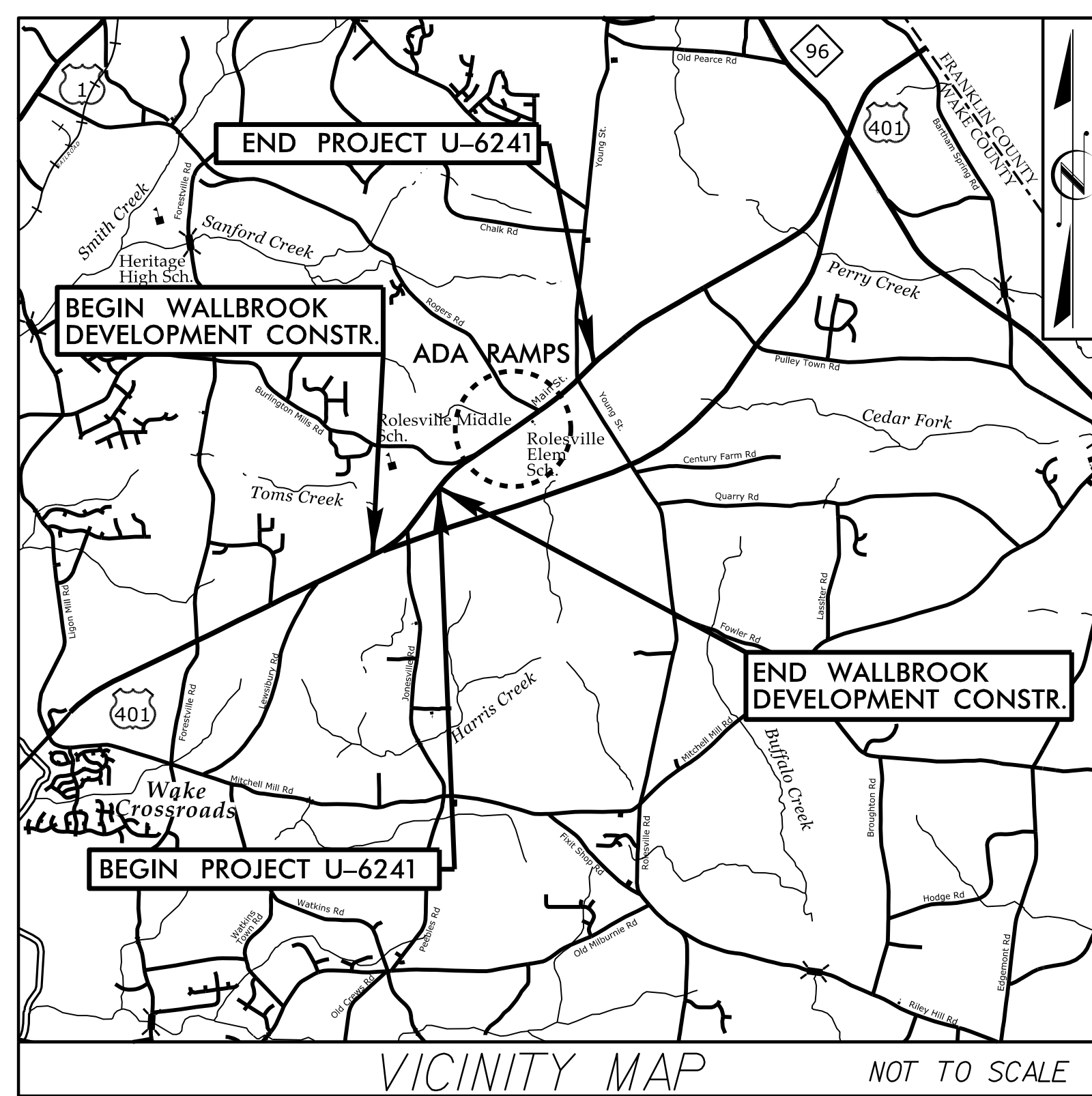


09_08/2019

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



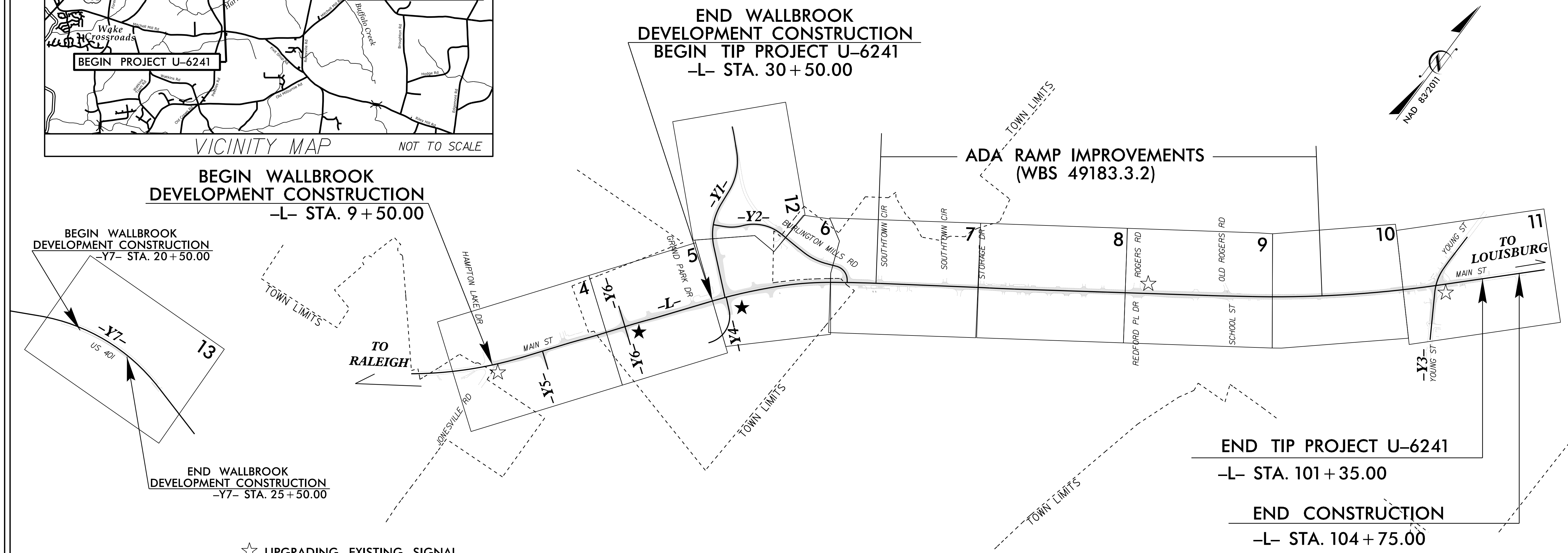
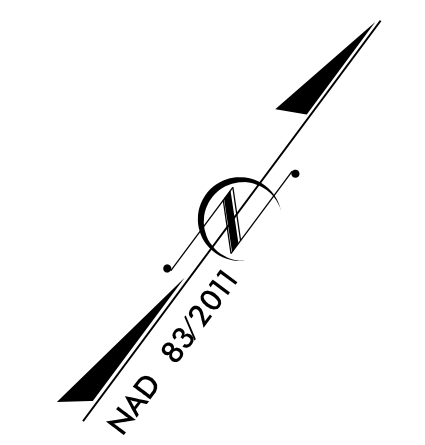
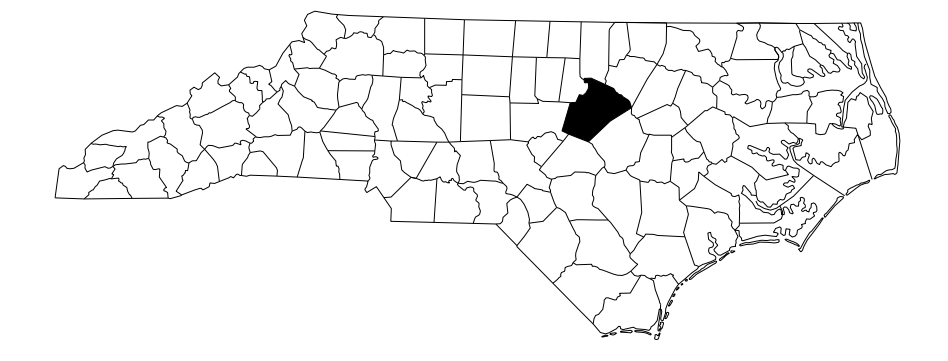
TIP PROJECT: U-6241

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

LOCATION: US 401 BUS (MAIN STREET) FROM JONESVILLE ROAD TO NORTH OF YOUNG STREET

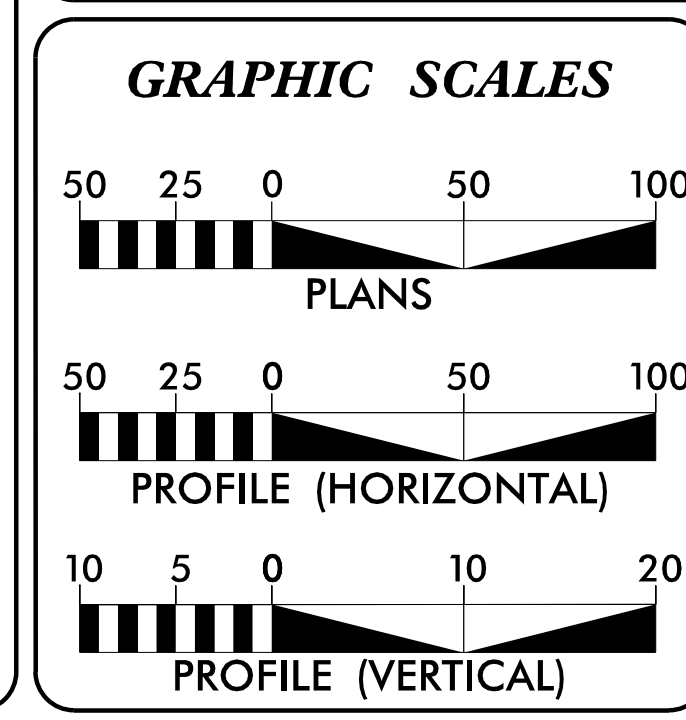
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6241	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36249.4025	N/A	PE	
36249.4025	N/A	RW	
49183.3.1	2051002	CON. (WALLBROOK)	
49183.3.2	2051002	CON. (U-6241)	
		CON. (ADA RAMP)	



- ☆ UPGRADING EXISTING SIGNAL
- ★ NEW SIGNAL

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2021 =	19,690
ADT 2041 =	32,264
K =	10 %
D =	55 %
T =	2 %
V =	40 MPH

FUNC CLASS = ARTERIAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-6241	=	1.342 MILES
TOTAL LENGTH TIP PROJECT U-6241	=	1.342 MILES
LENGTH ROADWAY PROJECT WALLBROOK	=	0.398 MILES
TOTAL LENGTH PROJECT WALLBROOK	=	0.398 MILES

PREPARED IN THE OFFICE OF:

Stantec
STANTEC CONSULTING
801 Jones Franklin Road | Suite 300 |
Raleigh, NC 27606
Tel. (919) 851-6806 | Fax. (919) 851-7024 |
www.stantec.com
License No. 2-5072

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

FOR THE TOWN OF ROLESVILLE

2018 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 2022

MICHAEL LINDGREN, PE
PROJECT ENGINEER

KELLY ARNOLD
ROLESVILLE TOWN MANAGER

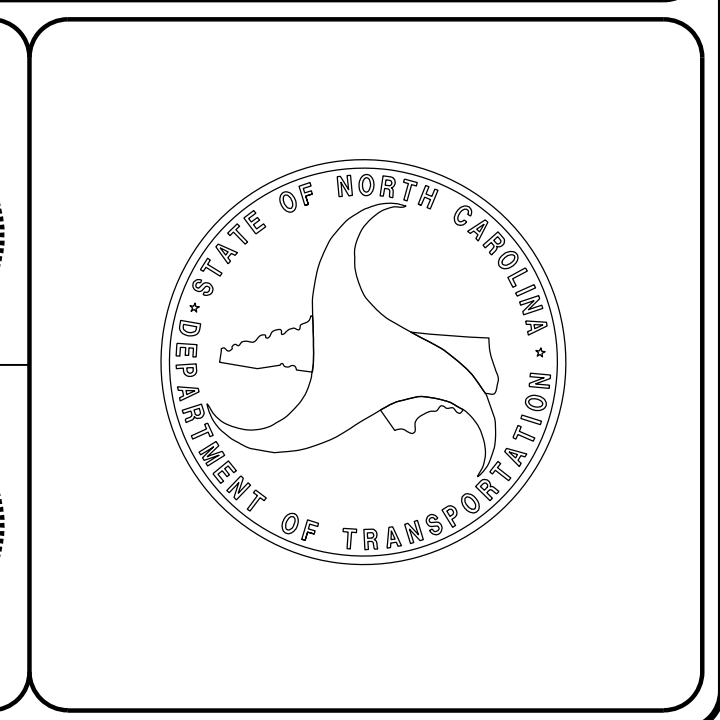
TRACY PARROTT, PE
DIVISION PROJECT DELIVERY ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
Jesha G Dalton
SIGNATURE: _____
P.E.
4/14/2022

ROADWAY DESIGN ENGINEER

DocuSigned by:
Mike Lindgren
SIGNATURE: _____
P.E.
4/14/2022



4/14/2022 U:\Roadway\Proj\U-6241\Rdy_TSH_1A_IB.dgn Thoppe

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>1-A</i>
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SHEET NUMBER	SHEET	2018 ROADWAY ENGLISH STANDARD DRAWINGS
1	TITLE SHEET	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:
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS	STD.NO. TITLE
1B	CONVENTIONAL SYMBOLS	DIVISION 2 - EARTHWORK
2A-1 THRU 2A-7	PAVEMENT SCHEDULE AND TYPICAL SECTIONS	200.03 Method of Clearing - Method III
2B-1 THRU 2B-4	ROADWAY INTERSECTION DETAILS	225.02 Guide for Grading Subgrade - Secondary and Local
2B-5	SIDEWALK GRADING PLAN	225.04 Method of Obtaining Superelevation - Two Lane Pavement
2B-6	STANDARD BICYCLE ACCESS RAMP DETAIL	225.06 Method of Grading Sight Distance at Intersections
2B-7	TYPE2 MOD, TYPE 3 MOD CURB RAMP DETAIL, ROLLED CURB	225.07 Grading for False Cut at Grade Separations
2C-1 THRU 2C-4	CURB RAMP DETAILS	DIVISION 3 - PIPE CULVERTS
2C-5	STEEL FLUME PLATE DETAIL	300.01 Method of Pipe Installation
2C-6	MINIMUM DEPTH CB	DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
2C-7	REINFORCED CONCRETE DRIVEWAY	560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I
2D-1	TRENCH DRAIN DETAIL	DIVISION 6 - ASPHALT BASES AND PAVEMENTS
2D-2	OFFSET CATCH BASIN	654.01 Pavement Repairs for superpave mix types
3B-1	EARTHWORK & PAVEMENT REMOVAL SUMMARY	DIVISION 8 - INCIDENTALS
3D-1 THRU 3D-6	DRAINAGE SUMMARIES	840.00 Concrete Base Pad for Drainage Structures
3G-1	GEOTECHNICAL SUMMARY	840.01 Brick Catch Basin - 12" thru 54" Pipe
3P-1	PARCEL INDEX SHEET	840.02 Concrete Catch Basin - 12" thru 54" Pipe
4 THRU 20	PLAN AND PROFILE SHEET	840.03 Frame, Grates and Hood - for Use on Standard Catch Basin
TMP-1 THRU TMP-13	TRAFFIC MANAGEMENT PLANS	840.14 Concrete Drop Inlet - 12" thru 30" Pipe
PMP-1 THRU PMP-11	PAVEMENT MARKING PLANS	840.15 Brick Drop Inlet - 12" thru 30" Pipe
EC-1 THRU EC-23	EROSION CONTROL PLANS	840.16 Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
L-1 THRU L-16	LANDSCAPE PLANS	840.22 Frames and Wide Slot Sag Grates
SIGN-1 THRU SIGN-14	SIGNING PLANS	840.25 Anchorage for Frames - Brick or Concrete or Precast
SIG-1.0 THRU SIG-7.6	SIGNAL PLANS	840.29 Frames and Narrow Slot Flat Grates
SIG-M1 THRU SIG-M8	SIGNAL METAL POLE PLANS	840.45 Precast Drainage Structure
SCP-01 THRU SCP-10	SIGNAL COMMUNICATION PLANS	840.54 Manhole Frame and Cover
UC-1 THRU UC-12	UTILITIES CONSTRUCTION PLANS	840.66 Drainage Structure Steps
UD-1 THRU UD-11	UTILITIES BY OTHERS PLANS	840.71 Concrete and Brick Pipe Plug
X-1A THRU X-1	CROSS-SECTION SUMMARY SHEET	846.01 Concrete Curb, Gutter and Curb & Gutter
X-1 THRU X-83	CROSS-SECTIONS	848.01 Concrete Sidewalk
		848.02 Driveway Turnout - Radius Type
		848.03 Driveway Turnout - Drop Curb Type
		848.04 Street Turnout
		848.05 Curb Ramp - Proposed Curb & Gutter
		848.06 Curb Ramp - Existing Curb & Gutter
		852.01 Concrete Islands
		852.02 Concrete Mountable Median - for Use with Rigid or Flexible Pavement
		852.06 Method for Placement of Drop Inlets in Concrete Islands
		876.02 Guide for Rip Rap at Pipe Outlets
		876.04 Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES: 2018 SPECIFICATIONS

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.

DRIVEWAYS:

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

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.

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 Century Link, City Of Raleigh, Dominion Energy, Duke Energy, Spectrum, Ting Fiber, Wake Electric

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.

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-☠-S-
Potential Contamination Area: Soil	☠-S-☠-S-
Known Contamination Area: Water	☠-W-☠-W-
Potential Contamination Area: Water	☠-W-☠-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	□ 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	---

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	---
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.

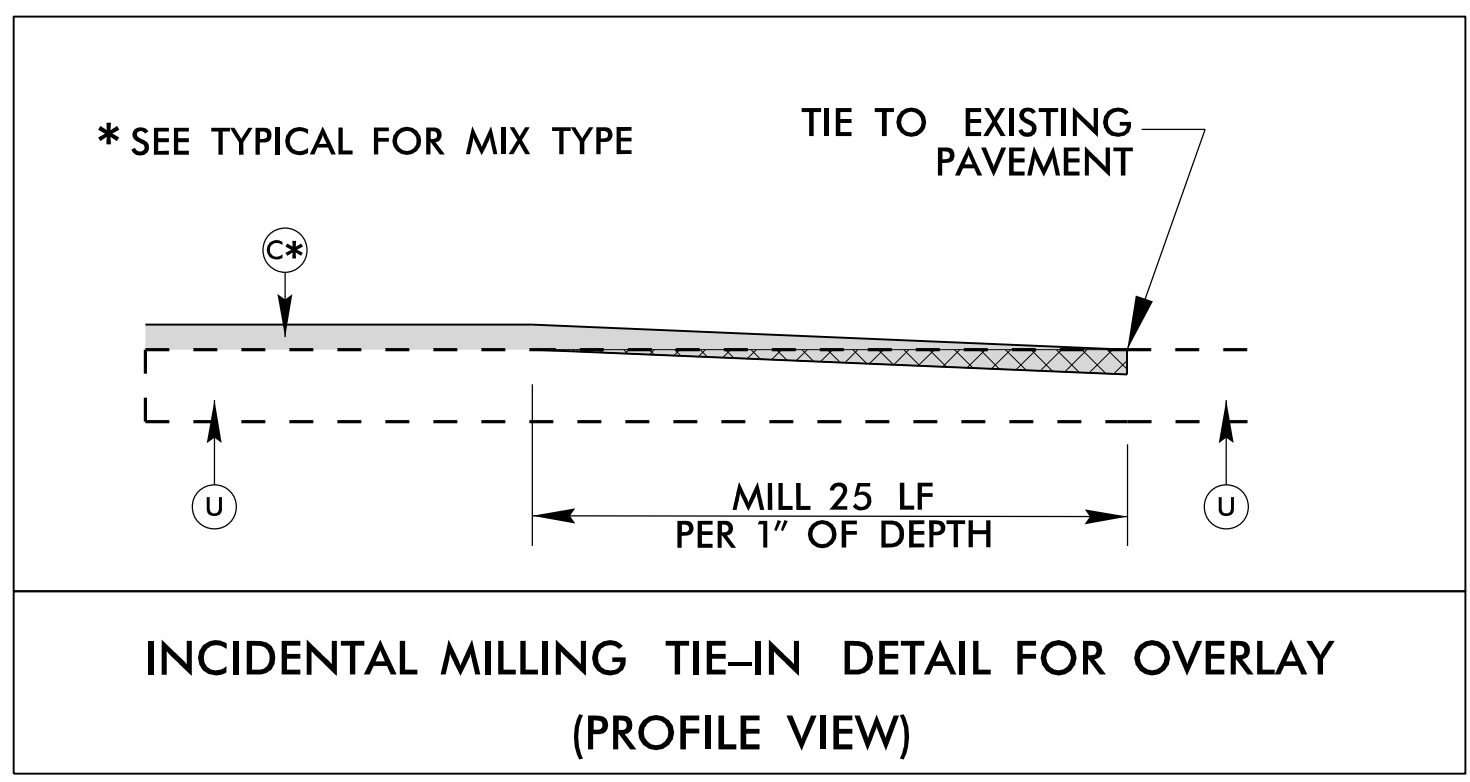
6/2/2022

PAVEMENT SCHEDULE

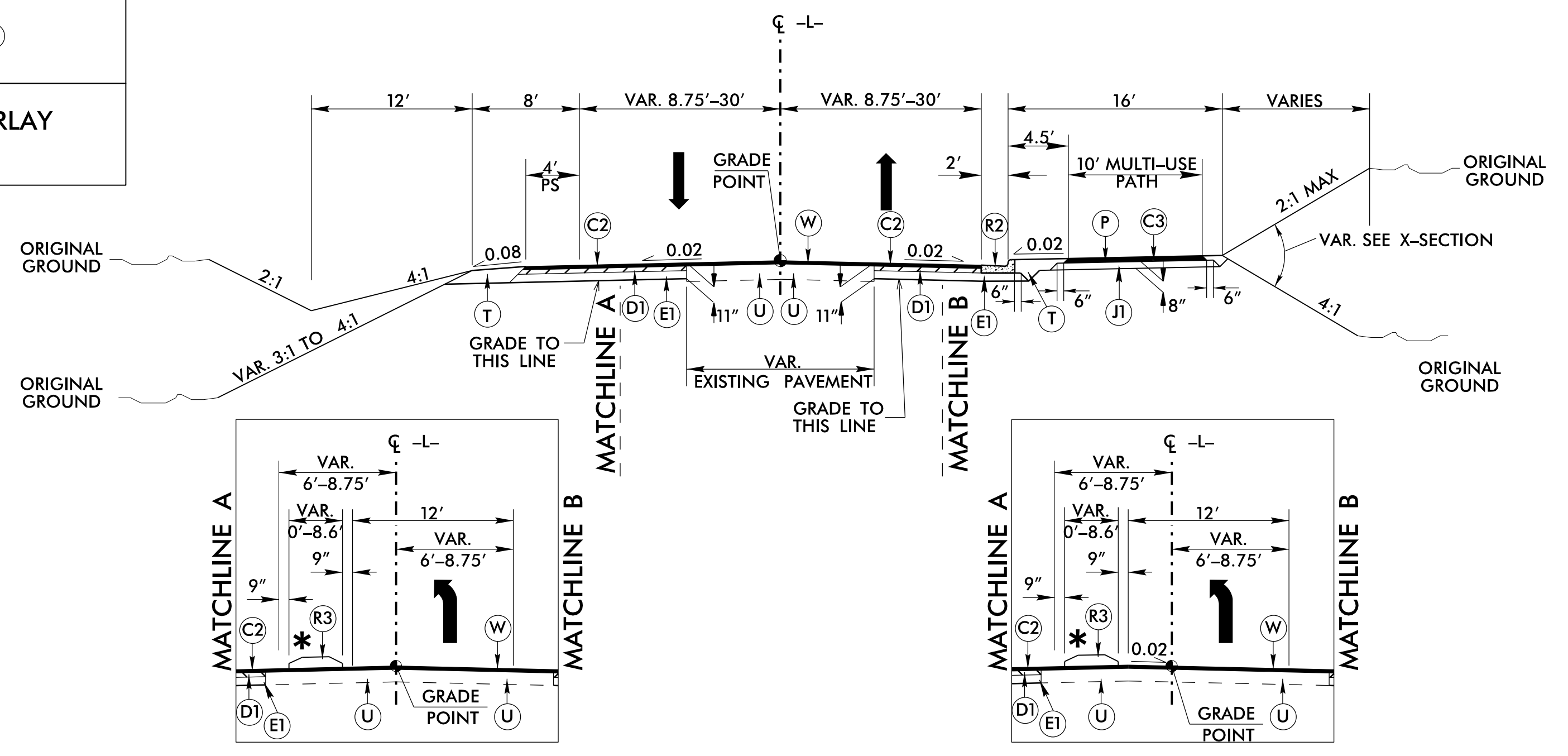
(FINAL PAVEMENT DESIGN LETTERS PROVIDED BY FALCON ENGINEERING)

A	CONCRETE PAVEMENT WITH W3xW3 MESH.	P	PRIME COAT.
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	1'-6" CONCRETE CURB AND GUTTER.
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 LAYERS.	R2	2'-6" CONCRETE CURB AND GUTTER.
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN).
C4	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.	R4	8" x 12" CONCRETE CURB.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	CONCRETE VALLEY GUTTER.
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.	S	4" CONCRETE SIDEWALK.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
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.	U	EXISTING PAVEMENT.
J1	PROP. 6" AGGREGATE BASE COURSE.	V	MILLING EXISTING PAVEMENT, 1.5" DEPTH.
		W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS).

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



INCIDENTAL MILLING TIE-IN DETAIL FOR OVERLAY (PROFILE VIEW)



TYPICAL SECTION No. 1

USE TYPICAL SECTION No. 1
-L- STA. 9+50.00 TO 16+54.70

PARTIAL TYPICAL No. 1A

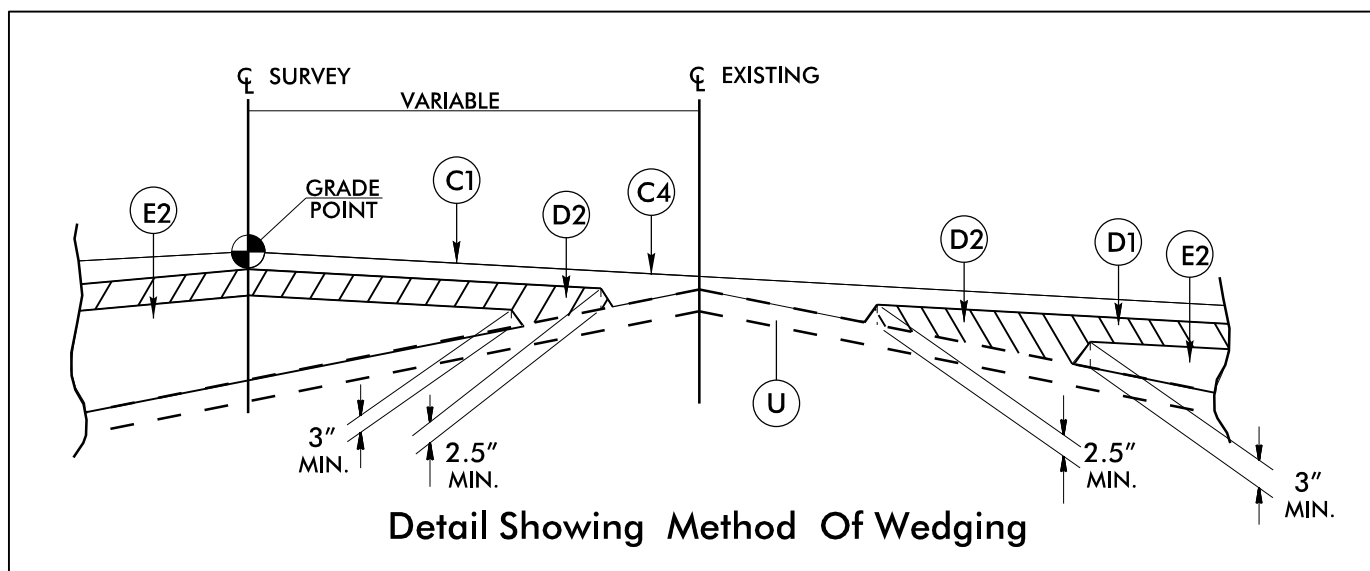
USE IN CONJUNCTION WITH TYPICAL SECTION No. 1

-L- STA. 12+40.45 TO 13+67.30
-L- STA. 16+12.50 TO 16+15.19

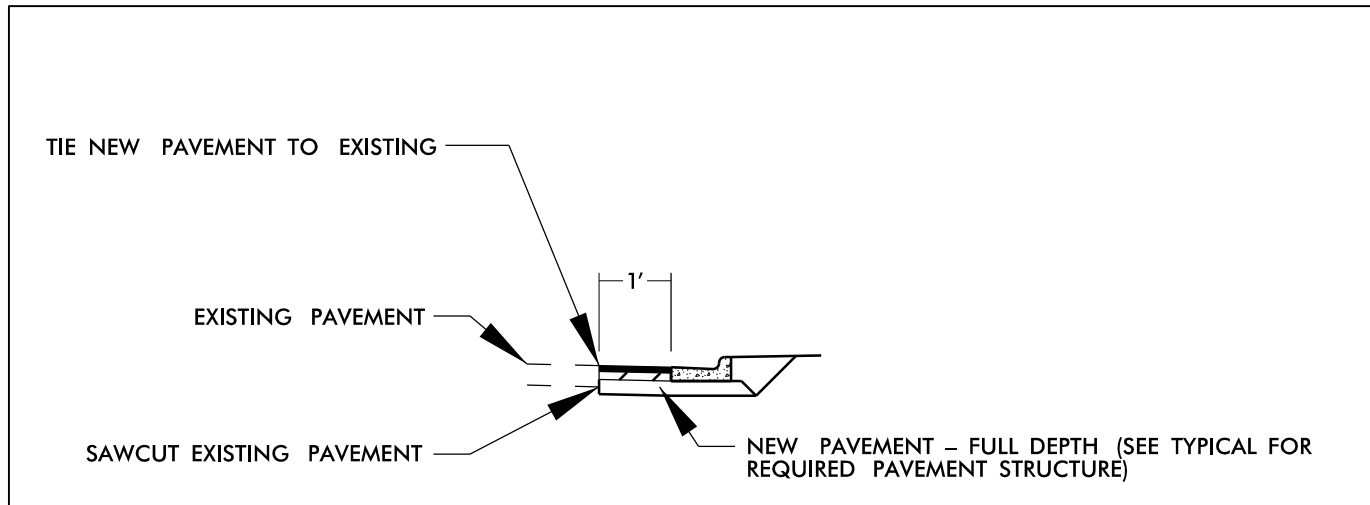
PARTIAL TYPICAL No. 1B

USE IN CONJUNCTION WITH TYPICAL SECTION No. 1

-L- STA. 13+67.30 TO 16+12.50



W: WEDGING DETAIL FOR WEDGING



MINIMUM WIDENING AND SAWCUT DIMENSIONS

Stantec
Stantec Consulting Services Inc.
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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO. U-6241	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
4/14/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

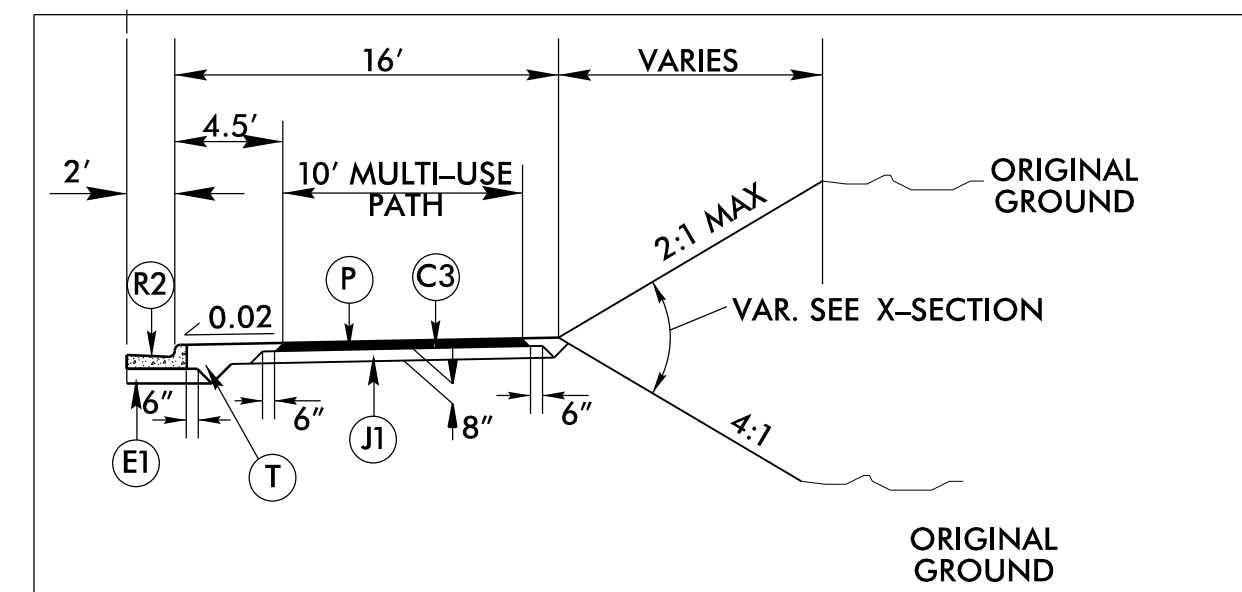
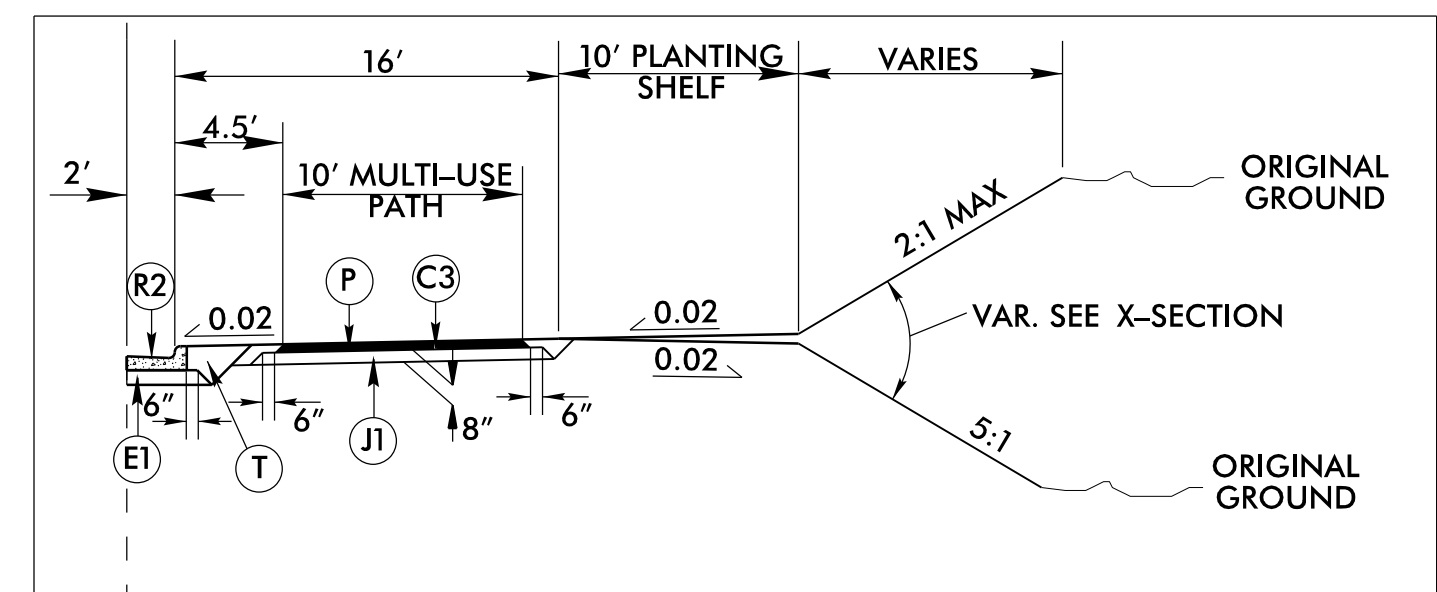
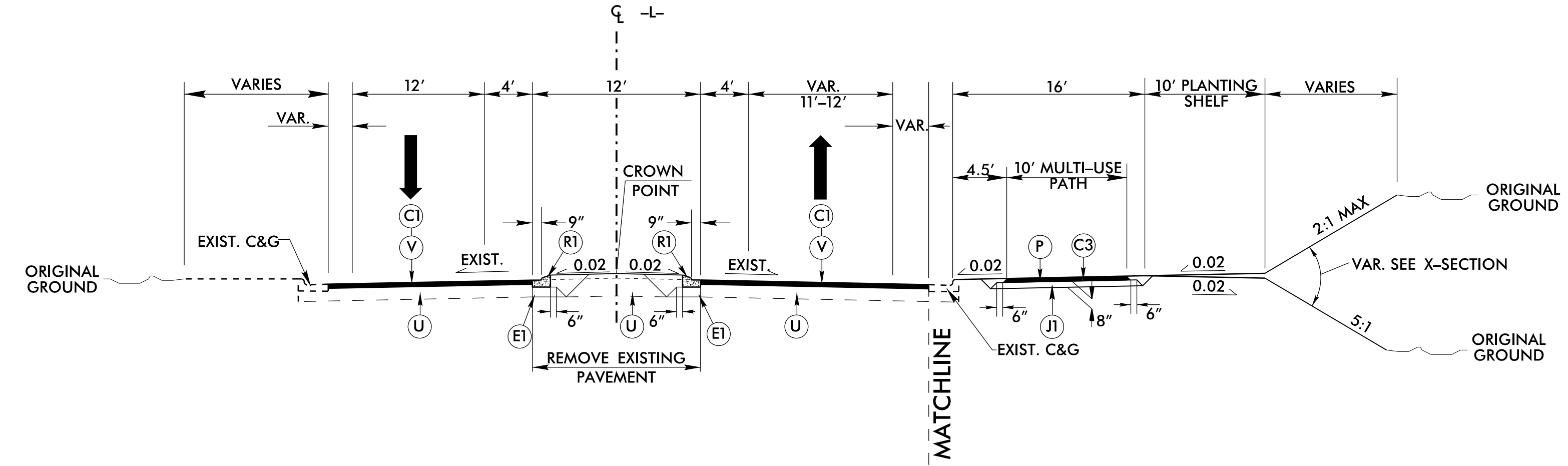
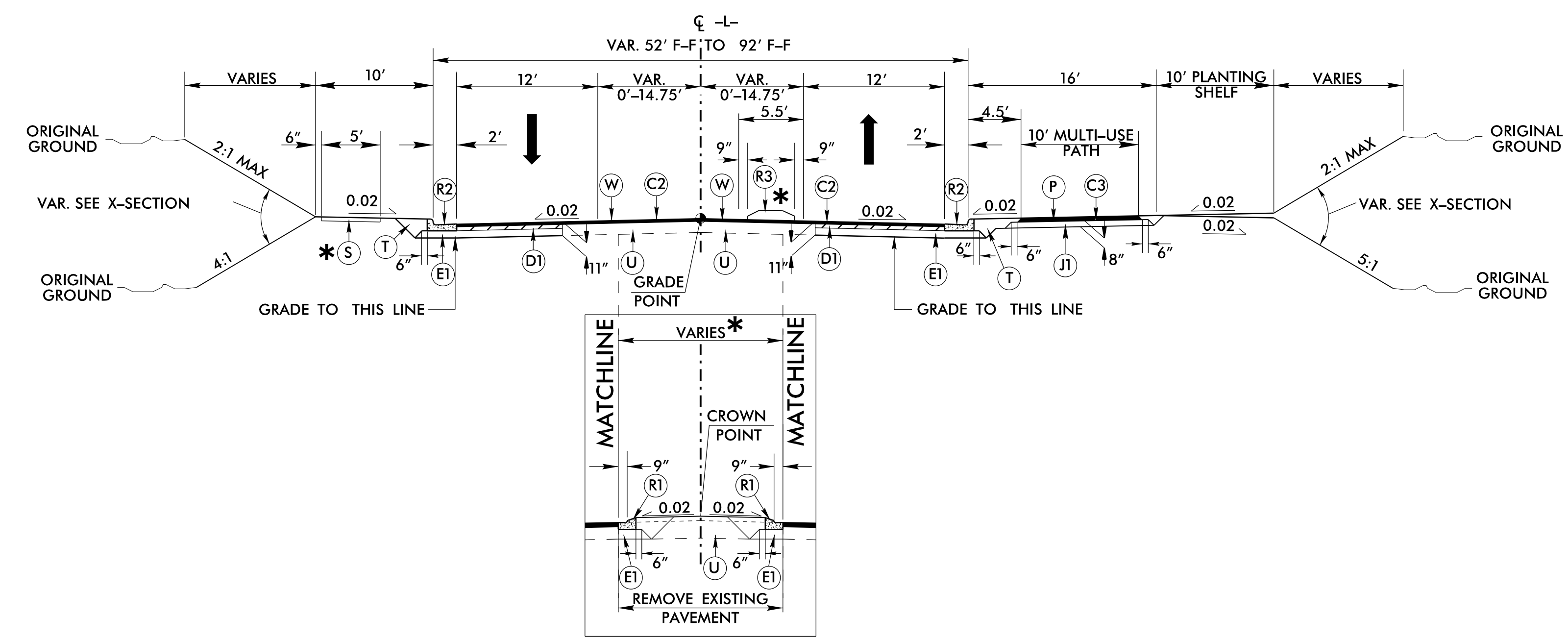
4/14/2022
L:\Projects\2022\171002202.Rdy_TYP.dgn

* SEE PLANS FOR EXACT LOCATIONS

PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
R5	CONCRETE VALLEY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

* SEE PLANS FOR EXACT LOCATIONS



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 Tel. (919) 851-6866
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 www.stantec.com
 License No. F-0672

PROJECT REFERENCE NO. U-6241
 SHEET NO. 2A-2

ROADWAY DESIGN ENGINEER
 PAVEMENT DESIGN ENGINEER

4/14/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TYPICAL SECTION No. 2

USE TYPICAL SECTION No. 2
 -L- STA. 16+54.70 TO 38+91.00

PARTIAL TYPICAL No. 2A

USE IN CONJUNCTION WITH TYPICAL SECTION No. 2
 -L- STA. 16+91.00 TO 19+74.00
 -L- STA. 23+86.00 TO 26+33.00
 -L- STA. 32+85.00 TO 36+93.00

TYPICAL SECTION No. 3

SEE WIDENING AND SAW CUT DETAIL FOR NEW CURB
 USE TYPICAL SECTION No. 3
 -L- STA. 38+91.00 TO 43+46.25

PARTIAL TYPICAL No. 3A

USE IN CONJUNCTION WITH TYPICAL SECTION No. 3
 -L- STA. 42+46.00 TO 42+00.00 RT

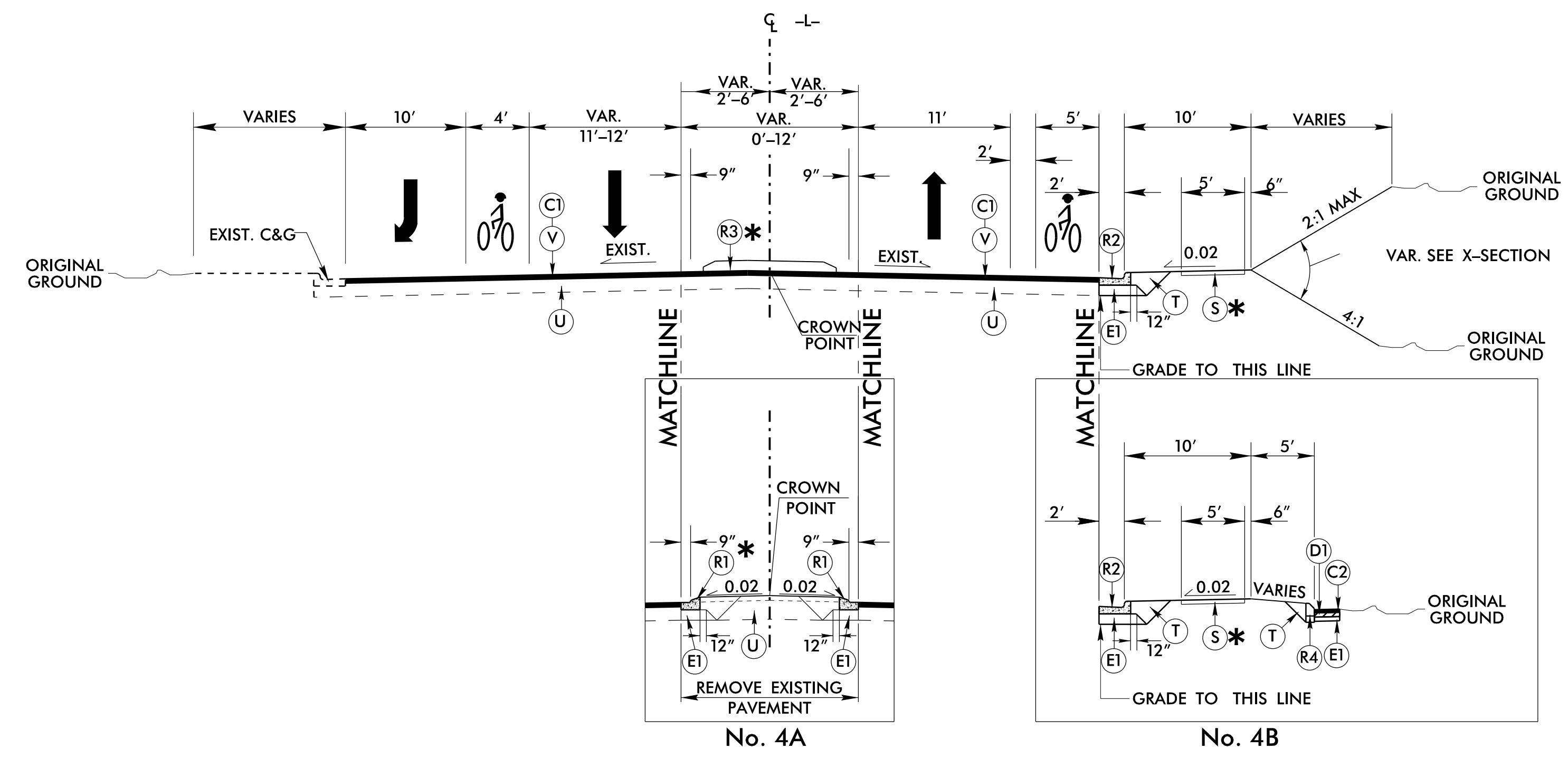
PARTIAL TYPICAL No. 3B

USE IN CONJUNCTION WITH TYPICAL SECTION No. 3
 -L- STA. 42+80.00 TO 43+46.25 RT

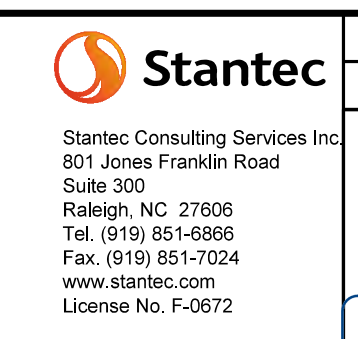
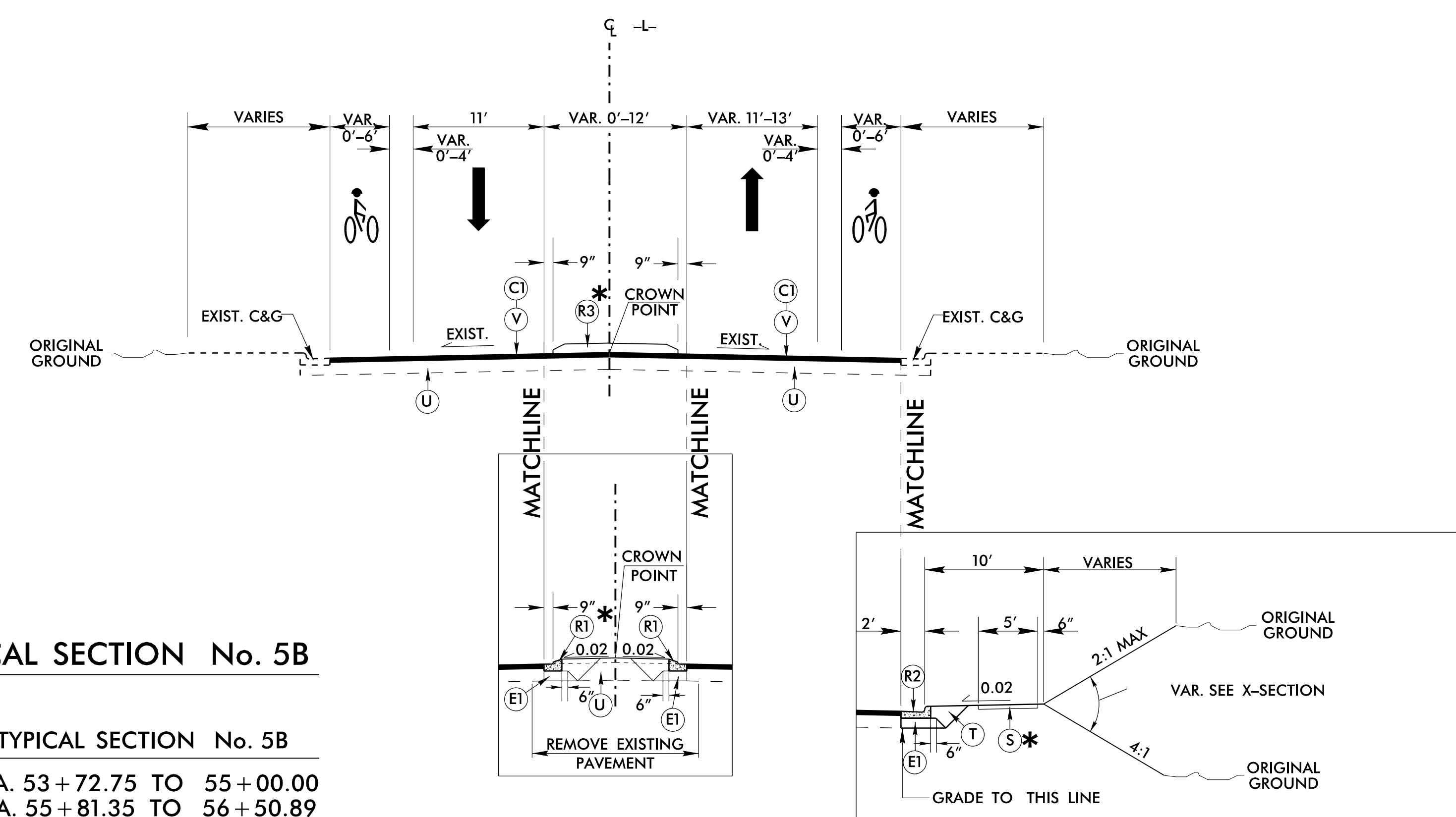
6/2/2022

PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
R5	CONCRETE VALLEY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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



* SEE PLANS FOR EXACT LOCATIONS



PROJECT REFERENCE NO. U-6241	SHEET NO. 2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<p>4/14/2022</p> <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

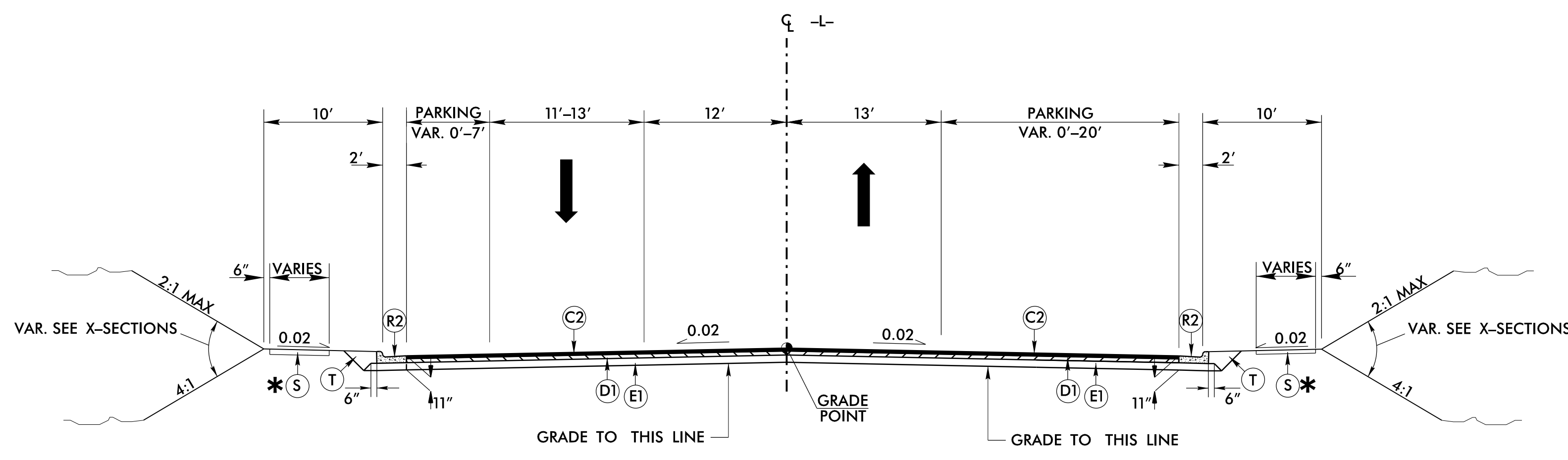
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PROJECT REFERENCE NO. U-6241	SHEET NO. 2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

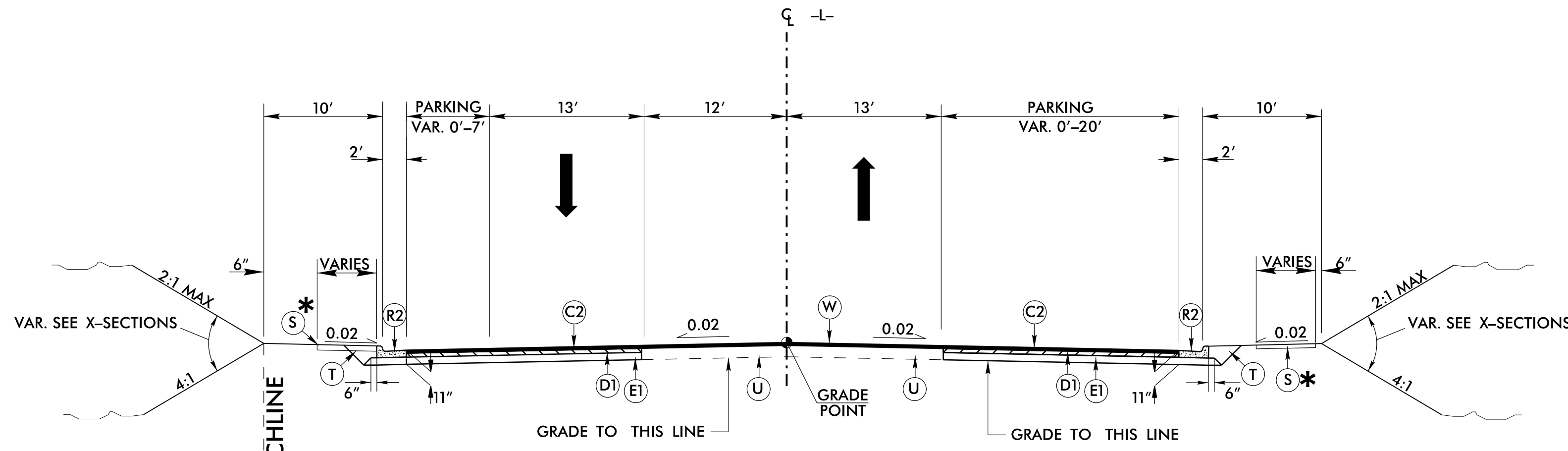
PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
R5	CONCRETE VALLEY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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



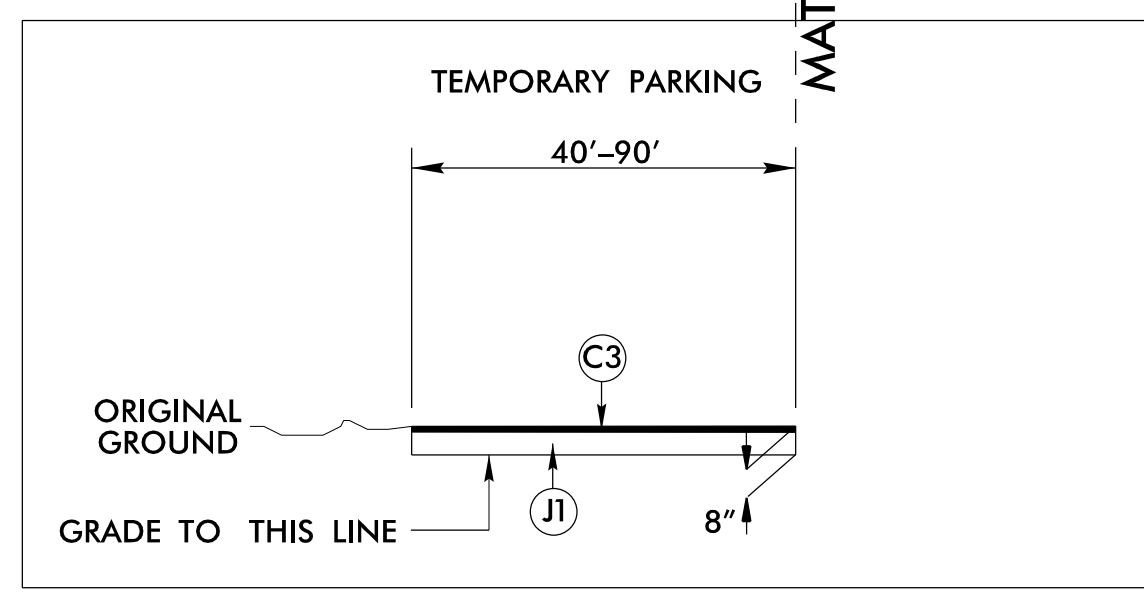
TYPICAL SECTION No. 6

USE TYPICAL SECTION No. 6
 -L- STA. 92+00.00 TO 98+00.00
 -Y3- STA. 13+50.00 TO 18+50.00



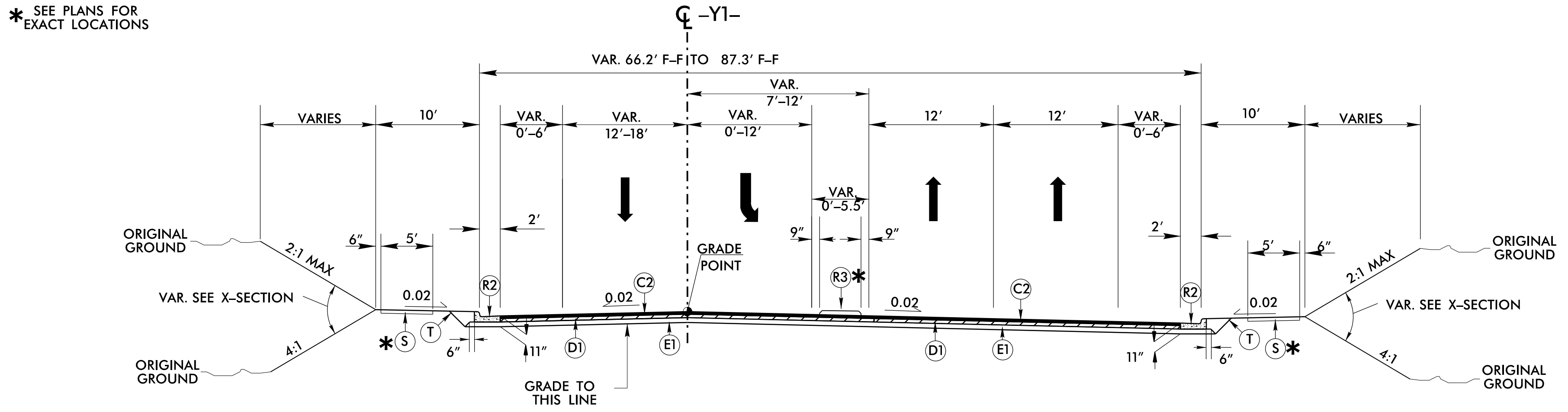
TYPICAL SECTION No. 7

USE TYPICAL SECTION No. 7
 -L- STA. 98+00.00 TO 100+50.00



PARTIAL TYPICAL No. 7A

USE IN CONJUNCTION WITH
 TYPICAL SECTION No. 7
 -L- STA. 98+31.00 TO 100+20.00 LT



TYPICAL SECTION No. 8

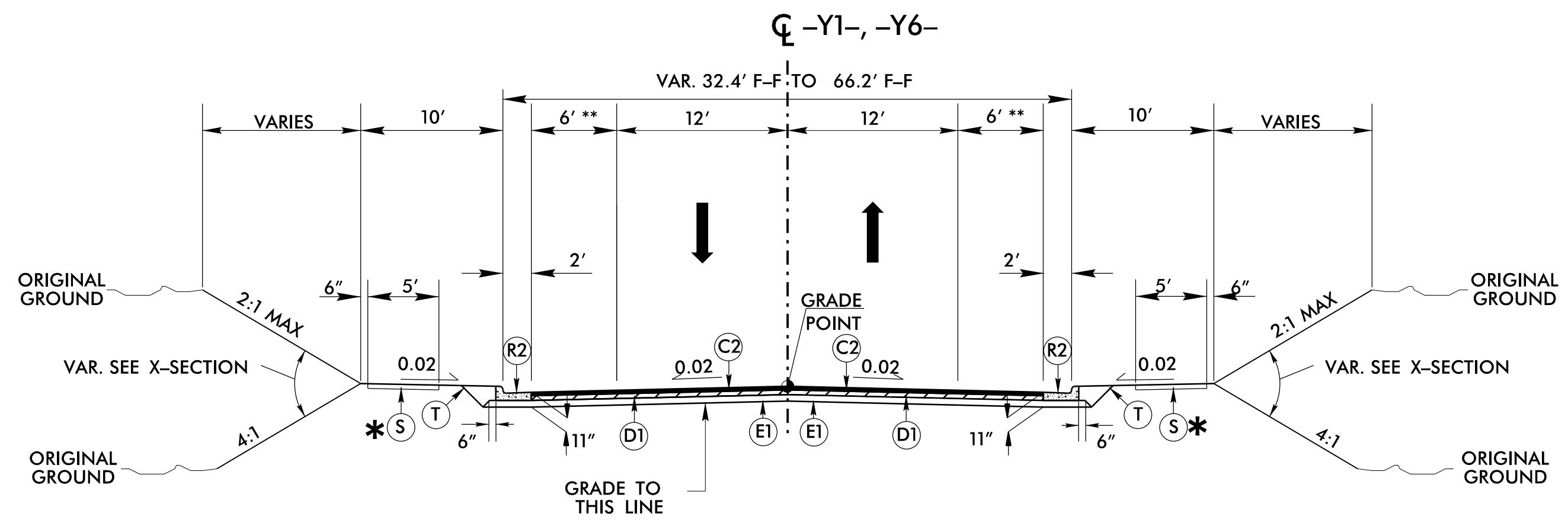
USE TYPICAL SECTION No. 8
 -Y1- STA. 10+38.78 TO 17+00.00

6/2/2022

PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
R5	CONCRETE VALLEY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

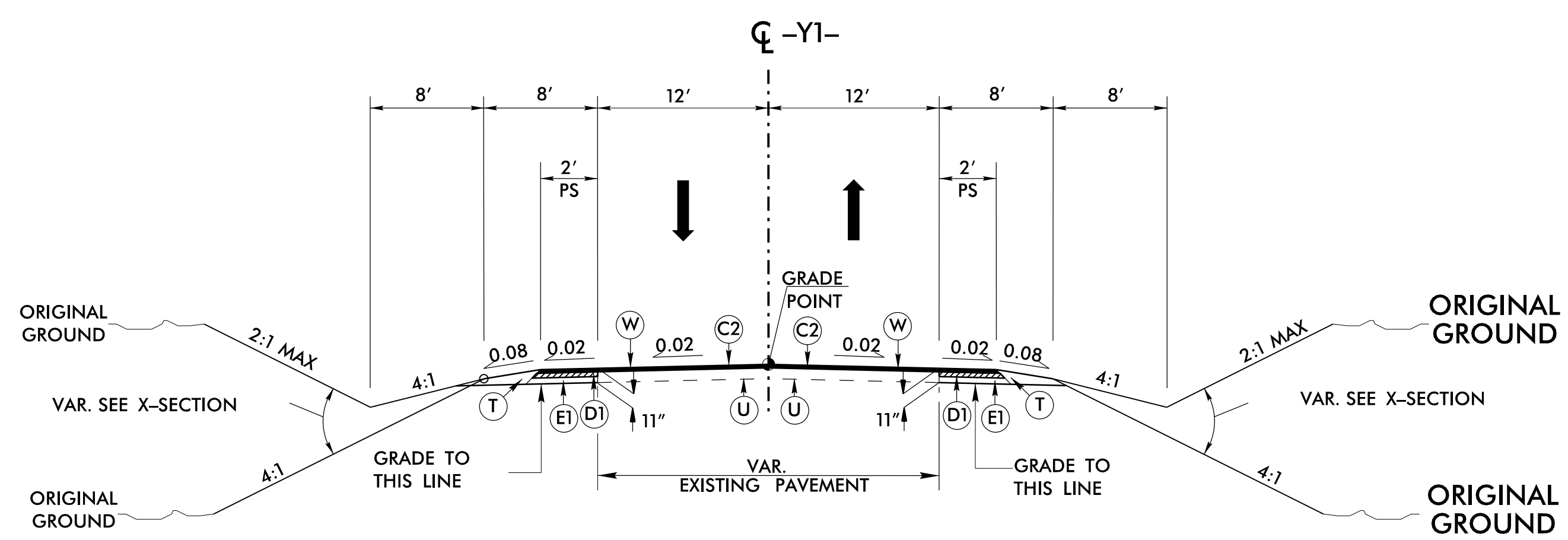
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>2A-5</i>
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



TYPICAL SECTION No. 9

USE TYPICAL SECTION No. 9

** -Y1- STA. 17+00.00 TO 22+50.00
-Y6- STA. 10+49.33 TO 11+64.64

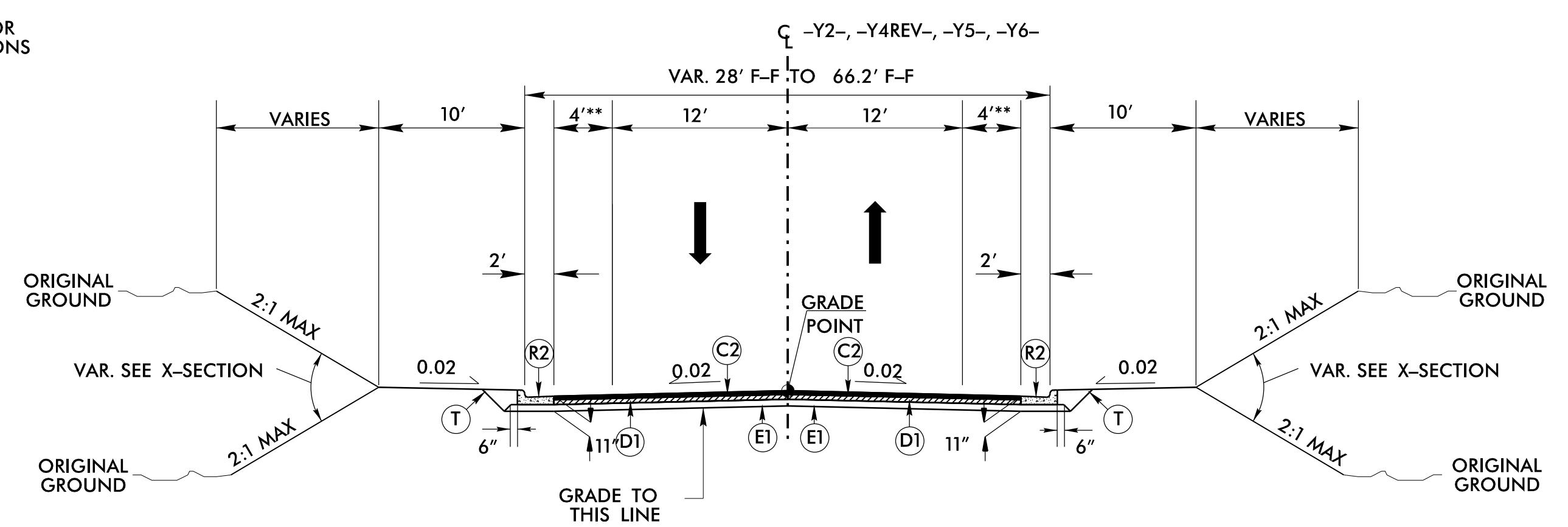


TYPICAL SECTION No. 10

USE TYPICAL SECTION No. 10

-Y1- STA. 22+50.00 TO 24+60.00

* SEE PLANS FOR EXACT LOCATIONS



TYPICAL SECTION No. 11

USE TYPICAL SECTION No. 11

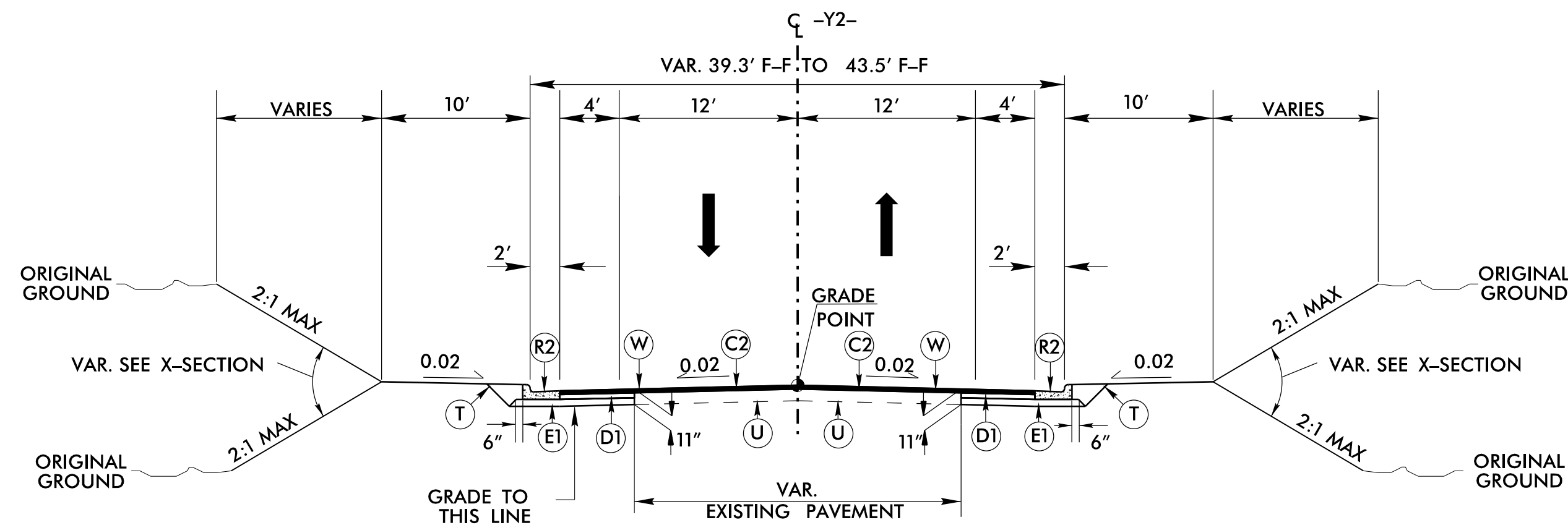
** -Y2- STA. 10+40.05 TO 15+06.60
-Y4REV- STA. 10+38.77 TO 11+65.00
-Y5- STA. 10+32.75 TO 11+40.35
-Y6- STA. 12+30.14 TO 12+88.49

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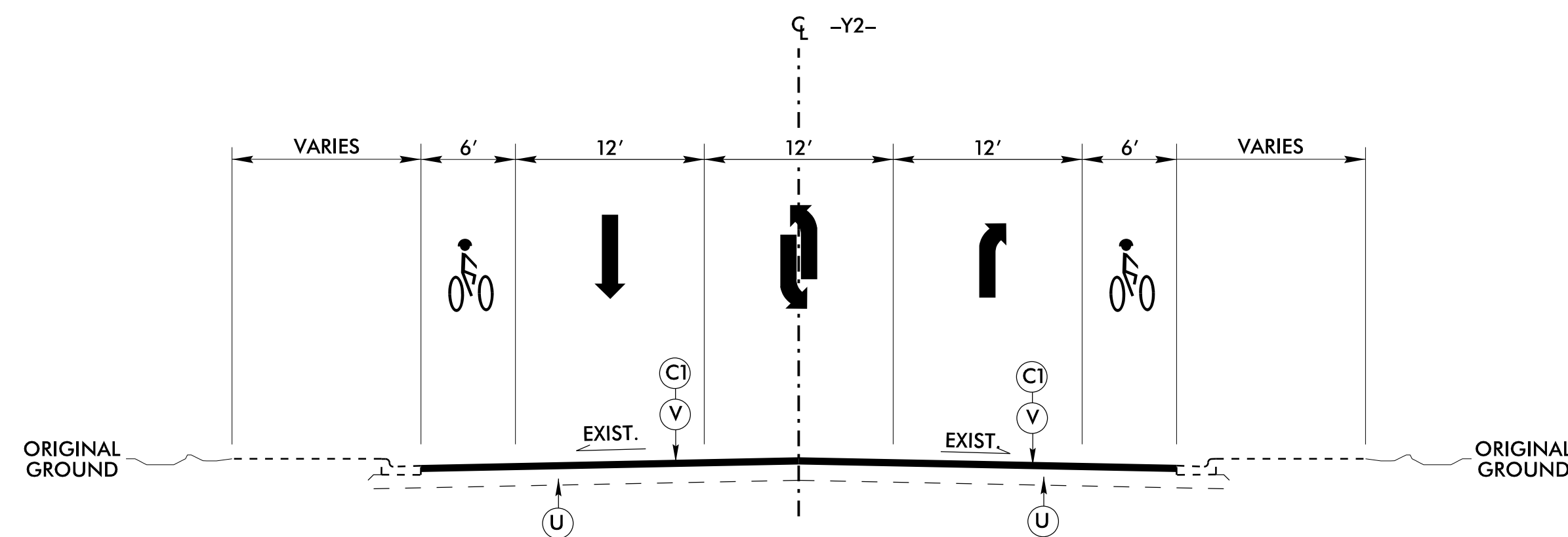
PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
R5	CONCRETE VALLEY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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



TYPICAL SECTION No. 12

USE TYPICAL SECTION No. 12
-Y2- STA. 15+06.60 TO 16+60.00



TYPICAL SECTION No. 13

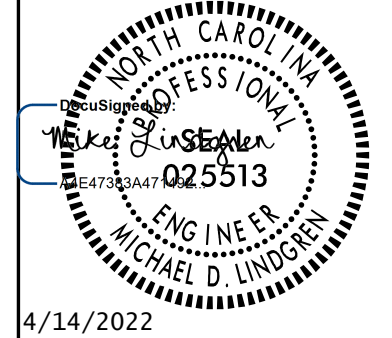
USE TYPICAL SECTION No. 13
-Y2- STA. 16+60.00 TO 24+00.00



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PROJECT REFERENCE NO.	SHEET NO.
U-6241	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

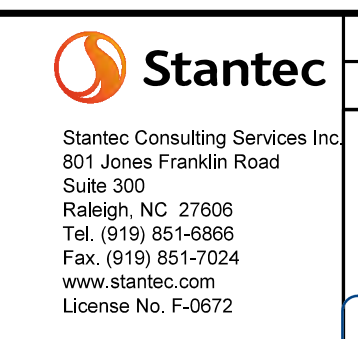
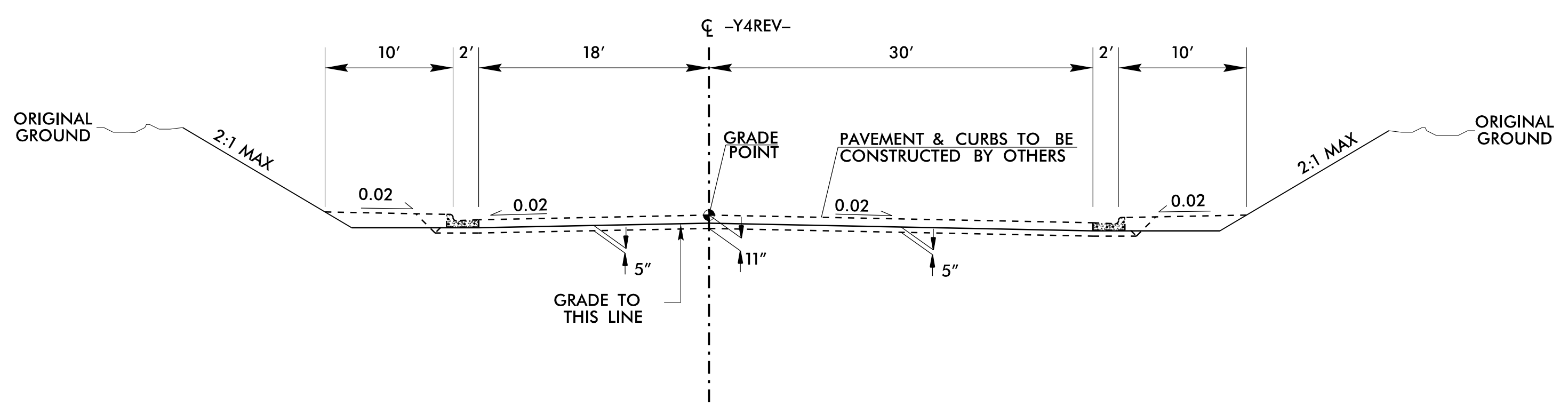
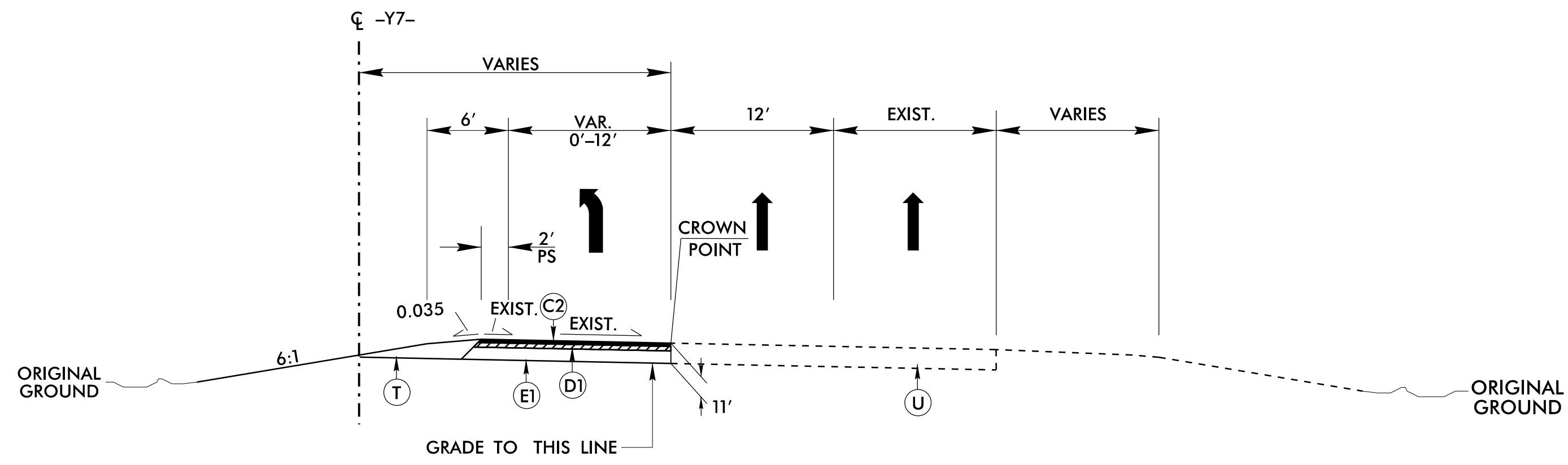
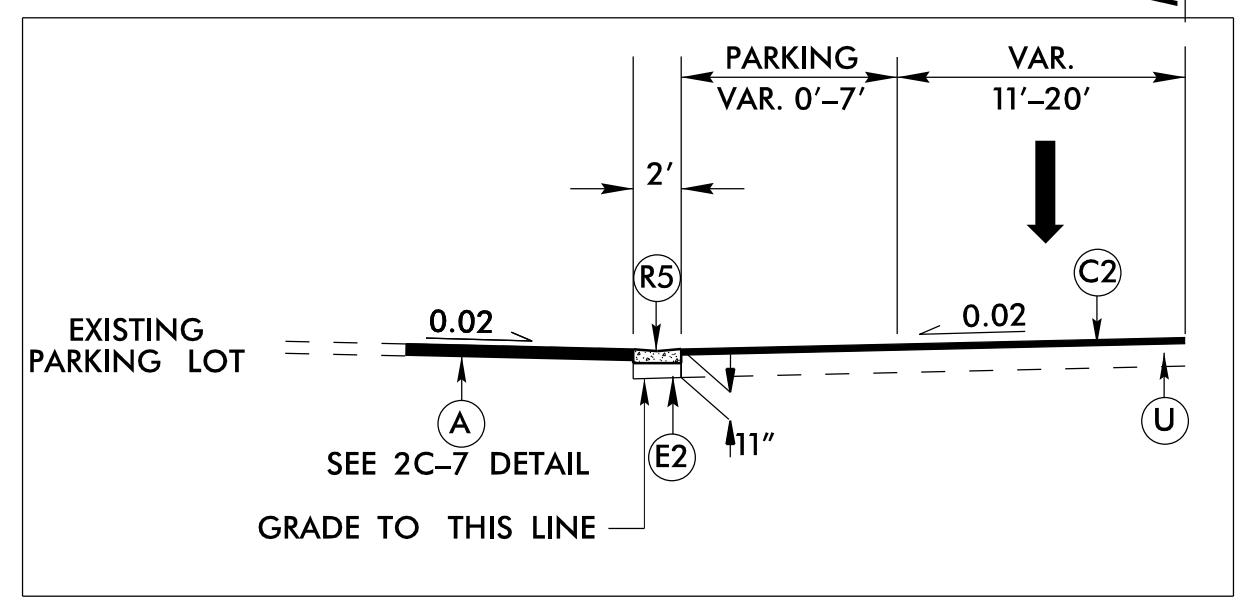
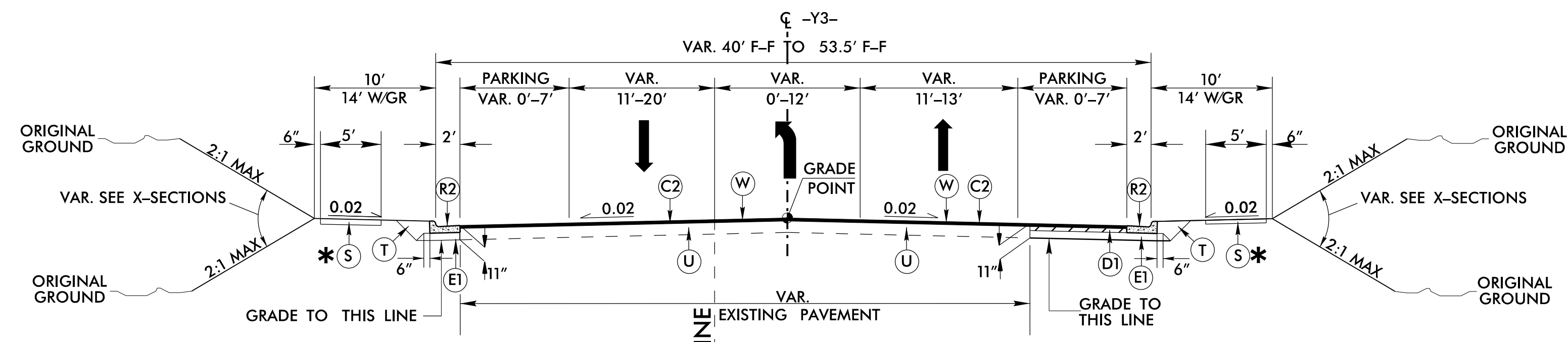
4/14/2022
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



6/2/2022

PAVEMENT DESIGN	
A	CONCRETE PAVEMENT WITH W3XW3 MESH.
C1	PROP. APPROX. 1.5", TYPE S9.5B
C2	PROP. APPROX. 3", TYPE S9.5B
C3	PROP. APPROX. 2", TYPE S9.5B
C4	PROP. VAR. DEPTH, TYPE S9.5B
D1	PROP. APPROX. 4", TYPE I19.0C
D2	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 4", TYPE B25.0C
E2	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 6" AGGREGATE BASE COURSE
P	PRIME COAT.
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND
R4	8" X 12" CONCRETE CURB
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S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 1.5" DEPTH
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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



PROJECT REFERENCE NO. U-6241	SHEET NO. 2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

TYPICAL SECTION No. 14

USE TYPICAL SECTION No. 14
 -Y3- STA. 11+40.00 TO 13+50.00
 SEE WIDENING AND SAW CUT DETAIL FOR NEW CURB

TYPICAL SECTION No. 14A

USE IN CONJUNCTION WITH
 TYPICAL SECTION No. 14
 -Y3- STA. 11+62.11 TO 13+74.85

TYPICAL SECTION No. 15

USE TYPICAL SECTION No. 15
 -Y7- STA. 20+75.00 TO 25+50.00

TYPICAL SECTION No. 16

USE TYPICAL SECTION No. 16
 -Y4REV- STA. 11+65.00 TO 13+00.00

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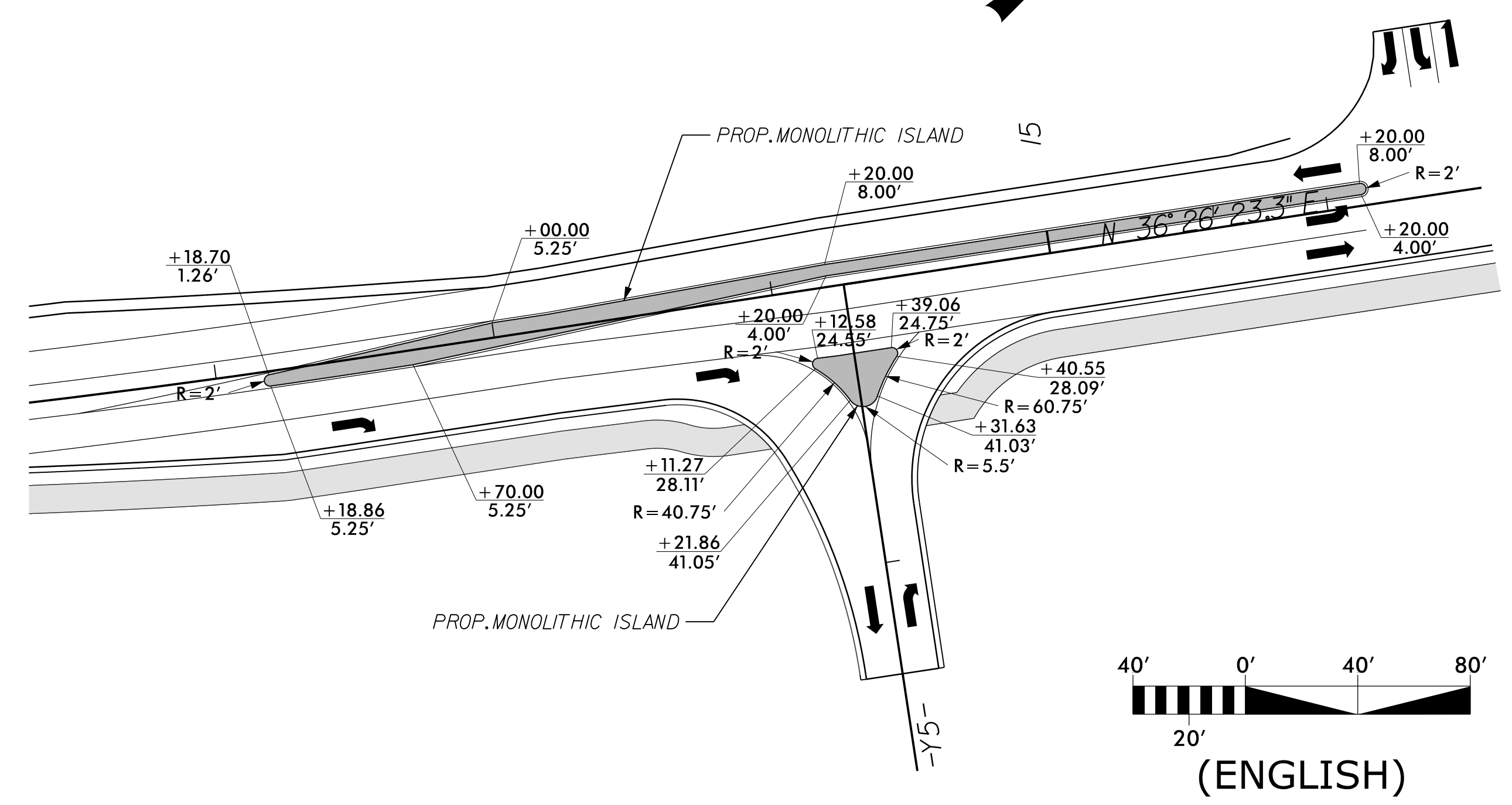
8/17/99



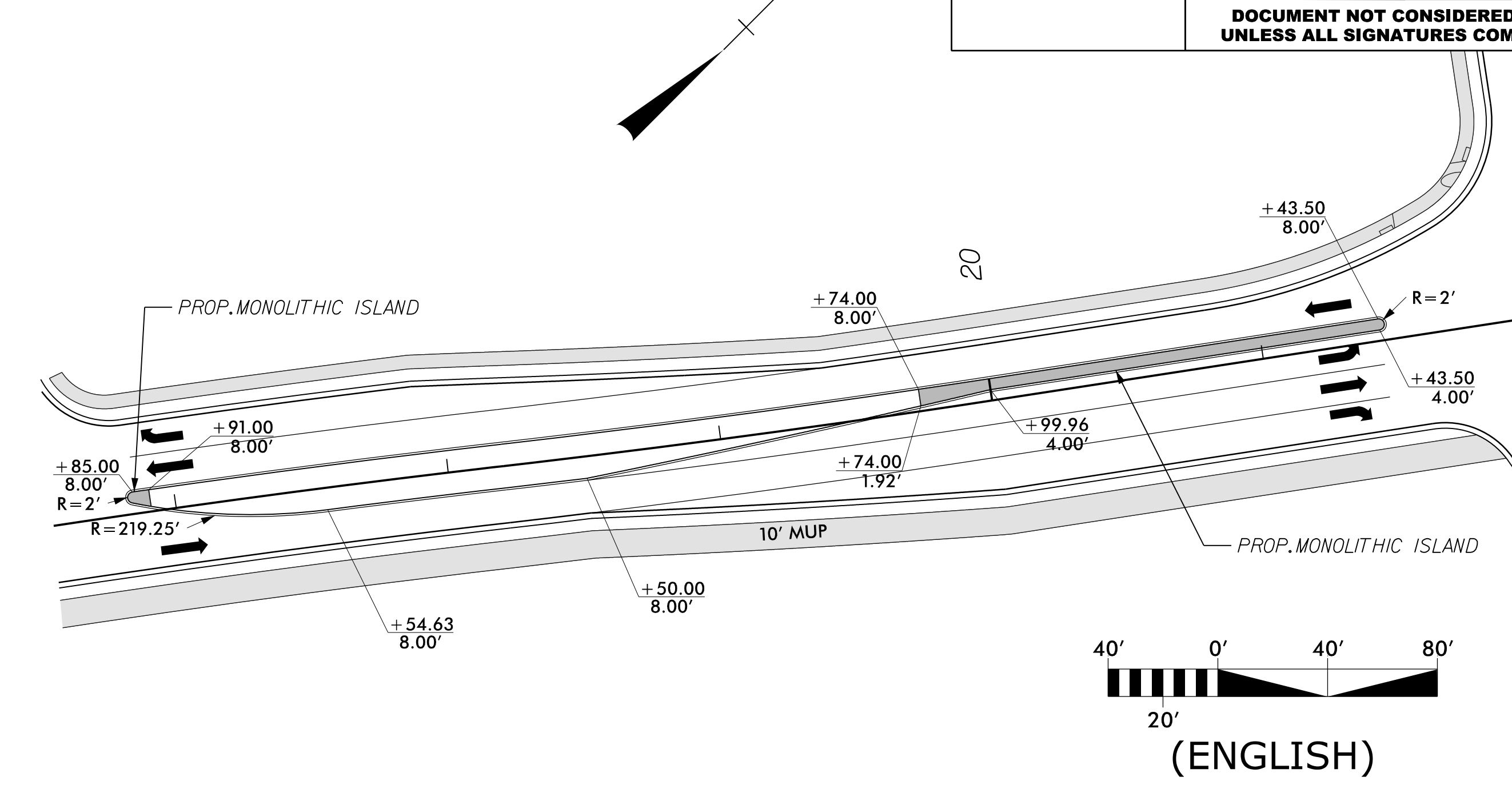
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PROJECT REFERENCE NO.	U-6241	SHEET NO.	2B-1
RW SHEET NO.			
ROADWAY DESIGN ENGINEER			
2/10/2022			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

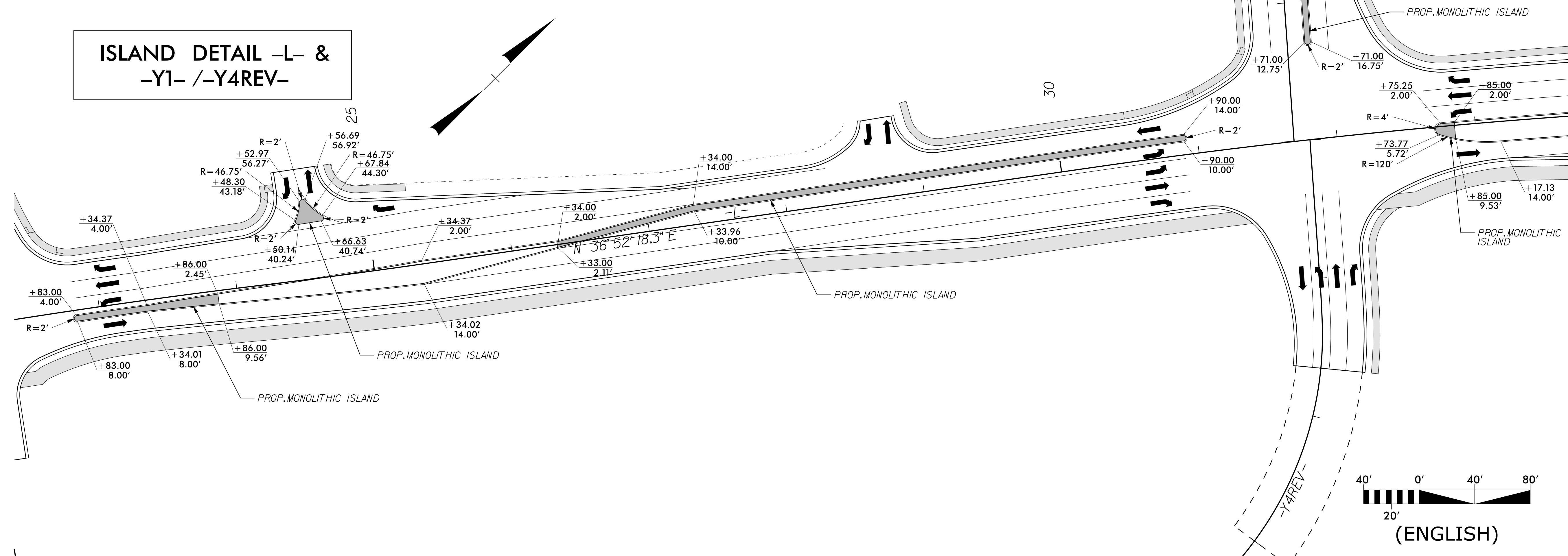
ISLAND DETAIL -L- & -Y5-



ISLAND DETAIL -L-



ISLAND DETAIL -L- & -Y1- /-Y4REV-



REVISIONS

2/7/2022
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8/17/99

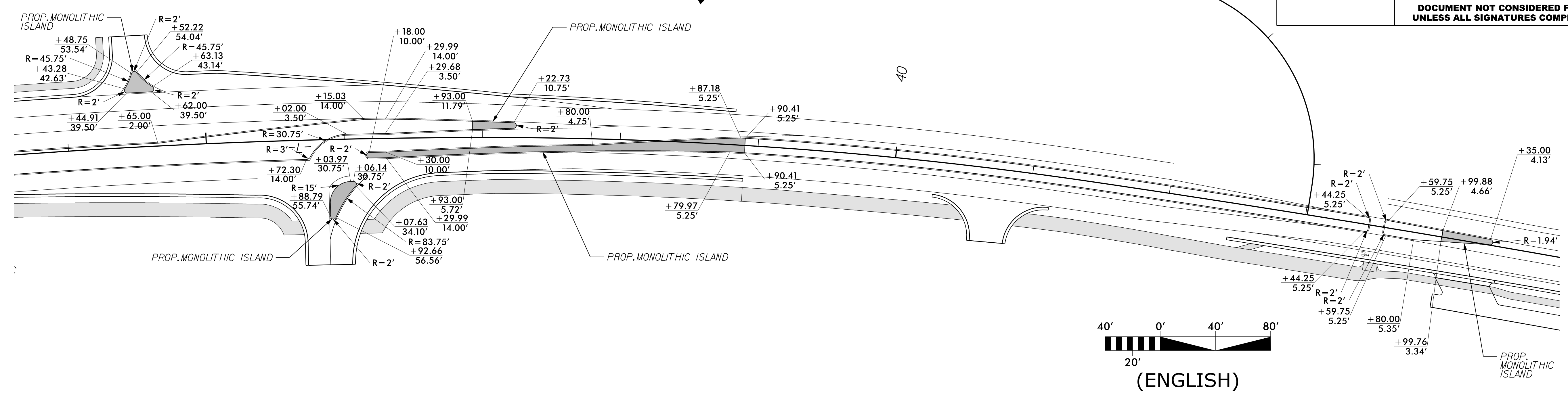


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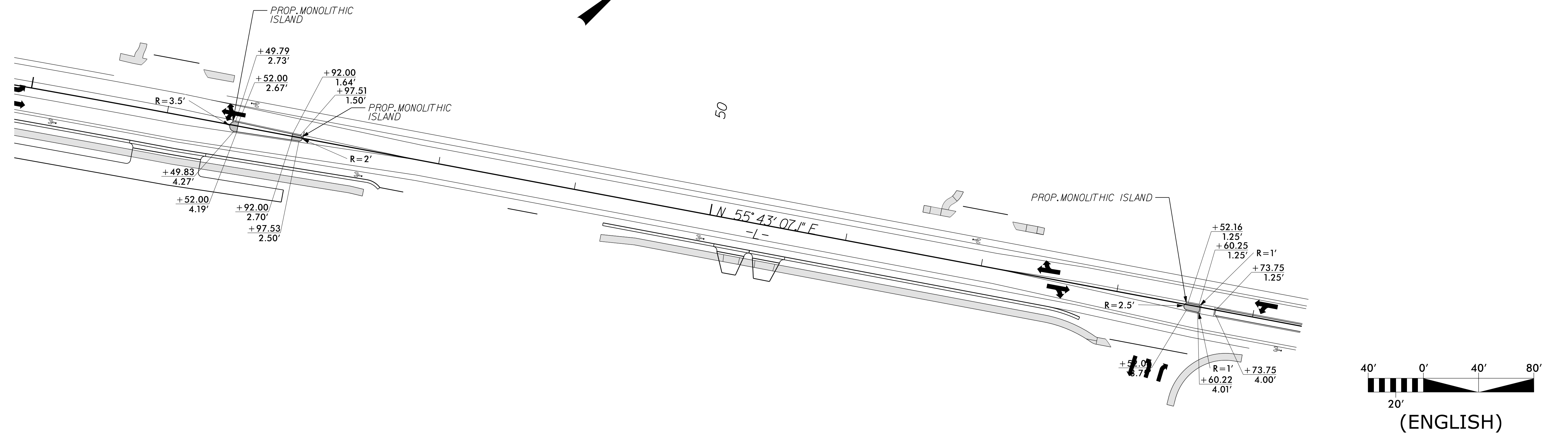
PROJECT REFERENCE NO. U-6241	SHEET NO. 2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
2/10/2022	

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ISLAND DETAIL -L- & -Y2-



ISLAND DETAIL -L-



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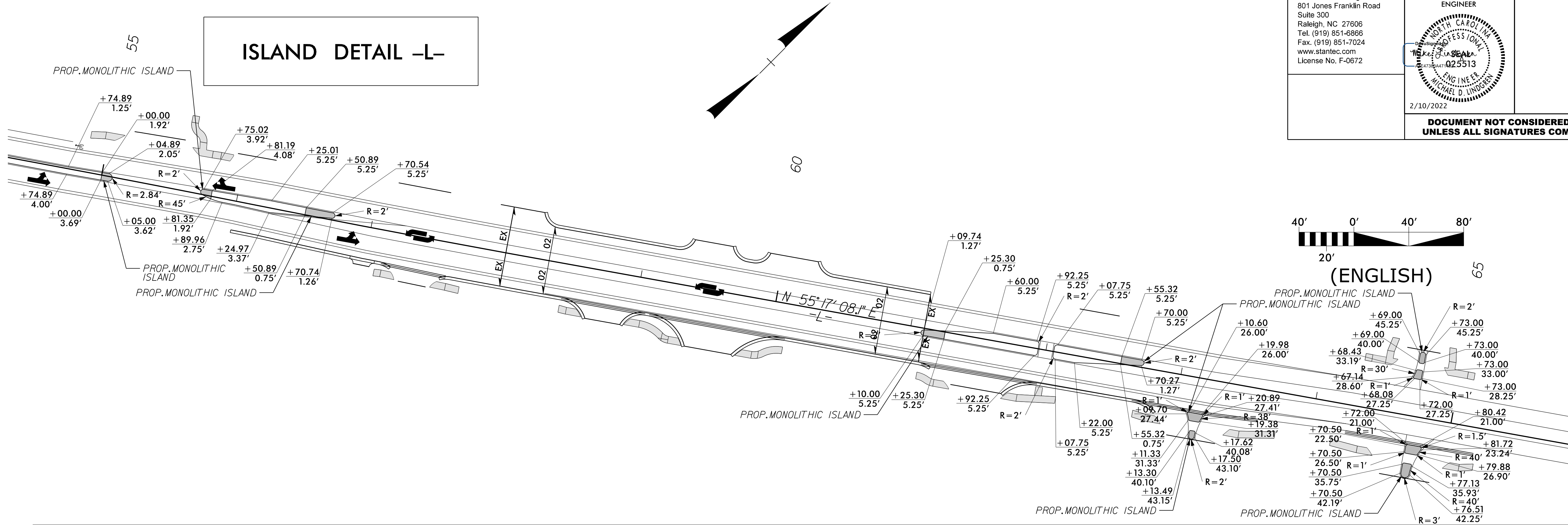
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	RW SHEET NO.	
	ROADWAY DESIGN ENGINEER	

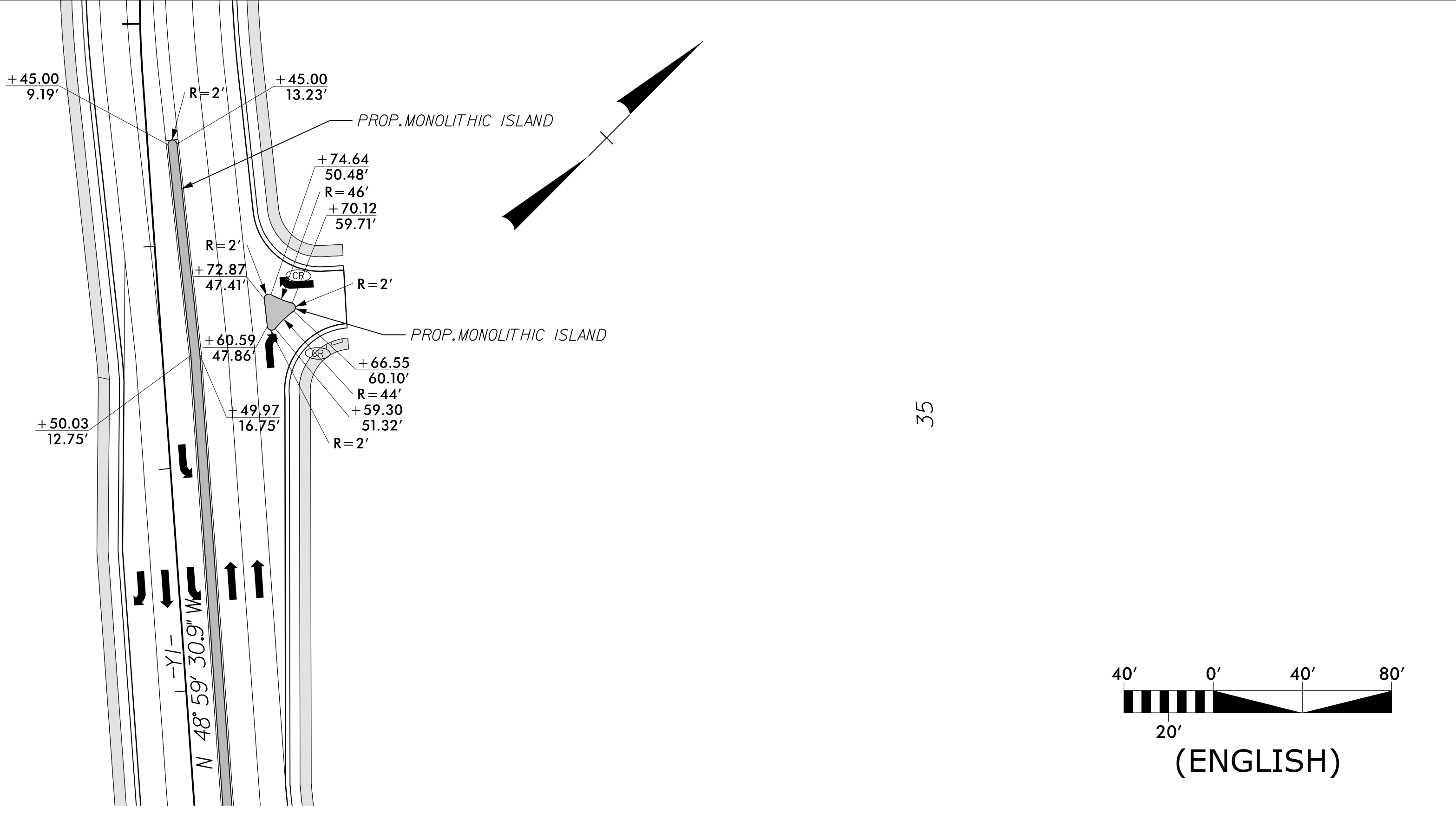
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ISLAND DETAIL -L-



ISLAND DETAIL -Y1-

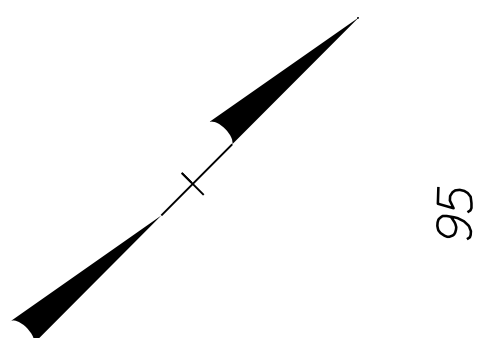


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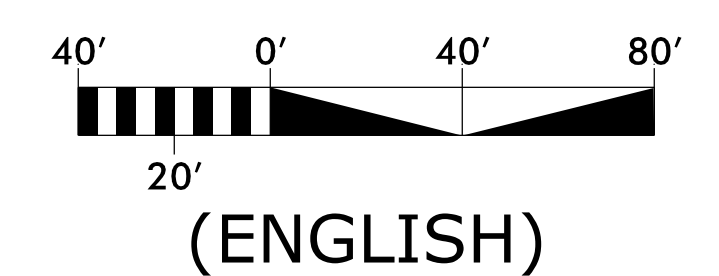
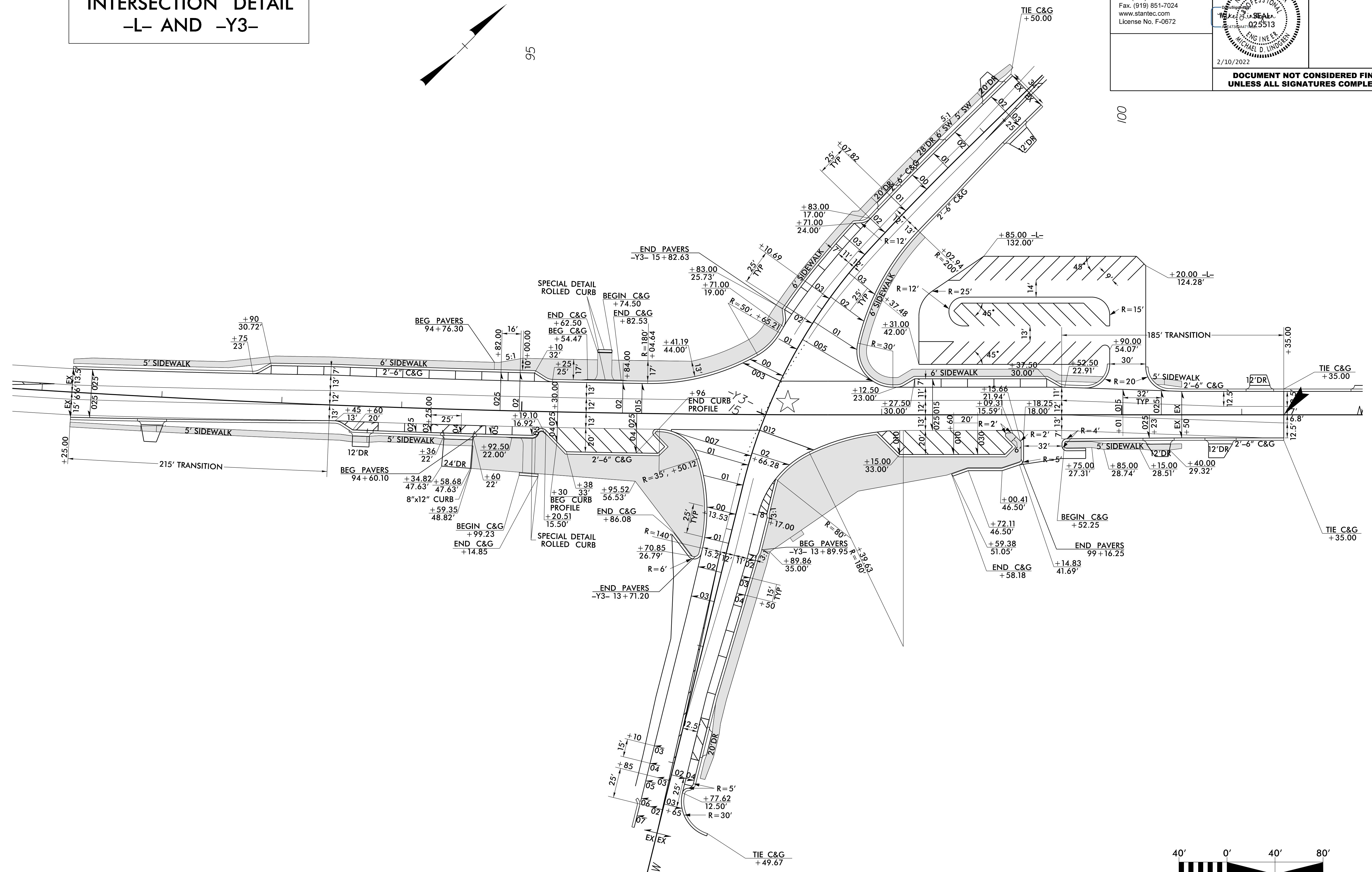
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INTERSECTION DETAIL -L- AND -Y3-



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	RW SHEET NO.	
ROADWAY DESIGN ENGINEER		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

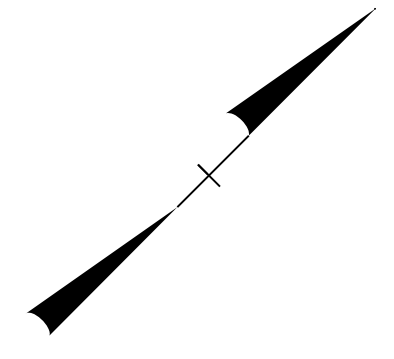
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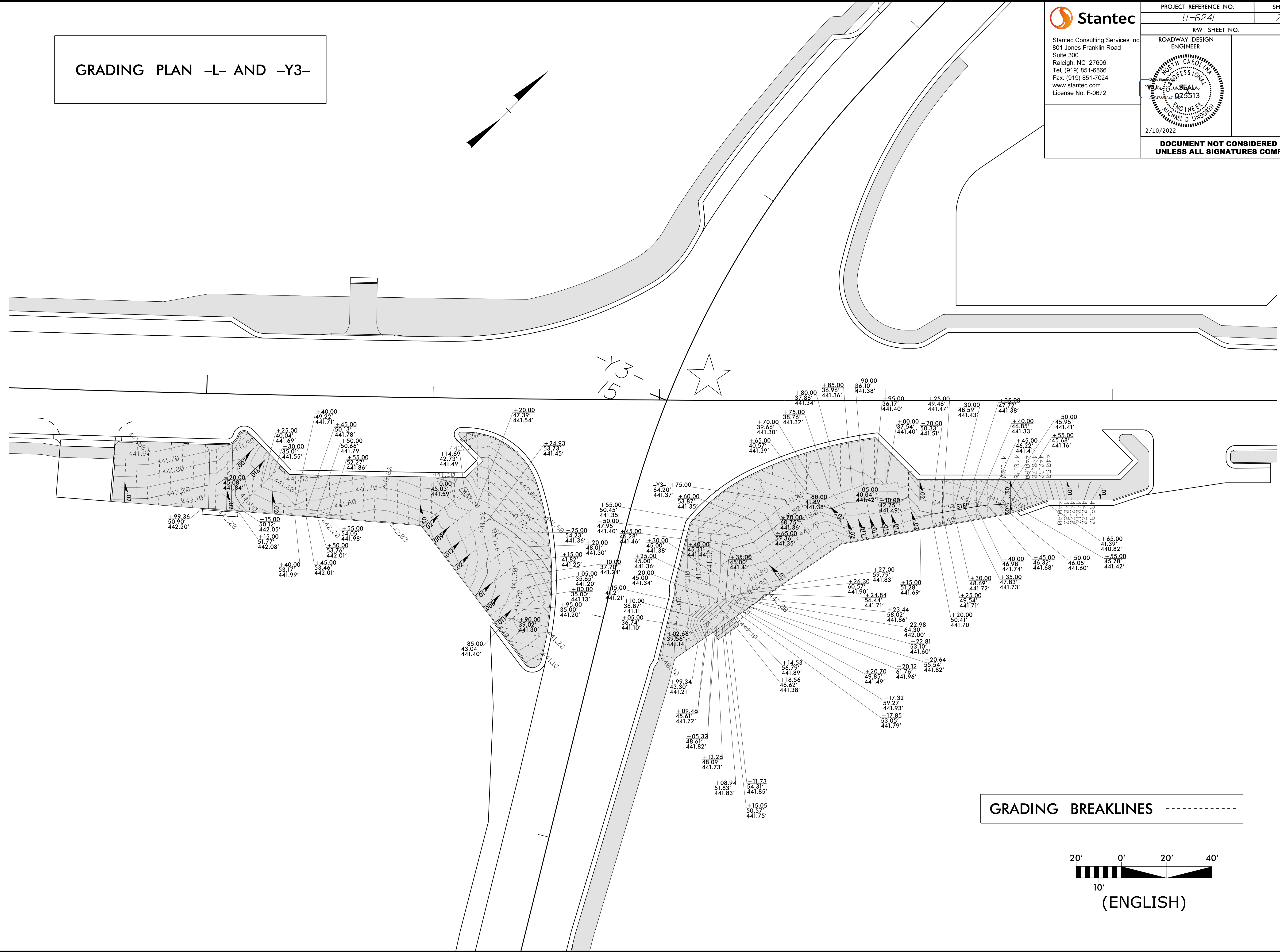
8/17/99

GRADING PLAN -L- AND -Y3-

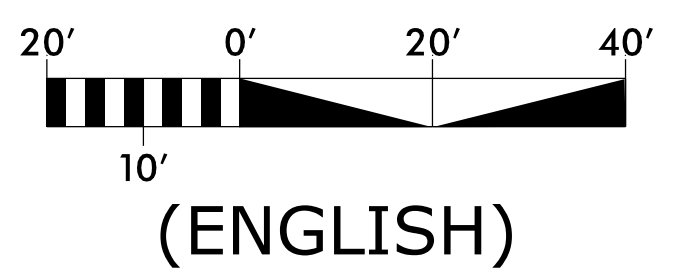


<p>Stantec Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>2B-5</i>
	RW SHEET NO.	
<p>ROADWAY DESIGN ENGINEER</p> <p>2/10/2022</p>		
	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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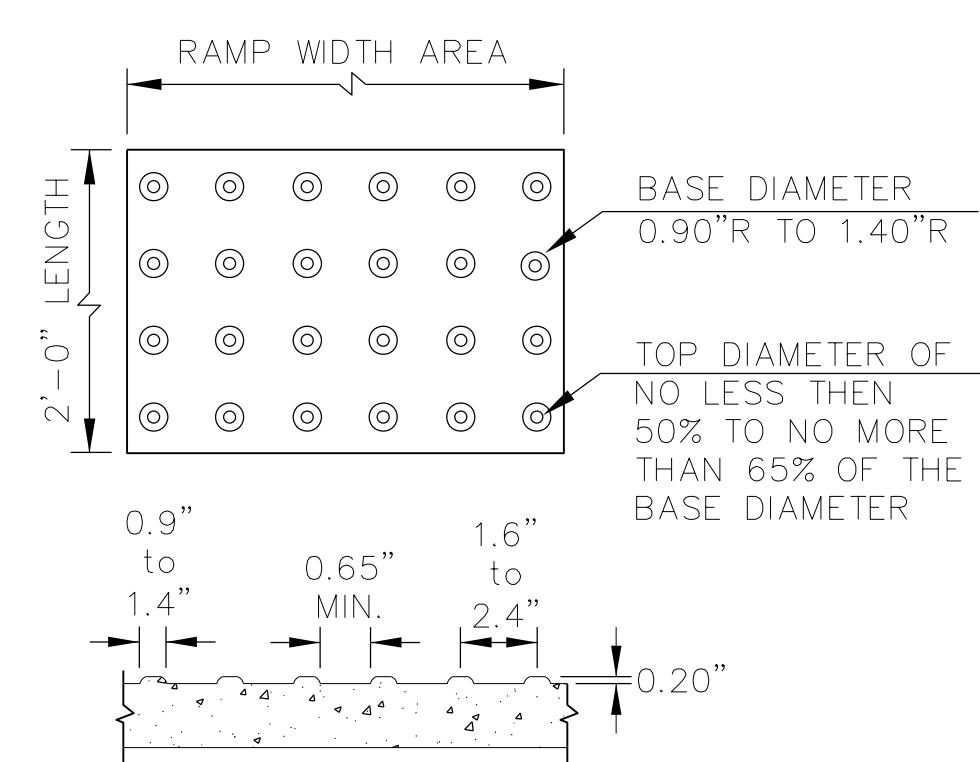
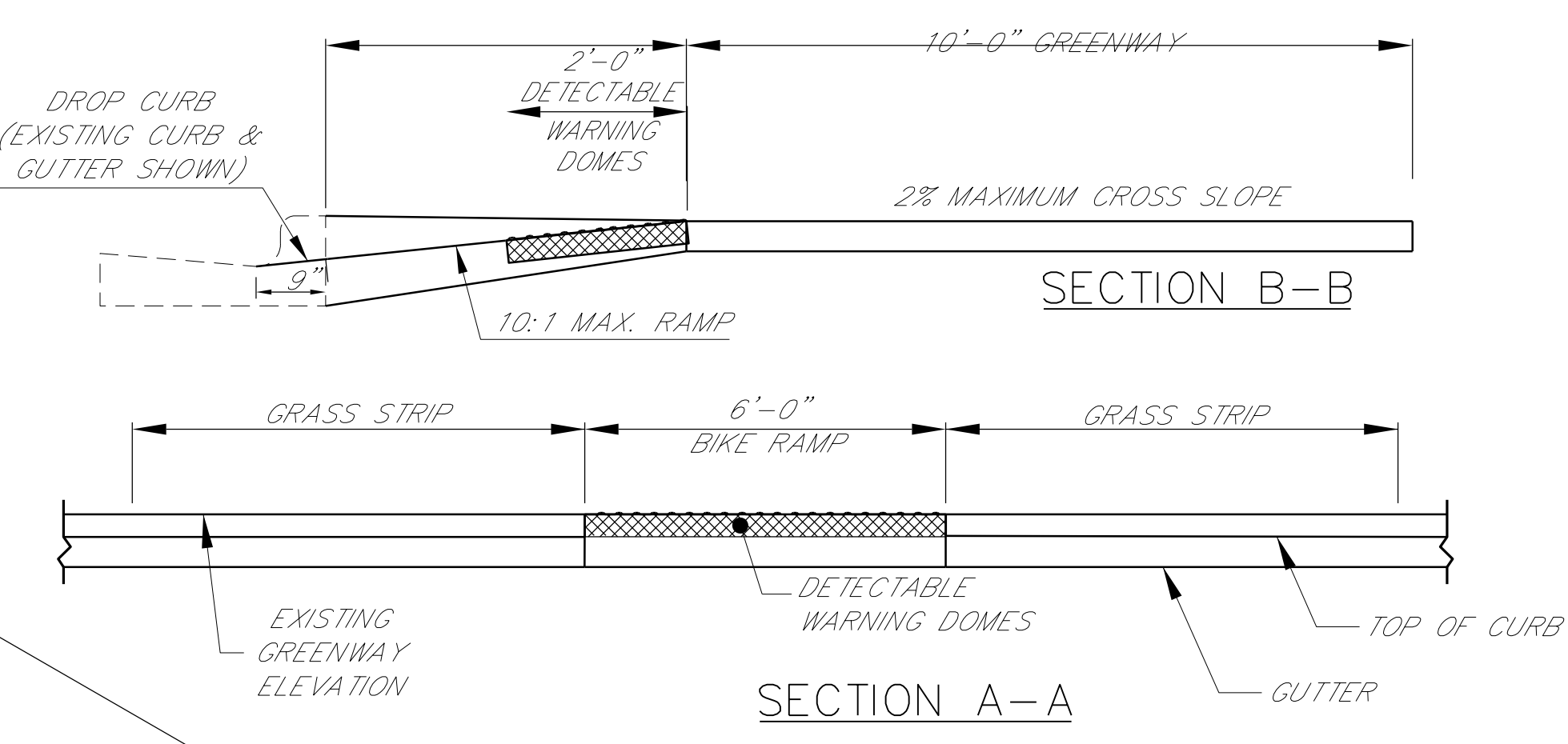
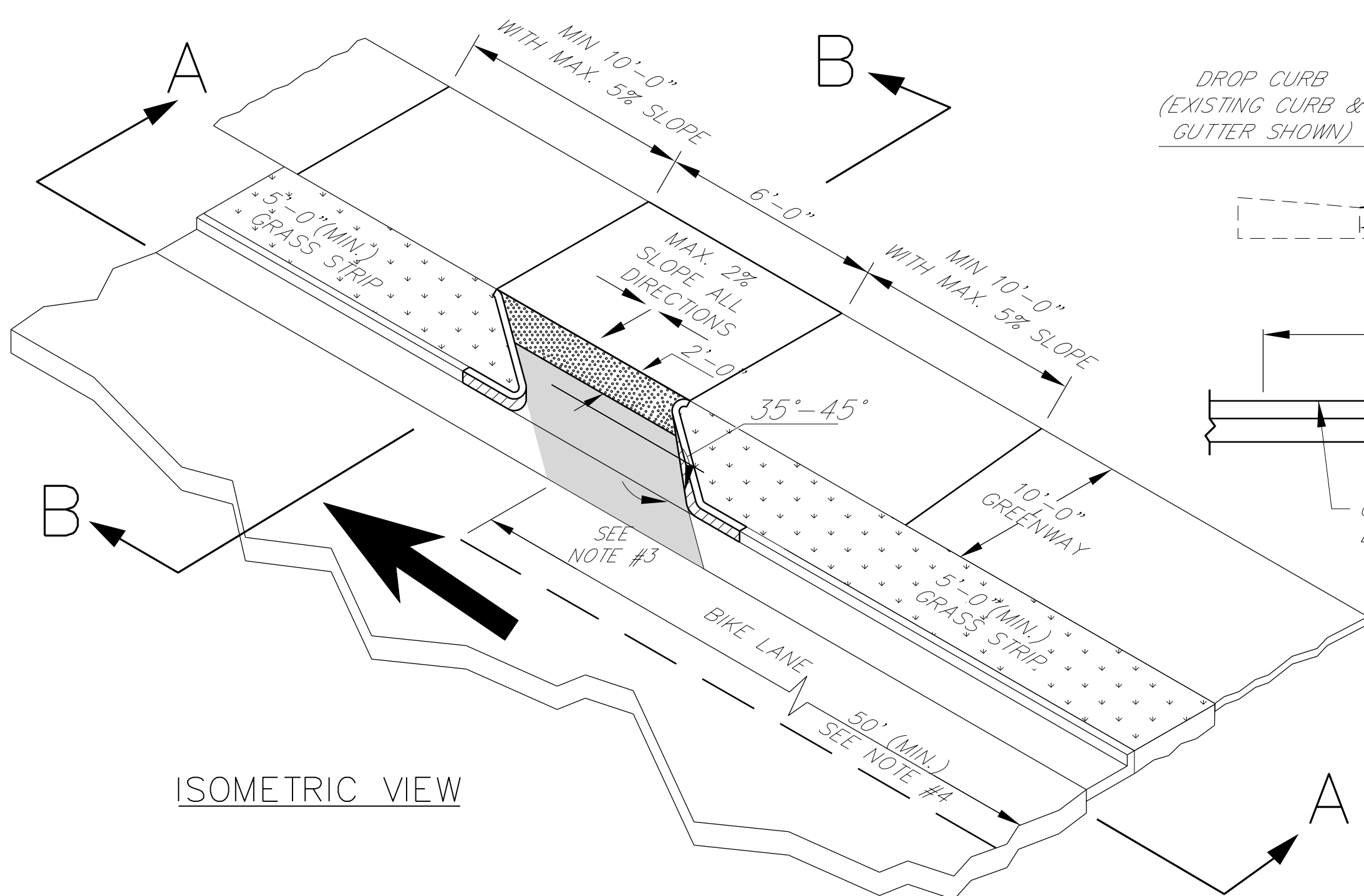
GRADING BREAKLINES - - - - -



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6/2/2022

PROJECT REFERENCE NO. U-6241	SHEET NO. 2B-6
ROADWAY DESIGN ENGINEER	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



- NOTES :
1. DETECTABLE WARNING DOMES WILL COVER 2 FEET OF LENGTH AND FULL WIDTH OF THE TOP OF RAMP AS SHOWN ON THE DETAILS.
 2. DETECTABLE WARNING DOMES WILL CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.
 3. SHADED AREA BETWEEN EDGE OF TRAVEL LANE AND RAISED DOME STRIP TO BE PAINTED GREEN IN ACCORDANCE WITH MUTCD COLOR STANDARDS.
 4. DASH BIKE LANE STRIPE FOR MINIMUM 50' (MAX. 200') PRECEDING BIKE RAMP.
 5. CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT.
 6. LOCATE BIKE RAMPS AS SHOWN IN PLANS.
 7. ALLOWABLE CROSS SLOPE ON GREENWAY AND BIKE RAMP WILL BE 2% MAXIMUM.

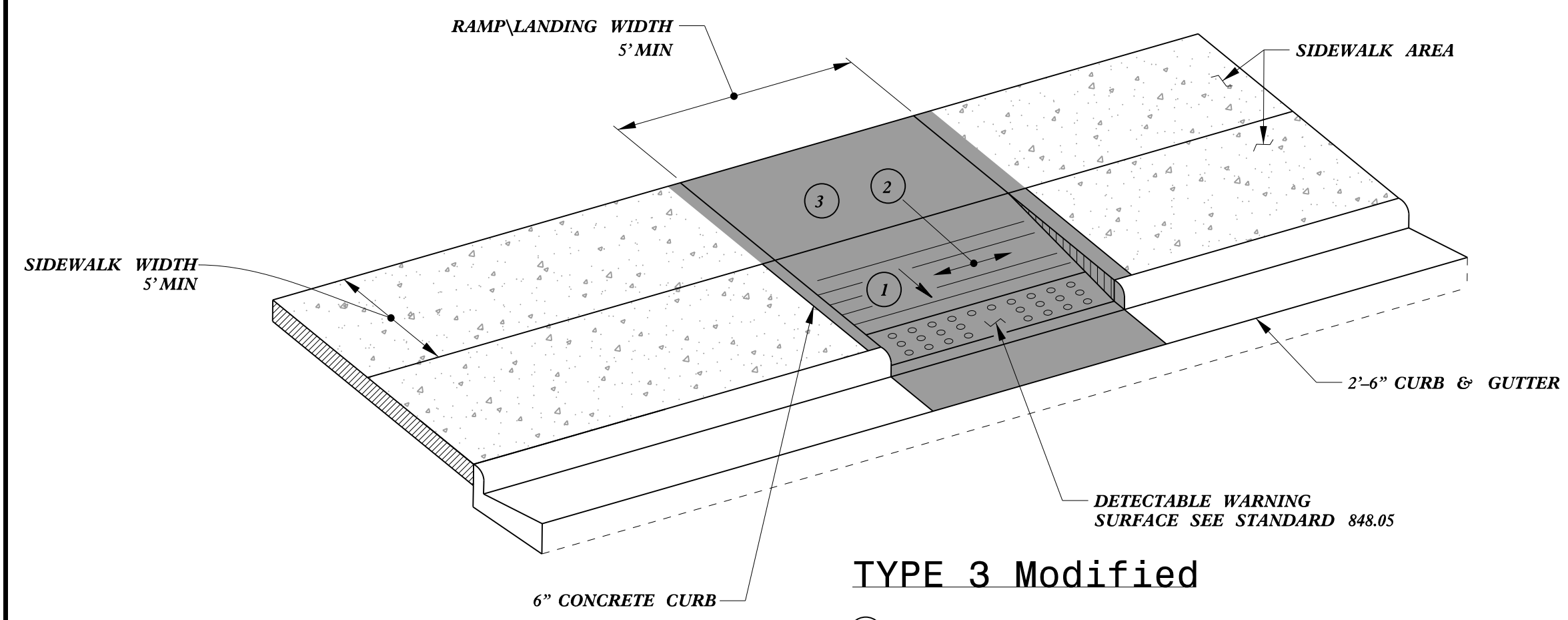
STANDARD BICYCLE ACCESS RAMP

2/7/2022
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REVISIONS

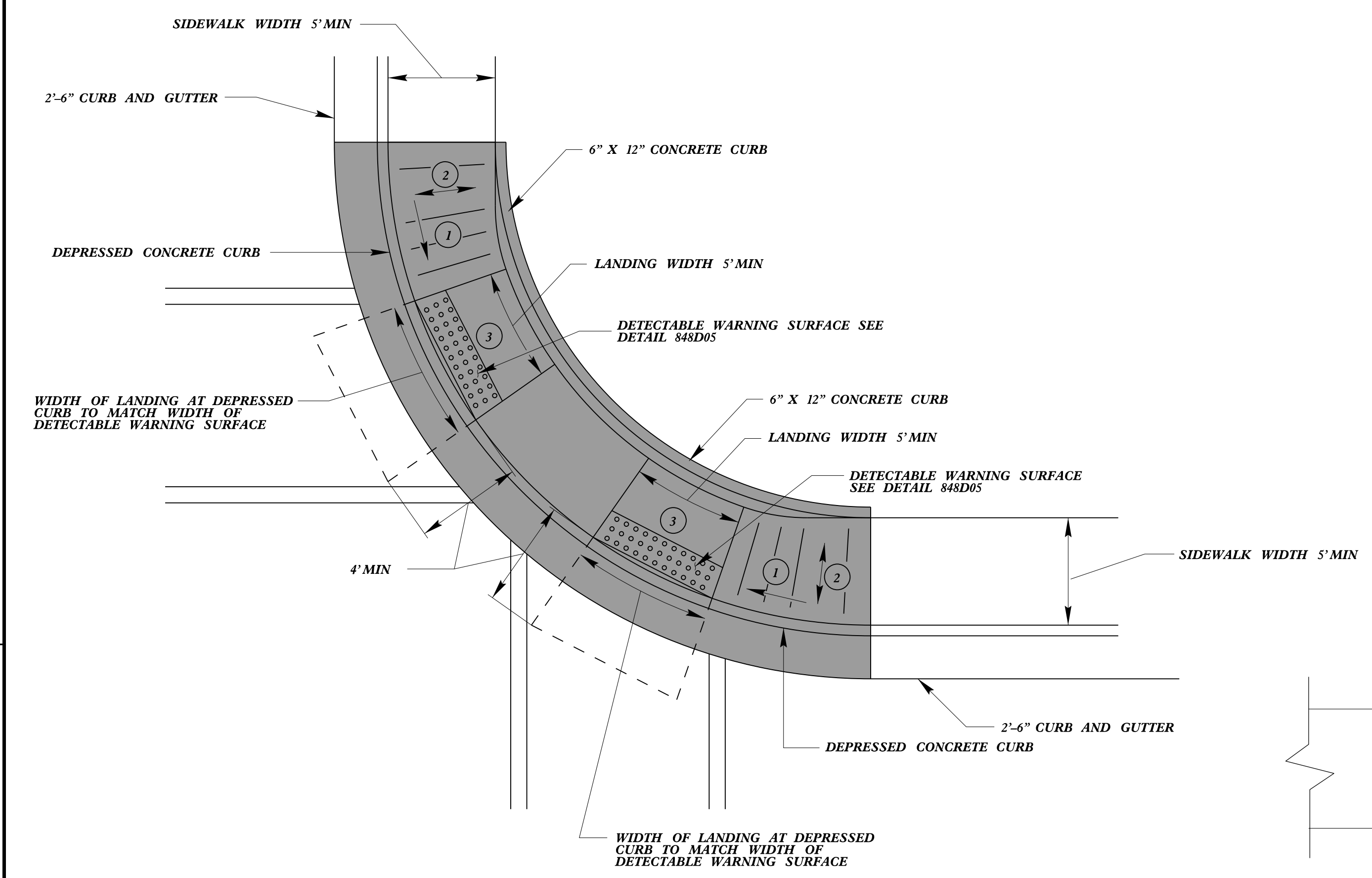
<p>Stantec Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>2B-7</i>
	RW SHEET NO.	
<p>ROADWAY DESIGN ENGINEER</p> <p>2/10/2022</p>	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



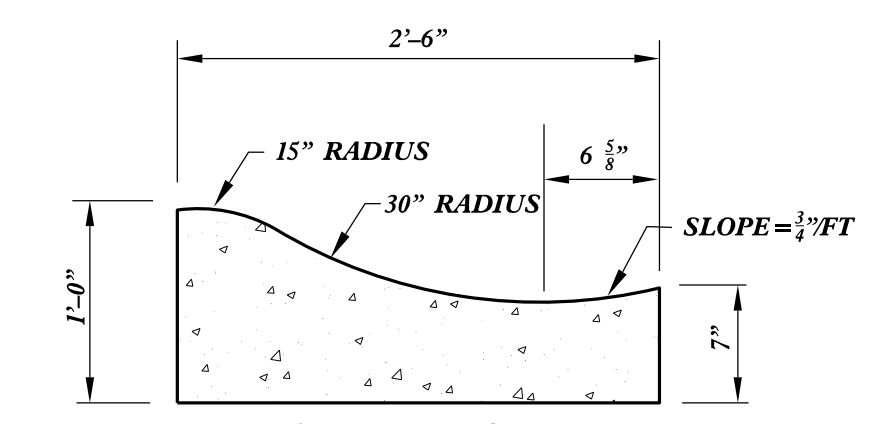
TYPE 3 Modified

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMP 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 2 Modified



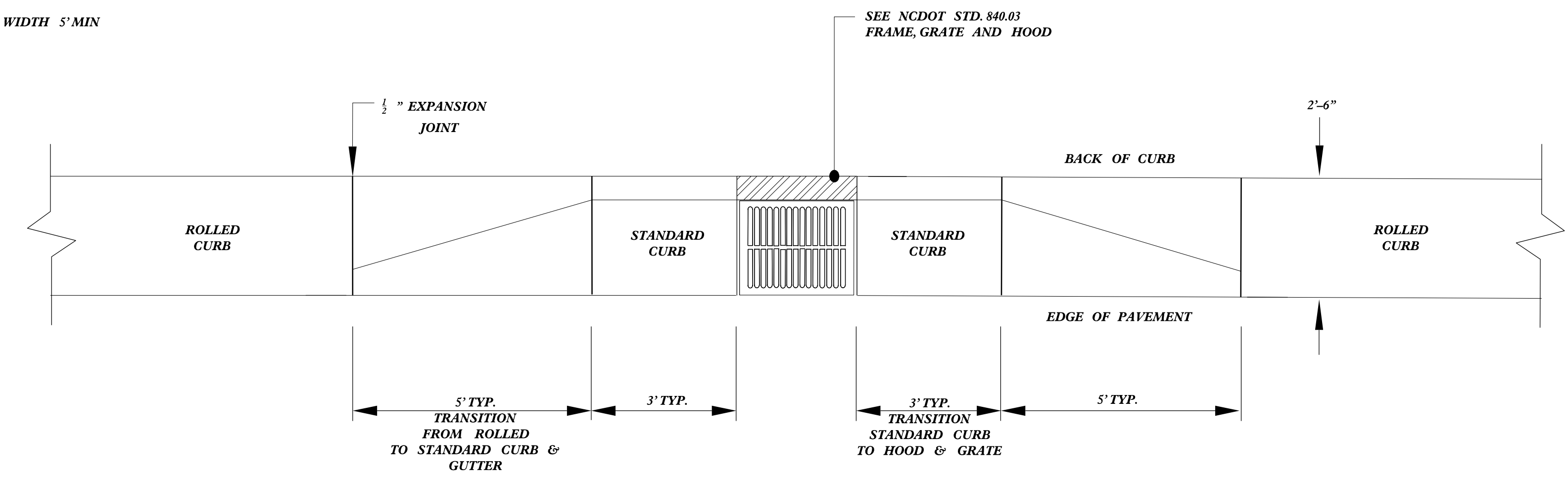
- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMP REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



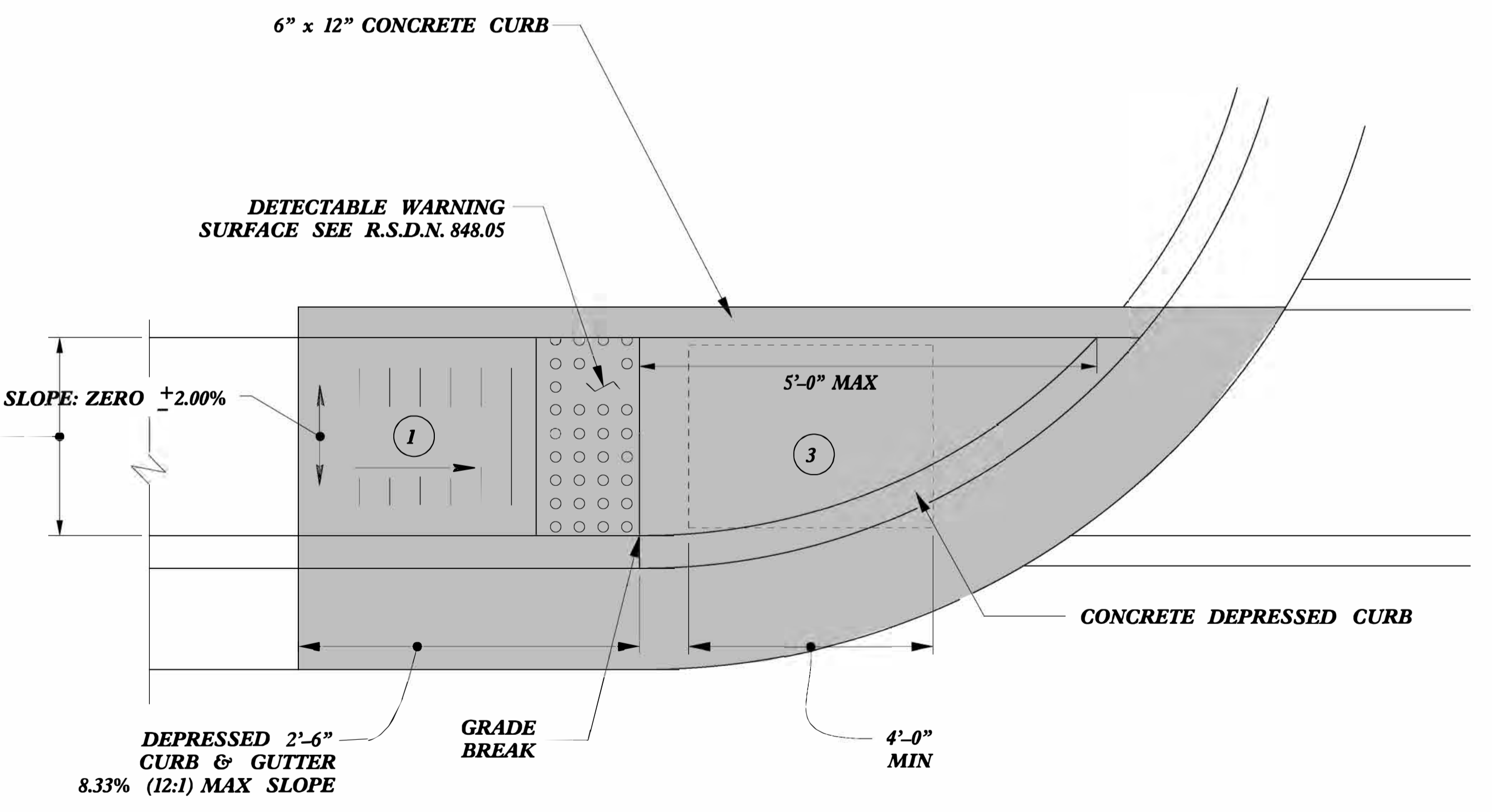
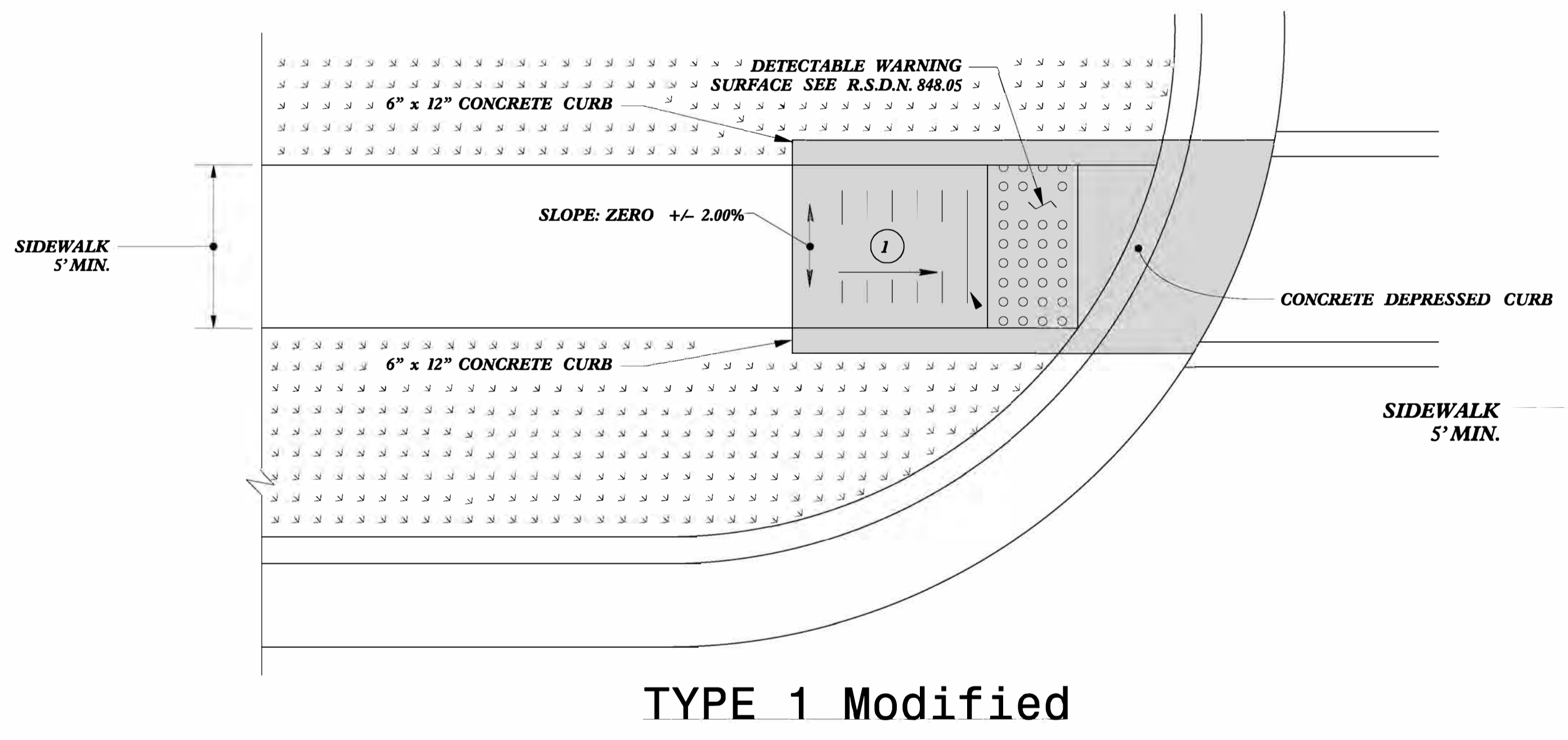
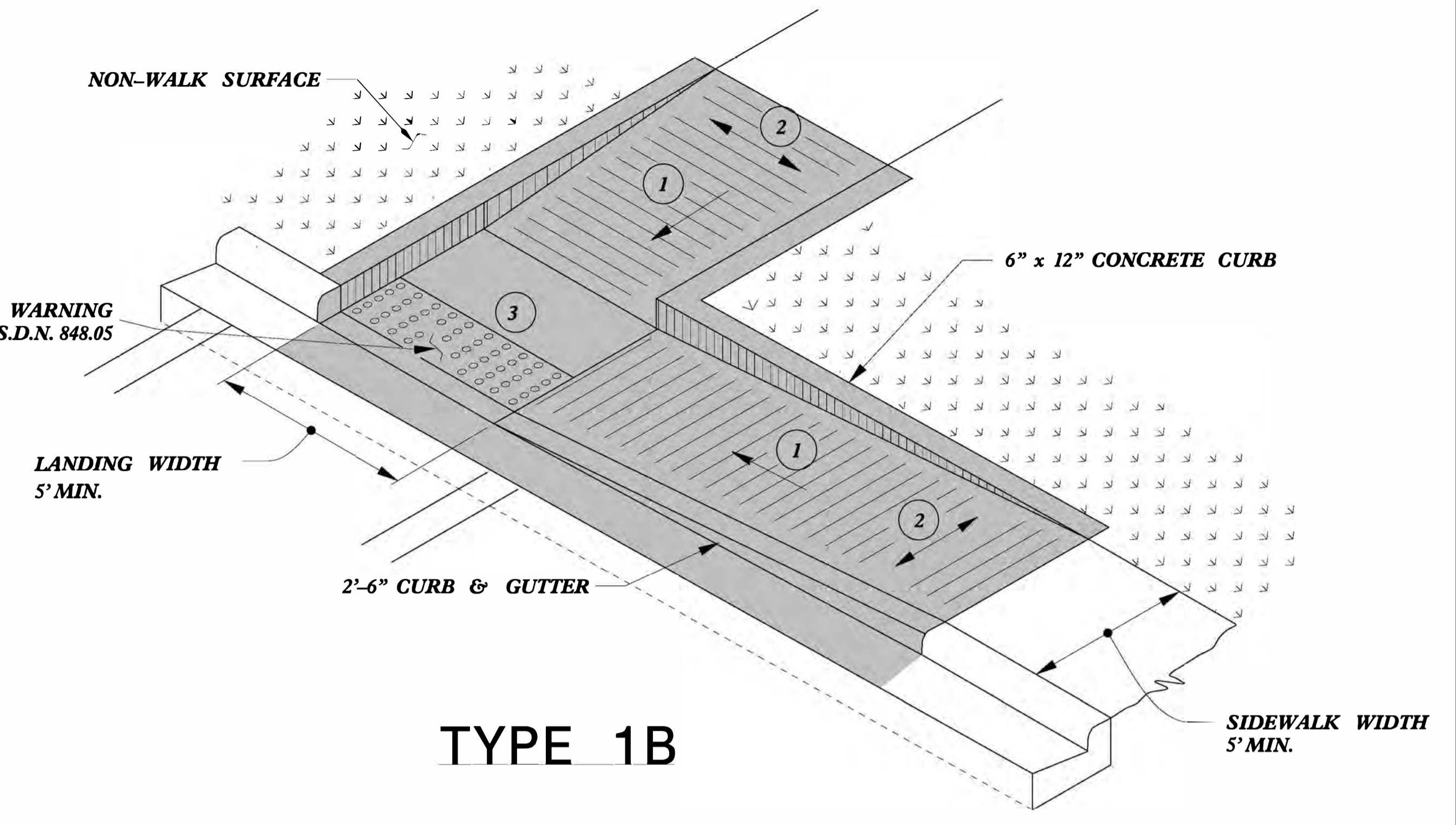
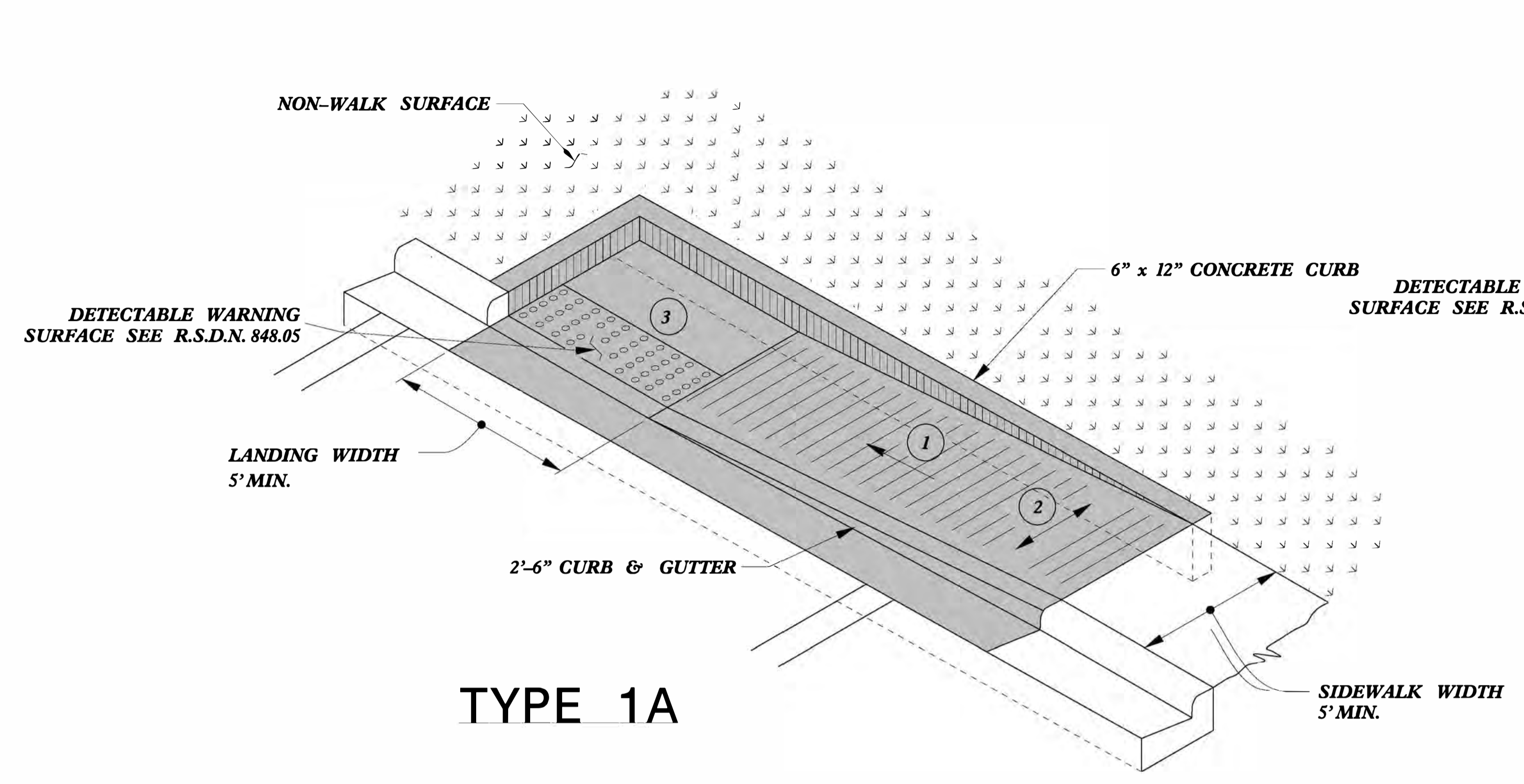
ROLLED CURB SIDE VIEW

- NOTES:
- 1. CONCRETE SHALL BE 3,000 P.S.I.
 - 2. CONTRACTION JOINTS SHALL BE SPACED AT 10 FOOT INTERVALS. (A 15 FOOT SPACING WILL BE ALLOWED WHEN A MACHINE IS USED).
 - 3. FINISH ALL CONCRETE WITH CURING COMPOUND.
 - 4. REFER TO NCDOT DET. 846.01 FOR CURB & GUTTER SUPERELEVATION RATES.

CONCRETE CURB AND GUTTER TRANSITION (ROLLED CURB TO STANDARD CURB)



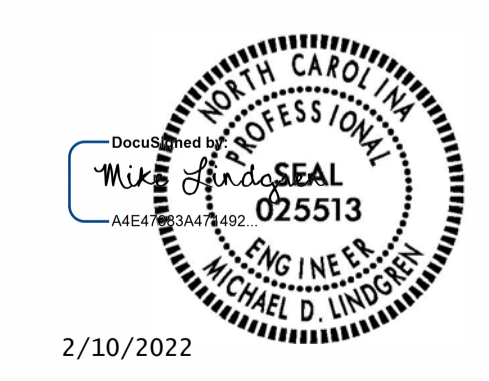
2/7/2022
U:\Roadway\Proj\U-6241\Roadway.dtl_2B-7.dgn



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

PAY LIMITS FOR 1 CURB RAMP

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



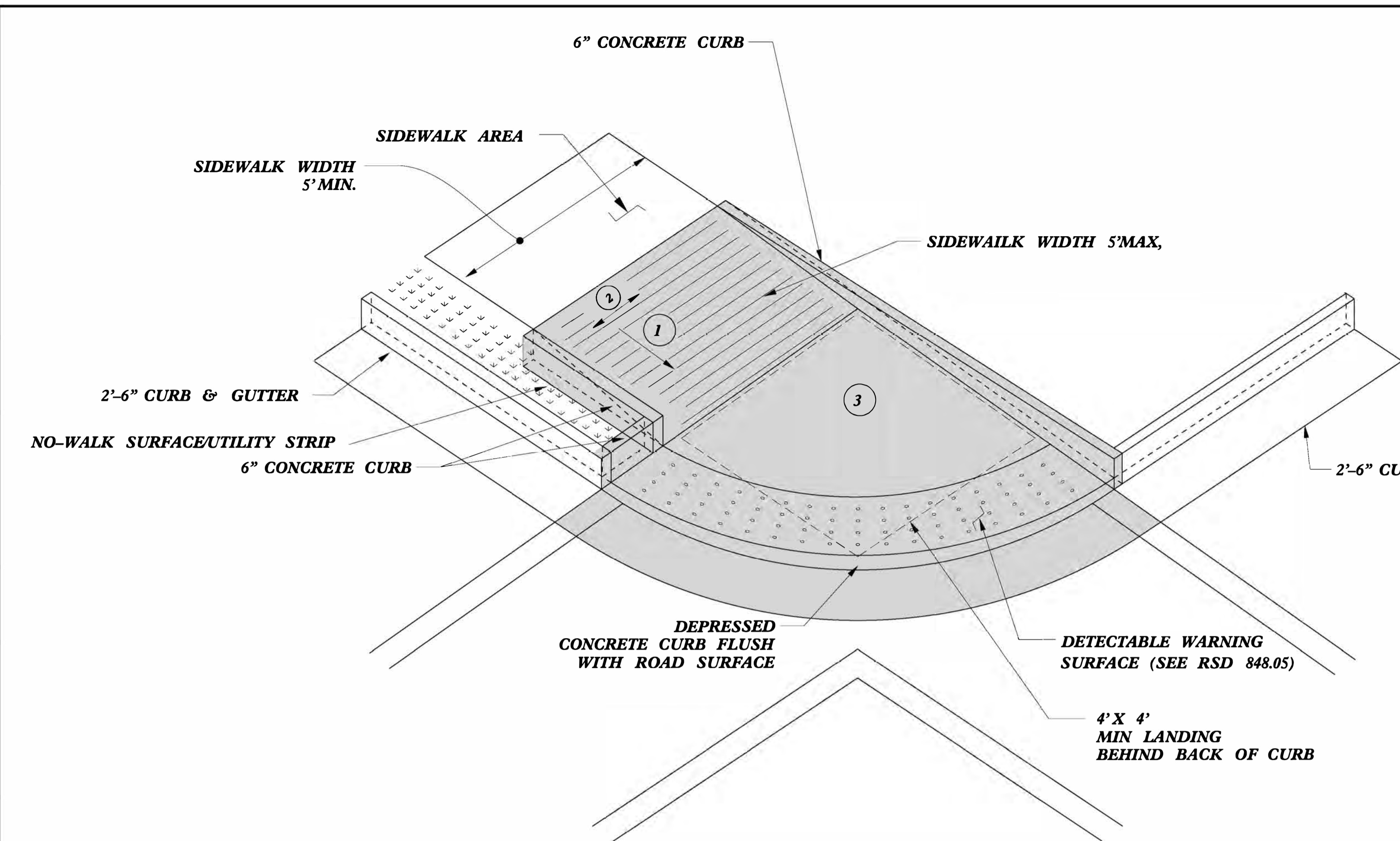
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

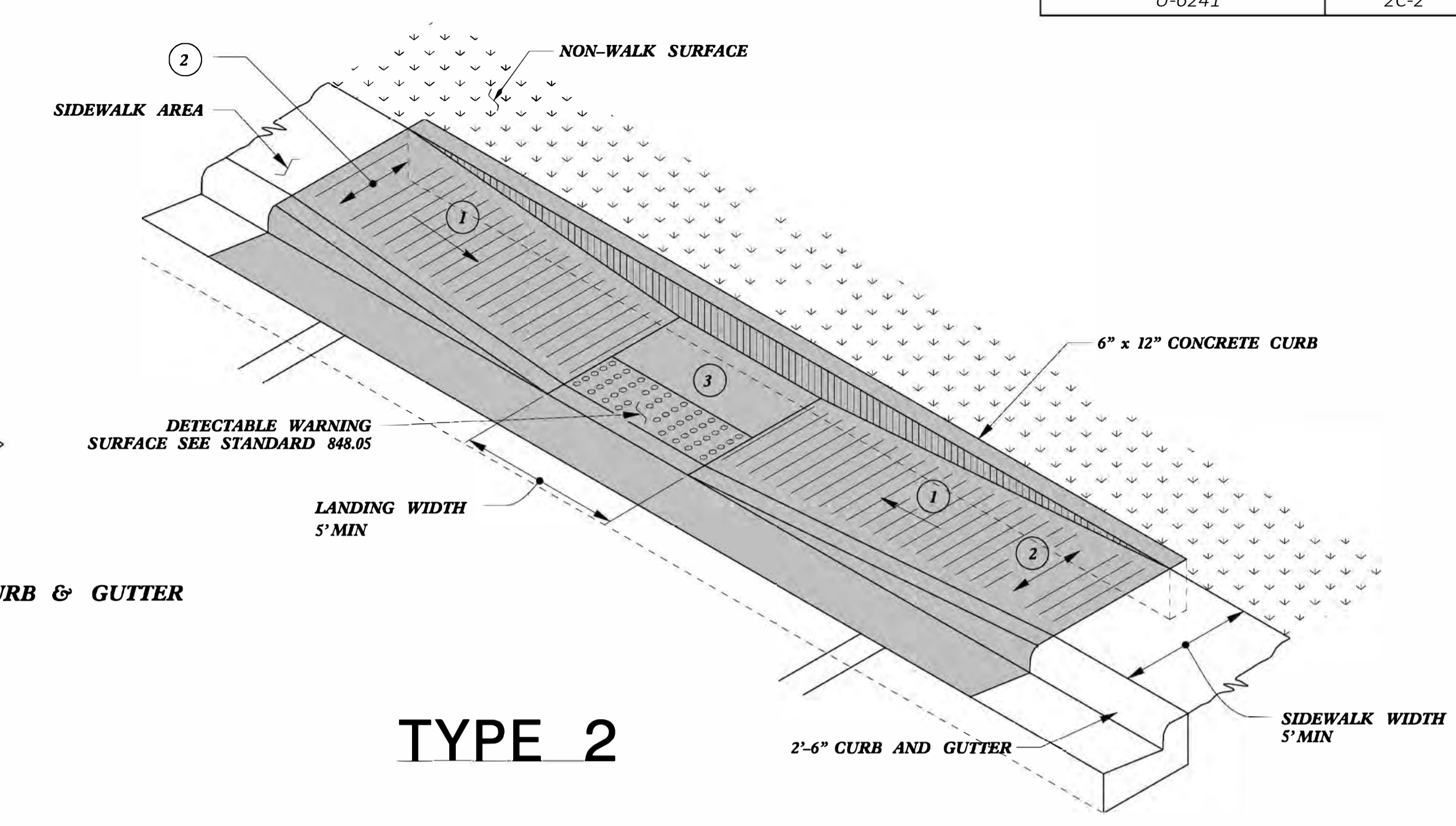
CURB RAMPS
Directional Ramps

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

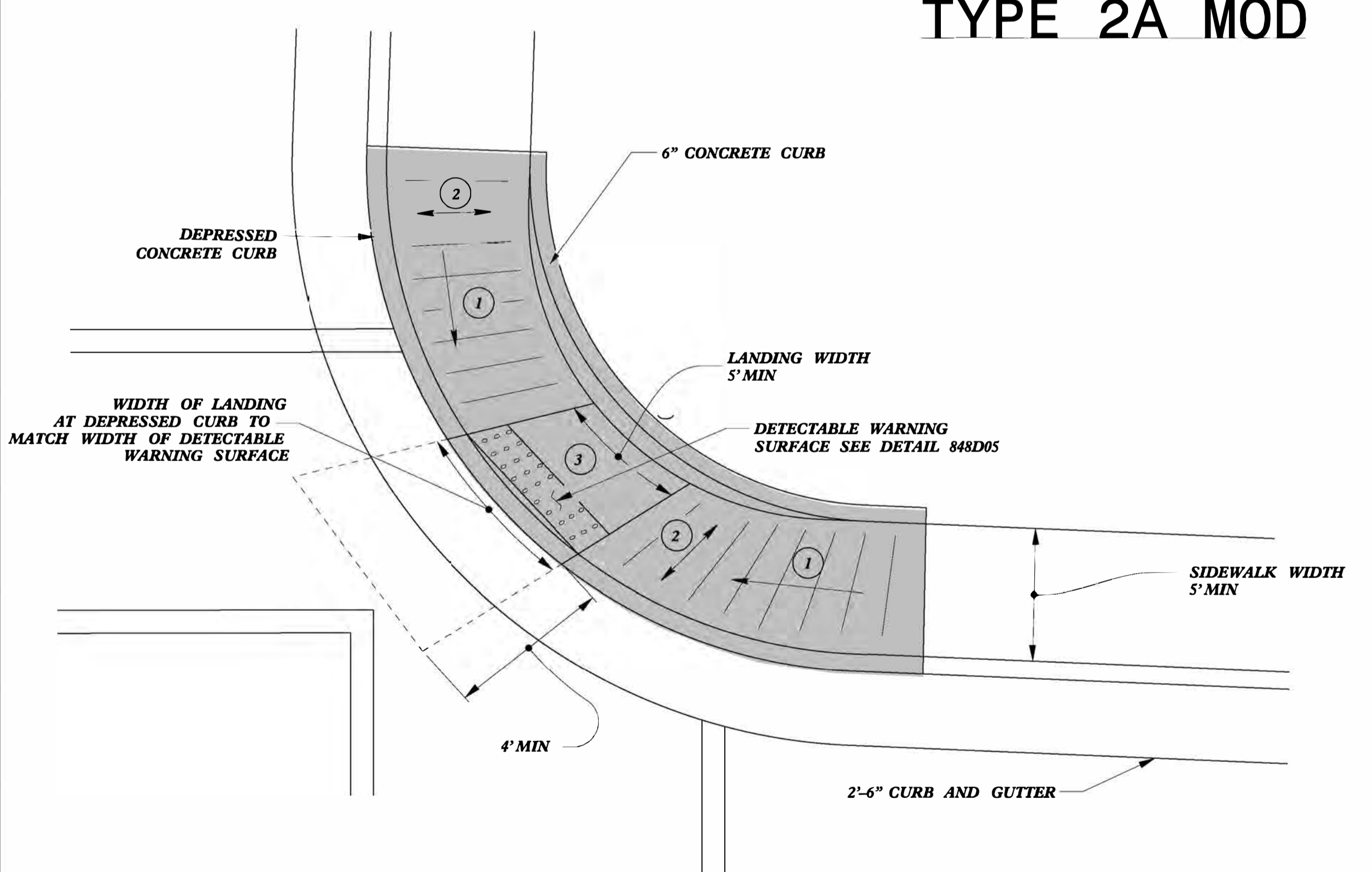
5/14/99



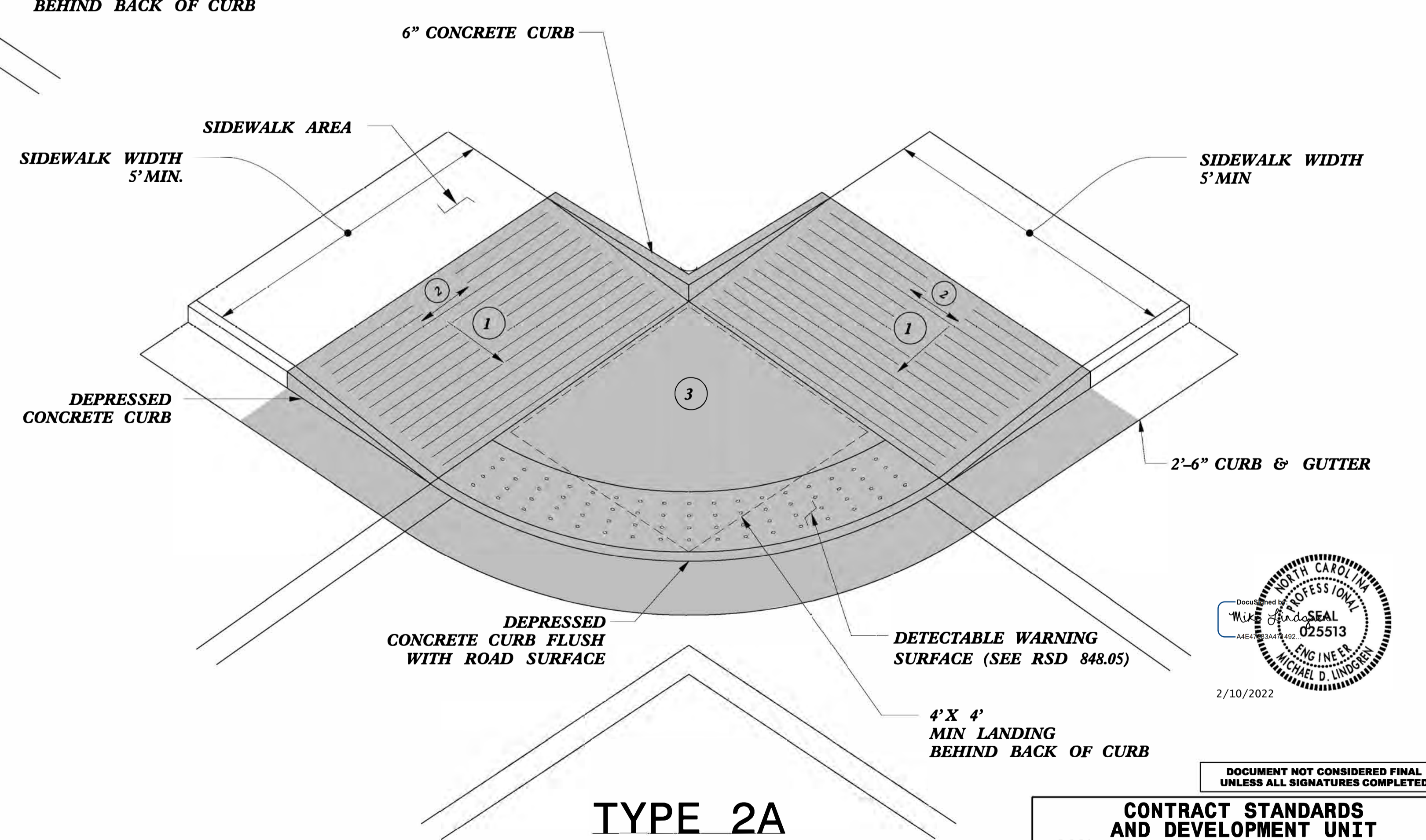
TYPE 2A MOD



TYPE 2



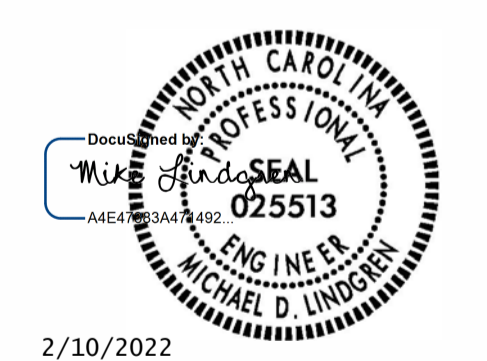
TYPE 2B



TYPE 2A

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

PAY LIMITS FOR 1 CURB RAMP



2/10/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

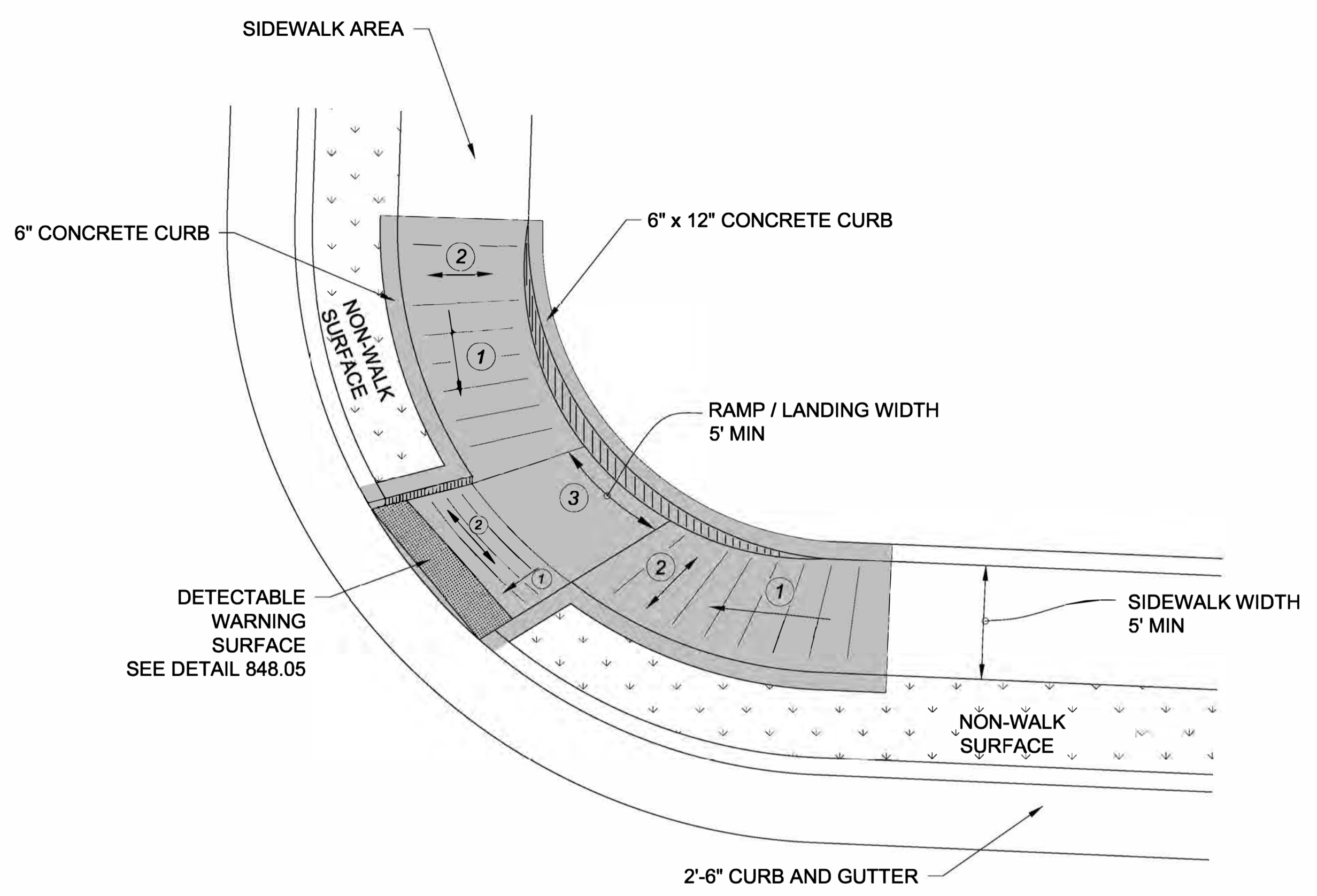
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

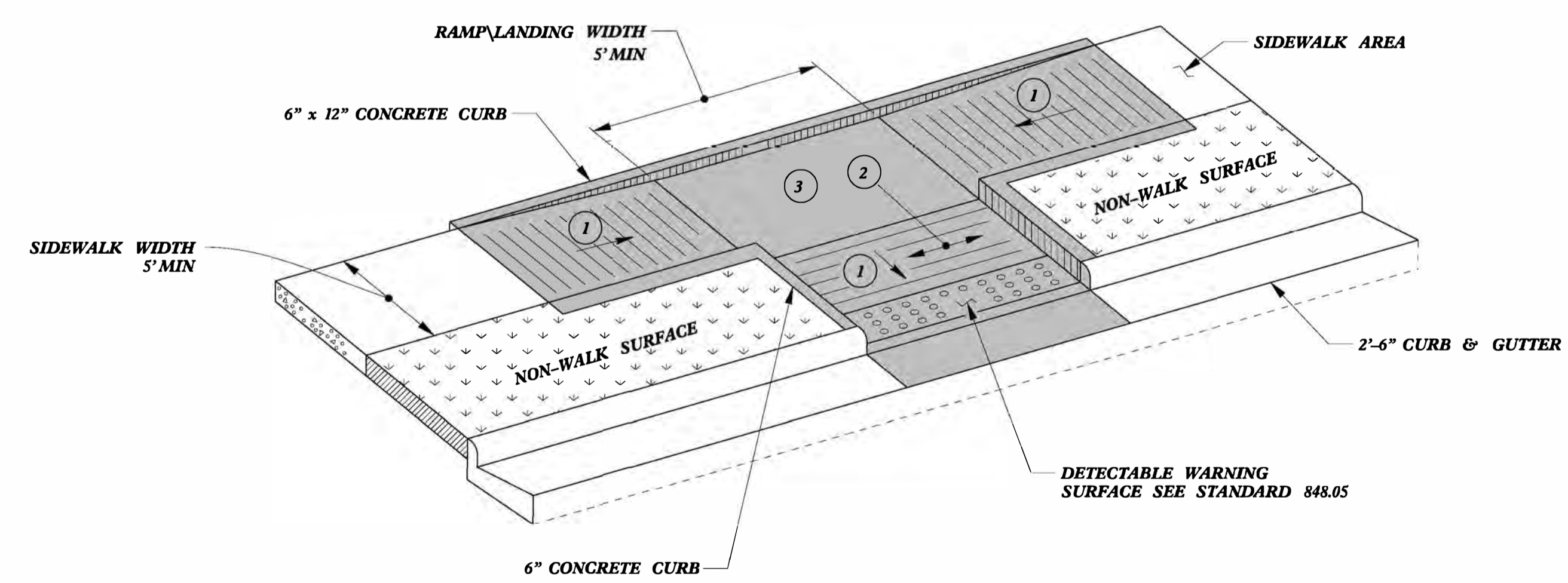
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC. stds/2012CurbRamp/CurbRampDetails.dgn

5/14/99

PAY LIMITS FOR 1 CURB RAMP

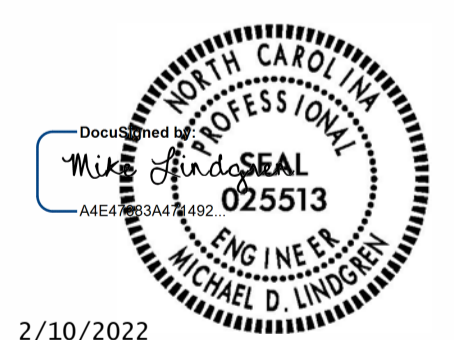


TYPE 3 MODIFIED INSTALLATION IN A RADIUS



TYPE 3

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



2/10/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

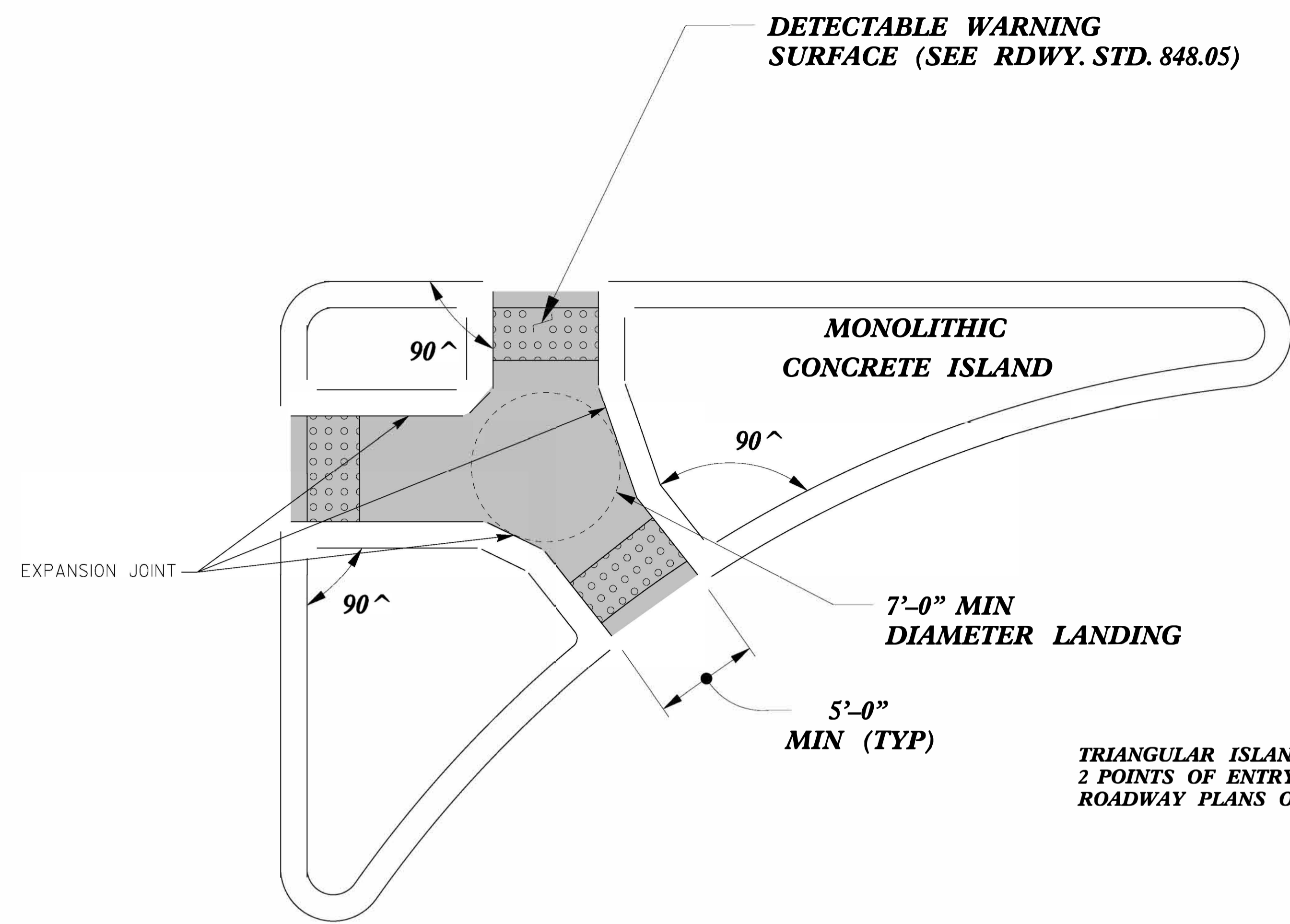
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

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

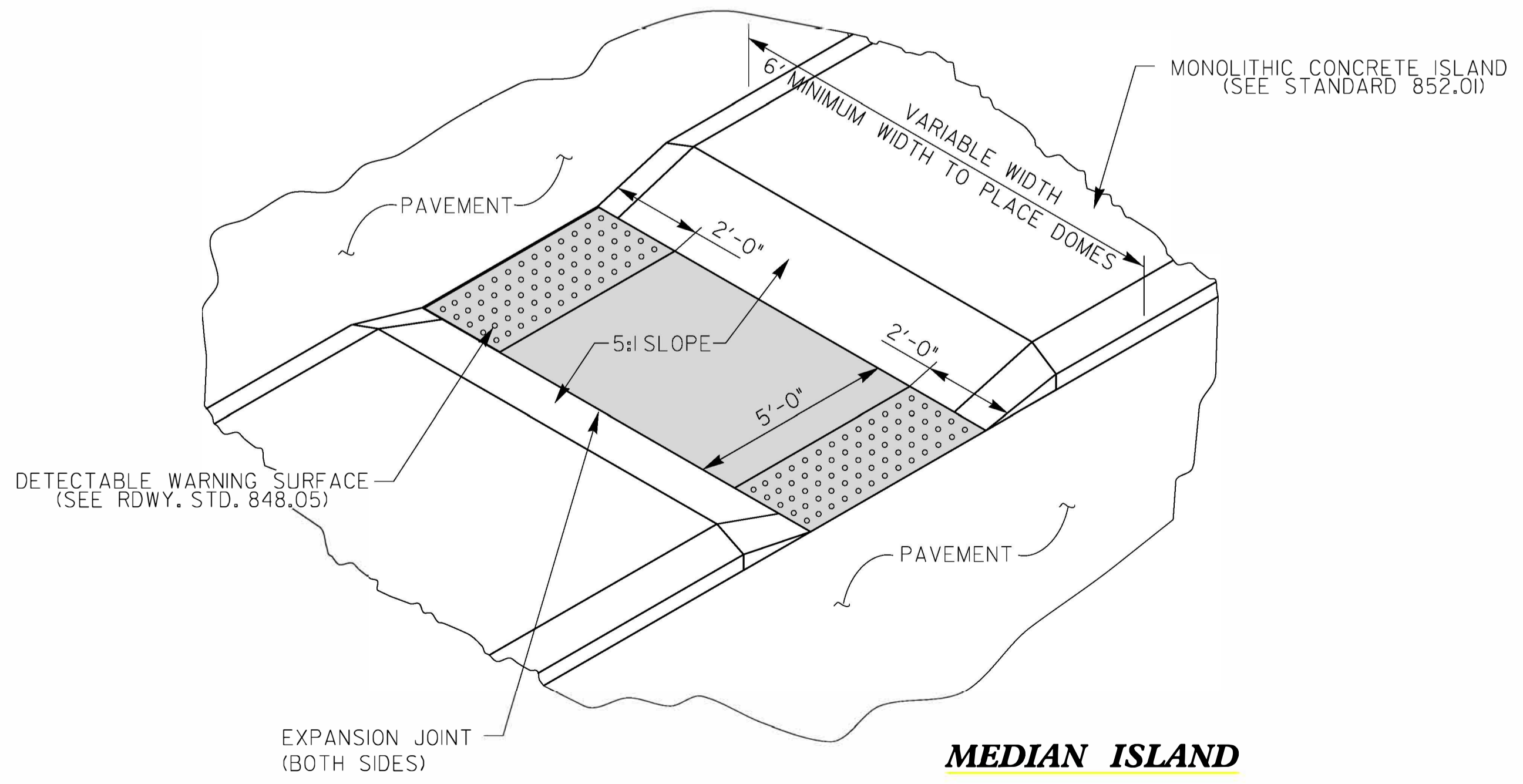
5/14/99

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

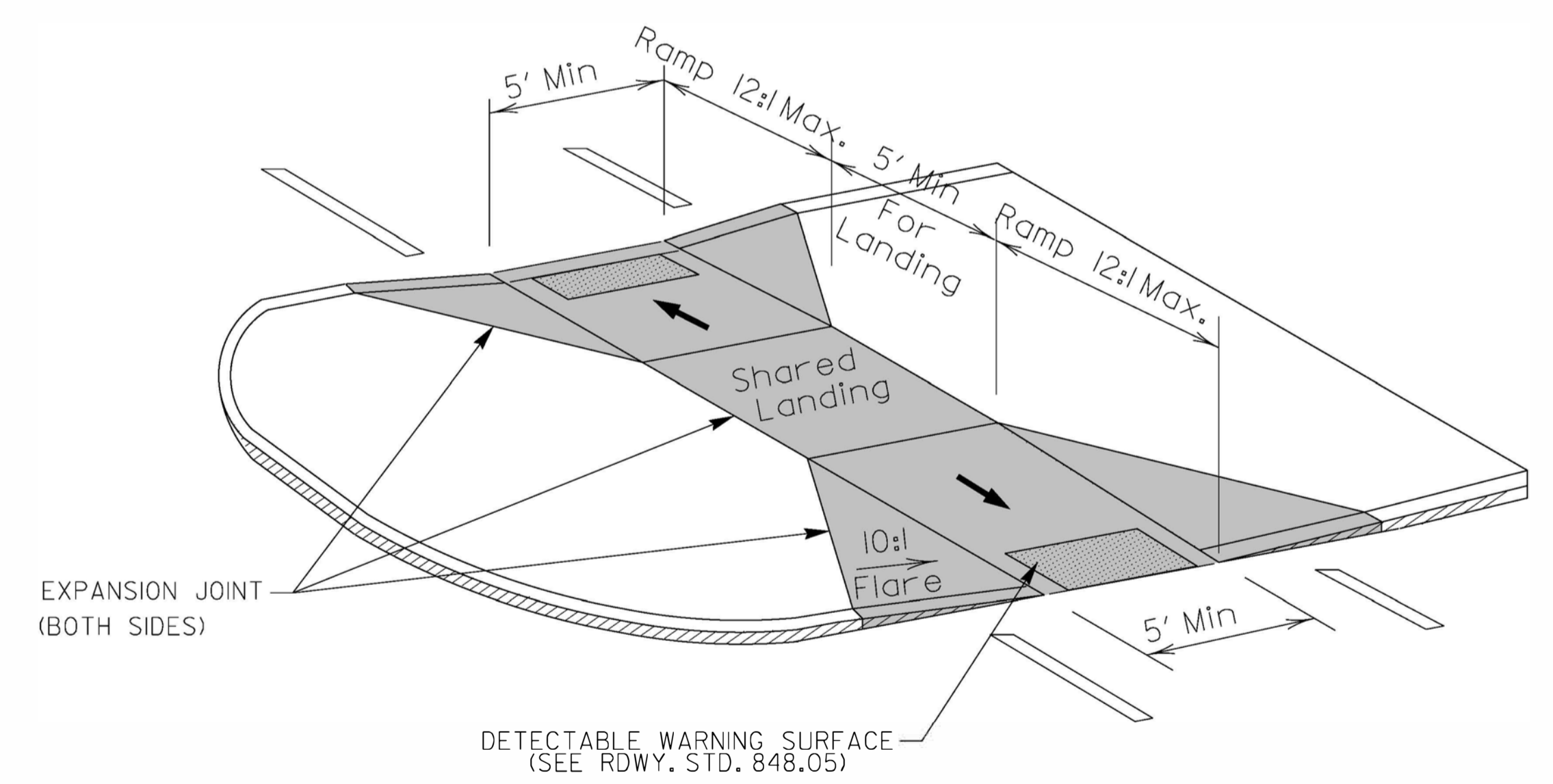


**TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY
2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE
ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.**

**TRIANGULAR ISLAND
WITH CUT THROUGH
TYPE 6**



**MEDIAN ISLAND
WITH CUT THROUGH
TYPE 7**



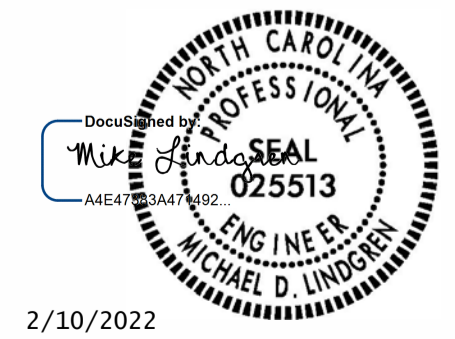
**MEDIAN ISLAND
CURB RAMPS
TYPE 8**

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

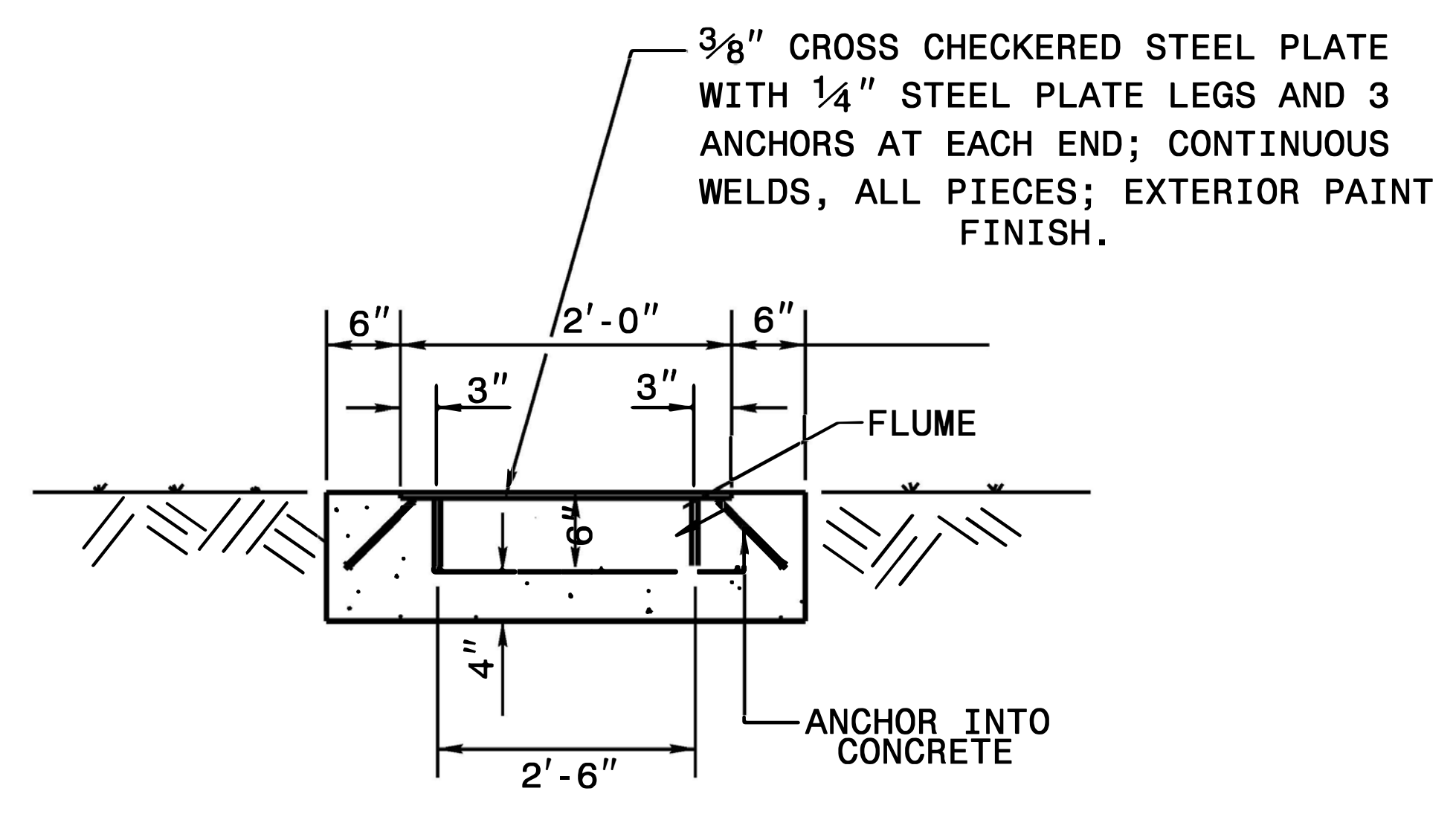
CURB RAMPS
Median or Turn Lane Islands

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

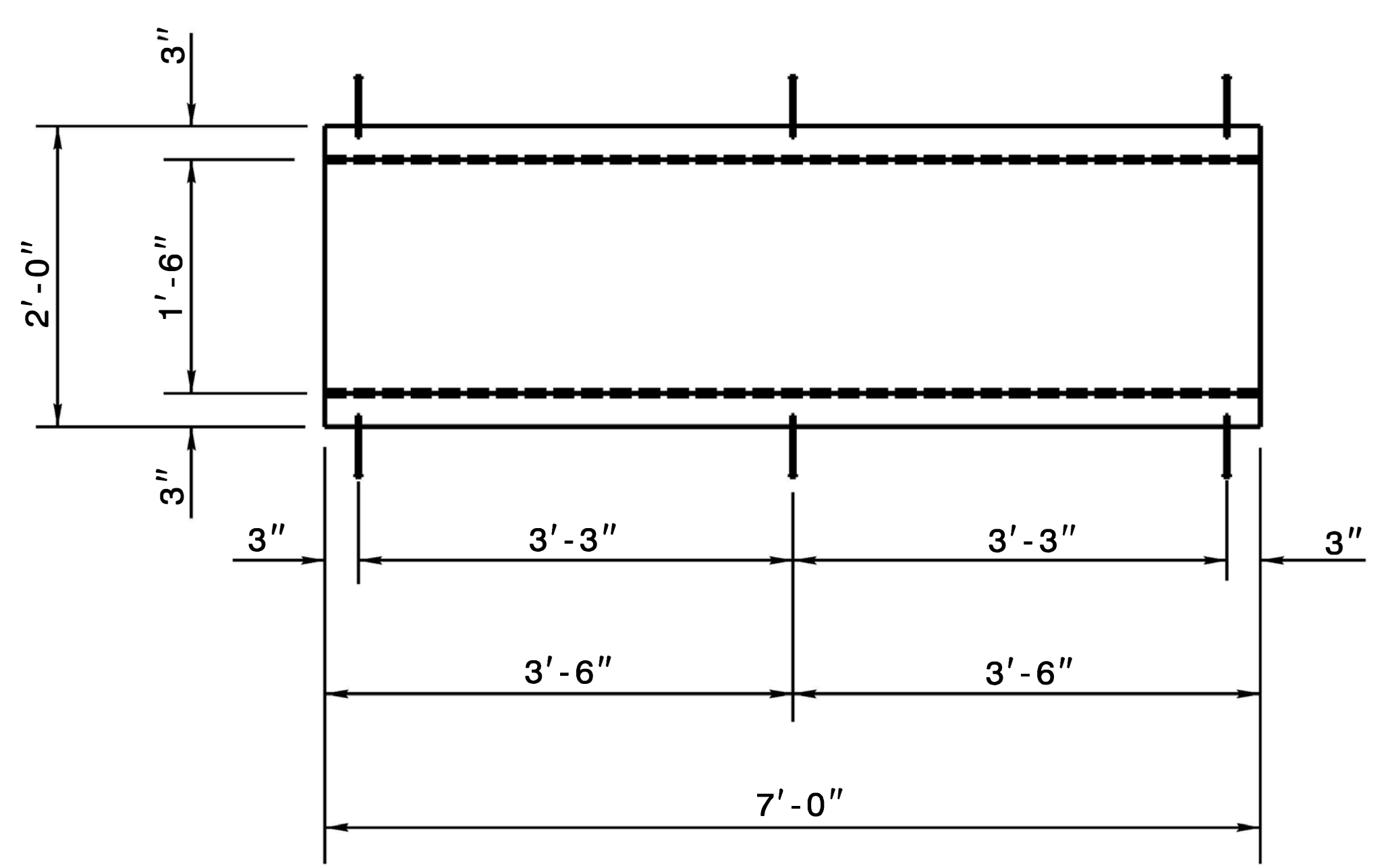


2/10/2022

5/14/99



FLUME SECTION VIEW



STEEL FLUME PLATE

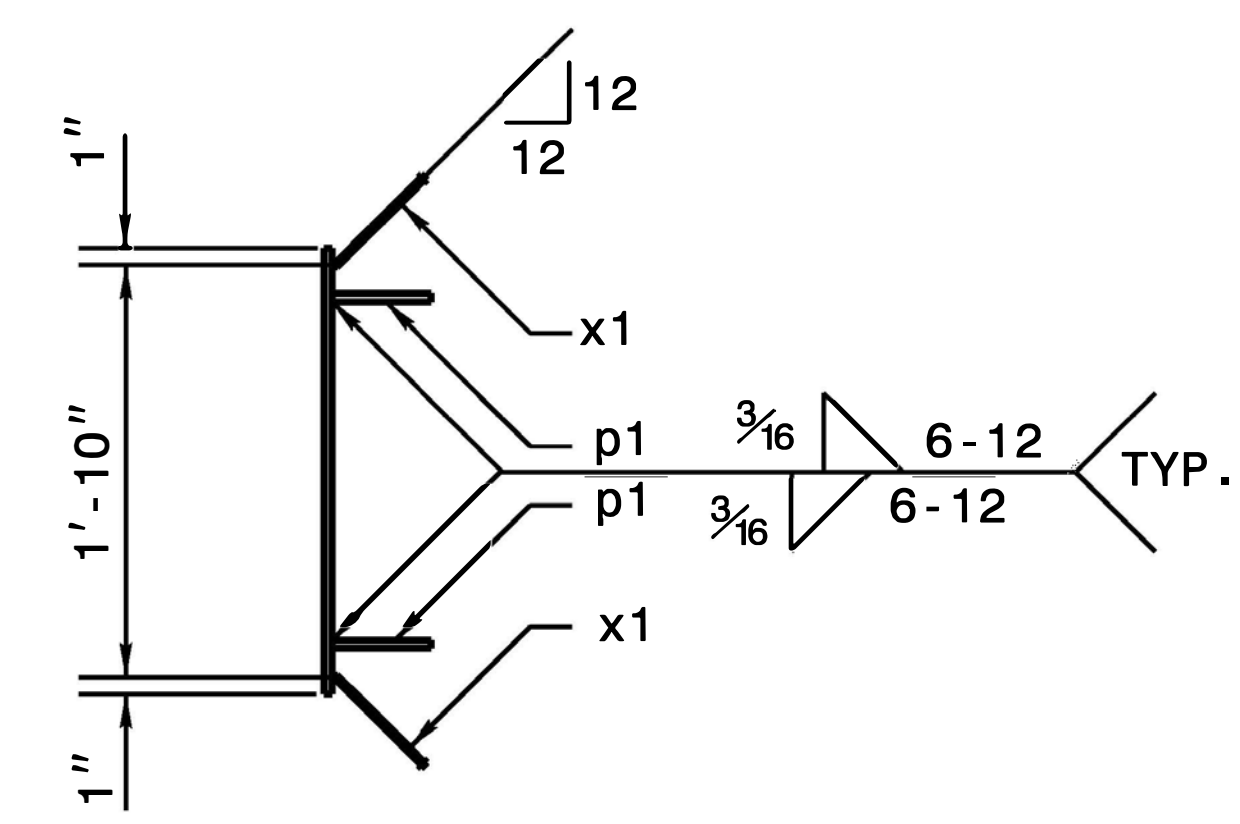
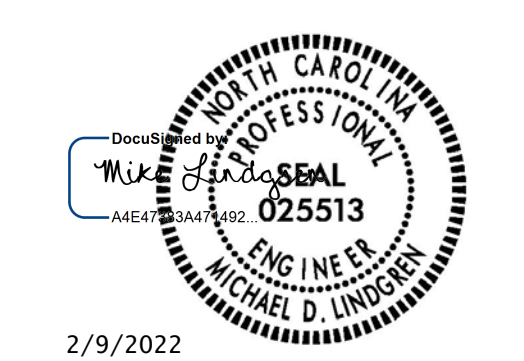


PLATE SECTION VIEW



2/9/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6900 FAX 919-250-4119

STEEL FLUME PLATE DETAIL

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: k Kempf DATE: 02/02/18
CHECKED BY: _____ DATE: _____
FILE SPEC: detail/nbritt/english/hydro/steel flume plate.dwg

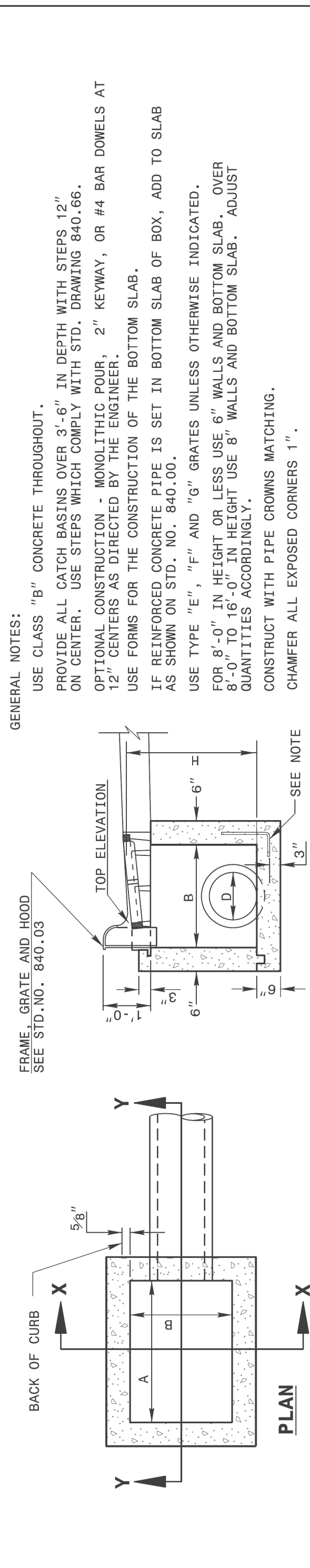
MARK	QTY	DESCRIPTION	LENGTH	GRADE	ROUTING CODE
1P1	1	CP $\frac{3}{8}$ x 24	7'-0"	A786	F
p1	2	PL $\frac{1}{4}$ x 6	7'-0"	A36	
x1	6	$\frac{1}{2}$ WS	0'-6 $\frac{1}{8}$ "	A108	

\$\$\$SYTIME\$\$\$
 \$\$\$CUCLERMVA\$\$\$
 \$\$\$\$\$\$

REVISIONS

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

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



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

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

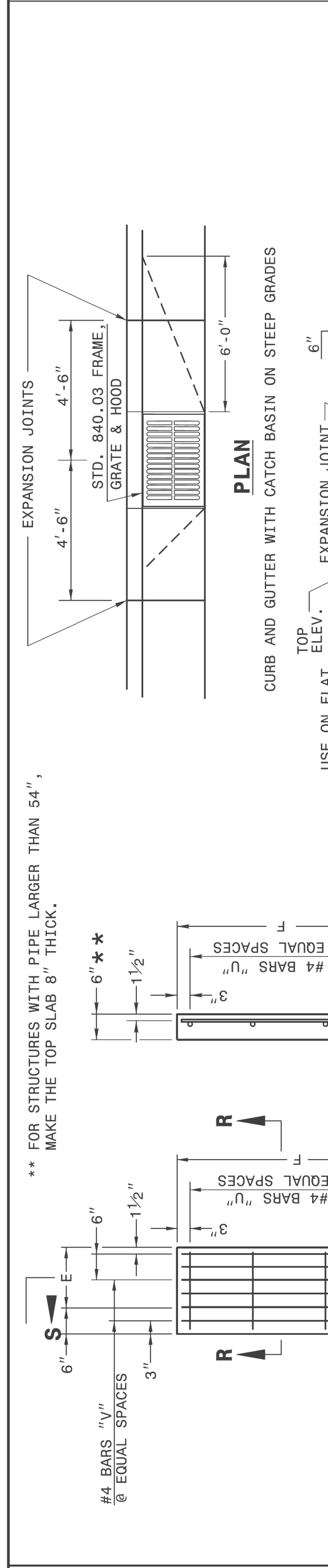
SHEET 1 OF 2
840D02

SHEET 1 OF 2
840D02



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

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

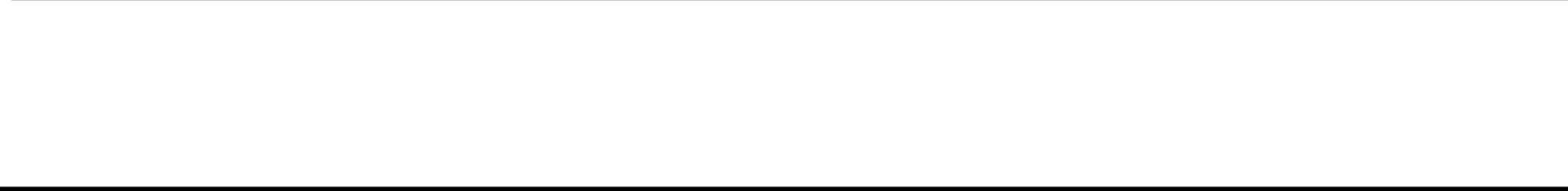


ENGLISH DETAIL DRAWING FOR
**MINIMUM DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

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

SHEET 2 OF 2
840D02

SHEET 2 OF 2
840D02



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

PIPE D	DIMENSIONS OF BOX AND PIPE			COVER DIMENSION			BARS-U NO.	BARS-V NO.	BARS-W NO.	TOTAL LBS.	CU. YDS. CONC. IN BOX		DEDUCTIONS ONE PIPE R.C.		
	SPAN	WIDTH	MIN. HEIGHT	E	F	TOP SLAB MINIMUM HEIGHT, H					BOTTOM SLAB MINIMUM HEIGHT, H	C.M.		R.C.	
12"	3'-0"	2'-2"	2'-0"	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026	
15"	3'-0"	2'-2"	2'-3"	--	--	--	--	--	--	--	0.235	0.829	0.023	0.036	
18"	3'-0"	2'-2"	2'-6"	--	--	--	--	--	--	--	0.235	0.887	0.033	0.049	
24"	3'-0"	2'-2"	3'-1"	--	--	--	--	--	--	--	0.235	1.001	0.059	0.085	
30"	3'-0"	2'-2"	3'-4"	1'-2"	4'-4"	4'-1"	2	4'-1"	3	4'-1"	39	0.123	0.347	0.092	0.127
36"	3'-0"	2'-2"	3'-10"	1'-8"	4'-10"	4'-7"	4	4'-7"	3	4'-7"	43	0.161	0.432	0.132	0.178
42"	3'-0"	2'-2"	4'-5"	2'-2"	5'-5"	5'-2"	5	5'-2"	3	5'-2"	47	0.200	0.543	0.179	0.243
48"	3'-0"	2'-2"	5'-0"	2'-10"	6'-0"	5'-9"	4	5'-9"	3	5'-9"	51	0.235	0.667	0.205	0.285
54"	3'-0"	2'-2"	5'-7"	3'-5"	6'-7"	6'-4"	5	6'-4"	3	6'-4"	56	0.289	0.802	0.287	0.401
60"	3'-0"	2'-2"	6'-3"	4'-1"	7'-3"	6'-4"	6	7'-0"	3	7'-0"	61	0.340	0.973	0.363	0.546
66"	3'-0"	2'-2"	6'-11"	4'-9"	7'-11"	7'-8"	7	7'-8"	3	7'-8"	66	0.391	1.160	0.440	0.655
72"	3'-0"	2'-2"	7'-6"	5'-3"	8'-6"	8'-3"	8	8'-3"	3	8'-3"	72	0.442	1.340	0.552	0.774
78"	3'-0"	2'-2"	8'-1"	6'-0"	9'-1"	8'-2"	8	8'-2"	3	8'-2"	78	0.493	1.530	0.615	0.893
84"	3'-0"	2'-2"	8'-9"	6'-7"	9'-9"	8'-6"	8	8'-6"	3	9'-6"	84	0.544	1.760	0.662	0.913

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 Std.840.01 DATE: _____
 MODIFIED BY: E.E. WARD DATE: 3-1-02
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: s:details/stand/840d01.dgn

PROJECT REFERENCE NO. U-6241 SHEET NO. 2C-6
 RW SHEET NO. _____
 ROADWAY DESIGN ENGINEER

 2/9/2022
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

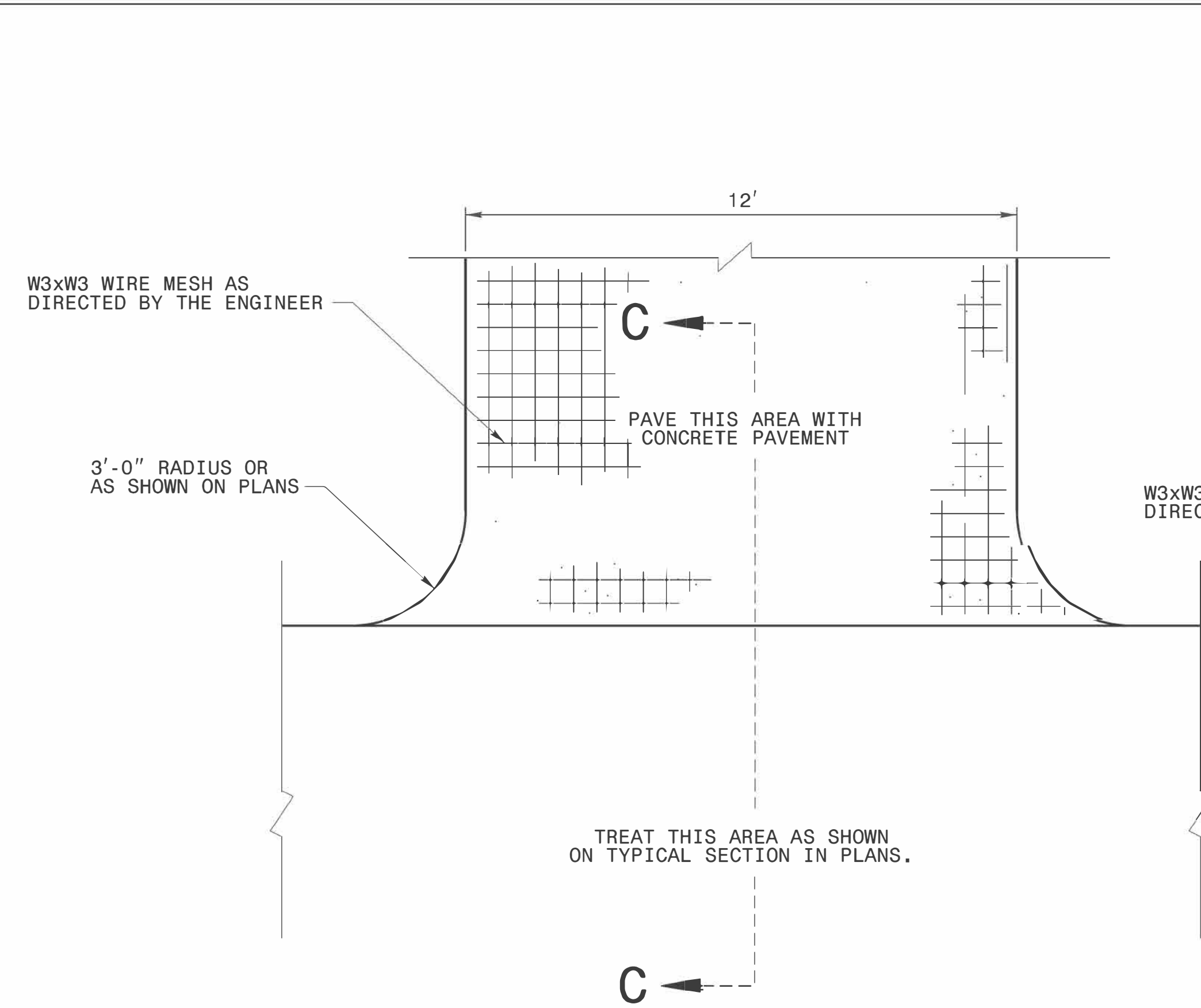
REVISIONS

PROJECT REFERENCE NO. U-6241	SHEET NO. 2C-7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

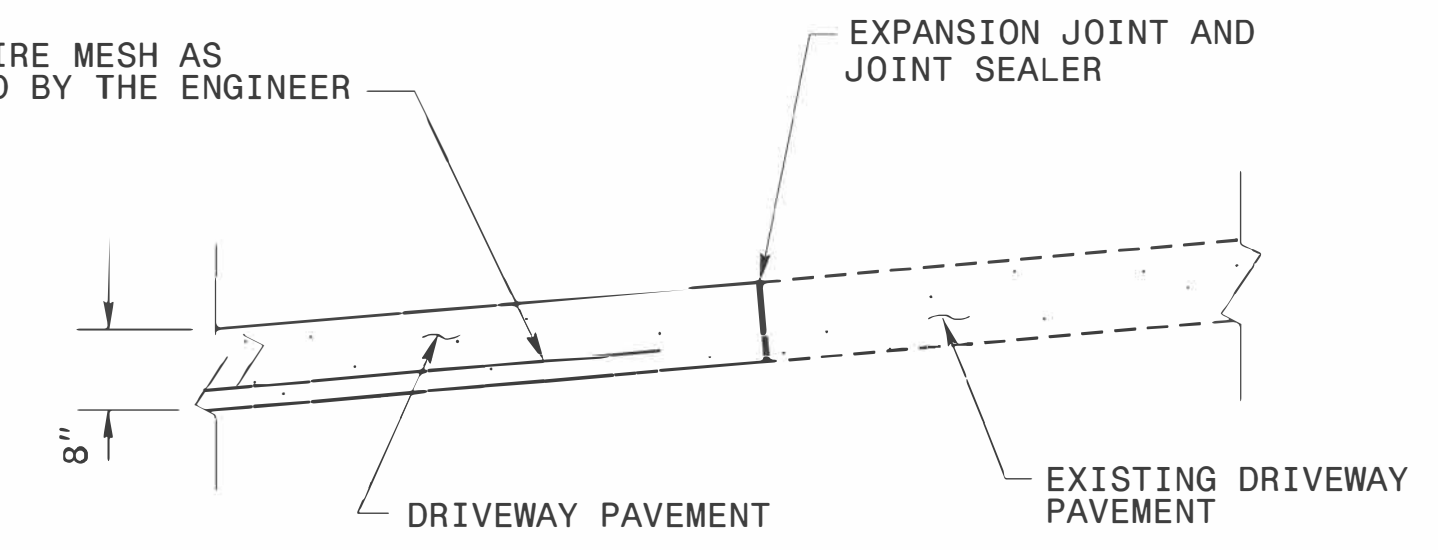
ENGLISH DETAIL DRAWING FOR
DRIVEWAY TURNOUT
RADIUS TYPE

SHEET 1 OF 1
848D02



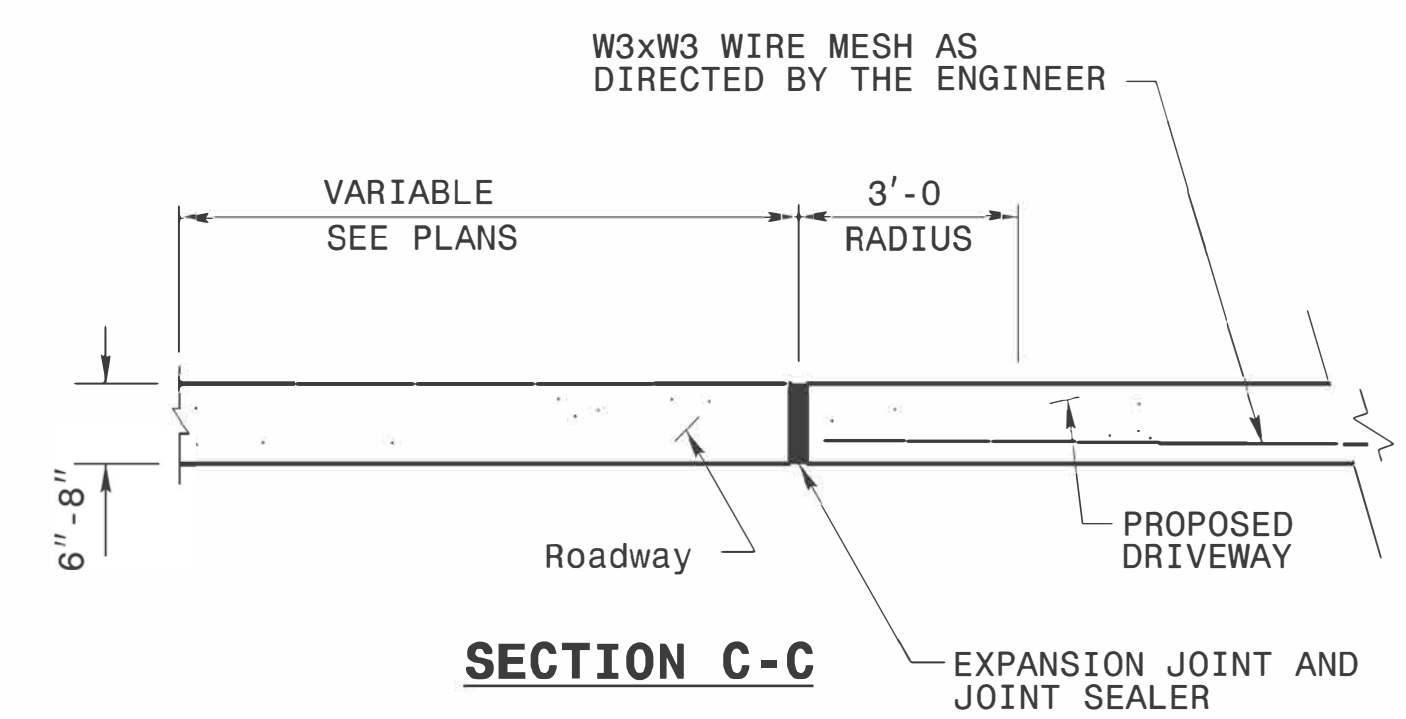
PARTIAL PLAN OF PAVED DRIVEWAY TURNOUT

- NOTES:
- CONSTRUCT STANDARD DRIVEWAY THE WIDTH OF EXISTING DRIVE. CONSTRUCT DRIVE 8" THICK UNLESS OTHERWISE NOTED ON PLANS.
 - PLACE 1/2" EXPANSION JOINT BETWEEN DRIVEWAY AND ROADWAY AND AT LOCATIONS AS DIRECTED BY THE ENGINEER. SEAL JOINT WITH JOINT SEALER (SEE STD. SECTION 1028)
 - PLACE WIRE MESH IN BOTTOM THIRD OF CONCRETE DRIVEWAY.
 - SAW CUT OR FORM CONTRACTION JOINTS IN DRIVEWAY @ 10' INTERVALS. AT EVERY THIRD JOINT, PLACE EXPANSION MATERIAL AS SHOWN IN SECTION C-C.



METHOD OF TIE IN

WHEN EXISTING DRIVEWAY PAVEMENT IS CONCRETE, SAW CUT A 2" DEEP JOINT AT THE POINT OF TIE IN WITH EXISTING DRIVEWAY GRADE.
SAW JOINT PERPENDICULAR TO EDGE OF EXISTING DRIVEWAY PAVEMENT.



SECTION C-C

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

ENGLISH DETAIL DRAWING FOR
DRIVEWAY TURNOUT
RADIUS TYPE

SHEET 1 OF 1
848D02

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

REINFORCED CONCRETE DRIVEWAY

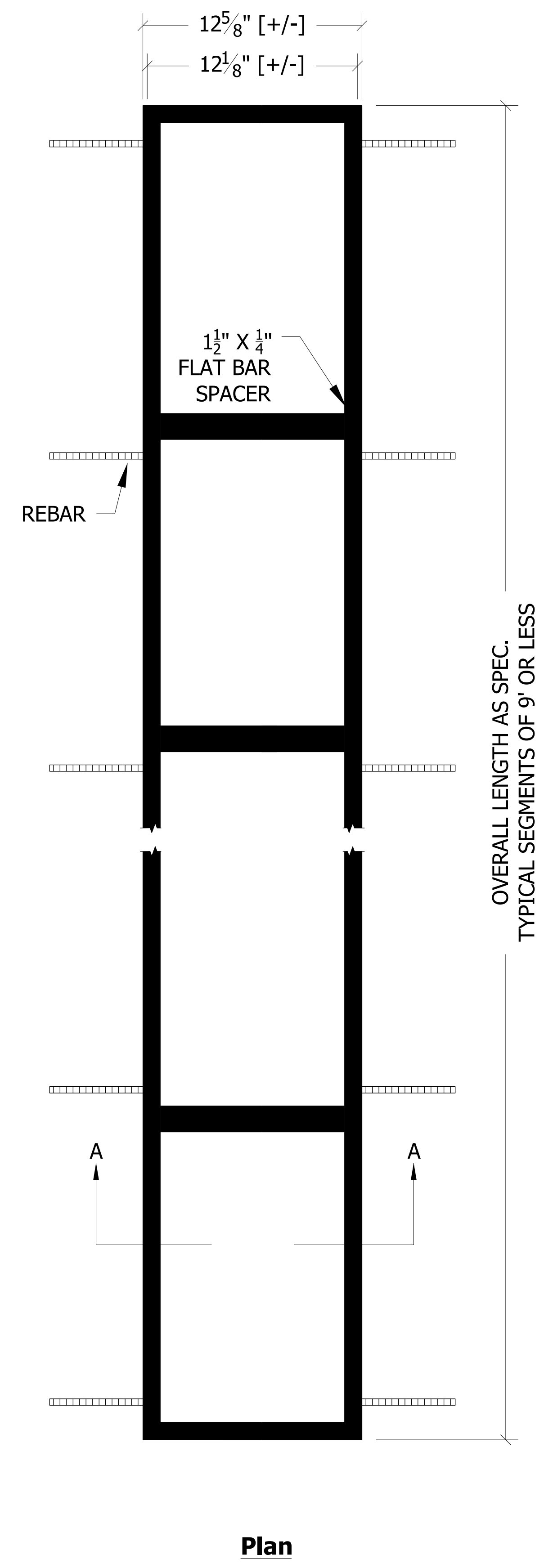
ORIGINAL BY: _____ DATE: _____
 MODIFIED BY: rnbritt DATE: 03-20-08
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: details/english/misc/concdrive.dgn

Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

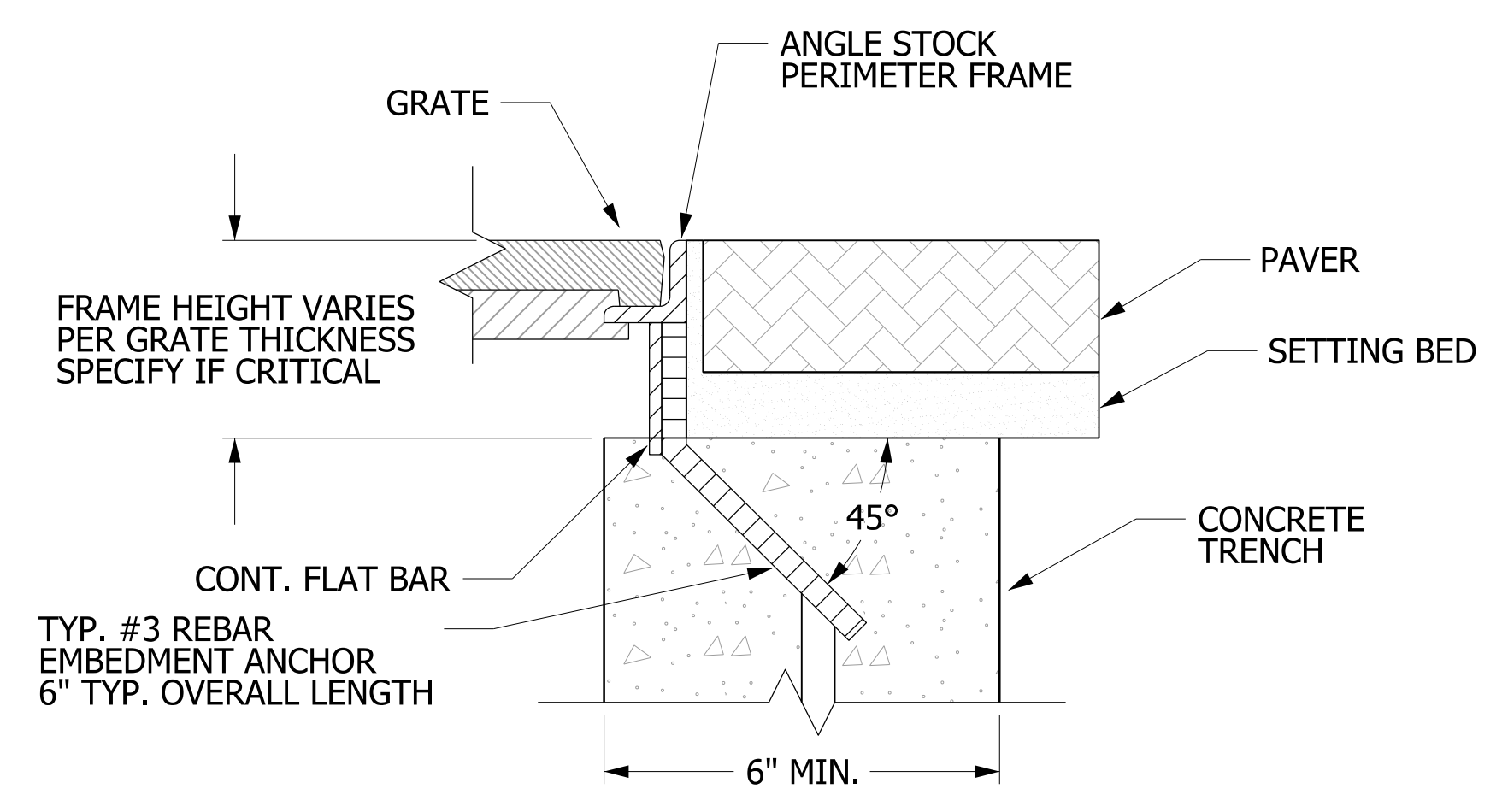
SUNGATE DESIGN GROUP, P.A.
 955 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 NC CDA No. C-0850

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>2D-1</i>
R/W SHEET NO.	
HYDRAULICS ENGINEER	

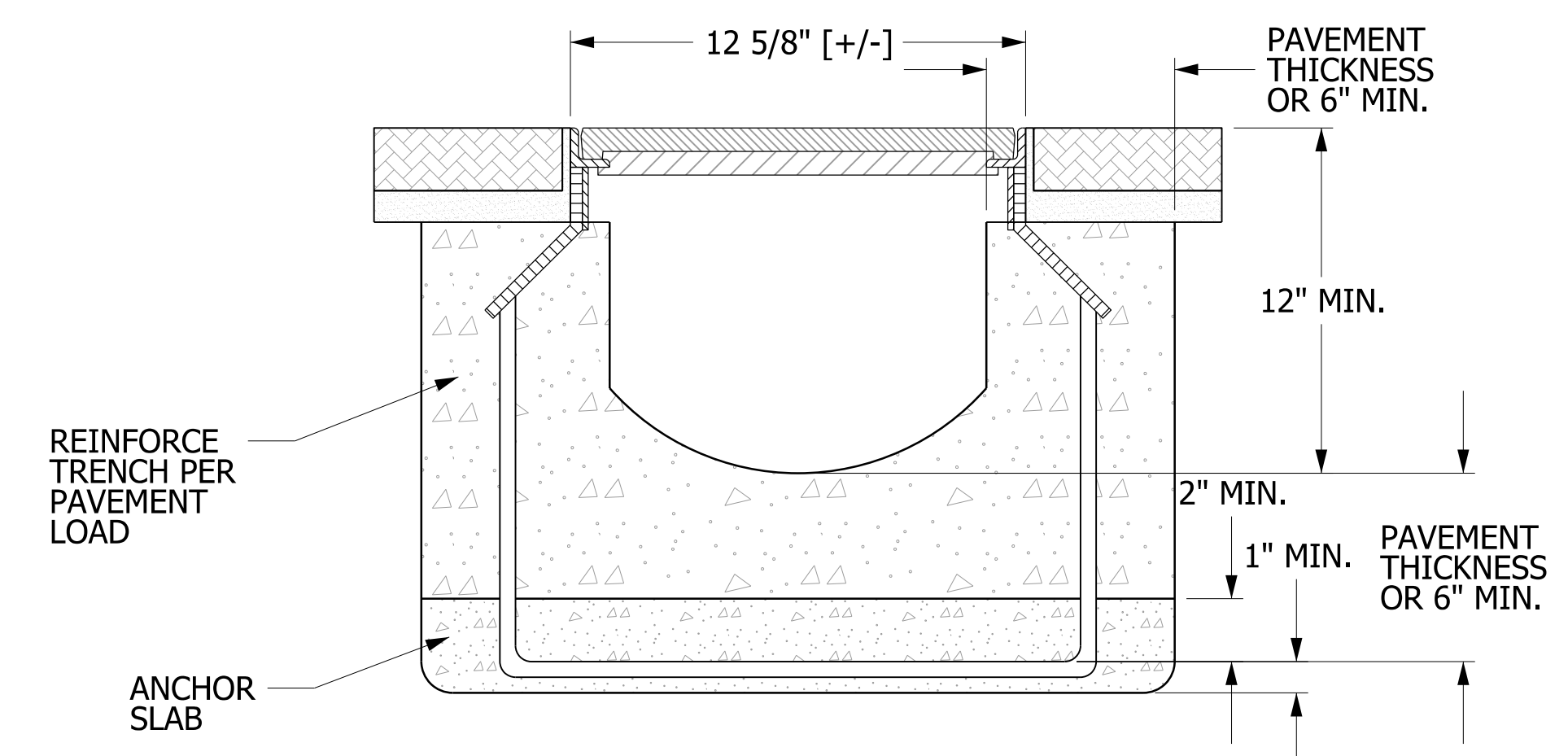
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



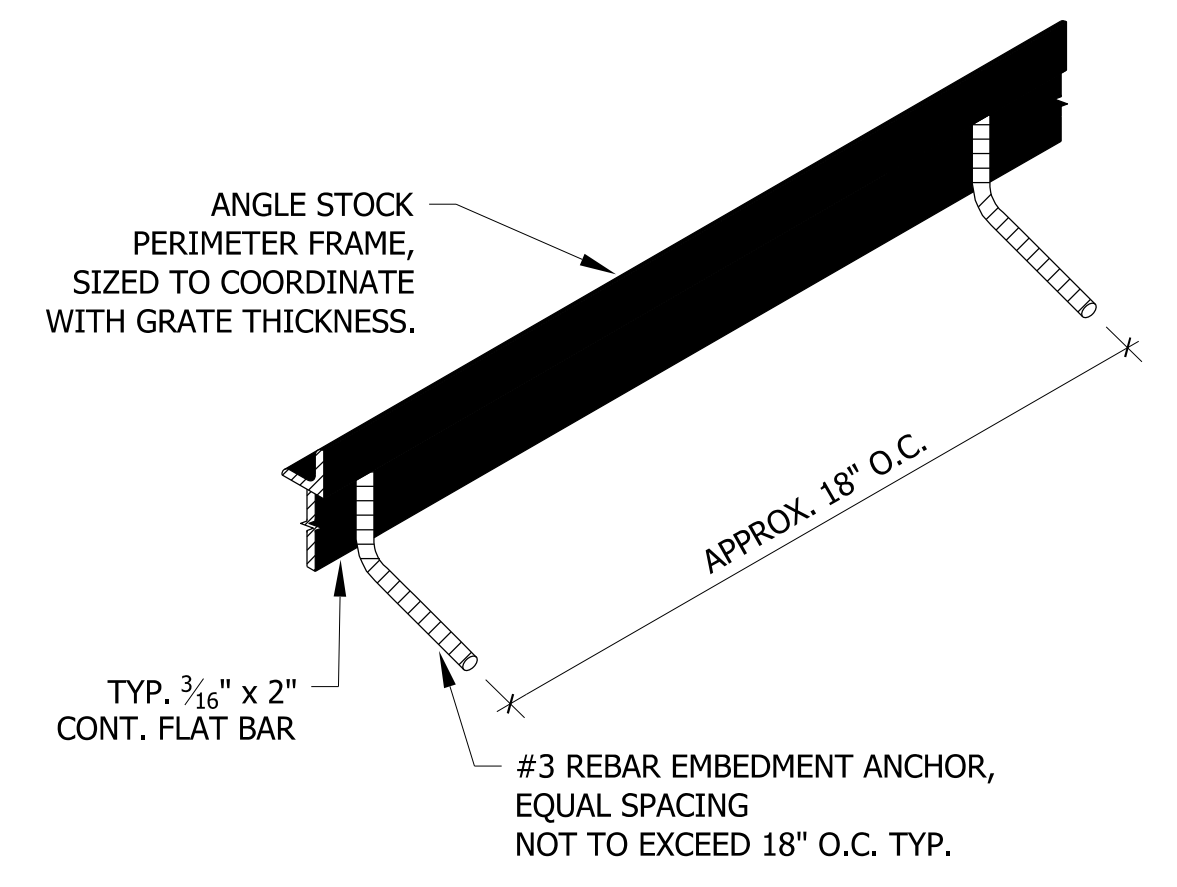
Plan



Detail Elevation A-A

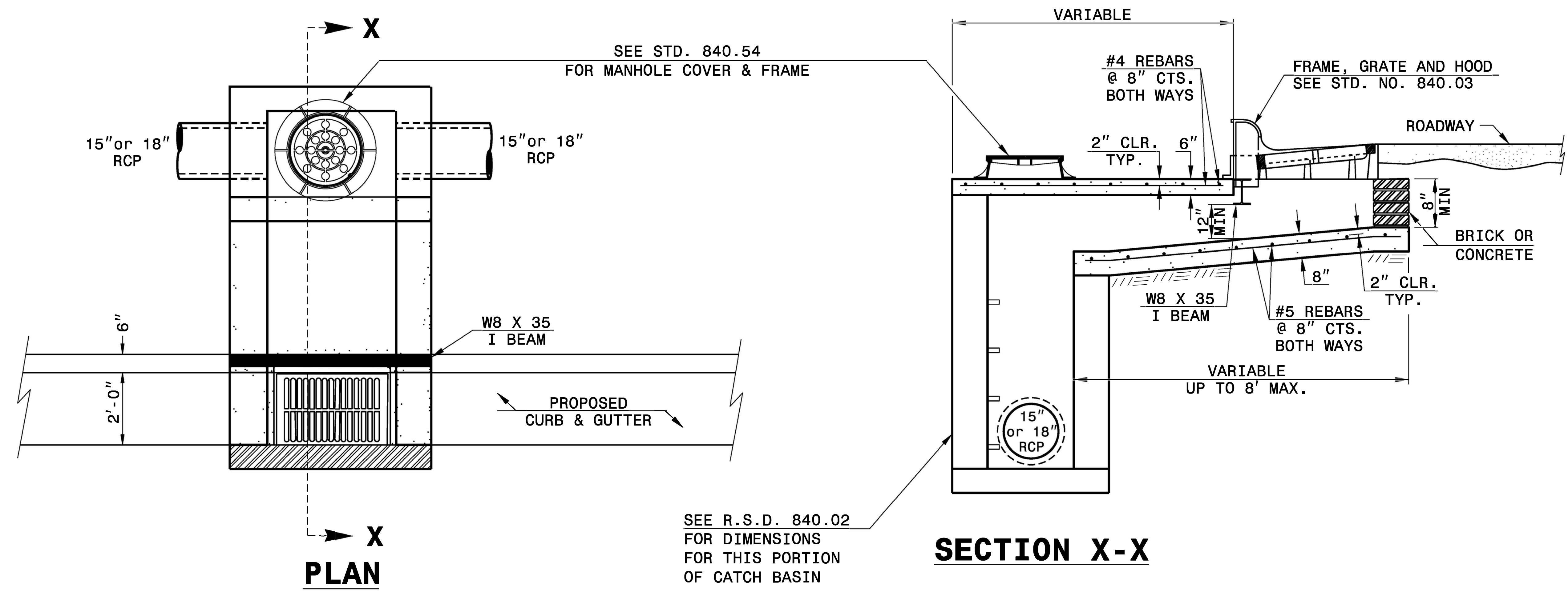


Elevation A-A



Isometric

TRENCH DRAIN DETAIL



SEE R.S.D. 840.02
FOR DIMENSIONS
FOR THIS PORTION
OF CATCH BASIN

NOTES:
MORTAR JOINTS 1/2" TO 1/4" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.
PROVIDE ALL CATCH BASINS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66



2/9/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

PROPOSED OFFSET CATCH BASIN

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: K. KEMPF DATE: 11/13/15
CHECKED BY: _____ DATE: _____
FILE SPEC.: nbritt/english/hydro/840d06 offset boxes.dgn

I7-JUN-2019 13:42
S:\Contracts\Special Details\nbritt\english\hydro\840d06 offset boxes.dgn
Jhowerston AT CSO-212515

12/06/07

COMPUTED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO. SHEET NO.
 U-6241 3B-1

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

(IN CUBIC YARDS)

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
-L- 9+50.00 LT	-L- 30+50.00 LT	575	3,218	2,643	
-Y6- 10+50.00	-Y6- 11+67.25	596	130		466
SUBTOTALS:		1,171	3,348	2,643	466
-L- 9+50.00 RT	-L- 30+50.00 RT	963	18,019	17,056	
-Y5- 10+32.75	-Y5- 11+40.00	675	25		650
-Y6- 12+32.75	-Y6- 13+00.00		786	786	
SUBTOTALS:		1,638	18,830	17,842	650
-Y7- 20+00.00	-Y7- 25+50.00	193	409	216	
SUBTOTALS:		193	409	216	
-L- 30+50.00 LT	-L- 61+00.00 LT	425	2,077	1,652	
-Y1- 10+38.78	-Y1- 24+60.00	1,468	11,419	9,951	
-Y2- 10+38.00	-Y2- 16+60.00	4,971	424		4,547
SUBTOTALS:		6,864	13,920	11,603	4,547
-L- 30+50.00 RT	-L- 61+00.00 RT	2,905	1,408		1,497
-Y4REV- 10+38.78	-Y4REV- 13+00.00	4,984	4		4,980
SUBTOTALS:		7,889	1,412		6,477
-L- 91+25.00	-L- 100+50.00	2,614	164		2,450
-Y3- 11+40.00	-Y3- 14+86.28	533	92		441
-Y3- 15+30.69	-Y3- 18+50.00	1,058	1		1,057
SUBTOTALS:		4,205	257		3,948
TOTALS:		21,960	38,176	32,304	16,088
MATERIAL FOR SHOULDER CONSTRUCTION			180	180	
LOSS DUE TO CLEARING & GURBBING		-1,300		400	
WASTE IN LIEU OF BORROW				-12,719	-12,719
PROJECT TOTALS:		20,660	38,356	20,165	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				1,008	
GRAND TOTALS:		20,660		21,173	
SAY:		20,800		21,200	

EST. DDE = 1,615 CY
 EST. SHALLOW UNDERCUT = 450 CY
 EST. CLASS IV SUBGRADE STABILIZATION = 900 TONS
 PER GEOTECH RECOMMENDATION, 1,550 CUBIC YARDS OF ESTIMATE UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

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.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ²
-L-	16+91	19+74	CL	507
-L-	23+86	26+33	CL	293
-L-	18+23	19+51	CL	61
-L-	32+85	36+93	CL	547
-L-	38+90	43+48	CL	686
-L-	43+56	44+00	CL	63
-L-	46+52	46+92	CL	39
-L-	53+71	55+00	CL	119
-L-	55+81	56+51	CL	82
-L-	61+25	61+96	CL	98
-L-	62+04	62+56	CL	69
-L-	80+17	81+00	CL	106
-L-	91+25	101+35	CL	3,788
-Y1-/-Y2-	21+33	15+80	RT	1,222
-Y3-	11+50	18+50	CL	1,756
-Y3-	11+80		RT	20
-Y7-	19+75	25+50	RT	320
TOTAL:				9,776
SAY:				9,800

ADA RAMPS PROJECT SUMMARY

SURVEY LINE	STATION	LOCATION CL / RT / LT	REMOVE AND REPLACE	RETROFIT EXISTING	REMOVE EXISTING
-L-	45+98	LT	2		
-L-	45+98	LT			2
-L-	51+95	LT	2		
-L-	52+97	RT	1		
-L-	53+58	RT		1	
-L-	55+91	LT	1		
-L-	55+37	LT	2		
-L-	57+35	RT	2		
-L-	58+75	RT	2		
-L-	59+57	RT	2		
-L-	61+54	RT	2		
-L-	62+74	RT			1
-L-	63+15	RT	2		
-L-	63+61	RT			1
-L-	64+72	LT/RT	4		
-L-	66+43	LT	2		
-L-	69+06	LT/RT	4		
-L-	70+18	RT	1		
-L-	77+36	LT			1
-L-	77+50	LT	1		
-L-	78+05	LT	1		
-L-	78+60	RT	3		
-L-	86+04	LT/RT	2		
-L-	86+28	RT	2		
SUBTOTAL:			38	1	5
SAY:			40	2	5

4/14/2002
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DTALBERT/NEW

COMPUTED BY: DWT DATE: 5/20/21
CHECKED BY: DATE:

PROJECT NO. U-6241 SHEET NO. 3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe, R.C. Pipe Class III, IV, V, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Remarks. Includes a 'SHEET TOTALS' row at the bottom.

