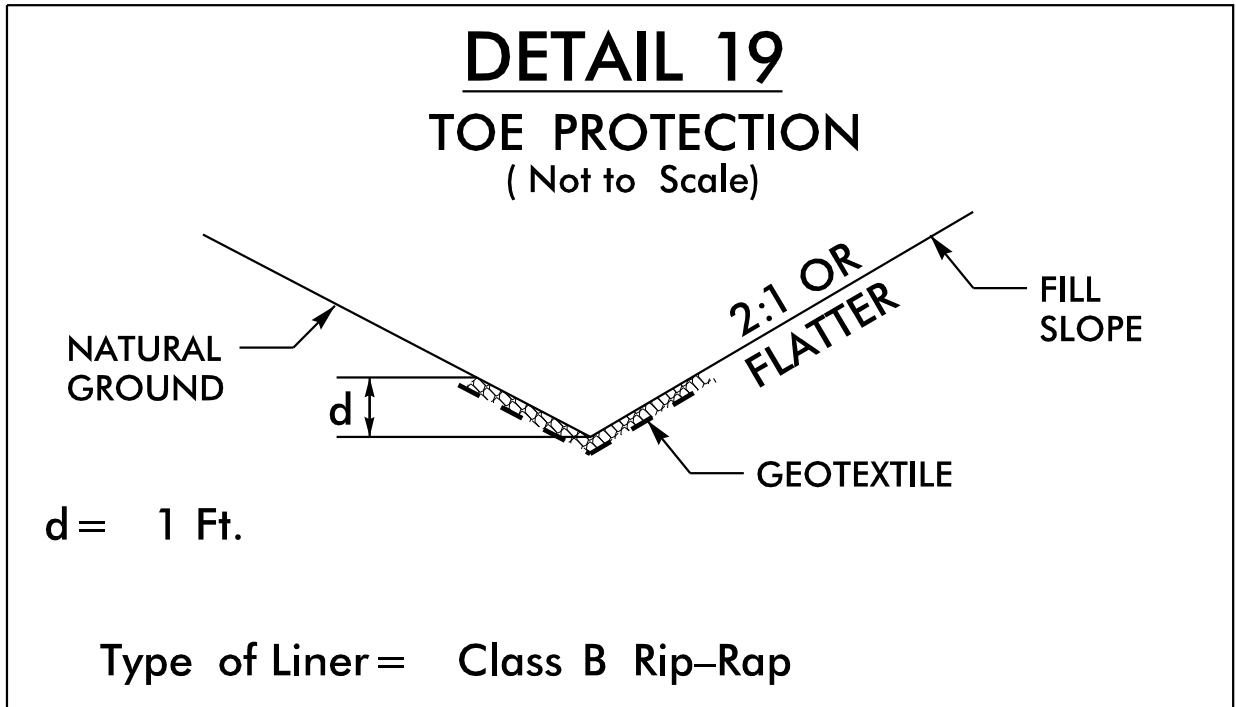
FROM STA. 159+00 TO STA. 163+00 -L- (RT)
FROM STA. 17+40 TO STA. 20+45 -Y14- (RT)

5/14/99

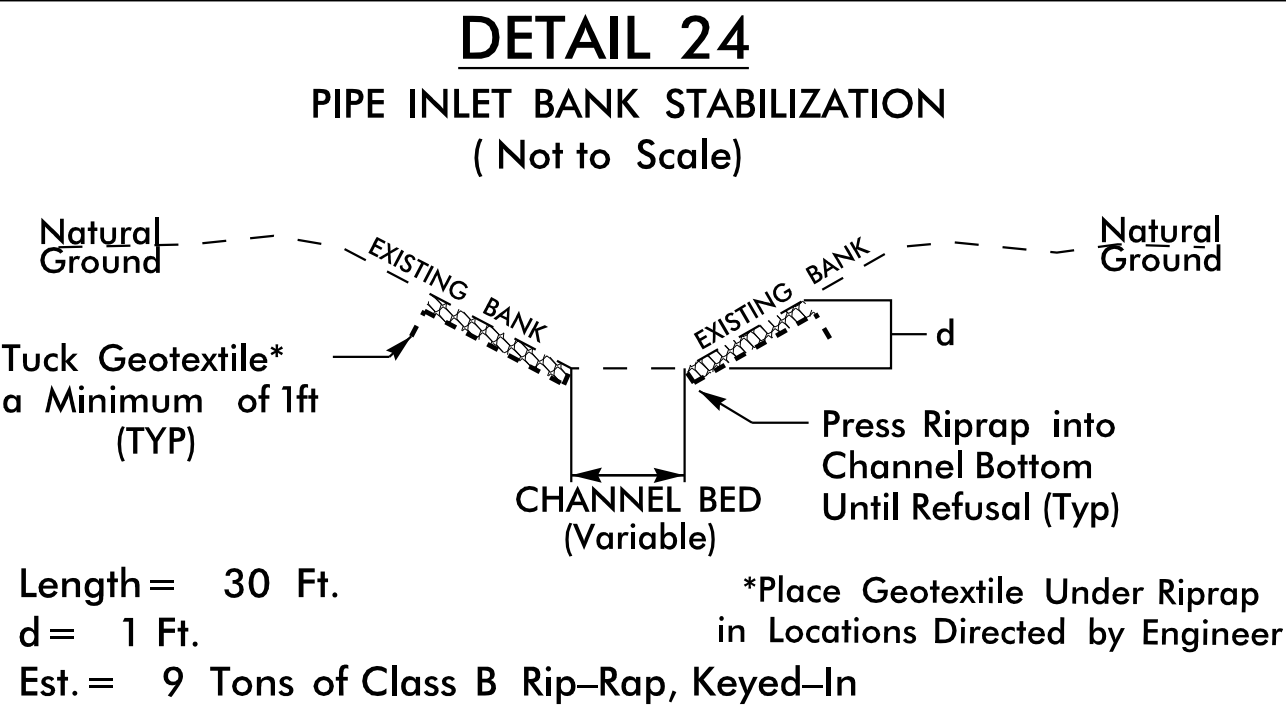
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REVISIONS

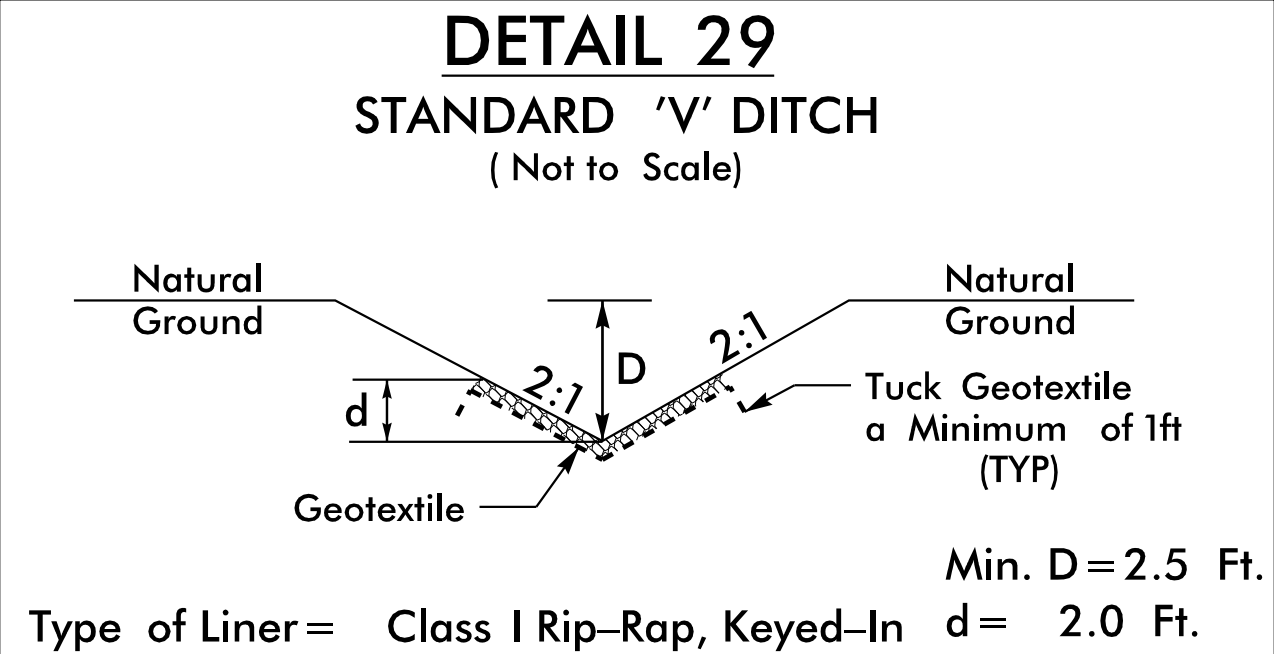
3/5/2025



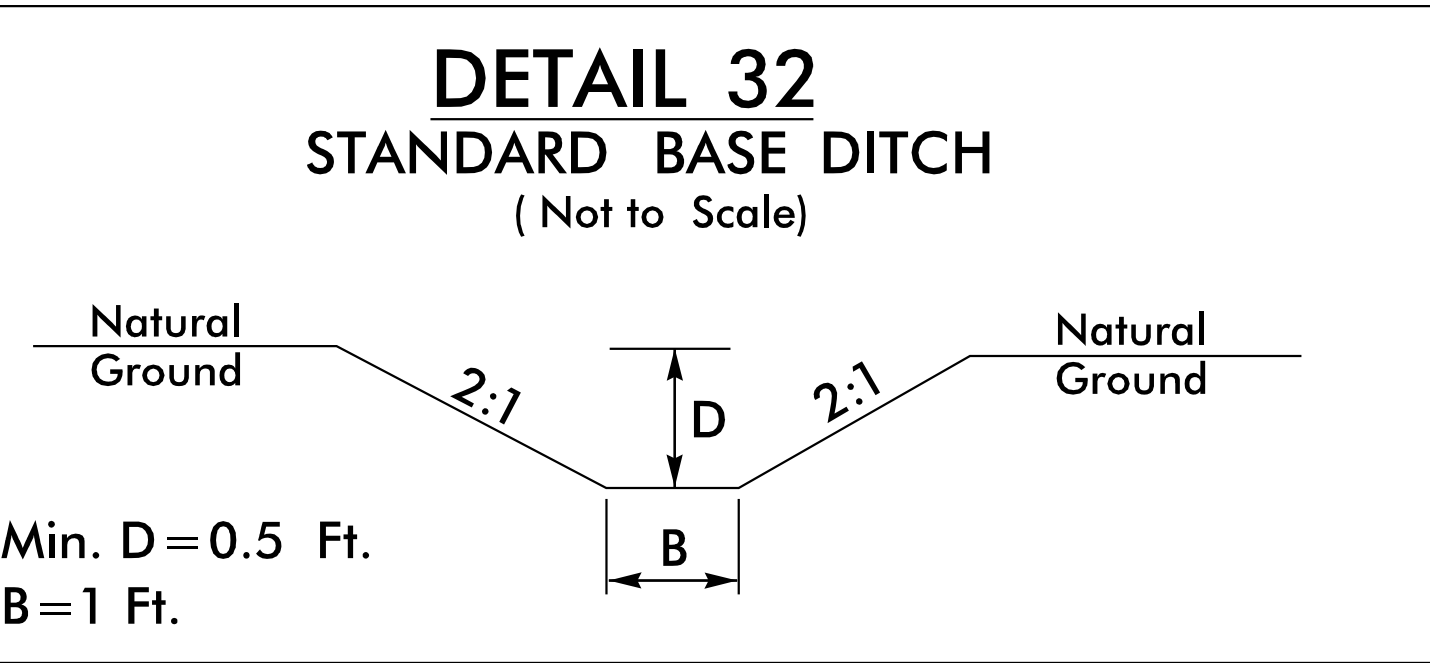
FROM STA. 51+10 TO STA. 52+00 -L- RT
FROM STA. 146+00 TO STA. 148+50 -L- RT
FROM STA. 20+50 TO STA. 21+50 -Y1- RT
FROM STA. 9+80 TO STA. 11+20 -Y10- RT



