09/08/99

TIP PROJECT: U-5748

CONTRACT: C204786

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

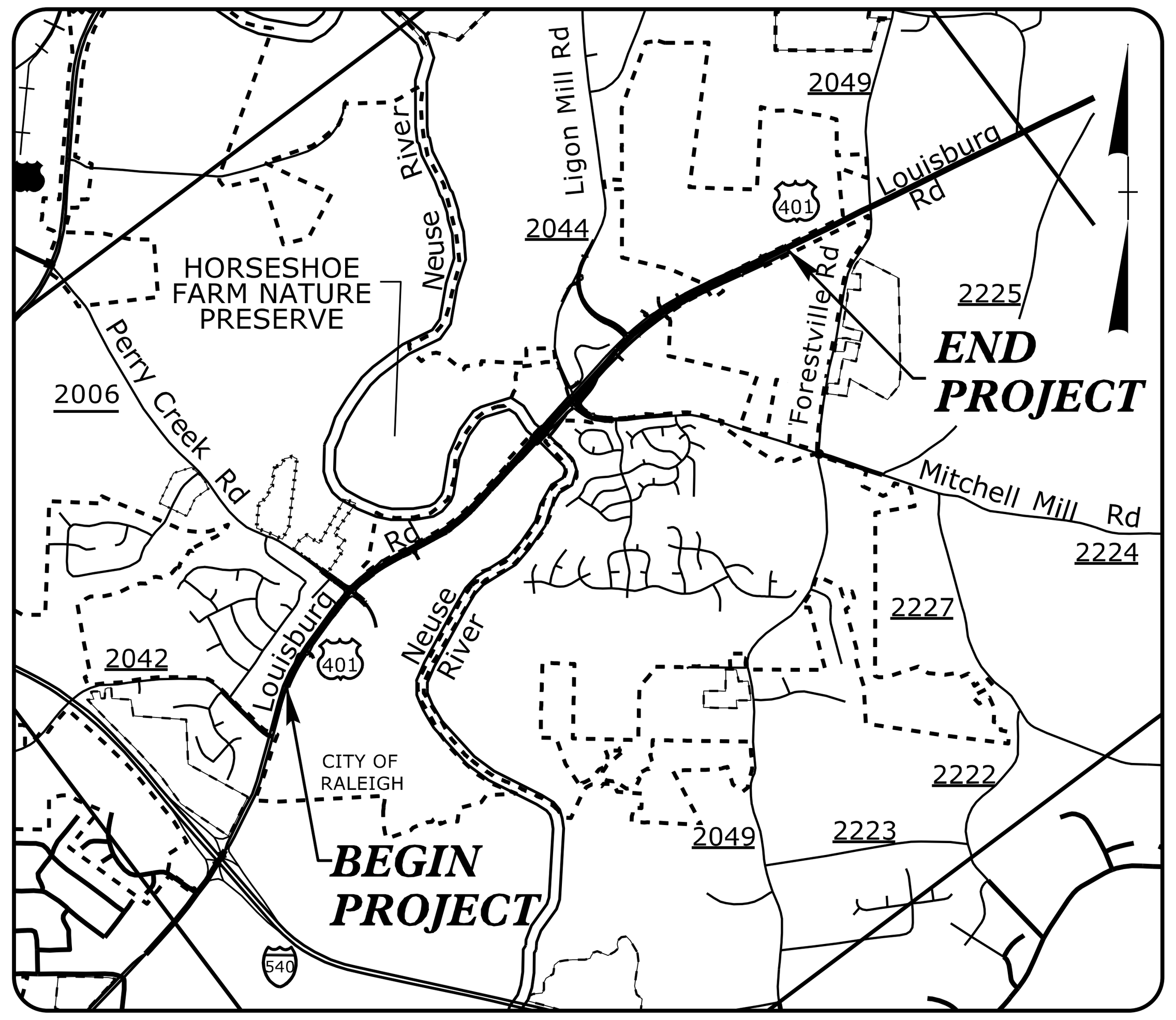
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5748	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
50168.1.1		P.E.	
50168.2.1		R/W & UTILITIES	
50168.3.1		CONSTRUCTION	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: US 401 (LOUISBURG RD) AT SR 2044 (LIGON MILL RD) / SR 2224 (MITCHELL MILL RD) AND SR 2006 (PERRY CREEK ROAD) INTERSECTION IMPROVEMENTS

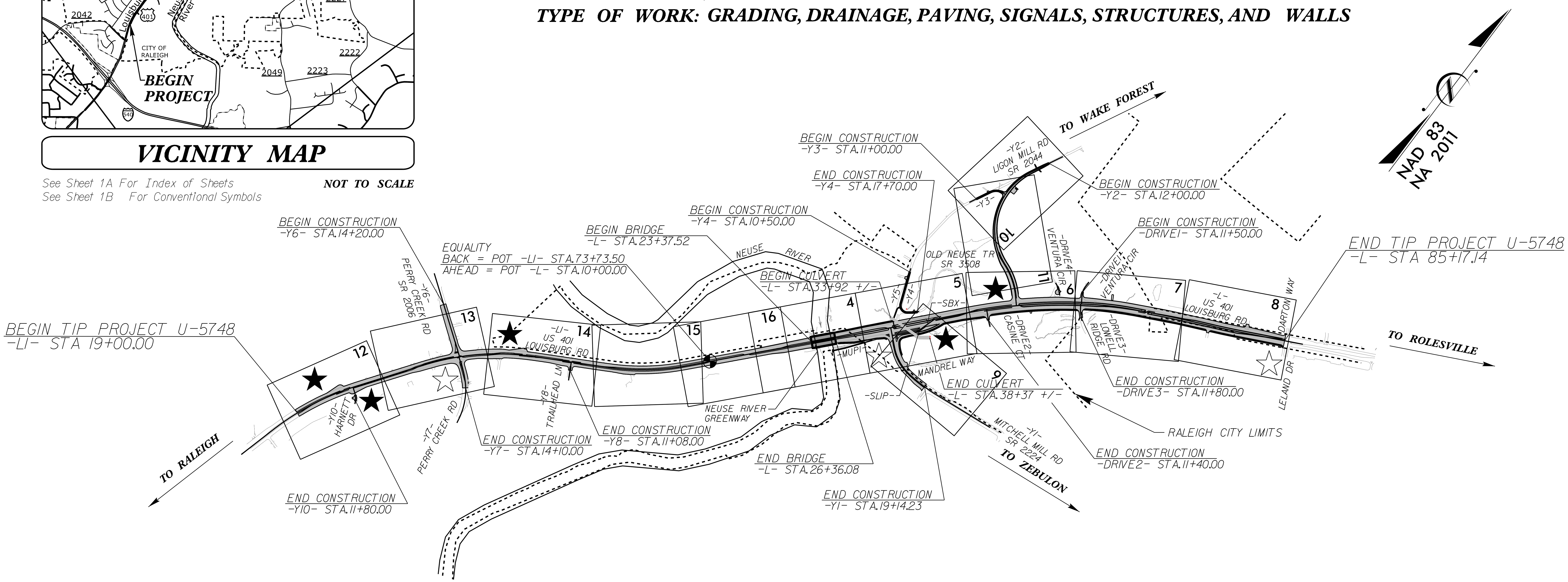
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, STRUCTURES, AND WALLS



VICINITY MAP

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

NOT TO SCALE



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

★ PROPOSED SIGNAL
☆ EXISTING SIGNAL

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2022 = 38,425
ADT 2042 = 58,842
K = 10 %
D = 55 %
T = 3% % *
V = 50 MPH
* TTST =1% DUAL 2%
FUNC CLASS = PRINCIPAL ARTERIAL REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5748 = 2.403 MI
LENGTH STRUCTURE TIP PROJECT U-5748 = 0.057 MI
TOTAL LENGTH TIP PROJECT U-5748 = 2.460 MI

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 8, 2021

LETTING DATE:
JULY 18, 2023

EDWARD GLENN EDENS JR., P.E.
PROJECT ENGINEER

ELIZABETH WARGO, P.E.
PROJECT DESIGN ENGINEER

JOHN CONFORTI, P.E.
NCDOT PROJECT ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.
SEAL 037863
4/10/2023

ROADWAY DESIGN ENGINEER
SIGNATURE: Edward Glenn Edens, Jr. P.E.
SEAL 18470
4/10/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

4/10/2023
U5748_rdy_tsh.dgn
elizabeth.hunter

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	1A

ROADWAY DESIGN ENGINEER

3/10/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	TITLE
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-10	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-6	ROADWAY DETAILS
2C-1 THRU 2C-18	SPECIAL DETAILS
2D-1	DRAINAGE DETAILS
2G-1 THRU 2G-2	GEOTECHNICAL DETAILS
2N-1 THRU 2N-3	NOISE WALL ENVELOPE DETAILS
3B-1 THRU 3B-2	ROADWAY SUMMARIES
3D-1 THRU 3D-12	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 16	PLAN SHEETS
17 THRU 32	PROFILE SHEETS
RW-1 THRU RW-11	RIGHT OF WAY PLANS
TMP-1 THRU TMP-49	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-15	PAVEMENT MARKING PLANS
EC-1 THRU EC-29	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-11	SIGNING PLANS
SIG-1.0 THRU SIG-18.3	SIGNAL PLANS
SIG-M1 THRU SIG-M8	STANDARD METAL POLE SHEETS
SCP-1 THRU SCP-24	SIGNAL COMMUNICATION PLANS
UC-1 THRU UC-18	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-14	UTILITIES BY OTHERS PLANS
X-0	CROSS-SECTION INDEX
X-1A THRU X-1B	CROSS-SECTION SUMMARY SHEETS
X-1 THRU X-90	CROSS-SECTIONS
TSH	STRUCTURE PLANS TITLE SHEET
S1-01 THRU S1-61	STRUCTURE PLANS (NBL BRIDGE)
S2-01 THRU S2-58	STRUCTURE PLANS (SBL BRIDGE)
SN	STRUCTURE PLANS STANDARD NOTES
SBW-1 THRU SBW-3	STRUCTURE PLANS SOUND BARRIER WALLS

GENERAL NOTES

EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND 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. 560.01

SIDE ROADS:

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

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 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 AS THE CONTRACT PRICE FOR "TEMPROARY SHORING".

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY (POWER DISTRIBUTION), WAKE EMC (POWER DISTRIBUTION), CHARTER (CATV), AT&T (TELECOM), DOMINION ENERGY (NATURAL GAS), AND THE CITY OF RALEIGH (WATER AND SANITARY SEWER).

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

ROCK

ROCK IS ANTICIPATED BETWEEN -L- 70+50 AND -L- 77+70. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

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
225.01	Guide for Grading Subgrade Interstate and Freeway
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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.03	Concrete Control of Access Marker
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.05	Concrete 'L' Endwall for Single Pipe Culverts - 15" thru 48" Pipe
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.15	Brick 'L' Endwall for Single Pipe Culverts - 15" thru 48" Pipe
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.37	Steel Grate and Frame
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
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
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

3/9/2023
3:54:43 PM tsh.dgn
elizabethhunter

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
U-5748	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line (RW)
- New Right of Way Line with Pin and Cap (RW)
- New Right of Way Line with Concrete or Granite R/W Marker (RW)
- New Control of Access Line with Concrete C/A Marker (CA)
- Existing Control of Access (CA)
- New Control of Access (CA)
- Existing Easement Line (E)
- New Temporary Construction Easement (E)
- New Temporary Drainage Easement (TDE)
- New Permanent Drainage Easement (PDE)
- New Permanent Drainage / Utility Easement (DUE)
- New Permanent Utility Easement (PUE)
- New Temporary Utility Easement (TUE)
- New Aerial Utility Easement (AUE)

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-1

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470, EDWARD GLENN EDENS, JR. — DocuSigned by: Ed Edens, 5A6D1CECAFFA4AB... — 3/10/2023

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896, CLARK S. MORRISON — DocuSigned by: Clark S. Morrison, 16126B45C6CF44F... — 3/10/2023

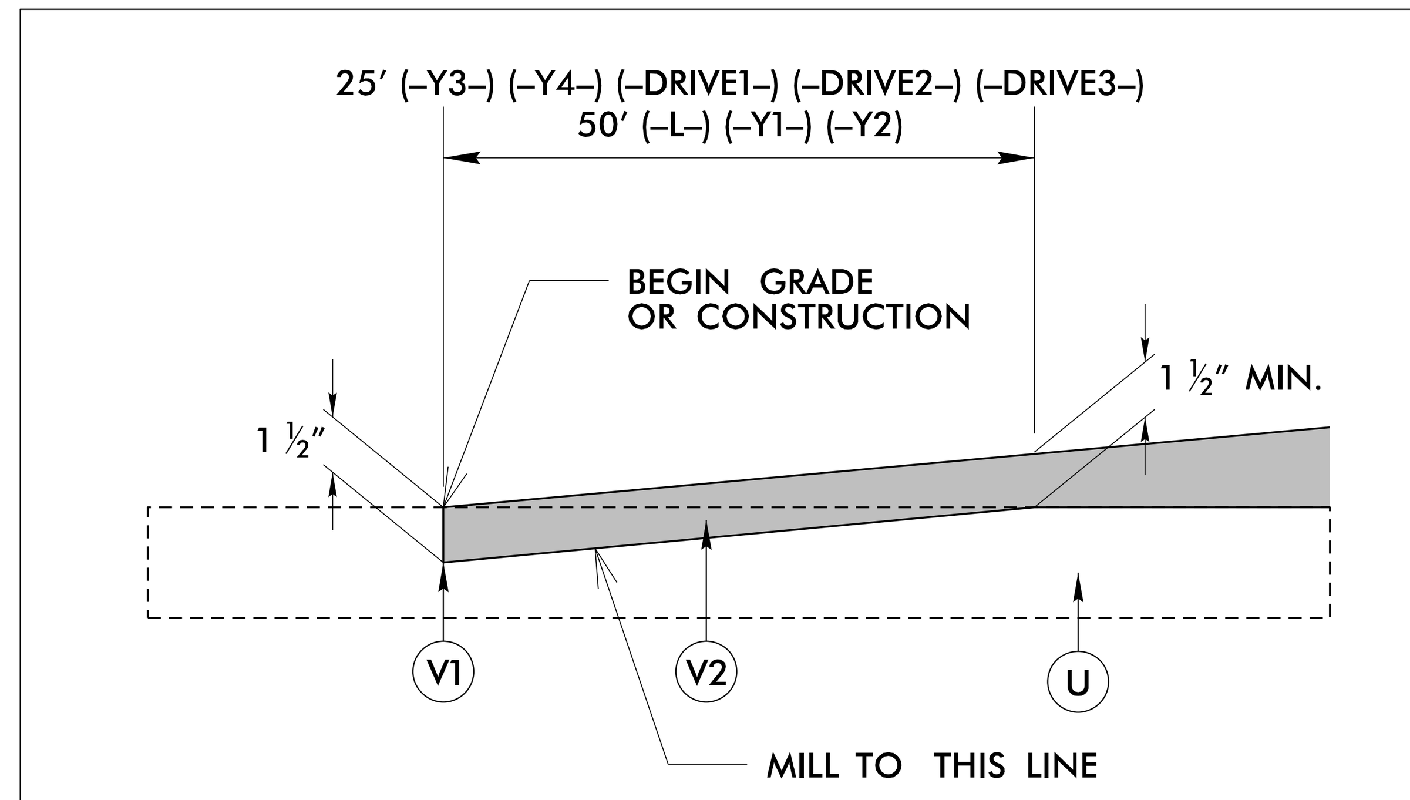
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Boulevard, Suite 200
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

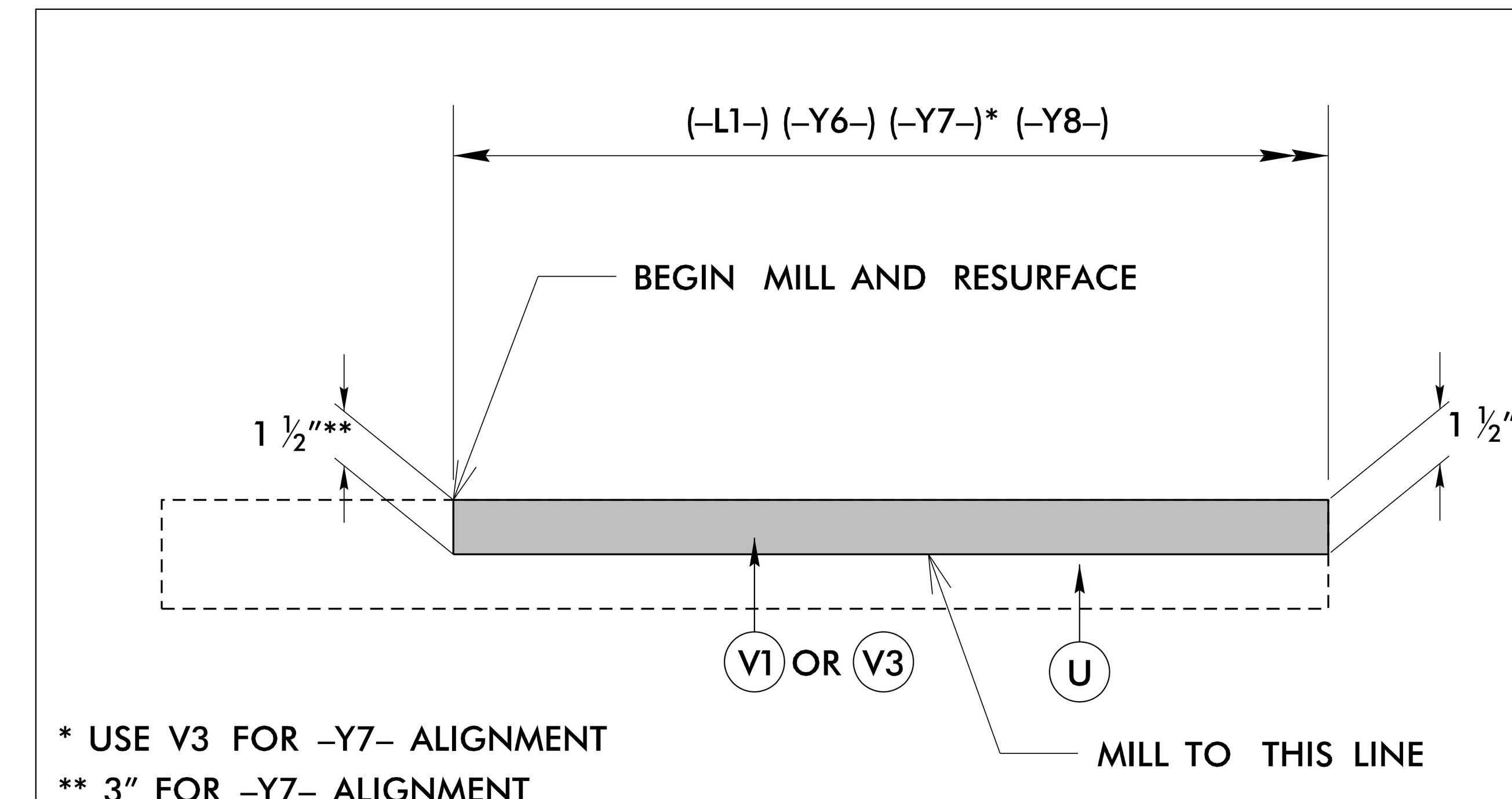
C1	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R1	2′-6″ CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	2′-9″ CONCRETE CURB AND GUTTER.
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 TO EXCEED 1½″ IN DEPTH.	R3	4″ CONCRETE ISLAND COVER
C4	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R4	5″ MONOLITHIC ISLAND (KEYED IN)
C5	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R5	8″x18″ CONCRETE CURB
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	R6	SINGLE FACED BARRIER
C7	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S	CONCRETE SIDEWALK
C8	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	T	EARTH MATERIAL
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	U	EXISTING PAVEMENT
D2	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V1	1½″ DEPTH 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.	V2	VARIABLE DEPTH MILLING 0″ TO 1½″
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V3	3″ DEPTH MILLING
E2	PROP. APPROX. 3″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO. 1)
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 4″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO. 2)
J1	PROP. 6″ AGGREGATE BASE COURSE.	W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO. 3)
J2	PROP. 8″ AGGREGATE BASE COURSE.		
K	PROP. 8″ CLASS IV SUBGRADE STABILIZATION		
N1	GEOTEXTILE FOR SOIL STABILIZATION		
N2	GEOTEXTILE FOR SUBGRADE STABILIZATION		
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YARD		

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



DETAIL SHOWING MILLED PAVEMENT PROFILE TIE-IN

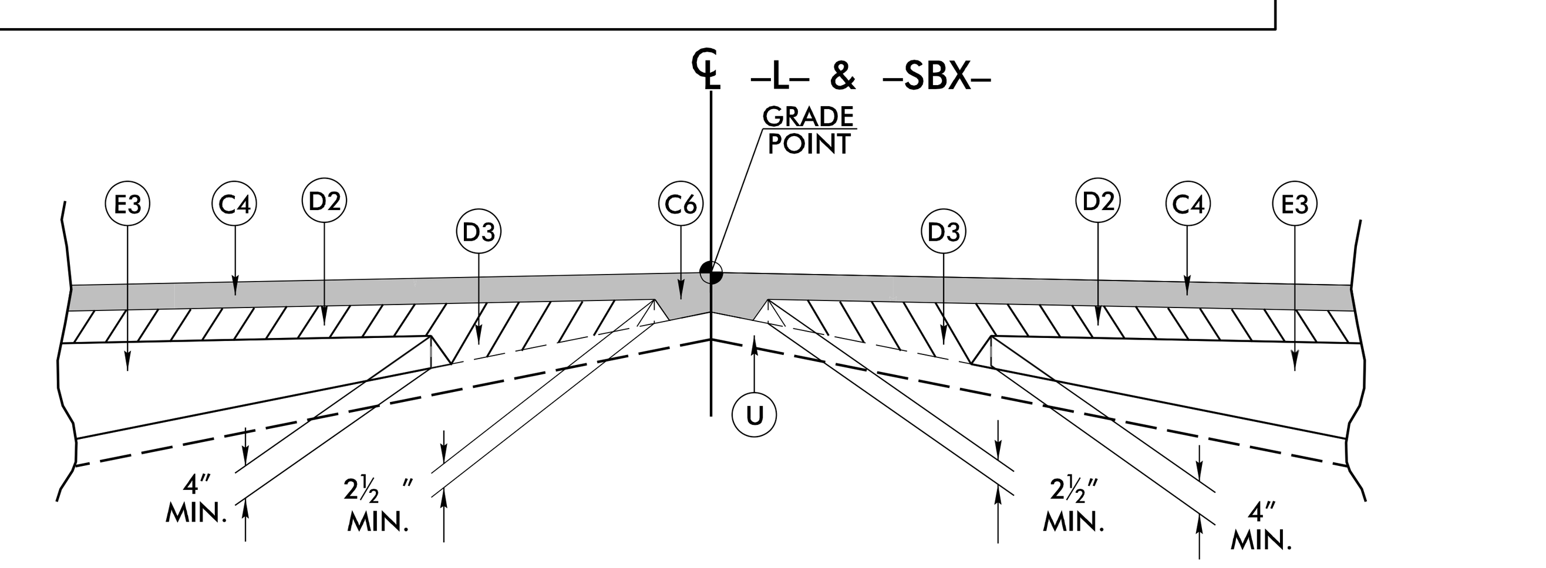
-L1- STA 19+00.00 LT TO -L1- STA 19+50.00 LT
-L1- STA 19+00.00 RT TO -L1- STA 19+50.00 RT
-L- STA 84+67.14 LT TO -L- STA 85+17.14 LT
-L- STA 84+67.14 RT TO -L- STA 85+17.14 RT
-Y1- STA 18+64.23 TO -Y1- STA 19+14.23
-Y2- STA 12+00.00 TO -Y2- STA 12+50.00
-Y3- STA 11+00.00 TO -Y3- STA 11+25.00
-Y4- STA 10+50.00 TO -Y4- STA 10+75.00
-DRIVE1- STA 11+50.00 TO -DRIVE1- STA 11+75.00
-DRIVE2- STA 11+15.00 TO -DRIVE2- STA 11+40.00
-DRIVE3- STA 11+55.00 TO -DRIVE3- STA 11+80.00



* USE V3 FOR -Y7- ALIGNMENT
** 3″ FOR -Y7- ALIGNMENT

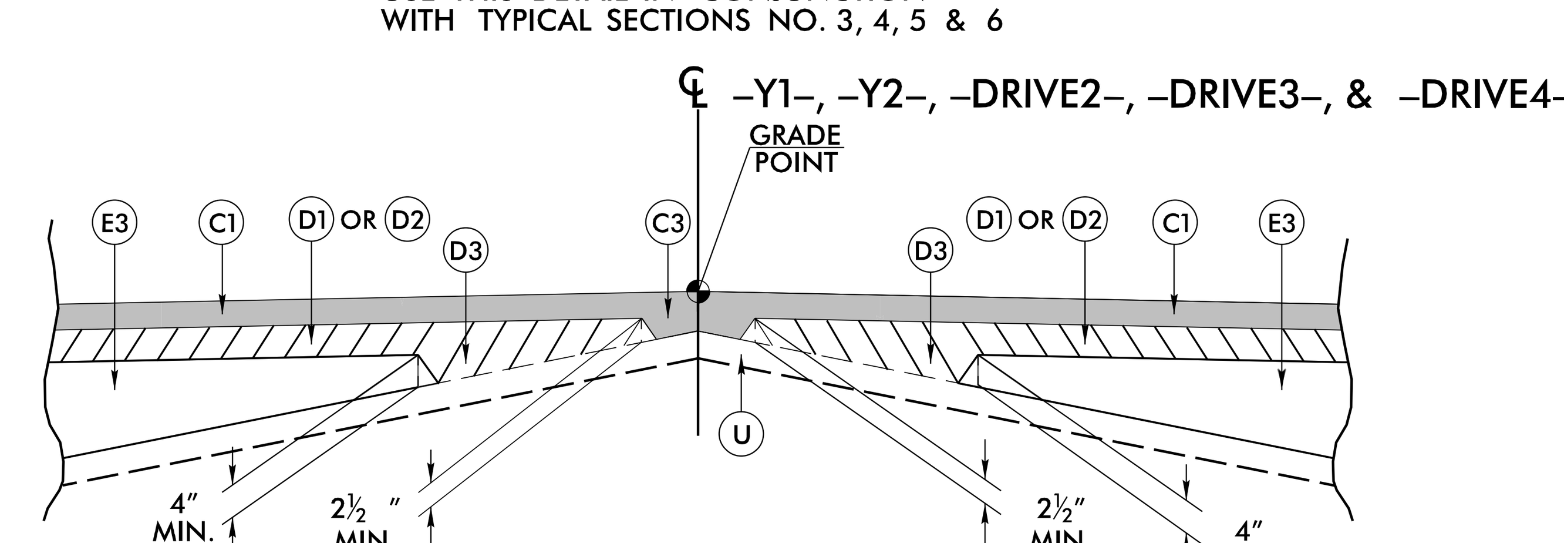
MILLING DETAIL

-L1- STA 19+50.00 RT/LT TO -L1- STA 73+73.50 RT/LT
-Y6- STA 14+20.00 RT/LT TO -L- STA 20+69.00 RT/LT
-Y7- STA 10+61.00 RT/LT TO -L- STA 14+10.00 RT/LT
-Y8- STA 10+59.00 RT/LT TO -L- STA 11+08.00 RT/LT



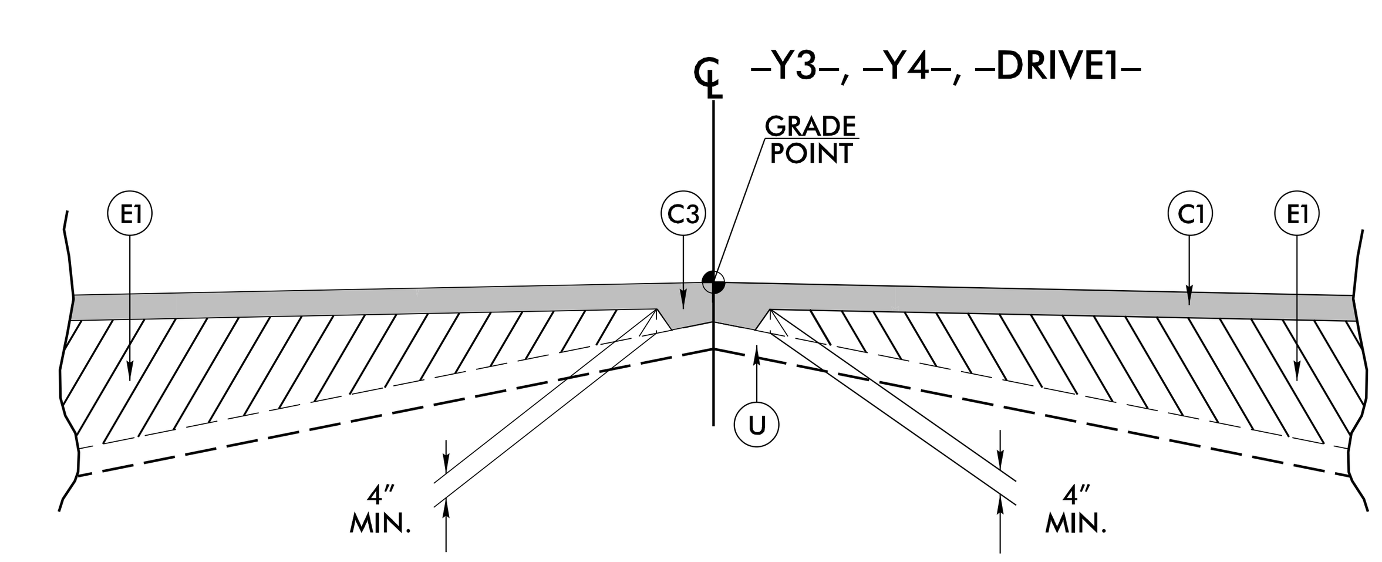
W1: Detail Showing Method of Wedging

USE THIS DETAIL IN CONJUNCTION WITH TYPICAL SECTIONS NO. 3, 4, 5 & 6



W2: Detail Showing Method of Wedging

USE THIS DETAIL IN CONJUNCTION WITH TYPICAL SECTIONS NO. 8, 11, 13, 14, & 15



W3: Detail Showing Method of Wedging

USE THIS DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 12

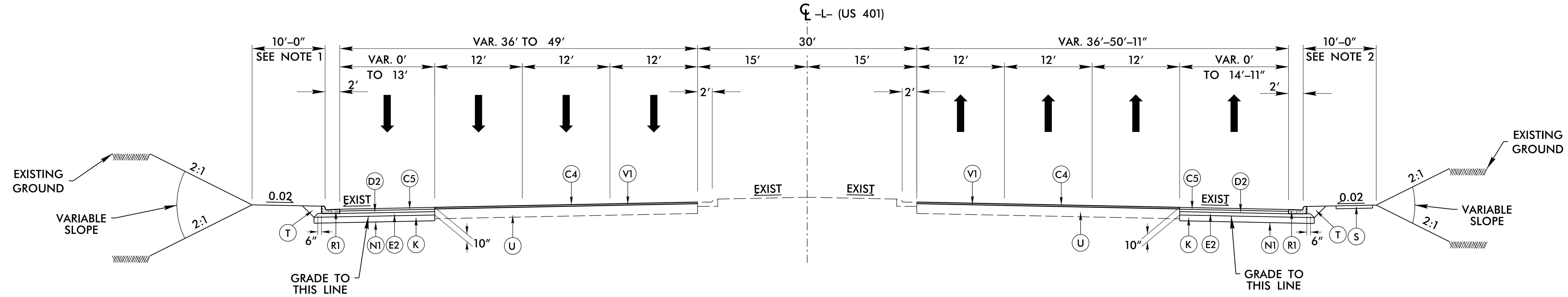
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. — DocuSigned by: Ed Edens 5A6D1CECAFFA4AB... 3/10/2023

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON — DocuSigned by: Clark S. Morrison 16126B45C6CF44F... 3/10/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Boulevard, Suite 200
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

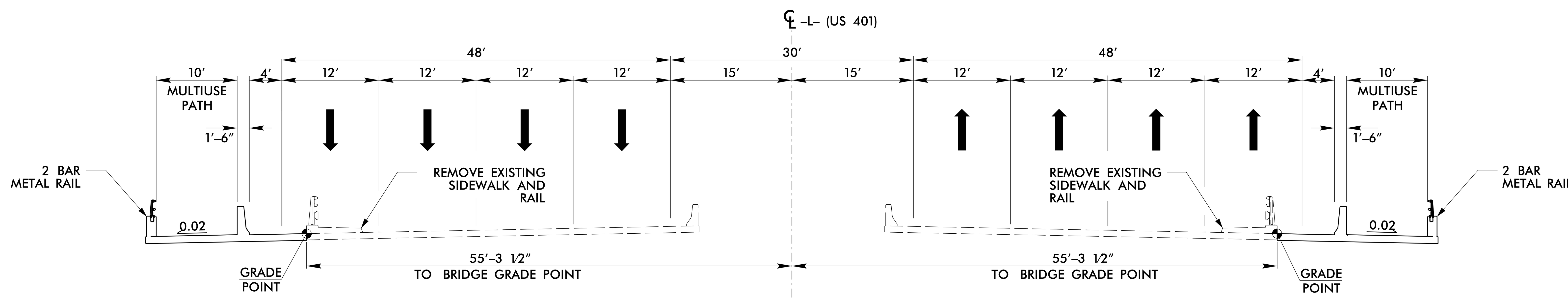


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 15+50.00 LT TO STA. 23+37.52 LT (BEG. BRIDGE)
-L- STA. 17+90.00 RT TO STA. 23+37.52 RT (BEG. BRIDGE)

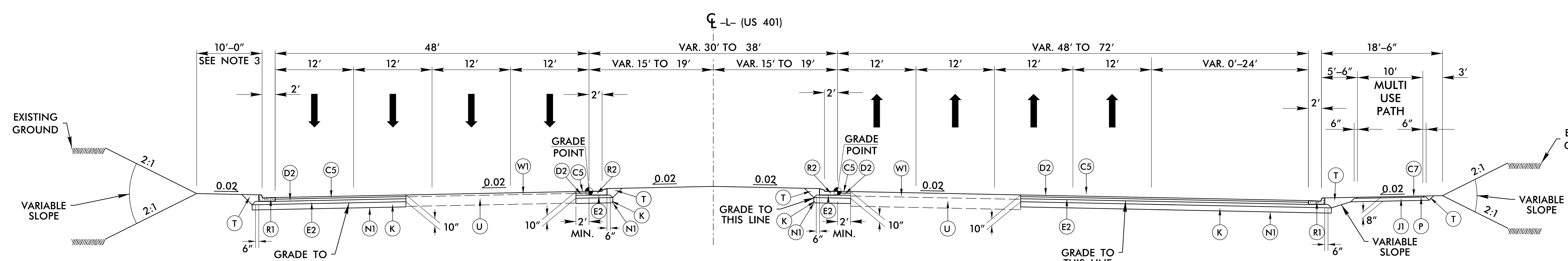
NOTE 1: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL
FROM -L- STA 18+10 LT TO -L- STA 23+37.52 LT, USE 10'-0" AND PLACE GUARDRAIL AT FACE OF CURB

NOTE 2: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL
FROM -L- STA 18+10 RT TO -L- STA 19+60+/- RT, USE 14'-0" AND PLACE GUARDRAIL AT 12'-0"
FROM -L- STA 19+60+/- RT TO -L- STA 23+37.52 RT, USE 10'-0" AND PLACE GUARDRAIL AT FACE OF CURB



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 23+37.52 (BEG. BRIDGE) TO STA. 26+36.08 (END BRIDGE)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L- STA. 26+36.08 (END BRIDGE) TO STA. 28+83.00

NOTE 3: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL
FROM -L- STA 26+36.08 LT TO -L- STA 30+50+/- LT, USE 10'-0" AND PLACE GUARDRAIL AT FACE OF CURB

NOTE 4: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL
FROM -L- STA 26+36.08 RT TO -L- STA 28+50 RT, USE 10'-0" AND PLACE GUARDRAIL AT FACE OF CURB

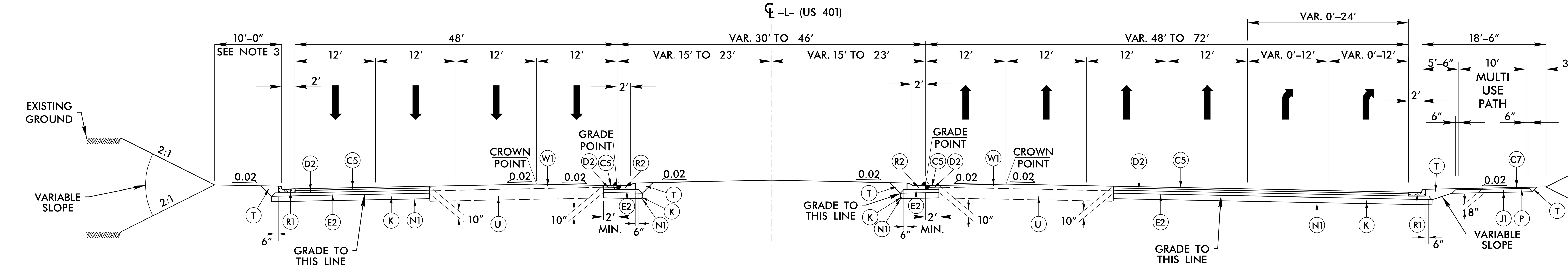
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

6/2/99
3/10/2023
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\900-CAD GIS\910_CAD\70_NCDOT_TIP\Roadway\Proj\U5748_rdy_typ.dgn
elizabeth.hunter

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 018470 EDWARD GLENN EDENS, JR. 3/10/2023	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022898 CLARK S. MORRISON 3/10/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

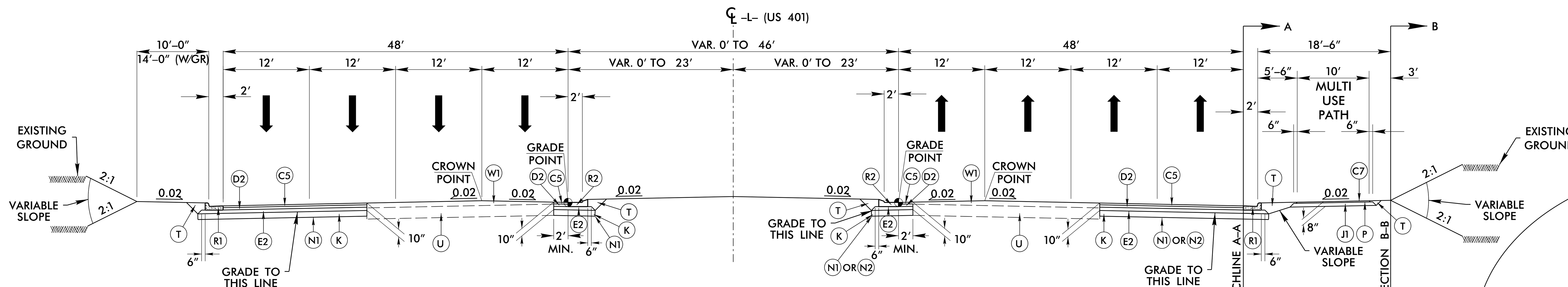
Prepared in the Office of: AECOM — NC FIRM LICENSE No. F-0342, 5438 Wade Park Boulevard, Suite 200, Raleigh, NC 27607, (919) 854-6200 · (919) 854-6259(FAX)



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-L- STA. 28+83.00 TO STA. 33+68.82

