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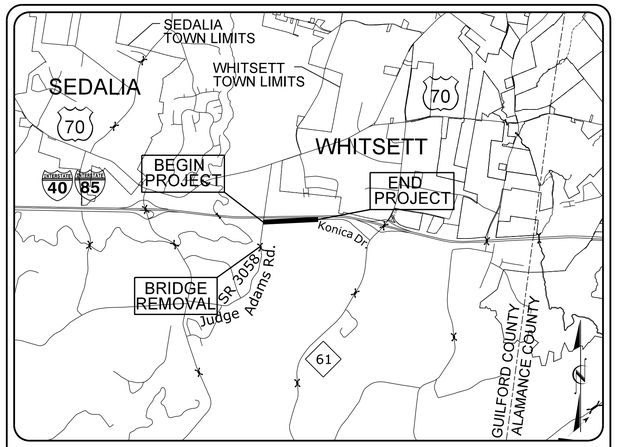
09/08/99

TIP PROJECT: B–4960

CONTRACT: DG00472

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



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4960	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40153.1.1	BRZ–3058(002)	P.E.
40153.2.2	BRZ–3058(002)	R/W AND UTIL.
40153.3.3	BRZ–3058(002)	CONST.

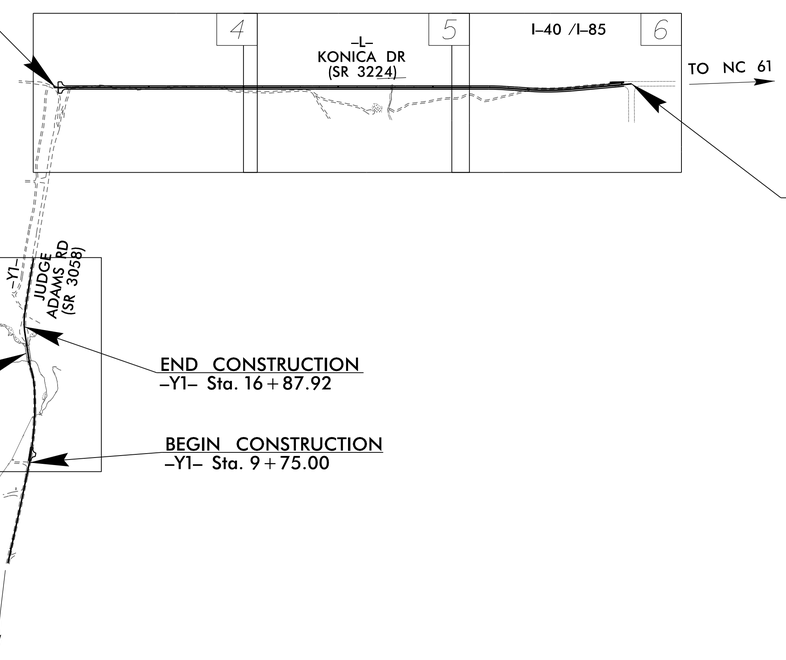
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: SR 3224 (KONICA DRIVE) AND SR 3058 (JUDGE ADAMS RD) AT LITTLE ALAMANCE CREEK

TYPE OF WORK: GRADING AND GRAVEL EXTENSION OF SR 3224, REMOVAL OF BRIDGE #214 ON SR 3058

NAD 83/ NSRS 2007

BEGIN TIP PROJECT B–4960
–L– STA. 10+11.00



END TIP PROJECT B–4960
–L– STA. 40+10.91

END CONSTRUCTION
–Y1– Sta. 16+87.92

TIP PROJECT B–4960
BRIDGE REMOVAL

BEGIN CONSTRUCTION
–Y1– Sta. 9+75.00

SUBMITTAL: 100% PLANS
DATE: SEPTEMBER 21, 2018

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013 = 800
ADT 2035 = 2,500
K = 13%
D = 80%
T = 4% *
V = 40 MPH
* (TTST 1% + DUAL 3%)
FUNC. CLASS = LOCAL REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4960 = 0.568 MILES
LENGTH BRIDGE TIP PROJECT B–4960 = 0.000 MILES
TOTAL LENGTH OF TIP PROJECT B–4960 = 0.568 MILES

Prepared in the Office of:
AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
(919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 2017

LETTING DATE: DECEMBER 2018

LEN HILL, P.E.
PROJECT ENGINEER

LAURA FISHER, P.E.
PROJECT DESIGN ENGINEER

CHRIS SMITHERMAN, P.E.
PROJECT ENGINEER NCDOT CONTACT

HYDRAULICS ENGINEER
DocuSigned by: Charles Smith
4496FD01593A42E...
NORTH CAROLINA PROFESSIONAL SEAL 029872 ENGINEER CHARLES R. SMITH
SIGNATURE:

ROADWAY DESIGN ENGINEER
DocuSigned by: Laura C. Fisher
86330A43C531436...
NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

10/10/2018
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morgan.foster

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	1A

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER	NORTH CAROLINA PROFESSIONAL SEAL 029672 ENGINEER CHARLES R. SMITH
Signed by: Laura C. Fisher 9/18/2018	Signed by: Charles R. Smith 9/18/2018

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INDEX OF SHEETS

EFF. 01–16–2018

1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1B	CONVENTIONAL SYMBOLS
1C–1	SURVEY CONTROL SHEET
2A	TYPICAL SECTION
2–D	DRAINAGE DETAIL
3B	ROADWAY SUMMARIES
3D–1 THROUGH 3D–2	DRAINAGE SUMMARY
4 THROUGH 7	PLAN SHEETS
8 THROUGH 9	PROFILE SHEETS
TMP–1	TRANSPORTATION MANAGEMENT PLAN
EC–1 THROUGH EC–11	EROSION CONTROL SHEETS
RF–1	REFORESTATION SHEET
UC–1 THROUGH UC–8	UTILITY CONSTRUCTION PLANS
UO–1 THROUGH UO–7	UTILITIES BY OTHERS PLANS
X–1A THROUGH X–19	CROSS–SECTIONS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 – EARTHWORK	
200.02	Method of Clearing – Method II
225.02	Guide for Grading Subgrade – Secondary and Local
225.04	Method of Obtaining Superelevation – Two Lane Pavement
DIVISION 3 – PIPE CULVERTS	
300.01	Method of Pipe Installation
310.03	Cross Pipe End Section – Precast Concrete Section for 18" to 30" Pipe
DIVISION 5 – SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction – High Side of Superelevated Curve – Method I
DIVISION 8 – INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts – 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts – 15" thru 48" Pipe 90 Skew
840.17	Concrete Grated Drop Inlet Type 'A' – 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' – 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' – 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' – 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' – 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box – for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet – for Cast Iron Double Frame and Grates
840.54	Manhole Frame and Cover
866.02	Woven Wire Fence – with Wood Post
866.03	Woven Wire Fence – with Steel Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES: 2018 SPECIFICATIONS

EFFECTIVE: 01–16–18

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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 II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04
SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH

UTILITIES:

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

9/17/2018
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mcrain1@ncdot.gov

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
B-4960	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

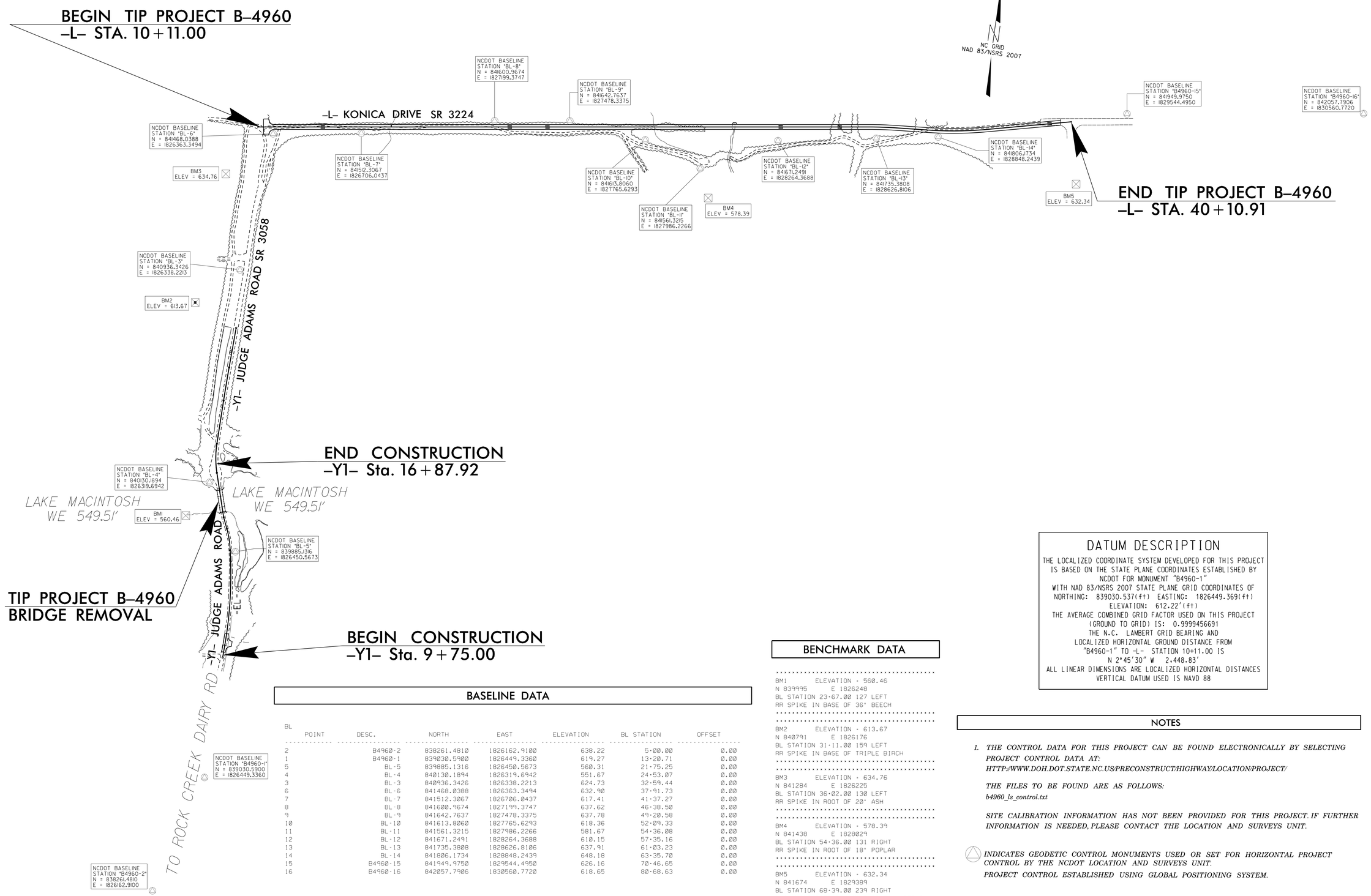
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-4960	1C-1
Location and Surveys	

B-4960 SURVEY CONTROL SHEET



BASELINE DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	BL STATION	OFFSET
2	B4960-2	838261.4810	1826162.9100	638.22	5+00.00	0.00
1	B4960-1	839030.5900	1826449.3360	619.27	13+20.71	0.00
5	BL-5	839885.1316	1826450.5673	560.31	21+75.25	0.00
4	BL-4	840130.1894	1826319.6942	551.67	24+53.07	0.00
3	BL-3	840936.3426	1826338.2213	624.73	32+59.44	0.00
6	BL-6	841468.0388	1826363.3494	632.90	37+91.73	0.00
7	BL-7	841512.3067	1826706.0437	617.41	41+37.27	0.00
8	BL-8	841600.9674	1827199.3747	637.62	46+38.50	0.00
9	BL-9	841642.7637	1827478.3375	637.78	49+20.58	0.00
10	BL-10	841613.8060	1827765.6293	618.36	52+09.33	0.00
11	BL-11	841561.3215	1827986.2266	581.67	54+36.08	0.00
12	BL-12	841671.2491	1828264.3688	610.15	57+35.16	0.00
13	BL-13	841735.3808	1828626.8106	637.91	61+03.23	0.00
14	BL-14	841806.1734	1828848.2439	648.18	63+35.70	0.00
15	B4960-15	841949.9750	1829544.4950	626.16	70+46.65	0.00
16	B4960-16	842057.7906	1830560.7720	618.65	80+68.63	0.00

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4960-1"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 839030.537(ft) EASTING: 1826449.369(ft)
ELEVATION: 612.22'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999456691
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4960-1" TO -L- STATION 10+11.00 IS
N 2°45'30" W 2,448.83'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

BM1 ELEVATION - 560.46
N 839995 E 1826248
BL STATION 23+67.00 127 LEFT
RR SPIKE IN BASE OF 36" BEECH

BM2 ELEVATION - 613.67
N 840791 E 1826176
BL STATION 31+11.00 159 LEFT
RR SPIKE IN BASE OF TRIPLE BIRCH

BM3 ELEVATION - 634.76
N 841284 E 1826225
BL STATION 36+02.00 130 LEFT
RR SPIKE IN ROOT OF 20" ASH

BM4 ELEVATION - 578.39
N 841438 E 1828029
BL STATION 54+36.00 131 RIGHT
RR SPIKE IN ROOT OF 18" POPLAR

BM5 ELEVATION - 632.34
N 841674 E 1829389
BL STATION 68+39.00 239 RIGHT
X IN CONC BASE OF LIGHT POLE NUMBER 2
ON NORTH SIDE OF POLE

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
b4960_ls_control.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

12/01/2005

8/17/2018
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mcraven

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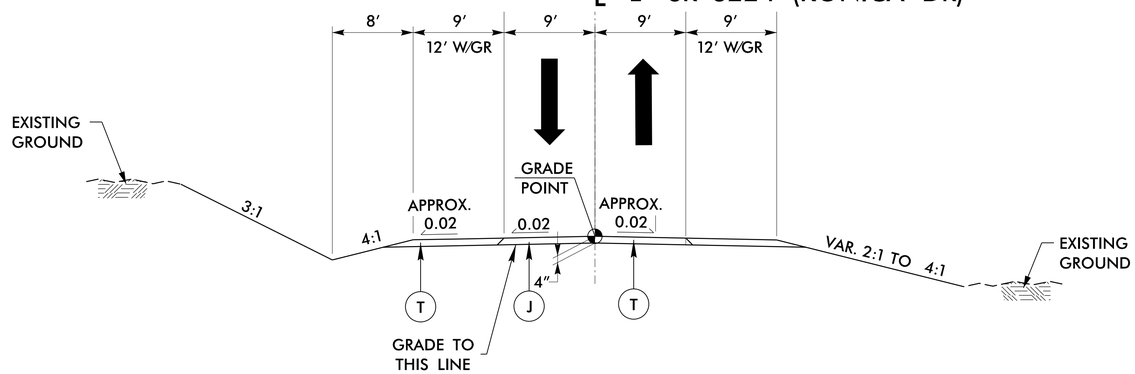
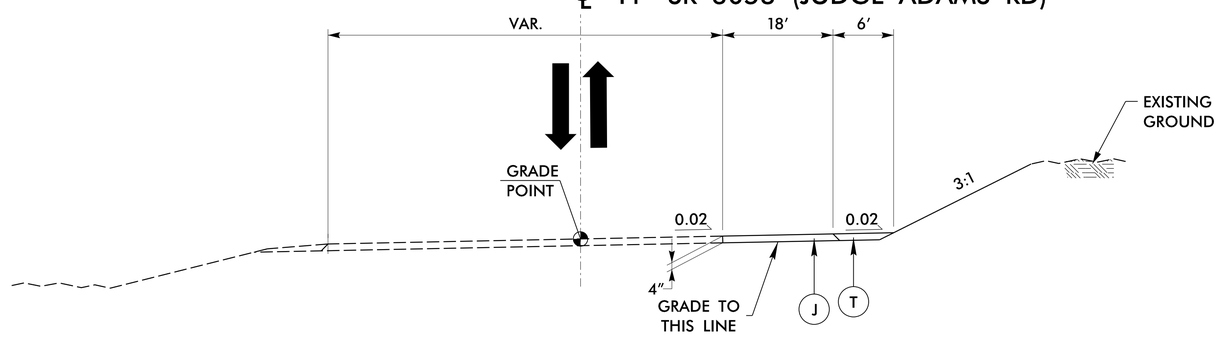
PROJECT REFERENCE NO.	SHEET NO.
B-4960	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER 9/18/2018	NORTH CAROLINA PROFESSIONAL SEAL 029872 ENGINEER CHARLES R. SMITH 9/18/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

–L– STA. 10+21.00 TO STA. 40+10.91



TYPICAL SECTION NO. 2

–Y1– STA. 9+75.00 TO STA. 10+45.00

PAVEMENT SCHEDULE	
J	PROP. 4″ AGGREGATE BASE COURSE.
T	EARTH MATERIAL.

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9/17/2018
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morgan.foster

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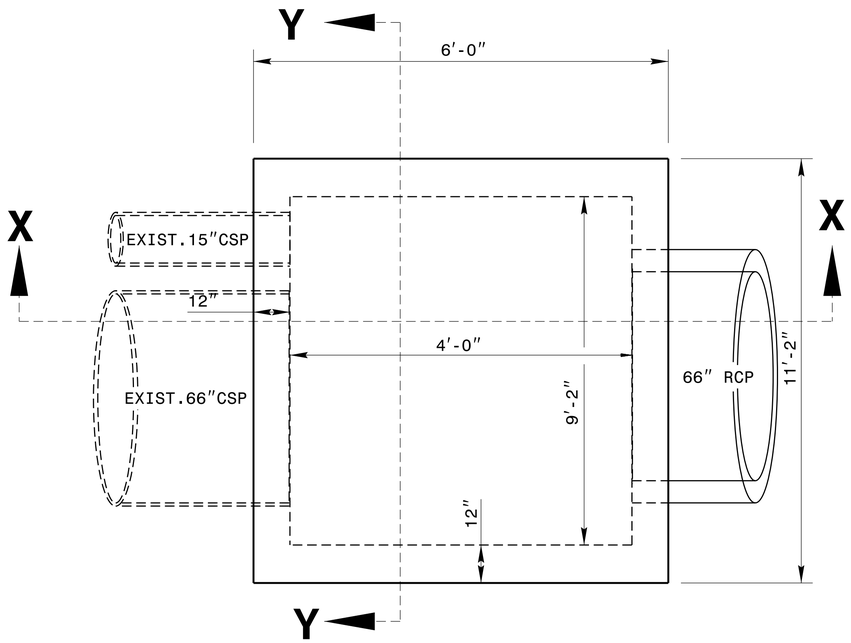
PROJECT REFERENCE NO.	SHEET NO.
B-4960	2-D



PLAN VIEW

GENERAL NOTES:
CHAMFER ALL EXPOSED CORNERS 1".

USE CLASS "AA" CONCRETE THROUGHOUT.

IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE SLAB AS SHOWN ON STANDARD DRAWING 840.00.

INCLUDE THE COST OF REINFORCING STEEL BARS IN THE UNIT PRICE BID PER CUBIC YARD OF "REINFORCED CONCRETE DRAINAGE STRUCTURE."

CUT, BEND OR RELOCATE REINFORCING STEEL TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

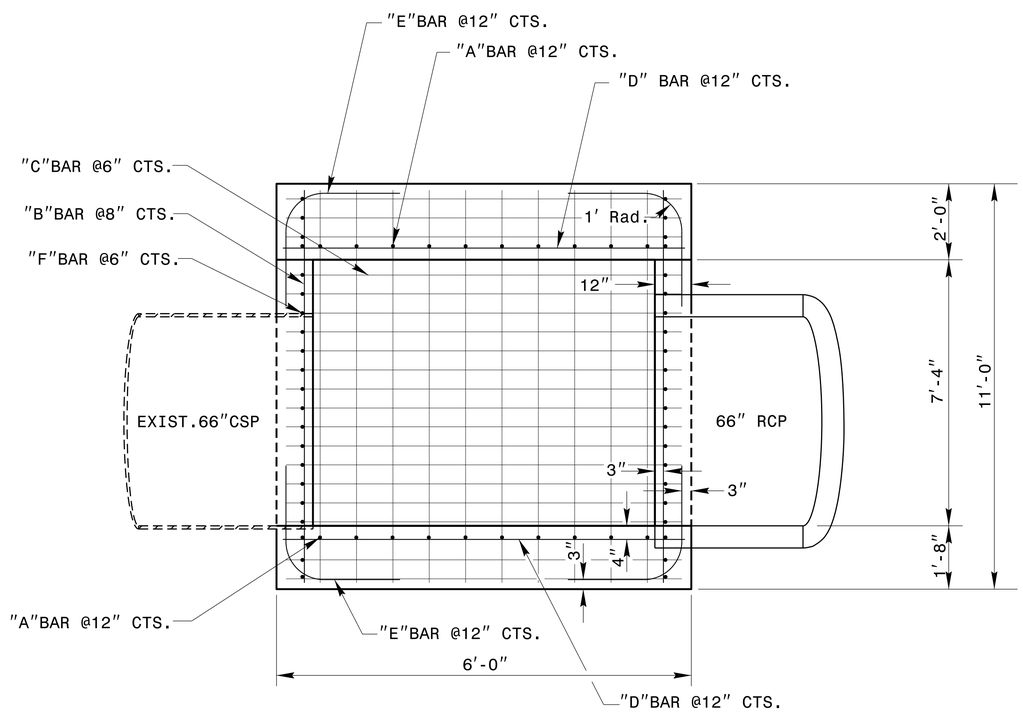
POSITION JUNCTION BOX AS FIELD CONDITIONS DICTATE AND AS DIRECTED BY THE ENGINEER.

BILL OF MATERIAL

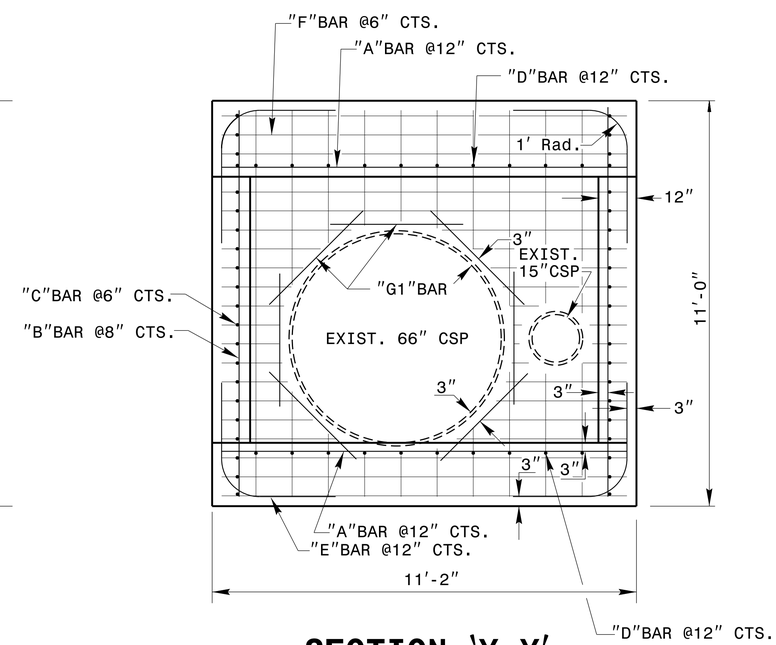
BAR	NO.	SIZE	LENGTH	WEIGHT
A	14	5	10'-10"	159
B	52	5	9'-8"	525
C	46	5	5'-8"	272
D	42	5	5'-8"	249
E	70	5	4'-8"	341
F	46	5	10'-10"	520
G1	28	5	3'-6"	103
TOTAL STEEL (lbs.)				2169
CLASS "B" CONCRETE (cu.yds.)				17.4

NOTE: CUT, BEND OR RESHAPED REBARS CROSSING PIPE OPENINGS OR PASSING WITHIN 2" OF A PIPE TO CLEAR THE OPENING.

DEDUCTION FOR 66" CSP OPENING - 0.88 CY
DEDUCTION FOR 15" CSP OPENING - 0.29 CY
DEDUCTION FOR 66" RCP OPENING - 1.56 CY



SECTION 'X-X'



SECTION 'Y-Y'

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton
8/29/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL OF JUNCTION BOX FOR 66" PIPE UNDER 35' FILL

ORIGINAL BY: L.E.Robinson,T.L.Stephenson DATE: Aug. 1993
MODIFIED BY: rnbritt DATE: 07-18-2016
CHECKED BY: DATE:
FILE SPEC.: details/nbritt/english/ bridge/b4960 JB under 35 fill.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
B-4960	3B

REVISIONS

SUMMARY OF EARTHWORK

Volumes in Cubic Yards

COUNTY: GUILFORD

LINE	STATION	STATION	TOTAL UNCLASSIFIED	UNDERCUT	EMBANKMENT +%	BORROW	WASTE
-L-	10+11.00	40+10.91	12,423		22,958	17,835	7,300
	SUMMARY No. 1	SUBTOTAL	12,423	0	22,958	17,835	7,300
-Y1-	9+75.00	10+45.00	12		4	0	8
	SUMMARY NO. 2	SUBTOTAL	12	0	4	0	8
	TOTAL:		12,435	0	22,962	17,835	7,308
MATERIAL FOR SHOULDER CONSTRUCTION					960	960	
LOSS DUE TO CLEARING & GRUBBING			-1,700			1,700	
ADDITIONAL UNDERCUT				2,900	3,480	3,480	2,900
ROCK WASTE TO REPLACE BORROW						0	
ADJUST FOR ROCK WASTE						0	
WASTE IN LIEU OF BORROW							-8
Project Totals:			10,735	2,900	27,402	23,975	10,200
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						1,199	
GRAND TOTAL			10,735	2,900	27,402	25,173	10,200
SAY			**10,800**	2,900		**25,200**	

Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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

SUMMARY OF GUARDRAIL

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

NG = NON-GATING IMPACT ATTENUATOR TYPE 350

G = GATING IMPACT ATTENUATOR TYPE 350

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS						IMP. ATTEN. TYPE 350			REMOVE EXISTING GRDRAIL	SINGLE FACE CONCRETE BARRIER	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	III	B-77	GREU 350 TL-2	M-350	AT-1	CAT-1	TES	EA	G	NG			
-L-	10+19.00	10+19.00	CL	62.50																	2						
-L-	13+90.25	16+40.25	LT	250.00					6	9							2										
-L-	26+00.00	31+50.00	RT	550.00					6	9							2										
-Y1-	11+50.00	11+50.00	CL	25.00																	2						
-Y1-	14+80.00	14+80.00	CL	25.00																	2						
-Y1-	16+12.22	16+12.22	CL	25.00																	2						
			SUBTOTAL	**937.50**													**4**				**8**						
	ANCHOR UNIT DEDUCTIONS																										
		GREU 350 TL-2 @ 50.00' EACH		-200.00																							
		TYPE III @ 18.75' EACH		0.00																							
		CAT-1 @ 6.25' EACH		0.00																							
		M-350 @ 37.5' EACH		0.00																							
	ADDITIONAL POSTS = 0		**TOTAL**	**737.50**	**0.00**												**4**				**8**						
			SAY	**737.5**	**0.0**																						

USRAL3LT1529

COMPUTED BY:	CRS	DATE:	2017 02 17
CHECKED BY:	CWL	DATE:	2017 02 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4960	3D-1

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48	54	60	66	72	78	84	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
-L-																													
15+14.14	-33	0401																											
		0401	0402		610.6	610.1									96										X	X			
24+83.53	-19	0501																											
		0501	0508		616.0	603.0				96															X	X			
27+64.00	-26	0502		612.4																									
		0502	0505		607.7	607.2					92												X	X		X			
26+65.00	-27	0505		613.5																									
		0505	0506		607.2	607.0					40												X	X	X	X			
26+65.00	18	0506		614.5																									
		0506	0507		607.0	583.5					60											X				X			
		0504	0509		608.0	579.0					176											X				X			
31+76.27	-29	0601																											
		0601	0605		620.0	619.0				80															X	X			
39+00.00	-26	0602		637.1																									
		0602	0603		634.9	634.7				36													X	X	X	X			
39+00.00	16	0603		639.1																									
		0603	0604		634.7	634.0				76																X			
-Y1-																													
10+00.00	12	0701																										47	
SHEET TOTALS										288	368				96													47	
PROJECT TOTALS										288	368				96													47	