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.

REMARKS

DTALBERT.NEW

COMPUTED BY: DWT DATE: 5/20/21
CHECKED BY: DATE:

PROJECT NO. U-6241 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, INVERT ELEVATION, MINIMUM REQUIRED SLOPE, Drainage Pipe, R.C. PIPE CLASS III, IV, V, ENDWALLS, REINFORCED ENDWALLS, MASONRY, QUANTITIES FOR DRAINAGE STRUCTURES, FRAME, GRATES, AND HOOD, CONCRETE TRANSITIONAL SECTION, FLOWABLE FILL, TRENCH DRAIN, PIPE REMOVAL, and REMARKS.

SHEET TOTALS

DTALBERT/NEW

COMPUTED BY: DWT DATE: 5/20/21
CHECKED BY: DATE:

PROJECT NO. SHEET NO.
U-6241 3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Drainage Pipe, R.C. Pipe Class (III, IV, V), Quantities for Drainage Structures, Frame/Grates, and Remarks. Includes a 'SHEET TOTALS' row at the bottom.

ABBREVIATIONS table listing codes like C.A.A., C.B., C.S., etc. and their corresponding material or structure names.

REMARKS

COMPUTED BY: Hunsberger, W. S. DATE: 5/25/21
 CHECKED BY: Hamm, J.R. DATE: 5/25/21

(12-17-19)

PROJECT NO. SHEET NO.
 U-6241 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	0
TOTAL LF:					0

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

**SUMMARY OF GEOTEXTILE
 FOR PAVEMENT STABILIZATION**

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY				
TOTAL SY/TONS:			0	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

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(1)	12	450	900	1350		
TOTAL CY/TONS/SY:					450	900**	1350**	0	0

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

SUMMARY OF 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
TOTAL SY:								0

*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
TOTAL SY:						0	0	0*	0**

*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.

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
TOTAL SY:						0

SUMMARY OF HORIZONTAL DRAINS

LINE	Approximate Station	Location LT/RT	Elevation Above or Below Grade (+/-) FT	Inclination Angle DEGREES	PVC Pipe Schedule 40/80 or NO PIPE	Horizontal Drain FT	Horizontal Drain W/O Pipe FT
CONTINGENCY							
TOTAL FT:						0	0

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
TOTAL GAUGES (EACH):			

**SUMMARY OF SURCHARGES
 AND SURCHARGE WAITING PERIODS**

LINE	Station	Station	Surcharge Height FT	MONTHS

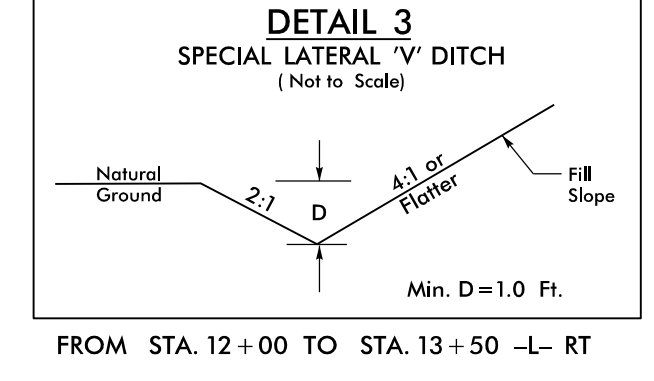
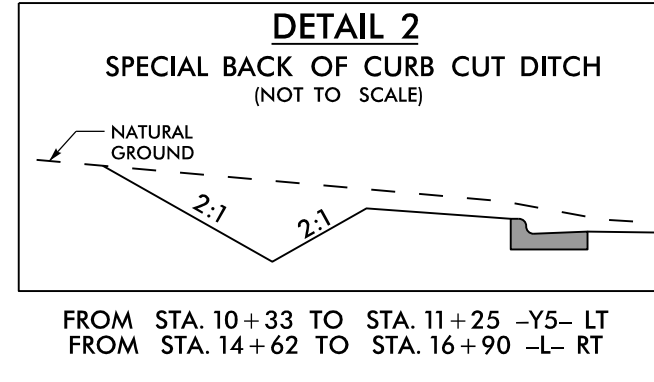
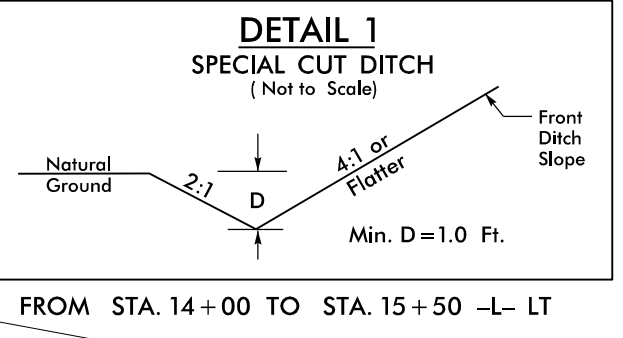
**SUMMARY OF EMBANKMENT
 WAITING PERIODS**

LINE	Station	Station	MONTHS

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

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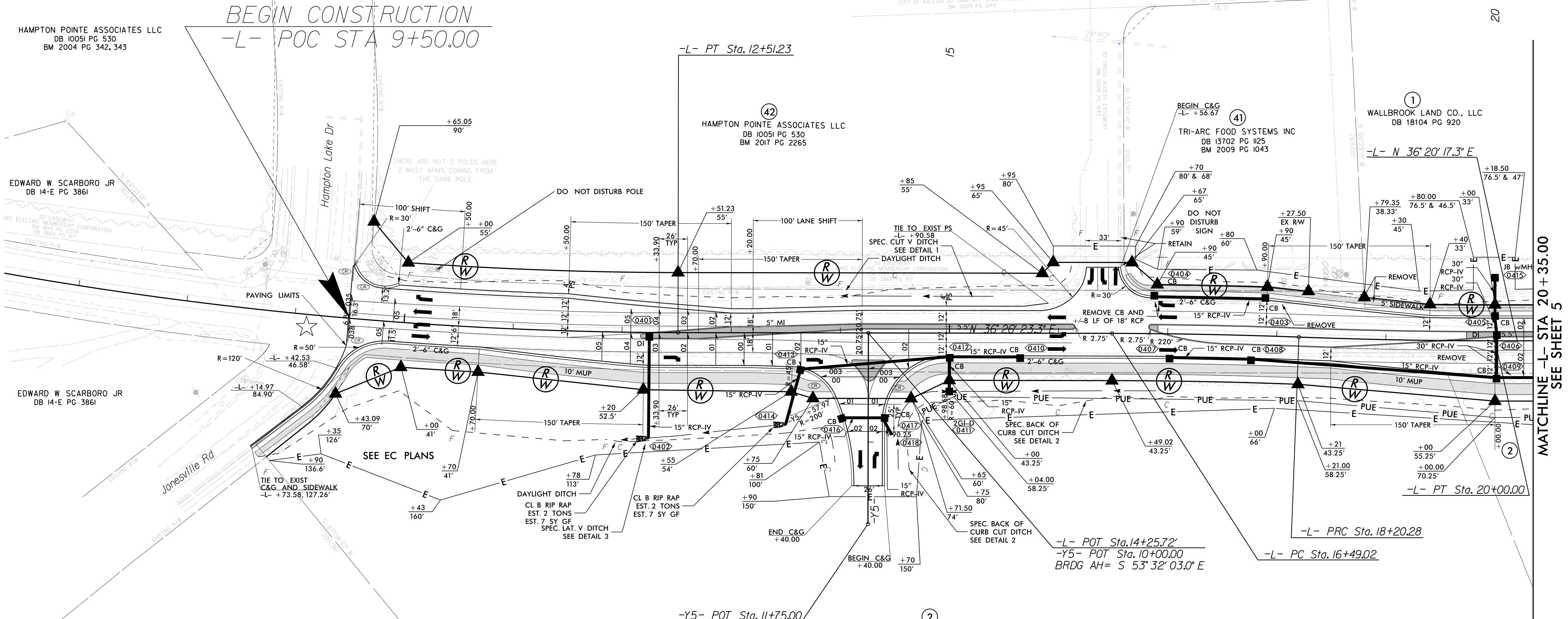
U-6241 MAIN ST US 401 BUS	4286 7023	HAMPTON LAKE DR
1965 3220	1744 2858	-L-
16404 26880	238 390	3745 6137
JONESVILLE RD -Y5-		
YR 2021	4561 7473	
YR 2041		

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SUNGATE DESIGN GROUP, P.A.
105 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Professional Seal: Michael D. Lindgren, License No. 025513	Professional Seal: Joshua G. Dalton, License No. 26971
2/10/2022	2/10/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



HAMPTON POINTE ASSOCIATES LLC
DB 10051 PG 530
BM 2004 PG 342, 343

EDWARD W. SCARBORO JR
DB 14-E PG 386I

EDWARD W. SCARBORO JR
DB 14-E PG 386I

WAKE COUNTY BOARD OF ALCOHOLIC CONTROL
DB 13588 PG 2155
BM 2008 PG 702

WALLBROOK LANDCO LLC
DB 18103 PG 1563
BM 1995 PG 2034

-L-	-Y5-	-L-
PI Sta 7+29.38	PI Sta 17+34.66	PI Sta 19+10.15
Δ = 16° 43' 51.3" (LT)	Δ = 2° 03' 25.6" (RT)	Δ = 2° 09' 31.7" (LT)
D = 1' 35" 29.6"	D = 1' 12" 04.2"	D = 1' 12" 04.2"
L = 1,051.23'	L = 171.26'	L = 179.72'
T = 529.38'	T = 85.64'	T = 89.87'
R = 3,600.00'	R = 4,770.00'	R = 4,770.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

ALL WORK ON THIS SHEET IS ASSOCIATED WITH WALLBROOK DEVELOPMENT AND IS NOT SUBJECT TO FEDERAL REIMBURSEMENT.

★ UPGRADED EXISTING SIGNAL
NOTE: FOR -L- PROFILE SEE SHEET 14 & 15
NOTE: FOR -Y5- PROFILE SEE SHEET 20

MATCHLINE -L- STA 20 + 35.00
SEE SHEET 5

2/7/2022
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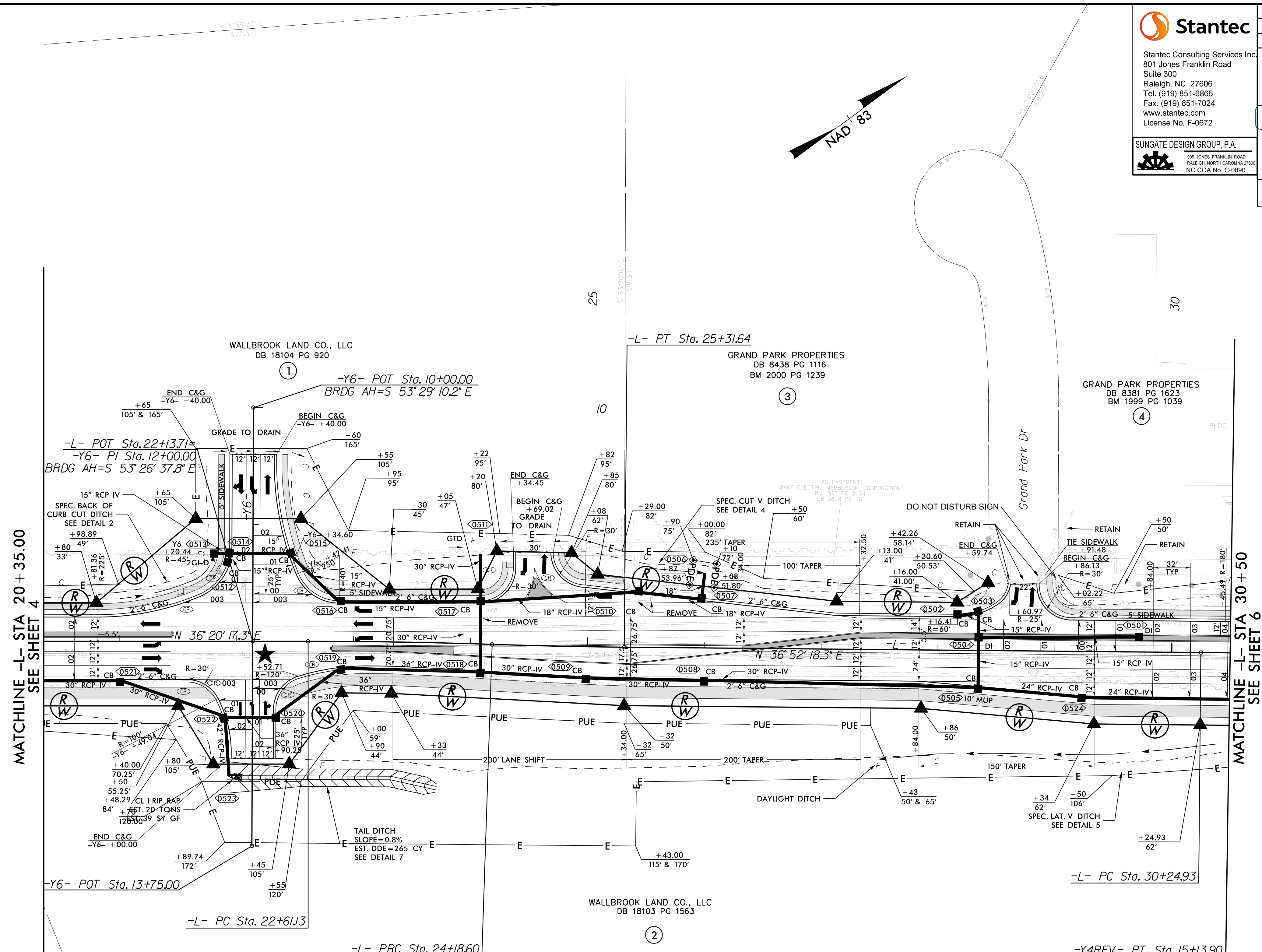
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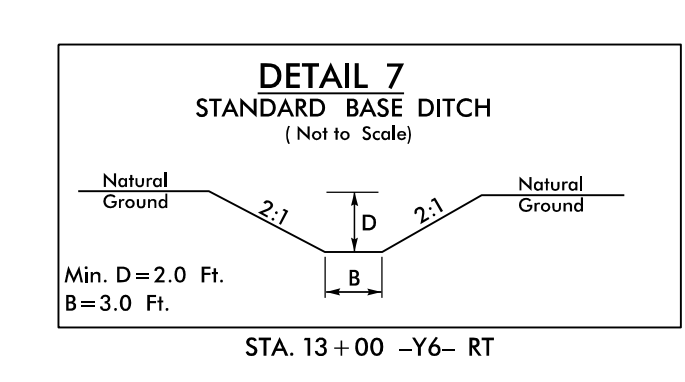
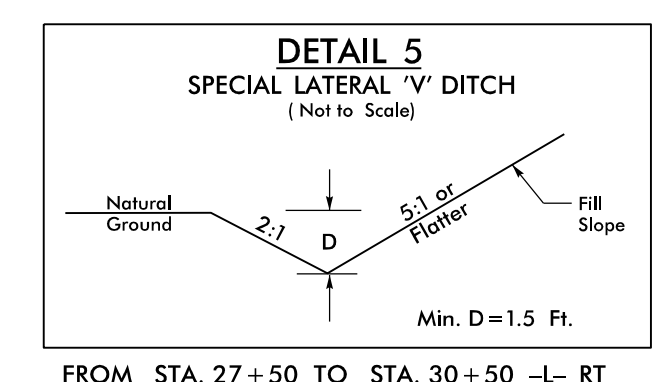
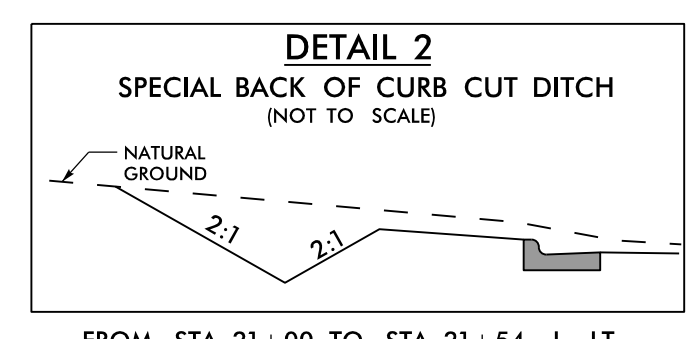
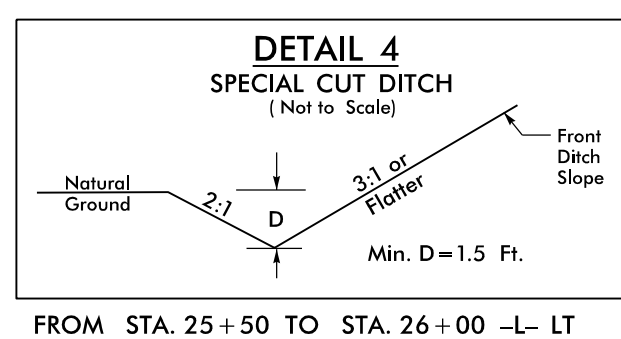
PROJECT REFERENCE NO. U-6241	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2022	2/10/2022

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



MATCHLINE -L- STA 20 + 35.00
SEE SHEET 4

MATCHLINE -L- STA 30 + 50
SEE SHEET 6



-L-		
PI Sta 23+39.87	PI Sta 24+75.12	PI Sta 33+62.25
$\Delta = 1' 53'' 29.3'' (RT)$	$\Delta = 1' 21'' 28.3'' (LT)$	$\Delta = 8' 05'' 24.3'' (RT)$
$D = 1' 12'' 04.2''$	$D = 1' 12'' 04.2''$	$D = 1' 12'' 04.2''$
$L = 157.47'$	$L = 113.05'$	$L = 673.52'$
$T = 78.74'$	$T = 56.53'$	$T = 337.32'$
$R = 4,770.00'$	$R = 4,770.00'$	$R = 4,770.00'$
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

ALL WORK ON THIS SHEET IS ASSOCIATED WITH WALLBROOK DEVELOPMENT AND IS NOT SUBJECT TO FEDERAL REIMBURSEMENT.

★ **NEW SIGNAL**
NOTE: FOR -L- PROFILE SEE SHEET 15
NOTE: FOR -Y6- PROFILE SEE SHEET 20

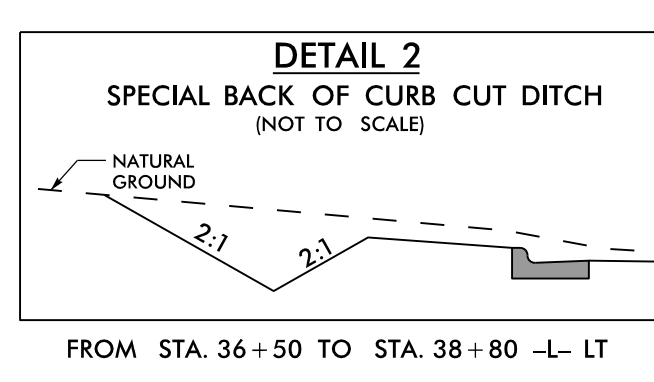
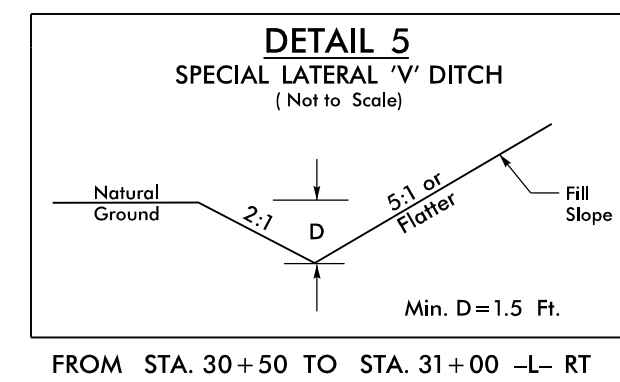
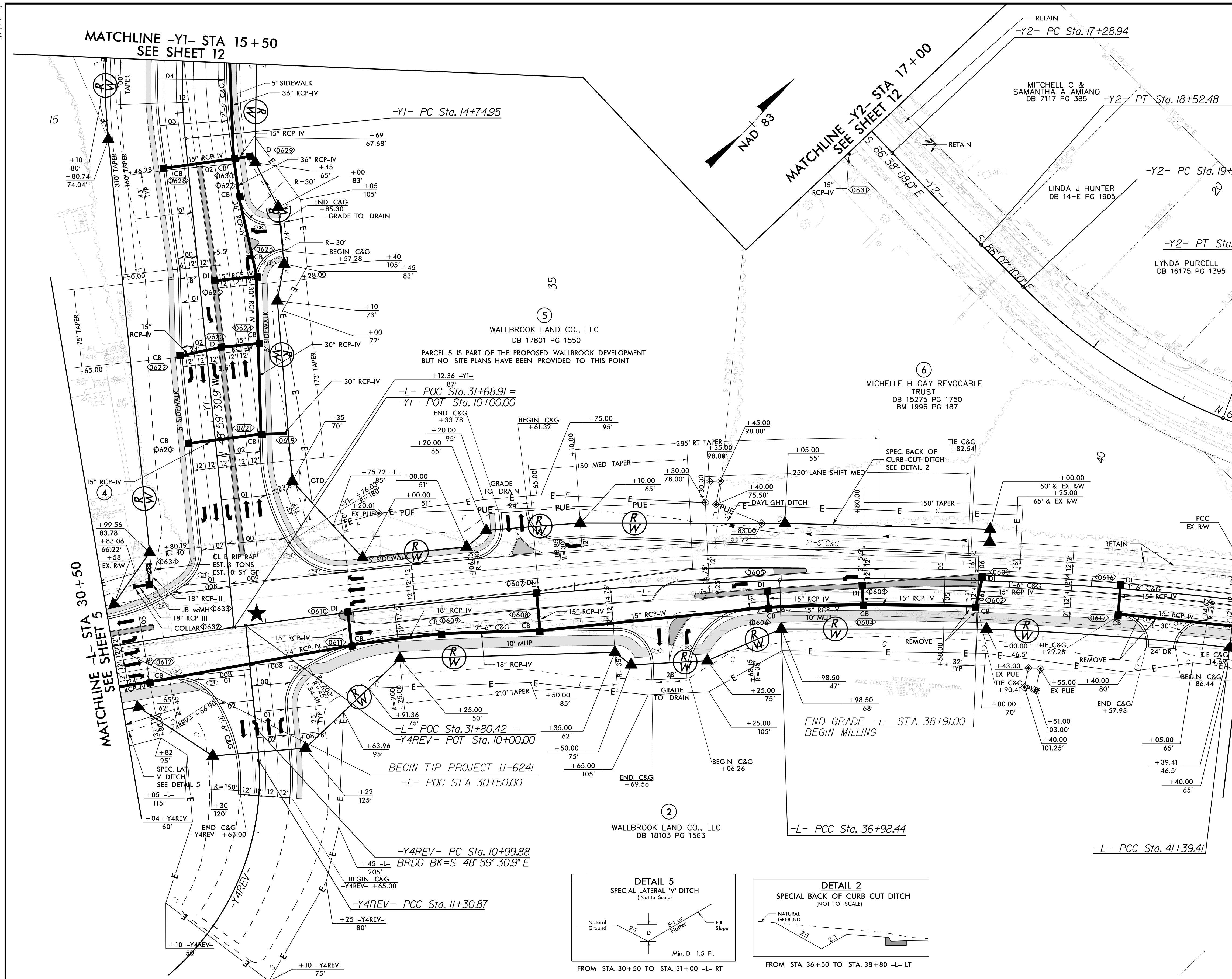
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8/17/2022

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 NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2022	2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



U-6241 MAIN ST US 401 BUS	5220 8554	BURLINGTON MILLS ROAD	
16950 27775	2294 3759	2065 3383	-L- 17118 28050
	559 916	956 1566	-Y4-
YR 2021	2376	3894	
YR 2041			

★ **NEW SIGNAL**

NOTE:
 FOR -L- PROFILE SEE SHEET 15
 FOR -Y1- PROFILE SEE SHEET 18
 FOR -Y4REV- PROFILE SEE SHEET 20

PI Sta 33+62.25 Δ = 8° 05' 24.3" (RT) D = 1' 12" 04.2" L = 673.52' T = 337.32' R = 4,770.00' SE = SEE PLANS	-L- PI Sta 39+19.33 Δ = 8° 25' 18.5" (RT) D = 1' 54' 35.5" L = 440.97' T = 220.88' R = 3,000.00' SE = SEE PLANS	PI Sta 43+74.02 Δ = 2° 20' 06.0" (RT) D = 0' 29' 51.7" L = 469.15' T = 234.61' R = 11,512.00' SE = SEE PLANS
---	--	--

-Y1- PI Sta 16+89.75 Δ = 43° 53' 56.0" (RT) D = 10' 44' 58.8" L = 408.37' T = 214.80' R = 533.00' SE = SEE PLANS

-Y2- PI Sta 17+90.71 Δ = 1° 29' 02.0" (LT) D = 1' 12" 04.2" L = 123.54' T = 61.77' R = 4,770.00' SE = SEE PLANS	PI Sta 20+27.92 Δ = 23° 37' 46.3" (LT) D = 10' 08' 27.0" L = 233.01' T = 118.19' R = 565.00' SE = SEE PLANS
--	---

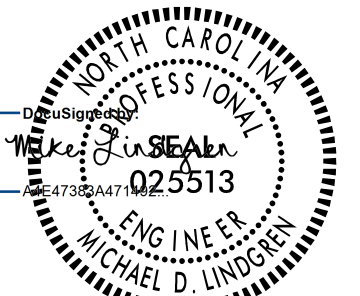
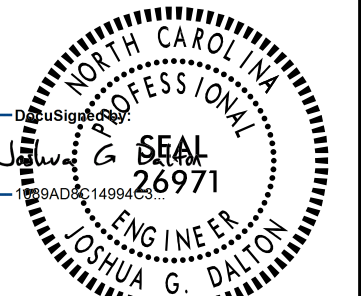
-Y4REV- PI Sta 11+15.38 Δ = 1° 46' 32.8" (RT) D = 5' 43' 46.5" L = 30.99' T = 15.50' R = 1,000.00' SE = SEE PLANS	PI Sta 13+71.38 Δ = 87° 46' 55.7" (RT) D = 22' 55' 05.9" L = 383.02' T = 240.51' R = 250.00' SE = SEE PLANS
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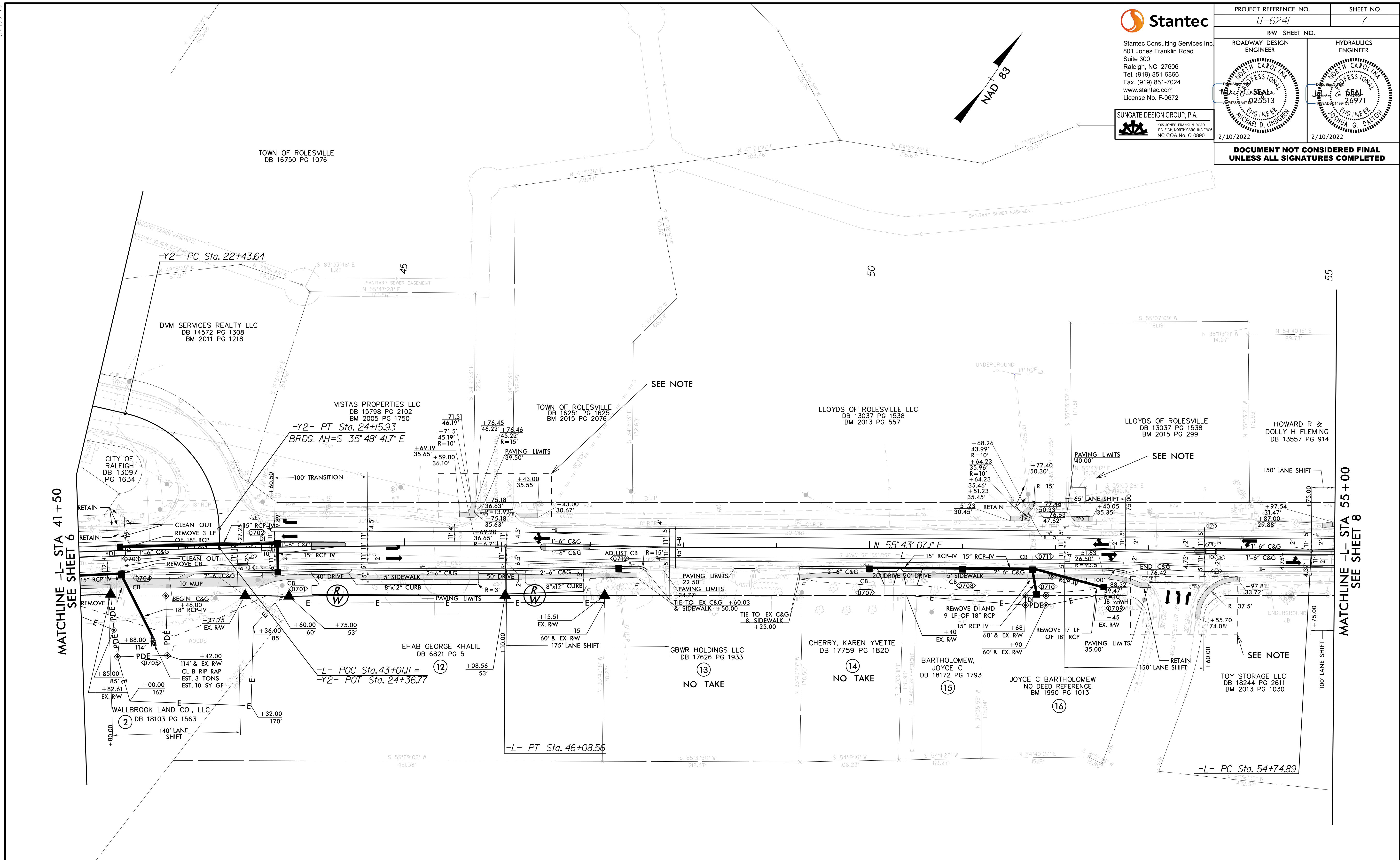
2/7/2022
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8.17.2022

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 NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
 MICHAEL D. LINDGREN ENGINEER License No. 025513 2/10/2022	 JOSHUA G. DALTON ENGINEER License No. 26971 2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -L- STA 41 + 50
SEE SHEET 6

MATCHLINE -L- STA 55 + 00
SEE SHEET 8

-L-		-Y2-	
PI Sta 43+74.02	PI Sta 55+41.73	PI Sta 23+45.09	
$\Delta = 2^\circ 20' 06.0'' (RT)$	$\Delta = 0^\circ 38' 18.0'' (RT)$	$\Delta = 75^\circ 56' 14.6'' (RT)$	
$D = 0^\circ 29' 51.7''$	$D = 0^\circ 28' 38.9''$	$D = 44^\circ 04' 25.2''$	
$L = 469.15'$	$L = 133.69'$	$L = 172.30'$	
$T = 234.61'$	$T = 66.85'$	$T = 101.45'$	
$R = 11,512.00'$	$R = 12,000.00'$	$R = 130.00'$	
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	

NOTED CURB RAMP IMPROVEMENTS ON THIS SHEET ARE SUBJECT TO FEDERAL REIMBURSEMENT UNDER WBS 49183.3.2

NOTE: FOR -L- PROFILE SEE SHEET 15 & 16

2/7/2022
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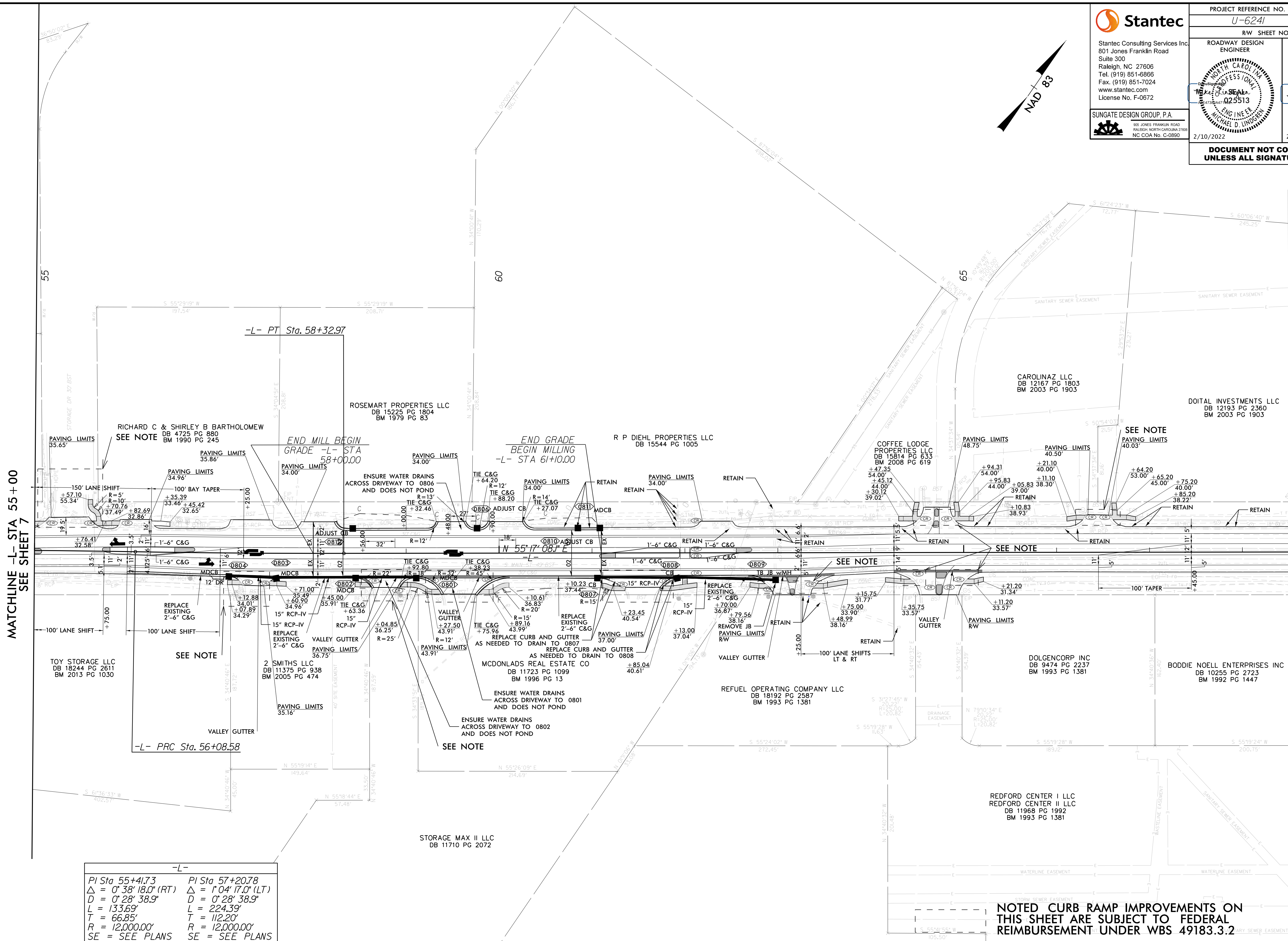
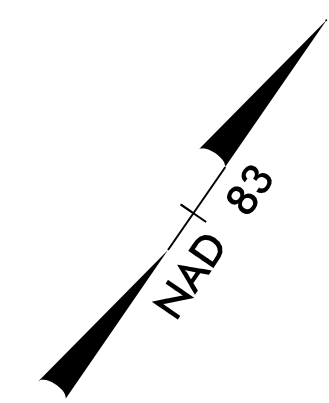


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805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2022	2/10/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MATCHLINE -L- STA 55+00
SEE SHEET 7

MATCHLINE -L- STA 68+50
SEE SHEET 9

-L-	
PI Sta 55+41.73	PI Sta 57+20.78
$\Delta = 0' 38' 18.0''$ (RT)	$\Delta = 1' 04' 17.0''$ (LT)
$D = 0' 28' 38.9''$	$D = 0' 28' 38.9''$
$L = 133.69'$	$L = 224.39'$
$T = 66.85'$	$T = 112.20'$
$R = 12,000.00'$	$R = 12,000.00'$
SE = SEE PLANS	SE = SEE PLANS

NOTED CURB RAMP IMPROVEMENTS ON THIS SHEET ARE SUBJECT TO FEDERAL REIMBURSEMENT UNDER WBS 49183.2

NOTE: FOR -L- PROFILE SEE SHEET 16

2/7/2022
L:\Projects\2022\U-6241_L_Rd\psh08.dgn

8/17/99

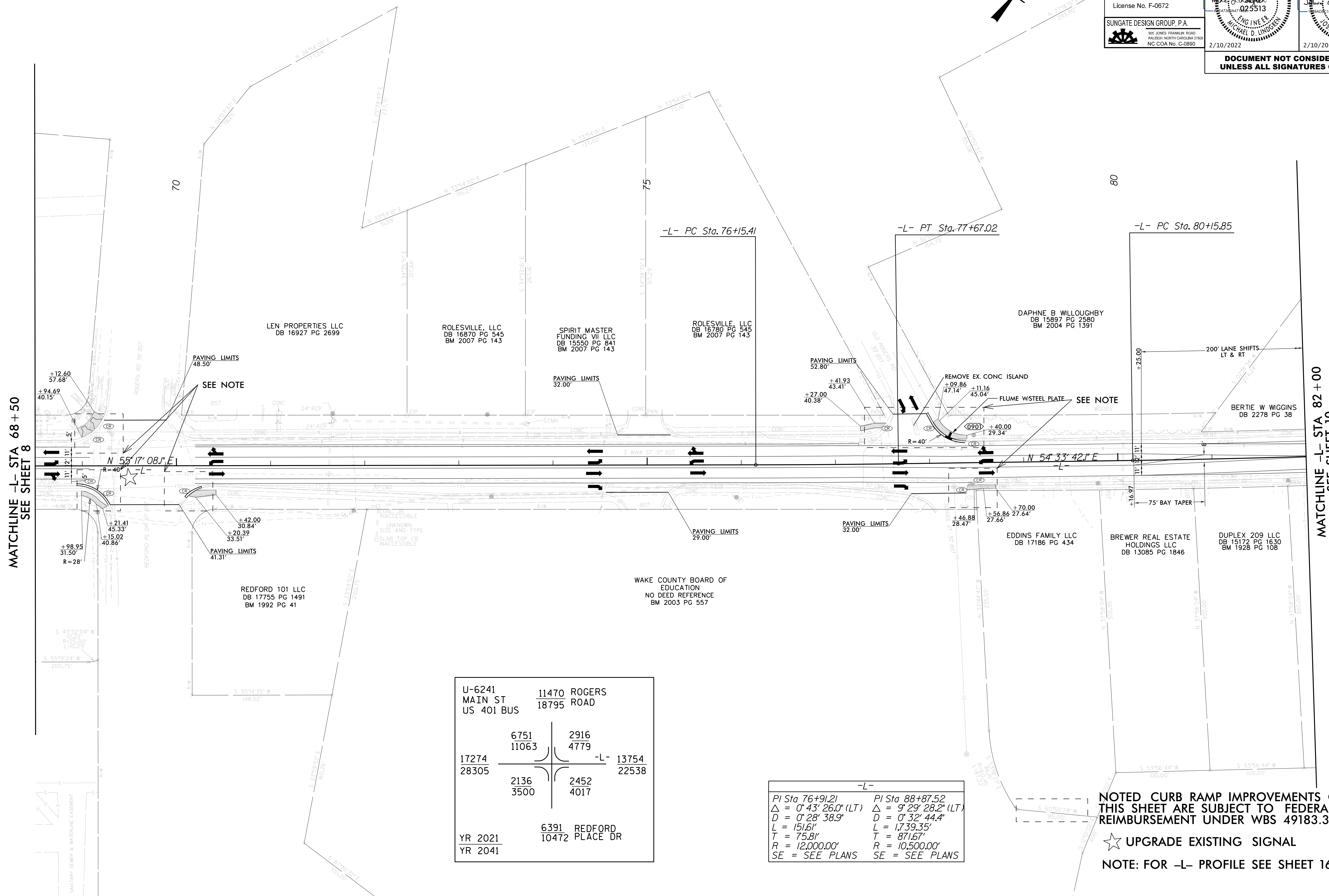
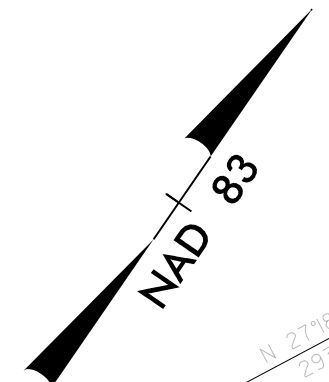


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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2022	2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -L- STA 68+50
SEE SHEET 8

MATCHLINE -L- STA 82+00
SEE SHEET 10

U-6241 MAIN ST US 401 BUS	11470 ROGERS 18795 ROAD
17274 28305	6751 11063
	2916 4779
	-L- 13754 22538
	2136 3500
	2452 4017
YR 2021	6391 REDFORD
YR 2041	10472 PLACE DR

-L-	
PI Sta 76+91.21	PI Sta 88+87.52
$\Delta = 0^\circ 43' 26.0''$ (LT)	$\Delta = 9^\circ 29' 28.2''$ (LT)
$D = 0^\circ 28' 38.9''$	$D = 0^\circ 32' 44.4''$
$L = 151.61'$	$L = 1,739.35'$
$T = 75.81'$	$T = 871.67'$
$R = 12,000.00'$	$R = 10,500.00'$
SE = SEE PLANS	SE = SEE PLANS

NOTED CURB RAMP IMPROVEMENTS ON THIS SHEET ARE SUBJECT TO FEDERAL REIMBURSEMENT UNDER WBS 49183.3.2

★ UPGRADE EXISTING SIGNAL

NOTE: FOR -L- PROFILE SEE SHEET 16 & 17

2/7/2022
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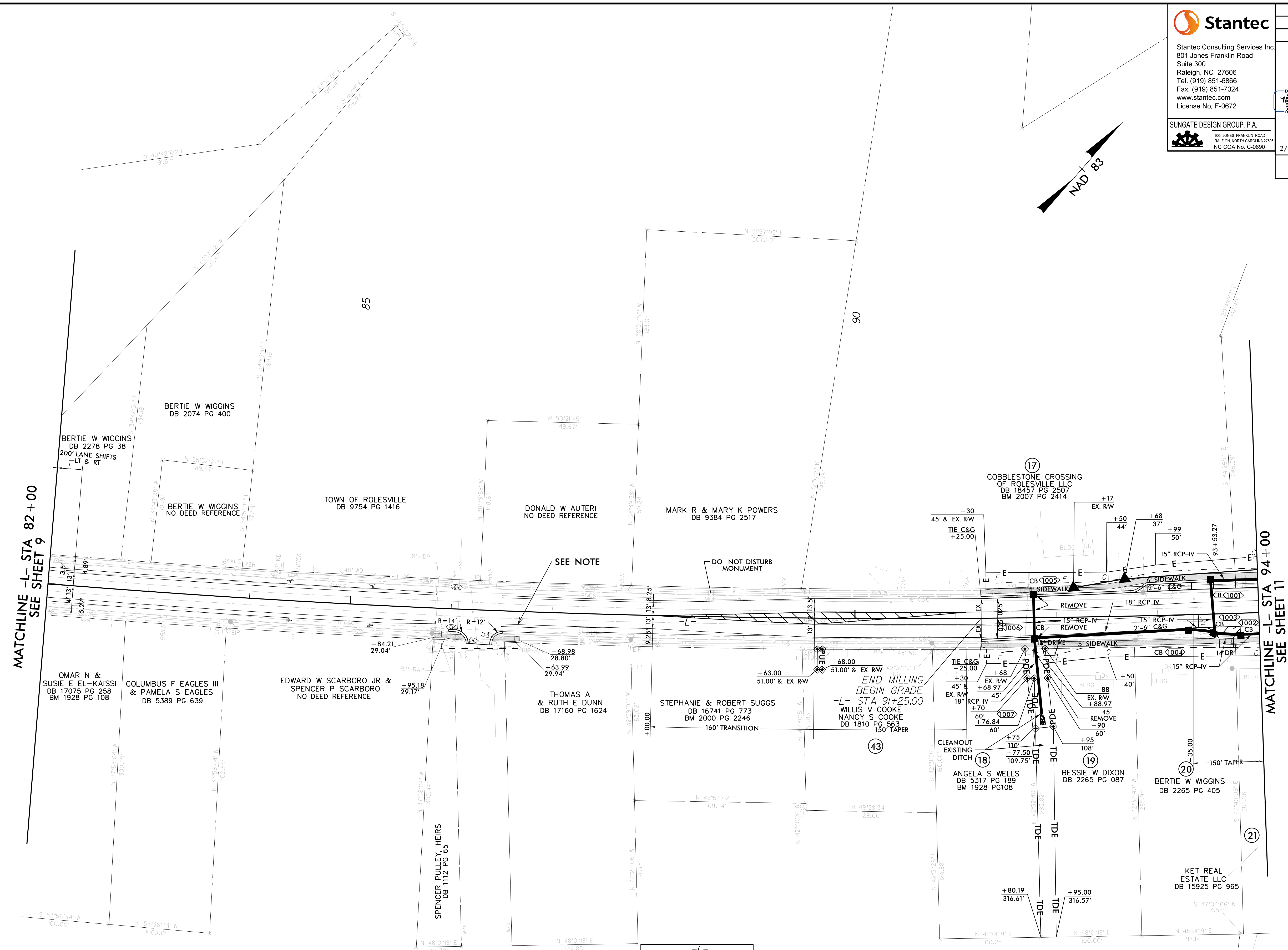
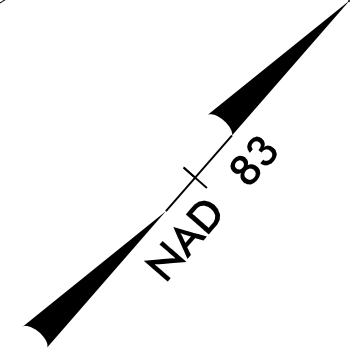


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905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2022	2/10/2022

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MATCHLINE -L- STA 82+00
SEE SHEET 9

MATCHLINE -L- STA 94+00
SEE SHEET 11

-L-
 PI Sta 88+87.52
 $\Delta = 9' 29" 28.2"$ (LT)
 $D = 0' 32" 44.4"$
 $L = 1,739.35'$
 $T = 871.67'$
 $R = 10,500.00'$
 SE = SEE PLANS

NOTED CURB RAMP IMPROVEMENTS ON
THIS SHEET ARE SUBJECT TO FEDERAL
REIMBURSEMENT UNDER WBS 49183.3.2
NOTE: FOR -L- PROFILE SEE SHEET 17

8.17.19

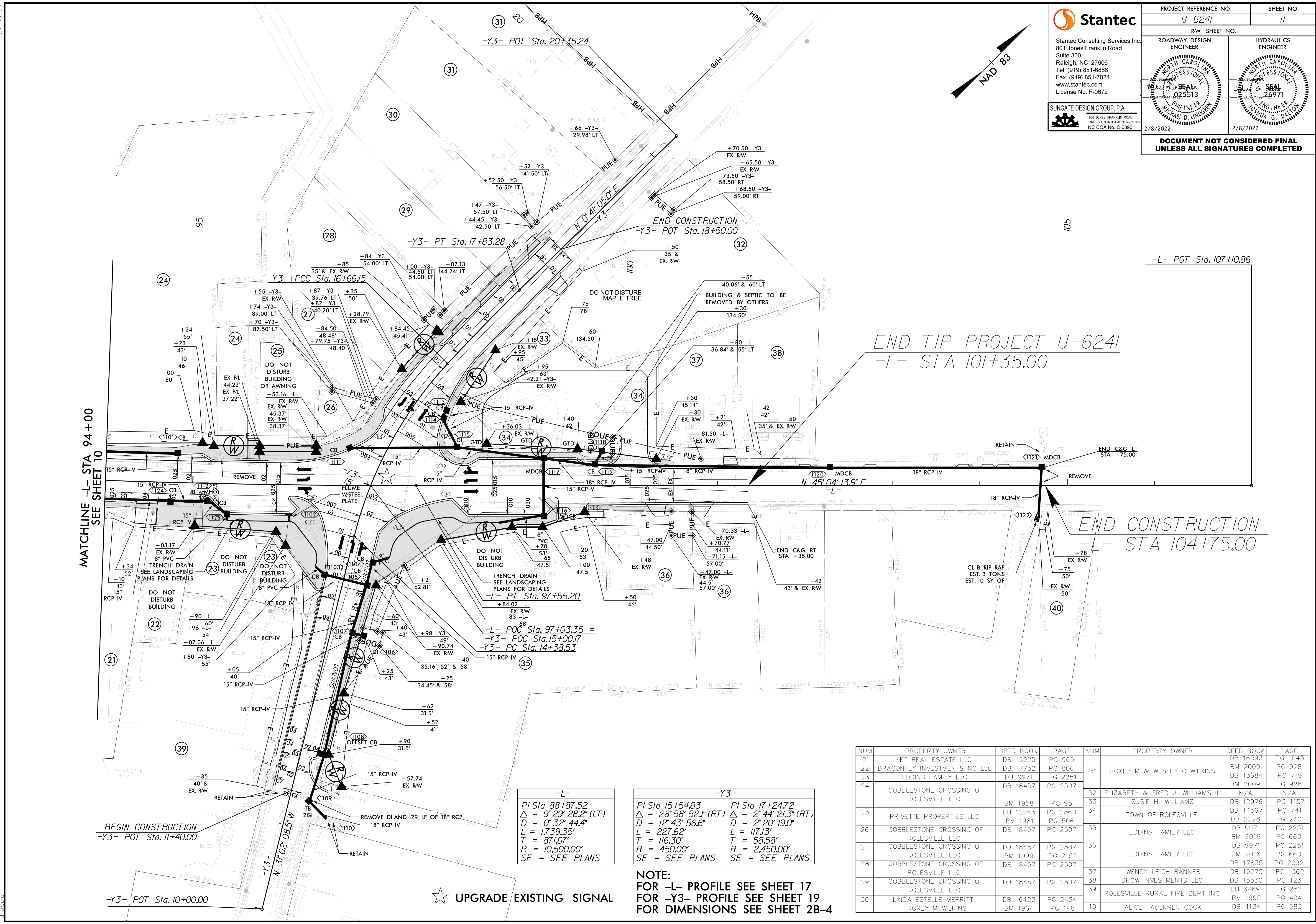
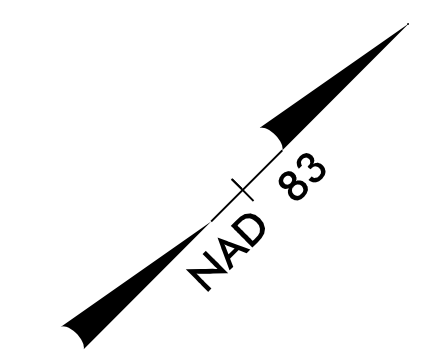


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SUNGATE DESIGN GROUP, P.A.
105 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241		SHEET NO. 11	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
2/8/2022		2/8/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



MATCHLINE -L- STA 94+00
SEE SHEET 10

END TIP PROJECT U-6241
-L- STA 101+35.00

END CONSTRUCTION
-L- STA 104+75.00

-L-
 PI Sta 88+87.52
 $\Delta = 9' 29" 28.2" (LT)$
 $D = 0' 32" 44.4"$
 $L = 1,739.35'$
 $T = 871.67'$
 $R = 10,500.00'$
 SE = SEE PLANS

-Y3-
 PI Sta 15+54.83 PI Sta 17+24.72
 $\Delta = 28' 58" 52.1" (RT)$ $\Delta = 2' 44" 21.3" (RT)$
 $D = 12' 43" 56.6"$ $D = 2' 20" 19.0"$
 $L = 227.62'$ $L = 117.13'$
 $T = 116.30'$ $T = 58.58'$
 $R = 450.00'$ $R = 2,450.00'$
 SE = SEE PLANS SE = SEE PLANS

NOTE:
FOR -L- PROFILE SEE SHEET 17
FOR -Y3- PROFILE SEE SHEET 19
FOR DIMENSIONS SEE SHEET 2B-4

★ UPGRADE EXISTING SIGNAL

NUM	PROPERTY OWNER	DEED BOOK	PAGE	NUM	PROPERTY OWNER	DEED BOOK	PAGE		
21	KET REAL ESTATE LLC	DB 15925	PG 965	31	ROXEY M & WESLEY C WILKINS	DB 16593	PG 1043		
22	DRAGONFLY INVESTMENTS NC LLC	DB 17752	PG 806			BM 2009	PG 928		
23	EDDINS FAMILY LLC	DB 9971	PG 2251			DB 13684	PG 719		
24	COBBLESTONE CROSSING OF ROLESVILLE LLC	DB 18457	PG 2507	BM 2009	PG 928	32	ELIZABETH & FRED J. WILLIAMS III	N/A	N/A
				BM 1958	PG 95			DB 12976	PG 1157
25	PRIVETTE PROPERTIES LLC	DB 12763	PG 2560	34	TOWN OF ROLESVILLE	DB 14567	PG 741		
26	COBBLESTONE CROSSING OF ROLESVILLE LLC	DB 18457	PG 2507			DB 2228	PG 240		
27	COBBLESTONE CROSSING OF ROLESVILLE LLC	DB 18457	PG 2507	BM 1999	PG 2152	35	EDDINS FAMILY LLC	DB 9971	PG 2251
								DB 18457	PG 2507	BM 2016	PG 660
28	COBBLESTONE CROSSING OF ROLESVILLE LLC	DB 18457	PG 2507	DB 18457	PG 2507	36	EDDINS FAMILY LLC	DB 9971	PG 2251
								DB 2016	PG 660
29	COBBLESTONE CROSSING OF ROLESVILLE LLC	DB 18457	PG 2507	DB 15530	PG 1361	37	WENDY LEIGH BANNER	DB 15275	PG 1362
								DB 17835	PG 2092
30	LINDA ESTELLE MERRITT, ROXEY M WILKINS	DB 16423	PG 2434	BM 1995	PG 404	38	DRCW INVESTMENTS LLC	DB 15530	PG 1361
								BM 1964	PG 148	DB 6469	PG 282
						39	ROLESVILLE RURAL FIRE DEPT INC	DB 1995	PG 404
						40	ALICE FAULKNER COOK	DB 4134	PG 583

2/8/2022
L:\Projects\U-6241_Rd\psh1.dgn

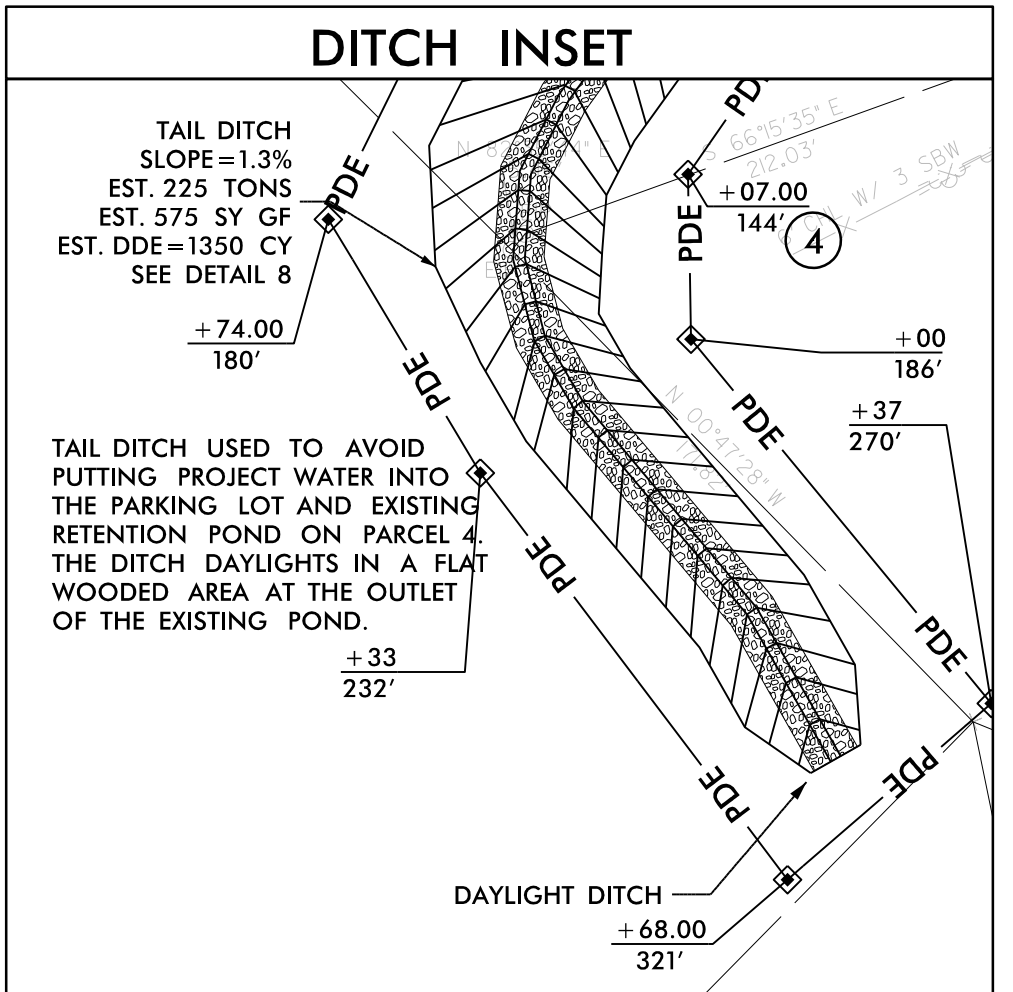
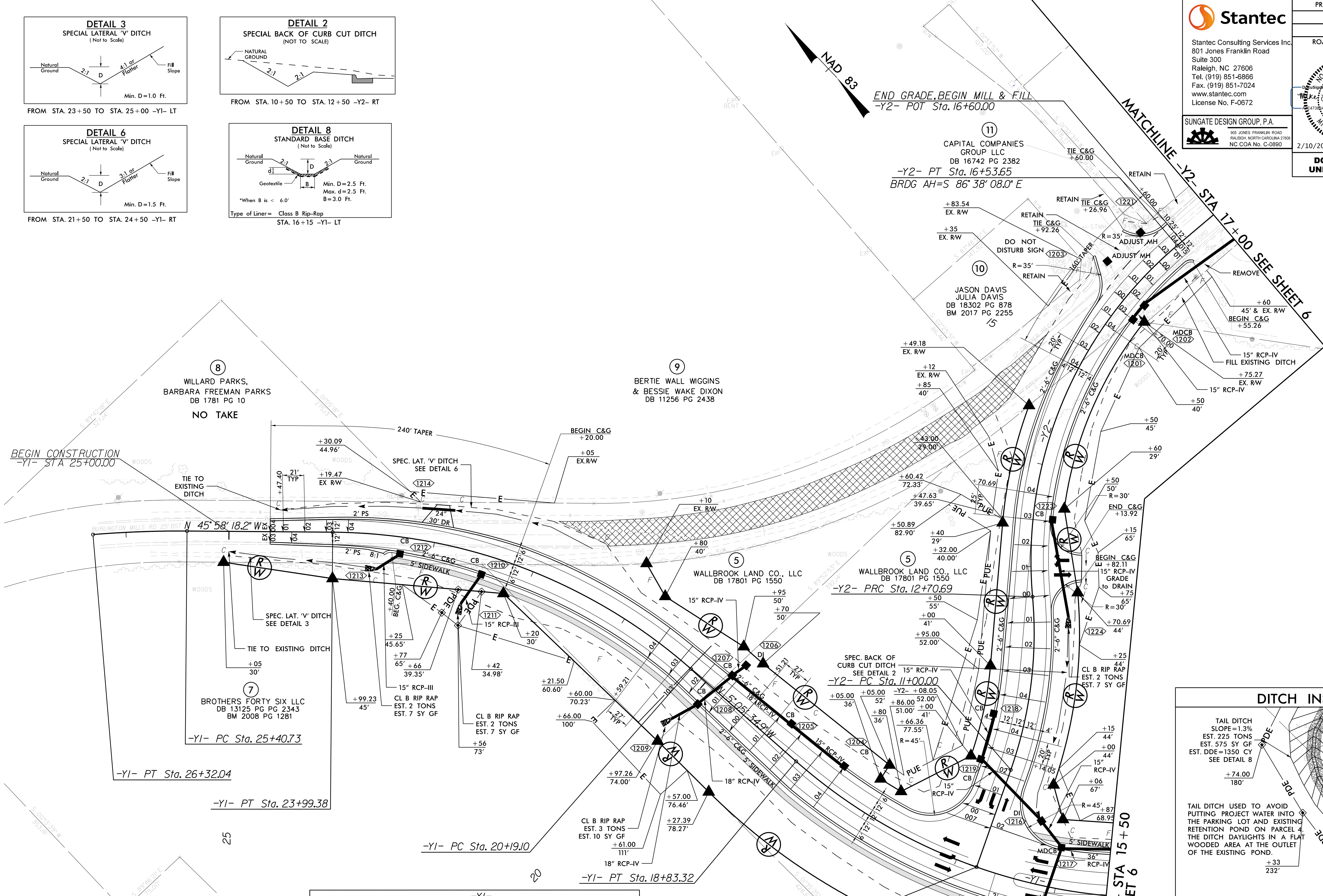
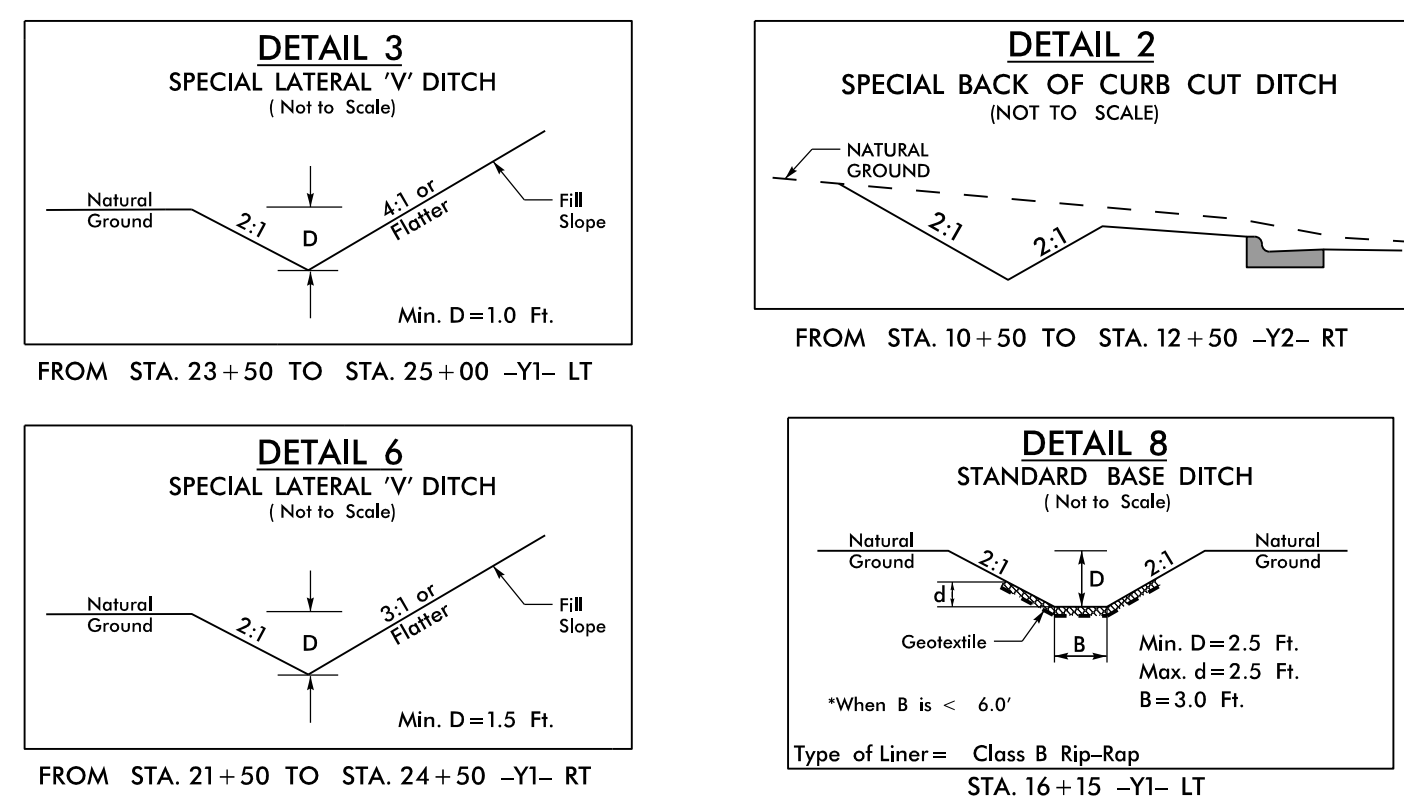
8.17.2022

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 105 JONES FRANKLIN ROAD
 RALEIGH, NORTH CAROLINA 27606
 NC COA No. C-0890

PROJECT REFERENCE NO. **U-6241** SHEET NO. **12**
 RW SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER
 2/10/2022 2/10/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y1-		
PI Sta 16+89.75	PI Sta 22+17.74	PI Sta 25+86.41
Δ = 43° 53' 56.0" (RT)	Δ = 40° 52' 43.3" (LT)	Δ = 5° 13' 54.0" (LT)
D = 10° 44' 58.8"	D = 10° 44' 58.8"	D = 5° 43' 46.5"
L = 408.37'	L = 380.28'	L = 91.31'
T = 214.80'	T = 198.64'	T = 45.69'
R = 533.00'	R = 533.00'	R = 1,000.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS
-Y2-		
PI Sta 11+86.66	PI Sta 14+78.28	
Δ = 24° 26' 57.0" (LT)	Δ = 54° 51' 21.9" (RT)	
D = 14° 19' 26.2"	D = 14° 19' 26.2"	
L = 170.69'	L = 382.97'	
T = 86.66'	T = 207.59'	
R = 400.00'	R = 400.00'	
SE = SEE PLANS	SE = SEE PLANS	

-Y1- POC Sta. 16+79.14 =
 -Y2- POT Sta. 10+00.00
 BRDG AH = N 62° 57' 27" E
 SYSTEM 1222 SIZED FOR ANTICIPATED FUTURE IMPERVIOUS AREA. CALCS AND PREPOST DO NOT ACCOUNT FOR FUTURE DETENTION THAT WOULD BE REQUIRED FOR DEVELOPMENT.

NOTE:
 FOR -Y1- PROFILE SEE SHEET 18
 FOR -Y2- PROFILE SEE SHEET 19

2/7/2022
 L:\Projects\2022\U-6241_Rd\psh12.dgn

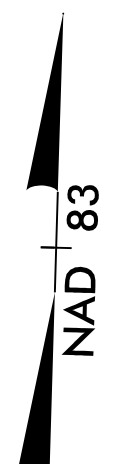
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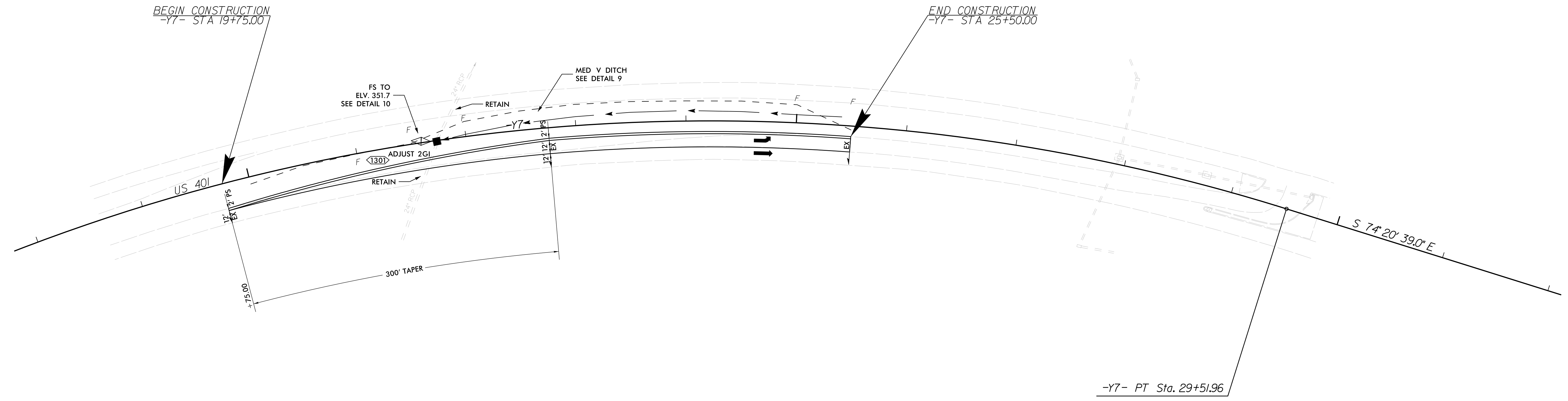
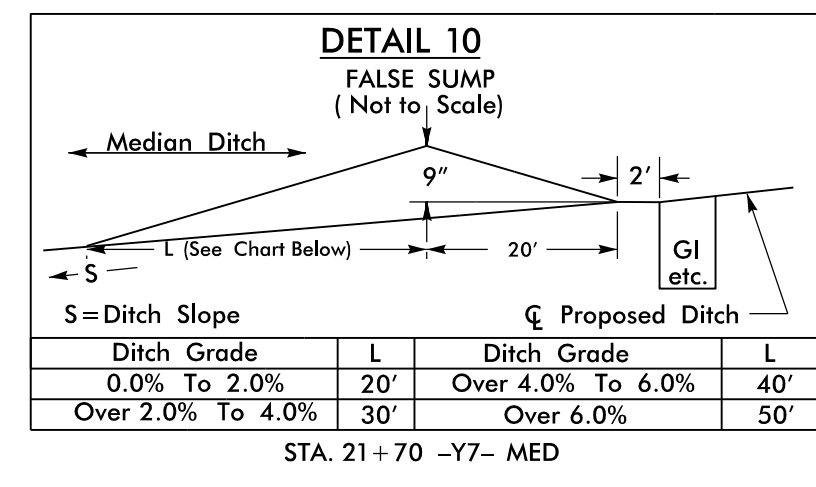
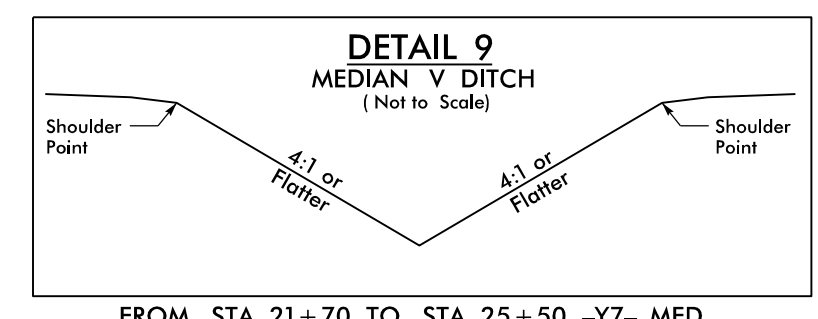
PROJECT REFERENCE NO. U-6241	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



20

25

30



-Y7-
PI Sta 23+34.65
$\Delta = 42^\circ 38' 33.8''$ (RT)
$D = 3^\circ 17' 06.4''$
$L = 1,298.06'$
$T = 680.75'$
$R = 1,744.10'$
SE = SEE PLANS

U-6241	16404	US 401 BUS
MAIN ST	26880	
US 401 BUS		
32493	15142	1262
53243	24812	2068
	US 401 BYPASS	18613
	-Y7-	30499
YR 2021		
YR 2041		

ALL WORK ON THIS SHEET IS ASSOCIATED WITH WALLBROOK DEVELOPMENT AND IS NOT SUBJECT TO FEDERAL REIMBURSEMENT.

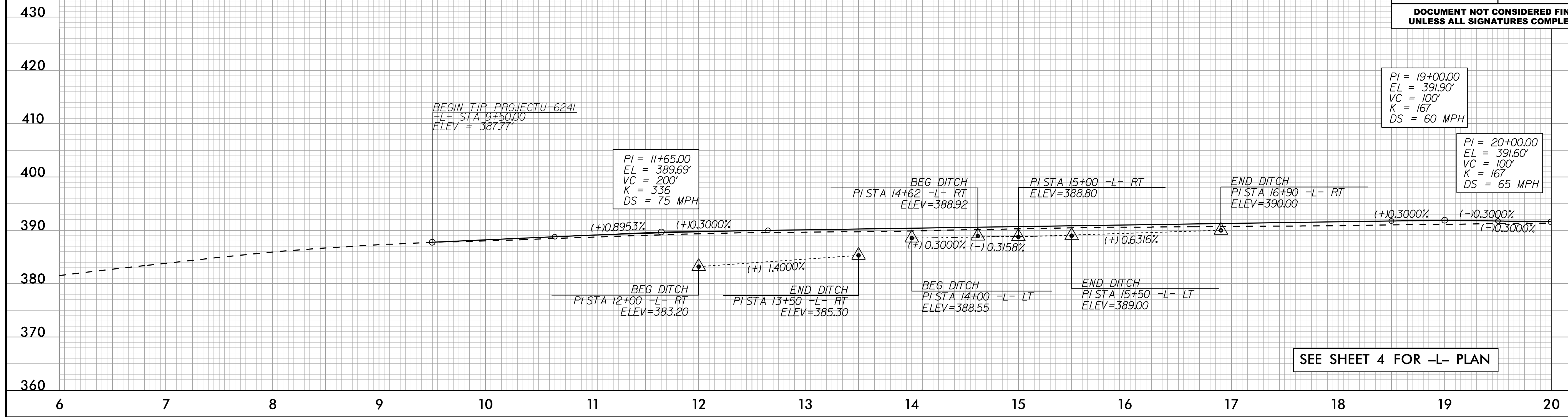
2/7/2022
I:\Projects\2021\U-6241_Main St\RDY_psh13.dgn
thorpe

5/28/99

PROJECT REFERENCE NO. U-6241	SHEET NO. 14
ROADWAY DESIGN ENGINEER MICHAEL D. LINDSEY 2/10/2022	HYDRAULICS ENGINEER JOSHUA G. DALTON 2/10/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



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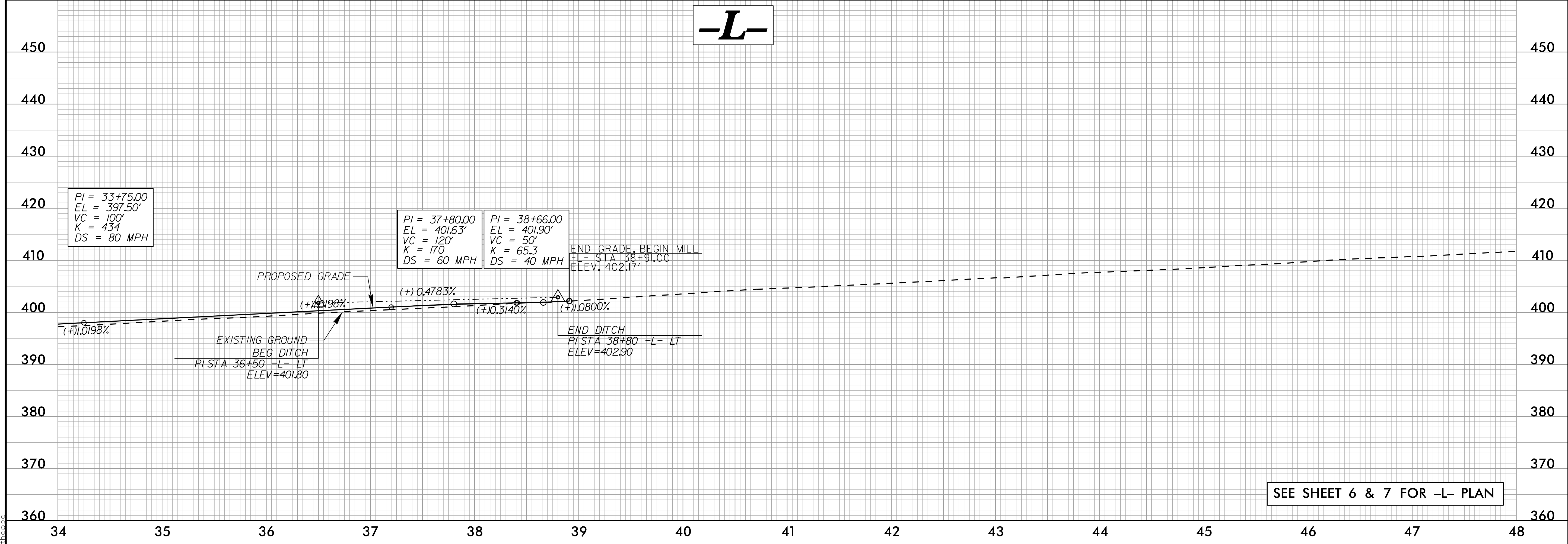
2/7/2022
U:\Projects\171002202_rdy_pfl_sheets.dgn
thorpe

5/28/2022

PROJECT REFERENCE NO. U-6241	SHEET NO. 15
ROADWAY DESIGN ENGINEER MICHAEL D. LINDSEY 2/10/2022	HYDRAULICS ENGINEER JOSHUA G. DIXON 2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

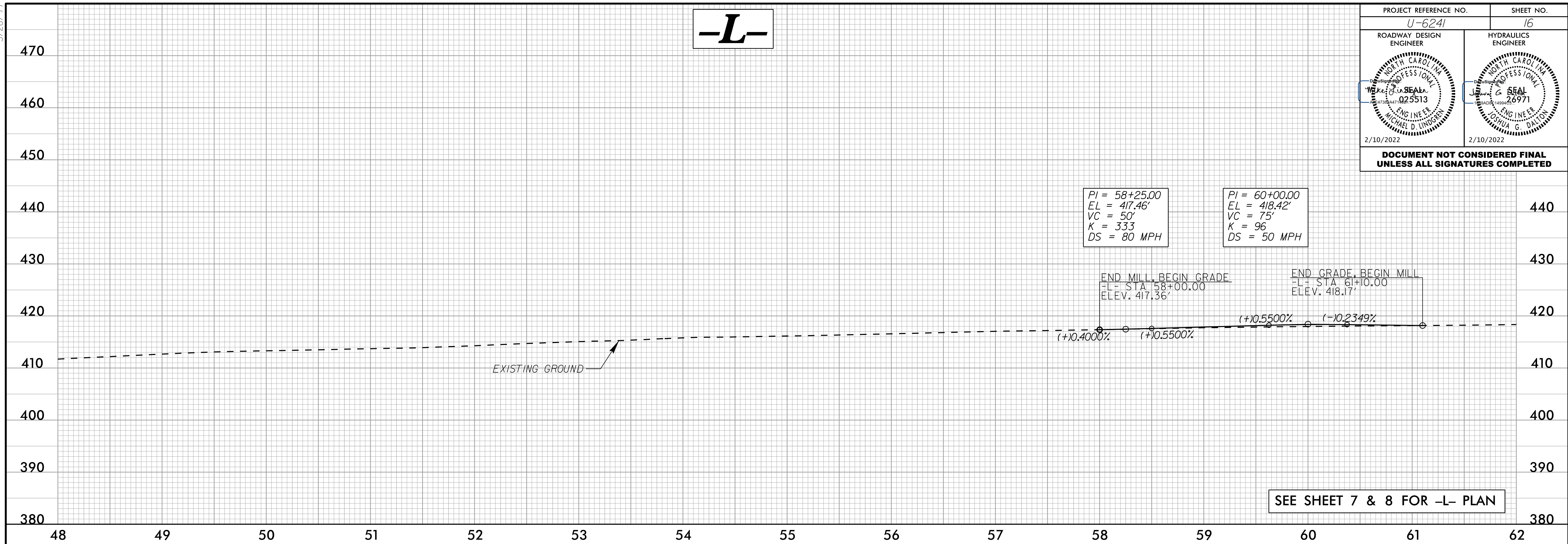


2/7/2022
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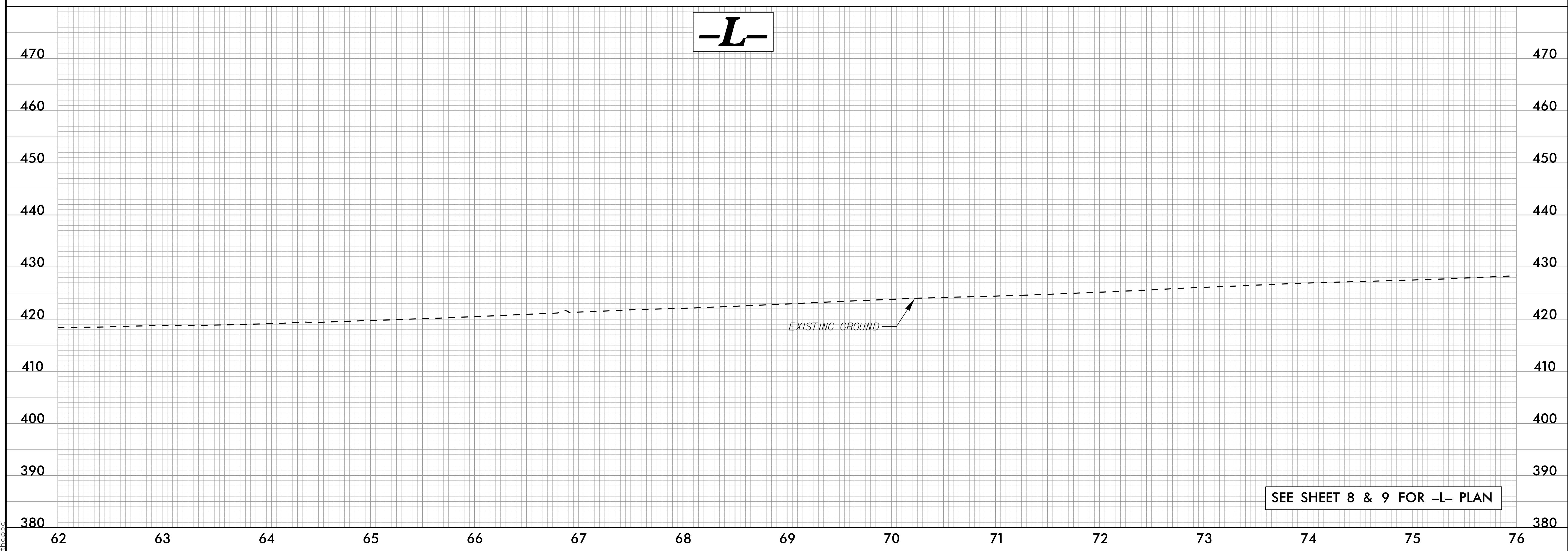


5/28/99

PROJECT REFERENCE NO. U-6241	SHEET NO. 16
ROADWAY DESIGN ENGINEER MICHAEL D. LINDSEY 2/10/2022 SEAL 025513	HYDRAULICS ENGINEER JOSHUA G. DALTON 2/10/2022 SEAL 26971
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

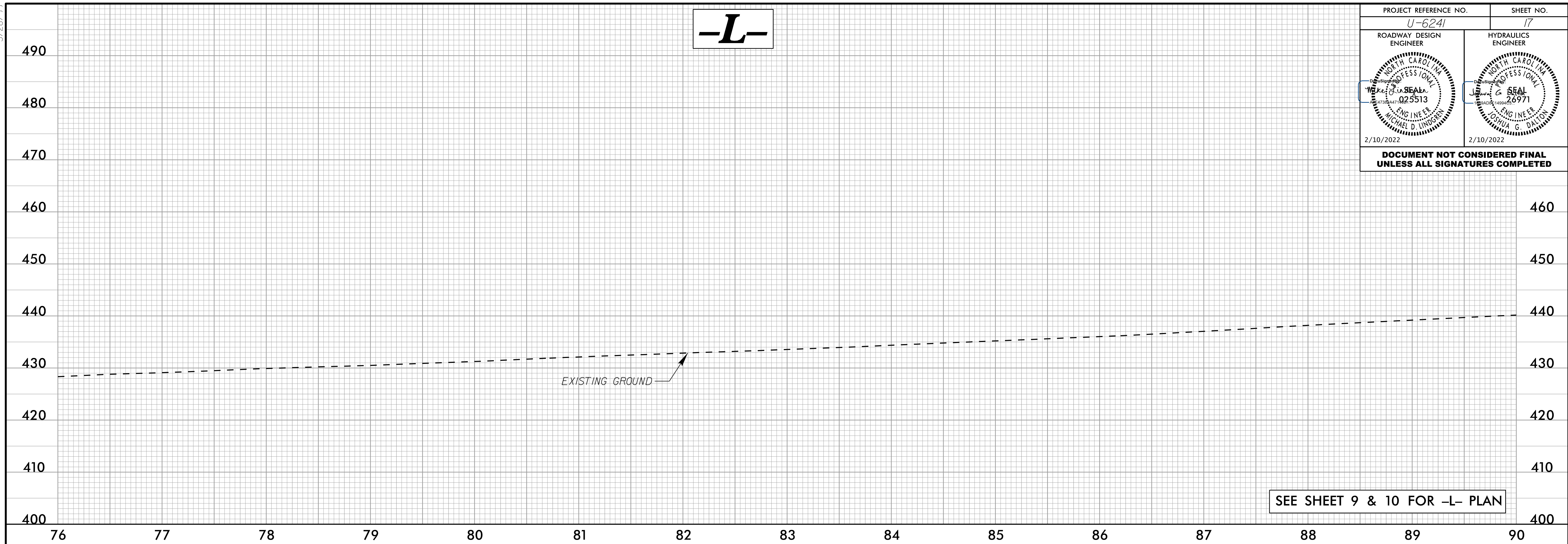


2/7/2022
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thorpe

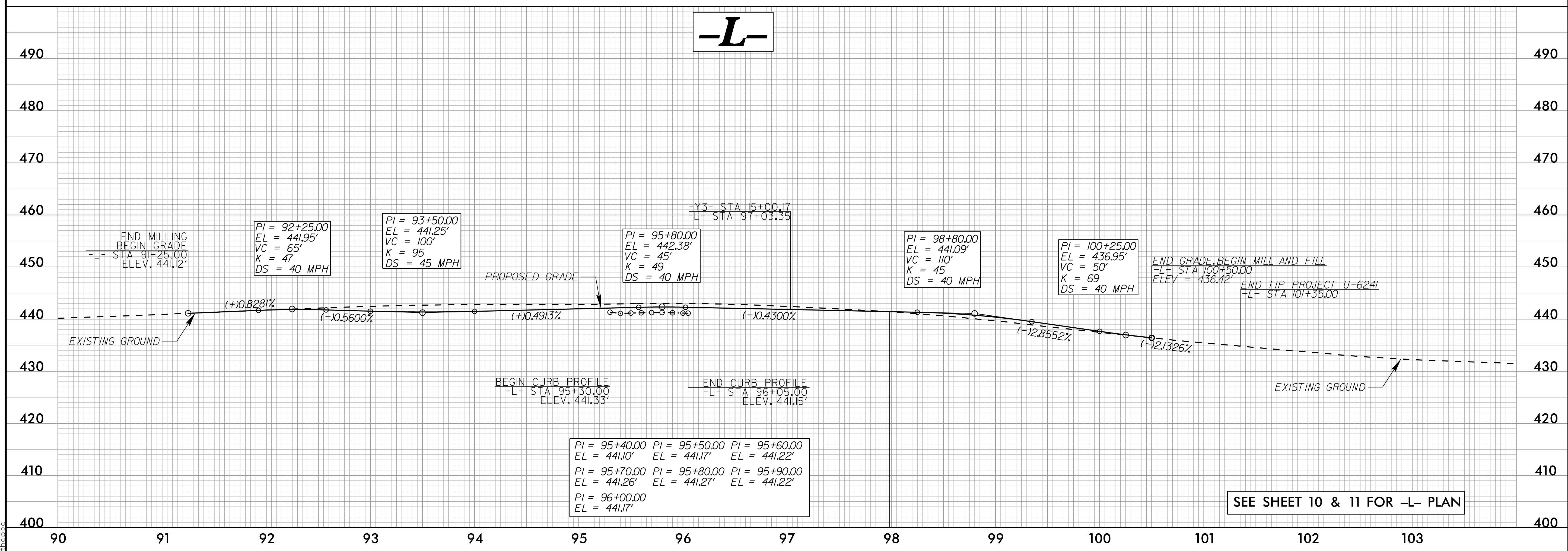


5/28/99

PROJECT REFERENCE NO. U-6241	SHEET NO. 17
ROADWAY DESIGN ENGINEER MICHAEL D. LINDGREN 2/10/2022	HYDRAULICS ENGINEER JOSHUA G. DALTON 2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SEE SHEET 9 & 10 FOR -L- PLAN


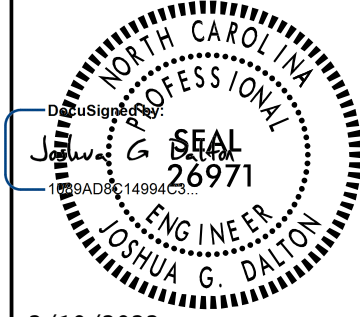


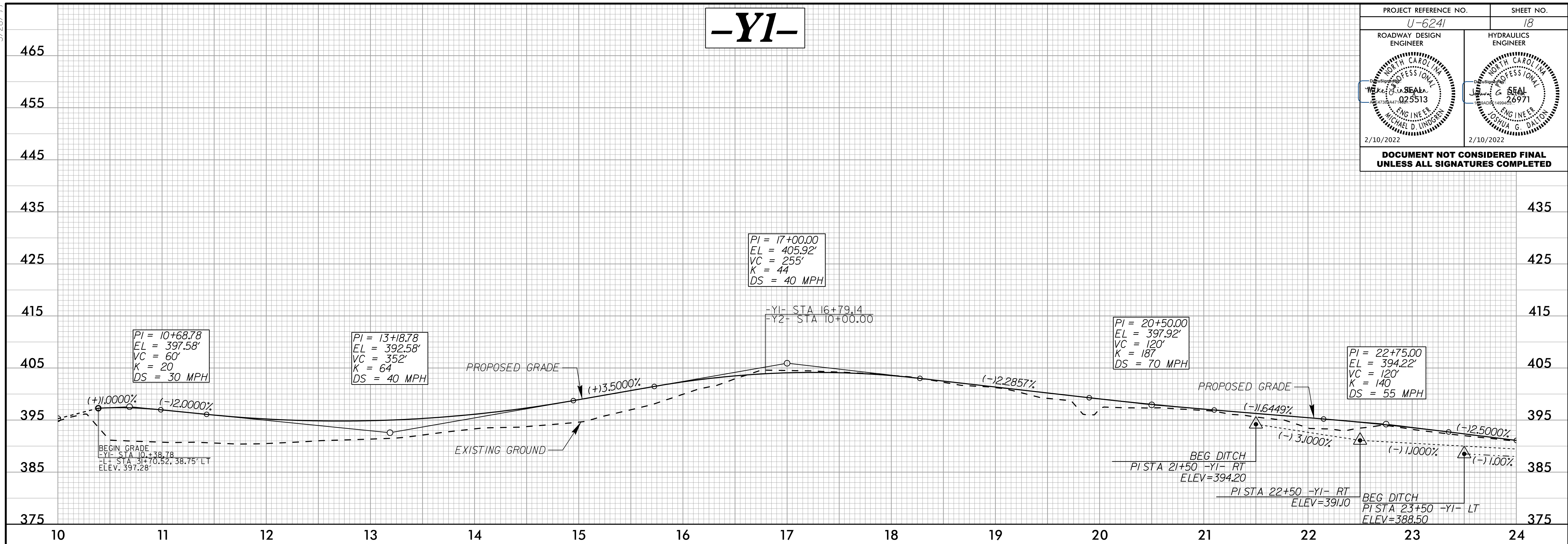
SEE SHEET 10 & 11 FOR -L- PLAN

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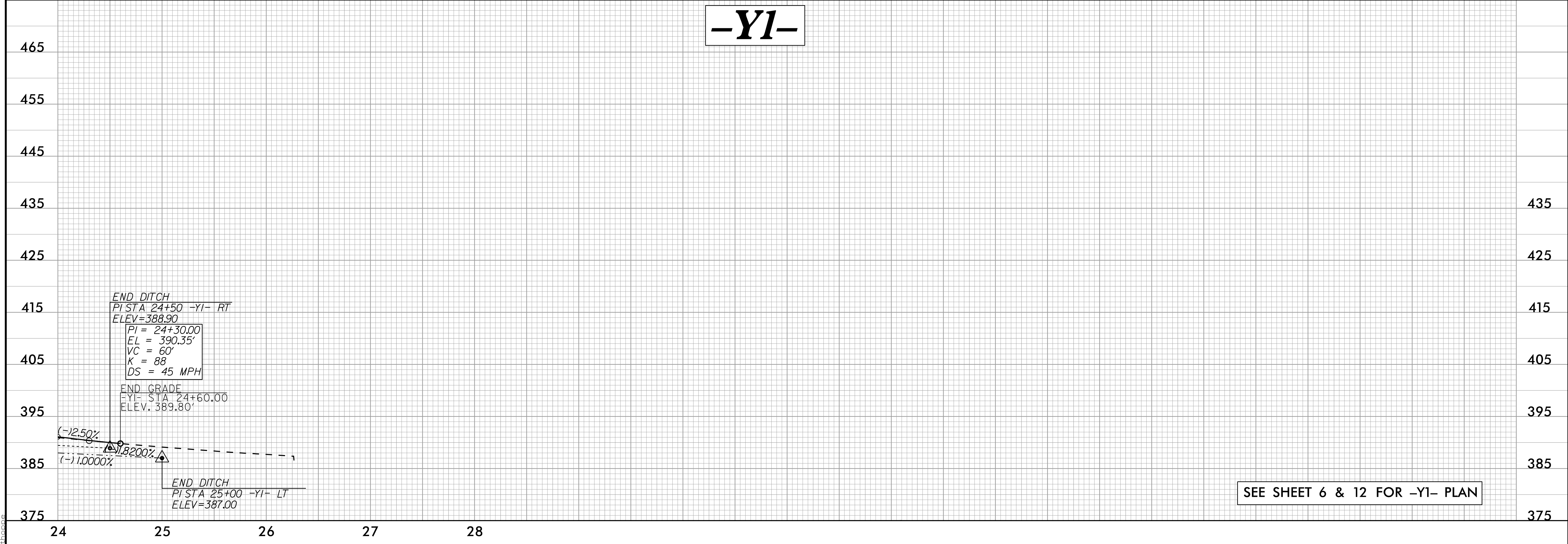
5/28/22

-Y1-

PROJECT REFERENCE NO. U-6241	SHEET NO. 18
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-Y1-



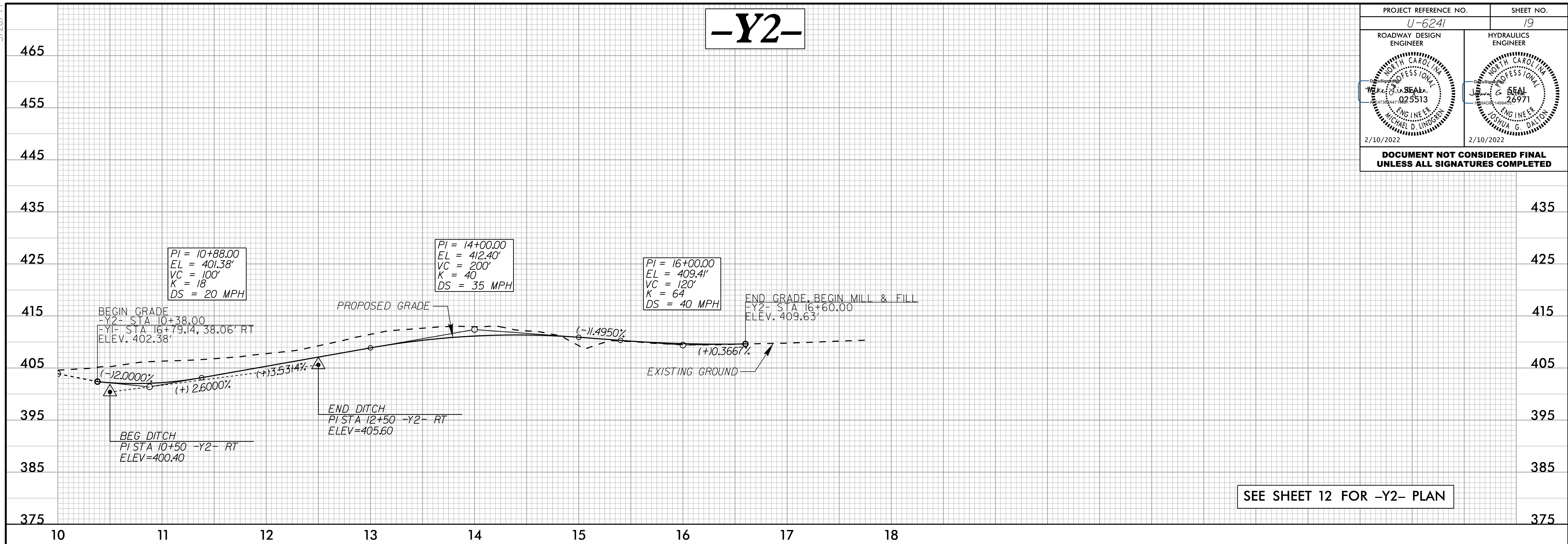
SEE SHEET 6 & 12 FOR -Y1- PLAN

2/7/2022
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5/28/22

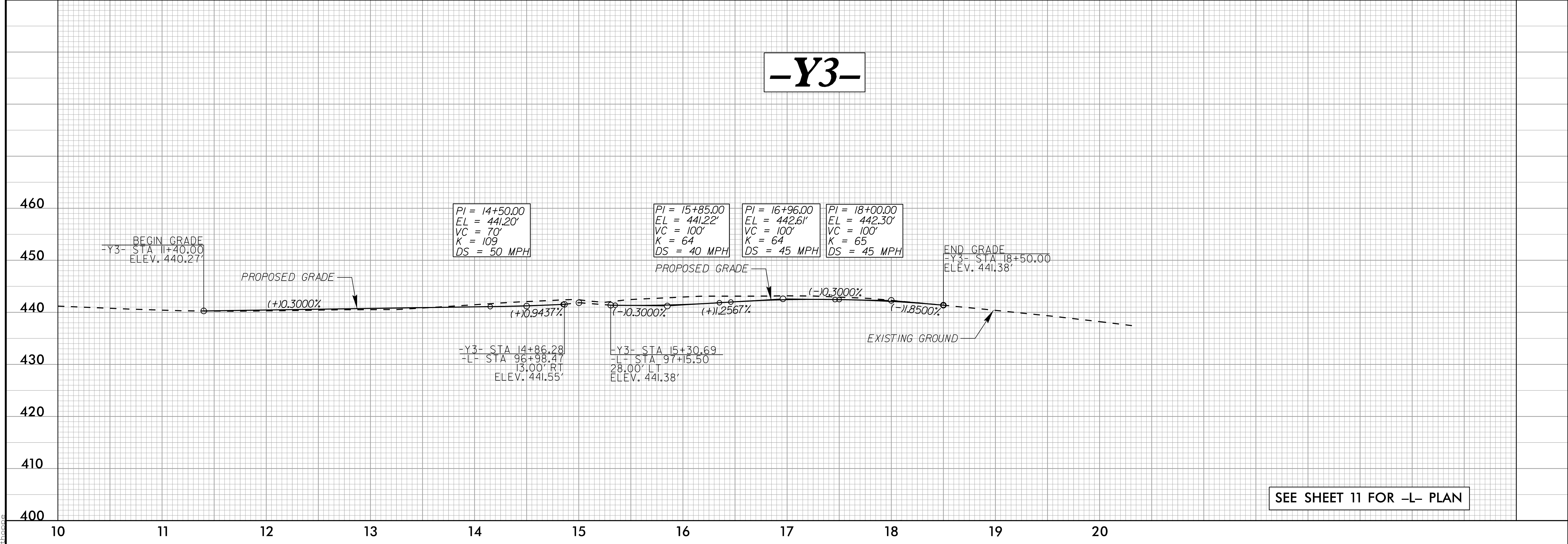
-Y2-

PROJECT REFERENCE NO. U-6241	SHEET NO. 19
ROADWAY DESIGN ENGINEER MICHAEL D. LINDSEY 2/10/2022	HYDRAULICS ENGINEER JOSHUA G. DALTON 2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



SEE SHEET 12 FOR -Y2- PLAN

-Y3-

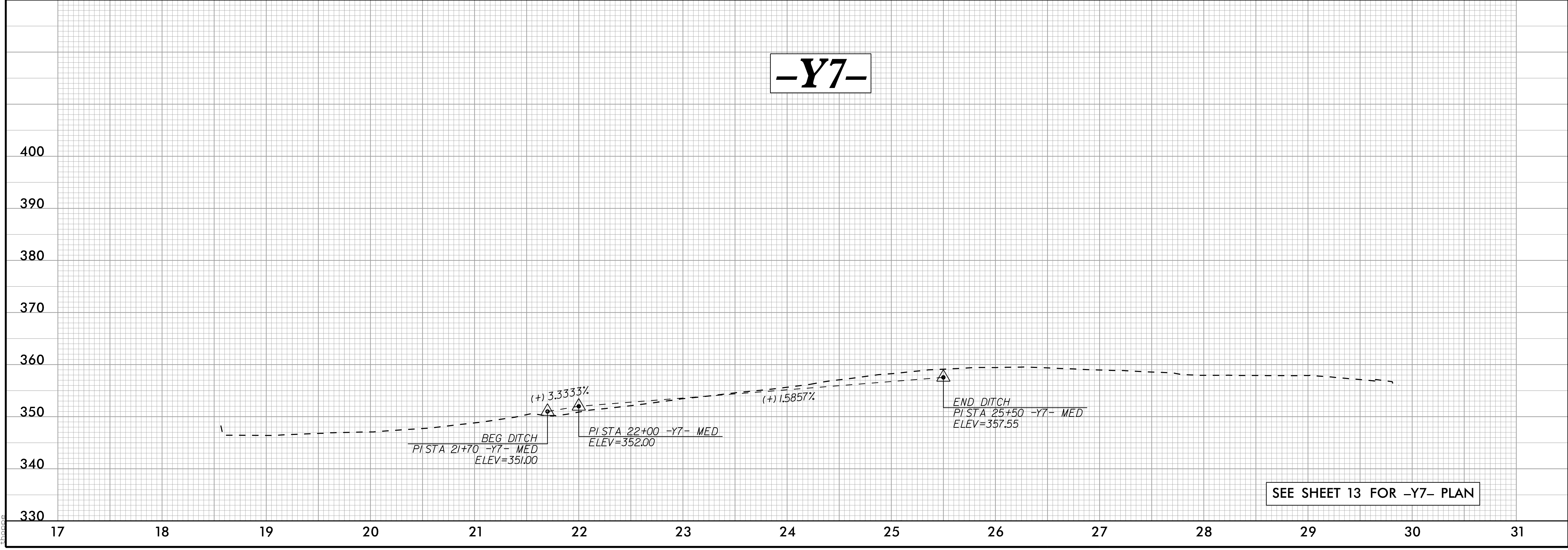
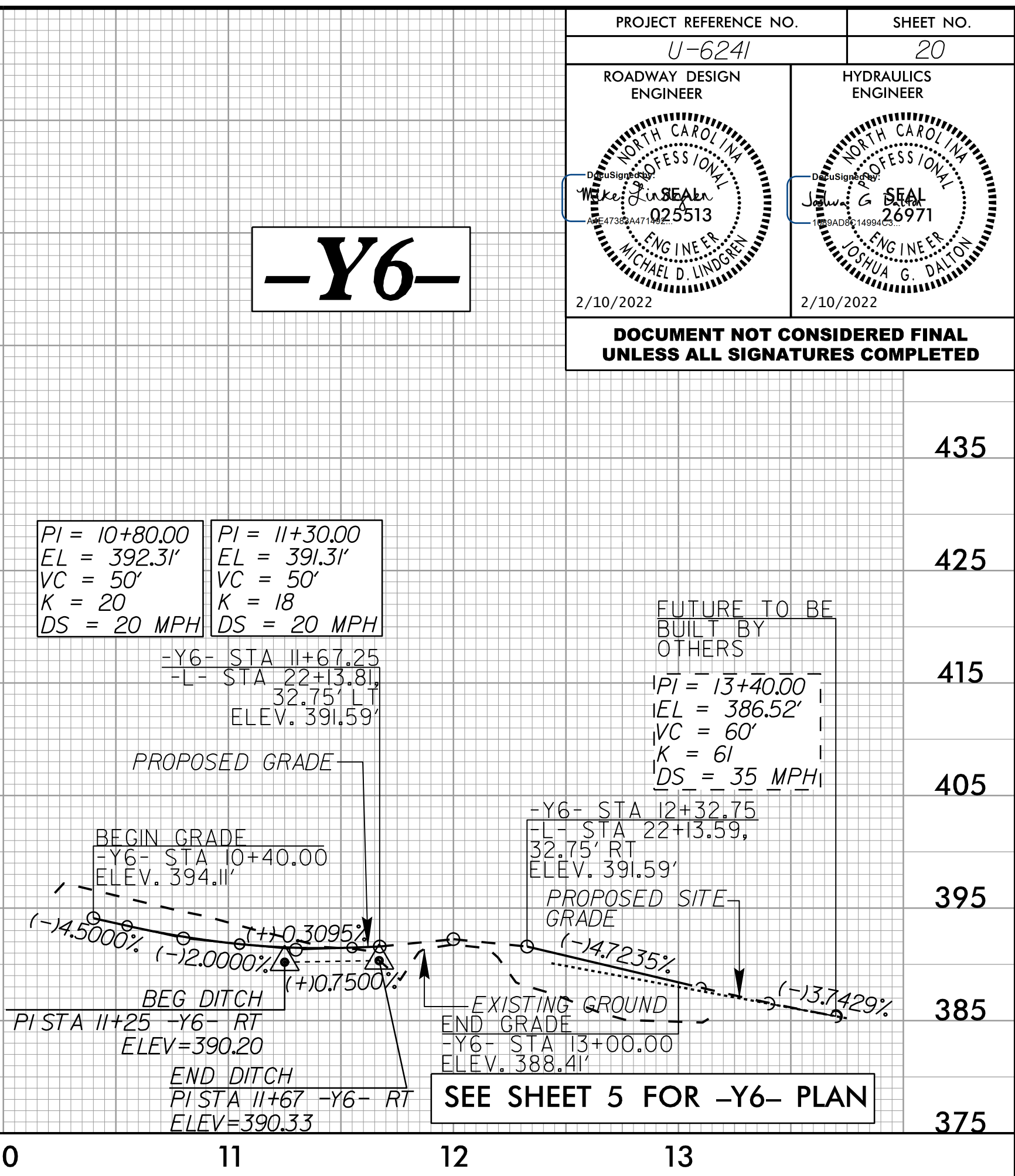
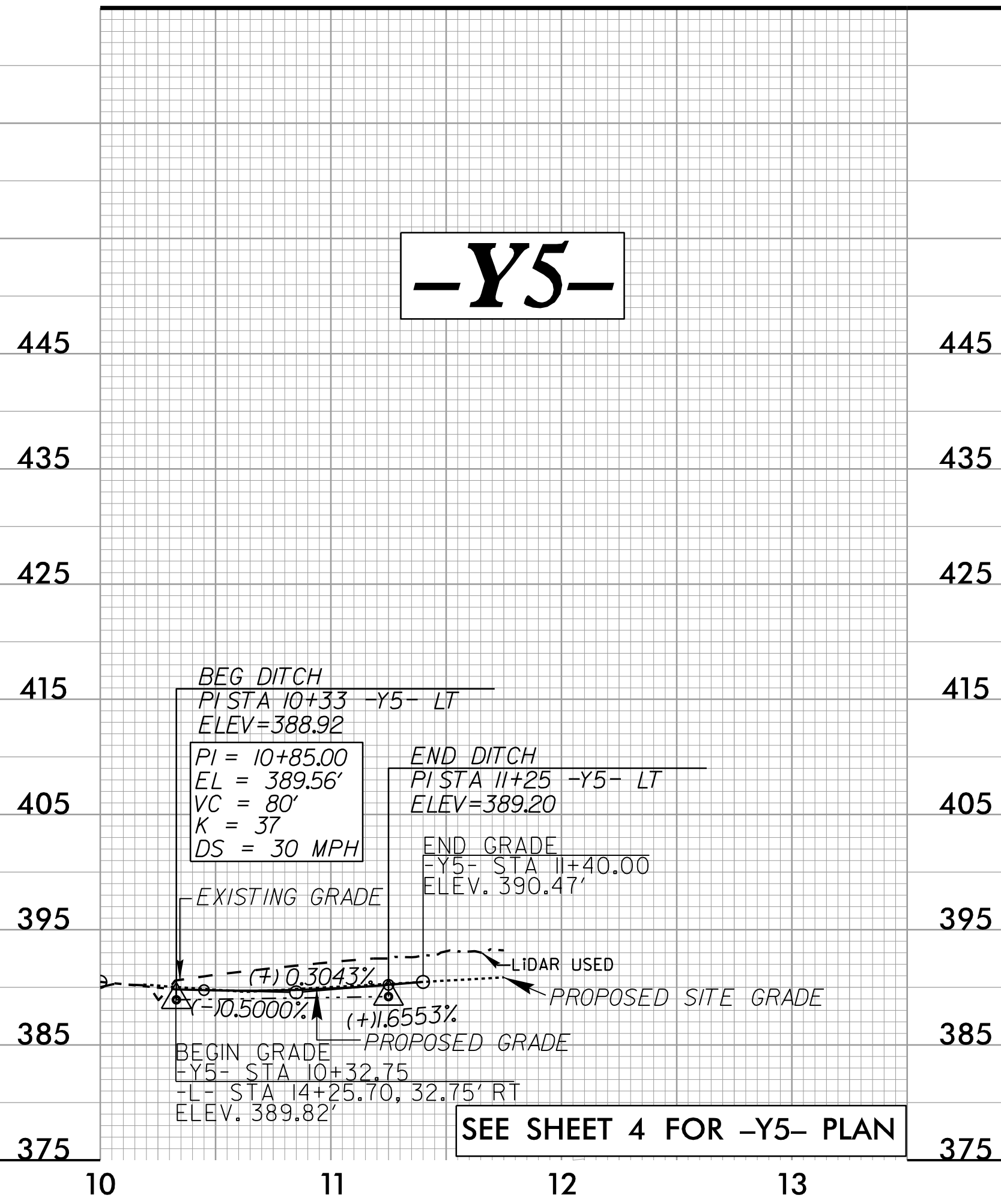
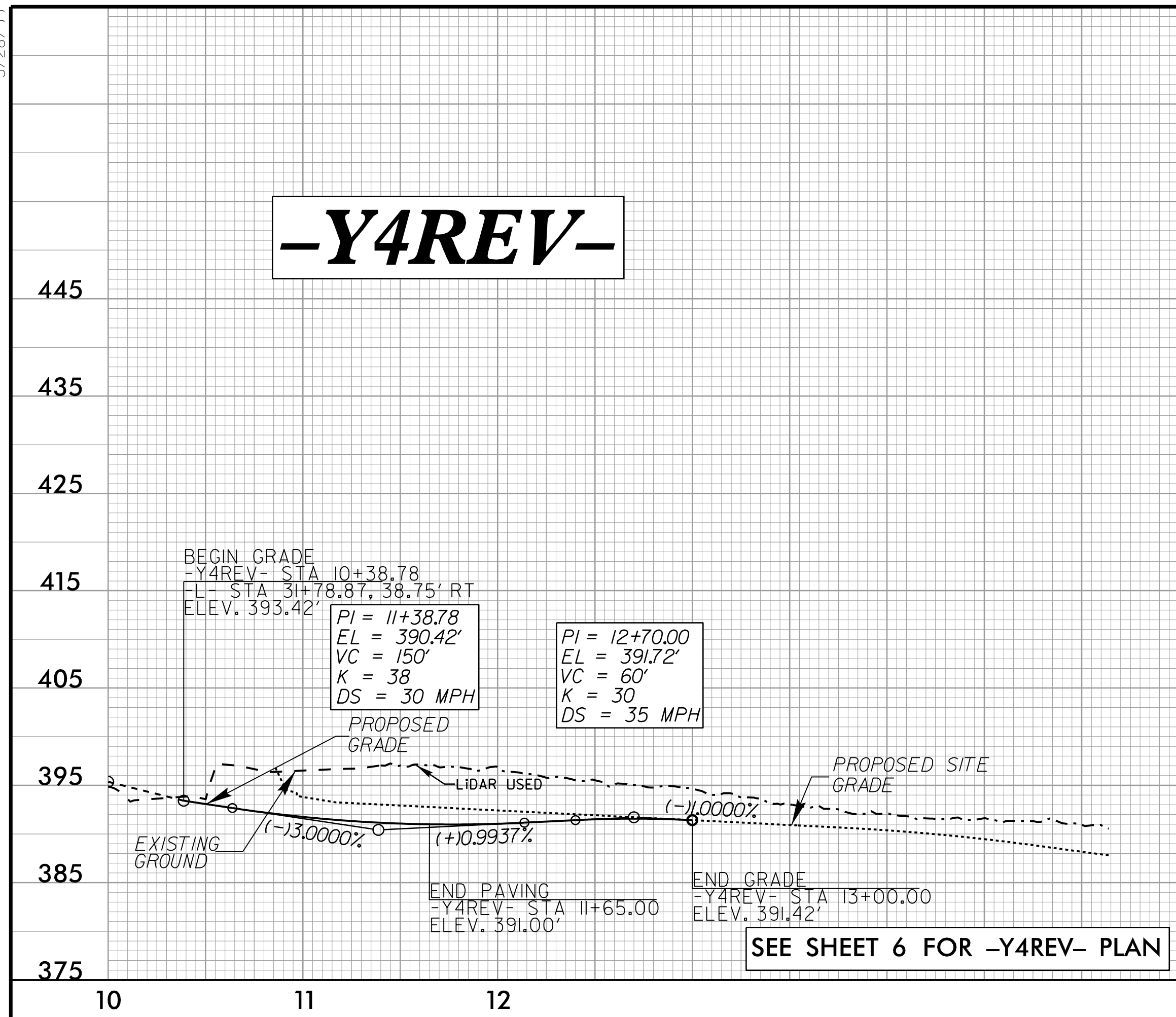


SEE SHEET 11 FOR -L- PLAN

2/7/2022
U:\Projects\171002202_rdy_pfl_sheets.dgn

5/28/2022

PROJECT REFERENCE NO. U-6241	SHEET NO. 20
ROADWAY DESIGN ENGINEER MICHAEL D. LINGGREN Professional Seal: 025513 2/10/2022	HYDRAULICS ENGINEER JOSHUA G. DIXON Professional Seal: 26971 2/10/2022
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

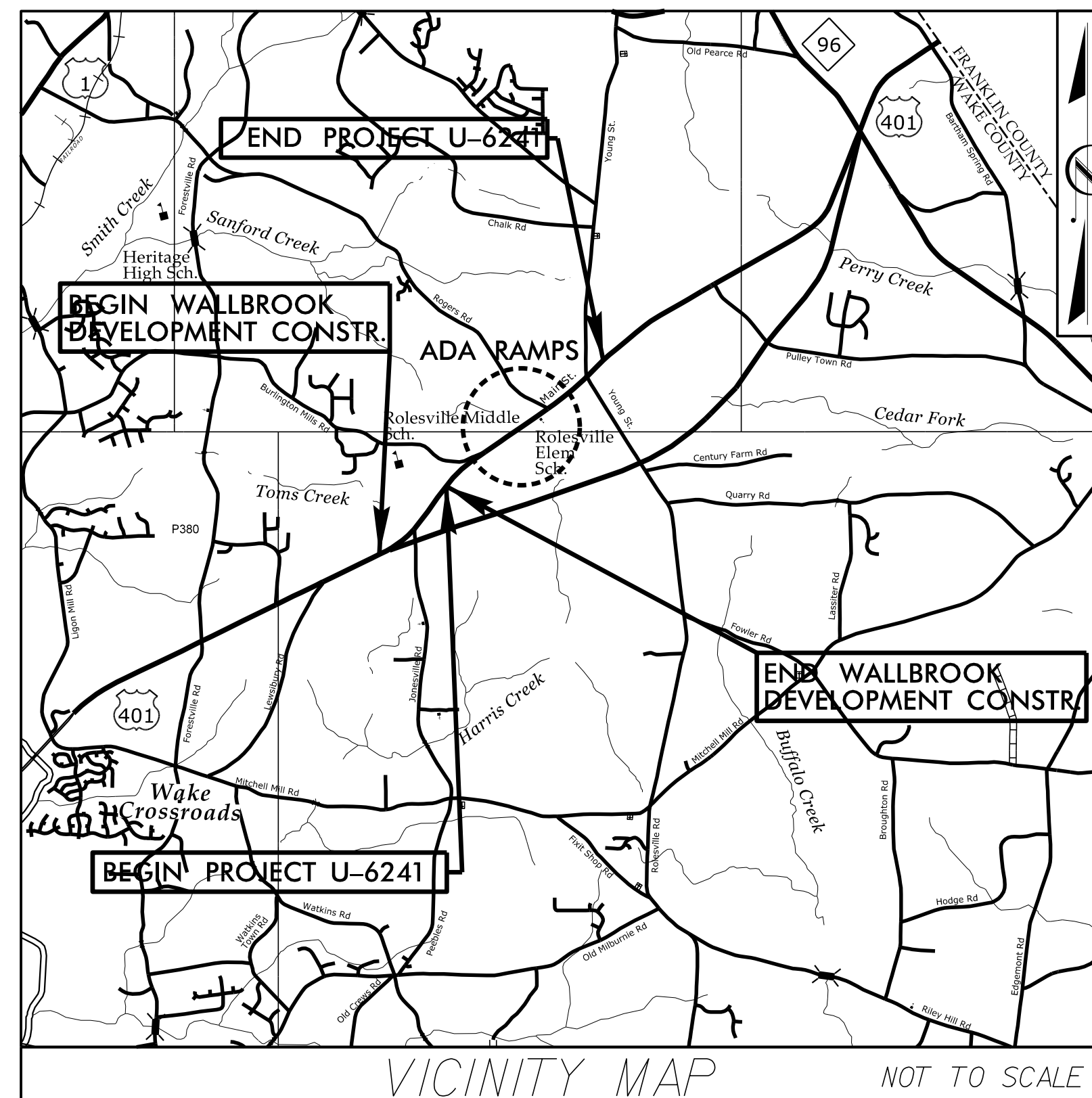
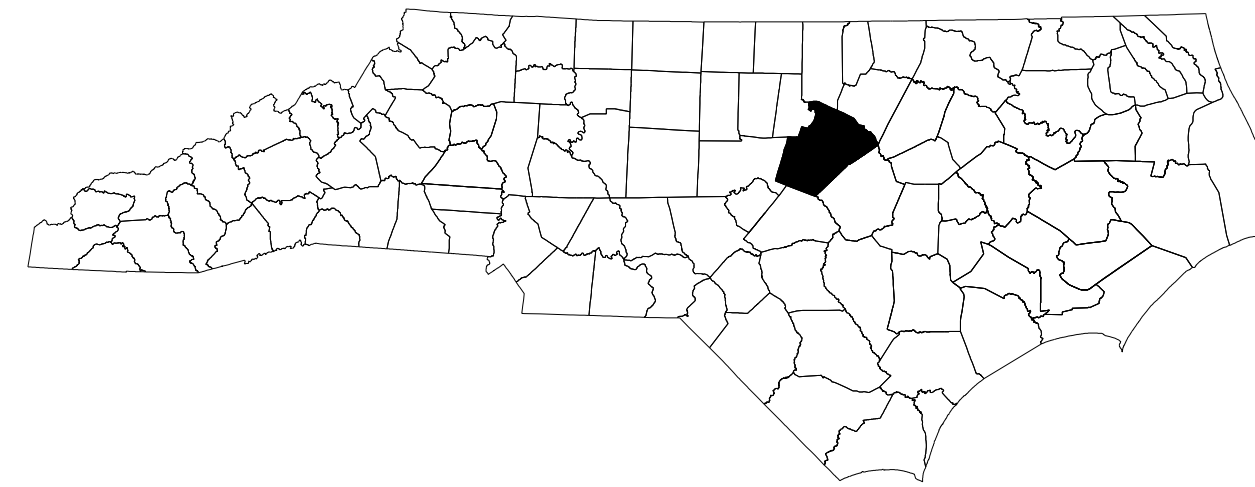


2/7/2022
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

WAKE COUNTY



LOCATION: US 401 BUS (MAIN ST) FROM JONESVILLE RD TO NORTH OF YOUNG ST
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS

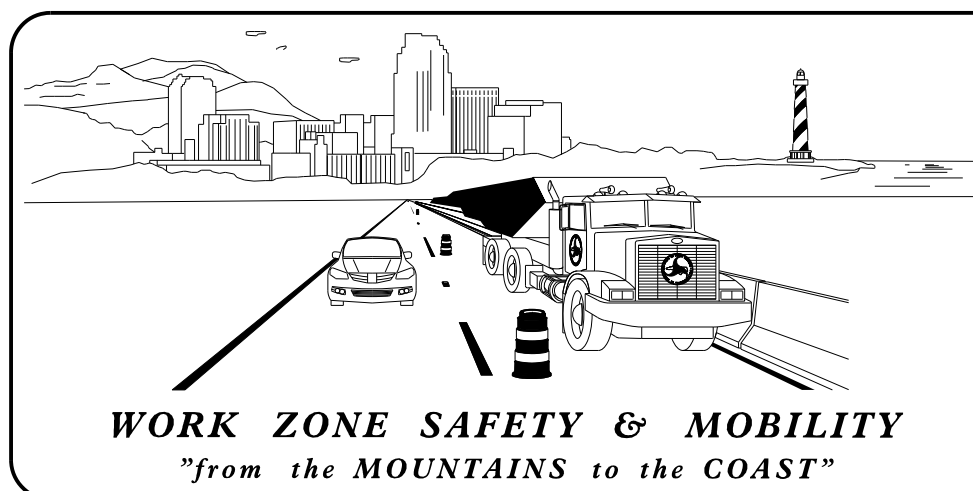
INDEX OF SHEETS	
SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD STANDARDS, TEMP. PVMT. MARKING SCHEDULE AND LEGEND
TMP-1B AND TMP-1C	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES)
TMP-2	CLOSURE OF MAIN ST AND YOUNG ST (PEDESTRIAN PLAN)
TMP-2A	DETOUR ROUTE
TMP-2B	ROAD CLOSURE DETAIL
TMP-2C AND TMP-2D	SPECIAL SIGN DESIGN
TMP-3	PHASING
TMP-4 THRU TMP-8	PHASE I DETAILS
TMP-9 THRU TMP-13	PHASE II DETAILS

SHEET NO.
TMP-1

U-6241

TIP PROJECT:

4/14/2022 U:\Traffic\Transportation Management\Plan\TCP\PLAN SHEETS\DER\U6241\TMP01\TITLE.dgn User:darichardson



PLANS PREPARED BY:

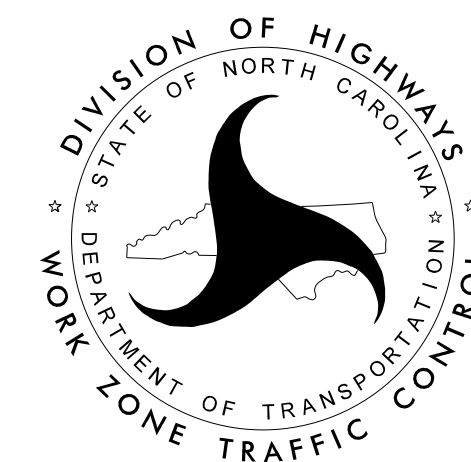
J. WOOLARD, PE
 SENIOR TRANSPORTATION ENGINEER

D. RICHARDSON
 TRANSPORTATION DESIGNER

NCDOT CONTACTS:

KELLY ARNOLD
 ROLESVILLE TOWN MANAGER

TRACY PARROT, PE
 DIVISION PROJECT DELIVERY ENGINEER



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APPROVED: *J.W. Woolard, Jr.*
 DATE: 4/14/2022

 SEAL
 19862
 J.W. WOOLARD JR.
 ENGINEER

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	<u>PAINT PAVEMENT MARKING LINES (4")</u>		<u>PAINT PAVEMENT MARKING LINES (24")</u>
	2 FT. - 6 FT./SP WHITE MINISKIP		WHITE STOPBAR
	2 FT. - 6 FT./SP YELLOW MINISKIP		WHITE CROSSWALK LINE
	WHITE EDGELINE		<u>PAINT PAVEMENT MARKING SYMBOLS</u>
	YELLOW EDGELINE		LEFT TURN ARROW
	10 FT. WHITE SKIP		RIGHT TURN ARROW
	3 FT. - 9 FT./SP WHITE MINISKIP		STRAIGHT ARROW
	WHITE SOLID LANE LINE		COMBO. RIGHT/STRAIGHT ARROW
	10 FT. YELLOW SKIP		HANDICAP PARKING
	YELLOW SINGLE CENTER		ALPHANUMERIC CHAR
	YELLOW DOUBLE CENTER		BICYCLE SYMBOL
	<u>PAINT PAVEMENT MARKING LINES (8")</u>		BICYCLE STRAIGHT ARROW
	WHITE CROSSWALK LINE		BICYCLE LEFT ARROW
			SHARROW

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GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRE OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
-L- US 401 BUS MAIN ST	MONDAY THRU FRIDAY
-Y1- BURLINGTON MILLS RD	6:00 A.M. TO 9:00 A.M. AND 4:00 P.M.-7:00 P.M.
-Y3- YOUNG ST	AND SUNDAY 6:00 A.M. TO 1:00 P.M.
-Y7- US 401 BYPASS	

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
-L- US 401 BUS MAIN ST
-Y3- YOUNG ST
-Y7- US 401 BYPASS

HOLIDAY

- 1) FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
- 2) FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
- 3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
- 4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
- 5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY; THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
- 6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
- 7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
- 8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

LANE AND SHOULDER CLOSURE REQUIREMENTS (CONT'D)

- E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- G) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- H) DO NOT INSTALL MORE THAN (0.7 MILES) OF LANE CLOSURE ON -L- US 401 BUS (MAIN ST) MEASURED FROM THE BEGINNING OF THE MERGE TAPER TO THE END OF THE LANE CLOSURE.
- I) DO NOT INSTALL MORE THAN TWO (2) SIMULTANEOUS LANE CLOSURES IN ANY ONE DIRECTION ON -L- US 401 MAIN ST.
- J) PROVIDE A MINIMUM OF 0.7 MILES BETWEEN LANE CLOSURES, MEASURED FROM THE END OF ONE CLOSURE TO THE FIRST SIGN OF THE NEXT LANE CLOSURE.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- K) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPEN TRAVEL LANE THAT HAS A DROP-OFF AS FOLLOWS:
- BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.
- BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.
- BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.
- L) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

- M) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.


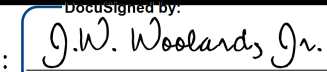
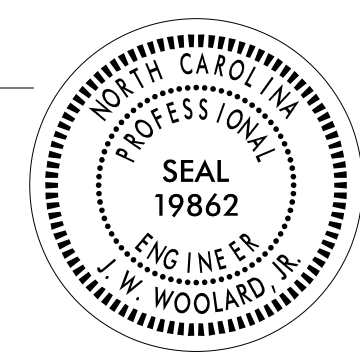

SIGNING

- N) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- O) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.
- AND
- PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.
- P) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.
- AND
- COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- Q) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- R) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

- S) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- T) PLACE TYPE III BARRICADES WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- U) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS, CONES OR SKINNY DRUMS) PERPENDICULAR TO THE EDGE OF TRAVELWAY ON (100 FT) CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

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GENERAL NOTES (CONT'D)

PAVEMENT MARKINGS AND MARKERS

- V) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:
- | ROAD NAME | MARKING | MARKER |
|-----------|---------|------------------|
| ALL ROADS | PAINT | TEMPORARY RAISED |
- W) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- X) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- Y) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.
- Z) TRACE THE (EXISTING AND/OR PROPOSED) MONOLITHIC ISLAND LOCATIONS WITH THE PROPER COLOR PAVEMENT MARKING PRIOR TO (REMOVAL AND/OR INSTALLATION). PLACE (DRUMS, CONES, OR TUBULAR MARKERS) TO DELINEATE ANY (EXISTING AND/OR PROPOSED) MONOLITHIC ISLANDS (AFTER REMOVAL AND/OR BEFORE INSTALLATION).

MISCELLANEOUS

- AA) USE LAW ENFORCEMENT TO DIRECT TRAFFIC AND ENFORCE ROAD CLOSURES. LOCATIONS SHOWN IN THE PLANS ARE APPROXIMATE AND MAY BE REVISED AS THE OFFICER OR THE ENGINEER DEEM NECESSARY.
- USE LAW ENFORCEMENT TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATIONS SHOWN IN THE PLANS ARE APPROXIMATE AND MAY BE REVISED AS THE OFFICER OR THE ENGINEER DEEM NECESSARY.
- BB) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) (500 FT) AND (1000 FT) RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.
- CC) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.
- DD) CONTRACTOR SHALL MAINTAIN SIDEWALK ACCESS AT ALL TIMES AS STATED IN THE PHASING. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY SIDEWALKS (CONCRETE, ASPHALT, OR OTHER SUITABLE MATERIAL AS APPROVED BY THE ENGINEER) AT ALL LOCATIONS WHERE THE OPEN PEDESTRIAN TRAVELWAY HAS BEEN REMOVED FOR CONSTRUCTION OPERATIONS (UTILITIES, DRAINAGE, ETC.).
- EE) MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING THE LIFE OF THE CONTRACT, UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER. USE INCIDENTAL STONE WHEN NECESSARY.
- FF) ALL DIMENSIONS AND STATIONS IN THE TRANSPORTATION MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- GG) CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES. OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT. ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATING.
- HH) COMPLETE ANY PROPOSED OR TEMPORARY WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE.


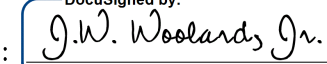
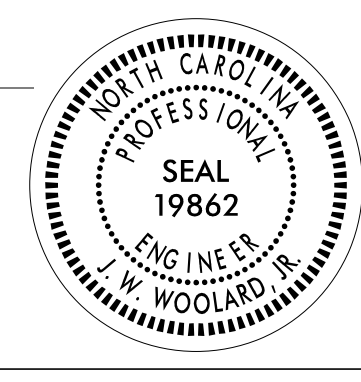

MISCELLANEOUS (CONT'D)

- II) MAINTAIN ALL EXISTING SIGNING ON PROJECT (WARNING, REGULATORY AND GUIDE SIGNS). WHERE CONSTRUCTION AFFECTS THE LOCATION OF A SIGN, RELOCATE AS NECESSARY, OR INSTALL REPLACEMENT SUCH THAT THE FUNCTION OF THE SIGN IS MAINTAINED AT ALL TIMES. DURING RELOCATION OF STOP SIGNS PROVIDE FLAGGERS WITH "FLAGGER AHEAD" (W20-7a) AND "BE PREPARED TO STOP" (W3-4) SIGNS AS NECESSARY TO MAINTAIN INTERSECTION TRAFFIC.
- JJ) DRAINAGE CONSTRUCTION SHOWN IN THE TRANSPORTATION MANAGEMENT PLAN IS A GENERAL REPRESENTATION OF WORK TO BE PERFORMED DURING A PARTICULAR PHASE OF CONSTRUCTION. REFER TO THE ROADWAY PLANS FOR DRAINAGE ITEMS. IN THE EVENT THERE IS A DISCREPANCY BETWEEN WHAT IS SHOWN IN THE TRANSPORTATION MANAGEMENT PLAN AND THE ROADWAY PLAN, THE ROADWAY PLAN SHALL GOVERN OVER THE TRANSPORTATION MANAGEMENT PLAN.

MANAGEMENT STRATEGIES

- L- (US 401 BUS/MAIN ST) FROM SOUTH OF HAMPTON LAKE RD TO SOUTH OF YOUNG ST INTERSECTION WIDEN AND RESURFACE USING LANE CLOSURES AND LAW ENFORCEMENT TO DIRECT TRAFFIC AT SIGNALS.
- Y1- (BURLINGTON MILLS RD)
CONSTRUCT AWAY FROM TRAFFIC, WITH TIE INS BEING CONSTRUCTED WITH FLAGGERS.
- INTERSECTION OF -L- (MAIN ST) AND -Y3- (YOUNG ST)
CONSTRUCT USING A ROAD CLOSURE FOR 60 DAYS WITH TRAFFIC PLACED ON OFF SITE DETOURS.

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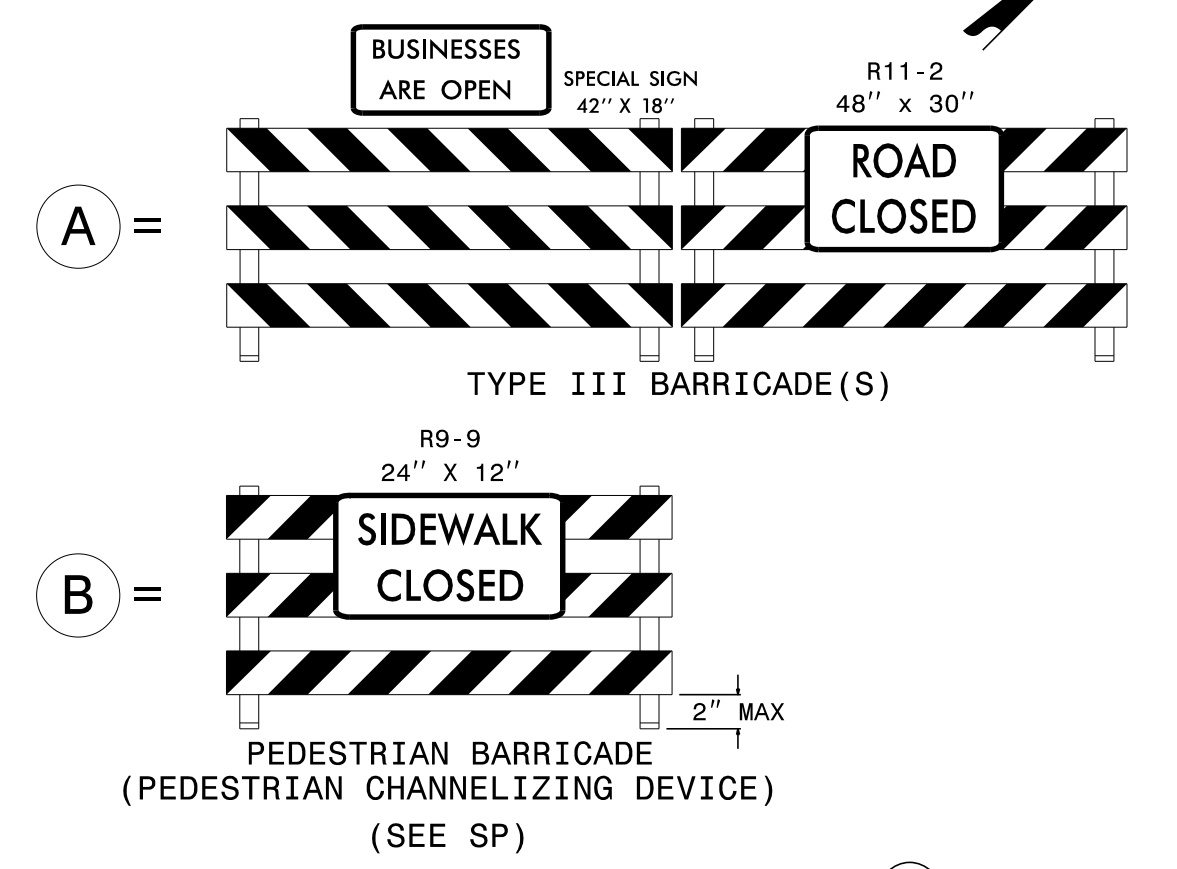
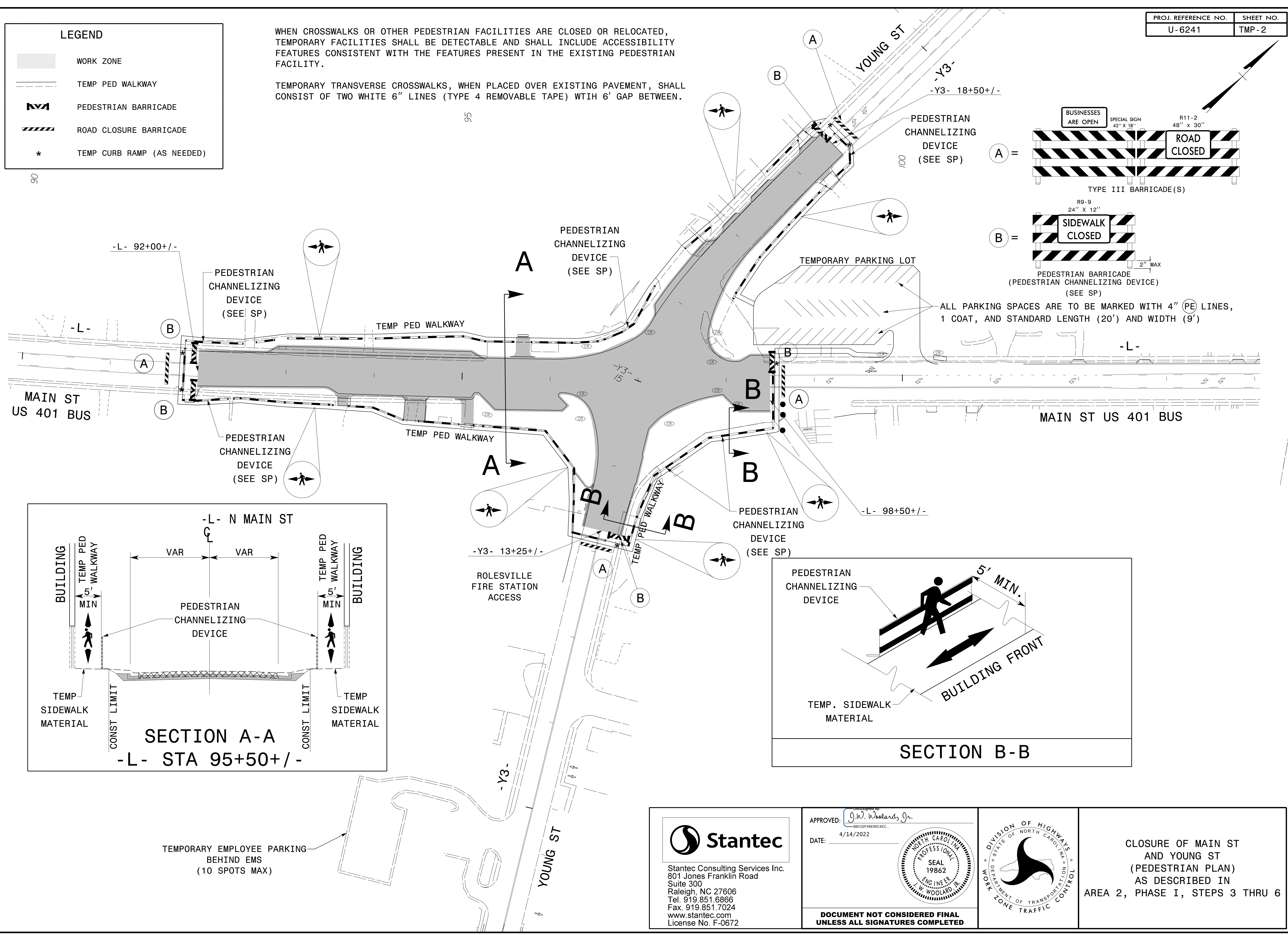
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LEGEND

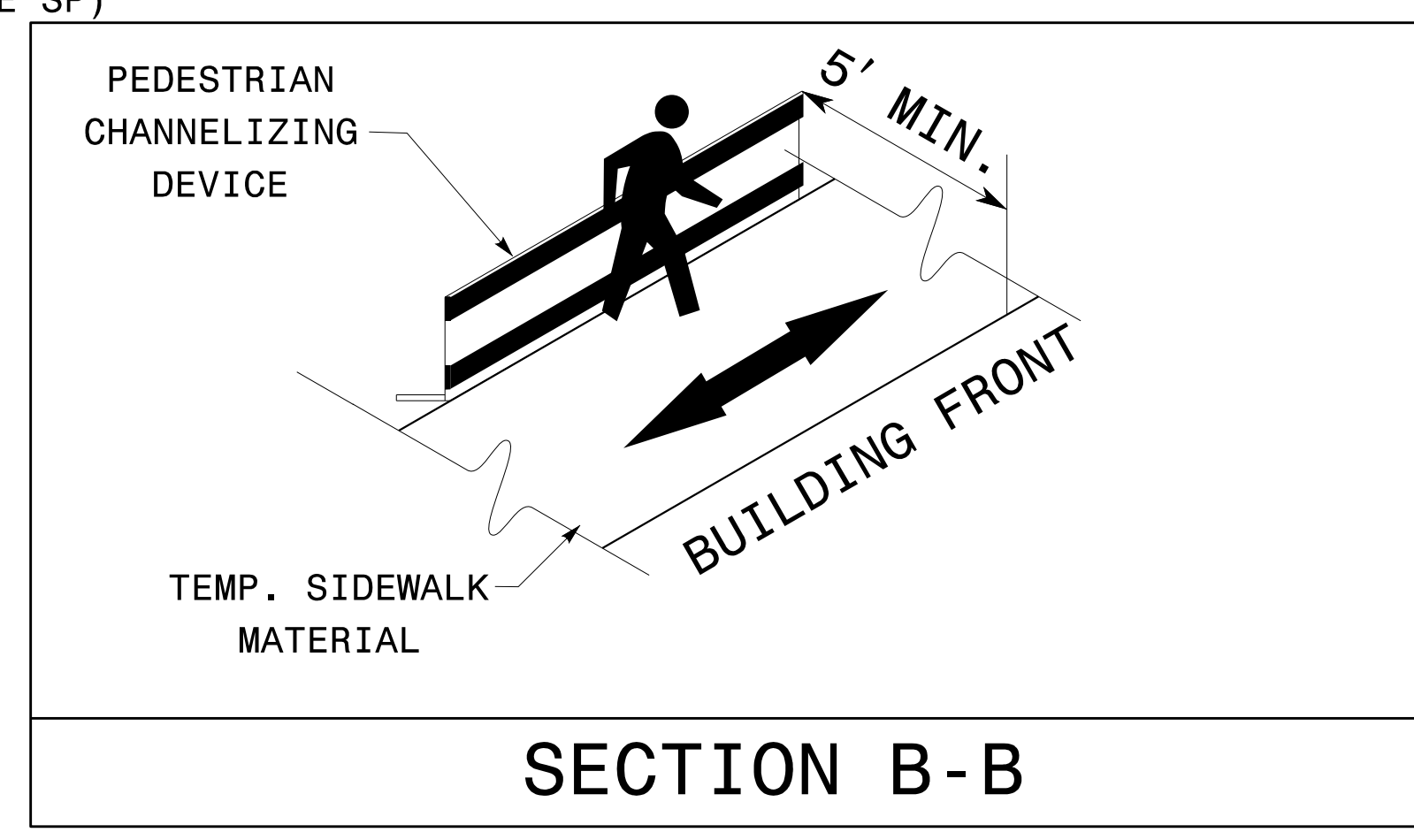
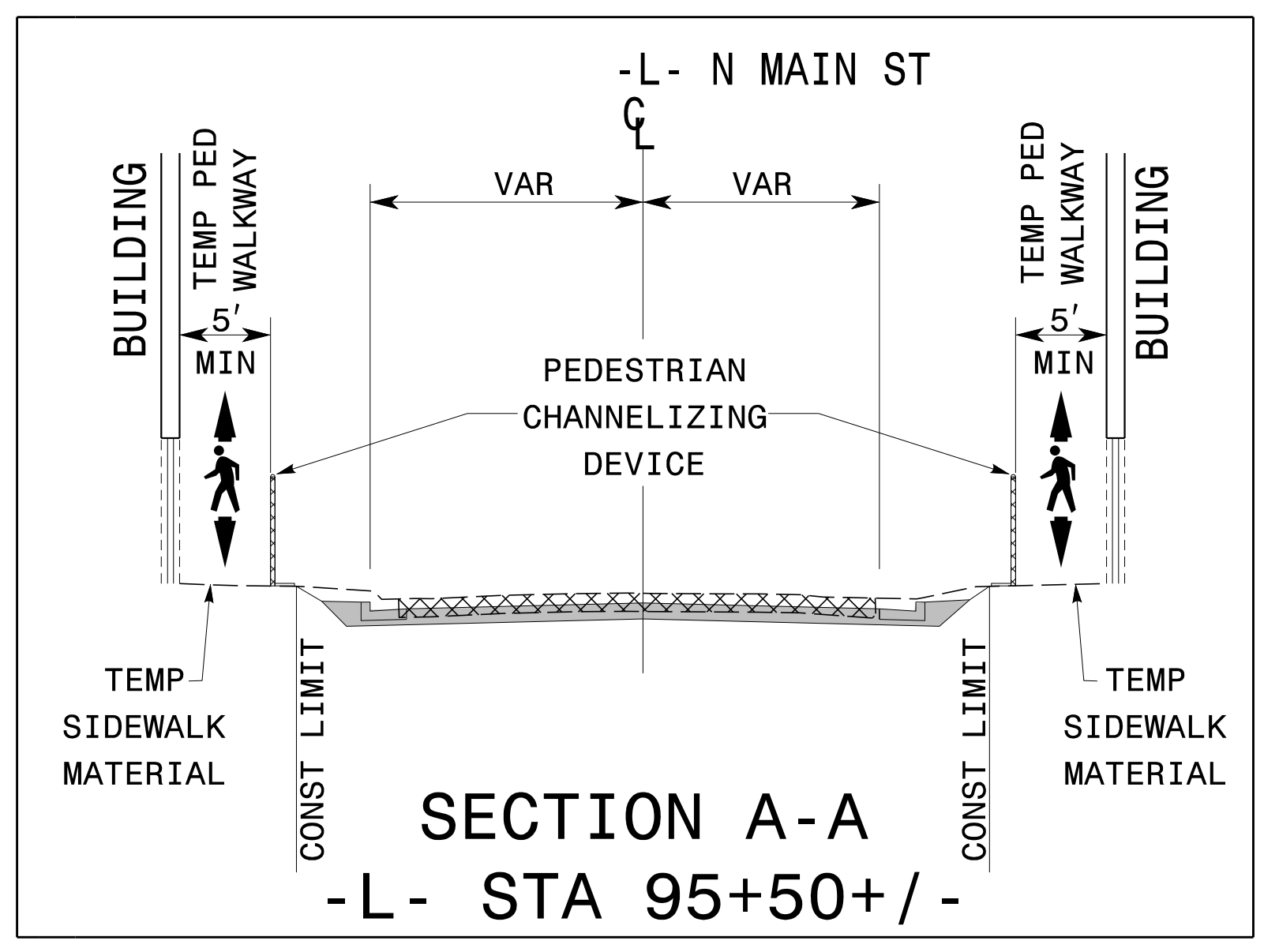
- WORK ZONE
- TEMP PED WALKWAY
- PEDESTRIAN BARRICADE
- ROAD CLOSURE BARRICADE
- TEMP CURB RAMP (AS NEEDED)

WHEN CROSSWALKS OR OTHER PEDESTRIAN FACILITIES ARE CLOSED OR RELOCATED, TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.

TEMPORARY TRANSVERSE CROSSWALKS, WHEN PLACED OVER EXISTING PAVEMENT, SHALL CONSIST OF TWO WHITE 6" LINES (TYPE 4 REMOVABLE TAPE) WITH 6' GAP BETWEEN.



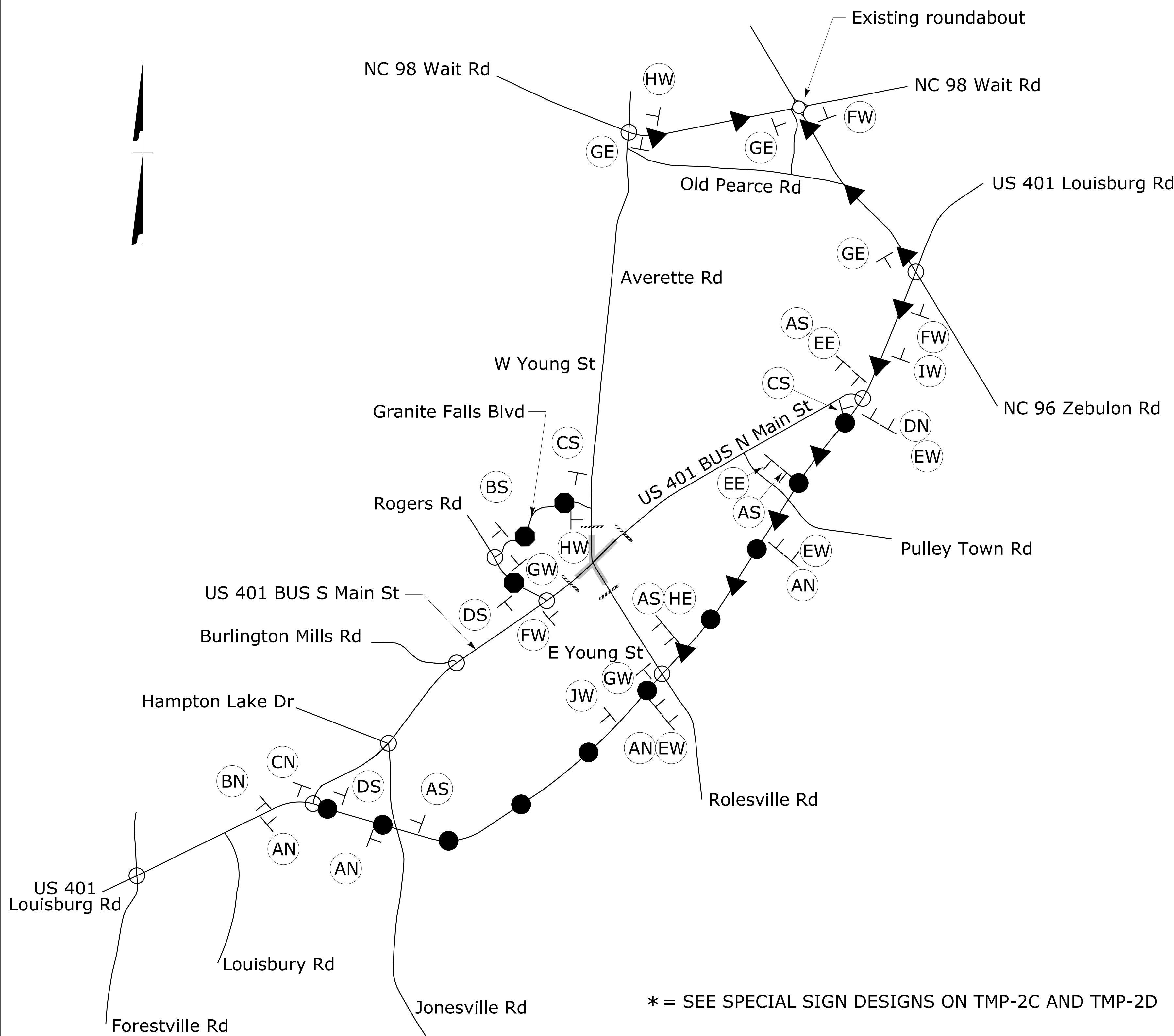
ALL PARKING SPACES ARE TO BE MARKED WITH 4" (PE) LINES, 1 COAT, AND STANDARD LENGTH (20') AND WIDTH (9')



TEMPORARY EMPLOYEE PARKING BEHIND EMS (10 SPOTS MAX)

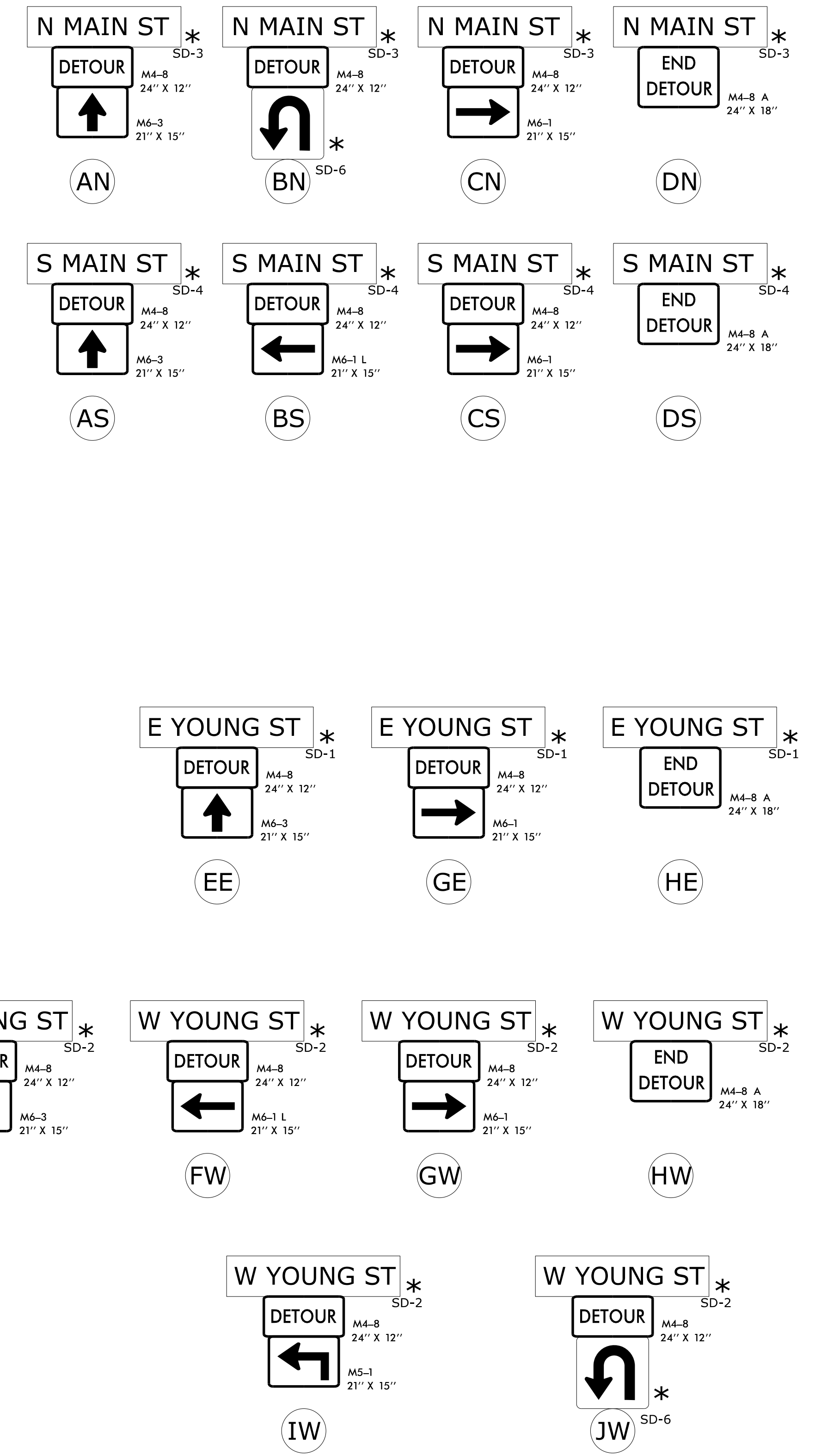
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	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			



* = SEE SPECIAL SIGN DESIGNS ON TMP-2C AND TMP-2D

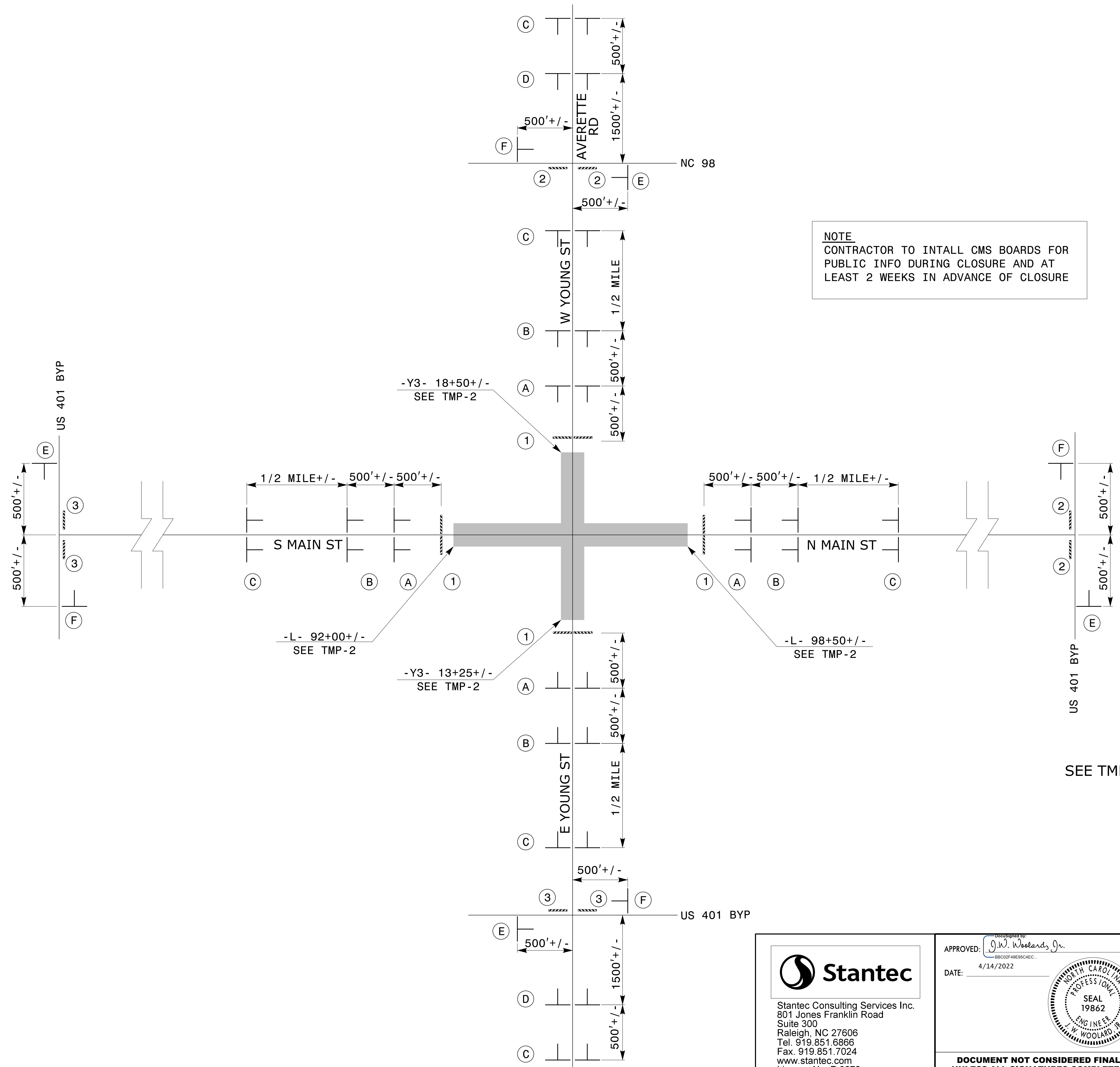
- US 401 BUS/Main St DETOUR ROUTE (PRIMARY ROUTE)
- US 401 BUS/Main St DETOUR ROUTE (SECONDARY ROUTE)
- ▲ Young St DETOUR
- Existing signal



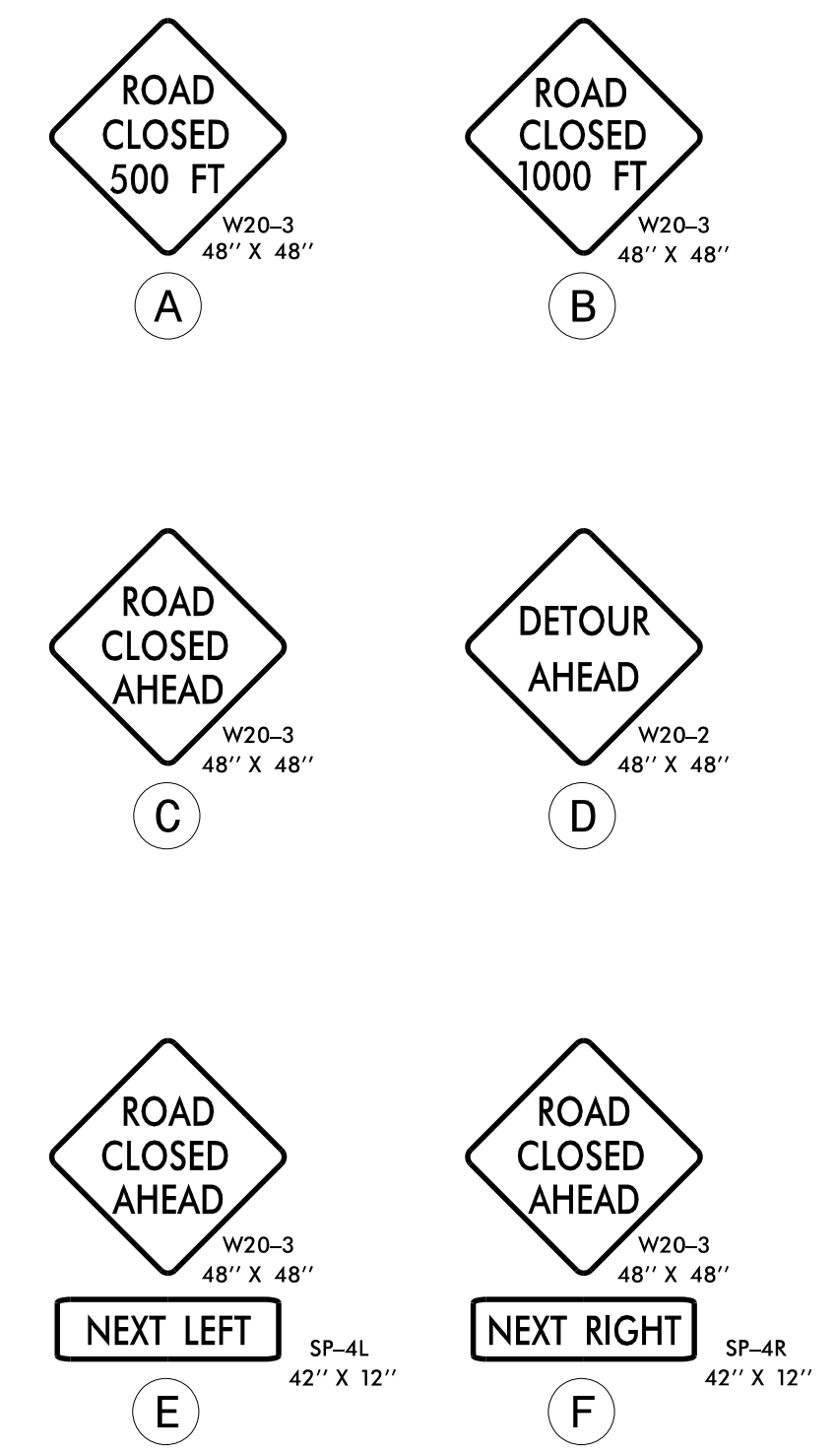
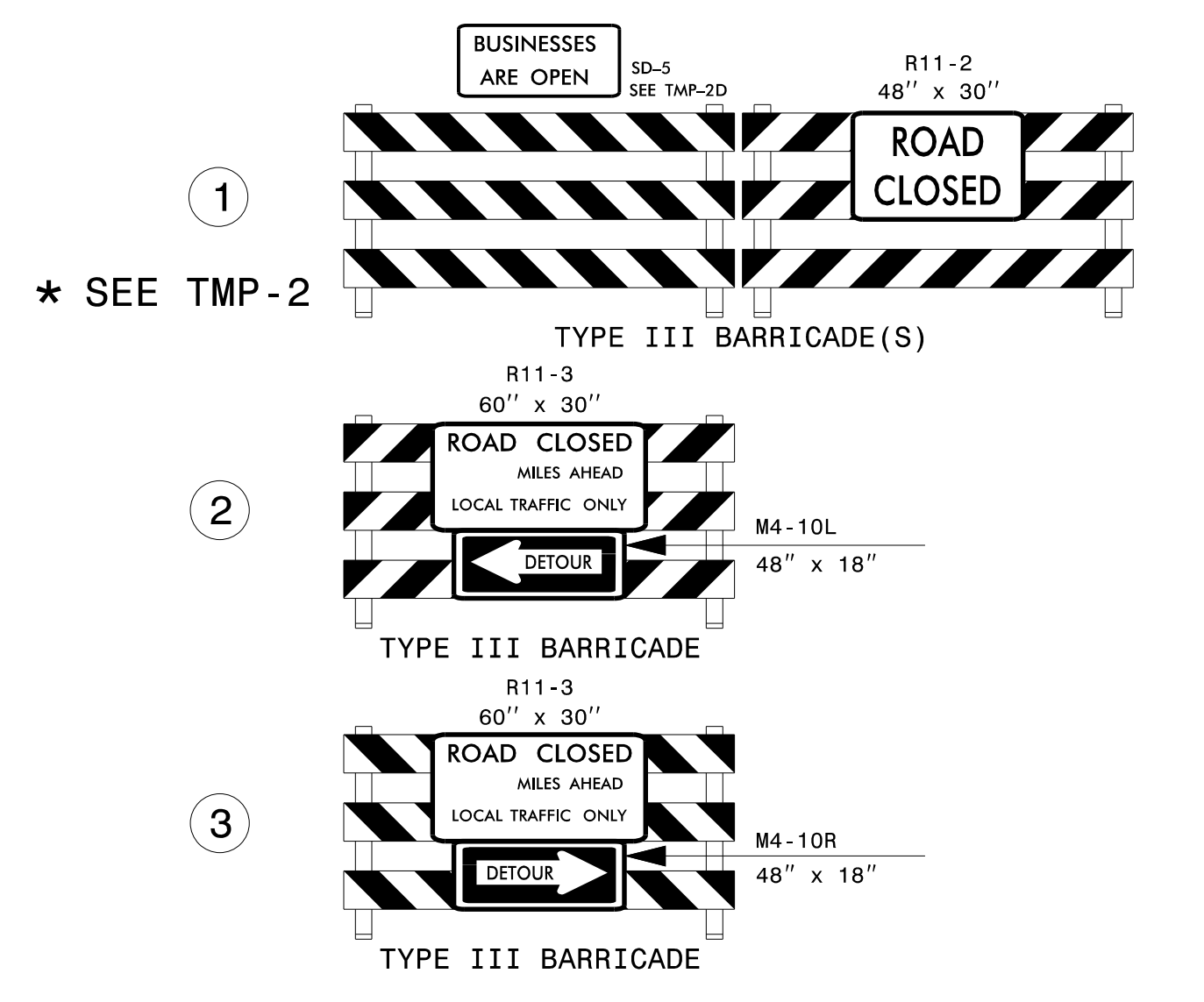
SEE TMP-2B FOR ROAD CLOSURE SIGN DETAIL

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NOTE
 CONTRACTOR TO INTALL CMS BOARDS FOR PUBLIC INFO DURING CLOSURE AND AT LEAST 2 WEEKS IN ADVANCE OF CLOSURE

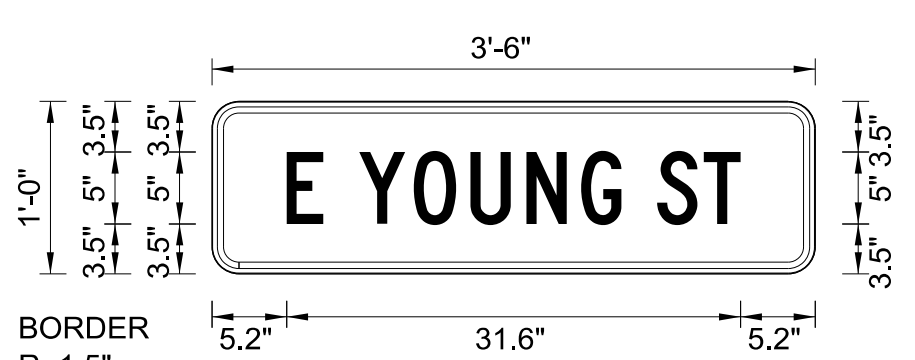


SEE TMP-2A FOR DETOUR ROUTE

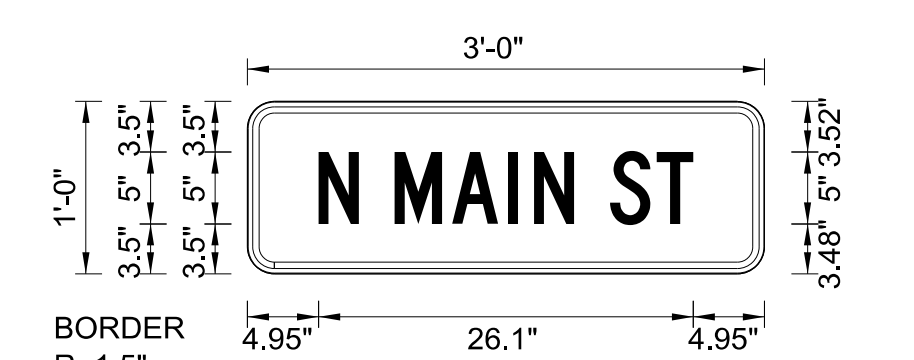
REFER TO ROADWAY STANDARD
 DRAWING 1101.03, SHEET 1 OF 9
 FOR APPLICABLE NOTES.

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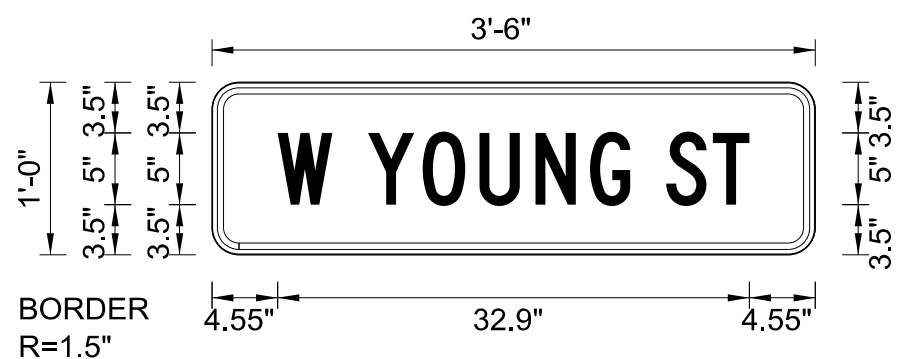
<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. 919.851.6866 Fax. 919.851.7024 www.stantec.com License No. F-0672</p>	APPROVED: <i>J.W. Woolard, Jr.</i> DATE: 4/14/2022			<h2 style="text-align: center;">ROAD CLOSURE DETAIL</h2>
	<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			

SIGN NUMBER: SD-1 TYPE: STATIONARY QUANTITY: SEE PLANS SIGN WIDTH: 3'-6" HEIGHT: 1'-0" TOTAL AREA: 3.5 Sq.Ft. BORDER TYPE: RECESSED RADII: 1.5" WIDTH: 0.44" RECESS: 0.38" NO. Z BARS: LENGTH:	BACKG COLOR: Fluorescent Orange COPY COLOR: Black <table border="1" style="width: 100%; text-align: center;"><tr><th>SYMBOL</th><th>X</th><th>Y</th><th>WID</th><th>HT</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> MAT'L: 0.080" (2.0MM) ALUMINUM	SYMBOL	X	Y	WID	HT																					DESIGN BY: D RICHARDSON CHECKED BY: J WOOLARD DATE: May 14, 2021 PROJECT ID: U6241 DIV: 5  <p style="text-align: center;">E YOUNG ST</p> BORDER R=1.5" TH=0.44" IN=0.38" Spacing Factor is 1 unless specified otherwise
SYMBOL	X	Y	WID	HT																							
USE NOTES 1. Legend and border shall be direct applied black non-reflective sheeting. 2. Background shall be NC GRADE B Fluorescent Orange retroreflective sheeting.																											

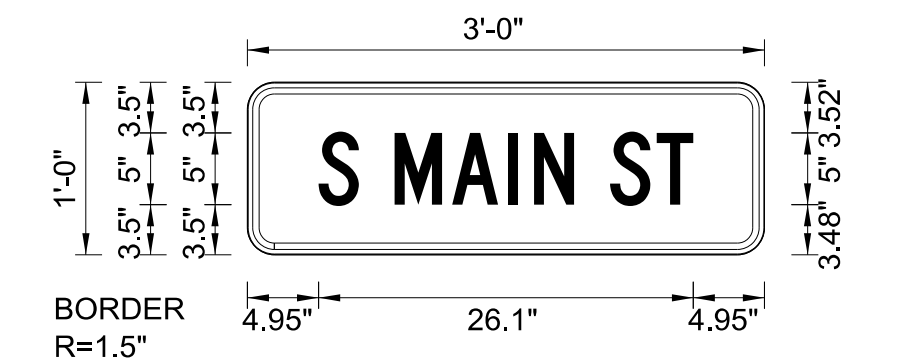
Letter spacings are to start of next letter												Series/Size Text Length
	E		Y	O	U	N	G		S	T		C 2000
	5.1	2.8	2.5	3.8	4	3.9	3.8	2.8	2.5	3.3	2.6	31.9

SIGN NUMBER: SD-3 TYPE: STATIONARY QUANTITY: SEE PLANS SIGN WIDTH: 3'-0" HEIGHT: 1'-0" TOTAL AREA: 3.0 Sq.Ft. BORDER TYPE: RECESSED RADII: 1.5" WIDTH: 0.44" RECESS: 0.38" NO. Z BARS: LENGTH:	BACKG COLOR: Fluorescent Orange COPY COLOR: Black <table border="1" style="width: 100%; text-align: center;"><tr><th>SYMBOL</th><th>X</th><th>Y</th><th>WID</th><th>HT</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> MAT'L: 0.080" (2.0MM) ALUMINUM	SYMBOL	X	Y	WID	HT																					DESIGN BY: D RICHARDSON CHECKED BY: J WOOLARD DATE: Jun 29, 2021 PROJECT ID: U6241 DIV: 5  <p style="text-align: center;">N MAIN ST</p> BORDER R=1.5" TH=0.44" IN=0.38" Spacing Factor is 1 unless specified otherwise
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Letter spacings are to start of next letter												Series/Size Text Length
	N		M	A		I	N		S	T		C 2000
	5	2.8	2.5	4	3.9	1.8	2.8	2.5	3.3	2.6	5	26.1

SIGN NUMBER: SD-2 TYPE: STATIONARY QUANTITY: SEE PLANS SIGN WIDTH: 3'-6" HEIGHT: 1'-0" TOTAL AREA: 3.5 Sq.Ft. BORDER TYPE: RECESSED RADII: 1.5" WIDTH: 0.44" RECESS: 0.38" NO. Z BARS: LENGTH:	BACKG COLOR: Fluorescent Orange COPY COLOR: Black <table border="1" style="width: 100%; text-align: center;"><tr><th>SYMBOL</th><th>X</th><th>Y</th><th>WID</th><th>HT</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> MAT'L: 0.080" (2.0MM) ALUMINUM	SYMBOL	X	Y	WID	HT																					DESIGN BY: D RICHARDSON CHECKED BY: J WOOLARD DATE: May 14, 2021 PROJECT ID: U6241 DIV: 5  <p style="text-align: center;">W YOUNG ST</p> BORDER R=1.5" TH=0.44" IN=0.38" Spacing Factor is 1 unless specified otherwise
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	W		Y	O	U	N	G		S	T		C 2000
	5.1	2.8	2.5	3.8	4	3.9	3.8	2.8	2.5	3.3	2.6	31.9

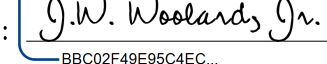
SIGN NUMBER: SD-4 TYPE: STATIONARY QUANTITY: SEE PLANS SIGN WIDTH: 3'-0" HEIGHT: 1'-0" TOTAL AREA: 3.0 Sq.Ft. BORDER TYPE: RECESSED RADII: 1.5" WIDTH: 0.44" RECESS: 0.38" NO. Z BARS: LENGTH:	BACKG COLOR: Fluorescent Orange COPY COLOR: Black <table border="1" style="width: 100%; text-align: center;"><tr><th>SYMBOL</th><th>X</th><th>Y</th><th>WID</th><th>HT</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> MAT'L: 0.080" (2.0MM) ALUMINUM	SYMBOL	X	Y	WID	HT																					DESIGN BY: D RICHARDSON CHECKED BY: J WOOLARD DATE: Jun 29, 2021 PROJECT ID: U6241 DIV: 5  <p style="text-align: center;">S MAIN ST</p> BORDER R=1.5" TH=0.44" IN=0.38" Spacing Factor is 1 unless specified otherwise
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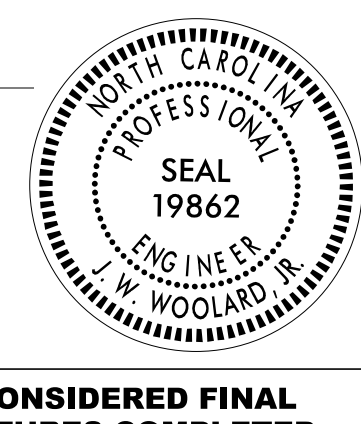
Letter spacings are to start of next letter												Series/Size Text Length
	S		M	A		I	N		S	T		C 2000
	5	2.8	2.5	4	3.9	1.8	2.8	2.5	3.3	2.6	5	26.1

4/14/2022
User: dorichardson
Management Plan\TCP\PLAN SHEETS\DER\U6241\TMP02C - SPECIAL SIGN.dgn



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APPROVED: 
DATE: 4/14/2022



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SPECIAL SIGN DESIGN

SIGN NUMBER: SD-5 TYPE: STATIONARY QUANTITY: SEE PLANS SIGN WIDTH: 42" HEIGHT: 24" TOTAL AREA: 7.0 Sq.Ft. BORDER TYPE: NONE RADII: 1.5" WIDTH: 0" RECESS: 0" NO. Z BARS: LENGTH:	BACKG. COLOR: White COPY COLOR: Black <table border="1" style="width: 100%;"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> MAT'L: 0.080" (2.0MM) ALUMINUM	SYMBOL	X	Y	WID	HT																																																			DESIGN BY: RRH PROJECT ID: U6241 CHECKED BY: J.Woolard DIV: 5 DATE: May 17, 2021 (rev) Mar 02, 2018 (orig)
SYMBOL	X	Y	WID	HT																																																					

Spacing Factor is 0.8

LETTER POSITIONS																
Letter spacings are to start of next letter																
	B	U	S	I	N	E	S	S	E	S					Series/Size Text Length	
	2.2	4.2	4.2	4.2	1.9	4.4	3.6	3.9	4.2	3.6	3.4	2.2			C 2000	37.6
		A	R	E	O	P	E	N							C 2000	32.3
	4.8	4.5	4.2	3.1	4.5	4.5	4.3	3.9	3.4	4.8						

SIGN NUMR: SD-6 TYPE: F QUANTITY: 1 SIGN WIDTH: 1'-9" HEIGHT: 1'-9" TOTAL AREA: 3.1 Sq.Ft. MAT'L: 0.083" ALUMINUM BORDER TYPE: RECESSED RECESS: 0.38" WIDTH: 0.63" RADII: 1.5" NO. Z BARS: LENGTH:	BACKG. COLOR: White COPY COLOR: Black <table border="1" style="width: 100%;"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr> <td>u arrow</td> <td>3.7</td> <td>3.5</td> <td>12.7</td> <td>13.8</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	SYMBOL	X	Y	WID	HT	u arrow	3.7	3.5	12.7	13.8																																									DESIGN BY: [blank] PROJECT ID: [blank] CHK BY: [blank] DIV: [blank] STD #: [blank] DATE: [blank]
SYMBOL	X	Y	WID	HT																																																
u arrow	3.7	3.5	12.7	13.8																																																

ARROW DIMENSIONS (INCHES)	F	G	H	M	N	P	Q	R
	2.625	2.625	8.659	5.25	3	5.25	0.375	0.5

Spacing Factor is 1 unless specified otherwise
FILENAME: 05ENG

Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. 919.851.6866 Fax. 919.851.7024 www.stantec.com License No. F-0672	APPROVED: <i>J.W. Woolard Jr.</i> DATE: 4/14/2022 		SPECIAL SIGN DESIGN
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PHASING

PROJ. REFERENCE NO.	SHEET NO.
U-6241	TMP-3

AREA 1 (-L- FROM 9+50+/- TO 85+00, -Y1-, -Y2-, -Y4REV-, -Y5-, -Y6-, -Y7-)

PHASE I

STEP 1
USING RSD 1101.01, INSTALL WORK ZONE ADVANCE WARNING SIGNS.

STEP 2
USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, CONSTRUCT UP TO, BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE (WEDGE EXISTING PAVEMENT AS NEEDED TO MAINTAIN TRAFFIC):
 -L- 9+50+/- TO 38+91+/- (SEE TMP-4 THRU TMP-6)
 -L- 42+46+/- TO 47+57+/- (CONSTRUCT TO 1.5" BELOW ELEV OF EXISTING EP)(SEE TMP-6)
 -L- 49+25+/- TO 52+75+/- (CONSTRUCT TO 1.5" BELOW ELEV OF EXISTING EP)(SEE TMP-7)
 -Y1- FROM 10+25+/- TO 24+60+/- (SEE TMP-5)
 -Y2- FROM 15+00+/- TO 16+53+/- (SEE TMP-6)
 -Y4REV- FROM 10+05+/- TO 11+65+/- (SEE TMP-5)
 -Y5- FROM 10+18+/- TO 11+40+/- (SEE TMP-4)
 -Y6- FROM 10+40+/- TO 13+00+/- (SEE TMP-5)
 -Y7- FROM 20+75+/- TO 25+50+/- (SEE TMP-4)

STEP 3
USING LAW ENFORCEMENT TO DIRECT TRAFFIC, INSTAL AND COVER ALL PROPOSED SIGNALS.

PHASE II

ICT
COMPLETE THE WORK REQUIRED IN AREA 1, PHASE II, STEP 1 BY SEPTEMBER 8, 2023. SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.

STEP 1
USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, INSTALL TEMPORARY MARKINGS AND MARKERS IN FINAL PATTERN, UNCOVER AND ACTIVATE PROPOSED SIGNAL AT -Y6- AND SHIFT ALL TRAFFIC TO PATTERNS SHOWN ON TMP-9 AND TMP-10 FROM -L- 9+45+/- TO 28+60+/-.

STEP 2
USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, CONSTRUCT -Y1- AND -Y2- AS SHOWN ON TMP-10 AND TMP-11 UP TO , BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE (WEDGE EXISTING PAVEMENT AS NEEDED TO MAINTAIN TRAFFIC)

USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, INSTALL TEMPORARY MARKINGS AND MARKERS IN FINAL PATTERN, UNCOVER AND ACTIVATE PROPOSED SIGNALS AND SHIFT ALL TRAFFIC TO PATTERNS SHOWN ON TMP-10 THRU TMP-13 FROM -L- 28+60+/- TO 101+35+/-.

USING DRUM AND TYPE 3 BARRICADES AS NECESSARY, RESTRICT LEFT TURN ACCESS FROM MAIN ST NB TO EXISTING BURLINGTON MILLS RD AND LEFT TURNS FROM EXIST BURLINGTON MILLS RD TO MAIN ST NB. USING LAW ENFORCEMENT AS NECESSARY TO DIRECT ALL OTHER TRAFFIC, COVER AND REMOVE EXISTING SIGNAL.

STEP 3
USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, MILL 1.5" AND CONSTRUCT PROPOSED CURB AND GUTTER, AND CURB RAMPS FROM -L- 38+91+/- TO 85+00+/-, INSTALL TEMPORARY MARKINGS AS NECESSARY TO DIRECT TRAFFIC. SEE ROADWAY PLANS AND TMP-7.

USING RSD 1101.02, SHEET 1 AND 2 OF 14 WHERE NECESSARY, MILL -Y2- FROM 16+60+/- TO 24+00+/-, SEE ROADWAY PLANS.

STEP 4
USING RSD 1101.02, SHEETS 1 AND 2 OF 14, INSTALL ISLANDS. SEE TMP-9 THRU TMP-12 AND LANDSCAPING PLANS.

STEP 5
USING RSD 1101.02, SHEETS 1 AND 2 OF 14 WHERE NECESSARY, INSTALL FINAL LAYER OF SURFACE COURSE AND INSTALL FINAL MARKINGS AND MARKERS.

STEP 6
REMOVE ALL REMAINING WORK ZONE DEVICES.

AREA 2 (-L- 85+00 TO 101+35, -Y3-)

PHASE I

STEP 1
USING RSD 1101.01, INSTALL WORK ZONE ADVANCE WARNING SIGNS.

STEP 2
USING RSD 1101.02, SHEETS 1 AND 2 OF 14 WHERE NECESSARY, BEGIN CONSTRUCTION OF -L- AND -Y3- DRAINAGE SYSTEM AS SHOWN ON TMP-8

USING RSD 1101.02, SHEET 2 OF 14 WHERE NECESSARY, CONSTRUCT TEMPORARY PARKING LOT AT -L- 100+00+/- AND ASSOCIATED NEW SIDEWALK AND RAMPS

INSTALL AND COVER DETOUR SIGNS AS SHOWN ON TMP-2A AND TMP-2B

ICT
COMPLETE THE WORK REQUIRED IN AREA 2, PHASE I, STEPS 3 THRU 6 IN 60 CONSECUTIVE CALENDAR DAYS BEGINNING JUNE 15. SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.

STEP 3
UNCOVER ALL DETOUR SIGNS AND CLOSURE SIGNS, AND USING RSD 1101.03, SHEET 1 OF 9, AND TMP-2A AND TMP-2B, CLOSE -L- MAIN ST AND -Y3- YOUNG ST AND PLACE TRAFFIC ON DETOUR ROUTES SHOWN ON TMP-2B. INSTALL PEDESTRIAN MAINTENANCE DEVICES AND PLACE PEDESTRIANS IN DETOUR AS SHOWN ON TMP-2.

STEP 4
AWAY FROM TRAFFIC AND WITH PEDESTRIANS SAFELY MAINTAINED, CONSTRUCT -L-/-Y3- INTERSECTION INCLUDING PAVEMENT, C&G, AND TEMPORARY SIGNAL UP TO, BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE AS FOLLOWS:
 -L- FROM 92+00+/- TO 98+50+/- INCLUDING COMPLETION OF DRAINAGE BEGAN IN STEP 2
 -Y3- FROM 13+25+/- TO 18+50+/- INCLUDING COMPLETION OF DRAINAGE BEGAN IN STEP 2

CONTRACTOR MAY BEGIN SIDEWALK AND CONCRETE PAVER CONSTRUCTION.

STEP 5
PLACE TEMPORARY MARKINGS IN PATTERN SHOWN ON TMP-13.

STEP 6
COVER AND/OR REMOVE ALL DETOUR AND CLOSURE DEVICES AND OPEN -L- MAIN ST AND -Y3- YOUNG STREET TO PATTERN SHOWN ON TMP-13 WITH TEMPORARY SIGNAL OPERATIONAL.

STEP 7
USING LAW ENFORCEMENT TO DIRECT TRAFFIC, INSTALL AND COVER ALL PROPOSED SIGNALS.

PHASE II

STEP 1
USING RSD 1101.02, SHEETS 1, 2 AND 3 OF 14 WHERE NECESSARY, MILL 1.5" AND CONSTRUCT PROPOSED CURB AND GUTTER, AND CURB RAMPS FROM -L- 85+00+/- TO 92+00+/-, INSTALL TEMPORARY MARKINGS AS NECESSARY TO DIRECT TRAFFIC. SEE ROADWAY PLANS AND TMP-7.

COMPLETE SIDEWALK AND CONCRETE PAVER CONSTRUCTION.


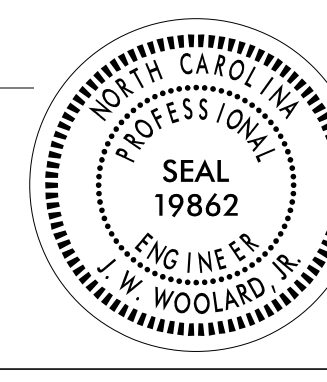
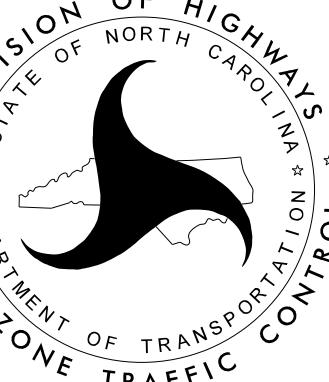
STEP 2
USING RSD 1101.02, SHEETS 1 AND 2 OF 14, CONSTRUCT THE FOLLOWING UP TO , BUT NOT INCLUDING, THE FINAL LAYER OF SURFACE COURSE (WEDGE EXISTING PAVEMENT AS NEEDED TO MAINTAIN TRAFFIC):
 -L- 98+50+/- TO 101+35+/- (SEE TMP-13)
 -Y3- 11+90+/- TO 13+25+/- (SEE TMP-13)

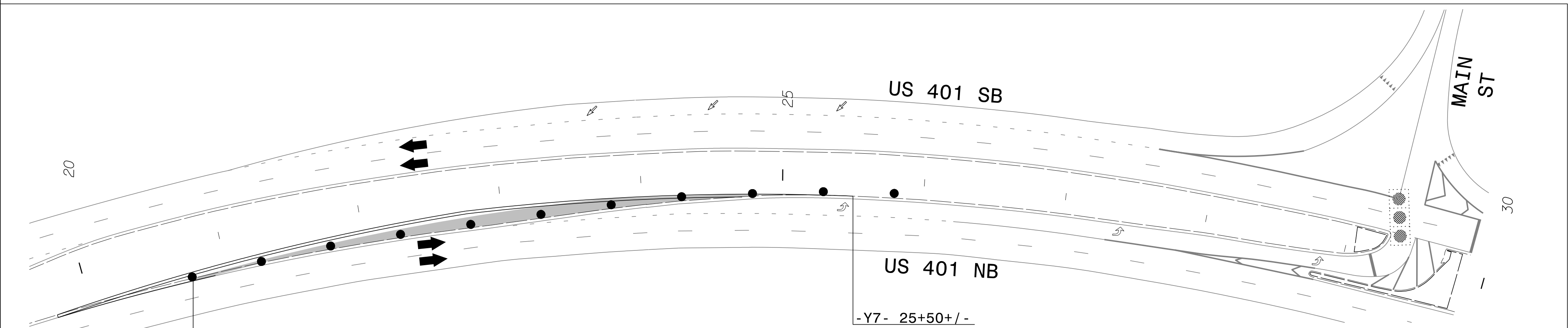
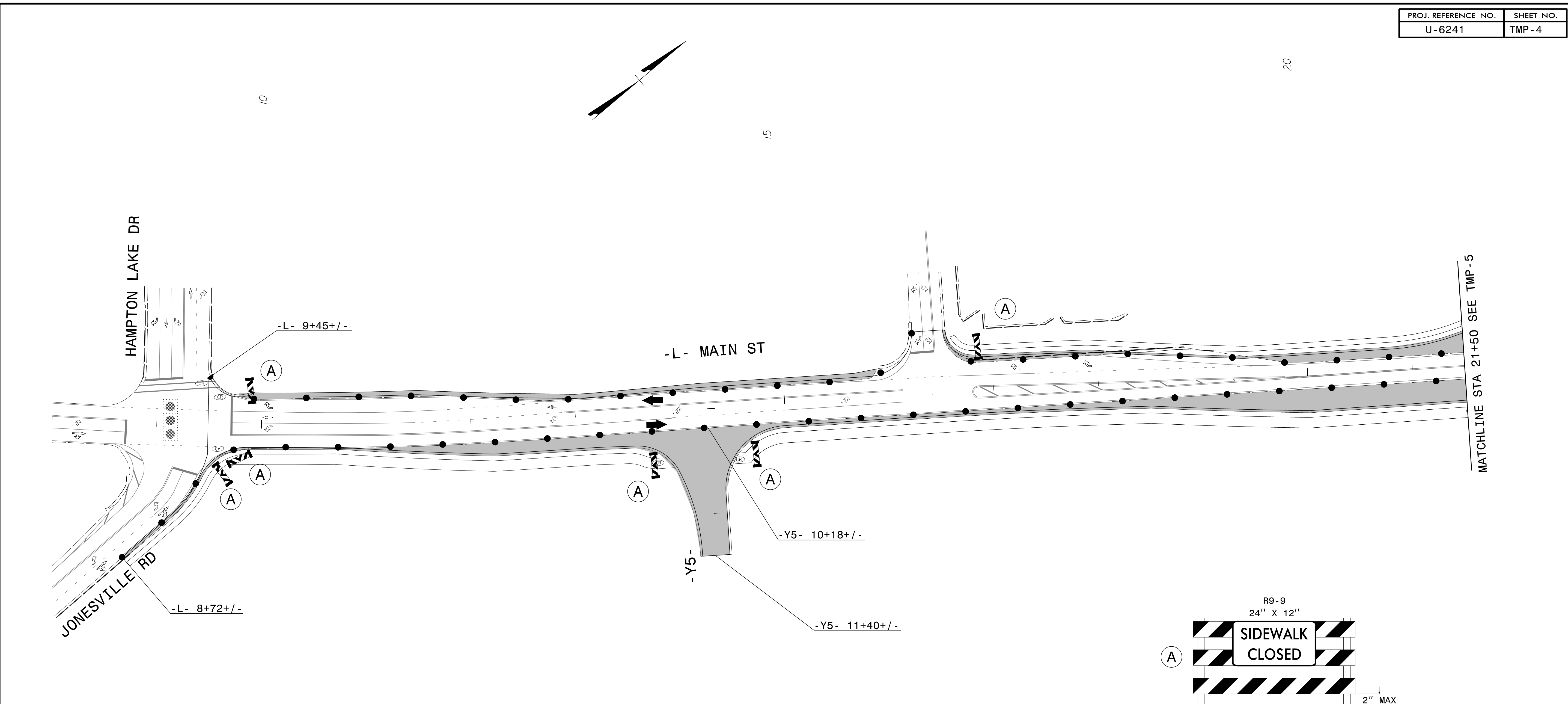
WITH PEDESTRIANS PROPERLY MAINTAINED, CONSTRUCT THE FOLLOWING:
 -L- 91+25+/- TO 100+50+/- (PROPOSED SIDEWALKS)
 -Y3- 15+00+/- TO 18+50+/- (PROPOSED SIDEWALKS)

STEP 4
USING RSD 1101.02, SHEETS 1 AND 2 OF 14 WHERE NECESSARY, INSTALL FINAL LAYER OF SURFACE COURSE AND INSTALL FINAL MARKINGS AND MARKERS.

STEP 5
REMOVE ALL REMAINING WORK ZONE DEVICES.

4/14/2022 Us:\Traffic\Transportation Management\Plan\TCP\PLAN SHEETS\DER\U6241\TMP03 PHASING.dgn User:dotcharadson

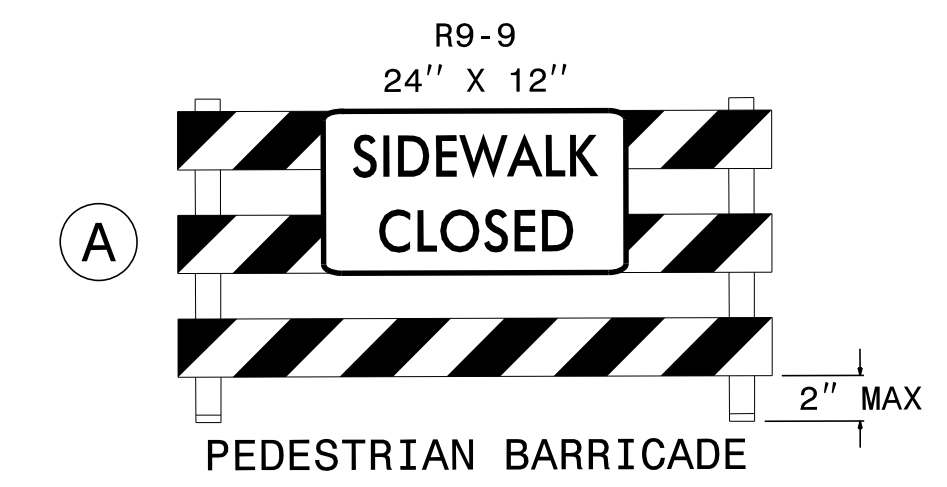
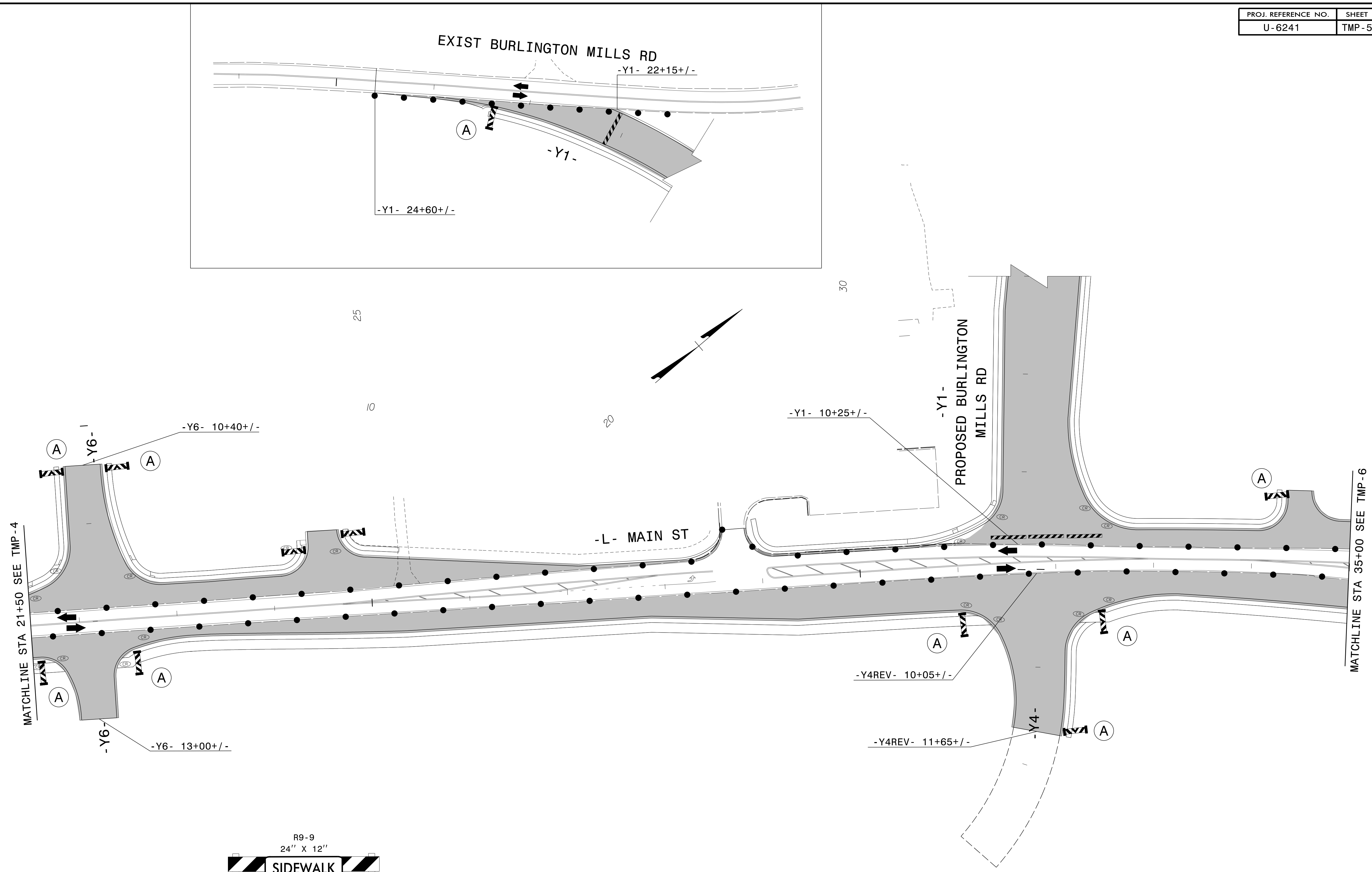
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 User:dotichardson

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PROJ. REFERENCE NO.	SHEET NO.
U-6241	TMP-5

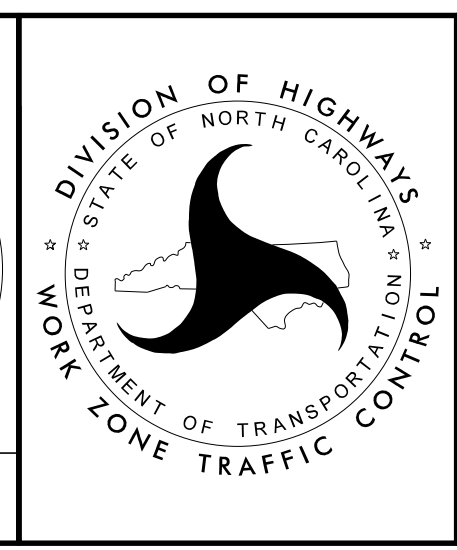


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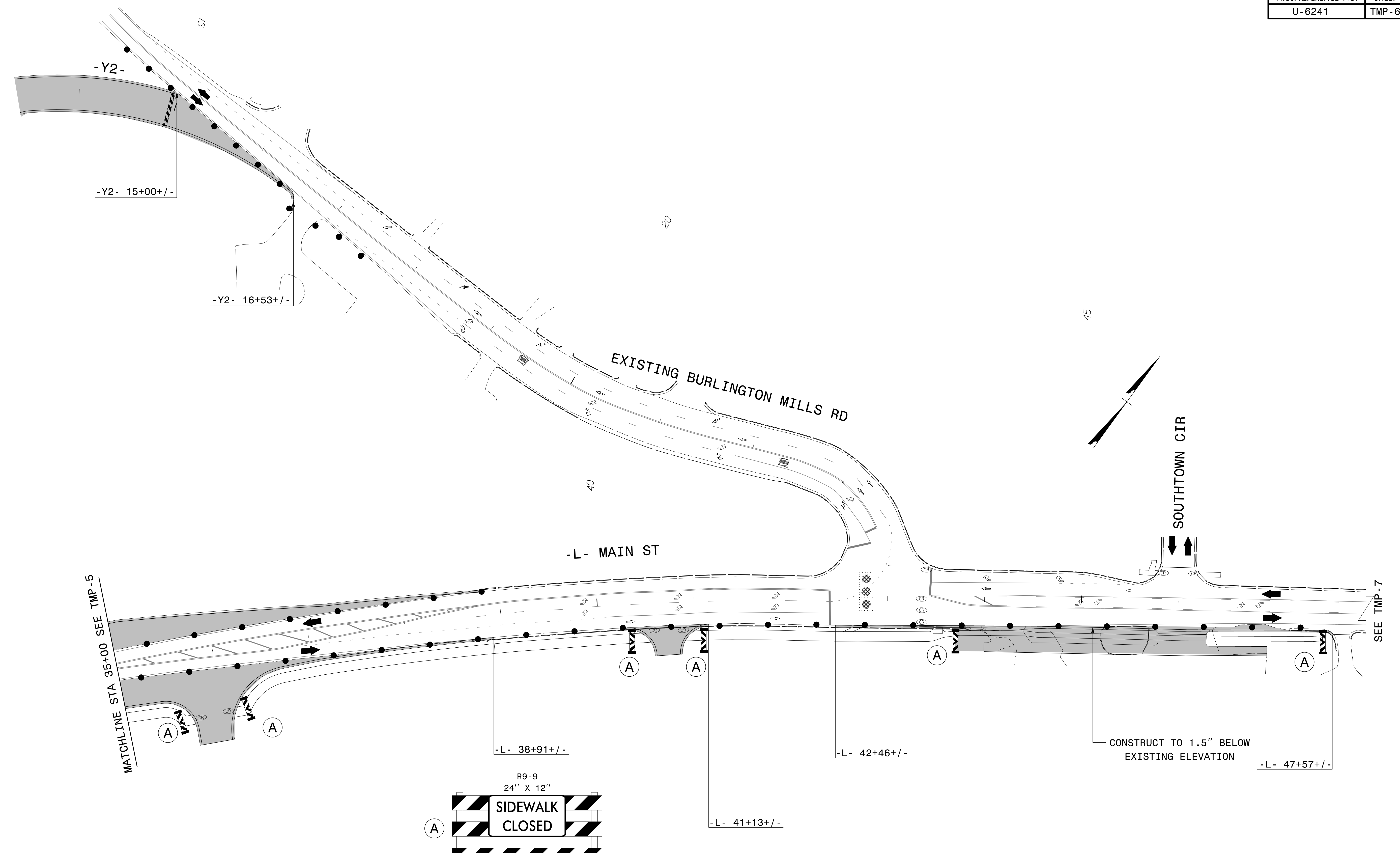
APPROVED: *J.W. Woolard, Jr.*
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DATE: 4/14/2022



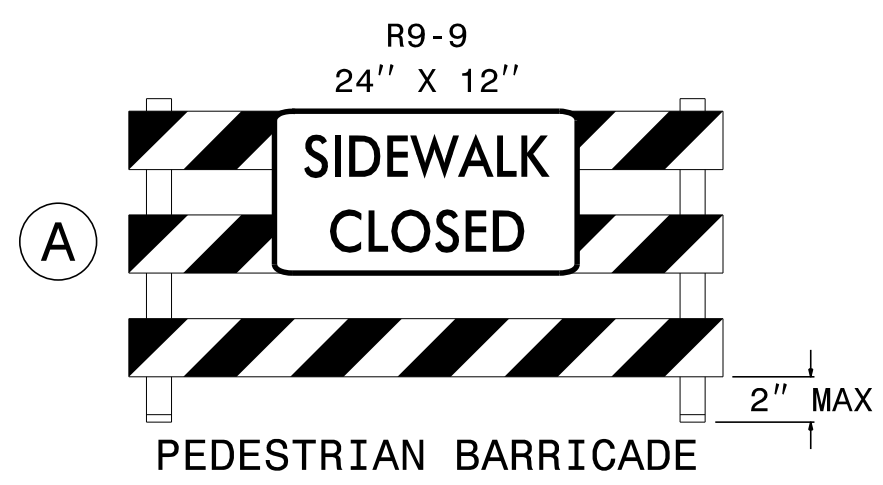
AREA 1
PHASE I

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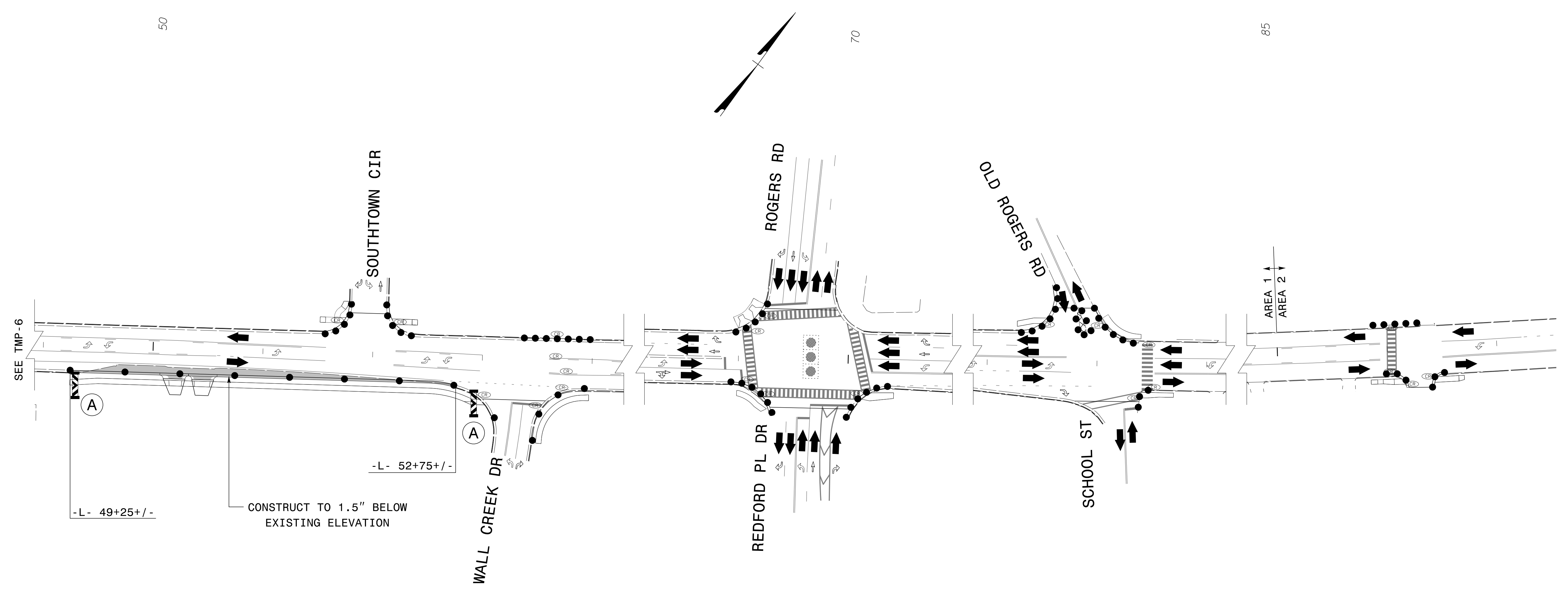
MATCHLINE STA 35+00 SEE TMP-5

SEE TMP-7



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 User: dorichardson



CONSTRUCT TO 1.5" BELOW EXISTING ELEVATION

4/14/2022
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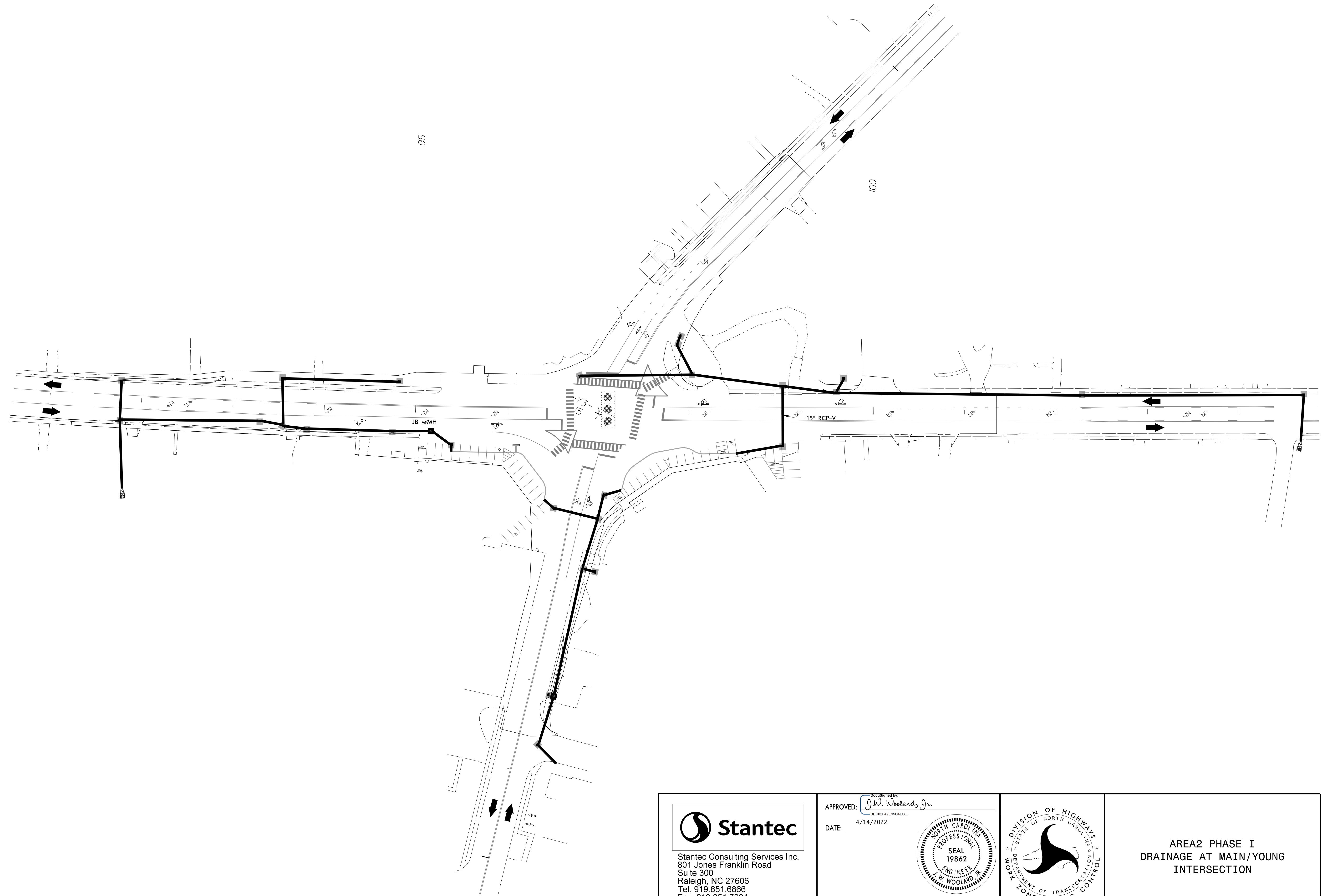
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 Raleigh, NC 27606
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APPROVED: *J.W. Woolard, Jr.*
BB020F49E95CAEC
 DATE: 4/14/2022

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AREA 1
 AREA 2
 PHASE I

PROJ. REFERENCE NO.	SHEET NO.
U-6241	TMP-8

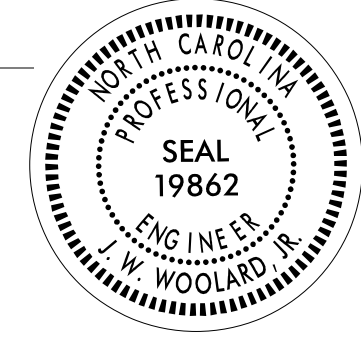


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BB020249E95CAEC...
 DATE: 4/14/2022



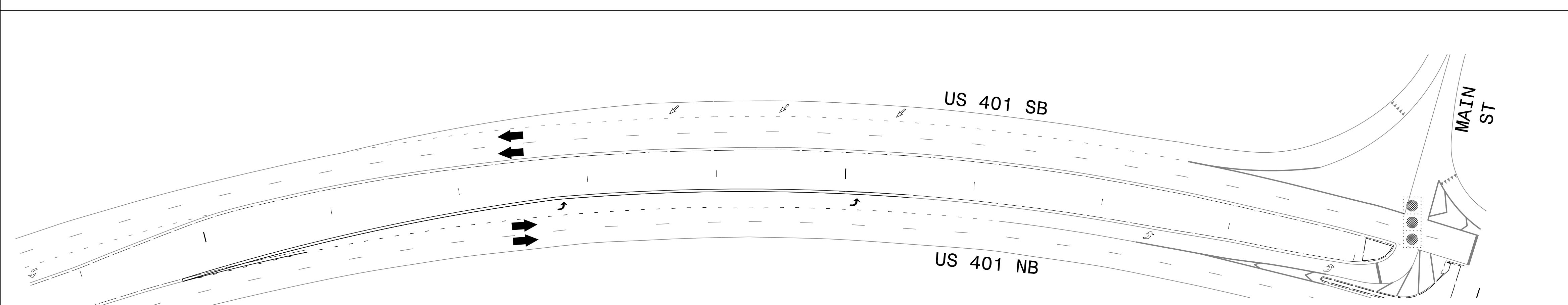
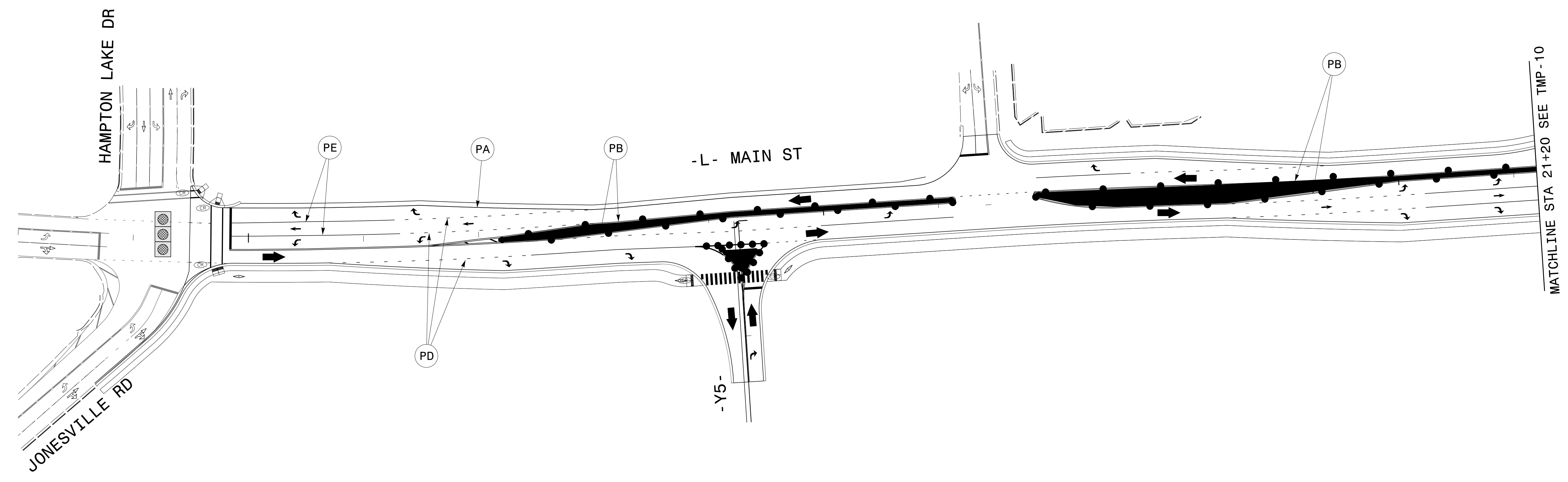
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**AREA2 PHASE I
DRAINAGE AT MAIN/YOUNG
INTERSECTION**

NOTE
 ALL PAVEMENT MARKINGS SHOWN ARE TEMPORARY AND ARE IN FINAL PATTERN. SEE THE PM PLANS FOR ALL STATIONING AND DIMENSIONS.

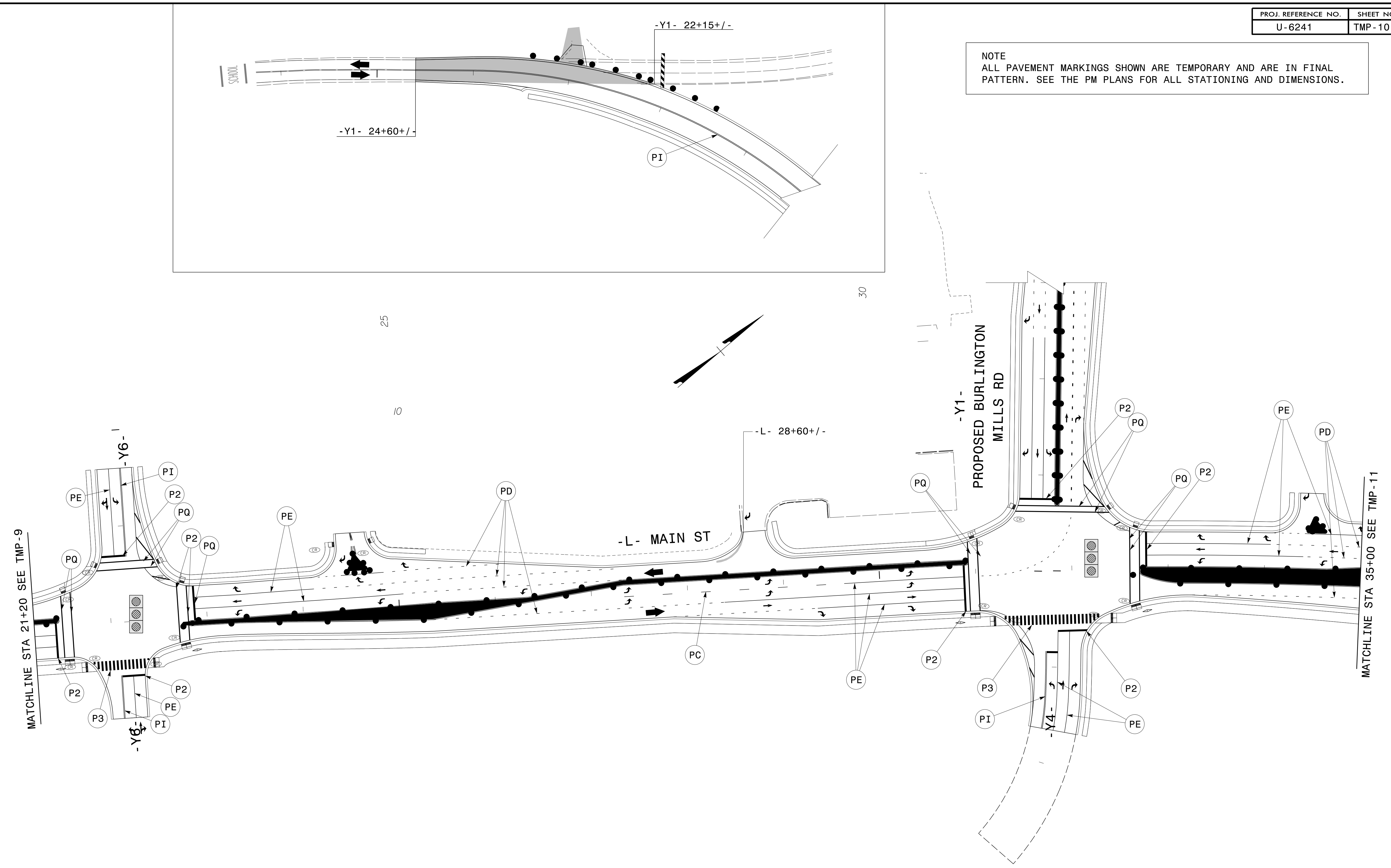
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4/14/2022
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 User:dotichardson

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NOTE
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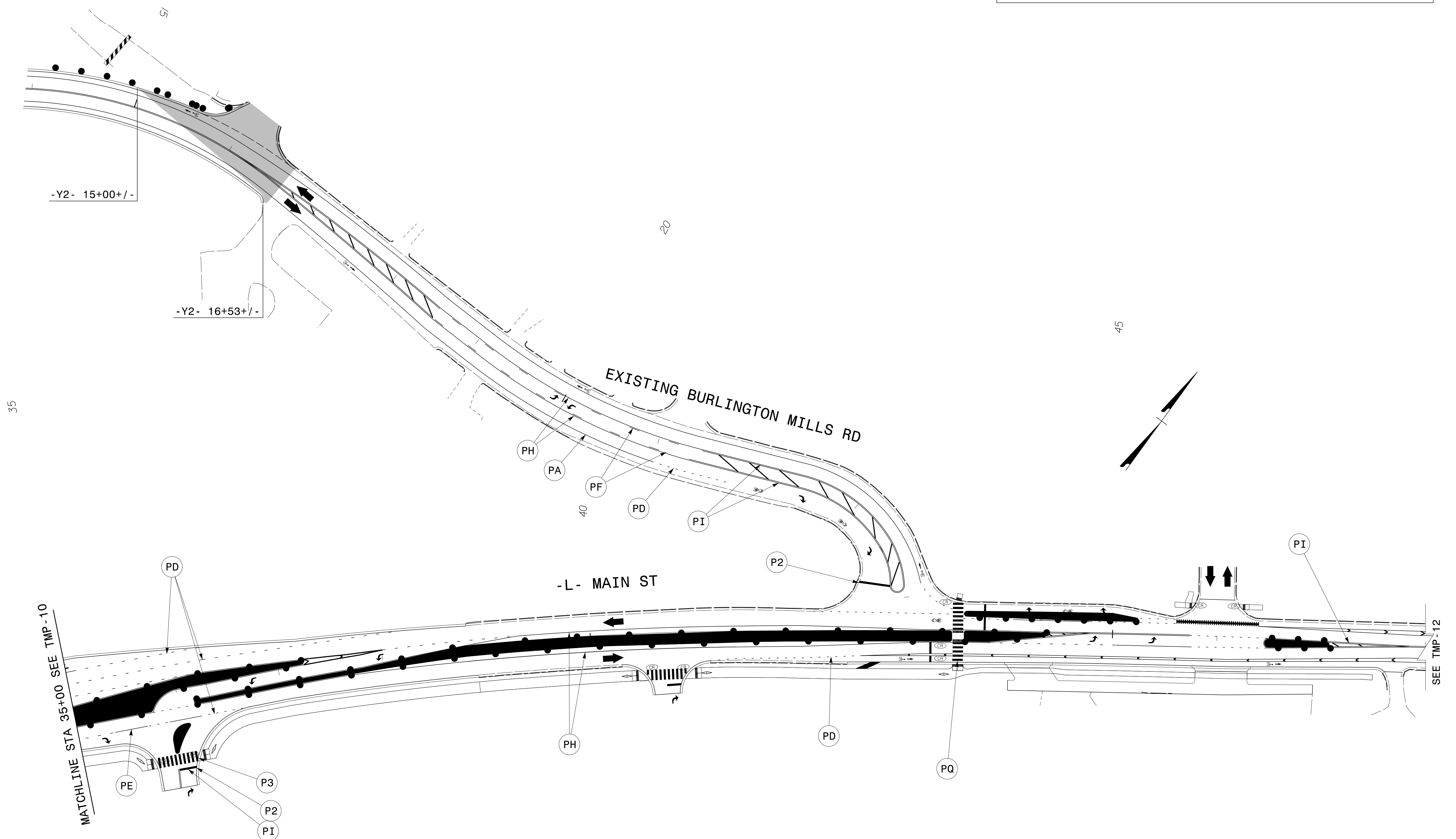
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PROJ. REFERENCE NO.	SHEET NO.
U-6241	TMP-11

NOTE
 ALL PAVEMENT MARKINGS SHOWN ARE TEMPORARY AND ARE IN FINAL PATTERN. SEE THE PM PLANS FOR ALL STATIONING AND DIMENSIONS.

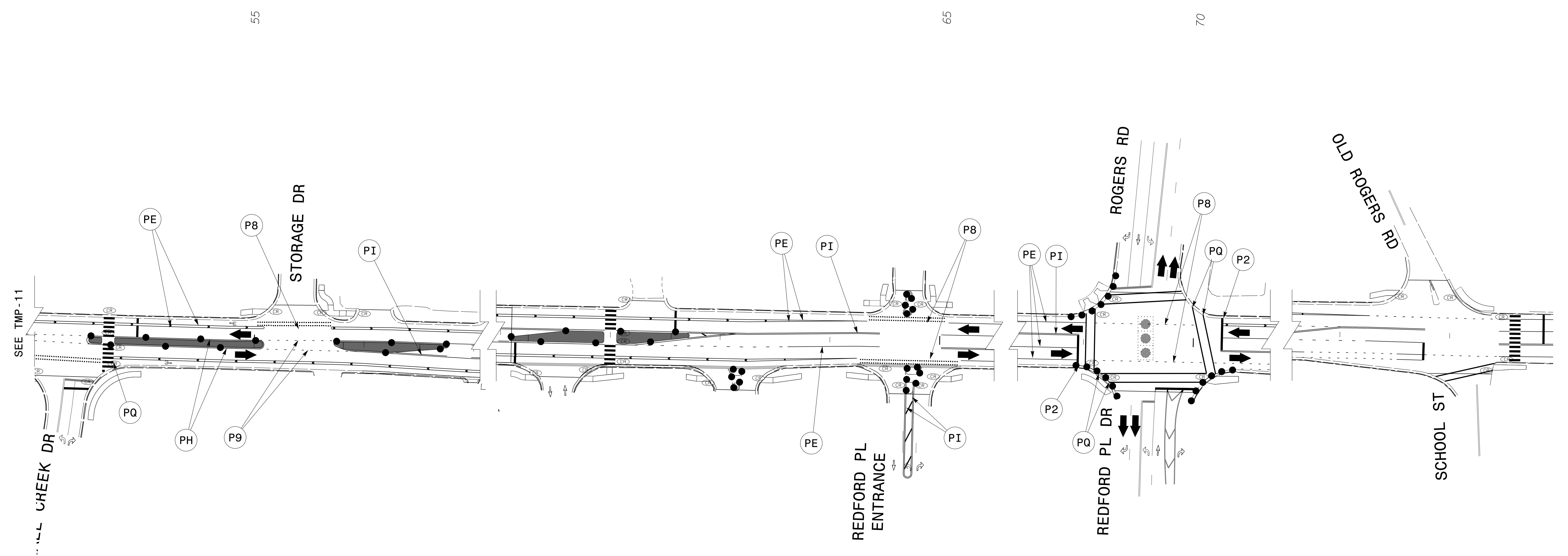


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 User: dorichardson


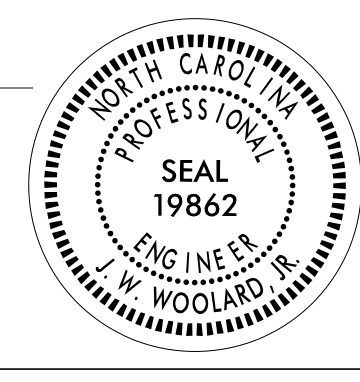
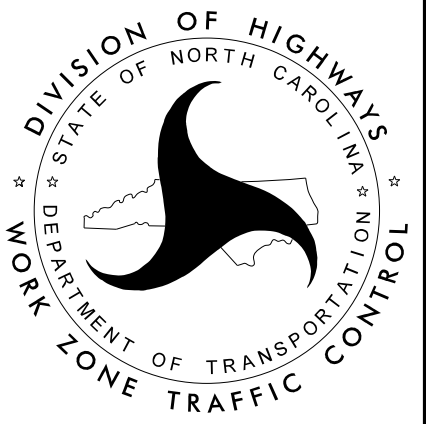
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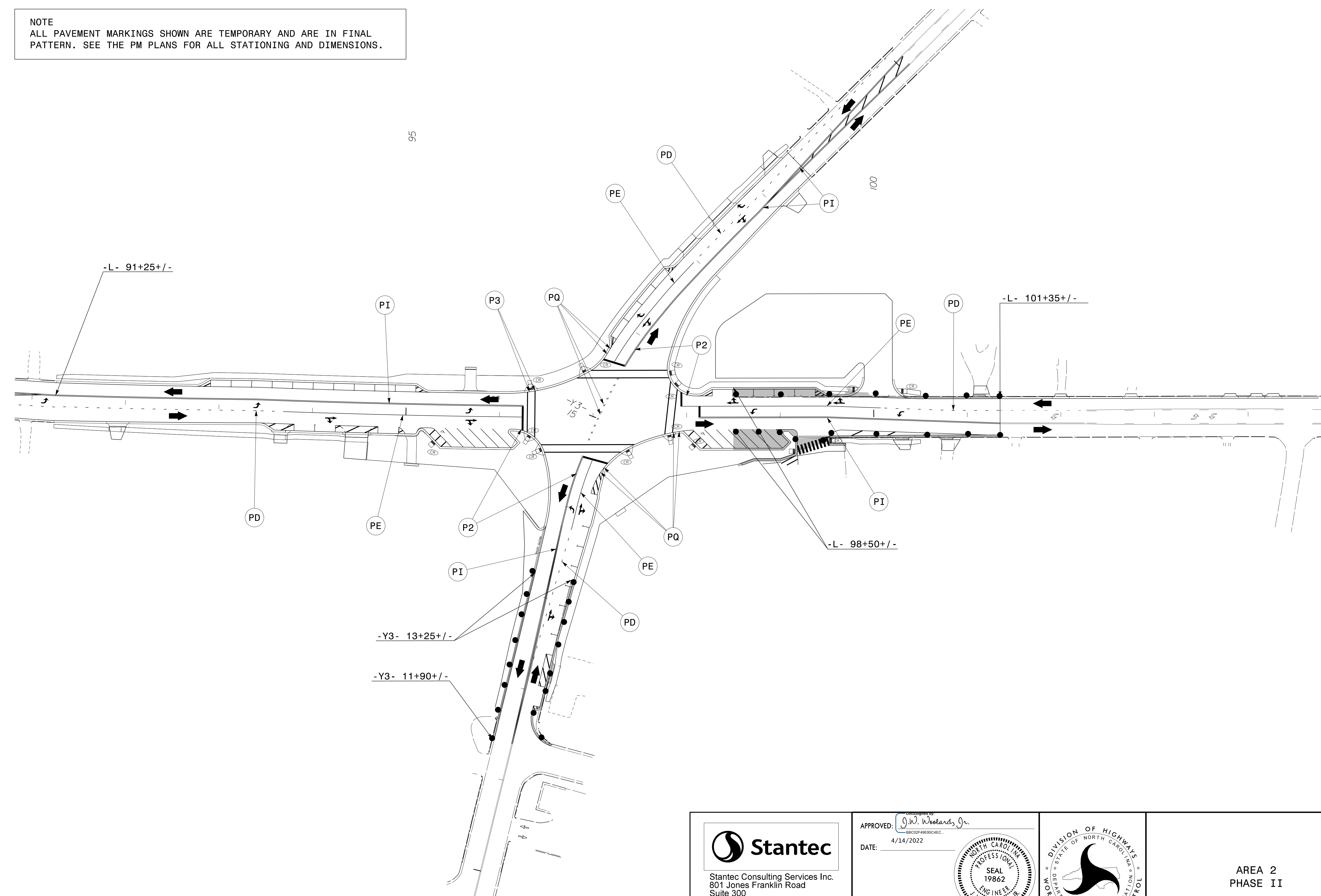
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 ALL PAVEMENT MARKINGS SHOWN ARE TEMPORARY AND ARE IN FINAL PATTERN. SEE THE PM PLANS FOR ALL STATIONING AND DIMENSIONS.



4/14/2022
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 User: dorichardson

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NOTE
 ALL PAVEMENT MARKINGS SHOWN ARE TEMPORARY AND ARE IN FINAL PATTERN. SEE THE PM PLANS FOR ALL STATIONING AND DIMENSIONS.



