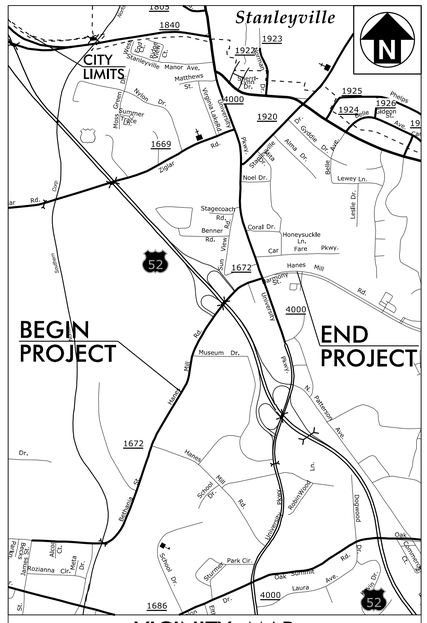
09/08/49

TIP PROJECT: U–2729

CONTRACT: C204837

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

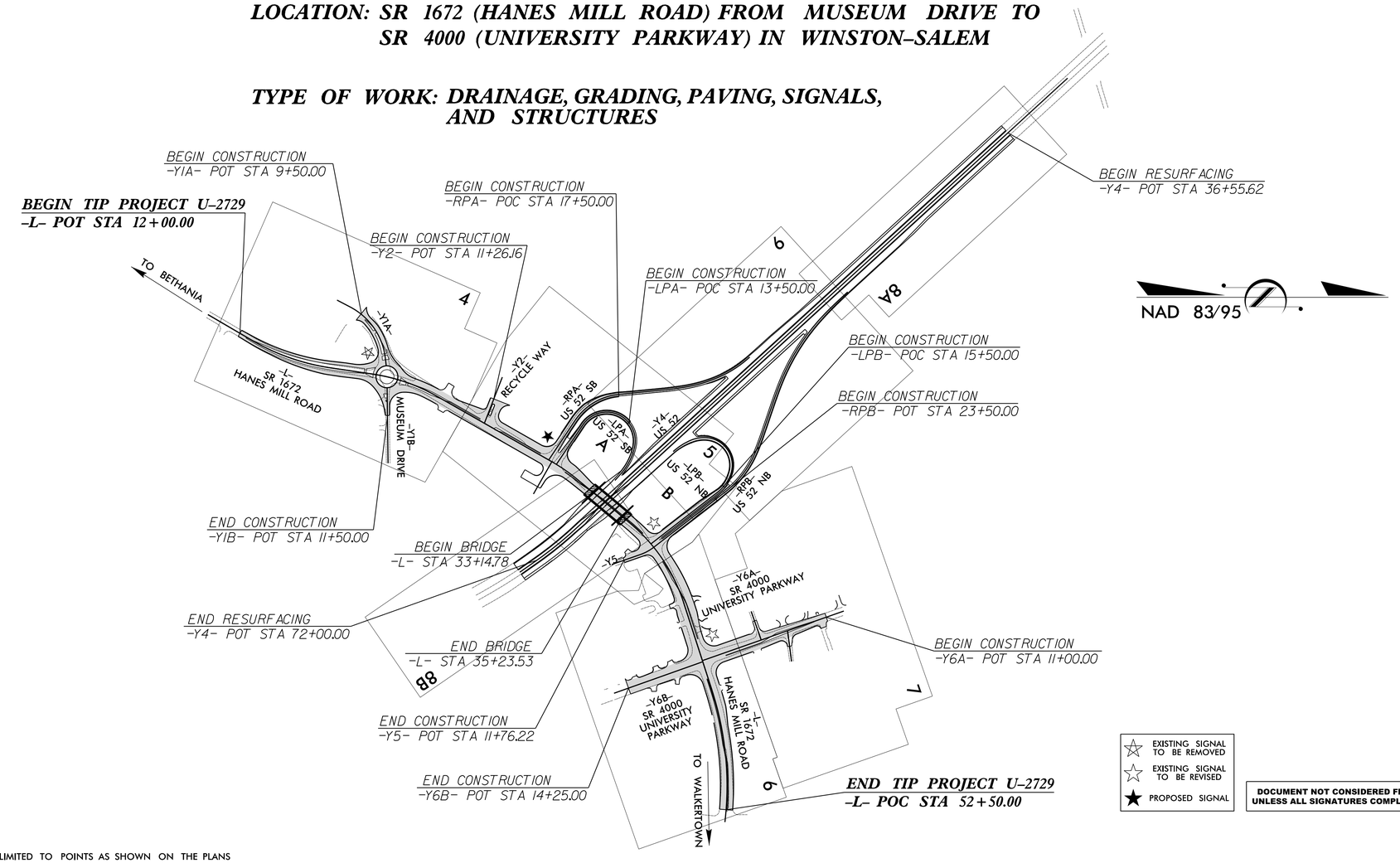
FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–2729	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34853.1.2		PE
34853.2.2		R/W UTIL.
34853.3.3		CONST.

LOCATION: SR 1672 (HANES MILL ROAD) FROM MUSEUM DRIVE TO SR 4000 (UNIVERSITY PARKWAY) IN WINSTON–SALEM

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS IS A PARTIAL CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

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 2023 = 20,222
ADT 2043 = 23,138
K = 8 %
D = 60 %
T = 5 % *
V = 50 MPH
* (TTST 1% + DUAL 4%)
FUNC CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–2729 = 0.727 MILES
LENGTH STRUCTURE TIP PROJECT U–2729 = 0.040 MILES
TOTAL LENGTH OF TIP PROJECT U–2729 = 0.767 MILES

TOTAL PROJECT LENGTH BASED ON –L– STATIONS.

PLANS PREPARED FOR THE NCDOT BY:

MOTT MACDONALD
7621 Parfoy Road, Suite 115
Fuquay-Varina, NC 27526
(919) 552-2253
(919) 552-2254 (Fax)
www.mottmac.com
NC License No. F-0669

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 15, 2019

LETTING DATE:
JUNE 20, 2023

DAVID C. WALLER, PE
PROJECT ENGINEER
PEF ENGINEER

HUDSON COKER
PROJECT DESIGN ENGINEER
PEF ENGINEER

CONNIE JAMES, PE
NCDOT DIVISION PROJECT ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042084 ENGINEER JOSHUA J. MASSROCK P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11:03:27 AM
R:\Roadway\Proj\u2729_rdy_tsh.dgn
COK8259

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

MOTT MACDONALD I & E, LLC
LICENSE NO. F-0669

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Prepared in the Office of:
MOTT MACDONALD
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Fuquay-Varina, NC 27526
www.mottmac.com
NC License No. F-0669

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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. 560.02

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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 Power: Duke Energy: Water: City of Winston-Salem: Sewer: City of Winston-Salem:

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 848.05 and/or 848.06.

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.04	Guide for Paving Shoulders Under Bridges - Method IV
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
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
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
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	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
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
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

INDEX OF SHEETS

5/15/2023
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dkeziah

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
U-2729	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.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

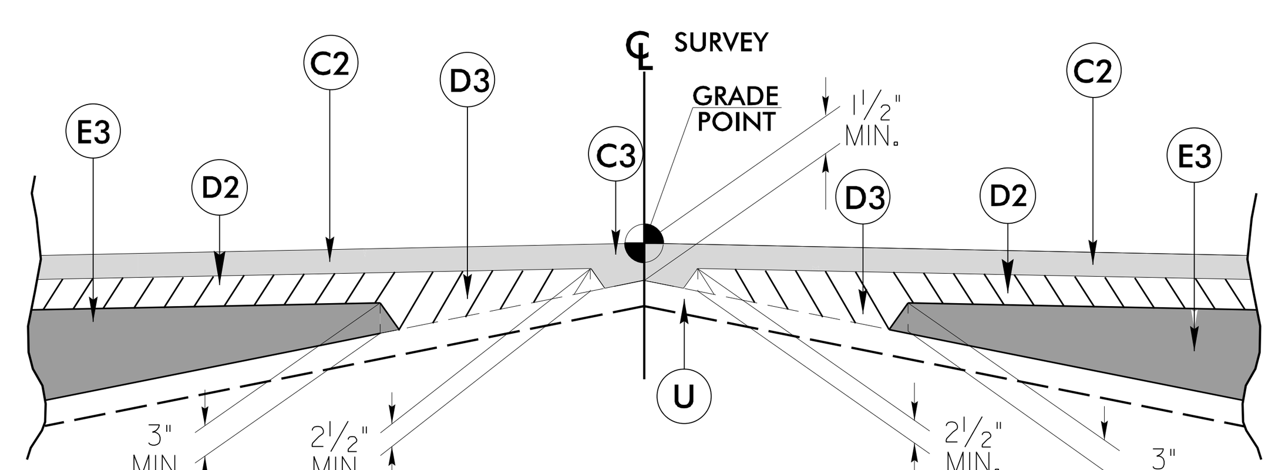
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18969 ENGINEER CONNIE K. JAMES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

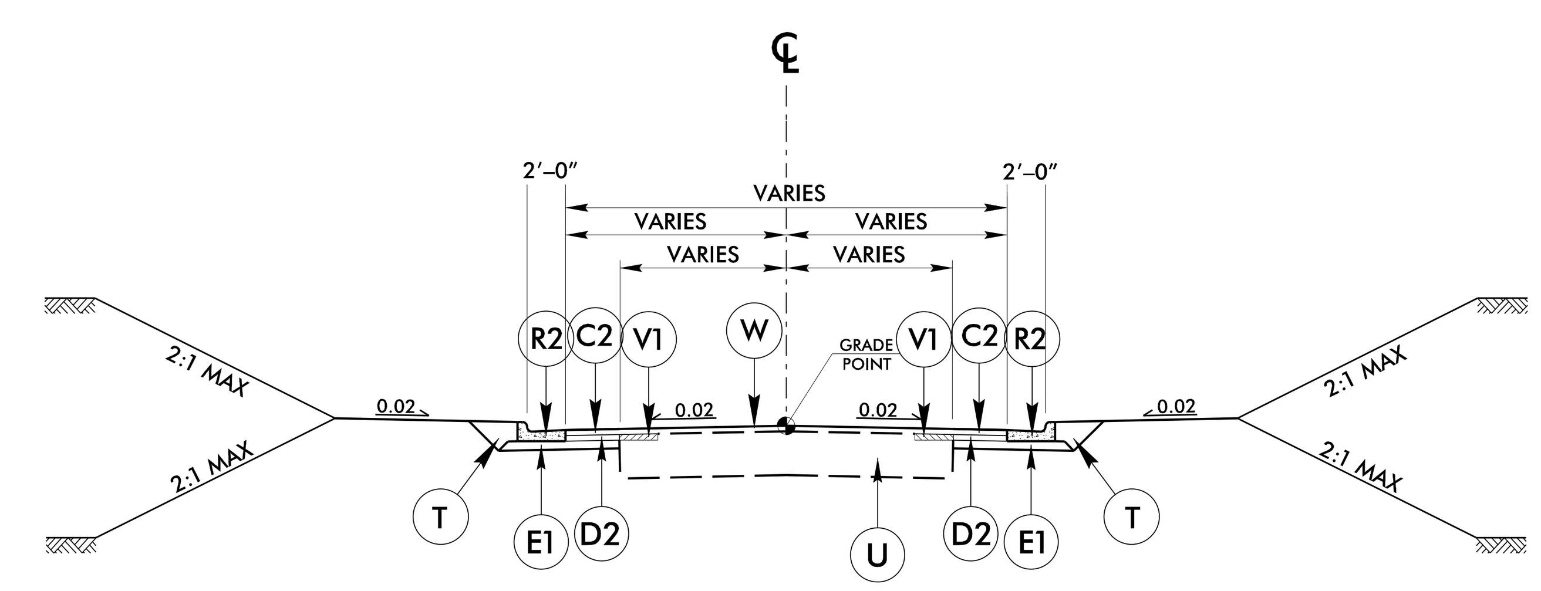
Prepared in the Office of: MOTT MACDONALD — Mott MacDonald I & E, LLC, 7621 Purfoy Road, Suite 115, Fuquay-Varina, NC 27526, www.mottmac.com, NC License No. F-0669

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN 11/23/22)

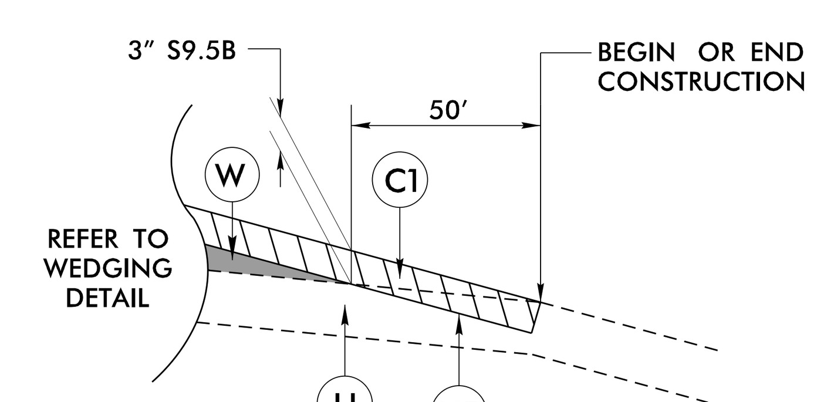
A1	9" PORTLAND CONCRETE APRON	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	S	4" CONCRETE SIDEWALK.
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	F	PROP. APPROX. 5/8" ULTRATHIN HOT MIX BONDED WEARING SURFACE COURSE, AT AN AVERAGE RATE OF 70 LBS. PER SQ. YD.	T	EARTH MATERIAL.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	K	CLASS IV SUBGRADE STABILIZATION	U	EXISTING PAVEMENT.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.	N	GEOTEXTILE FOR SUBGRADE STABILIZATION	V1	2' X 4" BENCH MILL
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C TO BE APPLIED AT AN AVERAGE RATE OF 168 LBS PER SQ YD.	R1	1'-6" CONCRETE CURB AND GUTTER.	V2	MILL ASPHALT PAVEMENT, 6" DEPTH
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.	V3	MILLED RUMBLE STRIP
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	2'-6" CONCRETE CURB AND GUTTER MODIFIED. (SEE DETAIL, SHEET 2A-7)	V4	5/8" FINE MILLING
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R4	2'-0" MODIFIED VALLEY GUTTER. (SEE DETAIL, SHEET 2A-7)	V5	INCIDENTAL MILLING
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	5" MONOLITHIC ISLAND (KEYED IN).	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL NO. 1)
E2	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TO BE APPLIED AT AN AVERAGE RATE OF 513 LBS PER SQ YD.	R6	8" X 12" CONCRETE CURB		NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



W – Detail Showing Method of Wedging

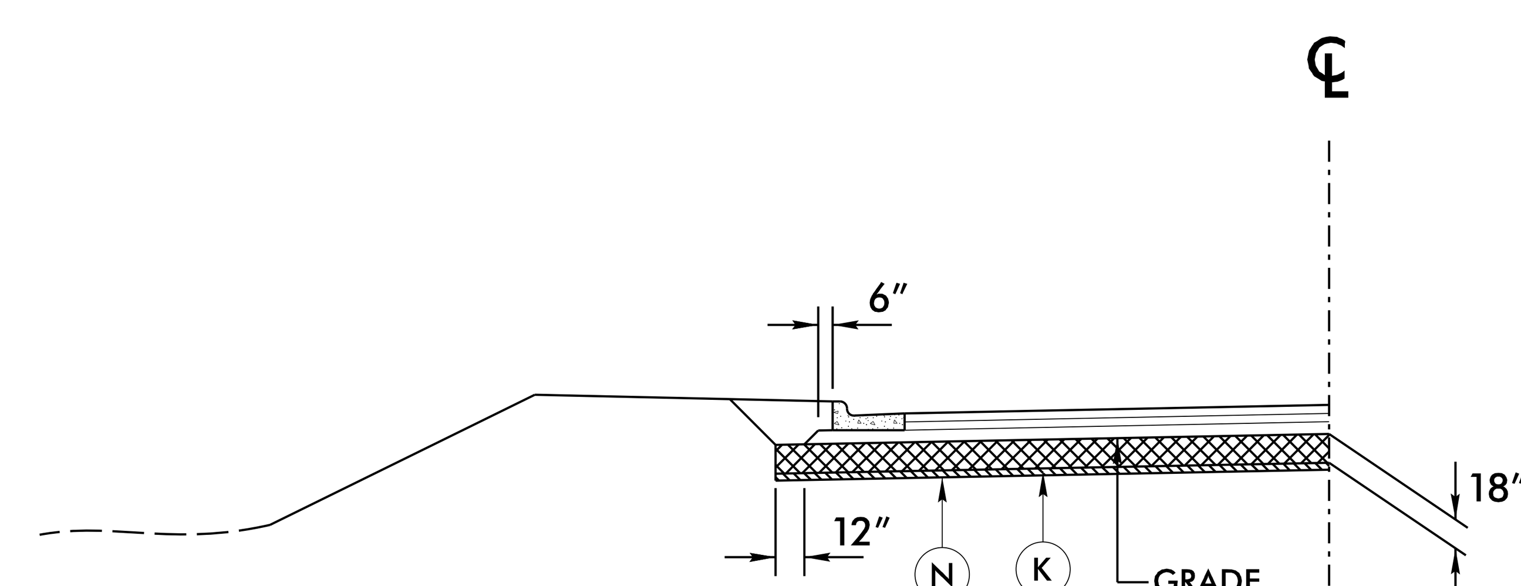


BENCH MILL DETAIL



INCIDENTAL MILLING DETAIL

DETAIL SHOWING PROFILE VIEW

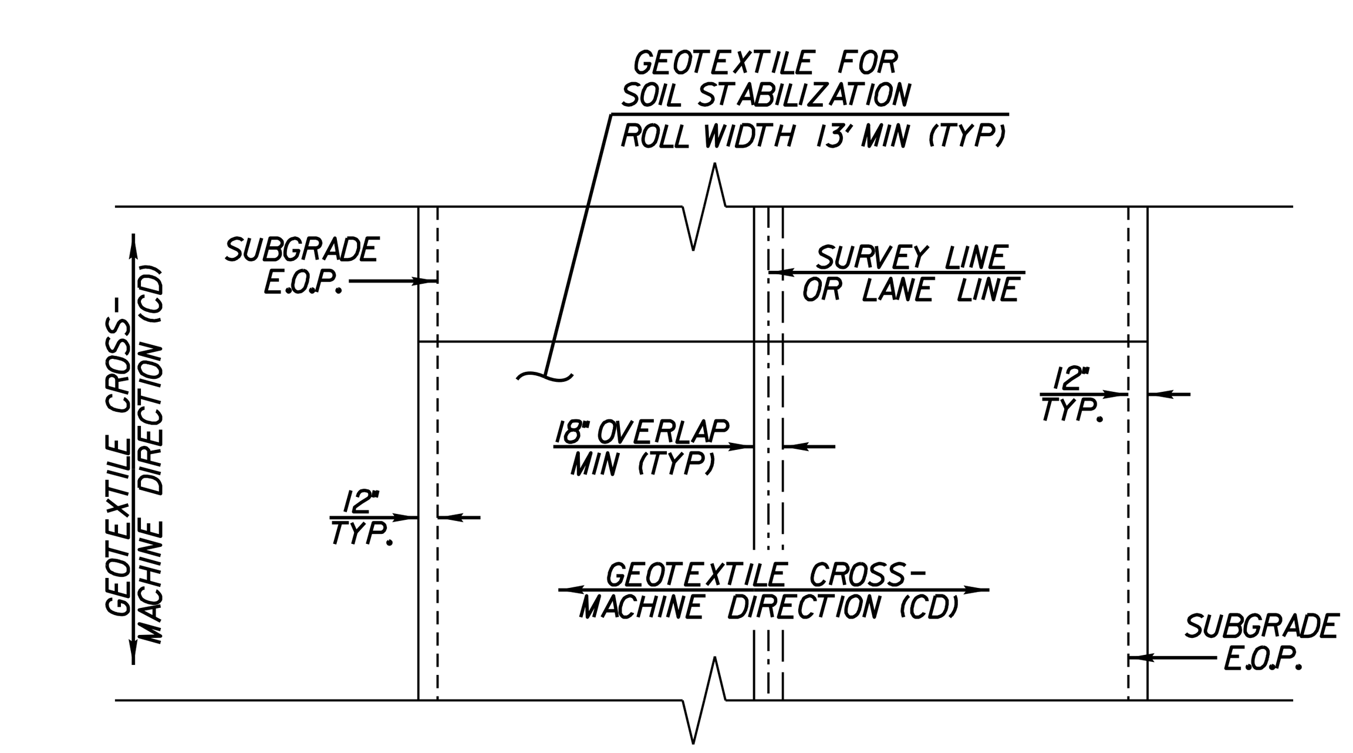


*USE IN ALL AREAS OF SUBGRADE STABLIZATION

DETAIL FOR SHALLOW UNDERCUT

-L- STA. 38+25 TO 40+75 LT/RT

-Y6A- STA. 15+25 TO 17+75 LT/RT



GEOTEXTILE FOR SOIL STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18969 ENGINEER CONNIE K. JAMES

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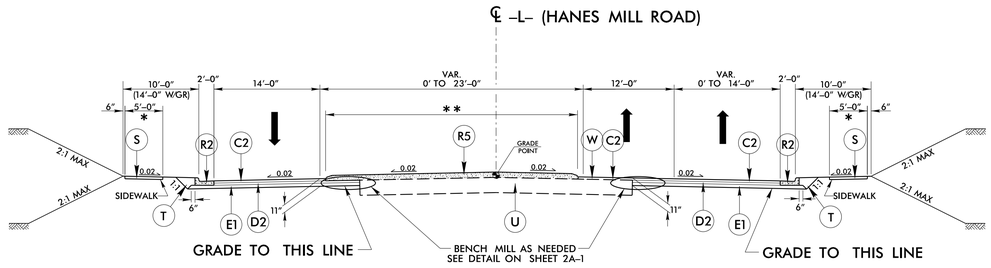
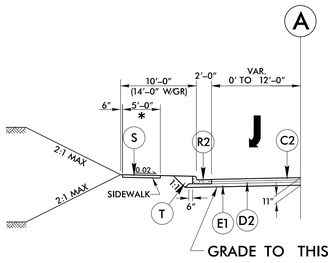


* SIDEWALK AS SHOWN ON PLANS
** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS AND ISLAND DETAILS SHEETS 2B–5 THRU 2B–8

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 12 + 00.00 TO 19 + 61.19

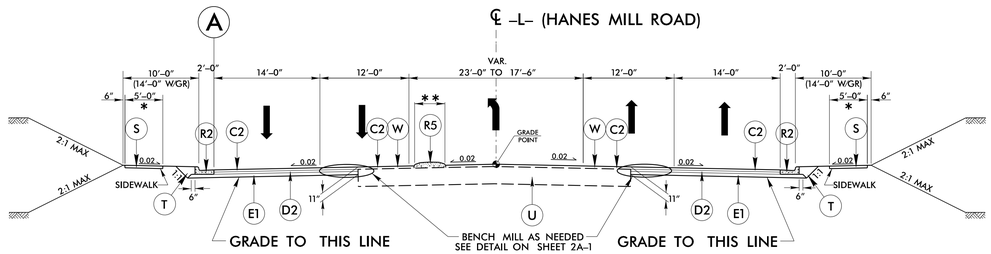


PARTIAL TYPICAL SECTION NO. 2A

USE PARTIAL TS NO. 2A IN CONJUNCTION WITH TS NO. 2
–L– STA. 26 + 00.00 TO 28 + 00.00 LT
–L– STA. 37 + 50.00 TO 39 + 00.00 LT

USE PARTIAL TS NO. 2A IN CONJUNCTION WITH TS NO. 3
–L– STA. 28 + 00.00 TO 32 + 80.00 LT
–L– STA. 39 + 00.00 TO 41 + 70.00 LT

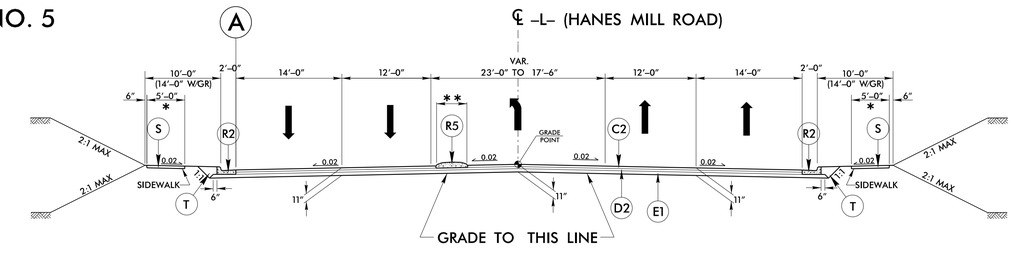
USE PARTIAL TS NO. 2A IN CONJUNCTION WITH TS NO. 5
–L– STA. 41 + 70.00 TO 42 + 70.00 LT



* SIDEWALK AS SHOWN ON PLANS
** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS AND ISLAND DETAILS SHEETS 2B–5 THRU 2B–8

TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 21 + 09.23 TO 28 + 00.00
–L– STA. 36 + 50.00 TO 41 + 70.00



* SIDEWALK AS SHOWN ON PLANS
** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 28 + 00.00 TO 33 + 14.78 (BEGIN BRIDGE)
–L– STA. 35 + 23.53 (END BRIDGE) TO 36 + 50.00

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

12:44:19 PM
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[DK8251]

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-3

ROADWAY DESIGN ENGINEER — SEAL 22606, NORTH CAROLINA PROFESSIONAL ENGINEER, DAVID C. WALLER

PAVEMENT DESIGN ENGINEER — SEAL 18969, NORTH CAROLINA PROFESSIONAL ENGINEER, CONNIE K. JAMES

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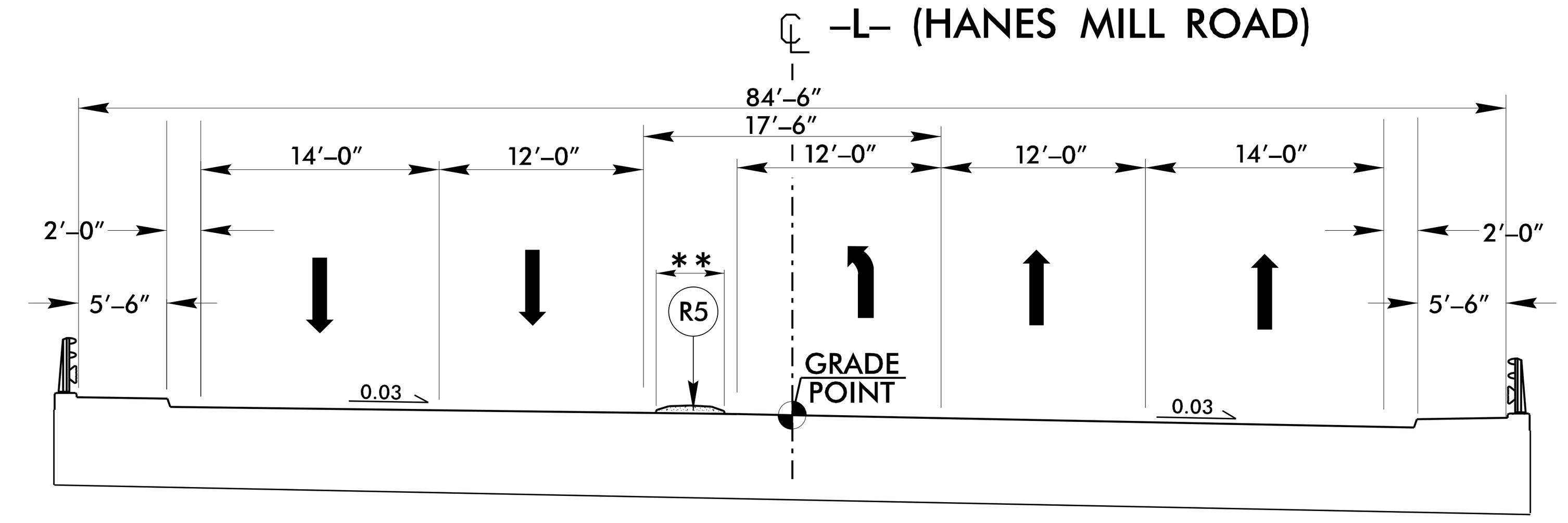
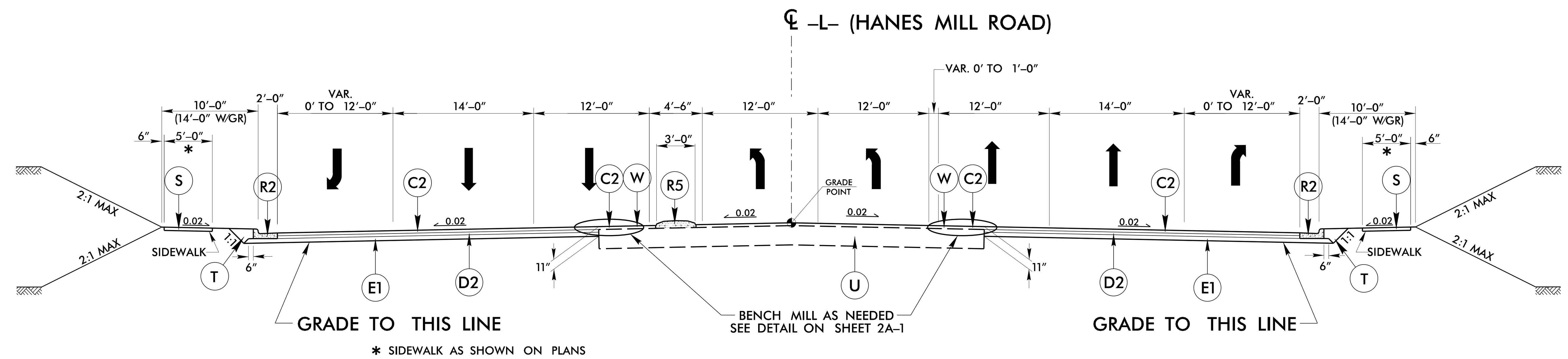


** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS

BRIDGE TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

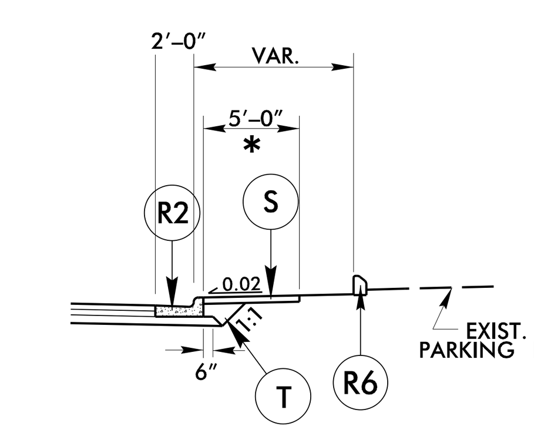
-L- STA. 33+14.78 (BEGIN BRIDGE) TO 35+23.53 (END BRIDGE)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