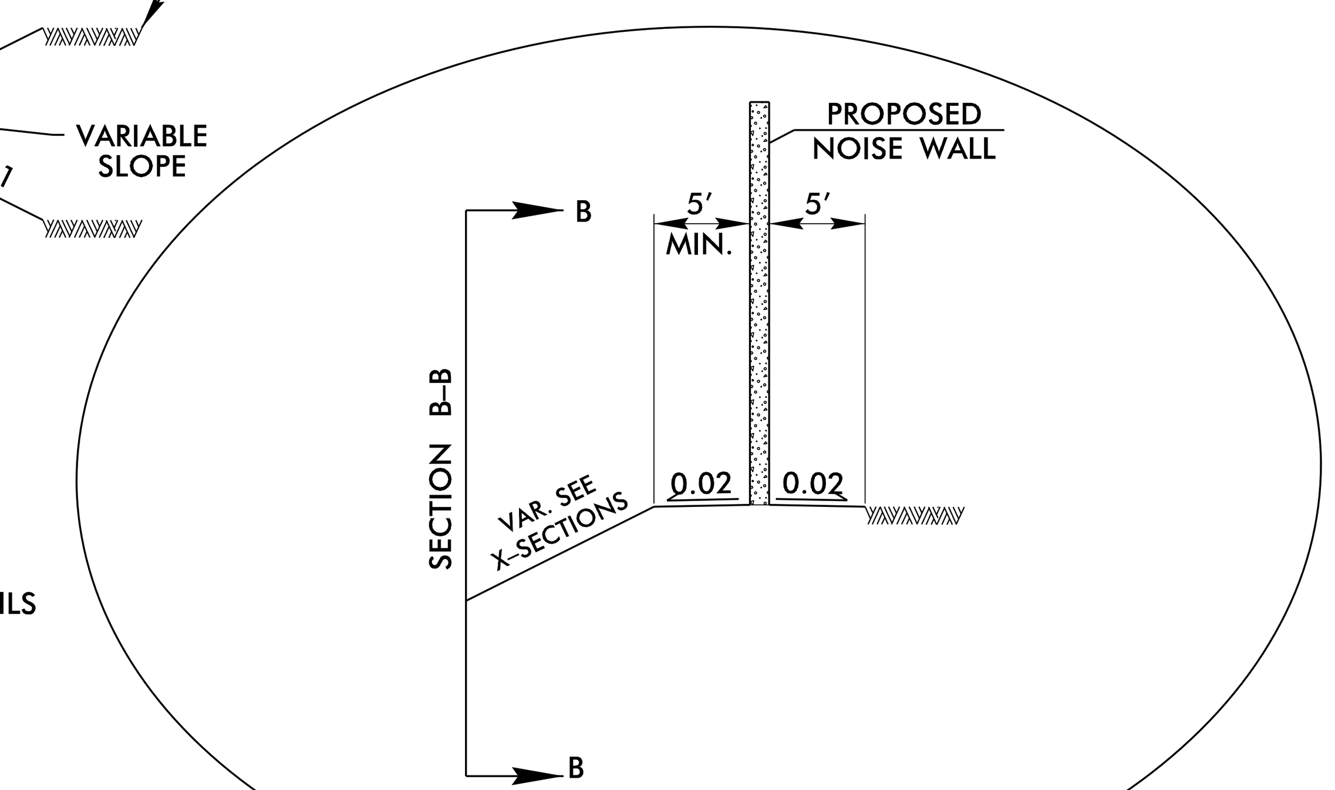
NOTE 3: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL FROM -L- STA 26+36.08 LT TO -L- STA 30+50+/- LT, USE 10'-0" AND PLACE GUARDRAIL AT FACE OF CURB



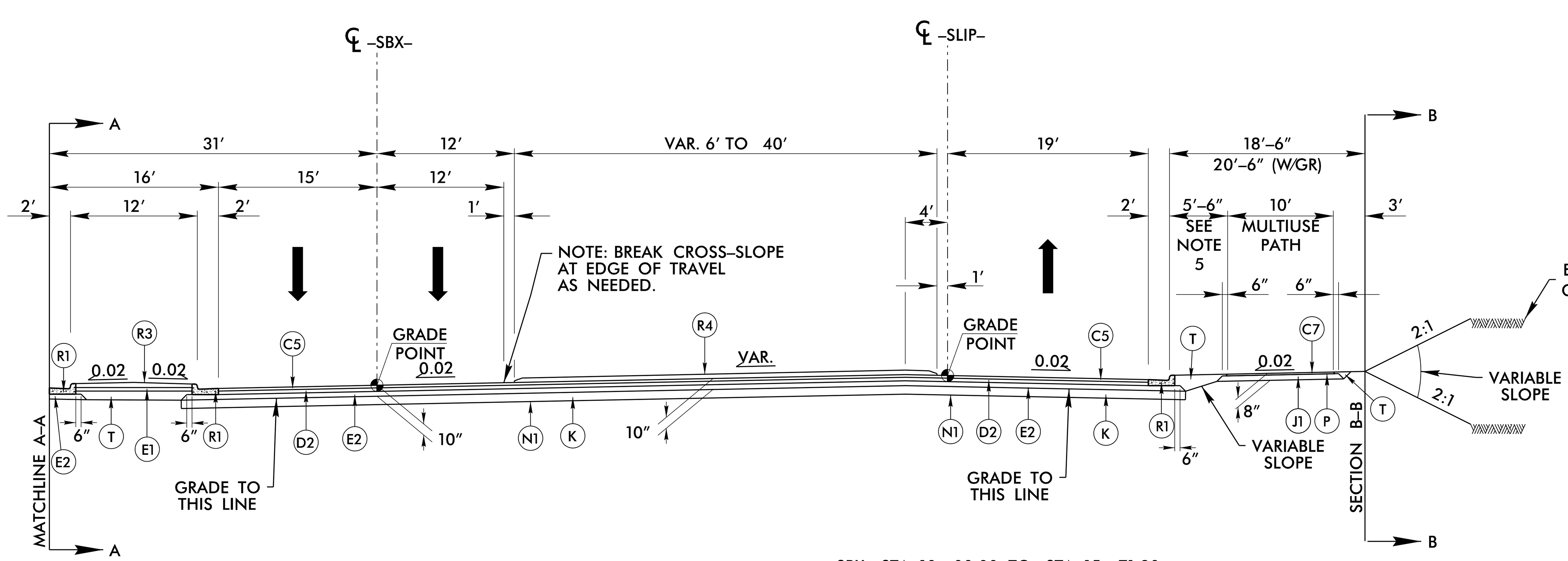
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-L- STA. 33+68.82 TO STA. 50+14.31
SEE INSET 5A & 5B ON SHEET 2A-4 FOR LEFT TURN LANE DETAILS

NOTE 5: SEE PLANS AND RSD 862.01 SHEET 11 OF 11 FOR LOCATION OF GUARDRAIL

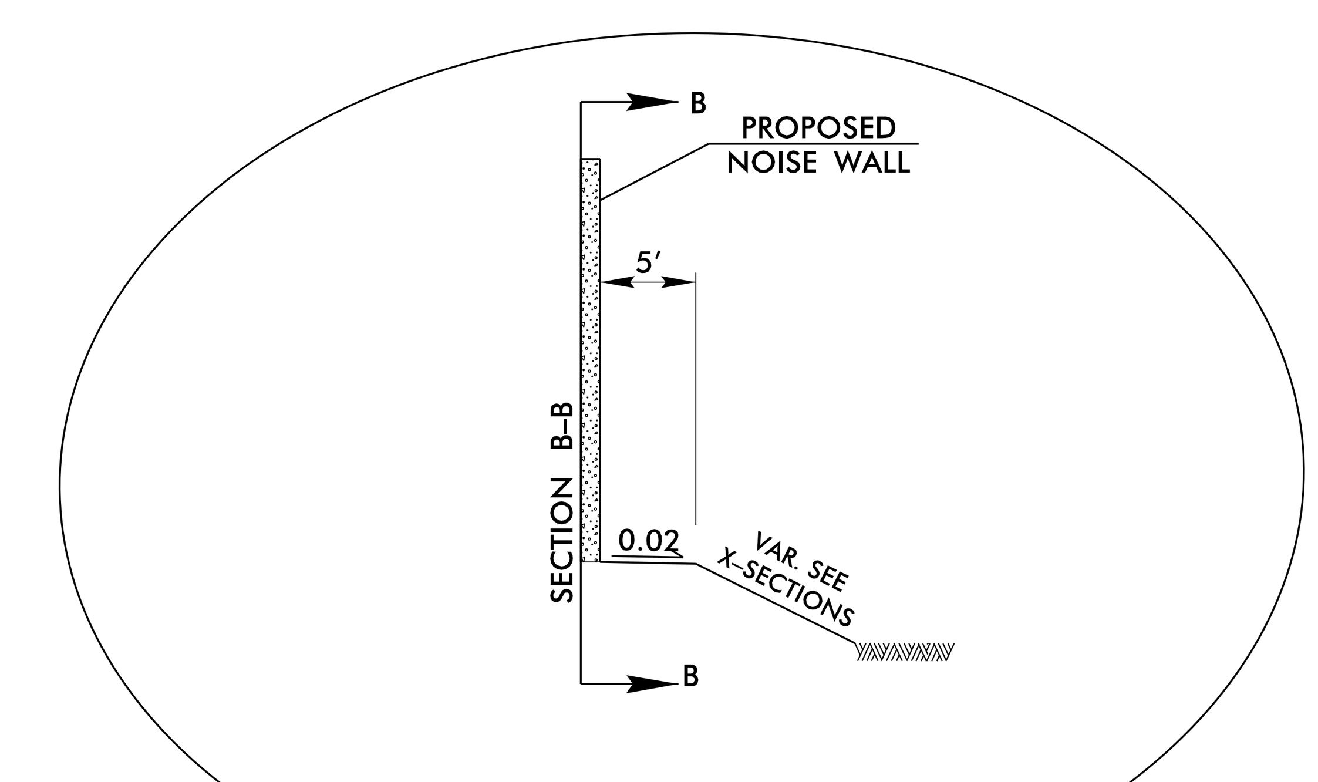


SECTION B-B
IN CUT CONDITIONS



-SBX- STA. 10+00.00 TO STA. 15+71.90
-SLIP- STA. 10+00.00 TO STA. 13+95.94
(TO BE USED WITH TYPICAL SECTION NO. 5)

PARTIAL TYPICAL SECTION NO. 5A



SECTION B-B
IN FILL CONDITIONS

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

6/2/99
3/10/2023
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\900-CAD GIS\910_CAD\70_NCDOT_TIP\Roadway\Proj\U5748_rdy_typ.dgn
elizabeth.hunter

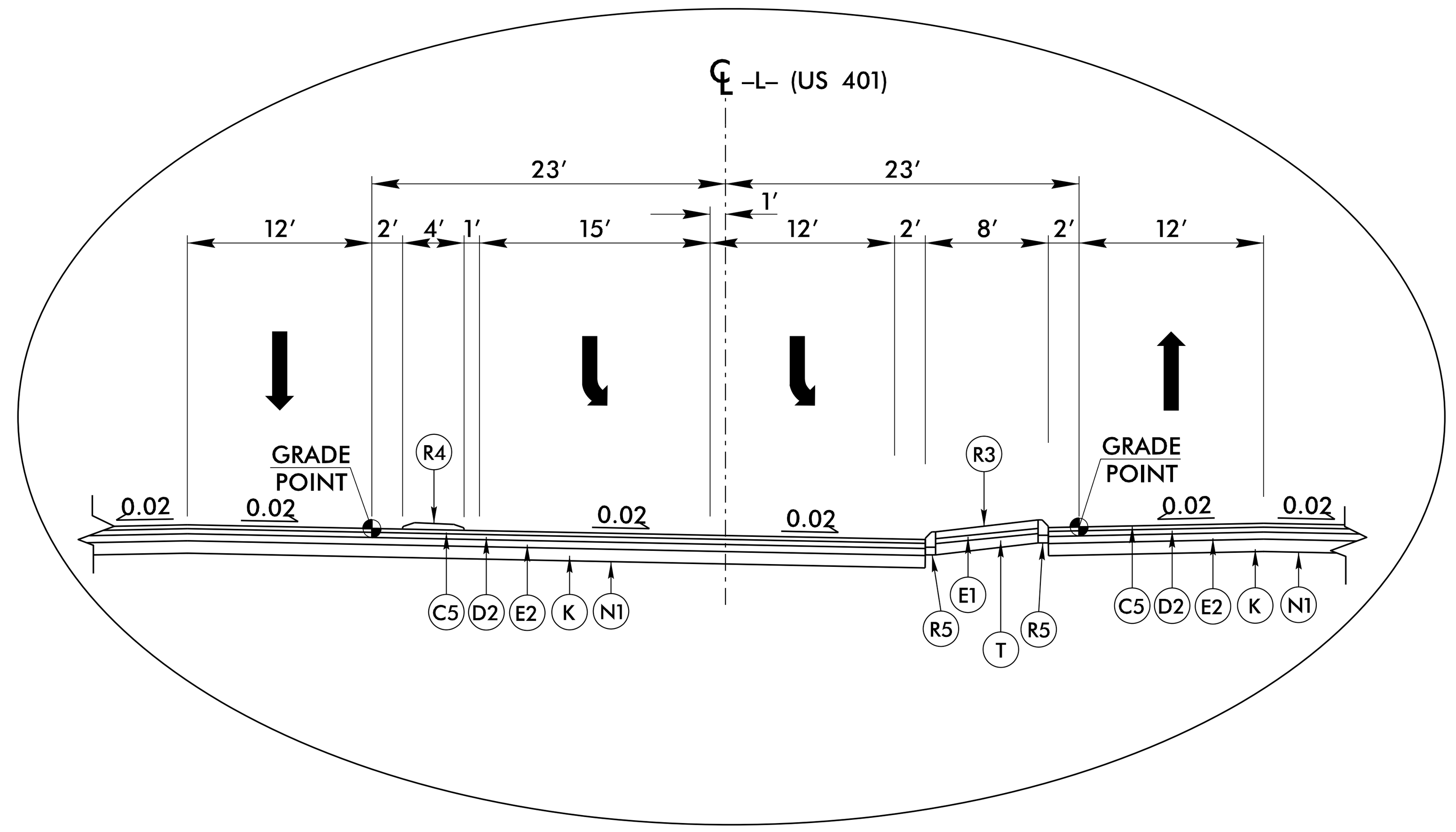
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-4

ROADWAY DESIGN ENGINEER — SEAL 018470 — EDWARD GLENN EDENS, JR. — 3/10/2023

PAVEMENT DESIGN ENGINEER — SEAL 022896 — CLARK S. MORRISON — 3/10/2023

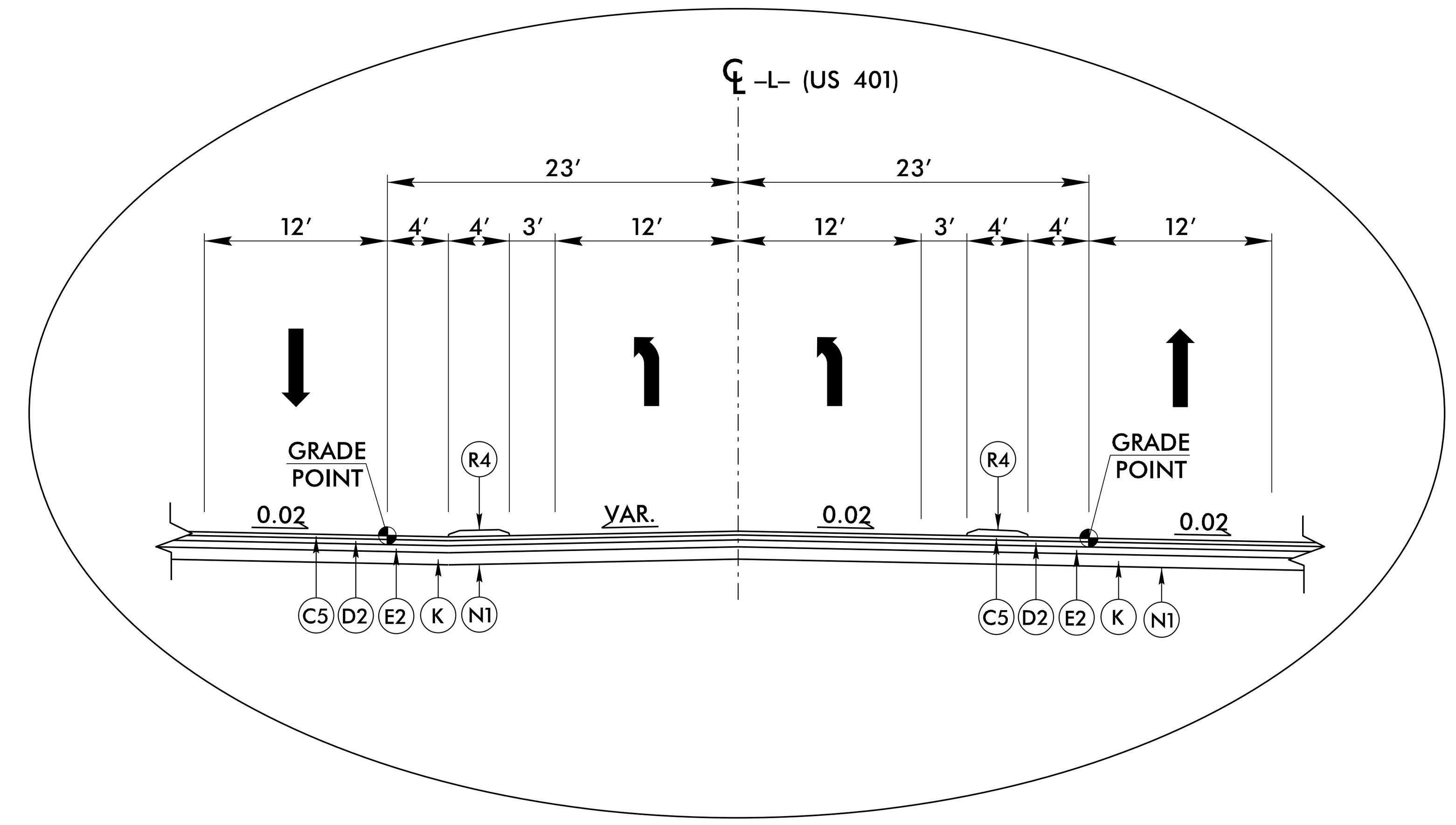
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 5438 Wade Park Boulevard, Suite 200, Raleigh, NC 27607, (919) 854-6200 · (919) 854-6259(FAX)



INSET 5A

-L- STA. 39+54.25 TO STA. 42+47.78
(REFER TO TYPICAL SECTION NO. 5 FOR PAVEMENT DESIGN)

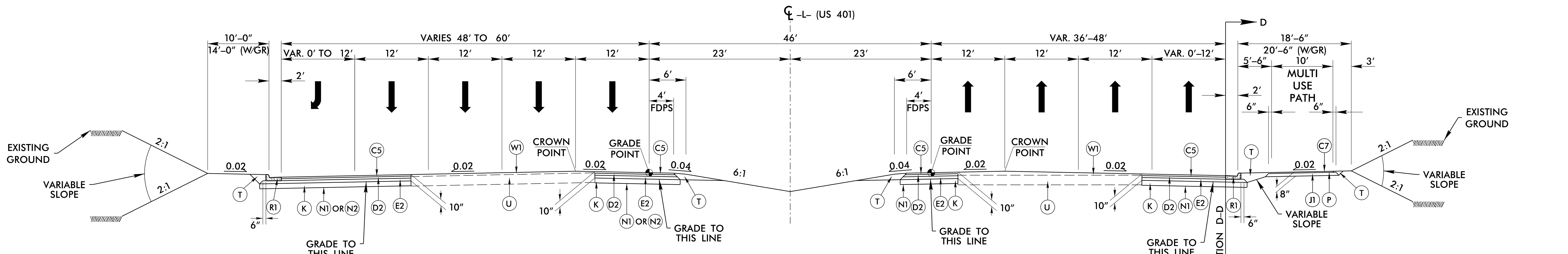


INSET 5B

-L- STA. 45+25.84 TO STA. 49+55.00
(REFER TO TYPICAL SECTION NO. 5 FOR PAVEMENT DESIGN)

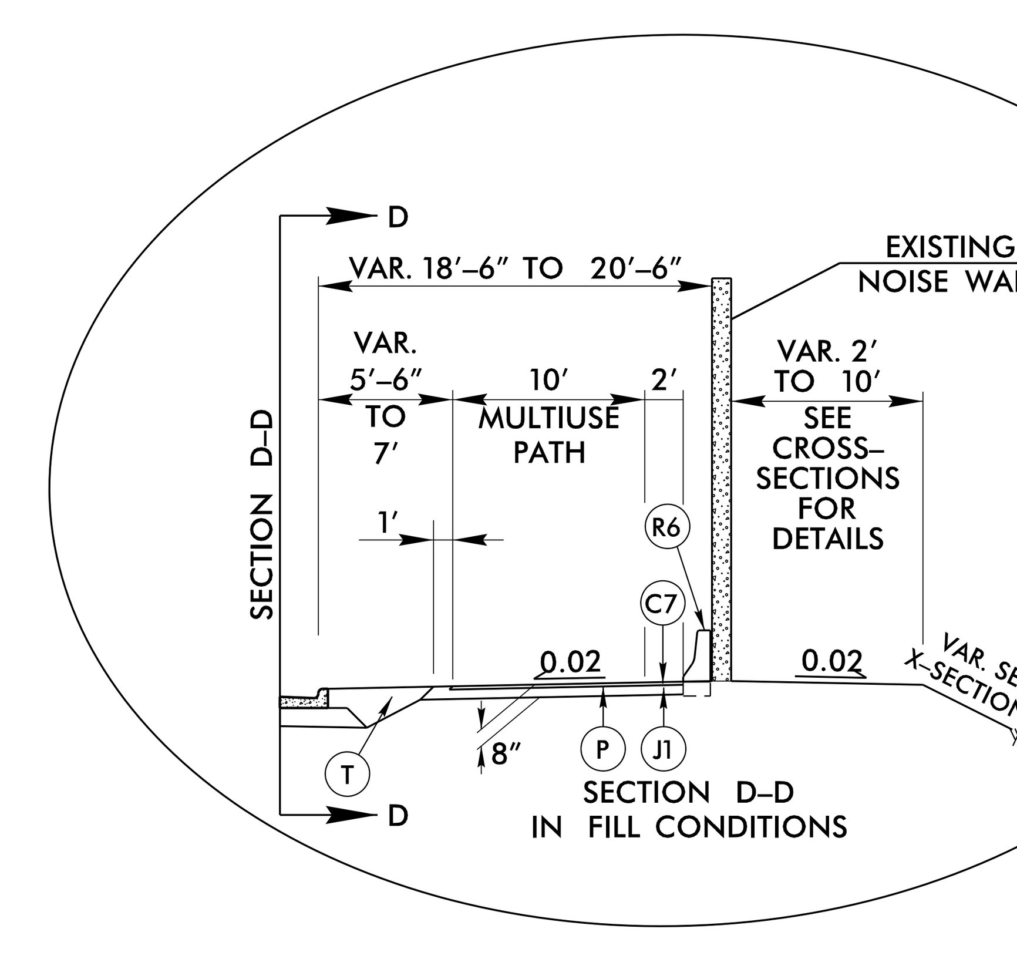
INSET 5A & 5B

(TO BE USED WITH TYPICAL SECTION NO. 5)



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
-L- STA. 50+14.31 TO STA. 85+17.14
SEE DETAIL 6A & 6B ON SHEET 2A-5 FOR LEFT TURN LANE DETAILS



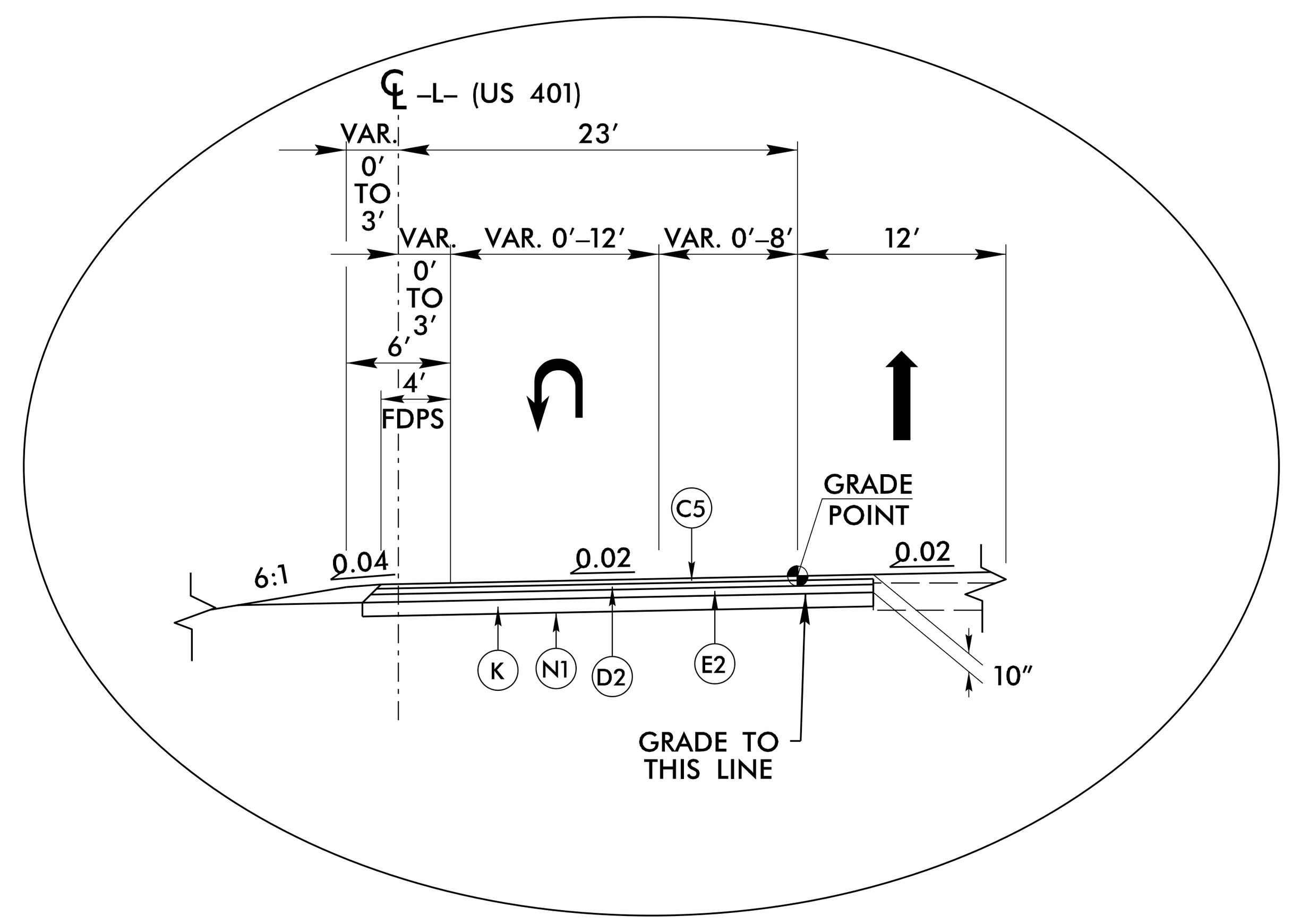
(USE WITH TYPICAL SECTION 6)

C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	1½″ S9.5C
C5	3″ S9.5C
C6	VAR. S9.5C
C7	2″ S9.5B
C8	2″ S9.5C
D1	2½″ I19.0C
D2	4″ I19.0C
D3	VAR. I19.0C
E1	4″ B25.0C
E2	3″ B25.0C
E3	VAR. B25.0C
J1	6″ ABC
J2	8″ ABC
K	8″ CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	4″ CONC.ISL.COV.
R4	5″ MONO. ISLAND
R5	8″x18″ CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½″ MILLING
V2	VAR. MILLING
V3	3″ MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/10/2023	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON 3/10/2023

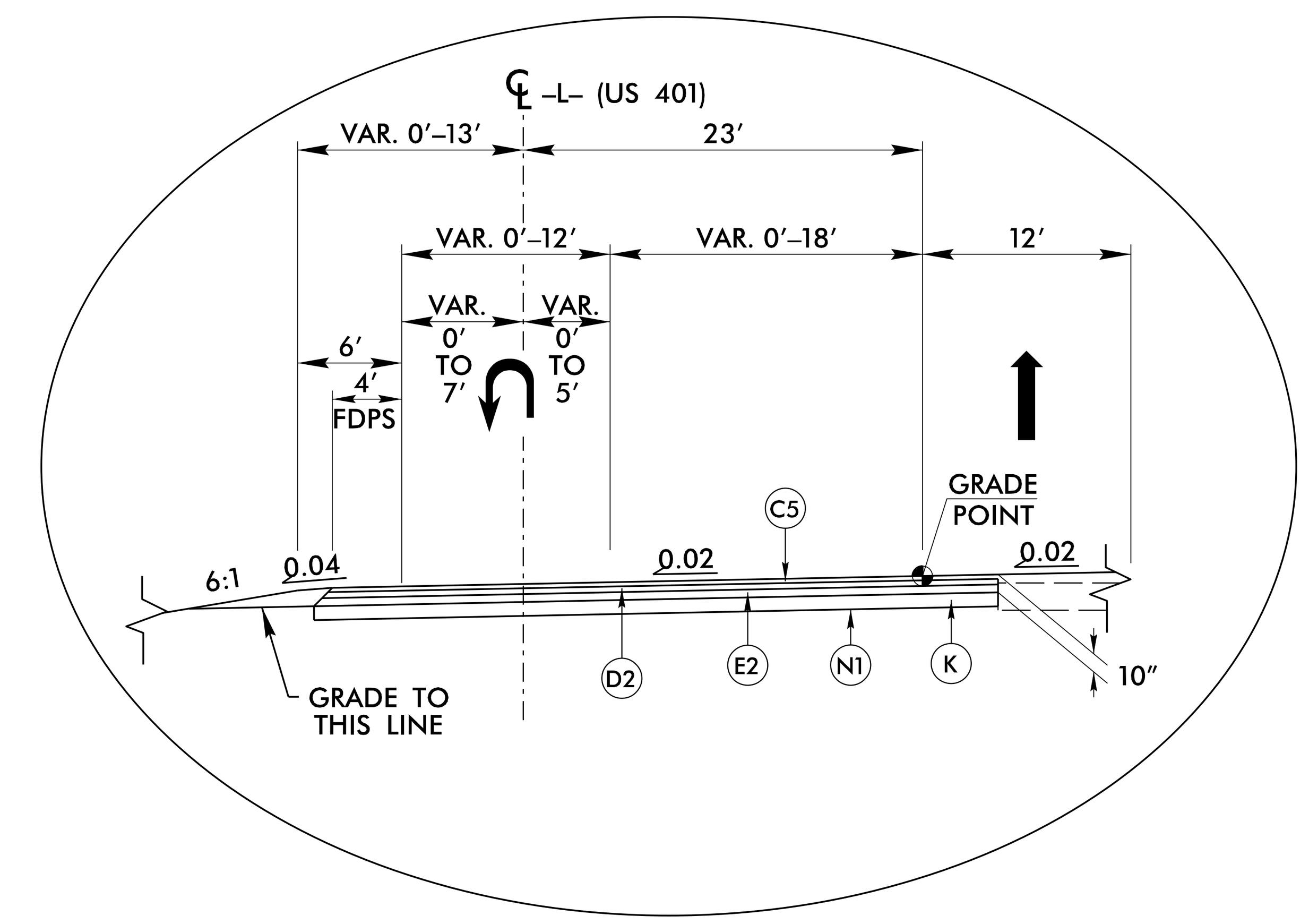
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259(FAX)



INSET 6A

-L- STA. 60+60.00 TO STA. 67+00.00 (NB)
-L- STA. 79+00.00 TO STA. 82+41.11 (NB)
-L- STA. 67+00.00 TO STA. 73+40.00 (SB – USE MIRROR)

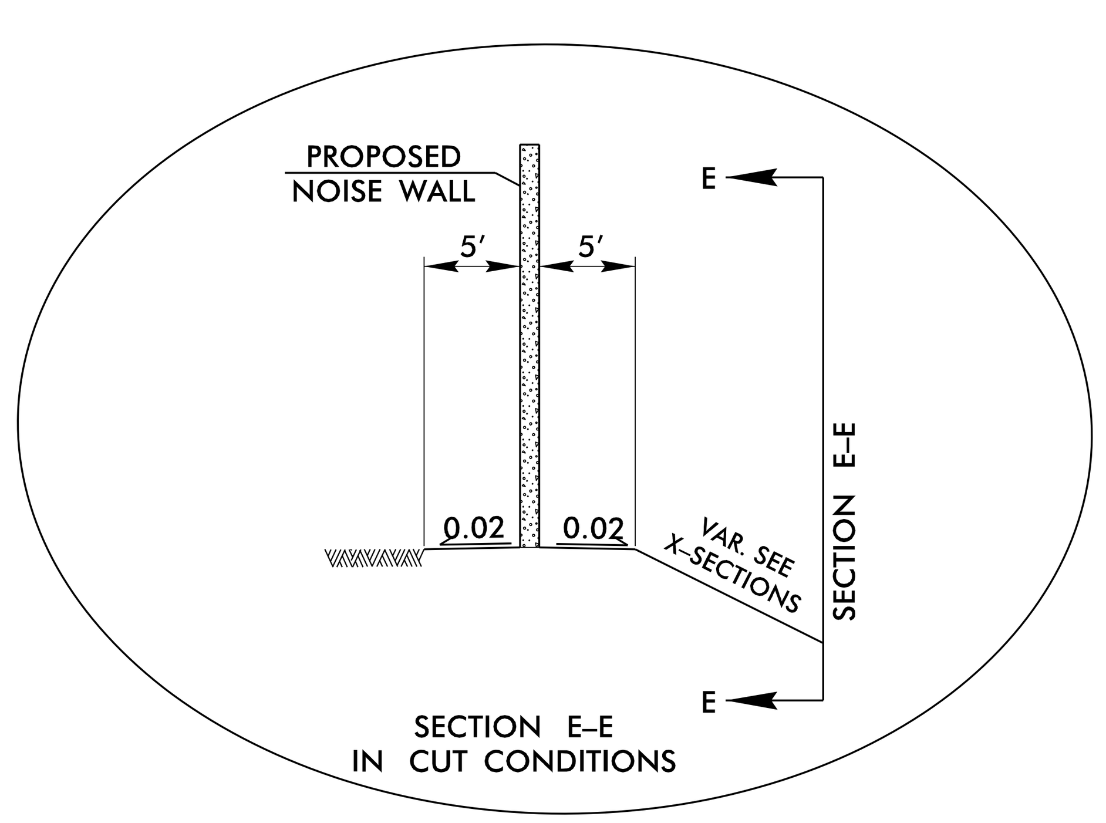


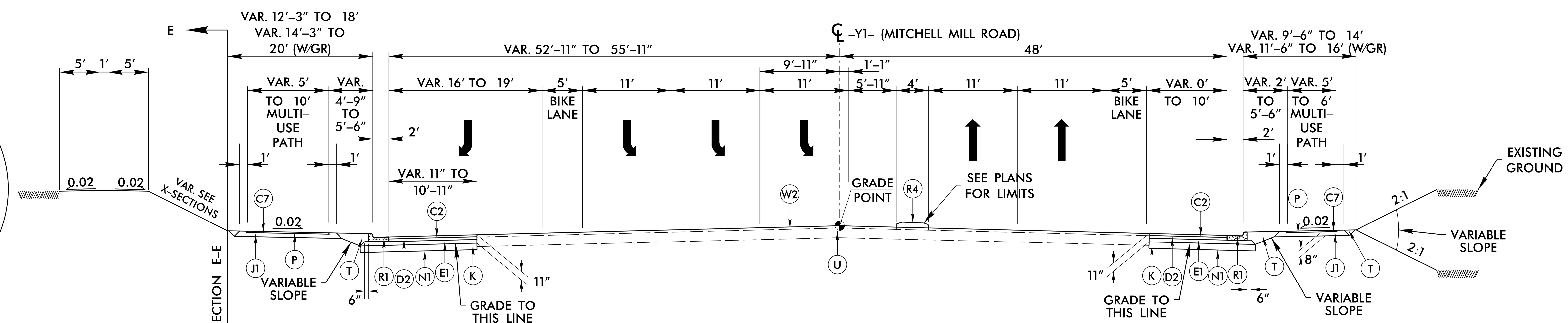
INSET 6B

-L- STA. 82+41.11 TO STA. 84+80.00 (NB)

INSET 6A & 6B

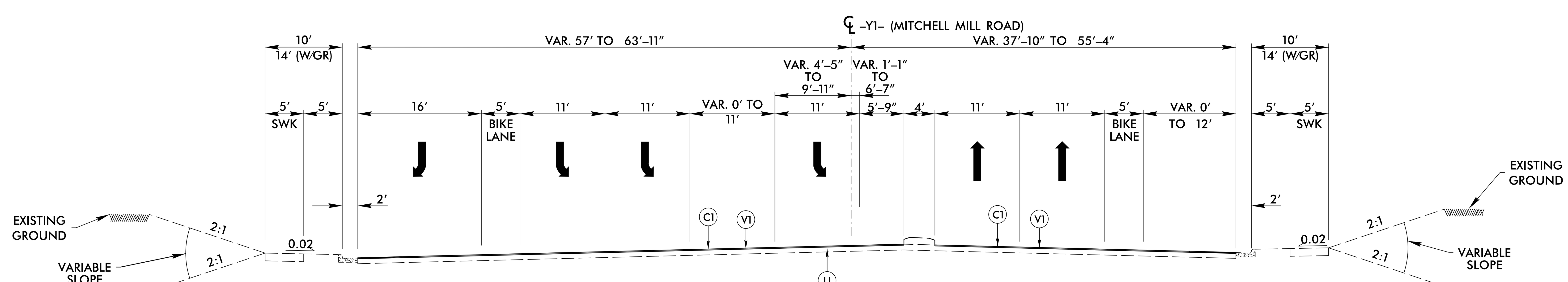
(TO BE USED WITH TYPICAL SECTION NO. 6)





TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
-Y1- STA. 10+71.00 TO STA. 13+30.00 (RT)
-Y1- STA. 10+71.00 TO STA. 13+74.71 (LT)



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
-Y1- STA. 13+30.00 TO STA. 19+14.23 (RT)
-Y1- STA. 13+74.71 TO STA. 19+14.23 (LT)

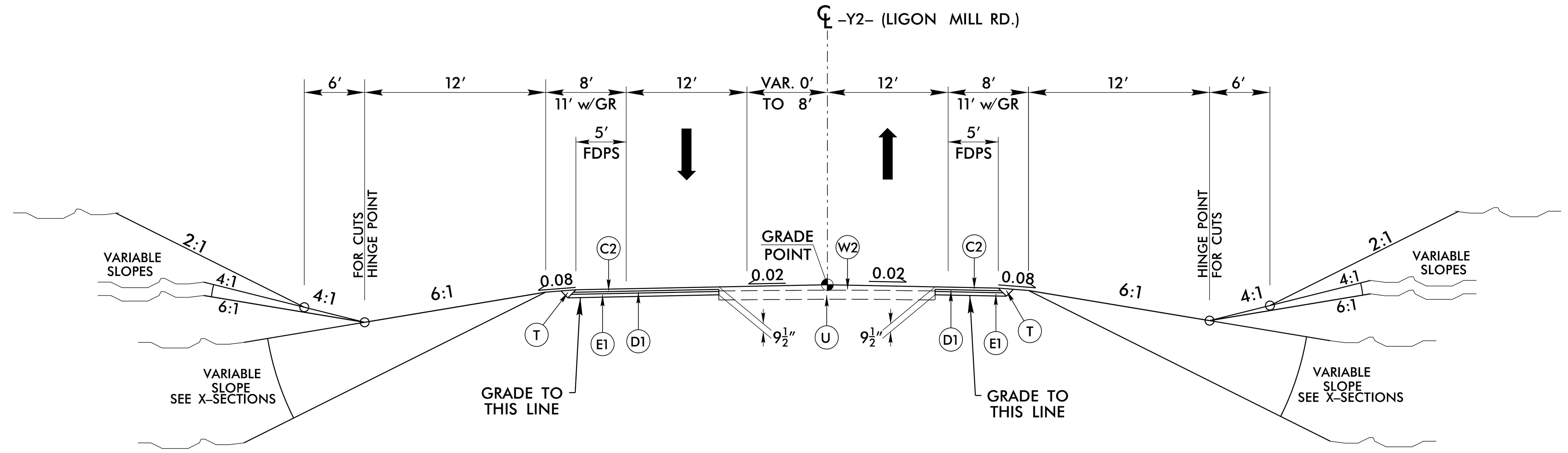
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/10/2023	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON 3/10/2023