4/14/2022
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T I P P R O J E C T : U - 6 2 4 1

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
WAKE COUNTY**

LOCATION: US 401 BUS (MAIN ST) FROM JONESVILLE RD TO NORTH OF YOUNG ST

PROJECT NAME U-6241	SHEET NO. PMP-1
APPROVED: Betsy L. Watson <small>05E79834F8743F</small>	
DATE: 2/21/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS (REPLACE SHEET 2 OF 2 WITH PMP-1A)
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROP
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	THERMOPLASTIC	SNOWPLOWABLE
- B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.
- E) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.
- F) ALL BICYCLE LANE SYMBOLS SHALL BE HEATED-IN-PLACE THERMOPLASTIC. SYMBOLS SHALL BE PAID FOR USING THE HEATED-IN-PLACE PAY ITEM.
- G) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF COLD APPLIED PLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS ON ASPHALT OR CONCRETE ROADWAYS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE COLD APPLIED PAY ITEM.
- H) TYPE III COLD APPLIED PLASTIC MAY BE USED IN LIEU OF TYPE II COLD APPLIED PLASTIC. IF TYPE III COLD APPLIED PLASTIC IS USED, IT SHALL BE PAID FOR USING THE TYPE II COLD APPLIED PLASTIC PAY ITEM.
- I) SEE ROADWAY PLANS FOR ALTERNATE CURB RAMP DESIGNS WHEN INDICATED ON PAVEMENT MARKING DETAIL SHEETS.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM
C94A	CHEVRON SYMBOL ON LIGHT PAVEMENT	COLD APPLIED PLASTIC
T1	WHITE EDGELINE	(4", 90 MILS) THERMOPLASTIC
T2	WHITE SOLID LANE LINE	(4", 90 MILS) THERMOPLASTIC
T3	10 FT WHITE SKIP	(4", 90 MILS) THERMOPLASTIC
T4	3 FT-9 FT/SP WHITE MINISKIP	(4", 90 MILS) THERMOPLASTIC
T5	2 FT-6 FT/SP WHITE MINISKIP	(4", 90 MILS) THERMOPLASTIC
T10	YELLOW EDGELINE	(4", 90 MILS) THERMOPLASTIC
T11	YELLOW SINGLE CENTER	(4", 90 MILS) THERMOPLASTIC
T12	10 FT YELLOW SKIP	(4", 90 MILS) THERMOPLASTIC
T13	YELLOW DOUBLE CENTER	(4", 90 MILS) THERMOPLASTIC
T14	2 FT-6 FT/SP YELLOW MINISKIP	(4", 90 MILS) THERMOPLASTIC
T40	WHITE GORELINE	(8", 90 MILS) THERMOPLASTIC
T41	WHITE DIAGONAL	(8", 90 MILS) THERMOPLASTIC
T42	YELLOW DIAGONAL	(8", 90 MILS) THERMOPLASTIC
T43	WHITE SOLID LANE LINE	(8", 90 MILS) THERMOPLASTIC
T44	3 FT-9 FT/SP WHITE MINISKIP	(8", 90 MILS) THERMOPLASTIC
T46	WHITE CROSSWALK LINE	(8", 90 MILS) THERMOPLASTIC
T61	WHITE STOPBAR	(24", 90 MILS) THERMOPLASTIC
T62	WHITE CROSSWALK LINE	(24", 90 MILS) THERMOPLASTIC
T70	LEFT TURN ARROW	(90 MILS) THERMOPLASTIC
T71	RIGHT TURN ARROW	(90 MILS) THERMOPLASTIC
T72	STRAIGHT ARROW	(90 MILS) THERMOPLASTIC
T73	COMBO LEFT/STRAIGHT ARROW	(90 MILS) THERMOPLASTIC
T74	COMBO STRAIGHT/RIGHT ARROW	(90 MILS) THERMOPLASTIC
T90	BICYCLE SYMBOL, HEATED-IN-PLACE	(90 MILS) THERMOPLASTIC
T91	BICYCLE STRAIGHT ARROW, HEATED-IN-PLACE	(90 MILS) THERMOPLASTIC
T93	BICYCLE CHARACTER, HEATED-IN-PLACE	(90 MILS) THERMOPLASTIC
T94	SHARROW, HEATED-IN-PLACE	(90 MILS) THERMOPLASTIC
T100	ALPHANUMERIC CHAR	(90 MILS) THERMOPLASTIC
T101	HANDICAP PARKING	(90 MILS) THERMOPLASTIC
●	BULLNOSE MARKER WITH BLACK AND YELLOW DIAGONALS	

PLAN PREPARED BY:

BETSY L. WATSON, P.E. SENIOR TRANSPORTATION ENGINEER
REGINA M. MUNCEY, P.E. TRANSPORTATION ENGINEER
ROSI R. HENNEIN TRANSPORTATION DESIGNER



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INDEX

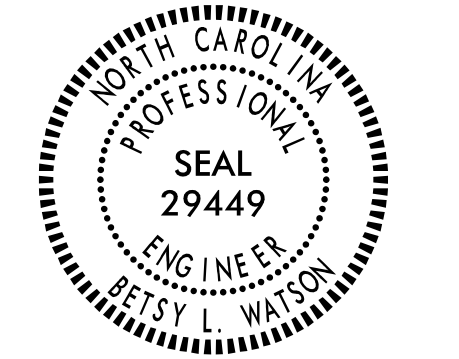
SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-1A	REVISED ROADWAY STANDARD DRAWING
PMP-1B	REMOVABLE BOLLARD DETAIL
PMP-1C	BULLNOSE MARKER DETAIL
PMP-2-11	PAVEMENT MARKING DETAIL

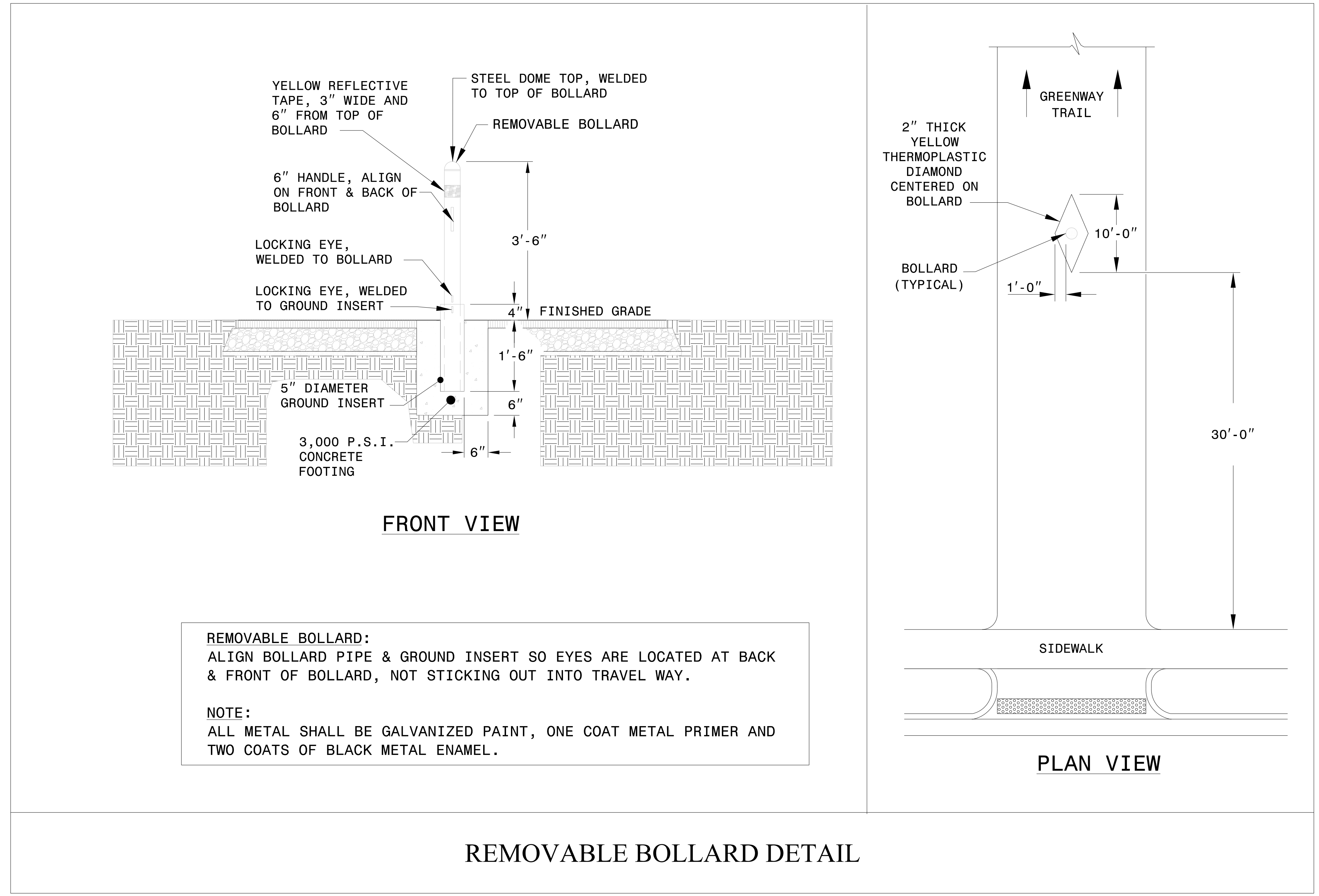
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DocuSigned by:	
APPROVED: <i>Matthew V. Springer</i>	
DATE: 8/13/2019	
SEAL	

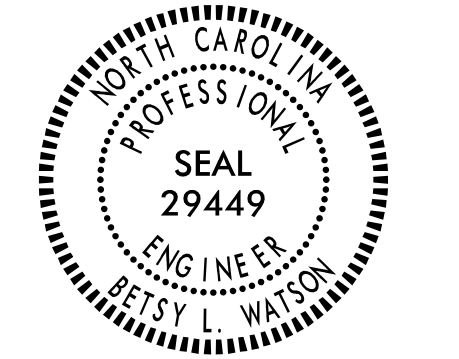
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	TWO-LANE, TWO-WAY ROADWAY	TWO-LANE, TWO-WAY ROADWAY WITH TWO-WAY LEFT TURN LANE	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
	UNDIVIDED MULTI-LANE ROADWAY	DIVIDED MULTI-LANE ROADWAY WITH TURN BAY	
ENGLISH DETAIL DRAWING FOR PAVEMENT MARKINGS INTERSECTIONS			ENGLISH DETAIL DRAWING FOR PAVEMENT MARKINGS INTERSECTIONS
	DIVIDED MULTI-LANE ROADWAY WITH WIDE MEDIAN CROSSOVER	GENERAL NOTES:	
		<p>1- PLACEMENT OF STOP BARS AT NON-SIGNALIZED INTERSECTIONS IS OPTIONAL AND USED WHERE IT IS IMPORTANT TO INDICATE THE POINT WHICH VEHICLES ARE REQUIRED TO STOP. PLACE STOP BARS NO LESS THAN 4 FEET AND NO MORE THAN 30 FEET FROM THE NEAREST EDGE OF THE INTERSECTING ROADWAY. USE 10 FEET AS THE TYPICAL SETBACK DISTANCE OR AS DIRECTED BY THE ENGINEER.</p> <p>2- MINI-SKIP LANE LINE EXTENSIONS SHOULD BE USED AT INTERSECTIONS THAT HAVE REDUCED VISIBILITY CONDITIONS SUCH AS OFFSET, SKEWED, OR CURVED ROADWAYS.</p> <p>3- MINI-SKIP EDGE LINE EXTENSIONS MAY BE PLACED THROUGH INTERSECTIONS AND MAJOR DRIVEWAYS.</p> <p>4- REFER TO ROADWAY STANDARD DRAWINGS 1205.01, 1205.02, 1205.05, 1205.08 AND 1205.09 FOR ADDITIONAL PAVEMENT MARKING GUIDANCE.</p>	
SHEET 2 OF 2 1205D04	LEGEND	SHEET 2 OF 2 1205D04	

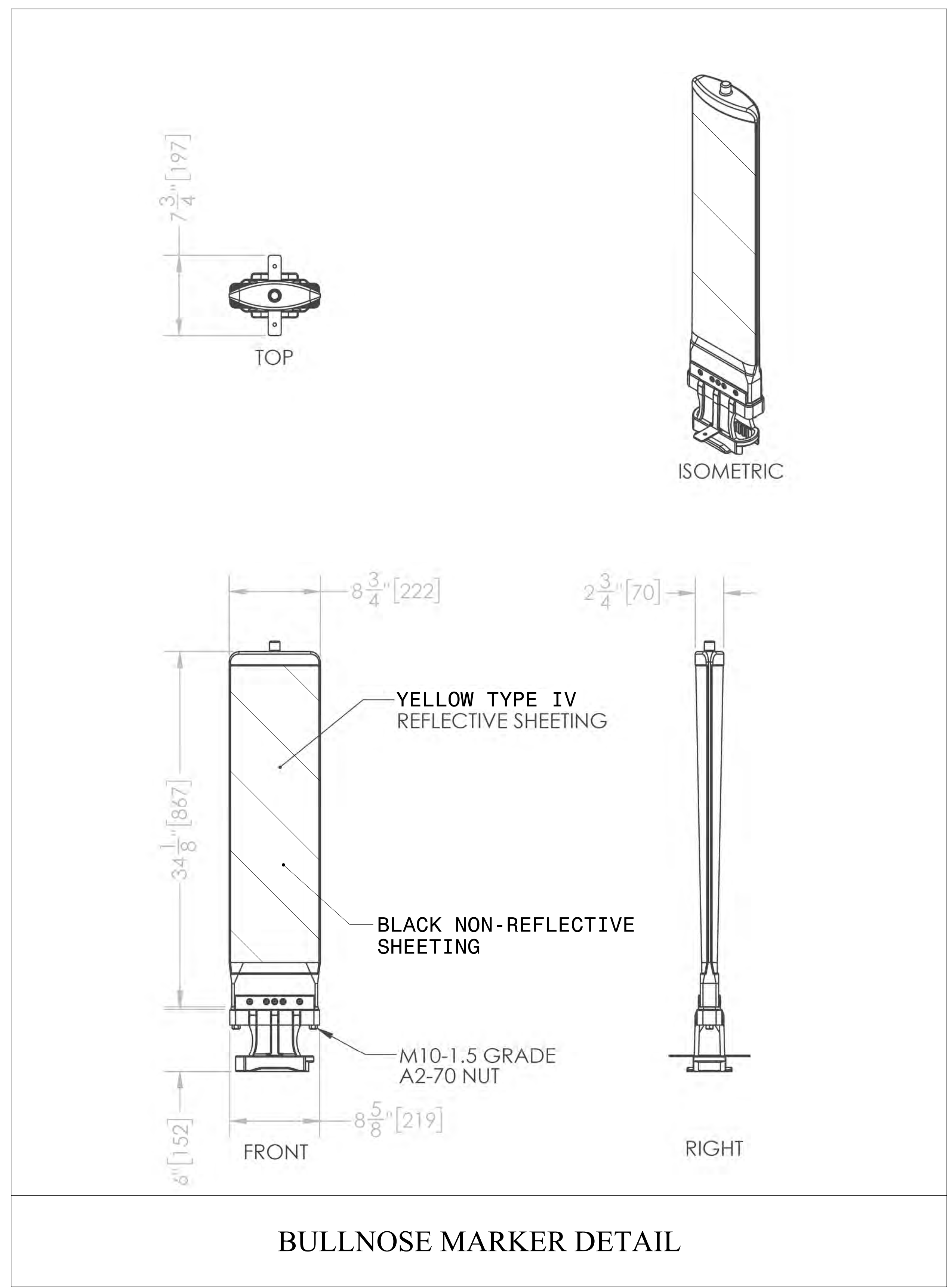
**REVISED PAVEMENT MARKING
ROADWAY STANDARD DRAWING**



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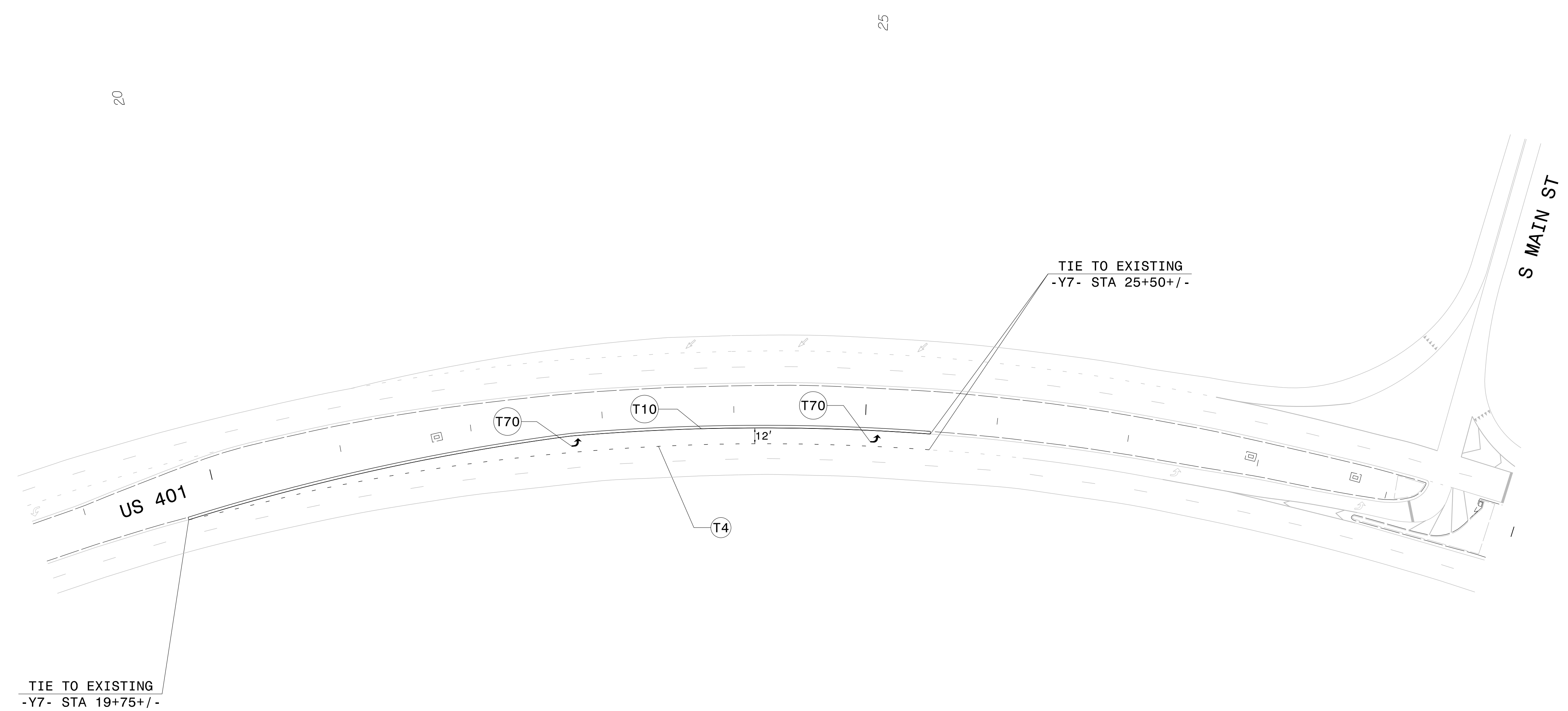
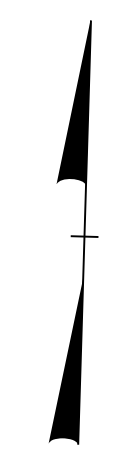
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U-6241	PMP-1B
APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
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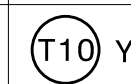
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PROJECT NAME	SHEET NO.
U-6241	PMP-2
APPROVED: <i>Betsy L. Watson</i> 35E97B83F8743F	
DATE: 2/21/2022	
SEAL	
	
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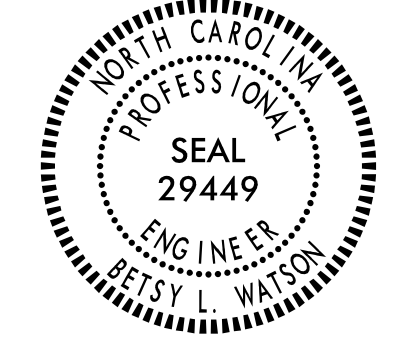

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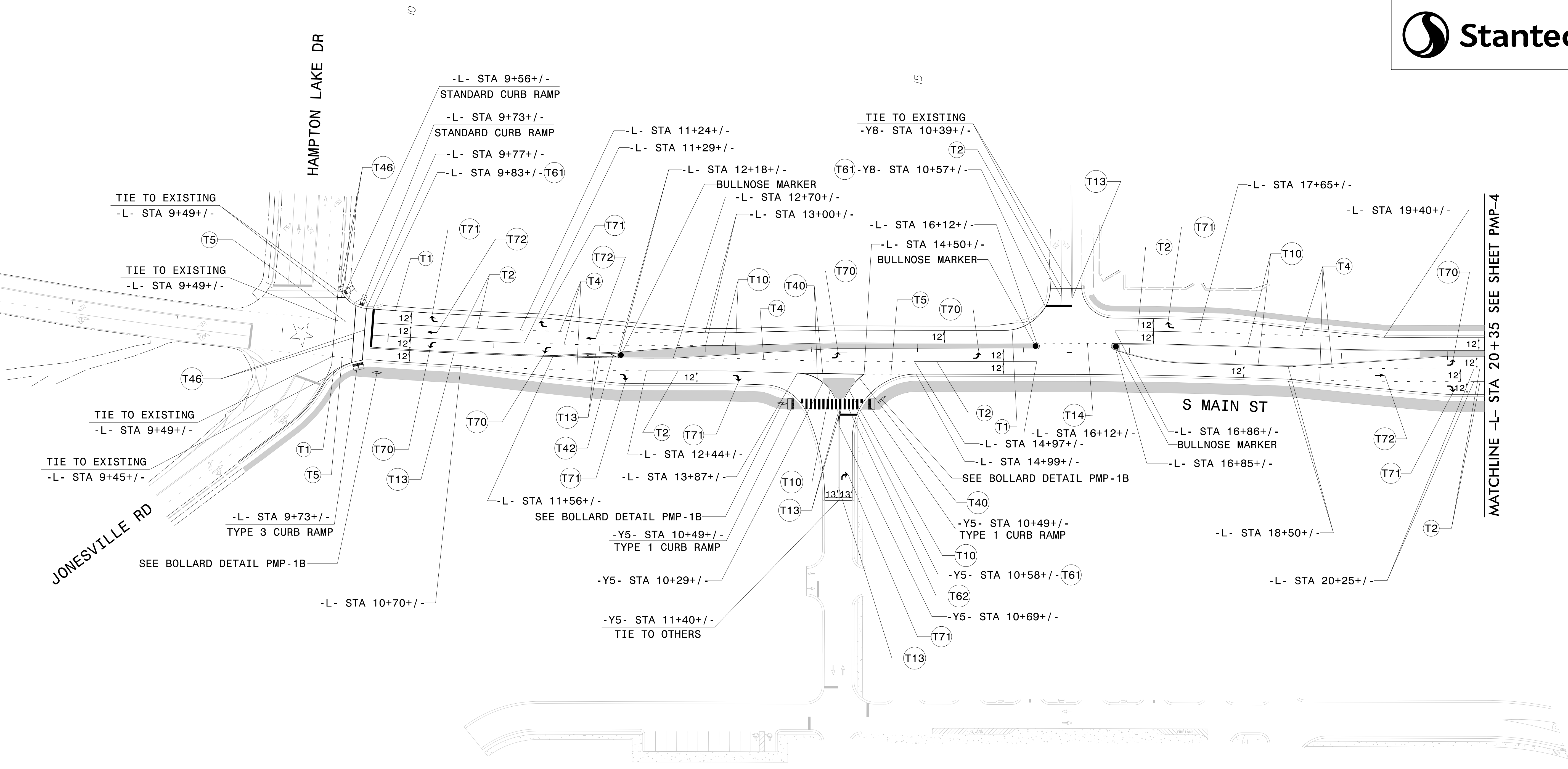
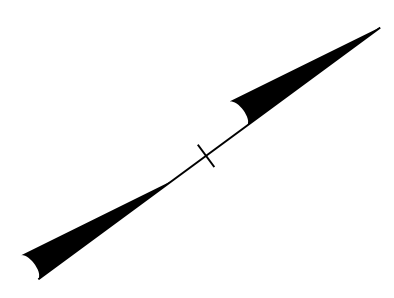
THERMOPLASTIC PAVEMENT MARKING LEGEND	
	LEFT TURN ARROW
	3 FT-9 FT/SP WHITE MINISKIP (4")
	YELLOW EDGELINE (4")

PAVEMENT MARKING DETAIL

THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGELINE (4")	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")
(T71) RIGHT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T40) WHITE GORELINE (8")
(T72) STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T42) YELLOW DIAGONAL (8")
	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T46) WHITE CROSSWALK LINE (8")
	(T10) YELLOW EDGELINE (4")	(T61) WHITE STOPBAR (24")
	(T13) YELLOW DOUBLE CENTER (4")	(T62) WHITE CROSSWALK LINE (24")

★ EXISTING SIGNAL ● BULLNOSE MARKER

PROJECT NAME U-6241	SHEET NO. PMP-3
APPROVED: <i>Betsy L. Watson</i> 2/21/2022	
DATE: 2/21/2022	
SEAL	
	
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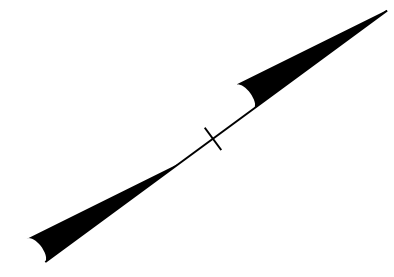


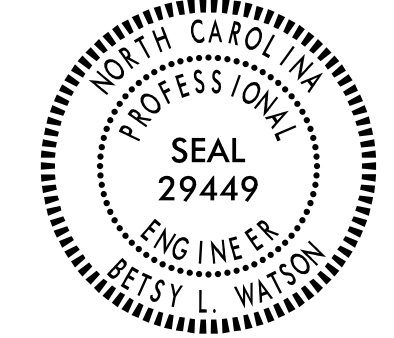

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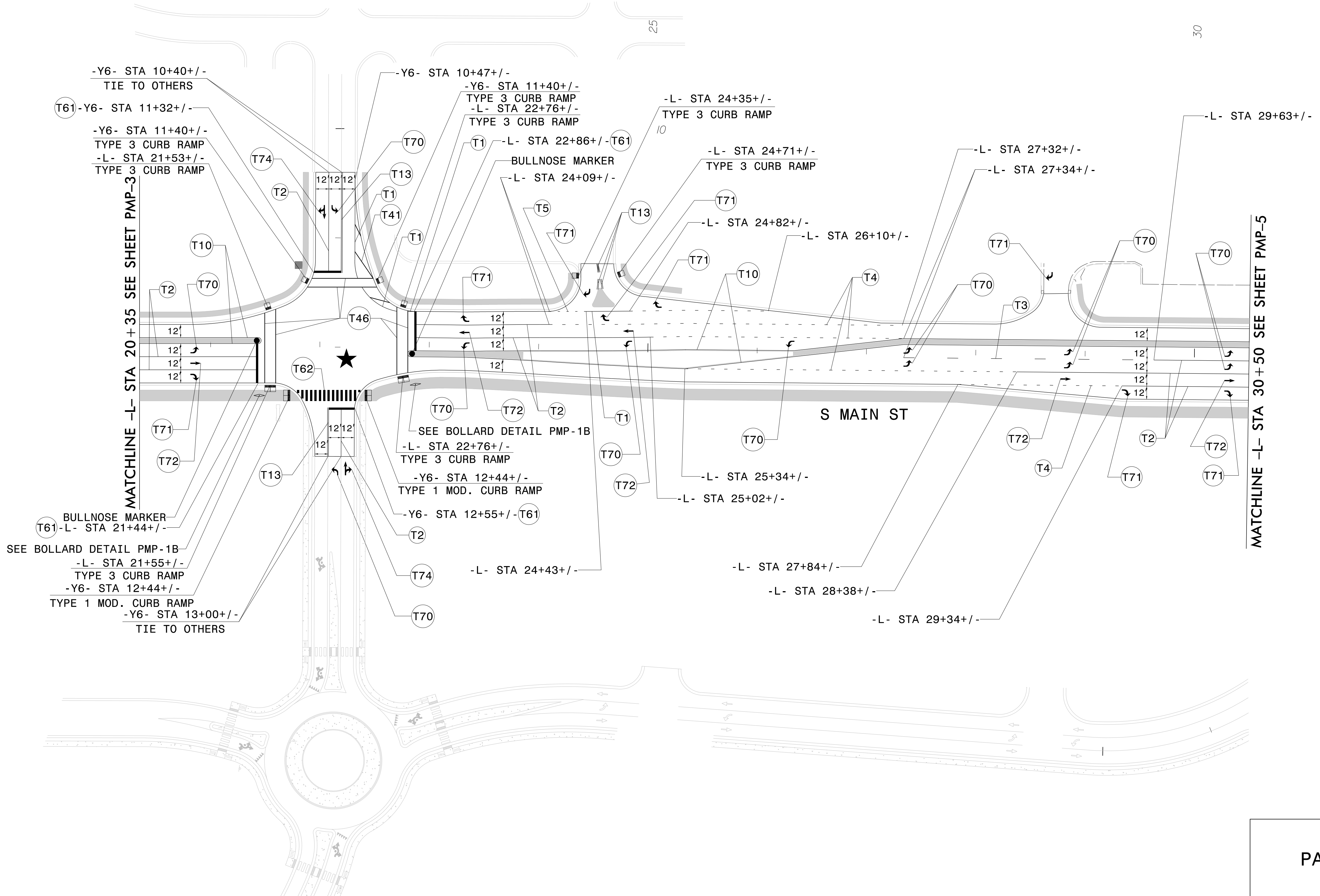
PAVEMENT MARKING DETAIL

THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGELINE (4")	(T13) YELLOW DOUBLE CENTER (4")
(T71) RIGHT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T41) WHITE DIAGONAL (8")
(T72) STRAIGHT ARROW	(T3) 10 FT WHITE SKIP (4")	(T46) WHITE CROSSWALK LINE (8")
(T74) STRAIGHT/RIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T61) WHITE STOPBAR (24")
	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T62) WHITE CROSSWALK LINE (24")
	(T10) YELLOW EDGELINE (4")	

★ PROPOSED SIGNAL ● BULLNOSE MARKER



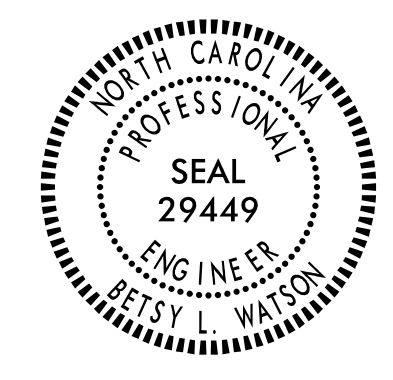
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APPROVED: <i>Betsy L. Watson</i> <small>REGISTERED PROFESSIONAL ENGINEER</small>	
DATE: 2/21/2022	
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



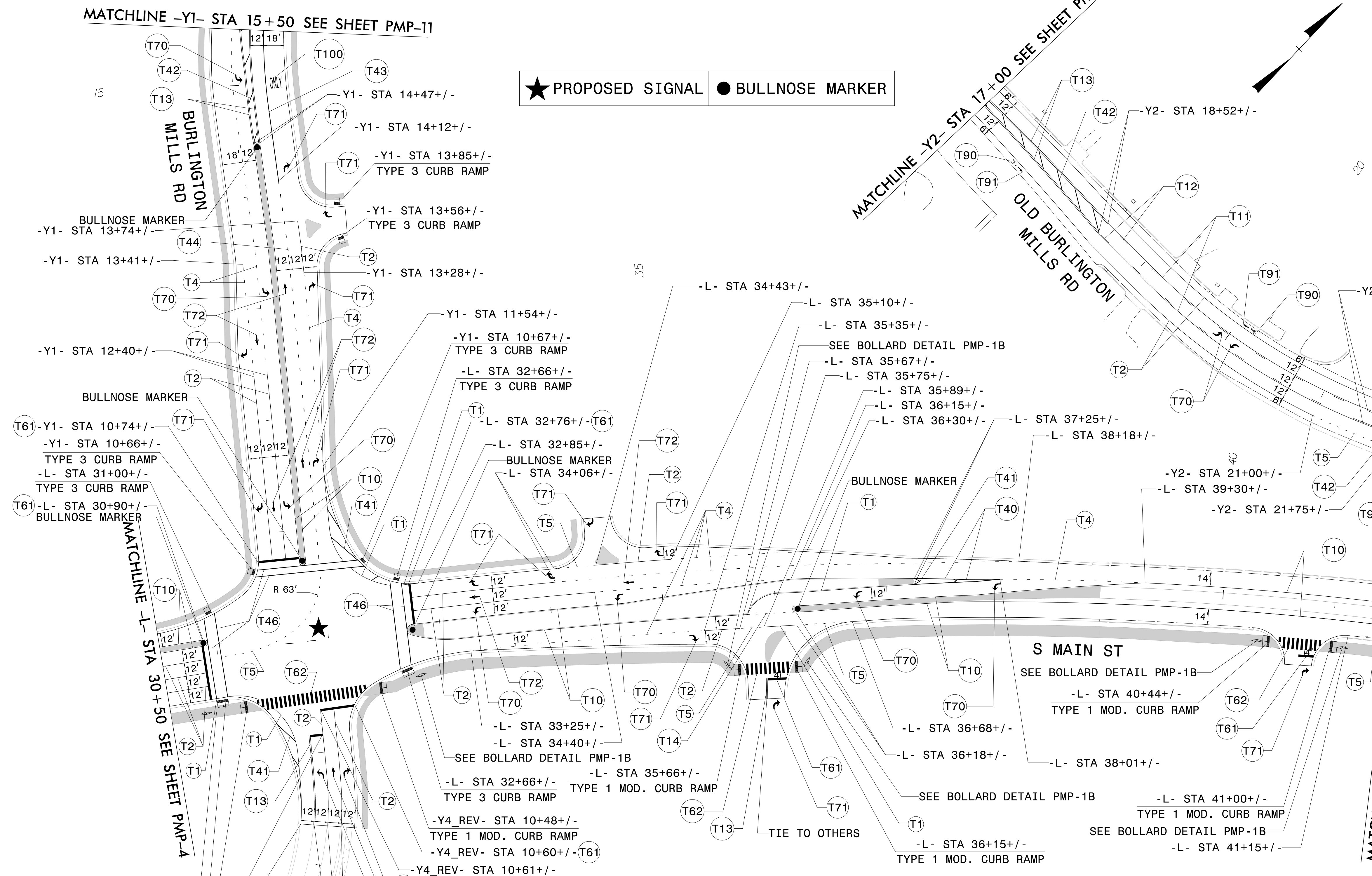
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PAVEMENT MARKING DETAIL

PROJECT NAME	SHEET NO.
U-6241	PMP-5
APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
SEAL	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



★ PROPOSED SIGNAL ● BULLNOSE MARKER

THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGELINE (4")	(T40) WHITE GORELINE (8")
(T71) RIGHT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T41) WHITE DIAGONAL (8")
(T72) STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T42) YELLOW DIAGONAL (8")
(T90) BICYCLE SYMBOL	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T43) WHITE SOLID LANE LINE (8")
(T91) BICYCLE STRAIGHT ARROW	(T10) YELLOW EDGELINE (4")	(T44) 3 FT-9 FT/SP WHITE MINISKIP (8")
(T94) SHARROW	(T11) YELLOW SINGLE CENTER (4")	(T46) WHITE CROSSWALK LINE (8")
(T100) ONLY ALPHANUMERIC CHARACTERS	(T12) 10 FT YELLOW SKIP (4")	(T61) WHITE STOPBAR (24")
	(T13) YELLOW DOUBLE CENTER (4")	(T62) WHITE CROSSWALK LINE (24")
	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")	

PAVEMENT MARKING DETAIL

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

C94A COLD APPLIED PLASTIC DETAIL

4 INCH BLACK EPOXY
4 INCH WHITE COLD APPLIED PLASTIC
4 INCH BLACK EPOXY

DETAIL A

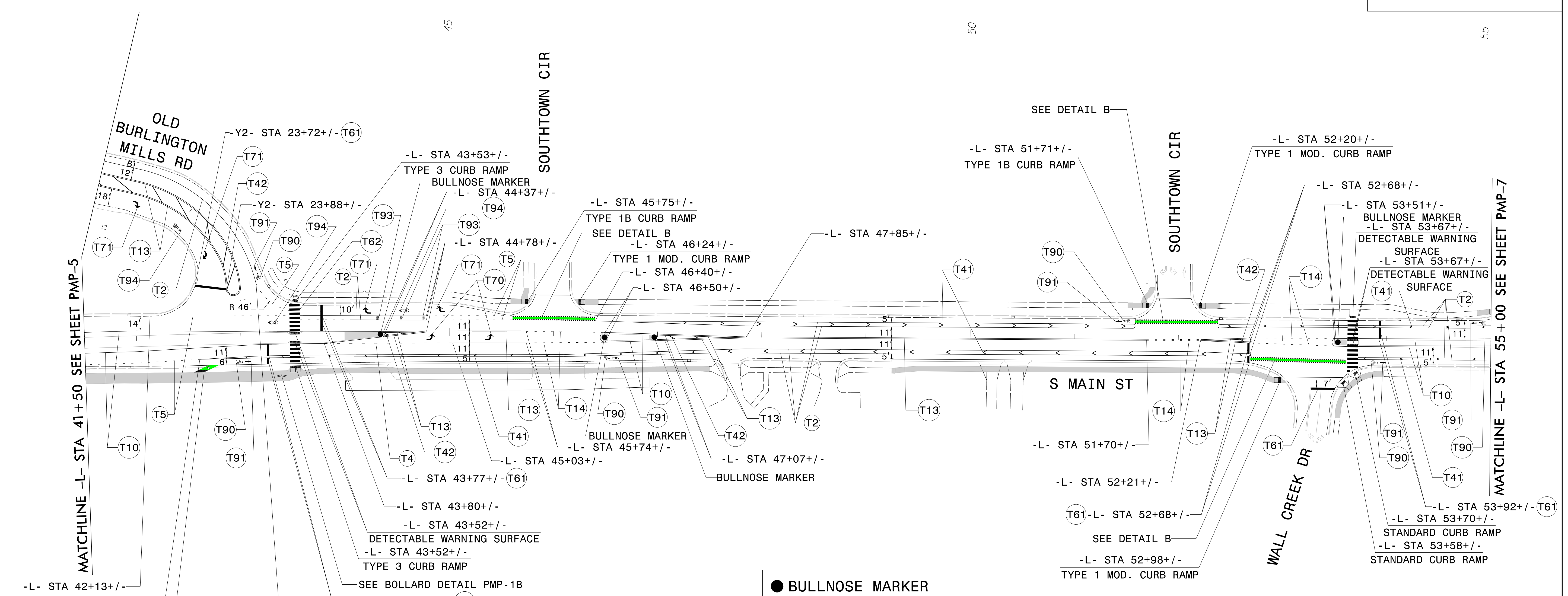
FOR BIKE RAMPS:
PLACE DETECTOR DOMES FOR BARRIER ALONG SIDEWALK

GREEN THERMOPLASTIC

DETAIL B

12 INCH SQUARE WHITE CROSSWALK MARKING
24 INCH GREEN THERMOPLASTIC
12 INCH SQUARE WHITE CROSSWALK MARKING

PROJECT NAME	SHEET NO.
U-6241	PMP-6
DESIGNED BY: <i>Betsy L. Watson</i>	
APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
SEAL	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



● BULLNOSE MARKER

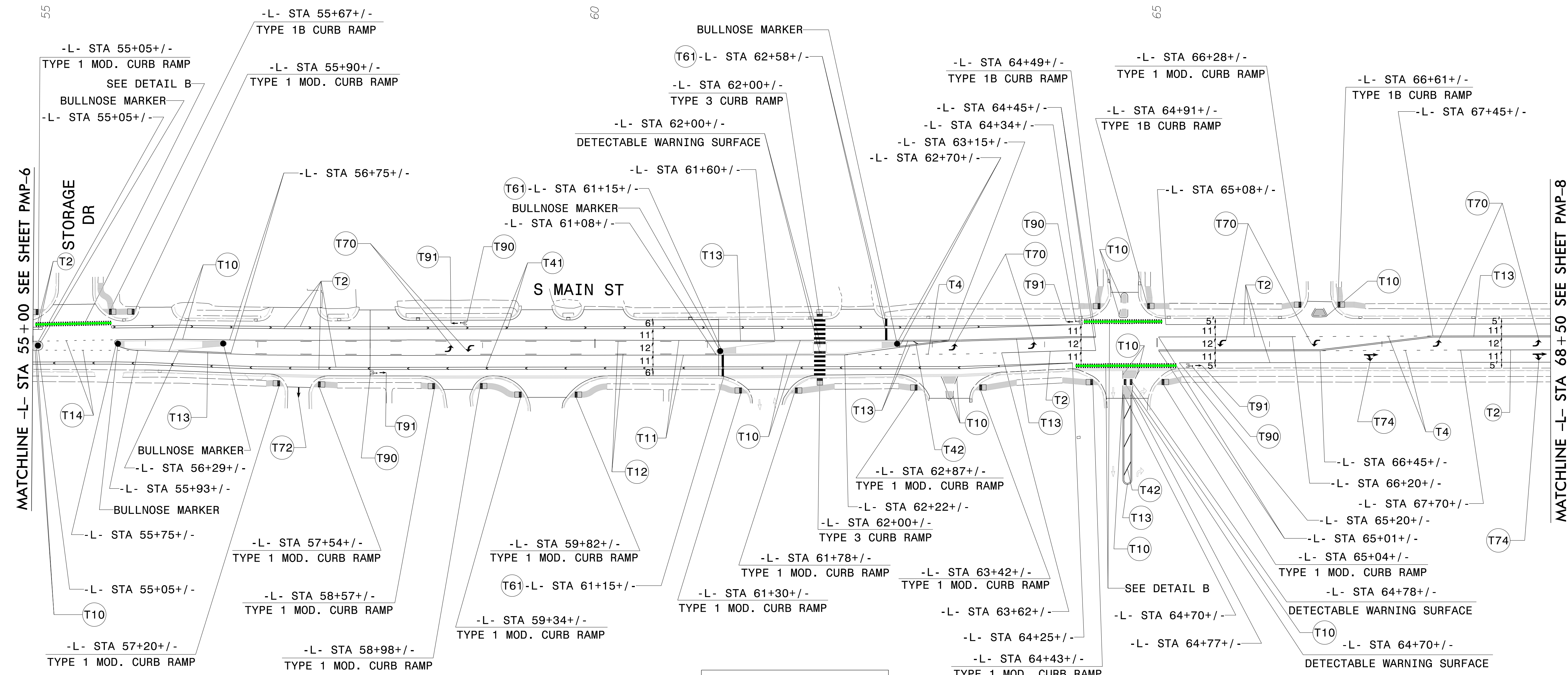
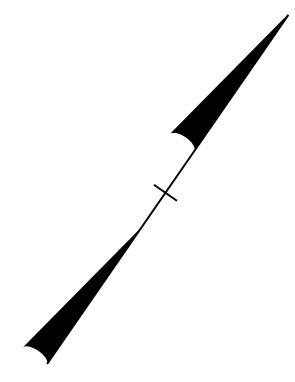
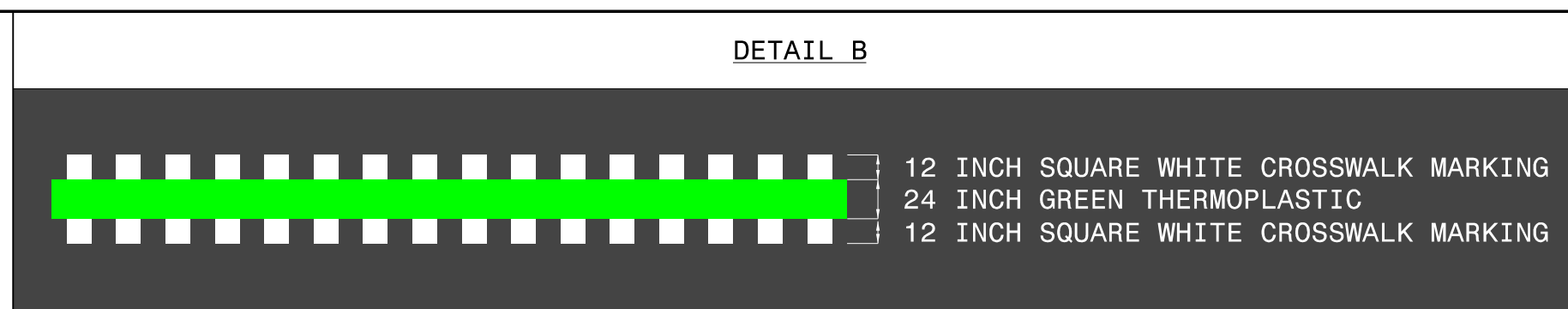
THERMOPLASTIC PAVEMENT MARKING LEGEND

(T70) LEFT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T61) WHITE STOPBAR (24")
(T71) RIGHT TURN ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T62) WHITE CROSSWALK LINE (24")
(T90) BICYCLE SYMBOL	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	
(T91) BICYCLE STRAIGHT ARROW	(T10) YELLOW EDGELINE (4")	
(T93) BIKE BICYCLE CHARACTER	(T13) YELLOW DOUBLE CENTER (4")	
(T93) LANE BICYCLE CHARACTER	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")	
(T93) ENDS BICYCLE CHARACTER	(T41) WHITE DIAGONAL (8")	
(T94) SHARROW	(T42) YELLOW DIAGONAL (8")	

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PAVEMENT MARKING DETAIL

PROJECT NAME	SHEET NO.
U-6241	PMP-7
DESIGNED BY: Betsy L. Watson	
APPROVED:	
DATE: 2/21/2022	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

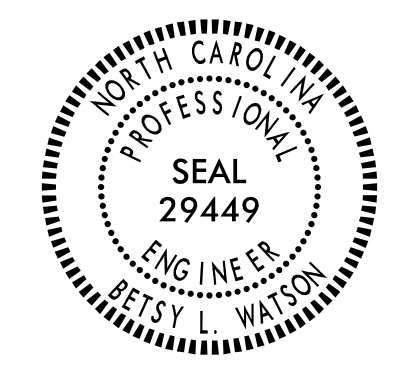



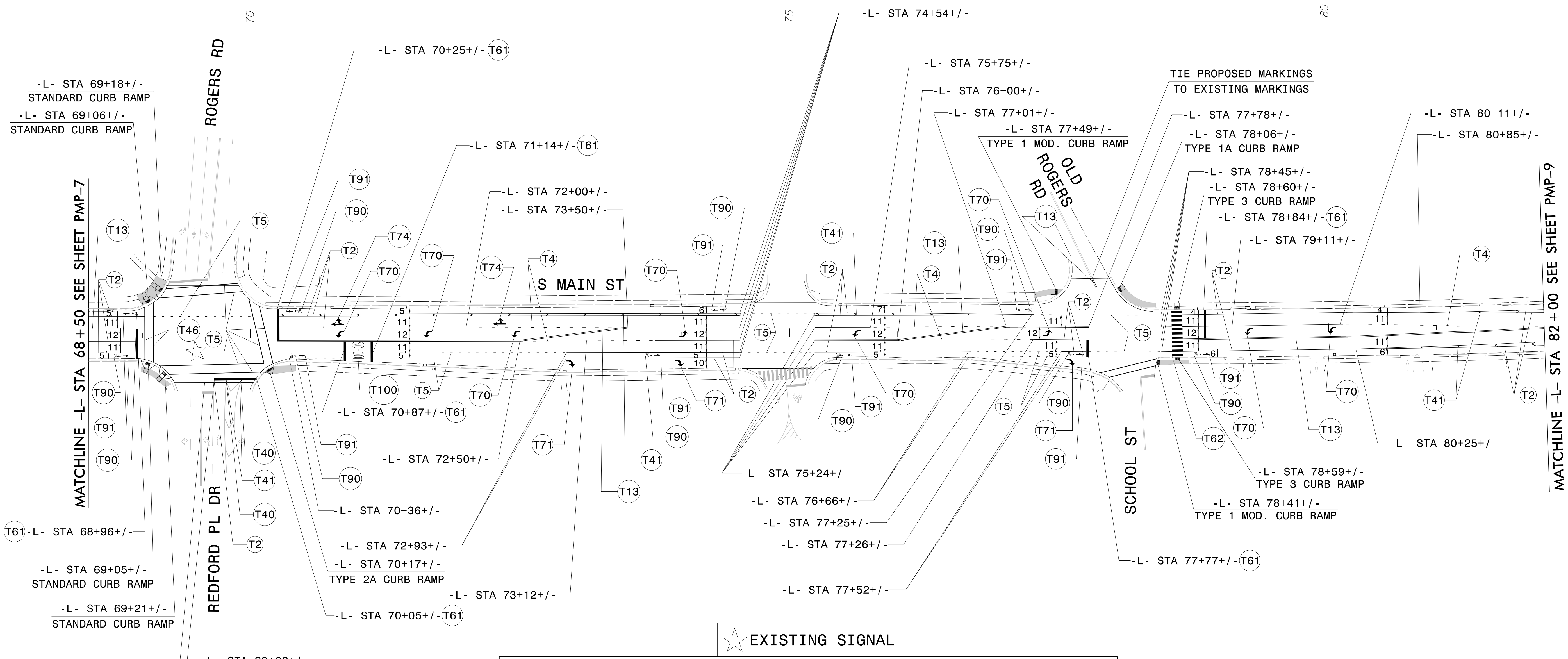
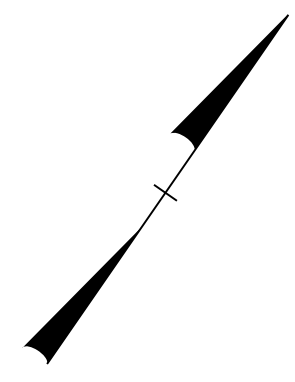
● BULLNOSE MARKER

THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) ← LEFT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T13) YELLOW DOUBLE CENTER (4")
(T72) ↑ STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")
(T74) ↗ STRAIGHT/RIGHT ARROW	(T10) YELLOW EDGELINE (4")	(T41) WHITE DIAGONAL (8")
(T90) ⚡ BICYCLE SYMBOL	(T11) YELLOW SINGLE CENTER (4")	(T42) YELLOW DIAGONAL (8")
(T91) ↑ BICYCLE STRAIGHT ARROW	(T12) 10 FT YELLOW SKIP (4")	

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

PAVEMENT MARKING DETAIL

PROJECT NAME	SHEET NO.
U-6241	PMP-8
APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



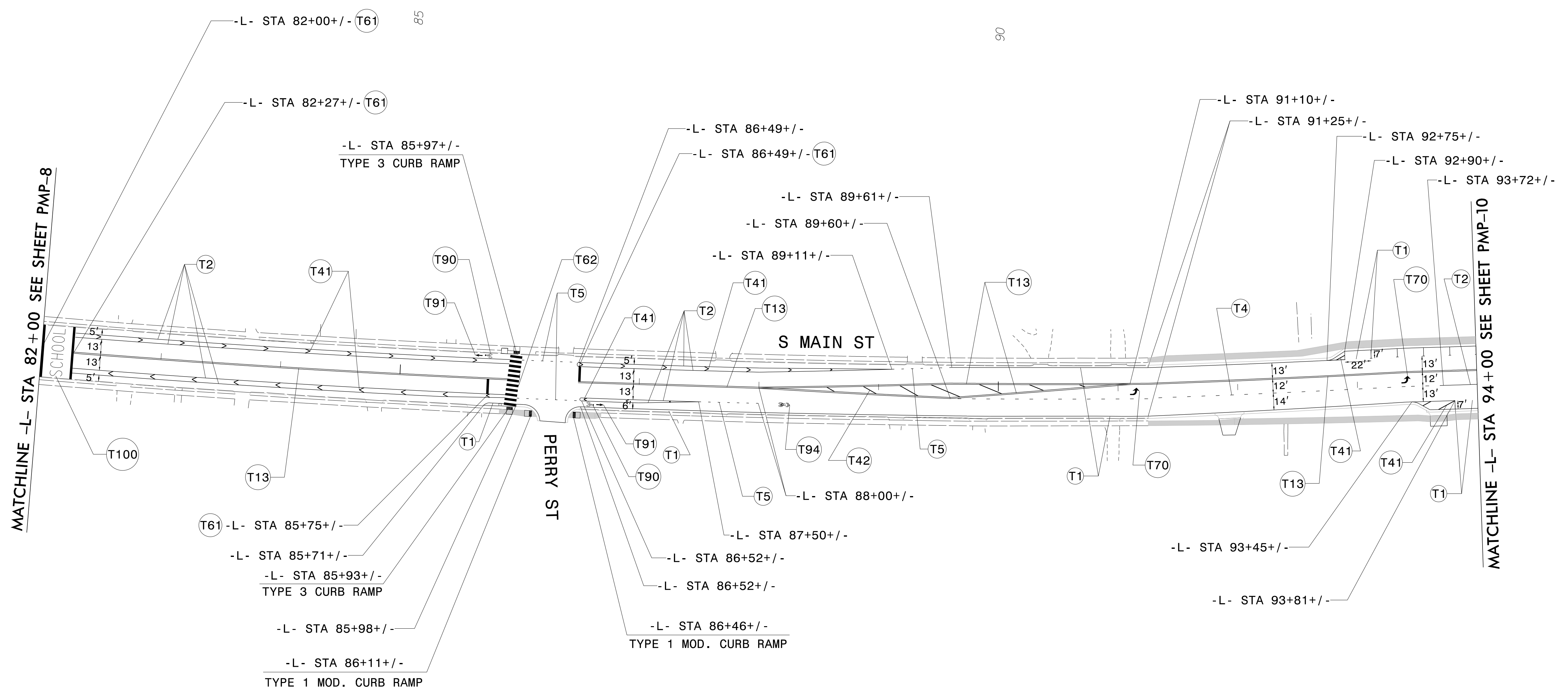
★ EXISTING SIGNAL

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(T71) RIGHT TURN ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T46) WHITE CROSSWALK LINE (8")
(T74) STRAIGHT/RIGHT ARROW	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T61) WHITE STOPBAR (24")
(T90) BICYCLE SYMBOL	(T13) YELLOW DOUBLE CENTER (4")	(T62) WHITE CROSSWALK LINE (24")
(T91) BICYCLE STRAIGHT ARROW	(T40) WHITE GORELINE (8")	
(T100) SCHOOL ALPHANUMERIC CHARACTERS		

PAVEMENT MARKING DETAIL

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SDGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

PROJECT NAME	SHEET NO.
U-6241	PMP-9
APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

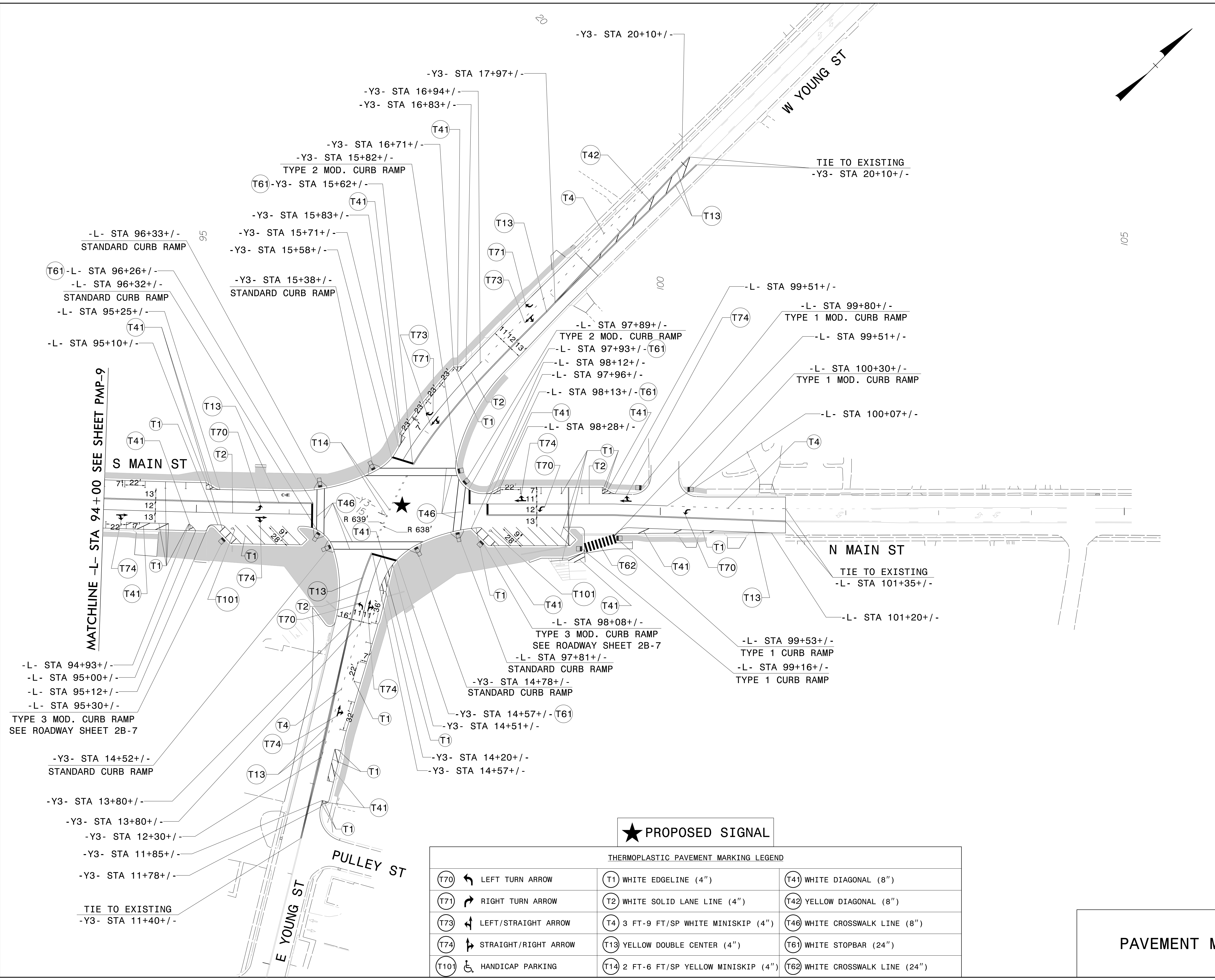


THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGELINE (4")	(T41) WHITE DIAGONAL (8")
(T90) BICYCLE SYMBOL	(T2) WHITE SOLID LANE LINE (4")	(T42) YELLOW DIAGONAL (8")
(T91) BICYCLE STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T61) WHITE STOPBAR (24")
(T94) SHARROW	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T62) WHITE CROSSWALK LINE (24")
(T100) SCHOOL ALPHANUMERIC CHARACTERS	(T13) YELLOW DOUBLE CENTER (4")	

PAVEMENT MARKING DETAIL

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT NAME	SHEET NO.
U-6241	PMP-10
DESIGNED BY: APPROVED: <i>Betsy L. Watson</i>	
DATE: 2/21/2022	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



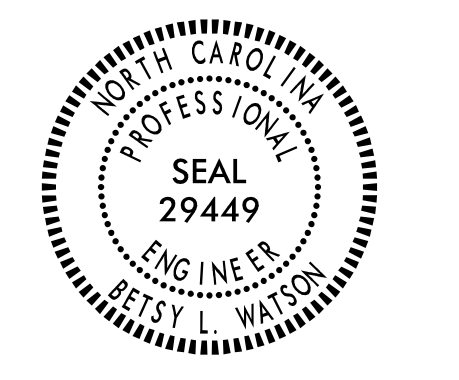

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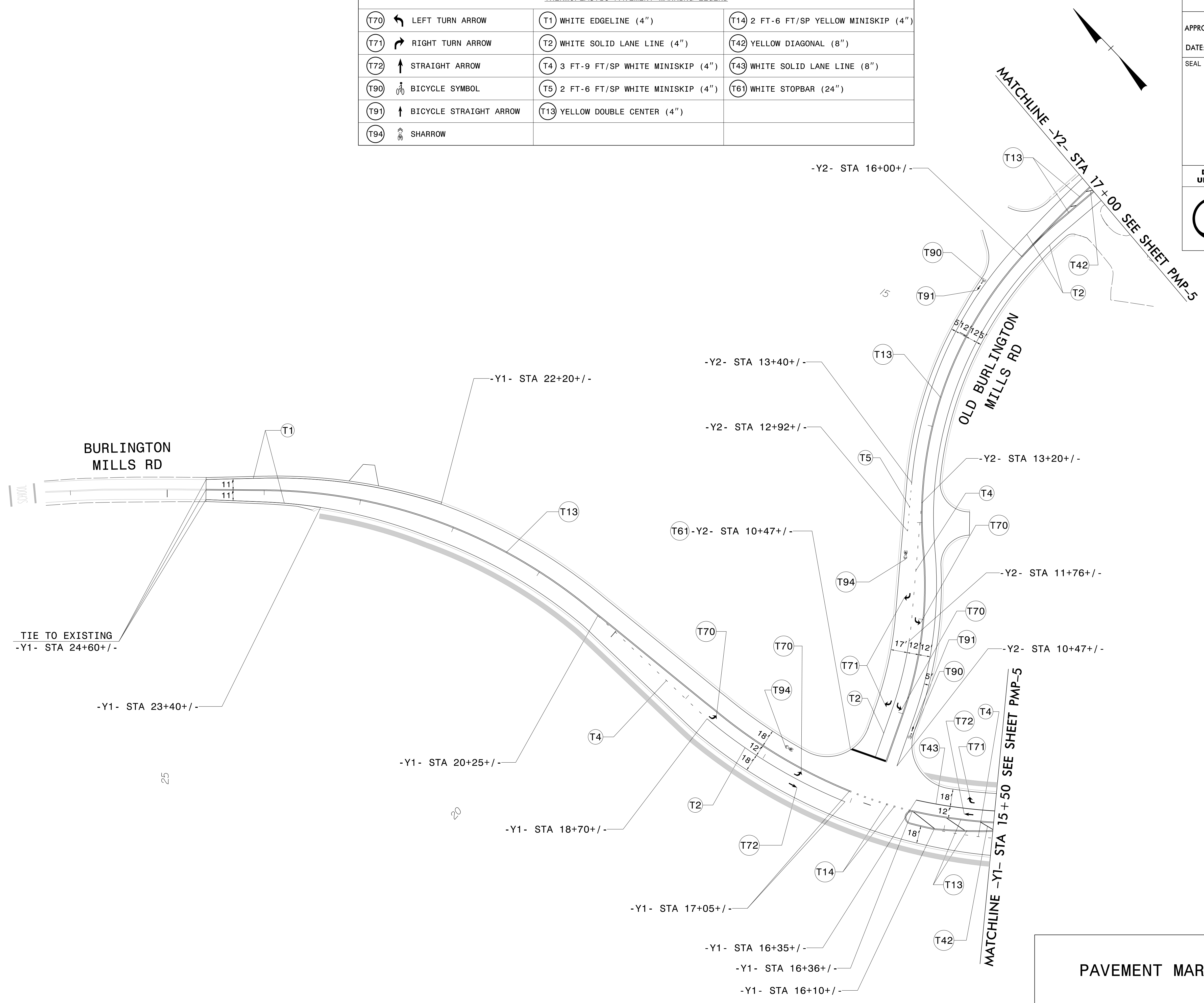
THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGLINE (4")	(T41) WHITE DIAGONAL (8")
(T71) RIGHT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T42) YELLOW DIAGONAL (8")
(T73) LEFT/STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T46) WHITE CROSSWALK LINE (8")
(T74) STRAIGHT/RIGHT ARROW	(T13) YELLOW DOUBLE CENTER (4")	(T61) WHITE STOPBAR (24")
(T101) HANDICAP PARKING	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")	(T62) WHITE CROSSWALK LINE (24")

PAVEMENT MARKING DETAIL

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

THERMOPLASTIC PAVEMENT MARKING LEGEND		
(T70) LEFT TURN ARROW	(T1) WHITE EDGELINE (4")	(T14) 2 FT-6 FT/SP YELLOW MINISKIP (4")
(T71) RIGHT TURN ARROW	(T2) WHITE SOLID LANE LINE (4")	(T42) YELLOW DIAGONAL (8")
(T72) STRAIGHT ARROW	(T4) 3 FT-9 FT/SP WHITE MINISKIP (4")	(T43) WHITE SOLID LANE LINE (8")
(T90) BICYCLE SYMBOL	(T5) 2 FT-6 FT/SP WHITE MINISKIP (4")	(T61) WHITE STOPBAR (24")
(T91) BICYCLE STRAIGHT ARROW	(T13) YELLOW DOUBLE CENTER (4")	
(T94) SHARROW		

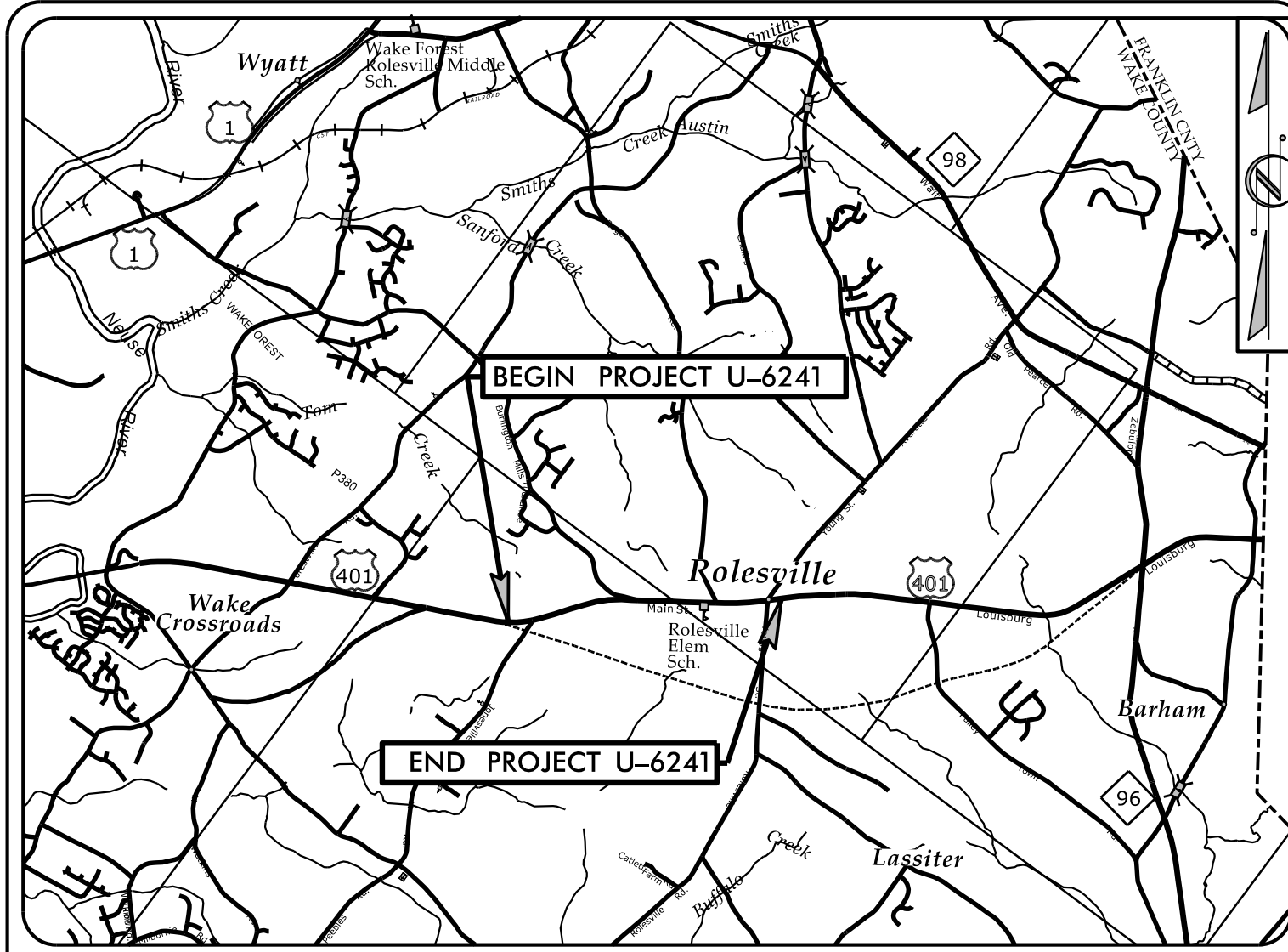
PROJECT NAME U-6241	SHEET NO. PMP-11
APPROVED: <i>Betsy L. Watson</i> <small>REGISTERED PROFESSIONAL ENGINEER</small>	
DATE: 2/21/2022	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

PAVEMENT MARKING DETAIL

TIP PROJECT: U-6241



VICINITY MAP
NOT TO SCALE

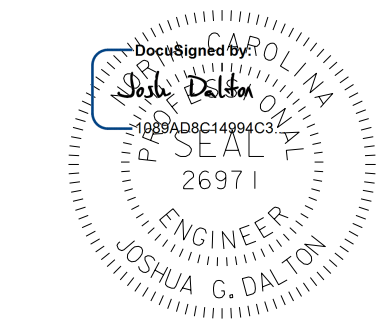
EROSION CONTROL SHEET EC-01

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
WAKE COUNTY

LOCATION: US 401 BUS (MAIN STREET) FROM SOUTH OF JONESVILLE ROAD
TO NORTH OF YOUNG STREET

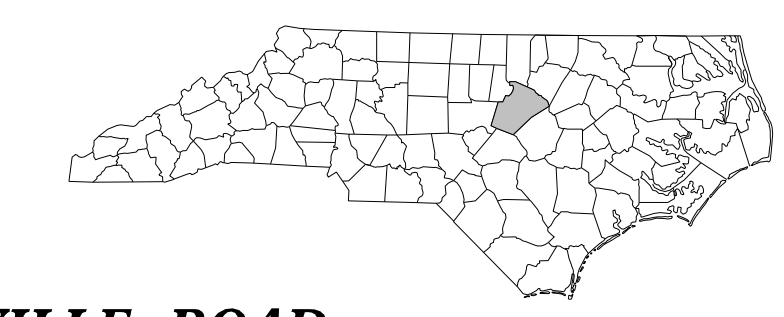
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND SIGNALS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



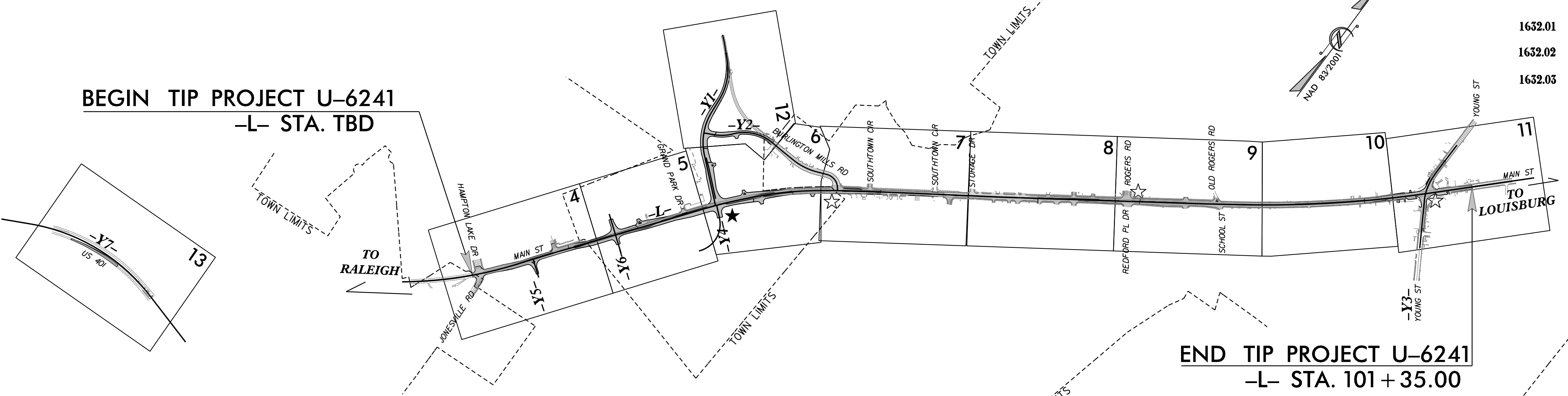
4/12/2022

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-6241	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36249.4025	N/A	PE	
36249.4025	NA	ROW	



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	TSF
1606.01	Special Sediment Control Fence	SSCF
1622.01	Temporary Berms and Slope Drains	TBSD
1630.02	Silt Basin Type B	SBS
1633.01	Temporary Rock Silt Check Type-A	TRSCA
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	TRSCA-PAM
1633.02	Temporary Rock Silt Check Type-B	TRSCB
	Wattle/Coir Fiber Wattle	WCFW
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	WCFW-PAM
1634.01	Temporary Rock Sediment Dam Type-A	TRSDA
1634.02	Temporary Rock Sediment Dam Type-B	TRSDB
1635.01	Rock Pipe Inlet Sediment Trap Type-A	RPISTRA
1635.02	Rock Pipe Inlet Sediment Trap Type-B	RPISTRB
1630.04	Stilling Basin	SB
1630.06	Special Stilling Basin	SSB
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	SKB
	Tiered Skimmer Basin	TSKB
	Infiltration Basin	IB
	Temp. Tree Prot. Fence	TPF
	Coir Fiber Baffle	CFB
	Limits of Disturbance	LOD



STANTEC CONSULTING SERVICES INC. CONTACT:
PROJECT ENGINEER
MICHAEL D. LINDGREN, PE
SUNGATE DESIGN GROUP, P.A. CONTACT:
HYDRAULICS ENGINEER
JOSHUA G. DALTON, PE

PROJECT LENGTH: 1.740 MILES

END TIP PROJECT U-6241
-L- STA. 101+35.00

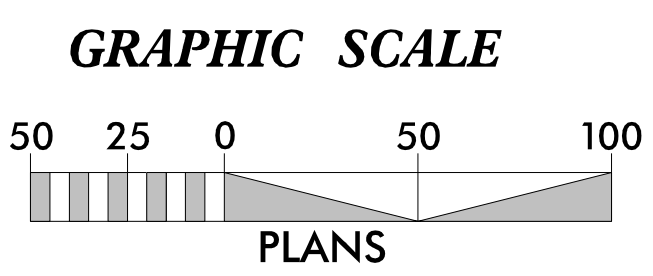
TOTAL DISTURBED
AREA = 37.9 ACRES

NEUSE RIVER BASIN

THIS PROJECT HAS
BEEN DESIGNED TO
SENSITIVE WATERSHED
STANDARDS.

INDEX OF SHEETS

SHEET #	DESCRIPTION
EC-01	EROSION CONTROL COVER SHEET
EC-02 THRU EC-02B	EROSION CONTROL NOTES
EC-03 THRU EC-03J	EROSION CONTROL DETAILS
EC-03K THRU EC-03L	SKIMMER BASIN DRAINAGE AREAS
EC-04 THRU EC-23	EROSION CONTROL PLAN



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH
THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000
GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019
AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.



Prepared in the Office of:
SUNGATE DESIGN GROUP, P.A.

905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

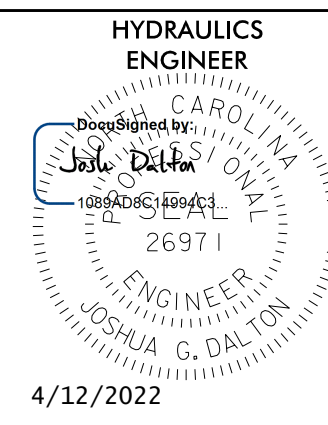
Designed by:
JOSHUA G. DALTON, PE 3552
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

EROSION CONTROL SHEET EC-02

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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

VEGETATIVE PLAN

Seedbed Preparation

1. Chisel compacted areas and spread topsoil 2 to 3 inches deep over adverse soil conditions, if available.
2. Rip the entire area to a depth of not less than 5 inches, unless directed otherwise.
3. Remove all loose rock, roots and other obstructions 3 inches or larger on median, leaving surface reasonably smooth and uniform.
4. Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see mixture below).
5. Continue tillage until a well-pulverized, firm, reasonably uniform seedbed is prepared 2 to 3 inches deep.
6. Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or cultipack after seeding.
7. Mulch within 24 hours after seeding and anchor mulch.
8. Inspect all seeded areas and make necessary repairs or reseedings within the planting season, if possible. If stand should be more than 60% damaged, re-establish following the original lime, fertilizer and seeding rates.

Mixture

Agricultural Limestone	2 tons/acre in sandy soils (3 tons/acre in clay soils or per soil tests)
Fertilizer	1,000 lbs/acre – 10-10-10
Superphosphate	500 lbs/acre – 20% analysis
Mulch	2 tons/acre – small grain straw
Anchor	Asphalt emulsion at 400 gals/acre

Seeding Schedule

For Shoulders, Side Ditches, Slopes (Max 3:1):

Date	Type	Planting Rate
Aug 15– Nov 1	Tall Fescue	300 lbs/acre
Nov 1– Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1– Apr 15	Tall Fescue	300 lbs/acre
Apr 15– Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1– Aug 15	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	125 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)

For Shoulders, Side Ditches, Slopes (3:1 to 2:1):

Date	Type	Planting Rate
Mar 1– Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1– Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1– Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1– Sept 1	Tall Fescue AND Browntop Millet or Sorghum-Sudan Hybrids***	120 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum-Sudan Hybrids)
Sept 1– Mar 1	Sericea Lespedeza (unhulled – unscarified) AND Tall Fescue	70 lbs/acre (Sericea Lespedeza); 120 lbs/acre (Tall Fescue)
Nov 1– Mar 1	AND Abruzzi Rye	25 lbs/acre

The Contractor shall select a nurse crop from the table below that is best suited to the specific site conditions and characteristics. The nurse crop shall be added to and applied along with the permanent vegetative mixture.

Consult Erosion Control Design Engineer for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those that do well under local conditions; other seeding rate combinations are possible.

*** TEMPORARY: Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow more than 12" in height before mowing; otherwise, fescue may be shaded out.

CONSTRUCTION SEQUENCE

1. Obtain a Land Disturbing Permit.
2. Submit documentation required under the site NPDES stormwater permit for construction activity (NCG010000) to Stormwater Inspections throughout the project.
3. Schedule a pre-construction conference with NCDDEQ Erosion Control Officer and Erosion Control Design Engineer. Contact DEMLR Raleigh Regional Office at least 48 hours prior to commencing the land-disturbing activity at (919) 791-4200.
4. Erosion and Sediment Control (E&SC) permit, approved plans, and Certificate of Coverage (COC) must be obtained before any logging, clearing or grubbing, or other types of demolition can occur.
5. Per NPDES requirements, a rain gauge, self-inspections records, permit, Certificate of Coverage, and E&SC Plan are required to be maintained on-site and accessible during inspection. It is recommended that these items be placed in a permits box at the beginning or entrance of project.
6. Construction activities that have an E&SC Plan approved on or after April 1, 2019 are required to fill out and submit an electronic Notice of Intent (e-NOI) form. All construction activities are required to follow the new NCG01 permit regardless of when plans were approved.
7. The contractor shall conduct self-inspections of the erosion and sediment control measures and complete the following combined self-inspection form found on the DEMLR website:
<https://files.nc.gov/ncdeq/Energy%20Mineral%20and%20Land%20Resources/Stormwater/NPDES%20General%20Permits/DEMLR-CSW-Monitoring-Form-Rev-August-8-2019.pdf> Twelve months of complete inspection forms shall be kept on-site and available for inspection at all times. It is recommended a copy be kept in a permits box.
8. Self-inspections for erosion and sedimentation control measures are to be performed at least once every seven calendar days and within 24 hours of every rain event of greater than 1 inch. Any needed repairs shall be made immediately to maintain measures as details on this plan. A rain gauge shall be installed at the project site for monitoring.
9. Install all temporary erosion and sediment control measures including silt fence, tree protection, inlet protection, and skimmer basins. Limit clearing and land disturbing activity to the area necessary to install the permitted measures.
10. Cover basin slopes with a suitable rolled erosion control product (RECP) after seeding. Any bare soil between the toe of the basin slopes and perimeter E&SC measures will be seeded, mulched, and tacked.
11. Begin clearing and grubbing.
12. Cover any bare areas resulting from construction activity with straw mulch and anchor with asphalt emulsion by the end of each workday.
13. Increase maintenance frequency where approved measures fail to prevent accelerated erosion, off-site sedimentation, or repetitive non-compliance issues.
14. During sidewalk construction, a concrete washout, as shown on plans, shall be provided for concrete truck and/or equipment washout.
15. Transition erosion control measures to the final grade phase as proposed grading and drainage progresses. This includes the modification of skimmer basin 5.1, the removal of skimmer basin 6.1, and the construction of earthen dam with skimmer 12.2.
16. Maintain all erosion and sediment control measures in good working order. Silt fence, inlet protection and other similar measures must be cleaned out before they are half full. Clogged stone filters must be refreshed or replaced. Silt fence cannot have holes or tears.
17. Stabilize site as areas are brought up to finished grade with vegetation, paving, mulch, matting, etc. Seed and mulch denuded areas per Ground Stabilization.
18. Once the site is completely stabilized, remove temporary erosion control measures and seed out any resulting bare areas.
19. All sediment basins to be dewatered and outfalls stabilized prior to removal of basins and their perimeter erosion control measures. Basin to be dewatered via floating intake and pumped effluent to be directed to a special stilling basin(s). Special stilling basins must be located on level ground with stone underlayment.
20. When vegetation has become established, call for a final site inspection by the Erosion Control Design Engineer.
21. When the project is complete, the permittee shall contact DEMLR to close out the E&SC Plan. After DEMLR informs the permittee of the project close out, via inspection report, the permittee shall visit deq.nc.gov/NCG01 to submit an electronic Notice of Termination (e-NOT). A \$100 annual general permit fee will be charged until the e-NOT has been filled out.

**HERBACEOUS PLANTS-Seeding recommendations for immediate stabilization/nurse crops
(2 to 5 weeks for development; effectiveness goal: 6 months to 1 year stabilization)**

Table 6.11.a

NURSE CROP SPECIES		Native / Introduced	Seeding Rates lbs/acre	Fertilizer/ Limestone lbs/acre	Optimal Planting Dates							Riparian Buffers	Invasive Yes or No	Installation / Maintenance Considerations	Other information, commentary
Common Name	Botanical Name				Mountains	Piedmont	Coastal Plains	Sun/Shade tolerant	Wetlands	Wetlands	Riparian Buffers				
Rye Grain	<i>Secale cereale</i>	I	40 lbs	By soil test	11/1 - 4/30	8/15 - 4/15	8/15 - 4/15	Sun	Yes	Yes	No	Must be mown to reduce competitiveness with permanent or long term vegetation			
Wheat	<i>Triticum aestivum</i>	I	30 lbs	By soil test	11/1 - 4/30	8/15 - 5/15	8/15 - 4/15	Sun	Yes	Yes	No	Must be mown to reduce competitiveness with permanent or long term vegetation	Not water tolerant. May be used in wetlands that are not continuously saturated.		
German Millet	<i>Setaria italica</i>	I	10 lbs	By soil test	5/11 - 9/30	5/15 - 8/15	4/15 - 8/15	Sun	Yes	Yes	No	Crop should be cut / disc prior to planting primary or long term vegetation	Not water tolerant. May be used in wetlands that are not continuously saturated.		
Browntop Millet	<i>Urochloa ramosa</i>	I	10 lbs	By soil test	5/11 - 9/30	5/15 - 8/15	4/15 - 8/15	Sun	Yes	Yes	No	Crop should be cut / disc prior to planting primary or long term vegetation	Not water tolerant. May be used in wetlands that are not continuously saturated.		
Sudangrass (hybrids)	<i>Sorghum saccharatum</i> <i>S. bicolor</i> esp. <i>Drummondii</i>	I	15 lbs	By soil test	NR	NR	4/15 - 8/15	Sun	No	No	Yes	Crop should be cut / disc prior to planting primary or long term vegetation	Use only where plants and seed can be contained and controlled.		
Kobe Lespedeza	<i>Kummerowia striata</i> v. <i>kobe</i>	I	10 lbs	By soil test	5/1 - 9/1	5/1 - 9/1	5/1 - 9/1	Sun	No	No	No	Consult qualified horticulturalist or extension agent for over-seeding with primary cover	Use in Coastal Plain		
Korean Lespedeza	<i>Kummerowia stipulacea</i>	I	10 lbs	By soil test	5/1 - 9/1	5/1 - 9/1	5/1 - 9/1	Sun	No	No	No	Consult qualified horticulturalist or extension agent for over-seeding with primary cover	Use in Piedmont and Mountains. May become invasive		

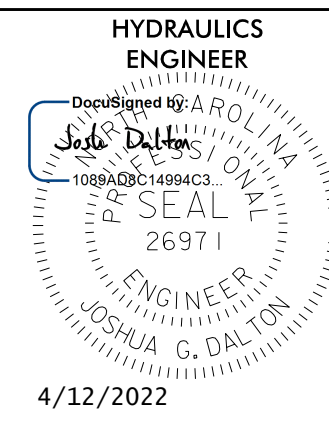
NOTES:

1. Seeding rates are for hulled seed unless otherwise noted.
2. Fertilizer & Limestone – rates to be applied in absence of soil tests. Recommended application rate assumes significantly disturbed site soils with little or no residual value.
3. NR means Species not recommended for this region or application area.
4. Invasive designation as determined by the N.C. Exotic Pest Plant Council and N.C. Native Plant Society .
5. Sprigging is not recommended for immediate stabilization unless terrain is flat heavy mulch is applied and no other immediate stabilization method is practical.

GENERAL MAINTENANCE REQUIREMENTS

- All erosion and sediment control practices will be checked for stability and operation following every runoff producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.
- All seeded areas will be fertilized, reseeded as necessary, and mulched according to specifications in the vegetative plan to maintain a vigorous, dense vegetative cover.

EROSION CONTROL SHEET EC-02A

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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Date:

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10 feet or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
<ul style="list-style-type: none"> · Temporary grass seed covered with straw or other mulches and tackifiers. · Hydroseeding · Rolled erosion control products with or without temporary grass seed · Appropriately applied straw or other mulch · Plastic sheeting 	<ul style="list-style-type: none"> · Permanent grass seed covered with straw or other mulches and tackifiers · Geotextile fabrics such as permanent soil reinforcement matting · Hydroseeding · Shrubs or other permanent plantings covered with mulch · Uniform and evenly distributed ground cover sufficient to restrain erosion · Structural methods such as concrete, asphalt or retaining walls · Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS

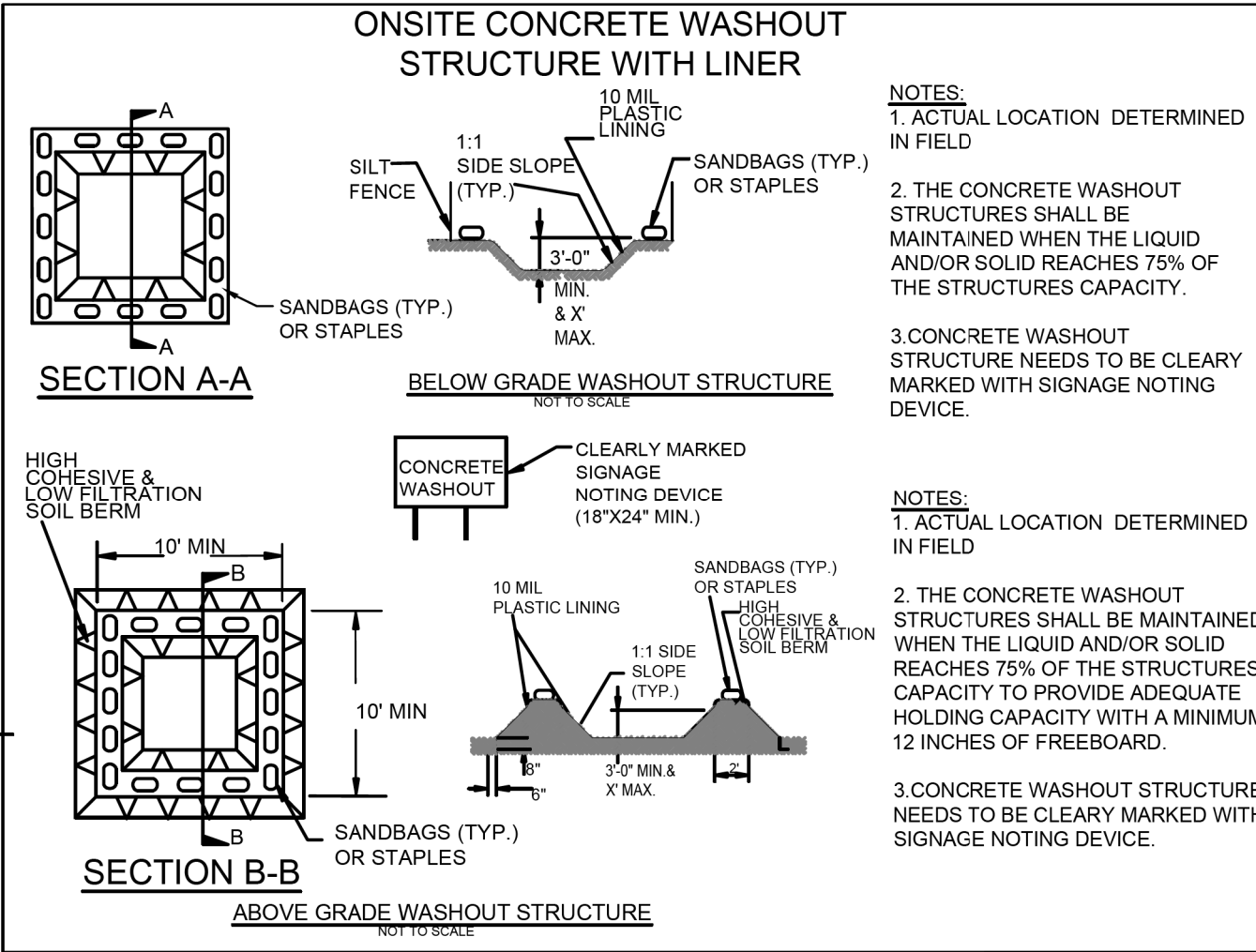
1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.



CONCRETE WASHOUTS

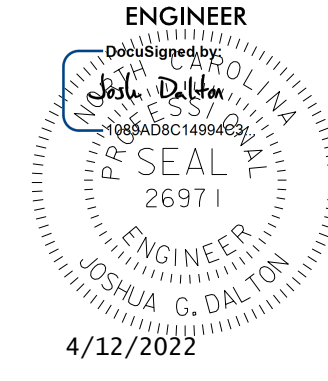
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

Page:

EROSION CONTROL SHEET EC-02B

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-2B</i>
RW SHEET NO.	
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**PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT**

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

- The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
- The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
- Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems
- Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
- Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
- Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING
SECTION A: SELF-INSPECTION**

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend on holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those unattended days (this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "Zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours.	1. Identification of the measures inspected 2. Date and Time of the inspection 3. Name of the person performing the inspection 4. Indication of whether the measures were operating properly 5. Description of maintenance needs for the measure 6. Description, Evidence, and date of corrective actions taken
(3) Stormwater discharge outfalls(SDOs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours.	1. Identification of the discharge outfalls inspected 2. Date and Time of the inspection 3. Name of the person performing the inspection 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration 5. Indication of visible sediment leaving the site 6. Description, Evidence, and date corrective actions taken
(4) Perimeter of Site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours.	If visible Sedimentation is found outside site limits, then record of the following shall be made: 1) Actions taken to clean up or stabilize sediment that has left the site limits 2) Description, Evidence and date of corrective actions taken 3) An explanation as to the actions taken to control future releases
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours.	If the stream or wetland has increased visible sedimentation or has visible increased turbidity from the construction activity, then a record of the following shall be made: 1) Description, Evidence and date of corrective actions taken 2) Records of required reports to the appropriate Division Regional Office per Part III, Section C, Item(2)(a) of this permit
(6) Ground Stabilization Measures	After each phase of grading.	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING
SECTION B: RECORDKEEPING**

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Document Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

- This General Permit as well as the Certificate of Coverage, after it is received.
- Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

**PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING
SECTION C: REPORTING**

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

- Visible sediment deposition in a stream or wetland.
- Oil spills if:
 - They are 25 gallons or more,
 - They are less than 25 gallons but cannot be cleaned up within 24 hours,
 - They cause sheen on surface waters (regardless of volume), or
 - They are within 100 feet of surface waters (regardless of volume).
- Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.
- Anticipated bypasses and unanticipated bypasses.
- Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframe (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<ul style="list-style-type: none"> • Within 24 hours, an oral or electronic notification. • Within 7 Calendar Days, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related caused, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per item 1(b)-(c) above	<ul style="list-style-type: none"> • Within 24 Hours, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> • A report at least ten days before the date of the bypass, if possible. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	<ul style="list-style-type: none"> • Within 24 Hours, an oral or electronic notification • Within 7 calendar days, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment [40 CFR 122.41(l)(7)]	<ul style="list-style-type: none"> • Within 24 Hours, an oral or electronic notification • Within 7 calendar days, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

EROSION CONTROL SHEET EC-03

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

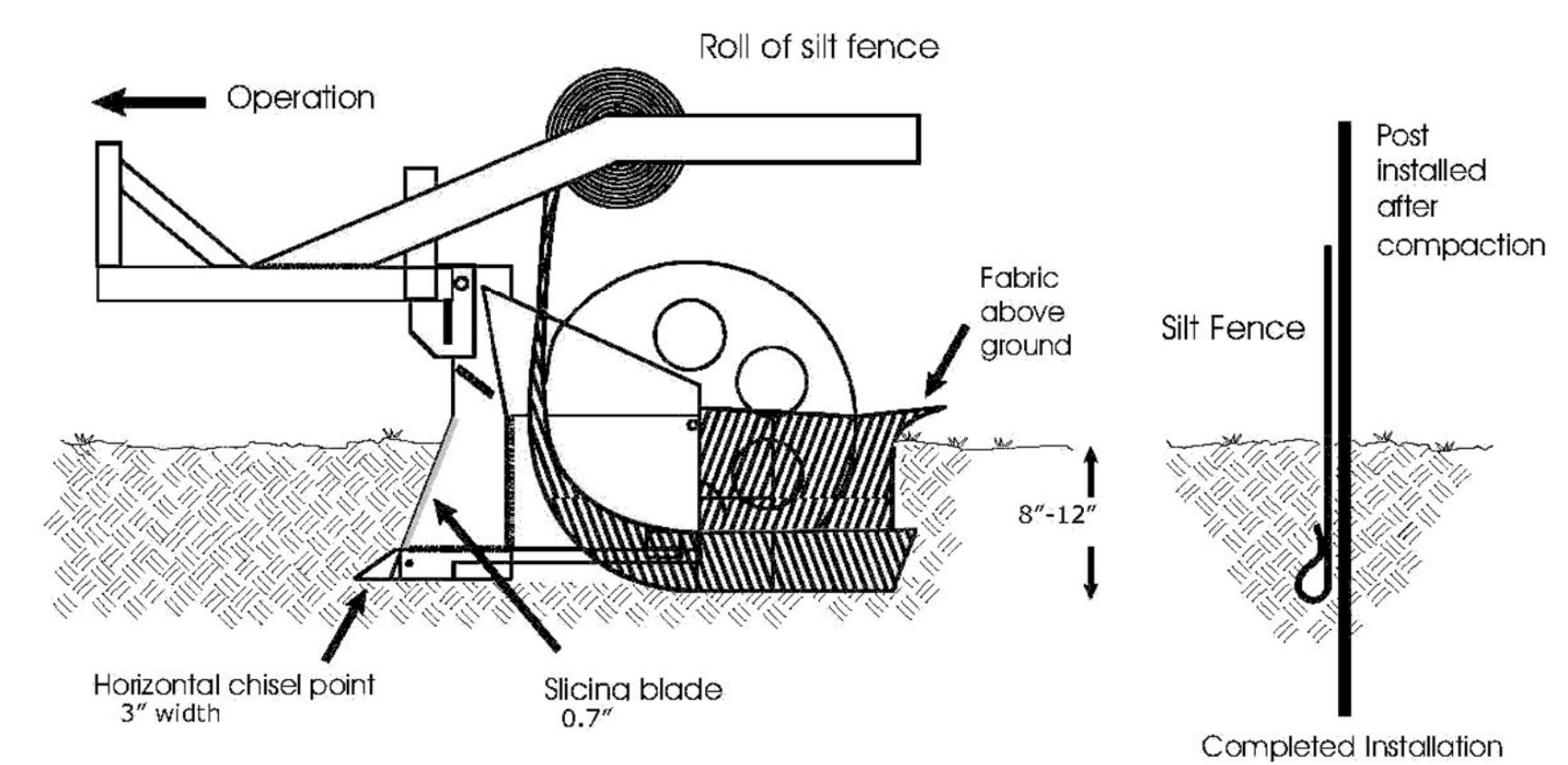
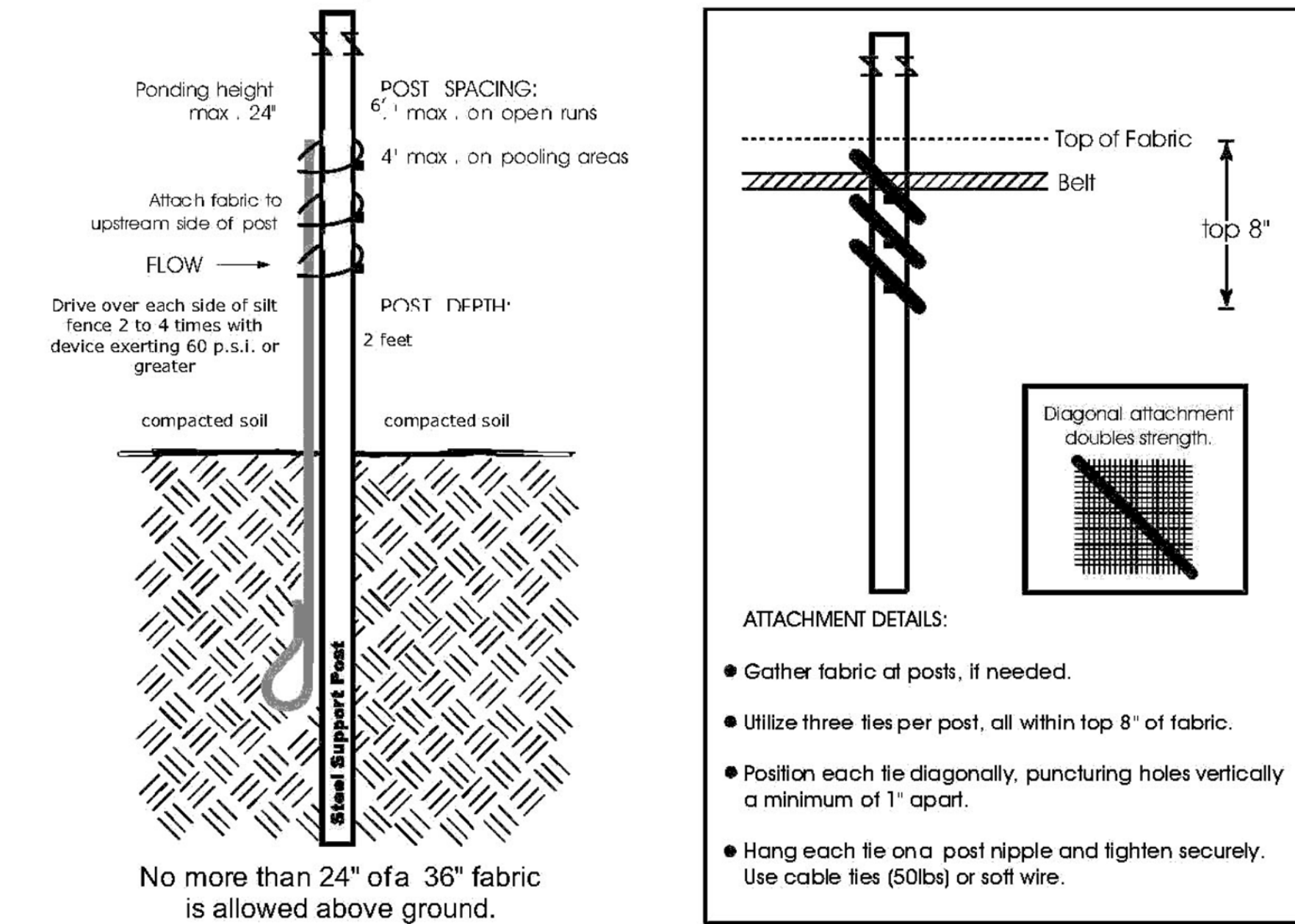
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Table 6.62b Specifications For Sediment Fence Fabric

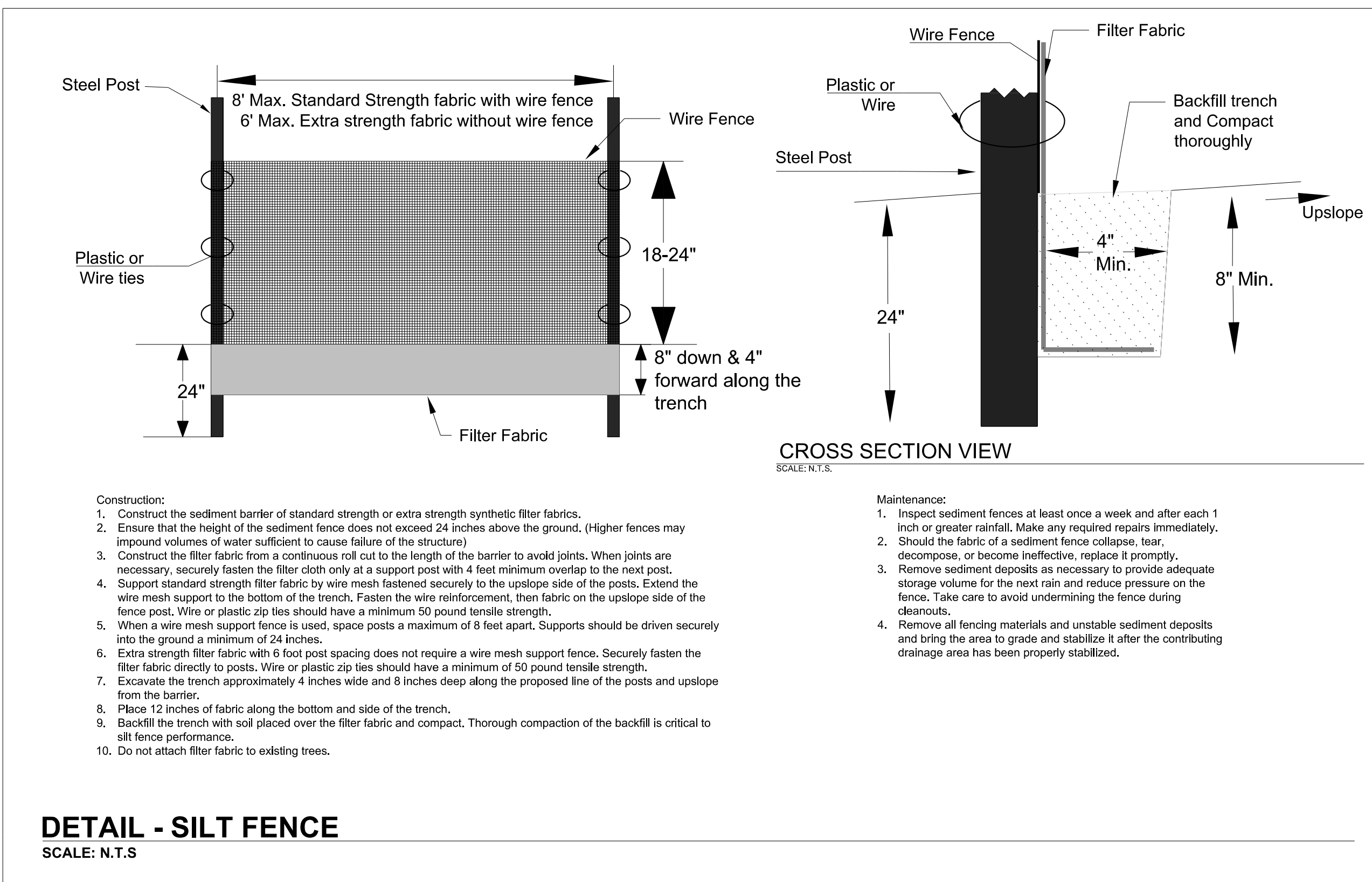
Temporary Silt Fence Material Property Requirements					
	Test Material	Units	Supported ¹ Silt Fence	Un-Supported ¹ Silt Fence	Type of Value
Grab Strength	ASTM D 4632	N (lbs)			
Machine Direction			400 (90)	550 (90)	MARV
X-Machine Direction			400 (90)	450 (90)	MARV
Permittivity ²	ASTM D 4491	sec-1	0.05	0.05	MARV
Apparent Opening Size ²	ASTM D 4751	mm (US Sieve #)	0.60 (30)	0.60 (30)	Max. ARV ³
Ultraviolet Stability	ASTM D 4355	% Retained Strength	70% after 500h of exposure	70% after 500h of exposure	Typical

¹ Silt Fence support shall consist of 14 gage steel wire with a mesh spacing of 150 mm (6 inches), or prefabricated polymer mesh of equivalent strength.
² These default values are based on empirical evidence with a variety of sediment. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotextile tests in accordance with Test Method D 5141 should be performed by the agency to confirm suitability of these requirements.
³ As measured in accordance with Test Method D 4632.

The Slicing Method



Vibratory plow is not acceptable because of horizontal compaction
Figure 6.62b Schematics for using the slicing method to install a sediment fence. Adapted from *Silt Fence that Works*

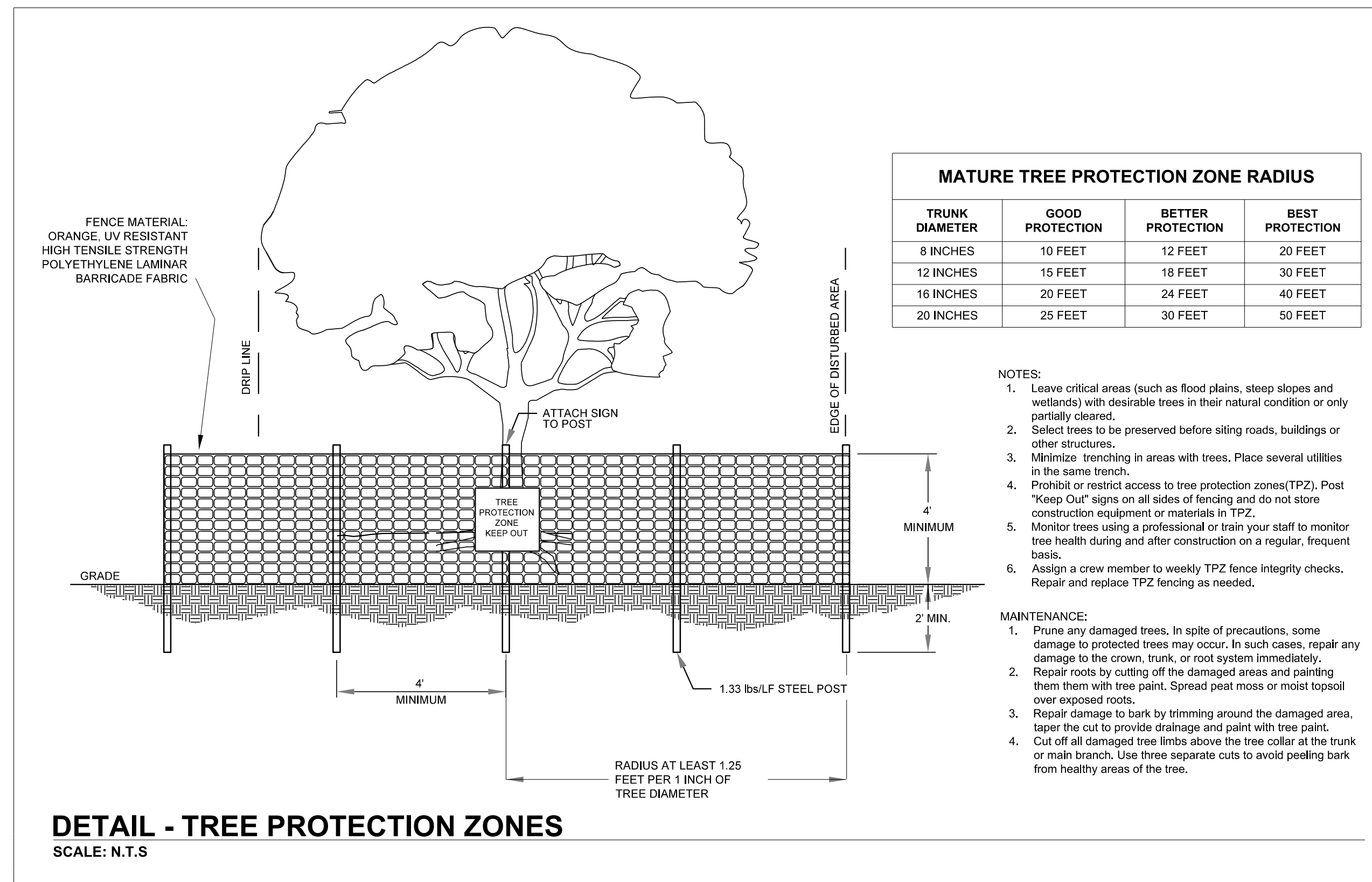


DETAIL - SILT FENCE
SCALE: N.T.S.

EROSION CONTROL SHEET EC-03A

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Design Criteria The following general criteria should be considered when developing sites in wooded areas:

- Leave critical areas (such as flood plains, steep slopes and wetlands) with desirable trees in their natural condition or only partially cleared.
- Locate roadways, storage areas, and parking pads away from valuable tree stands. Follow natural contours, where feasible, to minimize cutting and filling in the vicinity of trees.
- Select trees to be preserved before siting roads, buildings, or other structures.
- Minimize trenching in areas with trees. Place several utilities in the same trench.
- Designate groups of trees and individual trees to be saved on the erosion and sedimentation control plan.
- **Do not excavate, traverse, or fill closer than the drip line, or perimeter of the canopy, of trees to be saved.**

Construction Specifications

1. **Erect TPZ fences.** Restrict access to TPZs, with tall, bright, protective fencing. Most fencing is inexpensive and durable enough to last throughout most construction projects. Temporary tree protection fencing should be erected before clearing, deliveries and other construction activities begin on the site.

2. **Prohibit or restrict access to TPZs.** All on-site workers should be aware of the TPZs and the restrictions on activities within the zones. Use these TPZ guidelines for the best effect:

- Post "keep out" signs on all sides of fencing. Do not store construction equipment or materials in TPZs.
- Prohibit construction activities near the most valuable trees, and restrict activities around others.
- Assess crew and contractor penalties, if necessary, to keep the TPZs intact.

3. **Monitor trees.** Vigilance is required to protect trees on construction sites. Use a tree professional or train your staff to monitor tree health during and after construction on a regular, frequent basis. Watch for signs of tree stress, such as dieback, leaf loss, or general decline in tree health or appearance.

4. **Monitor TPZ fences.** Assign a crewmember the weekly responsibility of checking the integrity of TPZ fences. Repair and replace TPZ fencing as needed.

5. **Optimize tree health.** Assign a trained crewmember or hire a professional to complete regular tree maintenance tasks, including watering, fertilization, and mulching to protect tree roots. Consult a tree professional for advice on these practices if needed. Survival of protected trees will increase if these practices continue during construction. Healthy trees require undisturbed healthy soils. Do not cause injuries to trees and roots. Do not change the soil, grade, drainage, or aeration without protecting priority trees

Figure 6.05c Tree protection zone guidelines.

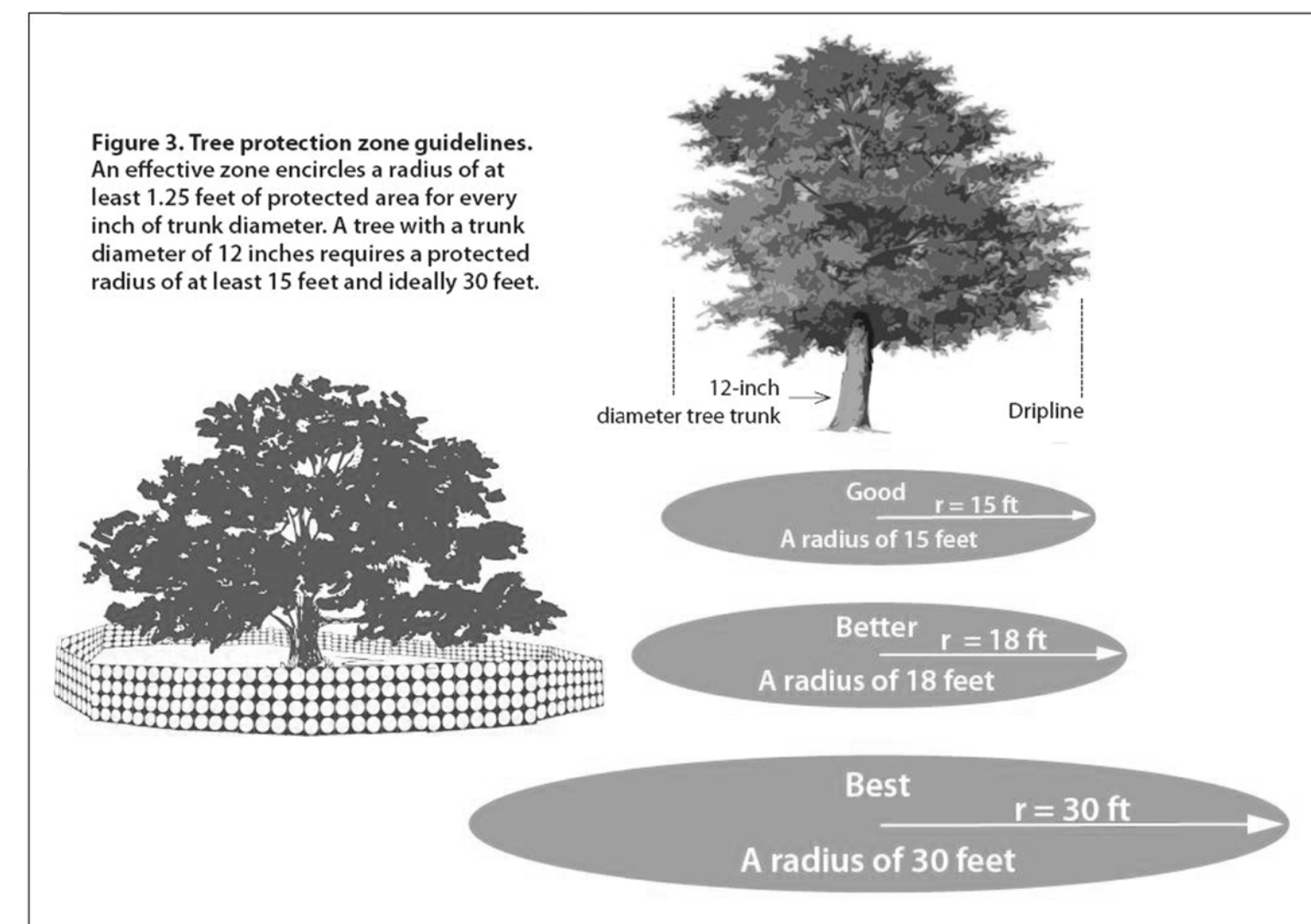
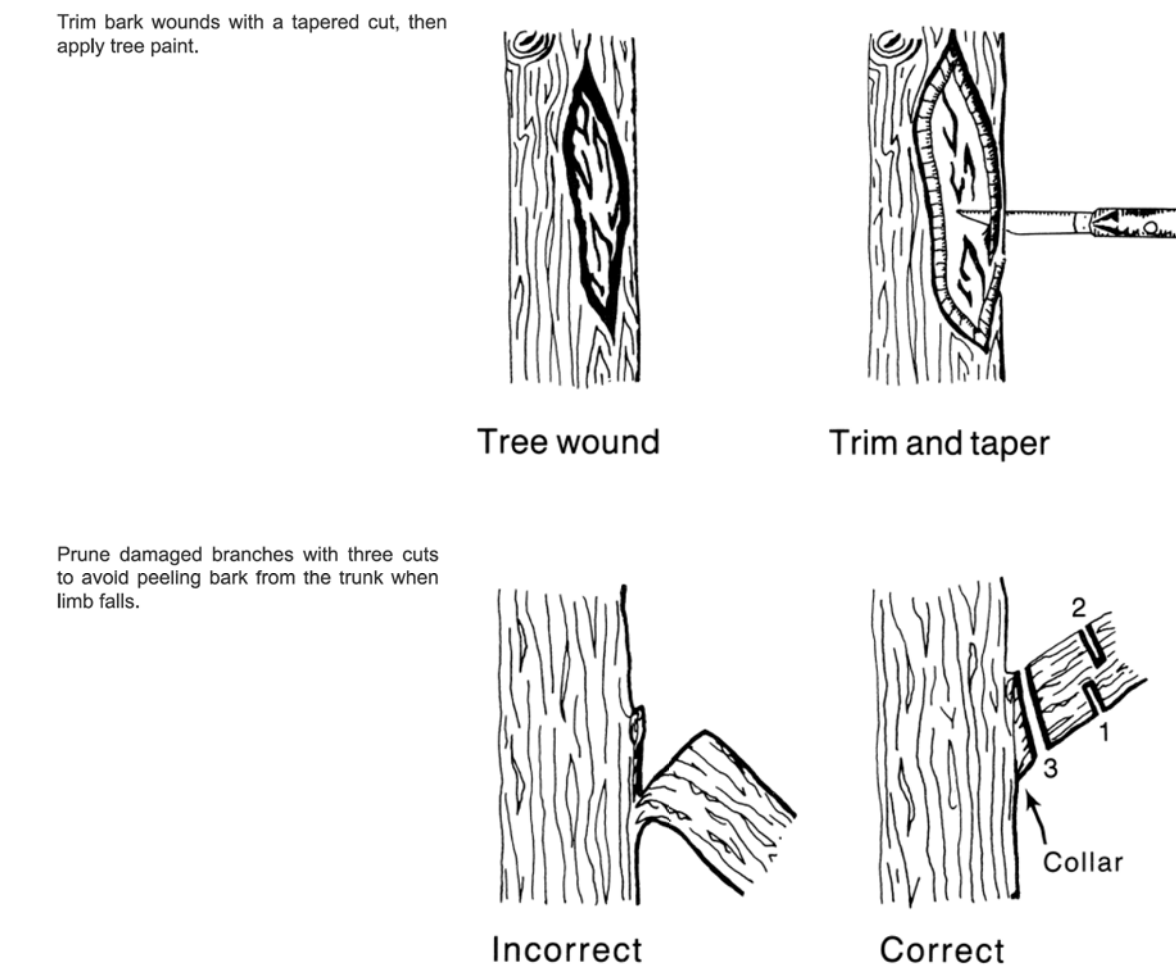


Figure 6.05d Wound repair and pruning of damaged trees.

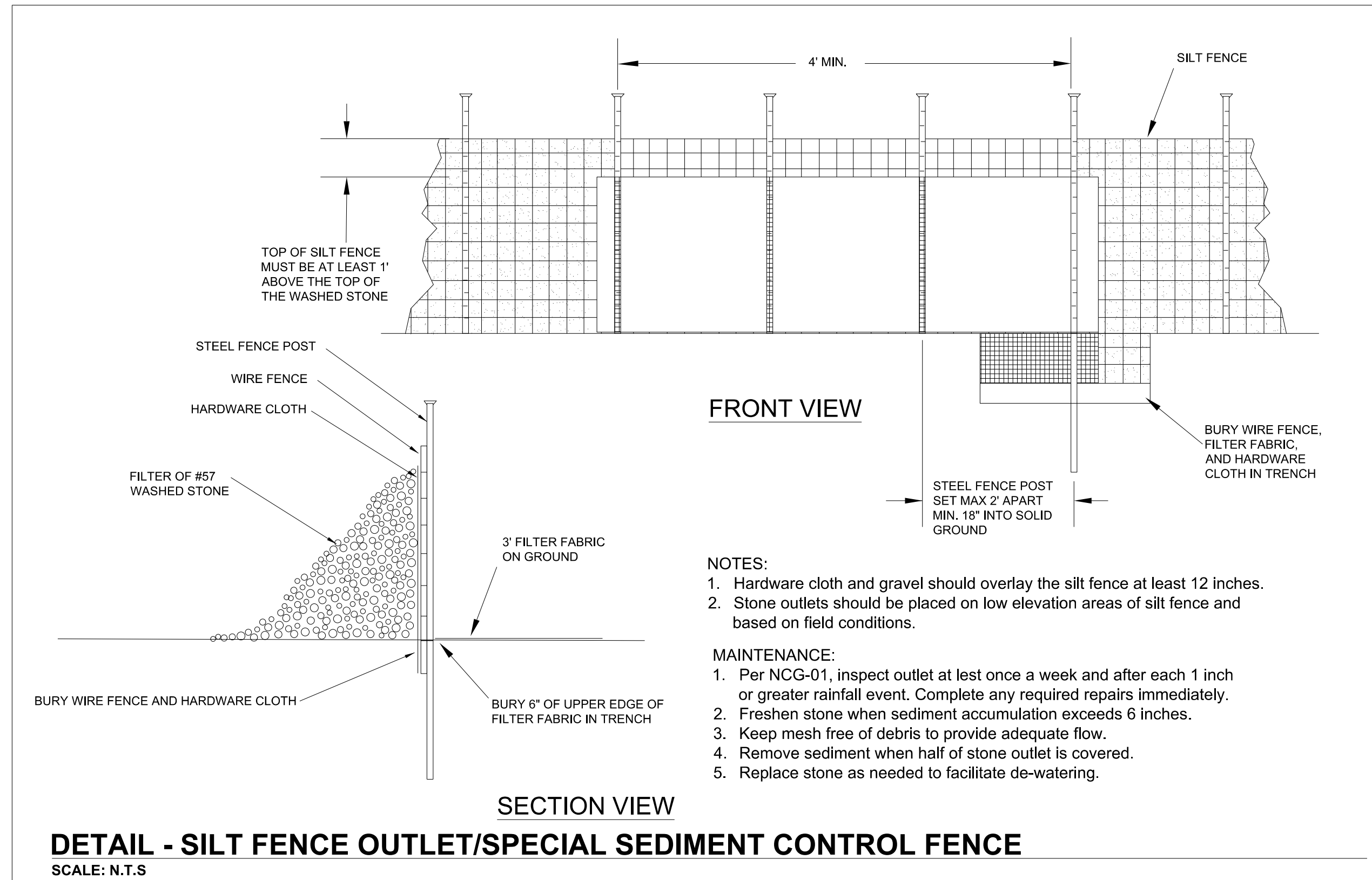


References
Construction and Tree Protection, AG-685 (Revised) North Carolina Cooperative Extension Service

EROSION CONTROL SHEET EC-03B

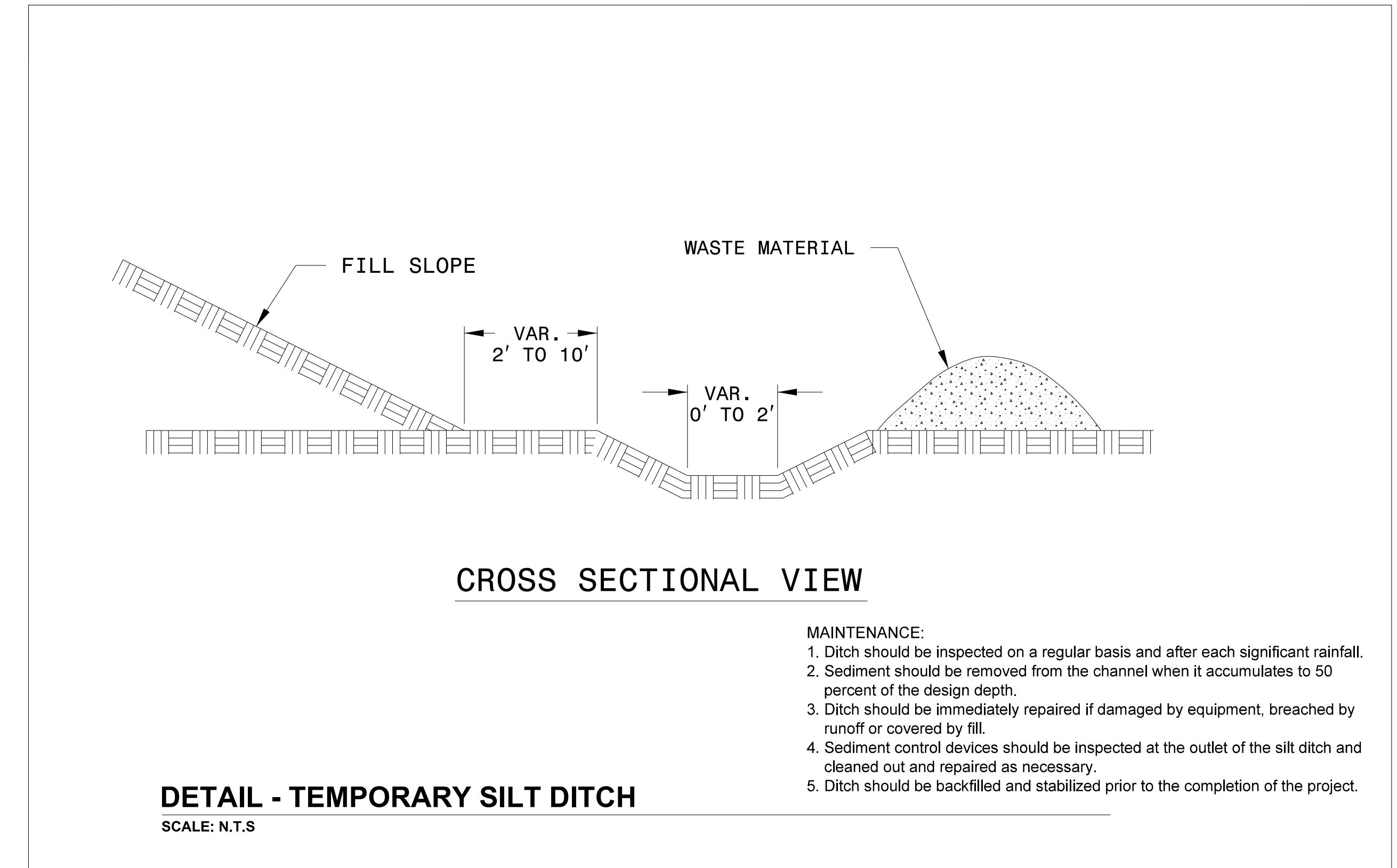
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Construction Specifications:

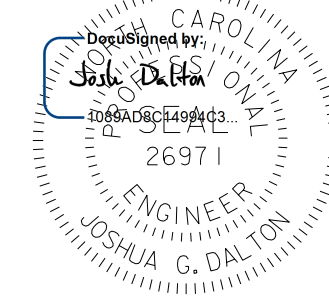
Sediment Control Stone	- Install on the upgradient face of the hardware cloth to a height of 1 foot.
Steel Posts	- Install a minimum of 2-feet deep and a maximum spacing of 3 feet.
Hardware Cloths	- Install at a height of 2 feet and placed 2-feet under the sediment control stone. - Install top of the hardware cloth a minimum of 1-foot below the shoulder to prevent flow from entering the roadway. - Install top of hardware cloth a minimum of 1-foot below any clean water diversion. - Attach to posts with wire staple or other approved method.
Overlap and Spacing	- Overlap silt fence 12 inches on either side. - In wetland areas, limit silt fence outlet sections to 15-foot sections spaced a maximum of 200 feet apart.



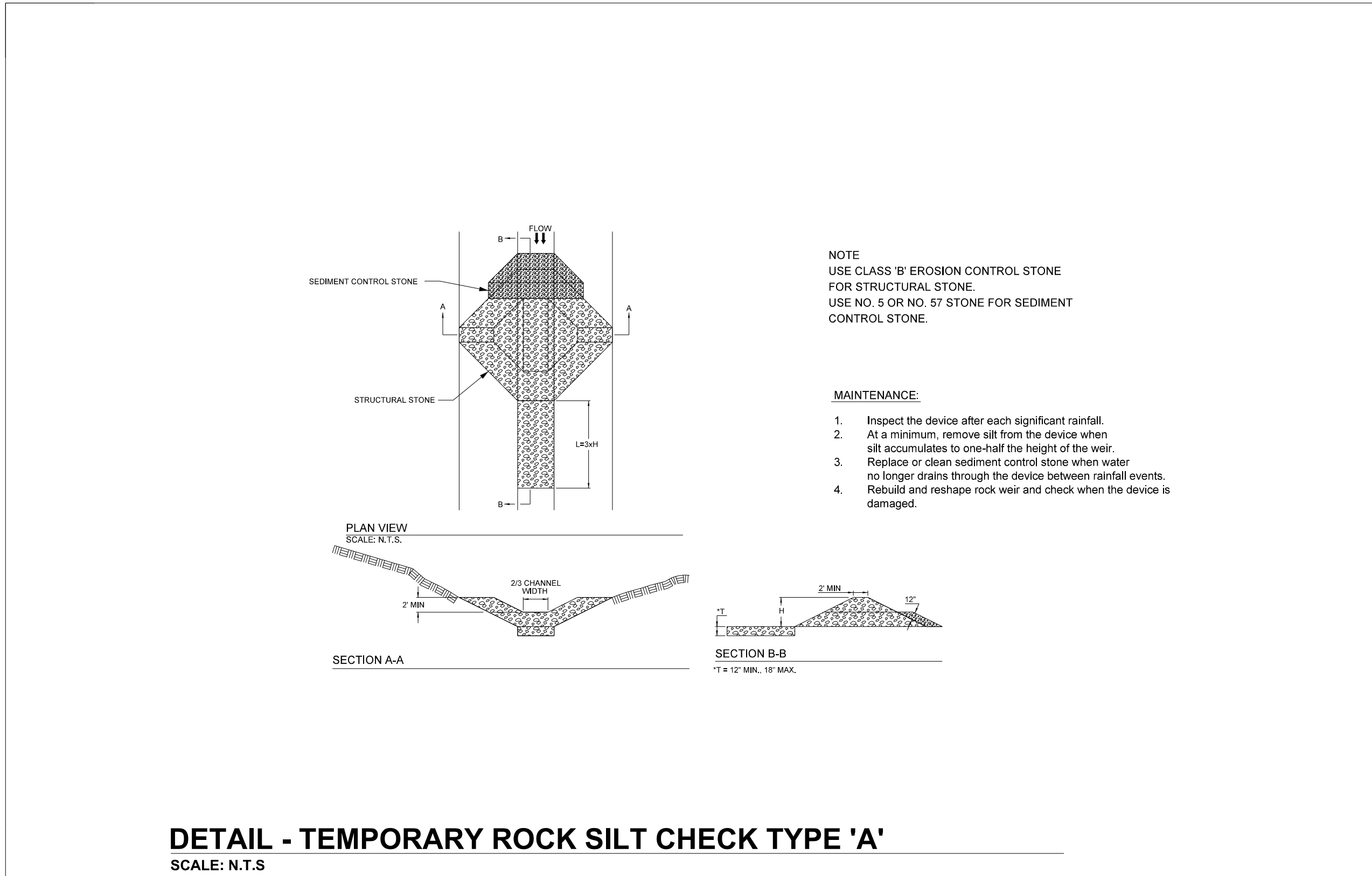
Construction Specifications:

Geotextile	- The geotextile shall be buried a minimum 8 inches deep and 4 inches laterally. Soil should be firmly tamped. - Geotextile should be installed a maximum of 18 inches above the ground surface for mechanical slicing method of installation. - The geotextile shall be attached to posts and woven wire by wire or other acceptable means. - The geotextile shall be overlapped a minimum of 18 inches at all splice joints. - The height of the geotextile should not exceed 24 inches above the ground surface. - Each end of the silt fence shall be cut upgradient in a "J" pattern to prevent release of untreated storm flows.
Posts	- Posts spacing should be a maximum of 6 feet without woven wire backing and 8 feet with woven wire. - Posts shall be installed so that no more than 3 feet extends above the ground.

EROSION CONTROL SHEET EC-03C

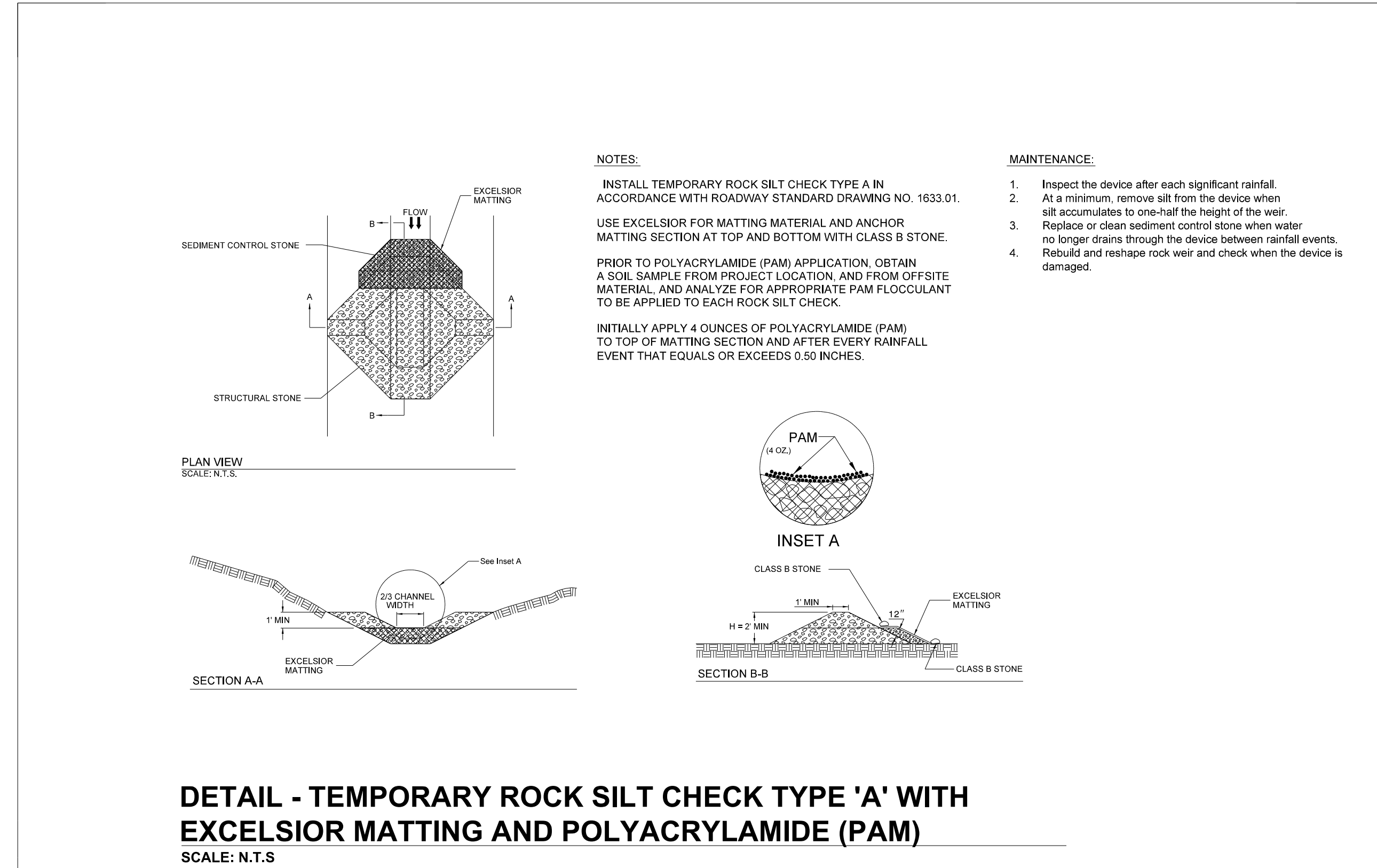
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3C</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER 
4/12/2022	

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Construction Specifications:

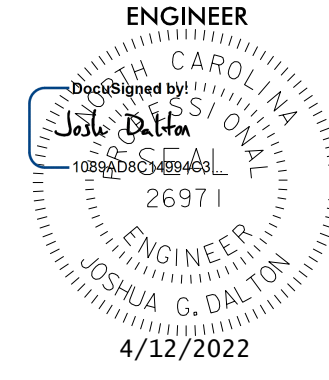
Structural Stone	<ul style="list-style-type: none"> - Use Class B structural stone. - Install stone at a minimum depth of 12 inches. - Install sediment control stone on the upgradient face of the structural stone.
Side Slopes	- 2:1 or flatter.
Weir	<ul style="list-style-type: none"> - Weir length should be $\frac{2}{3}$ of the channel width. - The weir height shall be a minimum of 1 foot. - The depth of the weir shall be a minimum of 1 foot.



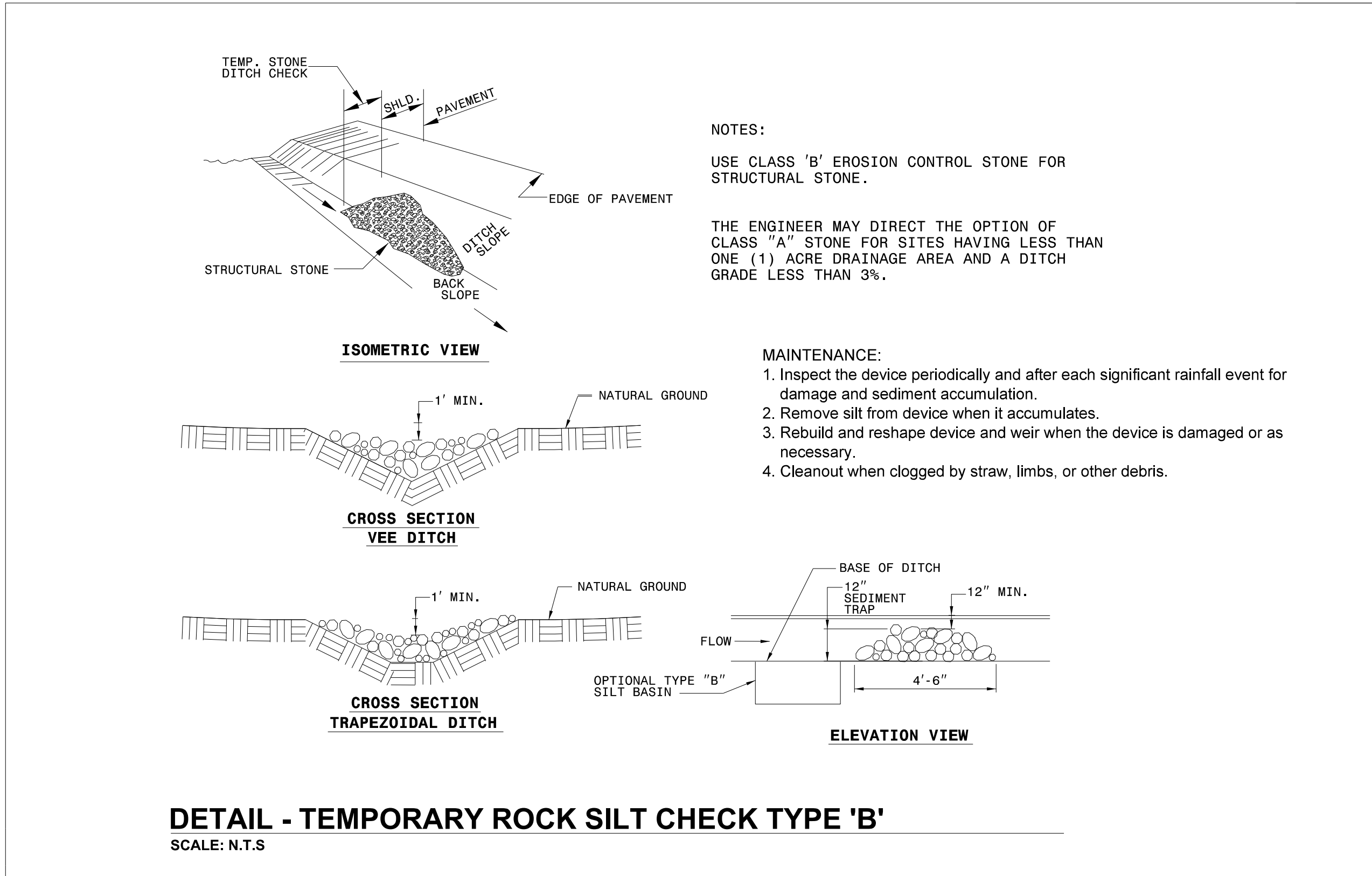
Construction Specifications:

Structural Stone	<ul style="list-style-type: none"> - Use Class B structural stone. - Install stone at a minimum depth of 12 inches. - Install sediment control stone on the upgradient face of the structural stone.
Side Slopes	- 2:1 or flatter.
Weir	<ul style="list-style-type: none"> - Weir length should be $\frac{2}{3}$ of the channel width. - The weir height shall be a minimum of 1 foot. - The depth of the weir shall be a minimum of 1 foot.
Matting	<ul style="list-style-type: none"> - Install over sediment control stone on the upgradient of the TRSC-A. - Anchor excelsior section at top and bottom with Class B stone.
Flocculant	<ul style="list-style-type: none"> - Prior to the flocculant application, obtain a soil sample from the project location, and from the off-site material, and analyze for appropriate flocculant to be applied to each rock silt check. - Initially apply 4 ounces of flocculant to the face of the excelsior and also after every rainfall event that equals or exceeds 1.0 inches. - Flocculant used should be listed on the NCDENR DWR website as an approved product for use in North Carolina.

EROSION CONTROL SHEET EC-03D

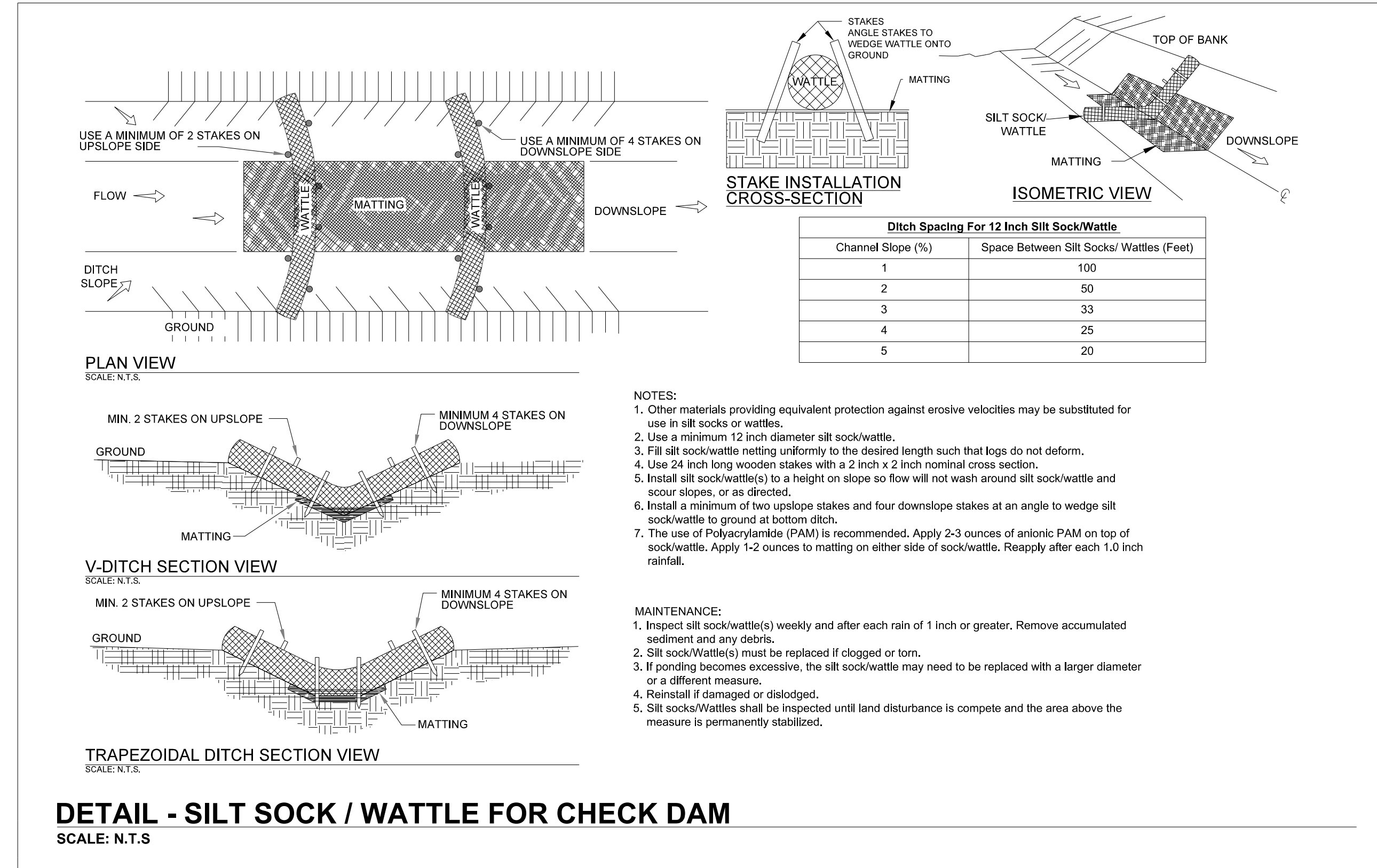
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3D</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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Construction Specifications:

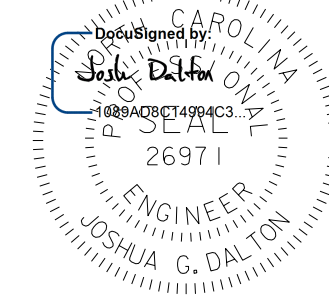
Installation	<ul style="list-style-type: none"> - The center of the rock silt check shall be at least 1-foot lower than the outer edges (top of the channel sides). - The maximum height at the center of the rock check should not exceed 2 feet. - The side slopes of the check shall be 2:1 or flatter.
Slope	<ul style="list-style-type: none"> - Maximum spacing between the checks should place the toe of the upstream check at the top of the downstream check.



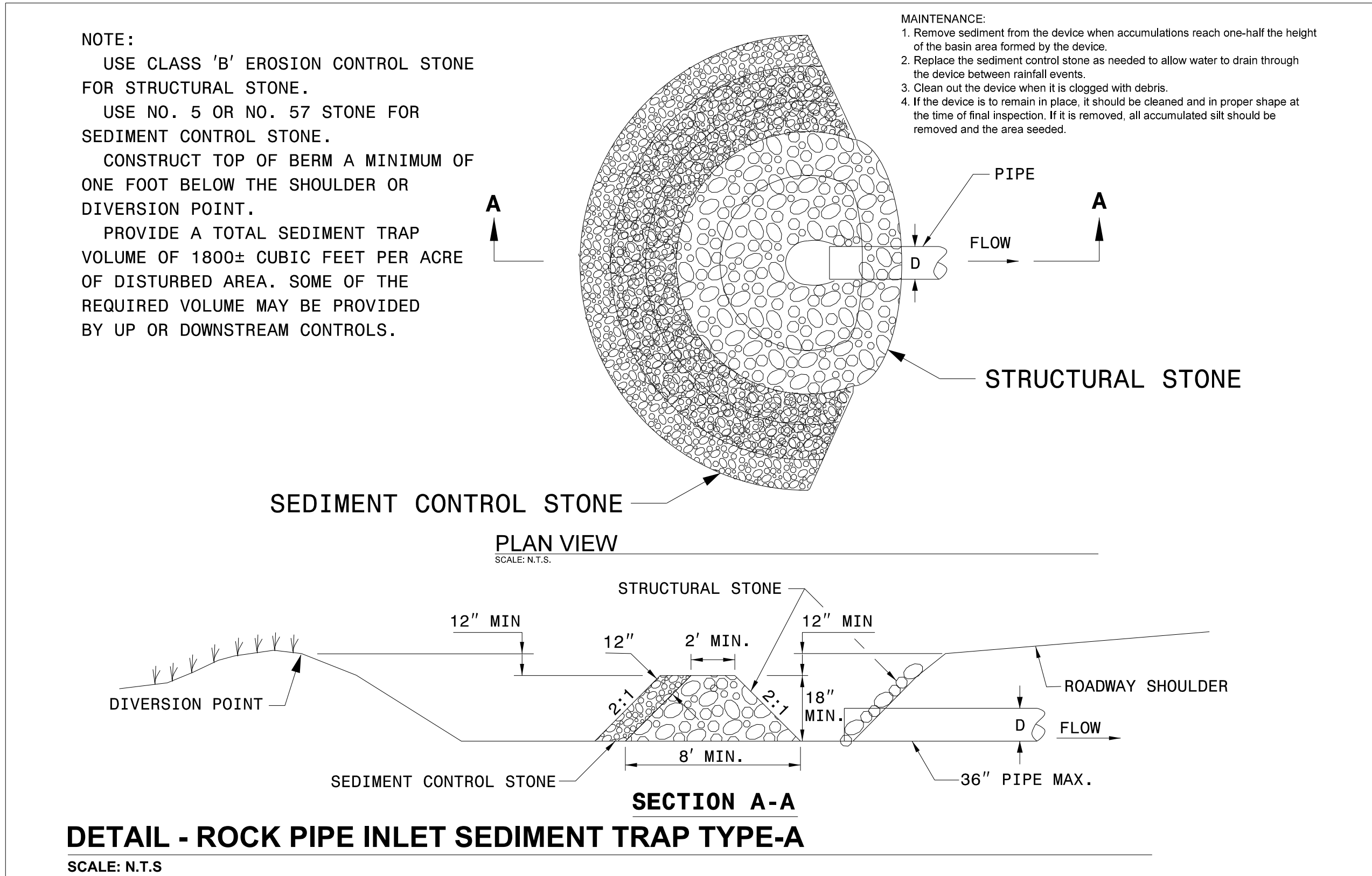
Construction Specifications:

Matting	<ul style="list-style-type: none"> - Install matting in accordance with Section 1631 of the Standard Specifications.
Staples	<ul style="list-style-type: none"> - Provide staples made of 0.125-inch diameter steel wire formed into a U-shape no less than 12 inches in length. - Install staples approximately every 1 foot on both sides of the wattle and at each end to secure it to the soil.
Stakes	<ul style="list-style-type: none"> - Use 2-foot wooden stakes with a 2-inch by 2-inch nominal cross section. - Install a minimum of 2 upslope stakes and 4 downslope stakes at an angle to wedge the wattle to the bottom of the ditch. - Drive stakes into the ground a minimum of 10 inches with no more than 2 inches projecting from the top of the wattle.
Flocculant	<ul style="list-style-type: none"> - Flocculant shall be in powder form and anionic and neutrally charged. - Soil samples should be obtained from areas where wattles will be placed and from off-site material used to construct the roadway. Samples should be analyzed to determine the appropriate flocculant to be used in each wattle. - Flocculant used should be listed on the NCDENR DWR website as an approved product for use in North Carolina. - Flocculant should be applied over the lower center portion of the wattle where the water will flow at a rate of 2 ounces per wattle. - Apply 1 ounce of flocculant on each side of the wattle. - Flocculant should be evaluated and applied after every rainfall event that is equal to or exceeds 1.0 inches.
Overlap	<ul style="list-style-type: none"> - Overlap adjoining sections of wattles a minimum of 1 foot.

EROSION CONTROL SHEET EC-03E

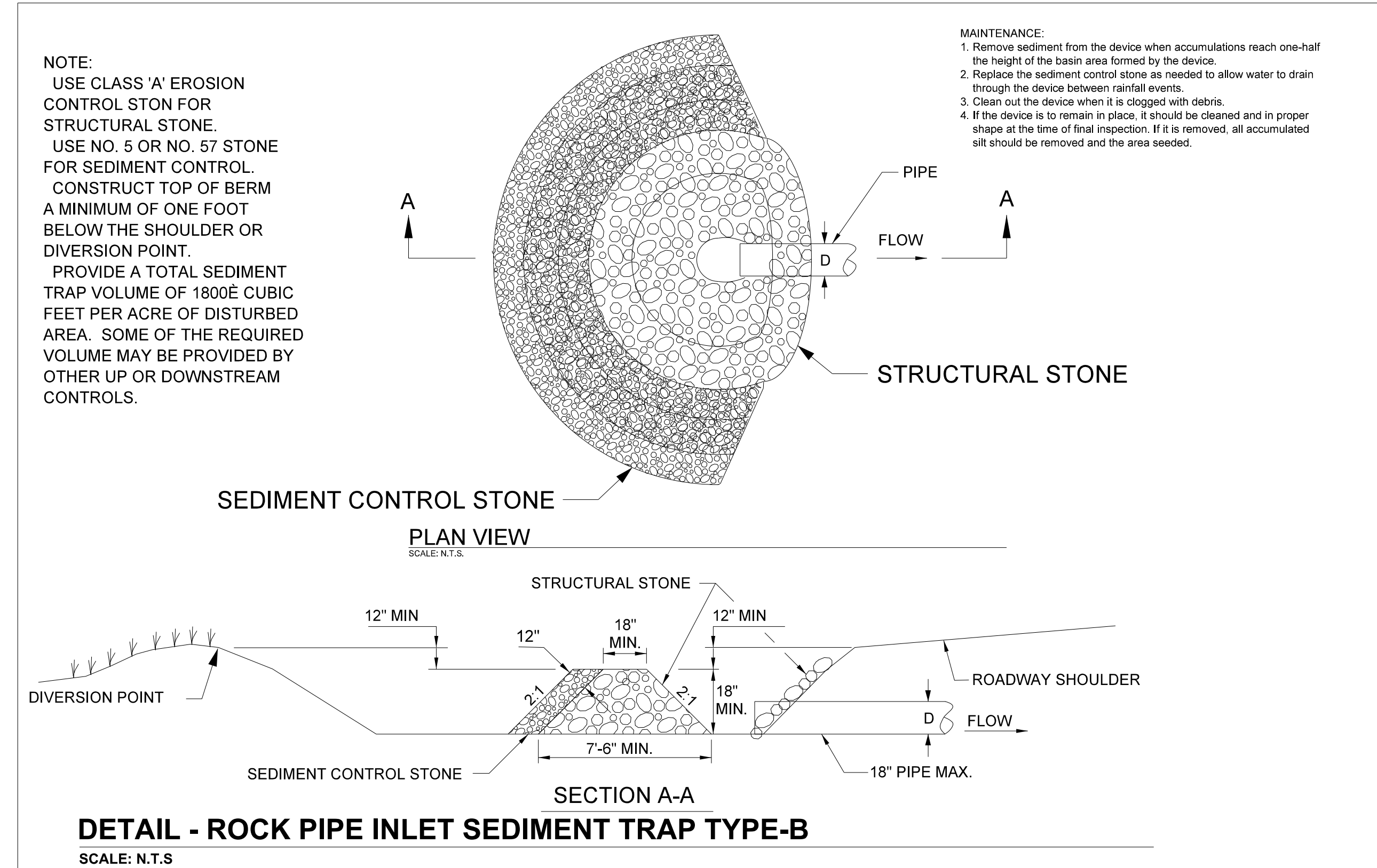
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3E</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
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Construction Specifications:

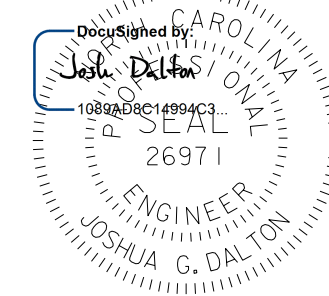
Berm	- Top of berm should be a minimum of 12 inches below the shoulder or any diversion point. - Side slopes should be no steeper than 2:1. - Berm should have a minimum height of 18 inches.
Sediment Control Stone	- No. 5 or No. 57 stone to be installed on the outer face of the stone dam in a layer 1-foot thick.
Structural Stone	- Class B stone installed in a doughnut-shaped ring around the inlet. - Stone should be installed with a berm on the top that is 2 feet wide. - Stone should have an 8 foot minimum base width.



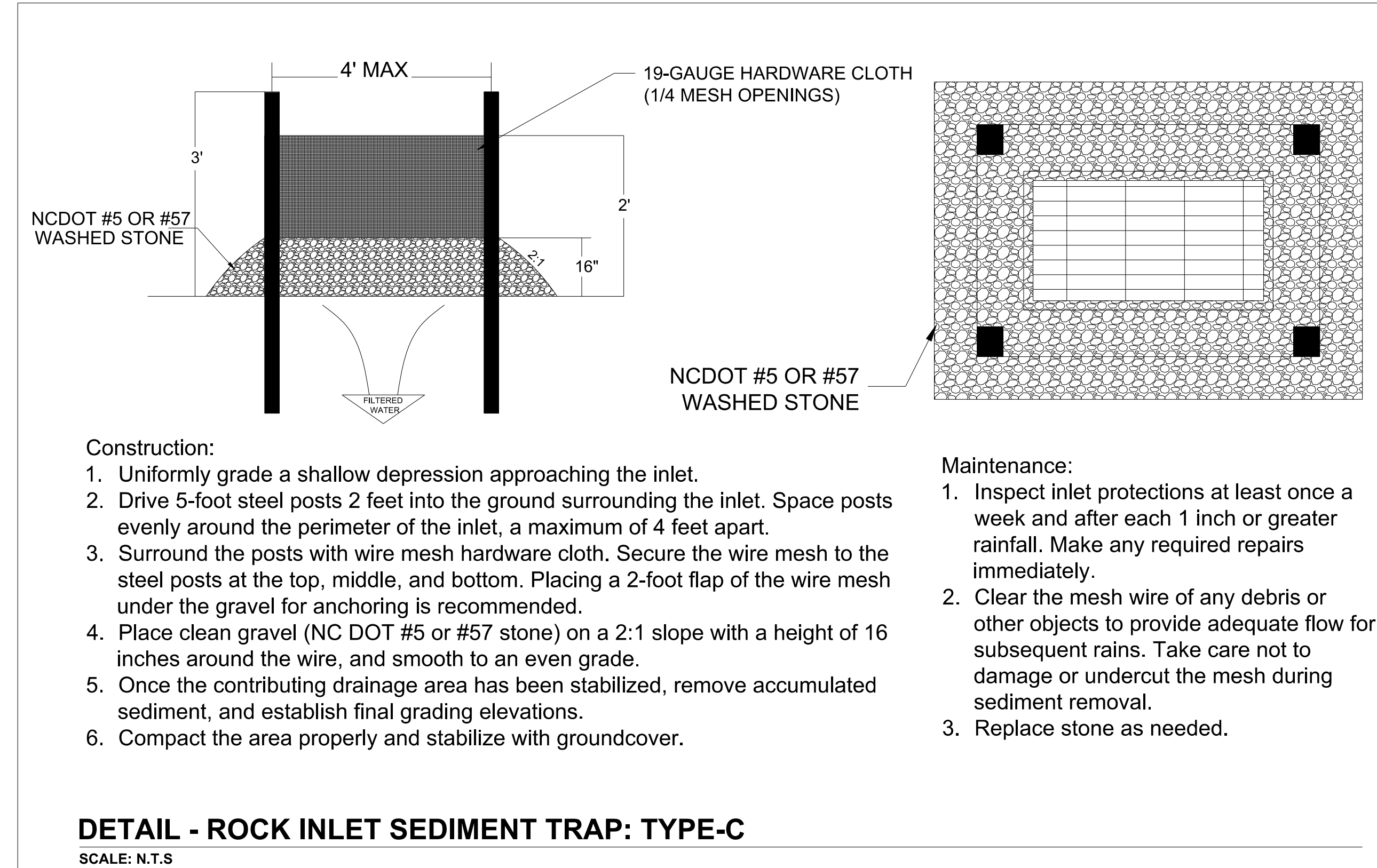
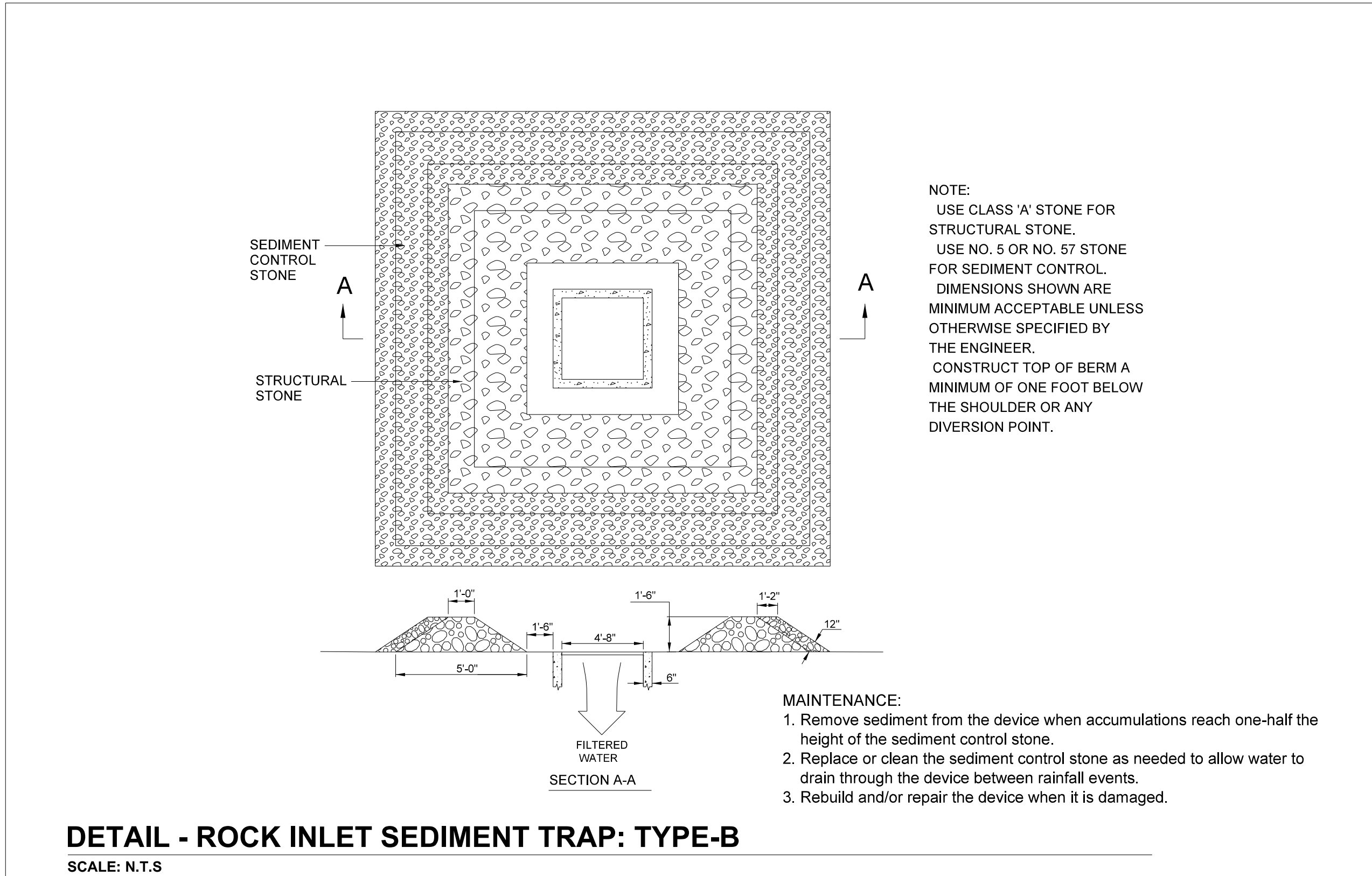
Construction Specifications:

Berm	- Top of berm should be a minimum of 12 inches below the shoulder or any diversion point. - Side slopes should be no steeper than 2:1. - Berm should have a minimum height of 18 inches.
Sediment Control Stone	- No. 5 or No. 57 stone to be installed on the outer face of the stone dam in a layer 1-foot thick.
Structural Stone	- Class A stone installed in a doughnut-shaped ring around the inlet. - Installed with a berm on the top that is 18 inches wide. - Stone should have a minimum base width of 7.5 feet.

EROSION CONTROL SHEET EC-03F

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3F</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
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Construction Specifications:

Berm	- 1.5 feet of space required from the inside edge of the stone dam to the edge of the inlet. - Top of berm should be a minimum of 1-foot below the shoulder or any diversion point.
Sediment Control Stone	- No. 5 or No. 57 stone to be installed on the outer face of the stone dam in a layer 1-foot thick.
Structural Stone	- Class A stone installed in a doughnut-shaped ring around the inlet. - Installed with a 1-foot wide berm on the top and a height of 1.5 feet.

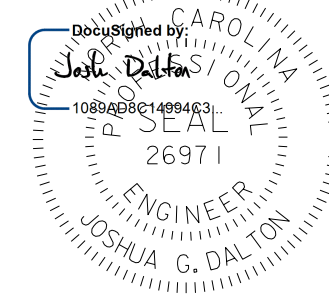
Place the structural stone, Class A, around the outside perimeter of the inlet with approximately 2:1 side slopes and plate the upstream side with sediment control stone.

Construction Specifications:

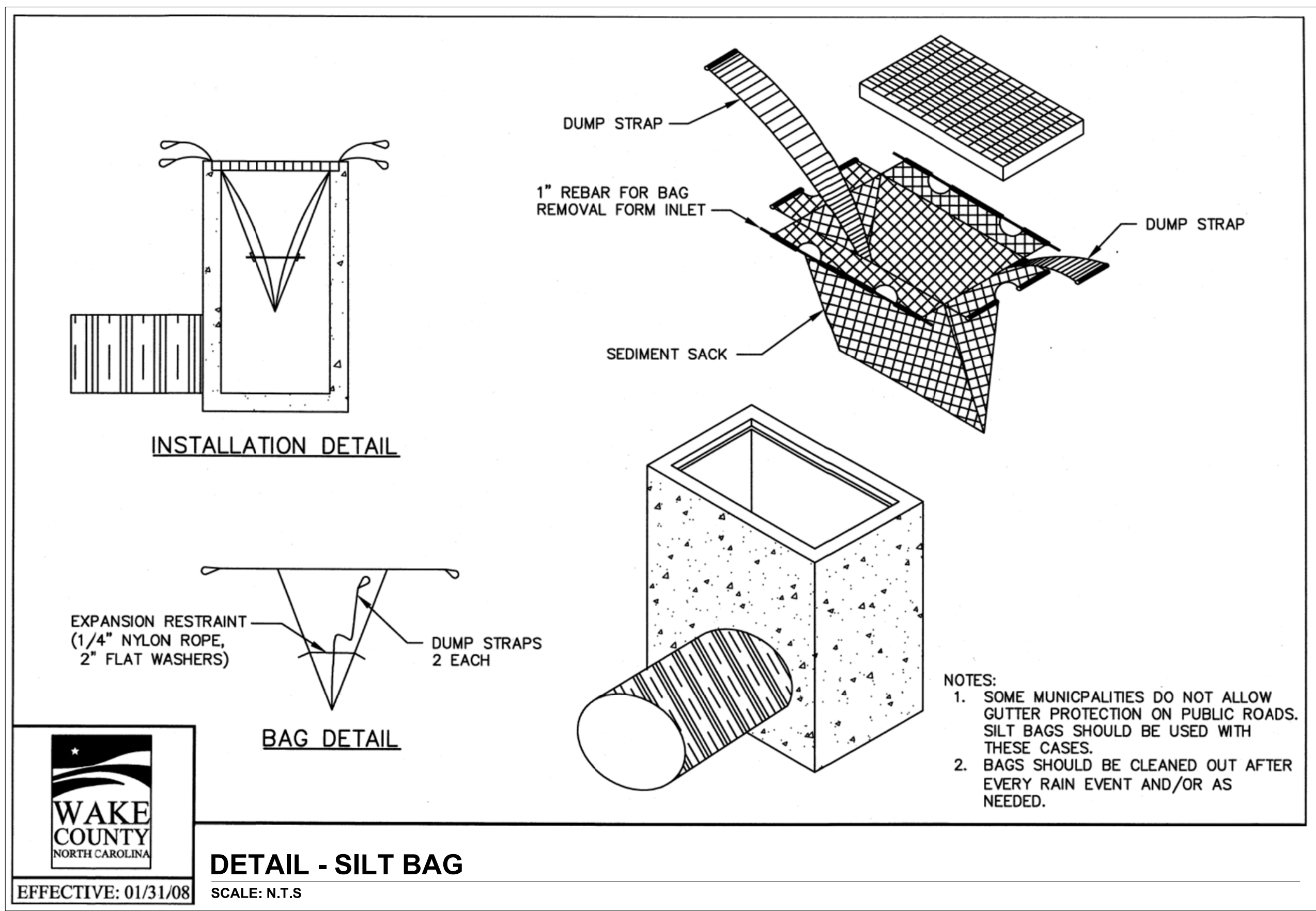
Hardware Cloth	- Installed at a height of 2 feet. - Placed under the sediment control stone. - 1.5 feet of space required from the inside edge of the hardware cloth to the edge of the inlet. - Top of hardware cloth to be installed a minimum of 1-foot below the shoulder or any diversion point.
Posts	- Made of steel or other approved material. - Installed a minimum of 1.5 feet deep. - Installed with a maximum spacing of 4 feet.
Structural Stone	- Installed on the outer face of the hardware cloth to a height of 1 foot and a width of 2 feet.

Construct rock inlet devices as shown on plans and at locations as directed. Attached hardware cloth to posts with wire staple or other acceptable methods.

EROSION CONTROL SHEET EC-03G

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3G</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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Specifications

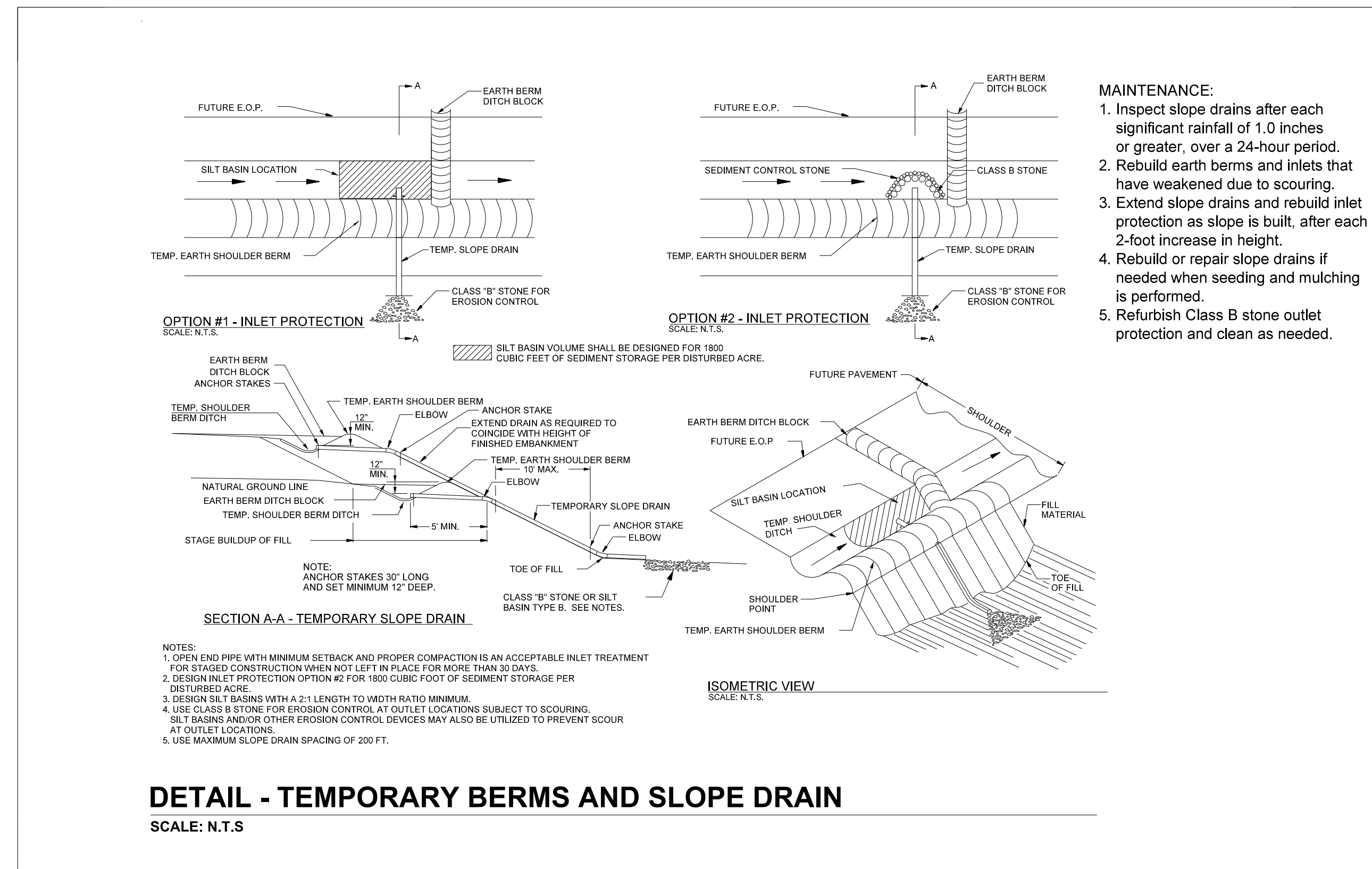
- Silt Bag shall be manufactured from a woven polypropylene geotextile and sewn by a double needle machine, using a high strength nylon thread.
- Seams shall meet or exceed values in Table 1 below:

Parameter	MARV	Units
Maximum Load	852	LBS
Maximum Strength	1280	LB/FT
- Silt Bag shall be manufactured to fit the opening of the catch basin or drop inlet. Silt Bag will have the following features: two dump straps attached at the bottom to facilitate emptying; Silt Bag shall have lifting straps as an integral part of the system to be used to lift Silt Bag from the basin; Silt Bag shall have a restraint cord approximately halfway up the depth of the sack to keep the sides from expanding toward the catch basin wall (this cord is also a visual means of indicating when the sack should be emptied). Once the cord is covered with sediment, Silt Bag should be emptied, cleaned, and placed back into the basin for reuse.
- The Silt Bag unit shall utilize a woven fabric with the following characteristics:

Property	Test Method	Units	MARV
Grab Tensile	ASTM D-4632	LBS	281 x 170
Grab Elongation	ASTM D-4632	%	16 x 7
CBR Puncture	ASTM D-6241	LBS	1005
Trapezoid Tear Strength	ASTM D-4533	LBS	85 x 61
UV Resistance @ 500 Hours	ASTM D-4355	%	96
AOS	ASTM D-4751	U.S. SIEVE	40
Flow Rate	ASTM D-4491	GPM/FT	38.5
Permittivity	ASTM D-4491	SEC-1	0.51

Installation & Maintenance

- To install Silt Bag in the catch basin, remove the grate and place the sack in the opening. Hold approximately six inches of the sack outside the frame. This is the area of the lifting straps. Replace the grate to hold the sack in place.
- Inlet silt bags will be cleaned out after every 1" or greater rain event and not less than once per week.
- When the restraint cord is no longer visible, Silt Bag is full and should be emptied.
- To remove Silt Bag take two pieces of 1" diameter rebar and place through the lifting loops on each side of the sack to facilitate the lifting of the Silt Bag.
- To empty Silt Bag, place unit where the contents will be collected. Place the rebar through the lift straps (connected to the bottom of the sack) and lift. This will lift Silt Bag from the bottom and empty the contents. Clean out and rinse. Return Silt Bag to its original shape and place back in the basin.
- Silt Bag is reusable. Once the construction cycle is complete, remove Silt Bag from the basin and clean. Silt Bag should be stored out of sunlight until next use.

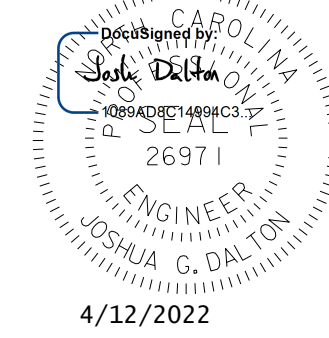


- MAINTENANCE:**
- Inspect slope drains after each significant rainfall of 1.0 inches or greater, over a 24-hour period.
 - Rebuild earth berms and inlets that have weakened due to scouring.
 - Extend slope drains and rebuild inlet protection as slope is built, after each 2-foot increase in height.
 - Rebuild or repair slope drains if needed when seeding and mulching is performed.
 - Refurbish Class B stone outlet protection and clean as needed.

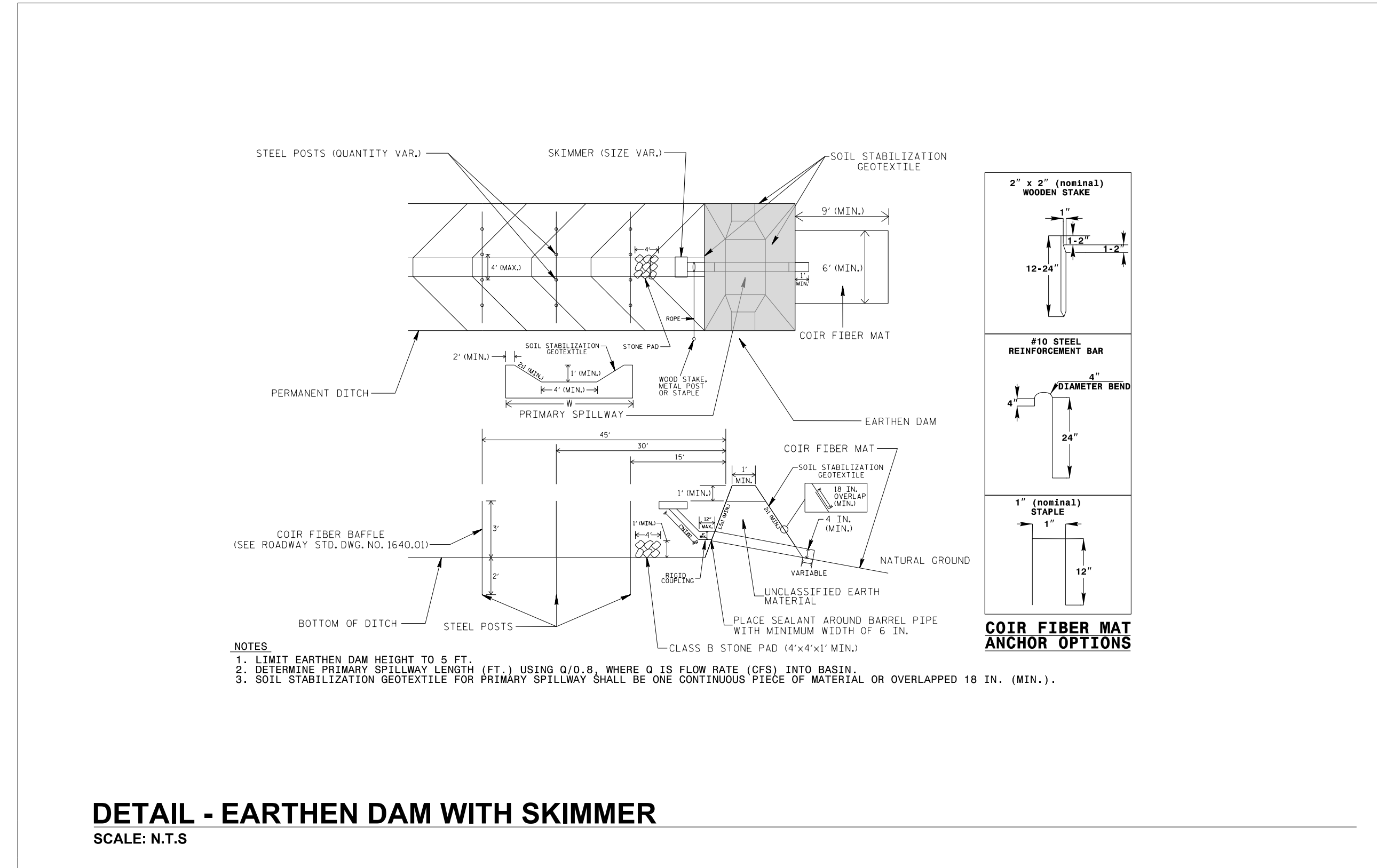
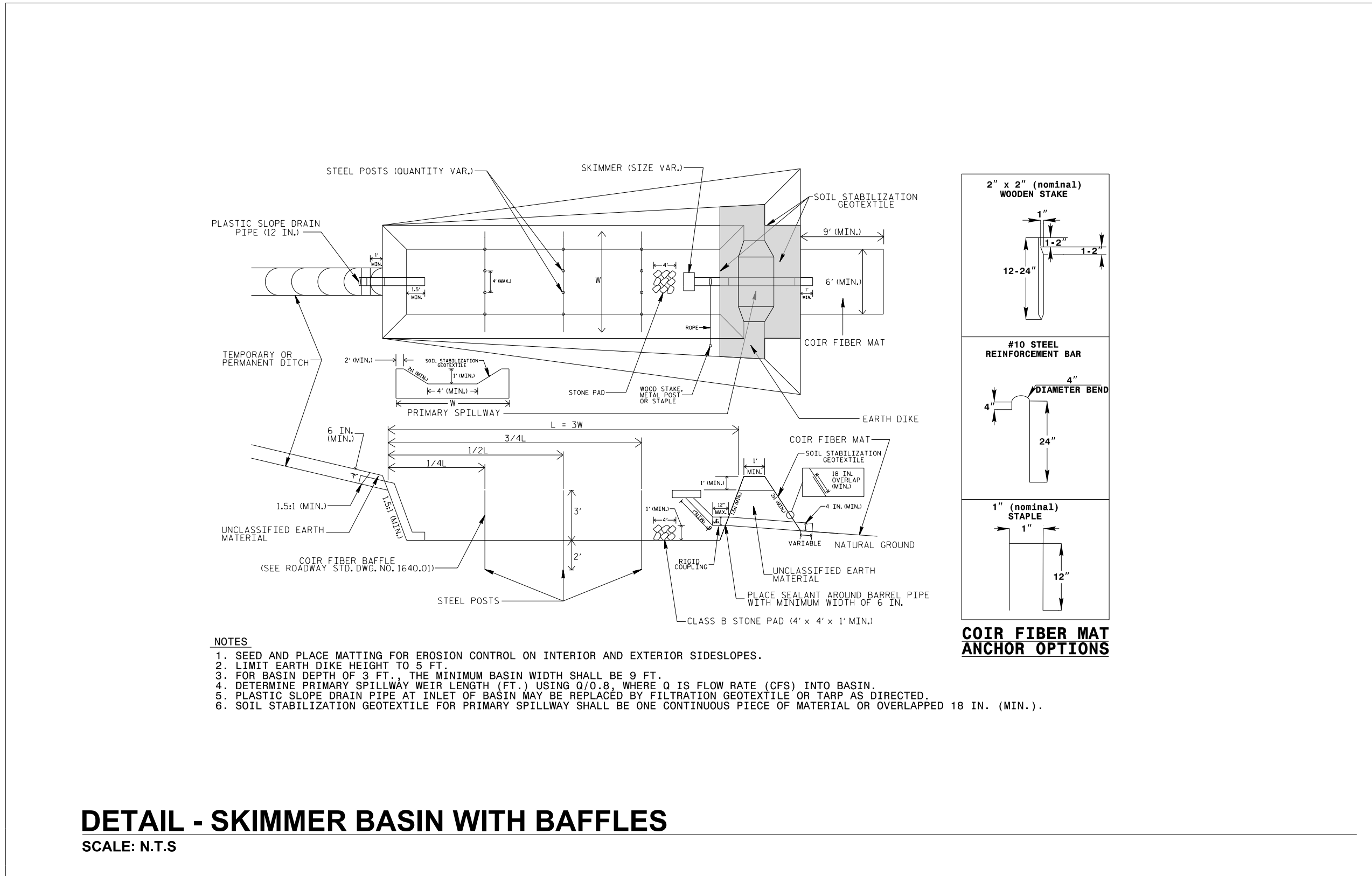
Construction Specifications:

Installation	<ul style="list-style-type: none"> - Install slope drains in conjunction with grading and adjust to coincide with the height of the embankment as construction progresses. - Install stakes to anchor the conduit at intervals not to exceed 10 feet with the outlet end securely fastened in place. The conduit must extend beyond the toe of the slope. - Construct the slope drain so that erosion or scouring does not occur underneath or around the sides of the pipe inlet. - When using the earthen berm in conjunction with the slope drain, construct the lowest point of the berm ridge a minimum of 1-foot above the top of the drain so that design flow can freely enter the drain. - Install a standard T-section at inlets as necessary for multi-directional flow and elbows for single directional flow.
Stone	<ul style="list-style-type: none"> - Protect outlet locations subject to scour with Class B stone or a silt detention device. A special stilling basin may also be used as outlet protection. Construct outlet protection devices as shown in the plans and at other locations as directed.
Spacing	<ul style="list-style-type: none"> - Implement a maximum slope drain spacing 200 feet measured along the top of the slope.

EROSION CONTROL SHEET EC-03H

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3H</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

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Construction Specifications:

Installation	- Construct the basin according to the Erosion and Sediment Control plan with the basin surface free of obstructions, debris and pockets of low-density material. - Assemble and install the skimmer as instructed by the manufacturer. Place a 6-inch band of sealant around the interior face of the outlet barrel pipe. - Depending on the expected time period for which the skimmer basin is designed, permanently or temporarily seed all bare side slopes of the basin.
Dimensions	- Limit the dam height to 5 feet. - Install the skimmer a minimum of 1 foot from the bottom of the basin. - The minimum basin width should be 3 times the depth of the basin. - For basin depth of 3 feet, the minimum basin width should be 9 feet.
Matting	- Install coir fiber matting under the outlet of the skimmer with minimum dimensions of 9 feet long by 6 feet wide. - Install matting for erosion control on exposed side slopes after seeding is completed.
Geotextile	- Unroll the geotextile on the spillway in the direction of flow, with edges buried at least 6 inches deep. The geotextile should be one continuous piece of material or overlapped a minimum of 18 inches. - For Divisions 1, 2, 3, 4, and 6 in the east part of the state, use a low permeability geotextile. - Replace the plastic slope drain at the inlet of the basin with geotextile as directed.

Construction Specifications (Continued):

Baffles	- Install 3 coir fiber baffles in the skimmer basin with a spacing of 1/4 the basin length. - Install a minimum of 2 coir fiber baffles in basins with less than 20 feet of length at spacing of 1/3 the basin length.
Stone	- Install a Class B stone pad (4 feet by 4 feet by 12 inches high) directly underneath the skimmer device.
Anchors	- Anchor the coir fiber mat with wooden stakes, steel reinforcement rebar or metal staples. - Anchor the geotextile with 6" staples at a maximum spacing of 3 ft.
Primary Spillway	- Construct the primary spillway with a trapezoidal cross-section, with 2:1 side slopes, and a minimum base width of 4 feet.

- MAINTENANCE:**
1. Inspect the basin on a regular basis and after every significant rainfall event (1/2 inch or greater).
 2. Clean out the basins when sediment accumulations reach approximately one-half the height of the first baffle.
 3. Check the skimmer to make sure it is not clogged with sediment.
 4. Check the fabric lined spillway for damage.
 5. Check the coir fiber mat at the outlet of the skimmer to determine if a replacement is needed.
 6. During winter, support the skimmer at an angle such that water does not stand inside the barrel. This could result in water freezing and plugging the skimmer.
 7. Repair seed and replace matting on the side slope areas that have eroded or have become damaged by equipment from silt cleanout.
 8. Remove sediment that may accumulate on the stone pad underneath the skimmer device.
 9. Inspect baffles after each rain event for erosion damage and sediment accumulations.

Construction Specifications:

Installation	- Construct the basin according to the Erosion and Sediment Control plan with the ditch and dam surfaces free of obstructions, debris, and pockets of low density material. - Assemble and install the skimmer as instructed by the manufacturer. Place a 6-inch band of sealant around the interior face of the outlet barrel pipe. - Depending on the expected time period for which the earthen dam is designed, permanently or temporarily seed all bare side slopes of the basin.
Dimensions	- Limit the dam height to 5 feet. - Install the skimmer a minimum of 1 foot from the bottom of the basin.
Matting	- Install coir fiber matting under the outlet of the skimmer with minimum dimensions of 9 feet long by 6 feet wide. - Install matting for erosion control on exposed side slopes after seeding is completed.
Geotextile	- Unroll the geotextile on the spillway in the direction of flow, with edges buried at least 6 inches deep. The geotextile should be one continuous piece of material or overlapped a minimum of 18 inches. - For Divisions 1, 2, 3, 4, and 6 in the east part of the state, use a low permeability geotextile. - Shall be placed at the bottom and across the entire width of the ditch berm and according to the Earthen Dam with Skimmer Detail.
Baffles	- Install 3 coir fiber baffles in the ditch beginning 15 feet upgrade from the primary spillway, each with a spacing of 15 feet. Refer to the section on coir fiber baffles.
Stone	- Install a Class B stone pad (4 feet by 4 feet by 12 inches high) directly underneath the skimmer device.

Construction Specifications (Continued):

Anchors	- Anchor the coir fiber mat with wooden stakes, steel reinforcement rebar or metal staples. Anchors shall be at the ends of the matting approximately 1 foot apart and along outer edges and own the center of the matting 3 feet apart. - Anchor the geotextile with 6" staples at a maximum spacing of 3 feet horizontally and vertically. - Wooden stakes shall be 12-inch to 24-inch long with a 2" by 2" nominal square cross section. One end of the stake must be sharpened or beveled. The other end needs to have a 1-inch to 2-inch long head at the top with a 1-inch to 2-inch notch to secure the mat. - Steel reinforcement bars shall be uncoated, #10 rebar that are 24 inches long. The bars shall have a 4-inch diameter bend at one end with a 4-inch straight section at the tip to catch and secure the coir fiber mat. - Staples shall be made of 0.125-inch diameter 11-gauge new steel wire formed into a U shape not less than 12 inches long with a throat of 1 inch wide.
Primary Spillway	- Construct the primary spillway with a trapezoidal cross-section to a depth of 12 inches and a minimum base width of 4 feet.
Skimmer	- Provide Schedule 40 PVC are pipe with a length of 6 feet to attach the skimmer to the coupling at the barrel pipe. - For skimmer sizes 2.5 inches and smaller, the arm pipe diameter shall be 1.5 inches. - For skimmer sizes of 3 inches and larger, refer to the manufacturer recommendation for arm pipe diameter. - Provide a 4-inch diameter Schedule 40 PVC pipe to attach to the coupling connection of the skimmer and serve as the barrel pipe through the earthen dam.

- MAINTENANCE:**
1. Inspect the dam on a regular basis after every significant rainfall event (1/2 inch or greater).
 2. Clean out the ditch and baffles when sediment accumulations reach approximately one-half the height of the first baffle. Silt should also be removed from the earthen dam on a regular basis.
 3. Check the skimmer to make sure it is not clogged with sediment.
 4. Check the geotextile lined spillway for damage.
 5. Check the coir fiber mat at the outlet of the skimmer to determine if it is in need of replacement.
 6. During winter, support the skimmer at an angle such that water does not stand inside the barrel. This could result in the water freezing and plugging the skimmer or cracking the PVC.
 7. Reseed and replace matting on the side slope areas that have eroded or have become damaged by equipment from silt cleanout.
 8. Remove sediment that may accumulate on the stone pad underneath the skimmer device.
 9. Inspect the baffles after each rain event for erosion damage and sediment accumulations.

EROSION CONTROL SHEET EC-031

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-31</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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DETAIL - ROLLED EROSION CONTROL PRODUCTS (RECP)
SCALE: N.T.S

NOTES:

- Lime, fertilize and seed before installation. Planting of shrubs, trees, etc. should occur after installation.
- Slope surface shall be smooth before placement for proper soil contact.
- Design velocities exceeding 2 feet/second require temporary blankets, mats or similar liners to protect seed and soil until vegetation becomes established.
- Terminal anchor trenches are required at RECP ends and intermittent check slots must be constructed across channels at 25 foot intervals.
- Terminal anchor trenches should be a minimum of 12 inches in depth and 6 inches in width. Intermittent check slots should be 6 inches deep and 6 inches wide.
- For installation on a slope, place RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill and compact. Unroll the RECP down the slope maintaining direct contact between the soil and RECP. Pin using staples or pins in a 3 foot center-to-center pattern.
- 11 gauge, at least 6 inch by 1 inch staples or 12 inch minimum length wooden stakes are recommended for anchoring.
- Grass-lined channels with design velocities exceeding 6 feet/second should include turf reinforcement mats
- Check slots to be constructed per manufacturers specifications.
- Staking or stapling layout per manufacturers specification.
- If there is a berm at the top of slope, anchor upslope of the berm.
- Do not stretch blankets/matting tight, allow the rolls to conform to any irregularities.
- For slopes less than 3H:1V, rolls may be placed in horizontal strips.

MAINTENANCE:

- Inspect Rolled Erosion Control Products at least weekly and after each rain of 1 inch or greater; repair immediately.
- Good contact with the ground must be maintained, and erosion must not occur beneath the RECP.
- Any areas of the RECP that are damaged or not in close contact with the ground shall be repaired and stapled.
- If erosion occurs due to poorly controlled drainage, the problem shall be fixed and the eroded area protected.
- Monitor and repair the RECP as necessary until ground cover is established.

DETAIL - COIR FIBER BAFFLE
SCALE: N.T.S

NOTES:

- Install three(3) coir fiber baffles in silt basins and sediment dams at drainage outlets with a spacing of 1/4 the basin length.
- Two(2) coir fiber baffles can be installed in silt basins and dams less than 20 ft. in length with a spacing of 1/3 the basin length.
- Top height of coir fiber baffles shall not be below base of emergency spillway elevation.

MAINTENANCE:

- Inspect the basin on a regular basis and after every significant rainfall event. Make any repairs immediately.
- Inspect coir fiber baffle to be sure the ends of the mat are anchored into the ground or side slopes with staples.
- At a minimum, remove sediment from the device when it reaches 1/2 the baffle height, and do not damage the baffles during sediment cleanout.
- Remove and replace deteriorated or clogged baffles.
- Install additional posts or wire backing if baffle is sagging.

Construction Specifications

Construction
Even if properly designed, if not properly installed, RECP's will probably not function as desired. Proper installation is imperative. Even if properly installed, if not properly timed and nourished, vegetation will probably not grow as desired. Proper seed/vegetation selection is also imperative.

Grade the surface of installation areas so that the ground is smooth and loose. When seeding prior to installation, follow the steps for seed bed preparation, soil amendments, and seeding in *Surface Stabilization*, 6.1. All gullies, rills, and any other disturbed areas must be fine graded prior to installation. Spread seed before RECP installation. (**Important:** Remove all large rocks, dirt clods, stumps, roots, grass clumps, trash, and other obstructions from the soil surface to allow for direct contact between the soil surface and the RECP.)

Terminal anchor trenches are required at RECP ends and intermittent trenches must be constructed across channels at 25-foot intervals. Terminal anchor trenches should be a minimum of 12 inches in depth and 6 inches in width, while intermittent trenches need be only 6 inches deep and 6 inches wide.

Installation for Slopes— Place the RECP 2-3 feet over the top of the slope and into an excavated end trench measuring approximately 12 inches deep by 6 inches wide. Pin the RECP at 1 foot intervals along the bottom of the trench, backfill, and compact. Unroll the RECP down (or along) the slope maintaining direct contact between the soil and the RECP. Overlap adjacent rolls a minimum of 3 inches. Pin the RECP to the ground using staples or pins in a 3 foot center-to-center pattern. Less frequent stapling/pinning is acceptable on moderate slopes.

Installation in Channels— Excavate terminal trenches (12 inches deep and 6 inches wide) across the channel at the upper and lower end of the lined channel sections. At 25-foot intervals along the channel, anchor the RECP across the channel either in 6 inch by 6 inch trenches or by installing two closely spaced rows of anchors. Excavate longitudinal trenches 6 inches deep and wide along channel edges (above water line) in which to bury the outside RECP edges. Place the first RECP at the downstream end of the channel. Place the end of the first RECP in the terminal trench and pin it at 1 foot intervals along the bottom of the trench.

Note: The RECP should be placed upside down in the trench with the roll on the downstream side of the bench.

Once pinned and backfilled, the RECP is deployed by wrapping over the top of the trench and unrolling upstream. If the channel is wider than the provided rolls, place ends of adjacent rolls in the terminal trench, overlapping the adjacent rolls a minimum of 3 inches. Pin at 1 foot intervals, backfill, and compact. Unroll the RECP in the upstream direction until reaching the first intermittent trench. Fold the RECP back over itself, positioning the roll on the downstream side of the trench, and allowing the mat to conform to the trench.

Then pin the RECP (two layers) to the bottom of the trench, backfill, and compact. Continue up the channel (wrapping over the top of the intermittent trench) repeating this step at other intermittent trenches, until reaching the upper terminal trench.

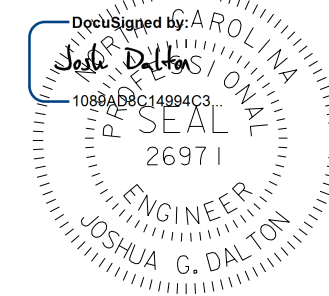
At the upper terminal trench, allow the RECP to conform to the trench, secure with pins or staples, backfill, compact and then bring the mat back over the top of the trench and onto the existing mat (2 to 3 feet overlap in the downstream direction), and pin at 1 foot intervals across the RECP. When starting installation of a new roll, begin in a trench or shingle-lap ends of rolls a minimum of 1 foot with upstream RECP on top to prevent uplifting. Place the outside edges of the RECP(s) in longitudinal trenches, pin, backfill, and compact.

Anchoring Devices—11 gauge, at least 6 inches length by 1 inch width staples or 12 inch minimum length wooden stakes are recommended for anchoring the RECP to the ground.

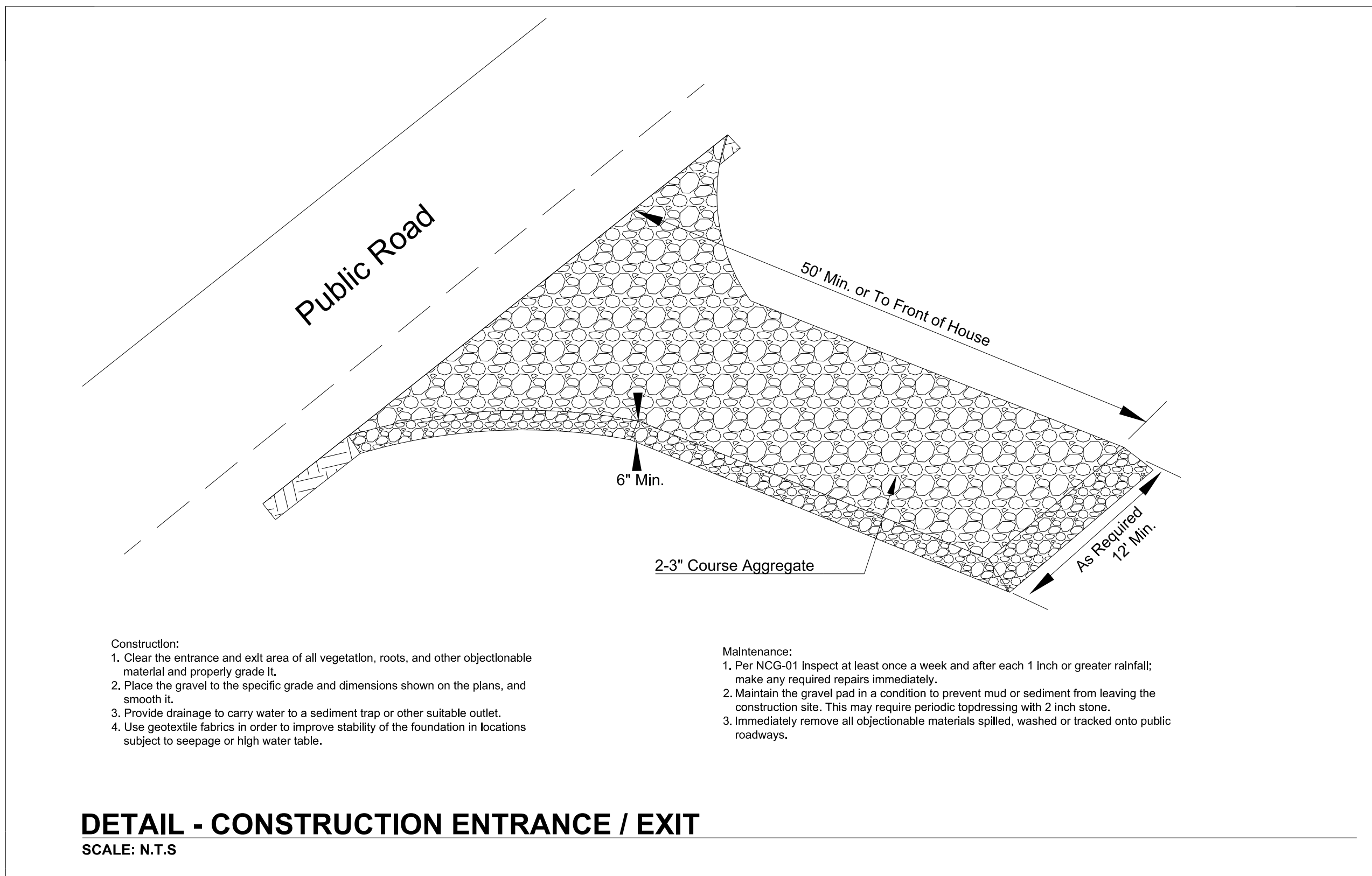
Drive staples or pins so that the top of the staple or pin is flush with the ground surface. Anchor each RECP every 3 feet along its center. Longitudinal overlaps must be sufficient to accommodate a row of anchors and uniform along the entire length of overlap and anchored every 3 feet along the overlap length. Roll ends may be spliced by overlapping 1 foot (in the direction of water flow), with the upstream/upslope mat placed on top of the downstream/ downslope RECP. This overlap should be anchored at 1 foot spacing across the RECP. When installing multiple width mats heat seamed in the factory, all factory seams and field overlaps should be similarly anchored.

When to Install	<ul style="list-style-type: none"> - Install the coir fiber baffles immediately upon construction of the sediment dams and basins. - Install 3 baffles in the sediment control device at a spacing of 1/4 the basin length. - Install only 2 baffles at a spacing of 1/3 the basin length, if the impoundment area of the device is less than 20 feet in length. - Use only 1 baffle for basin lengths less than 10 feet.
How to Install	<ul style="list-style-type: none"> - Install 5-foot steel T-posts to a minimum depth of 2 feet and maximum spacing of 4 feet. - Attach 9-gauge minimum high tension wire to the top of the posts so that the coir fiber mat can be draped over it to measure a minimum of 3 feet in height. - Secure the bottom of the coir fiber mat with 12-inch staples at a maximum spacing of 12 inches. - Install 5-foot T-posts into the side slopes of the basin to anchor the nearest vertical post.

EROSION CONTROL SHEET EC-03J

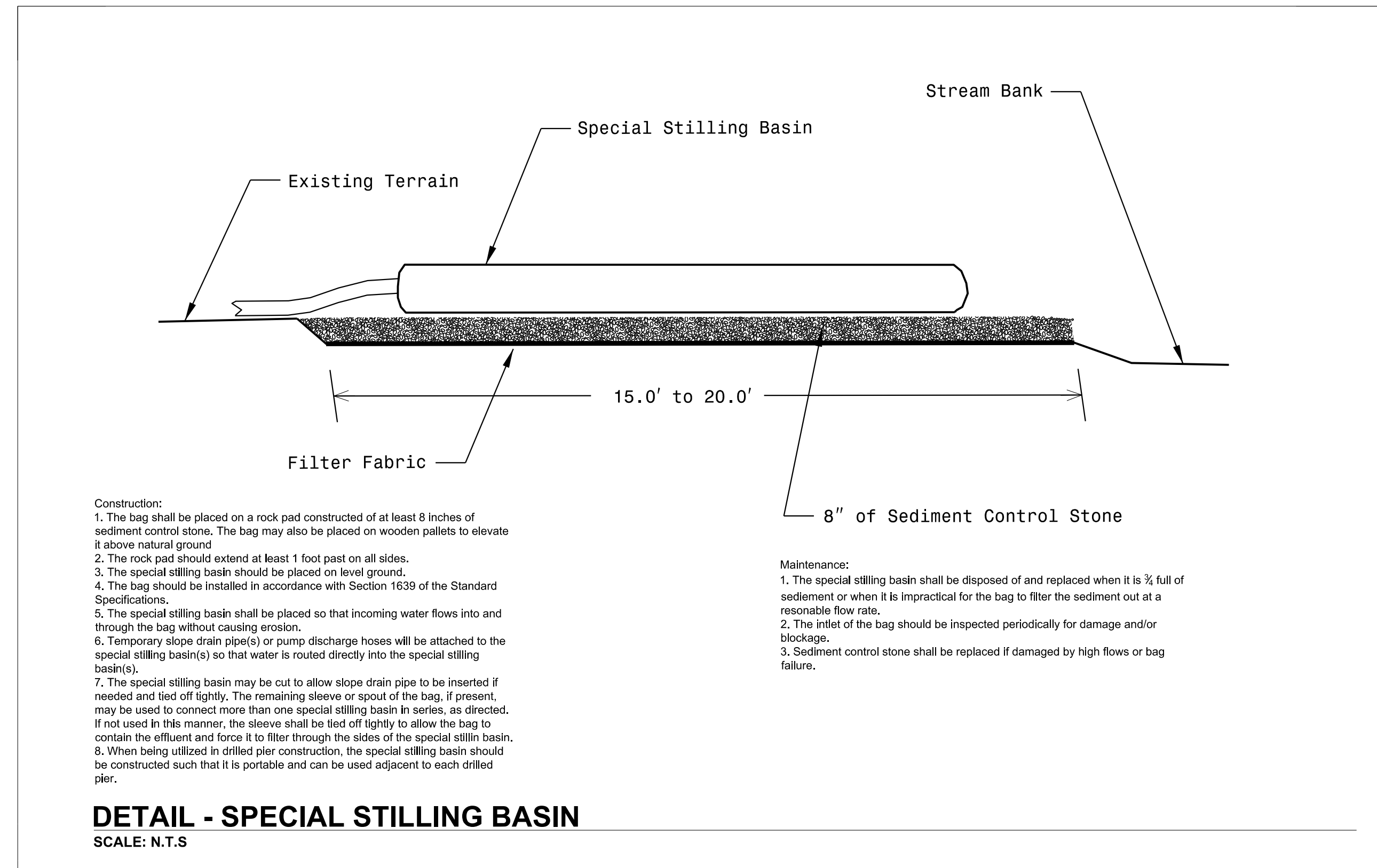
PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-3J</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
	4/12/2022

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



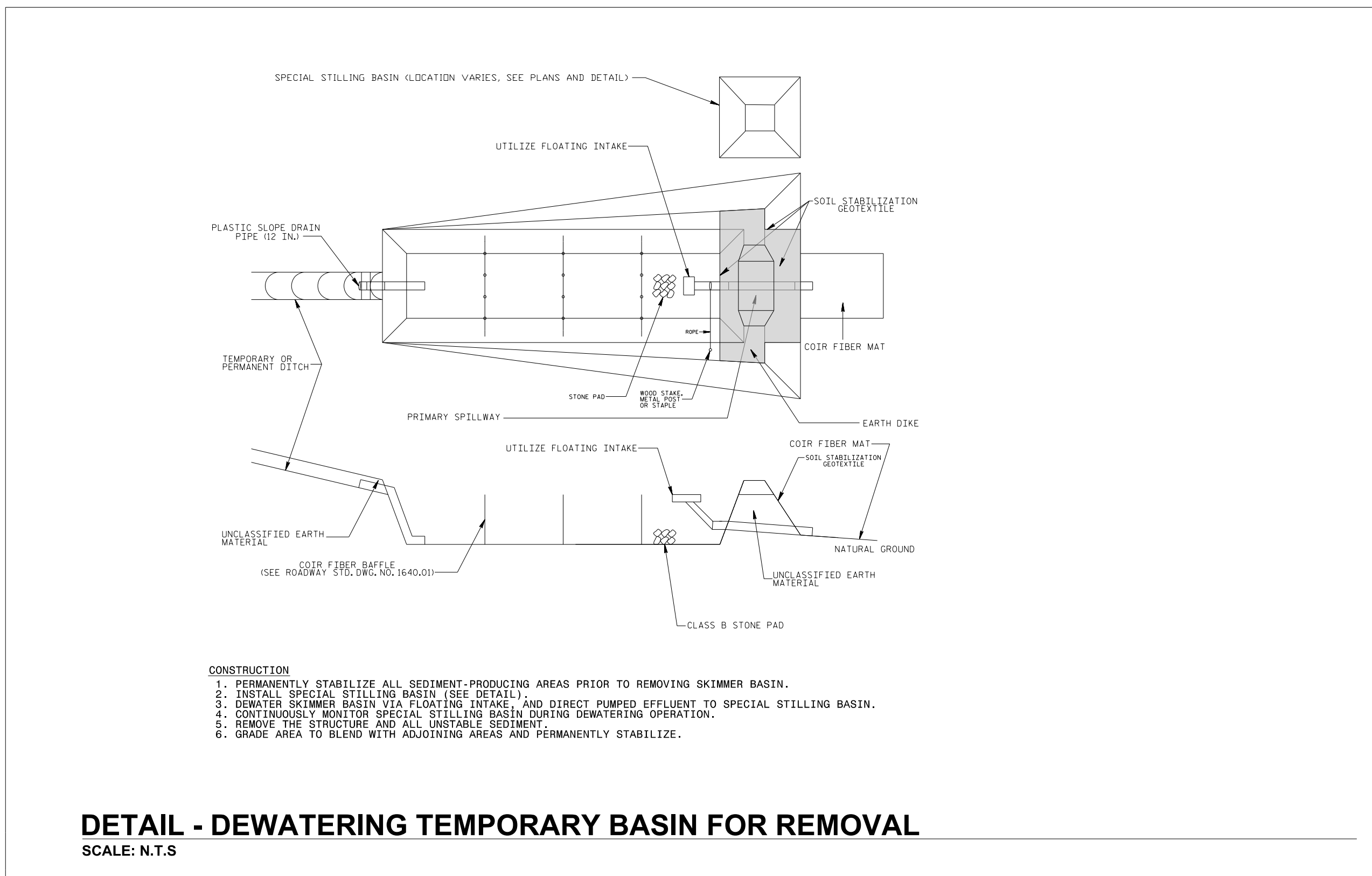
- Construction:**
1. Clear the entrance and exit area of all vegetation, roots, and other objectionable material and properly grade it.
 2. Place the gravel to the specific grade and dimensions shown on the plans, and smooth it.
 3. Provide drainage to carry water to a sediment trap or other suitable outlet.
 4. Use geotextile fabrics in order to improve stability of the foundation in locations subject to seepage or high water table.

- Maintenance:**
1. Per NCC-01 inspect at least once a week and after each 1 inch or greater rainfall; make any required repairs immediately.
 2. Maintain the gravel pad in a condition to prevent mud or sediment from leaving the construction site. This may require periodic tamping with 2 inch stone.
 3. Immediately remove all objectionable materials spilled, washed or tracked onto public roadways.



- Construction:**
1. The bag shall be placed on a rock pad constructed of at least 8 inches of sediment control stone. The bag may also be placed on wooden pallets to elevate it above natural ground.
 2. The rock pad should extend at least 1 foot past on all sides.
 3. The special stilling basin should be placed on level ground.
 4. The bag should be installed in accordance with Section 1639 of the Standard Specifications.
 5. The special stilling basin shall be placed so that incoming water flows into and through the bag without causing erosion.
 6. Temporary slope drain pipe(s) or pump discharge hoses will be attached to the special stilling basin(s) so that water is routed directly into the special stilling basin(s).
 7. The special stilling basin may be cut to allow slope drain pipe to be inserted if needed and tied off tightly. The remaining sleeve or spout of the bag, if present, may be used to connect more than one special stilling basin in series, as directed. If not used in this manner, the sleeve shall be tied off tightly to allow the bag to contain the effluent and force it to filter through the sides of the special stilling basin.
 8. When being utilized in drilled pier construction, the special stilling basin should be constructed such that it is portable and can be used adjacent to each drilled pier.

- Maintenance:**
1. The special stilling basin shall be disposed of and replaced when it is $\frac{3}{4}$ full of sediment or when it is impractical for the bag to filter the sediment out at a reasonable flow rate.
 2. The inlet of the bag should be inspected periodically for damage and/or blockage.
 3. Sediment control stone shall be replaced if damaged by high flows or bag failure.

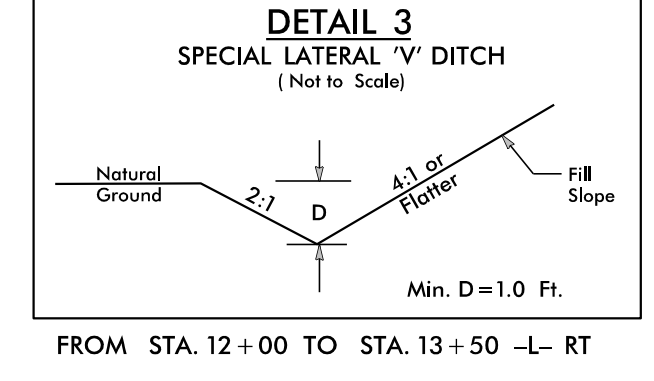
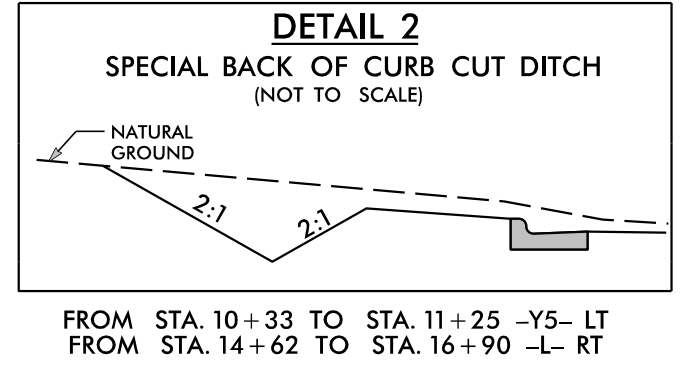
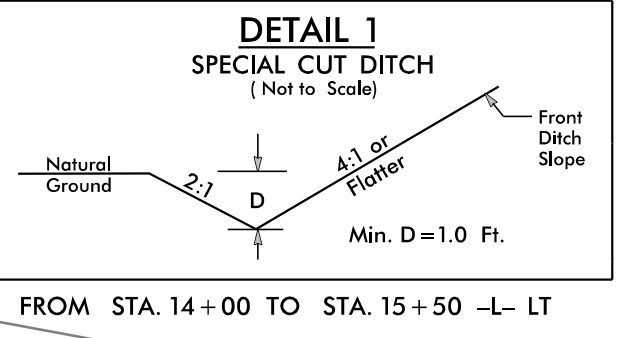


- CONSTRUCTION**
1. PERMANENTLY STABILIZE ALL SEDIMENT-PRODUCING AREAS PRIOR TO REMOVING SKIMMER BASIN.
 2. INSTALL SPECIAL STILLING BASIN (SEE DETAIL).
 3. DEWATER SKIMMER BASIN VIA FLOATING INTAKE AND DIRECT PUMPED EFFLUENT TO SPECIAL STILLING BASIN.
 4. CONTINUOUSLY MONITOR SPECIAL STILLING BASIN DURING DEWATERING OPERATION.
 5. REMOVE THE STRUCTURE AND ALL UNSTABLE SEDIMENT.
 6. GRADE AREA TO BLEND WITH ADJOINING AREAS AND PERMANENTLY STABILIZE.

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

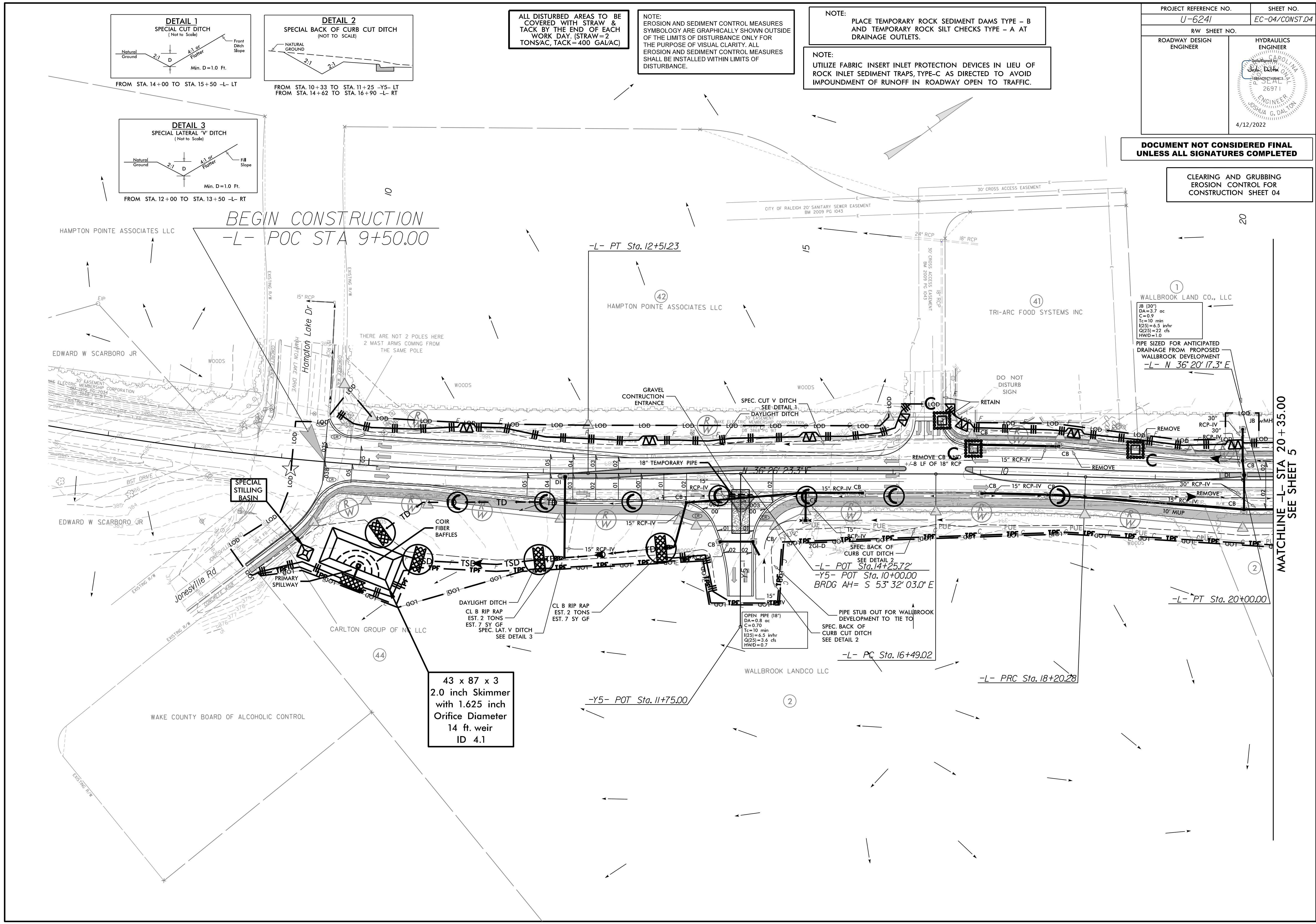


ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

NOTE: EROSION AND SEDIMENT CONTROL MEASURES SYMBOLRY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE: UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.



WALLBROOK LAND CO., LLC
JB (30')
DA=3.7 ac
C=0.9
Tc=10 min
I(25)=6.5 in/hr
Q(25)=22 cfs
HWD=1.0
PIPE SIZED FOR ANTICIPATED DRAINAGE FROM PROPOSED WALLBROOK DEVELOPMENT
-L- N 36° 20' 17.3" E

43 x 87 x 3
2.0 inch Skimmer
with 1.625 inch
Orifice Diameter
14 ft. weir
ID 4.1

MATCHLINE -L- STA 20 + 35.00
SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-05/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**DOCUMENT NOT CONSIDERED FINAL
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CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES
SYMBOLS ARE GRAPHICALLY SHOWN OUTSIDE
OF THE LIMITS OF DISTURBANCE ONLY FOR
THE PURPOSE OF VISUAL CLARITY. ALL
EROSION AND SEDIMENT CONTROL MEASURES
SHALL BE INSTALLED WITHIN LIMITS OF
DISTURBANCE.

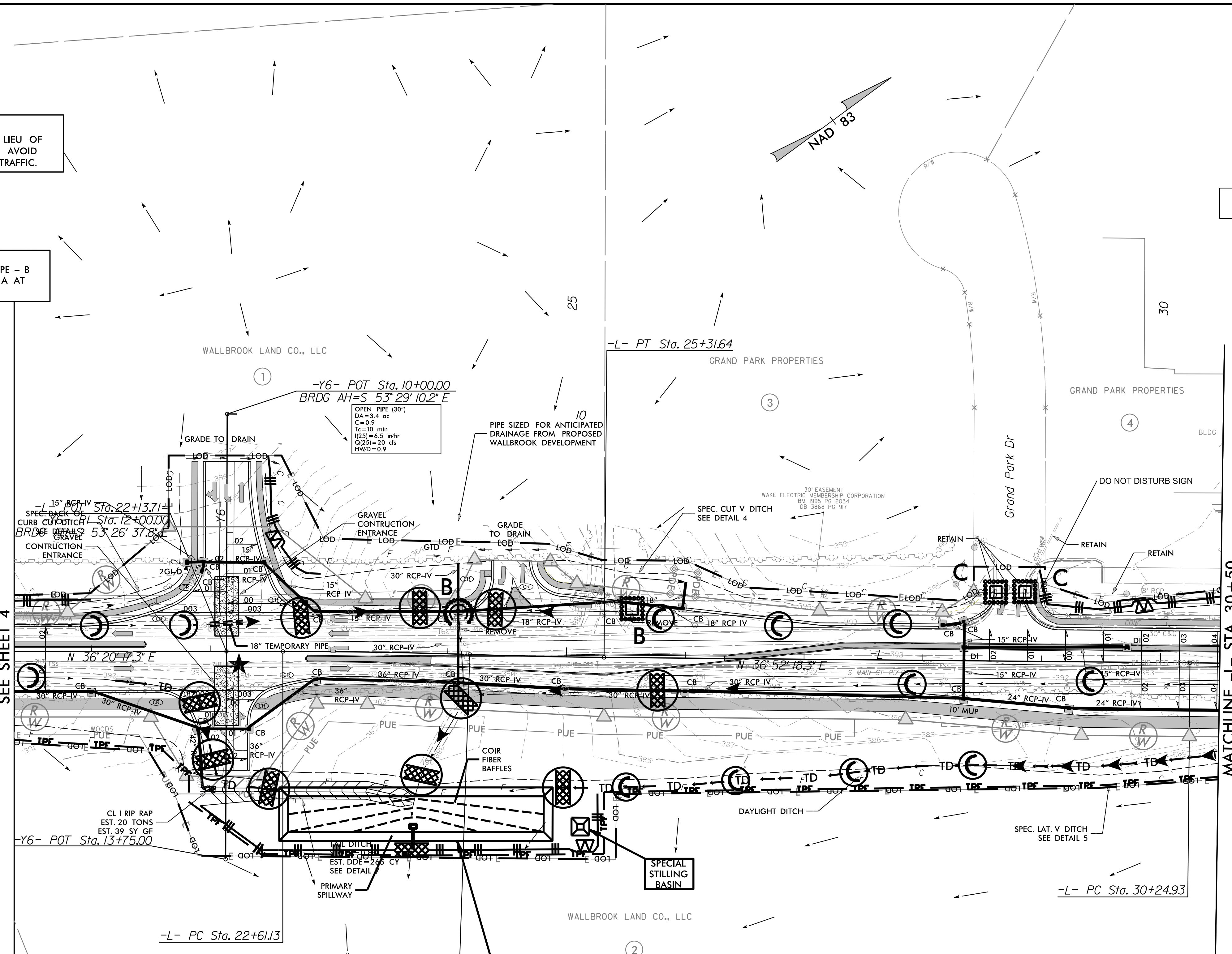
NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONS/AC, TACK=400 GAL/AC)

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

MATCHLINE -L- STA 20 + 35.00
SEE SHEET 4

MATCHLINE -L- STA 30 + 50
SEE SHEET 6

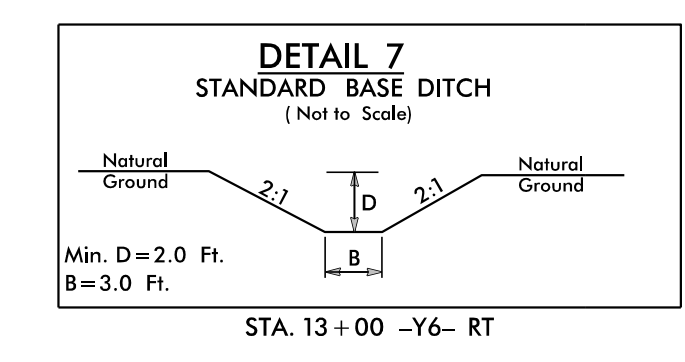
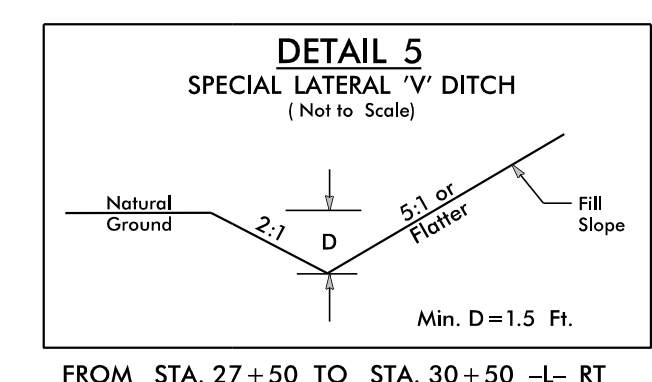
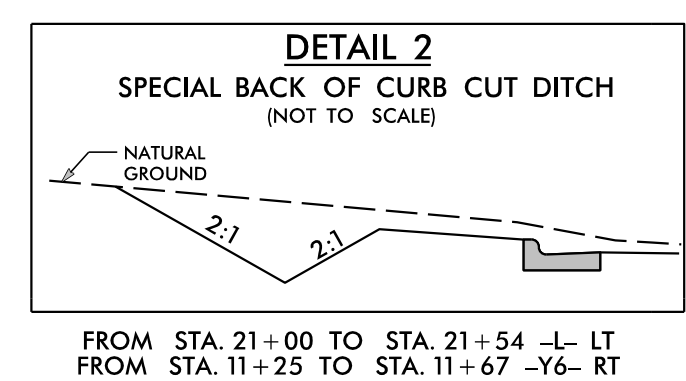
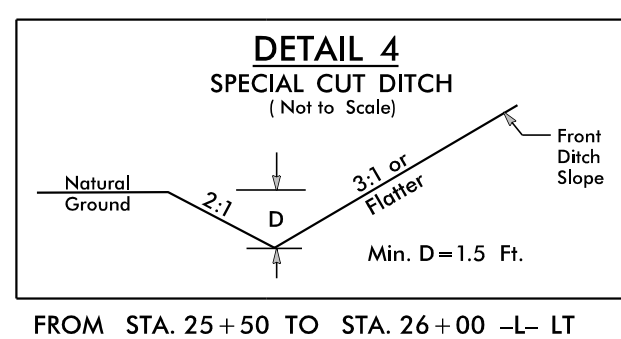


OPEN PIPE (30")
DA=3.4 ac
C=0.9
Tc=10 min
I(25)=6.5 in/hr
Q(25)=20 cfs
HWD=0.9

PIPE SIZED FOR ANTICIPATED
DRAINAGE FROM PROPOSED
WALLBROOK DEVELOPMENT

45 x 230 x 3
3.0 inch Skimmer
with 2.75 inch
Orifice Diameter
19 ft. weir
ID 5.1

OUTFALL LOCATION WAS COORDINATED WITH THE DESIGNERS FOR
WALLBROOK TO ALLOW THEM TO PICK UP 0523 AND TAKE
THE SYSTEM TO THEIR PROPOSED DETENTION POND. THE SYSTEM
WAS SIZED FOR ANTICIPATED FUTURE IMPERVIOUS AREA. CALCS AND
PREPOST DO NOT ACCOUNT FOR FUTURE DETENTION THAT
WOULD BE REQUIRED FOR DEVELOPMENT.



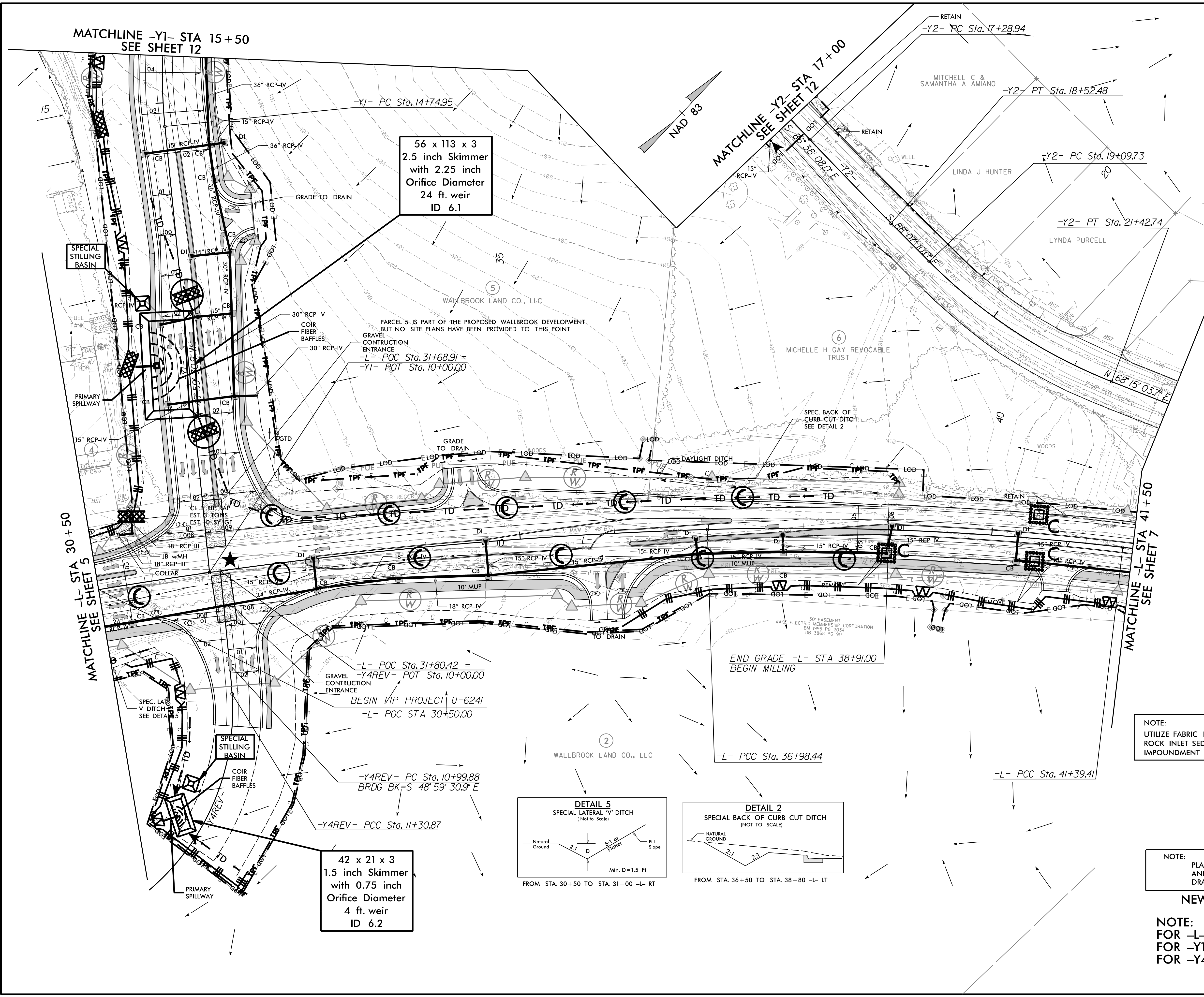
★ NEW SIGNAL

NOTE: FOR -L- PROFILE SEE SHEET 15
NOTE: FOR -Y6- PROFILE SEE SHEET 20

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-06/CONST.06
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06



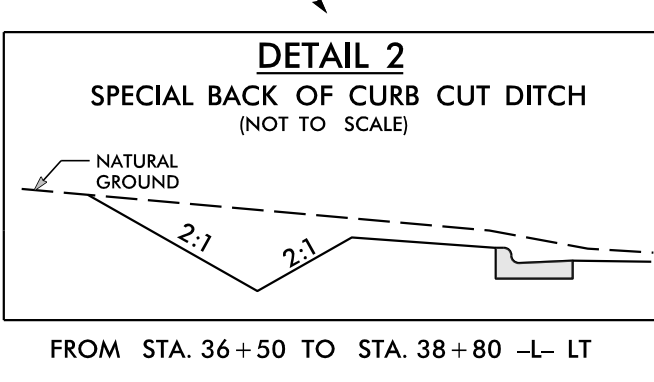
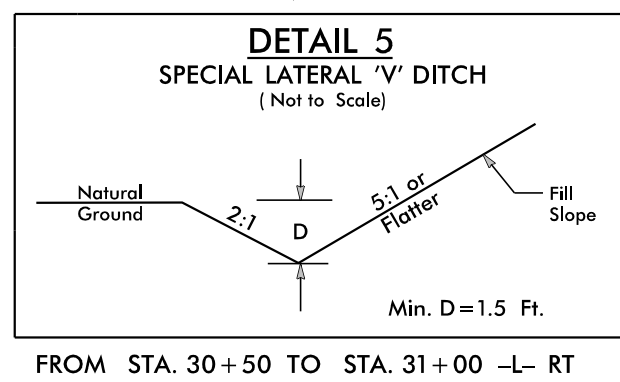
56 x 113 x 3
2.5 inch Skimmer
with 2.25 inch
Orifice Diameter
24 ft. weir
ID 6.1

42 x 21 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 6.2

PARCEL 5 IS PART OF THE PROPOSED WALLBROOK DEVELOPMENT
BUT NO SITE PLANS HAVE BEEN PROVIDED TO THIS POINT
GRAVEL
CONSTRUCTION
ENTRANCE
-L- POC Sta. 31+68.91 =
-Y1- POT Sta. 10+00.00

-L- POC Sta. 31+80.42 =
-Y4REV- POT Sta. 10+00.00
GRAVEL
CONSTRUCTION
ENTRANCE
BEGIN TIP PROJECT U-6241
-L- POC STA 30+50.00

END GRADE -L- STA 38+91.00
BEGIN MILLING



ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONS/AC, TACK=400 GAL/AC)

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
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SYMBOLGY ARE GRAPHICALLY SHOWN OUTSIDE
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EROSION AND SEDIMENT CONTROL MEASURES
SHALL BE INSTALLED WITHIN LIMITS OF
DISTURBANCE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B
AND TEMPORARY ROCK SILT CHECKS TYPE - A AT
DRAINAGE OUTLETS.