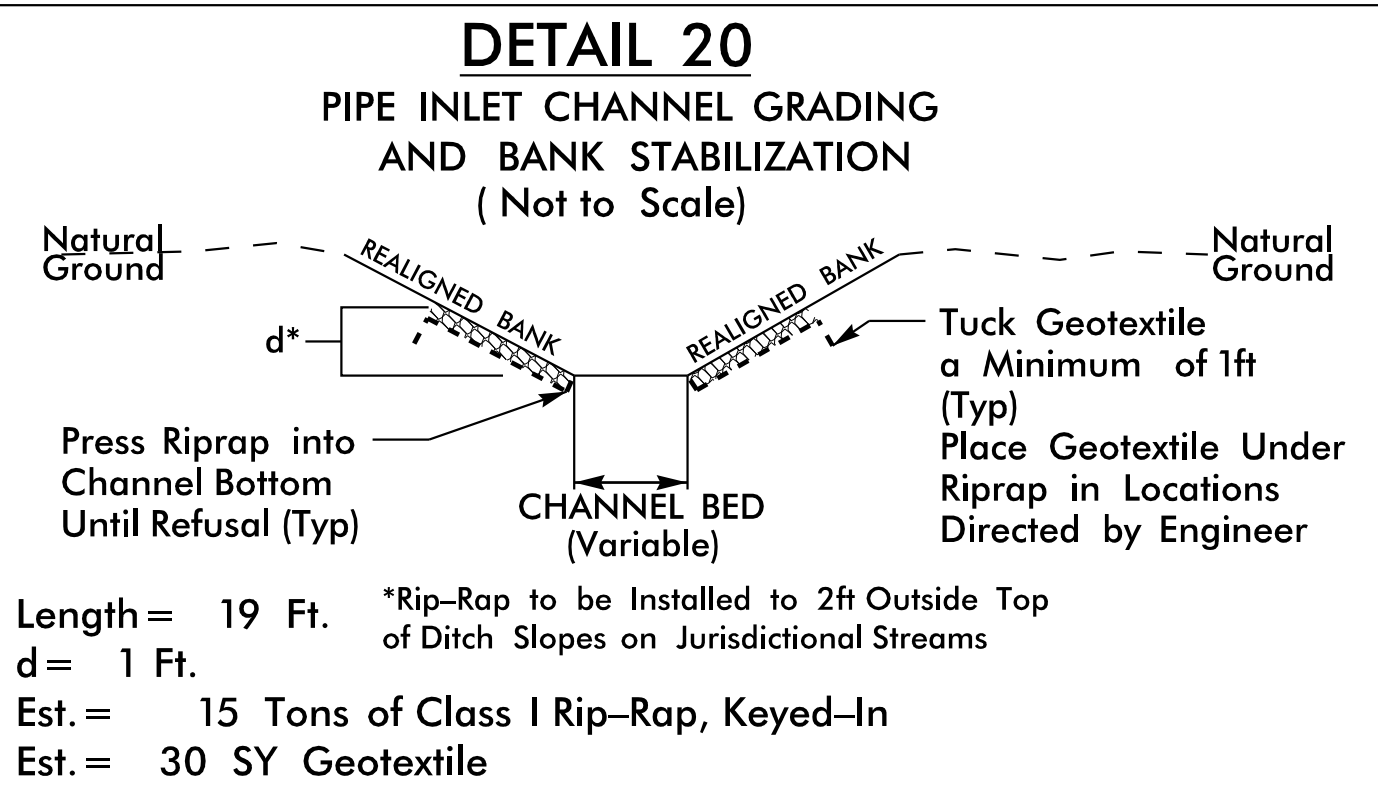
STA. 144+87 RT



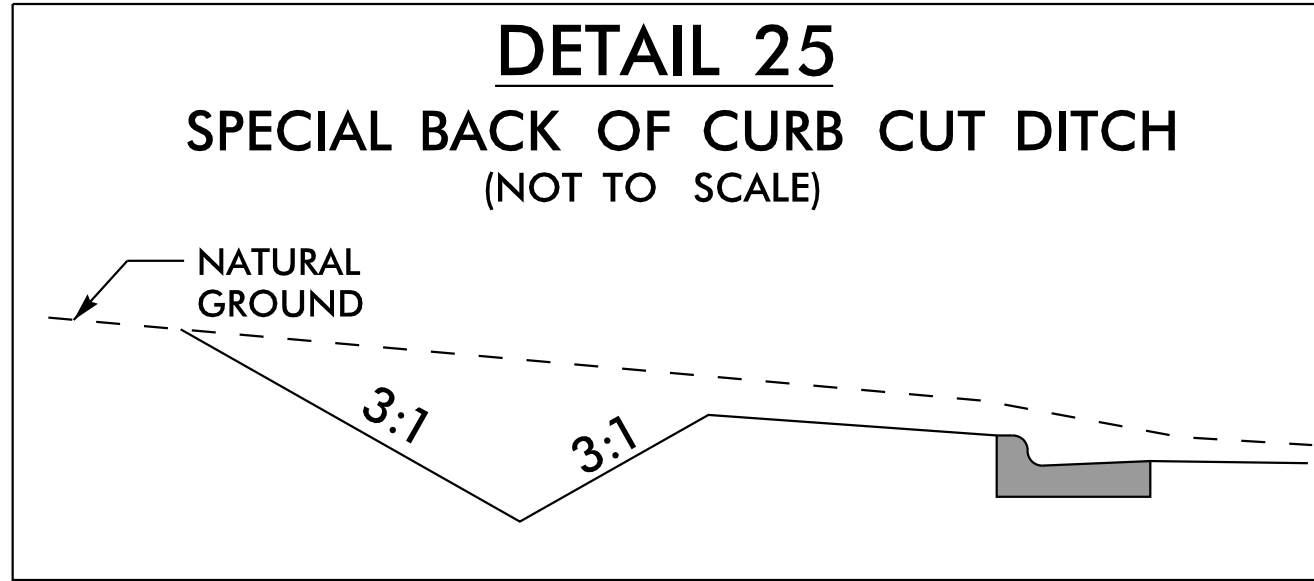
FROM STA. 97+50 TO STA. 97+11 -L- (RT)



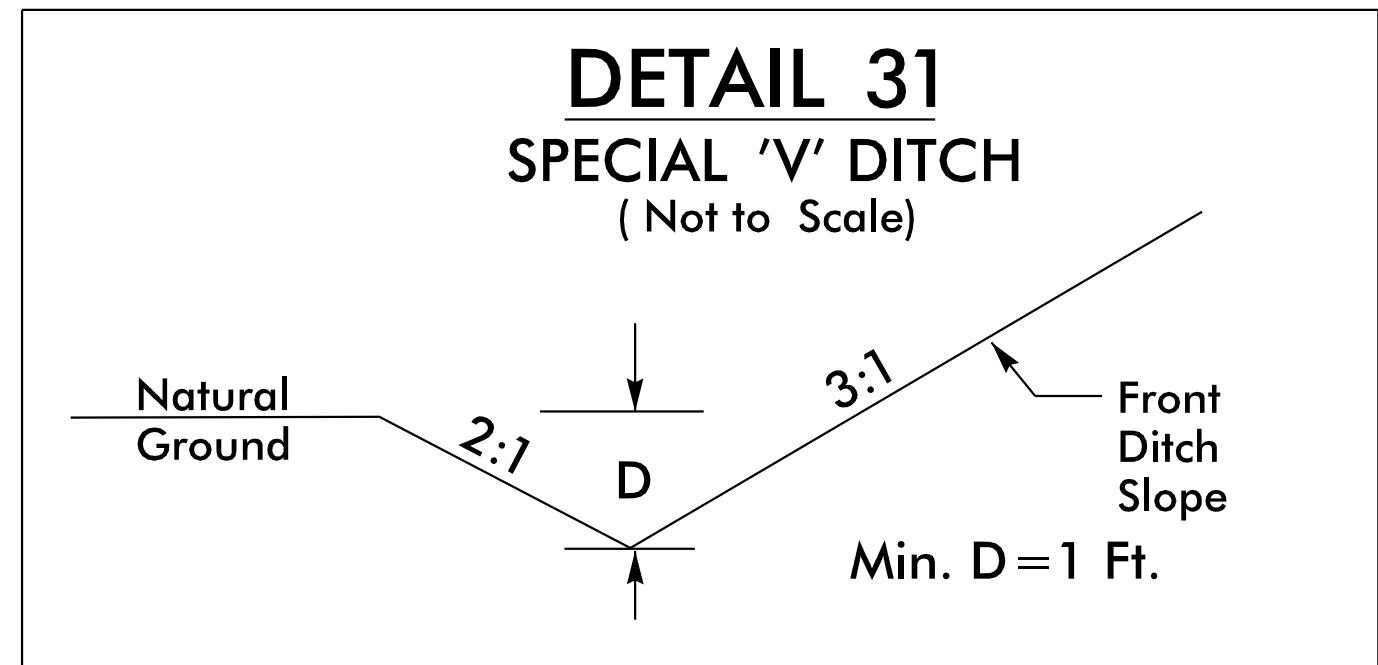
FROM STA. 173+90 TO STA. 176+38 -L- (LT)