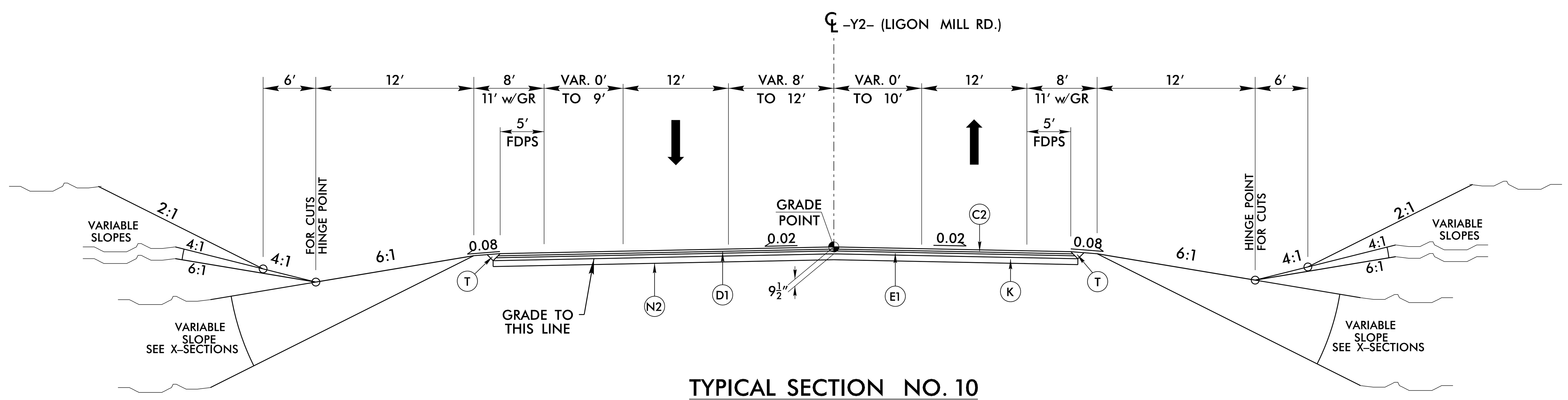
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 (919) 854-6259(FAX)



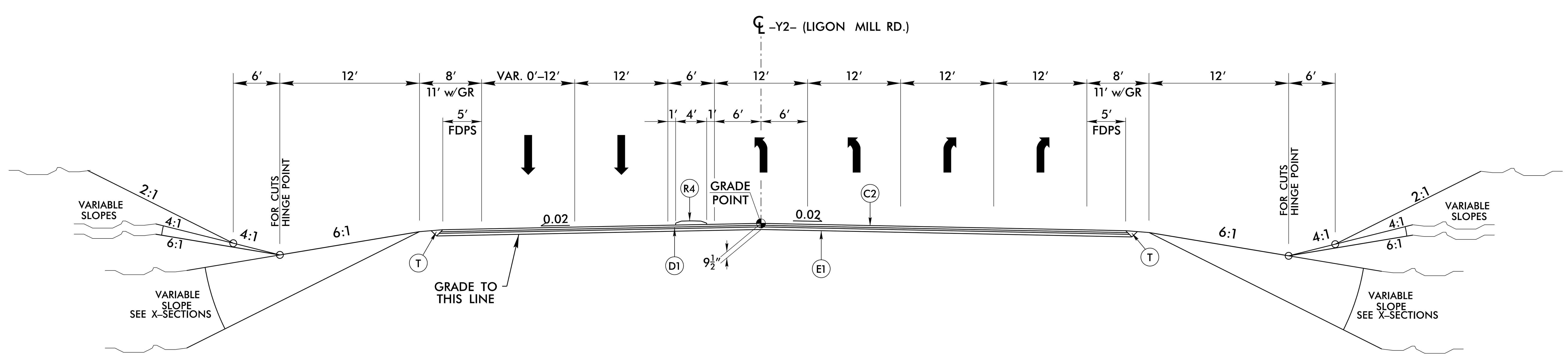
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y2- STA. 12+00.00 TO STA. 16+75.50



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-Y2- STA. 16+75.50 TO STA. 26+85.00



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
-Y2- STA. 26+85.00 TO STA. 33+45.68

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

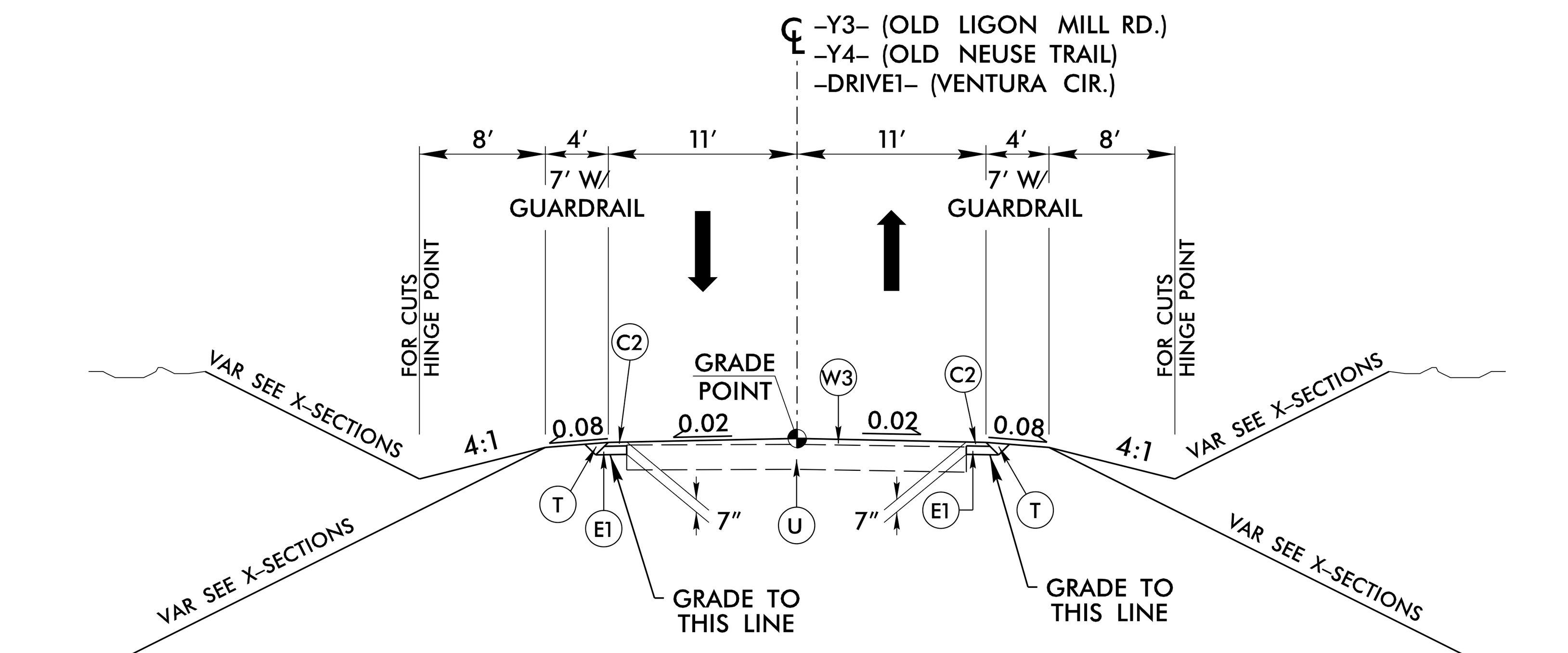
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-7

ROADWAY DESIGN ENGINEER — SEAL 18470, EDWARD GLENN EDENS, JR., 3/10/2023

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON, 3/10/2023

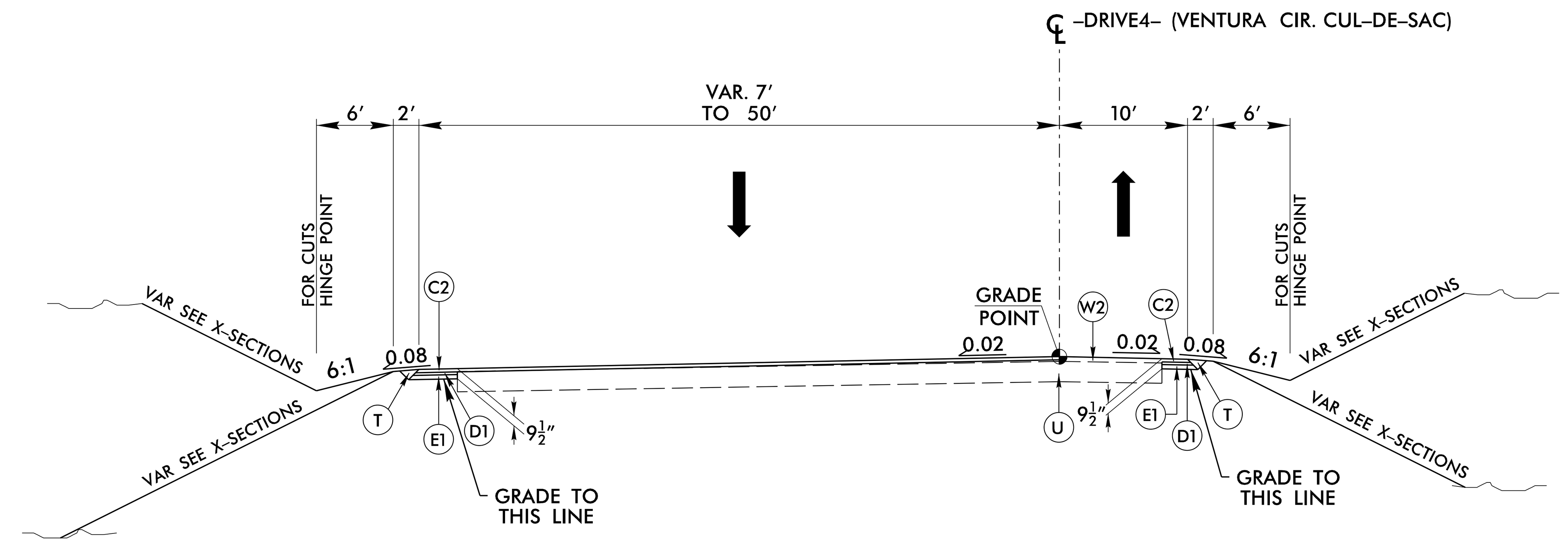
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM — NC FIRM LICENSE No.: F-0342, 5438 Wade Park Boulevard, Suite 200, Raleigh, NC 27607, (919) 854-6200 (919) 854-6259(FAX)



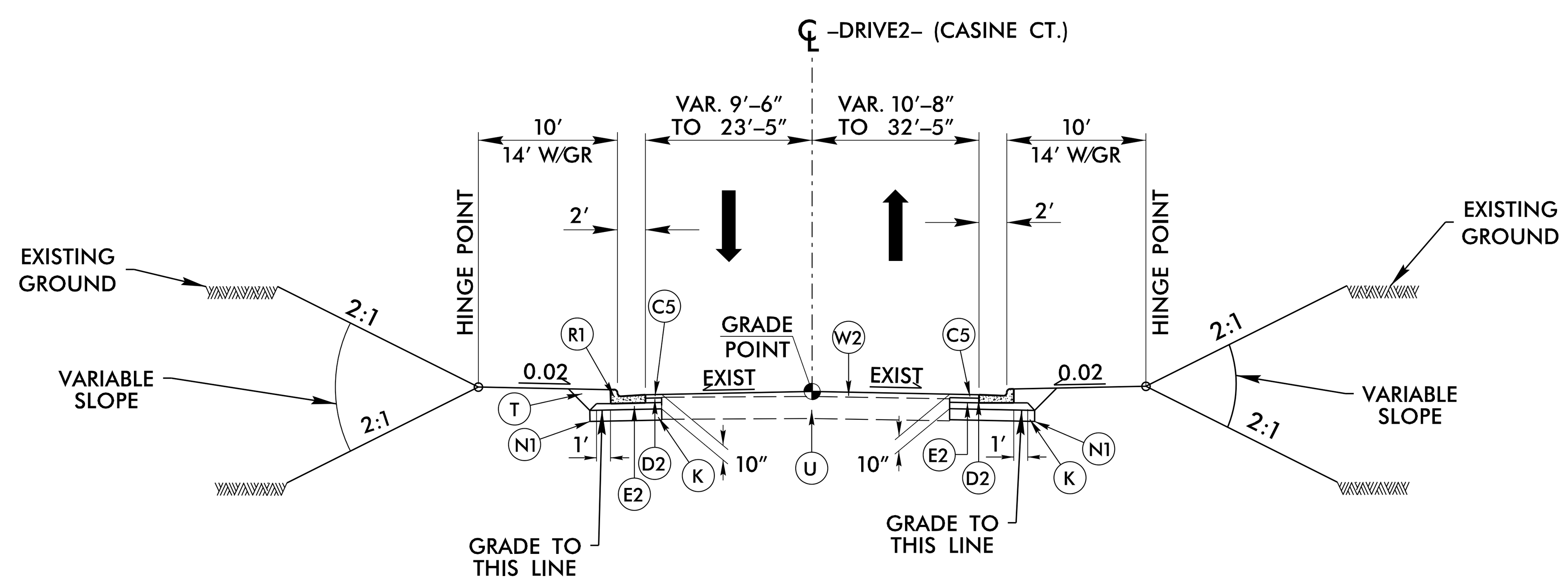
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
-Y3- STA. 11+00.00 TO STA. 14+93.84
-Y4- STA. 10+50.00 TO STA. 17+70.00
-DRIVE1- STA. 11+50.00 TO STA. 12+37.08



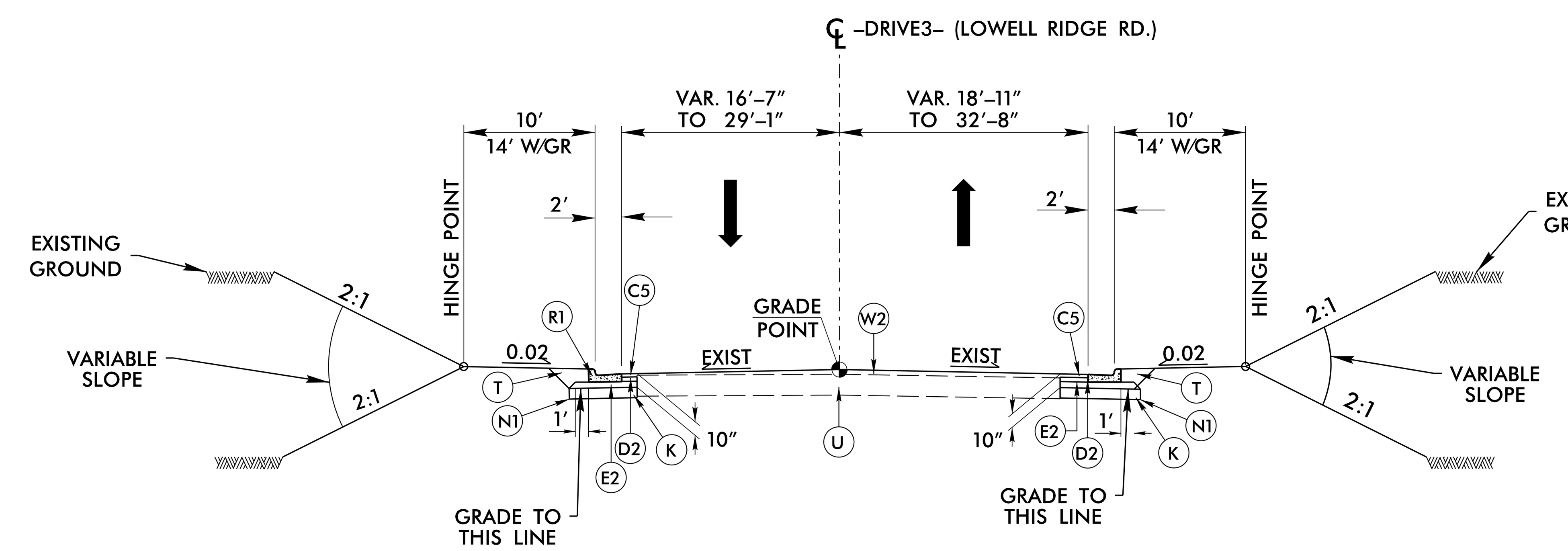
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
-DRIVE4- STA. 10+24.54 TO STA. 11+25.00



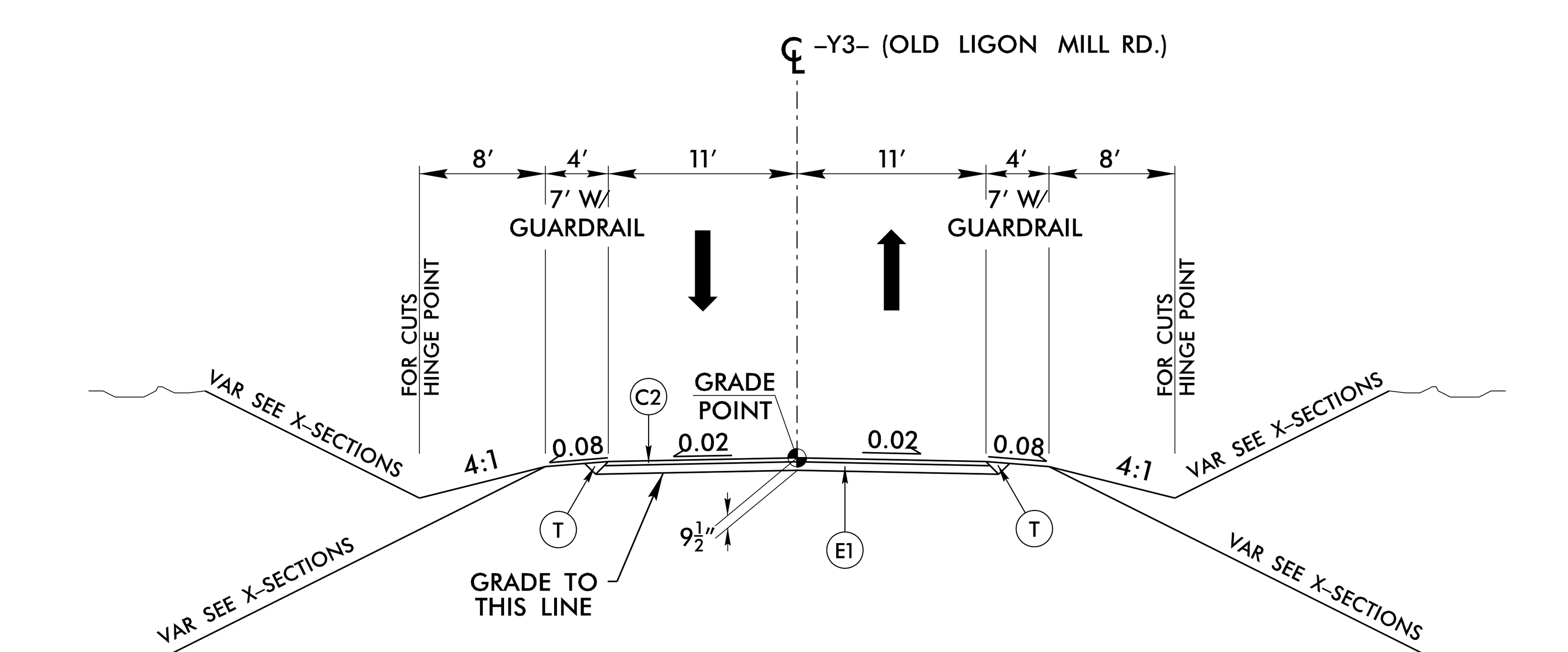
TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
-DRIVE2- STA. 10+83.00 TO STA. 11+40.00



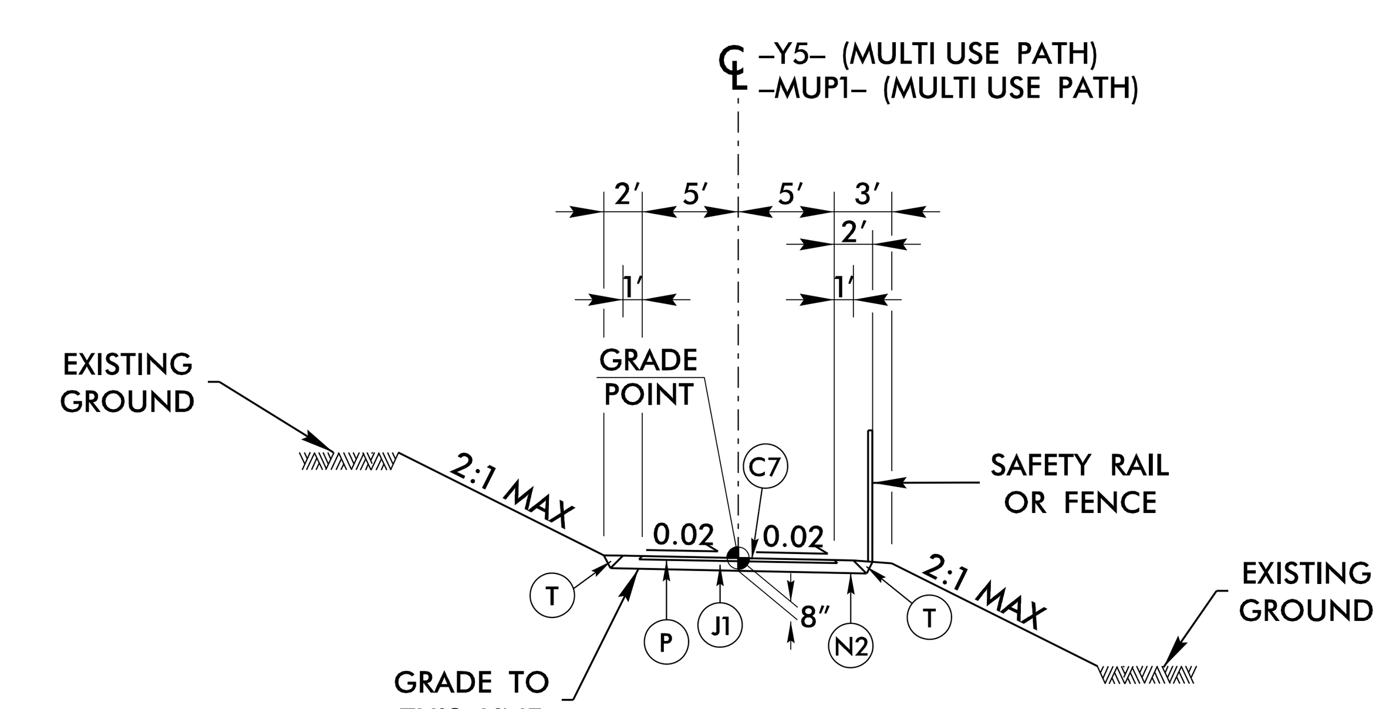
TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15
-DRIVE3- STA. 10+69.21 TO STA. 11+80.00



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16
-Y3- STA. 13+86.67 TO STA. 14+93.84



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
-Y5- STA. 10+83.00 TO STA. 12+85.27
-MUP1- STA. 10+12.09 TO STA. 15+33.47

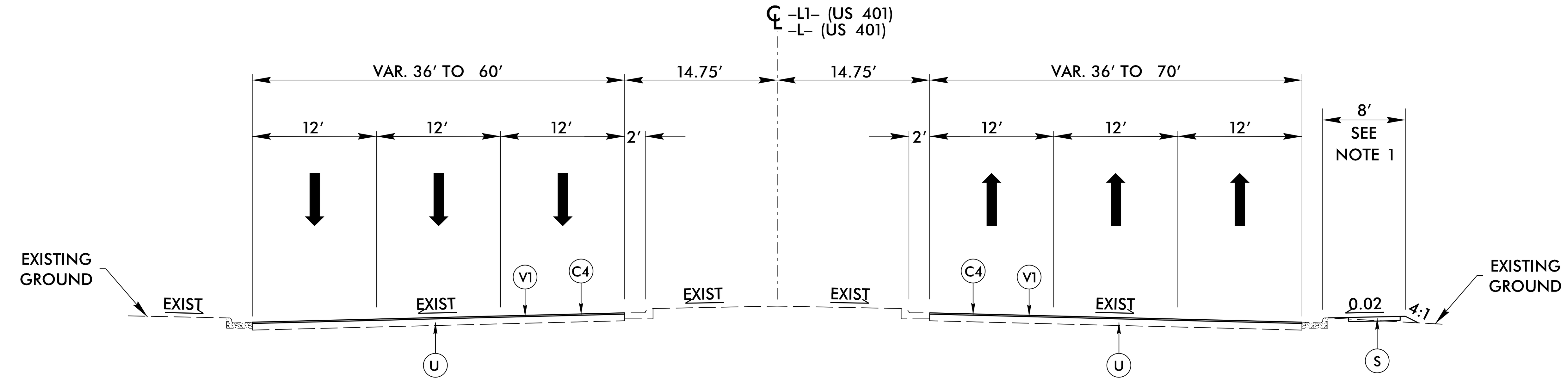
NOTES: PROVIDE SAFETY RAIL FOR THE FOLLOWING CIRCUMSTANCES:
SLOPE >/= 3:1 AND DROP OF 6'
SLOPE >/= 2:1 AND DROP OF 4'
SLOPE >/= 1:1 AND DROP OF 1'

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-8
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/10/2023	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON 3/10/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

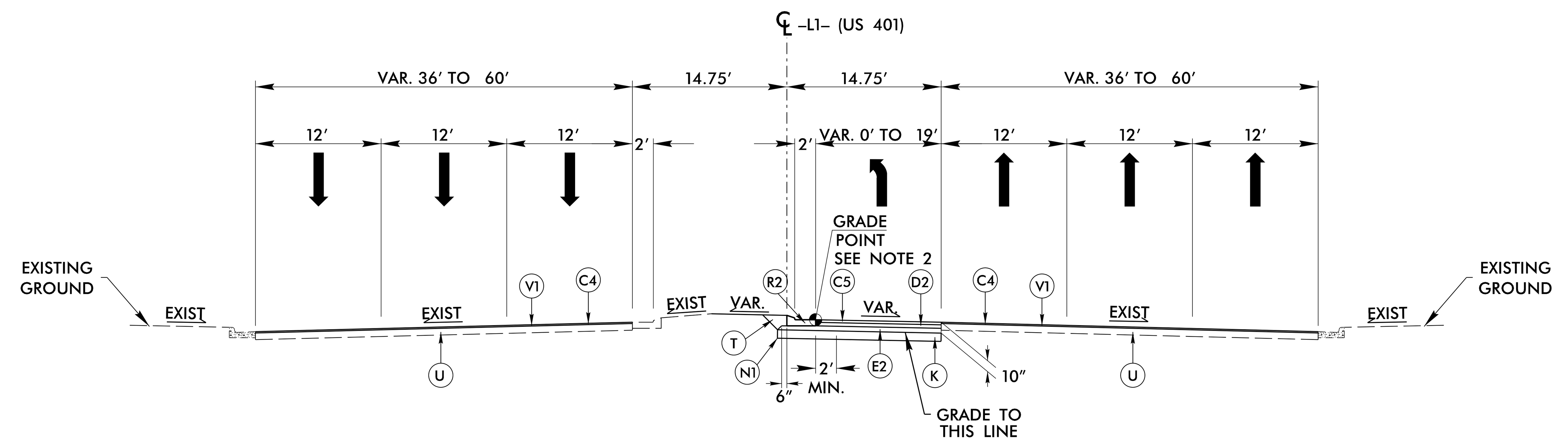
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259(FAX)



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18
-L1- STA. 19+00.00 TO STA. 19+60.00
-L1- STA. 36+40.00 TO STA. 45+00.00
-L1- STA. 61+50.00 TO STA. 73+73.50
-L- STA. 10+00.00 TO STA. 15+50.00
-L- STA. 15+50.00 RT TO STA. 17+90.00 RT

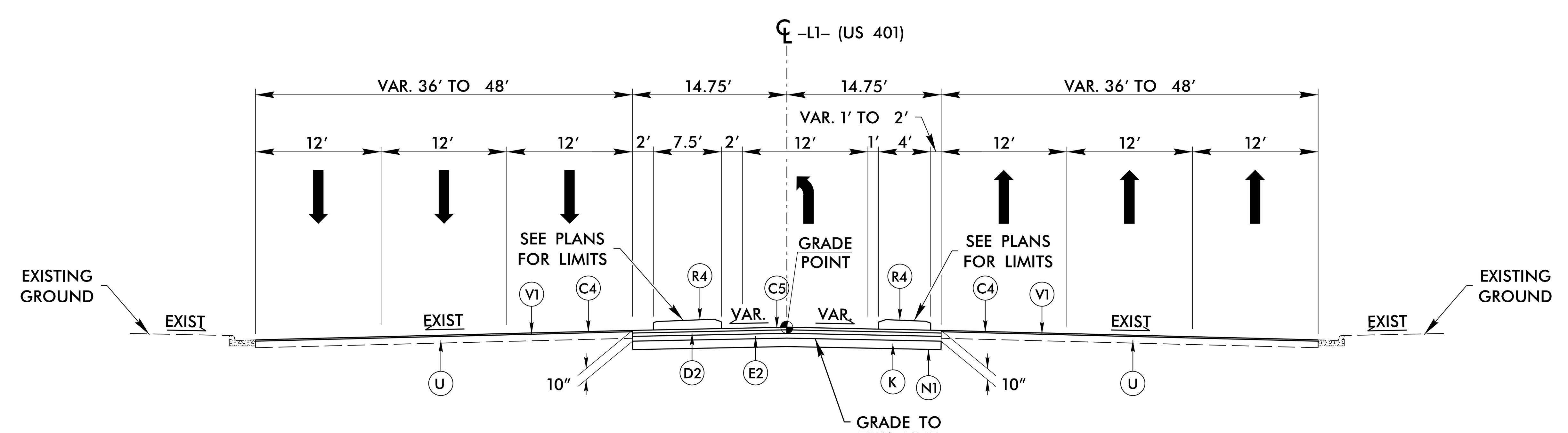
NOTE 1: PROPOSED SIDEWALK AND 8' ONLY BERM FROM -L1- STA. 71+74.29 TO STA. 73+73.50 AND -L- STA. 10+00.00 RT TO -L- STA. 17+90.00 RT



TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19
-L1- STA. 19+60.00 TO STA. 24+60.00
-L1- STA. 45+00.00 TO STA. 48+95.00
-L1- STA. 50+20.00 TO STA. 54+60.00
-L1- STA. 56+90.00 TO STA. 61+50.00 (USE MIRROR)

SEE INSETS 19A & 19B ON SHEET 2A-9 FOR WIDENING DETAILS
NOTE 2: GRADE POINT IS ALONG EDGE OF PAVEMENT



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20
-L1- STA. 24+60.00 TO STA. 26+54.43
-L1- STA. 48+95.00 TO STA. 50+20.00
-L1- STA. 54+60.00 TO STA. 56+00.00
-L1- STA. 56+00.00 TO STA. 56+90.00 (USE MIRROR)
SEE INSETS 19A & 19B ON SHEET 2A-9 FOR WIDENING DETAILS

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

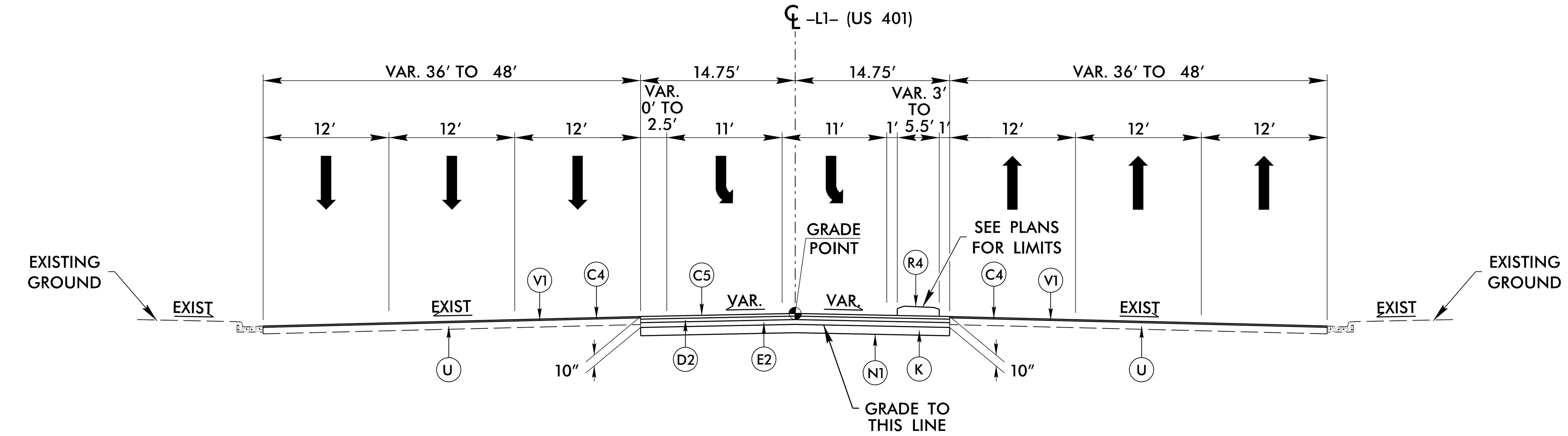
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-9

ROADWAY DESIGN ENGINEER — SEAL 018470, EDWARD GLENN EDENS, JR., NORTH CAROLINA PROFESSIONAL ENGINEER, 3/10/2023

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON, NORTH CAROLINA PROFESSIONAL ENGINEER, 3/10/2023

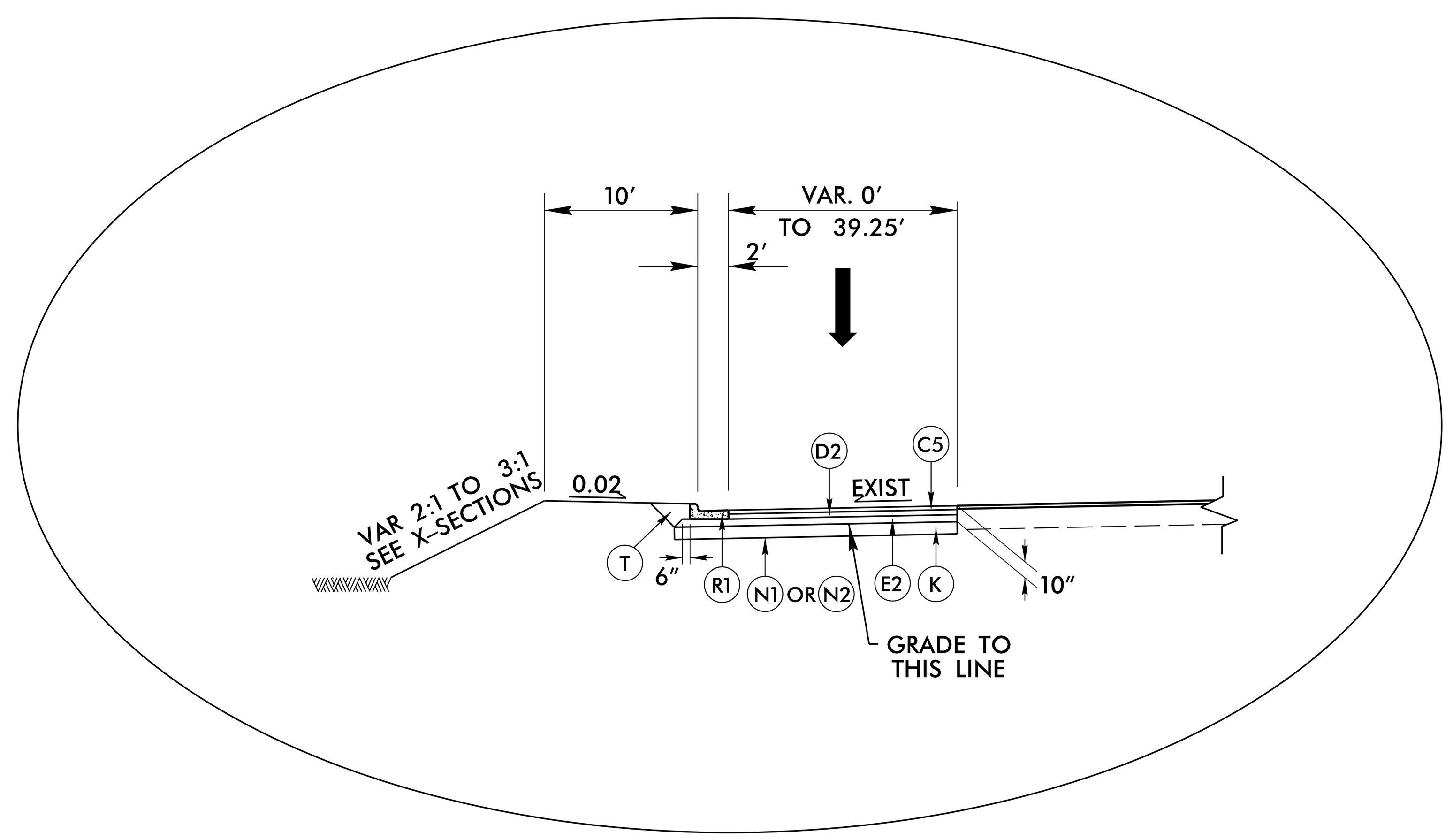
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM
NC FIRM LICENSE No. F-0342
5438 Wade Park Boulevard, Suite 200
Raleigh, NC 27607
(919) 854-6200 · (919) 854-6259(FAX)



