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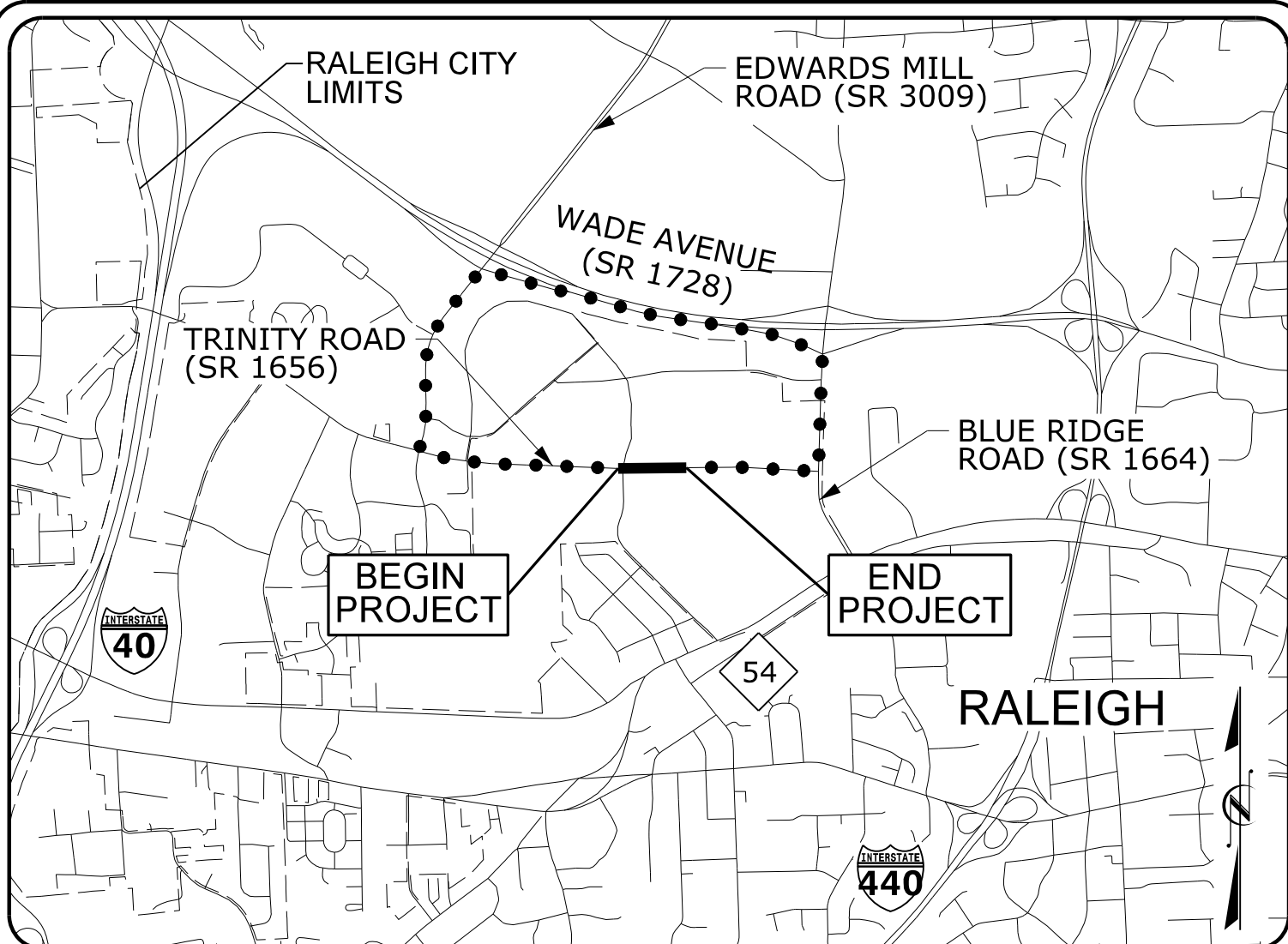
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09/28/2017

**TIP PROJECT: W-5522**

**CONTRACT: C203908**

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



**VICINITY MAP**  
NOT TO SCALE

••• DETOUR ROUTE TO EDWARDS MILL ROAD (SR 3009)

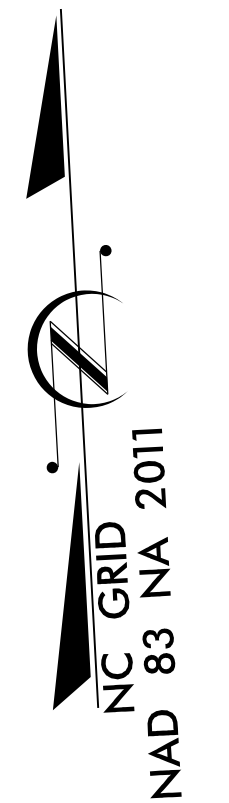
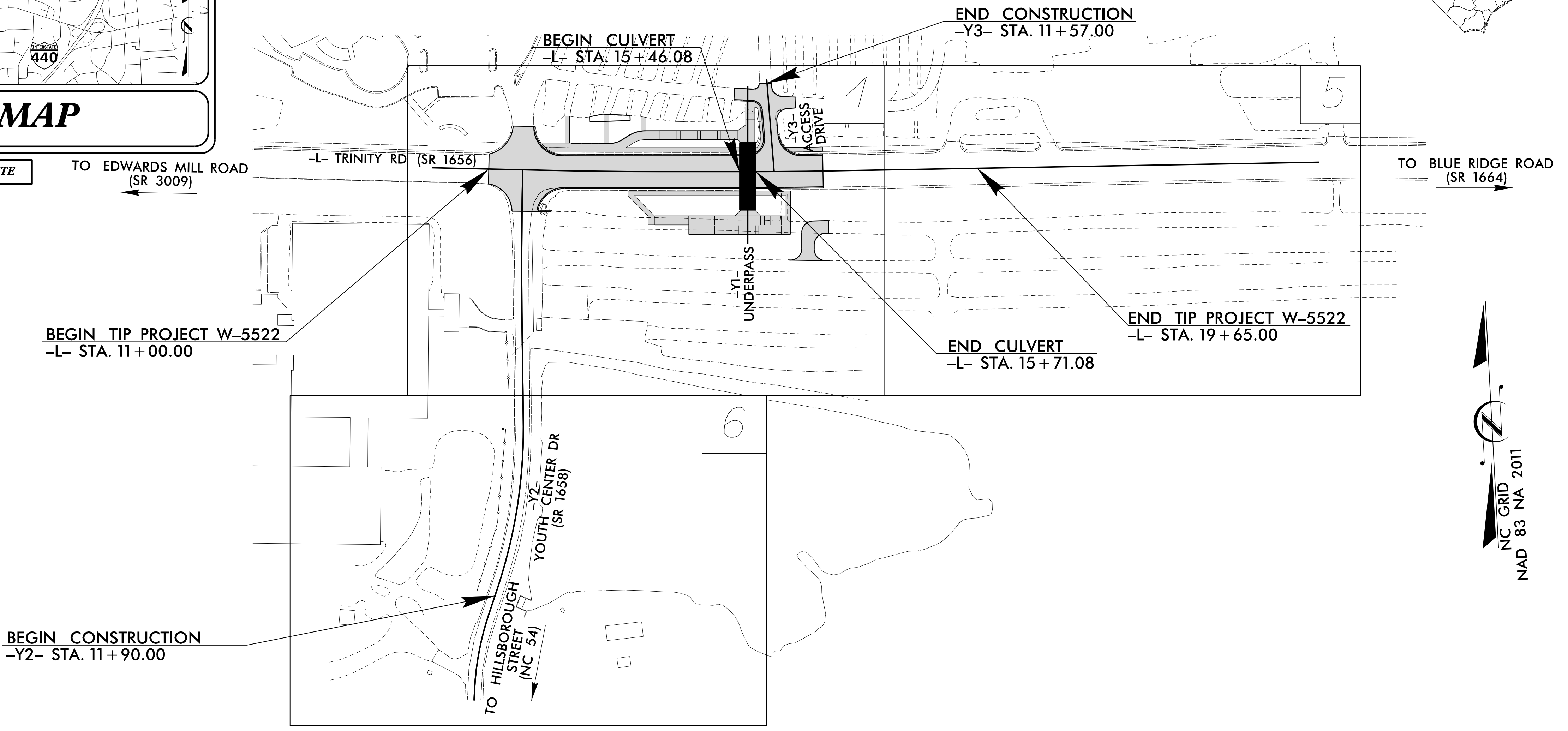
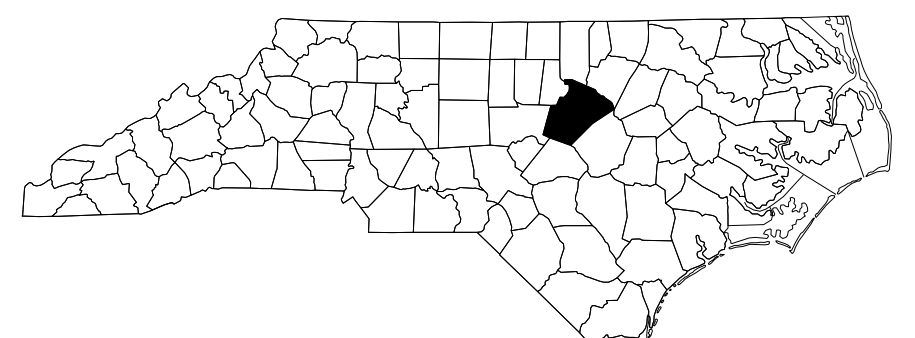
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE COUNTY**

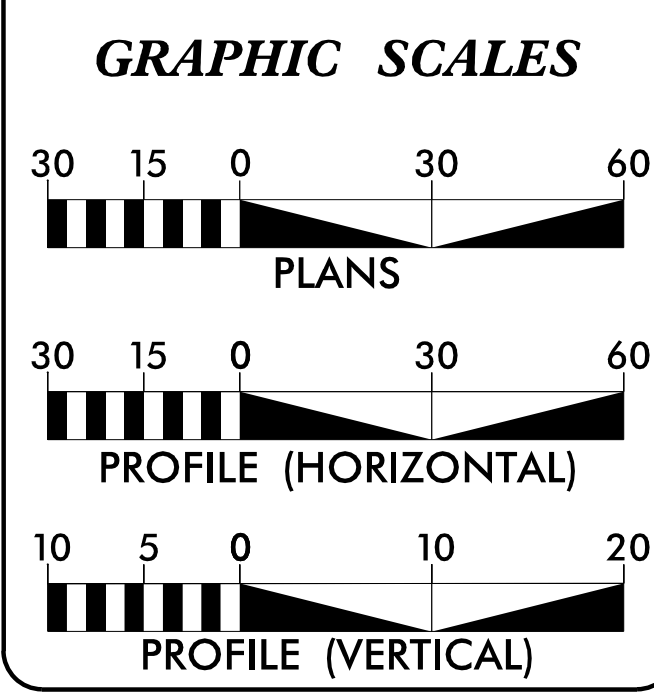
**LOCATION: SR 1656 (TRINITY ROAD) AT SR 1658 (YOUTH CENTER DRIVE) INTERSECTION IN RALEIGH**

**TYPE OF WORK: GRADING, PAVING, CULVERT, AND DRAINAGE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>W-5522</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50143.1.FD1	HSIP-1656(5)	PE	
50143.2.1	HSIP-1656(005)	ROW & UTIL	
50143.3.1	HSIP-1656(5)	CONST.	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**  
ADT 2013 = 6,000  
FUNC CLASS = MAJOR COLLECTOR  
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT W-5522 = 0.159 MILES  
LENGTH CULVERT TIP PROJECT W-5522 = 0.005 MILES  
TOTAL LENGTH OF TIP PROJECT W-5522 = 0.164 MILES

Prepared in the Office of:  
**AECOM**  
2018 STANDARD SPECIFICATIONS

**EDWARD G. EDENS, P.E.**  
PROJECT ENGINEER

**KIMBERLY KOIVUNIEMI, P.E.**  
PROJECT DESIGN ENGINEER

**TATIA L. WHITE, P.E., P.L.S.**  
PROJECT ENGINEER  
NCDOT CONTACT

**RIGHT OF WAY DATE:**  
MARCH 30, 2017

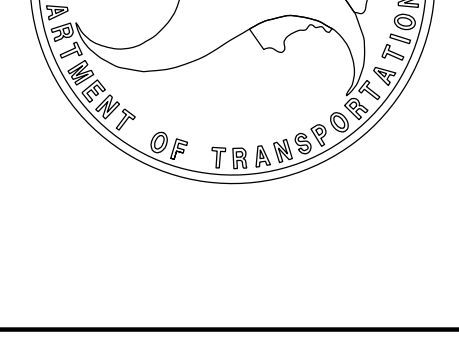
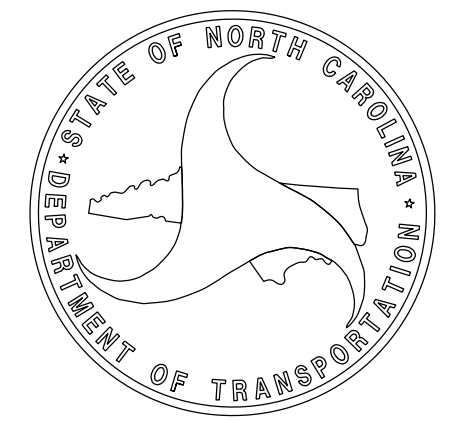
**LETTING DATE:**  
JANUARY 16, 2018

**HYDRAULICS ENGINEER**

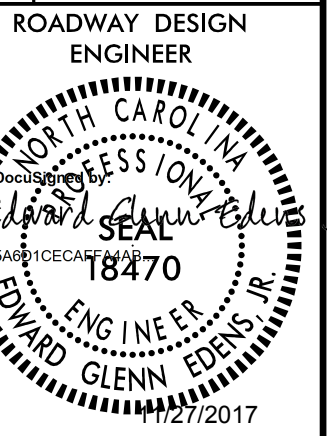
DocuSigned by:  
*Charles R. Smith*  
SIGNATURE: P.E.

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
*Edward Glenn Edens Jr., P.E.*  
SIGNATURE: P.E.







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

EFF. 01-01-2018

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEETS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	SITE GRADING PLAN
2C-1	STEEL BOLLARDS
2C-2	DETAIL OF STEEL PIPE GATE
3B-1	SUMMARY OF QUANTITIES
3D-1 THRU 3D-2	DRAINAGE SUMMARIES
4 THRU 7	PLAN AND PROFILE SHEET
TMP-1 THRU TMP-10	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
L-1 THRU L-4	ELECTRICAL PLANS
EC-1 THRU EC-7	EROSION CONTROL PLANS
UO-1 THRU UO-4	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-12	CROSS-SECTIONS
S-1 THRU S-31	STRUCTURE PLANS

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

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

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

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

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.