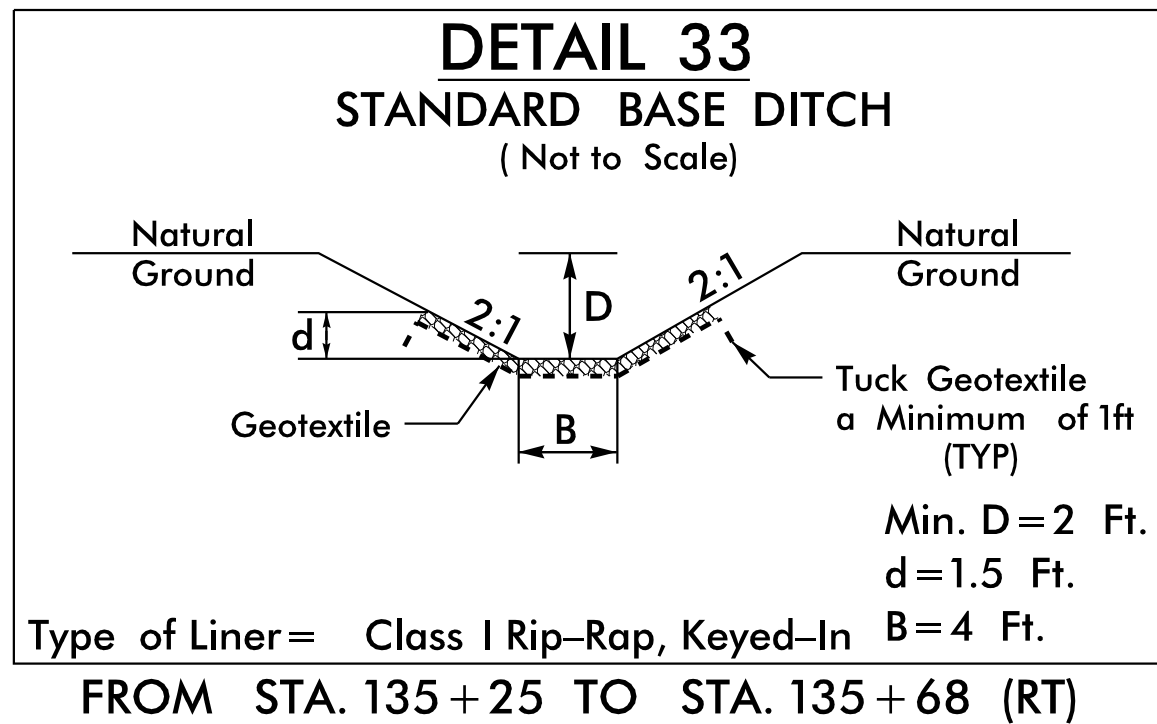
STA. 50+90 -L- RT



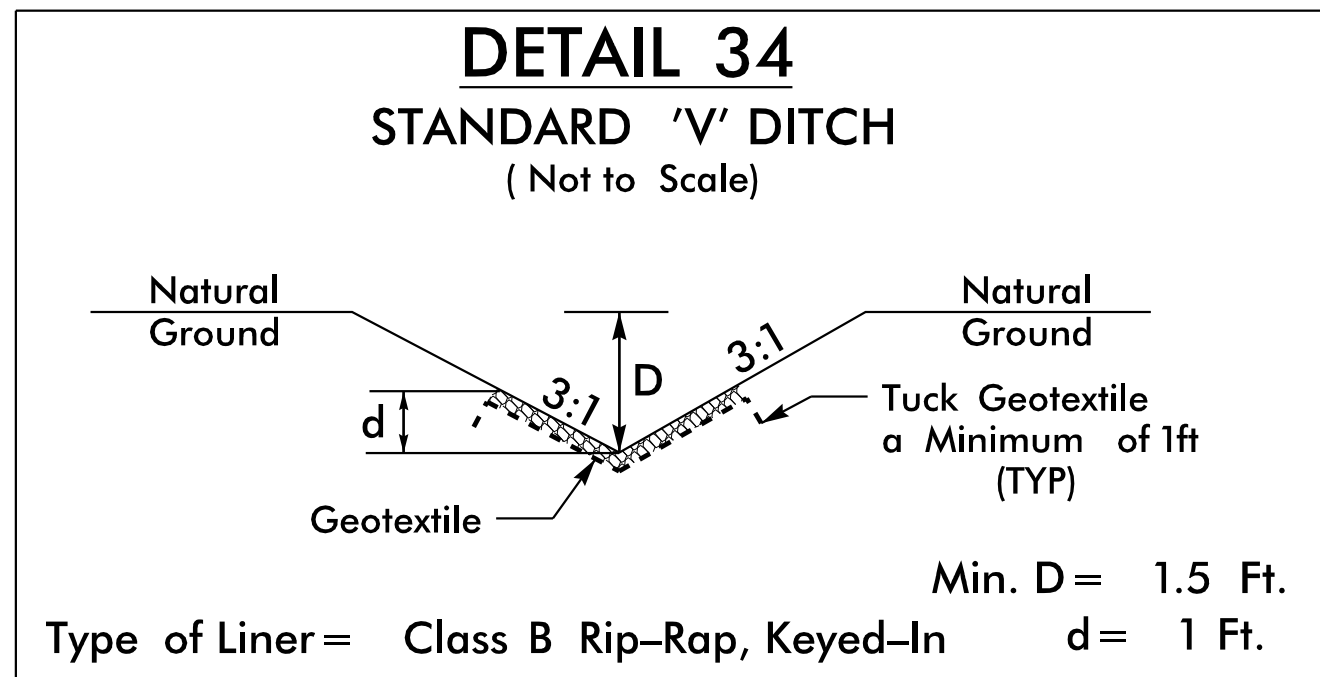
FROM STA. 156+00 TO STA. 157+50 -L- RT



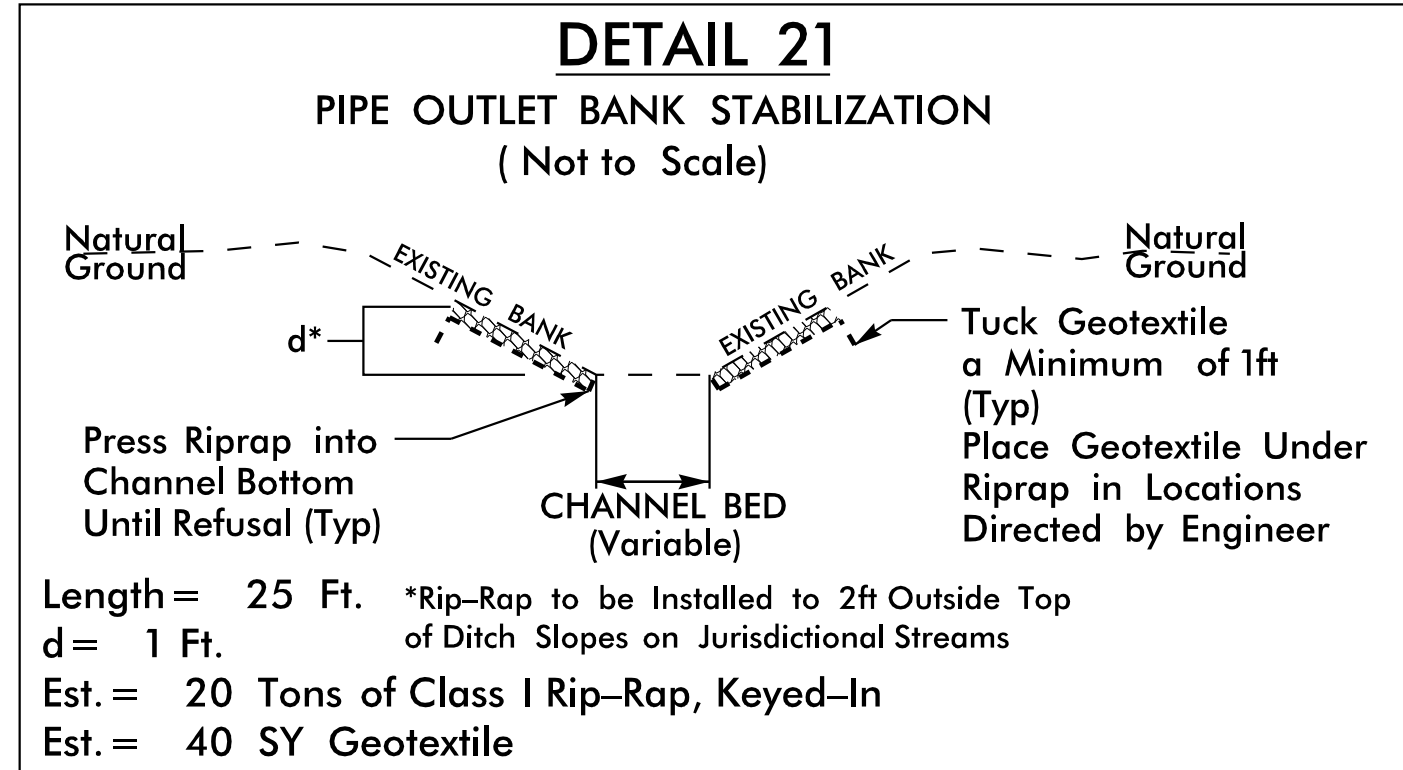
FROM STA. 22+50 TO STA. 26+20 -Y1- (LT)



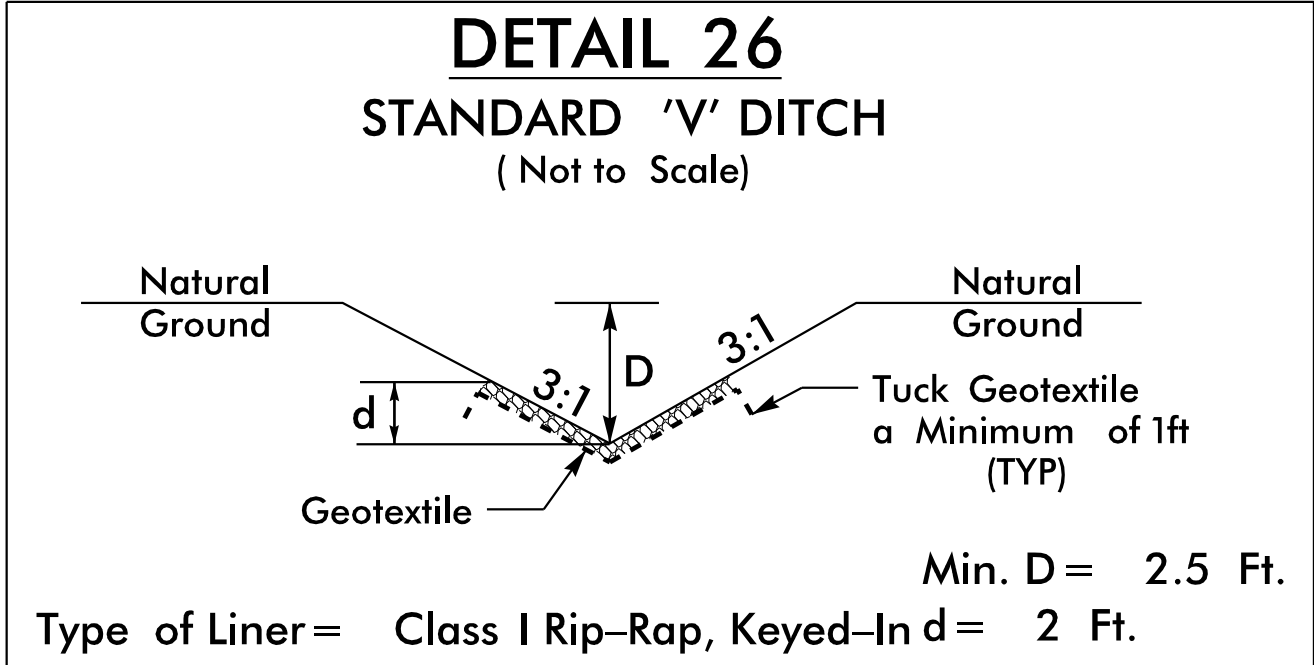
FROM STA. 135+25 TO STA. 135+68 (RT)



STA. 71+95 -L- (RT)



STA. 52+12 -L- LT



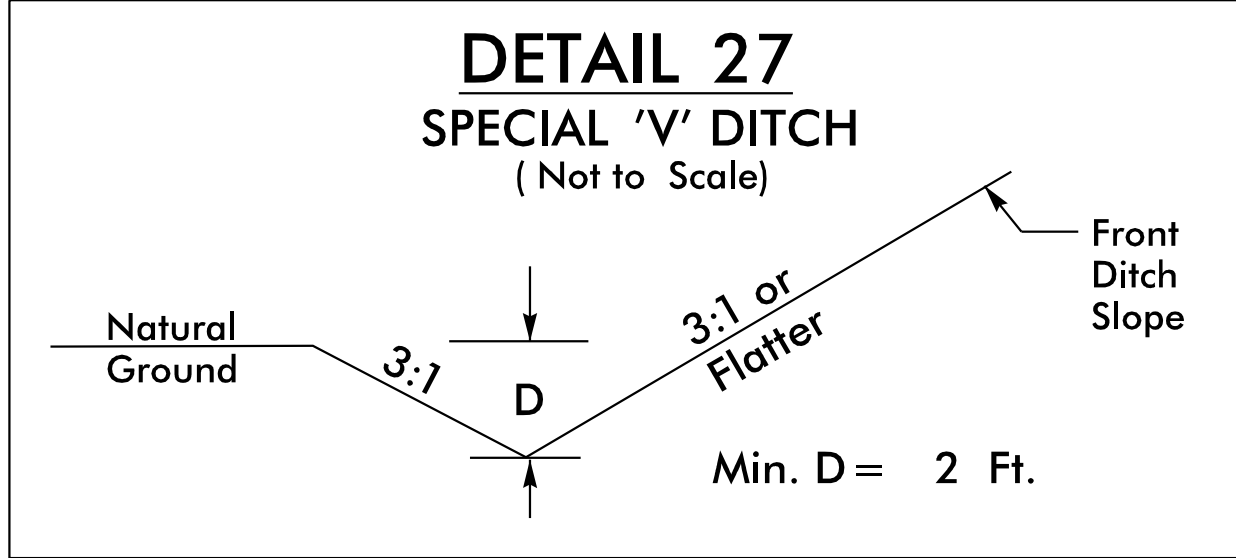
STA. 25+84 -L- (RT)