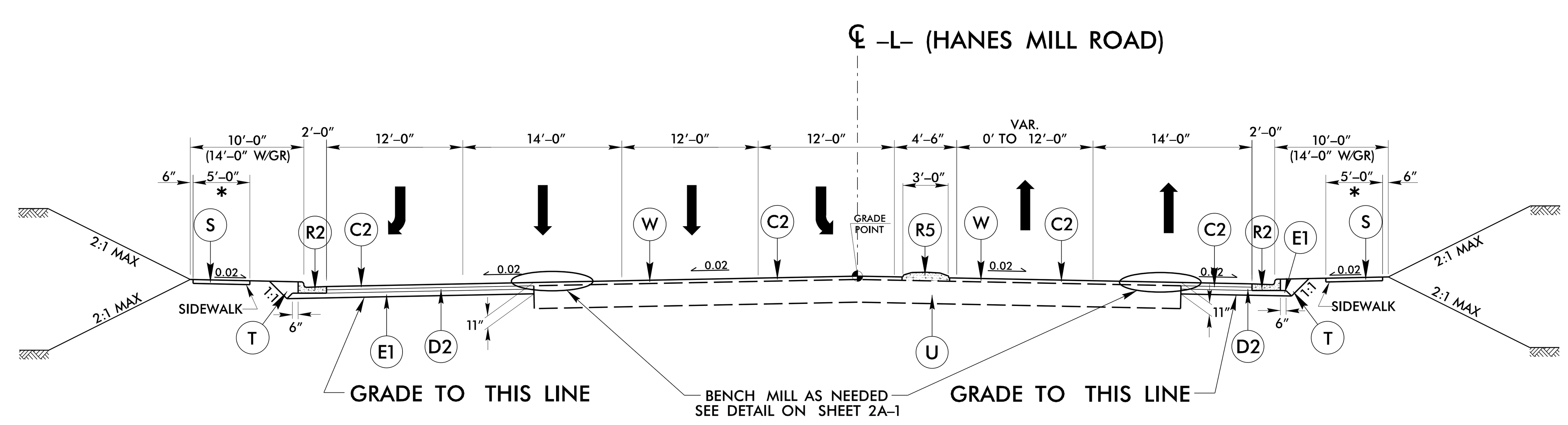
-L- STA. 41+70.00 TO 43+92.00



DETAIL A

BERM WITH CONCRETE CURB

USE DETAIL A FROM -L- 41+24.11 TO 41+88.04 RT
USE DETAIL A FROM -L- 42+28.05 TO 43+69.22 RT
USE DETAIL A FROM -L- 45+21.22 TO 47+24.16 RT
USE DETAIL A FROM -L- 47+75.20 TO 48+03.35 RT



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-L- STA. 43+92.00 TO 52+50.00

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
R6	8" X 12" CONC. CURB
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18969 ENGINEER CONNIE K. JAMES

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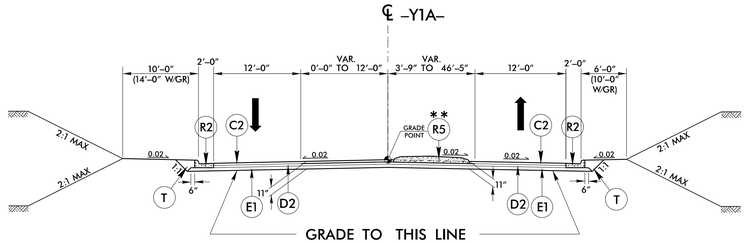
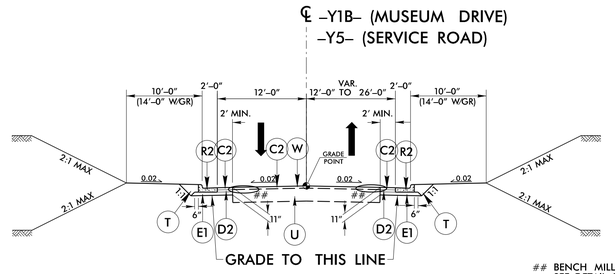


** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS

TYPICAL SECTION NO. 7

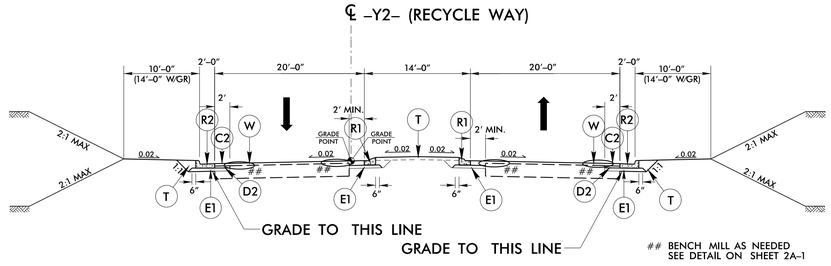
USE TYPICAL SECTION NO. 7
–Y1A– STA. 9+50.00 TO 12+39.27



BENCH MILL AS NEEDED SEE DETAIL ON SHEET 2A–1

TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–Y1B– STA. 10+31.00 TO 11+50.00
–Y5– STA. 10+34.92 TO 11+76.22



BENCH MILL AS NEEDED SEE DETAIL ON SHEET 2A–1

TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
–Y2– STA. 11+26.16 TO 12+28.89

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22606 DAVID C. WALLER

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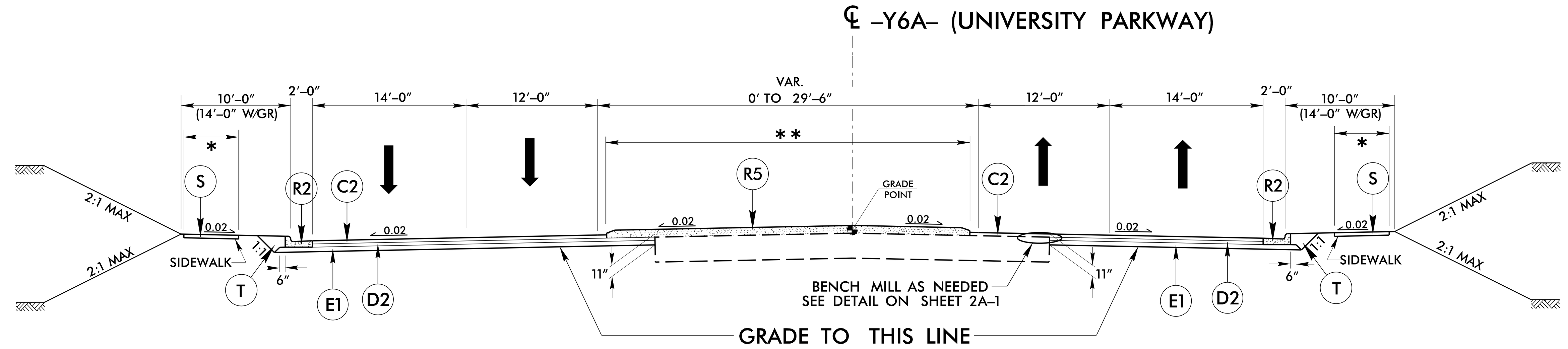
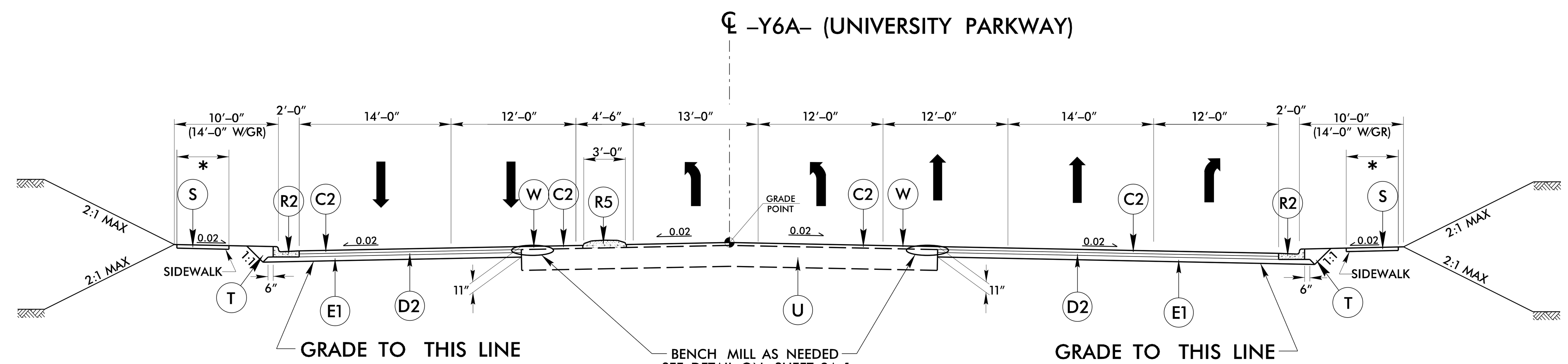


* SIDEWALK AS SHOWN ON PLANS
** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS

TYPICAL SECTION NO. 10

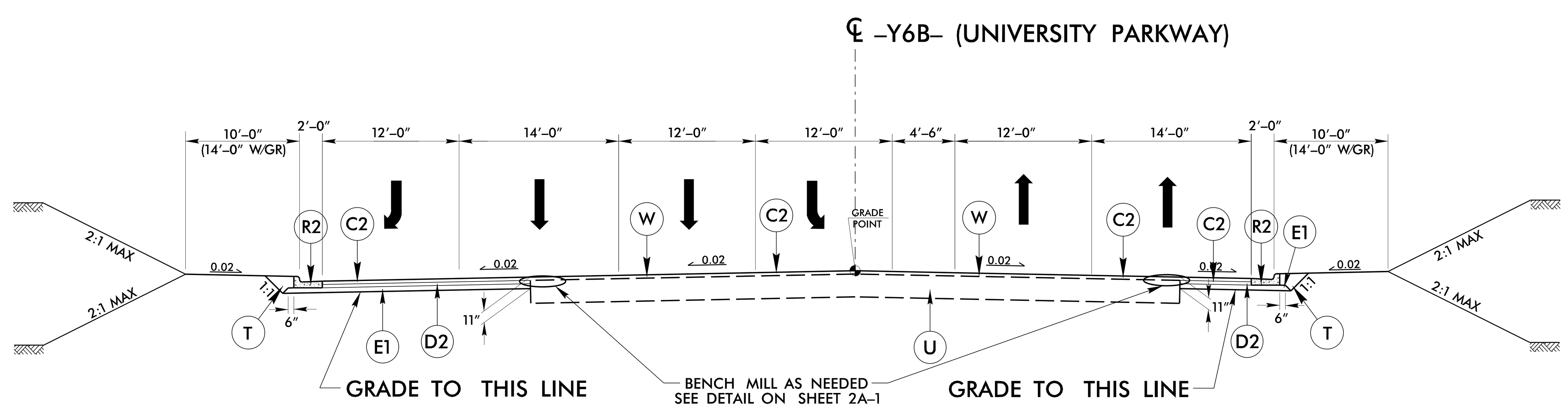
USE TYPICAL SECTION NO. 10
-Y6A- STA. 11+00.00 TO 14+80.00



* SIDEWALK AS SHOWN ON PLANS

TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-Y6A- STA. 14+80.00 TO 17+61.50



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
-Y6B- STA. 10+52.77 TO 14+25.00

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-6

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22606 DAVID C. WALLER	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18969 CONNIE K. JAMES

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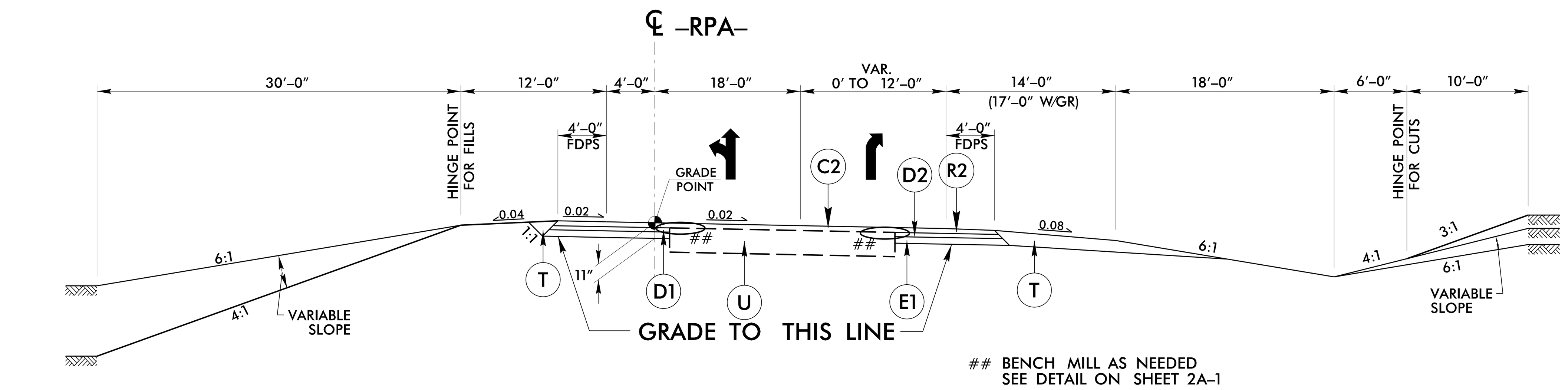
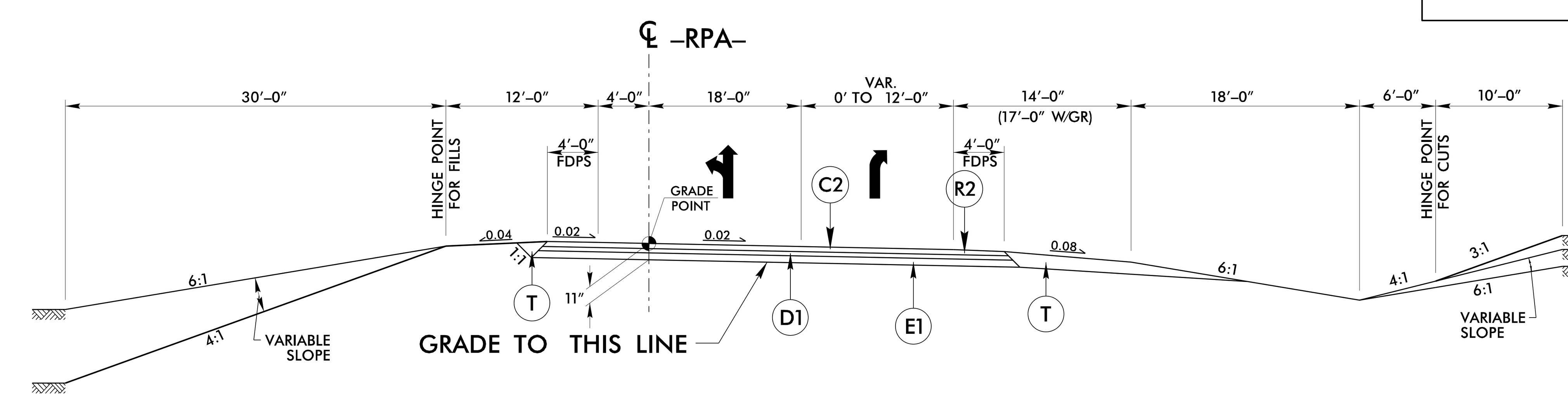


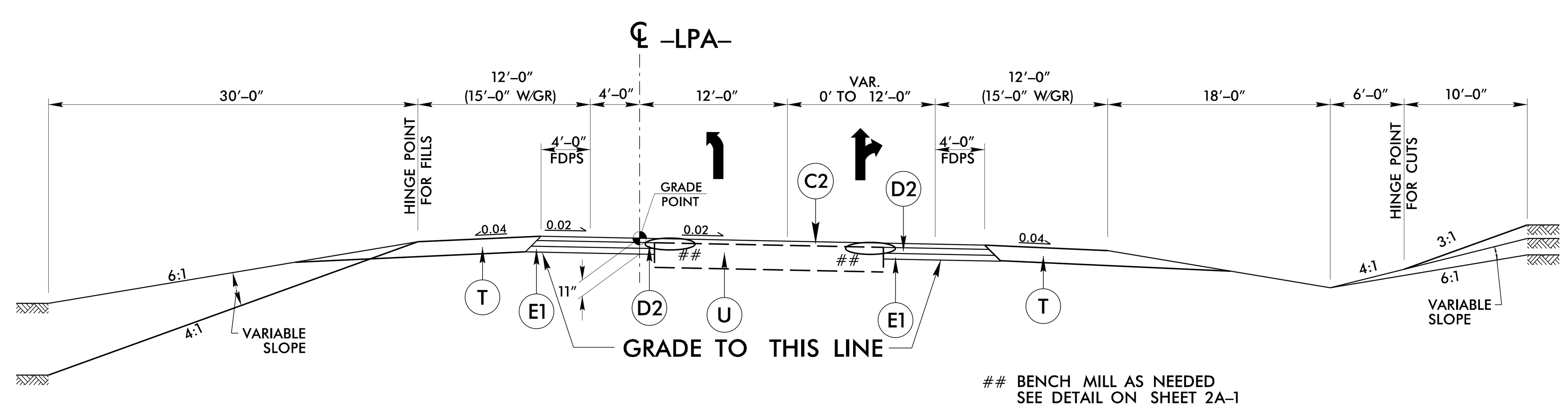
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
-RPA- STA. 17+50.00 TO 20+50.00



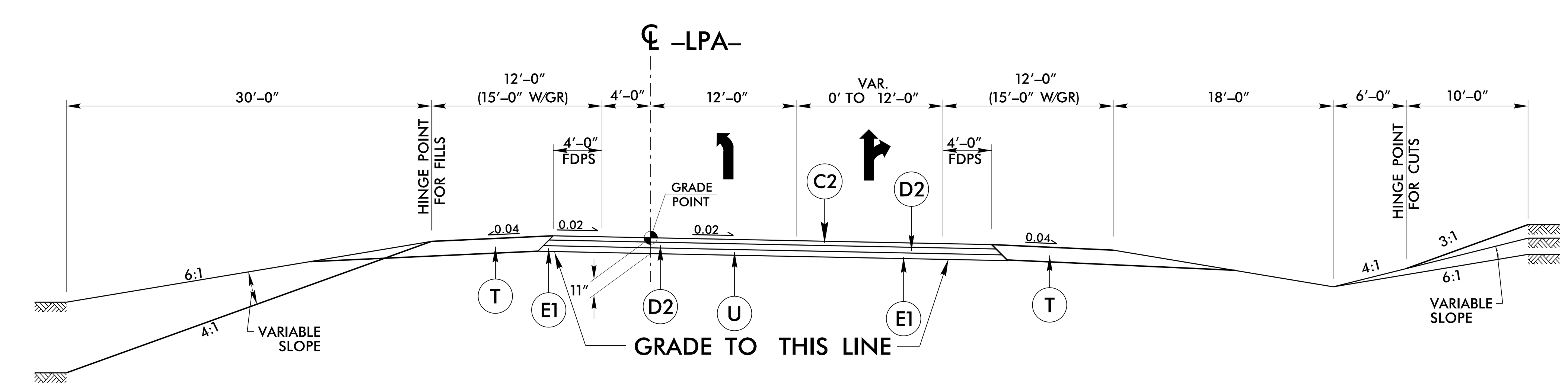
TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
-RPA- STA. 20+50.00 TO 21+32.03



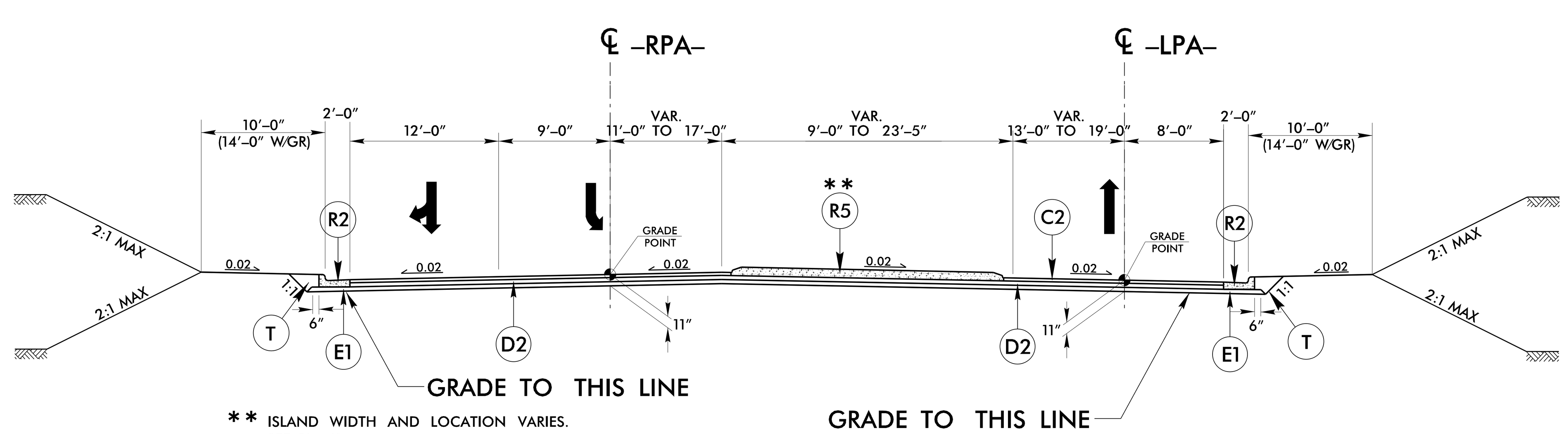
TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
-LPA- STA. 13+50.00 TO 16+15.92



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16
-LPA- STA. 16+15.92 TO 17+42.91



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
-RPA- STA. 21+32.03 TO 22+39.90
-LPA- STA. 17+42.91 TO 18+47.69

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2A-7

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22606 DAVID C. WALLER

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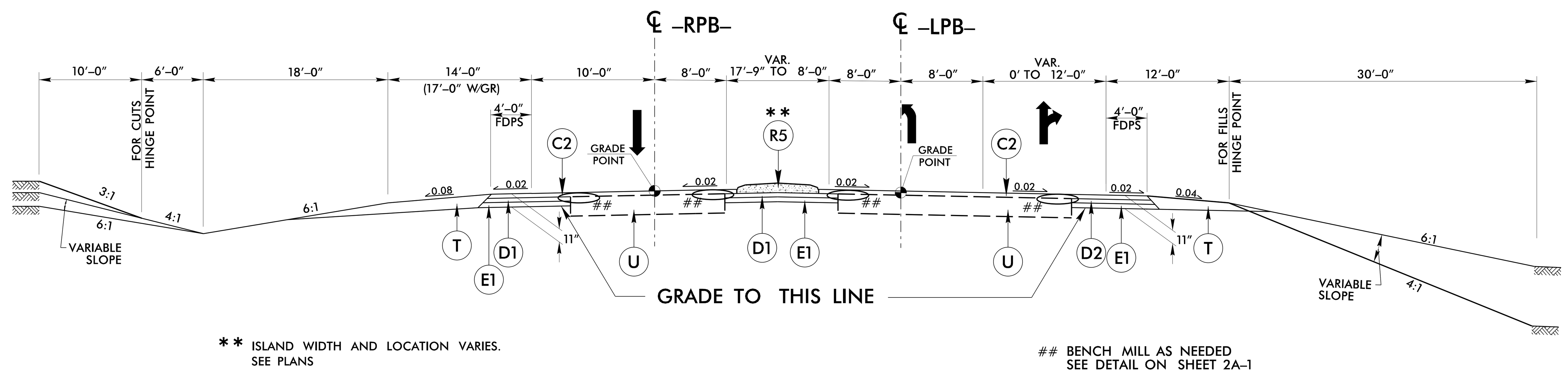
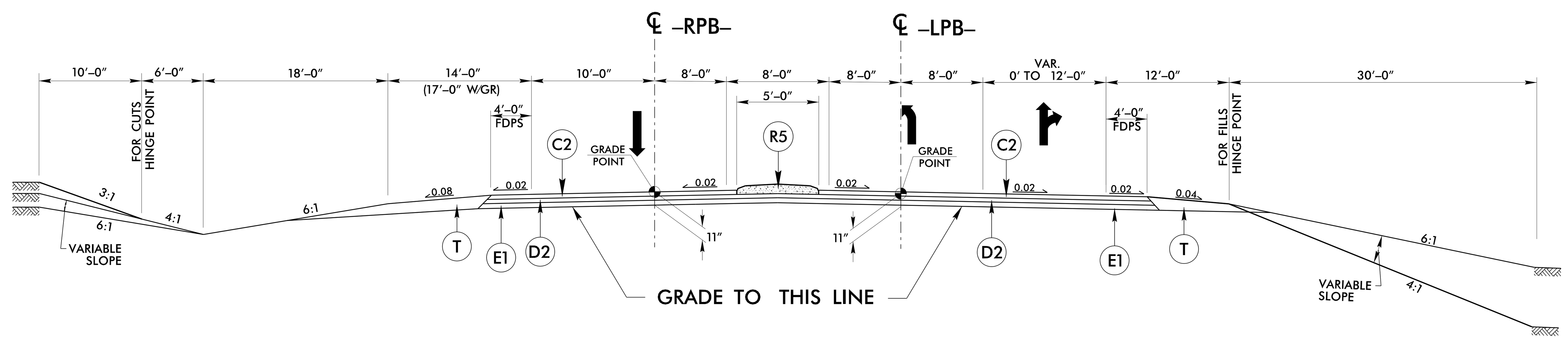


** ISLAND WIDTH AND LOCATION VARIES. SEE PLANS

BENCH MILL AS NEEDED SEE DETAIL ON SHEET 2A-1

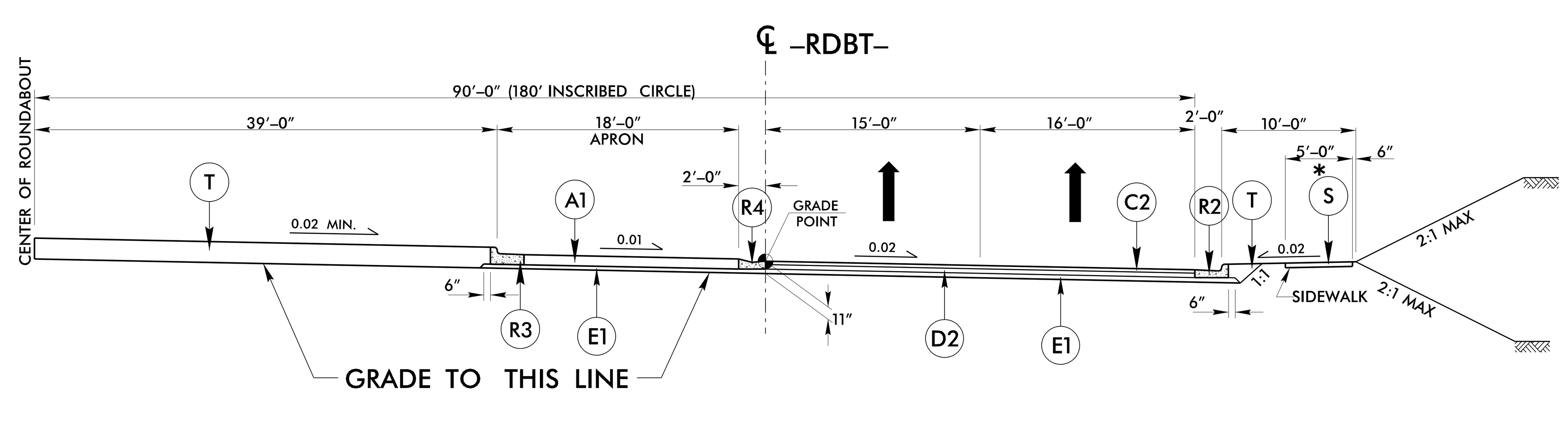
TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18
-RPB- STA. 23+50.00 TO 25+00.00
-LPB- STA. 15+50.00 TO 17+75.12



TYPICAL SECTION NO. 19

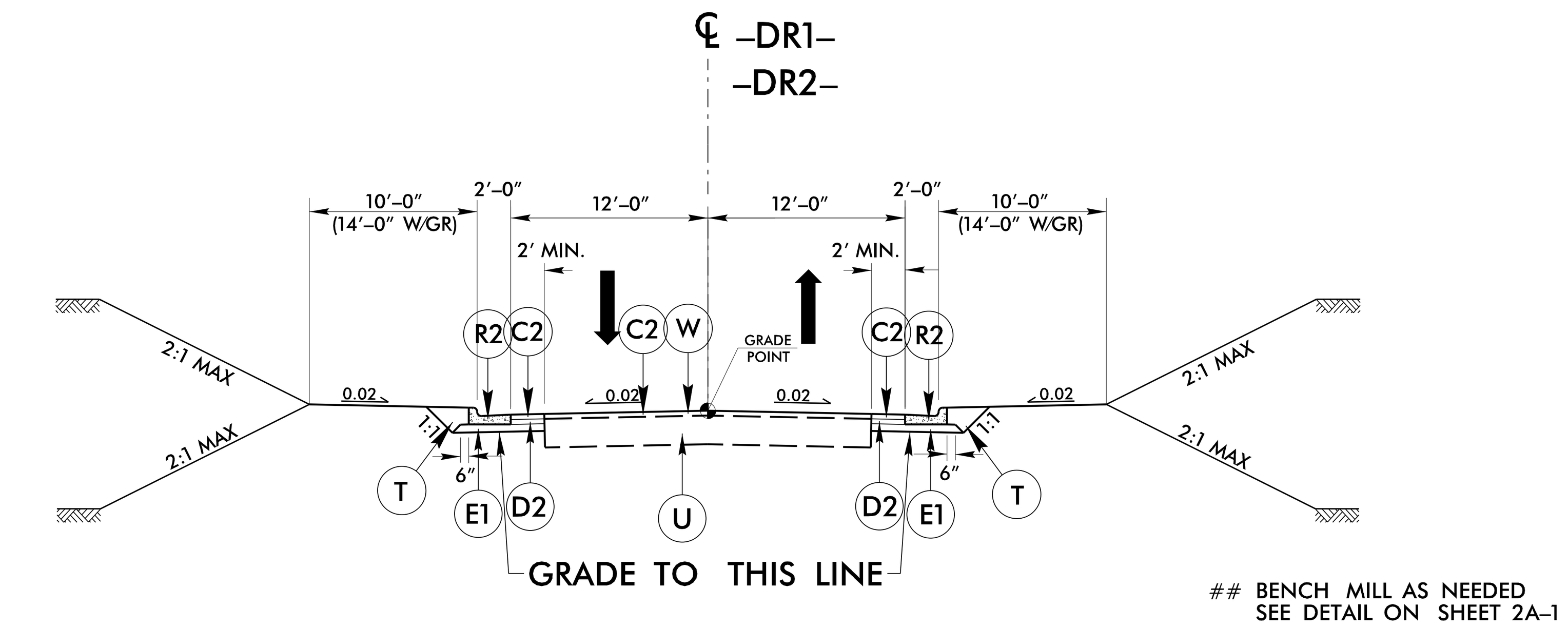
USE TYPICAL SECTION NO. 19
-RPB- STA. 25+00.00 TO 27+27.58
-LPB- STA. 17+75.12 TO 20+03.45