NEW SIGNAL

NOTE:
FOR -L- PROFILE SEE SHEET 15
FOR -Y1- PROFILE SEE SHEET 18
FOR -Y4- PROFILE SEE SHEET 20

NOTE:
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NOTE:
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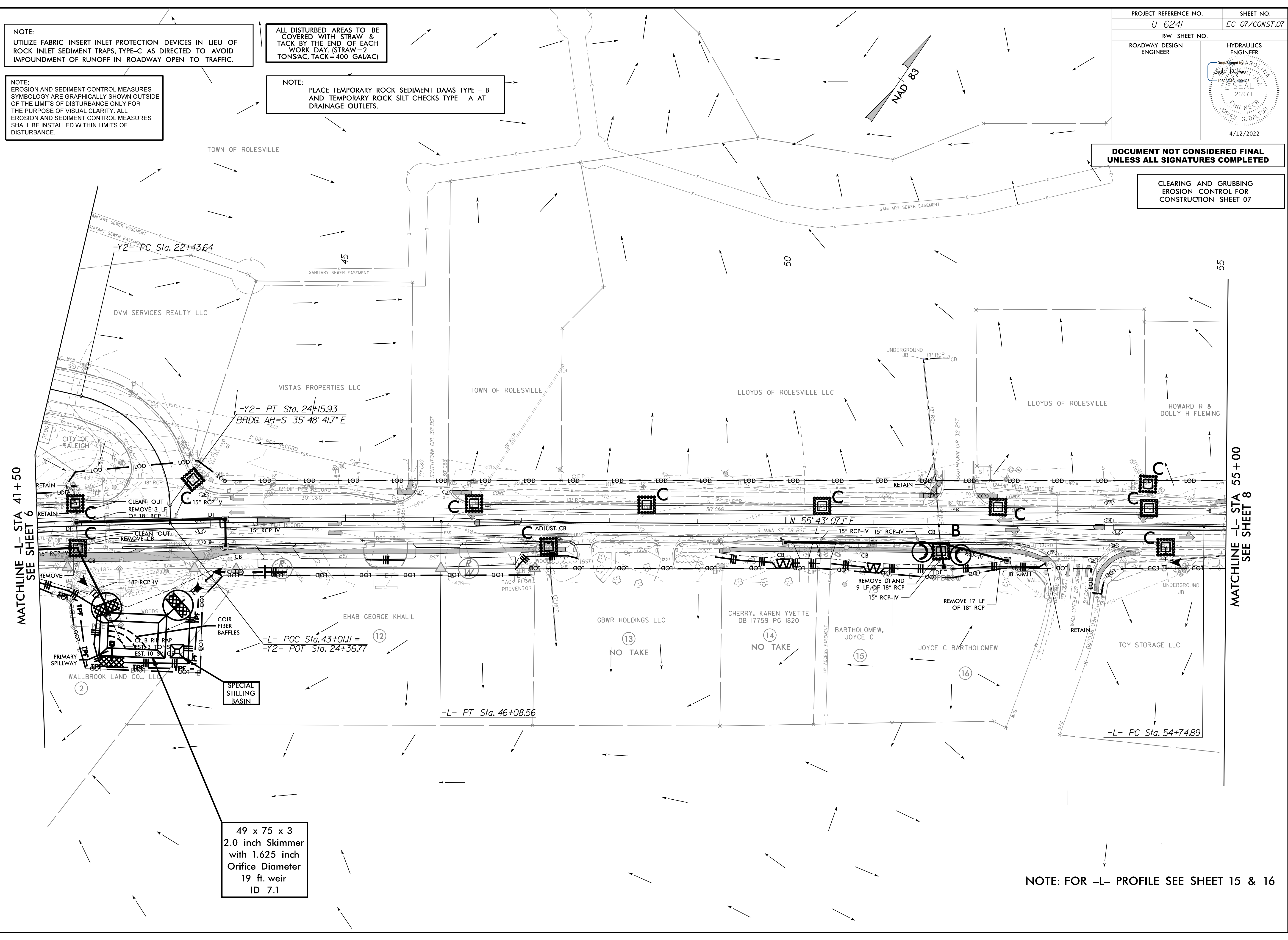
ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-07/CONST.07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 07



MATCHLINE -L- STA 41 + 50
SEE SHEET 6

MATCHLINE -L- STA 55 + 00
SEE SHEET 8

49 x 75 x 3
2.0 inch Skimmer
with 1.625 inch
Orifice Diameter
19 ft. weir
ID 7.1

NOTE: FOR -L- PROFILE SEE SHEET 15 & 16

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-08/CONST.08
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
4/12/2022	

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

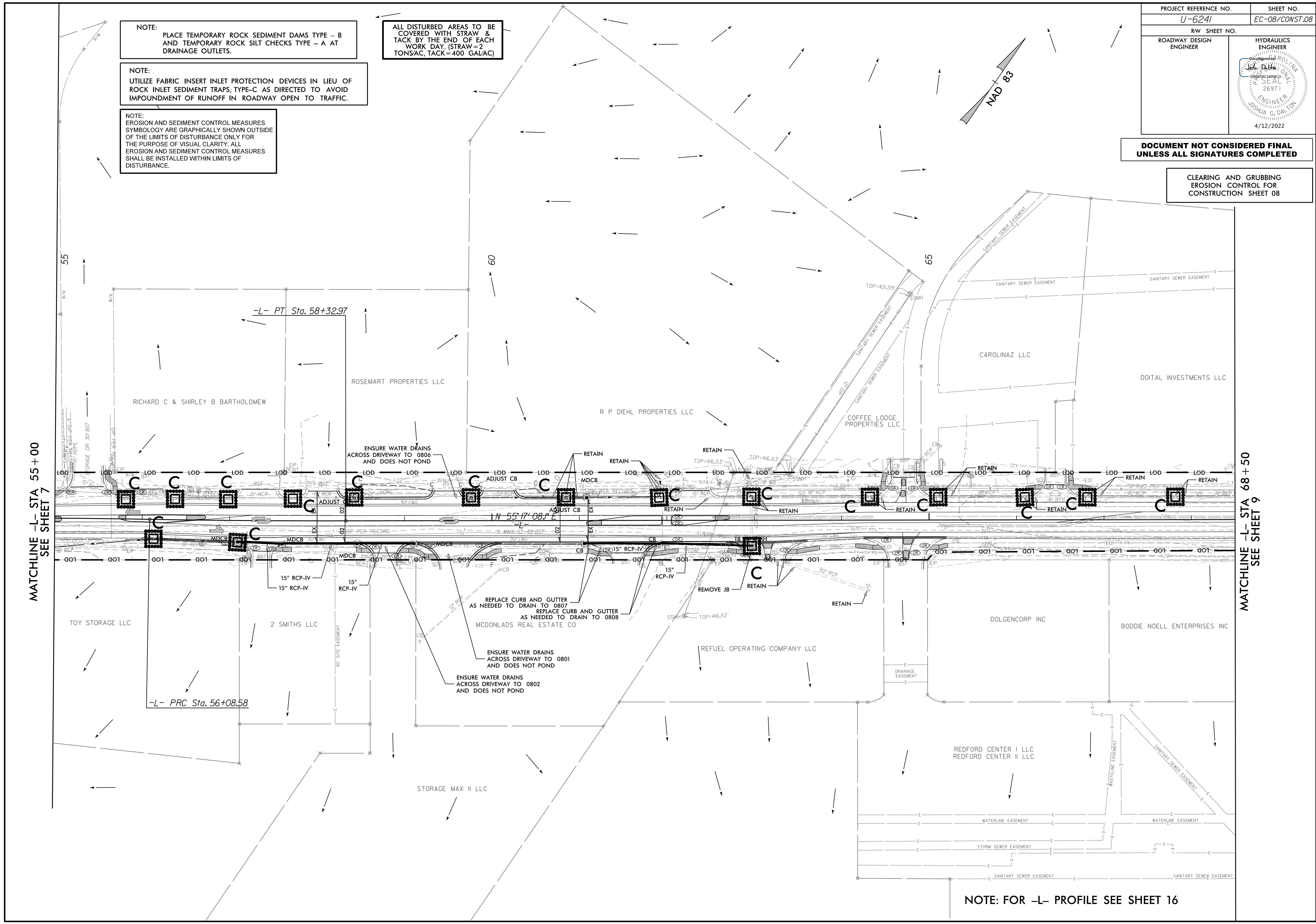
NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
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CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 08



MATCHLINE -L- STA 55+00
SEE SHEET 7

MATCHLINE -L- STA 68+50
SEE SHEET 9

NOTE: FOR -L- PROFILE SEE SHEET 16

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-09/CONST.09</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

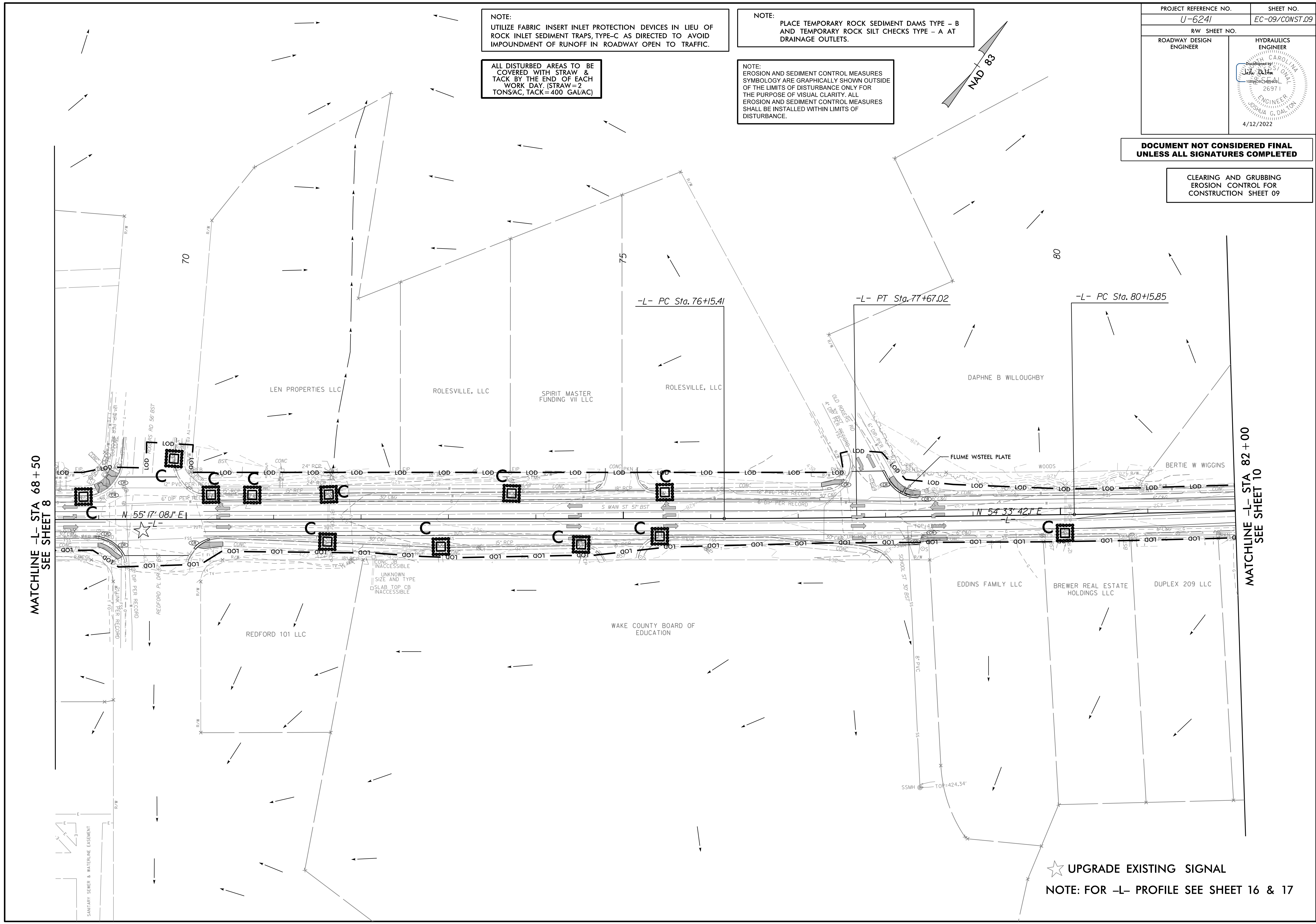
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

NOTE:
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CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 09



MATCHLINE -L- STA 68+50
SEE SHEET 8

MATCHLINE -L- STA 82+00
SEE SHEET 10

★ UPGRADE EXISTING SIGNAL
NOTE: FOR -L- PROFILE SEE SHEET 16 & 17

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-10/CONST.10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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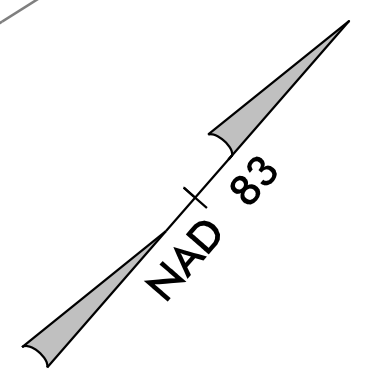
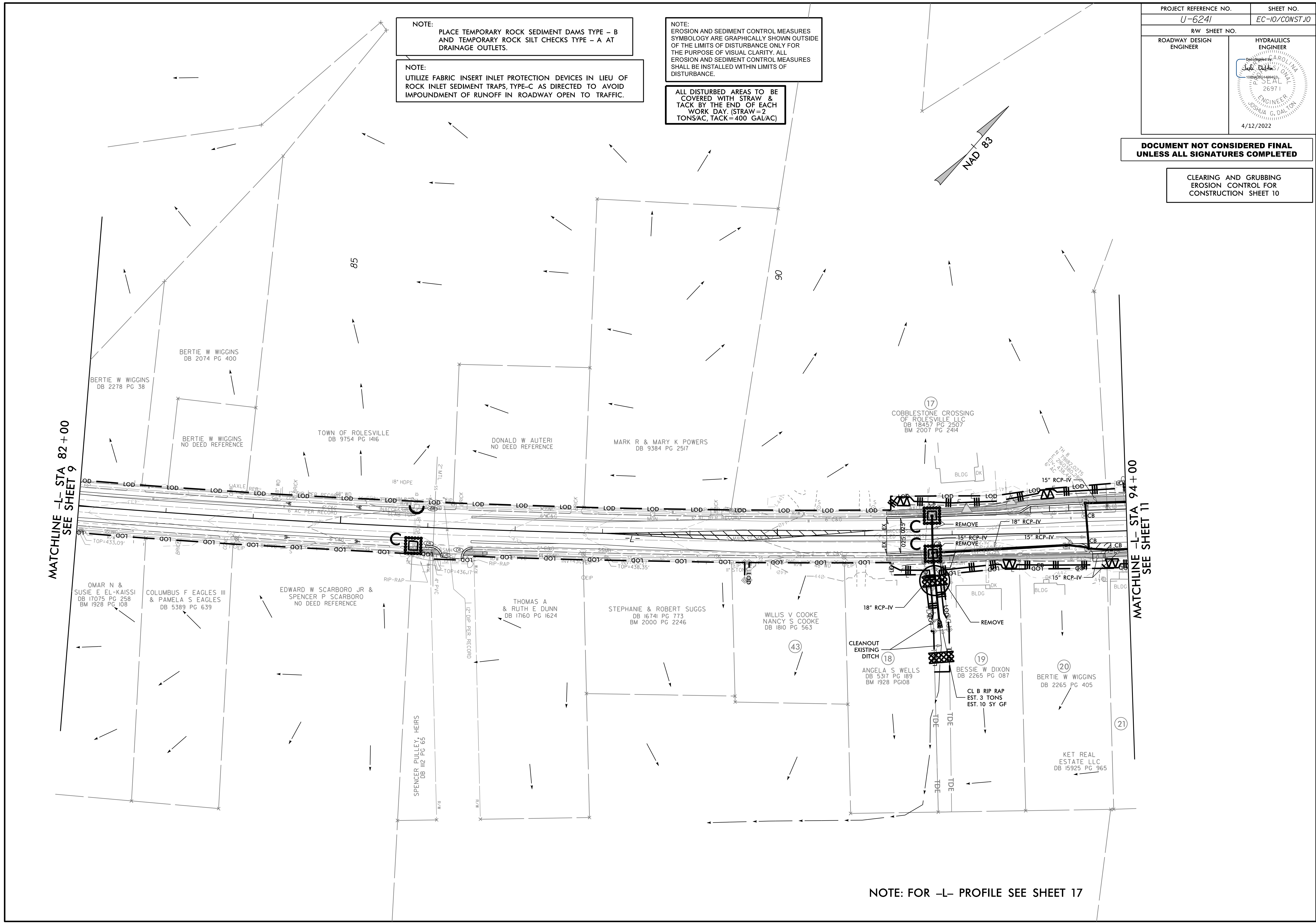
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 10

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
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MATCHLINE -L- STA 82+00
SEE SHEET 9

MATCHLINE -L- STA 94+00
SEE SHEET 11

NOTE: FOR -L- PROFILE SEE SHEET 17

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

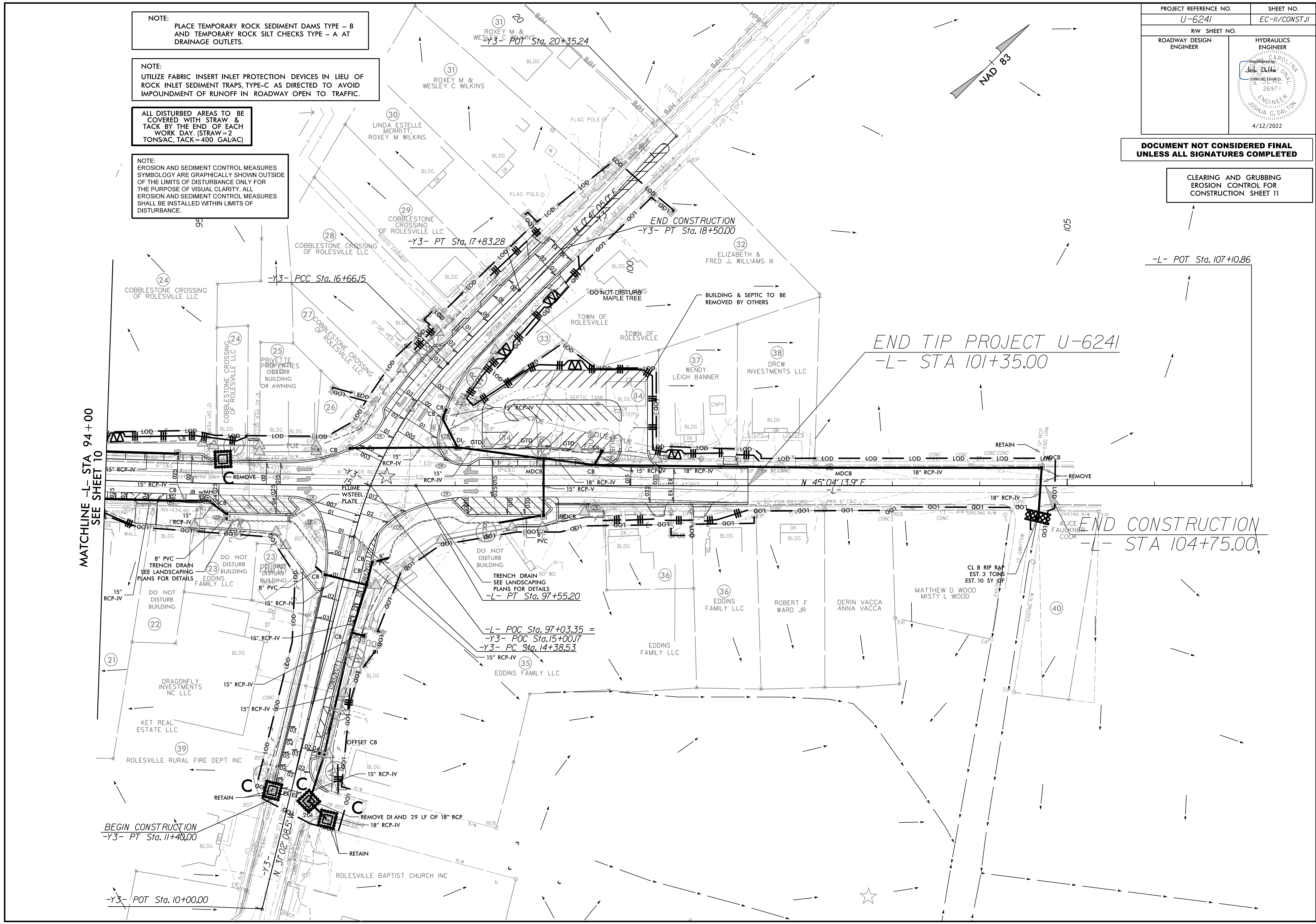
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PROJECT REFERENCE NO. U-6241	SHEET NO. EC-II/CONST/II
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 11



MATCHLINE -L- STA 94+00
SEE SHEET 10

END TIP PROJECT U-6241
-L- STA 101+35.00

END CONSTRUCTION
-L- STA 104+75.00

BEGIN CONSTRUCTION
-Y3- PT Sta. 11+40.00

-L- POC Sta. 97+03.35 =
-Y3- POC Sta. 15+00.17
-Y3- PC Sta. 14+38.53

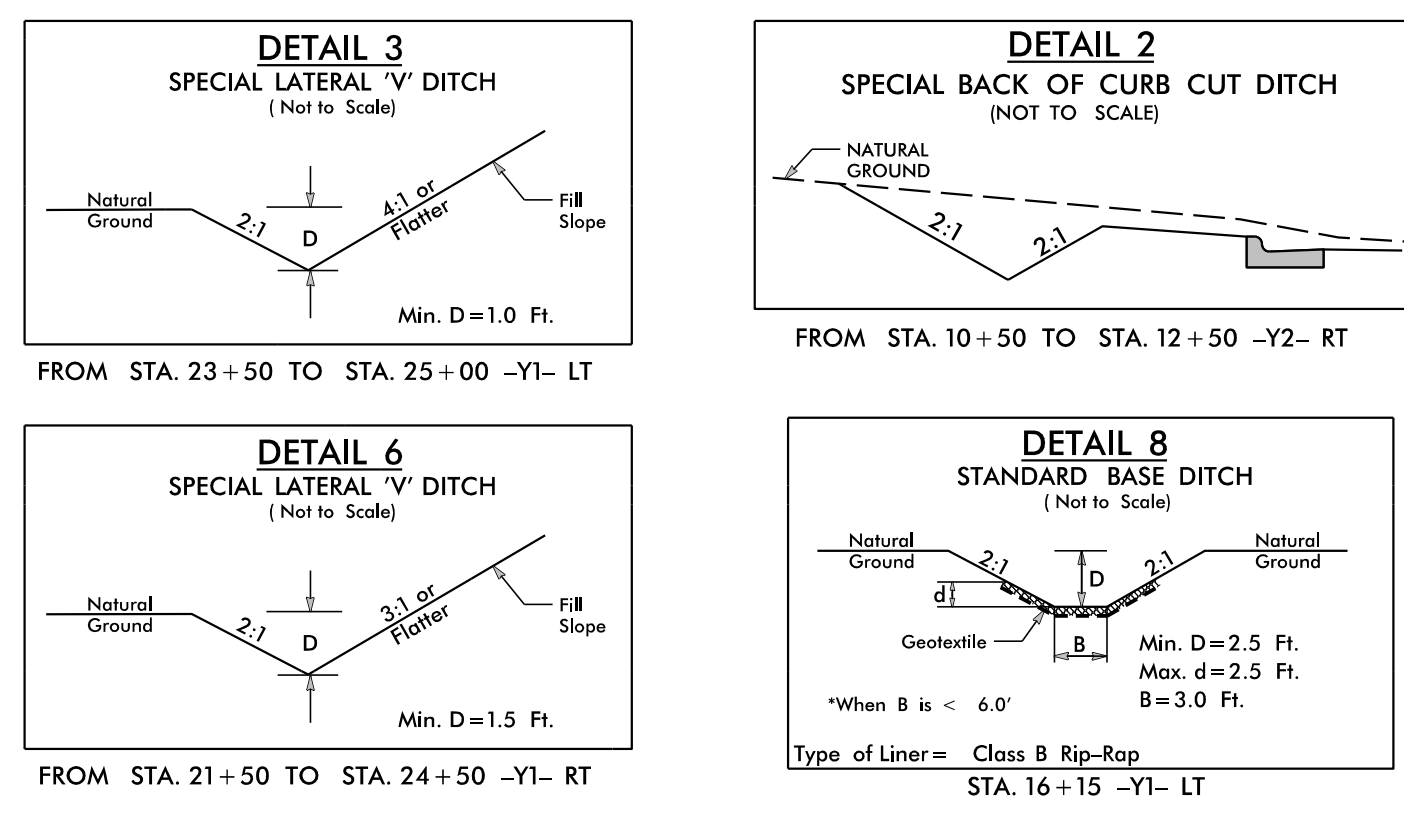
-L- POT Sta. 107+10.86

-Y3- POT Sta. 10+00.00

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-12/CONST J2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

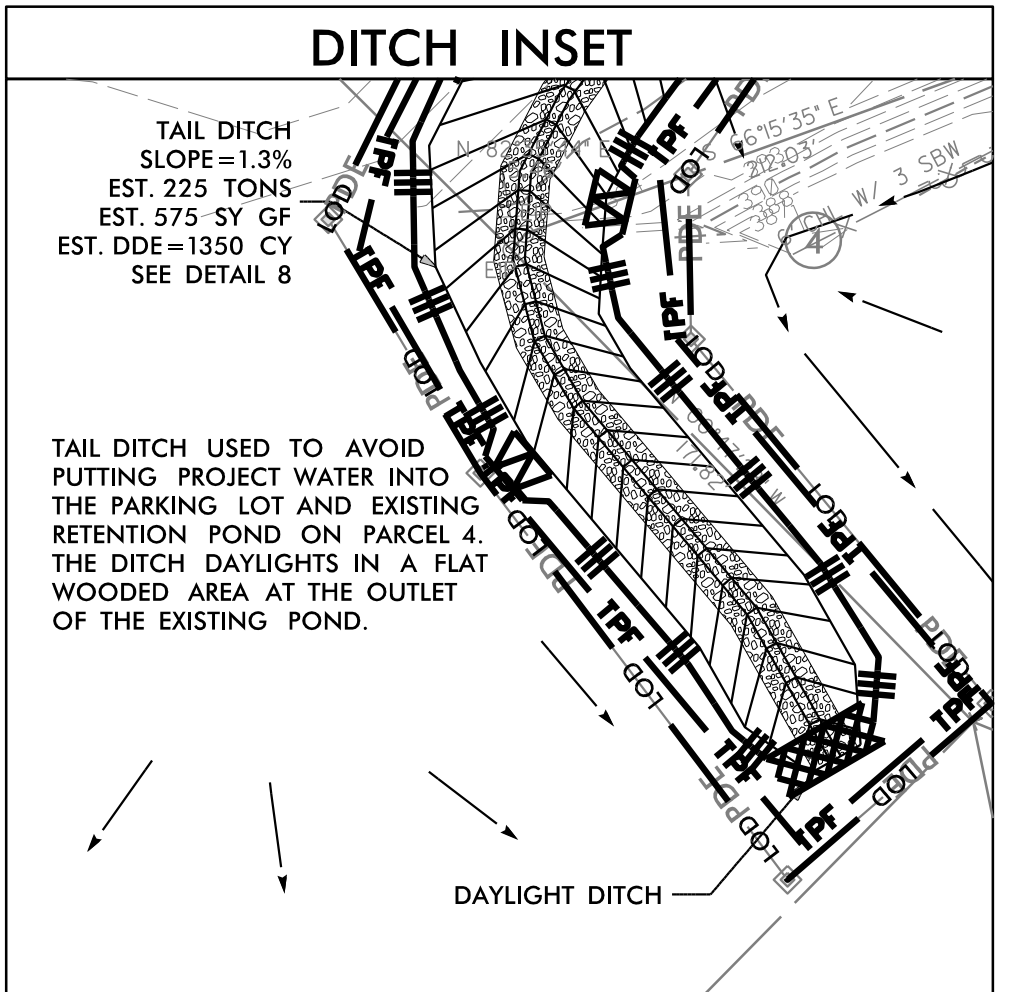
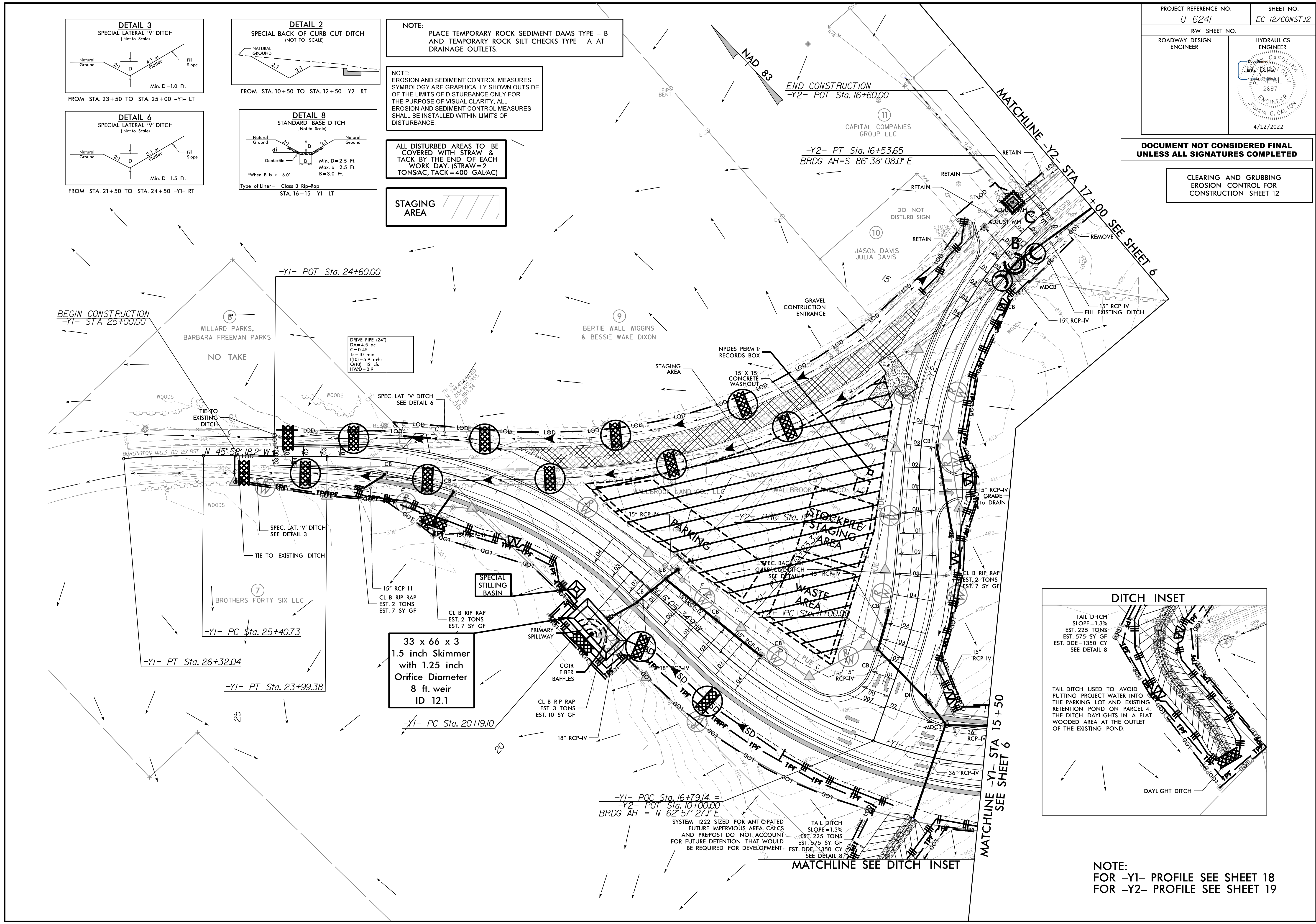
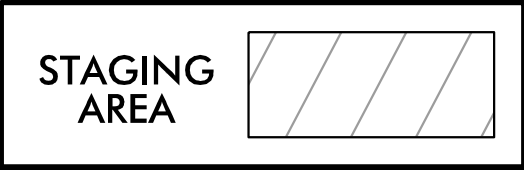
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 12



NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

NOTE: EROSION AND SEDIMENT CONTROL MEASURES SYMBOLGY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONSAC, TACK=400 GALAC)



NOTE: FOR -Y1- PROFILE SEE SHEET 18 FOR -Y2- PROFILE SEE SHEET 19

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-13/CONST13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 13

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES SYMBOLOGY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

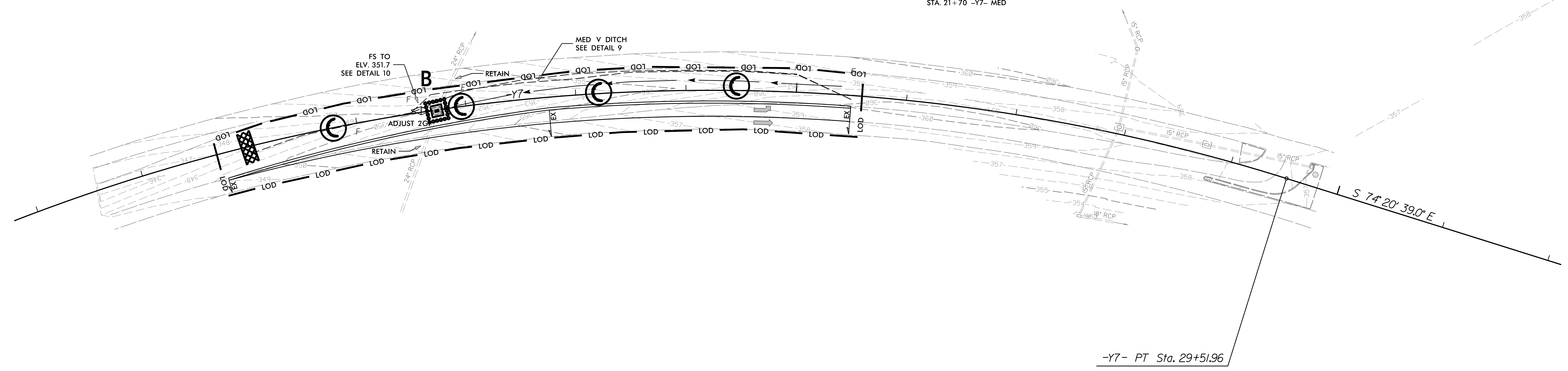
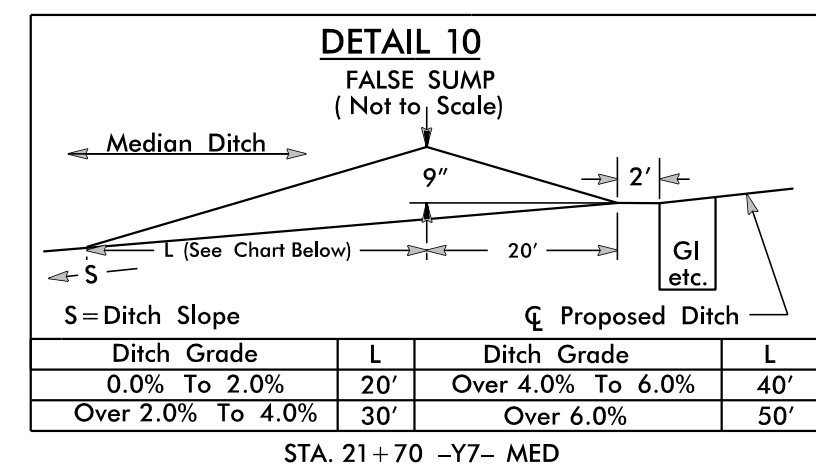
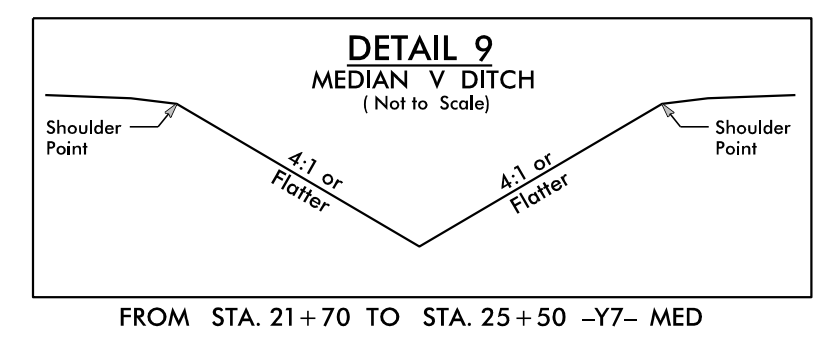
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

25

20

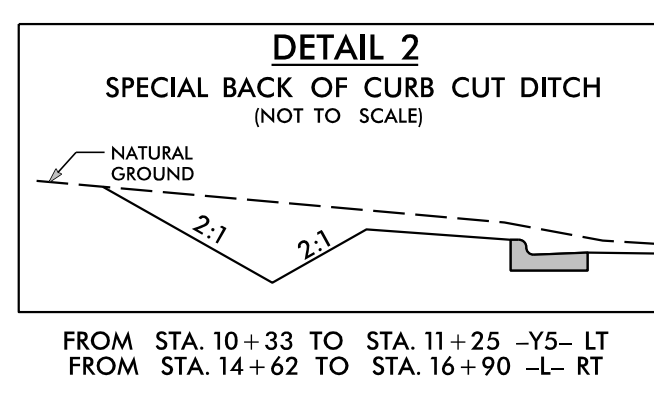
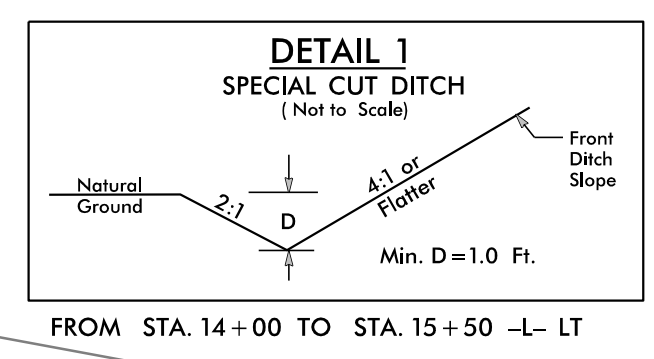
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PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-14/CONST.04</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

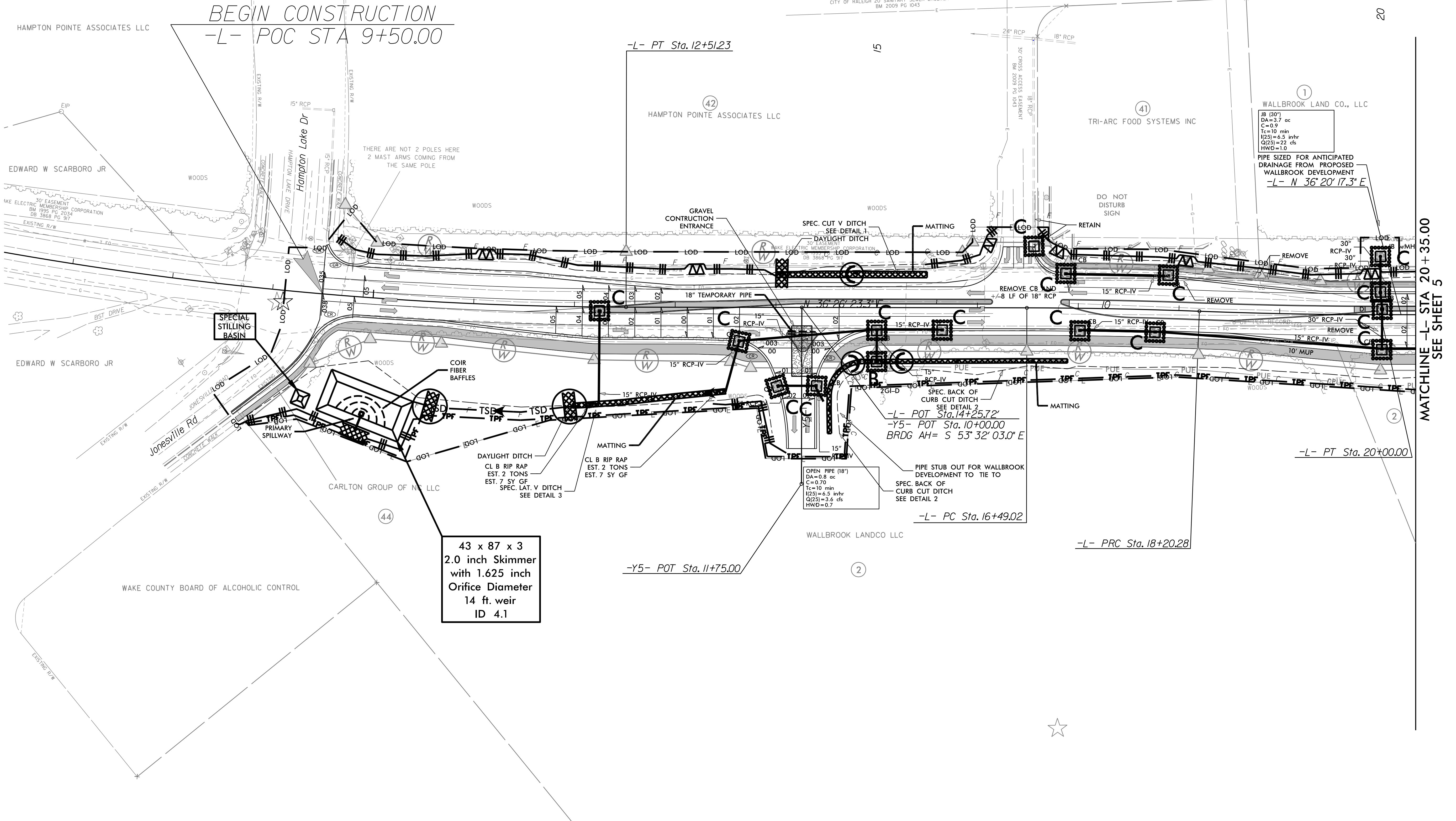
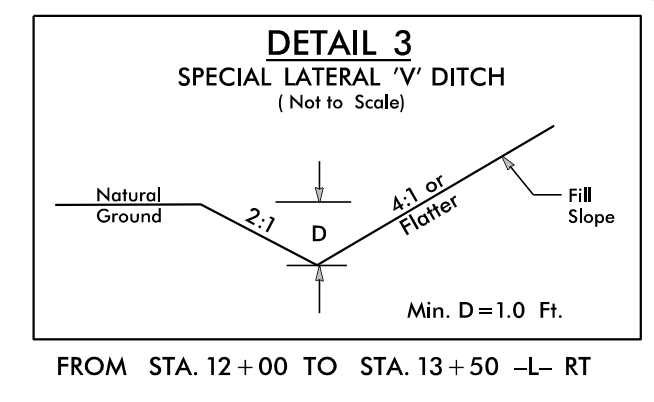


**INSTALL MATTING FOR EROSION CONTROL
IN THE PROPOSED DITCH LINE.**
 STA. 12+00 TO STA. 13+50 -L- RT (95 SY)
 STA. 14+00 TO STA. 15+50 -L- LT (105 SY)
 STA. 14+62 TO STA. 16+90 -L- RT (120 SY)
 STA. 10+33 TO STA. 11+25 -Y5- RT (35 SY)

NOTE:
 UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
 ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
 IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
 EROSION AND SEDIMENT CONTROL MEASURES
 SYMBOLS ARE GRAPHICALLY SHOWN OUTSIDE
 OF THE LIMITS OF DISTURBANCE ONLY FOR
 THE PURPOSE OF VISUAL CLARITY. ALL
 EROSION AND SEDIMENT CONTROL MEASURES
 SHALL BE INSTALLED WITHIN LIMITS OF
 DISTURBANCE.

**ALL DISTURBED AREAS TO BE
 COVERED WITH STRAW &
 TACK BY THE END OF EACH
 WORK DAY. (STRAW=2
 TONS/AC, TACK=400 GAL/AC)**



PIPE SIZED FOR ANTICIPATED
 DRAINAGE FROM PROPOSED
 WALLBROOK DEVELOPMENT
 -L- N 36° 20' 17.3" E

43 x 87 x 3
 2.0 inch Skimmer
 with 1.625 inch
 Orifice Diameter
 14 ft. weir
 ID 4.1

MATCHLINE -L- STA 20 + 35.00
SEE SHEET 5

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-15/CONST.05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 05

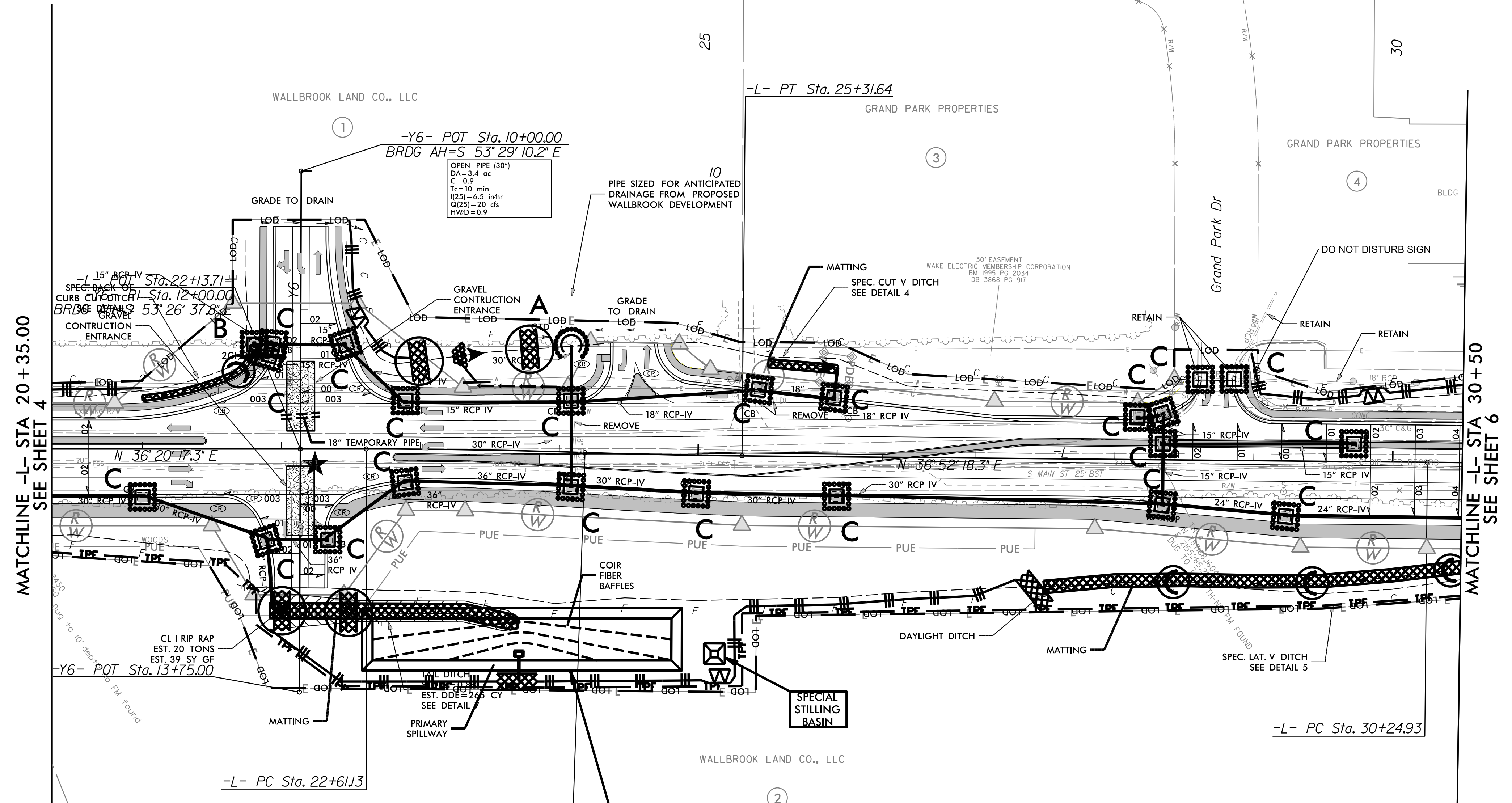
NOTE:
EROSION AND SEDIMENT CONTROL MEASURES SYMBOLICALLY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
STA. 21+00 TO STA. 21+54 -L- LT (30 SY)
STA. 25+50 TO STA. 26+00 -L- LT (55 SY)
STA. 27+50 TO STA. 30+50 -L- LT (315 SY)
STA. 11+25 TO STA. 11+67 -L- LT (20 SY)
STA. 13+00 -Y6- RT (240 SY)

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 23+40 to Sta. 24+00 -L- LT

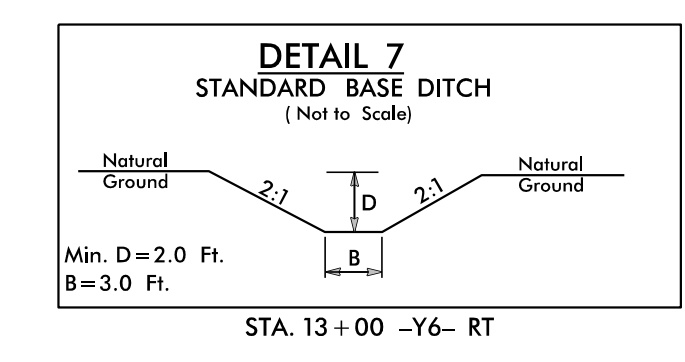
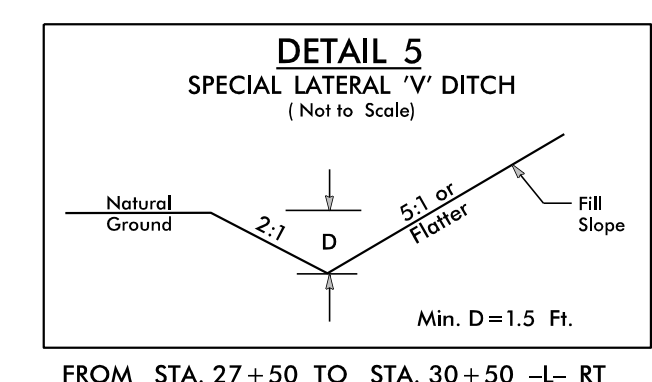
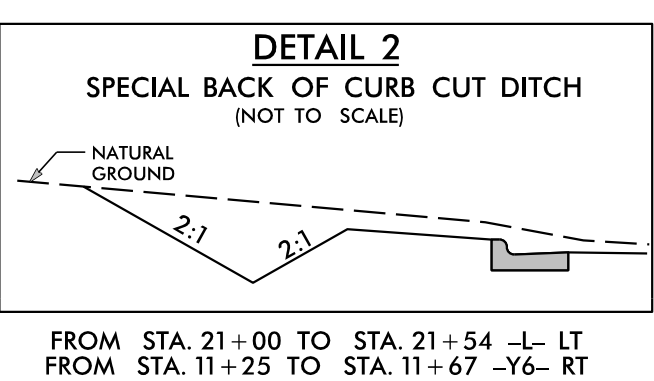
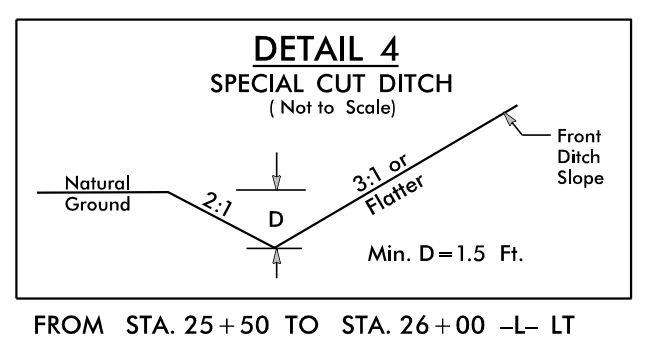


MATCHLINE -L- STA 20 + 35.00
SEE SHEET 4

MATCHLINE -L- STA 30 + 50
SEE SHEET 6

OUTFALL LOCATION WAS COORDINATED WITH THE DESIGNERS FOR WALLBROOK TO ALLOW THEM TO PICK UP 0523 AND TAKE THE SYSTEM TO THEIR PROPOSED DETENTION POND. THE SYSTEM WAS SIZED FOR ANTICIPATED FUTURE IMPERVIOUS AREA. CALCS AND PREPOST DO NOT ACCOUNT FOR FUTURE DETENTION THAT WOULD BE REQUIRED FOR DEVELOPMENT.

45 x 230 x 3
3.0 inch Skimmer
with 2.75 inch
Orifice Diameter
19 ft. weir
ID 5.1

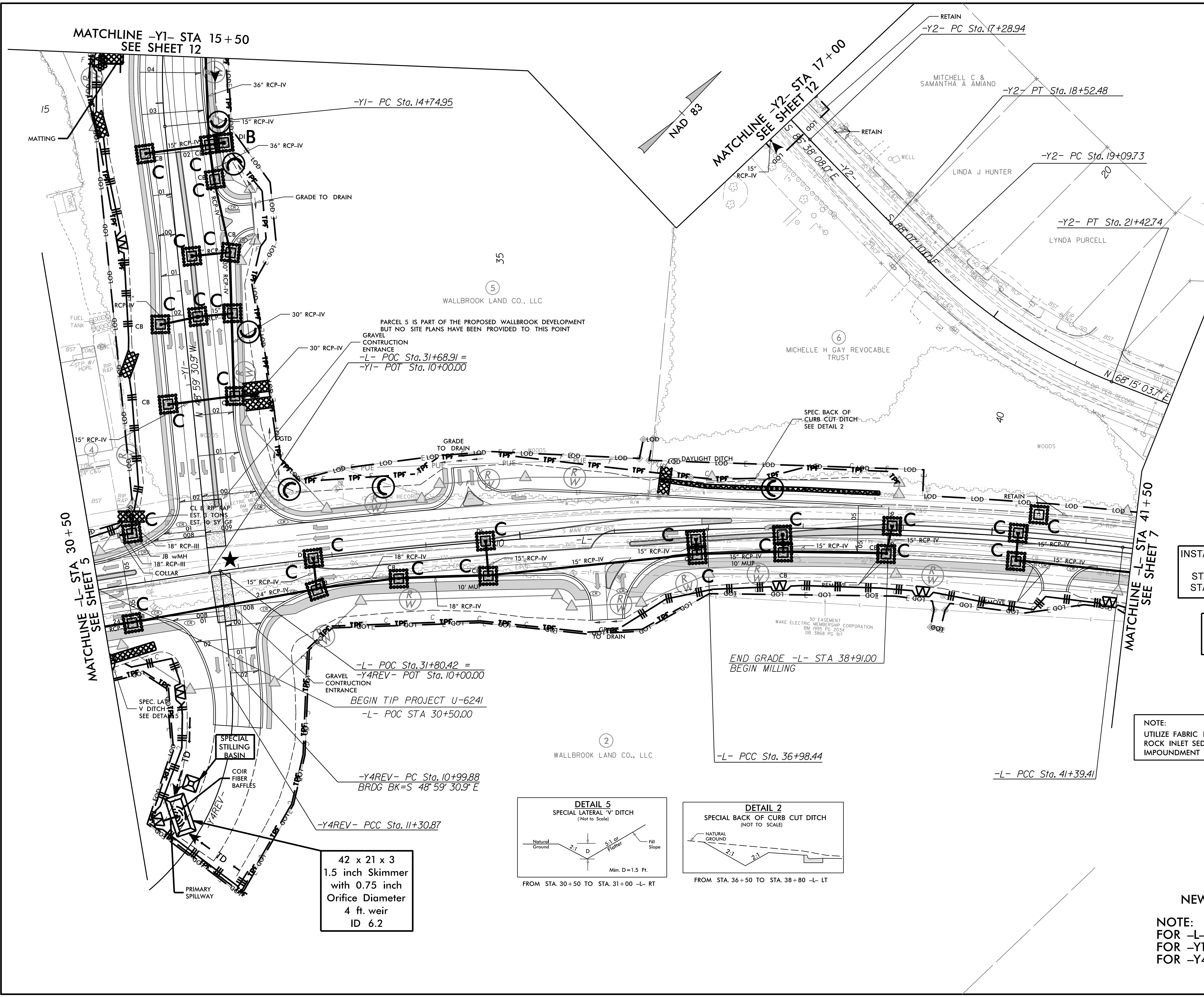


★ NEW SIGNAL
NOTE: FOR -L- PROFILE SEE SHEET 15
NOTE: FOR -Y6- PROFILE SEE SHEET 20

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-16/CONST.06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**DOCUMENT NOT CONSIDERED FINAL
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FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 06



INSTALL MATTING FOR EROSION CONTROL
IN THE PROPOSED DITCH LINE.
STA. 30+50 TO STA. 31+00 -L- LT (55 SY)
STA. 36+50 TO STA. 38+80 -L- LT (120 SY)

Place Matting for Erosion Control
on Slope as Work Allows.
Sta. 15+40 to Sta. 15+50 -Y1- LT

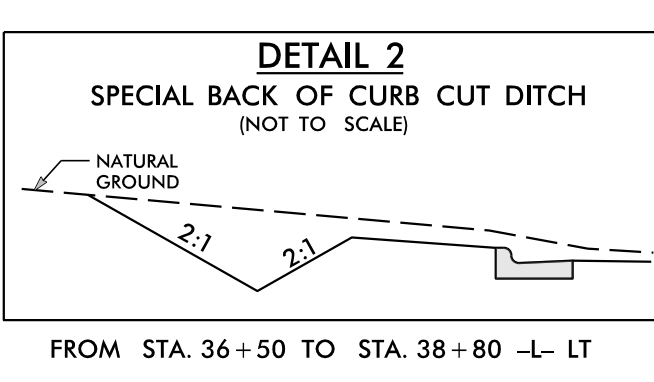
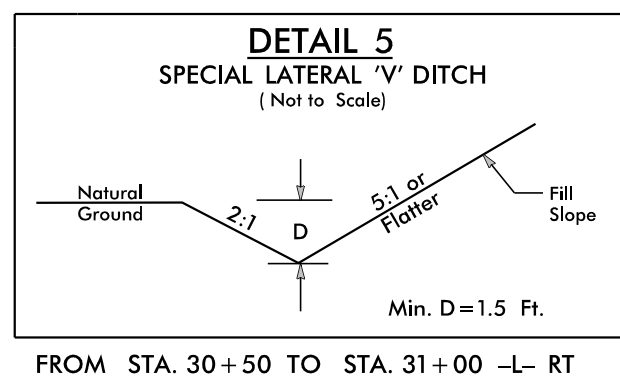
ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONSAC, TACK=400 GAL/AC)

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES
SYMBOLS ARE GRAPHICALLY SHOWN OUTSIDE
OF THE LIMITS OF DISTURBANCE ONLY FOR
THE PURPOSE OF VISUAL CLARITY. ALL
EROSION AND SEDIMENT CONTROL MEASURES
SHALL BE INSTALLED WITHIN LIMITS OF
DISTURBANCE.

NEW SIGNAL
NOTE:
FOR -L- PROFILE SEE SHEET 15
FOR -Y1- PROFILE SEE SHEET 18
FOR -Y4- PROFILE SEE SHEET 20

42 x 21 x 3
1.5 inch Skimmer
with 0.75 inch
Orifice Diameter
4 ft. weir
ID 6.2



END GRADE -L- STA 38+91.00
BEGIN MILLING

-L- PCC Sta. 36+98.44

-L- PCC Sta. 41+39.41

PARCEL 5 IS PART OF THE PROPOSED WALLBROOK DEVELOPMENT
BUT NO SITE PLANS HAVE BEEN PROVIDED TO THIS POINT

GRAVEL
CONSTRUCTION
ENTRANCE
-L- POC Sta. 31+68.91 =
-Y1- POT Sta. 10+00.00

-L- POC Sta. 31+80.42 =
-Y4REV- POT Sta. 10+00.00

GRAVEL
CONSTRUCTION
ENTRANCE

BEGIN TIP PROJECT U-6241
-L- POC STA 30+50.00

-Y4REV- PC Sta. 10+99.88
BRDG BK=S 48° 59' 30.9" E

-Y4REV- PCC Sta. 11+30.87

MATCHLINE -Y1- STA 15+50
SEE SHEET 12

MATCHLINE -Y2- STA 17+00
SEE SHEET 12

MATCHLINE -L- STA 30+50
SEE SHEET 5

MATCHLINE -L- STA 41+50
SEE SHEET 7

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

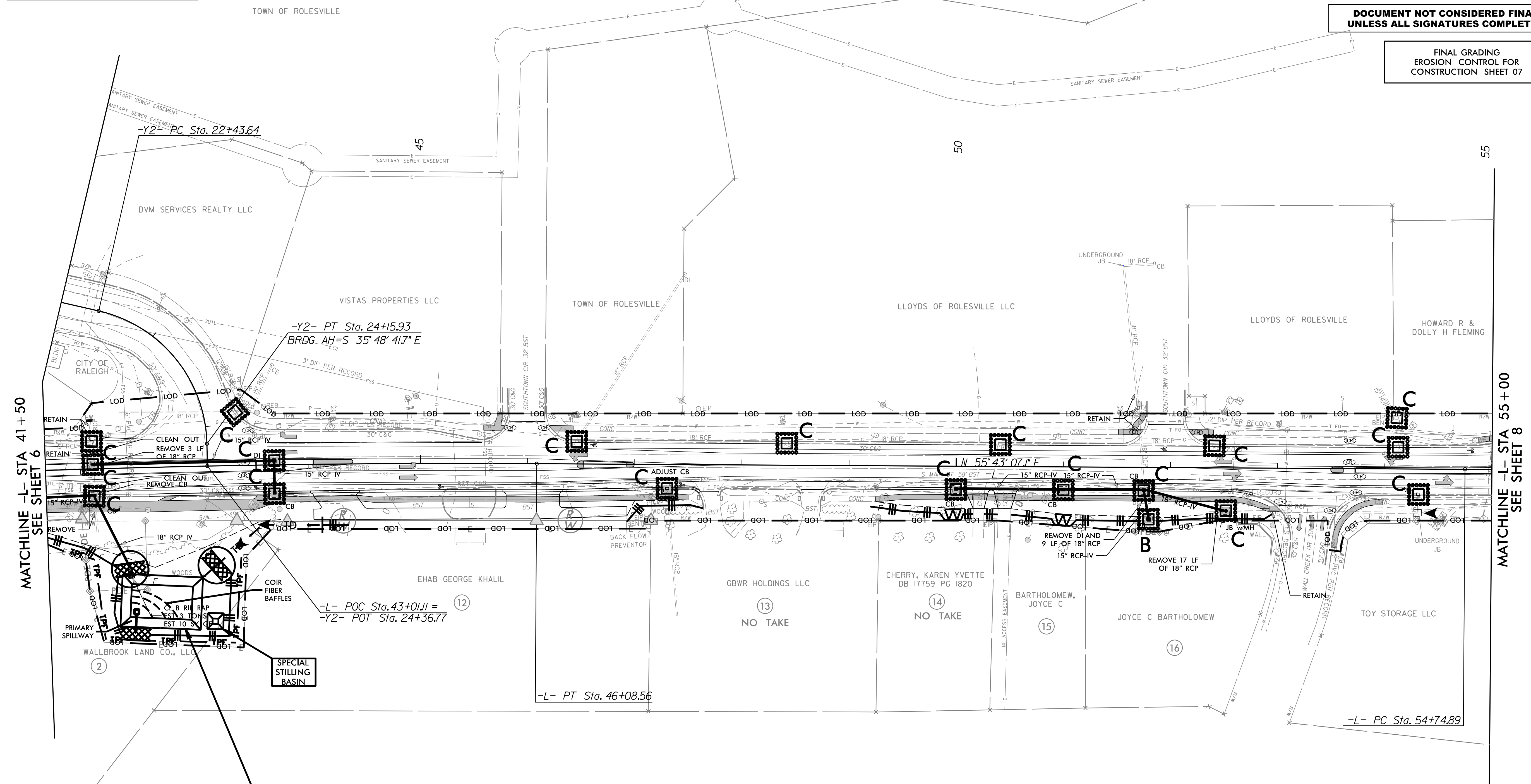
NOTE:
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ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)

PROJECT REFERENCE NO. U-6241	SHEET NO. EC-17/CONST.07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 07

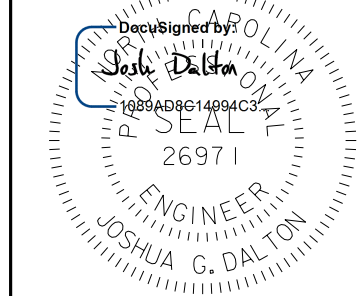


MATCHLINE -L- STA 41+50
SEE SHEET 6

MATCHLINE -L- STA 55+00
SEE SHEET 8

49 x 75 x 3
2.0 inch Skimmer
with 1.625 inch
Orifice Diameter
19 ft. weir
ID 7.1

NOTE: FOR -L- PROFILE SEE SHEET 15 & 16

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-18/CONST.08</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
	4/12/2022

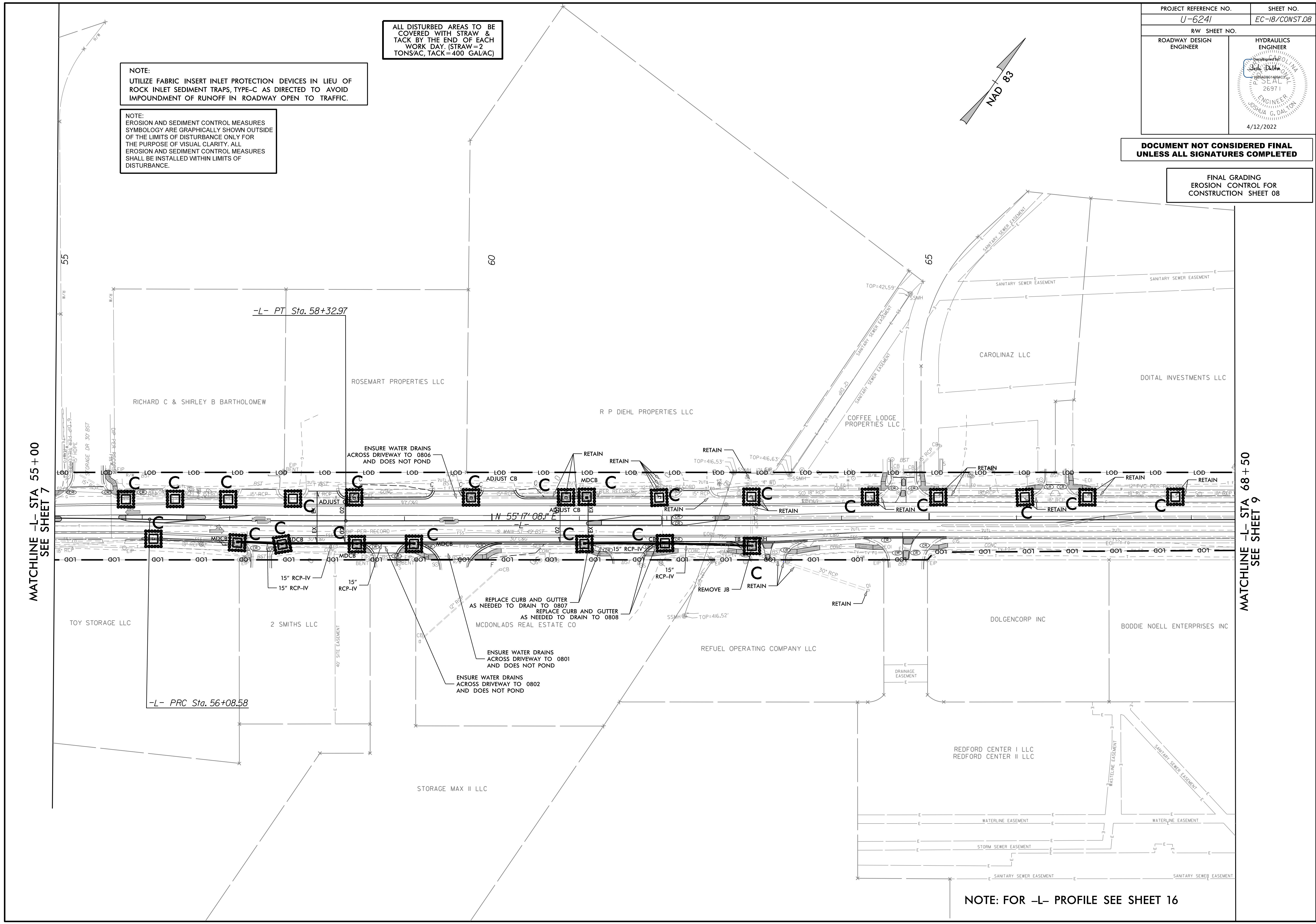
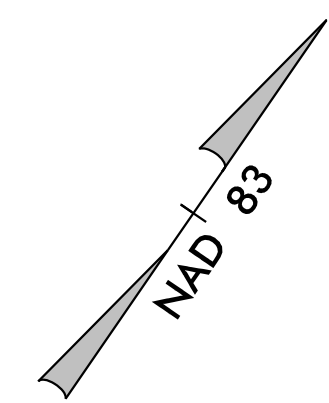
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 08

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
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SHALL BE INSTALLED WITHIN LIMITS OF
DISTURBANCE.

ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONSAC, TACK=400 GALAC)



MATCHLINE -L- STA 55+00
SEE SHEET 7

MATCHLINE -L- STA 68+50
SEE SHEET 9

NOTE: FOR -L- PROFILE SEE SHEET 16

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-19/CONST.09</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	4/12/2022

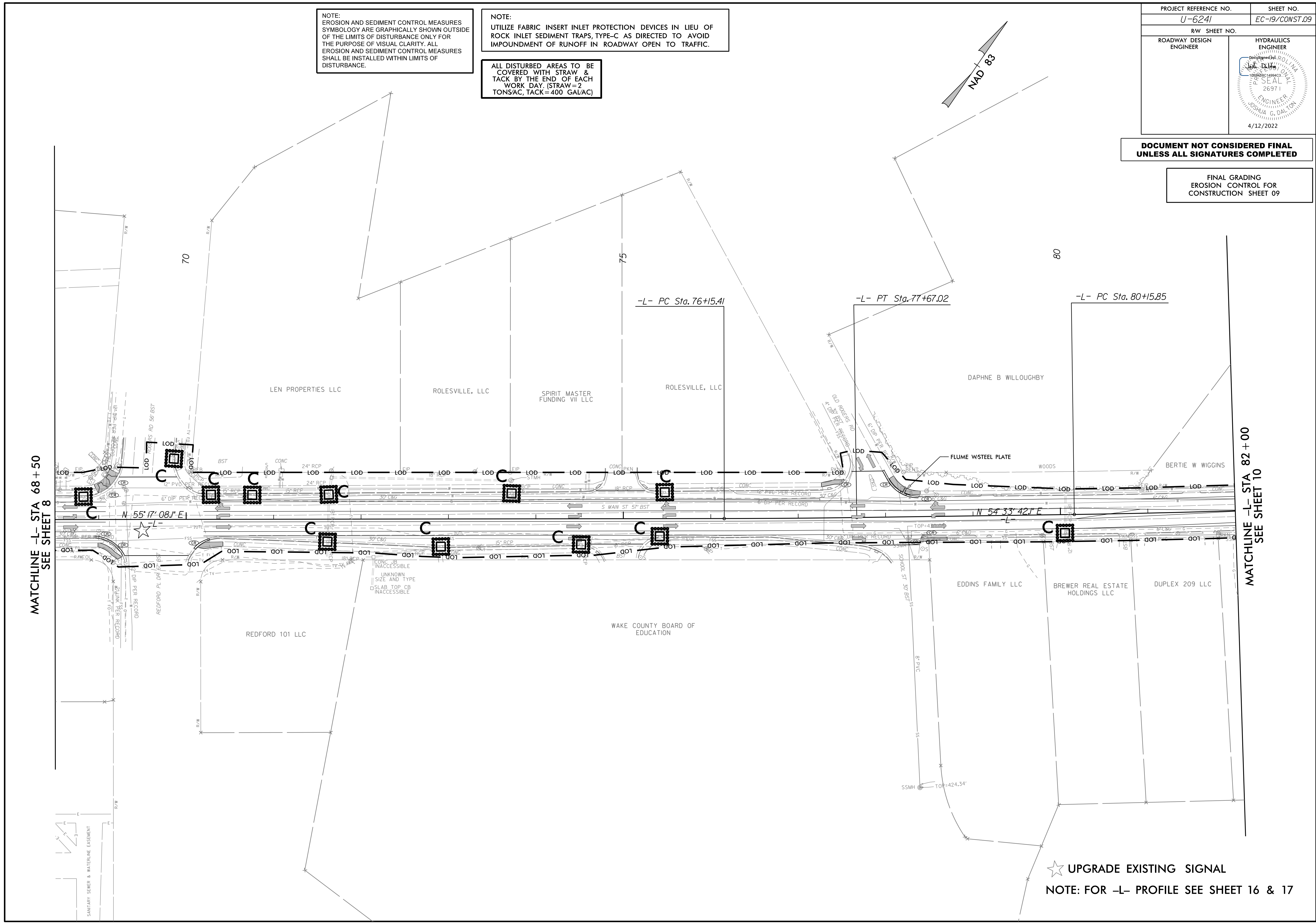
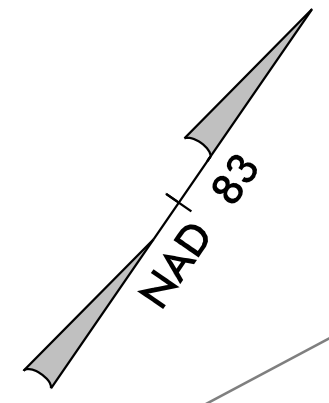
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 09

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES SYMBOLOLOGY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)



MATCHLINE -L- STA 68+50
SEE SHEET 8

MATCHLINE -L- STA 82+00
SEE SHEET 10

★ UPGRADE EXISTING SIGNAL
NOTE: FOR -L- PROFILE SEE SHEET 16 & 17

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-20/CONST.10</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

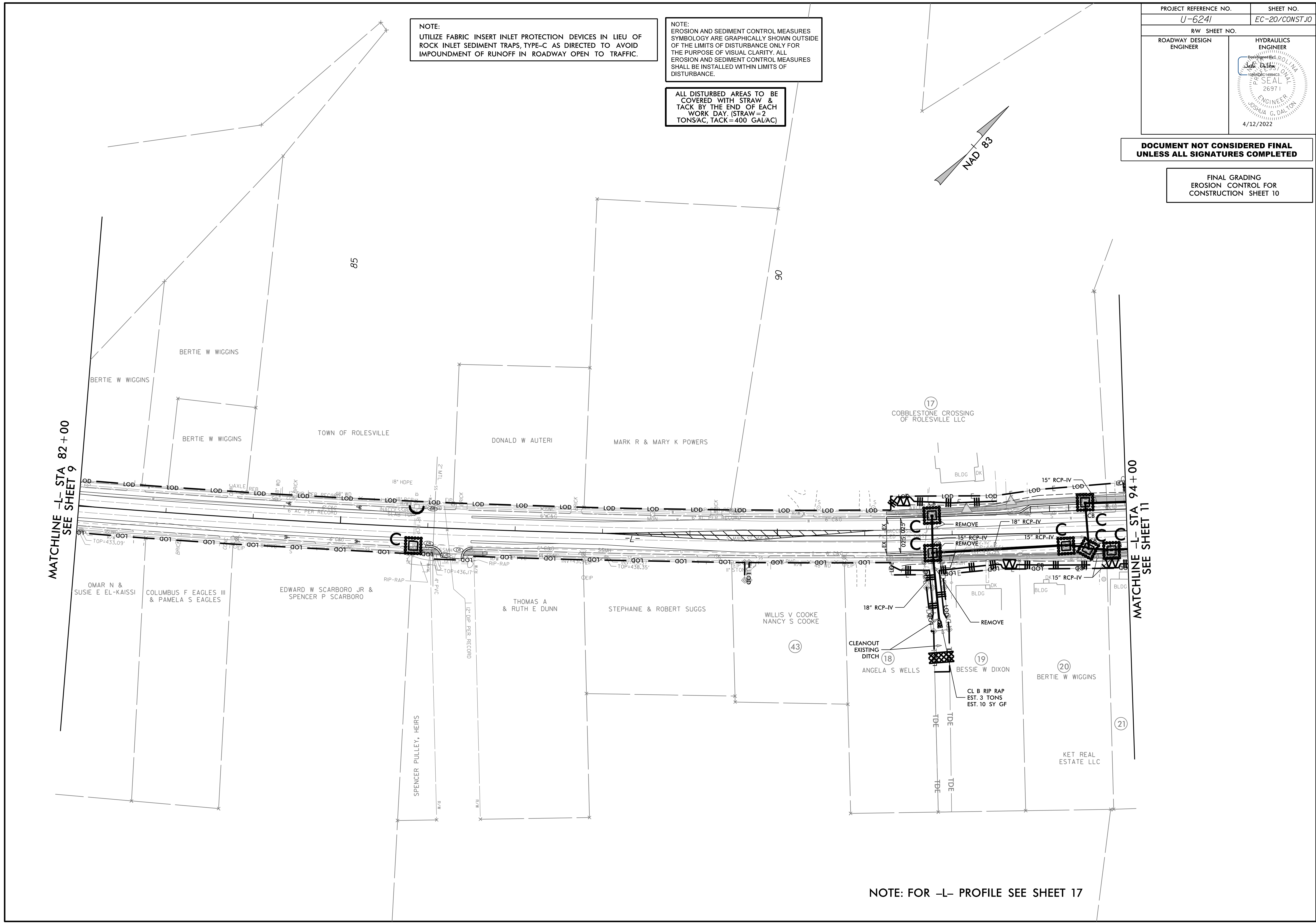
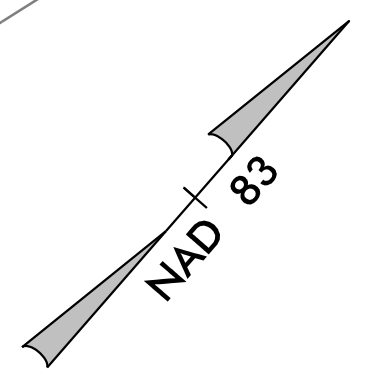
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 10

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES SYMBOLOGY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW=2 TONS/AC, TACK=400 GAL/AC)



NOTE: FOR -L- PROFILE SEE SHEET 17

NOTE:
UTILIZE FABRIC INSERT INLET PROTECTION DEVICES IN LIEU OF
ROCK INLET SEDIMENT TRAPS, TYPE-C AS DIRECTED TO AVOID
IMPOUNDMENT OF RUNOFF IN ROADWAY OPEN TO TRAFFIC.

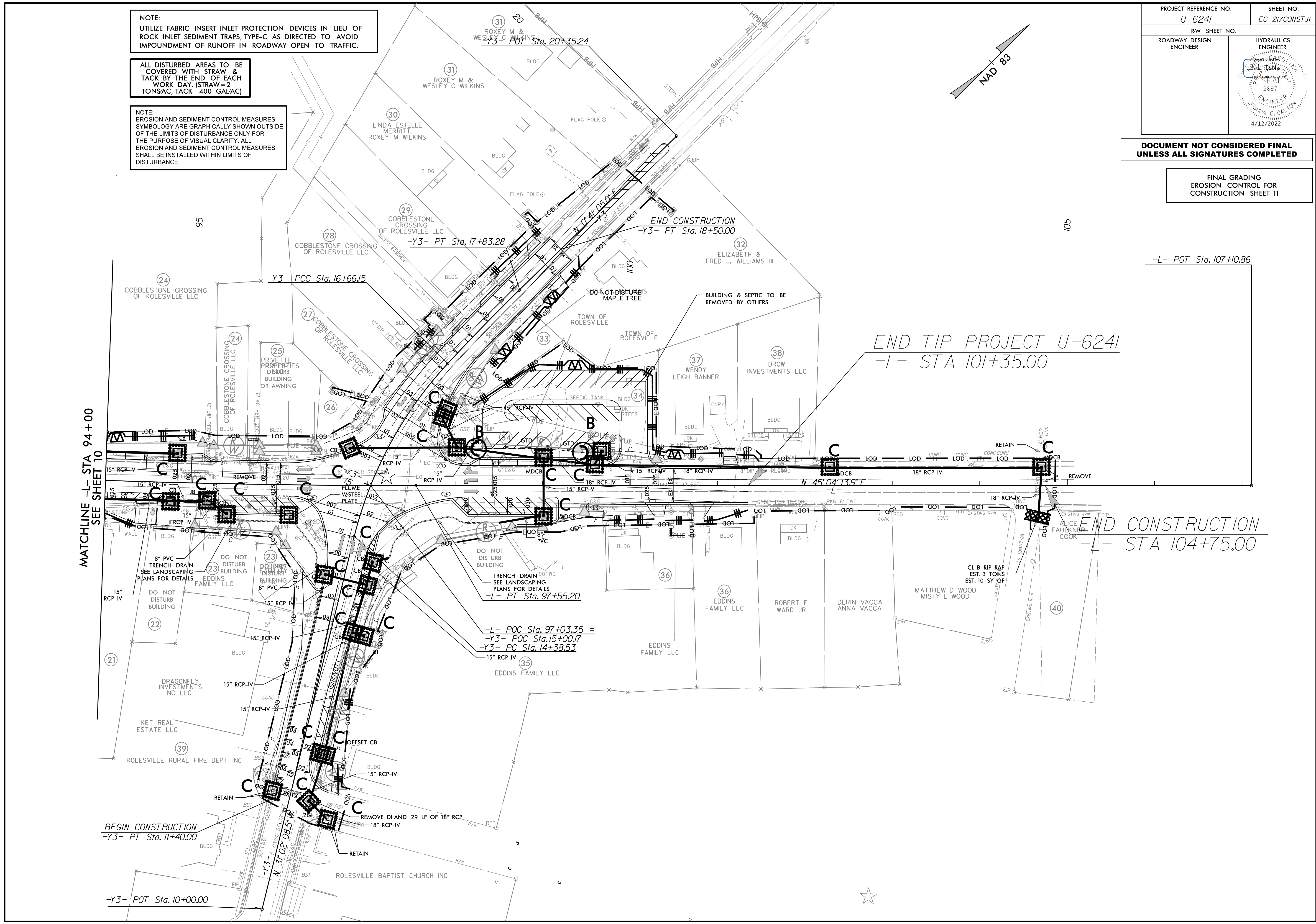
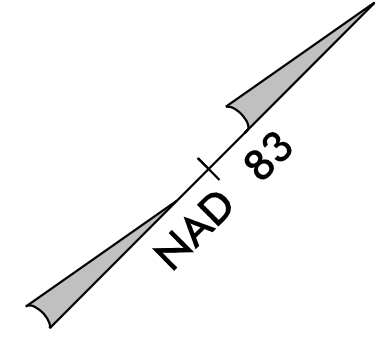
ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONSAC, TACK=400 GAL/AC)

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES
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DISTURBANCE.

PROJECT REFERENCE NO. <i>U-6241</i>	SHEET NO. <i>EC-21/CONST.11</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

**DOCUMENT NOT CONSIDERED FINAL
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FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 11



MATCHLINE -L- STA 94+00
SEE SHEET 10

END TIP PROJECT U-6241
-L- STA 101+35.00

END CONSTRUCTION
-L- STA 104+75.00

BEGIN CONSTRUCTION
-Y3- PT Sta. 11+40.00

-Y3- POT Sta. 10+00.00

-L- POC Sta. 97+03.35 =
-Y3- POC Sta. 15+00.17
-Y3- PC Sta. 14+38.53

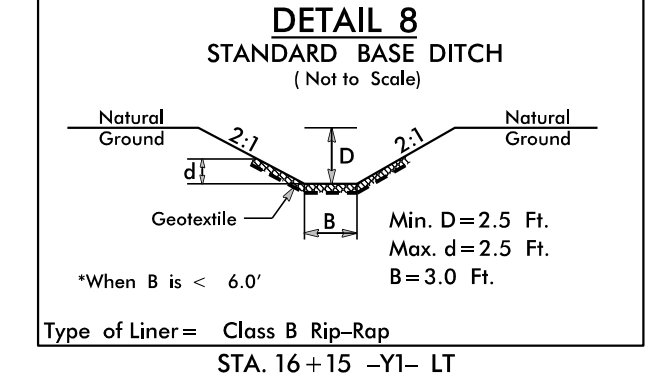
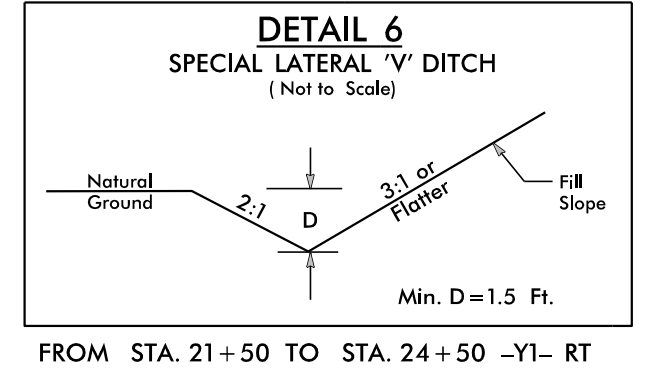
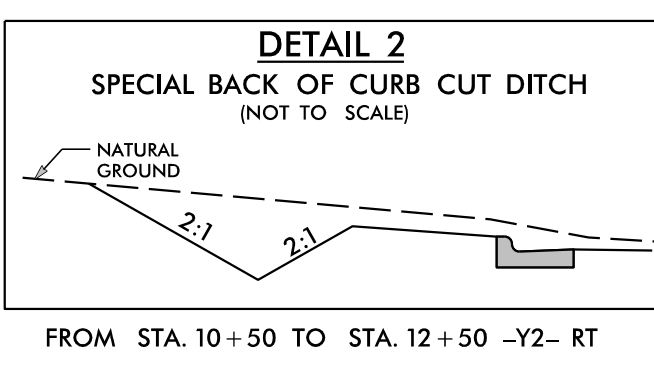
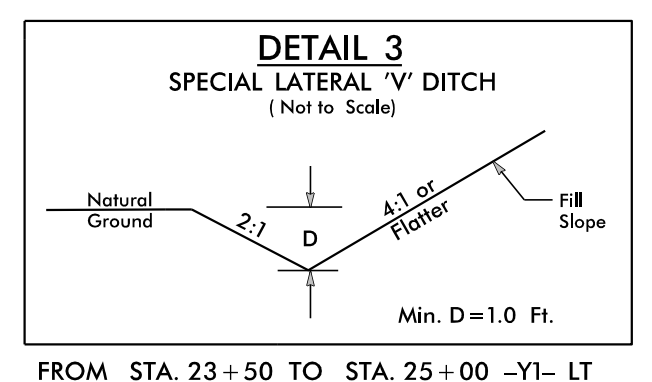
-L- POT Sta. 107+10.86



PROJECT REFERENCE NO. U-6241	SHEET NO. EC-22/CONST.12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

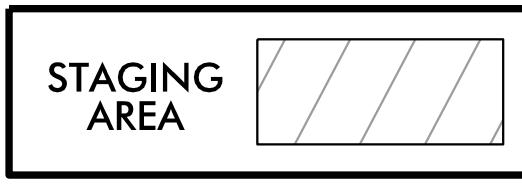
FINAL GRADING EROSION CONTROL FOR CONSTRUCTION SHEET 12



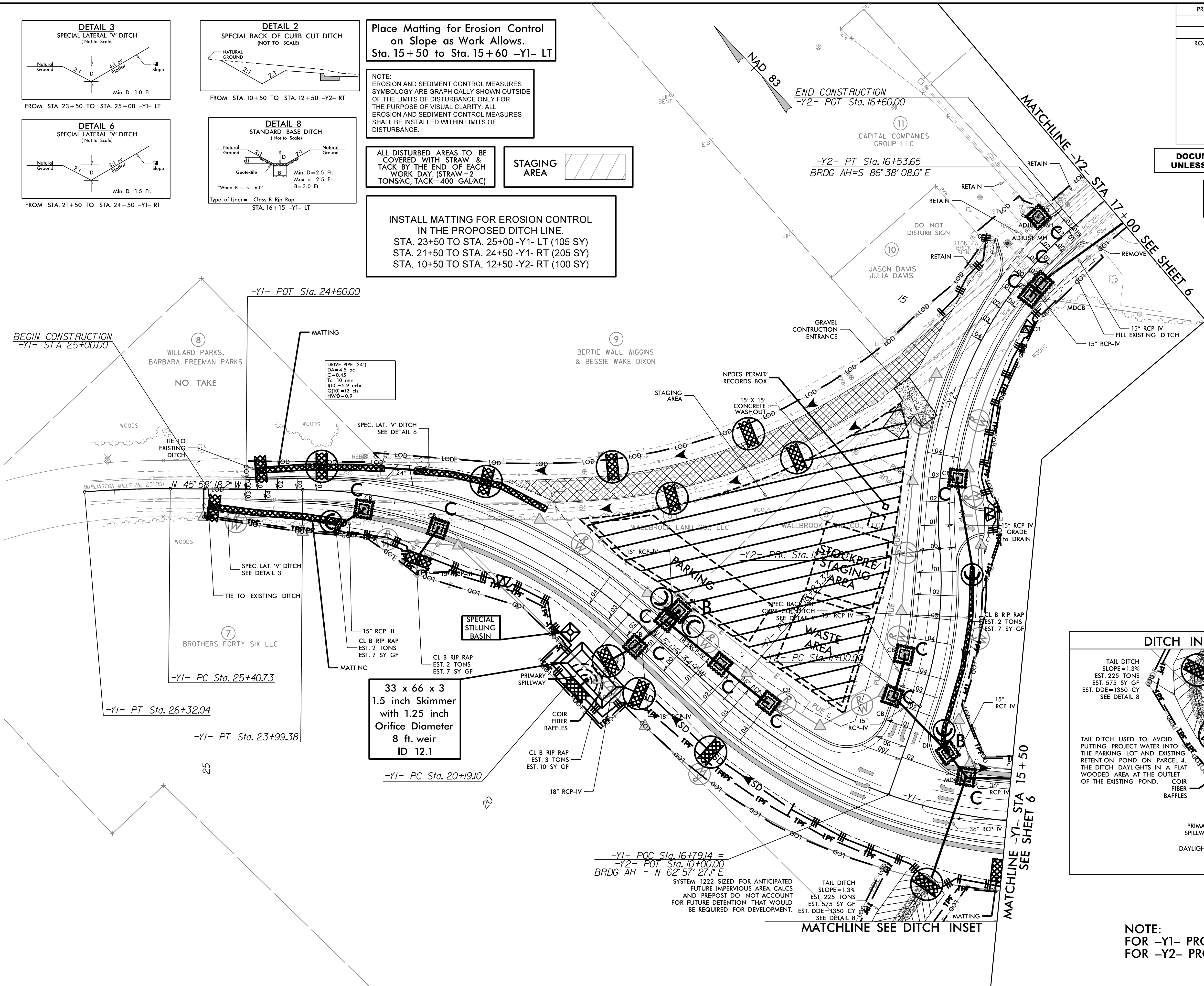
Place Matting for Erosion Control on Slope as Work Allows.
Sta. 15+50 to Sta. 15+60 -Y1- LT

NOTE: EROSION AND SEDIMENT CONTROL MEASURES SYMBOLOGY ARE GRAPHICALLY SHOWN OUTSIDE OF THE LIMITS OF DISTURBANCE ONLY FOR THE PURPOSE OF VISUAL CLARITY. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED WITHIN LIMITS OF DISTURBANCE.

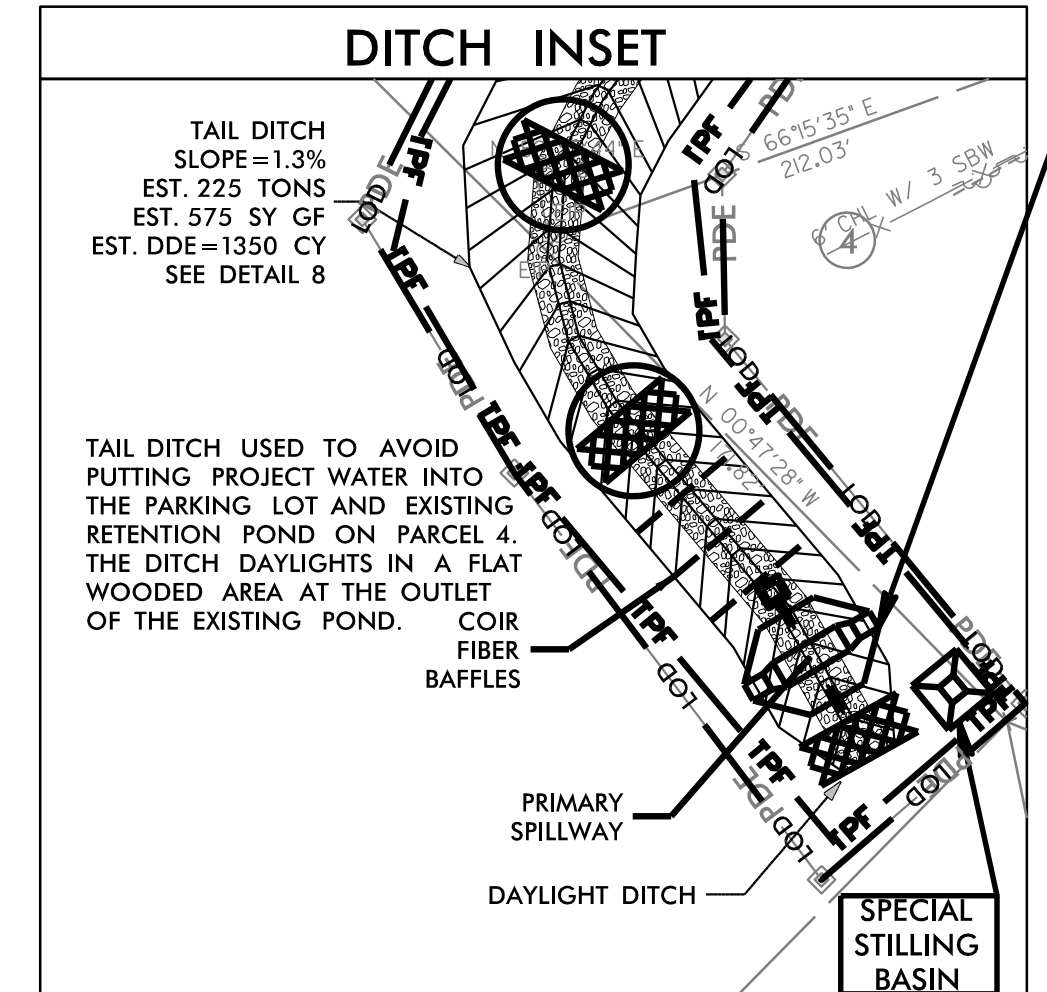
ALL DISTURBED AREAS TO BE COVERED WITH STRAW & TACK BY THE END OF EACH WORK DAY. (STRAW = 2 TONSAC, TACK = 400 GAL/AC)



INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
STA. 23+50 TO STA. 25+00 -Y1- LT (105 SY)
STA. 21+50 TO STA. 24+50 -Y1- RT (205 SY)
STA. 10+50 TO STA. 12+50 -Y2- RT (100 SY)



1.5 inch Skimmer with 0.625 inch Orifice Diameter
6 ft. weir with 2.75 ft. weir height
ID 12.2
(See Earthen Dam with Skimmer Detail)



-Y1- POC Sta. 16+79.14 =
-Y2- POT Sta. 10+00.00
BRDG AH = N 62° 57' 27" E
SYSTEM 1222 SIZED FOR ANTICIPATED FUTURE IMPERVIOUS AREA. CALCS AND PREPOST DO NOT ACCOUNT FOR FUTURE DETENTION THAT WOULD BE REQUIRED FOR DEVELOPMENT.

TAIL DITCH SLOPE = 1.3%
EST. 225 TONS
EST. 575 SY GF
EST. DDE = 1350 CY
SEE DETAIL 8

NOTE:
FOR -Y1- PROFILE SEE SHEET 18
FOR -Y2- PROFILE SEE SHEET 19

PROJECT REFERENCE NO.	SHEET NO.
U-6241	EC-23/CONST.13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 13

NOTE:
EROSION AND SEDIMENT CONTROL MEASURES
SYMBOLGY ARE GRAPHICALLY SHOWN OUTSIDE
OF THE LIMITS OF DISTURBANCE ONLY FOR
THE PURPOSE OF VISUAL CLARITY. ALL
EROSION AND SEDIMENT CONTROL MEASURES
SHALL BE INSTALLED WITHIN LIMITS OF
DISTURBANCE.

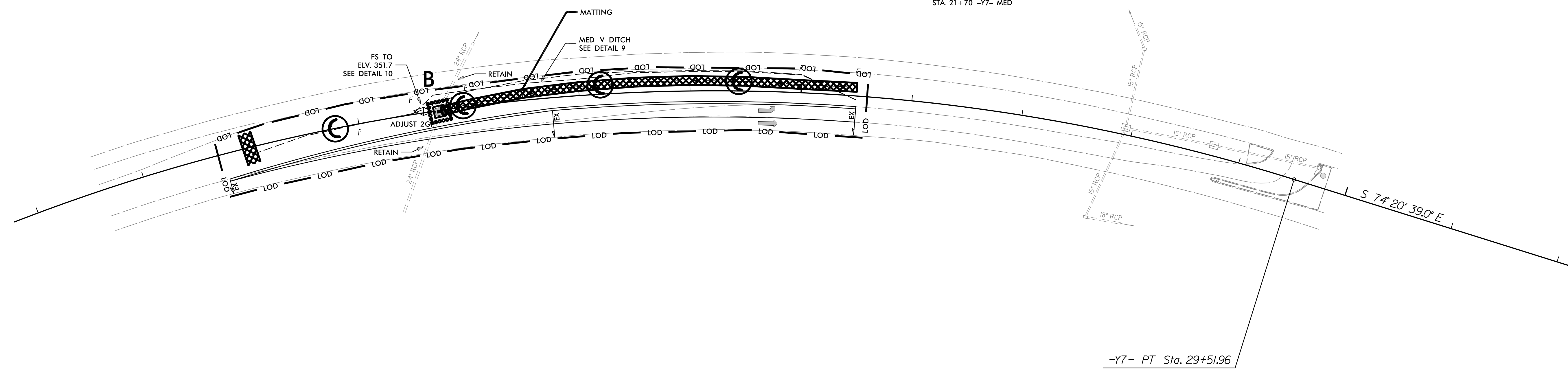
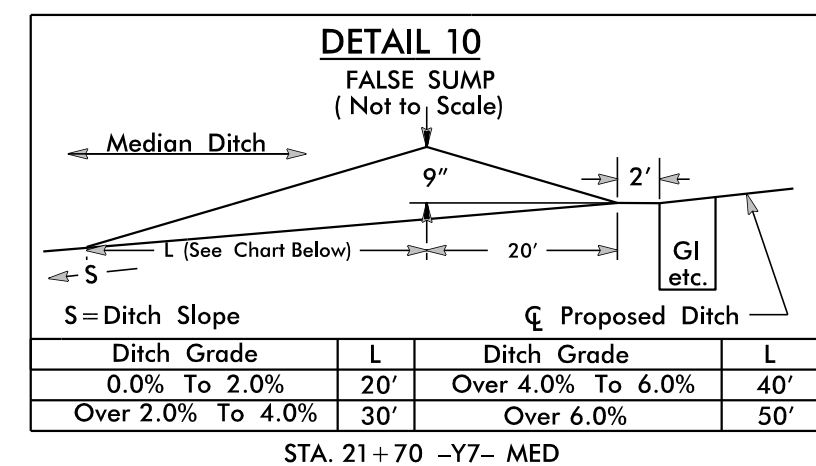
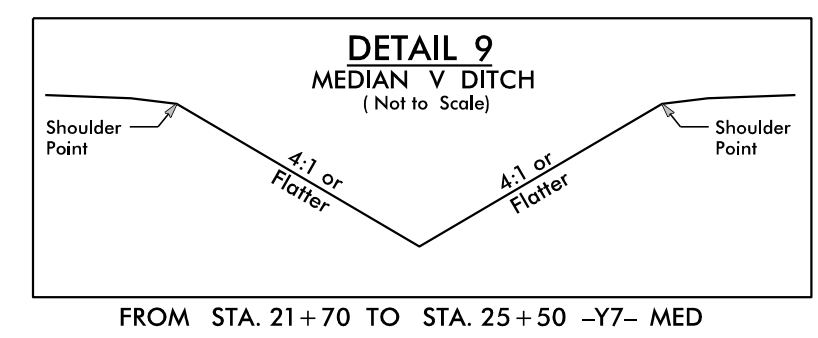
ALL DISTURBED AREAS TO BE
COVERED WITH STRAW &
TACK BY THE END OF EACH
WORK DAY. (STRAW=2
TONS/AC, TACK=400 GAL/AC)

INSTALL MATTING FOR EROSION CONTROL
IN THE PROPOSED DITCH LINE.
STA. 21+70 TO STA. 25+50 -Y5- MED (345 SY)

25

20

30



8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: US 401 BUS (MAIN STREET) FROM JONESVILLE ROAD
TO NORTH OF YOUNG STREET

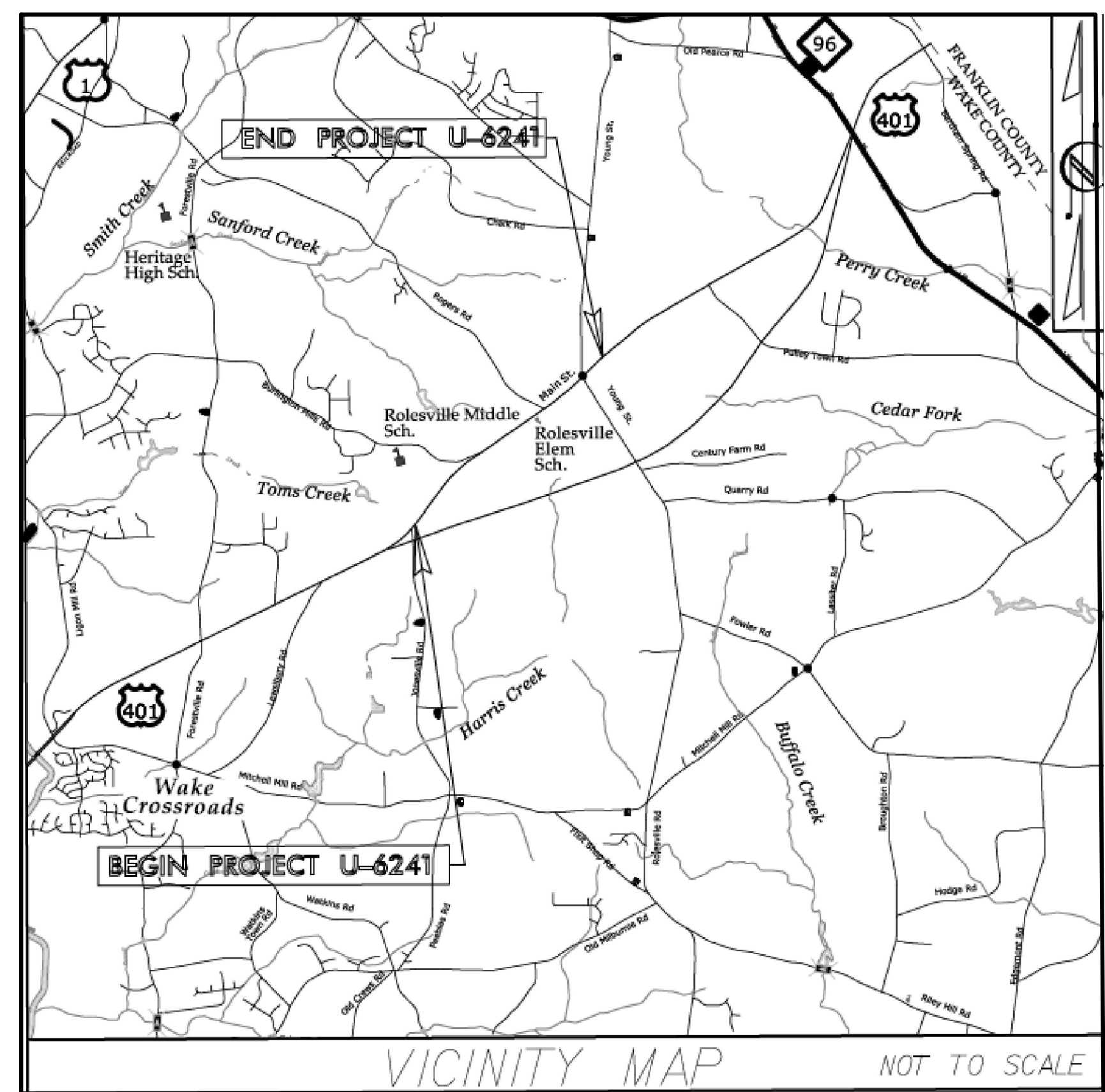
TYPE OF WORK: LANDSCAPING

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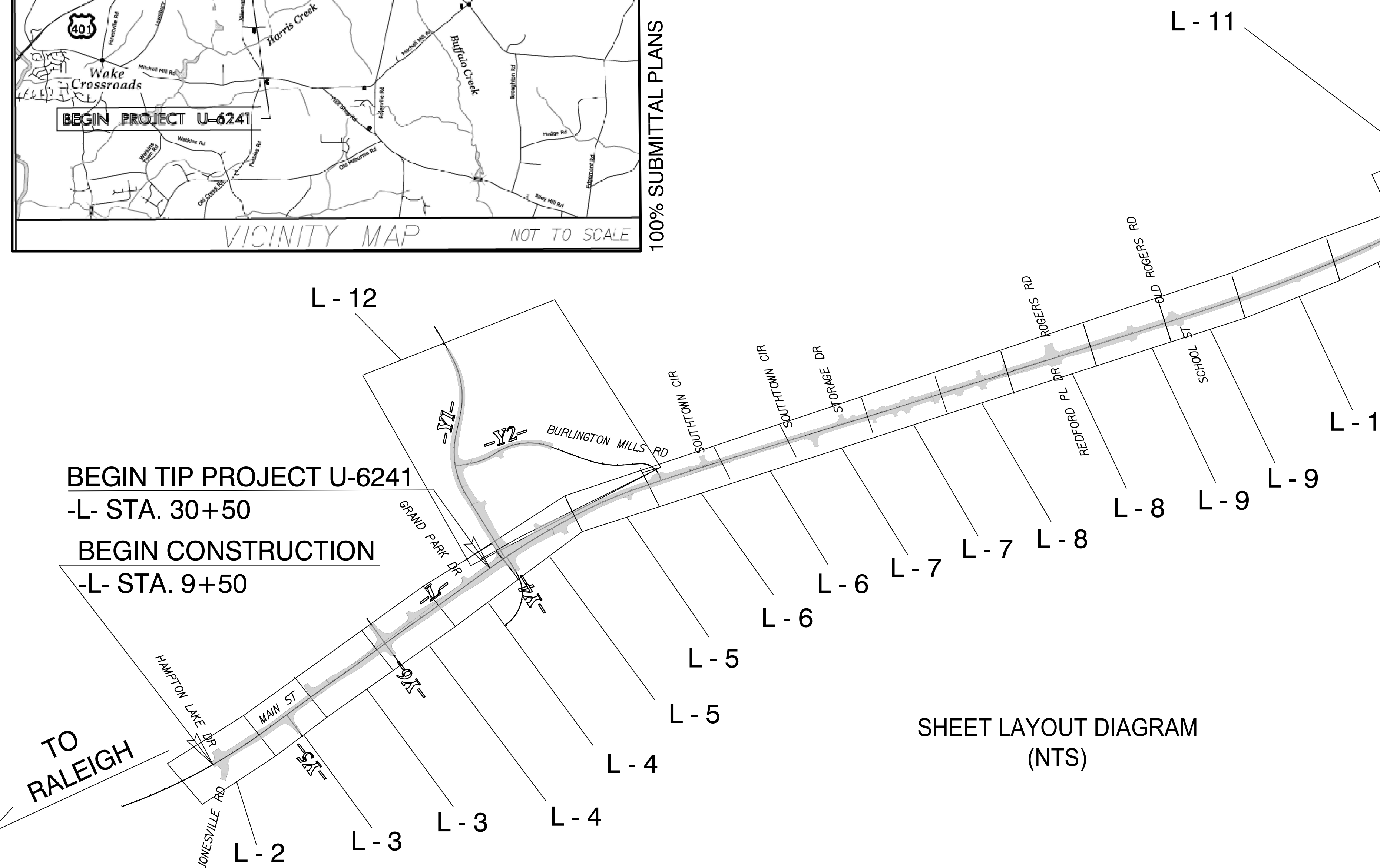
SUNGATE DESIGN GROUP, P.A.
805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27608
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. L-1
R/W SHEET NO.	
LANDSCAPE ARCHITECT	

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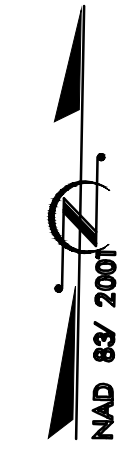


100% SUBMITTAL PLANS



INDEX OF SHEETS

COVER SHEET.....	L - 1
PLAN SHEETS.....	L - 2 TO L - 12
MAIN STREET (US 401).....	L - 2 TO L - 10
MAIN AND YOUNG INTERSECTION.....	L - 11
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PLAN SE INSET.....	L - 11B
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BURLINGTON MILLS RD.....	L - 12
DESIGN DETAILS.....	L - 13 TO L - 16
PLANT LIST, QUANTITIES, AND DETAILS.....	L - 13
SITE DETAILS.....	L - 14A
SITE FURNISHINGS.....	L - 14B
TRENCH GRATE	L - 15
TRENCH GRATE FRAME.....	L - 16



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	<p>PROJECT LENGTH LENGTH OF ROADWAY TIP PROJECT U-6241 = 1.740 MILES TOTAL LENGTH TIP PROJECT U-6241 = 1.740 MILES</p>	<p>PREPARED FOR THE TOWN OF ROLESVILLE</p>		<p>ANDRE BOYKIN JR., PE LANDSCAPE DESIGNER</p>
	<p>LETTING DATE: TBD</p>	<p>2018 STANDARD SPECIFICATIONS</p>	<p>JAMIE D. HAIRFIELD, PLA LANDSCAPE ARCHITECT</p> <p>KELLY ARNOLD ROLESVILLE TOWN MANAGER</p> <p>TRACY PARROTT, PE DIVISION PROJECT DELIVERY ENGINEER</p>	

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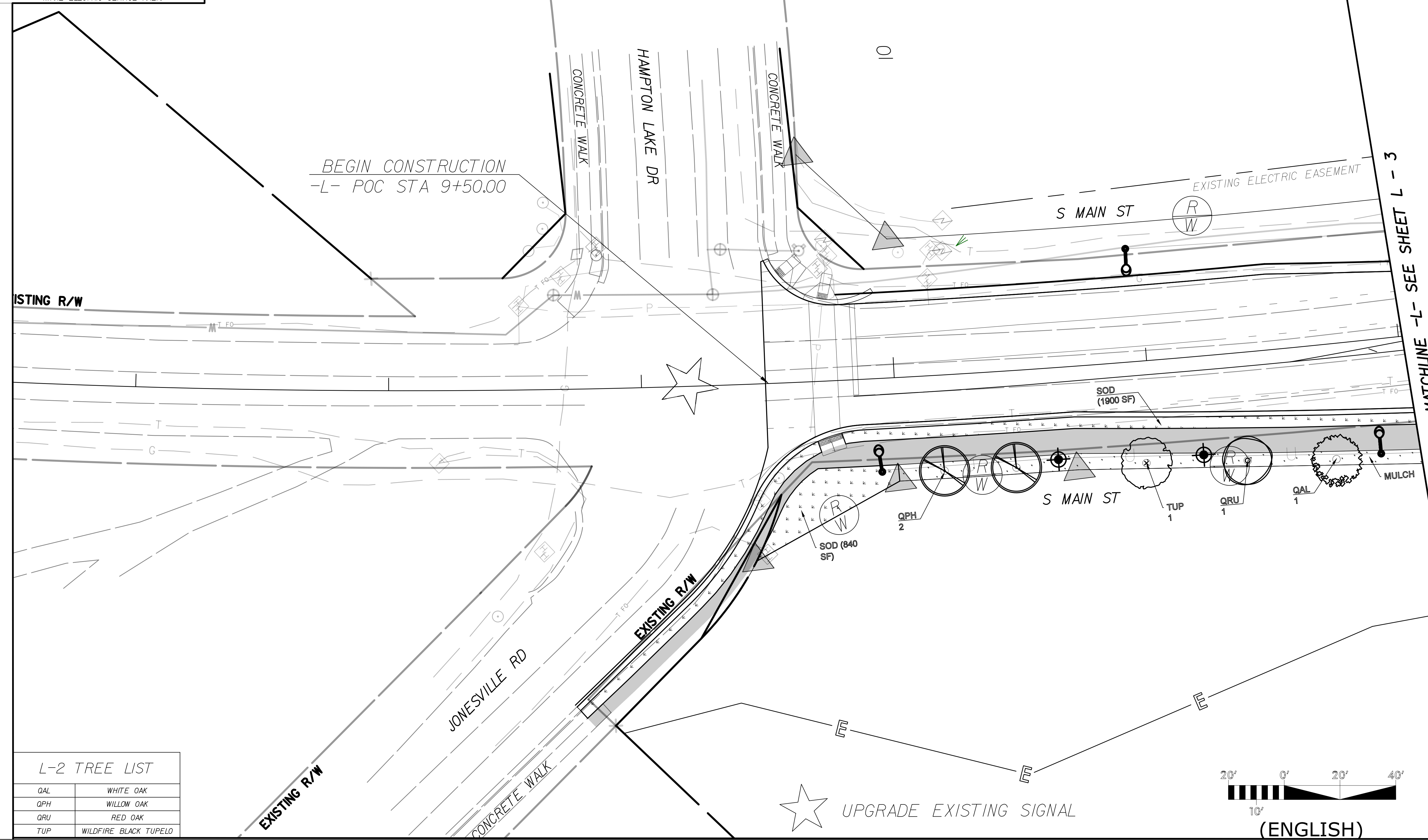
PROJECT REFERENCE NO. U-6241	SHEET NO. L-2
LANDSCAPE ARCHITECT	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

LEGEND

- WILDFIRE BLACK TUPELO (TUP)
- WILLOW OAK (QPH)
- RED MAPLE (ARU)
- WHITE OAK (QAL)
- RED OAK (QRU)
- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)
- ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)

NOTES:

- REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR ADDITIONAL INFORMATION SUCH AS FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE ENERGY EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. PLAN ENTAILS SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN IN LANDSCAPING PLANS ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS FROM BOTH ENERGY PROVIDERS.
- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.



L-2 TREE LIST

QAL	WHITE OAK
QPH	WILLOW OAK
QRU	RED OAK
TUP	WILDFIRE BLACK TUPELO

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MATCHLINE -L- SEE SHEET L-3

(ENGLISH)

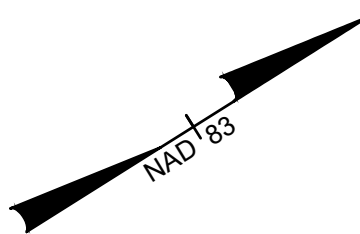
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LEGEND

	WILDFIRE BLACK TUPELO (TUP)		WILLOW OAK (QPH)
	RED MAPLE (ARU)		WHITE OAK (QAL)
	RED OAK (QRU)		
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)		
	ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)		

NOTES:

- REFER TO THE LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE ENERGY EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. LIGHTING PLANS ENTAIL SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN IN LANDSCAPING PLANS ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS FROM BOTH ENERGY PROVIDERS.
- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.



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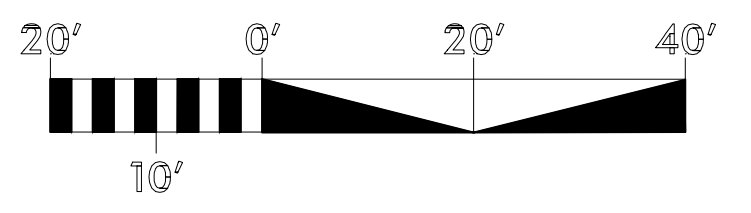
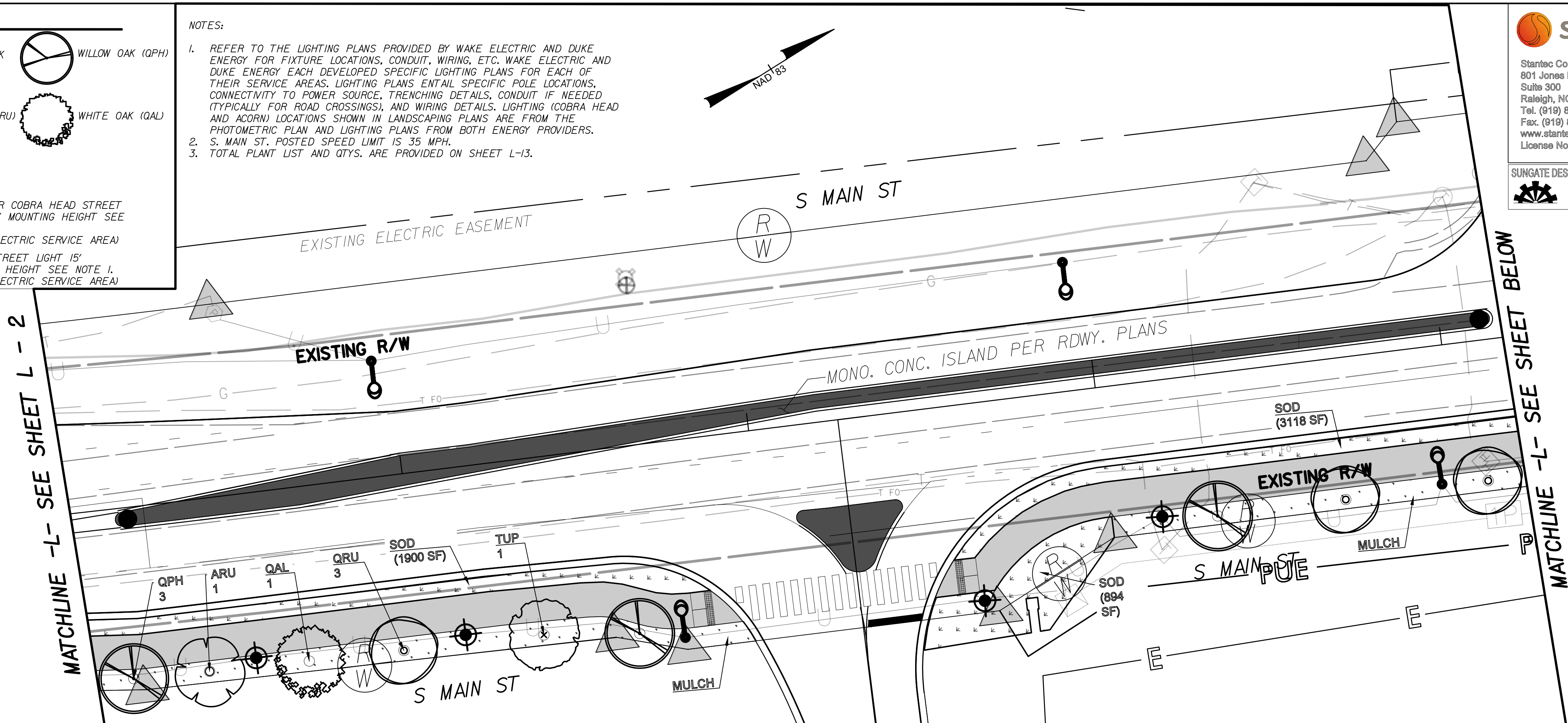
PROJECT REFERENCE NO. U-6241	SHEET NO. L-3
LANDSCAPE ARCHITECT	

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L-3 PLANT & TREE LIST

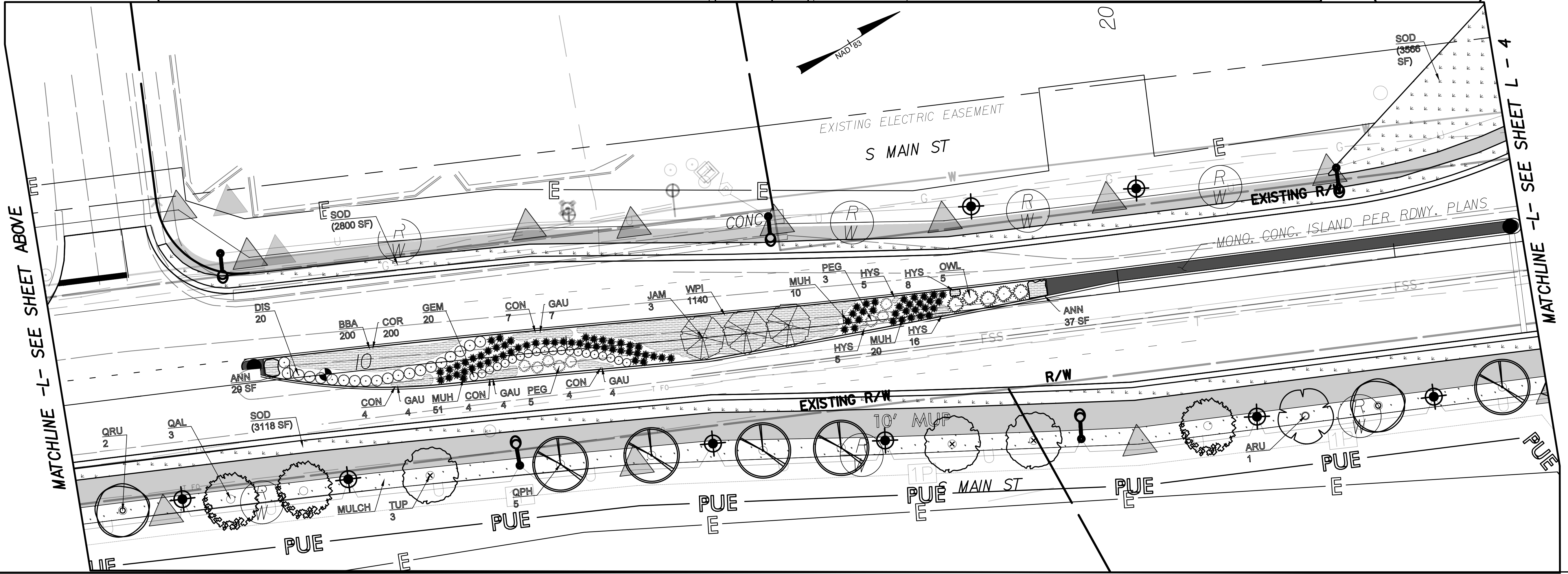
ARU (TREE)	RED MAPLE
JAM (TREE)	JANE MAGNOLIA
QAL (TREE)	WHITE OAK
QPH (TREE)	WILLOW OAK
QRU (TREE)	RED OAK
TUP (TREE)	WILDFIRE BLACK TUPELO
ANN	ANNUALS/BULBS
BBA	SPOTTED BEE BALM
CON	PURPLE CONEFLOWER
COR	LANCELEAF COREOPSIS
DIS	CINNAMON DISTYLLUM
GAU	WHIRLING BUTTERFLIES GAURA
GEM	GEM BOX INKBERRY HOLLY
HYS	BONESET, HYSSOP LEAF
MUH	PINK MUHLY GRASS
OWL	GREY OWL JUNIPER
PEG	PEARL GLAM BEAUTYBERRY
WPI	WILD PINK

MATCHLINE -L- SEE SHEET L-2



(ENGLISH)

MATCHLINE -L- SEE SHEET ABOVE



MATCHLINE -L- SEE SHEET L-4

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PROJECT REFERENCE NO. U-6241
 SHEET NO. L-4

LANDSCAPE ARCHITECT

Documented by: **Jamie Hairfield**
 2022-10-10-14:04:54
 License No. 4/21/2022

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LEGEND

WILDFIRE BLACK TUPELO (TUP) [Symbol]

RED MAPLE (ARU) [Symbol]

RED OAK (QRU) [Symbol]

WILLOW OAK (QPH) [Symbol]

WHITE OAK (QAL) [Symbol]

VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA) [Symbol]

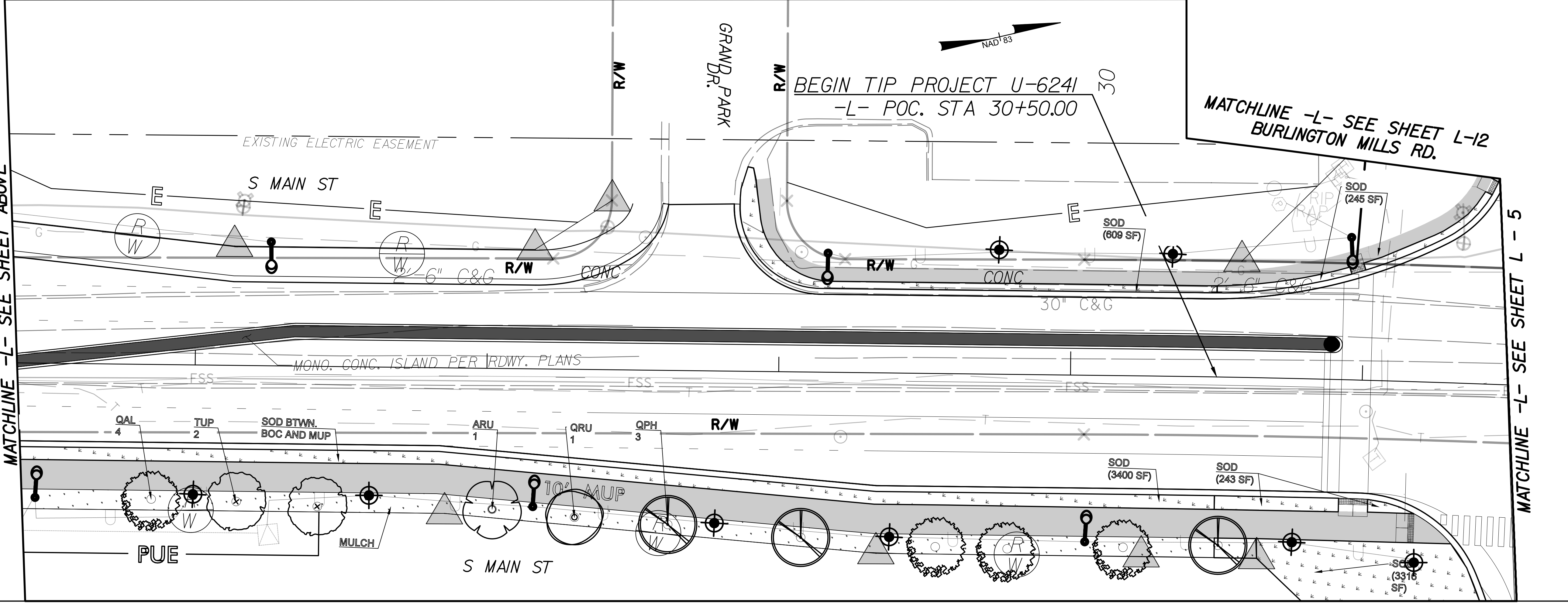
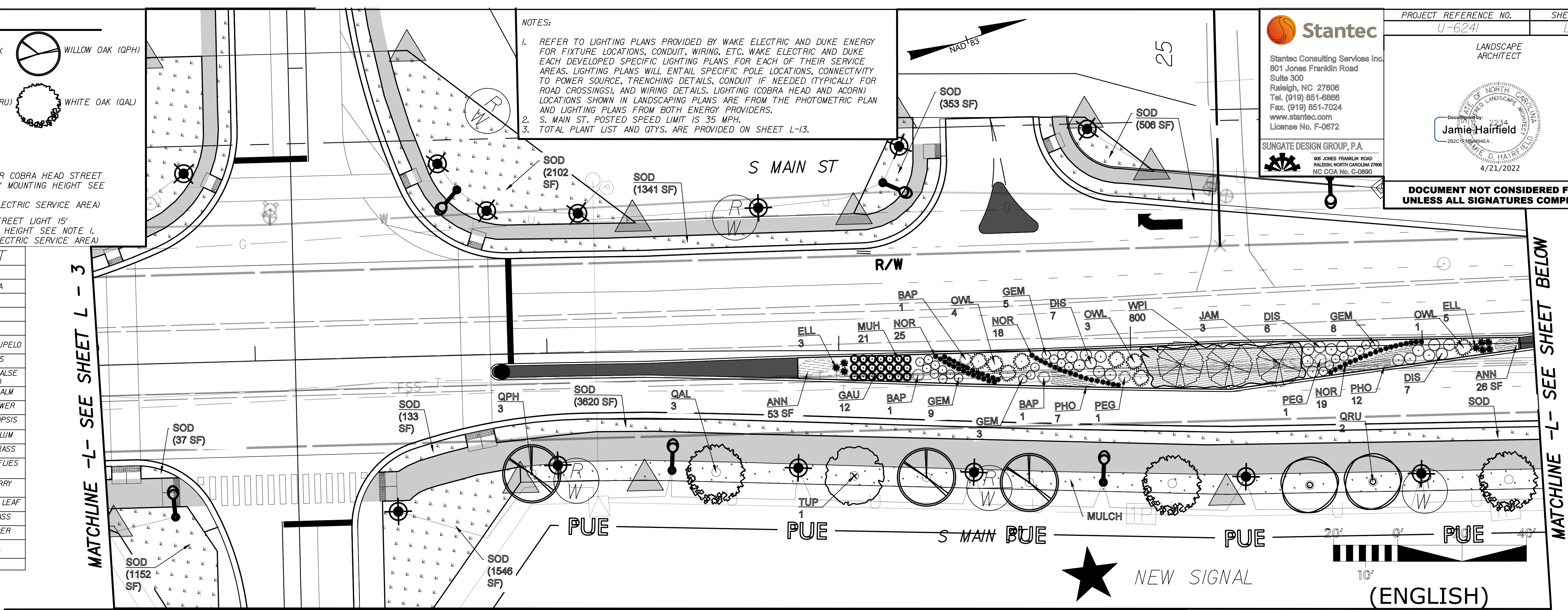
ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA) [Symbol]

NOTES:

- REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. LIGHTING PLANS WILL ENTAIL SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN IN LANDSCAPING PLANS ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS FROM BOTH ENERGY PROVIDERS.
- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.

L-4 PLANT LIST

ARU (TREE)	RED MAPLE
JAM (TREE)	JANE MAGNOLIA
QAL (TREE)	WHITE OAK
QPH (TREE)	WILLOW OAK
QRU (TREE)	RED OAK
TUP (TREE)	WILDFIRE BLACK TUPELO
ANN	ANNUALS/BULBS
BAP	PURPLE SMOKE FALSE INDIGO HYBRID
BBA	SPOTTED BEE BALM
CON	PURPLE CONEFLOWER
DDR	LANCELEAF COREOPSIS
DIS	CINNAMON DISTYLLUM
ELL	ELLIOT'S LOVE GRASS
GAU	WHIRLING BUTTERFLIES GAURA
GEM	GEM BOX INKBERRY HOLLY
HYS	BONESET, HYSSOP LEAF
MUH	PINK MUHLY GRASS
OWL	GREY OWL JUNIPER
PEG	PEARL GLAM BEAUTYBERRY
WPI	WILD PINK



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PROJECT REFERENCE NO.
U-6241

SHEET NO.
L-5

LANDSCAPE ARCHITECT

Seal of Jamie Hairfield, State of North Carolina, License No. 2224, dated 4/23/2022.

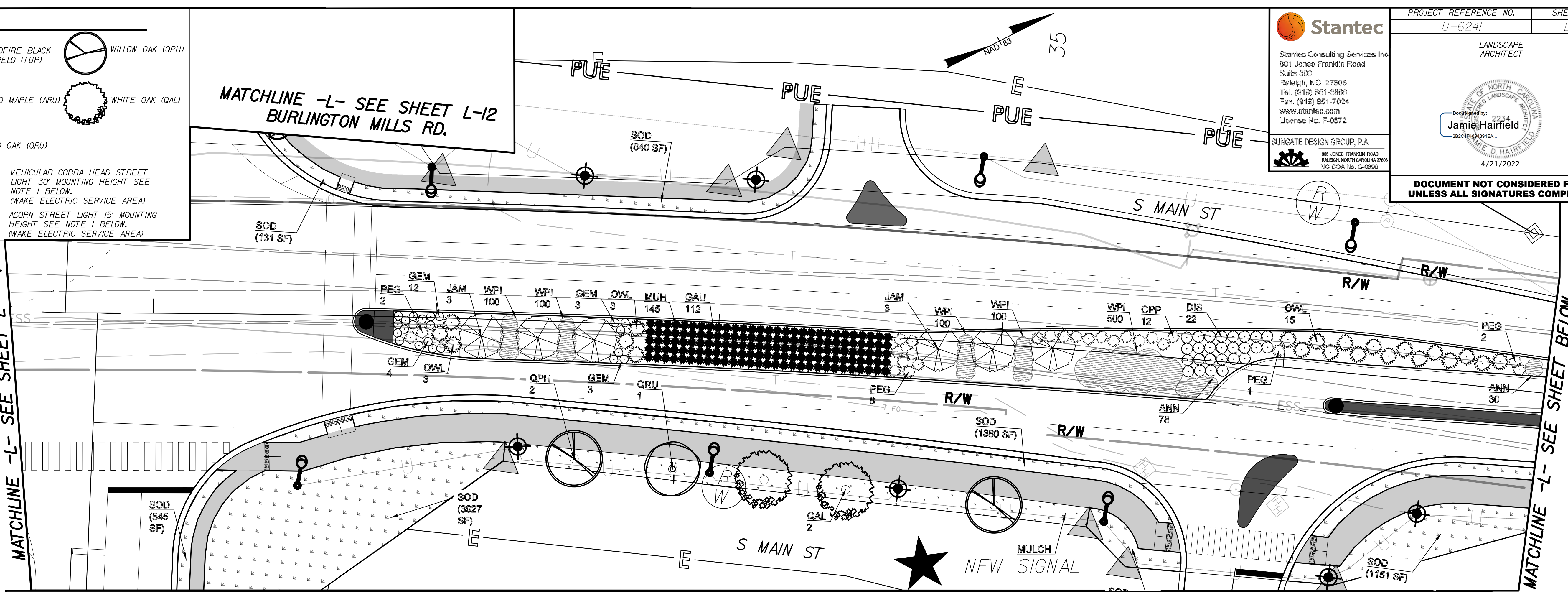
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LEGEND

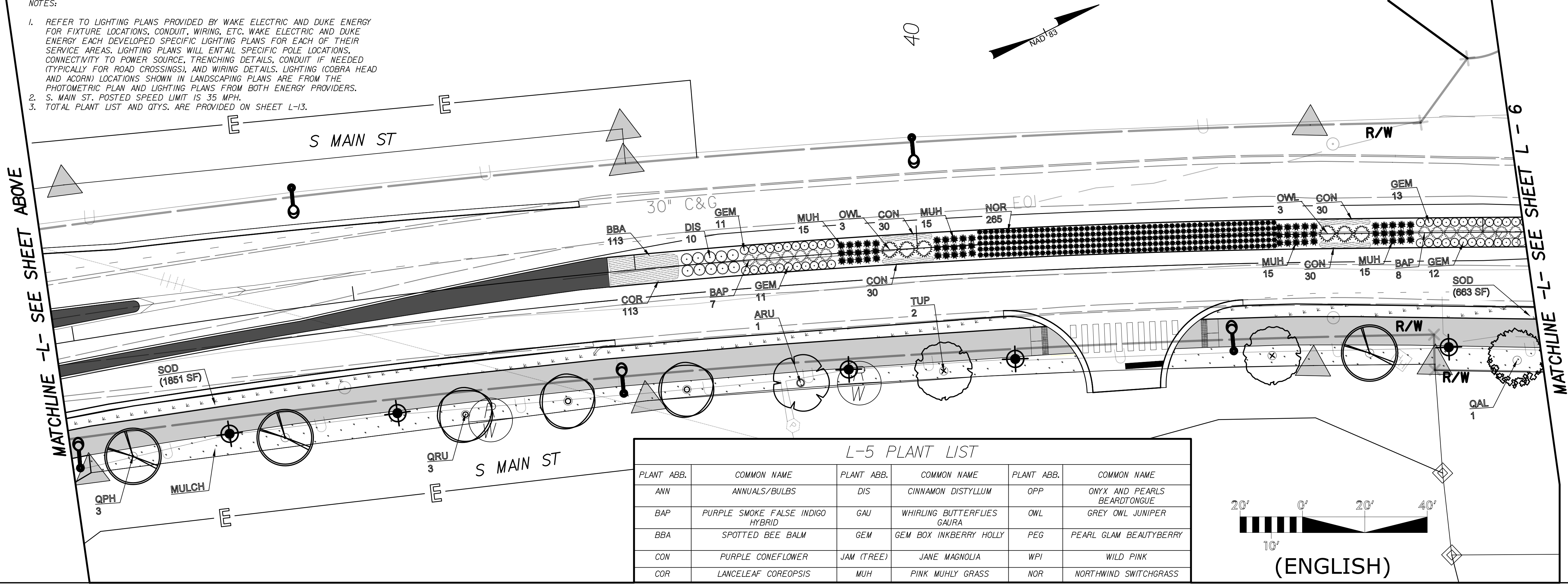
- WILDFIRE BLACK TUPELO (TUP)
- RED MAPLE (ARU)
- RED OAK (QRU)
- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1 BELOW. (WAKE ELECTRIC SERVICE AREA)
- ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1 BELOW. (WAKE ELECTRIC SERVICE AREA)
- WILLOW OAK (QPH)
- WHITE OAK (QAL)

MATCHLINE -L- SEE SHEET L-4

MATCHLINE -L- SEE SHEET BELOW

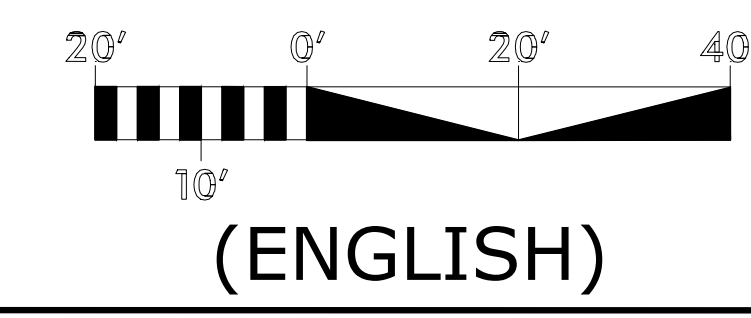


- NOTES:**
- REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE ENERGY EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. LIGHTING PLANS WILL ENTAIL SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN IN LANDSCAPING PLANS ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS FROM BOTH ENERGY PROVIDERS.
 - S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
 - TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.



L-5 PLANT LIST

PLANT ABB.	COMMON NAME	PLANT ABB.	COMMON NAME	PLANT ABB.	COMMON NAME
ANN	ANNUALS/BULBS	DIS	CINNAMON DISTYLLUM	OPP	ONYX AND PEARLS BEARDTONGUE
BAP	PURPLE SMOKE FALSE INDIGO HYBRID	GAU	WHIRLING BUTTERFLIES GAURA	OWL	GREY OWL JUNIPER
BBA	SPOTTED BEE BALM	GEM	GEM BOX INKBERRY HOLLY	PEG	PEARL GLAM BEAUTYBERRY
CON	PURPLE CONEFLOWER	JAM (TREE)	JANE MAGNOLIA	WPI	WILD PINK
COR	LANCELEAF COREOPSIS	MUH	PINK MUHYL GRASS	NOR	NORTHWIND SWITCHGRASS



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PROJECT REFERENCE NO. U-6241
 SHEET NO. L-6

LANDSCAPE ARCHITECT

DESIGNED BY 234
Jamie Hairfield
 LICENSED LANDSCAPE ARCHITECT
 4/21/2022

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LEGEND

WILDFIRE BLACK TUPELO (TUP)

WILLOW OAK (QPH)

VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)

ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)

EXISTING TREES (PER OBSERVATION NOT SURVEYED)

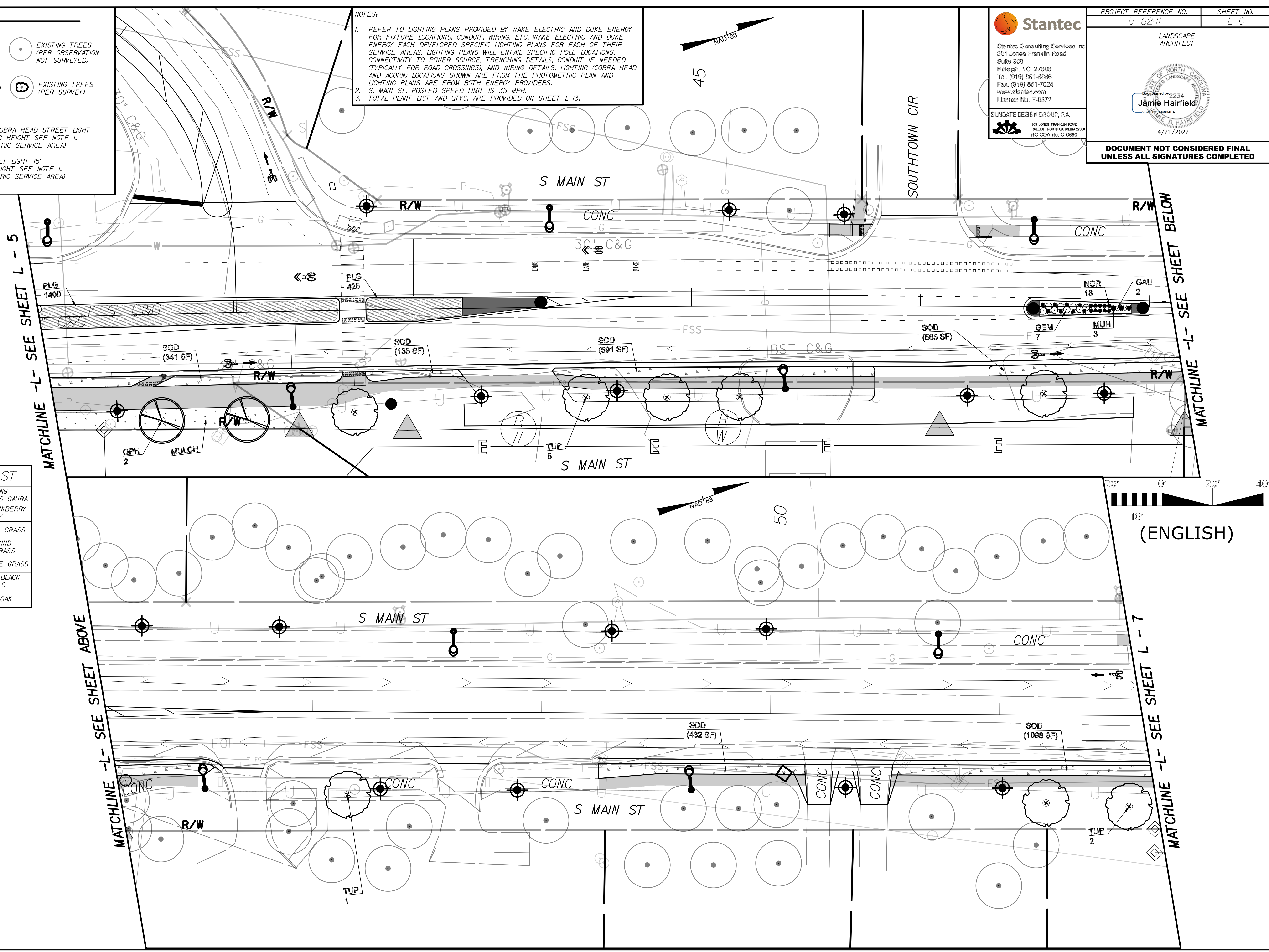
EXISTING TREES (PER SURVEY)

NOTES:

- REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE ENERGY EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. LIGHTING PLANS WILL ENTAIL SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS ARE FROM BOTH ENERGY PROVIDERS.
- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.

L-6 PLANT LIST

GAU	WHIRLING BUTTERFLIES GAURA
GEM	GEM BOX INKBERRY HOLLY
MUH	PINK MUHLY GRASS
NOR	NORTHWIND SWITCHGRASS
PLG	PURPLE LOVE GRASS
TUP (TREE)	WILDFIRE BLACK TUPELO
QPH (TREE)	WILLOW OAK



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

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 NC CDA No. C-0590

PROJECT REFERENCE NO. U-6241
 SHEET NO. L-7
 LANDSCAPE ARCHITECT

Designed by: **Jamie Hairfield**
 2828134894EA
 4/21/2022

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 UNLESS ALL SIGNATURES COMPLETED**

L-7 PLANT LIST

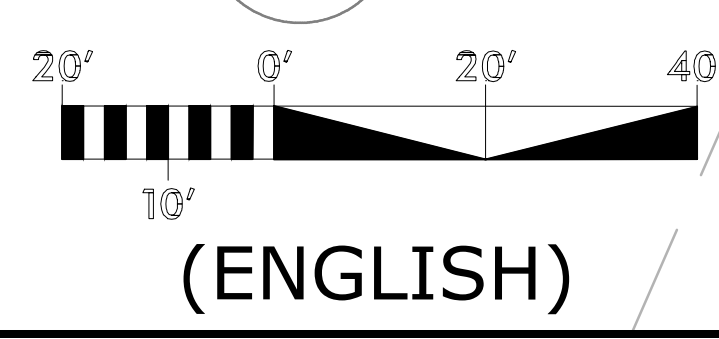
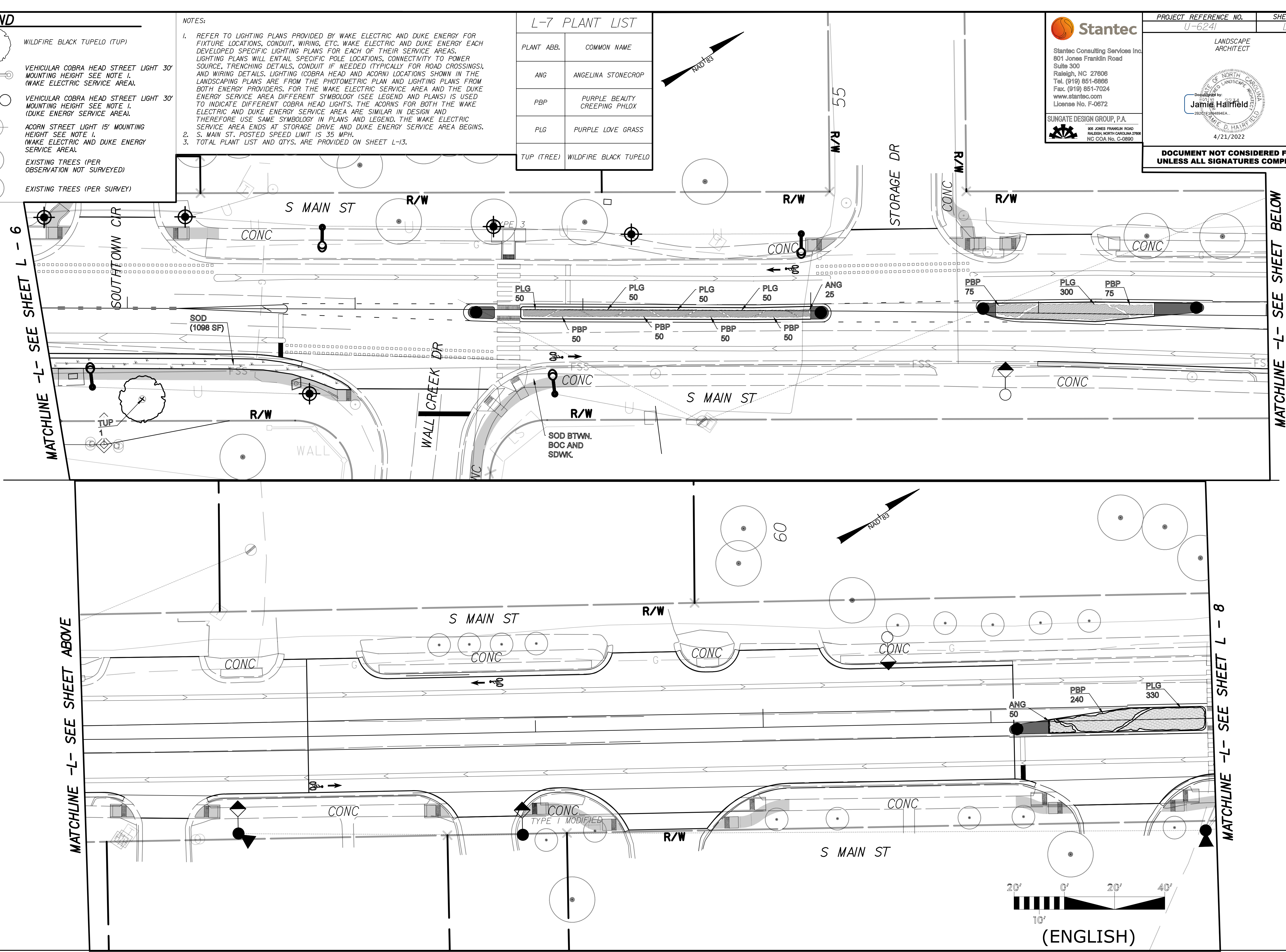
PLANT ABB.	COMMON NAME
ANG	ANGELINA STONECROP
PBP	PURPLE BEAUTY CREEPING PHLOX
PLG	PURPLE LOVE GRASS
TUP (TREE)	WILDFIRE BLACK TUPELO

NOTES:

- REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC. WAKE ELECTRIC AND DUKE ENERGY EACH DEVELOPED SPECIFIC LIGHTING PLANS FOR EACH OF THEIR SERVICE AREAS. LIGHTING PLANS WILL ENTAIL SPECIFIC POLE LOCATIONS, CONNECTIVITY TO POWER SOURCE, TRENCHING DETAILS, CONDUIT IF NEEDED (TYPICALLY FOR ROAD CROSSINGS), AND WIRING DETAILS. LIGHTING (COBRA HEAD AND ACORN) LOCATIONS SHOWN IN THE LANDSCAPING PLANS ARE FROM THE PHOTOMETRIC PLAN AND LIGHTING PLANS FROM BOTH ENERGY PROVIDERS. FOR THE WAKE ELECTRIC SERVICE AREA AND THE DUKE ENERGY SERVICE AREA DIFFERENT SYMBOLLOGY (SEE LEGEND AND PLANS) IS USED TO INDICATE DIFFERENT COBRA HEAD LIGHTS. THE ACORNS FOR BOTH THE WAKE ELECTRIC AND DUKE ENERGY SERVICE AREA ARE SIMILAR IN DESIGN AND THEREFORE USE SAME SYMBOLLOGY IN PLANS AND LEGEND. THE WAKE ELECTRIC SERVICE AREA ENDS AT STORAGE DRIVE AND DUKE ENERGY SERVICE AREA BEGINS.
- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTY'S. ARE PROVIDED ON SHEET L-3.

LEGEND

- WILDFIRE BLACK TUPELO (TUP)
- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA)
- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA)
- ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC AND DUKE ENERGY SERVICE AREA)
- EXISTING TREES (PER OBSERVATION NOT SURVEYED)
- EXISTING TREES (PER SURVEY)



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LEGEND

- WILDFIRE BLACK TUPELO (TUP)
- BALD CYPRESS (BCY)
- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).
- ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA)
- EXISTING TREES (PER OBSERVATION NOT SURVEYED)
- EXISTING TREES (PER SURVEY)

NOTES:

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- S. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.

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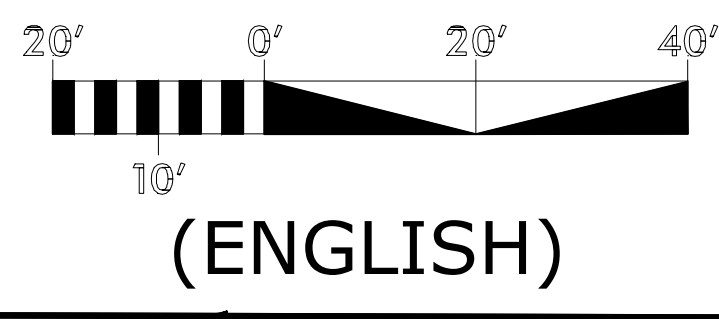
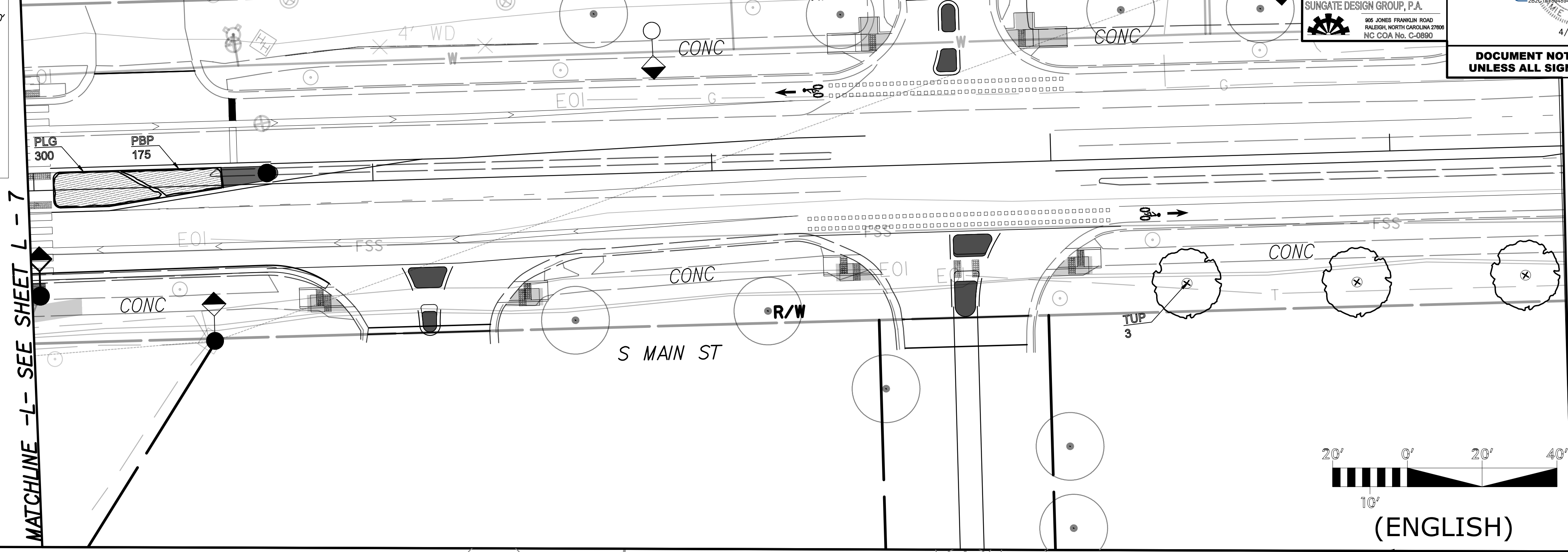
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805 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PROJECT REFERENCE NO. U-6241	SHEET NO. L-8
LANDSCAPE ARCHITECT	
<p>DATE: 4/21/2022</p>	

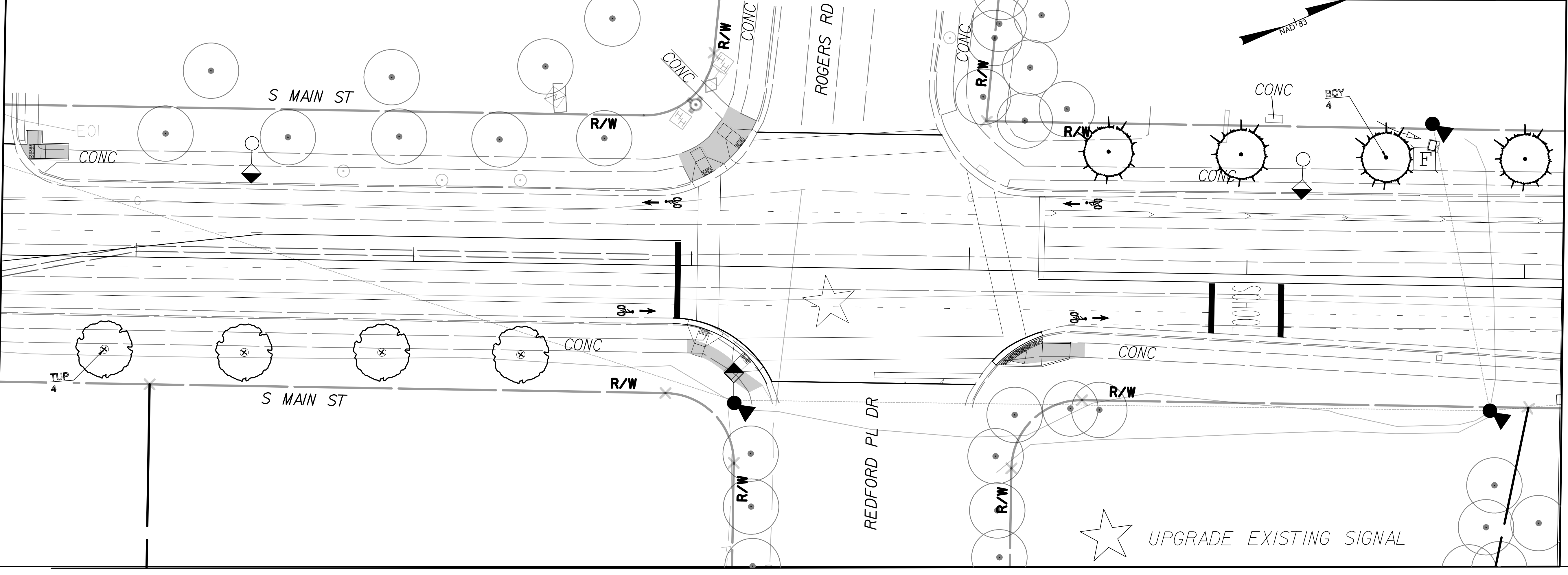
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L-8 PLANT LIST

PLANT ABB.	COMMON NAME
BCY (TREE)	BALD CYPRESS
PBP	PURPLE BEAUTY CREEPING PHLOX
PLG	PURPLE LOVE GRASS
TUP (TREE)	WILDFIRE BLACK TUPELO



MATCHLINE -L- SEE SHEET BELOW



UPGRADE EXISTING SIGNAL

MATCHLINE -L- SEE SHEET ABOVE

MATCHLINE -L- SEE SHEET L - 9

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LEGEND

- VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).
- ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).
- EXISTING TREE PER OBSERVATION (NOT SURVEYED)

NOTES:

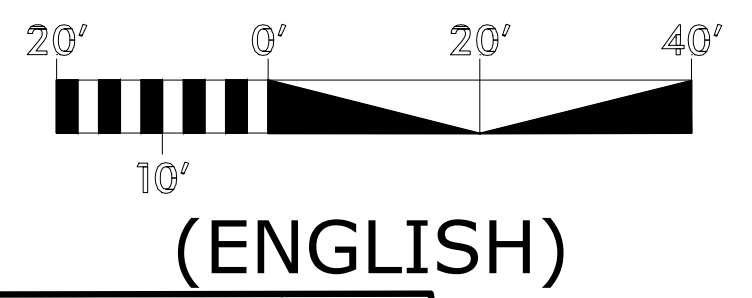
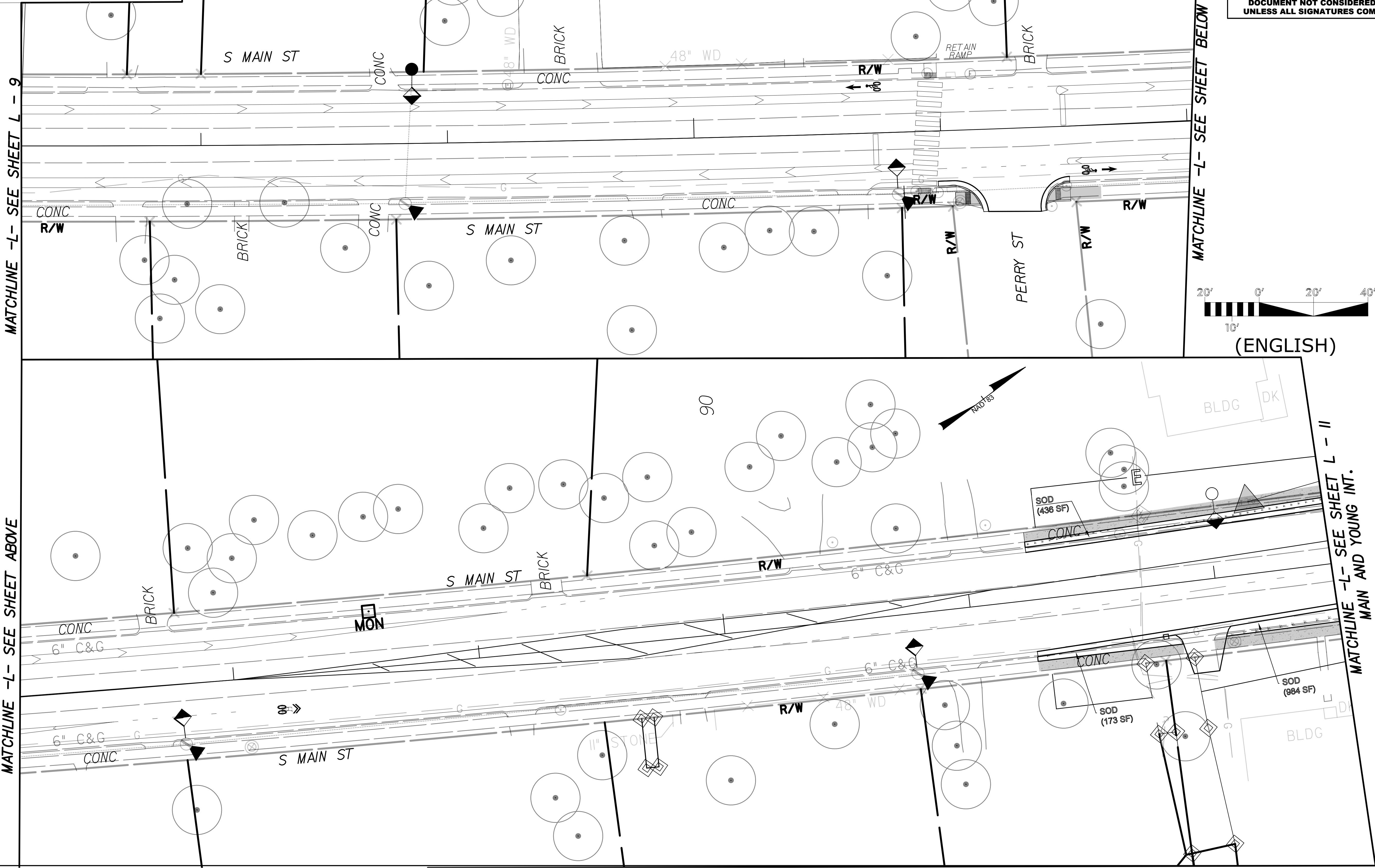
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NC CCA No. G-0590

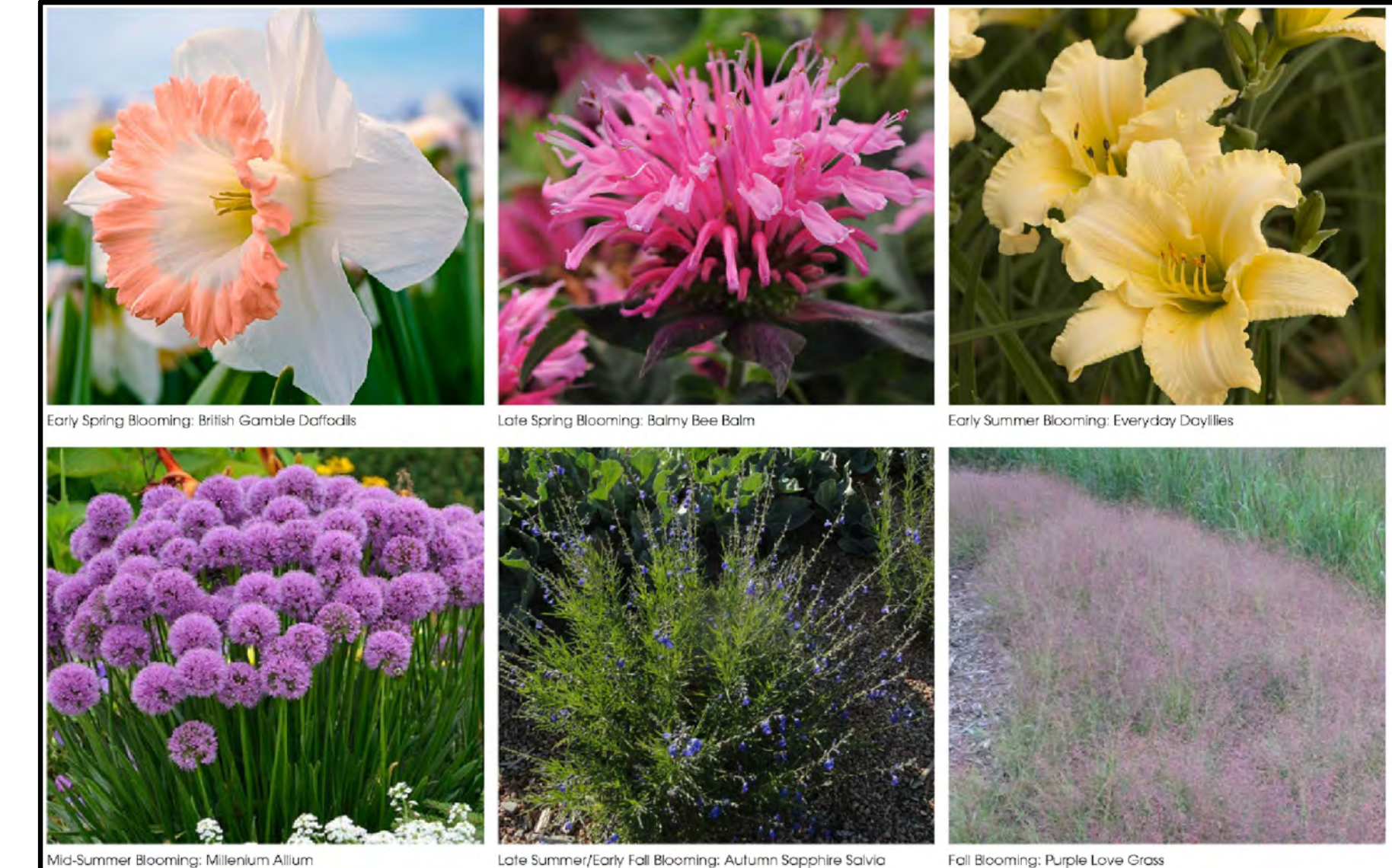
PROJECT REFERENCE NO. U-6241	SHEET NO. L-10
LANDSCAPE ARCHITECT	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



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LEGEND

	WILDFIRE BLACK TUPELO (TUP)		TREE GRATE
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).		TRASH RECEPTACLE
	ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA)		4' BENCH
	EXISTING TREE PER OBSERVATION (NOT SURVEYED)		6' BENCH
	EXISTING TREE (PER SURVEY)		PROPOSED TRENCH DRAIN



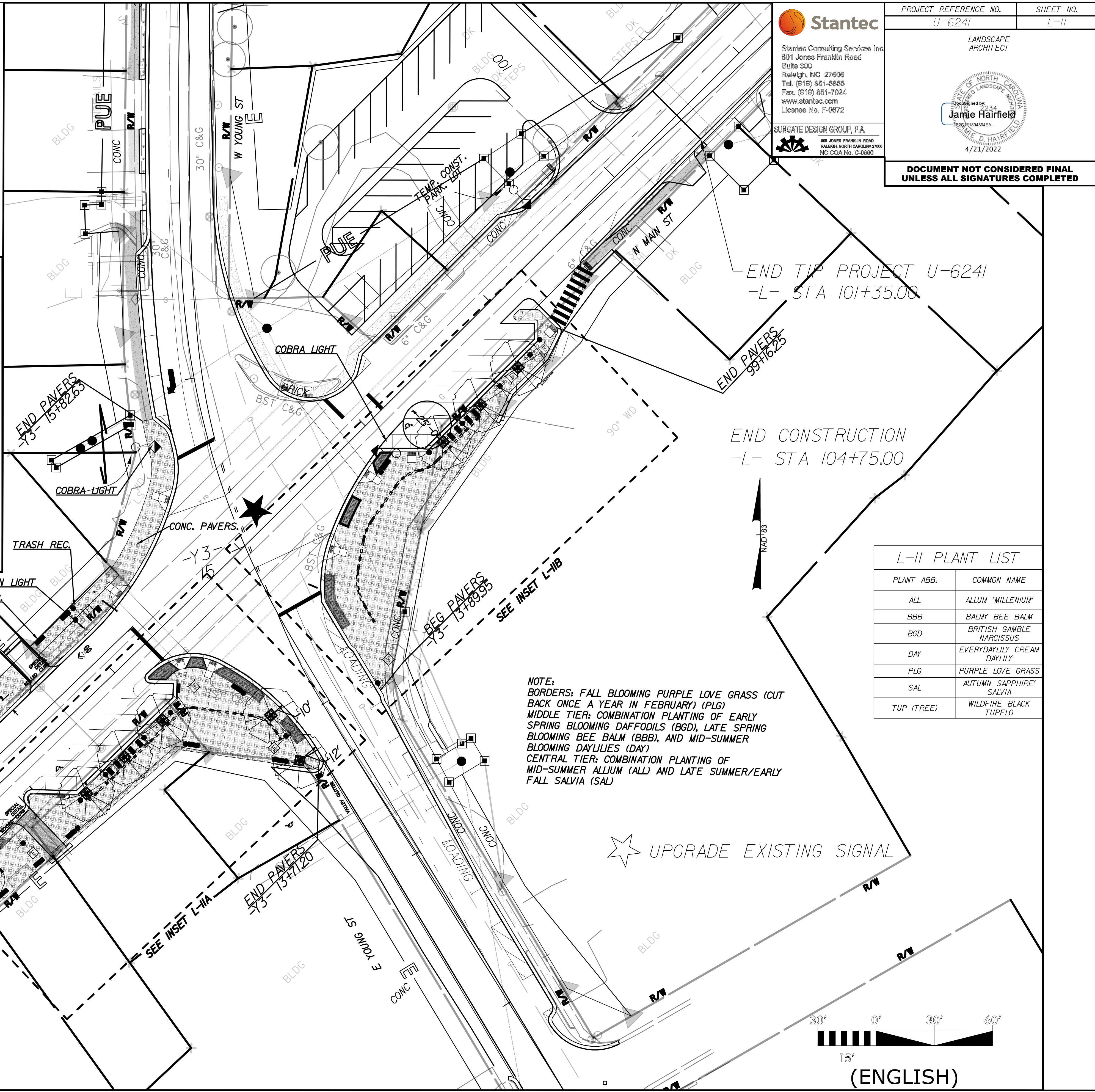
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 - S. MAIN ST. AND N. MAIN ST. POSTED SPEED LIMIT IS 35 MPH.
 - TOTAL PLANT LIST AND QTY'S. ARE PROVIDED ON SHEET L-13.
 - DETAILS FOR TREE GRATE PROVIDED ON SHEET L-14A.
 - DETAILS FOR 6' BENCH, 4' BENCH, AND TRASH RECEPTACLES PROVIDED ON SHEET L-14B.
 - TRENCH DRAIN DETAILS PROVIDED ON SHEET L-15 AND L-16.

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 RALEIGH, NORTH CAROLINA 27606
 NC COA No. C-0890

PROJECT REFERENCE NO. U-6241 SHEET NO. L-11
 LANDSCAPE ARCHITECT
 Prepared by: **Jamie Hairfield**
 4/23/2022

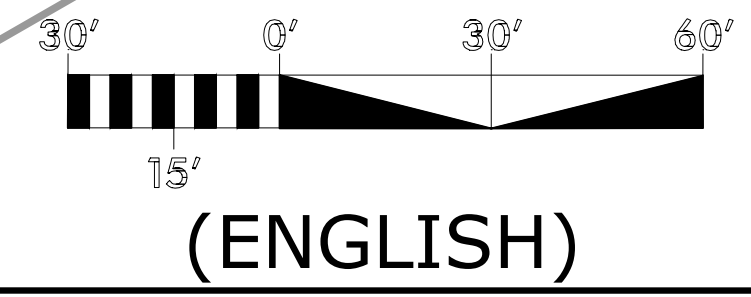
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L-11 PLANT LIST

PLANT ABB.	COMMON NAME
ALL	ALLIUM 'MILLENIUM'
BBB	BALMY BEE BALM
BGD	BRITISH GAMBLE NARCISSUS
DAY	EVERYDAY LILY CREAM DAYLILY
PLG	PURPLE LOVE GRASS
SAL	AUTUMN SAPHIRE SALVIA
TUP (TREE)	WILDFIRE BLACK TUPELO

NOTE:
 BORDERS: FALL BLOOMING PURPLE LOVE GRASS (CUT BACK ONCE A YEAR IN FEBRUARY) (PLG)
 MIDDLE TIER: COMBINATION PLANTING OF EARLY SPRING BLOOMING DAFFODILS (BGD), LATE SPRING BLOOMING BEE BALM (BBB), AND MID-SUMMER BLOOMING DAYLILIES (DAY)
 CENTRAL TIER: COMBINATION PLANTING OF MID-SUMMER ALLIUM (ALL) AND LATE SUMMER/EARLY FALL SALVIA (SAL)



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LEGEND

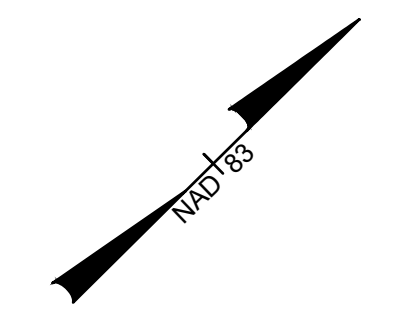
	WILDFIRE BLACK TUPELO (TUP)		TREE GRATE
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).		TRASH RECEPTACLE
	ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).		4' BENCH
	EXISTING TREE PER OBSERVATION (NOT SURVEYED)		6' BENCH
	EXISTING TREE (PER SURVEY)		PROPOSED TRENCH DRAIN

NOTES:

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- DETAILS FOR TREE GRATE PROVIDED ON SHEET L-14A.
- DETAILS FOR 6' BENCH, 4' BENCH, AND TRASH RECEPTACLE PROVIDED ON SHEET L-14B.
- TRENCH DRAIN DETAILS PROVIDED ON SHEET L-15 AND L-16.

L-11A PLANT LIST

PLANT ABB.	COMMON NAME
ALL	ALLUM 'MILLENIUM'
BBB	BALMY BEE BALM
BGD	BRITISH GAMBLE NARCISSUS
DAY	EVERYDAYLILY CREAM DAYLILY
PLG	PURPLE LOVE GRASS
SAL	AUTUMN 'SAPPHIRE' SALVIA
TUP (TREE)	WILDFIRE BLACK TUPELO



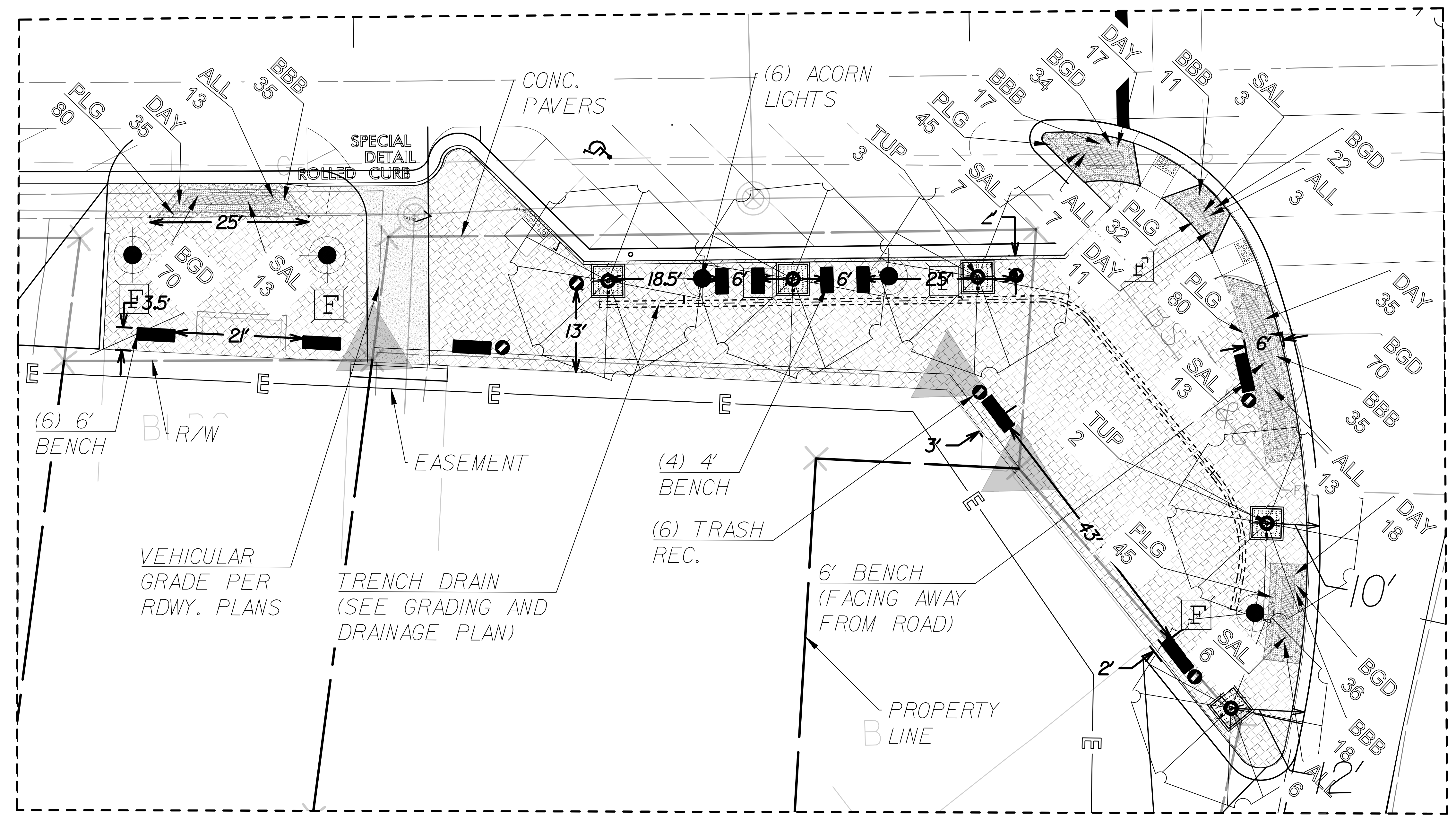
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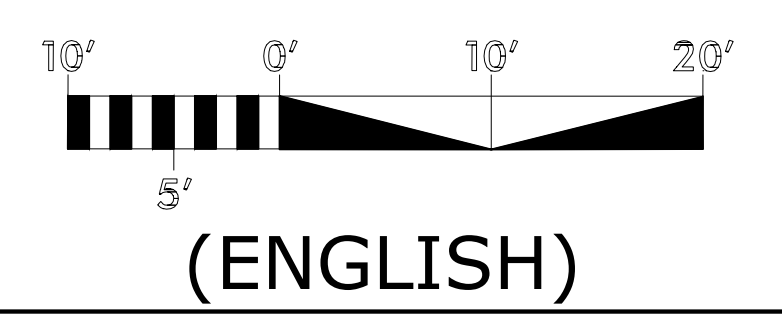
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PROJECT REFERENCE NO. U-6241	SHEET NO. L-11A
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INSET L-11A



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LEGEND

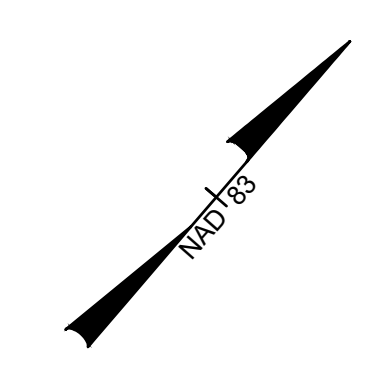
	WILDFIRE BLACK TUPELO (TUP)		TREE GRATE
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).		TRASH RECEPTACLE
	ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (DUKE ENERGY SERVICE AREA).		4' BENCH
	EXISTING TREE PER OBSERVATION (NOT SURVEYED)		6' BENCH
	EXISTING TREE (PER SURVEY)		PROPOSED TRENCH DRAIN

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- DETAILS FOR TREE GRATE PROVIDED ON SHEET L-14A.
- DETAILS FOR 6' BENCH, 4' BENCH, AND TRASH RECEPTACLE PROVIDED ON SHEET L-14B.
- TRENCH DRAIN DETAILS PROVIDED ON SHEET L-15 AND L-16.

L-IIB PLANT LIST

PLANT ABB.	COMMON NAME
ALL	ALLUM "MILLENNIUM"
BBB	BALMY BEE BALM
BGD	BRITISH GAMBLE NARCISSUS
DAY	EVERYDAY LILY CREAM DAYLILY
PLG	PURPLE LOVE GRASS
SAL	AUTUMN 'SAPPHIRE' SALVIA
TUP (TREE)	WILDFIRE BLACK TUPELO



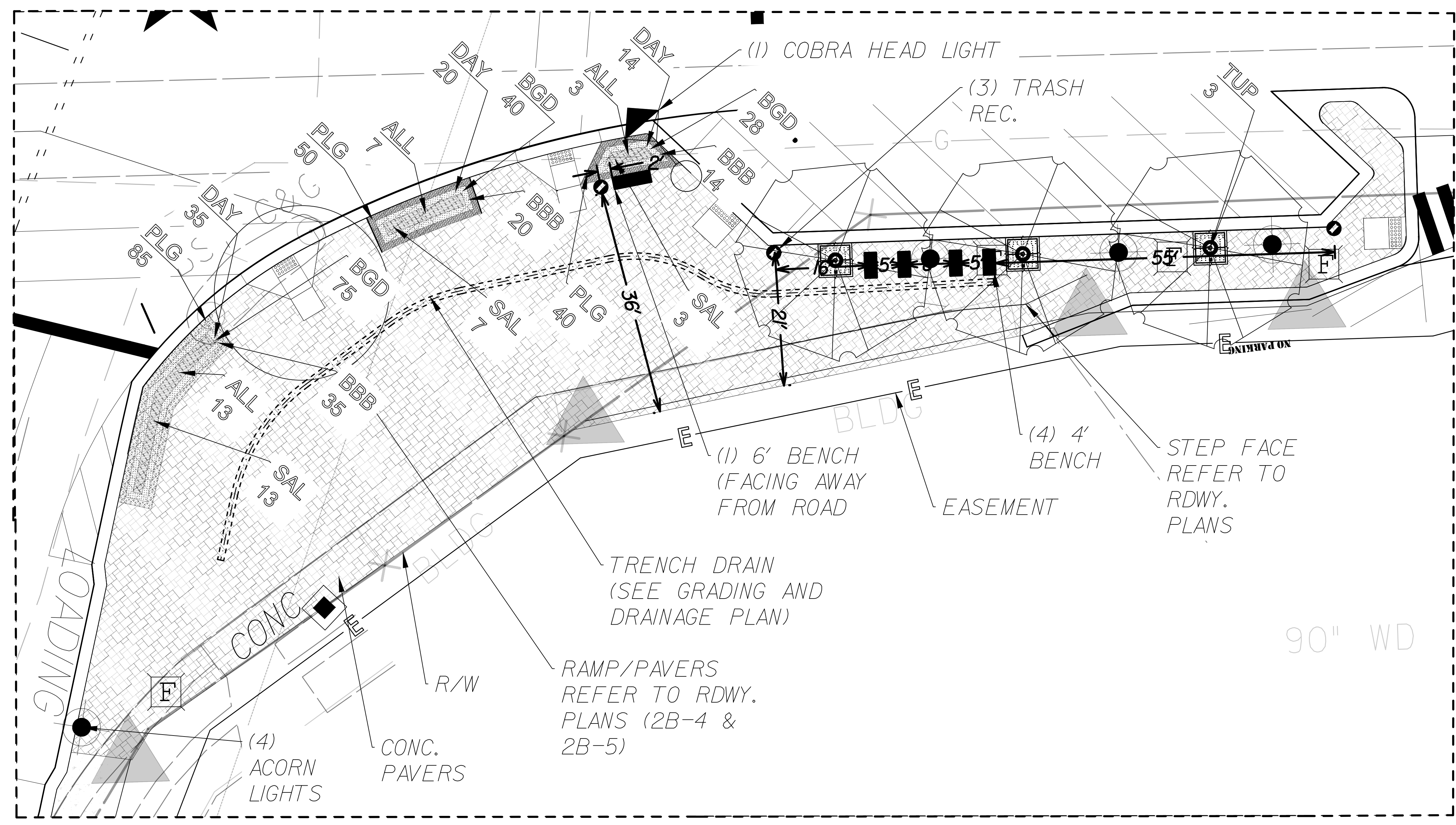
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U-6241

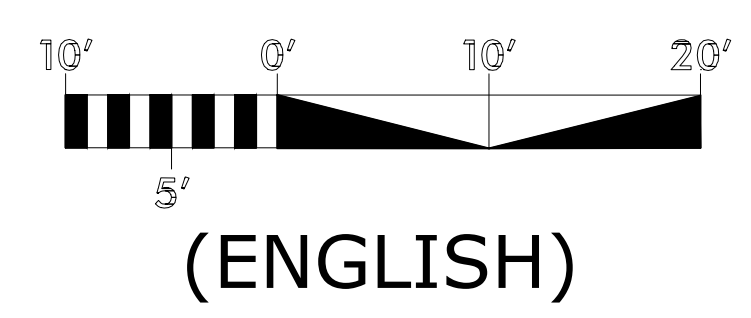
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L-IIB

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INSET L-11B



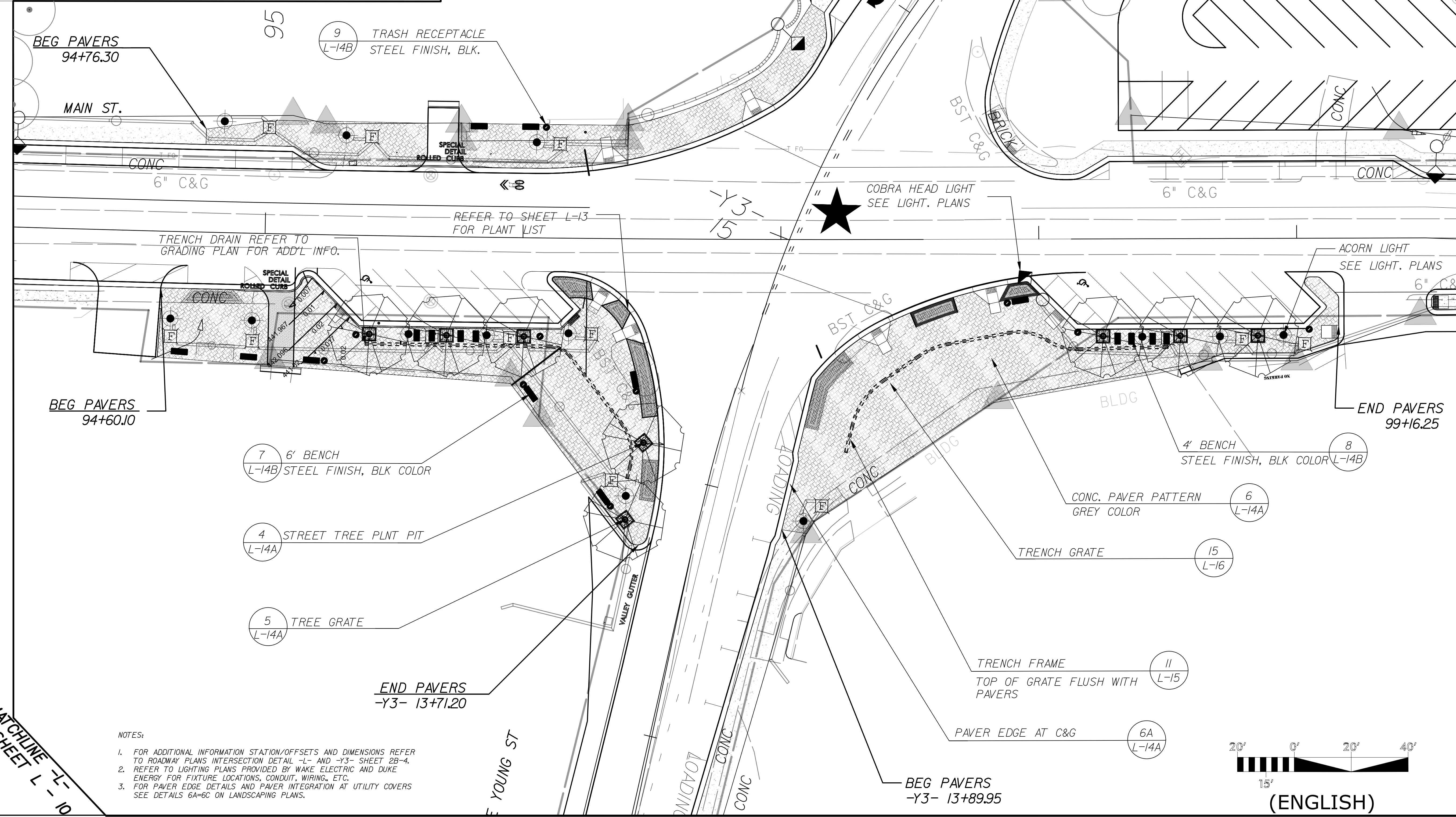
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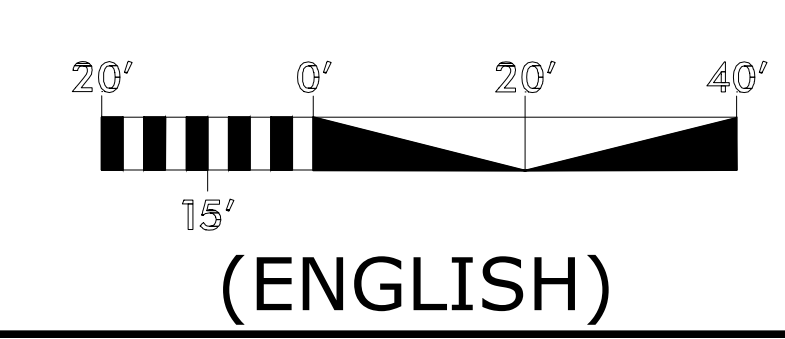
LEGEND

	WILDFIRE BLACK TUPELO (TUP)		TREE GRATE
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT (SEE NOTE 1)		TRASH RECEPTACLE
	ACORN STREET LIGHT 15' MOUNTING HEIGHT (SEE NOTE 1)		4' BENCH
	EXISTING TREE PER OBSERVATION (NOT SURVEYED)		6' BENCH
	EXISTING TREE (PER SURVEY)		PROPOSED TRENCH DRAIN

	PROJECT REFERENCE NO. U-6241	SHEET NO. L-11C
Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-8886 Fax. (919) 851-7024 www.stantec.com License No. F-0872	LANDSCAPE ARCHITECT	
	DESIGNED BY JAMIE HAIRFIELD LICENSED LANDSCAPE ARCHITECT STATE OF NORTH CAROLINA NO. 28521 4/21/2022	
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- NOTES:
- FOR ADDITIONAL INFORMATION STATION/OFFSETS AND DIMENSIONS REFER TO ROADWAY PLANS INTERSECTION DETAIL -L- AND -Y3- SHEET 2B-4.
 - REFER TO LIGHTING PLANS PROVIDED BY WAKE ELECTRIC AND DUKE ENERGY FOR FIXTURE LOCATIONS, CONDUIT, WIRING, ETC.
 - FOR PAVER EDGE DETAILS AND PAVER INTEGRATION AT UTILITY COVERS SEE DETAILS 6A-6C ON LANDSCAPING PLANS.



MATCHLINE -L- 10
SEE SHEET L-10

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LEGEND

	WILDFIRE BLACK TUPELO (TUP)		WILLOW OAK (QPH)
	RED MAPLE (ARU)		WHITE OAK (QAL)
	RED OAK (QRU)		
	VEHICULAR COBRA HEAD STREET LIGHT 30' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA).		
	ACORN STREET LIGHT 15' MOUNTING HEIGHT SEE NOTE 1. (WAKE ELECTRIC SERVICE AREA).		

L-12 TREE LIST

ARU	RED MAPLE
JAM	JANE MAGNOLIA
QAL	WHITE OAK
QPH	WILLOW OAK
QRU	RED OAK
TUP	WILDFIRE BLACK TUPELO

NOTES:

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- BURLINGTON MILLS RD. POSTED SPEED LIMIT IS 35 MPH.
- TOTAL PLANT LIST AND QTYS. ARE PROVIDED ON SHEET L-13.

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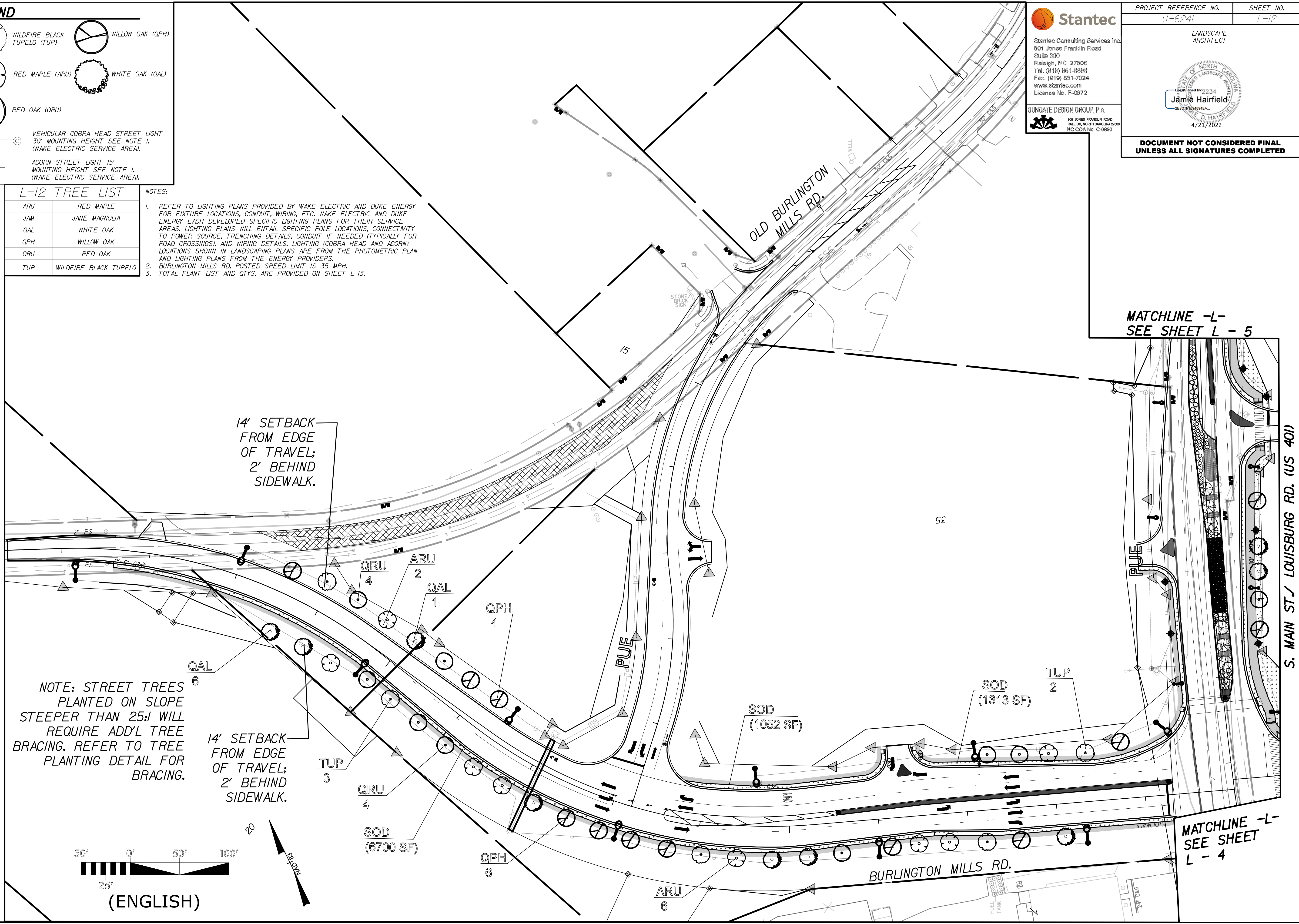
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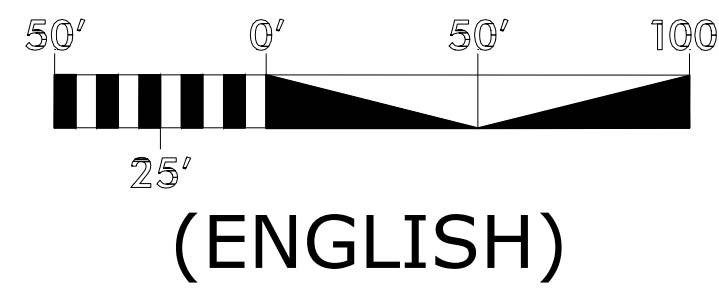
PROJECT REFERENCE NO. U-6241	SHEET NO. L-12
LANDSCAPE ARCHITECT	

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NOTE: STREET TREES PLANTED ON SLOPE STEEPER THAN 25:1 WILL REQUIRE ADD'L TREE BRACING. REFER TO TREE PLANTING DETAIL FOR BRACING.

14' SETBACK FROM EDGE OF TRAVEL; 2' BEHIND SIDEWALK.



MATCHLINE -L-
SEE SHEET L - 5

MATCHLINE -L-
SEE SHEET L - 4

S. MAIN ST./ LOUISBURG RD. (US 401)

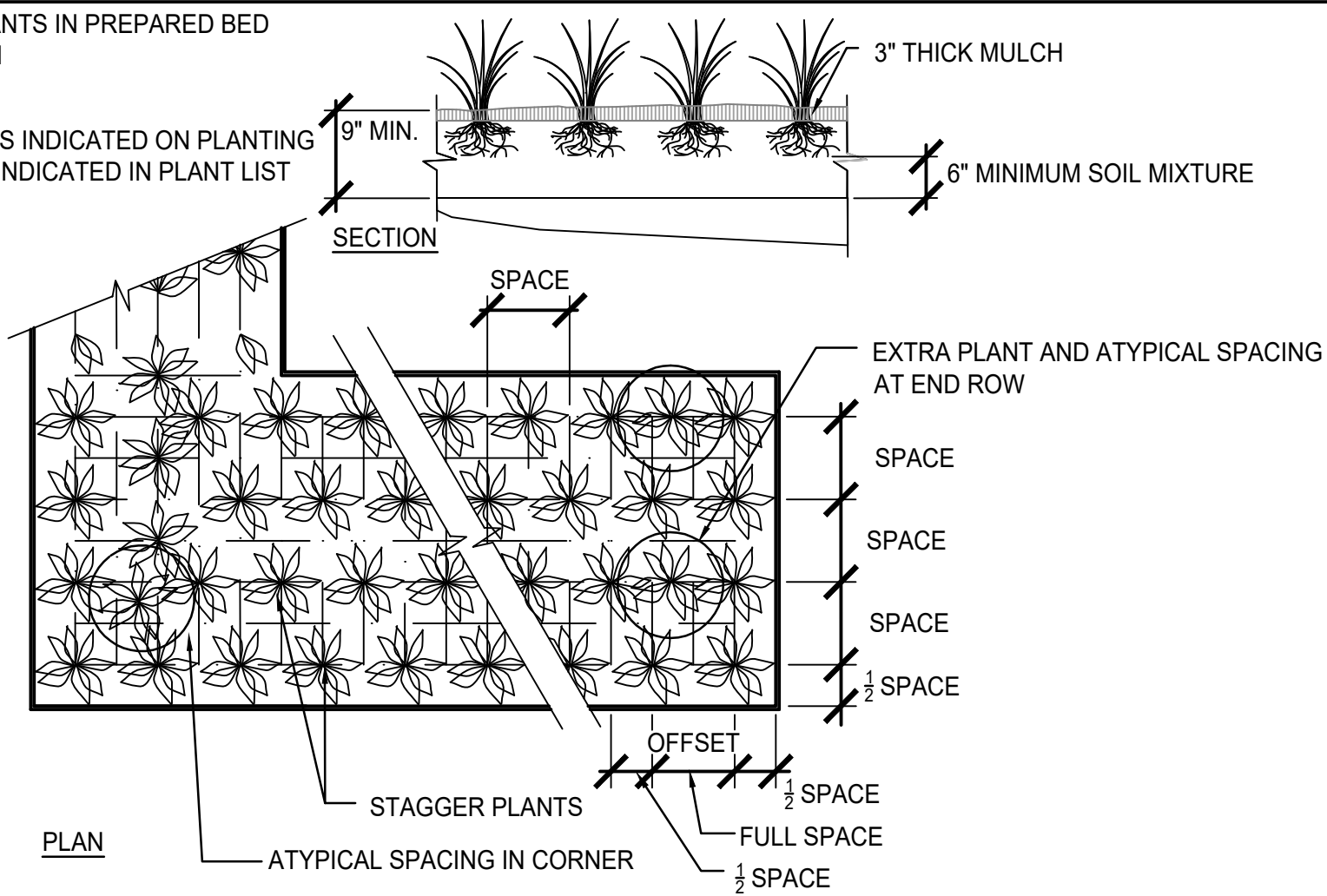
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PLANT LIST AND QUANTITY TABLE

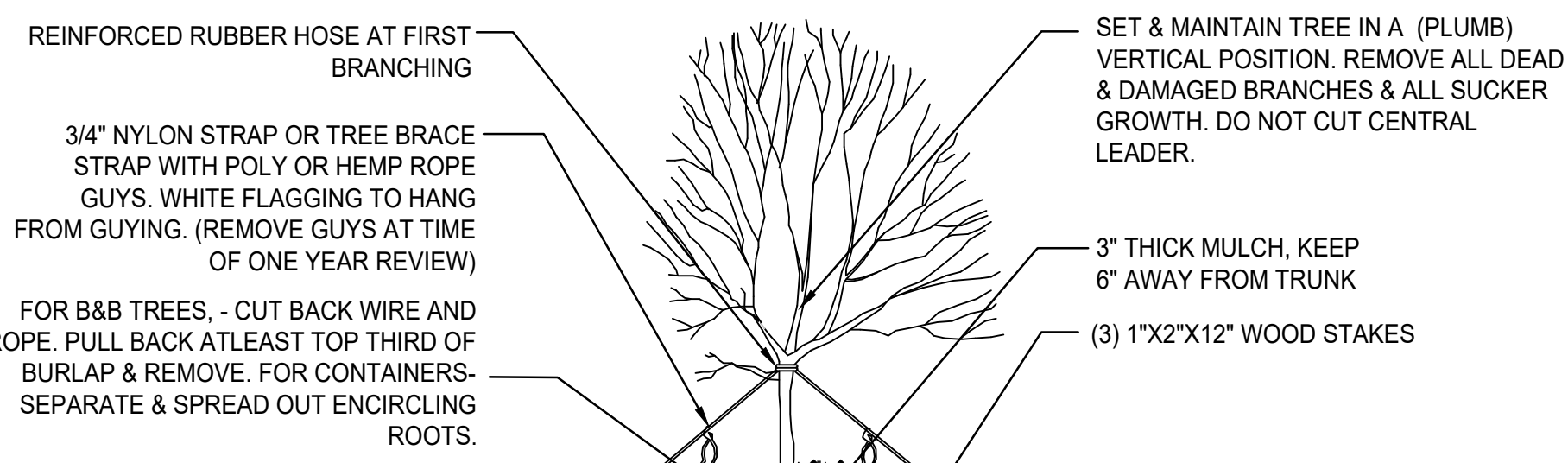
Plant Abbreviation	Scientific Name	Common Name	Quantity	Growth Habit	Installation Specification
Trees					
ARU	<i>Acer rubrum</i>	Red Maple	12	60' - 80' tall and 40' wide; round shape with mostly fall interest. Grows in urban settings to smaller heights. Bark is typically smooth for this native deciduous tree	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
BCY	<i>Taxodium distichum</i>	Bald Cypress	11	60' tall and 30' wide; pyramidal shape with year-round interest; peeling bark and persistent cones; deciduous conifer; urban tolerant street tree, native (limb up as needed)	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
JAM	<i>Magnolia 'Jane'</i>	Jane Magnolia	12	10'15' tall and 8-10' wide; small cultivar of saucer magnolia; showy spring cup-shaped flowers before leaves emerge (Little Girl Series developed at U.S. National Arboretum)	30 Gal. Container / 6-8' Height / 3-4' Spread / Multi-stem / 3-5' matching stems
QAL	<i>Quercus alba</i>	White Oak	22	65' - 90' tall and 40' - 50' wide with good fall interest. Grows in urban settings to smaller sizes and can tolerate compact growth areas but prefers more room. Suggest female specimen so acorns do not litter the landscape. Native species.	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
QPH	<i>Quercus phellos</i>	Willow Oak	33	65' - 90' tall and 40' - 50' wide; round shape with mostly fall interest. Grows in urban settings to smaller sizes and can tolerate compact growth areas but prefers more room. Suggest female specimen so acorns do not litter the landscape. Native species.	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
ORU	<i>Quercus rubra</i>	Red Oak	21	65' - 85' tall and 40' - 50' wide with excellent fall interest. Grows in urban settings to smaller sizes. Suggest female specimen so acorns do not litter the landscape. Native species.	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
TUP	<i>Nyssa sylvatica 'Wildfire'</i>	Wildfire Black Tupelo	39	30'-50' tall and 30' wide; cultivar is notable for brilliant fall foliage; excellent street tree; native	3.5" cal. / B&B / Height 8' - 10' / Spread 4'-5' / Central Leader Specimen
Shrubs, Ornamental Grasses, Perennials, Annuals, Boulders					
ALL	<i>Allium 'Millenium'</i>	Allium 'Millenium'	65	15" tall x 18-22" wide; mid-summer purple blooms	#SP4 container
ANG	<i>Sedum rupestre 'Angelina'</i>	Angelina stonecrop	75	4-6" tall and 12-24" wide; chartreuse coloration with orangish/red fall color; creeping, drought tolerant ground cover	#SP4 container
ANN	<i>Annua/Bulbs</i>	Annua/Bulbs (pockets in medians as indicated on plans)	253	By local civic groups/clubs/schools	#SP4 container
BAP	<i>Baptisia 'Purple Smoke'</i>	Purple Smoke False Indigo Hybrid	18	3'x3' perennial; developed at the NC Botanical Gardens; partial shade; drought tolerant; smoky violet flowers in mid-spring, native	#SP4 container
BBA	<i>Monarda punctata</i>	Spotted Bee Balm	313	1.5'-2' tall and wide; full to part sun; medium to dry soil; unique pink-white flowers in late summer, native	#SP4 container
BBB	<i>Monarda didyma 'Balsalmink'</i>	Balmy Bee Balm	185	Compact growth reaches only 10 to 12 in. tall; 8 to 10 in. wide.; late spring/early summer, full sun	#SP4 container
BGD	<i>Narcissus 'British Gamble'</i>	British Gamble Narcissus	375	6" deep and 4 - 6" apart; allow foliage to mature and die down naturally; early to mid-spring bloom; white/oral trumpet flowering daffodil	DN III; Bulb, underplant Daylilies and Bee Balm at 12" on center in FALL
CON	<i>Echinacea purpurea</i>	Purple Coneflower	79	2-4' tall and 18" wide; full to part sun; medium to dry soil; pink-purple flowers early to mid-summer, native	#SP4 container
COR	<i>Coreopsis lanceolata</i>	Lanceleaf coreopsis	313	1-2' tall and 1' wide; full to part sun; medium to dry soil; prolific yellow flowers in early summer, native	#SP4 container
DAY	<i>Heemerocalis x 'VER00112'</i>	EveryDaylily® Cream Daylily	185	12 to 15 in. tall and wide; flowers rise above foliage; dwarf-carefree	#SP4 container
DIS	<i>Distylium 'Cinnamon Gift'</i>	Cinnamon Distylium	72	2' tall and 4' wide evergreen; new foliage has plum-purple color and feeds to blue-green; cold hardy; reddish-maroon flowers in winter; drought tolerant	3 gal. / 12" Height / 12"-18" Spread
ELL	<i>Eragrostis Elliottii</i>	Elliott's Love Grass	8	2-3' tall and wide; full to part sun; medium to dry soil; airy white panicles in late summer, native	#SP5 container
GAU	<i>Gaura lindheimeri</i>	Whirling Butterflies Gaura	145	3'x3' sun-loving perennial; prolific blooms from late spring to early fall; thrive in heat and drought, native	#SP4 container
GEM	<i>Ilex glabra 'Gem Box'</i>	Gem Box Inkberry Holly	121	3'x3' evergreen dwarf; dense ball-shaped, native	3 gal. / 12" Height / 12"-18" Spread
HYS	<i>Eupatorium hyssopifolium</i>	Bonaset, Hyssop Leaf	34	3' tall and 12" wide; full to part sun; medium to dry soil, deer resistant; white flowers late in summer; native	#SP4 container
MUH	<i>Muhlenbergia capillaris</i>	Pink Muhly Grass	310	3'x3' perennial ornamental grass; show stopping during fall when blooming a pink/purple hue of billowy inflorescence, native	3 gal. / 2-3' Height / 12"-18" Spread
NOR	<i>Panicum virgatum 'Northwind'</i>	Northwind Switchgrass	345	4' tall and 2' wide; upright; blue-green foliage; drought tolerant, native	3 gal. / 2-3' Height / 12"-18" Spread
OPP	<i>Penstemon HYBRID</i>	Onyx and Pearls Beardtongue	12	4' tall and 4' wide; perennial penstemon; dark foliage and soft lavender flowers with white interiors; drought tolerant, native	#SP4 container class-round (51-63 cubic inches)
OWL	<i>Juniperus virginiana 'Grey Owl'</i>	Grey Owl Juniper	40	3' tall and 6' wide; soft, silver evergreen foliage; drought tolerant	7 gal. / 2-3' Height / 1-2' Spread
PBP	<i>Phlox subulata 'Purple Beauty'</i>	Purple Beauty Creeping Phlox	765	4-6" tall and 18" wide	#SP4
PEG	<i>Callicarpa x HYBRID</i>	Pearl Glam Beautyberry	23	4-5' tall and 3-4' wide; dark purple foliage from spring to frost; dozens of orchid-colored berries in fall; upright, space-saving habit, native	7 gal. / 2-3' Height / 1-2' Spread
PHO	<i>Phlox 'Fashionably Early Crystal'</i>	Hybrid Phlox Fashionably Early Crystal	19	2-3' tall and wide; early and prolific white blooms, native	#SP4
PLG	<i>Eragrostis spectabilis</i>	Purple Love Grass	3,412	6"-12" tall and wide; dry conditions in full sun; low groundcover mowing with late summer airy cloud-like soft purple flowers (inflorescence), native	#SP4
SAL	<i>Salvia reptans 'Autumn Sapphire'</i>	Autumn Sapphire® Salvia	65	18-24" tall; semi-dwarf; profusion of small cobalt-blue flowers in early fall	#SP4
WPI	<i>Silene caroliniana</i>	Wild Pink	2,840	12" tall and wide; full to part sun; medium to dry soil; hardy for rock gardens, pink flowers in spring, native	#SP4

PLACE PLANTS IN PREPARED BED AS SHOWN

SPACING AS INDICATED ON PLANTING PLAN AND INDICATED IN PLANT LIST



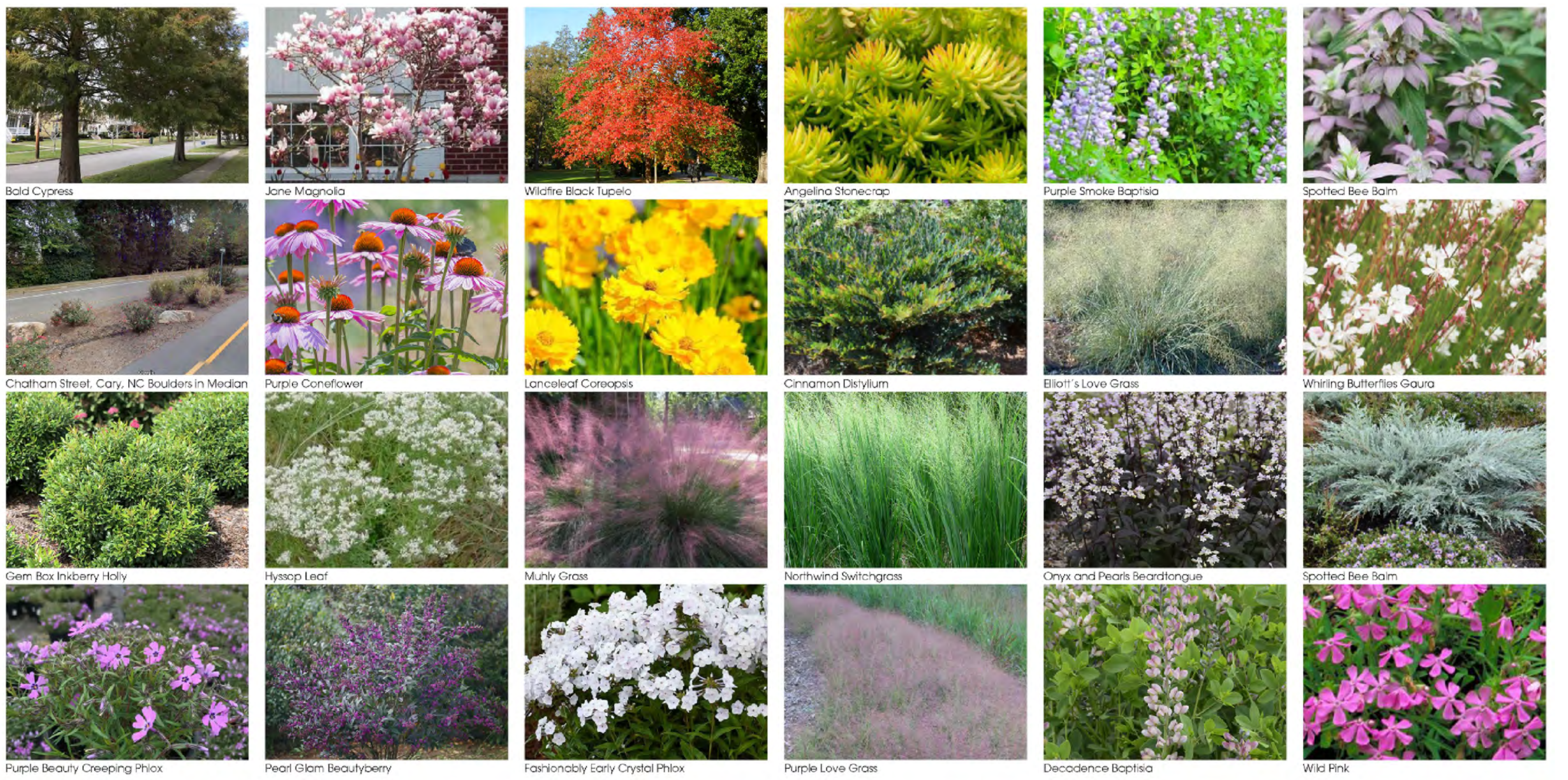
1 PERENNIAL & ORNAMENTAL GRASSES PLANTING DETAIL



- NOTES:
- IF NOT INCLUDED IN PLANT BED, MULCH SHOULD EXTEND TO THE DRIP LINE OF THE TREE.
 - SOIL TEST SHOULD BE PREFORMED AND APPROPRIATE AMENDMENTS AND FERTILIZERS APPLIED TO THE SITE AND SPECIMEN.
 - USE ONLY WATER TO SETTLE SOIL.

2 STREET TREE IN PLANTING STRIP DETAIL

PLANT PALETTE



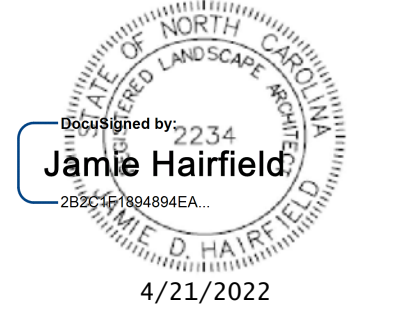
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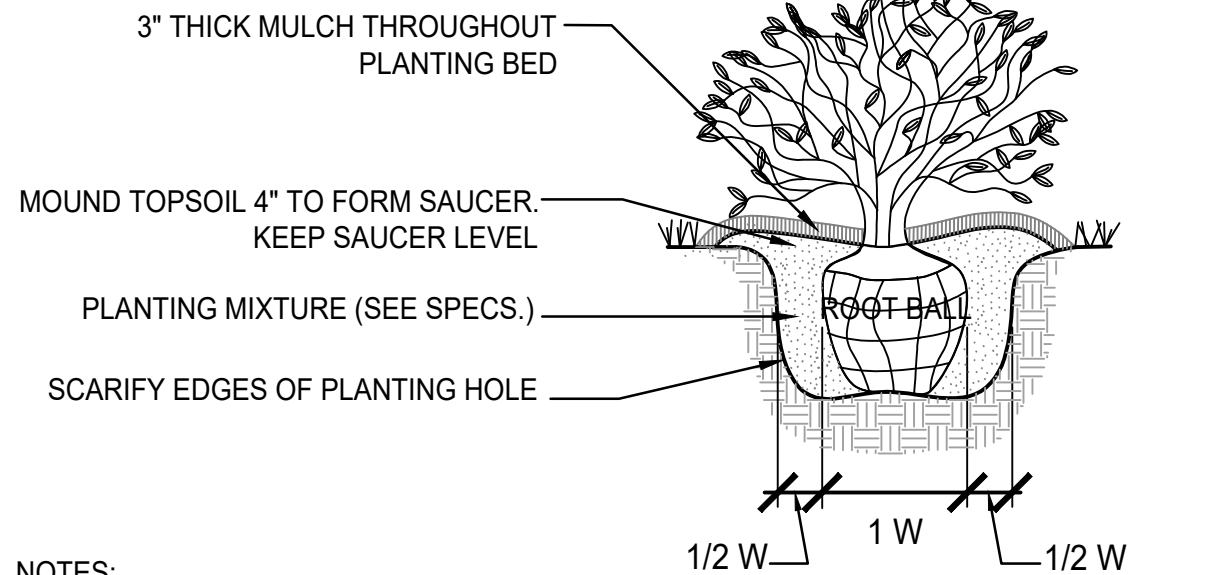
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PROJECT REFERENCE NO. U-6241
SHEET NO. L-13

LANDSCAPE ARCHITECT



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- NOTES:
- REMOVE CONTAINERIZED PLANTS FROM THEIR CONTAINER.
 - REMOVE BURLAP, TWINE, ROPE AND BASKET FROM 1/3 TOP OF ROOTBALL IF BOUND IN BURLAP.
 - PRUNE ROOTS IF ROOTBOUND.
 - REMOVE ALL CONTAINERS AND NON-BIODEGRADABLE BURLAP.
 - WHEN BACKFILLING PLANT PIT, PLACE PLANTING SOIL IN TWO LIFTS. AFTER FIRST LIFT, PUDDLE SOIL IN WITH WATER TO REMOVE ALL AIR POCKETS. PLACE SECOND LIFT AND REPEAT. CONTINUE TO PUDDLE AND FILL AS NECESSARY.

3 SHRUB PLANTING DETAIL

GENERAL LANDSCAPE NOTES:

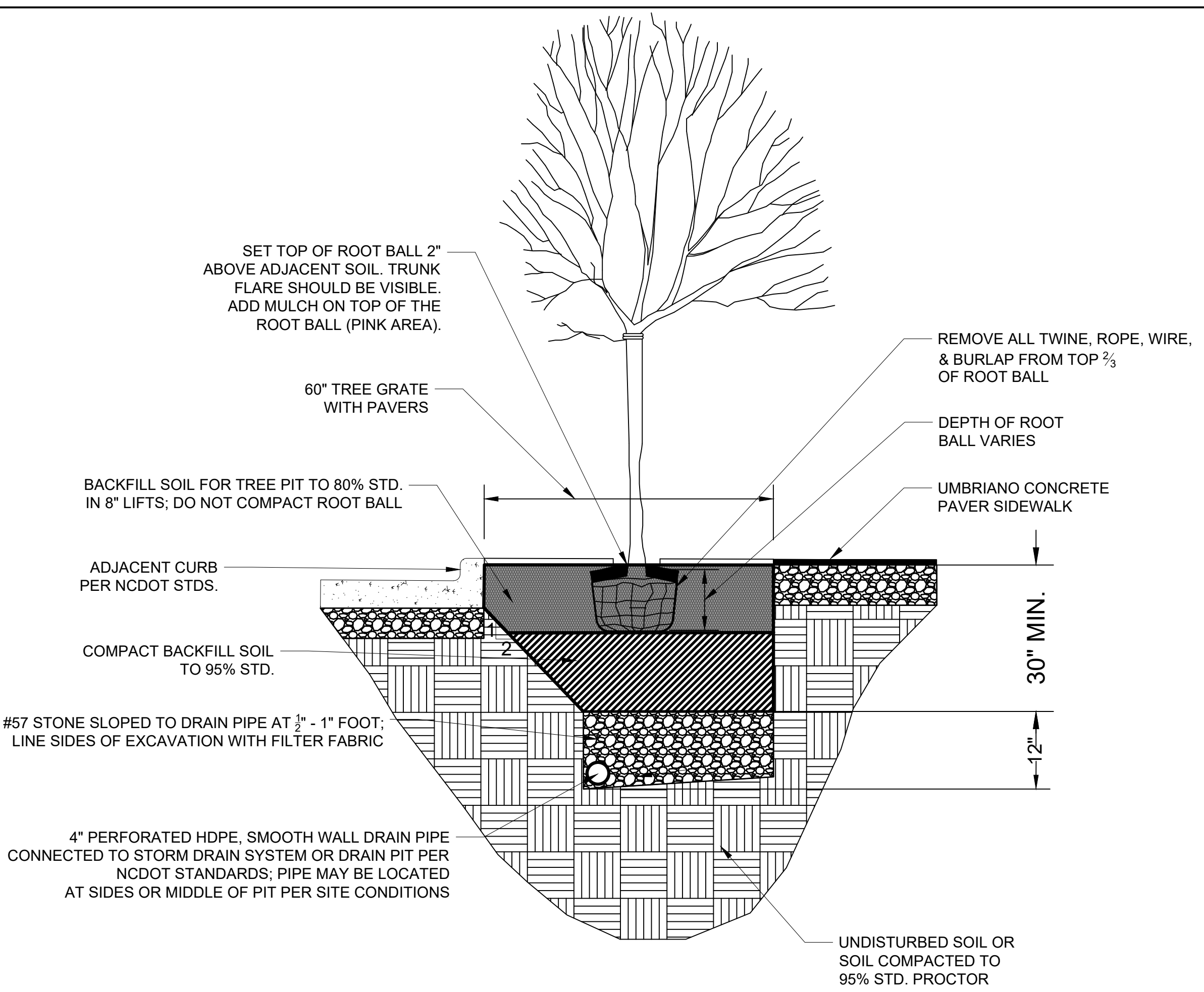
- LANDSCAPE CONTRACTOR (CONTRACTOR) SHALL VISIT SITE, INSPECT EXISTING CONDITIONS, AND REVIEW PROPOSED PLANTINGS AND RELATED WORK. LANDSCAPE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS ON PROPERTY WITH THE GENERAL CONTRACTOR AND BY CALLING LOCAL ONE-CALL OR DIG-RITE PRIOR TO STAKING PLANT LOCATIONS.
- IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, PLAN SHALL GOVERN QUANTITIES, CONTACT LANDSCAPE ARCHITECT AND/OR OWNER'S REPRESENTATIVE WITH ANY CONCERNS.
- LANDSCAPE CONTRACTOR TO COORDINATE THE PHASES OF CONSTRUCTION AND PLANTING INSTALLATIONS WITH OTHER CONTRACTORS WORKING ON SITE.
- WHERE EXISTING TREES AND/OR SIGNIFICANT SHRUB MASSINGS ARE FOUND ON SITE, WHETHER SHOWN ON THE DRAWING OR NOT, THEY SHALL BE PROTECTED AND SAVED UNLESS NOTED TO BE REMOVED AND/OR ARE IN AN AREA TO BE GRADED. ANY QUESTIONS REGARDING WHETHER PLANT MATERIAL SHOULD REMAIN OR NOT SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT AND/OR OWNER'S REPRESENTATIVE PRIOR TO REMOVAL.
- NO PLANT MATERIAL SUBSTITUTIONS WILL BE ACCEPTED UNLESS APPROVAL IS REQUESTED OF THE LANDSCAPE ARCHITECT BY THE LANDSCAPE CONTRACTOR PRIOR TO INSTALLATION.
- ALL PLANT MATERIAL SHALL COMPLY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, AMERICAN ASSOCIATION OF NURSERYMEN.
- LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR ON-GOING MAINTENANCE OF ALL NEWLY INSTALLED MATERIALS UNTIL TIME OF OWNER ACCEPTANCE. ANY ACTS OF VANDALISM OR DAMAGE WHICH MAY OCCUR PRIOR TO OWNER ACCEPTANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- WARRANTY FOR LANDSCAPE MATERIALS SHALL BEGIN ON THE DATE OF ACCEPTANCE BY THE OWNER'S REPRESENTATIVE AFTER THE COMPLETION OF PLANTING OF ALL LANDSCAPE MATERIALS. NO PARTIAL ACCEPTANCE WILL BE CONSIDERED. LANDSCAPE CONTRACTOR SHALL PROVIDE A WRITTEN REQUEST FOR THE OWNER'S ACCEPTANCE INSPECTION. REMOVE AND REPLACE DEAD PLANT MATERIAL (25% + DEAD) IMMEDIATELY UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON. A LIMIT OF ONE REPLACEMENT OF EACH TREE AND SHRUB WILL BE REQUIRED, EXCEPT FOR LOSSES CAUSED BY CONTRACTOR'S ERRORS.
- CONTRACTOR WILL SUPPLY FINISHED GRADE AND EXCAVATE AS NECESSARY TO SUPPLY 4" TOPSOIL DEPTH IN ALL PLANTING BEDS AND 2" SOIL MIXTURE DEPTH IN ALL LAWN AREAS. BACKFILL DIRECTLY BEHIND ALL CURBS AND ALONG SIDEWALKS AND COMPACT TO TOP OF CURB OR WALK TO SUPPORT VEHICLE AND PEDESTRIAN WEIGHT WITHOUT SETTLING.
- ACCEPTANCE OF GRADING AND SOD SHALL BE BY LANDSCAPE ARCHITECT AND/OR PROJECT REPRESENTATIVE. THE LANDSCAPE CONTRACTOR SHALL ASSUME MAINTENANCE RESPONSIBILITY UNTIL FINAL ACCEPTANCE HAS BEEN RECEIVED. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REPLACEMENT OF WASH-OUTS AND OTHER OPERATIONS NECESSARY TO KEEP SOD IN A THRIVING CONDITION. UPON FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT AND/OR OWNER'S REPRESENTATIVE, THE OWNER WILL ASSUME ALL MAINTENANCE RESPONSIBILITIES.
- LANDSCAPE CONTRACTOR SHALL GUARANTEE NEW PLANT MATERIAL THROUGH ONE CALENDAR YEAR FROM THE DATE OF OWNER'S ACCEPTANCE WITH ALL REPLACEMENTS TO BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- PLANT MATERIAL LOCATIONS SHOWN ARE DIAGRAMMATIC AND MAY BE SUBJECT TO CHANGE IN THE FIELD AS REQUIRED. CONTRACTOR TO VERIFY QUANTITIES SHOWN ON PLAN.
- REPAIR ALL DAMAGE TO PROPERTY FROM PLANTING OPERATIONS AT NO COST TO THE OWNER.
- OWNER OR OWNER'S REPRESENTATIVE SHALL INSPECT LANDSCAPE INSTALLATION AND HAVE THE RIGHT TO REJECT AND WITHHOLD PAYMENT ON ANY PLANT MATERIAL(S) OF DAMAGED OR POOR QUALITY OR NOT MEETING SPECIFICATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SOIL, EROSION, AND DUST CONTROL MEASURES PRIOR TO AND DURING CONSTRUCTION. THE LANDSCAPE CONTRACTOR SHALL PREVENT EROSION OF SOIL AND ENTRY OF SOIL-BEARING WATER AND AIRBORNE DUST INTO ADJACENT PROPERTIES AND INTO THE PUBLIC STORM WATER FACILITIES.
- ALL LANDSCAPE BEDS AND TREE RINGS TO BE MULCHED WITH MULCH TO A DEPTH OF NO LESS THAN 3".
- NO PLANTING TO BE INSTALLED UNTIL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
- IF THE LANDSCAPE CONTRACTOR PERCEIVES ANY DEFICIENCIES IN THE PLANT SELECTIONS, SOIL CONDITIONS, OR ANY OTHER SITE CONDITION WHICH MIGHT NEGATIVELY AFFECT PLANT MATERIAL ESTABLISHMENT, SURVIVAL, OR GUARANTEE, THEY SHALL BRING THESE DEFICIENCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- ALL PLANTS TO BE INSTALLED AS PER PLANTING DETAILS. PLANT MATERIALS ARE TO BE PLANTED IN THE SAME RELATIONSHIP TO GRADE AS WAS GROWN IN NURSERY CONDITIONS. IF WET, CLAY SOILS OR POOR DRAINING SOILS ARE EVIDENT, PLANT HIGHER. REMOVE ALL TWINE, WIRE AND BURLAP FROM TOP 1/3 OF ROOT BALL AND FROM TREE TRUNKS.
- ONE SHRUB PER TYPE AND SIZE IN EACH PLANTING BED AND EVERY TREE SHALL BE CLEARLY IDENTIFIED (COMMON OR LATIN NOMENCLATURE) WITH A PLASTIC TAG WHICH SHALL NOT BE REMOVED PRIOR TO OWNER ACCEPTANCE.
- SOD ALL AREAS DISTURBED DUE TO GRADING AND CONSTRUCTION ACTIVITIES. WHERE SOD ABUTS PAVED SURFACES, FINISHED GRADE OF SOD/SEED SHALL BE HELD 1" BELOW SURFACE ELEVATION OF TRAIL, SLAB, CURB, ETC. SOD SHALL BE LAID PARALLEL TO THE CONTOURS AND SHALL HAVE STAGGERED JOINTS. ON SLOPES STEEPER THAN 3:1 OR IN DRAINAGE SWALES, THE SOD SHALL BE STAKED TO THE GROUND.
- PRUNE, THIN AND SHAPE TREES AND SHRUBS ACCORDING TO STANDARD HORTICULTURAL PRACTICES. APPLY MINIMUM 3" MULCH CUP AT ALL TREES NOT PLANTED IN PLANTING BEDS.
- ALL LANDSCAPE AREAS SHALL HAVE PROPER DRAINAGE THAT PREVENTS EXCESS WATER FROM STANDING AROUND TREES AND SHRUBS.
- IMMEDIATELY MULCH WITH HARDWOOD MULCH AND WATER ALL PLANTS AND TREES OR COMPLETE WITHIN 16 HOURS AFTER INSTALLATION
- SOIL MIXTURE SHALL BE 40% TOPSOIL, 40% PEAT MOSS AND 20% SANDY LOAM.

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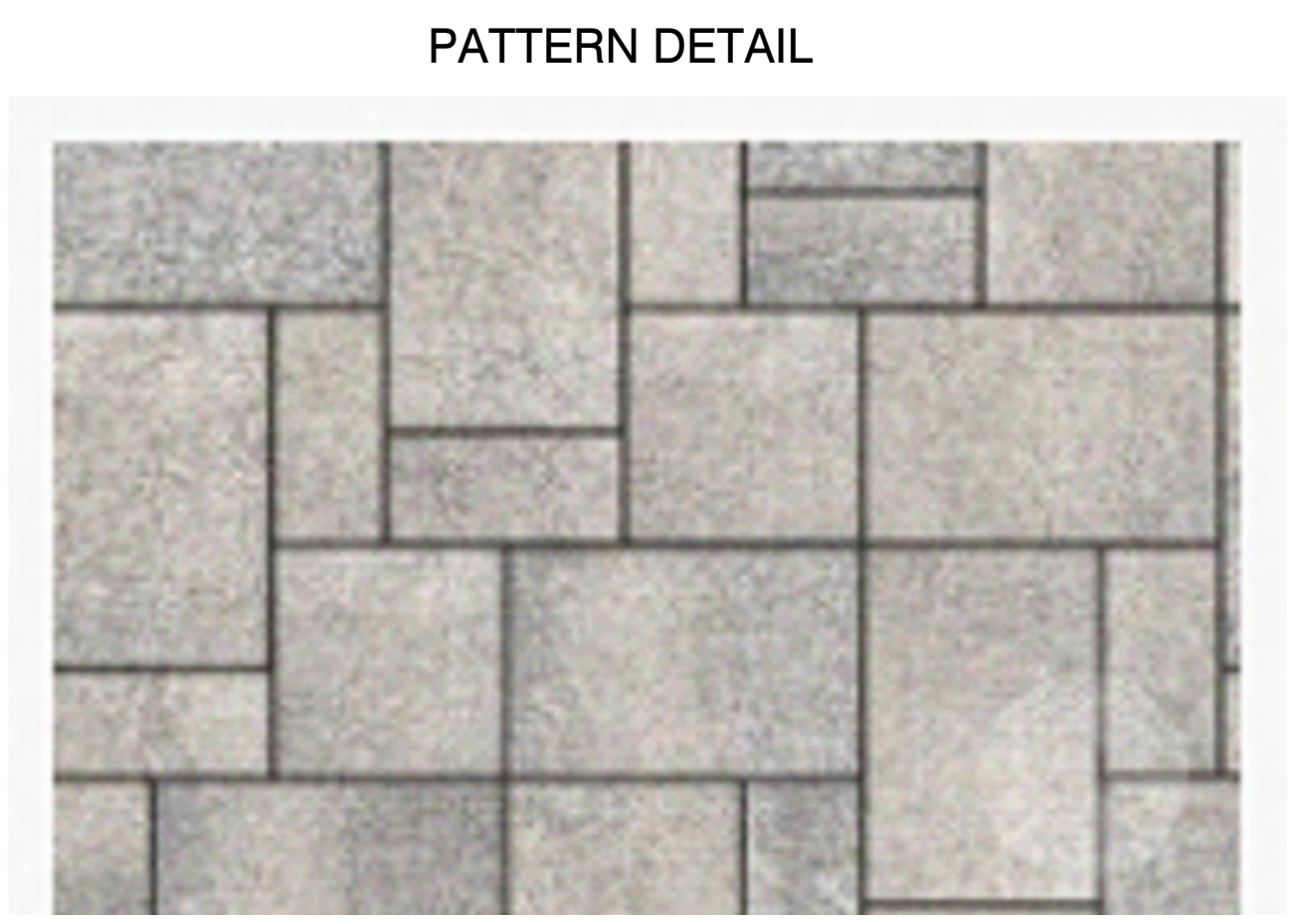
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LANDSCAPE ARCHITECT	
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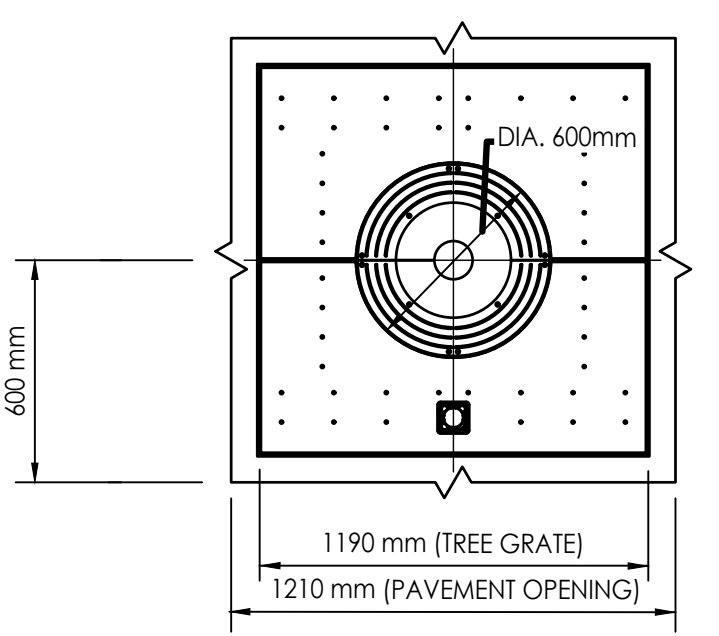


4 STREET TREE PLANTING PIT (FOR TREE PLANTING PITS WITHIN PAVERS)
NTS

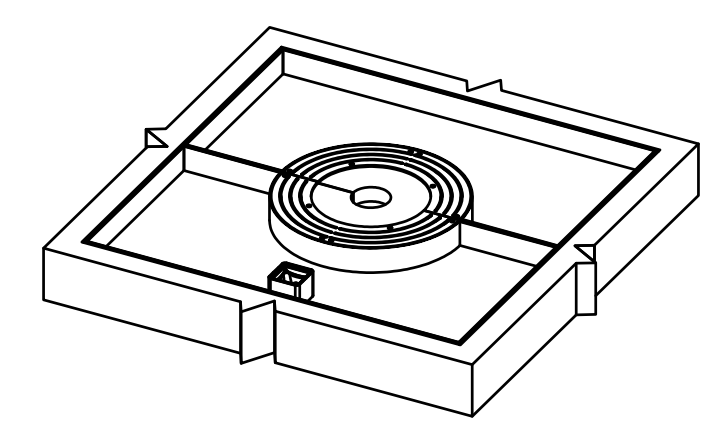


LARGE RECTANGLE 54 CM X 36 CM X 8 CM 21.25" X 14.125" X 3.125"	SQUARE 36 CM X 36 CM X 8 CM 14.125" X 14.125" X 3.125"	SMALL RECTANGLE 18 CM X 36 CM X 8 CM 7.125" X 14.125" X 3.125"

6 CONCRETE PAVER PATTERN AND SIZE
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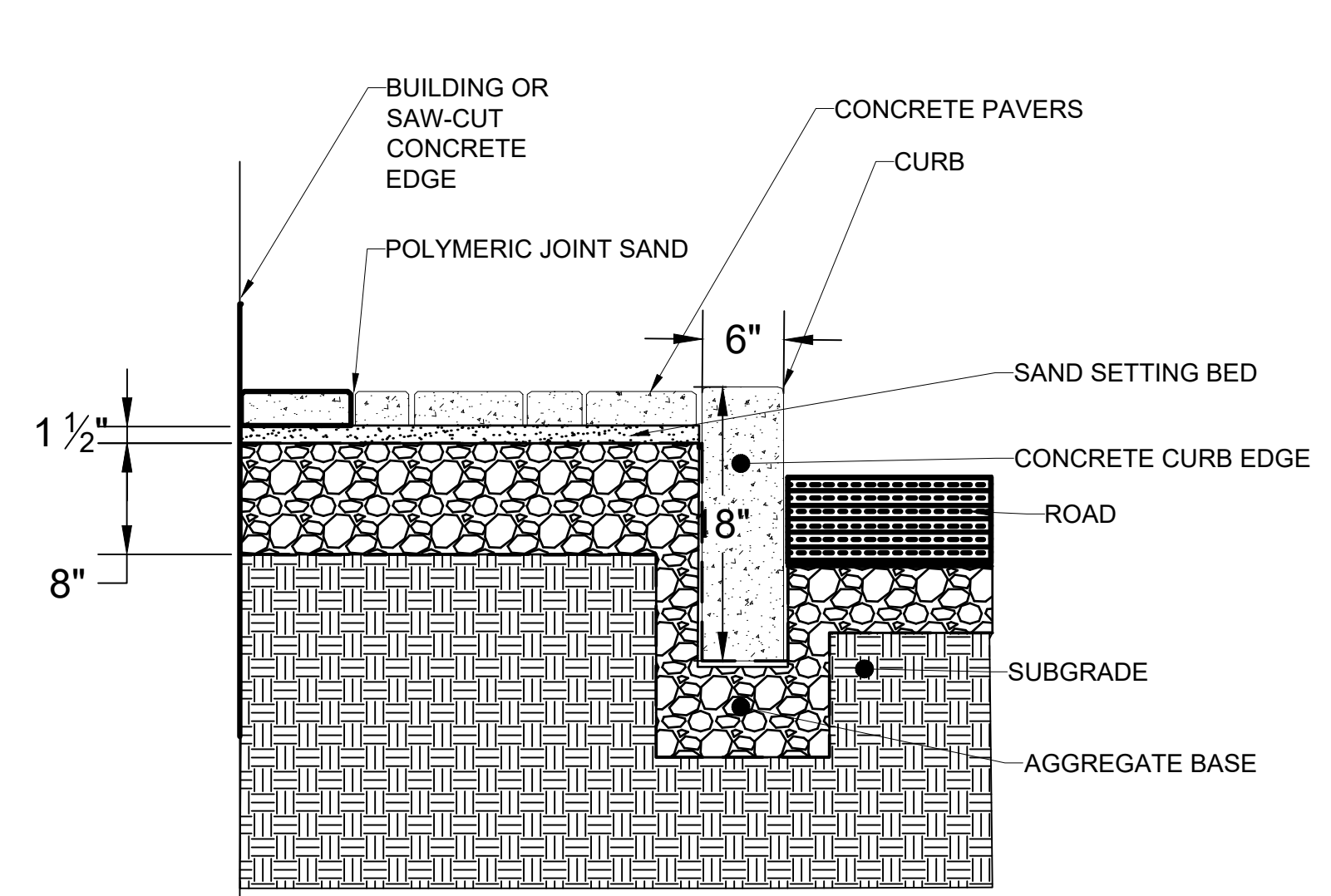


5 TREE GRATE
NTS

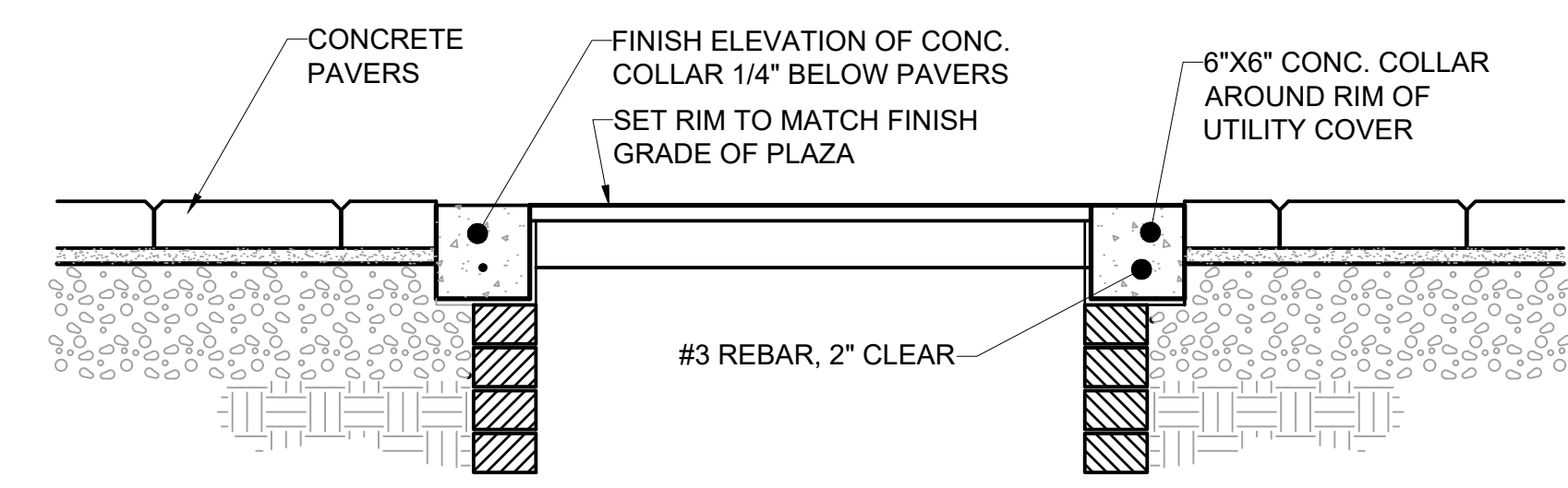


6B PAVER EDGE DETAIL (APPLIES WHEN NO C/G OR BUILDING IS ADJACENT TO PAVERS)
NTS

CAUTION: PROTECT PAVER SURFACE WITH NEOPRENE SCUFF PAD DURING COMPACTION.



6A PAVER EDGE AT CURB/GUTTER DETAIL (PER ROADWAY PLANS)
NTS



6C PAVER INTEGRATION AT UTILITY COVERS
NTS

NOTES AND SPECIFICATIONS

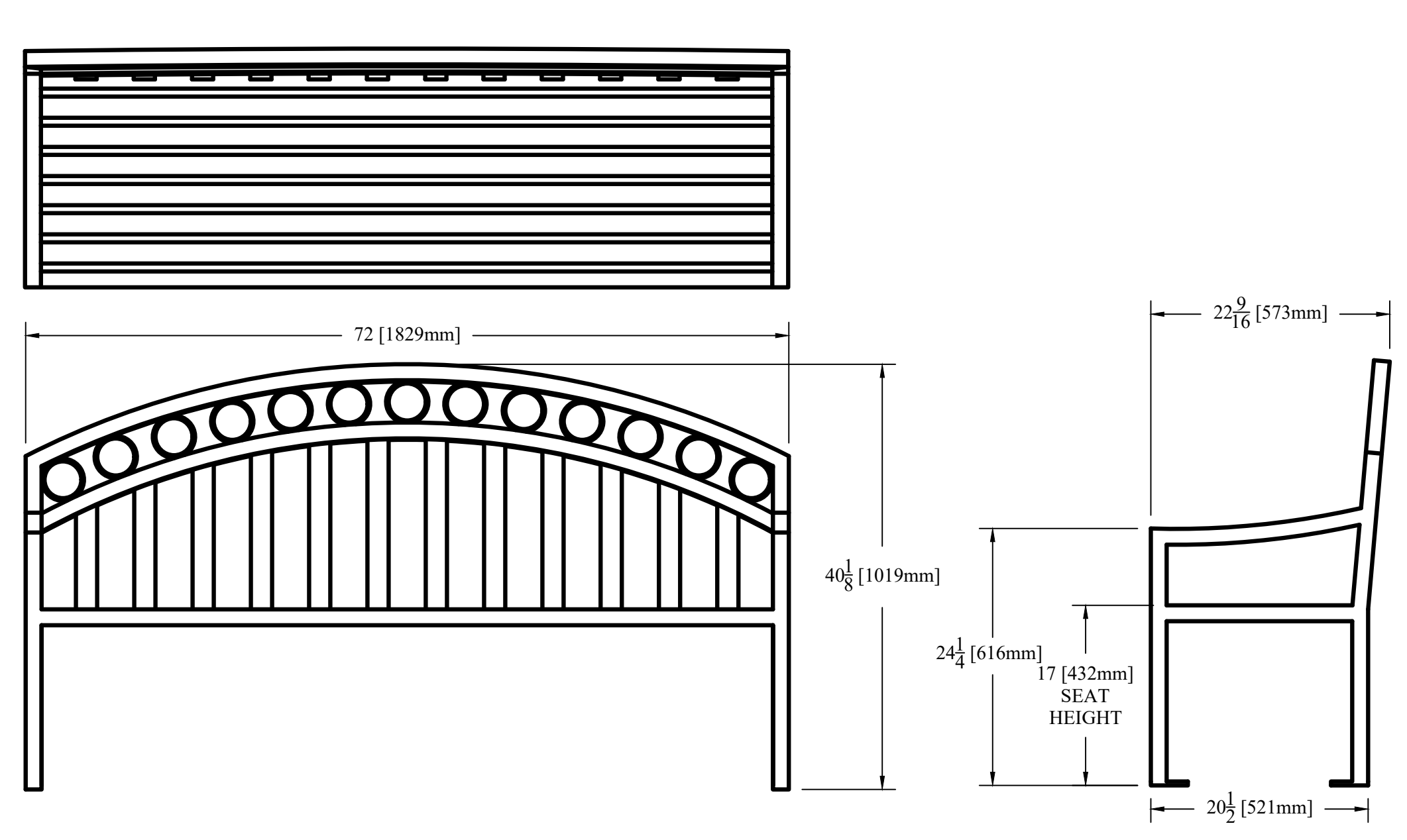
- TREE GRATES**
- FURNISH TREE GRATES IN THE DIMENSIONS SHOWN ON DETAIL 5.
 - FURNISH TREE GRATES SIMILAR IN STYLE AND APPEARANCE TO THE CITYGREEN "INVISIGRATE" 1200IR. SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
 - THE SELECTED TREE GRATE PRODUCT MUST ALLOW THE CONCRETE PAVERS TO CONTINUE OVER THE TREE PIT AREA (I.E., ALLOW FOR "PAVER INFILL") IN ORDER TO REDUCE TRIPPING HAZARDS AND MAXIMIZE THE USABLE AREA FOR PEDESTRIANS, INCLUDING WHEELCHAIRS, STROLLERS, ETC.
 - CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO BE APPROVED BY LANDSCAPE ARCHITECT/ ENGINEER AND THE TOWN OF ROLESVILLE.
 - INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- CONCRETE PAVERS**
- FURNISH CONCRETE PAVERS IN A STYLE AND GRANITE APPEARANCE SIMILAR TO UNILOCK "UMBRIANO". SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
 - FURNISH TREE GRATES SIMILAR IN COLOR, CHARACTERISTICS, AND APPEARANCE SIMILAR TO UNILOCK "WINTER MARVEL" EASY CLEAN FINISH.
 - THREE APPROXIMATE SIZES OF PAVER SHALL BE USED TO CREATE THE DESIRED PATTERN AS INDICATED IN DETAIL #6 AS FOLLOWS:
 - LARGE RECTANGLE: 54CM X 36CM X 8CM (21.25" X 14.125" X 3.125")
 - SQUARE: 36CM X 36CM X 8CM (14.125" X 14.125" X 3.125")
 - SMALL RECTANGLE: 18CM X 36CM X 8CM (7.125" X 14.125" X 3.125")
 - REFER TO PROJECT SPECIAL PROVISIONS FOR IMPORTANT SUBMITTAL REQUIREMENTS INCLUDING SAMPLE PAVERS, TEST RESULTS, PRODUCT DATA, INSTALLATION INSTRUCTIONS, AND MATERIAL SAFETY DATA SHEETS.
 - INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
 - PRODUCT AND INSTALLATION DETAILS ON THIS SHEET MAY BE OVERRIDDEN BY MANUFACTURER'S SPECIFICATIONS FOR THE SELECTED PRODUCT.