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16
-L-																		
15+14.14	0401		6.000															
	0401	0402																
24+83.53	0501																	
	0501	0508																
27+64.00	0502					1												
	0502	0505																
26+65.00	0505					1	1.3											
	0505	0506																
26+65.00	0506					1	2.2											
	0506	0507																
	0504	0509																
31+76.27	0601																	
	0601	0605																
39+00.00	0602					1												
	0602	0603																
39+00.00	0603					1												
	0603	0604																
-Y1-																		
10+00.00	0701																	
SHEET TOTALS			6.000			5	3.5											
PROJECT TOTALS			6.000			6	9.5											

LINE & STATION	FROM	TO	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 3 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK	##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK
-L-																												
15+14.14	0401																											
	0401	0402																										
24+83.53	0501																											
	0501	0508																										
27+64.00	0502		1									1																
	0502	0505																										
26+65.00	0505			1							1																	
	0505	0506																										
26+65.00	0506																	1								1		
	0506	0507																										
	0504	0509																										
31+76.27	0601																											
	0601	0605																										
39+00.00	0602				1						1																	
	0602	0603																										
39+00.00	0603												1						1									
	0603	0604																										
-Y1-																												
10+00.00	0701																											
SHEET TOTALS			1	1	1						2	1	1					1	1							1		
PROJECT TOTALS			1	1	1						2	1	1					1	1							1		

LINE & STATION	FROM	TO	18" PIPE END SECTION STD. 310.03	##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	PIPE REMOVAL LIN. FT.	REMARKS
-L-													
15+14.14	0401												
	0401	0402										18	
24+83.53	0501		1										
	0501	0508											
27+64.00	0502												
	0502	0505											
26+65.00	0505												
	0505	0506											
26+65.00	0506												
	0506	0507											
	0504	0509											
31+76.27	0601		1										
	0601	0605											
39+00.00	0602												
	0602	0603											
39+00.00	0603												
	0603	0604											
-Y1-													
10+00.00	0701												
SHEET TOTALS			2									18	
PROJECT TOTALS			2									18	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

USRA13LT1529

COMPUTED BY:	CRS	DATE:	2017 02 17
CHECKED BY:	CWL	DATE:	2017 02 20

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4960	3D-2

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE SIZE 12	15	18	24		30			36			42	48	54	60	66	72	78	84
THICKNESS OR GAUGE								.064	.064	.064	.064		.079			.079			.109	.109						
-L-																										
27+85.79	-16	0503																								
		0503	0510		580.3	579.7																				
27+71.61	90	0510																								

LINE & STATION	R. C. PIPE CLASS III SIZE 12	15	18	24	30	36	42	48	54	60	66	72	78	84	R. C. PIPE CLASS IV SIZE 12	15	18	24	30	36	42	48	54	60	66	72	78	84	R. C. PIPE CLASS V SIZE 12	15	18	24	30	36	42	48	54	60	66	72	78	84
THICKNESS OR GAUGE																																										
-L-																																										
27+85.79																																										
27+71.61																																										

LINE & STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE AA CONC CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	ENERGY DISSIPATION BASIN		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
-L-														
27+85.79			17.400	1	5.0	1.0								
27+71.61								1						
SHEET TOTALS			17.400	1	5.0	1.0		1						
PROJECT TOTALS	6.000		17.400	6	9.5			1					18	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

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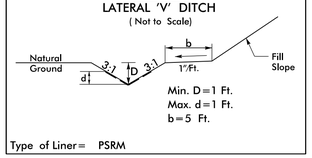
8/17/99

REVISIONS

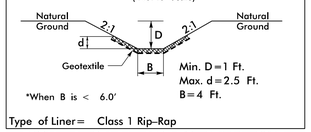
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA.12 + 50LT TO STA.15 + 20LT
FROM -L- STA.15 + 20LT TO STA.17 + 00LT
FROM -L- STA.23 + 00RT TO STA.25 + 00RT
FROM -L- STA.22 + 50LT TO STA.24 + 85LT
FROM -L- STA. 31 + 85LT TO STA.33 + 50LT

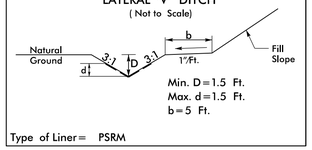
DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 1 Rip-Rap

FROM -L- STA.14 + 65RT TO STA.14 + 90RT
EST. 24 TONS CLASS I RIPRAP
EST. DDE 29 CY
EST. 40 SY GEOTEXTILE

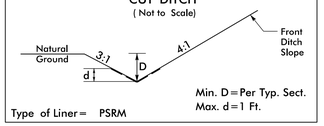
DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA.15 + 00RT TO STA.16 + 50RT

DETAIL 4
CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA.16 + 50RT TO STA.20 + 70RT

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
B-4960	04
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER
Signed by: LAURA C. FISHER 8/13/2018 9:53:04 AM EDT

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022872 ENGINEER CHARLES R. SMITH
Signed by: CHARLES R. SMITH 8/13/2018 9:53:04 AM EDT

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27607
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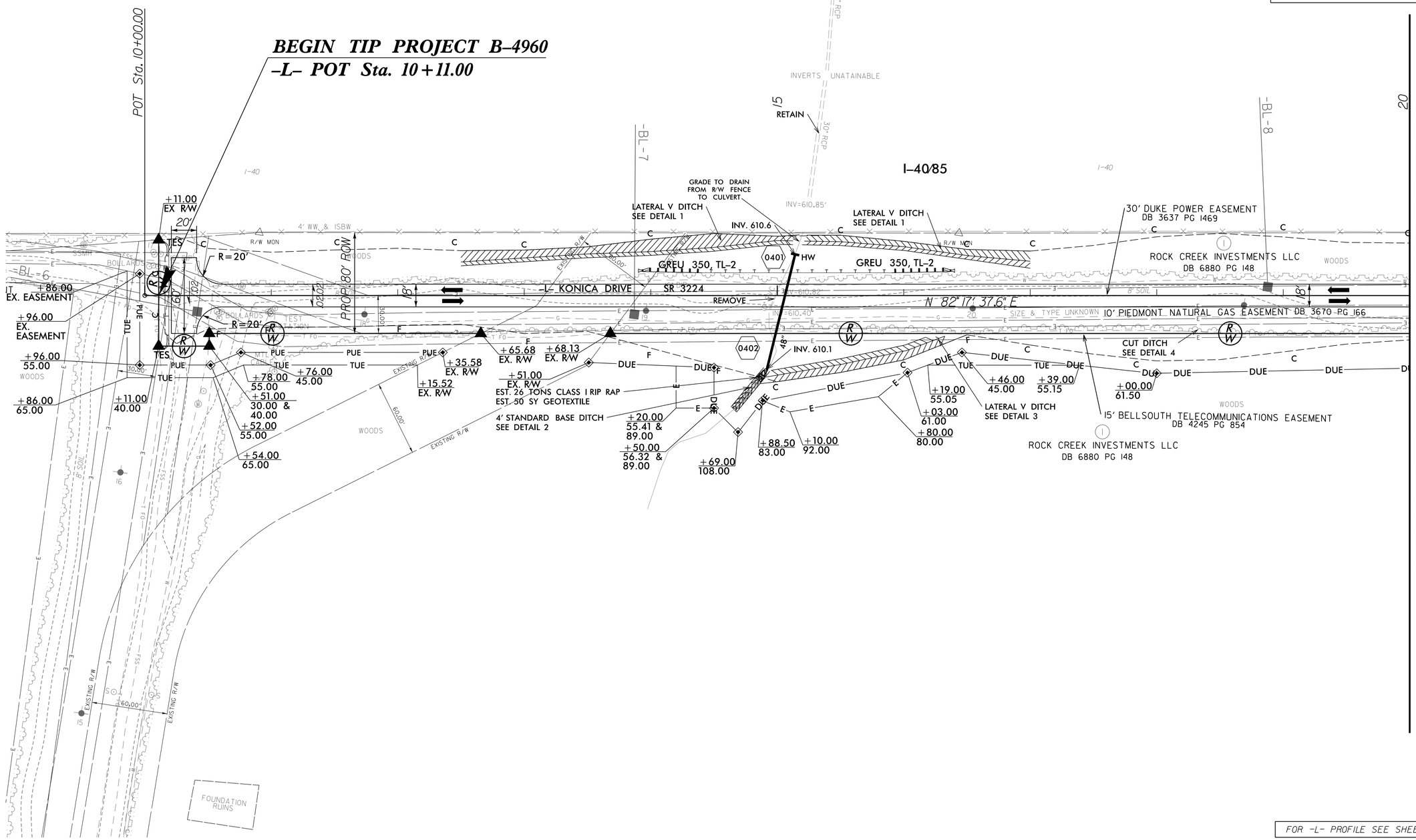

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	05
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 022872 ENGINEER CHARLES R. SMITH

Prepared in the Office of: AECOM — NC FIRM LICENSE Nos F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground; 3:1; d; D; 3:1; b; 1½'/Ft.; Fill Slope

Min. D=1 Ft.
Max. d=1 Ft.
b=5 Ft.

Type of Liner= PSRM

FROM –L– STA.12+50LT TO STA.15+20LT
FROM –L– STA.15+20LT TO STA.17+00LT
FROM –L– STA.23+00RT TO STA.25+00RT
FROM –L– STA.22+50LT TO STA.24+85LT
FROM –L– STA. 31+85LT TO STA.33+50LT

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground; 3:1; D; 3:1; b; 1½'/Ft.; Fill Slope

Min. D=1 Ft.
b=5 Ft.

FROM –L– STA.25+50LT TO STA.27+00LT

DETAIL 6
TOE PROTECTION
(Not to Scale)

Natural Ground; b; 2:1 or Flatter Fill Slope; d; Geotextile

d=1 Ft.
b=5 Ft.

Type of Liner= Class B Rip-Rap

FROM –L– STA.27+72RT TO STA.28+61RT

DETAIL 7
STANDARD BASE DITCH
(Not to Scale)

Natural Ground; 3:1; D; 3:1; Natural Ground; d; Geotextile; B

Min. D=2 Ft.
Max. d=2 Ft.
B=2 Ft.

*When B is < 6.0'

Type of Liner= Class I Rip-Rap

FROM –L– STA.29+45RT TO STA.30+50RT
EST. 105 TONS CLASS I RIPRAP
EST. DDE 140 CY
EST. 177 SY GEOTEXTILE

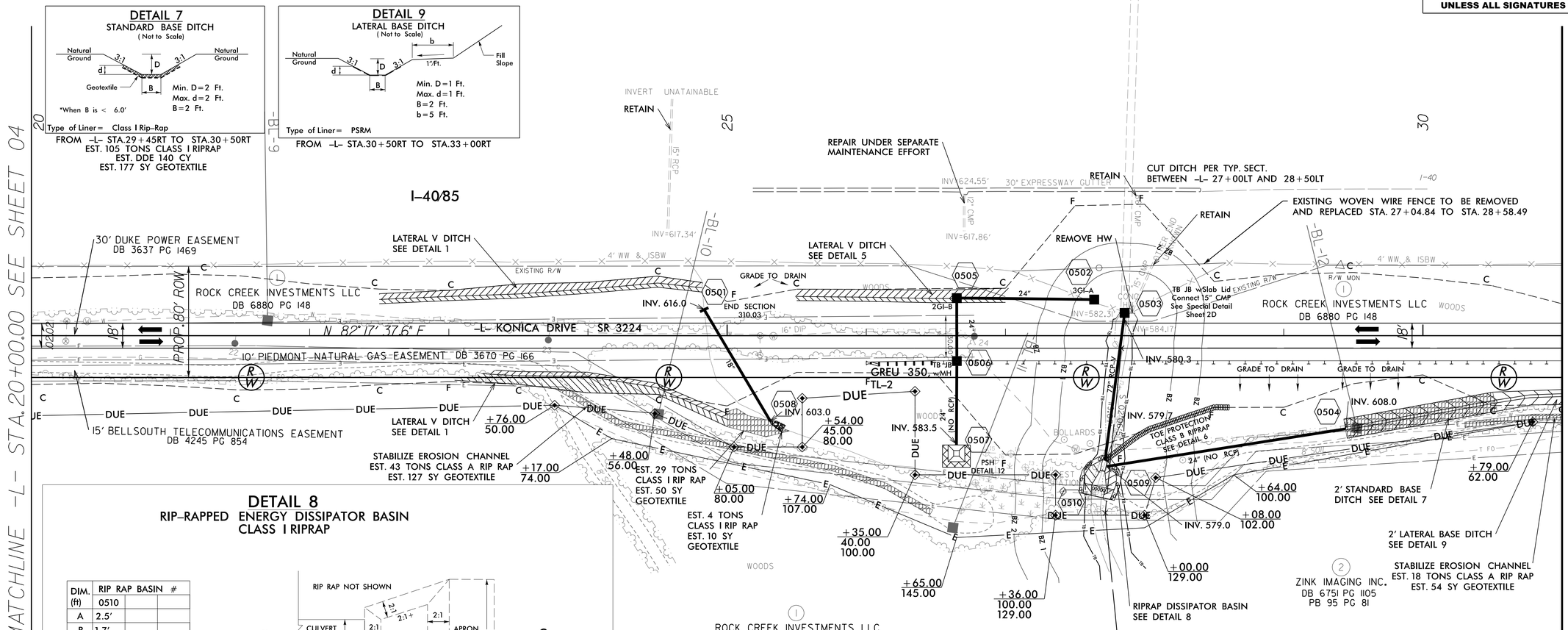
DETAIL 9
LATERAL BASE DITCH
(Not to Scale)

Natural Ground; 3:1; D; 3:1; b; 1½'/Ft.; Fill Slope; d; B

Min. D=1 Ft.
Max. d=1 Ft.
B=2 Ft.
b=5 Ft.

Type of Liner= PSRM

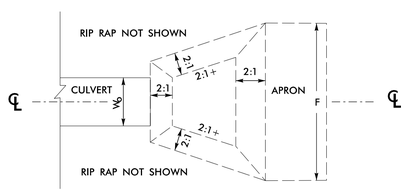
FROM –L– STA.30+50RT TO STA.33+00RT



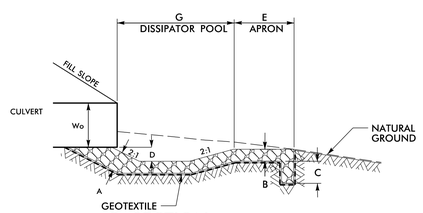
DETAIL 8
RIP-RAPPED ENERGY DISSIPATOR BASIN
CLASS I RIPRAP

DIM. (ft)	RIP RAP BASIN # 0510		
A	2.5'		
B	1.7'		
C	2.5'		
D	1.7'		
E	8.5'		
F	23.5'		
G	18.0'		

ALL DIMENSIONS APPROXIMATE



PLAN



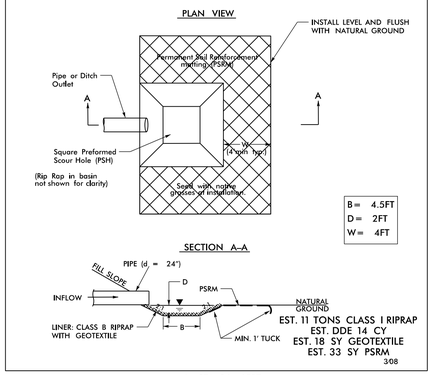
BASIN #	LOCATION (AT OUTLET)
0510	–L– 27+70RT

℄ SECTION

7/08

FROM –L– STA.27+63RT TO STA.27+77RT
EST. 56 TONS CLASS I RIPRAP
EST. DDE 70 CY
EST. 60 SY GEOTEXTILE

DETAIL 12, PREFORMED SCOUR HOLE
*NOT TO SCALE



–L– STA. 26+65RT

FOR –L– PROFILE SEE SHEET 8

REVISIONS

8/17/99

10/8/2018
R:\Roadway\Proj\B4960_Rdy_psh05.dgn
mpcarlton

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	06
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030877 LAURA C. FISHER — Designed by: Laura Fisher — 9/18/2018

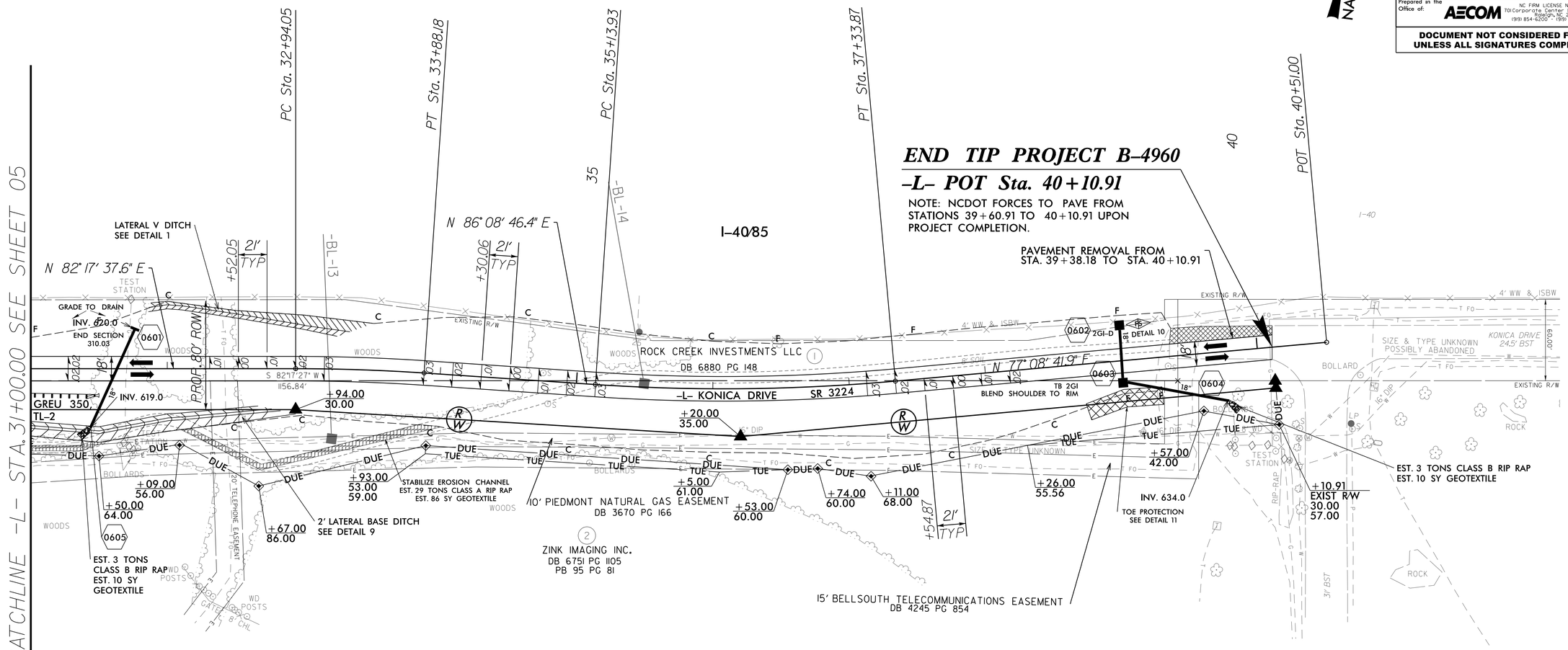
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029872 CHARLES R. SMITH — Designed by: Charles Smith — 9/18/2018

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)

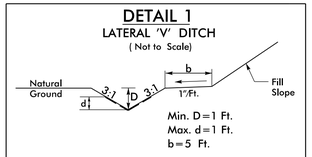
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

REVISIONS 8/17/99



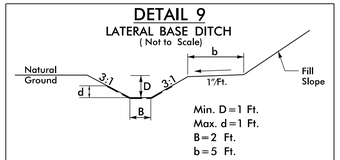
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = PSRM

FROM -L- STA.12+50LT TO STA.15+20LT
FROM -L- STA.15+20LT TO STA.17+00LT
FROM -L- STA.23+00RT TO STA.25+00RT
FROM -L- STA.22+50LT TO STA.24+85LT
FROM -L- STA. 31+85LT TO STA.33+50LT

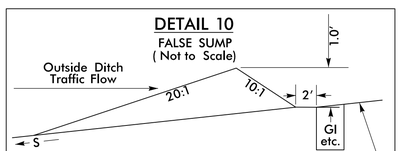
DETAIL 9
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

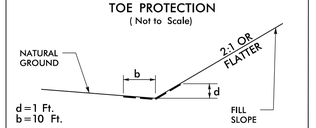
FROM -L- STA.30+50RT TO STA.33+00RT

DETAIL 10
FALSE SUMP
(Not to Scale)



FROM -L- STA.39+04LT TO STA.39+34LT

DETAIL 11
TOE PROTECTION
(Not to Scale)



Type of Liner = PSRM

FROM -L- STA.38+70RT TO STA.39+30RT

-L- KONICA DRIVE

PI Sta 33+41.13	PI Sta 36+24.12
Δ = 3° 51' 08.9" (RT)	Δ = 9° 00' 04.5" (LT)
D = 4° 05' 33.2"	D = 4° 05' 33.2"
L = 94.13'	L = 219.94'
T = 47.08'	T = 110.20'
R = 1,400.00'	R = 1,400.00'
DS = 40 MPH	DS = 40 MPH
e = 3.0%	e = 3.0%
RUNOFF = 63.0'	RUNOFF = 63.0'

FOR -L- PROFILE SEE SHEET 8 & 9

PAVEMENT REMOVAL

9/17/2018
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mcrogers, fsaxon

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	07
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER — Signed by: DocuSigned by: 8B330A4D8D1D4A0...

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 029872 ENGINEER CHARLES R. SMITH — Signed by: DocuSigned by: 2A489FD0E2A4...

Prepared in the Office of: AECOM — NC FIRM LICENSE Nos F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259(FAX)

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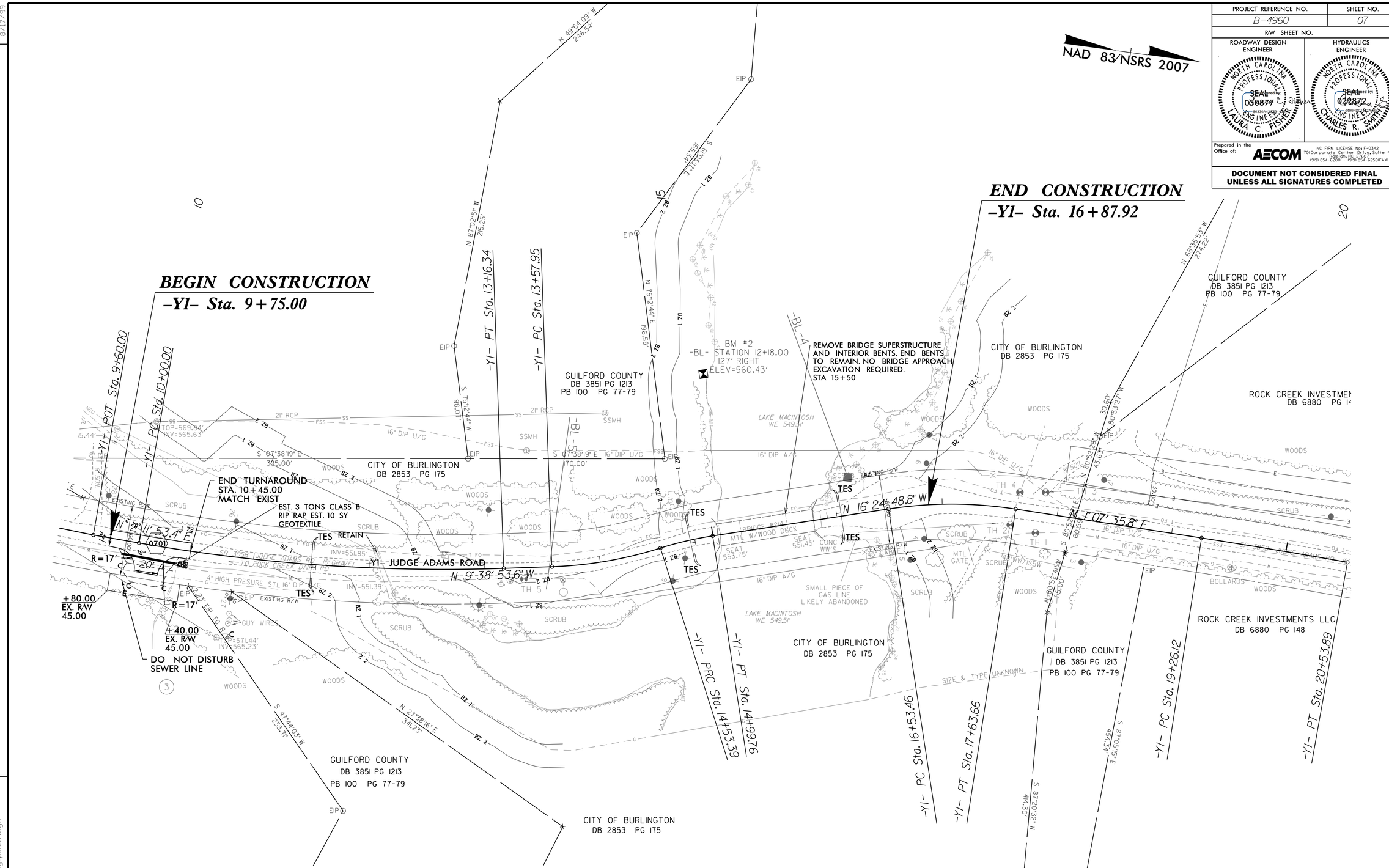
NAD 83/NSRS 2007

REVISIONS

8/17/99



-Y1- JUDGE ADAMS ROAD

PI Sta 11+58.74	PI Sta 14+05.97	PI Sta 14+76.62	PI Sta 17+09.00	PI Sta 19+90.01
Δ = 11° 50' 47.0" (LT)	Δ = 15° 37' 23.0" (LT)	Δ = 8° 51' 27.8" (RT)	Δ = 17° 32' 24.5" (RT)	Δ = 1° 15' 43.6" (RT)
D = 3° 44' 41.4"	D = 16° 22' 12.8"	D = 19° 05' 54.9"	D = 15° 54' 55.8"	D = 0° 59' 16.3"
L = 316.34'	L = 95.44'	L = 46.38'	L = 110.21'	L = 127.76'
T = 158.74'	T = 48.02'	T = 23.24'	T = 55.54'	T = 63.88'
R = 1,530.00'	R = 350.00'	R = 300.00'	R = 360.00'	R = 5,800.00'

10/10/2018
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mcrapnfisher

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	08

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER
DocuSigned by: Laura Fisher
9/18/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029872 ENGINEER CHARLES R. SMITH
DocuSigned by: Charles Smith
9/18/2018

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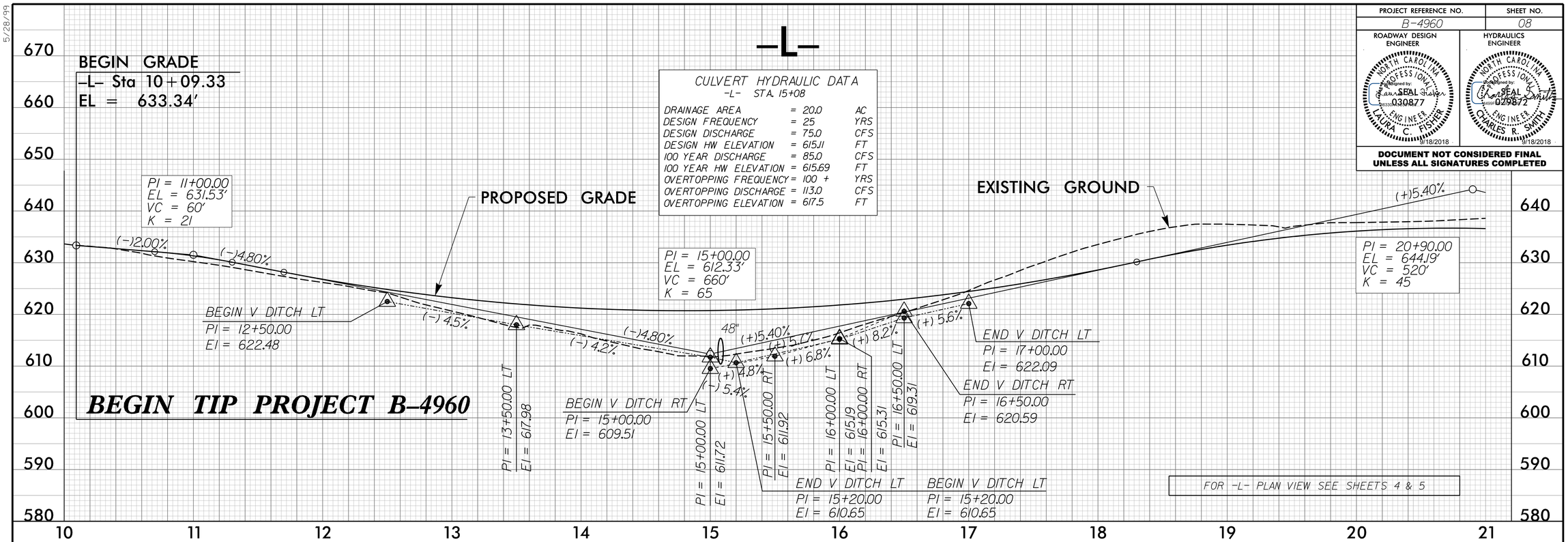