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 WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

UTILITIES:  
 UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, PSNC, CHARTER COMMUNICATIONS, NCSU AT&T LEGACY, AT&T, GOOGLE, CELITO, CITY OF RALEIGH  
 ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

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

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	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
840.46	Traffic Bearing 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
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
862.01	Guardrail Placement (Beg. July 2017 Letting use detail in lieu of Standard)
862.02	Guardrail Installation (Beg. July 2017 Letting use detail in lieu of Standard)
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.02	Guide for Rip Rap at Pipe Outlets

# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

## CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

### BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Computed Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-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	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□
Building	□
School	□
Church	□
Dam	---

### HYDROLOGY:

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

### RAILROADS:

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

### RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	---
Primary Horiz Control Point	---
Primary Horiz and Vert Control Point	---
Exist Permanent Easement Pin and Cap	---
New Permanent Easement Pin and Cap	---
Vertical Benchmark	△
Existing Right of Way Marker	---
Existing Right of Way Line	---
New Right of Way Line	---
New Right of Way Line with Pin and Cap	---
New Right of Way Line with Concrete or Granite R/W Marker	---
New Control of Access Line with Concrete C/A Marker	---
Existing Control of Access	---
New Control of Access	---
Existing Easement Line	---
New Temporary Construction Easement	---
New Temporary Drainage Easement	---
New Permanent Drainage Easement	---
New Permanent Drainage / Utility Easement	---
New Permanent Utility Easement	---
New Temporary Utility Easement	---
New Aerial Utility Easement	---

### ROADS AND RELATED FEATURES:

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

### VEGETATION:

Single Tree	☼
Single Shrub	☼

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

Hedge	-----
Woods Line	-----
Orchard	☼ ☼ ☼ ☼
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.*)	---
U/G Power Line LOS C (S.U.E.*)	---
U/G Power Line LOS D (S.U.E.*)	---

### 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.*)	---
U/G Telephone Cable LOS C (S.U.E.*)	---
U/G Telephone Cable LOS D (S.U.E.*)	---
U/G Telephone Conduit LOS B (S.U.E.*)	---
U/G Telephone Conduit LOS C (S.U.E.*)	---
U/G Telephone Conduit LOS D (S.U.E.*)	---
U/G Fiber Optics Cable LOS B (S.U.E.*)	---
U/G Fiber Optics Cable LOS C (S.U.E.*)	---
U/G Fiber Optics Cable LOS D (S.U.E.*)	---

### WATER:

Water Manhole	⊙
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	---
U/G Water Line LOS C (S.U.E.*)	---
U/G Water Line LOS D (S.U.E.*)	---
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.*)	---
U/G TV Cable LOS C (S.U.E.*)	---
U/G TV Cable LOS D (S.U.E.*)	---
U/G Fiber Optic Cable LOS B (S.U.E.*)	---
U/G Fiber Optic Cable LOS C (S.U.E.*)	---
U/G Fiber Optic Cable LOS D (S.U.E.*)	---

### GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	---
U/G Gas Line LOS C (S.U.E.*)	---
U/G Gas Line LOS D (S.U.E.*)	---
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.*)	---
SS Forced Main Line LOS C (S.U.E.*)	---
SS Forced Main Line LOS D (S.U.E.*)	---

### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	---
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 W-5522

FINAL

ROW MARKER PERMANENT EASEMENT-E-

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+54.00	-65.00	745821.08674	2083943.46354
L	12+54.00	-48.34	745804.47431	2083942.27345
L	12+75.00	-48.69	745803.35282	2083963.11877
L	12+75.00	-65.00	745819.62564	2083964.24160
L	12+96.00	-102.00	745855.13789	2083987.47348
L	12+96.00	-48.98	745802.23142	2083983.96243
L	13+20.50	-97.00	745848.58318	2084011.29463
L	13+20.50	-49.24	745800.92321	2084008.27832
L	13+22.00	-165.00	745916.35475	2084017.05575
L	13+42.00	-148.00	745898.17680	2084035.57775
L	13+43.00	-178.50	745928.56190	2084038.39827
L	13+49.00	-153.00	745902.75538	2084042.73388
L	13+62.00	69.00	745680.37918	2084042.59083
L	13+69.00	83.00	745665.99573	2084048.83996
L	13+92.00	95.00	745652.71958	2084071.39166
L	13+92.00	-87.00	745834.45167	2084081.26326
L	13+92.00	-49.60	745797.10573	2084079.23464
L	14+07.00	-73.00	745819.67390	2084095.40745
L	14+07.00	-56.78	745803.47631	2084094.54431
L	14+08.00	103.00	745643.87004	2084087.04064
L	14+08.00	78.22	745668.61437	2084088.35921
L	14+48.00	128.02	745616.75704	2084125.65636
L	14+48.00	111.00	745633.75288	2084126.55826
L	14+48.00	103.00	745641.74154	2084126.98396
L	14+63.00	112.00	745631.95611	2084141.48380
L	14+63.00	103.00	745640.94335	2084141.96271
L	15+00.00	-81.00	745822.71380	2084188.70139
L	15+00.00	-97.00	745838.69113	2084189.55279
L	15+30.00	-81.00	745821.11743	2084218.65889
L	15+44.00	-60.00	745799.40221	2084231.52159
L	15+51.00	86.00	745653.23657	2084230.74265
L	15+51.00	112.00	745627.27341	2084229.35912
L	15+52.00	-97.00	745835.92409	2084241.47912
L	15+66.00	86.00	745652.43937	2084245.83498
L	15+66.00	112.00	745626.47440	2084244.48569
L	15+66.00	-76.00	745814.22107	2084254.24213
L	15+77.00	-130.00	745867.59416	2084267.85157
L	15+85.00	-154.00	745891.17102	2084276.90029
L	15+90.00	-114.00	745850.97755	2084279.84211
L	15+99.00	-56.66	745793.27594	2084285.96409
L	15+99.00	-68.00	745804.60124	2084286.50578
L	16+10.00	-124.00	745860.02734	2084299.99873
L	16+20.00	-70.00	745805.63173	2084307.39510
L	16+20.00	-56.52	745792.16636	2084306.78646
L	16+36.00	112.00	745623.10099	2084315.38525
L	16+36.00	78.46	745656.60974	2084316.83270
L	16+53.00	75.00	745659.34421	2084334.12618
L	16+53.00	128.00	745606.38884	2084331.95144
L	17+00.00	50.00	745682.52154	2084382.39566

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	13+92.00	50.40	745697.25292	2084073.81069
L	13+92.00	78.22	745669.47005	2084072.30154
L	14+01.00	-49.60	745796.62496	2084088.17071
L	14+01.00	-56.78	745803.79559	2084088.55281
L	16+18.00	78.47	745657.40713	2084298.67366
L	16+18.00	50.20	745685.64892	2084299.95726
L	16+25.00	-56.48	745791.90216	2084311.74429
L	16+25.00	-49.83	745785.25508	2084311.44800

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	745775.2428	2083685.5299
PC	12+25.91	745758.3093	2083910.8037
PT	14+00.23	745747.1377	2084084.7608
PC	15+55.45	745738.8778	2084239.7660
PT	16+97.49	745732.5791	2084381.6606
POT	25+70.00	745701.6262	2085253.6218

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	745610.6725	2084236.0641
POT	12+80.00	745890.2758	2084250.9636

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	745736.3846	2084289.4611
POT	11+64.87	745901.1933	2084284.9801

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	744829.4066	2083709.1187
PC	10+11.34	744840.7018	2083710.1379
PT	11+52.82	744977.9507	2083742.4861
PC	12+04.64	745026.2084	2083761.3673
PT	15+04.32	745318.1675	2083822.5165
PC	16+70.24	745483.9607	2083829.1473
PT	18+97.64	745711.0141	2083841.4623
POT	19+50.00	745763.2526	2083845.0408

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4437-6" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 744,776.532(±) EASTING: 2,089,363.650(±) ELEVATION: U4467-8 472.43(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00009982 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4437-6" TO -L- STATION 11+82.29 IS N 79°50'21.8" W 5,583.91' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

ROW MARKER PERMANENT EASEMENT-E-

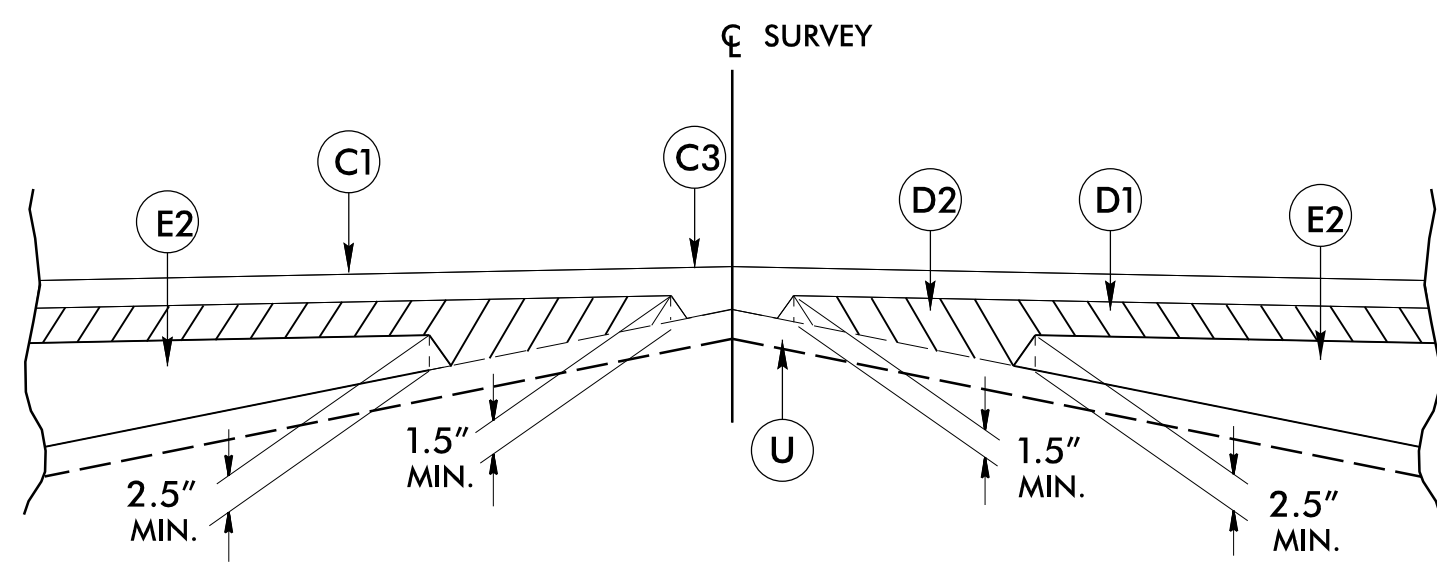
ALIGN	STATION	OFFSET	NORTH	EAST
Y2	18+21.00	55.41	745631.27291	2083891.90837
Y2	18+52.00	68.00	745661.21294	2083906.33716



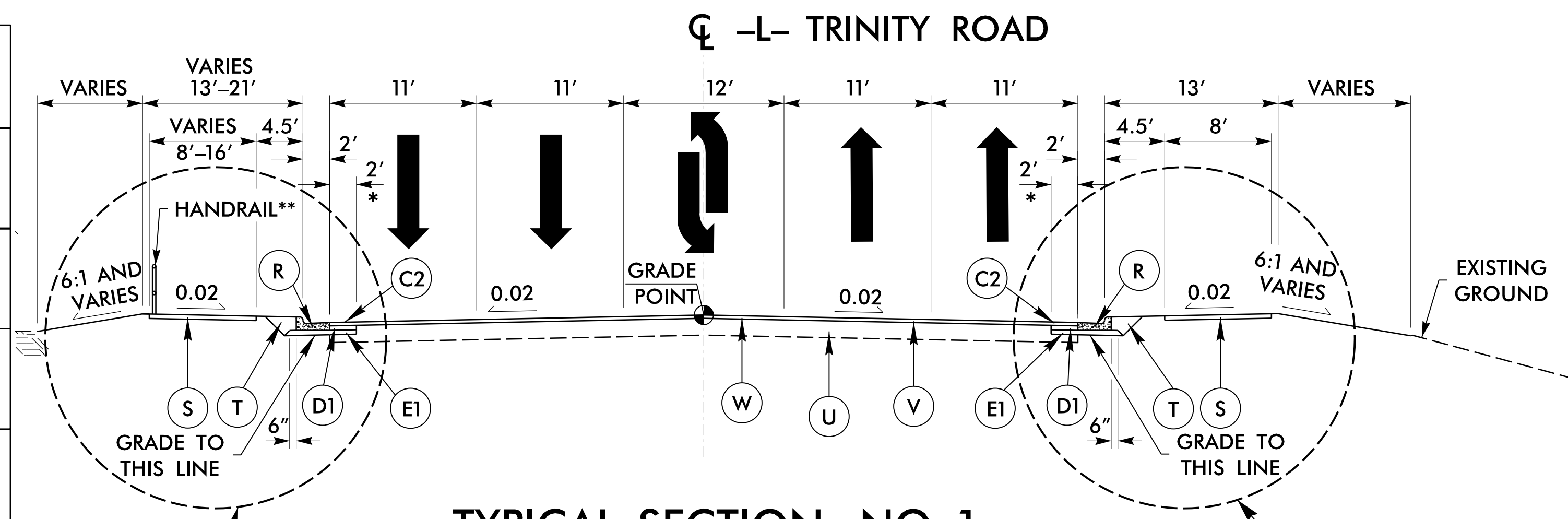
6/2/2017

PAVEMENT SCHEDULE (FINAL DESIGN)	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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.
J1	PROP. 8" AGGREGATE BASE COURSE.
R	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
S1	6" CONCRETE PAVEMENT. SEE STRUCTURAL PLANS
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	1.5" MILLING BITUMINOUS PAVEMENT.
W	VAR. DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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