* SIDEWALK AS SHOWN ON PLANS

TYPICAL SECTION NO. 20

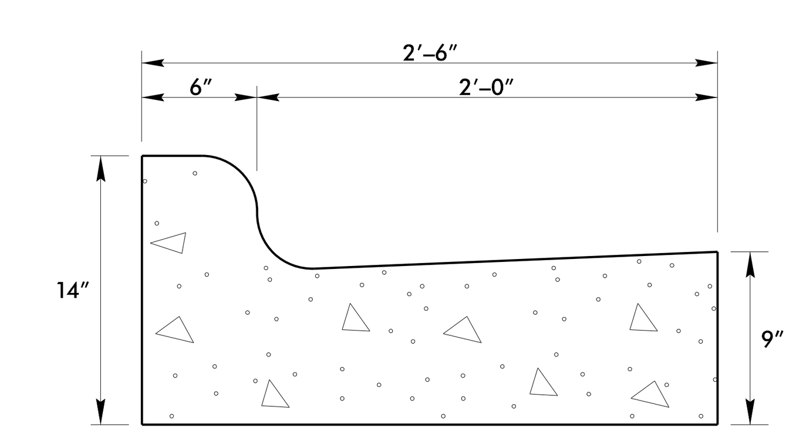
USE TYPICAL SECTION NO. 20
-RDBT- STA. 10+00 TO 13+70.71



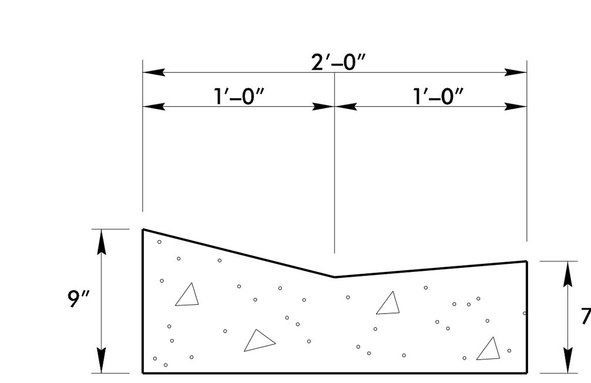
BENCH MILL AS NEEDED SEE DETAIL ON SHEET 2A-1

TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21
-DR1- STA. 10+82.57 TO 11+17.89
-DR2- STA. 10+35.88 TO 11+09.20



R3 2'-6" MODIFIED CURB & GUTTER DETAIL



R4 2' MODIFIED VALLEY GUTTER DETAIL

PAVEMENT SCHEDULE	
A1	9" CONCRETE APRON
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	2.5" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E3	VAR. B25.0C
R1	1' 6" C & G
R2	2'-6" C & G
R3	2'-6" C & G MODIFIED
R4	2' MODIFIED VALLEY GUTTER
R5	5" MONO. ISLAND (KEYED IN)
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

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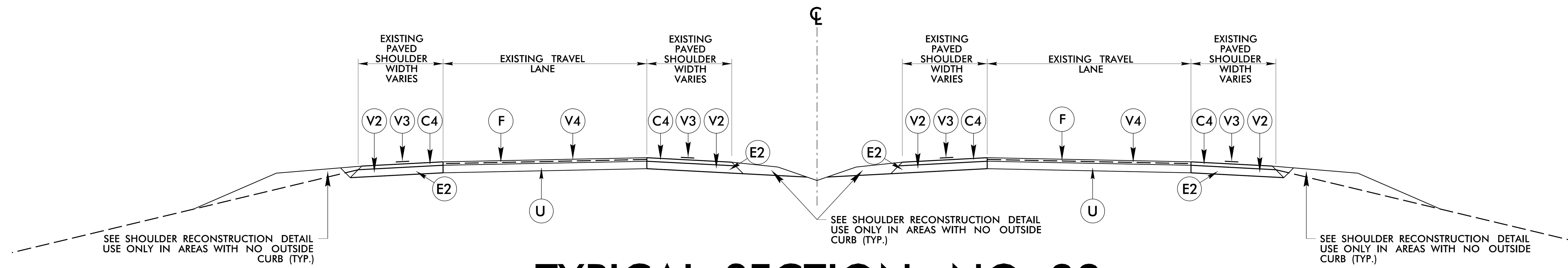
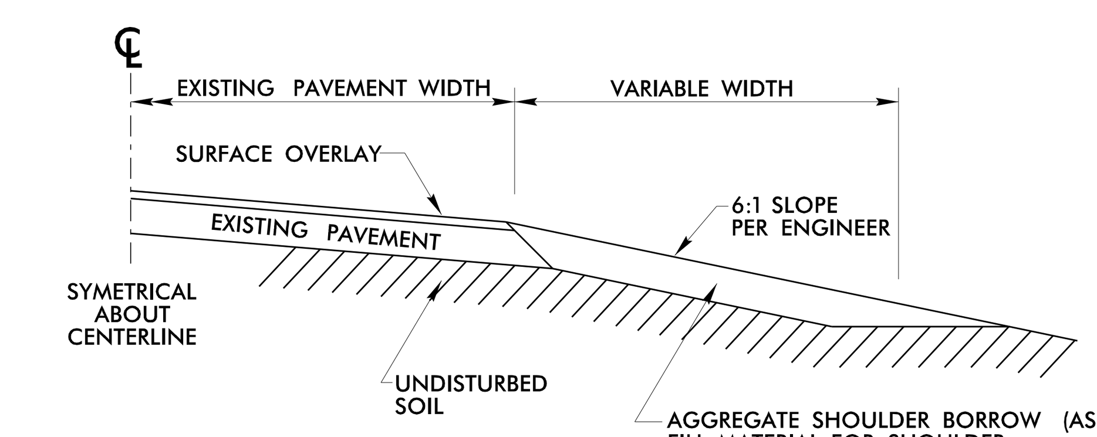


TYPICAL SECTION NO. 22

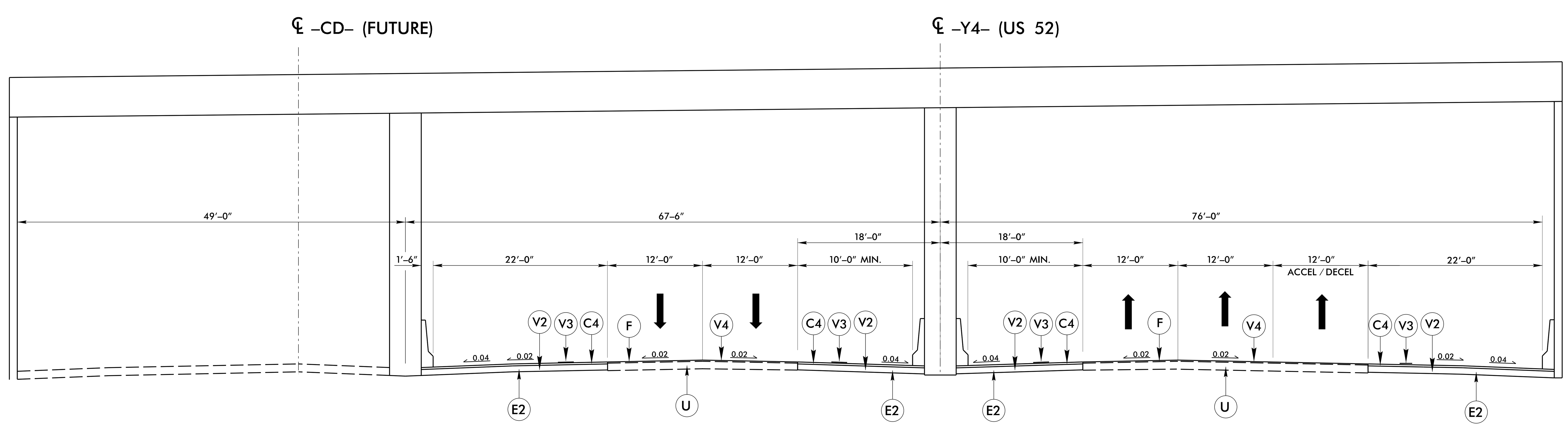
* ON RAMPS WHERE CONCRETE PAVED SHOULDERS EXIST, DO NOT REMOVE AND REPLACE. ONLY MILL TOP AND FILL WITH SURFACE

USE TYPICAL SECTION NO. 22

–Y4– STA. 65+62.87 TO 72+00.00
–Y4– STA. 66+48.16 TO 72+00.00
–RPA– STA. 11+63.35 TO 17+50.00
–RPB– STA. 13+06.07 TO 23+50.00
–LPA– STA. 10+50.25 TO 13+50.00
–LPB– STA. 11+50.00 TO 15+50.00



SHOULDER RECONSTRUCTION



TYPICAL SECTION –Y4– UNDER STRUCTURE

USE TYPICAL SECTION

–Y4– STA. 65+62.87 TO 66+48.16

PAVEMENT SCHEDULE	
C4	1½" S9.5C
E2	4½" B25.0C
F	5⁄8" UTBWC
V2	6" MILL
V3	MILLED RUMBLE STRIP
V4	5/8" FINE MILLING
T	EARTH MATERIAL
U	EXIST. PAVEMENT

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22606 DAVID C. WALLER

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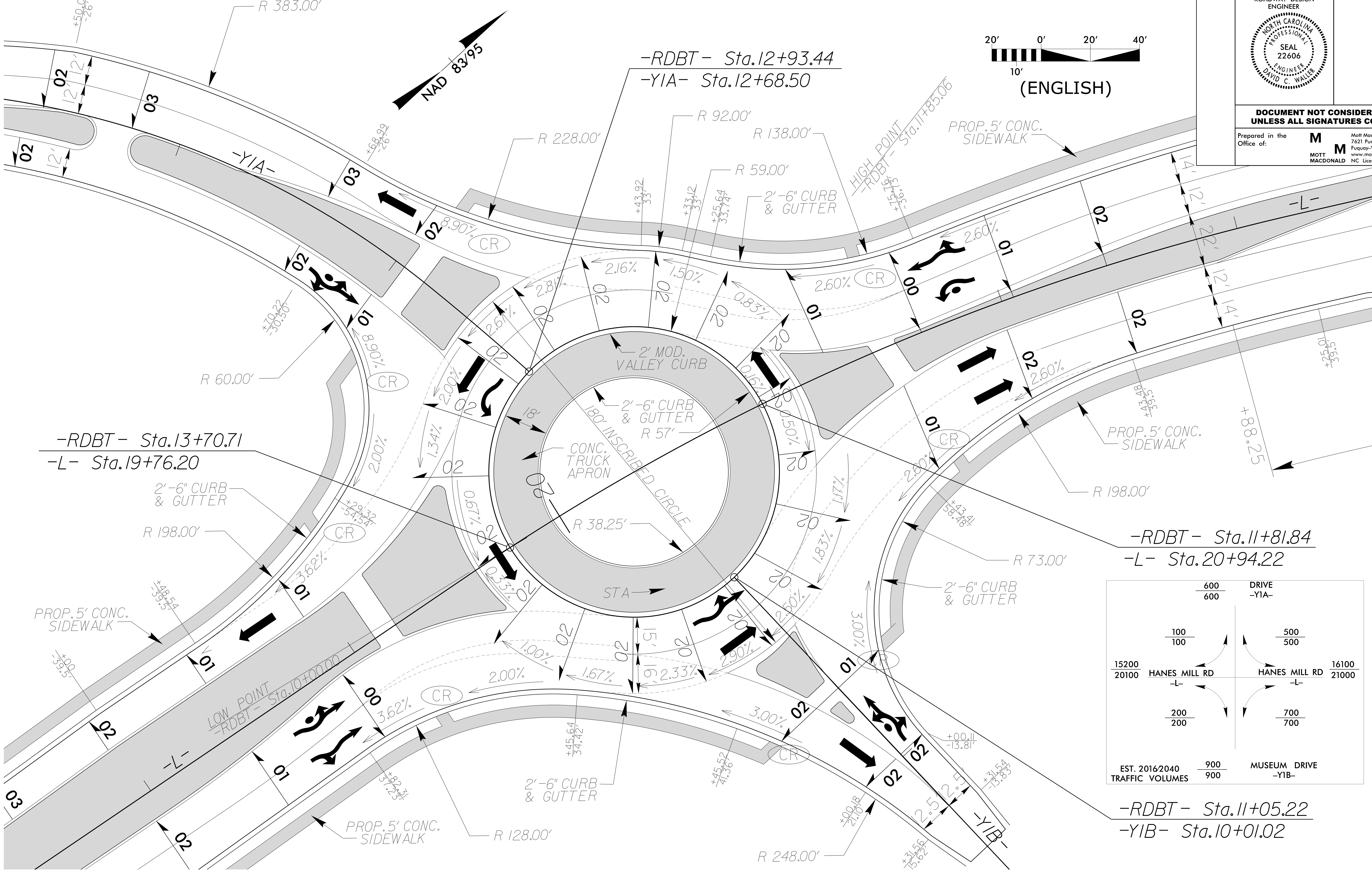
FOR ISLAND DETAILS, SEE SHEETS 2B-5 THRU 2B-8



-RDBT- INTERSECTION DETAIL

FOR PLAN, SEE SHEET NO. 4

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-2
R/W SHEET NO.	

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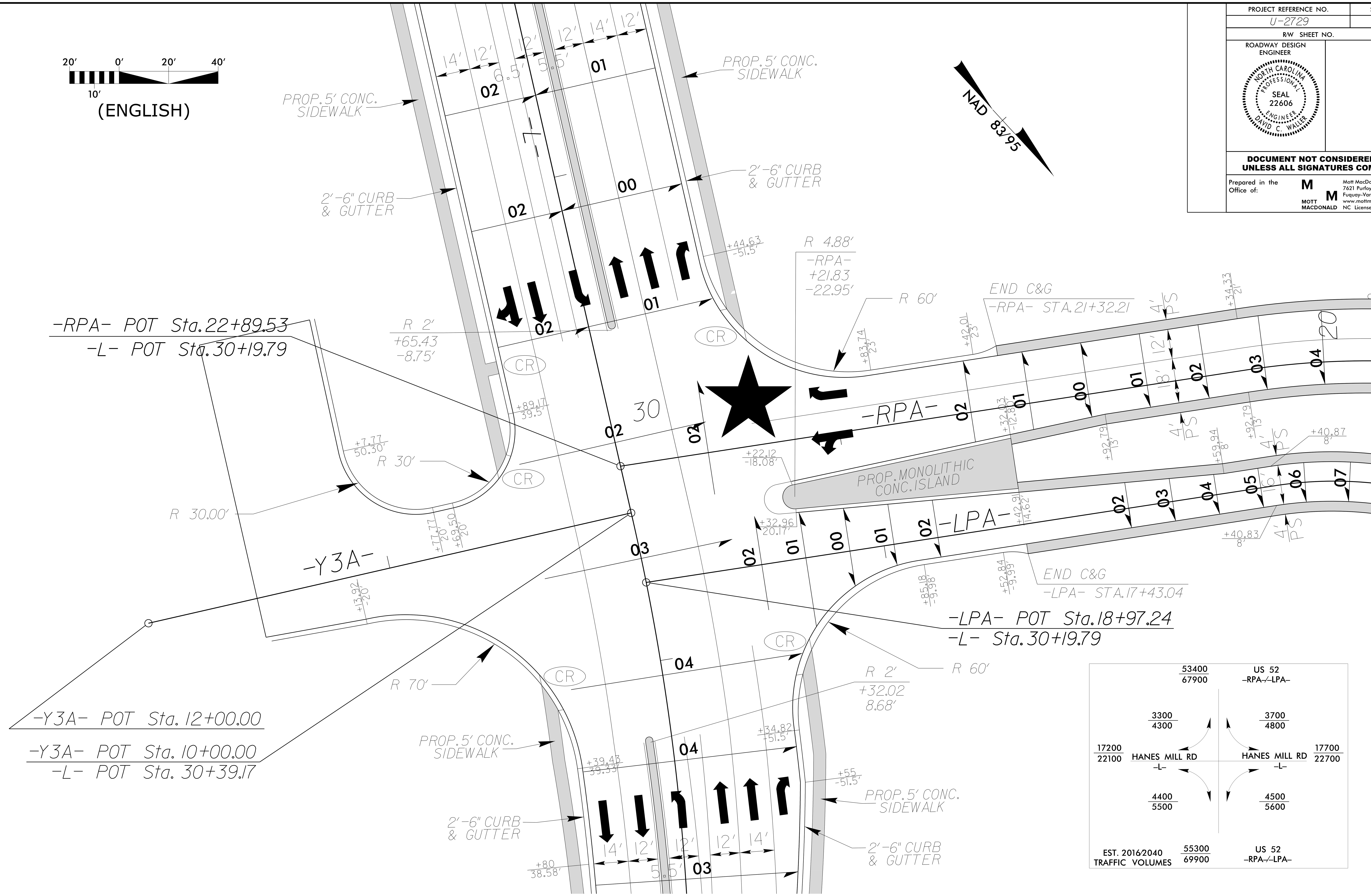

-RPA/LPA- INTERSECTION DETAIL

FOR PLAN, SEE SHEET NO. 5

8/17/99
9:40:39 AM
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PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-3
R/W SHEET NO.	

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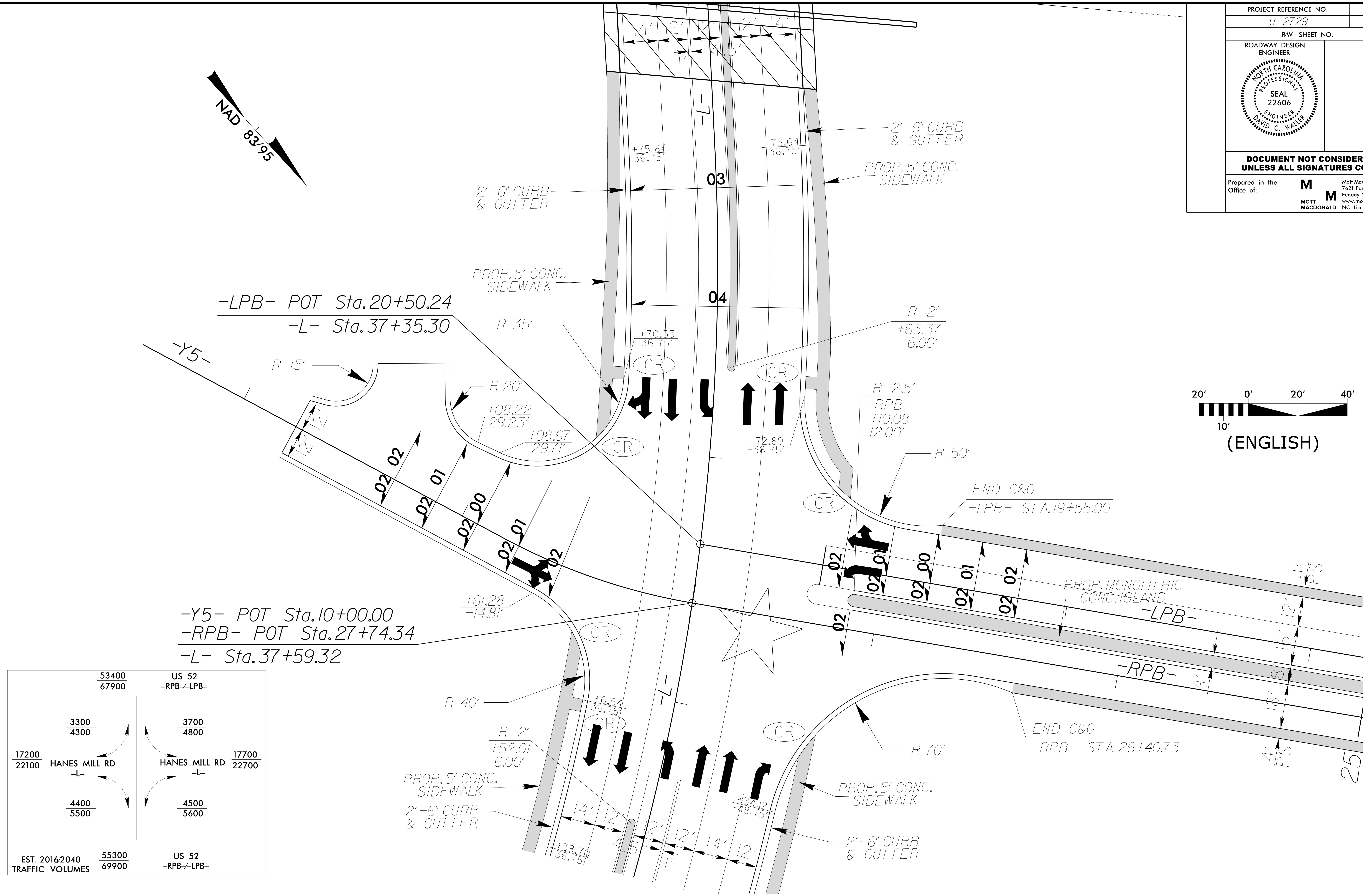

-RPB/LPB- INTERSECTION DETAIL

FOR PLAN, SEE SHEET NO. 5

9:40:40 AM
R:\Roadway\Proj\u2729_rdy_dsn_int_det.dgn
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-4
R/W SHEET NO.	

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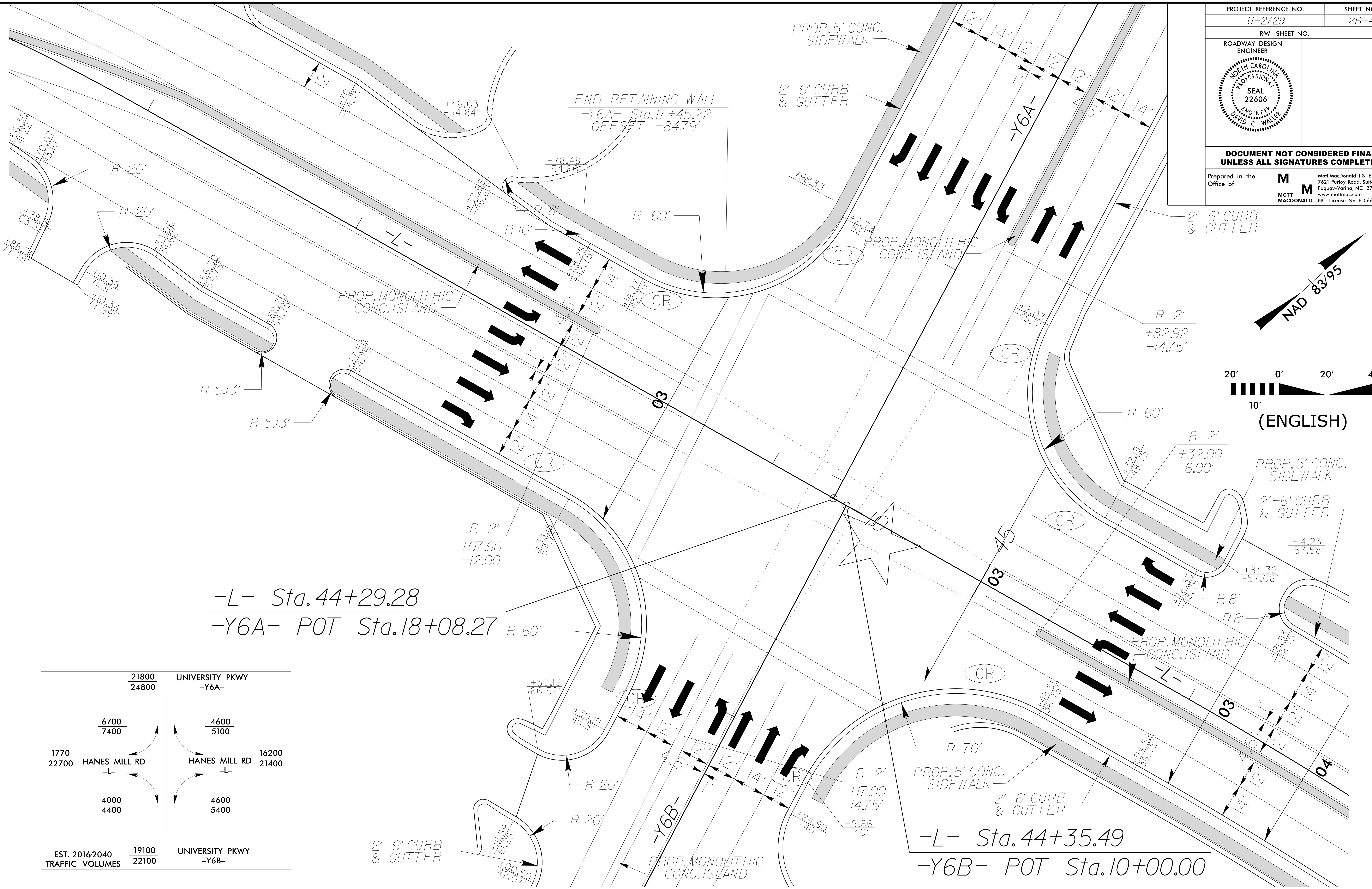


–Y6A– /–Y6B– INTERSECTION DETAIL

FOR PLAN, SEE SHEET NO. 6

8/17/99

*FOR INTERSECTION DETAILS SEE SHEET 2B–1
**UNLABELED RADII FOR MONOLITHIC CONCRETE ISLAND ARE 1'

20' 0' 20' 40'
10'
(ENGLISH)

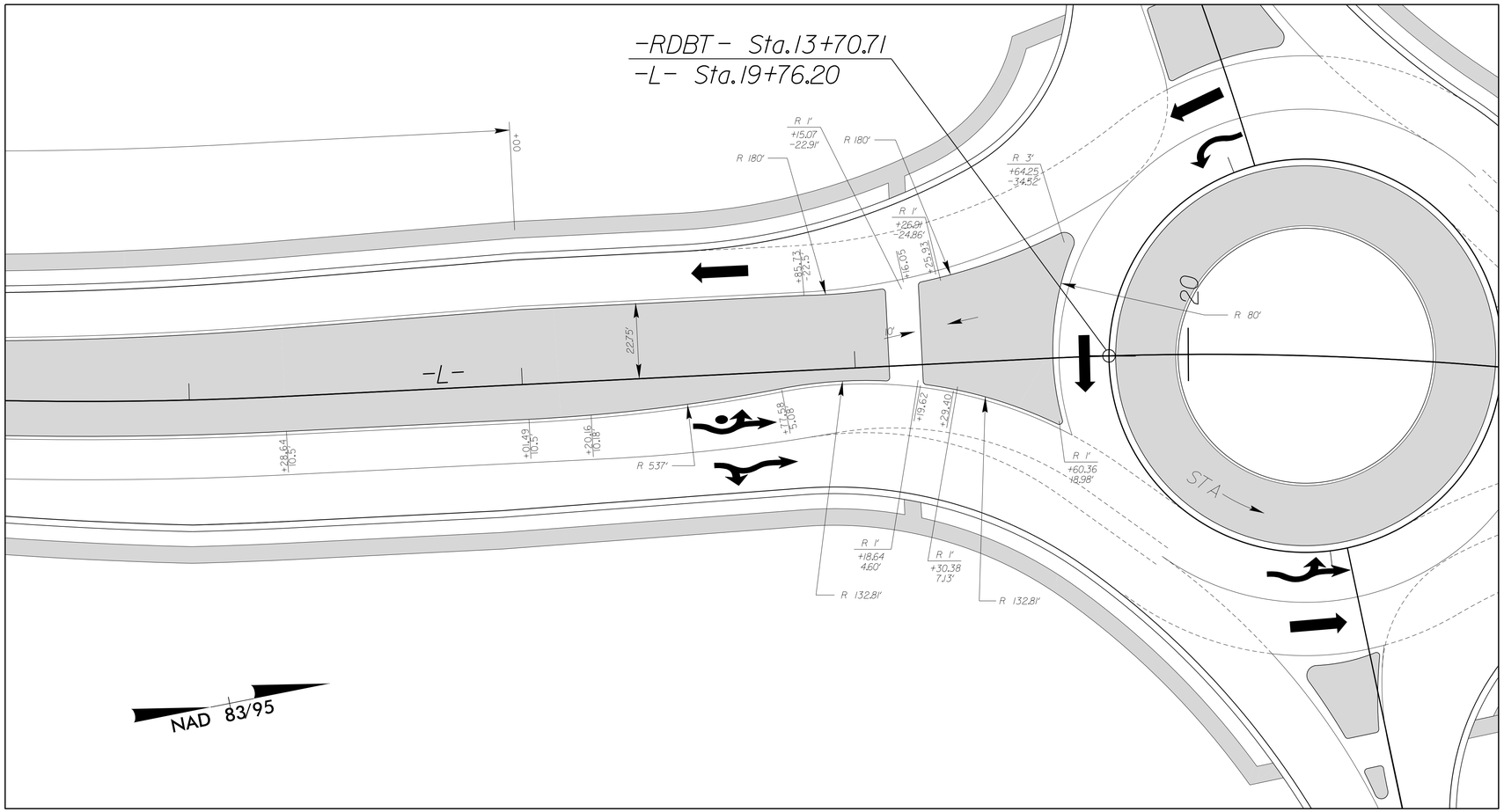
PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
MOTT MACDONALD
Mott MacDonald I & E, LLC
7621 Parfoy Road, Suite 115
Fuquay-Varina, NC 27526
www.mottmac.com
NC License No. F-0669



-L- ISLAND DETAIL

FOR PLAN, SEE SHEET NO. 4

9:40:01 AM
C:\Projects\Roadway\Proj\u2729_rdy_dsn_islands_det.dgn
08/26/19

8/17/99

*FOR INTERSECTION DETAILS SEE SHEET 2B–1
**UNLABELED RADII FOR MONOLITHIC
CONCRETE ISLAND ARE 1′

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

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Fuquay-Varina, NC 27526
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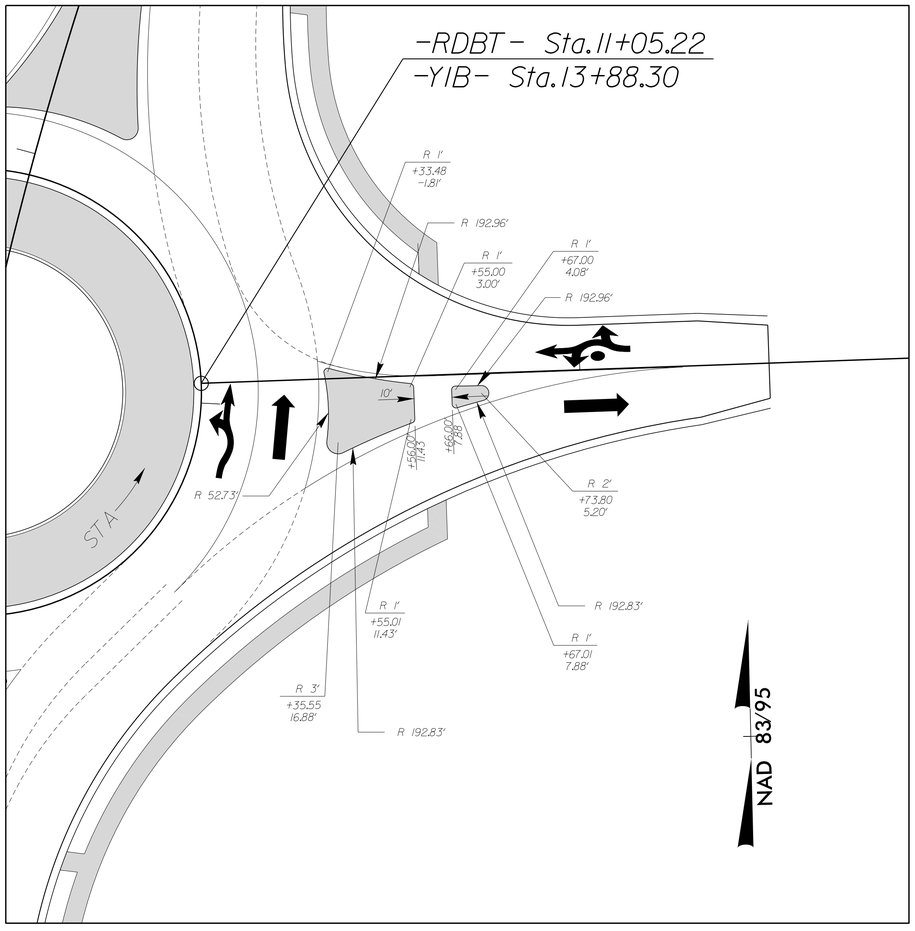
NC License No. F-0669