Kimley»Horn

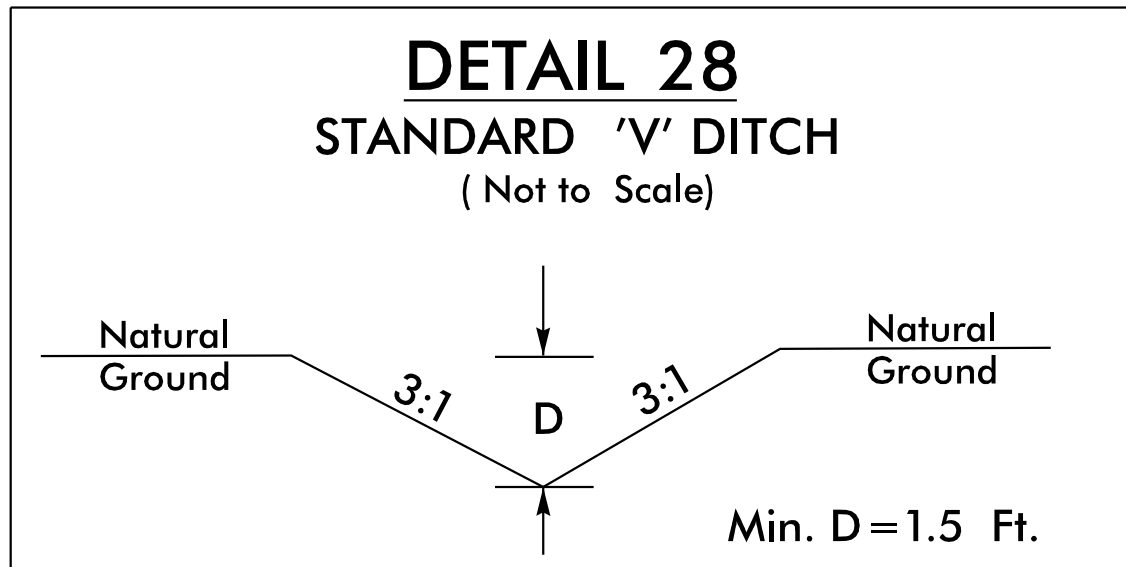
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.		SHEET NO.
R-5963A		2D-2
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



FROM STA. 26+50 TO STA. 28+50 -Y14- (LT)

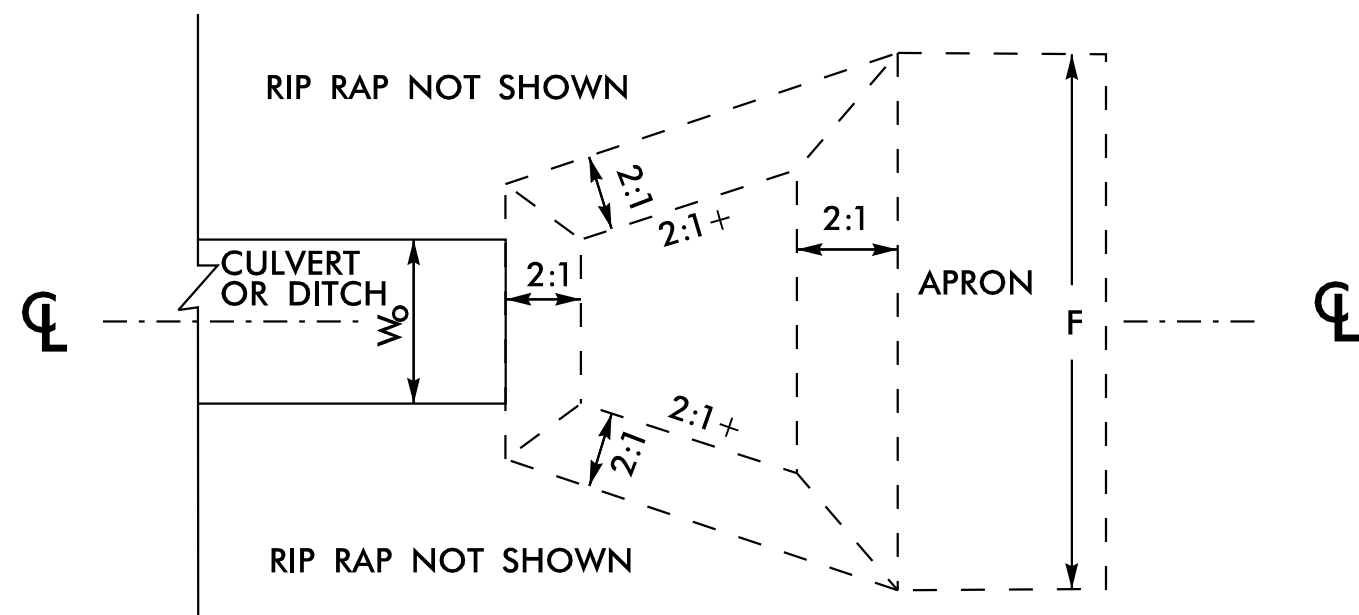


STA. 15+45 -L- RT
STA. 38+90 -L- RT
STA. 91+50 -L- RT

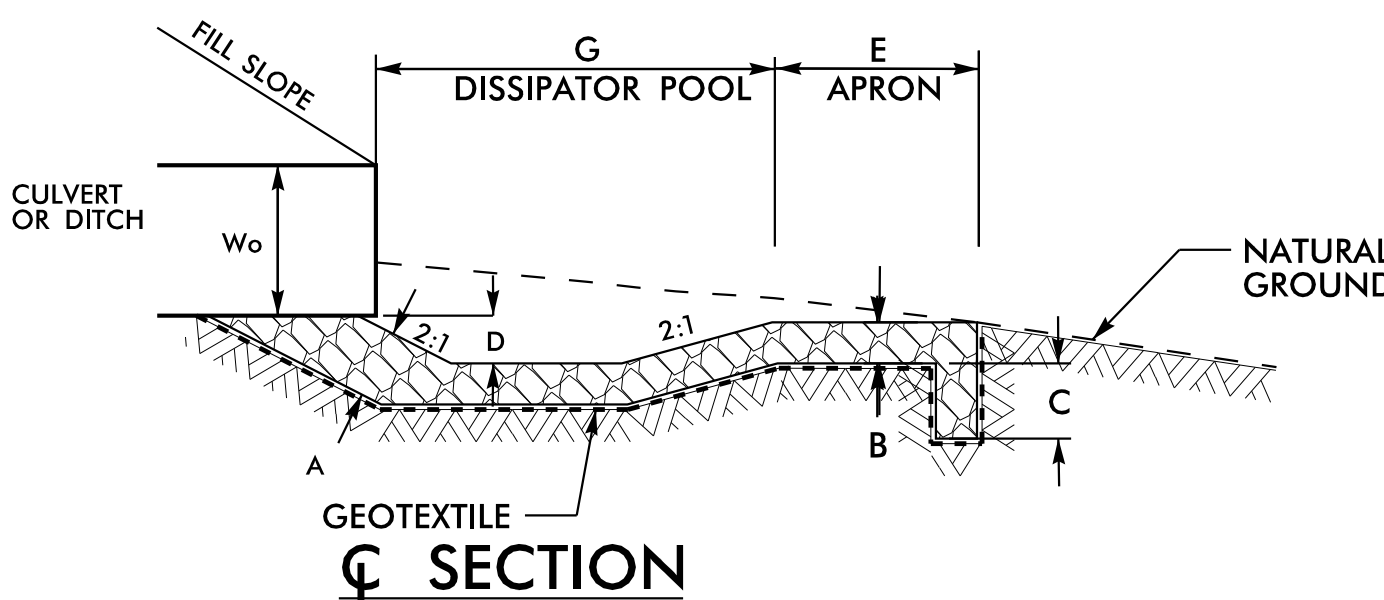
DETAIL 30 RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN #			
	1	2	3	4
A	1.5	2.0	1.5	2.0
B	1.0	1.5	1.0	1.5
C	1.5	2.0	1.5	2.0
D	1.0	2.0	1.0	2.0
E	2.0	4.0	2.0	4.0
F	20.0	20.0	15.0	20.0
G	15.0	20.0	10.0	20.0

ALL DIMENSIONS APPROXIMATE



PLAN



SECTION

I:\AUC-2017 10\J\SA\contracts\Special Details\howerton\840d02 Min Depth CB.dgn
SA\contracts\howerton\840d02 Min Depth CB.dgn
Jhowerton At CSD-292855

5/14/99

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

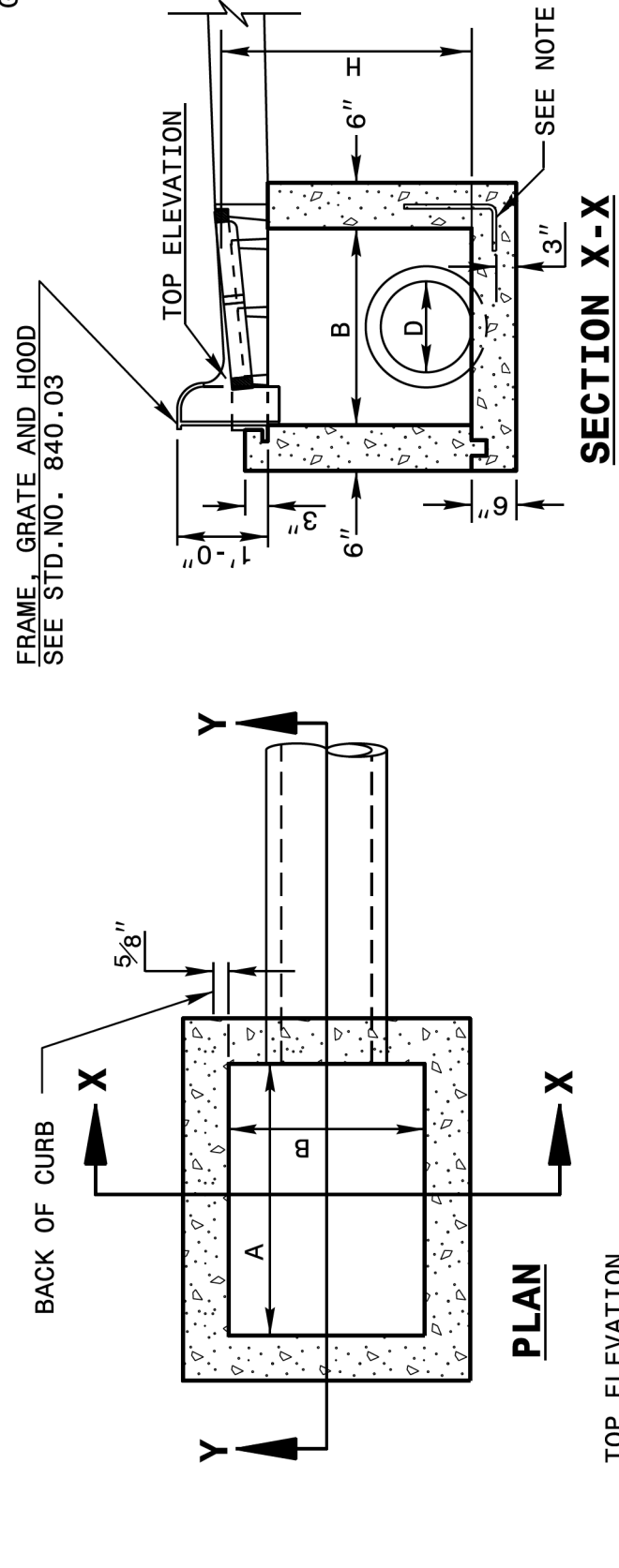
ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 1 OF 2

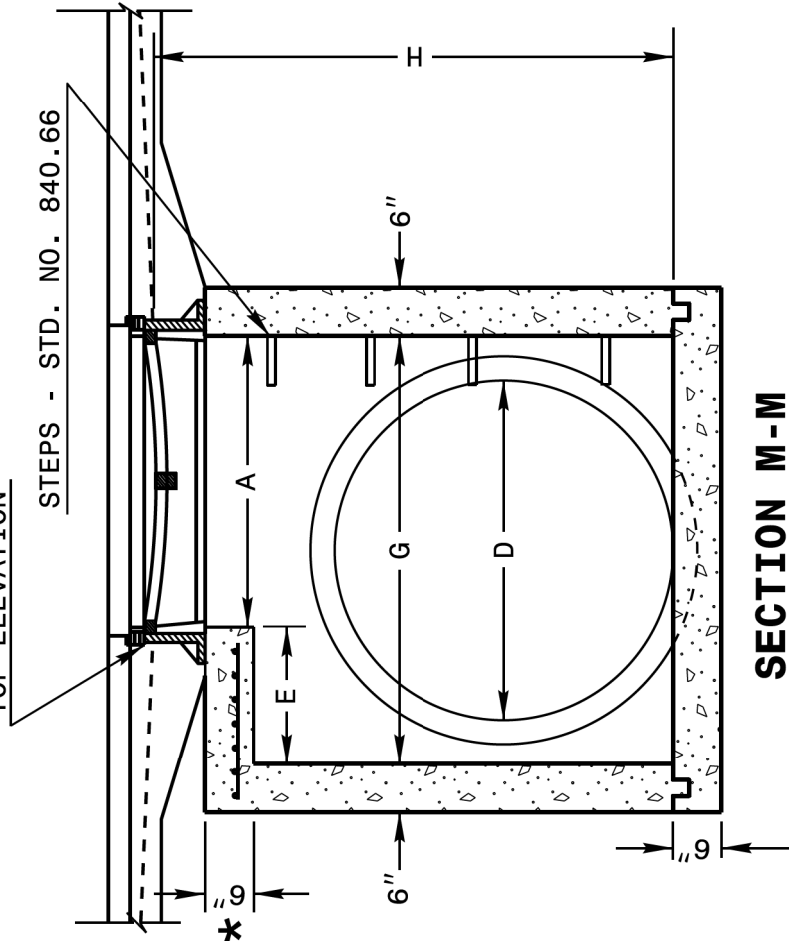
840D02

GENERAL NOTES:

