

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

**LOCATION: US 17 (MARKET STREET) FROM
SR 1403 (MIDDLE SOUND LOOP ROAD)
TO SR 2290 (MENDENHALL DRIVE)/
SR 2734 (MARSH OAKS DRIVE)**

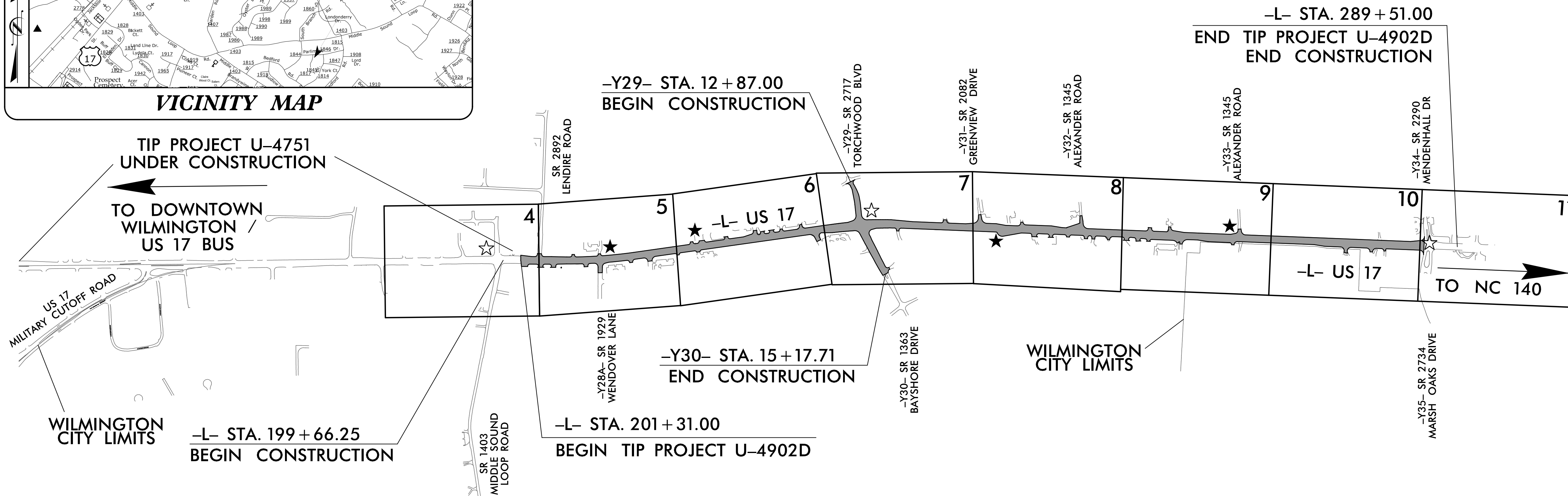
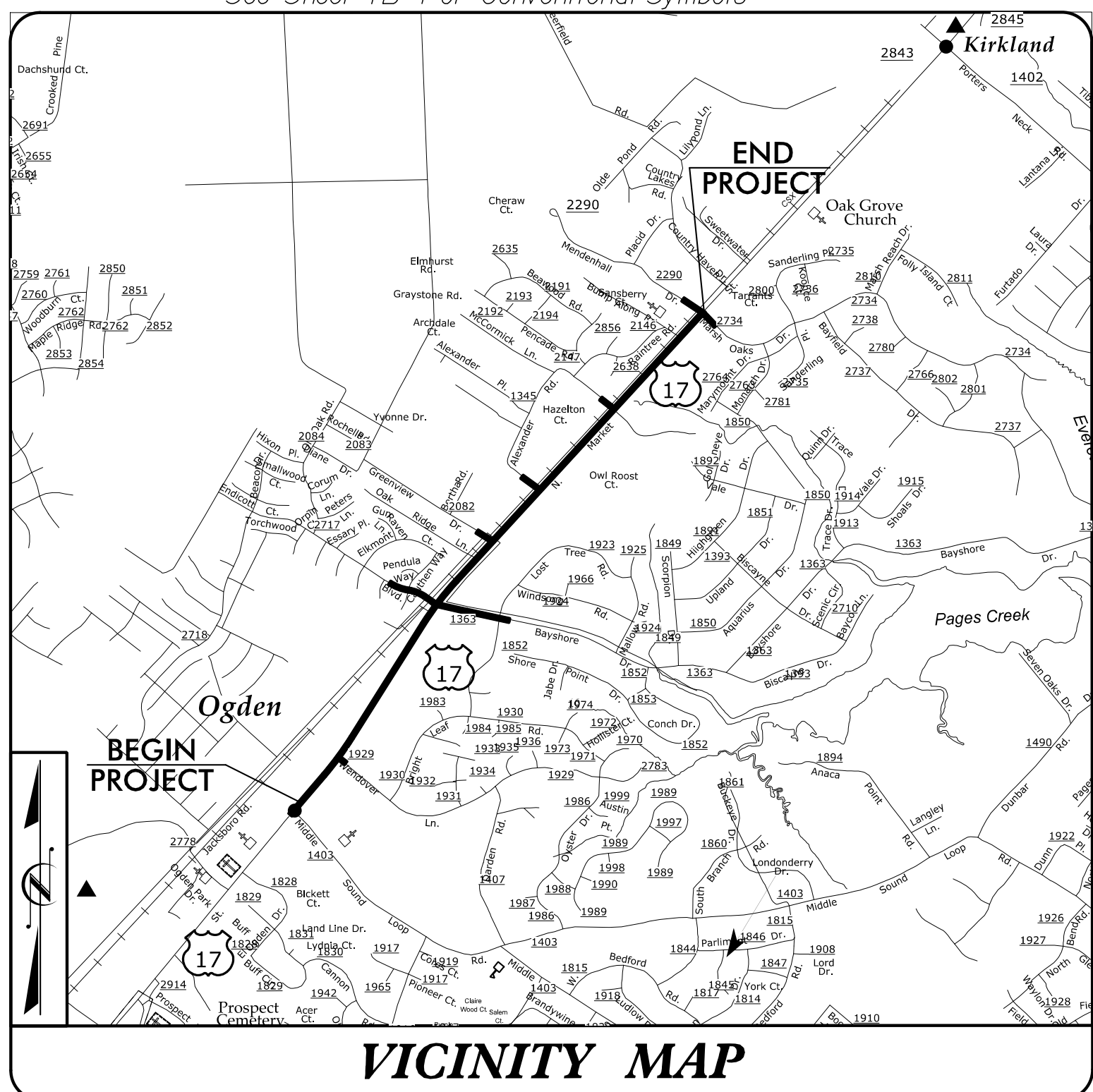
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS,
AND RETAINING WALL**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-4902D	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40238.1.4		P.E.	
40238.2.4		RW/UTIL	
40238.3.5		CONST	



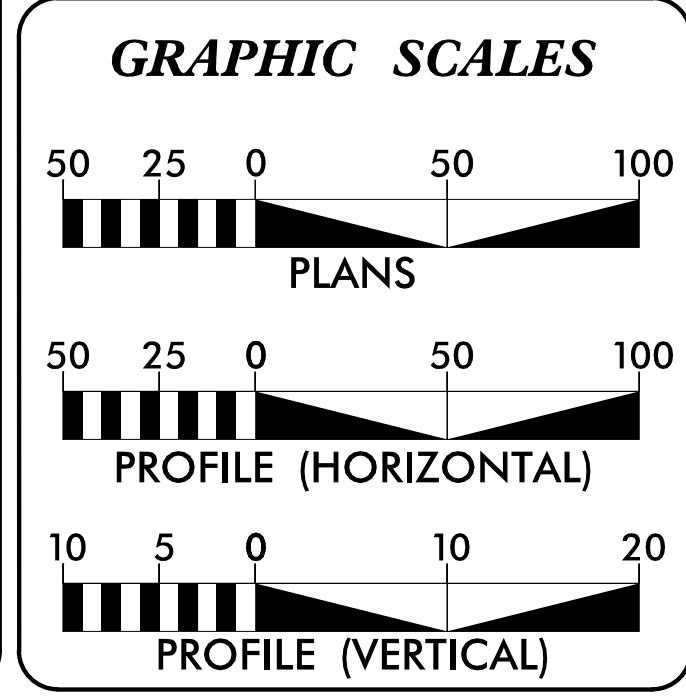
TIP PROJECT: U-4902D

CONTRACT: C202280



	EXISTING SIGNAL
	PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2018 =	52,130
ADT 2038 =	65,390
K =	11 %
D =	55 %
T =	6 % *
V =	50 MPH
* TTST =	2% DUAL 4%
FUNC CLASS =	PRINCIPAL ARTERIAL
STATEWIDE TIER	

PROJECT LENGTH

LENGTH OF ROADWAY T.I.P. PROJECT U-4902D =	1.670 MILES
TOTAL LENGTH OF T.I.P. PROJECT U-4902D =	1.670 MILES
LENGTH BASED ON	-L- CENTERLINE

PREPARED IN THE OFFICE OF

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1594

FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 30, 2017

LETTING DATE:
FEBRUARY 19, 2019

DOUGLAS M. WHEATLEY, PE
PROJECT ENGINEER

ROY TELLIER, PE
PROJECT DESIGN ENGINEER

KRISTA KIMMEL, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

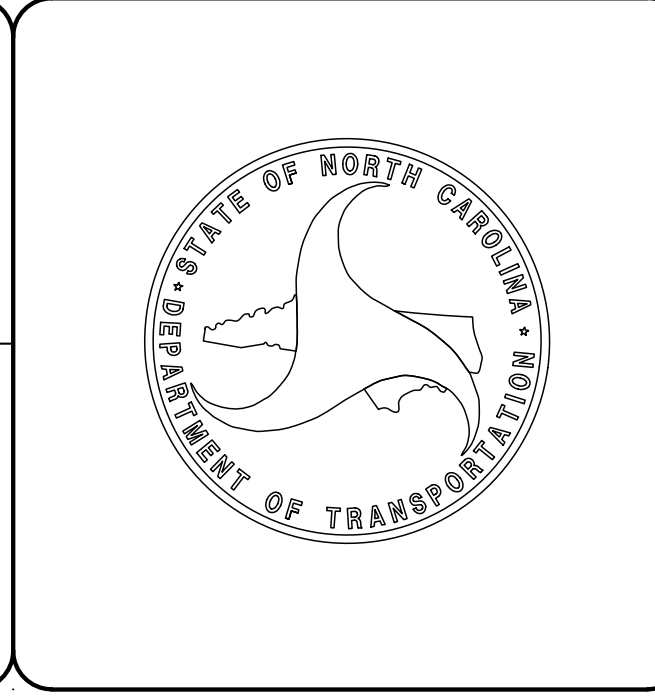
DocuSigned by:
James A. Byrd
239299854F47C...
1/7/2019

SIGNATURE:


ROADWAY DESIGN ENGINEER

DocuSigned by:
Roy Tellier
BF7DB8BA8E8C430...
1/4/2019

SIGNATURE:



B:17/99

PROJECT REFERENCE NO. U-4902D	SHEET NO. 1A
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C THRU 1C-6	SURVEY CONTROL SHEETS
1D	PROPOSED ALIGNMENT CONTROL SHEETS
1E THRU 1E-2	RIGHT OF WAY CONTROL SHEETS
2A-1 THRU 2A-3	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	INTERSECTION DETAIL SHEET
2B-2	DETAIL OF TEMPORARY WIDENING
2C-1	DETAIL OF HANDRAIL ADJACENT TO MULTI-USE PATH
2C-2	DETAIL OF HANDRAIL ADJACENT TO RETAINING WALL
2C-3	DETAIL OF MODIFIED METHOD III CLEARING
2C-4	DETAIL OF REINFORCED CONCRETE ENDWALL FOR 96IN. DIAMETER PIPE, 60 DEGREE SKEW
2C-5	DETAIL OF SPECIAL DI WITH 96" REINFORCED CONCRETE PIPE
2C-6	DETAIL OF 1" TEMPORARY STEEL COVER OVER DRAINAGE STRUCTURE
2C-7	DETAIL OF W-BEAM GUARDRAIL INSTALLATION
2C-8	DETAIL OF DIRECTIONAL CURB RAMPS
2C-9	DETAIL OF MINIMUM DEPTH DRAINAGE STRUCTURE
2C-10	DETAIL OF WOOD RUB RAIL
2G-1 THRU 2G-2	DETAIL OF REINFORCED SOIL SLOPE WITH HIGH GROUNDWATER
2G-3	DETAIL OF ROCK PLATING
2G-4	DETAIL OF LIGHTWEIGHT AGGREGATE FILL EMBANKMENT
2G-5 THRU 2G-8	DETAILS OF STANDARD TEMPORARY SHORING
3B-1	SUMMARY OF EARTHWORK, GUARDRAIL, AND TEMPORARY SHORING
3D-1 THRU 3D-11	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 11	PLAN SHEETS
12 THRU 16	PROFILE SHEETS
TMP-1 THRU TMP-19	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-11	PAVEMENT MARKING PLANS
EC-1 THRU EC-19	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-6	SIGNING PLANS
SIG.1.0 THRU SIG.16.0	SIGNAL PLANS
SIG.M1 THRU SIG.M8	STANDARD DRAWINGS FOR METAL POLES
SCP.1 THRU SCP.34	SIGNAL COMMUNICATION PLANS
UC-1 THRU UC-15	UTILITY CONSTRUCTION PLANS
UBO-1 THRU UBO-9	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX SHEET
X-1A THRU X-1B	CROSS SECTION SUMMARY
X-2 THRU X-55	CROSS SECTIONS
W-1 THRU W-2	RETAINING WALL PLANS

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 MODIFIED METHOD III.

SUPERELEVATION: ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 & 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.

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".

UTILITIES: UTILITY OWNERS ON THIS PROJECT ARE
POWER TRANSMISSION & DISTRIBUTION: DUKE ENERGY
COMMUNICATIONS: AT&T, AT&T-T, SPIRIT / MCNC, LUMOS / LMK, CENTURYLINK, AND SPECTRUM
GAS: PIEDMONT NATURAL GAS
WATER & SEWER: CAPE FEAR PUBLIC UTILITY AUTHORITY
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 OTHERS.

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.

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	
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
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 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
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation (Special Detail for Sheet 6 of 8)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ EDM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
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	○
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	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

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	----- R/W
New Right of Way Line with Pin and Cap	----- R/W ▲
New Right of Way Line with Concrete or Granite RW Marker	----- R/W
New Control of Access Line with Concrete CA Marker	----- C/A
Existing Control of Access	----- C/A
New Control of Access	----- C/A
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	⊙
Storm Sewer	----- S

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
Power Line Tower	⊠
Power Transformer	⊠
U/G Power Cable Hand Hole	○
H-Frame Pole	●
U/G Power Line 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	⊙
Telephone Pedestal	⊠
Telephone Cell Tower	⊠
U/G Telephone Cable Hand Hole	○
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	⊙
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	⊠
TV Tower	⊗
U/G TV Cable Hand Hole	○
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	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	----- 7UTL
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊠
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.

SURVEY CONTROL SHEET U-4902D

PROJECT REFERENCE NO. U-4902D SHEET NO. 1C Location and Surveys

BL POINT DESC. NORTH EAST ELEVATION L STATION OFFSET... BL1 REBAR & CAP 182436.7570 2341112.9420 38.60 OUTSIDE PROJECT LIMITS...

BL1 POINT DESC. NORTH EAST ELEVATION L STATION OFFSET... U47514 REBAR & CAP 192245.8550 2356912.9870 46.11 199+70.89 38.11 RT...

BY2 POINT DESC. NORTH EAST ELEVATION Y17 STATION OFFSET... BL4 REBAR & CAP 184166.3490 2345376.8720 39.94 OUTSIDE PROJECT LIMITS...

BY3 POINT DESC. NORTH EAST ELEVATION Y22 STATION OFFSET... BY31 REBAR & CAP 186892.5970 2348407.7480 38.63 10+67.03 18.05 RT...

***** BM1 ELEVATION = 38.67 N 182497 E 2340964 L STATION 10+00.00 N 76+37'2.69" W DIST 201.09 SQUARE CUT IN CONC CURB AT IHOP *****

DATUM DESCRIPTION THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "P-122" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 205,424.53(ft) EASTING: 2,360,493.54(ft) ELEVATION: (ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000012368 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "P-122" TO L- L STATION 10+00.00 IS S 40° 05' 00" W 30,026.79' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BY1 POINT DESC. NORTH EAST ELEVATION L STATION OFFSET... U49023 REBAR & CAP 185722.2070 2341266.5760 23.24 20+06.74 3170.96 LT...

BY4 POINT DESC. NORTH EAST ELEVATION L STATION OFFSET... U47514 REBAR & CAP 192245.8550 2356912.9870 46.11 199+70.89 38.11 RT...

***** BMU49026 ELEVATION = 41.20 N 180681 E 2345649 L STATION 43+59.00 3231 RIGHT R/R SPIKE IN 18" PINE @ COLLEGE ACRES BAPTIST CH *****

***** BMU47515 ELEVATION = 43.46 N 193083 E 2357701 L STATION 211+05.00 128 RIGHT R/R SPIKE IN 20" BRADFORD PEAR *****

NOTE: DRAWING NOT TO SCALE

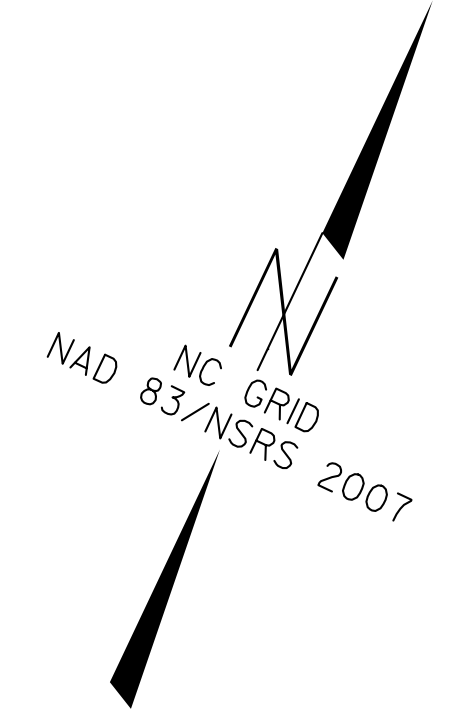
6/2/09

.....
BMU49023 ELEVATION = 23.10
N 186002 E 2341287
L STATION 25+64.00 3428 LEFT
BOLT ON SIGN
.....

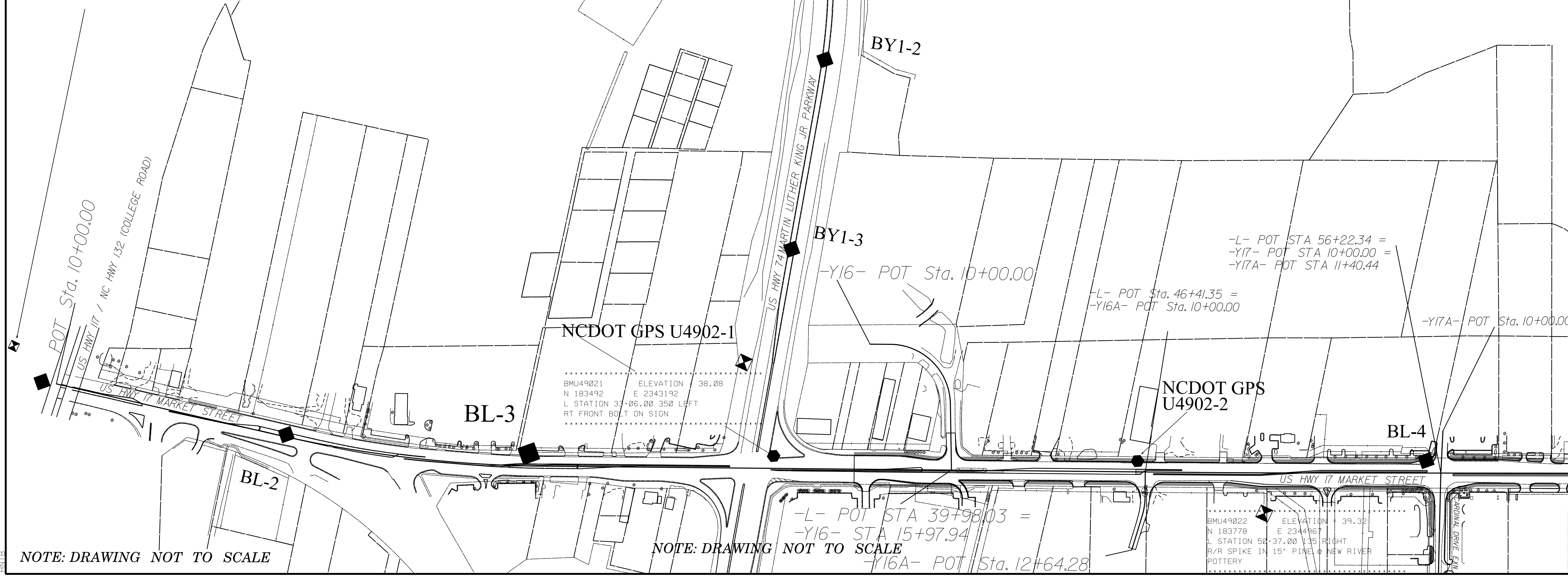
• SURVEY CONTROL SHEET U-4902D

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-1
Location and Surveys	

NCDOT GPS U4902-3



.....
BM1 ELEVATION = 38.67
N 182497 E 2340964
L STATION 10+00.00
N 76°37'2.69" W DIST 201.09
SQUARE CUT IN CONC CURB AT IHOP
.....



-L- POT STA 56+22.34 =
-Y17- POT STA 10+00.00 =
-Y17A- POT STA 11+40.44

-L- POT Sta. 46+41.35 =
-Y16A- POT Sta. 10+00.00

-Y17A- POT Sta. 10+00.00

-Y16- POT Sta. 10+00.00

US HWY 74 MARTIN LUTHER KING JR. PARAWAY

POT Sta. 10+00.00
US HWY 17 / NC HWY 132 (COLLEGE ROAD)

US HWY 17 MARKET STREET

US HWY 17 MARKET STREET

.....
BMU49021 ELEVATION = 38.08
N 183492 E 2343192
L STATION 33+06.00 350 LEFT
RT FRONT BOLT ON SIGN
.....

NCDOT GPS U4902-2

-L- POT STA 39+98.03 =
-Y16- STA 15+97.94
-Y16A- POT Sta. 12+64.28

.....
BMU49022 ELEVATION = 39.32
N 183778 E 2344967
L STATION 50+37.00 135 RIGHT
R/R SPIKE IN 15" PINE @ NEW RIVER
POTTERY
.....

NOTE: DRAWING NOT TO SCALE

NOTE: DRAWING NOT TO SCALE

6/2/09 12:44 (R:\odds\911\U4902D.LS.1C-1.dgn)

6/2/09

NCDOT GPS U4902-1

BMU49021 ELEVATION = 38.08
 N 183492 E 2343192
 L STATION 33+06.00 350 LEFT
 RT FRONT BOLT ON SIGN

SURVEY CONTROL SHEET U-4902D

NCDOT GPS U4902-2

BL-4

BL-5

-Y18- POT Sta. 10+00.00

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-2
Location and Surveys	
-Y19- POT Sta. 10+00.00	

BL-6

US HWY 17 MARKET STREET

ZOOM COURT

US HWY 7 EASTWOOD ROAD

-L- POT STA 39+98.03 =
 -Y16- STA 15+97.94
 -Y16A- POT Sta. 12+64.28

BMU49022 ELEVATION = 39.32
 N 183778 E 2344967
 L STATION 50+37.00 135 RIGHT
 R/R SPIKE IN 15" PINE @ NEW RIVER
 POTTERY

-L- POT STA 65+03.33 =
 -Y18- POT STA 12+62.72

BM6 ELEVATION = 40.72
 N 184629 E 2346675
 L STATION 69+44.00 94 RIGHT
 R/R SPIKE IN 18" OAK ACROSS FROM AUTO
 WHOLESALE

-L- POT STA 76+48.22
 -Y19- POT STA 12+64.46

BY1-4

BY1-5

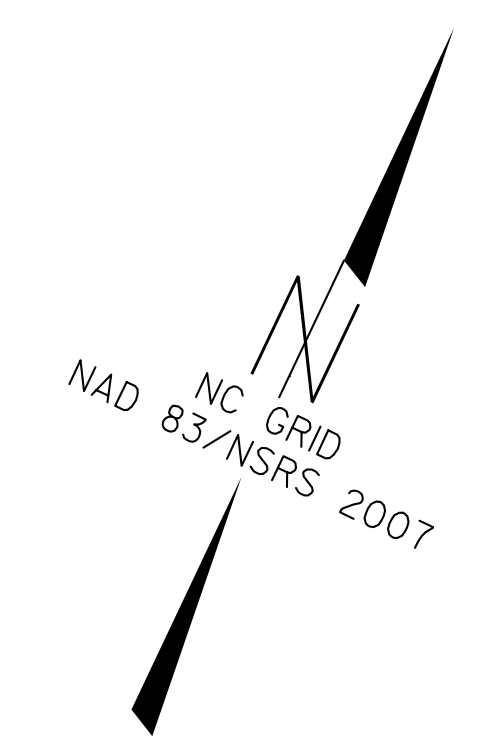
BY2-1

-Y17- POT Sta. 25+46.64

NCDOT GPS U4902-5

NCDOT GPS U4902-5

.....
 BMU49026 ELEVATION = 41.20
 N 180681 E 2345649
 L STATION 43+59.00 3231 RIGHT
 R/R SPIKE IN 18" PINE @ COLLEGE ACRES
 BAPTIST CH

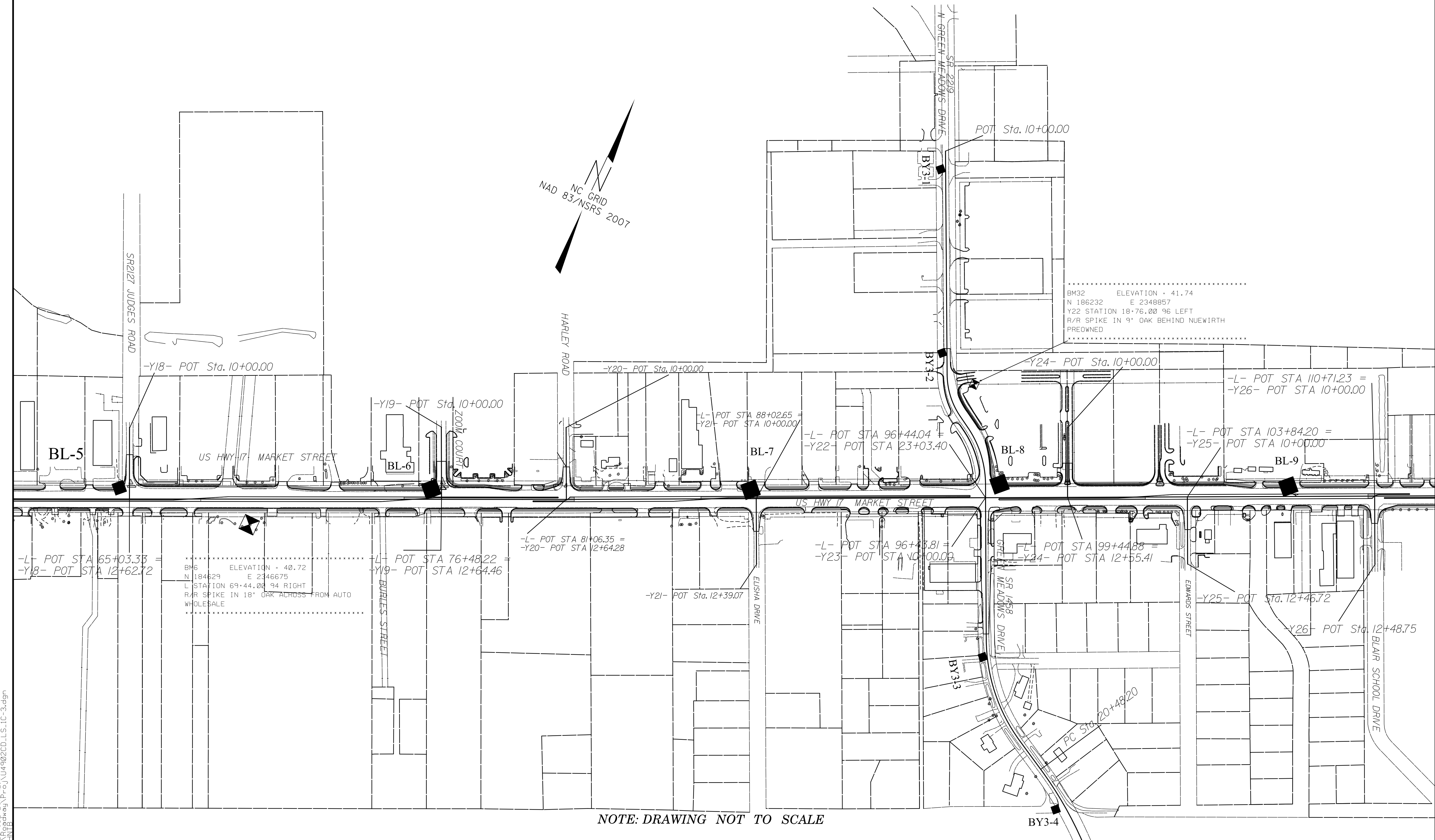


NOTE: DRAWING NOT TO SCALE

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SURVEY CONTROL SHEET U-4902D

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-3
Location and Surveys	



.....
 BM32 ELEVATION = 41.74
 N 186232 E 2348857
 Y22 STATION 18+76.00 '96 LEFT
 R/R SPIKE IN 9' OAK BEHIND NUEWIRTH
 PREOWNED

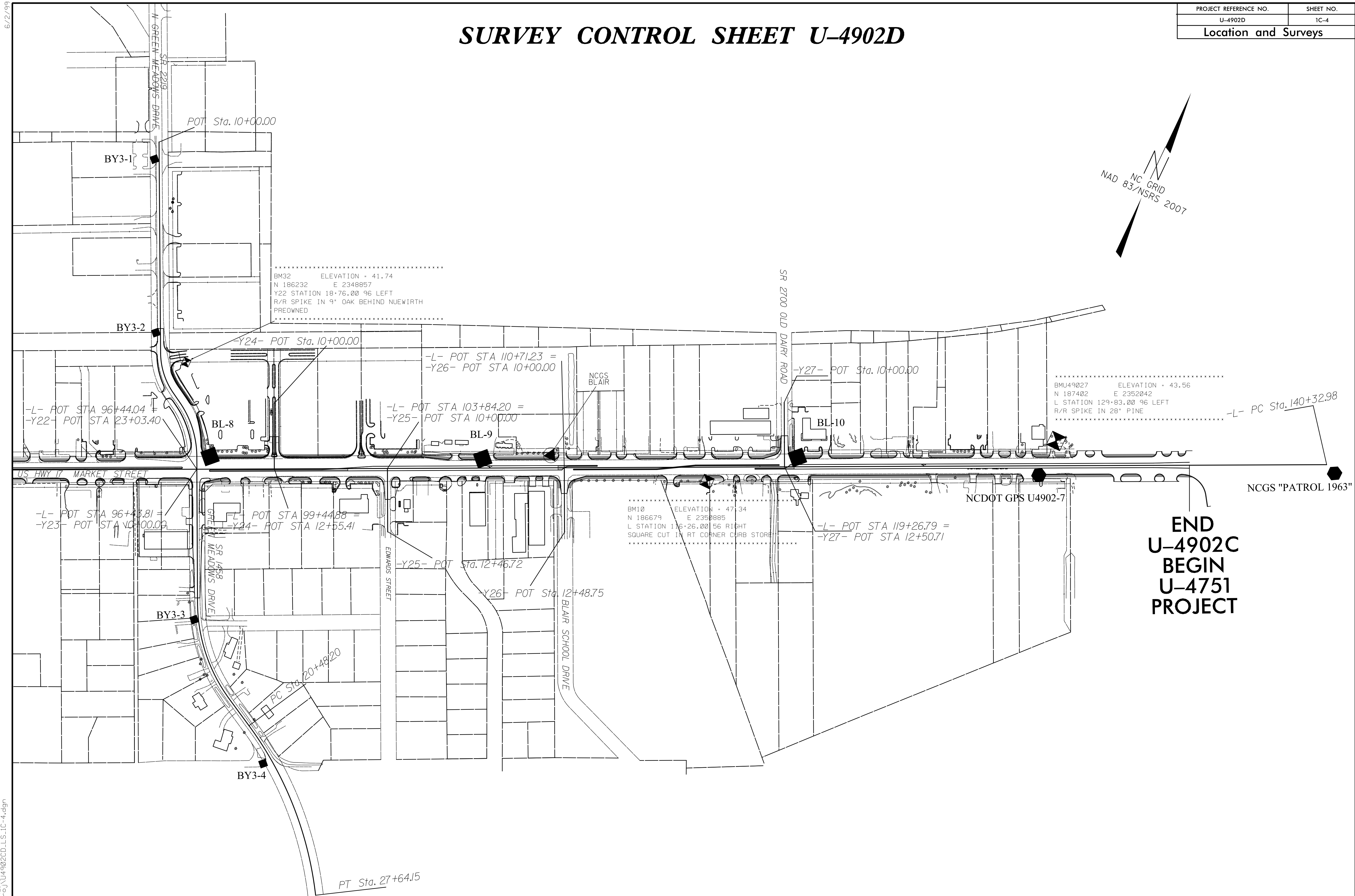
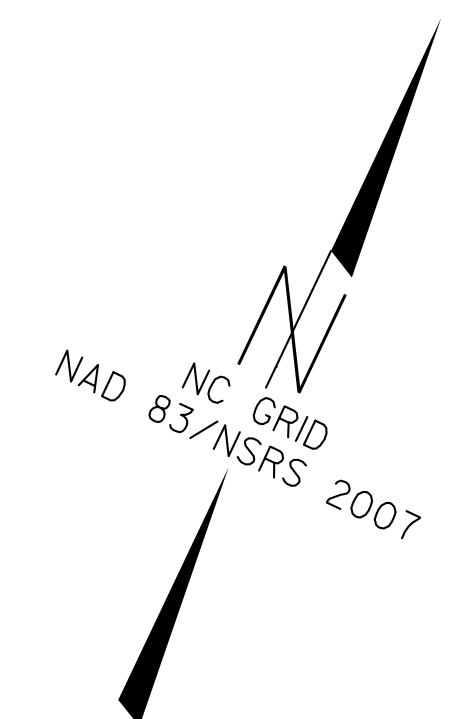
.....
 BM6 ELEVATION = 40.72
 N 184629 E 2346675
 L STATION 69+44.00 '94 RIGHT
 R/R SPIKE IN 18' OAK ACROSS FROM AUTO
 WHOLESALE

6/2/99

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SURVEY CONTROL SHEET U-4902D

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-4
Location and Surveys	



.....
BM32 ELEVATION = 41.74
N 186232 E 2348857
Y22 STATION 18+76.00 96 LEFT
R/R SPIKE IN 9" OAK BEHIND NUEWIRTH
PREOWNED
.....

.....
BMU49027 ELEVATION = 43.56
N 187402 E 2352042
L STATION 129+83.00 96 LEFT
R/R SPIKE IN 28" PINE
.....

.....
BM10 ELEVATION = 47.34
N 186679 E 2350885
L STATION 116+26.00 56 RIGHT
SQUARE CUT IN RT CORNER CURB STORE
.....

**END
U-4902C
BEGIN
U-4751
PROJECT**

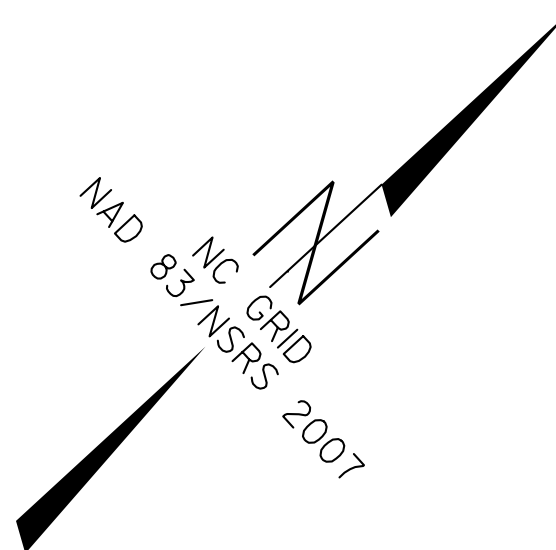
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PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-5
Location and Surveys	

SURVEY CONTROL SHEET U-4902D



.....
 BMU47514 ELEVATION = 47.96
 N 192408 E 2356715
 L STATION 199+68.00 218 LEFT
 R/R SPIKE IN 30' OAK

-L- POC Sta. 208+75.01=
 -Y28A- POT Sta. 10+00.00

NCDOT GPS
 U4751-4
 PC Sta. 198+61.71

**END
 U-4751
 BEGIN
 U-4902D
 PROJECT**

END CONSTRUCTION
 -Y28A- POT Sta. 11+25.00
 -Y28A- POT Sta. 11+30.00

.....
 BMU47515 ELEVATION = 43.46
 N 193083 E 2357701
 L STATION 211+05.00 128 RIGHT
 R/R SPIKE IN 20' BRADFORD PEAR

.....
 BM12 ELEVATION = 40.38
 N 194901 E 2358809
 L STATION 232+36.00 89 RIGHT
 R/R SPIKE IN 30' SYCAMORE

-L- PC Sta. 230+3.66
 END CONSTRUCTION
 -Y30- POT Sta. 12+10.00

-Y30- POT Sta. 12+54.62

BEGIN CONSTRUCTION
 -Y29- POC STA 13+00.00

-Y29- PC Sta. 10+00.00

-Y29- PT Sta. 15+12.25

BEGIN CONSTRUCTION
 -Y31- POT STA 11+25.00

-Y31- POT Sta. 10+00.00

-L- PT Sta. 237+45.09

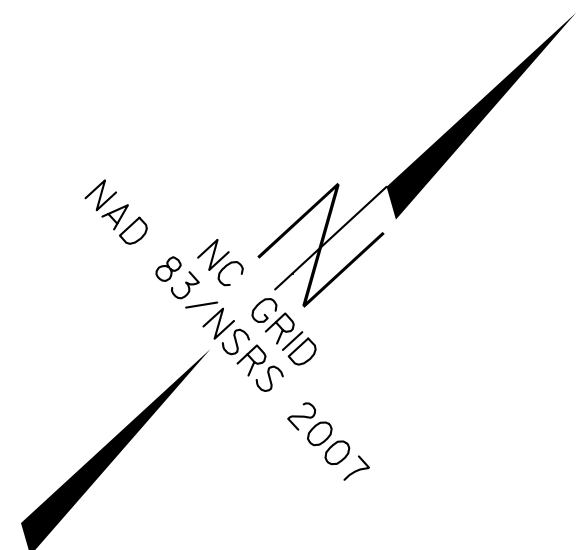
-L- POT STA 244+79.00 =
 -Y31- POT STA 12+50.09

NOTE: DRAWING NOT TO SCALE

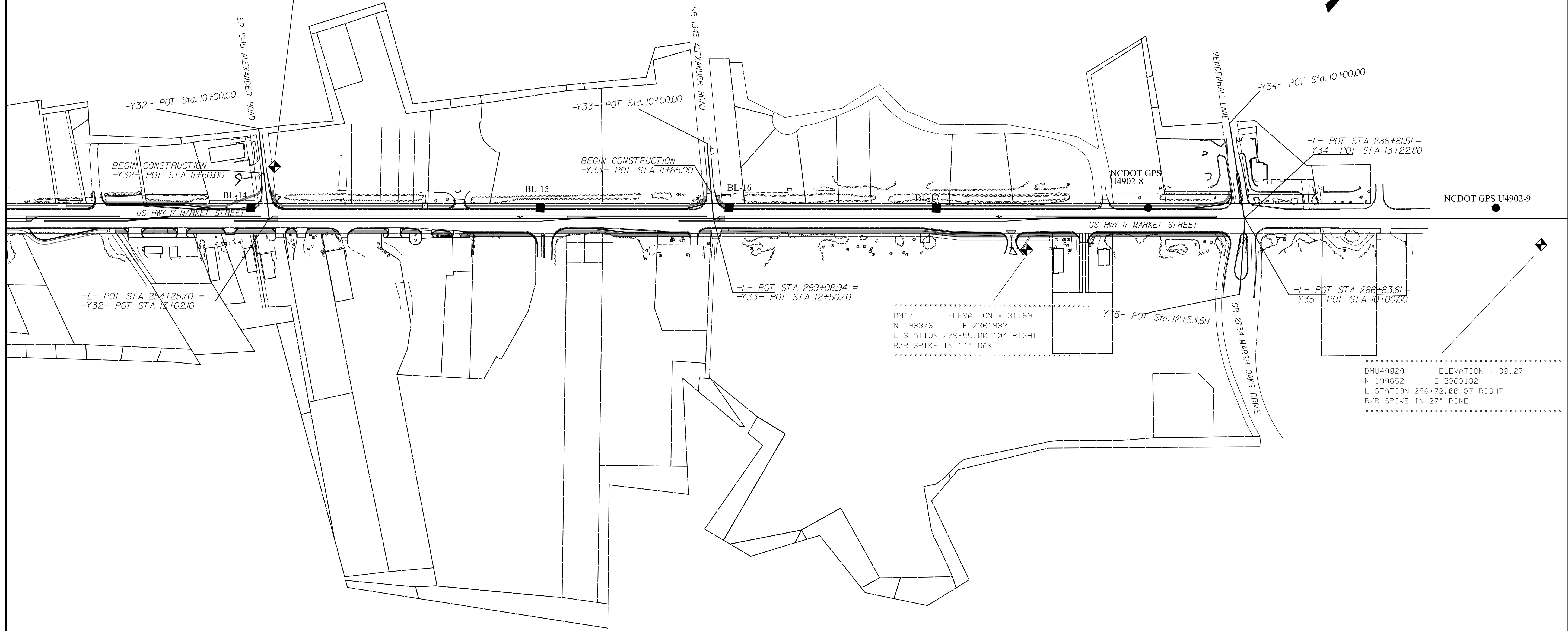
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SURVEY CONTROL SHEET U-4902D

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	1C-6
Location and Surveys	



.....
 BM14 ELEVATION - 36.45
 N 196715 E 2360078
 Y32 STATION 11+32.00 38 LEFT
 R/R SPIKE IN 24" MAGNOLIA



NOTE: DRAWING NOT TO SCALE

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PROPOSED ALIGNMENT CONTROL SHEET U4902D

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	182450.8155	2341159.2065
PC	17+40.97	182609.0777	2341883.0747
PT	26+43.20	182895.7052	2342736.6952
PC	47+98.71	183799.4666	2344693.5863
PT	51+36.10	183942.2204	2344999.2936
PC	79+44.98	185141.3963	2347539.3308
PT	81+51.85	185230.1957	2347726.1685
PC	140+32.98	187768.4571	2353031.3501
PT	144+65.30	188032.2767	2353369.5866
PC	198+61.71	192186.6004	2356813.8393
PT	200+79.45	192353.2082	2356954.0227
PC	205+64.96	192722.4303	2357269.2906
PT	211+98.60	193232.2181	2357644.6919
PC	230+13.66	194767.4020	2358613.0170
PT	237+45.09	195347.5451	2359056.8210
POT	317+43.45	201236.1168	2364469.6328

Y28A

TYPE	STATION	NORTH	EAST
POT	10+00.00	192965.1159	2357462.1539
POT	11+30.00	192884.5420	2357564.1728

Y29

TYPE	STATION	NORTH	EAST
PC	10+00.00	195326.7704	2358156.9993
PRC	12+78.57	195228.3238	2358415.3644
PT	15+12.25	195143.5098	2358631.0265
POT	17+10.51	195031.9438	2358794.9228

Y30

TYPE	STATION	NORTH	EAST
POT	10+00.00	195033.6229	2358796.1790
PC	13+53.01	194954.9503	2359140.3090
PT	14+18.41	194940.7915	2359204.1620
POT	20+08.04	194816.9154	2359780.6278

Y31

TYPE	STATION	NORTH	EAST
POT	10+00.00	196021.1098	2359341.8747
POT	12+50.09	195887.9427	2359553.5578

Y32

TYPE	STATION	NORTH	EAST
POT	10+00.00	196761.9489	2359949.4159
POT	13+02.10	196584.8471	2360194.1567

Y33

TYPE	STATION	NORTH	EAST
POT	10+00.00	197830.0291	2360999.4716
POT	12+50.70	197676.8399	2361197.9233

Y34

TYPE	STATION	NORTH	EAST
POT	10+00.00	199160.9362	2362128.9319
POT	13+22.80	198981.8506	2362397.4973

Y35

TYPE	STATION	NORTH	EAST
POT	10+00.00	198983.3955	2362398.9173
POT	12+53.69	198798.6045	2362572.7295

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/09

REVISIONS

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RIGHT OF WAY CONTROL SHEET U4902D

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	205+27.74	62.00	192653.86257	2357292.26961
L	205+33.62	-62.00	192738.85950	2357201.79212
L	205+64.96	-62.00	192762.69033	2357222.14056
L	205+64.96	62.00	192682.17024	2357316.44069
L	208+43.76	62.00	192902.85094	2357493.09898
L	209+12.71	57.00	192962.05985	2357530.56040
L	211+98.60	-62.00	193265.29475	2357592.25211
L	211+98.60	57.00	193201.80887	2357692.90271
L	211+98.60	-57.00	193262.62728	2357596.48112
L	227+76.72	-57.00	194597.40347	2358438.39797
L	228+05.41	-57.00	194621.67044	2358453.70448
L	230+13.66	-57.00	194797.81124	2358564.80619
L	230+13.66	62.00	194734.32537	2358665.45679
L	230+13.66	57.00	194736.99284	2358661.22778
L	230+81.88	-57.00	194856.00898	2358602.20353
L	232+65.00	63.00	194938.83697	2358804.70999
L	234+77.64	62.00	195105.96192	2358930.77626
L	235+00.98	-62.00	195202.09473	2358849.05034
L	237+45.09	62.00	195305.58723	2359102.46678
L	237+45.09	-62.00	195389.50299	2359011.17523
L	238+64.33	-62.00	195477.29528	2359091.87446
L	238+64.37	-50.00	195469.20198	2359100.73448
L	241+47.69	-62.00	195685.91134	2359283.63564
L	244+20.00	-62.00	195886.38837	2359467.91537
L	245+38.00	-80.00	195985.44390	2359534.51869
L	245+38.00	-62.00	195973.26258	2359547.77068
L	245+72.00	62.00	195914.37837	2359662.07139
L	246+46.00	106.00	195939.08225	2359744.54392
L	247+00.00	106.00	195978.83825	2359781.08788
L	248+80.00	62.00	196141.13479	2359870.50730
L	253+28.50	-62.00	196555.24617	2360082.73362
L	254+70.00	-62.00	196659.42160	2360178.49233
L	268+55.00	-62.00	197679.08925	2361115.77718
L	269+56.00	-62.00	197753.44769	2361184.12791
L	276+00.00	62.00	198143.65898	2361711.23999
L	277+00.00	72.00	198210.51379	2361786.27621
L	281+86.59	-62.00	198659.43728	2362016.91919
L	282+43.05	-62.00	198701.00482	2362055.12833
L	285+67.00	-62.00	198939.50154	2362274.35599
L	285+75.00	72.00	198854.70816	2362378.42368

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y28A	11+25.00	-27.94	192909.56951	2357577.56801
Y28A	11+25.00	-40.00	192919.03146	2357585.04099

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y29	12+99.93	45.00	195180.49822	2358427.79310
Y29	13+09.54	-45.00	195266.74623	2358455.23311
Y29	15+12.25	-45.00	195180.70921	2358656.34849
Y29	15+12.25	45.00	195106.31043	2358605.70442
Y29	16+06.07	45.00	195053.51375	2358683.26552
Y29	16+11.22	-45.00	195125.01659	2358738.16387

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y30	10+68.00	65.00	194955.10300	2358847.98265
Y30	11+31.00	-75.00	195077.54156	2358940.59906
Y30	12+10.00	-49.24	195034.81895	2359011.87024
Y30	12+10.00	65.00	194923.45640	2358986.41130
Y30	12+10.00	50.00	194938.07914	2358989.75426
Y30	12+10.00	-68.00	195053.11140	2359016.05214

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y31	11+25.23	-30.19	195979.97760	2359463.95321
Y31	11+30.00	29.82	195926.64398	2359436.03189
Y31	11+50.00	-50.00	195983.55917	2359495.46488
Y31	11+77.66	-48.49	195967.55197	2359518.07232

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y32	11+52.30	-30.51	196697.38402	2360090.68185
Y32	12+14.34	29.93	196612.04722	2360105.51995

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y33	11+58.30	-29.17	197756.39689	2361142.60459
Y33	11+68.93	30.86	197702.37762	2361114.33789

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y34	12+13.25	25.63	199021.30400	2362292.13219

ROW CAP & REBAR MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y35	11+12.64	59.01	198860.92045	2362433.10870

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

6/2/09

REVISIONS

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DATE

RIGHT OF WAY CONTROL SHEET U4902D

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	241+74.00	-75.00	195714.07534	2359291.86645
L	241+74.00	-62.00	195705.27772	2359301.43734
L	247+89.00	-62.00	196158.05433	2359717.63242
L	247+89.00	-81.00	196170.91239	2359703.64419
L	251+83.00	62.00	196364.21010	2360075.55950
L	251+83.00	80.00	196352.02878	2360088.81150
L	252+03.00	80.00	196366.75322	2360102.34630
L	252+03.00	62.00	196378.93454	2360089.09430
L	253+78.50	-81.00	196604.91534	2360102.58240
L	254+82.38	76.00	196575.14590	2360288.46901
L	254+82.38	62.00	196584.62009	2360278.16174
L	254+85.00	-85.00	196686.02995	2360171.71032
L	255+03.00	76.00	196590.32706	2360302.42363
L	255+04.21	197.19	196509.20126	2360392.46587
L	255+07.00	-62.00	196686.66210	2360203.53196
L	255+07.00	-85.00	196702.22684	2360186.59860
L	255+18.00	62.00	196610.84451	2360302.26739
L	255+18.00	76.00	196601.37015	2360312.57450
L	257+33.00	62.00	196769.13227	2360447.76648
L	257+42.00	75.00	196766.96065	2360463.42803
L	257+82.00	62.00	196805.20715	2360480.92674
L	257+91.00	75.00	196803.03553	2360496.58829
L	266+71.00	113.00	197425.19489	2361120.09590
L	266+71.00	62.00	197459.70862	2361082.54857
L	267+36.00	113.00	197473.04932	2361164.08399
L	267+36.00	62.00	197507.56306	2361126.53667
L	268+10.00	-62.00	197645.95925	2361085.32388
L	277+90.00	106.00	198253.76463	2361872.21436
L	277+90.00	72.00	198276.77379	2361847.18281
L	278+12.00	-62.00	198383.65383	2361763.41732
L	278+12.00	-72.00	198390.42123	2361756.05510
L	278+38.00	-62.00	198402.79560	2361781.01256
L	278+38.00	-72.00	198409.56300	2361773.65034
L	278+43.00	72.00	198315.79356	2361883.05003
L	278+43.00	106.00	198292.78440	2361908.08158
L	285+67.00	-84.00	198954.38981	2362258.15911
L	285+93.00	-88.00	198976.23855	2362272.80946
L	286+09.73	-87.00	198987.88044	2362284.86904
L	289+22.06	-73.18	199208.46969	2362506.40556
L	289+25.54	-50.00	199195.34878	2362525.83180
L	289+27.00	50.00	199128.74663	2362600.43926
L	289+27.00	83.00	199106.41421	2362624.73459
L	289+51.00	50.00	199146.41596	2362616.68102
L	289+51.00	83.00	199124.08354	2362640.97635

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y29	14+33.00	45.00	195142.39868	2358542.97308
Y29	14+33.00	64.00	195125.26080	2358534.76986
Y29	14+58.00	64.00	195115.31686	2358554.33202
Y29	14+58.00	45.00	195132.04401	2358563.34325
Y29	15+68.00	-45.00	195149.33556	2358702.43803
Y29	15+80.00	-52.00	195148.36958	2358716.29686
Y29	15+80.00	-77.00	195169.03591	2358730.36465
Y29	16+05.00	-77.00	195154.96812	2358751.03098
Y29	16+05.00	-63.00	195143.39497	2358743.15301

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y32	12+04.11	-42.01	196676.32105	2360139.40239

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y33	11+18.99	30.70	197733.01946	2361074.89850

PERMANENT EASEMENT MARKER-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y34	12+41.85	-24.24	199046.92730	2362343.59666

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

6/2/09

REVISIONS

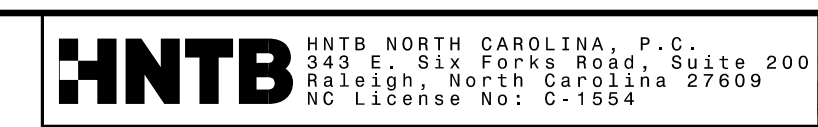
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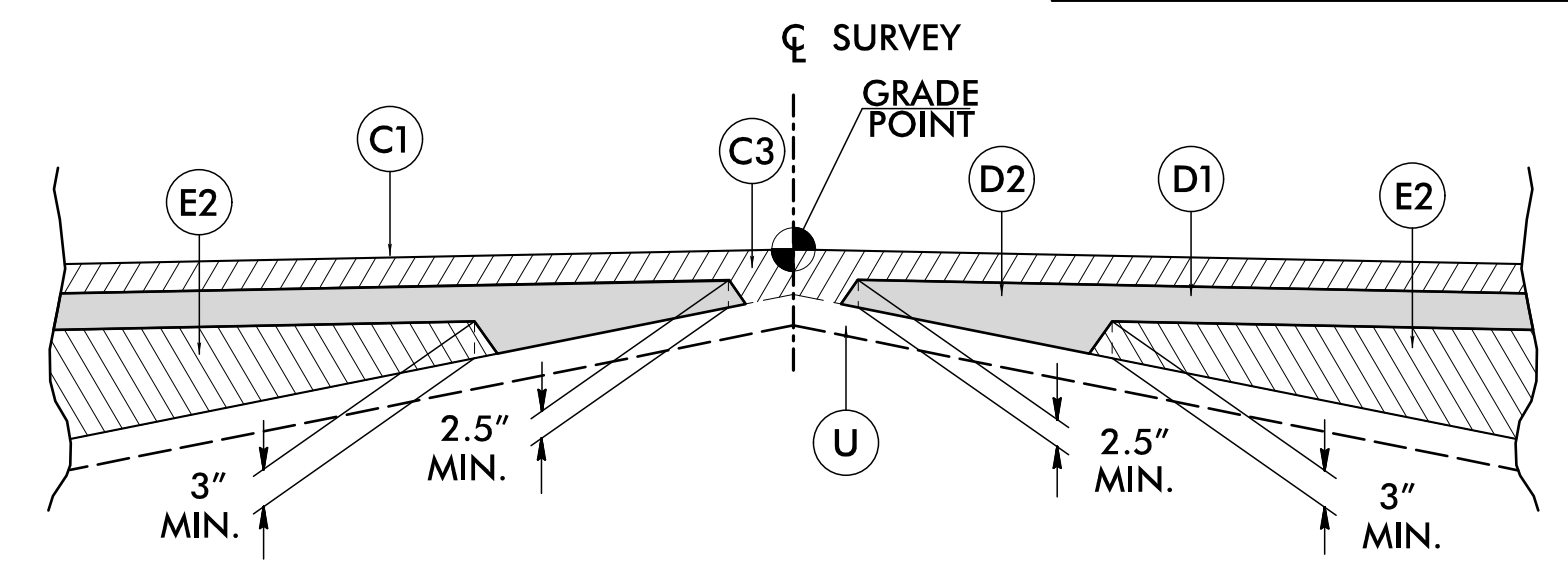
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	1'-6" CONCRETE CURB AND GUTTER.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. PLACED IN TWO LAYERS.	R3	2'-0" CONCRETE CURB AND GUTTER.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2" IN DEPTH OR GREATER THAN 2" IN DEPTH.	R4	8" X 18" CONCRETE CURB.
C4	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R5	9" X 18" CONCRETE CURB.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R6	5" MONOLITHIC CONCRETE ISLAND. (KEYED IN)
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R7	PROP. VAR. DEPTH CONCRETE PAD (10" MIN.)
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	S1	4" CONCRETE SIDEWALK.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.	T	EARTH MATERIAL.
J1	PROP. 6" AGGREGATE BASE COURSE	U	EXISTING PAVEMENT.
J2	PROP. 8" AGGREGATE BASE COURSE	V1	RETAINING WALL.
P	PRIME COAT (.35 GAL/SY)	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL SHOWING METHOD OF WEDGING No. 1. THIS SHEET)
R1	2'-6" CONCRETE CURB AND GUTTER.		