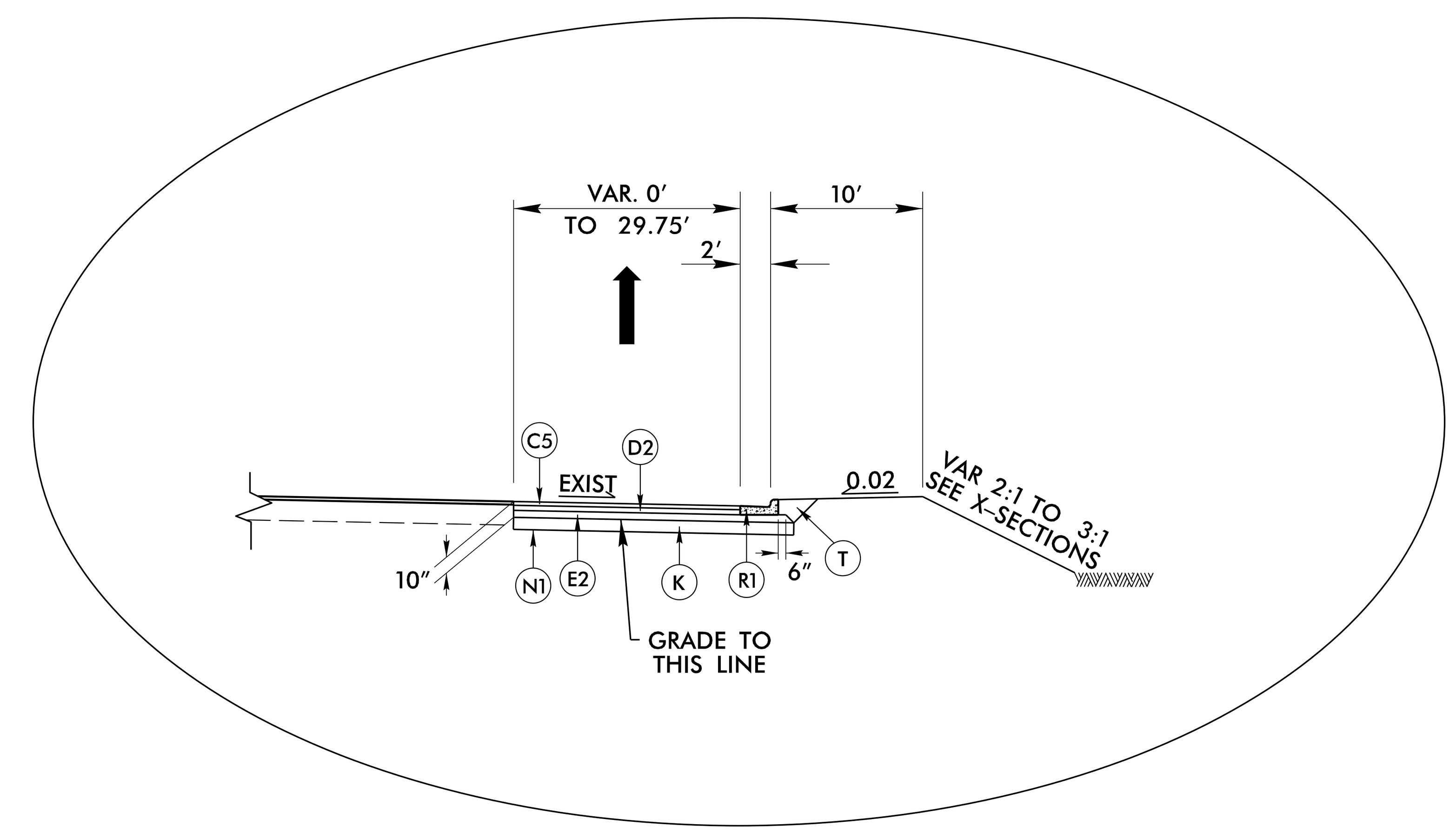
TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21
-L1- STA. 26+54.43 TO STA. 36+40.00
SEE INSET 19A & 19B FOR WIDENING DETAILS



INSET 19A

-L1- STA. 23+42.00 TO STA. 26+02.75
-L1- STA. 47+55.00 TO STA. 50+40.19

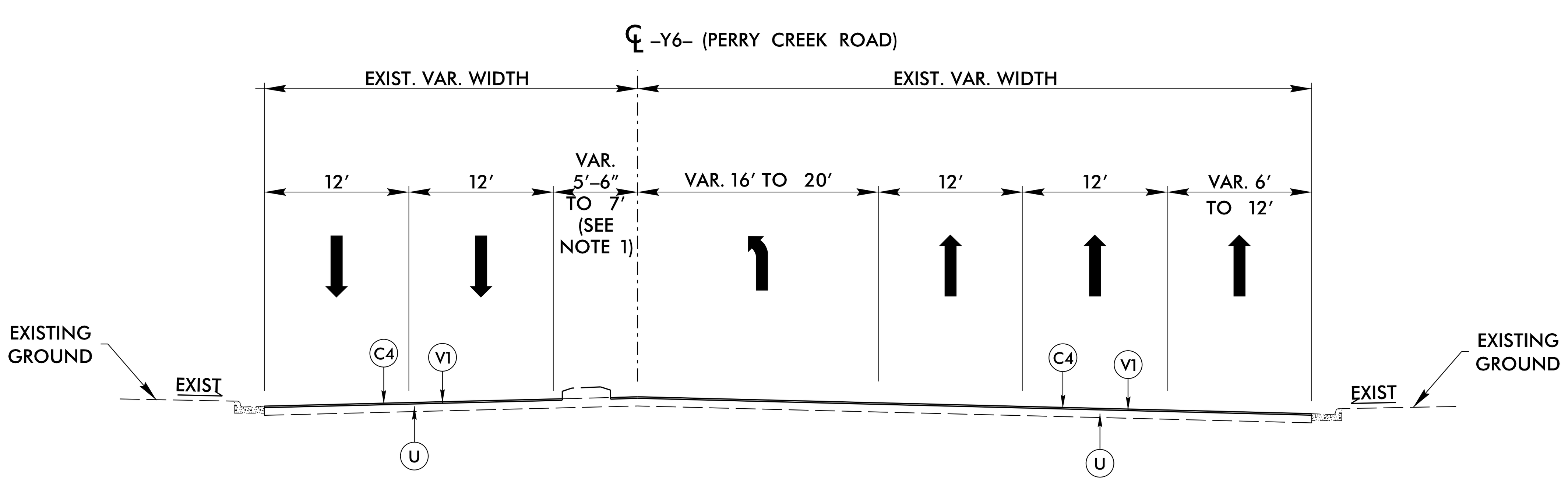


INSET 19B

-L1- STA. 26+02.00 TO STA. 28+62.23

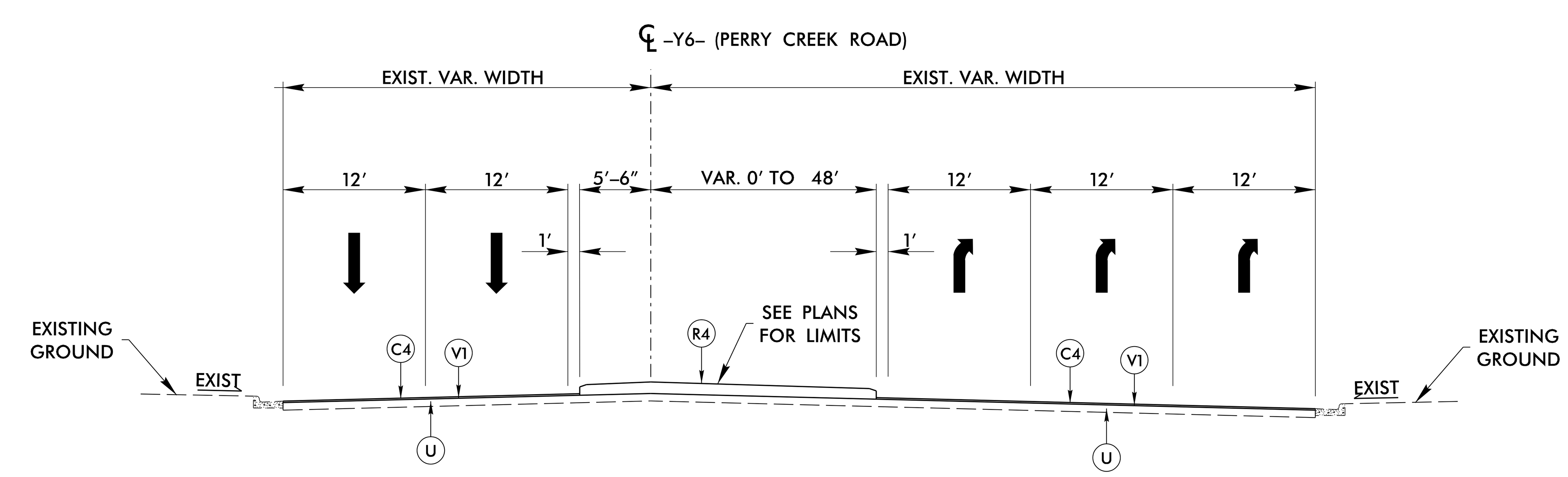
INSET 19A & 19B

(TO BE USED WITH TYPICAL SECTION NOS. 19, 20, AND 21)



TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22
-Y6- STA. 14+20.00 TO STA. 19+21.21
NOTE 1: EXISTING MONOLITHIC ISLAND FROM -Y6- STA. 17+66.34 TO 19+21.21



TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23
-Y6- STA. 19+21.21 TO STA. 20+69.26

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

6/2/99
3/10/2023
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\900-CAD GIS\910_CAD\70_NCDOT_TIP\Roadway\Proj\U5748_rdy_typ.dgn
elizabeth.hunter

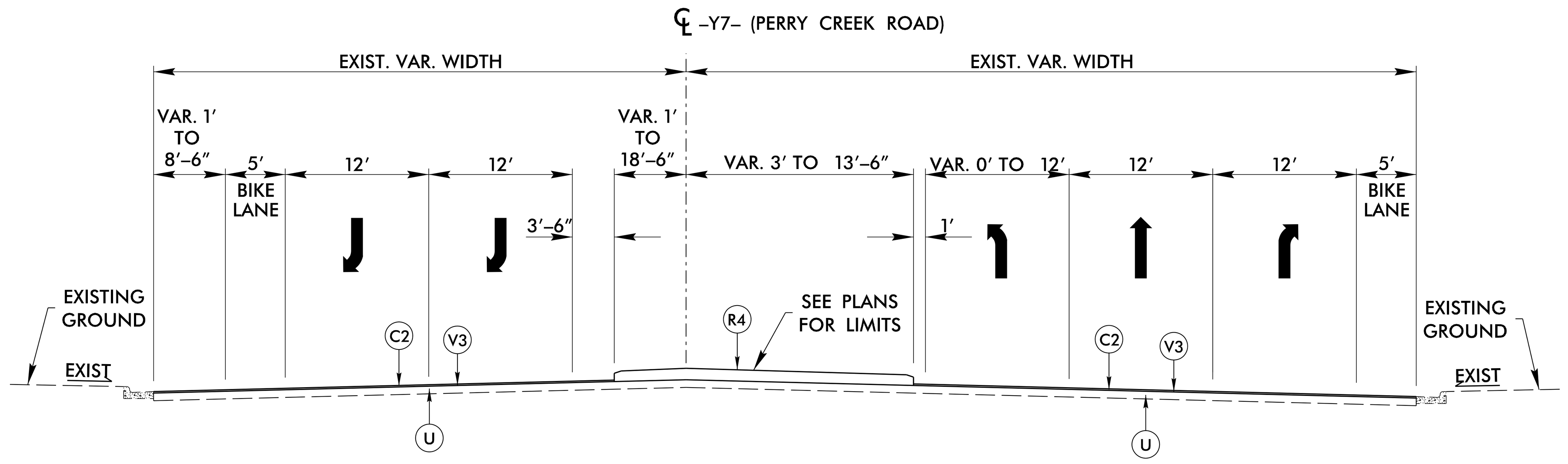
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2A-10

ROADWAY DESIGN ENGINEER — SEAL 18470 — EDWARD GLENN EDENS, JR. — 3/10/2023

PAVEMENT DESIGN ENGINEER — SEAL 022896 — CLARK S. MORRISON — 3/10/2023

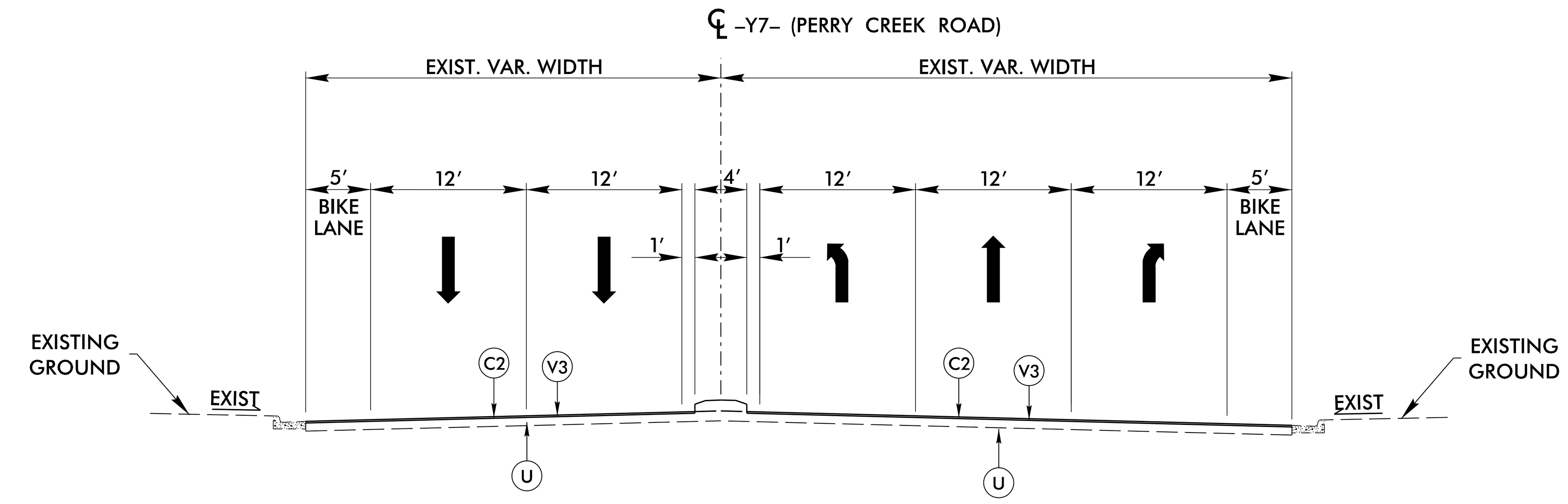
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: AECOM — NC FIRM LICENSE No. F-0342, 5438 Wade Park Boulevard, Suite 200, Raleigh, NC 27607, (919) 854-6200 · (919) 854-6259(FAX)



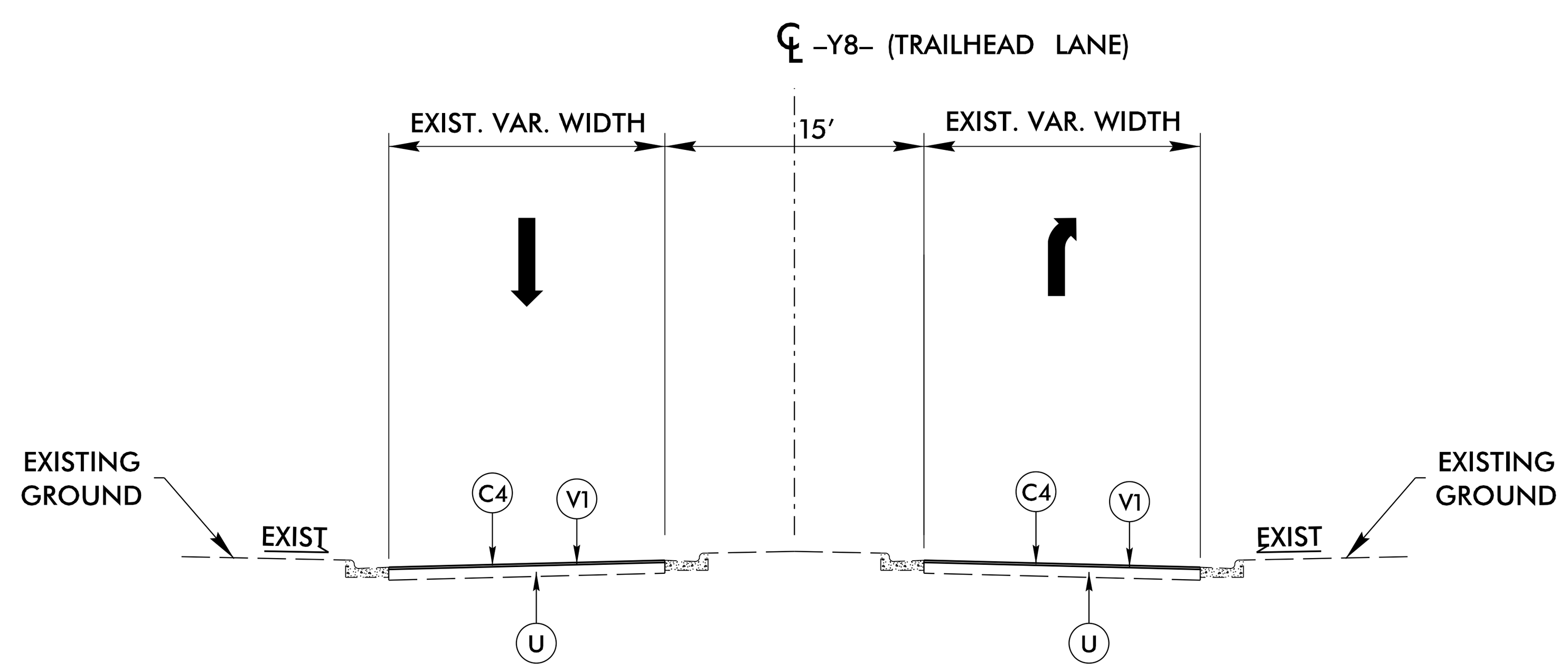
TYPICAL SECTION NO. 24

USE TYPICAL SECTION NO. 24
-Y7- STA. 10+61.64 TO STA. 13+33.47



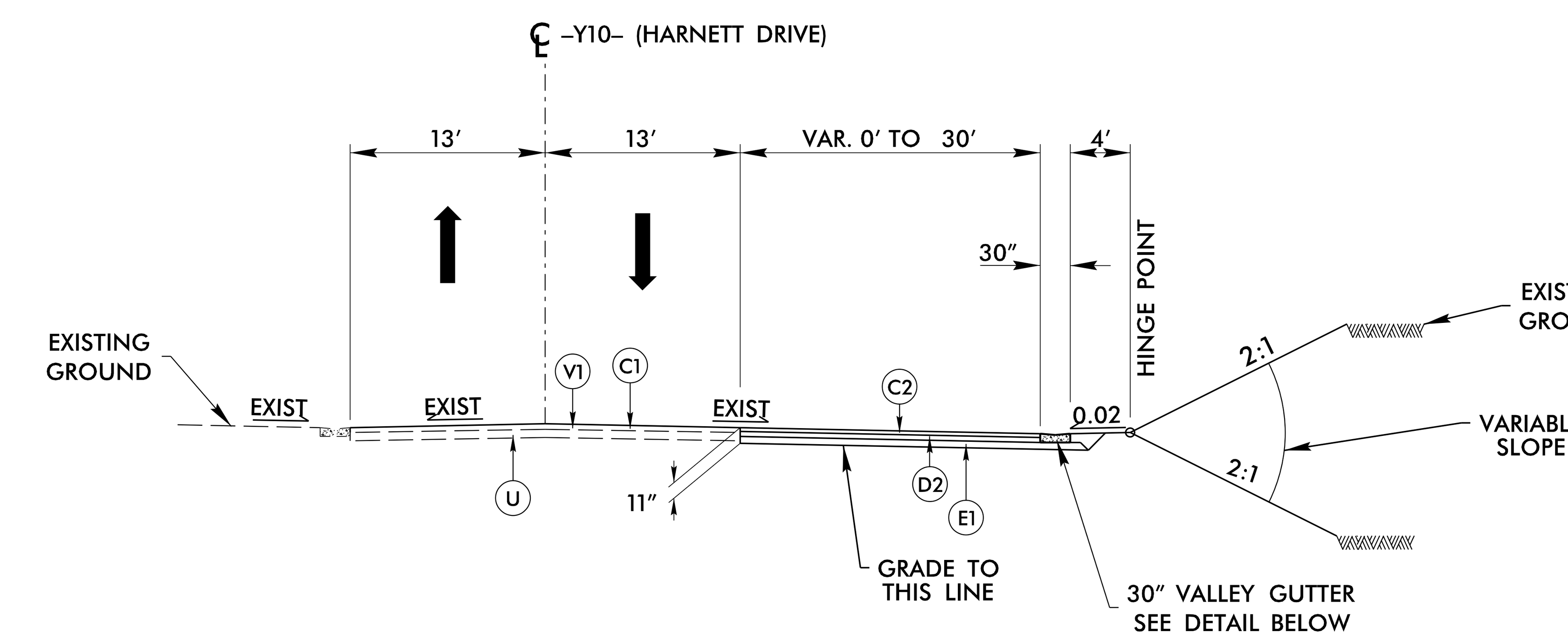
TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 25
-Y7- STA. 13+33.47 TO STA. 14+10.00



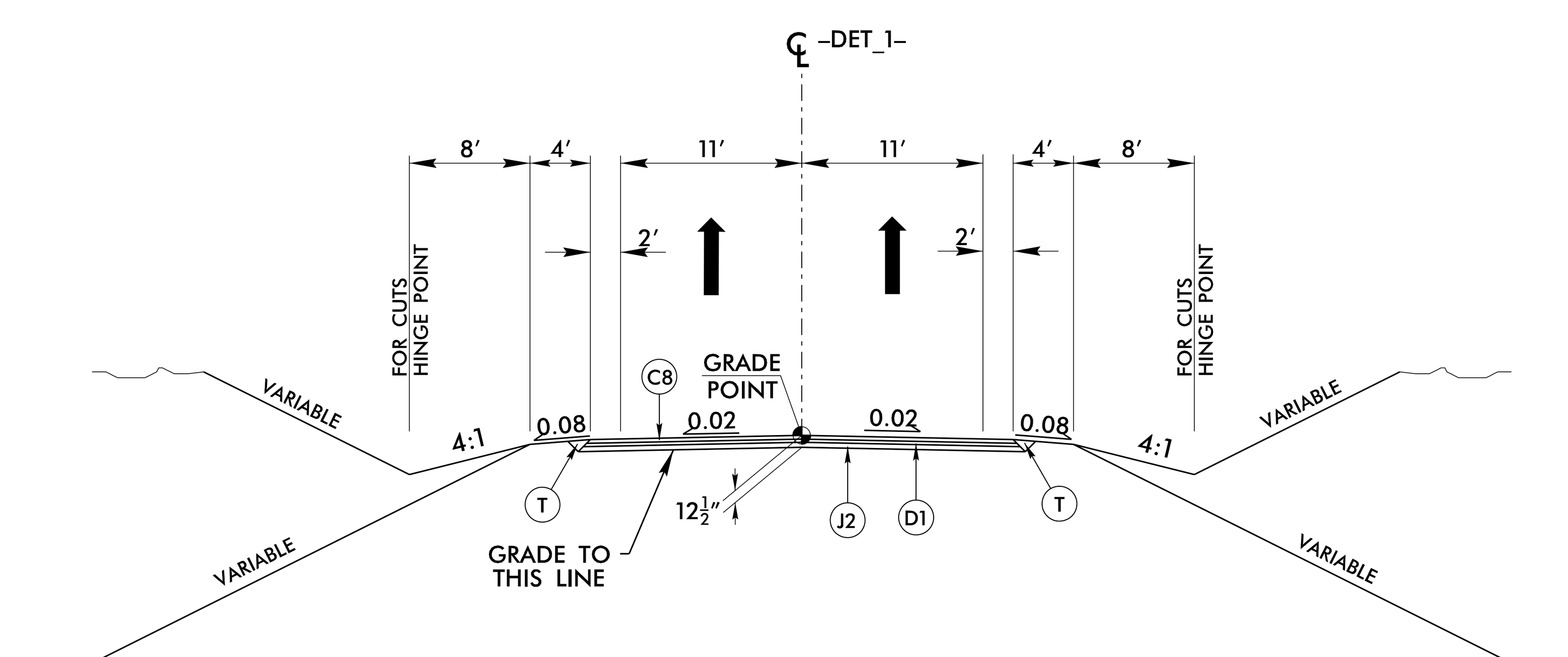
TYPICAL SECTION NO. 26

USE TYPICAL SECTION NO. 26
-Y8- STA. 10+59.08 TO STA. 11+08.00



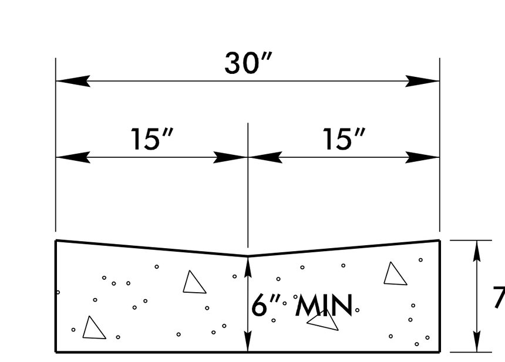
TYPICAL SECTION NO. 27

USE TYPICAL SECTION NO. 27
-Y10- STA. 11+05.56 TO STA. 11+80.00



TYPICAL SECTION NO. 28

USE TYPICAL SECTION NO. 28
-DET_1- STA. 12+00.00 TO STA. 18+28.80



VALLEY GUTTER DETAIL

C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	2" S9.5B
C8	2" S9.5C
D1	2½" I19.0C
D2	4" I19.0C
D3	VAR. I19.0C
E1	4" B25.0C
E2	3" B25.0C
E3	VAR. B25.0C
J1	6" ABC
J2	8" ABC
K	8" CLASS IV S.S.
N1	GEOTEXT. SOIL S.
N2	GEOTEXT. SUB.S.
P	PRIME COAT
R1	2'-6" C & G
R2	2'-9" C & G
R3	4" CONC.ISL.COV.
R4	5" MONO. ISLAND
R5	8"x18" CONC.CURB
R6	S.F. BARRIER
S	CONC. SIDEWALK
T	EARTH MATERIAL
U	EXST. PAVEMENT
V1	1½" MILLING
V2	VAR. MILLING
V3	3" MILLING
W1	WEDGING DET.#1
W2	WEDGING DET.#2
W3	WEDGING DET.#3

6/2/99

3/10/2023
pw:\\aecom-na-pw.bentley.com:AECOM_DS21_NA_2020\Documents\60609754-U-5748 Ligon Mill\900-CAD GIS\910_CAD\70_NCDOT_TIP\Roadway\Proj\U5748_rdy_typ.dgn
elizabeth.hunter

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/7/2023

Prepared in the Office of: AECOM

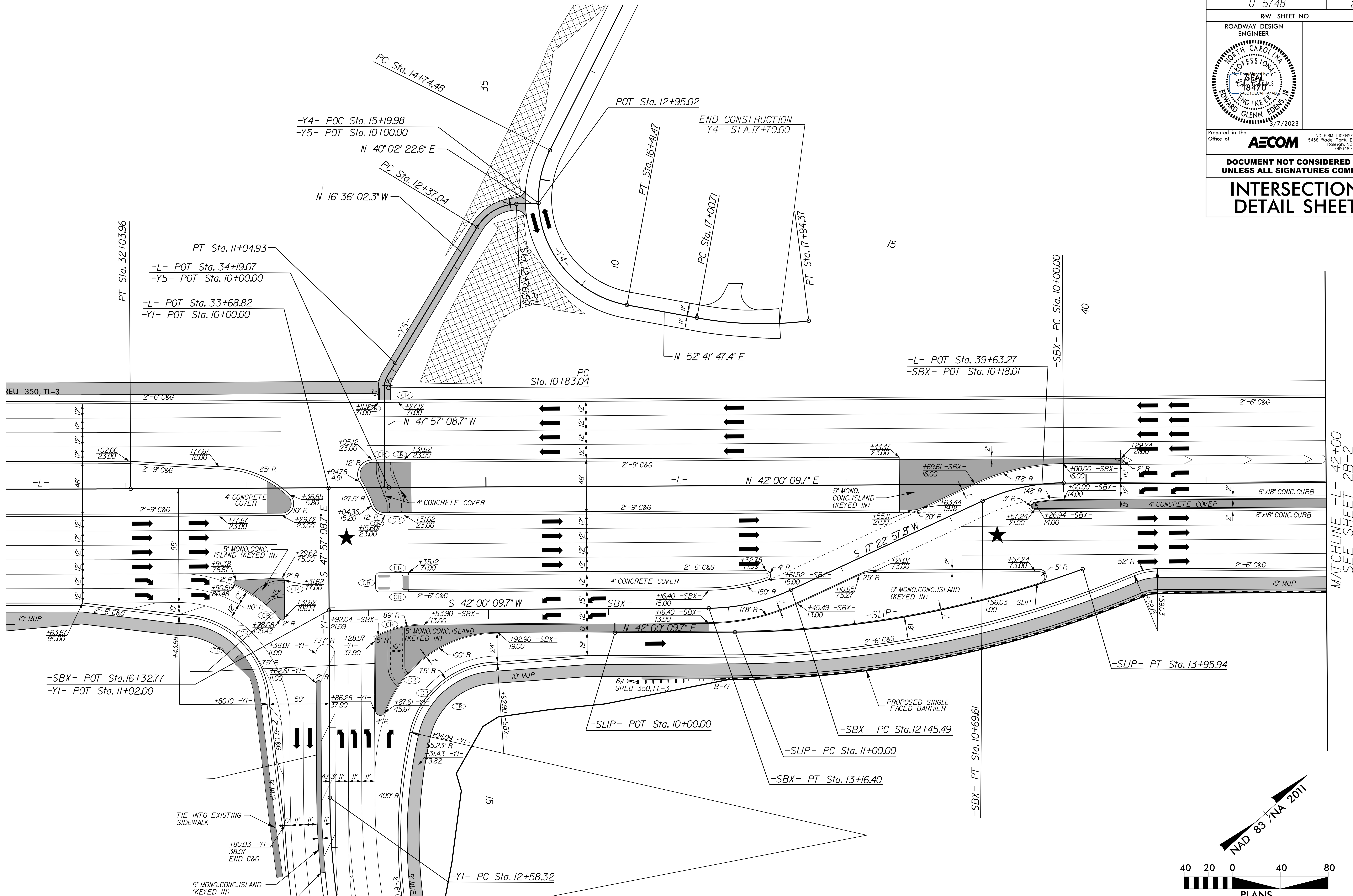
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL SHEET

REVISIONS

5/14/99



PC Sta. 14+74.48
POT Sta. 12+95.02
END CONSTRUCTION
-Y4- STA.17+70.00
-Y4- POC Sta. 15+19.98
-Y5- POT Sta. 10+00.00
N 40° 02' 22.6" E
PC Sta. 12+37.04
N 16° 36' 02.3" W
PT Sta. 16+41.47
PC Sta. 17+00.71
PT Sta. 17+94.37
PT Sta. 11+04.93
-L- POT Sta. 34+19.07
-Y5- POT Sta. 10+00.00
-L- POT Sta. 33+68.82
-Y1- POT Sta. 10+00.00
PT Sta. 32+03.96
N 52° 41' 47.4" E
-L- POT Sta. 39+63.27
-SBX- POT Sta. 10+18.01
-SBX- PC Sta. 10+00.00
PC Sta. 10+83.04
REU 350, TL-3
2'-6" C&G
N 47° 57' 08.7" W
2'-9" C&G
-L-
N 42° 00' 09.7" E
4' CONCRETE COVER
S 47° 57' 08.7" E
S 17° 22' 57.8" W
5' MONO. CONC. ISLAND (KEYED IN)
S 42° 00' 09.7" W
-SBX-
N 42° 00' 09.7" E
-SLIP-
10' MUP
8'x18" CONC. CURB
MATCHLINE -L- 42+00 SEE SHEET 2B-2
-SBX- POT Sta. 16+32.77
-Y1- POT Sta. 11+02.00
-SLIP- POT Sta. 10+00.00
-SLIP- PC Sta. 11+00.00
-SBX- PT Sta. 13+16.40
-SBX- PC Sta. 12+45.49
-SLIP- PT Sta. 13+95.94
-SBX- PT Sta. 10+69.61
PROPOSED SINGLE FACED BARRIER
GREU 350, TL-3
TIE INTO EXISTING SIDEWALK
END C&G
-Y1- PC Sta. 12+58.32
BEGIN C&G
NAD 83 / NA 2011
40 20 0 40 80
PLANS

NOTE: SEE PAVEMENT MARKING PLANS FUR CURB RAMP LOCATIONS AND STATIONING

Symbol	Legend
(hatched)	PAVEMENT REMOVAL
★	PROPOSED SIGNAL

FOR PLAN VIEW, SEE SHEET NO. 5
FOR -L- PROFILE, SEE SHEET NO. 13
FOR -Y1- PROFILE, SEE SHEET NO. 17
FOR -Y4- PROFILE, SEE SHEET NO. 19
FOR -SLIP- PROFILE, SEE SHEET NO. 17
FOR -SBX- PROFILE, SEE SHEET NO. 20

1/3/2023
U5748_rdy_psh02B-1.dgn
elizabeth.hunter

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/7/2023

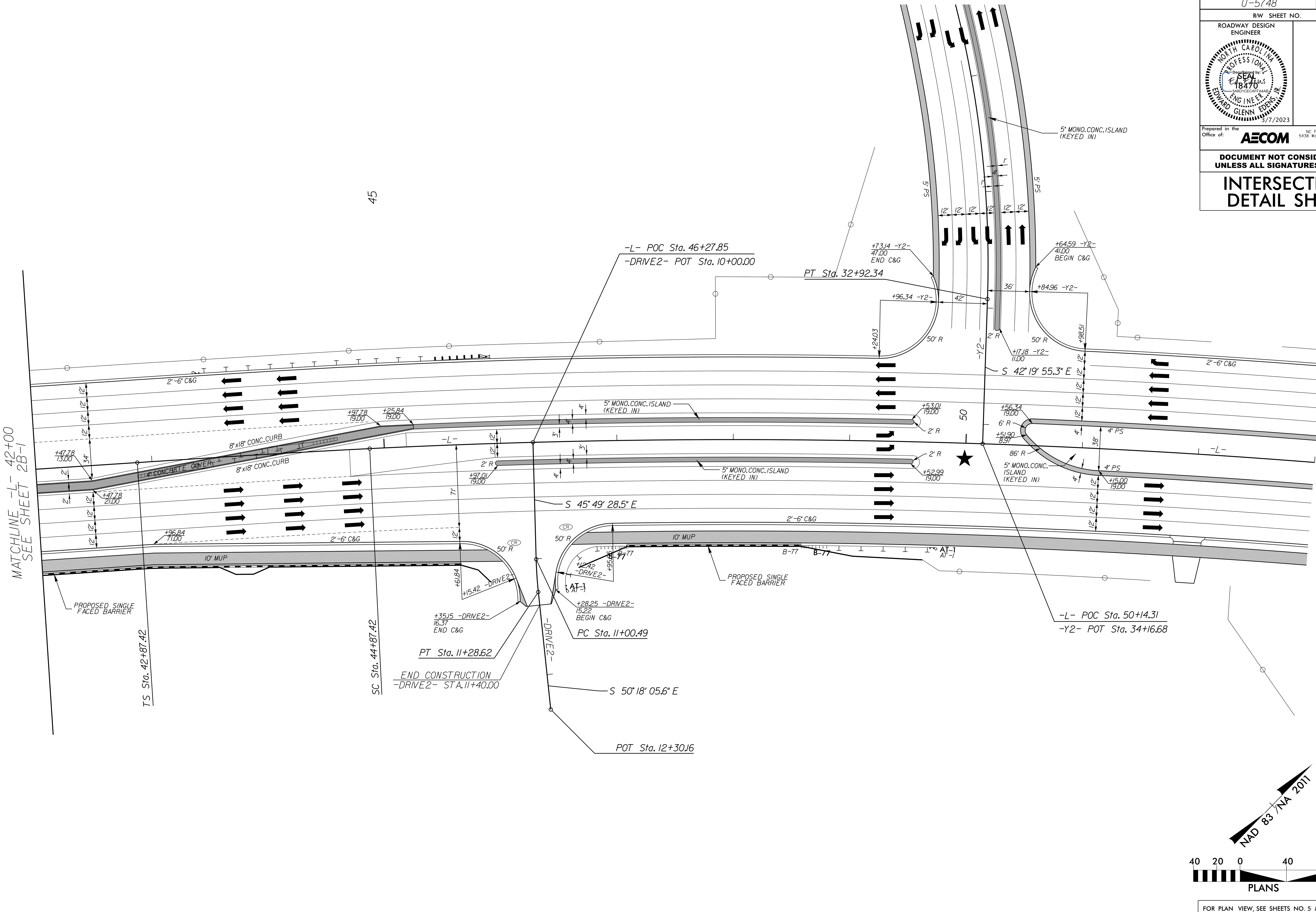
Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL SHEET

REVISIONS



-L- POC Sta. 46+27.85
-DRIVE2- POT Sta. 10+00.00
PT Sta. 32+92.34
5' MONO.CONC.ISLAND (KEYED IN)
S 42° 19' 55.3" E
S 45° 49' 28.5" E
S 50° 18' 05.6" E
-L- POC Sta. 50+14.31
-Y2- POT Sta. 34+16.68
MATCHLINE -L- 42+00 SEE SHEET 2B-1
TS Sta. 42+87.42
SC Sta. 44+87.42
PT Sta. 11+28.62
PC Sta. 11+00.49
END CONSTRUCTION -DRIVE2- STA.11+40.00
POT Sta. 12+30.16
PROPOSED SINGLE FACED BARRIER
10' MUP
2'-6" C&G
8"x18" CONC.CURB
4" CONCRETE COVER
NAD 83/NA 2011

PLANS (scale: 40 20 0 40 80)

★ PROPOSED SIGNAL

FOR PLAN VIEW, SEE SHEETS NO. 5 & 6
FOR -L- PROFILE, SEE SHEET NO. 14
FOR -Y2- PROFILE, SEE SHEET NO. 18
FOR -DRIVE2- PROFILE, SEE SHEET NO. 21

DocuSign Envelope ID: 1E0E78E0-503B-4DAD-B892-61FEBBE2FF61

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

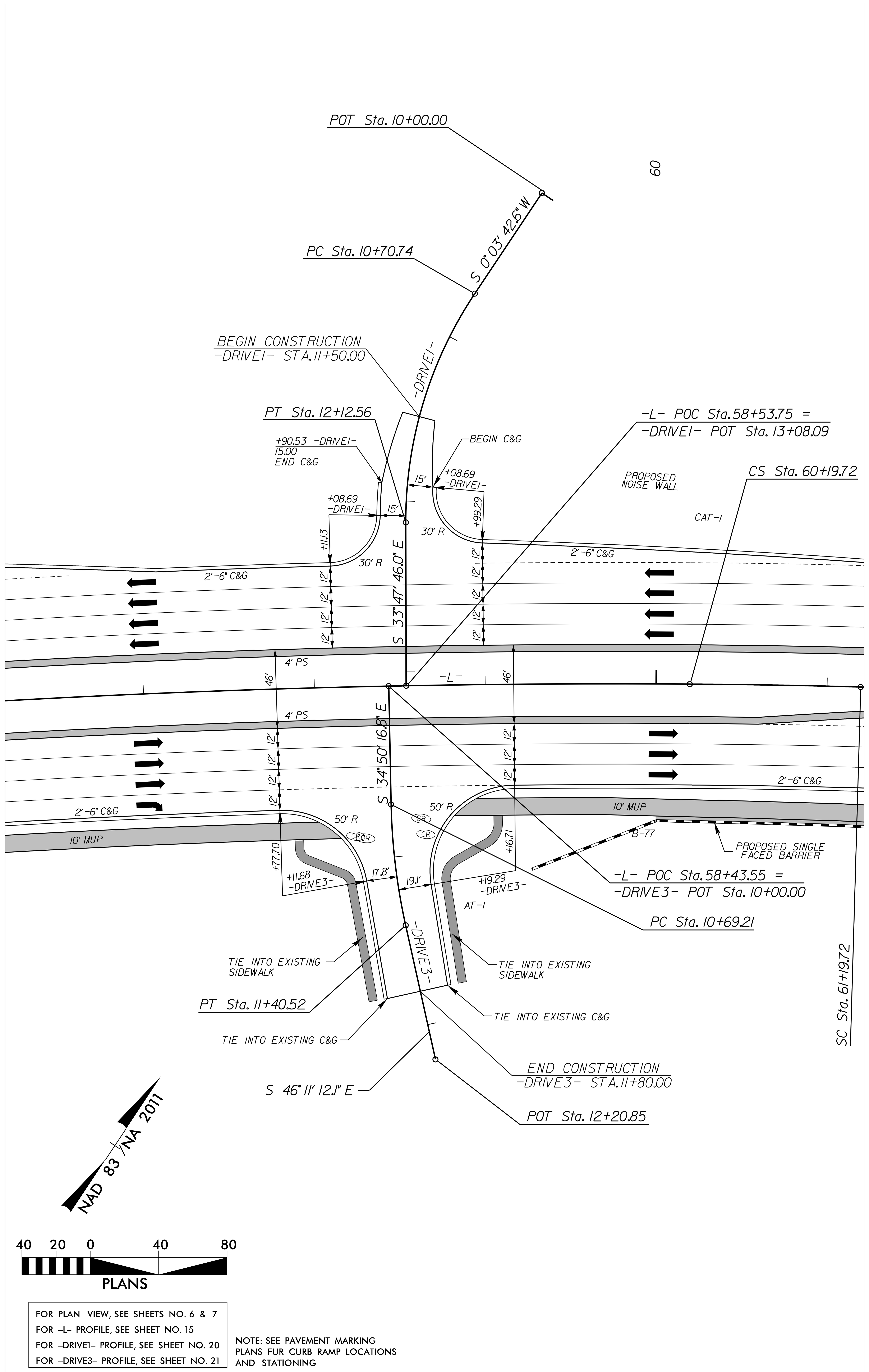
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/7/2023