20′ 0′ 20′ 40′
10′
(ENGLISH)

–Y1B– ISLAND DETAIL

FOR PLAN, SEE SHEET NO. 4

9:40:42 AM
R:\Roadway\Proj\u2729_rdy_dsn_islands_det.dgn
Chk 8251g

8/17/99

*FOR INTERSECTION DETAILS SEE SHEET 2B–1
**UNLABELED RADII FOR MONOLITHIC CONCRETE ISLAND ARE 1'

20' 0' 20' 40'
10'
(ENGLISH)

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

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Mott MacDonald I & E, LLC
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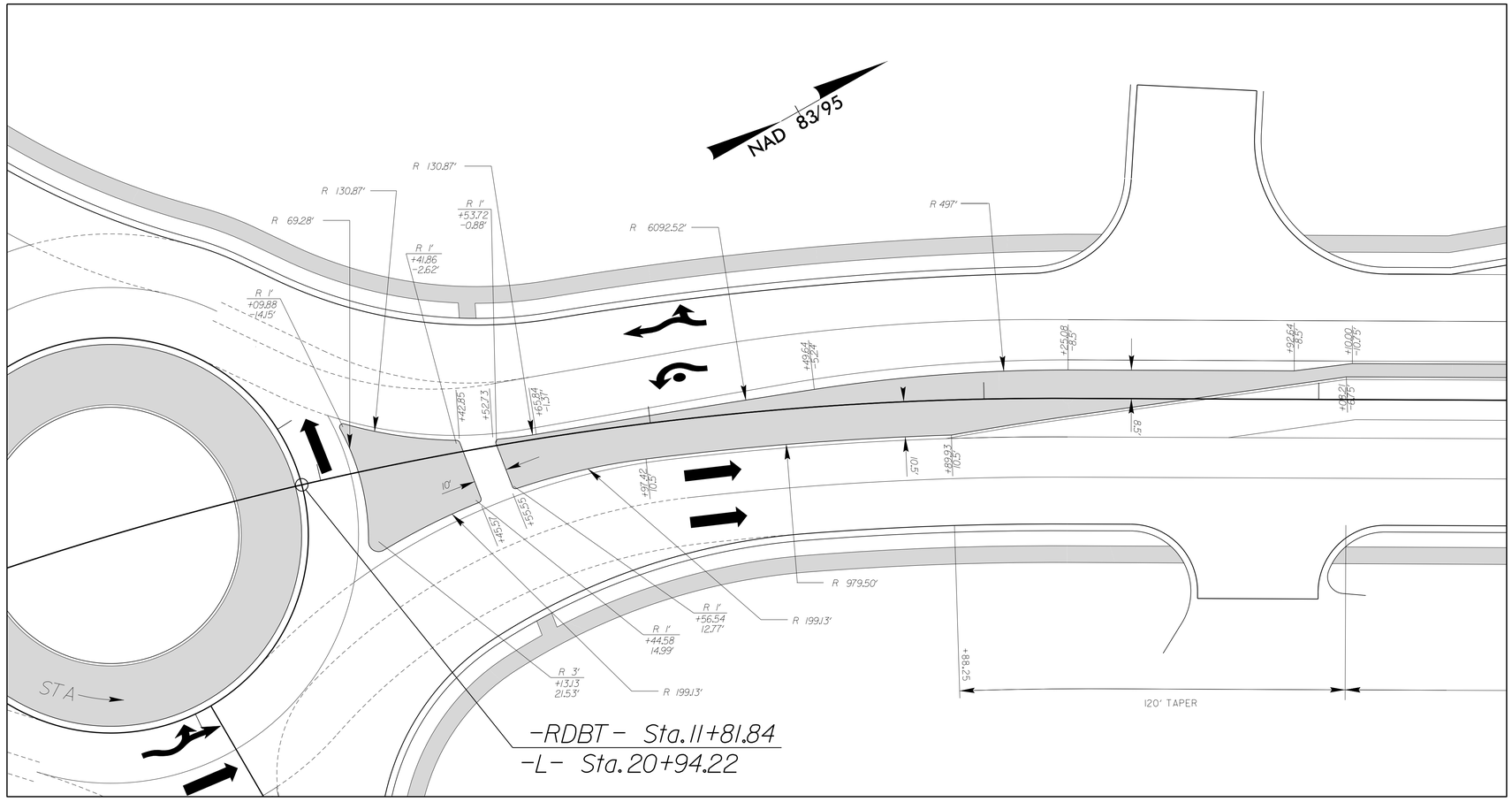
NC License No. F-0669



-L- ISLAND DETAIL

FOR PLAN, SEE SHEET NO. 4

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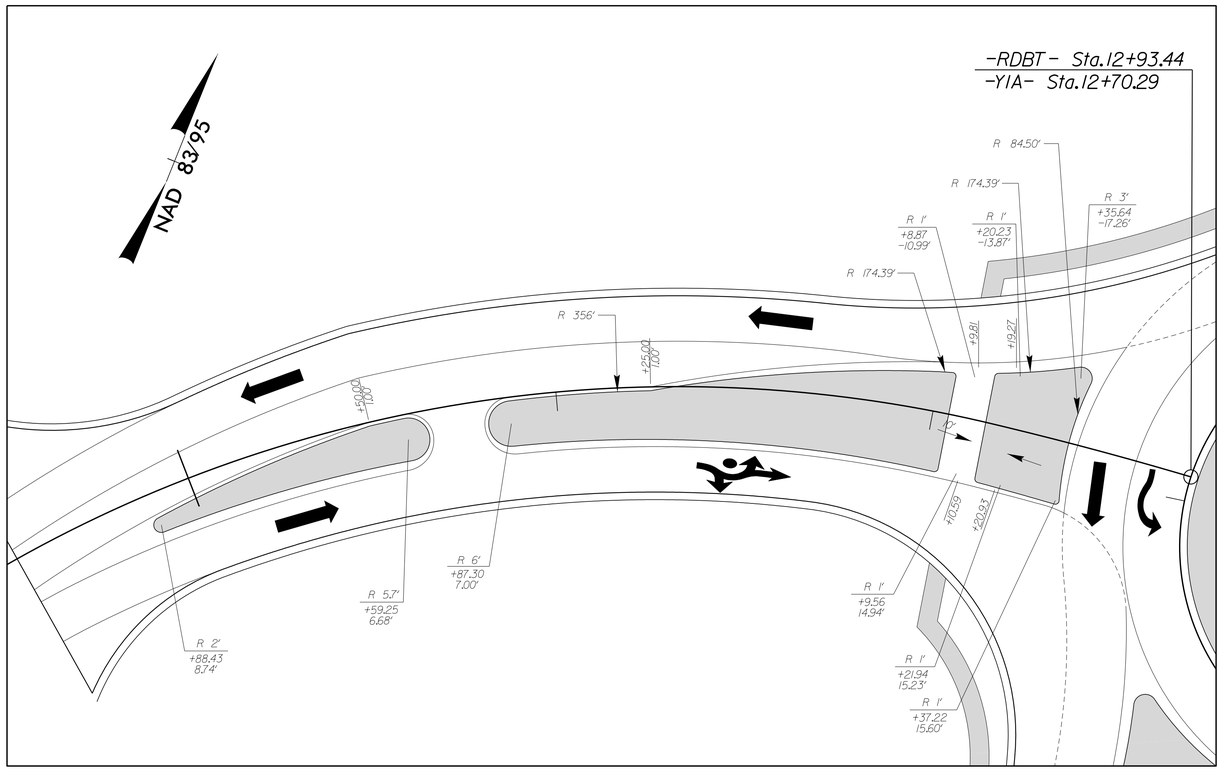
Chk82619

8/17/99

*FOR INTERSECTION DETAILS SEE SHEET 2B–1
**UNLABELED RADII FOR MONOLITHIC CONCRETE ISLAND ARE 1'

20' 0' 20' 40'
10'
(ENGLISH)



–Y1A– ISLAND DETAIL

FOR PLAN, SEE SHEET NO. 4

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2B-8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

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MOTT MACDONALD
Mott MacDonald I & E, LLC
7621 Parfoy Road, Suite 115
Fuquay-Varina, NC 27526
www.mottmac.com
NC License No. F-0669

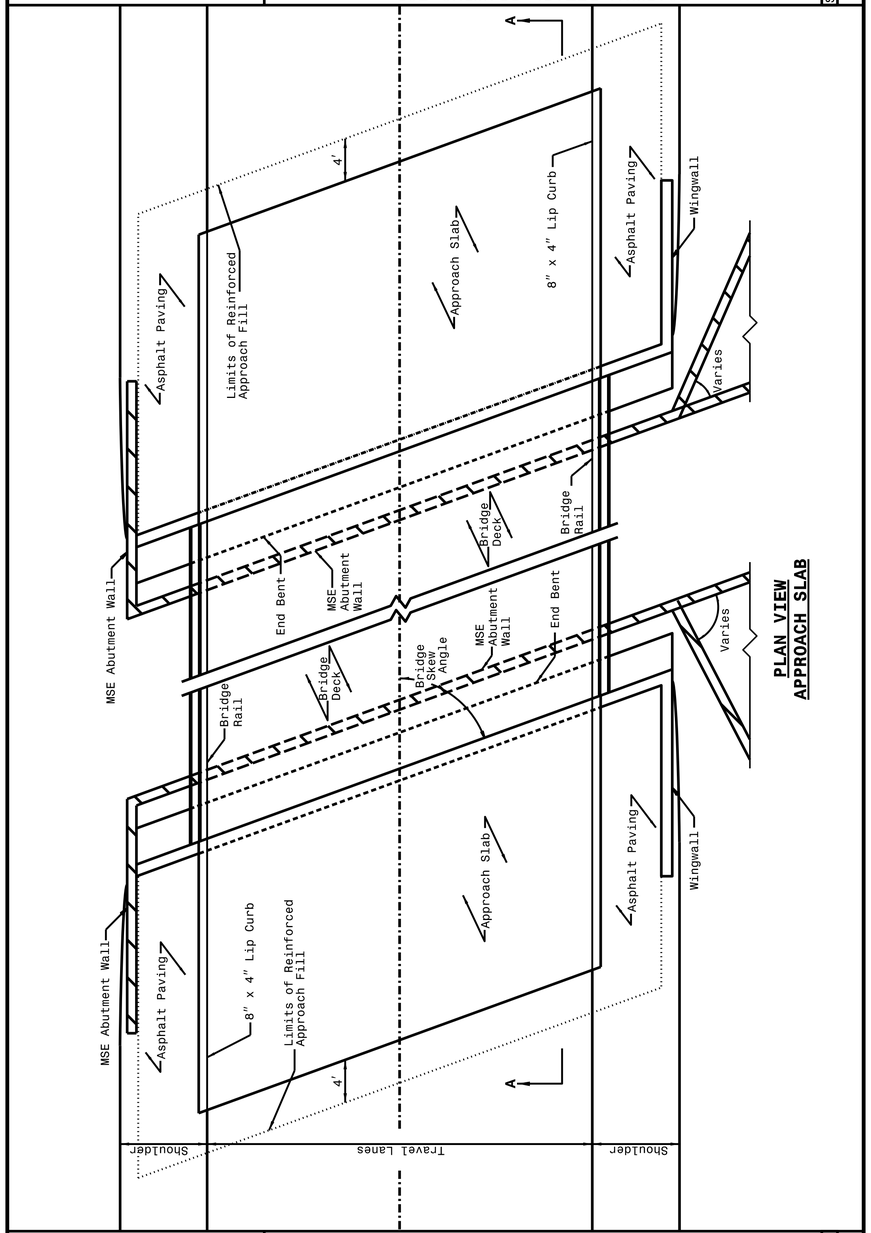
9:40:43 AM
R:\Roadway\Proj\u2729_rdy_dsn_islands_det.dgn
cook82519

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-1

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

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2
422D10

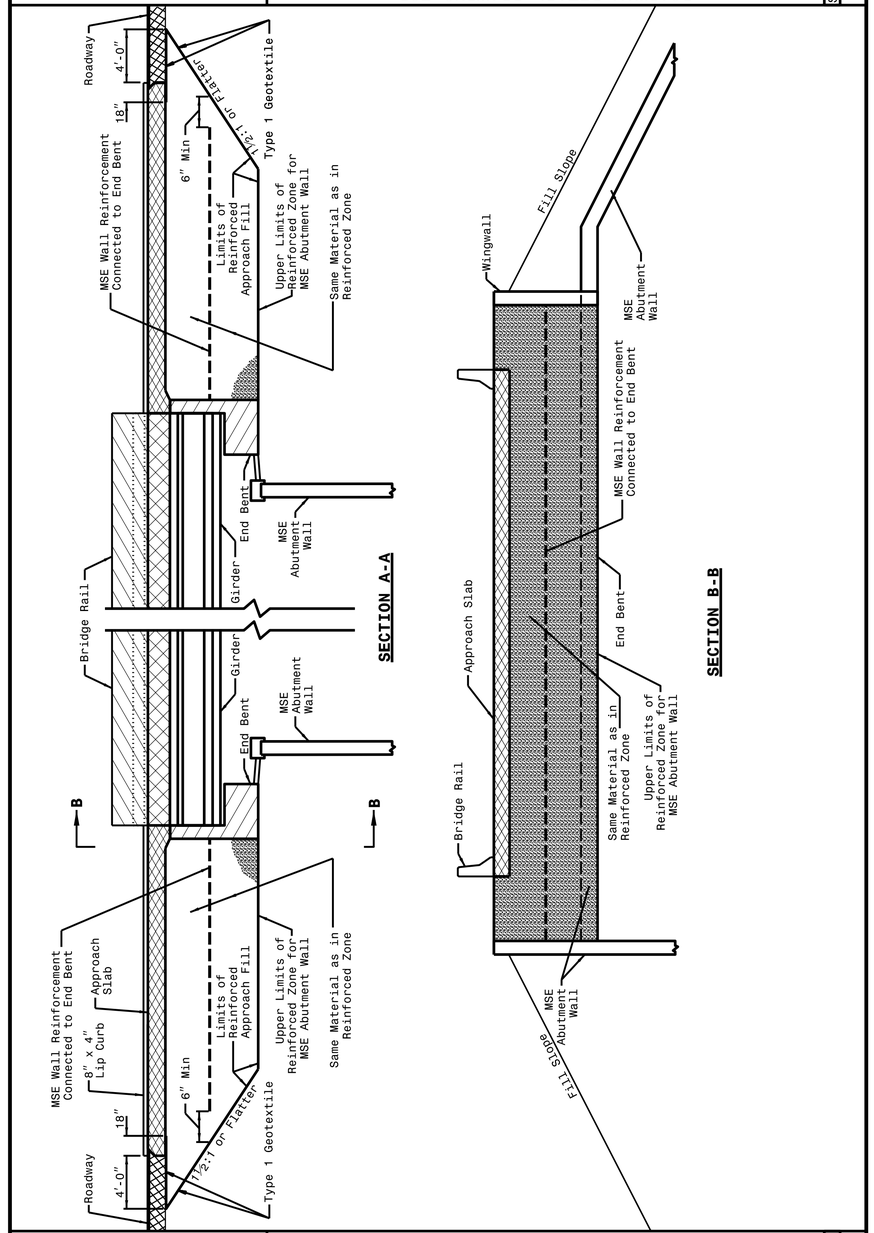


PLAN VIEW
APPROACH SLAB

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

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 2 OF 2
422D10



SECTION A-A

SECTION B-B

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

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2
422D10

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. MCKEE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TYPE III REINFORCED APPROACH FILLS

ORIGINAL BY: K. A. KEMPF DATE: JULY 2017
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: 2018 standard drawings\division 422d10.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-2

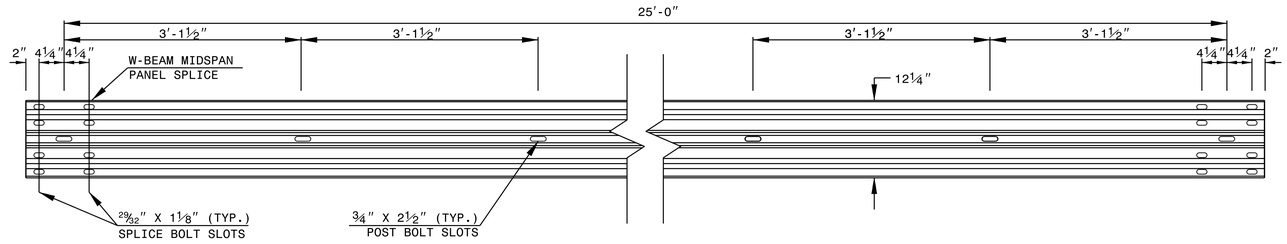
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

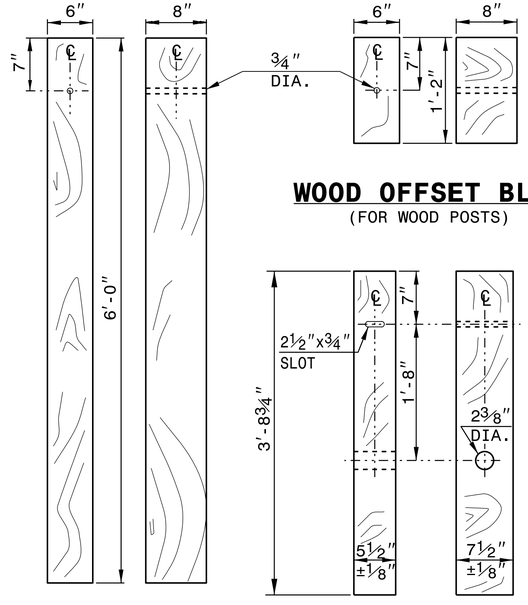
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8

862D02



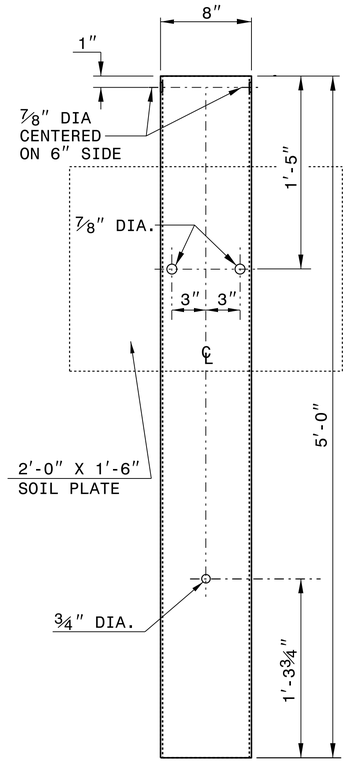
STANDARD W-BEAM GUARDRAIL



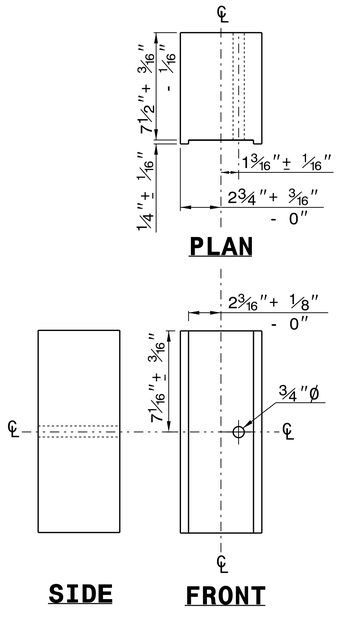
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



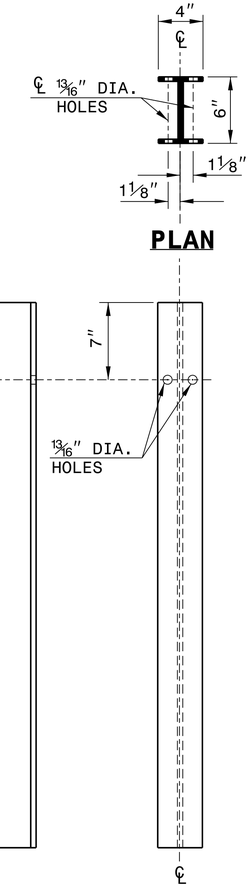
STEEL TUBE
TS 6"x8"x0.1875"



PLAN

SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN

SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8

862D02

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M WALKER

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

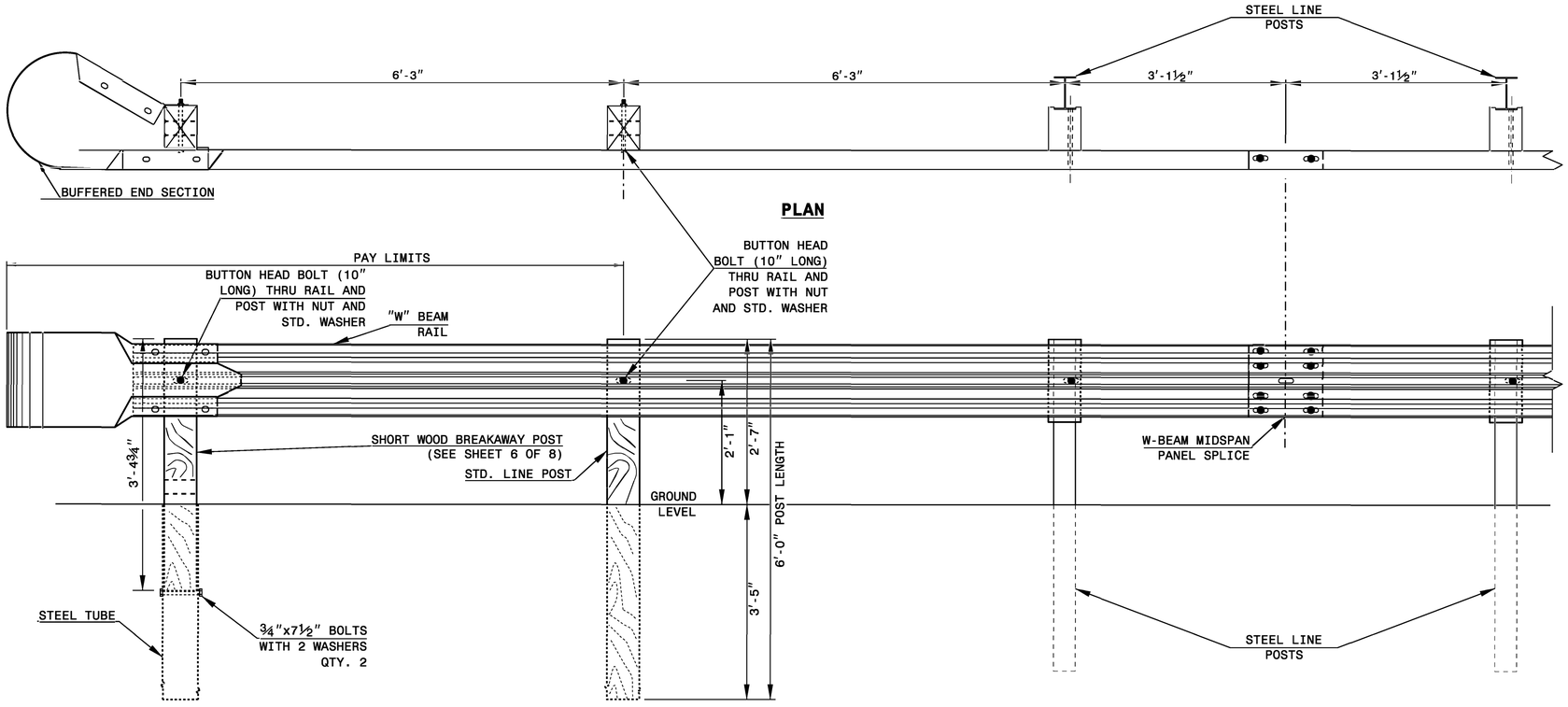
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-3

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

SHEET OF

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER

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

A.T.-1 SYSTEM

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

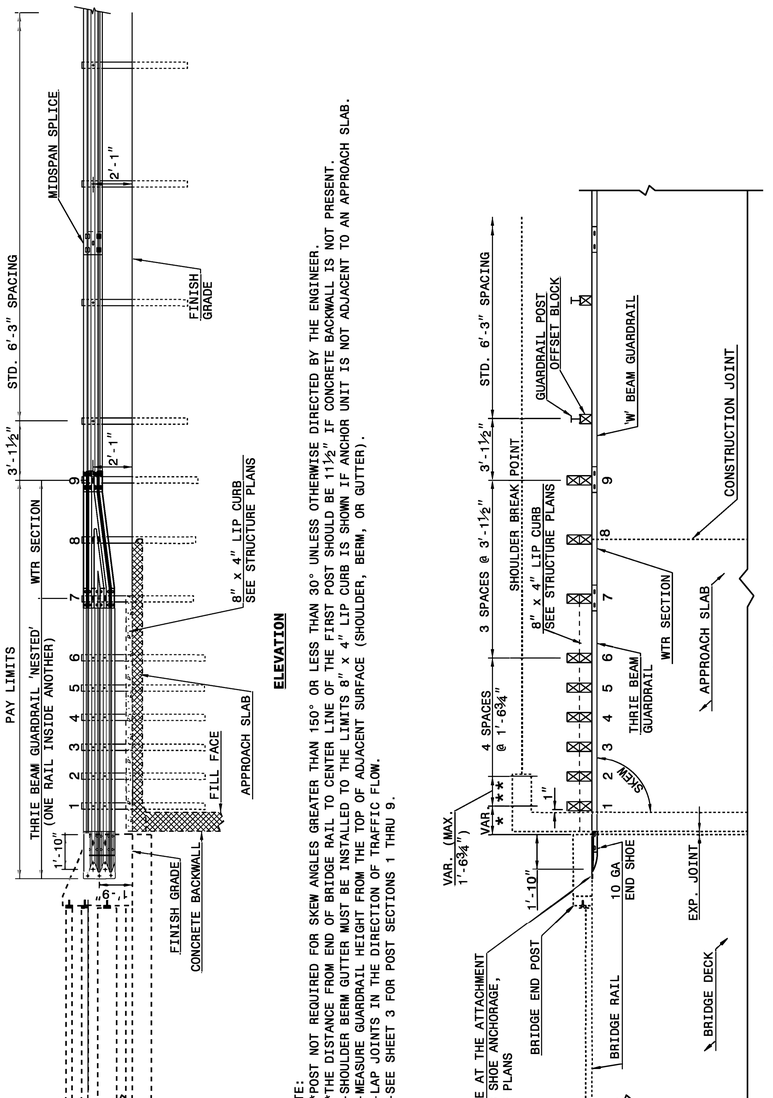
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-4

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

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

SHEET 1 OF 7
862D03



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

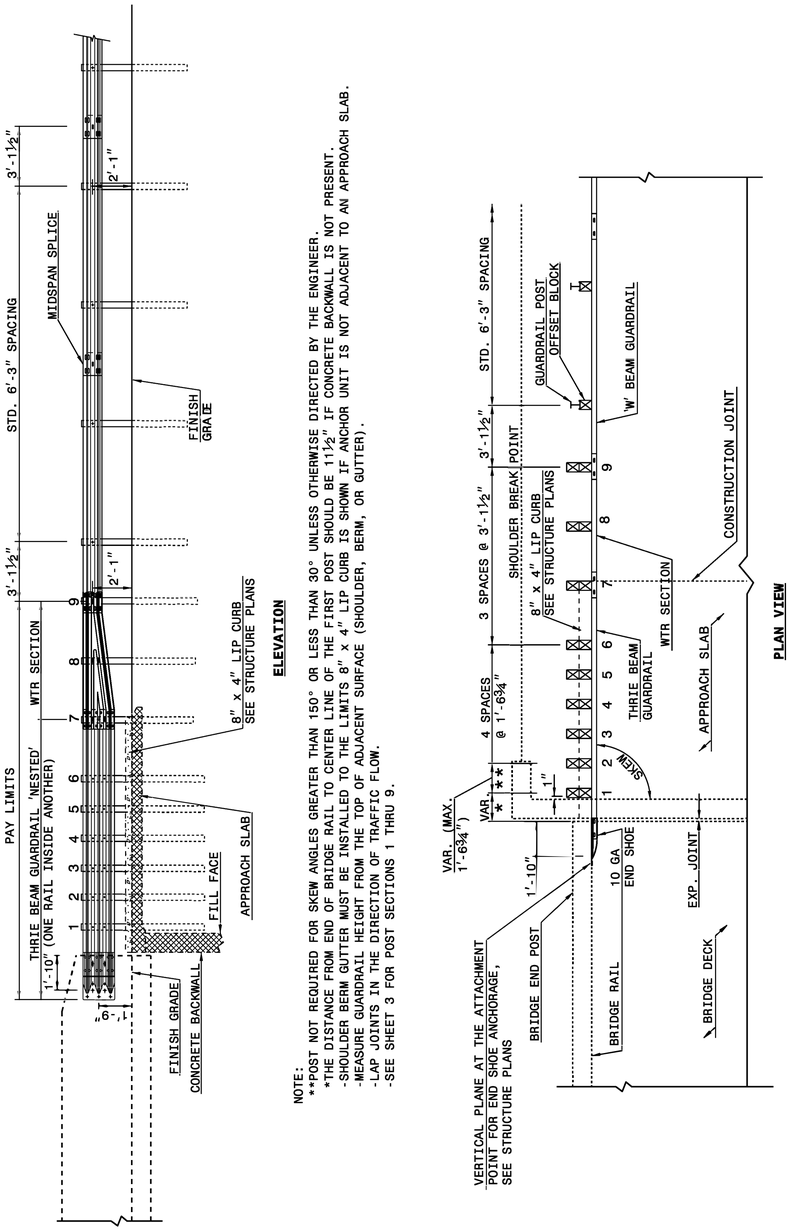
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