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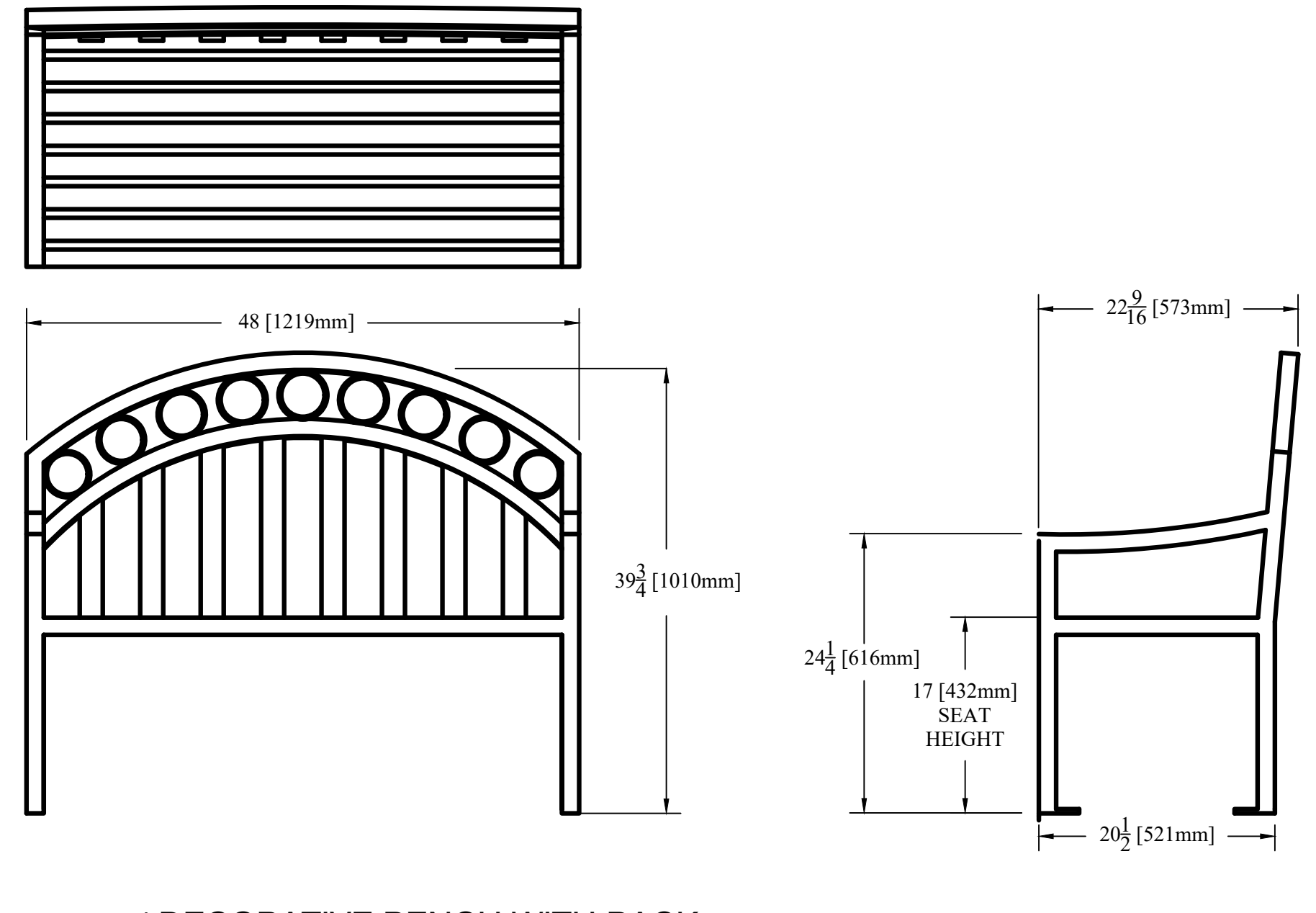
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7 6' DECORATIVE BENCH WITH BACK
 NTS



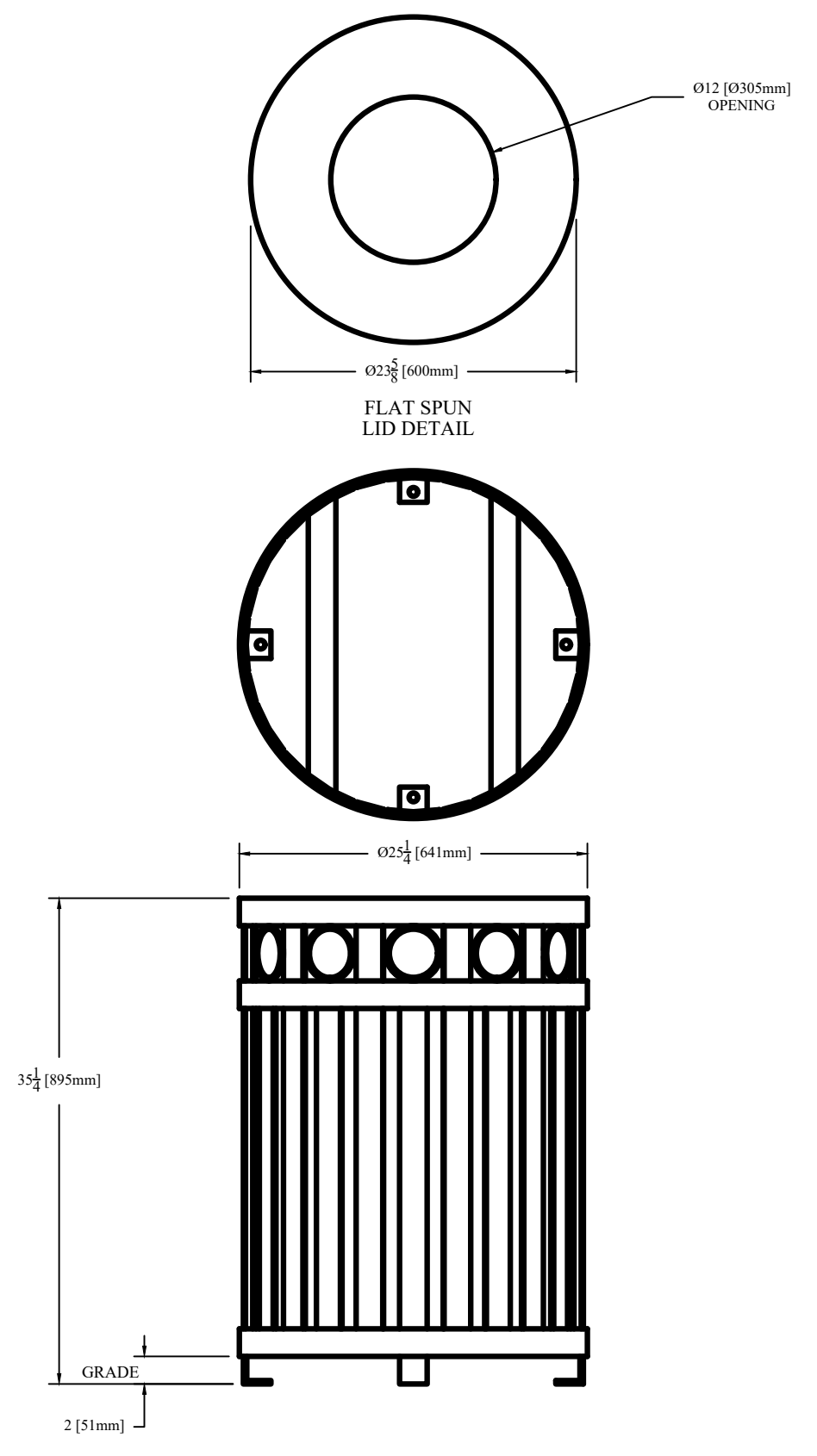
8 4' DECORATIVE BENCH WITH BACK
 NTS

NOTES AND SPECIFICATIONS

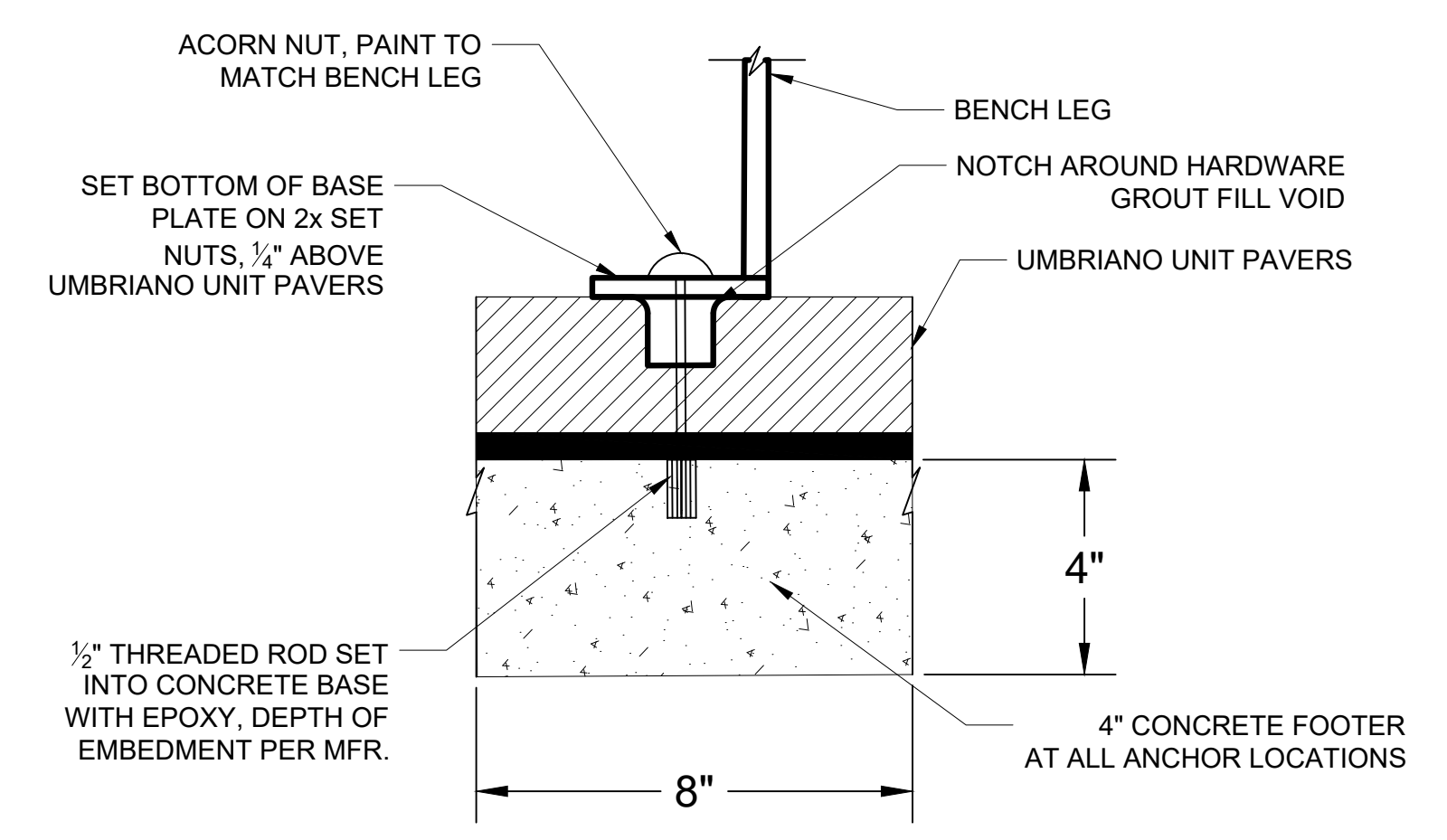
BENCHES AND TRASH RECEPTACLES

- 1) BENCHES
 - A) FURNISH DECORATIVE STREET BENCHES WITH BACKS IN 4' LENGTHS AND 6' LENGTHS ACCORDING TO DETAILS 7 AND 8.
 - B) FURNISH BENCHES IN A STYLE AND APPEARANCE SIMILAR TO KEYSTONE RIDGE "ATLANTA" SERIES (AT-24 AND AT-26) WITH BACK. SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
 - C) FINISH SHALL BE A BLACK POWDER COAT FINISH.
- 2) TRASH RECEPTACLES
 - A) FURNISH DECORATIVE TRASH RECEPTACLES ACCORDING TO DETAIL 9.
 - B) FURNISH TRASH RECEPTACLES IN A STYLE AND APPEARANCE SIMILAR TO KEYSTONE RIDGE "ATLANTA" SERIES. SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
 - C) FINISH SHALL BE A BLACK POWDER COAT FINISH.
- 3) INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- 4) CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL BY LANDSCAPE ARCHITECT.

NOTE: ALL BENCHES AND TRASH RECEPTACLES ARE "NON-REIMBURSABLE ITEMS".



9 DECORATIVE TRASH RECEPTACLE
 NTS


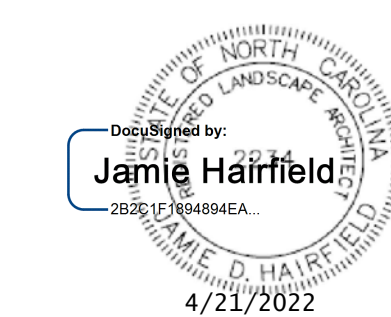



10 ANCHOR BOLT DETAIL FOR BENCHES AND TRASH RECEPTACLES
 NTS

ANCHOR INSTALLATION NOTES:

NOTE: TYPICAL ANCHOR TAB ON BOTH BENCHES AND RECEPTACLES. THE ANCHOR TABS HAVE BEEN DRILLED WITH A 5/8" HOLE; USE A 1/2" ANCHOR BOLT OF 4 1/4" LENGTH. ALL ANCHOR BOLTS SHOULD BE EXPANSION BOLTS AND STAINLESS STEEL FOR INSTALLATION INTO CONCRETE SURFACES.

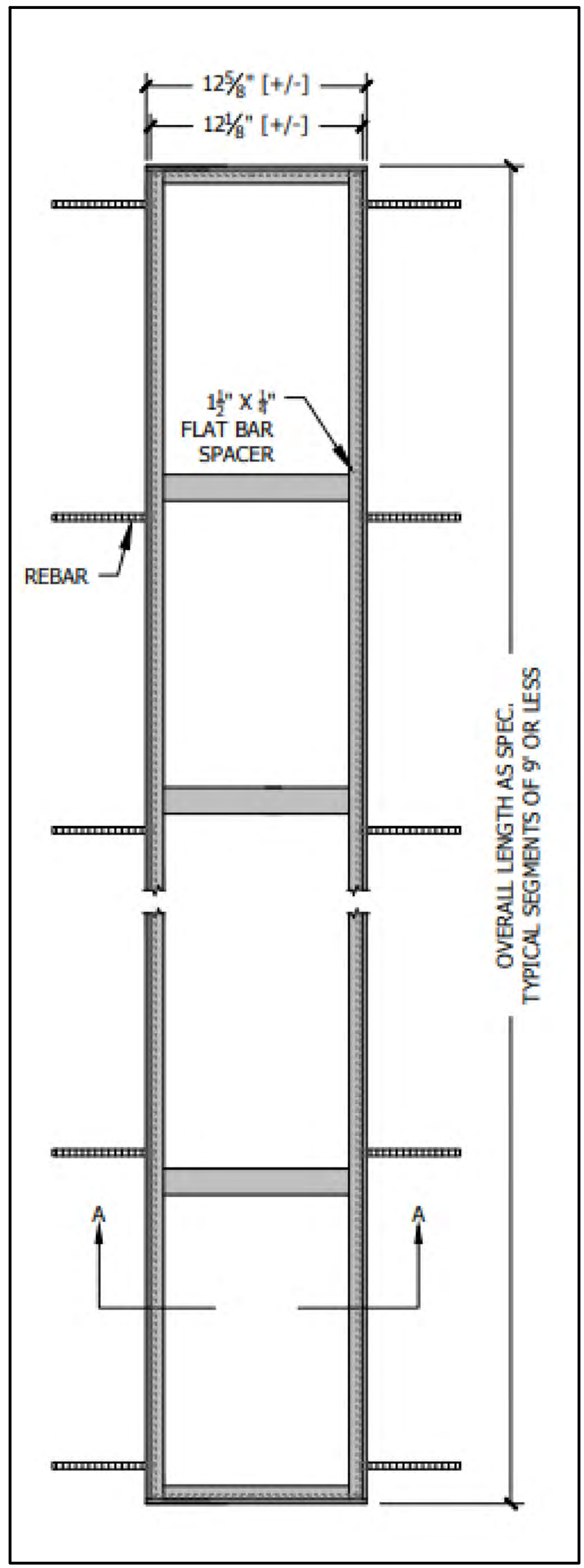
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	U-6241	L-15
LANDSCAPE ARCHITECT  <p>DESIGNED BY: JAMIE D. HAIRFIELD 4/21/2022</p>		
SUNGATE DESIGN GROUP, P.A.  <p>900 JONES FRANKLIN ROAD RALEIGH, NORTH CAROLINA 27606 NC CCA No. C-0590</p>		
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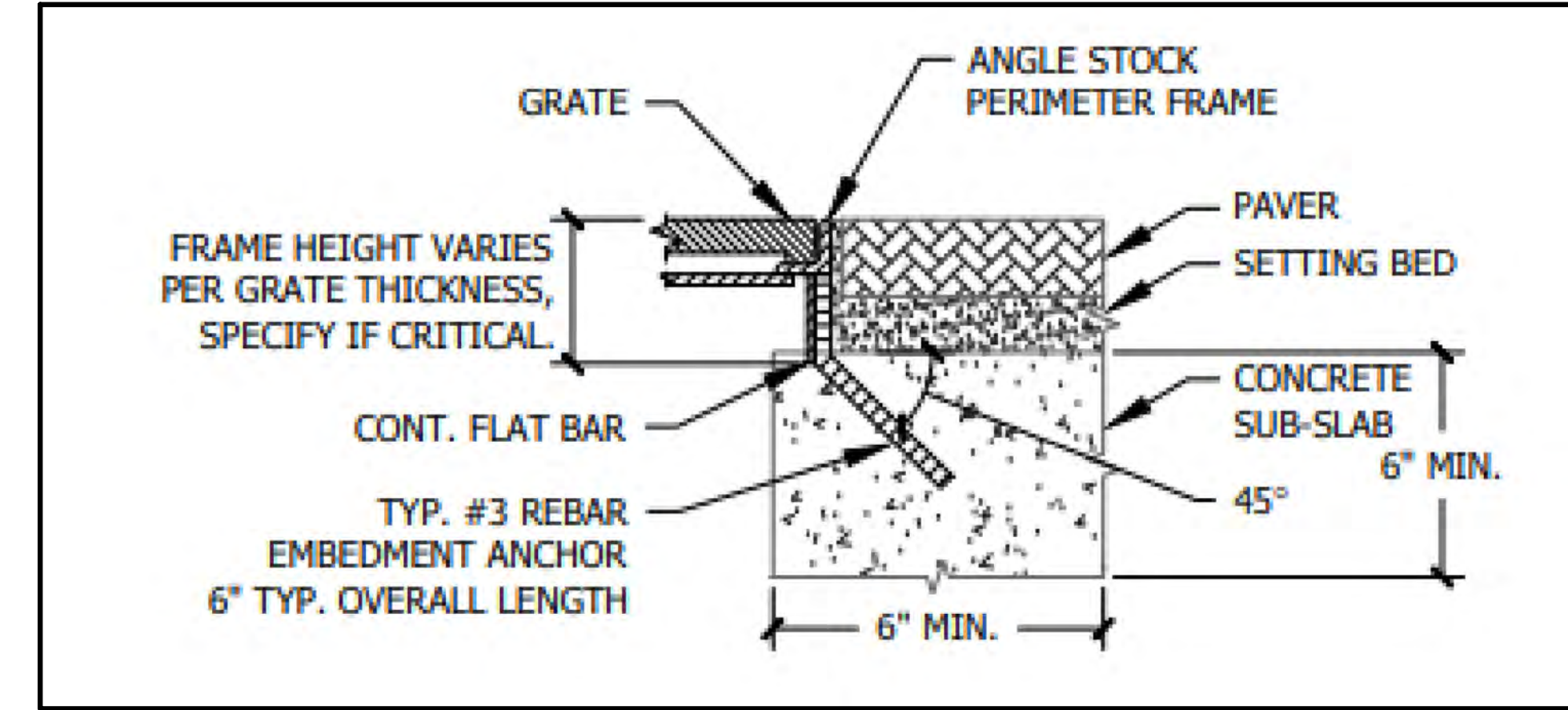
TRENCH FRAME NOTES AND SPECIFICATIONS

TRENCH FRAME

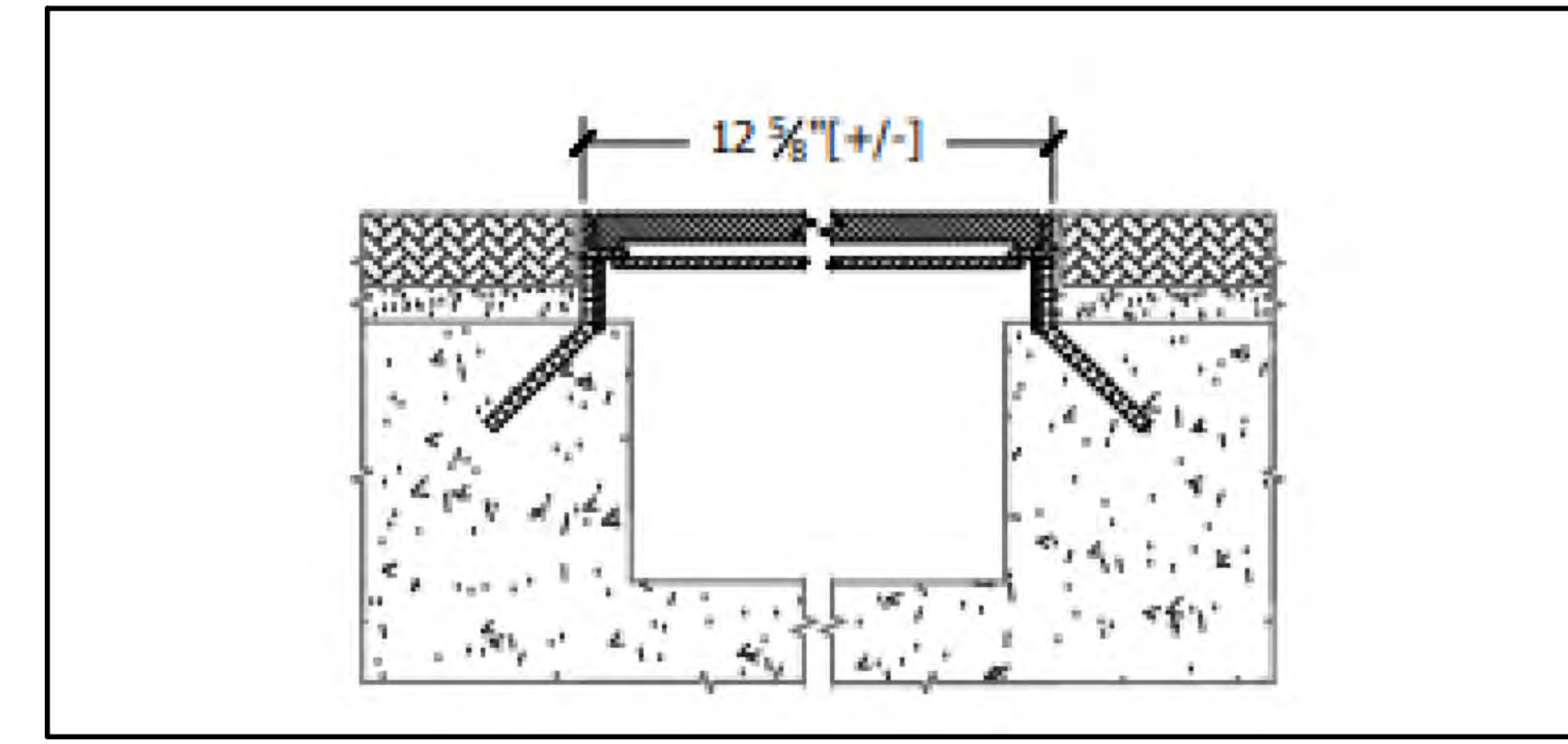
- FURNISH TRENCH FRAMES ACCORDING TO THE DIMENSIONS IN DETAIL 11.
- FURNISH TRENCH FRAMES IN A STYLE AND APPEARANCE SIMILAR TO URBAN ACCESSORIES TRENCH GRATE FRAME 12" WIDE TYPE "P" PEDESTRIAN DUTY IN "RUST CONDITIONER" FINISH. SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
- FURNISH TRENCH FRAMES CONSTRUCTED OF MILD STEEL ASTM A36.
- TRENCH FRAMES ARE TO BE LOAD RATED FOR PEDESTRIAN TRAFFIC AT A MINIMUM.
- TYPICAL 1/8" HORIZONTAL GAP BETWEEN GRATE AND FRAME. ALL VISIBLE WELDS TO BE GROUND SMOOTH ON OUTSIDE EDGES.
- FRAMES ARE TO BE TRUE TO SQUARE OR DIAMETER.
- TOP OF GRATE TO BE FLUSH WITH GRADE OF SURROUNDING PAVERS.
- FINISH SHALL BE IN A COLOR SIMILAR TO URBAN ACCESSORIES "RUST CONDITIONER" OR APPROVED EQUAL.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO BE APPROVED BY LANDSCAPE ARCHITECT/ ENGINEER AND THE TOWN OF ROLESVILLE.
- INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- PRODUCT AND INSTALLATION DETAILS ON THIS SHEET MAY BE OVERRIDDEN BY MANUFACTURER'S SPECIFICATIONS FOR THE SELECTED PRODUCT.



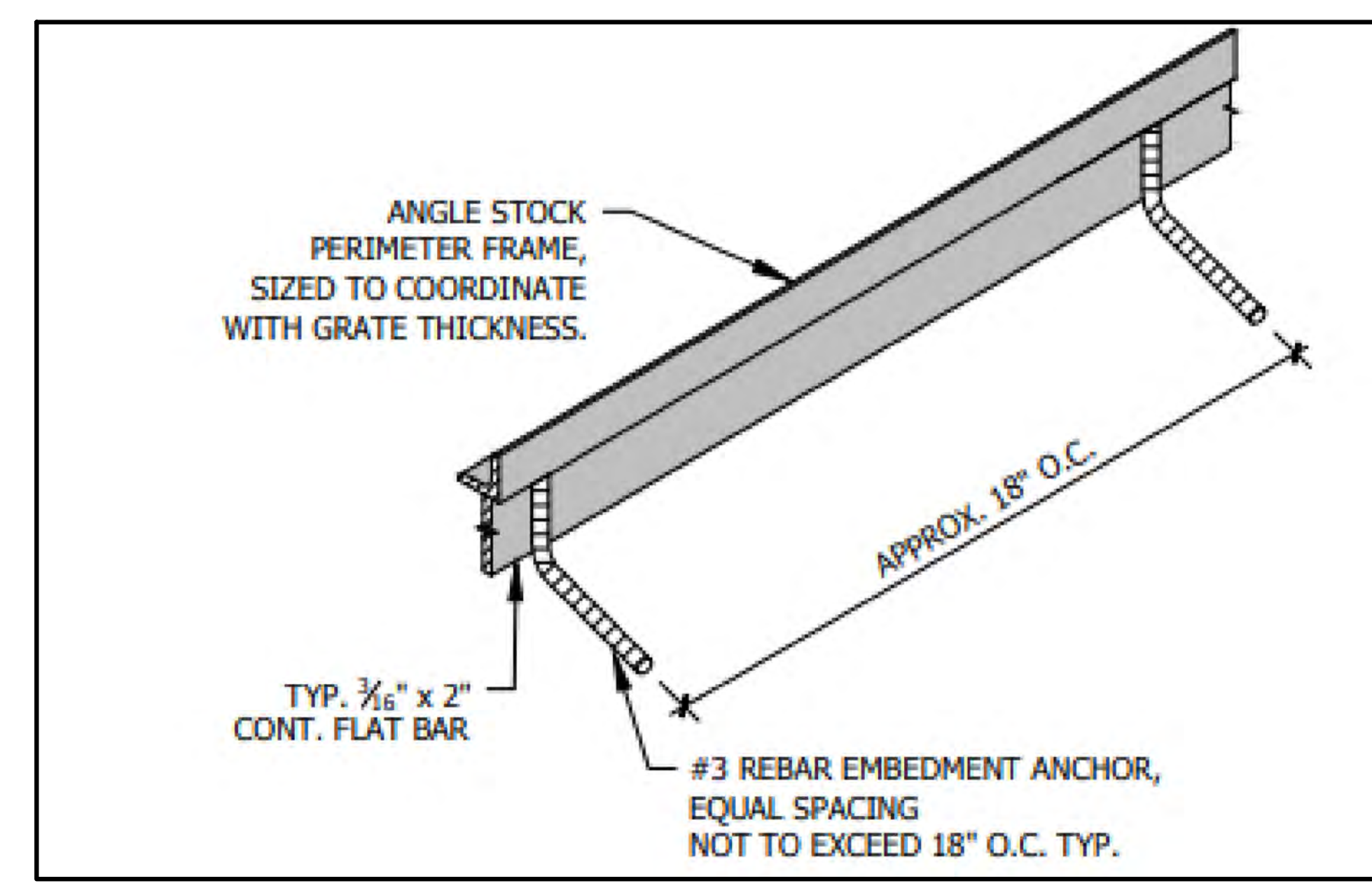
11 TRENCH GRATE FRAME
NTS



12 DETAILED ELEVATION A-A
NTS



13 ELEVATION A-A
NTS



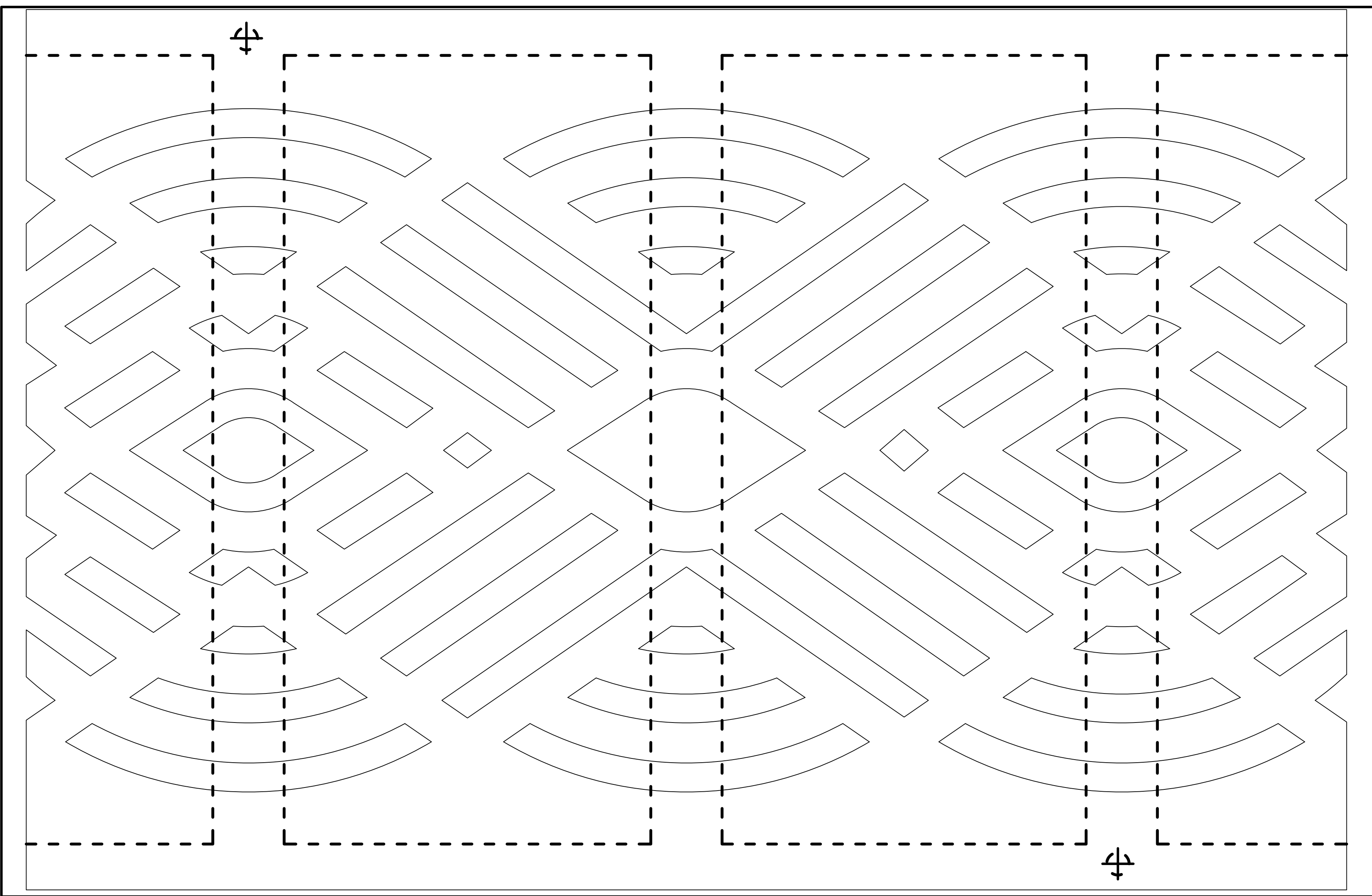
14 ISOMETRIC VIEW OF TRENCH GRATE
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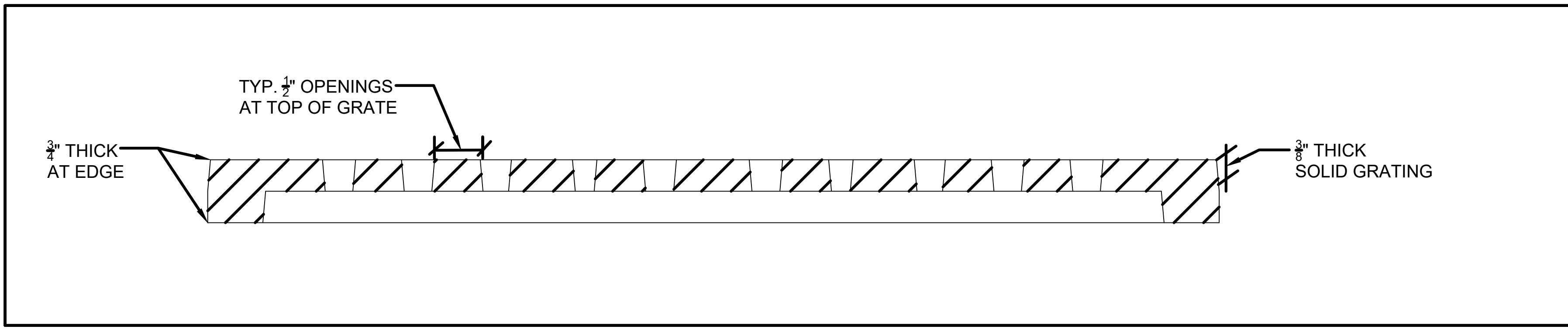


DECORATIVE TRENCH GRATE NOTES AND SPECIFICATIONS

DECORATIVE TRENCH GRATE

- a. FURNISH DECORATIVE TRENCH GRATES IN A STYLE AND APPEARANCE SIMILAR TO URBAN ACCESSORIES TRENCH GRATE IN "DOUBLE WAVE" PATTERN IN "RUST CONDITIONER" FINISH. SEE SPECIAL PROVISIONS FOR ALTERNATE PRODUCTS.
- b. TRENCH GRATE MATERIAL SHALL BE HIGH QUALITY MATERIAL THAT MEETS OR EXCEEDS THE MINIMUM CHARACTERISTICS OF 100% RECYCLED GREY IRON; ASTM A48 CLASS 35B OR BETTER; HARDNESS 170-223 BRINNELL.
- c. TYPICAL GRATE THICKNESS IS 3/4" THICK AT EDGE.
- d. ENSURE NO OPENINGS GREATER THAN 1/2" IN CONFORMANCE WITH ADA ACCESSIBILITY GUIDELINES.
- e. FINISH SHALL BE IN A COLOR SIMILAR TO URBAN ACCESSORIES "RUST CONDITIONER" OR APPROVED EQUAL.
- f. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO BE APPROVED BY LANDSCAPE ARCHITECT/ ENGINEER AND THE TOWN OF ROLESVILLE.
- g. INSTALL ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
- h. PRODUCT AND INSTALLATION DETAILS ON THIS SHEET MAY BE OVERRIDDEN BY MANUFACTURER'S SPECIFICATIONS FOR THE SELECTED PRODUCT.

15 PLAN VIEW OF EXAMPLE DECORATIVE PATTERN FOR TRENCH GRATE
NTS



16 SECTION VIEW
NTS

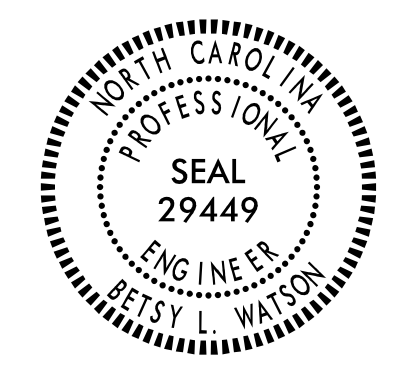
8/17/09
 6/3/2021
 C:\Users\aboukri\desktop\Rolesville Backup\Rolesville Details.dwg
 aboukri

T I P P R O J E C T : U - 6 2 4 1

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SIGNING PLAN WAKE COUNTY

LOCATION: US 401 BUS (MAIN ST) FROM JONESVILLE RD TO NORTH OF YOUNG ST

PROJECT NAME U-6241	SHEET NO. SIGN-1
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
901.50	ARROWS AND SHIELDS
901.70	SIGN STRINGERS AND SUPPORT SPACING
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
910.20	SIGNING SCHOOL ZONE

GENERAL NOTES

- . SIGNS FURNISHED BY CONTRACTOR.
- . ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.
- . WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.
- . ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.
- . WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- . THE BACKGROUND FOR TYPE E SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE B SIGN.....	262.50	SF
4025000000	901	CONTRACTOR FURNISHED, TYPE D SIGN.....	27	SF
4025000000	901	CONTRACTOR FURNISHED, TYPE E SIGN.....	837.67	SF
4072000000	903	SUPPORTS, 3-LB STEEL U-CHANNEL.....	1,350	LF
4096000000	904	SIGN ERECTION, TYPE D.....	2	EA
4102000000	904	SIGN ERECTION, TYPE E.....	110	EA
4109000000	904	SIGN ERECTION, TYPE B (OVERHEAD).....	16	EA
4110000000	904	SIGN ERECTION, TYPE B (GROUND MOUNTED).....	16	EA
4116100000	904	SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED).....	4	EA
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL.....	41	EA
4238000000	907	DISPOSAL OF SIGN, D, E OR F.....	2	EA
4360000000	SP	GENERIC SIGNING ITEM (SOLAR POWERED RECTANGULAR RAPID-FLASHING BEACON)...	12	EA

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2-2D	SIGN DESIGNS
SIGN-3	TYPE 'E' SIGNS
SIGN-4-13	SIGNING PLAN SHEETS
SIGN-14	STREET NAME SIGN INTERSECTION DETAILS

PLAN PREPARED BY:

BETSY L. WATSON, P.E. SENIOR TRANSPORTATION ENGINEER

REGINA M. MUNCEY, P.E. TRANSPORTATION ENGINEER

ROSI R. HENNEIN TRANSPORTATION DESIGNER



Stantec
 Stantec Consulting Services Inc.
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 License No. F-9572

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

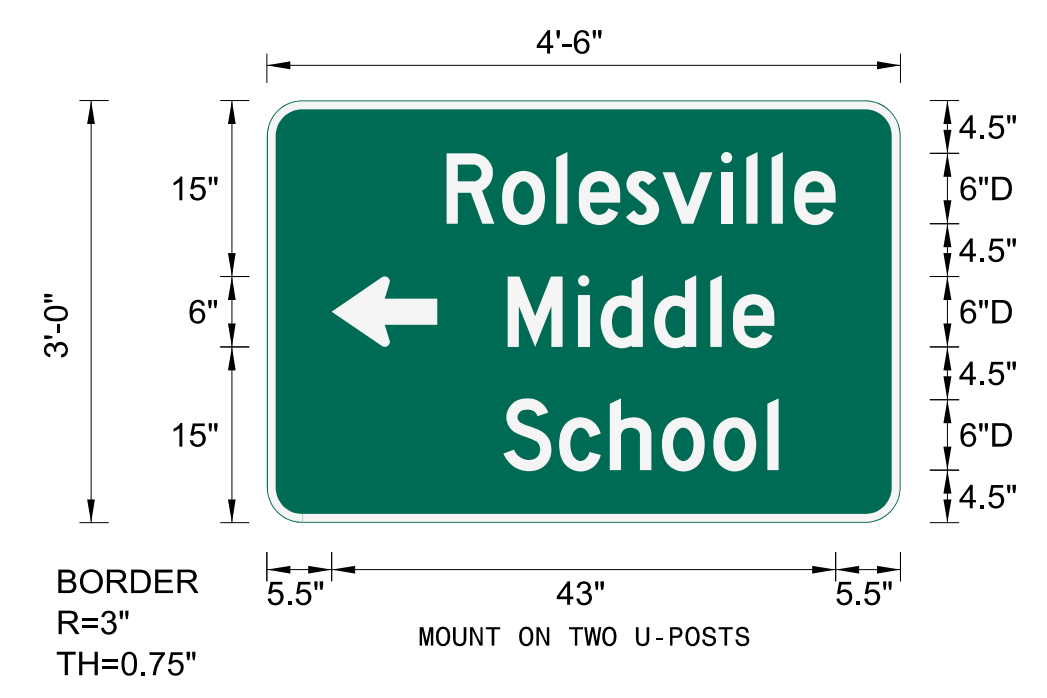
SIGN NUMBER: 301
 TYPE: D
 QUANTITY: 1
 SIGN WIDTH: 54"
 HEIGHT: 36"
 TOTAL AREA: 13.5 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 3"
 WIDTH: 0.75"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	5.5	15	6	9

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Feb 16, 2021
 PROJECT ID: U-6241 DIV: 5



USE NOTES
 1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
 2. Background shall be Grade C reflective sheeting.

LETTER POSITIONS

Letter spacings are to start of next letter

Letter	R	o	l	e	s	v	i	l	l	e	Series/Size Text Length			
Rolesville	15.3	4.7	4.6	1.9	4	3.1	5	2.2	2.2	1.9	3.5	5.5	D 2000	33.2
Middle	20.5	6	1.9	4.6	4.8	1.9	3.5	10.7					D 2000	22.7
School	20.2	4.7	4.3	4.4	4.4	4.6	1	10.4					D 2000	23.5

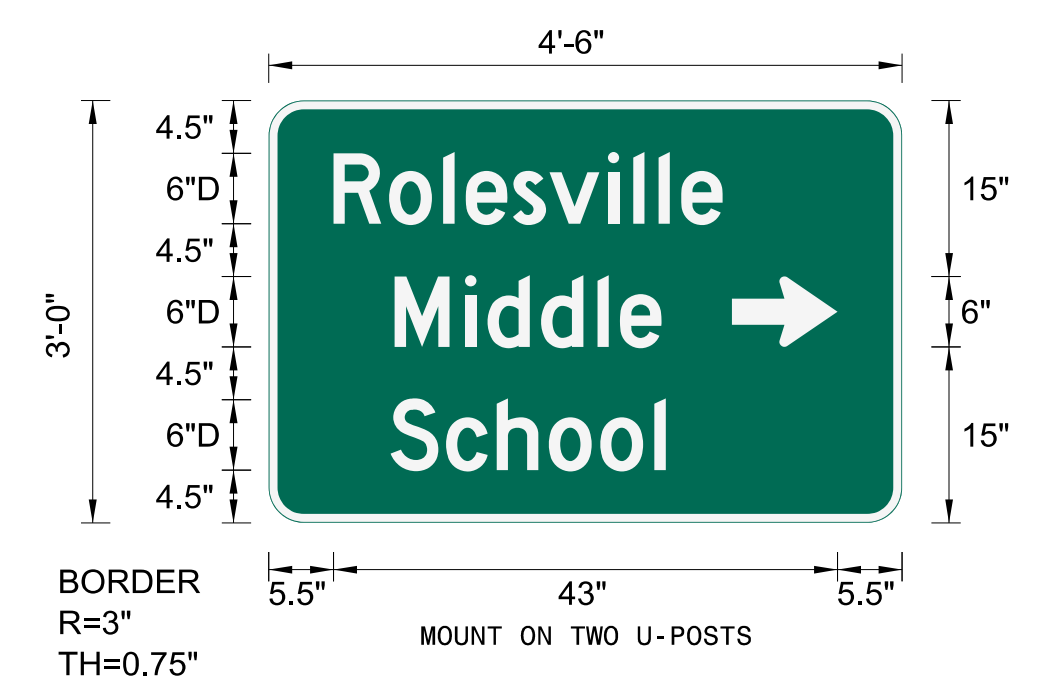
SIGN NUMBER: 302
 TYPE: D
 QUANTITY: 1
 SIGN WIDTH: 54"
 HEIGHT: 36"
 TOTAL AREA: 13.5 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 3"
 WIDTH: 0.75"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	39.5	15	6	9

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Feb 16, 2021
 PROJECT ID: U-6241 DIV: 5



USE NOTES
 1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
 2. Background shall be Grade C reflective sheeting.

LETTER POSITIONS

Letter spacings are to start of next letter

Letter	R	o	l	e	s	v	i	l	l	e	Series/Size Text Length			
Rolesville	5.5	4.7	4.6	1.9	4	3.1	5	2.2	2.2	1.9	3.5	15.3	D 2000	33.2
Middle	10.7	6	1.9	4.6	4.8	1.9	3.5	20.5					D 2000	22.7
School	10.4	4.7	4.3	4.4	4.4	4.6	1	20.2					D 2000	23.5

PROJECT NAME: U-6241 SHEET NO.: SIGN-2

APPROVED: *Betsy L. Watson*
REGISTERED PROFESSIONAL ENGINEER

DATE: 11/19/2021

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 \$\$\$\$\$\$DGN\$\$\$\$\$
 \$\$\$\$\$\$USERNAME\$\$\$\$\$

TYPE 'D' SIGNS

SIGN NUMBER: 1,2,5,6,9,10
 TYPE: B
 QUANTITY: 6
 SIGN WIDTH: 72"
 HEIGHT: 18"
 TOTAL AREA: 9.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS: LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
town logo	5.5	3	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 11, 2021
 PROJECT ID: U-6241 DIV: 5

- USE NOTES
1. Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 2. Background shall be Grade C reflective sheeting.
 3. Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter

S	M	a	i	n	S	t	Series/Size Text Length
23.5	3.6	6	7.6	6.1	2.9	4.7	D 2000
							43

SIGN NUMBER: 3
 TYPE: B
 QUANTITY: 1
 SIGN WIDTH: 90"
 HEIGHT: 24"
 TOTAL AREA: 15.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS: LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	24.7	16.4	5	7.5
AR_Type D	78.3	4.7	5	7.5
town logo	2.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 11, 2021
 PROJECT ID: U-6241 DIV: 5

- USE NOTES
1. Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 2. Background shall be Grade C reflective sheeting.
 3. Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter

J	o	n	e	s	v	i	l	l	e	R	d	Series/Size Text Length		
36.2	4.8	4	3.8	3.4	2.9	4.2	2.3	2.1	3	4.5	3.6	B 2000,C 2000		
												43.7		
H	a	m	p	t	o	n	L	a	k	e	D	r	Series/Size Text Length	
18.8	4.4	4	5.7	3.3	2.7	3.8	2.9	4.5	3.4	4	3.7	3	4.5	B 2000,C 2000
														55.5

SIGN NUMBER: 4
 TYPE: B
 QUANTITY: 1
 SIGN WIDTH: 90"
 HEIGHT: 24"
 TOTAL AREA: 15.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS: LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	18.8	15.5	5	7.5
AR_Type D	72.4	3.3	5	7.5
town logo	2.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 11, 2021
 PROJECT ID: U-6241 DIV: 5

- USE NOTES
1. Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 2. Background shall be Grade C reflective sheeting.
 3. Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter

H	a	m	p	t	o	n	L	a	k	e	D	r	Series/Size Text Length	
30.3	4.4	4	5.7	3.3	2.7	3.8	2.9	4.5	3.4	4	3.7	3	4.5	B 2000,C 2000
														55.5
J	o	n	e	s	v	i	l	l	e	R	d	Series/Size Text Length		
24.7	4.8	4	3.8	3.4	2.9	4.2	2.3	2.3	2.1	3	4.5	3.6	2.7	B 2000,C 2000
														43.7

SIGN NUMBER: 7,8
 TYPE: B
 QUANTITY: 2
 SIGN WIDTH: 90"
 HEIGHT: 18"
 TOTAL AREA: 11.3 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS: LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
town logo	5.7	3	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 11, 2021
 PROJECT ID: U-6241 DIV: 5

- USE NOTES
1. Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 2. Background shall be Grade C reflective sheeting.
 3. Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter

V	i	r	g	i	n	i	a	W	a	t	e	r	D	r	Series/Size Text Length					
23.7	4.6	2.3	2.6	4.2	2.3	4.1	1.9	3	6	5.6	3.5	2.8	3.8	2.1	6	3.9	1.8	5.7	B 2000,C 2000	
																				60.7

APPROVED: *Estay L. Watson*
 DATE: 11/19/2021

SEAL

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\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$DDON\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

STREET NAME SIGNS MOUNTED OVERHEAD
 ON SIGNAL MAST ARMS

PROJECT NAME	SHEET NO.
U-6241	SIGN-2B
APPROVED: <i>Estay L. Watson</i>	
DATE: 11/19/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SIGN NUMBER: 11
TYPE: B
QUANTITY: 1

BACKG COLOR: Green
COPY COLOR: White

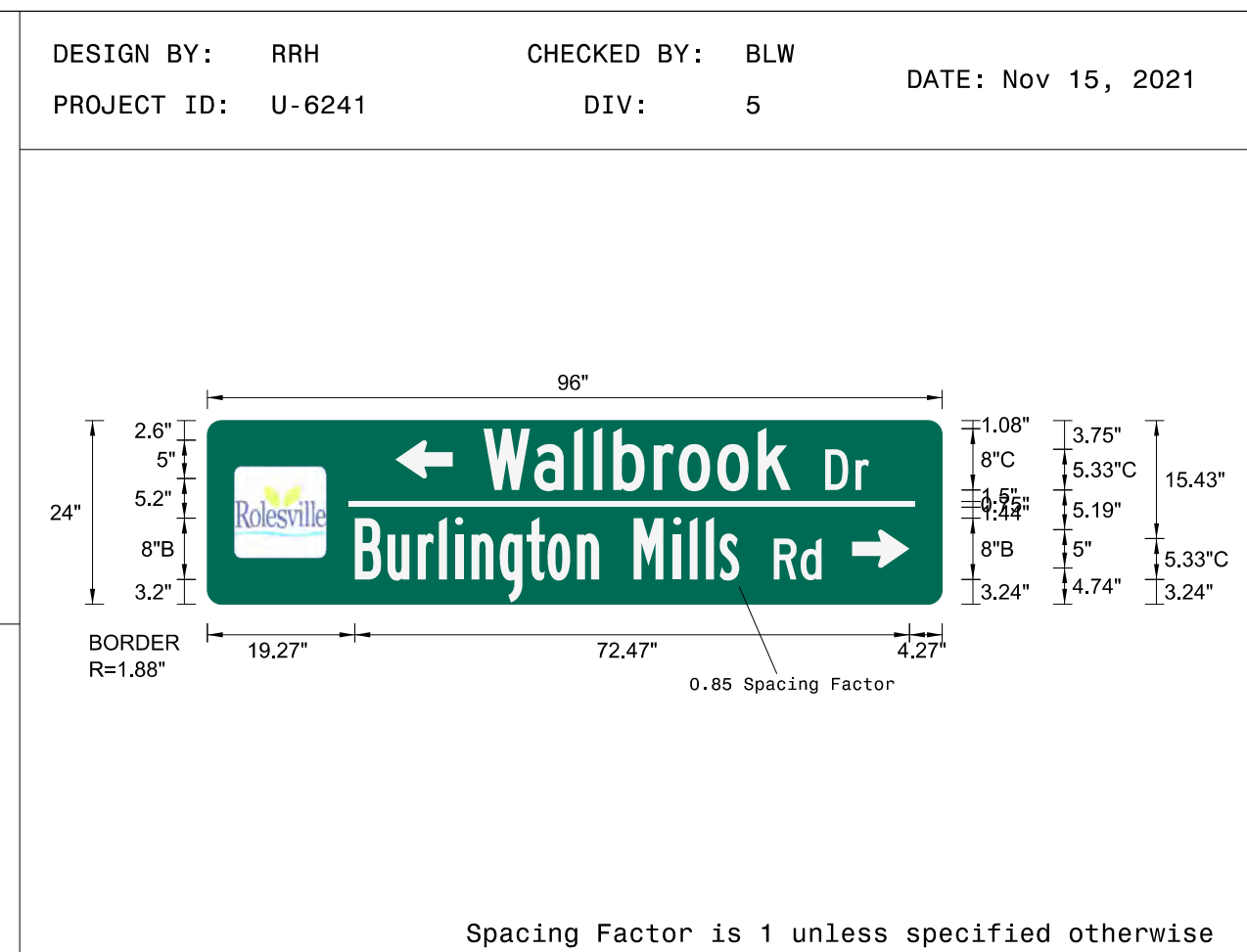
SYMBOL	X	Y	WID	HT
AR_Type D	24.6	16.4	5	7.5
AR_Type D	84.2	4.7	5	7.5
town logo	3.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

SIGN WIDTH: 96"
HEIGHT: 24"
TOTAL AREA: 16.0 Sq.Ft.

BORDER TYPE: FLUSH
RADI: 1.88"
WIDTH: 0"
RECESS: 0"

NO. Z BARS:
LENGTH:



- USE NOTES
- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 - Background shall be Grade C reflective sheeting.
 - Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter															Series/Size Text Length						
W	a	l	l	b	r	o	o	k	D	r					C 2000						
36.1	6.6	5.2	2.6	2.6	5.3	3.3	5	5.3	4.3	4.5	3.9	1.8	9.6		50.4						
B	u	r	l	i	n	g	t	o	n	M	i	l	l	s	B 2000,C 2000						
19.3	4.3	4	2.8	2.1	2.1	3.7	3.5	2.7	3.8	2.9	4.5	5.2	2.1	2.1	1.8	2.6	4.5	3.5	2.7	15.8	61

SIGN NUMBER: 12
TYPE: B
QUANTITY: 1

BACKG COLOR: Green
COPY COLOR: White

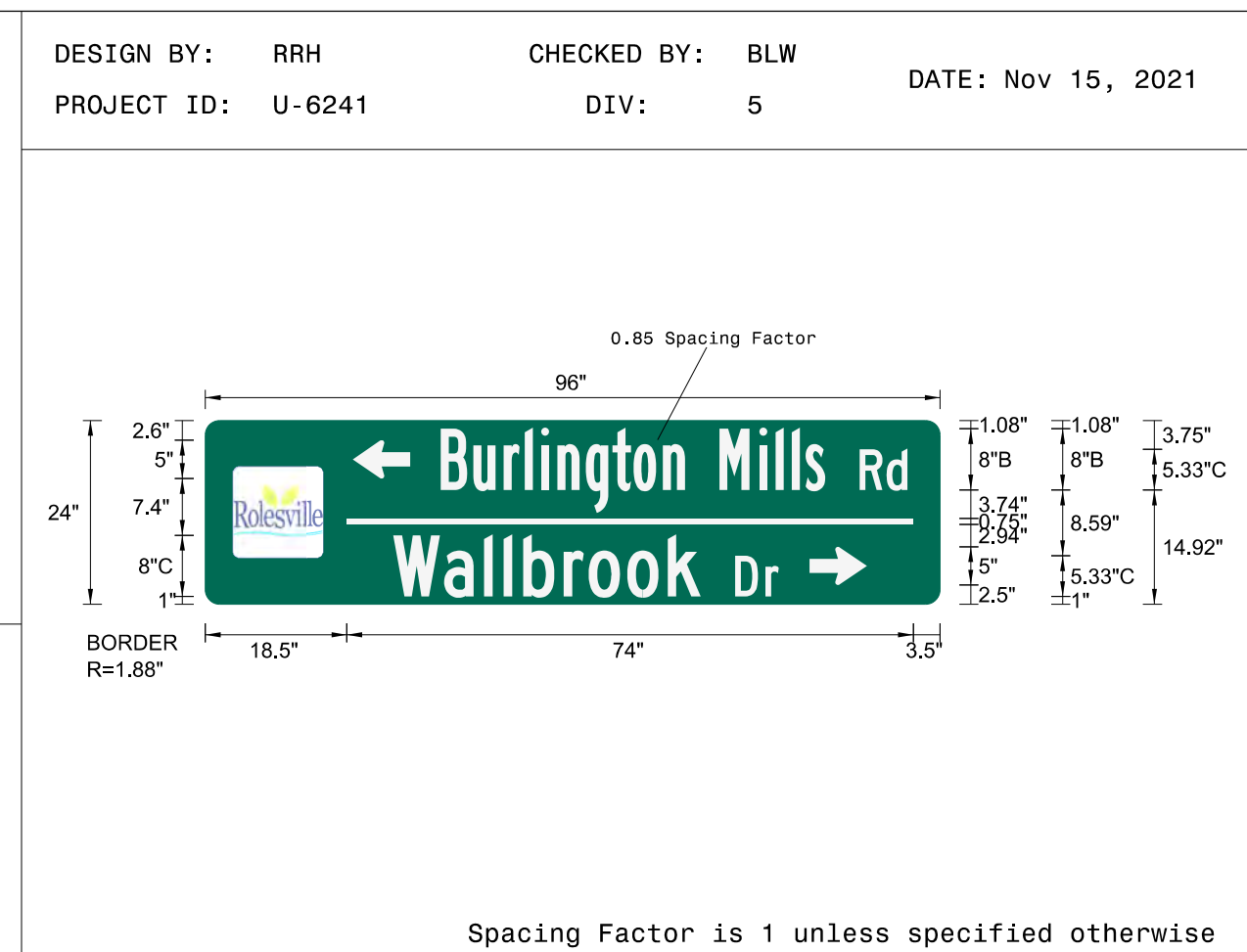
SYMBOL	X	Y	WID	HT
AR_Type D	19.3	16.4	5	7.5
AR_Type D	78.9	2.5	5	7.5
town logo	3.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

SIGN WIDTH: 96"
HEIGHT: 24"
TOTAL AREA: 16.0 Sq.Ft.

BORDER TYPE: FLUSH
RADI: 1.88"
WIDTH: 0"
RECESS: 0"

NO. Z BARS:
LENGTH:



- USE NOTES
- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 - Background shall be Grade C reflective sheeting.
 - Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter															Series/Size Text Length						
B	u	r	l	i	n	g	t	o	n	M	i	l	l	s	B 2000,C 2000						
30.8	4.3	4	2.8	2.1	2.1	3.7	3.5	2.7	3.8	2.9	4.5	5.2	2.1	2.1	1.8	2.6	4.5	3.5	2.7	4.3	61
W	a	l	l	b	r	o	o	k	D	r					C 2000						
24.6	6.6	5.2	2.6	2.6	5.3	3.3	5	5.3	4.3	4.5	3.9	1.8	21.1		50.4						

SIGN NUMBER: 13
TYPE: B
QUANTITY: 1

BACKG COLOR: Green
COPY COLOR: White

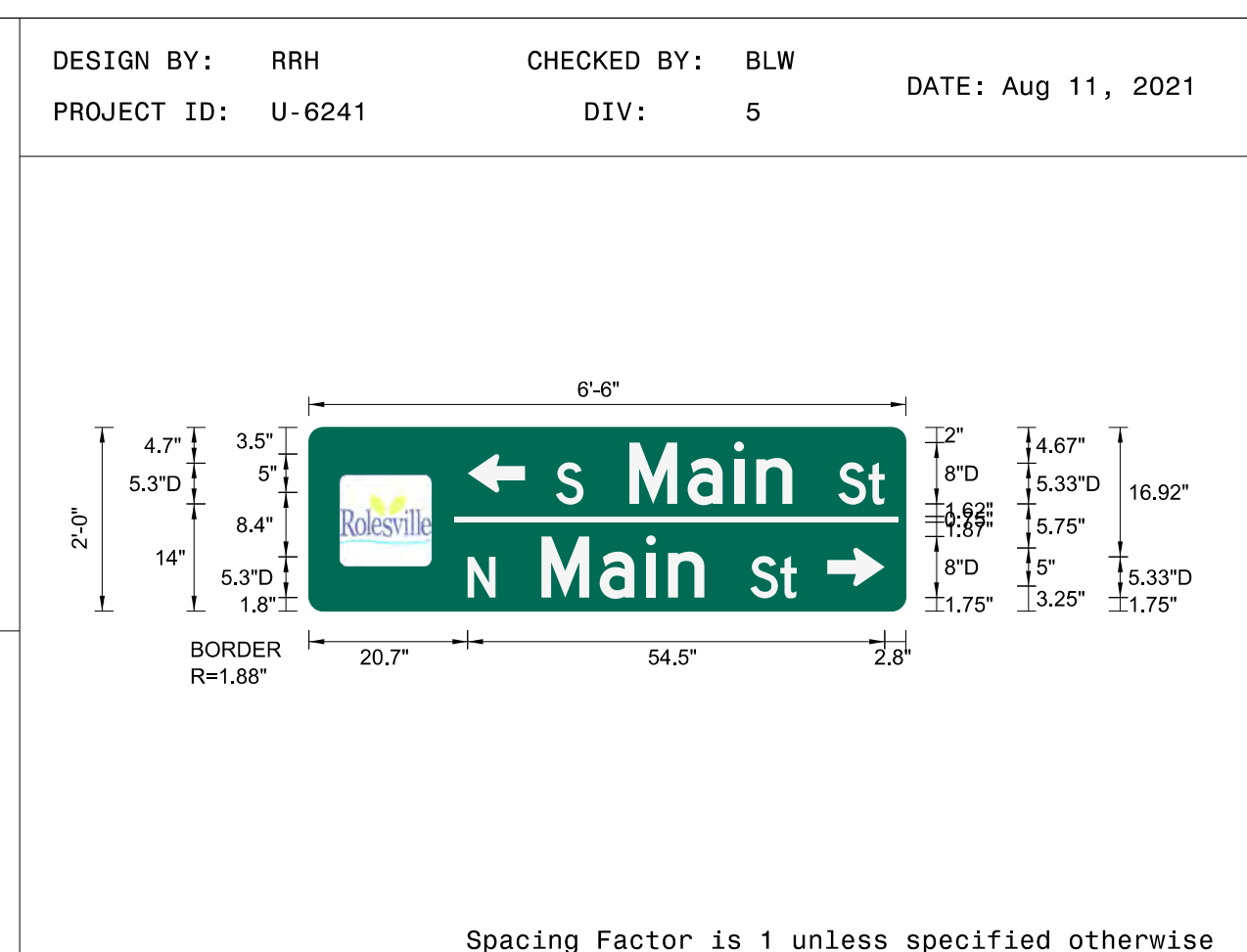
SYMBOL	X	Y	WID	HT
AR_Type D	20.7	15.5	5	7.5
AR_Type D	67.7	3.3	5	7.5
town logo	4	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

SIGN WIDTH: 78"
HEIGHT: 24"
TOTAL AREA: 13.0 Sq.Ft.

BORDER TYPE: FLUSH
RADI: 1.88"
WIDTH: 0"
RECESS: 0"

NO. Z BARS:
LENGTH:



- USE NOTES
- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 - Background shall be Grade C reflective sheeting.
 - Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter															Series/Size Text Length
S	M	a	i	n	S	t									D 2000
32.3	3.6	6	7.6	6.1	2.9	4.7	6	3.9	2.1	2.8					43
N	M	a	i	n	S	t									D 2000
20.7	3.6	6	7.6	6.1	2.9	4.7	6	3.9	2.1	14.3				43	

SIGN NUMBER: 14
TYPE: B
QUANTITY: 1

BACKG COLOR: Green
COPY COLOR: White

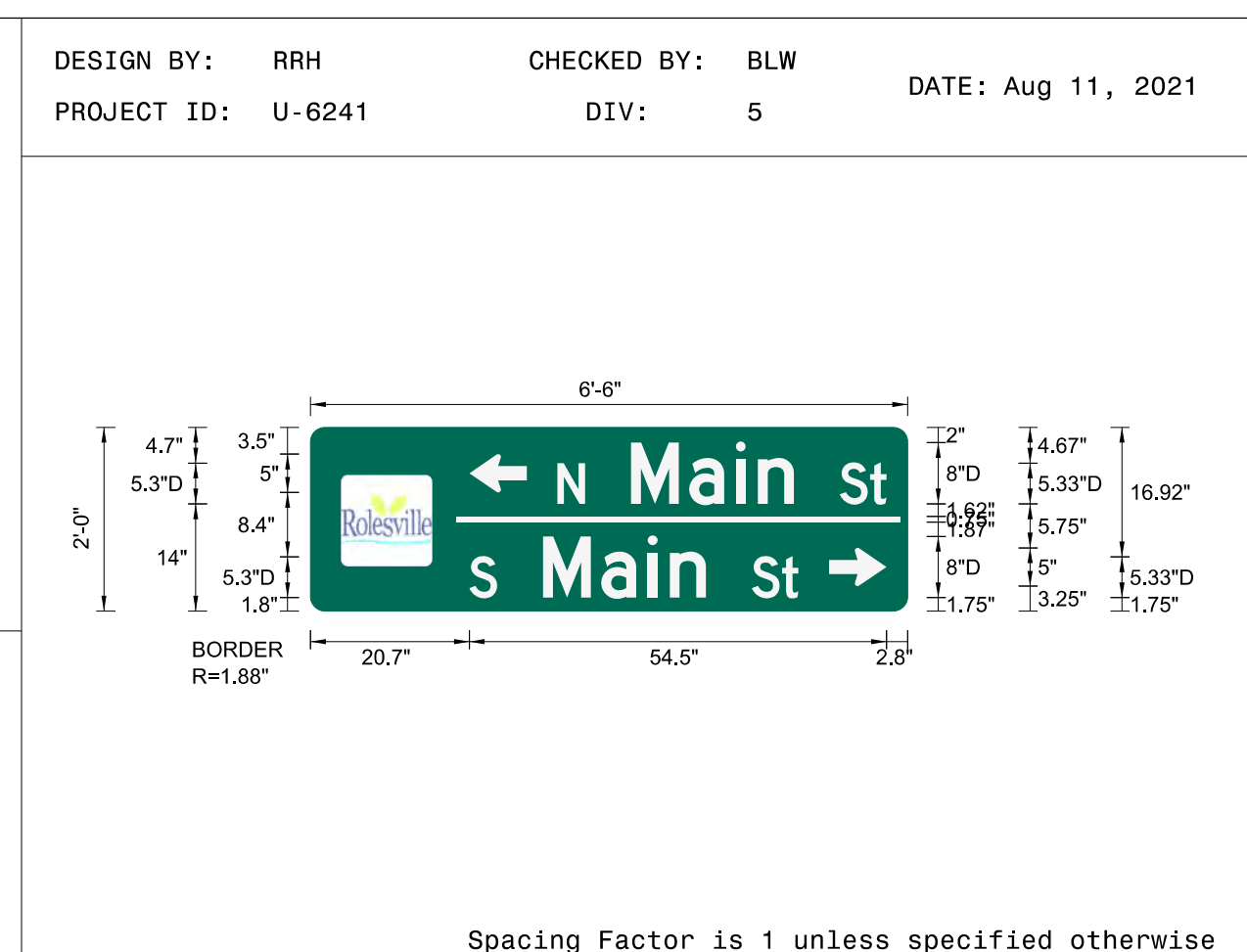
SYMBOL	X	Y	WID	HT
AR_Type D	20.7	15.5	5	7.5
AR_Type D	67.7	3.3	5	7.5
town logo	4	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM

SIGN WIDTH: 78"
HEIGHT: 24"
TOTAL AREA: 13.0 Sq.Ft.

BORDER TYPE: FLUSH
RADI: 1.88"
WIDTH: 0"
RECESS: 0"

NO. Z BARS:
LENGTH:



- USE NOTES
- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
 - Background shall be Grade C reflective sheeting.
 - Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter															Series/Size Text Length
N	M	a	i	n	S	t									D 2000
32.3	3.6	6	7.6	6.1	2.9	4.7	6	3.9	2.1	2.8					43
S	M	a	i	n	S	t									D 2000
20.7	3.6	6	7.6	6.1	2.9	4.7	6	3.9	2.1	14.3				43	

STREET NAME SIGNS MOUNTED OVERHEAD
ON SIGNAL MAST ARMS

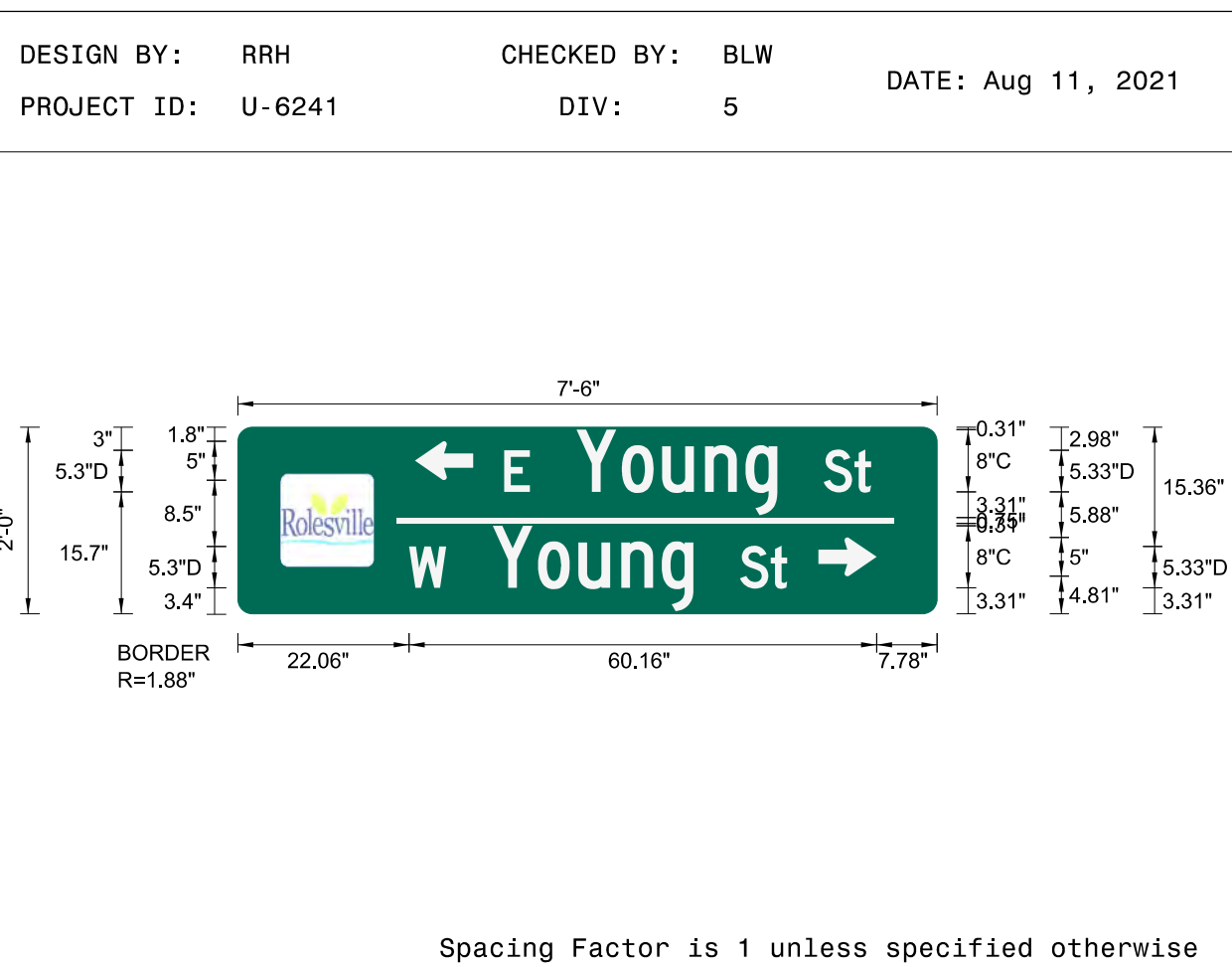
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\$\$\$\$\$USERNAME\$\$\$\$\$

SIGN NUMBER: 15
 TYPE: B
 QUANTITY: 1
 SIGN WIDTH: 90"
 HEIGHT: 24"
 TOTAL AREA: 15.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADI: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	22.8	17.2	5	7.5
AR_Type D	74.7	4.8	5	7.5
town logo	5.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM



USE NOTES

- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
- Background shall be Grade C reflective sheeting.
- Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS

Letter spacings are to start of next letter

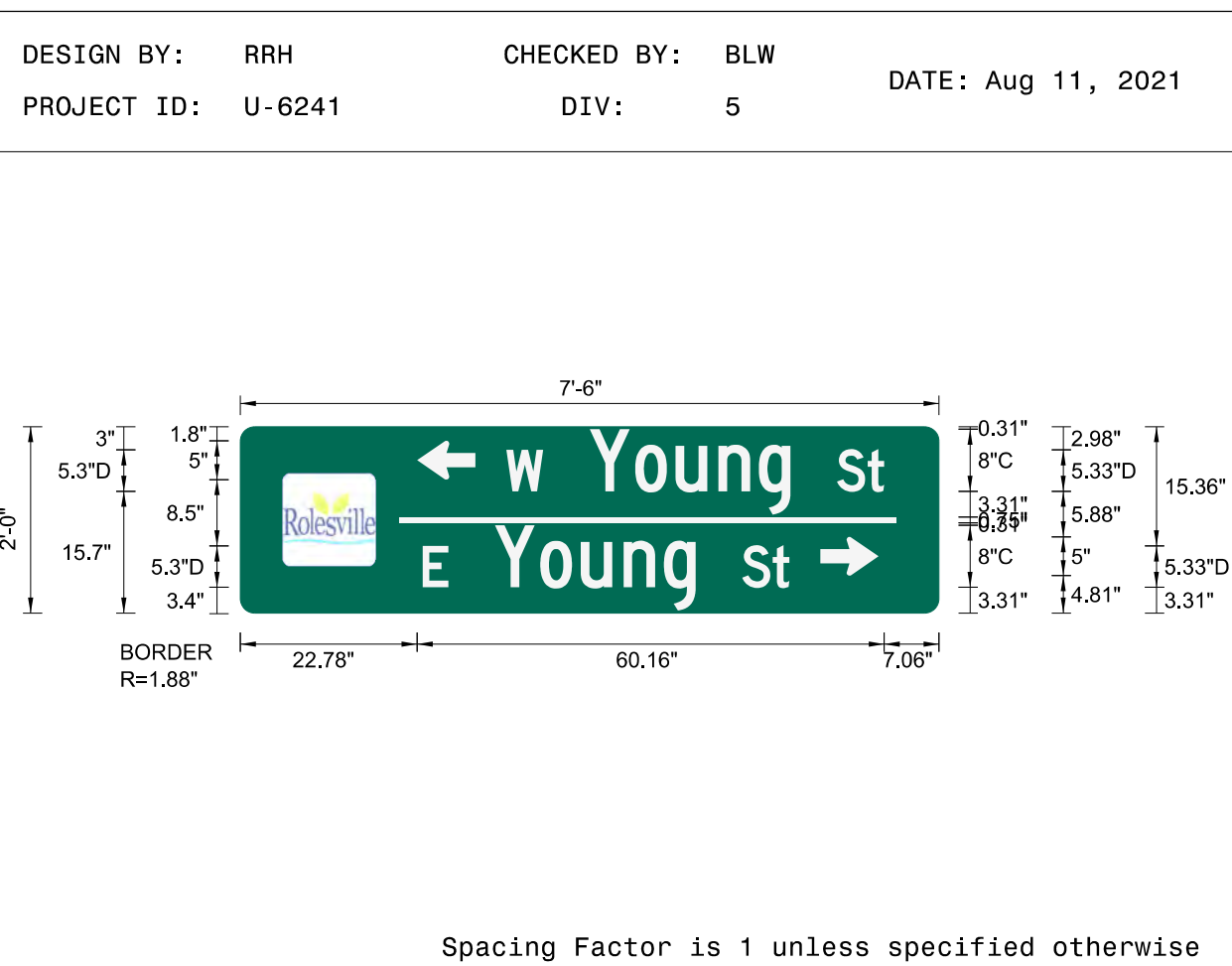
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34.3	3.3	6	5.8	5.2	5.5	5.2	4.1	6	3.9	2.1	8.5									D 2000,C 2000	
																					47.2
	W	Y	o <td>u <td>n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td></td></td>	u <td>n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td></td>	n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td>	g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td>	S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td>	t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td>												D 2000,C 2000	
22.1	4.7	6	5.8	5.2	5.5	5.2	4.1	6	3.9	2.1	19.3									48.7	

SIGN NUMBER: 16
 TYPE: B
 QUANTITY: 1
 SIGN WIDTH: 90"
 HEIGHT: 24"
 TOTAL AREA: 15.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADI: 1.88"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Green
 COPY COLOR: White

SYMBOL	X	Y	WID	HT
AR_Type D	22.8	17.2	5	7.5
AR_Type D	74.7	4.8	5	7.5
town logo	5.5	6	12	12

MAT'L: 0.125" (3.2MM) ALUMINUM



USE NOTES

- Legend and border (except those that are colored black) shall be direct applied Grade A sheeting.
- Background shall be Grade C reflective sheeting.
- Town logo: BORDER Type=Flush R=1"

LETTER POSITIONS



Letter spacings are to start of next letter

	W	Y	o	u	n	g	S	t												Series/Size Text Length	
34.3	4.7	6	5.8	5.2	5.5	5.2	4.1	6	3.9	2.1	7.1									D 2000,C 2000	
																					48.7
	E	Y	o <td>u <td>n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td></td></td>	u <td>n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td></td>	n <td>g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td></td>	g <td>S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td></td>	S <td>t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td> </td>	t <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>D 2000,C 2000</td>												D 2000,C 2000	
23.5	3.3	6	5.8	5.2	5.5	5.2	4.1	6	3.9	2.1	19.3									47.2	

PROJECT NAME: U-6241 SHEET NO.: SIGN-2C
 APPROVED: Estay L. Watson
 DATE: 11/19/2021
 SEAL: 29449
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STREET NAME SIGNS MOUNTED OVERHEAD ON SIGNAL MAST ARMS

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$DGN\$\$\$\$\$
 \$\$\$\$\$\$USERNAME\$\$\$\$\$

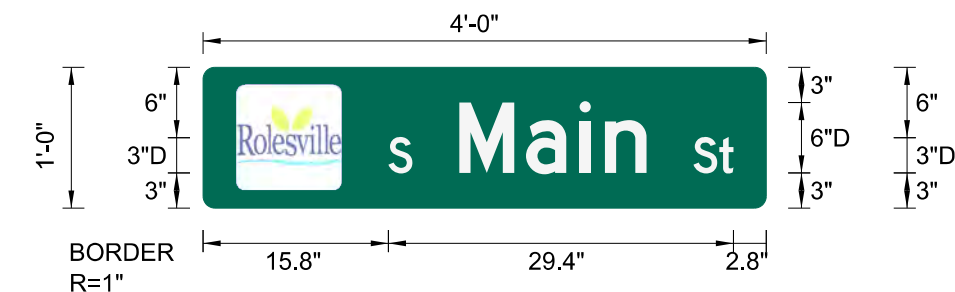
PROJECT NAME	SHEET NO.
U-6241	SIGN-2D
APPROVED: <i>Estay L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	

SIGN NUMBER: 101,102,103,104,105,106,107,108
 TYPE: B
 QUANTITY: 8
 SIGN WIDTH: 48"
 HEIGHT: 12"
 TOTAL AREA: 4.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

SYMBOL	X	Y	WID	HT
town logo	2.8	1.5	9	9

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 10, 2021
 PROJECT ID: U-6241 DIV: 5



MOUNT BACK TO BACK
IN 4 INSTALLATIONS

Spacing Factor is 1 unless specified otherwise

USE NOTES

1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.
3. Town logo: BORDER Type=Flush R=0.75"

LETTER POSITIONS

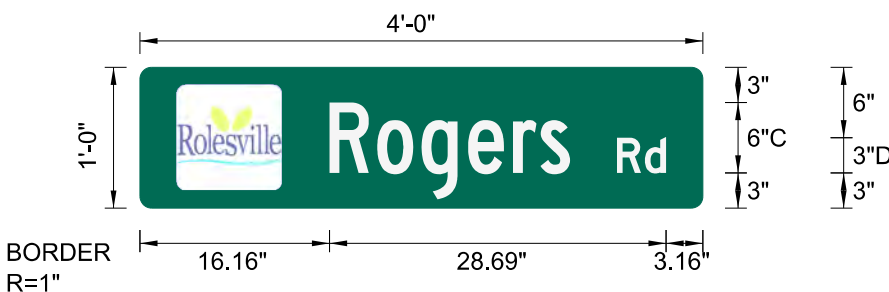
Letter spacings are to start of next letter											Series/Size Text Length
S	M	a	i	n	S	t					D 2000
15.8	2	4	5.7	4.6	2.2	3.5	4	2.2	1.2	2.8	29.4

SIGN NUMBER: 109,110,111,112
 TYPE: B
 QUANTITY: 4
 SIGN WIDTH: 48"
 HEIGHT: 12"
 TOTAL AREA: 4.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

SYMBOL	X	Y	WID	HT
town logo	3.2	1.5	9	9

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 10, 2021
 PROJECT ID: U-6241 DIV: 5



MOUNT BACK TO BACK
IN 2 INSTALLATIONS

Spacing Factor is 1 unless specified otherwise

USE NOTES

1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.
3. Town logo: BORDER Type=Flush R=0.75"

LETTER POSITIONS

Letter spacings are to start of next letter											Series/Size Text Length
R	o	g	e	r	s	R	d				C 2000,D 2000
16.2	4.1	3.8	4	3.8	2.3	2.5	4	2.4	1.8	3.2	28.7

SIGN NUMBER: 113,114,115,116
 TYPE: B
 QUANTITY: 4
 SIGN WIDTH: 60"
 HEIGHT: 12"
 TOTAL AREA: 5.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RADII: 1"
 WIDTH: 0"
 RECESS: 0"
 NO. Z BARS:
 LENGTH:

SYMBOL	X	Y	WID	HT
town logo	2.5	1.5	9	9

MAT'L: 0.125" (3.2MM) ALUMINUM

DESIGN BY: RRH CHECKED BY: BLW DATE: Aug 10, 2021
 PROJECT ID: U-6241 DIV: 5



MOUNT BACK TO BACK
IN 2 INSTALLATIONS

Spacing Factor is 1 unless specified otherwise

USE NOTES

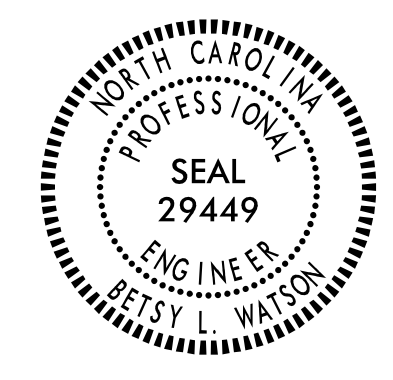
1. Legend and border (except those that are colored black) shall be direct applied Grade C sheeting.
2. Background shall be Grade C reflective sheeting.
3. Town logo: BORDER Type=Flush R=0.75"

LETTER POSITIONS

Letter spacings are to start of next letter														Series/Size Text Length				
R	e	d	f	o	r	d	P	l	a	c	e	D	r		B 2000,D 2000			
15.5	3.2	2.7	2.9	1.8	3	2	2.2	4	3.2	1.4	2.9	2.6	2.2	4	2.6	1.1	2.5	42

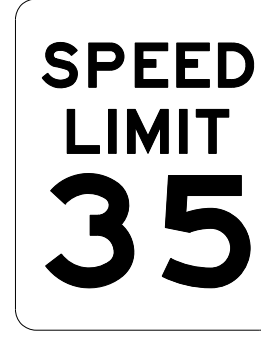
\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$DGN\$\$\$\$\$
 \$\$\$\$\$\$USERNAME\$\$\$\$\$

STREET NAME SIGNS GROUND MOUNTED
ON SIGNAL POLES

PROJECT NAME	SHEET NO.
U-6241	SIGN-3
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



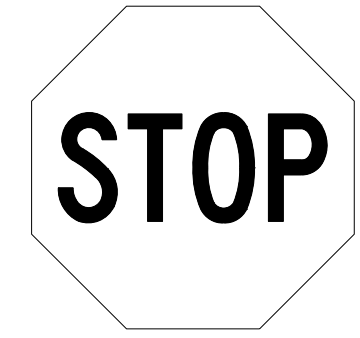
401 QUANTITY REQ'D 15



24 X 30
R2-1

ONE SIGN POST PER SIGN


406 QUANTITY REQ'D 2



36 X 36
R1-1

ONE SIGN POST PER SIGN


411 QUANTITY REQ'D 1



54 X 18
R6-1R

TWO SIGN POSTS PER SIGN


416 QUANTITY REQ'D 9



24 X 18
R3-17

ONE "U" POST PER SIGN


421 QUANTITY REQ'D 2



36 X 30
R4-4

ONE "U" POST PER SIGN

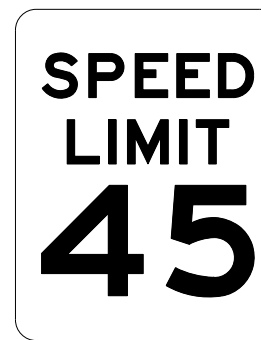
426 QUANTITY REQ'D 2



24 X 18
R8-3gP

ONE SIGN POST PER SIGN

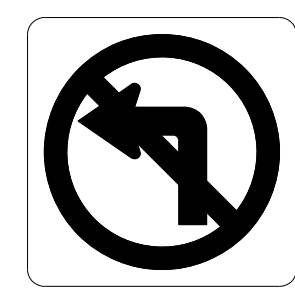
402 QUANTITY REQ'D 1



24 X 30
R2-1

ONE SIGN POST PER SIGN

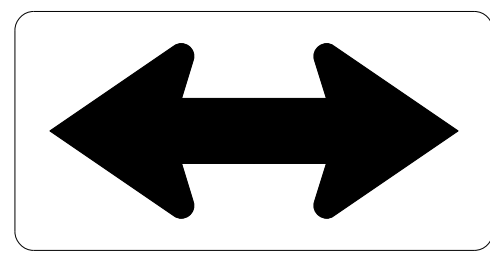
407 QUANTITY REQ'D 15



24 X 24
R3-1

MOUNT BELOW SIGN 405
IN 14 INSTALLATIONS
MOUNT BELOW SIGN 406
IN 1 INSTALLATION


412 QUANTITY REQ'D 1



48 X 24
W1-7

TWO SIGN POSTS PER SIGN

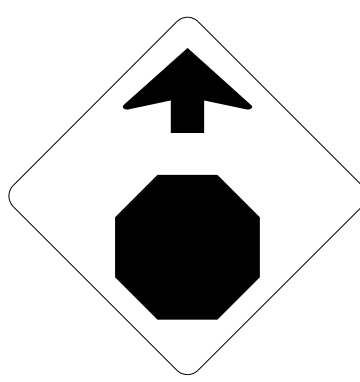
417 QUANTITY REQ'D 2



24 X 8
R3-17bP

MOUNT BELOW SIGN 416
IN 1 INSTALLATION


422 QUANTITY REQ'D 1



36 X 36
W3-1

ONE "U" POST PER SIGN


427 QUANTITY REQ'D 7



12 X 18
R7-1R

ONE SIGN POST PER SIGN


431 QUANTITY REQ'D 6



9 X 18
R10-25

MOUNT ON POLE WITH RRFB
IN 6 INSTALLATIONS

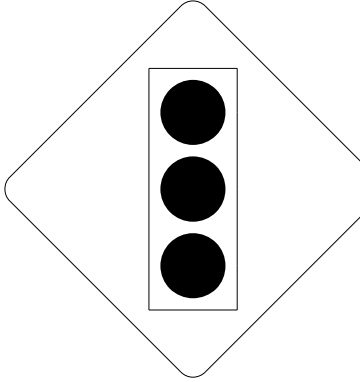
403 QUANTITY REQ'D 2



36 X 36
R3-7R

ONE SIGN POST PER SIGN


408 QUANTITY REQ'D 1



36 X 36
W3-3

ONE SIGN POST PER SIGN


413 QUANTITY REQ'D 10



36 X 36
R1-5b

ONE SIGN POST PER SIGN


418 QUANTITY REQ'D 8



36 X 36
W11-2

FLUORESCENT YELLOW/GREEN
MOUNT ON POLE WITH RRFB
IN 8 INSTALLATIONS

423 QUANTITY REQ'D 1



36 X 36
W3-5

ONE "U" POST PER SIGN


428 QUANTITY REQ'D 7



12 X 18
R7-1L

ONE SIGN POST PER SIGN


404 QUANTITY REQ'D 2



36 X 36
R5-1

ONE SIGN POST PER SIGN

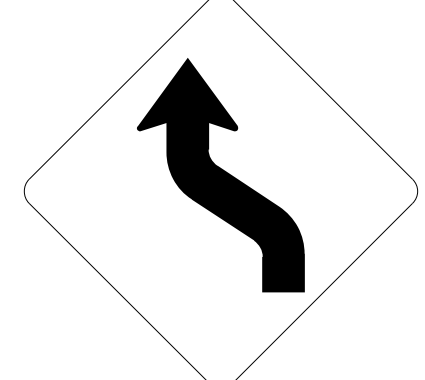
409 QUANTITY REQ'D 4



36 X 36
W11-15

FLUORESCENT YELLOW/GREEN
MOUNT ON POLE WITH RRFB
IN 4 INSTALLATIONS

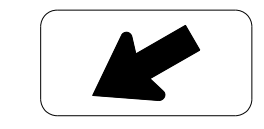
414 QUANTITY REQ'D 1



30 X 30
W1-4L

ONE SIGN POST PER SIGN


419 QUANTITY REQ'D 6



24 X 12
W16-7PL

FLUORESCENT YELLOW/GREEN
MOUNT BELOW SIGN 409
IN 2 INSTALLATIONS
MOUNT BELOW SIGN 418
IN 4 INSTALLATIONS


424 QUANTITY REQ'D 1



24 X 36
R3-9b

ONE SIGN POST PER SIGN

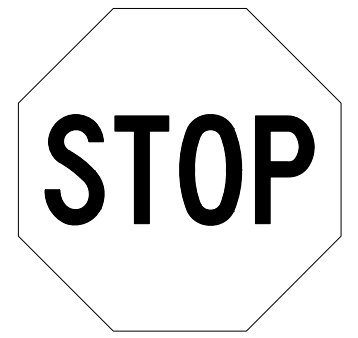
429 QUANTITY REQ'D 2



36 X 36
W11-1

FLUORESCENT YELLOW/GREEN
ONE SIGN POST PER SIGN

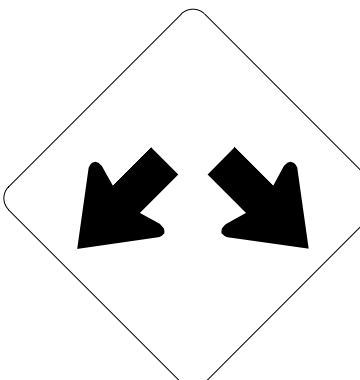
405 QUANTITY REQ'D 19



30 X 30
R1-1

ONE SIGN POST PER SIGN


410 QUANTITY REQ'D 1



30 X 30
W12-1

ONE "U" POST PER SIGN

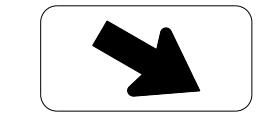
415 QUANTITY REQ'D 1



18 X 18
W13-1P

MOUNT BELOW SIGN 414
IN 1 INSTALLATION


420 QUANTITY REQ'D 6



24 X 12
W16-7PR

FLUORESCENT YELLOW/GREEN
MOUNT BELOW SIGN 409
IN 2 INSTALLATIONS
MOUNT BELOW SIGN 418
IN 4 INSTALLATIONS


425 QUANTITY REQ'D 2



12 X 18
R7-8

ONE SIGN POST PER SIGN

430 QUANTITY REQ'D 2





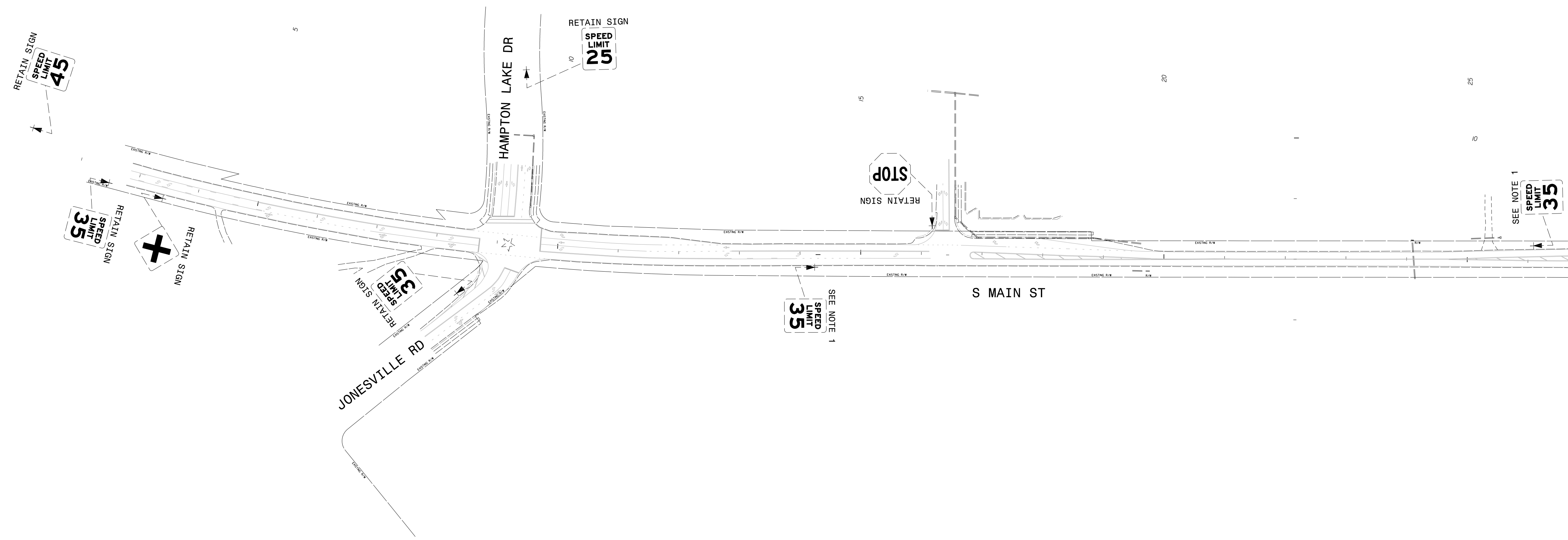
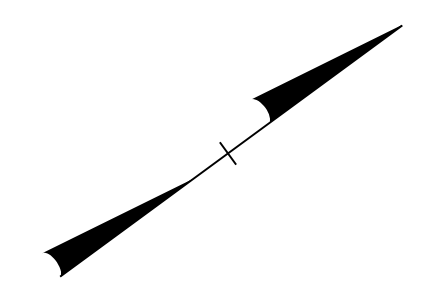
18 X 24
W16-1P

FLUORESCENT YELLOW/GREEN
MOUNT BELOW SIGN 429
IN 2 INSTALLATIONS

TYPE 'E' SIGNS

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



PROJECT NAME U-6241	SHEET NO. SIGN-4
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	

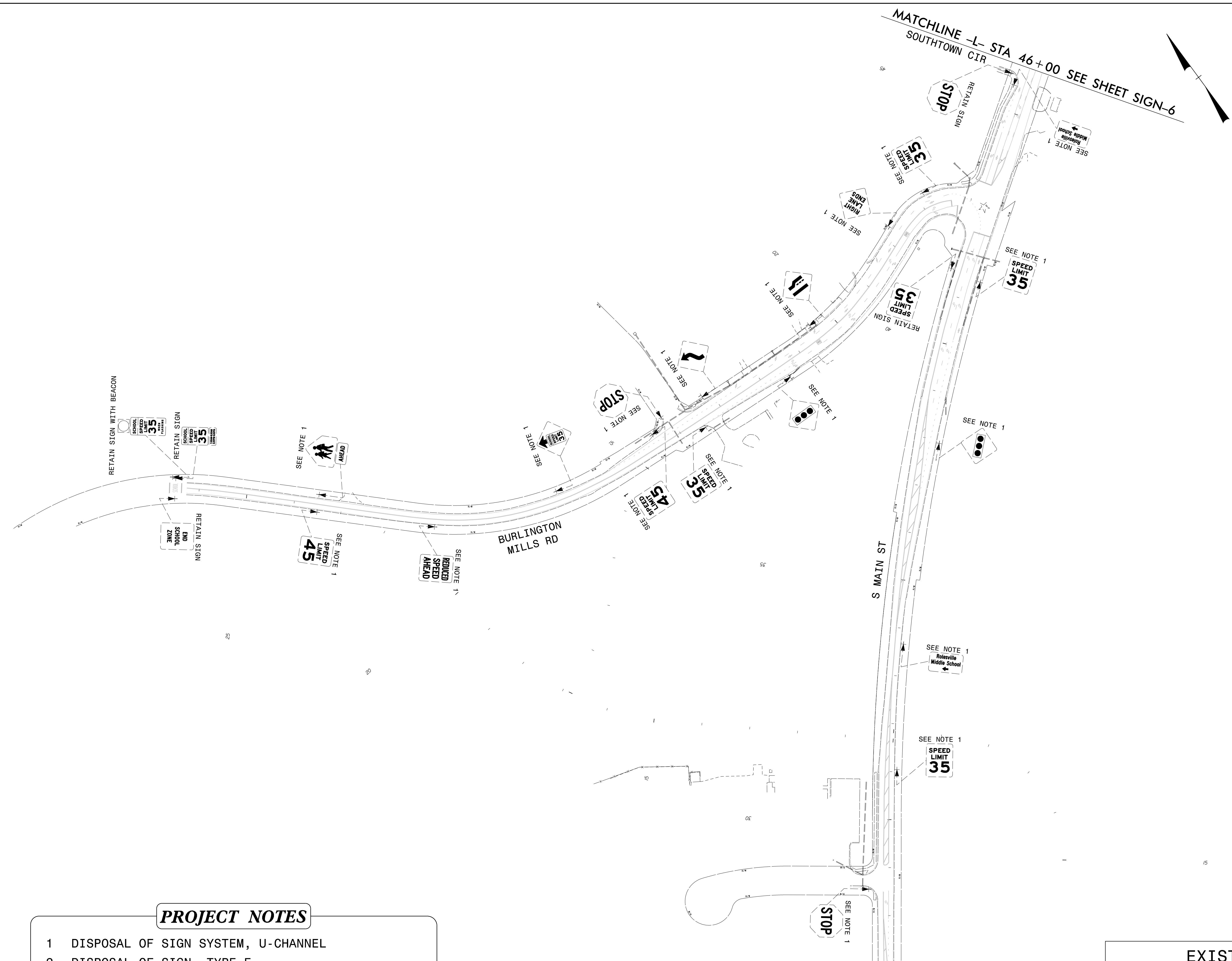


- PROJECT NOTES**
- DISPOSAL OF SIGN SYSTEM, U-CHANNEL
 - DISPOSAL OF SIGN, TYPE E
 - SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED)

**EXISTING SIGNING
MAIN ST
-L- STA 2+00 TO 27+00**

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT NAME	SHEET NO.
U-6241	SIGN-5
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	

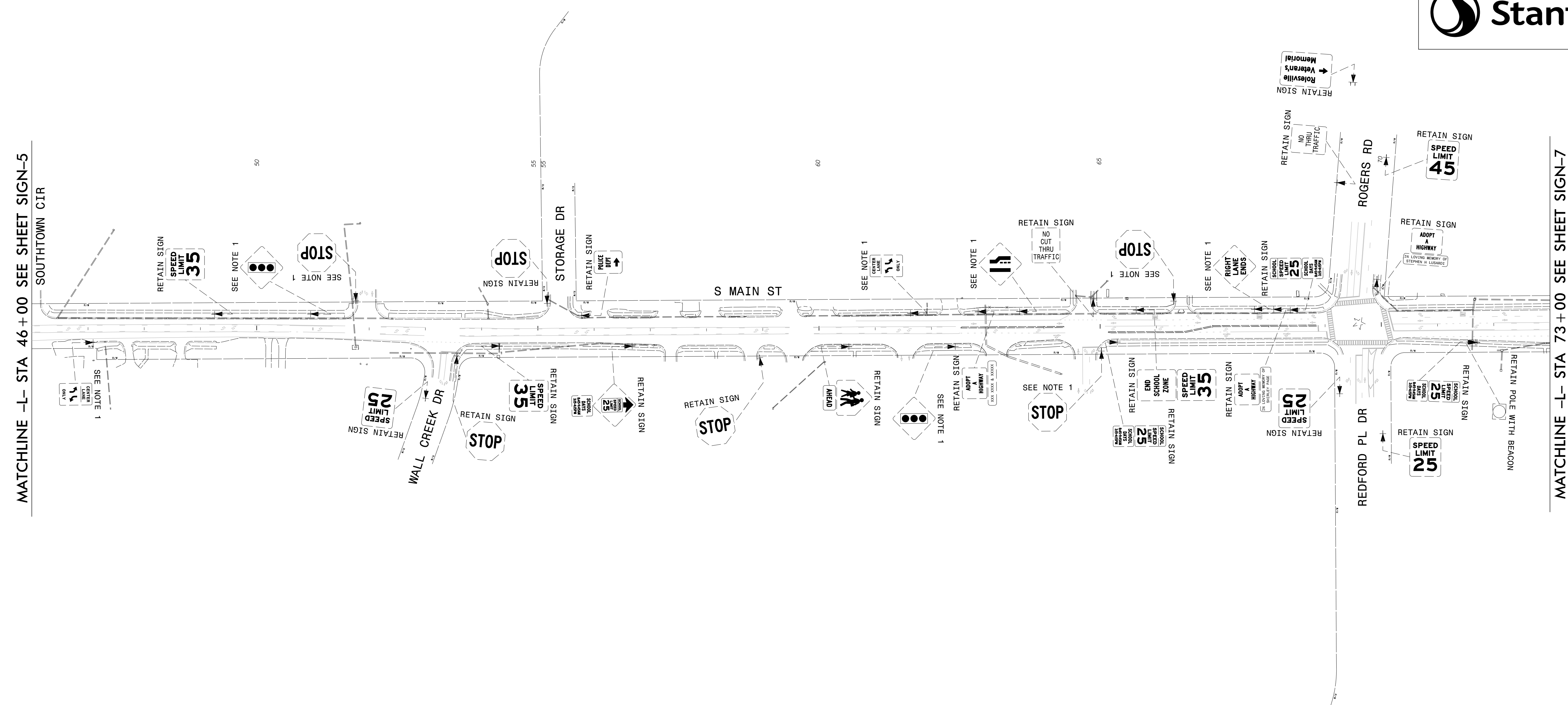


- PROJECT NOTES**
- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
 - 2 DISPOSAL OF SIGN, TYPE E
 - 3 SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED)

EXISTING SIGNING
MAIN ST
 -L- STA 27+00 TO 46+00

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

PROJECT NAME U-6241	SHEET NO. SIGN-6
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -L- STA 46+00 SEE SHEET SIGN-5

MATCHLINE -L- STA 73+00 SEE SHEET SIGN-7

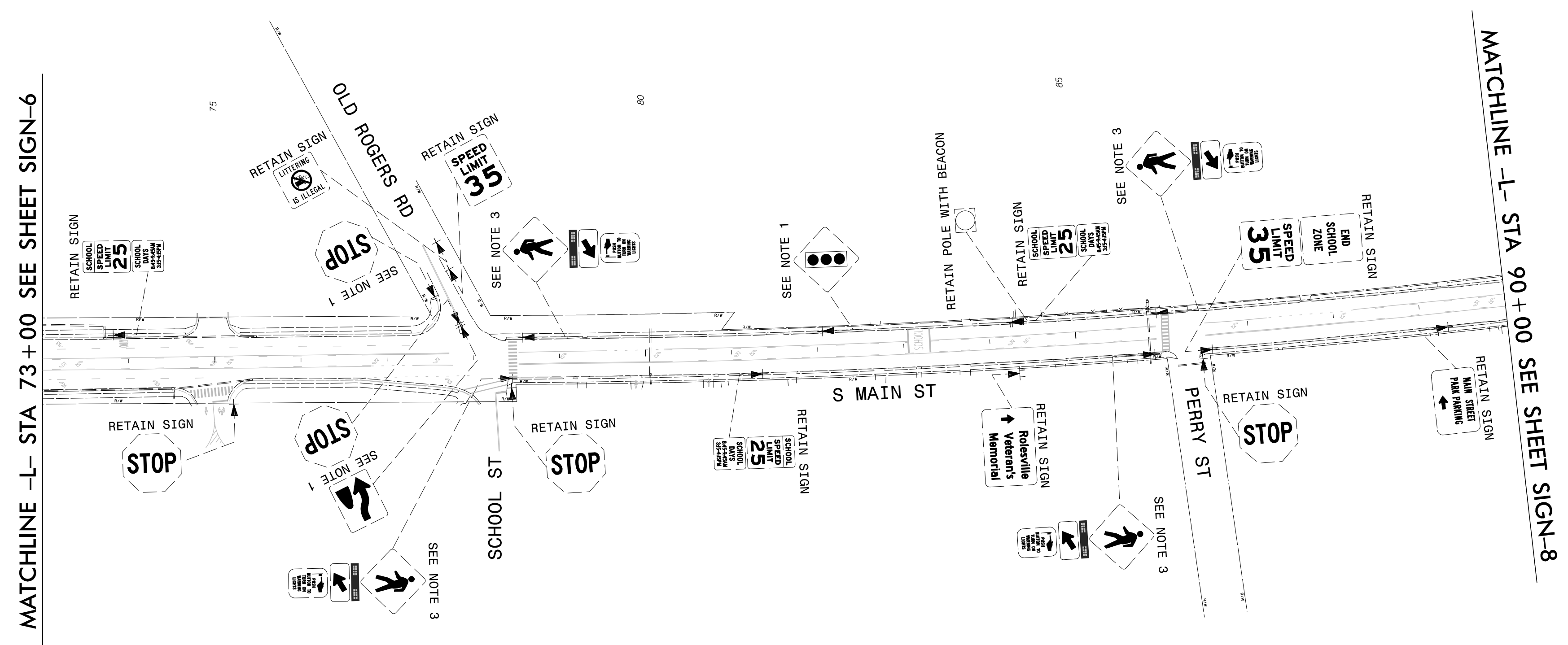
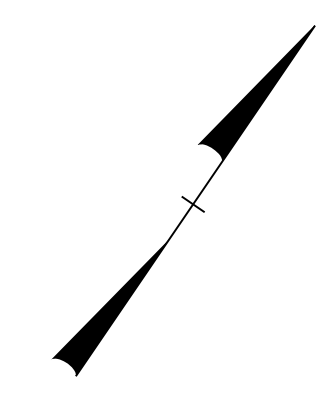
PROJECT NOTES

- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 2 DISPOSAL OF SIGN, TYPE E
- 3 SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED)

EXISTING SIGNING
MAIN ST
-L- STA 46+00 TO 73+00

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

PROJECT NAME	SHEET NO.
U-6241	SIGN-7
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

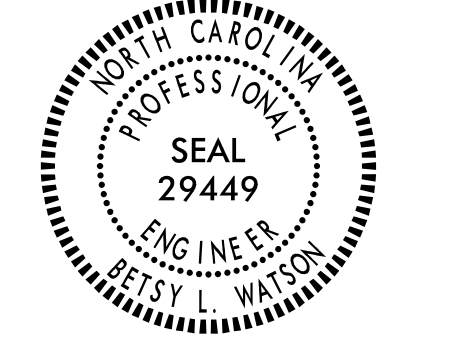



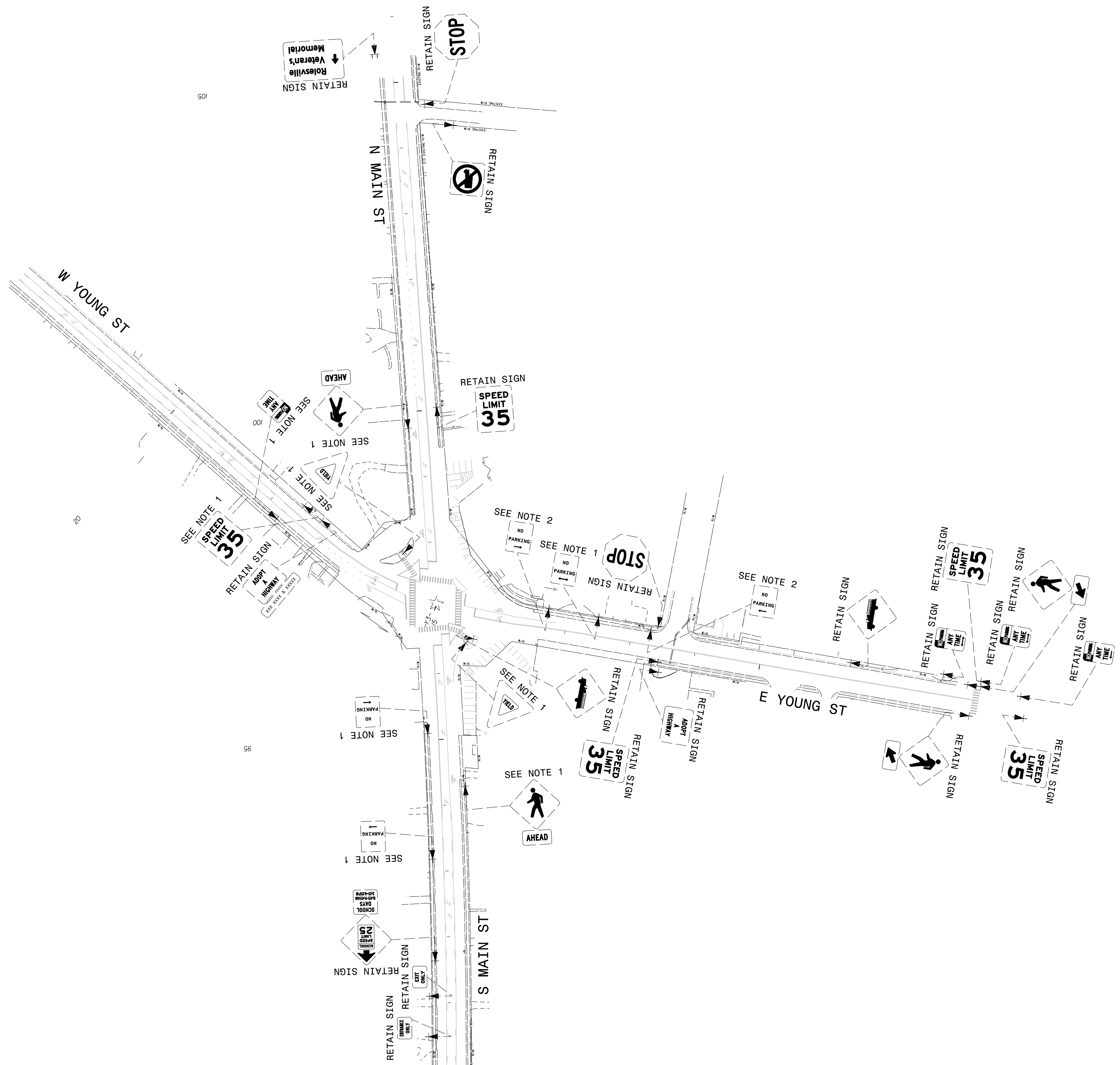
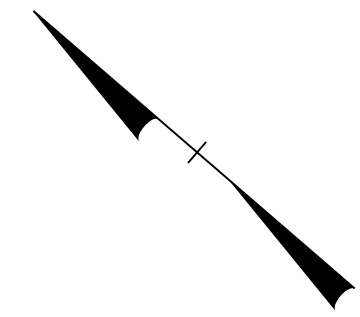
PROJECT NOTES

- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
- 2 DISPOSAL OF SIGN, TYPE E
- 3 SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED)

EXISTING SIGNING
MAIN ST
-L- STA 73+00 TO 90+00

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



PROJECT NAME	SHEET NO.
U-6241	SIGN-8
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	

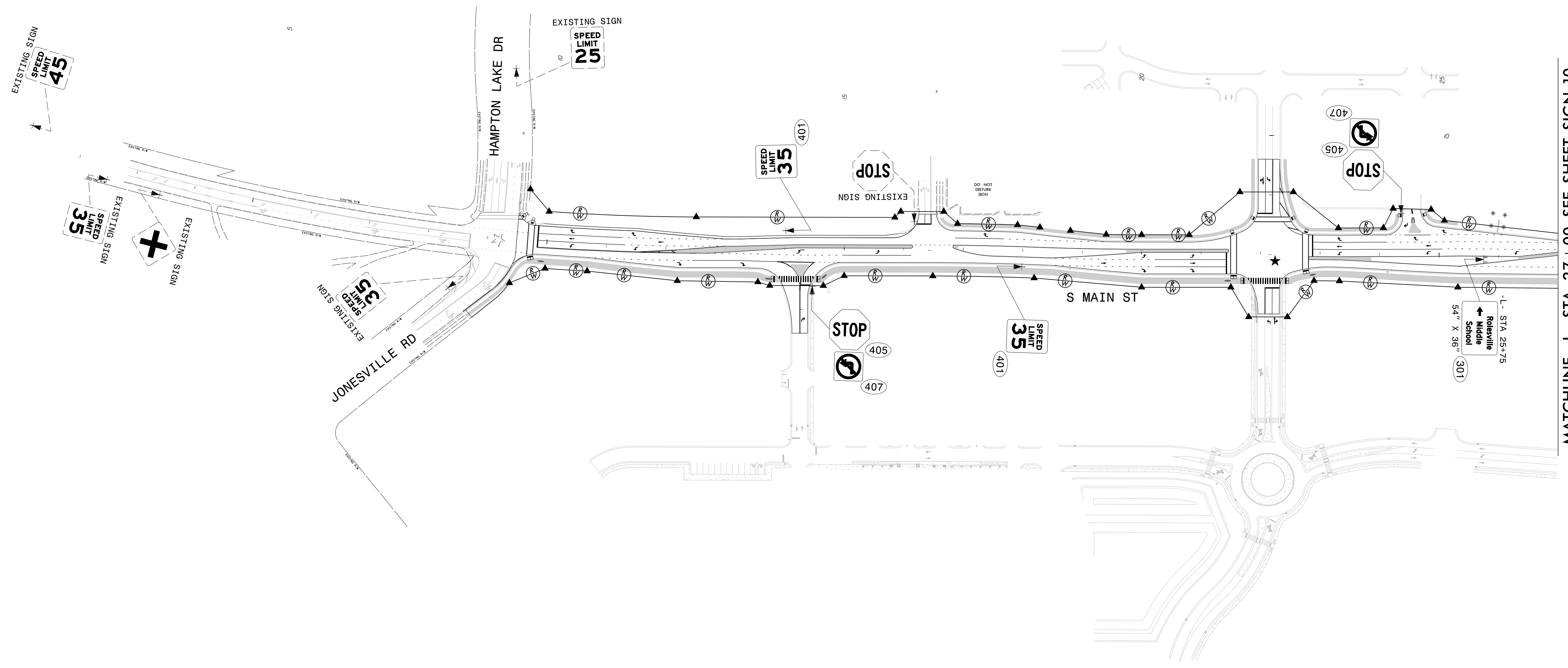
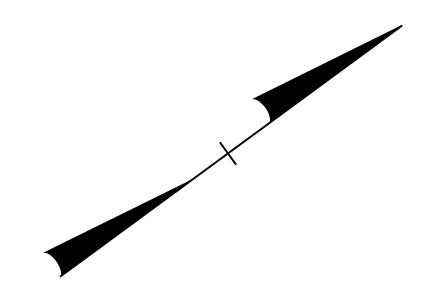


- PROJECT NOTES**
- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL
 - 2 DISPOSAL OF SIGN, TYPE E
 - 3 SIGN ERECTION, RELOCATE TYPE B (GROUND MOUNTED)

EXISTING SIGNING
MAIN ST
 -L- STA 90+00 TO 107+00

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$\$\$\$DGN\$\$\$\$\$
 \$\$\$\$\$\$USERNAME\$\$\$\$\$



PROJECT NAME	SHEET NO.
U-6241	SIGN-9
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	

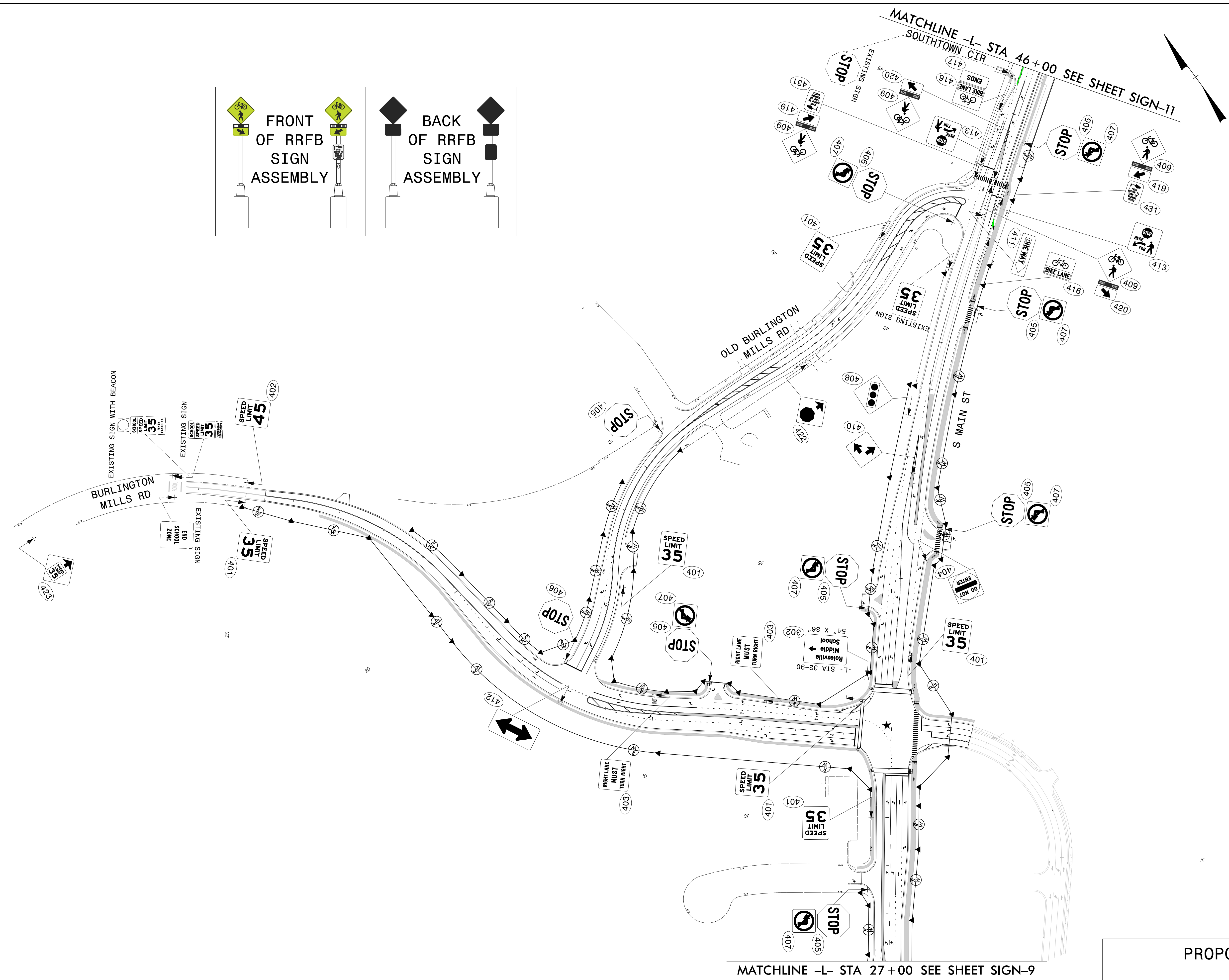
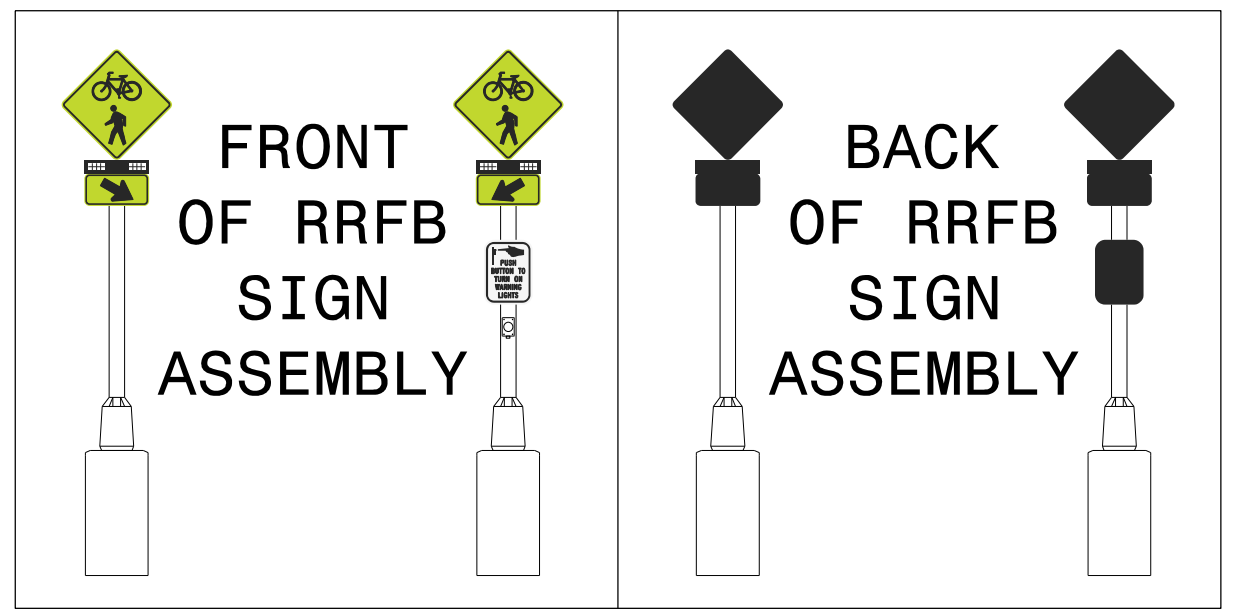


MATCHLINE -L- STA 27+00 SEE SHEET SIGN-10

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$



PROPOSED SIGNING
MAIN ST
 -L- STA 2+00 TO 27+00

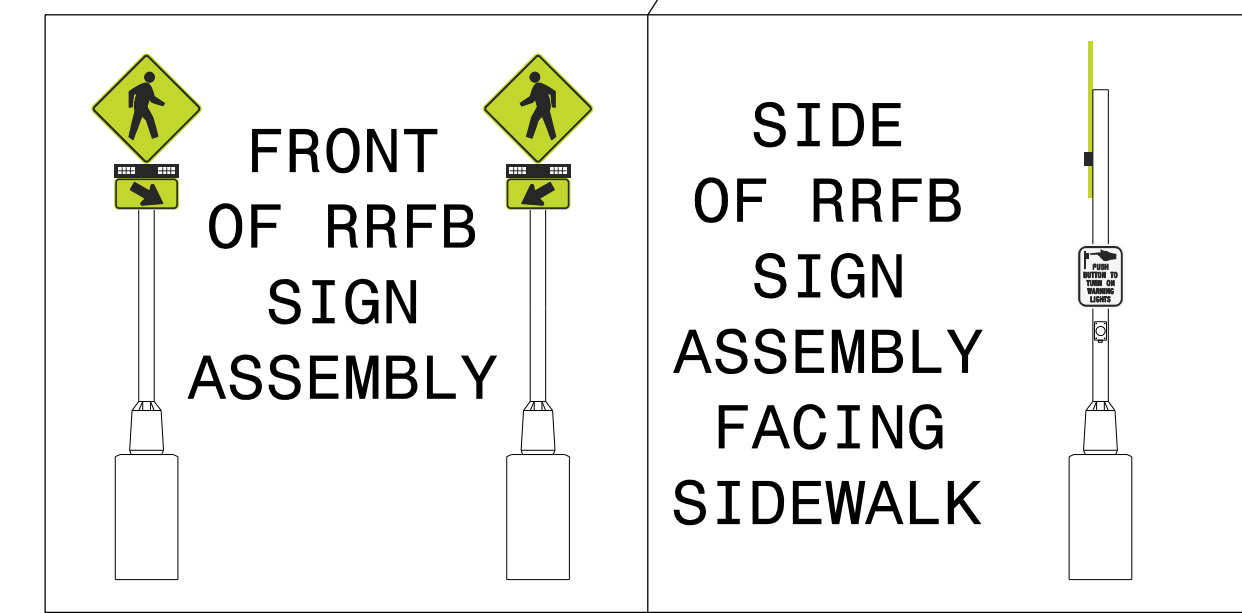
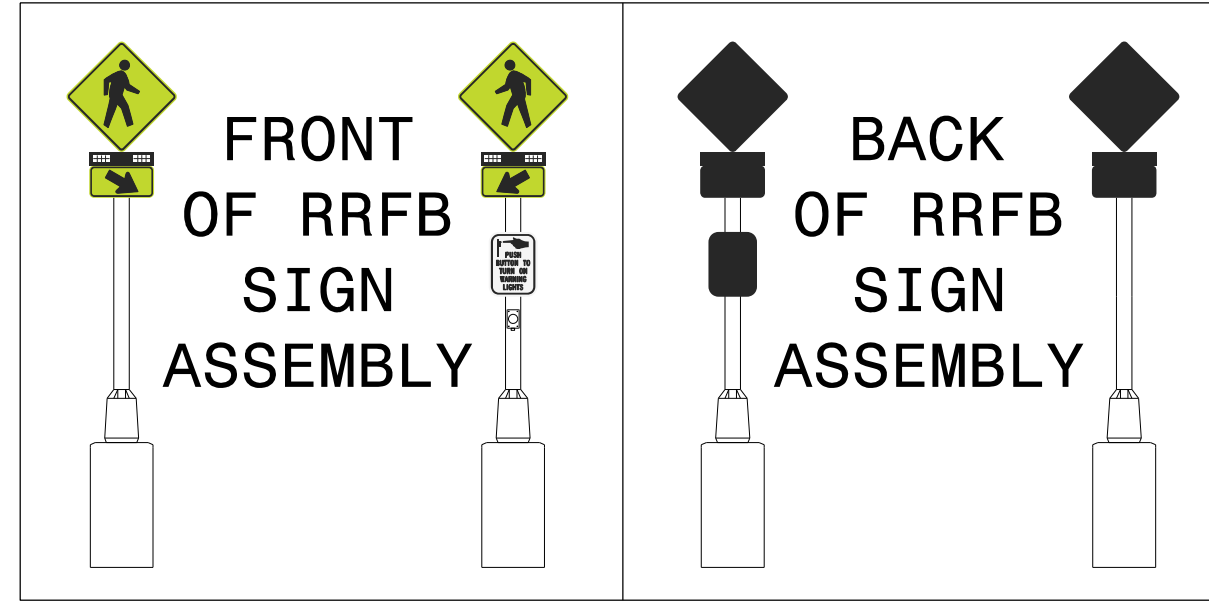
PROJECT NAME U-6241	SHEET NO. SIGN-10
APPROVED: <i>Betsy L. Watson</i> <small>REGISTERED PROFESSIONAL ENGINEER</small>	
DATE: 11/19/2021	
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



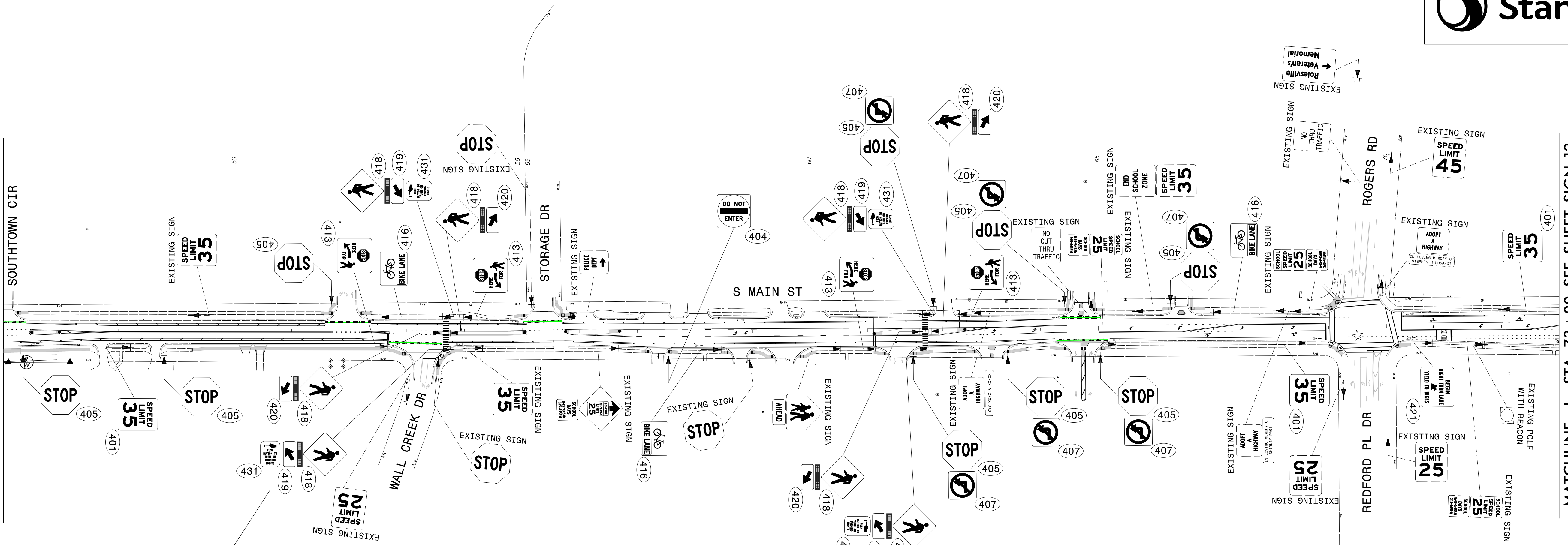
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 \$\$\$\$\$\$DGN\$\$\$\$\$
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PROPOSED SIGNING
MAIN ST
-L- STA 27+00 TO 46+00

PROJECT NAME U-6241	SHEET NO. SIGN-11
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



MATCHLINE -L- STA 46+00 SEE SHEET SIGN-10

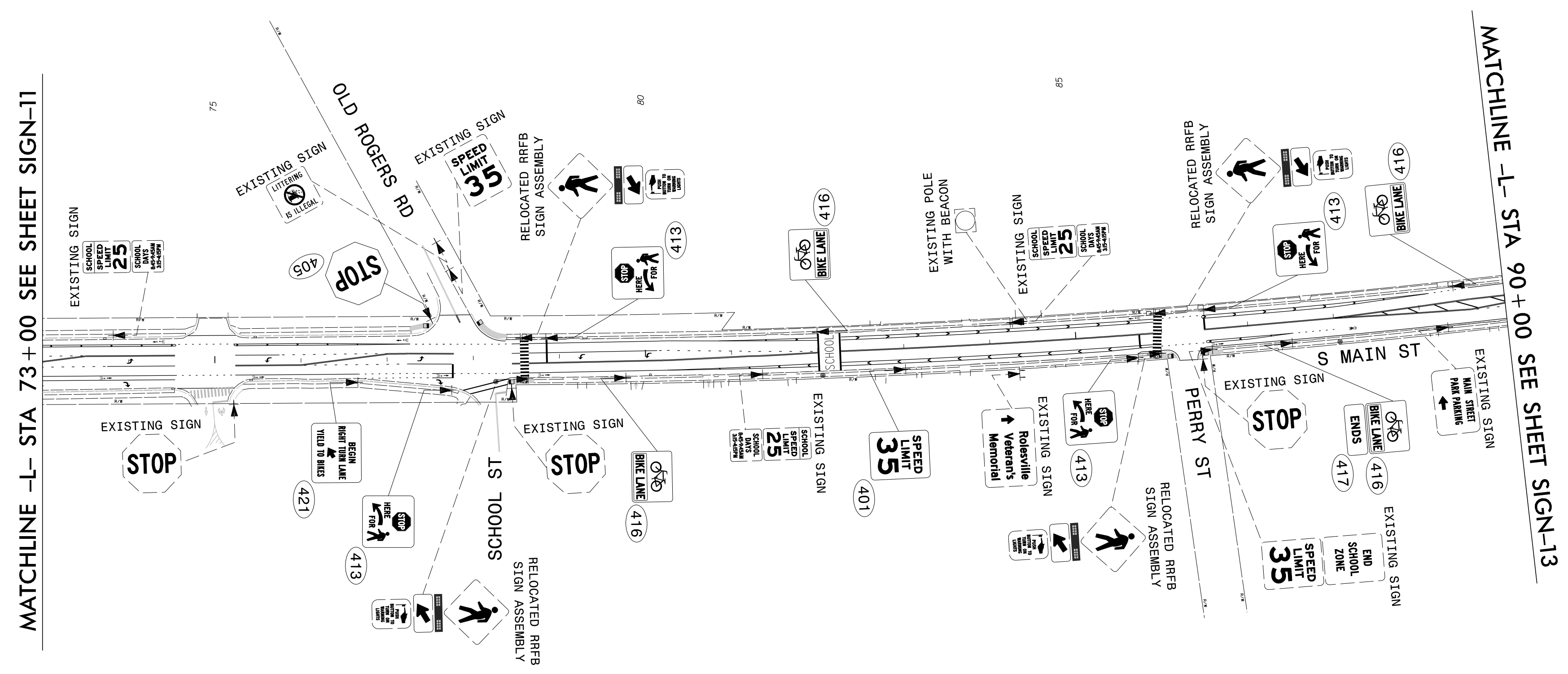
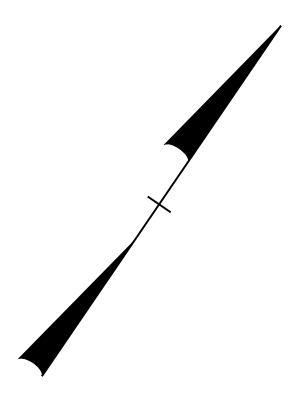


MATCHLINE -L- STA 73+00 SEE SHEET SIGN-12

PROPOSED SIGNING
MAIN ST
-L- STA 46+00 TO 73+00



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

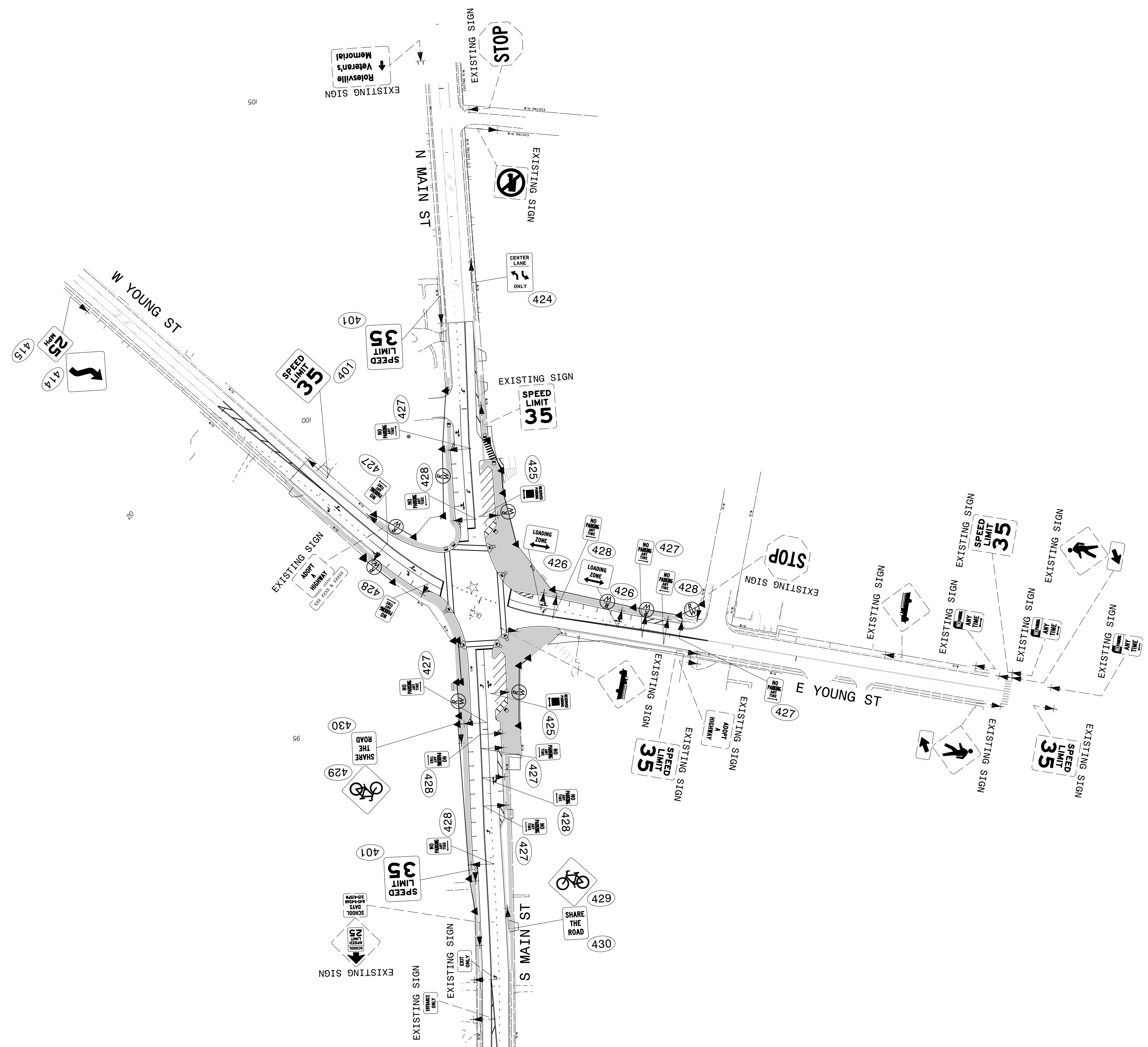
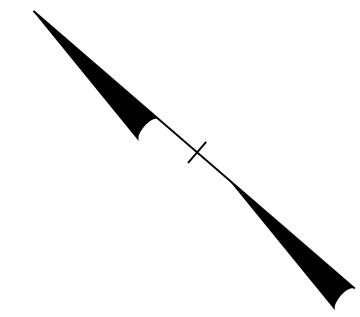
PROJECT NAME	SHEET NO.
U-6241	SIGN-12
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROPOSED SIGNING
MAIN ST
-L- STA 73+00 TO 90+00

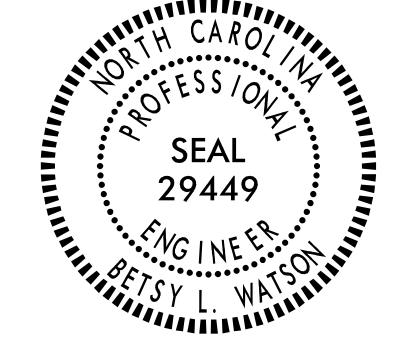
PROJECT NAME	SHEET NO.
U-6241	SIGN-13
APPROVED: <i>Betsy L. Watson</i>	
DATE: 11/19/2021	
SEAL	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	



MATCHLINE -L- STA 90+00 SEE SHEET SIGN-12

PROPOSED SIGNING
MAIN ST
-L- STA 90+00 TO 107+00

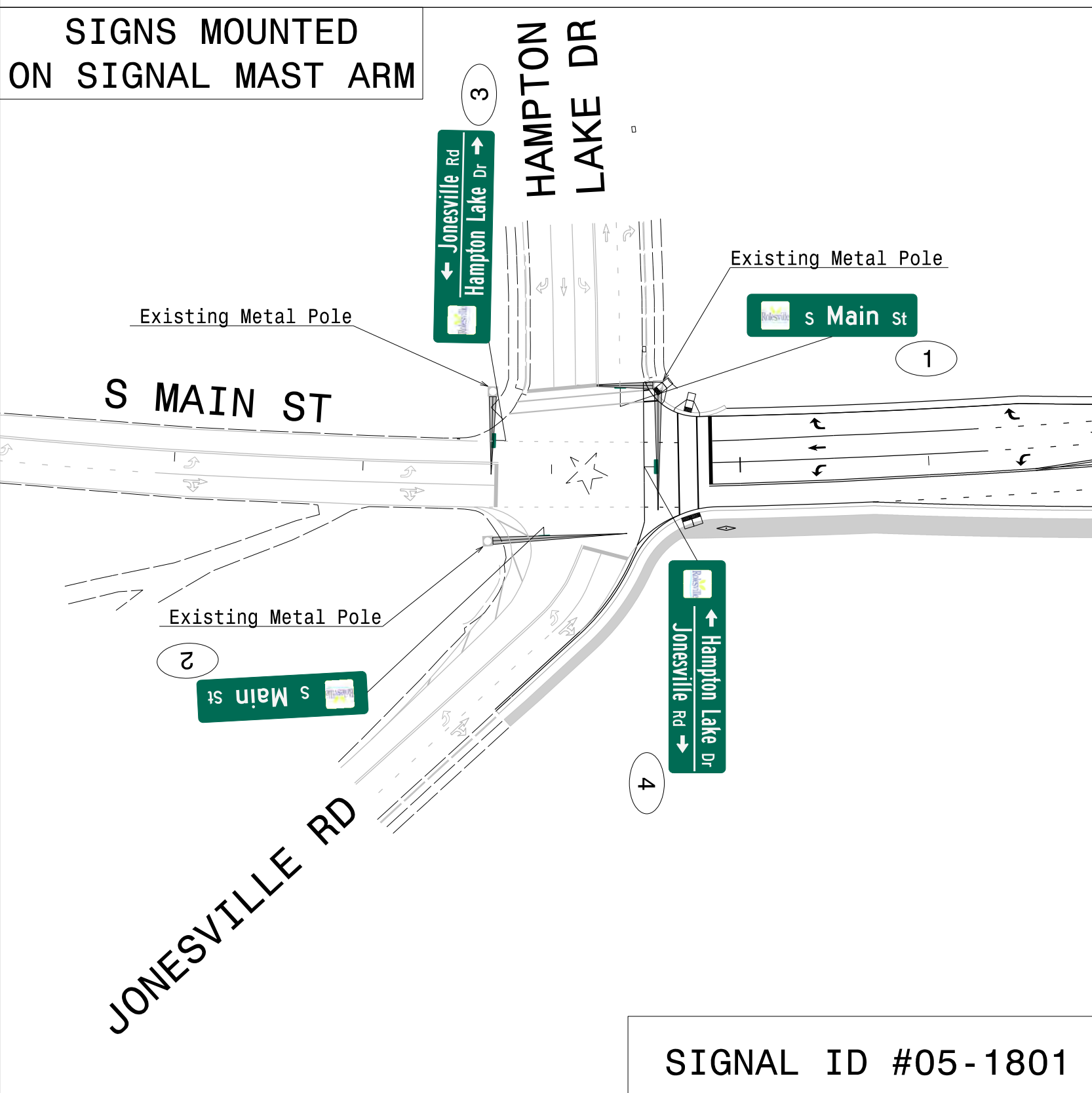
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



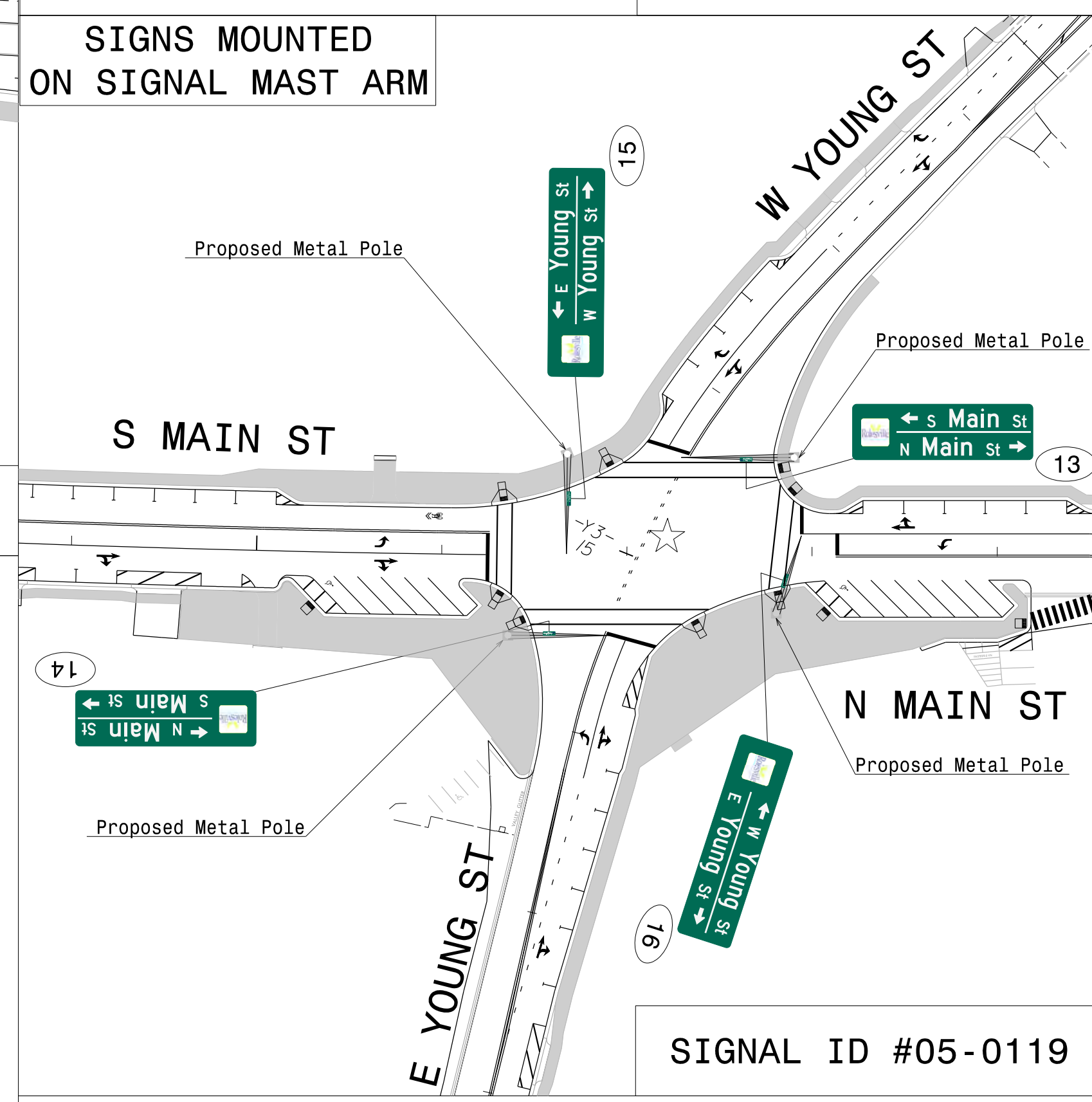
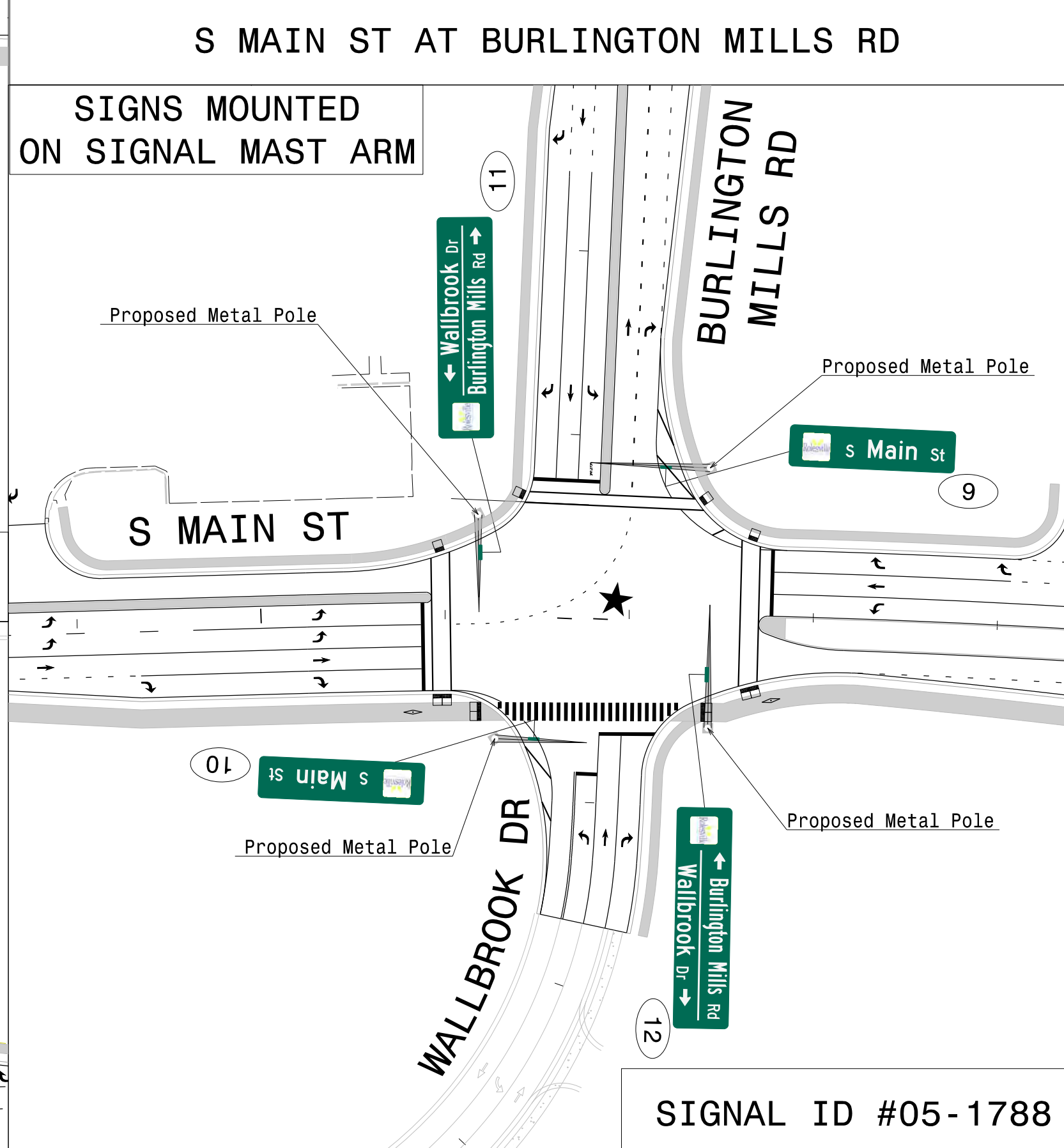
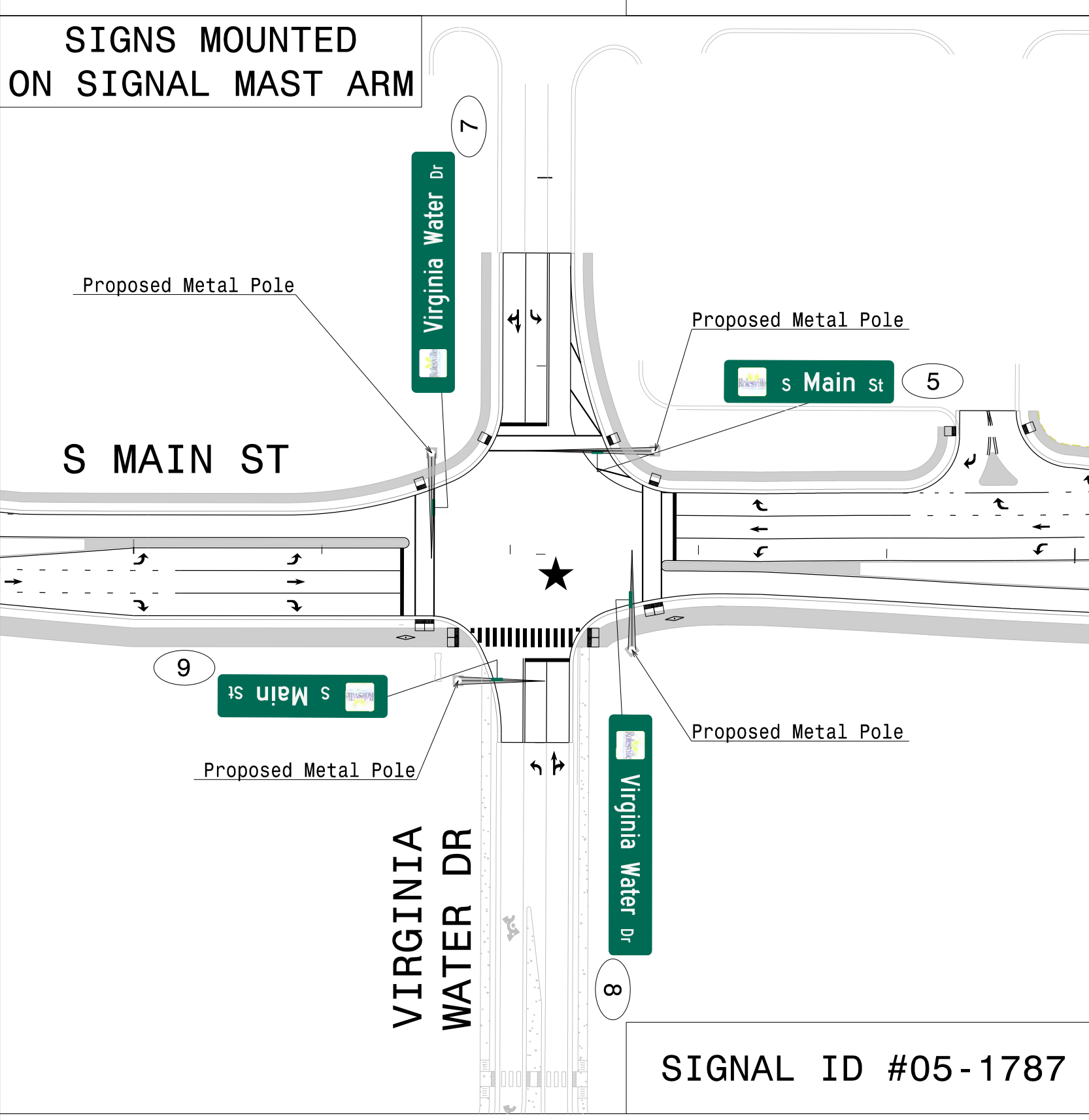
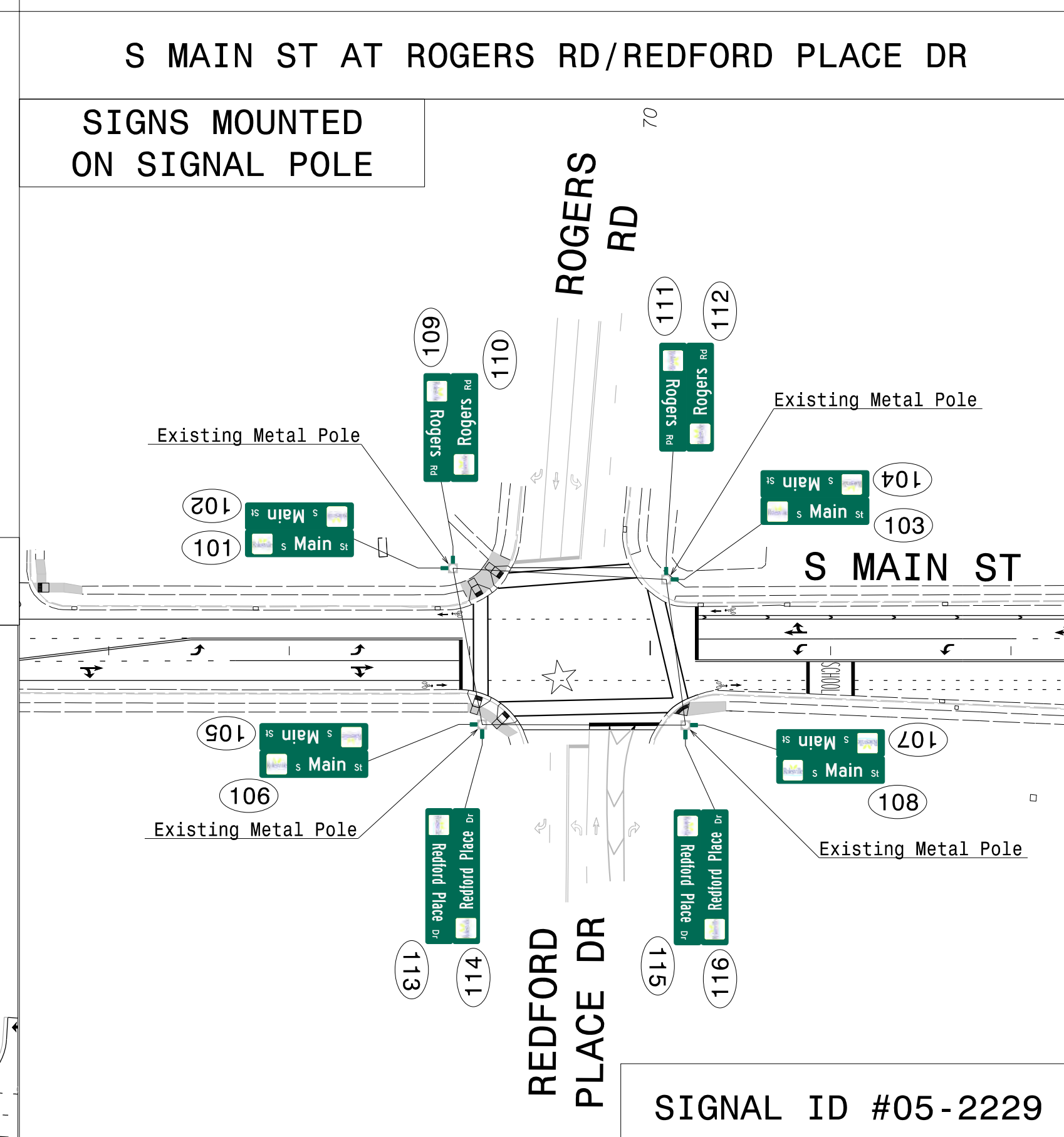
S MAIN ST AT HAMPTON LAKE DR/JONESVILLE RD



FOR SIGN LOCATIONS ON MAST ARM
SEE SIGNAL LOADING DIAGRAMS



S MAIN ST AT ROGERS RD/REDFORD PLACE DR



S MAIN ST AT WALLBROOK DEVELOPMENT

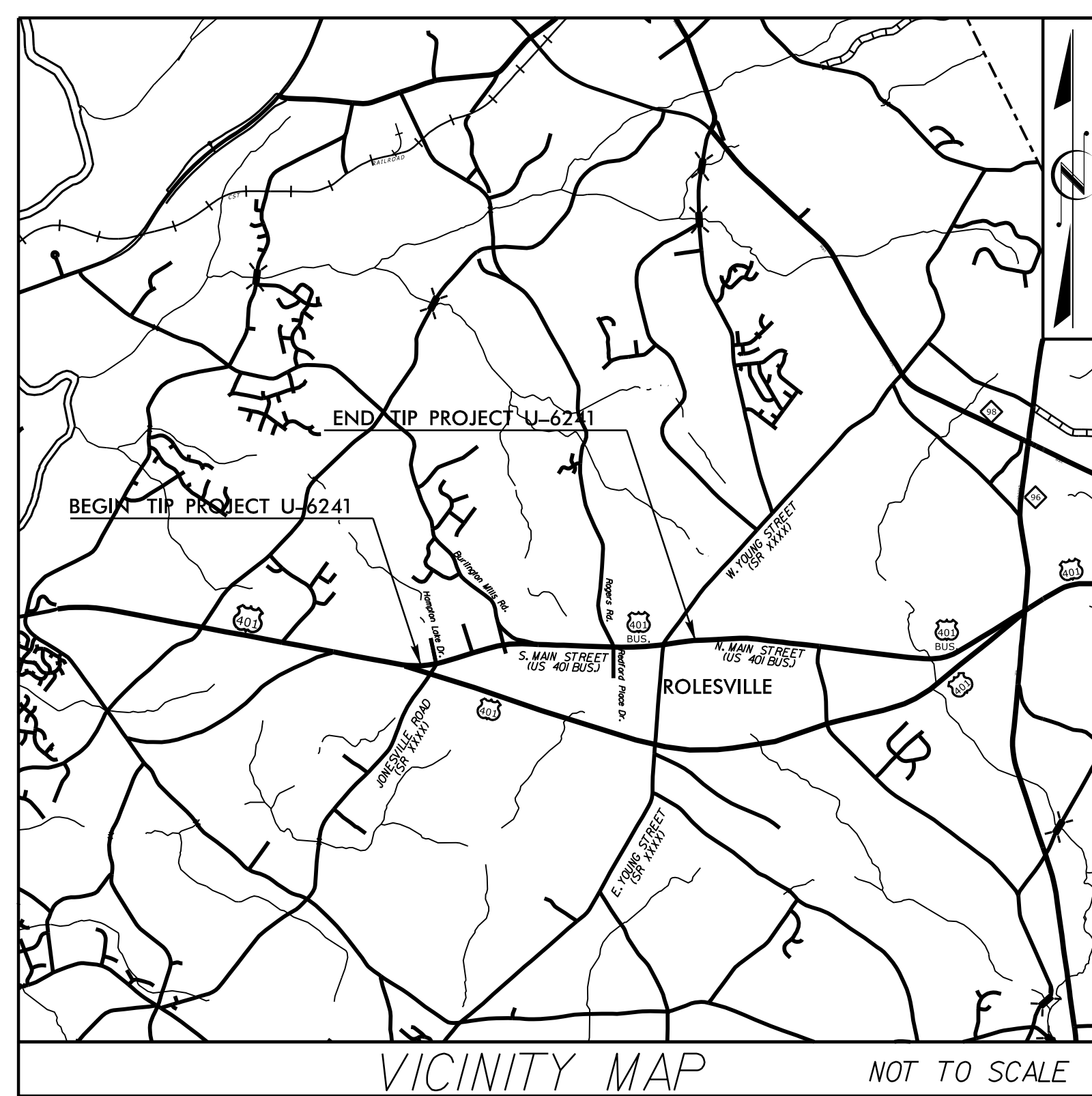
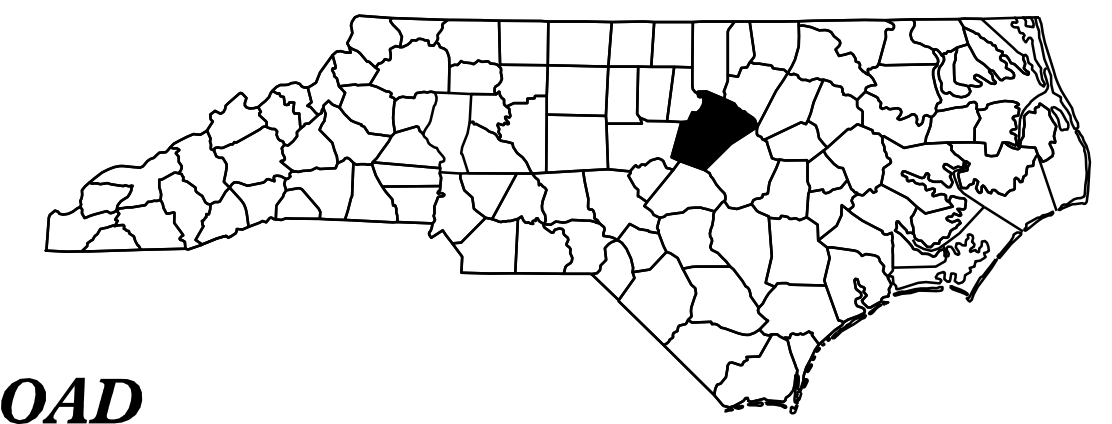
S MAIN ST/N MAIN ST AT W YOUNG ST/E YOUNG ST

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

TIP PROJECT: U-6241

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

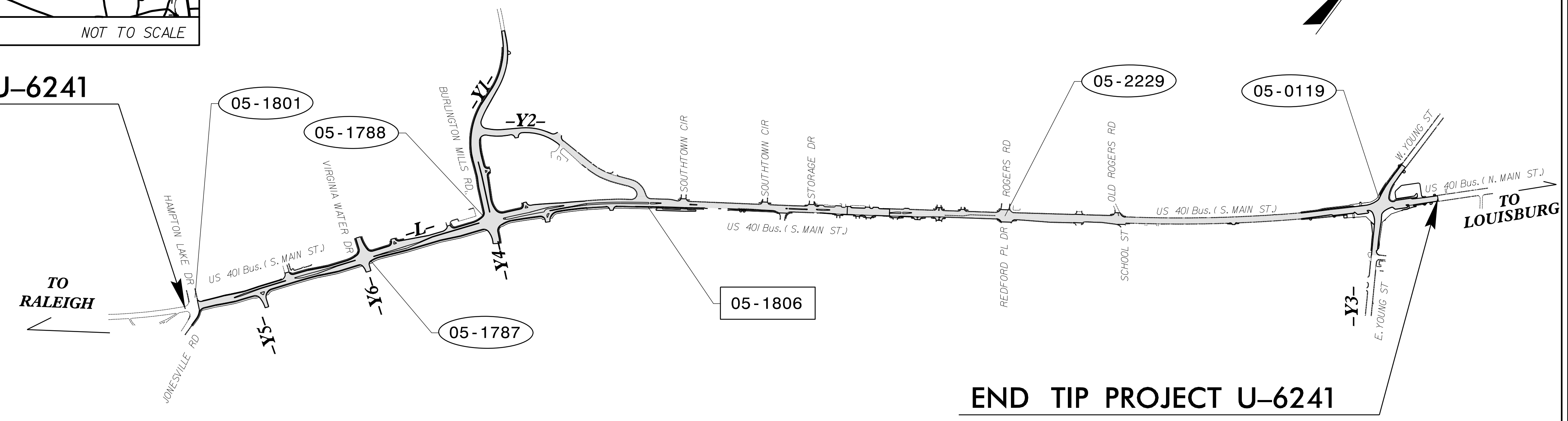
WAKE COUNTY



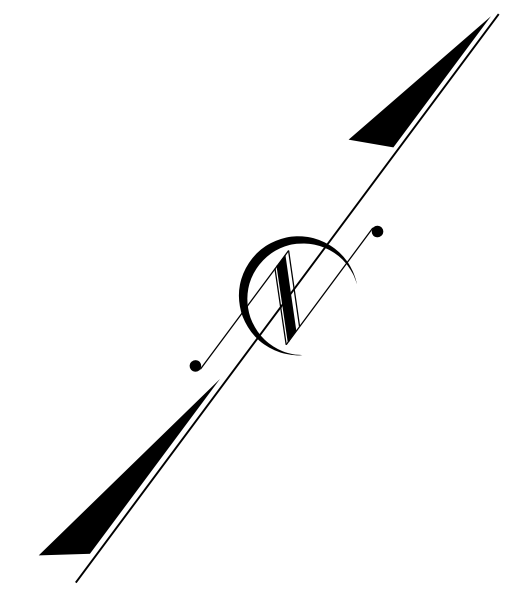
LOCATION: US 401 BUS (MAIN STREET) FROM SOUTH OF JONESVILLE ROAD TO NORTH OF YOUNG STREET

TYPE OF WORK: TRAFFIC SIGNALS & SIGNAL COMMUNICATIONS

BEGIN TIP PROJECT U-6241



END TIP PROJECT U-6241



Sheet #	Title	Location/Description
SIG 1.0	Title Sheet	
SIG 1.1 to SIG 1.2	Standard Plate Sheets	
SIG 2.0 to SIG 2.4	05-1801: US 401 Bus. (S. Main Street) @ SR 2226 (Jonesville Road) Hampton Lake Drive	
SIG 3.0 to SIG 3.6	05-1787: US 401 Bus. (S. Main Street) @ Virginia Water Drive	
SIG 4.0 to SIG 4.6	05-1788: US 401 Bus. (S. Main Street) @ SR 2051 (Burlington Mills Road)	
SIG 5.0 to SIG 5.4	05-2229: US 401 Bus. (S. Main Street) @ SR 2052 (Rogers Road) Redford Place Drive	
SIG 6.0 to SIG 7.6	05-0119: US 401 Bus. (Main Street) @ SR 1003/945 (Young Street)	
Remove Signal	05-1806: US 401 Bus. (S. Main Street) @ SR 2051 (Burlington Mills Road)	
MI - M8	Metal Pole Standards	
SCP-01 to SCP-10	Signal Communication Plans	

LEGEND

XX-XXXX - NEW OR UPGRADED SIGNAL XX-XXXX - SIGNAL REMOVAL

TRANSPORTATION SYSTEMS MANAGEMENT & OPERATION UNIT
Contacts:
Robert J. Ziemba, PE, CPM
Signals Engineer, Central Region
D. Todd Joyce, PE
Signal Equipment Design Review Engineer
Gregory A. Green
Signal Communication Project Engineer

Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION

750 N. Greenfield Parkway, Garner, NC 27529

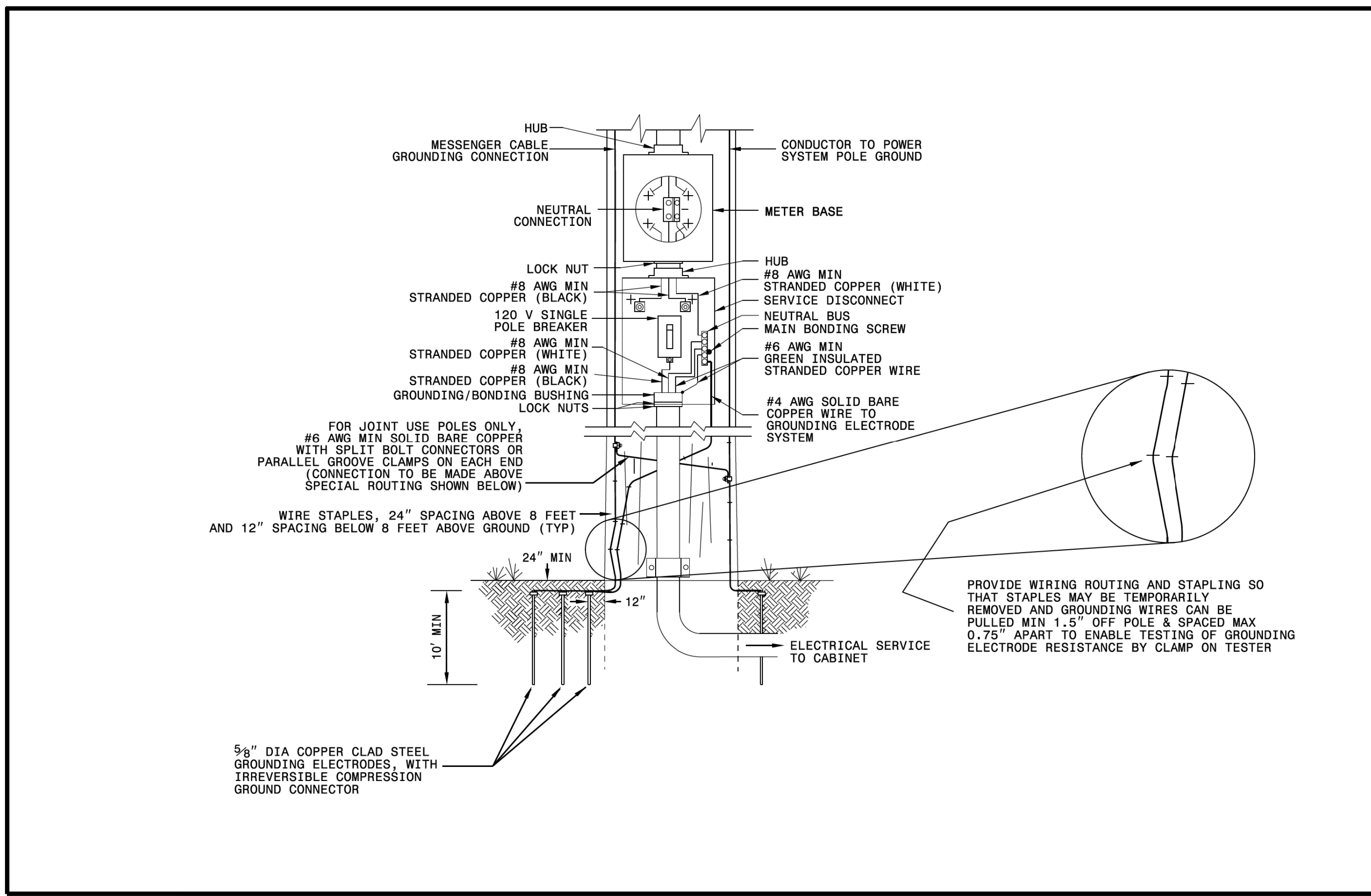
Stantec Consulting Services Inc.
801 Jones Franklin Rd-Suite 300
Raleigh, NC 27606

Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com
License No. F-0672

Betsy Watson, PE Senior Associate
Dean Harris Senior Transportation Designer
Regina Muncey, PE Transportation Engineer
Derrick Waller, PE Transportation Engineer

APPROVED: Regina M. Muncey
DATE: 12/16/2021

I:\0446 AM... Signals\Design\Title Sheet\U-6241_SIG_1.TSH.dgn
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1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

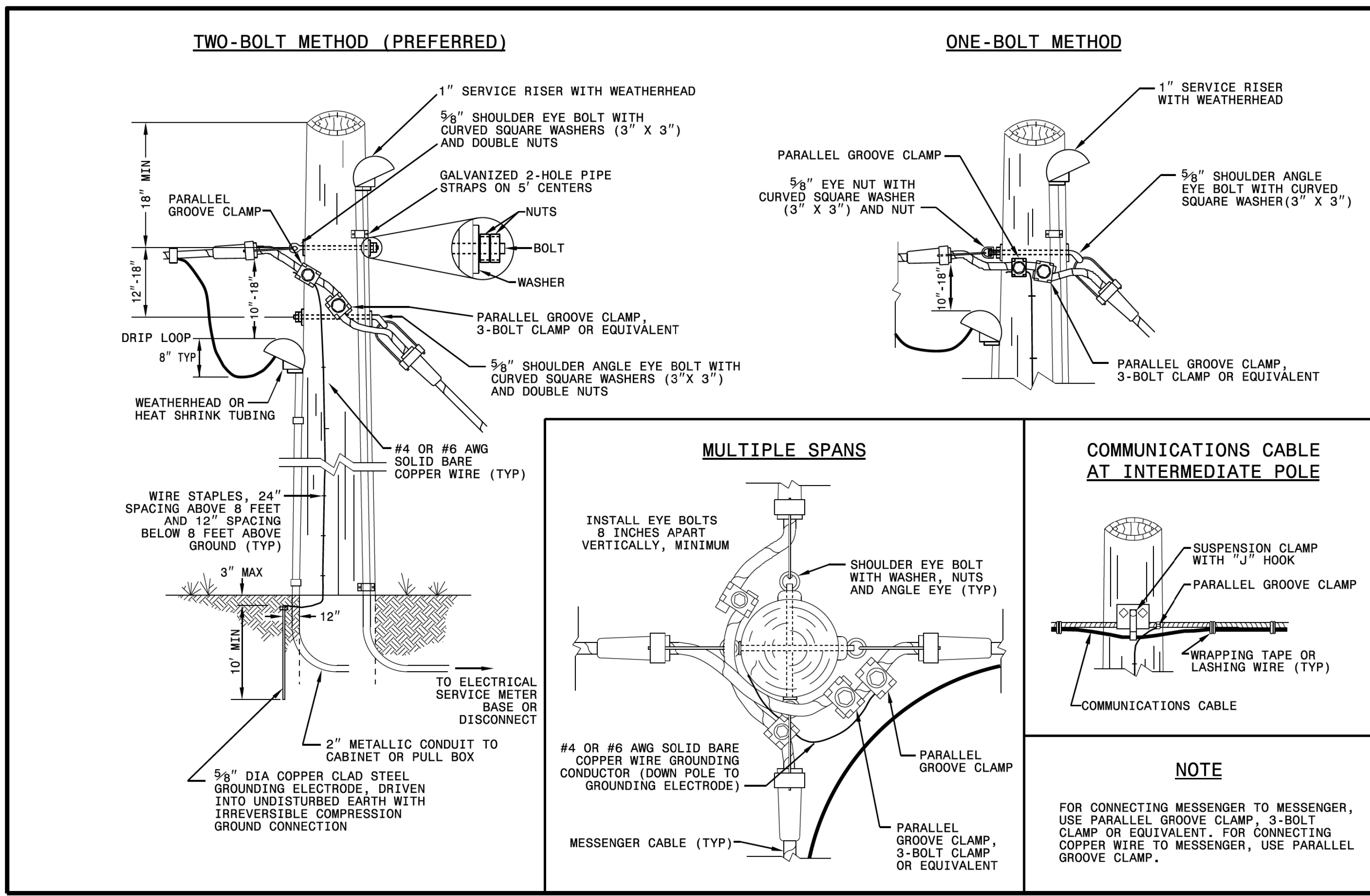
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING

SHEET 1 OF 1

1700D01



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

WOOD POLES

METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1

1720D01

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

See Plate for Title

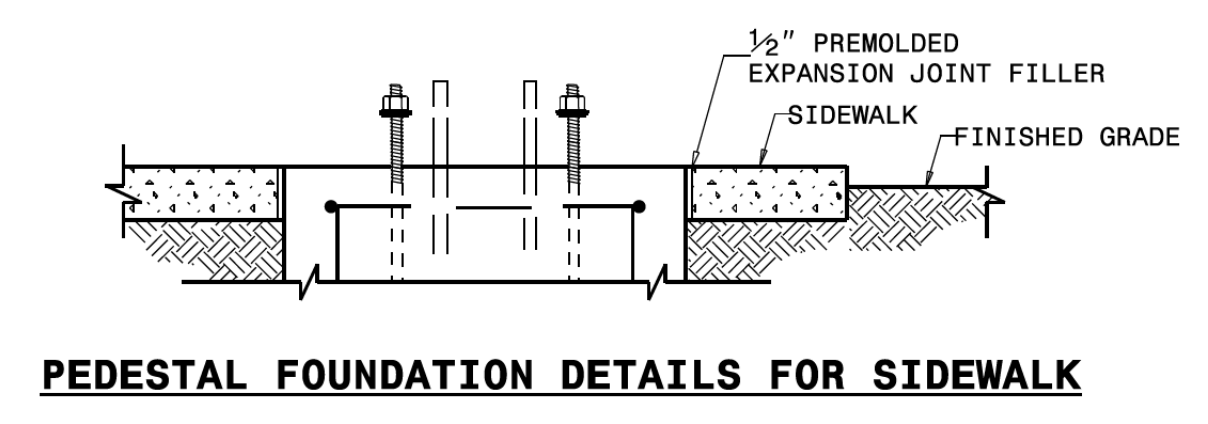
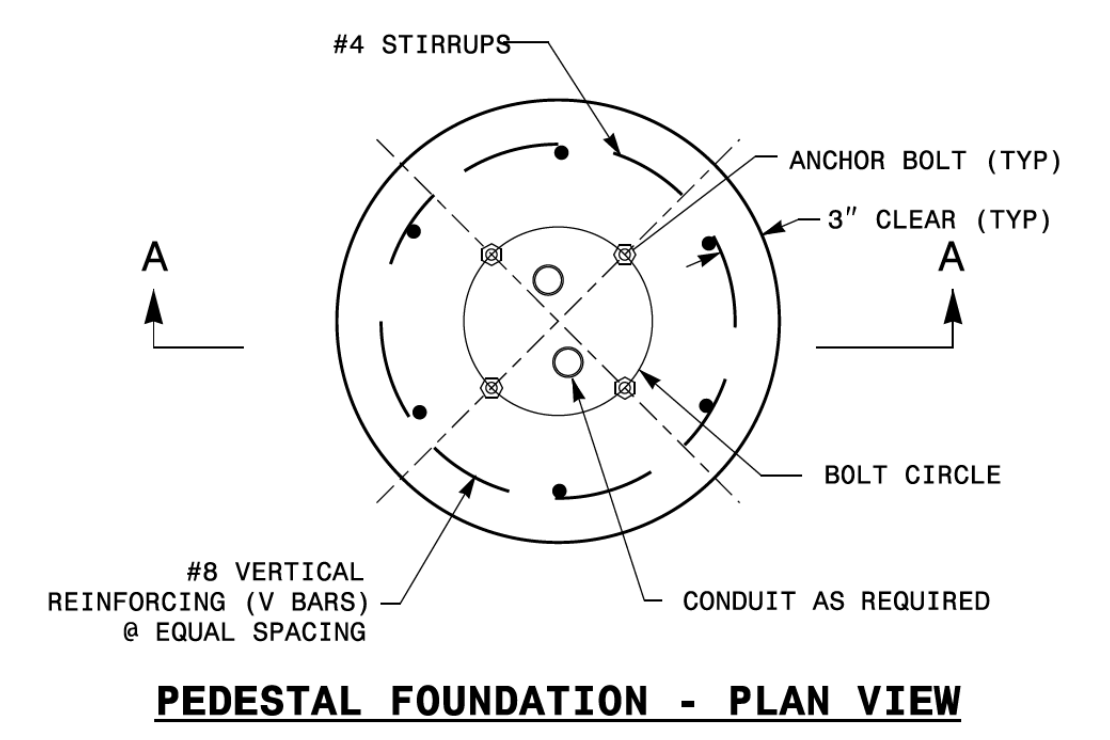
Prepared in the Offices of:

750 N. Greenfield Parkway
Garner, NC 27529

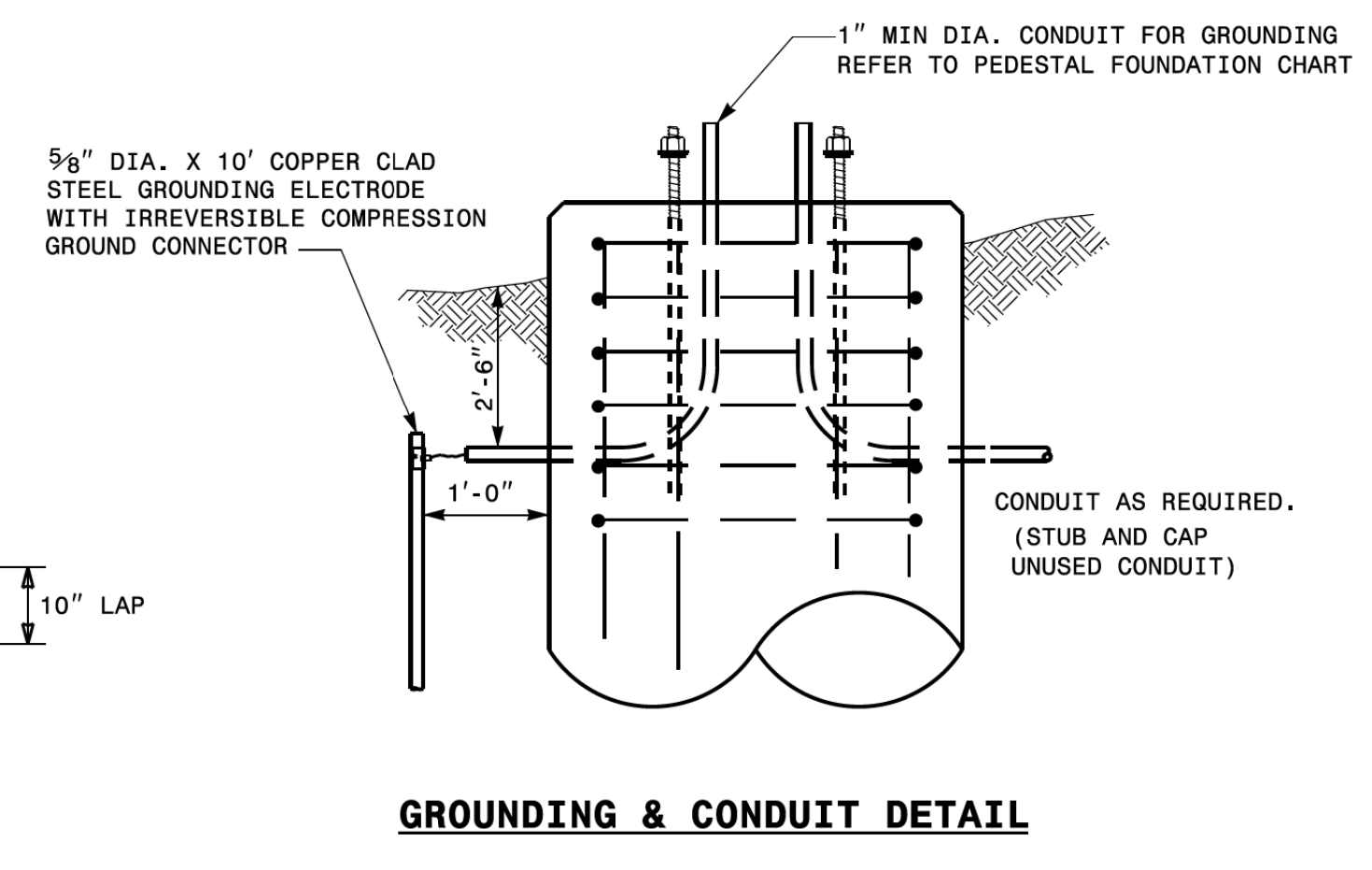
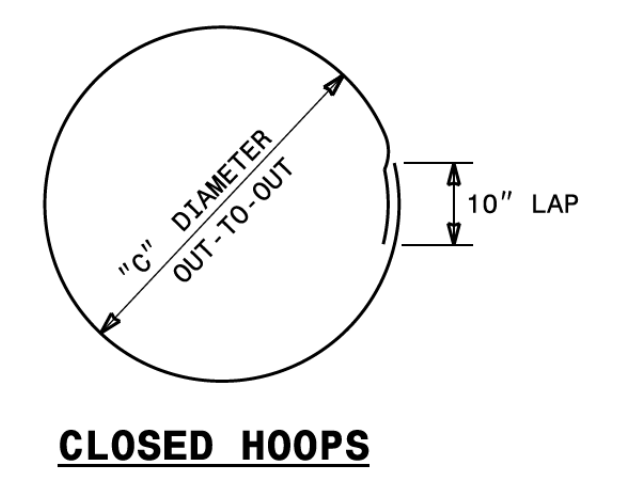
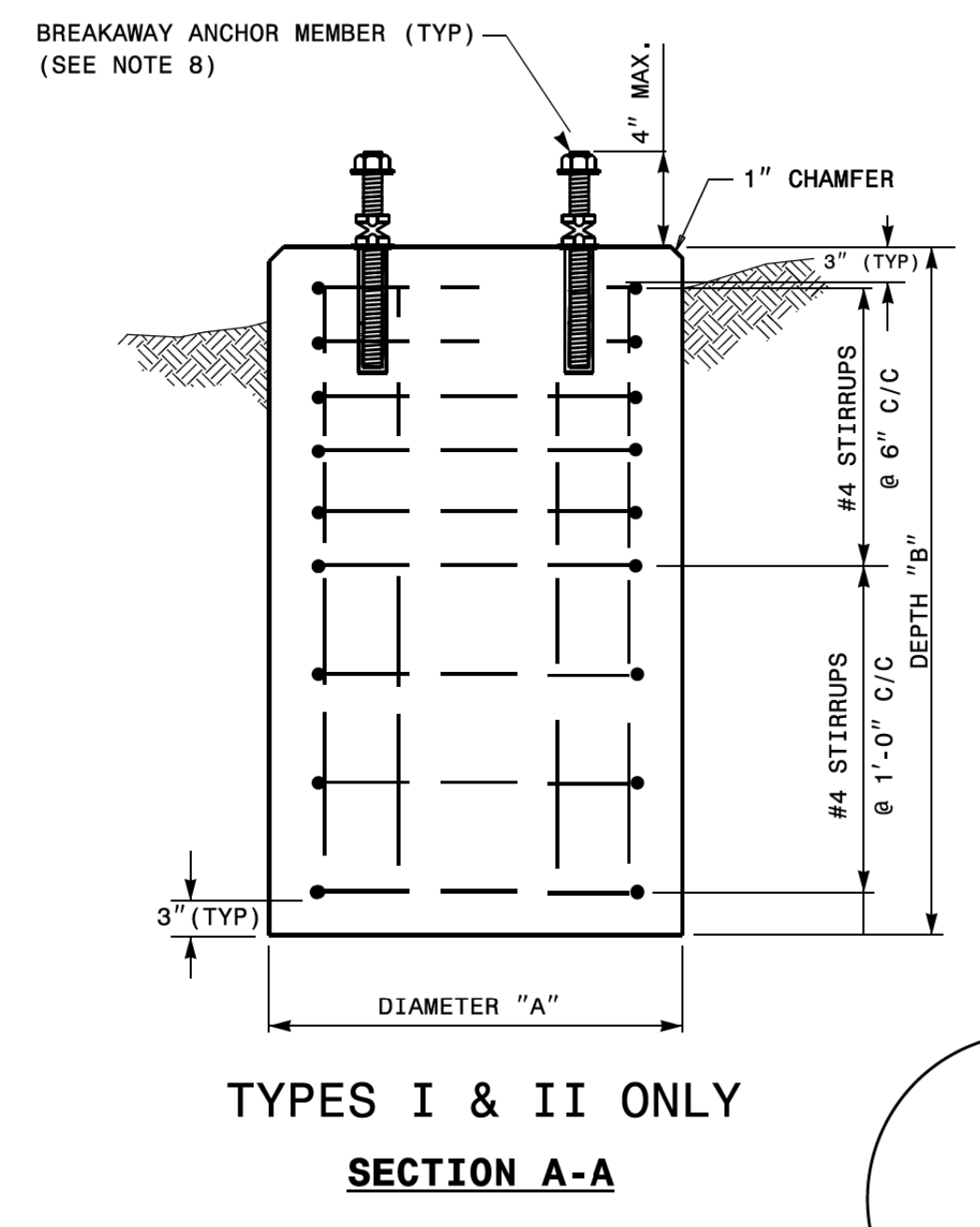
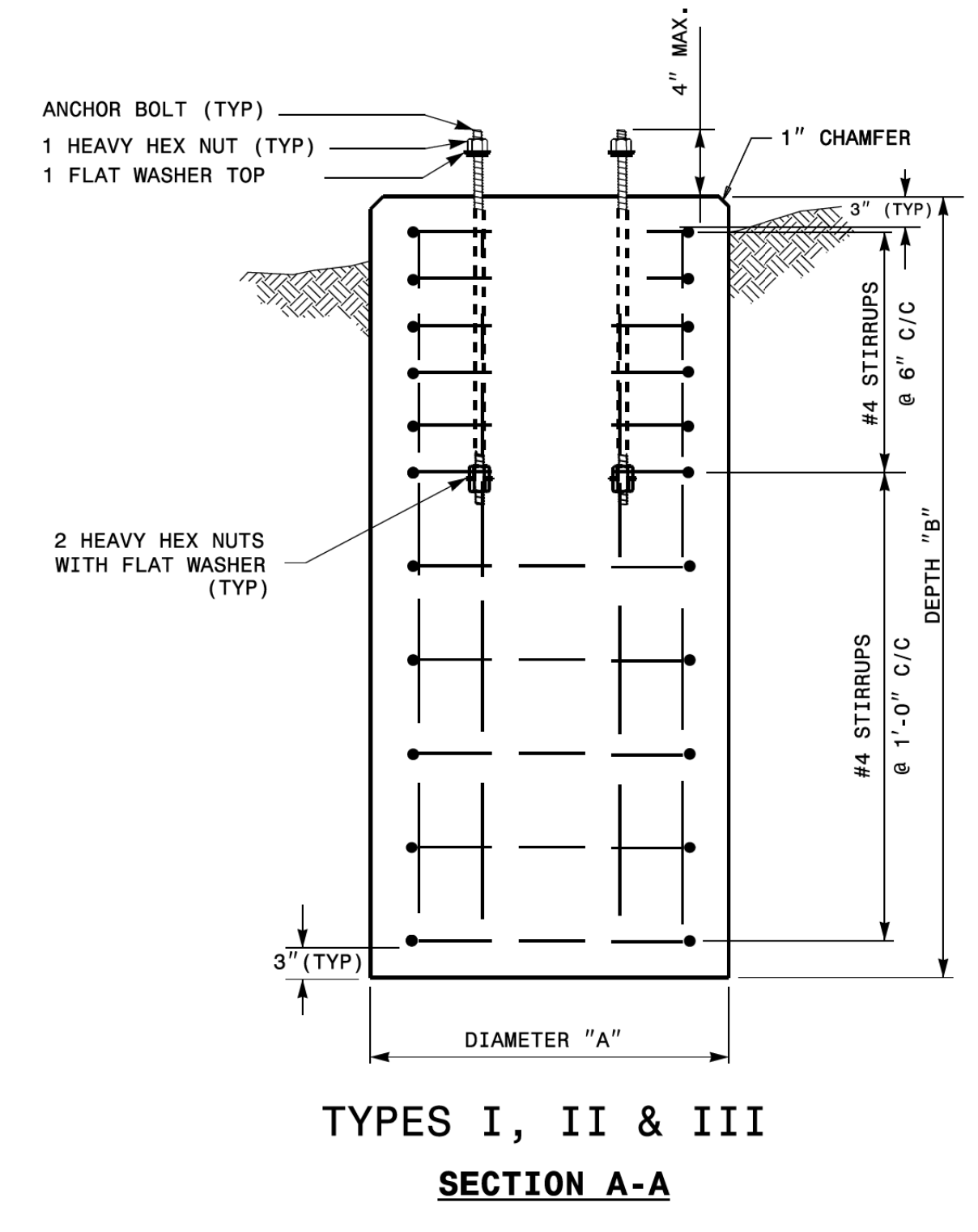
SEAL

DocuSigned by:
Mohd Aslami

10/11/2017
DATE



- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
 - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
 - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
 - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
 - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - SANDY TYPE SOIL
 - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
 - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
 - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
 - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS	
					ON 6" CENTERS	ON 12" CENTERS	TOTAL						
I	8	6	3'-0"	56	4	4	4	5'-7"	1'-6"	0'-10"	15	71	
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

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

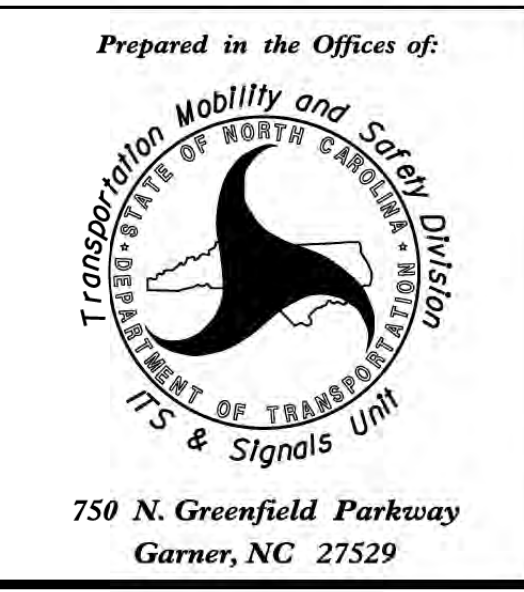
ENGLISH STANDARD DRAWING FOR
PEDESTALS
 FOUNDATIONS

SHEET 1 OF 1
1743D01

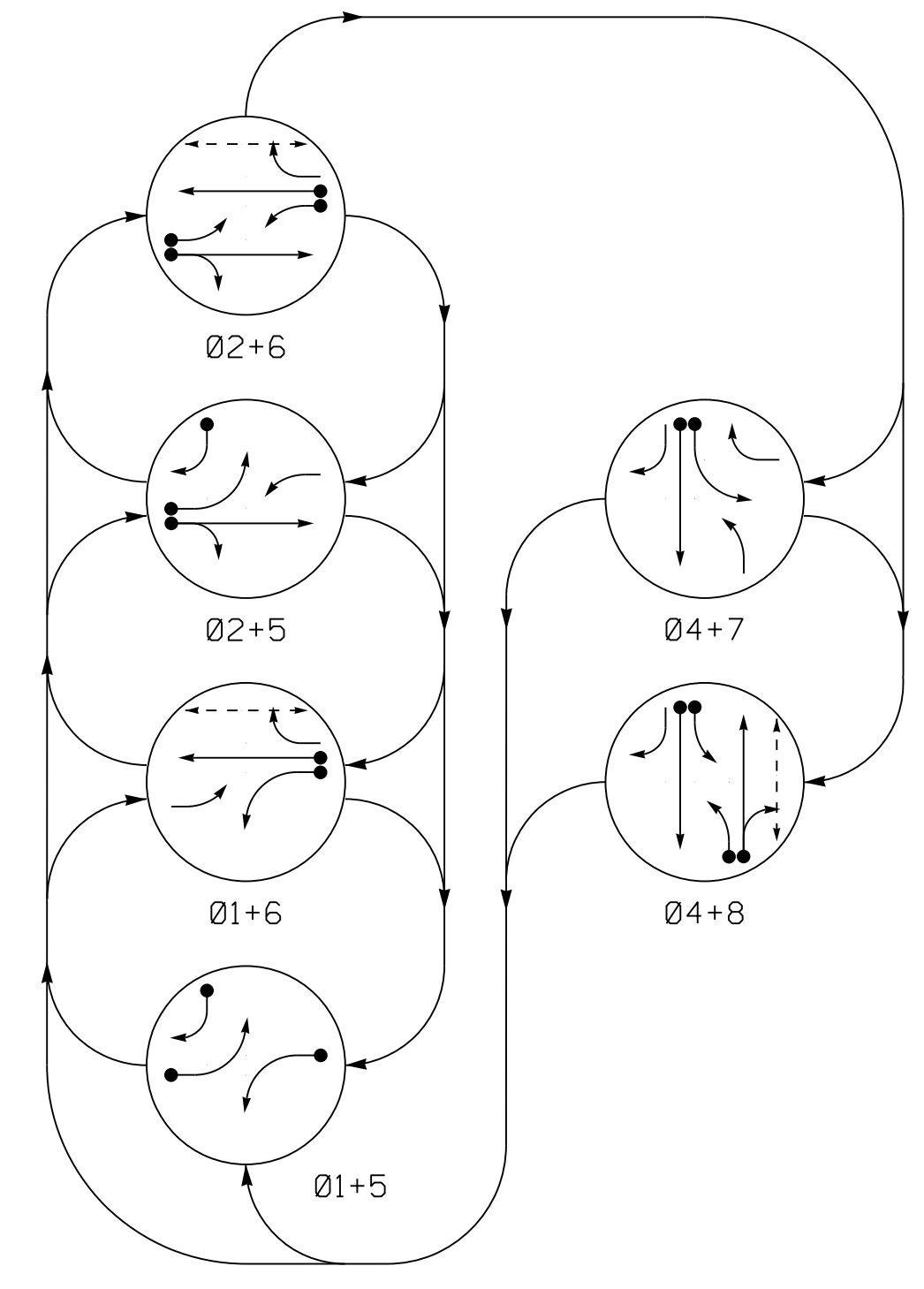
11-2017-2017_09-03
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DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

See Plate for Title



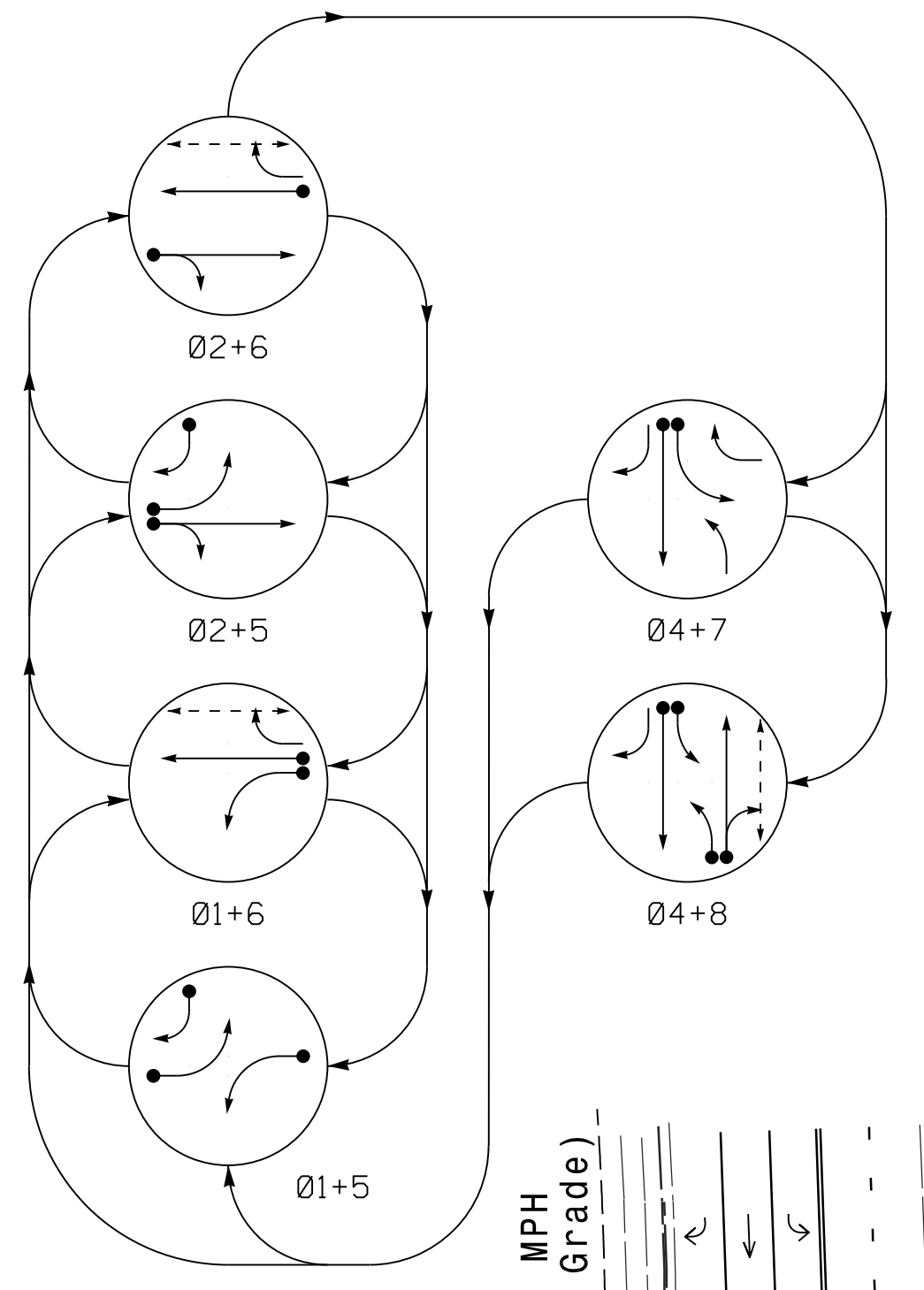
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE						
	01+5	01+6	02+5	02+6	04+7	04+8	FLASH
11	←	←	←	←	←	←	Y
21,22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
51	←	←	←	←	←	←	Y
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R	Y
71	←	←	←	←	←	←	Y
81	←	←	←	←	←	←	Y
82,83,84	R	R	R	R	G	G	R
P61,P62	DW	W	DW	W	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DRK

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE						
	01+5	01+6	02+5	02+6	04+7	04+8	FLASH
11	←	←	←	←	←	←	Y
21,22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42	R	R	R	R	G	G	R
51	←	←	←	←	←	←	Y
61	R	G	R	G	R	R	Y
62	R	G	R	G	R	R	Y
71	←	←	←	←	←	←	Y
81	←	←	←	←	←	←	Y
82,83,84	R	R	R	R	G	G	R
P61,P62	DW	W	DW	W	DW	DW	DRK
P81,P82	DW	DW	DW	DW	DW	W	DRK

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	15*	-	N	-	X
2A/SB	6X6	70	4	-	2	Yes	-	-	-	N	-	X
4A	6X40	+2	2-4-2	-	4	Yes	-	-	-	N	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	15*	-	N	-	X
5B	6X40	+2	2-4-2	-	5	Yes	-	-	15	-	-	X
6A/S7	6X6	70	3	X	6	Yes	-	-	-	N	X	X
7A	6X40	+2	2-4-2	-	7	Yes	-	15	-	N	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	3	-	N	-	X
8B	6X40	0	2-4-2	X	8	Yes	-	10	-	N	-	X

*Reduce Delay to 3 seconds during Alternate Phasing operation.
 #Disable phase call for loop during Alternate Phasing operation.

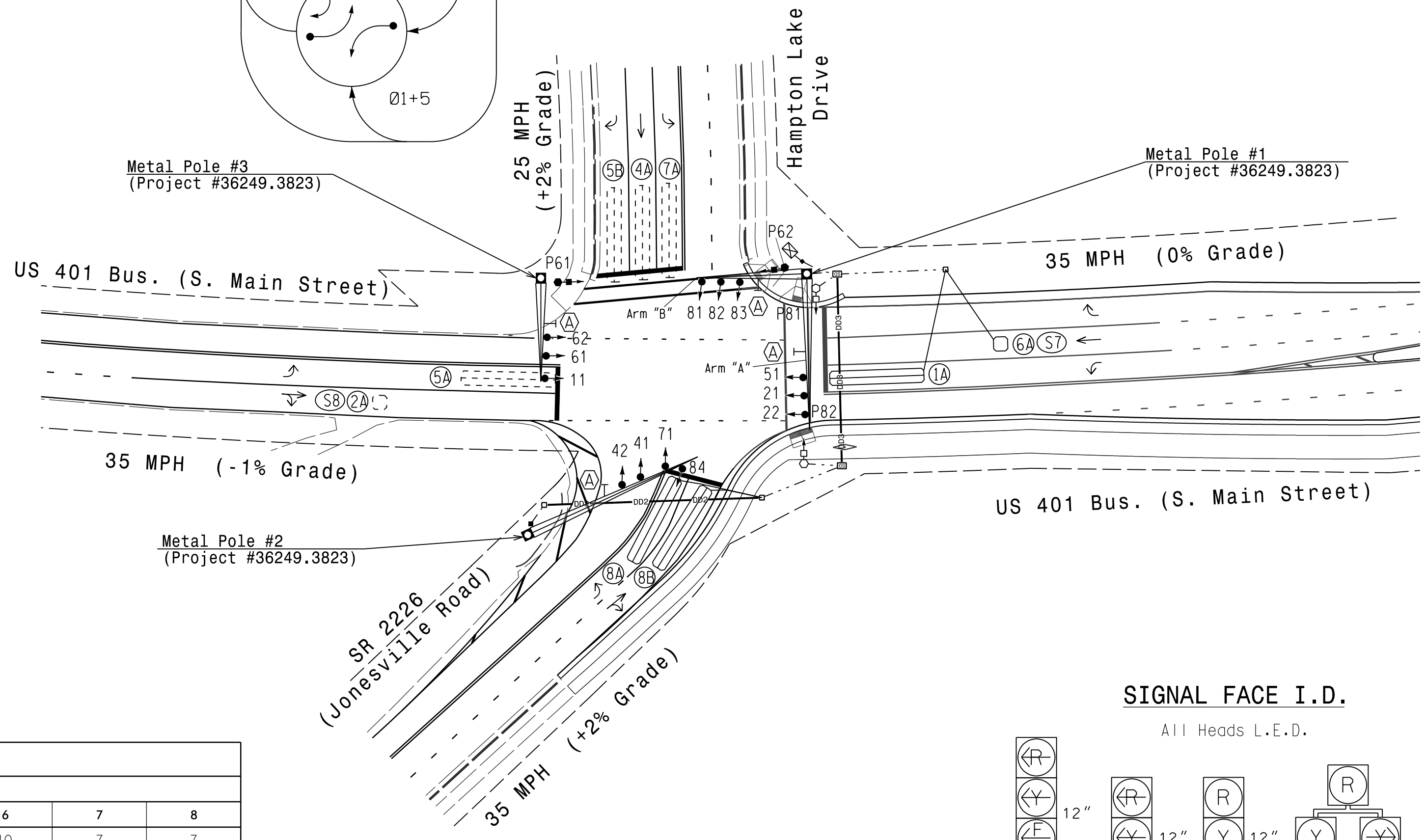
6 Phase Fully Actuated
 US 401 Business (Louisburg Rd) (CLS - System 3)
 Signal System #D05-20_Rolesville

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Install new cabinet on the existing cabinet foundation.
- Closed Loop System Data: Controller Asset #: 1801, Master Asset #: 10520.

PHASING DIAGRAM DETECTION LEGEND

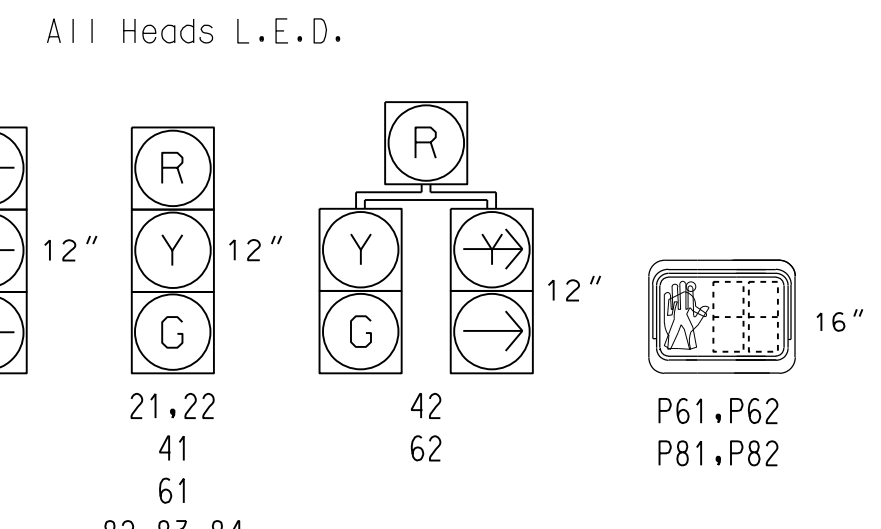
- ← ● DETECTED MOVEMENT
- ← ○ UNDETECTED MOVEMENT (OVERLAP)
- ← - - UNSIGNALIZED MOVEMENT
- ← - - > PEDESTRIAN MOVEMENT



LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & Sign |
| ⊥ Signal Pole with Guy | ⊥ Signal Pole with Guy |
| ⊥ Signal Pole with Sidewalk Guy | ⊥ Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Inductive Loop Detector |
| ⊥ Controller & Cabinet Junction Box | ⊥ Controller & Cabinet Junction Box |
| ⊥ 2-in Underground Conduit | ⊥ 2-in Underground Conduit |
| N/A Right of Way | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| — DD — Directional Drill | N/A Directional Drill |
| ⊥ Metal Pole with Mastarm | ⊥ Metal Pole with Mastarm |
| ⊥ Oversized Junction Box | ⊥ Oversized Junction Box |
| ○ Type II Signal Pedestal | ○ Type II Signal Pedestal |
| N/A Curb Ramp | N/A Curb Ramp |
| ⊥ Street Name Sign (D3-1) By Others | ⊥ Street Name Sign (D3-1) By Others |

SIGNAL FACE I.D.



ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	4	5	6	7	8	
Min Green *	7	10	7	7	10	7	7	
Walk *	-	-	-	-	7	-	7	
Ped Clear	-	-	-	-	20	-	13	
Veh. Extension *	2.0	3.0	2.0	2.0	3.0	2.0	2.0	
Max 1 *	15	50	15	15	50	15	15	
Yellow	3.0	3.9	3.7	3.0	3.9	3.0	3.7	
Red Clear	2.3	1.9	2.2	2.4	1.9	2.3	2.2	
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Actuations B4 Add *	-	-	-	-	-	-	-	
Seconds / Actuation *	-	-	-	-	-	-	-	
Max Initial *	-	-	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	-	-	
Locking Detector	-	X	-	-	X	-	-	
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-	-	
Dual Entry	-	-	X	-	-	-	X	
Simultaneous Gap	X	X	X	X	X	X	X	

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

Stantec Consulting Services Inc.
 801 Jones Franklin Road-Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

Prepared For the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street) at SR 2226 (Jonesville Road) / Hampton Lake Drive

Division 5 Wake County Rolesville

PLAN DATE: January 2022 REVIEWED BY: E D Harris

PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

DocuSigned by: **Derrick Waller** 1/6/2022

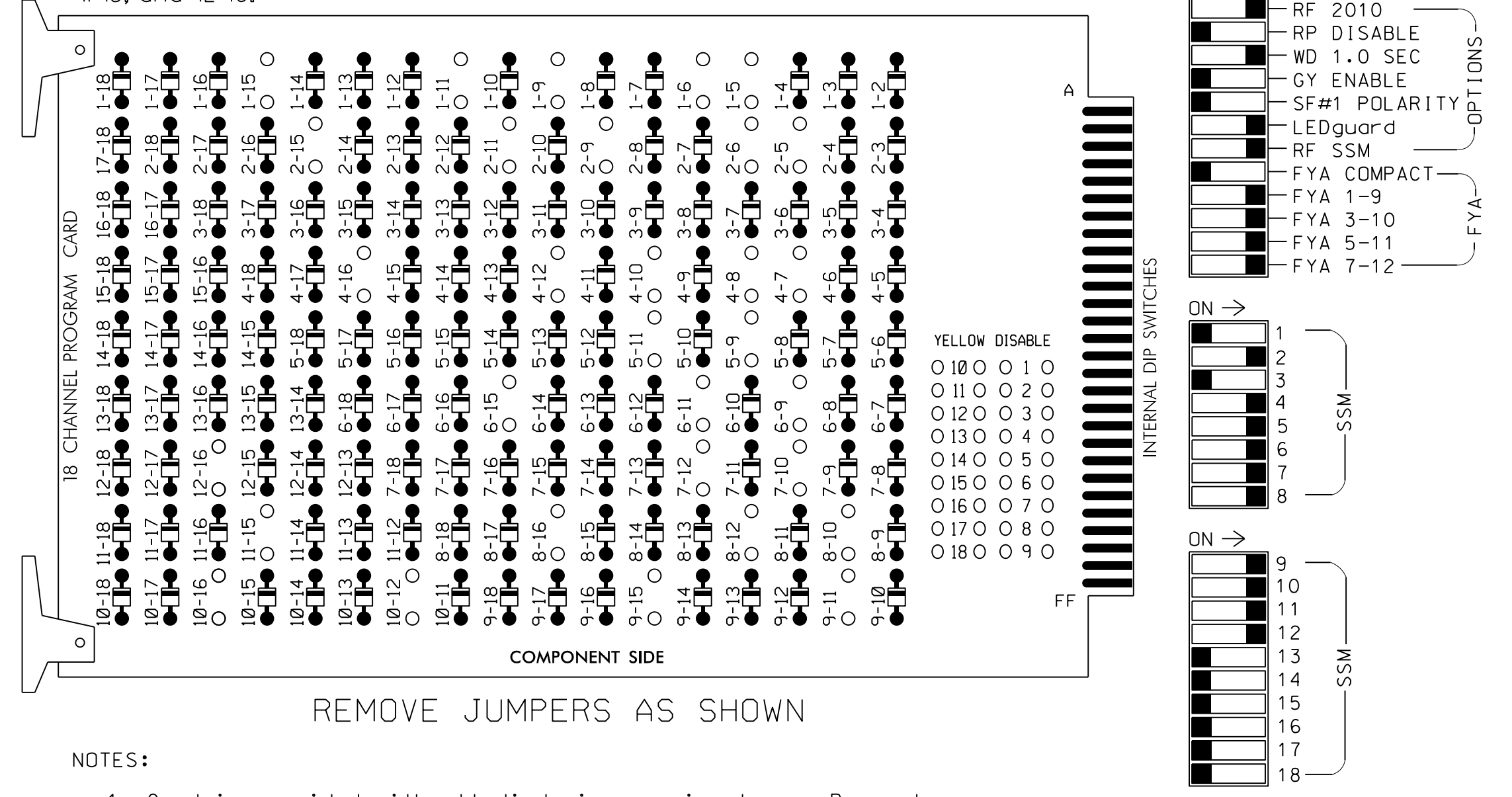
SIGNATURE DATE

SIG. INVENTORY NO. 05-1801

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 4-7, 4-8, 4-10, 4-12, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 8-16, 9-11, 9-15, 10-12, 10-16, 11-15, and 12-16.



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S9,S10,S11,S12,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,4,5,6,6PED,7,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

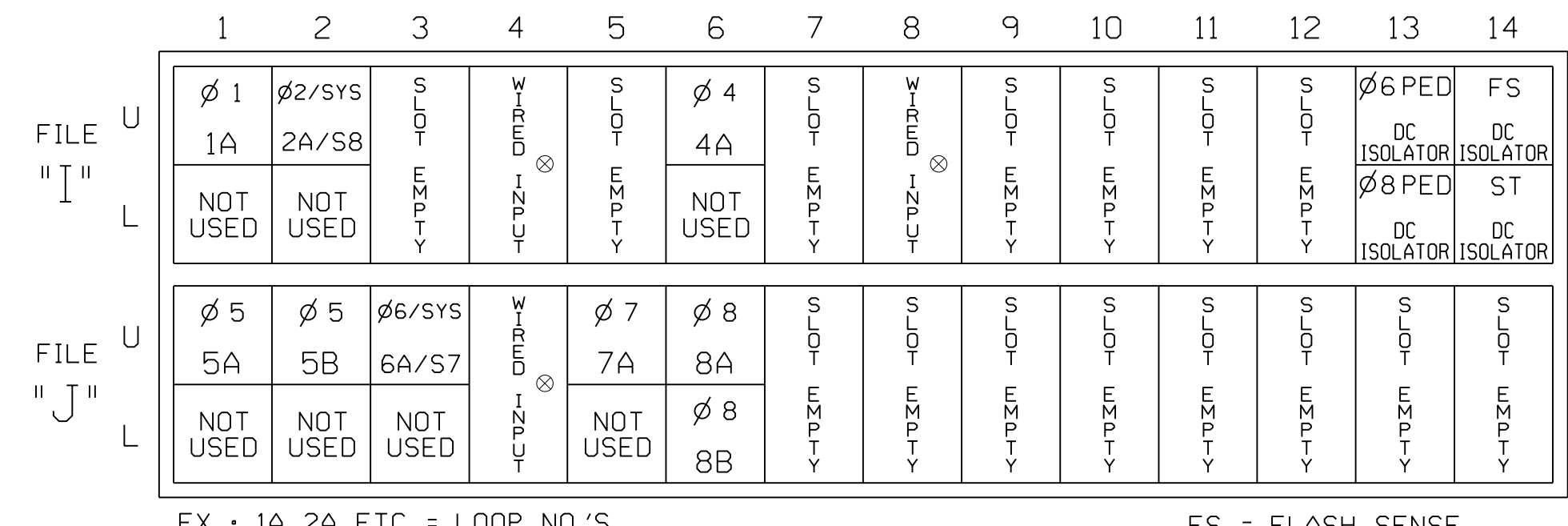
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6		
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18		
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE		
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	42	51	61,62	P61, P62	62	71	82,83, 84	P81, P82	11	81	NU	51	71	
RED		128			101		*	134		*	107									
YELLOW	*	129			102					135			108							
GREEN		130			103					136			109							
RED ARROW																A121	A124		A114	A101
YELLOW ARROW								132				123				A122	A125		A115	A102
FLASHING YELLOW ARROW																A123	A126		A116	A103
GREEN ARROW	127						133	133			124	124								
Hand											119								110	
Walking																				112

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

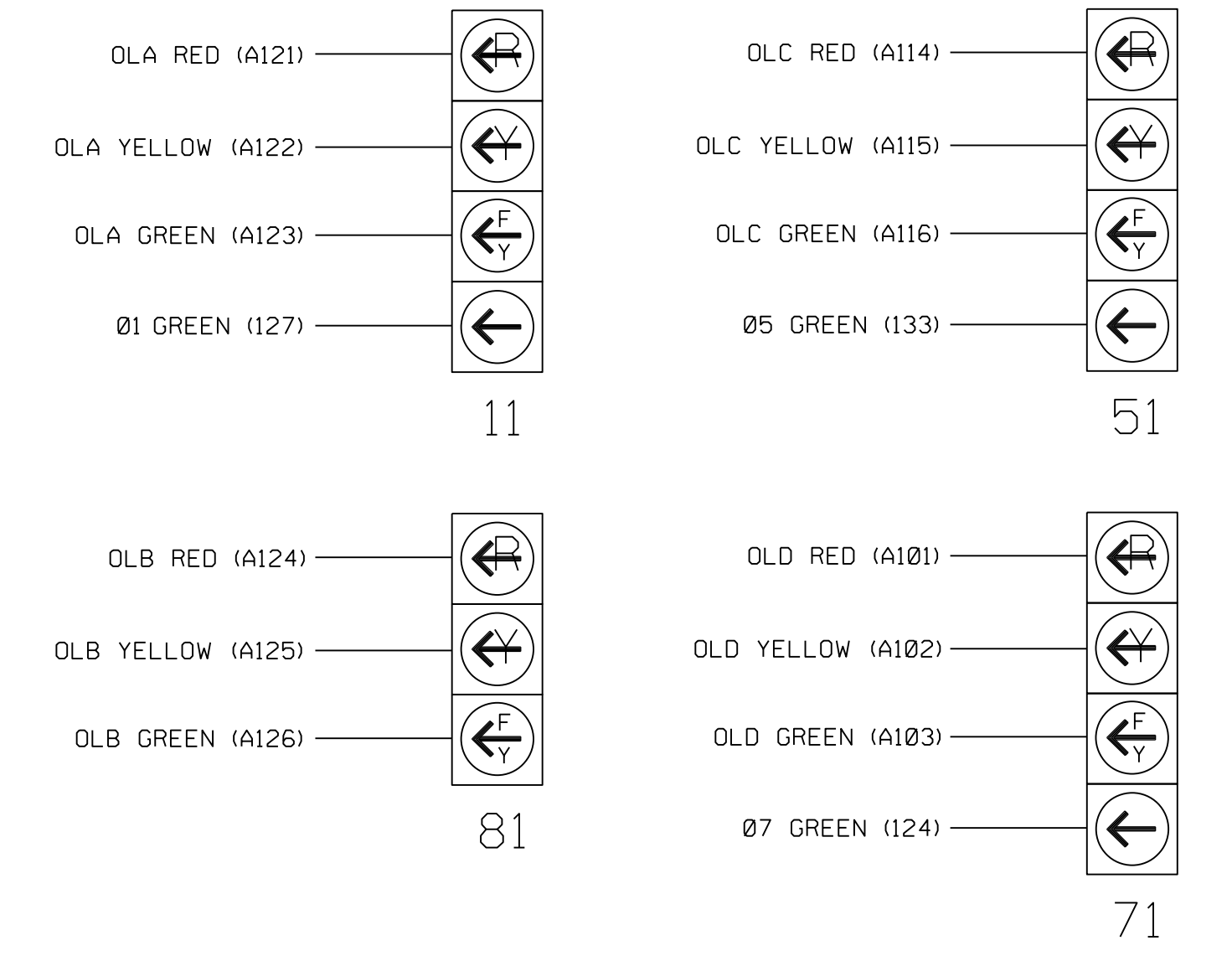
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES				N
2A/S8	TB2-5,6	I2U	39	2	2/SYS	YES				N
4A	TB4-9,10	I6U	41	4	4	YES				N
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES				N
5B	TB3-5,6	J2U	40	6	5	YES		15		N
6A/S7	TB3-9,10	J3U	64	36	6/SYS	YES				N
7A ³	TB5-5,6	J5U	57	7	7	YES		15		N
	-	I8U	49	24	4	YES		3		N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
PED PUSH BUTTONS										
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.
- ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

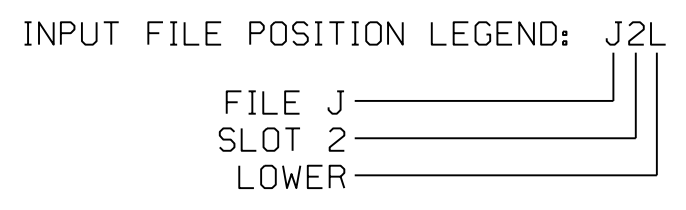
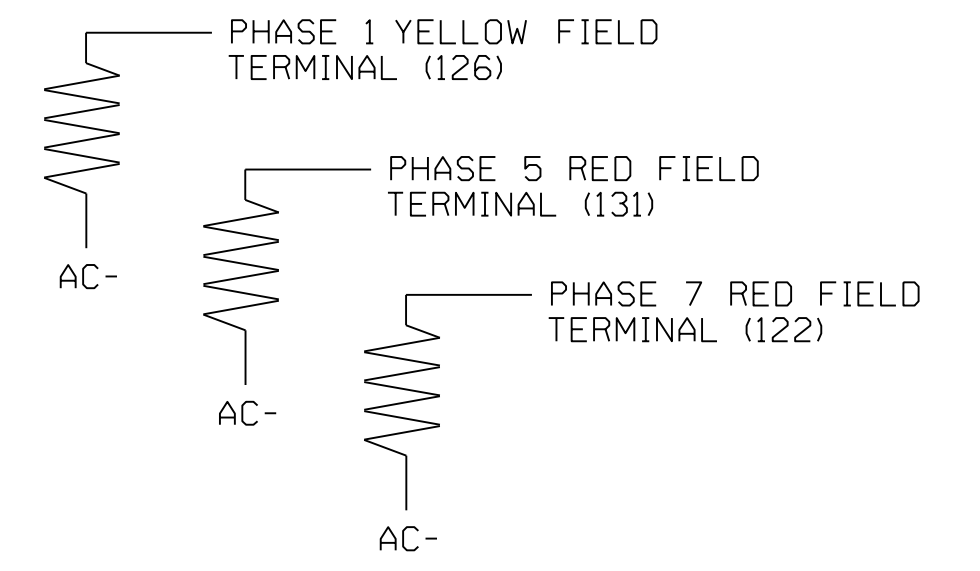


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 4

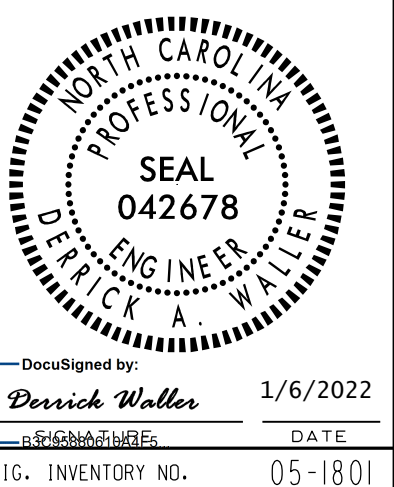
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US 401 Bus. (S. Main Street) at SR 2226 (Jonesville Road)/ Hampton Lake Drive
 Division 5 Wake County Rolesville

PLAN DATE: January 2022	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey
REVISIONS	INIT. DATE

DocuSigned by: Derrick Waller 1/6/2022



ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 1
OPPOSING THROUGH.....	PHASE 2
FLASHING ARROW OUTPUT.....CH9 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE.....	1

NOTICE ACTION PLAN SF BIT "1"

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[B] TYPE: OTHER/ECONOLITE	
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	
INCLUDED . . . X	
PROTECT	
PED PRTC	
NOT OVLP	
FLSH GRN . . . 1	
LAG X PH	
LAG 2 PH	
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0	

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 5
OPPOSING THROUGH.....	PHASE 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE.....	5

NOTICE ACTION PLAN SF BIT "5"

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

TMG VEH OVLP...[D] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 7
OPPOSING THROUGH.....	PHASE 8
FLASHING ARROW OUTPUT.....CH12 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE.....	0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-1801
 DESIGNED: JANUARY 2022
 SEALED: 1/6/2022
 REVISED: N/A

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 U:\Projects\2022\Signal Design\05-1801\Signal Design\05-1801.dgn
 User: dawillier

 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	Prepared for the Offices of: Signal Design Section <small>750 N. Greenfield Pkwy, Garner, NC 27529</small>	US 401 Bus. (S. Main Street) at SR 2226 (Jonesville Road)/ Hampton Lake Drive Division 5 Wake County Rolesville						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>PLAN DATE: January 2022</td> <td>REVIEWED BY: E D Harris</td> </tr> <tr> <td>PREPARED BY: D A Waller</td> <td>REVIEWED BY: R M Muncey</td> </tr> <tr> <td>REVISIONS</td> <td>INIT. DATE</td> </tr> <tr> <td> </td> <td> </td> </tr> </table>		PLAN DATE: January 2022	REVIEWED BY: E D Harris	PREPARED BY: D A Waller	REVIEWED BY: R M Muncey	REVISIONS
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REVISIONS	INIT. DATE							
DocuSigned by: DATE: 1/6/2022		SIG. INVENTORY NO. 05-1801						

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING

LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select **8. UTILITIES**
2. From UTILITIES Submenu select **1. COPY/CLEAR**
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM           TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN.... > TIMING PLAN....
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
    
```

4. From Main Menu select **6. DETECTORS**
5. From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
 - Set delay time to "3".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2
← ENSURE DELAY IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "26".
 - Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2

ENSURE PHASE IS SET TO "0" →

- Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "3".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2
← ENSURE DELAY IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "22".
 - Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2

ENSURE PHASE IS SET TO "0" →

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-1801
 DESIGNED: JANUARY 2022
 SEALED: 1/6/2022
 REVISED: N/A

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			REVISIONS	INIT.	DATE							
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 User: dawaller

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1 AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .

```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-1801
 DESIGNED: JANUARY 2022
 SEALED: 1/6/2022
 REVISED: N/A

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 Signal Design Section
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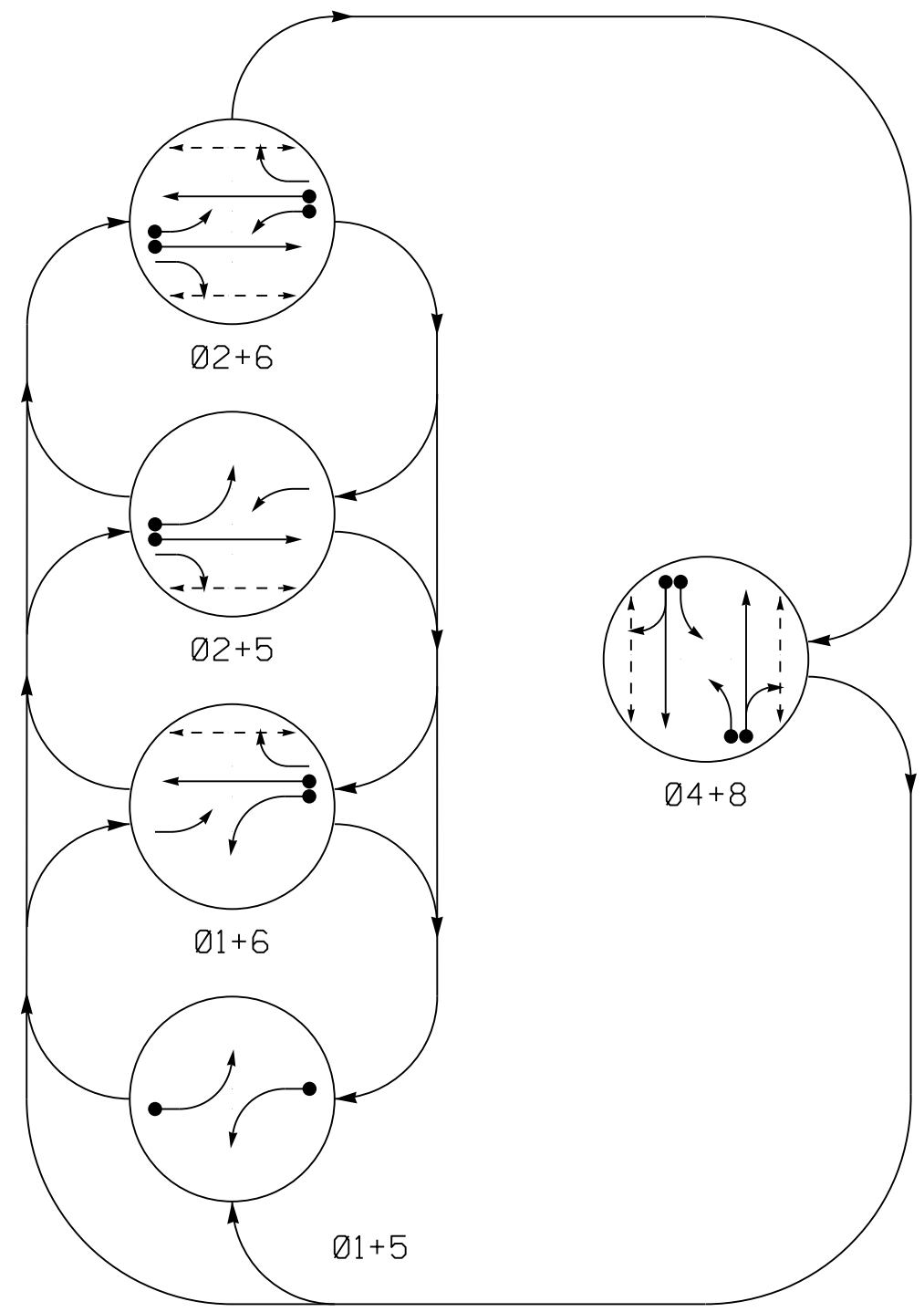
US 401 Bus. (S. Main Street)
 at
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 PLAN DATE: January 2022 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

Documented by: Derrick Waller 1/6/2022
 DATE
 SIG. INVENTORY NO. 05-1801

2:52:01 PM U:\Projects\0519\Signal Design\Electrical Detail\sig_e_05-1801.dgn User: dwaller

DEFAULT PHASING DIAGRAM



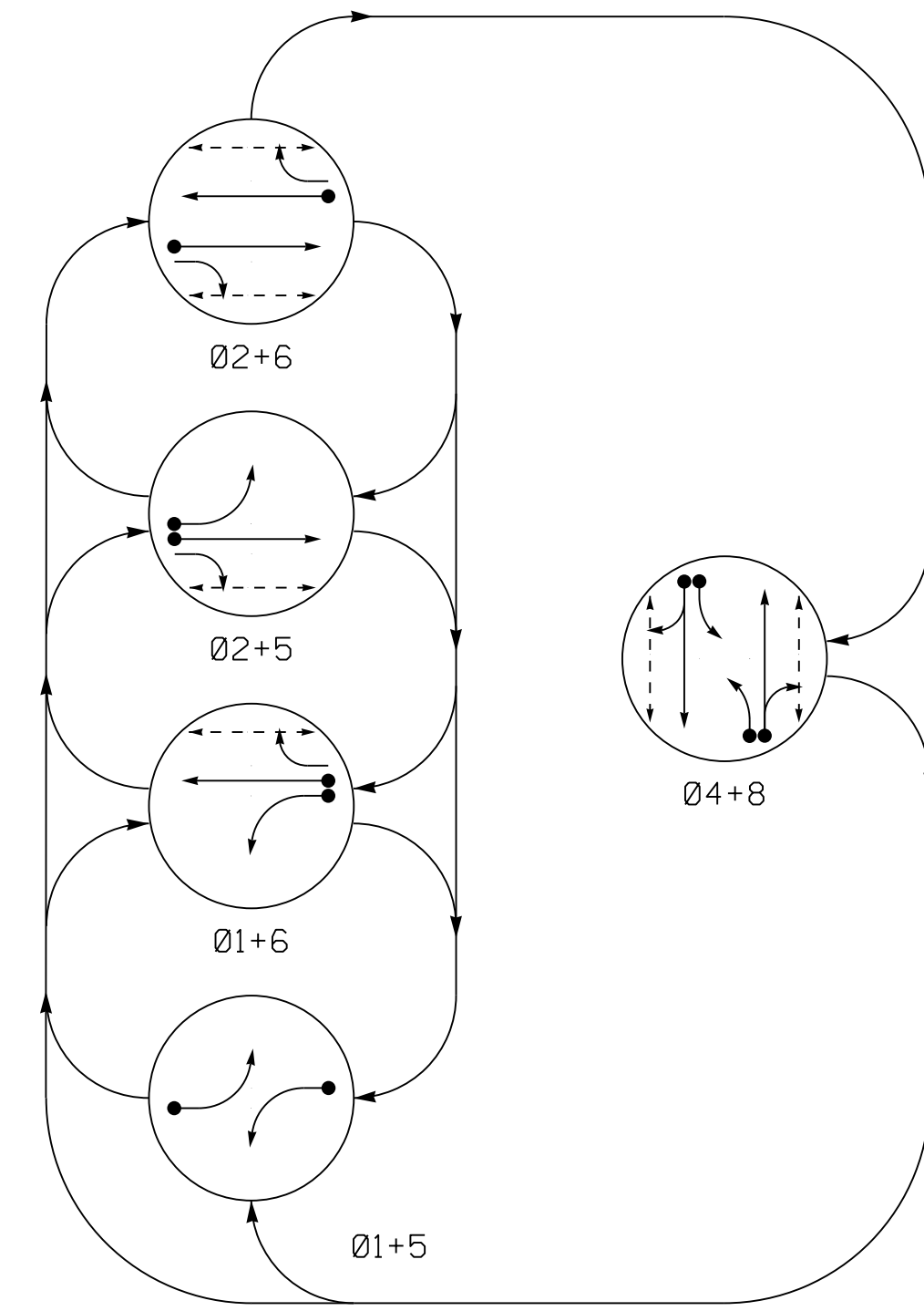
PHASING DIAGRAM DETECTION LEGEND

- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← - - - PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	FLHS
11	←	←	←	←	←	←
21,22	R	R	G	G	R	Y
41	←	←	←	←	←	←
42,43	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	Y
81	←	←	←	←	←	←
82,83	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

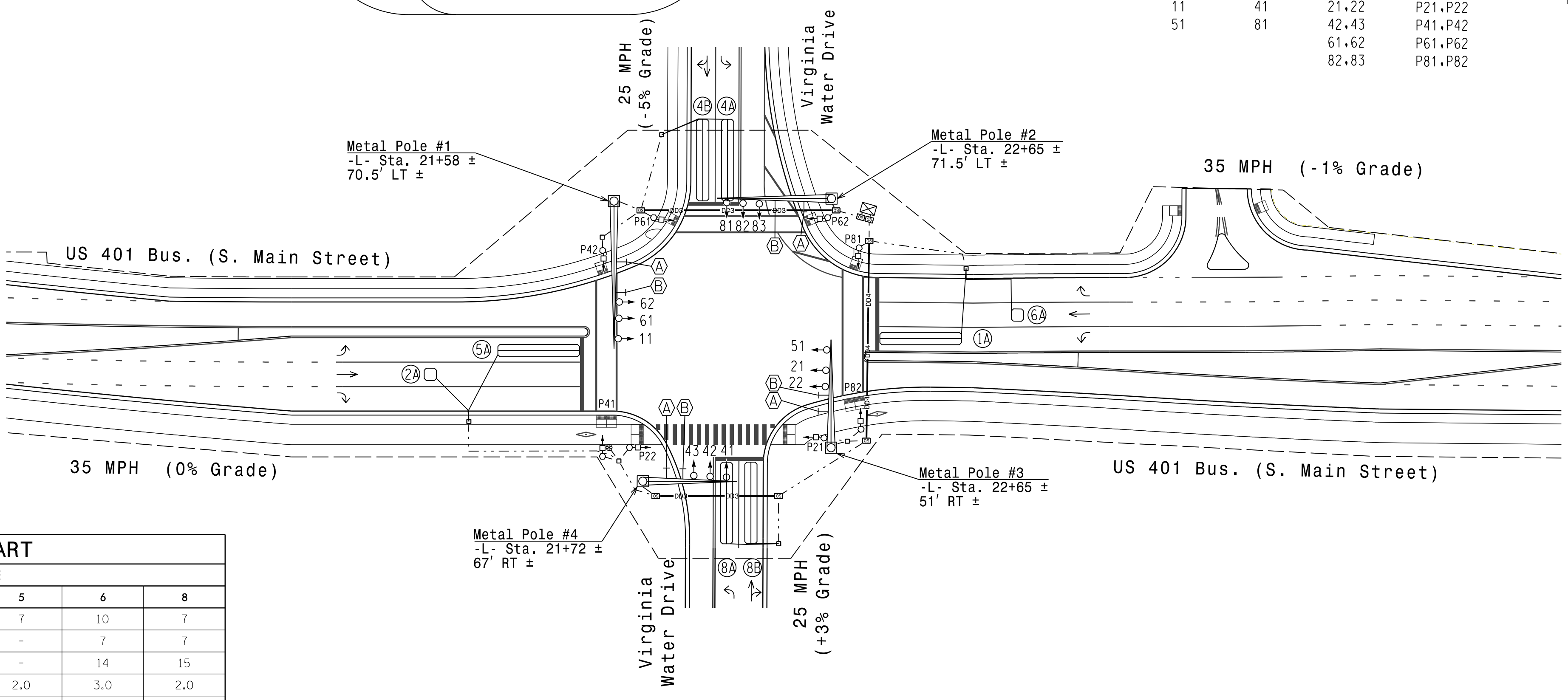
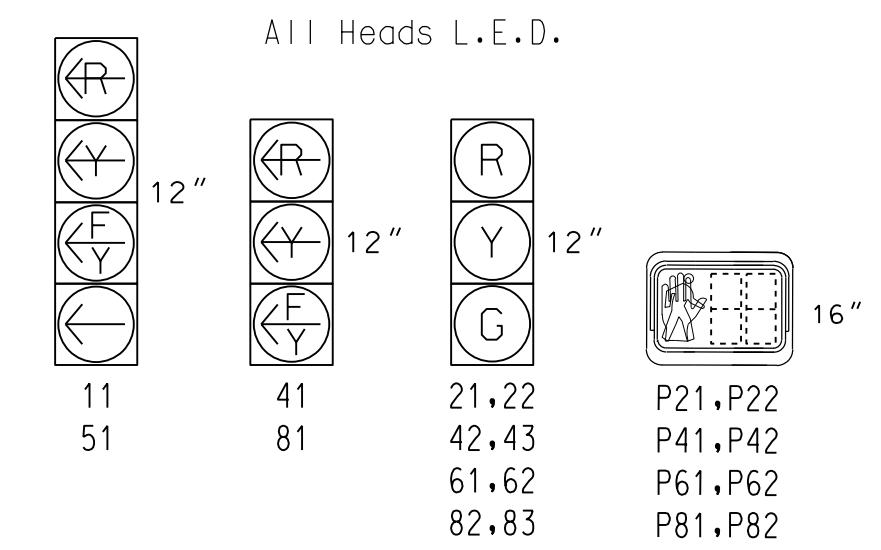
SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	FLHS
11	←	←	←	←	←	←
21,22	R	R	G	G	R	Y
41	←	←	←	←	←	←
42,43	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	Y
81	←	←	←	←	←	←
82,83	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	DW	W	DRK

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	15*	-	N	-	X
					6#	Yes	-	-	-	N	-	X
2A	6X6	70	4	X	2	Yes	-	-	-	N	-	X
4A	6X40	0	2-4-2	X	4	Yes	-	3	-	N	-	X
4B	6X40	0	2-4-2	X	4	Yes	-	10	-	N	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	15*	-	N	-	X
					2#	Yes	-	-	-	N	-	X
6A	6X6	70	3	X	6	Yes	-	-	-	N	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	3	-	N	-	X
8B	6X40	0	2-4-2	X	8	Yes	-	10	-	N	-	X

*Disable Delay during Alternate Phasing operation.
#Disable phase call for loop during Alternate Phasing operation.

SIGNAL FACE I.D.



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	10	7	7	10	7
Walk *	-	7	7	-	7	7
Ped Clear	-	12	16	-	14	15
Veh. Extension *	2.0	3.0	2.0	2.0	3.0	2.0
Max 1 *	15	45	25	15	45	25
Yellow	3.0	3.9	3.5	3.0	3.9	3.5
Red Clear	3.2	2.6	3.1	3.3	2.6	3.1
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	X	-
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

5 Phase Fully Actuated US 401 Business (Louisburg Rd) (CLS - System 3) Signal System #D05-20_Rolesville

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed Loop System Data: Controller Asset #: 1787, Master Asset #: 10520.