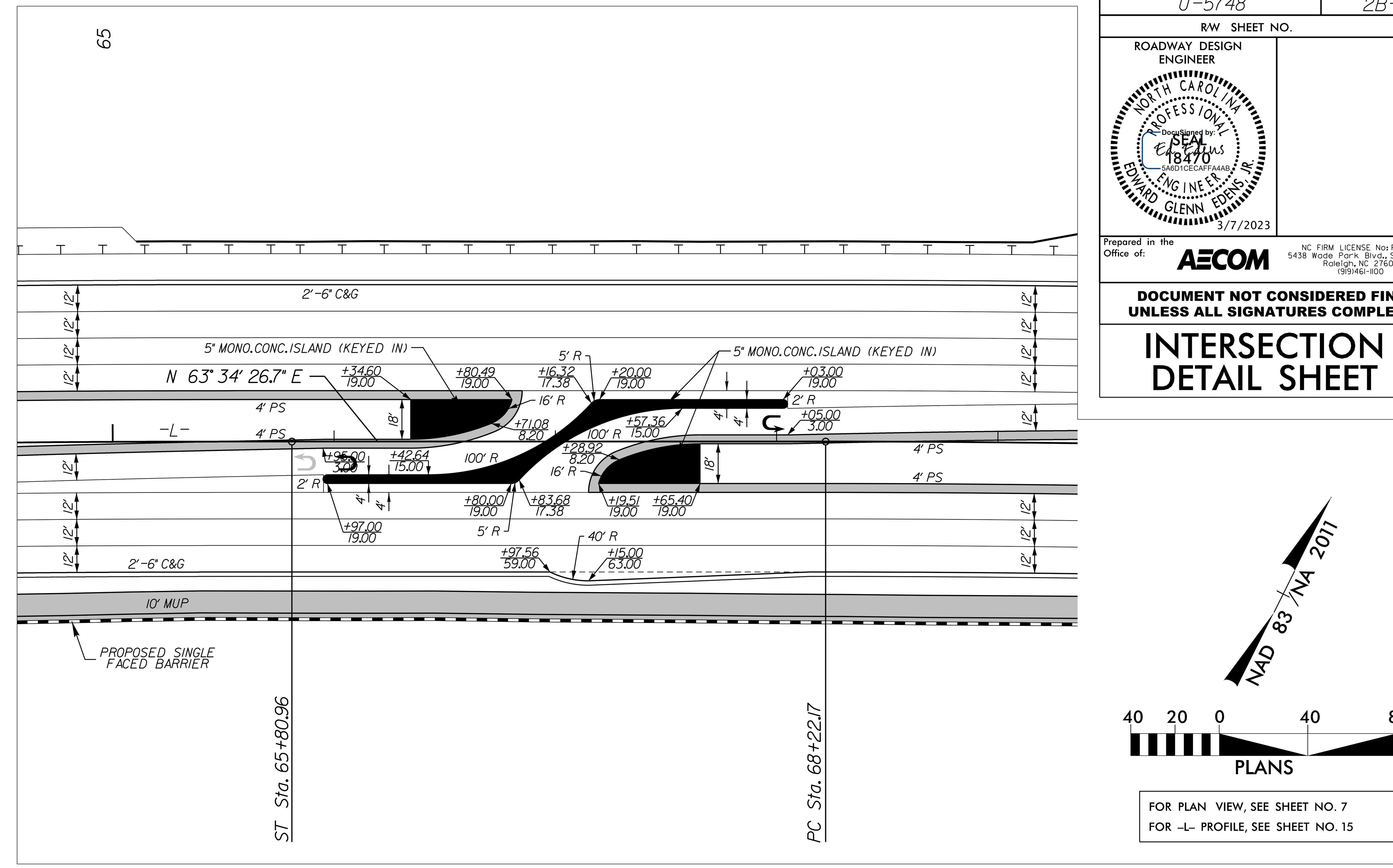
Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 5438 Wade Park Blvd., Suite 200 Raleigh, NC 27607

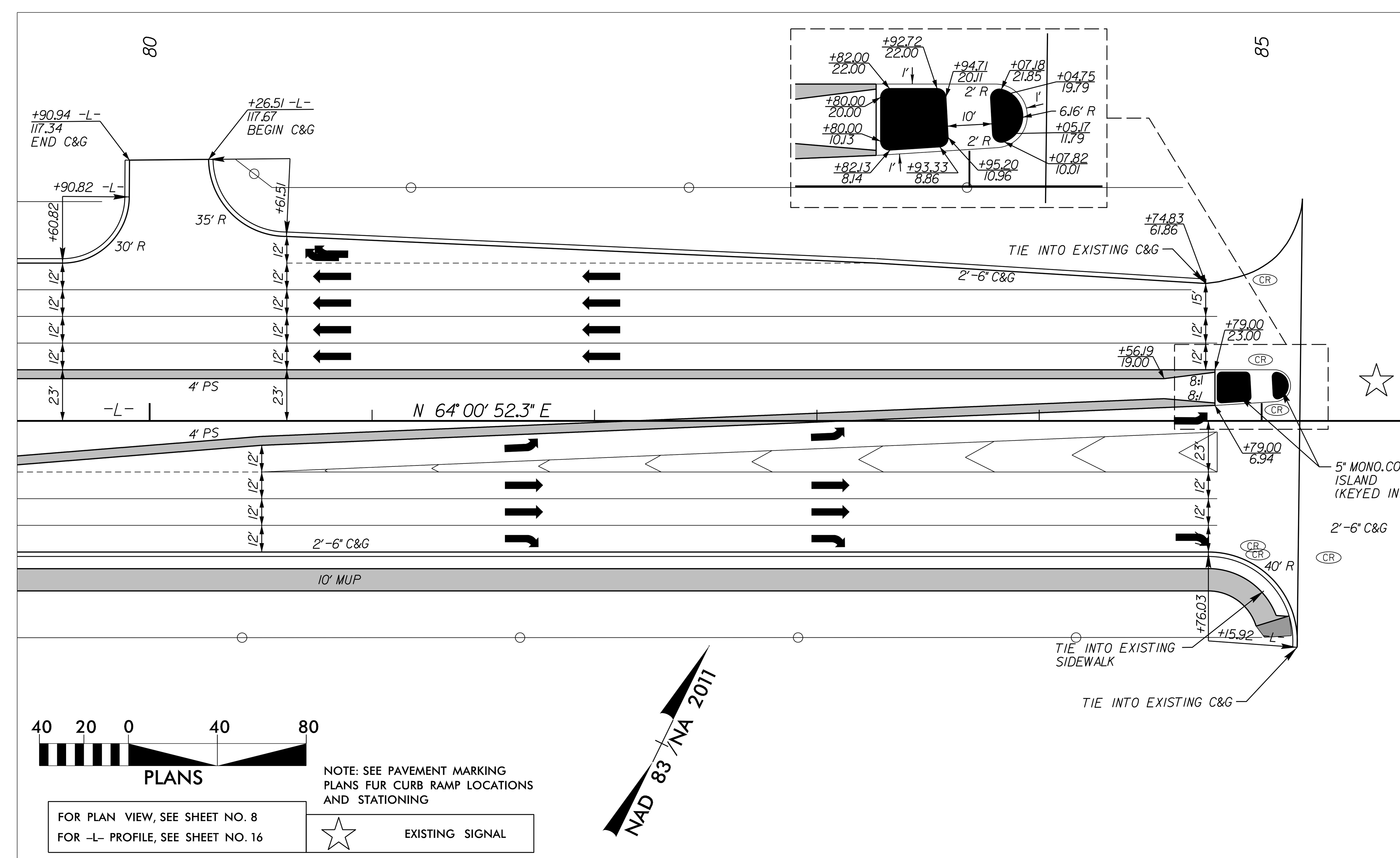
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL SHEET

REVISIONS







5/14/99

1/3/2023 U5748_rdy_psh02B-3.dgn elizabeth.hunter

5/14/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

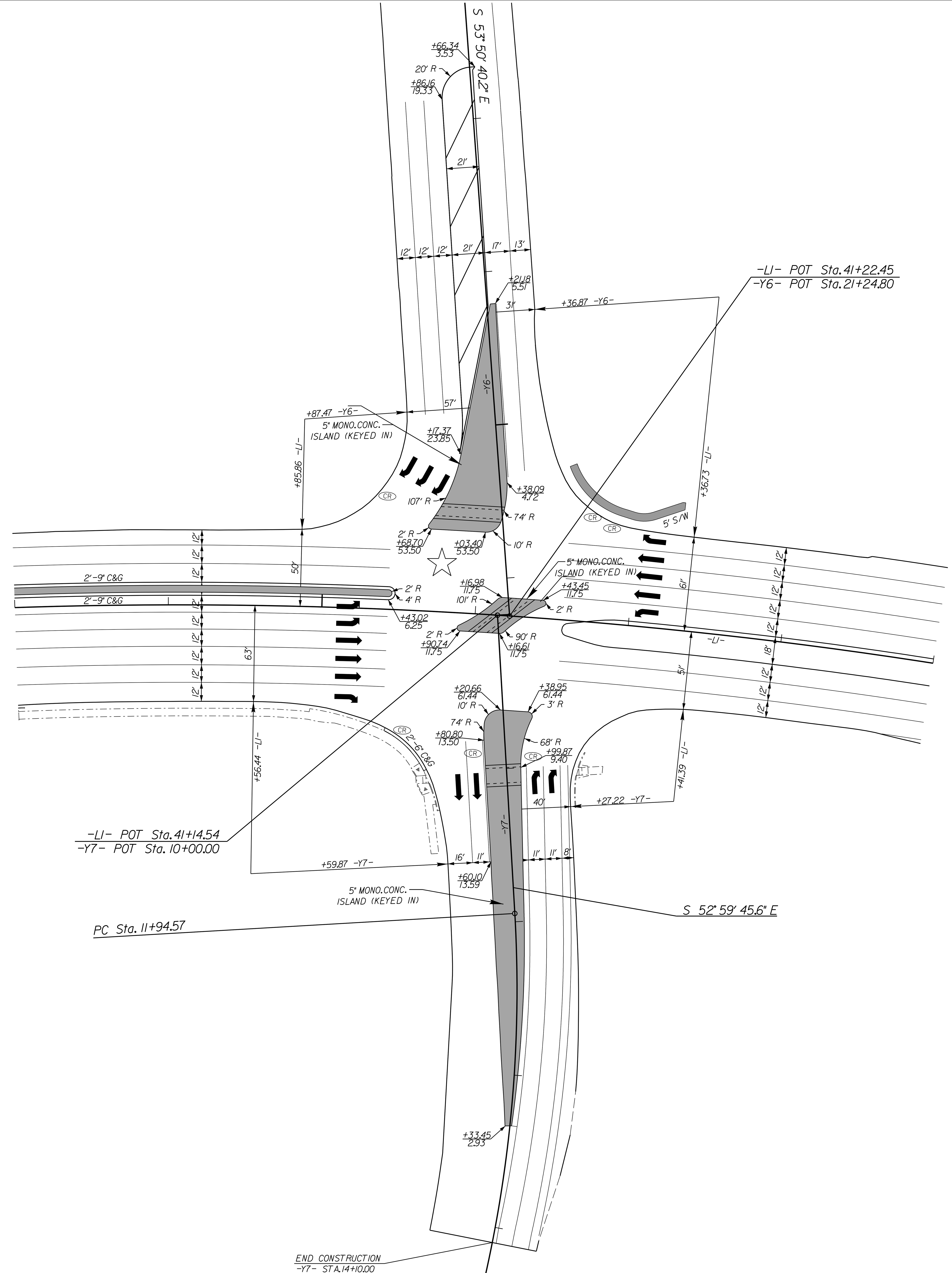
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/7/2023

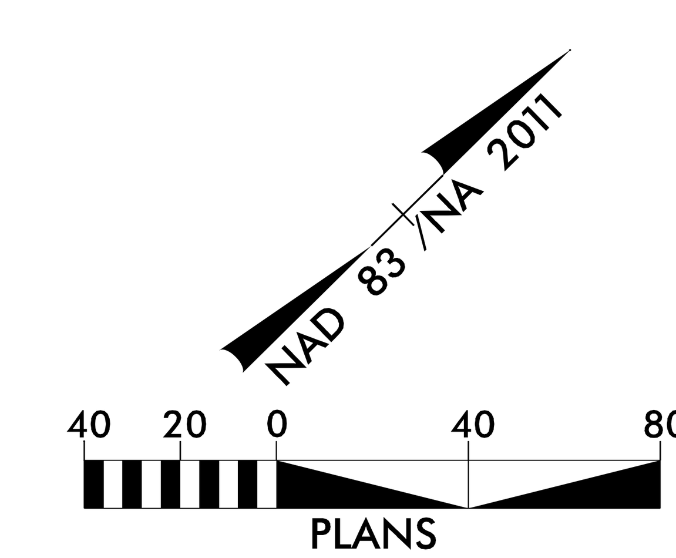
Prepared in the Office of: AECOM

NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd., Suite 200
Raleigh, NC 27607
(919)461-1100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL SHEET





NOTE: SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING

(hatched)	PAVEMENT REMOVAL
☆	EXISTING SIGNAL

FOR PLAN VIEW, SEE SHEET NO. 13
FOR -L1- PROFILE, SEE SHEET NO. 28
FOR -Y6- PROFILE, SEE SHEET NO. 30
FOR -Y7- PROFILE, SEE SHEET NO. 31

1/3/2023
U5748_rdy_psh02B-4.dgn
elizabeth.hunter

DocuSign Envelope ID: 1E0E78E0-503B-4DAD-B892-61FEBBE2FF61

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR. 3/7/2023

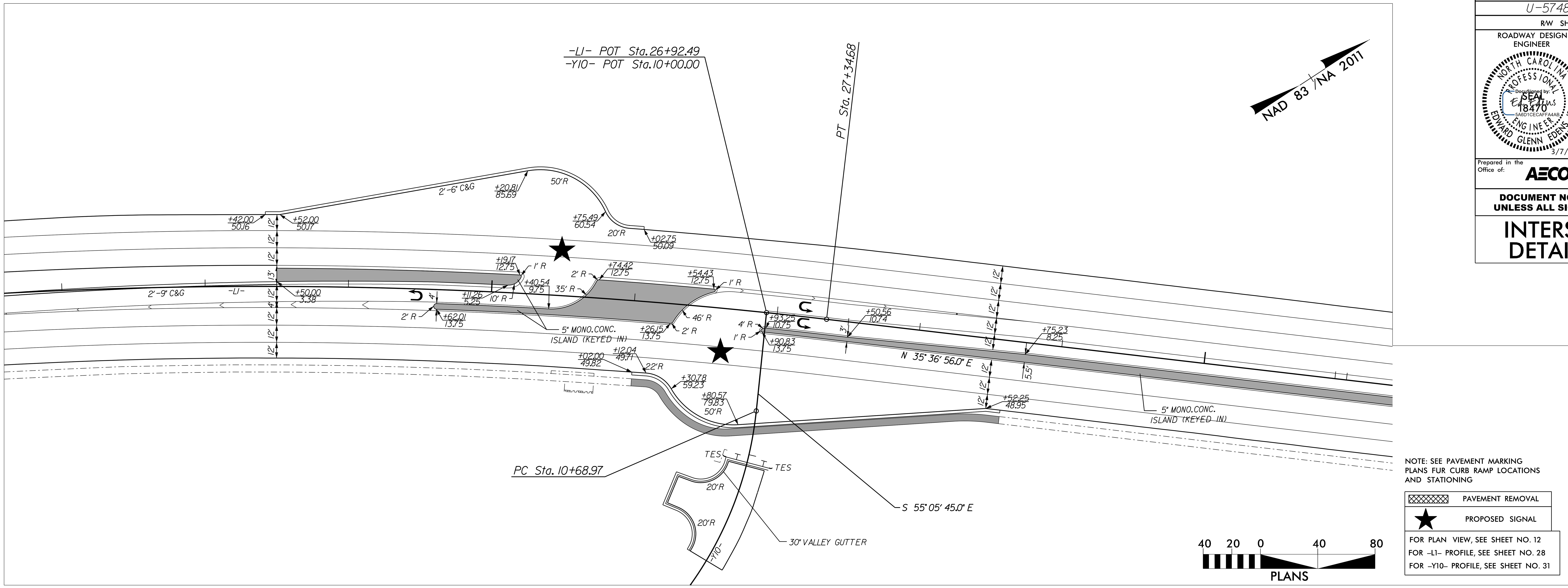
Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 5438 Wade Park Blvd., Suite 200 Raleigh, NC 27607 (919)461-1100

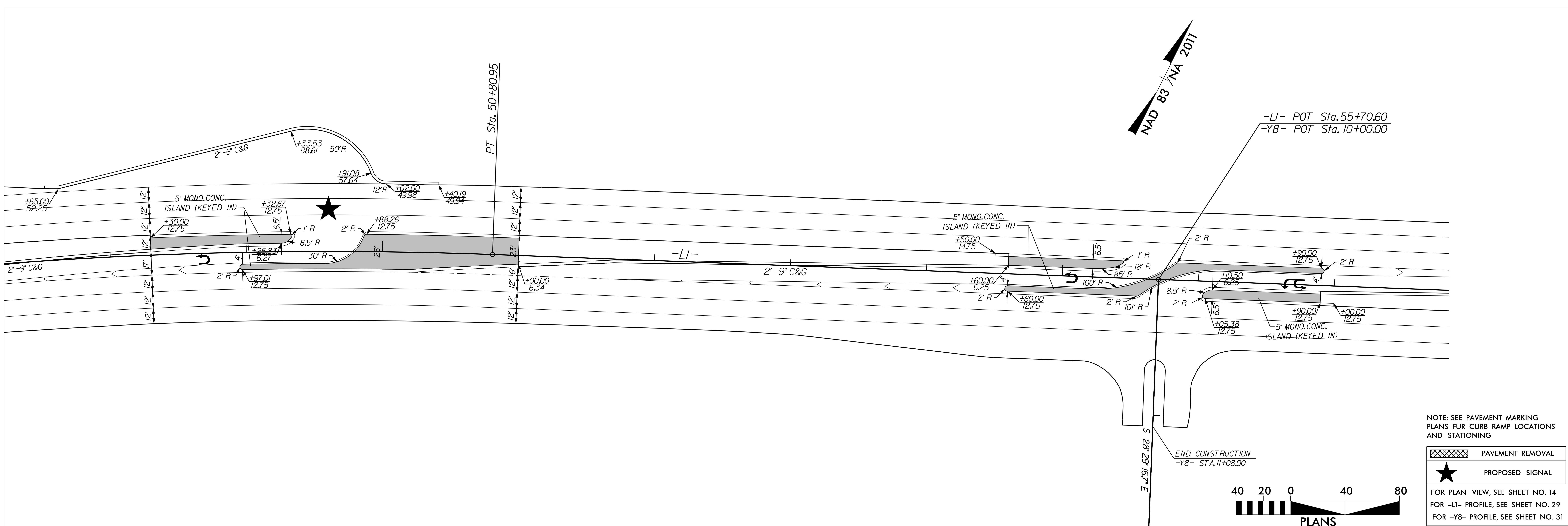
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL SHEET

REVISIONS

5/14/99





2/2/2023 U5748_rdy_psh02B-5.dgn elizabeth.hunter

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2B-6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, JR.

3/7/2023

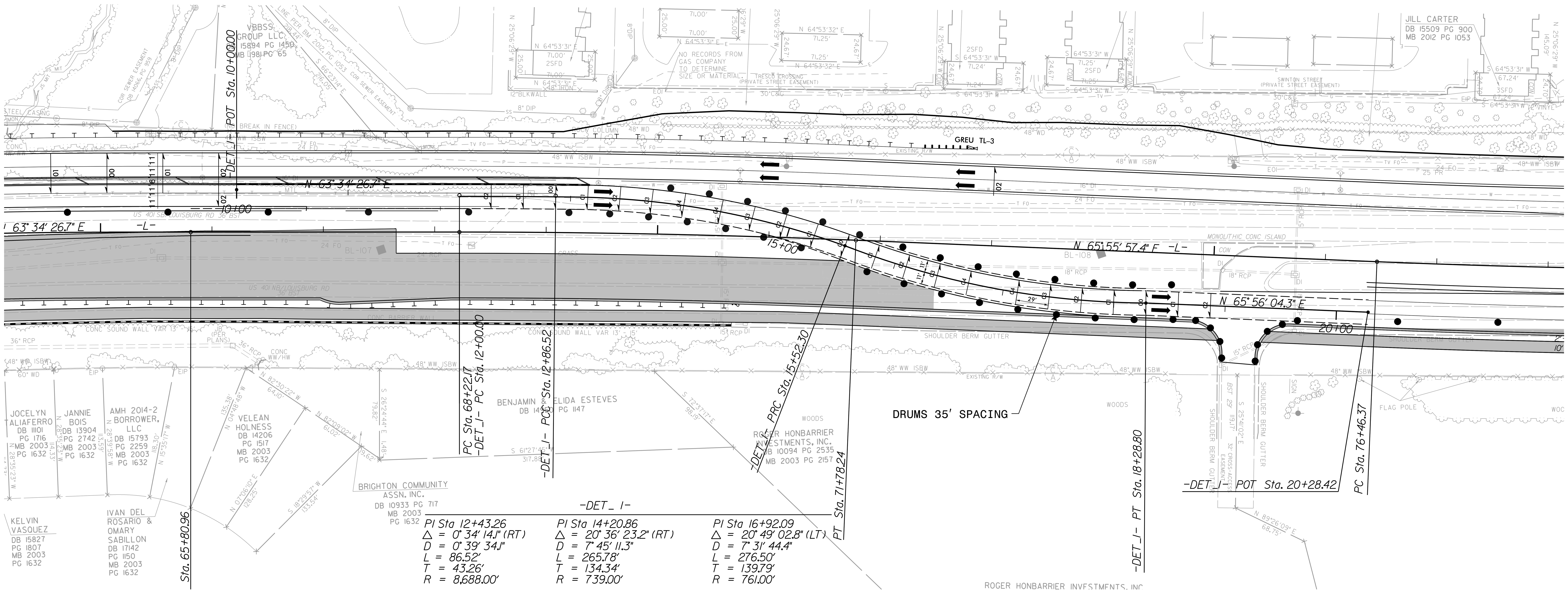
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE ROADWAY PSH07-08 FOR PROPOSED DESIGN, DRAINAGE, AND RIGHT OF WAY DETAIL

SEE TRANSPORTATION MANAGEMENT PLANS FOR WZTC DETAILS

NAD 83 / NA 2011

REVISIONS



3/6/2023
U5748_Rdy_psh02B-6.dgn

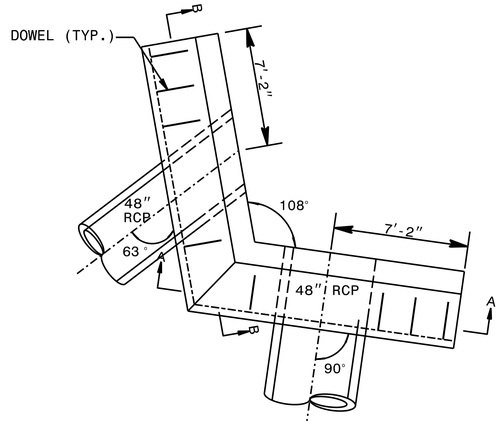
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-1

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

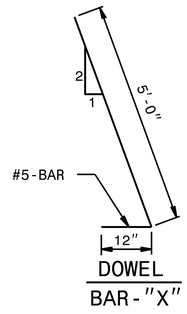
ROADWAY STANDARD DRAWING FOR
CONCRETE "L" ENDWALL FOR DOUBLE PIPE CULVERT

SHEET 1 OF 1

838D05



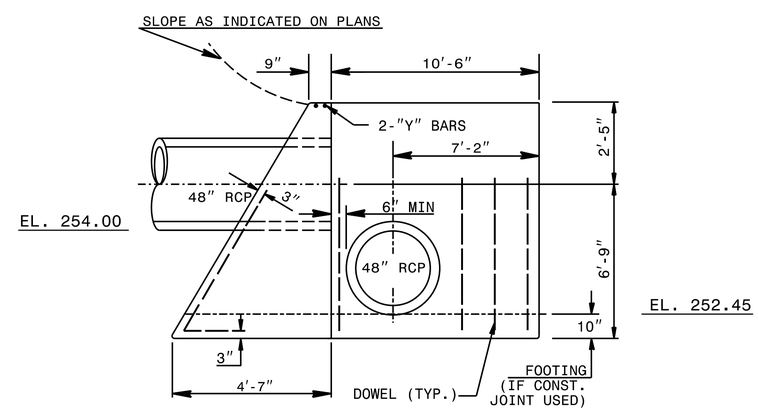
PLAN



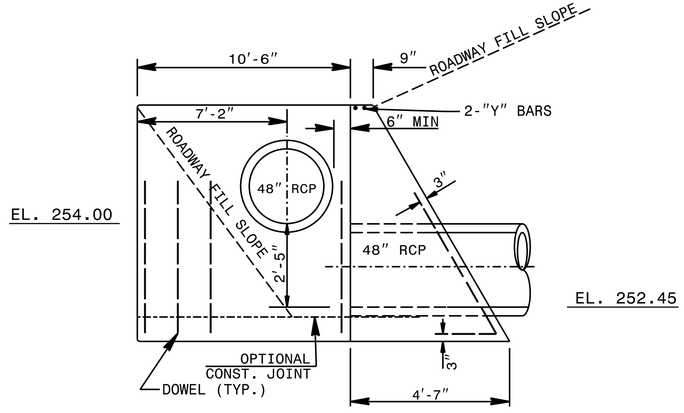
QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
X	8	5	6'-0"	50
Y	4	6	10'-0"	60
TOTAL REINF.STEEL (lbs.)				110
CLASS "B" CONC. (yd 3)				16.3

* NO DEDUCTION HAS BEEN MADE FOR PIPES



SECTION A-A



SECTION B-B

GENERAL NOTES:

ALL CORNERS SHALL BE CHAMFERED 1 INCH. CLASS "B" CONCRETE SHALL BE USED.

PLACE 2 #6 "Y' BARS IN THE TOP OF ALL ENDWALL WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL LENGTH.

IF CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE, BAR 'X' DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS IS APPROXIMATELY 12 INCHES ON CENTER UNLESS THE ENGINEER SPECIFIES OTHERWISE.

WHEN CONTRACTOR ELECTS TO USE CONSTRUCTION JOINT AT BOTTOM OF PIPE AND POURS BASE SEPERATELY, THE TOP OF BASE SHALL BE LEFT ROUGH.

FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

ROADWAY STANDARD DRAWING FOR
CONCRETE "L" ENDWALL FOR DOUBLE PIPE CULVERT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

DocuSigned by: John C. Morrison 3/10/2023
A2FDE142C82F4AB...

AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd. Suite 200
Raleigh, NC 27607
(919) 854-6200

CONCRETE "L" ENDWALL FOR DOUBLE PIPE CULVERT

ORIGINAL BY:	K.KEMPF	DATE:	APR.4,2019
MODIFIED BY:	M. BUSCEMI	DATE:	MARCH 8, 2023
CHECKED BY:	C. MORRISON	DATE:	MARCH 8, 2023
FILE SPEC.:			

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-2

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

ENGLISH DETAIL DRAWING FOR

CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'

12" THRU 72" PIPE

SHEET 1 OF 2 — 840D17

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE DROP INLETS WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.

CONSTRUCT WITH PIPE CROWNS MATCHING.

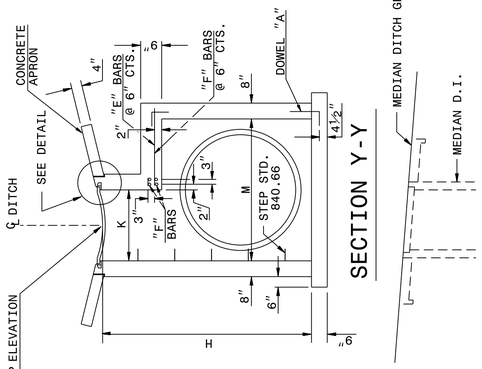
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

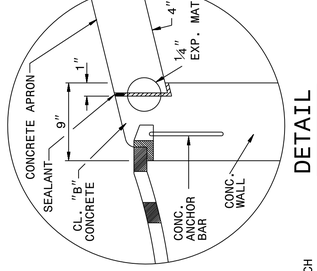
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

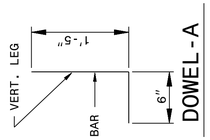
DRAWING NOT TO SCALE.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 25 FEET.

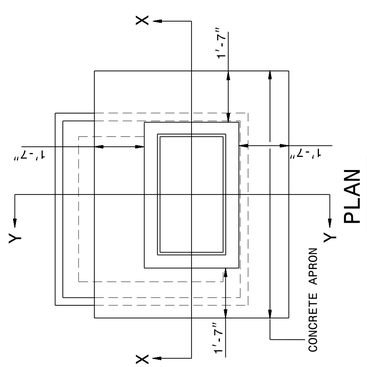




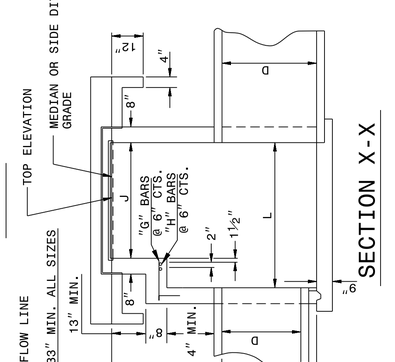
DETAIL
(APRON SUPPORT NOTCH)



DOWEL-A



PLAN



SECTION X-X

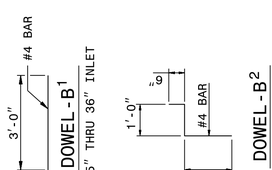
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

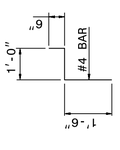
CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25'

12" THRU 72" PIPE

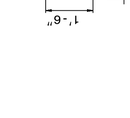
SHEET 2 OF 2 — 840D17



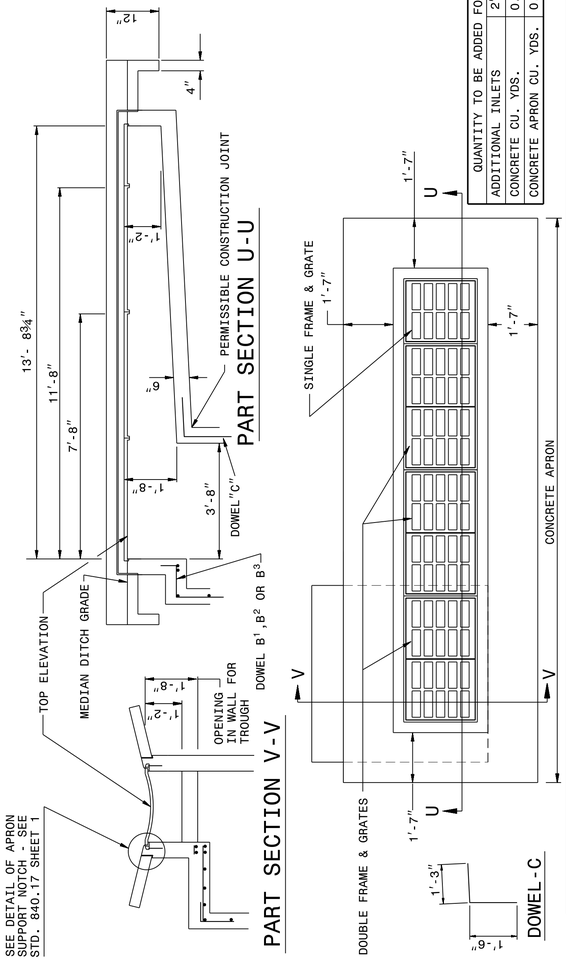
DOWEL-B¹
FOR 15" THRU 36" INLET



DOWEL-B²
FOR 42" INLET



DOWEL-B³



PART SECTION U-U

PART SECTION V-V

DOWEL-C

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

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

QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING

	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
ADDITIONAL INLETS						
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

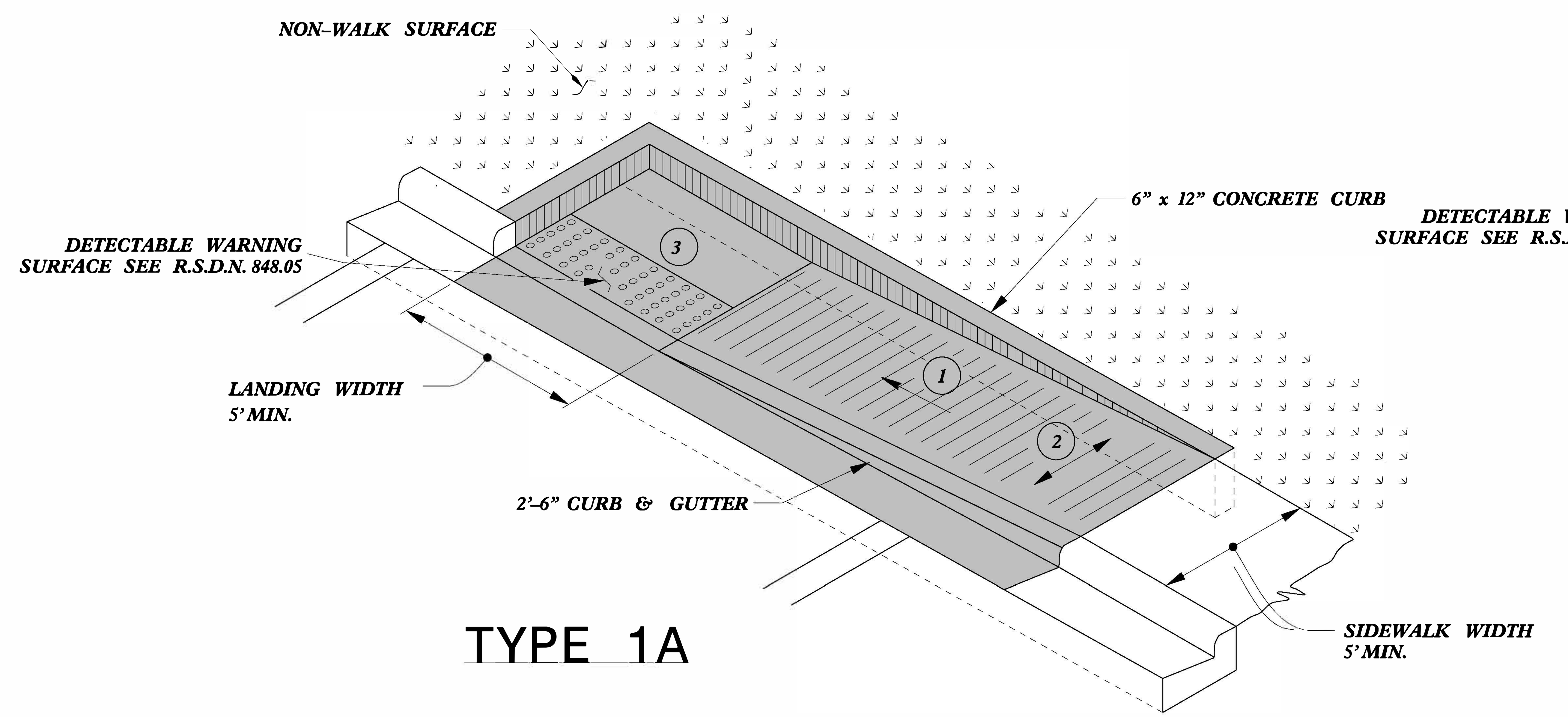
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

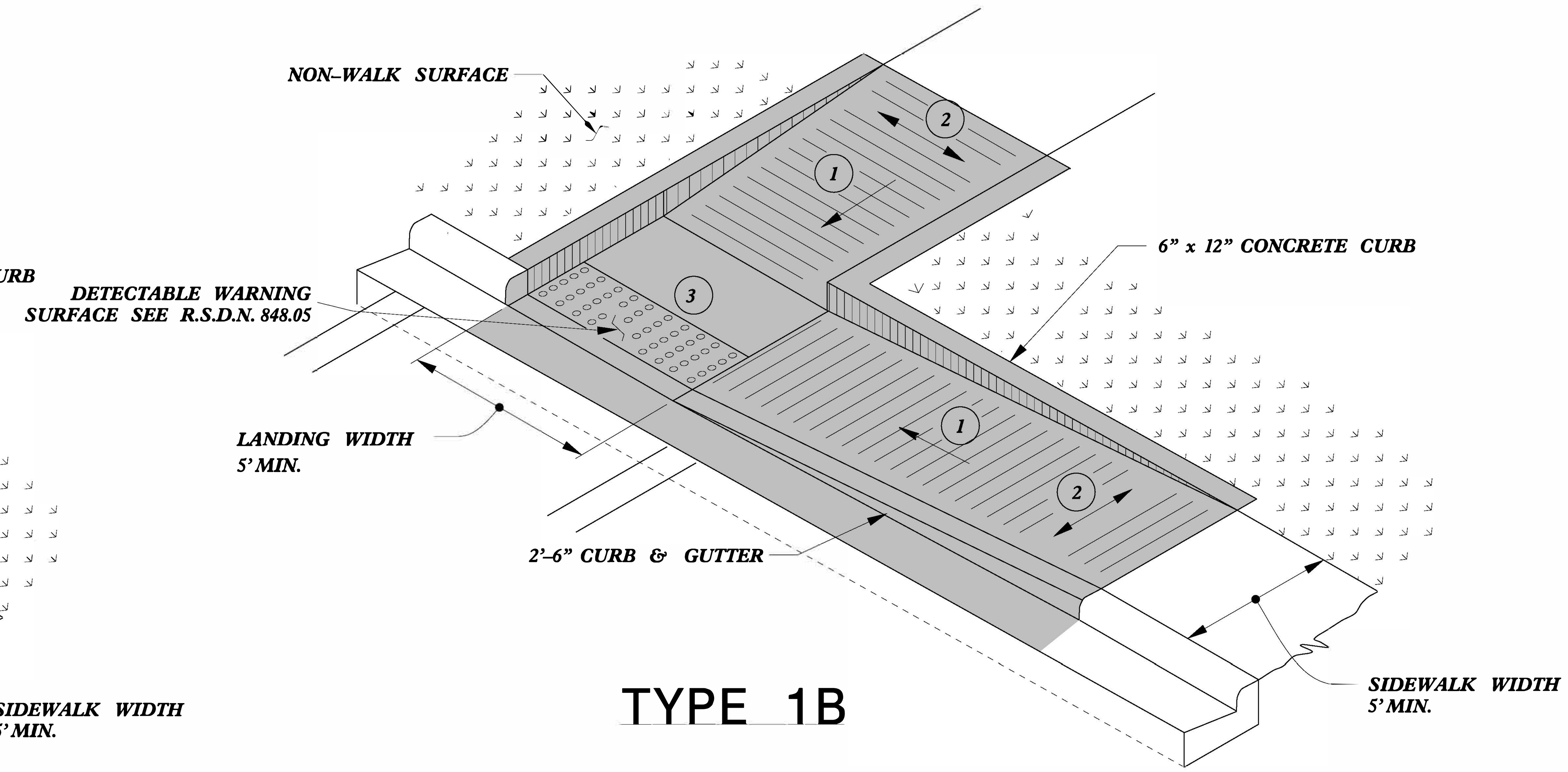
ORIGINAL BY: 2002 STD.840.17 DATE:
MODIFIED BY: K.A. KEMPF DATE: 07-06-09
CHECKED BY: DATE:
FILE SPEC.: /stand/840d17 Extra Depth 2GI.dgn