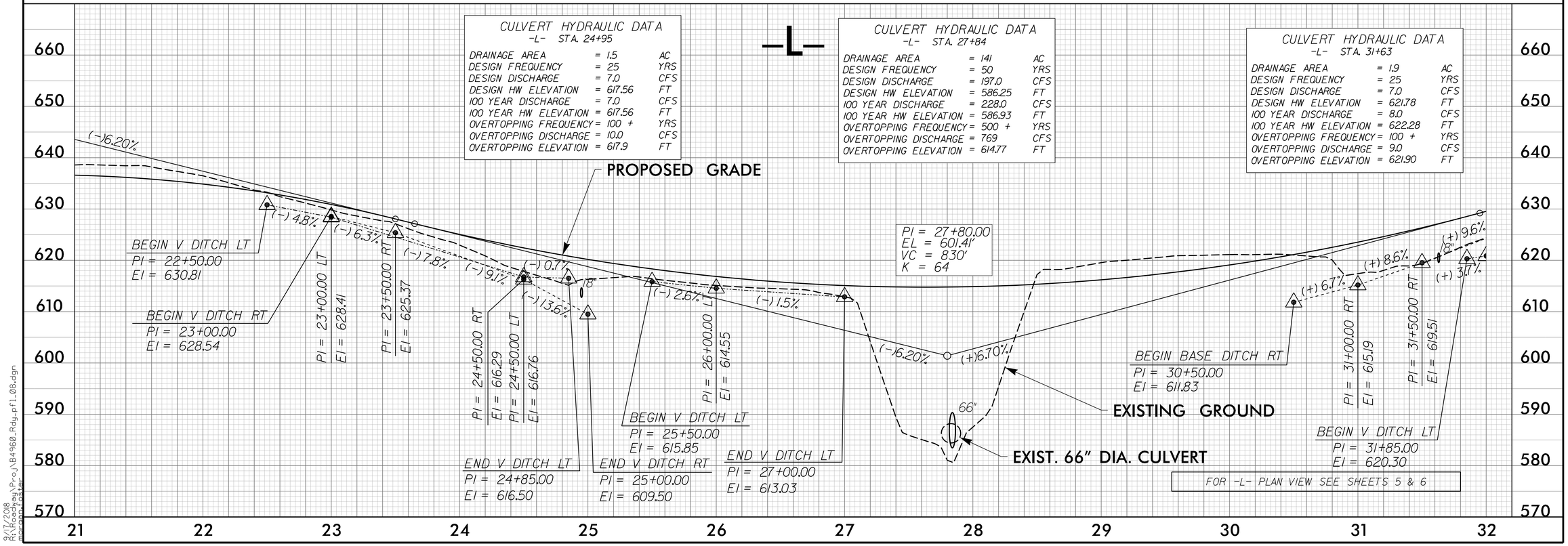

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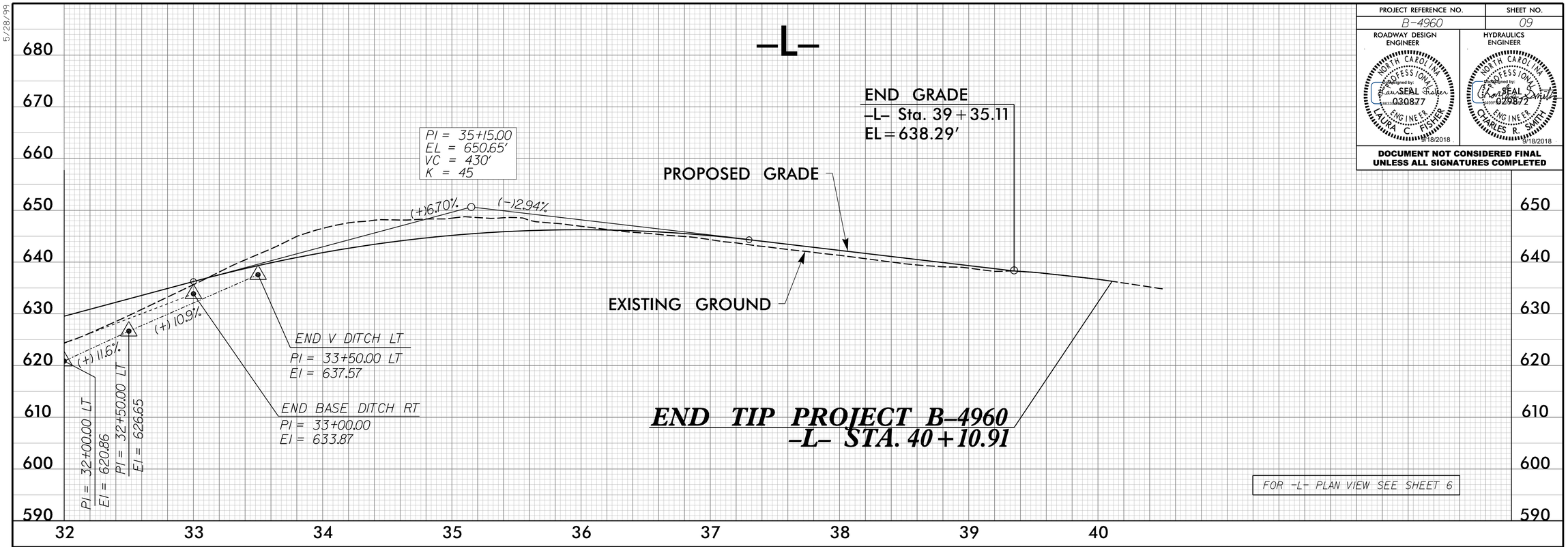
PROJECT REFERENCE NO.	SHEET NO.
B-4960	09

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030877 LAURA C. FISHER 9/18/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029872 CHARLES R. SMITH 9/18/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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morgan.foster

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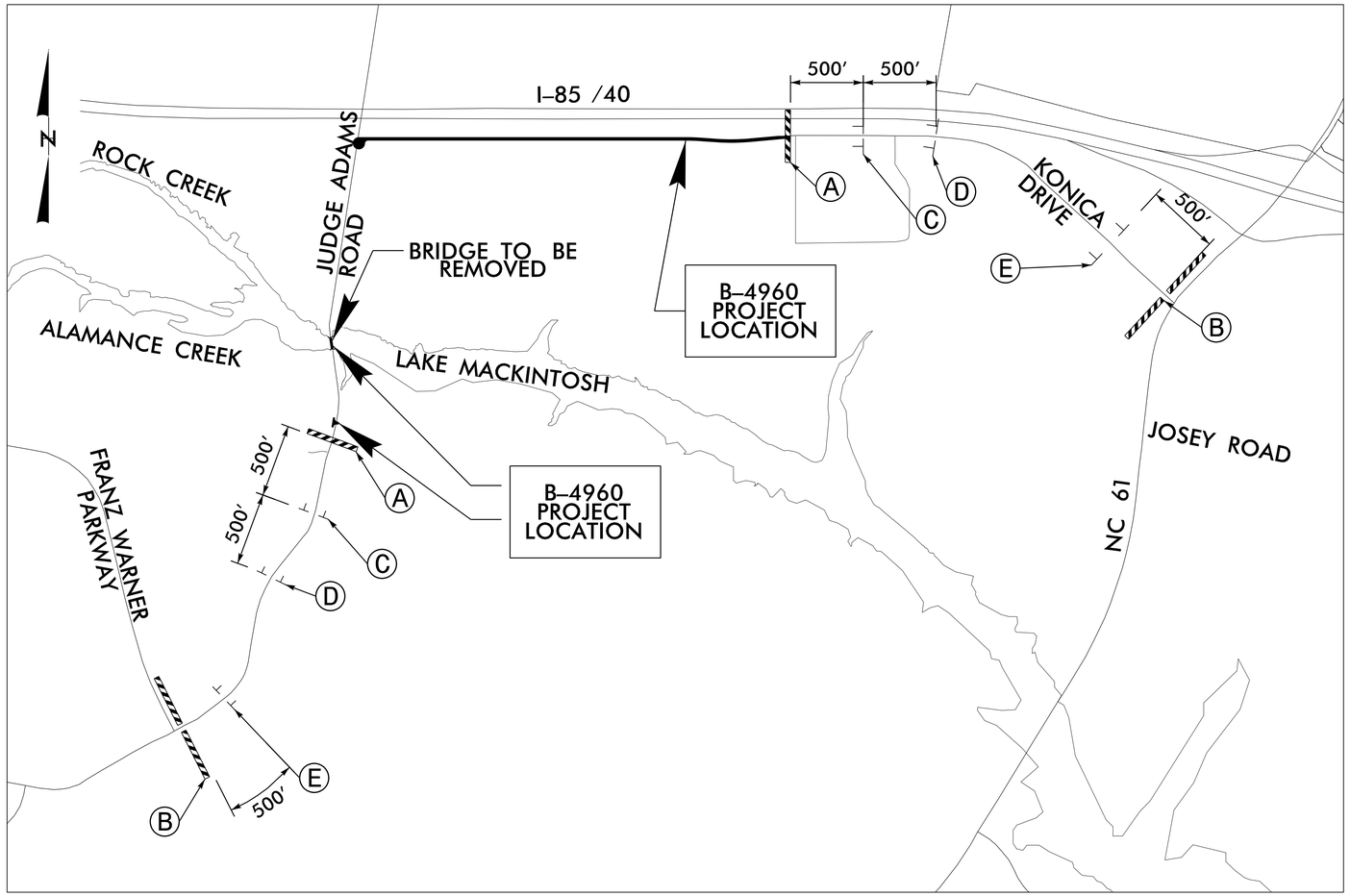
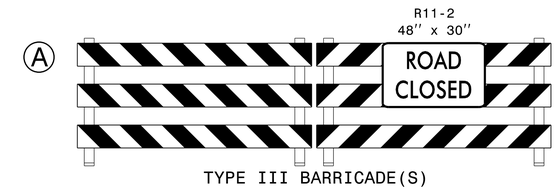
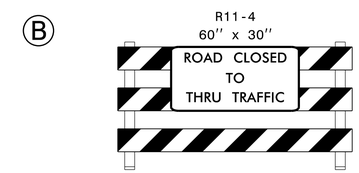
PROJ. REFERENCE NO.	SHEET NO.
B-4960	TMP-1





TYPE III BARRICADE(S)



TYPE III BARRICADE

LEGEND

TRAFFIC CONTROL DEVICES

BARRICADE (TYPE III)

TEMPORARY SIGNING

STATIONARY SIGN

PHASING NOTES:

COMPLETE CONSTRUCTION OF KONICA DRIVE AND JUDGE ADAMS ROAD IMPROVEMENTS PRIOR TO REMOVING BRIDGE ON JUDGE ADAMS ROAD.

NOTES:

TRAFFIC CONTROL DEVICES Ⓐ THROUGH Ⓔ SHALL BE INSTALLED ACCORDING TO 2018 NORTH CAROLINA ROADWAY STANDARD DRAWINGS 1101.03, SHEET 1 OF 9.

APPROVED: DocuSigned by: Laura C. Fisher 86330A43C531436...

DATE: 10/8/2018

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030877 ENGINEER LAURA C. FISHER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

ROAD CLOSURE

10/8/2018
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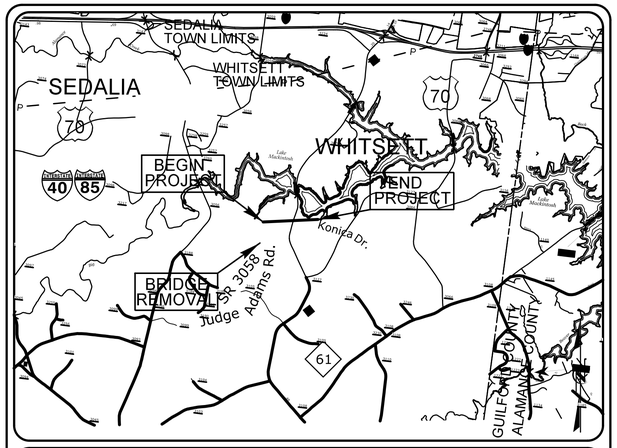
morgan.foster

09/08/99

TIP PROJECT: B-4960

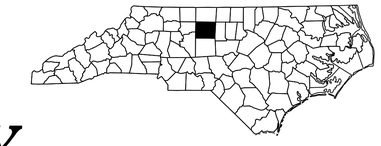
CONTRACT: DG00472

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



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



GUILFORD COUNTY

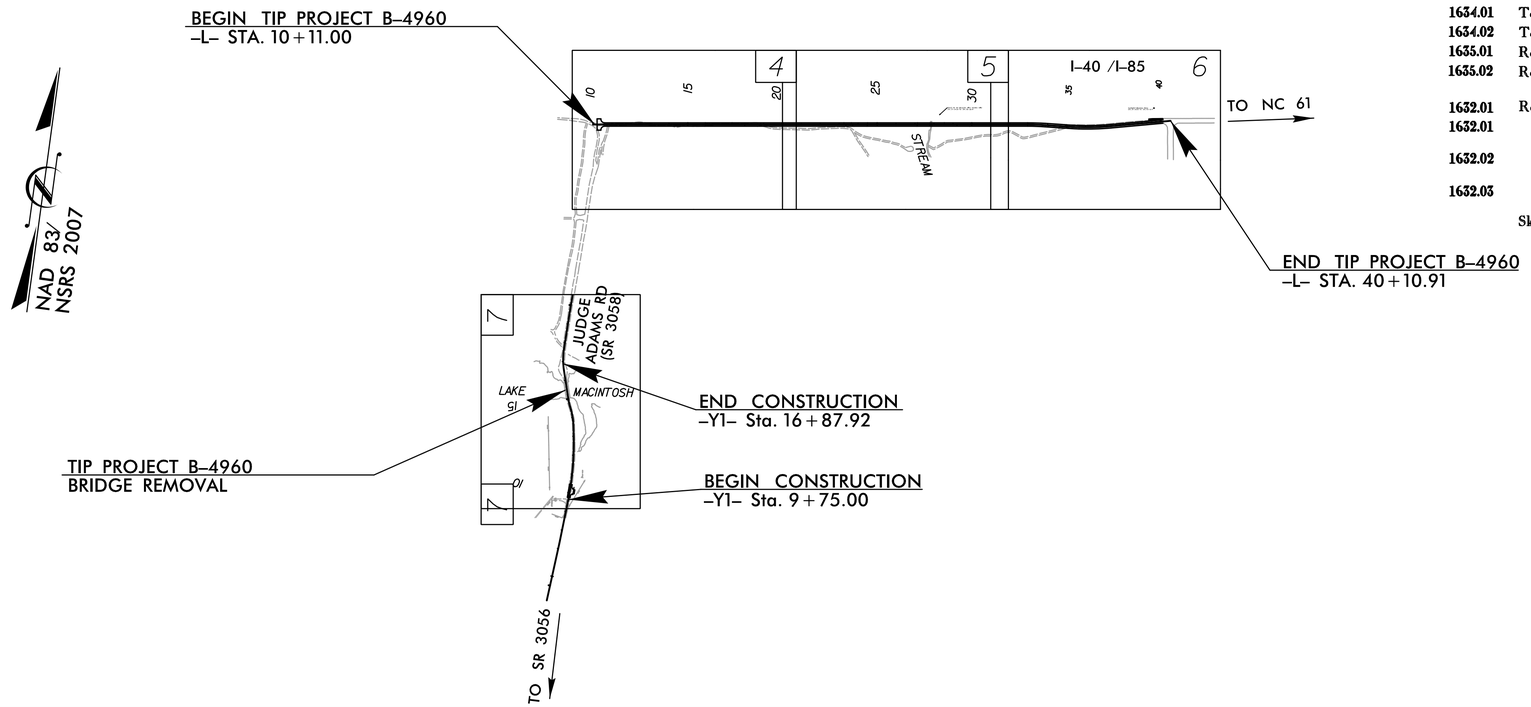
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4960	EC-1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
40153.1.1	BRZ-3058(2)	P.E.
40153.2.2	BRZ-3058(2)	R/W AND UTIL.
40153.3.3	BRZ-3058(2)	CONST.

LOCATION: SR 3224 (KONICA DRIVE) AND SR 3058 (JUDGE ADAMS RD) AT LITTLE ALAMANCE CREEK

TYPE OF WORK: GRADING AND GRAVEL EXTENSION OF SR 3224, REMOVAL OF BRIDGE #214 ON SR 3058



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	WW CFW
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared In the Office of:

AECOM
Firm License No. F-0342
701 Corporate Center Drive, Suite 475
Raleigh NC 27607
(919) 854-6200 (919) 854-6259 (Fax)

Designed by:

RENE REMY, CPESC, CPSWQ ***3125***
NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

JENNIFER PARISH, EI, CPESC, CPSWQ

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 revison 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		

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02
R/W SHEET NO.	

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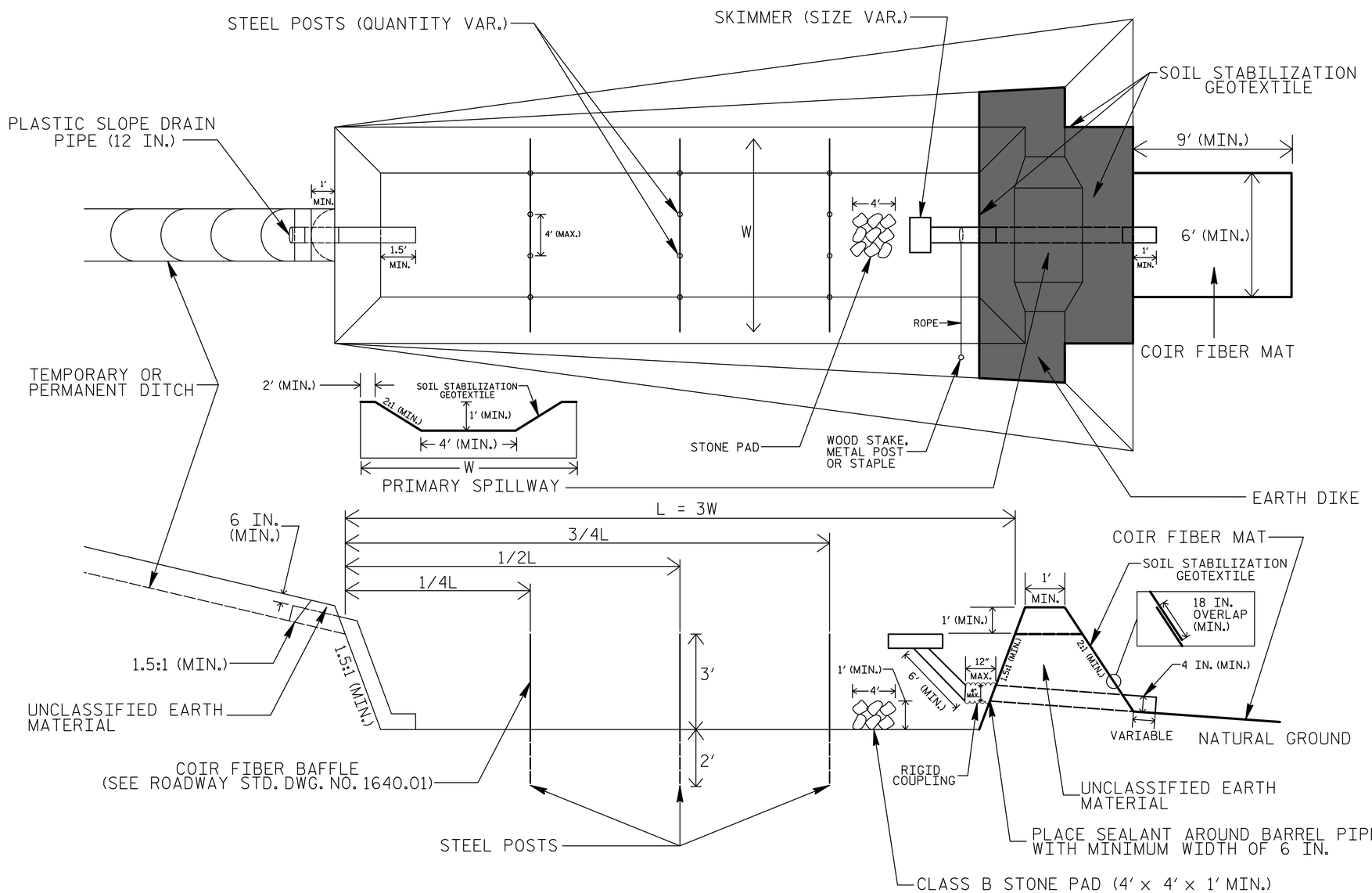
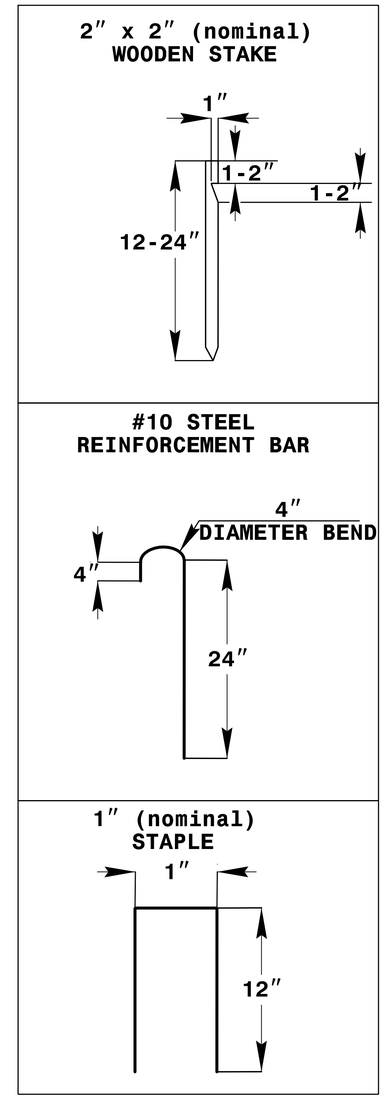
SKIMMER BASIN WITH BAFFLES DETAIL





COIR FIBER MAT ANCHOR OPTIONS

NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING Q/0.4, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

NOT TO SCALE

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02A
R/W SHEET NO.	

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Raleigh, NC 27610
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COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

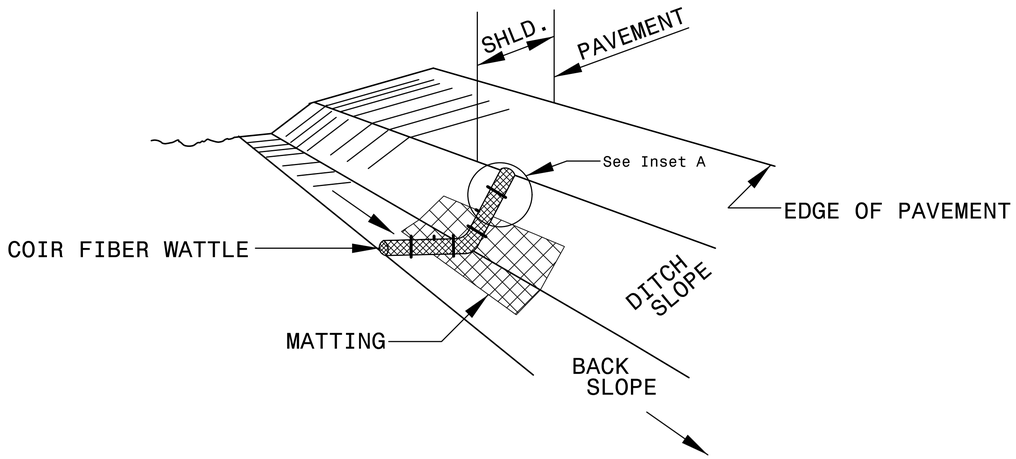
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

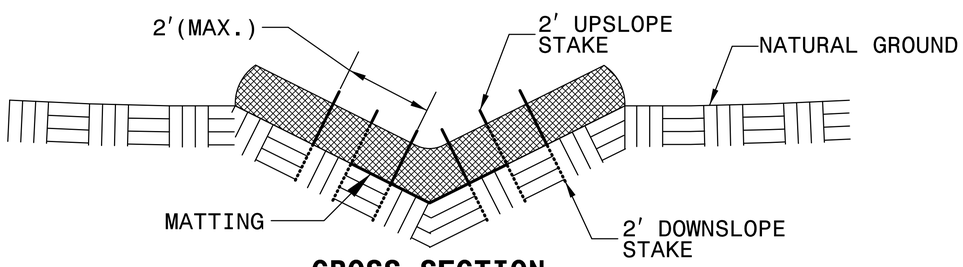
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

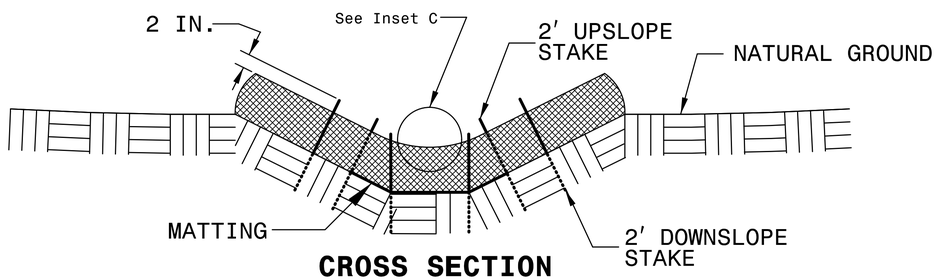
INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



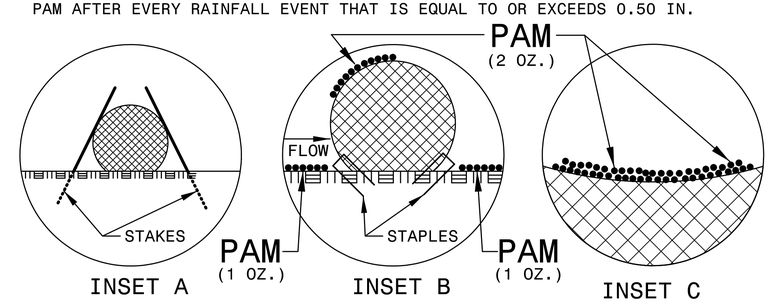
ISOMETRIC VIEW

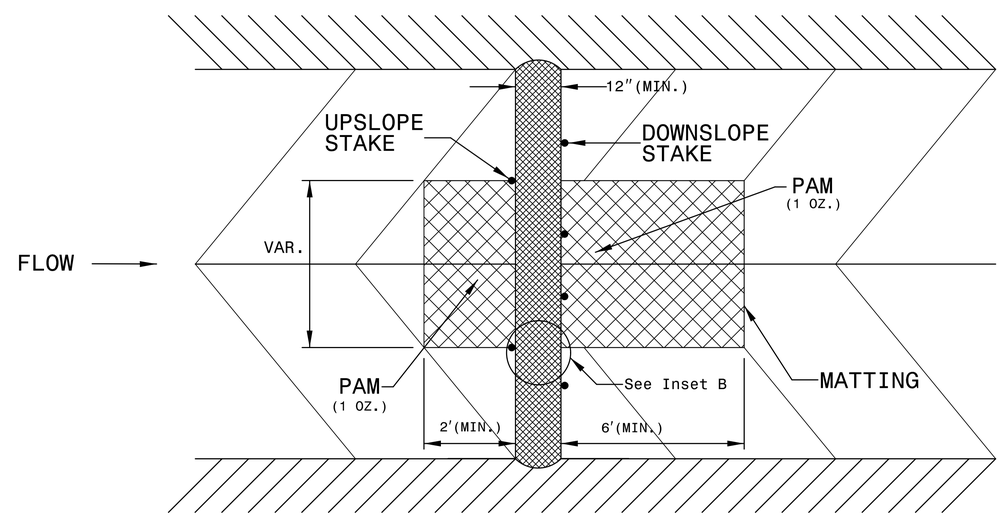


CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH





TOP VIEW

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02B
R/W SHEET NO.	