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

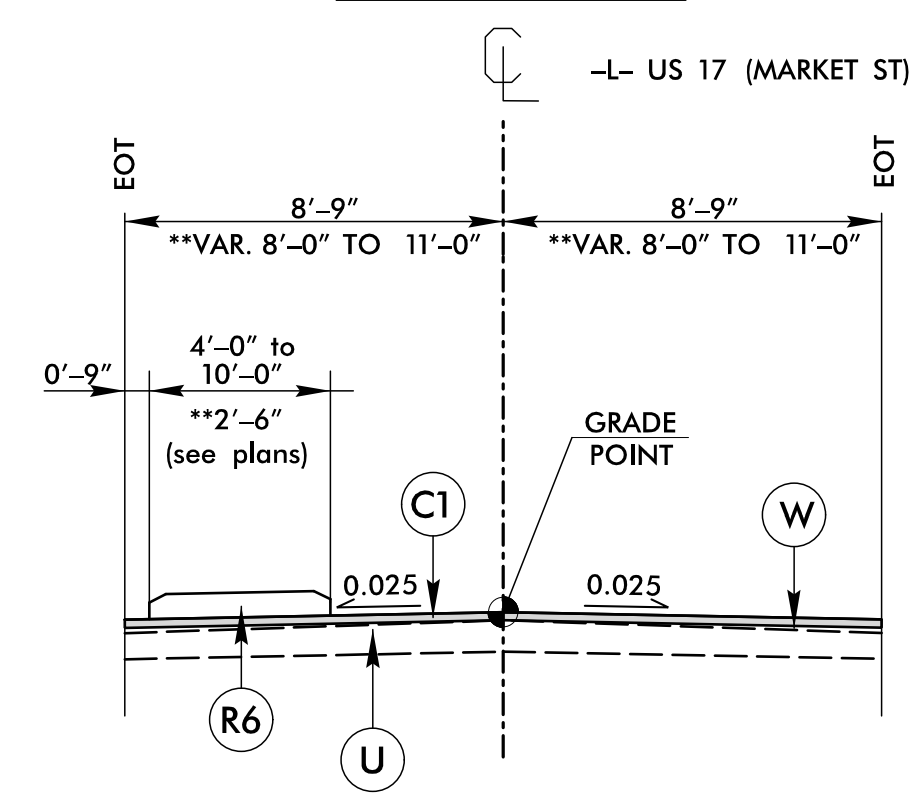


PROJECT REFERENCE NO. U-4902D	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



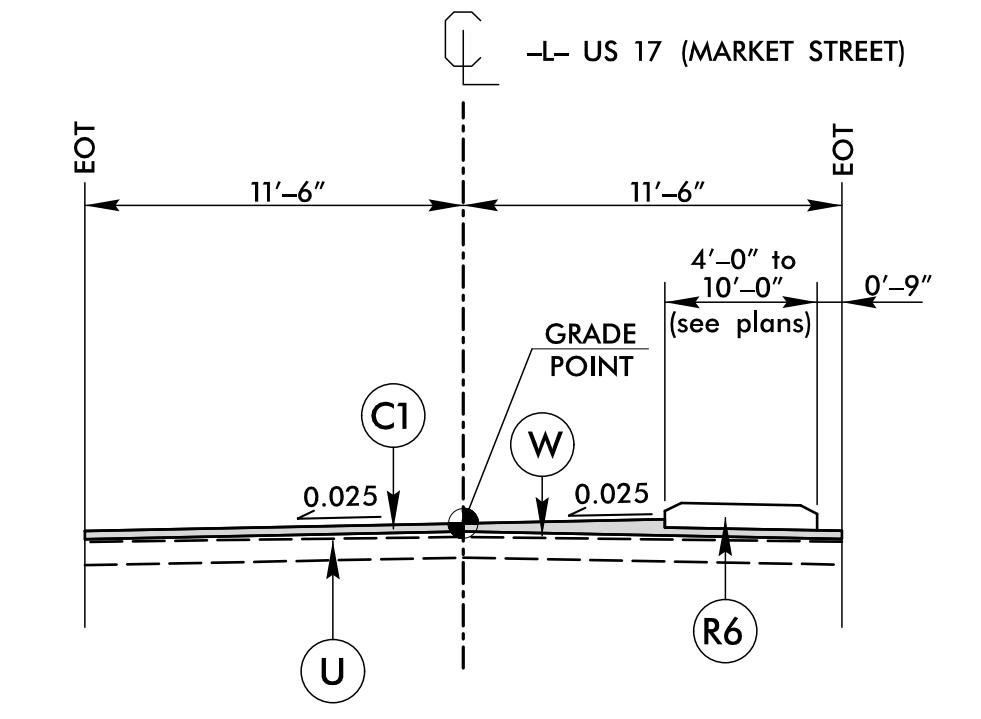
Detail Showing Method of Wedging No. 1

DETAIL 1A



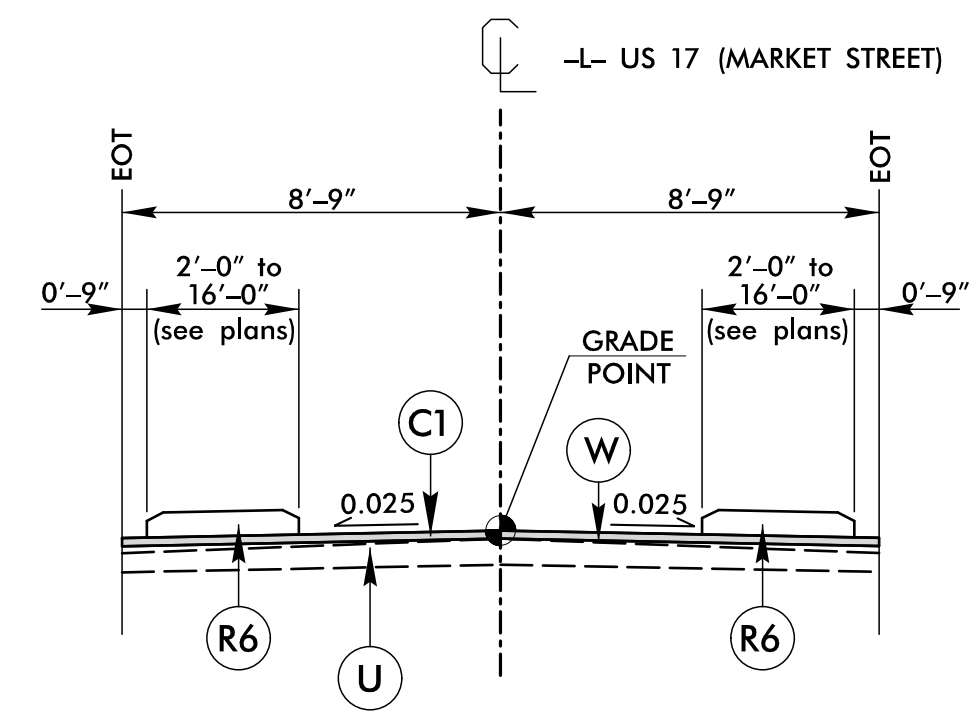
USE DETAIL 1A IN CONJUNCTION WITH TYPICAL 1 AT THE FOLLOWING LOCATIONS
 -L- STA. 218+12.00 TO STA. 219+17.43
 *** -L- STA. 224+35.03 TO STA. 240+55.97
 -L- STA. 279+86.03 TO STA. 285+86.00

DETAIL 1D



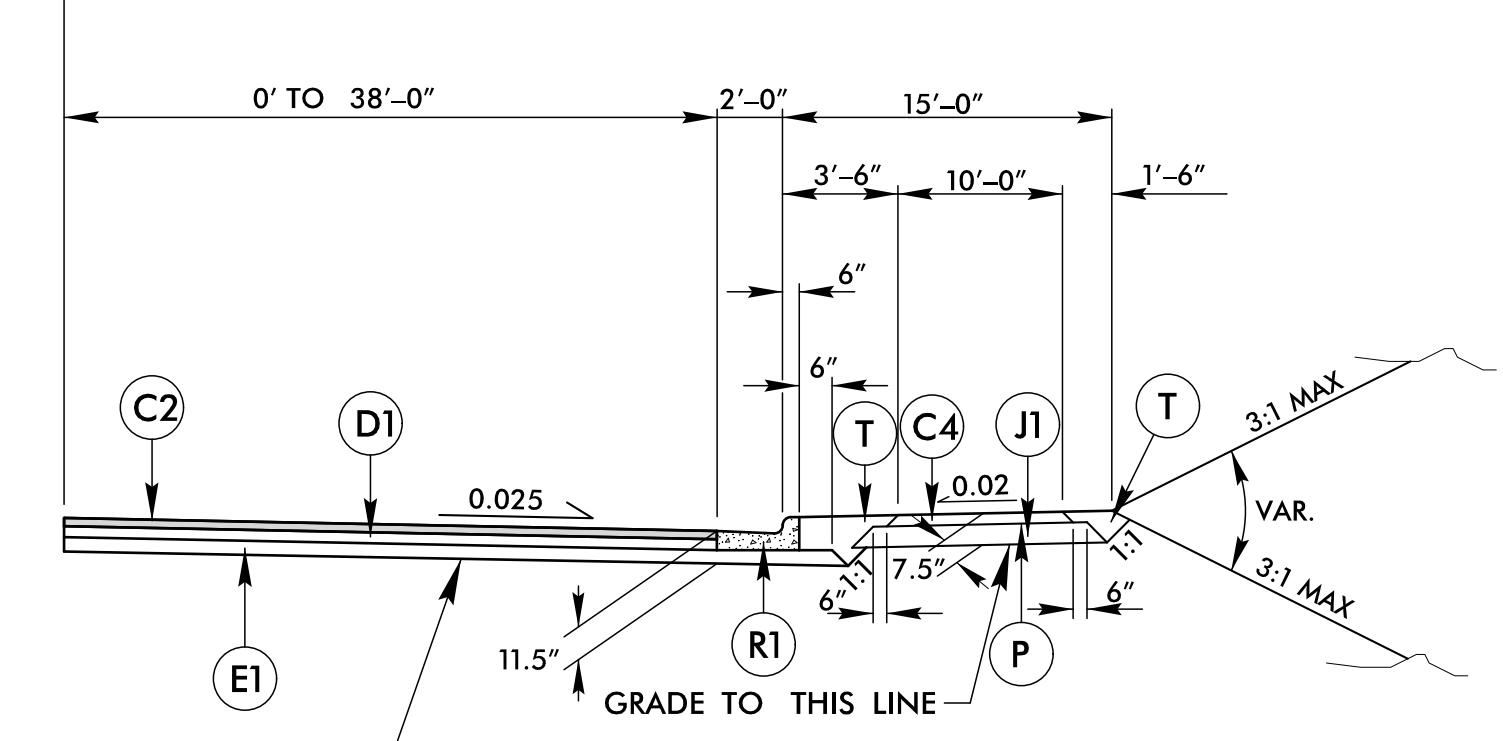
USE DETAIL 1D IN CONJUNCTION WITH TYPICAL 1 AT THE FOLLOWING LOCATIONS
 -L- STA. 201+31.00 TO STA. 204+35.30

DETAIL 1C

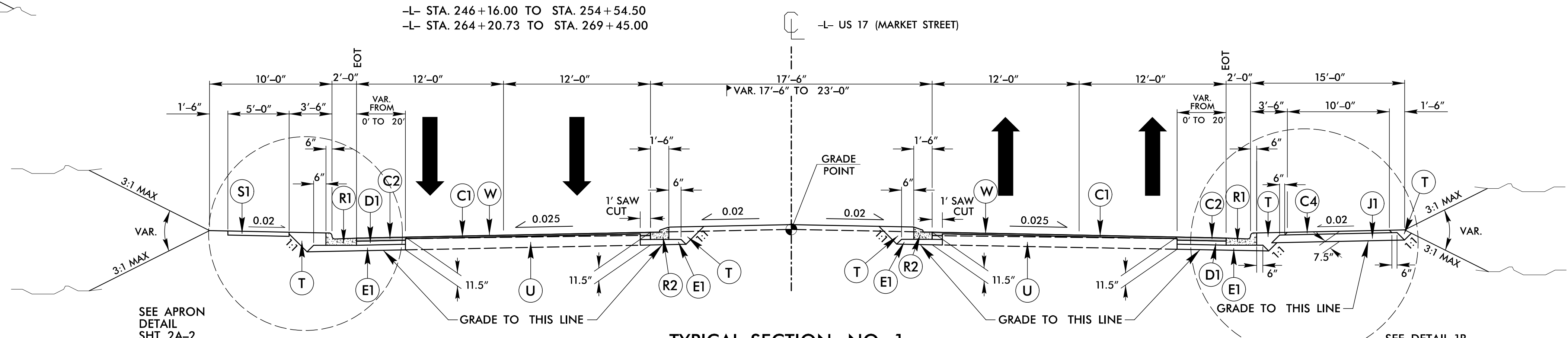


USE DETAIL 1C IN CONJUNCTION WITH TYPICAL 1 AT THE FOLLOWING LOCATIONS
 -L- STA. 208+34.00 TO STA. 216+58.27
 -L- STA. 246+16.00 TO STA. 254+54.50
 -L- STA. 264+20.73 TO STA. 269+45.00

DETAIL 1B



USE DETAIL 1B IN CONJUNCTION WITH TYPICAL 1 AT THE FOLLOWING LOCATION
 -L- STA. 246+16.87 TO STA. 248+56.00 RT



TYPICAL SECTION NO. 1

-L- STA. 201+31.00 TO STA. 206+71.00
 -L- STA. 206+71.00 TO STA. 230+70.00
 -L- STA. 230+70.00 TO STA. 236+21.00
 -L- STA. 236+21.00 TO STA. 286+38+/-

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

NOTE: SAW CUT EXISTING PAVEMENT WITHIN 1' OF PROPOSED CURB & GUTTER

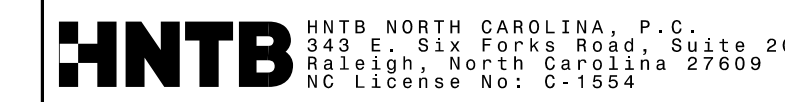
13-AUG-2018 08:14
 (Roadway\Projects\U4902D\RDY_TYP.dgn)
 HNTB

6/2/19

FINAL PAVEMENT SCHEDULE

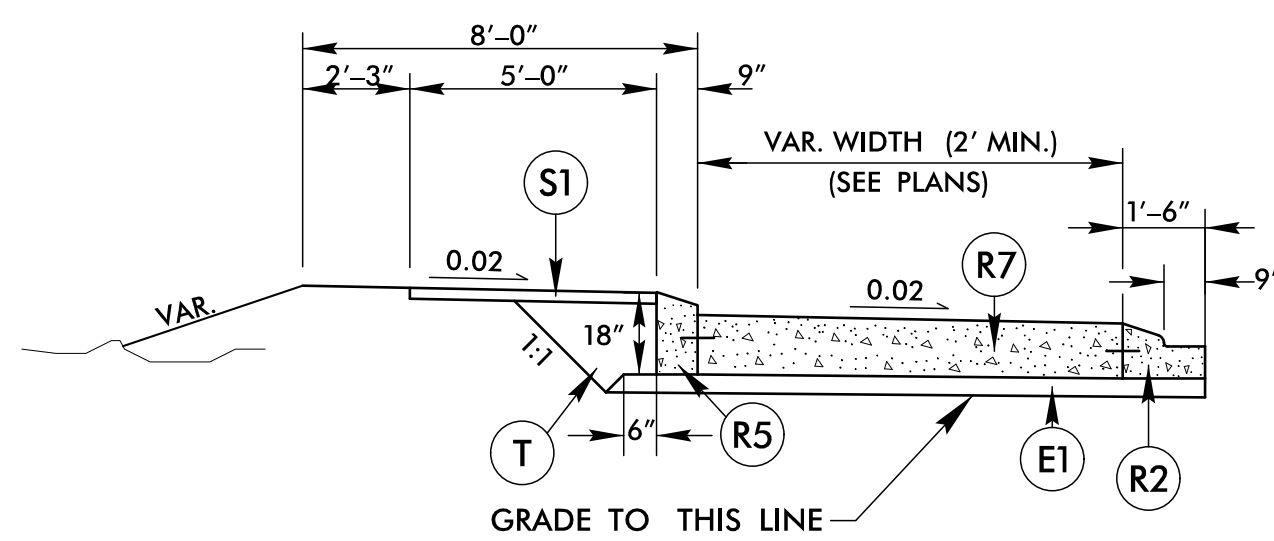
C1	PROP. 1.5" ACSC, TYPE S9.5C
C2	PROP. 3" ACSC, TYPE S9.5C
C3	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C4	PROP. 1.5" ACSC, TYPE S9.5B
D1	PROP. 4" ACIC, TYPE I19.0C
D2	PROP. VAR. DEPTH ACIC, TYPE I19.0C
E1	PROP. 4.5" ACBC, TYPE B25.0C
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
J2	PROP. 8" AGGREGATE BASE COURSE
P	PRIME COAT (.35 GAL/SY)
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	2'-0" CONCRETE CURB AND GUTTER.
R4	8" X 18" CONCRETE CURB.
R5	9" X 18" CONCRETE CURB.
R6	5" MONOLITHIC CONCRETE ISLAND. (KEYED IN)
R7	PROP. VAR. DEPTH CONCRETE PAD (10" MIN.)
S1	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	RETAINING WALL.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL SHOWING METHOD OF WEDGING No. 1 ON SHEET 2A-1)

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



PROJECT REFERENCE NO. U-4902D	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER <i>[Signature]</i> SEAL 044575 9/6/2018	PAVEMENT DESIGN ENGINEER <i>[Signature]</i> SEAL 022896 9/6/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

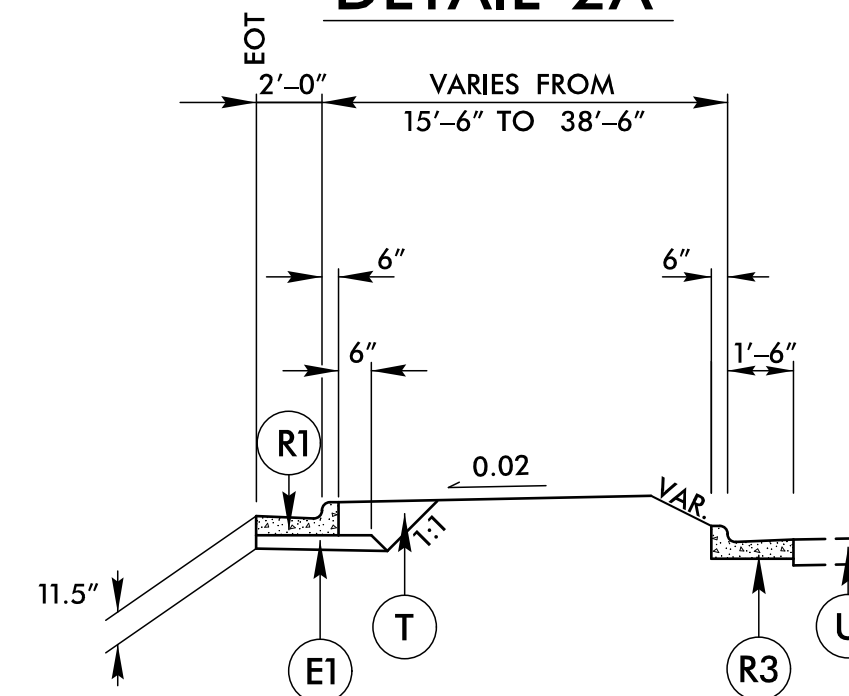
APRON DETAIL



- NOTE:
1. PLACE 18" LONG #8 BARS AT 12" CENTERS BEGINNING 6" FROM LONGITUDINAL JOINT.
 2. PLACE 14" LONG #4 "J" BARS AT 36" CENTERS AT ALL LONGITUDINAL SLAB/CURB JOINTS.

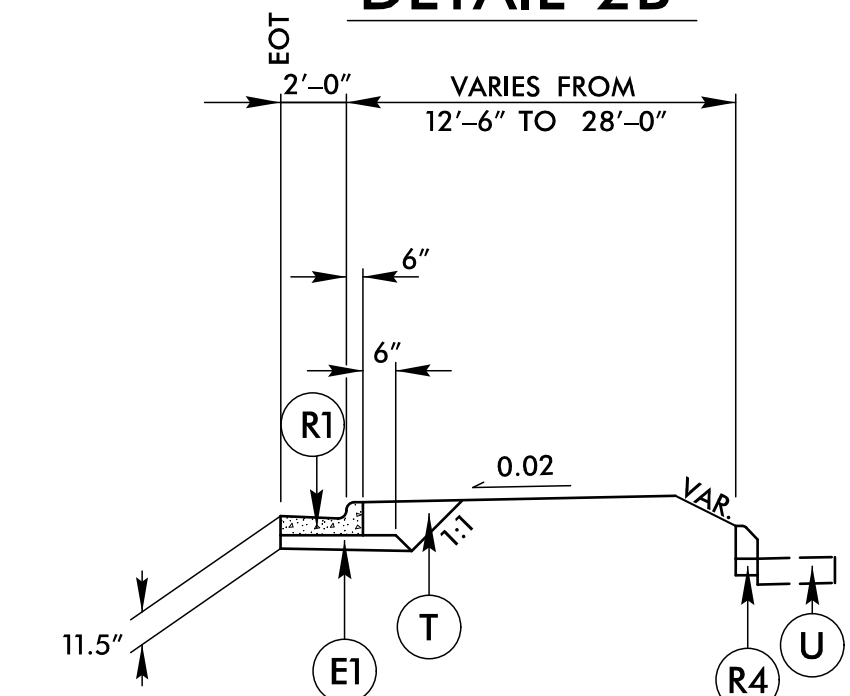
USE APRON DETAIL IN CONJUNCTION WITH TYPICAL 1 (SHEET 2A-1)
SEE PLAN SHEET 8 FOR LOCATION

DETAIL 2A



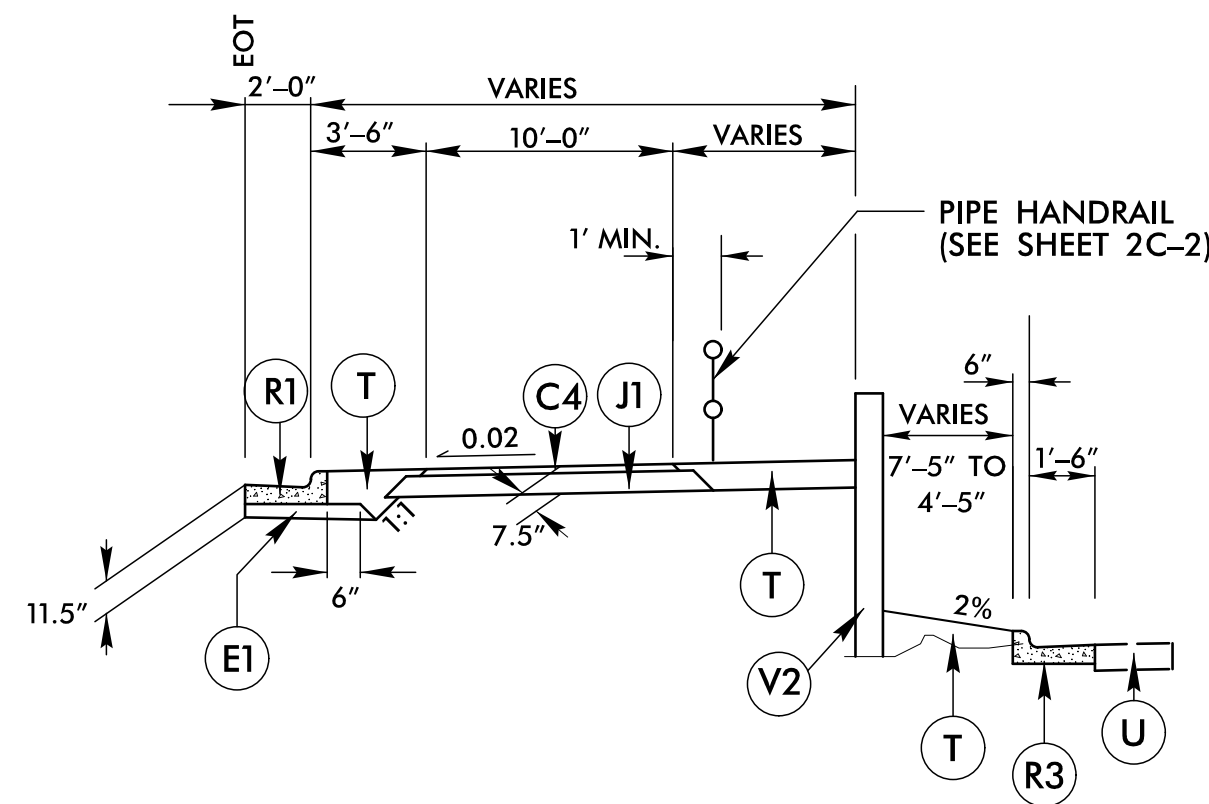
USE DETAIL 2A IN CONJUNCTION WITH TYPICAL 1 (SHEET 2A-1)
SEE PLANS FOR LOCATIONS

DETAIL 2B



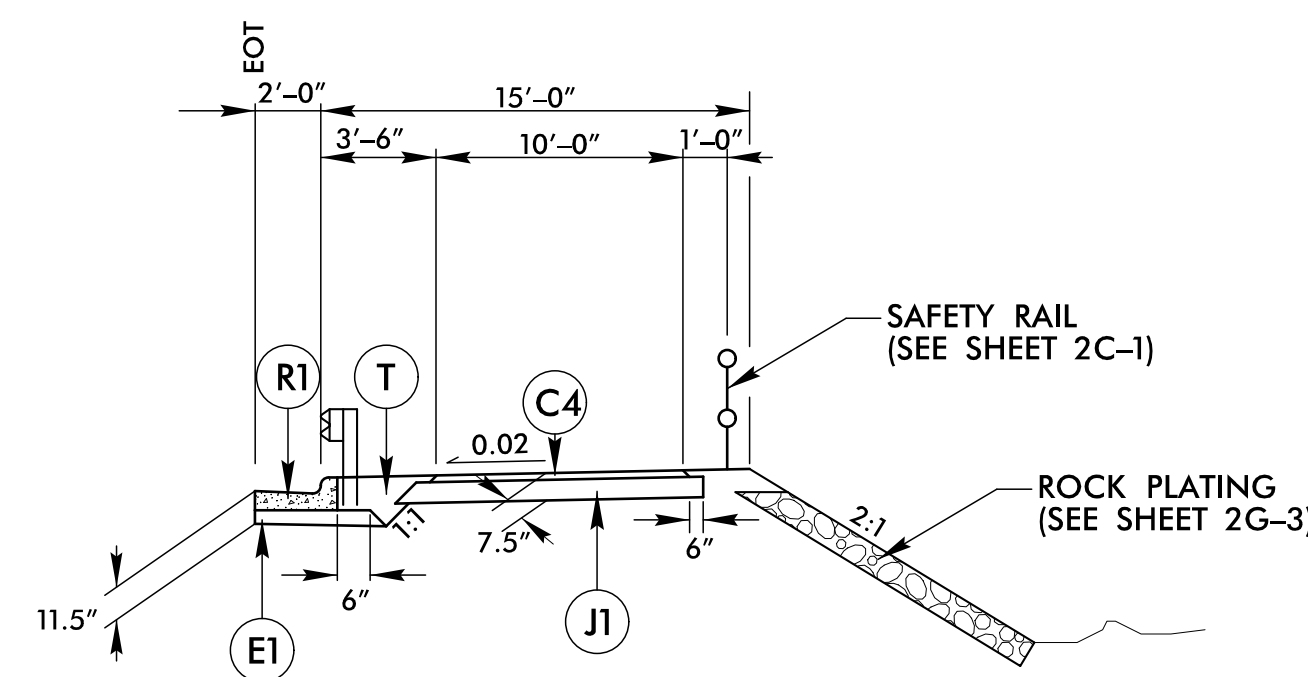
USE DETAIL 2B IN CONJUNCTION WITH TYPICAL 1 (SHEET 2A-1)
SEE PLANS FOR LOCATIONS

DETAIL 2C



USE DETAIL 2C IN CONJUNCTION WITH TYPICAL 1 (SHEET 2A-1)
-L- STA. 230+45.40 TO STA. 232+00.00 RT

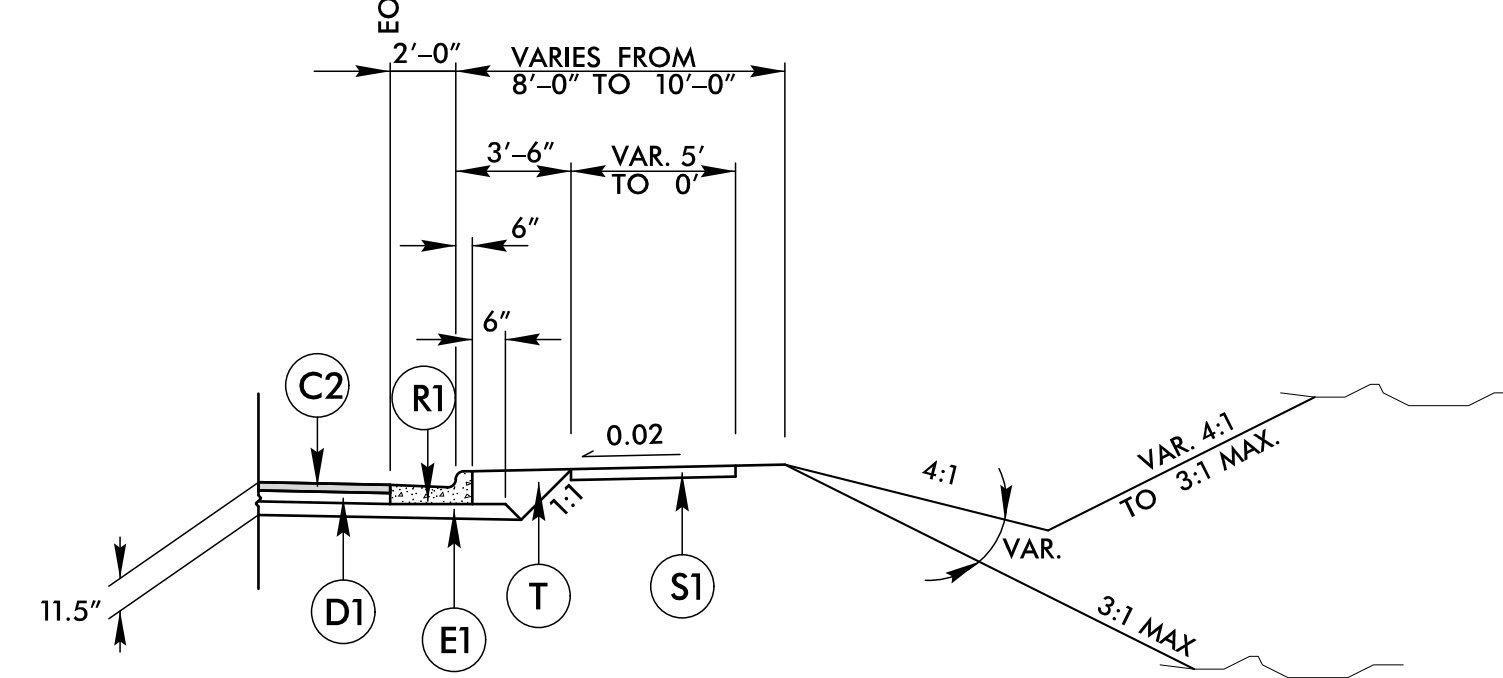
DETAIL 2D



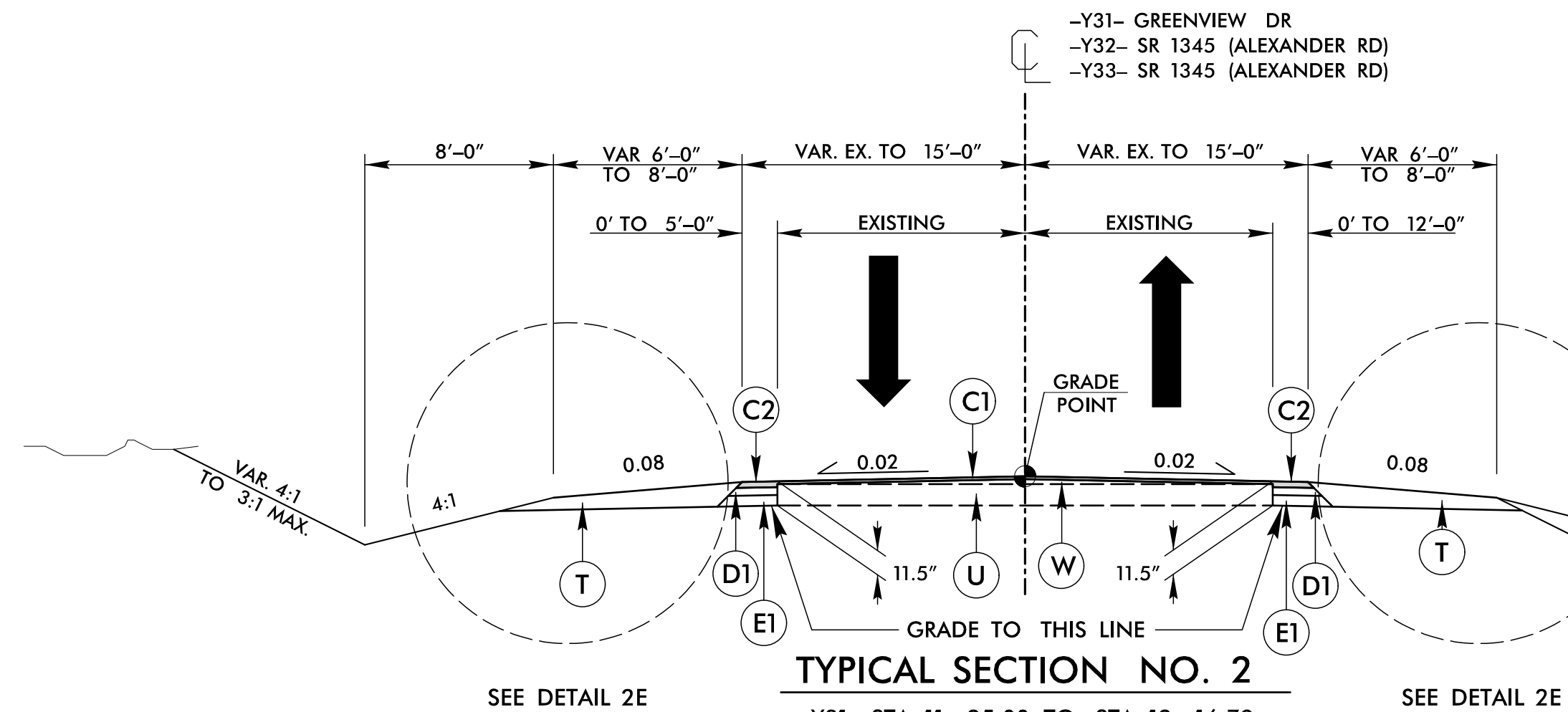
USE DETAIL 2D IN CONJUNCTION WITH TYPICAL 1 (SHEET 2A-1)
-L- STA. 270+75.00 TO STA. 278+75.00

NOTE: USE WOOD RUB RAIL POSTS (SEE SHEET 2C-10) FOR GUARDRAIL ADJACENT TO MULTI-USE PATH.

DETAIL 2E



USE DETAIL 2E IN CONJUNCTION WITH TYPICAL 2
SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 2

-Y31- STA. 11+25.00 TO STA. 12+16.79
-Y32- STA. 11+50.00 TO STA. 12+69.12
-Y33- STA. 11+65.00 TO STA. 12+17.86

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

NOTE: SAW CUT EXISTING PAVEMENT WITHIN 1' OF PROPOSED CURB & GUTTER

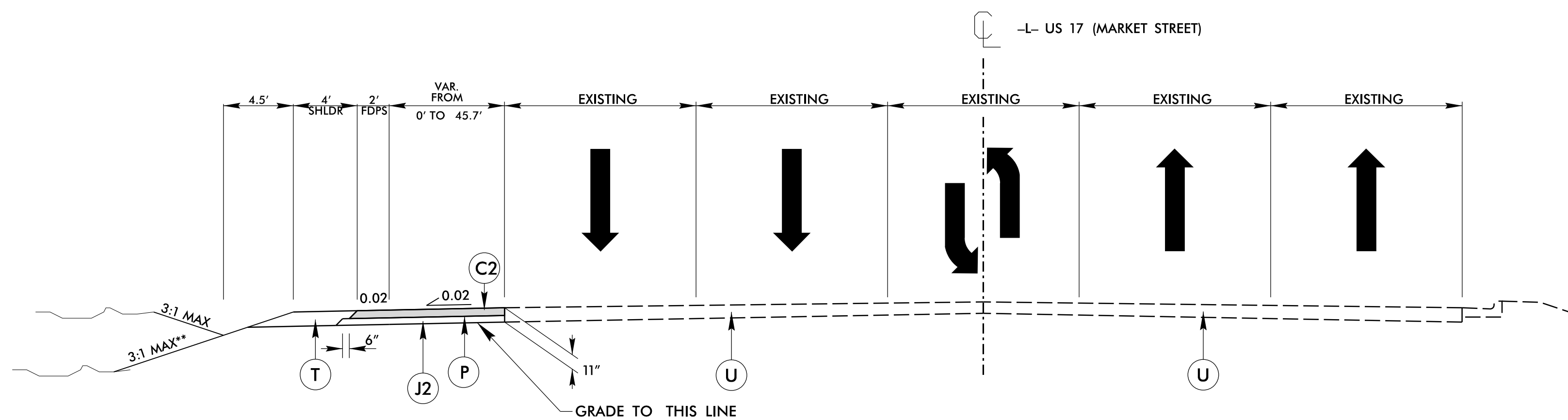
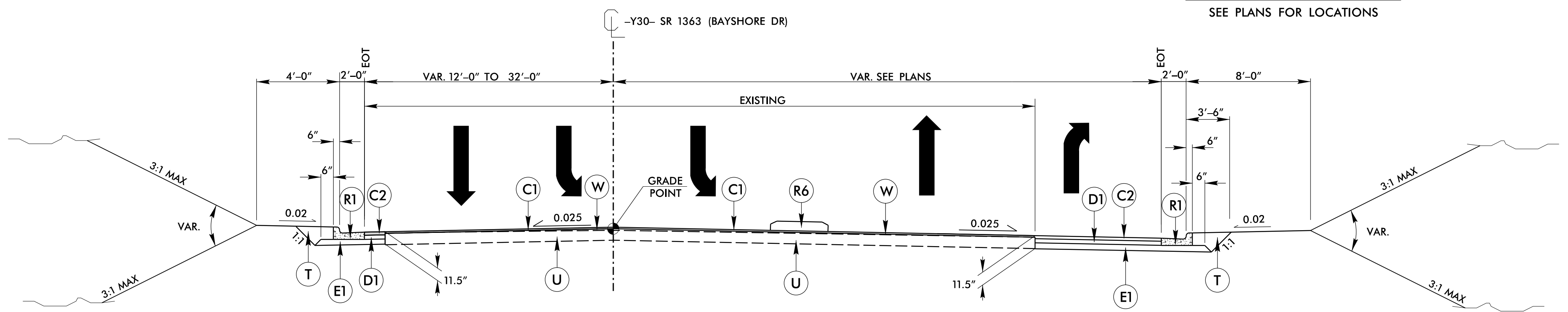
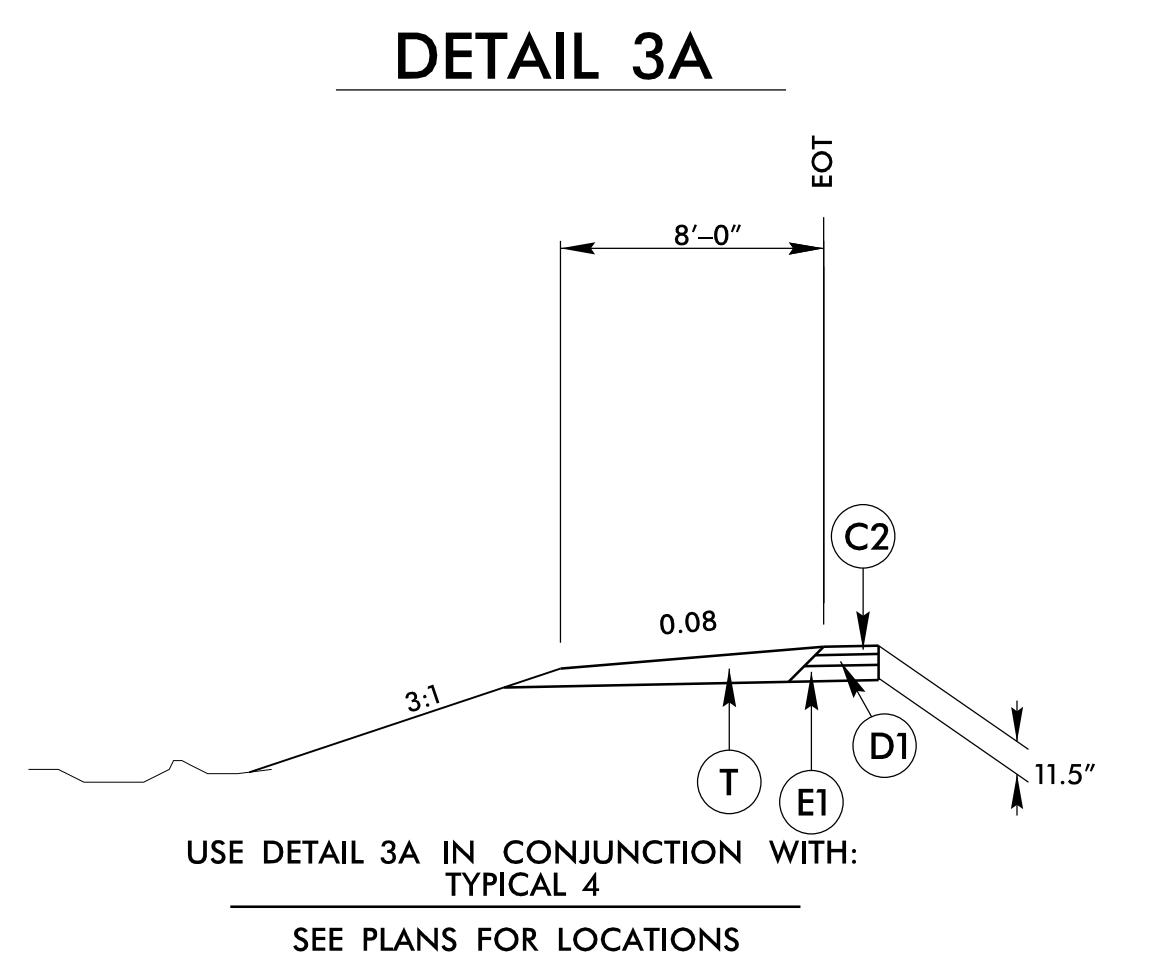
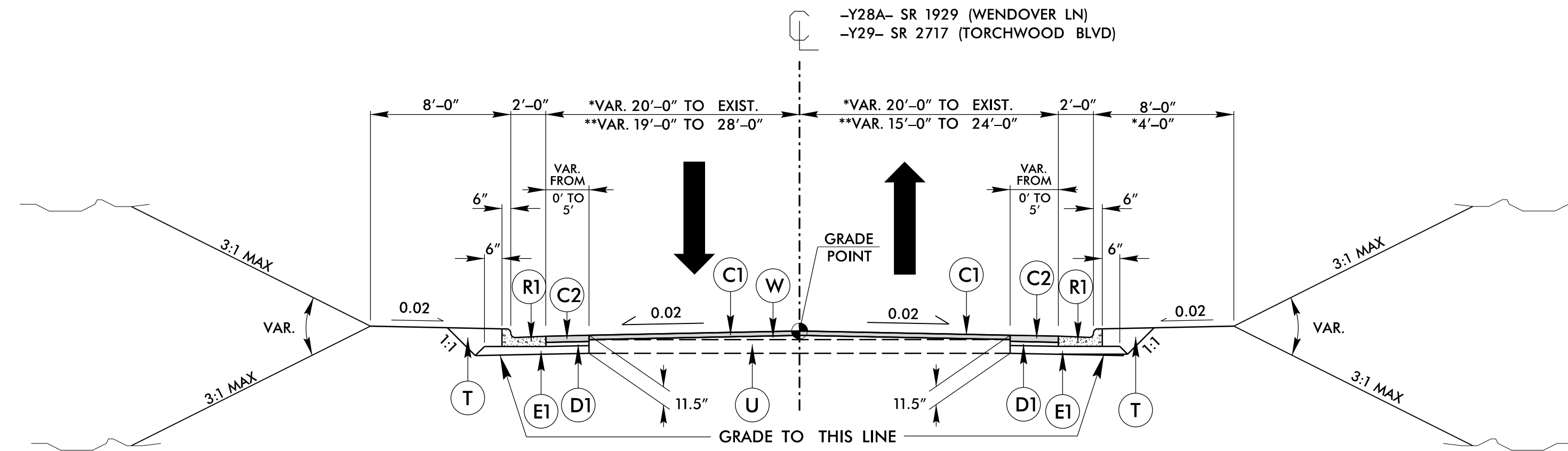
13-AUG-2018 08:14
N:\Roadway\N-POJ\U4902D.RDY_TYP.dgn
HNTB

6/2/2019

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER SEAL 044575 11/4/2020	PAVEMENT DESIGN ENGINEER SEAL 022896 11/4/2020
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FINAL PAVEMENT SCHEDULE	
C1	PROP. 1.5" ACSC, TYPE S9.5C
C2	PROP. 3" ACSC, TYPE S9.5C
C3	PROP. VAR. DEPTH ACSC, TYPE S9.5C
C4	PROP. 1.5" ACSC, TYPE S9.5B
D1	PROP. 4" ACIC, TYPE I19.0C
D2	PROP. VAR. DEPTH ACIC, TYPE I19.0C
E1	PROP. 4.5" ACBC, TYPE B25.0C
E2	PROP. VAR. DEPTH ACBC, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
J2	PROP. 8" AGGREGATE BASE COURSE
P	PRIME COAT (.35 GAL/SY)
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	2'-0" CONCRETE CURB AND GUTTER.
R4	8" X 18" CONCRETE CURB.
R5	9" X 18" CONCRETE CURB.
R6	5" MONOLITHIC CONCRETE ISLAND. (KEYED IN)
R7	PROP. VAR. DEPTH CONCRETE PAD (10" MIN.)
S1	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	RETAINING WALL.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE DETAIL SHOWING METHOD OF WEDGING No. 1 ON SHEET 2A-1)

REVISIONS
CONSTRUCTION REVISION NO. 6: REVISED TYPICAL NO. 4, ADDED DETAIL 3A.



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

NOTE: SEE PLANS FOR SUPERELEVATIONS, TURN LANES, MONOLITHIC ISLANDS, CURB AND GUTTER, AND LANE TAPER LOCATIONS.

NOTE: SAW CUT EXISTING PAVEMENT WITHIN 1' OF PROPOSED CURB & GUTTER

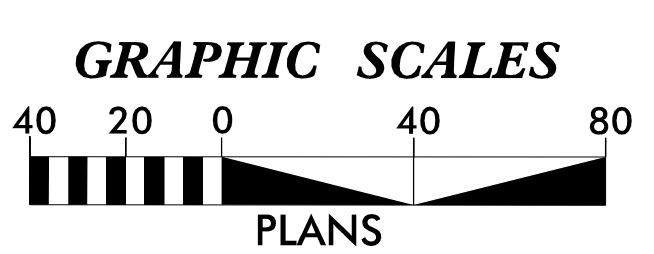
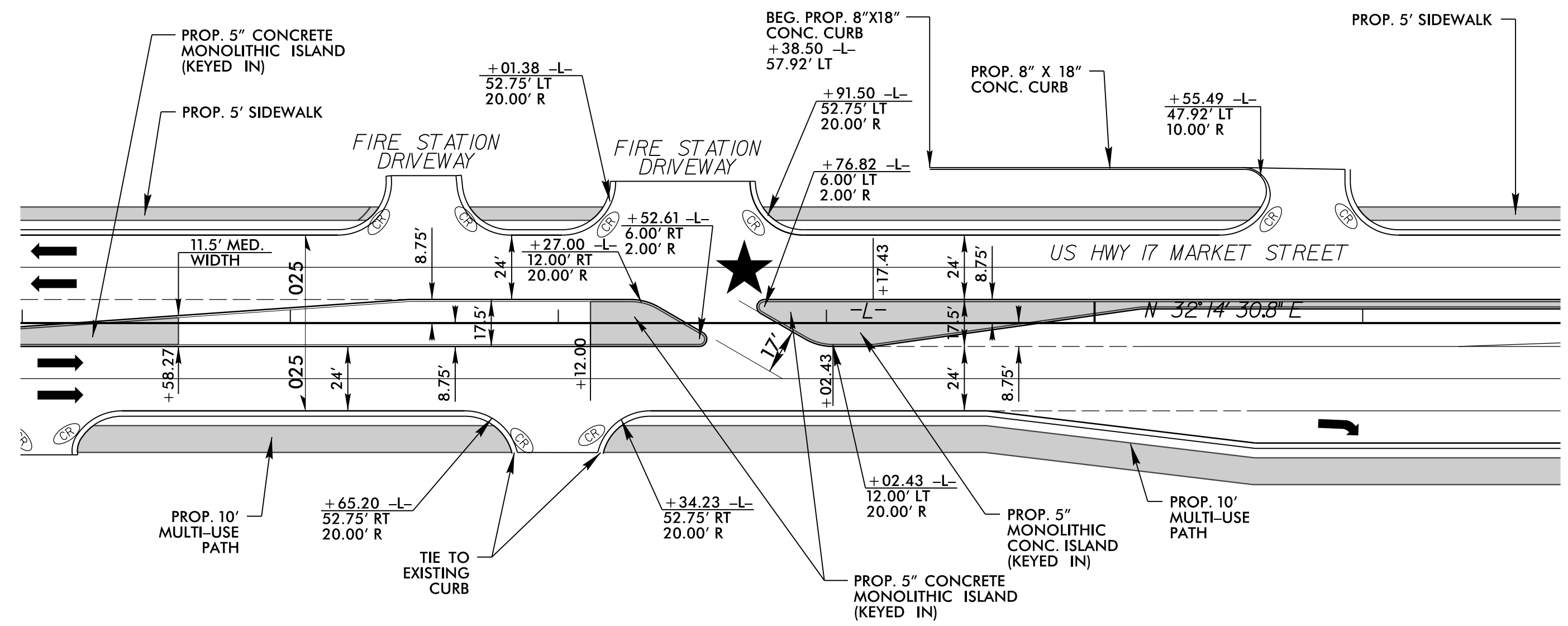
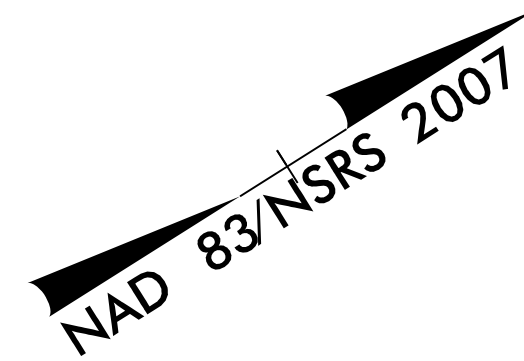
NOTE: USE 2:1 MAX SLOPES FROM STA. 278+00 TO 279+00. SEE SHEETS 2G-1 THRU 2G-2 FOR REINFORCED SLOPE DETAIL.

CP: NOV 2020 09:00
 V:\Projects\2019\U-4902D\RDY_TYP.dgn
 HNTB

5/14/19

EMERGENCY VEHICLE ACCESS DETAIL

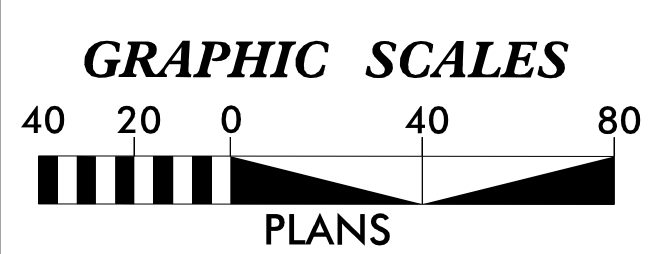
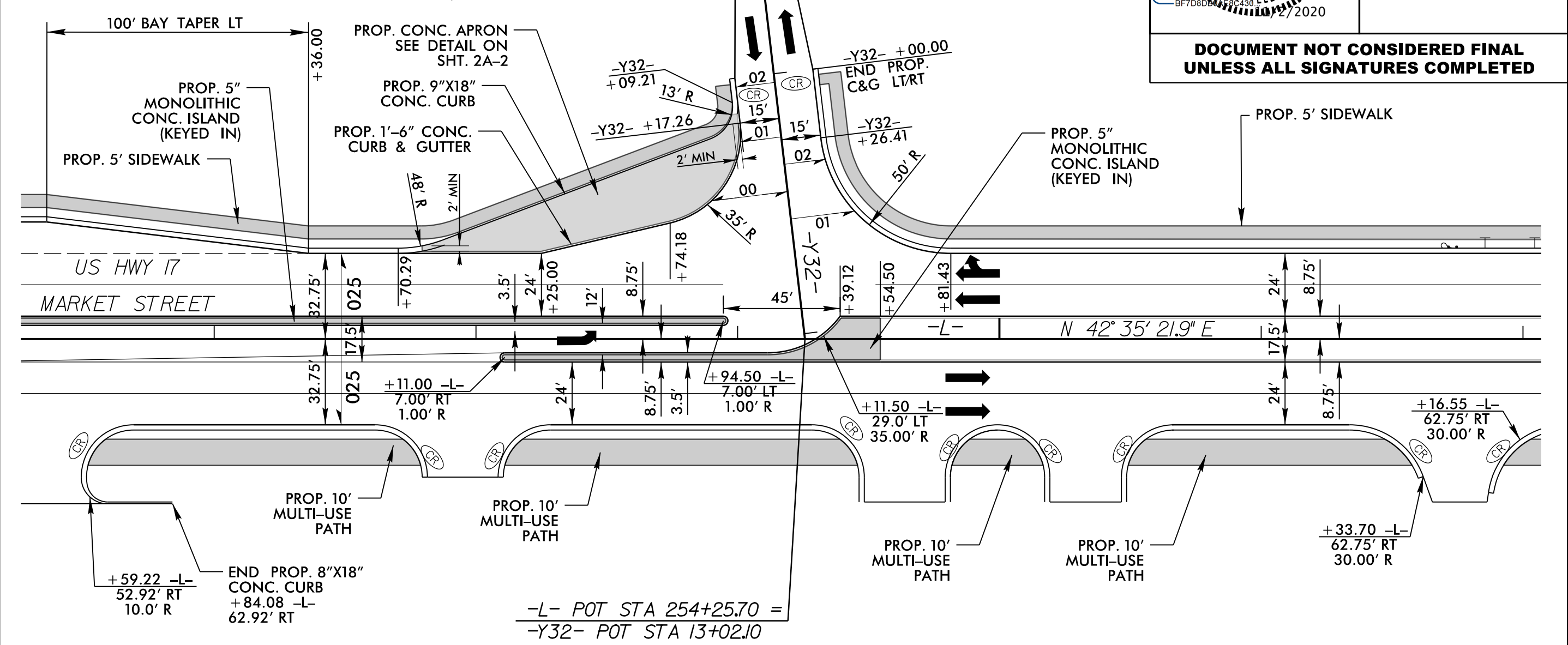
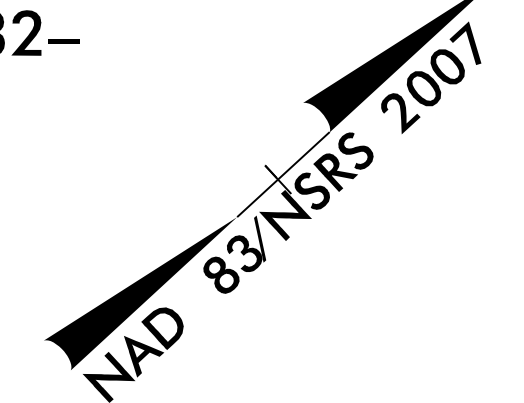
220



FOR -L- PLAN, SEE SHEET 6
FOR -L- PROFILE, SEE SHEETS 12 & 13

INTERSECTION DETAIL -L- AND -Y32-

255



FOR -L- PLAN, SEE SHEET 8
FOR -L- PROFILE, SEE SHEET 13 & 14
FOR -Y32- PLAN, SEE SHEET 8
FOR -Y32- PROFILE, SEE SHEET 16

HNTB
HNTB NORTH CAROLINA, P.C.
345 S. BIRK BEACH ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

PROJECT REFERENCE NO. U-4902D
SHEET NO. 2B-1
RW SHEET NO.