01-MAR-2018 07:39
S:\Contracts\Special Details\erickward\ur\details\stand\840d17 Extra Depth 2GI.dgn
jhowerton AT CSD-292595

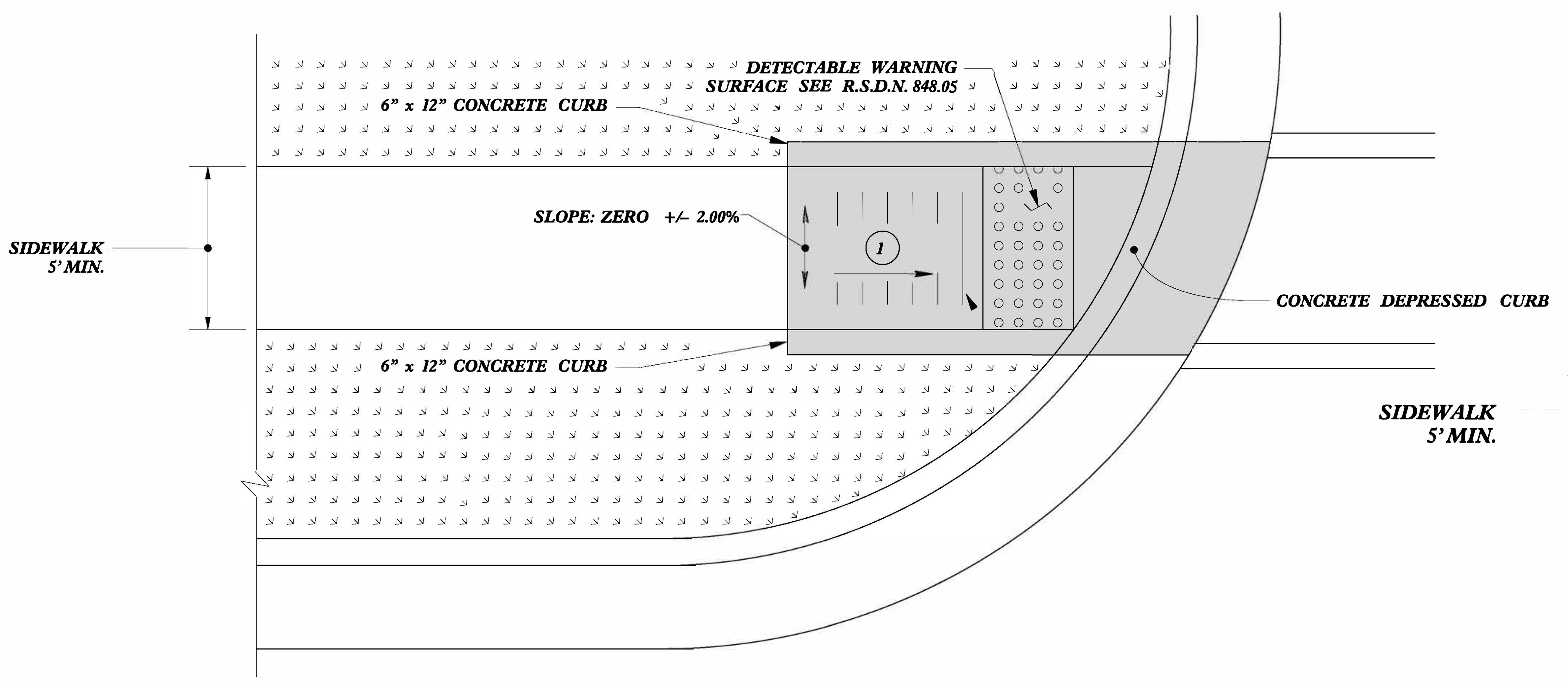
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-3



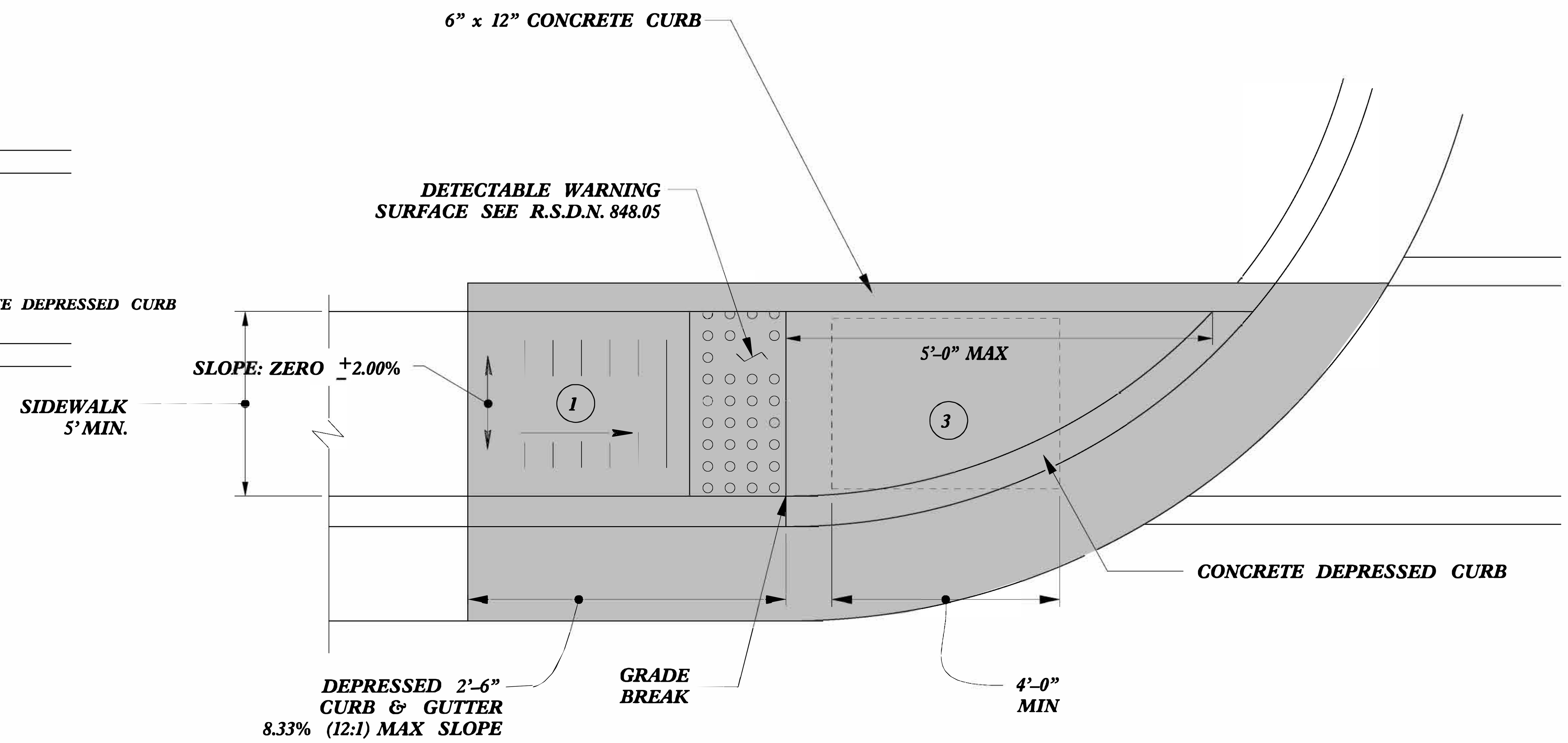
TYPE 1A



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

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M HACKER 3/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

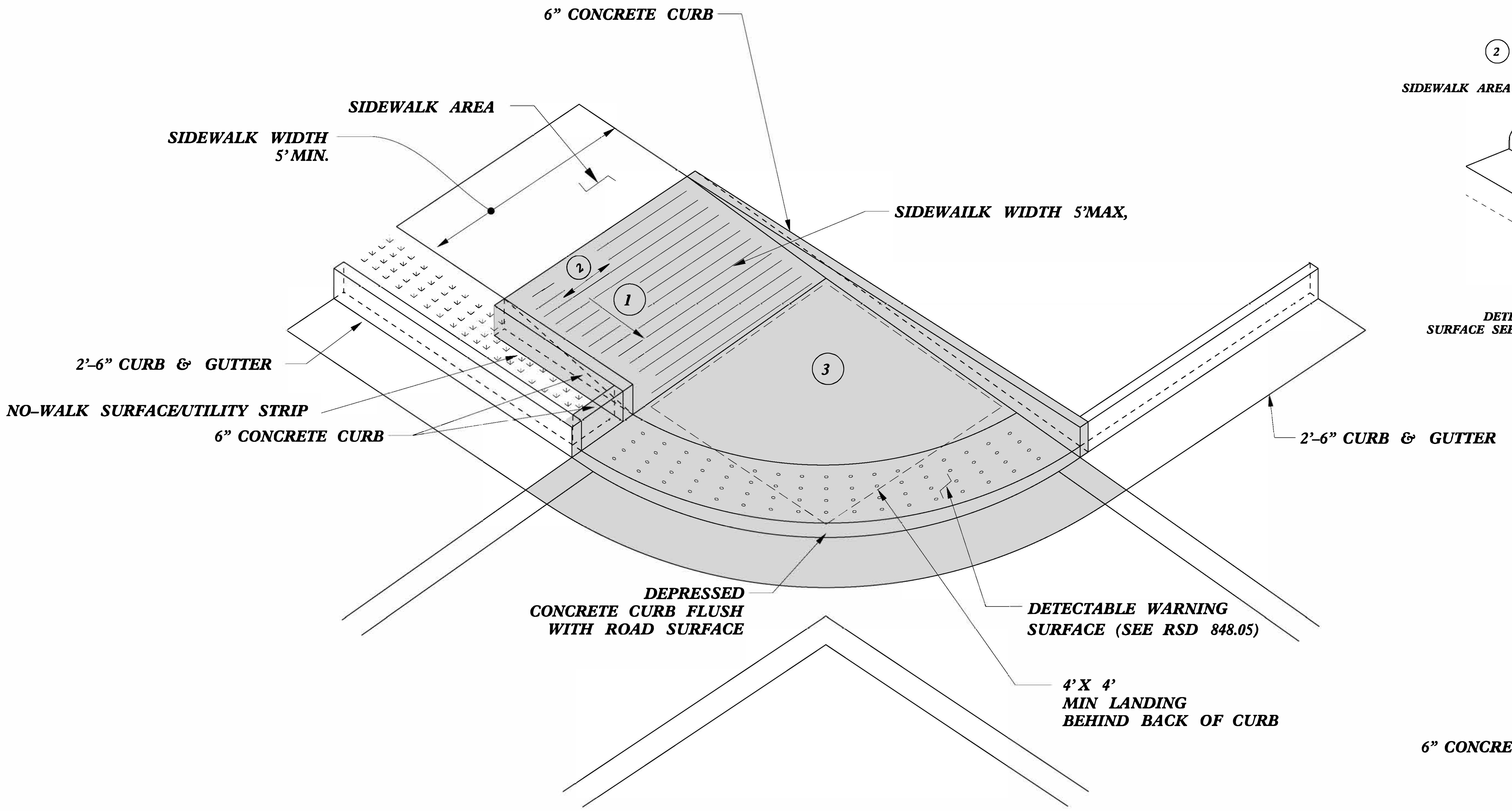
CURB RAMPS

Directional Ramps

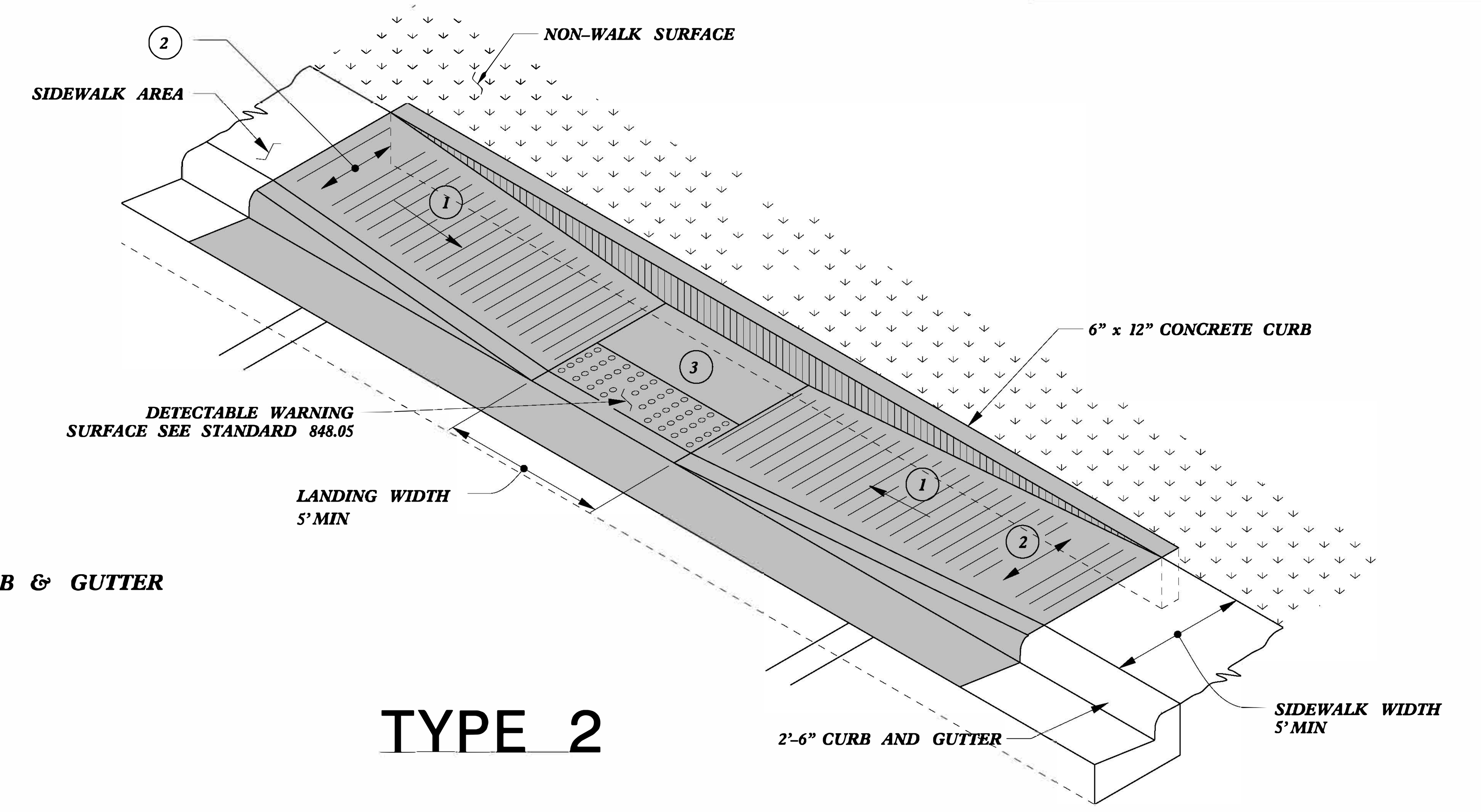
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

DocuSign Envelope ID: 48B62D7A-58EB-48B6-A085-8575089BEDF1

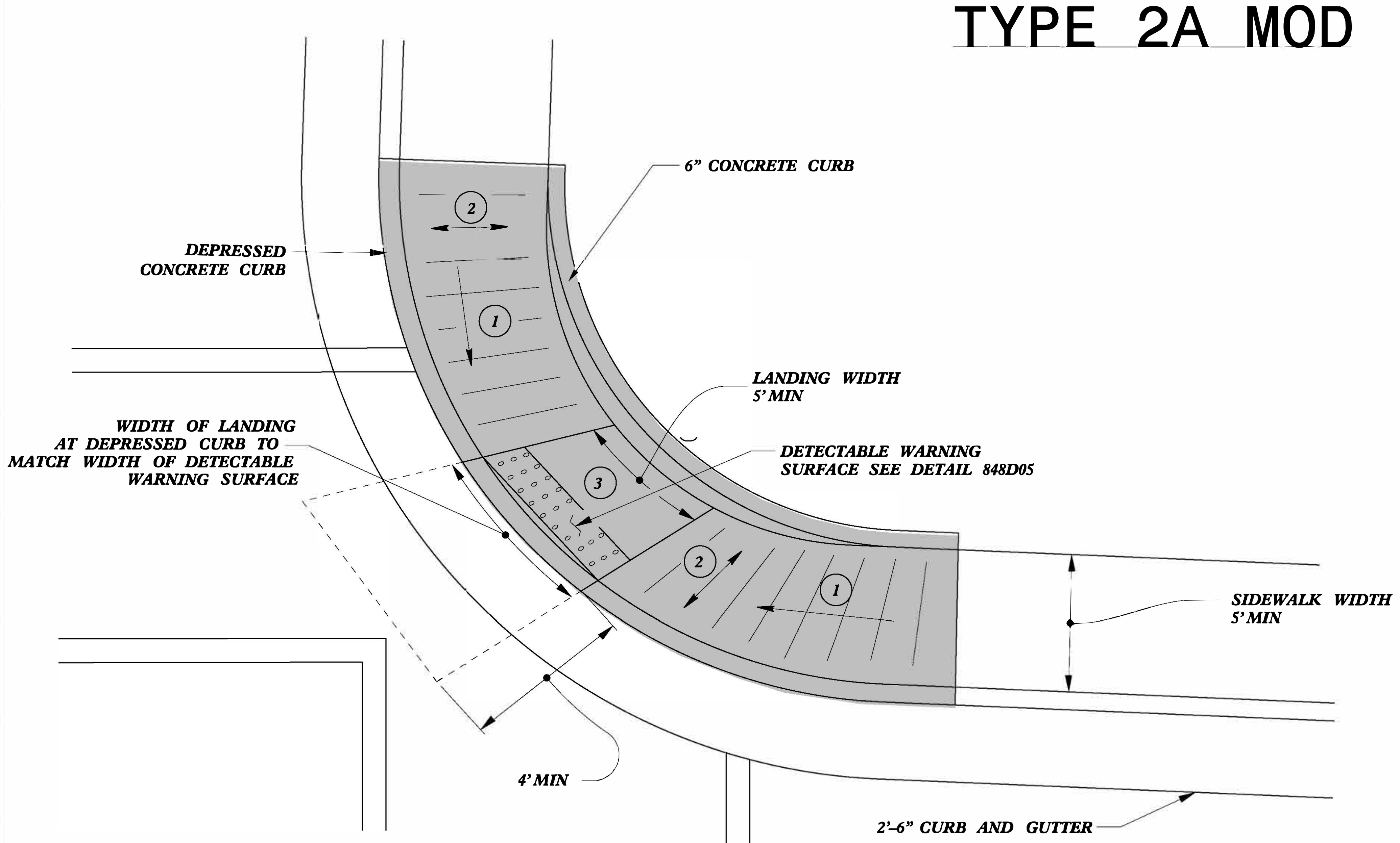
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-4A



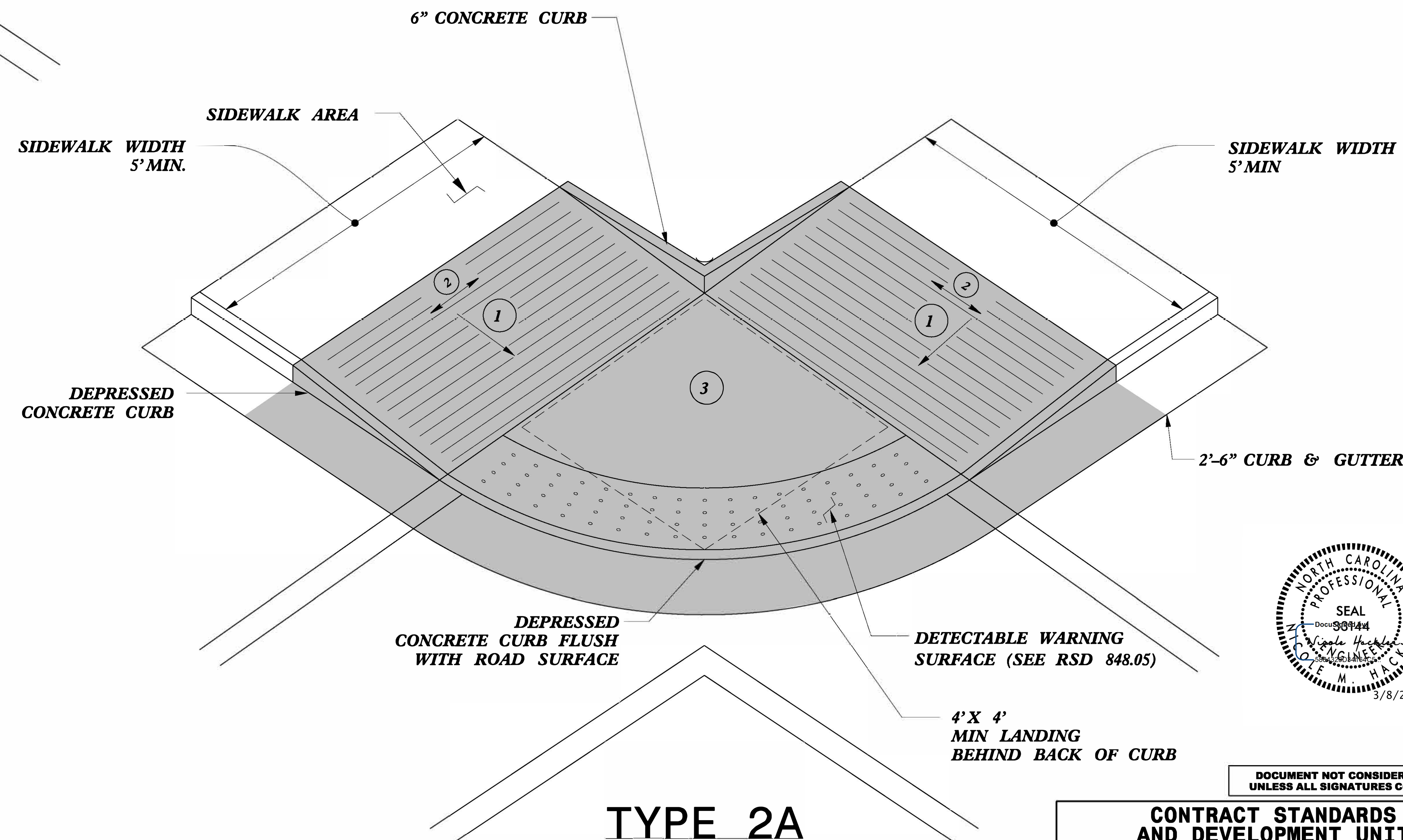
TYPE 2A MOD



TYPE 2



TYPE 2B



TYPE 2A

(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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 38144 NICOLE M. HACKER 3/8/2023

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

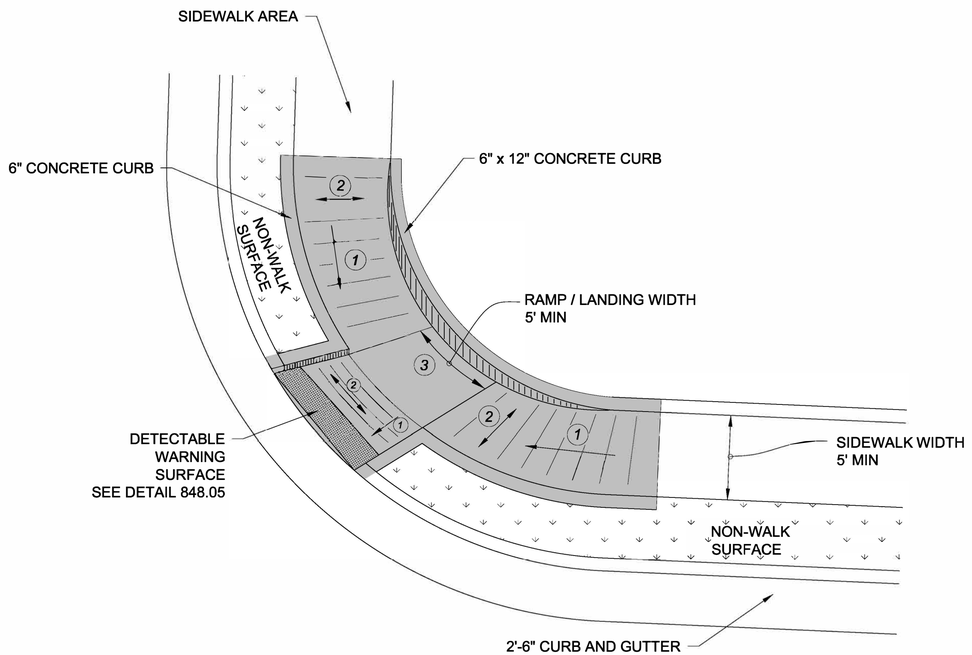
5/14/99

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

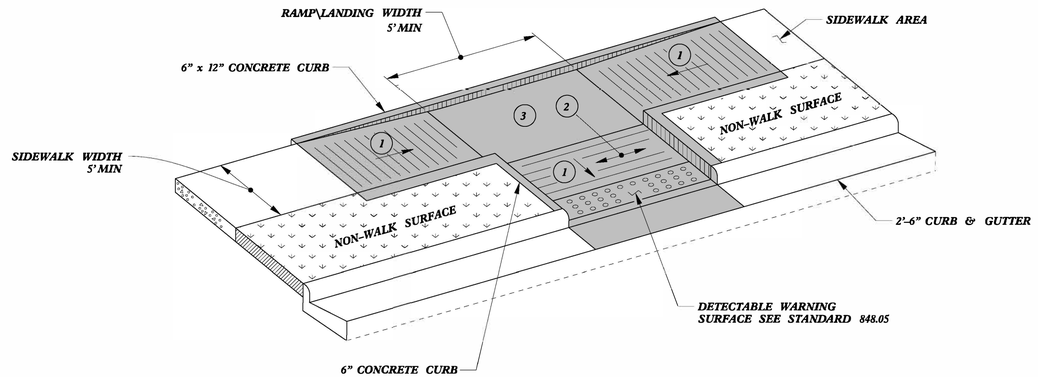
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-4B

PAY LIMITS FOR 1 CURB RAMP



TYPE 3 MODIFIED
INSTALLATION IN A RADIUS



TYPE 3

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.*

NORTH CAROLINA PROFESSIONAL SEAL 037444 ENGINEER NICOLE M. HACKLER
5/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

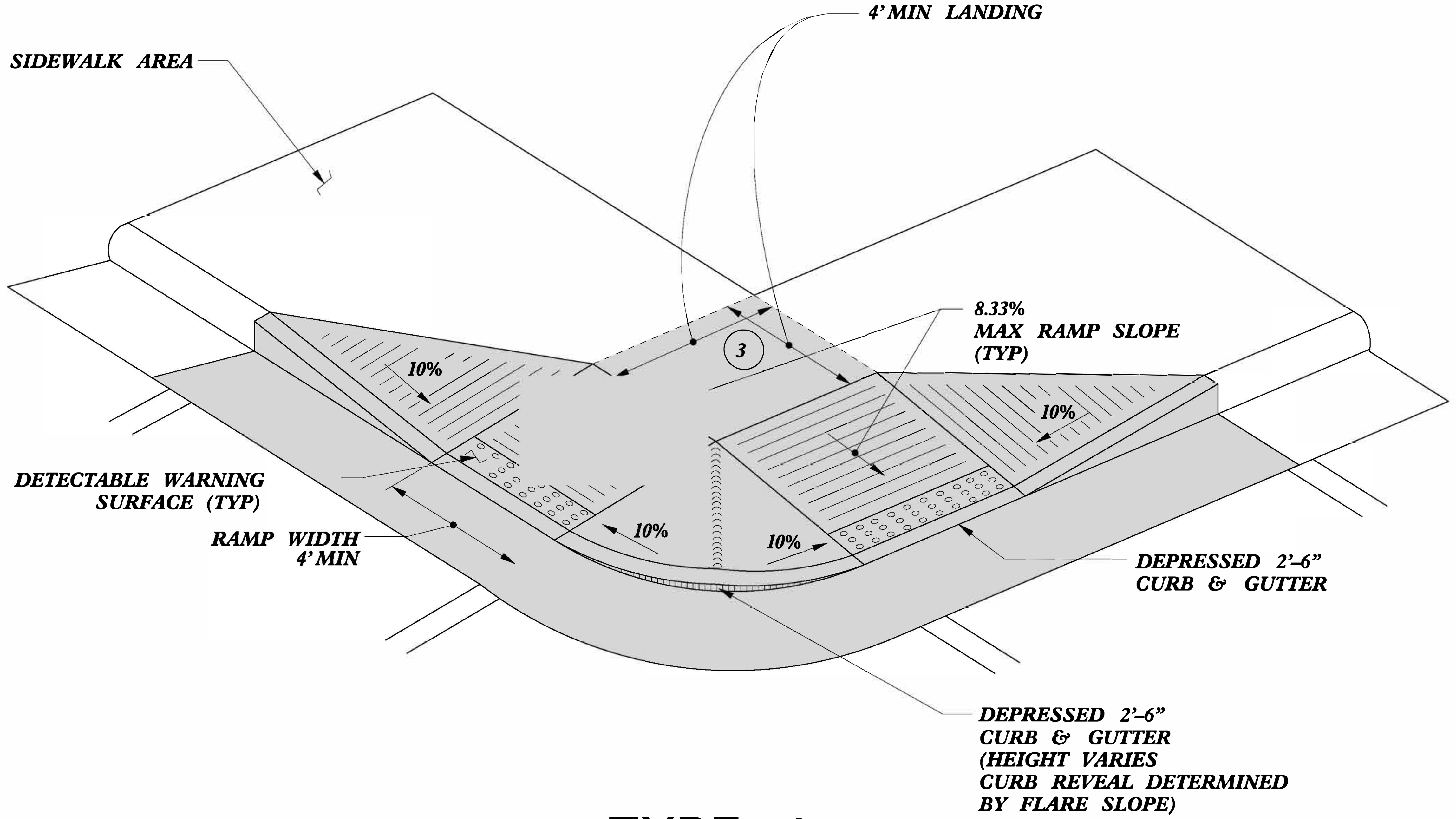
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

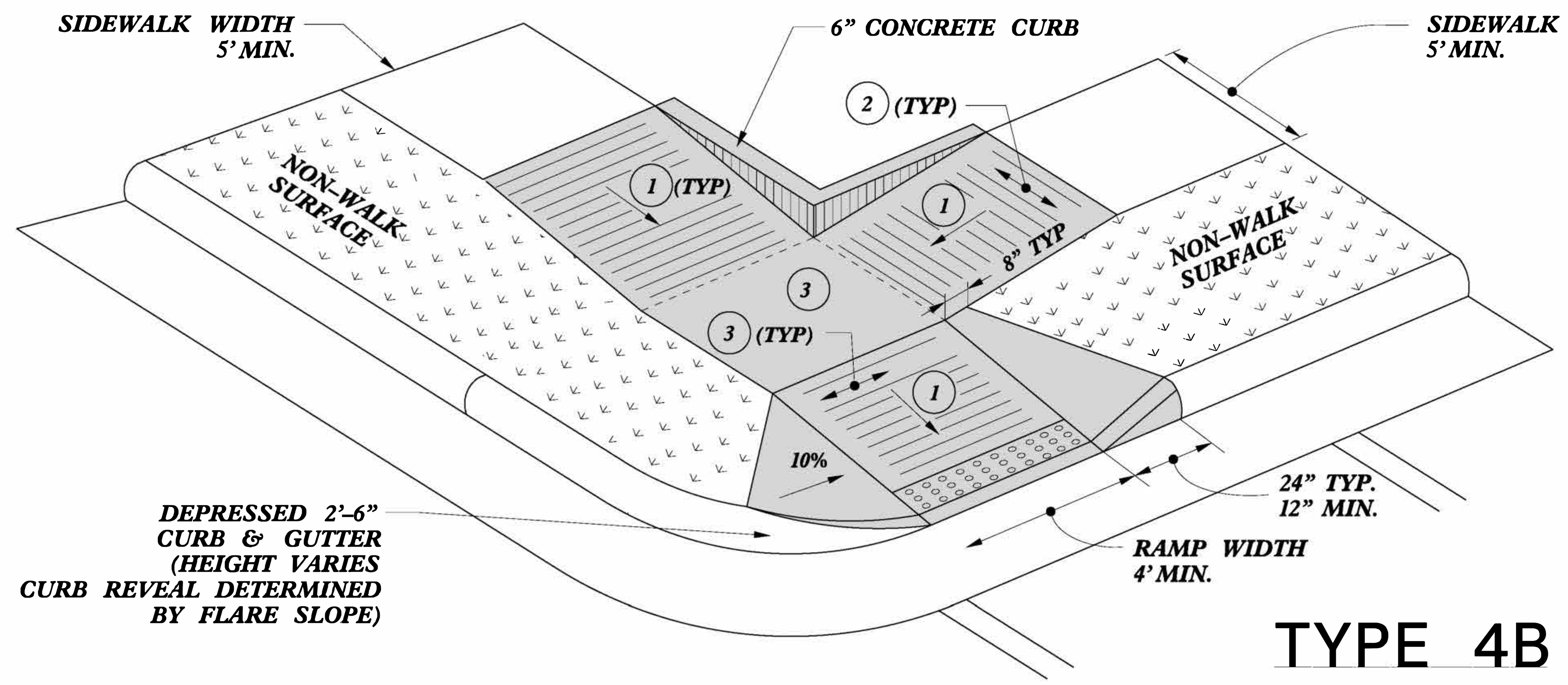
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-5A

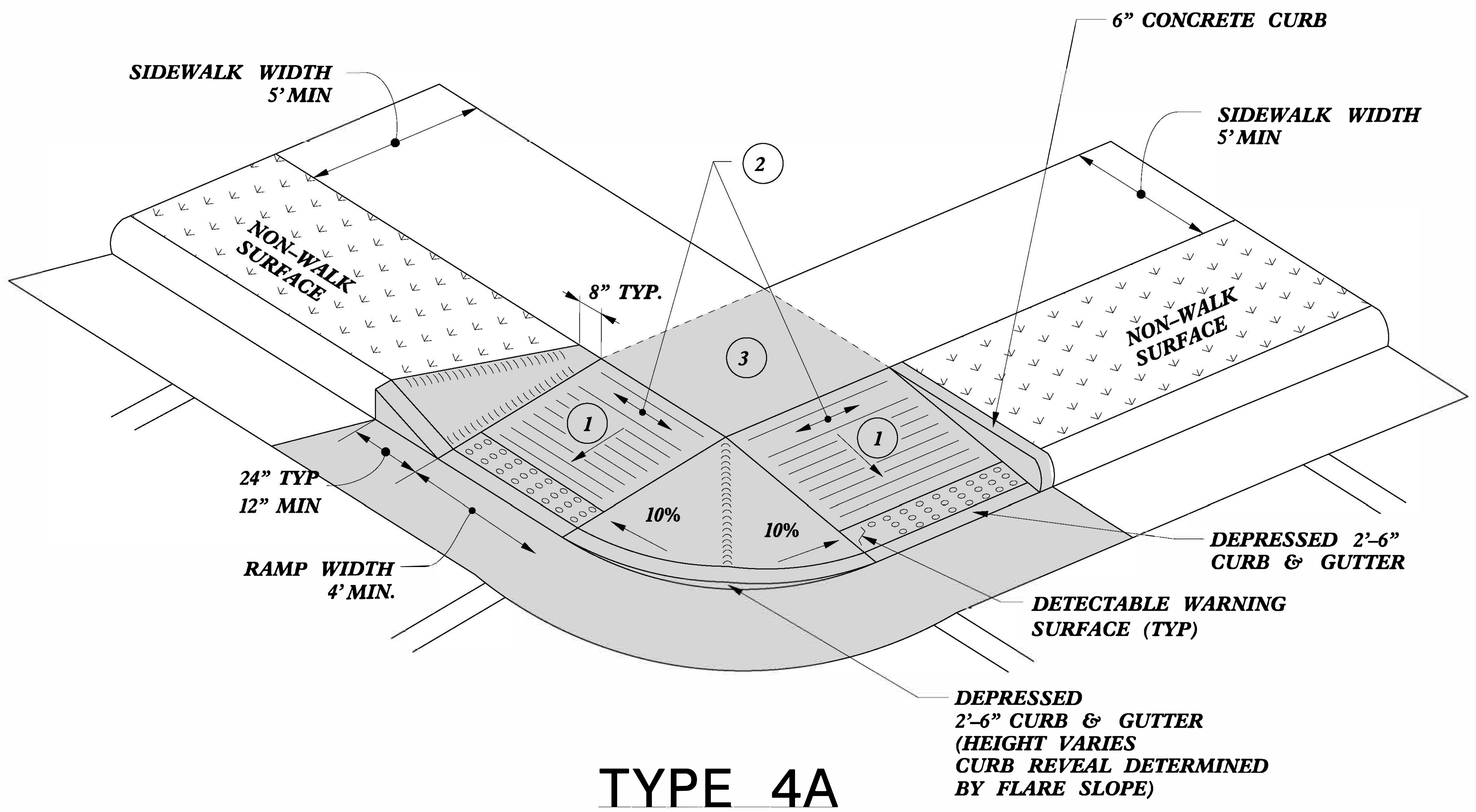
PAY LIMITS FOR 1 OR 2 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