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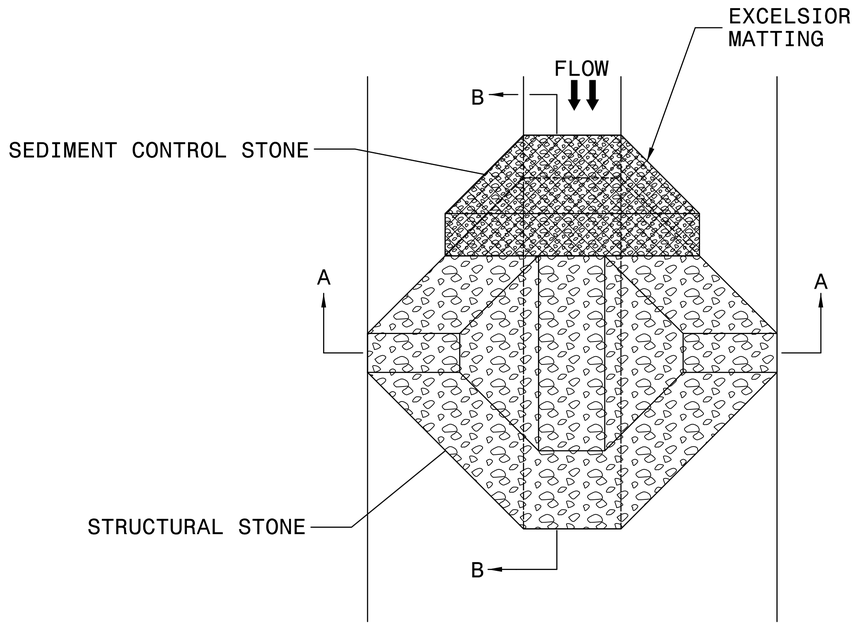
TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN

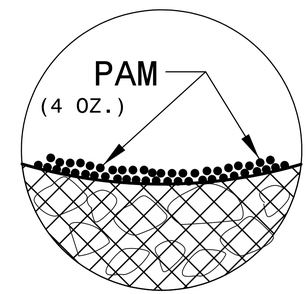
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

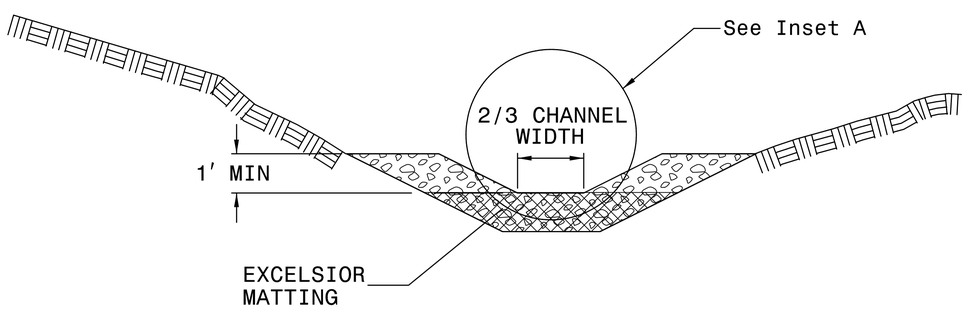
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

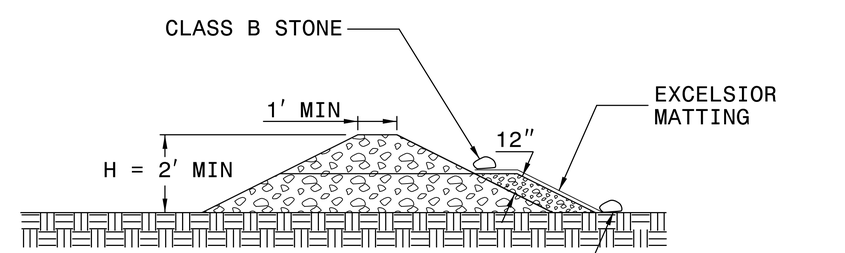
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

8/17/99

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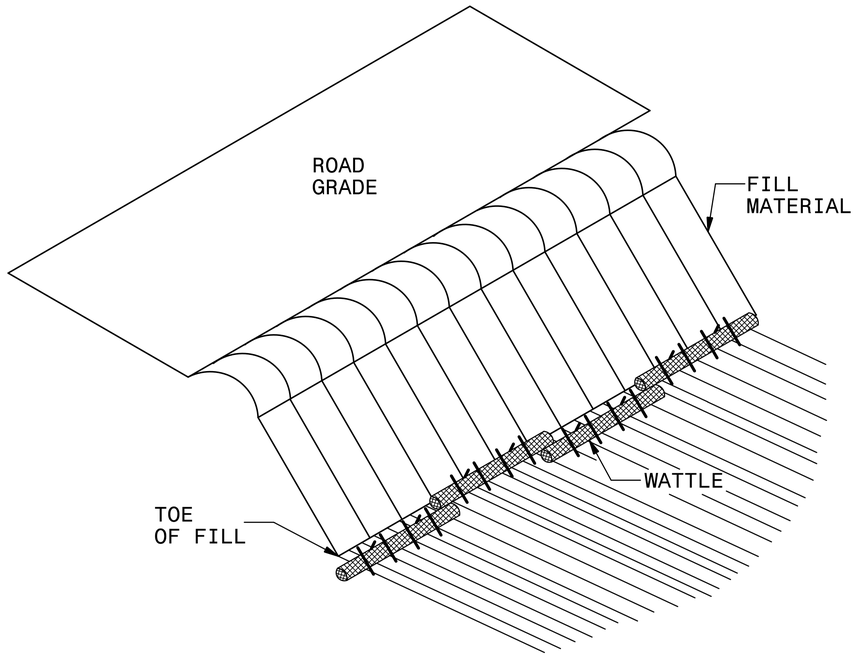
PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02C
R/W SHEET NO.	

Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27610 (919) 854-6200 - (919) 854-6259FAX

WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

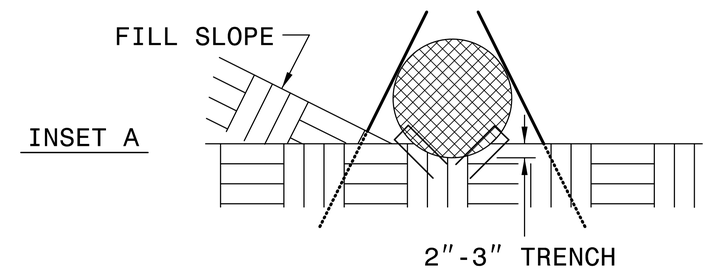
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

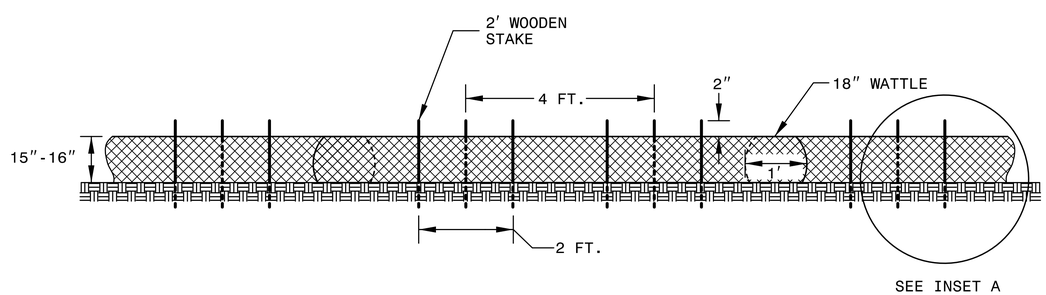
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

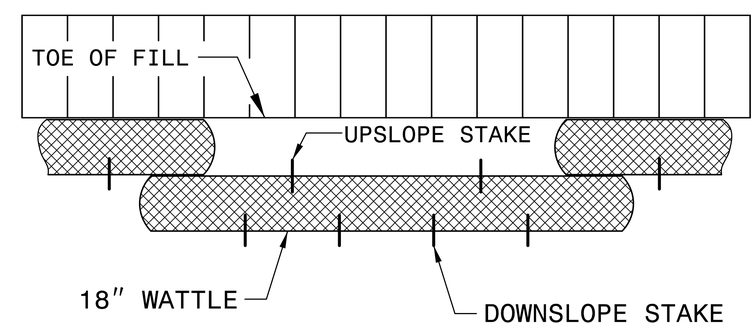
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW



TOP VIEW

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02D
R/W SHEET NO.	

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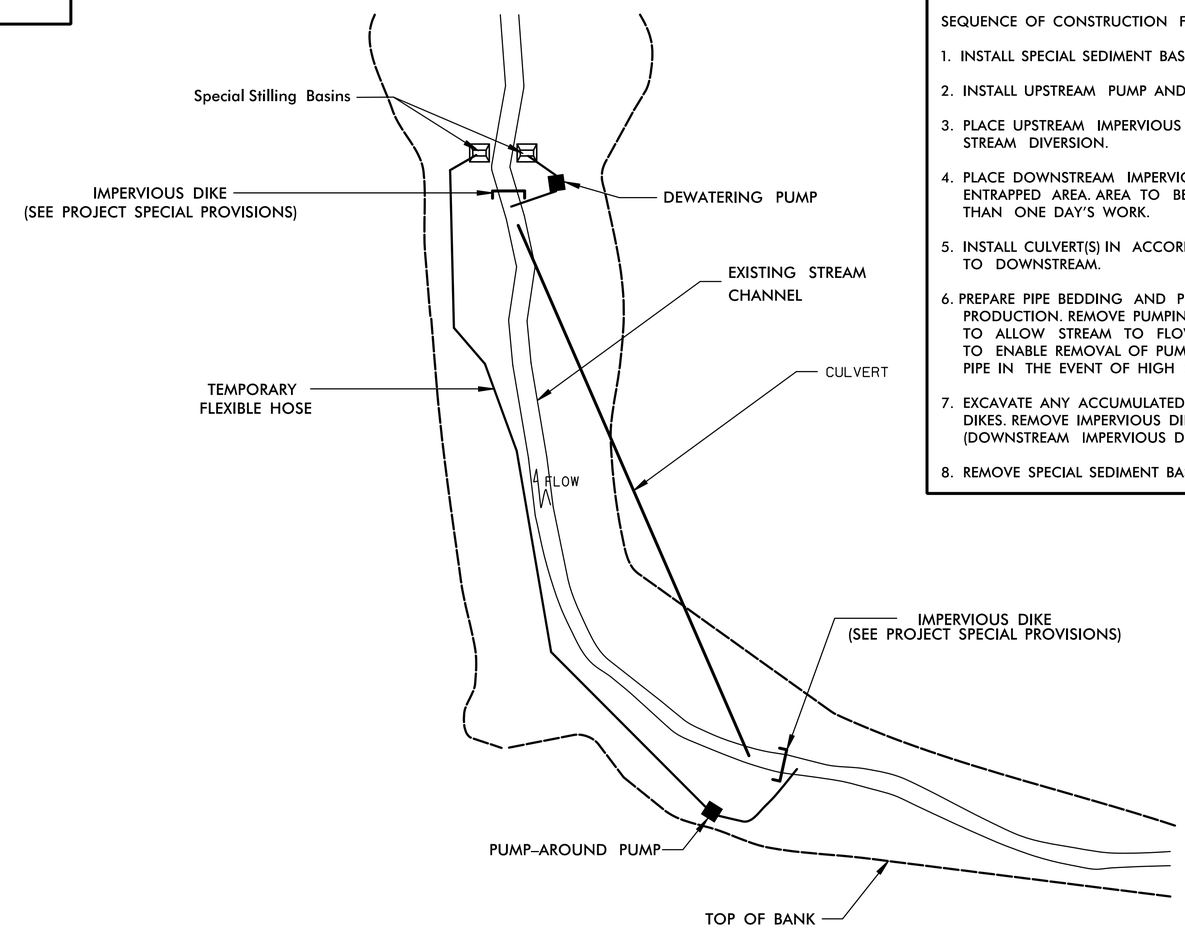
EXAMPLE OF PUMP–AROUND OPERATION

USE PUMP–AROUND DETAIL IF NEEDED DURING THE INSTALLATION OF THE 72" RCP

NOTES:
1) All excavation shall be performed only in dry or isolated areas of the work zone.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL SEDIMENT BASINS.
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO NO MORE THAN ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS. FROM UPSTREAM TO DOWNSTREAM.
6. PREPARE PIPE BEDDING AND PLACE PIPE SEGMENTS EQUIVALENT TO ONE DAY'S PRODUCTION. REMOVE PUMPING APPARATUS AND DIKES AT END OF EACH DAY TO ALLOW STREAM TO FLOW THROUGH NEWLY INSTALLED PIPE. MAINTAIN SITE TO ENABLE REMOVAL OF PUMPING APPARATUS AND FLOW THROUGH INSTALLED PIPE IN THE EVENT OF HIGH STORM FLOW RATES.
7. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
8. REMOVE SPECIAL SEDIMENT BASINS. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

8/17/99

DATE/TIME: 3:03:37 PM
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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02E
R/W SHEET NO.	

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27610
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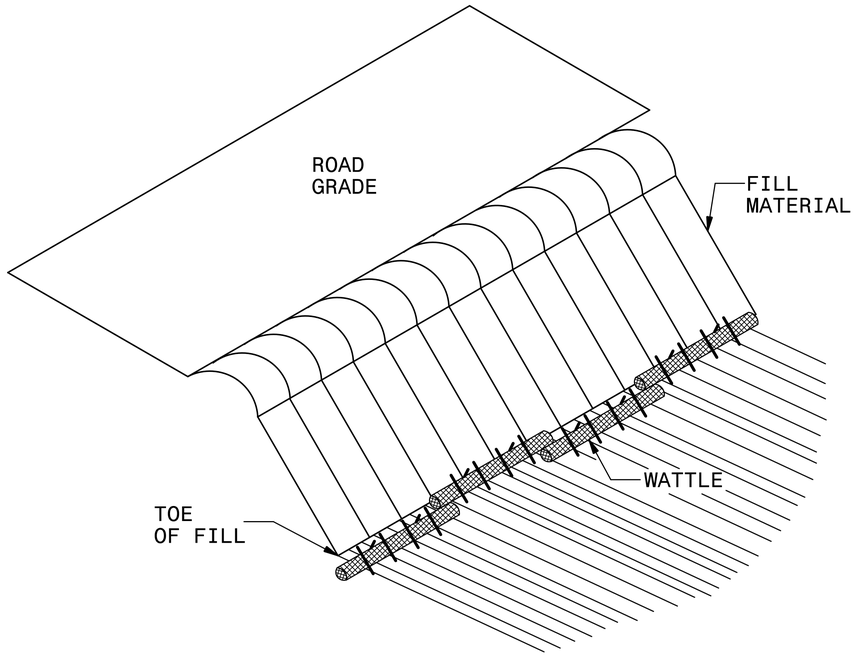
COIR FIBER WATTLE BARRIER DETAIL



ISOMETRIC VIEW

NOTES:

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

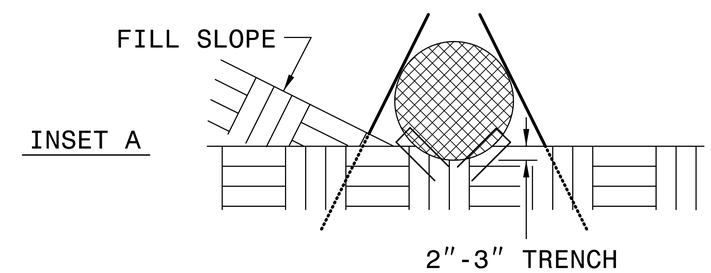
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

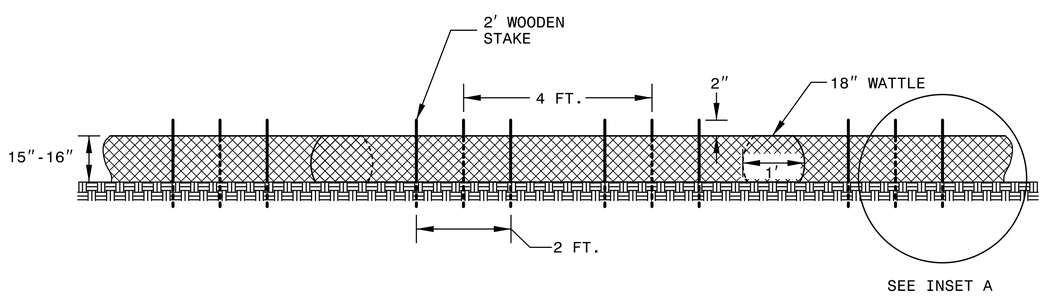
INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

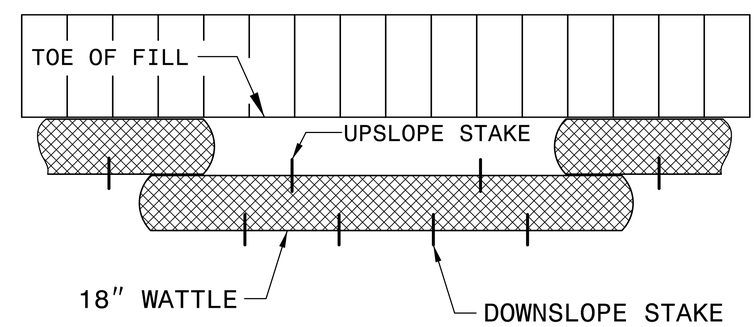
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.





FRONT VIEW



TOP VIEW

8/17/99

DATE/TIME: 3:03:39 PM
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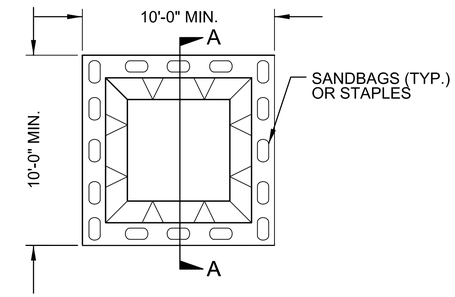
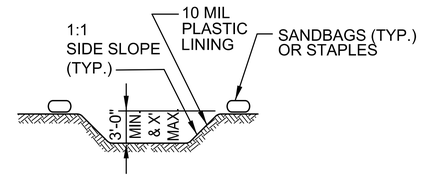
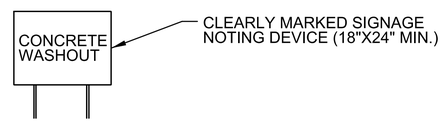
PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-02F
R/W SHEET NO.	

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27610
(919) 854-6200 - (919) 854-6259FAX0

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER







PLAN

SECTION A-A

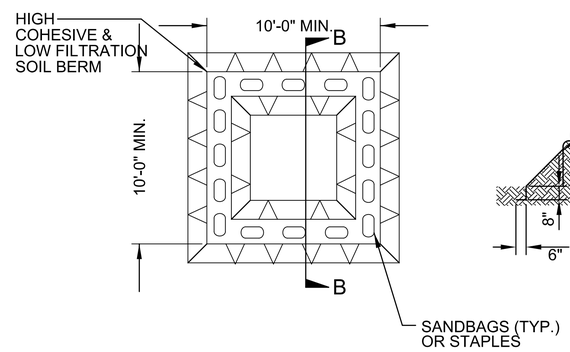
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

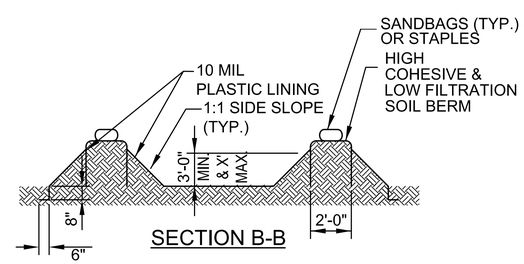
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

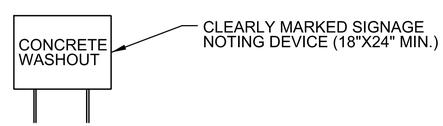
BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE





SECTION B-B



PLAN

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

8/17/99

DATE/TIME: 3:03:40 PM
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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-03
R/W SHEET NO.	

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	10+50	12+50	LT	385
4	-L-	17+00	20+00	LT	485
5	-L-	20+00	22+50	LT	405
5	-L-	20+00	23+00	RT	485
5	-L-	25+50	27+00	LT	245
5	-L-	26+50	29+00	RT	1250
5	-L-	27+00	30+50	LT	565
6	-L-	33+50	36+00	LT	405
6	-L-	36+00	39+35	LT	540
6	-L-	33+00	36+00	RT	485
6	-L-	36+00	39+00	RT	485
				SUBTOTAL	5,735
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					6,810
				TOTAL	12,545
				SAY	12,500

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	12+50	15+20	LT	180
4	-L-	15+20	17+00	LT	120
4	-L-	15+00	16+50	RT	150
4	-L-	16+50	20+70	RT	327
5	-L-	22+50	24+85	LT	157
5	-L-	23+00	25+00	RT	133
5	-L-	26+65		RT	33
6	-L-	30+50	33+00	RT	222
6	-L-	31+85	33+50	LT	110
6	-L-	38+70	39+30	RT	87
6	-L-	38+71	39+28	RT	80
			SUBTOTAL		1,599
		ADDITIONAL PSRM TO BE INSTALLED			0
				TOTAL	1,599
				SAY	1,600

8/17/99

DATE/TIME: 2/22/19 PM
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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-03A
R/W SHEET NO.	

Prepared in the Office of: AECOM
NC FIRM LICENSE No: F-0342
701 Corporate Center Drive, Suite 475
Raleigh, NC 27610
(919) 854-6200 - (919) 854-6259FAX

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

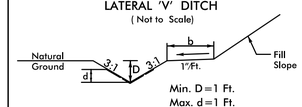
SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-04/CONST.4
R/W SHEET NO.	

Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259 FAX

DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)

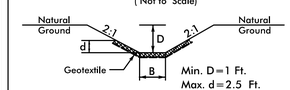


Min. D = 1 Ft.
Max. d = 1 Ft.
b = 5 Ft.

Type of Liner = PSRM

FROM -L- STA.12+50LT TO STA.15+20LT
FROM -L- STA.15+20LT TO STA.17+00LT
FROM -L- STA.23+00RT TO STA.25+00RT
FROM -L- STA.22+50LT TO STA.24+85LT
FROM -L- STA. 31+85LT TO STA.33+50LT

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



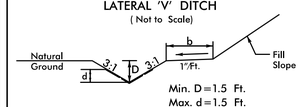
Min. D = 1 Ft.
Max. d = 2.5 Ft.
B = 4 Ft.

*When B is < 6.0'

Type of Liner = Class 1 Rip-Rap

FROM -L- STA.14+65RT TO STA.14+90RT
EST. 24 TONS CLASS I RIPRAP
EST. DDE 29 CY
EST. 40 SY GEOTEXTILE

DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)

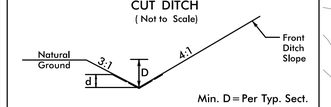


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5 Ft.

Type of Liner = PSRM

FROM -L- STA.15+00RT TO STA.16+50RT

DETAIL 4
CUT DITCH
(Not to Scale)



Min. D = Per Typ. Sect.
Max. d = 1 Ft.

Type of Liner = PSRM

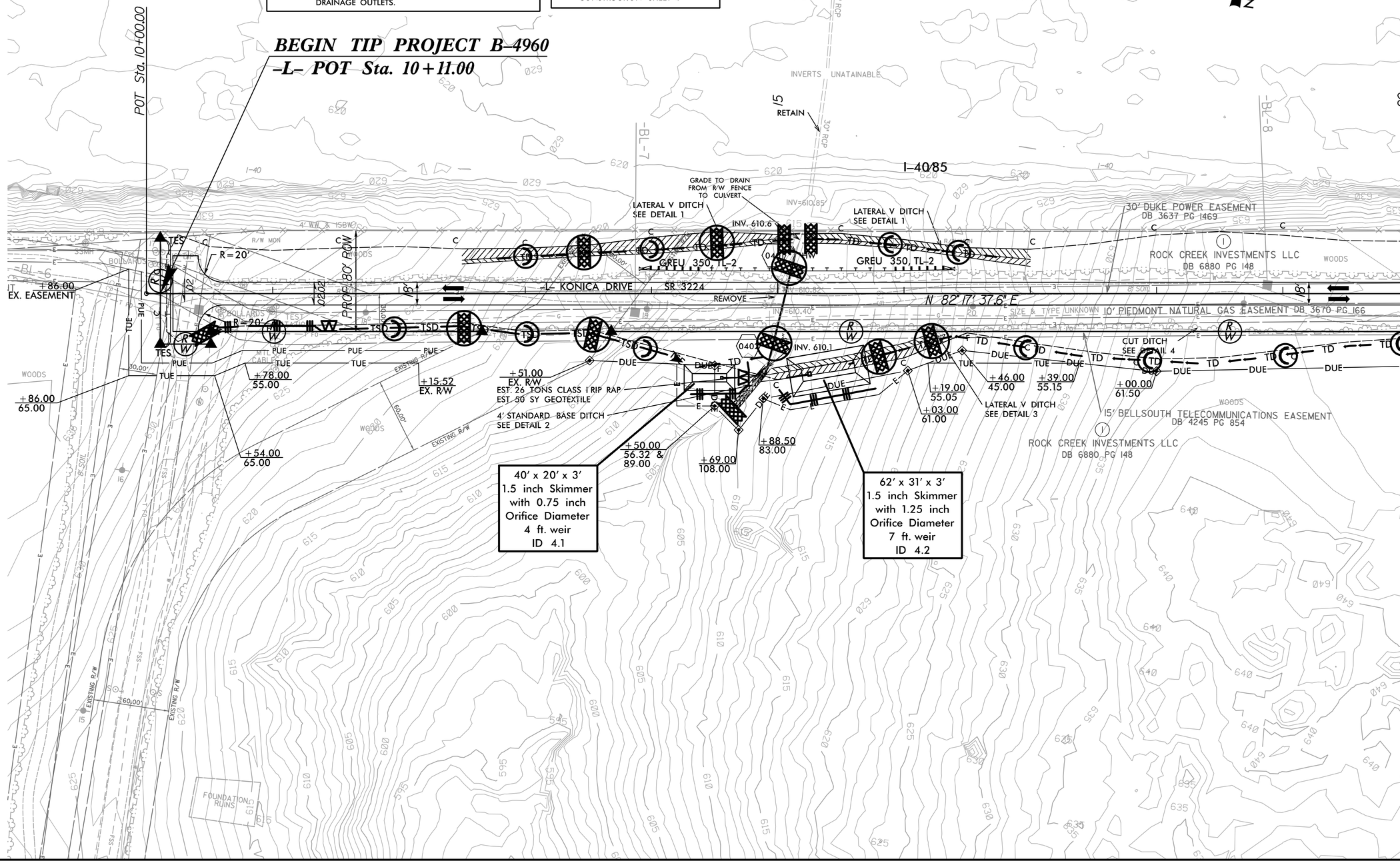
FROM -L- STA.16+50RT TO STA.20+70RT

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NAD 83/NSRS 2007

40 20 0 40 80
PLANS



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PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-05/CONST.5
R/W SHEET NO.	

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610, (919) 854-6200 - (919) 854-6259FAX

8/17/99

DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)

Type of Liner= PSRM

FROM –L– STA.12+50LT TO STA.15+20LT
FROM –L– STA.15+20LT TO STA.17+00LT
FROM –L– STA.23+00RT TO STA.25+00RT
FROM –L– STA.22+50LT TO STA.24+85LT
FROM –L– STA. 31+85LT TO STA.33+50LT

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)

FROM –L– STA.25+50LT TO STA.27+00LT

DETAIL 6
TOE PROTECTION
(Not to Scale)

Type of Liner= Class B Rip-Rap

FROM –L– STA.27+72RT TO STA.28+61RT

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

USE PUMP-AROUND IF NEEDED DURING THE INSTALLATION OF THE 72" RCP. SEE EC-02D FOR DETAIL

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 5

INSTALL PIPE(S) IN JURISDICTIONAL AREAS WITHOUT IMPACTING STREAM UNTIL AREA STABILIZED AND ACCORDING TO NCDOT BEST MANAGEMENT PRACTICES FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES MANUAL.