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

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

SHEET 2 OF 7
862D03



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

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

SHEET 1 OF 7
862D03

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

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

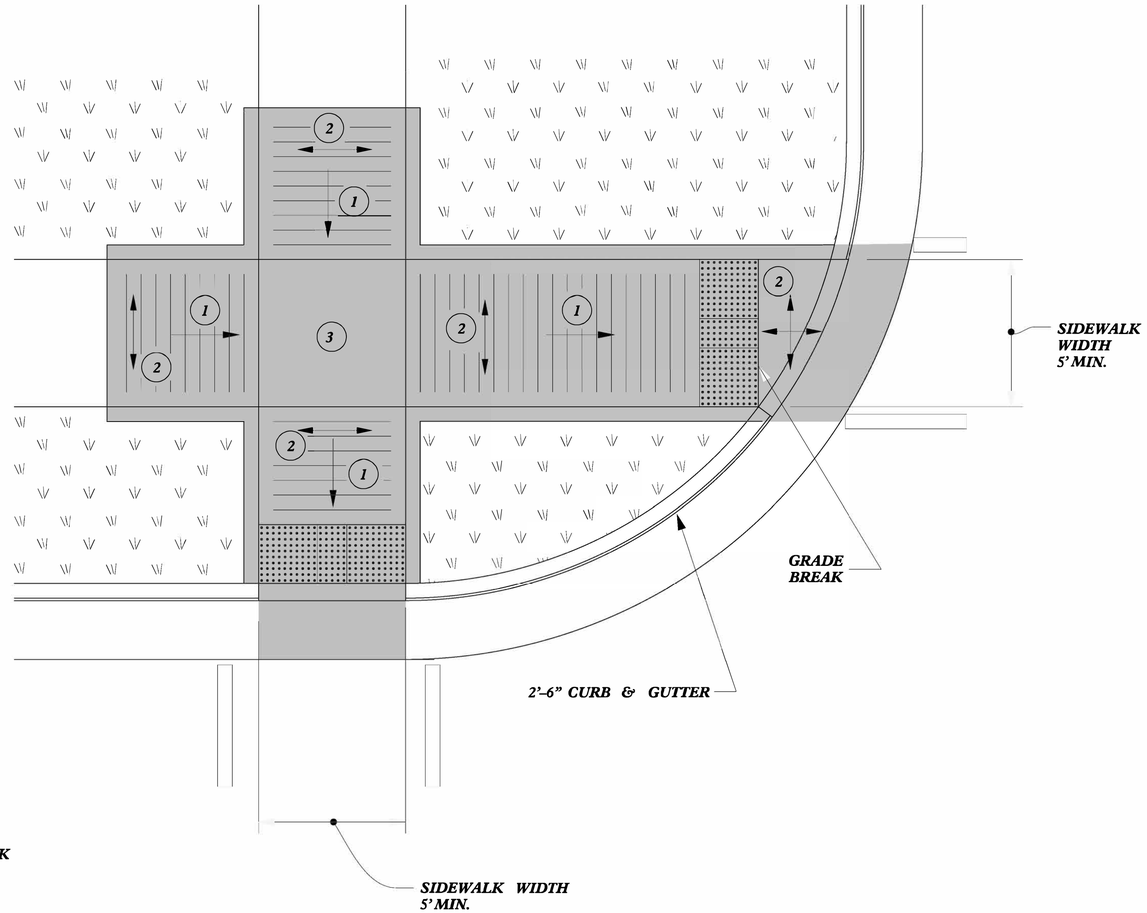
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03

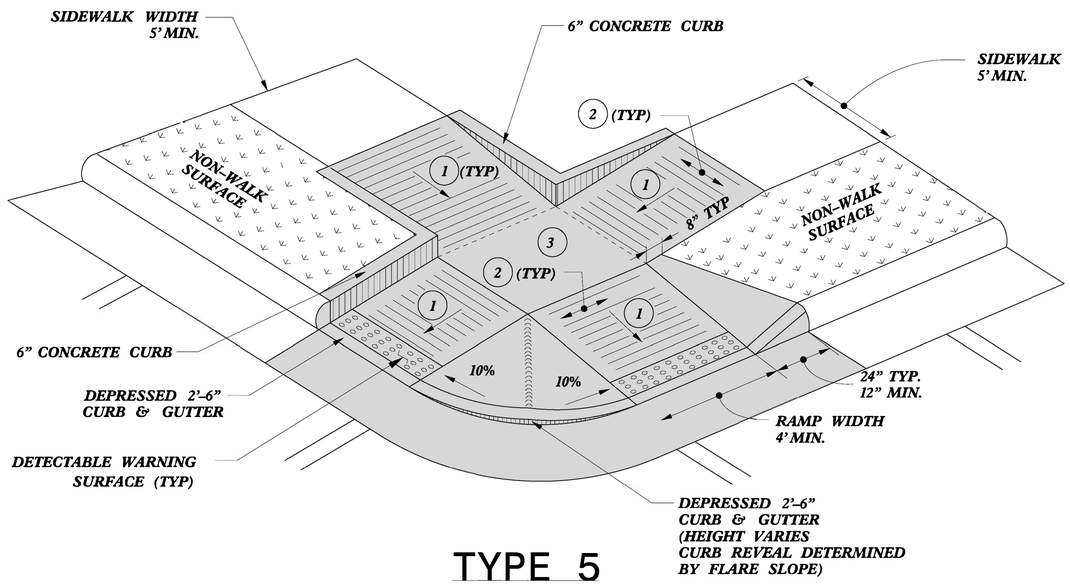
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-5

PAY LIMITS FOR 1 OR 2 CURB RAMPS
(CALCULATE BASED ON NUMBER OF SETS
OF TRUNCATED DOMES)



TYPE 5A



TYPE 5

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

(2) CROSS SLOPE: 2.00%

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

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER

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

CURB RAMPS

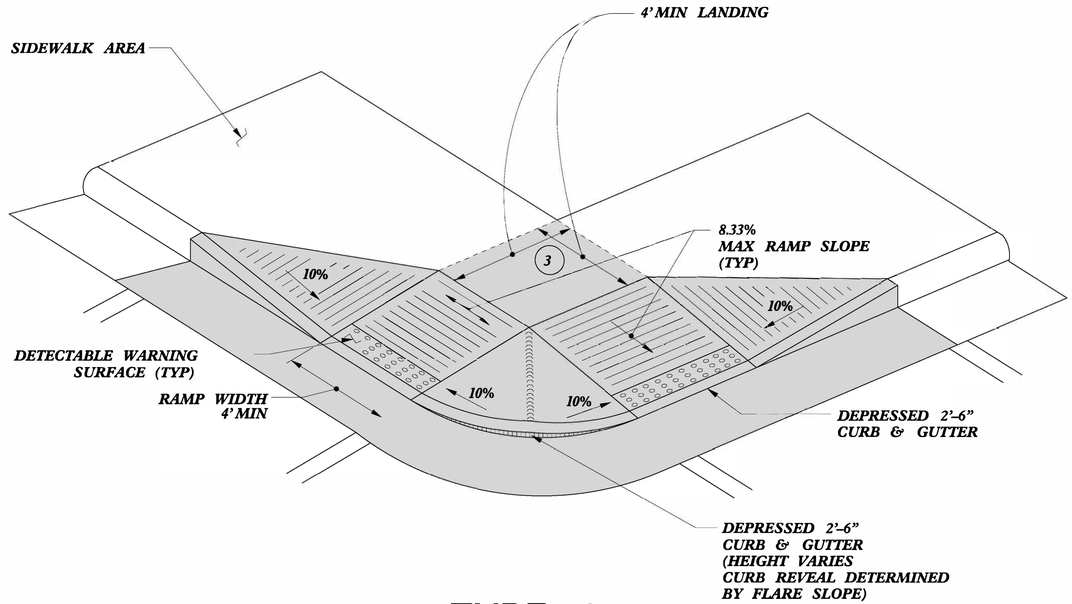
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

$$$$SYSTIME$$$$
$$$$SYSDIS$$$$
$$$$USERNAME$$$$

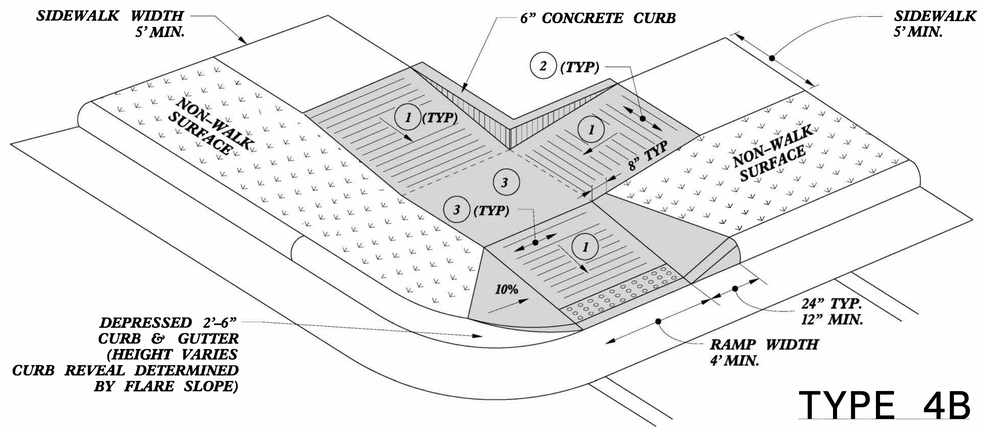
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-6

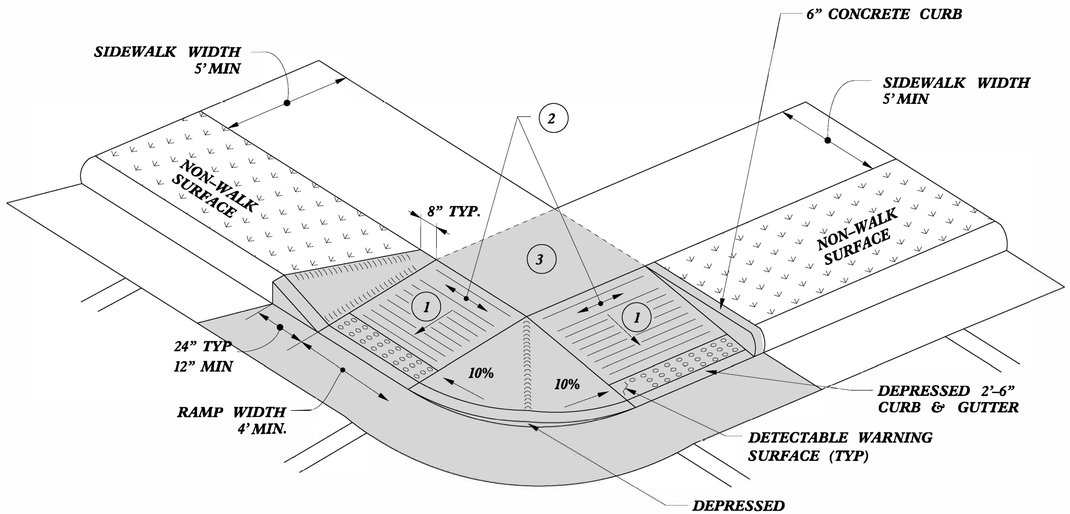
PAY LIMITS FOR 1 OR 2 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



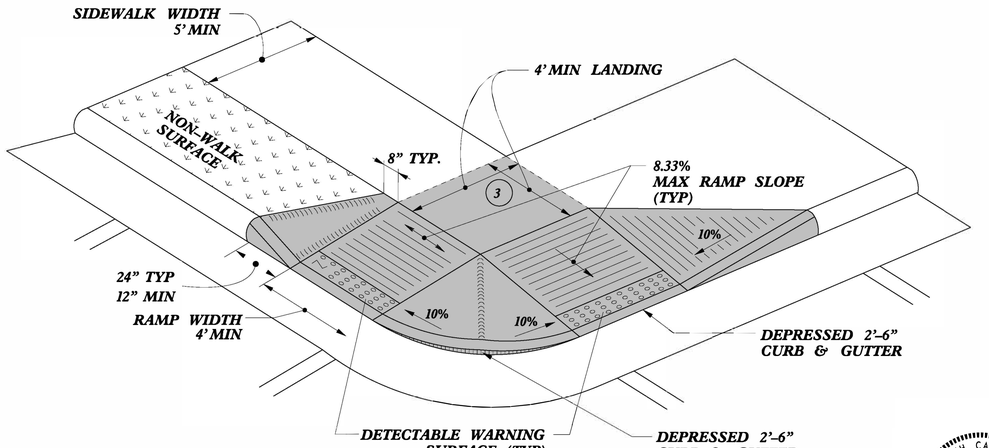
TYPE 4



TYPE 4B



TYPE 4A



TYPE 4C

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HICKLER

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

(2) CROSS SLOPE: 2.00%

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

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

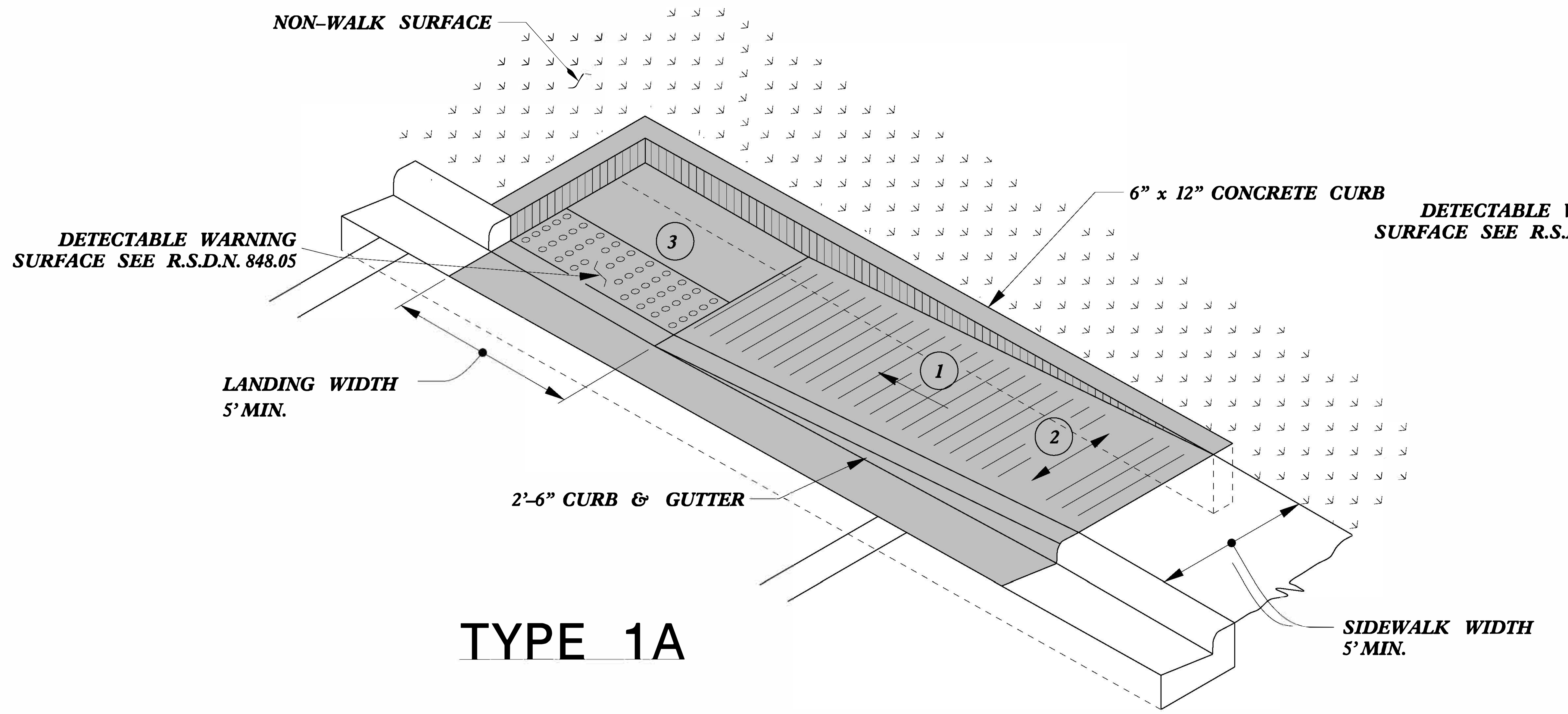
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