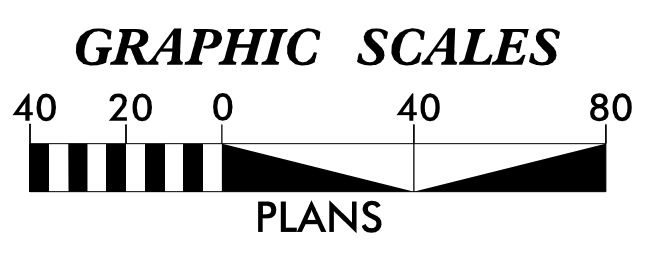
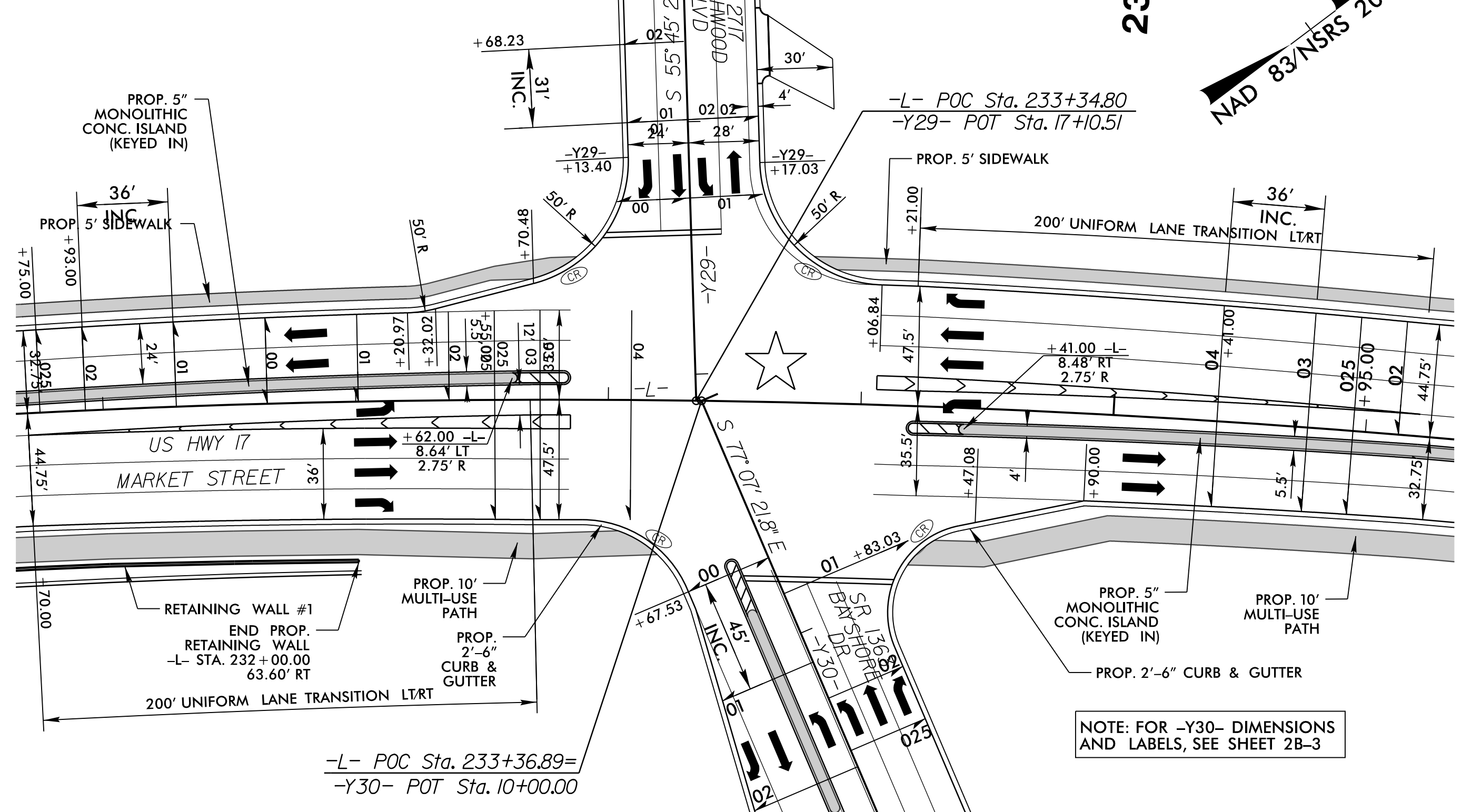
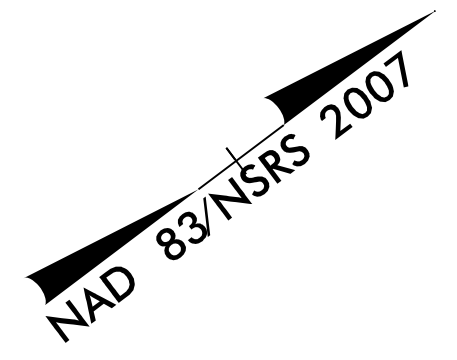
ROADWAY DESIGN ENGINEER

SEAL 044575
NORTH CAROLINA PROFESSIONAL ENGINEER
R. J. FELLER
EXPIRES 12/31/2020

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

INTERSECTION DETAIL -L-, Y29-, AND -Y30-

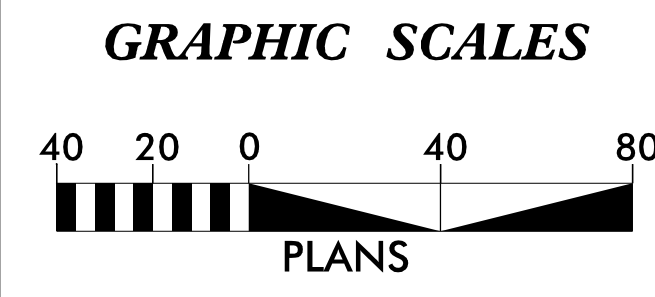
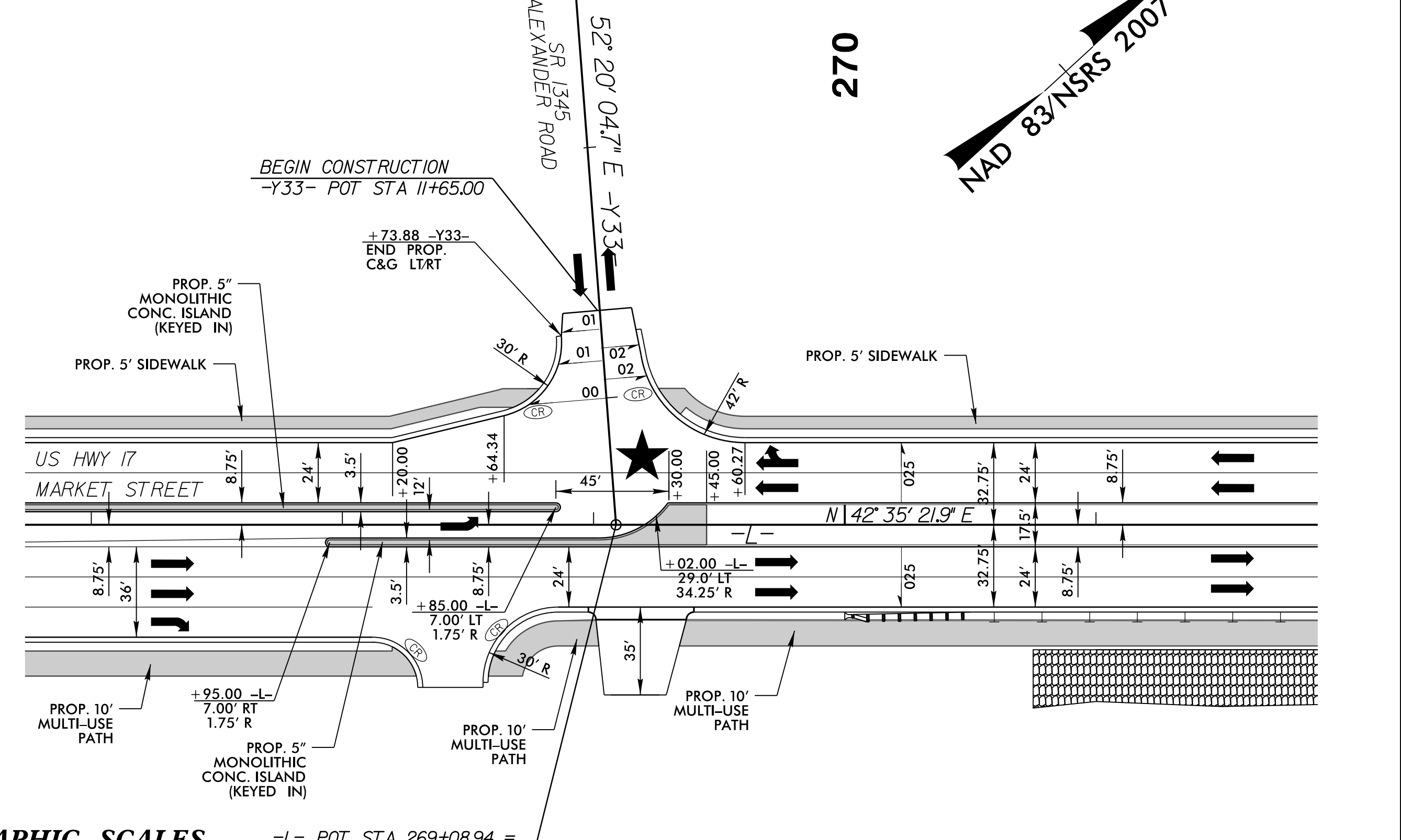
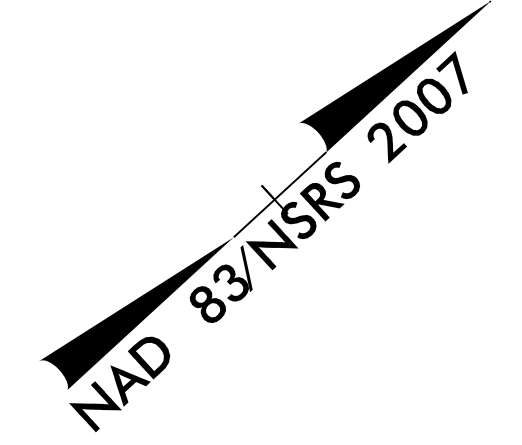
235



FOR -L-, -Y29-, & -Y30- PLAN, SEE SHEET 7
FOR -L- PROFILE, SEE SHEET 13
FOR -Y29- & -Y30- PROFILE, SEE SHEET 15
FOR RETAINING WALL PLANS, SEE SHEETS W-1 THRU W-2

INTERSECTION DETAIL -L- AND -Y33-

270



FOR -L- PLAN, SEE SHEET 9
FOR -L- PROFILE, SEE SHEET 14
FOR -Y33- PLAN, SEE SHEET 9
FOR -Y33- PROFILE, SEE SHEET 16

REVISIONS

CONSTRUCTION REVISION NO. 6: UPDATED PLAN VIEW OF -Y30-

02-NOV-2020 09:12:00 19222020.DWG 2B-1.dgn

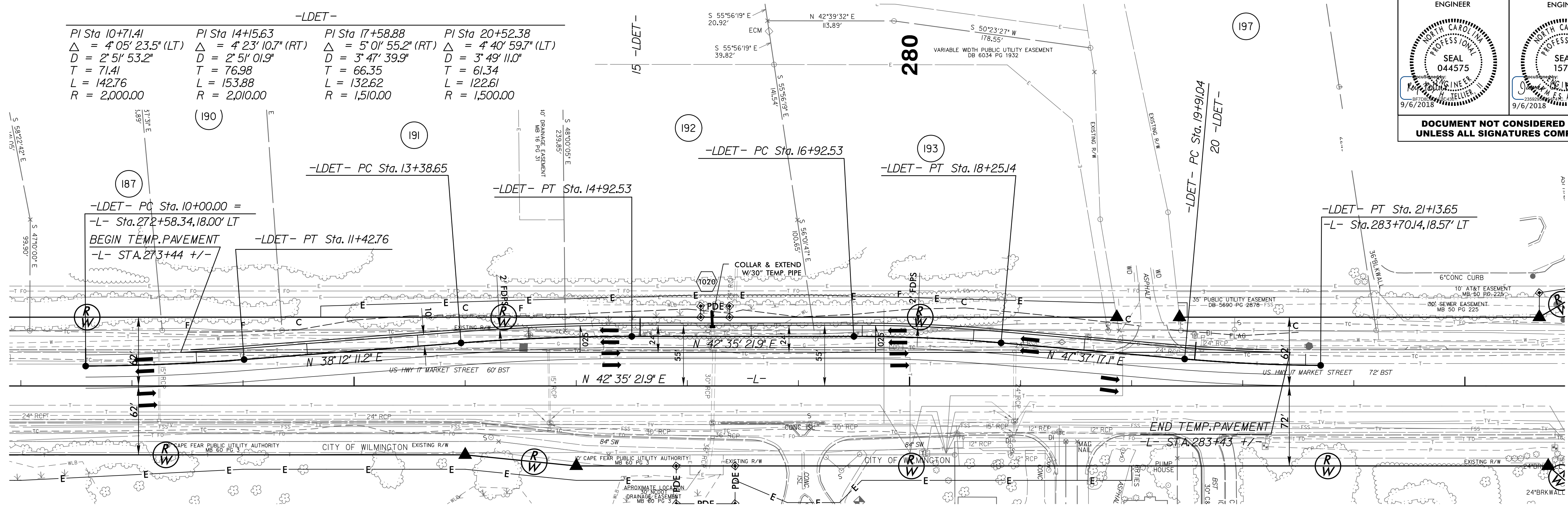
8/17/19

DETAIL OF TEMPORARY WIDENING FROM STA -L- 273+44 TO STA -L- 283+43

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No. C-1554

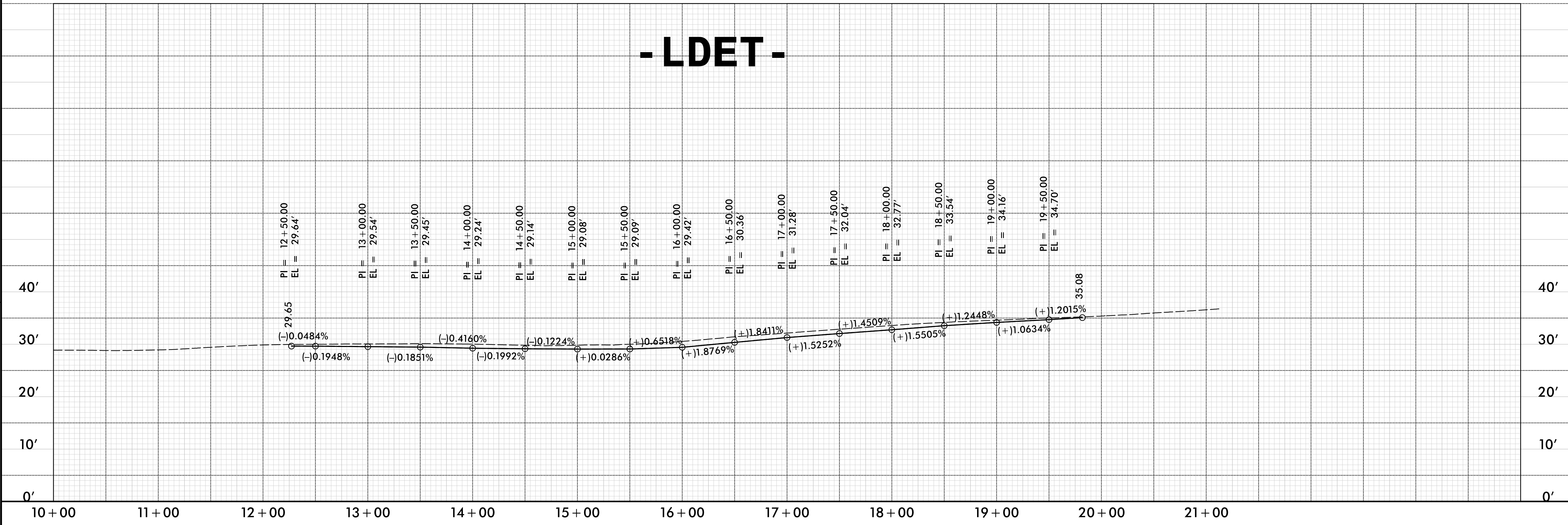
PROJECT REFERENCE NO. U-4902D	SHEET NO. 2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PI Sta	Delta	D	T	L	R
10+71.41	4° 05' 23.5" (LT)	2' 51' 53.2"	71.41	142.76	2,000.00
14+15.63	4° 23' 10.7" (RT)	2' 51' 01.9"	76.98	153.88	2,010.00
17+58.88	5° 01' 55.2" (RT)	3' 47' 39.9"	66.35	132.62	1,510.00
20+52.38	4° 40' 59.7" (LT)	3' 49' 11.0"	61.34	122.61	1,500.00



NOTE: TEMPORARY PAVEMENT TO BE USED DURING TRAFFIC PHASING. SEE TRAFFIC MANAGEMENT PLANS FOR MORE INFORMATION.
NOTE: SEE SHEETS 2G-1 AND 2G-2 FOR DETAIL OF STANDARD REINFORCED SOIL SLOPE TO BE USED FROM STATION -L- 278+00 TO STATION -L- 279+00 .

- LDET -



REVISIONS

03-AUG-2018 15:45
N:\Roadway\Projects\U4902D.RDY_DETAIL_2B-2.dgn

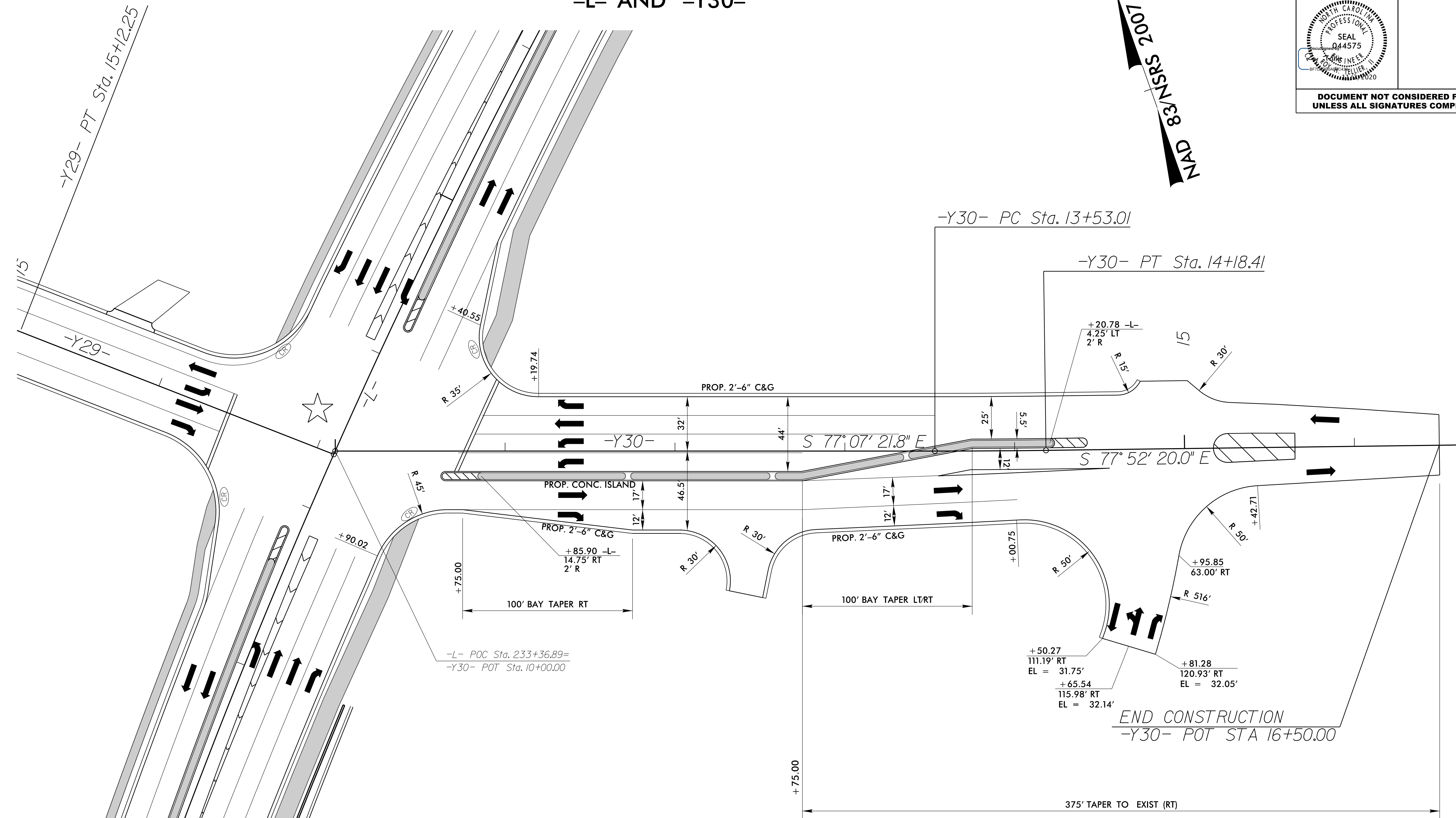
5/14/99

HNTB HNTB NORTH CAROLINA, P.C.
345 S. SIX FORKS ROAD, SUITE 200
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO: C-1554

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2B-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

INTERSECTION DETAIL -L- AND -Y30-

DAVID SRS 044575 12/31/2020

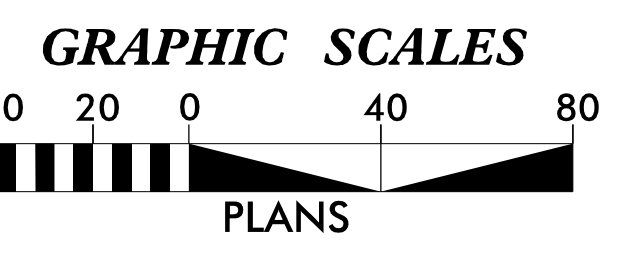


REVISIONS

CONSTRUCTION REVISION NO. 6; ADDED SHEET.

02-NOV-2020 09:14:49 U:\4902D_PDX_DETAIL\2B-3.dgn

NOTE: FOR INTERSECTION DETAIL OF -L- & -Y29-, SEE SHEET 2B-1

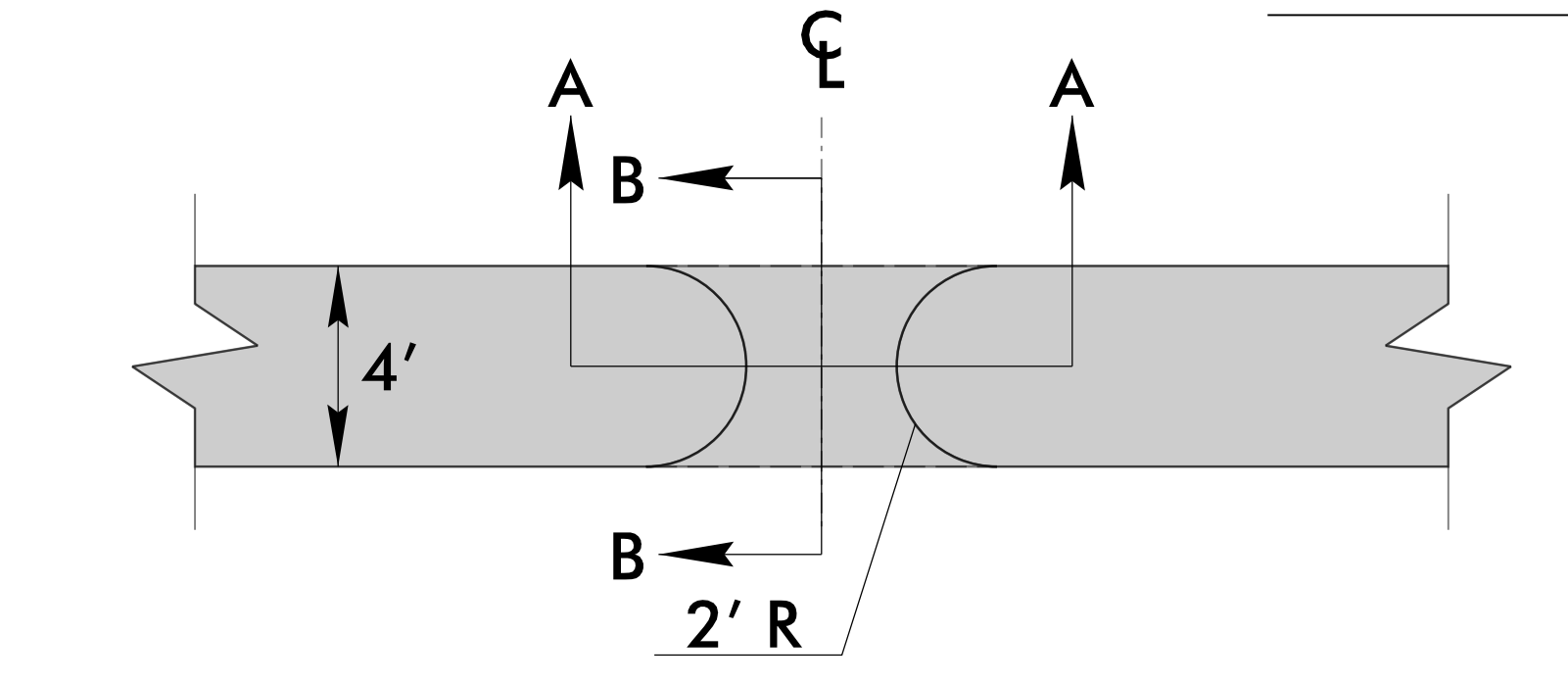


FOR -L-, -Y29-, & -Y30- PLAN, SEE SHEET 7
 FOR -L- PROFILE, SEE SHEET 13
 FOR -Y30- PROFILE, SEE SHEET 15

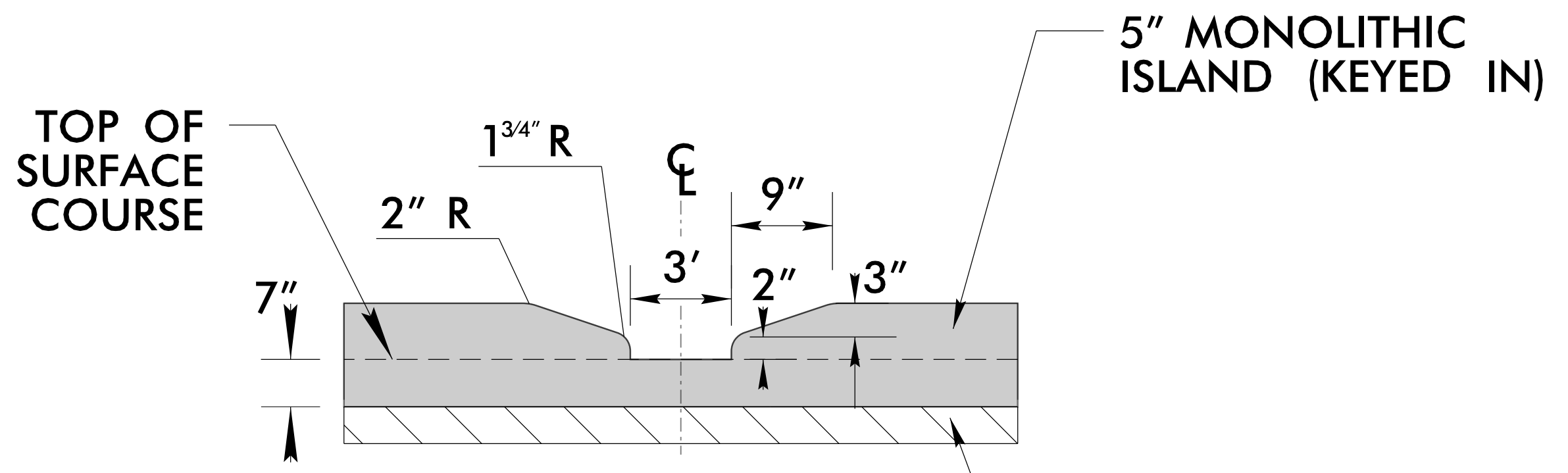
5/14/99

PROJECT REFERENCE NO.		SHEET NO.	
U-4902D		2B-4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

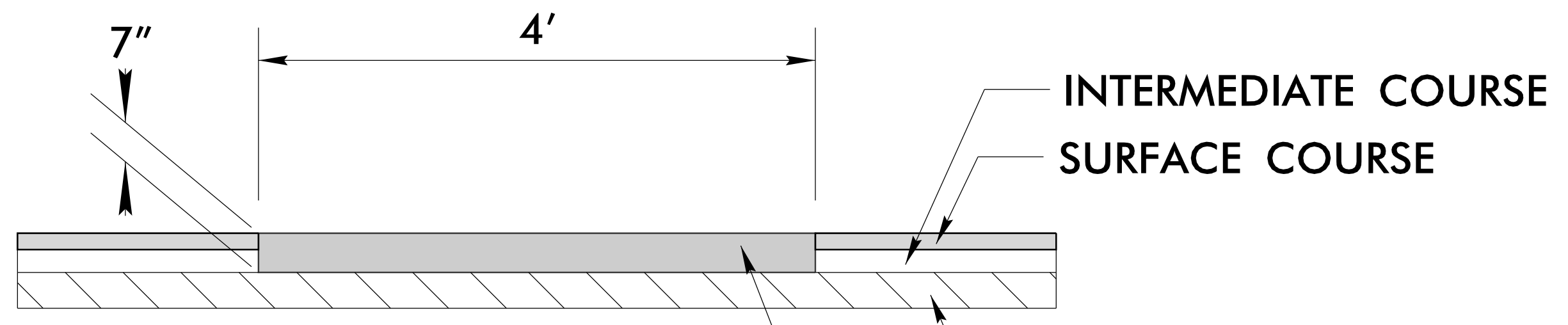
DETAIL OF MEDIAN ISLAND CUTS (-Y30-)



PLAN VIEW



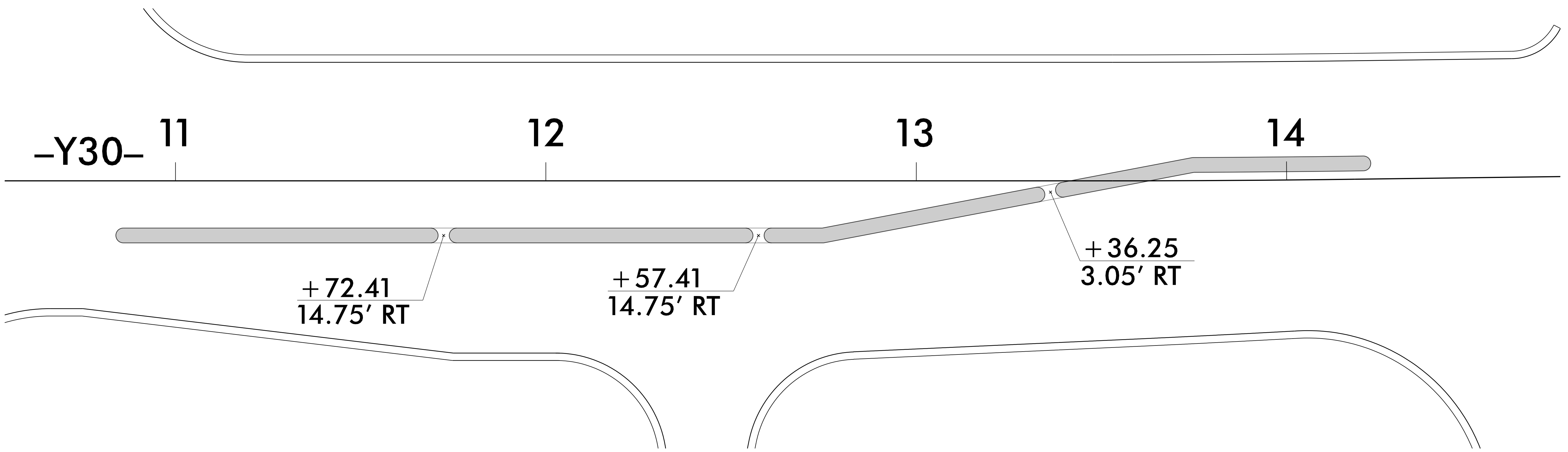
SECTION A-A



SECTION B-B

REFER TO ROADWAY STD. DRAWING 852.01 FOR ADDITIONAL DIMENSIONS AND NOTES.

LOCATION OF MEDIAN ISLAND CUTS (-Y30-)



NOTE: STATION/OFFSET LABEL TO CENTER OF MEDIAN ISLAND CUT.

REVISIONS
CONSTRUCTION REVISION NO. 6: ADDED SHEET.

02-NOV-2020 09:10:08
C:\proway\proway\U-4902D_PDX_DETAIL_2B-4.dgn

5/14/99

NCDOT MODIFIED EXPRESSWAY GUTTER DETAIL

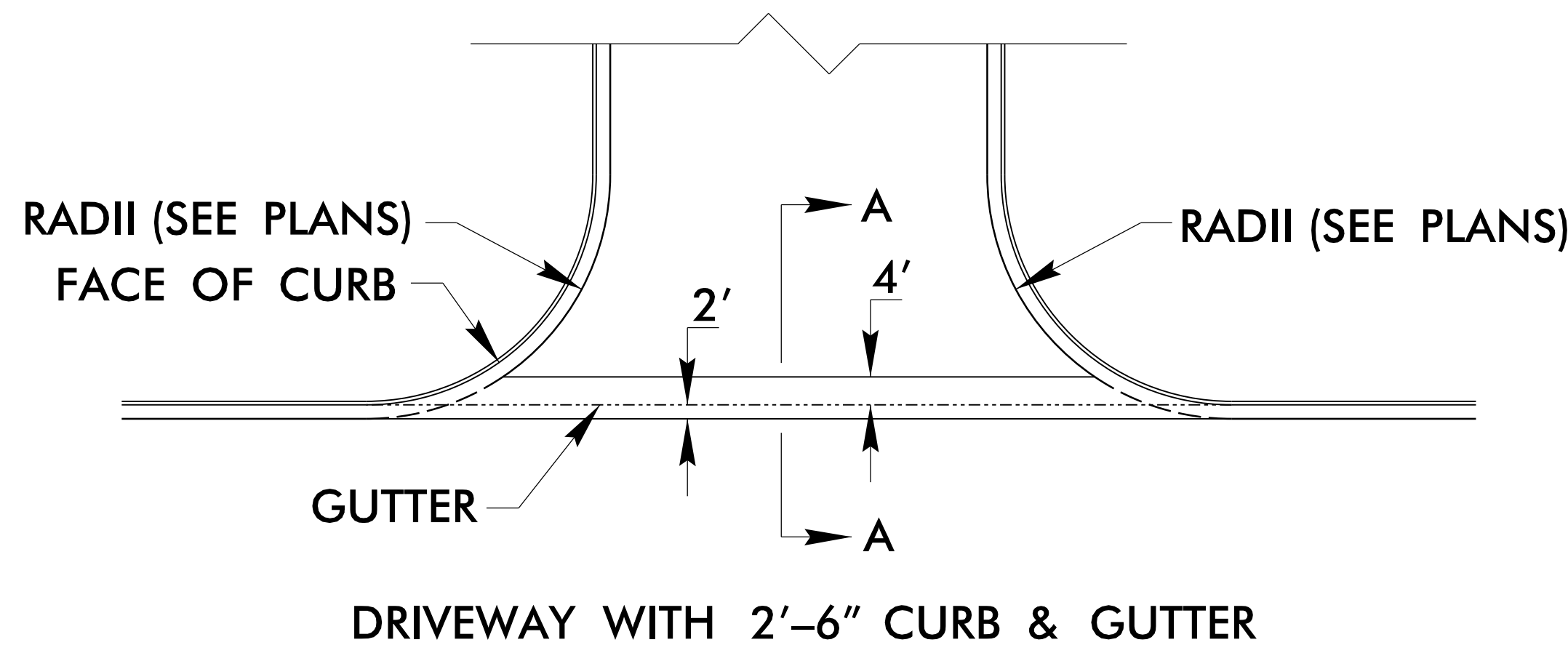
04/19/2006

NOT TO SCALE

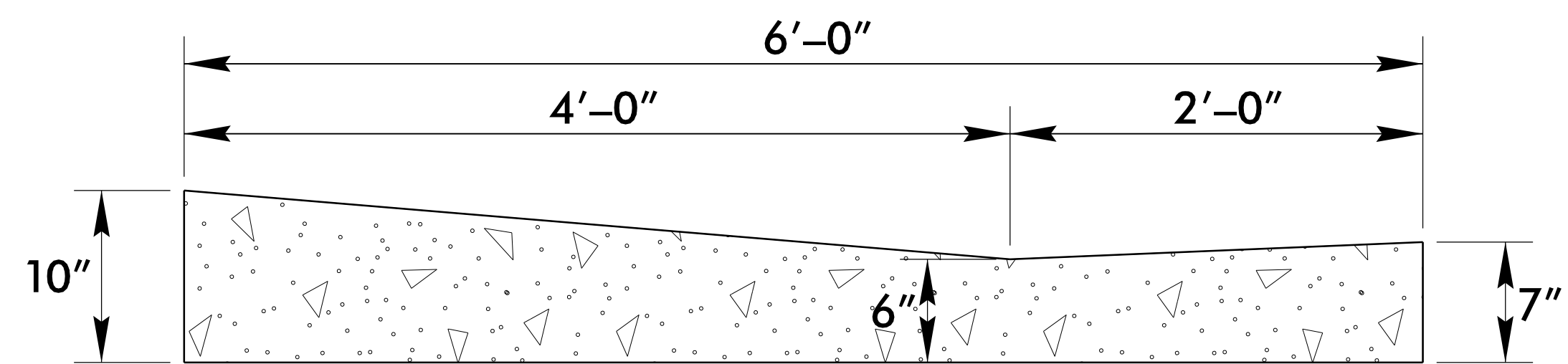
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

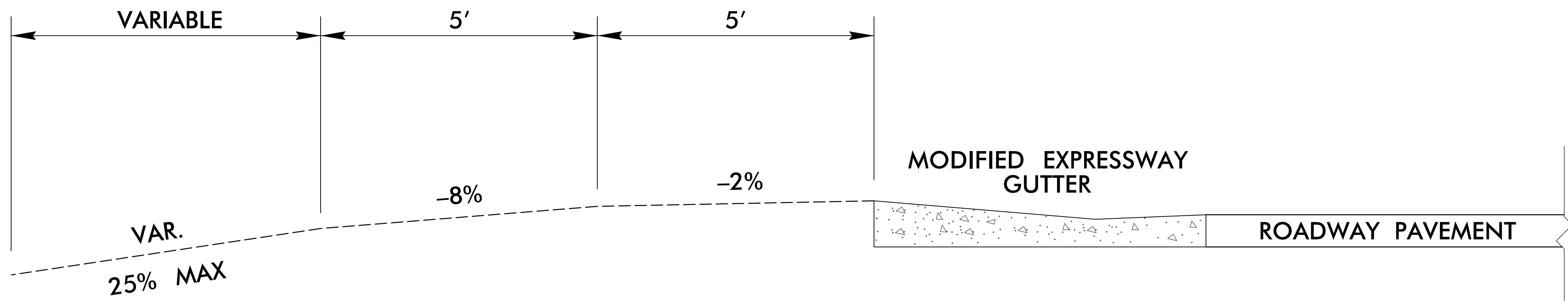
PLAN VIEW



SECTION A-A



MAXIMUM DRIVEWAY GRADES

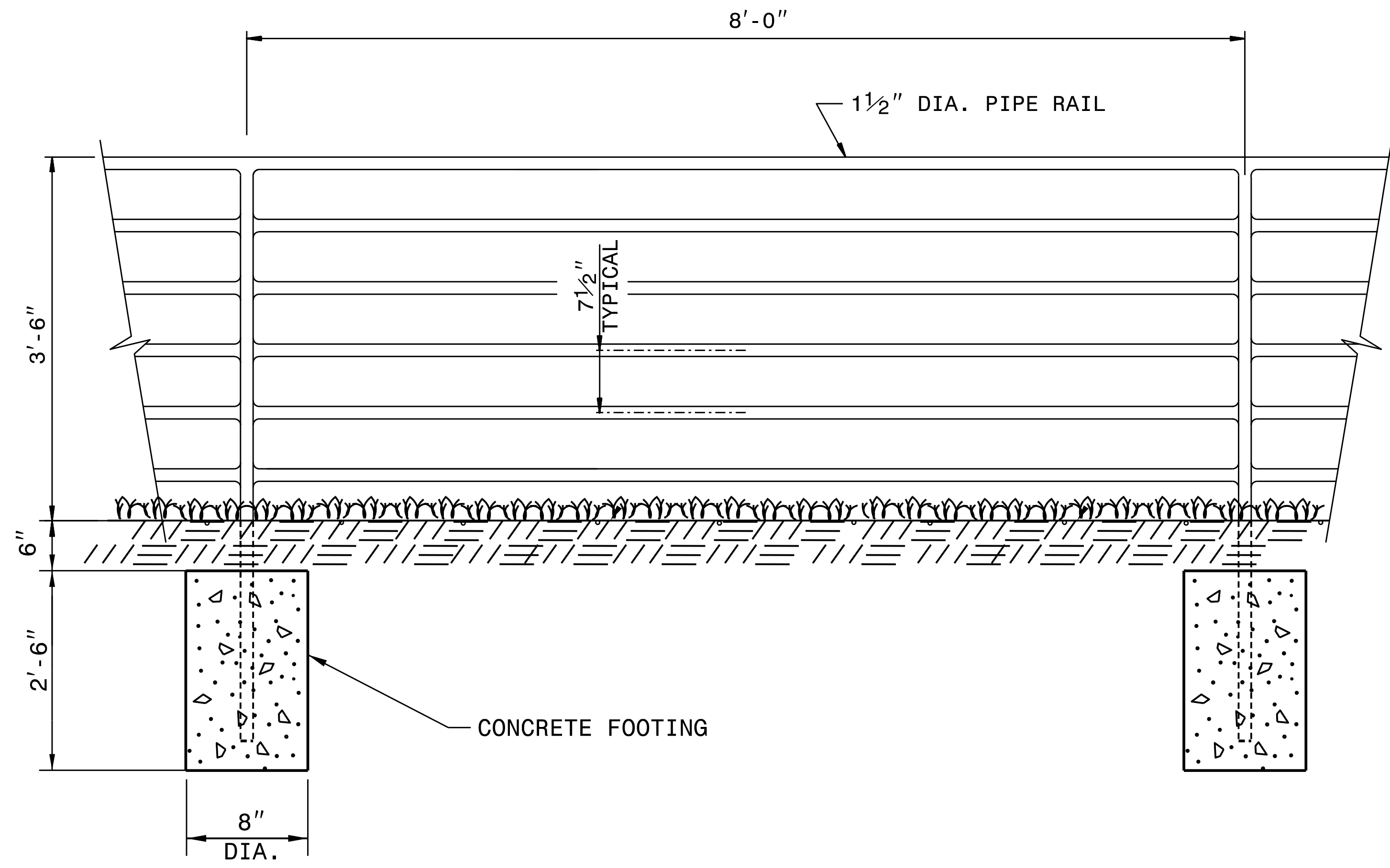


USE DETAIL AT THE FOLLOWING DRIVE LOCATIONS:
-L- STA. 222 + 78 RT

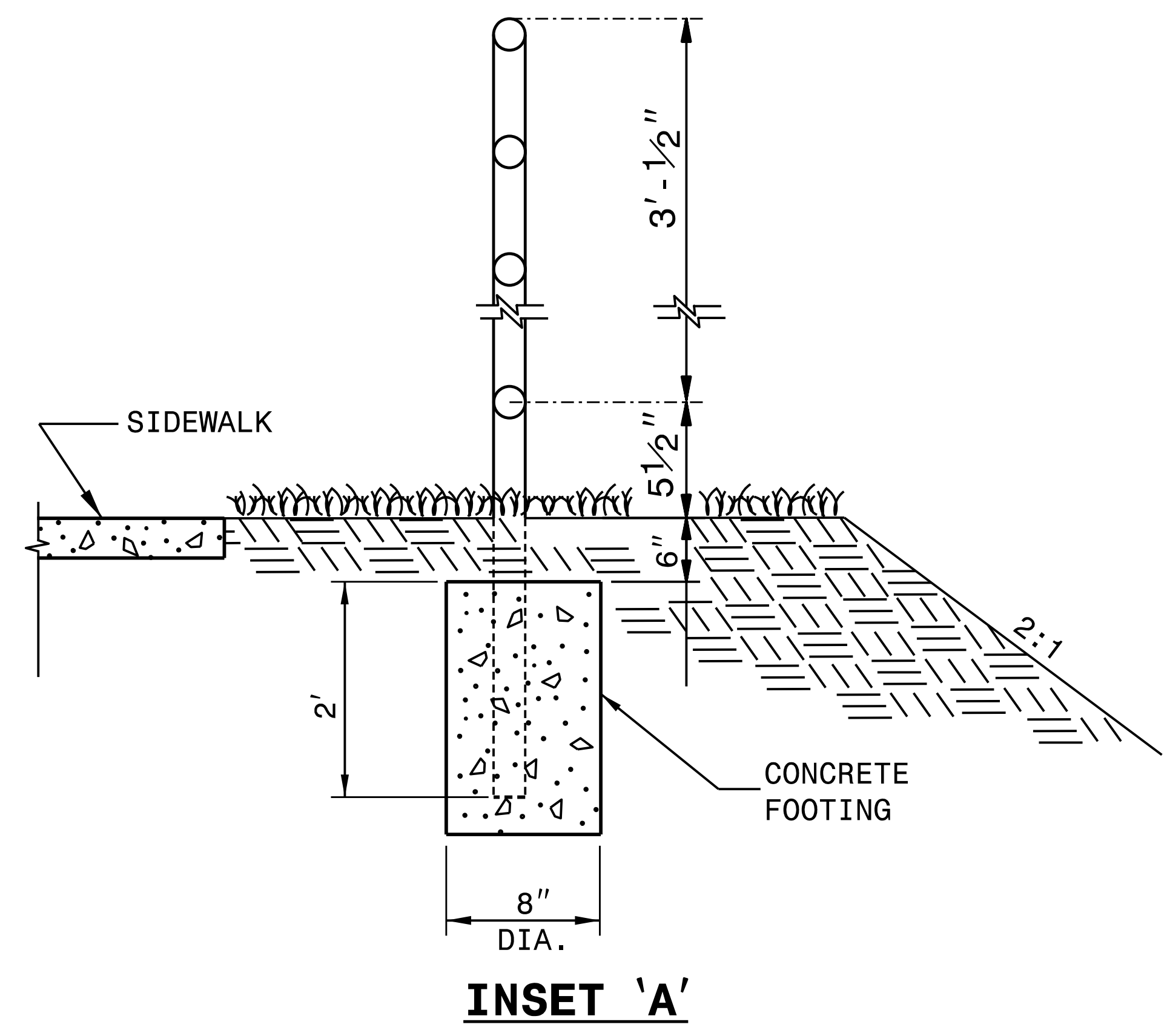
NOTE: MODIFIED EXPRESSWAY GUTTER PAID FOR AS "EXPRESSWAY GUTTER".

REVISIONS
CONSTRUCTION REVISION NO. 6: ADDED SHEET.

02-NOV-2020 09:15
C:\pwworking\hntb\proj\2020\U-4902D_PDX_DETAIL_2B-5.dgn



ELEVATION OF HANDRAIL



NOTES:

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

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

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

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

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

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

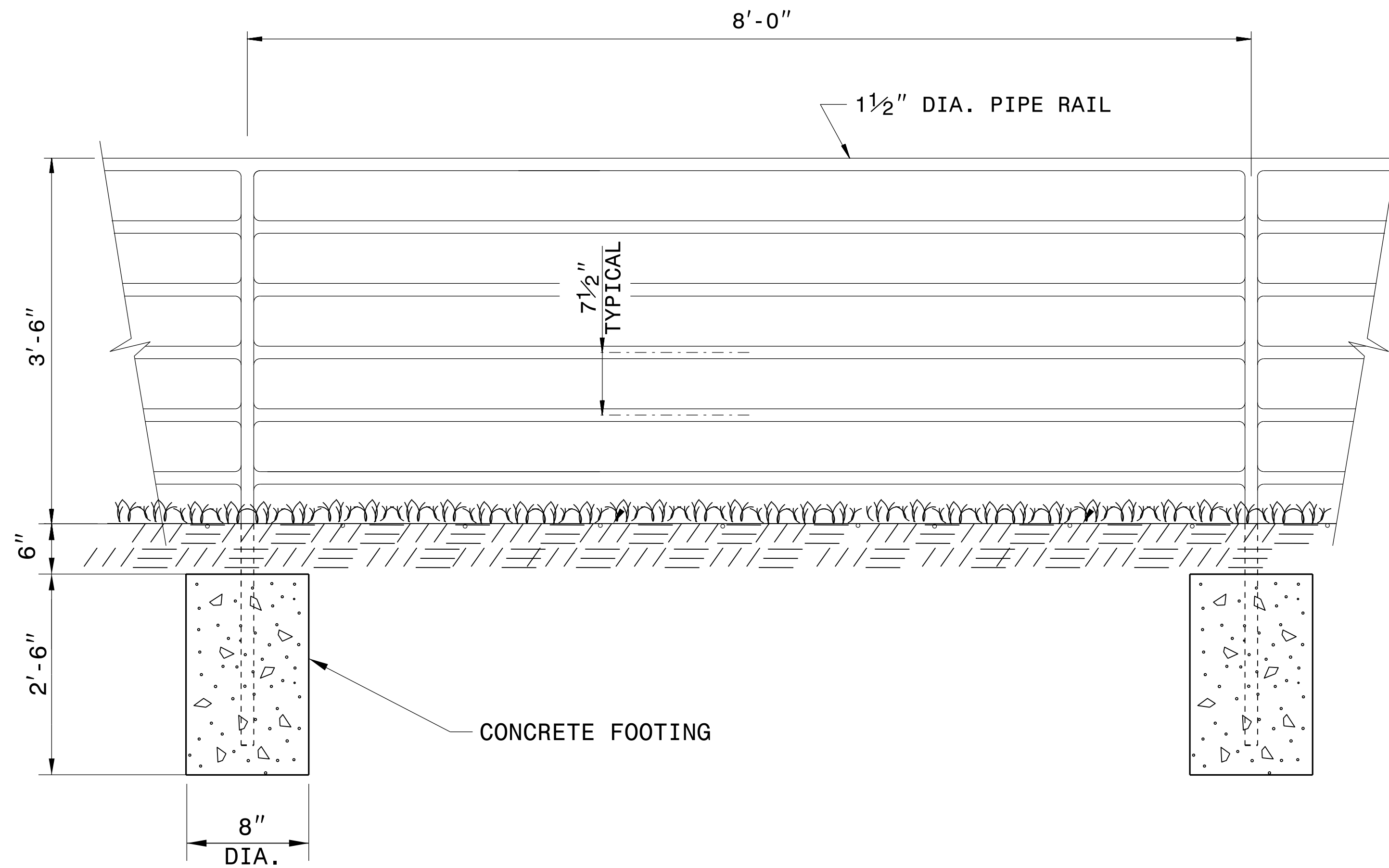
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7/25/2018

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
PROPOSED PEDESTRIAN SAFETY RAIL	
ORIGINAL BY: E.E. WARD	DATE: 12-99
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: jhowerton/handrail_adjacent_to_sidewalk.dgn	



ELEVATION OF HANDRAIL

NOTES:

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

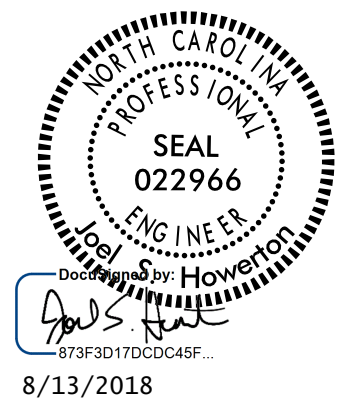
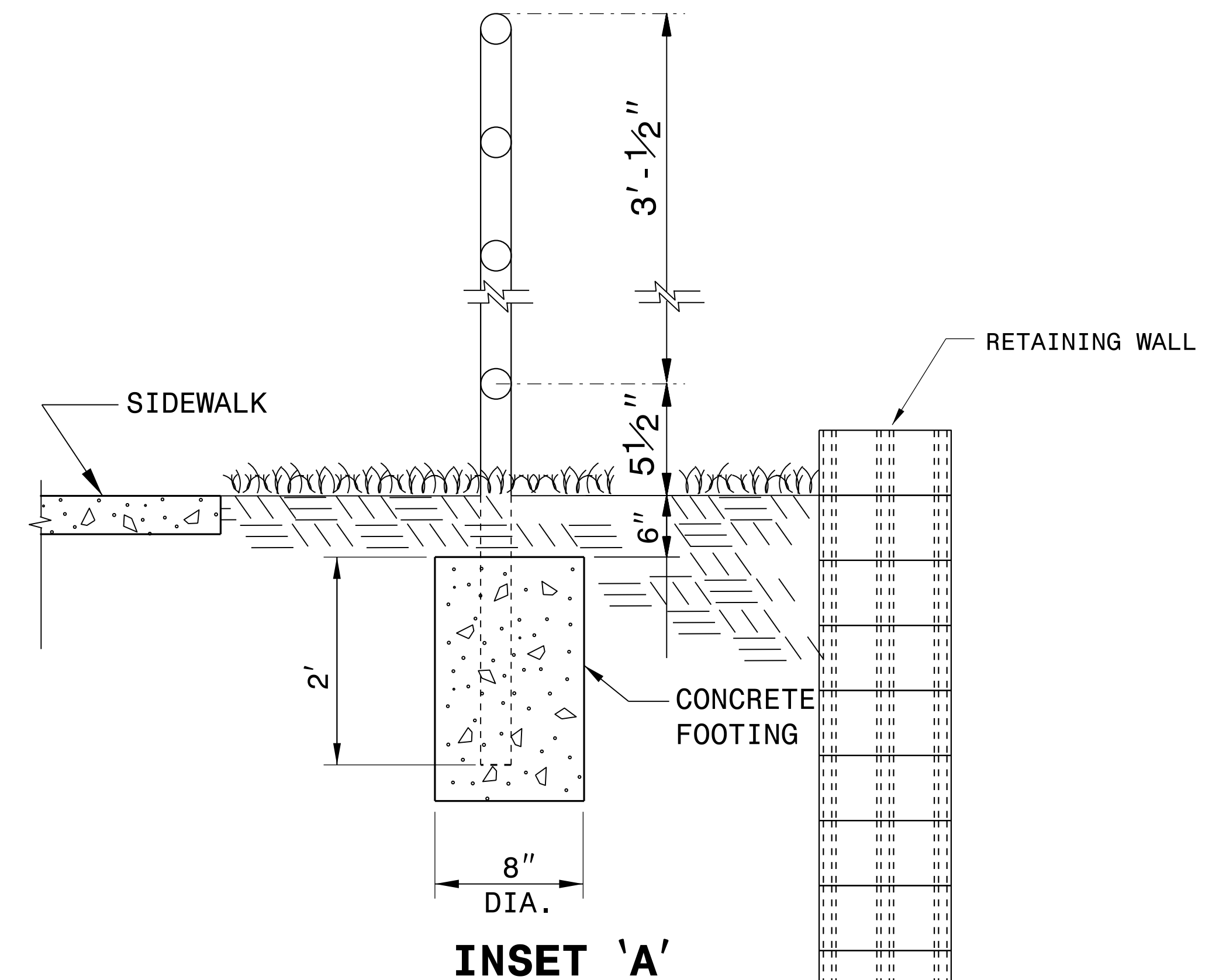
REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

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

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

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

PLACEMENT OF HANDRAIL IN RELATION TO RETAINING WALL AND SIDEWALK MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.