DETAIL 7
STANDARD BASE DITCH
(Not to Scale)

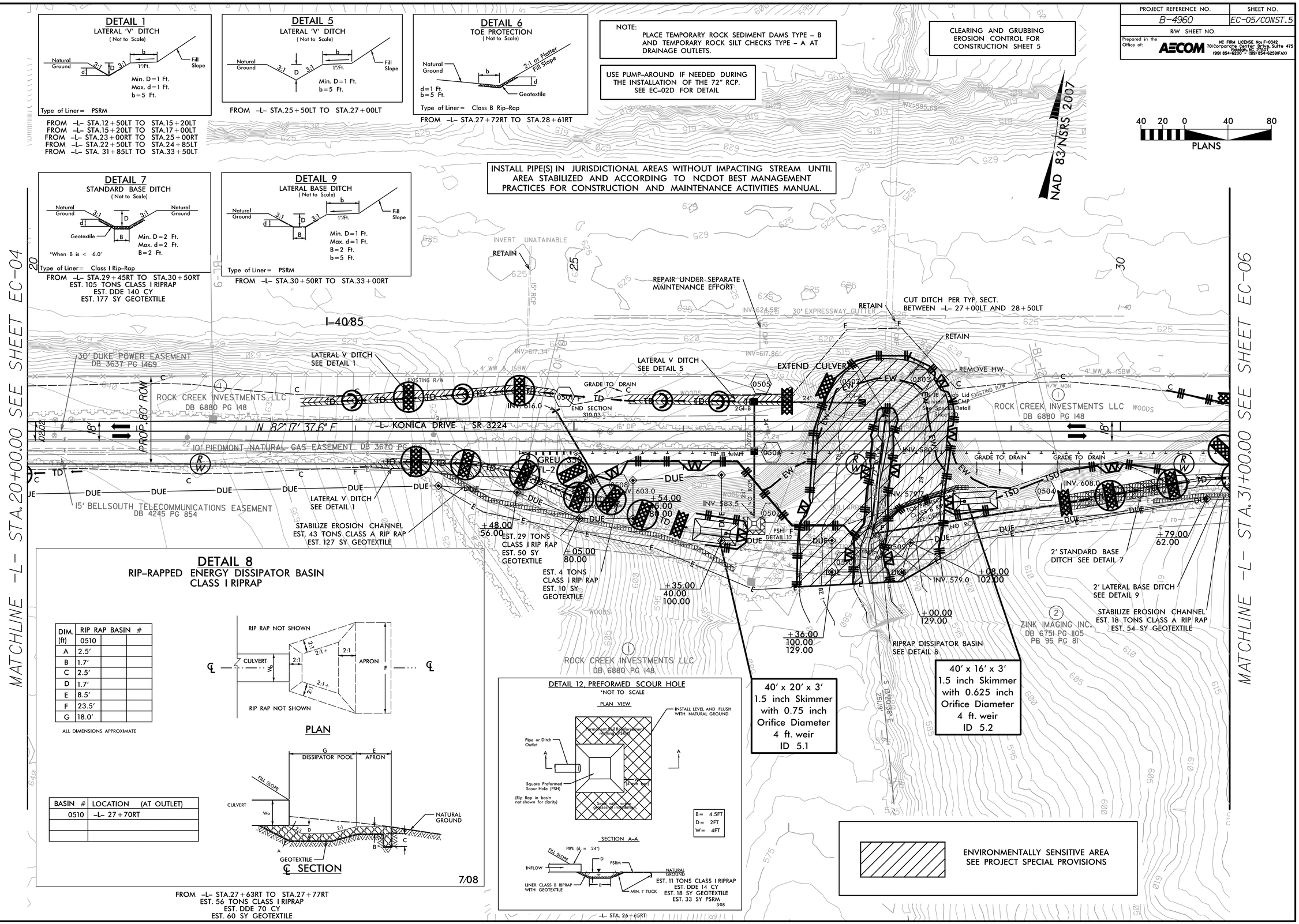
Type of Liner= Class I Rip-Rap

FROM –L– STA.29+45RT TO STA.30+50RT
EST. 105 TONS CLASS I RIPRAP
EST. DDE 140 CY
EST. 177 SY GEOTEXTILE

DETAIL 9
LATERAL BASE DITCH
(Not to Scale)

Type of Liner= PSRM

FROM –L– STA.30+50RT TO STA.33+00RT



DETAIL 8
RIP-RAPPED ENERGY DISSIPATOR BASIN
CLASS I RIPRAP

DIM. (ft)	RIP RAP BASIN #		
	0510		
A	2.5'		
B	1.7'		
C	2.5'		
D	1.7'		
E	8.5'		
F	23.5'		
G	18.0'		

ALL DIMENSIONS APPROXIMATE

PLAN

℄ SECTION

BASIN #	LOCATION (AT OUTLET)
0510	–L– 27+70RT

7/08

FROM –L– STA.27+63RT TO STA.27+77RT
EST. 56 TONS CLASS I RIPRAP
EST. DDE 70 CY
EST. 60 SY GEOTEXTILE

DETAIL 12, PREFORMED SCOUR HOLE
*NOT TO SCALE

–L– STA. 26+65RT

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

DATE/TIME: 3/03/49 PM
DGN: R:\900_Work\910_CADD\0_NCDOT_TIP\Environmental\Design\B4960_Rev_EC_psh05.dgn

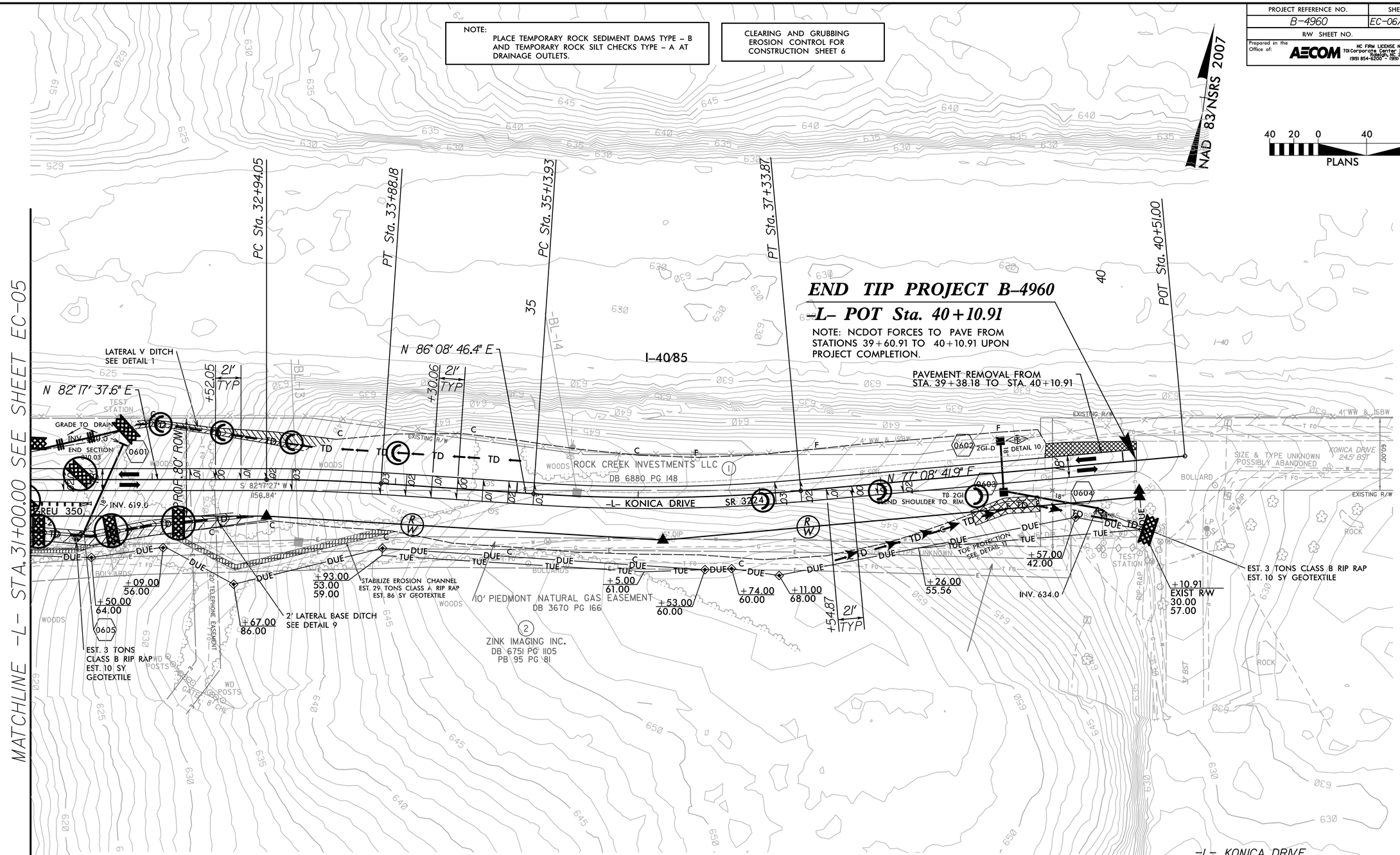
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-06/CONST.6
R/W SHEET NO.	

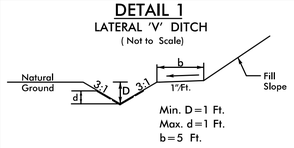
Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259FAX

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 6



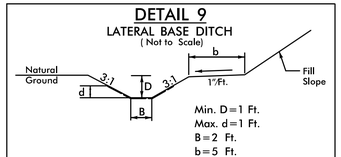
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1 Ft.
Max. d = 1 Ft.
b = 5 Ft.
Type of Liner = PSRM

FROM -L- STA.12+50LT TO STA.15+20LT
FROM -L- STA.15+20LT TO STA.17+00LT
FROM -L- STA.23+00RT TO STA.25+00RT
FROM -L- STA.22+50LT TO STA.24+85LT
FROM -L- STA. 31+85LT TO STA.33+50LT

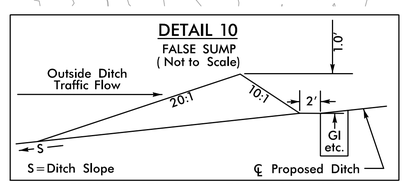
DETAIL 9
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
Max. d = 1 Ft.
B = 2 Ft.
b = 5 Ft.
Type of Liner = PSRM

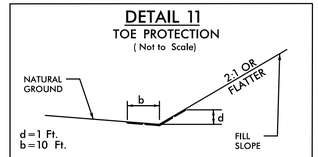
FROM -L- STA.30+50RT TO STA.33+00RT

DETAIL 10
FALSE SUMP
(Not to Scale)



FROM -L- STA.39+04LT TO STA.39+34LT

DETAIL 11
TOE PROTECTION
(Not to Scale)



d = 1 Ft.
b = 10 Ft.
Type of Liner = PSRM

FROM -L- STA.38+70RT TO STA.39+30RT

-L- KONICA DRIVE

PI Sta 33+41.13	PI Sta 36+24.12
Δ = 3° 51' 08.9" (RT)	Δ = 9° 00' 04.5" (LT)
D = 4° 05' 33.2"	D = 4° 05' 33.2"
L = 94.13'	L = 219.94'
T = 47.08'	T = 110.20'
R = 1,400.00'	R = 1,400.00'
DS = 40 MPH	DS = 40 MPH
e = 3.0%	e = 3.0%
RUNOFF = 63.0'	RUNOFF = 63.0'

DATE/TIME: 3/03/51 PM
DGN: R:\3900_Work\910_CADD\0_NCDOT_TIP\Environmental\Design\B4960_Reu_EC_pst06.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-07/CONST.7
R/W SHEET NO.	

Prepared in the Office of: AECOM NC FIRM LICENSE No: F-0342 701 Corporate Center Drive, Suite 475 Raleigh, NC 27607 (919) 854-6200 - (919) 854-6259(FAX)

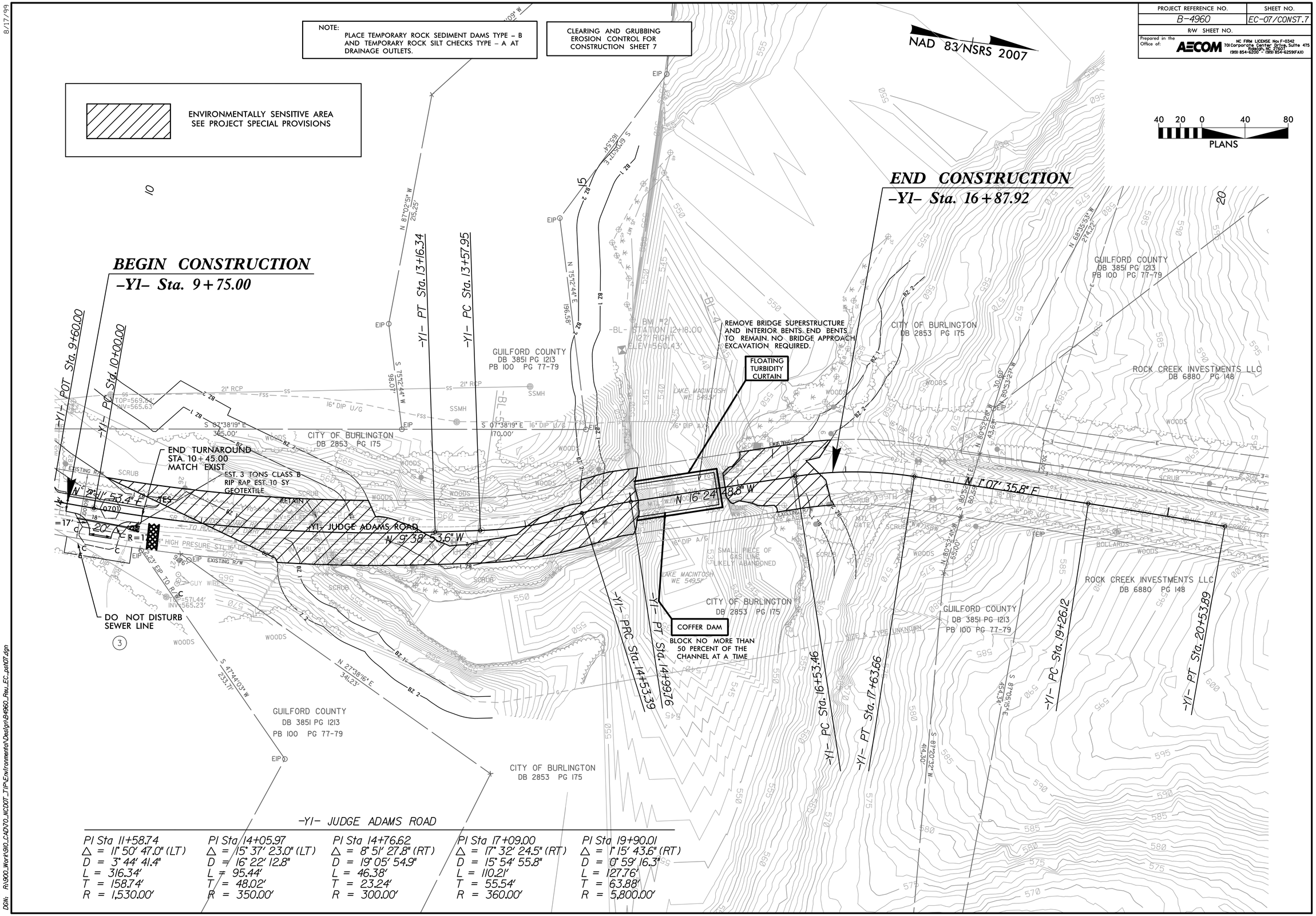
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 7

ENVIRONMENTALLY SENSITIVE AREA SEE PROJECT SPECIAL PROVISIONS

NAD 83/NSRS 2007

40 20 0 40 80
PLANS



-Y1- JUDGE ADAMS ROAD

PI Sta 11+58.74	PI Sta 14+05.97	PI Sta 14+76.62	PI Sta 17+09.00	PI Sta 19+90.01
Δ = 11° 50' 47.0" (LT)	Δ = 15° 37' 23.0" (LT)	Δ = 8° 51' 27.8" (RT)	Δ = 17° 32' 24.5" (RT)	Δ = 1° 15' 43.6" (RT)
D = 3° 44' 41.4"	D = 16° 22' 12.8"	D = 19° 05' 54.9"	D = 15° 54' 55.8"	D = 0° 59' 16.3"
L = 316.34'	L = 95.44'	L = 46.38'	L = 110.21'	L = 127.76'
T = 158.74'	T = 48.02'	T = 23.24'	T = 55.54'	T = 63.88'
R = 1,530.00'	R = 350.00'	R = 300.00'	R = 360.00'	R = 5,800.00'

8/17/99

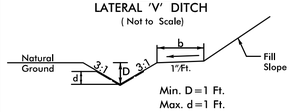
DATE/TIME: 12:53:19 PM
DGN: R:\900_Work\910_CAD\70_NCDOT_TIP\Environmental\Design\B4960_Reu_EC_psh07.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-08/CONST.4
R/W SHEET NO.	

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610, (919) 854-6200 - (919) 854-6259FAX0

DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)

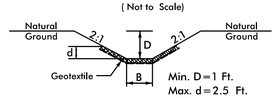


Min. D = 1 Ft.
Max. d = 1 Ft.
b = 5 Ft.

Type of Liner= PSRM

FROM –L– STA.12 + 50LT TO STA.15 + 20LT
FROM –L– STA.15 + 20LT TO STA.17 + 00LT
FROM –L– STA.23 + 00RT TO STA.25 + 00RT
FROM –L– STA.22 + 50LT TO STA.24 + 85LT
FROM –L– STA. 31 + 85LT TO STA.33 + 50LT

DETAIL 2
STANDARD BASE DITCH
(Not to Scale)



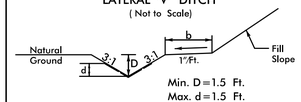
Min. D = 1 Ft.
Max. d = 2.5 Ft.
B = 4 Ft.

*When B is < 6.0'

Type of Liner= Class 1 Rip-Rap

FROM –L– STA.14 + 65RT TO STA.14 + 90RT
EST. 24 TONS CLASS I RIPRAP
EST. DDE 29 CY
EST. 40 SY GEOTEXTILE

DETAIL 3
LATERAL 'V' DITCH
(Not to Scale)

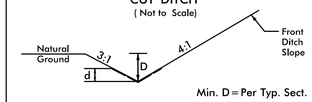


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5 Ft.

Type of Liner= PSRM

FROM –L– STA.15 + 00RT TO STA.16 + 50RT

DETAIL 4
CUT DITCH
(Not to Scale)



Min. D = Per Typ. Sect.
Max. d = 1 Ft.

Type of Liner= PSRM

FROM –L– STA.16 + 50RT TO STA.20 + 70RT

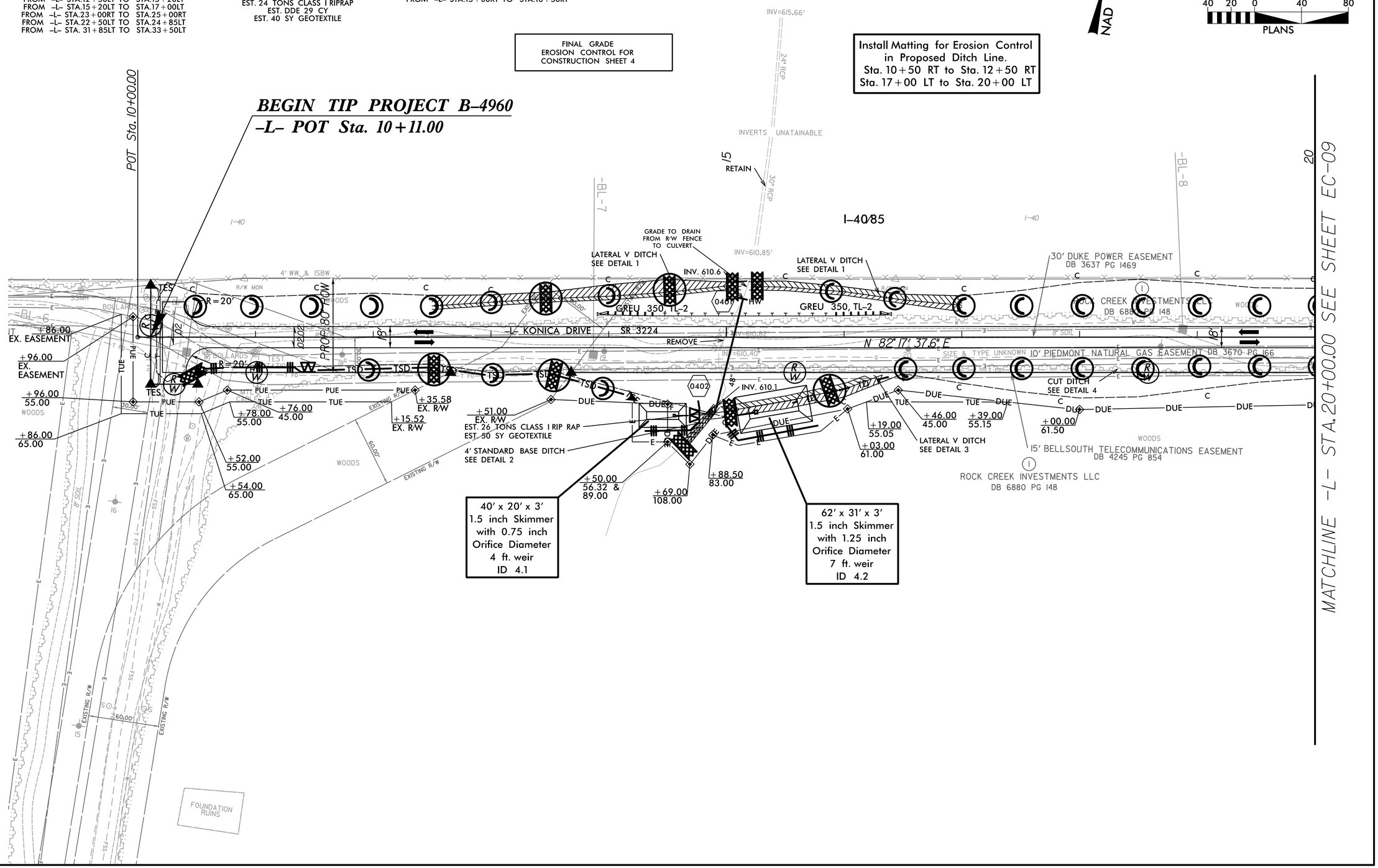
PERMANENT SOIL REINFORECMENT MAT					
–L–	12 + 50	TO	15 + 20	LT	180 CY
–L–	15 + 20	TO	17 + 00	LT	120 CY
–L–	15 + 00	TO	16 + 50	RT	150 CY
–L–	16 + 50	TO	20 + 70	RT	327 CY

NAD 83/NSRS 2007

40 20 0 40 80
PLANS

FINAL GRADE
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

Install Matting for Erosion Control
in Proposed Ditch Line.
Sta. 10 + 50 RT to Sta. 12 + 50 RT
Sta. 17 + 00 LT to Sta. 20 + 00 LT



DATE/TIME: 12/5/20 PM
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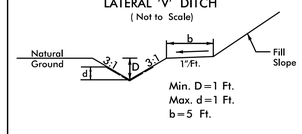
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-09/CONST.5
R/W SHEET NO.	

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27610, (919) 854-6200 - (919) 854-6259FAX0

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 5

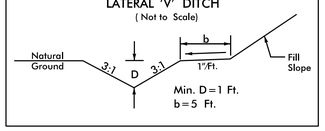
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

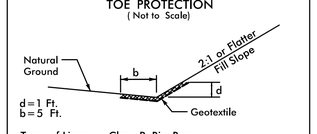
FROM –L– STA.12+50LT TO STA.15+20LT
FROM –L– STA.15+20LT TO STA.17+00LT
FROM –L– STA.23+00RT TO STA.25+00RT
FROM –L– STA.22+50LT TO STA.24+85LT
FROM –L– STA. 31+85LT TO STA.33+50LT

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)



FROM –L– STA.25+50LT TO STA.27+00LT

DETAIL 6
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM –L– STA.27+72RT TO STA.28+61RT

PERMANENT SOIL REINFORECMENT MAT					
–L–	22+50	TO	24+85	LT	157 CY
–L–	23+00	TO	25+00	RT	133 CY
–L–	26+65	TO		RT	33 CY

NAD 83/NSRS 2007

40 20 0 40 80
PLANS

DETAIL 7
STANDARD BASE DITCH
(Not to Scale)

Type of Liner= Class I Rip-Rap

FROM –L– STA.29+45RT TO STA.30+50RT
EST. 105 TONS CLASS I RIPRAP
EST. DDE 140 CY
EST. 177 SY GEOTEXTILE

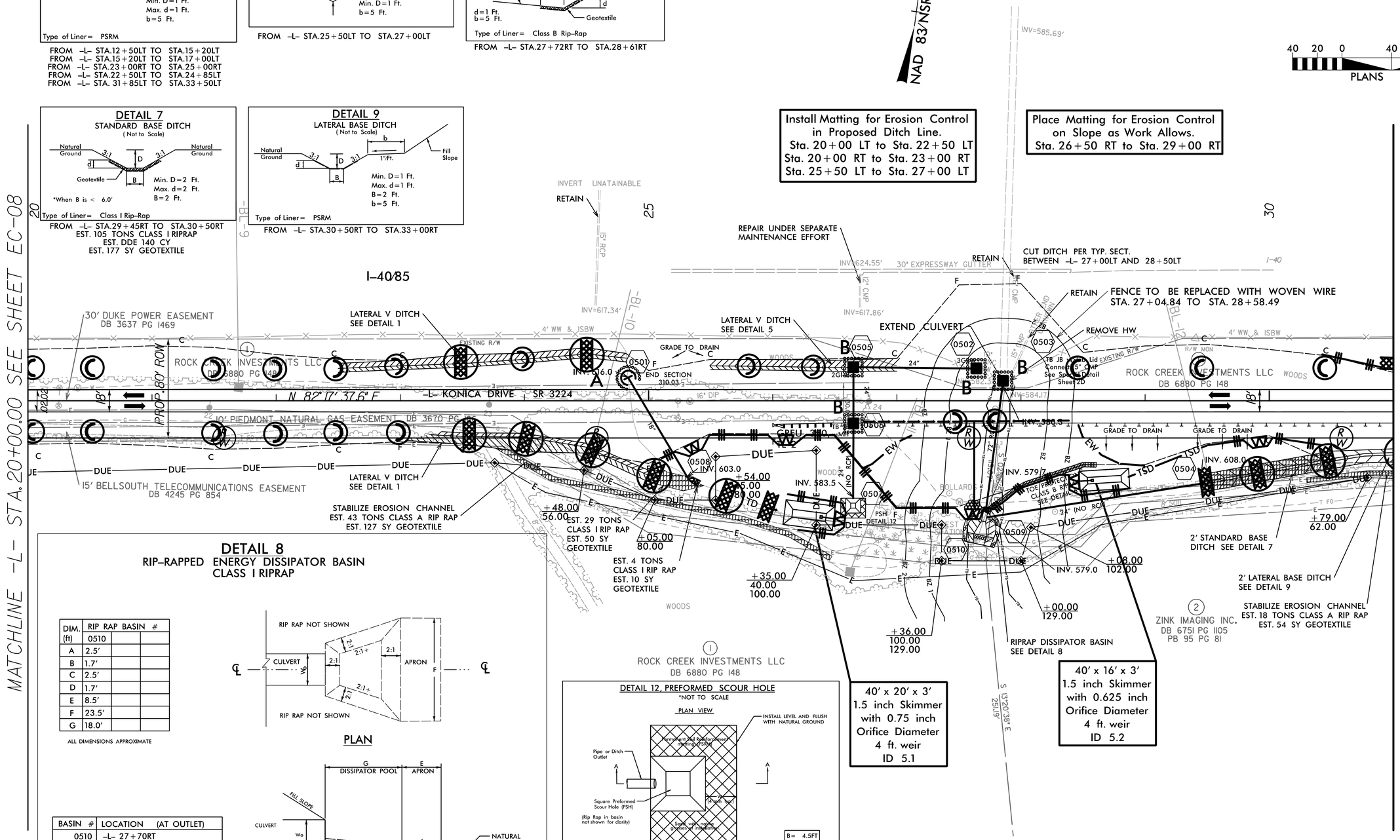
DETAIL 9
LATERAL BASE DITCH
(Not to Scale)

Type of Liner= PSRM

FROM –L– STA.30+50RT TO STA.33+00RT

Install Matting for Erosion Control in Proposed Ditch Line.
Sta. 20+00 LT to Sta. 22+50 LT
Sta. 20+00 RT to Sta. 23+00 RT
Sta. 25+50 LT to Sta. 27+00 LT

Place Matting for Erosion Control on Slope as Work Allows.
Sta. 26+50 RT to Sta. 29+00 RT

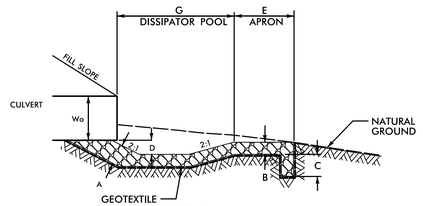


DETAIL 8
RIP-RAPPED ENERGY DISSIPATOR BASIN
CLASS I RIPRAP

DIM. (ft)	RIP RAP BASIN # 0510		
A	2.5'		
B	1.7'		
C	2.5'		
D	1.7'		
E	8.5'		
F	23.5'		
G	18.0'		

ALL DIMENSIONS APPROXIMATE

PLAN



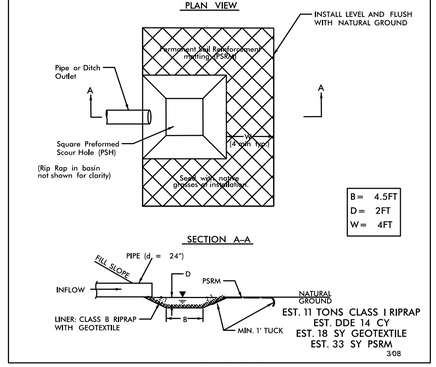
℄ SECTION

BASIN #	LOCATION (AT OUTLET)
0510	–L– 27+70RT

7/08

FROM –L– STA.27+63RT TO STA.27+77RT
EST. 56 TONS CLASS I RIPRAP
EST. DDE 70 CY
EST. 60 SY GEOTEXTILE

DETAIL 12, PREFORMED SCOUR HOLE
*NOT TO SCALE



3/08

–L– STA. 26+65RT

DATE/TIME: 12/5/22 PM
DGN: R:\900_Work\910_CADD\0_NCDOT_TIP\Environmental\Design\B4960_Reu_EC_psh09.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-10/CONST.6
R/W SHEET NO.	