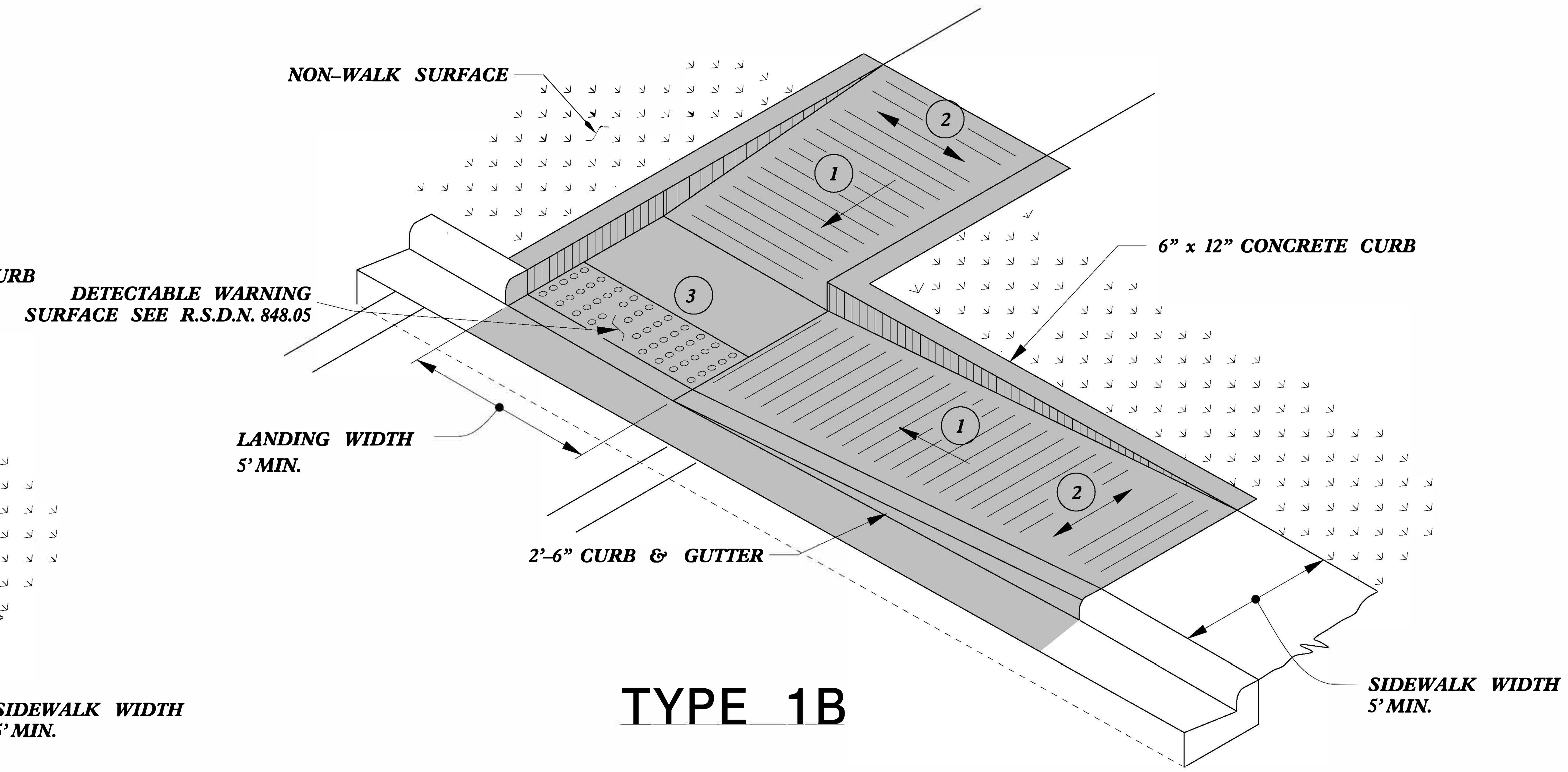
CURB RAMPS

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

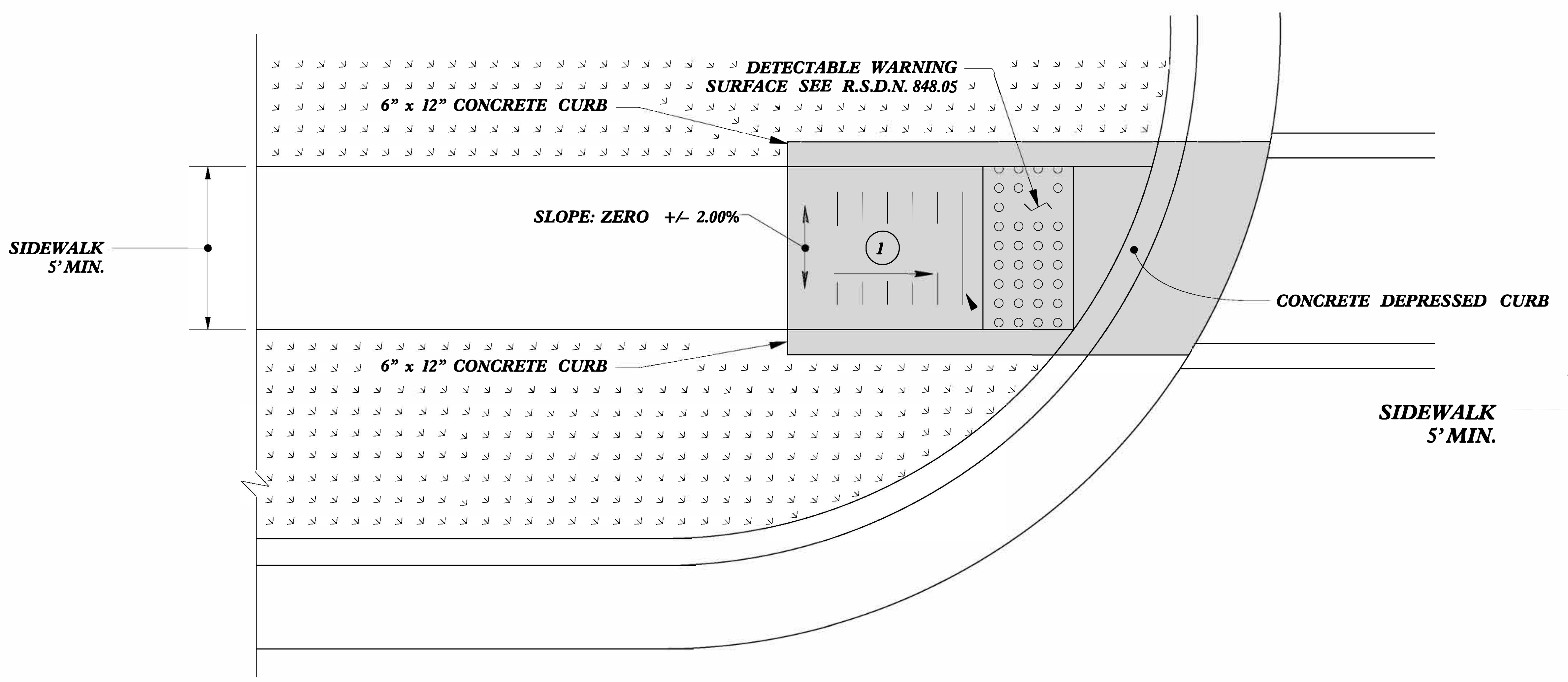
$$$$SYSTEM$$$$
$$$$USERNAME$$$$



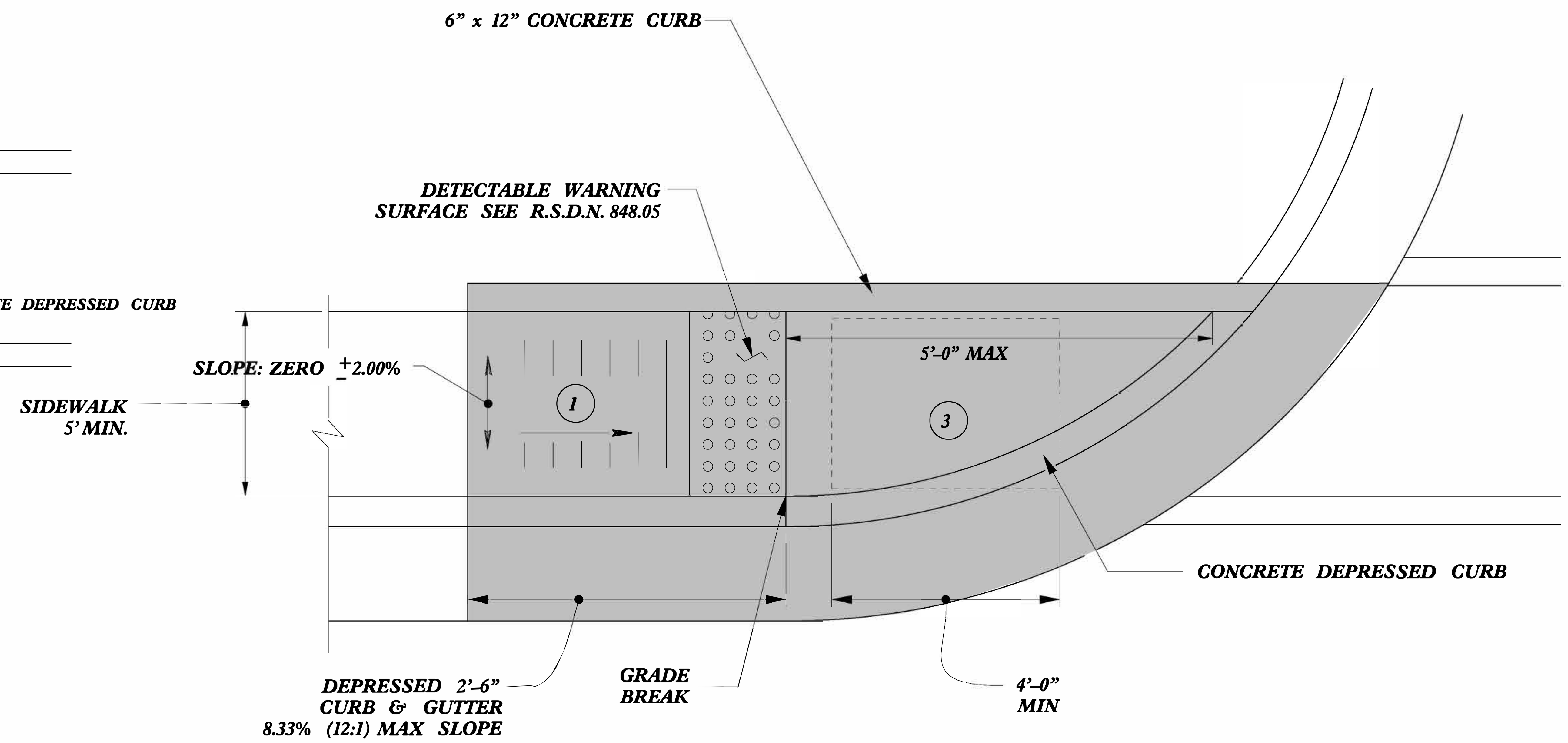
TYPE 1A



TYPE 1B



TYPE 1 Modified



TYPE 1

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

PAY LIMITS FOR 1 CURB RAMP

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CURB RAMPS

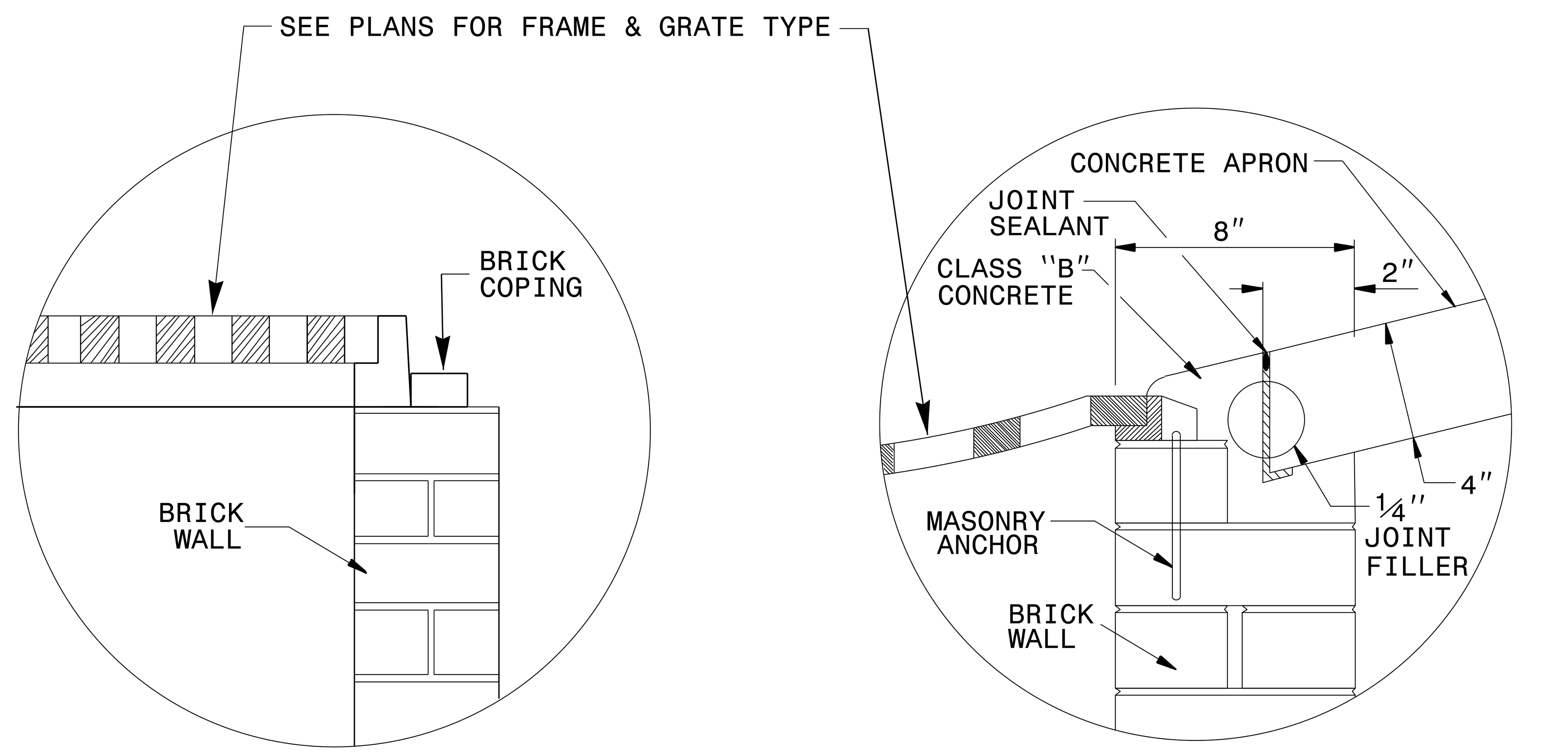
Directional Ramps

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

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

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2C-7



GRATE PLACEMENT DETAIL

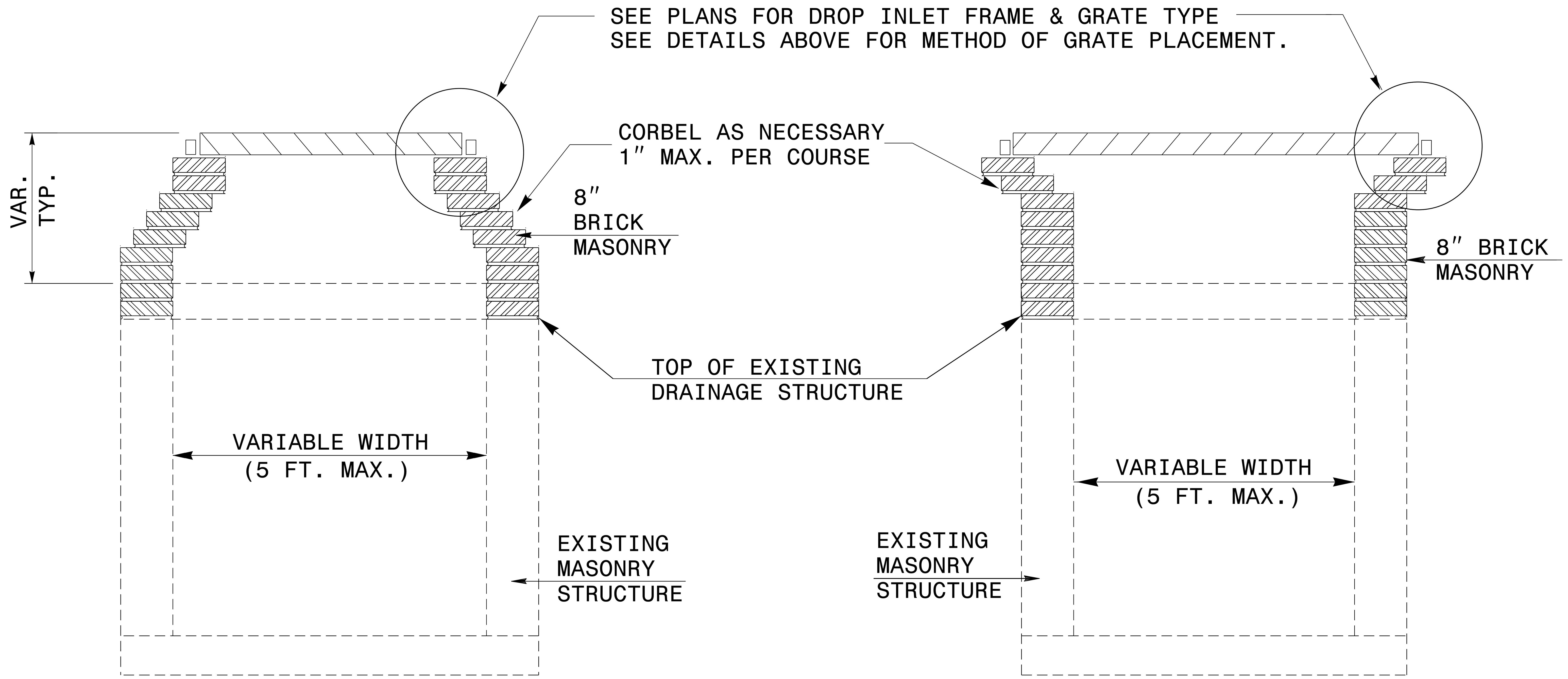
FOR DROP INLETS

GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

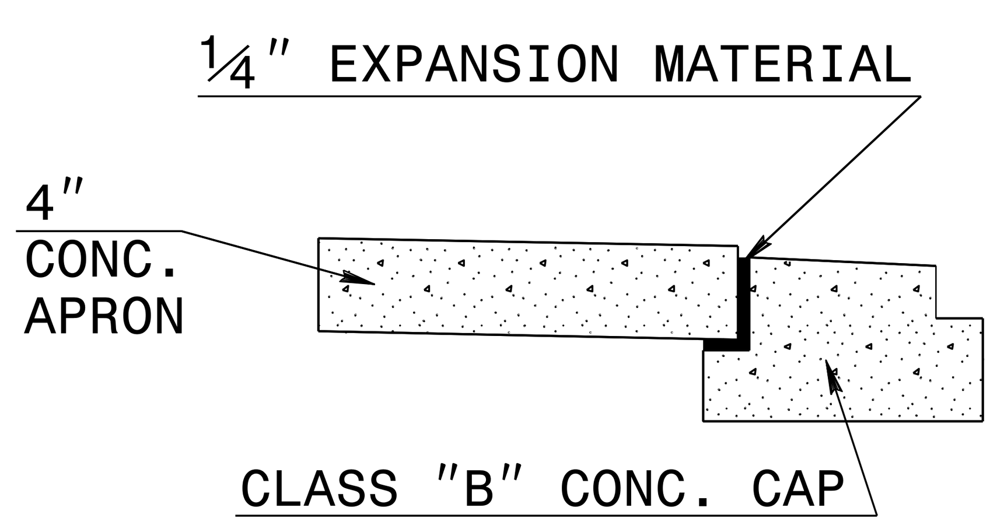
GENERAL NOTES:

- 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.

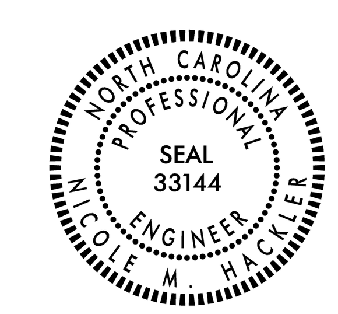


TYPICAL SECTION

TYPICAL SECTION



EXPANSION JOINT DETAIL



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.
U-2729	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 03/27/2023
E760CAEB96EC4D3... SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

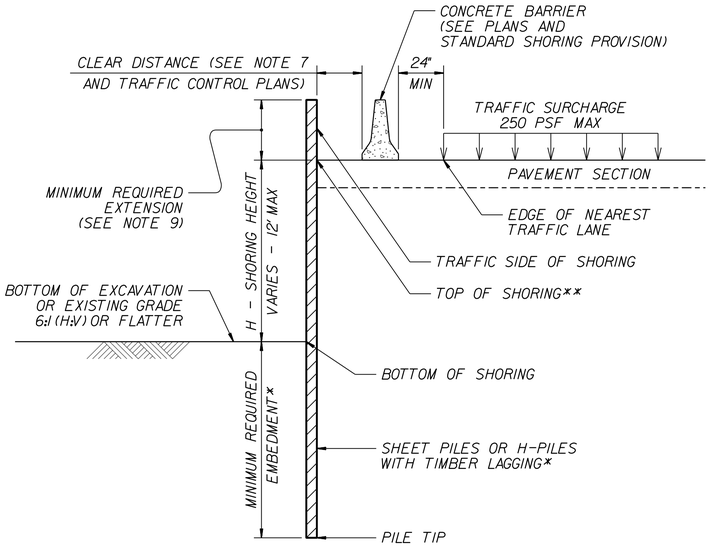
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

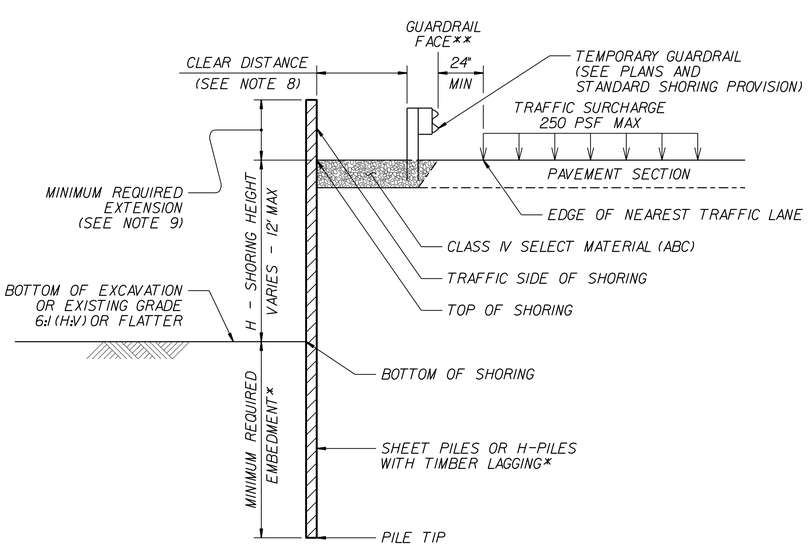
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS 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 SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



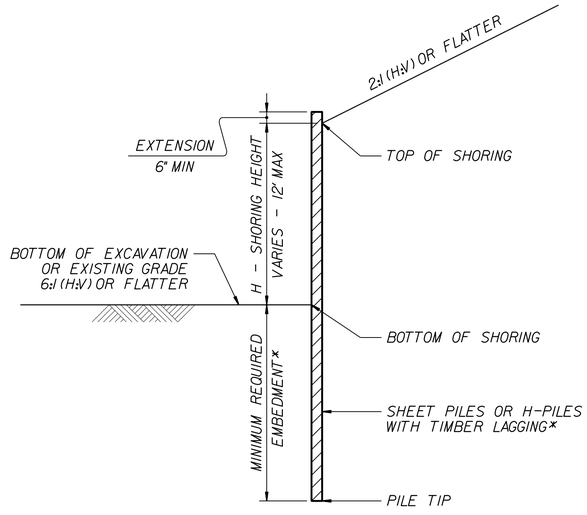
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)

*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
U-2729	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 03/27/2023
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ENGINEER

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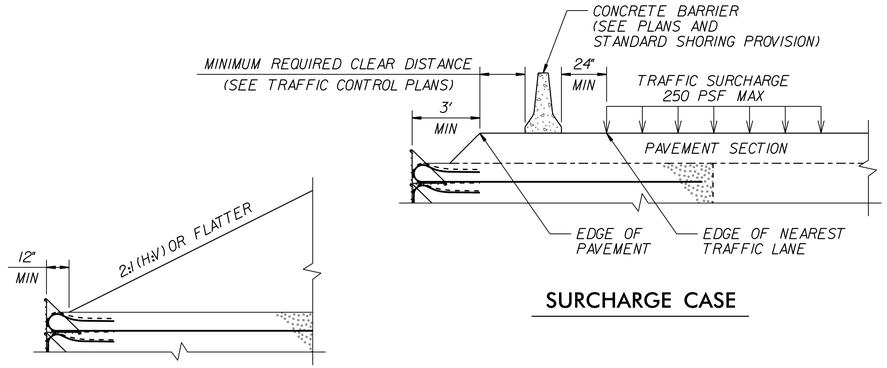
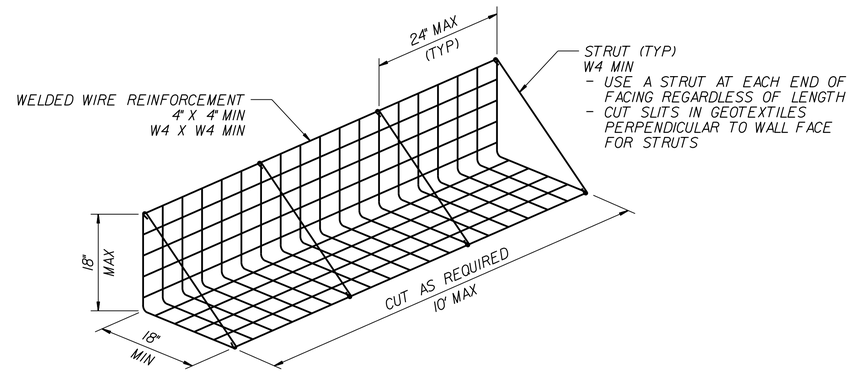
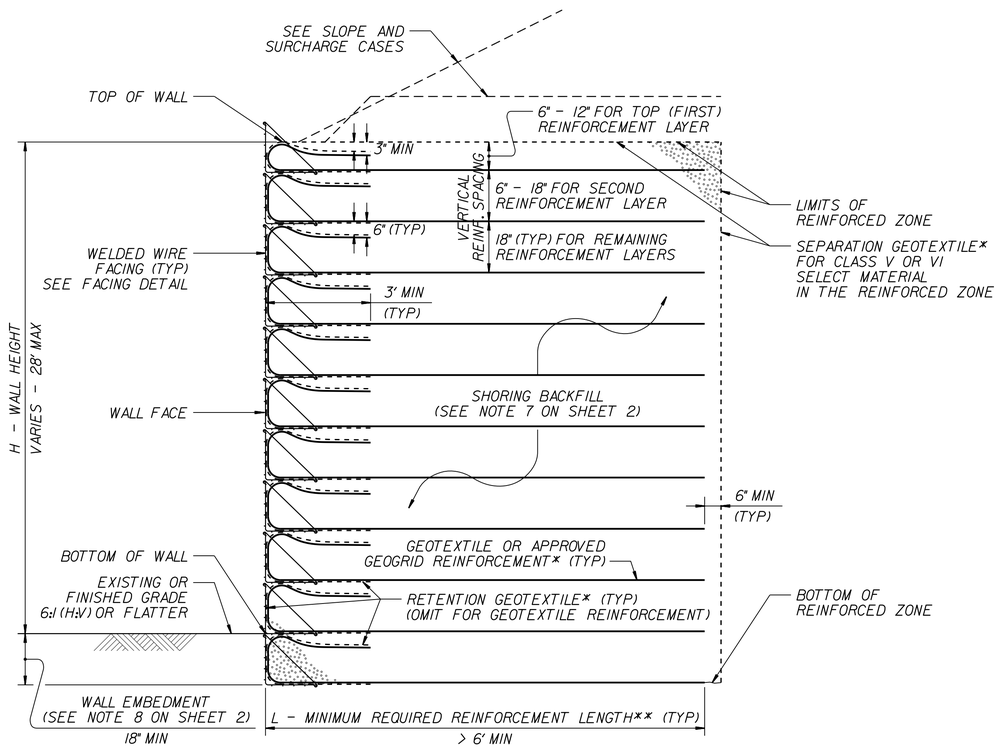


SURCHARGE CASE

SLOPE CASE

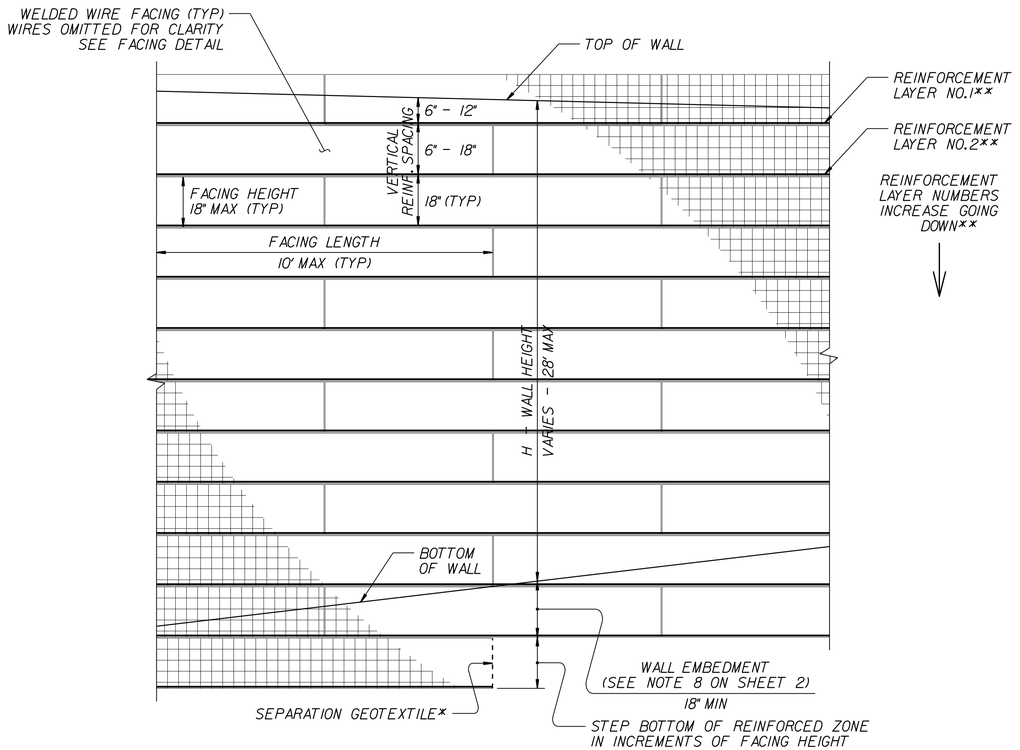


FACING DETAIL



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.
U-2729	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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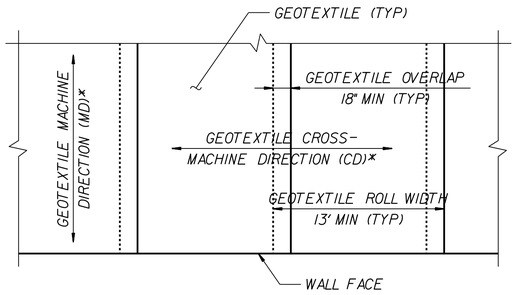
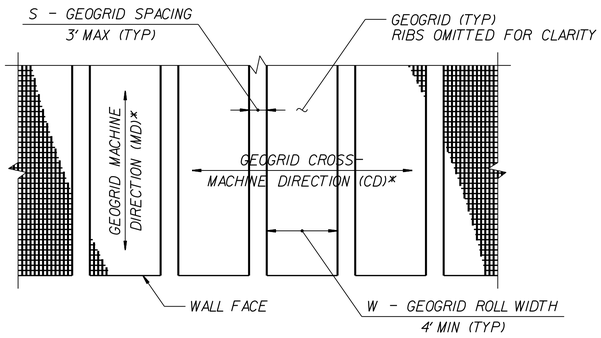


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

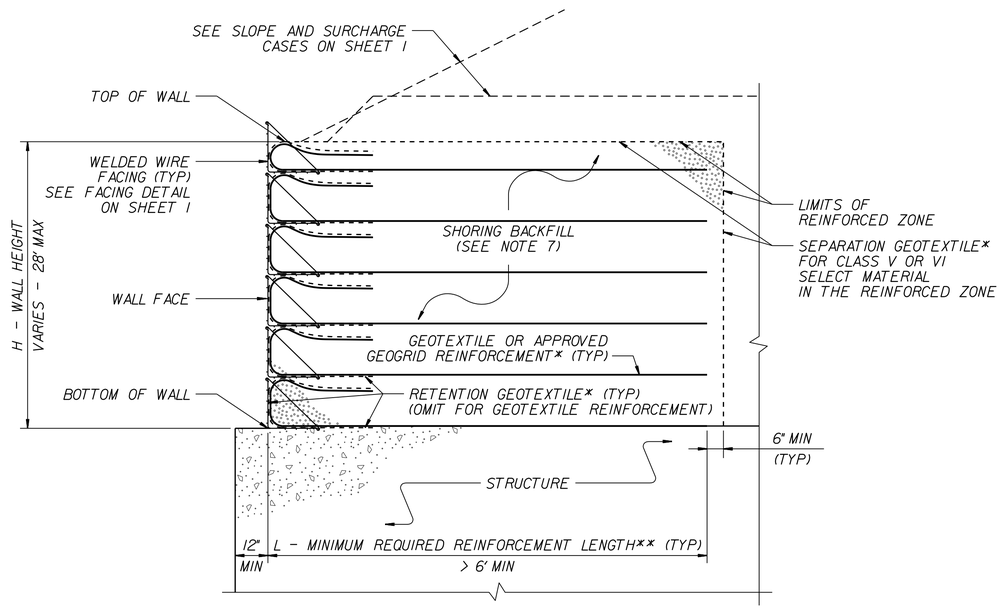


GEOGRID PLACEMENT

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

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

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

NOTES:

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

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 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.
U-2729	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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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

12/06/07

COMPUTED BY: JRC DATE: 11/15/21
CHECKED BY: HDC DATE: 11/15/21

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2729	3B-1

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONC. BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-3	GREU TL-2	TYPE III	AT-1	CAT-1	B-77	EA	G	NG				
-L-	25+14.19	25+57.46	LT	37.50			25+50.00		14	14	6.25								1								
-L-	31+33.04	33+20.55	LT	175.00			30+73.50	BRIDGE	14	14							1										
-L-	31+35.00	33+09.01	RT	150.00			33+30.70	BRIDGE	14	14							1										
-RPA-	17+92.35	19+84.51	RT	150.00			18+00.00	19+50.00	4	6	50.00	6.25			1				1								
-LPA-	17+28.99	18+33.14	LT	50.00	74.19		21+50.00	22+00.00	12	14		6.25							1								
-Y4-	63+76.86	65+74.08	RT	125.00			49+50.00	50+50.00	12	14	50.00				1					1							
-Y4-	66+59.37	67+37.50	RT	50.00					12	14		6.25							1	1							
-Y4-	62+23.29	65+62.67	RT	316.98					12	14										1					713.12		
-Y4-	66+48.36	69+44.14	RT	272.50					12	14										1							
-Y4-	61+22.25	65+62.67	LT	417.60					12	14										1					324.52		
-Y4-	66+47.95	68+62.43	LT	191.75					12	14										1							
-Y4-	64+74.54	65+53.85	LT	50.00					12	14		6.25							1	1					329.23		
-Y4-	66+39.14	68+62.43	LT	100.00					12	14	50.00				1					1					39.51		
-L-	35+29.30	36+72.89	LT	125.00			BRIDGE	37+00.00	14	14							1										
-L-	48+98.50	50+59.39	RT	100.00			49+50.00	50+50.00	14	14					1				1								
-Y2-	11+51.06	11+86.62	RT	0	43.00				14	14		6.25						1									
-Y3A-	10+55.96	11+52.47	LT	12.50	90.70				12	14	25.00					1											
-LPB-	19+06.52	20+06.76	RT	12.50	55.39				14	14	50.00				1												
-Y4-	65+74	66+59	LT																					85			
-Y4-	65+63	66+48	LT																					85			
-Y4-	65+63	66+48	RT																					85			
-Y4-	65+30	67+00	RT																					170			
TOTALS				2,295.04	263.28						231.25	37.5			5	1	3	1	6	8				425			
ADDITIONAL GUARDRAIL POSTS:		5																									
DEDUCTIONS FOR ANCHOR UNITS																											
	GREU TL-3	5	50.00	-250.00																							
	GREU TL-2	1	25.00	-25.00																							
	TYPE III	3	18.75	-56.25																							
	AT-1	1	6.25	-6.25																							
	CAT-1	6	6.25	-37.50																							
	B-77	8	22.875	-183.00																							
	GRAND TOTAL			1,737.04	263.28										5	1	3	1	6	8					1,404.37		
		SAY		1,737.50	275.00										5	1	3	1	6	8					1,404.37		

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CDK8251

12/06/07

COMPUTED BY: JRC DATE: 11/15/21
CHECKED BY: HDC DATE: 11/15/21

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-2729	3B-2

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–L–	12+00	12+28	LT	1.49
–L–	12+00	12+50	RT	2.89
–L–	23+57	23+65	RT	11.72
–L–	23+99	24+09	RT	11.99
–L–	27+69	28+00	RT	1.50
–L–	29+34	29+84	RT	111.67
–L–	31+01	32+75	RT	145.57
–L–	36+50	37+07	RT	106.71
–L–	37+69	39+37	RT	125.69
–L–	40+84	40+88	RT	3.41
–L–	41+07	41+08	RT	0.77
–L–	41+24	43+44	RT	578.87
–L–	45+21	45+31	RT	5.68
–L–	47+30	47+33	RT	0.72
–L–	47+65	47+71	RT	0.71
–L–	51+99	52+50	RT	4.36
–L–	21+12	23+46	LT	278.98
–L–	23+80	23+80	LT	2.16
–L–	23+90	24+54	LT	29.91
–L–	39+62	40+58	LT	63.70
–L–	40+75	41+89	LT	177.69
–L–	42+24	42+50	LT	23.24
–L–	42+75	43+41	LT	69.77
–L–	45+01	45+11	LT	3.84
–L–	47+10	48+63	LT	99.45
–L–	51+84	52+50	LT	6.60
–RDBT–	12+20	12+69	RT	108.07
–Y1A–	9+50	12+06	RT	355.05
–Y1A–	9+50	12+39	LT	289.24
–Y1B–	11+40	11+50	LT	0.57
–Y1B–	11+45	11+50	RT	0.26
–Y1B–	10+60	11+10	RT	5.63
–Y2–	11+29	11+87	RT	5.50
–LPA–	17+43	18+18	LT	35.12
–LPB–	19+55	19+83	RT	4.85
–RPB–	26+41	26+86	LT	20.72
–Y5–	10+69	11+36	RT	13.26
–Y5–	11+58	11+76	RT	11.49
–Y5–	10+40	11+76	LT	56.11
–Y6A–	11+00	11+24	RT	1.34
–Y6A–	14+61	14+62	RT	4.22
–Y6A–	14+82	14+83	RT	2.40
–Y6A–	11+46	11+47	LT	0.50
–Y6A–	13+11	13+22	LT	6.48
–Y6A–	13+24	13+29	LT	1.55
–Y6A–	13+46	13+49	LT	1.11
–Y6A–	14+88	14+90	LT	0.39
–Y6A–	15+32	15+42	LT	0.75
–Y6B–	11+52	11+53	RT	0.38
–Y6B–	11+79	11+79	RT	0.16
–Y6B–	11+81	11+91	RT	1.51
–Y6B–	12+25	12+34	RT	3.99
–Y6B–	12+67	12+92	RT	8.90
–Y6B–	13+06	13+30	RT	1.43
–Y6B–	11+52	11+62	LT	0.95
–Y6B–	11+73	11+79	LT	0.68
–Y6B–	12+69	12+89	LT	3.53
–Y6B–	13+13	13+30	LT	11.80
			TOTAL:	2,827.00
			SAY:	3,110

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
–RDBT–	10+00	13+71	CL	1,494.75
–RDBT–	12+33	12+74	RT	34.69
–Y1A–	10+00	12+39	CL	1,337.56
–L–	28+00	32+97	CL	2,486.72
–RPA–	20+00	22+40	CL	518.63
–LPA–	16+16	18+48	CL	503.33
–L–	35+42	36+50	RT	478.40
–Y5–	10+35	11+26	CL	310.51
–LPB–	17+75	20+14	CL	804.26
–RPB–	25+00	27+37	CL	619.38
			TOTAL:	8,588.22
			SAY:	9,450

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
–L– STA. 12+00.00	–L– STA. 19+59.48	185	4,271	4,086	
–Y1A– STA. 10+00.00	–Y1A– STA. 12+36.84	152	3,910	3,758	
–Y1B– STA. 10+32.76	–Y1B– STA. 11+50.00	435	12		423
–RBDT– STA. 10+00.00	–RBDT– STA. 13+70.71	247	4,232	3,985	
SUBTOTALS:		1,019	12,425	11,829	423
–L– STA. 21+11.53	–L– STA. 33+24.93	2,547	19,610	17,063	
–Y2– STA. 11+26.16	–Y2— STA. 12+16.76	113	288	175	
–RPALPA– STA. 17+50.00	–RPALPA– STA. 22+39.90	485	6,572	6,087	
–Y3A– STA. 10+37.50	–Y3A– STA. 11+54.95	225	546	321	
SUBTOTALS:		3,370	27,016	23,646	0
–L– STA. 34+73.30	–L– STA. 52+50.00	1,681	16909	15,228	
–RPBLPB– STA. 23+50.00	–RPBLPB– STA. 27+26.18	158	4,098	3,940	
–Y5– STA. 10+34.92	–Y5– STA. 11+76.22	115	283	168	
–Y6A– STA. 11+80.00	–Y6A– STA. 17+61.50	1,308	334		974
–Y6B– STA. 10+52.77	–Y6B– STA. 13+30.00	736	91		645
SUBTOTALS:		3,998	21,715	19,336	1,619
PROJECT TOTALS:		8,387	61,156	54,811	2,042
WASTE TO REPLACE BORROW:				–2,042	–2,042
LOSS DUE TO CLEARING AND GRUBBING		–1000		1000	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				2,689	
GRAND TOTALS:		7387	61,156	56,458	
SAY:		8,000		60,000	

DDE: SAY 335 CY

Earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Approximate quantities only. Unclassified excavation, borrow, fine grading, clearing and grubbing, removal of existing pavement and breaking of existing pavement will be paid for at the lump sum price for "Grading".