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CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
PROPOSED PEDESTRIAN SAFETY RAIL	
ORIGINAL BY: E.E. WARD	DATE: 12-99
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: jhowerton/handrail adjacent to sidewalk.dgn	

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

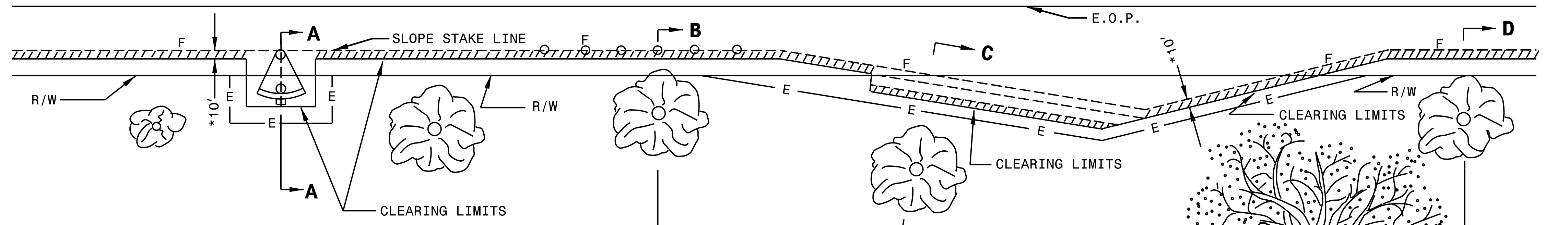
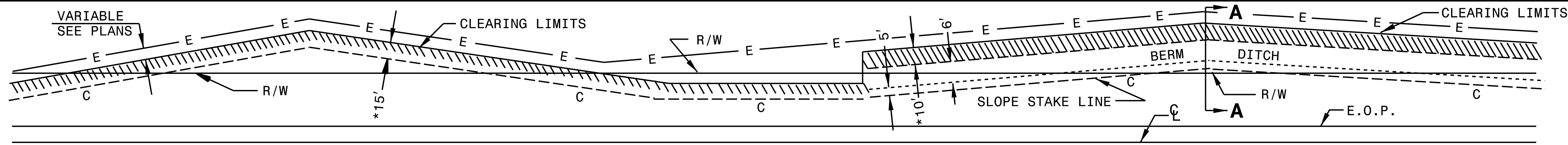
ENGLISH DETAIL DRAWING FOR METHOD OF CLEARING MODIFIED METHOD - III

SHEET 1 OF 1 200D03

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

ENGLISH DETAIL DRAWING FOR METHOD OF CLEARING MODIFIED METHOD - III

SHEET 1 OF 1 200D03

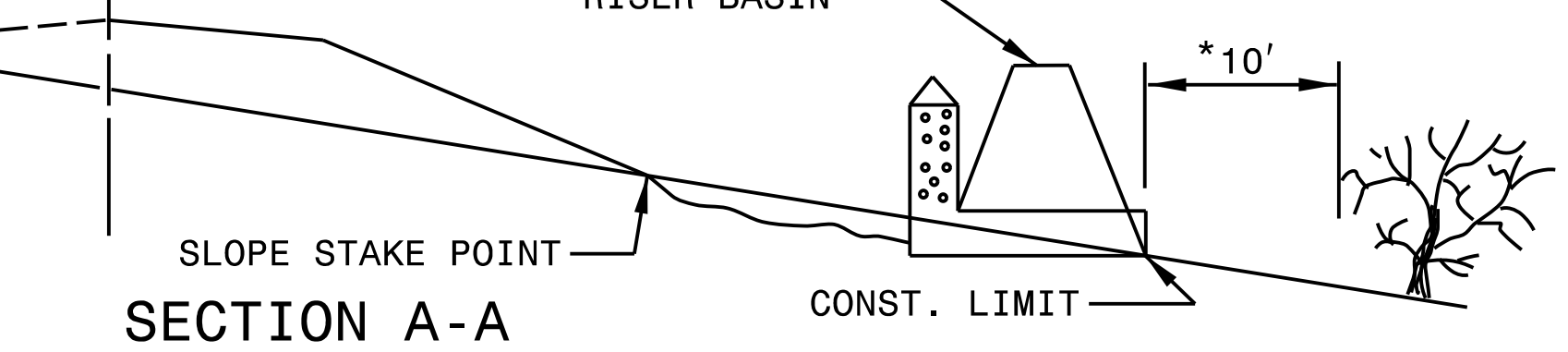
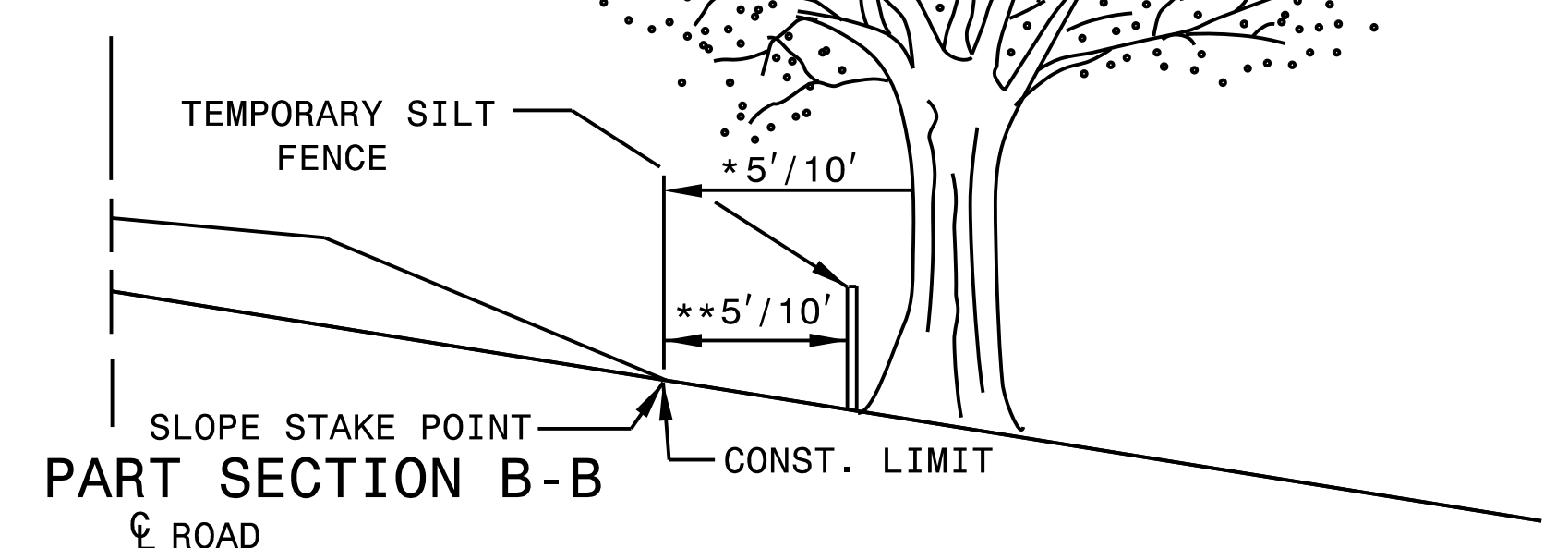
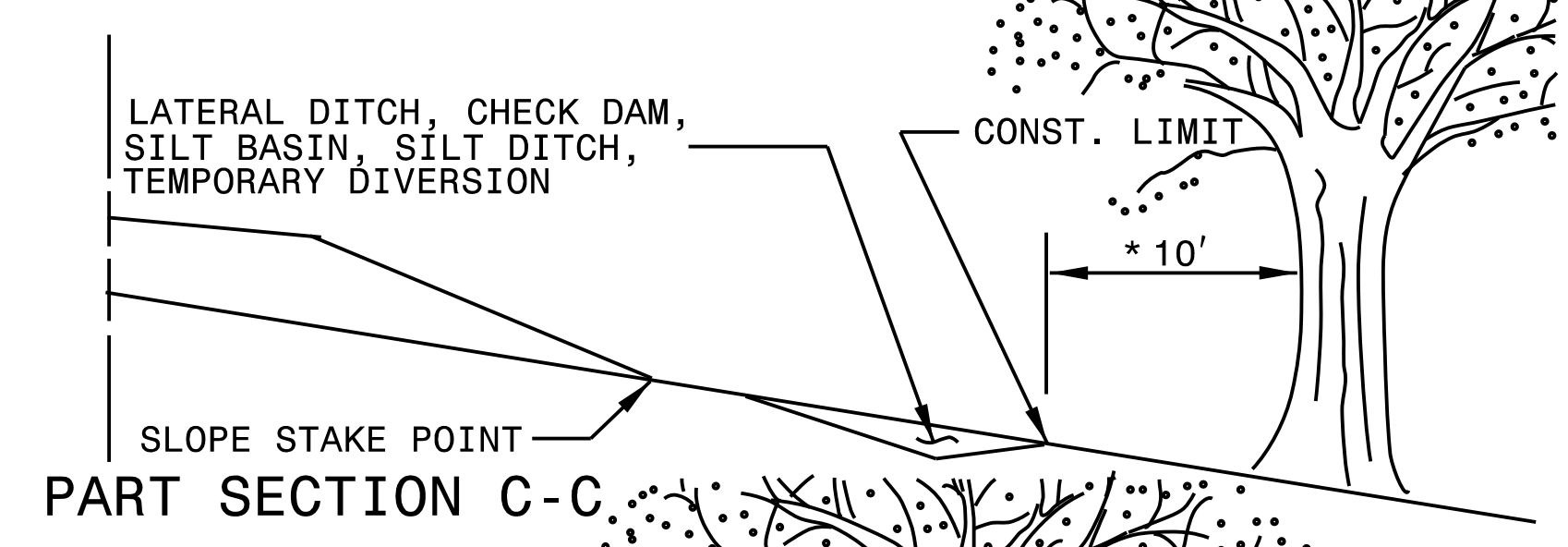
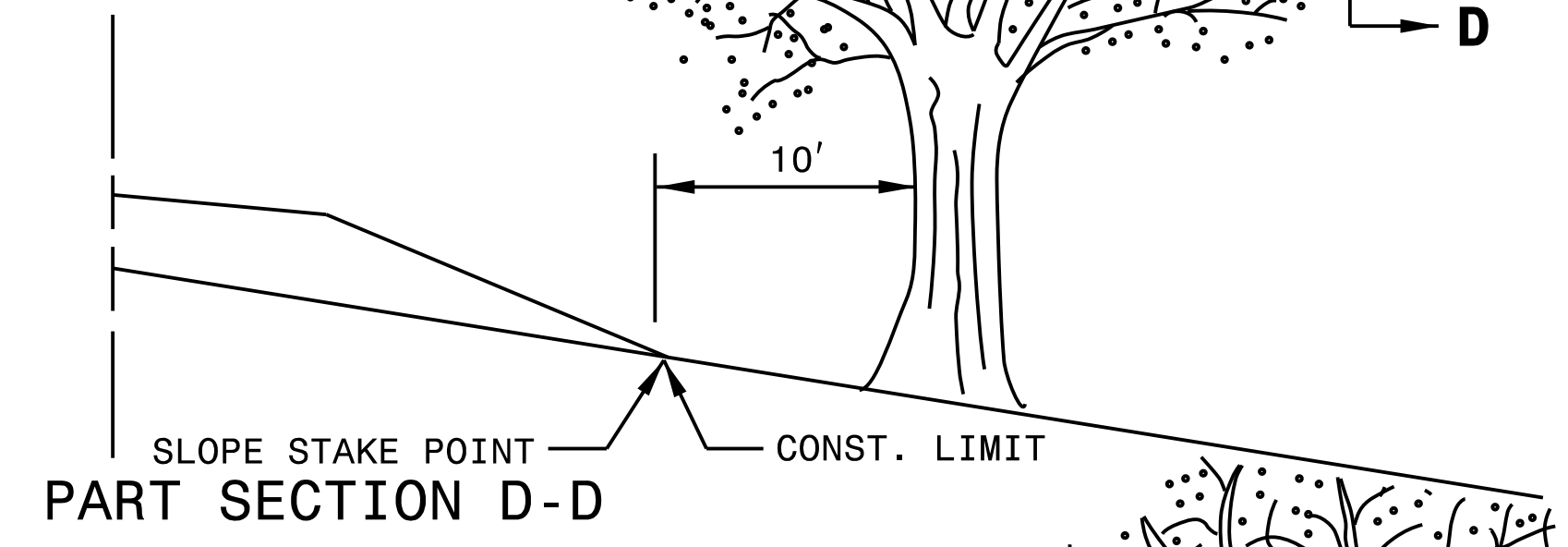
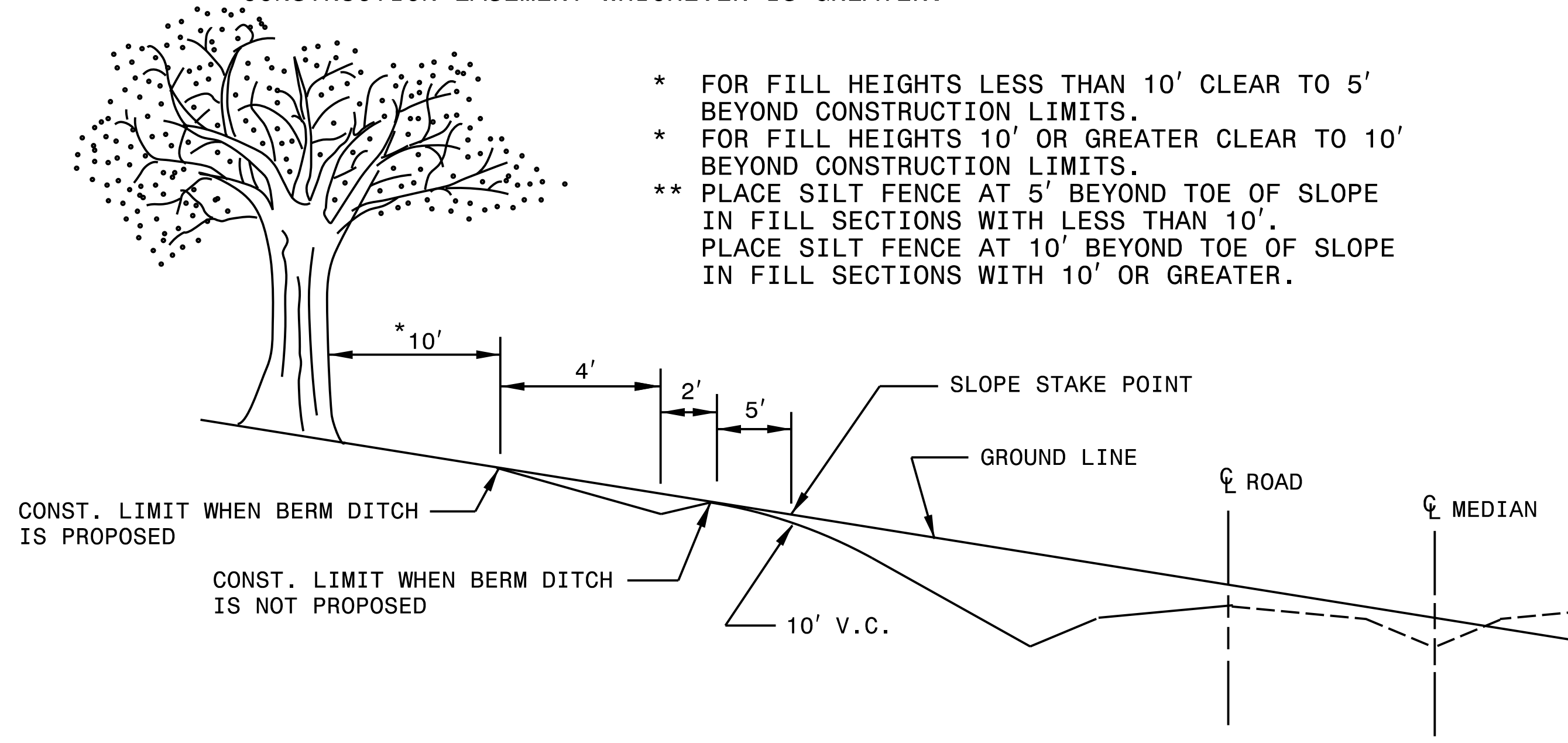


- GENERAL NOTES:
1. REMOVE TREES OUTSIDE THE CLEARING LIMIT WHEN, IN THE OPINION OF THE ENGINEER, THE UTILITY OF A TREE WILL BE DESTROYED BY THE CONSTRUCTION OR THE CLEARING OPERATION.
 2. CLEAR IN ACCORDANCE WITH THIS STANDARD EXCEPT WHERE ADDITIONAL CLEARING IS REQUIRED FOR SAFETY AS SHOWN ON THE PLANS.

METHOD III CLEARING LIMITS

- (A) CUTS -- CLEAR TO CONSTRUCTION LIMITS.
- (B) FILLS - CLEAR TO 5'/10' * BEYOND CONSTRUCTION LIMITS, UNLESS SPECIFIED OTHERWISE BY WETLAND PERMIT.
- (C) CUTS AND FILLS - WHEN THE CLEARING LIMITS (A AND B) EXCEED THE PROPOSED R/W OR PROPOSED CONSTRUCTION EASEMENTS, THEN CLEAR ONLY TO THE R/W OR CONSTRUCTION EASEMENT WHICHEVER IS GREATER.

- * FOR FILL HEIGHTS LESS THAN 10' CLEAR TO 5' BEYOND CONSTRUCTION LIMITS.
- * FOR FILL HEIGHTS 10' OR GREATER CLEAR TO 10' BEYOND CONSTRUCTION LIMITS.
- ** PLACE SILT FENCE AT 5' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH LESS THAN 10'. PLACE SILT FENCE AT 10' BEYOND TOE OF SLOPE IN FILL SECTIONS WITH 10' OR GREATER.



7/25/2018

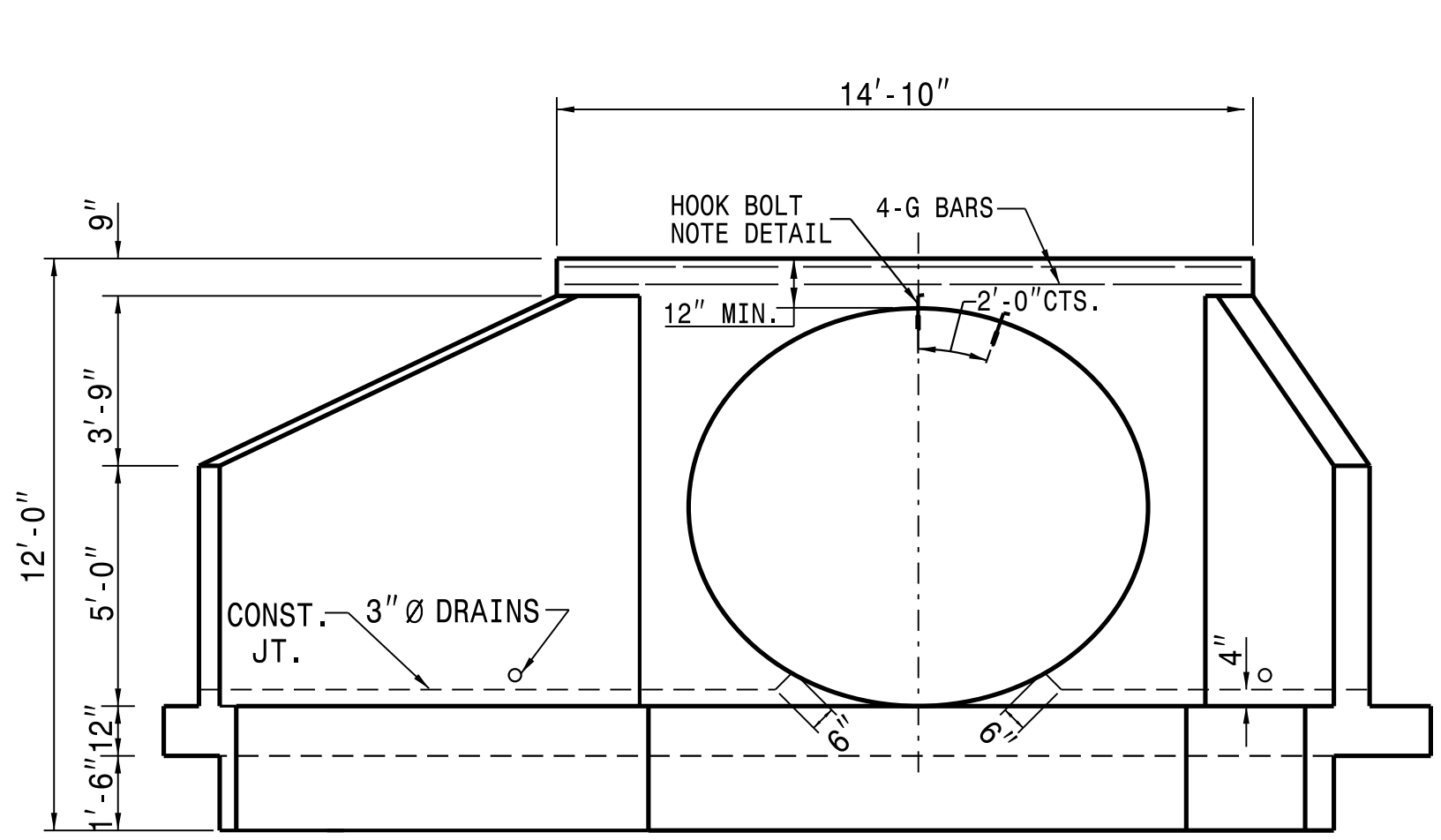
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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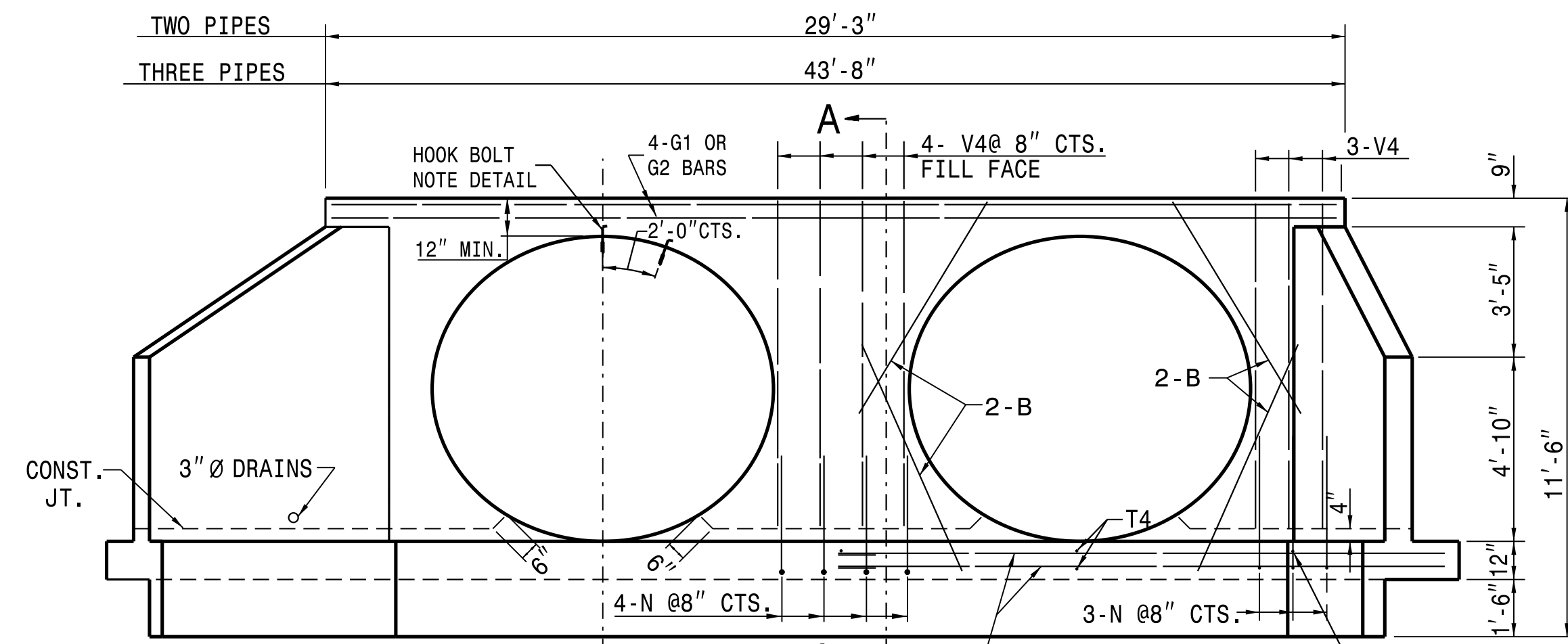
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 MODIFIED BY: K.A.K. DATE: AUG. 2016
 CHECKED BY: DATE:
 FILE SPEC.: kkempf/english/0200d301.dgn

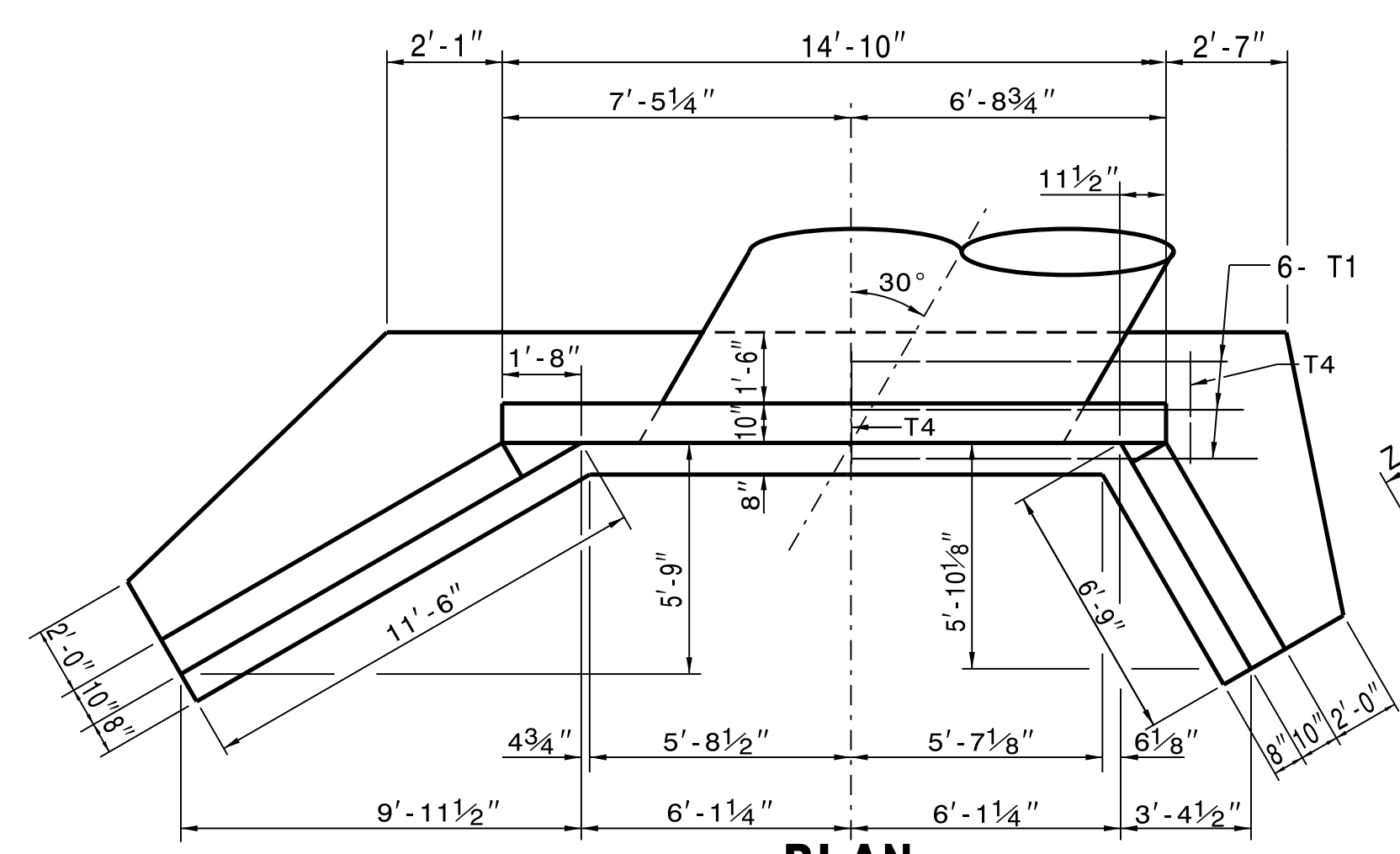
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L/08
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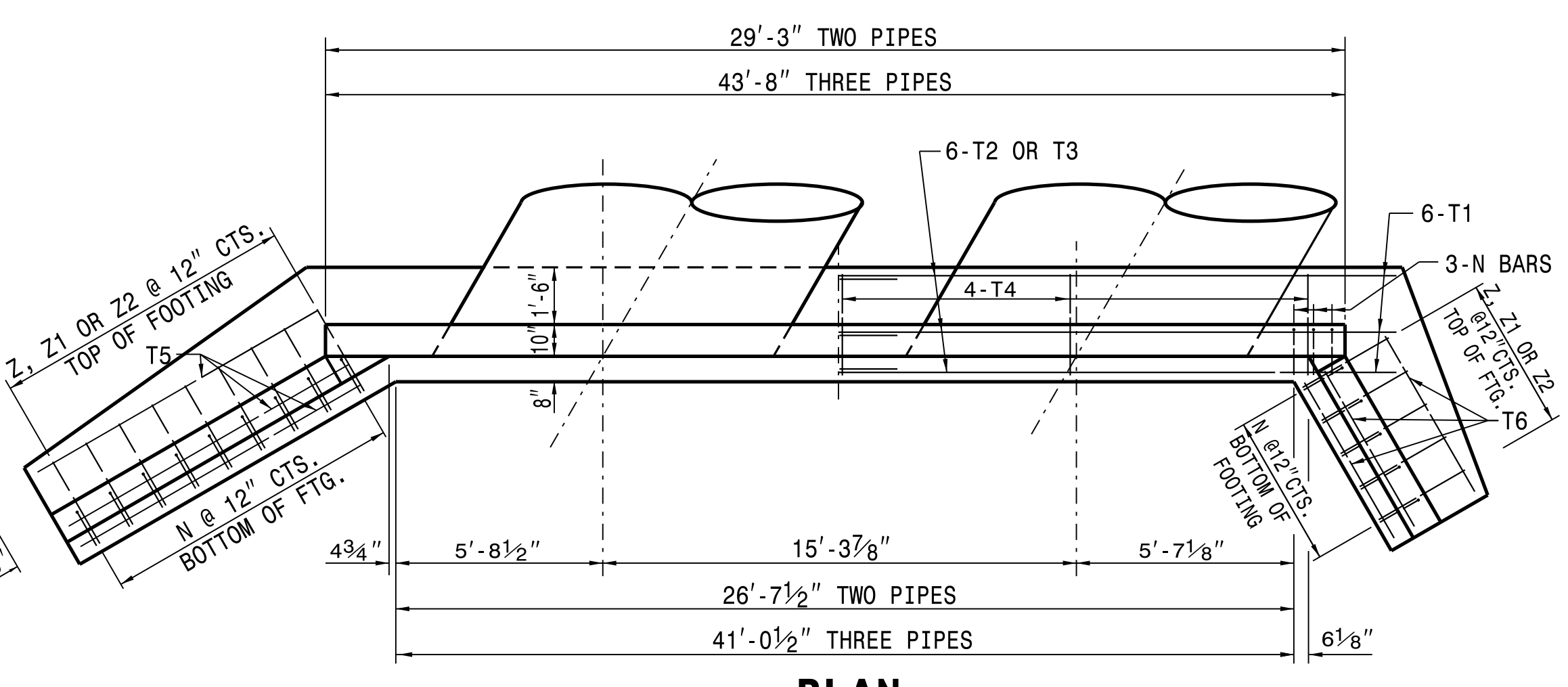
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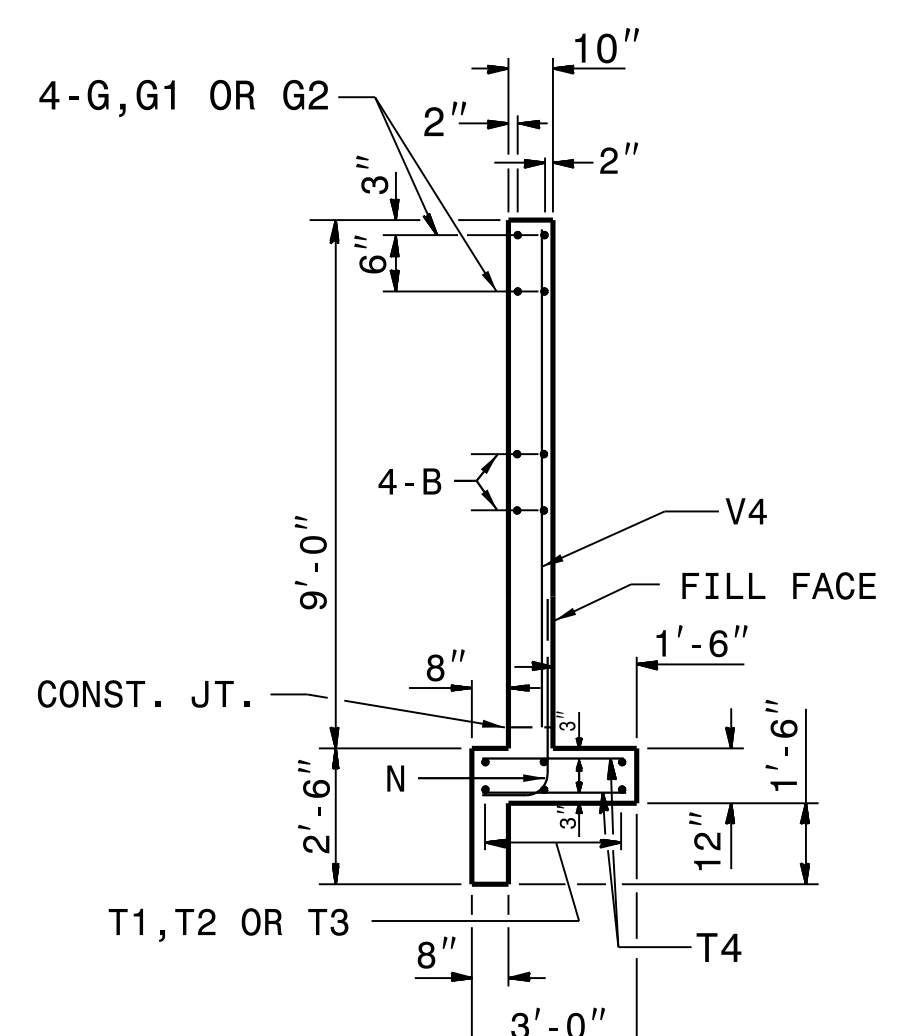
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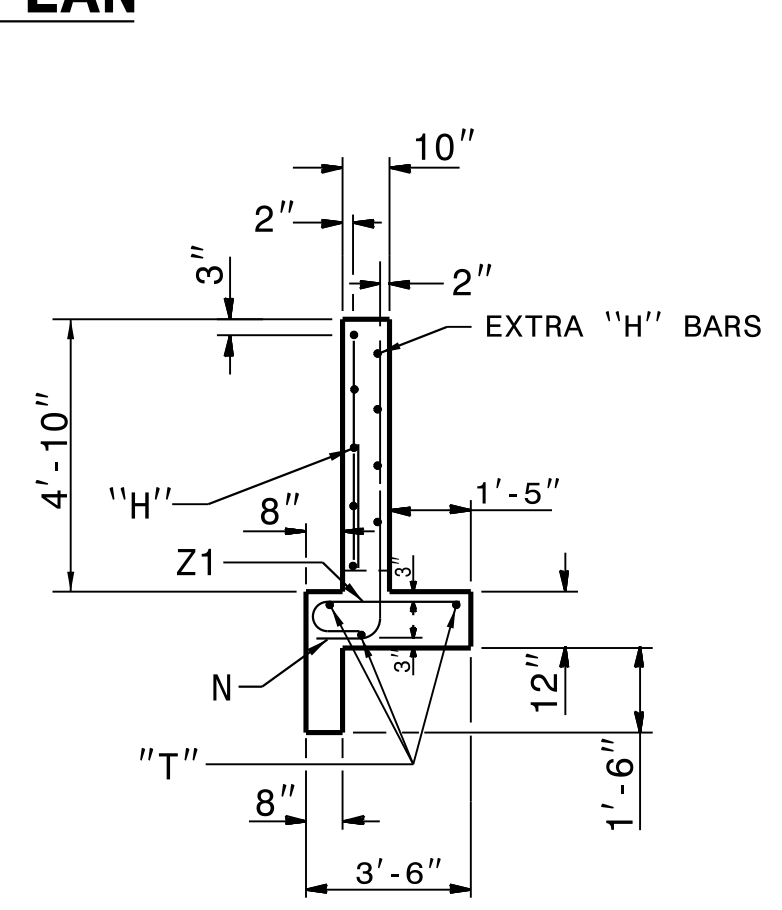
PLAN



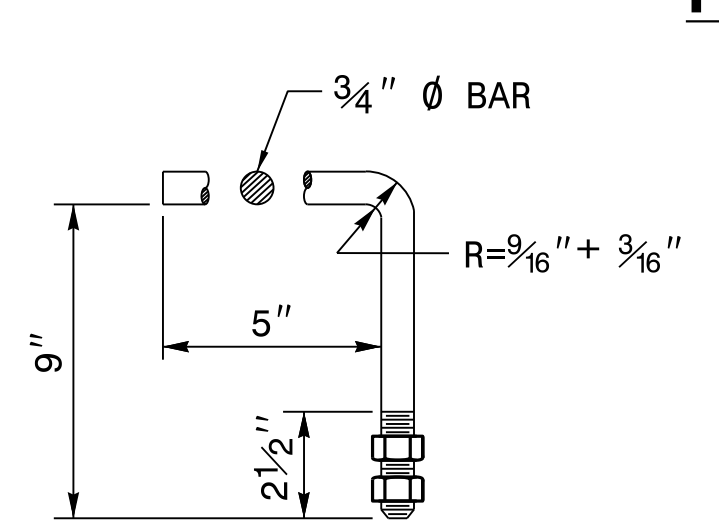
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SECTION - AA

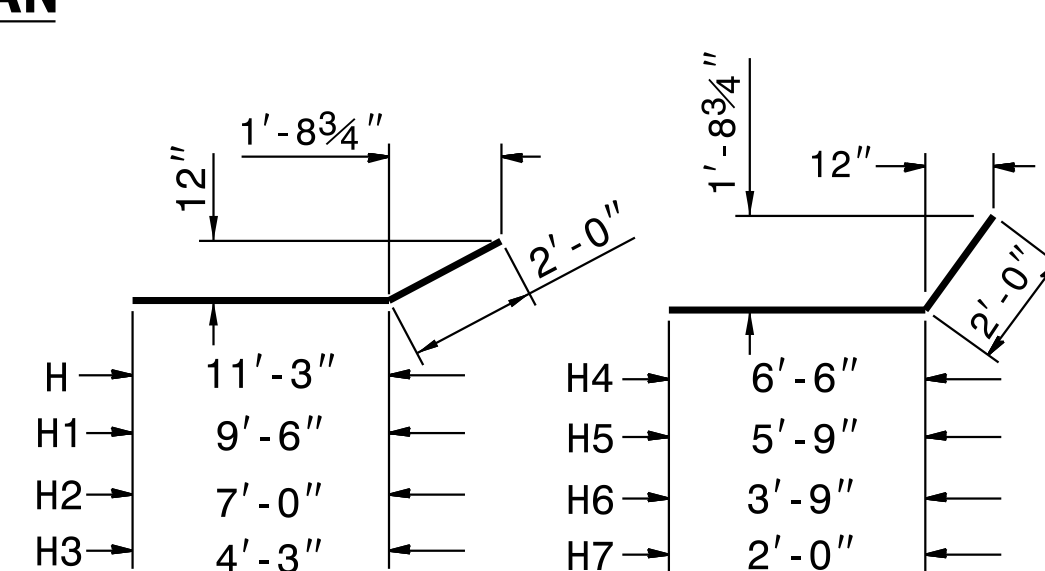


END OF WING



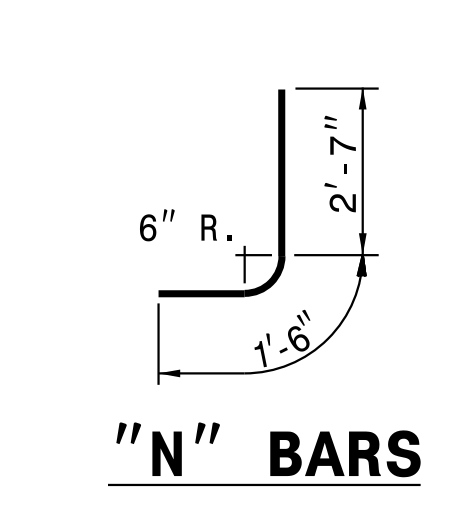
HOOK BOLT

NOTE: CONSTRUCT HOOK BOLTS (ANCHORS) AT 2'-0" CTS. ALONG THE CIRCUMFERENCE OF THE 96" CSP. EMBED THE HOOK BOLTS 6" IN DEPTH. THE GALVANIZED 3/4" DIA. HOOK BOLTS MUST MEET ASTM A-307 OR ASTM A-836. BOTH BOLTS AND NUTS MUST BE IN ACCORDANCE WITH ASTM A-153 FOR GALVANIZING.

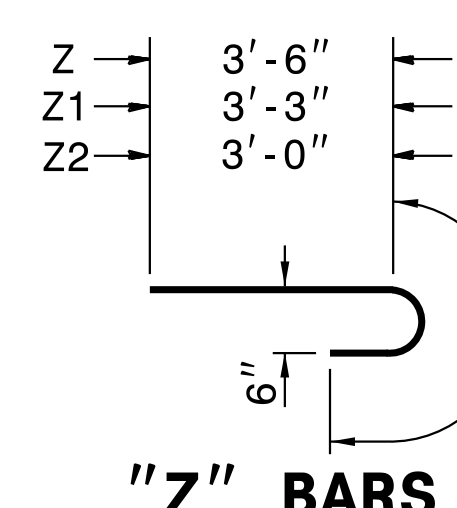


"H" BARS

"H" BARS

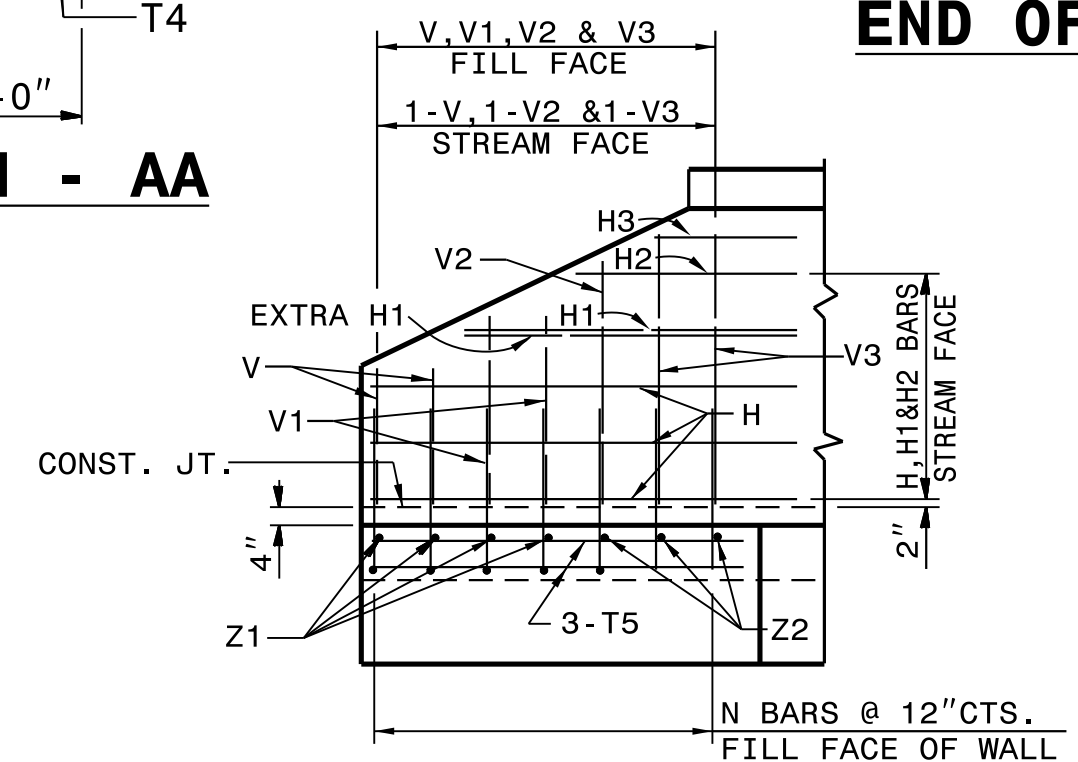


"N" BARS

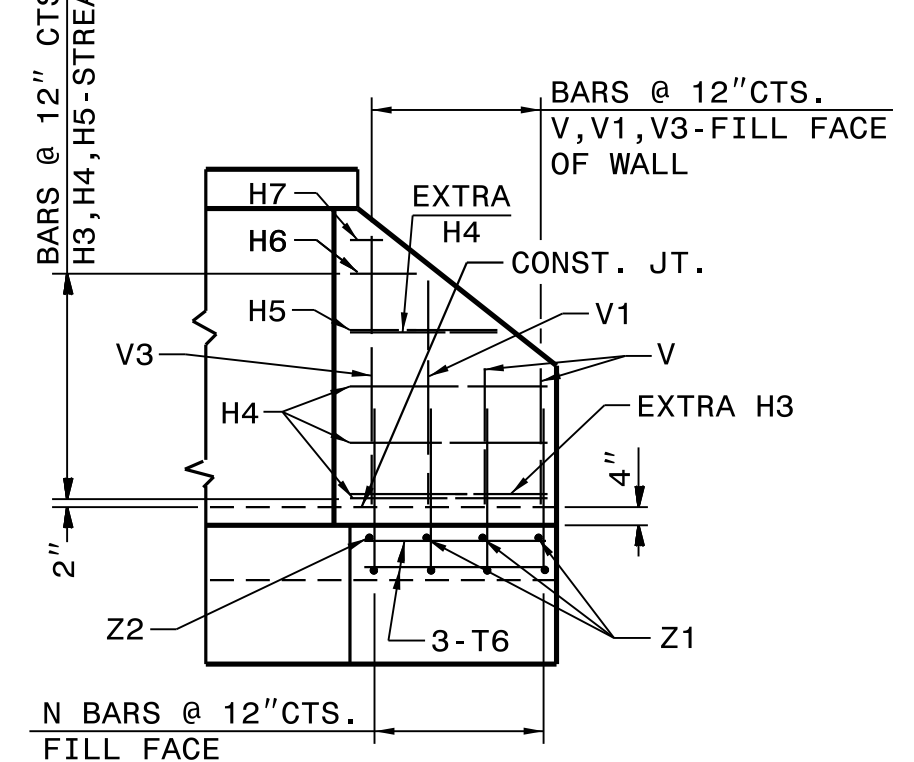


"Z" BARS

"H", "N", & "Z" BAR DIMENSIONS ARE OUT TO OUT.



WING ELEVATION



WING ELEVATION

NOTES:

- ALL CONCRETE TO BE CLASS "A".
- ALL REINFORCING STEEL SHALL BE ASTMA615-GRADE 60.
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS. WHERE SPLICING OF REINFORCEMENT IS NECESSARY, BARS ARE TO BE LAPPED 45 DIAMETERS. ALL DIMENSIONS RELATIVE TO REINFORCEMENT ARE TO CENTERS OF BARS.
- THE FOOTING, CURTAIN WALL AND 4" OF WALL ARE TO BE POURED IN ONE OPERATION ALLOWING NO TIME FOR INITIAL SET TO TAKE PLACE BETWEEN THEM. THE REMAINING WALL SHALL THEN BE POURED IN ONE OPERATION.
- ALL EXPOSED CORNERS ARE TO BE CHAMFERED 1".
- 3" DIAMETER DRAINS SHALL BE PLACED IN WALL AS SHOWN AND BE 6" ABOVE NORMAL FLOW LINE.
- ALL MATERIAL AND WORKMANSHIP AS PER N.C. DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
- THE EXTRA BARS ARE PROVIDED FOR HOLDING REINFORCING STEEL IN CORRECT POSITION IN WING.