Detail Showing Method of Wedging  
**WEDGING DETAIL**



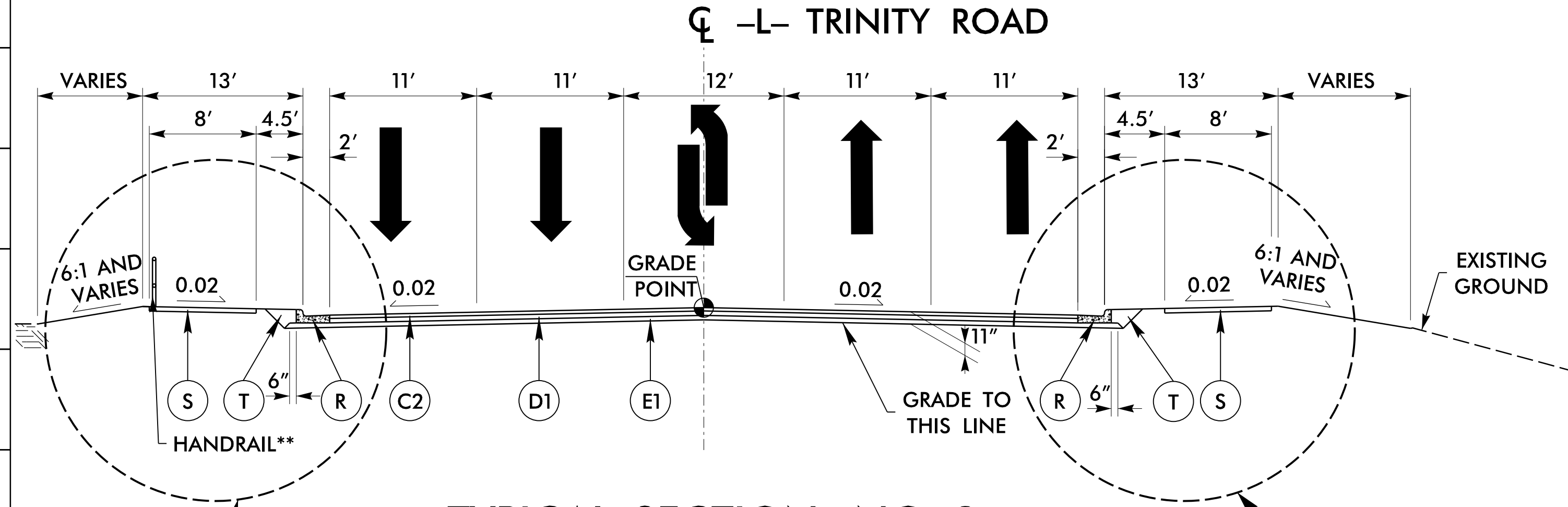
**TYPICAL SECTION NO. 1**

-L- STA. 11+00.00 TO STA. 13+70.00  
-L- STA. 16+15.00 TO STA. 16+91.72

SEE INSET NO. 1

SEE INSET NO. 2

NOTE: STATIONS MAY VARY BASED ON UNDERPASS EXCAVATION LIMITS.  
\* SAWCUT TO REMOVE AND REPLACE 2' OF PAVEMENT.  
NOTE: FROM STA 11+00.00 TO STA 11+82.29 MILL AND RESURFACE 1.5".  
\*\*TOP MOUNTED HANDRAIL (SEE ROADWAY PLANS SHEET 4 FOR LOCATION, STRUCTURAL PLANS SHEET S-31 FOR DETAILS)



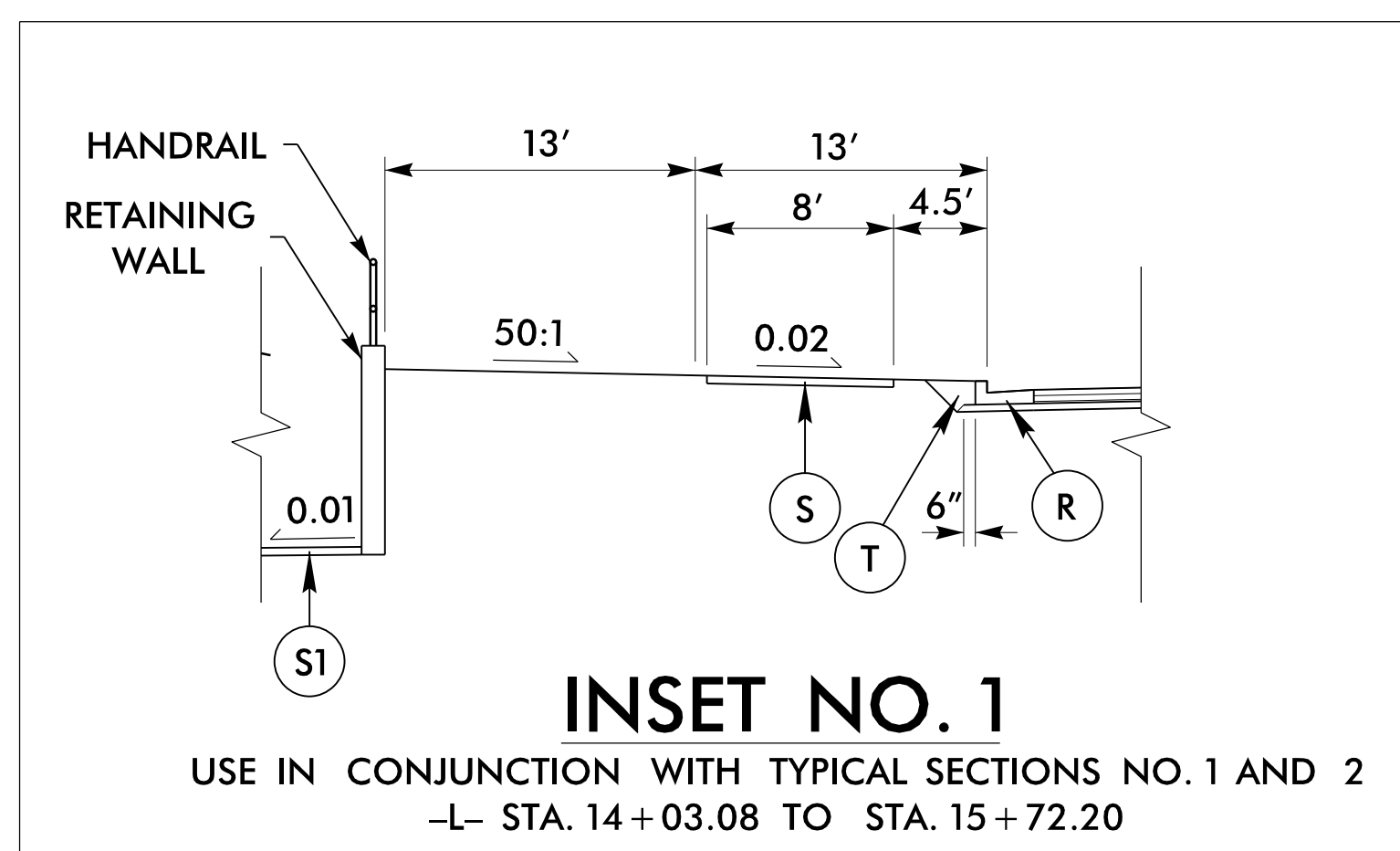
**TYPICAL SECTION NO. 2**

-L- STA. 13+70.00 TO STA. 16+15.00  
(INCLUDES TYPICAL SECTION 3 FOR UNDERPASS)

SEE INSET NO. 1

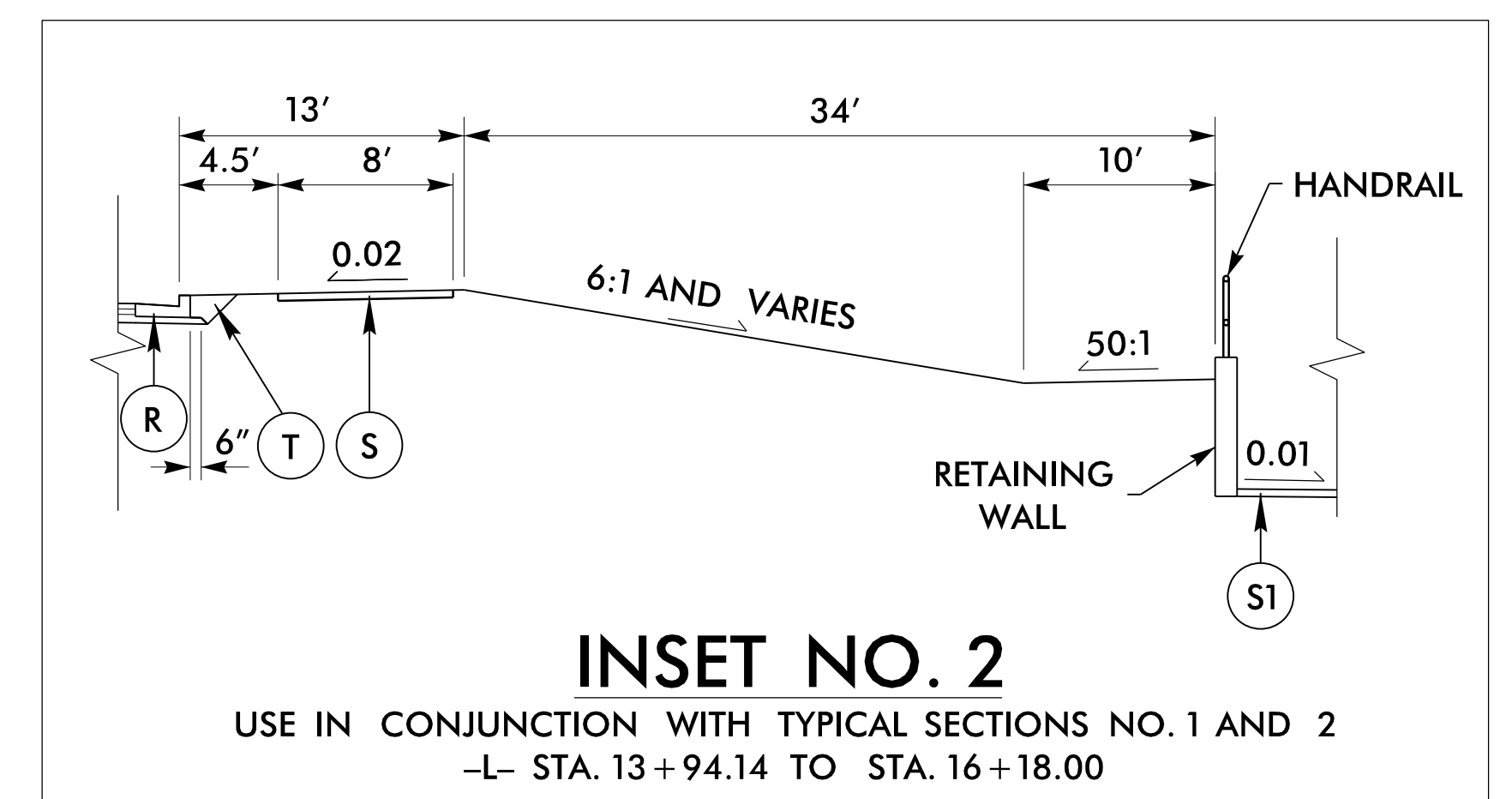
SEE INSET NO. 2

NOTE: STATIONS MAY VARY BASED ON UNDERPASS EXCAVATION LIMITS.  
\*\*TOP MOUNTED HANDRAIL (SEE ROADWAY PLANS SHEET 4 FOR LOCATION, STRUCTURAL PLANS SHEET S-31 FOR DETAILS)



**INSET NO. 1**

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO.1 AND 2  
-L- STA. 14+03.08 TO STA. 15+72.20



**INSET NO. 2**

USE IN CONJUNCTION WITH TYPICAL SECTIONS NO.1 AND 2  
-L- STA. 13+94.14 TO STA. 16+18.00


PROJECT REFERENCE NO. W-5522	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	PAVEMENT DESIGN ENGINEER <i>[Signature]</i>
Professional Engineer Seal No. 18470 Exp. 12/27/2017	Professional Engineer Seal No. 022896 Exp. 12/29/2017
Prepared in the Office of: <b>AECOM</b>	
<small>NC FIRM LICENSE No. F-0342 701 Corporate Center, 3rd Fl., Suite 475 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
<p><b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b></p>	

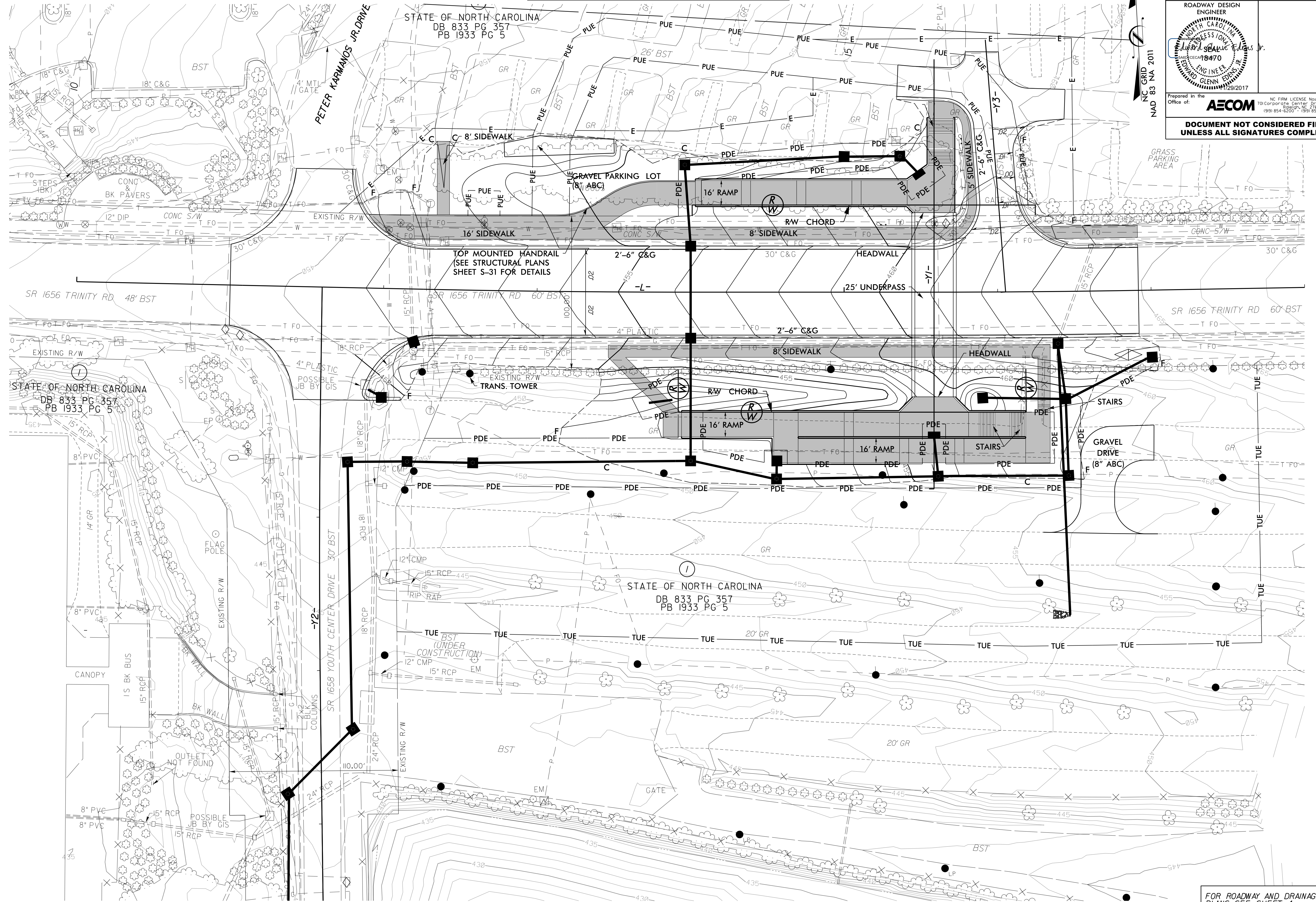
W:\GIS\2017  
 RA\Facilities\N-Proj\W5522\_Rdg-tyr.dgn  
 ktmkva@aec.com