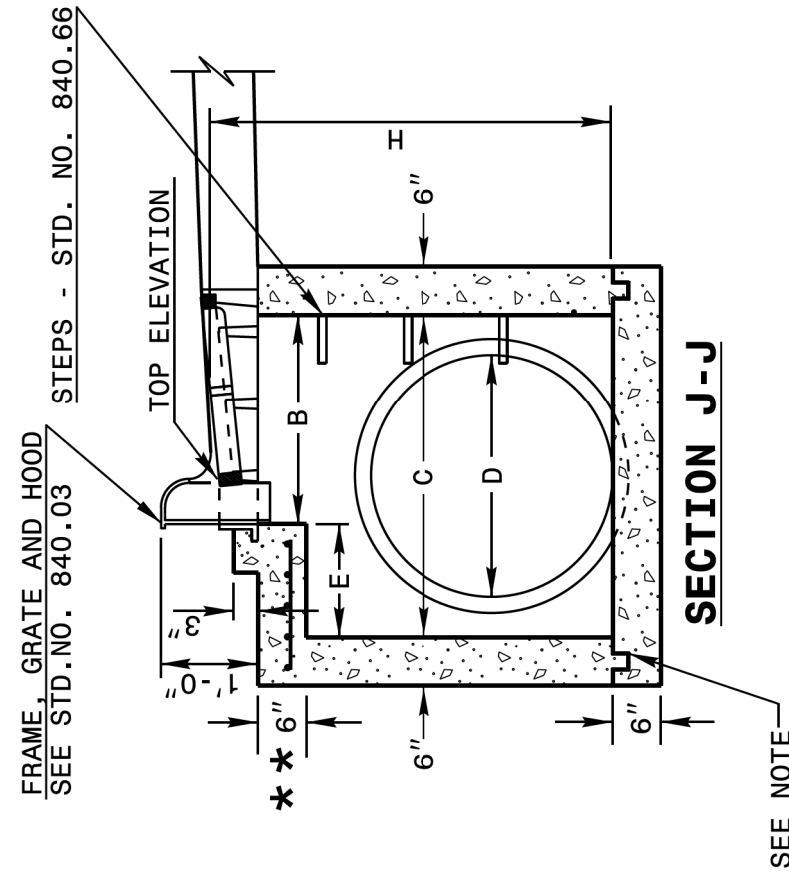
- USE CLASS "B" CONCRETE THROUGHOUT.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
** FOR STRUCTURES WITH PIPE LARGER THAN 54", MAKE THE TOP SLAB 8" THICK.



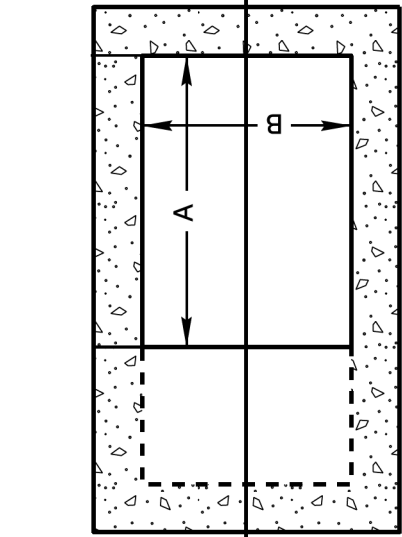
SECTION X-X



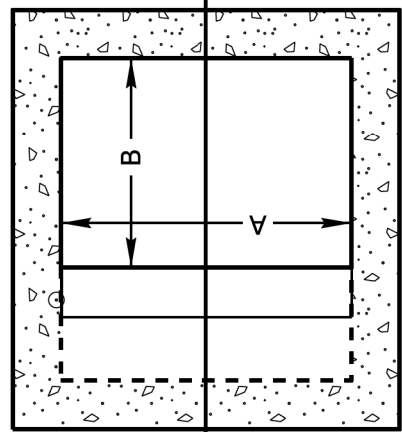
SECTION M-M



SECTION J-J



PLAN



PLAN

**DETAIL SHOWING METHOD
OF RISER CONSTRUCTION**

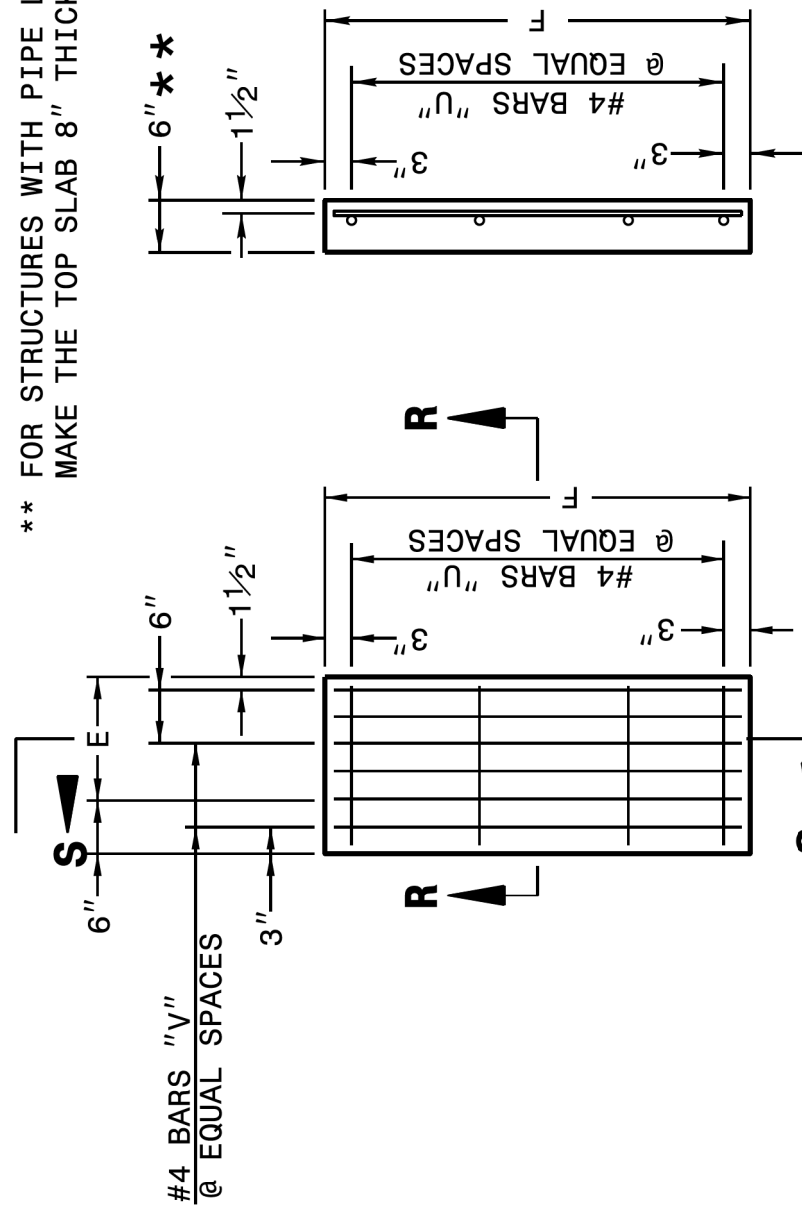
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 2 OF 2

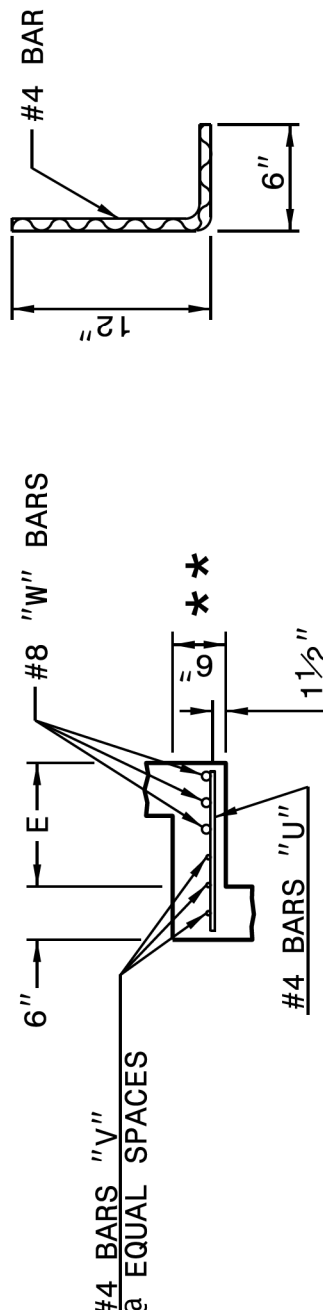
840D02

** FOR STRUCTURES WITH PIPE LARGER THAN 54",
MAKE THE TOP SLAB 8" THICK.



PLAN OF TOP SLAB

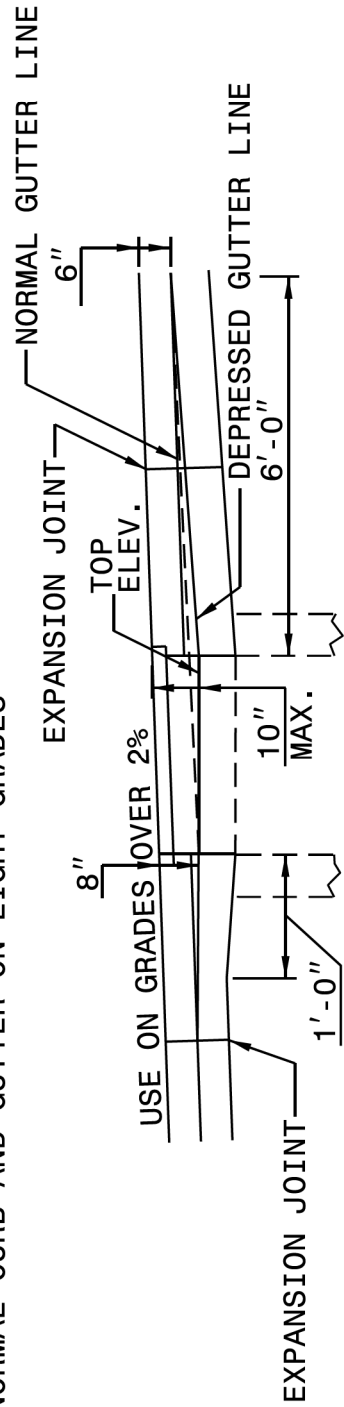
SECTION S-S



SECTION R-R

NORMAL CURB AND GUTTER ON LIGHT GRADES

ELEVATION



NORMAL CURB AND GUTTER ON STEEP GRADES

ELEVATION

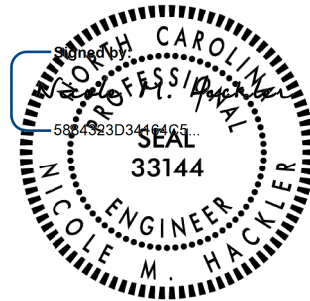
* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *									
DIMENSIONS OF BOX AND PIPE					COVER DIMENSION		BARS		
PIPE D	SPAN A	WIDTH B	WIDTH C	SPAN G	H	E	F	NO.	LENGTH
12"	3'-0"	2'-2"	2'-2"	--	2'-0"	--	--	--	--
15"	3'-0"	2'-2"	2'-2"	--	2'-3"	--	--	--	--
18"	3'-0"	2'-2"	2'-2"	--	2'-6"	--	--	--	--
24"	3'-0"	2'-2"	2'-2"	--	3'-1"	--	--	--	--
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"

ORIGINAL BY: 2002 Std.840.01 DATE:
MODIFIED BY: E.E. WARD DATE: 3-1-02
CHECKED BY: DATE:
FILE SPEC.: s:Special Details\jhowerton\840d02.dgn

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

SEE PLATE FOR TITLE



3/5/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

FOR USE IN THE FOLLOWING LOCATIONS,
OR AS DIRECTED BY THE ENGINEER.