BILL OF MATERIAL FOR ENDWALL								
REIN. STEEL		1 PIPE	2 PIPES	3 PIPES				
BAR	SIZE	LENGTH	NO.	WEIGHT	NO.	WEIGHT	NO.	WEIGHT
B	#4	7'-0"	8	37	16	75	24	112
G	#5	14'-6"	4	60	-	-	-	-
G1	#5	15'-9"	-	-	8	131	-	-
G2	#5	23'-0"	-	-	-	-	8	192
H	#4	13'-3"	7	62	7	62	7	62
H1	#4	11'-6"	1	8	1	8	1	8
H2	#4	9'-0"	2	12	2	12	2	12
H3	#4	6'-3"	1	4	1	4	1	4
H4	#4	8'-6"	7	45	7	45	7	45
H5	#4	7'-9"	1	5	1	5	1	5
H6	#4	5'-9"	2	8	2	8	2	8
H7	#4	4'-0"	1	3	1	3	1	3
N	#4	4'-1"	25	68	32	87	40	109
T1	#4	19'-0"	6	77	-	-	-	-
T2	#4	18'-0"	-	-	12	144	-	-
T3	#4	25'-0"	-	-	-	-	12	200
T4	#4	2'-9"	4	7	7	13	10	18
T5	#4	11'-3"	3	23	3	23	3	23
T6	#4	6'-6"	3	13	3	13	3	13
V	#4	4'-9"	6	12	6	12	6	12
V1	#4	5'-6"	2	5	2	5	2	5
V2	#4	6'-6"	3	9	3	9	3	9
V3	#4	7'-6"	5	17	5	17	5	17
V4	#4	9'-0"	6	23	10	39	14	55
Z	#4	4'-9"	7	16	7	16	7	16
Z1	#4	4'-6"	7	16	7	16	7	16
Z2	#4	4'-3"	4	11	4	11	4	11
REIN. STEEL LBS.				541		758		955
HOOK BOLTS-NO.				10		20		30
CON./R.C. CU. YDS.				11.8		16.1		20.5

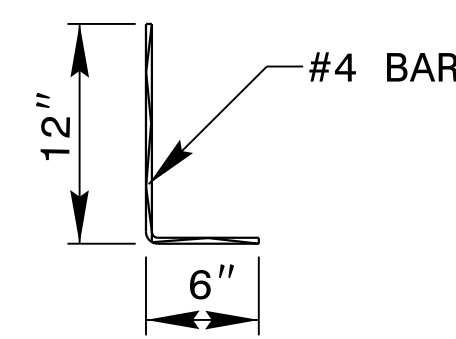
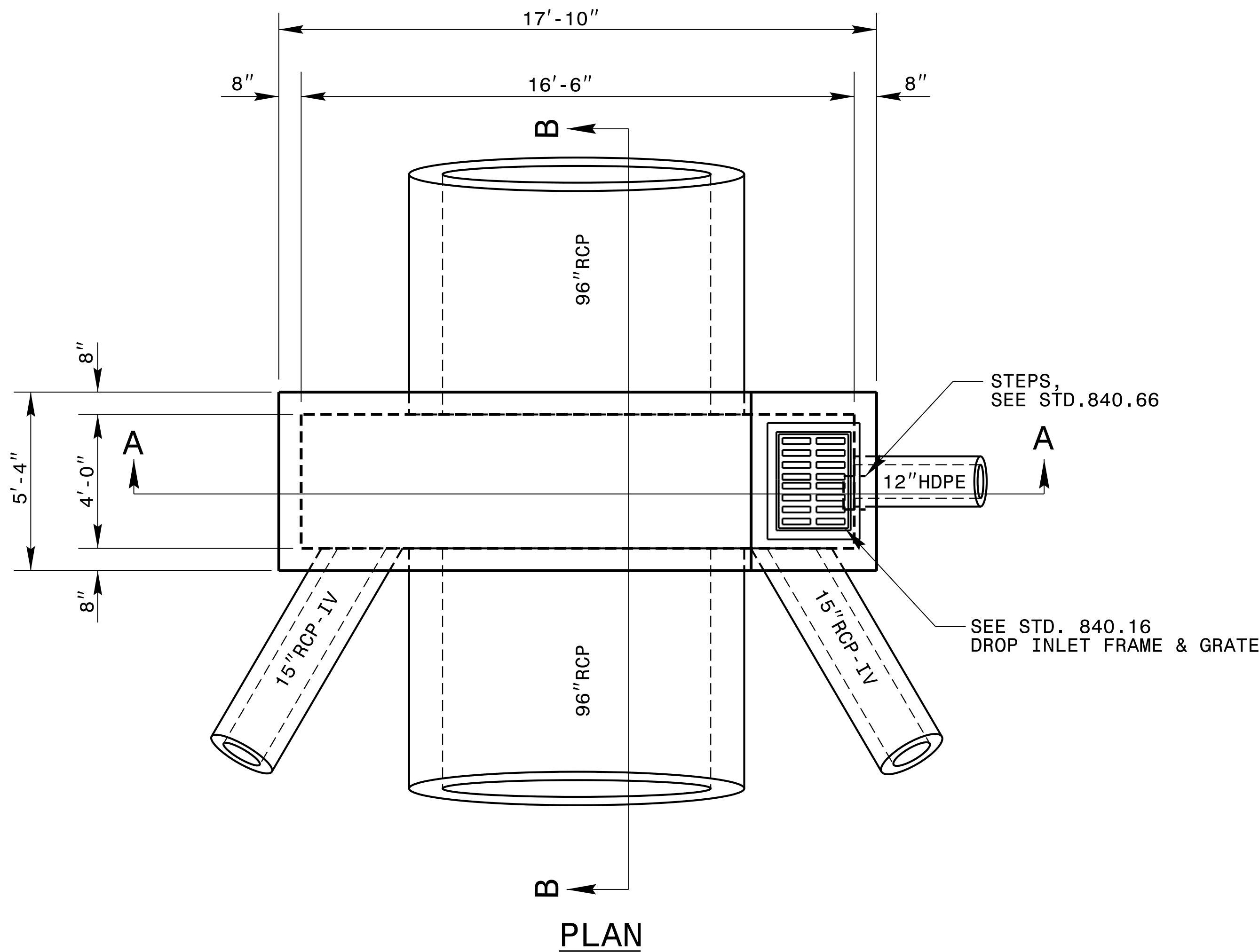
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT
 Office 919-707-6950 FAX 919-250-4119
DETAIL OF REINFORCED CONCRETE ENDWALL FOR 96" PIPE @ 60° SKEW



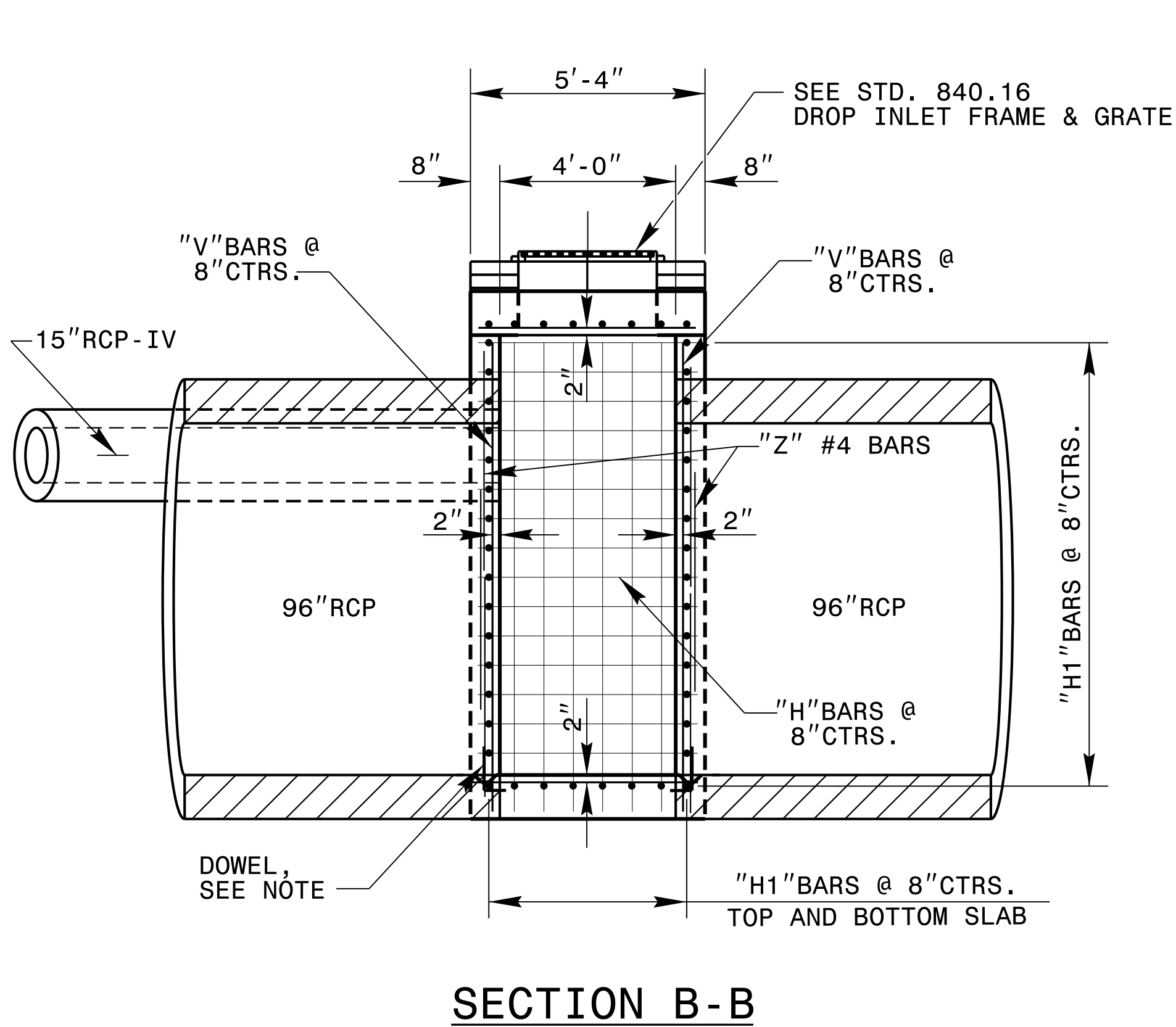
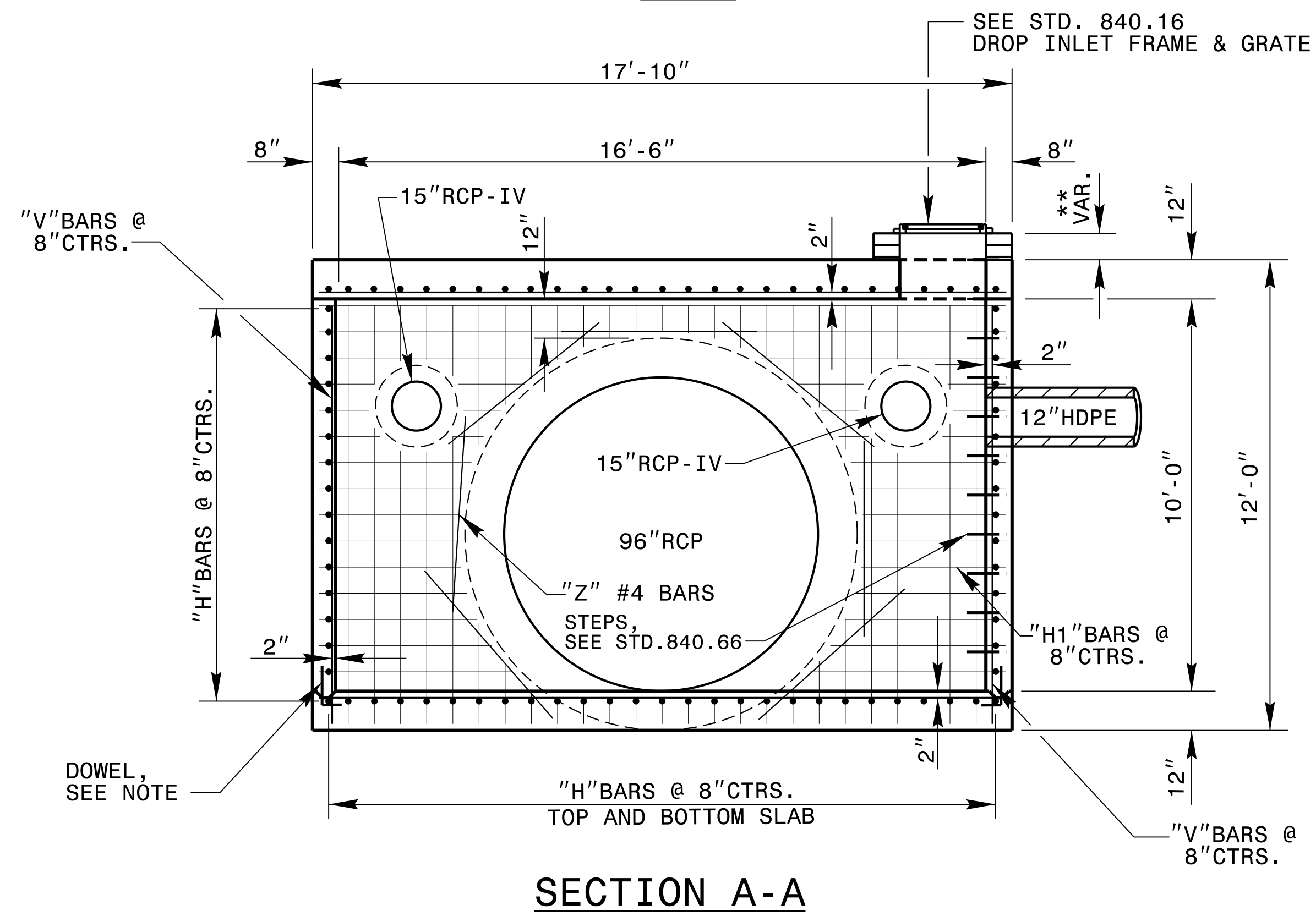
ORIGINAL BY: T.S. Spell DATE: April 22, 2005
 MODIFIED BY: K.A. Kempf DATE: July 30, 2018
 CHECKED BY: DATE:
 FILE SPEC.: details\endwall_96 sk60.dgn

31-JUL-2018 10:30
 S:\Contracts\Special Details\kempf\english\endwall_96 sk60.dgn
 kempf AT CSO-292596



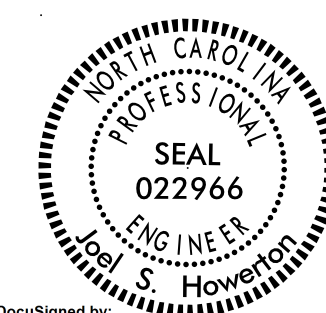
GENERAL NOTES:

- THE BASE SLAB TO BE CONSTRUCTED BY FORMING.
- IF PIPE IS SET INTO BASE SLAB, SEE STD. DWG. 840.00 FOR CONSTRUCTION DETAILS.
- CLASS 'B' CONCRETE SHOULD BE USED THROUGHOUT.
- CONSTRUCTION OPTIONS: MONOLITHIC POUR. 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- REINFORCING STEEL SHOULD BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.
- ALL EXPOSED CORNERS SHOULD BE CHAMFERED 1".
- SEE STD. DRAWING 840.34 FOR CONSTRUCTION OF RISER FOR DROP INLET GRATE AND FRAME.
- STRUCTURES OVER 3'-6" IN DEPTH WILL REQUIRE STEPS TO BE PLACED ON 12" CTRS. REFERENCE STD. NO. 840.66.
- MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.



BILL OF MATERIAL				
BAR	NO.	SIZE	LENGTH	WEIGHT
H	84	#4	5'-0"	281
H1	46	#4	17'-6"	538
V	66	#4	10'-8"	471
Z	14	#4	5'-0"	47
TOTAL REINF. STEEL (lbs.)			1337	
CLASS "B" CONC. (cu. yds.)			17.8	
DEDUCTION FOR 2- 96" RCP			-3.9	
DEDUCTION FOR 2- 15" RCP III			-0.2	
CLASS "B" CONC. (cu. yds.)			13.7	

** 0.30 CU. YD. PER FOOT OF RISER HEIGHT



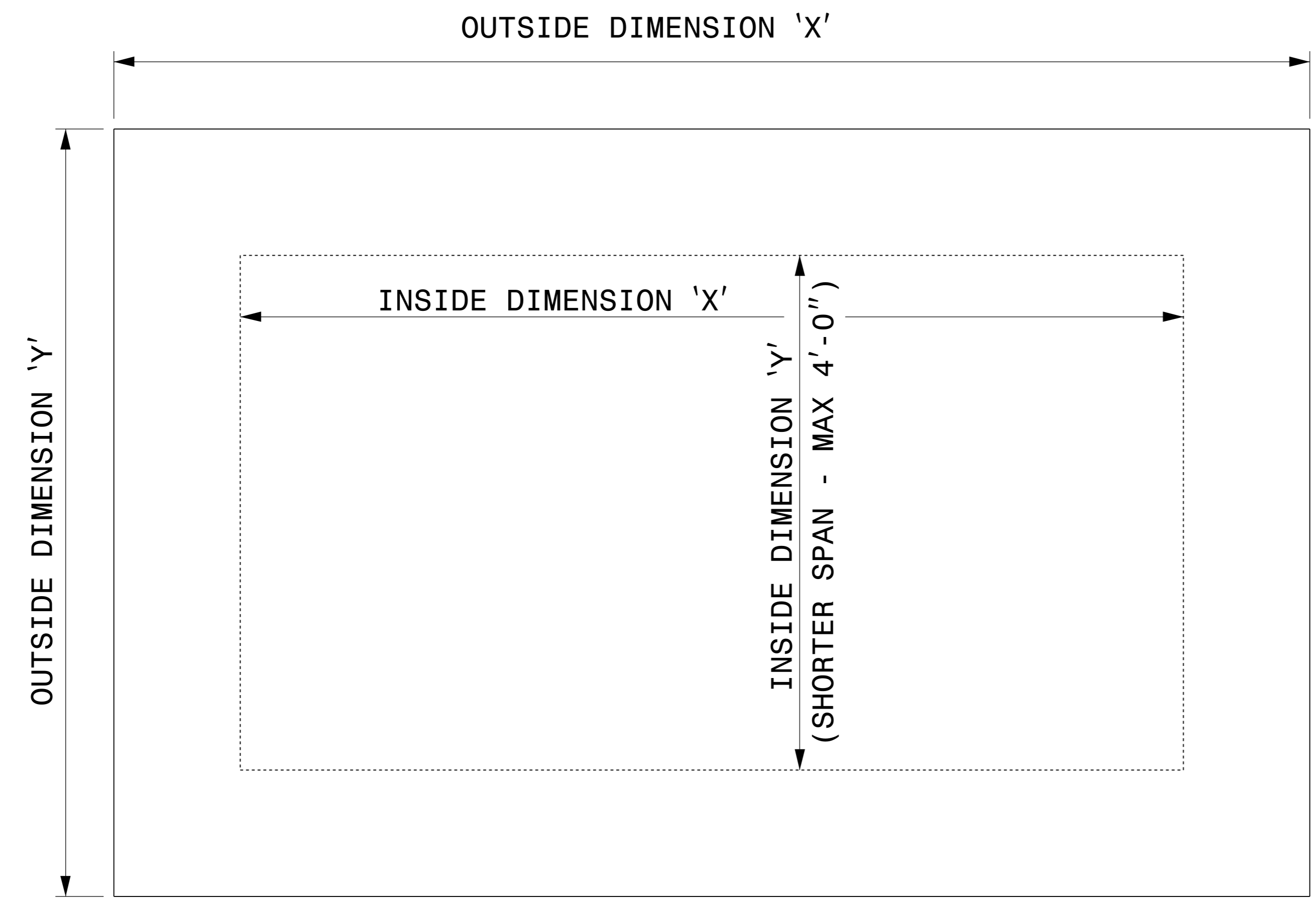
DocuSigned by:
Joel S. Howerton
7/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**CONTRACT SERVICES & DEVELOPMENT UNIT
STANDARDS AND SPECIAL DESIGN**
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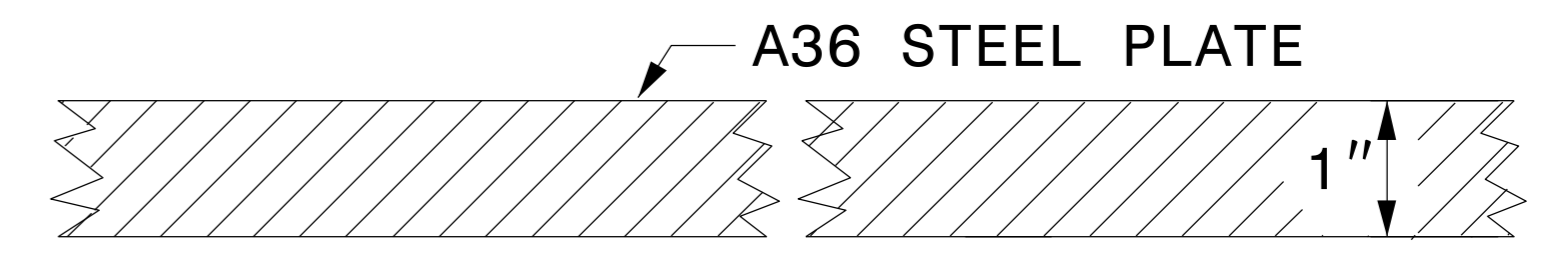
**DETAIL OF DROP INLET FOR
96" REINFORCED CONCRETE PIPE**

ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: rnbritt DATE: 12-02-2015
 CHECKED BY: _____ DATE: _____
 FILE SPEC: :details/nbritt/english/urban/u4902_96di.dgn



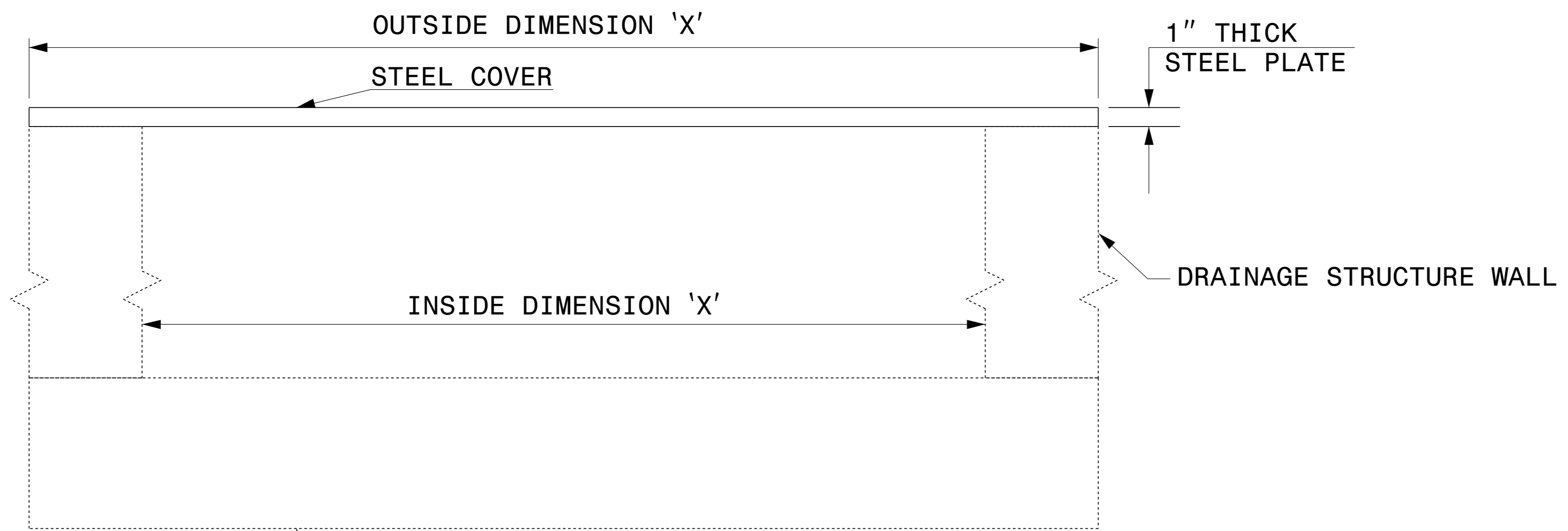
GENERAL NOTES:

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



SECTION VIEW OF STEEL TOP PLATE

PLAN VIEWS



ELEVATION VIEWS



7/25/2018

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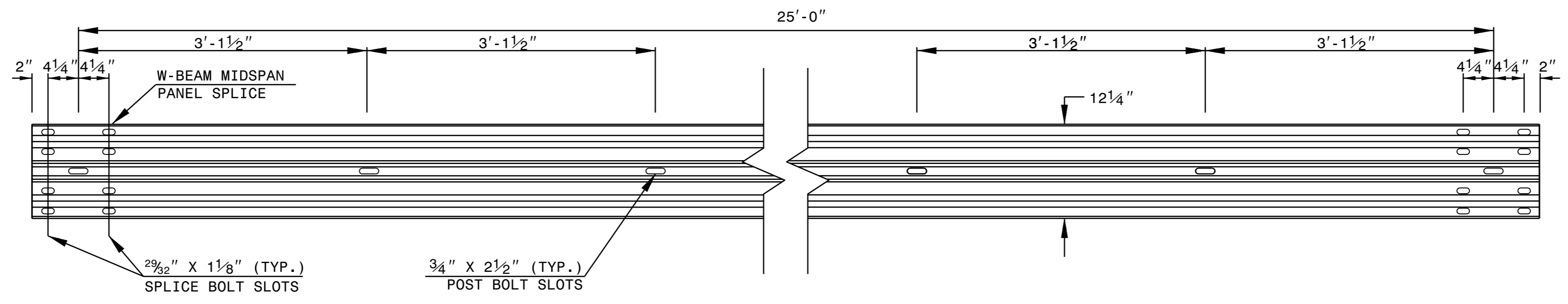
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE	
ORIGINAL BY: E.E. WARD	DATE: 2-2-98
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: eric:/usr/details/metric/stand/st1cvr2.dgn	

\$\$\$\$ TIME \$\$\$
 \$\$\$ USERNAME \$\$\$
 \$\$\$

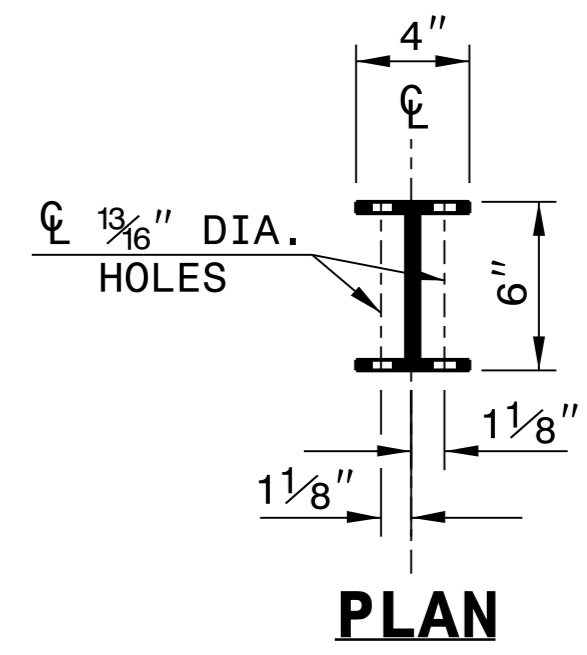
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

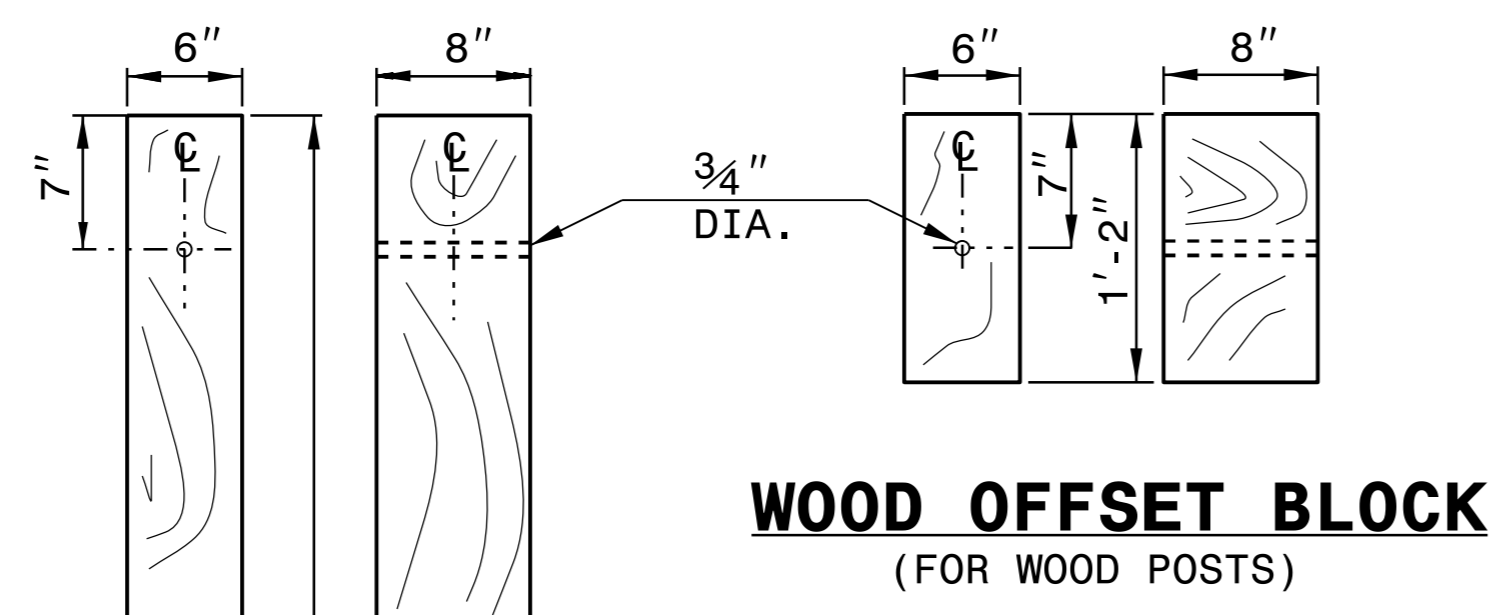
SHEET 6 OF 8
862D02



STANDARD W-BEAM GUARDRAIL



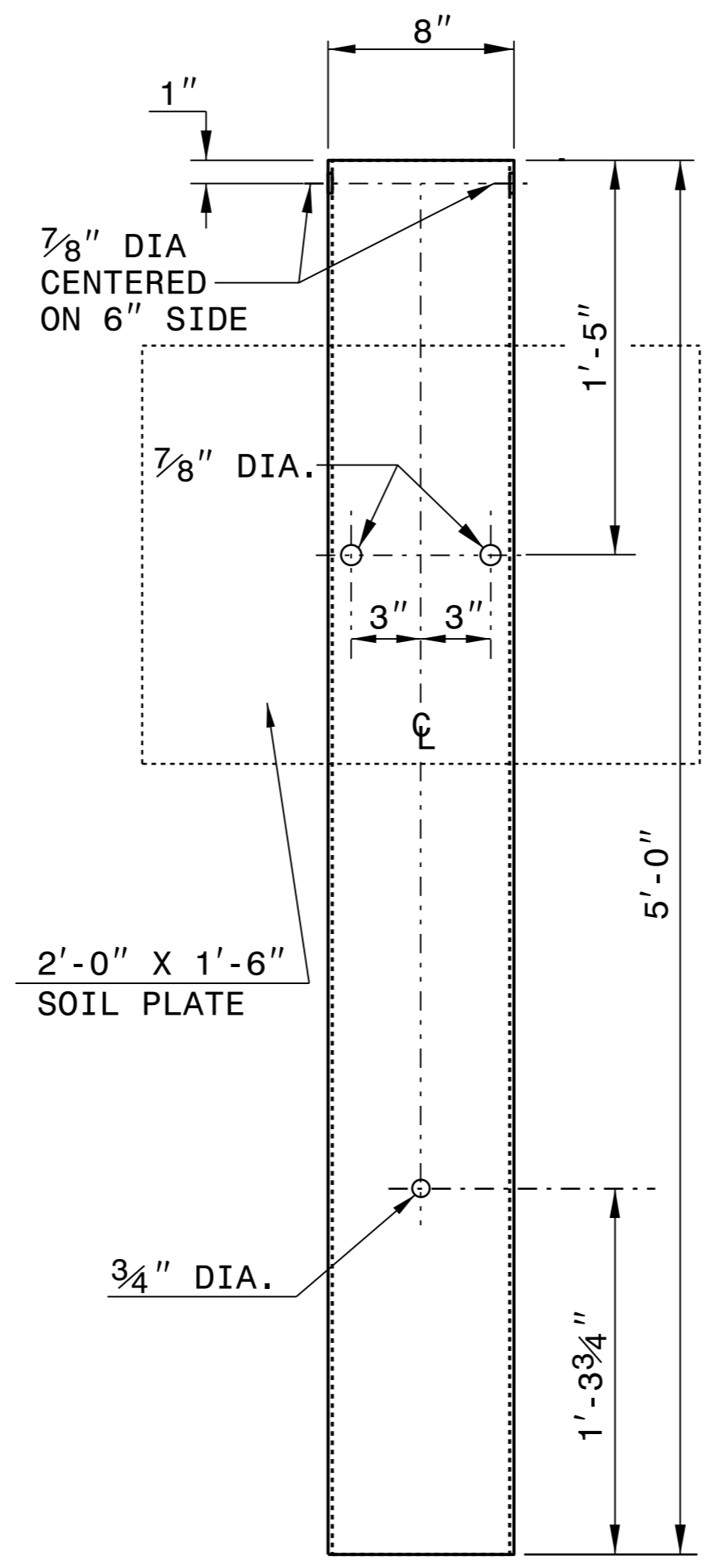
PLAN



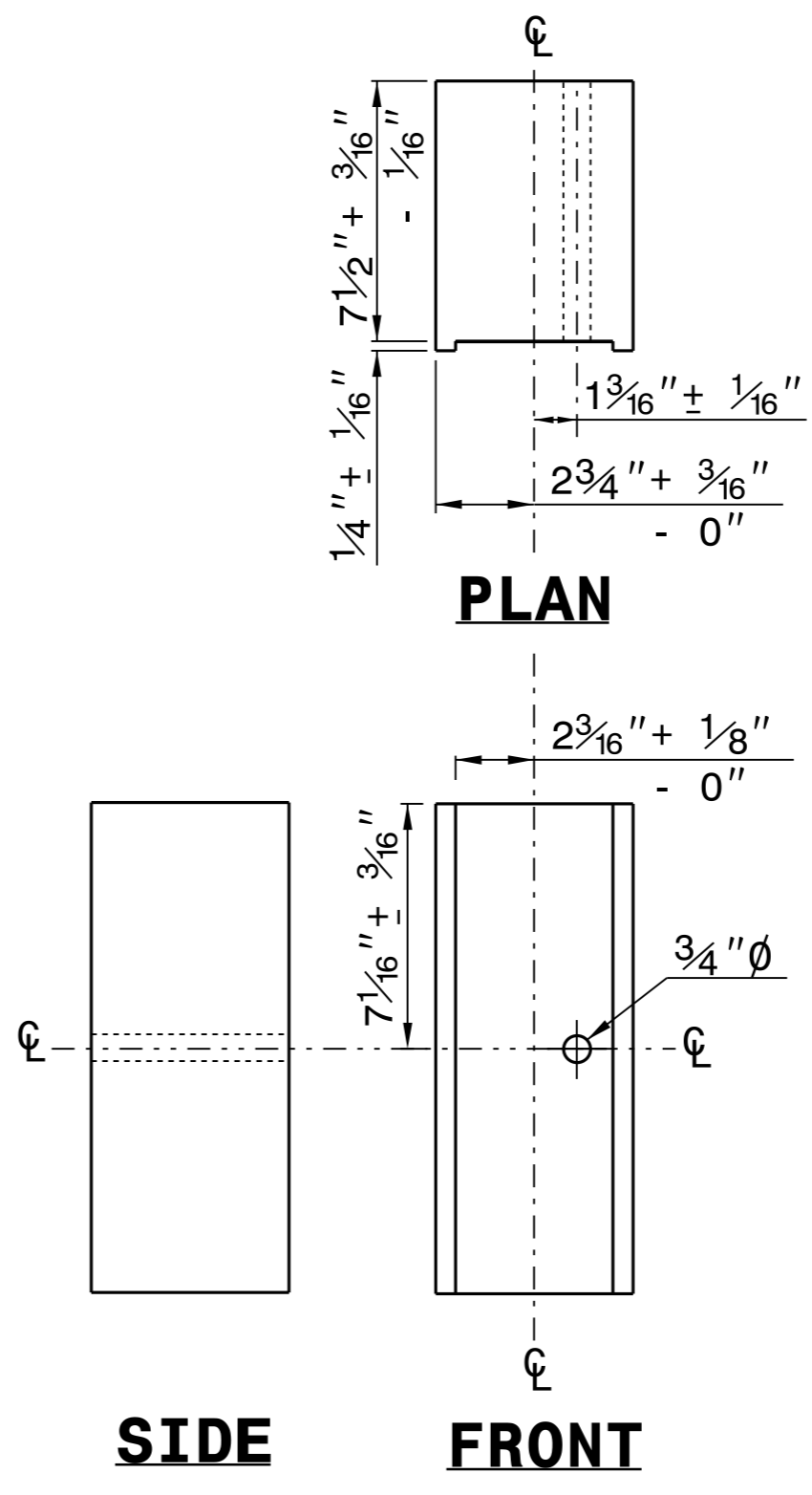
**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

**STANDARD
LINE POST**

**SHORT WOOD
BREAKAWAY POST**



**STEEL TUBE
TS 6"x8"x0.1875"**

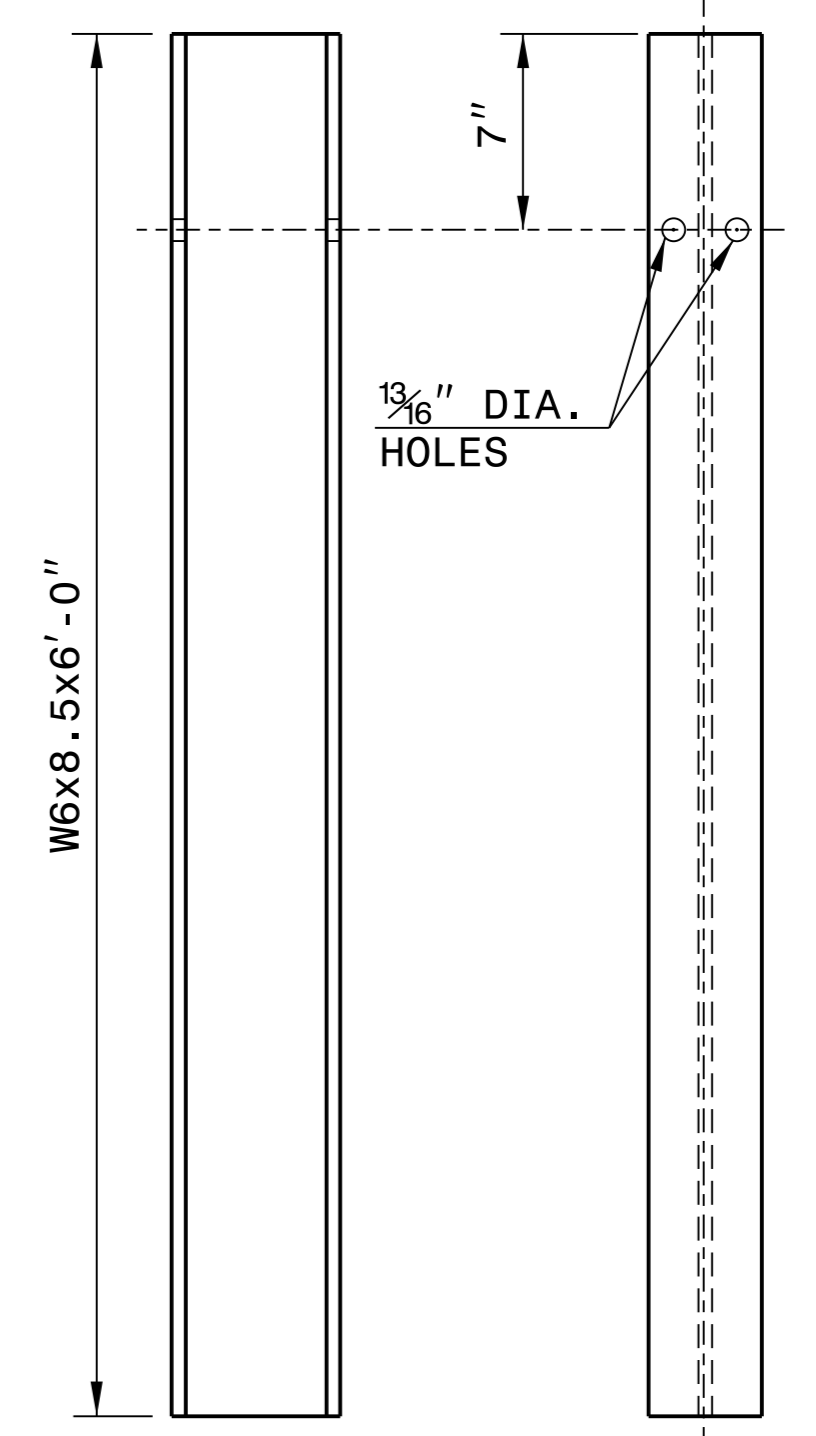


PLAN

SIDE

FRONT

**ROUTED
OFFSET BLOCK**



SIDE

FRONT

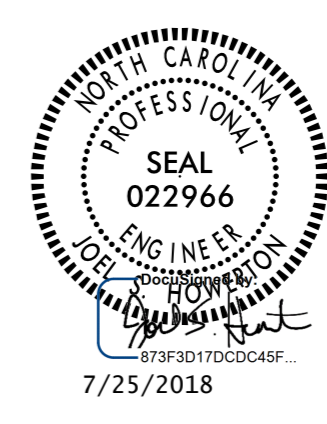
"W6" STEEL POST

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

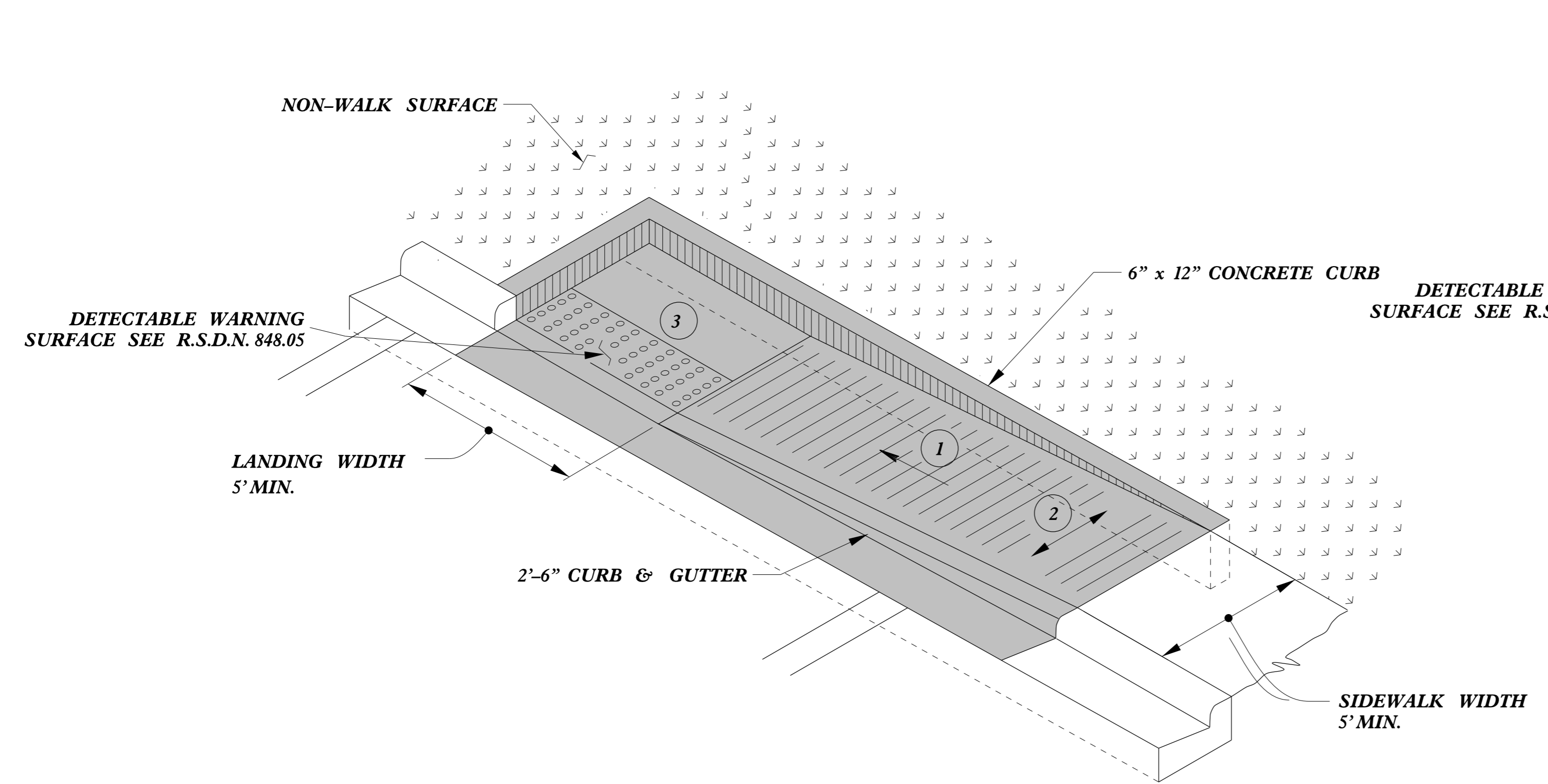


**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
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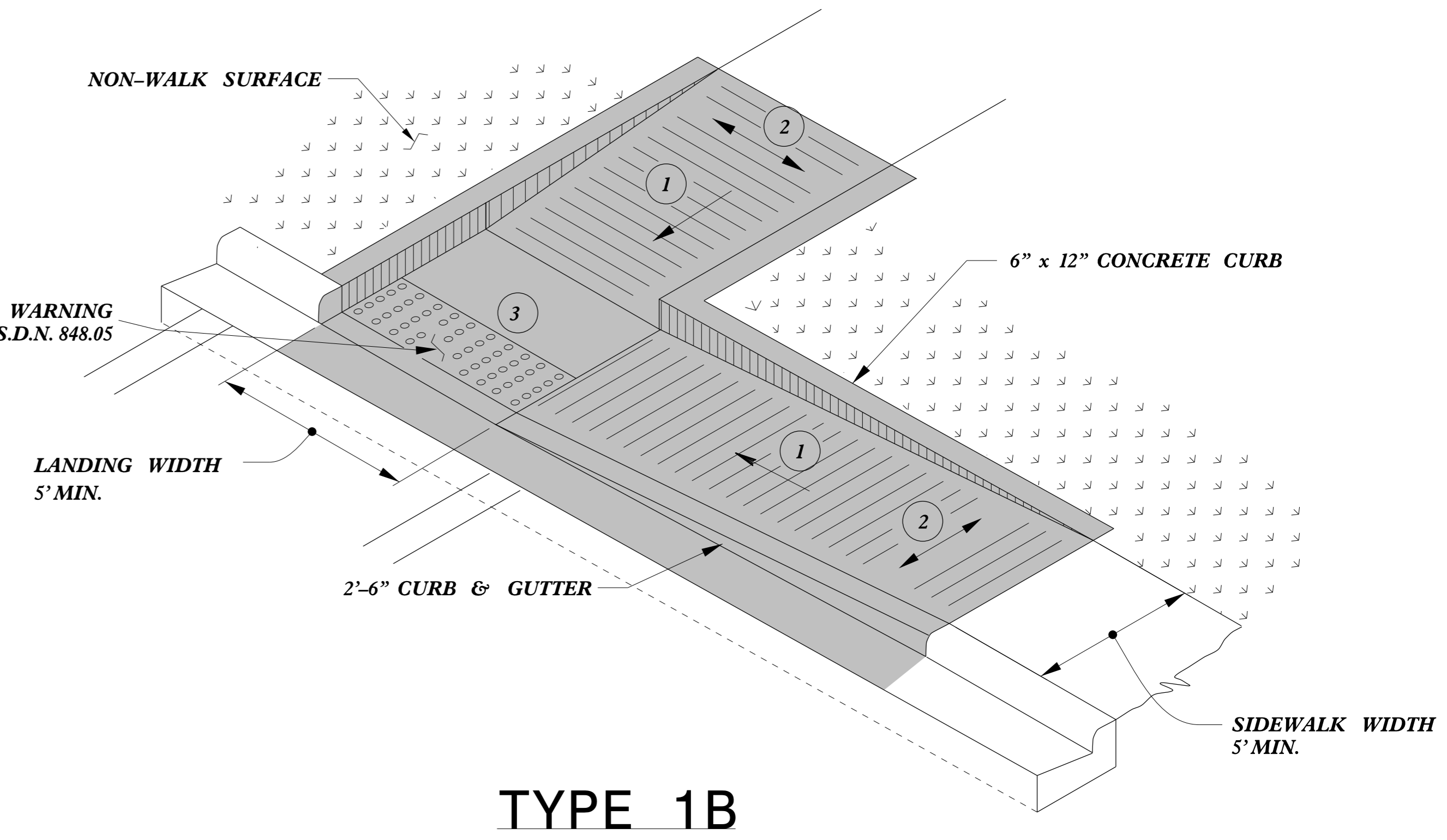
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MODIFIED BY: DATE: _____
CHECKED BY: DATE: _____
FILE SPEC.: _____

5/14/99



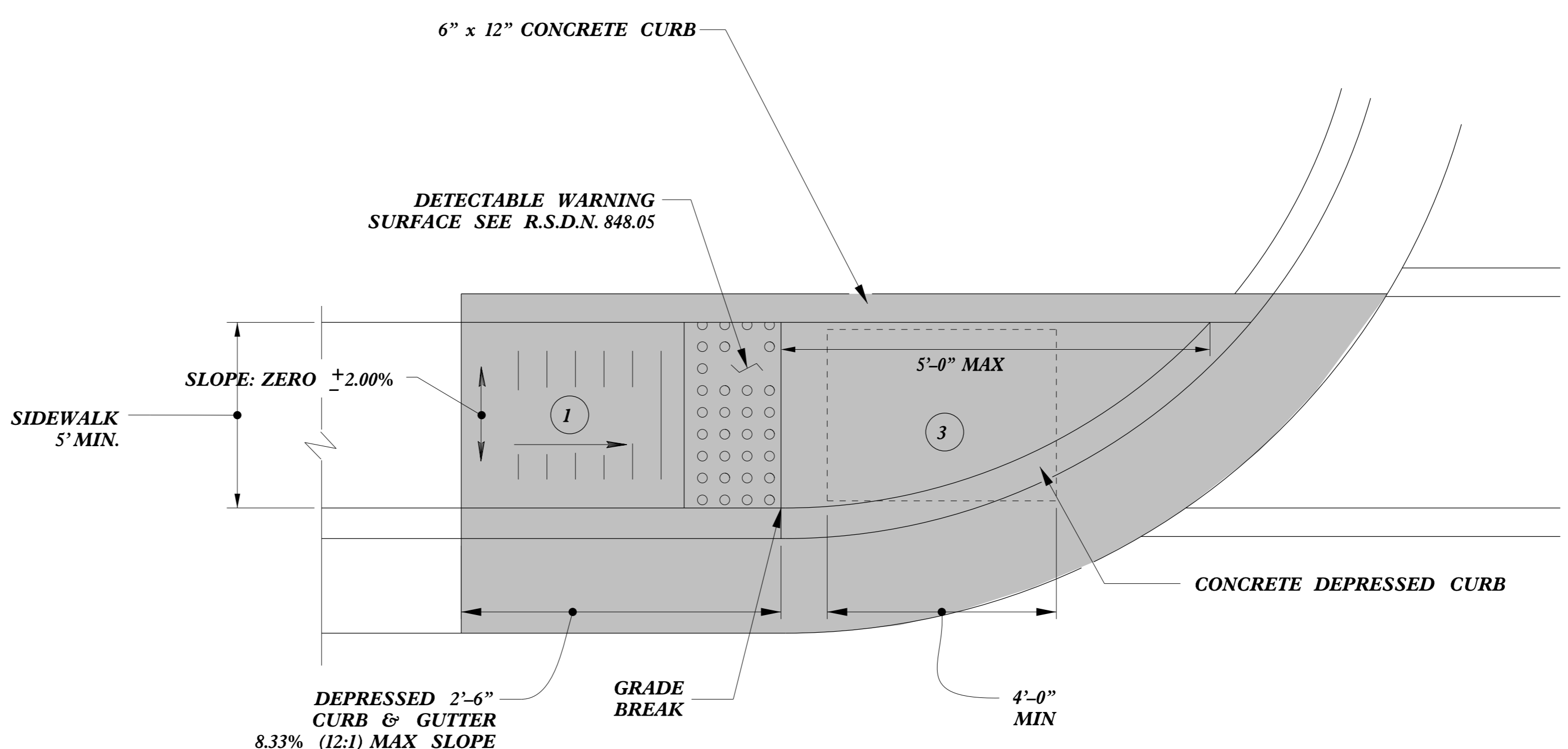
TYPE 1A



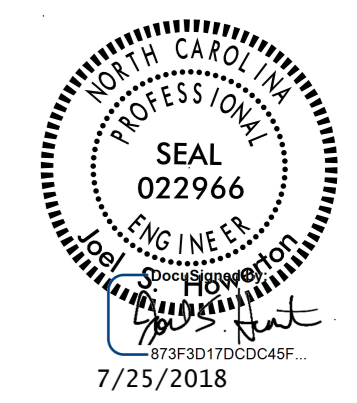
TYPE 1B

PAY LIMITS FOR 1 CURB RAMP

- 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.



TYPE 1



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CURB RAMPS
Directional Ramps

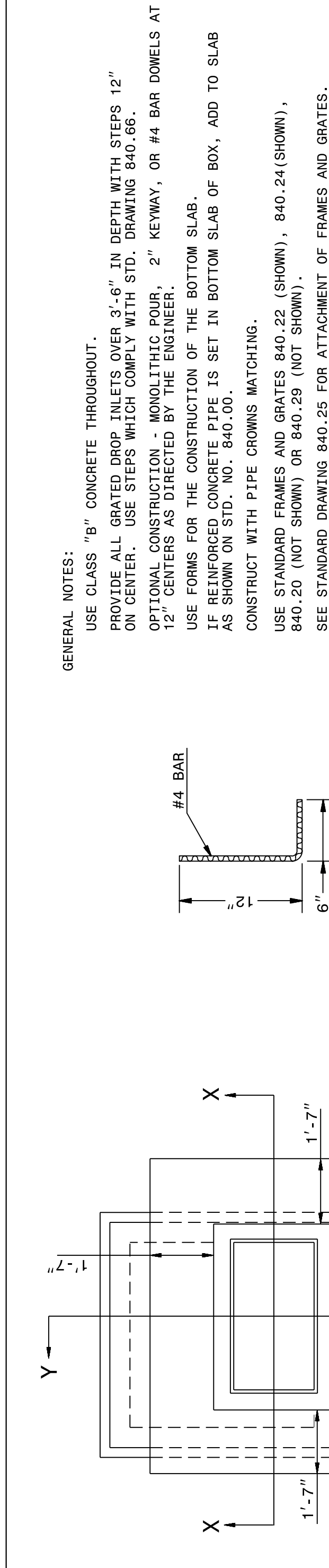
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
 MODIFIED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dgn

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

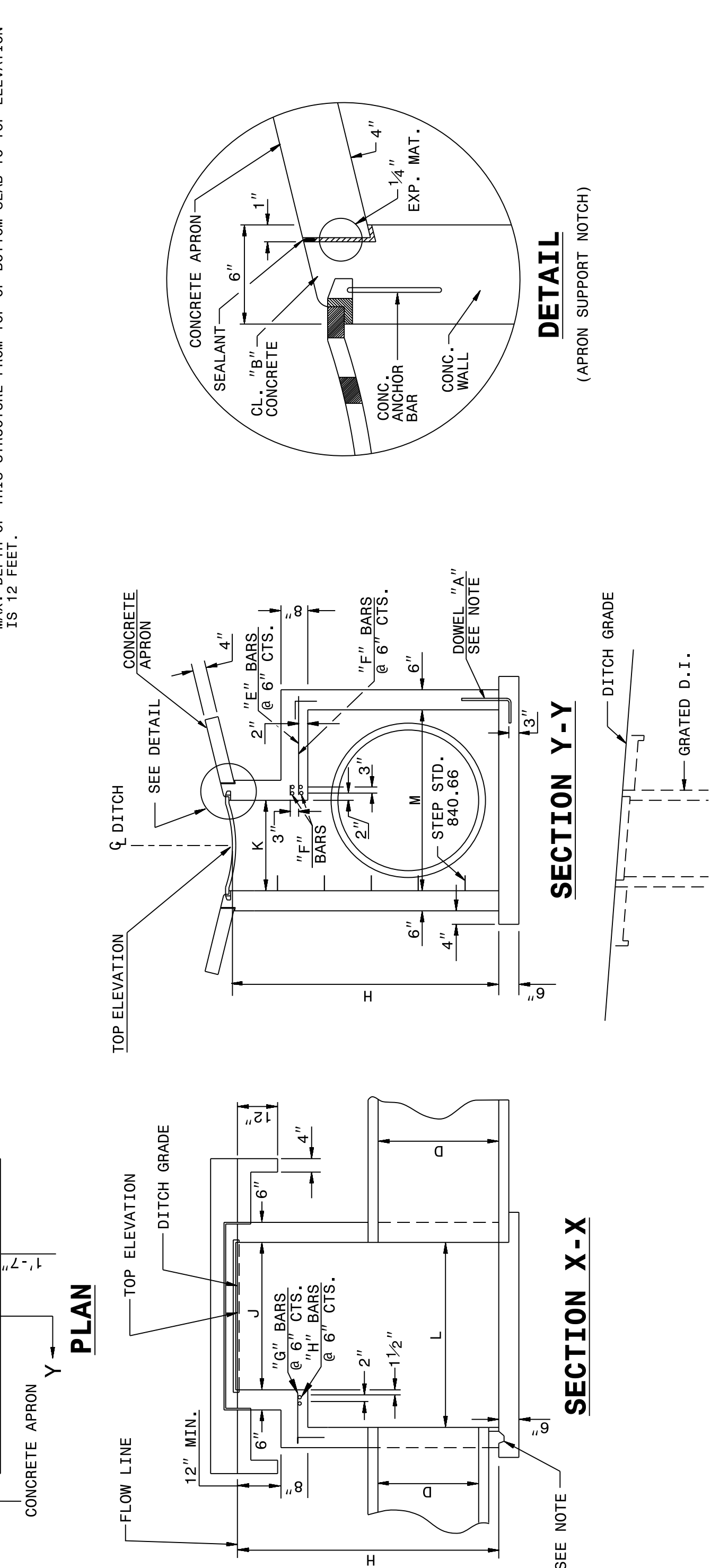
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

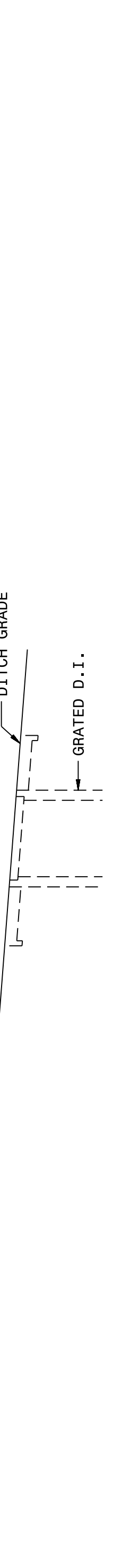
SHEET 1 OF 2
840d17



SECTION X-X



SECTION Y-Y



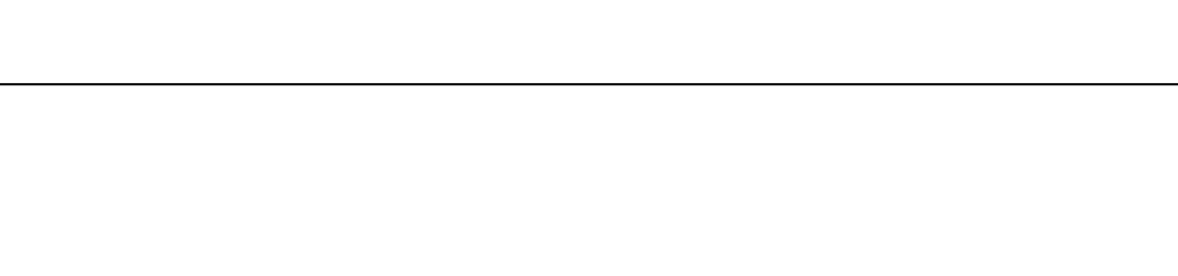
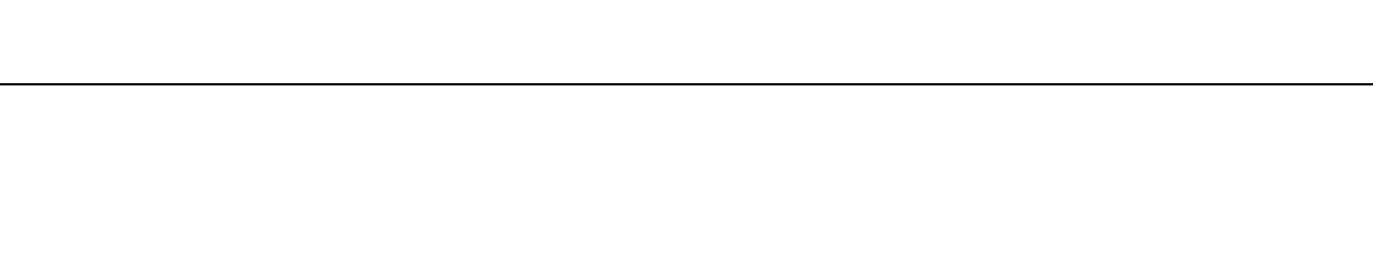
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RALEIGH, N.C.