# SITE GRADING PLAN

PROJECT REFERENCE NO. W-5522	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
Prepared in the Office of: <b>AECOM</b>	
NC FIRM LICENSE No: F-0342 701 Corporate Center, Suite 4175 Raleigh, NC 27607 (919) 854-8200 • (919) 854-6299(FAX)	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

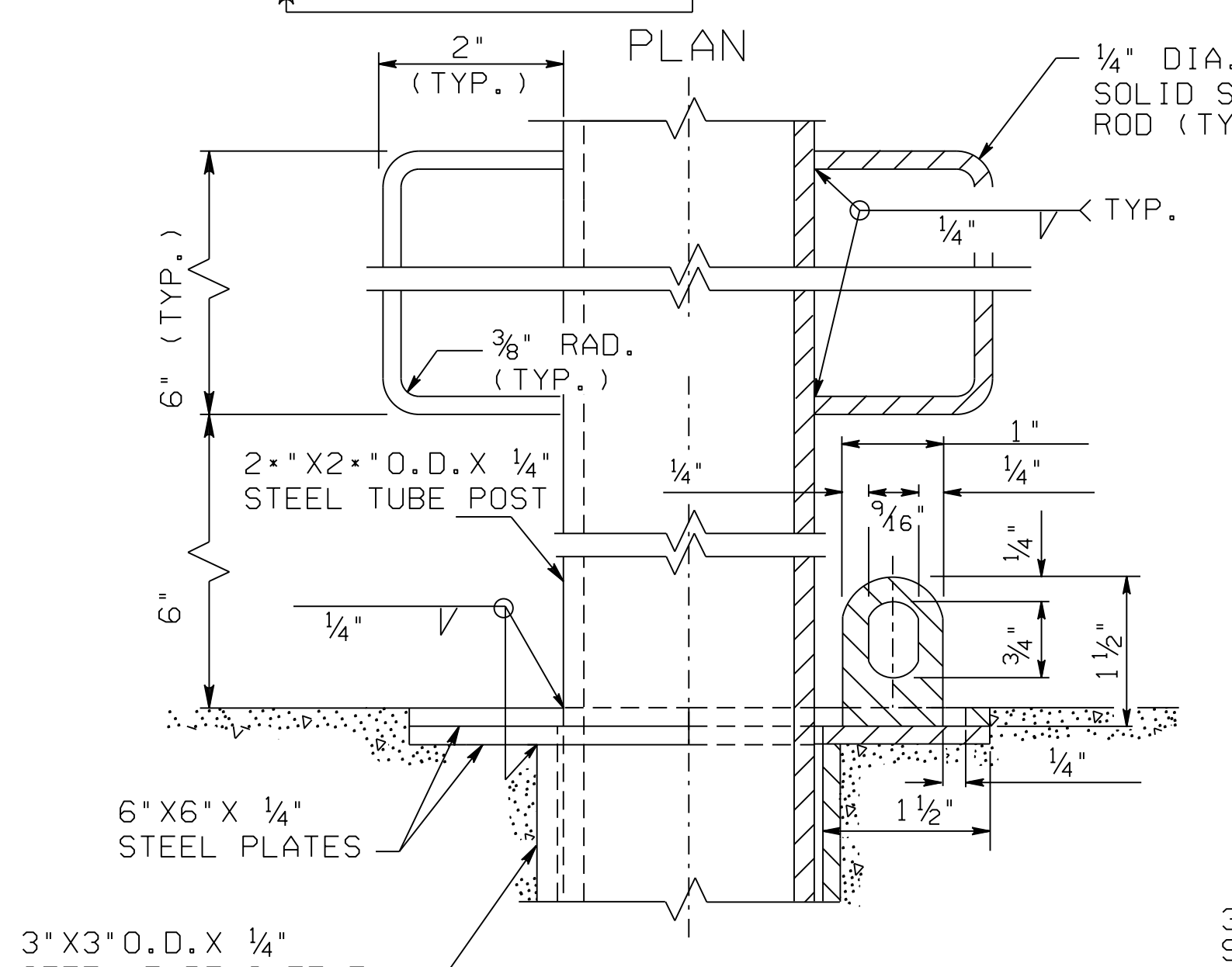
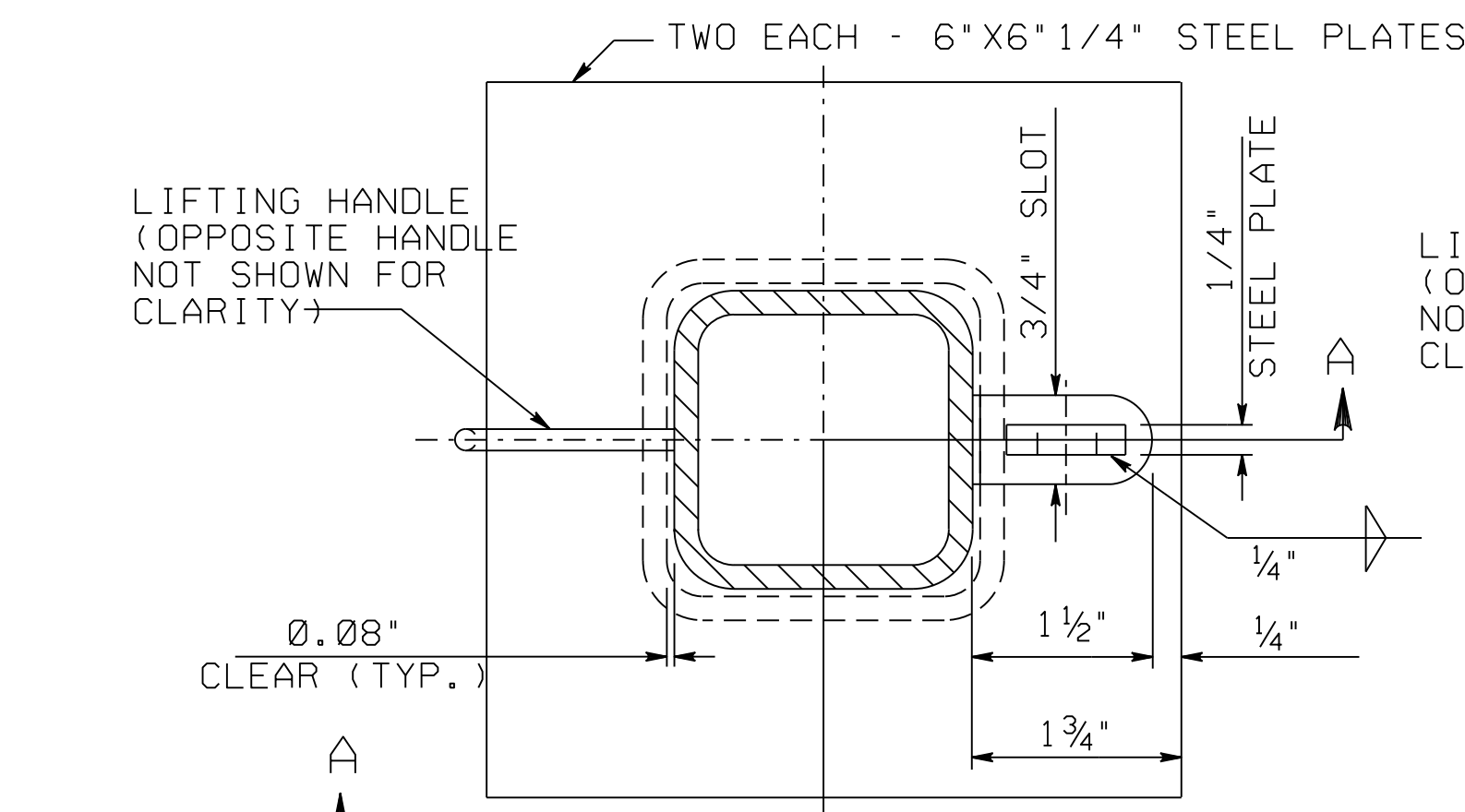


REVISIONS

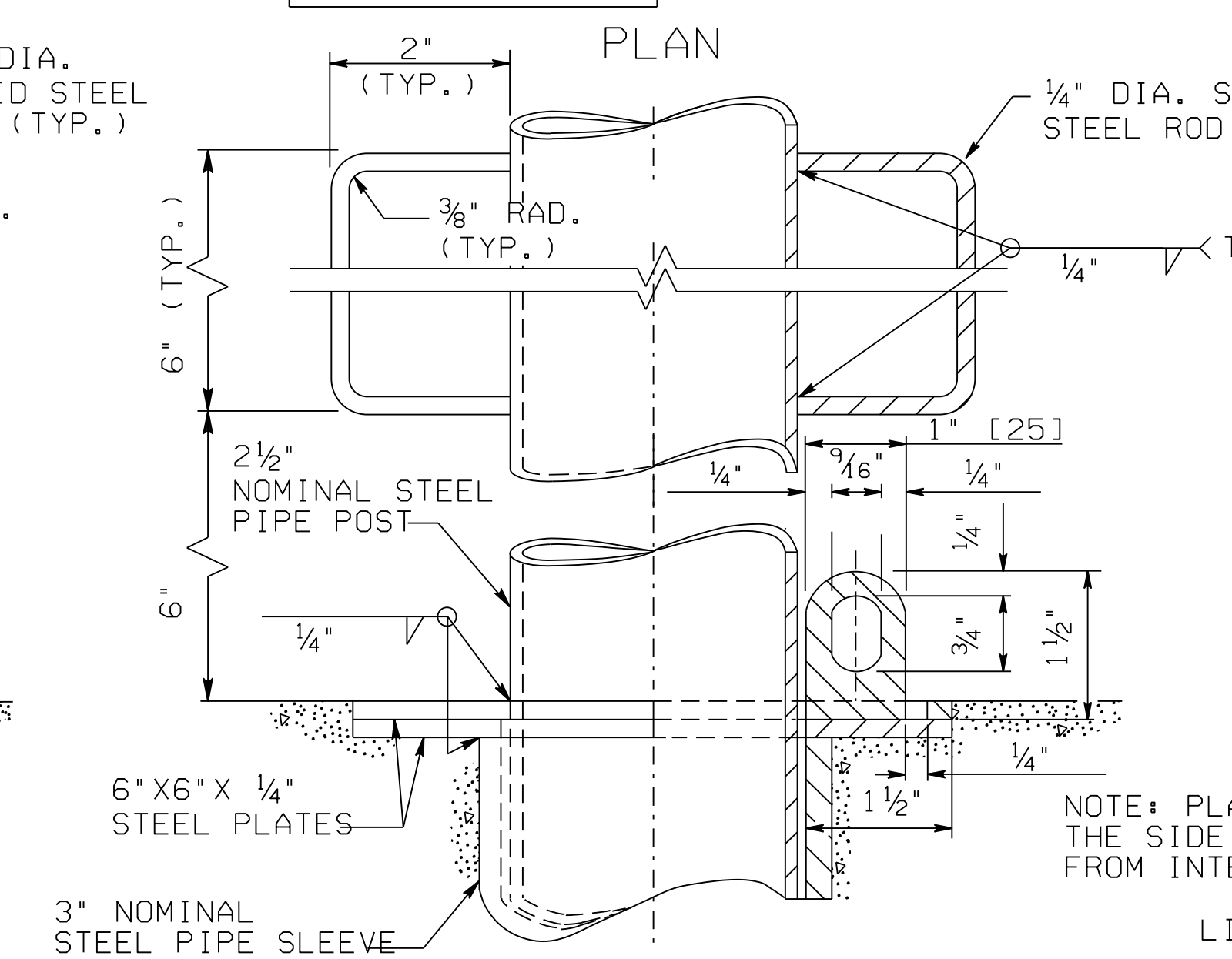
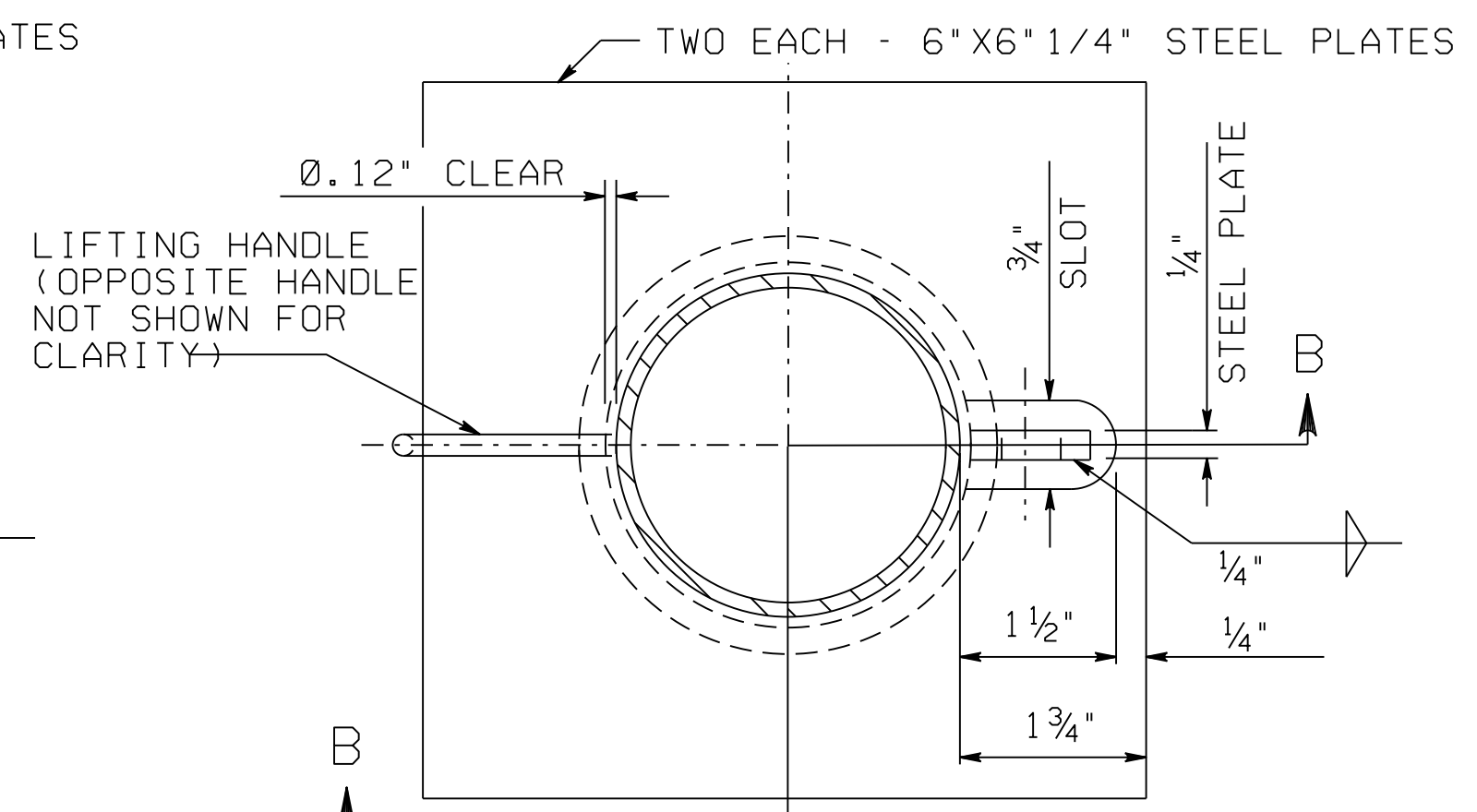
\$\$\$\$\$ SYSTEM TIME \$\$\$\$\$\$  
 \$\$\$ DATE: 08/17/99 \$\$\$  
 \$\$\$ USER: JENNA \$\$\$