LEGEND

- | PROPOSED | EXISTING |
|---|---|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Pedestrian Signal Head With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| □ → Inductive Loop Detector | □ → N/A |
| □ → Controller & Cabinet | □ → N/A |
| □ → Junction Box | □ → N/A |
| - - - 2-in Underground Conduit | - - - N/A |
| - - - Right of Way | - - - N/A |
| → Directional Arrow | → Directional Arrow |
| ○ → Metal Strain Pole | ○ → N/A |
| - - - Directional Drill | - - - N/A |
| ○ → Metal Pole with Mastarm | ○ → N/A |
| ○ → Type II Signal Pedestal | ○ → N/A |
| □ → Oversized Junction Box | □ → N/A |
| - - - Curb Ramp | - - - N/A |
| (A) Street Name Sign (D3-1) By Others | (A) Street Name Sign (D3-1) By Others |
| (B) "TURNING VEHICLES YIELD TO PEDS" Sign (R10-15R) | (B) "TURNING VEHICLES YIELD TO PEDS" Sign (R10-15R) |

New Installation

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Prepared For the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
SIGNAL DESIGN SECTION

US 401 Bus. (S. Main Street) at Virginia Water Drive
Division 5 Wake County Rolesville
PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris
PREPARED BY: D A Waller REVIEWED BY: R M Muncy

REVISIONS	INIT.	DATE

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 43239
Regina M. Muncy, ENGINEER
12/16/2021
SIC INVENTORY NO. 05-1787

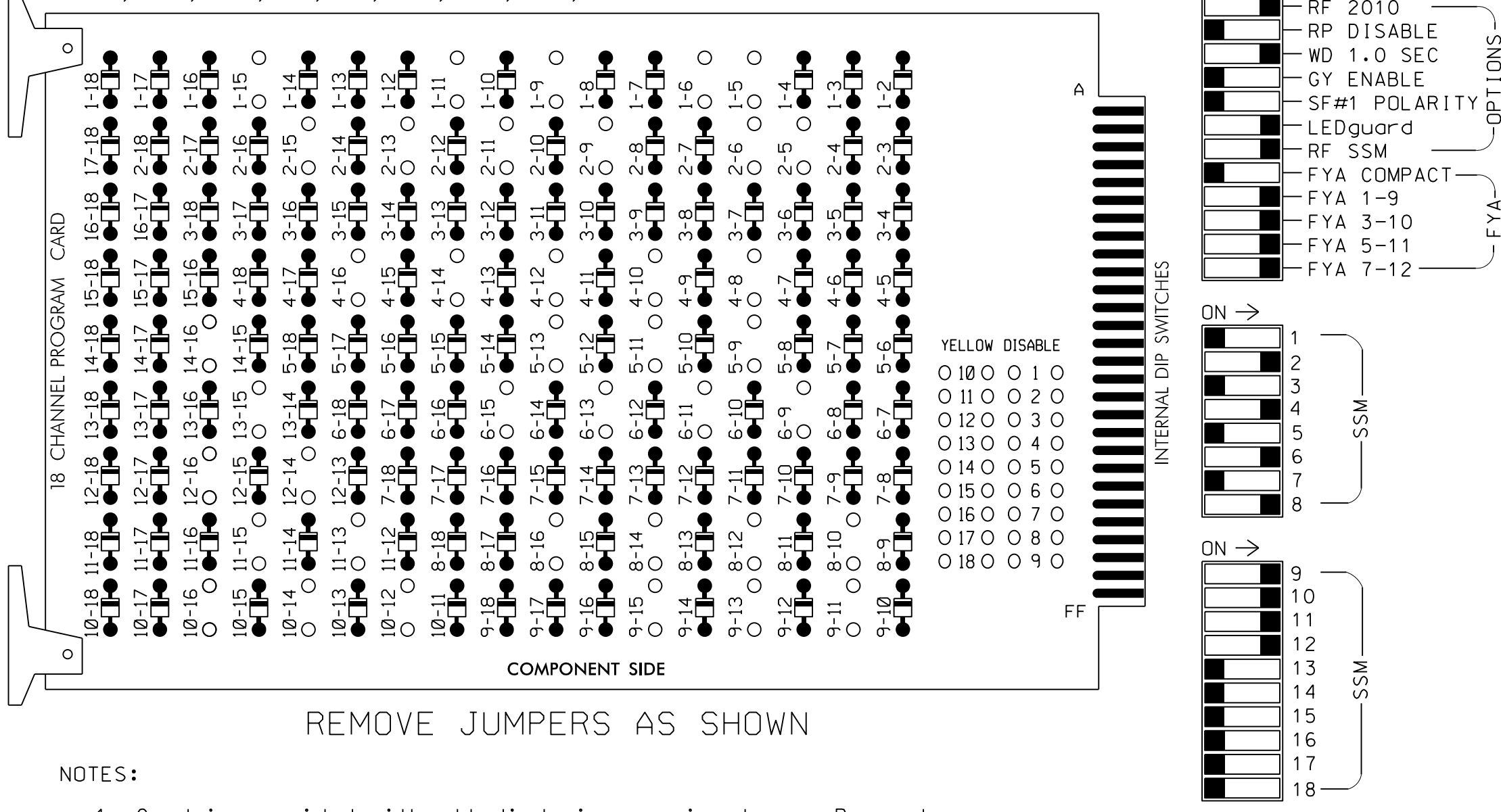
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 12/16/2021 10:11:11 AM
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 User: r:muncy

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,S12,AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	NU	42,43	P41, P42	51	61,62	P61, P62	NU	82,83	P81, P82	11	81	NU	51	41	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127							133										
Hand icon					113			104			119			110				
Walking person icon					115			106			121			112				

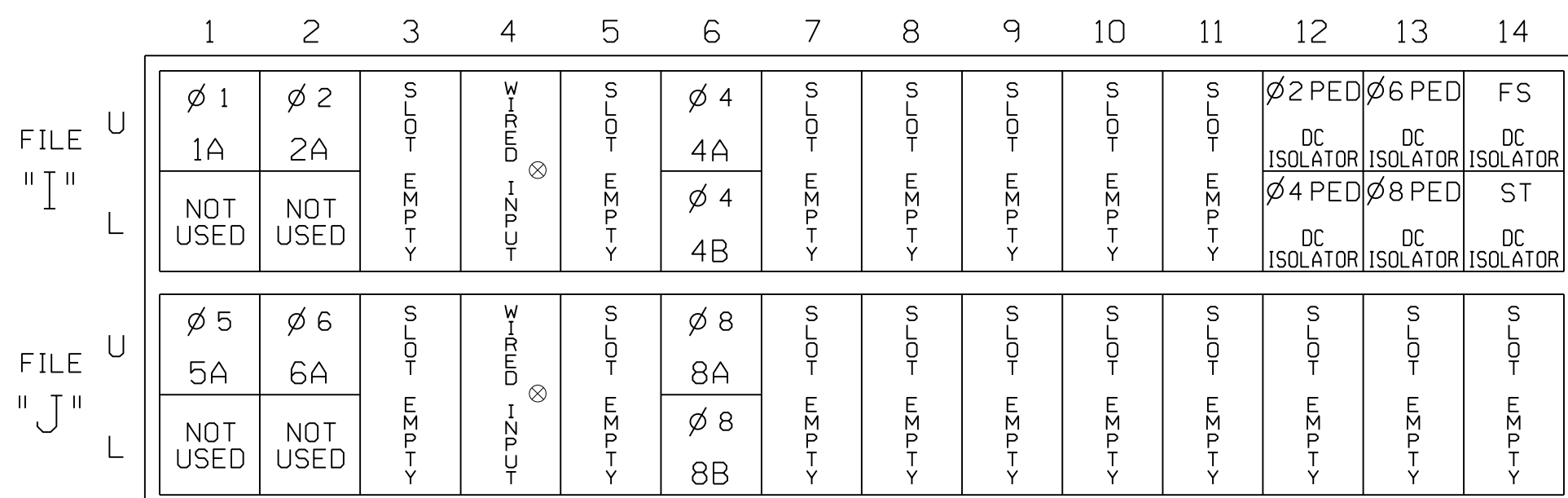
NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

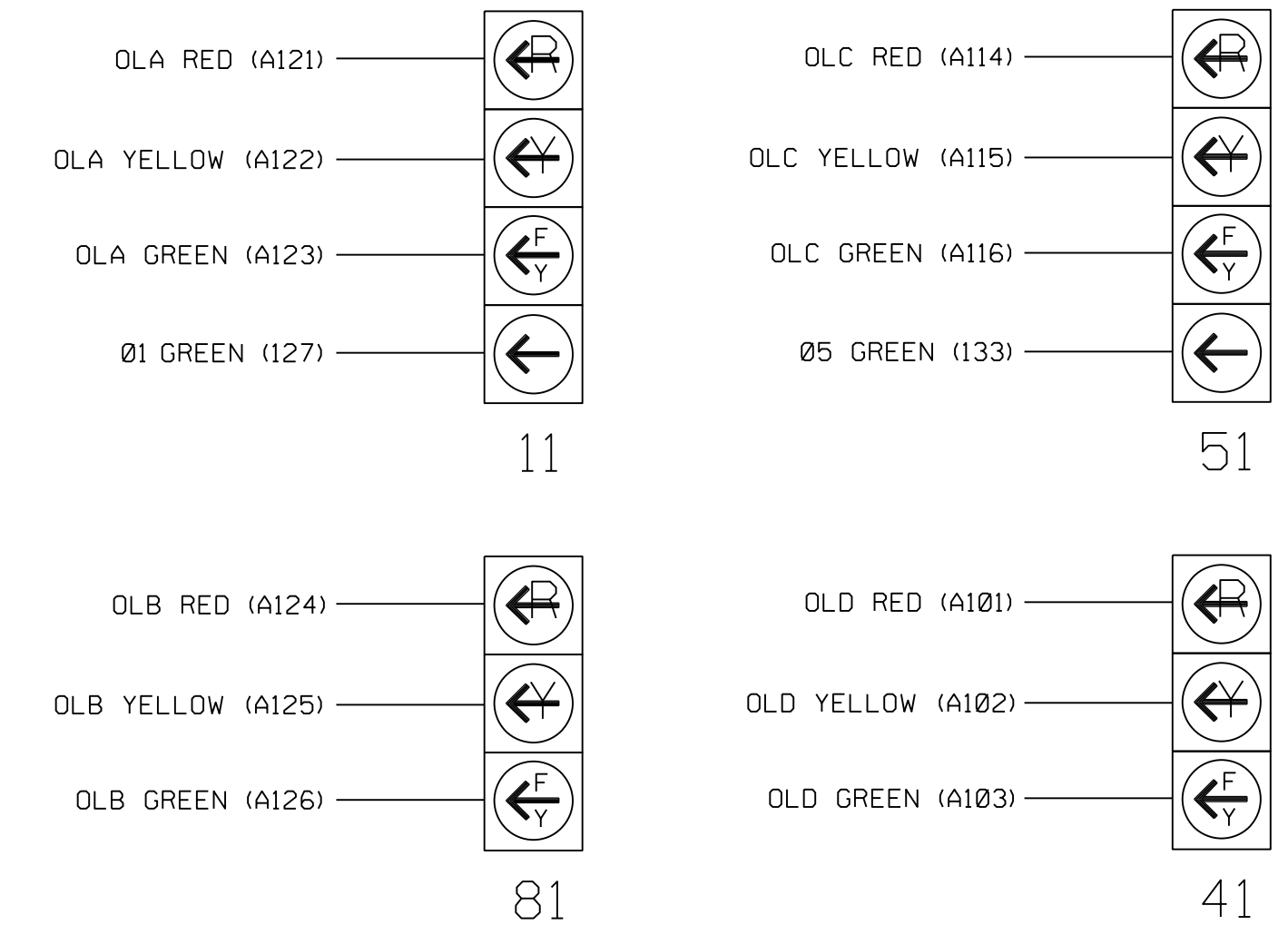
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES				N
2A	TB2-5,6	I2U	39	2	2	YES				N
4A	TB4-9,10	I6U	41	4	4	YES		3		N
4B	TB4-11,12	I6L	45	14	4	YES		10		N
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES				N
6A	TB3-5,6	J2U	40	6	6	YES				N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- Add jumper from J1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to J4-W, on rear of input file.
- ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

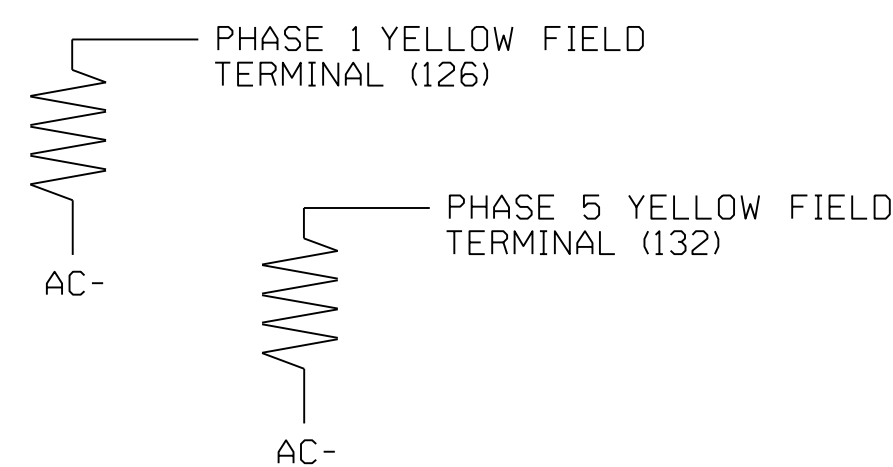


LOAD RESISTOR INSTALLATION DETAIL

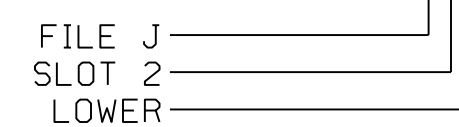
(install resistors as shown)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



INPUT FILE POSITION LEGEND: J2L



Electrical Detail - Sheet 1 of 4

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Prepared for the Offices of:

Division 5 Wake County Rolesville
 PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

US 401 Bus. (S. Main Street)
 at
 Virginia Water Drive

REVISIONS: _____ INIT. DATE _____

Designed by: Regina M. Muncey 12/16/2021
 DATE: _____
 SIG. INVENTORY NO. 05-1787

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 2. CONTROLLER
- From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 1

← NOTICE ACTION PLAN SF BIT "1"

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[B] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED . . . X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN . . . 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 5

← NOTICE ACTION PLAN SF BIT "5"

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE

PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6

INCLUDED X

PROTECT

PED PRTC

NOT OVLP

FLSH GRN 1

LAG X PH

LAG 2 PH

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION


Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-2229
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A



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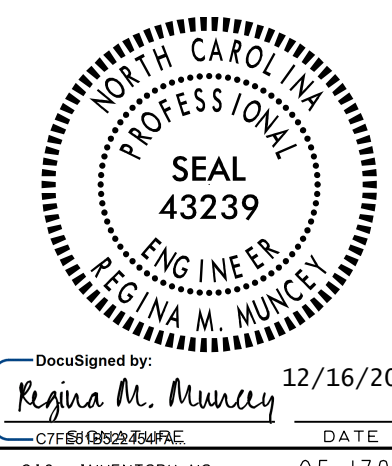
750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street)
 at
 Virginia Water Drive

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE



Seal: NORTH CAROLINA PROFESSIONAL ENGINEER REGINA M. MUNCEY SEAL 43239

DocuSigned by: Regina M. Muncey 12/16/2021

SIG. INVENTORY NO. 05-1787

11:49:45 AM U:\Projects\cbs\signal\asc\3-2070\Detail\asc\3-2070\sig_e_05-1787.dgn User:rmuncey

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING.... > PHASE TIMING....
TIMING PLAN.... > TIMING PLAN....
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
 - Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH
DET PLAN 2

← ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
 - Set assigned phase to "0".

ENSURE PHASE IS SET TO "0" →

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

- Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "0".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH
DET PLAN 2

← ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "22".
 - Set assigned phase to "0".

ENSURE PHASE IS SET TO "0" →

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

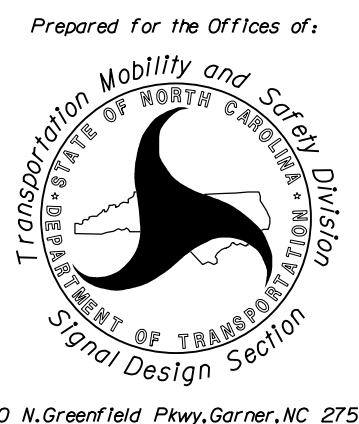
← NOTICE VEH DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-2229
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

11:49:55 AM U:\Projects\Signal Design\Signal Design\U-6241_Sig_e_05-1787.dgn User: rmuncey

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 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

North Carolina Professional Engineer
 SEAL 43239
 REGINA M. MUNCEY
 Date Signed: 12/16/2021
 Signature: *Regina M. Muncey*
 DATE: 12/16/2021
 SIG. INVENTORY NO. 05-1787

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1 AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

```

ACTION PLAN...[ 1]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 2   DET LOG.....NONE
FLASH..... --      RED REST..... NO
VEH DET DIAG PLN... 0   PED DET DIAG PLN..0
DIMMING ENABLE.. NO   PRIORITY RETURN. NO
PED PR RETURN.. NO   QUEUE DELAY..... NO
PMT COND DELAY   NO


  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-2229
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A



Stantec Consulting Services Inc.
 801 Jones Franklin Road-Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

Prepared for the Offices of:



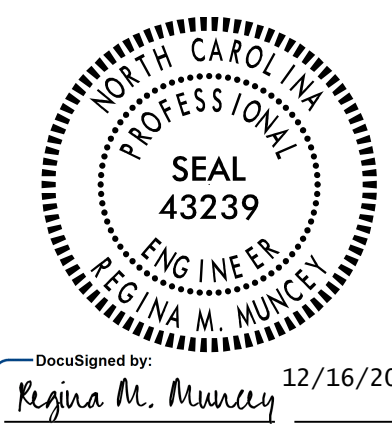
750 N. Greenfield Pkwy, Garner, NC 27529

**US 401 Bus. (S. Main Street)
at
Virginia Water Drive**

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

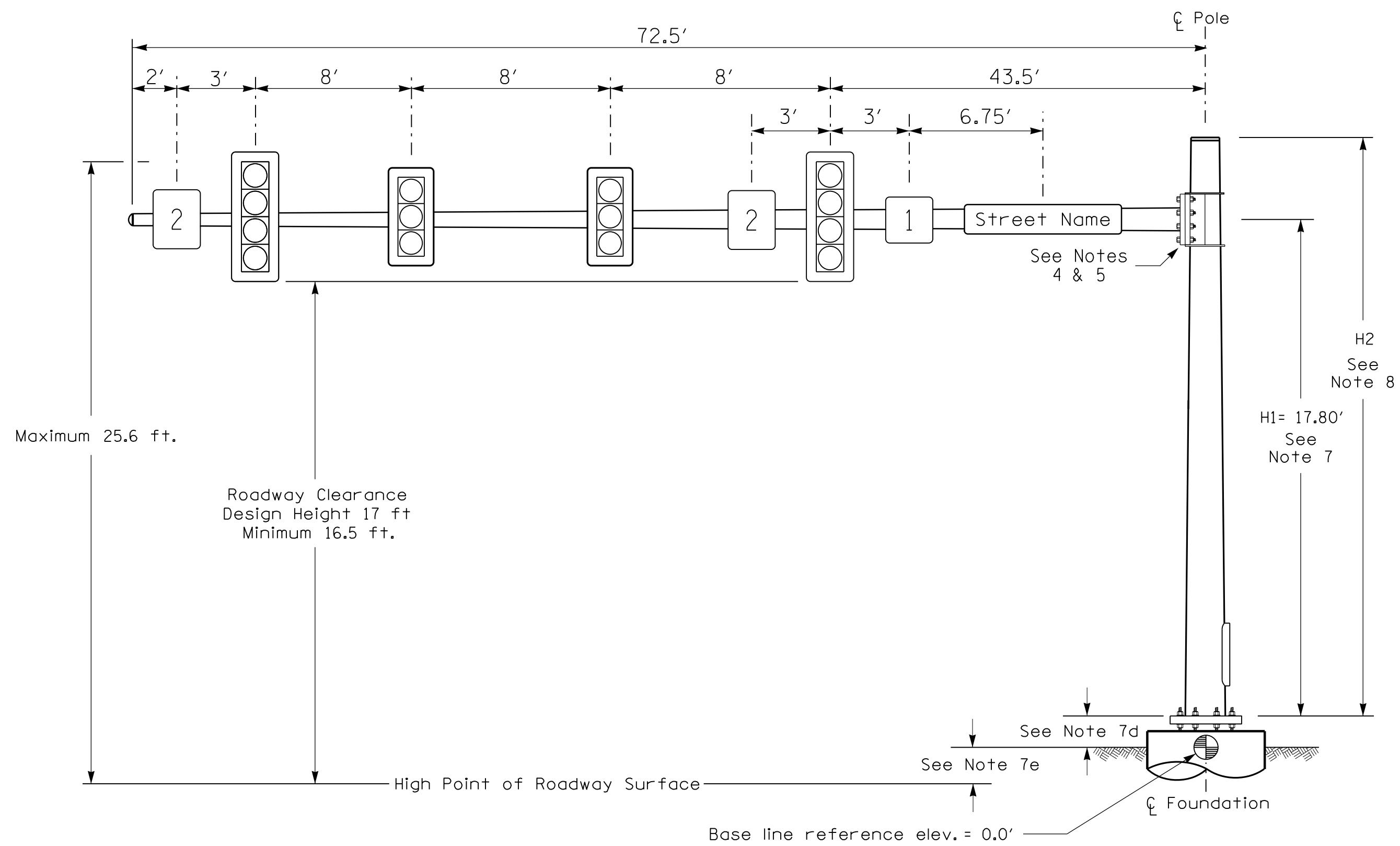


Seal 43239
 REGINA M. MUNCEY
 ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL

Date Signed by: Regina M. Muncey 12/16/2021
 DATE
 SIG. INVENTORY NO. 05-1787

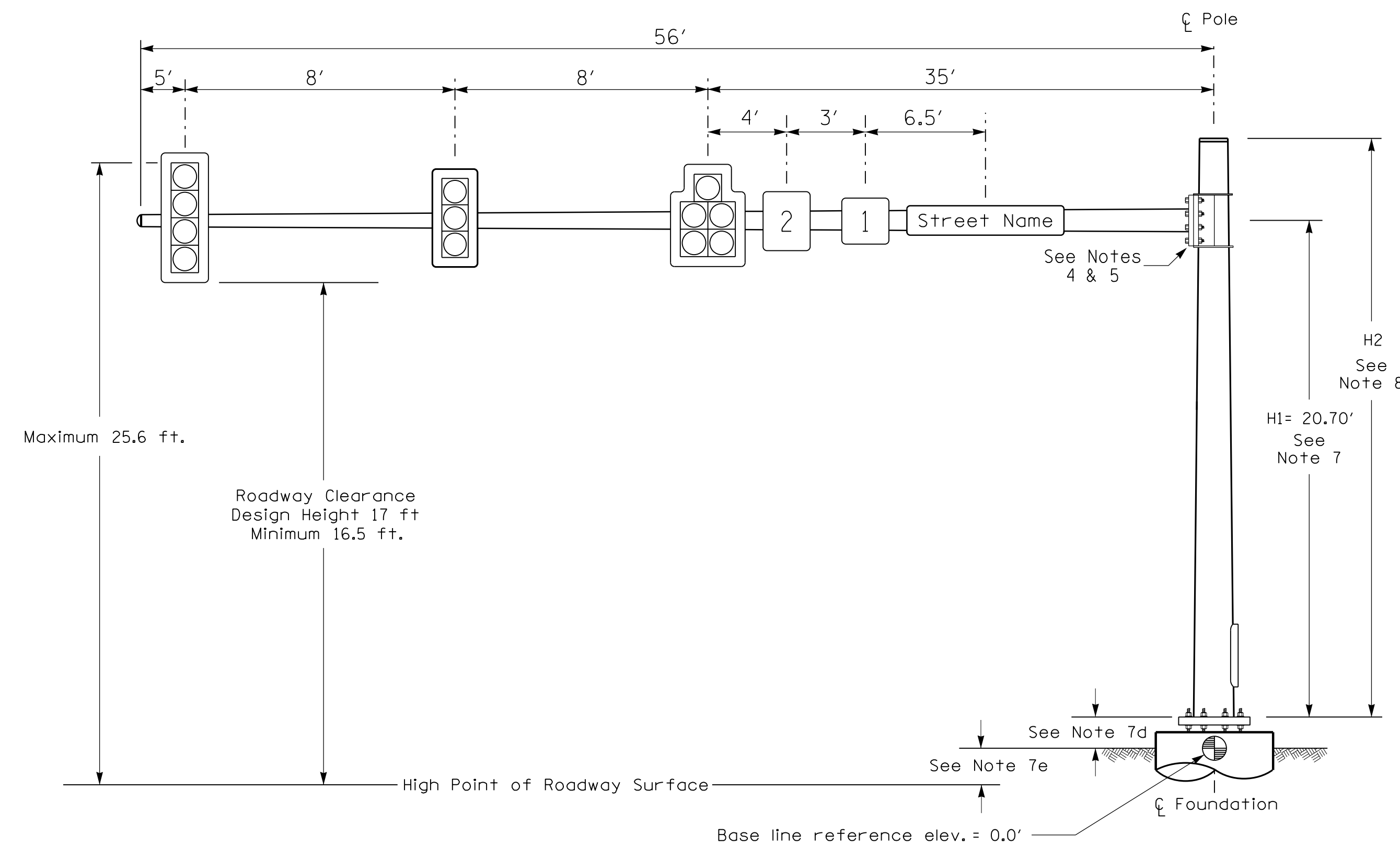
11:50:05 AM
 U:\Projects\cbs\signal\sig\elec\Detail\sig\elec_05-1787.dgn
 User: rmuncey

Design Loading for METAL POLE NO. 1



Elevation View

Design Loading for METAL POLE NO. 2



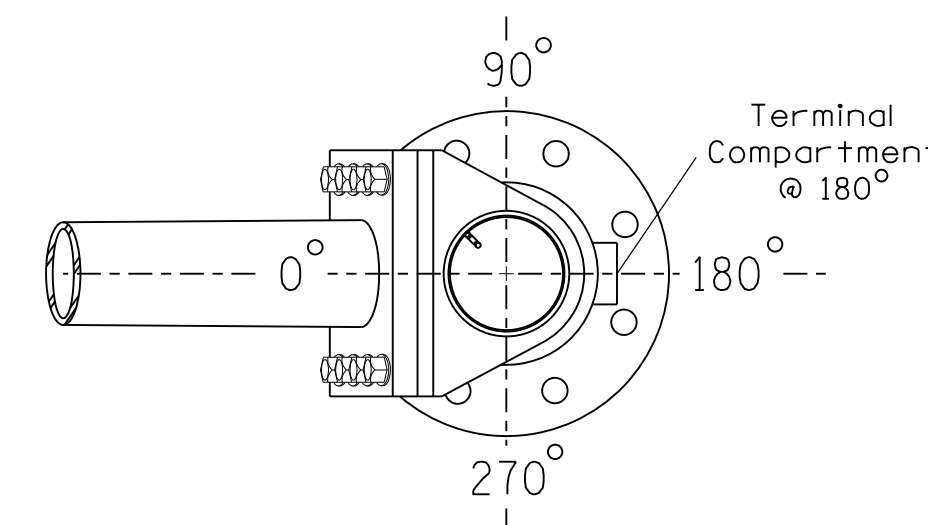
Elevation View

SPECIAL NOTE

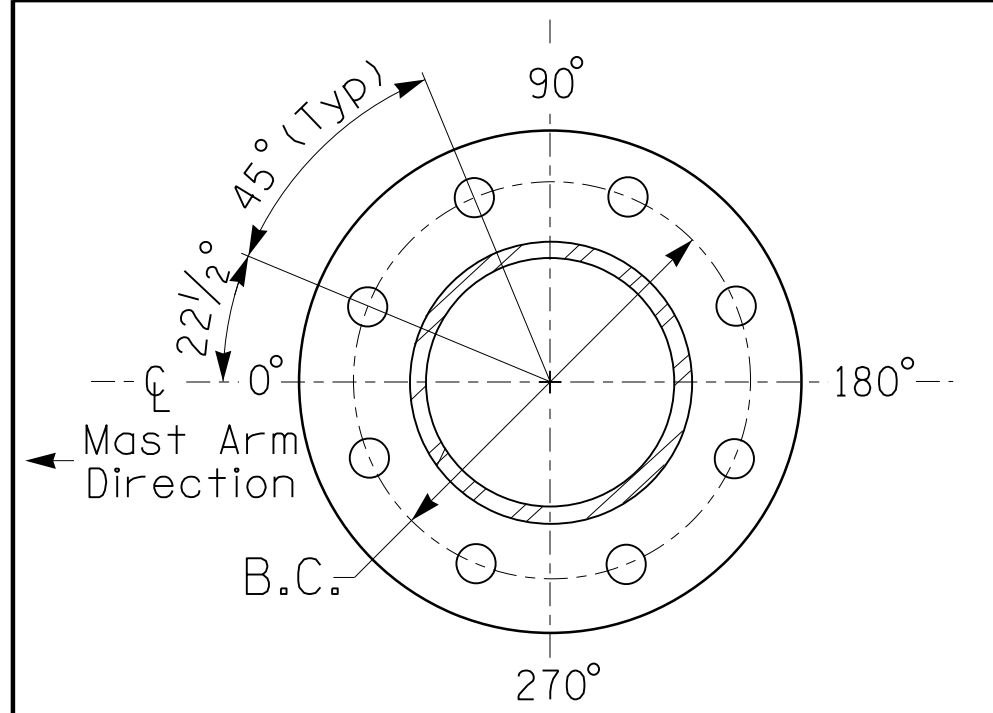
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

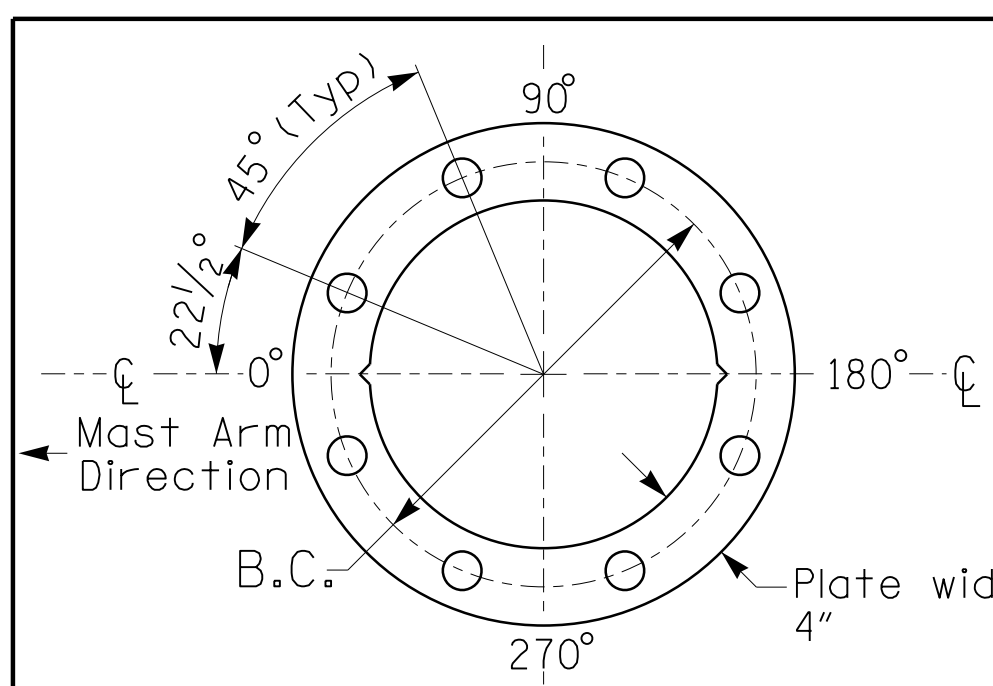
Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-1.21 ft.	+1.63 ft.
Elevation difference at Edge of travelway or face of curb	+/-0.0 ft.	+/-0.0 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL For 8 Bolt Base Plate

METAL POLE No. 1 and 2

PROJECT REFERENCE NO.	SHEET NO.
U-6241	SIG. 3.5

MAST ARM LOADING SCHEDULE				
LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0" W X 56.0" L	103 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS
	SIGN RIGID MOUNTED	6.25 S.F.	30.0" W X 30.0" L	11 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

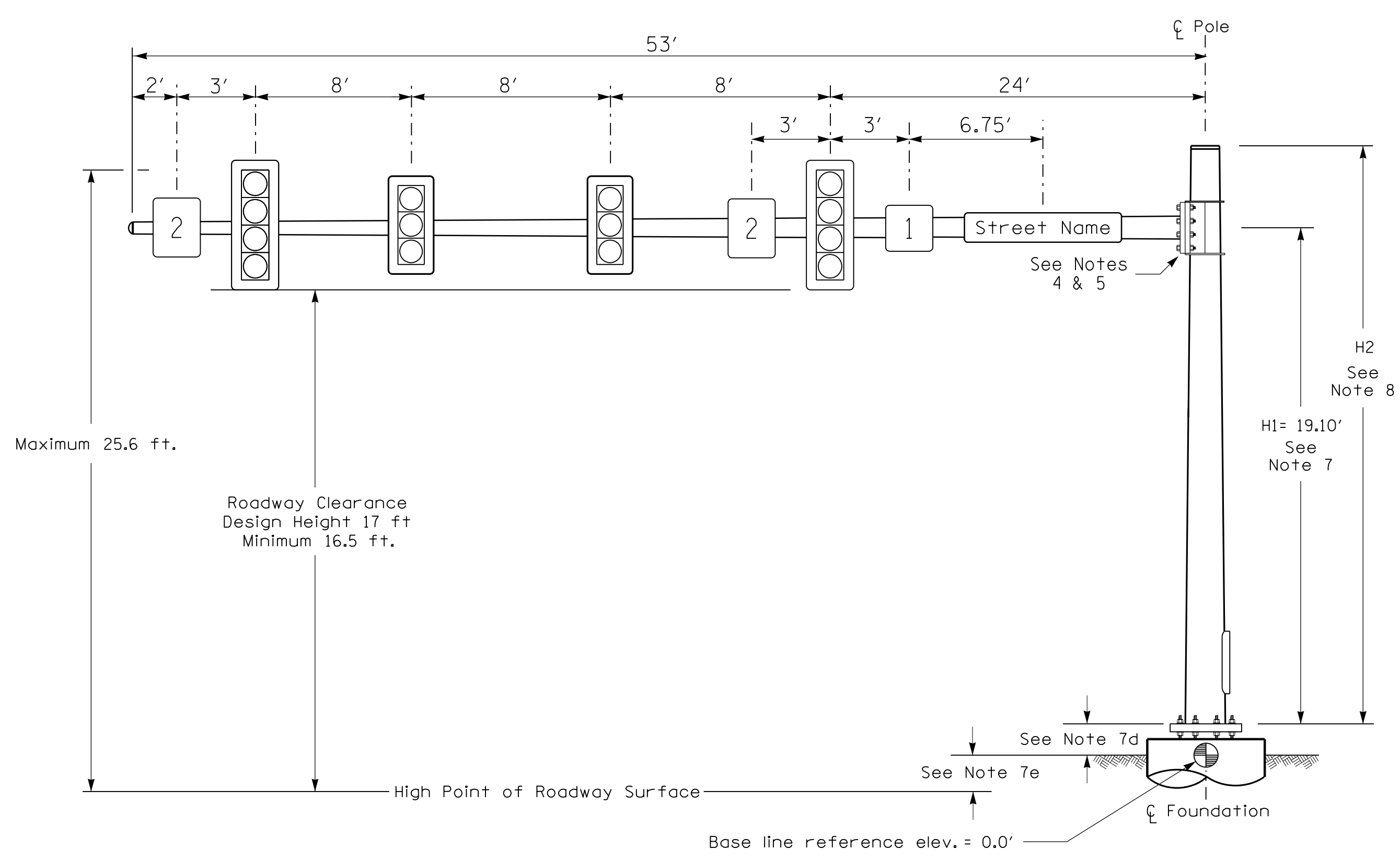
NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	Prepared For the Offices of: US 401 Bus. (S. Main Street) at Virginia Water Drive		
	Division 5 Wake County Rolesville PLAN DATE: DECEMBER 2021 PREPARED BY: J Hambricht	REVIEWED BY: D Harris REVIEWED BY: R M Muncy		SEAL REGINA M. MUNCY PROFESSIONAL ENGINEER NO. 43239
SCALE 0 N/A N/A	REVISIONS INIT. DATE	DATE 12/16/2021	SIGNED BY: REGINA M. MUNCY DATE: 12/16/2021 SIG. INVENTORY NO. 05-1787

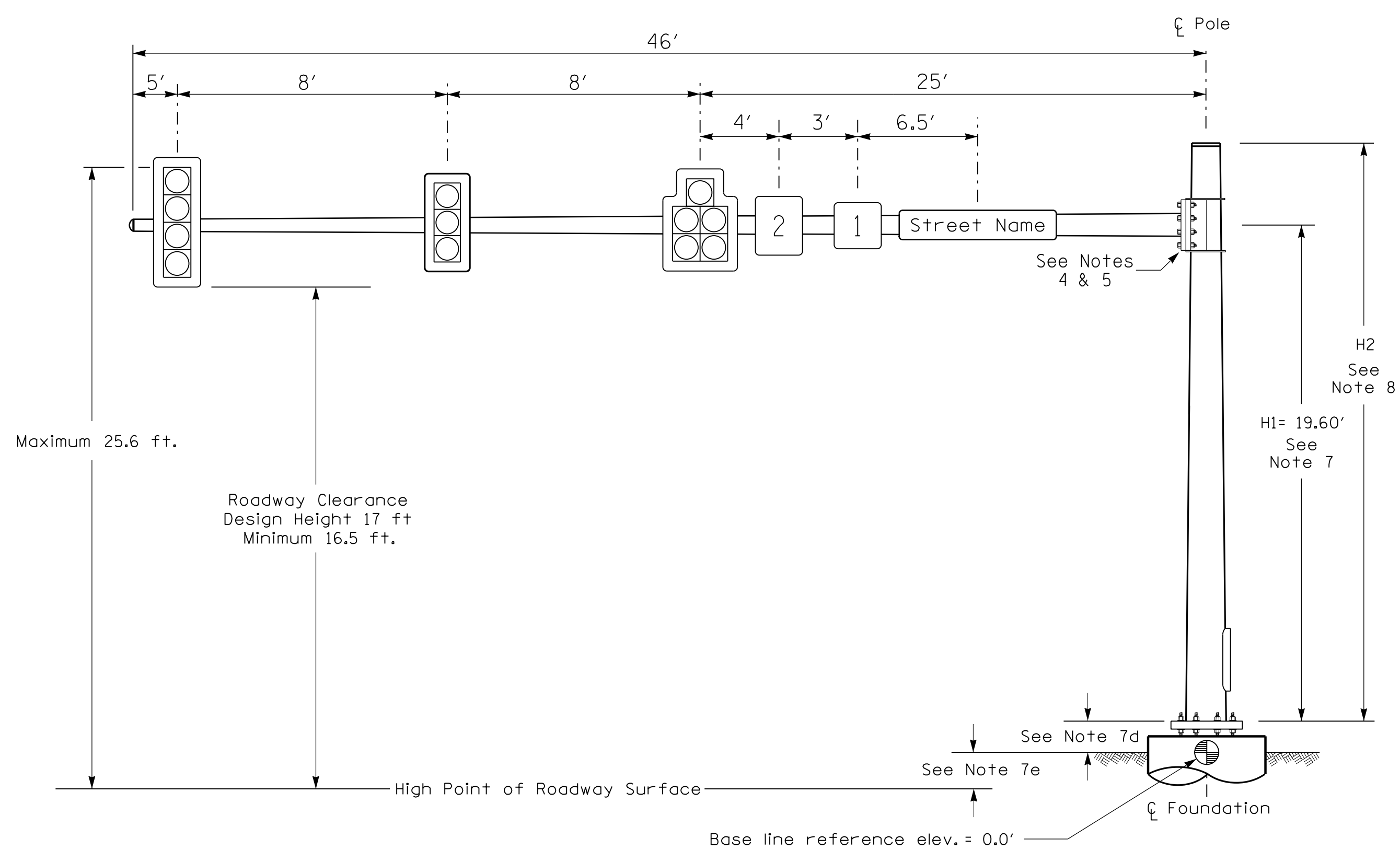
12:03:58 PM
 U:\Projects\Signal\Loading Diagrams\Metal Pole\Mast Arm\05-1787_1 and 2.dgn
 User: rrmuncy

Design Loading for METAL POLE NO. 3



Elevation View

Design Loading for METAL POLE NO. 4



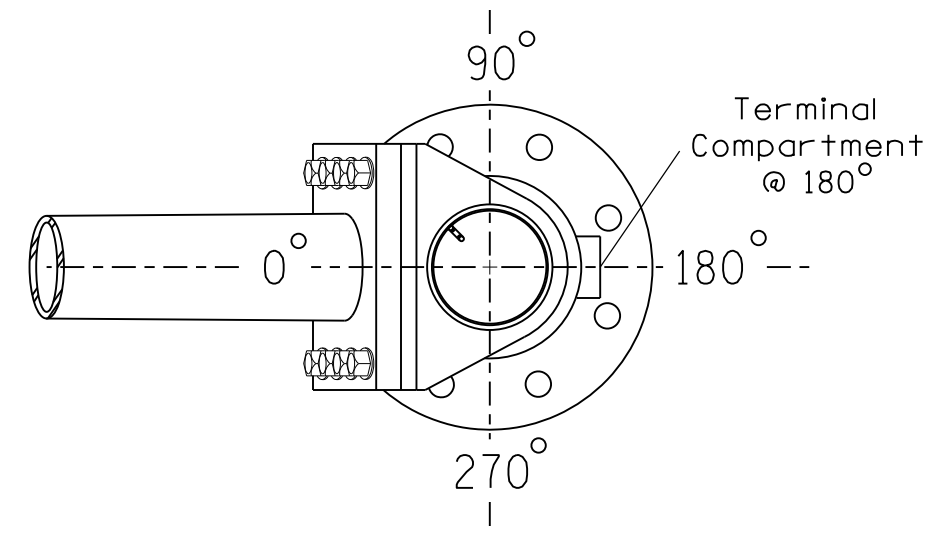
Elevation View

SPECIAL NOTE

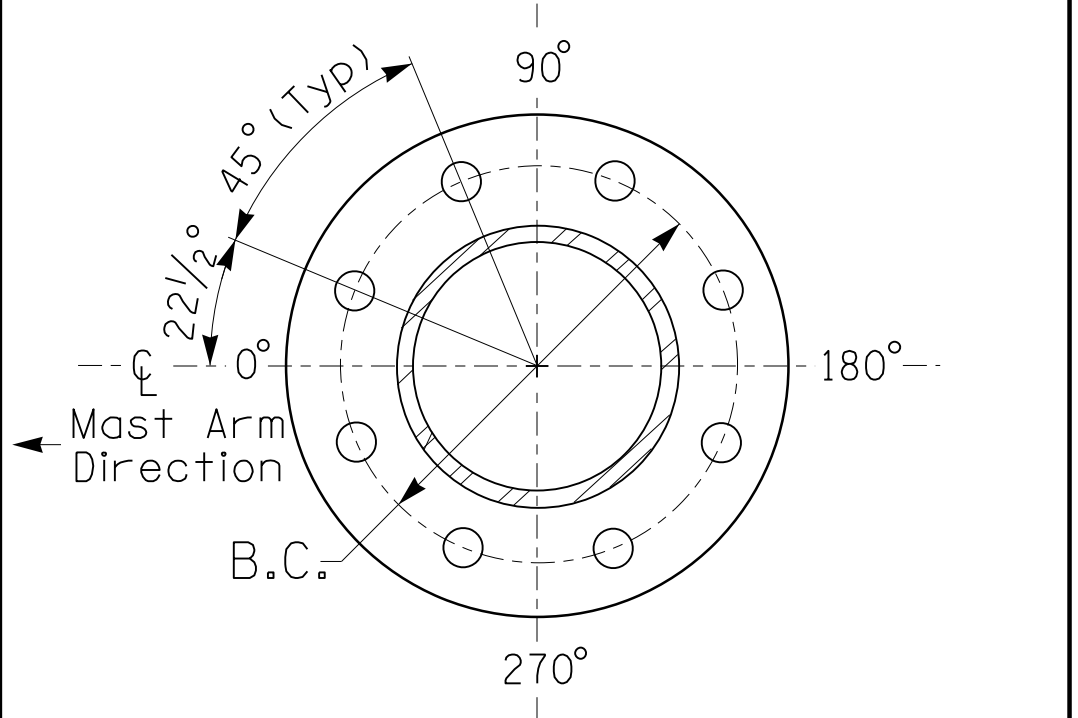
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

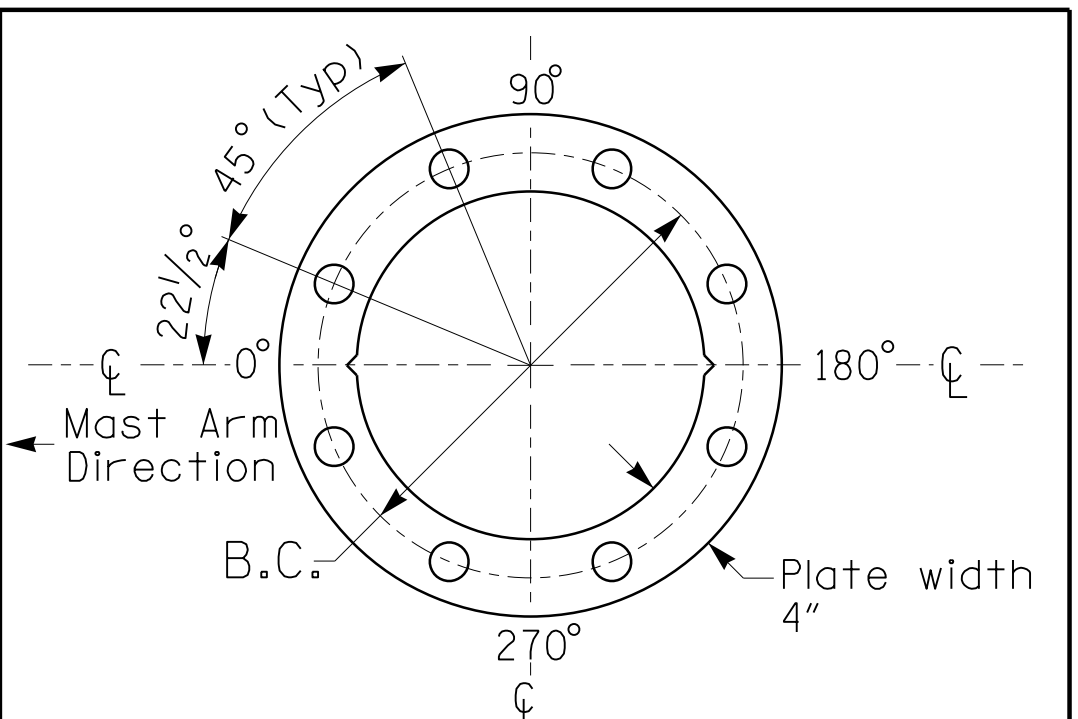
Elevation Differences for:	Pole 3	Pole 4
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.01 ft.	+0.50 ft.
Elevation difference at Edge of travelway or face of curb	+/-0.0 ft.	+/-0.0 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 3 and 4

PROJECT REFERENCE NO.	SHEET NO.
U-6241	SIG. 3.6

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0"W X 56.0"L	103 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS
	SIGN RIGID MOUNTED	6.25 S.F.	30.0"W X 30.0"L	11 LBS
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NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views. The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

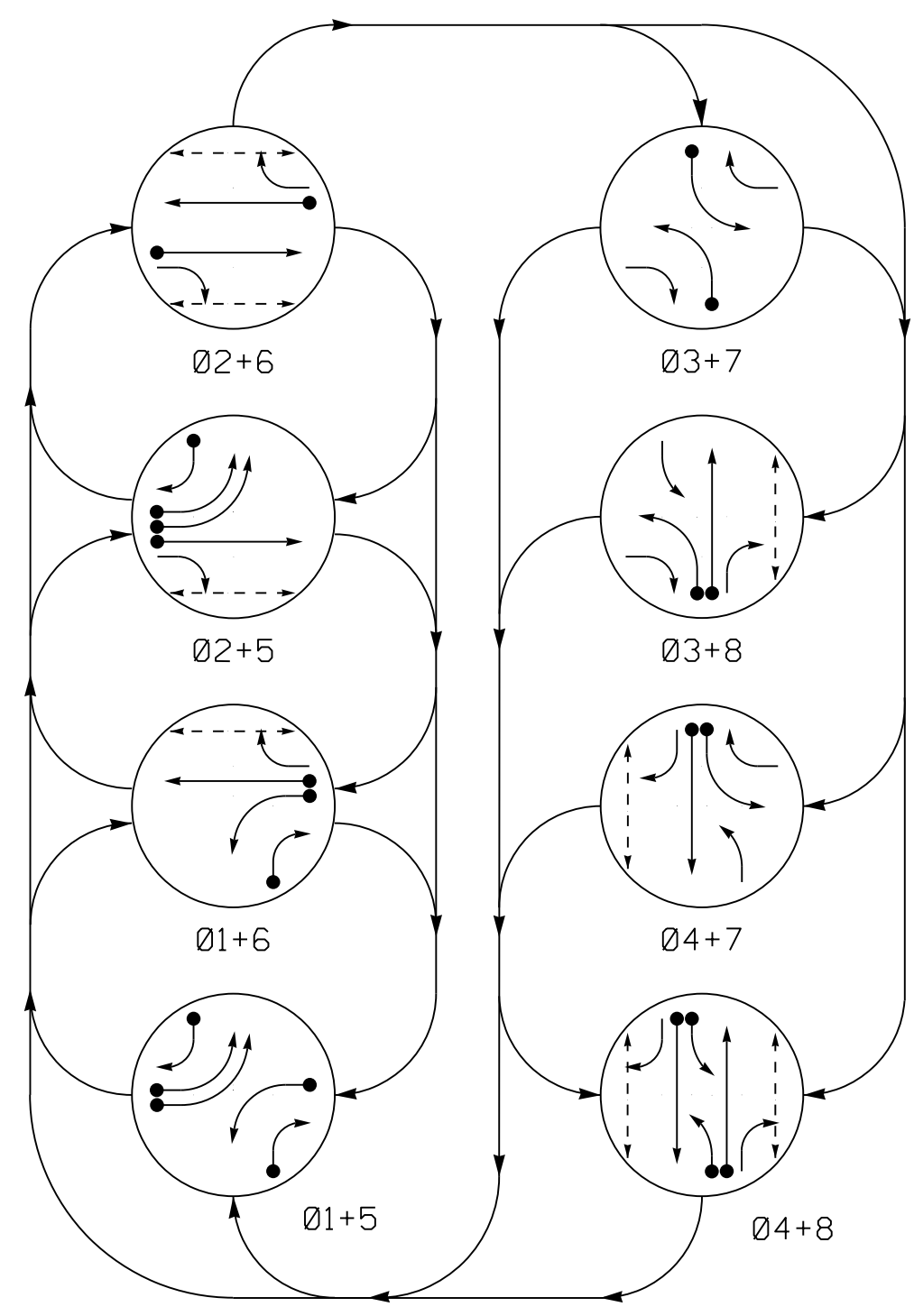
NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	US 401 Bus. (S. Main Street) at Virginia Water Drive		
	Division 5 Wake County Rolesville	PREPARED BY: J Hambricht REVIEWED BY: R M Muncy	
PLAN DATE: DECEMBER 2021 PREPARED BY: J Hambricht	REVIEWED BY: D Harris REVIEWED BY: R M Muncy	REVISIONS	INIT. DATE
SCALE: 0 N/A N/A		Documented by: <i>Regina M. Muncy</i> 12/16/2021 DATE: _____ SIGNATURE: _____ SIC. INVENTORY NO. 05-1787	

I:\110847.dwg
 U:\110847.dwg
 User: rmmuncy

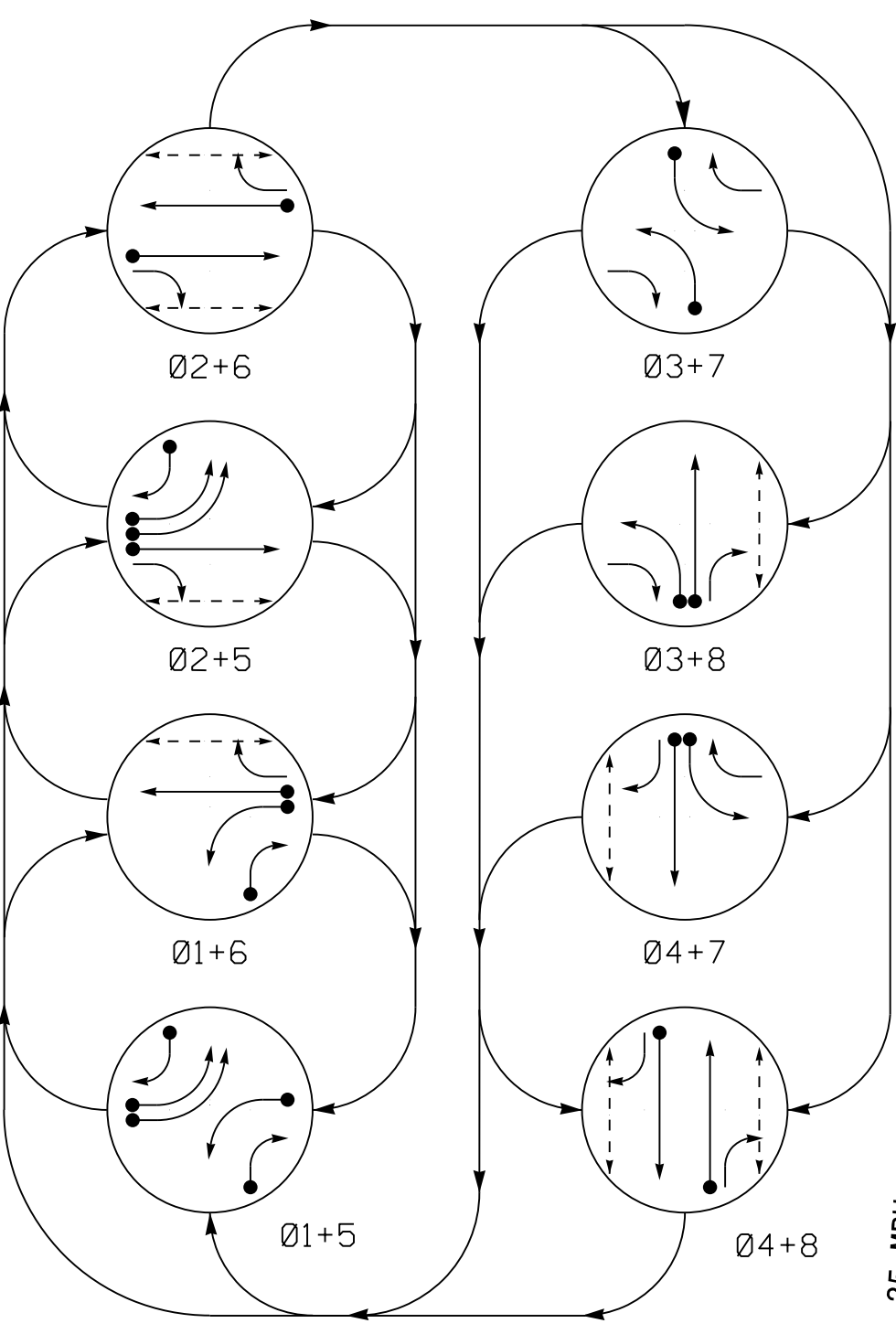
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

Table with columns for SIGNAL FACE and PHASE (01+5 to 04+8, FLASH, FLSH). Rows list signal faces 11 through 82 and P21, P22, P41, P42, P61, P62, P81, P82.

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

Table with columns for SIGNAL FACE and PHASE (01+5 to 04+8, FLASH, FLSH). Rows list signal faces 11 through 82 and P21, P22, P41, P42, P61, P62, P81, P82.

ASC/3 DETECTOR INSTALLATION CHART

Table with columns for LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD. Rows list loops 1A through 8A.

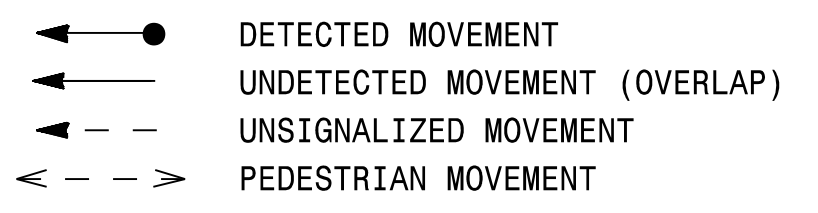
*Reduce Delay to 3 seconds during Alternate Phasing operation.
**Disable Delay during Alternate Phasing operation.
#Disable phase call for loop during Alternate Phasing operation.

8 Phase Fully Actuated US 401 Business (Louisburg Rd) (CLS - System 3) Signal System #D05-20_Rolesville

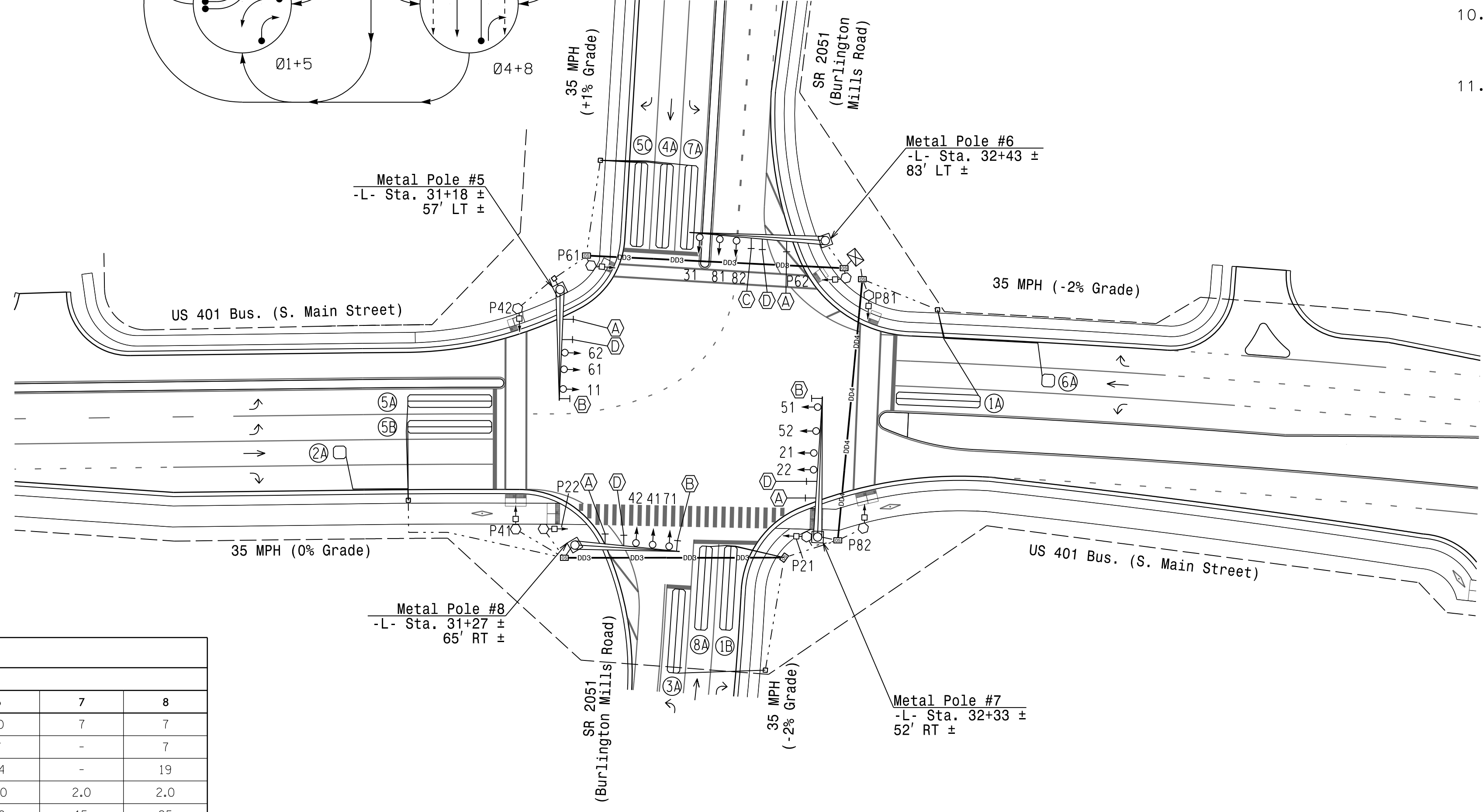
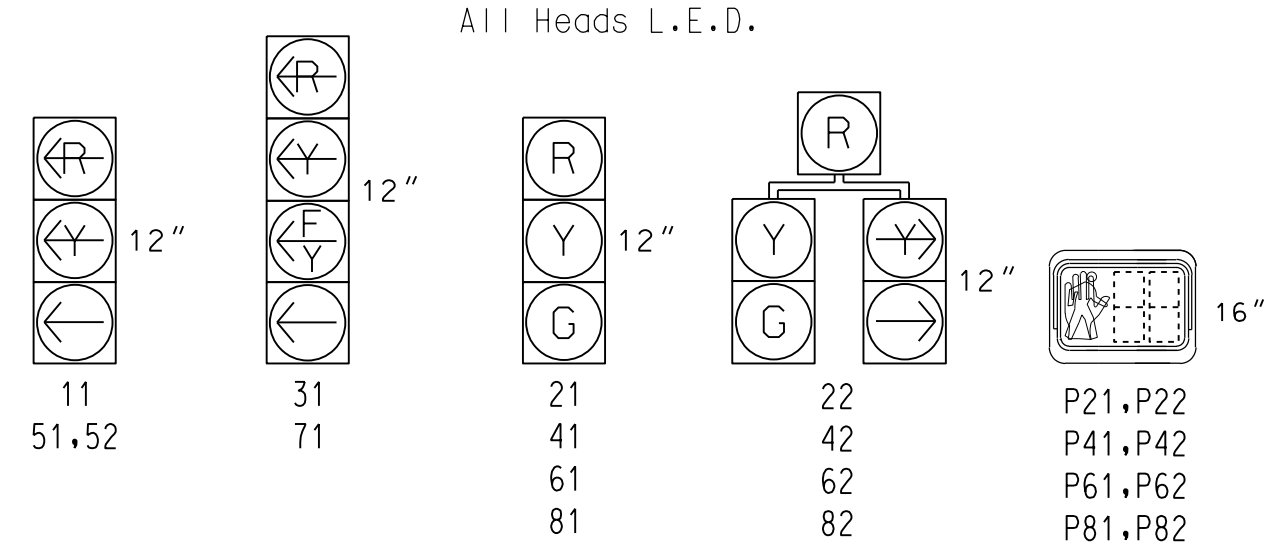
NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. The Division Traffic Engineer will determine the hours of use for each phasing plan.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
11. Closed Loop System Data: Controller Asset #: 1788, Master Asset #: 10520.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.



LEGEND

Legend table with columns for PROPOSED and EXISTING. Symbols include Traffic Signal Head, Pedestrian Signal Head, Inductive Loop Detector, etc.

ASC/3 TIMING CHART

Timing chart table with columns for FEATURE and PHASE (1-8). Rows list features like Min Green, Walk, Ped Clear, Veh. Extension, etc.

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

New Installation

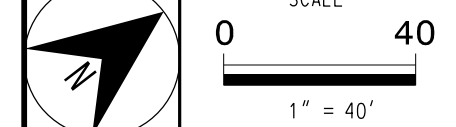
Stantec logo and contact information: Stantec Consulting Services Inc., 801 Jones Franklin Road-Suite 300, Raleigh, NC 27606.

Professional Engineer seal for Regina M. Muncey, State of North Carolina, License No. 43239.

Project title: US 401 Bus. (S. Main Street) at SR 2051 (Burlington Mills Road). Includes division, county, and rolesville information.

Professional Engineer seal for Regina M. Muncey, State of North Carolina, License No. 43239.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



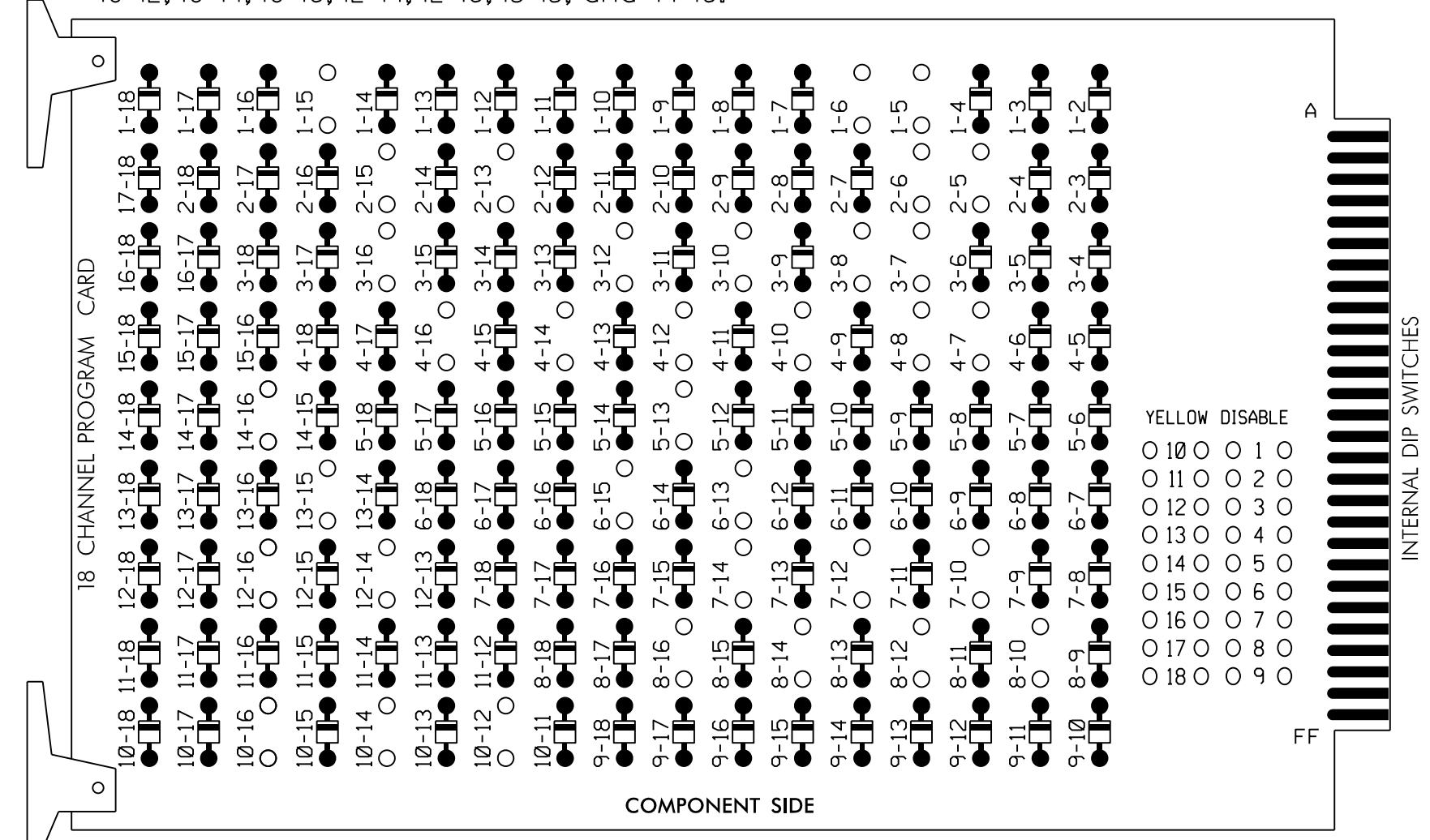
Revisions table with columns for REVISIONS, INIT., and DATE.

Vertical text on the left margin: User: r.muncey

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

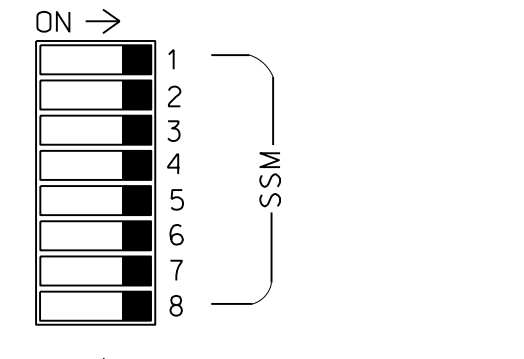
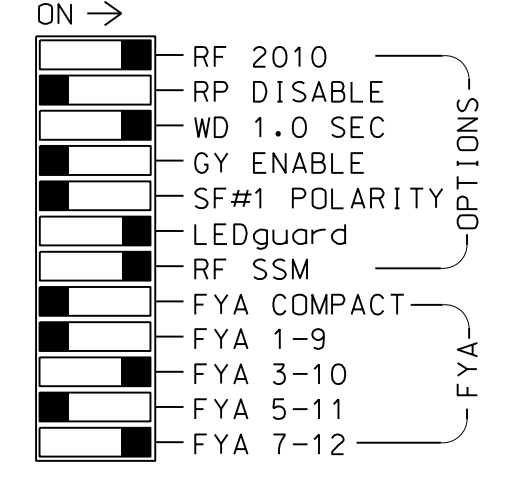
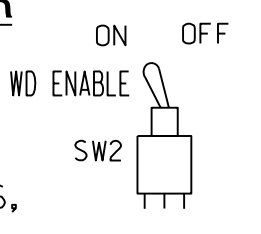
REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-13, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 10-12, 10-14, 10-16, 12-14, 12-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- 1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.



■ = DENOTES POSITION OF SWITCH

NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Walk and 6 Walk.
4. If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
5. The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
CABINET.....332 W/AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,
S11,S12,AUX S2,AUX S5
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,
8,8PED
OVERLAP "A".....NOT USED
OVERLAP "B".....*
OVERLAP "C".....NOT USED
OVERLAP "D".....*

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

Table with columns for Load Switch No., S1-S12, AUX S1-S6, and Signal Head No. (RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW). Rows show hook-up details for various signal heads.

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.

INPUT FILE CONNECTION & PROGRAMMING CHART

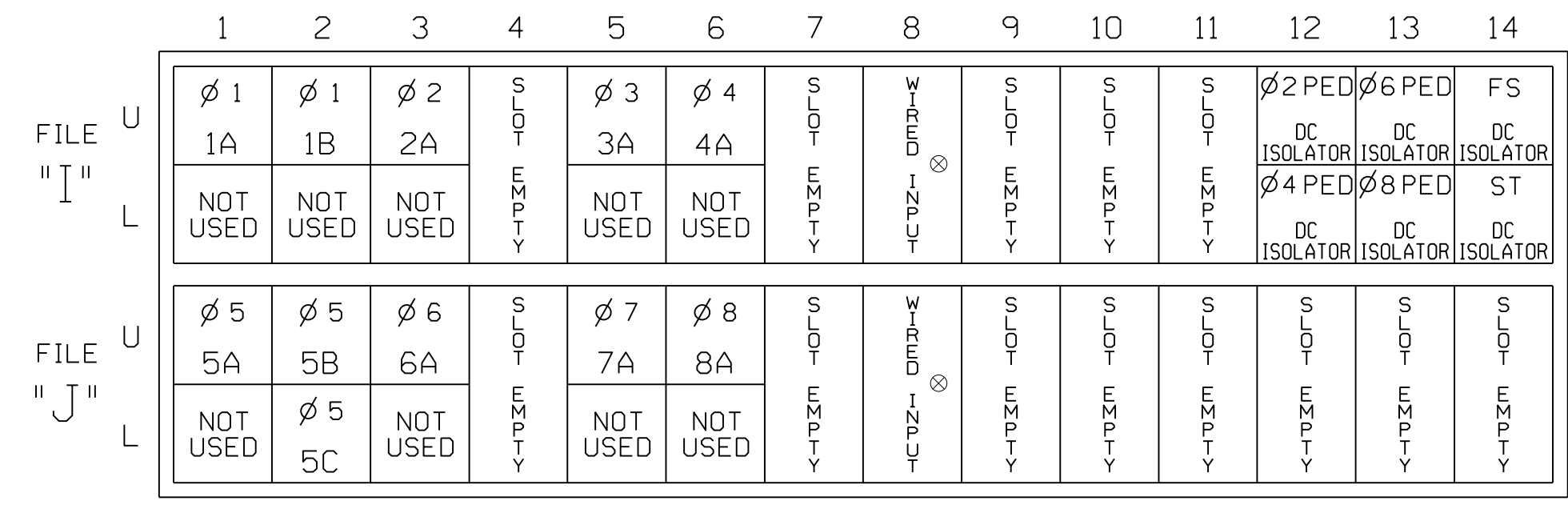
Table with columns: LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND TIME, DELAY TIME, ADDED INITIAL, DETECTOR TYPE. Lists connections for loops 1A through 8A.

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- 1 Add jumper from I5-W to J8-W, on rear of input file.
2 Add jumper from J5-W to I8-W, on rear of input file.
★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

INPUT FILE POSITION LAYOUT

(front view)



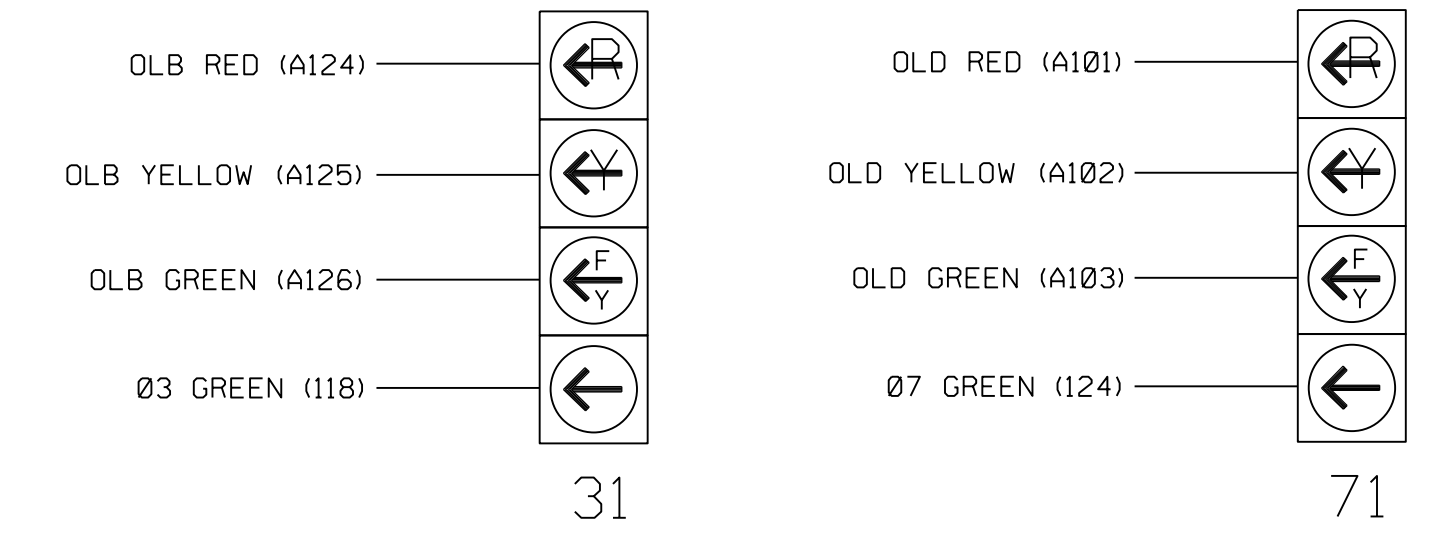
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

FYA SIGNAL WIRING DETAIL

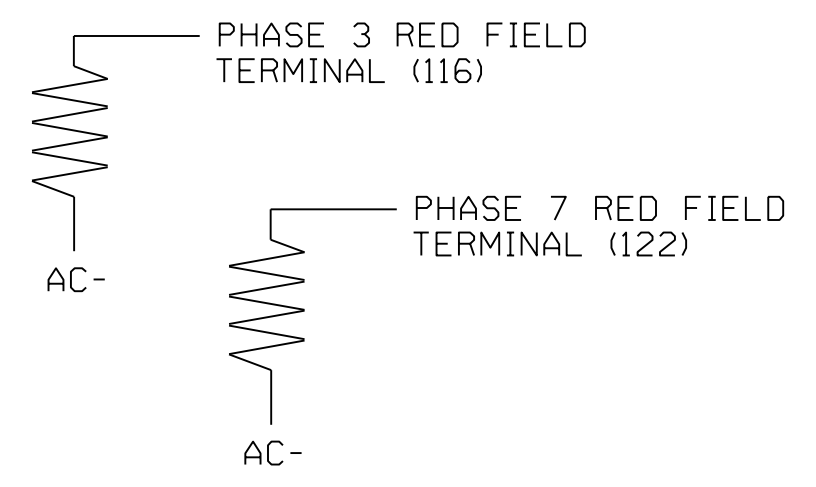
(wire signal heads as shown)



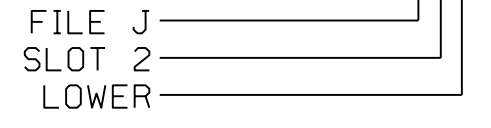
LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

Table with columns: VALUE (ohms), WATTAGE. Values: 1.5K - 1.9K (25W min), 2.0K - 3.0K (10W min).



INPUT FILE POSITION LEGEND: J2L



Electrical Detail - Sheet 1 of 4

Stantec logo and contact information: Stantec Consulting Services Inc., 801 Jones Franklin Road-Suite 300, Raleigh, NC 27606.



Project information table: US 401 Bus. (S. Main Street) at SR 2051 (Burlington Mills Road), Division 5, Wake County, Rolesville. Includes dates and reviewer information.

Professional Engineer Seal for Regina M. Muncey, State of North Carolina, License No. 43239, dated 12/16/2021.

11:57:18 AM U:\Projects\GIS\Signal\Design\2021\sig_elec_05-1788.dgn User:rmuncey

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

```

TMG VEH OVLP...[B] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 3
OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 3
  
```

← NOTICE ACTION PLAN SF BIT "3"

Toggle Twice

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

```

TMG VEH OVLP...[D] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 7
OPPOSING THROUGH..... PHASE 8

FLASHING ARROW OUTPUT.....CH12 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 7
  
```

← NOTICE ACTION PLAN SF BIT "7"

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION


Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-1788
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A



Stantec Consulting Services Inc.
 801 Jones Franklin Road-Suite 300
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 Tel. (919) 851-6866
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 www.stantec.com
 License No. F-0672

Prepared for the Offices of:



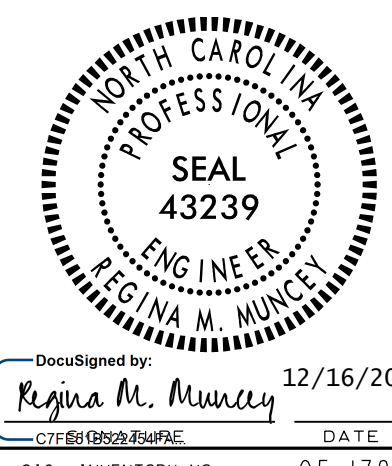
750 N. Greenfield Pkwy, Garner, NC 27529

**US 401 Bus. (S. Main Street)
at
SR 2051 (Burlington Mills Road)**

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE



Seal
43239

REGINA M. MUNCEY
ENGINEER

Date Signed by: Regina M. Muncey 12/16/2021
 DATE

SIG. INVENTORY NO. 05-1788

11:52:27 AM
U:\Projects\cbs\signal\asc\electrical\Detail\asc\Final Design\U-6241_sig_eie_05-1788.dgn
User: rmuncey

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 3 and 7.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 3 and 7.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	3, 7

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

```

ACTION PLAN...[ 1]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 2   DET LOG.....NONE
FLASH..... --      RED REST..... NO
VEH DET DIAG PLN... 0   PED DET DIAG PLN..0
DIMMING ENABLE.. NO   PRIORITY RETURN. NO
PED PR RETURN.. NO   QUEUE DELAY..... NO
PMT COND DELAY   NO

  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  .  .  X  .  .  .  X  .  (1-8)
AUX FCT  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .

```

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 3 AND 7 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 3,7: Modifies overlap parent phases for heads 31 and 71 to run protected turns only.

VEH DET PLAN 2: Disables phase 8 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 3 seconds.


Disables phase 4 call on loop 7A and reduces delay time for phase 7 call on loop 7A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-1788
DESIGNED: DECEMBER 2021
SEALED: 12/16/2021
REVISED: N/A



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Prepared for the Offices of:

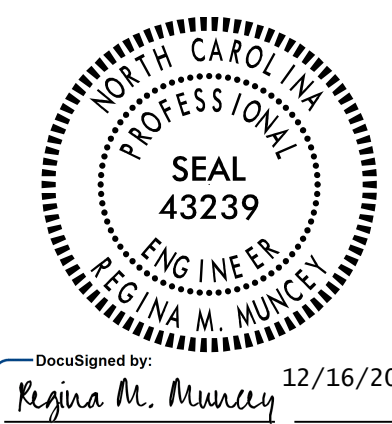


750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street)
at
SR 2051 (Burlington Mills Road)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey
REVISIONS	INIT. DATE

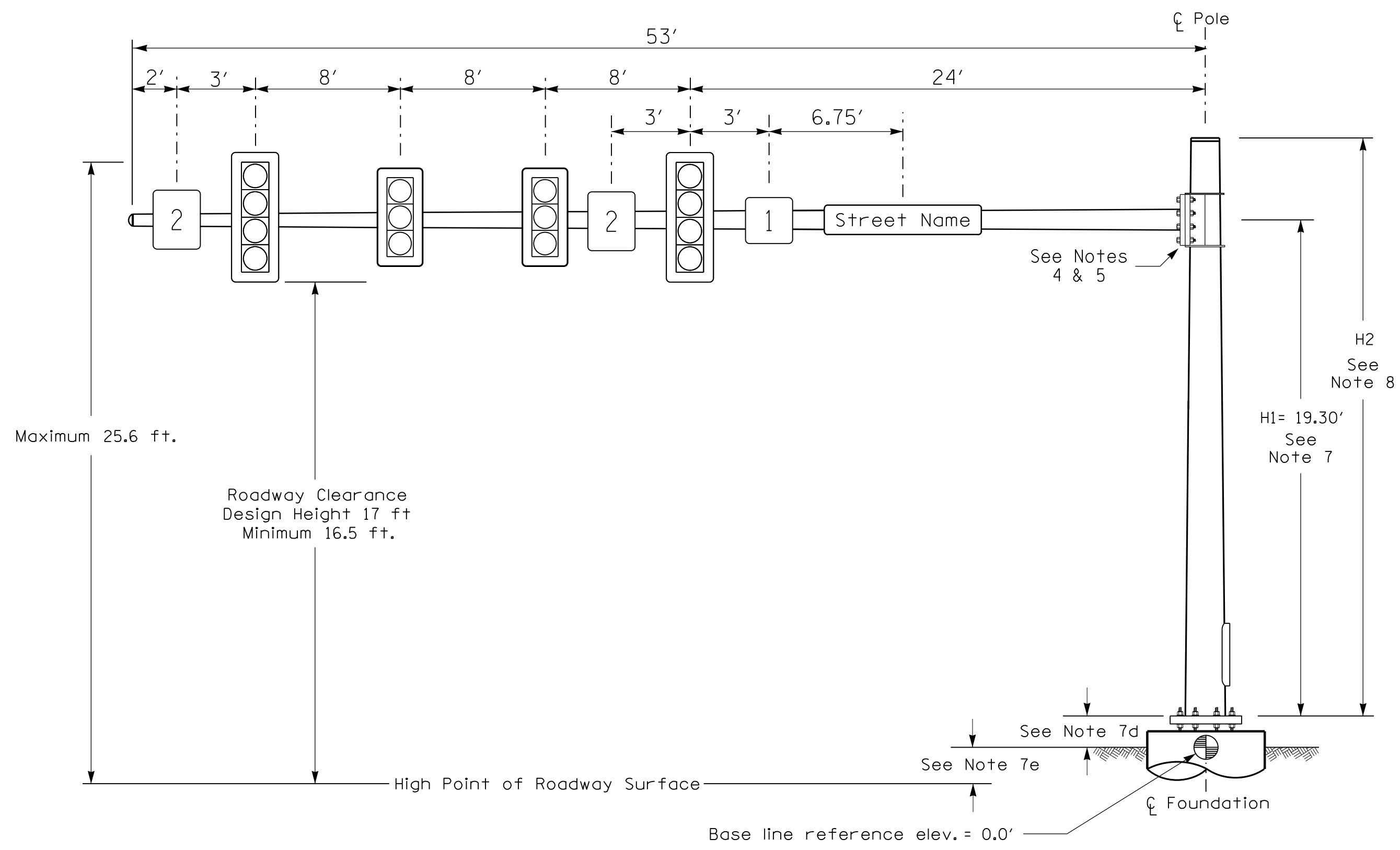


DocuSigned by:
Regina M. Muncey 12/16/2021
DATE

SIG. INVENTORY NO. 05-1788

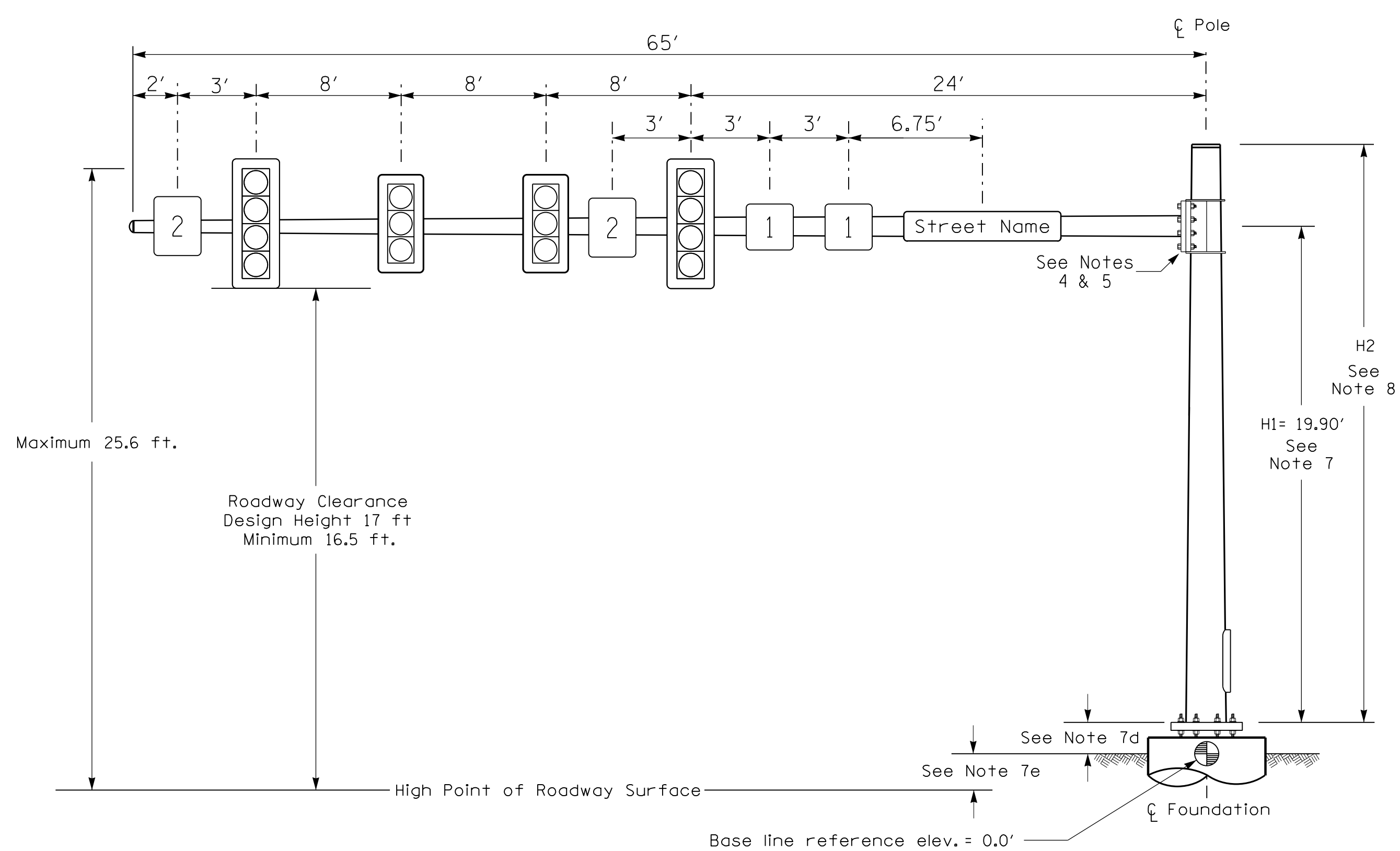
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User: rmuncey

Design Loading for METAL POLE NO. 5



Elevation View

Design Loading for METAL POLE NO. 6



Elevation View

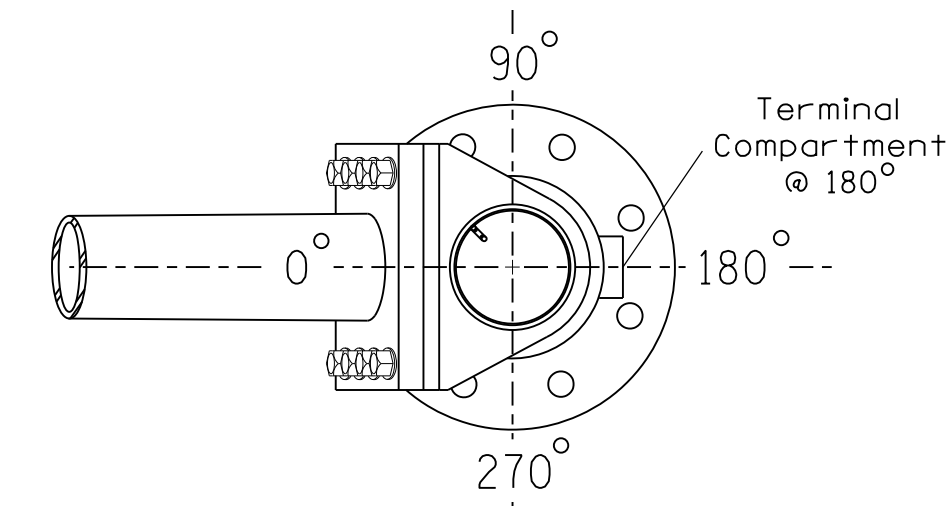
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SPECIAL NOTE

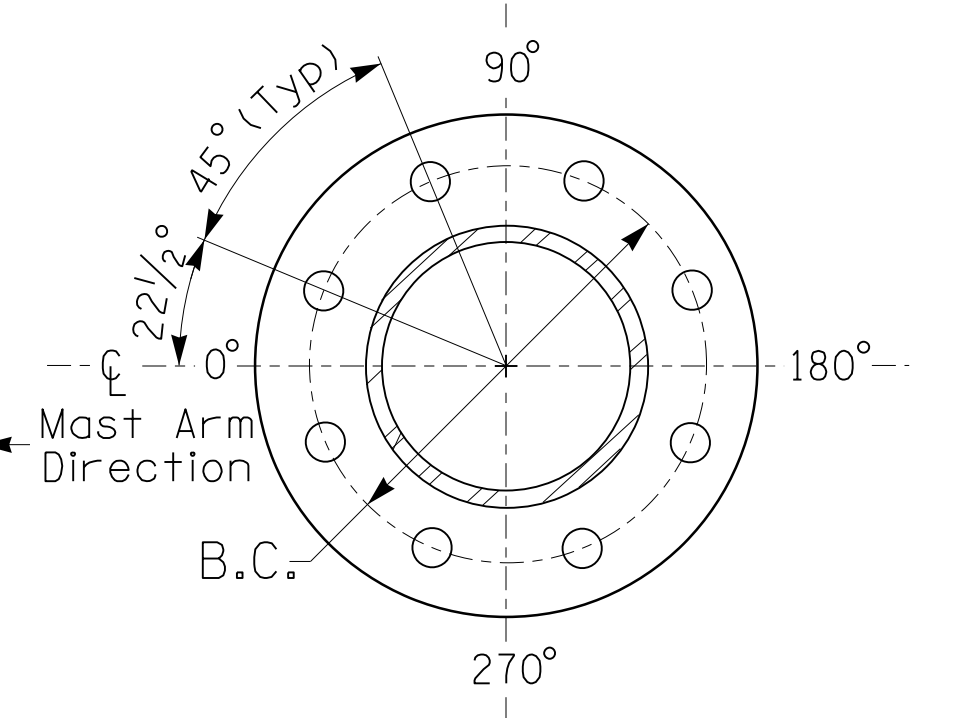
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

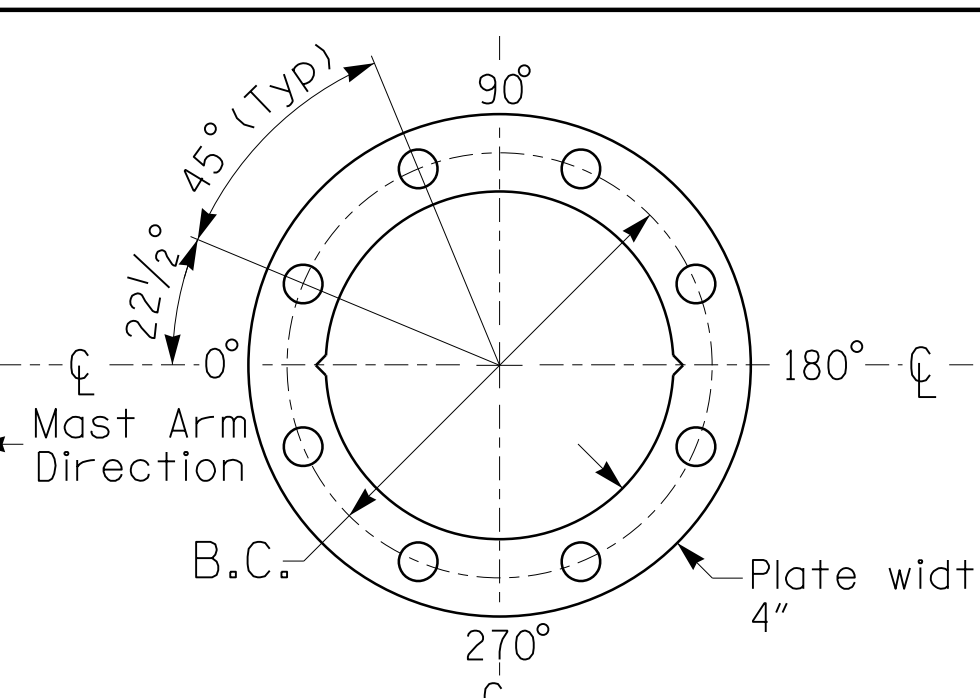
Elevation Differences for:	Pole 5	Pole 6
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.21 ft.	+0.84 ft.
Elevation difference at Edge of travelway or face of curb	+/-0.0 ft.	+/-0.0 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 5 and 6

PROJECT REFERENCE NO.	SHEET NO.
U-6241	SIG. 4.5

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0"W X 56.0"L	103 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS
	SIGN RIGID MOUNTED	6.25 S.F.	30.0"W X 30.0"L	11 LBS
	SIGN RIGID MOUNTED	7.5 S.F.	30.0"W X 36.0"L	14 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

NCDOT Wind Zone 4 (90 mph)

Prepared For the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

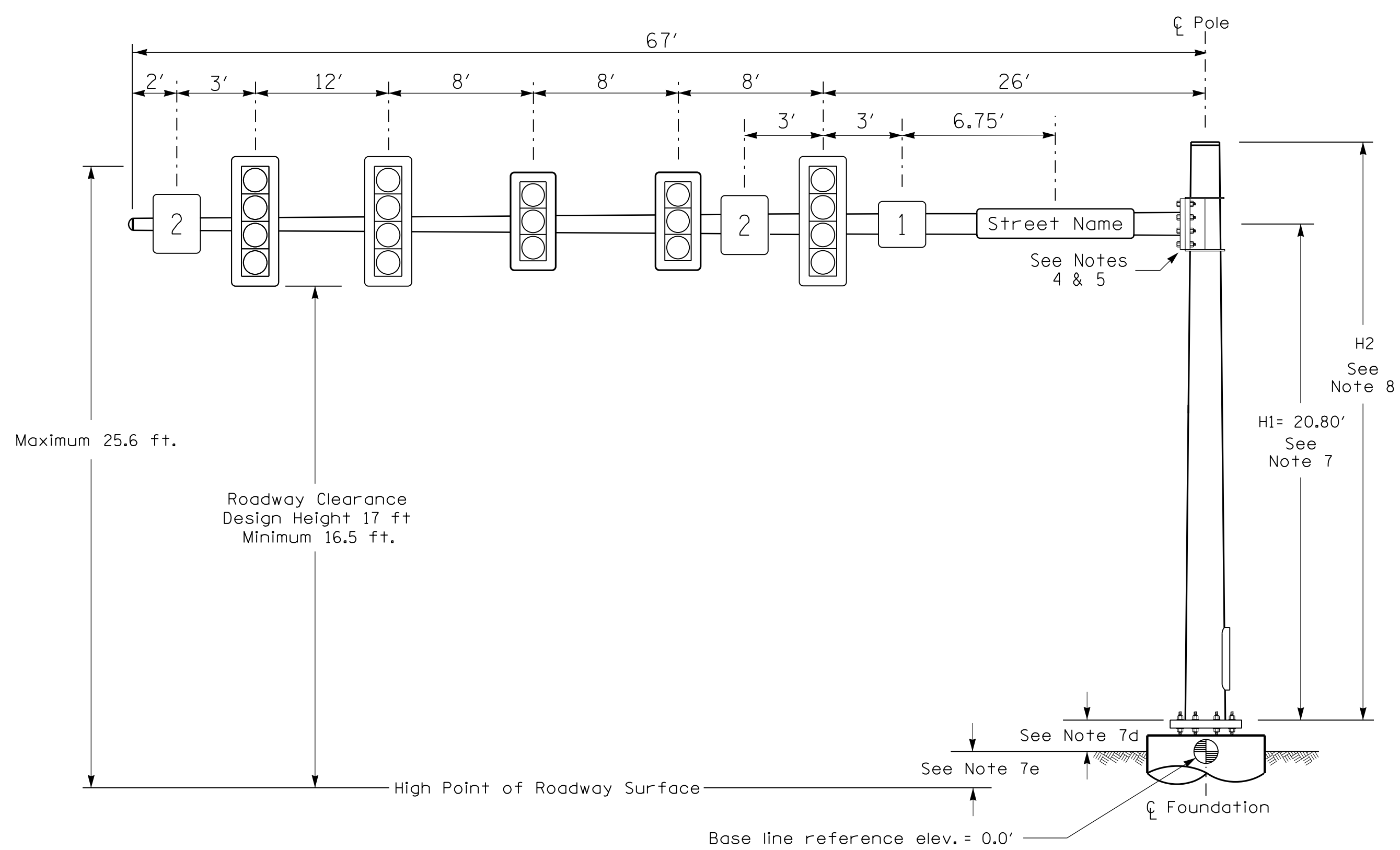
US 401 Bus. (S. Main Street) at SR 2051 (Burlington Mills Road)	
Division 5	Wake County
Roletsville	
PLAN DATE: DECEMBER 2021	REVIEWED BY: D Harris
PREPARED BY: J Hambricht	REVIEWED BY: R M Muncey
SCALE: 0 N/A	SCALE: N/A
REVISIONS:	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SEAL

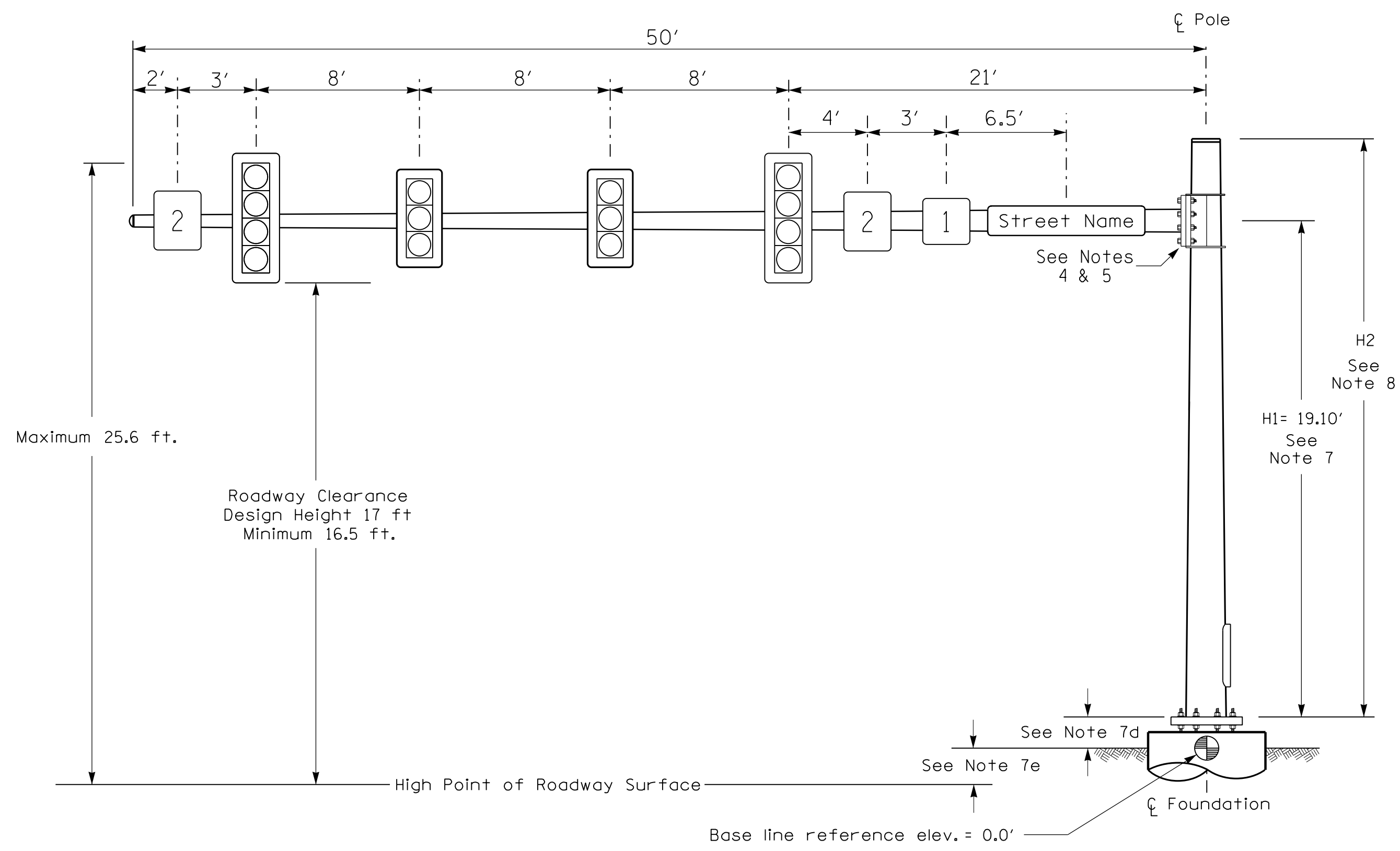
 REGINA M. MUNCEY
 ENGINEER
 12/16/2021
 DATE
 SIG. INVENTORY NO. 05-1788

Design Loading for METAL POLE NO. 7



Elevation View

Design Loading for METAL POLE NO. 8



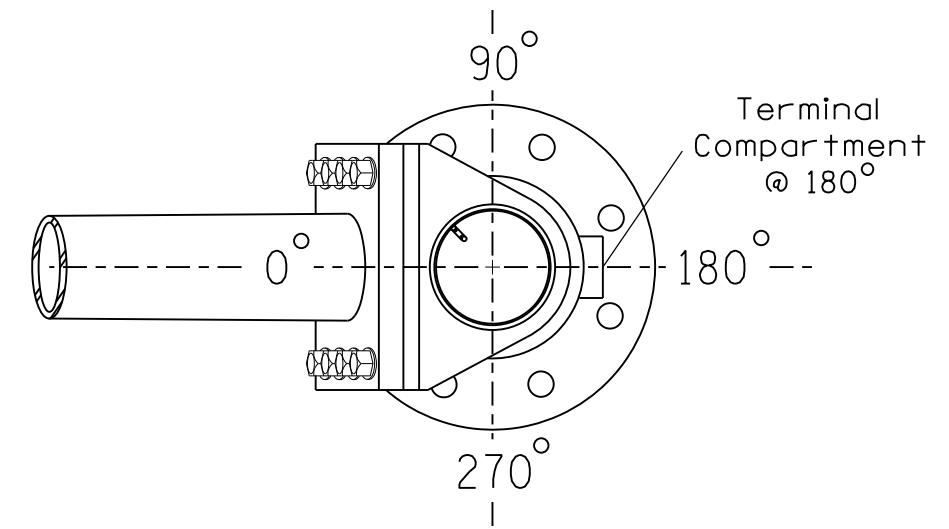
Elevation View

SPECIAL NOTE

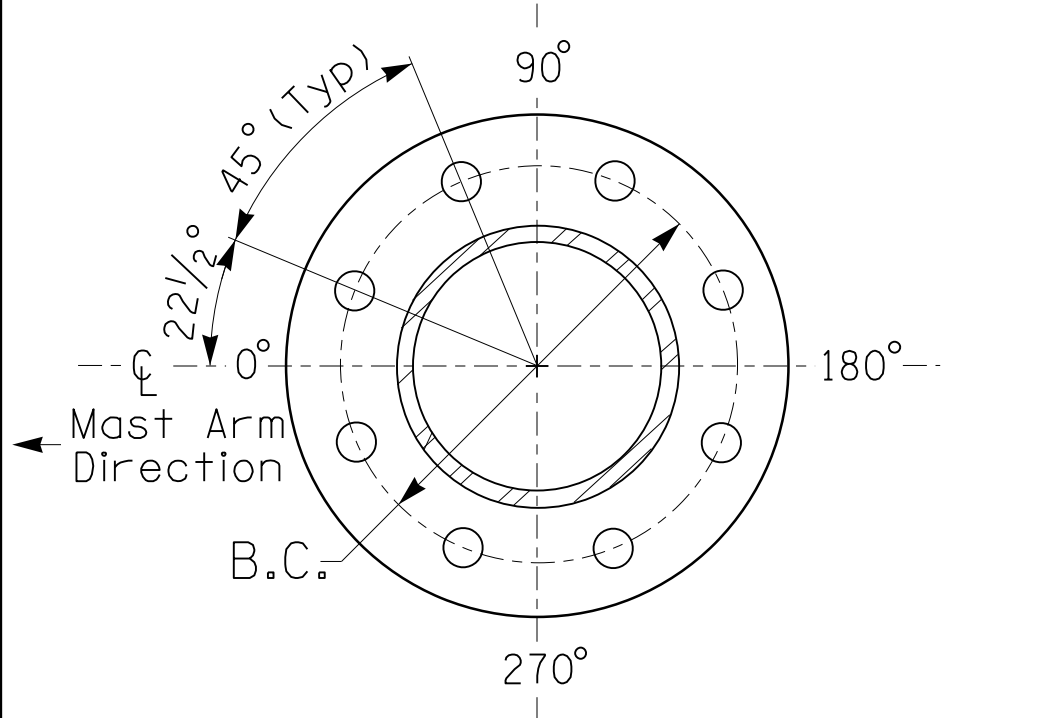
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Elevation Data for Mast Arm Attachment (H1)

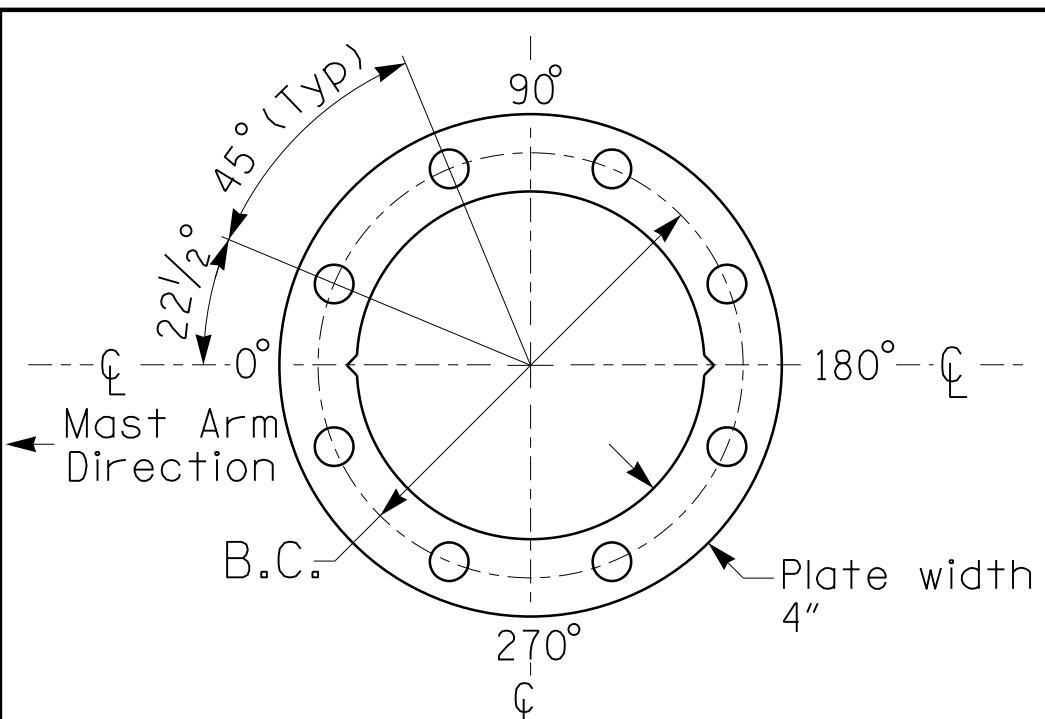
Elevation Differences for:	Pole 7	Pole 8
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+1.72 ft.	0.00 ft.
Elevation difference at Edge of travelway or face of curb	+/-0.0 ft.	+/-0.0 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 7 and 8

PROJECT REFERENCE NO.	SHEET NO.
U-6241	SIG. 4.6

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0"W X 56.0"L	103 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS
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NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
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 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

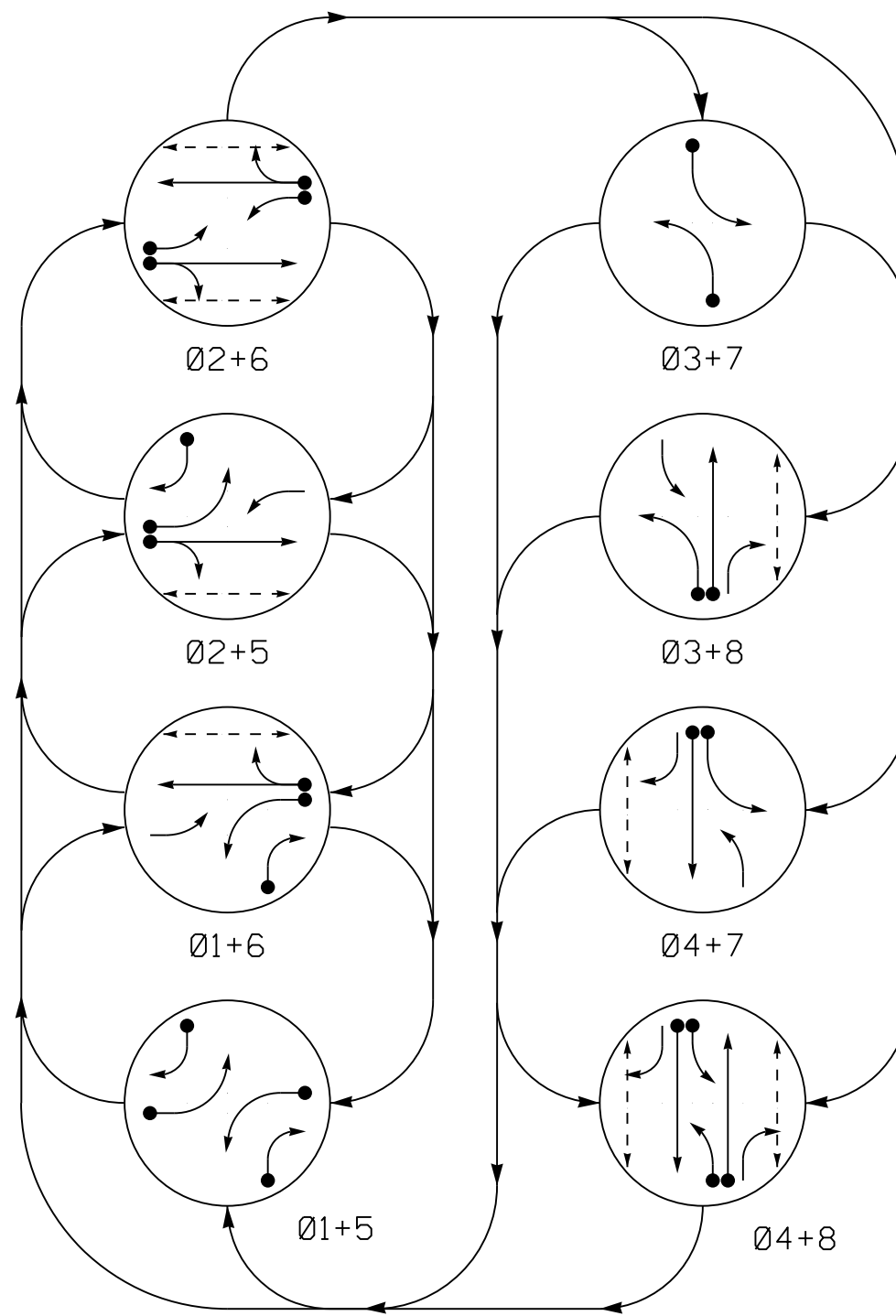
NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	Prepared For the Offices of: US 401 Bus. (S. Main Street) at SR 2051 (Burlington Mills Road)	
	Division 5 Wake County Rolesville PLAN DATE: DECEMBER 2021 REVIEWED BY: D Harris PREPARED BY: J Hambricht REVIEWED BY: R M Muncey	
SCALE 0 N/A N/A	REVISIONS INIT. DATE	Documented by: Signature: <i>Regina M. Muncey</i> DATE: 12/16/2021 SIG. INVENTORY NO. 05-1788

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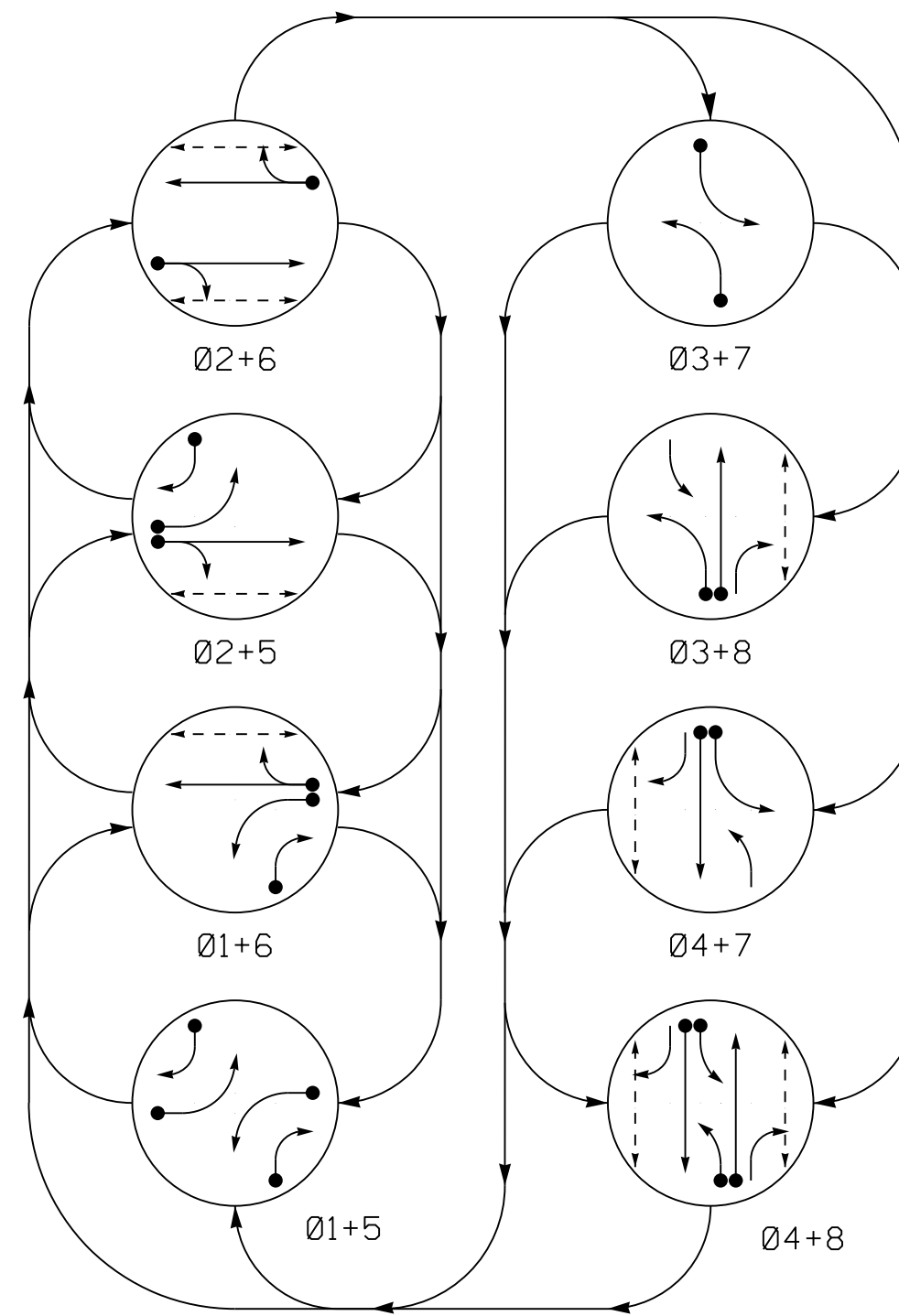
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

Table with 8 columns for phases and rows for signal faces (11, 21,22, 31, 41, 42, 51, 61,62, 71, 81, 82, P21,P22, P41,P42, P61,P62, P81,P82).

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

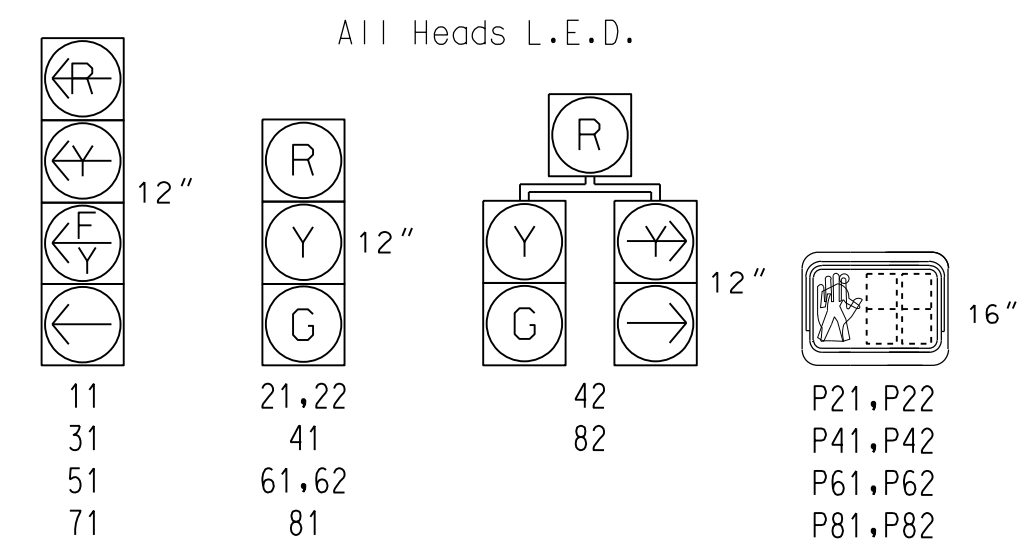
Table with 8 columns for phases and rows for signal faces (11, 21,22, 31, 41, 42, 51, 61,62, 71, 81, 82, P21,P22, P41,P42, P61,P62, P81,P82).

ASC/3 DETECTOR INSTALLATION CHART

Table with columns for Loop, Size (FT), Distance from Stopbar (FT), Turns, New Loop, Phase, Calling, Extend Time, Delay Time, Added Initial, Type, System Loop, New Card.

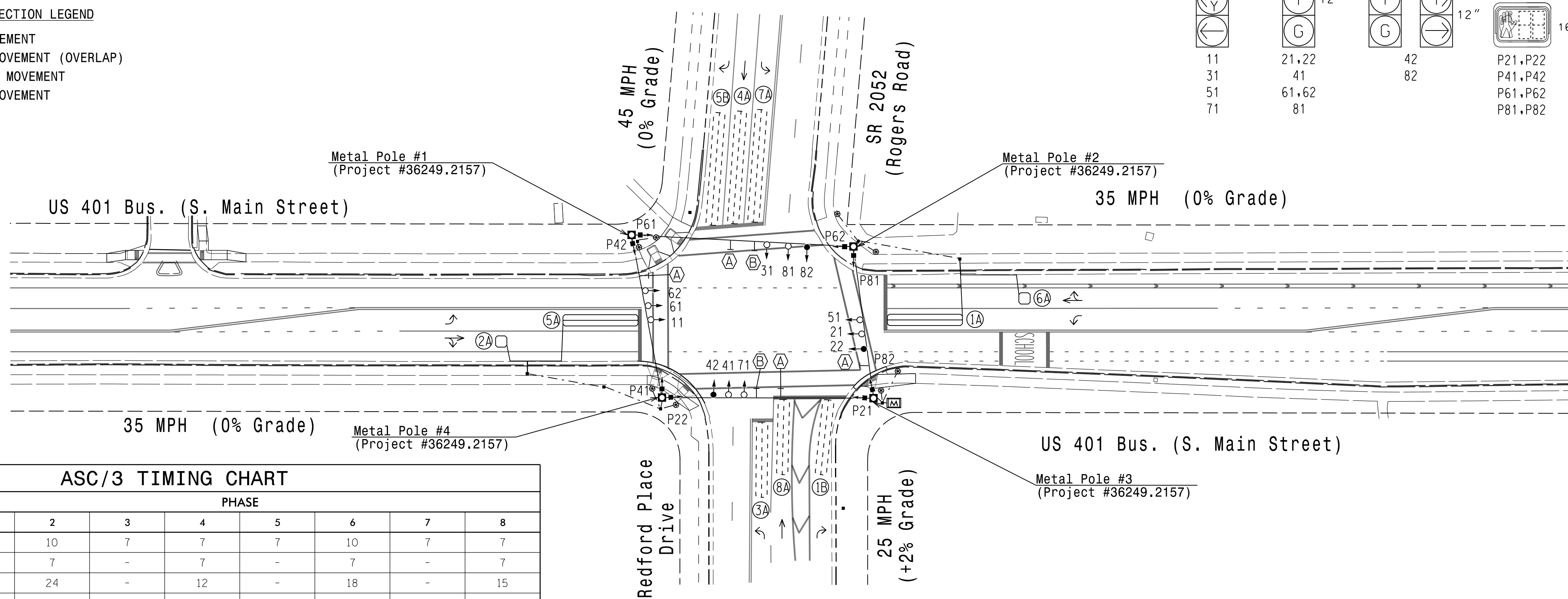
*Reduce Delay to 3 seconds during Alternate Phasing operation. #Disable phase call for loop during Alternate Phasing operation.

SIGNAL FACE I.D.



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT (arrow with dot)
UNDETECTED MOVEMENT (OVERLAP) (arrow with bar)
UNSIGNALIZED MOVEMENT (dashed arrow)
PEDESTRIAN MOVEMENT (arrow with vertical bar)



ASC/3 TIMING CHART

Timing chart table with columns for Feature and Phases 1-8, containing values for Min Green, Walk, Ped Clear, Veh. Extension, etc.

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

8 Phase Fully Actuated US 401 Business (Louisburg Rd) (CLS - System 3) Signal System #D05-20_Rolesville

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 22, 42 and 82.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual...
8. Locate new cabinet so as not to obstruct sight distance...
9. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
10. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
11. The Division Traffic Engineer will determine the hours of use...
12. Maximum times shown in timing chart are for free-run operation only.
13. Install new cabinet on the existing cabinet foundation.
14. Closed Loop System Data: Controller Asset #: 2229, Master Asset#: 10520.

LEGEND

- PROPOSED: Traffic Signal Head, Modified Signal Head, Pedestrian Signal Head, Signal Pole with Guy, Signal Pole with Sidewalk Guy, Inductive Loop Detector, Master Controller & Cabinet, Junction Box, 2-in Underground Conduit, Right of Way, Directional Arrow, Metal Strain Pole, Type I Pushbutton Post, Curb Ramp, Street Name Sign (D3-1) By Others, Left Arrow "ONLY" Sign (R3-5L)
EXISTING: N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A

Signal Upgrade

Stantec logo and contact information for Stantec Consulting Services Inc., Raleigh, NC.

Professional Engineer Seal for Derrick Waller, State of North Carolina, License No. 042678.

Project title: US 401 Bus. (S. Main Street) at SR 2052 (Rogers Road)/Redford Place Drive. Includes plan date (January 2022), reviewed by (E D Harris, R M Muncey), and revision table.

Professional Engineer Seal for Derrick Waller, State of North Carolina, License No. 042678.

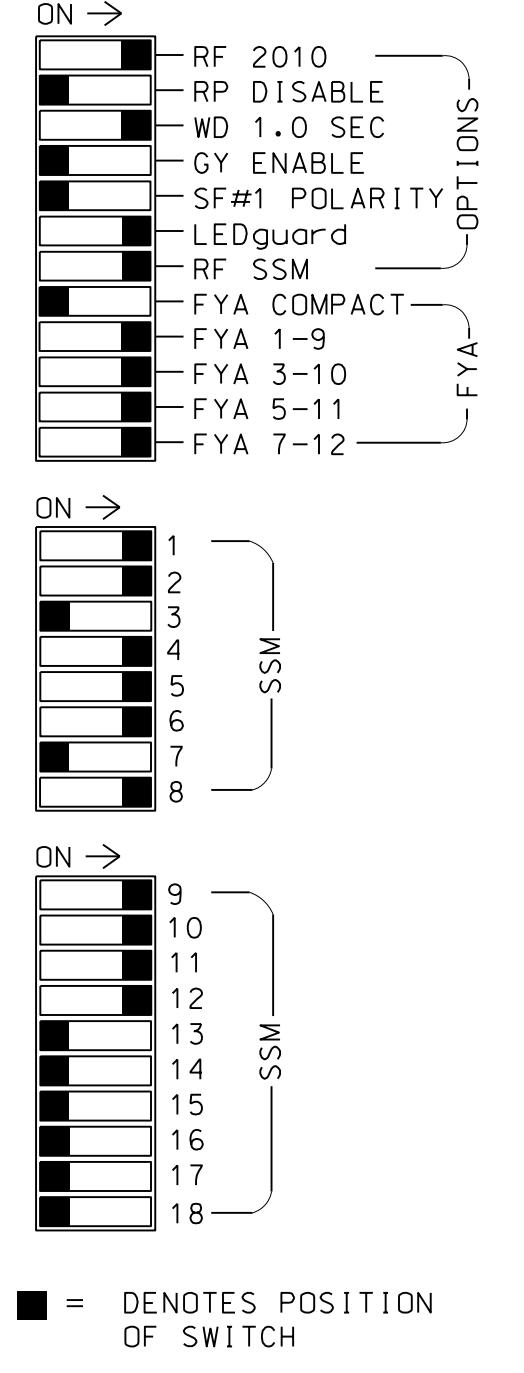
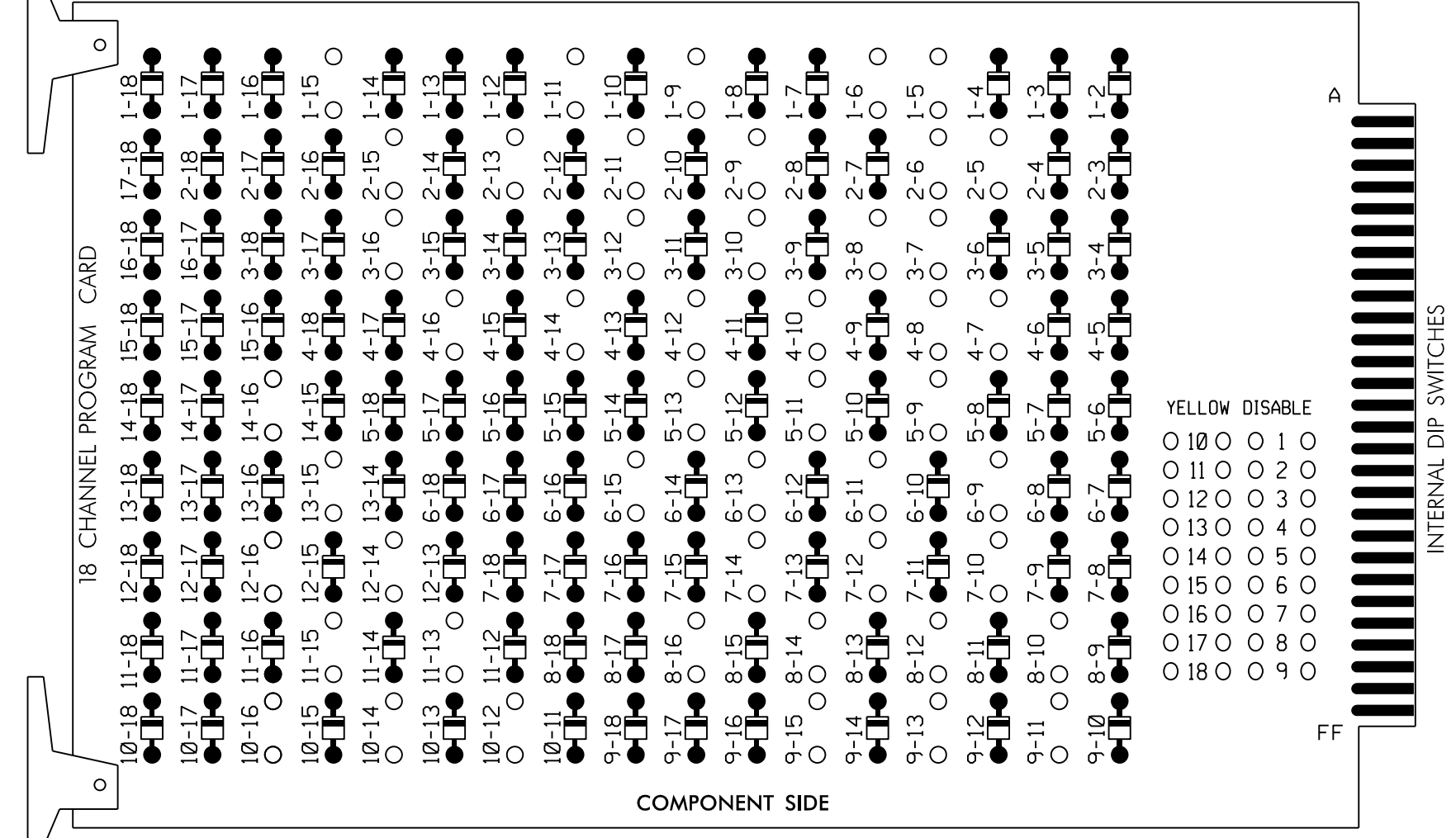
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Derrick Waller 1/6/2022

Vertical text on the left margin containing file path and user information.

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



- NOTES:
- 1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - 2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - 3. Ensure that Red Enable is active at all times during normal operation.
 - 4. Integrate monitor with Ethernet network in cabinet.

NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- 2. Program phases 4 and 8 for Dual Entry.
- 3. Program controller to start up in phase 2 Walk and 6 Walk.
- 4. If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- 5. The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

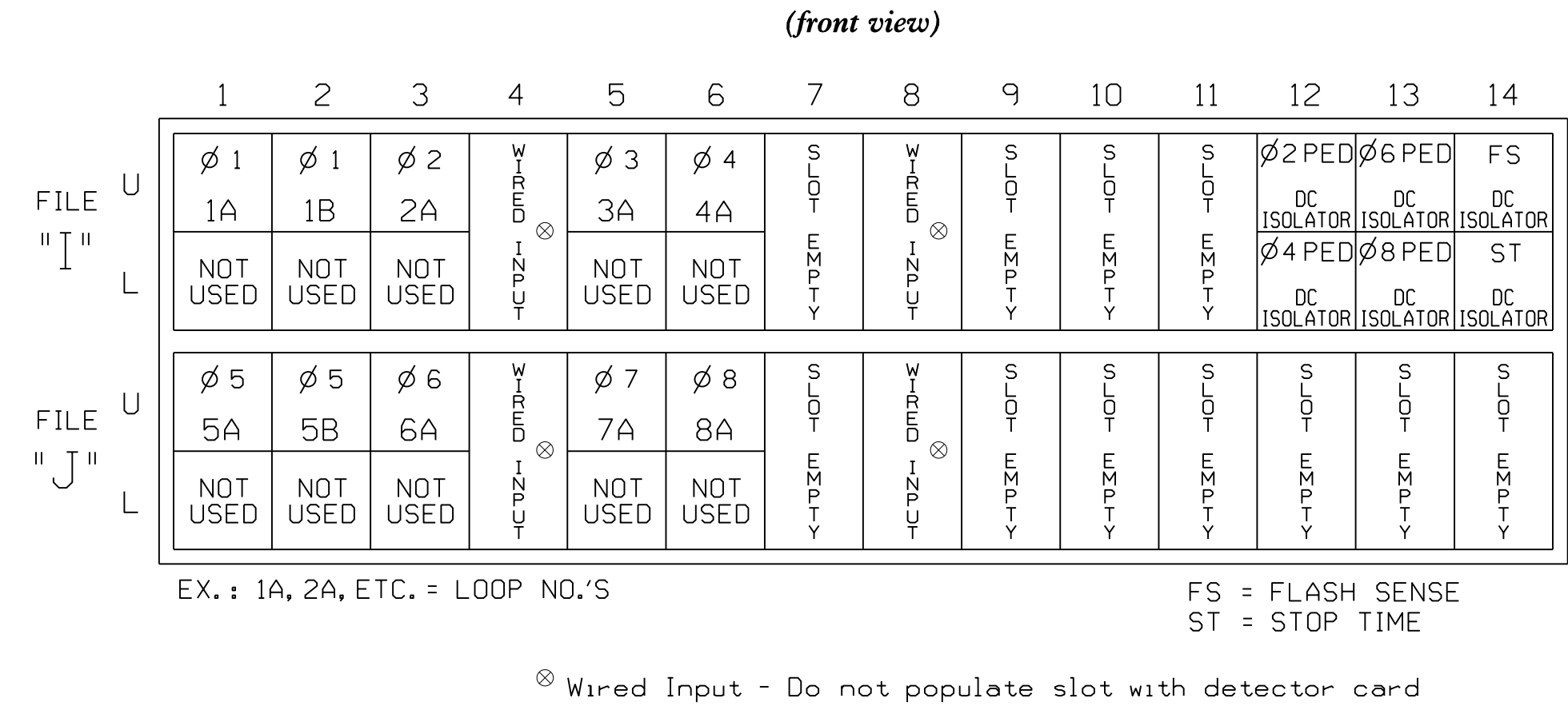
CONTROLLER.....2070E
CABINET.....332 W/AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,
S11,S12,AUX S1,AUX S2,AUX S4,
AUX S5
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,
8,8PED
OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....*
OVERLAP "D".....*
* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22	P21, P22	31	41,42	P41, P42	42	51	61,62	P61, P62	71	81,82	P81, P82	11	31	51	71
RED	*	128			101			*	134		107							
YELLOW		129		*	102				135		* 108							
GREEN		130			103				136		109							
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW	126								132				A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127	127		118			133	133		124								
Hand icon				113			104			119		110						
Walking person icon				115			106			121		112						

NU = Not Used
* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT



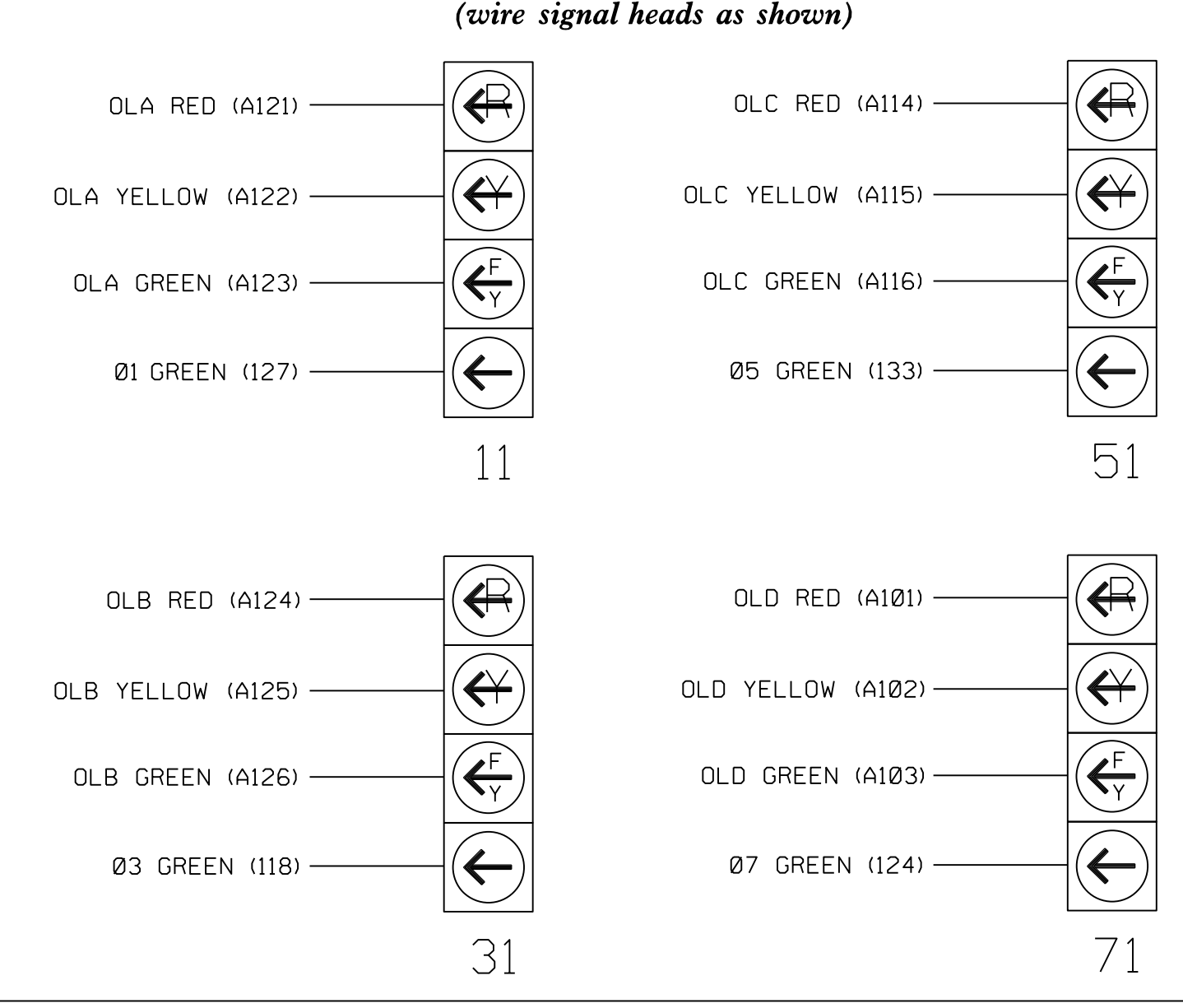
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		N
	-	J4U	48	26 ★	6	YES				N
1B	TB2-5,6	I2U	39	2	1	YES		15		N
2A	TB2-9,10	I3U	63	32	2	YES				N
3A ²	TB4-5,6	I5U	58	3	3	YES		15		N
	-	J8U	50	28	8	YES		3		N
4A	TB4-9,10	I6U	41	4	4	YES				N
5A ³	TB3-1,2	J1U	55	5 ★	5	YES		15		N
	-	I4U	47	22 ★	2	YES				N
5B	TB3-5,6	J2U	40	6	5	YES		15		N
6A	TB3-9,10	J3U	64	36	6	YES				N
7A ⁴	TB5-5,6	J5U	57	7	7	YES		15		N
	-	I8U	49	24	4	YES		3		N
8A	TB5-9,10	J6U	42	8	8	YES				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

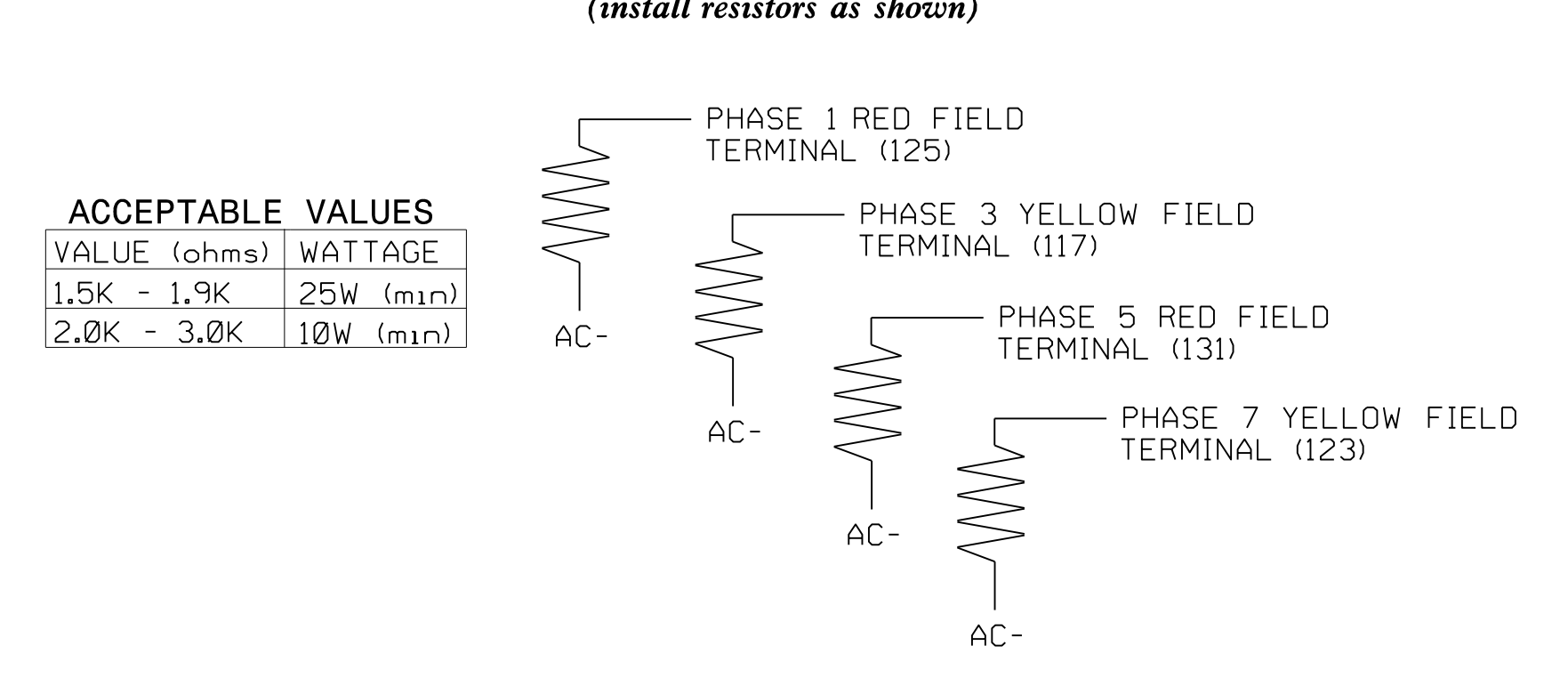
NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- ¹Add jumper from I1-W to J4-W, on rear of input file.
 - ²Add jumper from I5-W to J8-W, on rear of input file.
 - ³Add jumper from J1-W to I4-W, on rear of input file.
 - ⁴Add jumper from J5-W to I8-W, on rear of input file.
- ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

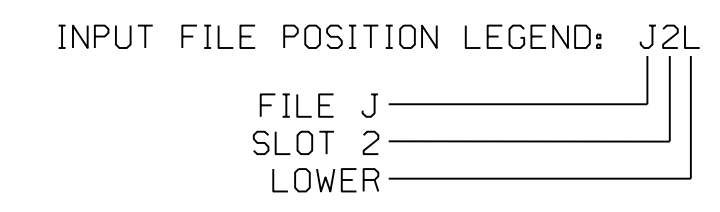
FYA SIGNAL WIRING DETAIL



LOAD RESISTOR INSTALLATION DETAIL



VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



US 401 Bus. (S. Main Street) at SR 2052 (Rogers Road)/ Redford Place Drive
Division 5 Wake County Rolesville
PLAN DATE: January 2022 REVIEWED BY: E D Harris
PREPARED BY: D A Waller REVIEWED BY: R M Muncey

2:53:15 PM
U:\Projects\Signal\Signal\EDI Model 2018ECLip-NC Conflict Monitor\Detail\Signal\EDI Model 2018ECLip-NC Conflict Monitor\Signal\EDI Model 2018ECLip-NC Conflict Monitor.dgn
User: dwall118

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE:PPLT FYA

PROTECTED LEFT TURN... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 1

← NOTICE ACTION PLAN SF BIT "1"

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

TMG VEH OVLP...[B] TYPE:PPLT FYA

PROTECTED LEFT TURN... PHASE 3

OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE:PPLT FYA

PROTECTED LEFT TURN... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 5

← NOTICE ACTION PLAN SF BIT "5"

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

TMG VEH OVLP...[D] TYPE:PPLT FYA

PROTECTED LEFT TURN... PHASE 7

OPPOSING THROUGH..... PHASE 8

FLASHING ARROW OUTPUT.....CH12 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION


Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-2229
DESIGNED: JANUARY 2022
SEALED: 1/6/2022
REVISED: N/A



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Prepared for the Offices of:




750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street)
at
SR 2052 (Rogers Road) /
Redford Place Drive

Division 5 Wake County Rolesville

PLAN DATE: January 2022	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey
REVISIONS	INIT. DATE



DocuSigned by:
Derrick Waller 1/6/2022
DATE
SIGNATURE
SIG. INVENTORY NO. 05-2229

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User: dawaller

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
 - Set delay time to "3".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

ENSURE PHASE IS SET TO "0" →

- Place cursor in VEH DETECTOR [] position and enter "26".
 - Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "3".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "22".
 - Set assigned phase to "0".

ENSURE PHASE IS SET TO "0" →

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-2229
 DESIGNED: JANUARY 2022
 SEALED: 1/6/2022
 REVISED: N/A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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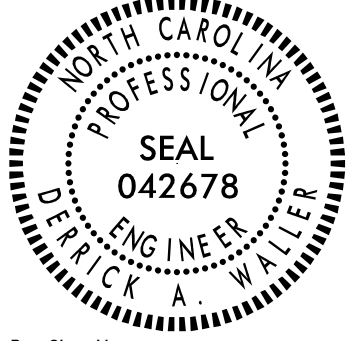


750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street)
 at
 SR 2052 (Rogers Road) /
 Redford Place Drive
 Division 5 Wake County Rolesville

PLAN DATE: January 2022 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE



DocuSigned by:
Derrick Waller
 1/6/2022

SIGNATURE DATE
 SIG. INVENTORY NO. 05-2229

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ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1 AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .

```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-2229
 DESIGNED: JANUARY 2022
 SEALED: 1/6/2022
 REVISED: N/A




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Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (S. Main Street)
 at
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 Division 5 Wake County Rolesville

PLAN DATE: January 2022 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

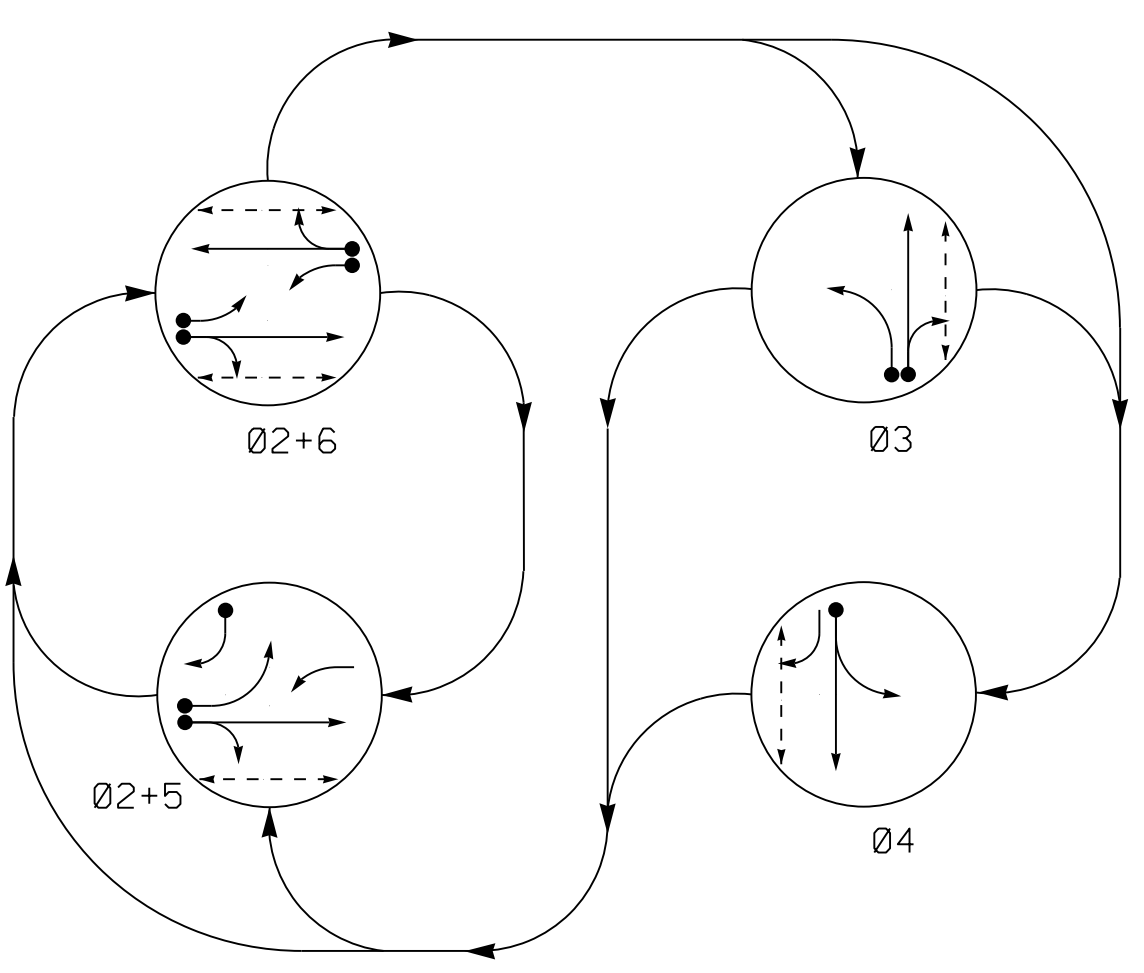
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Derrick Waller 1/6/2022
 DATE
 SIG. INVENTORY NO. 05-2229

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 User: dawaller

DEFAULT PHASING DIAGRAM



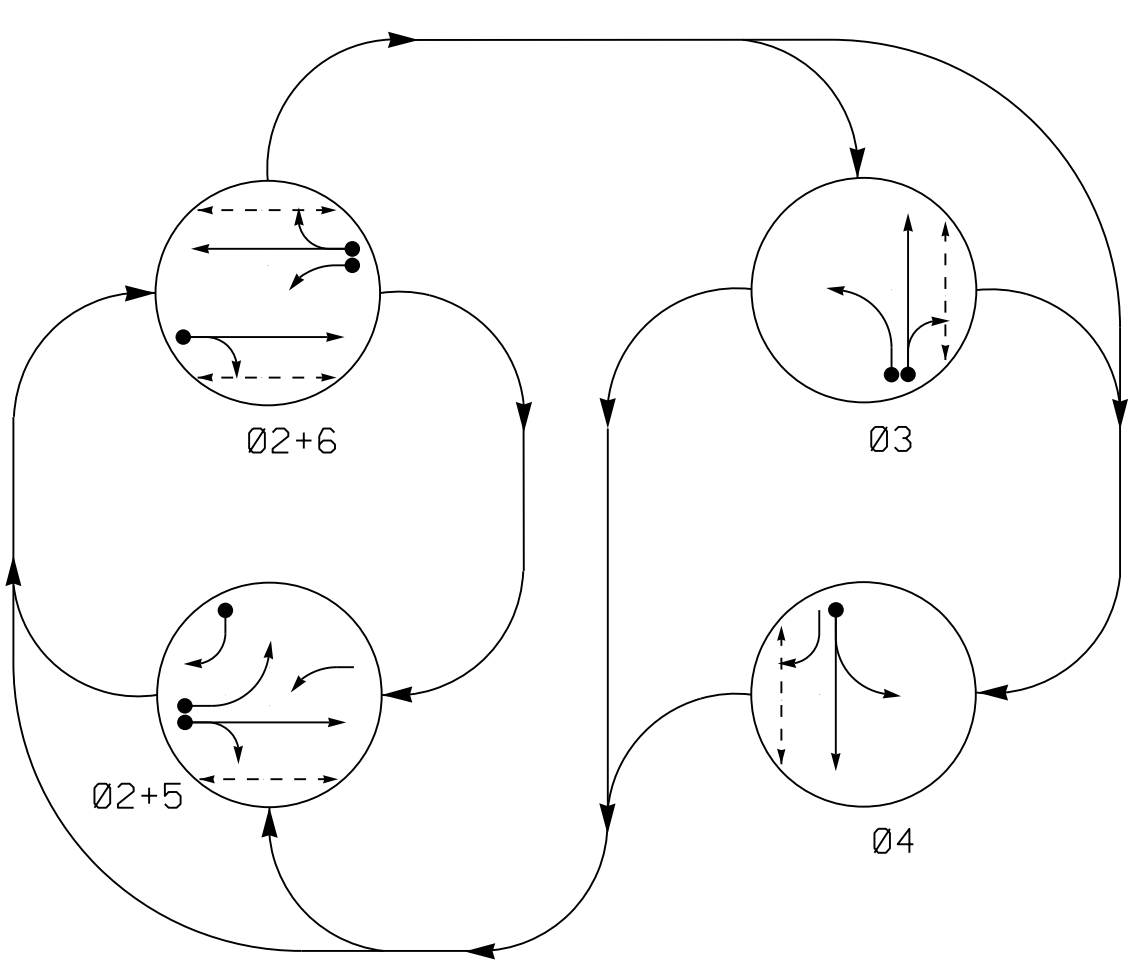
PHASING DIAGRAM DETECTION LEGEND

- ● DETECTED MOVEMENT
- ○ UNDETECTED MOVEMENT (OVERLAP)
- ○ UNSIGNALIZED MOVEMENT
- ○ PEDESTRIAN MOVEMENT

DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE				FLASH
	02+5	02+6	03	04	
21,22,23	G	G	R	R	Y
31	R	R	G	R	R
32,33	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
43	R	R	R	G	R
51	F	F	R	R	Y
61	F	F	R	R	Y
62,63,64	R	G	R	R	Y
P21,P22	W	W	DW	DW	DRK
P31,P32	DW	DW	W	DW	DRK
P41,P42	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	DW	DRK

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE				FLASH
	02+5	02+6	03	04	
21,22,23	G	G	R	R	Y
31	R	R	G	R	R
32,33	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
43	R	R	R	G	R
51	F	F	R	R	Y
61	F	F	R	R	Y
62,63,64	R	G	R	R	Y
P21,P22	W	W	DW	DW	DRK
P31,P32	DW	DW	W	DW	DRK
P41,P42	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	DW	DRK

ASC/3 DETECTOR INSTALLATION CHART

DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	70	3	X	2	Yes	-	-	-	N	-	X
3A	6X40	0	2-4-2	X	3	Yes	-	3	-	N	-	X
3B	6X40	0	2-4-2	X	3	Yes	-	10	-	N	-	X
4A	6X15	50	4	X	4	Yes	-	15	-	N	-	X
4B	6X40	0	2-4-2	X	4	Yes	-	3	-	N	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	15*	-	N	-	X
5B	6X40	0	2-4-2	X	5	Yes	-	15	-	N	-	X
6A	6X6	70	3	X	6	Yes	-	-	-	N	-	X
6B	6X40	0	2-4-2	X	6	Yes	-	-	-	N	-	X

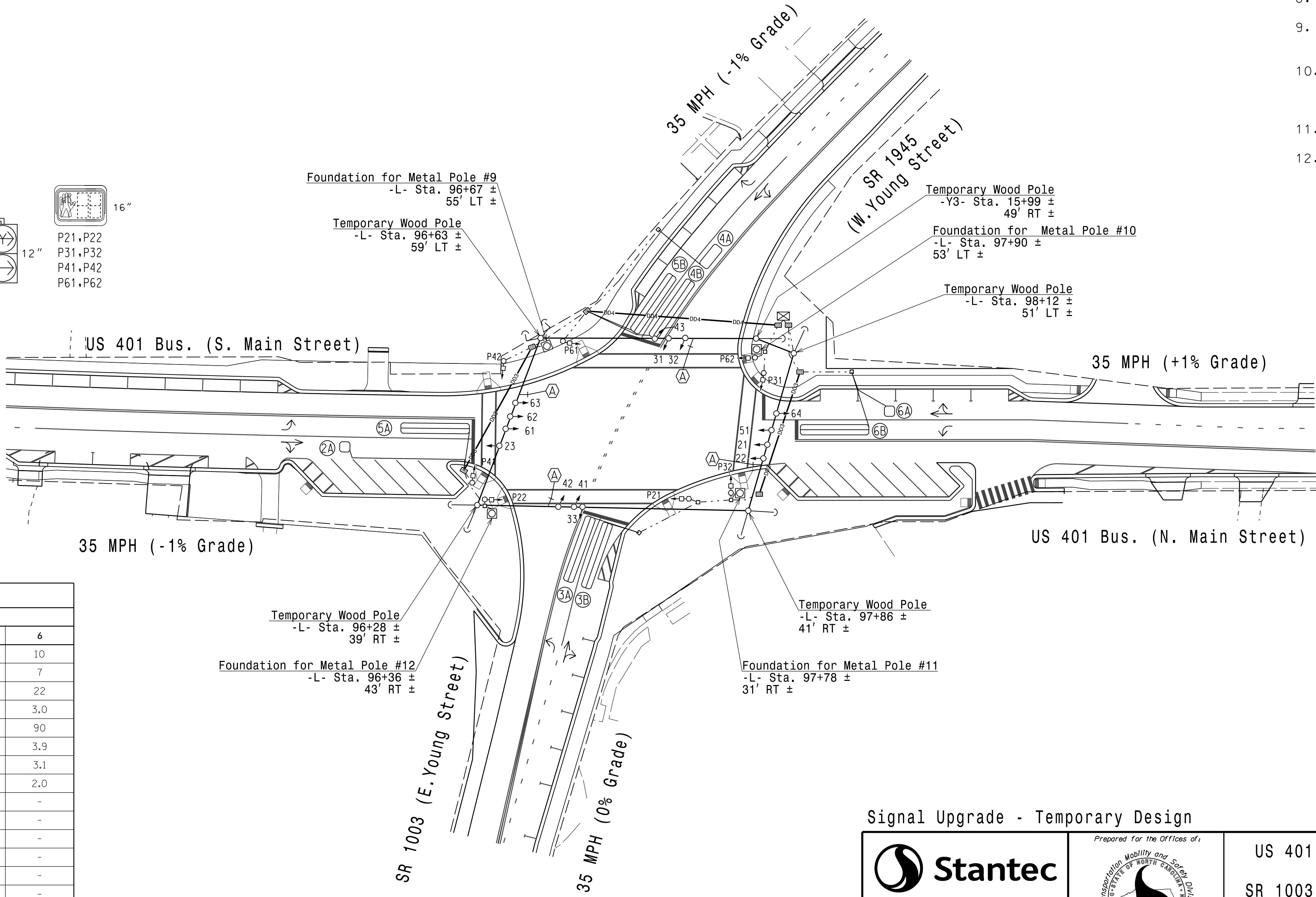
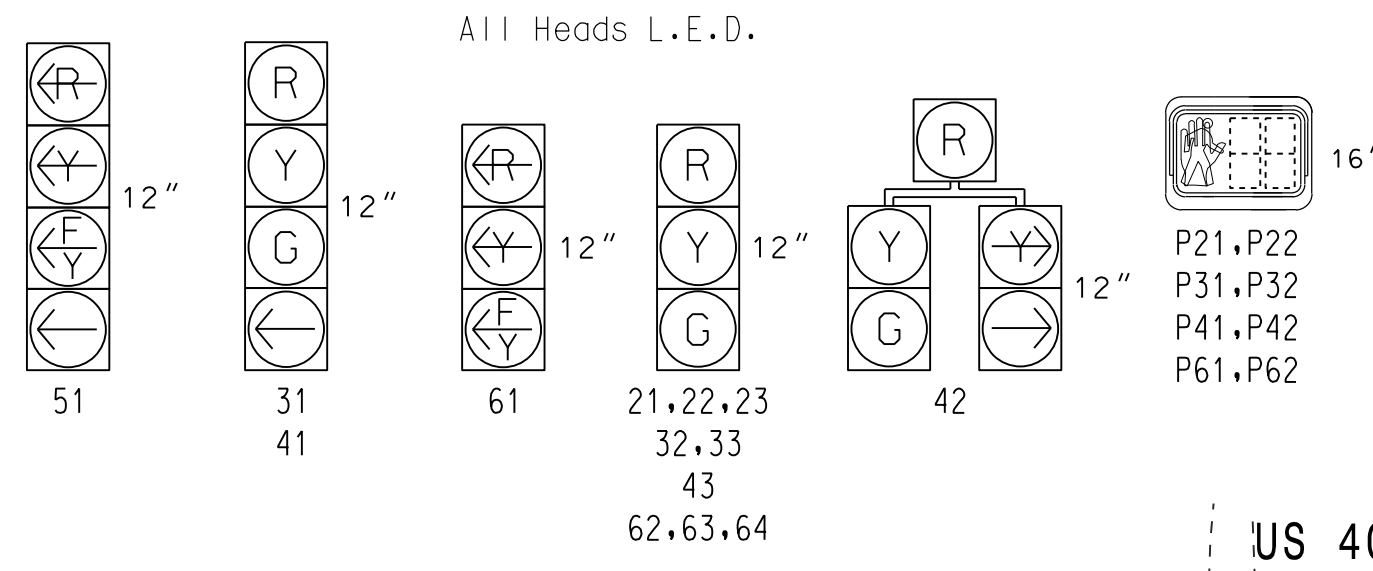
*Reduce Delay to 3 seconds during Alternate Phasing operation.
 # Disable phase call for loop during Alternate Phasing operation.

4 Phase Fully Actuated
 US 401 Business (Louisburg Rd) (CLS - System 3)
 Signal System #D05-20_Rolesville

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer. Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Install new cabinet on the existing cabinet foundation.
- Closed Loop System Data: Controller Asset #: 0119, Master Asset #: 10520.

SIGNAL FACE I.D.



LEGEND

	PROPOSED Traffic Signal Head		EXISTING Traffic Signal Head
	PROPOSED Modified Signal Head		EXISTING Modified Signal Head
	PROPOSED Pedestrian Signal Head		EXISTING Pedestrian Signal Head
	PROPOSED Signal Pole with Guy		EXISTING Signal Pole with Guy
	PROPOSED Inductive Loop Detector		EXISTING Inductive Loop Detector
	PROPOSED Junction Box		EXISTING Junction Box
	PROPOSED Right of Way		EXISTING Right of Way
	PROPOSED Directional Arrow		EXISTING Directional Arrow
	PROPOSED Metal Pole with Mastarm		EXISTING Metal Pole with Mastarm
	PROPOSED Directional Drill		EXISTING Directional Drill
	PROPOSED Type II Signal Pedestal		EXISTING Type II Signal Pedestal
	PROPOSED Oversized Junction Box		EXISTING Oversized Junction Box
	PROPOSED Curb Ramp		EXISTING Curb Ramp
	PROPOSED "TURNING VEHICLES YIELD TO PEDS" Sign (R10-15R)		EXISTING "TURNING VEHICLES YIELD TO PEDS" Sign (R10-15R)

ASC/3 TIMING CHART

FEATURE	PHASE					
	2	3	4	5	6	
Min Green *	10	7	7	7	10	
Walk *	7	7	7	-	7	
Ped Clear	22	11	11	-	22	
Veh. Extension *	3.0	2.0	2.0	2.0	3.0	
Max 1 *	90	20	30	20	90	
Yellow	3.9	3.8	3.9	3.0	3.9	
Red Clear	3.1	2.1	2.0	3.4	3.1	
Red Revert	2.0	2.0	2.0	2.0	2.0	
Actuations B4 Add *	-	-	-	-	-	
Seconds / Actuation *	-	-	-	-	-	
Max Initial *	-	-	-	-	-	
Time Before Reduction *	-	-	-	-	-	
Time To Reduce *	-	-	-	-	-	
Minimum Gap	-	-	-	-	-	
Locking Detector	X	-	-	-	X	
Recall Position	VEH. RECALL	-	-	-	VEH. RECALL	
Dual Entry	-	-	-	-	-	
Simultaneous Gap	X	X	X	X	X	

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade - Temporary Design

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Regina M. Muncey
 ENGINEER
 No. 43239
 State of North Carolina

US 401 Bus. (Main Street) at SR 1003/1945 (Young Street)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris

PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

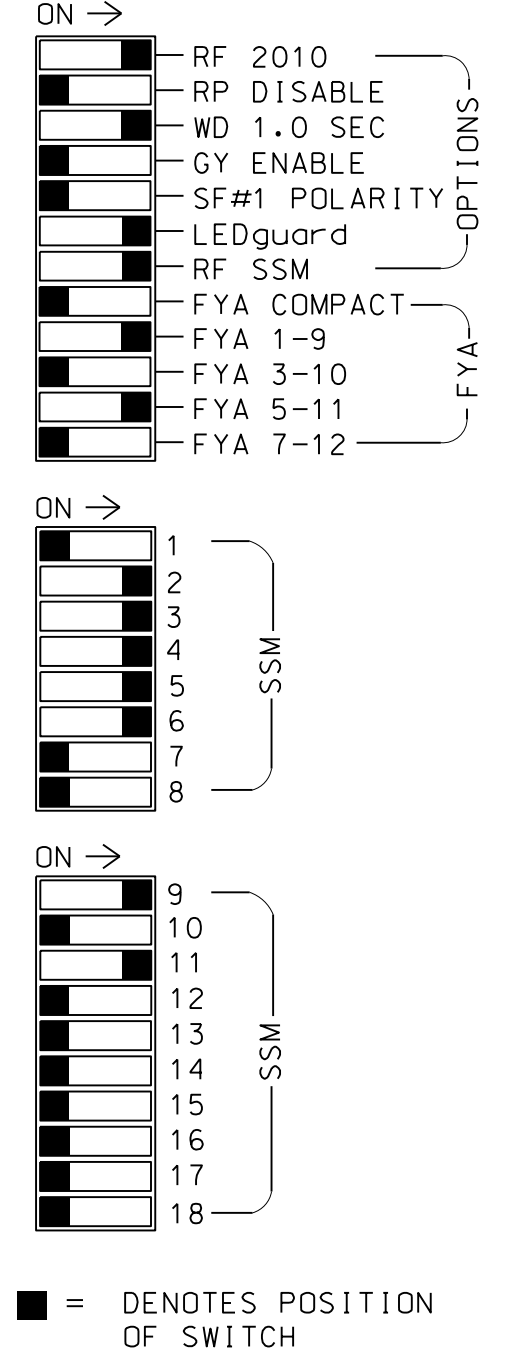
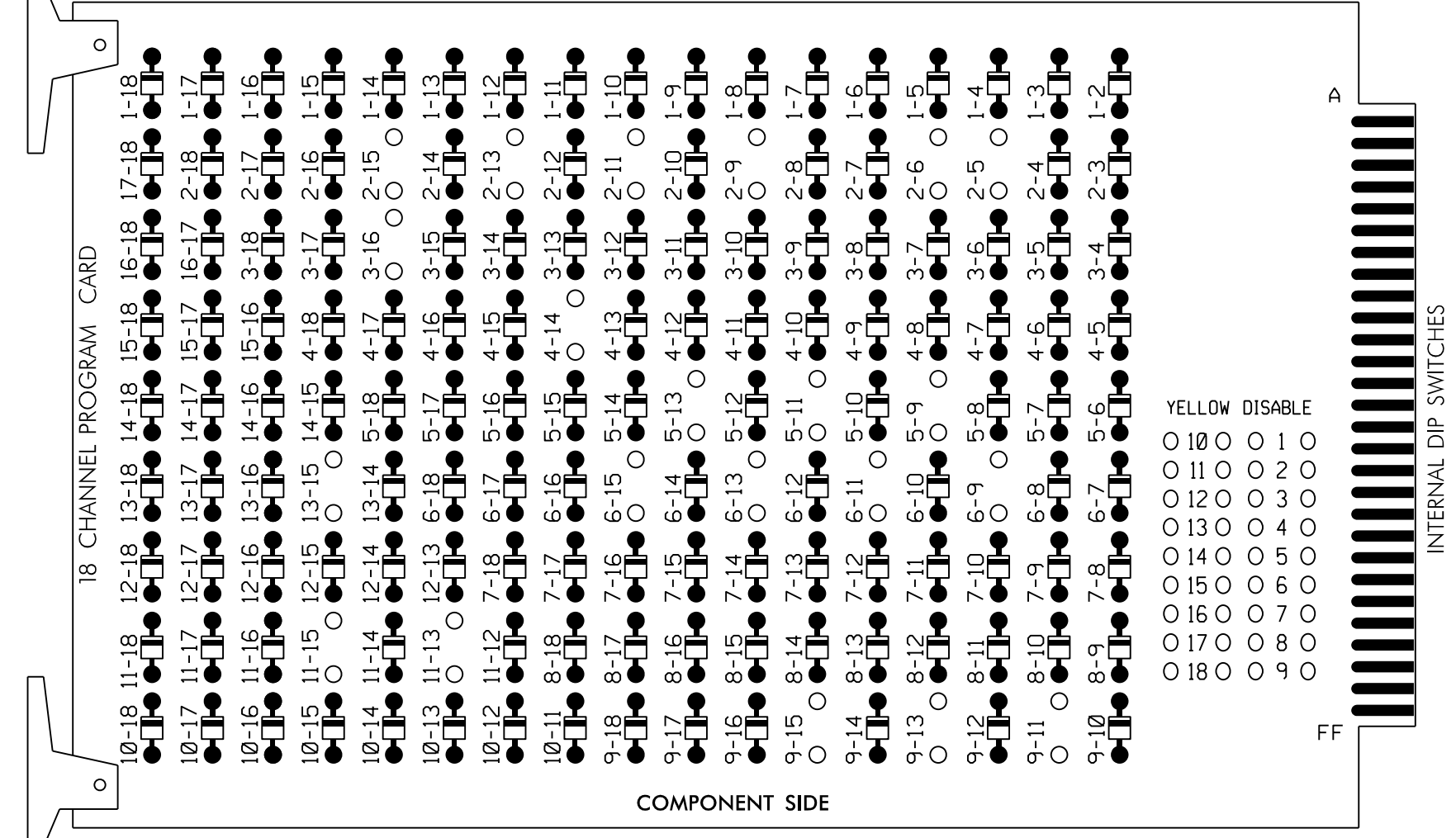
DocuSigned by:
 Regina M. Muncey
 12/16/2021
 DATE
 SIG. INVENTORY NO. 05-0119T

*****SD:TE*****
 User: r.muncey

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-16, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15, and 13-15.



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Walk and 6 Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S3,S4,S5,S6,S7,S8,S9,S12,
 AUX S1,AUX S4
 PHASES USED.....2,2PED,3,3PED,4,4PED,5,6,6PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

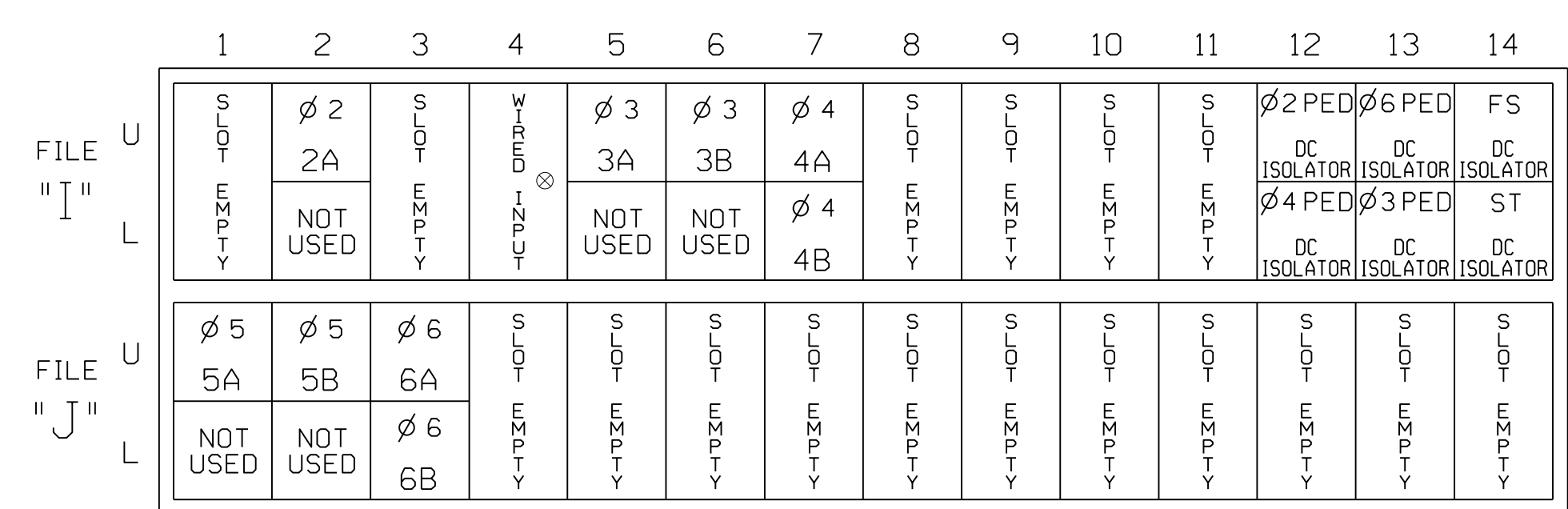
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	21,22 23	P21, P22	31	32,33	41	42,43	P41, P42	42	51	62,63 64	P61, P62	NU	NU	P31, P32	61	NU	51	NU
RED		128		116	116	101	101			*	134								
YELLOW		129		117	117	102	102				135								
GREEN		130		118	118	103	103				136								
RED ARROW													A121					A114	
YELLOW ARROW										132								A115	
FLASHING YELLOW ARROW														A123				A116	
GREEN ARROW				118		103		133	133										
Hand			113					104			119			110					
Walking			115					106			121			112					

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT (front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

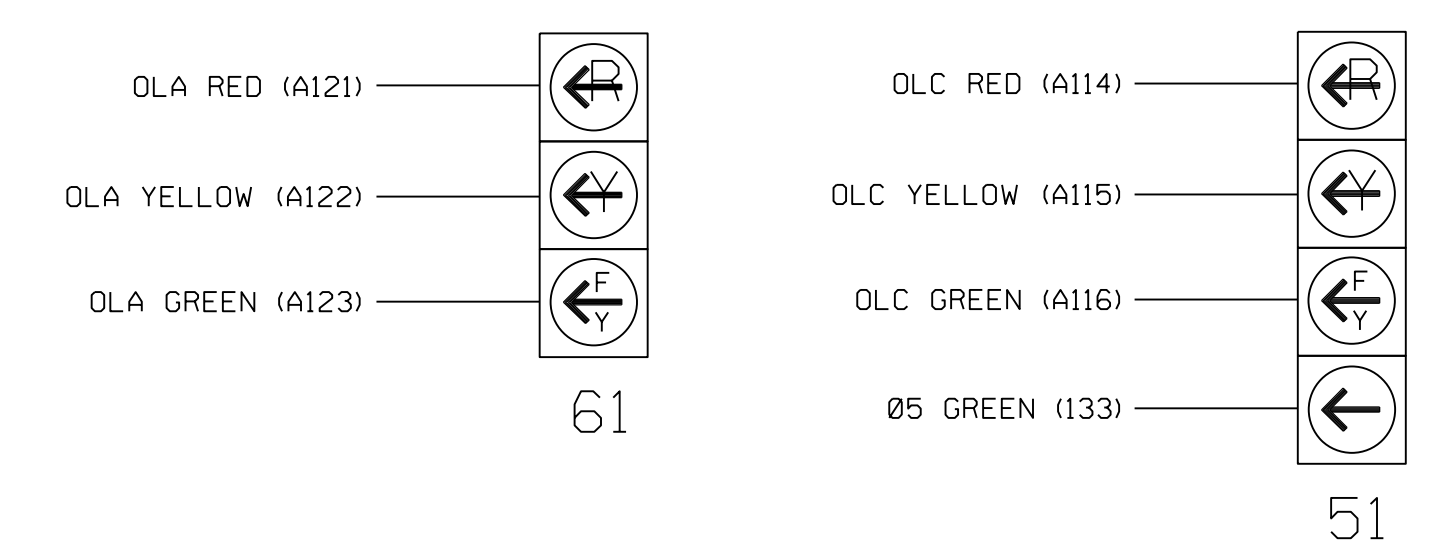
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				N
3A	TB4-5,6	I5U	58	3	3	YES		3		N
3B	TB4-9,10	I6U	41	4	3	YES		10		N
4A	TB6-1,2	I7U	65	34	4	YES		15		N
4B	TB6-3,4	I7L	78	44	4	YES		3		N
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		N
		I4U	47	22	2	YES				N
5B	TB3-5,6	J2U	40	6	5	YES		15		N
6A	TB3-9,10	J3U	64	36	6	YES				N
6B	TB3-11,12	J3L	77	46	6	YES				N

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

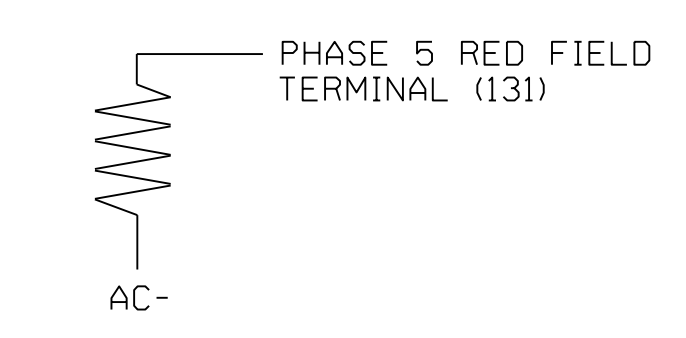
- ¹Add jumper from J1-W to I4-W, on rear of input file.
 ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

FYA SIGNAL WIRING DETAIL (wire signal heads as shown)

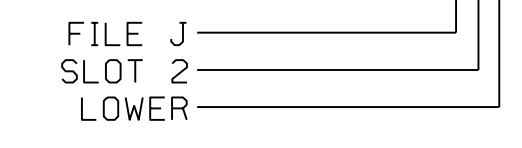


LOAD RESISTOR INSTALLATION DETAIL (install resistor as shown)

VALUE (ohms)	WATTAGE
1.5K	25W (min)
2.0K	10W (min)



INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: Ø5-Ø119T
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

Temporary Design
 Electrical Detail - Sheet 1 of 4

US 401 Bus. (Main Street) at SR 1003/1945 (Young Street)
 Division 5 Wake County Rolesville
 PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 Date Signed by: Regina M. Muncey 12/16/2021
 DATE: _____
 SIG. INVENTORY NO. 05-0119T

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

1. From Main Menu select 6. DETECTORS
2. From DETECTOR Submenu select 3. PED DETECTOR INPUT ASSIGNMENT

PED DET PHASE ASSIGNMENT MODE: NTCIP												
PHASE	1	2	3	4	5	6	7	8	9	10	11	12
DETECTOR	0	2	8	4	0	6	0	0	0	0	0	0
PHASE	9	10	11	12	13	14	15	16				
DETECTOR	0	0	0	0	0	0	0	0				

← NOTICE PED DETECTOR 8
ASSIGNED TO PHASE 3

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH ASSIGN									
PHASE	DIMMING	---FLASH---							
/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	Y	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	Y	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	Y	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	3	P	.	.	.	-	A	.	.

NOTICE PHASE 3 PED
ASSIGNED TO LD SWITCH 16 →

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL (program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A
Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

TMG VEH OVLP... [A]	TYPE:	OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	INCLUDED	. X
PROTECT	. . . . .
PED PRTC	. . . . .
NOT OVLP	. . . . .
FLSH GRN	. 1	
LAG X PH	. . . . .
LAG 2 PH	. . . . .
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0		

Toggle Twice

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP... [C]	TYPE:	PPLT FYA
PROTECTED LEFT TURN....	PHASE	5
OPPOSING THROUGH.....	PHASE	6
FLASHING ARROW OUTPUT.....	CH11	ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0		
ACTION PLAN SF BIT DISABLE.....	5	

← NOTICE ACTION
PLAN SF BIT "5"

END PROGRAMMING

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0119T
DESIGNED: DECEMBER 2021
SEALED: 12/16/2021
REVISED: N/A

Temporary Design
Electrical Detail - Sheet 2 of 4

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 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	Prepared for the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529	US 401 Bus. (Main Street) at SR 1003/1945 (Young Street)	 REGINA M. MUNCEY ENGINEER SEAL 43239 NORTH CAROLINA PROFESSIONAL									
		Division 5 Wake County Rolesville PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris PREPARED BY: D A Waller REVIEWED BY: R M Muncey										
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REVISIONS	INIT.	DATE										

11:17:22 AM
U:\Projects\cbs\signal\asc\asc\Temporary Design\U-6241...stg-el\el_05-0119T.dgn
User: rmuncey

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
      FROM          TO
PHASE TIMING.... . > PHASE TIMING.... .
TIMING PLAN.... . > TIMING PLAN.... .
PH DET OPT PLAN. . > PH DET OPT PLAN. .
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
      TOGGLE TO SELECT A "FROM" AND A "TO"
      THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".
- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "3".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
      5 5 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

→ ENSURE PHASE IS SET TO "0"

```

VEH DETECTOR [22] VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
      22 0 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-0119T
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

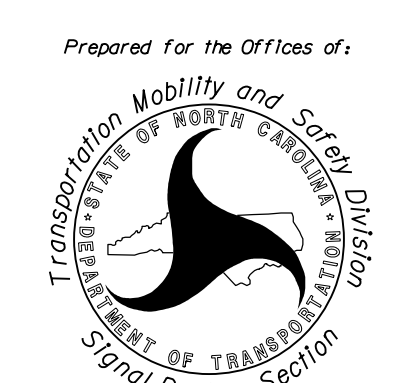
Temporary Design
Electrical Detail - Sheet 3 of 4

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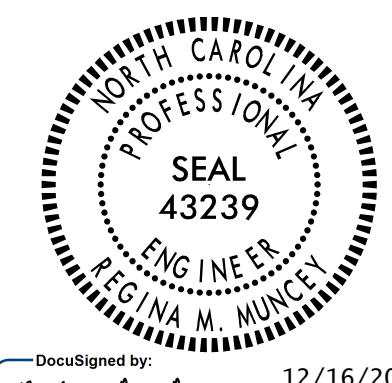
US 401 Bus. (Main Street)
 at
 SR 1003/1945 (Young Street)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris

PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE



Regina M. Muncey 12/16/2021

SIG. INVENTORY NO. 05-0119T

11:57:31 AM
U:\Traffic\cbs\signal\04as\gn\electr\local\Detail\sig\Temporary Design\U-6241...stg.ele.05-0119T.dgn
User:rmuncey

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

<u>PHASING</u>	<u>VEH DET PLAN</u>	<u>SF BITS ENABLED</u>
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

```

ACTION PLAN...[ 1]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 2   DET LOG.....NONE
FLASH..... --      RED REST..... NO
VEH DET DIAG PLN... 0   PED DET DIAG PLN..0
DIMMING ENABLE.. NO   PRIORITY RETURN. NO
PED PR RETURN.. NO   QUEUE DELAY..... NO
PMT COND DELAY   NO

  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  .  .  .  .  X  .  .  .  .  .  .  .  .  .  .  .
AUX FCT  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0119T
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

Temporary Design
 Electrical Detail - Sheet 4 of 4

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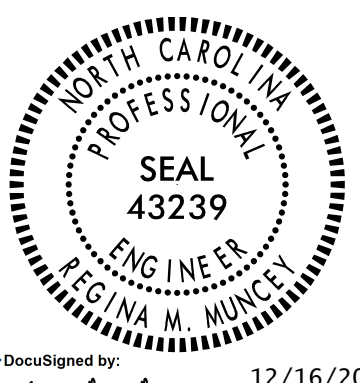


750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Main Street)
 at
 SR 1003/1945 (Young Street)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: D A Waller	REVIEWED BY: R M Muncey
REVISIONS	INIT. DATE



Date Signed by: **Regina M. Muncey** 12/16/2021
 DATE

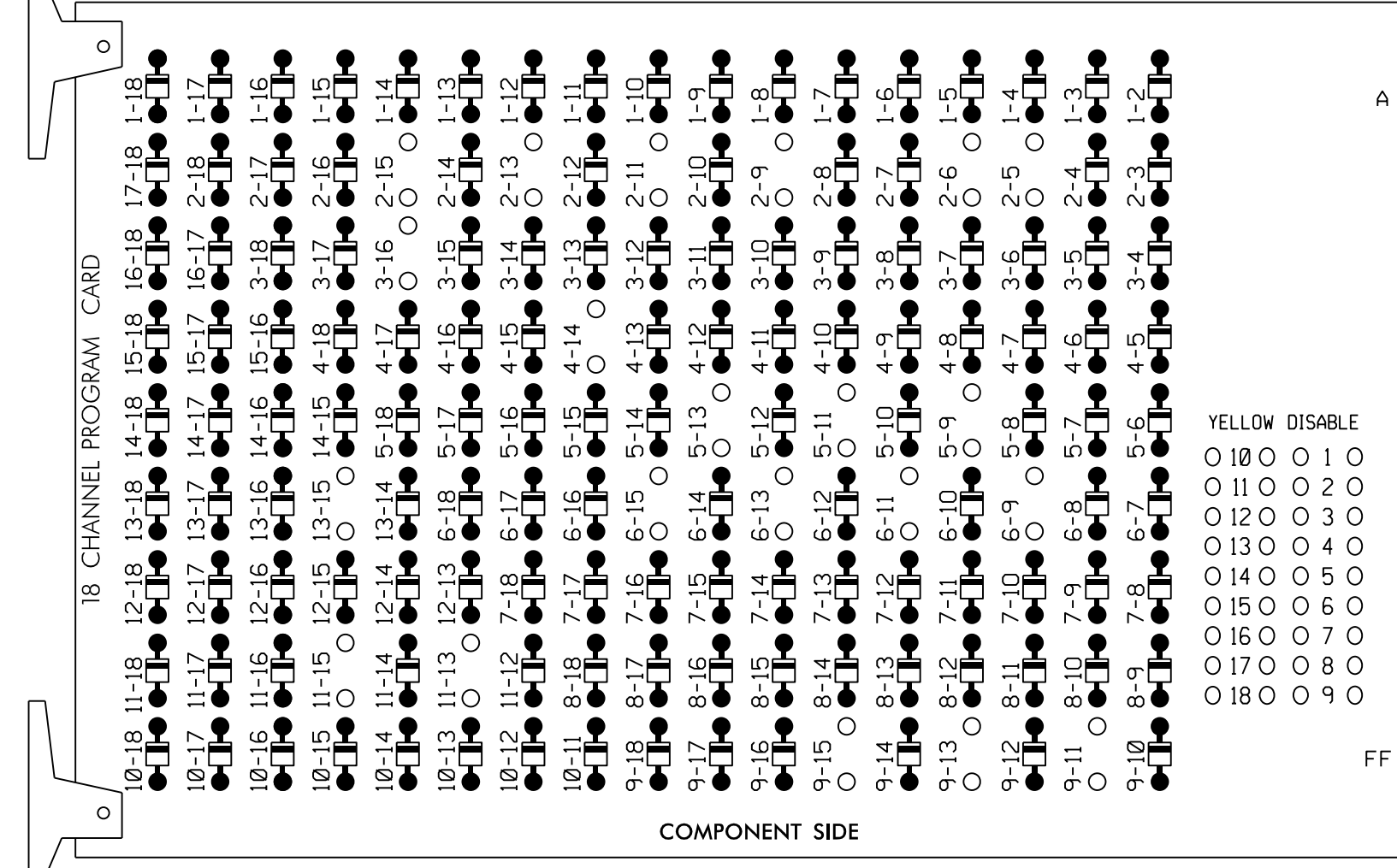
SIG. INVENTORY NO. 05-0119T

11:57:40 AM
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 User: rmuncey

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-16, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15, and 13-15.



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Walk and 6 Walk.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all enabled detectors.
- The cabinet and controller are part of the (Rolesville) System.

EQUIPMENT INFORMATION

CONTROLLER.....2070E
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S3,S4,S5,S6,S7,S8,S9,S12,
 AUX S1,AUX S4
 PHASES USED.....2,2PED,3,3PED,4,4PED,5,6,6PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

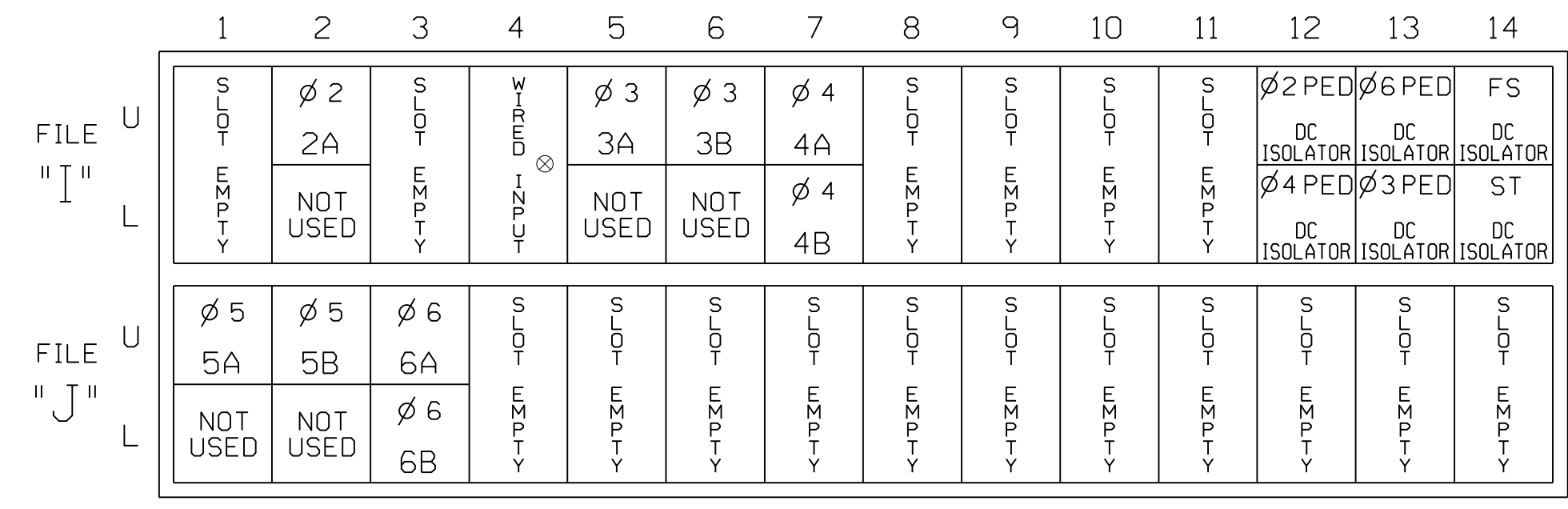
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	3 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	21,22 23	P21, P22	31	32,33	41	42,43	P41, P42	42	51*	62,63	P61, P62	NU	NU	P31, P32	61*	NU	51*	NU
RED		128		116	116	101	101			*	134								
YELLOW		129		117	117	102	102				135								
GREEN		130		118	118	103	103				136								
RED ARROW													A121					A114	
YELLOW ARROW										132					A122			A115	
FLASHING YELLOW ARROW															A123			A116	
GREEN ARROW				118		103		133	133										
Hand			113					104			119		110						
Walking			115					106			121		112						

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

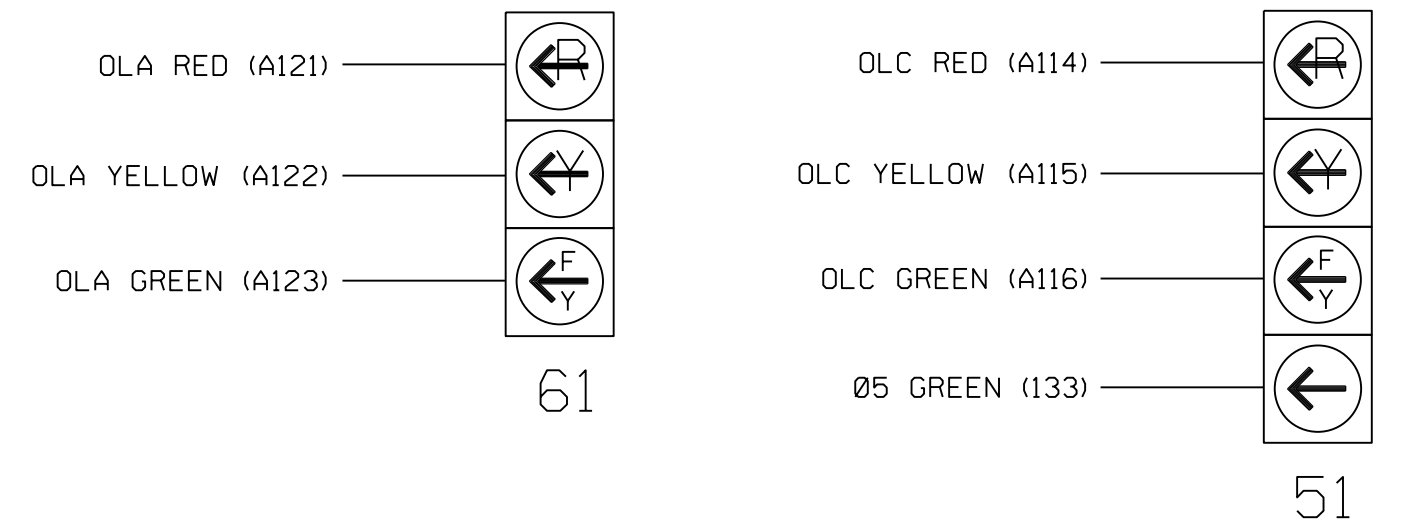
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				N
3A	TB4-5,6	I5U	58	3	3	YES		3		N
3B	TB4-9,10	I6U	41	4	3	YES		10		N
4A	TB6-1,2	I7U	65	34	4	YES		15		N
4B	TB6-3,4	I7L	78	44	4	YES		3		N
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		N
	-	I4U	47	22	2	YES				N
5B	TB3-5,6	J2U	40	6	5	YES		15		N
6A	TB3-9,10	J3U	64	36	6	YES				N
6B	TB3-11,12	J3L	77	46	6	YES				N

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- ¹Add jumper from J1-W to I4-W, on rear of input file.
 ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheets 3 and 4.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

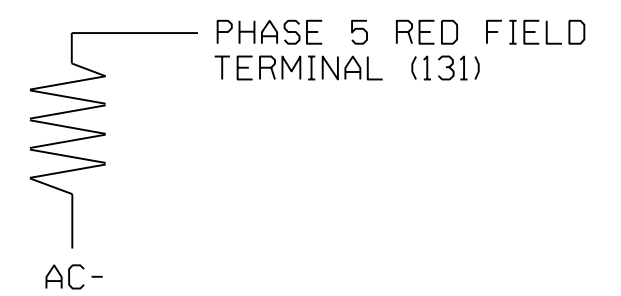


LOAD RESISTOR INSTALLATION DETAIL

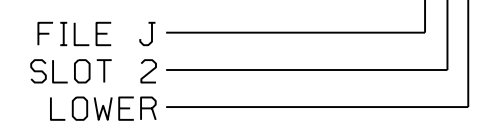
(install resistor as shown)

ACCEPTABLE VALUES

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



INPUT FILE POSITION LEGEND:



Final Design
 Electrical Detail - Sheet 1 of 4

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Prepared for the Offices of:
 NORTH CAROLINA PROFESSIONAL ENGINEER
 REGINA M. MUNCEY
 750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Main Street)
 at
 SR 1003/1945 (Young Street)
 Division 5 Wake County Rolesville
 PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris
 PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0119
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

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Regina M. Muncey 12/16/2021
 DATE
 SIG. INVENTORY NO. 05-0119

ECONOLITE ASC/3-2070 PED 3 PROGRAMMING ASSIGNMENT DETAIL

(program controller as shown)

1. From Main Menu select 6. DETECTORS
2. From DETECTOR Submenu select 3. PED DETECTOR INPUT ASSIGNMENT

PED DET PHASE ASSIGNMENT MODE: NTCIP												
PHASE	1	2	3	4	5	6	7	8	9	10	11	12
DETECTOR	0	2	8	4	0	6	0	0	0	0	0	0
PHASE	9	10	11	12	13	14	15	16				
DETECTOR	0	0	0	0	0	0	0	0				

← NOTICE PED DETECTOR 8
ASSIGNED TO PHASE 3

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH ASSIGN									
PHASE	DIMMING	---FLASH---							
/OVLP	TYPE	R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X
2	2	V	.	.	.	+	A	Y	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	6	V	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	Y	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	Y	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	3	P	.	.	.	-	A	.	.

NOTICE PHASE 3 PED
ASSIGNED TO LD SWITCH 16 →

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

TMG VEH OVLP... [A]	TYPE:	OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6	INCLUDED	. X
PROTECT	. . . . .
PED PRTC	. . . . .
NOT OVLP	. . . . .
FLSH GRN	. 1	
LAG X PH	. . . . .
LAG 2 PH	. . . . .
LAG GRN 0.0	YEL 0.0	RED 0.0
ADV GRN 0.0		

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP... [C]	TYPE:	PPLT FYA
PROTECTED LEFT TURN....	PHASE	5
OPPOSING THROUGH.....	PHASE	6
FLASHING ARROW OUTPUT.....	CH11	ISOLATE
DELAY START OF: FYA..0.0	CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE.....	5	

← NOTICE ACTION
PLAN SF BIT "5"

END PROGRAMMING

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 05-0119
DESIGNED: DECEMBER 2021
SEALED: 12/16/2021
REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 4

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		REVISIONS INIT. DATE _____ _____ _____	DocuSigned by: Regina M. Muncy 12/16/2021 _____ DATE _____ _____ SIG. INVENTORY NO. 05-0119

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 User: rlmuncy

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
      FROM          TO
PHASE TIMING.... . > PHASE TIMING.... .
TIMING PLAN.... . > TIMING PLAN.... .
PH DET OPT PLAN. . > PH DET OPT PLAN. .
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
      TOGGLE TO SELECT A "FROM" AND A "TO"
      THEN PRESS ENTER
  
```

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".
 - Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "3".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
      5 5 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "2".
- Set assigned phase to "0".

→ ENSURE PHASE IS SET TO "0"

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: N-NTCIP
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
      22 0 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0119
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 REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 4

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		<small>PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris</small> <small>PREPARED BY: D A Waller REVIEWED BY: R M Muncey</small>		<table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE			
REVISIONS	INIT.	DATE								

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Date Signed by: Regina M. Muncey 12/16/2021
 Date: _____
 Signature: _____
 Date: _____
 SIG. INVENTORY NO. 05-0119

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	5

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  .  .  .  .  X  .  .  .  .  (1-8)
AUX FCT  .  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .

```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 05-0119
 DESIGNED: DECEMBER 2021
 SEALED: 12/16/2021
 REVISED: N/A

Final Design
Electrical Detail - Sheet 4 of 4

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Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529


US 401 Bus. (Main Street)
 at
 SR 1003/1945 (Young Street)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris

PREPARED BY: D A Waller REVIEWED BY: R M Muncey

REVISIONS	INIT.	DATE

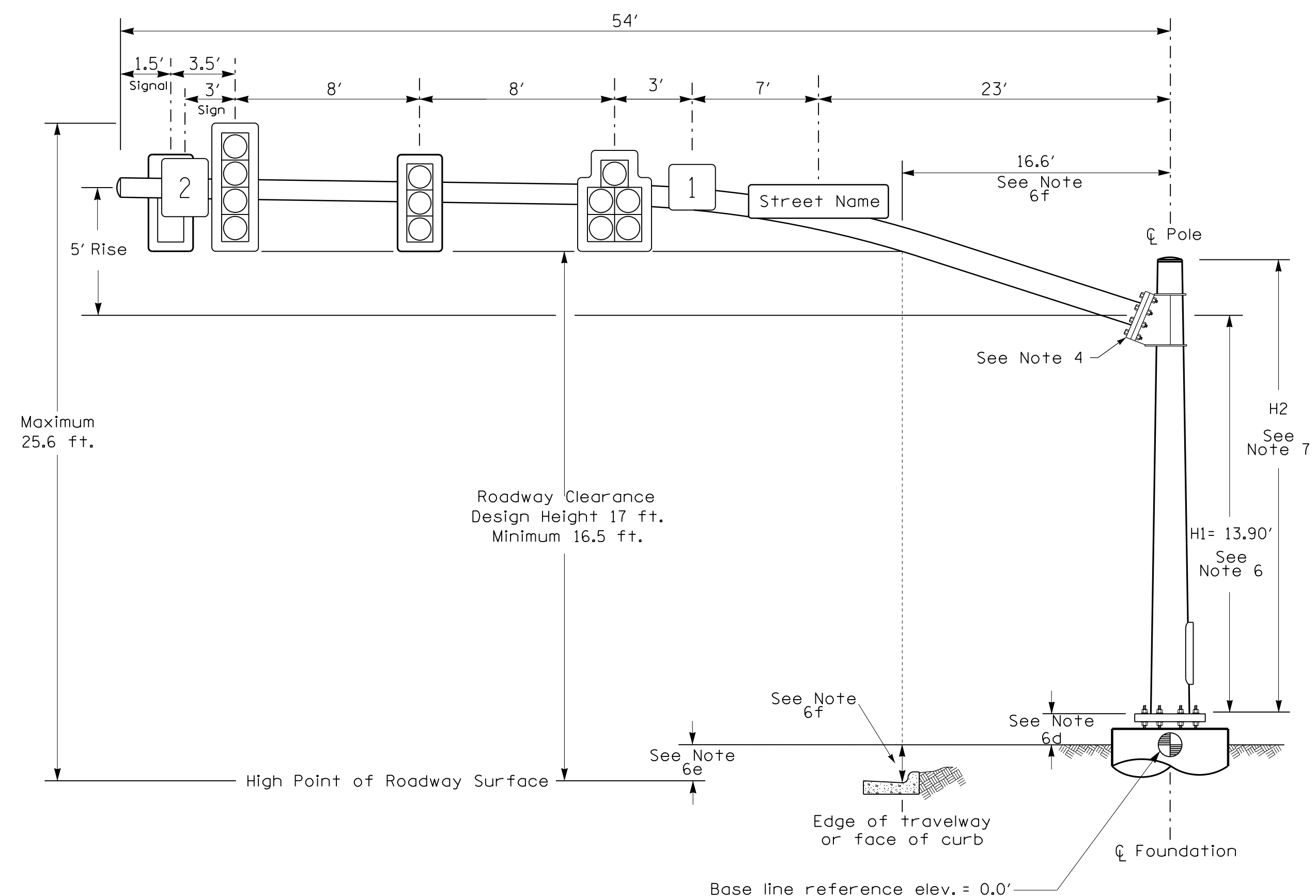


Regina M. Muncey
 12/16/2021

SIG. INVENTORY NO. 05-0119

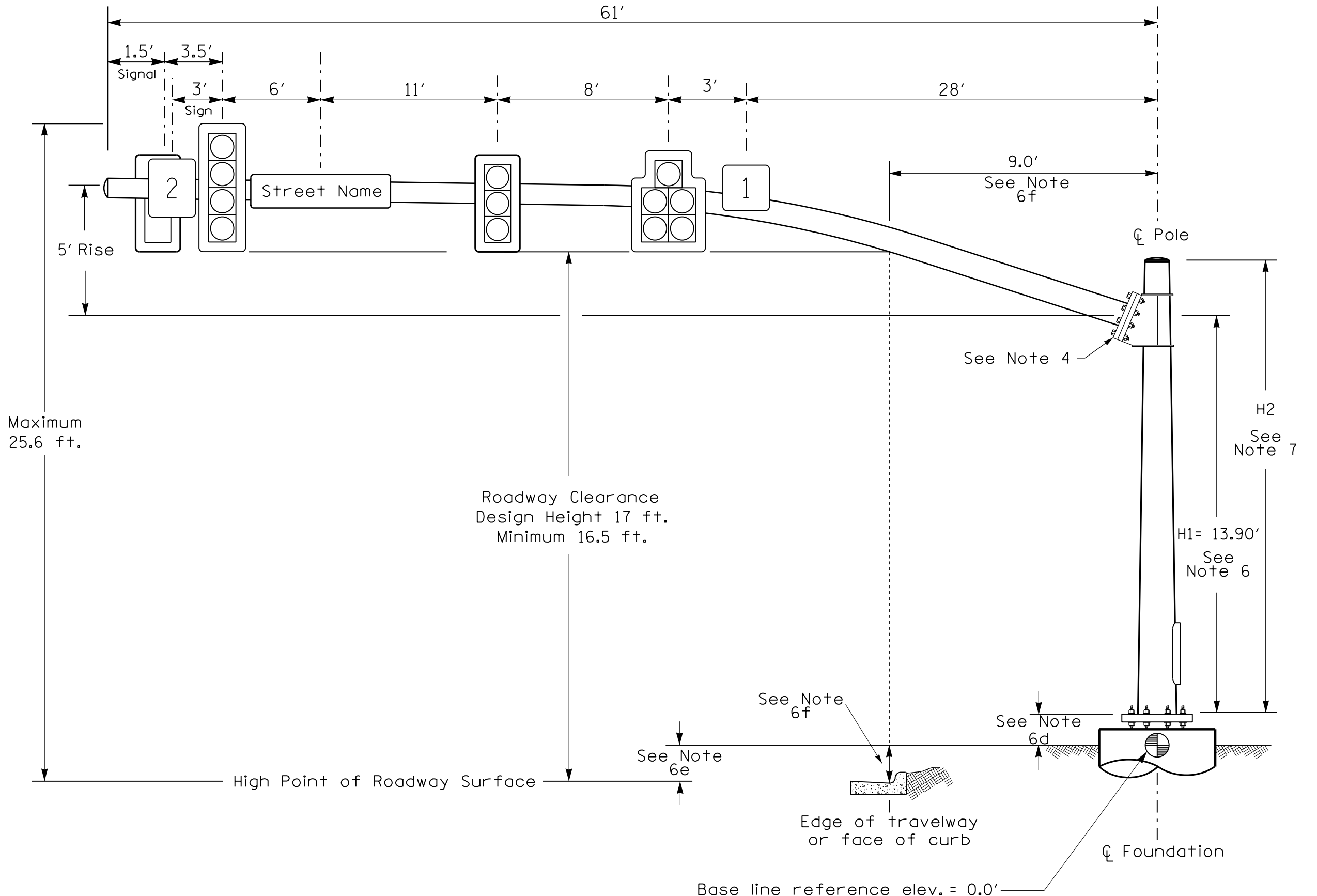
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User:rmuncey

Design Loading for METAL POLE NO. 9



Elevation View

Design Loading for METAL POLE NO. 10



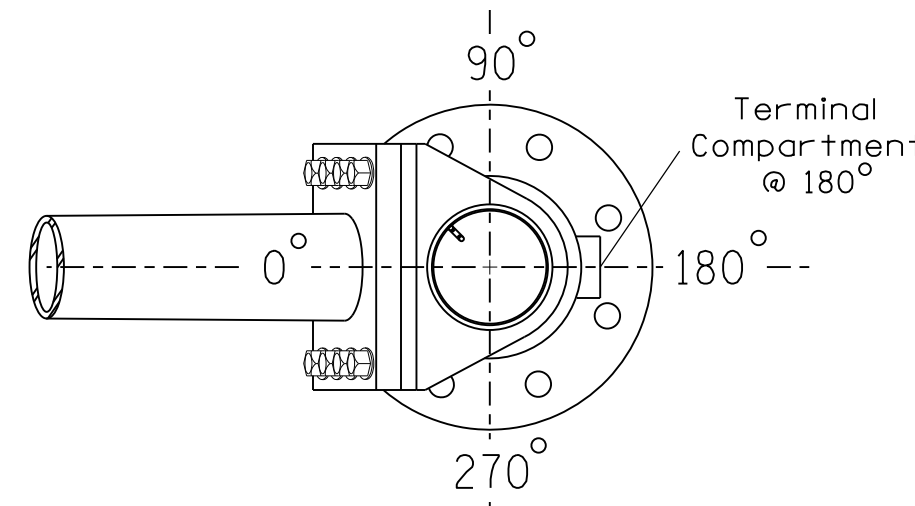
Elevation View

SPECIAL NOTE

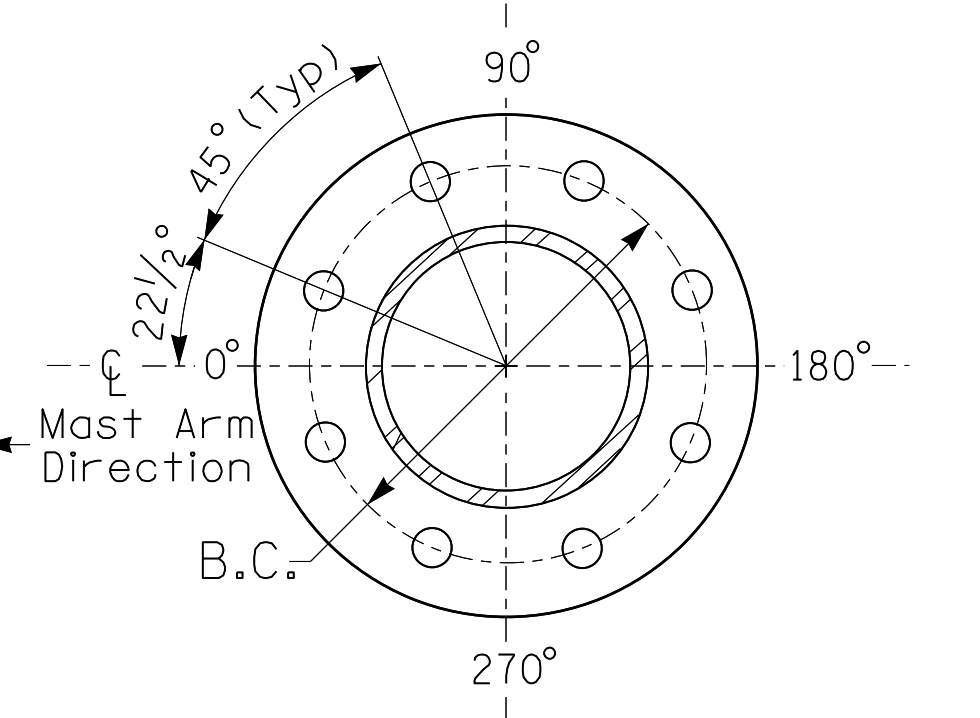
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

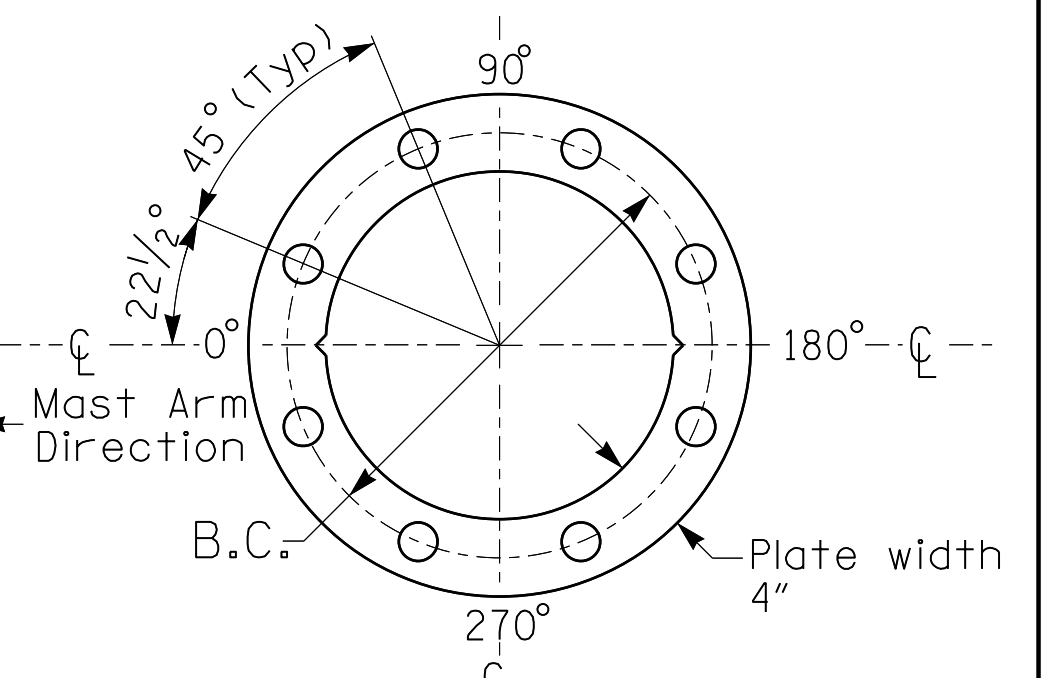
Elevation Differences for:	Pole 9	Pole 10
Baseline reference point at ϕ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.14 ft.	-0.17 ft.
Elevation difference at Edge of travelway or face of curb	-0.20 ft.	-0.61 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT
LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 9 and 10

MAST ARM LOADING SCHEDULE				
LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0" W X 56.0" L	103 LBS
1	SIGN RIGID MOUNTED	6.25 S.F.	30.0" W X 30.0" L	11 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

All metal poles and arms should be black in color as specified in the project special provisions.

NCDOT Wind Zone 4 (90 mph)

US 401 Bus. (Main Street) at SR 1003/1945 (Young Street)

Division 5 Wake County Rolesville

PLAN DATE: DECEMBER 2021 REVIEWED BY: D Harris

PREPARED BY: J Hambricht REVIEWED BY: R M Muncey

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 N/A

REVISIONS: _____

INIT. DATE

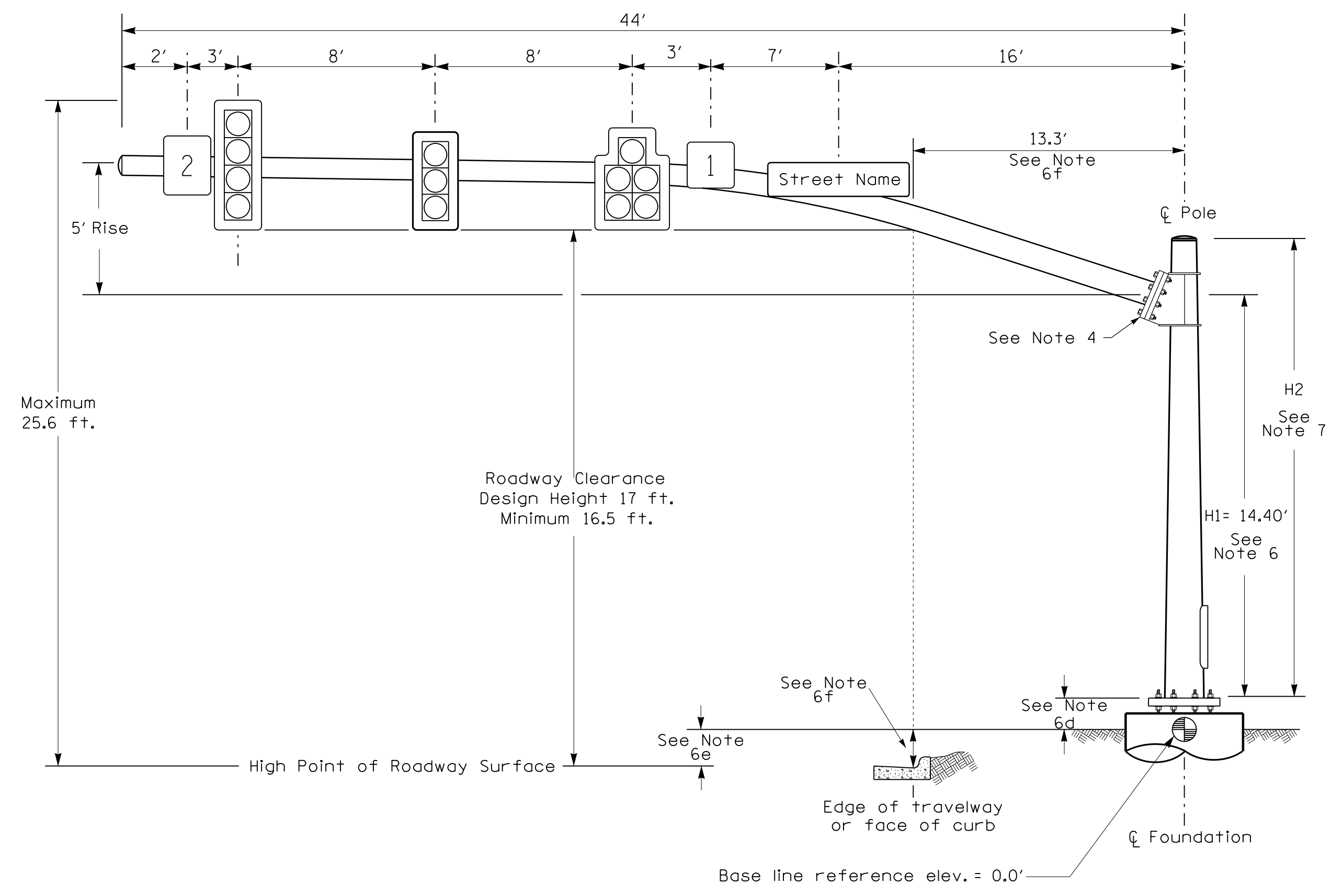
Seal: REGINA M. MUNCEY, PROFESSIONAL ENGINEER, SEAL 43239

Documented by: REGINA M. MUNCEY 12/16/2021

SIG. INVENTORY NO. 05-0119

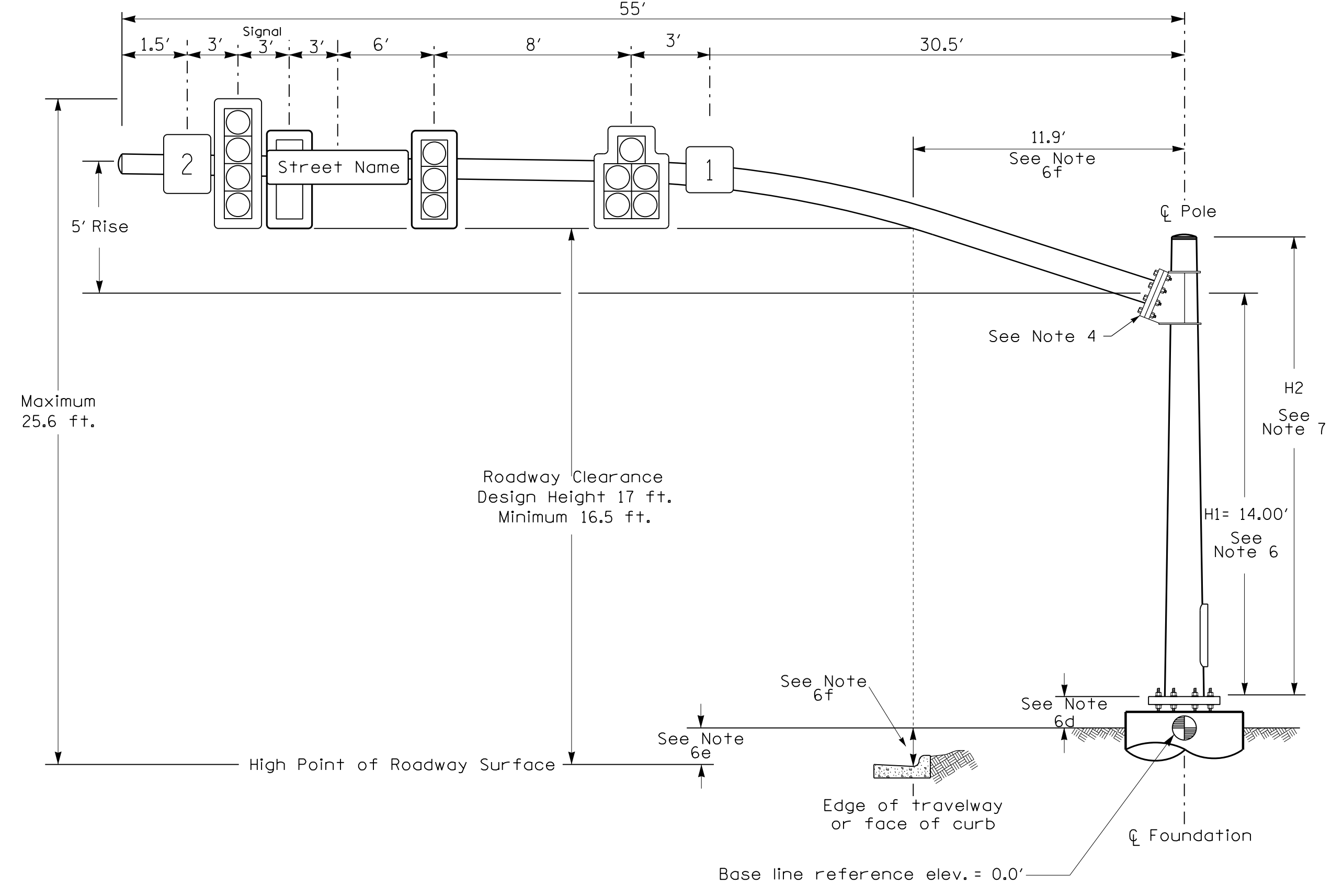
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 User: rrmuncey

Design Loading for METAL POLE NO. 11



Elevation View

Design Loading for METAL POLE NO. 12



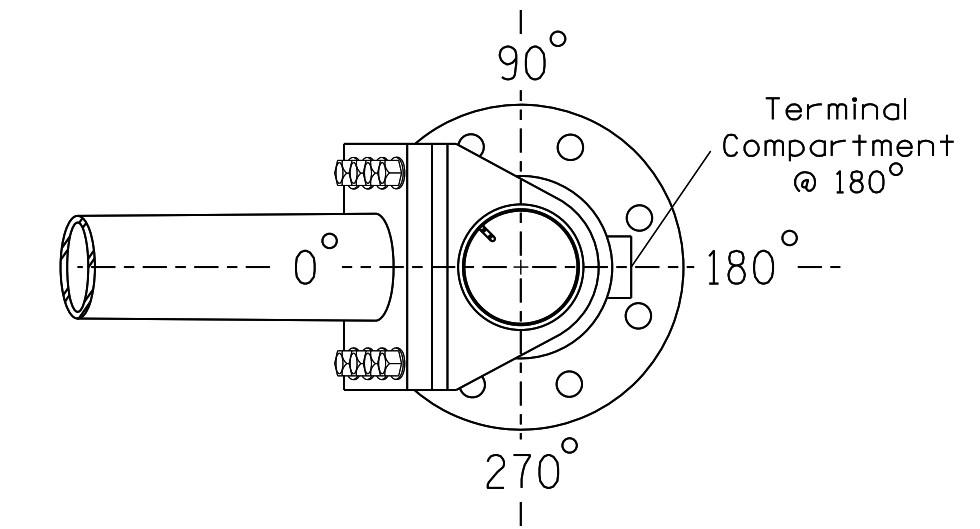
Elevation View

SPECIAL NOTE

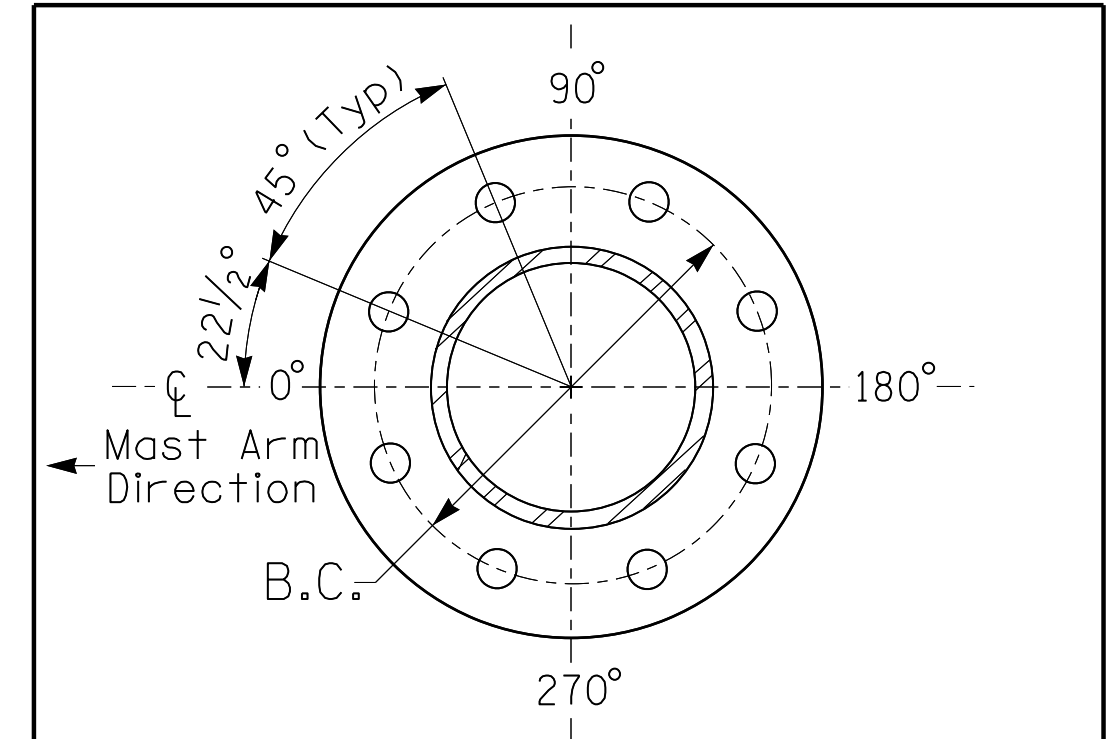
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

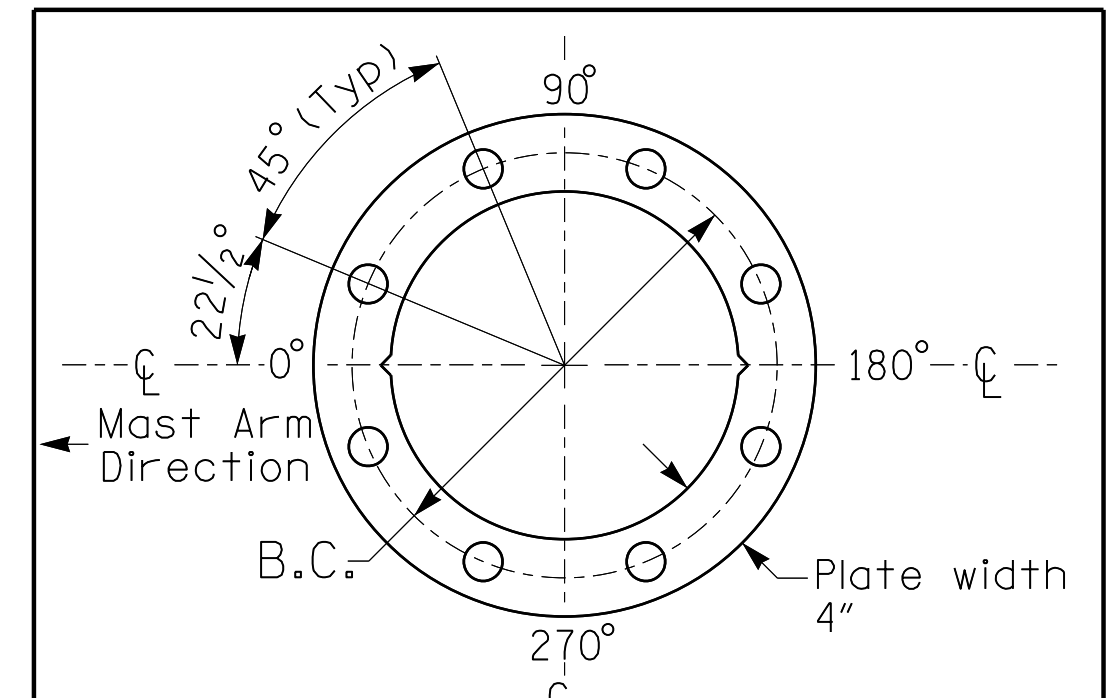
Elevation Differences for:	Pole 11	Pole 12
Baseline reference point at \odot Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	+0.33 ft.	-0.03 ft.
Elevation difference at Edge of travelway or face of curb	-0.19 ft.	+0.40 ft.



POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL
See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL
For 8 Bolt Base Plate

METAL POLE No. 11 and 12

PROJECT REFERENCE NO.	SHEET NO.
U-6241	SIG. 7.6

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12"3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0"W X 56.0"L	103 LBS
1	SIGN RIGID MOUNTED	6.25 S.F.	30.0"W X 30.0"L	11 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0"W X 36.0"L	14 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0"W X 96.0"L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

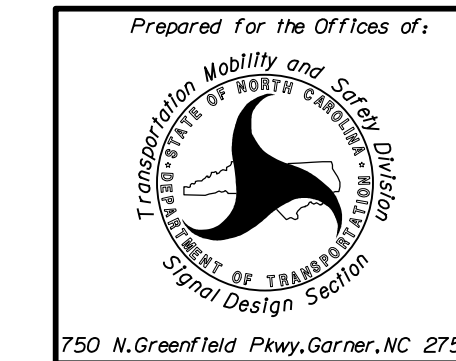
DESIGN REQUIREMENTS

- Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using stress ratios that do not exceed 0.9.
- A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
 - Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
 - Signal heads are rigidly mounted and vertically centered on the mast arm.
 - The roadway clearance height for design is as shown in the elevation views.
 - The top of the pole base plate is 0.75 feet above the ground elevation.
 - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
 - Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
 - Mast arm attachment height (H1) plus 2 feet, or
 - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

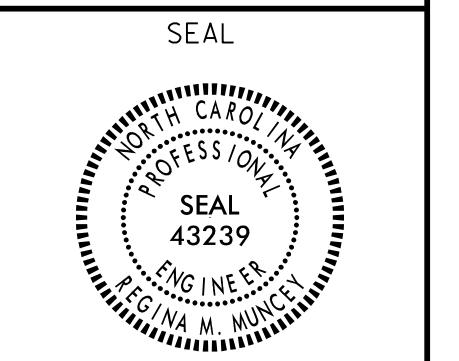
All metal poles and arms should be black in color as specified in the project special provisions.