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.

DOWEL - A

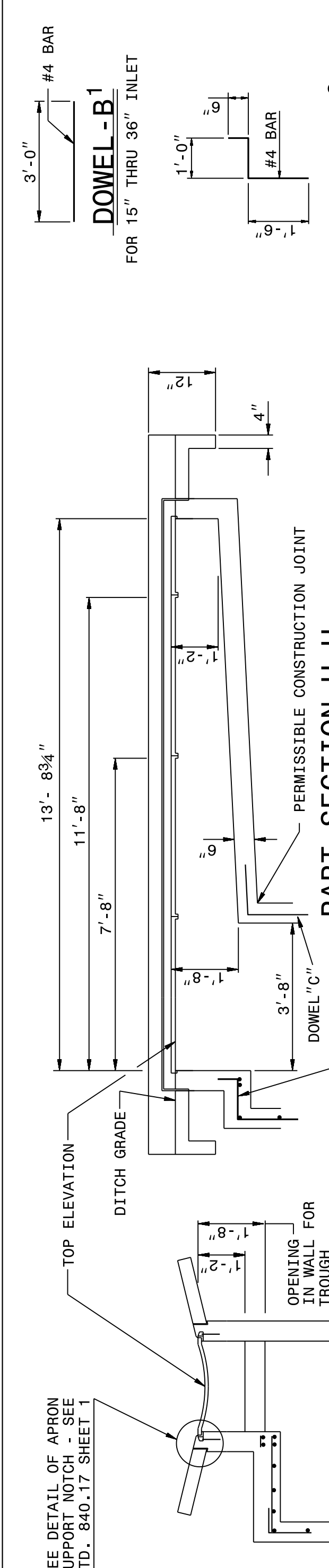


DETAIL
(APRON SUPPORT NOTCH)

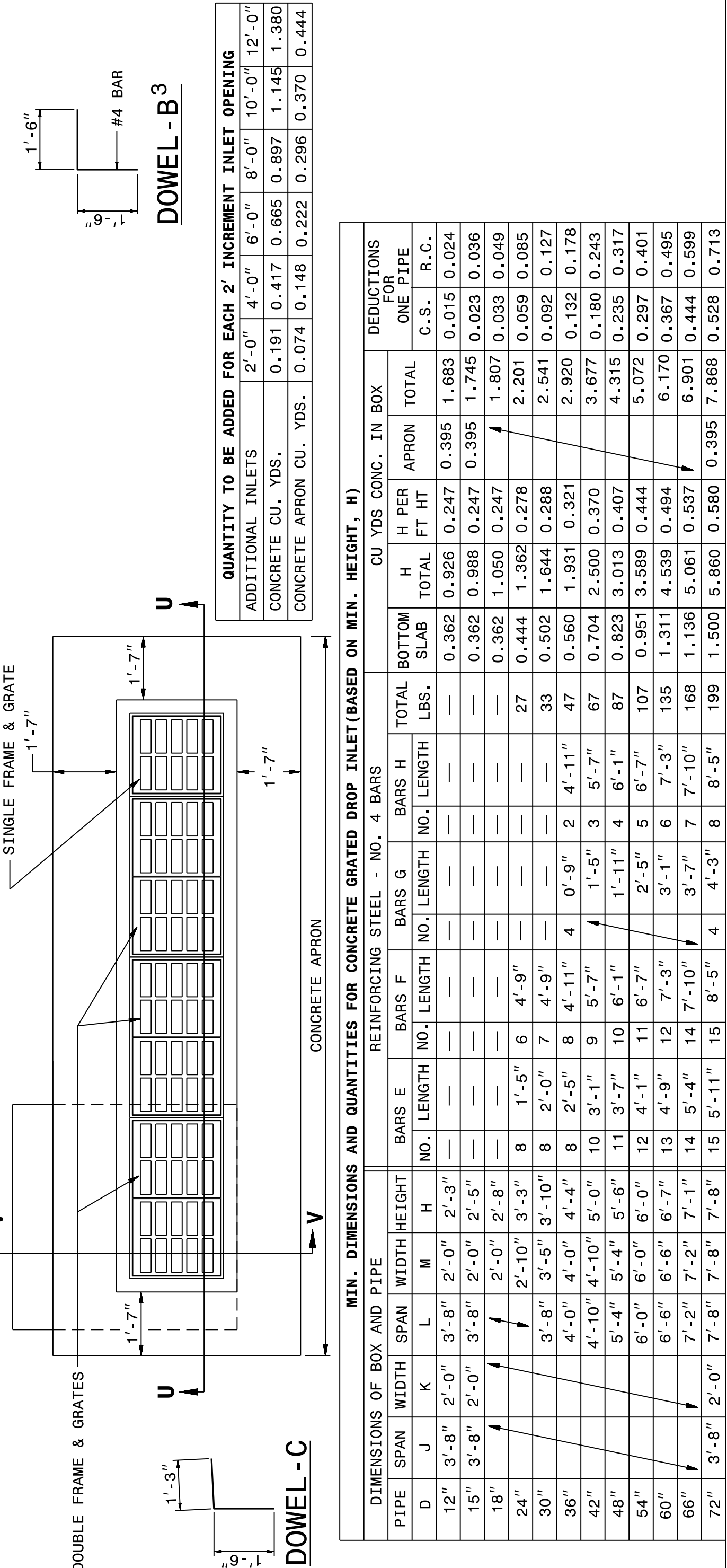
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ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A'
MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 2 OF 2
840d17



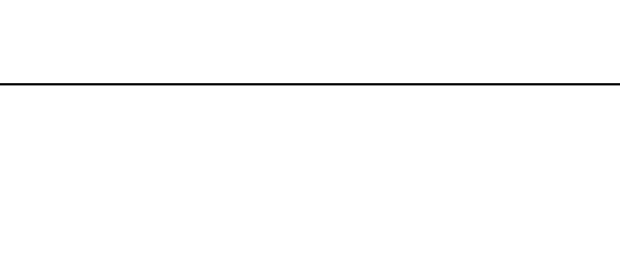
PART SECTION U-U



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

SHEET 2 OF 2
840d17



DOWEL - B1
FOR 15" THRU 36" INLET



DOWEL - B2
FOR 42" INLET



DOWEL - B3

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

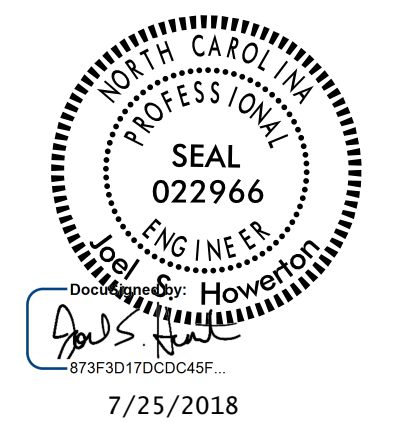
PIPE	DIMENSIONS OF BOX AND PIPE		REINFORCING STEEL - NO. 4 BARS				MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET (BASED ON MIN. HEIGHT, H)		CU YDS CONC. IN BOX		DEDUCTIONS FOR ONE PIPE			
	SPAN	WIDTH	NO.	LENGTH	NO.	LENGTH	BARS H	TOTAL	APRON	TOTAL	C.S.	R.C.		
12"	3'-8"	2'-0"	2'-0"	2'-3"	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	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
30"	—	—	3'-5"	3'-10"	8	2'-0"	7	4'-9"	—	—	33	0.502	1.644	0.288
36"	—	—	4'-0"	4'-4"	8	2'-5"	8	4'-11"	4	0'-9"	47	0.560	1.931	0.321
42"	—	—	4'-10"	5'-0"	10	3'-1"	9	5'-7"	3	5'-7"	67	0.704	2.500	0.370
48"	—	—	5'-4"	5'-6"	11	3'-7"	10	6'-1"	4	6'-1"	87	0.823	3.013	0.407
54"	—	—	6'-0"	6'-0"	12	4'-1"	11	6'-7"	5	6'-7"	107	0.951	3.589	0.444
60"	—	—	6'-6"	6'-7"	13	4'-9"	12	7'-3"	6	7'-3"	135	1.311	4.539	0.494
66"	—	—	7'-2"	7'-1"	14	5'-4"	14	7'-10"	7	7'-10"	168	1.136	5.061	0.537
72"	—	—	7'-8"	7'-8"	15	5'-11"	15	8'-5"	4	4'-3"	199	1.500	5.860	0.580

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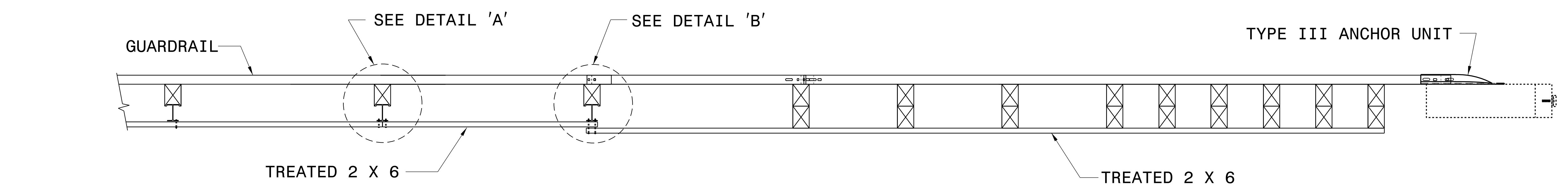
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AND DEVELOPMENT UNIT**
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SEE TITLE BLOCK

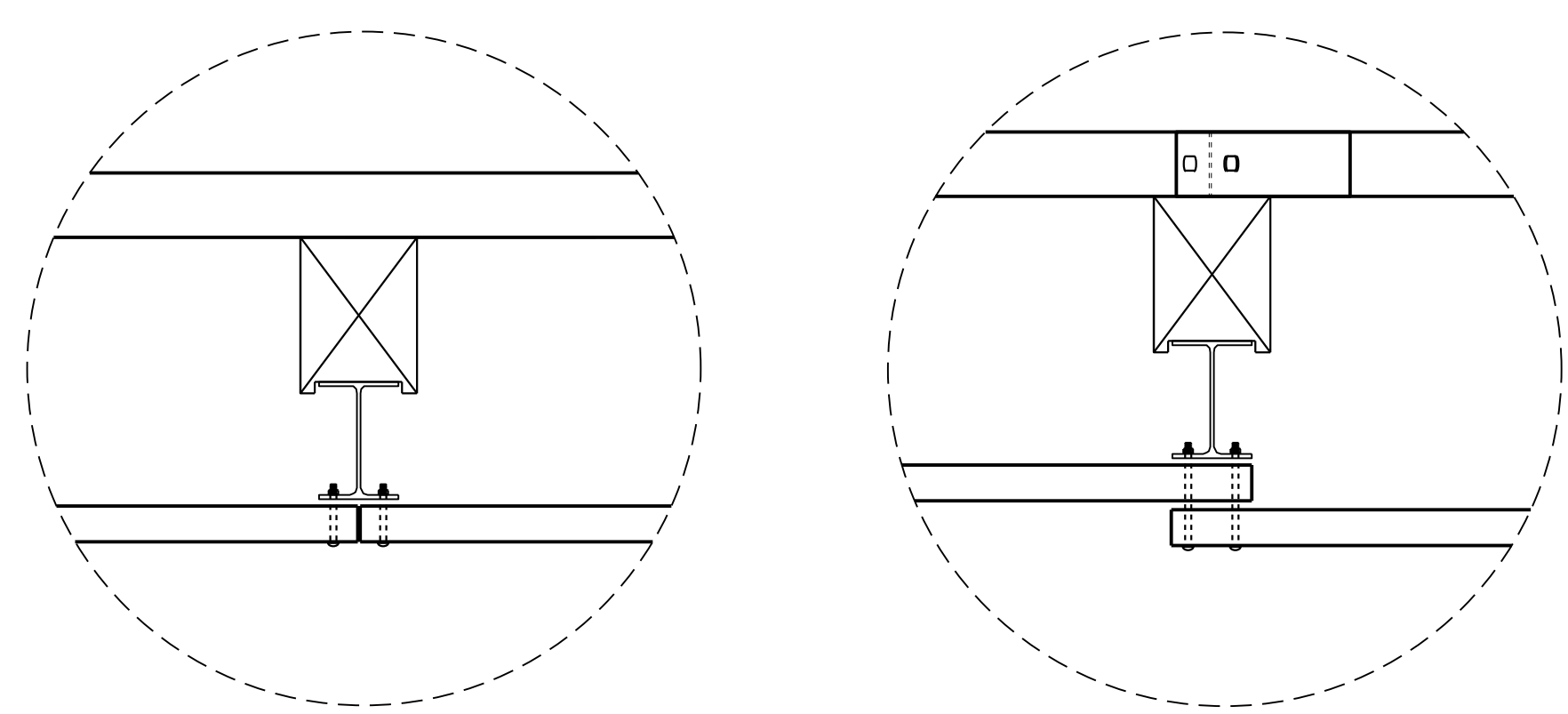
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CHECKED BY: DATE:
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jhowerton At CSD 2/25/18



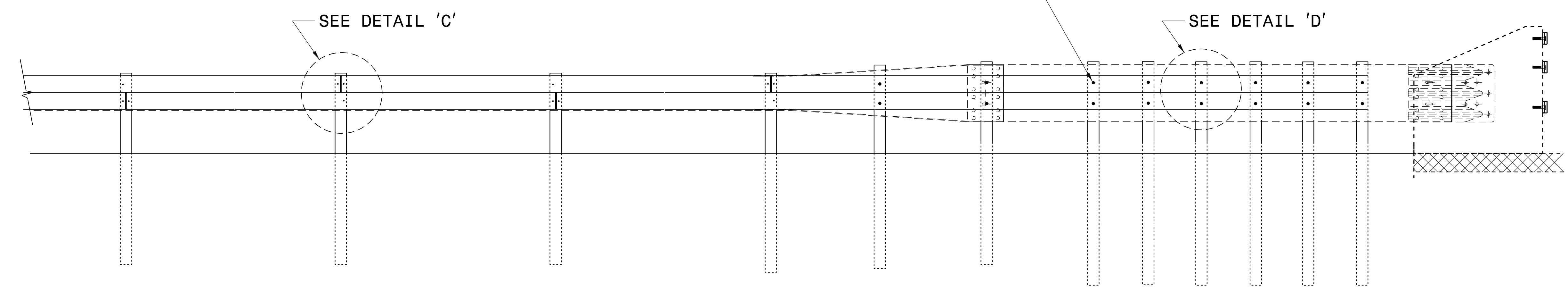
PLAN



DETAIL 'A'

DETAIL 'B'

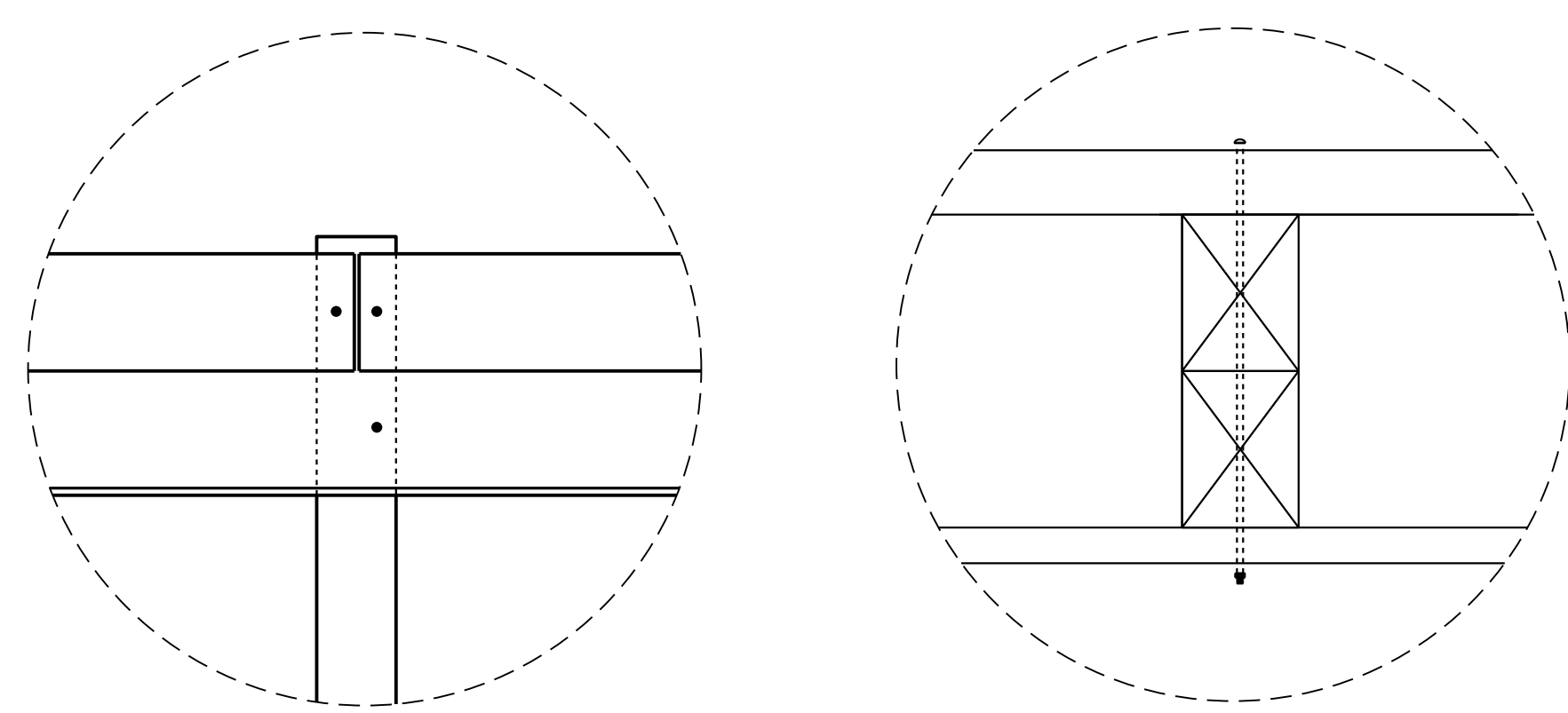
USE BOLTS AND NUTS FROM TYPE III ANCHOR UNIT TO FASTEN 2 X 6 WOOD RAILS TO THE WOOD POSTS - BOLTS MAY NEED TO BE LENGTHENED TO ACCOMMODATE FOR THE 2 X 6 WOOD RAILS.



ELEVATION

NOTES:

1. USE #2 SYP TREATED 2 X 6 FOR WOOD RAIL.
2. USE GUARDRAIL BOLTS TO FASTEN WOOD RAIL TO GUARDRAIL POSTS. SEE ROADWAY STD.NO.862.02.
3. THE MOUNTING HEIGHT OF THE WOOD RAIL TO BE DETERMINED IN THE FIELD.
4. PLACE THE TREATED 2 X 6 WOOD RAIL AS DIRECTED BY THE ENGINEER.
5. DO NOT PLACE WOOD RAIL WITHIN THE PAY LIMITS OF THE GREU.



DETAIL 'C'

DETAIL 'D'



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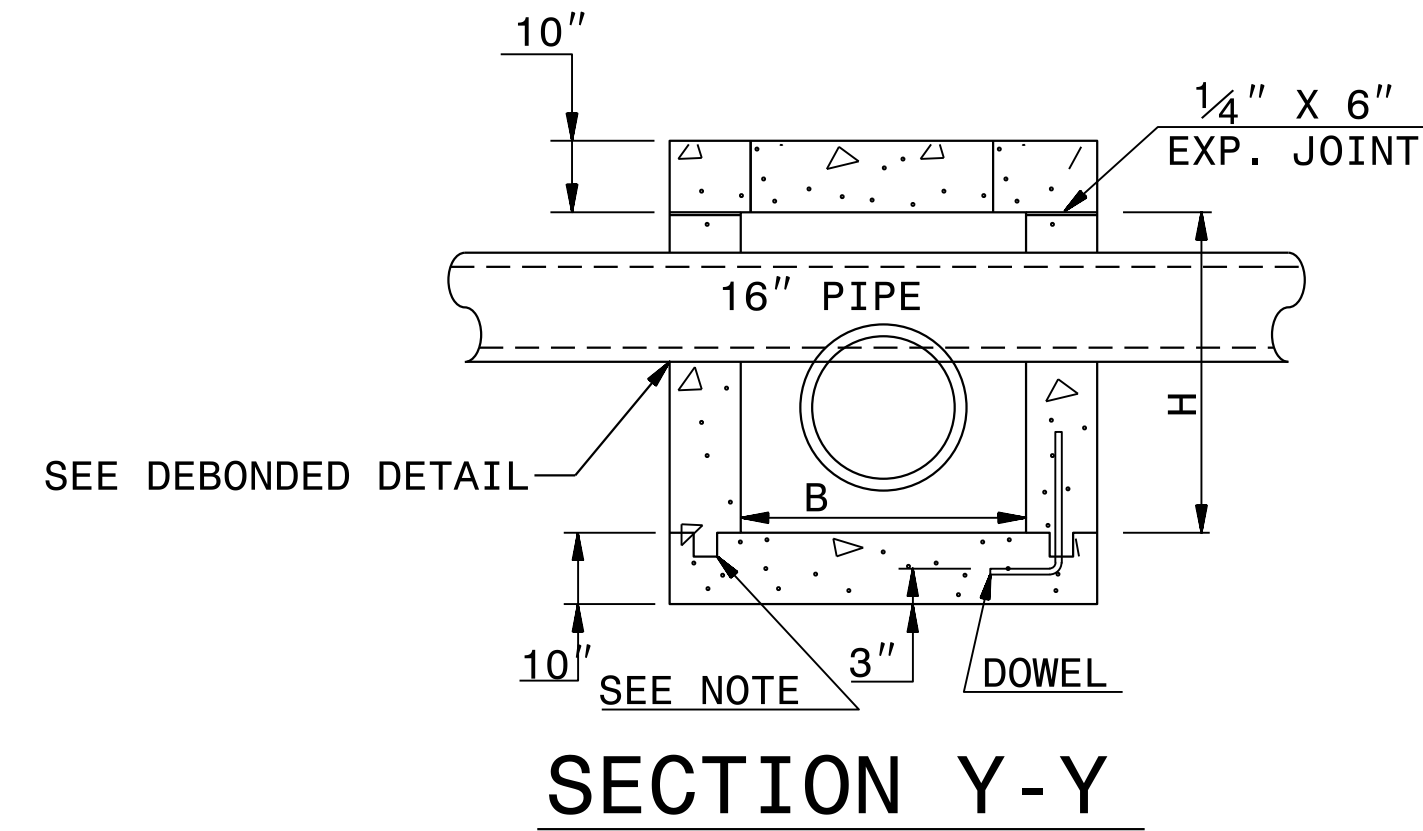
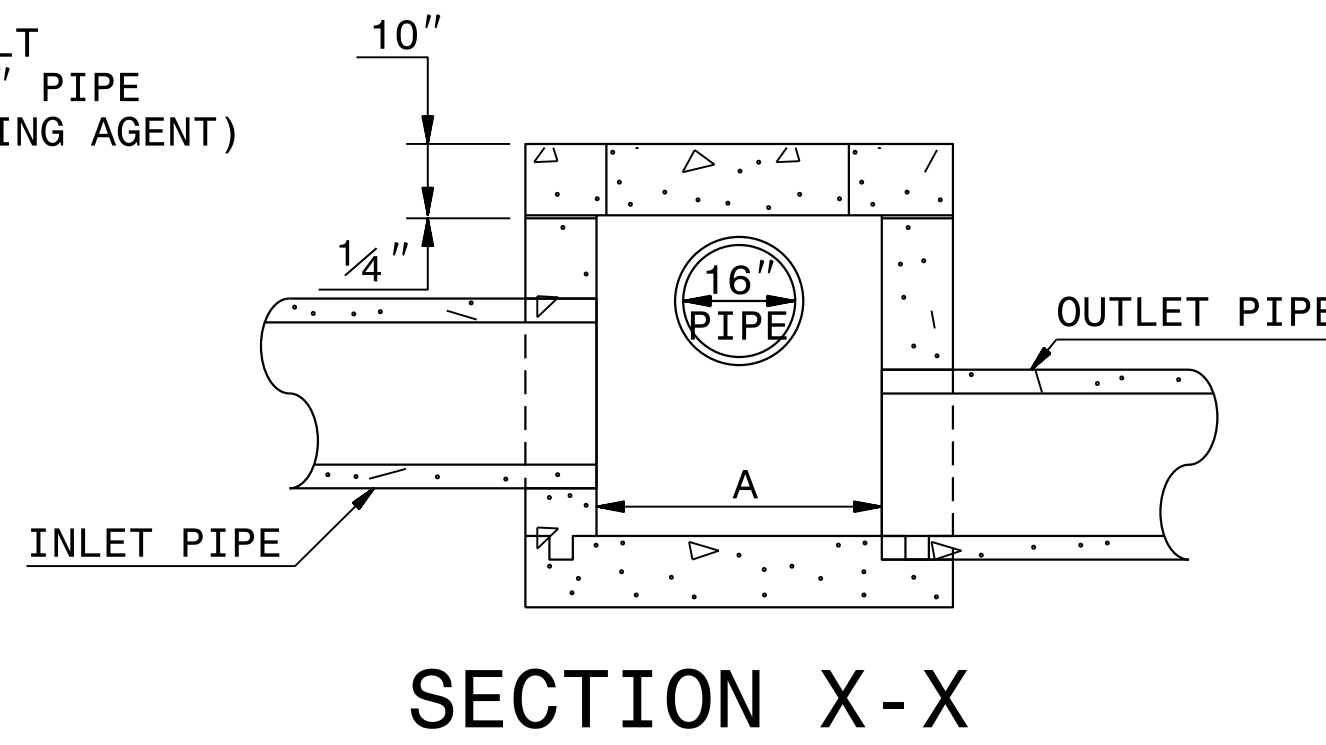
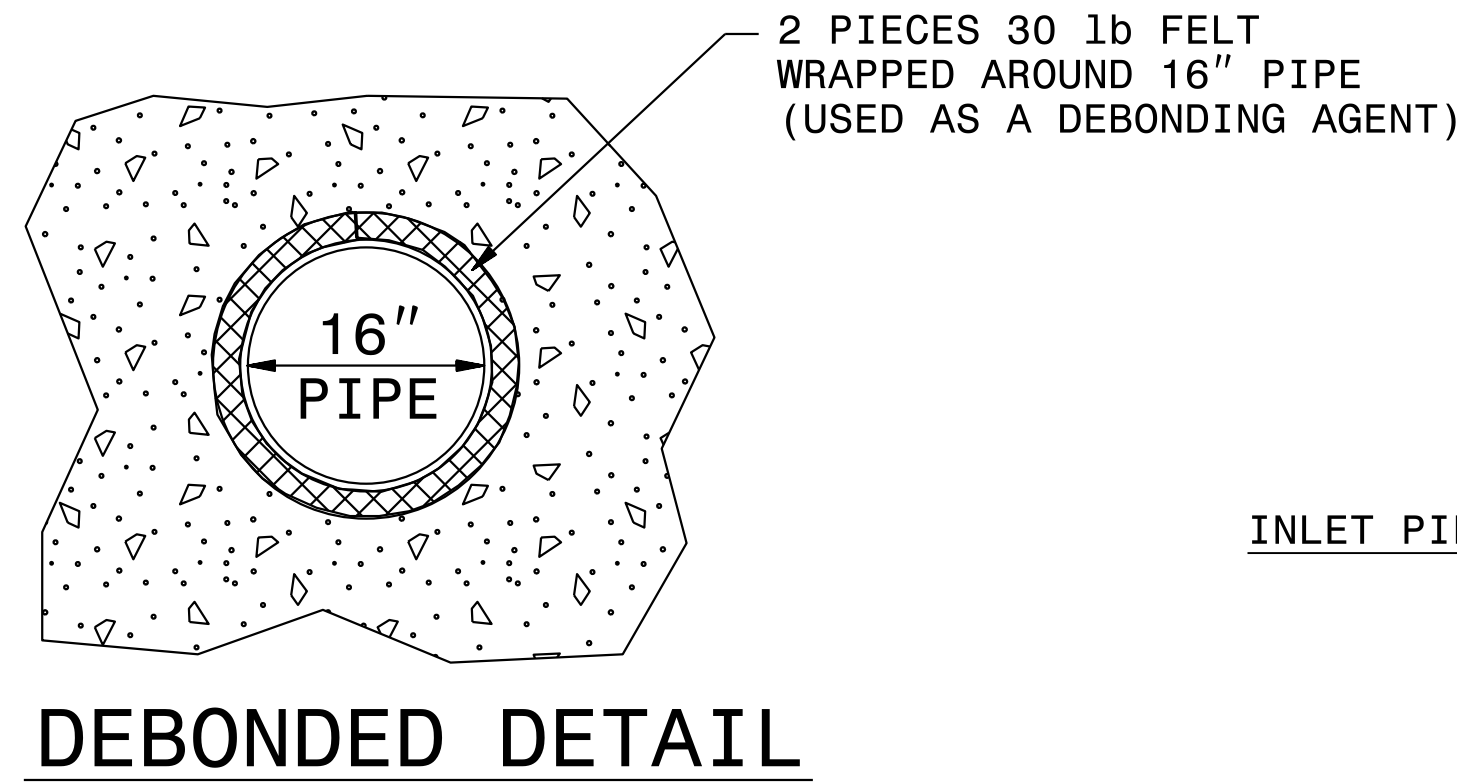
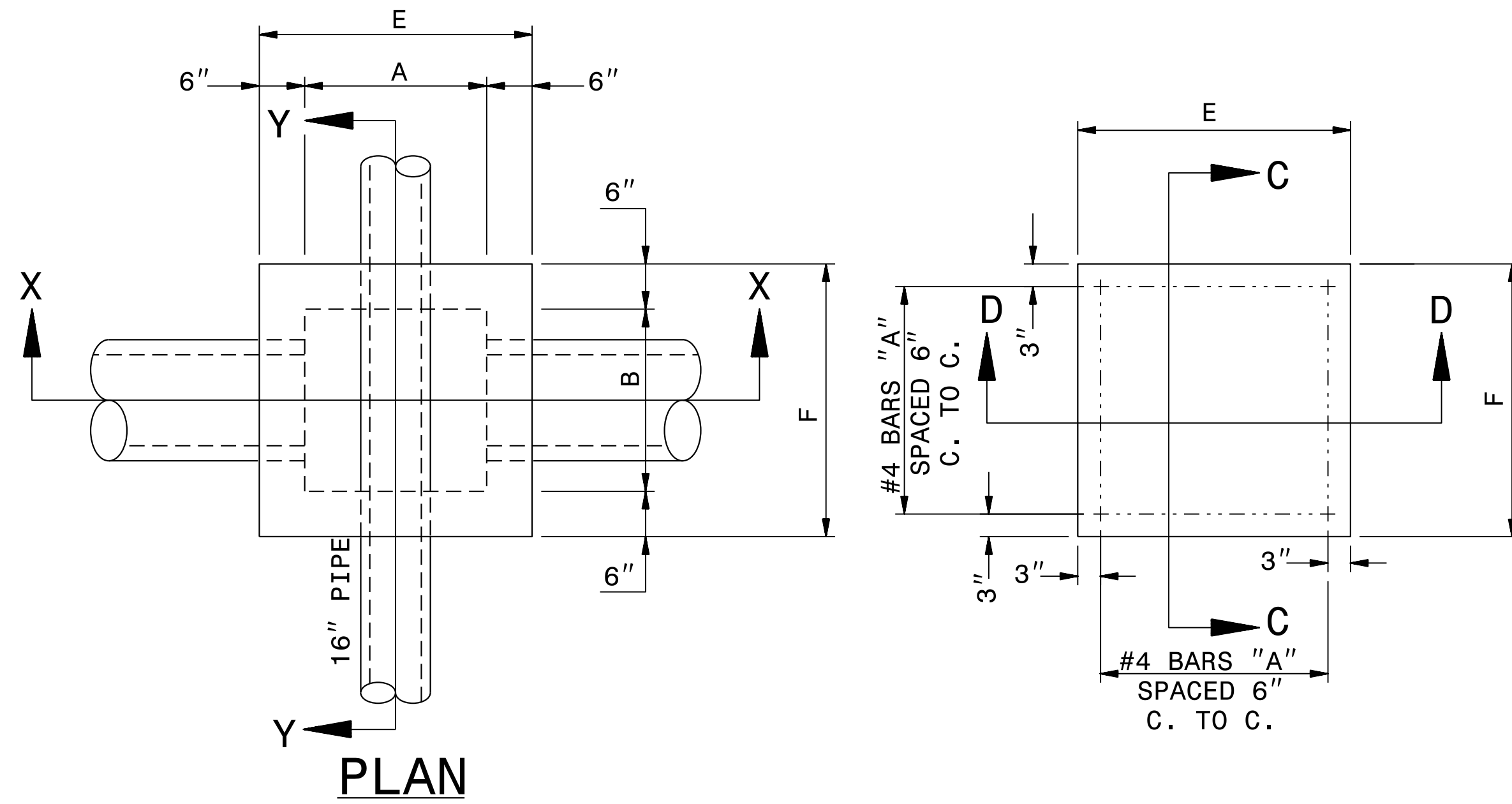
CONTRACT STANDARDS AND DEVELOPMENT UNIT PLANS AND STANDARDS SECTION	
Office 919-707-6950	FAX 919-250-4119
DETAIL OF WOOD RUB RAIL	
ORIGINAL BY: STD.862	DATE: 1-25-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: jhowerton/Wood Rail on Back of Guardrail	

23-AUG-2018 09:52
S:\Contracts\Contractors\Siggeal Details\jhowerton\Wood Rail on the Back of Guardrail.dgn
jhowerton AI CSB-212955

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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**CONCRETE JUNCTION BOX WITH
16" PIPE PASSING THRU
12" THRU 66" PIPE**

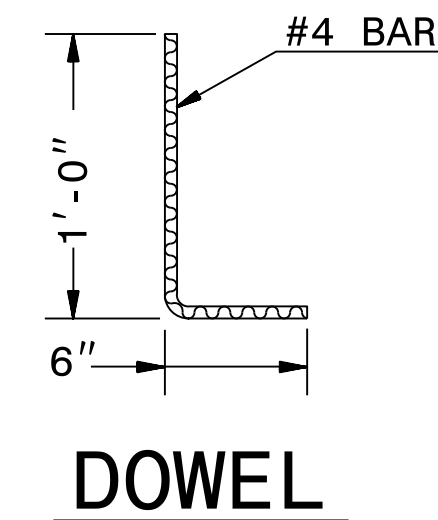
SHEET 1 OF 1
840D31



GENERAL NOTES:

- USE CLASS "B" CONCRETE THROUGHOUT.
- OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD NO. 840.00.
- REFER TO R.S.D.N. 840.31 FOR PLACEMENT OF MANHOLE COVER IN JUNCTION BOX.

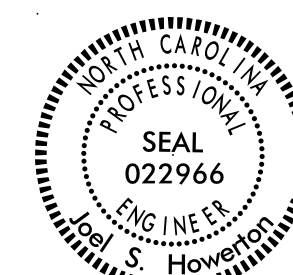
DIMENSIONS AND QUANTITIES FOR CONCRETE JUNCTION BOXES															
DIMENSIONS OF BOX AND PIPE				REINFORCEMENT BARS "A"		COVER DIMENSIONS		CUBIC YARDS IN BOX			TOTAL QUANTITIES BOX AND COVER		DEDUCTIONS FOR ONE PIPE CU.YDS.		
PIPE	SPAN	WIDTH	HEIGHT	NO.	LENGTH	E	F	COVER	FLOOR	WALL/ FT. OF HT.	LBS. REINF	CU. YDS. MIN. "H"	C.S.	R.C.	
12"	2'-4"	2'-0"	3'-0"	12	2'-9"	3'-0"	3'-0"	0.222	0.222	0.185	22	0.750	0.015	0.024	
15"	2'-4"	2'-4"	3'-0"	12	3'-0"	3'-3"	3'-3"	0.261	0.261	0.204	24	0.902	0.023	0.036	
18"	2'-6"	2'-6"	3'-0"	14	3'-3"	3'-6"	3'-6"	0.302	0.302	0.222	30	1.065	0.033	0.049	
24"	3'-0"	3'-0"	3'-3"	16	3'-9"	4'-0"	4'-0"	0.395	0.395	0.259	40	1.434	0.059	0.091	
30"	3'-6"	3'-6"	3'-9"	18	4'-3"	4'-6"	4'-6"	0.500	0.500	0.296	51	1.860	0.092	0.138	
36"	4'-0"	4'-0"	4'-3"	20	4'-9"	5'-0"	5'-0"	0.617	0.617	0.333	64	2.341	0.132	0.196	
42"	4'-6"	4'-6"	4'-9"	22	5'-3"	5'-6"	5'-6"	0.747	0.747	0.370	77	2.878	0.180	0.284	
48"	5'-0"	5'-0"	5'-3"	24	5'-9"	6'-0"	6'-0"	0.889	0.889	0.407	92	3.471	0.235	0.364	
54"	5'-6"	5'-6"	5'-9"	26	6'-3"	6'-6"	6'-6"	1.043	1.043	0.444	109	4.283	0.297	0.440	
60"	6'-0"	6'-0"	6'-3"	28	6'-9"	7'-0"	7'-0"	1.210	1.210	0.481	127	5.090	0.367	0.546	
66"	6'-6"	6'-6"	6'-9"	30	7'-3"	7'-6"	7'-6"	1.389	1.389	0.518	146	5.917	0.444	0.655	



STATE OF NORTH CAROLINA
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ENGLISH DETAIL DRAWING FOR
**CONCRETE JUNCTION BOX WITH
16" PIPE PASSING THRU
12" THRU 66" PIPE**

SHEET 1 OF 1
840D31



**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
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SEE PLATE FOR TITLE

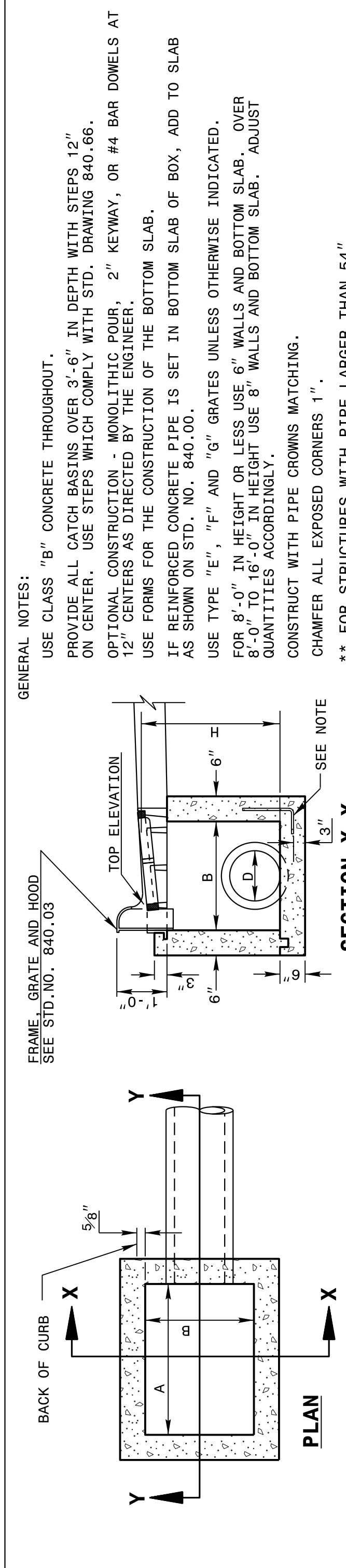
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MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: usr/details/stand/conflict_box.dgn

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

SHEET 1 OF 2
840D02

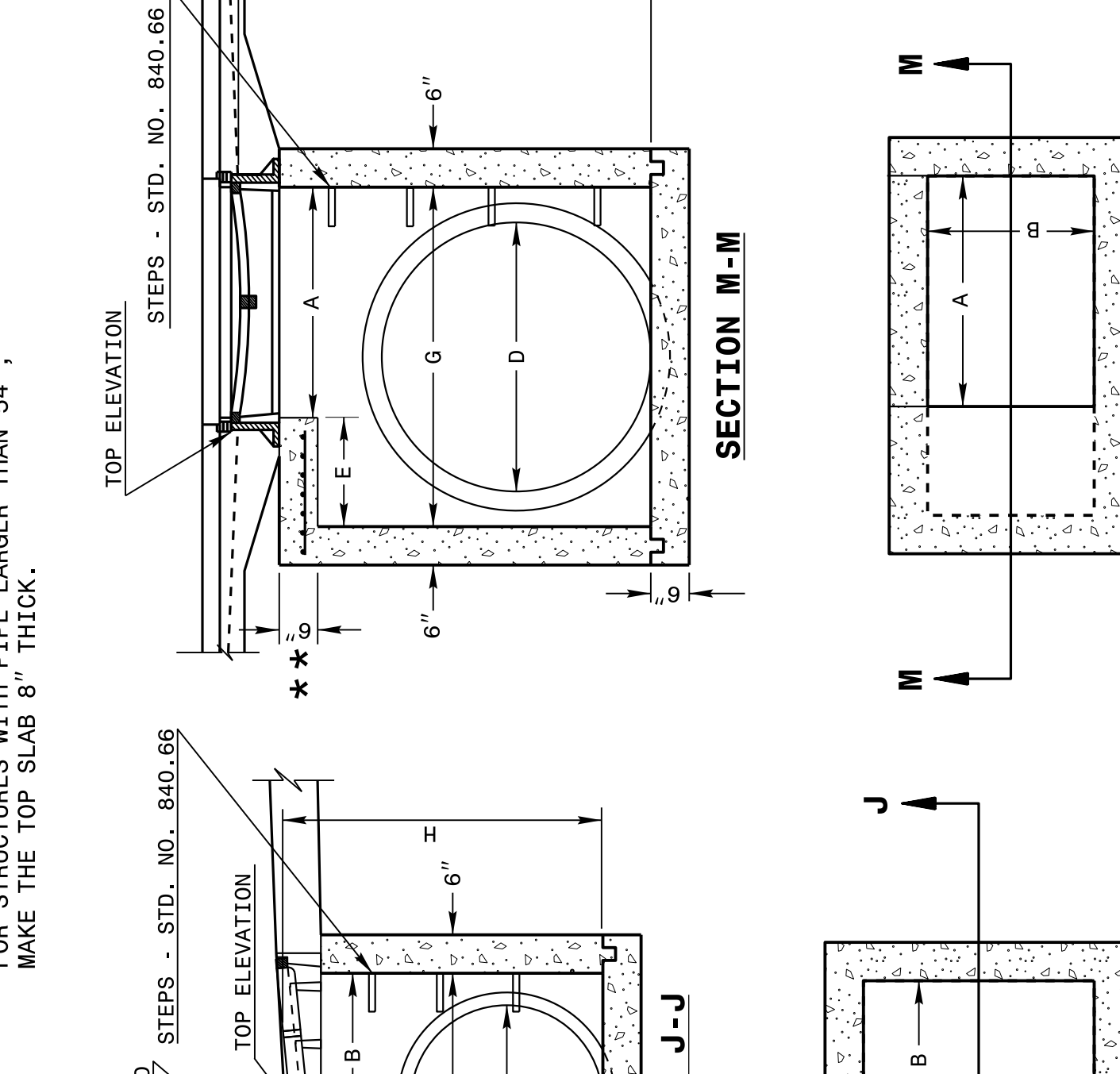


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ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
 CONCRETE CATCH BASIN**
 12" THRU 84" PIPE

SHEET 1 OF 2
840D02

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

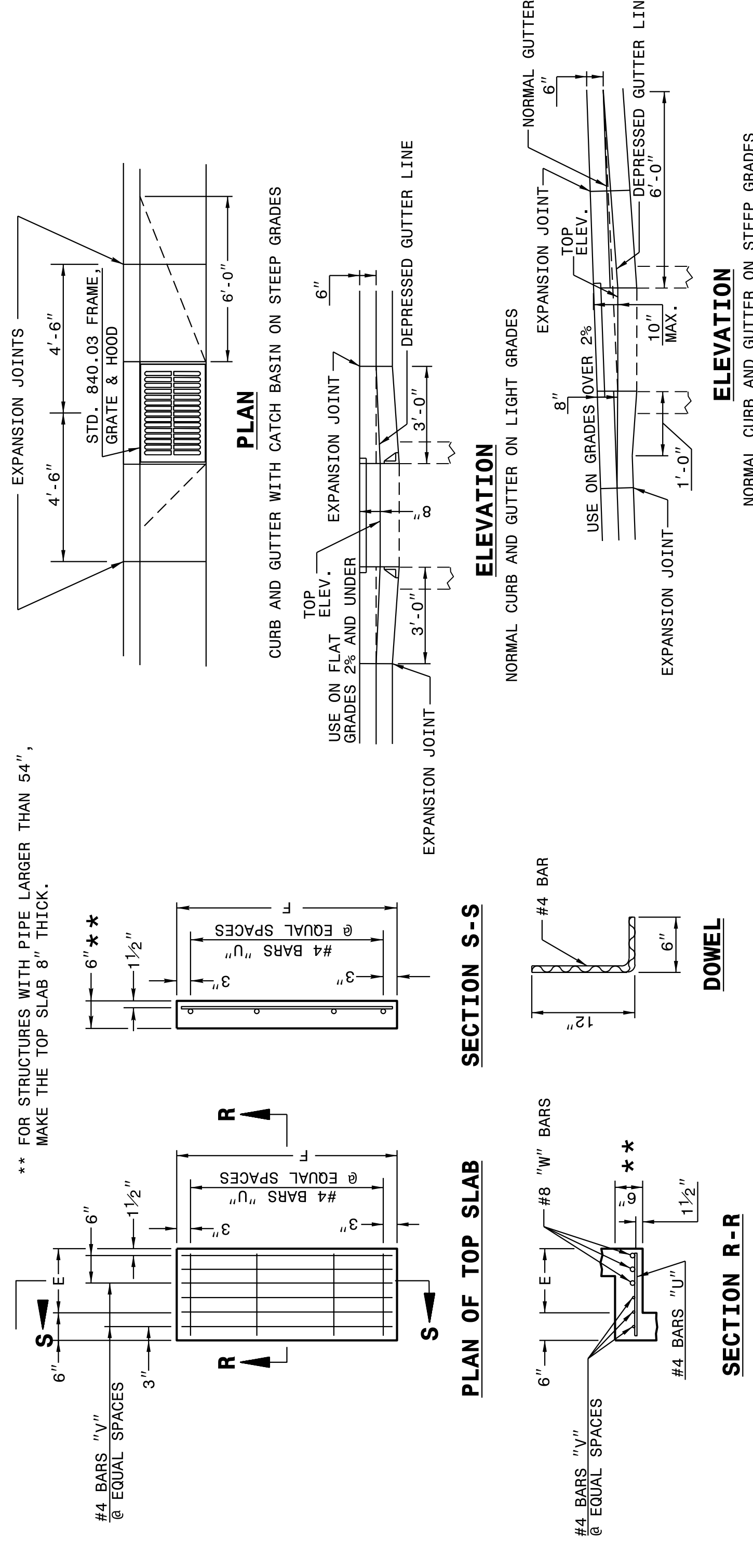


DETAIL SHOWING METHOD
 OF RISER CONSTRUCTION

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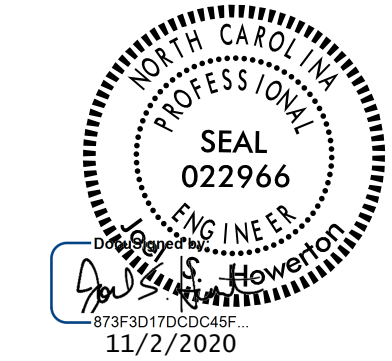
ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
 CONCRETE CATCH BASIN**
 12" THRU 84" PIPE

SHEET 2 OF 2
840D02



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

PIPE D.	MINIMUM DIMENSIONS OF BOX AND PIPE			COVER DIMENSION			DIMENSIONS OF BOX AND PIPE			COVER DIMENSION			QUANTITIES FOR CONCRETE CATCH BASIN (BASED ON MIN. HEIGHT, H, WITH NO RISER) *								
	SPAN	WIDTH	SPAN	MIN.	HEIGHT	E	F	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL LBS.	CU. YDS. CONC. IN BOX	DEDUCTIONS				
	A	B	C	G	H	E	F	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH		TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H	ONE PIPE	R.C.	
12"	3'-0"	2'-2"	2'-2"	..	2'-0"	0.235	0.772	0.015	0.026	0.015	0.026	
15"	3'-0"	2'-2"	2'-2"	..	2'-3"	0.235	0.829	0.023	0.036	0.023	0.036	
18"	3'-0"	2'-2"	2'-2"	..	3'-1"	0.235	0.887	0.033	0.049	0.033	0.049	
24"	3'-0"	2'-2"	2'-2"	..	3'-11"	0.235	1.001	0.059	0.085	0.059	0.085	
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-10"	1'-2"	4'-4"	4	1'-5"	2	4'-1"	3	4'-1"	39	0.123	0.347	1.433	0.092	0.127		
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-6"	1'-8"	4'-10"	4	1'-11"	3	4'-7"	3	4'-7"	43	0.161	0.432	1.714	0.132	0.178		
42"	3'-0"	2'-2"	4'-5"	4'-5"	4'-11"	2'-2"	5'-5"	5	2'-5"	4	5'-2"	3	5'-2"	47	0.200	0.543	1.738	0.180	0.243		
48"	3'-0"	2'-2"	5'-0"	5'-0"	5'-6"	2'-10"	6'-0"	5	3'-1"	4	5'-9"	3	5'-9"	51	0.235	0.667	2.052	0.235	0.317		
54"	3'-0"	2'-2"	5'-7"	5'-7"	6'-0"	3'-5"	6'-7"	6	3'-8"	5	6'-4"	3	6'-4"	56	0.269	0.802	2.387	0.287	0.401		
60"	3'-0"	2'-2"	6'-3"	6'-3"	6'-6"	4'-1"	7'-3"	6	4'-4"	5	7'-0"	3	7'-0"	61	0.340	0.973	2.722	0.363	0.546		
66"	3'-0"	2'-2"	6'-11"	6'-11"	7'-0"	4'-9"	7'-11"	7	5'-0"	6	7'-8"	3	7'-8"	66	0.391	1.160	3.057	0.440	0.655		
72"	3'-0"	2'-2"	7'-6"	7'-6"	7'-6"	5'-3"	8'-6"	7	5'-6"	6	8'-3"	3	8'-3"	72	0.442	1.340	3.392	0.524	0.774		
78"	3'-0"	2'-2"	8'-1"	8'-1"	8'-0"	5'-11"	9'-1"	8	6'-2"	7	8'-10"	3	8'-10"	78	0.493	1.530	3.727	0.615	0.893		
84"	3'-0"	2'-2"	8'-9"	8'-9"	8'-6"	6'-7"	9'-9"	8	6'-10"	7	9'-6"	3	9'-6"	84	0.544	1.760	4.062	0.713	1.010		

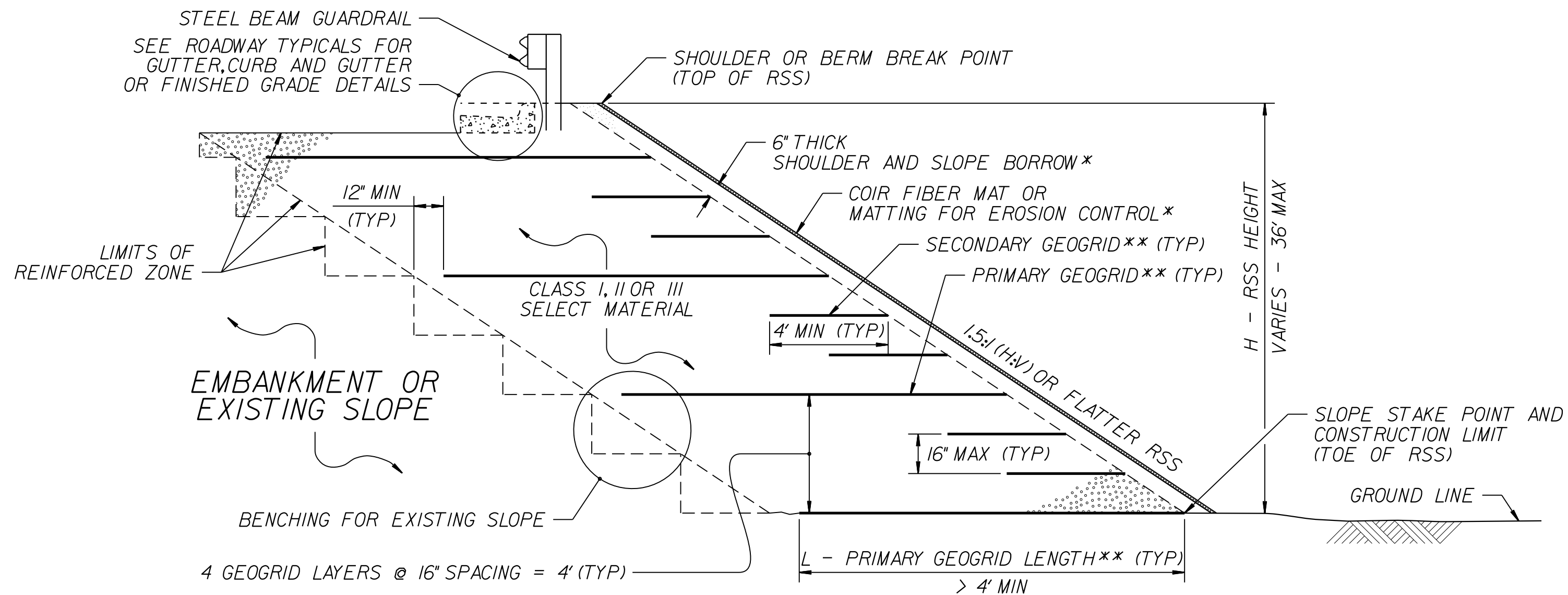


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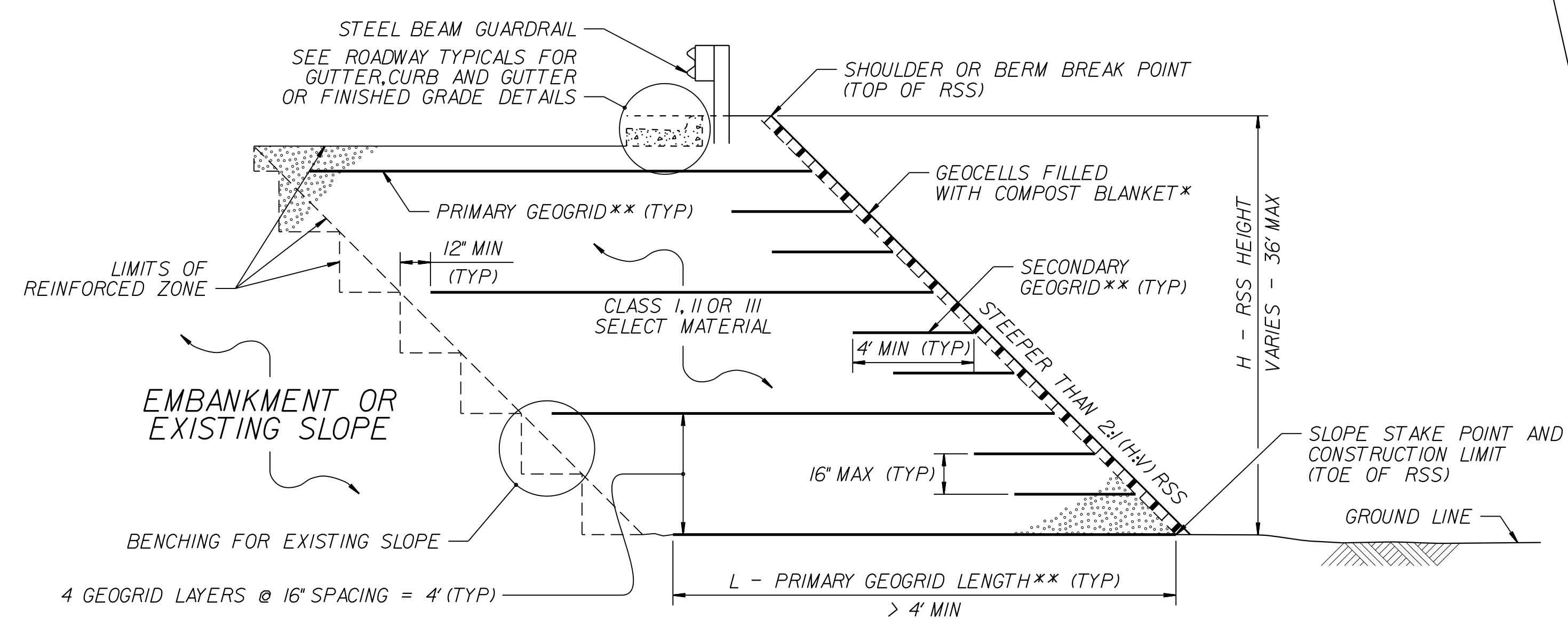
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SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 3-1-02
 CHECKED BY: _____ DATE: _____
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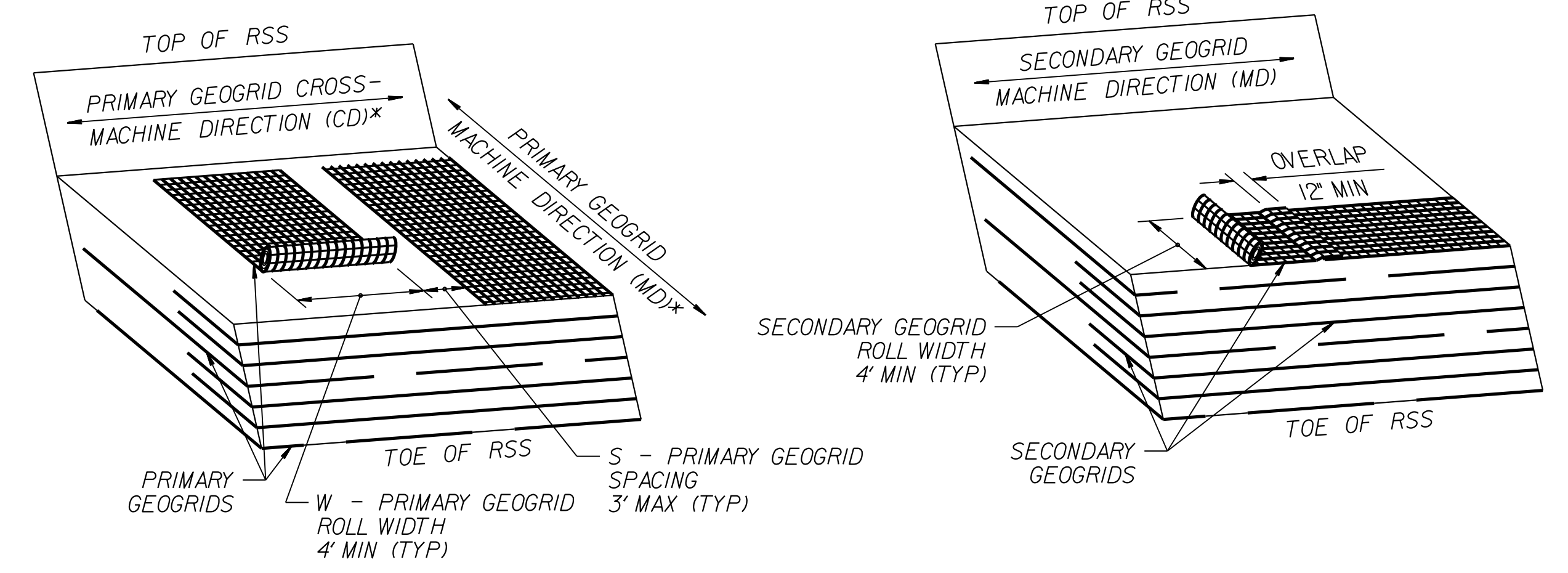


MATTING WITH SHOULDER AND SLOPE BORROW
*SEE NOTES 3 AND 11 ON SHEET 2.