NOTES:

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION

CONSTRUCT ROCK EMBANKMENTS AS SHOWN IN THE DETAIL AND IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION

CONSTRUCT ROCK EMBANKMENTS A MINIMUM OF 2 FT. ABOVE POND SURFACE WATER ELEVATION.

USE SELECT MATERIAL, CLASS VII, RIP RAP CLASS A, RIP RAP CLASS B, AND SELECT MATERIAL, CLASS VI TO CONSTRUCT ROCK EMBANKMENTS AS SHOWN. RIP RAP CLASS A AND SELECT MATERIAL, CLASS VI SHALL BE USED TO CHOK OFF VOIDS IN SELECT MATERIAL, CLASS VII BEFORE PLACING SEPARATION GEOTEXTILES AND SOIL EMBANKMENT FILL

SELECT MATERIAL, CLASS VII AND RIP RAP CLASS A AND B SHALL MEET THE REQUIREMENTS OF SECTION 1042 OF THE STANDARD SPECIFICATIONS

SELECT MATERIAL, CLASS VI SHALL MEET THE GRADATION REQUIREMENTS IN SECTION 1016 OF THE STANDARD SPECIFICATIONS

INSTALL SEPARATION GEOTEXTILE ON TOP OF ROCK EMBANKMENTS IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION AND ARTICLE 270-3 OF THE STANDARD SPECIFICATIONS

STATIONS:

-L- 89+44 TO 91+68, LT TO RT

-L- 90+95 TO 92+10, CL TO RT

WATER SURFACE

EL 391.0 FT

EL 393.0 FT

TOP OF ROCK EMBANKMENT

EL 393.0 FT

EL 395.0 FT

PROJECT REFERENCE NO.

R-5963A

SHEET NO.

2G-1

GEOTECHNICAL ENGINEER

SEAL

041986

ENGINEER

D. MATTHEW BREWER

DocuSigned by:

Matt Brewer, PE

11/25/2024

ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ESTIMATED QUANTITIES
ROCK EMBANKMENTS

BID ITEMS	-L- 89+44 TO 91+68	-L- 90+95 TO 92+10
SELECT MATERIAL, CLASS VII FOR ROCK EMBANKMENTS	15,120 TON	1,520 TON
RIP RAP CLASS A	2,160 TON	220 TON
RIP RAP CLASS B	2,160 TON	220 TON
SELECT MATERIAL, CLASS VI FOR ROCK EMBANKMENTS	1,570 TON	160 TON
GEOTEXTILE FOR ROCK EMBANKMENTS	2,760 SY	420 SY

SEPARATION GEOTEXTILE

WATER SURFACE VARIES SEE NOTES

1.5:1

5 FT. BERM (TYP)

2:1

TOP OF ROCK EMBANKMENT 2 FT. ABOVE SURFACE WATER

1 FT. THICK SELECT MATERIAL, CLASS VI

SELECT MATERIAL, CLASS VII

FILL RIP RAP CLASS B & RIP RAP CLASS A ON TOP OF SELECT MATERIAL, CLASS VII

SUITABLE SOILS FOR ROADWAY EMBANKMENT CONSTRUCTION

CL

SEPARATION GEOTEXTILE

PROPOSED GRADE

EXISTING GROUND LINE

3:1

WATER SURFACE VARIES SEE NOTES

TOP OF ROCK EMBANKMENT 2 FT. ABOVE SURFACE WATER

SELECT MATERIAL, CLASS VII

FILL RIP RAP CLASS B & RIP RAP CLASS A ON TOP OF SELECT MATERIAL, CLASS VII

ROCK EMBANKMENTS TYPICAL DETAILS

NOT TO SCALE

Prepared in the Office of:

CG2

CAROLINAS
GEOTECHNICAL
GROUP

2400 CROWNPOINT EXECUTIVE DRIVE

SUITE 800

CHARLOTTE, NC 28227

(980) 339-8684

GEOTECHNICAL
CONSTRUCTION DETAILS -
ROCK EMBANKMENTS -
POND DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PREPARED BY: D. MATTHEW BREWER, P.E.

DATE: 10/25/24

REVIEWED BY: MICHAEL J. WALKO, P.E.

DATE: 10/25/24

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

CHAIN	STATION	STATION	TOTAL UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT + %	BORROW	TOTAL WASTE
-L-	10 + 19.74	43 + 50.00	155,547	1,075	15,390		141,232
-L-	43 + 50.00	75 + 78.00	76,369	775	59,135		18,009
-L-	77 + 20.00	78 + 91.82			4,969	4,969	
-L-	80 + 41.91	111 + 00.00	127,624	1,225	29,031		99,818
-L-	111 + 00.00	134 + 04.29	41,928	2,150	47,564	7,552	4,066
-L-	135 + 25.71	165 + 00.00	51,958		75,117	23,159	
-L-	165 + 00.00	177 + 15.30	1,215		23,195	21,980	
-L-	177 + 86.80	179 + 25.00	133		17		116
-Y1-	12 + 39.00	29 + 63.00	2,799		1,146		1,653
-Y7-	13 + 25.00	15 + 71.69	280		296	16	
-Y7-	17 + 21.76	20 + 30.00	520		101		419
-Y10-	9 + 83.81	11 + 61.00	102		6,629	6,527	
-Y10-	12 + 39.00	14 + 17.58	10,802				10,802
-Y14-	11 + 48.00	31 + 05.00	1,561		2,861	1,300	
-Y16-	10 + 00.00	13 + 21.00	34	225	268	234	225
-RBT-	10 + 00.00	13 + 45.57	2,365	825	800		2,390
		SUBTOTAL	473,237	6,275	266,519	65,737	278,730
LOSS DUE TO CLEARING & GRUBBING			-17,000				-17,000
ADDITIONAL UNDERCUT TO BE FILLED WITH BORROW				4,100	4,920	4,920	4,100
ADDITIONAL UNDERCUT TO BE FILLED WITH SELECT GRANULAR MATERIAL - CLASS III				2,000			2,000
WASTE IN LIEU OF BORROW						-70,657	-70,657
	GRAND TOTALS		456,237	12,375	271,439	0	197,173
	SAY		457,000				
ESTIMATED SELECT GRANULAR MATERIAL - CLASS III				8,275	CY		
ESTIMATED DRAINAGE DITCH EXCAVATION (DDE)				1,530	CY		
ESTIMATED SHOULDER BORROW				4,900	CY		
ESTIMATED SHALLOW UNDERCUT				1,500	CY		
ESTIMATED CLASS IV SUBGRADE STABILIZATION				7,810	TON		
NOTE: A QUANTITY OF 52,400 CY OF "UNCLASSIFIED EXCAVATION - ACCEPTABLE BUT NOT TO BE USED IN THE TOP 3 FEET OF EMBANKMENT OR BACKFILL" HAS BEEN MEASURED FROM THE CROSS SECTIONS 2,190 CY FROM -L- STA 12+25 TO 12+75 (LT & RT) 150 CY FROM -L- STA 23+75 TO 26+25 (LT & RT) 5,310 CY FROM -L- STA 71+75 TO 74+75 (LT & RT) 36,840 CY FROM -L- STA 82+25 TO 89+25 (LT & RT) 580 CY FROM -L- STA 103+25 TO 105+25 (LT & RT) 2,820 CY FROM -L- STA 116+75 TO 119+75 (LT & RT) 2,570 CY FROM -L- STA 152+75 TO 154+25 (LT & RT) 1,940 CY FROM -RBT- STA 10+50 TO 12+10 (LT & RT)							

REVISIONS

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COMPUTED BY: TGS	DATE: 10/6/23
CHECKED BY: VWB	DATE: 10/6/23

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.
R-5963A

SHEET NO.
3B-2

Kimley»Horn

©2025

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

"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 GUARDRAIL END UNIT, TYPE TL-3
NG = NON-GATING GUARDRAIL END UNIT, 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	B-77	GREU TL-3	CAT-I	AT-I	EA	G	NG			
-L-	49+16.00	52+47.25	RT	331.25			50+75	52+20	17.5'	19.5'	50		1			1	1							
-L-	50+56.75	53+88.00	LT	331.25			51+25	52+65	17.5'	19.5'	50		1			1	1							
-L-	72+98.54	75+46.42	RT	247.88			75+25	75+46	2.5'	15.5'	50		1		1	1								
-L-	74+57.21	75+61.34	LT	104.13			75+61	75+25	2.5'	15.5'					1		1							
-L-	77+34.20	77+88.33	RT	54.13			77+34	77+34	2.5'	15.5'					1		1							
-L-	77+53.48	78+51.36	LT	97.88			77+75	77+53	2.5'	15.5'	50		1		1	1								
-L-	131+18.64	133+66.52	RT	247.88			133+92	133+92	2.5'	15.5'	50		1		1	1								
-L-	131+42.07	134+02.44	RT MED	260.38			134+02	134+02	4'	6'	50		1		1	1								
-L-	131+72.53	134+07.90	LT MED	235.38			134+08	134+08	4'	6'	50		1		1	1								
-L-	133+14.69	133+93.82	LT	79.13			134+19	134+19	2.5'	15.5'					1		1							
-L-	135+36.17	135+90.30	RT	54.13			135+36	135+36	2.5'	15.5'					1		1							
-L-	135+22.09	137+57.47	RT MED	235.38			135+22	135+22	4'	6'	50		1		1	1								
-L-	135+27.55	137+87.93	LT MED	260.38			135+28	135+28	4'	6'	50		1		1	1								
-L-	135+63.46	138+11.34	LT	247.88			135+63	135+63	2.5'	15.5'	50		1		1	1								
-Y16-	10+30.00	12+11.25	RT	181.25			11+08	12+10	2'	5'	50		1			1	1							
			SUBTOTAL	2968.25																				
															12	11	7							
	LESS ANCHOR DEDUCTIONS																							
	B-77	12 @ 22.875'	=	274.50																				
	GREU TL-3	11 @ 50'	=	550.00																				
	CAT-I	7 @ 6.25'	=	43.75																				
			TOTAL	2100.00											12	11	7							
			SAY	2125											12	11	7							

ADDITIONAL GUARDRAIL POSTS = 10 EA

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION	LOCATION	AREA (SY)
-Y7-	14+29 TO 14+60	LT	4
-Y7-	14+86 TO 15+17	RT	3
-Y7-	15+90 TO 17+03	MED	317
-Y7-	17+65 TO 18+12	LT	12
TOTAL			336
SAY			350

BICYCLE / PEDESTRIAN SAFETY RAIL

LINE	STATION TO STATION	SIDE	LENGTH (LF)
-L-	74+94 TO 75+67	RT	73
-L-	74+94 TO 75+91	LT	97
-L-	77+05 TO 78+06	RT	102
-L-	77+34 TO 78+05	LT	73
-L-	131+38 TO 133+87	RT	250
-L-	133+28 TO 134+23	LT	97
-L-	135+07 TO 137+63	RT	257
-L-	135+43 TO 135+99	LT	56
TOTAL			1005
SAY			1010

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REVISIONS

COMPUTED BY: D. MATTHEW BREWER DATE: 10/25/24
CHECKED BY: MICHAEL J. WALKO DATE: 10/25/24

(9-17-24)

PROJECT NO.
R-5963A

SHEET NO.
3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
-L-	10+00	18+00	LT TO RT	SD	1600
-L-	25+00	29+00	LT TO RT	SD	800
-L-	44+00	55+00	LT TO RT	SD	2200
-L-	80+00	95+00	LT TO RT	SD	3000
-L-	99+00	101+00	LT TO RT	SD	400
-Y1-	15+00	17+00	LT TO RT	SD	400
-Y1-	20+00	26+00	LT TO RT	SD	1200
-Y14-	15+00	19+00	LT TO RT	SD	800
-Y14-	23+00	28+00	LT TO RT	SD	1000
CONTINGENCY				SD	1000
				TOTAL LF:	12400