NCDOT Wind Zone 4 (90 mph)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



US 401 Bus. (Main Street) at SR 1003/1945 (Young Street)	
Division 5	Wake County
PLAN DATE: DECEMBER 2021	REVIEWED BY: D Harris
PREPARED BY: J Hambricht	REVIEWED BY: R M Muncy



SCALE	REVISIONS	INIT.	DATE
0 N/A			
N/A			

REVISIONS	INIT.	DATE

Documented by: Regina M. Muncy
DATE: 12/16/2021
SIG. INVENTORY NO. 05-0119

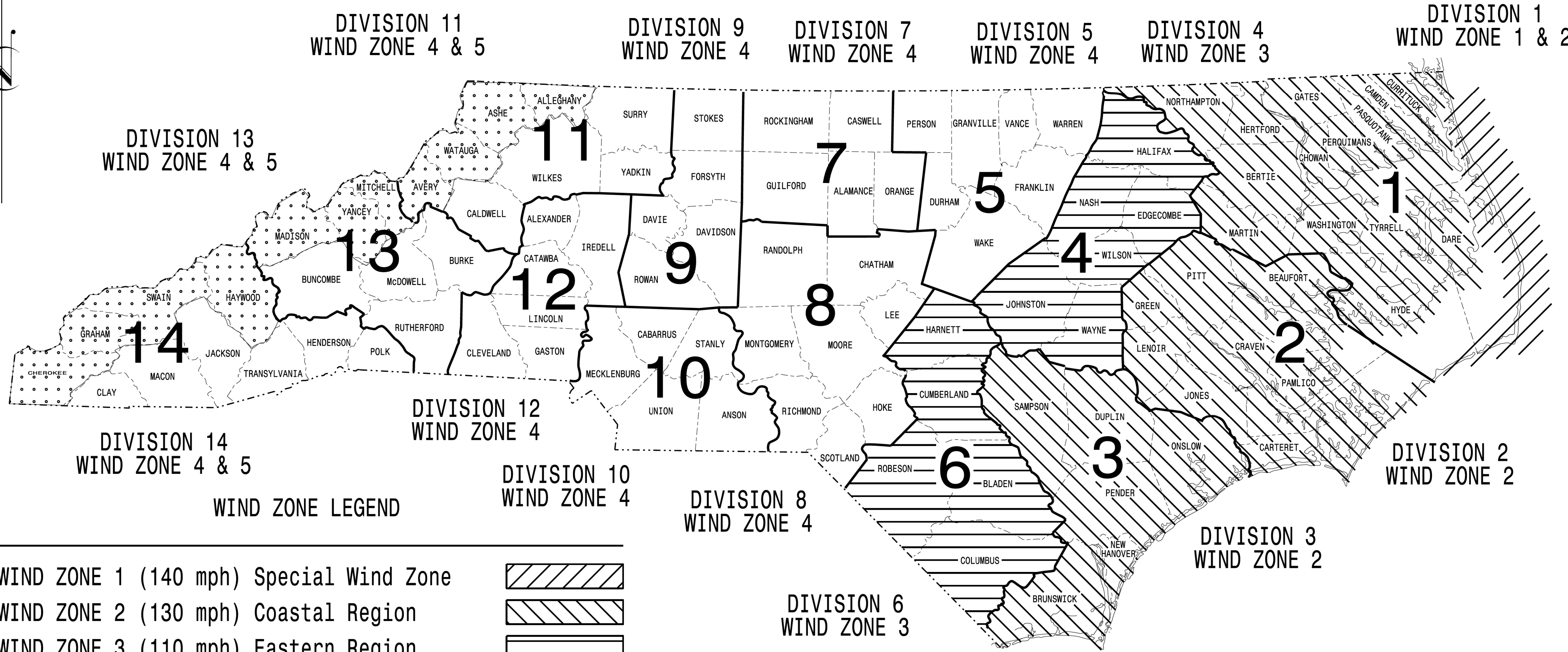
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NCDOT METAL POLE STANDARDS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT I.D. NO.	SHEET NO.
U-6241	Sig.M1

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared in the Offices of:

750 N. Greenfield Pkwy.
Garner, NC 27529

Designed in conformance
with the latest
2015 Interim to the
6th Edition 2013
AASHTO
Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

M.M. MCDIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

J. P. GALLOWAY, P.E. - STATE SIGNALS ENGINEER

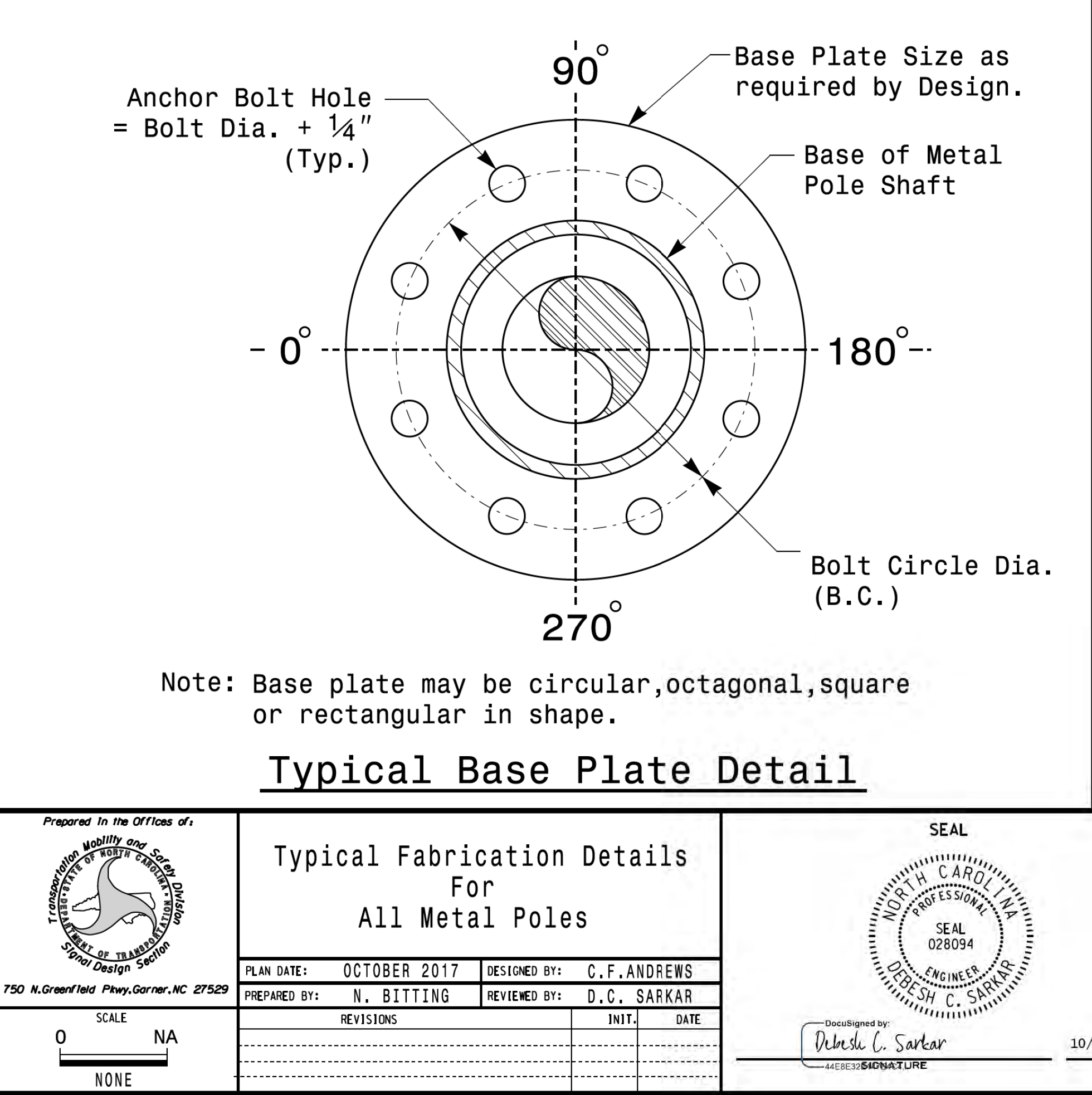
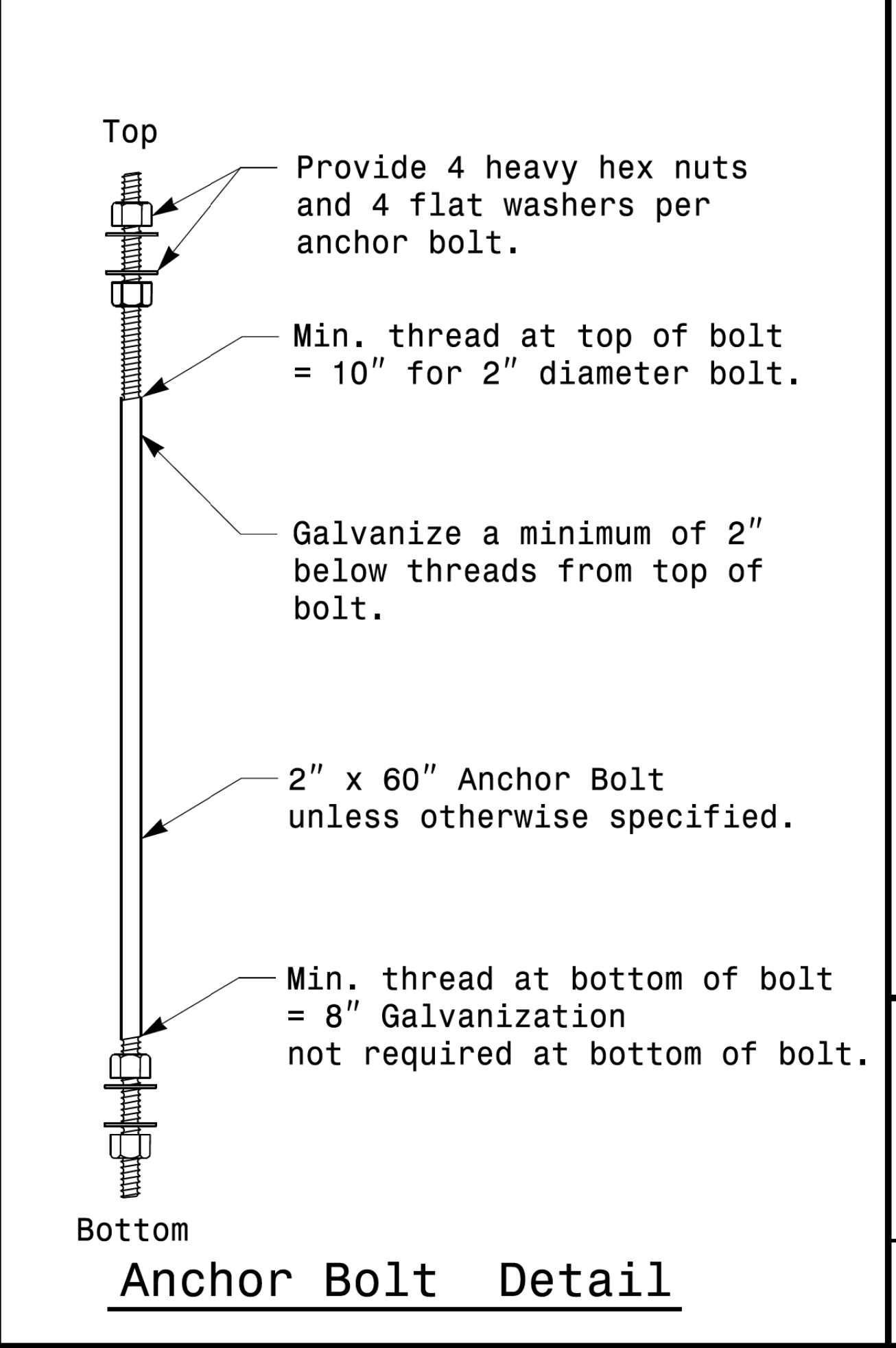
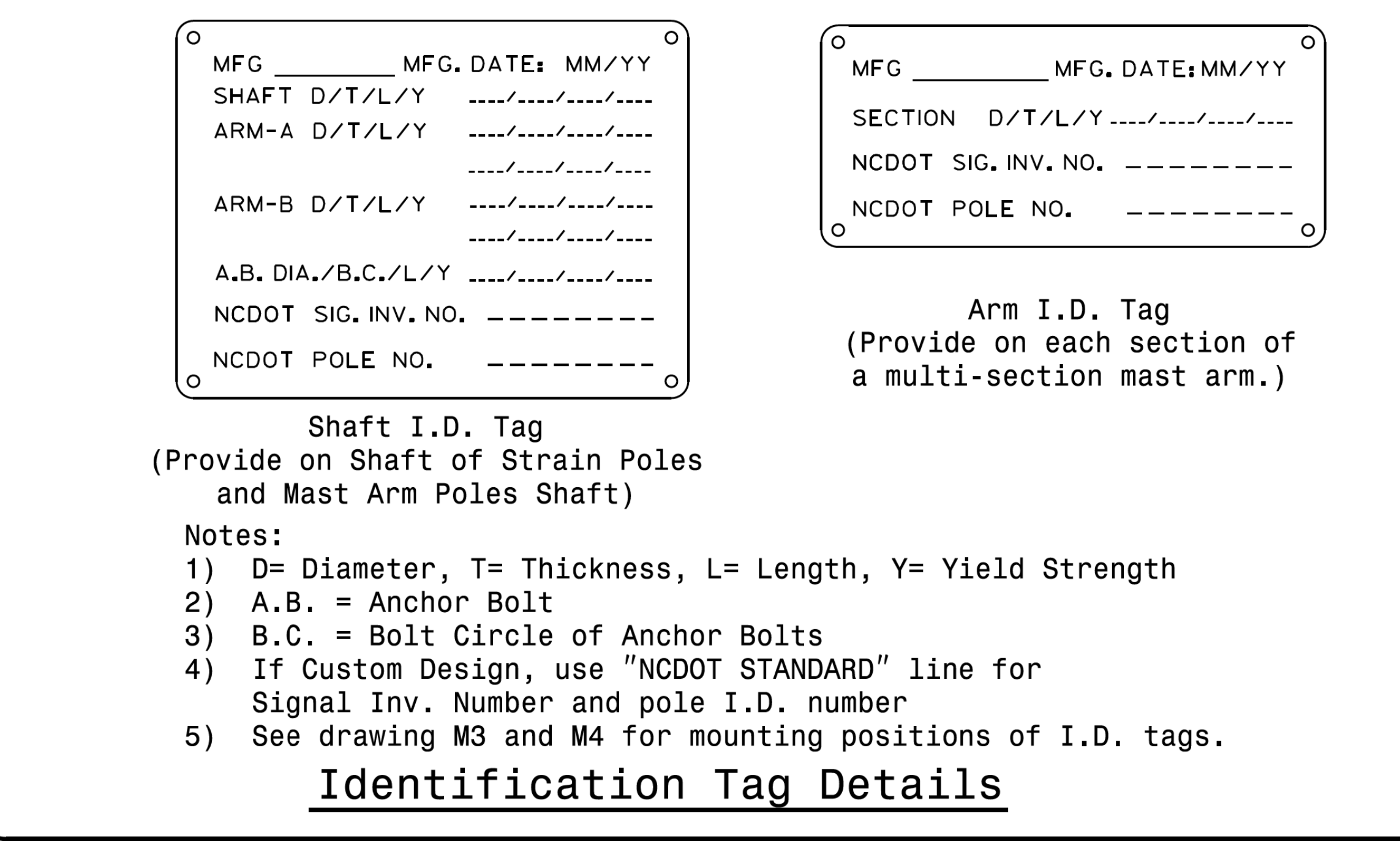
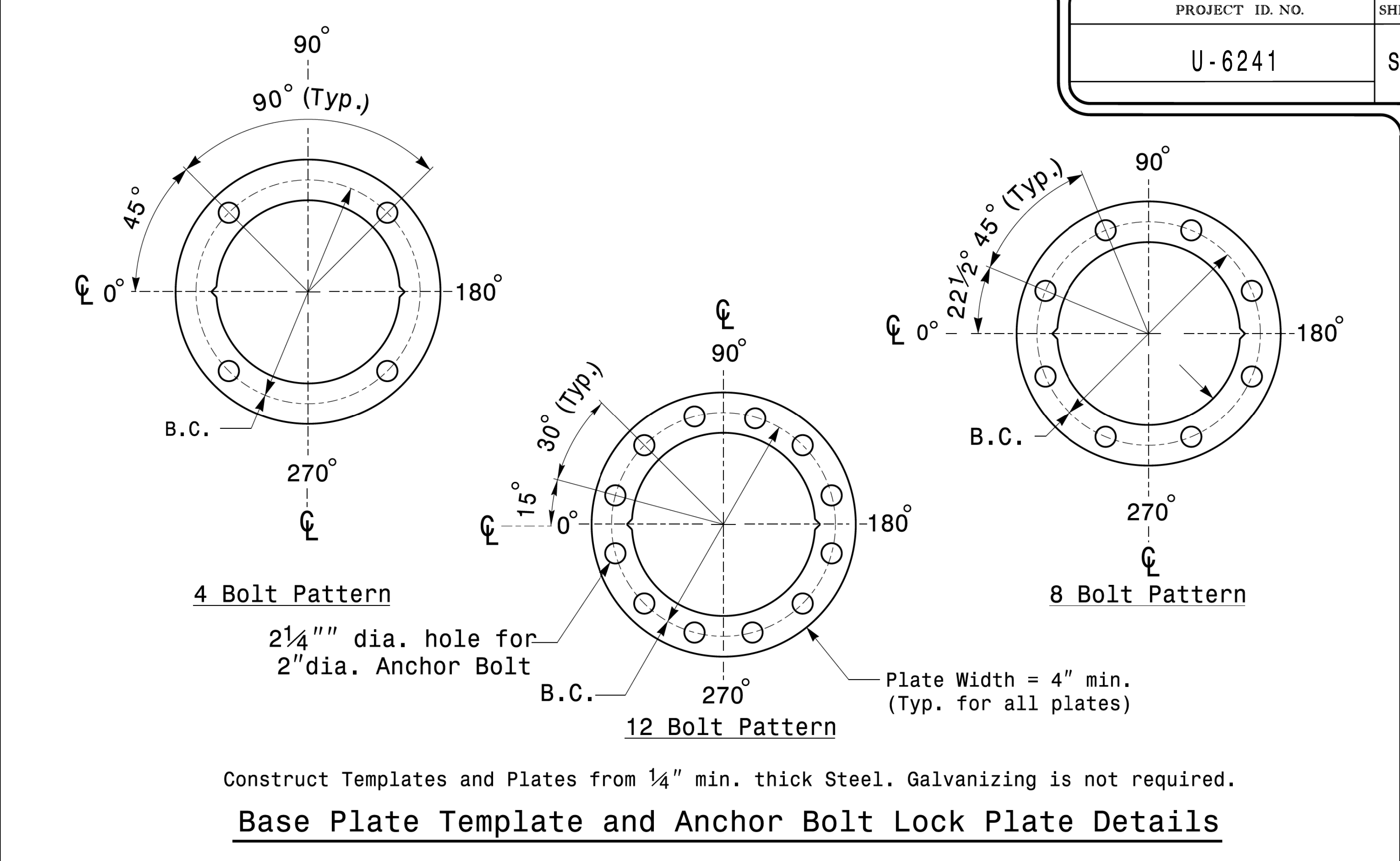
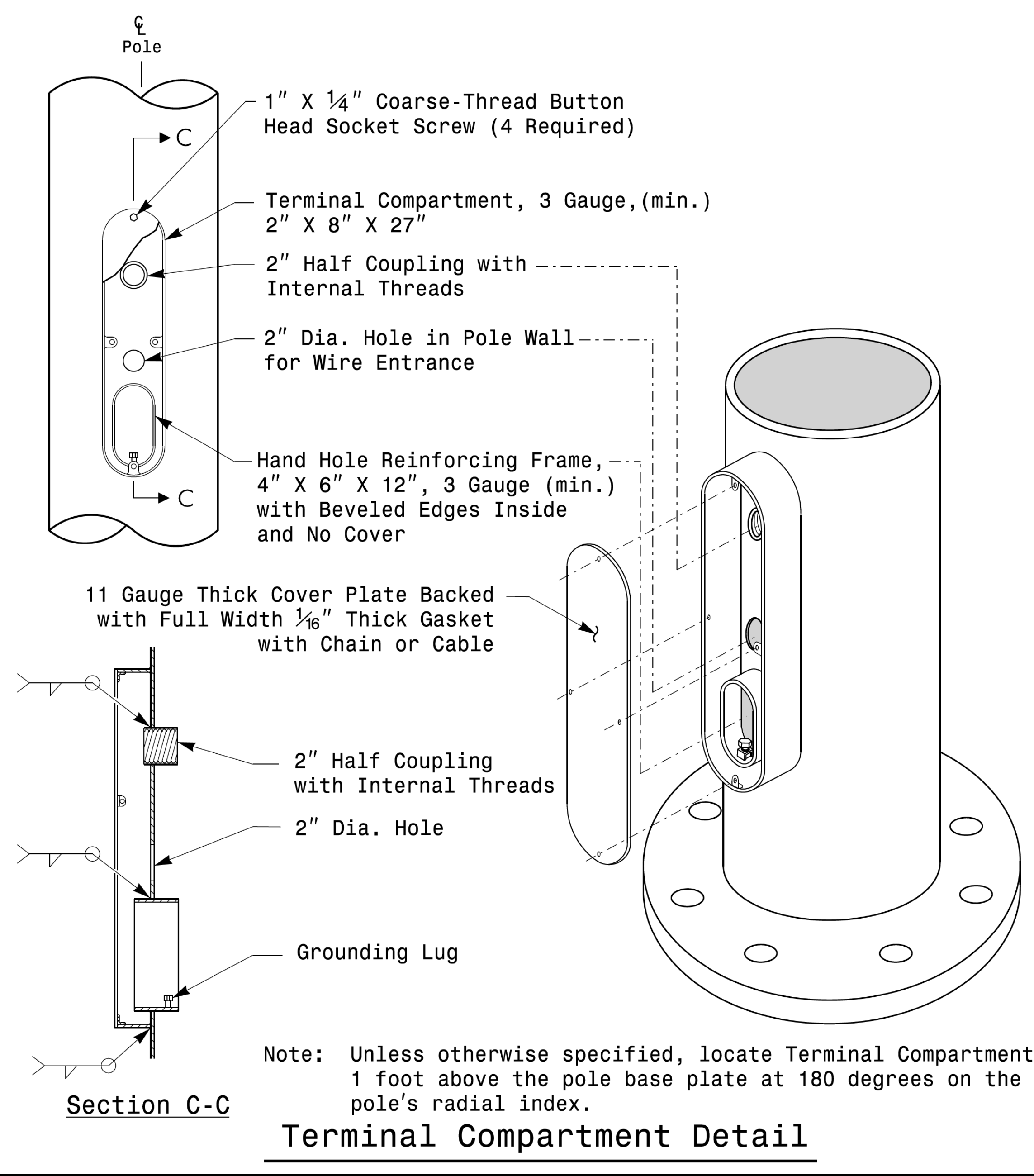
D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

SEAL

DocuSigned by:
Debesh C. Sarkar
SIGNATURE

10/11/2017
DATE

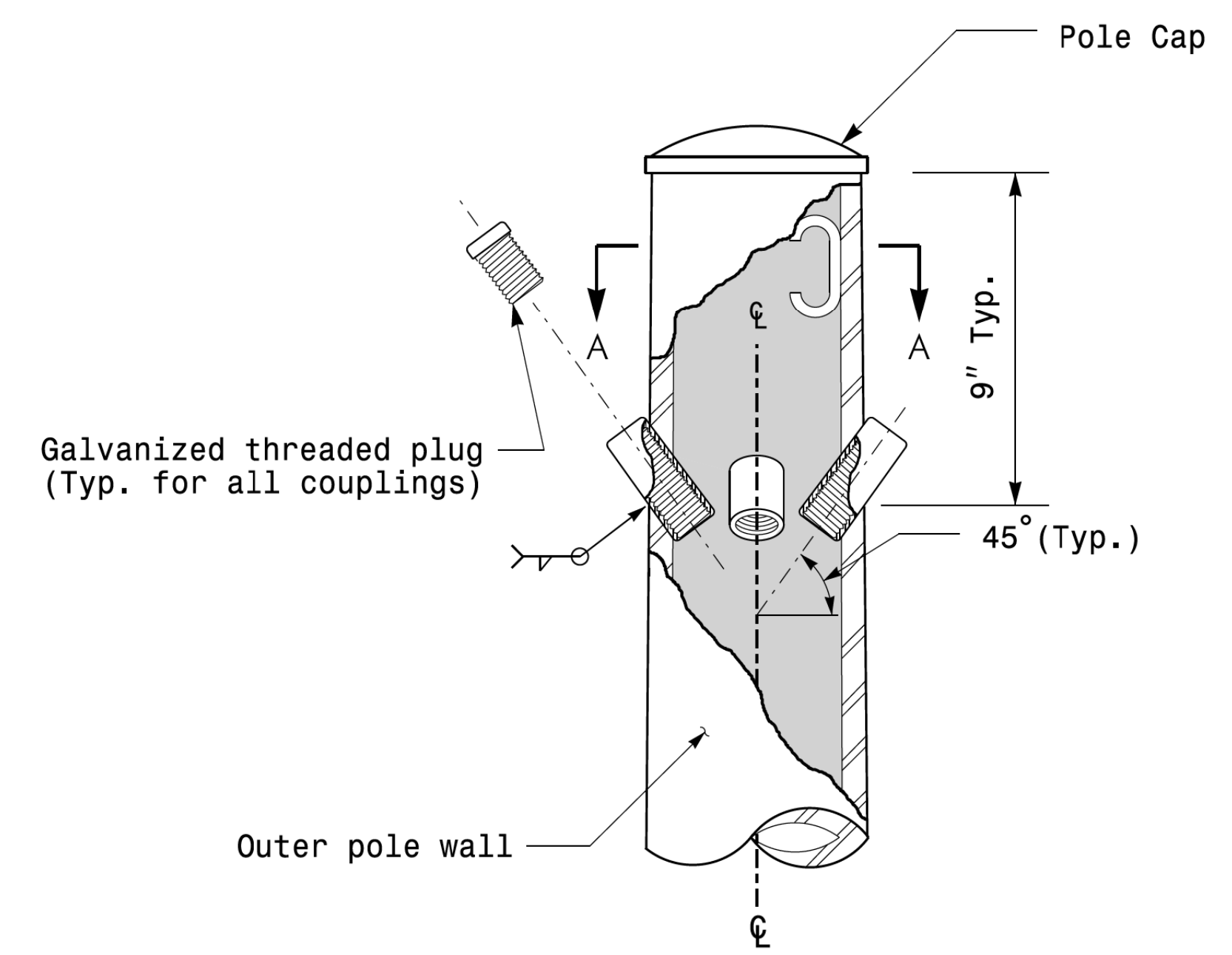
PROJECT ID. NO.	SHEET NO.
U-6241	Sig.M2



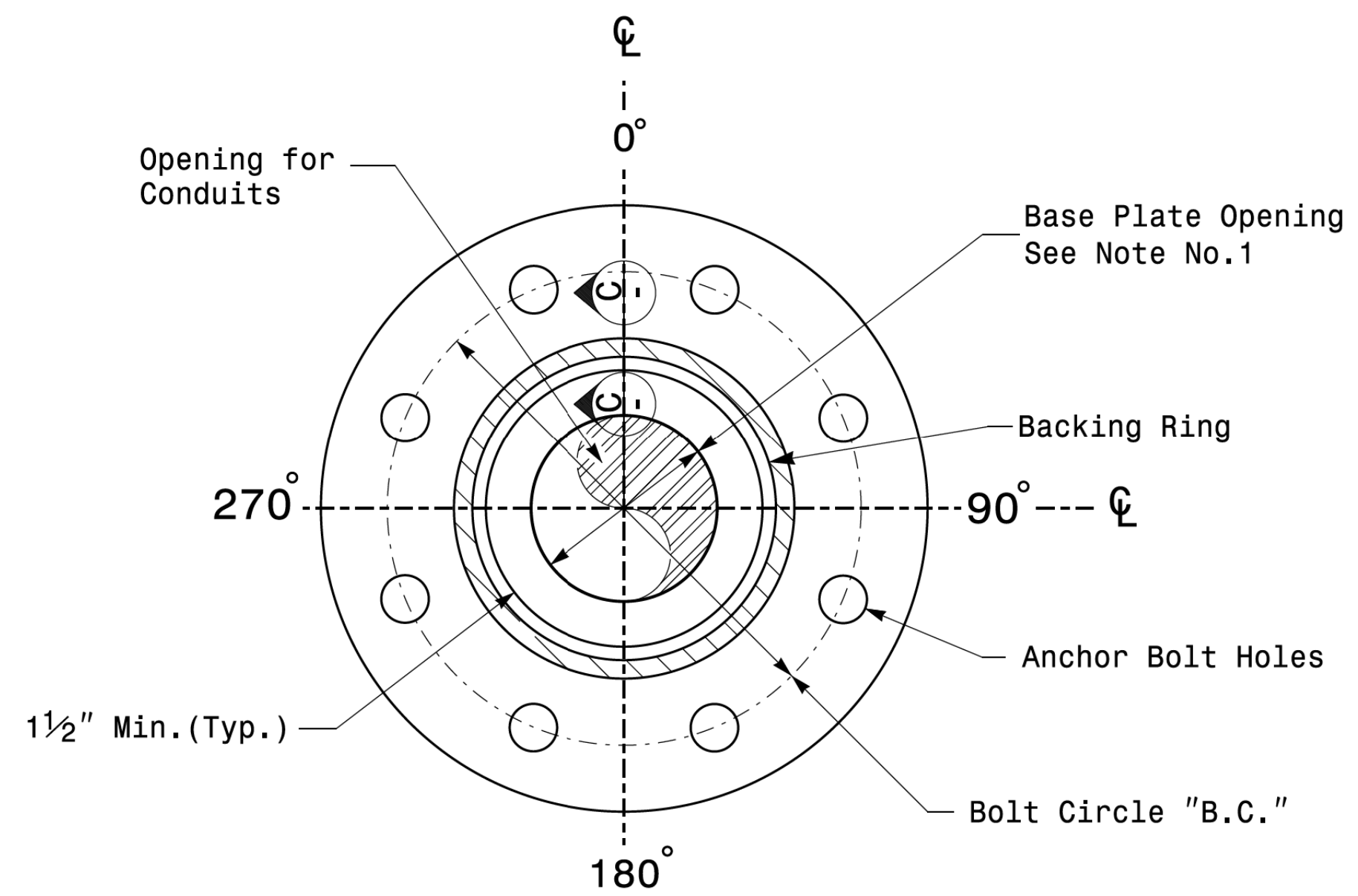
Fabrication Details – All Metal Poles

11-01-2017 08:30 P:\1350\WITS Signal\sig Design Section\Mast Arms\2016\2014 Sig.M2 Std. Fabrication Detail\sig.M2.dgn

Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".

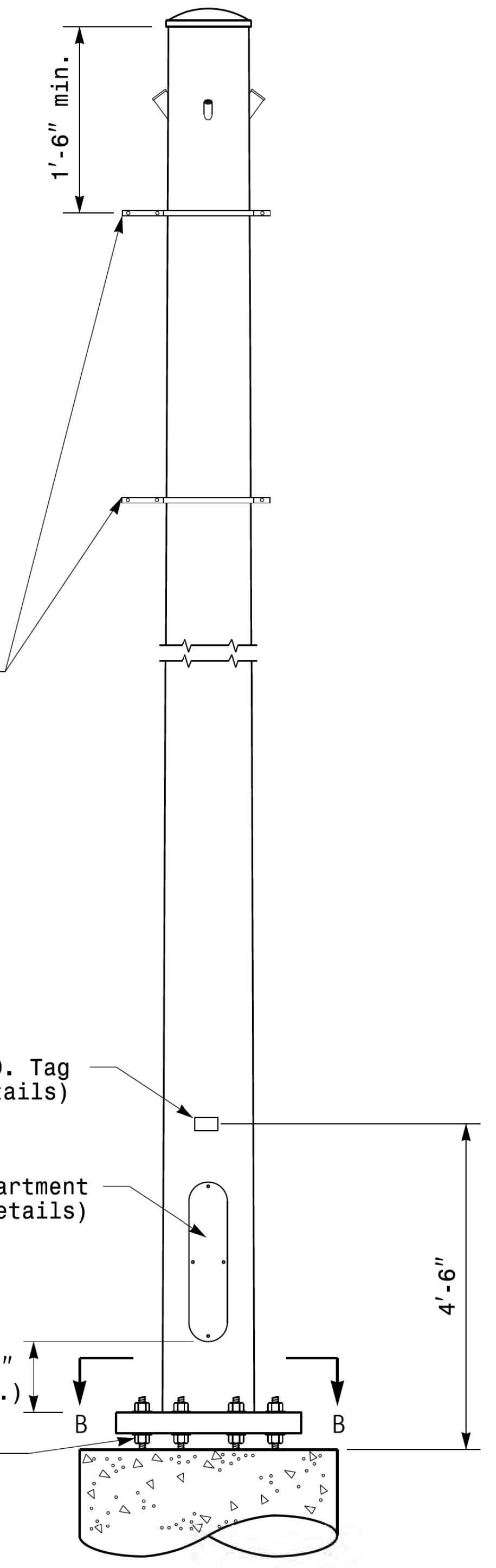


Cable Entrances at Top of Pole

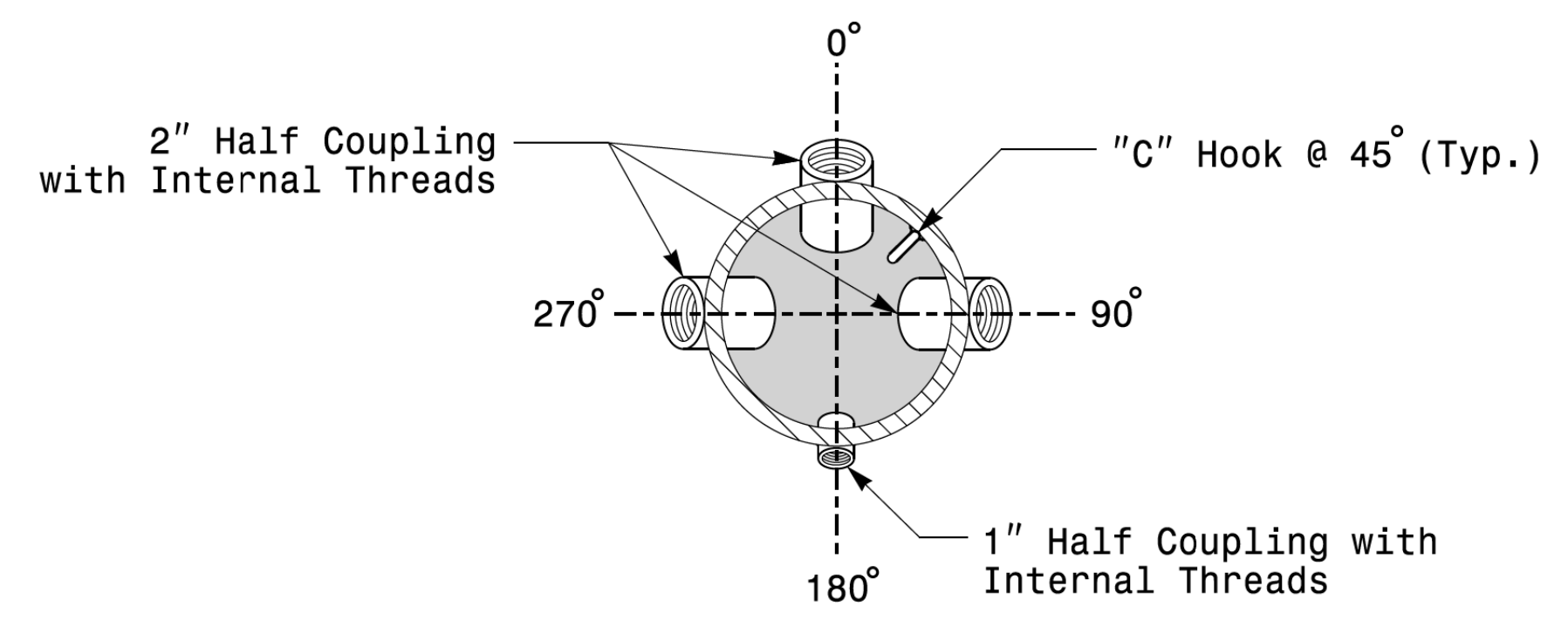


Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)

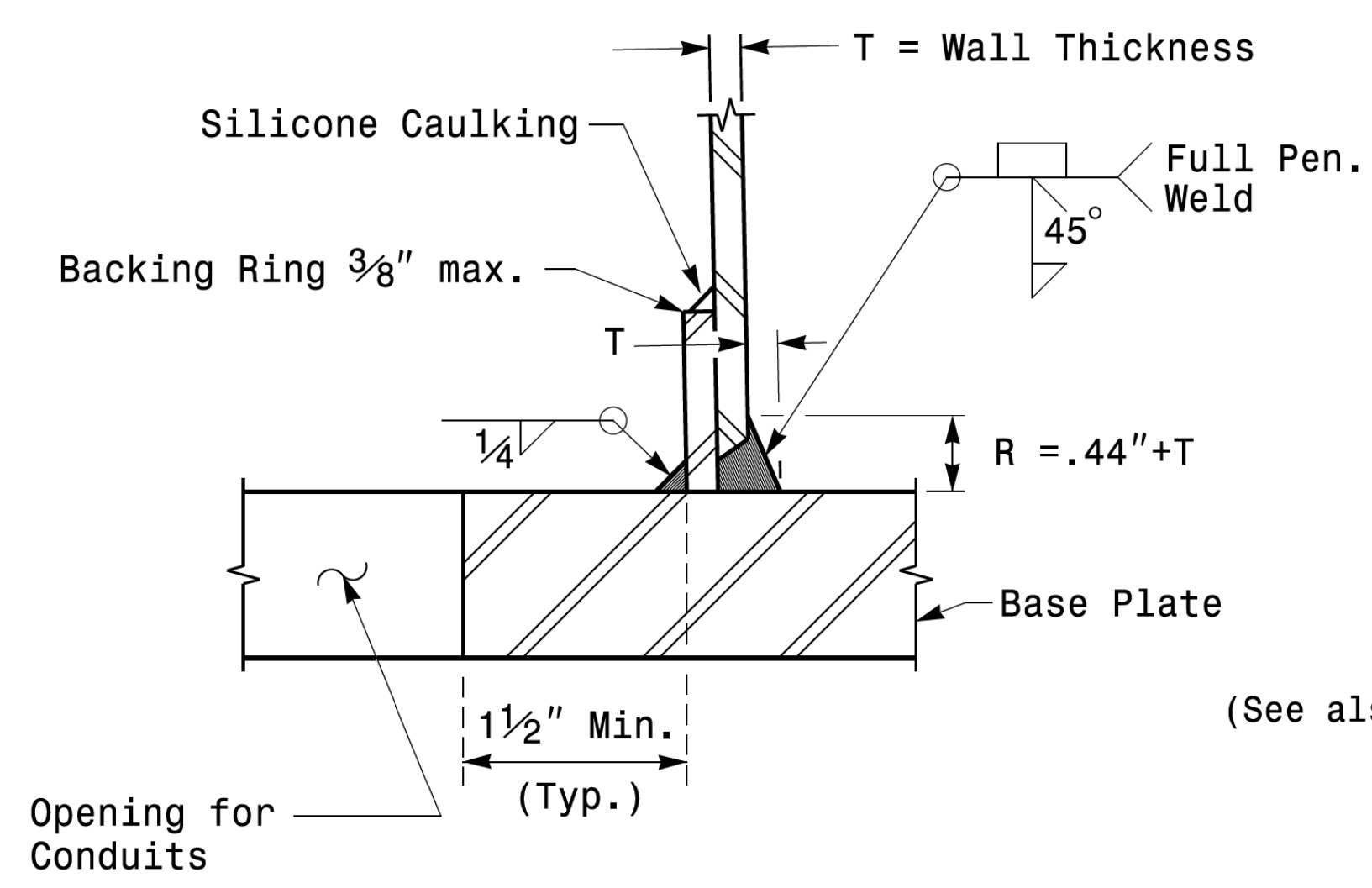
2 Cable Clamps designed for variable attachment heights from 1'-6" to 5'-0" below the top of the pole.



Monotube Strain Pole



Section A-A
Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C
(Pole Attachment to Base Plate)
Full-Penetration
Groove Weld Detail

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles	
PLAN DATE: OCTOBER 2017	DESIGNED BY: K.C. DURIGON
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
SCALE: NONE	REVISIONS
	INIT. DATE

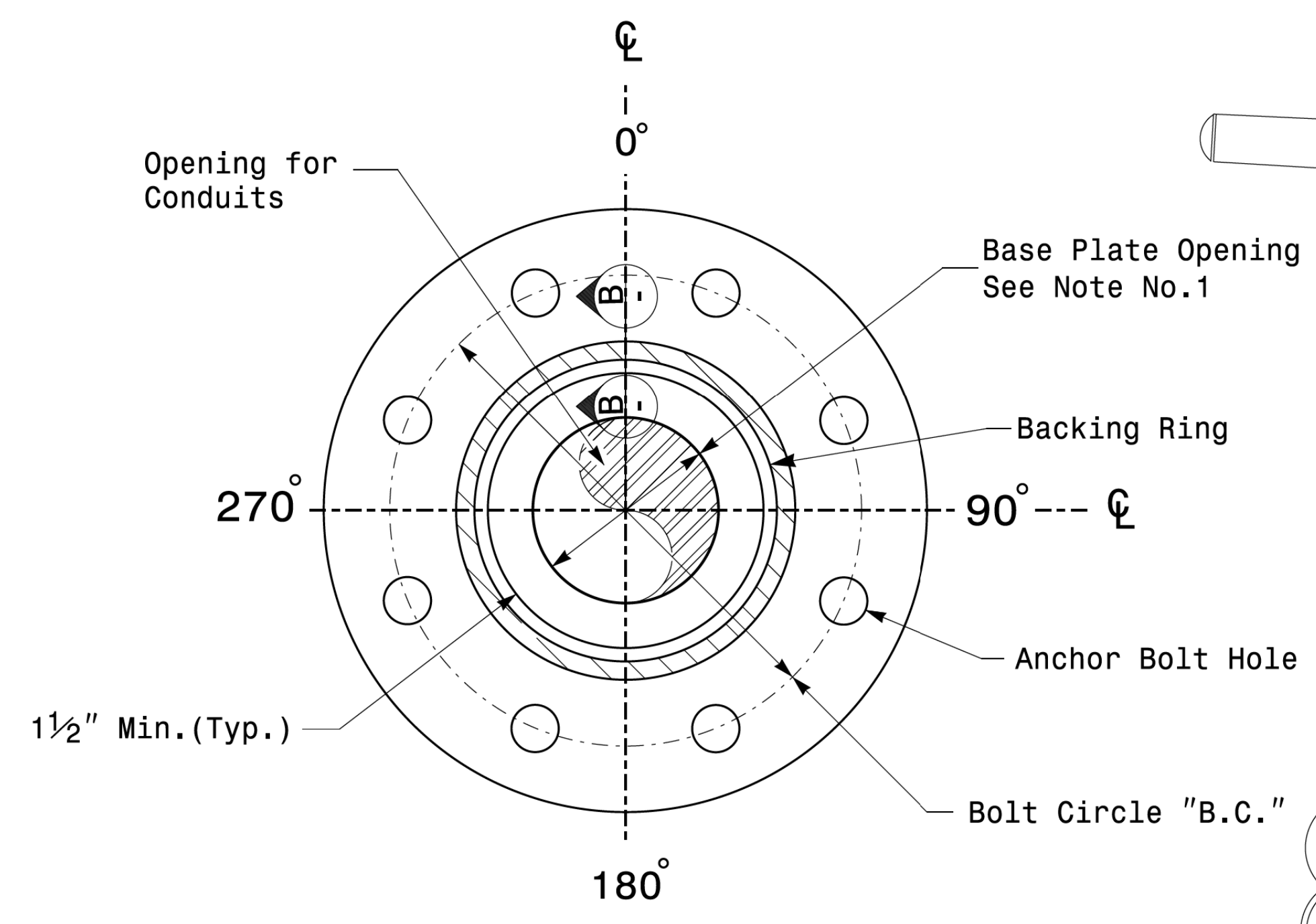
SEAL

 Debesh C. Sarkar
 10/11/2017
 DATE

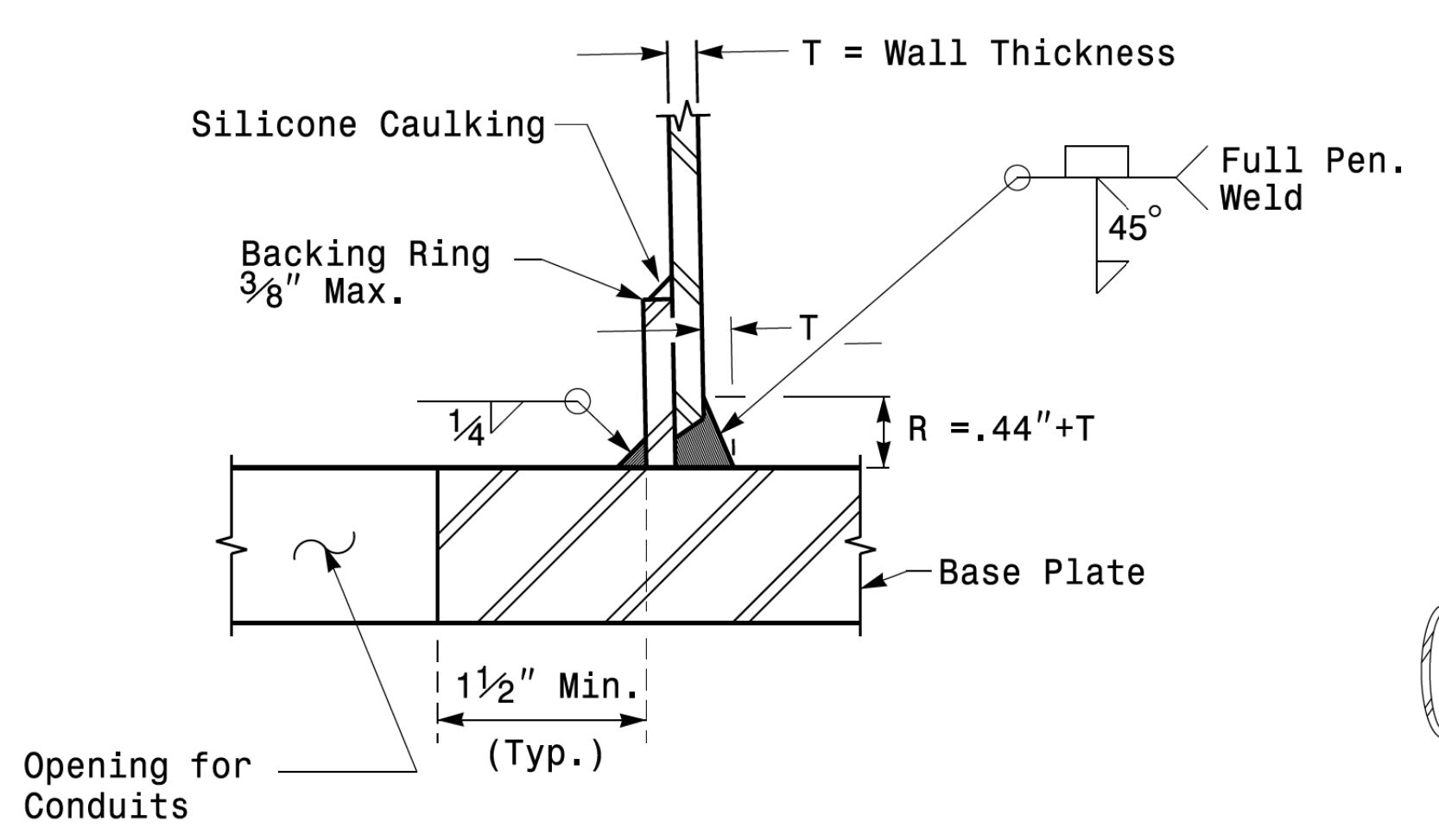
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Fabrication Details – Strain Poles

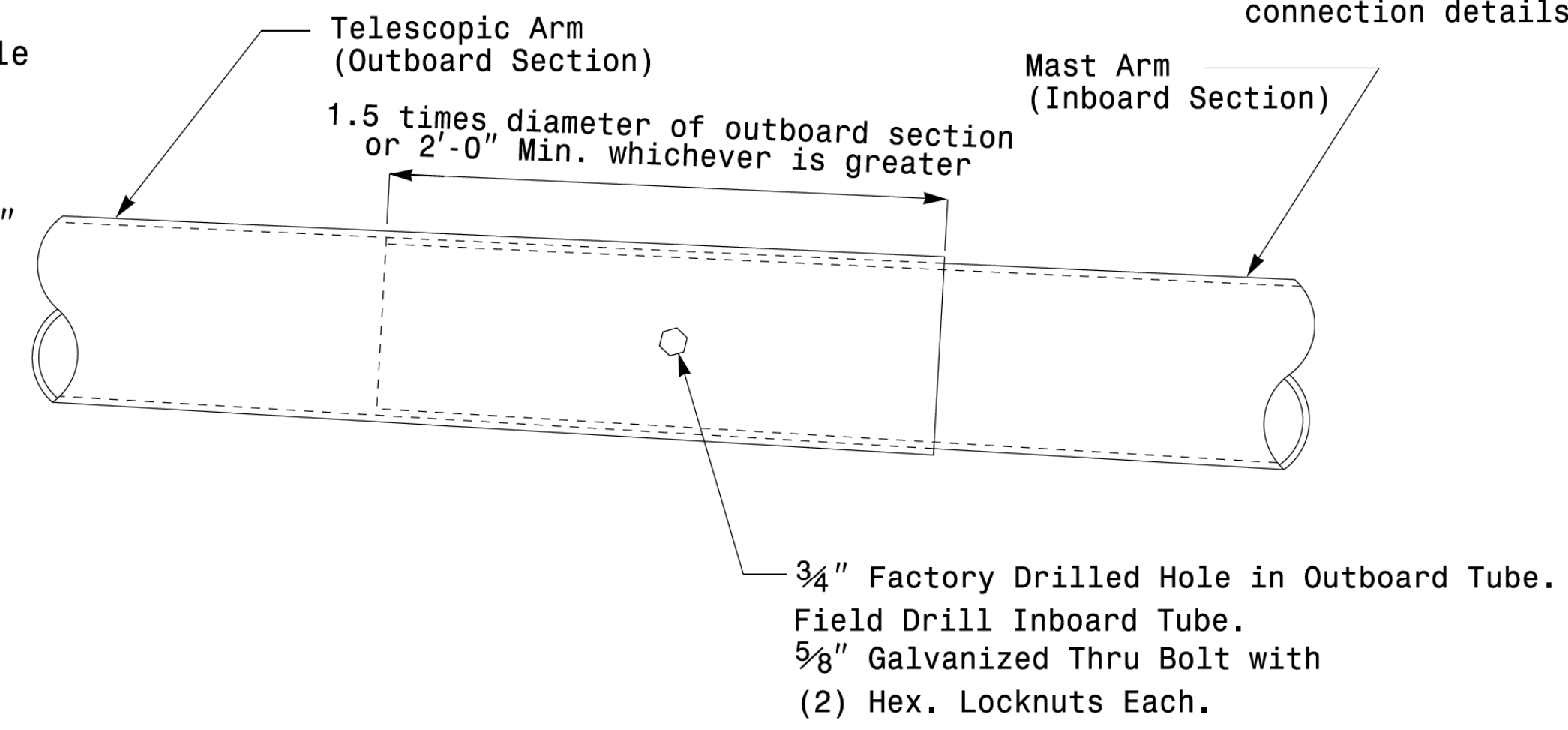
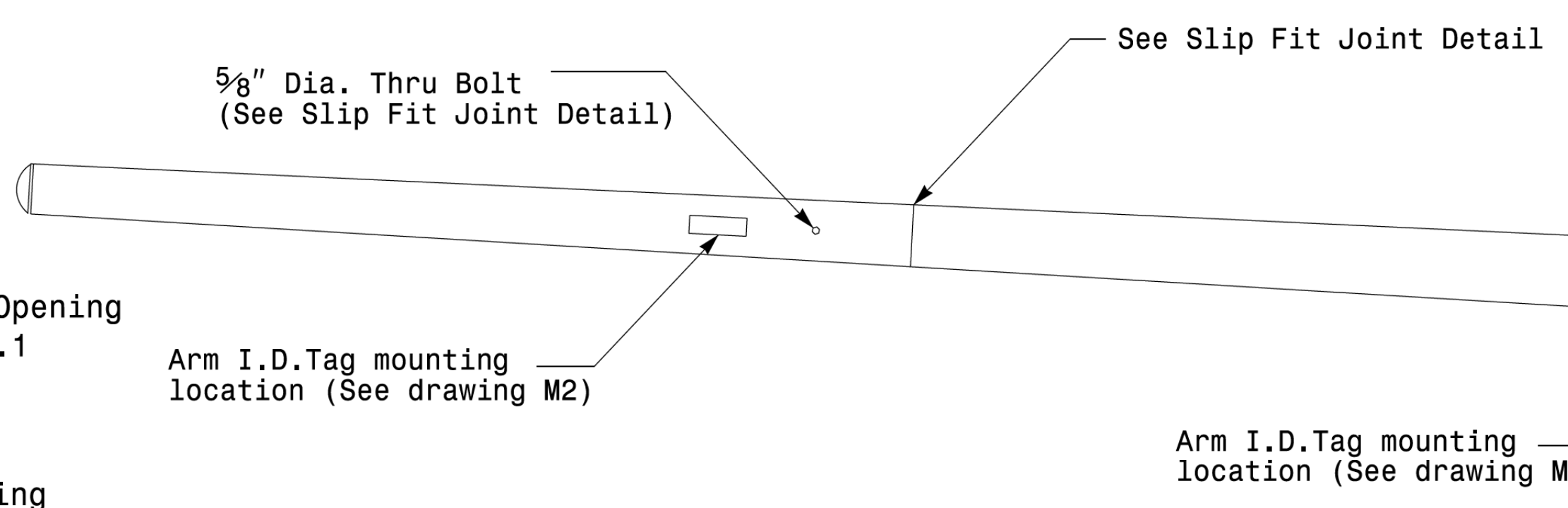
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



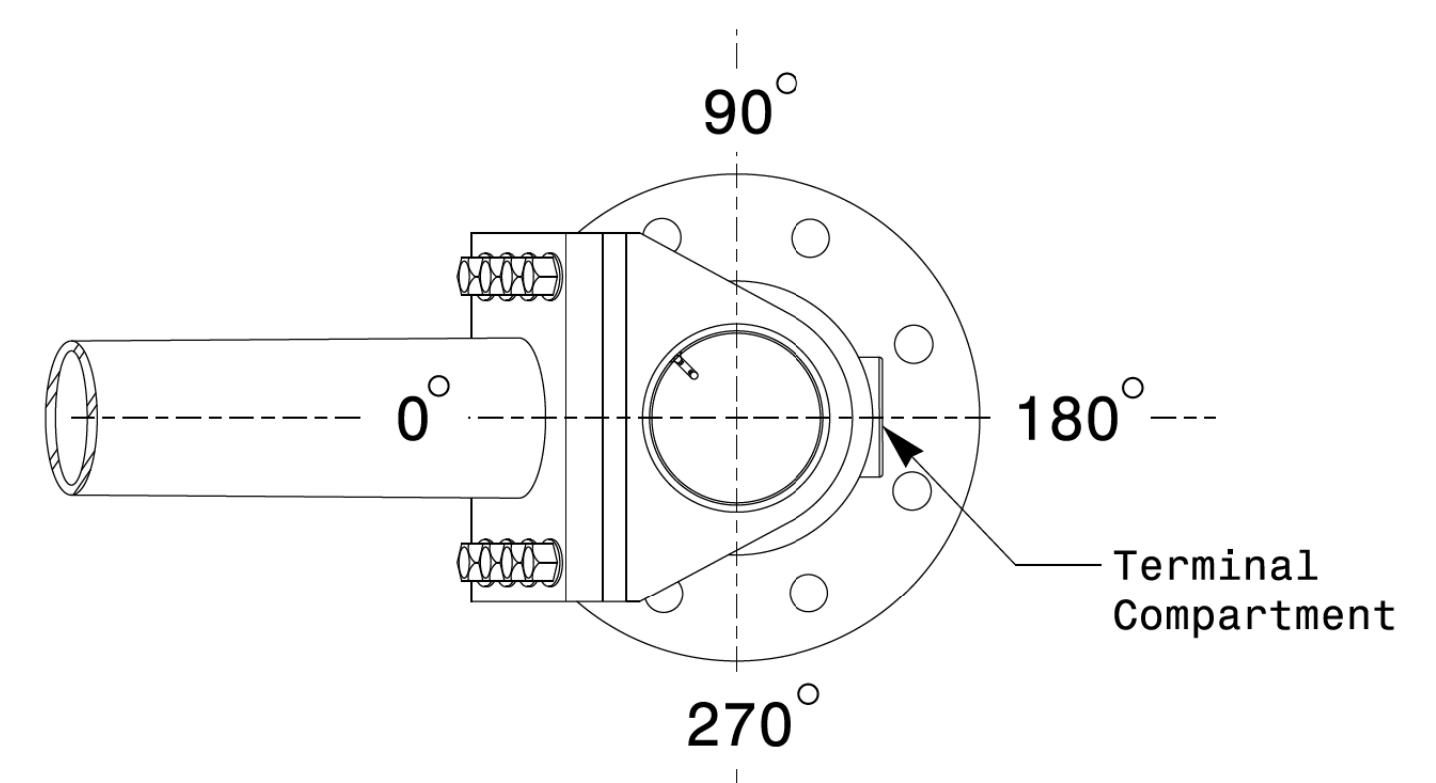
Section A-A
Pole Base Plate Details



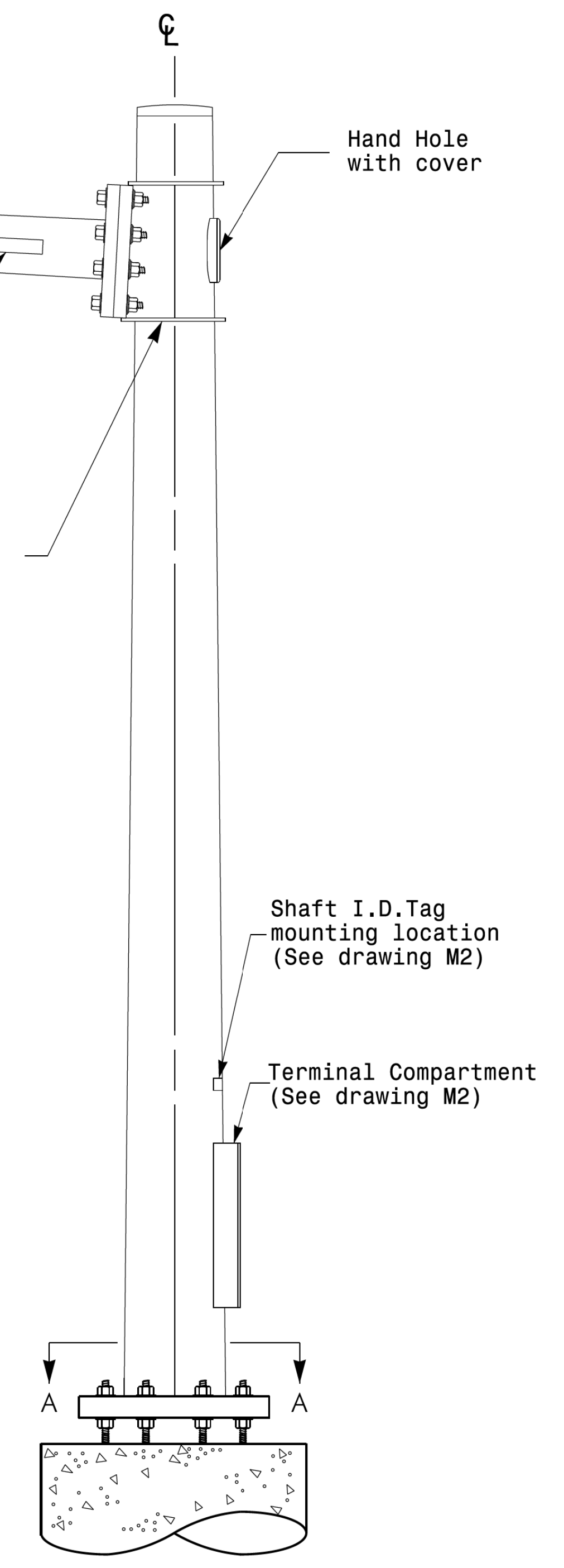
Section B-B
 (Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

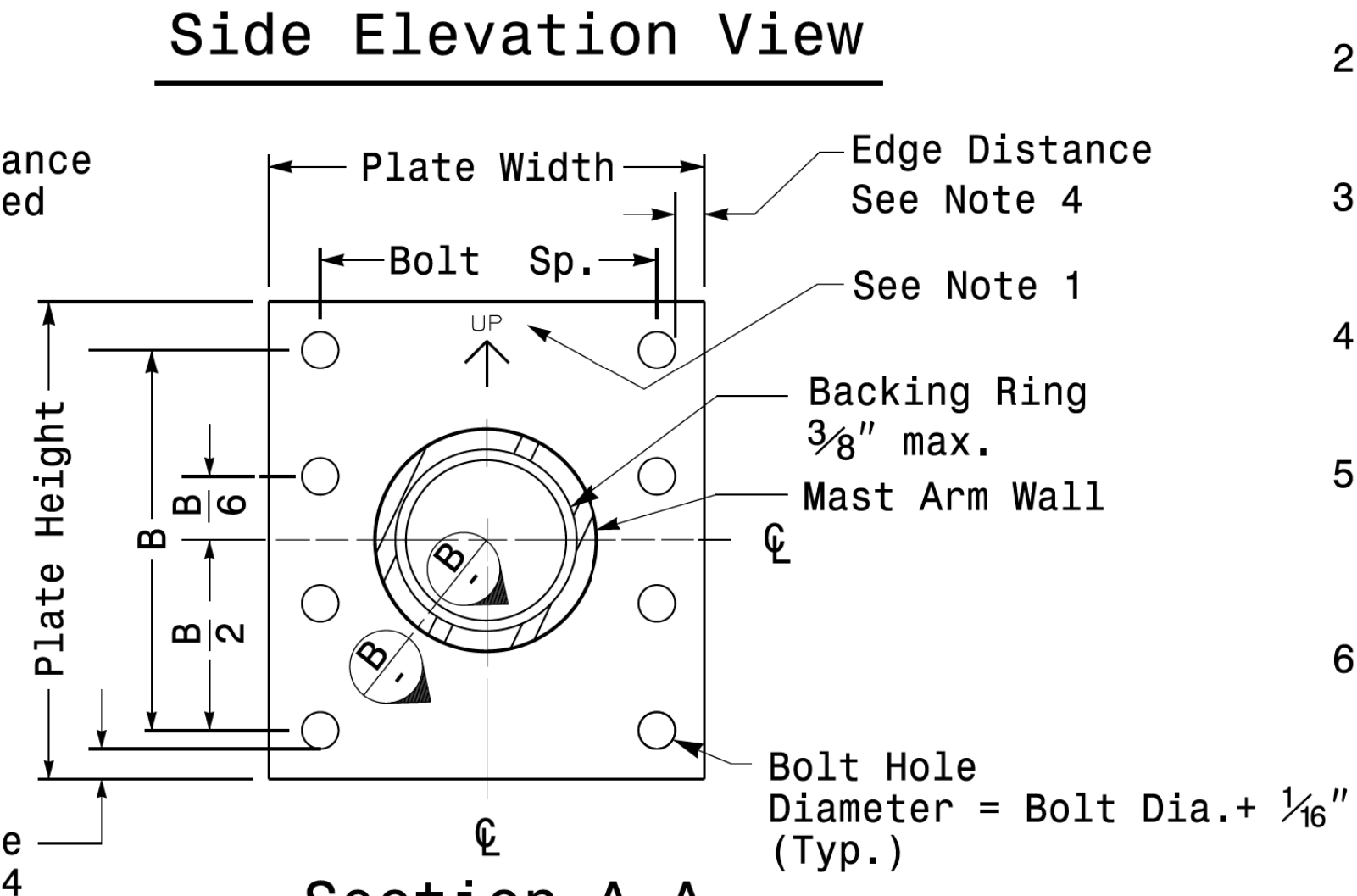
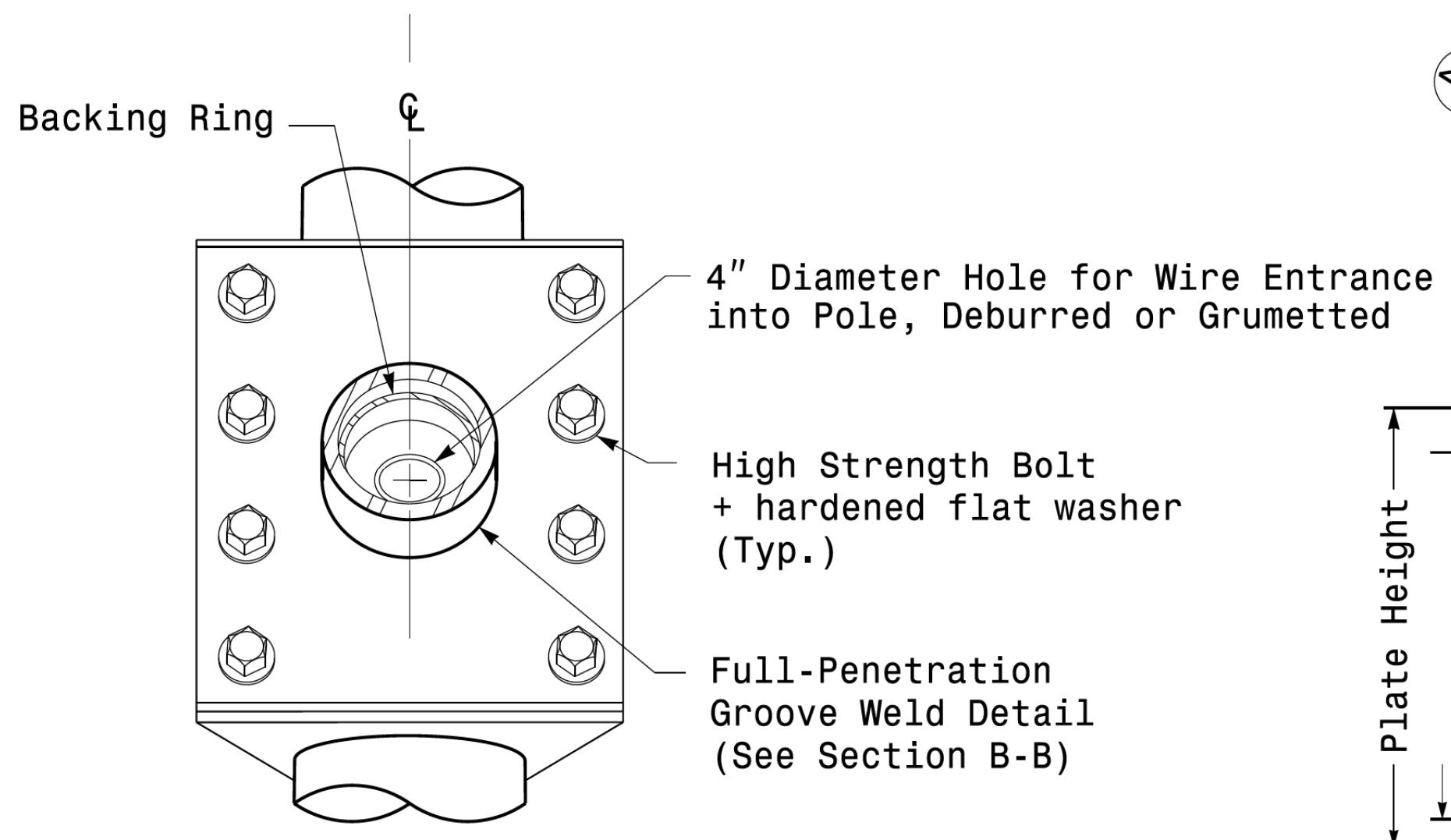
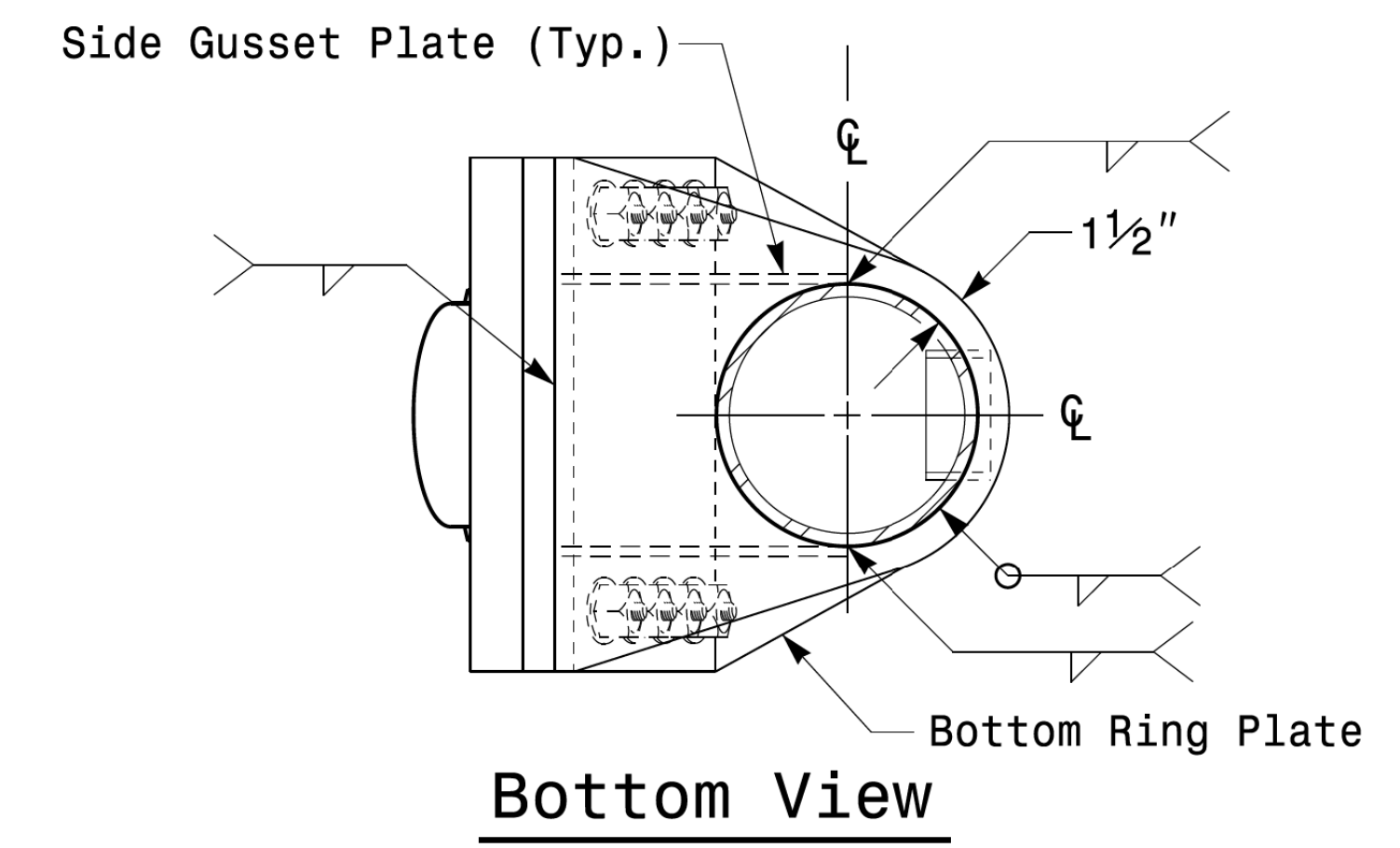
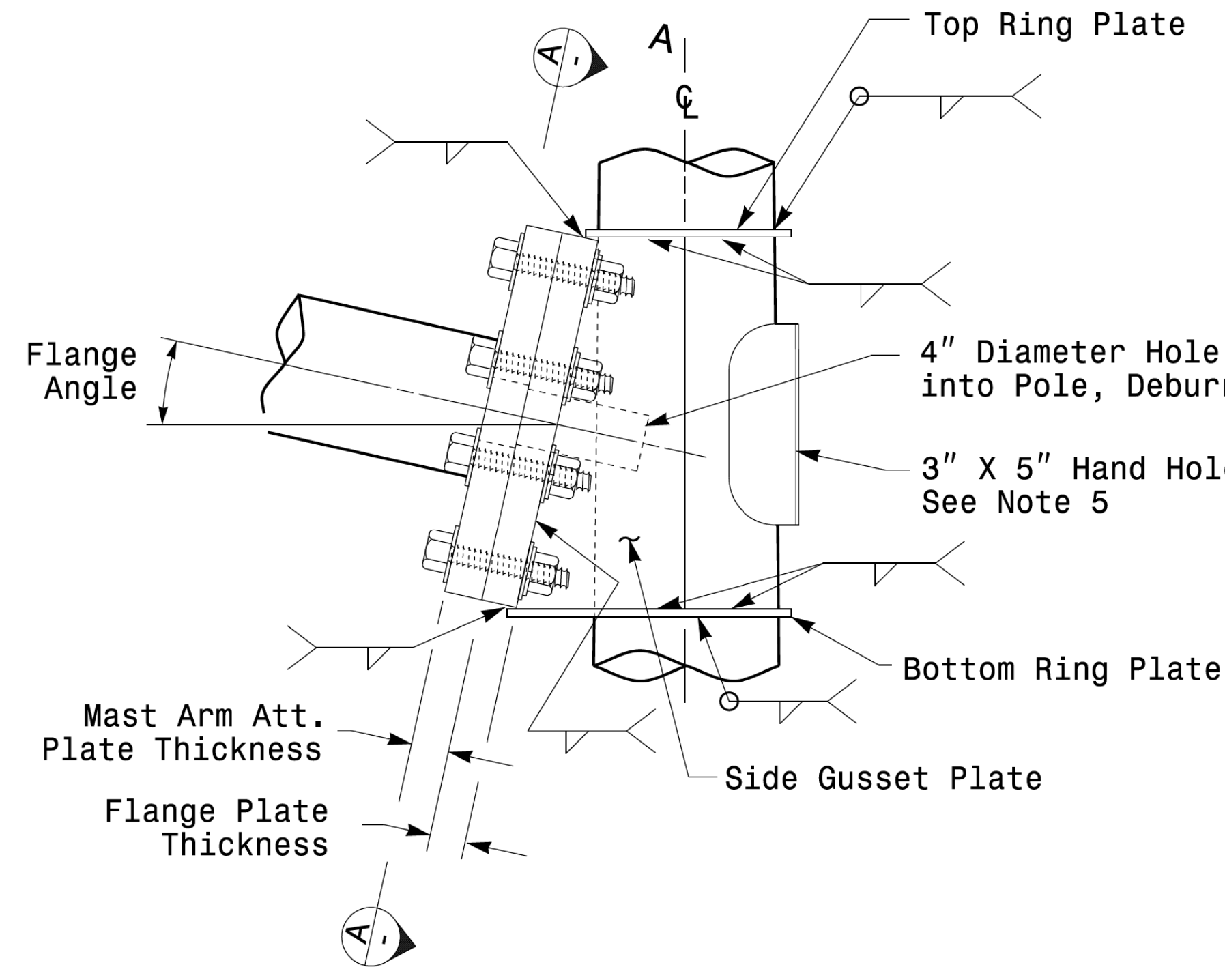
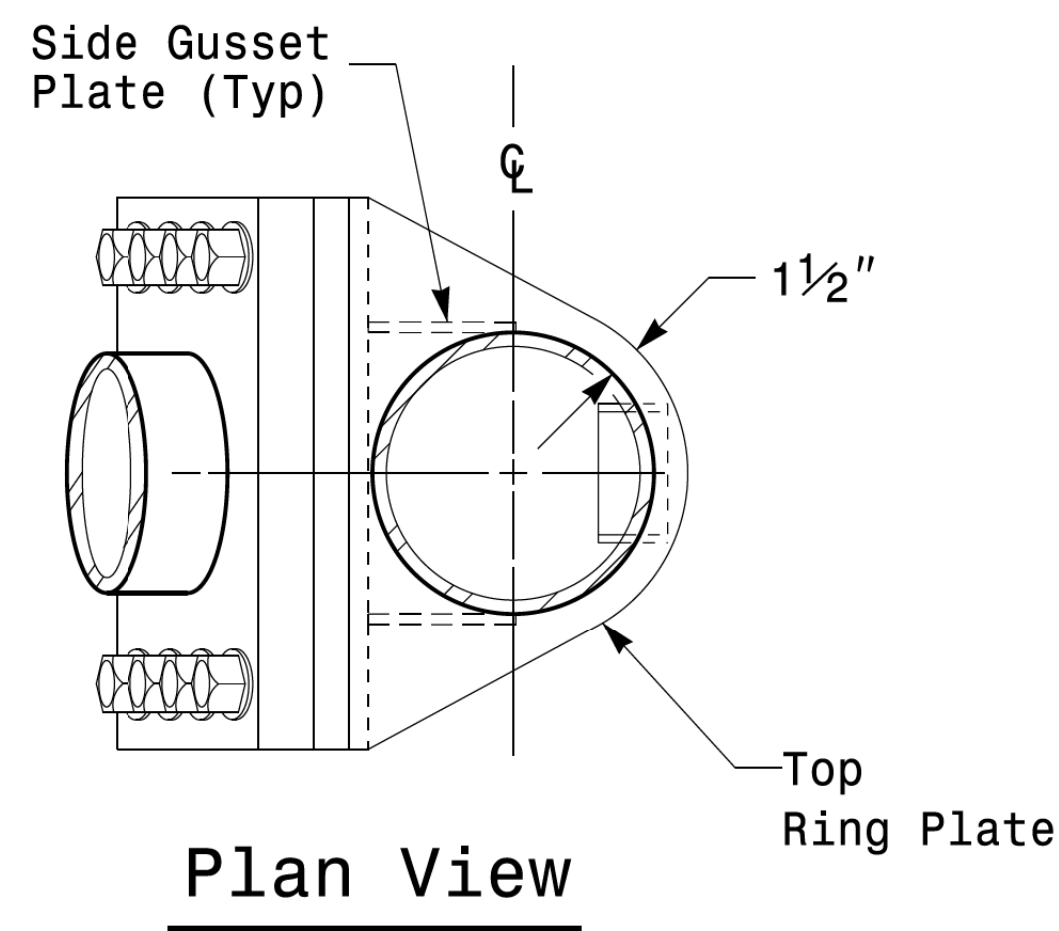
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Fabrication Details - Mast Arm Poles

	Typical Fabrication Details For Mast Arm Poles		SEAL
	PLAN DATE: OCTOBER 2017 DESIGNED BY: K.C. DURIGON	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR		DATE:
SCALE: 0 NA NONE	REVISIONS:	INIT.:	DATE:
Prepared in the Offices of: Transportation Mobility and Safety Division STATE OF NORTH CAROLINA Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529		DocuSigned by: Dresh C. Sarkar ENGINEER	10/11/2017 DATE

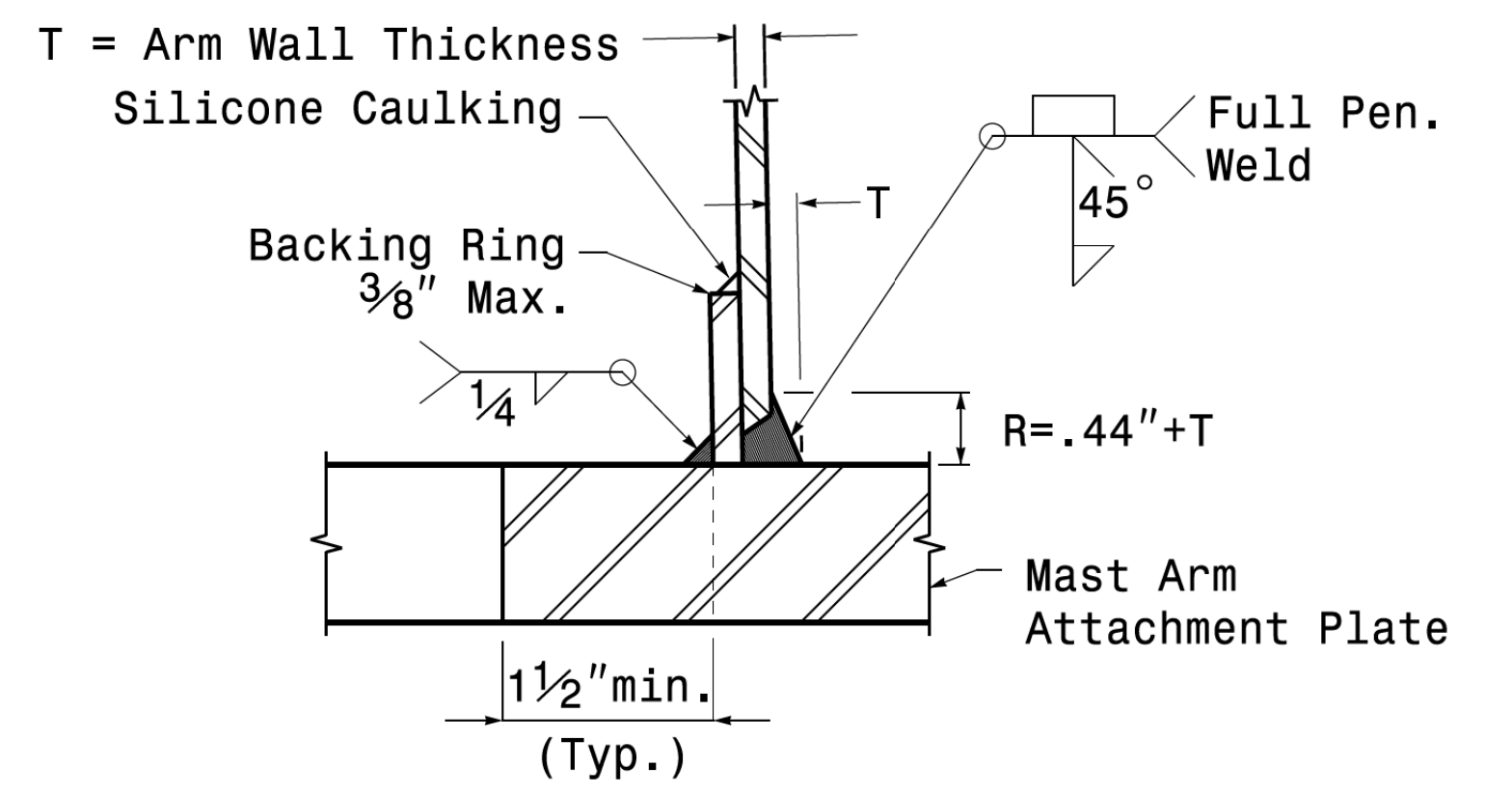
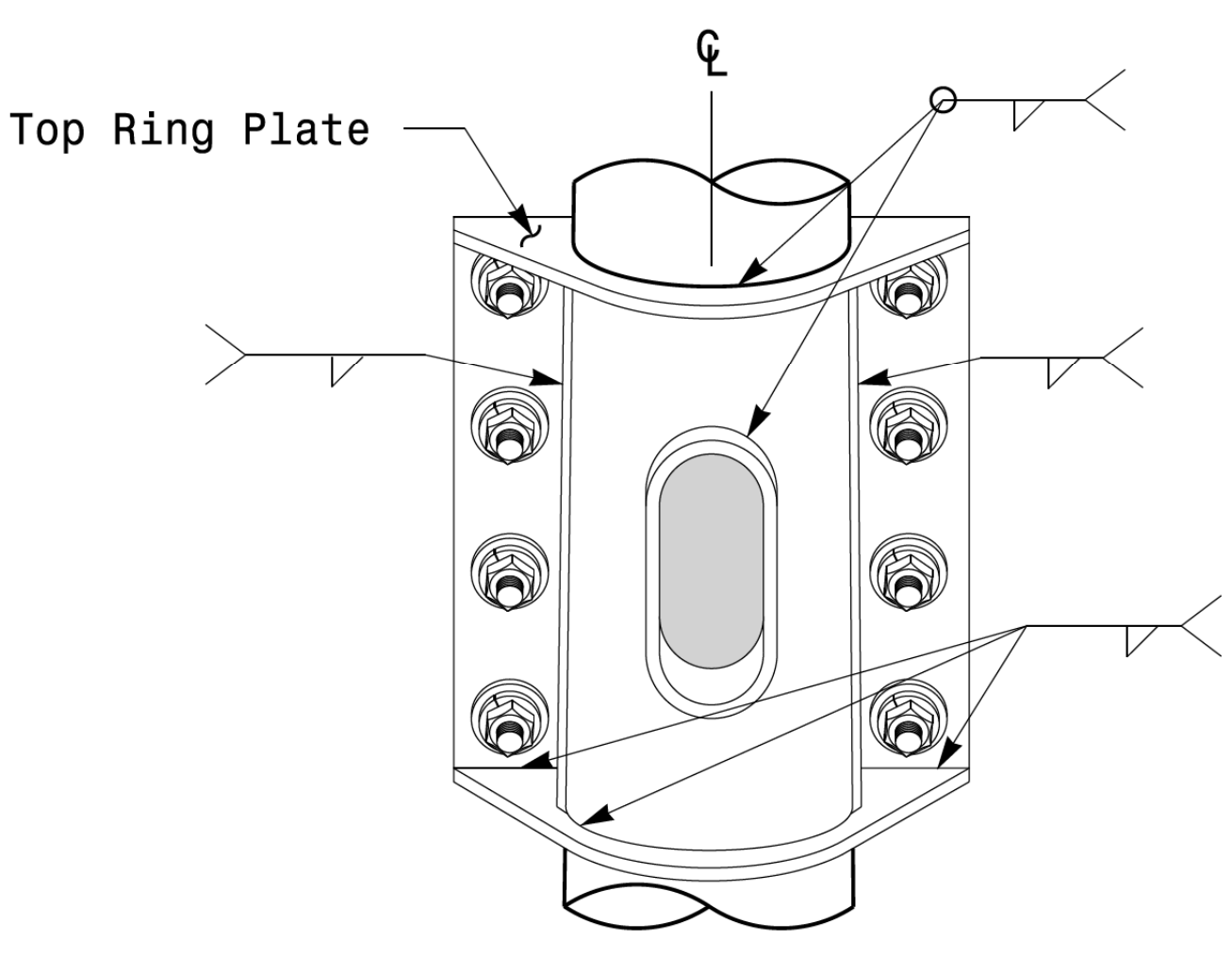
Welded Ring Stiffened Mast Arm Connection

PROJECT ID. NO.	SHEET NO.
U-6241	Sig.M5



Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Fabricator is responsible for providing appropriate holes at drainage points to drain galvanizing materials.
4. For minimum edge distance follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
5. Provide upper handhole as necessary when shaft extensions are required for luminaire arms or camera. For poles without luminaires/camera, wiring can be done through the top of pole.
6. Allowable range of flange tilt angle will vary from 0° to as required.



Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Typical Fabrication Details For Mast Arm Connection To Pole	
PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

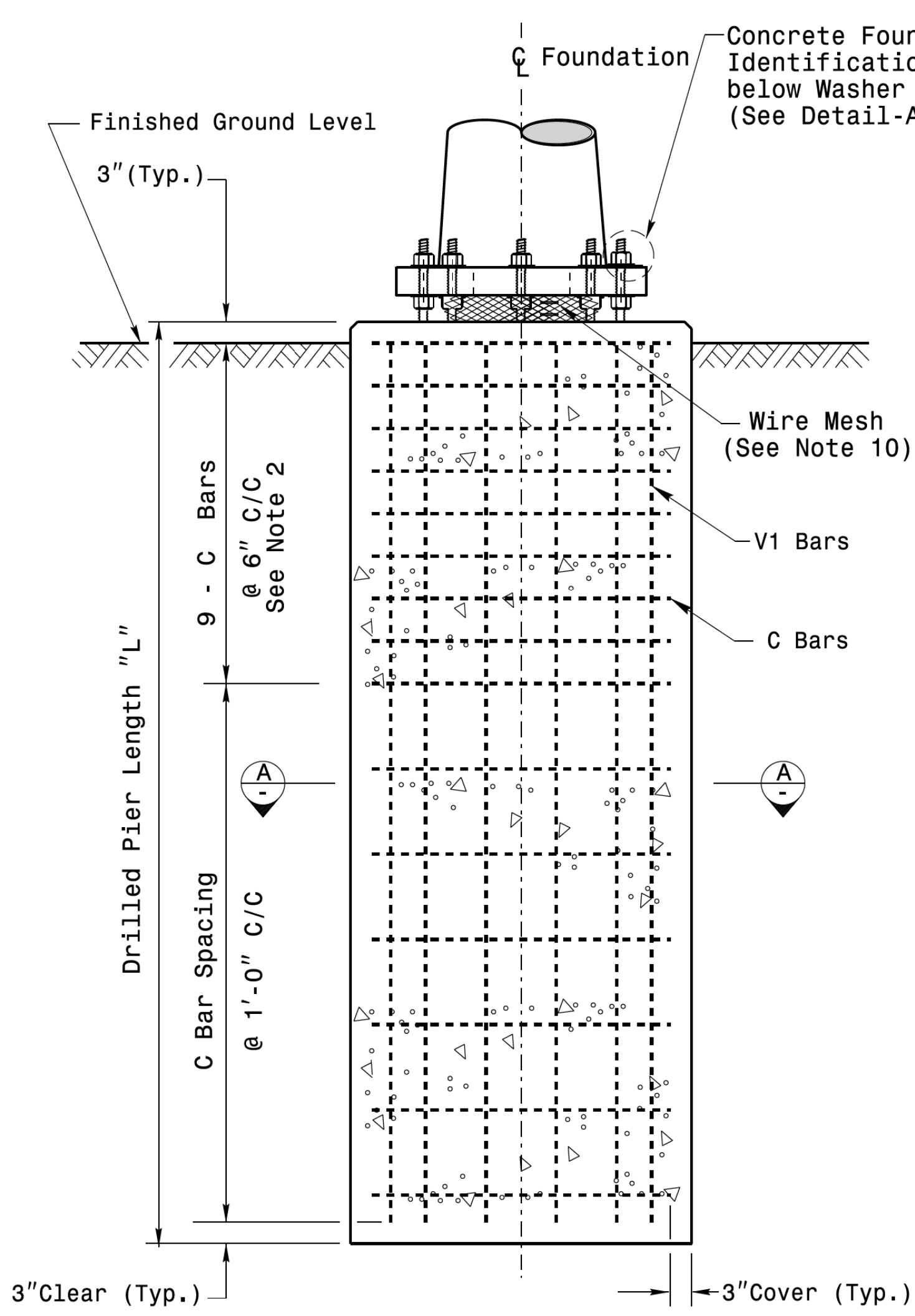
SEAL

Debesh C. Sarkar

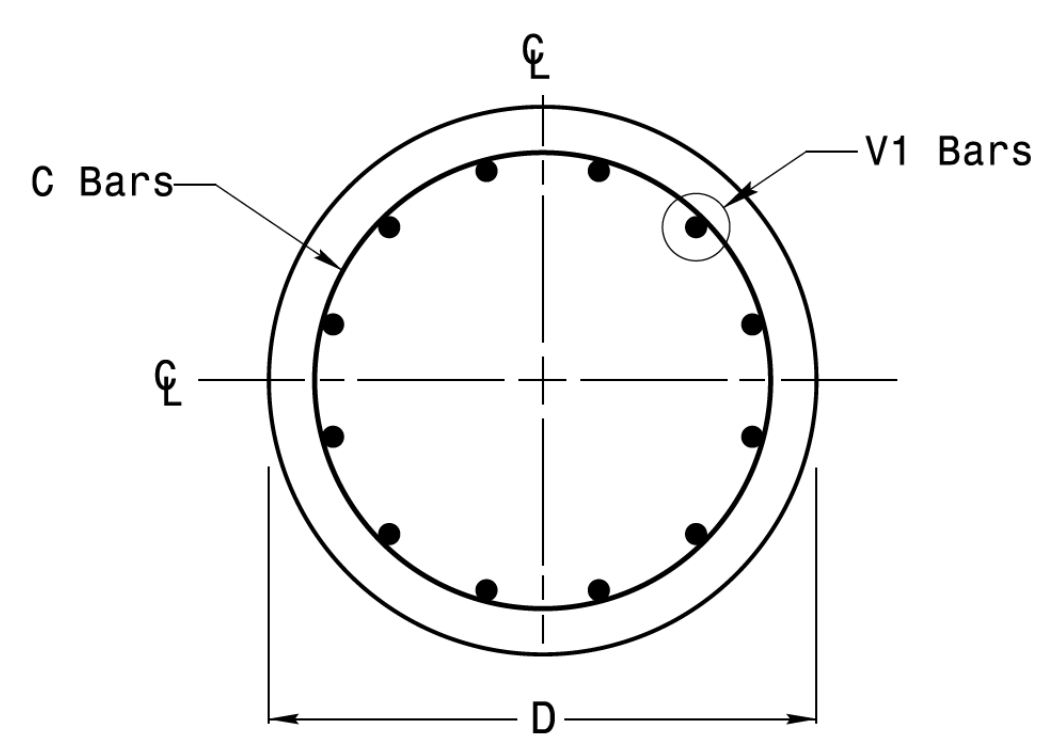
10/11/2017

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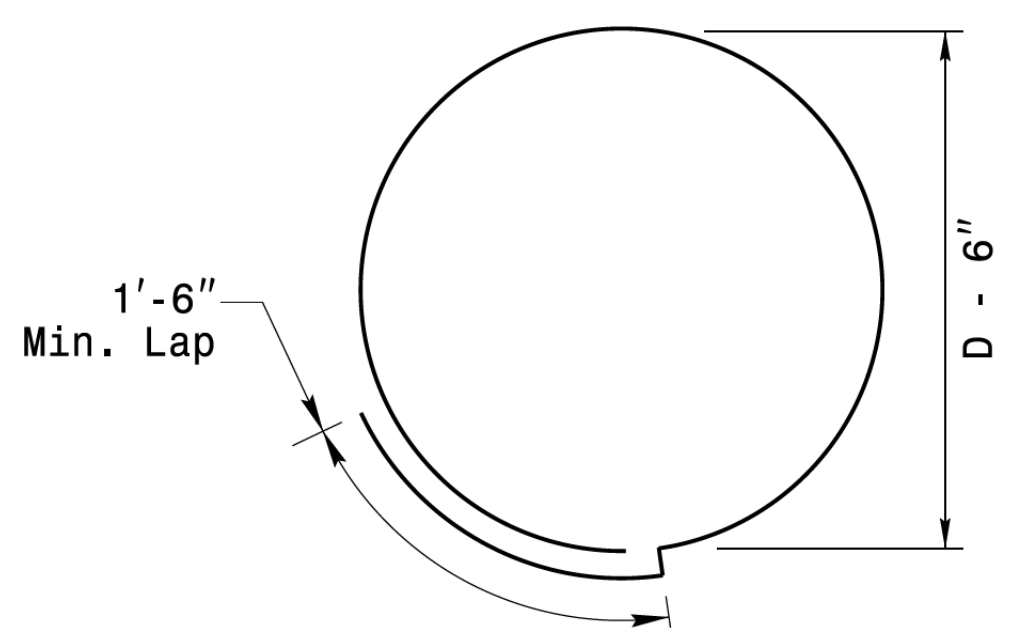
Fabrication Details - Mast Arm Connection



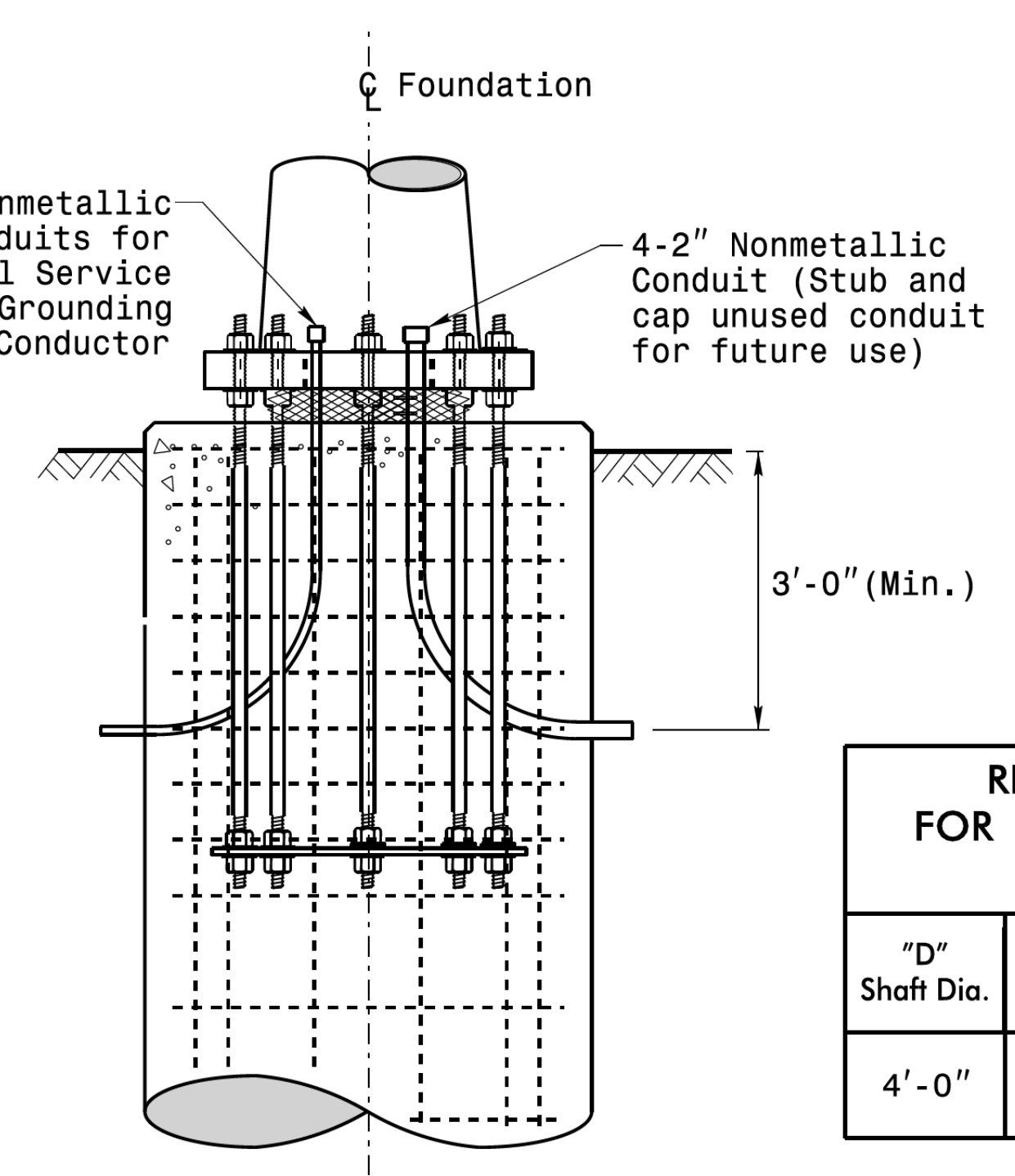
Concrete Shaft Elevation



Section A-A



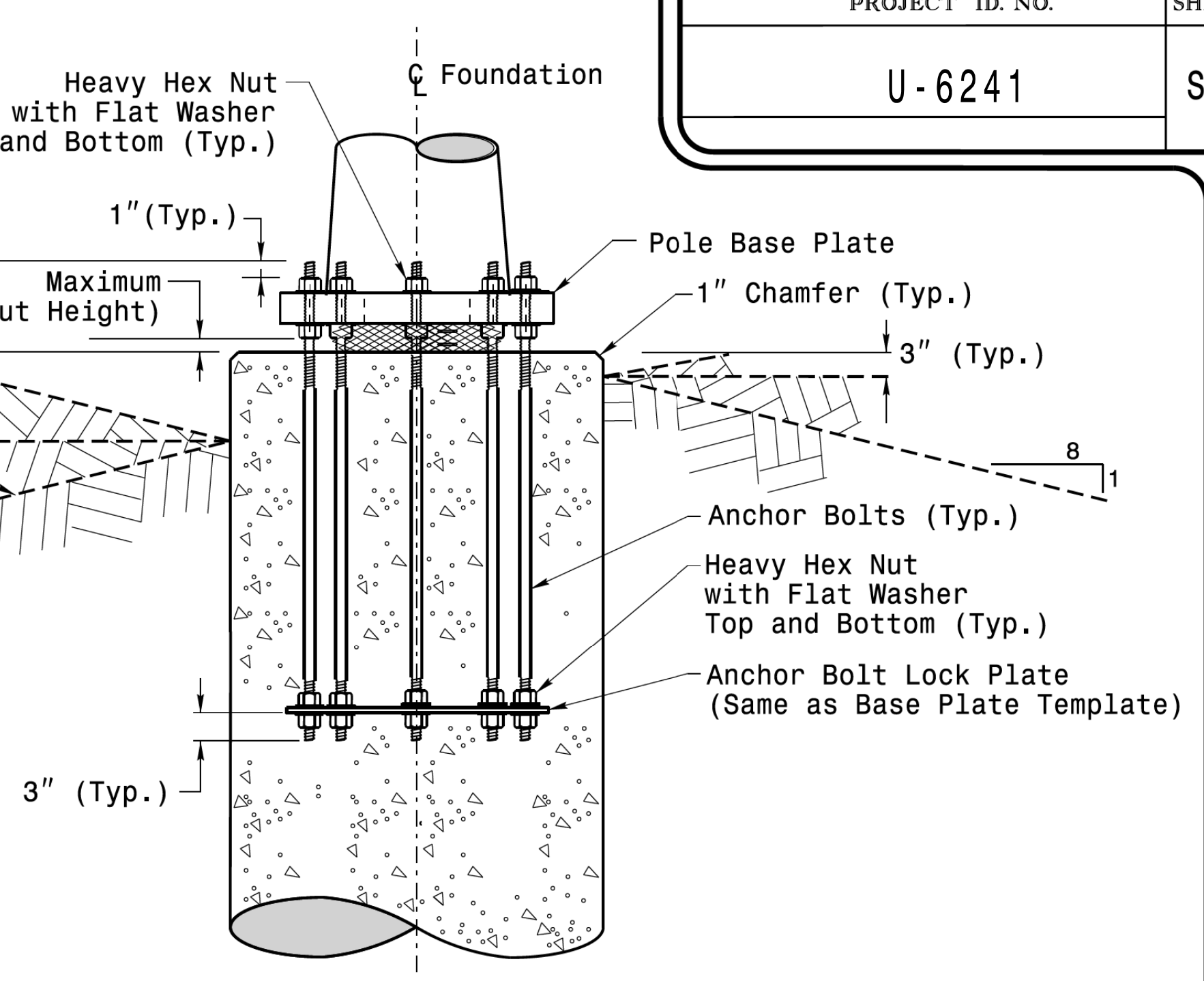
Typical "C" Bar Detail



Typical Foundation Conduit Details

"D" Shaft Dia.	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
4'-0"	.465 x L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 2
 ** See Note No. 3

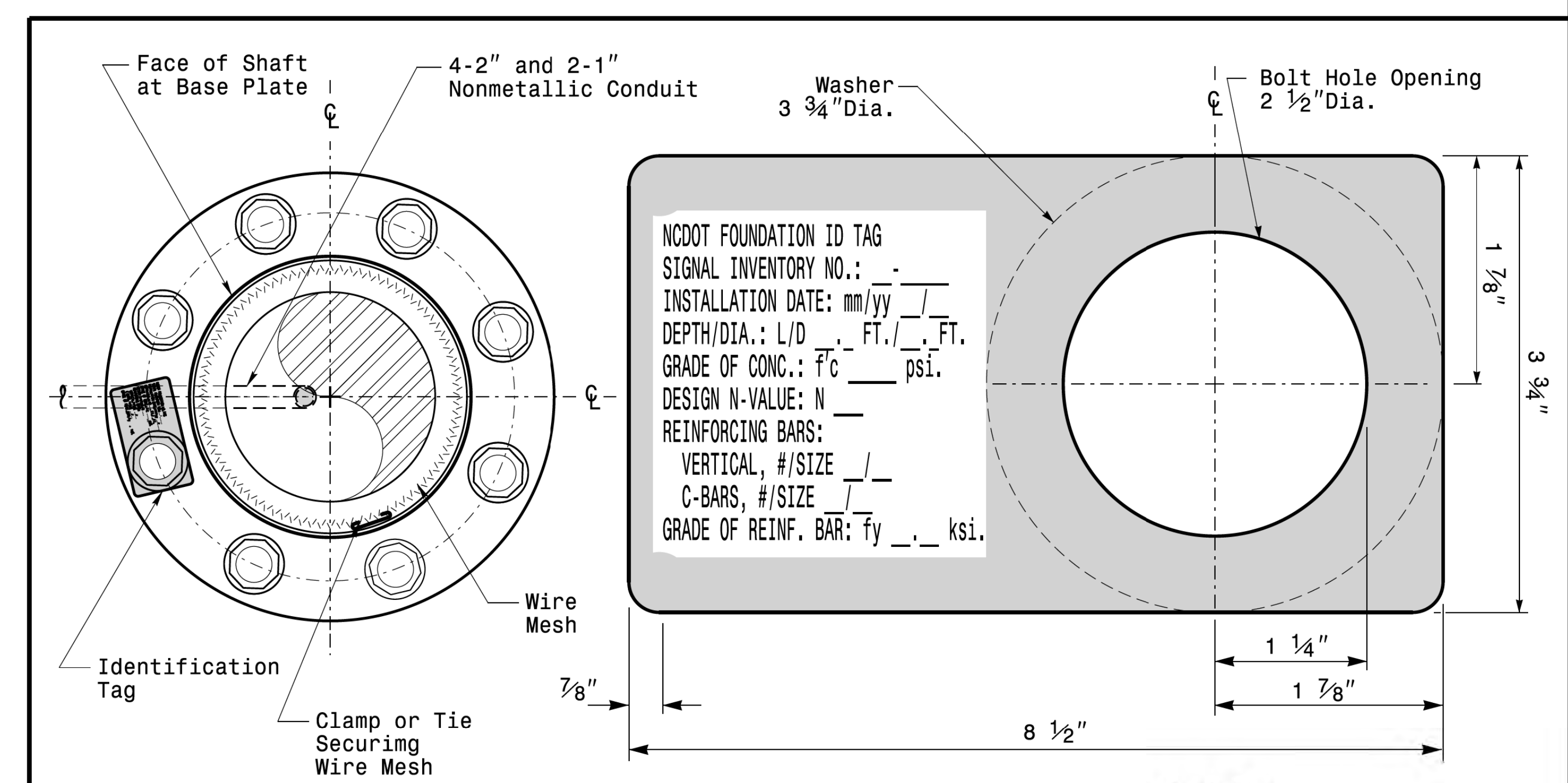


Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

General Notes:

1. If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
2. Circular tie reinforcing rings may be vertically adjusted by +/-3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
3. For standard foundations, see sheet Sig. M8 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/-3" to facilitate the installation of electrical conduit entering into the cage.
4. Provide 2" to 5" foundation projection above ground level depending on the ground slope.
5. Unless otherwise shown, foundation designs are based on non-sloping level ground surfaces with slope ratios of 8:1 (H:V) or flatter. If actual ground line slopes are steeper contact the Engineer before excavating or placing concrete.
6. Construct foundations in accordance with NCDOT Standard Provisions SP09 R005- Foundations and Anchor Rod Assemblies for Metal Poles. All applicable 2018 NCDOT Standard Specifications are referenced in this provision. Refer to the NCDOT Resources/Specifications page located on the Connect NCDOT website.
<https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx>
7. Use air entrained AA concrete mix with a compression strength of f'c=4500 psi.(min.) after 28 days.
8. Use ASTM A615 grade 60 deformed bars for all reinforcing steel. Maintain at least 3" cover on all reinforcement.
9. Locate the Identification Tag on the top of the base plate, directly above the conduit's entry point.
10. Provide two layers of galvanized welded 23 gauge (0.25) 6" wide 4 mesh wire around pipes under the base plate and secure it with ties if necessary.
11. Preferred location for the I.D. Tag is as shown in Detail-A; directly above the conduit entering the foundation.



Concrete Foundation Identification Tag Details

D = Diameter
 L = Length/Depth
 mm = Month
 yy = Year

Detail-A

<p>750 N. Grantfield Hwy, Garner, NC 27529</p>	<p>Construction Details For Foundations</p>			
	<p>PLAN DATE: OCTOBER 2018</p>	<p>DESIGNED BY: C. B. COGDILL</p>		<p>10/11/2017</p>
	<p>PREPARED BY: N. BITTING</p>	<p>REVIEWED BY: D. C. SARKAR</p>		
<p>SCALE: NONE</p>	<p>REV. NO. 1</p>	<p>COMMENTS: Revised Foundation Tag Details</p>	<p>INIT. N.B.</p>	<p>DATE: 5/11/2015</p>

Construction Details - Foundations

11-02-2017 08:37 P:\TSS\GIS\TIS\Signal\sig\Design\Section\Eastern_Region\M\Sheets\2016\2014_Sig_M7_Std_Construction_Detail\5-Strain_Poles.dgn

SOIL CONDITION

PROJECT ID. NO. U-6241	SHEET NO. Sig.M8
----------------------------------	----------------------------

		STANDARD STRAIN POLES					STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet							Reinforcement				
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	10	8	17	14.5	12.5	8	12	4	12
		S30L3	30	25	2	11	300	19.5	13.5	10	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	10.5	8	17.5	15	13	8	14	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	16	12	9	21	17.5	15	8	16	4	6
		S35H3	35	29	4	16	515	26	17	12.5	9.5	22	18.5	16	8	16	4	6
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11.5	8.5	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	9	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	9	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	13.5	10.5	8	18	15	13.5	8	16	4	6
		S35H1	35	25	4	12	350	21	14	10.5	8.5	18.5	15.5	13.5	8	16	4	6
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6

General Notes:

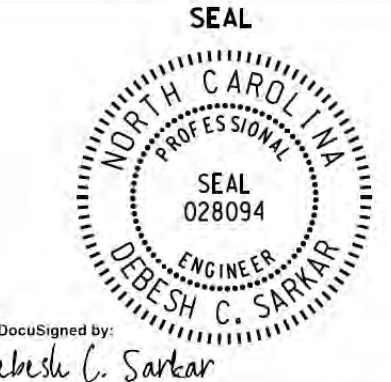
1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column under "Standard Foundations" based on soil type and "N" value. Select the appropriate row based on the pole load case.
6. The foundation depth is the value shown in the "Standard Foundations" category where the column and the row intersect.
7. Use Construction Procedures and Design Methods prescribed by FHWA-NHI-10-016 for Reference Drilled Shafts.

Standard Strain Pole Foundation-All Soil Condition

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Drilled Pier Length



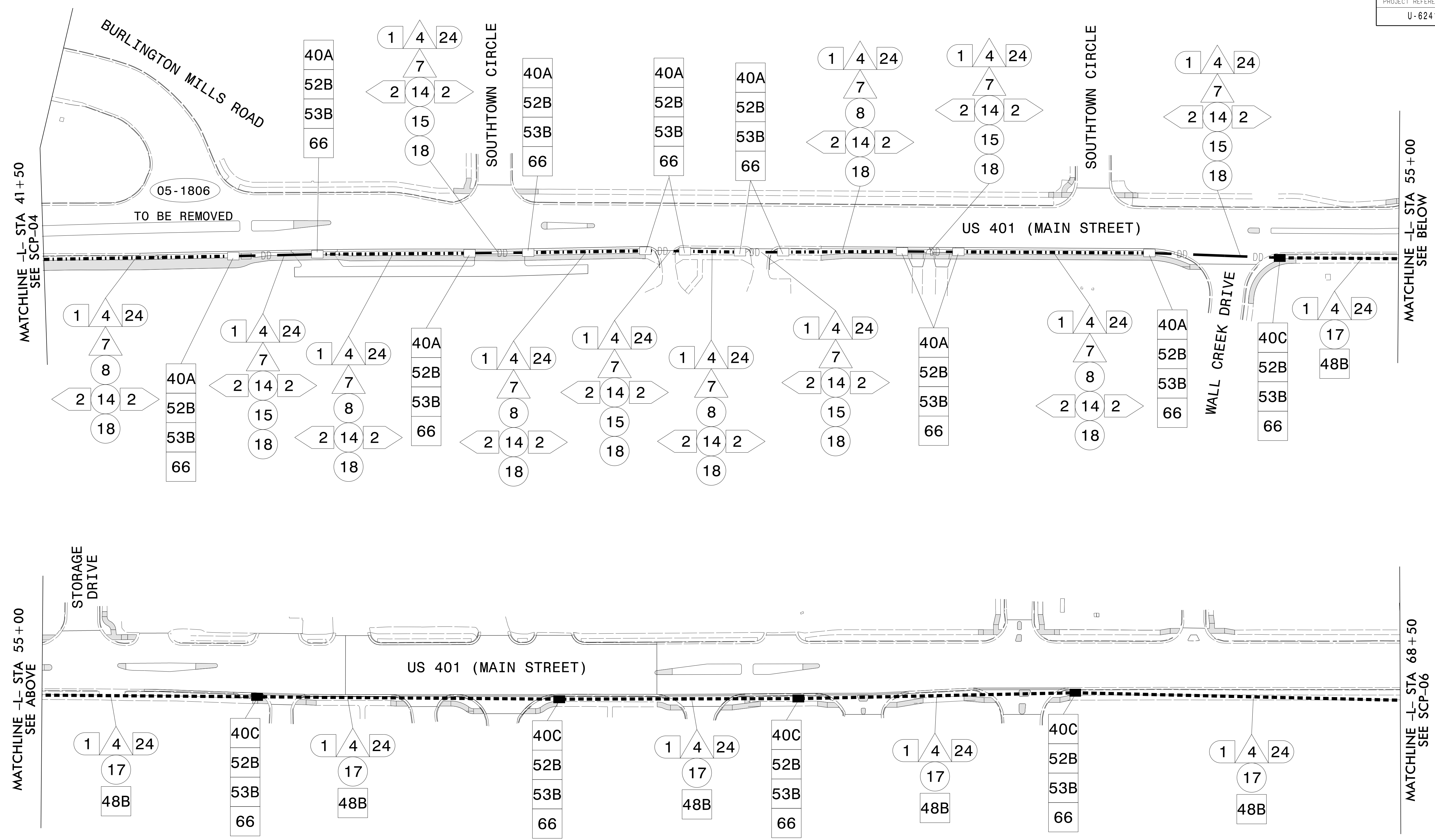
Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE: OCTOBER 2017 DESIGNED BY: C.B. COGDILL
 PREPARED BY: N. BITTING REVIEWED BY: D.C. SARKAR

10/11/2017
DATE

SCALE: 0 NA NONE

11/05/2017 08:10 S:\IT\ASUM\15\Sig.M8 Std. Strain Pole Found-Saturated Soil Condition.dgn rnz:ing



NOTES:
 1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 5 TRAFFIC ENGINEER AT (919) 536-4000 TO ARRANGE FOR NCDOT TO PROGRAM THE NEW FIELD ETHERNET SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK, AND VLAN ID INFORMATION. NOTIFY THE DIVISION 5 TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY.

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 User: rmuncey

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Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

SCALE
 0 50
 1" = 50'

CABLE ROUTING PLANS

Division 5 Wake County Rolesville

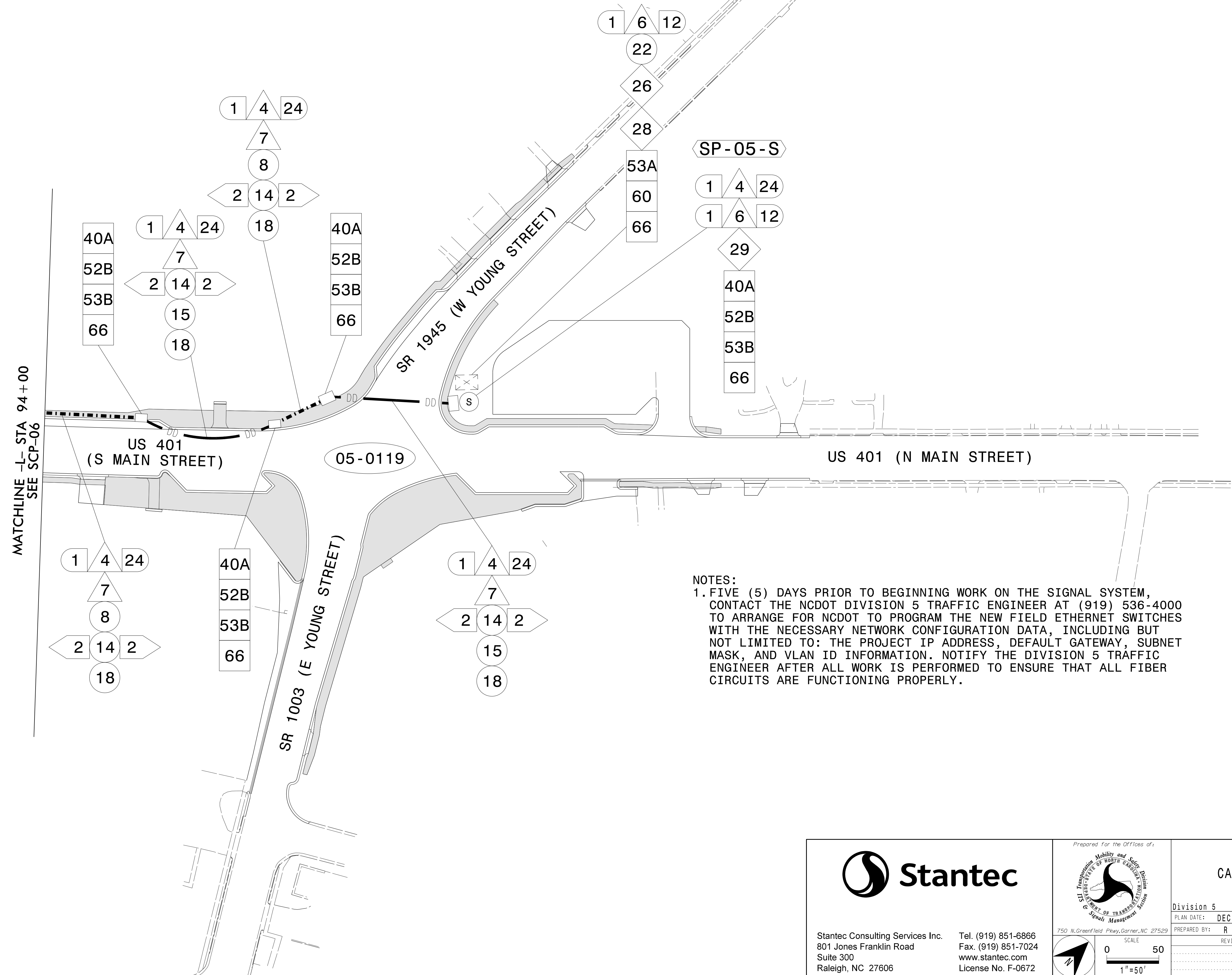
PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris
PREPARED BY: R M Muncey	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

 REGINA M. MUNCEY
 ENGINEER
 SEAL 43239

DocuSign
 Regina M. Muncey 12/3/2021
 C:\ES\1822454FA
 SIGNATURE DATE
 CADD Filename:



NOTES:
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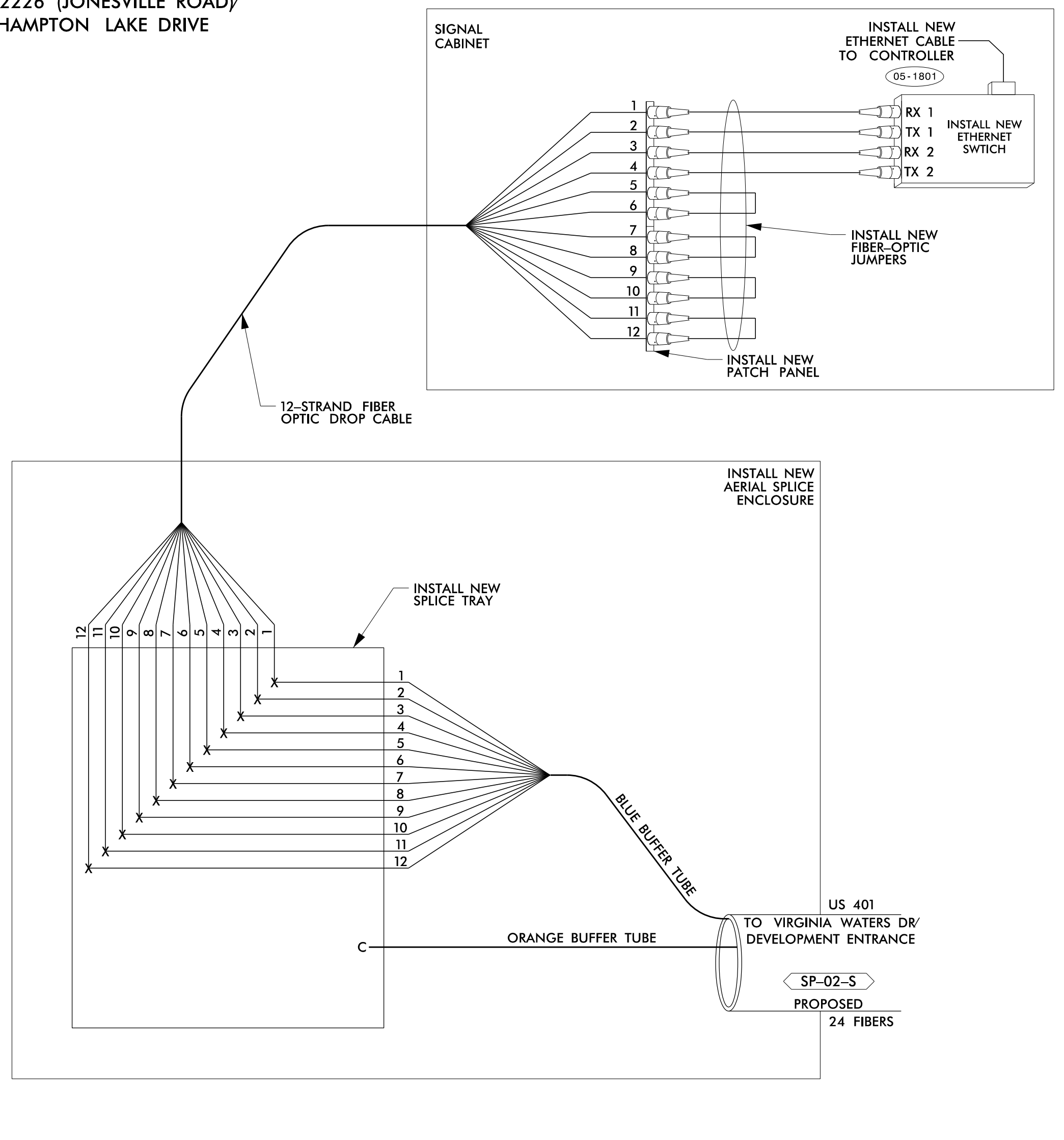
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<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606</p>	<p>Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>Prepared for the Offices of: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Division 5 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>CABLE ROUTING PLANS</p>		<p>Division 5 Wake County Rolesville PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris PREPARED BY: R M Muncey REVIEWED BY:</p>	<p>SEAL REGINA M. MUNCEY ENGINEER 12/3/2021</p>					
			<p>SCALE 0 50 1" = 50'</p>	<table border="1"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REVISIONS	INIT.	DATE		
REVISIONS	INIT.	DATE									

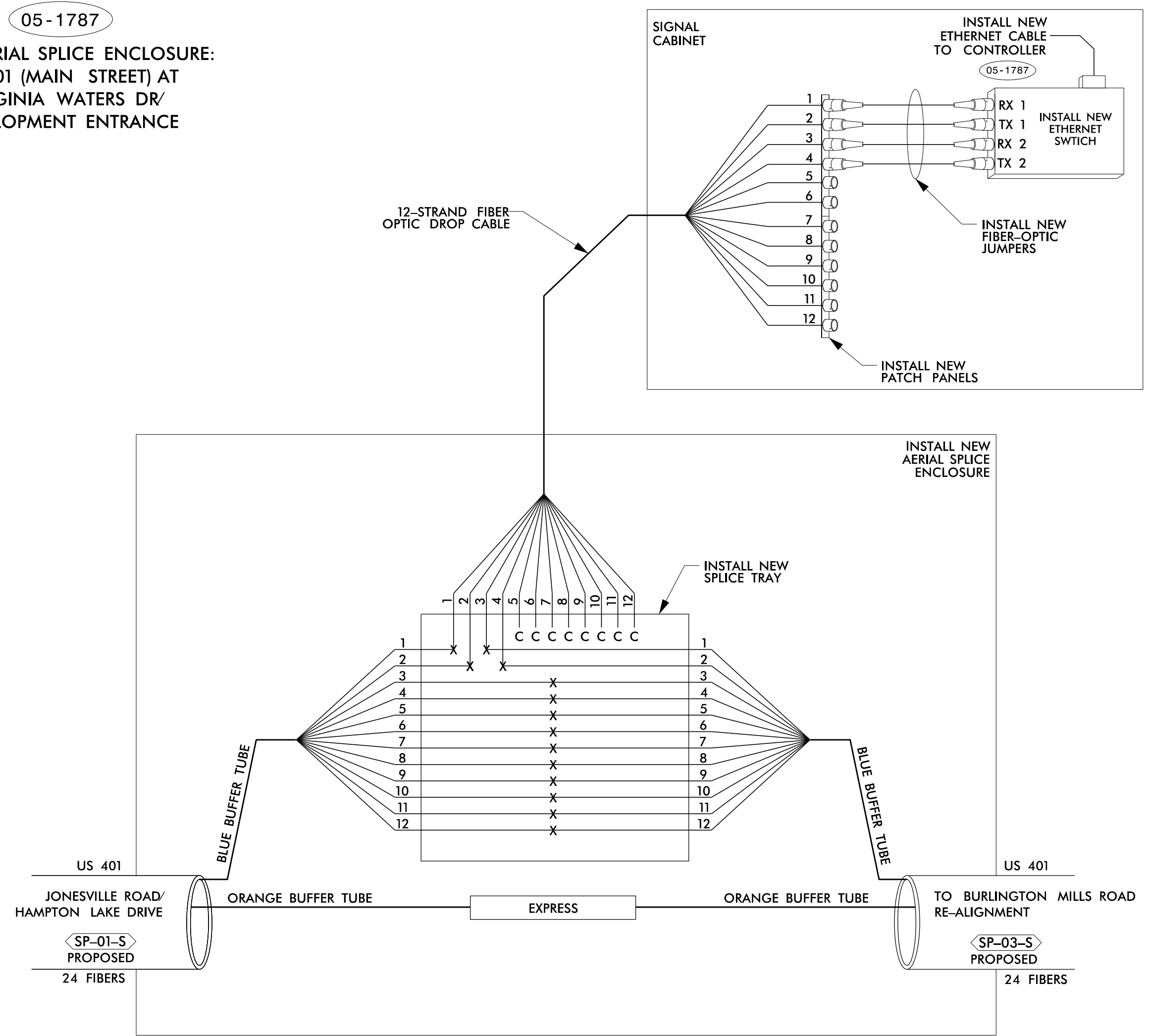
SPLICE NUMBER:
SP-01-S
05-1801

NEW AERIAL SPLICE ENCLOSURE:
US 401 (MAIN STREET) AT
SR 2226 (JONESVILLE ROAD/
HAMPTON LAKE DRIVE



SPLICE NUMBER:
SP-02-S
05-1787

NEW AERIAL SPLICE ENCLOSURE:
US 401 (MAIN STREET) AT
VIRGINIA WATERS DR/
DEVELOPMENT ENTRANCE



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LEGEND

COLOR CODE TIA/EIA 598-B		E = EXISTING FUSION SPLICE INDIVIDUAL FIBER TO REMAIN
(1) BLUE	(7) RED	X = FUSION SPLICE INDIVIDUAL FIBER
(2) ORANGE	(8) BLACK	C = CAP AND SEAL
(3) GREEN	(9) YELLOW	EXPRESS = EXPRESS ENTIRE BUFFER TUBE/FIBERS THROUGH WITHOUT CUTTING
(4) BROWN	(10) VIOLET	BUFFER SPLICE = SPLICE ALL FIBERS IN BUFFER TUBE COLOR TO COLOR
(5) SLATE	(11) ROSE	SM FIBER PATCH CORD WITH CONNECTORS
(6) WHITE	(12) AQUA	
05-XXXX = PROPOSED DEVICE		
05-XXXX = EXISTING DEVICE		

- FIVE (5) DAYS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEMS COMMUNICATIONS CABLE, CONTACT THE NCDOT DIVISION 5 TRAFFIC ENGINEER AT (919) 536-4000. NOTIFY THE ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. ALL WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
 - CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
 - TRANSCIEVER ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING ENSURING PROPER TERMINATIONS. INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING: REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"
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 - DATE
 - COMPANY NAME
 - NAME OF INDIVIDUAL PERFORMING THE SPLICING
- PRIOR TO INSTALLING THE COVER ABOVE THE SPLICE TRAY, TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTR TEST RESULTS.

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N.T.S.
750 N. Greenfield Pkwy, Garner, NC 27529

FIBER OPTIC SPLICE DETAILS

Division 5	Wake County	Rolesville
PLAN DATE: DECEMBER 2021	REVIEWED BY: E D Harris	
PREPARED BY: R M Muncey	REVIEWED BY:	
REVISIONS	INIT.	DATE

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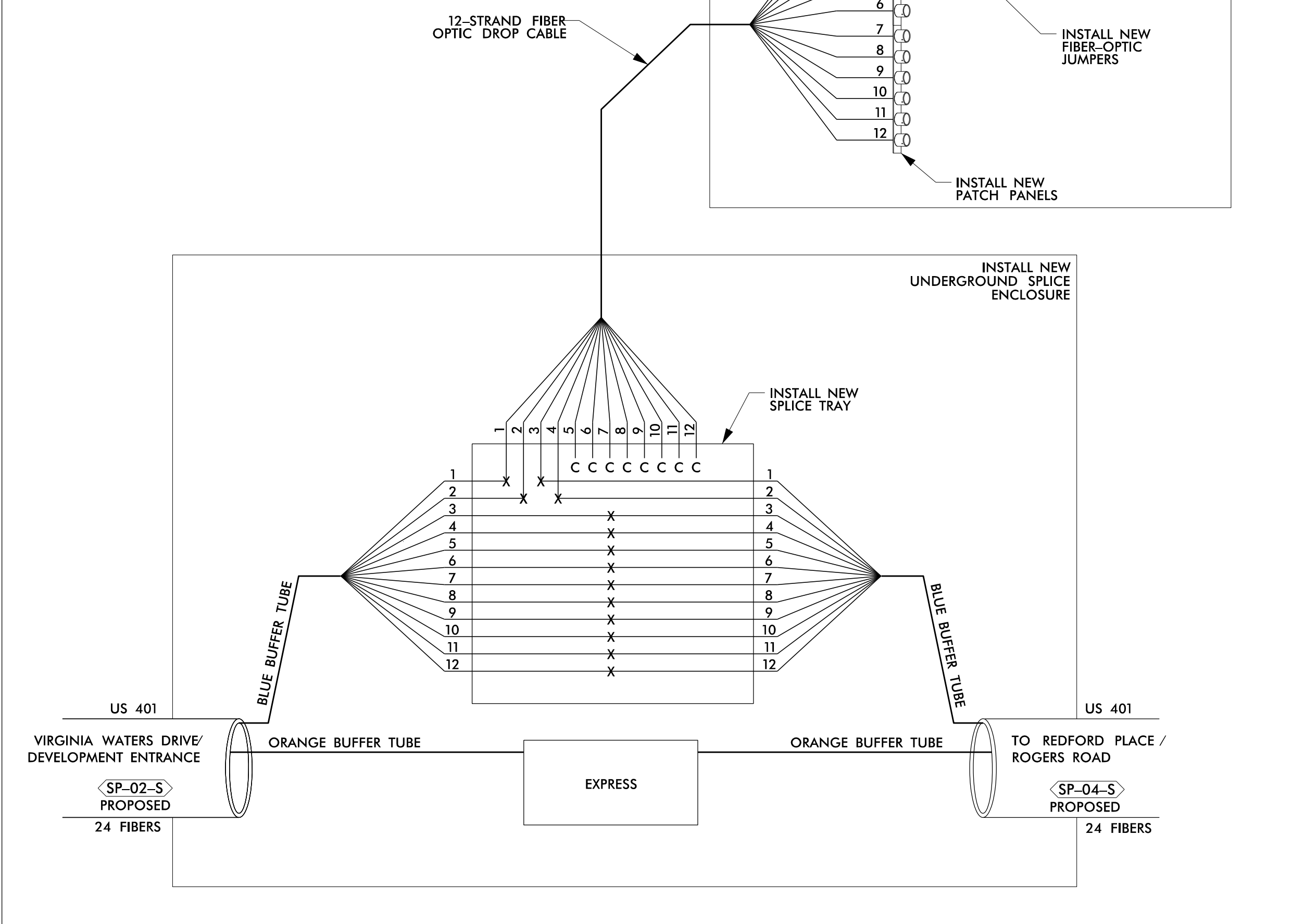
SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
REGINA M. MUNCEY
43239

DocuSign
Regina M. Muncey 12/3/2021
CITE#S1822454FA
SIGNATURE DATE
CADD Filename:

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SP-03-S

05-1788

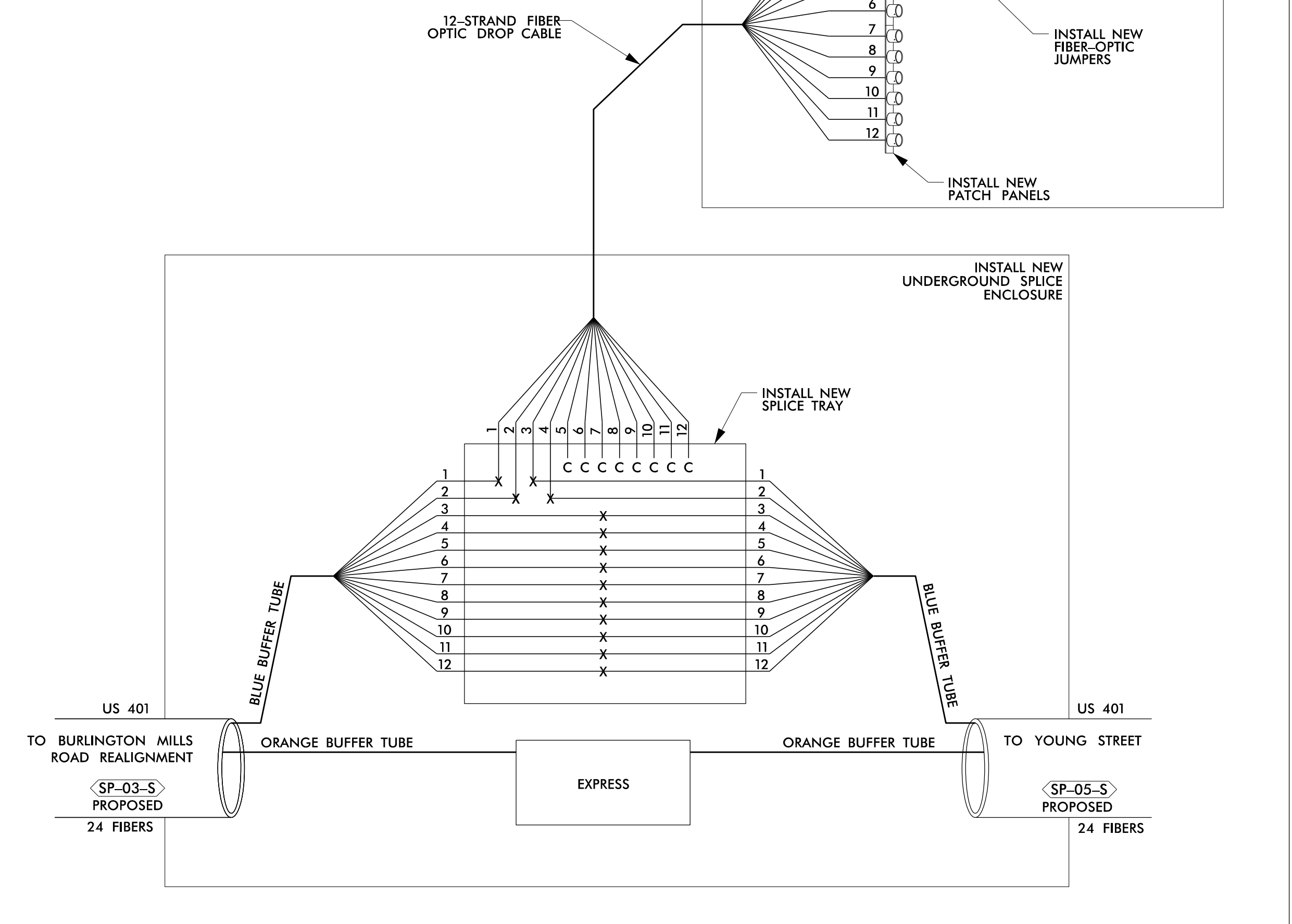
NEW UNDERGROUND
SPLICE ENCLOSURE:
US 401 (MAIN STREET) AT
SR 2051 (BURLINGTON MILLS ROAD
REALIGNMENT)



SPLICE NUMBER:
SP-04-S

05-2229

NEW UNDERGROUND
SPLICE ENCLOSURE:
US 401 (MAIN STREET) AT
REDFORD PLACE /
SR 2052 (ROGERS ROAD)



LEGEND

COLOR CODE TIA/EIA 598-B		E = EXISTING FUSION SPLICE INDIVIDUAL FIBER TO REMAIN
(1) BLUE	(7) RED	X = FUSION SPLICE INDIVIDUAL FIBER
(2) ORANGE	(8) BLACK	C = CAP AND SEAL
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750 N. Greenfield Pkwy, Garner, NC 27529

FIBER OPTIC SPLICE DETAILS
Division 5 Wake County Rolesville
PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris
PREPARED BY: R M Muncey REVIEWED BY:
REVISIONS INIT. DATE
N.T.S.

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SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
REGINA M. MUNCEY
SEAL 43239
REGINA M. MUNCEY 12/3/2021
CADD Filename:

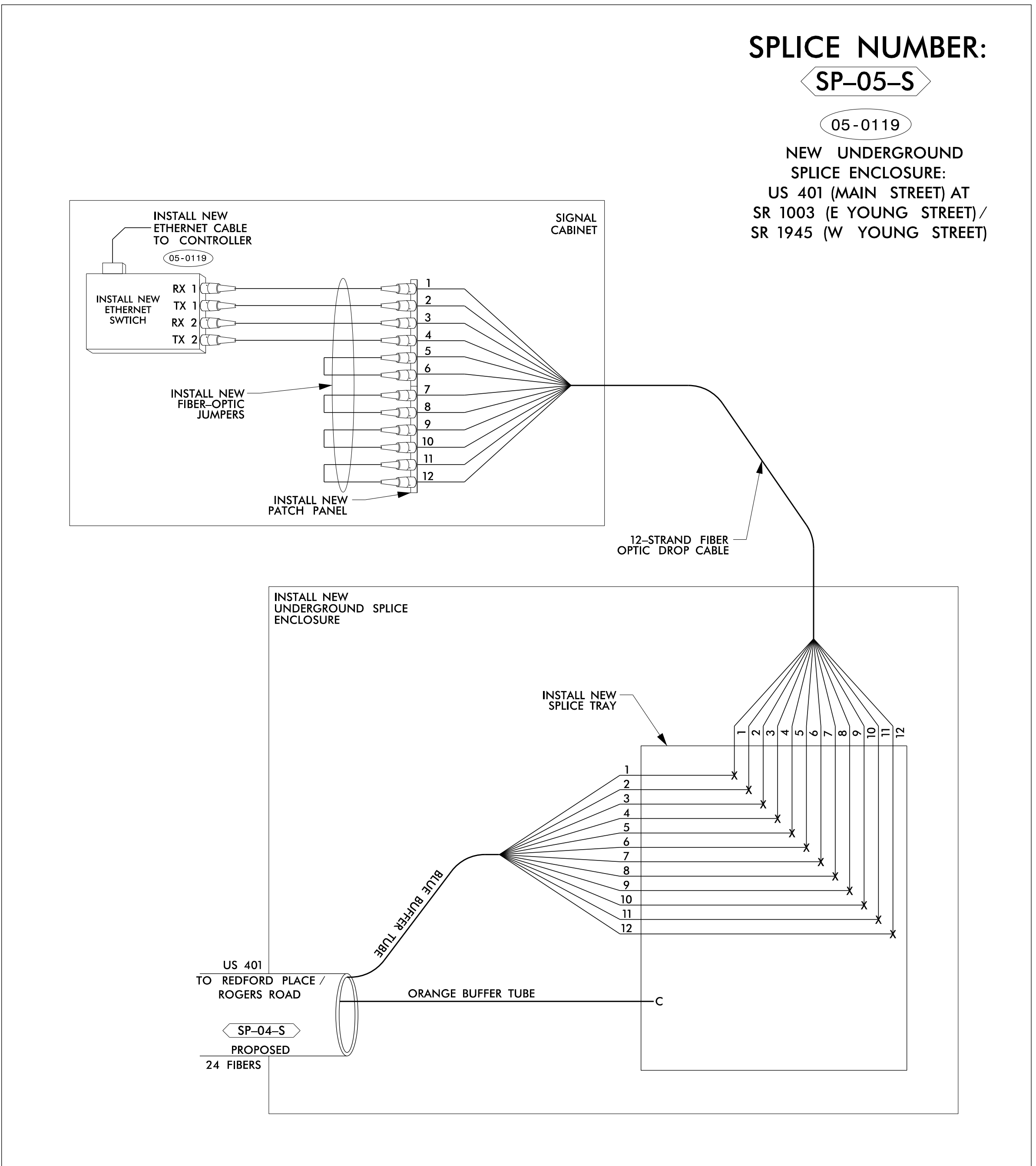
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SPLICE NUMBER:

SP-05-S

05-0119

NEW UNDERGROUND SPLICE ENCLOSURE: US 401 (MAIN STREET) AT SR 1003 (E YOUNG STREET) / SR 1945 (W YOUNG STREET)



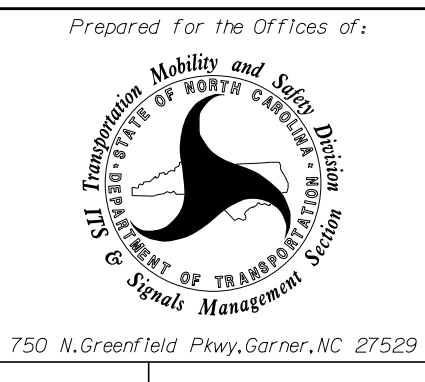
LEGEND

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FIBER OPTIC SPLICE DETAILS

Division 5 Wake County Rolesville PLAN DATE: DECEMBER 2021 REVIEWED BY: E D Harris PREPARED BY: R M Muncey REVIEWED BY:

Table with columns: REVISIONS, INIT., DATE. Includes a signature line for Regina M. Muncey dated 12/3/2021.

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Professional Engineer Seal for Regina M. Muncey, State of North Carolina, License No. 43239. Includes signature and date: Regina M. Muncey 12/3/2021.

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

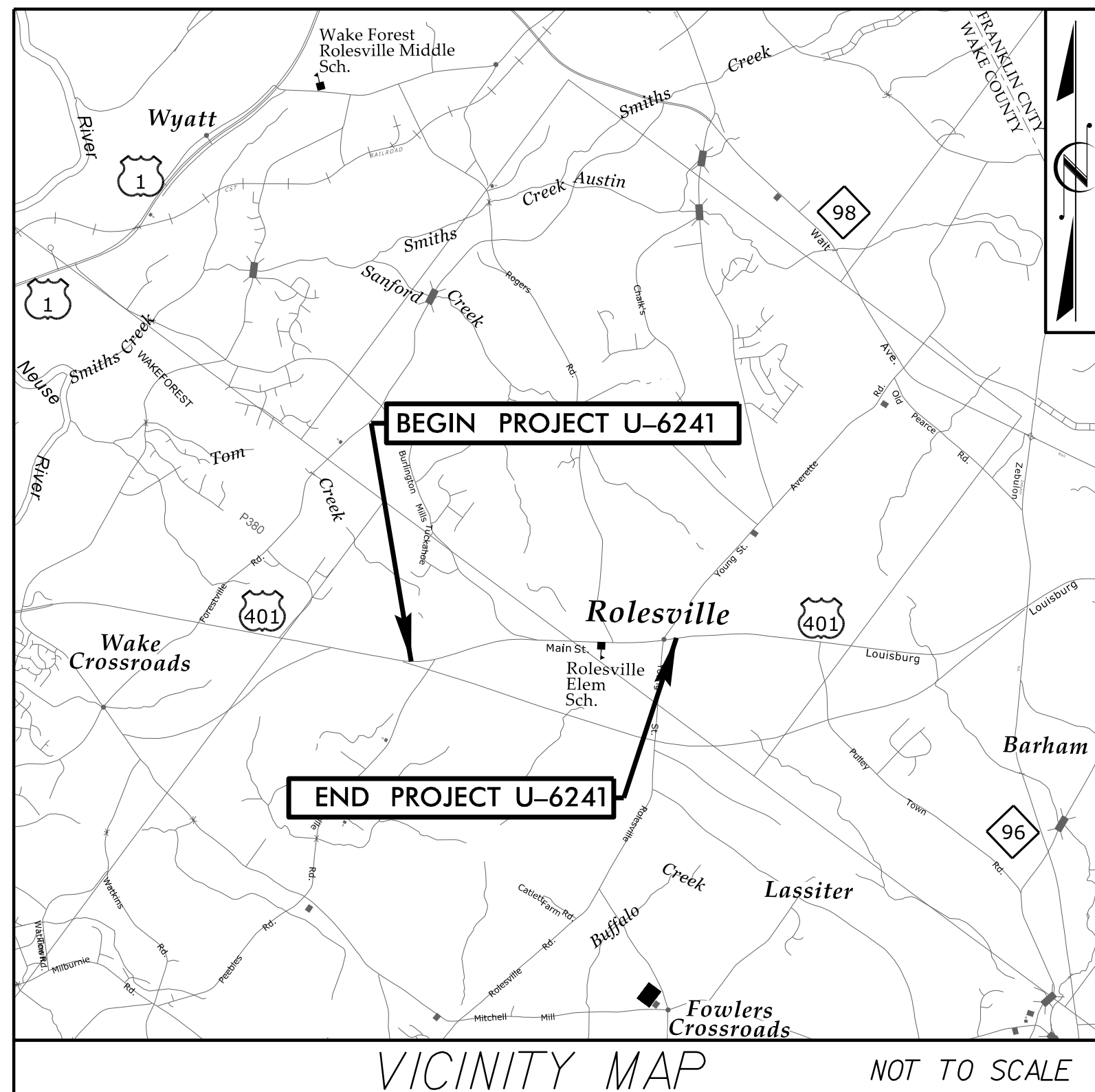
T.I.P. NO.	SHEET NO.
U-6241	UC-01

UTILITY CONSTRUCTION PLANS WAKE COUNTY

**LOCATION: US 401 BUS (MAIN STREET) FROM JONESVILLE ROAD
TO NORTH OF YOUNG STREET**

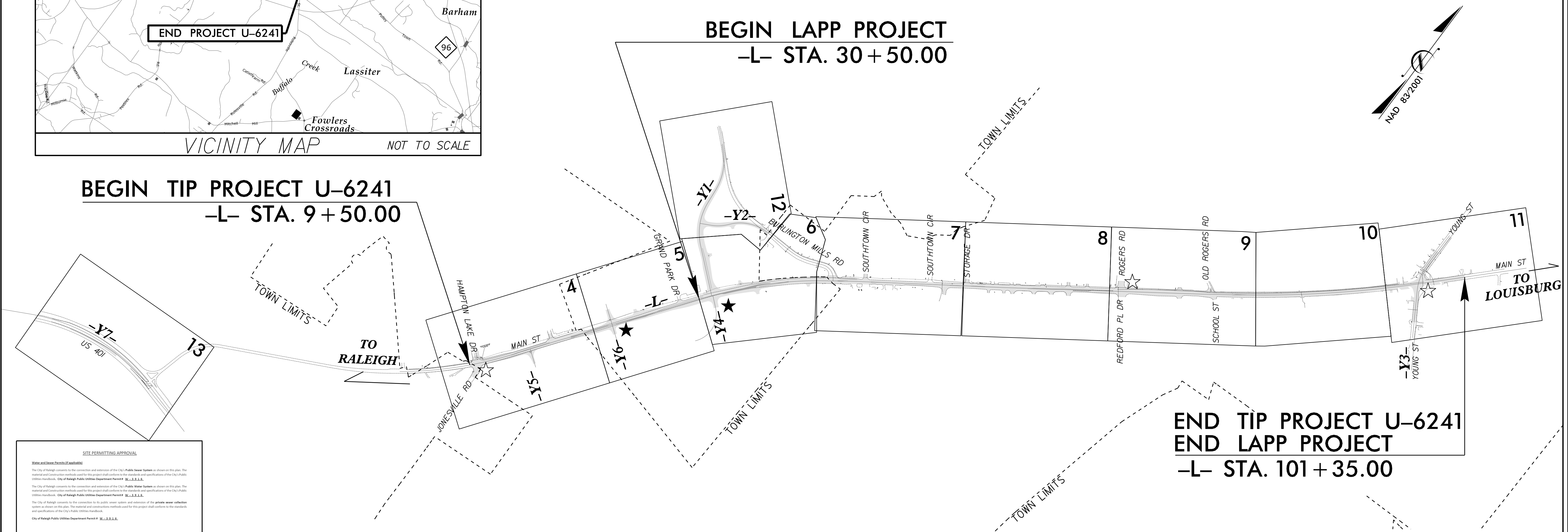
TYPE OF WORK: UTILITY RELOCATES FOR WATER

TIP PROJECT: U-6241



**BEGIN LAPP PROJECT
-L- STA. 30 + 50.00**

**BEGIN TIP PROJECT U-6241
-L- STA. 9 + 50.00**



**END TIP PROJECT U-6241
END LAPP PROJECT
-L- STA. 101 + 35.00**

SITE PERMITTING APPROVAL

Water and Sewer District of Wake County
The City of Raleigh consents to the construction and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City of Raleigh Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3.3.3.3.3.

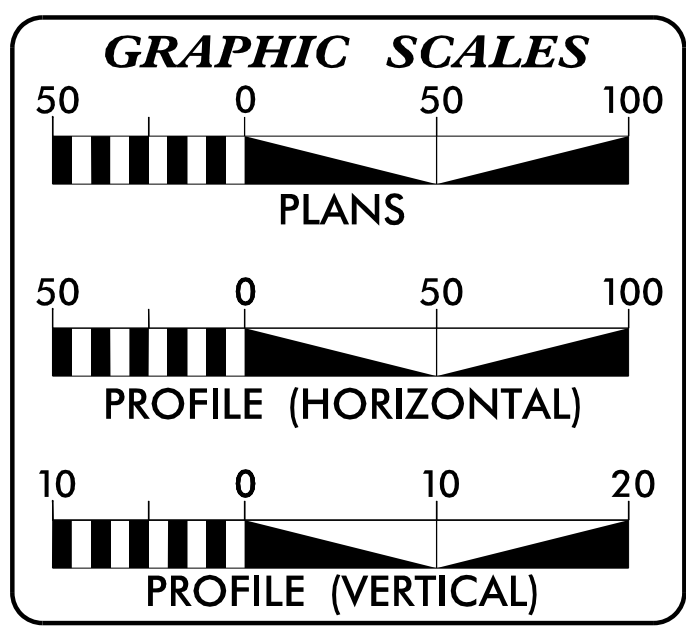
The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City of Raleigh Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3.3.3.3.3.

The City of Raleigh consents to the connection to the public water system and extension of the public water distribution system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City of Raleigh Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # W-3.3.3.3.3.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Public Utilities Engineer. The City will retain a copy of the approved plans. Any work authorized by this approval must be performed in accordance with the plan book on file with the City. This electronic approval may not be relied upon for legal purposes. Any modifications to the approved plans must be made and approved by the City.

City of Raleigh Development Approval: _____
Raleigh Water Services Officer



INDEX OF SHEETS

SHEET NO.	DESCRIPTION:
UC-01	TITLE SHEET
UC-02	UTILITY SYMBOLOGY
UC-03	NOTES
UC-03A - UC-03B	DETAILS
UC-04 THRU UC-12	WATER PLAN SHEETS

**UTILITY OWNER
WATER**

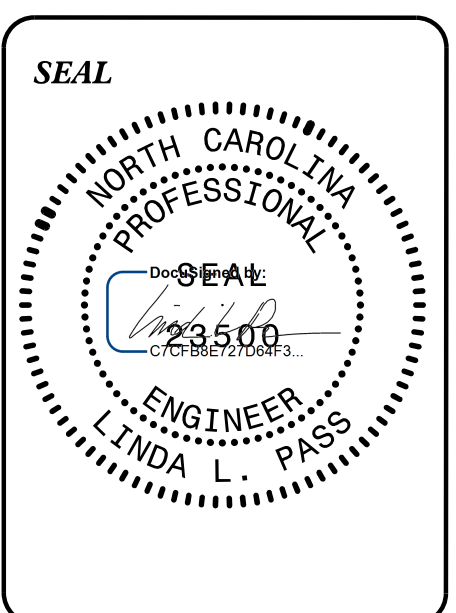
CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
1 EXCHANGE PLAZA #620
RALEIGH, NC 27601

PREPARED IN THE OFFICE OF

Stantec

STANTEC CONSULTING SERVICES INC.
801 JONES FRANKLIN ROAD,
SUITE 300
RALEIGH, NC 27686
TEL: (919) 851-6865
FAX: (919) 851-7024
www.stantec.com
License No.: F-0672

BETSY WATSON, PE CONSULTANT CONTACT #1
LINDA PASS, PE CONSULTANT CONTACT #2
LAURA WILSON, EI CONSULTANT CONTACT #3



**DIVISION OF HIGHWAYS
UTILITIES UNIT**

1555 MAIL SERVICES CENTER
RALEIGH, NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

JOHN LOUGHRY SENIOR UTILITIES ENGINEER
MONROE BROWN UTILITIES COORDINATOR

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	

Thrust Block	
Air Release Valve	
Utility Vault	
Abandon Utility (Sized as Shown)	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		Aboveground Power	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records		Sanitary Sewer Cleanout	
End of Information			

*For Existing Utilities
 Utility Line Drawn from Record (Type as Shown) _____
 Designated Utility Line (Type as Shown) _____

5/14/99
2/24/2022
C:\Utilities\Projects\UC\Proj\U-6241-1-ut-sym-UC02.dgn

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION WILL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
2. THE EXISTING UTILITIES BELONG TO THE CITY OF RALEIGH, NC.
3. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY NCDOT AND THE TOWN OF ROLESVILLE. NCDOT AND THE TOWN OF ROLESVILLE OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON NCDOT, THE TOWN OF ROLESVILLE OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON NCDOT AND THE TOWN OF ROLESVILLE.
4. PROVIDE ACCESS FOR NCDOT, THE TOWN OF ROLESVILLE PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY NCDOT, THE TOWN OF ROLESVILLE PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

5. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO NCDOT, THE TOWN OF ROLESVILLE AND THE CITY OF RALEIGH.

6. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

7. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.

8. ALL UTILITY MATERIALS WILL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

9. EMERGENCY CONTACT - UTILITY OWNER:
CITY OF RALEIGH, PUBLIC UTILITIES I RALEIGH WATER
TIM BEASLEY, SENIOR ENGINEER
919-996-2176
EMAIL: Timothy.Beasley@raleighnc.gov

TOWN OF ROLESVILLE
MICAL MCFARLAND
COMMUNITY & ECONOMIC DEVELOPMENT
919-556-3506
EMAIL: mical.mcfarland@rolesville.nc.gov

PROJECT SPECIFIC NOTES:

1. ALL NEW WATER LINE WILL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. WATER MAINS OR SEWER LINES CROSSING UNDER STORM DRAIN PIPE WILL HAVE 18" MINIMUM VERTICAL CLEARANCE UNLESS SPECIFIED ON THE PLAN/PROFILE DRAWINGS.
3. ALL MATERIALS AND CONSTRUCTION PERTAINING TO WATER AND SEWER LINE CONSTRUCTION WILL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF CITY OF RALEIGH.
4. CONTRACTOR WILL OBTAIN THE LATEST STANDARDS, SPECIFICATIONS OF CITY OF RALEIGH AND NCDOT.
5. RETURN ABANDONED MANHOLE FRAMES AND COVERS TO OWNER.
6. PRIOR TO CONSTRUCTION CONTRACTOR TO CONFIRM THE ELEVATION OF EXISTING WATER MAINS BY POTHOLING AT THE PROPOSED STORM DRAIN CROSSINGS. INFORM ENGINEER OF ANY REQUIRED REVISIONS.

STANDARD DETAIL DRAWINGS

1. STANDARD DETAILS ARE PROVIDED FOR THE PROJECT. TOWN OF MOORESVILLE STANDARD DETAILS ARE TO BE USED WHEN APPLICABLE. A COPY OF TOWN STANDARD DETAILS ARE AVAILABLE ON LINE: www.raleighnc.gov
2. IF NO STANDARD DETAILS ARE PROVIDED IN DRAWINGS OR BY TOWN, THEN USE NCDOT STANDARD SPECIFICATIONS, DIVISION 15 STANDARD DETAILS FOR UTILITY CONSTRUCTION.



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801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO. U-6241	SHEET NO. UC-03
DESIGNED BY: WMH	
DRAWN BY: RGR/WMH	
CHECKED BY: MCM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

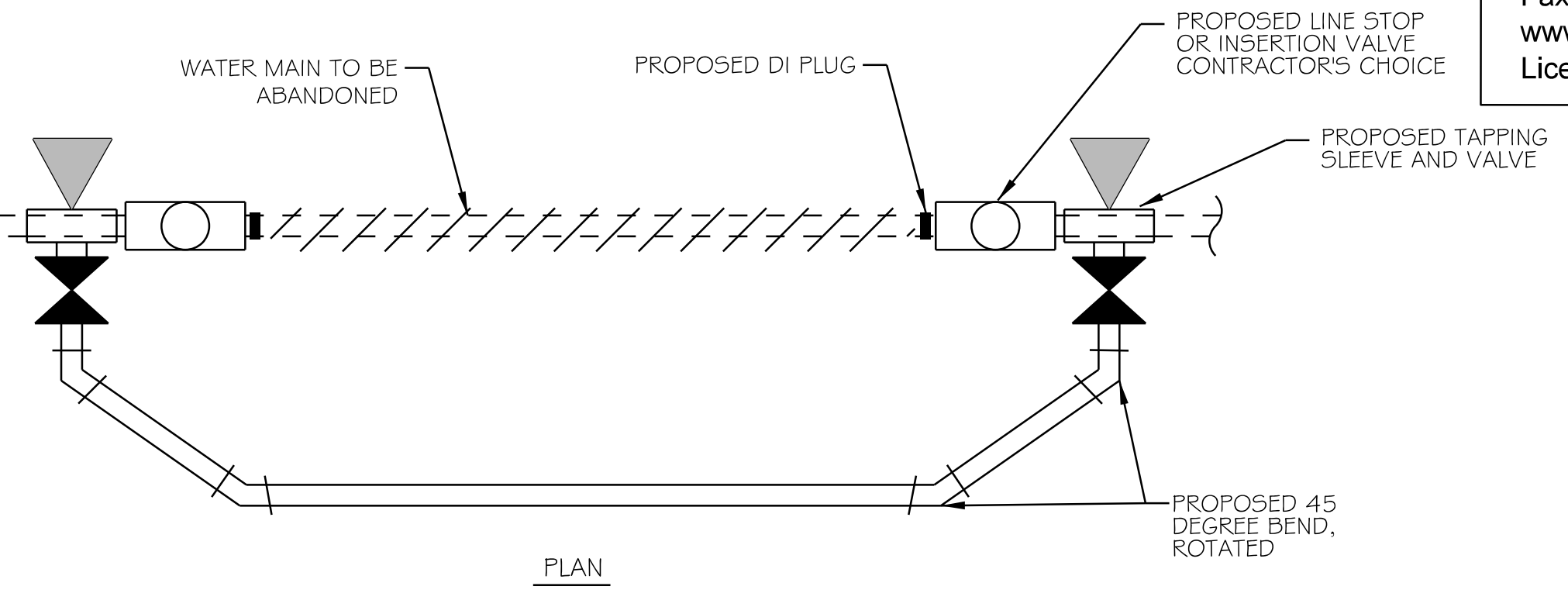
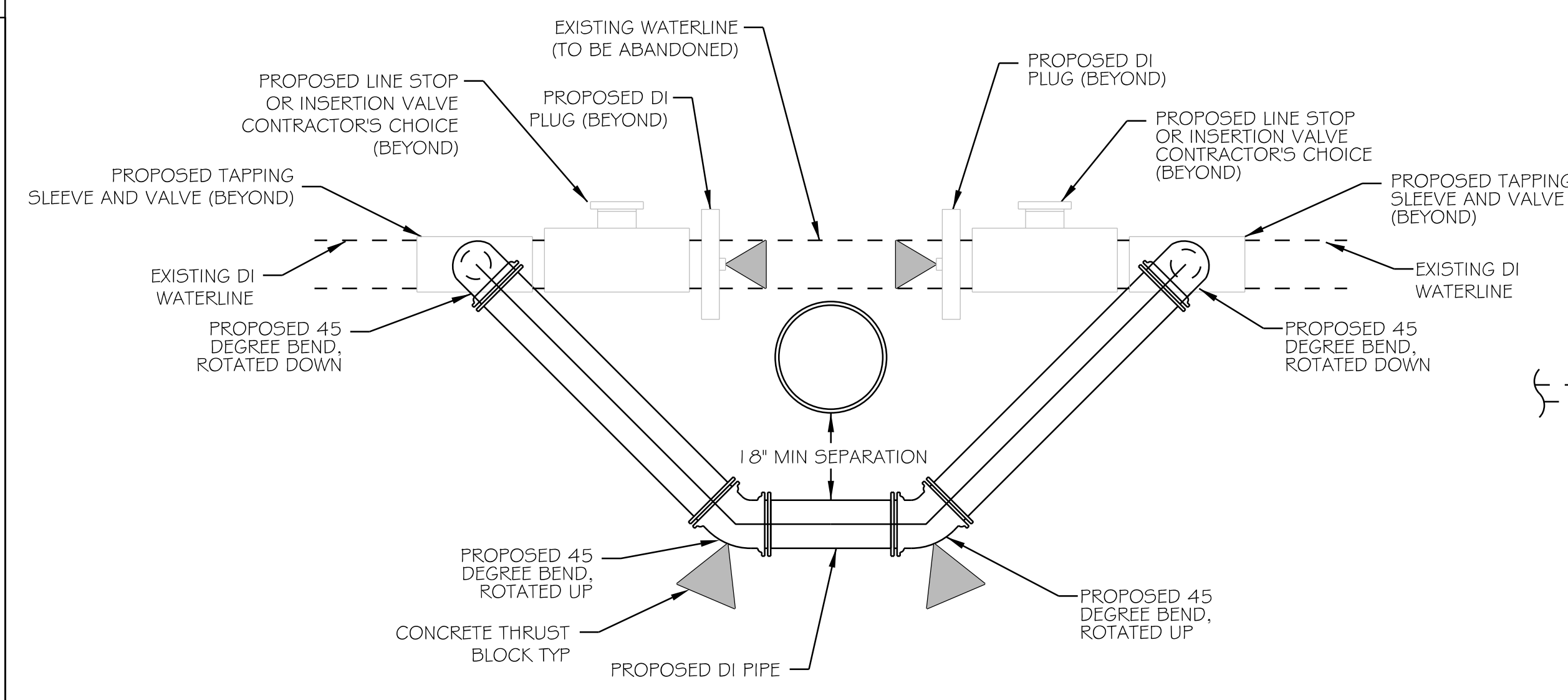
UTILITY CONSTRUCTION



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PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-03A
DESIGNED BY: LEW	
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

UTILITY CONSTRUCTION



PROFILE

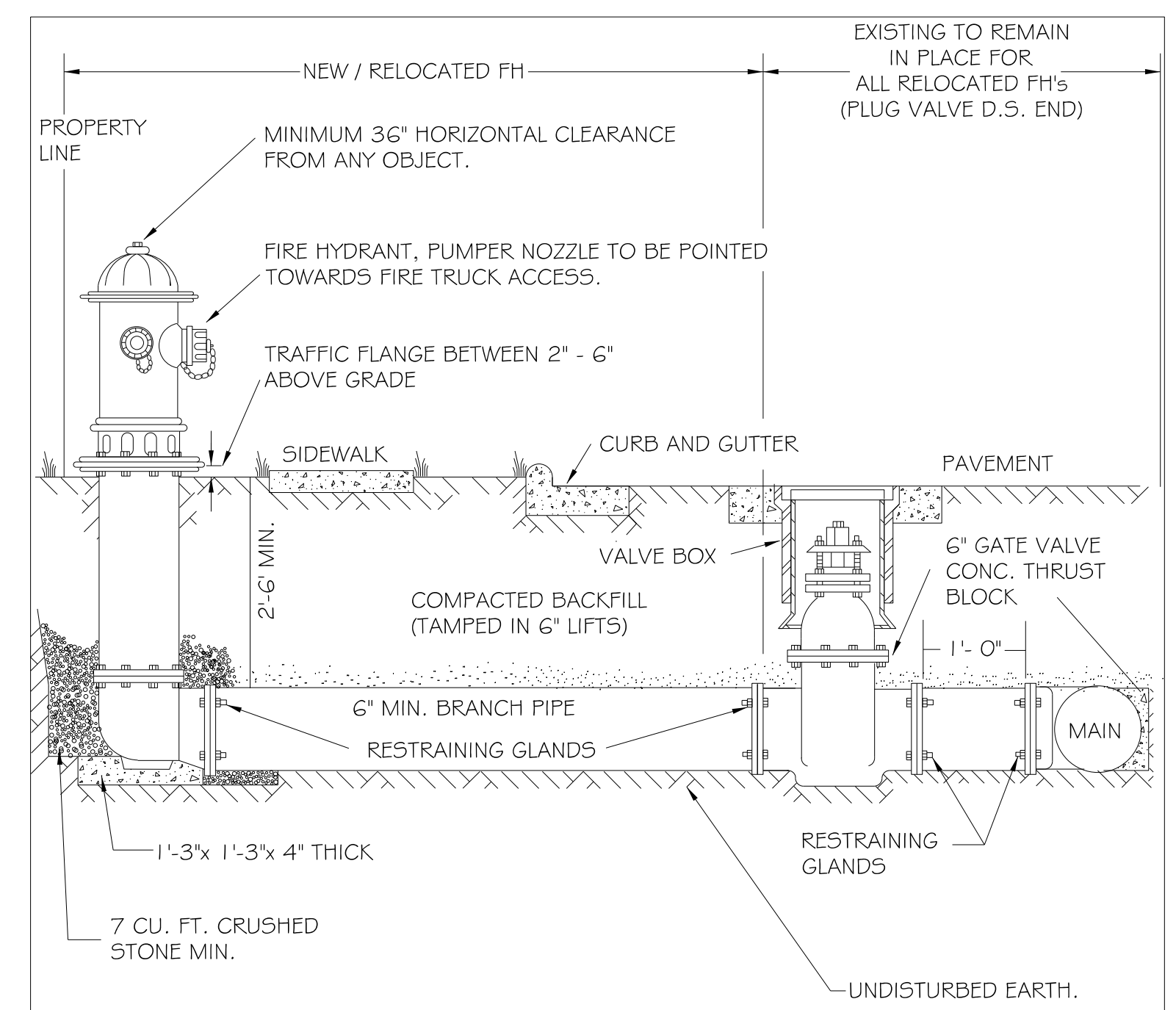
PLAN

DETAIL 03A/1
WATER MAIN RELOCATIONS WITH
TAPPING SLEEVE & VALVE

NOTES:

- 1. INSTALL THRUST BLOCKING PER CITY OF RALEIGH DETAILS W-9, W-10, AND W-12.

REVISIONS

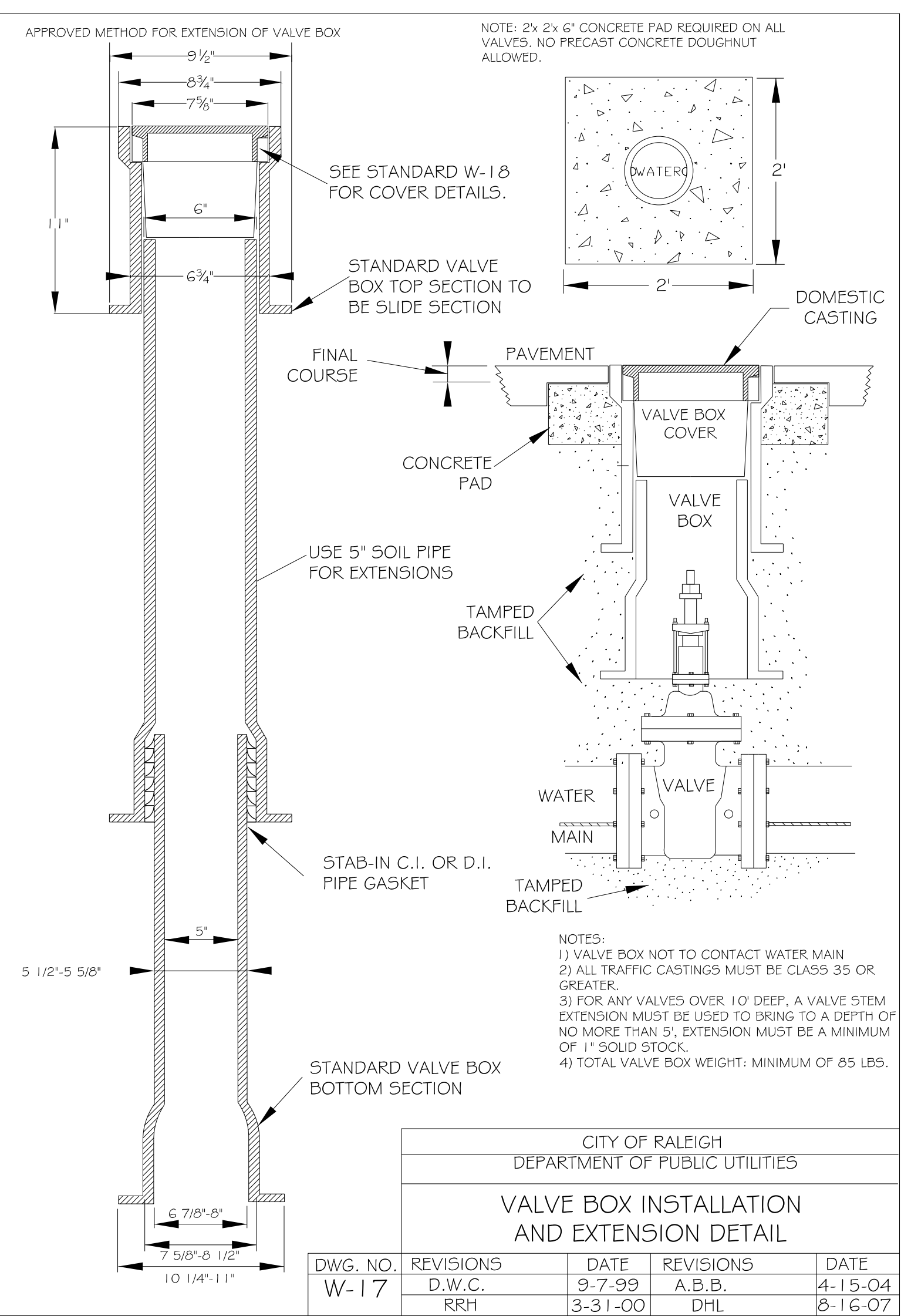


NOTES:

- 1. FIRE HYDRANT SHALL BE AS MANUFACTURED: MUELLER, AMERICAN DARLING, KENNEDY, M#H, WATEROUS, CLOW, EAST JORDAN IRON WORKS, OR US PIPE.
- 2. BRANCH PIPE SHALL BE DUCTILE IRON AWWA C150-96
- 3. 6\"/>

ANYTIME SITE WORK, CONSTRUCTION, ROAD WORK, OR ANY OTHER WORK CHANGES THE GRADE OF THE FIRE HYDRANT, THE PERSON RESPONSIBLE FOR THE WORK IS RESPONSIBLE FOR ADJUSTING THE FIRE HYDRANT TO STAY WITHIN COMPLIANCE.

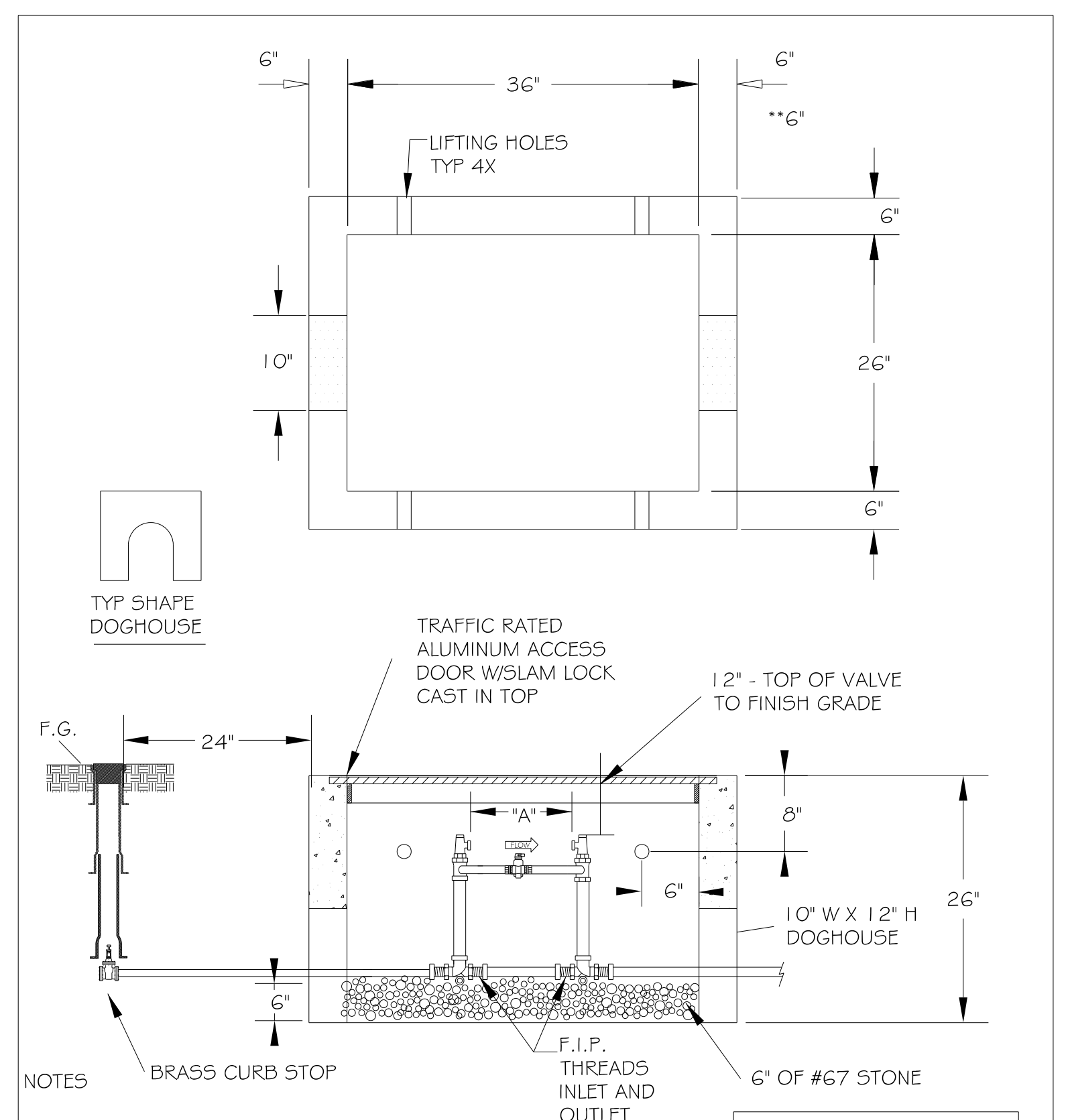
CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES	
STANDARD FIRE HYDRANT INSTALLATION DETAIL	
DWG. NO.	REVISIONS
W-4	ABB DHL
DATE	REVISIONS
4-6-04 2/14/05	PAP
DATE	
2/17/09	



NOTES:

- 1) VALVE BOX NOT TO CONTACT WATER MAIN
- 2) ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
- 3) FOR ANY VALVES OVER 10' DEEP, A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5', EXTENSION MUST BE A MINIMUM OF 1\"/>

CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES	
VALVE BOX INSTALLATION AND EXTENSION DETAIL	
DWG. NO.	REVISIONS
W-17	D.W.C. RRH
DATE	REVISIONS
9-7-99 3-31-00	A.B.B. DHL
DATE	
4-15-04 8-16-07	



NOTES:

- 1. METER AS MANUFACTURED BY SENSUS OR NEPTUNE.
- 2. BACKFILL TAMPED IN 6\"/>

CITY OF RALEIGH	
DEPARTMENT OF PUBLIC UTILITIES	
TYPICAL 1 1/2\"/>	
DWG. NO.	REVISIONS
W-31	A.B.B. D.H.L.
DATE	REVISIONS
8-17-04 6-18-05	J.P.S.
DATE	
11-4-10	

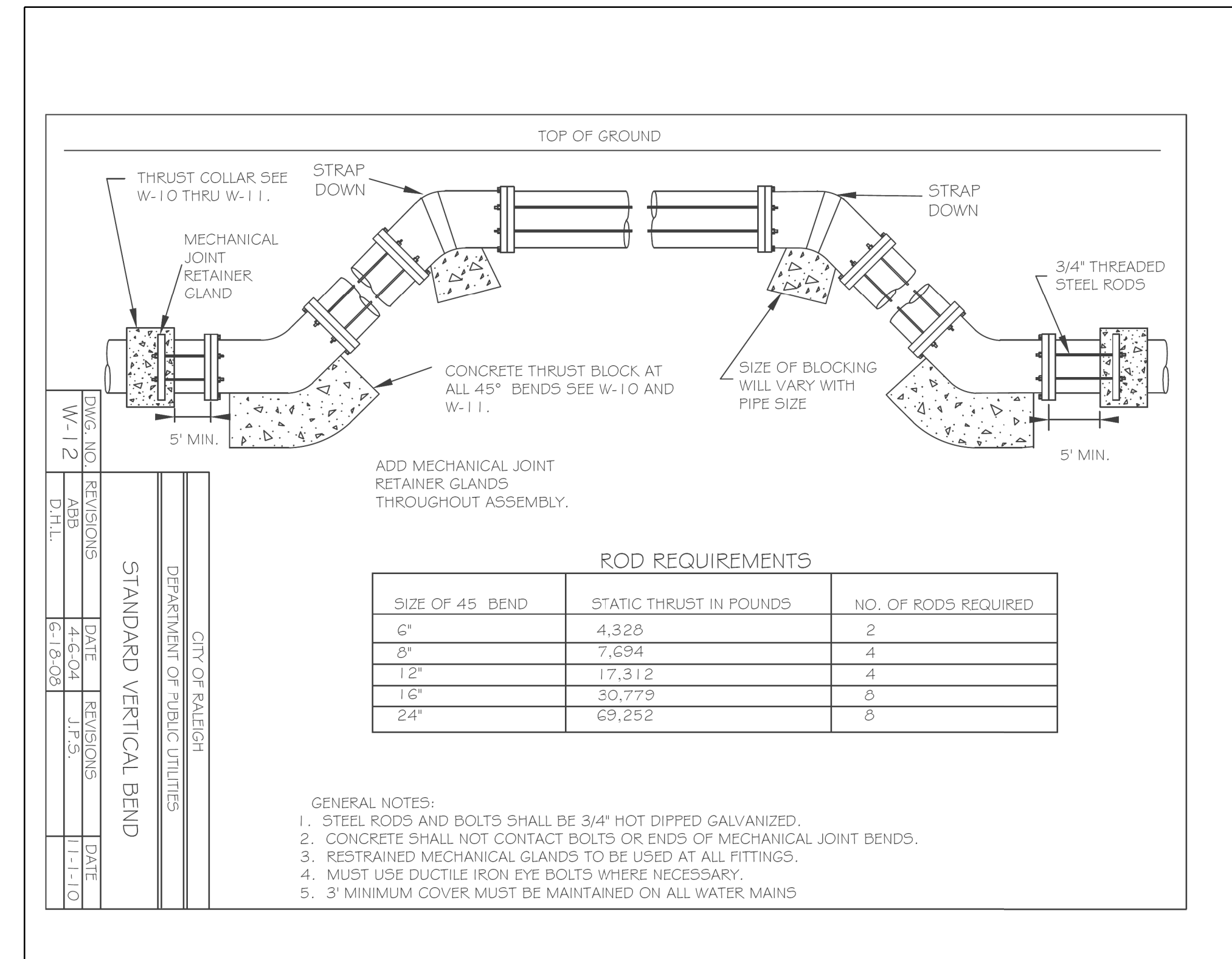
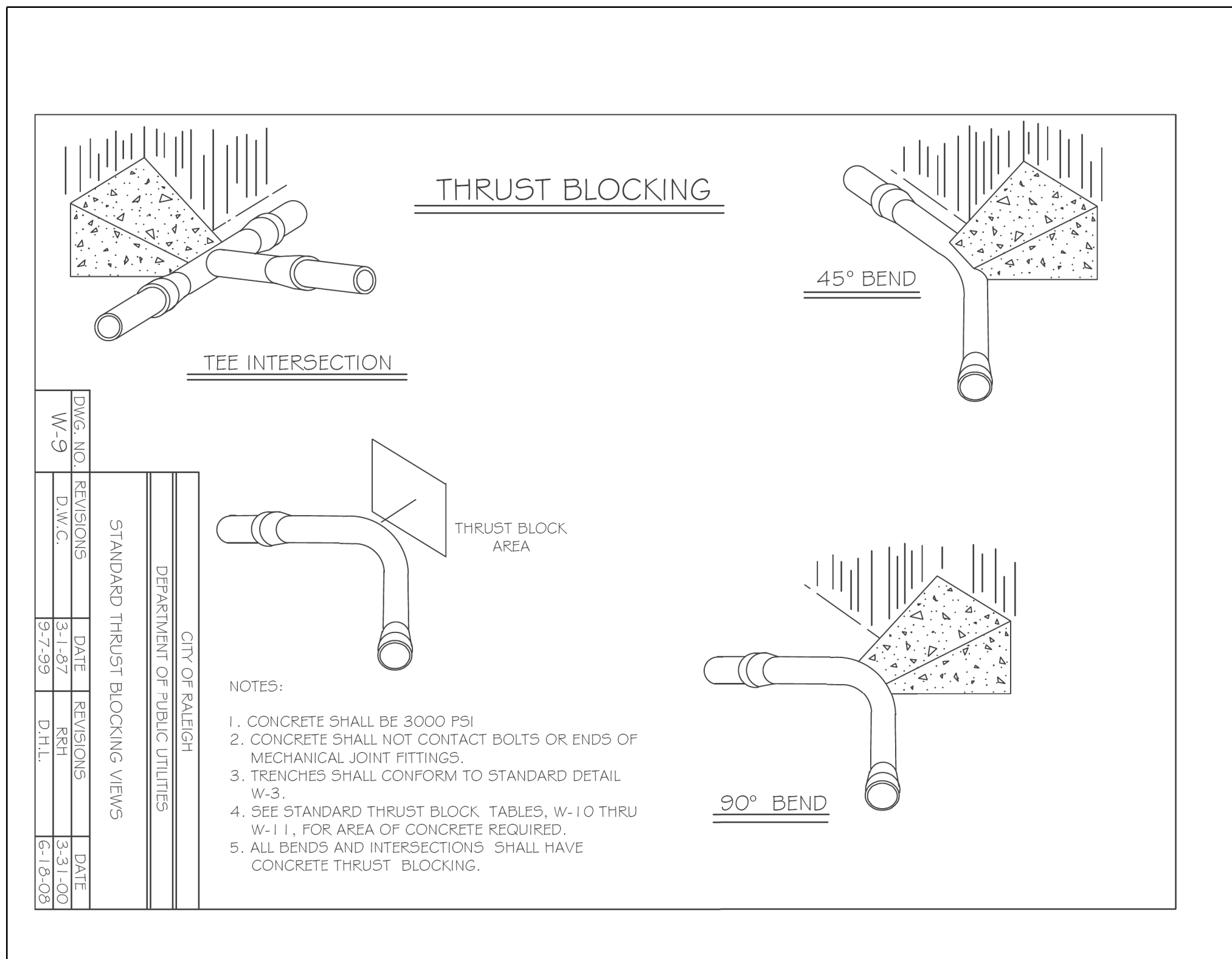
4/18/2022
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samamba



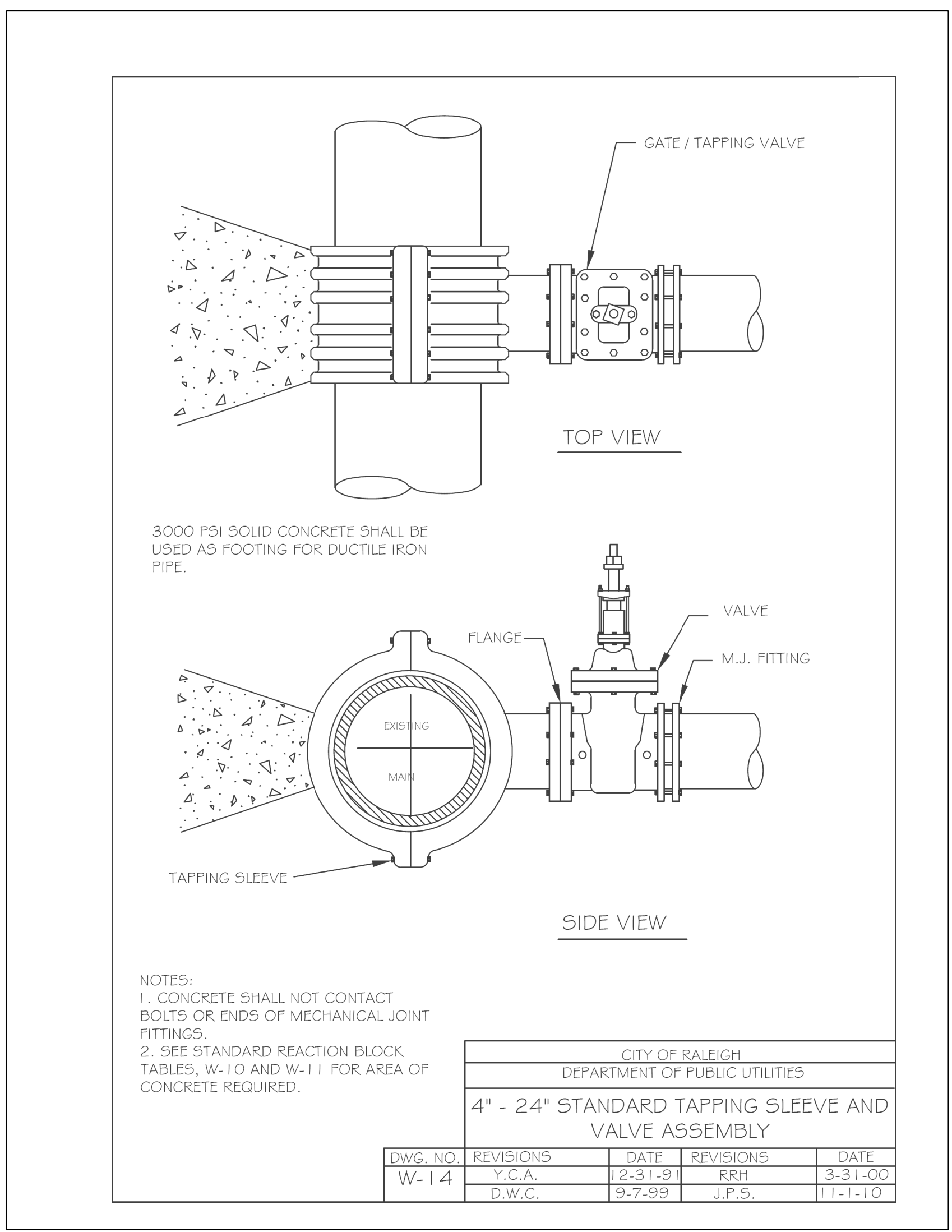
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www.stantec.com
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PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-03B
DESIGNED BY: LEW	
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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UTILITY CONSTRUCTION



REVISIONS



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET.

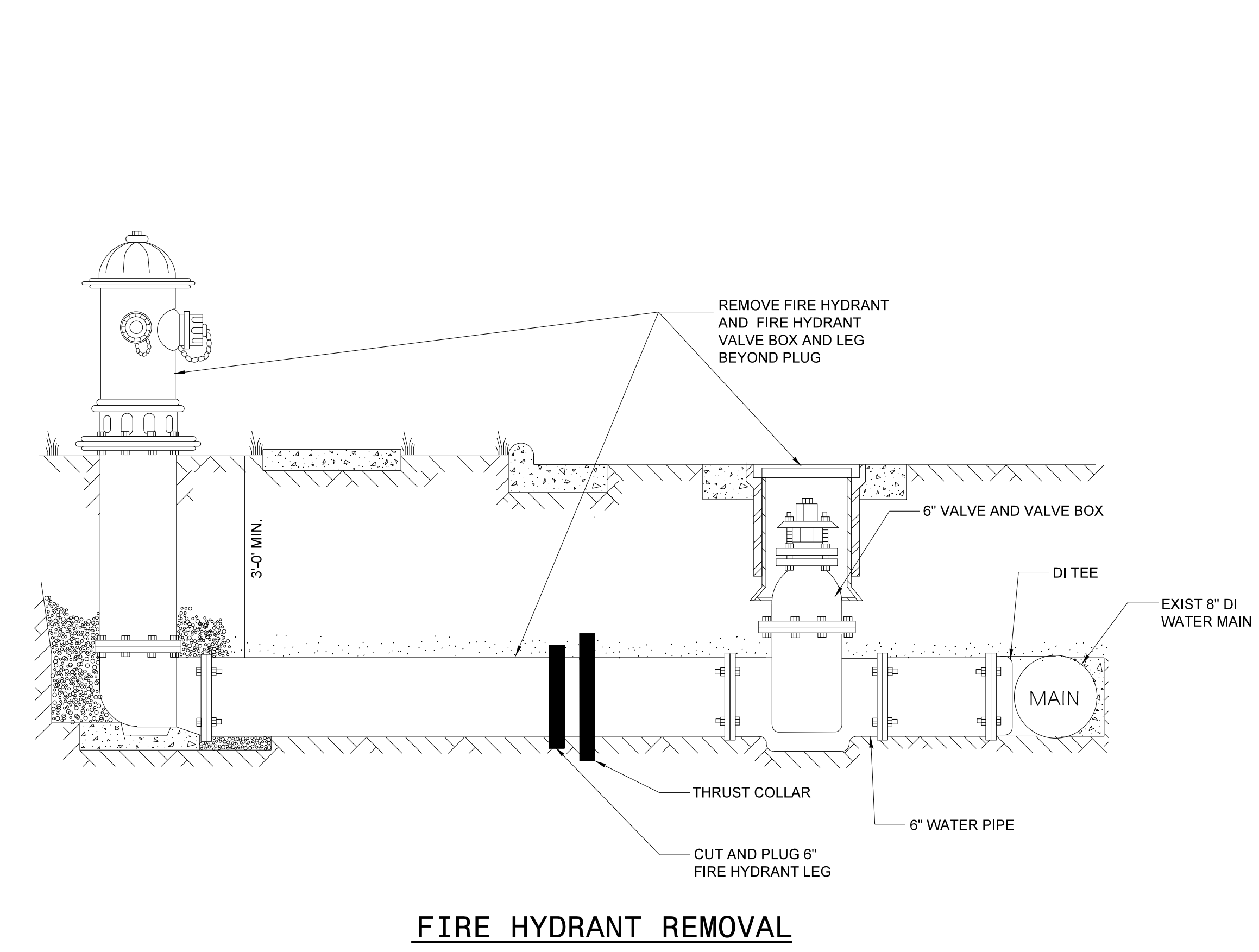
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS/SF ²	SOFT CLAY 2000 LBS/SF ²	1600 LBS/SF ² GRAVEL / COARSE SAND	800 LBS/SF ² DRY CLAY / ALWAYS DRY	SAND, COMPACT FIRM 800 LBS/SF ²	SAND, CLEAN DRY 700 LBS/SF ²	SOIL 1000 LBS/SF ² / QUICK SAND - VERY POOR	ROCK POOR 70,000 LBS/SF ²
6"									
11 1/4°	1,108	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	3	1	
45°	4,328	2	3	3	1	1	5	1	
90°	7,996	2	4	5	1	1	8	1	
PLUG	5,655	2	3	4	1	1	6	1	
8"									
11 1/4°	1,970	1	1	2	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	4	1	
45°	7,694	2	4	5	1	1	8	1	
90°	14,215	4	8	9	2	2	15	2	
PLUG	10,053	3	5	6	2	2	10	1	
12"									
11 1/4°	4,433	2	3	3	1	1	5	1	
22 1/2°	8,826	3	5	6	2	2	9	1	
45°	17,312	5	9	11	3	3	18	2	
90°	31,983	8	16	19	4	4	32	4	
PLUG	22,619	6	12	14	3	3	23	3	
16"									
11 1/4°	7,881	2	4	5	1	1	8	1	
22 1/2°	15,691	4	8	10	2	2	16	2	
45°	30,779	8	16	19	4	4	31	4	
90°	56,861	15	29	35	8	8	57	6	
PLUG	40,213	10	21	25	5	5	41	5	

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

CITY OF RALEIGH
DEPARTMENT OF PUBLIC UTILITIES
THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-10		6-23-99		
	D.W.C.			

USE 6° - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

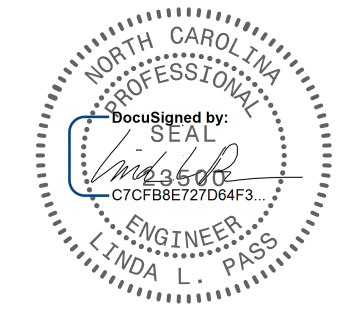


4/18/2022
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samuel

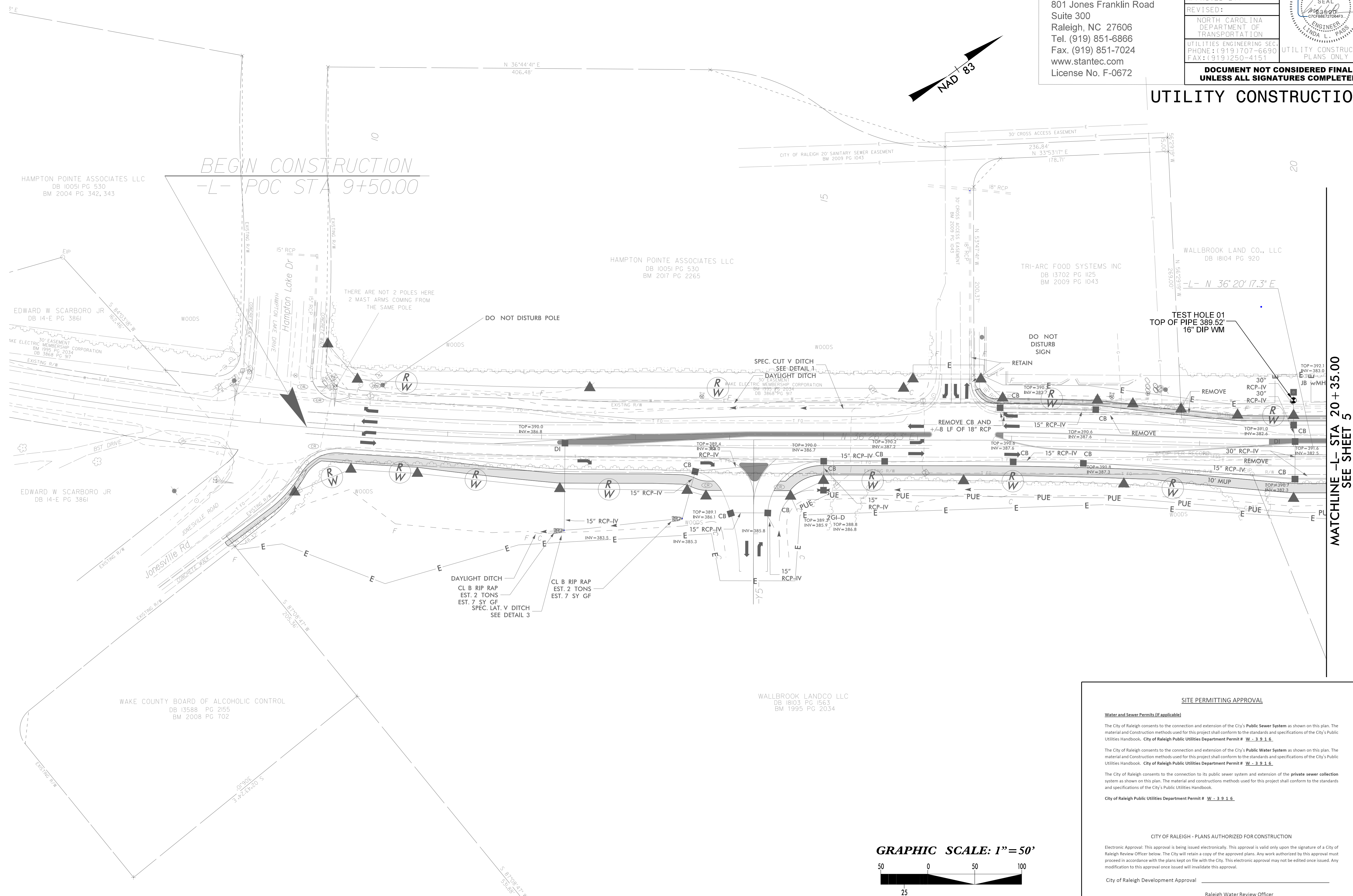


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PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-04
DESIGNED BY: LEW	ROADWAY SHEET NO. 4
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



UTILITY CONSTRUCTION



REVISIONS

GRAPHIC SCALE: 1" = 50'



PLAN

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916.**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916.**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3916.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

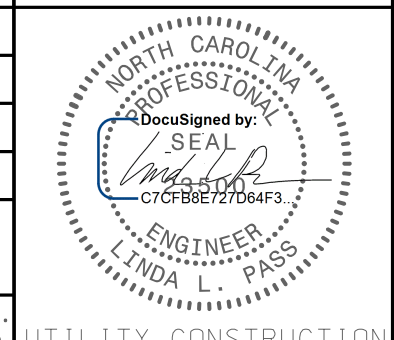
City of Raleigh Development Approval _____
Raleigh Water Review Officer

4/18/2022
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mshamba



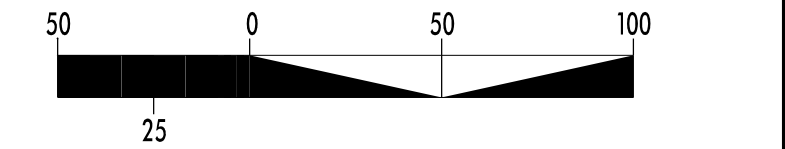
Stantec Consulting Services Inc.
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO. U-6241	SHEET NO. UC-05
DESIGNED BY: LEW	ROADWAY SHEET NO. 5
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



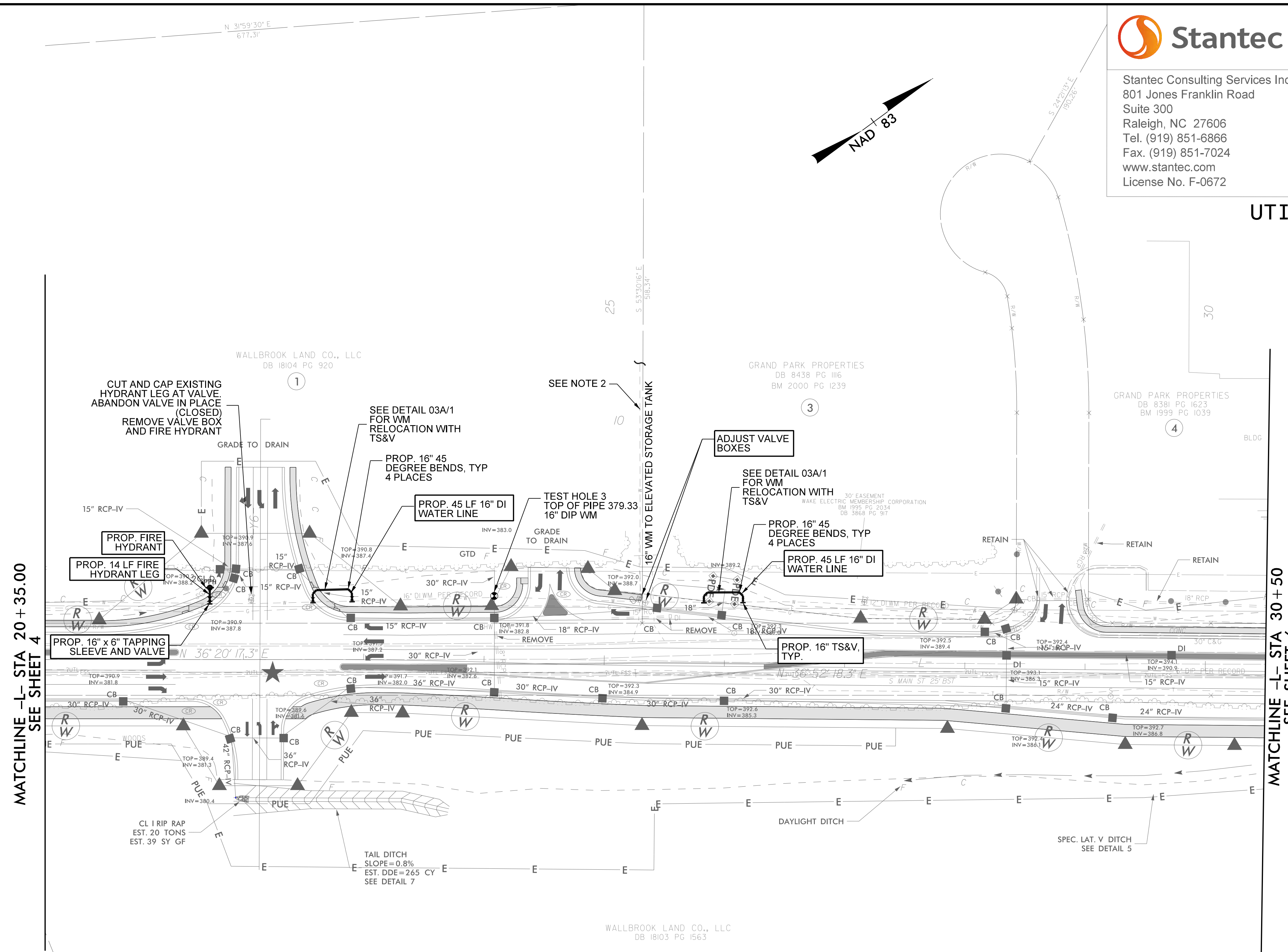
UTILITY CONSTRUCTION

GRAPHIC SCALE: 1" = 50'



PLAN

- NOTES:
- SEE CITY OF RALEIGH DETAILS W-9, W-10 AND W-12 FOR THRUST BLOCKING AND THRUST COLLAR REQUIREMENTS.
 - 16" WM TO ELEVATED STORAGE TANK TO REMAIN IN SERVICE AT ALL TIMES.



REVISIONS

MATCHLINE -L- STA 20+35.00
SEE SHEET 4

MATCHLINE -L- STA 30+50.00
SEE SHEET 6

SITE PERMITTING APPROVAL

Water and Sewer Permits (If applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916.**

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916.**

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection system** as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3916.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval _____
Raleigh Water Review Officer

PROP WATER LINE -W-
90 LF 16" DI RJ PIPE

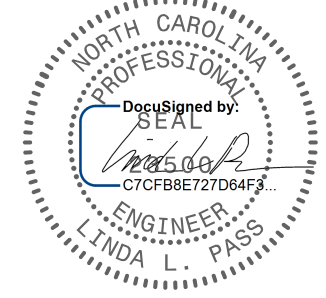
THE ESTIMATED QUANTITY OF
DUCTILE IRON WATER PIPE FITTINGS
ON THIS PLAN SHEET IS 3320 POUNDS.
THE ACTUAL QUANTITY AND TYPE OF
FITTINGS WILL VARY BASED ON FIELD
CONDITIONS.

4/22/2022
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PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-06
DESIGNED BY: LEW	ROADWAY SHEET NO. 6
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



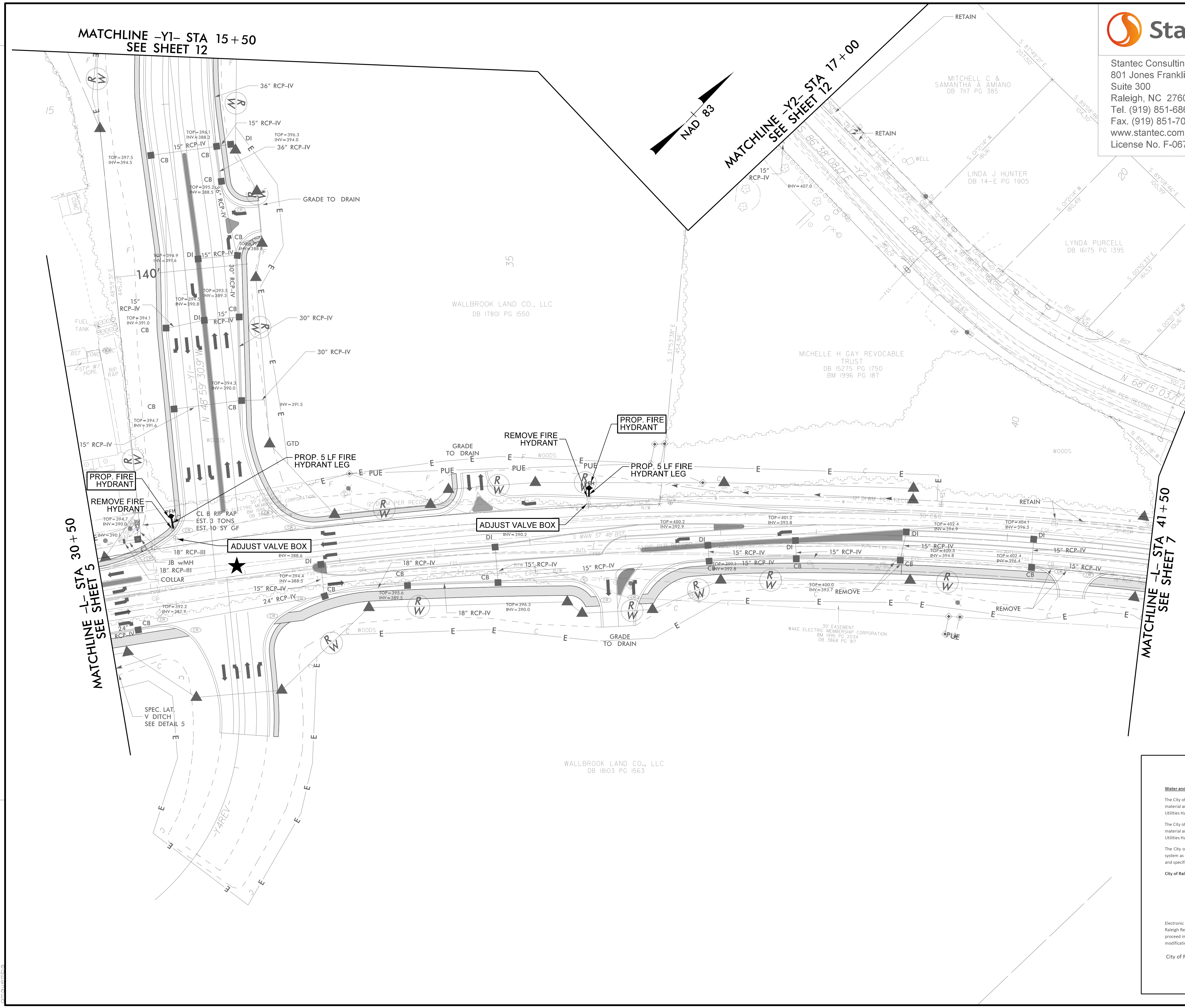
**DOCUMENT NOT CONSIDERED FINAL
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UTILITY CONSTRUCTION

GRAPHIC SCALE: 1"=50'



PLAN



REVISIONS

4/18/2022
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SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W-3916**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3916

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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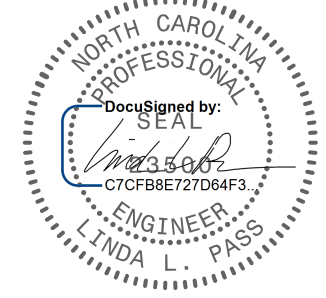
City of Raleigh Development Approval _____

Raleigh Water Review Officer



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Fax. (919) 851-7024
www.stantec.com
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PROJECT REFERENCE NO. U-6241	SHEET NO. UC-07
DESIGNED BY: LEW	ROADWAY SHEET NO. 7
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



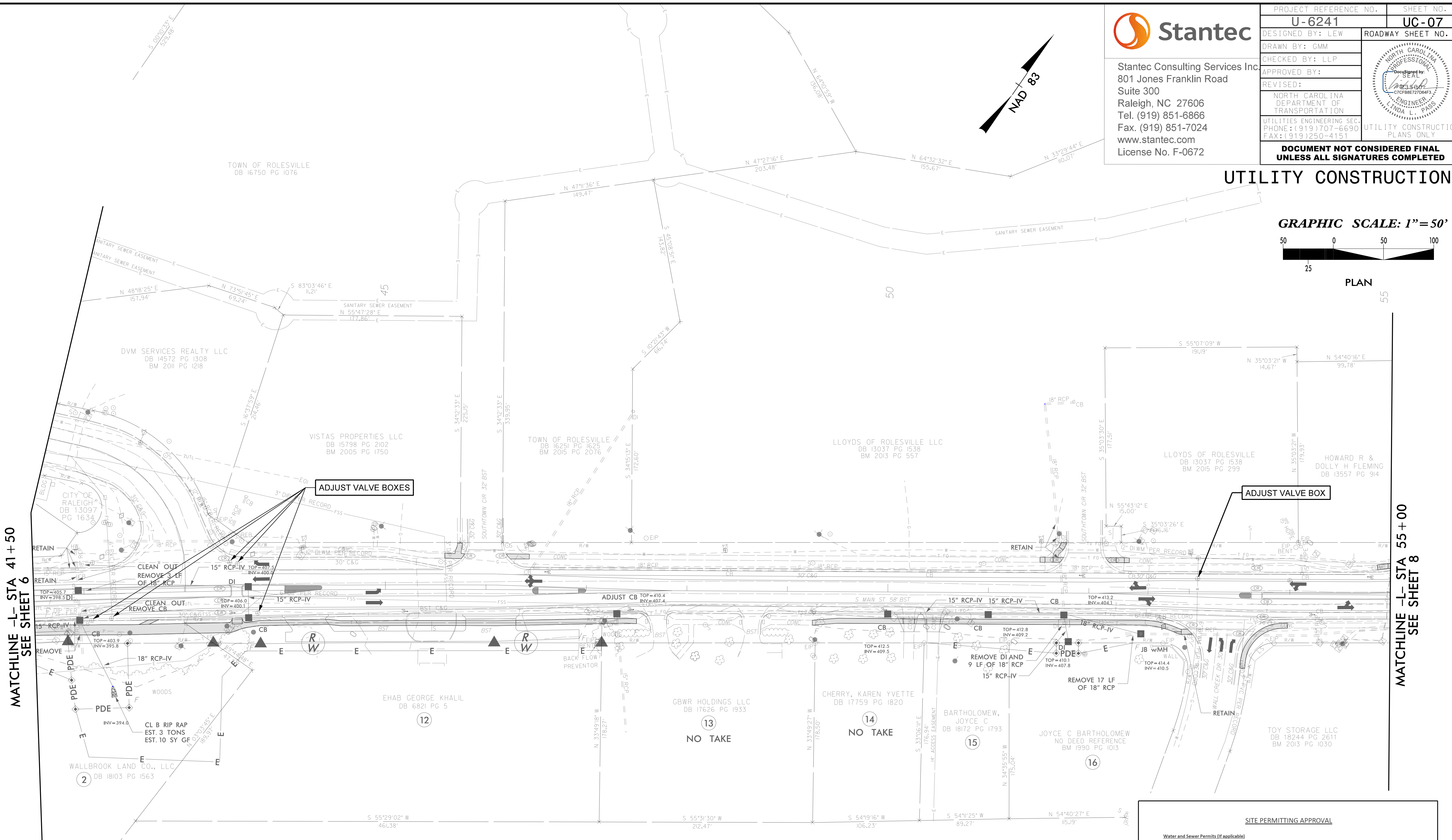
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

UTILITY CONSTRUCTION

GRAPHIC SCALE: 1" = 50'



PLAN



MATCHLINE -L- STA 41 + 50
SEE SHEET 6

MATCHLINE -L- STA 55 + 00
SEE SHEET 8

REVISIONS

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3916**.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3916**.

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City of Raleigh Public Utilities Department Permit # **W-3916**.

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City of Raleigh Development Approval _____

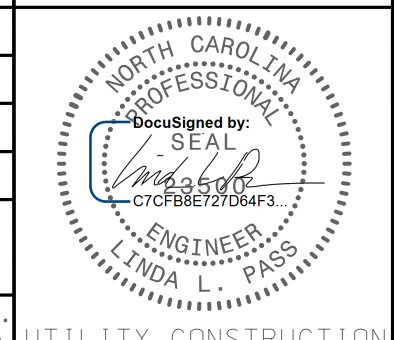
Raleigh Water Review Officer _____

4/18/2022
I:\GIS\111\Utilities\Engineering\N\N\Proj\U-6241_U-6241.pst\07.dgn



Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

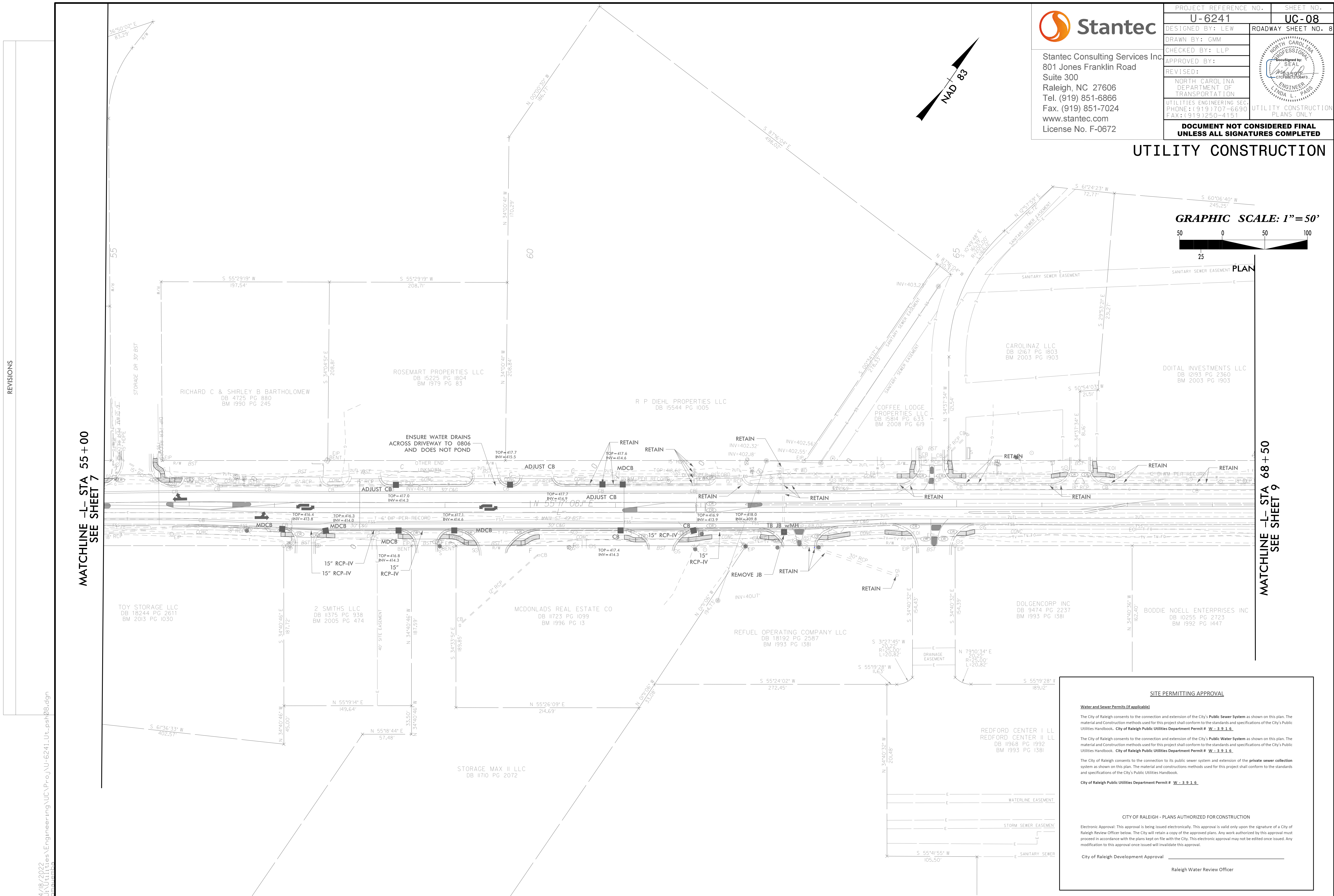
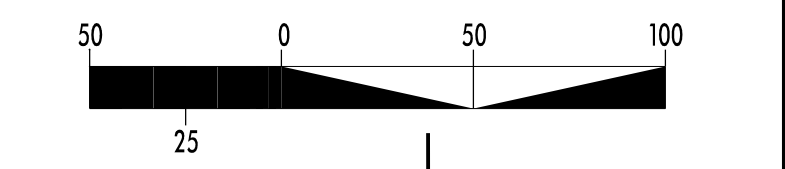
PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-08
DESIGNED BY: LEW	ROADWAY SHEET NO. 8
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



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

UTILITY CONSTRUCTION

GRAPHIC SCALE: 1" = 50'



REVISIONS

MATCHLINE -L- STA 55+00
SEE SHEET 7

MATCHLINE -L- STA 68+50
SEE SHEET 9

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3916**.

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # **W-3916**.

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # **W-3916**.

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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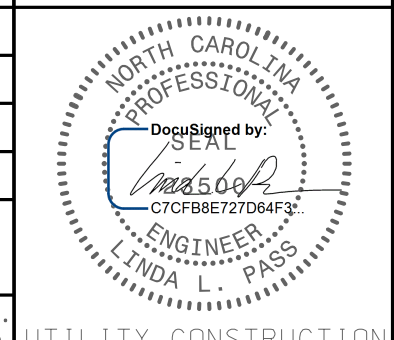
City of Raleigh Development Approval _____
Raleigh Water Review Officer

4/18/2022
I:\GIS\Utilities\Engineering\N\N\Proj\U-6241_Ut.pst\08.dgn



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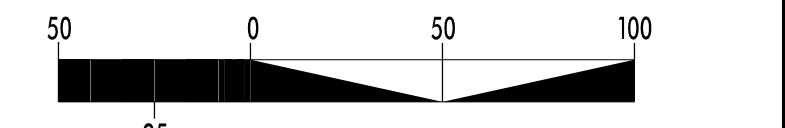
PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-09
DESIGNED BY: LEW	ROADWAY SHEET NO. 9
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED BY:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



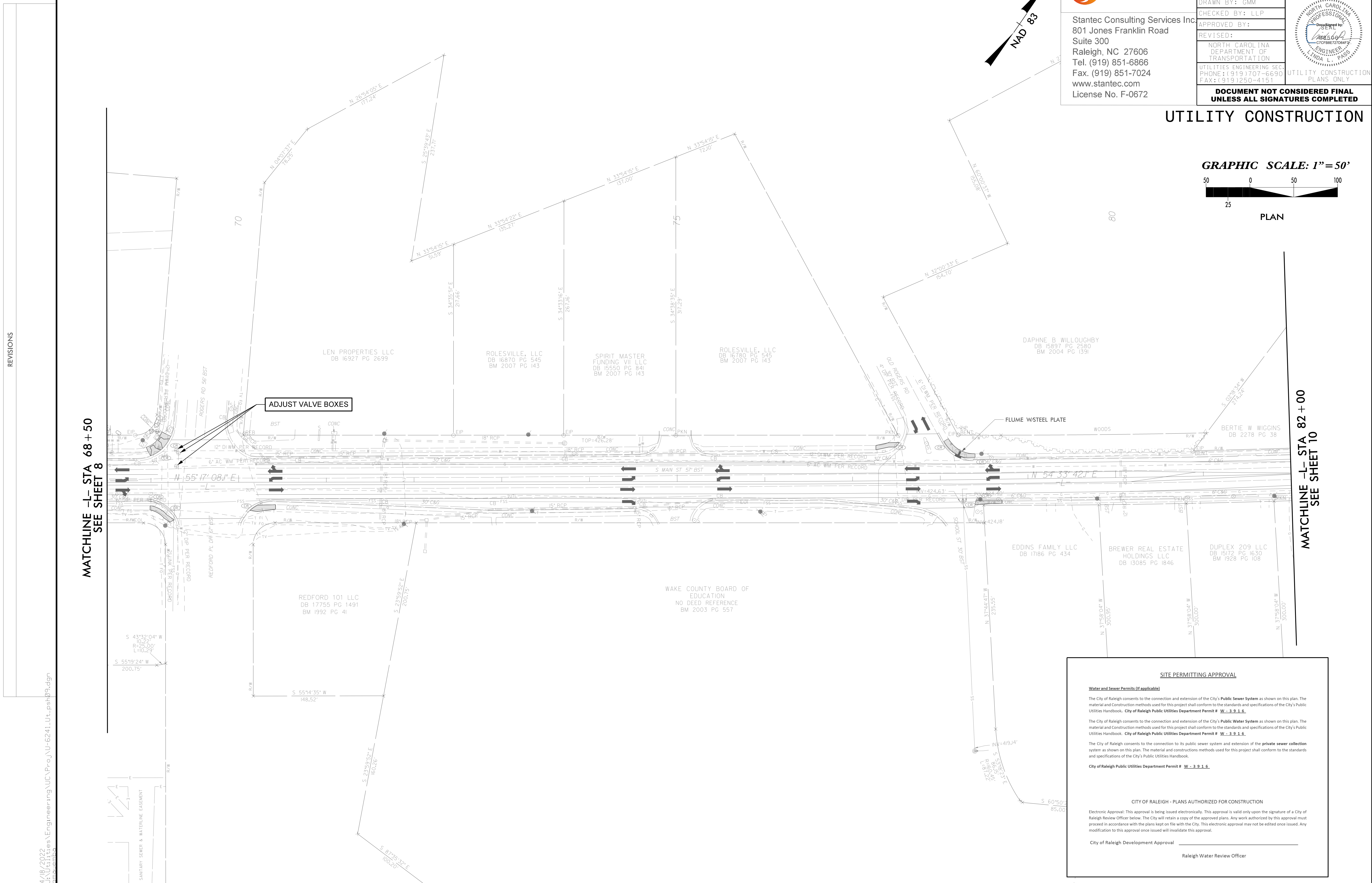
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

UTILITY CONSTRUCTION

GRAPHIC SCALE: 1" = 50'



PLAN



REVISIONS

MATCHLINE -L- STA 68+50
SEE SHEET 8

MATCHLINE -L- STA 82+00
SEE SHEET 10

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's **Public Sewer System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, **City of Raleigh Public Utilities Department Permit # W-3916**.

The City of Raleigh consents to the connection and extension of the City's **Public Water System** as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, **City of Raleigh Public Utilities Department Permit # W-3916**.

The City of Raleigh consents to the connection to its public sewer system and extension of the **private sewer collection system** as shown on this plan. The material and constructions methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3916

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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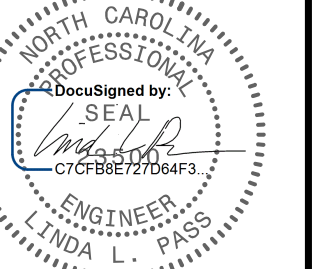
City of Raleigh Development Approval _____
Raleigh Water Review Officer

4/18/2022
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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-10
DESIGNED BY: LEW	ROADWAY SHEET NO. 10
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY



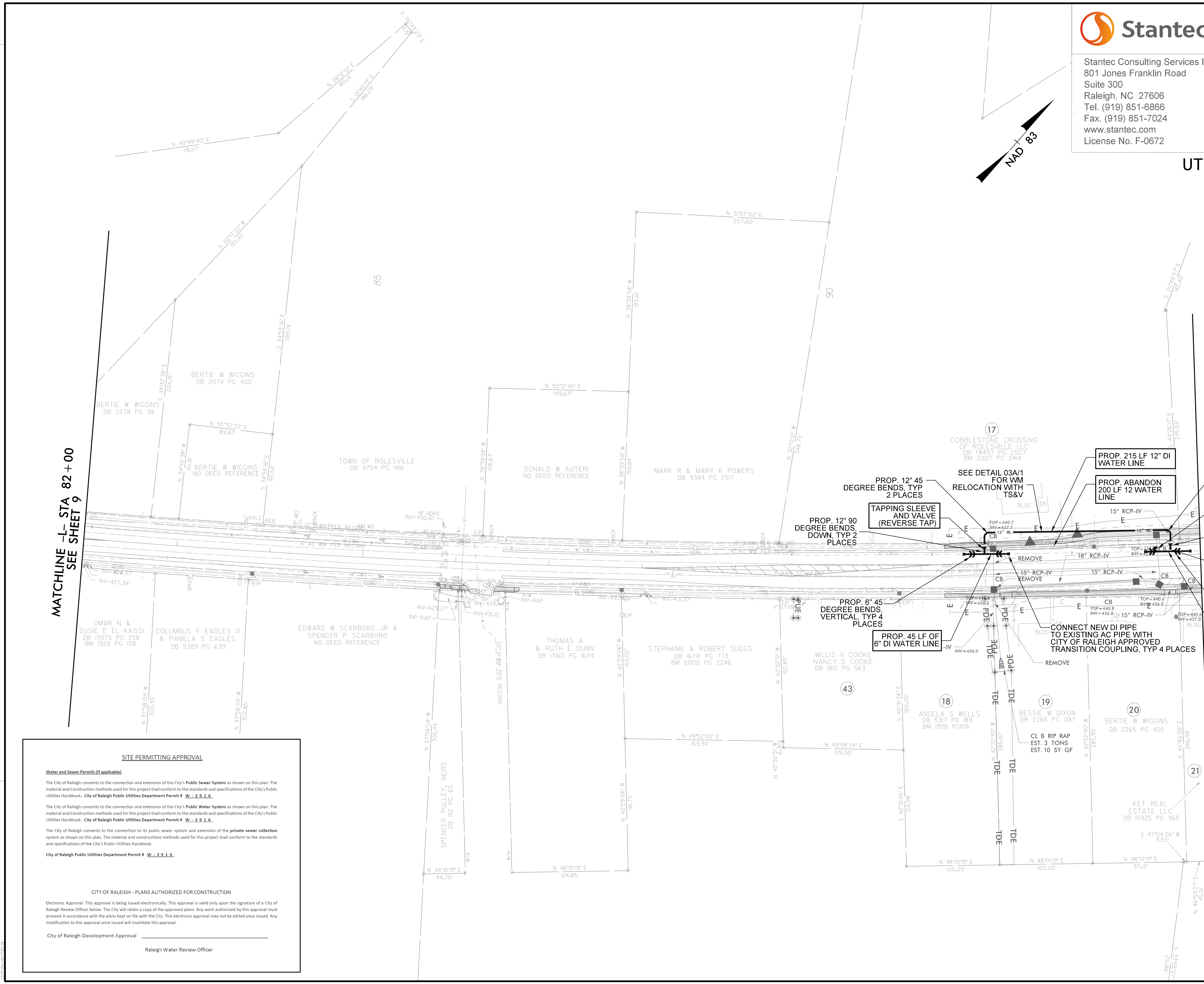
UTILITY CONSTRUCTION

GRAPHIC SCALE: 1" = 50'



PLAN

- NOTES:
- SEE CITY OF RALEIGH DETAILS W-9, W-10 AND W-12 FOR THRUST BLOCKING AND THRUST COLLAR REQUIREMENTS.



REVISIONS

MATCHLINE -L- STA 82 + 00
SEE SHEET 9

MATCHLINE -L- STA 94 + 00
SEE SHEET 11

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W - 3 9 1 6.**

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W - 3 9 1 6.**

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. **City of Raleigh Public Utilities Department Permit # W - 3 9 1 6.**

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City of Raleigh Development Approval _____

Raleigh Water Review Officer _____

PROP WATER LINE -W-
90 LF 6" DI RJ WATER LINE
215 LF 12" DI RJ WATER LINE

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 3510 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

4/18/2022
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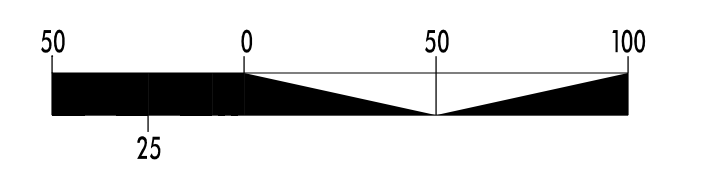


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PROJECT REFERENCE NO.	SHEET NO.
U-6241	UC-11
DESIGNED BY: LEW	ROADWAY SHEET NO. 11
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA PROFESSIONAL ENGINEER LINDA L. PASS CROSS REFERENCE	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

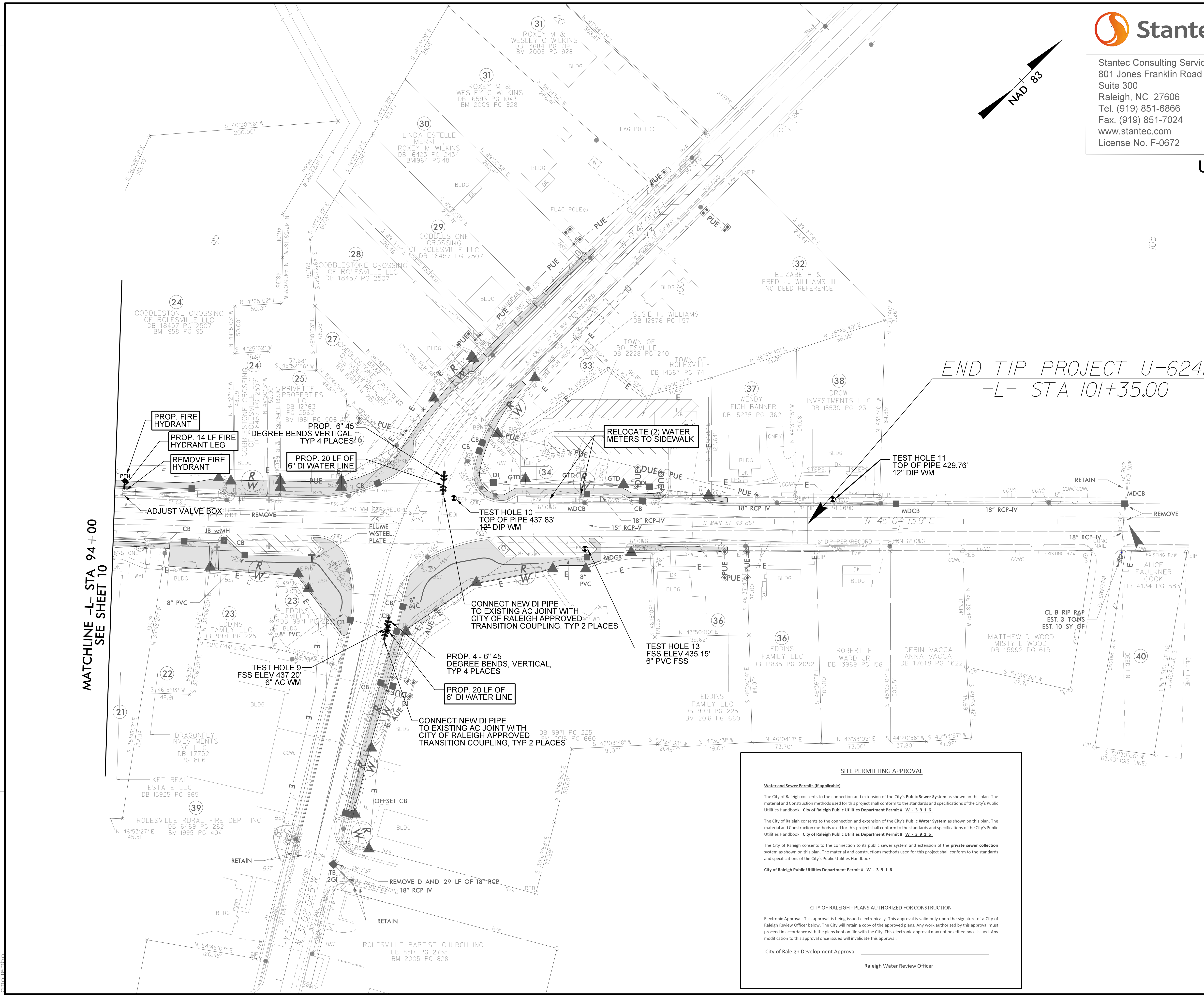
GRAPHIC SCALE: 1" = 50'



PLAN

- NOTES:
- SEE CITY OF RALEIGH DETAILS W-9, W-10 AND W-12 FOR THRUST BLOCKING AND THRUST COLLAR REQUIREMENTS.

END TIP PROJECT U-6241
-L- STA 101+35.00



MATCHLINE -L- STA 94+00
SEE SHEET 10

REVISIONS

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3916.

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # W-3916.

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh Public Utilities Department Permit # W-3916.

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

PROP WATER LINE -W-
40 LF 6" DI RJ PIPE

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 770 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

4/18/2022
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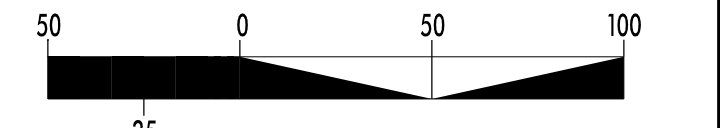
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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO. U-6241	SHEET NO. UC-12
DESIGNED BY: LEW	ROADWAY SHEET NO. 12
DRAWN BY: GMM	
CHECKED BY: LLP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA PROFESSIONAL ENGINEER LINDA L. PARR	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

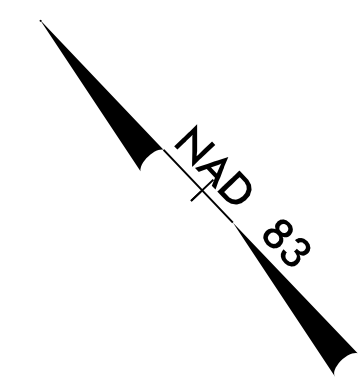
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

UTILITY CONSTRUCTION

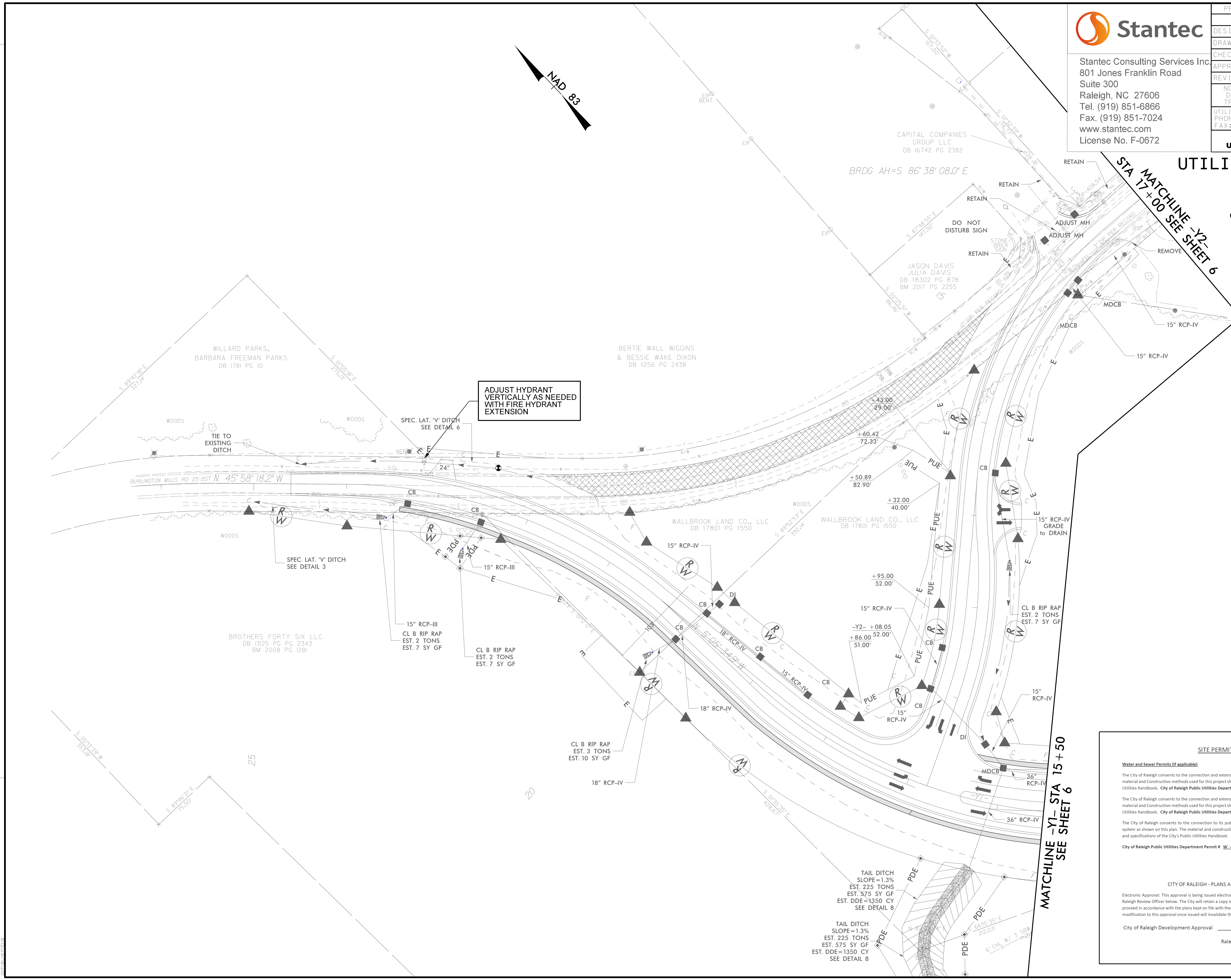
GRAPHIC SCALE: 1" = 50'



PLAN



REVISIONS



ADJUST HYDRANT VERTICALLY AS NEEDED WITH FIRE HYDRANT EXTENSION

MATCHLINE -Y1- STA 15+50
SEE SHEET 6

SITE PERMITTING APPROVAL

Water and Sewer Permits (if applicable)

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City of Raleigh Public Utilities Department Permit # W-3916.