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259FAX

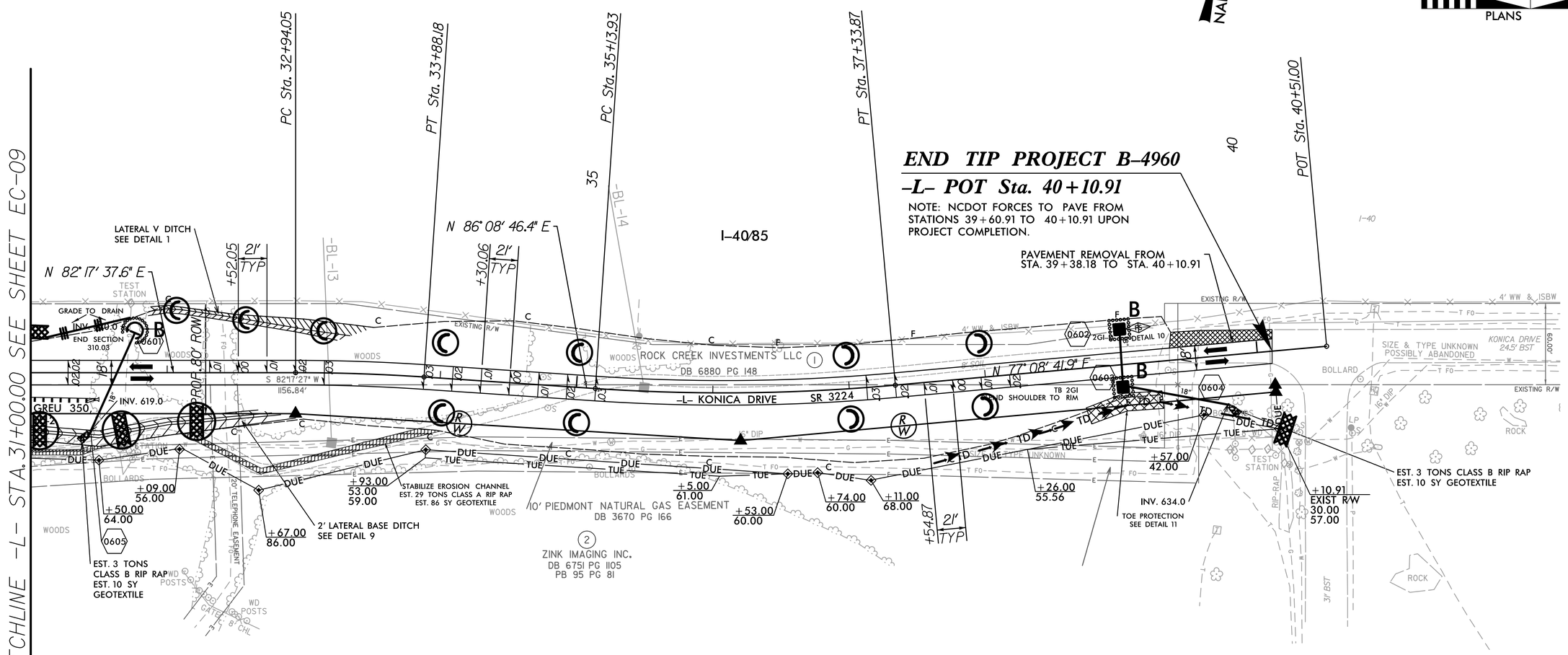
PERMANENT SOIL REINFORECMENT MAT					
-L-	30+50	TO	33+00	RT	222 CY
-L-	31+85	TO	33+50	LT	110 CY
-L-	38+70	TO	39+30	RT	87 CY
-L-	38+71	TO	39+28	RT	80 CY

Install Matting for Erosion Control in Proposed Ditch Line.
Sta. 33+50 LT to Sta. 39+35 LT
Sta. 33+00 RT to Sta. 39+00 RT

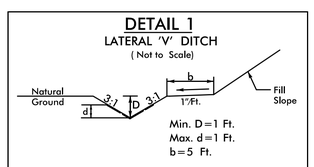
FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 6

NAD 83/NSRS 2007

40 20 0 40 80
PLANS



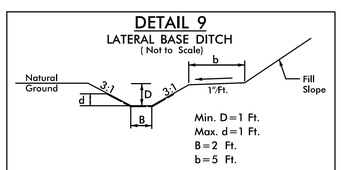
DETAIL 1
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = PSRM

FROM -L- STA.12+50LT TO STA.15+20LT
FROM -L- STA.15+20LT TO STA.17+00LT
FROM -L- STA.23+00RT TO STA.25+00RT
FROM -L- STA.22+50LT TO STA.24+85LT
FROM -L- STA. 31+85LT TO STA.33+50LT

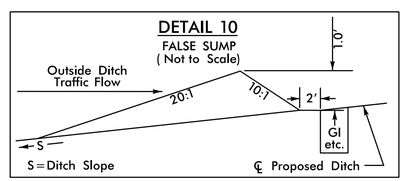
DETAIL 9
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = PSRM

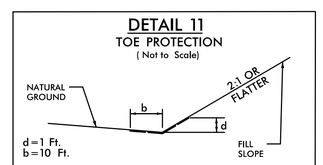
FROM -L- STA.30+50RT TO STA.33+00RT

DETAIL 10
FALSE SUMP
(Not to Scale)



FROM -L- STA.39+04LT TO STA.39+34LT

DETAIL 11
TOE PROTECTION
(Not to Scale)



Type of Liner = PSRM

FROM -L- STA.38+70RT TO STA.39+30RT

-L- KONICA DRIVE

PI Sta 33+41.13	PI Sta 36+24.12
Δ = 3° 51' 08.9" (RT)	Δ = 9° 00' 04.5" (LT)
D = 4° 05' 33.2"	D = 4° 05' 33.2"
L = 941.3'	L = 219.94'
T = 47.08'	T = 110.20'
R = 1,400.00'	R = 1,400.00'
DS = 40 MPH	DS = 40 MPH
e = 3.0%	e = 3.0%
RUNOFF = 63.0'	RUNOFF = 63.0'

DATE/TIME: 12:53:23 PM
DGN: R:\900_Work\910_CADD\0_NCDOT_TIP\Environmental\Design\B4960_Rev_EC_psht01.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	EC-11/CONST.7
R/W SHEET NO.	

Prepared in the Office of: AECOM — NC FIRM LICENSE No: F-0342, 701 Corporate Center Drive, Suite 475, Raleigh, NC 27607, (919) 854-6200 - (919) 854-6259FAX

NAD 83/NSRS 2007

40 20 0 40 80
PLANS

FINAL GRADE EROSION CONTROL FOR CONSTRUCTION SHEET 7

BEGIN CONSTRUCTION
-Y1- Sta. 9+75.00

END CONSTRUCTION
-Y1- Sta. 16+87.92

-Y1- POT Sta. 9+60.00
-Y1- PC Sta. 10+00.00
-Y1- PT Sta. 13+16.34
-Y1- PC Sta. 13+57.95
-Y1- PRC Sta. 14+53.39
-Y1- PT Sta. 14+99.76
-Y1- PC Sta. 16+53.46
-Y1- PT Sta. 17+63.66
-Y1- PC Sta. 19+26.12
-Y1- PT Sta. 20+53.89

END TURNAROUND
STA. 10+45.00
MATCH EXIST

EST. 3 TONS CLASS B RIP RAP EST. 10 SY GEOTEXTILE RETAIN

DO NOT DISTURB SEWER LINE

REMOVE BRIDGE SUPERSTRUCTURE AND INTERIOR BENTS. END BENTS TO REMAIN. NO BRIDGE APPROACH EXCAVATION REQUIRED.

FLOATING TURBIDITY CURTAIN

COFFER DAM
BLOCK NO MORE THAN 50 PERCENT OF THE CHANNEL AT A TIME

-Y1- JUDGE ADAMS ROAD

N 9° 38' 53.6" W
N 16° 24' 48.8" W
N 1° 07' 35.8" E
N 2° 11' 53.4" E

GUILFORD COUNTY
DB 3851 PG 1213
PB 100 PG 77-79

CITY OF BURLINGTON
DB 2853 PG 175

ROCK CREEK INVESTMENTS LLC
DB 6880 PG 148

BM #2
-BL- STATION 12+18.00
127' RIGHT
ELEV=560.43'

LAKE MACINTOSH
WE 549.5'

SMALL PIECE OF GAS LINE LIKELY ABANDONED

SIZE & TYPE UNKNOWN

-Y1- JUDGE ADAMS ROAD

PI Sta 11+58.74	PI Sta 14+05.97	PI Sta 14+76.62	PI Sta 17+09.00	PI Sta 19+90.01
Δ = 11° 50' 47.0" (LT)	Δ = 15° 37' 23.0" (LT)	Δ = 8° 51' 27.8" (RT)	Δ = 17° 32' 24.5" (RT)	Δ = 1° 15' 43.6" (RT)
D = 3° 44' 41.4"	D = 16° 22' 12.8"	D = 19° 05' 54.9"	D = 15° 54' 55.8"	D = 0° 59' 16.3"
L = 316.34'	L = 95.44'	L = 46.38'	L = 110.21'	L = 127.76'
T = 158.74'	T = 48.02'	T = 23.24'	T = 55.54'	T = 63.88'
R = 1,530.00'	R = 350.00'	R = 300.00'	R = 360.00'	R = 5,800.00'

8/17/99

DATE/TIME: 3:03:57 PM
DGN: R:\900_Work\910_CADV70_NCDOT_TIP\Environmental\Design\B4960_Reu_EC_psh1.dgn

DocuSign Envelope ID: C4E7D66A-F5A0-4A8D-A2C6-8FF394386C60

09/08/99

TIP PROJECT: B–4960

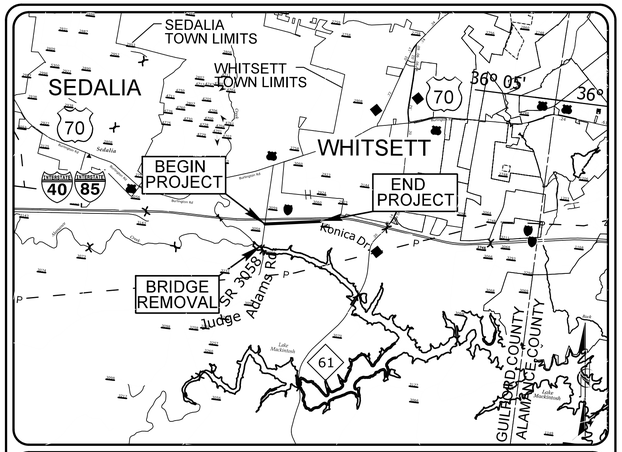
T.I.P. NO.	SHEET NO.
B–4960	UC–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
GUILFORD COUNTY

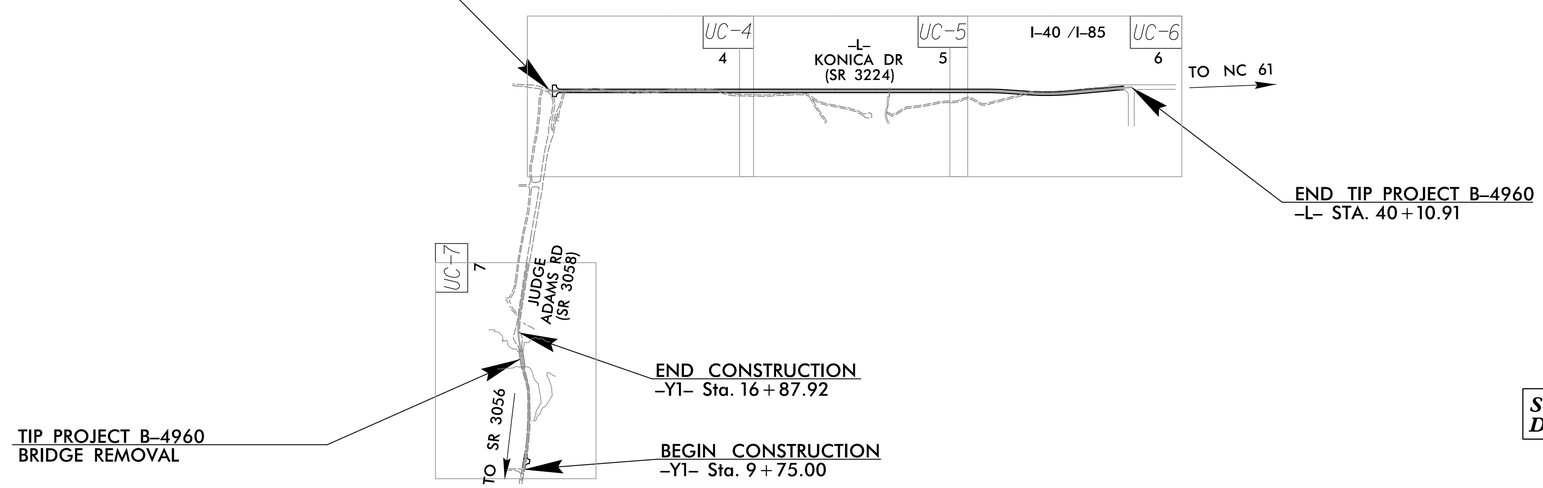
LOCATION: SR 3224 (KONICA DRIVE) AND
SR 3058 (JUDGE ADAMS RD) AT LITTLE ALAMANCE CREEK

TYPE OF WORK: WATER LINE RELOCATION



VICINITY MAP
NOT TO SCALE

NAD 83/
NSRS 2007



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SUBMITTAL: FINAL UTILITY PLANS
DATE: AUGUST 2018

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

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UC–3A THRU UC–3B	CONSTRUCTION DETAILS
UC–4 THRU UC–7	UTILITY CONSTRUCTION SHEETS
UC–8	PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(A) WATER: CITY OF GREENSBORO
(B) SANITARY SEWER: CITY OF GREENSBORO

PREPARED IN THE OFFICE OF:

AECOM

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
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D. Stephen Scruggs, PE	UTILITY PROJECT MANAGER
Gary Swinson	PROJECT UTILITY COORDINATOR
Gary Swinson	PROJECT UTILITY ENGINEER

SEAL

8/28/2018

NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

DocuSigned by:
D. Stephen Scruggs
957A10CE3D5E477...

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

Donna Jackson, PE	UTILITIES REGIONAL ENGINEER
Don Proper	UTILITIES ENGINEER
Donna Jackson, PE	UTILITIES AREA COORDINATOR
Don Langley	UTILITIES COORDINATOR

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

PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 12" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — 12" SS
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown) — PROP O/H POW LINES
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown) — ?UTL
- Designated Utility Line (Type as Shown) — ?UTL

REV: 2/1/2012

5/14/99

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5/14/99

UTILITY CONSTRUCTION

Prepared In the Office of:

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AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
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PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-3
DESIGNED BY:	8/28/2018
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REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	D. Stephen Scruggs UTILITIES CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

DocuSigned by: D. Stephen Scruggs

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING WATER AND SEWER UTILITIES BELONG TO THE CITY OF GREENSBORO.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT 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 THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT 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.

6. 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 THE DEPARTMENT.

7. 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.

8. 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.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

1. ALL PROPOSED WATER MAIN TIE-OVERS SHALL BE PERFORMED AT NIGHT DURING OFF PEAK HOUR DEMAND AND COORDINATED WITH THE CITY OF GREENSBORO AND ALL AFFECTED USERS. THESE USERS INCLUDE: ZINK IMAGING, RED OAK BREWERY, AND CITY OF BURLINGTON.

LIST OF STANDARD DRAWINGS

1515.02 FIRE HYDRANT

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TIME: 2:50:53 PM
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PROJECT TYPICAL DETAILS

Prepared In the Office of:

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-3A

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8/28/2018

NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

DocuSigned by: D. Stephen Scruggs
8/28/2018

UTILITY CONSTRUCTION PLANS ONLY

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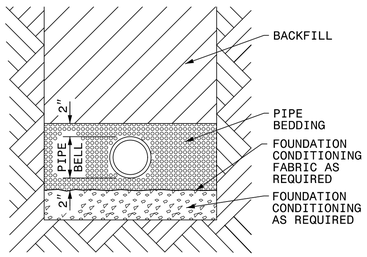
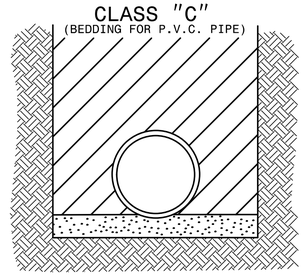
UTILITY CONSTRUCTION

TRENCH DETAIL



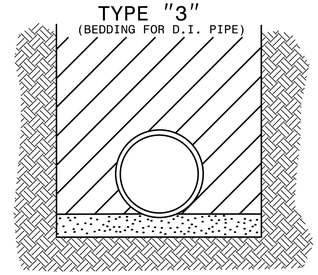
PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

CLASS "C"
(BEDDING FOR P.V.C. PIPE)



PIPE BEDDED IN LOOSE MATERIAL, LIGHTLY TAMPED WITH A MINIMUM OF 6" UNDER PIPE. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

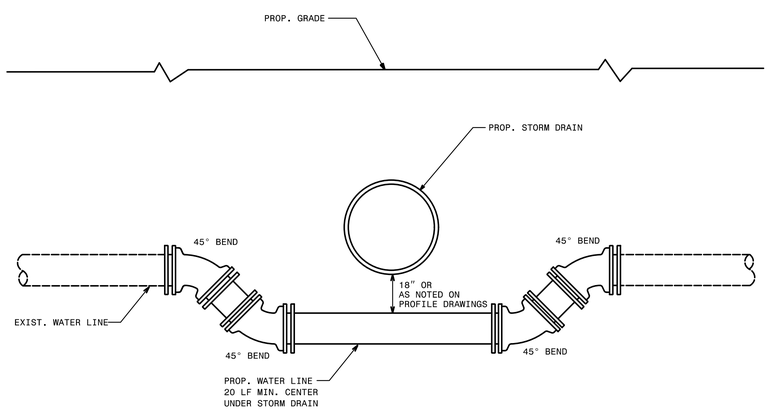
TYPE "3"
(BEDDING FOR D.I. PIPE)



PIPE BEDDED IN 4" MINIMUM LOOSE SOIL. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

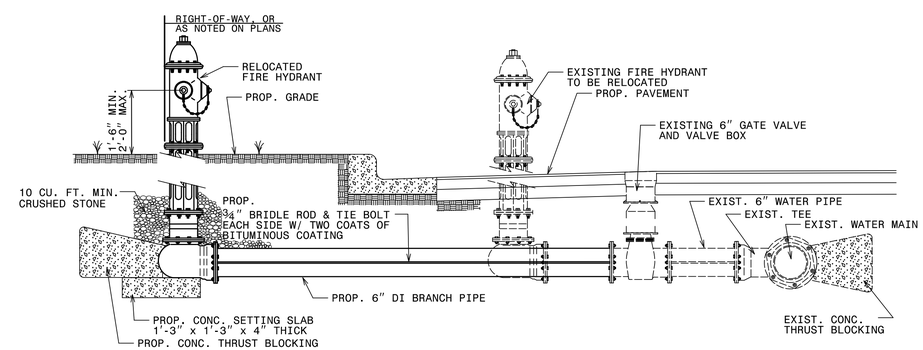
MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (inches)	TRENCH WIDTH (inches)	NOMINAL PIPE SIZE (inches)	TRENCH WIDTH (inches)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		



WATER MAIN RELOCATION (DOWN/UNDER) AT PROPOSED STORM DRAIN CROSSING

NTS



FIRE HYDRANT RELOCATION DETAIL

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DATE: 8/27/2018
TIME: 2:51:15 PM
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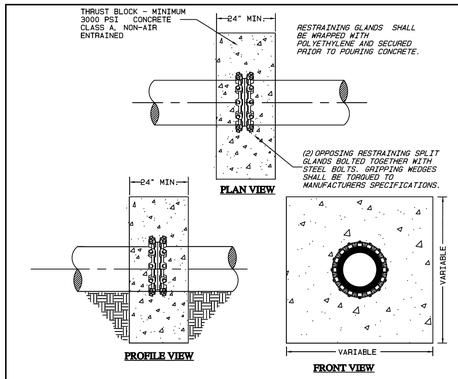


NOTES:

1. SEE CITY OF GREENSBORO - WATER LINE AND SEWER LINE STANDARD CONSTRUCTION SPECIFICATIONS, SUB-ARTICLE 3.02 & 3.03 FOR (TRENCH AND BACKFILL) AND (TRENCH STABILIZATION) REQUIREMENTS.
2. THRUST BLOCK SHALL BE ORIENTED APPROXIMATELY CENTER OF PIPE JOINT.
3. *OPTIONAL* A WELDED COLLAR (INSTALLED BY PIPE MANUFACTURER) MAY BE USED IN LIEU OF RESTRAINING GLANDS. ALL OTHER DESIGN REQUIREMENTS SHALL APPLY AS SHOWN.
4. FOR PIPES LARGER THAN 16" DIAMETER, THE DEADMAN THRUST RESTRAINT WITH BLOCKING MUST BE DESIGNED AND SEALED BY A N.C. PROFESSIONAL ENGINEER.
5. ANY PROPOSED MODIFICATIONS TO THIS STANDARD BASED ON THE FIELD CONDITIONS MUST BE PRE-APPROVED BY THE CITY OF GREENSBORO FIELD INSPECTOR AND/OR THE ENGINEER OF RECORD.
6. QUANTITIES SHOWN BELOW ARE TO THE NEAREST QUARTER YARD AND ARE BASED ON MINIMUM MASS WEIGHT REQUIREMENTS OF THE TEST PRESSURES SHOWN.

MINIMUM CUBIC YARDS OF CONCRETE REQUIRED

PIPE DIAMETER	**150 PSI TEST PRES.**	200 PSI TEST PRES.	250 PSI TEST PRES.
6"	**0.75**	1.0	1.25
8"	**1.5**	2.0	2.25
10"	**2.0**	3.0	3.5
12"	**3.0**	4.0	5.0
16"	**5.5**	7.25	9.0

C I T Y O F G R E E N S B O R O

DEADMAN THRUST RESTRAINT WITH MASS WEIGHT BLOCKING

STD. NO.	REV.
118	08-13 06-15

SIZE OF BEND		THRUST	REQUIRED RODS	MAXIMUM SIZE EACH STRAP
6"	11-1/4°	831 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	22-1/2°	1, 655 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	45°	3, 246 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	90°	5, 998 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	PLUG	4, 241 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
8"	11-1/4°	1, 478 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	22-1/2°	2, 942 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	45°	5, 771 lbs.	2 EACH @ 5/8" DIA.	2"x1/2" THICK
	90°	10, 663 lbs.	2 EACH @ 3/4" DIA.	2"x1/2" THICK
	PLUG	7, 540 lbs.	2 EACH @ 3/4" DIA.	2"x1/2" THICK
10"	11-1/4°	2, 310 lbs.	2 EACH @ 1/2" DIA.	2"x1/2" THICK
	22-1/2°	4, 597 lbs.	2 EACH @ 5/8" DIA.	2"x1/2" THICK
	45°	9, 017 lbs.	2 EACH @ 3/4" DIA.	2"x1/2" THICK
	90°	16, 661 lbs.	2 EACH @ 1" DIA.	2"x1/2" THICK
	PLUG	11, 781 lbs.	2 EACH @ 7/8" DIA.	2"x1/2" THICK
12"	11-1/4°	3, 326 lbs.	2 EACH @ 3/4" DIA.	2"x1/2" THICK
	22-1/2°	6, 619 lbs.	2 EACH @ 3/4" DIA.	2"x1/2" THICK
	45°	12, 984 lbs.	2 EACH @ 7/8" DIA.	2"x1/2" THICK
	90°	23, 992 lbs.	2 EACH @ 1" DIA.	2"x1/2" THICK
	PLUG	16, 965 lbs.	2 EACH @ 1" DIA.	2"x1/2" THICK
16"	11-1/4°	5, 912 lbs.	2 EACH @ 7/8" DIA.	2"x1/2" THICK
	22-1/2°	11, 768 lbs.	2 EACH @ 7/8" DIA.	2"x1/2" THICK
	45°	23, 083 lbs.	2 EACH @ 1-1/8" DIA.	2"x5/8" THICK
	90°	42, 652 lbs.	2 EACH @ 1-1/4" DIA.	2"x5/8" THICK
	PLUG	30, 159 lbs.	2 EACH @ 1-1/4" DIA.	2"x5/8" THICK

NOTES:

STEEL RODS ARE CALCULATED ON THE BASIS OF NET THREADED SECTION USING MAXIMUM TENSILE STRESS OF 20, 000 PSI.

STRAPS ARE CALCULATED ON BASIS OF MAXIMUM SHEAR STRESS OF 13, 000 PSI.

ALL RODS AND STRAPS ARE TO BE HEAVILY COATED WITH AN APPROVED BITUMASTIC COMPOUND.

C I T Y O F G R E E N S B O R O

STANDARD FOR RODS AND STRAPS TO HOLD FITTINGS WHERE CONCRETE REACTION BLOCKING CANNOT BE USED

STD. NO.	REV.
112	08-02 12-05 09-10

NOTES:

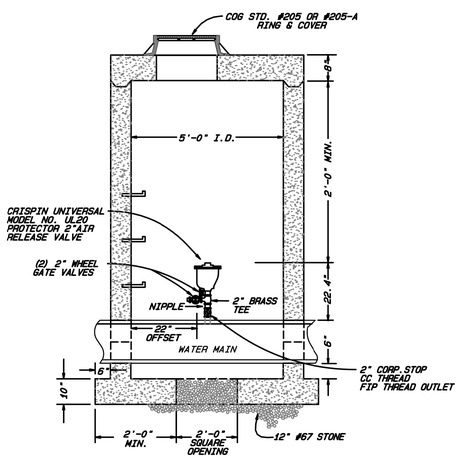
CONCRETE SHALL BE CLASS AA, 4000 PSI AS PER ASTM C-478.

STEEL REINFORCING SHALL MEET ASTM C-185 (4" DIA) OR ASTM C-478 (5" DIA).

MANHOLES OVER 3'-6" IN DEPTH SHALL BE PROVIDED WITH STEPS 16" ON CENTERS. STEPS SHALL BE IN ACCORDANCE WITH COG STD. #206.

ON NEW INSTALLATION A MAXIMUM OF (2) GRADE RINGS CAN BE USED.

ALL PIPE TO BE MINIMUM 2" BRASS AND NIPPLES TO BE 2" BRASS.