GEOCELLS WITH COMPOST BLANKET
*SEE NOTES 3 AND 11 ON SHEET 2.

STANDARD REINFORCED SOIL SLOPE (RSS)
**SEE TABLES ON SHEET 2 AND GEOGRID PLACEMENT DETAILS.



GEOGRID PLACEMENT DETAILS
 $(\% \text{ COVERAGE} = \frac{W}{W+S} \times 100 \geq 75\%)$
*SEE NOTES 8 AND 9 ON SHEET 2.

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-2
GEOTECHNICAL ENGINEER  DocuSigned by: Majid Khazaei 6/11/2018	ENGINEER
SIGNATURE	DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

GEOGRID TYPE, DIRECTION	H (FT)	0 - < 12		12 - 24		> 24 - 36	
	SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
PRIMARY GEOGRID, MD (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR 2:1 (H:V) OR FLATTER RSS)	1:1 TO < 1.5:1 (H:V) RSS	900	500	1200	900	1800	1200
	1.5:1 TO 1.75:1 (H:V) RSS	500	500	900	500	1400	1000
	> 1.75:1 TO < 2:1 (H:V) RSS	500	500	600	500	1000	800
SECONDARY GEOGRID, CD	1:1 (H:V) OR FLATTER RSS	185					

LTDS – MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)
 (LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID.
 SEE NOTE 9 FOR LESS THAN 100% COVERAGE.)

NOTES:

- SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.
- FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR GEOCELLS, SEE CELLULAR CONFINEMENT SYSTEMS PROVISION. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1633.01.
- STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ LB/CF
 FRICTION ANGLE, $\phi = 30$ DEGREES
 COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE TOE OF RSS.
- DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
 DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
BORROW	CLASS I SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL

IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.

- DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
- FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,

$$\text{MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH} = \text{LTDS BASED ON 100\% COVERAGE} \times (W + S) / W$$
 SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
- DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
- FOR SLOPE EROSION CONTROL, USE GEOCELLS OR MATTING ON SLOPE FACES OF RSS AS FOLLOWS:

RSS ANGLE	SLOPE EROSION CONTROL
1:1 TO < 1.5:1 (H:V)	GEOCELLS WITH COMPOST BLANKET
1.5:1 TO < 2:1 (H:V)	GEOCELLS WITH COMPOST BLANKET OR COIR FIBER MAT WITH SHOULDER AND SLOPE BORROW*
2:1 (H:V) OR FLATTER	MATTING FOR EROSION CONTROL WITH SHOULDER AND SLOPE BORROW

*SEE REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL SUMMARY TABLE IN THE ROADWAY SUMMARY SHEETS FOR SLOPE EROSION CONTROL ON SLOPE FACES OF RSS 1.5:1 (H:V) TO STEEPER THAN 2:1.

H (FT)	0 - < 12		12 - 24		> 24 - 36	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	1.25	1.20	1.15	1.10	1.10	1.00
1.5:1 TO 1.75:1 (H:V) RSS	1.10	1.00	0.95	0.90	0.90	0.85
> 1.75:1 TO < 2:1 (H:V) RSS	1.00	0.85	0.80	0.75	0.75	0.70

L / H RATIO (L > 4' MIN)
 (IF L ≤ 4', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.)




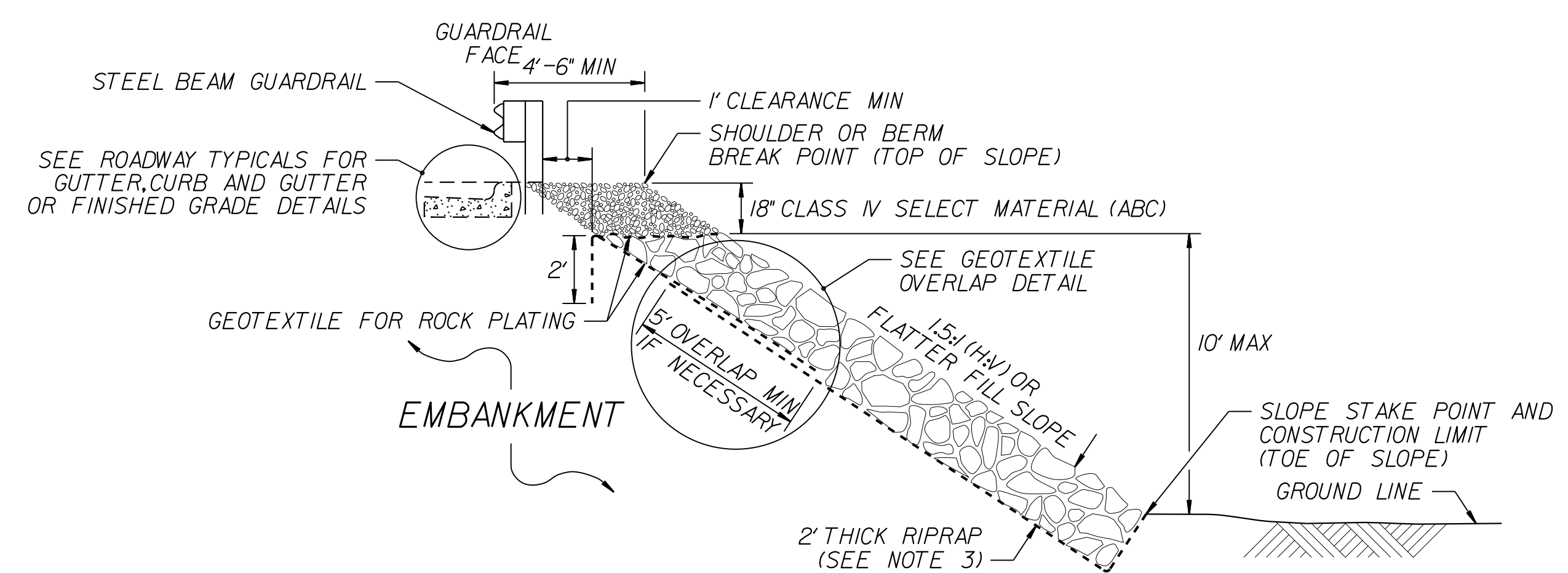
NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

**GEOTECHNICAL
 ENGINEERING UNIT**

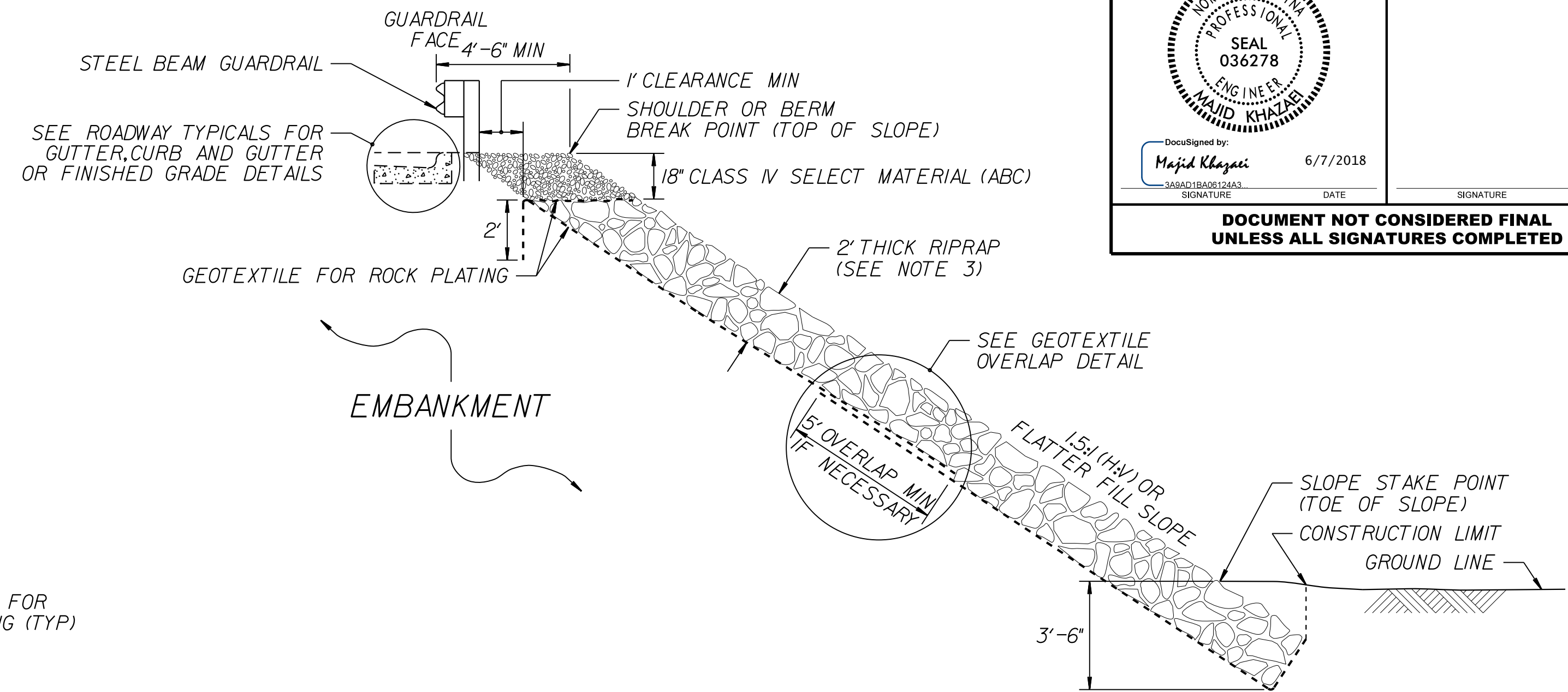
STANDARD DETAIL NO. 1803.01

 STANDARD
 REINFORCED SOIL SLOPE (RSS)
 WITH HIGH GROUNDWATER
 SHEET 2 OF 2

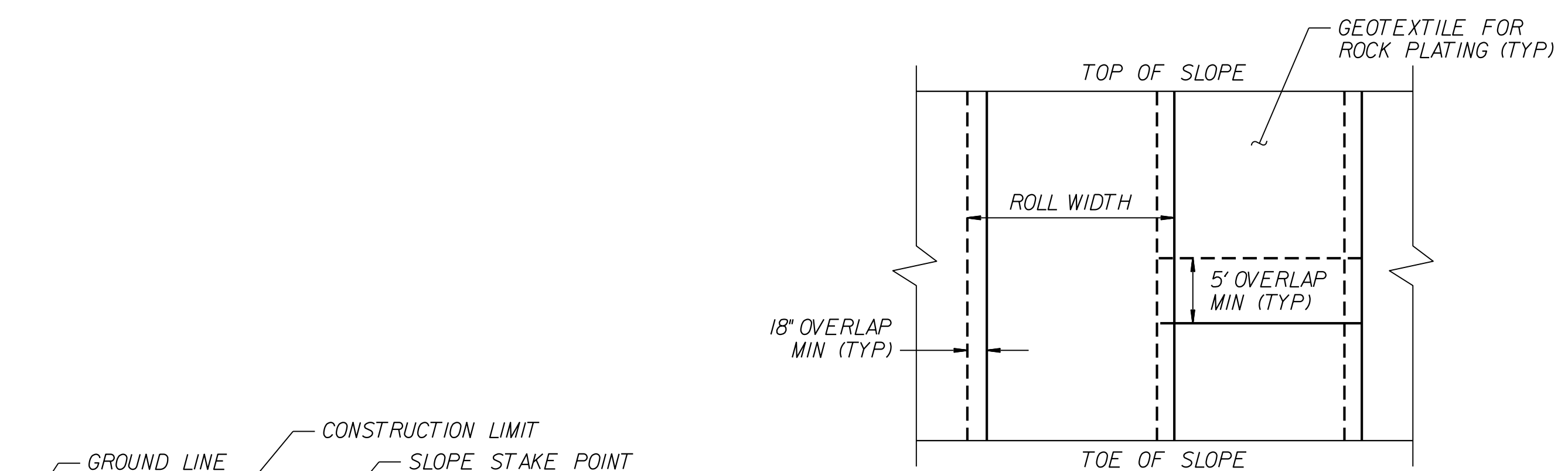
PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-3
GEOTECHNICAL ENGINEER  DocuSigned by: Majid Khazaei 6/7/2018	ENGINEER _____ DATE _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



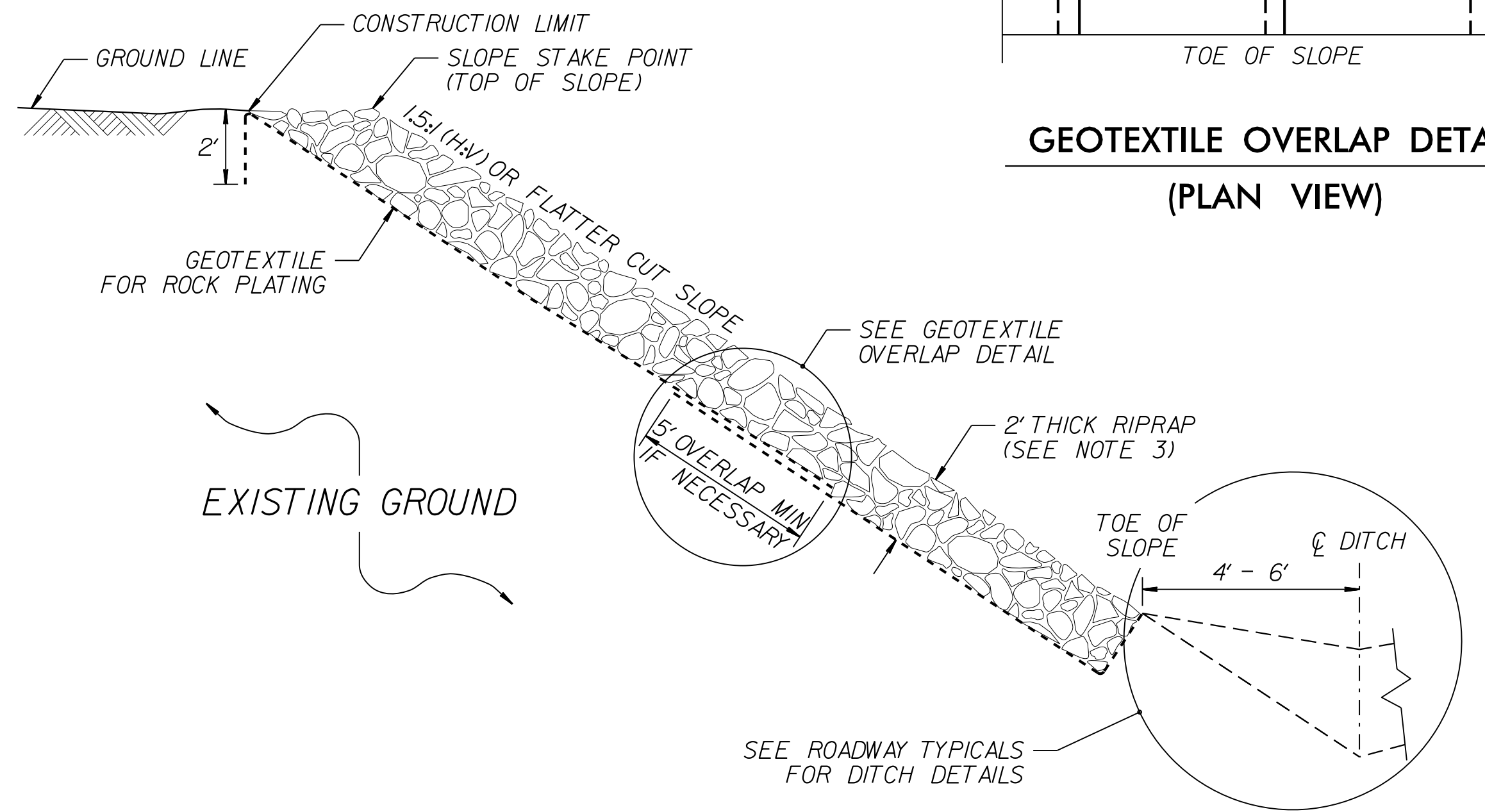
ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION



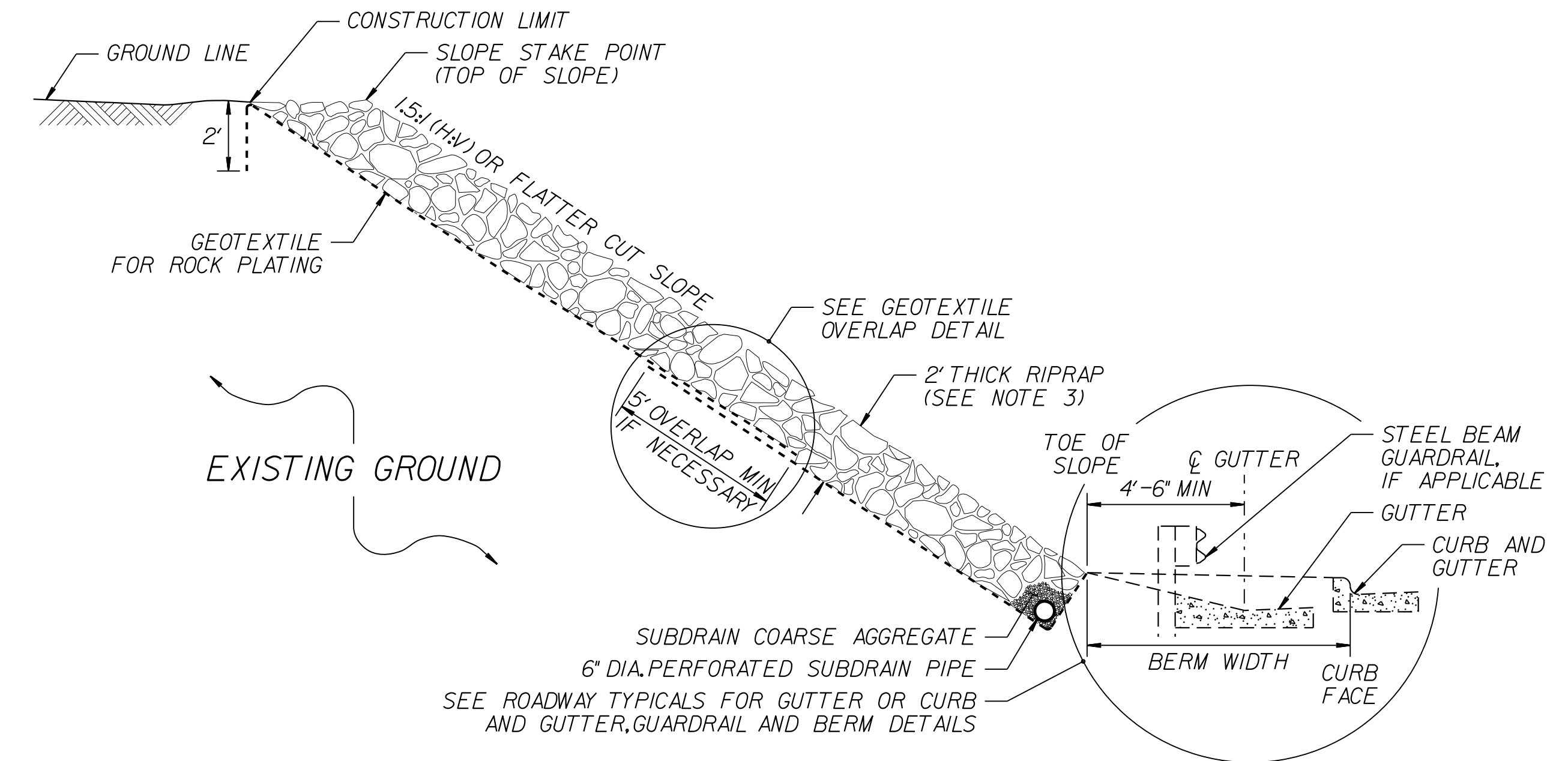
ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION



**GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)**



ROCK PLATING DETAIL NO. 3 – TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 – TYPICAL SECTION

- NOTES:**
1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
 2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
 3. USE CLASS I, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

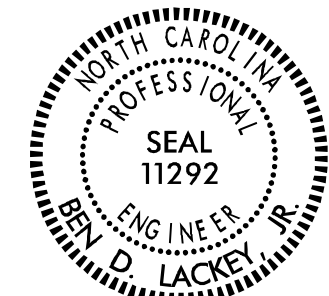


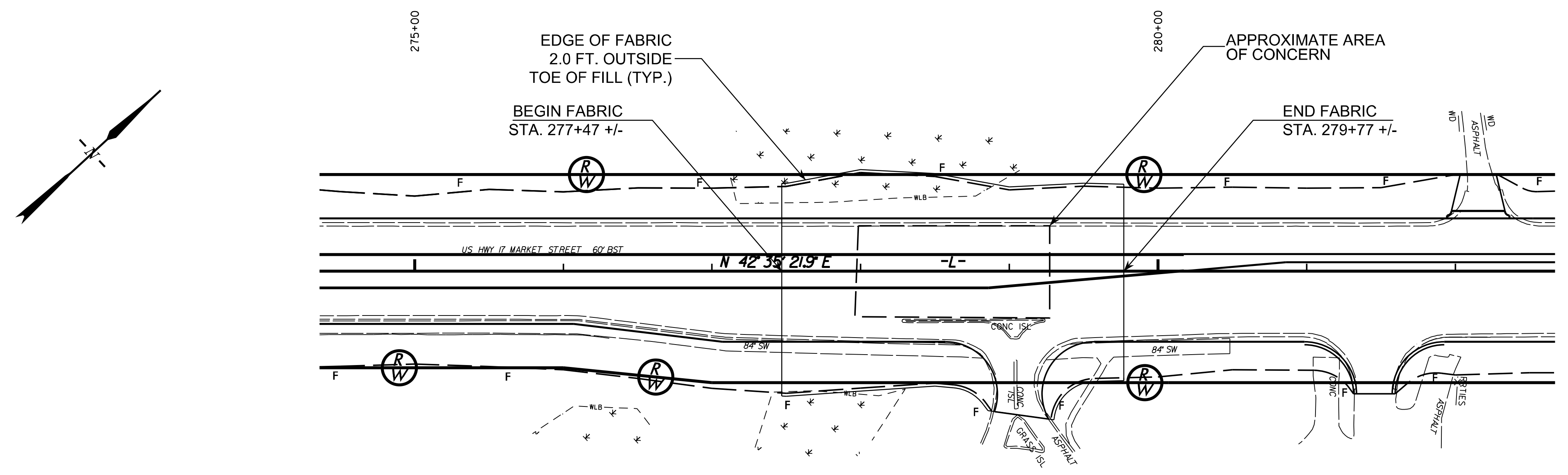
**NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

**GEOTECHNICAL
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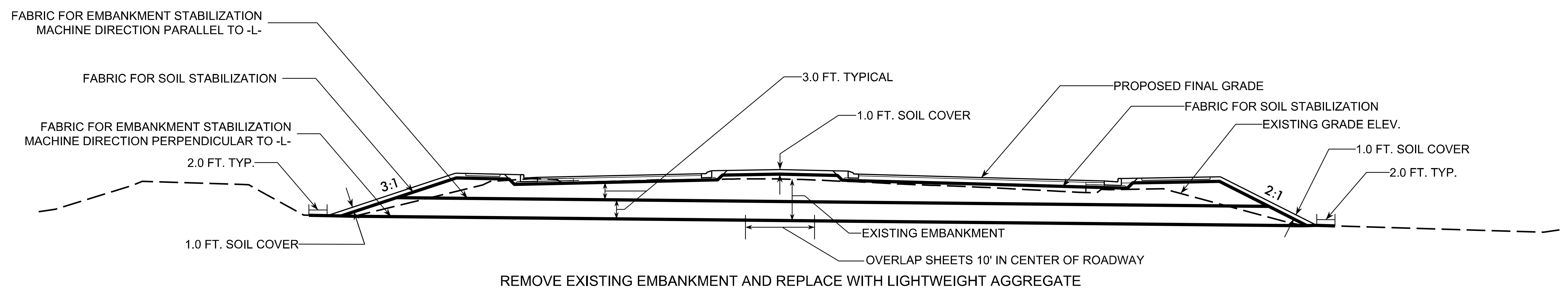
STANDARD DETAIL NO. 1802.01

**STANDARD
ROCK PLATING**

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-4
GEOTECHNICAL ENGINEER  DocuSigned by: Ben Lackey 6/27/2018	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**FABRIC FOR EMBANKMENT STABILIZATION LAYOUT
NOT TO SCALE**



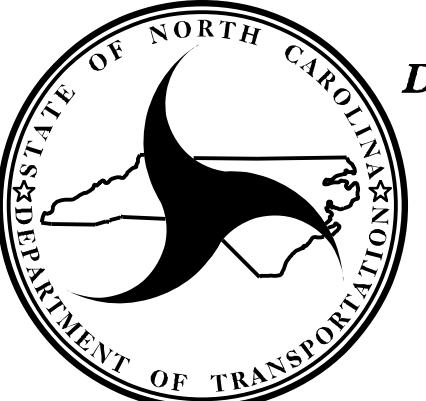
**TYPICAL SECTION
NOT TO SCALE**

PREPARED BY: STEVE HUDSON, P.G.	DATE: 03/30/17
REVIEWED BY: BEN LACKEY, P.E.	DATE: 05/16/17

Prepared in the Office of:




CATLIN
Engineers and Scientists
Wilmington, North Carolina



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

LIGHTWEIGHT AGGREGATE FILL EMBANKMENT					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-5
GEOTECHNICAL ENGINEER  Documented by: <i>Chris Kreider</i> 7/24/2018 DATE: 7/24/2018	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

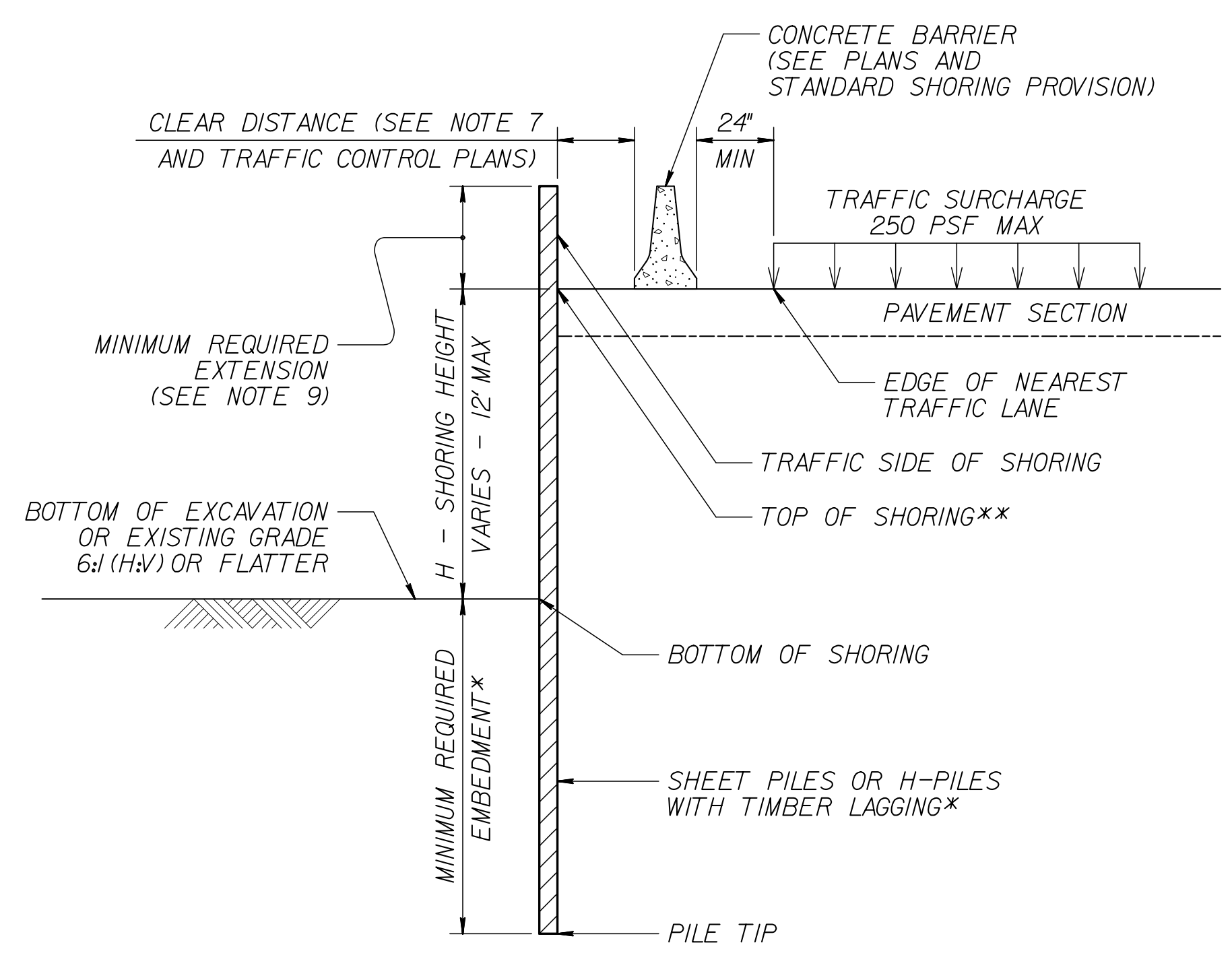
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT						SURCHARGE CASE WITH TRAFFIC IMPACT					
		SHEET PILES		H-PILES WITH TIMBER LAGGING				SHEET PILES		H-PILES WITH TIMBER LAGGING			
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 BETWEEN 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		

NOTES:

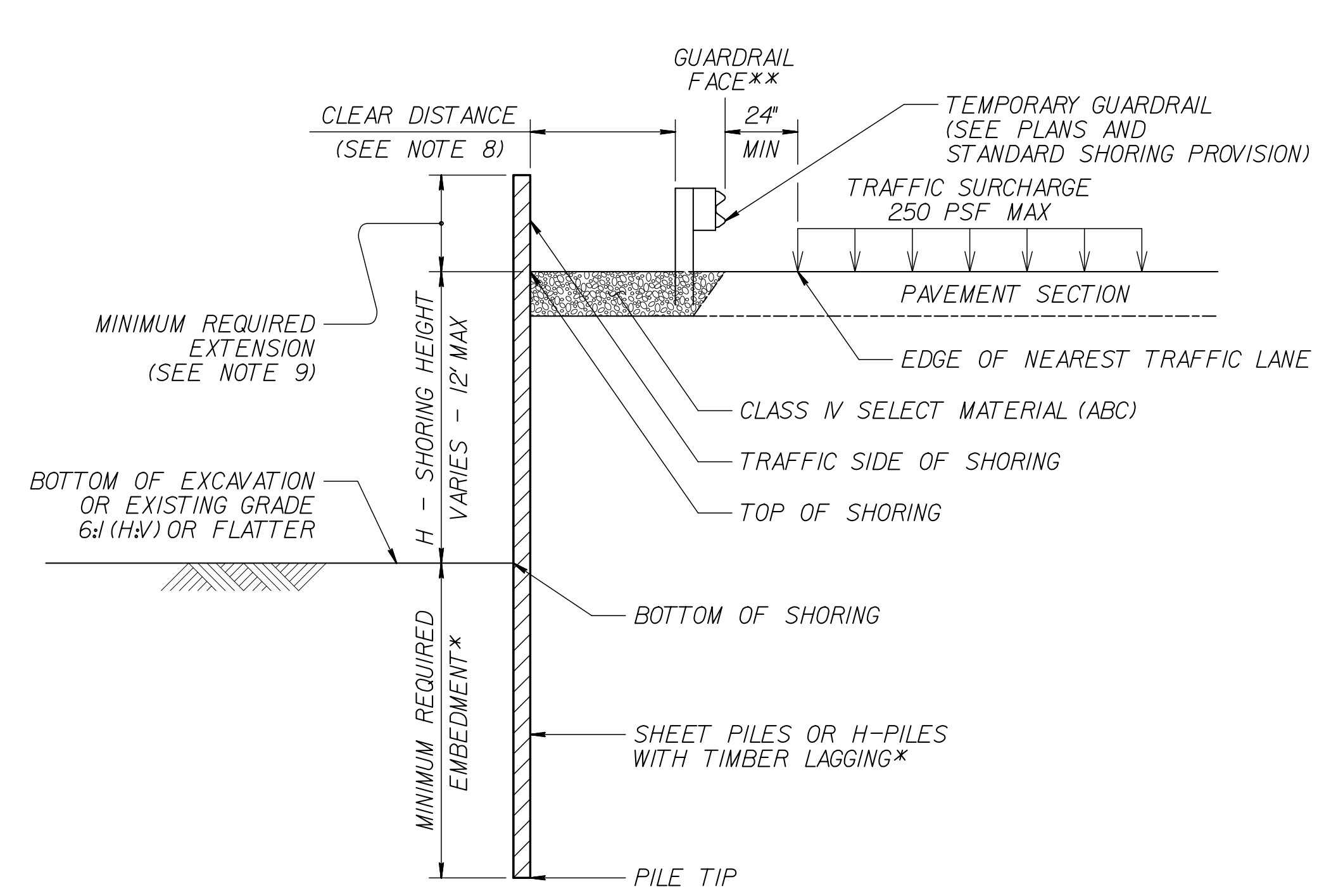
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- 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.
- 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".
- 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".
- MINIMUM REQUIRED EXTENSION IS 6' FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32' FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- 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.
- 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
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

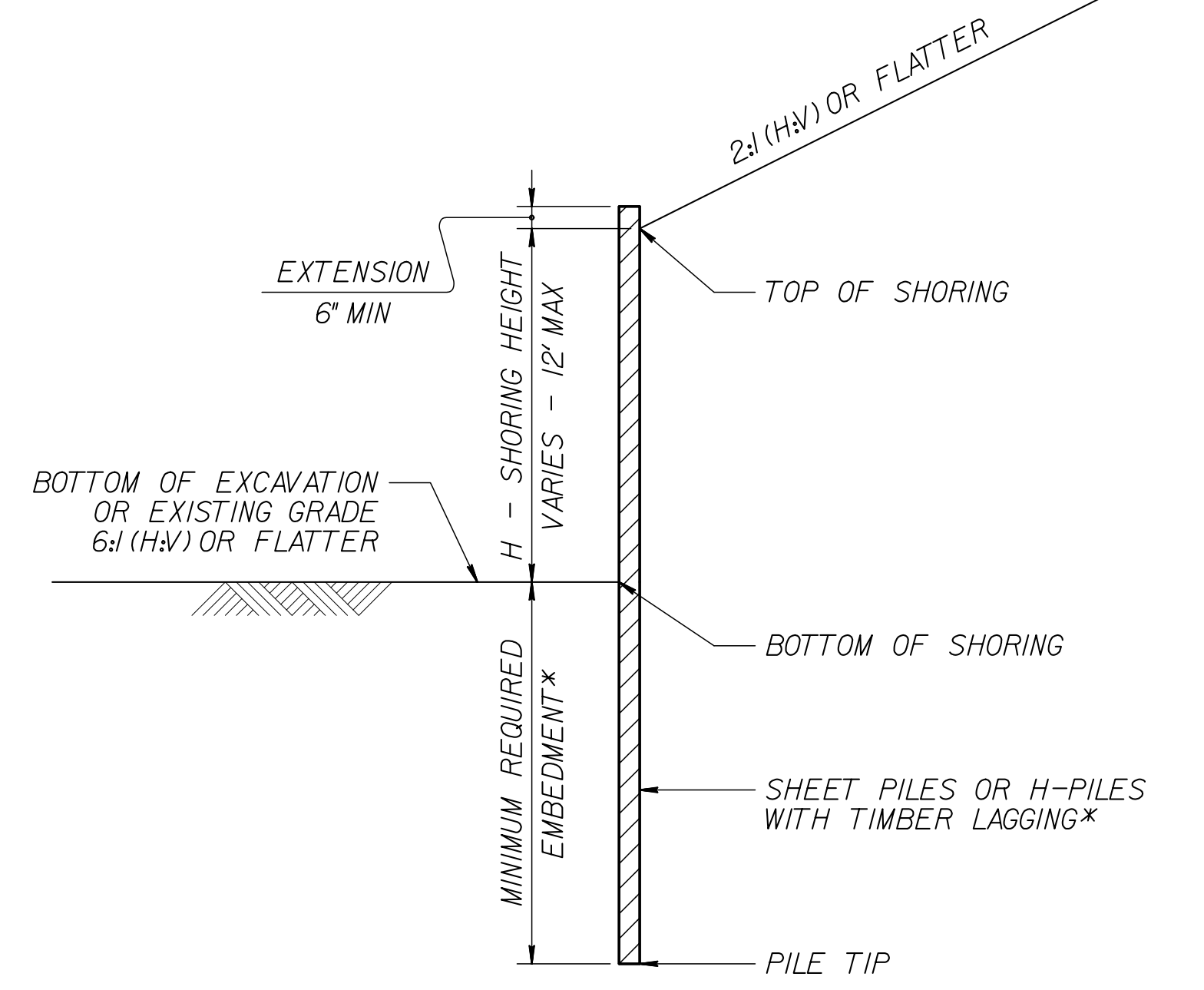
***DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**



CONCRETE BARRIER
****TOP OF SHORING = EDGE OF PAVEMENT**

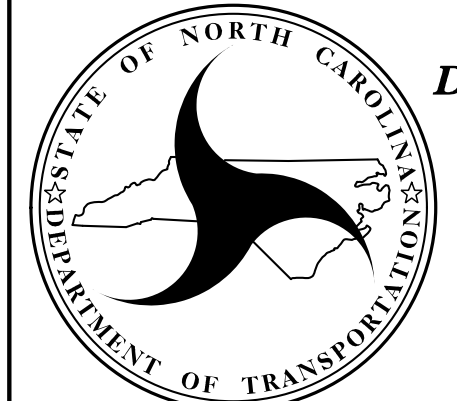


TEMPORARY GUARDRAIL
****GUARDRAIL FACE = EDGE OF PAVEMENT**




STANDARD TEMPORARY SHORING (SLOPE CASE)
***SEE TABLE ABOVE.**

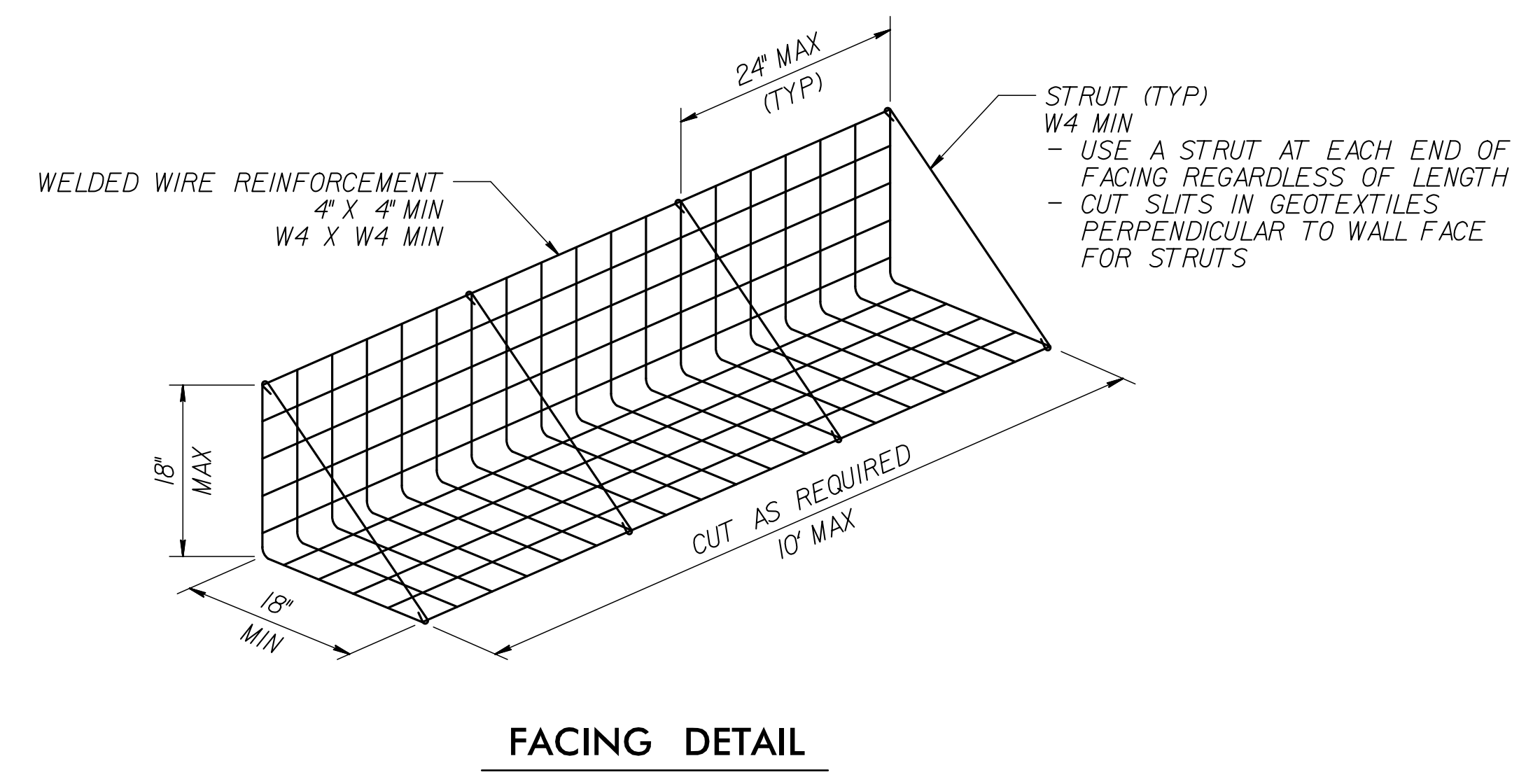
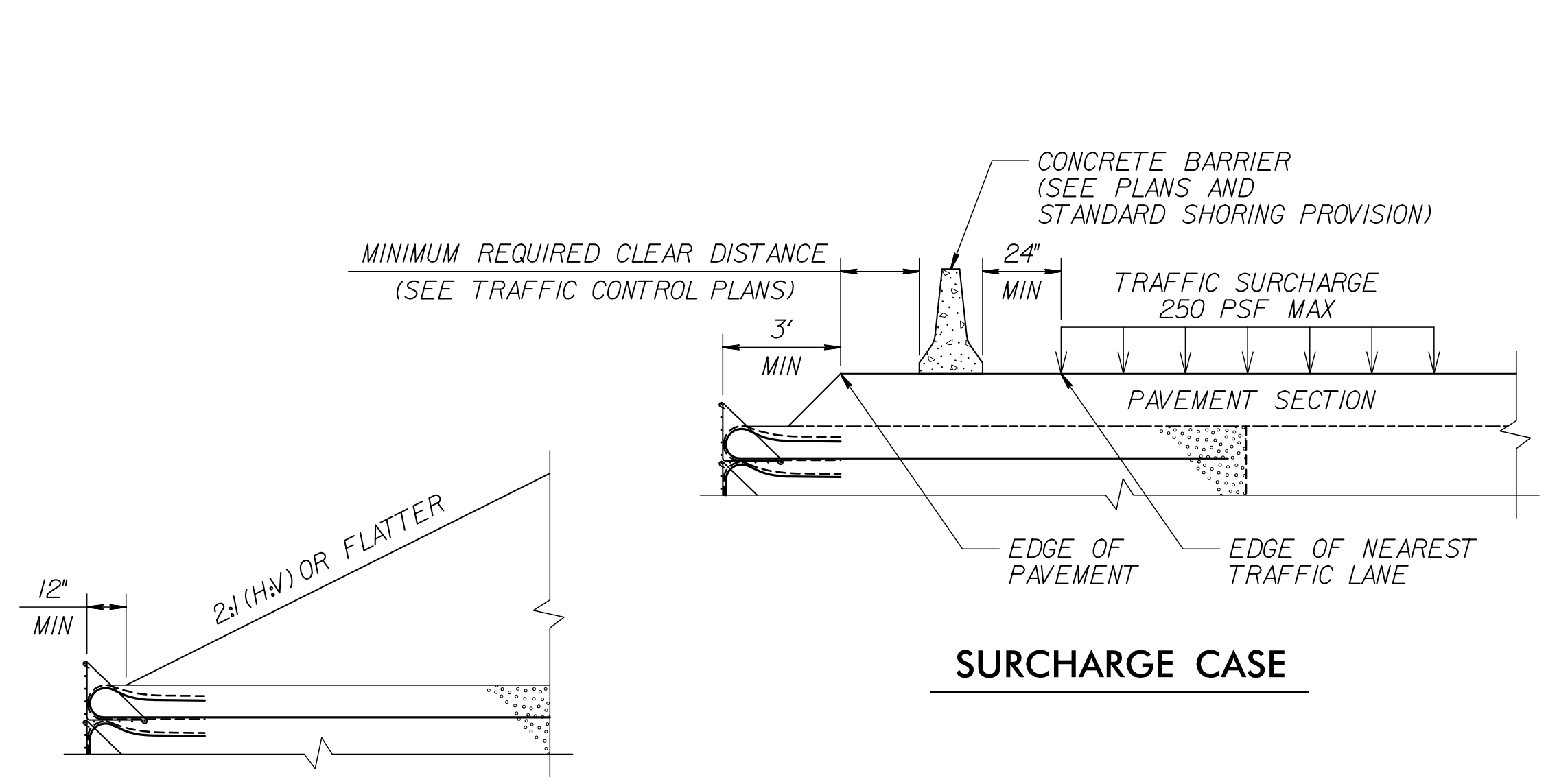
STANDARD TEMPORARY SHORING (SURCHARGE CASE)
***SEE TABLE ABOVE.**



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01
STANDARD TEMPORARY SHORING
DATE: 11-19-13

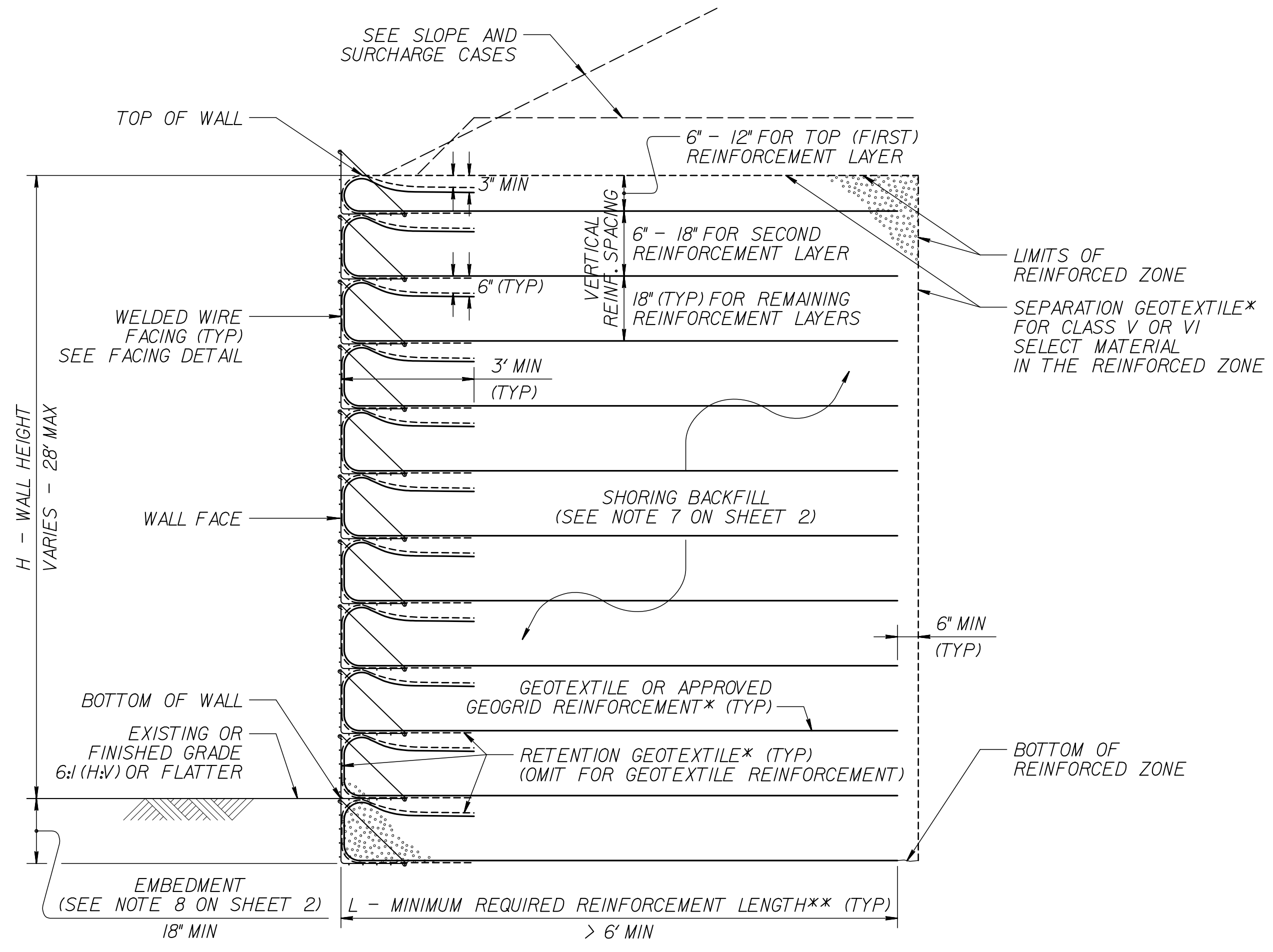
PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-6
GEOTECHNICAL ENGINEER  Designed by: <i>Chris Kreder</i> 7/24/2018 DATE: _____ SIGNATURE: _____ DATE: _____	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SLOPE CASE