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(DK8256)

5TYFPT3

COMPUTED BY:	EMP	DATE:	03/07/2023
CHECKED BY:	JMM	DATE:	3/22/2023

PROJECT NO.	SHEET NO.
U-2729	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 / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 .064	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	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
L 13+67	25	LT	0402		872.4																		1			1		1	
			0402	0401		869.2	862.9								172														
L 13+68	7	RT	0403		873.8																		1						
			0403	0402		870.5	869.2								32														
L 15+71	32	LT	0406		877.7																		1			1		1	
			0406	0402		874.5	869.2								196														
L 15+72	9	RT	0407		880.0																		1						
			0407	0404		876.5	876.2								60														
Y1A 12+68	97	LT	0409		890.5																		1						
			0409	0417		887.5	887.4							24															
Y1A 10+01	22	LT	0411		872.0																		1			1		1	
			0411	0410		876.5	865.1								44														
Y1A 10+00	28	RT	0412		871.6																		1			1			1
			0412	0411		868.3	867.5								48														
Y1A 10+89	29	RT	0413		878.2																		1			1			1
			0413	0412		875.0	868.3								80														
Y1A 11+45	26	LT	0414		883.9																		1			1		1	
			0414	0438		880.6	874.7								80														
Y1A 11+45	1	LT	0415		883.9																		1						
			0415	0414		880.7	880.6								24														
Y1A 12+17	36	LT	0416		890.4																		1			1		1	
			0416	0414		886.7	880.6								76														
RDBT 12+36	33	RT	0417		894.1																		1	1.7		1		1	
			0417	0416		887.4	887.0							76															
L 19+34	47	RT	0419		891.1																		1			1			1
			0419	0418		883.1	884.0	1.2				44																	
L 19+58	0	CL	0420		891.5																		1						
			0420	0419		886.8	888.6								52														
Y1B 10+43	43	RT	0421		892.6																		1			1			1
			0421	0419		888.9	888.1									100													
Y1B 10+69	21	LT	0422		894.2																		1			1		1	
			0422	0421		890.3	888.9									68													
RDBT 11+34	49	RT	0423		894.2																		1			1	1		
			0423	0422		890.5	890.3									44													
L 21+65	51	RT	0424		894.8																		1			1			1
			0424	0423		891.5	891.0	0.5							56														
L 22+24	40	RT	0425		896.1																		1			1			1
			0425	0424		892.9	891.5	0.5							56														
L 22+22	2	LT	0426		896.8																		1						
			0426	0425		893.6	892.9								40														
L 23+45	40	RT	0427		899.1																		1			1			1
			0427	0425		895.8	892.9	0.3							116														
L 23+45	7	LT	0428		900.2																		1						
			0428	0427		897.0	895.8								44														
L 24+19	39	RT	0429		900.7																		1			1			1
			0429	0427		897.4	895.8								72														
L 24+79	8	LT	0430		902.9																		1						
			0430	0428		899.5	897.0								132														
L 24+79	46	LT	0431		902.9																		1			1		1	
			0431	0430		899.7	899.5								36														
SHEET TOTALS												44		100	1416	212							25	1.7		17	1	8	8

FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	ADJUST M.H	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" R.C. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	##" SLUICE GATE (##" SIZE SLUICE GATE)	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0402																																											
0402	0401																																										
0403						1	1																																				
0403	0402																																										
0406																																											
0406	0402																																										
0407						1	1																																				
0407	0404																																										
0409						1	1																																				
0409	0417																																									155	
0411																																											
0411	0410																																										
0412																																											
0412	0411																																						2				
0413																																										256	
0413	0412																																										
0414																																											
0414	0438																																										
0415						1	1																																				
0415	0414																																										
0416																																											
0416	0414																																										
0417																																											
0417	0416																																										
0419																																											
0419	0418																											2															
0420						1	1																																				
0420	0419																																										
0421																																											
0421	0419																																									122	
0422																																											
0422	0421																																										
0423																																											
0423	0422																																									56	
0424																																											
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0429																																											
0429	0427																																										
0430						1	1																																				
0430	0428																																										
0431																																											
0431	0430																																										
SHEET TOTALS						8	8																					2											2			589	

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

5TYFPT3

COMPUTED BY: EMP DATE: 03/07/2023

CHECKED BY: JMM DATE: 3/22/2023

PROJECT NO.	SHEET NO.
U-2729	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | C. S. PIPE SIZE | C. S. PIPE THICKNESS OR GAUGE | R. C. PIPE CLASS IV SIZE | 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) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.06 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | ##" SPRING BOX PIPE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING J.B. TO D.I. | ADJUST C.B. | ADJUST D.I. | ADJUST M.H | ##" SIDE DRAIN PIPE ELBOW | ##" SIDE DRAIN PIPE ELBOW | ##" SIDE DRAIN PIPE ELBOW | ##" R.C. ELBOW | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | 36" C.S. ELBOW | ##" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | ##" SLUICE GATE (##" SIZE SLUICE GATE) | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

5TYFPT3

COMPUTED BY:	EMP	DATE:	03/07/2023
CHECKED BY:	JMM	DATE:	3/22/2023

PROJECT NO.	SHEET NO.
U-2729	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 (.064)	C. S. PIPE 15 (.064)	C. S. PIPE 18 (.064)	C. S. PIPE 24 (.064)	C. S. PIPE	C. S. PIPE	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	R. C. PIPE CLASS IV	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	
RPB 26+81	16	LT	0526		911.4																					1			1		1		
			0526	0532		908.4	900.2			36																							
L 36+57	7	LT	0527		914.7																					1	5.0						
			0527	0525		904.8	904.6										36																
L 36+59	37	RT	0530		912.4																					1	2.4		1		1		
			0530	0527		905.0	904.8										40																
L 36+80	64	RT	0531		908.6																					1							
			0531	0530		905.4	905.3									32																	
Y5 11+28	41	RT	0533																														
			0533	0531		913.4	905.4	0.3		44																							
L 35+55	7	LT	0534		916.2																					1							
			0534	0535		912.8	911.0										44																
L 35+49	37	RT	0535		914.4																					1			1		1		
			0535	0530		911.0	905.0										104																
L 37+66	62	RT	0536		909.7																					1			1		1		
			0536	0537		906.7	905.0									48																	
L 38+11	37	RT	0537		908.0																					1			1		1		
			0537	0610		905.0	899.3									180																	
Y6B 12+05	42	RT	0602		886.4																					1	1.0		1		1		
			0602	0622		880.3	878.4												80														
Y6B 11+00	47	RT	0603		890.6																					1			1		1		
			0603	0602		886.1	880.8	0.6										104															
L 43+54	59	RT	0604		892.0																					1			1		1		
			0604	0672		888.3	886.3	0.5										36															
L 43+03	55	RT	0605		893.8																					1			1		1		
			0605	0604		889.4	888.3											52															
L 41+55	55	RT	0606		898.2																					1	0.6		1		1		
			0606	0605		892.7	889.4											148															
L 40+65	42	RT	0607		900.6																					1	2.0		1		1		
			0607	0606		893.6	893.2										88																
L 40+02	3	RT	0608		904.5																					1							
			0608	0610		900.0	899.0										36																
L 40+01	40	RT	0610		902.3																					1			1		1		
			0610	0607		899.0	893.6										60																
L 43+03	13	LT	0612		893.7																					1							
			0612	0605		889.7	888.4	0.3										64															
Y6A 16+45	52	RT	0613		897.4																					1			1		1		
			0613	0656		894.1	893.3	0.8									48																
Y6A 16+18	52	RT	0614		897.9																					1			1		1		
			0614	0613		894.7	894.1	0.7									28																
Y6A 15+50	52	RT	0615		899.5																					1			1		1		
			0615	0614		896.3	894.7	0.6									66																
Y6A 14+17	37	RT	0616		903.9																					1			1		1		
			0616	0615		900.3	896.3	0.5									132																
Y6A 14+17	42	LT	0617		903.7																					1			1			1	
			0617	0616		900.4	900.0										76																
Y6A 12+50	32	LT	0618		908.1																					1			1			1	
			0618	0617		905.1	900.7	0.5								168																	
Y6A 11+94	29	LT	0619		910.2																					1			1			1	
								SHEET TOTALS		80						428	758	404	80							24	11.0		19		16	3	

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	ADJUST M.H	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" R.C. ELBOW		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW							BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)		##" SLUICE GATE (##" SIZE SLUICE GATE)		MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
RPB 26+81	0526																																																							
	0526	0532																													2																									
L 36+57	0527						1	1																																																
	0527	0525																																																						
L 36+59	0530																																																						
	0530	0527																																																				152	
L 36+80	0531						1	1																																															
	0531	0530																																																					
Y5 11+28	0533																																																						Ex. CB
	0533	0531																													2																									
L 35+55	0534						1	1																																															
	0534	0535																																																					
L 35+49	0535																																																						
	0535	0530																																																					
L 37+66	0536																																																						
	0536	0537																																																				57	
L 38+11	0537																																																						
	0537	0610																																																				238	
Y6B 12+05	0602																																																						
	0602	0622																																																				230	
Y6B 11+00	0603																																																						
	0603	0602																																																					
L 43+54	0604																																																						
	0604	0672																																																					
L 43+03	0605																																																						
	0605	0604																																																					
L 41+55	0606																																																						
	0606	0605																																																				350	
L 40+65	0607																																																						
	0607	0606																																																					
L 40+02	0608						1	1																																															
	0608	0610																																																					
L 40+01	0610																																																						
	0610	0607																																																					
L 43+03	0612						1	1																																															
	0612	0605																																																				172	
Y6A 16+45	0613																																																						
	0613	0656																																																					
Y6A 16+18	0614																																																						
	0614	0613																																																					
Y6A 15+50	0615																																																						
	0615	0614																																																					
Y6A 14+17	0616																																																						
	0616	0615																																																				525	
Y6A 14+17	0617																																																						
	0617	0616																																																				56	
Y6A 12+50	0618																																																						
	0618	0617																																																					
Y6A 11+94	0619																																																						
SHEET TOTALS							5	5																							4																							1780	

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

5TYFPT3

COMPUTED BY: EMP DATE: 03/07/2023

CHECKED BY: JMM DATE: 3/22/2023

PROJECT NO.	SHEET NO.
U-2729	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 / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12 .064	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	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
			0619	0618		907.2	905.1							56															
Y6A 12+42	30	RT	0620		908.9																		1			1		1	
			0620	0616		905.9	900.3							176															
Y6B 13+38	36	LT	0621		882.7																		1	1.0		1			1
			0621	0623		876.7	875.9												64										
Y6B 12+02	38	LT	0622		886.3																		1	4.0		1			1
			0622	0621		877.4	876.7												136										
Y6B 13+37	31	RT	0623		881.9																		1	1.0					
			0623	0670		875.9	875.5	0.5											72										
Y6B 11+81	65	LT	0624		890.1																		1	2.6		1		1	
			0624	0622		882.5	879.4								36														
Y6B 11+24	40	LT	0625		888.6																		1			1			1
			0625	0622		884.8	878.9									76													
Y6B 10+57	64	LT	0626		889.7																		1			1			1
			0626	0625		885.7	884.8									72													
L 45+49	6	RT	0627		891.8																		1						
			0627	0667		887.9	886.0									28													
L 44+98	60	LT	0628		893.1																		1			1	1		
			0628	0668		889.8	889.5								52														
L 45+10	76	LT	0629		894.0																		1			1	1		
			0629	0628		890.8	889.8								20														
Y6A 16+84	46	LT	0630		895.6																		1			1			1
			0630	0631		892.3	892.0								20														
Y6A 16+85	65	LT	0631		895.9																		1						
			0631	0629		892.0	890.8								56														
L 46+30	37	RT	0632		893.9																		1			1			1
			0632	0667		890.7	886.5								80														
L 46+31	5	RT	0633		895.3																		1						
			0633	0632		891.8	890.7								28														
L 47+72	37	RT	0634		895.8																		1			1			1
			0634	0632		892.6	890.7								140														
L 47+72	5	RT	0635		897.6																		1						
			0635	0634		894.1	892.6								32														
Y6B 12+12	63	RT	0637		887.4																		1	0.2					
			0637	0602		882.3	881.3								20														
Y6B 12+00	70	RT	0638		889.7																		1			1	1		
			0638	0637		886.4	882.5	0.6		16																			
L 50+25	0	CL	0641		898.1																								
L 52+44	0	CL	0642		896.6																		1						
			0642	0673																									
L 52+44	7	LT	0643		896.8																		1						
			0643	0642																									
L 50+21	58	LT	0644		896.6																								
			0644	0641																									
L 50+11	59	LT	0645		894.9																		1	0.4					
			0645	0644																									
L 50+03	72	LT	0646		895.4															3.400									
			0646	0645		892.4	889.5											16											
L 52+20	37	RT	0649		895.6																		1			1		1	
SHEET TOTALS										16				232	484	176		16	272	3.400			22	9.2		13	3	3	7

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	ADJUST M.H	PIPE REMOVAL LIN. FT.	REMARKS
	0619	0618																						265	
Y6A 12+42	0620																								
	0620	0616																							
Y6B 13+38	0621																								
	0621	0623																							
Y6B 12+02	0622																								
	0622	0621																						390	
Y6B 13+37	0623											1									1						
	0623	0670																							
Y6B 11+81	0624																								
	0624	0622																							
Y6B 11+24	0625																								
	0625	0622																							
Y6B 10+57	0626																								
	0626	0625																							
L 45+49	0627						1	1																	
	0627	0667																							
L 44+98	0628																								
	0628	0668																							
L 45+10	0629																								
	0629	0628																							
Y6A 16+84	0630																								
	0630	0631																							
Y6A 16+85	0631										1								1					160	
	0631	0629																							
L 46+30	0632																								
	0632	0667																						170	
L 46+31	0633						1	1																	
	0633	0632																						26	
L 47+72	0634																								
	0634	0632																							
L 47+72	0635						1	1																	
	0635	0634																						177	
Y6B 12+12	0637							1												1					
	0637	0602																							
Y6B 12+00	0638																								
	0638	0637																							
L 50+25	0641																		1				1		
																									Ex. 36in RCP
L 52+44	0642										1								1						
	0642	0673																							Ex. 18in RCP
L 52+44	0643						1	1																	
	0643	0642																							Ex. 15in RCP
L 50+21	0644																		1				1		
	0644	0641																							Ex. 36in RCP
L 50+11	0645								1										1						
	0645	0644																							Ex. 36in RCP
L 50+03	0646																								
	0646	0645																							
L 52+20	0649																								
SHEET TOTALS							4	5	1		3								6	1			2	1188	

##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" R.C. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	##" SLUICE GATE (##" SIZE SLUICE GATE)	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY

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

5TYFPT3

COMPUTED BY: EMP DATE: 03/07/2023

CHECKED BY: JMM DATE: 3/22/2023

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2729	3D-5

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 12	C. S. PIPE 15	C. S. PIPE 18	C. S. PIPE 24	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY
THICKNESS OR GAUGE								.064	.064	.064	.064										
L 52+04	37 RT	0650		895.5																	
		0650	0649		892.5	891.5							16								
L 51+00	7 LT	0651		897.8																	
		0651	0673		894.1	893.1							8								
Y6B 11+50	68 RT	0652		890.0																	
		0652	0638		886.7	886.4							48								
L 45+85	62 LT	0654		895.7																	
		0654	0668		891.9	889.5								40							
Y6A 16+95	52 RT	0656		896.5																	
		0656	0657		893.3	892.2	0.8							60							
L 43+52	55 LT	0657		895.8																	
		0657	0666		891.7	891.5									48						
L 43+43	62 LT	0658		895.5																	
		0658	0657		892.3	892.2								12							
Y6B 11+50	68 RT	0660		889.7																	
		0660	0652		886.7	886.6							8								
L 40+68	89 LT	0664		881.9																	
L 40+65	147 LT	0665		881.9																	
L 43+03	43 LT	0666		895.9																	
		0666	0612		891.5	889.7									28						
L 45+50	37 RT	0667		889.7																	
		0667	0626		886.0	885.7									52						
L 45+48	49 LT	0668		894.4																	
		0668	0627		889.0	887.9									52						
Y6B 14+10	31 RT	0670		882.0																	
		0670	0601		875.5	875.4	0.5											16			
Y6B 12+99	37 RT	0671		883.7																	
		0671	0623		880.4	877.9								36							
L 43+91	60 RT	0672		891.0																	
		0672	0603		886.3	886.1	0.5								16						
L 51+00	3 RT	0673		897.4																	
		0673	0641																		
SHEET TOTALS													80	148	196			16			
PROJECT TOTALS									164	220	44		1024	3746	988	80	16	288	3.400		

LINE & STATION	FROM	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	ADJUST M.H	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" SIDE DRAIN PIPE ELBOW	##" R.C. ELBOW	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW
L 52+04	0650	1			1		1																																
L 51+00	0651	1											1	1																									
Y6B 11+50	0652	1			1			1																															
L 45+85	0654	1			1		1																																
Y6A 16+95	0656	1			1		1																																
L 43+52	0657	1			1	1																																	
L 43+43	0658	1			1	1																																	
Y6B 11+50	0660	1			1	1																																	
L 40+68	0664	1											1	1																									
L 40+65	0665																											1											
L 43+03	0666	1			1			1																															
L 45+50	0667	1			1			1																															
L 45+48	0668	1	0.4		1		1																																
Y6B 14+10	0670	1	1.3														1								1														
Y6B 12+99	0671	1			1		1																																
L 43+91	0672	1															1								1														
L 51+00	0673	1	2.2														1								1														
SHEET TOTALS		16	3.9		11	3	5	3					2	2			3								3			1											
PROJECT TOTALS		112	47.1		76	7	41	28					25	26	3		7								12	1		1	2					10	6	2			

LINE & STATION	FROM	TO	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	##" SLUICE GATE (##" SIZE SLUICE GATE)	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
	0654	0668										82	
L 40+68	0664											220	
	0668	0627										112	
	0673	0641											Ex. 18in RCP
SHEET TOTALS												414	
PROJECT TOTALS									2			4135	

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: Paul Zhang DATE: 12/05/18
CHECKED BY: Shane Johnson DATE: 12/10/18
REVISED BY: Shane Clark Date: 3/24/23

(2-3-23)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2729	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-L-	38+25	40+75	ASU (1)	18	400	1800	1900		
-Y6A-	15+25	17+75	ASU (1)	18	600	1200	1300		
CONTINGENCY			ASU (1)	18	1800	3600	4000		
			TOTAL CY/TONS/SY:		2800	6600**	7200**	0	0

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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PARCEL INDEX SHEET

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
1	4	CLARENCE R. LAMBE, JR. KATHERINE W. LAMBE
2	4	WINSTON SALEM MILL PROPERTIES, LLC
3	4	FORSYTH COUNTY
4	4	FORSYTH COUNTY
5	4,5	Y.M.C.A. OF NORTHWEST N.C.
6	4,5	AMERICRAFT CARTON, INC.
7	5	CITY OF WINSTON SALEM
8	5	CITY OF WINSTON SALEM
9	5	WAFFLE HOUSE, INC. #754
10	5,6	HANES MILL ROAD PROPERTIES, LLC
11	5.6	MARK ALAN EVANS
12	6	REUBEN W. HAYNES MARY S. HAYNES
13	6	APH HOLDINGS, LLC
14	6	McDONALDS CORPORATION 32/322
15	6,7	BRANCH BANKING & TRUST CO.
16	6	CFT NV DEVELOPMENT, LLC
17	7	BRANCH BANKING & TRUST CO.
18	7	FRANK MYERS INVESTMENTS, LLC
19	7	FRANK MYERS INVESTMENTS, LLC
20	6	SAM B. SMITH, MILDRED G. SMITH, TRUSTEES UNDER THE SAM & MILDRED SMITH LIVING TRUST
21	6	MK WINSTON, LLC
22	6,7	FIRST CITIZENS BANK & TRUST CO.
23	6,7	PARKWAY PLACE I AND II, LLC
24	6	WHC PROPERTIES LLC.
25	6	O'CHARLEY'S INC.
26	7	TARHEEL TEXTILE SALES COMPANY, INC.
27	7	CAR FARE CAR WASH INC.
28	6	IRENE E. ERVIN
29	7	BRANCH BANKING & TRUST CO.
30	7	RONALD LEE SIMMONS
31	7	COE REVOCABLE LIVING TRUST
32	7	O'REILLY AUTOMOTIVE, INC.

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2729	4

R/W SHEET NO.

SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE SHEET 2B-5 THRU 2B-8 FOR ISLAND DETAILS

-L- SEE PROFILE SHEET 10
-Y1A- SEE PROFILE SHEET 11
-Y1B- SEE PROFILE SHEET 11
-RDBT- SEE PROFILE SHEET 15

-L-

PI Sta 15+02.37	PI Sta 21+43.26
Δ = 21° 58' 17.1" (LT)	Δ = 21° 17' 09.8" (RT)
D = 4° 47' 40.7"	D = 5° 47' 14.8"
L = 458.25'	L = 367.80'
T = 231.98'	T = 186.04'
R = 1,195.00'	R = 990.00'
SE = 0.04	SE = 0.04
RO = 192'	RO = 192'
TR = 96'	TR = 96'

-Y1A-

PI Sta 10+61.75	PI Sta 12+42.92
Δ = 53° 39' 43.2" (RT)	Δ = 3° 08' 15.1" (RT)
D = 16° 02' 57.3"	D = 5° 43' 46.5"
L = 334.36'	L = 54.76'
T = 180.58'	T = 27.39'
R = 357.00'	R = 1,000.00'
SE = 0.04	SE = 0.04
RO = 148'	RO = 148'
TR = 74'	TR = 74'

-RDBT-

PI Sta 10+73.09	PI Sta 11+50.01	PI Sta 12+63.61	PI Sta 13+38.74
Δ = 102° 10' 45.6" (LT)	Δ = 74° 24' 20.1" (LT)	Δ = 108° 22' 36.7" (LT)	Δ = 75° 02' 08.0" (LT)
D = 97° 06' 41.4"	D = 97° 06' 41.4"	D = 97° 06' 41.4"	D = 97° 06' 41.4"
L = 105.22'	L = 76.62'	L = 111.60'	L = 77.27'
T = 73.09'	T = 44.79'	T = 81.77'	T = 45.30'
R = 59.00'	R = 59.00'	R = 59.00'	R = 59.00'

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER	NORTH CAROLINA PROFESSIONAL SEAL 042084 ENGINEER JOSHUA J. MASSROCK

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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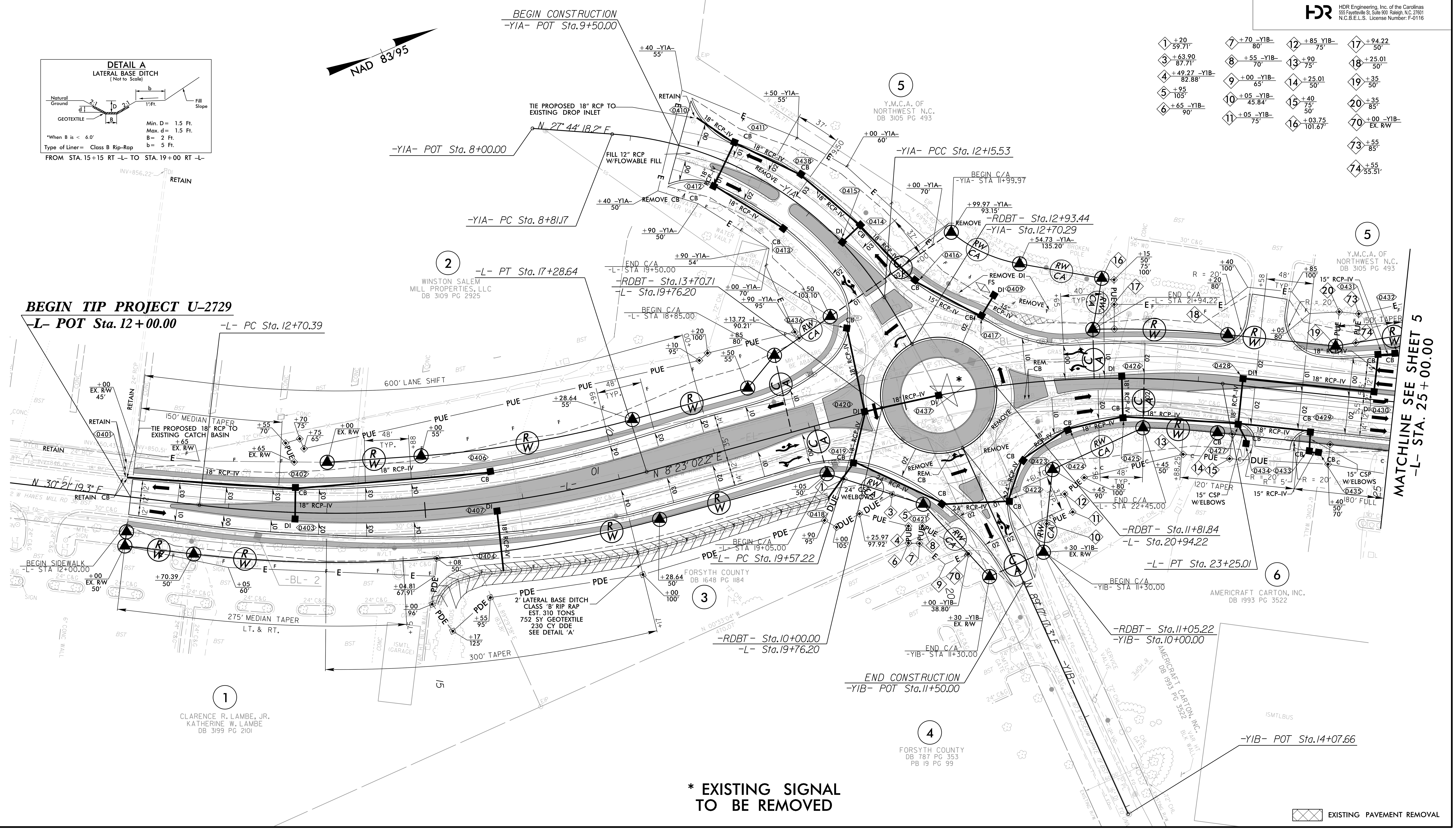
HDR — HDR Engineering, Inc. of the Carolinas, 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601, N.C.B.E.L.S. License Number: F-0116



DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
GEOTEXTILE
Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM STA. 15+15 RT -L- TO STA. 19+00 RT -L-
NAD 83/95
BEGIN TIP PROJECT U-2729
-L- POT Sta. 12+00.00
-L- PC Sta. 12+70.39
BEGIN CONSTRUCTION
-Y1A- POT Sta.9+50.00
-Y1A- POT Sta. 8+00.00
-Y1A- PC Sta. 8+81.17
-L- PT Sta. 17+28.64
-RDBT- Sta.13+70.71
-L- Sta.19+76.20
-Y1A- PCC Sta. 12+15.53
-RDBT- Sta.12+93.44
-Y1A- Sta.12+70.29
-RDBT- Sta.11+81.84
-L- Sta.20+94.22
-L- PT Sta. 23+25.01
-RDBT- Sta.10+00.00
-L- Sta.19+76.20
-L- PC Sta. 19+57.22
-RDBT- Sta.11+05.22
-Y1B- Sta.10+00.00
END CONSTRUCTION
-Y1B- POT Sta.11+50.00
-Y1B- POT Sta.14+07.66
N 27° 44' 18.2" E
N 30° 21' 19.3" E
N 8° 23' 02.2" E
TIE PROPOSED 18" RCP TO EXISTING DROP INLET
FILL 12" RCP W/FLOWABLE FILL
TIE PROPOSED 18" RCP TO EXISTING CATCH BASIN
600' LANE SHIFT
150' MEDIAN TAPER
275' MEDIAN TAPER LT. & RT.
300' TAPER
120' TAPER
150' TAPER
2' LATERAL BASE DITCH CLASS 'B' RIP RAP EST. 310 TONS 752 SY GEOTEXTILE 230 CY DDE SEE DETAIL 'A'
MATCHLINE SEE SHEET 5
-L- STA. 25+00.00
1 CLARENCE R. LAMBE, JR. KATHERINE W. LAMBE DB 3199 PG 2101
2 WINSTON SALEM MILL PROPERTIES, LLC DB 3109 PG 2925
3 FORSYTH COUNTY DB 1648 PG 1184
4 FORSYTH COUNTY DB 787 PG 353 PB 19 PG 99
5 Y.M.C.A. OF NORTHWEST N.C. DB 3105 PG 493
6 AMERICRAFT CARTON, INC. DB 1993 PG 3522

*** EXISTING SIGNAL TO BE REMOVED**

EXISTING PAVEMENT REMOVAL

-LPB-

PI Sta 10+58.79
Δ = 20° 17' 15.3" (RT)
D = 17° 26' 15.6"
L = 116.34'
T = 58.79'
R = 328.57'
SE = 0.08
RO = 144'
TR = 36'

PI Sta 11+65.70
Δ = 30° 40' 11.4" (RT)
D = 31° 49' 51.8"
L = 96.35'
T = 49.36'
R = 180.00'
SE = 0.08
RO = 144'
TR = 36'

PI Sta 13+93.02
Δ = 101° 14' 46.5" (RT)
D = 38° 42' 48.0"
L = 261.53'
T = 180.33'
R = 148.00'
SE = 0.08
RO = 144'
TR = 36'

PI Sta 15+35.99
Δ = 32° 31' 07.8" (RT)
D = 27° 03' 19.7"
L = 120.19'
T = 61.76'
R = 211.77'

-RPA-

PI Sta 14+75.22
Δ = 2° 31' 26.7" (RT)
D = 5° 43' 46.5"
L = 44.05'
T = 22.03'
R = 1,000.00'
SE = 0.08
RO = 192'
TR = 48'

PI Sta 19+01.55
Δ = 50° 41' 43.3" (LT)
D = 17° 44' 19.1"
L = 285.79'
T = 153.01'
R = 323.00'
SE = 0.08
RO = 192'
TR = 48'

-LPA-

PI Sta 13+12.30
Δ = 41° 19' 26.3" (LT)
D = 37° 41' 40.5"
L = 109.63'
T = 57.32'
R = 152.00'
SE = 0.08
RO = 144'
TR = 36'

PI Sta 14+54.75
Δ = 59° 54' 37.0" (LT)
D = 37° 41' 40.5"
L = 158.94'
T = 87.60'
R = 152.00'
SE = 0.08
RO = 144'
TR = 36'

PI Sta 15+85.81
Δ = 42° 03' 05.1" (LT)
D = 36° 52' 45.9"
L = 114.02'
T = 59.72'
R = 155.36'
SE = 0.08
RO = 144'
TR = 36'

-Y5-

PI Sta 10+40.80
Δ = 18° 32' 21.7" (RT)
D = 22° 55' 05.9"
L = 80.89'
T = 40.80'
R = 250.00'
SE = 0.04
RO = 76'
TR = 38'

-RPB-

PIs Sta 20+17.64
Θs = 11° 00' 00.0"
Ls = 200.00'
LT = 133.59'
ST = 66.90'
SE = 0.08
RO = 192'
TR = 48'

PI Sta 21+87.29
Δ = 22° 25' 21.1" (RT)
D = 11° 00' 00.0"
L = 203.84'
T = 103.24'
R = 520.87'
SE = 0.08
RO = 192'
TR = 48'

-L-

PI Sta 31+24.15
Δ = 10° 04' 10.0" (RT)
D = 6° 11' 14.8"
L = 162.74'
T = 81.58'
R = 926.00'
SE = 0.04
RO = 192'
TR = 96'

PI Sta 38+43.85
Δ = 32° 18' 24.7" (RT)
D = 6° 11' 14.8"
L = 522.14'
T = 268.21'
R = 926.00'
SE = 0.04
RO = 192'
TR = 96'

-Y4-

PI Sta 69+59.28
Δ = 7° 18' 31.0" (RT)
D = 2° 51' 53.2"
L = 255.12'
T = 127.73'
R = 2,000.00'

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

FROM STA. 31+12 LT -L- TO STA. 33+39 LT -L-

-L- SEE PROFILE SHEET 10 & 11
-Y2- SEE PROFILE SHEET 12
-LPA- SEE PROFILE SHEET 12
-RPA- SEE PROFILE SHEET 13
-LPB- SEE PROFILE SHEET 13
-RPB- SEE PROFILE SHEET 14
-Y5- SEE PROFILE SHEET 14

SEE SHEETS 2B-2 THRU 2B-3 FOR INTERSECTION DETAILS
SEE SHEETS 2G-1 THRU 2G-4 FOR TEMPORARY SHORING PLANS
SEE SHEETS S-1 THRU S-54 FOR STRUCTURES PLANS
SEE SHEETS W-1 THRU W-4 FOR RETAINING WALL PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-2729	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 042084 ENGINEER JOSHUA J. MASSOCK