SECTION THRU MANHOLE

C I T Y O F G R E E N S B O R O

STANDARD AIR RELIEF VALVE WITH ASSEMBLY AND MANHOLE FOR WATER LINES

STD. NO.	REV.
116	06-99 09-02 11-01 06-07 08-02

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	FAIR DRY CLAY 4,000 LBS/FT²	SOFT CLAY 2,000 LBS/FT²	GRAVEL COURSE 16,000 LBS/FT²	ALWAYS DRY CLAY 8,000 LBS/FT²	SAND COMPACT FIRM 8,000 LBS/FT²	SAND CLEAN DRY 4,000 LBS/FT²	QUICKSAND-VERY POOR 500-1,000 LBS/FT²	ROCK-GOOD 10,000 PSF
6"									
11-1/4°	812	1 FT²	1	1	1	1	1	1	1
22-1/2°	1653	1 FT²	1	1	1	1	1	2	1
45°	3247	1 FT²	2	1	1	1	1	4	1
90°	5994	2 FT²	3	1	1	1	2	6	1
PLUG	4239	1 FT²	2	1	1	1	1	4	1
8"									
11-1/4°	1444	1 FT²	1	1	1	1	1	2	1
22-1/2°	2939	1 FT²	2	1	1	1	1	3	1
45°	5773	2 FT²	3	1	1	1	2	6	1
90°	10656	3 FT²	6	1	2	2	3	11	2
PLUG	7536	2 FT²	4	1	1	1	2	8	1
12"									
11-1/4°	3248	1 FT²	2	1	1	1	1	3	1
22-1/2°	6612	2 FT²	4	1	1	1	2	7	1
45°	12988	3 FT²	7	1	2	2	3	13	2
90°	23976	6 FT²	12	2	3	3	6	24	3
PLUG	16956	4 FT²	9	1	2	2	4	17	2
16"									
11-1/4°	5775	3 FT²	3	1	1	1	2	6	1
22-1/2°	11756	3 FT²	6	1	2	1	3	12	1
45°	23090	6 FT²	12	2	3	3	6	23	3
90°	42624	11 FT²	22	3	6	6	11	43	4
PLUG	30144	8 FT²	15	2	4	4	8	30	3

BASED ON TEST PRESSURE OF 150 PSI

NOTES:

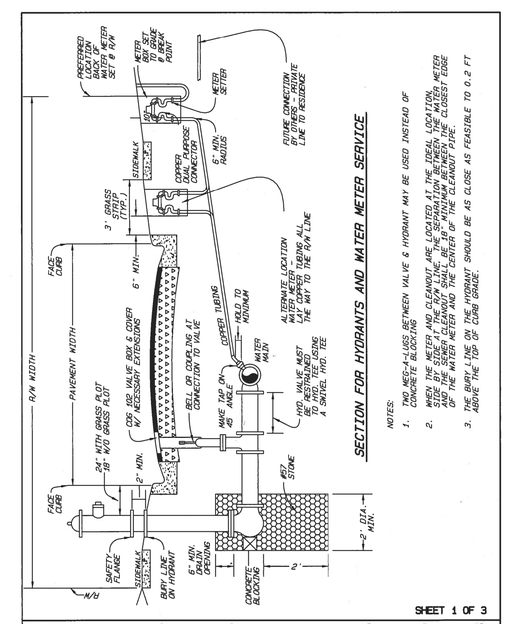
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6"-90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY.

C I T Y O F G R E E N S B O R O

STANDARD REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

STD. NO.	REV.
106	



SECTION FOR HYDRANTS AND WATER METER SERVICE

NOTES:

1. TWO METER VALVES BETWEEN VALVE & HYDRANT MAY BE USED INSTEAD OF TWO METER VALVES.
2. WHEN THE METER AND CLEANOUT ARE LOCATED AT THE IDEAL LOCATION, SIDE BY SIDE AT THE R/W LINE, THE SEPARATION BETWEEN THE WATER METER AND THE CLEANOUT SHALL BE A MINIMUM OF 18" WITH THE CLOSEST EDGE OF THE WATER METER AND THE CENTER OF THE CLEANOUT PIPE.
3. THE BURY LINE ON THE HYDRANT SHOULD BE AS CLOSE AS FEASIBLE TO 0.2 FT. ABOVE THE TOP OF CURB GRADE.

SHEET 1 OF 3

C I T Y O F G R E E N S B O R O

HOUSE CONNECTION AND HYDRANT SETTING DETAIL

STD. NO.	REV.
101	09-85 12-12 08-02 03-15 08-04 06-16

Prepared In the Office of:

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B-4960	UC-3B

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

8/28/2018

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PHONE:(919)707-6690
FAX:(919)250-4151

DocuSigned by: D. Stephen Scruggs
UTILITIES CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

PROJECT TYPICAL DETAILS

DATE: 8/27/2018
TIME: 2:51:45 PM
DGN: B4960_ue_psht035.dgn

DocuSign Envelope ID: C4E7D66A-F5A0-4A8D-A2C6-8FF394386C60

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919-854-6200 919-854-6259 (fax)
F - 0342

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-4

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

8/28/2018
NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS
DocuSigned by: D. Stephen Scruggs
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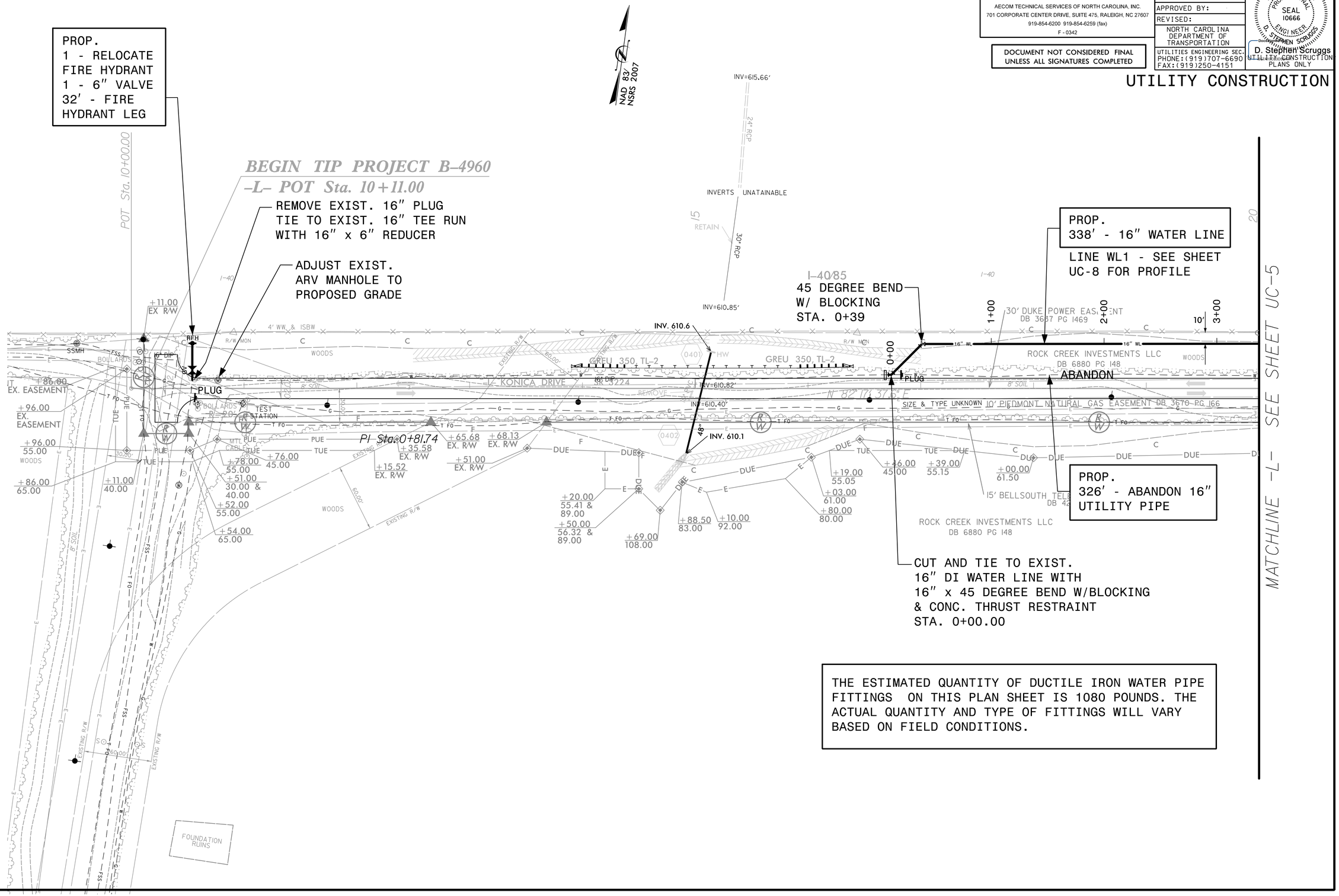
UTILITY CONSTRUCTION



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1080 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

DATE: 8/27/2018
TIME: 2:52:44 PM
DGN: B4960_uc_psh04.dgn

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919-854-6200 919-854-6259 (fax)
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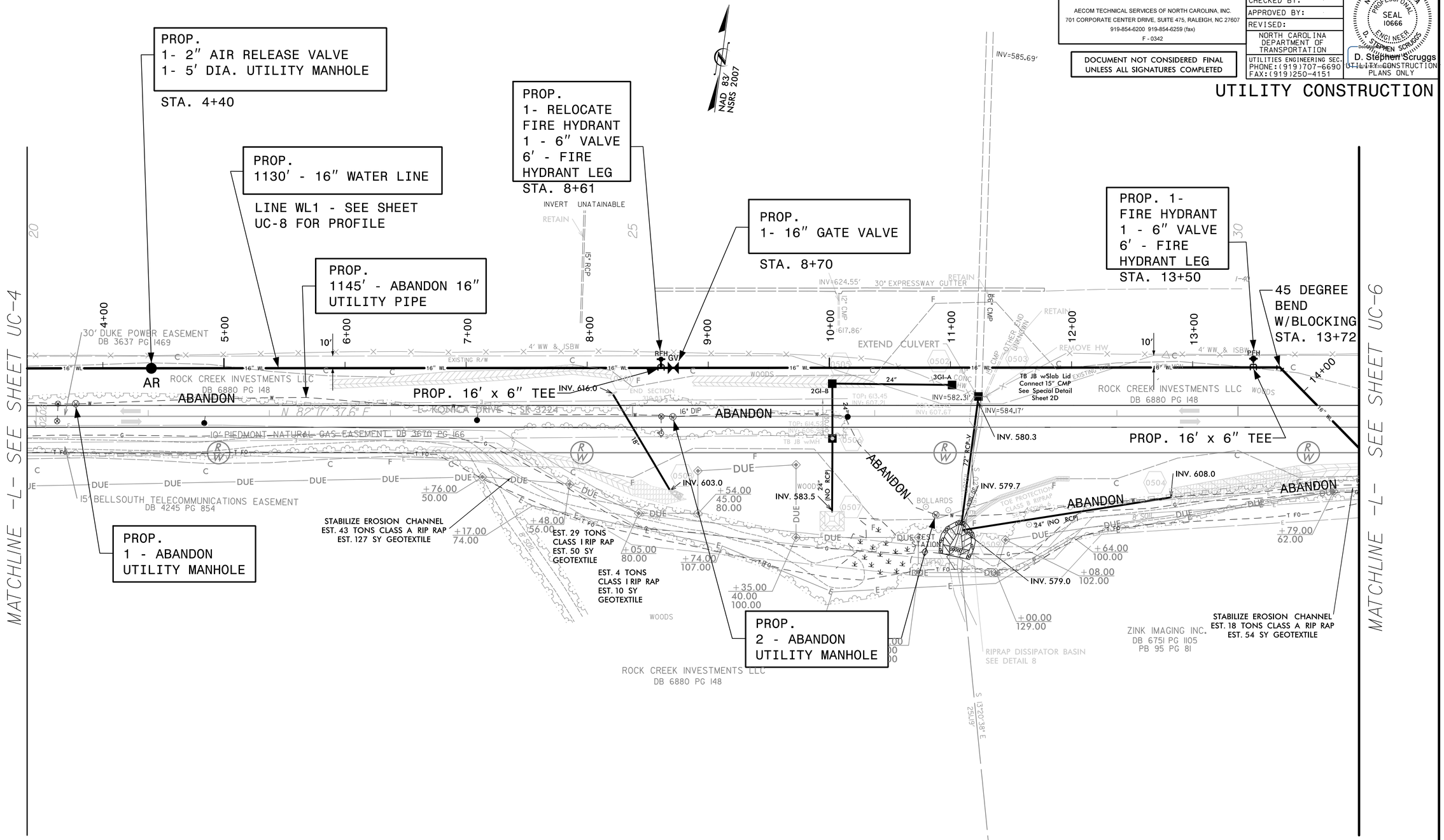
PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-5
DESIGNED BY:	8/28/2018
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	D. Stephen Scruggs UTILITIES CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

UTILITY CONSTRUCTION



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1420 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

DATE: 8/27/2018
TIME: 2:53:06 PM
DGN: B4960_uc_psh05.dgn

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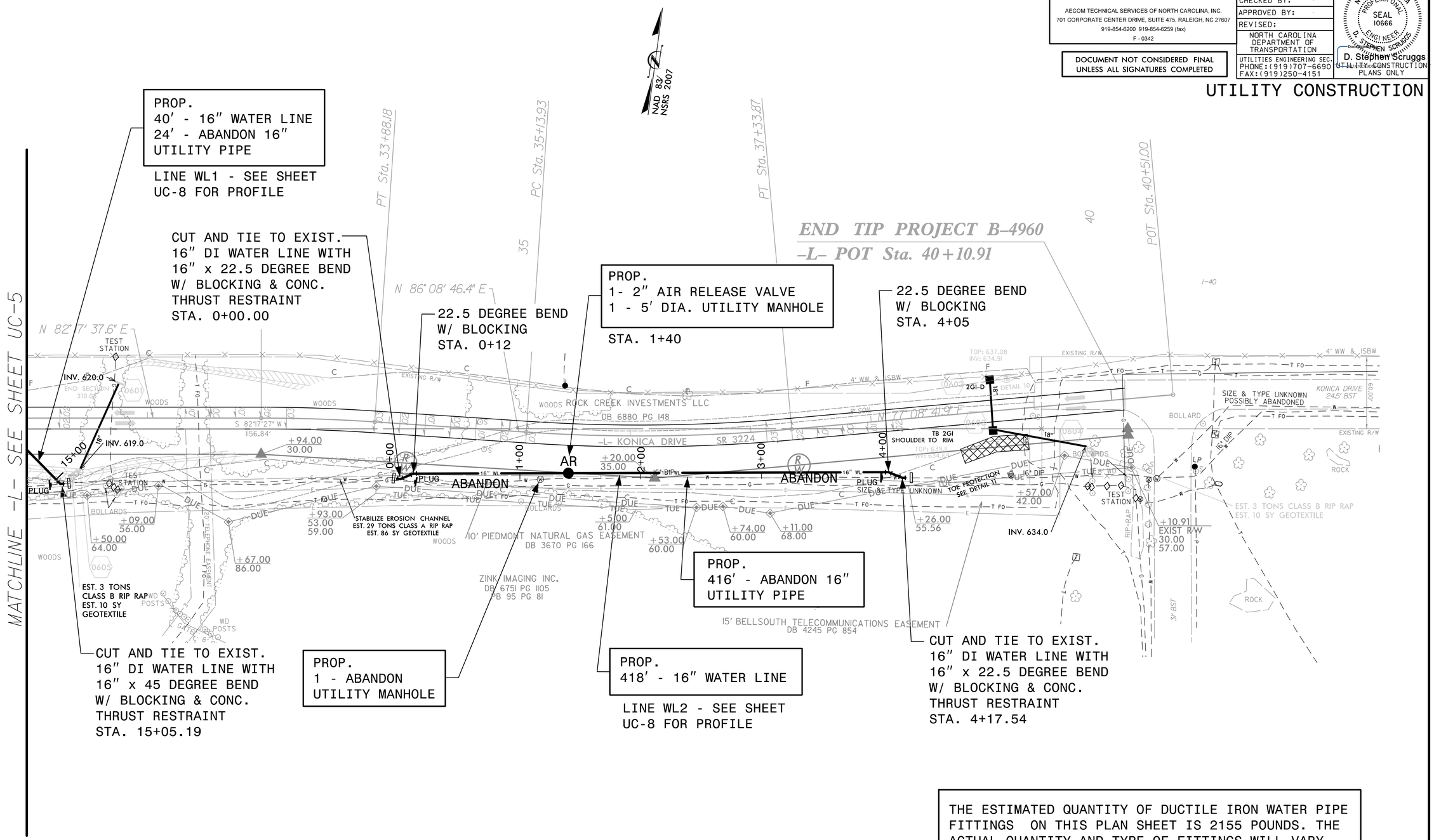
PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-6
DESIGNED BY:	8/28/2018
DRAWN BY:	NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	D. Stephen Scruggs
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 2155 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

DATE: 8/27/2018
TIME: 2:53:29 PM
DGN: B4960_uc_psh06.dgn

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-7
DESIGNED BY:	8/28/2018
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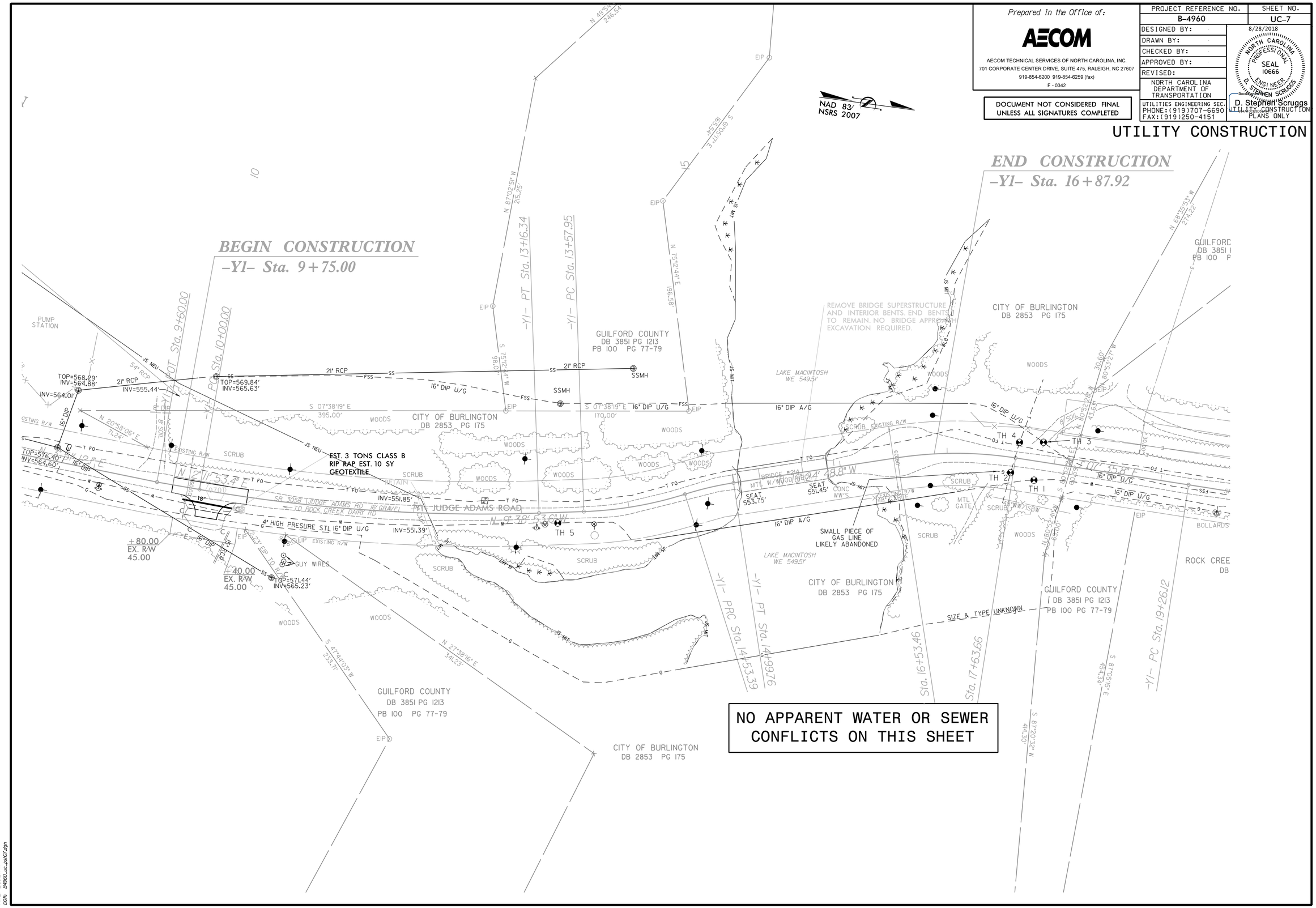
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	D. Stephen Scruggs UTILITIES CONSTRUCTION PLANS ONLY

NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

UTILITY CONSTRUCTION



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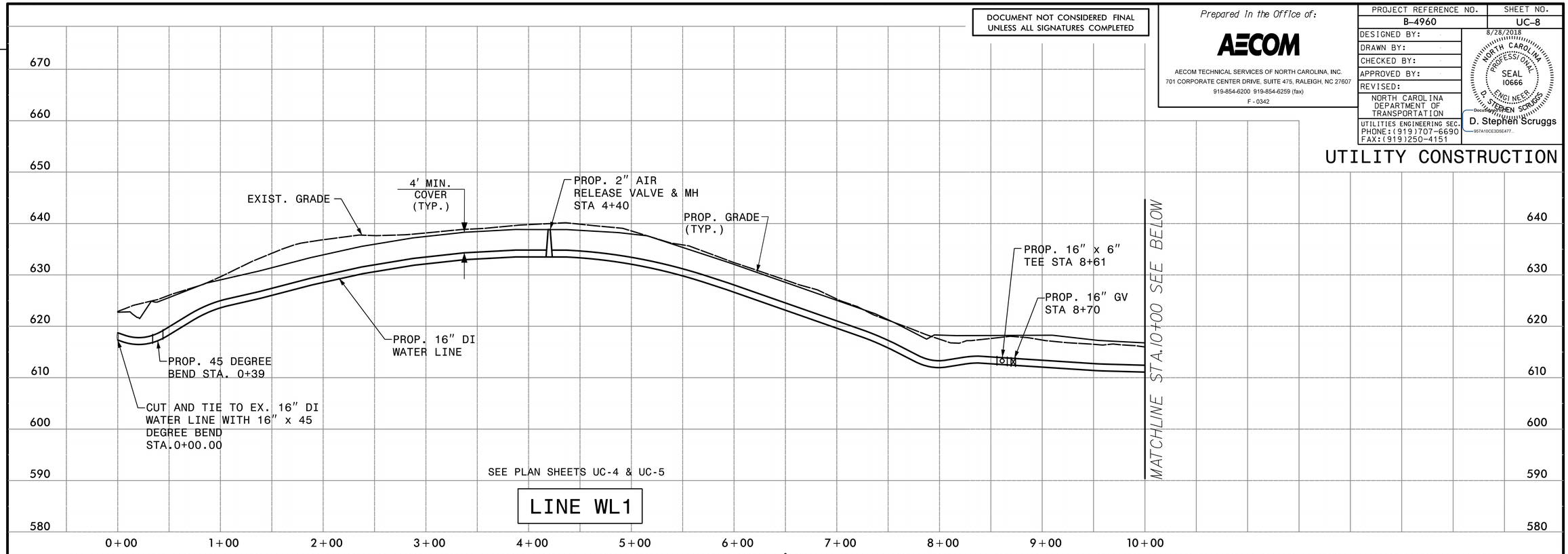
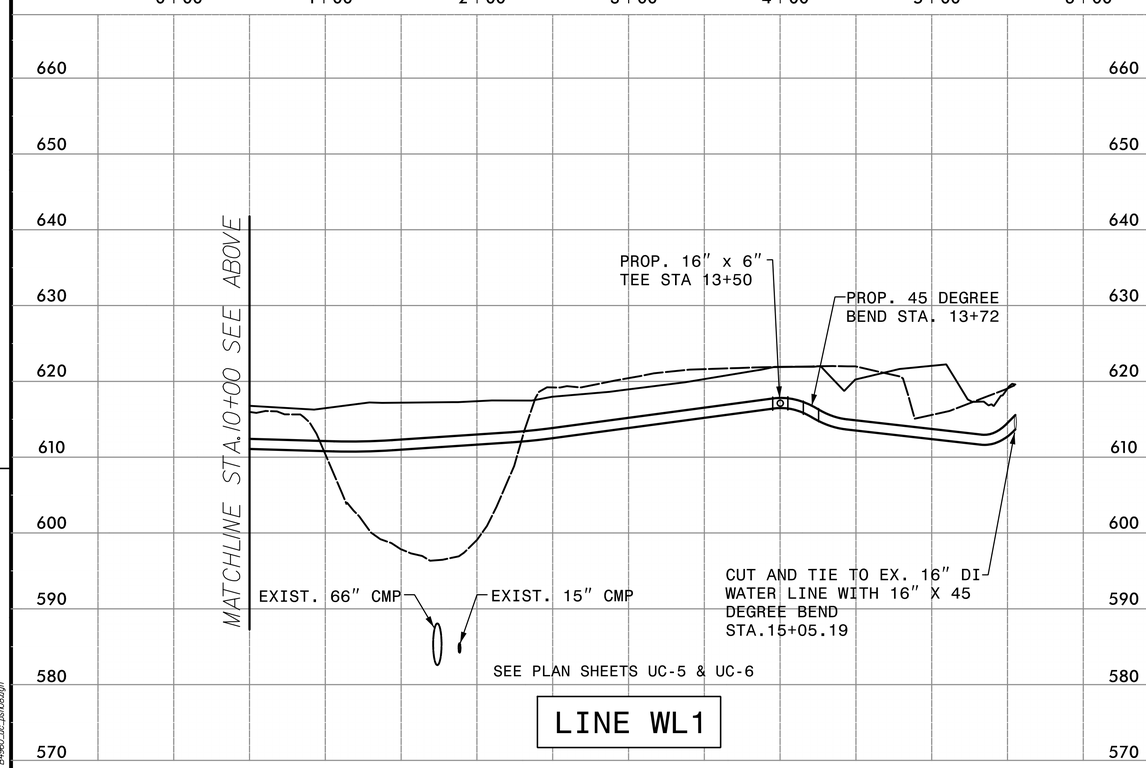
PROJECT REFERENCE NO.	SHEET NO.
B-4960	UC-8
DESIGNED BY:	8/28/2018
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	

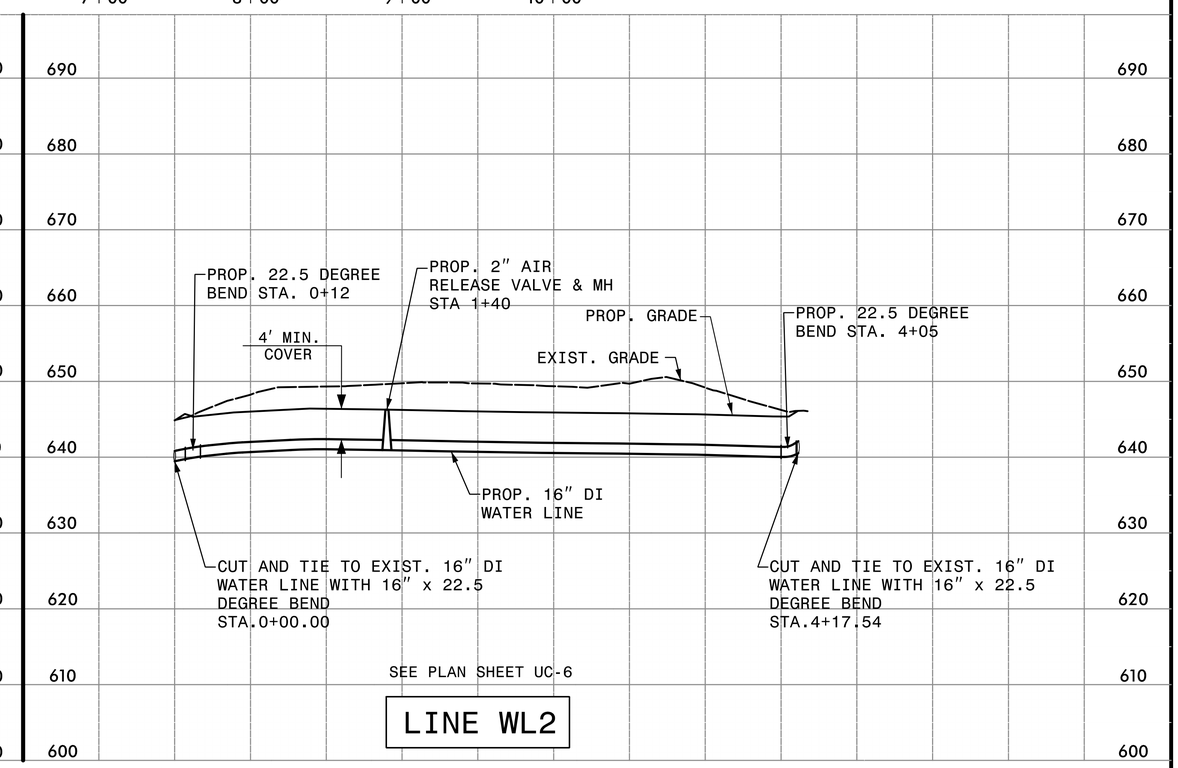
NORTH CAROLINA PROFESSIONAL SEAL 10666 ENGINEER D. STEPHEN SCRUGGS

DocuSigned by: D. Stephen Scruggs
957A10CE3D5E477...