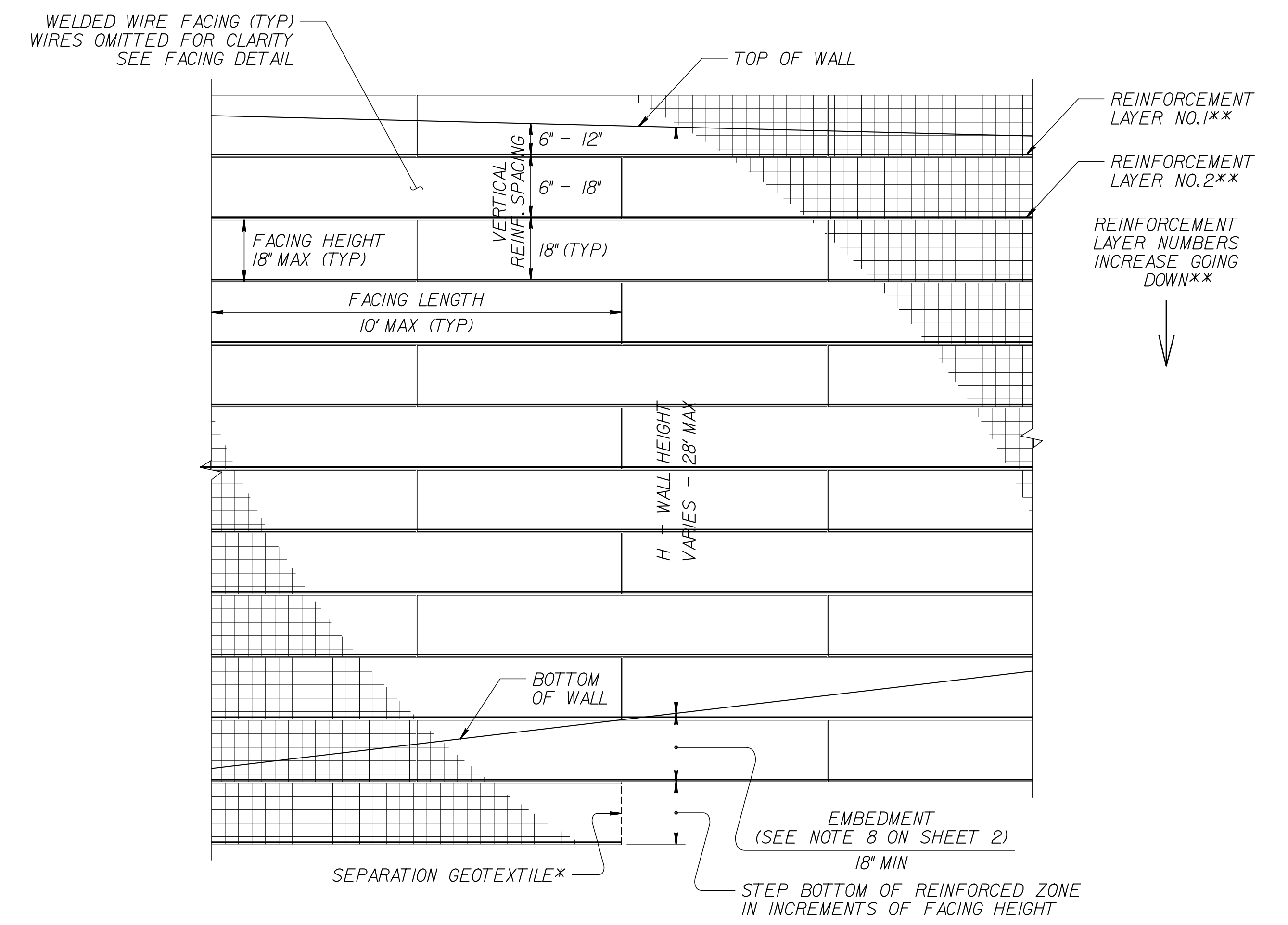
SURCHARGE CASE

FACING DETAIL



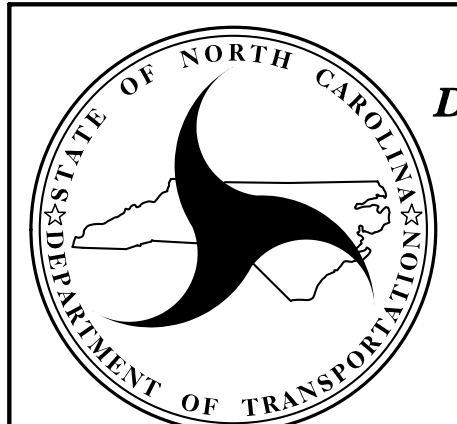
STANDARD TEMPORARY WALL


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

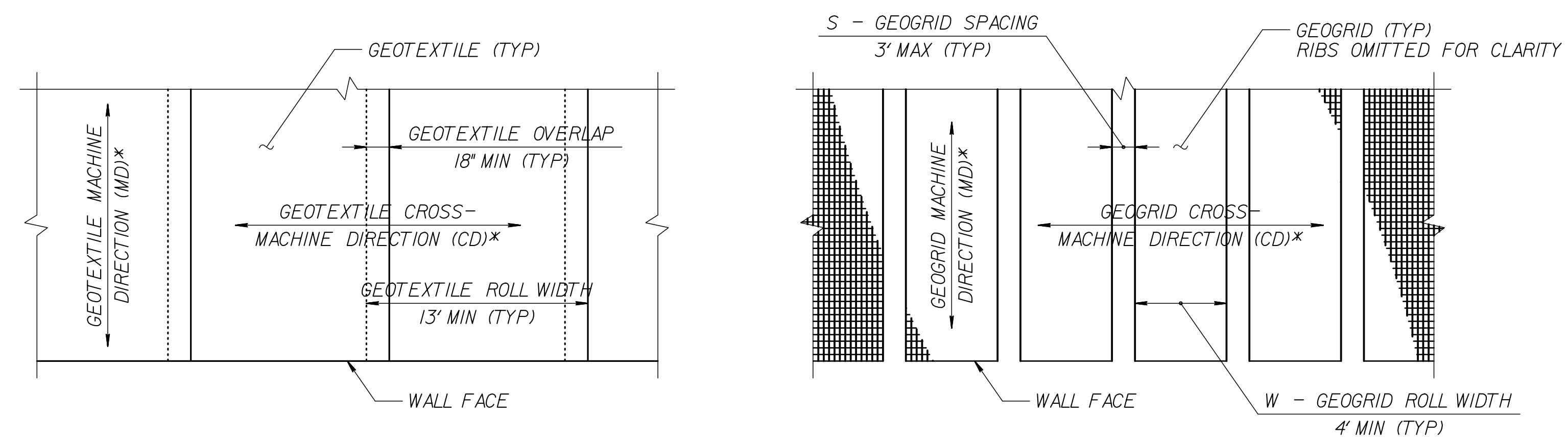


STANDARD TEMPORARY WALL - PARTIAL ELEVATION

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

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS GEOTECHNICAL ENGINEERING UNIT	STANDARD DETAIL NO. 1801.02
	STANDARD TEMPORARY WALL SHEET 1 OF 3 DATE: 11-19-13

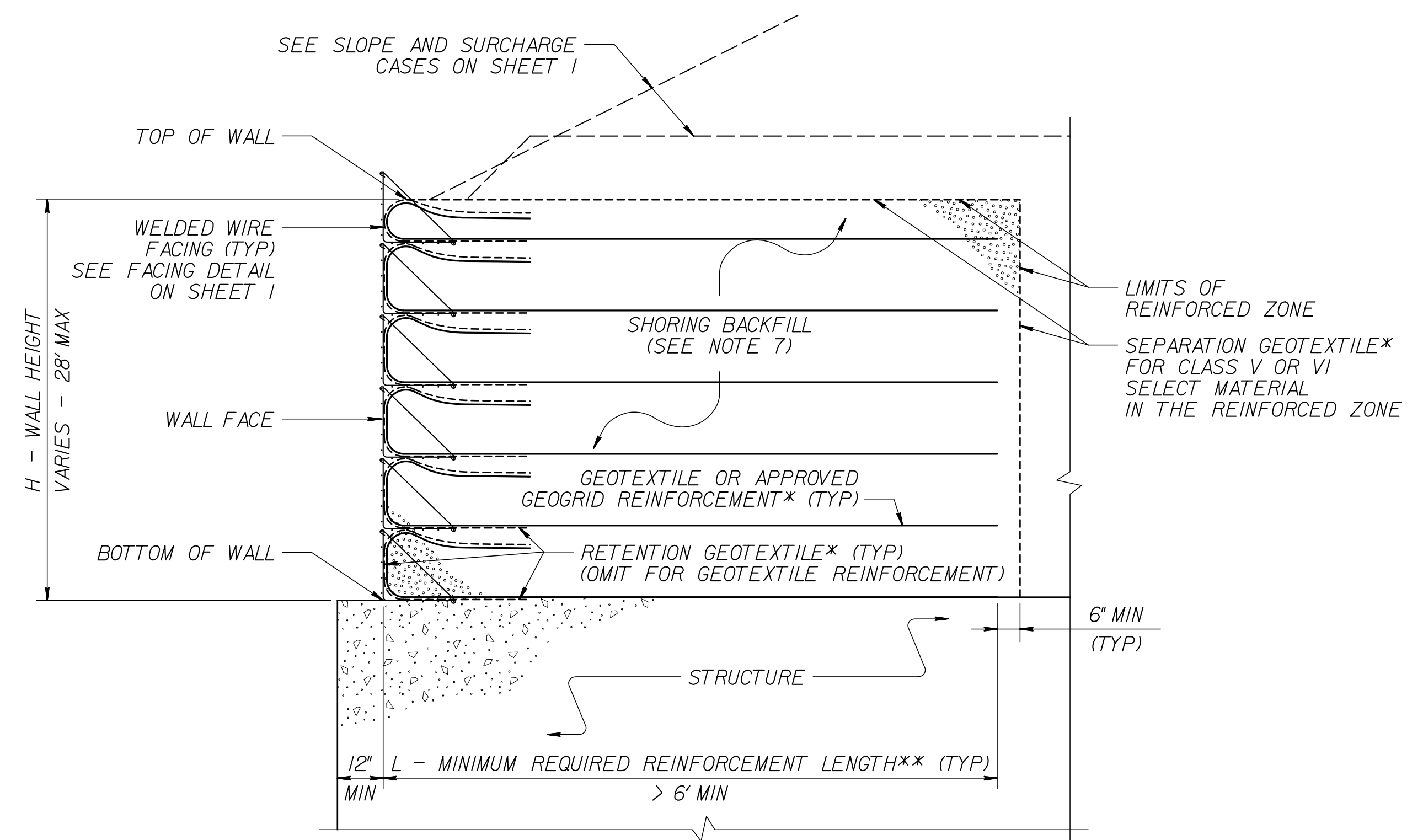
PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-7
GEOTECHNICAL ENGINEER  Documented by: <i>Chris Kreder</i> 7/24/2018 DATE: _____ SIGNATURE: _____ DATE: _____	ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

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

GEOSYNTHETIC PLACEMENT DETAILS
(PLAN VIEW)
*SEE NOTE 12.



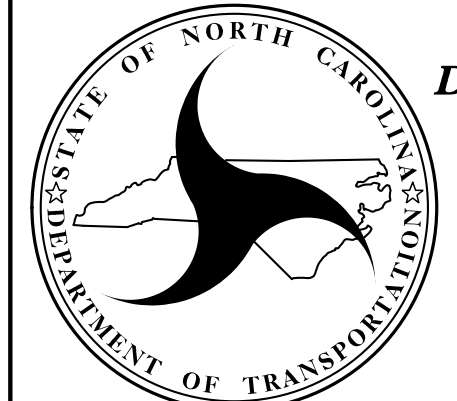
TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
- 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 IS ABOVE BOTTOM OF REINFORCED ZONE.
- 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.
- EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
- DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Manual.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

- IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
- FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
 - 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.
 - 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
 - DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
 - FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
 - DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
 - CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
 - FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
 - 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.

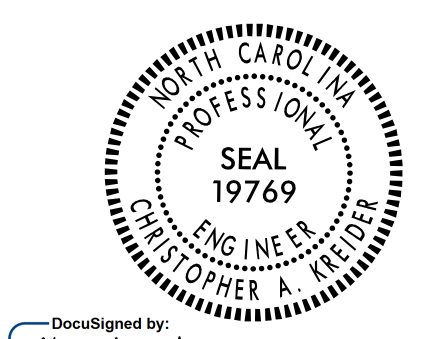
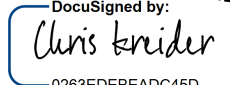


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 2 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO. U-4902D	SHEET NO. 2G-8
	ENGINEER
DocuSigned by:  7/24/2018	SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + 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.

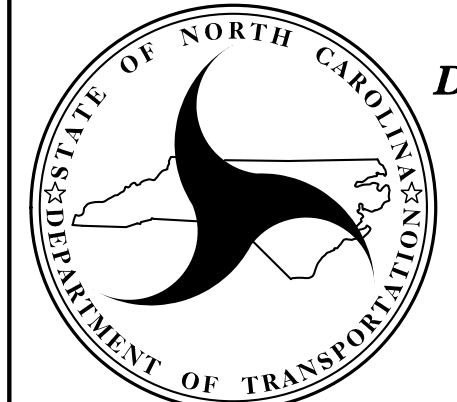
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	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.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. U-4902D SHEET NO. 3D-1

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)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Minimum Required Slope, Pipe Material (RCP, CSP, CAAP, HDPE, PVC, C.S. PIPE, R.C. PIPE CLASS IV), Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes a SHEET TOTALS row at the bottom.

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. U-4902D SHEET NO. 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)

Main data table with columns for Line & Station, Offset, Structure Number, Elevation, Slope, Pipe Material (Side Drain Pipe, C.S. Pipe, R.C. Pipe), Quantities for Drainage Structures, and various standards. Includes a 'SHEET TOTALS' row at the bottom.

ABBREVIATIONS table listing materials like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S.

SHEET TOTALS

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO. U-4902D SHEET NO. 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)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Minimum Required Slope, Pipe Type (RCP, CSP, CAAP, HDPE, PVC, C.S. PIPE, R.C. PIPE CLASS IV), Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, Grate Type, and Remarks. Includes a SHEET TOTALS row at the bottom.

RALL207

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. U-4902D SHEET NO. 3D-6

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)

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Pipe Material (Side Drain Pipe, C.S. Pipe, R.C. Pipe), Quantities for Drainage Structures, Frame, Grates, and Hood, and Remarks. Includes a SHEET TOTALS row at the bottom.

RALL207

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. SHEET NO.
U-4902D 3D-8

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)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Minimum Required Slope, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C. S. PIPE (12-48 inch diameters), R. C. PIPE CLASS IV (12-48 inch diameters), Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures (Grate Type, Frame, Grates, and Hood), Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.

PL11/207

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. SHEET NO.
U-4902D 3D-9

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)

Table with columns for Line & Station, Offset, Structure Number, Top Elevation, Invert Elevation, Minimum Required Slope, Pipe Material (RCP, C.S. PIPE, R.C. PIPE), Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes a SHEET TOTALS row at the bottom.

RALL207

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. U-4902D SHEET NO. 3D-11

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)

Main data table with columns for Line & Station, Offset, Structure Number, Pipe Type (Side Drain Pipe, C.S. PIPE, R.C. PIPE), Quantities for Drainage Structures, Frame, Grates, and Hood, and Remarks. Includes sub-tables for Endwalls, Reinforced Endwalls, Drainage Structure, and Frame, Grates, and Hood.

ABBREVIATIONS table listing codes like C.A.A., C.B., C.S., D.I., G.D.I., H.D.P.E., J.B., M.H., N.S., P.V.C., R.C., T.B.D.I., T.B.J.B., W.S. and their corresponding material descriptions.

SHEET TOTALS and PROJECT TOTALS summary rows at the bottom of the page.

PALL207

COMPUTED BY: Allen Hodges, EI DATE: 9/2/2020
CHECKED BY: DATE:

PROJECT NO. U-4902D SHEET NO. 3D-12

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 54 INCHES & OVER)

Table with columns for Line & Station, Offset, Structure Number, Pipe Size, Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC), C.S. Pipe, R.C. Pipe Class IV, Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures (Grate Type, Concrete Transitional Section, Frame, Grates, and Hood), Flowable Fill, Concrete Collars, and Pipe Removal. Includes a table of abbreviations and a remarks column.

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

SHEET TOTALS: 180, 340, 28,600, 15,077, 1, 1, 1
PROJECT TOTALS: 180, 340, 28,600, 15,077, 1, 1, 1

COMPUTED BY: ROY H. TELLIER, PE DATE: 1/22/18
 CHECKED BY: RYAN T. HOUGH, EI DATE: 2/14/2018

(5-15-18)

PROJECT NO.
U-4902D

SHEET NO.
3G-1

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
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 Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		100	190	300	0	0
			TOTAL CY/TONS/SY:		100	190**	300**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	2.75:1	270+75	2.75:1	278+75	RT	1		1600
							TOTAL SY:	1600

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
-L-	2:1	278+00	2:1	279+00	LT	80			80
						TOTAL SY:	80	0	80**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
124	4	SHIRLEY S. COVIL
125	5	FOREHAND PROPERTIES, LLC
126	5	FERREIRA PROPERTIES, LLC
127	5	MARY JANE SHOUB
128	5	JAY PATTERSON AND WIFE CHARLOTTE
128A	5	JAY PATTERSON AND WIFE CHARLOTTE
129	5	CAROLYN B. PARRISH
130	5	JAMES R. RYAN
131	5	DENNIS G. STOKLEY
132	5	MARY L. WALLACE
133	5, 6	COSWALD, LLC
134	5	FLAMINGO PROPERTIES, LLC
135	5	EVENTIDE PROPERTIES, LLC
136	5	BOCALISI REALTY TRUST
137	5, 6	CARL E. SHEPARD & MARTHA S. SHEPARD
138	6	JAMES L. HUENE & CLARA K. HUENE
139	6	NEW HANOVER COUNTY
140	6	STALVEY PROPERTY, LLC
141	6	CAMERON COMPANY LIMITED PARTNERSHIP
142	6	CAMELOT HOLDINGS, INC.
143	6	OGDEN CARWASH, LLC
144	6	CAMELOT HOLDINGS, INC.
145	6	STEPHEN T. WILLIAMS
146	6	PARKER INVESTMENTS USA, LLC
147	-	COMBINED WITH PARCEL 146
148	6, 7	PRIMARY CARE ASSOCIATES
149	6, 7	ROCKPORT HOA, INC.
150	7	PHILLIP G. PAGE
151	7	GORDEN B. LEWIS & PHYLLIS C. LEWIS
152	7	ENGLISH MOOR AT WEST BAY ESTATES ASSOCIATION, INC.
153	7	PRIMARY CARE ASSOCIATES, LLC
154	7	CAPE FEAR PUBLIC UTILITY AUTHORITY
155	7, 8	LLOYD C. BRINKLEY, JR., ETAL
155A	7	LLOYD C. BRINKLEY, JR., ETAL
156	7	LUTHERAN CHURCH OF RECONCILIATION
157	7, 8	BARBARA ANN JORDAN
158	7, 8	BARBARA ANN JORDAN
159	8	DARLENE R. PRIDGEN
160	8	CHRIST'S SANCTIFIED HOLY CHURCH
161	8	SHELLINGTON PROPERTIES, INC.
162	8	7643 MARKET STREET, LLC
163	8	BAYSHORE ESTATES, INC.
164	8	JAMES T. BALKCUM, JR. & DOROTHY T. BALKCUM
165	8	HEALING HANDS CHIRO-PRAK-TIK, PLLC
166	8	ANN S. DOWNING
167	8	ANN S. DOWNING
168	8	CNS PROPERTIES, LLC
169	8	LOST TREE, LLC
170	8	OCEAN HIGHWAY MINI STORAGE, INC.
171	8, 9	JOHNNY E. BROWN
172	8, 9	ROBERT R. HOWELL
173	8, 9	THERESA MOORE, HRS
174	9	GORDON EVERETT, ETAL
175	9	SHIRLEY WILSON
176	9	JAMES T. BALKCUM, JR.
177	9	PONDS EDGE OFFICE HOA, INC.
178	9	GRE JV WILMINGTON, LLC
179	9	GRE JV WILMINGTON, LLC
180	9	GEORGE E. SAUNDERS, III, ETAL
181	9	GEORGE E. SAUNDERS, III, ETAL
182	9	S & F1 PROPERTIES, LLC

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
183	9	WPB, LLC
183A	9	FUR FLYING REALTY TRUST
184	9	ESTHER F. LEE
185	9	ESTHER F. LEE
186	9	CATHLEE L. PADGETT, ETAL
187	9, 10	WALTER LARRY POTTER & VIRGINIA SUE POTTER
188	10	BOO MIN SHIN
189	9, 10	AMBERLEIGH SHORES, LLC
190	10	RONALD E. GEORGE
191	10	GRATHWOL PROPERTY HOLDINGS, LLC, ETAL
192	10	CAPE FEAR PUBLIC UTILITY AUTHORITY
193	10	YOSEF, INC.
194	10	WQGOODMAN PROPERTIES, LLC
194A	10	JAMES S. FURR & BARBARA W. FURR
195	10	DASJA INCORPORATED
196	10, 11	ALDI, LLC
197	10	LIBERTY BAPTIST CHURCH OF WILMINGTON, INC.
198	10, 11	CORNING FEDERAL CREDIT UNION
199	11	LIVE OAK DEVELOPMENT, LLC
200	11	BAYSHORE ESTATES, INC.
201	11	BLUE GEM, INC.
202	11	OCEANS 10, LLC

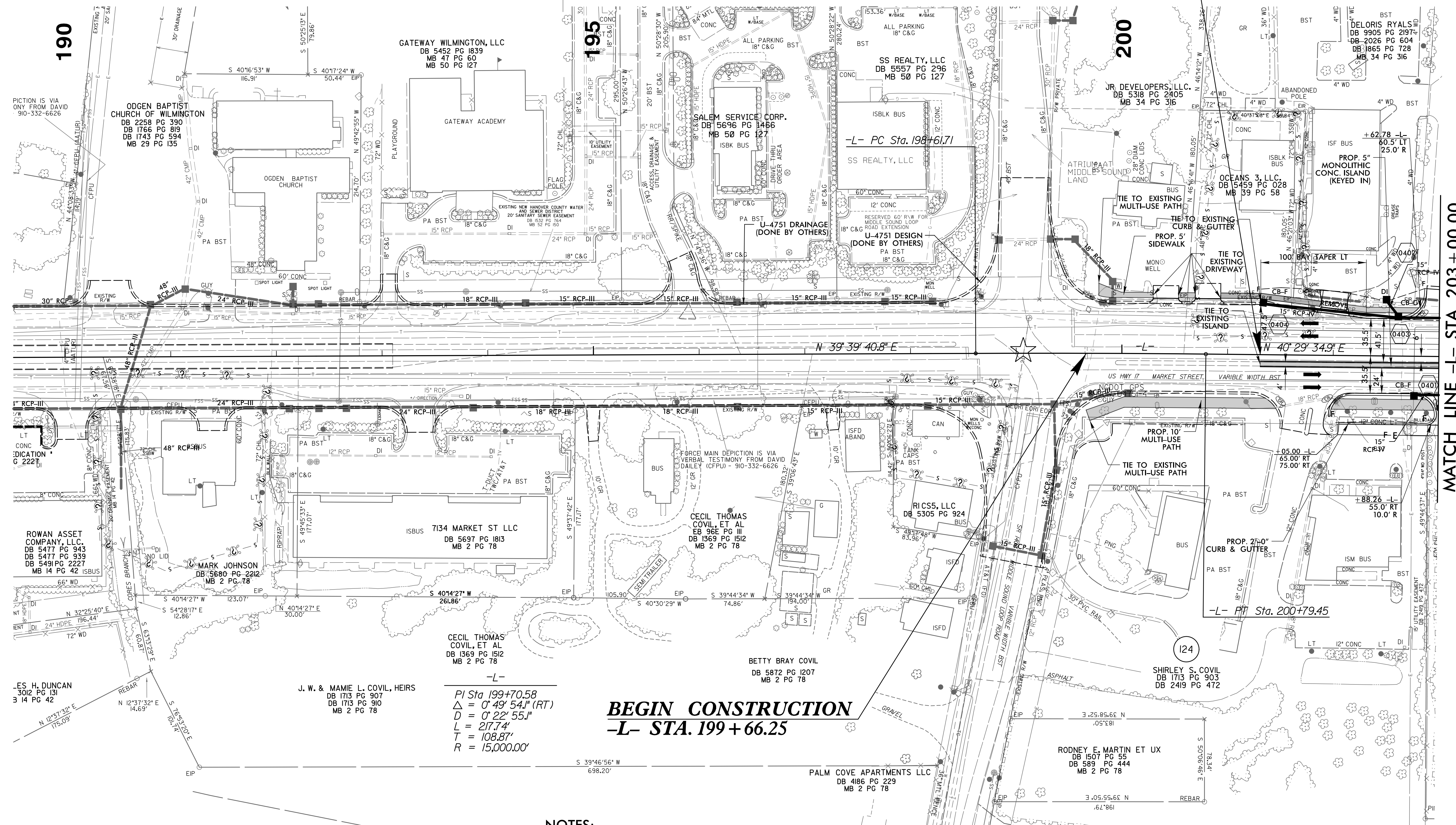
8.17.17.99

PROJECT REFERENCE NO.	SHEET NO.
U-4902D	4
RW SHEET NO.	U-4902CD-13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NAD 83 NSRS 2007

-L-
 PI Sta 199+70.58
 $\Delta = 0' 49' 54.1''$ (LT)
 $D = 0' 22' 55.1''$
 $L = 217.74'$
 $T = 108.87'$
 $R = 15,000.00'$
 $RO = N/A$
 $SE = N/A$

BEGIN TIP PROJECT U-4902D
-L- POT STA. 201+31.00



BEGIN CONSTRUCTION
-L- STA. 199+66.25

-L-
 PI Sta 199+70.58
 $\Delta = 0' 49' 54.1''$ (RT)
 $D = 0' 22' 55.1''$
 $L = 217.74'$
 $T = 108.87'$
 $R = 15,000.00'$

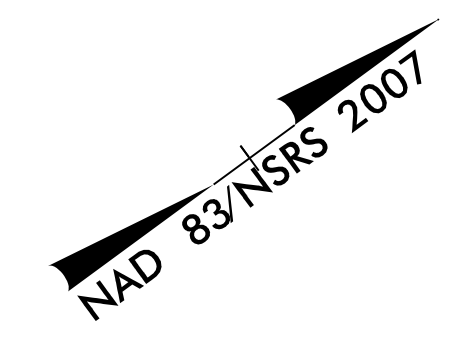
- NOTES:
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. ALL DI'S CONSTRUCTED OUTSIDE OF RW BUT WITHIN PUE WILL REVERT TO AND BE MAINTAINED BY THE RESPECTIVE PROPERTY OWNER AFTER PROJECT CONSTRUCTION IS COMPLETE.

EXISTING TRAFFIC SIGNAL

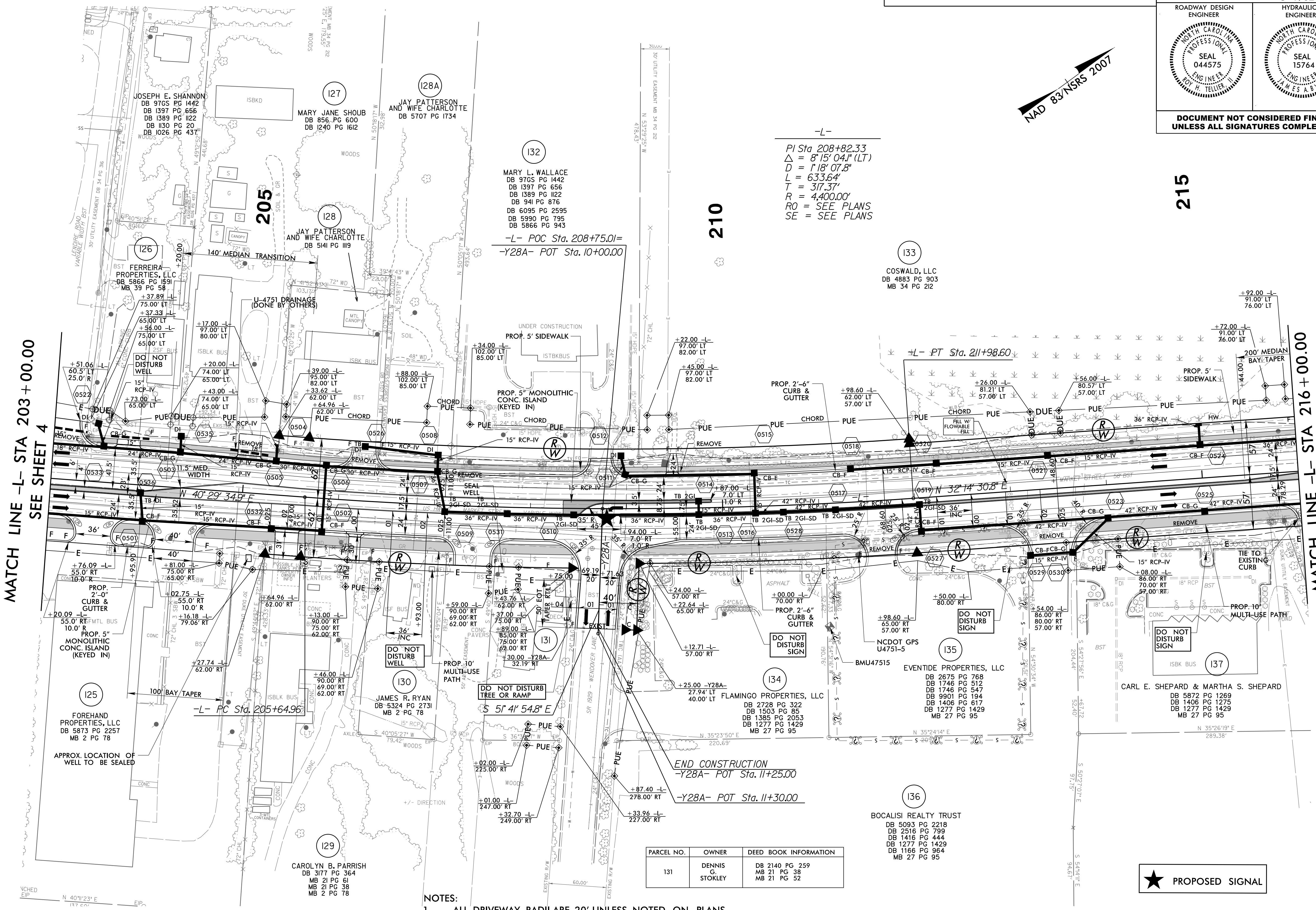
MATCH LINE -L- STA 203+00.00
 SEE SHEET 5

FOR -L- PROFILE, SEE SHEET 12

05-JUL-2018 12:45
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215



-L-
 Pi Sta 208+82.33
 $\Delta = 8' 15' 04''$ (LT)
 $D = 1' 18' 07.8''$
 $L = 633.64'$
 $T = 317.37'$
 $R = 4,400.00'$
 $RO = \text{SEE PLANS}$
 $SE = \text{SEE PLANS}$

-L- POC Sta. 208+75.01=
 -Y28A- POT Sta. 10+00.00

-L- PT Sta. 211+98.60

END CONSTRUCTION
 -Y28A- POT Sta. 11+25.00
 -Y28A- POT Sta. 11+30.00

MATCH LINE -L- STA 203+00.00
 SEE SHEET 4

MATCH LINE -L- STA 216+00.00
 SEE SHEET 6

PARCEL NO.	OWNER	DEED BOOK INFORMATION
131	DENNIS G. STOKLEY	DB 2140 PG 259 MB 21 PG 38 MB 21 PG 52

- NOTES:
- ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 - ALL DI'S CONSTRUCTED OUTSIDE OF RW BUT WITHIN PUE WILL REVERT TO AND BE MAINTAINED BY THE RESPECTIVE PROPERTY OWNER AFTER PROJECT CONSTRUCTION IS COMPLETE.
 - THE PIPES CONNECTING DRAINAGE STRUCTURES 0518, 0520, 0521, AND 0524 SHALL UTILIZE O-RING GASKET JOINTS.



FOR -L- PROFILE, SEE SHEET 12
 FOR -Y28A- PROFILE, SEE SHEET 16

REVISIONS

CONSTRUCTION REVISION #1 (2019-05-02): REVISED DRIVEWAY OPENINGS ON PARCEL 125. RHT
 CONSTRUCTION REVISION #4 (2020-03-12): REVISED DRAINAGE DESIGNS FROM PARCEL 133 TO PARCEL 141. RHT

U:\MAR-2020_1550\Projects\U-4902D_RDY_PSH_5.dgn

8/17/99

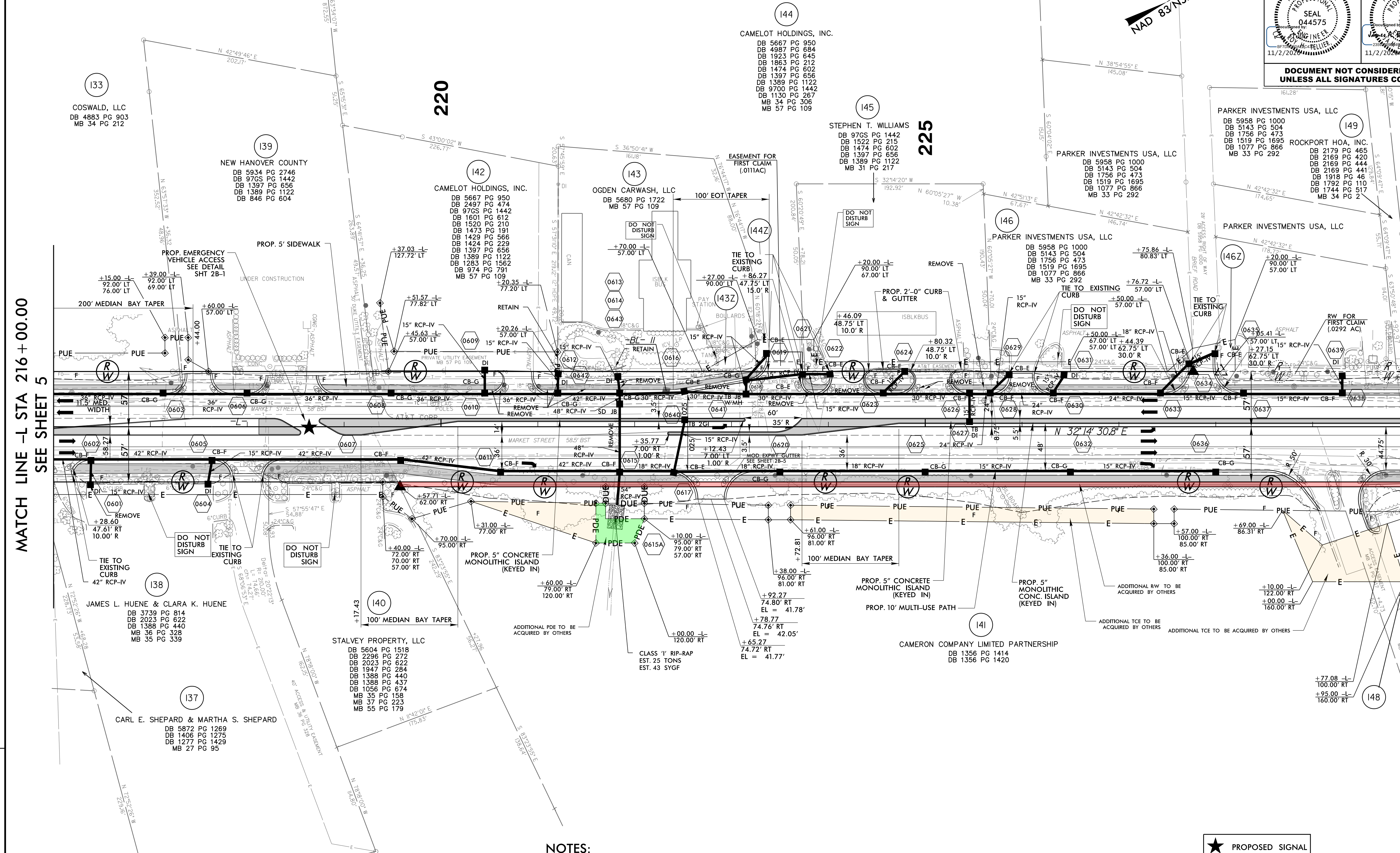
8.17.17.99

PROJECT REFERENCE NO. U-4902D	SHEET NO. 6
RW SHEET NO. U-4902CD-14	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS
CONSTRUCTION REVISION #6: EXTENDED RIGHT TURN LANE ON -L- (MARKET ST) AND REVISED -Y30- (BAYSHORE DR) DESIGNS FOR CAMERON PROPERTY DEVELOPMENT. ITS

MATCH LINE -L- STA 216+00.00
SEE SHEET 5

MATCH LINE -L- STA 230+00.00
SEE SHEET 7



- NOTES:**
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. ALL DI'S CONSTRUCTED OUTSIDE OF RW BUT WITHIN PUE WILL REVERT TO AND BE MAINTAINED BY THE RESPECTIVE PROPERTY OWNER AFTER PROJECT CONSTRUCTION IS COMPLETE.

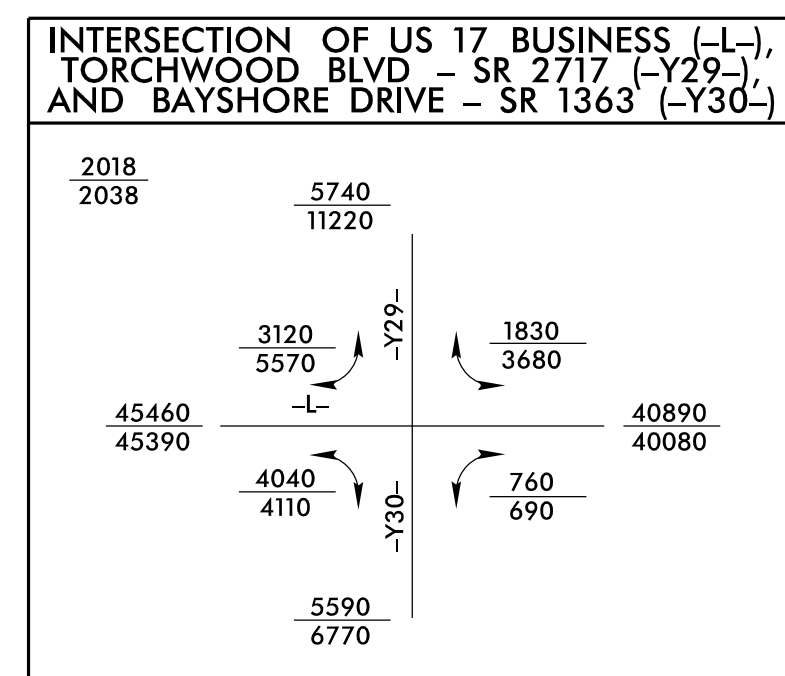
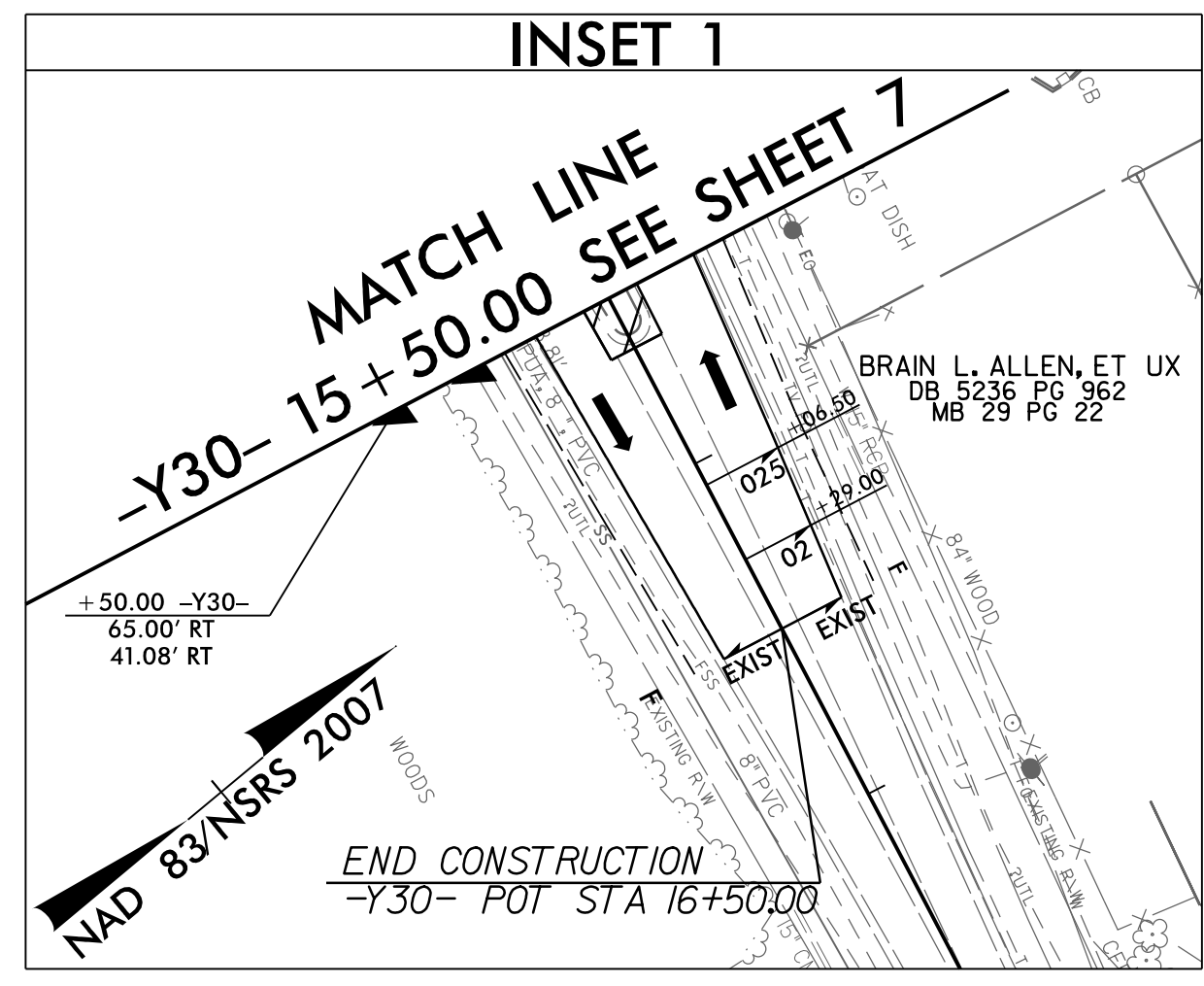
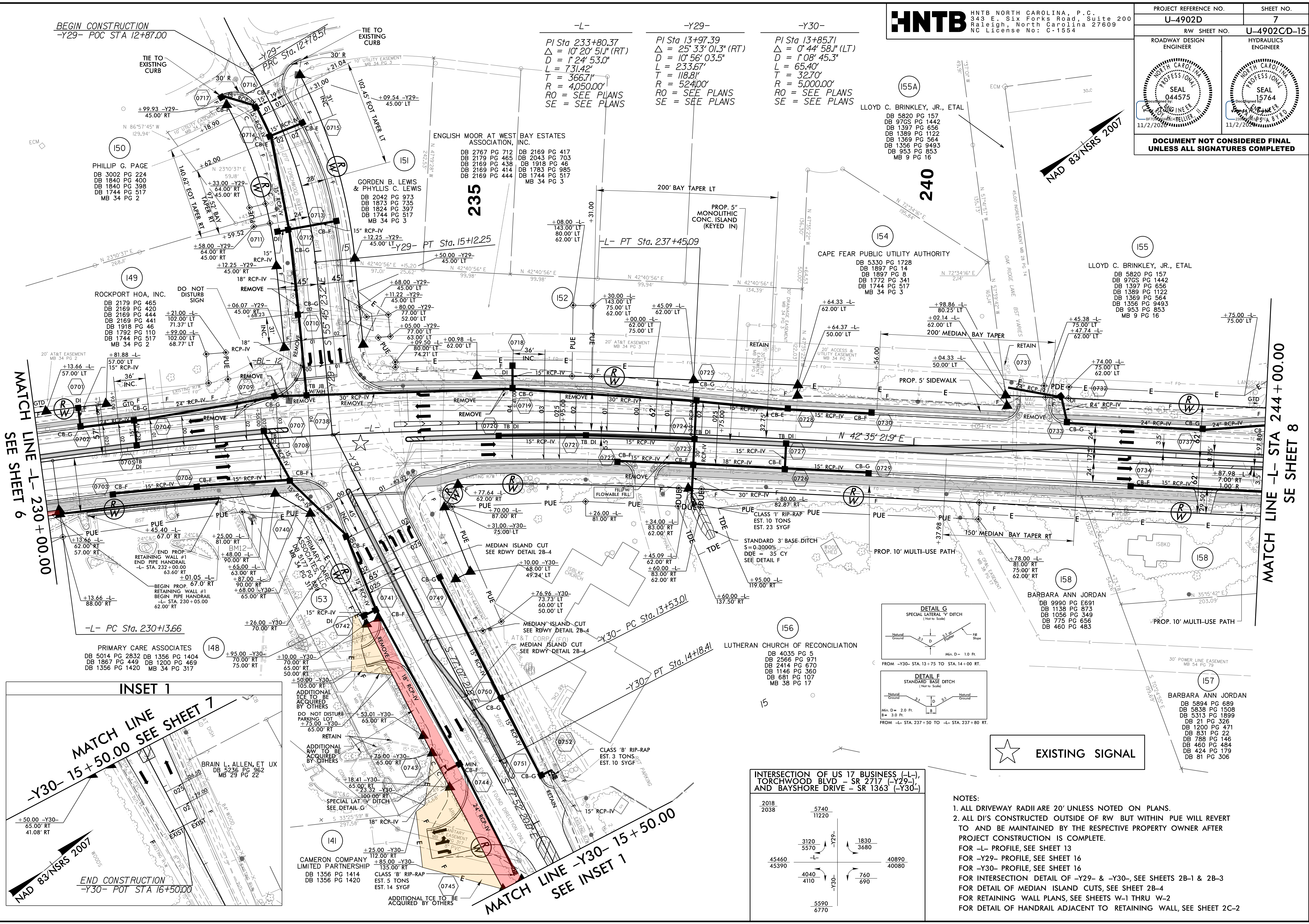


FOR -L- PROFILE, SEE SHEETS 12 & 13
 FOR EMERGENCY VEHICLE ACCESS DETAIL, SEE SHEET 2B-1
 FOR DETAIL OF MODIFIED EXPRESSWAY GUTTER, SEE SHEET 2B-5

CP: NOV-2020, 03:29
VP: NOV-2020, 14:02, RDY_PSH_6.dgn
DATE

8.17.17.99

PROJECT REFERENCE NO. U-4902D	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

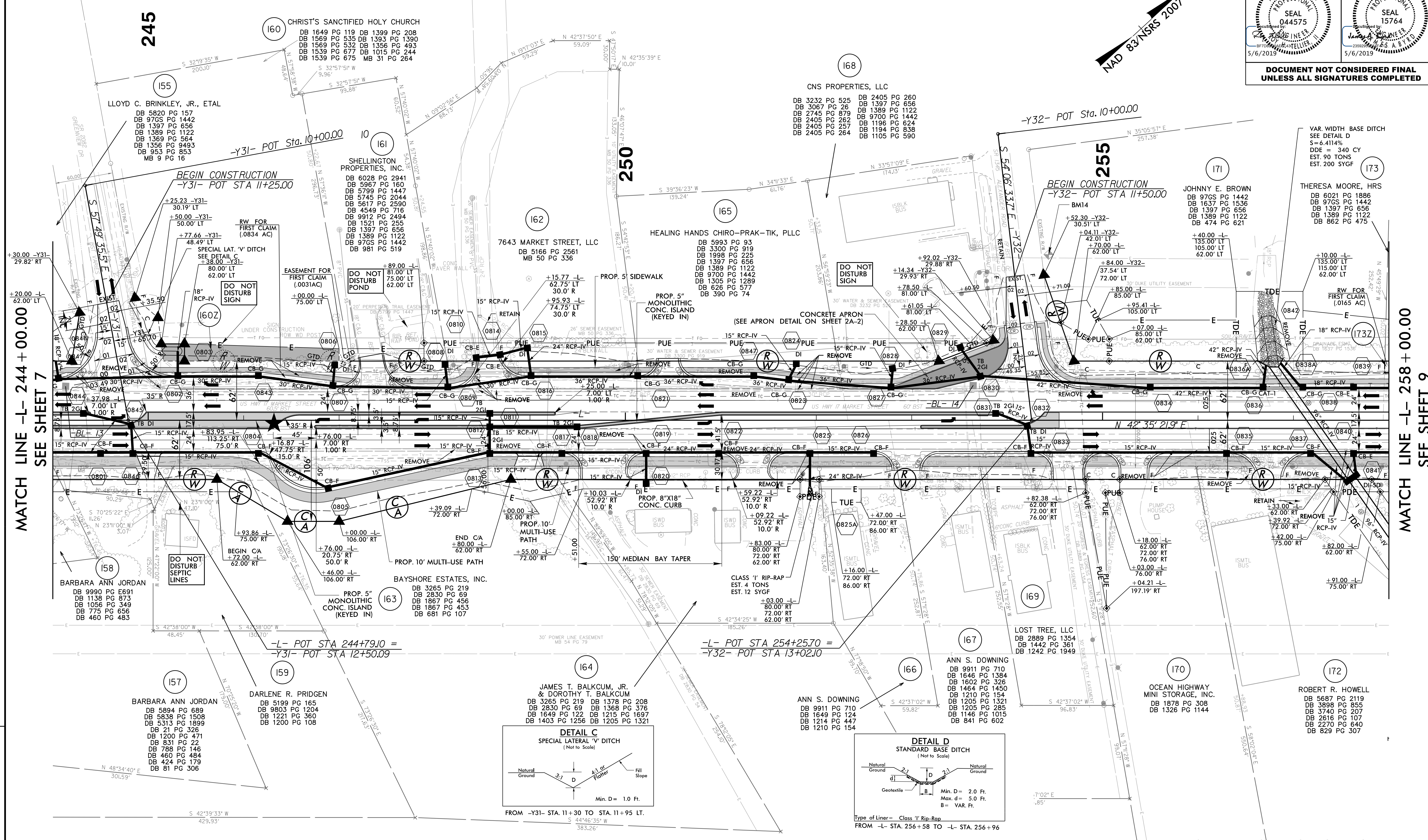
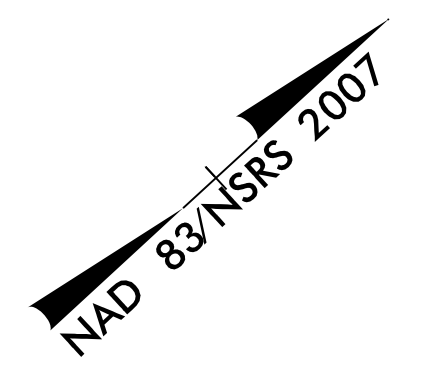


- NOTES:**
- ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 - ALL DI'S CONSTRUCTED OUTSIDE OF RW BUT WITHIN PUE WILL REVERT TO AND BE MAINTAINED BY THE RESPECTIVE PROPERTY OWNER AFTER PROJECT CONSTRUCTION IS COMPLETE.
- FOR -L- PROFILE, SEE SHEET 13
FOR -Y29- PROFILE, SEE SHEET 16
FOR -Y30- PROFILE, SEE SHEET 16
FOR INTERSECTION DETAIL OF -Y29- & -Y30-, SEE SHEETS 2B-1 & 2B-3
FOR RETAINING WALL PLANS, SEE SHEETS W-1 THRU W-2
FOR DETAIL OF HANDRAIL ADJACENT TO RETAINING WALL, SEE SHEET 2C-2

CONSTRUCTION REVISION #6 (2020-07-22): EXTENDED RIGHT TURN LANE ON -L- (MARKET ST) AND REVISED -Y30- (BAYSHORE DR) DESIGNS FOR CAMERON PROPERTY DEVELOPMENT. TSC

CP-NOV-2020-03129
CP-NOV-2020-03129
CP-NOV-2020-03129

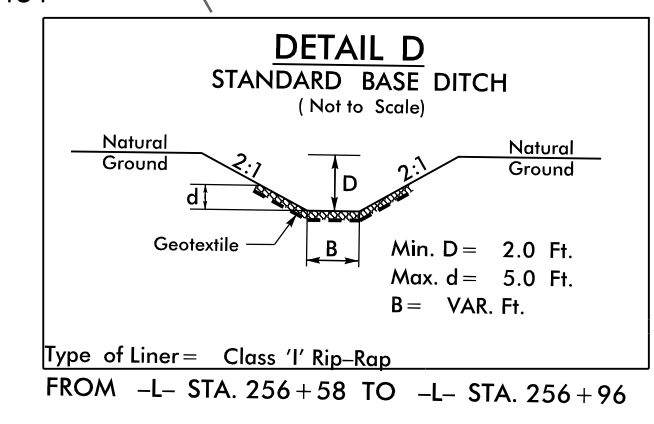
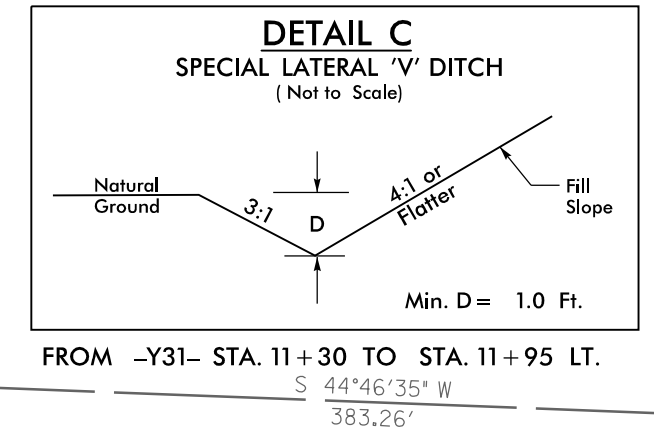
PROJECT REFERENCE NO. U-4902D	SHEET NO. 8
RW SHEET NO. U-4902CD-16	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCH LINE -L- 244 + 00.00
SEE SHEET 7

MATCH LINE -L- 258 + 00.00
SEE SHEET 9

★ PROPOSED SIGNAL



- NOTES:**
1. ALL DRIVEWAY RADII ARE 20' UNLESS NOTED ON PLANS.
 2. ALL DI'S CONSTRUCTED OUTSIDE OF RW BUT WITHIN PUE WILL REVERT TO AND BE MAINTAINED BY THE RESPECTIVE PROPERTY OWNER AFTER PROJECT CONSTRUCTION IS COMPLETE.

FOR -L- PROFILE, SEE SHEETS 13 & 14
FOR -Y31- PROFILE, SEE SHEET 16
FOR -Y32- PROFILE, SEE SHEET 16
FOR INTERSECTION DETAIL OF -Y32-,
SEE SHEET 2B-1

CONSTRUCTION REVISION NO. 2: REVISED DRIVEWAY PARCELS 161, ADDED DRIVEWAY TO PARCEL 165, REVISED DRAINAGE BOXES 0807 & 0821, ADDED DRAINAGE BOX 0847, RHT

05-MAY-2019 15:27
C:\p\chadway\161-165\U4902D_RDY_PSH_8.dgn
HNTB