FOR ROADWAY AND DRAINAGE  
 PLANS SEE SHEET 4  
 NOTE: CONTRACTOR TO VERIFY ALL  
 CONTOURS WITH DESIGN

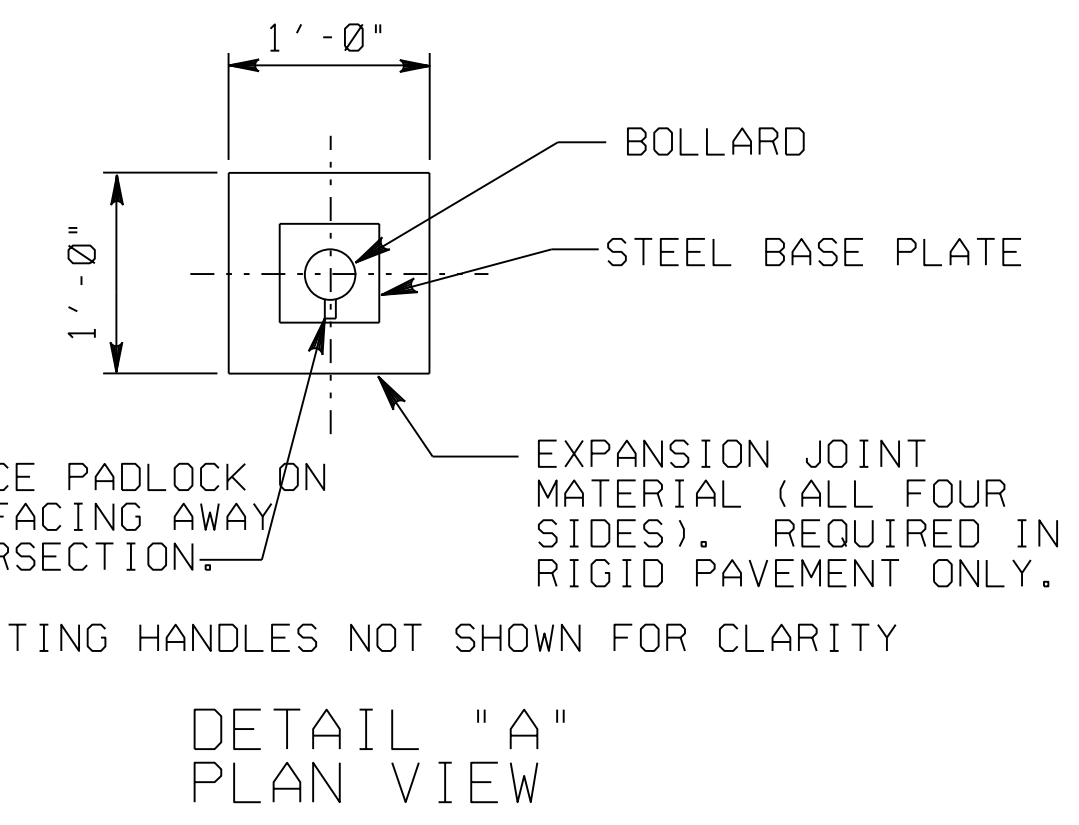




SECTION A-A  
REMOVABLE SQUARE BOLLARD



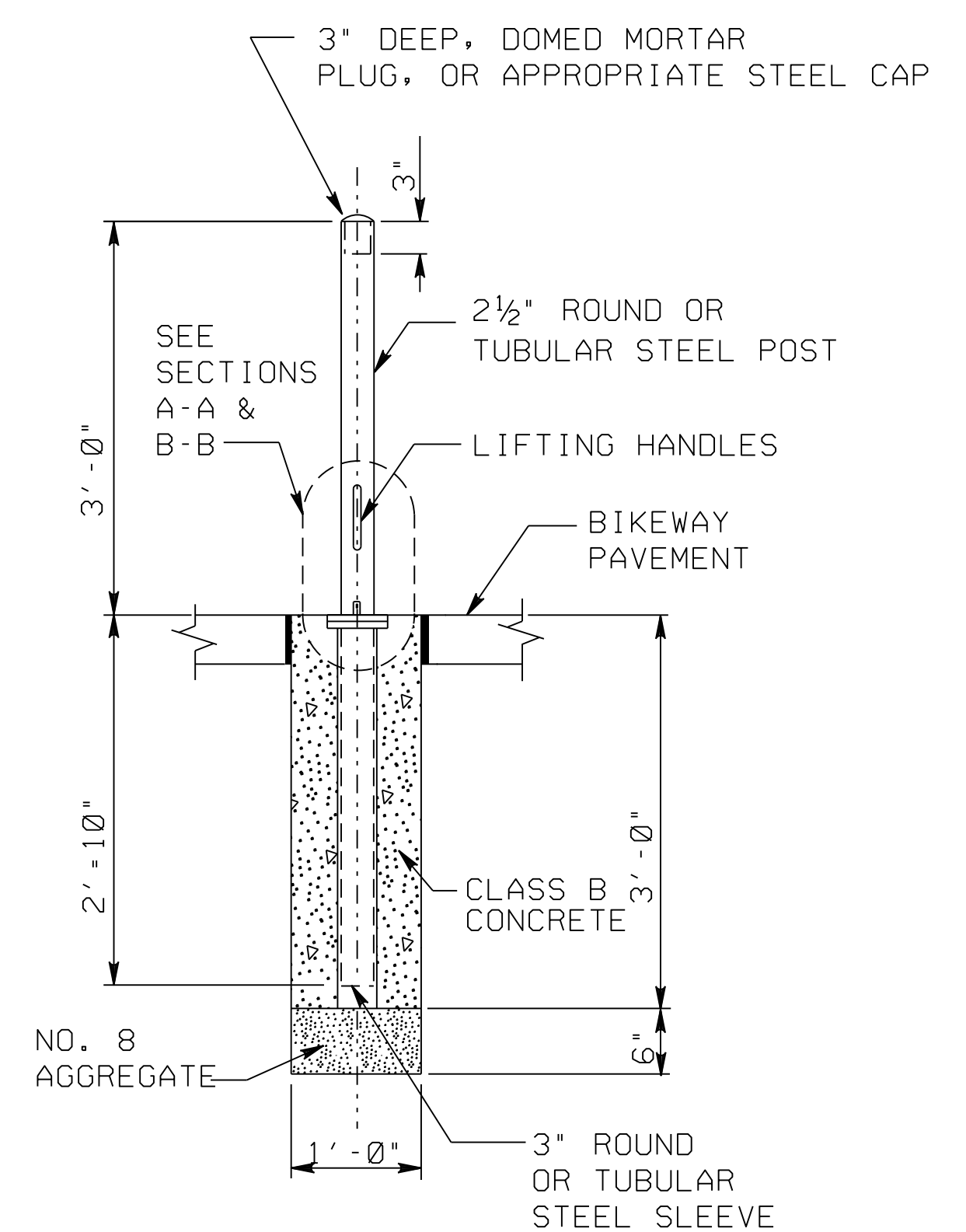
SECTION B-B  
REMOVABLE ROUND BOLLARD



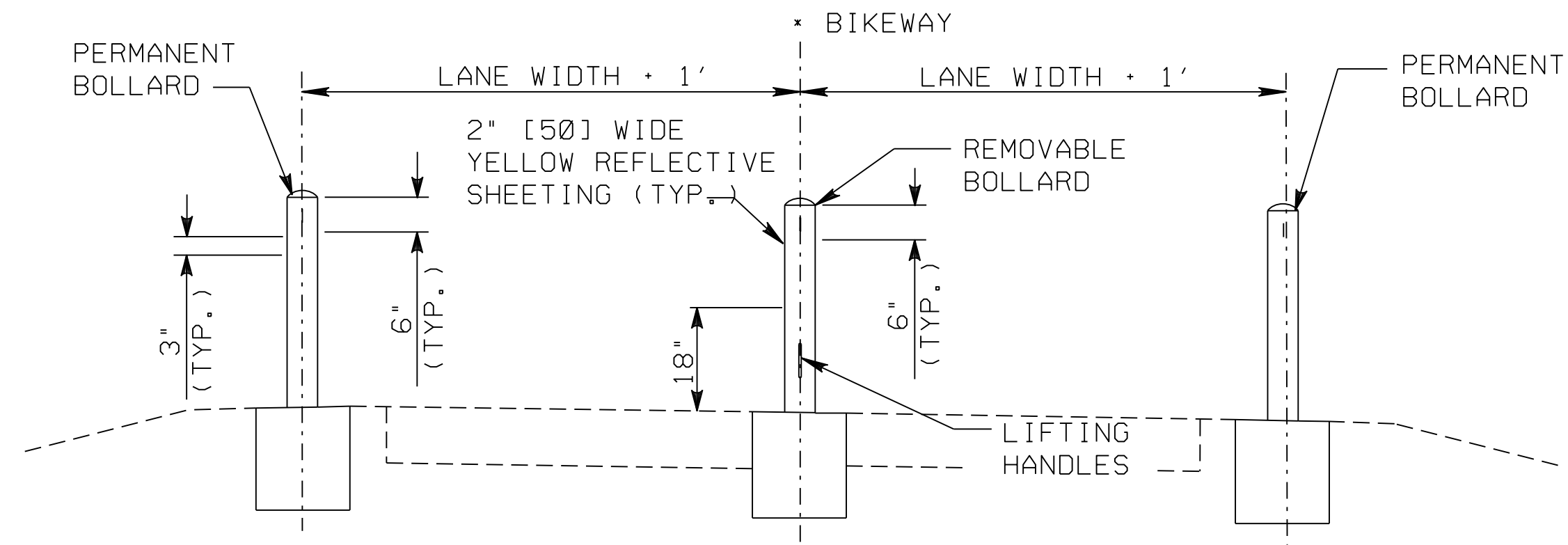
DETAIL "A"  
PLAN VIEW

NOTES

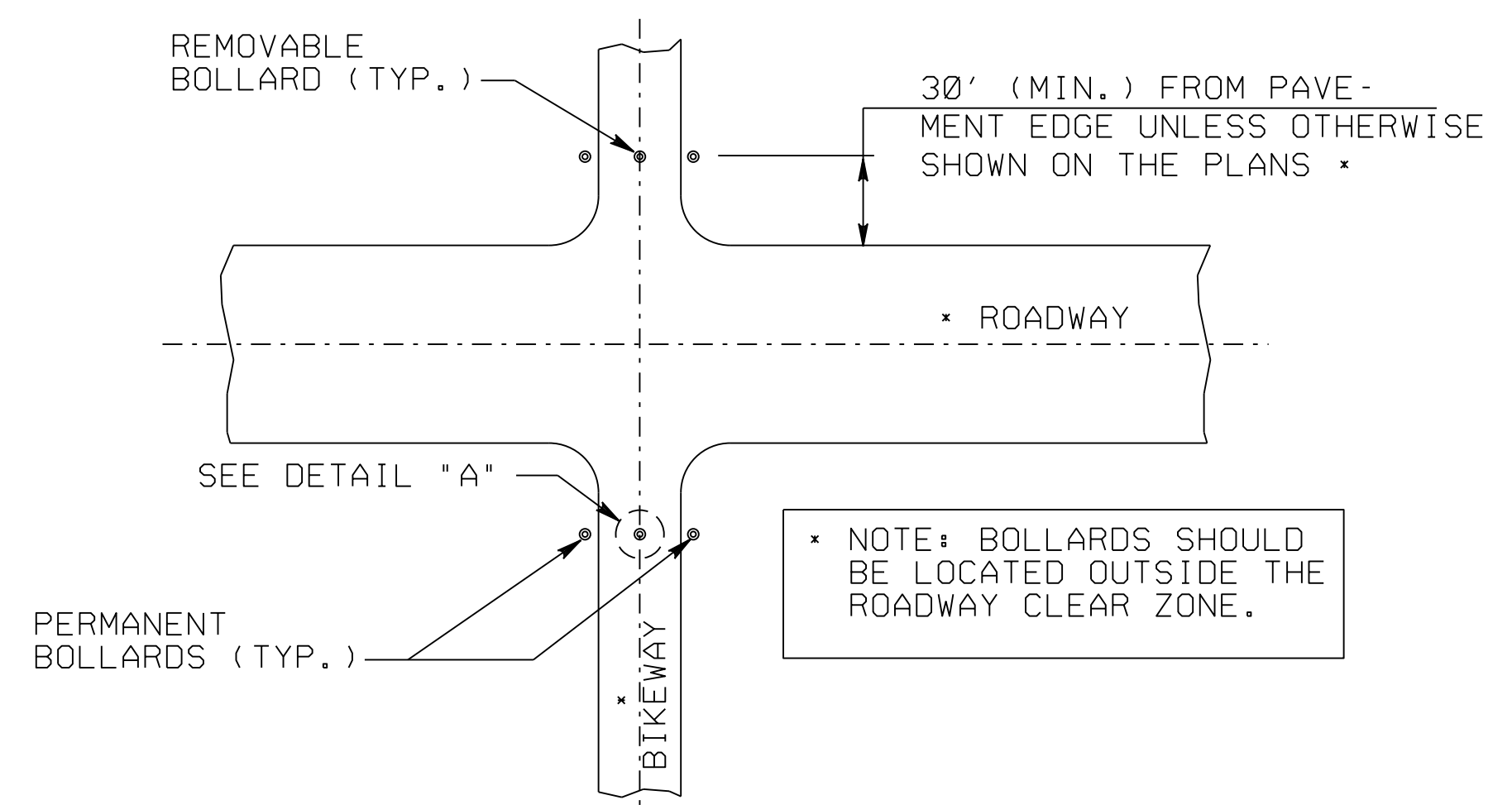
- GENERAL: MOUNT ALL BOLLARD SLEEVES FLUSH WITH THE BIKEWAY PAVEMENT.
- CONCRETE ENCASEMENT: SLEEVE ENCASEMENT SHALL BE SQUARE AS SHOWN, IN CONCRETE PAVEMENT, BUT MAY BE SQUARE OR ROUND IN FLEXIBLE PAVEMENT. ROUND ENCASEMENT SHOULD BE 1'-0" DIAMETER.
- PREFORMED EXPANSION JOINT FILLER: IS REQUIRED WHEN BOLLARDS ARE SET IN CONCRETE PAVEMENT.
- STEEL PIPE: ASTM A 53 SCHEDULE 40.
- CONCRETE: USE CLASS B CONCRETE.
- GALVANIZING: AFTER FABRICATING, HOT-DIP GALVANIZE ALL STEEL PARTS, INCLUDING STEEL PIPE, AS SPECIFIED IN ASTM A 123.
- ALUMINUM: ALL STEEL COMPONENTS MAY BE REPLACED BY ALUMINUM COMPONENTS MEETING THE FOLLOWING ASTM SPECIFICATIONS: B 209 (PLATE), B 210 OR B 241 (DRAWN SEAMLESS TUBES & PLATES), B 211 (RODS), AND F 901 (BOLTS).
- PERMANENT BOLLARDS: PERMANENT BOLLARDS SHALL BE THE SAME AS REMOVABLE BOLLARDS, EXCEPT THAT THE STEEL PLATES, SLEEVES AND LIFTING HANDLES SHALL BE OMITTED. ENCASE POSTS DIRECTLY IN CONCRETE.