*UD = Underdrain

*BD = Blind Drain

*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-L-	50+50	53+50	ASU (2)	8		770	1710		
-L-	65+50	66+50	ASU (2)	8		240	530		
-L-	75+25	75+78	ASU (2)	8		100	220		
-L-	77+20	77+50	ASU (2)	8		160	340		
-L-	89+50	92+00	ASU (2)	8		660	1450		
-L-	112+00	112+50	ASU (2)	8		330	720		
-L-	130+50	134+05	ASU (2)	8		1240	2740		
-L-	135+50	136+00	ASU (2)	8		80	170		
-L-	136+00	137+00	ASU (2)	8		300	670		
-L-	137+25	138+50	ASU (2)	8		260	590		
-L-	144+50	145+00	ASU (2)	8		110	250		
-L-	149+25	150+00	ASU (2)	8		370	810		
-L-	165+00	165+50	ASU (2)	8		190	430		
CONTINGENCY			ASU (1)	12	750	1500	2250		
CONTINGENCY			AST	3				500	
CONTINGENCY			ASU (1)	12	750	1500	2250		
			TOTAL CY/TONS/SY:		1500	7810**	15130**	500	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 EMBANKMENT WAITING PERIODS

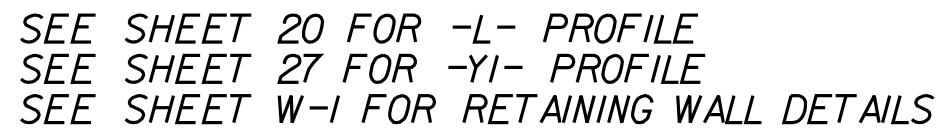
LINE	Station	Station	MONTHS
-L-	64+00	66+00	2

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	-L- 64+00	50	LT
2	-L- 64+50	50	LT
3	-L- 65+00	50	LT
4	-L- 65+50	50	LT
5	-L- 66+00	50	LT
TOTAL GAUGES (EACH):		5	

PROJ. REFERENCE NO.	SHEET NO.
R-5963A	3P-1

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3/5/2025

5/14/99
S 02°09'08" E
253.02'

-Y2-
PI Sta 13+65.93
Δ = 7° 49' 11.5" (RT)
D = 11' 27' 33.0"
L = 68.24'
T = 341.7'
R = 500.00'

-L-
PI Sta 20+72.87
Δ = 22° 14' 43.0" (RT)
D = 2' 51' 53.2"
L = 776.51'
T = 393.20'
R = 2,000.00'
SE = 3.5%
RO = 168'

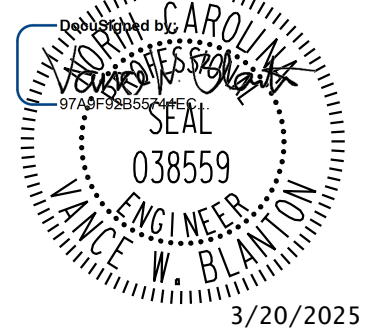
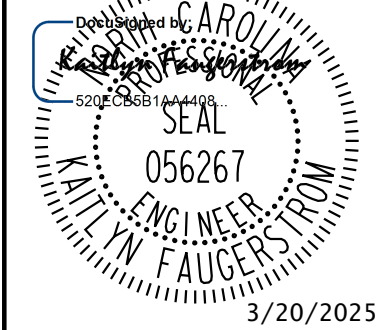
CARLOS GONZALEZ
AND WIFE
SANDRA HIMENEZ
DB 2293 PG 895
PS 94 - 243

①
CPF, LLC
DB 1898 PG 446
PS 2013 - 144

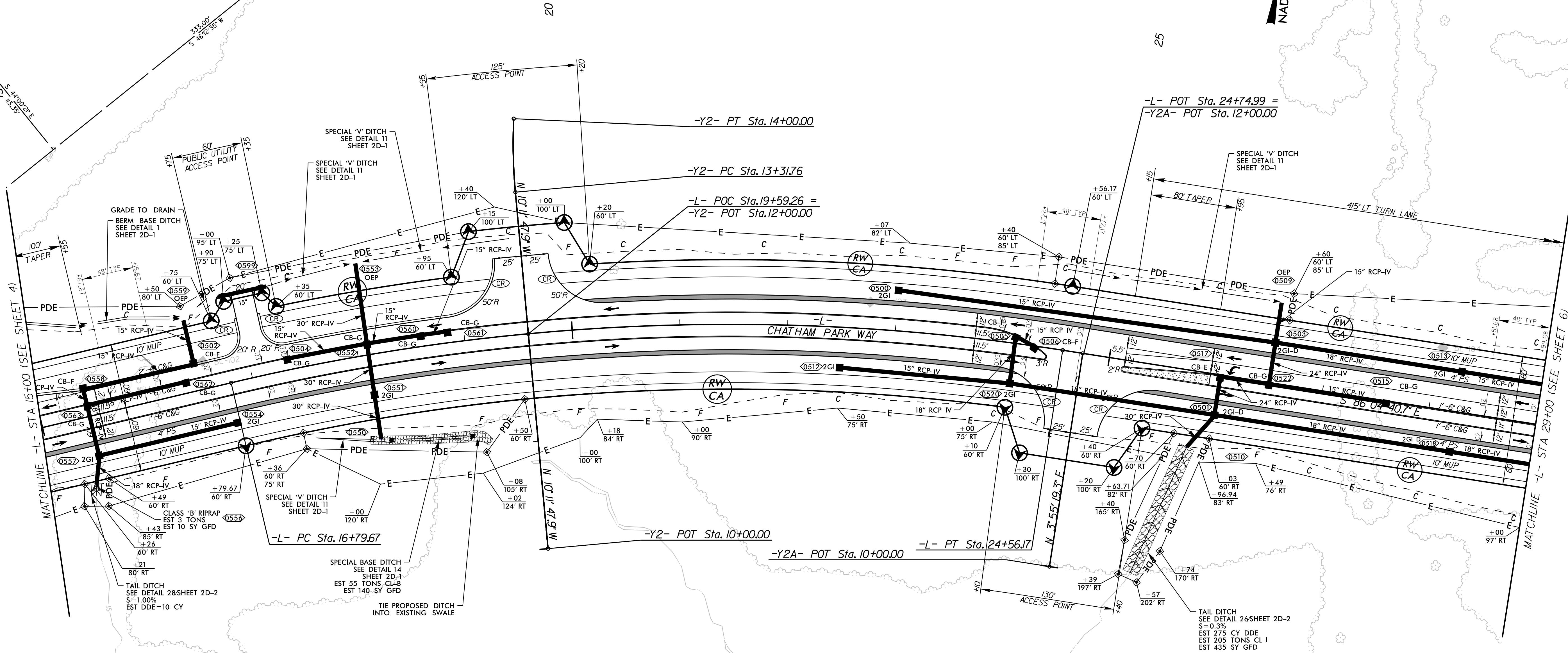
Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.		SHEET NO.
R-5963A		5
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		ENGINEER
		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

NAD 83 / NA 2011



①
CPF, LLC
DB 1898 PG 446
PS 2013 - 144

- ★ TRAFFIC SIGNAL
- PROP. PAVED SHOULDER
- PROP. 5" MONO. CONC. ISLAND

SEE SHEET 20 FOR -L- PROFILE

5/14/99

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REVISIONS

3/5/2025

-L-
PI Sta 37+64.10
 $\Delta = 38^{\circ} 48' 21.1''$ (LT)
 $D = 2^{\circ} 51' 53.2''$
 $L = 1,354.58'$
 $T = 704.43'$
 $R = 2,000.00'$
 $SE = 3.5\%$
 $RO = 168'$

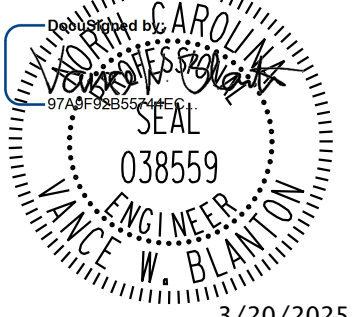
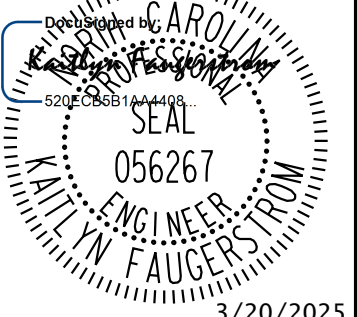
CPF, LLC
DB 1898 PG 446
PS 2013 - 144

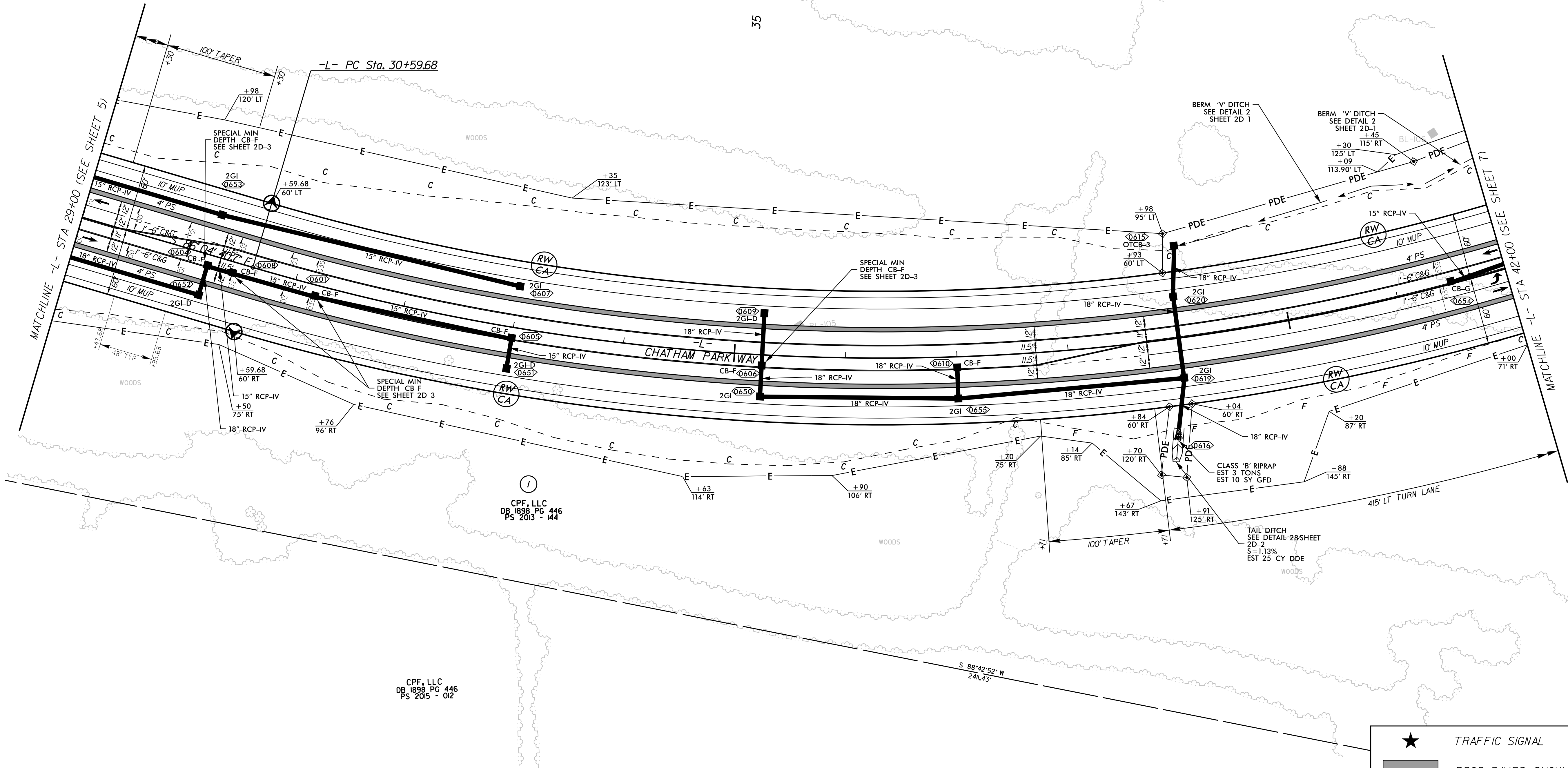
Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