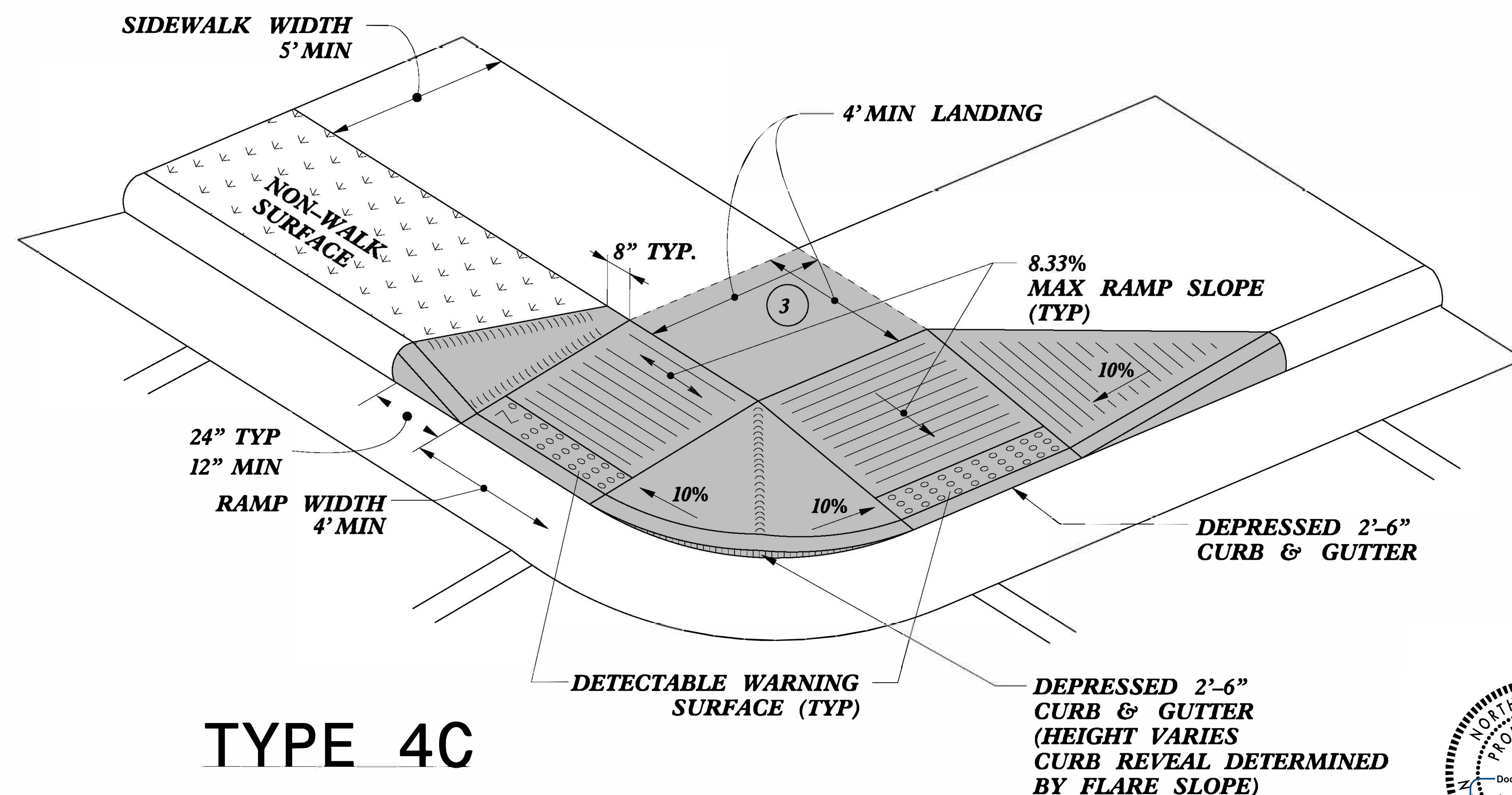
TYPE 4



TYPE 4B



TYPE 4A



TYPE 4C

3/8/2023

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

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

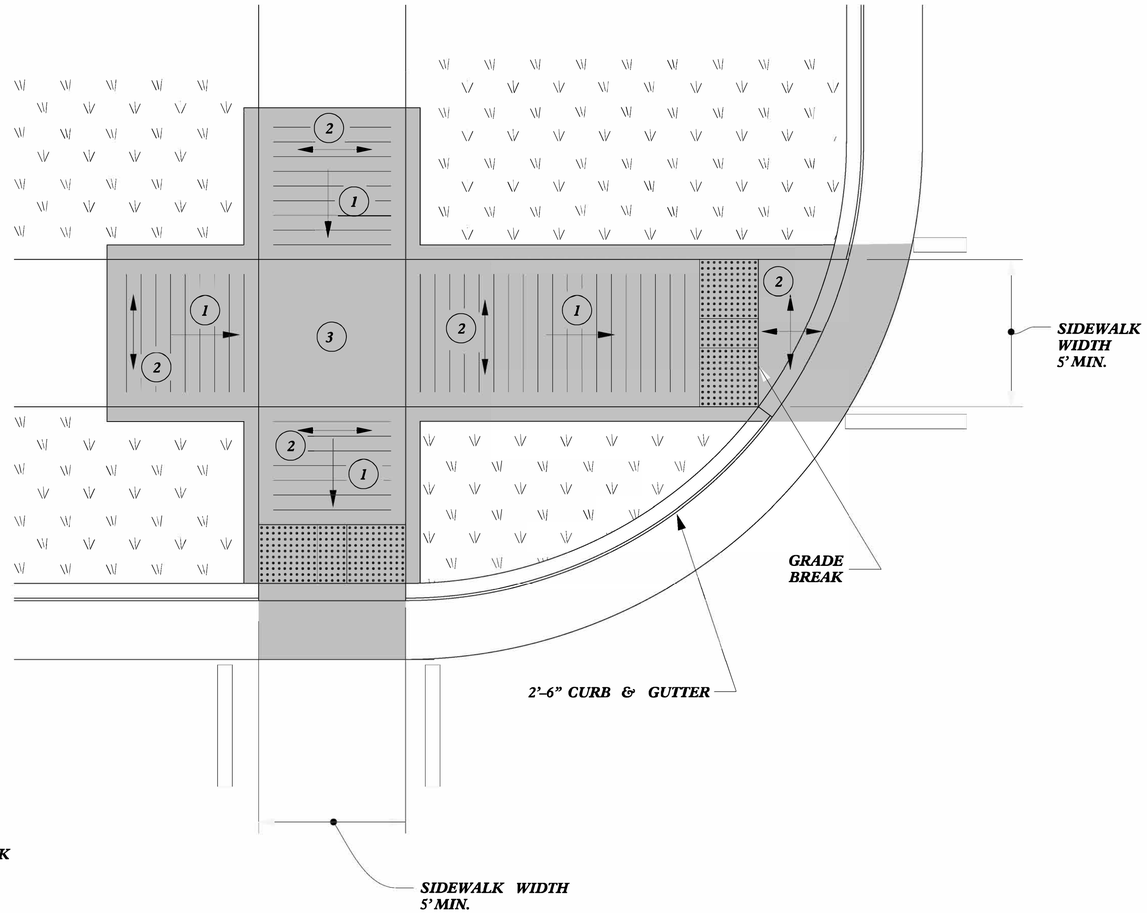
5/14/99

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

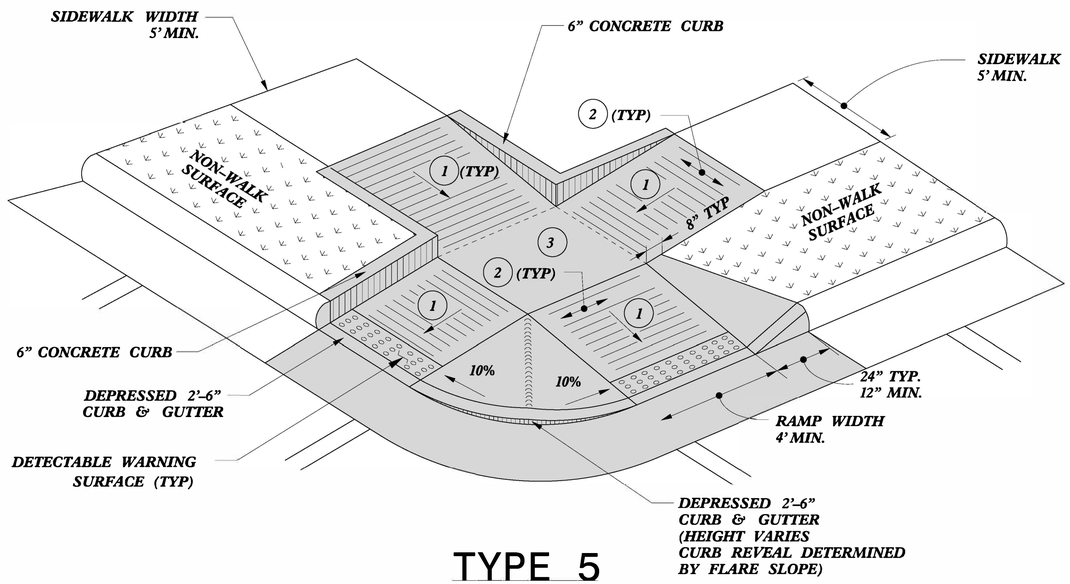
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-5B

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 39144 ENGINEER Nicole Hucks
3/8/2023

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

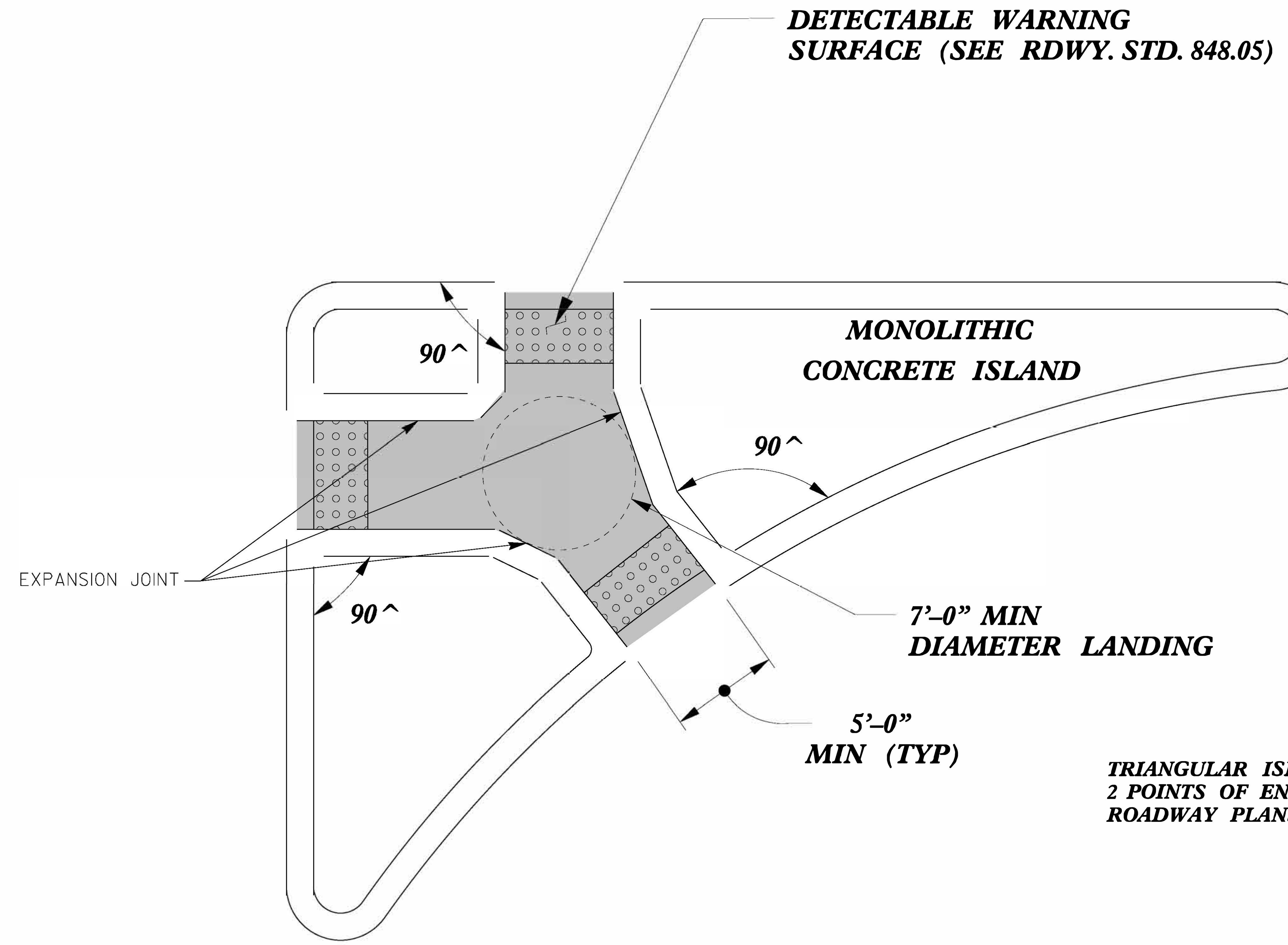
CURB RAMPS

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

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

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-6

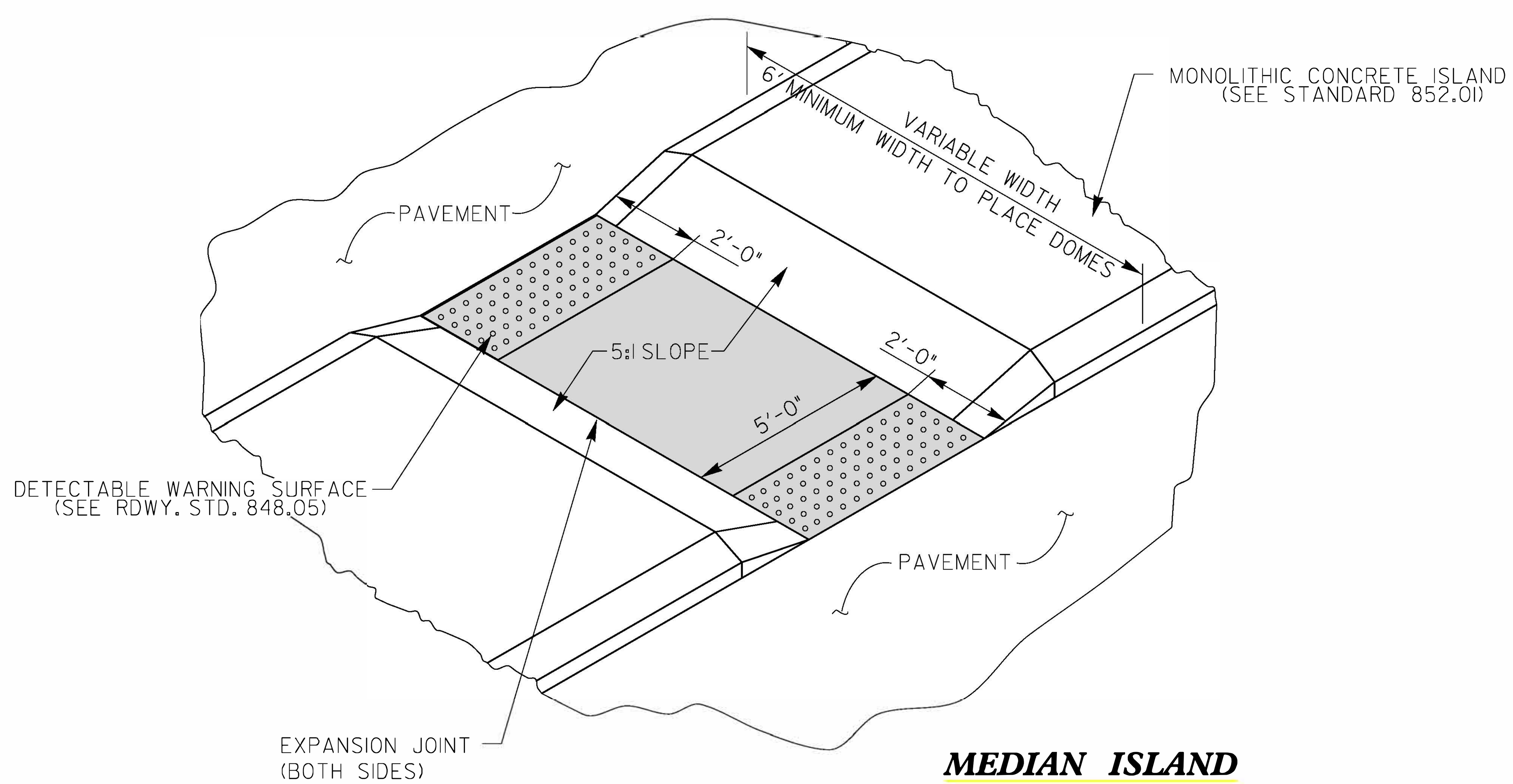
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)



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

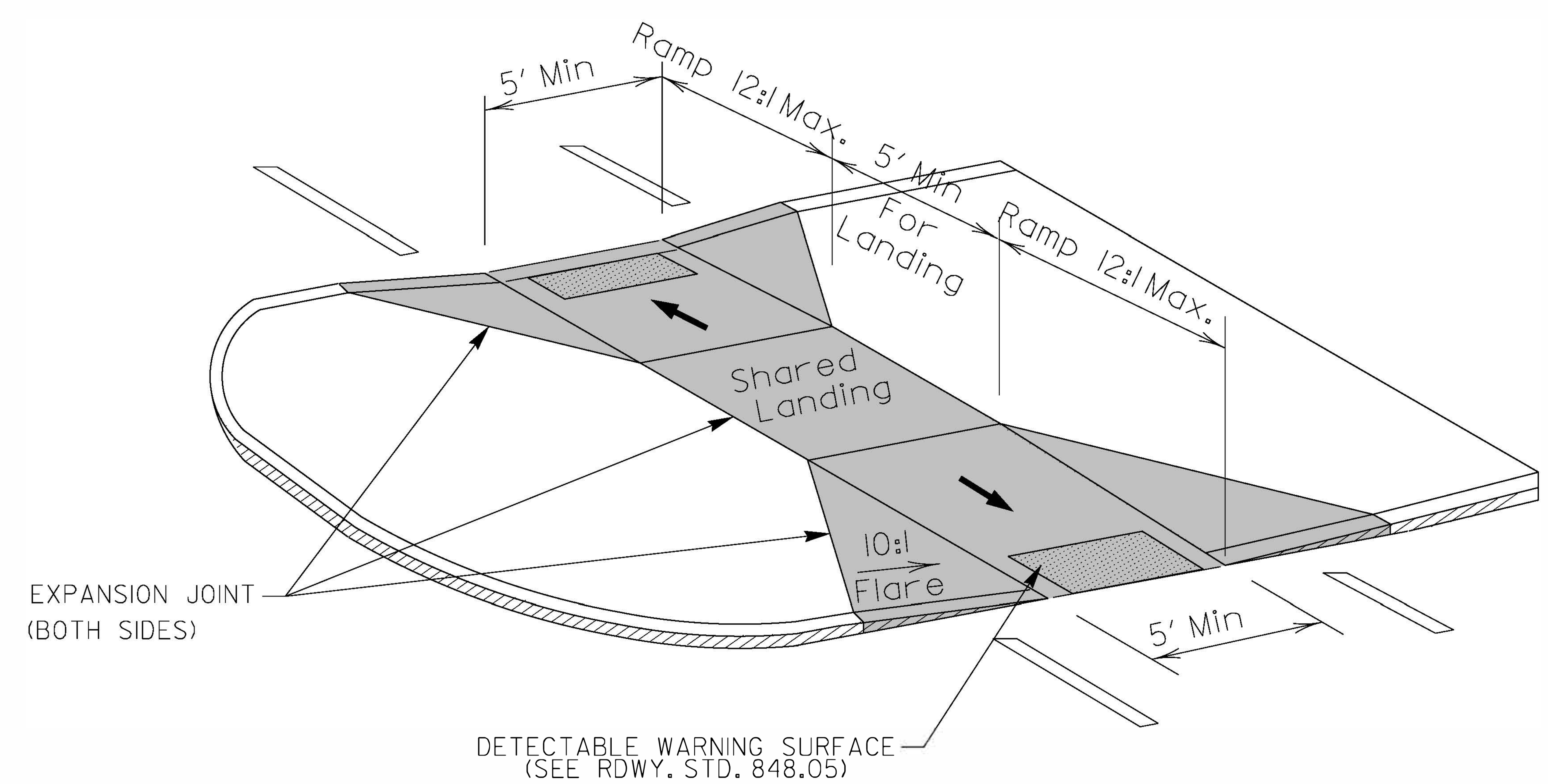
TRIANGULAR ISLAND WITH CUT THROUGH

TYPE 6



MEDIAN ISLAND WITH CUT THROUGH

TYPE 7



TYPE 8

MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M. HACKLER 3/8/2023

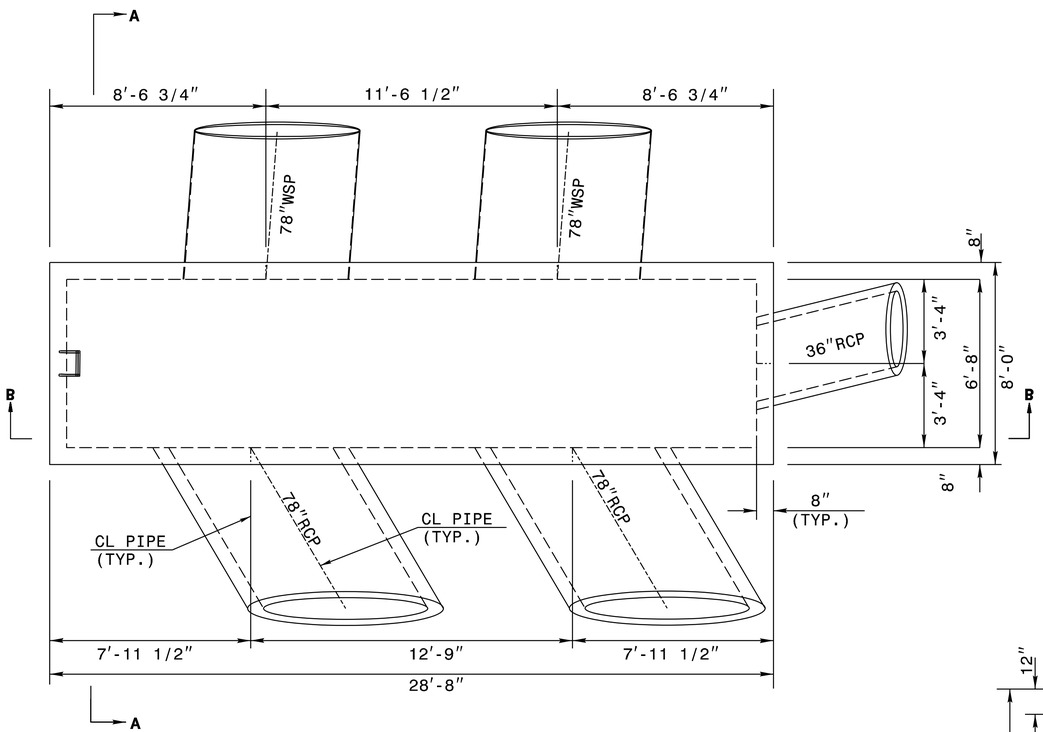
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

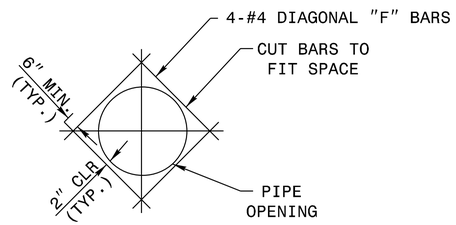
Median or Turn Lane Islands

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

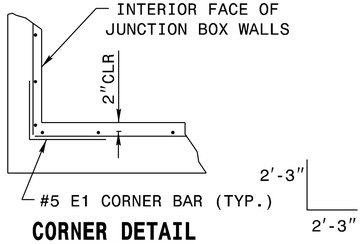
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-7



PLAN VIEW

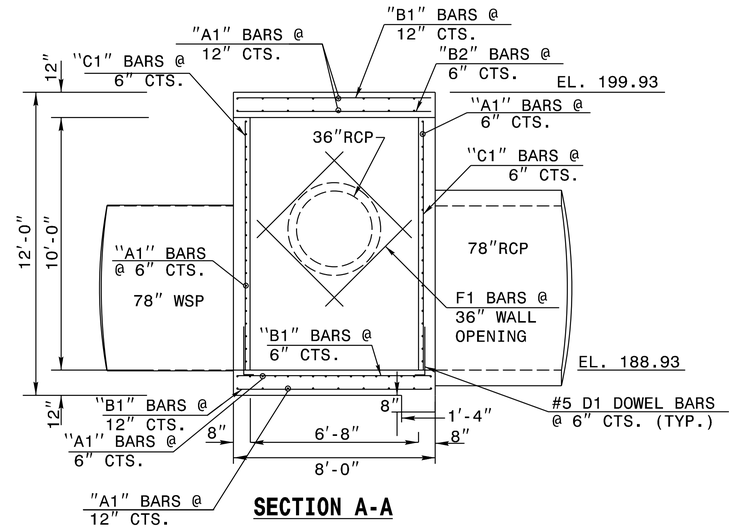


WALL OPENING REINFORCEMENT



CORNER DETAIL

NOTE: SPACE CORNER BARS TO MATCH HORIZ. BARS IN WALL

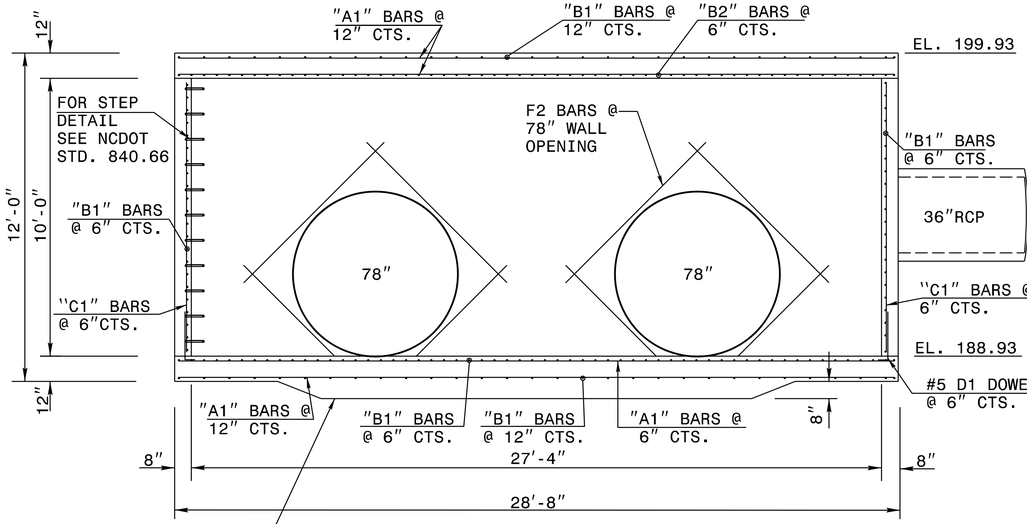


SECTION A-A

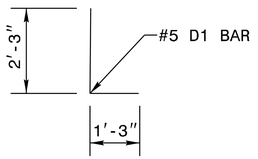
BILL OF MATERIALS

BAR	QTY	SIZE	LENGTH	WEIGHT
A1	40	#5	28′-4″	1300
B1	116	#5	7′-8″	928
B2	58	#6	7′-8″	668
C1	146	#5	9′-10″	1497
D1	146	#5	3′-6″	533
F1	4	#4	5′-3″	14
F2	16	#4	9′-3″	99
TOTAL REINF. STEEL (lbs.)				5039
TOTAL CONC. CU. YDS.				35.3

NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES.



SECTION B-B



DOWEL DETAIL

NOTE: DOWEL BARS TO MATCH VERTICAL BARS IN WALL

GENERAL NOTES:

1. USE CLASS ″A″ CONCRETE THROUGHOUT.
2. CONSTRUCT CONCRETE BOX IN ACCORDANCE WITH SECTION 825 OF THE STANDARD SPECIFICATIONS.
3. CONSTRUCT BOTTOM SLAB ON A MINIMUM 6″ SUB- BASE OF COMPACTED COARSE AGGREGATE.
4. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
5. ADJUST LENGTH OF STEEL BARS AS NEEDED TO COMPENSATE FOR PIPES AND ACCESS OPENING.
6. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60 DEFORMED BARS.
7. CUT OR BEND STEEL BARS AS NEEDED TO PROVIDE 2″ CLEARANCE.
8. PROVIDE JUNCTION BOX WITH STEPS 12″ ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
9. CHAMFER ALL EXPOSED CORNERS 1″.
10. BOX DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030474 ENGINEER JOHN C. MORRISON

DocuSigned by: John C. Morrison 3/7/2023 A2FDE142C82F4AB...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AECOM
NC FIRM LICENSE No: F-0342
5438 Wade Park Blvd, Suite 200
Raleigh, NC 27607
(919) 854-6200

DETAIL OF SPECIAL JUNCTION BOX 2@78″ AND 36″ RCP NOT TO SCALE

ORIGINAL BY:	K. Sloan	DATE:	6/9/2022
MODIFIED BY:	K. Sloan	DATE:	9/19/2022
CHECKED BY:	C. Morrison	DATE:	9/16/2022
FILE SPEC.:			

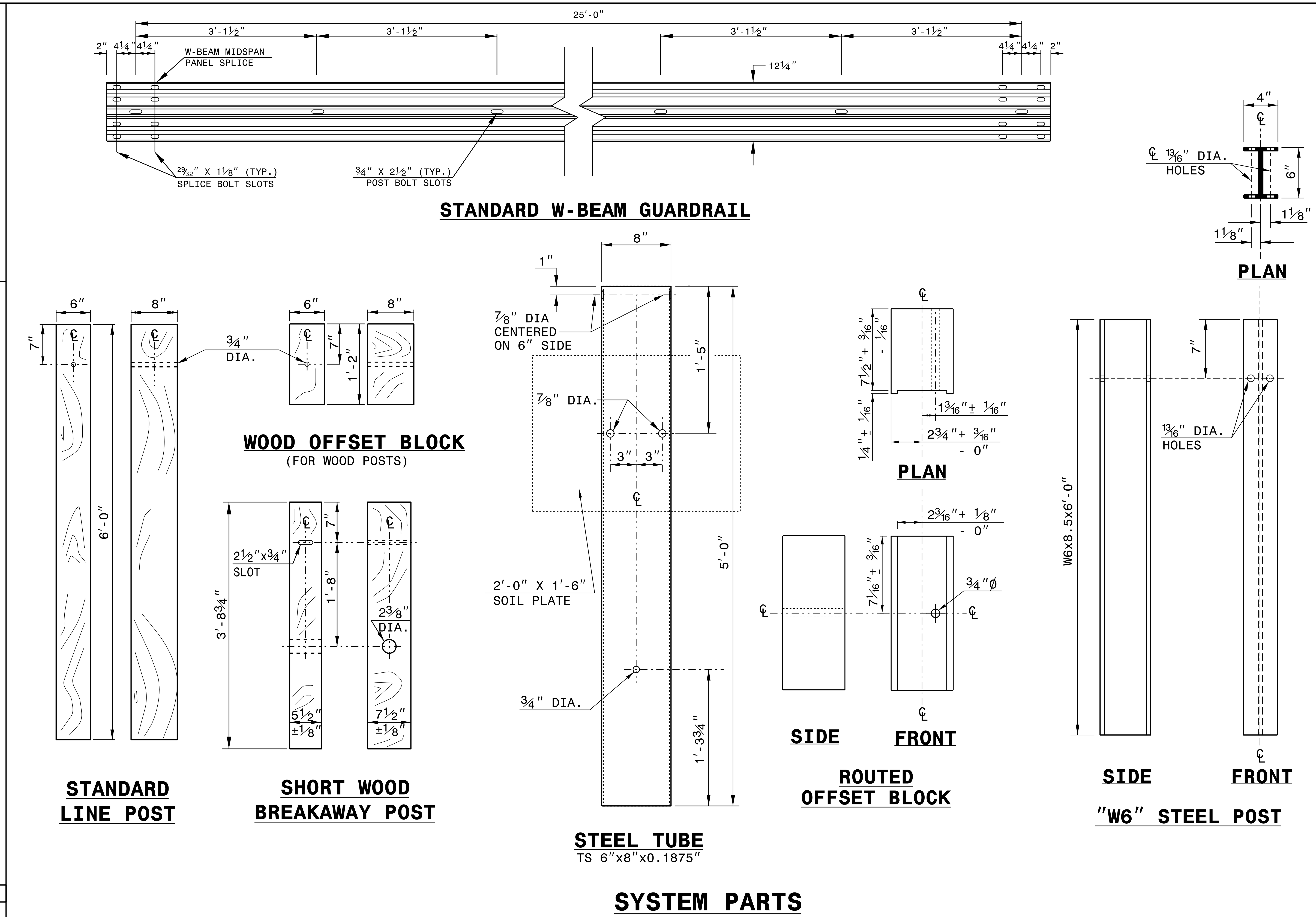
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-8

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

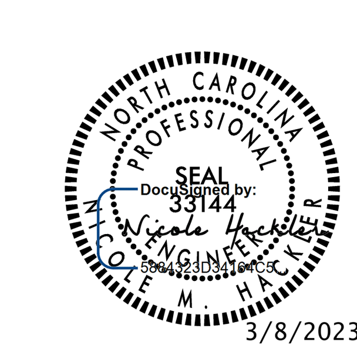
SHEET 6 OF 8
862D02



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



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

SEE TITLE BLOCK

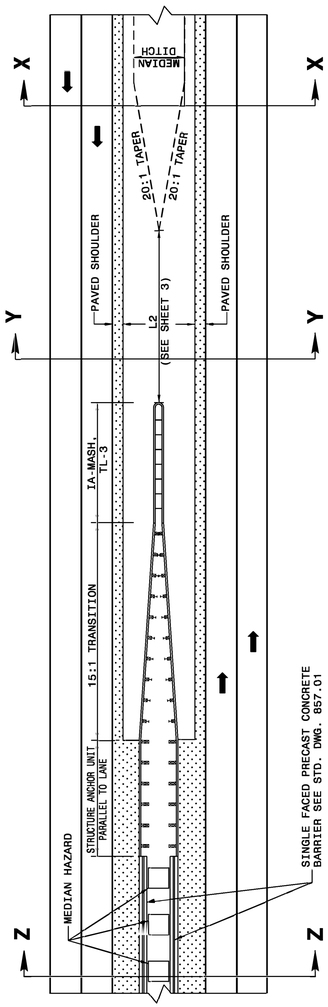
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

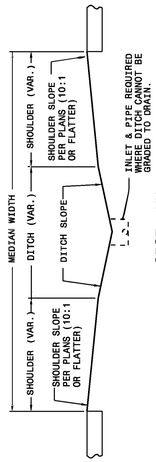
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-9

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

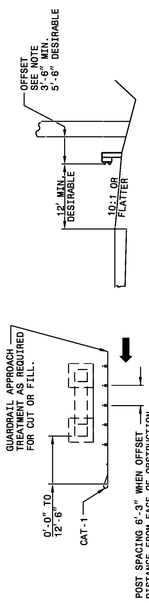
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 1 OF 11
862D01





DETAIL OF MEDIAN TREATMENT AT UNDERPASS



NOTE: WHEN OFFSET DISTANCE FROM FACE OF OBSTRUCTION TO FACE OF GUARDRAIL IS BETWEEN 3'-6" AND 5'-6", BEGIN 3'-1½" POST SPACING AT A POINT 25' BEFORE REACHING THE OBSTRUCTION AND CARRY THROUGHOUT ITS LENGTH. IF THE OFFSET IS LESS THAN 3'-6" USE CONCRETE BARRIER.

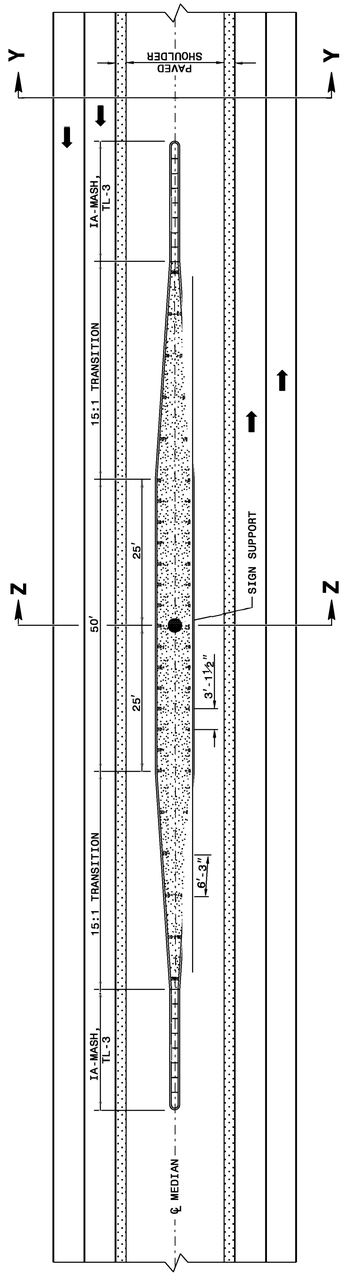
DETAIL OF RIGHT SIDE GUARDRAIL AT UNDERPASS

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR **GUARDRAIL PLACEMENT**	SHEET 1 OF 11 **862D01**

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

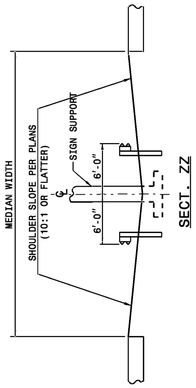
ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

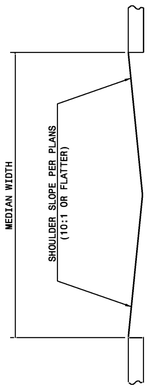
SHEET 2 OF 11
862D01



NOTE SPECIAL LAYER OF PAVEMENT .....

USE 3'-1½" POST SPACING ON THE 50' OF GUARDRAIL PARALLEL TO LANES AND 6'-3" POST SPACING ON 15:1 TRANSITION SECTIONS.
GRADE MEDIAN IN THE VICINITY OF THE SIGN SUPPORT AS ILLUSTRATED IN THE ROADWAY STANDARD DRAWINGS (STARDARD 862.01 SHEET 1 OF 12).