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City of Raleigh Development Approval _____
Raleigh Water Review Officer

TAIL DITCH
SLOPE = 1.3%
EST. 225 TONS
EST. 575 SY GF
EST. DDE = 1350 CY
SEE DETAIL 8

TAIL DITCH
SLOPE = 1.3%
EST. 225 TONS
EST. 575 SY GF
EST. DDE = 1350 CY
SEE DETAIL 8

4/18/2022
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CROSS SECTION INDEX OF SHEETS

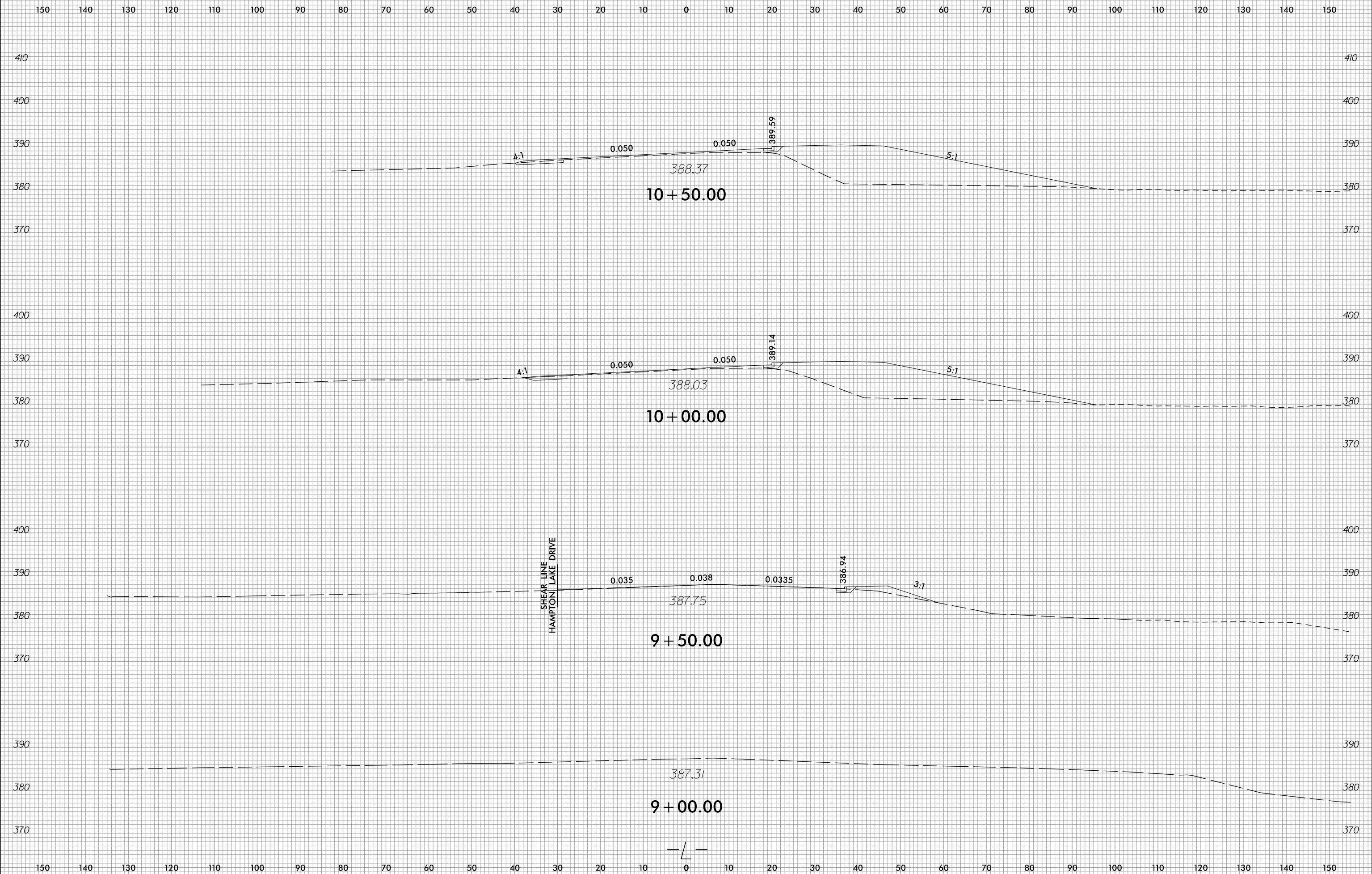
-L-	X-1 THRU X-51
-Y1-	X-52 THRU X-59
-Y2-	X-60 THRU X-63
-Y3-	X-64 THRU X-68
-Y4REV-	X-69 THRU X-72
-Y5-	X-73 THRU X-74
-Y6-	X-75 THRU X-79
-Y7-	X-80 THRU X-83

PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-1A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

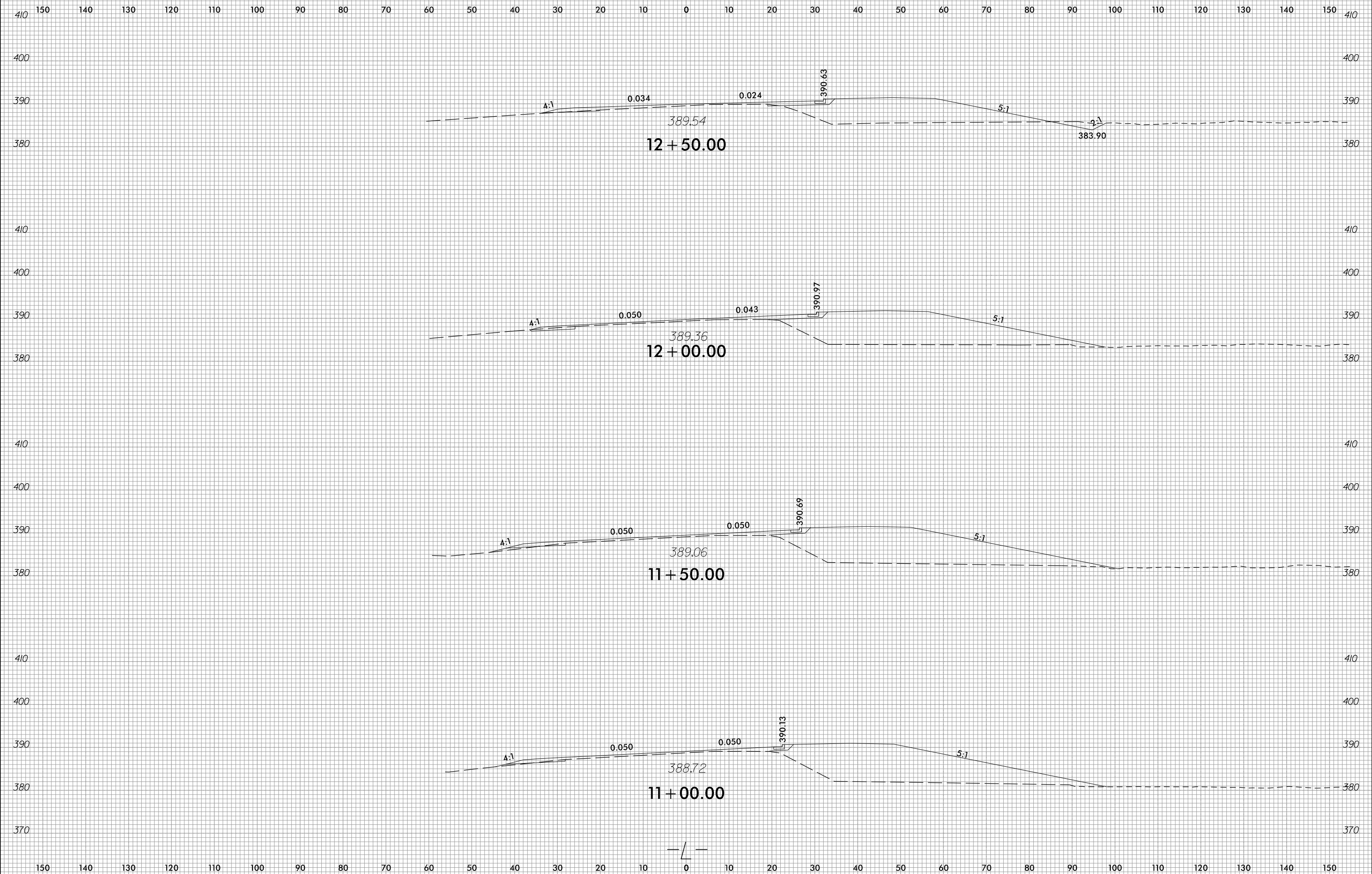
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L	(cu. yd.)	(cu. yd.)	L	(cu. yd.)	(cu. yd.)	L	(cu. yd.)	(cu. yd.)	L	(cu. yd.)	(cu. yd.)	L	(cu. yd.)	(cu. yd.)	Y2	(cu. yd.)	(cu. yd.)
10+00.00	6	0	13+00.00	40	364	37+50.00	23	13	44+25.00	2	10	99+36.00	26	9	15+00.00000	123	82
10+50.00	11	0	13+50.00	80	188	38+00.00	31	12	44+50.00	2	4	99+50.00	8	5	15+50.00000	54	94
11+00.00	7	1	14+00.00	59	49	38+50.00	36	8	45+00.00	9	15	100+00.00	54	16	16+00.00000	36	77
11+50.00	3	4	14+50.00	17	0	39+00.00	26	2	45+50.00	34	7	100+50.00	83	7	16+50.00000	55	53
12+00.00	6	3	15+00.00	70	8	39+50.00	11	0	46+00.00	37	1				16+60.00000	14	7
12+50.00	5	19	15+50.00	93	19	40+00.00	11	0	46+50.00	18	7	Station	Uncl. Exc.	Embt			
13+00.00	1	23	16+00.00	56	25	40+50.00	11	0	47+00.00	20	7	Y1	(cu. yd.)	(cu. yd.)	Station	Uncl. Exc.	Embt
13+50.00	0	12	16+50.00	34	32	41+00.00	11	0	47+50.00	20	1				Y3	(cu. yd.)	(cu. yd.)
14+00.00	0	13	17+00.00	27	27	41+50.00	11	0	48+00.00	9	1	10+38.78000	0	0	11+40.00	0	0
14+50.00	7	6	17+50.00	41	17	42+00.00	11	0	49+50.00	10	8	10+50.00000	0	241	11+50.00	3	0
15+00.00	23	0	18+00.00	45	17	42+50.00	11	0	50+00.00	20	21	11+00.00000	0	1431	12+00.00	18	5
15+50.00	38	15	18+50.00	41	17	43+00.00	11	0	50+50.00	20	24	11+50.00000	0	1057	12+50.00	14	8
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16+50.00	0	11	19+50.00	48	5	48+50.00	0	0	51+50.00	13	74	12+50.00000	0	654	13+50.00	59	2
17+00.00	5	9	20+00.00	62	4	49+00.00	0	0	52+00.00	12	82	13+00.00000	0	509	14+00.00	113	8
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18+00.00	8	12	21+00.00	14	50	58+50.00	26	0	53+00.00	5	10	14+00.00000	25	386	14+86.28	138	19
18+50.00	5	11	21+50.00	4	112	59+00.00	50	0	53+50.00	0	0	14+50.00000	9	471			
19+00.00	2	16	22+00.00	2	89	59+50.00	40	0	54+00.00	0	0	15+00.00000	2	625			
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20+50.00	4	19	23+50.00	1	938				55+50.00	0	0	16+50.00000	76	311			
21+00.00	16	17	24+00.00	1	1162	Station	Uncl. Exc.	Embt	56+00.00	0	0	17+00.00000	157	160	15+30.69	0	0
21+50.00	37	17	24+50.00	0	1265				56+50.00	0	0	17+50.00000	175	104	15+50.00	75	0
22+00.00	24	23	25+00.00	0	1123	L	(cu. yd.)	(cu. yd.)	57+00.00	0	0	18+00.00000	156	93	16+00.00	244	0
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24+00.00	0	567	27+00.00	0	468	32+50.00	141	3	59+00.00	37	0	20+00.00000	6	178	18+00.00	106	0
24+50.00	0	482	27+50.00	0	420	33+00.00	176	1	59+50.00	34	0	20+50.00000	10	149	18+50.00	86	1
25+00.00	1	392	28+00.00	1	369	33+50.00	136	1	60+00.00	28	0	21+00.00000	35	35			
25+50.00	10	259	28+50.00	3	310	34+00.00	181	1	60+50.00	13	0	21+50.00000	94	31	Station	Uncl. Exc.	Embt
26+00.00	33	44	29+00.00	9	275	34+50.00	236	1				22+00.00000	109	86	Y4_Rev	(cu. yd.)	(cu. yd.)
26+50.00	42	15	29+50.00	30	256	35+00.00	321	1	Station	Uncl. Exc.	Embt	22+49.99999	69	128			
27+00.00	34	0	30+00.00	49	232	35+50.00	237	1				23+00.00000	47	101	10+38.78000	0	0
27+50.00	28	0	30+50.00	25	111	36+00.00	73	2	L	(cu. yd.)	(cu. yd.)	23+50.00003	45	49	10+50.00000	86	1
28+00.00	44	0				36+50.00	82	3	91+25.00	0	0	24+00.00002	53	13	10+75.00000	400	2
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29+50.00	23	1	L	(cu. yd.)	(cu. yd.)	38+00.00	25	43	92+50.00	102	2				11+50.00000	584	0
30+00.00	6	7	31+00.00	2	57	38+50.00	28	43	93+00.00	165	0	Station	Uncl. Exc.	Embt	11+75.00000	597	0
30+50.00	3	6	31+50.00	3	68	39+00.00	43	21	93+50.00	234	0				12+00.00000	574	0
			32+00.00	1	31	39+50.00	56	3	94+00.00	262	0	Y2	(cu. yd.)	(cu. yd.)	12+25.00000	513	0
Station	Uncl. Exc.	Embt	32+50.00	1	52	40+00.00	87	3	94+50.00	247	1	10+38.00000	0	0	12+50.00000	437	0
L	(cu. yd.)	(cu. yd.)	33+00.00	2	179	40+50.00	145	2	95+00.00	215	6	10+50.00000	162	0	12+75.00000	371	0
			33+50.00	2	275	41+00.00	114	2	95+50.00	208	5	11+00.00000	716	0	13+00.00000	331	0
9+50.00	0	0	34+00.00	2	240	41+50.00	31	20	96+00.00	201	3	11+50.00000	676	0			
10+00.00	3	320	34+50.00	1	173	42+00.00	11	131	96+50.00	172	3	12+00.00000	562	0	Station	Uncl. Exc.	Embt
10+50.00	0	656	35+00.00	1	186	42+50.00	16	195	97+00.00	144	0	12+50.00000	459	0	Y5	(cu. yd.)	(cu. yd.)
11+00.00	0	724	35+50.00	1	208	43+00.00	20	149	97+50.00	134	18	13+00.00000	345	0			
11+50.00	0	749	36+00.00	1	130	43+20.00	4	26	98+00.00	106	32	13+50.00000	305	0	10+32.75000	0	0
12+00.00	0	723	36+50.00	1	63	43+50.00	3	10	98+50.00	74	15	14+00.00000	298	1	10+50.00000	87	17
12+50.00	11	570	37+00.00	7	22	44+00.00	8	37	99+00.00	52	7	14+50.00000	216	39	10+75.00000	151	4



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U-6241	X-2



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6/23/16

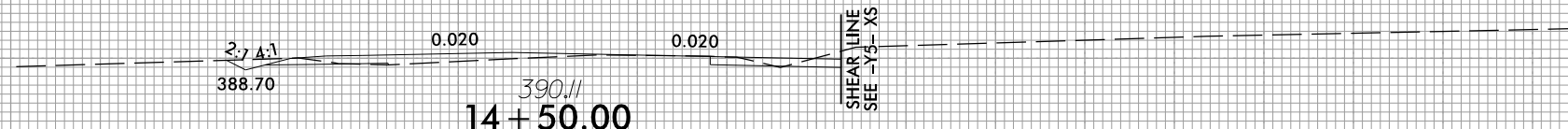


PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-3

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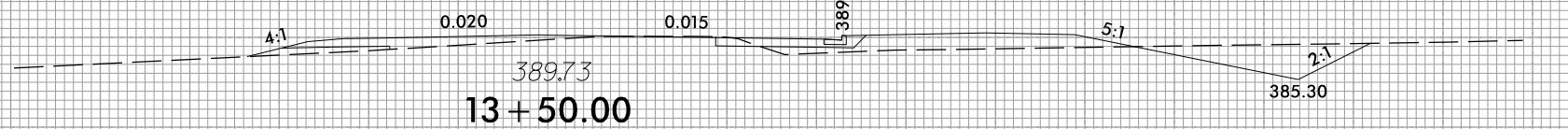
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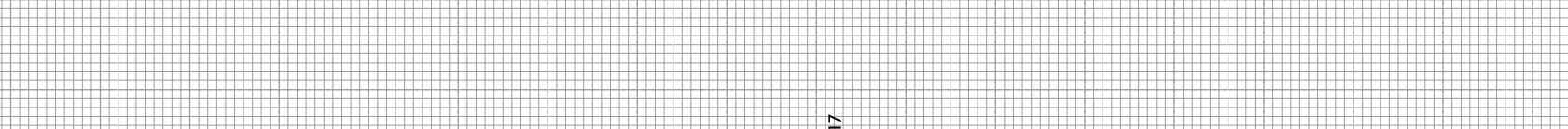
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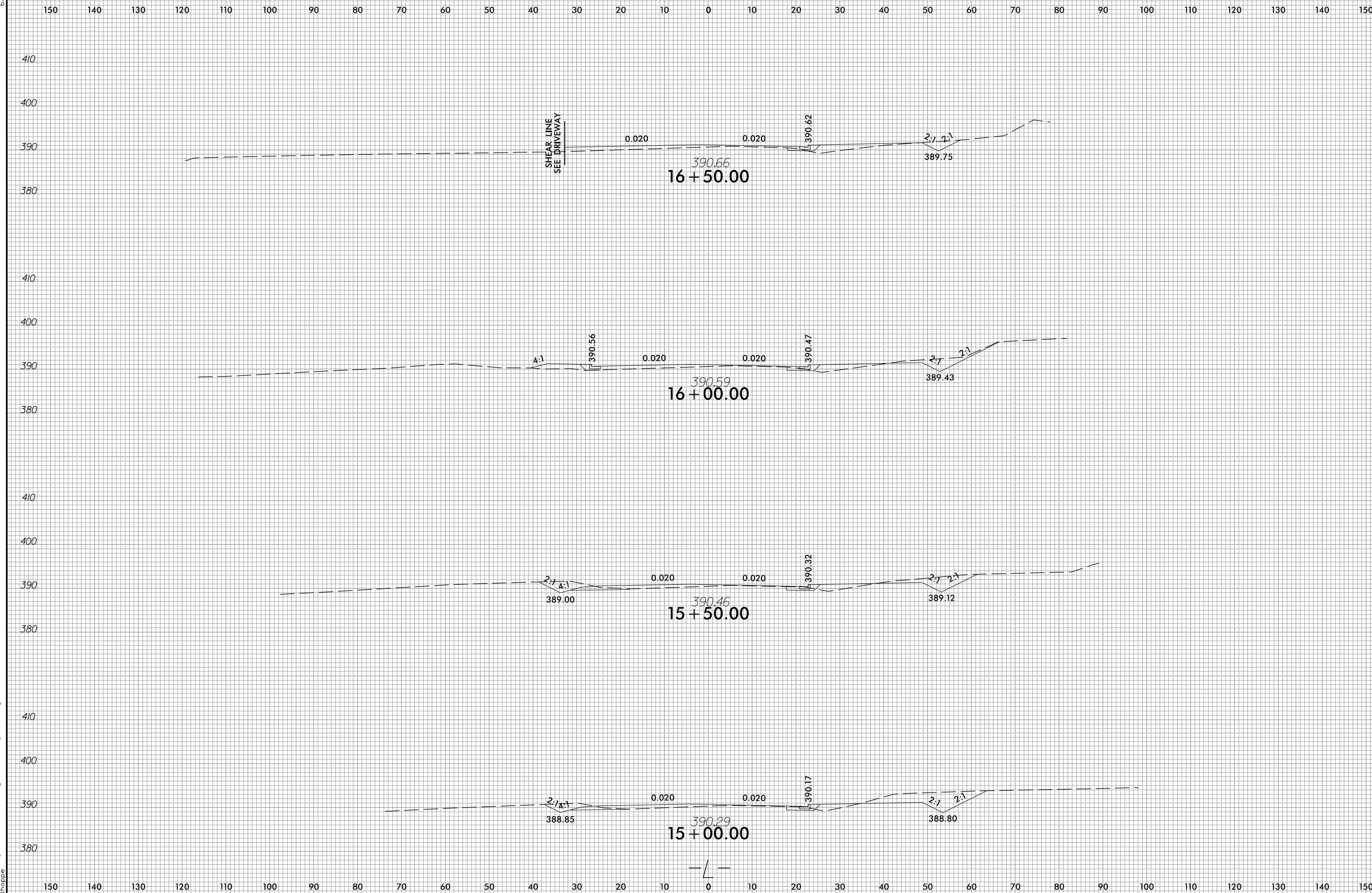
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choppe

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PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-4



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choppe

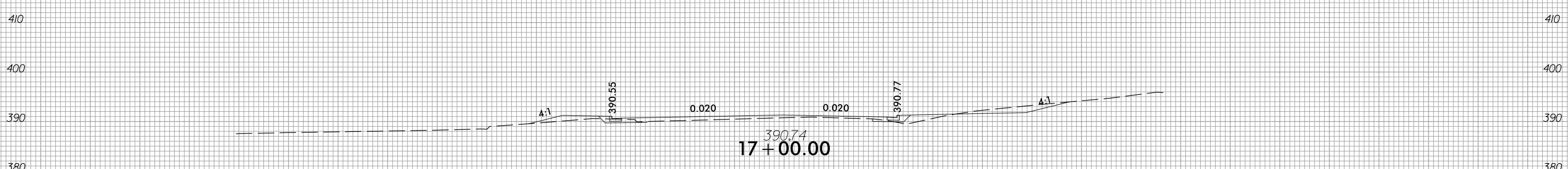
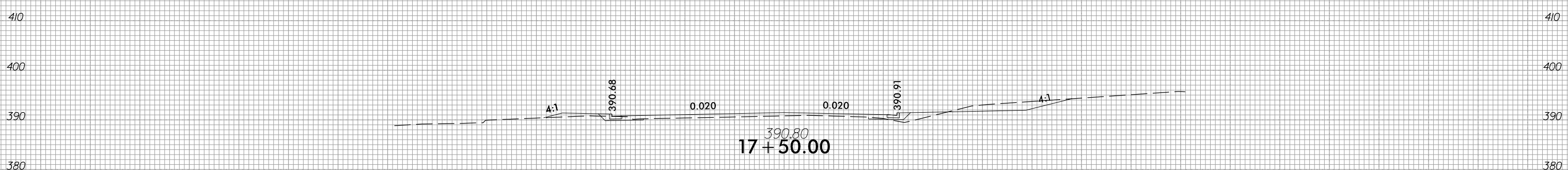
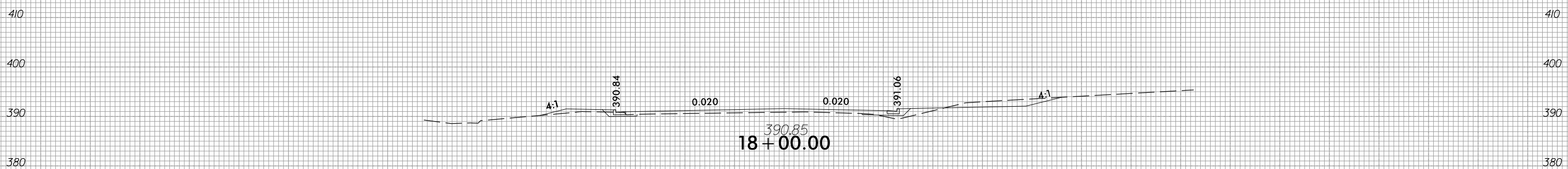
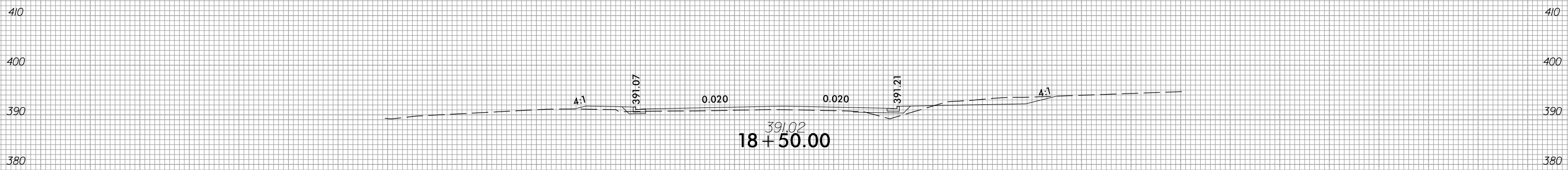
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PROJ. REFERENCE NO.
U-6241

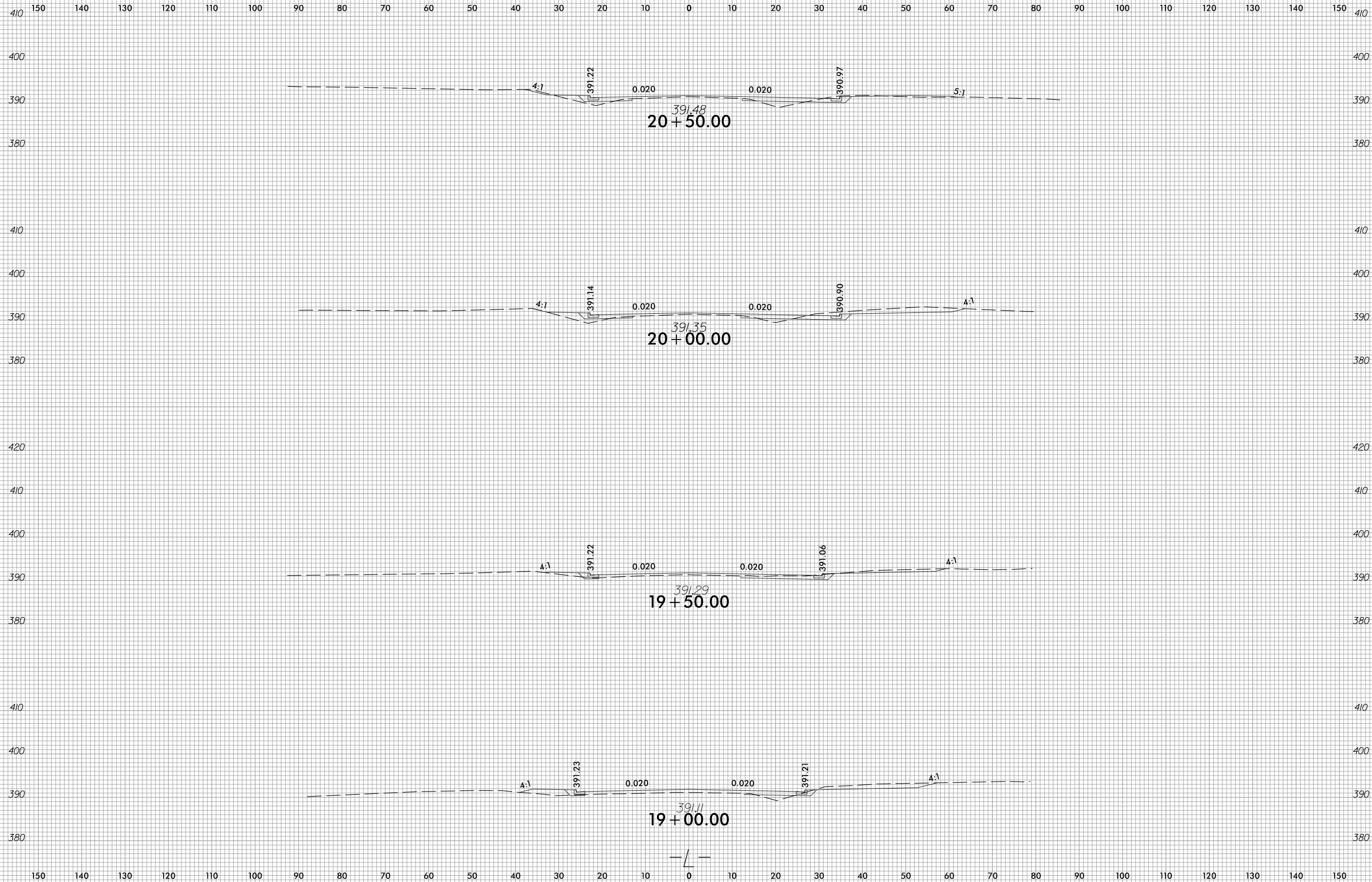
SHEET NO.
X-5

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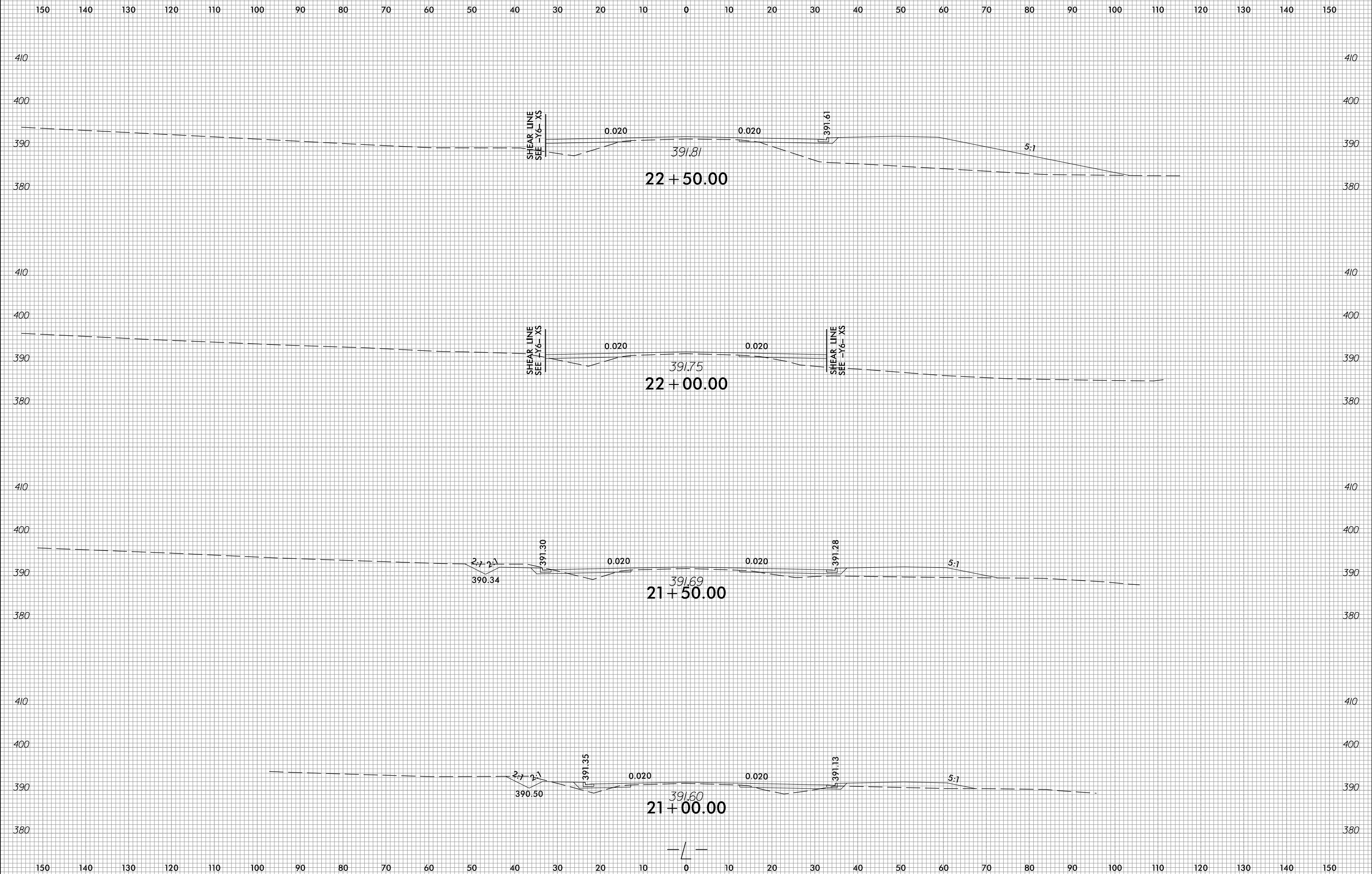
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choppe



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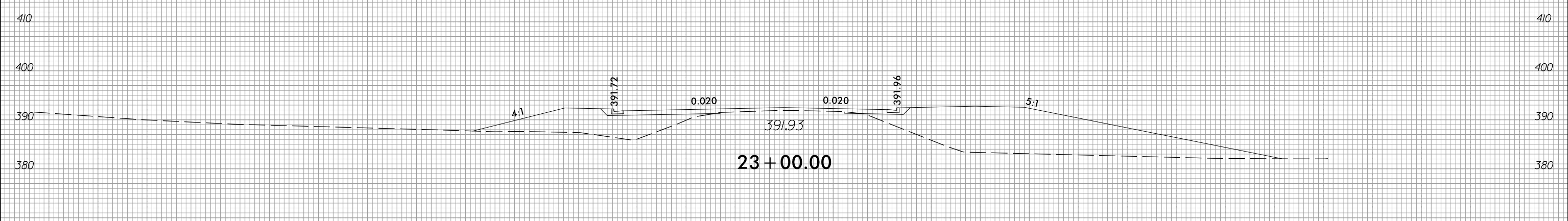
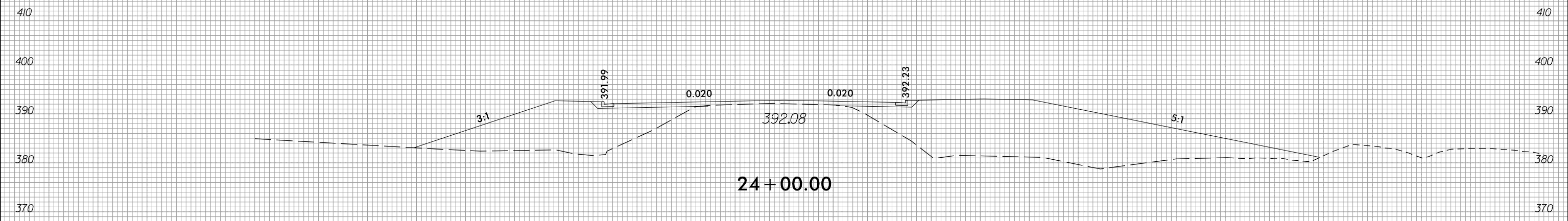
PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-7



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Choppe



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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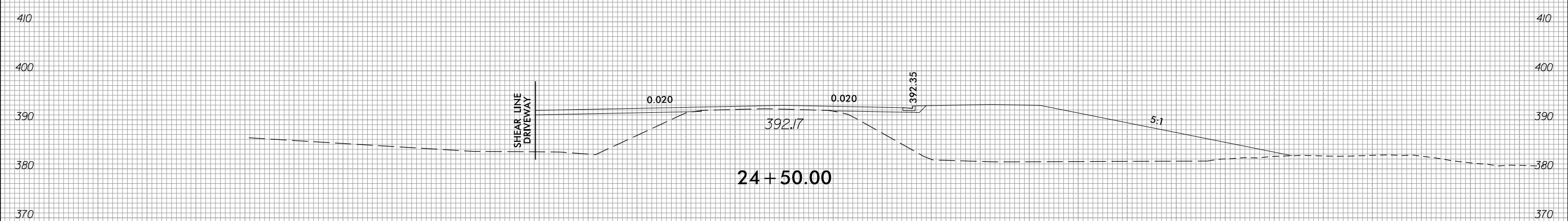
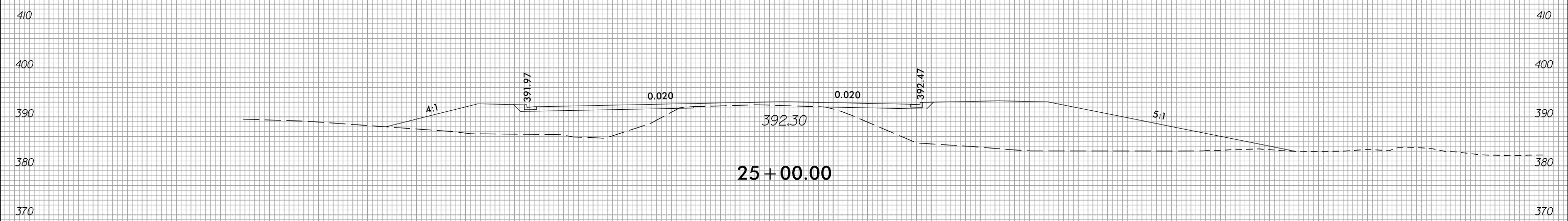
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-9

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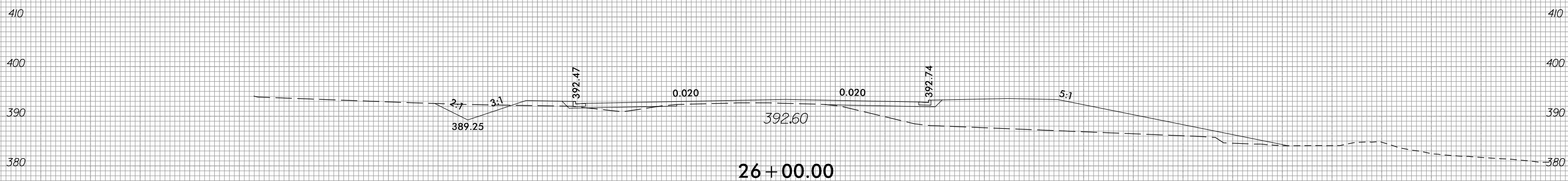
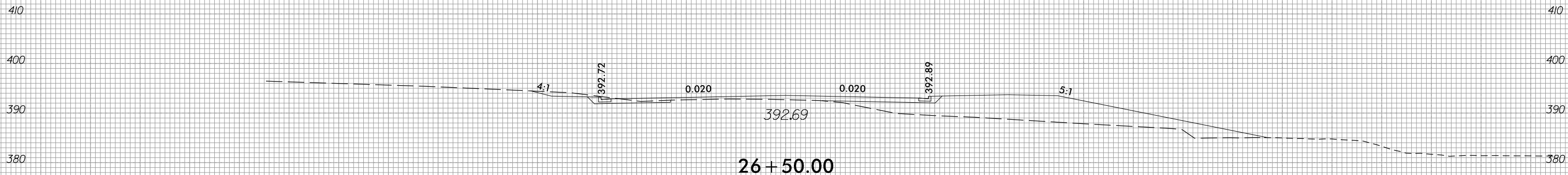
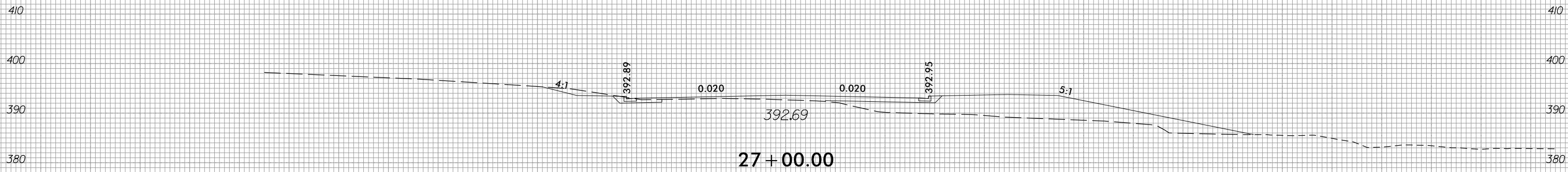


150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

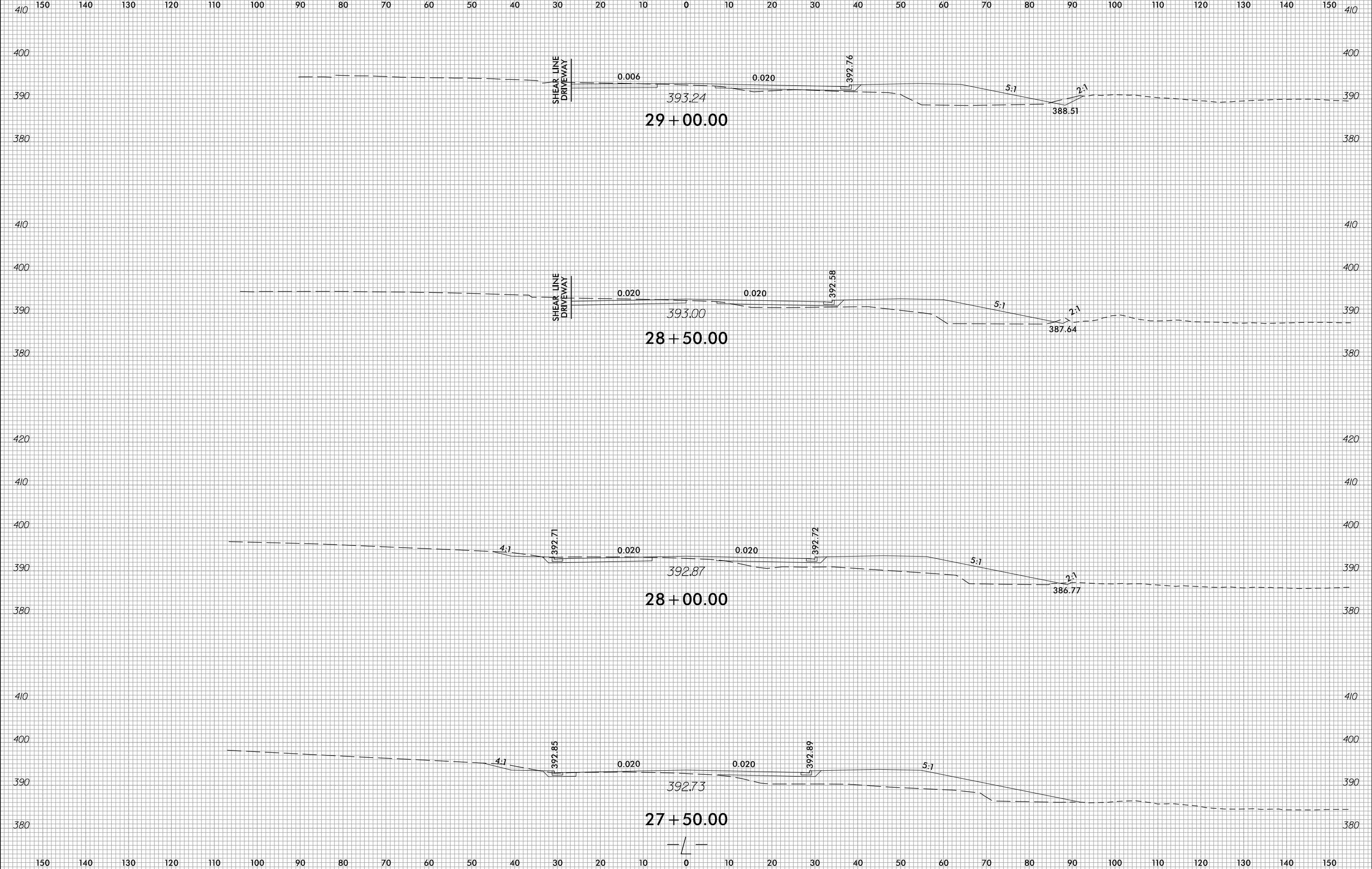


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6/23/16



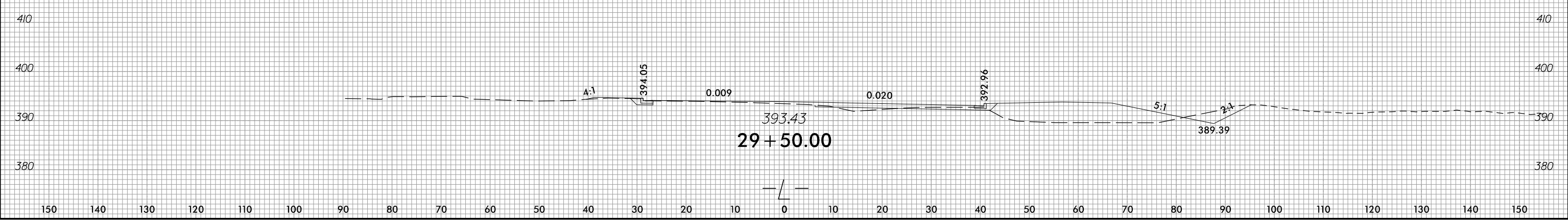
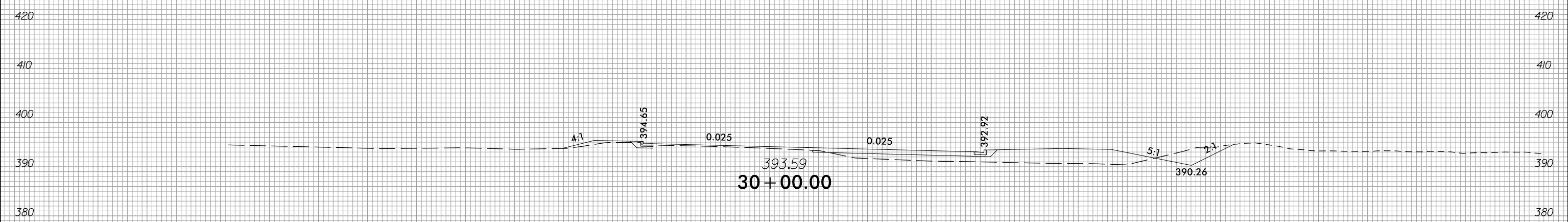
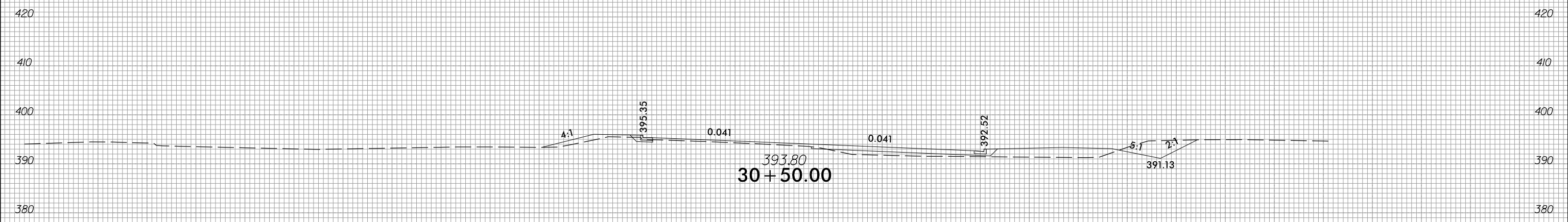
PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-11



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U:\Roadway\CorridorModeling\U-6241_Rdy_xpl.L.dgn
choppe



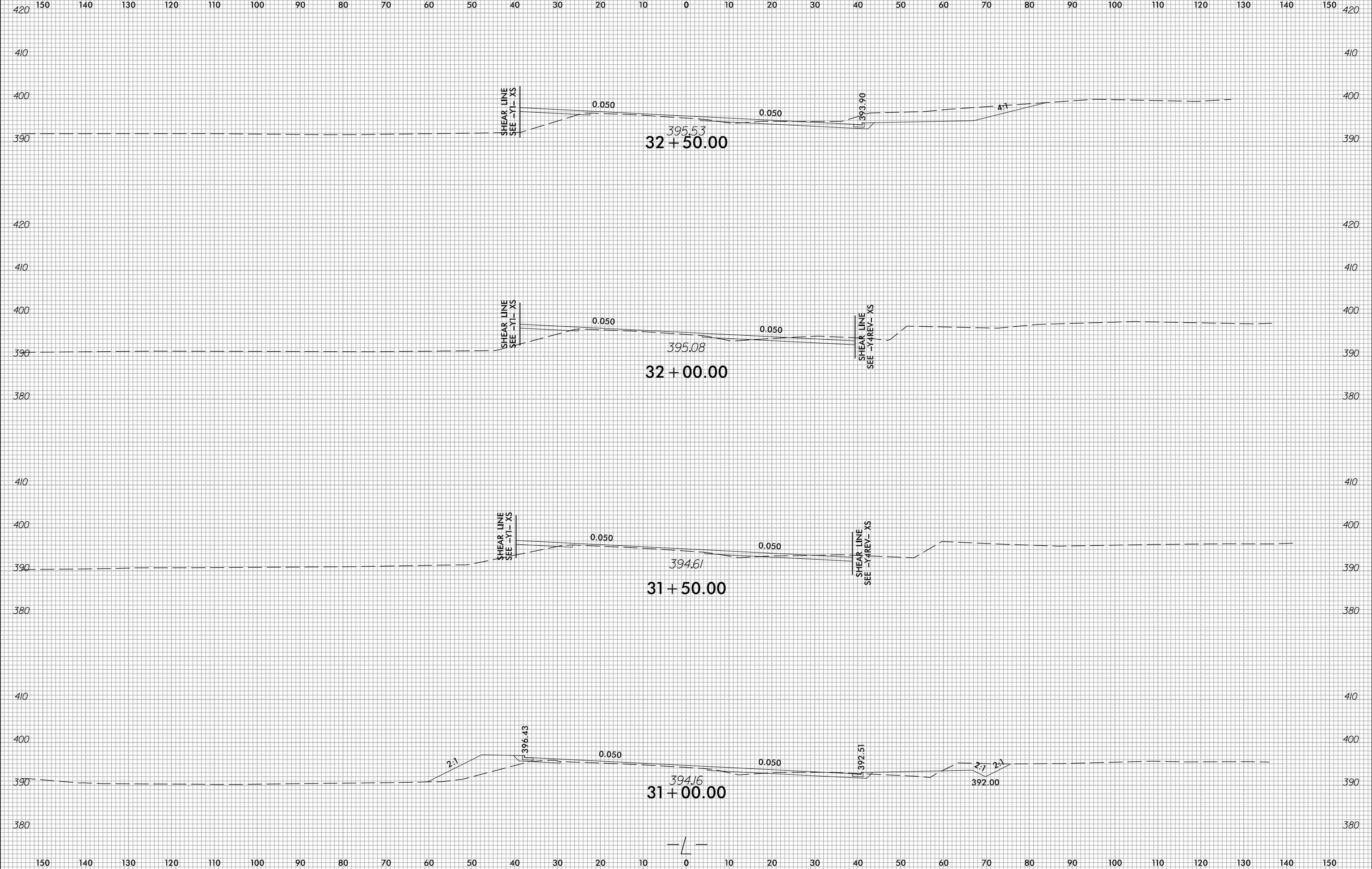
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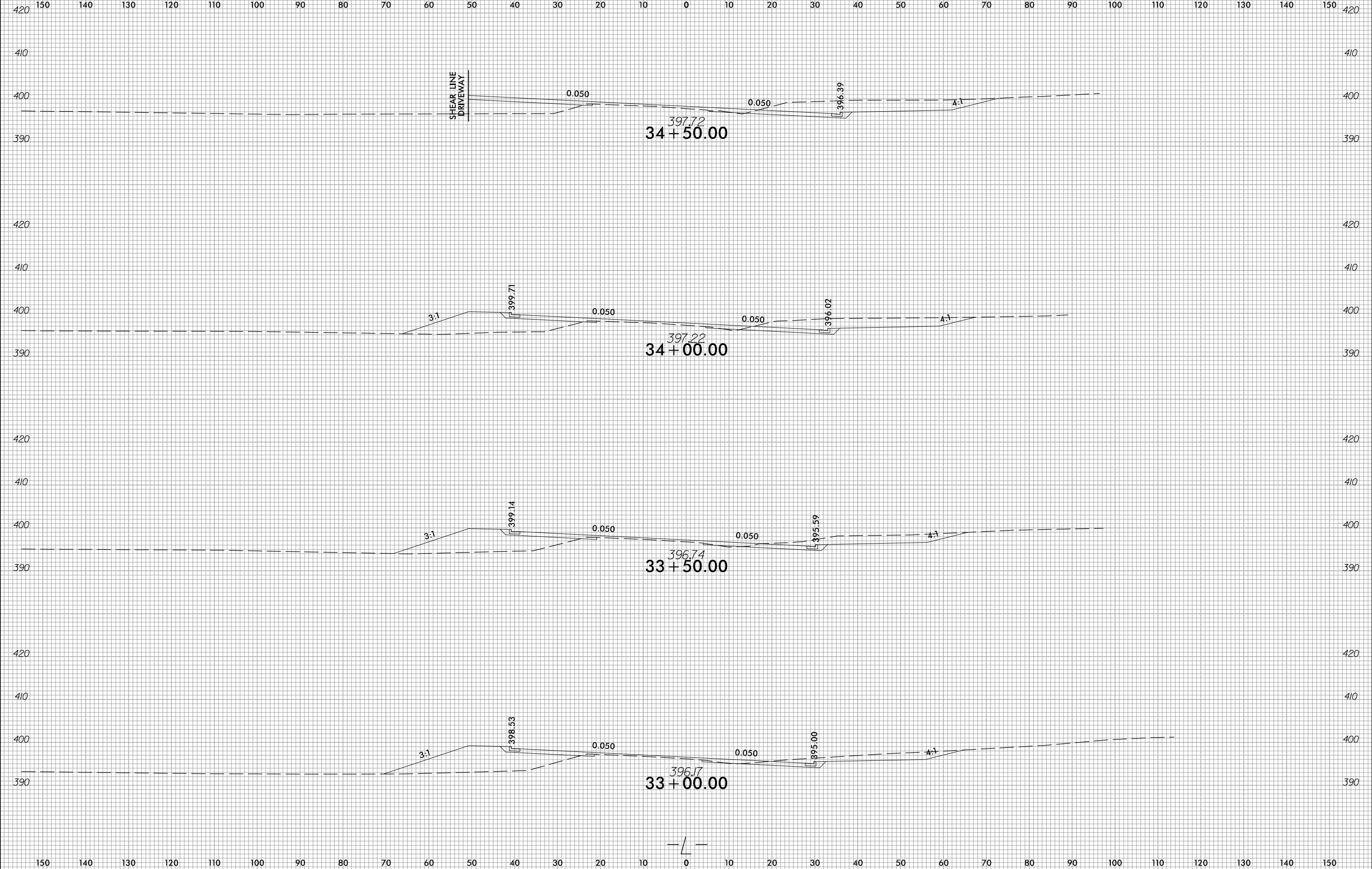
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PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-13



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choppe

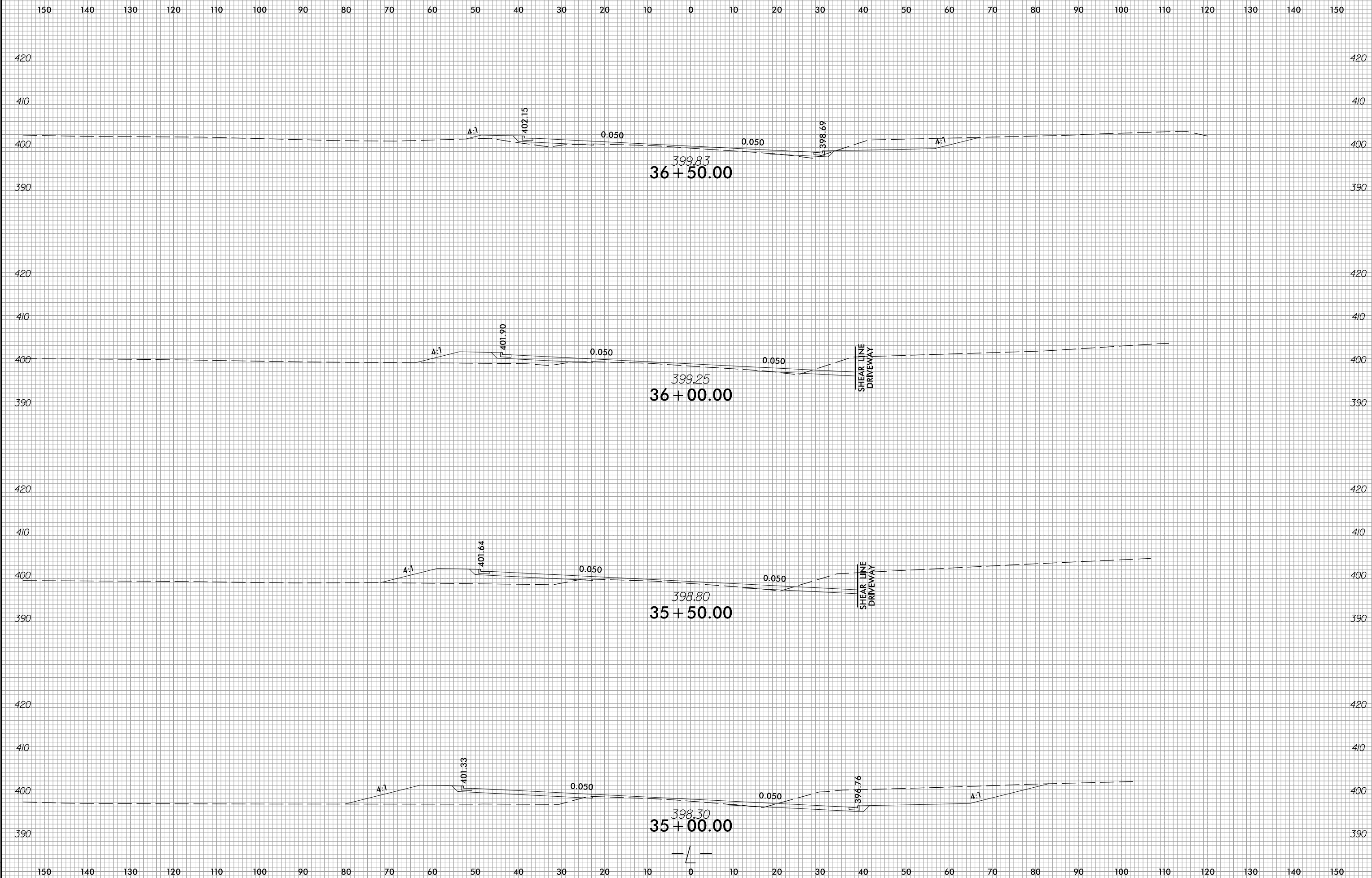


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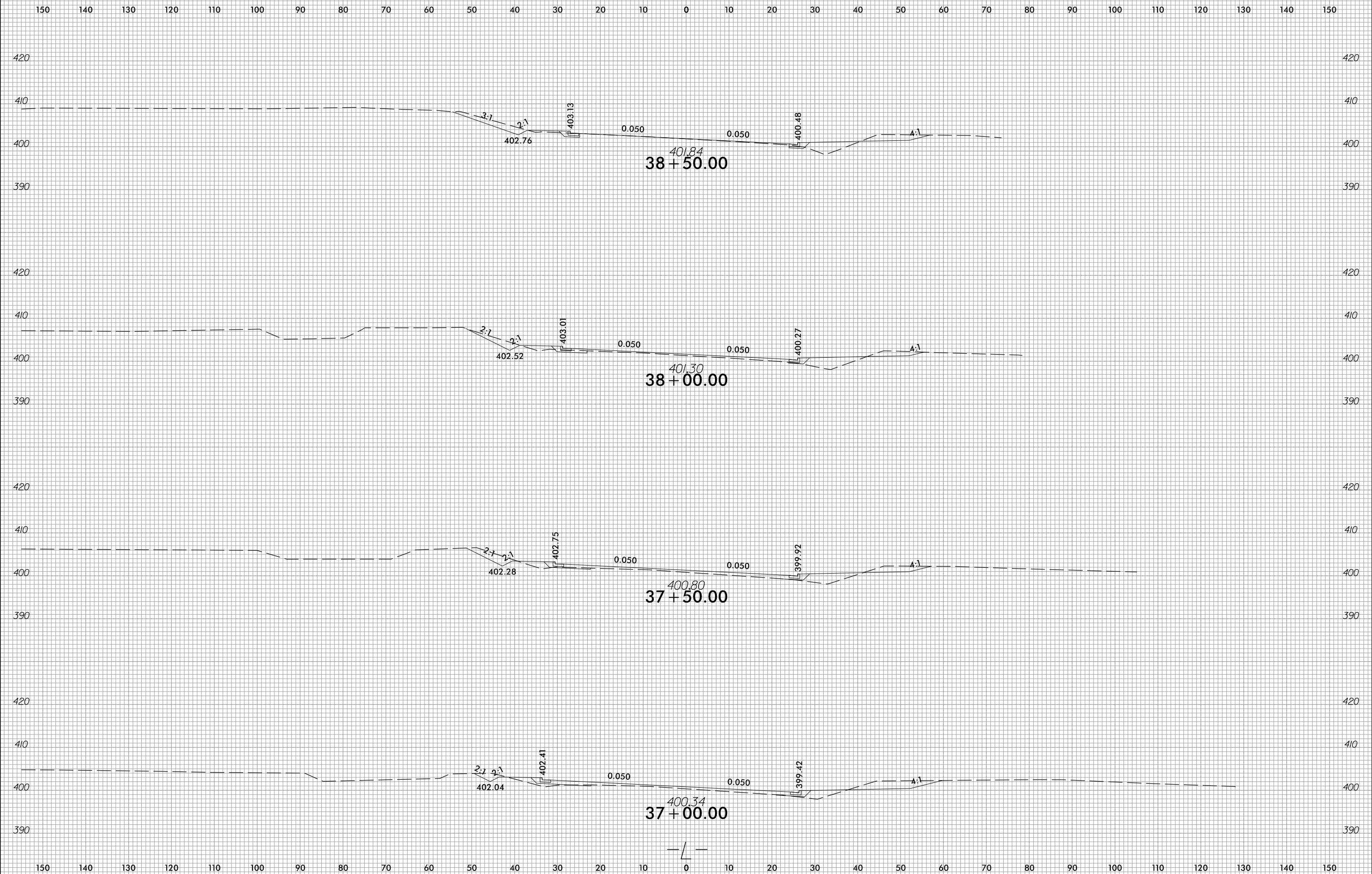


PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-15

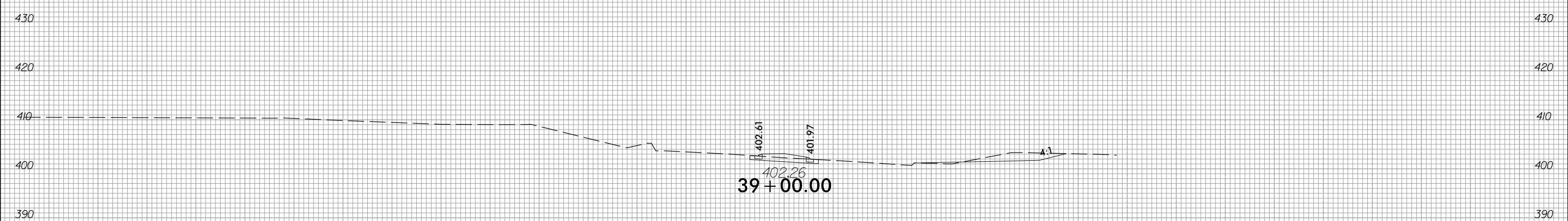
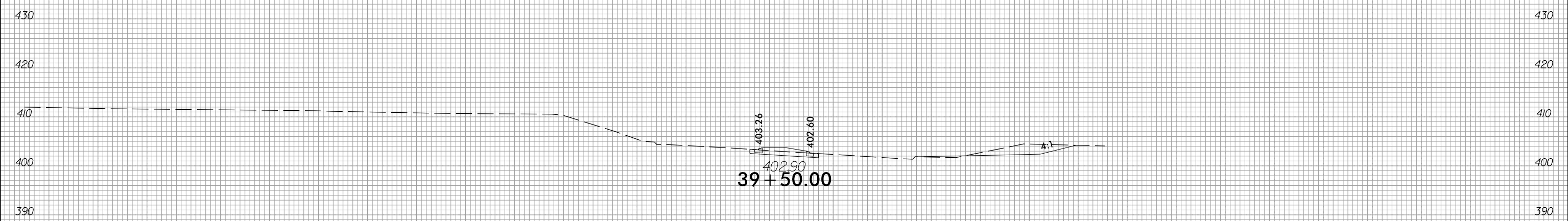
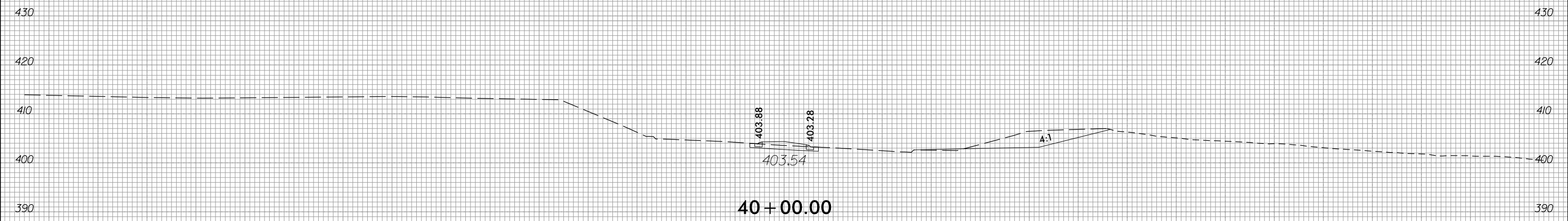


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choppe





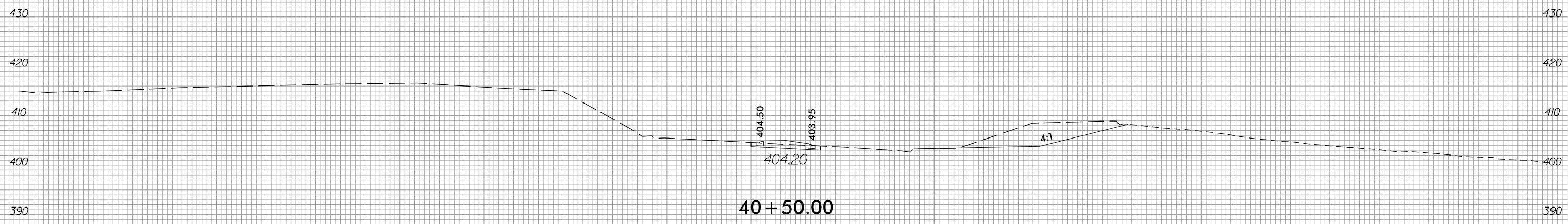
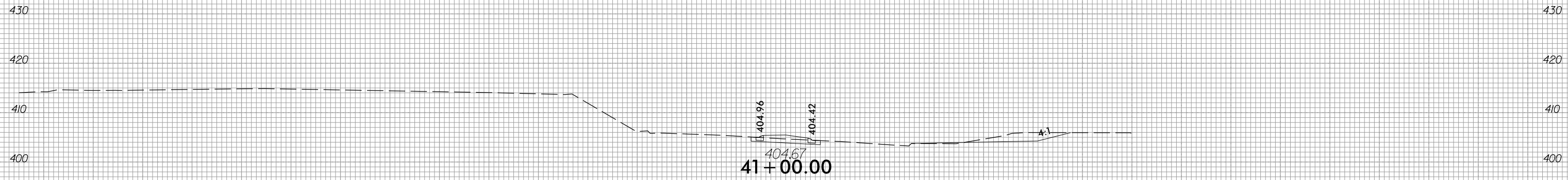
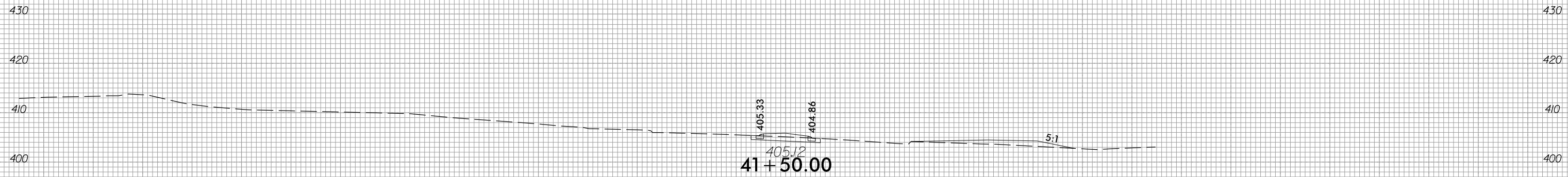
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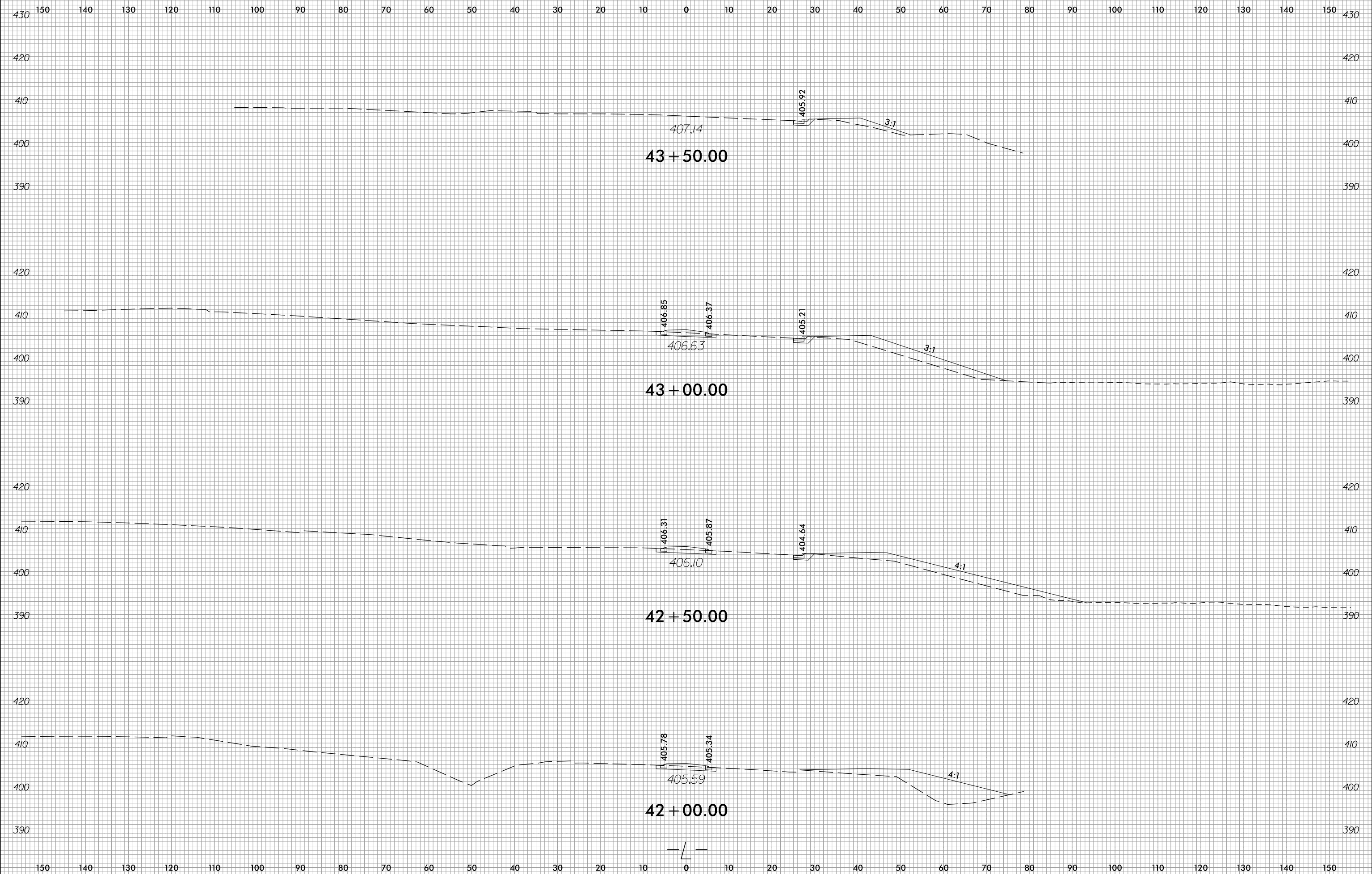
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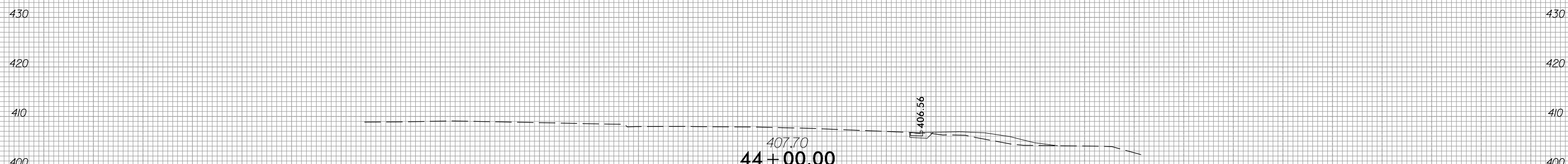
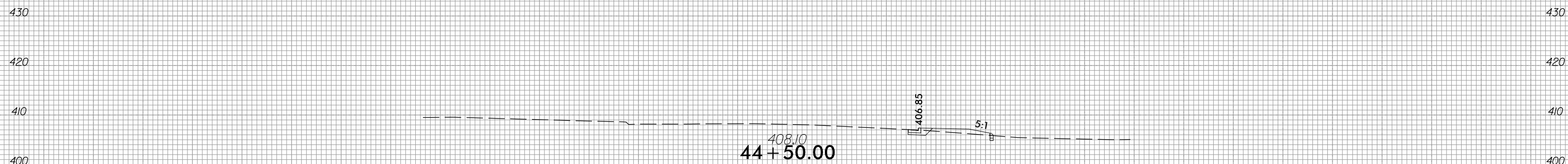
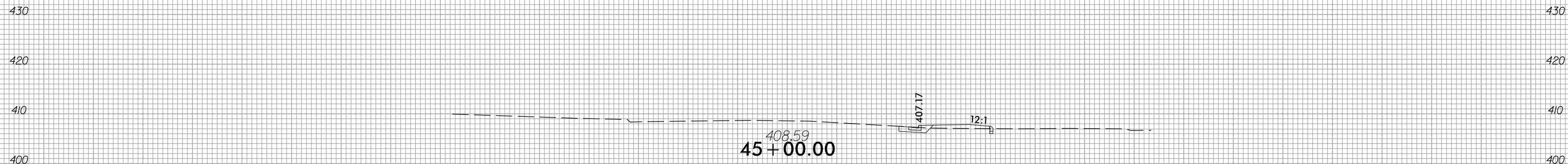
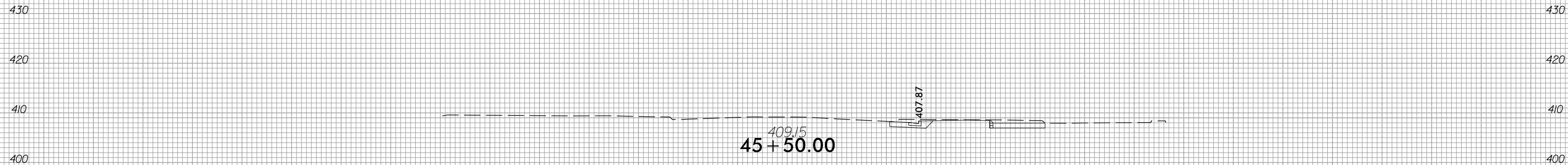


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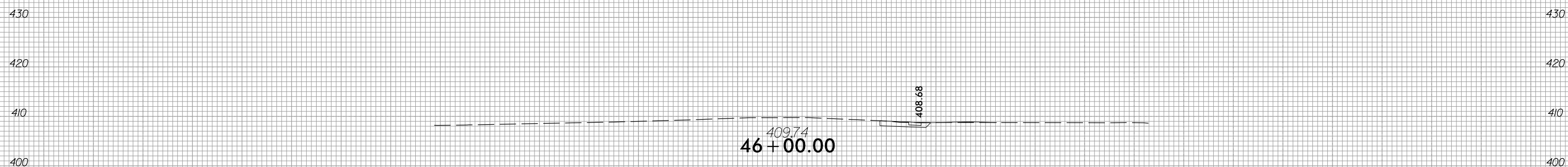
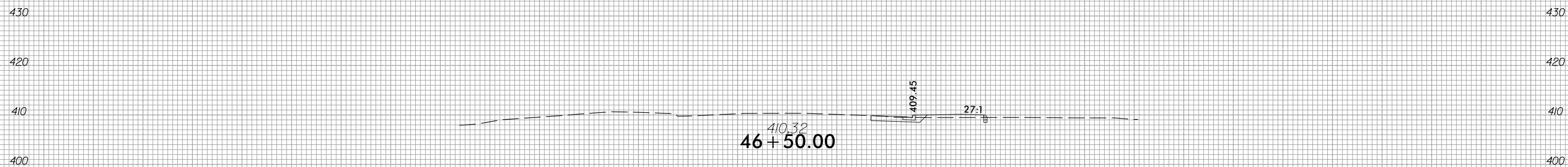
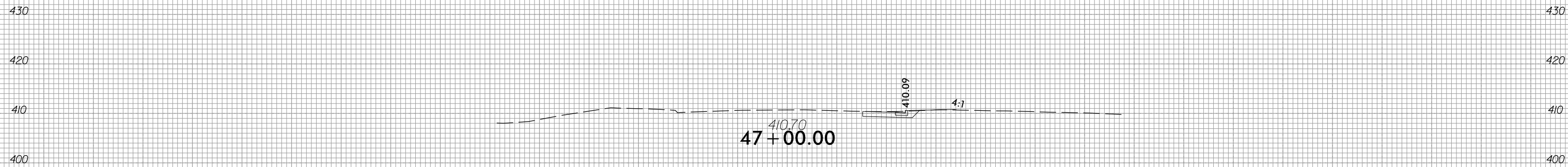
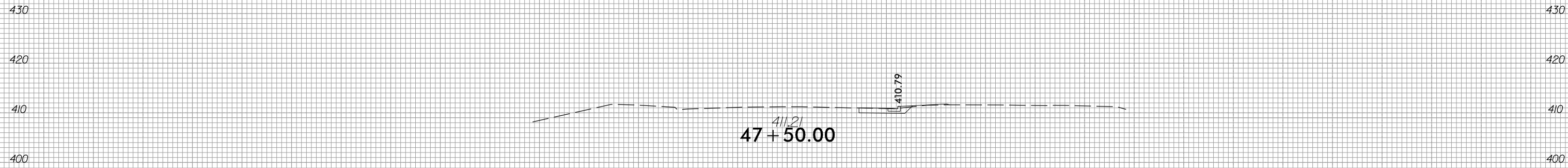
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U-6241

SHEET NO.
X-21

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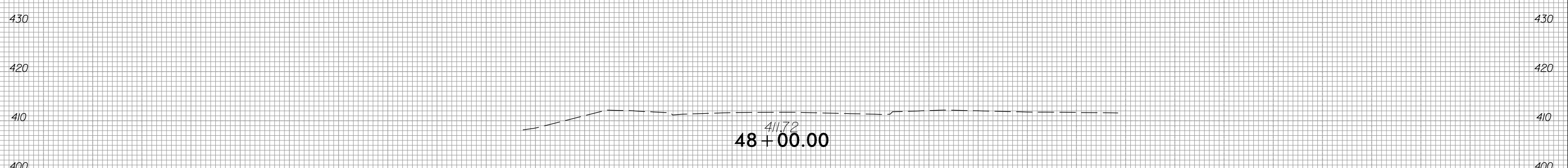
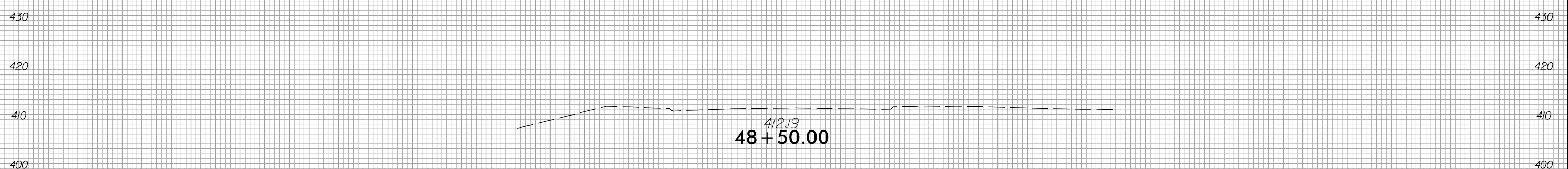
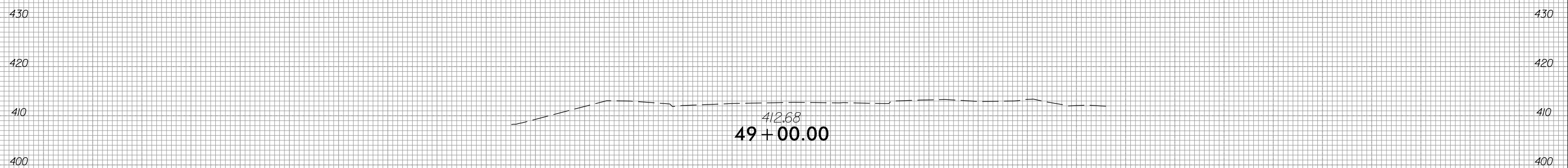
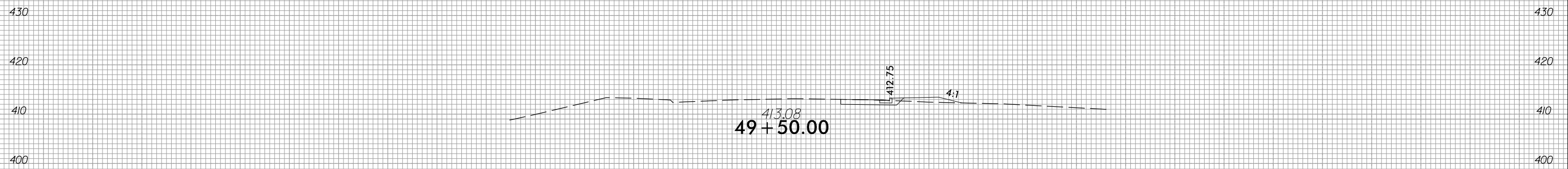


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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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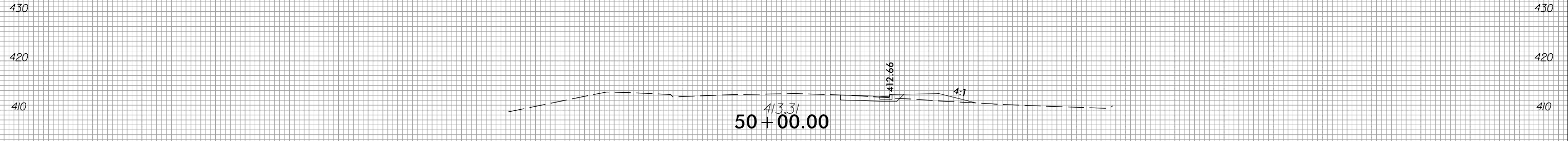
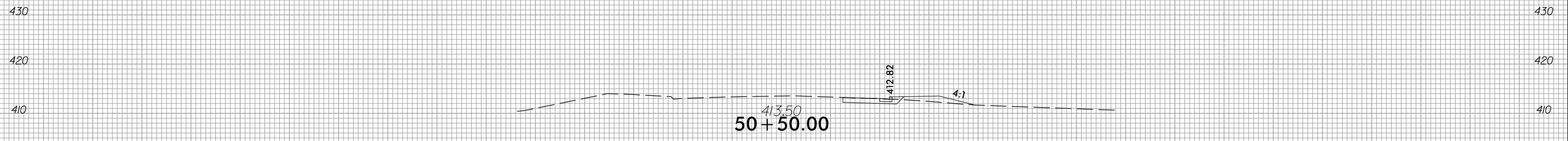
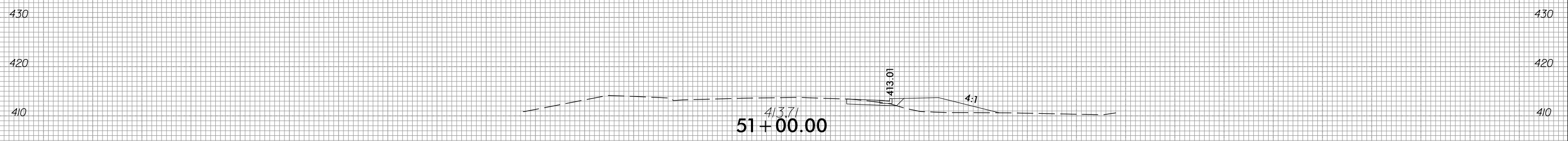
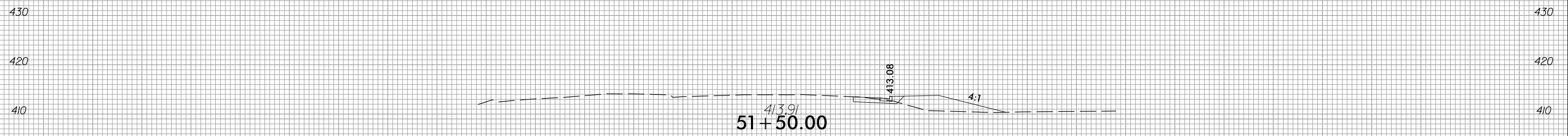
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-23

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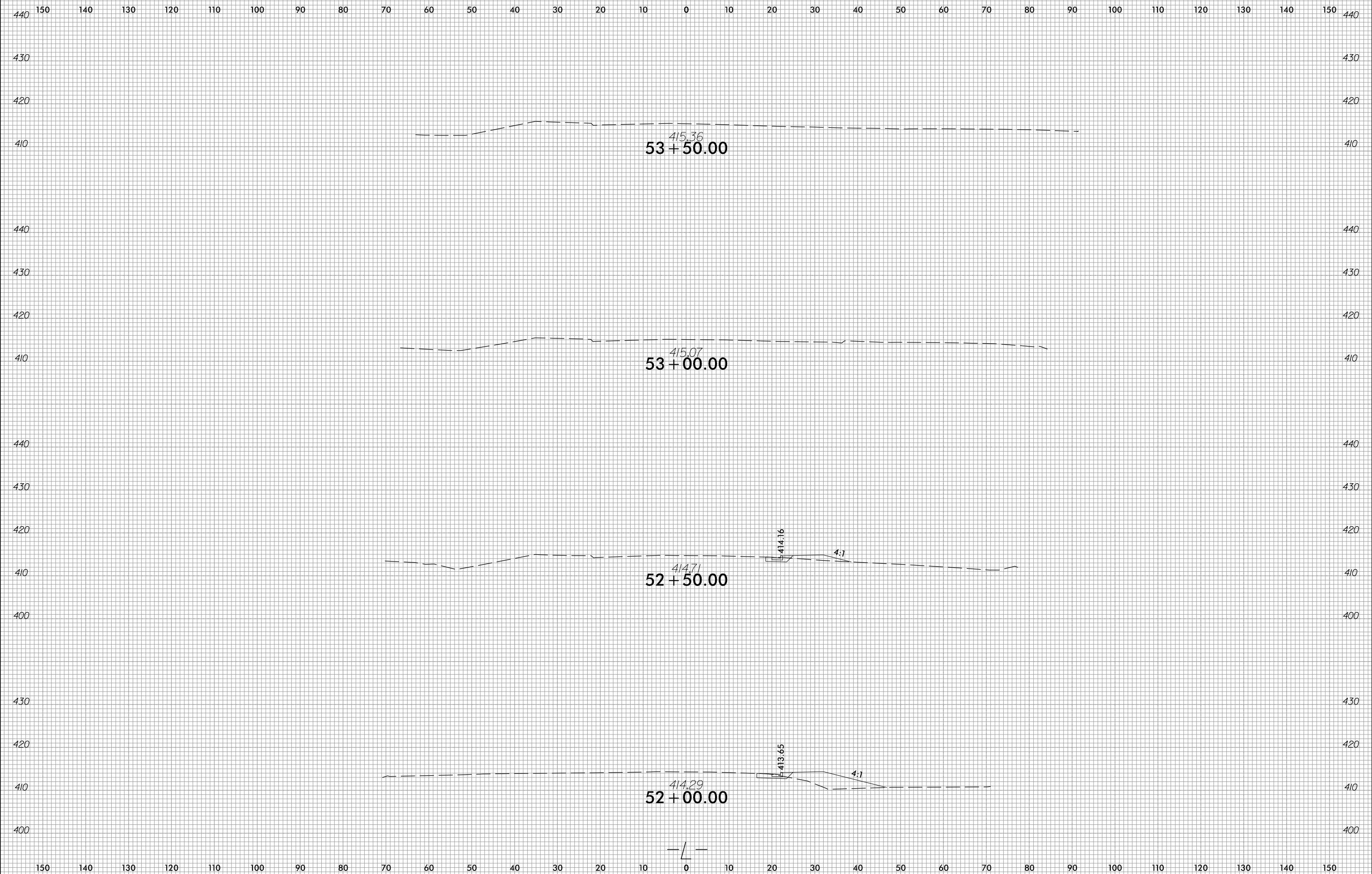
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PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-24

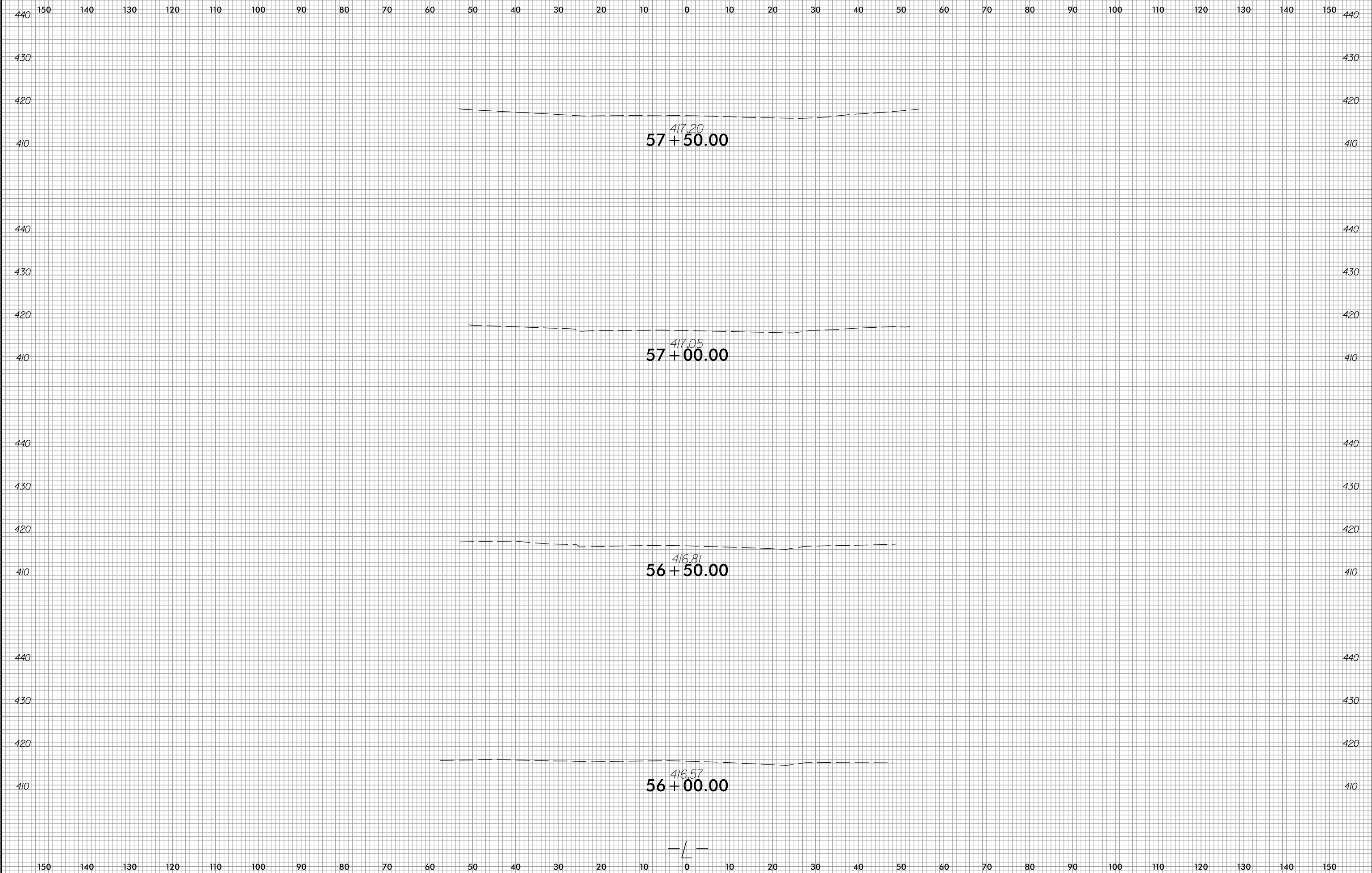


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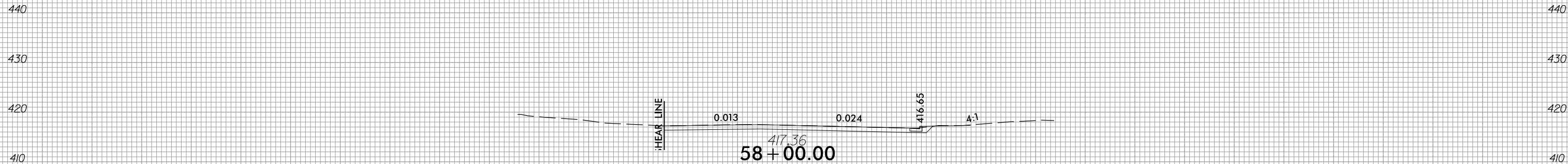
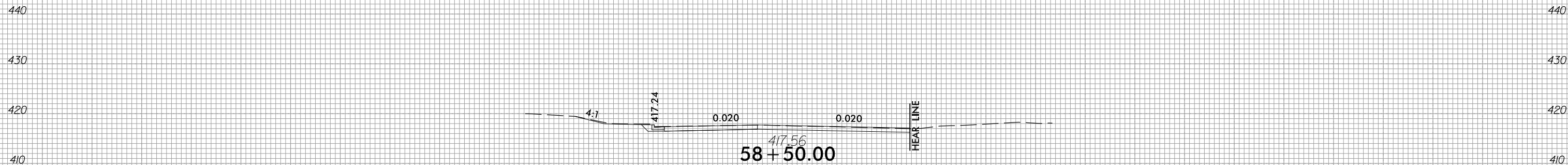
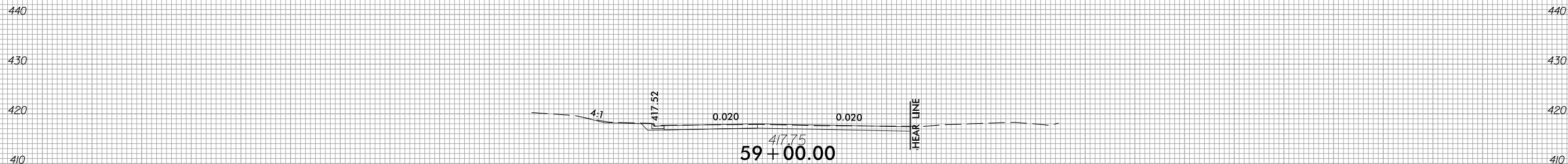
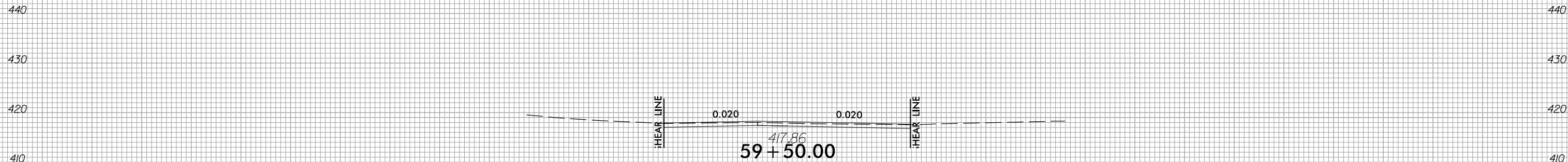
PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-26



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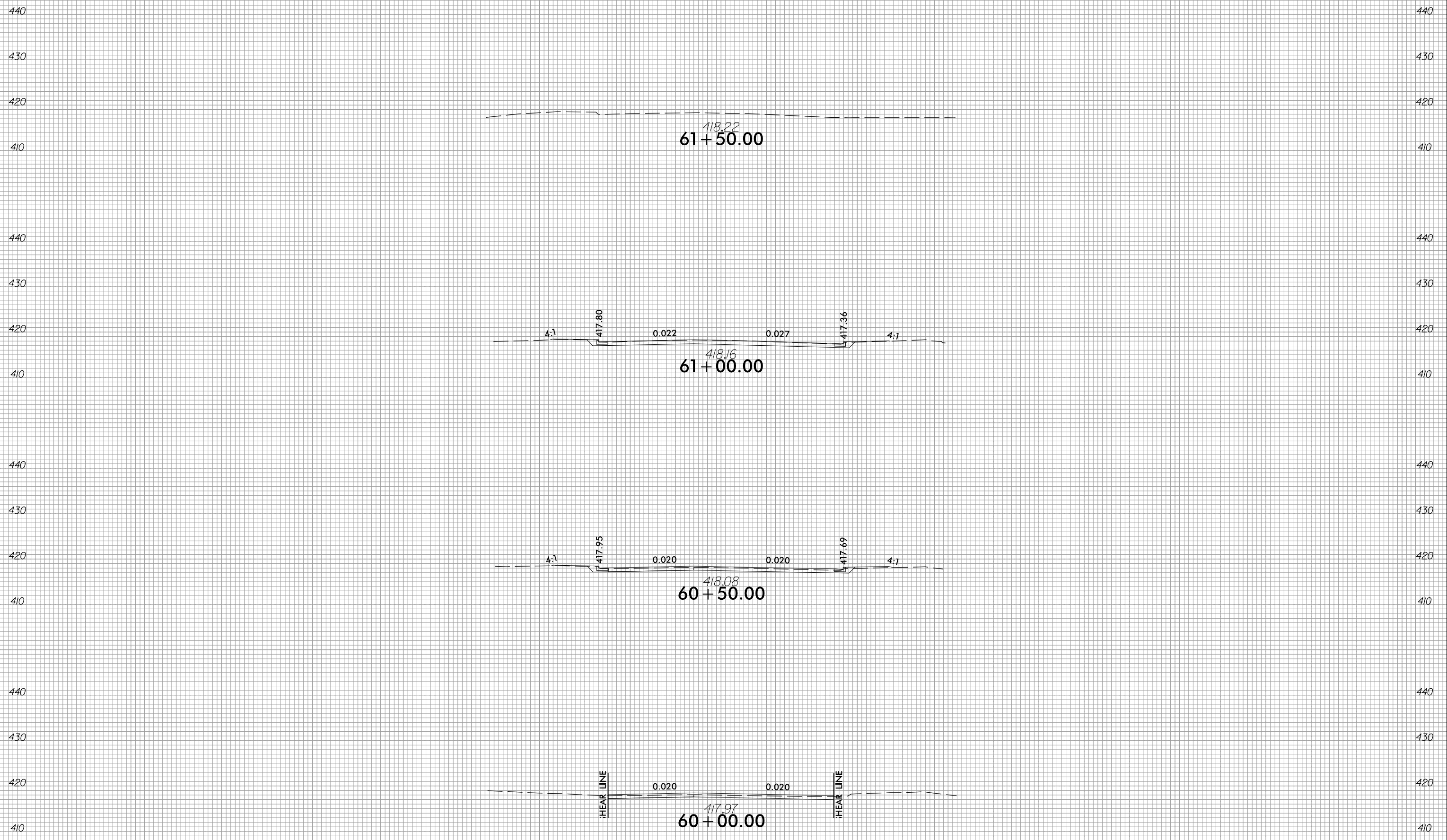
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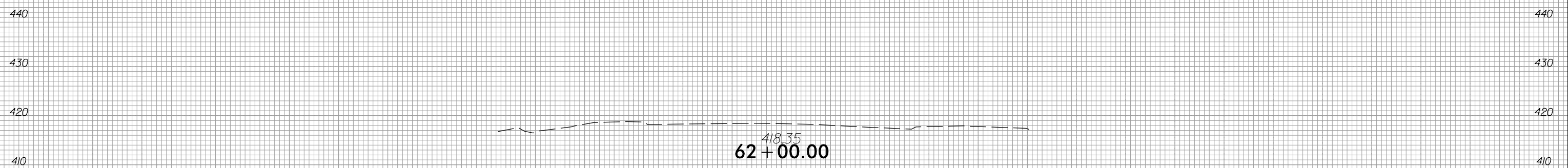
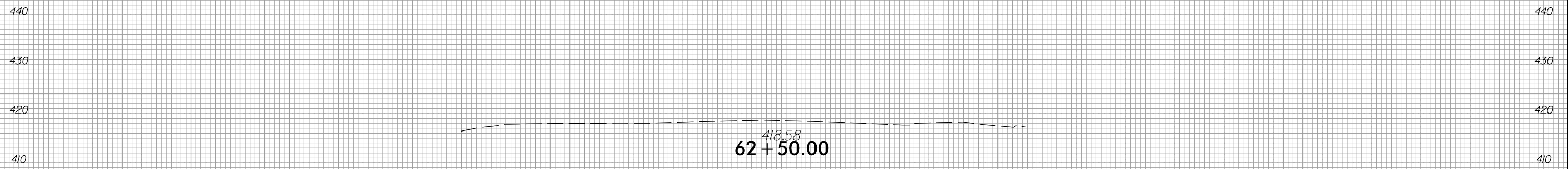
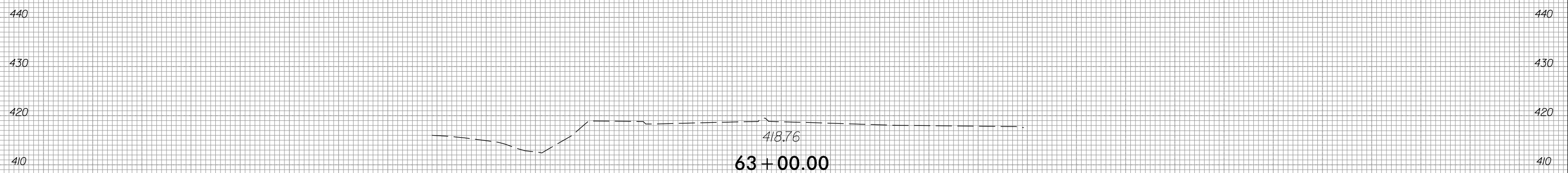
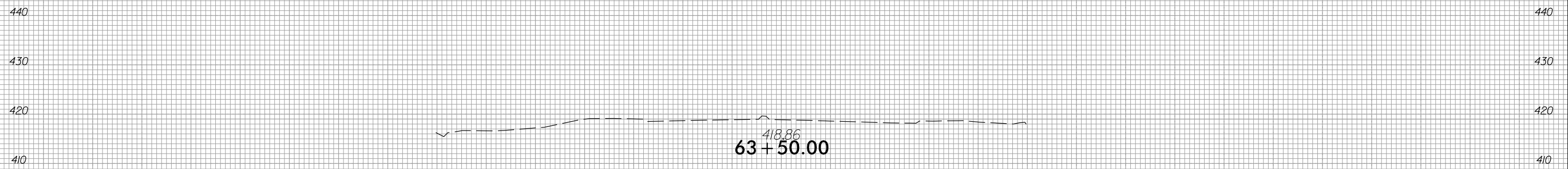
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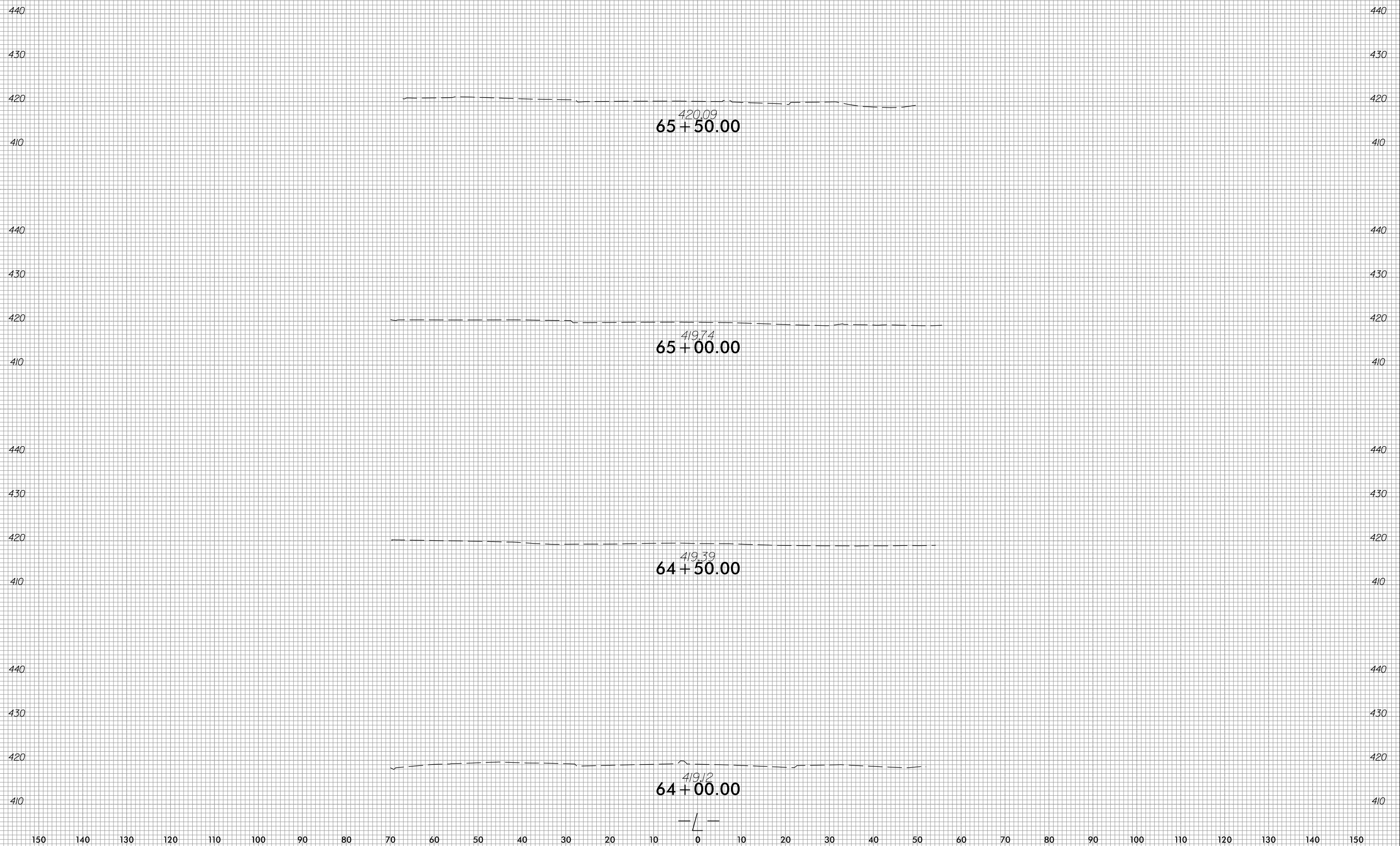
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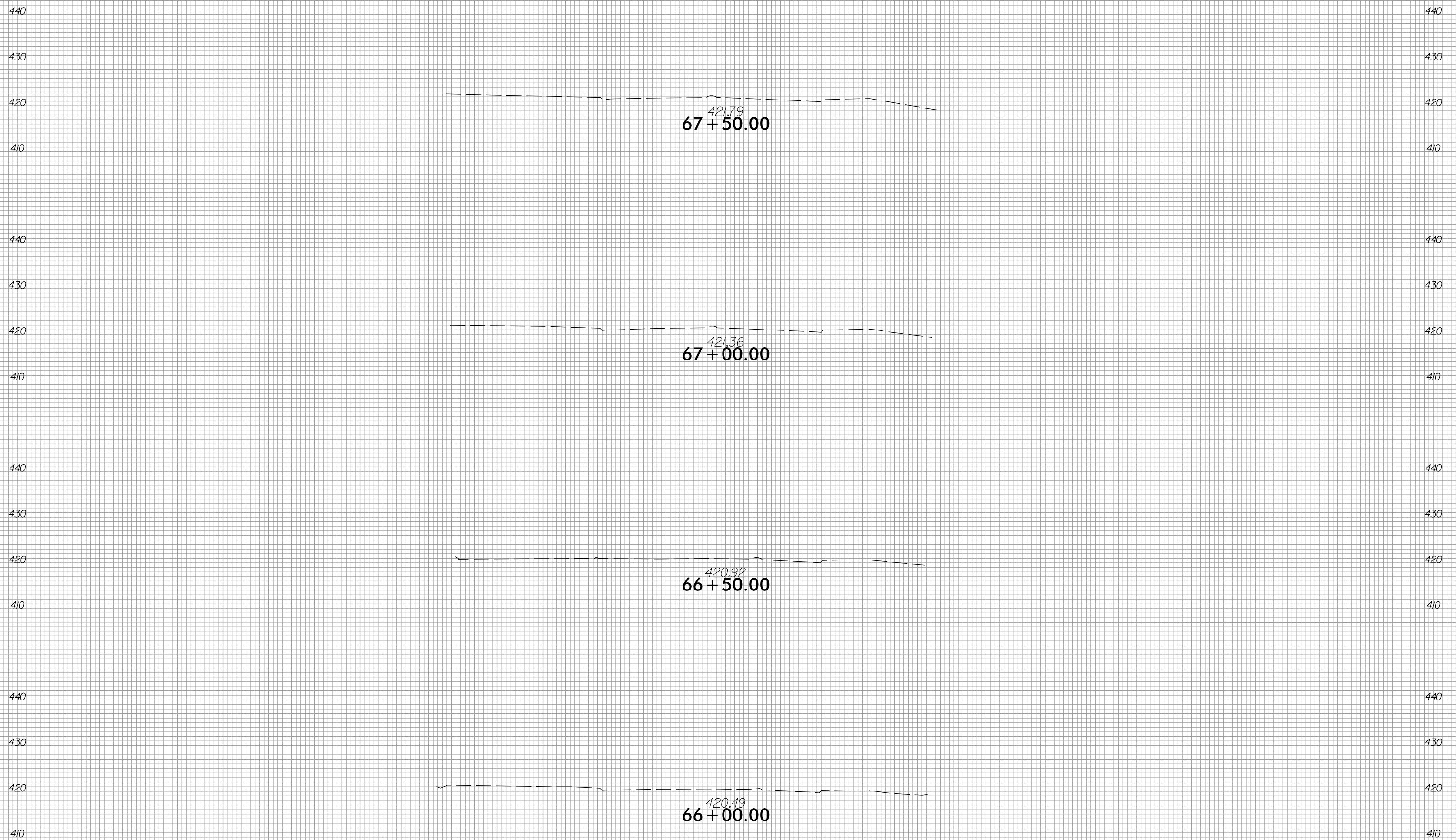
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450

450

440

440

430

430

420

420

410

410

422.91
69+00.00

440

440

430

430

420

420

410

410

422.48
68+50.00

440

440

430

430

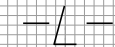
420

420

410

410

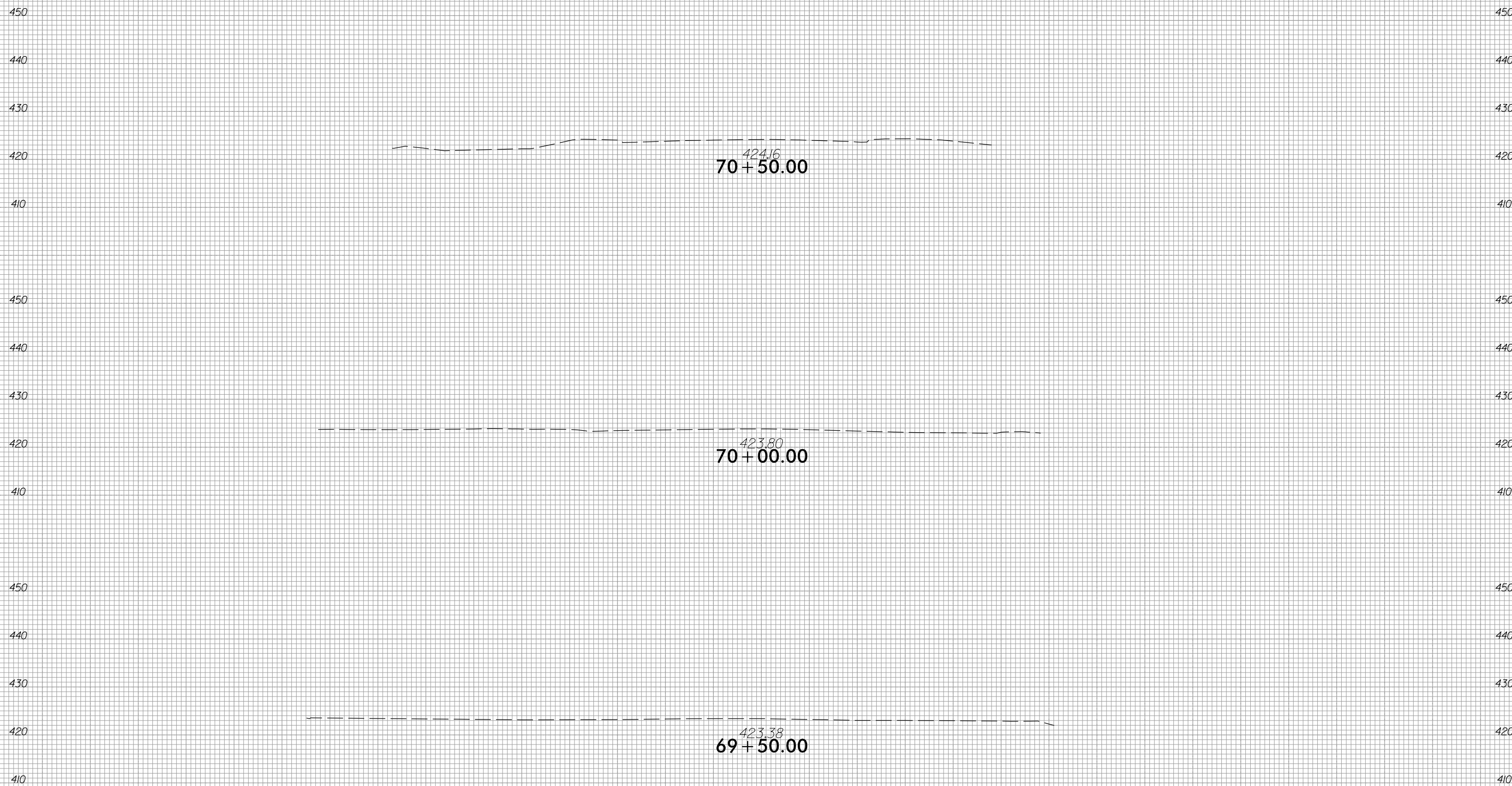
422.08
68+00.00



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

450

450

440

440

430

430

420

420

410

410

440

440

430

430

420

420

410

410

450

450

440

440

430

430

420

420

410

410

425.18
72+00.00

424.76
71+50.00

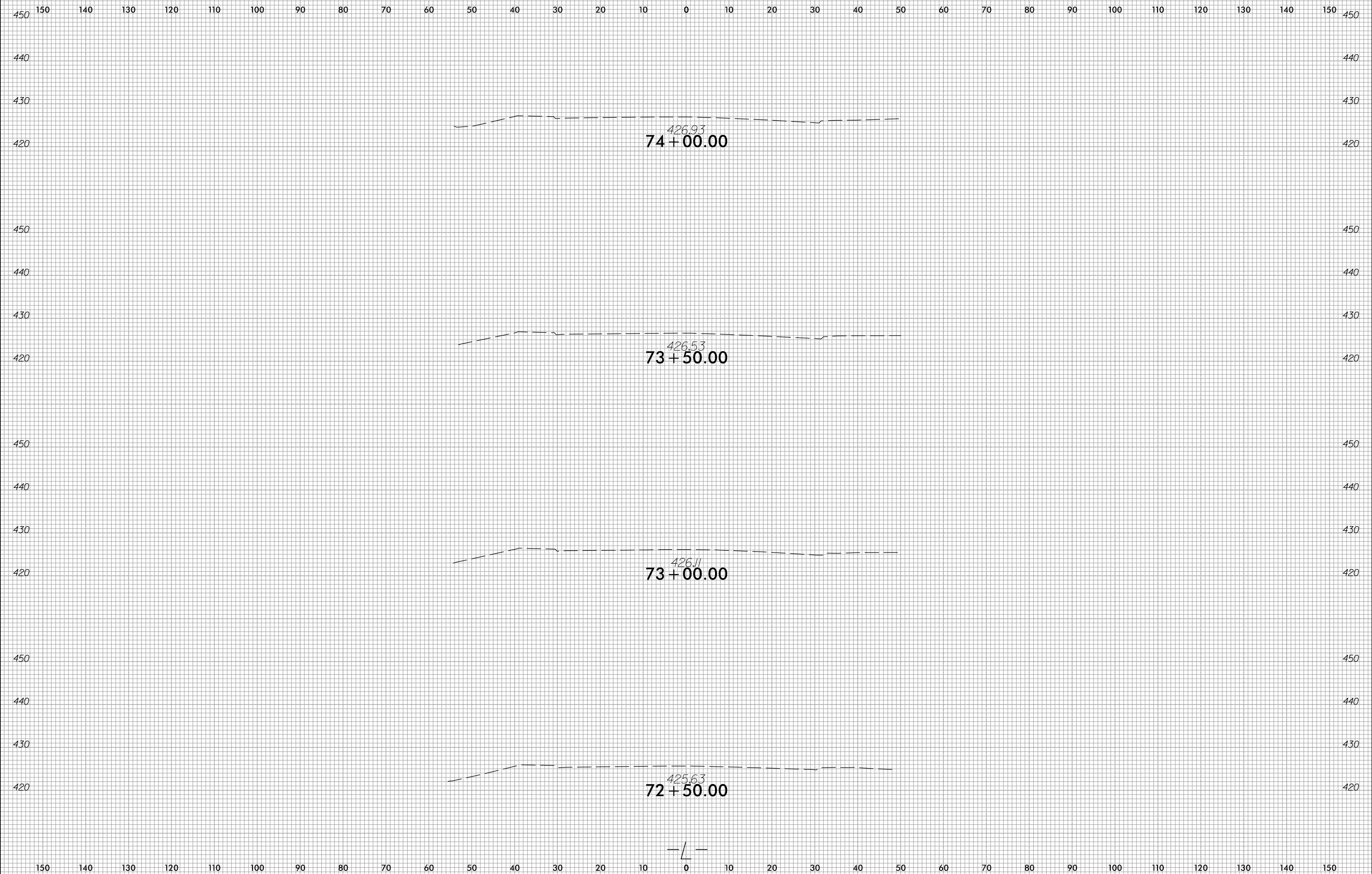
424.43
71+00.00



6/23/16



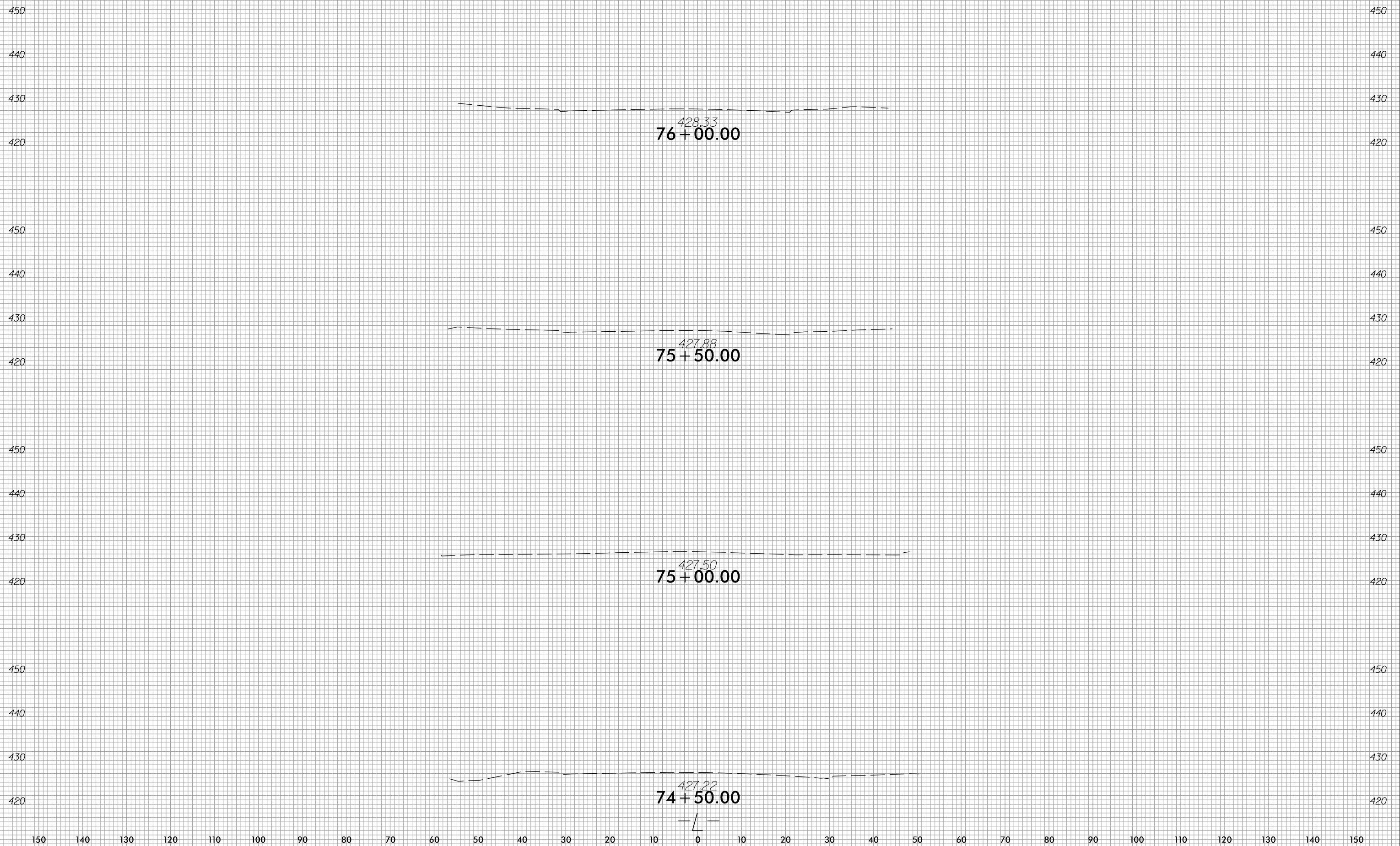
PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-35



4/18/2022
U:\Roadway\CorridorModeling\U-6241_Rdy_xpl.L.dgn
choppe



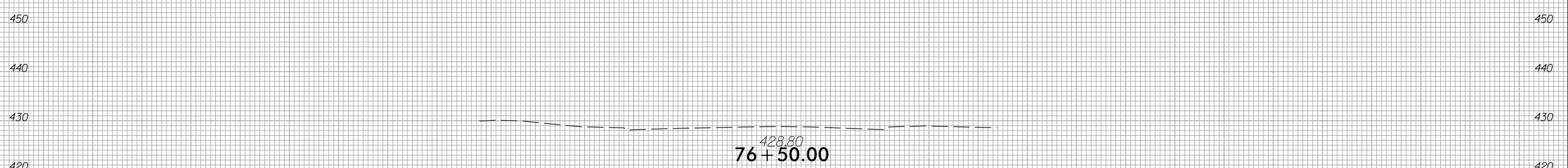
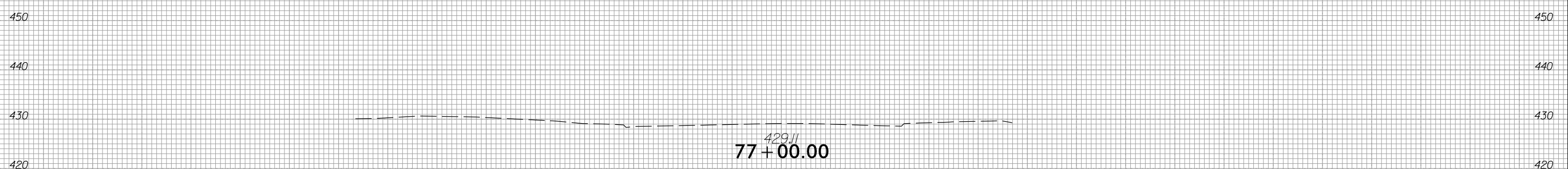
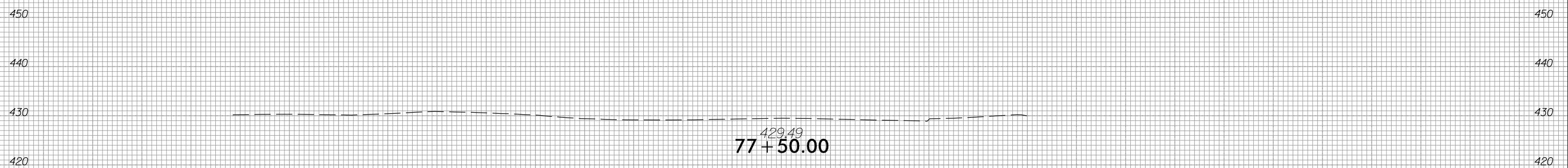
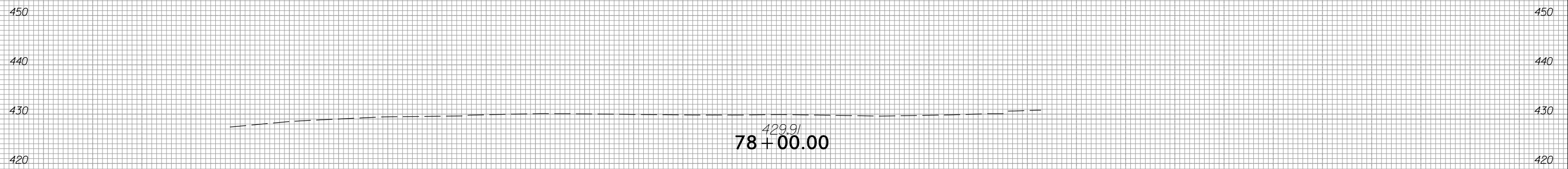
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



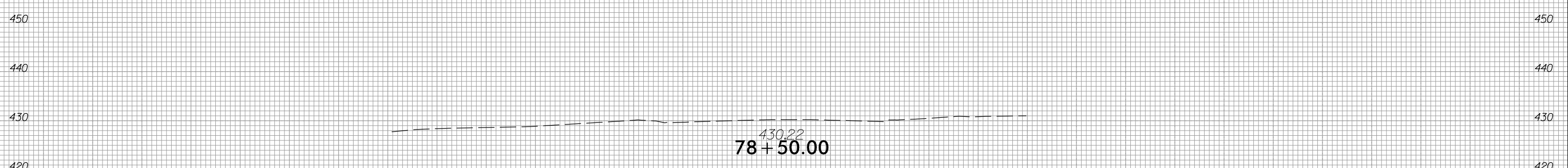
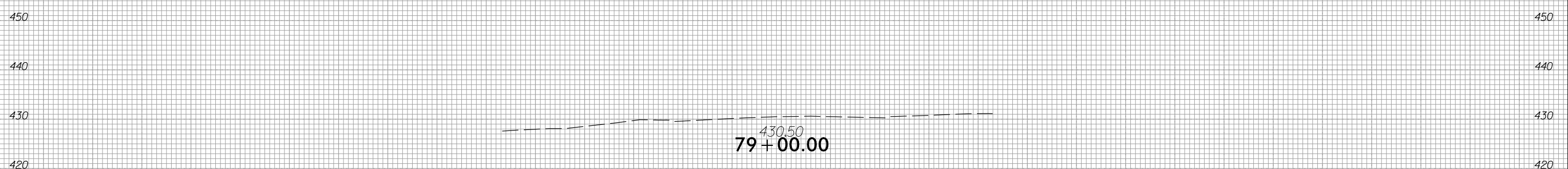
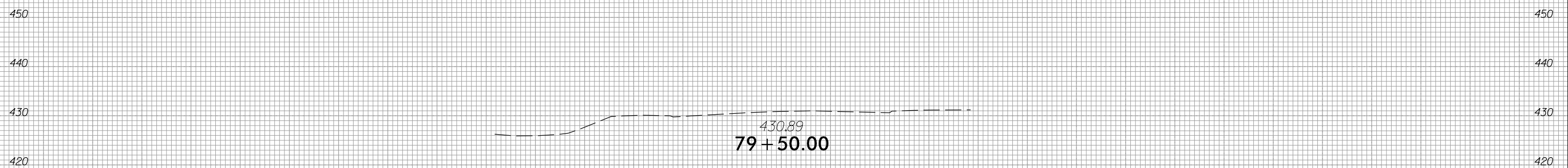
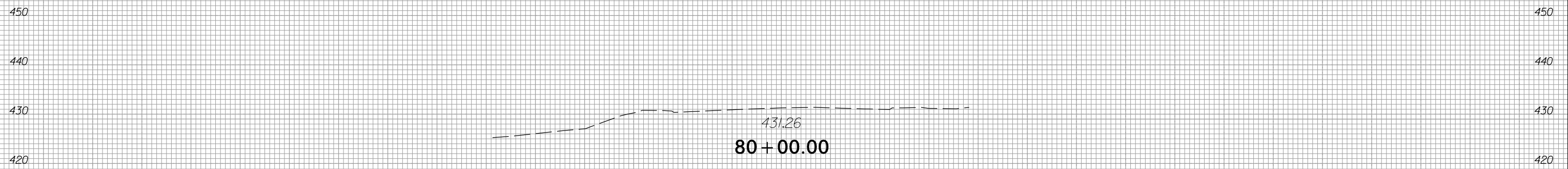
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

460

460

450

450

440

440

430

430

420

420

432.49
81+50.00

450

450

440

440

430

430

420

420

432.12
81+00.00

450

450

440

440

430

430

420

420

431.70
80+50.00

—/—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

460

460

450

450

440

440

430

430

420

420

433.56
83+00.00

460

460

450

450

440

440

430

430

420

420

433.20
82+50.00

460

460

450

450

440

440

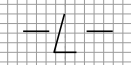
430

430

420

420

432.86
82+00.00



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

460

460

450

450

440

440

430

430

420

420

434.80
84 + 50.00

460

460

450

450

440

440

430

430

420

420

434.37
84 + 00.00

460

460

450

450

440

440

430

430

420

420

433.95
83 + 50.00

— / —

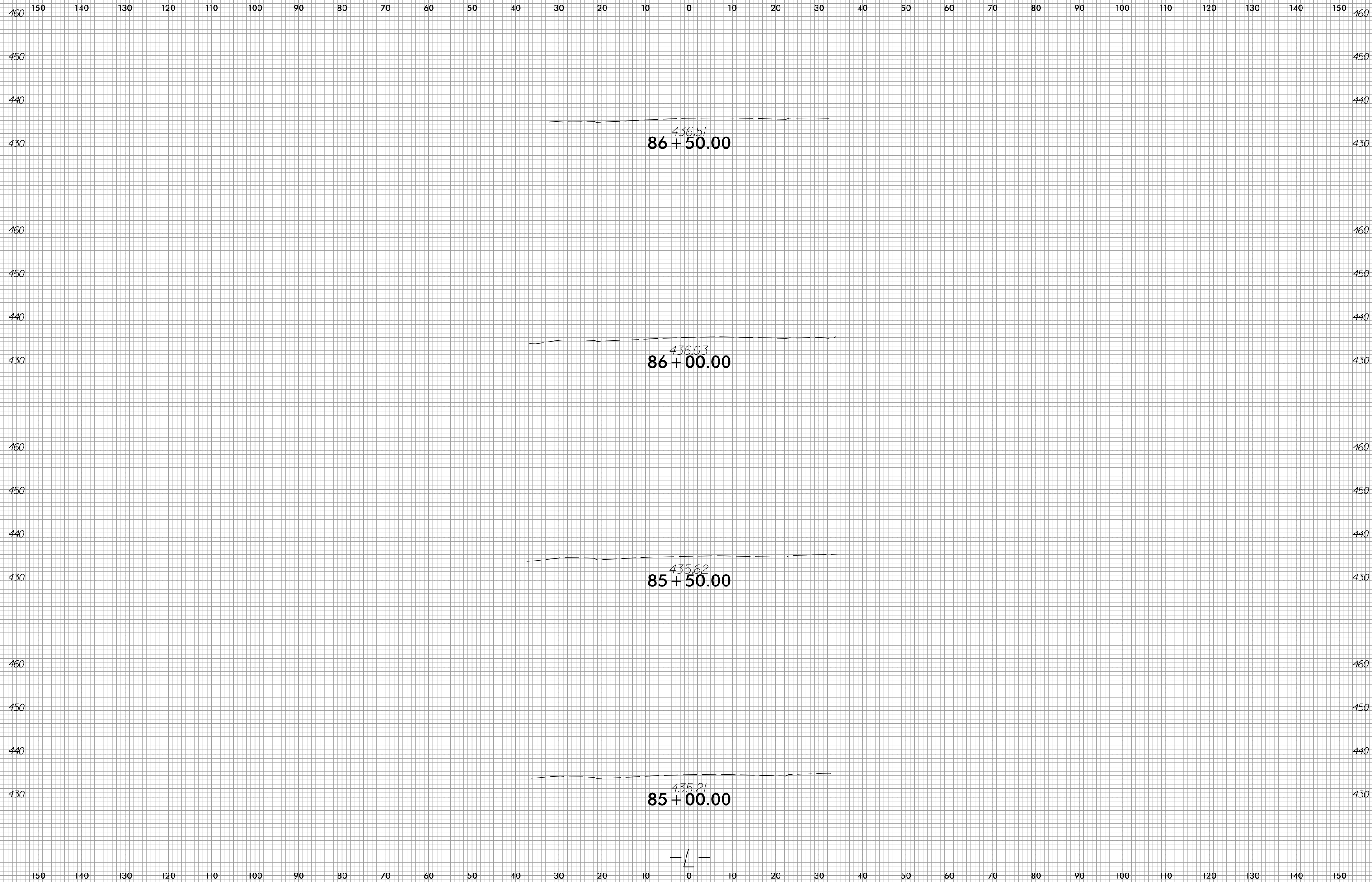
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-42



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choppe



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

460

460

450

450

440

440

430

430

438.71
88+50.00

460

460

450

450

440

440

430

430

438.20
88+00.00

460

460

450

450

440

440

430

430

437.62
87+50.00

460

460

450

450

440

440

430

430

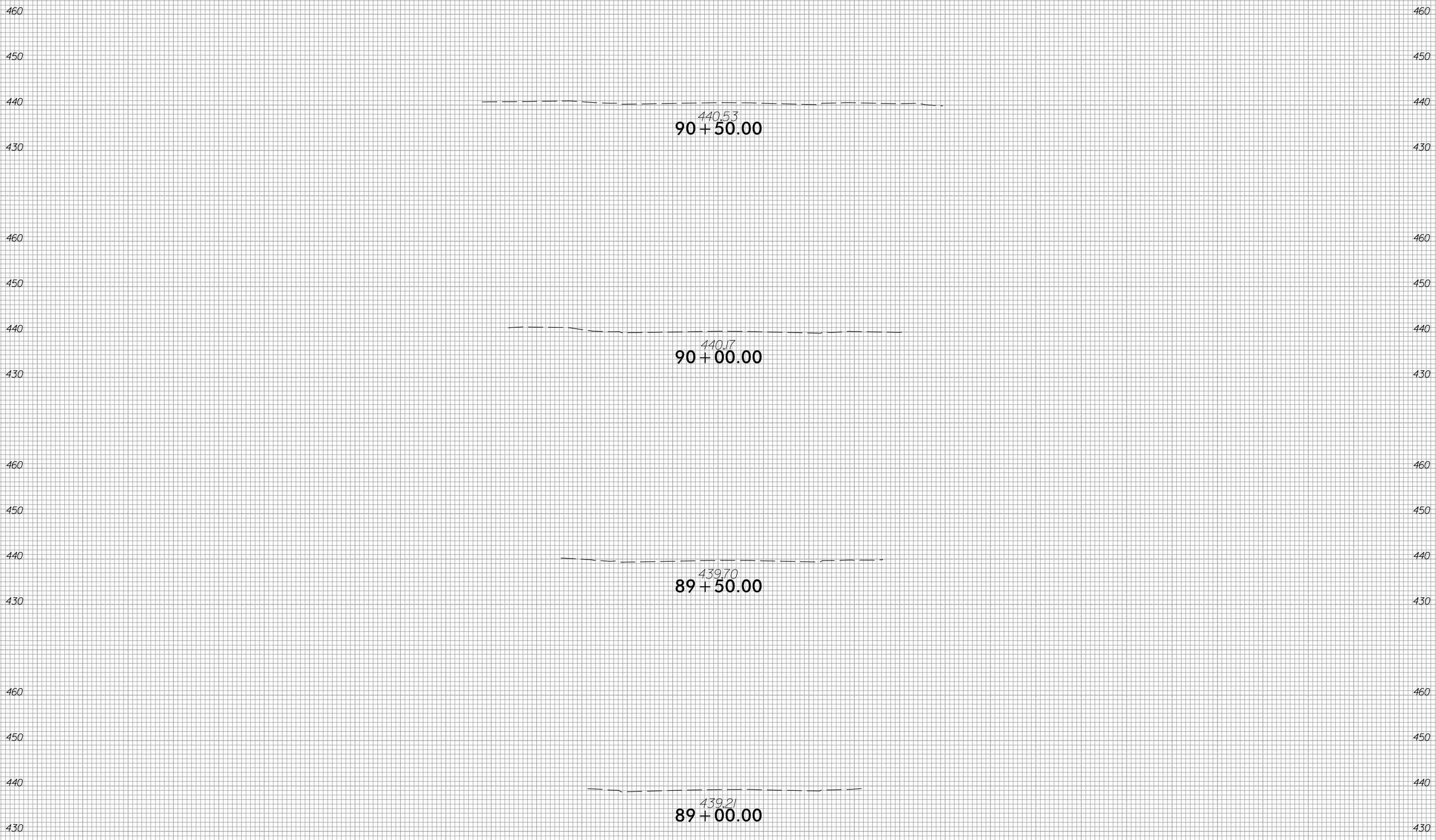
437.05
87+00.00

—/—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



440.53
90+50.00

440.17
90+00.00

439.70
89+50.00

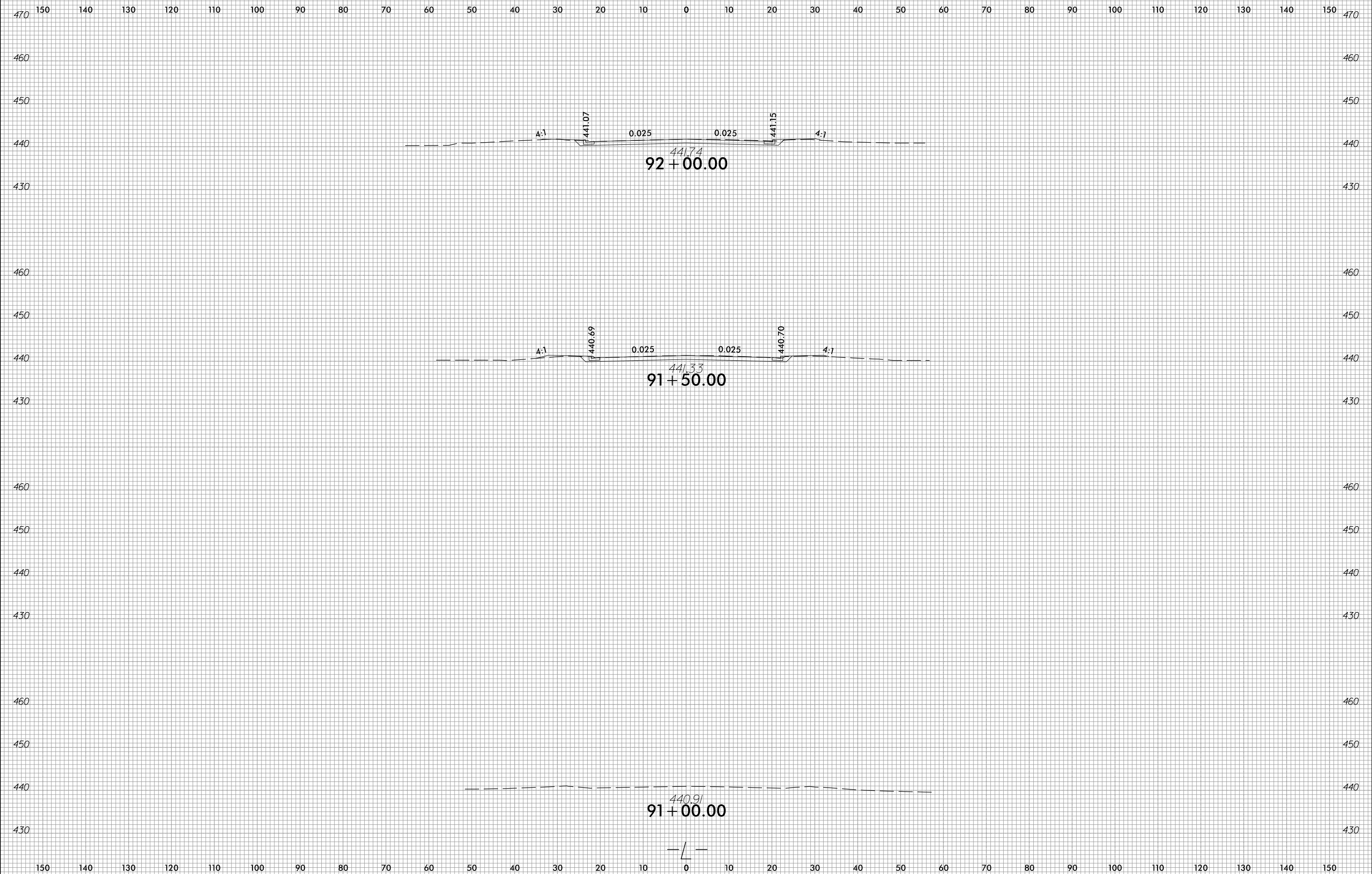
439.21
89+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-45



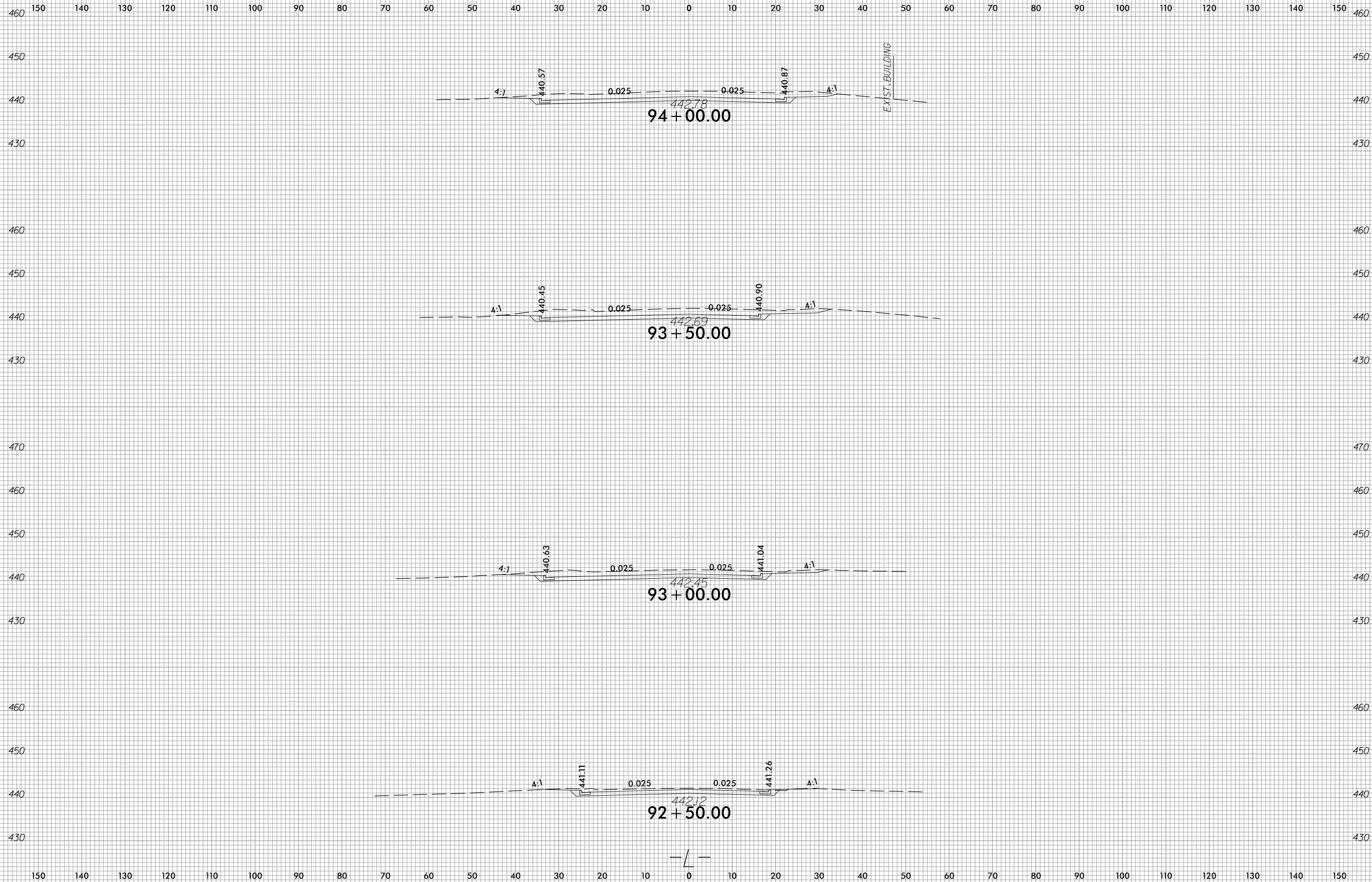
4/18/2022
 U:\Roadway\CorridorModeling\U-6241_Rdy_xpl.L.dgn
 choppe

6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-46



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U:\Roadway\CorridorModeling\U-6241_Rdy_xpl.L.dgn
choppe

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PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-47

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

470

470

460

460

450

450

440

440

EXIST. BUILDING

441.61

0.020

0.025

0.037

441.01

EXIST. BUILDING

442.97
95 + 50.00

430

430

470

470

460

460

450

450

440

440

4:1

441.23

0.020

0.025

0.050

441.13

442.78
95 + 00.00

430

430

470

470

460

460

450

450

440

440

4:1

440.81

0.025

0.025

0.040

440.98

4:1

442.80
94 + 50.00

430

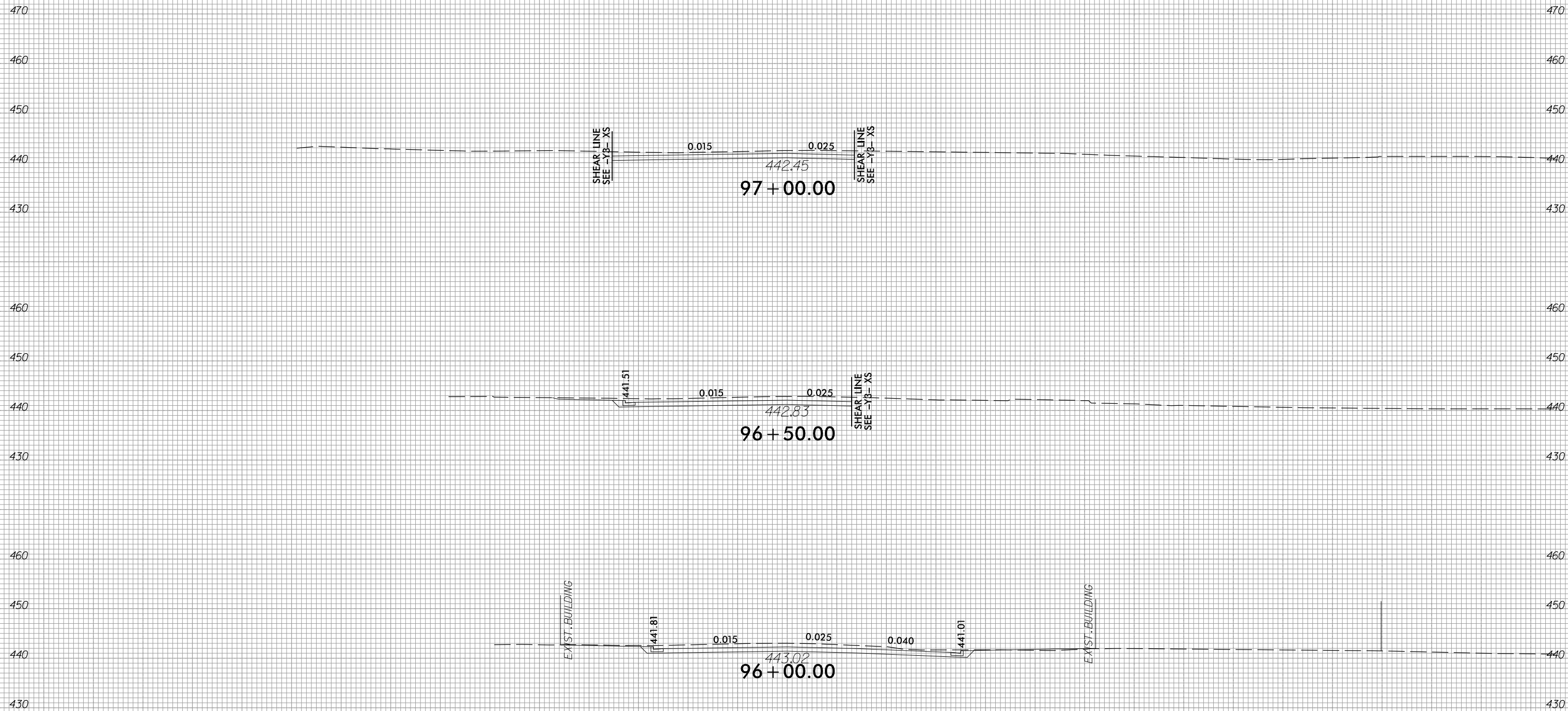
430

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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choppe



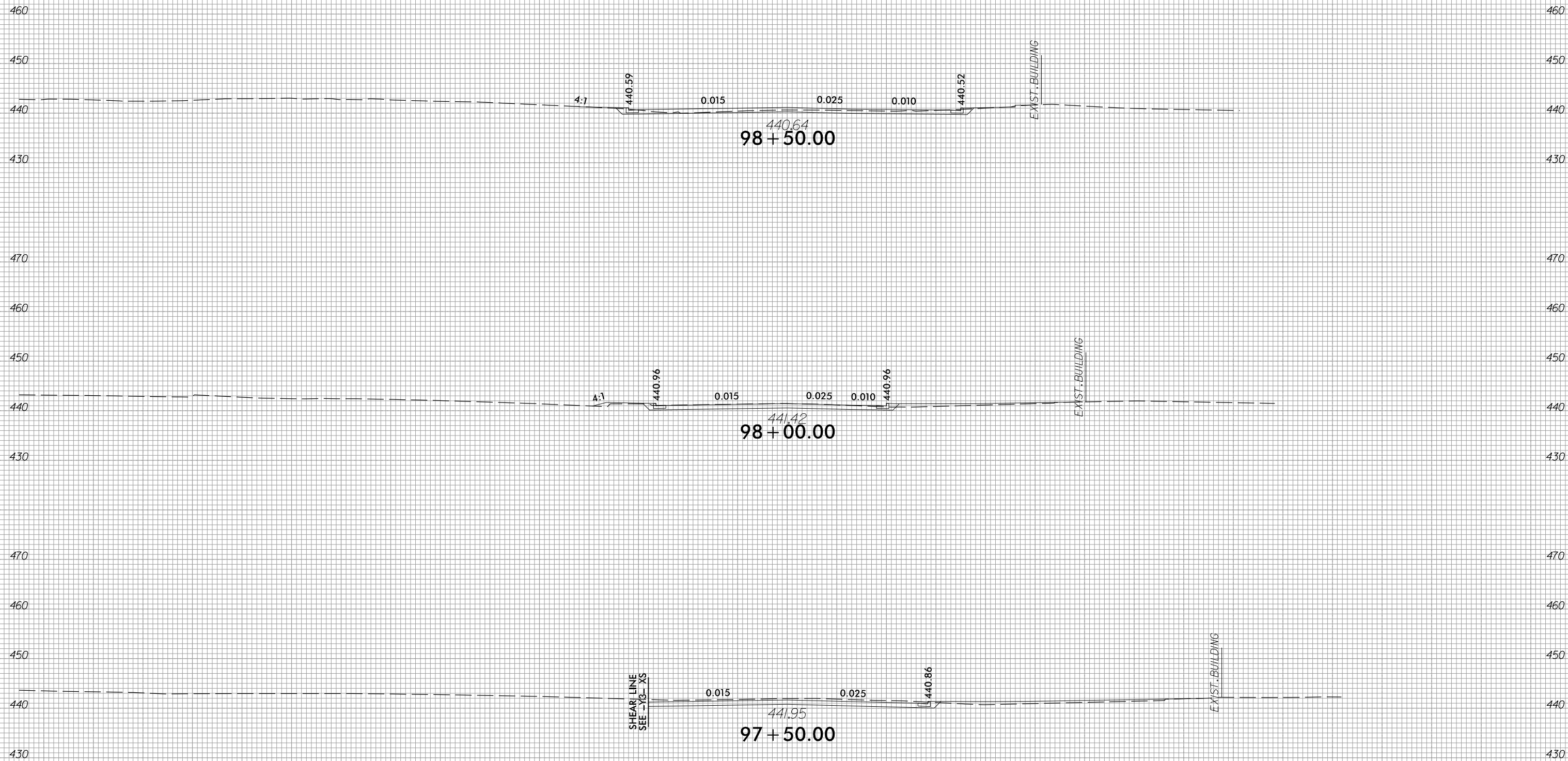
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



SHEAR LINE
SEE -Y3- XS

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

440

440

430

430

420

420

434.55
101 + 50.00

460

460

450

450

440

440

430

430

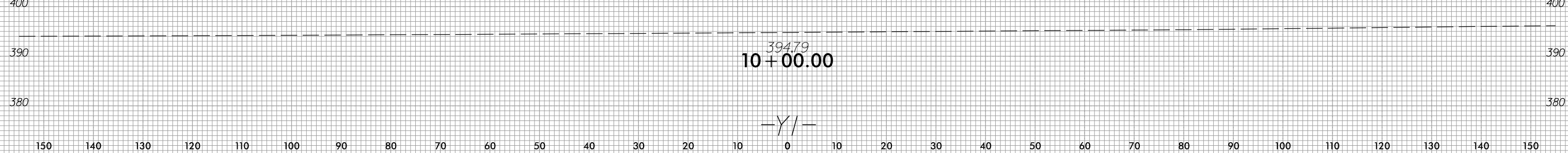
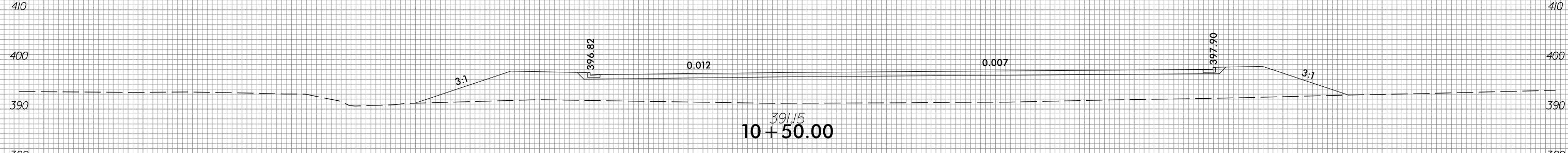
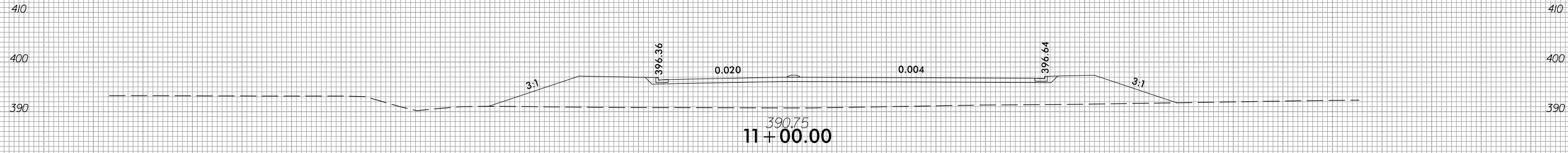
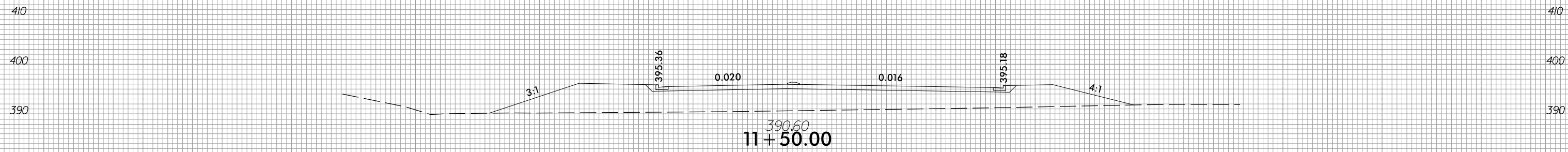
435.44
101 + 00.00

—/—

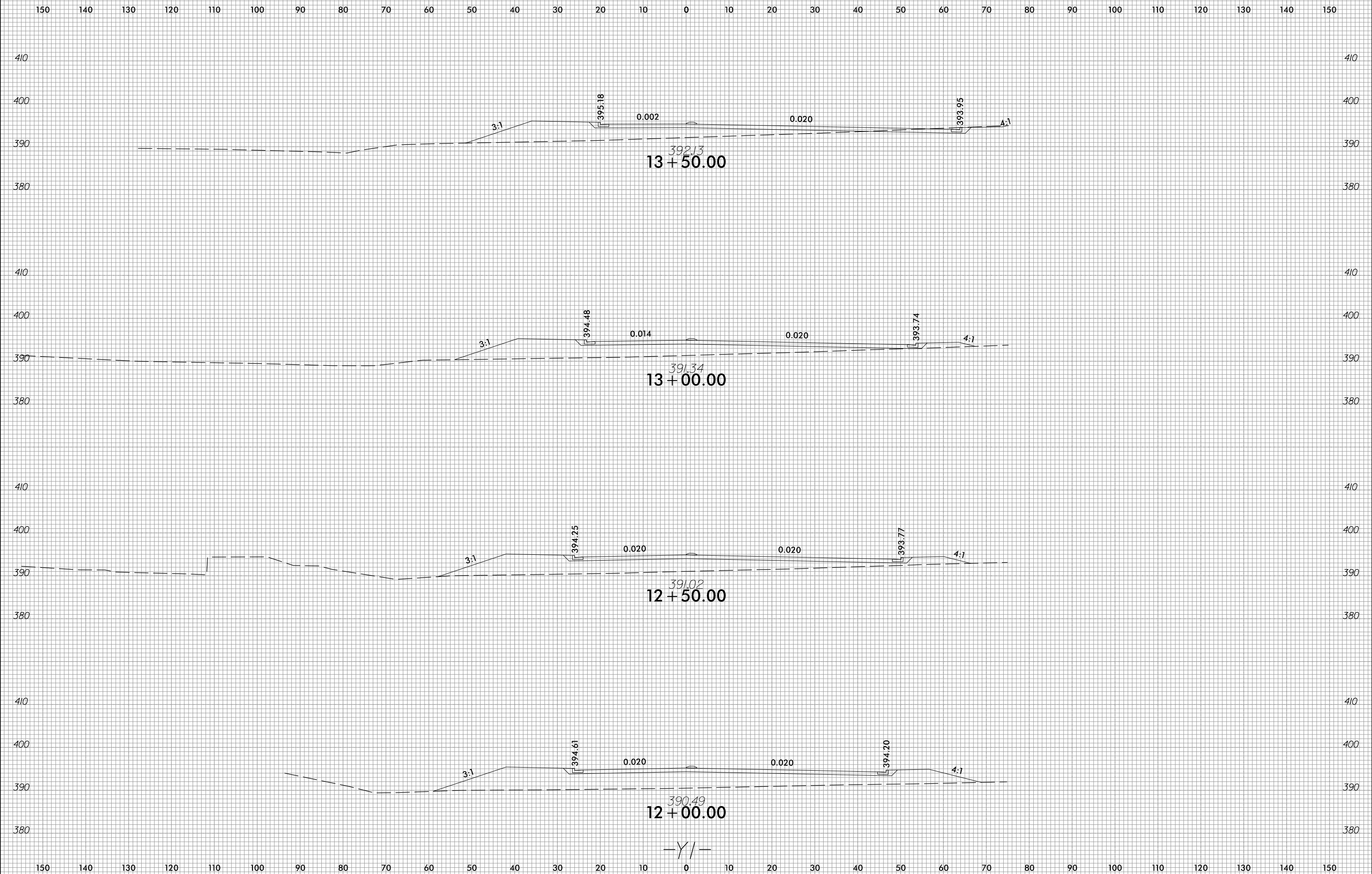
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



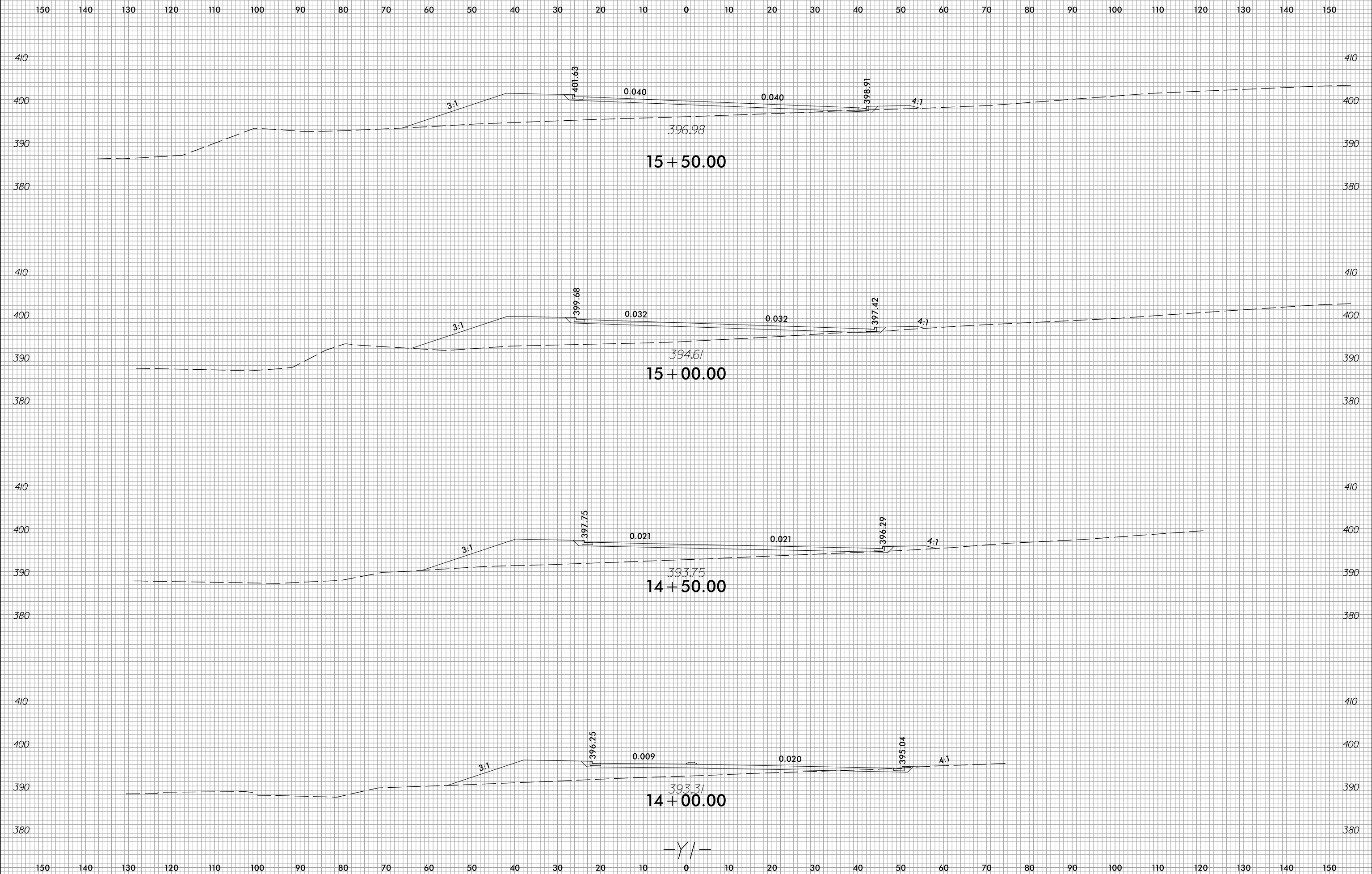
-Y/-



6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-54



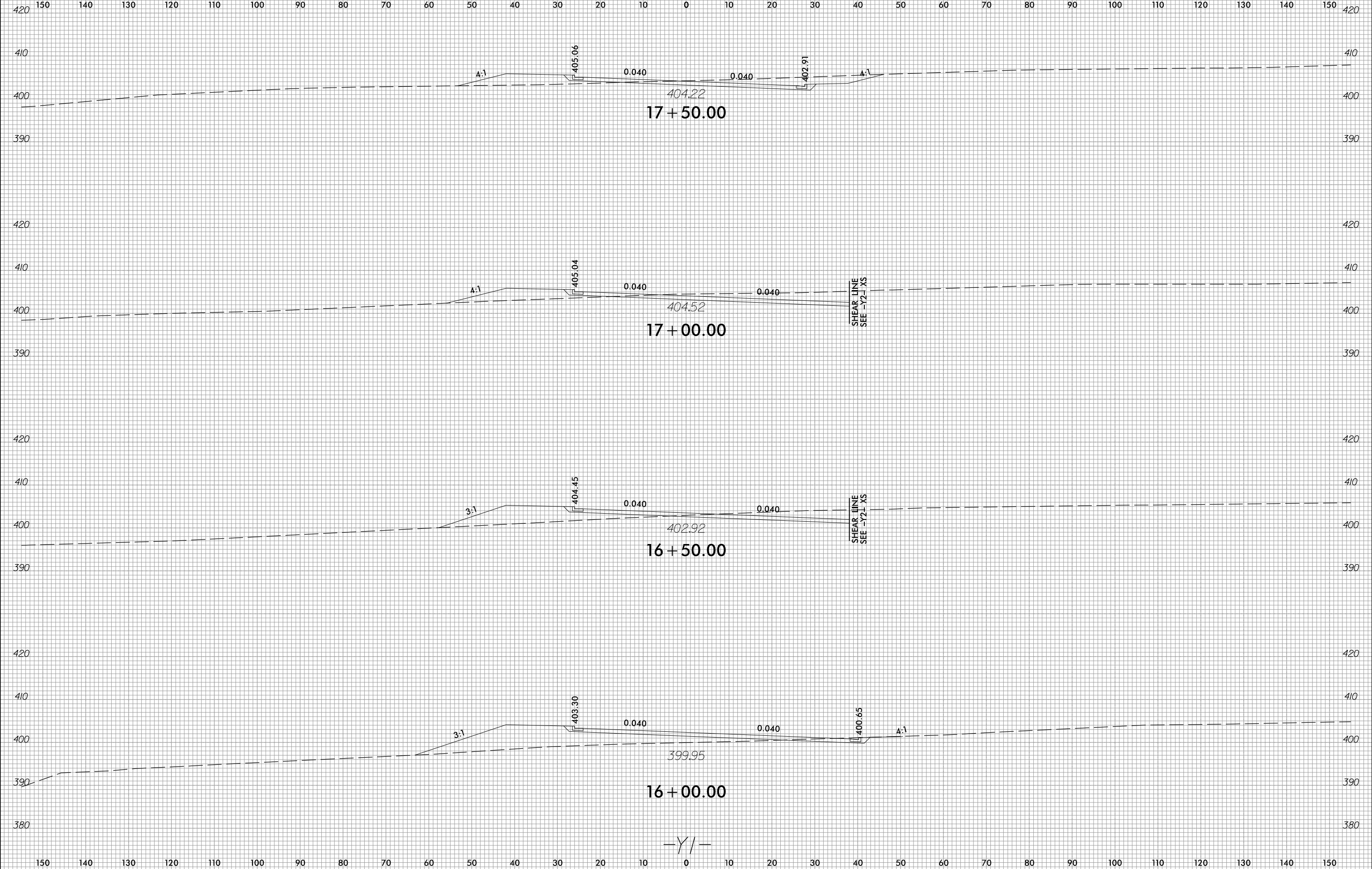
4/18/2022
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choppe

-Y/-

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-55



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U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y1.dgn
choppe

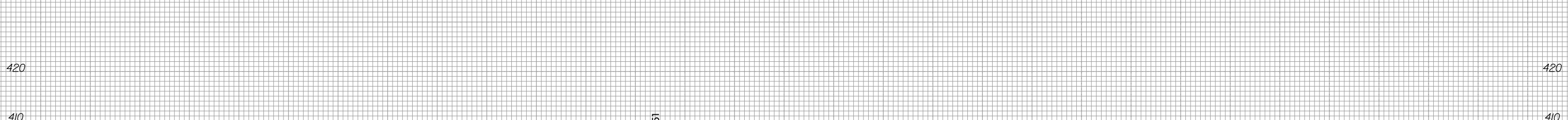
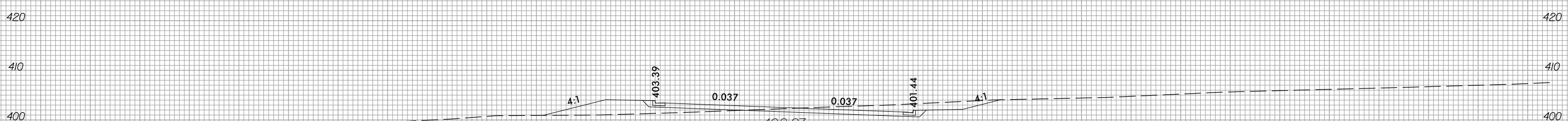
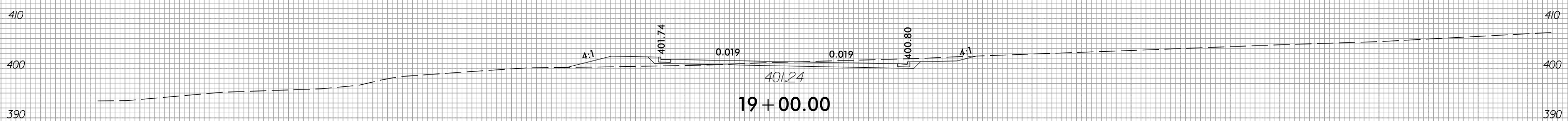
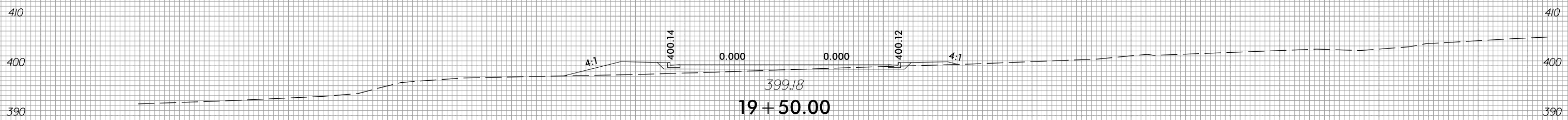
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-56

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y/-

4/18/2022
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choppe

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

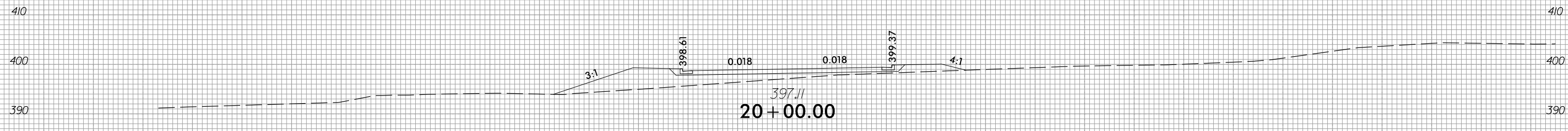
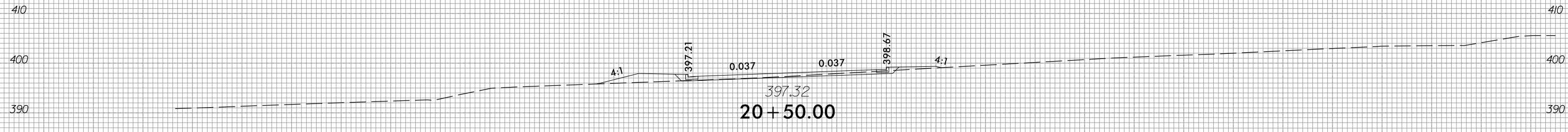
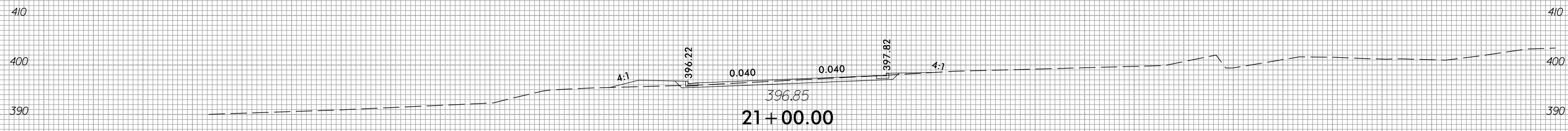
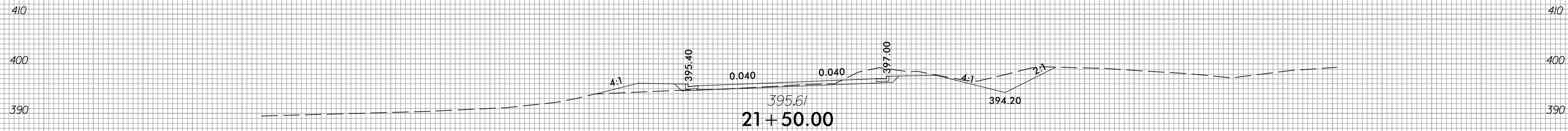
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-57

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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choppe

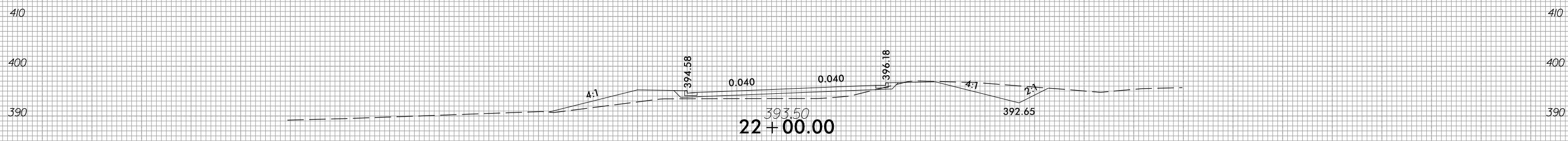
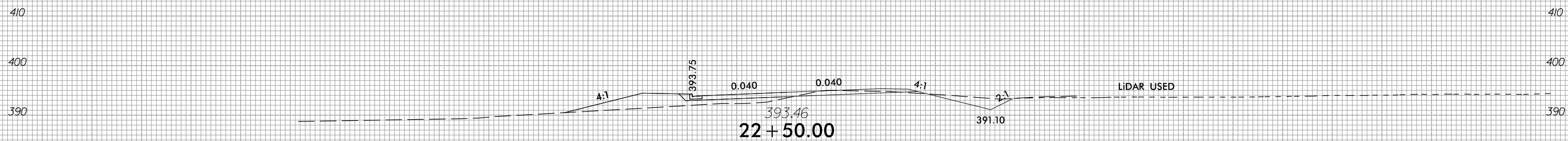
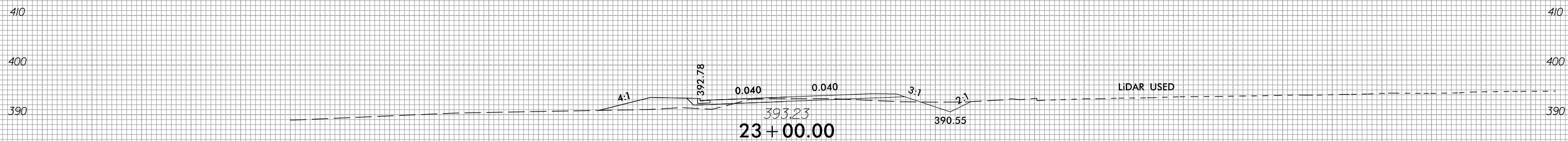
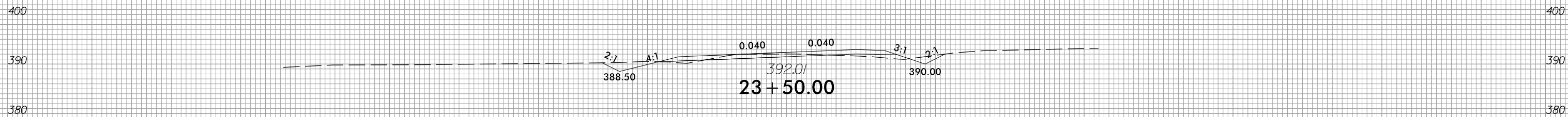
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-58

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



-Y/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y1.dgn
choppe



150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

400

400

390

390

380

380

389.12
25+00.00

400

400

390

390

380

380

387.50 389.98
24+50.00

400

400

390

390

380

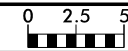
380

388.00 390.96 389.45
24+00.00

-Y/-

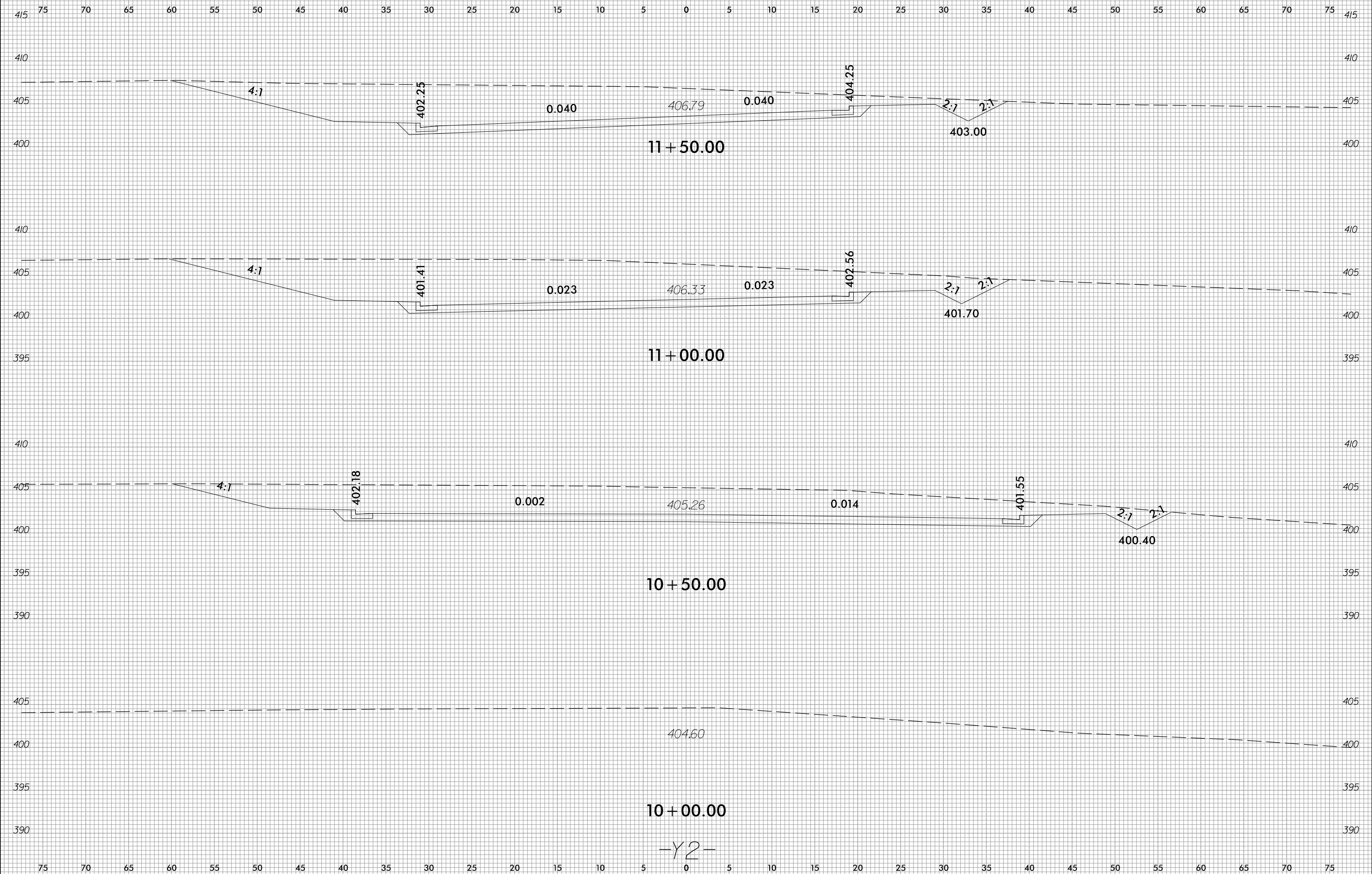
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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PROJ. REFERENCE NO.
U-6241

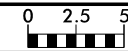
SHEET NO.
X-60



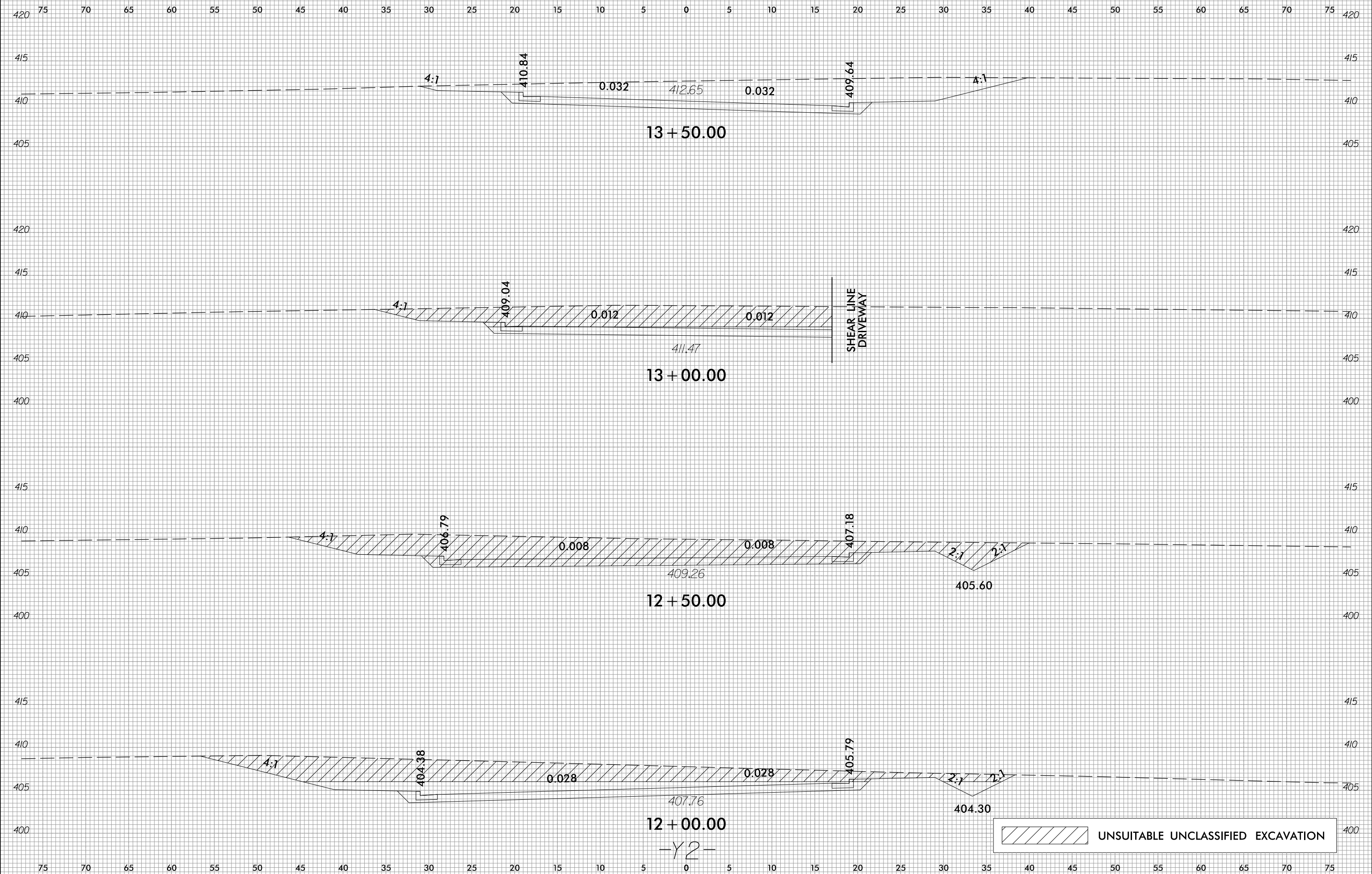
4/18/2022
U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y2.dgn
choppe

-Y2-

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-61

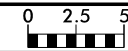


 UNSUITABLE UNCLASSIFIED EXCAVATION

4/18/2022
 U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y2.dgn
 choppe

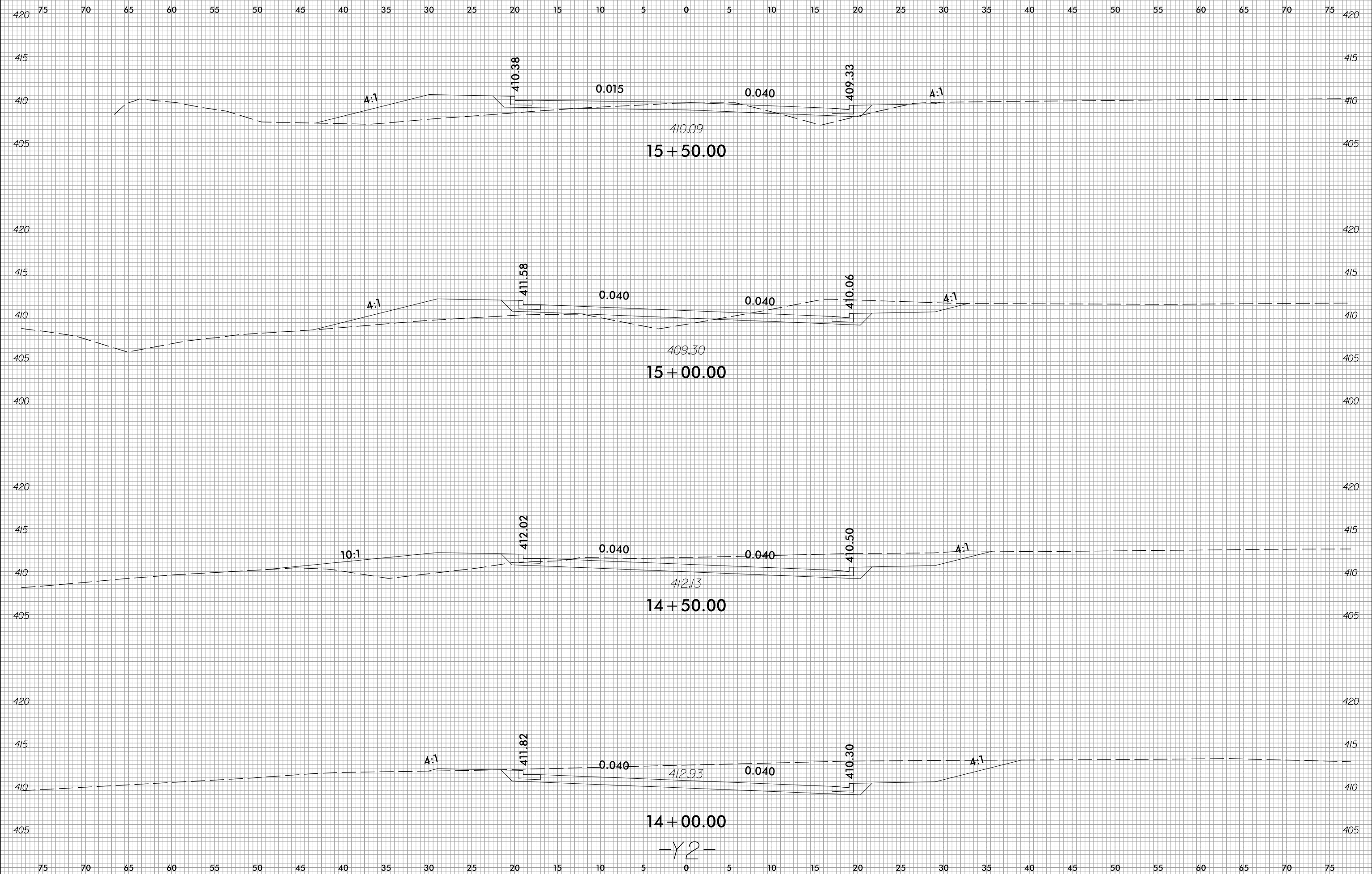
-Y2-

6/23/16



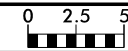
PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-62

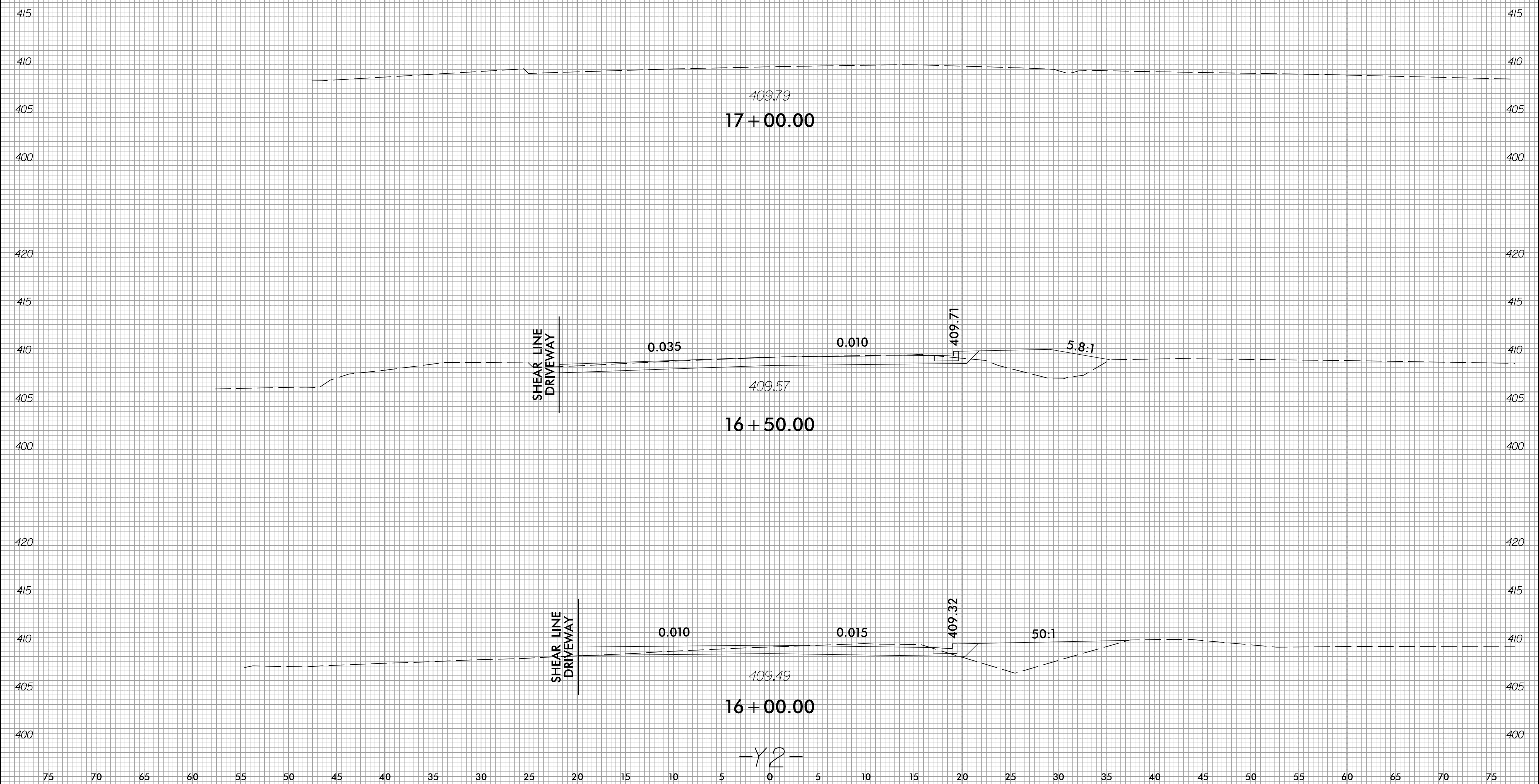


4/18/2022
U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y2.dgn
choppe

-Y2-

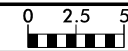


75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

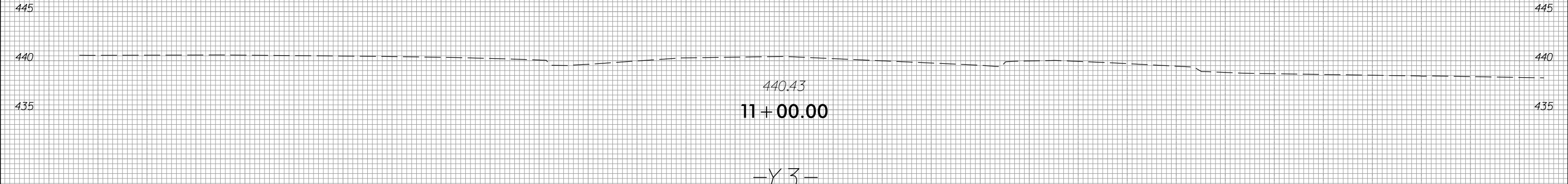
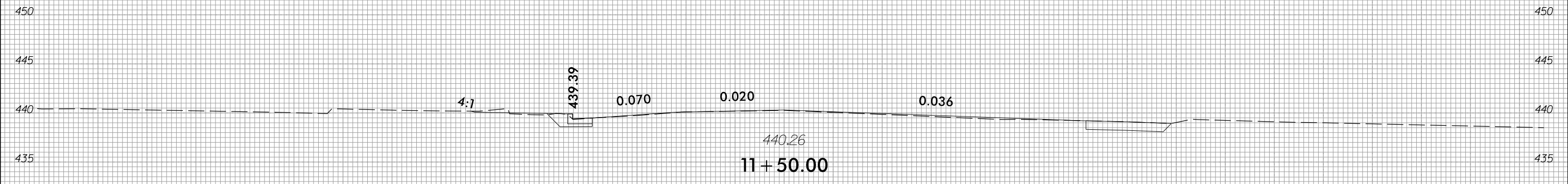
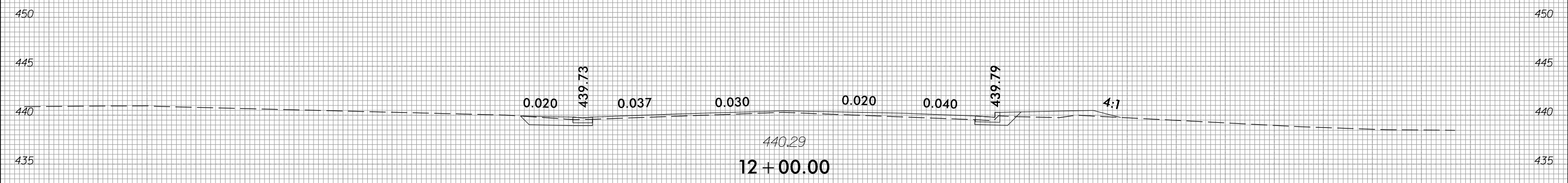
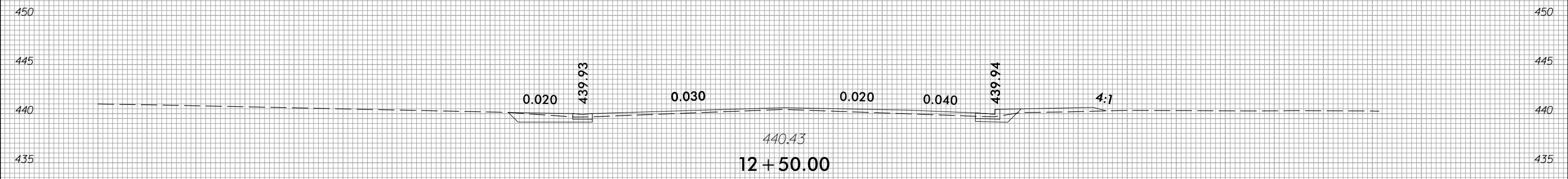
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-64

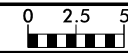
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



-Y3-

4/18/2022
U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y3.dgn
choppe

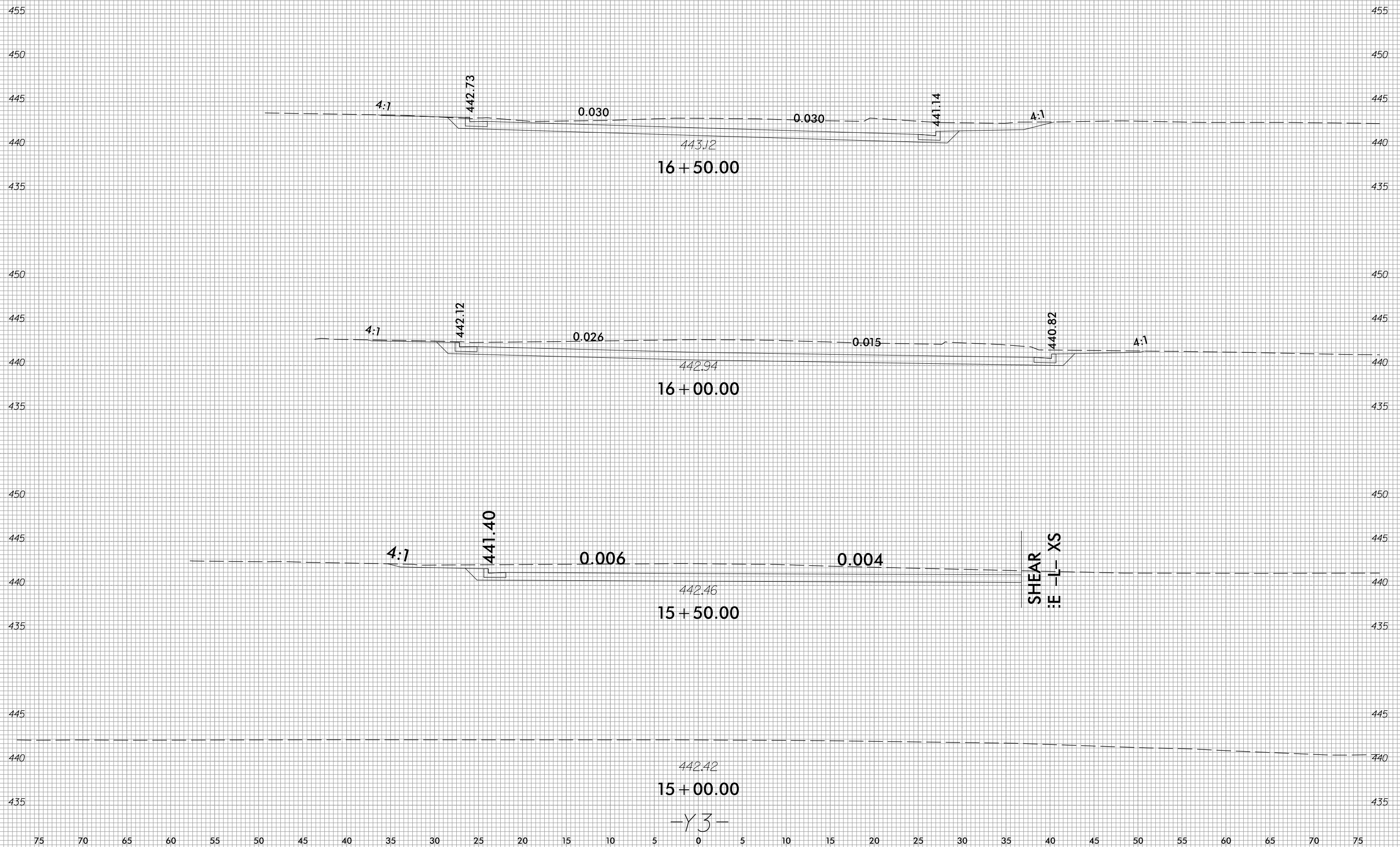
6/23/16



PROJ. REFERENCE NO.
U-6241

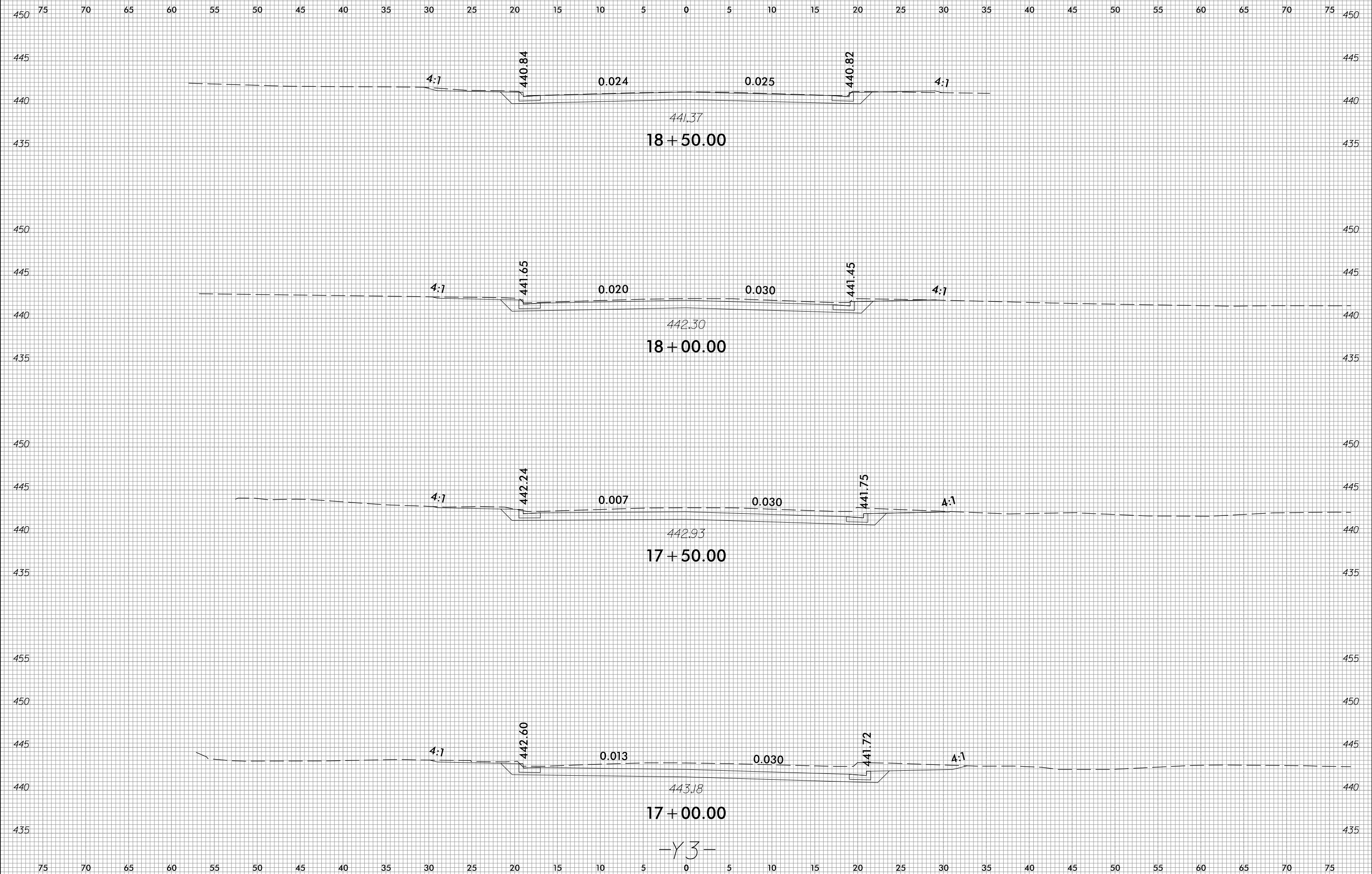
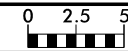
SHEET NO.
X-66

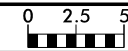
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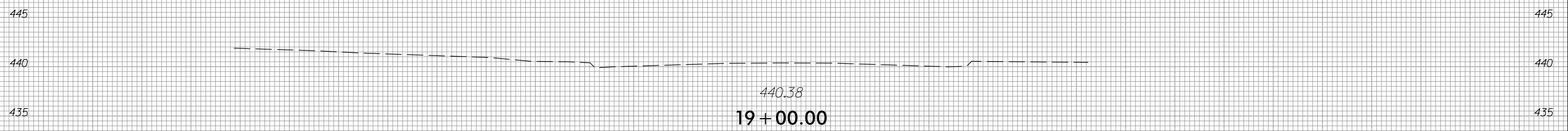
4/18/2022
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Choppe

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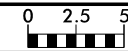
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-Y3-

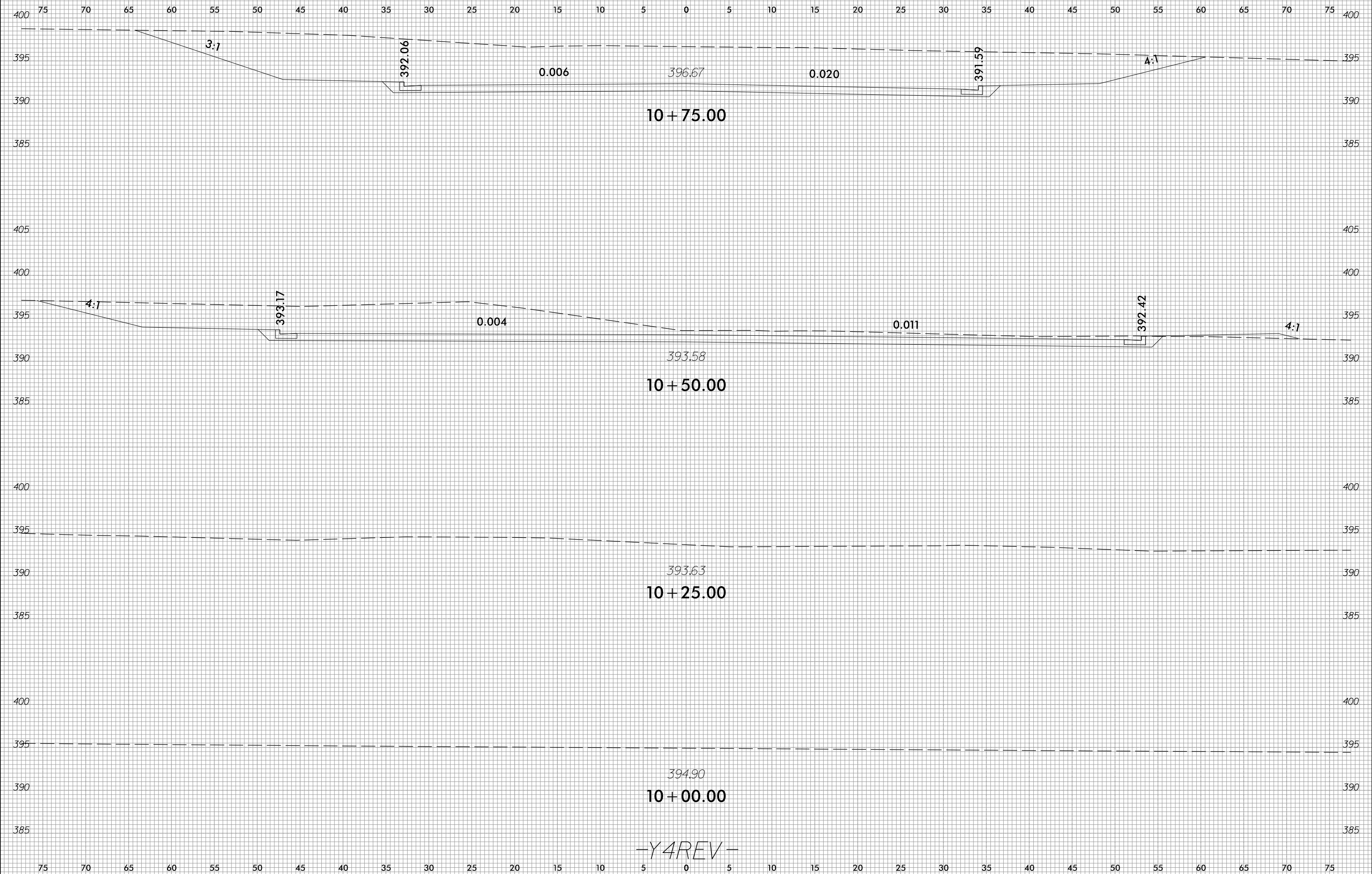
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PROJ. REFERENCE NO.
U-6241

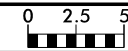
SHEET NO.
X-69



-Y4REV-

4/18/2022
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choppe

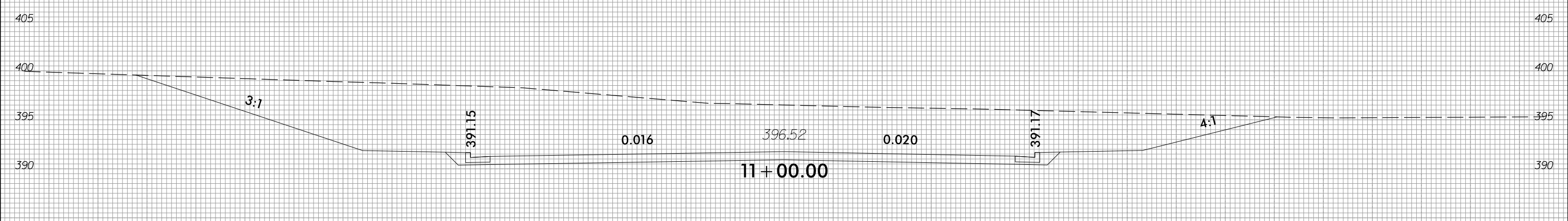
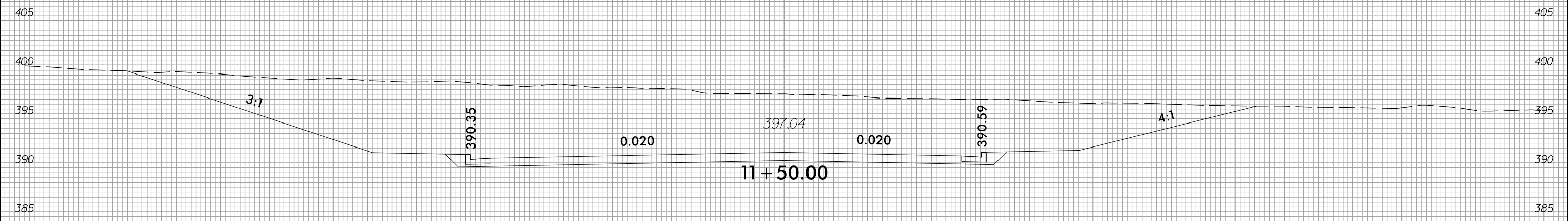
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-70

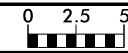
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-Y4REV-

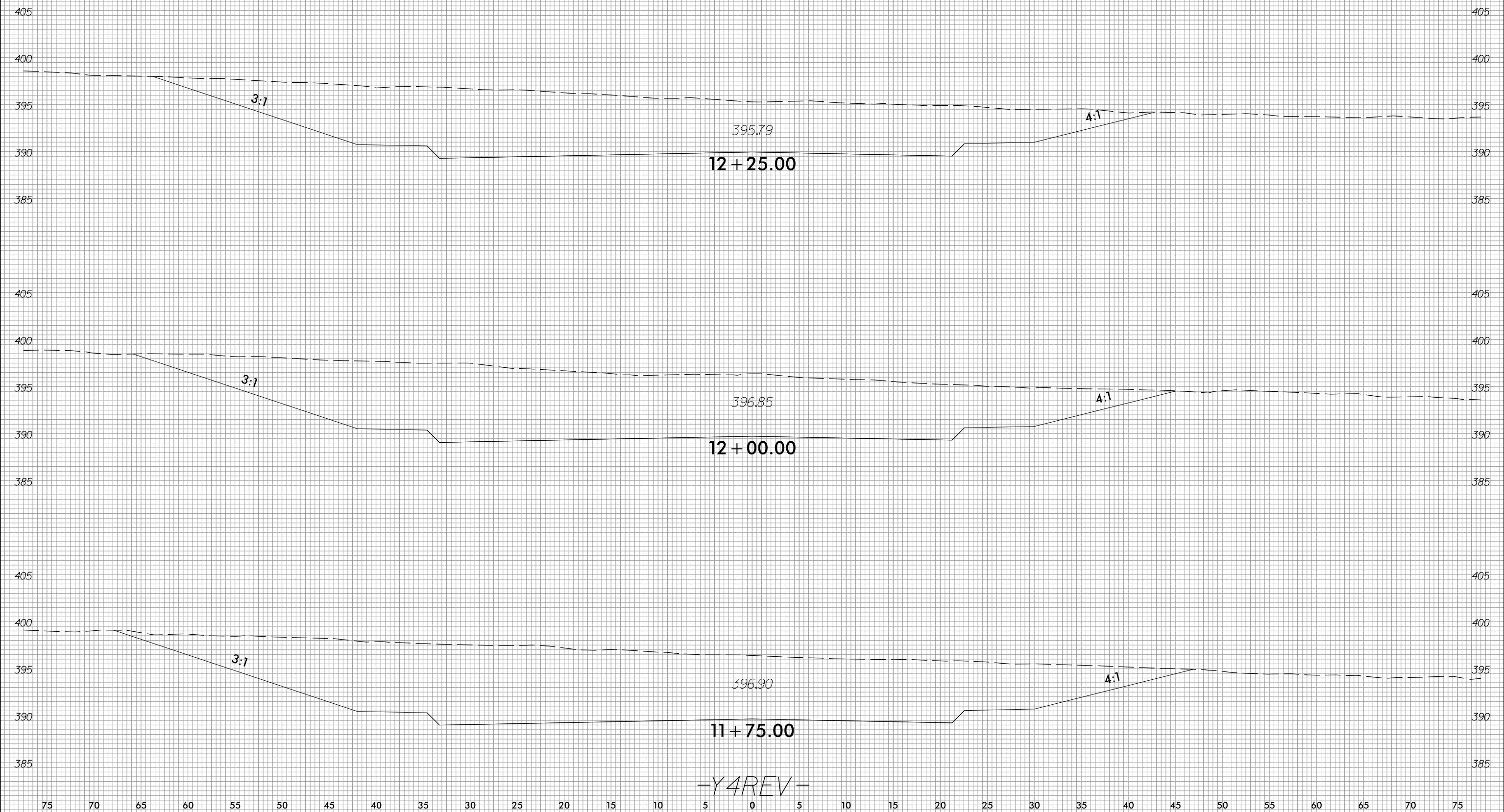
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choppe

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-71

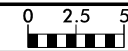
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-Y4REV-

4/18/2022
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 choppe

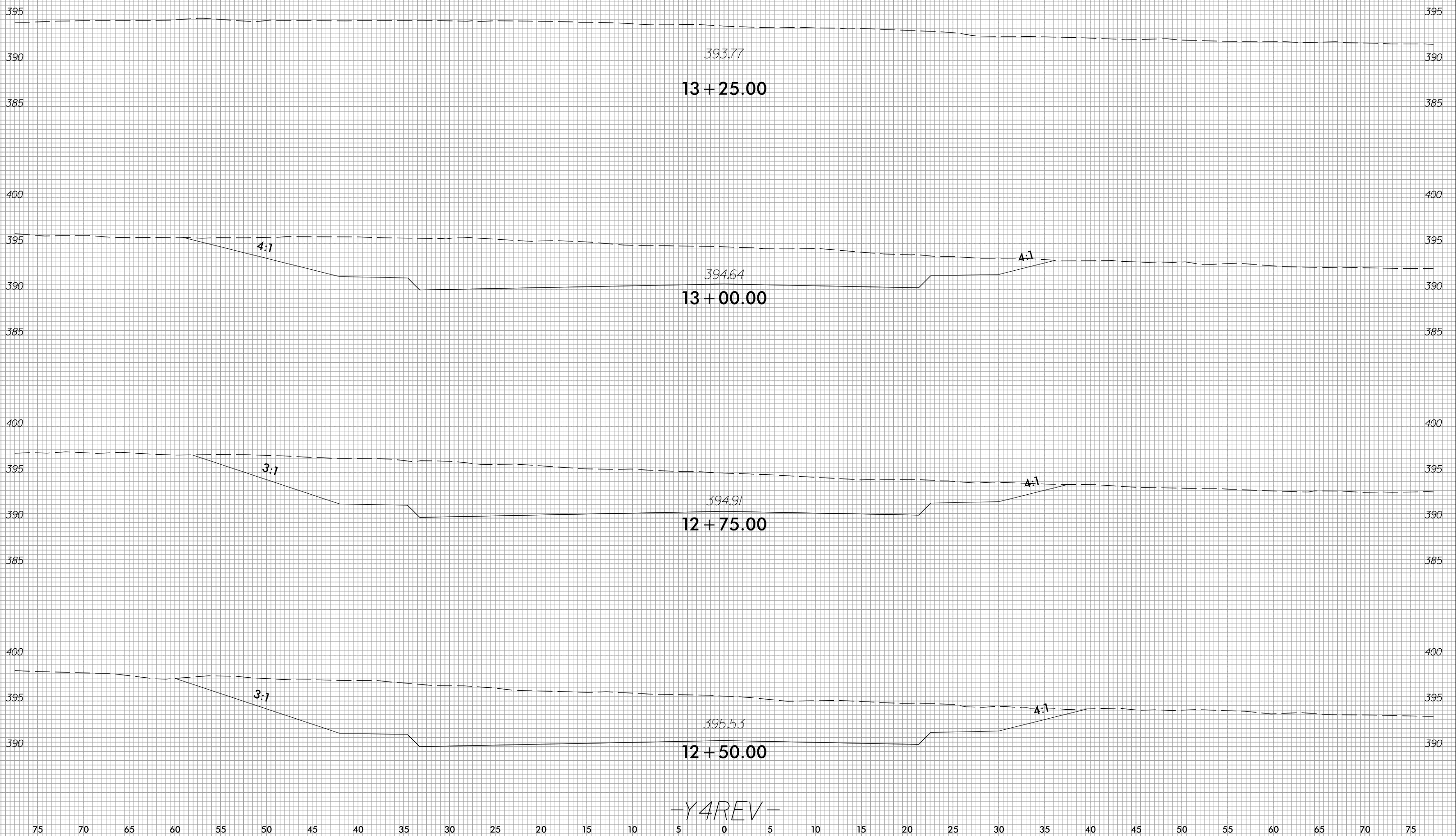
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-72

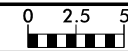
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-Y4REV-

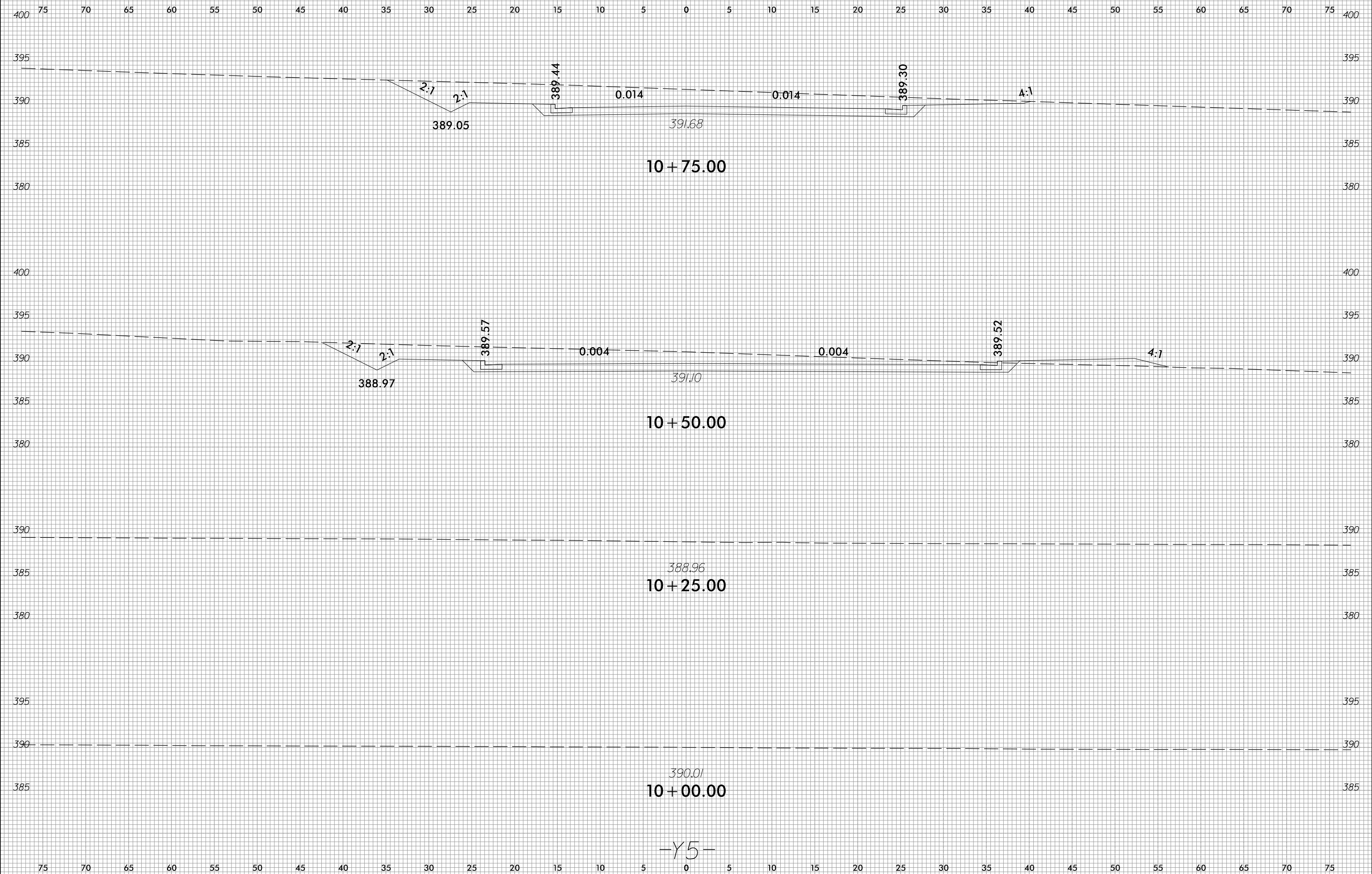
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6/23/16



PROJ. REFERENCE NO.
U-6241

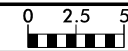
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X-73



-Y5-

4/18/2022
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choppe

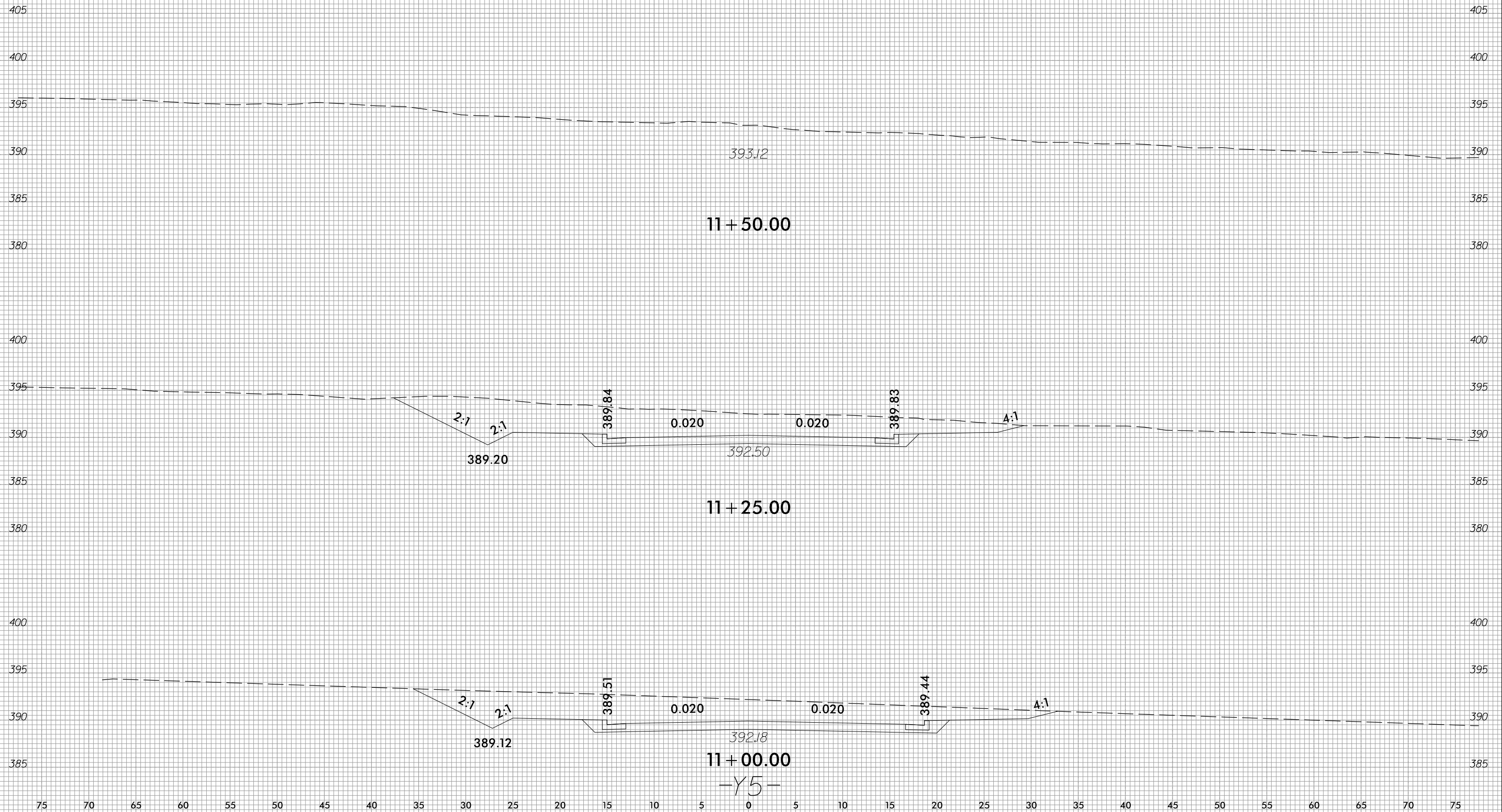
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-74

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choppe

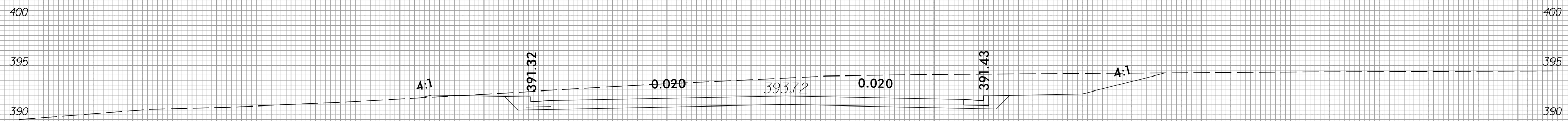
6/23/16



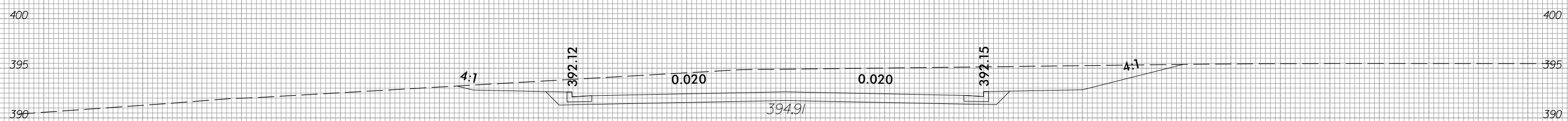
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SHEET NO.
X-75

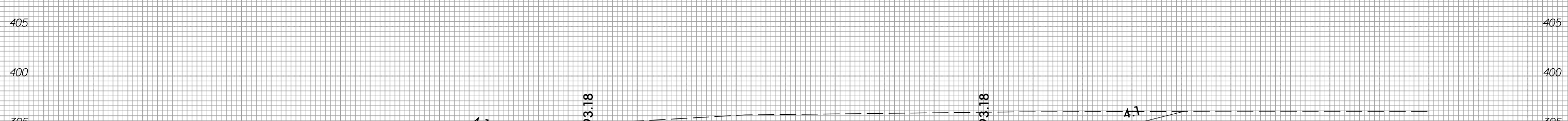
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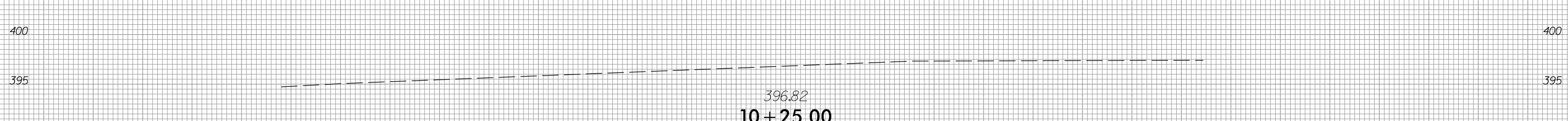
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10 + 75.00



10 + 50.00



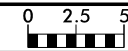
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-Y6-

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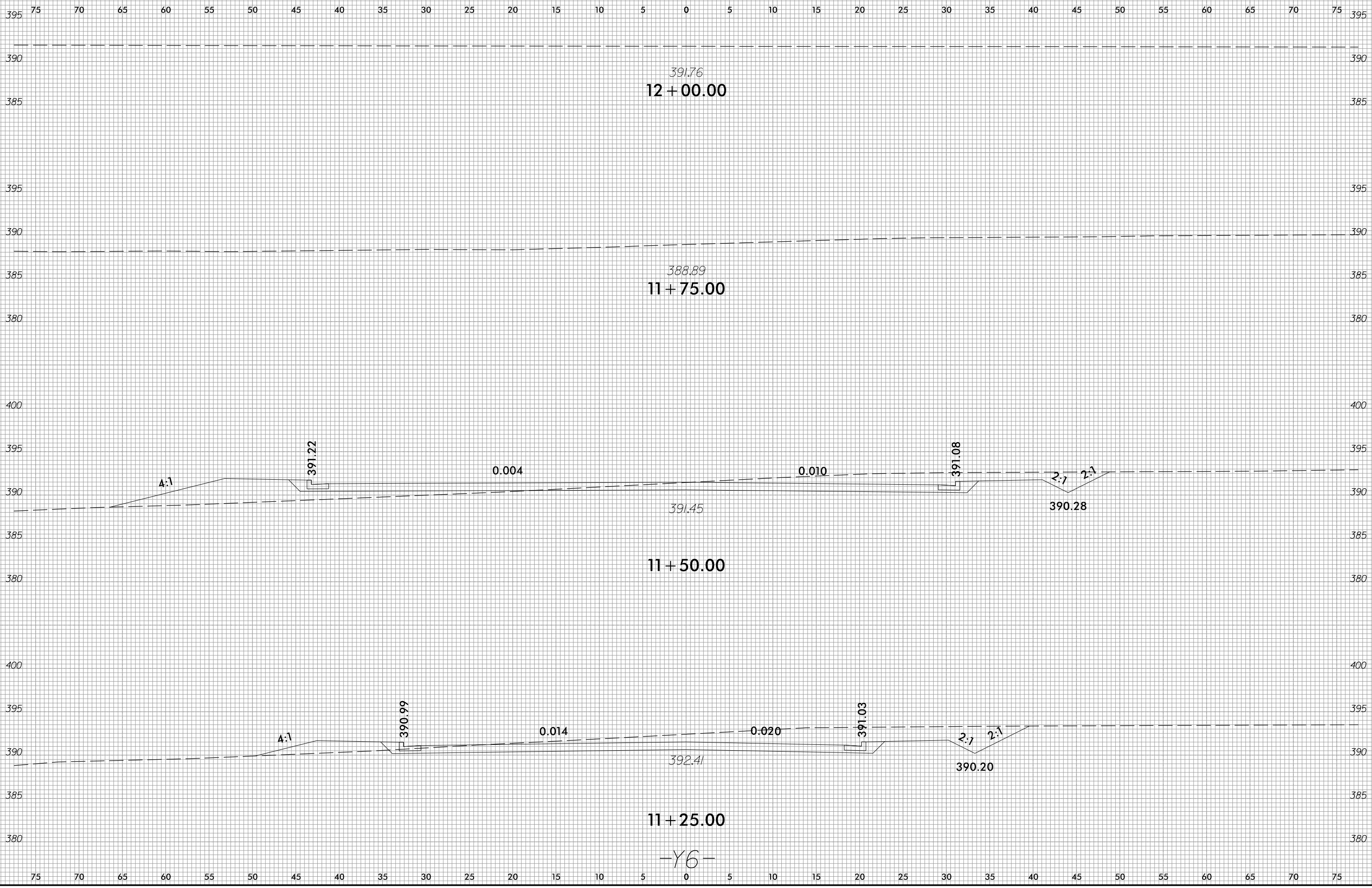
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choppe

6/23/16



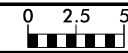
PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-76



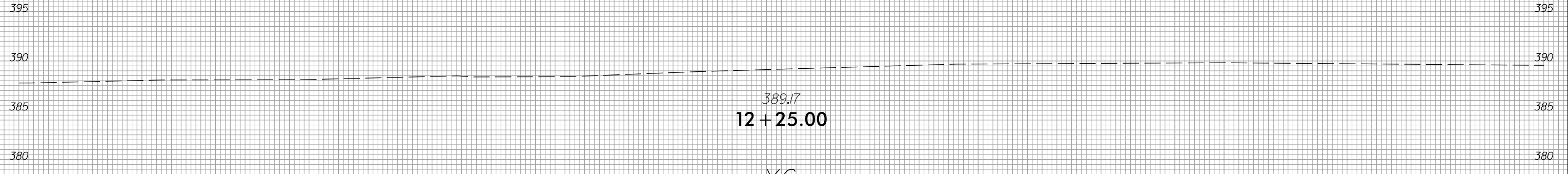
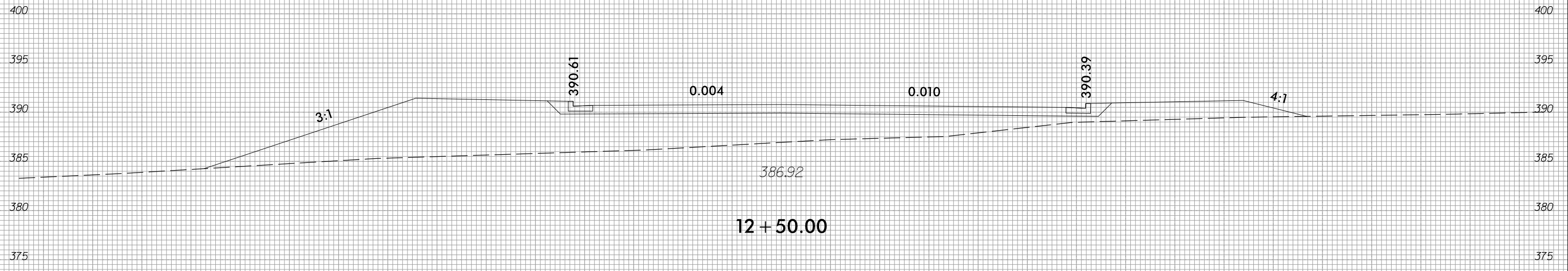
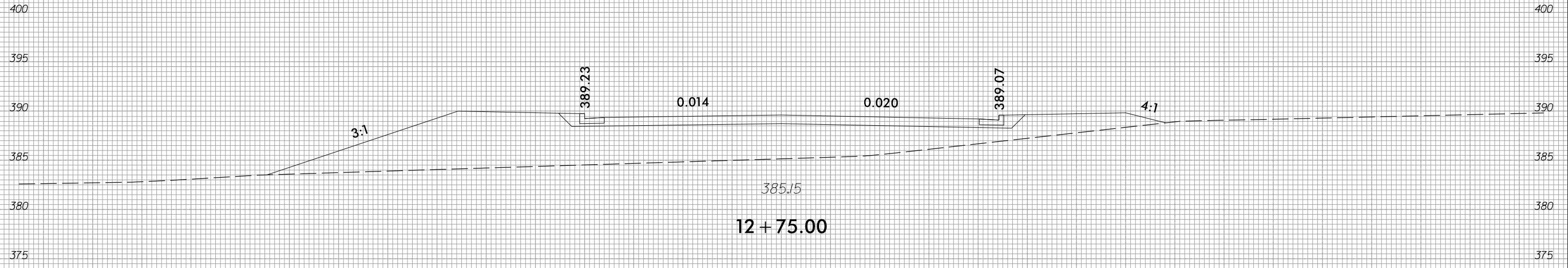
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choppe

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PROJ. REFERENCE NO.	SHEET NO.
U-6241	X-77

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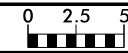


-Y6-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

4/18/2022
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choppe

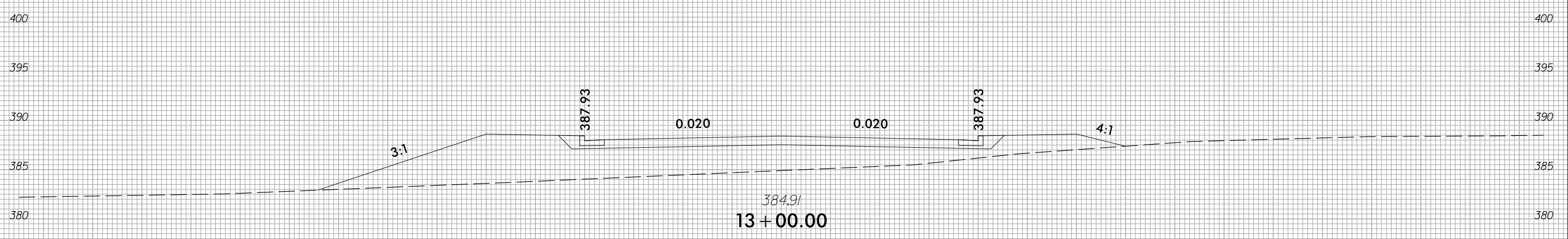
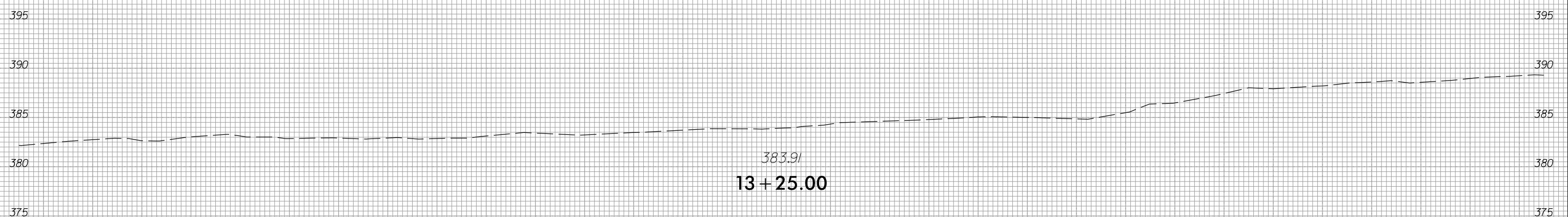
6/23/16



PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-78

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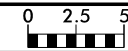


-Y6-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

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choppe

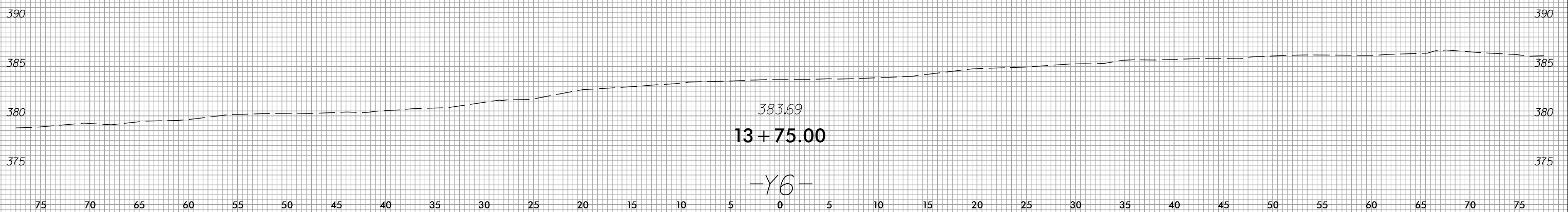
6/23/16



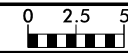
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U-6241

SHEET NO.
X-79

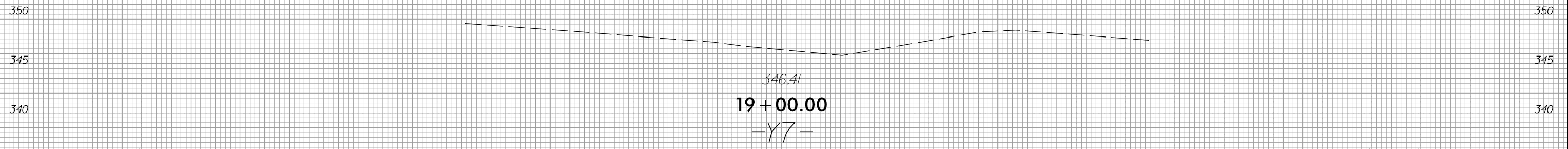
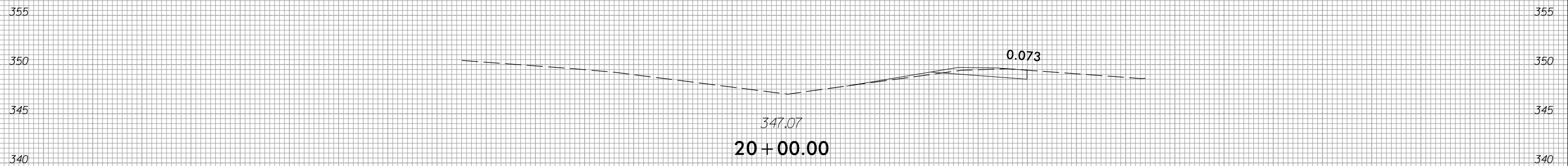
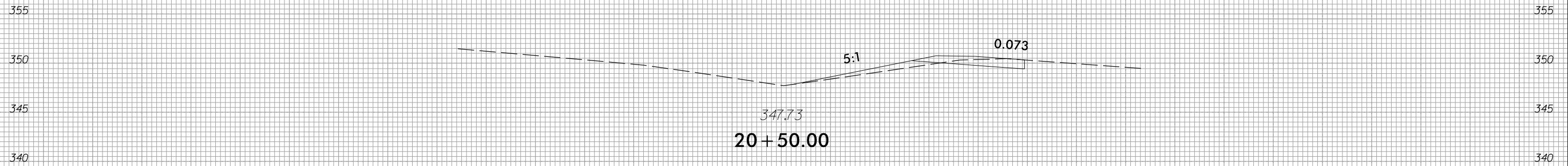
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 choppe

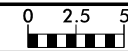


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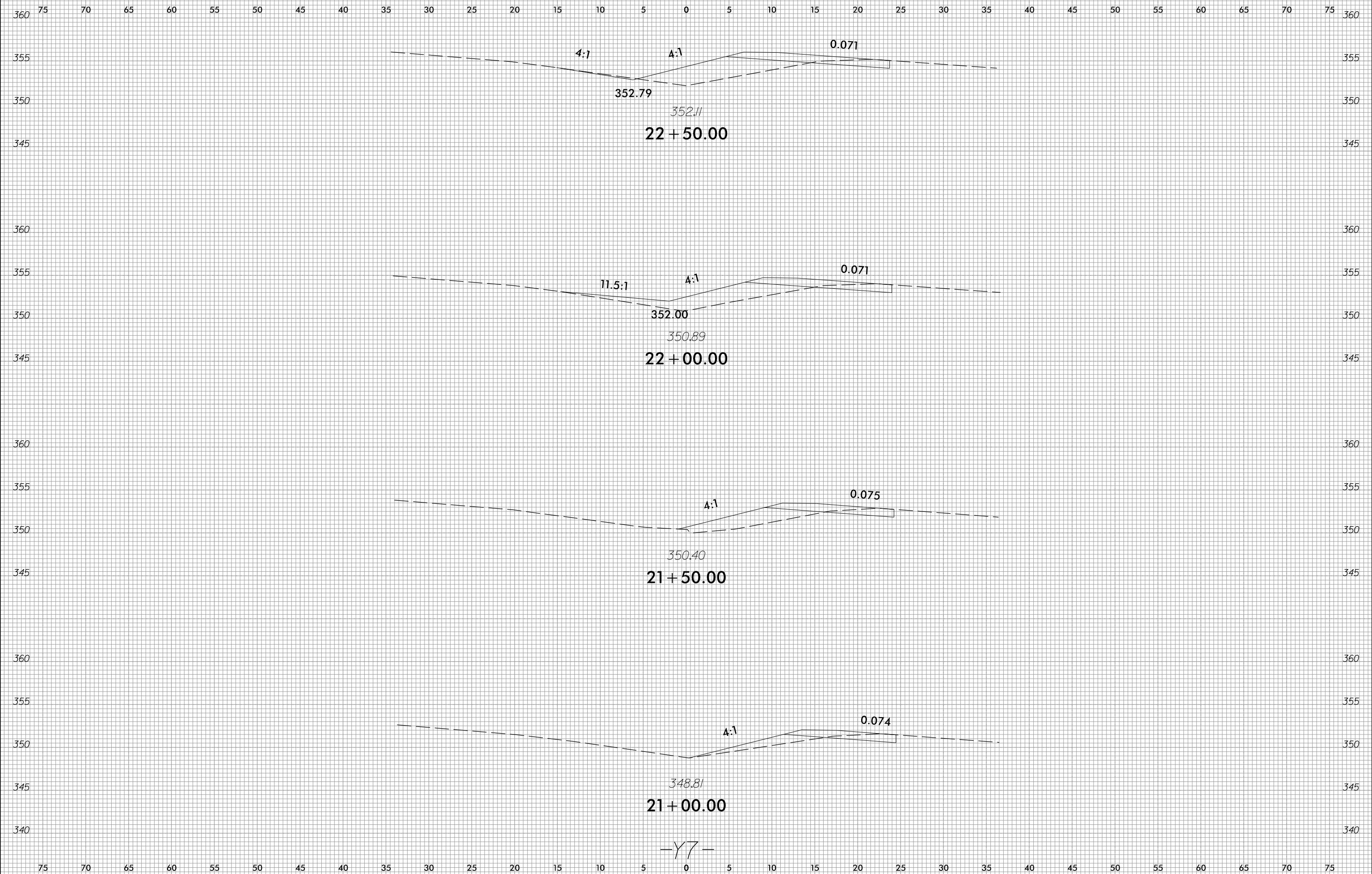
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6/23/16



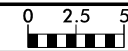
PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-81



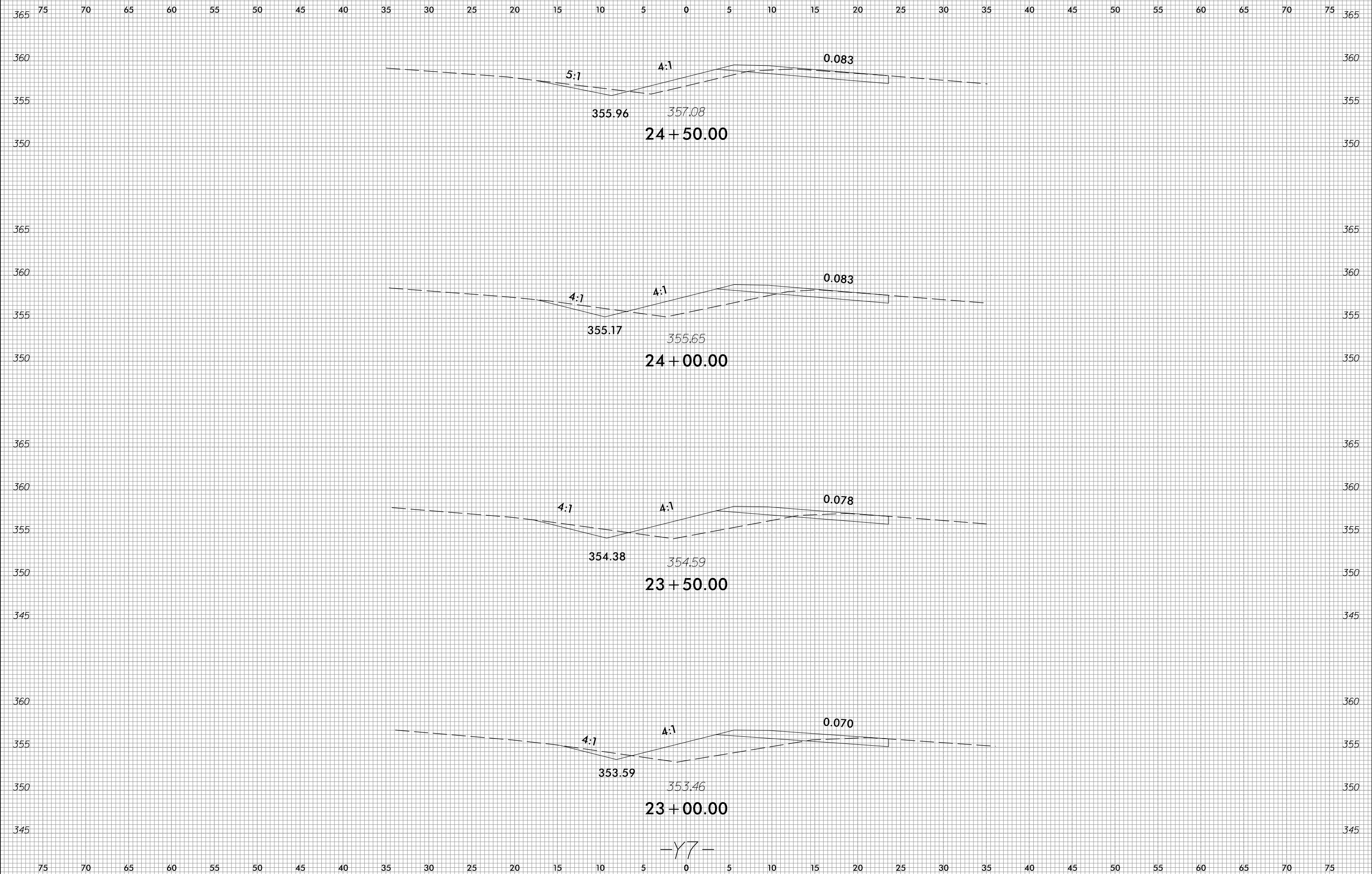
4/18/2022
U:\Roadway\CorridorModeling\U-6241_Rdy_xpl_Y7.dgn
choppe

6/23/16



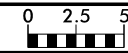
PROJ. REFERENCE NO.
U-6241

SHEET NO.
X-82

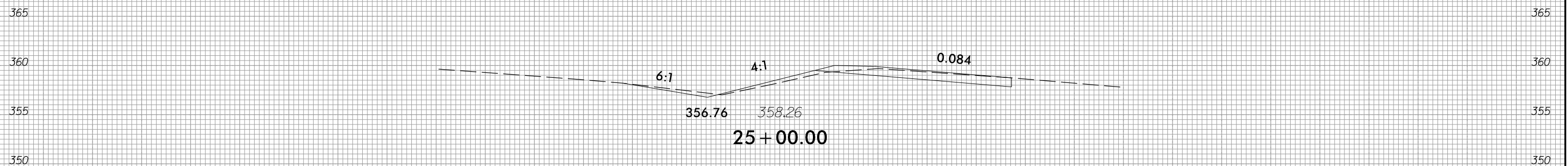
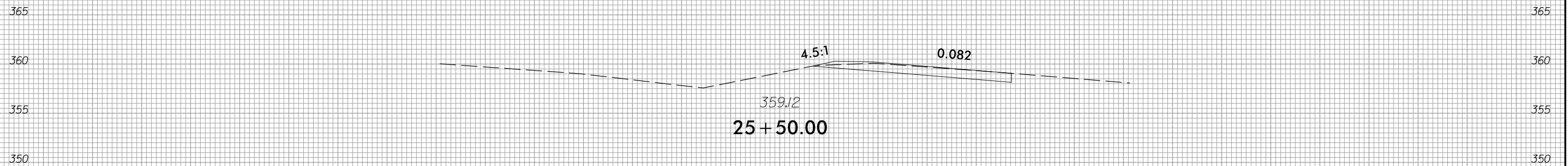
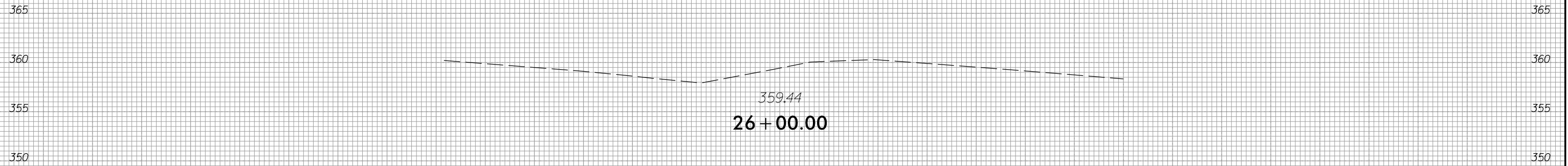


-Y7-

4/18/2022
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choppe



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-Y7-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75