DETAIL "A"  
ELEVATION VIEW  
REMOVABLE BOLLARD



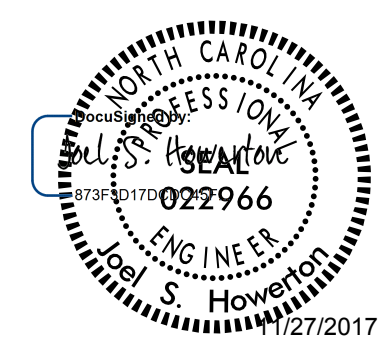
BOLLARD PLACEMENT - ELEVATION VIEW



BOLLARD PLACEMENT - PLAN VIEW

\* NOTE: BOLLARDS SHOULD BE LOCATED OUTSIDE THE ROADWAY CLEAR ZONE.

02-NOV-2017 14:38 S:\Contracts\Special Details\english\misc\bollards steel.dgn JHowerton AT USD-292595

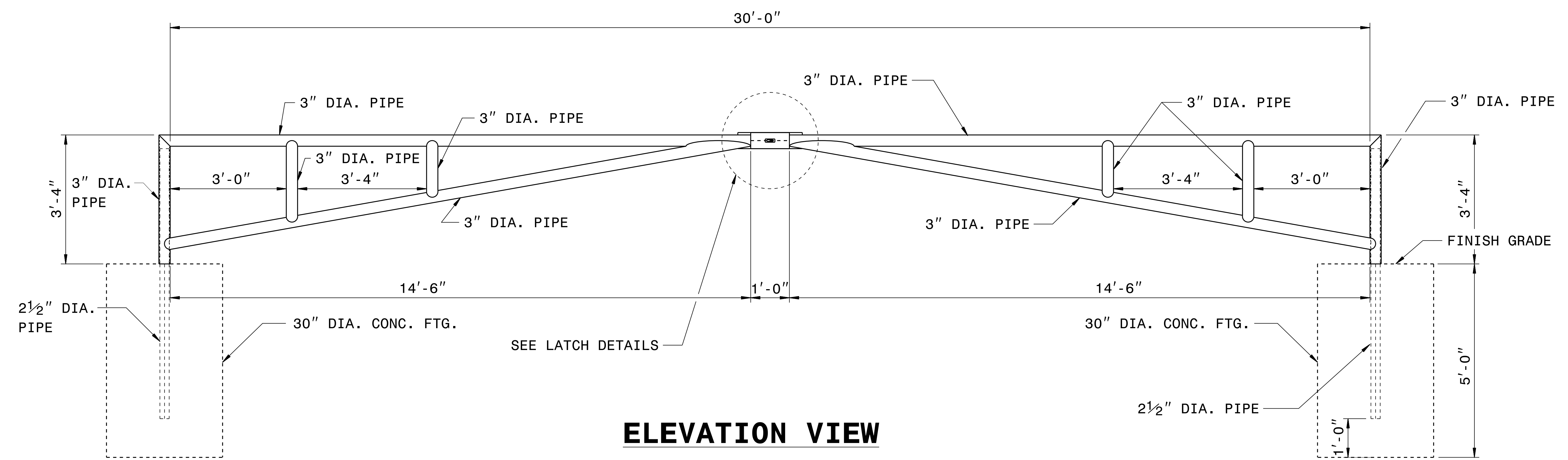


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

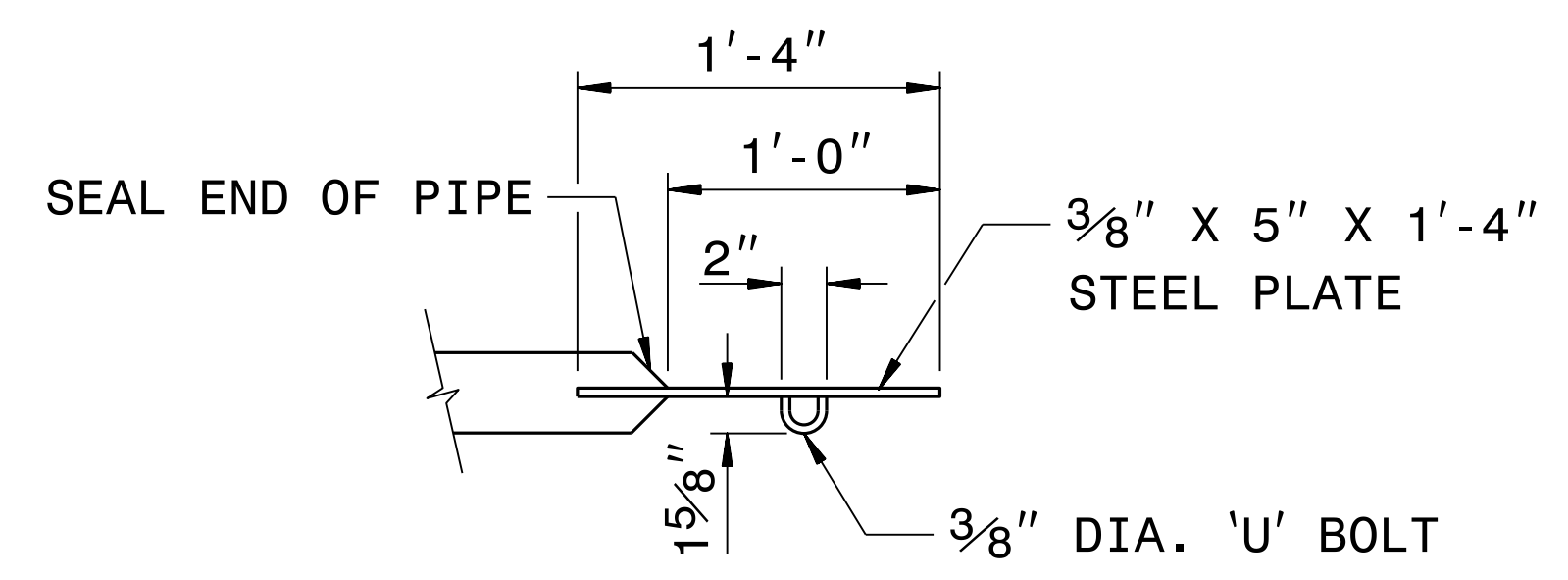
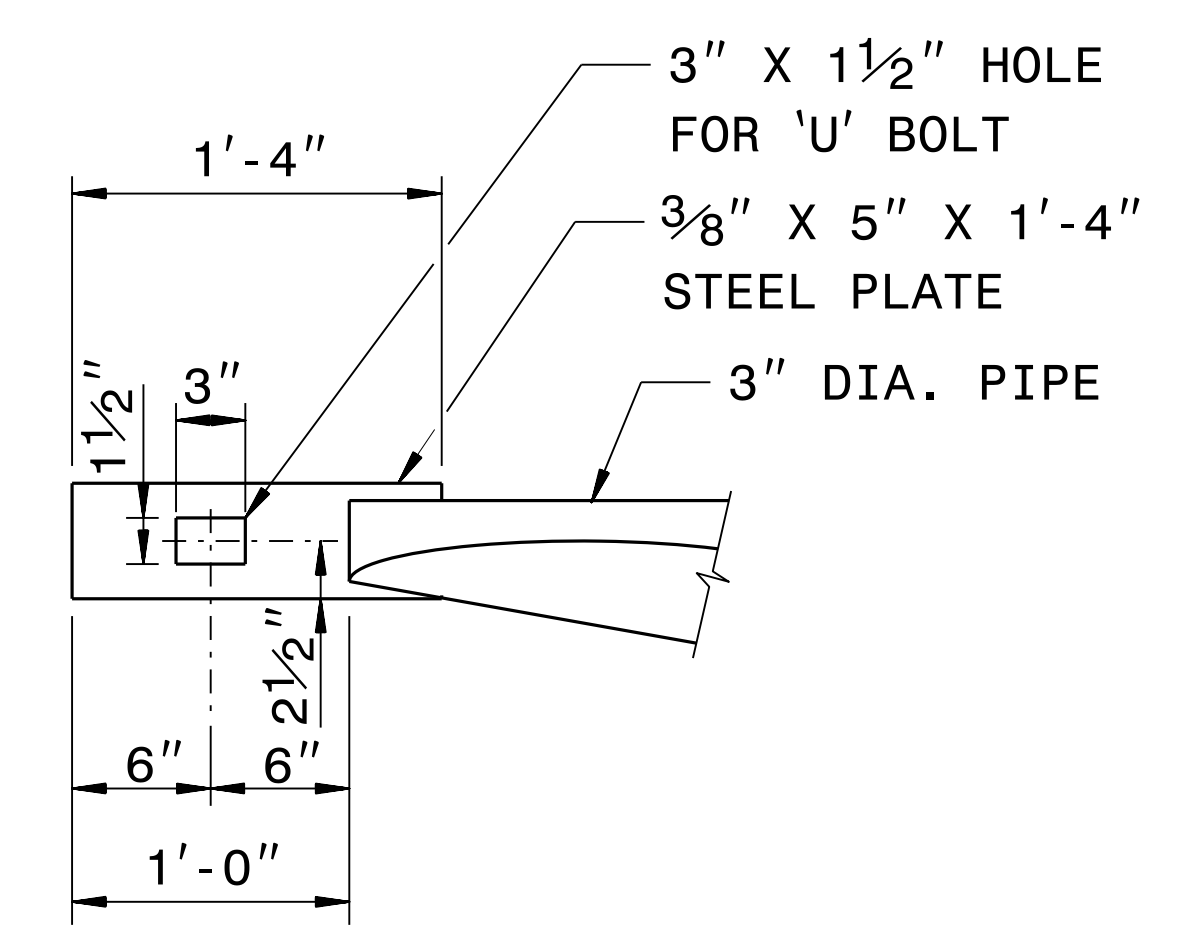
CONTRACT STANDARDS & DEVELOPMENT UNIT  
STANDARDS AND SPECIAL DESIGN  
Office 919-707-6950 FAX 919-250-4119

STEEL BOLLARDS

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: nbritt/english/misc/bollards steel.dgn



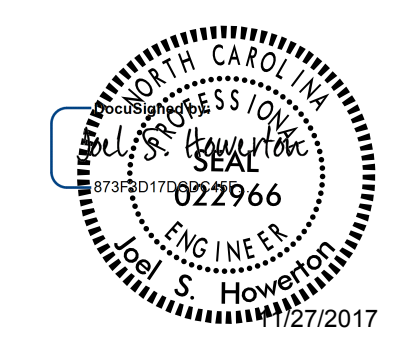
### ELEVATION VIEW



### LATCH DETAILS

**GENERAL NOTES:**

- 1- ALL STEEL SHALL BE ASTM A36 STEEL.
- 2- 1/4" FILLET WELDS ON ALL CONNECTIONS.
- 3- CONCRETE SHALL BE MINIMUM CLASS 'B'.
- 4- GATE SHALL BE LOCATED AS DIRECTED BY THE ENGINEER.
- 5- ALL PIPE SIZES ARE O.D.
- 6- LUBRICATE 2 1/2" DIA. PIPE BEFORE INSTALLING GATE TO INSURE SMOOTH OPERATION.
- 7- GATE SHALL BE PAID FOR PER EACH INSTALLATION.



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

### DETAIL OF STEEL PIPE GATE

ORIGINAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 MODIFIED BY: rnbritt DATE: 09-08-05  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: details/nbritt/misc/steelpipegate.dgn



## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

### SUMMARY OF EARTHWORK IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 12+00.00	-L- 15+46.08 (BEGIN CULVERT)	1,427	557		871
-L- 15+71.08 (END CULVERT)	-L- 16+91.72	158	230	72	
-Y3- 10+50.00	-Y3- 11+57.00	148	33		115
<b>PROJECT TOTALS:</b>		1,733	820		985
LOSS DUE TO CLEARING & GRUBBING		-25			-25
WASTE IN LIEU OF BORROW				-72	-72
<b>PROJECT TOTALS:</b>		1,708	820		888
<b>GRAND TOTALS:</b>		1,708	820		888
<b>SAY:</b>		1,800			

CONTINGENCY ITEMS PER NCDOT GEOTECHNICAL REPORT - DESIGN AND CONSTRUCTION RECOMMENDATIONS, DATED DECEMBER 15, 2016

ESTIMATED UNDERCUT = 100 CY  
 ESTIMATED GEOTEXTILE FOR SOIL STABILIZATION = 100 SY  
 ESTIMATED SELECT GRANULAR MATERIAL = 100 CY

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

Note: -L- Earthwork does not include quantities for the ramps, stairs, walls, and underpass. Additional excavation needed for construction of the ramps, stairs, walls, and underpass is assumed to be Structural Excavation.

### PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

SURVE LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	11+85.54	13+70.00	RT	46.45			
-L-	11+76.11	13+70.00	LT	49.46			
-L-	16+15.00	16+91.72	LT	17.33			
-L-	16+15.00	16+91.72	RT	17.11			
-Y3-	11+00.00	11+34.70	LT	15.36			
<b>TOTAL:</b>				145.71			
<b>SAY:</b>				150			

### SUMMARY OF GUARDRAIL

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

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS					IMP. ATTEN. TYPE 350			REMOVE EXISTING GUARDRAIL	SINGLE FACE CONCRETE BARRIER	REMOVE & STOCKPILE EXISTING	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	III	B-77	GREU TL-3	M-350	AT-1	CAT-1	TES	EA					G	NG
-L-	15+21	15+80	LT	87.50	25	-	-	-	15	-	-	-	-	-								2						
<b>ANCHOR UNIT DEDUCTIONS</b>				<b>SUBTOTAL</b>			87.50	25.00	0.00													2						
					GREU TL-3 @ 50.00' EACH		0.00																					
					TYPE III @ 18.75' EACH		0.00																					
					CAT-1 @ 6.25' EACH		-12.50																					
					M-350 @ 37.5' EACH		0.00																					
					<b>TOTAL</b>		75.00	25.00	0.00													2						
					<b>SAY</b>		75.0	25.0	0.0																			

(3 ADDITIONAL POSTS)







8/17/99

PROJECT REFERENCE NO. W-5522	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: <b>AECOM</b>	
<p>NC FIRM LICENSE No. F-0342          701 Corporate Center, Suite 500          Raleigh, NC 27607          (919) 854-9200 • (919) 854-9259/FAX</p>	
<p>DOCUMENT NOT CONSIDERED FINAL          UNLESS ALL SIGNATURES COMPLETED</p>	

**BEGIN TIP PROJECT**  
**W-5522**

-L- POT Sta. 11+00.00

-L- POT Sta. 10+00.00

-L- POT Sta. 11+59.96 =  
 -Y2- Sta. 19+50.00

SR 1656 TRINITY RD 48' BST

SR 1656 TRINITY RD 60' BST

SR 1656 TRINITY RD 60' BST

-L- TRINITY ROAD

-Y2- YOUTH CENTER DRIVE

PI Sta 13+13.07  
 $\Delta = 1' 14" 54.5" (LT)$   
 $D = 0' 42" 58.3"$   
 $L = 174.32'$   
 $T = 87.16'$   
 $R = 8,000.00'$   
 $e = \text{NORMAL CROWN}$

PI Sta 16+26.47  
 $\Delta = 1' 01" 02.1" (LT)$   
 $D = 0' 42" 58.3"$   
 $L = 142.04'$   
 $T = 71.02'$   
 $R = 8,000.00'$   
 $e = \text{NORMAL CROWN}$

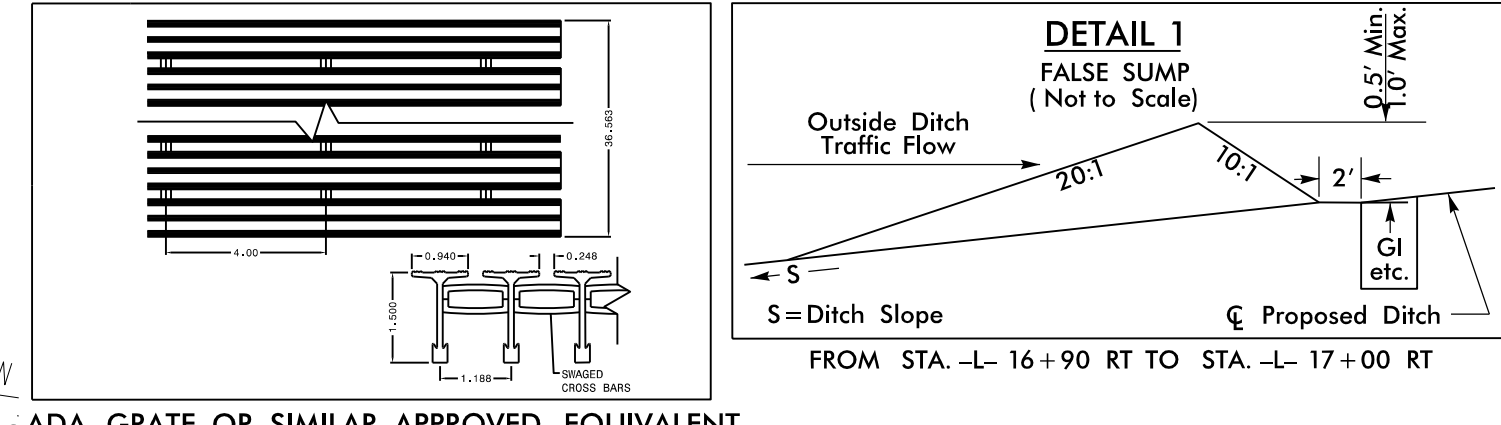
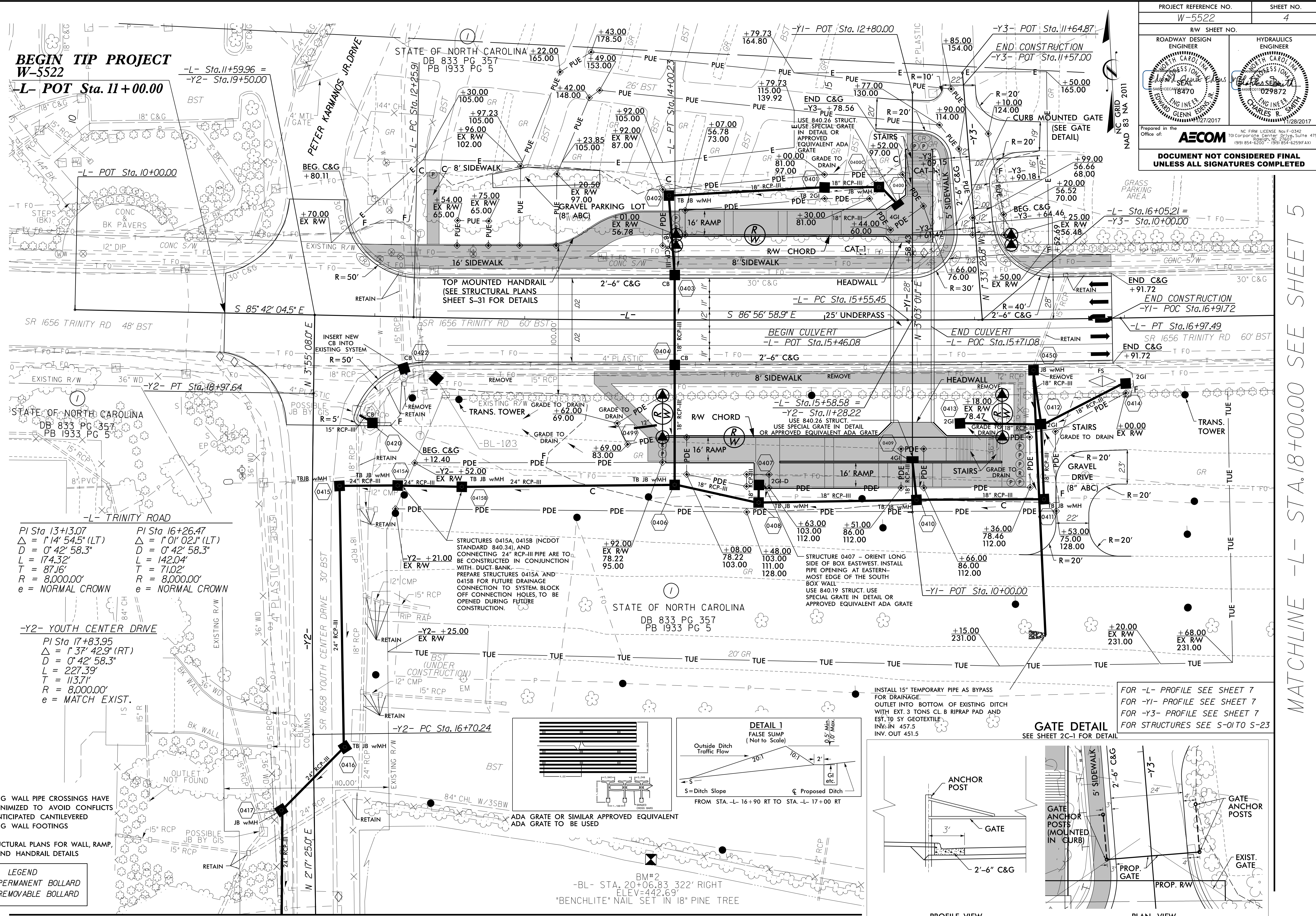
PI Sta 17+83.95  
 $\Delta = 1' 37" 42.9" (RT)$   
 $D = 0' 42" 58.3"$   
 $L = 227.39'$   
 $T = 113.71'$   
 $R = 8,000.00'$   
 $e = \text{MATCH EXIST.}$

NOTES:  
 RETAINING WALL PIPE CROSSINGS HAVE BEEN MINIMIZED TO AVOID CONFLICTS WITH ANTICIPATED CANTILEVERED RETAINING WALL FOOTINGS

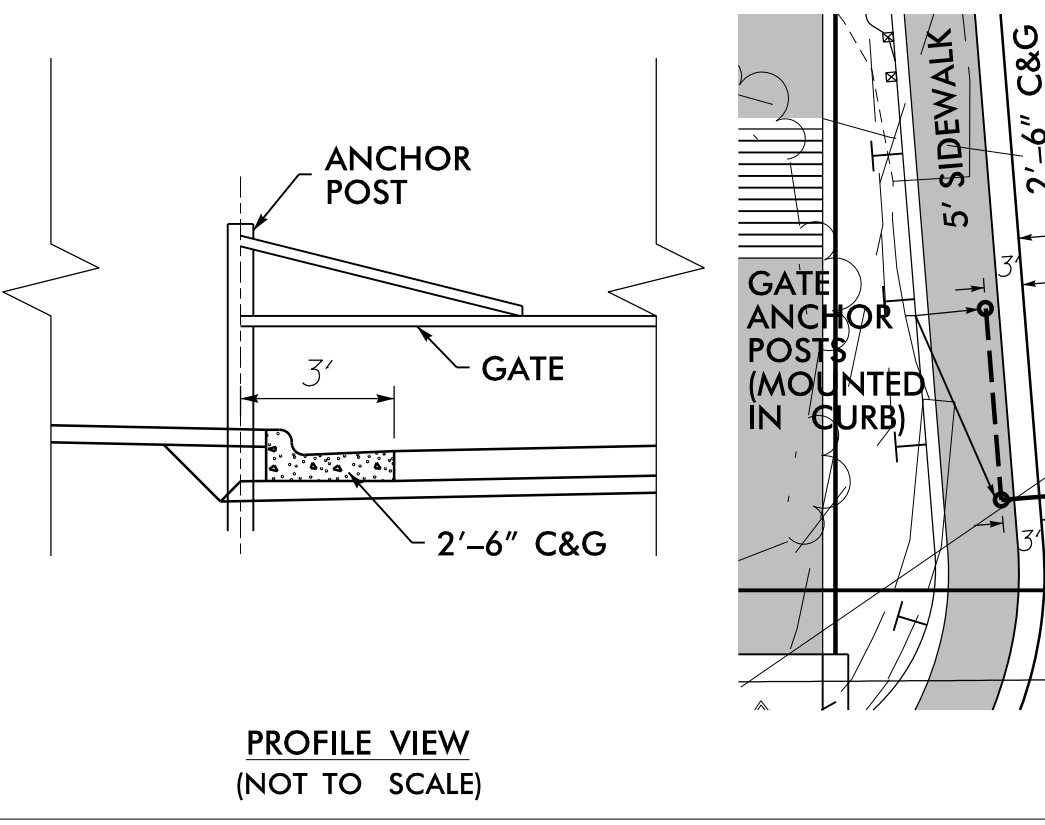
SEE STRUCTURAL PLANS FOR WALL, RAMP, STAIRS, AND HANDRAIL DETAILS

**LEGEND**  
 (P) PERMANENT BOLLARD  
 (R) REMOVABLE BOLLARD

MATCHLINE -Y2- STA. 15+50.00 SEE SHEET 6



INSTALL 15" TEMPORARY PIPE AS BYPASS FOR DRAINAGE OUTLET INTO BOTTOM OF EXISTING DITCH WITH EXT. 3 TONS CL. B RIPRAP PAD AND EST. 10 SY GEOTEXTILE. INV. IN 457.5 INV. OUT 451.5



FOR -L- PROFILE SEE SHEET 7  
 FOR -Y1- PROFILE SEE SHEET 7  
 FOR -Y3- PROFILE SEE SHEET 7  
 FOR STRUCTURES SEE S-010 TO S-23

MATCHLINE -L- STA. 18+00.00 SEE SHEET 5

REVISIONS

8/17/99

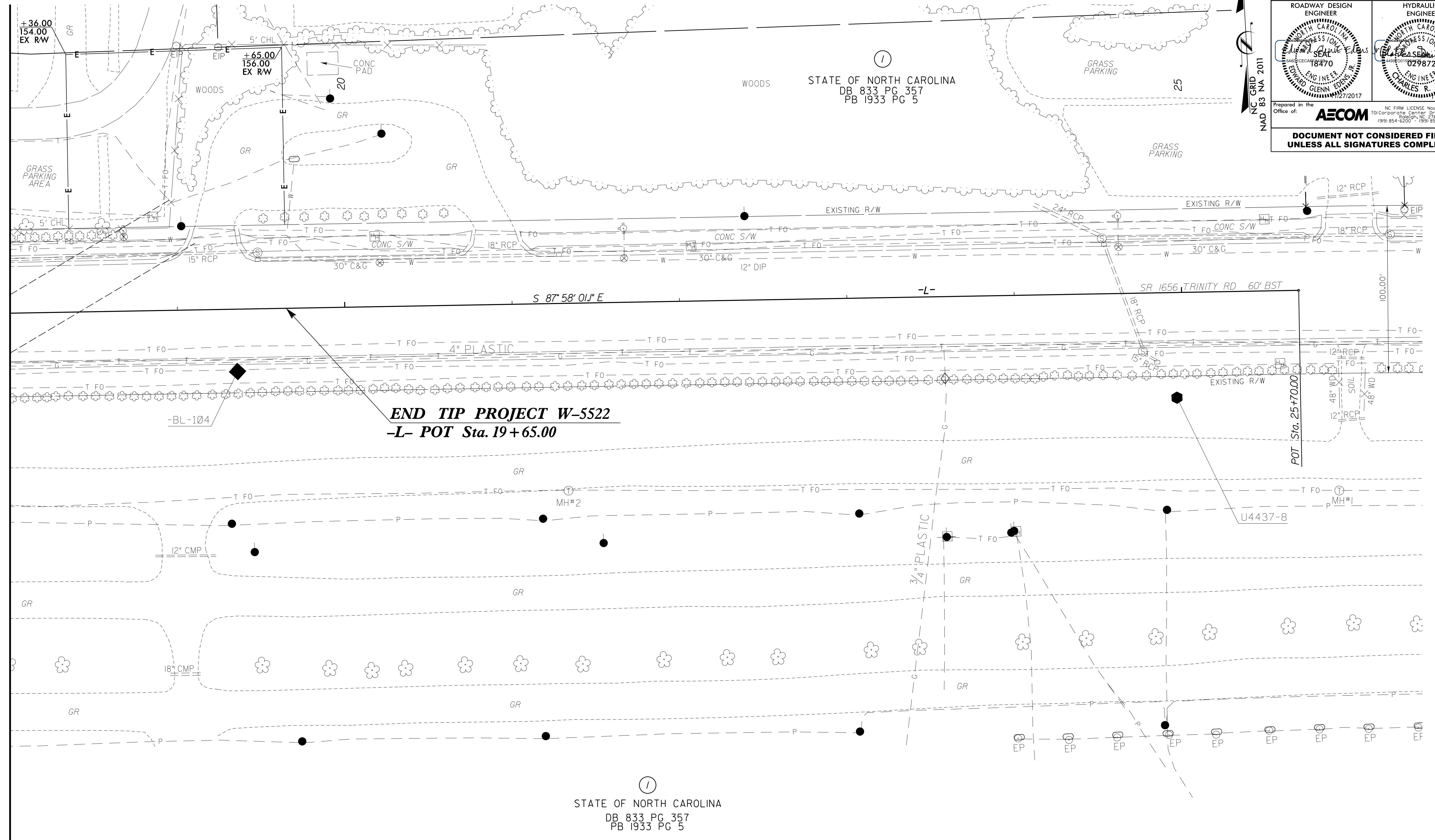


8/17/99

PROJECT REFERENCE NO. W-5522	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER <i>[Signature]</i>	HYDRAULICS ENGINEER <i>[Signature]</i>
Prepared in the Office of: <b>AECOM</b>	
<small>NC FIRM LICENSE No: F-0342 701 Corporate Center, Suite 4175 Raleigh, NC 27607 (919) 854-9200 • (919) 854-6259 FAX 1</small>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