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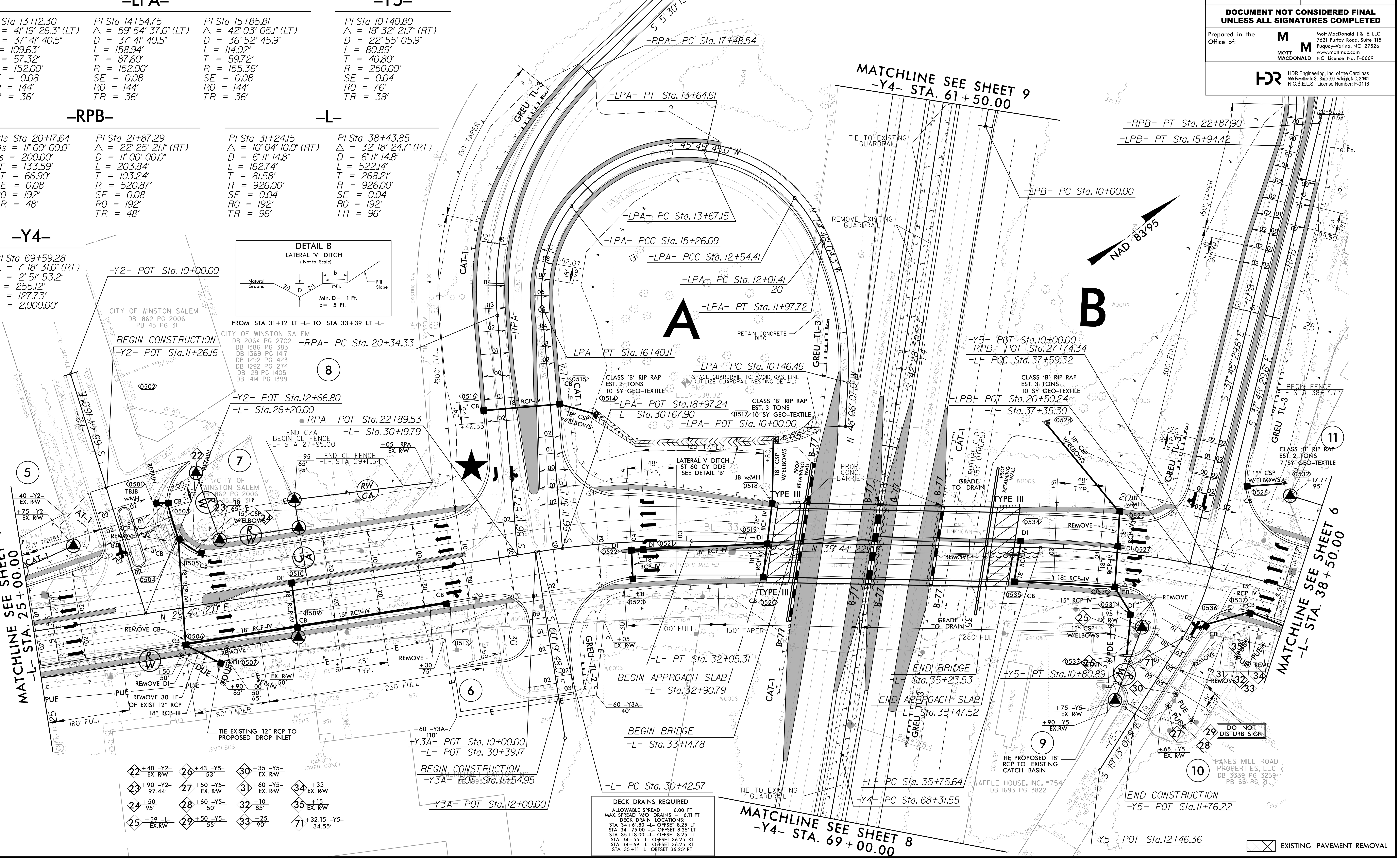
HDR — HDR Engineering, Inc. of the Carolinas, 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601, N.C.B.E.L.S. License Number: F-0116



DECK DRAINS REQUIRED
ALLOWABLE SPREAD = 6.00 FT
MAX. SPREAD W/O DRAINS = 6.11 FT
DECK DRAIN LOCATIONS:
STA 34+61.80 -L- OFFSET 8.25' LT
STA 34+75.00 -L- OFFSET 8.25' LT
STA 35+18.00 -L- OFFSET 8.25' LT
STA 34+55 -L- OFFSET 36.25' RT
STA 34+69 -L- OFFSET 36.25' RT
STA 35+11 -L- OFFSET 36.25' RT

EXISTING PAVEMENT REMOVAL

8/17/99

36 +75 EX. R/W
37 +55 EX. R/W
38 +83.29 EX. R/W
39 EX. R/W 85'
40 +20 60'
41 +39.95 75'
42 +55 65'
43 +30 65'
44 +35 75'
45 +95 –Y6B– 80'
46 +00 –Y6B– EX. R/W
47 +35 –Y6B– 80' EX.RW
48 +25 –Y6B– 80' EX.RW
49 +30 120' 105'
50 +40 120'
51 +45 105'
52 +45 90.14'
57 +15 –Y6A– 60'
58 +35 –Y6A– 86.31'
59 EX.RX 50'
60 +75 –Y6B– 75' 65.57'
61 +30 –Y6B– EX. R/W 50'
62 +30 –Y6B– 60'
65 +30 85'
72 +00 50'
68 +73 –L– 73' 60'
69 +94.52 –L– 73'
75 +45.04 –L– 63.48'
76 +15.16 –L– 131.14'

SEE SHEET 2B–4 FOR INTERSECTION DETAILS

–L– SEE PROFILE SHEET 11
–Y6A– SEE PROFILE SHEET 15
–Y6B– SEE PROFILE SHEET 15

PROJECT REFERENCE NO.	SHEET NO.
U-2729	6
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042084 ENGINEER JOSHUA I. MASSROCK

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Fuquay-Varina, NC 27526
www.mottmac.com
NC License No. F-0669

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

MATCHLINE SEE SHEET 7
–Y6A– STA. 16+00.00

MATCHLINE SEE SHEET 5
–L– STA. 38+50.00

END C/A
END FENCE
–L– STA 39+50.00

TIE EXISTING 15" RCP TO PROPOSED DI
350' FULL
110' TAPER
150' FULL
GRADE TO DRAIN
REMOVE 14LF OF EXISTING RCP
TIE EXISTING 18" RCP TO PROPOSED CATCH BASIN
100' TAPER
200' FULL
150' FULL
TIE EXISTING 15" RCP TO PROPOSED CATCH BASIN +10
REDUCED BERM
REMOVE 60LF OF EXISTING 24" RCP
TIE EXISTING 24" RCP TO PROPOSED JUNCTION BOX
200' FULL
100' TAPER
TIE EXISTING 36" RCP TO PROPOSED JUNCTION BOX
PAD FOR BUS SHELTER TO BE REPLACED BY OTHERS
TIE SIDEWALK TO EXISTING
8' x 12' CURB REDUCED BERM
TIE PROPOSED 18" RCP TO EXISTING CATCH BASIN
TIE EXISTING 15" RCP TO PROPOSED CATCH BASIN
TIE TO EXISTING 24" CMP
TIE EXISTING PIPES TO PROPOSED JUNCTION BOX
TIE SIDEWALK TO EXIST.

–L– N 72° 02' 46.8" E

–L– PC Sta. 45+94.52
–L– Sta.44+35.49
–Y6B– POT Sta.10+00.00
–L– Sta.44+29.28
–Y6A– POT Sta.18+08.27
–L– PT Sta. 40+97.78
–Y6B– S 19° 33' 01.0" E
END GRADE –Y6B– POT Sta.13+30.00
END RESURFACING –Y6B– POT Sta.14+25.00
–Y6B– POT Sta. 15+08.08

END TIP PROJECT U–2729
–L– POC Sta. 52+50.00

REUBEN W. HAYNES
MARY S. HAYNES
DB 767 PG 180
PB 4 PG 10

APH HOLDINGS, LLC
DB 2841 PG 2
PB 55 PG 81

HANES MILL ROAD PROPERTIES, LLC
DB 3339 PG 3259
PB 66 PG 21

BRANCH BANKING & TRUST CO.
DB 1777 PG 3645
PB 4 PG 10

McDONALDS CORPORATION 32/322
DB 1635 PG 1017
PB 4 PG 10

CFT NV DEVELOPMENT LLC
DB 3469 PG 3628
PB 4 PG 10

BV 189, LLC
DB 3371PG 102
PB 4 PG 10

TROY L. BROWN
PHYLLIS P. BROWN
DB 2776 PG 2755

PARKWAY PLACE I AND II, LLC
DB 3176 PG 2812
DB 1820 PG 986

ALLIANCE 2009, LLC
DB 3089 PG 238
PB 44 PG 189

O'CHARLEY'S INC.
DB 2275 PG 5089
PB 44 PG 189

SAM B. SMITH
MILDRED G. SMITH
TRUSTEES UNDER THE
SAM & MILDRED SMITH LIVING TRUST
DB 2197 PG 1902

MK WINSTON, LLC
DB 3288 PG 3398

WHC PROPERTIES, LLC.
DB 2812 PG 2396
PB 39 PG 187

CIRCLE K STORES, INC.
DB 3034 PG 515

OWNERSHIP UNKNOWN
POSSIBLE GAP

–L–

PI Sta 38+43.85	PI Sta 49+61.60
△ = 32° 18' 24.7" (RT)	△ = 24° 39' 01.7" (RT)
D = 6° 11' 14.8"	D = 3° 24' 37.7"
L = 522.14'	L = 722.79'
T = 268.21'	T = 367.07'
R = 926.00'	R = 1,680.00'
SE = 0.04	SE = 0.04
RO = 192'	RO = 192'
TR = 96'	TR = 96'

NAD 83/95

EXISTING PAVEMENT REMOVAL

4/6/2023
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8/17/99

85	+25 -Y6A-	EX.R/W
84	+25 -Y6A-	65'
83	+35 -Y6A-	
82	+35 -Y6A-	EX.R/W
81A	+50 -Y6A-	EX.R/W
81	+50 -Y6A-	58'
80	+24.76 -Y6A-	58'
79	+66 -Y6A-	70'
78	+66 -Y6A-	60'
77	+55 -Y6A-	60'
76	+86.51 -Y6A-	57.96'
75	+56.52 -Y6A-	110'
74	+65 -Y6A-	110'
73	+65 -Y6A-	100'
64	+50 -Y6A-	85'
63	EX. R/W	85'
56	+10 -Y6A-	80'
55	+15 -Y6A-	60'
54	+20 -Y6A-	75'
53	+18.33 -Y6A-	70'

-Y6A- SEE PROFILE SHEET 15

PROJECT REFERENCE NO.	SHEET NO.
U-2729	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 042084 ENGINEER JOSHUA J. MASSROCK

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Fuquay-Varina, NC 27526
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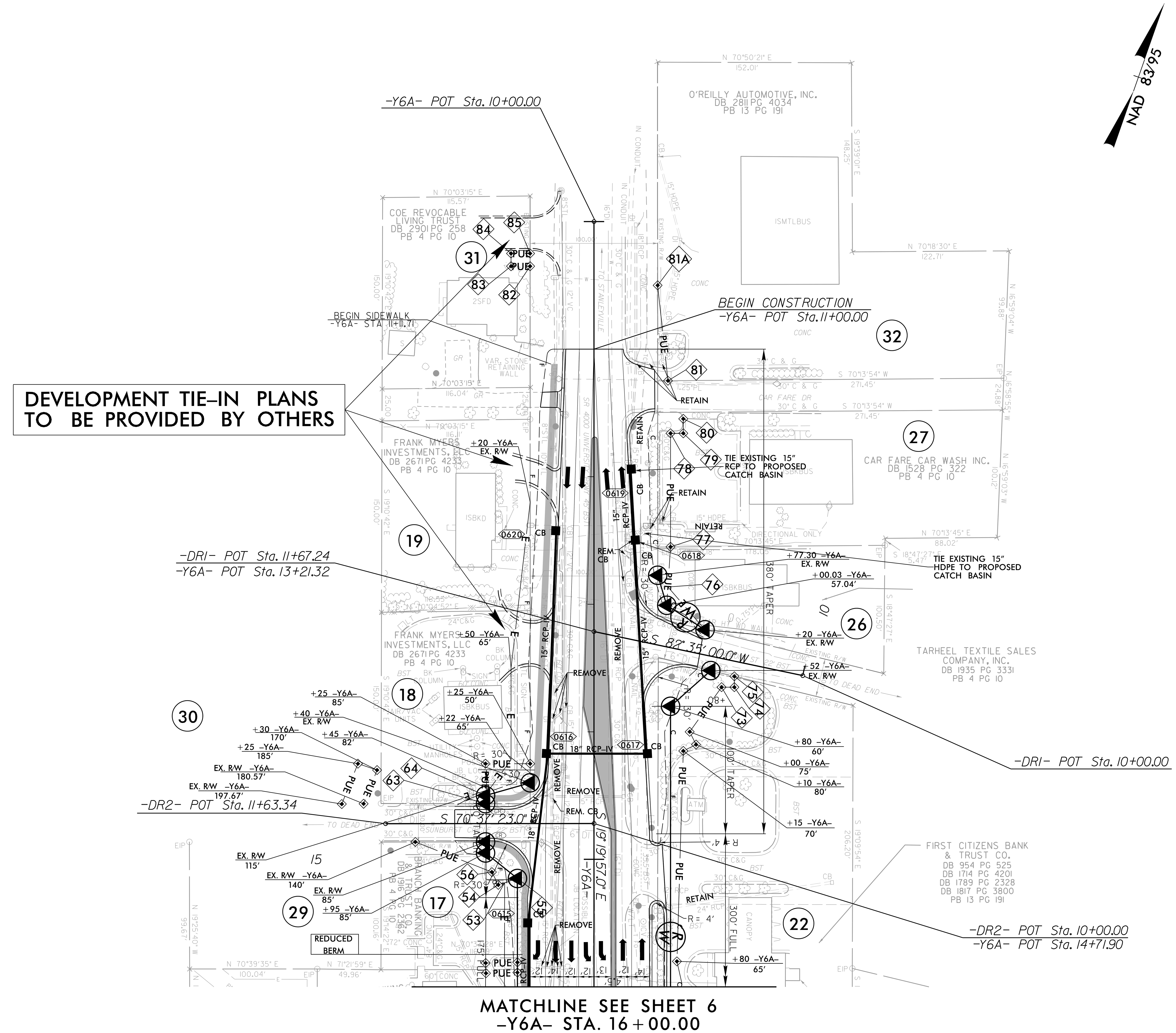
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



4/4/2023

EXISTING PAVEMENT REMOVAL

PROJECT REFERENCE NO.	SHEET NO.
U-2729	8

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

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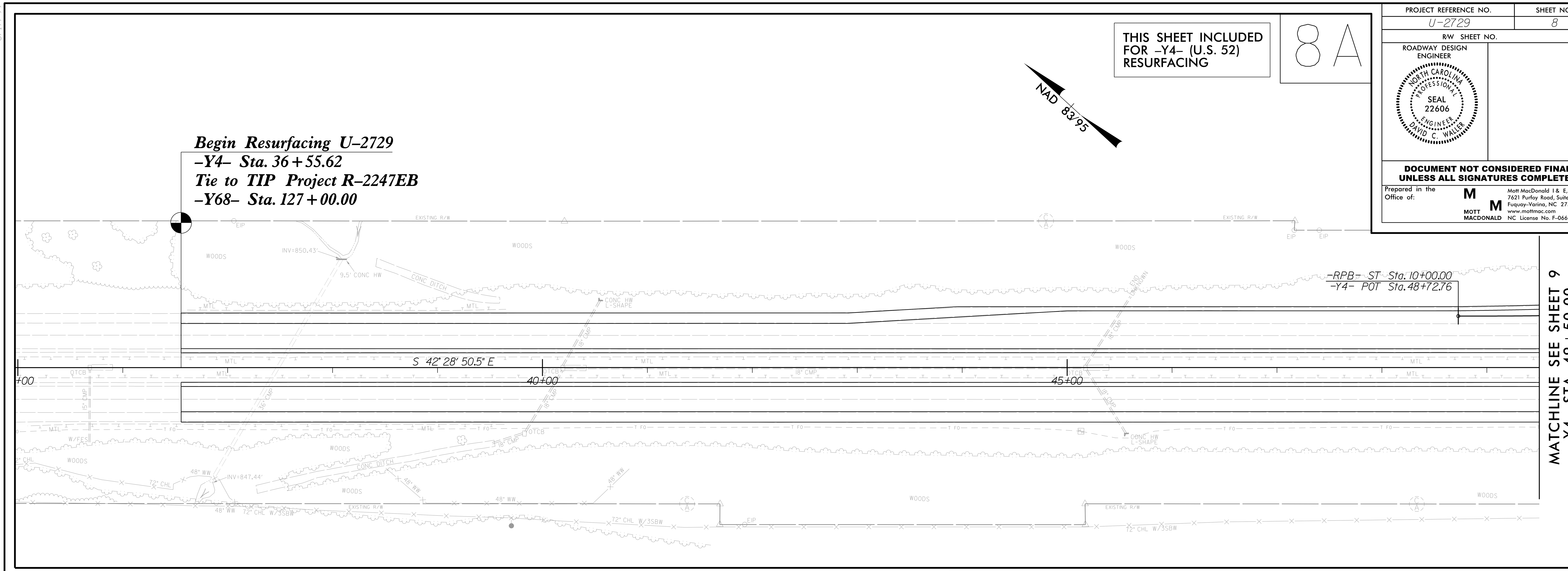

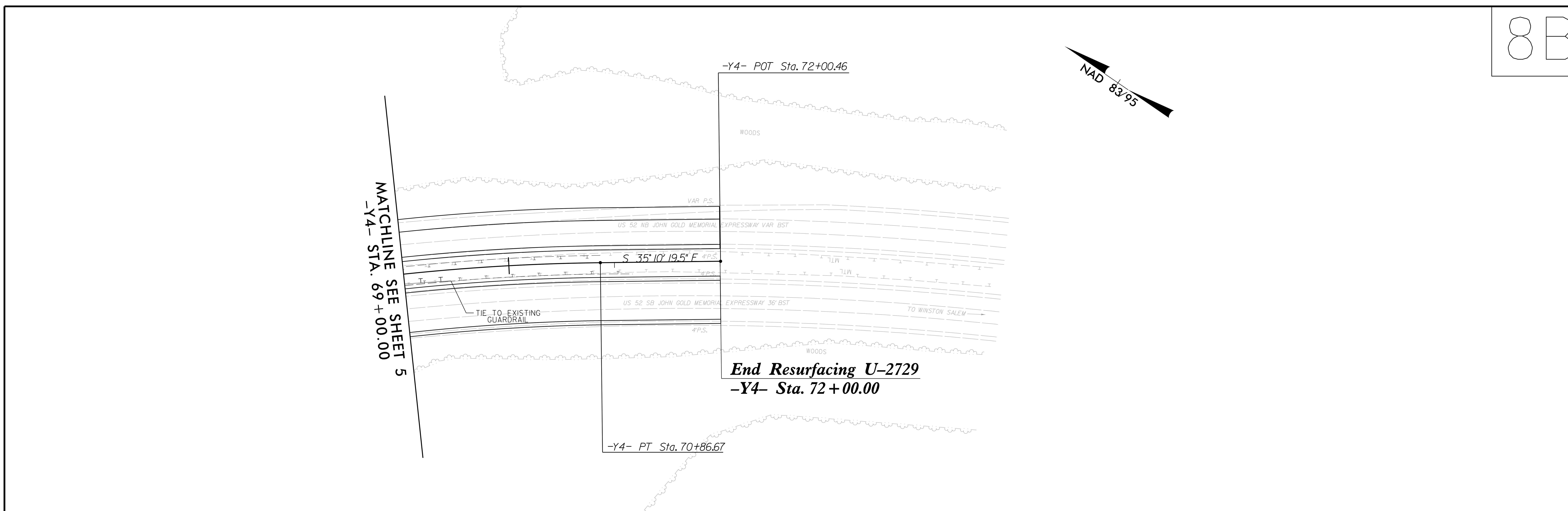

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PROJECT REFERENCE NO.	SHEET NO.
U-2729	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22606 ENGINEER DAVID C. WALLER

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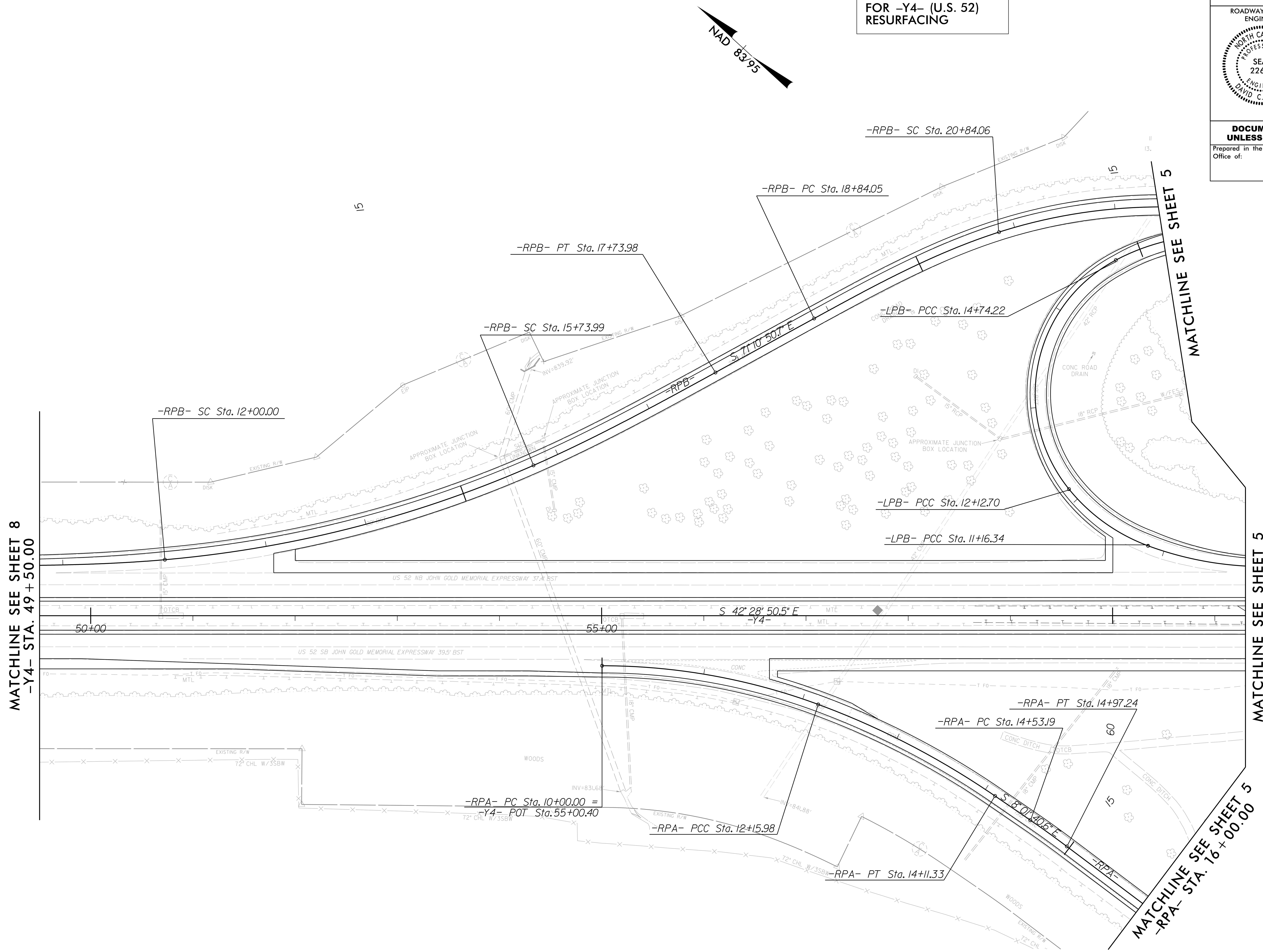
THIS SHEET INCLUDED FOR -Y4- (U.S. 52) RESURFACING



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PROJECT REFERENCE NO.	SHEET NO.
U-2729	10

ROADWAY DESIGN ENGINEER — SEAL 22606, NORTH CAROLINA PROFESSIONAL ENGINEER, DAVID C. WALLER

HYDRAULICS ENGINEER — SEAL 042084, NORTH CAROLINA PROFESSIONAL ENGINEER, JOSHUA J. MASSROCK

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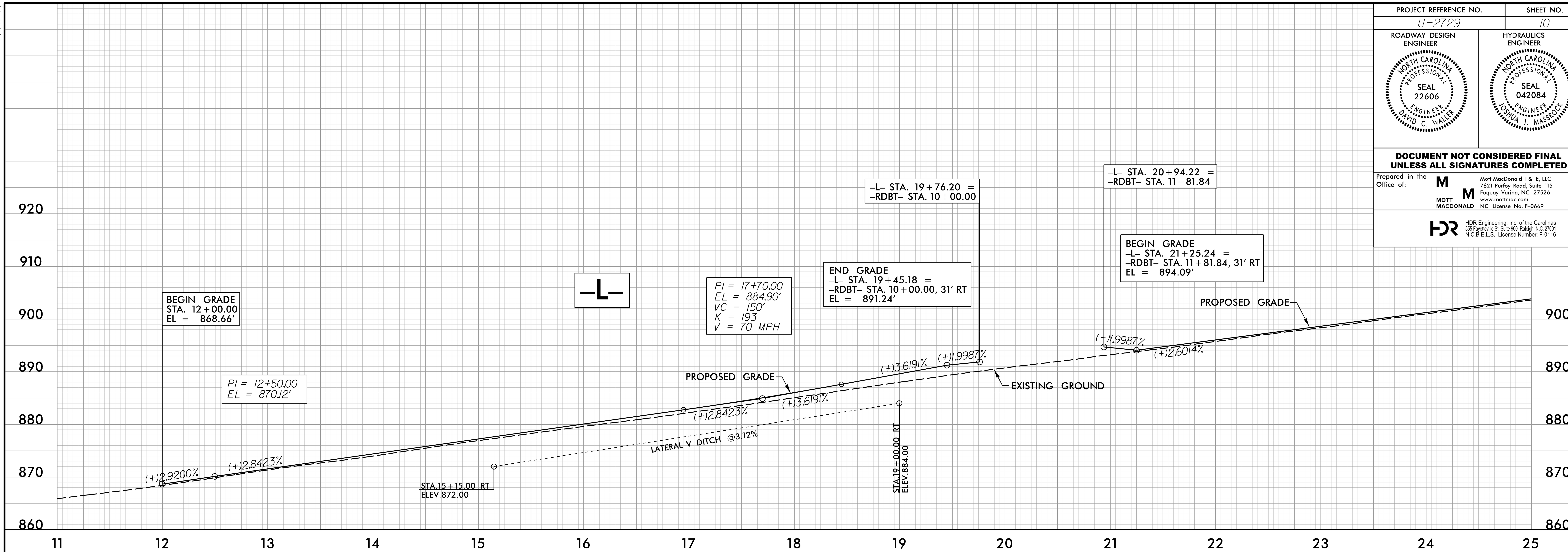

–L–
BEGIN GRADE
STA. 12+00.00
EL = 868.66'
PI = 12+50.00
EL = 870.12'
PI = 17+70.00
EL = 884.90'
VC = 150'
K = 193
V = 70 MPH
END GRADE
–L– STA. 19+45.18 =
–RDBT– STA. 10+00.00, 31' RT
EL = 891.24'
–L– STA. 19+76.20 =
–RDBT– STA. 10+00.00
–L– STA. 20+94.22 =
–RDBT– STA. 11+81.84
BEGIN GRADE
–L– STA. 21+25.24 =
–RDBT– STA. 11+81.84, 31' RT
EL = 894.09'
PROPOSED GRADE
EXISTING GROUND
(+)2.9200%
(+)2.8423%
(+)3.6191%
(+)1.9987%
(+)2.6014%
LATERAL V DITCH @3.12%
STA.15+15.00 RT
ELEV.872.00
STA.19+00.00 RT
ELEV.884.00
920
910
900
890
880
870
860
11
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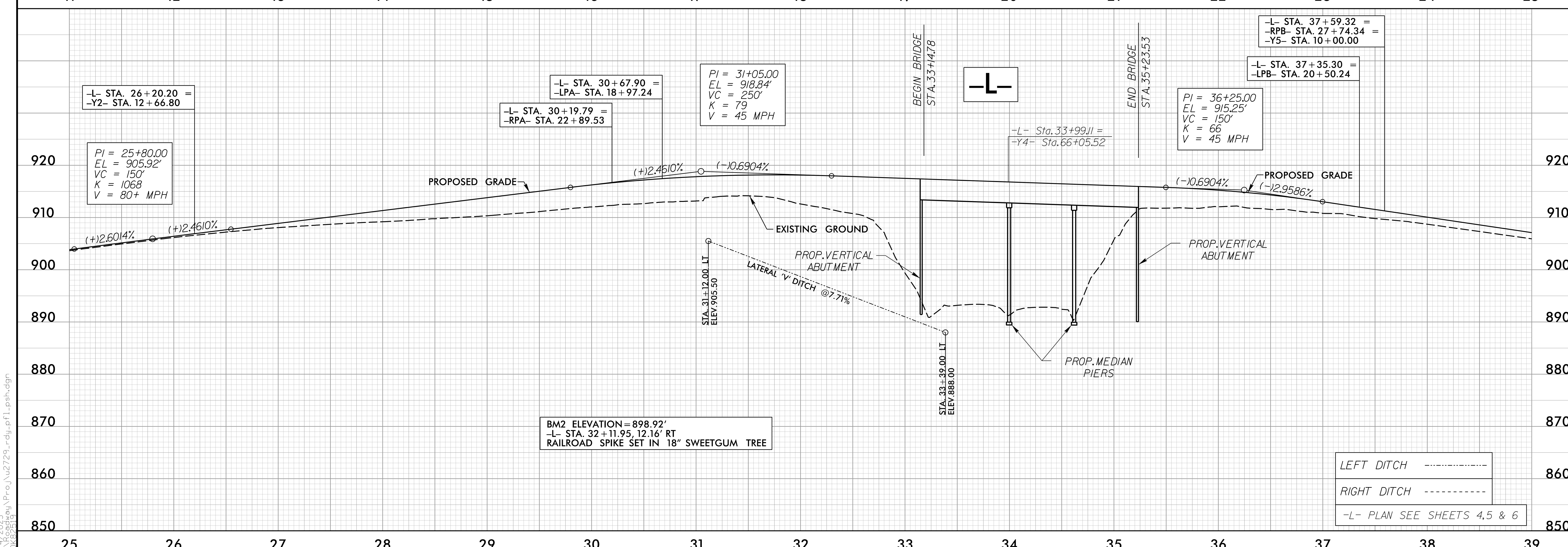

–L–
–L– STA. 26+20.20 =
–Y2– STA. 12+66.80
PI = 25+80.00
EL = 905.92'
VC = 150'
K = 1068
V = 80+ MPH
–L– STA. 30+19.79 =
–RPA– STA. 22+89.53
–L– STA. 30+67.90 =
–LPA– STA. 18+97.24
PI = 31+05.00
EL = 918.84'
VC = 250'
K = 79
V = 45 MPH
BEGIN BRIDGE
STA.33+14.78
–L– Sta.33+99.11 =
–Y4– Sta.66+05.52
END BRIDGE
STA.35+23.53
PI = 36+25.00
EL = 915.25'
VC = 150'
K = 66
V = 45 MPH
–L– STA. 37+59.32 =
–RPB– STA. 27+74.34 =
–Y5– STA. 10+00.00
–L– STA. 37+35.30 =
–LPB– STA. 20+50.24
PROPOSED GRADE
EXISTING GROUND
(+)2.6014%
(+)2.4610%
(–)0.6904%
(–)2.9586%
PROP.VERTICAL ABUTMENT
PROP.VERTICAL ABUTMENT
PROP.MEDIAN PIERS
LATERAL 'V' DITCH @7.71%
STA. 31+12.00 LT
ELEV.905.50
STA. 33+39.00 LT
ELEV.888.00
BM2 ELEVATION=898.92'
–L– STA. 32+11.95, 12.16' RT
RAILROAD SPIKE SET IN 18" SWEETGUM TREE
LEFT DITCH
RIGHT DITCH
–L– PLAN SEE SHEETS 4,5 & 6
920
910
900
890
880
870
860
850
25
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5/14/99
4/4/2023
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