DETAIL OF GUARDRAIL AT MEDIAN SIGN SUPPORT

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR **GUARDRAIL PLACEMENT**	SHEET 2 OF 11 **862D01**

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER NICOLE M HICKLER
3/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

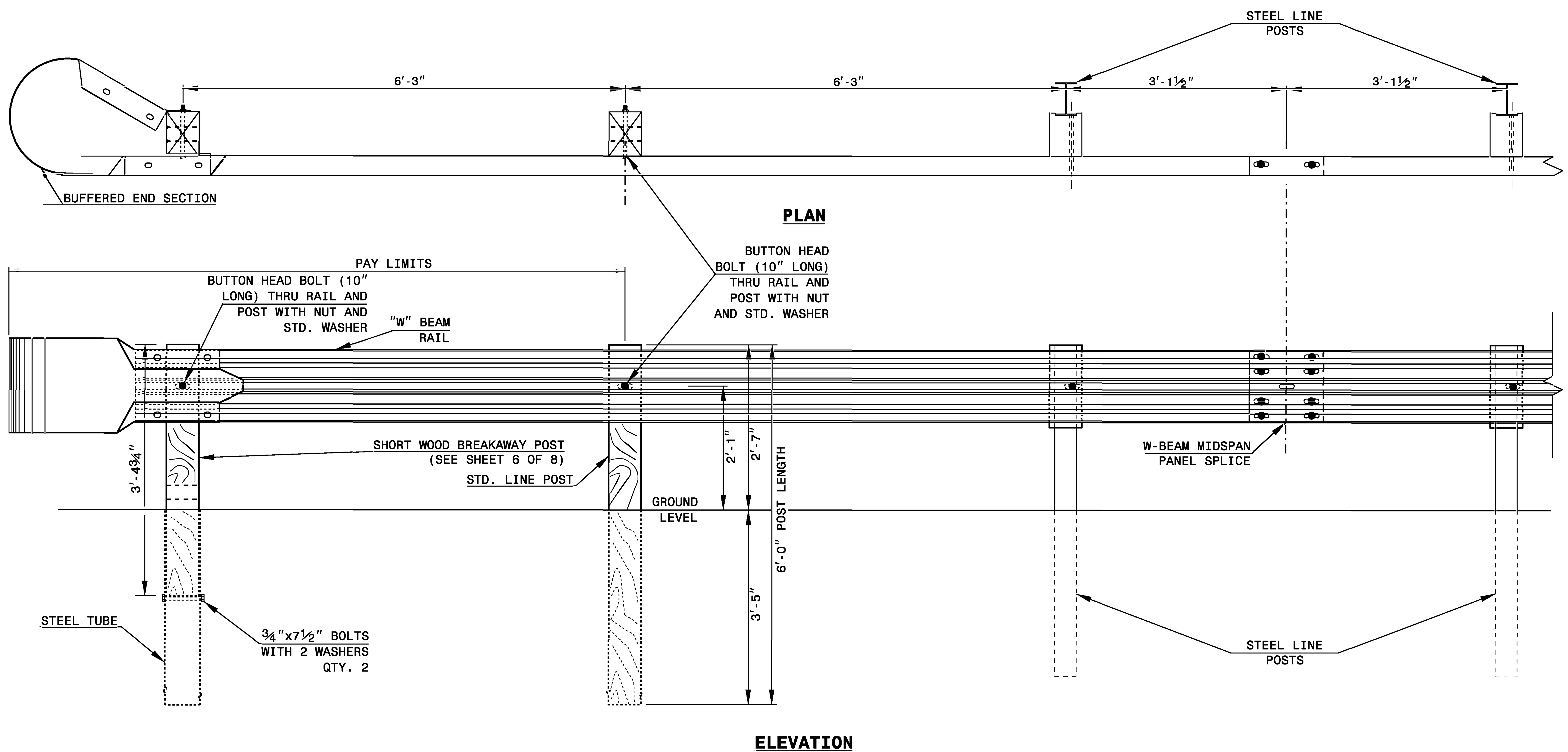
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 08-23-18
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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 ENGINEER SEAL 33144 N. M. HACKLER
3/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.:______

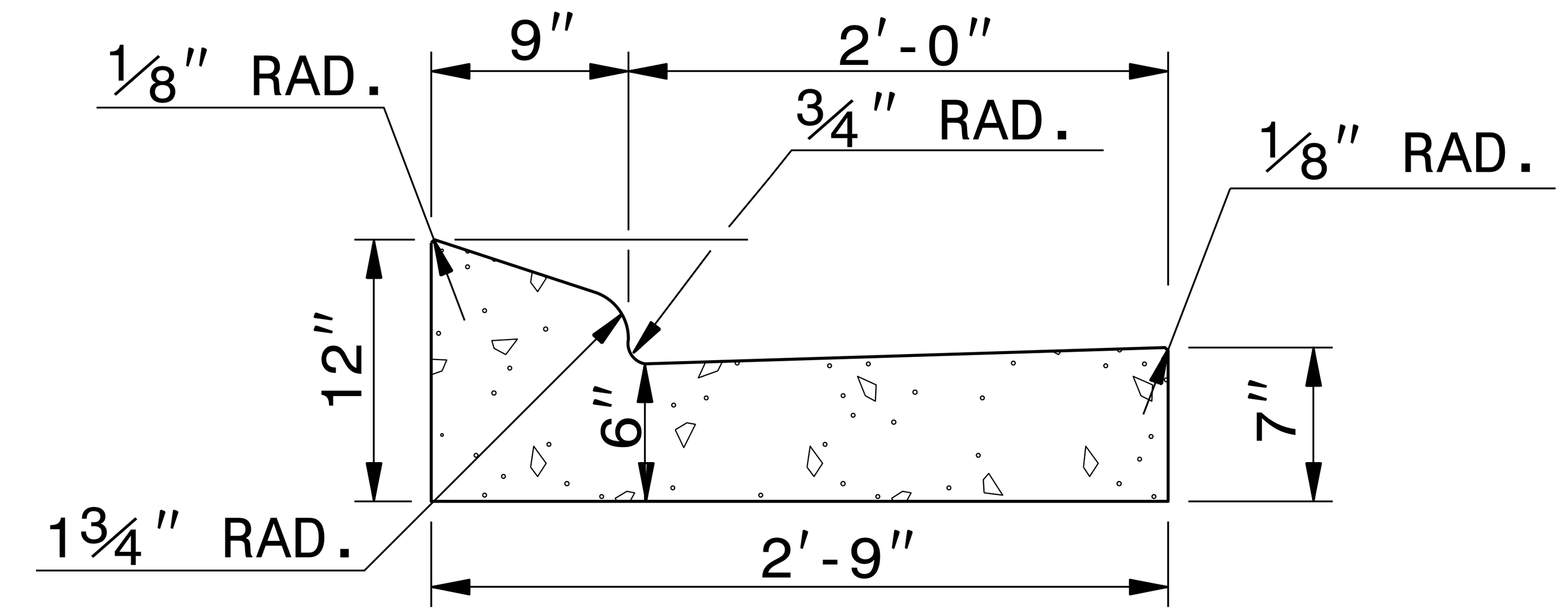
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-11

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

ENGLISH DETAIL DRAWING FOR

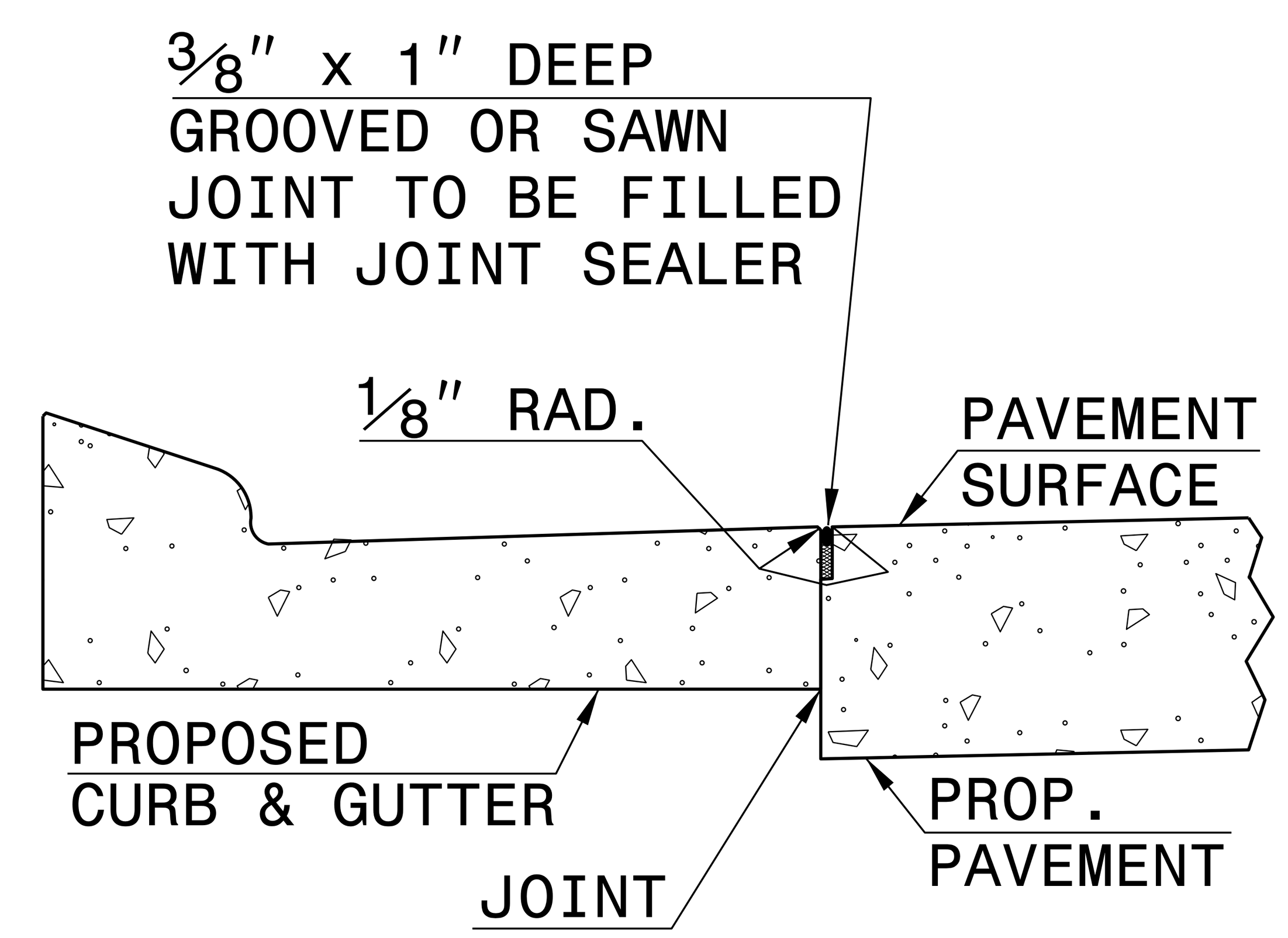
2'-9" CONCRETE CURB & GUTTER

GENERAL NOTES:
- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
- JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
- CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. MAKE NON-TEMPLATE FORMED JOINTS A MIN. OF 1½" DEEP.
- FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
- SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.
- SEE RDWY. STD. DWG. NO. 846.01, SHEET 2 OF 3 FOR PLACEMENT IN SUPERELEVATIONS. (USE 2'-6" CURB AND GUTTER RATES)

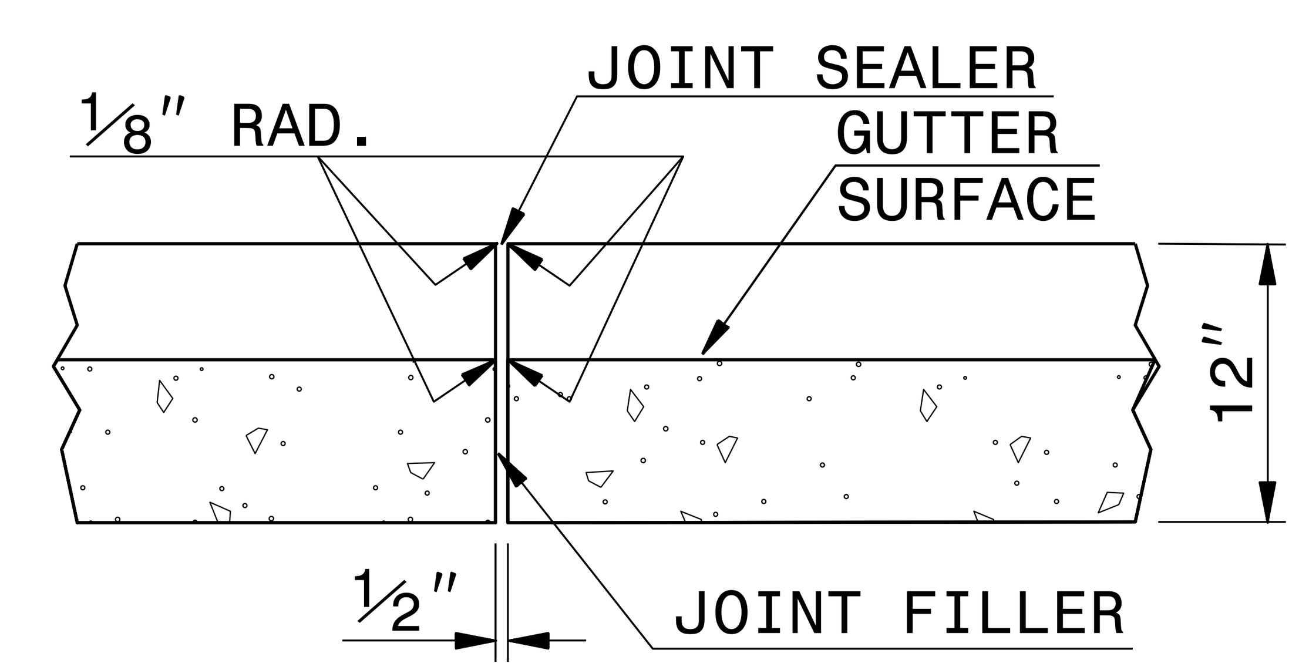


2'-9" CURB AND GUTTER

SECTION VIEW OF CURB AND GUTTER



LONGITUDINAL JOINT



TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER

SECTION VIEW OF JOINTS

SHEET 1 OF 1

846D01

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

ENGLISH DETAIL DRAWING FOR

2'-9" CONCRETE CURB & GUTTER

SHEET 1 OF 1

846D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144
3/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

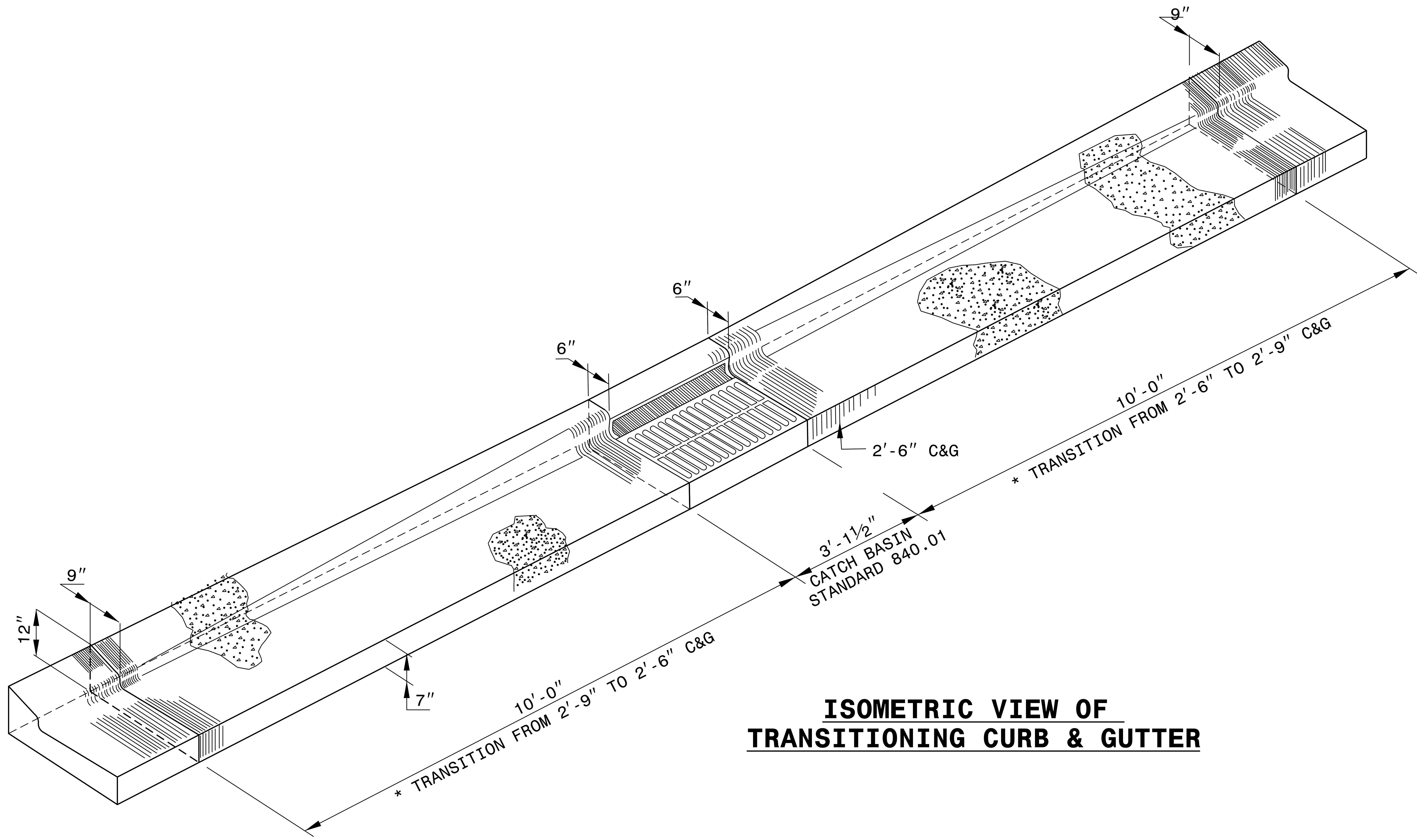
SEE PLATE FOR TITLE

ORIGINAL BY: STD. 846.01 DATE:
MODIFIED BY: E.E. WARD DATE: 8-15-00
CHECKED BY: DATE:
FILE SPEC.: /usr/details/stand/c&g2'-9".dgn

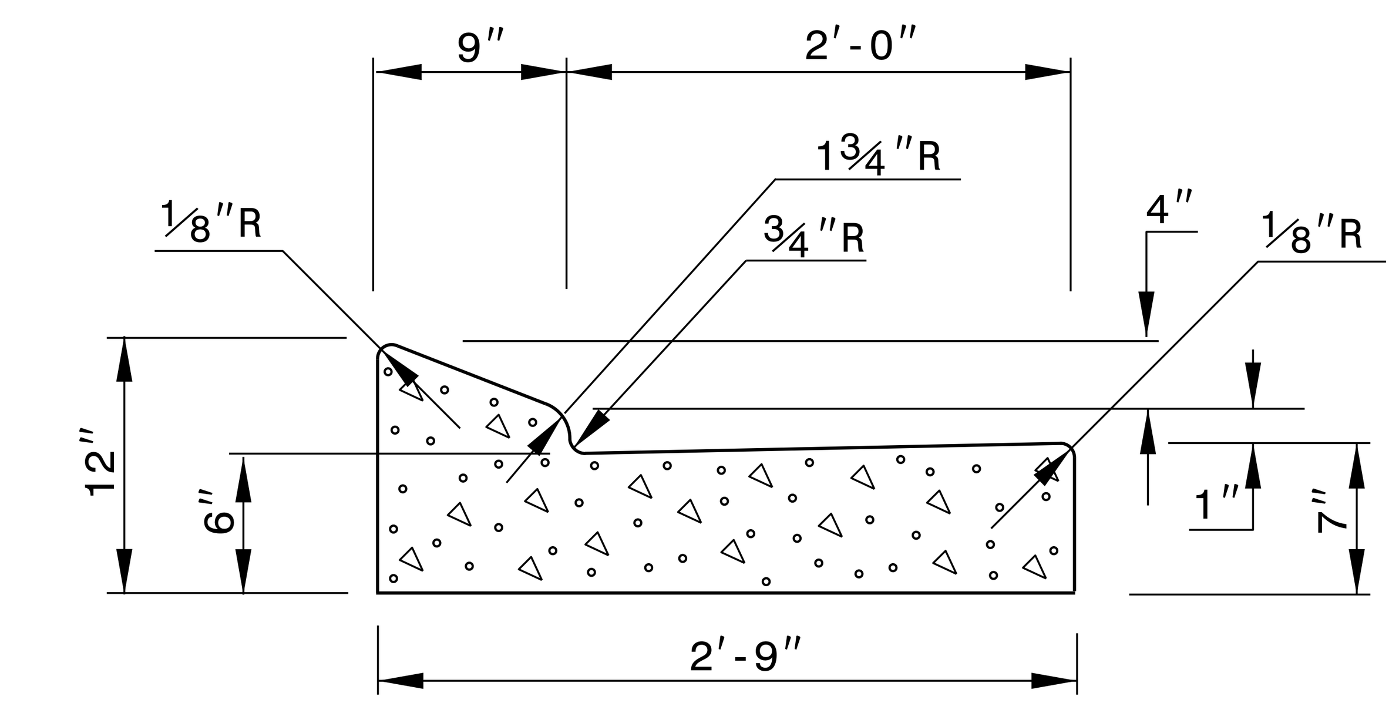
10-AUG-2017 11:46
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\c&g2'-9.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-12

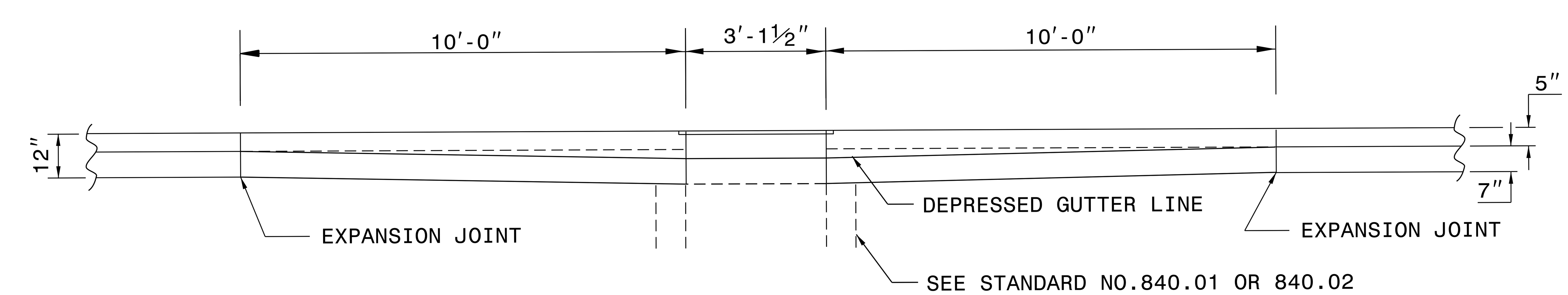
NOTE: SEE STD.DWG. 846.01 FOR 2′-6″ CURB AND GUTTER INFORMATION.



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER



PROPOSED 2′-9″ CURB & GUTTER



ELEVATION

* MAINTAIN THE EDGE OF PAVEMENT. TRANSITION THE CURB ALONG THE BACK OF THE CURB.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 33141 ENGINEER
3/8/2023

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

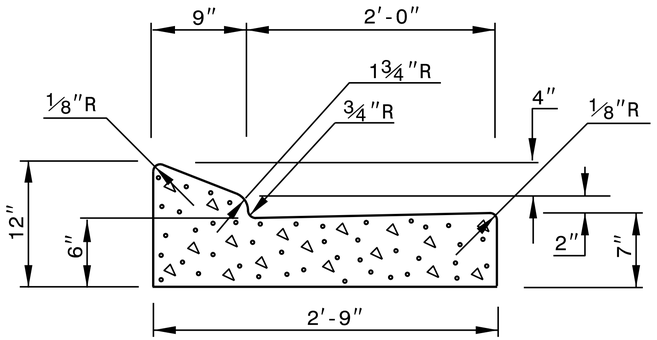
CATCH BASIN IN 2′-9″ CURB AND GUTTER

ORIGINAL BY: DATE:
MODIFIED BY: tspell DATE: july 14,2009
CHECKED BY: DATE:
FILE SPEC.: s:eric/usr/details/stand/cgtranst.dgn

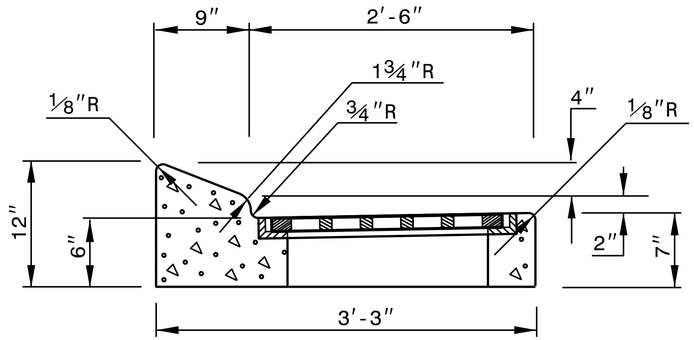
22-OCT-2019 07:30
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\c&g transition sections.dgn
jhowerton AT CSD-242595

5/14/99

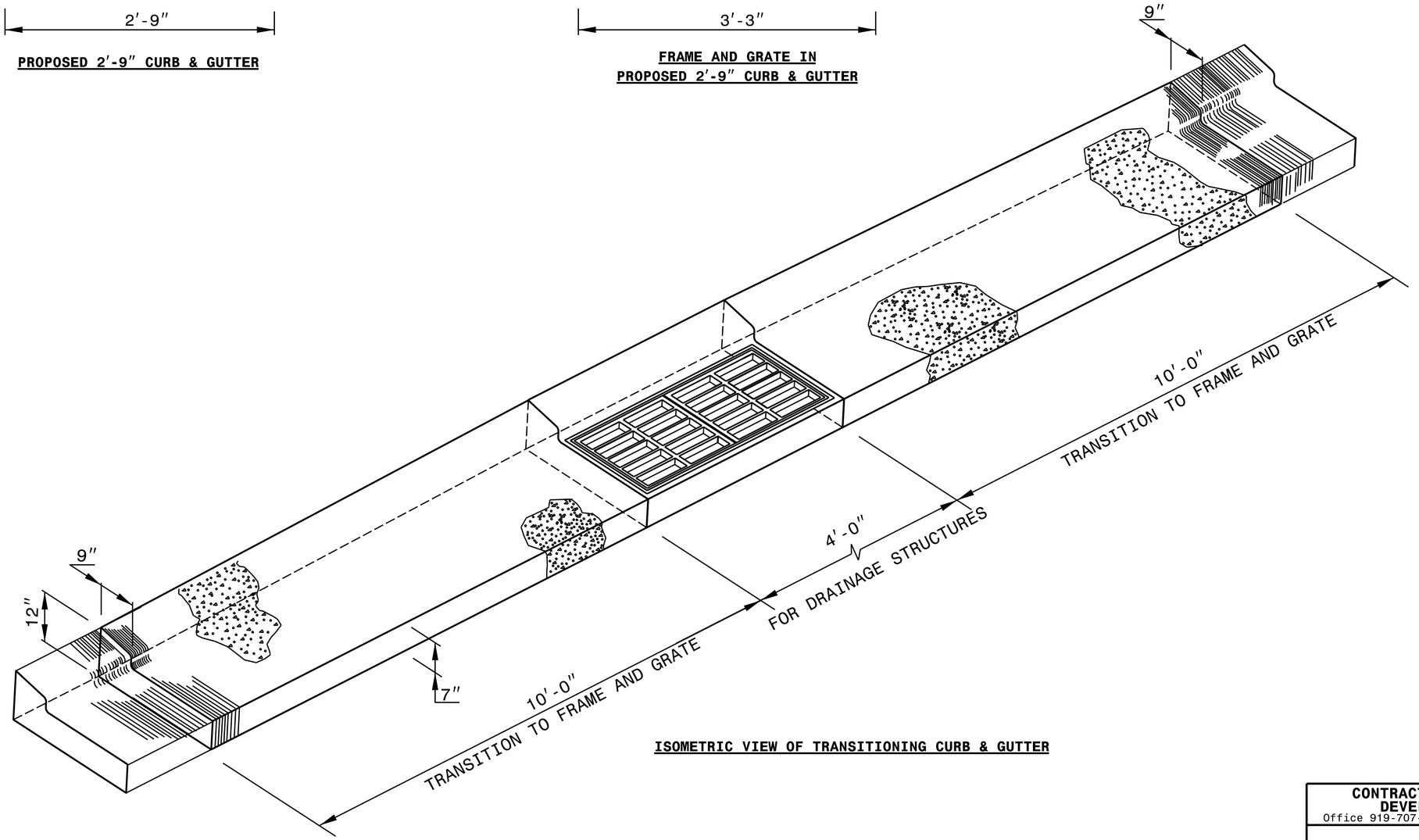
PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-13



PROPOSED 2′-9″ CURB & GUTTER



FRAME AND GRATE IN PROPOSED 2′-9″ CURB & GUTTER



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER Nicole M. Walker
3/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL OF 2′-9″ TO FRAME AND GRATE

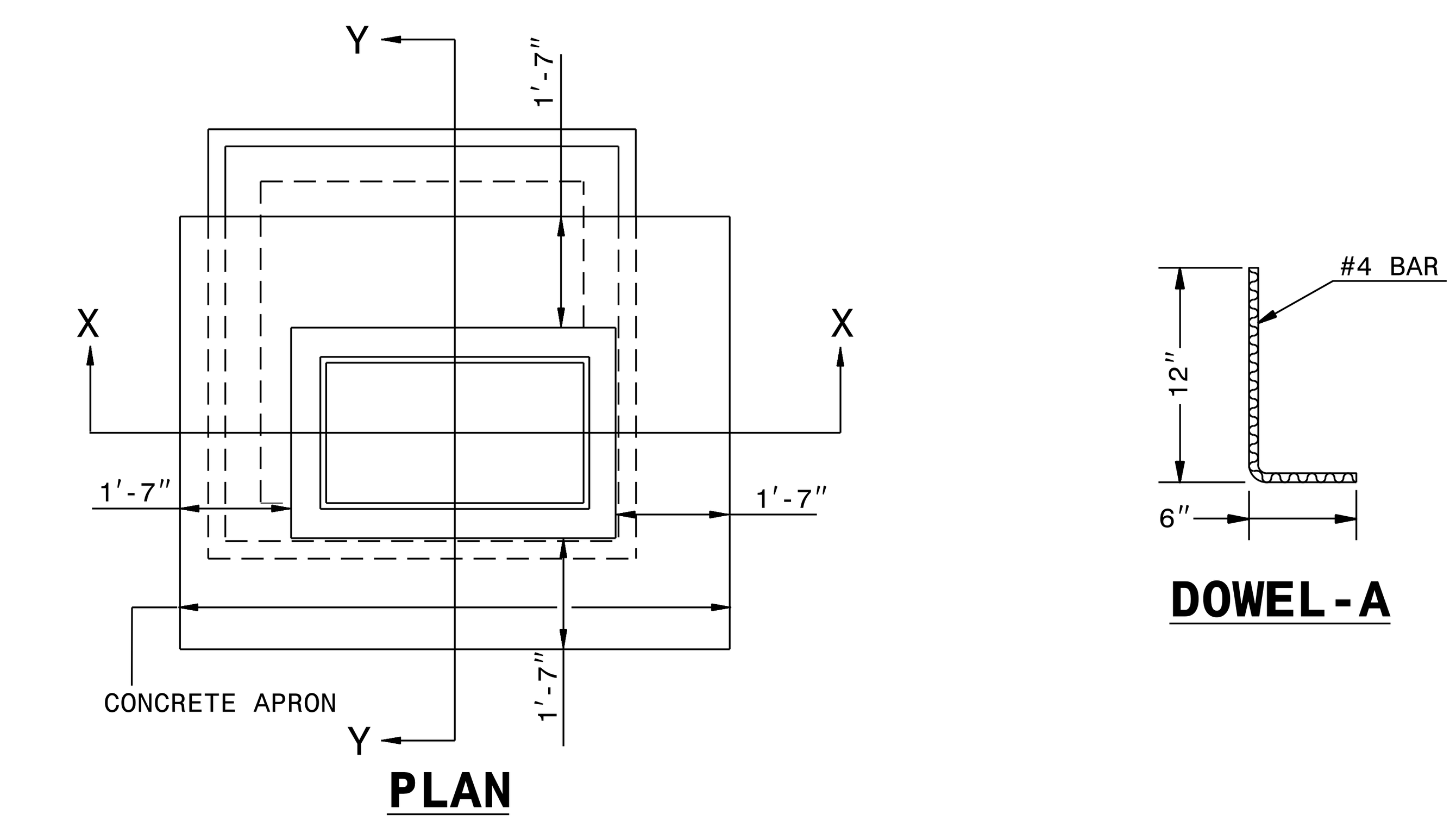
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: kkempf/english/curb gutter transition.dgn

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

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

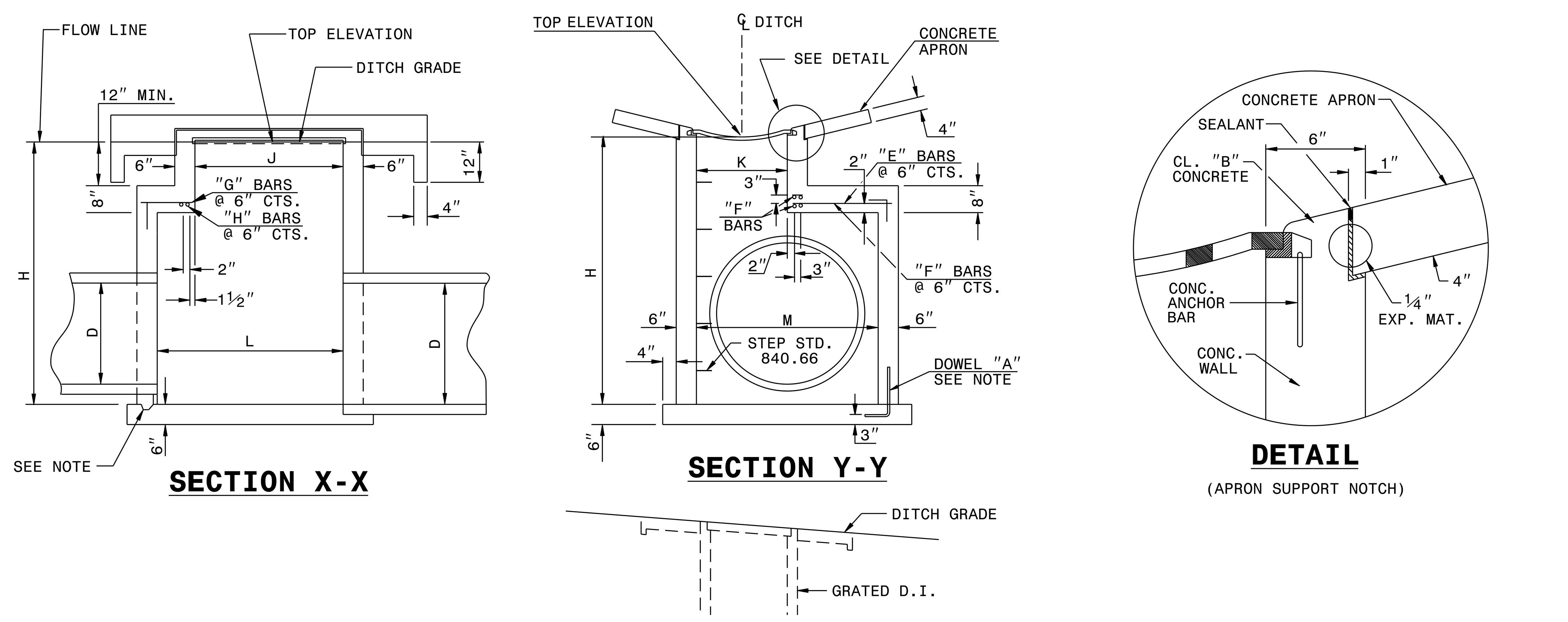
ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 1 OF 2 — 840d17



GENERAL NOTES:

- USE CLASS "B" CONCRETE THROUGHOUT.
- PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
- OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
- IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
- CONSTRUCT WITH PIPE CROWNS MATCHING.
- USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20 (NOT SHOWN) OR 840.29 (NOT SHOWN).
- SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.
- CHAMFER ALL EXPOSED CORNERS 1".
- DRAWING NOT TO SCALE.
- MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.



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

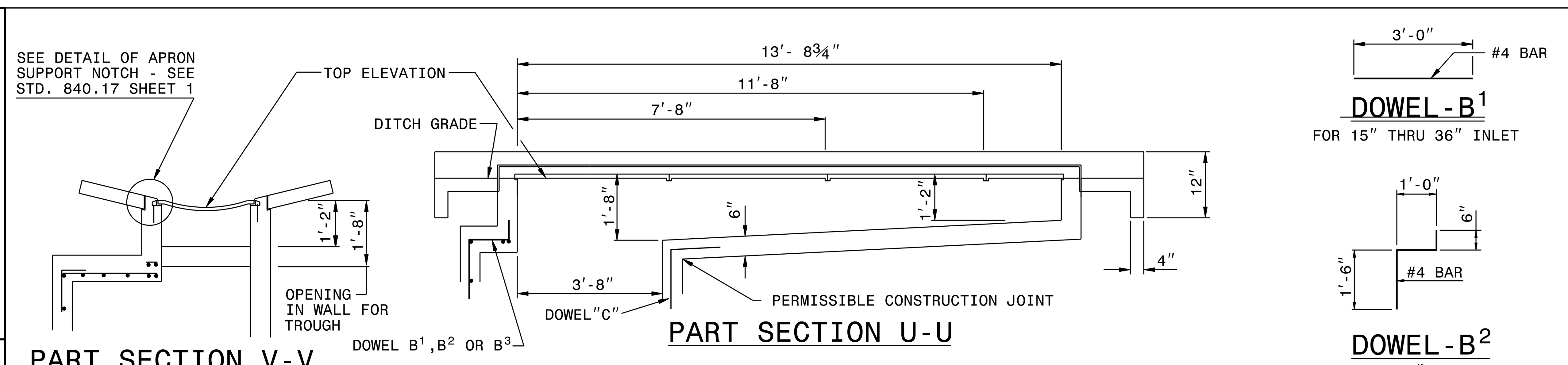
ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

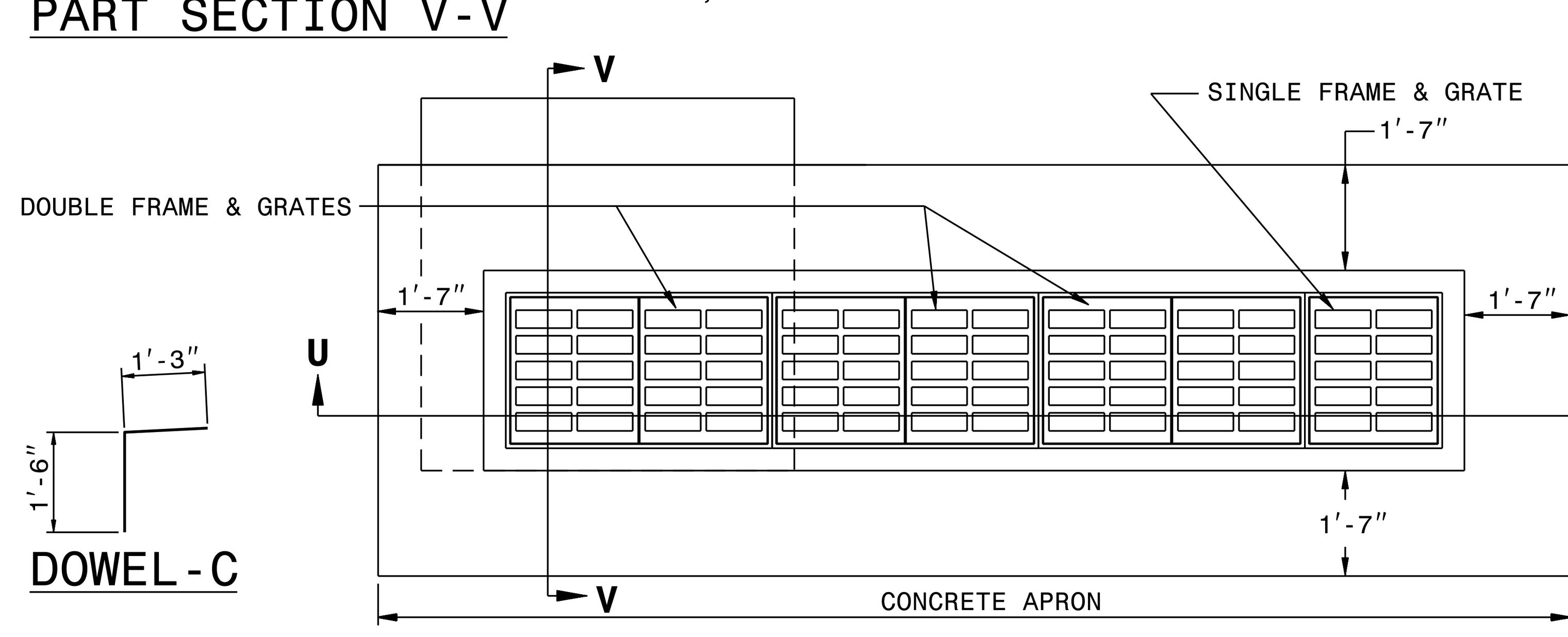
SHEET 1 OF 2 — 840d17

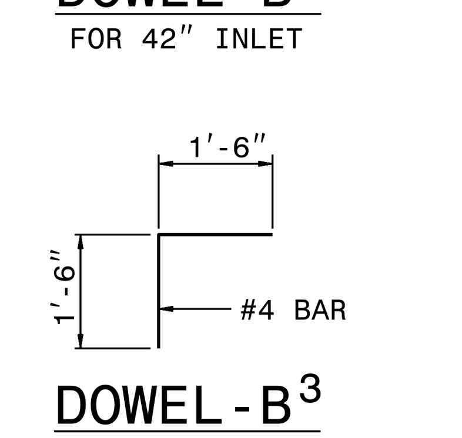
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 2 OF 2 — 840d17







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

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

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

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

ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 2 OF 2 — 840d17

PROJECT REFERENCE NO.	SHEET NO.
U-5748	2C-14

3/8/2023

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