NAD 83 / NA 2011

PROJECT REFERENCE NO.		SHEET NO.
R-5963A		6
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



CPF, LLC
DB 1898 PG 446
PS 2013 - 012

- ★ TRAFFIC SIGNAL
- PROP. PAVED SHOULDER
- PROP. 5" MONO. CONC. ISLAND

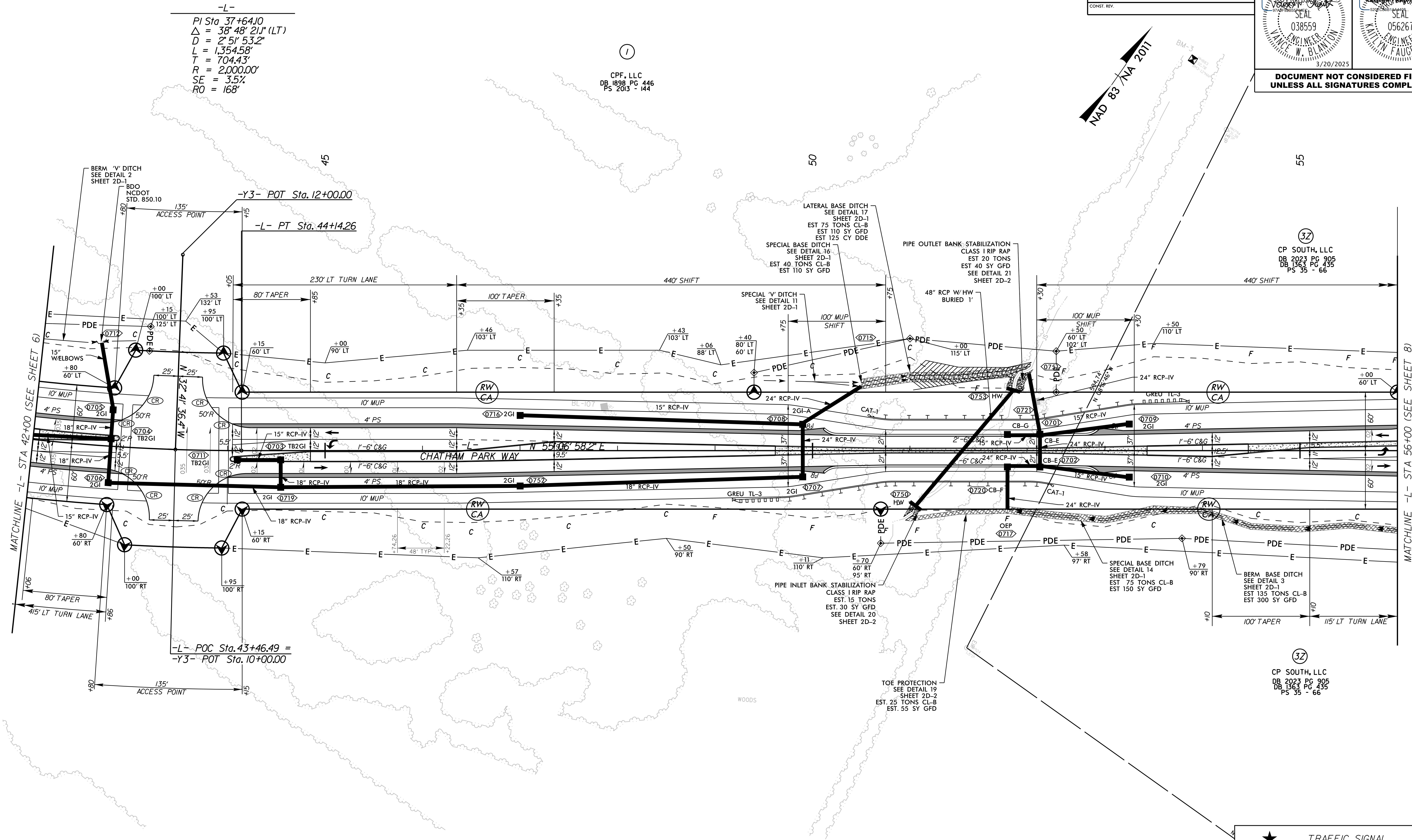
SEE SHEET 21 FOR -L- PROFILE

5/14/99

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REVISIONS

3/10/2025



-L-
PI Sta 37+64.10
 $\Delta = 38^{\circ} 48' 21.1''$ (LT)
 $D = 2^{\circ} 51' 53.2''$
 $L = 1,354.58'$
 $T = 704.43'$
 $R = 2,000.00'$
 $SE = 3.5\%$
 $RO = 168'$

CPF, LLC
DB 1898 PG 446
PS 2013 - 144

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

PROJECT REFERENCE NO.		SHEET NO.
R-5963A		7
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		ENGINEER

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

- ★ TRAFFIC SIGNAL
- PROP. PAVED SHOULDER
- PROP. 5" MONO. CONC. ISLAND

SEE SHEET 21 FOR -L- PROFILE

Kimley»Horn

421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601
PE NO. F-0102

RIGHT-OF-WAY REV.
CONST. REV.

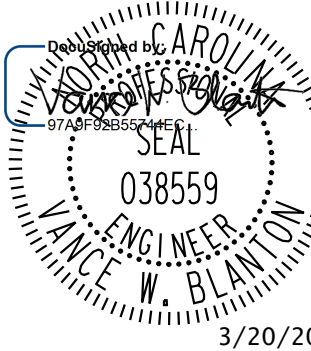
PROJECT REFERENCE NO.

R-5963A

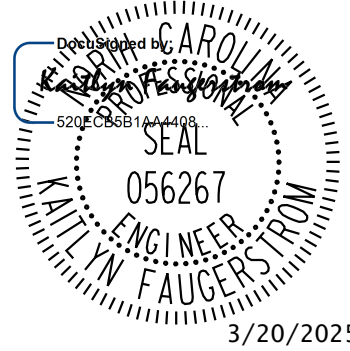
SHEET NO.

8

ROADWAY DESIGN
ENGINEER



HYDRAULICS
ENGINEER



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-Y4-

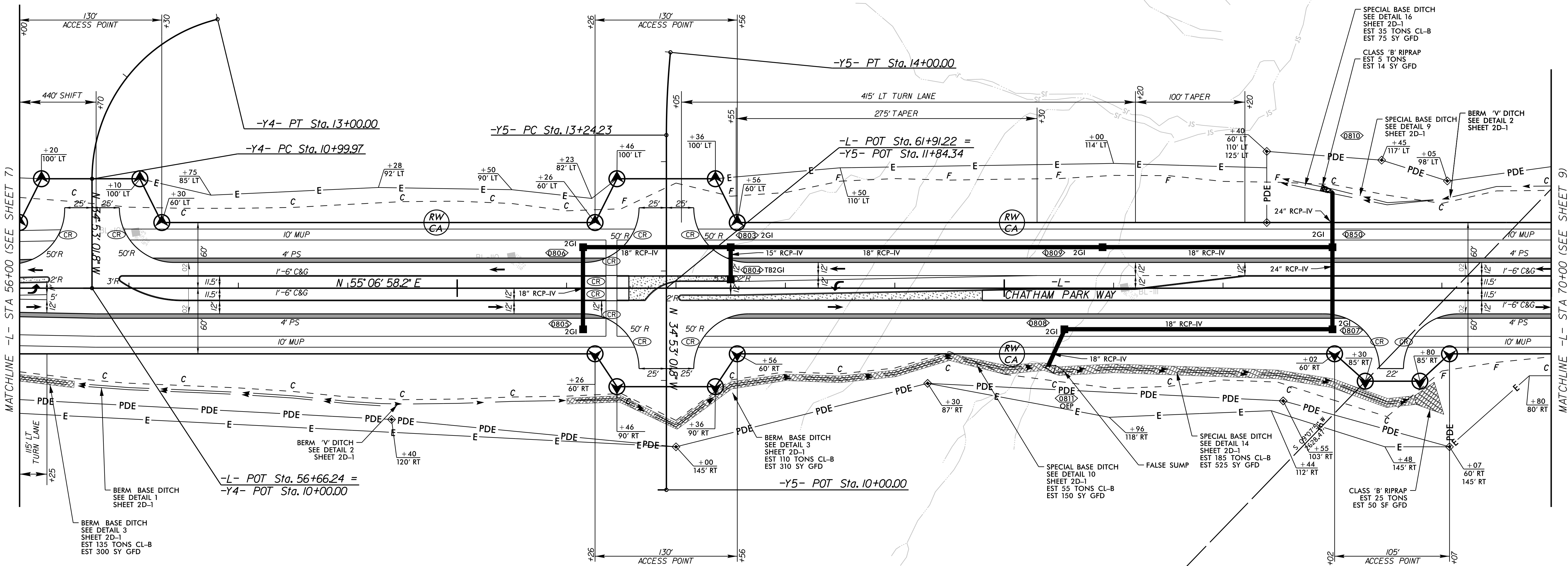
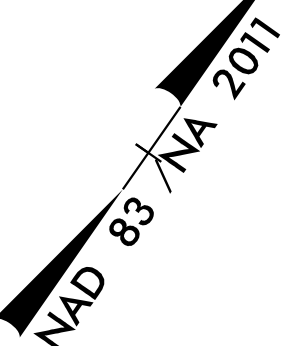
PI Sta 12+18.02
 $\Delta = 76' 24' 19.1''$ (RT)
 $D = 38' 11' 49.9''$
 $L = 200.03'$
 $T = 118.05'$
 $R = 150.00'$

-Y5-

PI Sta 13+62.14
 $\Delta = 5' 35' 01.4''$ (RT)
 $D = 7' 22' 09.2''$
 $L = 75.77'$
 $T = 37.92'$
 $R = 777.50'$

32

CP SOUTH, LLC
DB 2023 PG 905
DB 1363 PG 435
PS 35 - 66



32

CP SOUTH, LLC
DB 2023 PG 905
DB 1363 PG 1032
PS 35 - 66



TRAFFIC SIGNAL



PROP. PAVED SHOULDER



PROP. 5" MONO. CONC. ISLAND

SEE SHEET 22 FOR -L- PROFILE

-L-			-Y6-		-RBT -	
PI Sta 76+85.97	PI Sta 78+95.29	PI Sta 80+50.85	PI Sta 11+38.37	PI Sta 10+00.00		
$\Delta = 4^{\circ}05'50.5" \text{ (LT)}$	$\Delta = 15^{\circ}53'49.5" \text{ (RT)}$	$\Delta = 13^{\circ}50'51.4" \text{ (LT)}$	$\Delta = 26^{\circ}23'37.7" \text{ (LT)}$	$\Delta = 359^{\circ}59'56.1" \text{ (LT)}$		
D = 5'43'46.5"	D = 9'32'57.5"	D = 9'32'57.5"	D = 21'01'33.5"	D = 104'10'26.9"		
L = 71.51'	L = 166.47'	L = 145.01'	L = 125.53'	L = 345.57'		
T = 35.77'	T = 83.77'	T = 72.86'	T = 63.90'	T = 0.00'		
R = 1,000.00'	R = 600.00'	R = 600.00'	R = 272.50'	R = 55.00'		
-Y7-						
PI Sta 10+77.69	PI Sta 14+89.77	PI Sta 15+70.66	PI Sta 17+41.79	PI Sta 18+22.41	PI Sta 19+85.16	
$\Delta = 0^{\circ}13'21.2" \text{ (LT)}$	$\Delta = 7^{\circ}36'59.6" \text{ (LT)}$	$\Delta = 15^{\circ}41'01.4" \text{ (RT)}$	$\Delta = 14^{\circ}39'51.1" \text{ (LT)}$	$\Delta = 10^{\circ}55'53.8" \text{ (RT)}$	$\Delta = 4^{\circ}50'45.2" \text{ (RT)}$	
D = 0'08'35.7"	D = 8'11'06.4"	D = 22'55'05.9"	D = 22'55'05.9"	D = 11'14'04.1"	D = 2'07'19.4"	
L = 155.37'	L = 93.05'	L = 68.43'	L = 63.98'	L = 97.30'	L = 228.36'	
T = 77.69'	T = 46.60'	T = 34.43'	T = 32.17'	T = 48.80'	T = 114.25'	
R = 40,000.00'	R = 700.00'	R = 250.00'	R = 250.00'	R = 510.00'	R = 2,700.00'	