MATCHLINE -L- STA. 18+00.00 SEE SHEET 4

REVISIONS



**END TIP PROJECT W-5522**  
**-L- POT Sta. 19+65.00**

STATE OF NORTH CAROLINA  
DB 833 PG 357  
PB 1933 PG 5

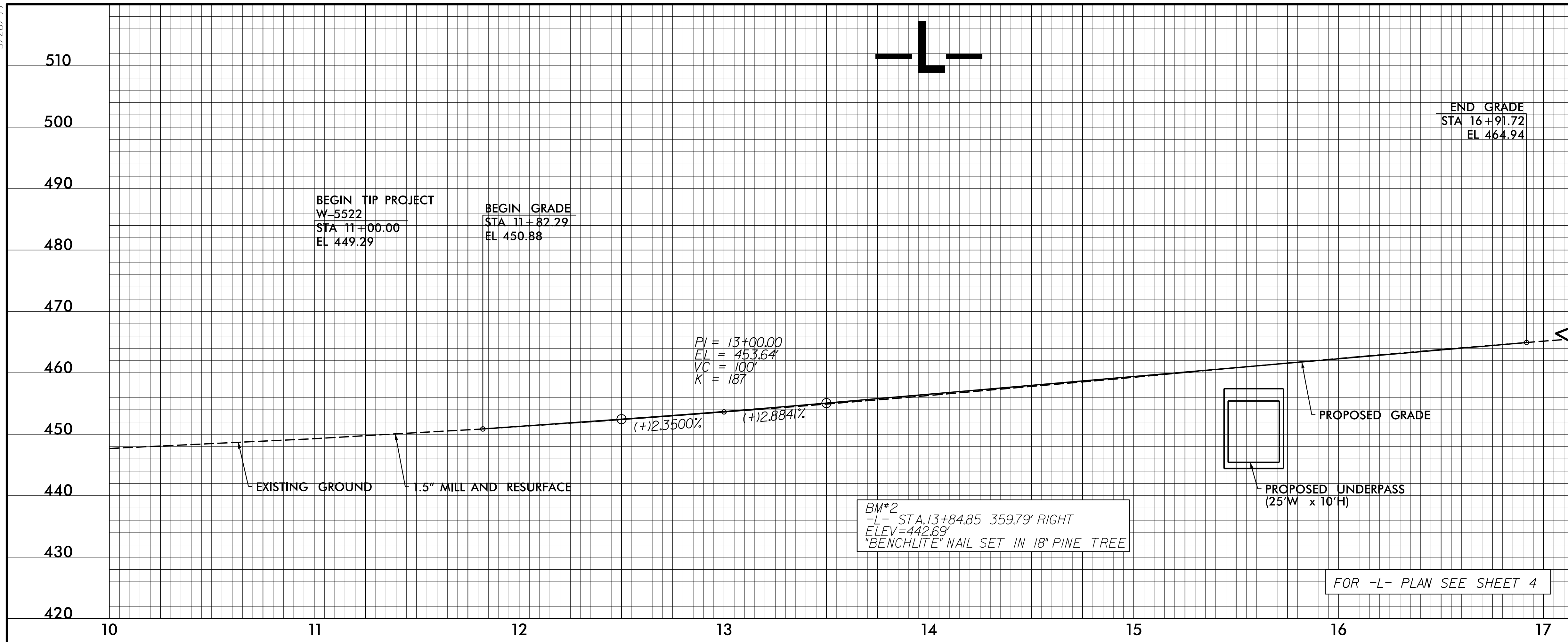
**NO PROPOSED WORK ON THIS SHEET**

SYSTEMS TIME \$\$\$\$  
CONSTRUCTION \$\$\$\$  
PLANNING \$\$\$\$  
DESIGN \$\$\$\$  
PERMITTING \$\$\$\$  
UTILITY \$\$\$\$  
CIVIL \$\$\$\$  
ELECTRICAL \$\$\$\$  
MECHANICAL \$\$\$\$  
PLUMBING \$\$\$\$  
HVAC \$\$\$\$  
ARCHITECTURE \$\$\$\$  
LANDSCAPE \$\$\$\$  
GENERAL CONTRACTOR \$\$\$\$  
SEWER \$\$\$\$  
WATER \$\$\$\$  
STORMWATER \$\$\$\$  
TRAFFIC \$\$\$\$  
SIGNAGE \$\$\$\$  
LIGHTING \$\$\$\$  
IRRIGATION \$\$\$\$  
PARKING \$\$\$\$  
BIOSURVIVAL \$\$\$\$  
ARCHITECTURE \$\$\$\$  
PLANNING \$\$\$\$  
DESIGN \$\$\$\$  
PERMITTING \$\$\$\$  
UTILITY \$\$\$\$  
CIVIL \$\$\$\$  
ELECTRICAL \$\$\$\$  
MECHANICAL \$\$\$\$  
PLUMBING \$\$\$\$  
HVAC \$\$\$\$  
ARCHITECTURE \$\$\$\$  
LANDSCAPE \$\$\$\$  
GENERAL CONTRACTOR \$\$\$\$  
SEWER \$\$\$\$  
WATER \$\$\$\$  
STORMWATER \$\$\$\$  
TRAFFIC \$\$\$\$  
SIGNAGE \$\$\$\$  
LIGHTING \$\$\$\$  
IRRIGATION \$\$\$\$



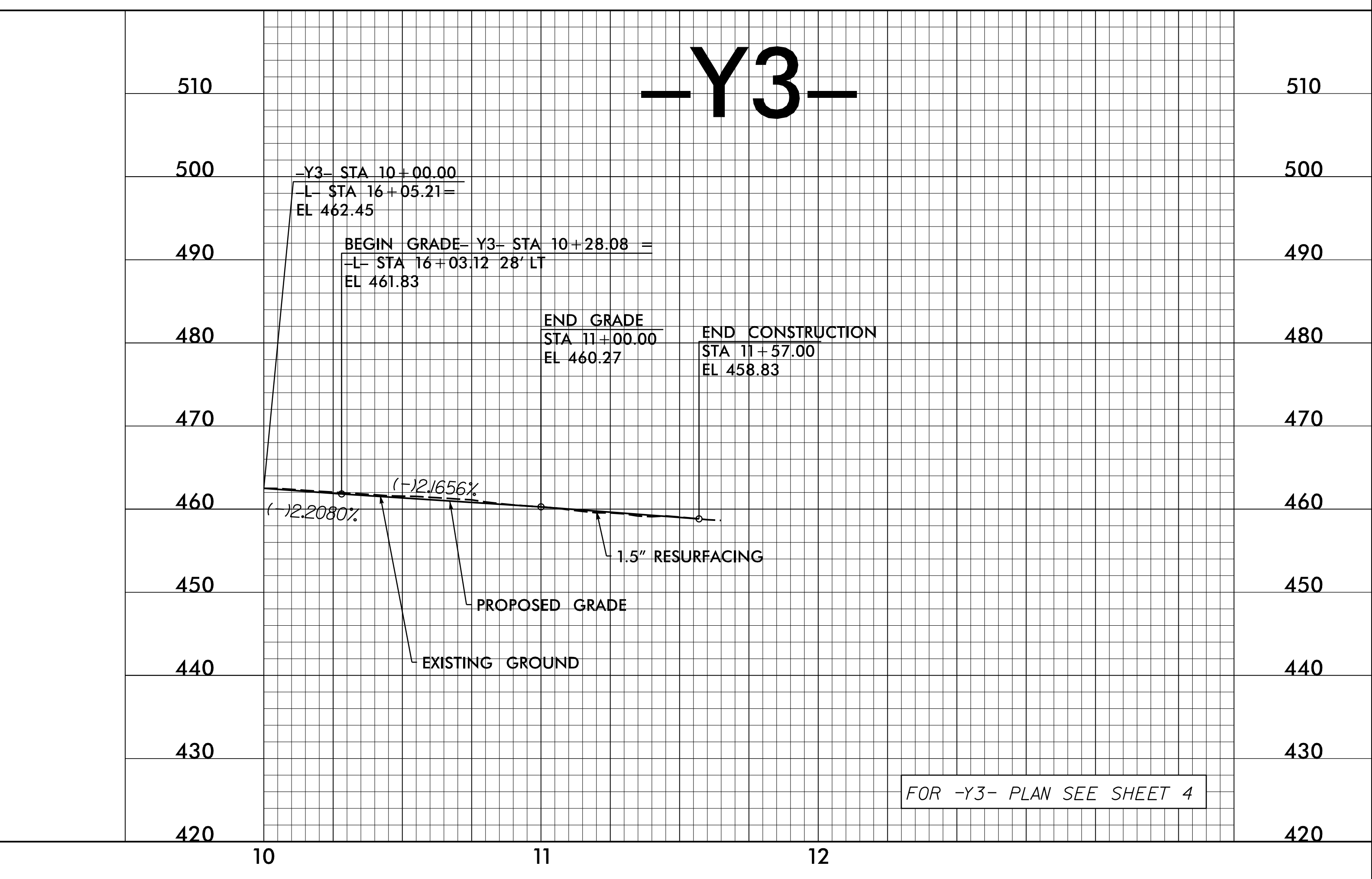
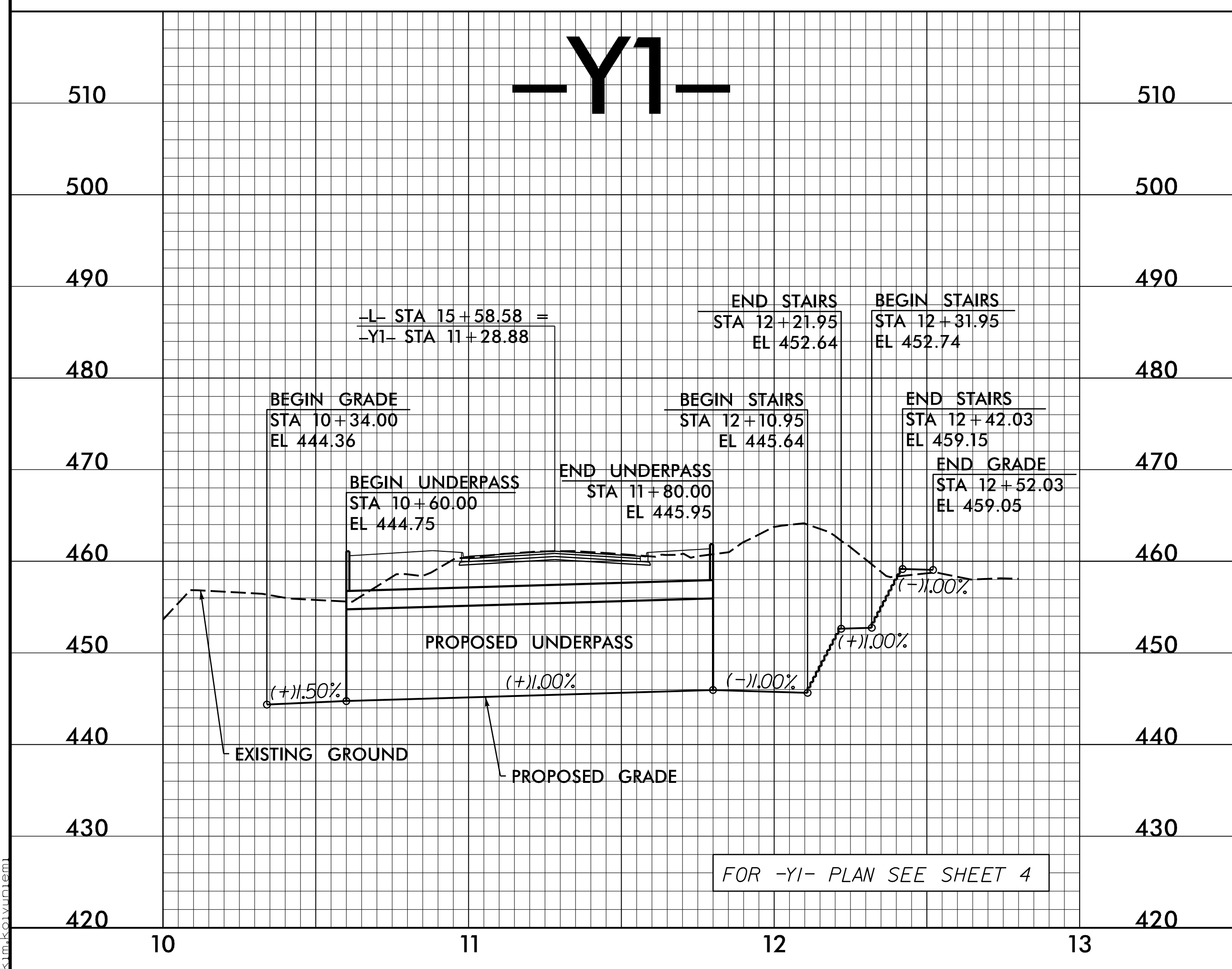


5/28/17



PROJECT REFERENCE NO. W-5522	SHEET NO. 7
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

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



11/16/2017  
I:\Projects\W5522\Drawings\W5522\_Rdy\_p1.pst07.dgn  
k.m.kovalev