UTILITY CONSTRUCTION







REVISIONS

DATE: 8/27/2018
TIME: 2:54:13 PM
DGN: B4960_uc_psh08.dgn

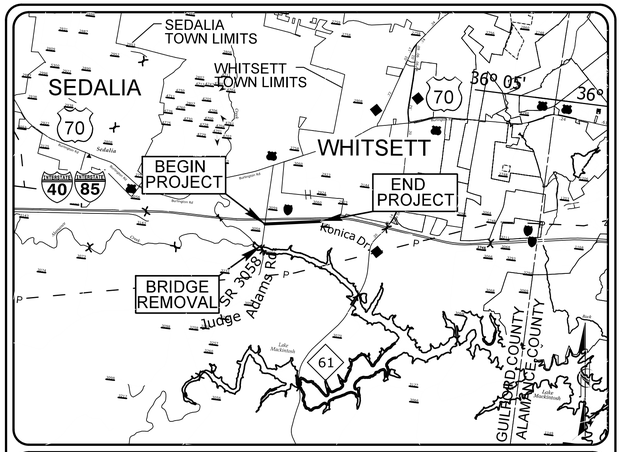
T.I.P. NO.	SHEET NO.
B–4960	UO–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

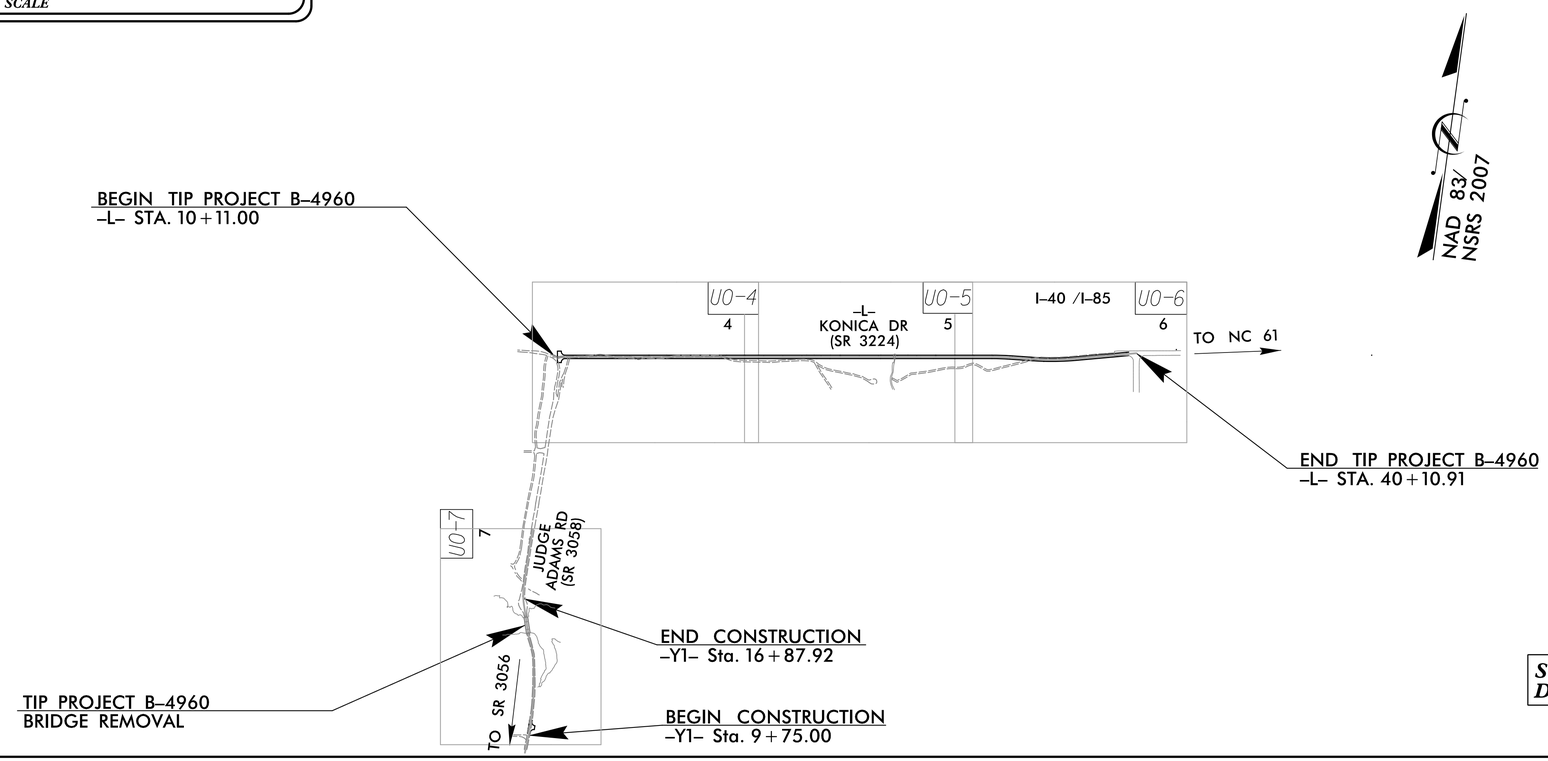
UTILITIES BY OTHERS PLANS
GUILFORD COUNTY

LOCATION: SR 3224 (KONICA DRIVE) AND
SR 3058 (JUDGE ADAMS RD) AT LITTLE ALAMANCE CREEK

TYPE OF WORK: POWER, TELECOM AND NATURAL GAS RELOCATIONS



VICINITY MAP
NOT TO SCALE



SUBMITTAL: FINAL UBO PLANS
DATE: AUGUST 2018

TIP PROJECT: B–4960

09/08/99

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

GRAPHIC SCALES

40 20 0 40 80
PLANS

40 20 0 40 80
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO–1	TITLE SHEET
UO–2	UTILITY SYMBOLOGY
UO–3	(OMITTED)
UO–4 THRU UO–7	UBO PLAN SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) Power Distribution – Duke Energy
(B) Telecommunications – AT&T
(C) Natural Gas – PNG

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701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)
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D. Stephen Scruggs, PE	UTILITY PROJECT MANAGER
Gary Swinson	PROJECT UTILITY COORDINATOR
Gary Swinson	PROJECT UTILITY ENGINEER

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699–1555
PHONE (919) 707–6690
FAX (919) 250–4151

Donna Jackson, PE	UTILITIES REGIONAL ENGINEER
Don Proper	UTILITIES ENGINEER
Donna Jackson, PE	UTILITIES AREA COORDINATOR
Don Langley	UTILITIES COORDINATOR

PROJECT REFERENCE NO.	SHEET NO.
B-4960	U0-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 12" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — 12" SS
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown) — PROP O/H POW LINES
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal — T
- CATV Pedestal — C
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown) — ?UTL
- Designated Utility Line (Type as Shown) — ?UTL

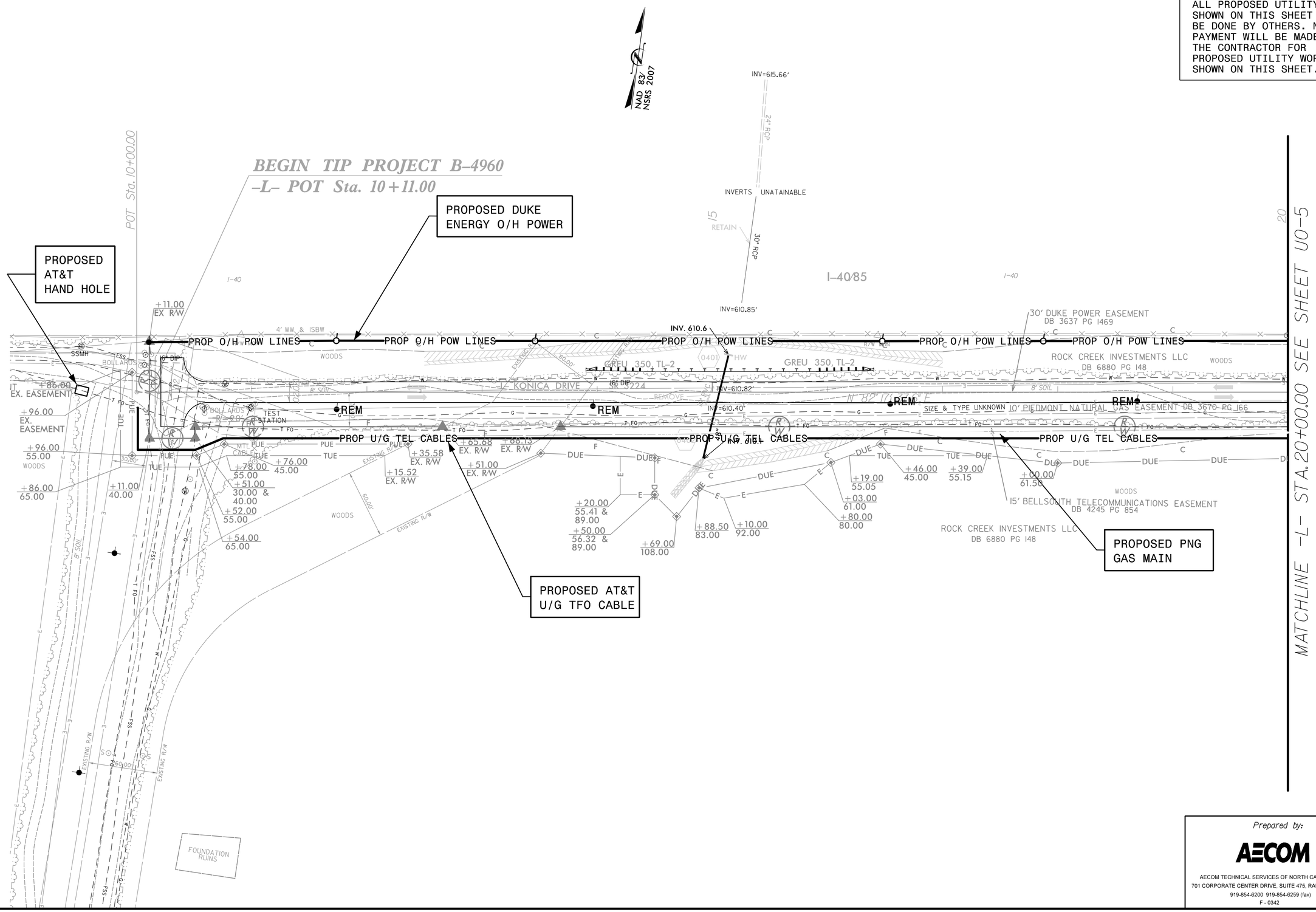
REV: 2/1/2012

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4960	UO-4

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.



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701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
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DATE: 6/27/2018
TIME: 3:03:49 PM
DGN: B4960Uo_sht04.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4960	UO-5

UTILITIES BY OTHERS

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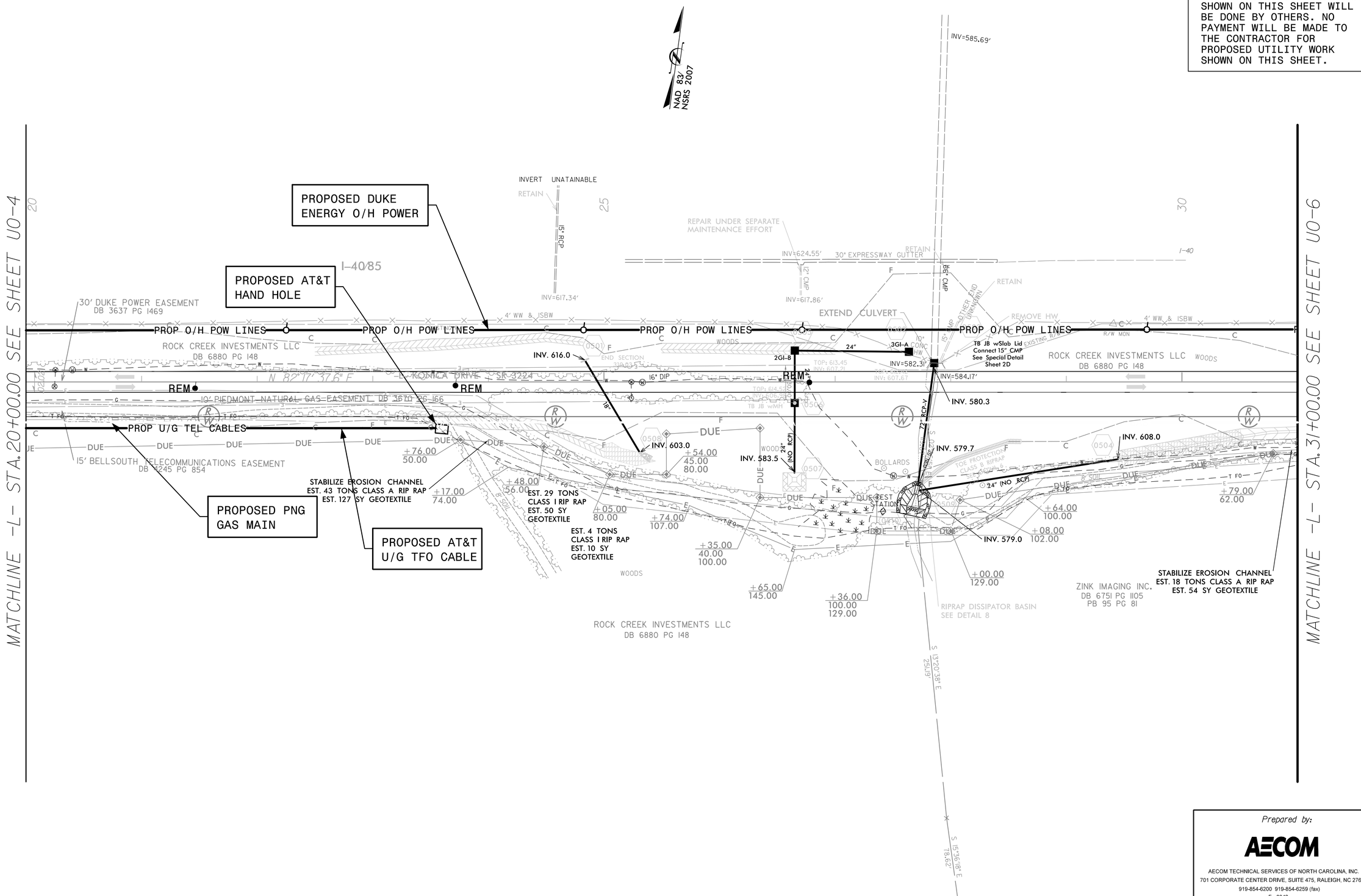

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919-854-6200 919-854-6259 (fax)
F - 0342

DATE: 8/27/2018
TIME: 3:04:01 PM
DGN: B4960_uo_sht05.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-4960	UO-6

UTILITIES BY OTHERS

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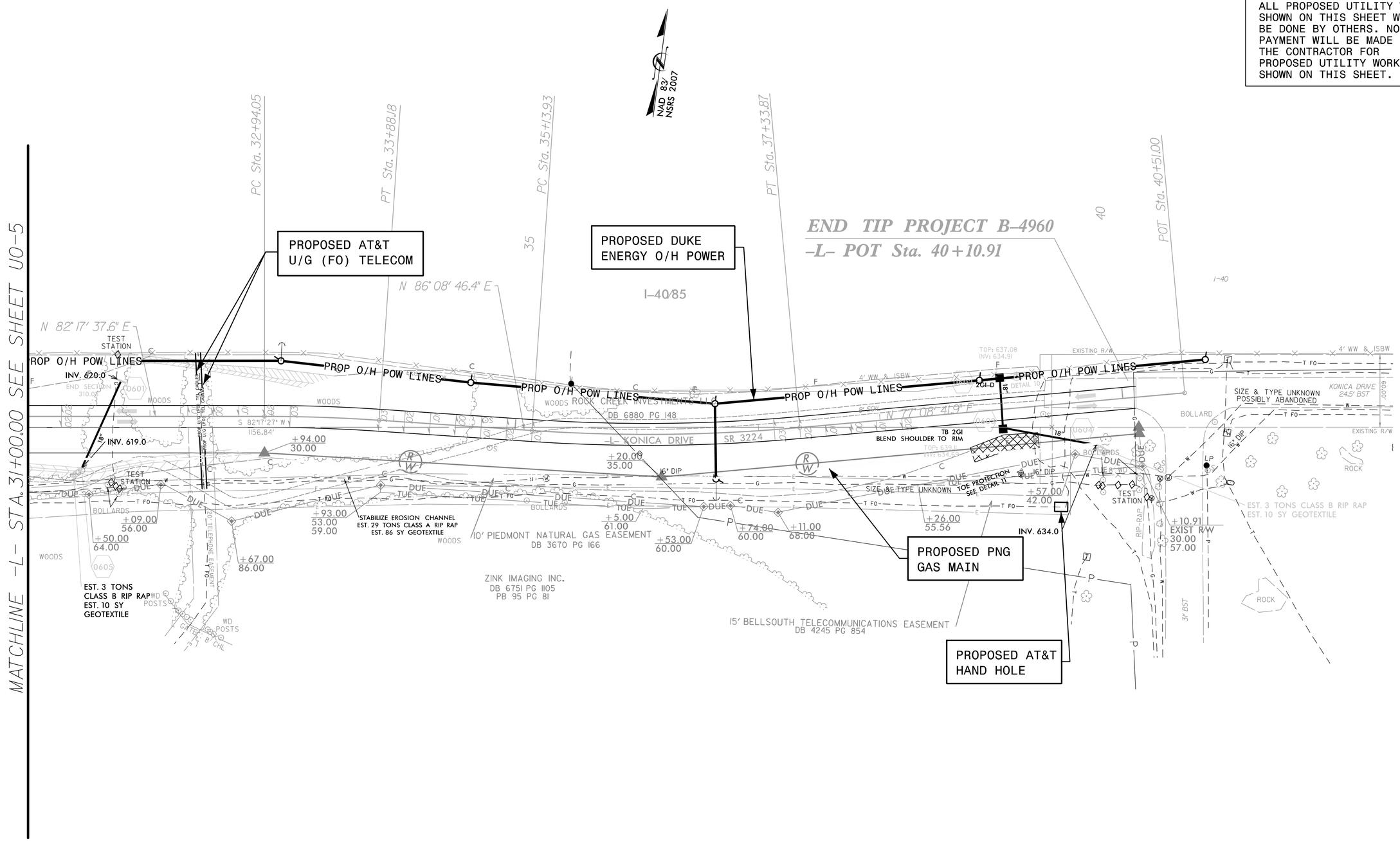

DATE: 8/27/2018
TIME: 3:54:53 PM
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Prepared by:

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PROJECT REFERENCE NO.	SHEET NO.
B-4960	UO-7

UTILITIES BY OTHERS

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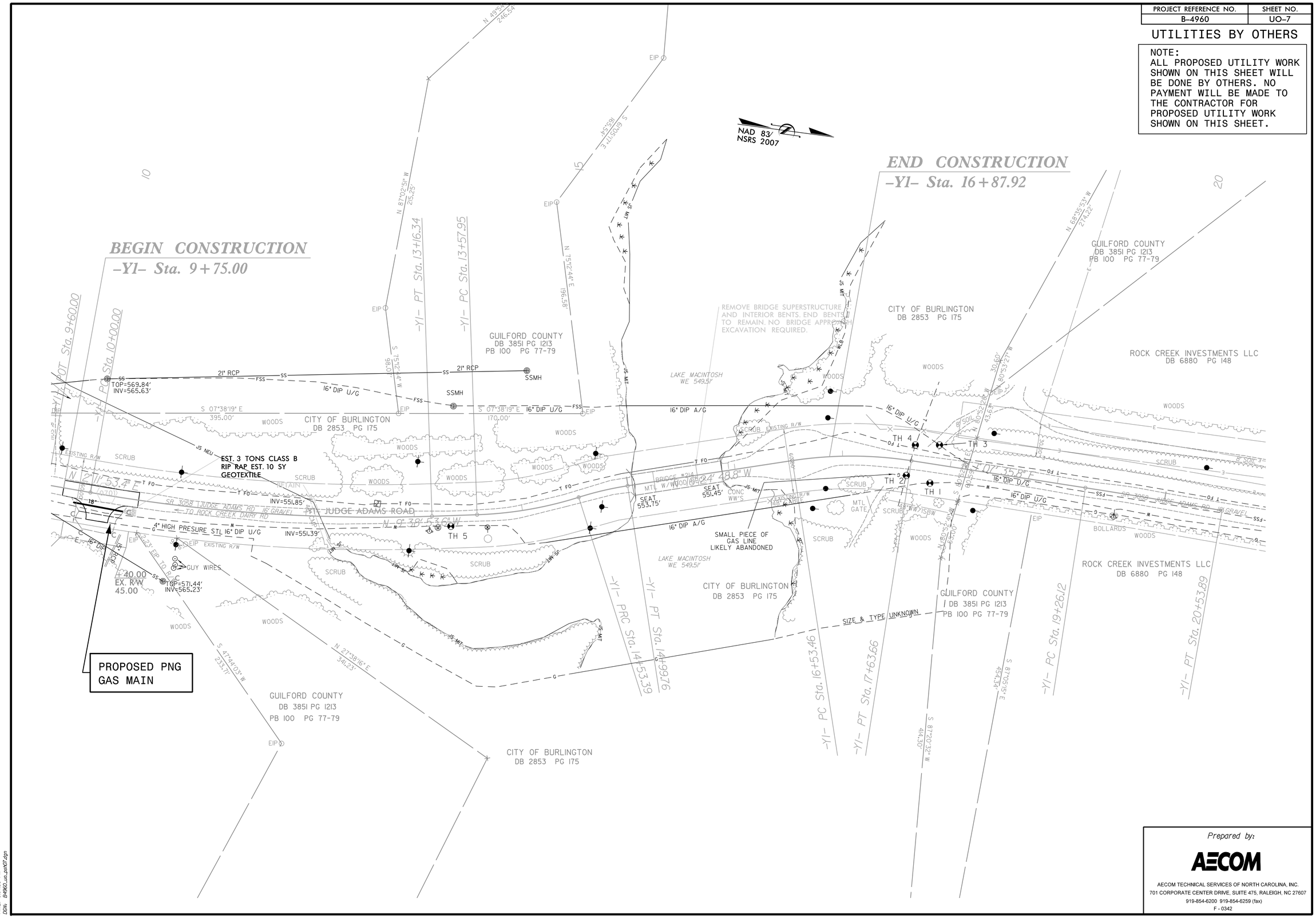

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F - 0342

DATE: 8/27/2018
TIME: 3:04:55 PM
DGN: B4960_sheetUT.dgn

PROJ. REFERENCE NO.	SHEET NO.
B-4960	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

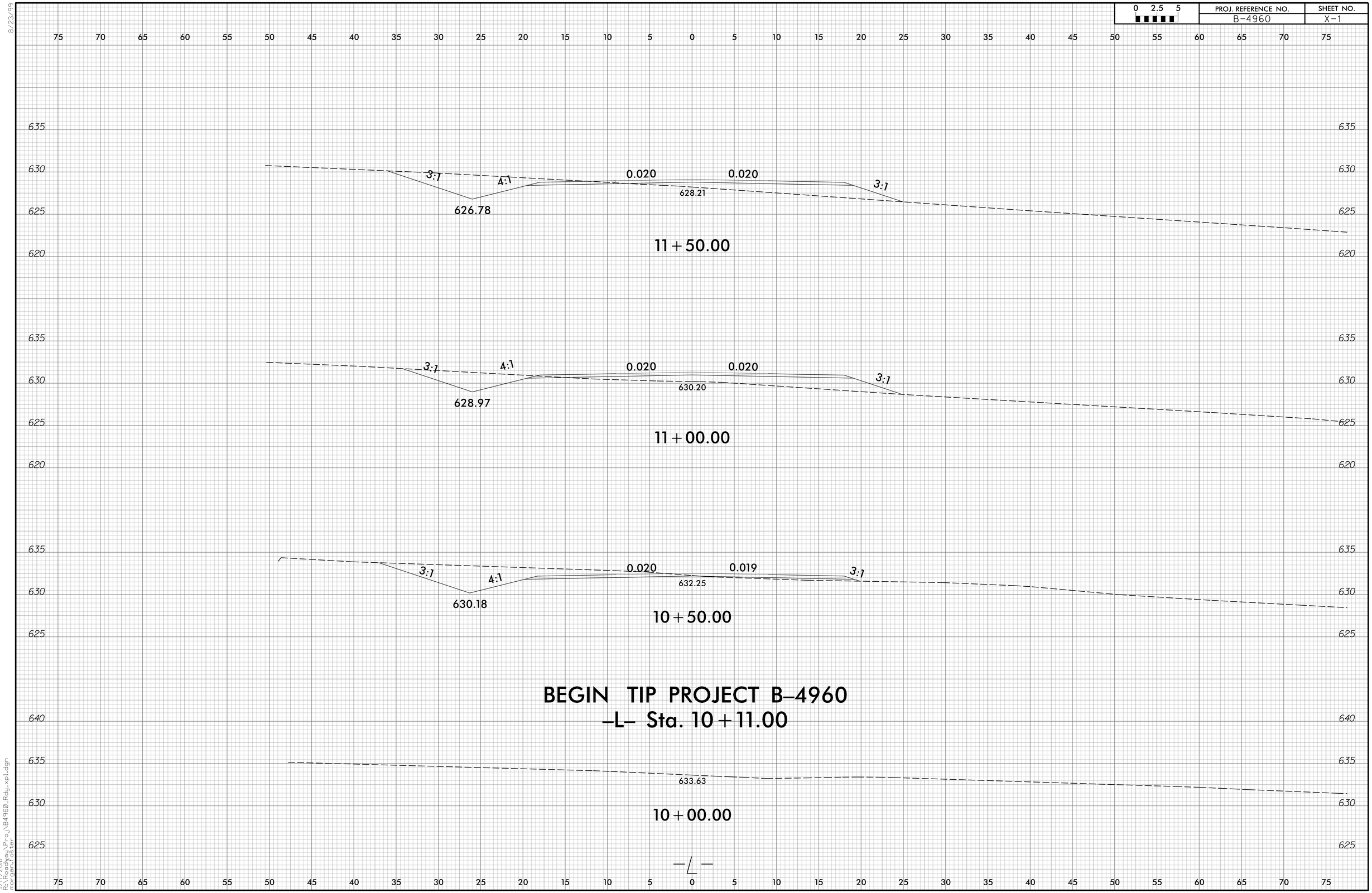
Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)	Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	12	0	36+50.00	237	1
10+50.00	45	1	37+00.00	213	9
11+00.00	62	32	37+50.00	248	19
11+50.00	47	55	38+00.00	206	25
12+00.00	68	41	38+50.00	110	35
12+50.00	68	30	39+00.00	59	39
13+00.00	39	116	39+35.11	16	12
13+50.00	19	251			
14+00.00	30	354			
14+50.00	43	611			
15+00.00	39	902			
15+50.00	36	878			
16+00.00	41	604			
16+50.00	36	271			
17+00.00	142	48			
17+50.00	409	0			
18+00.00	728	0			
18+50.00	917	0			
19+00.00	819	0			
19+50.00	548	0			
20+00.00	359	0			
20+50.00	309	0			
21+00.00	343	0			
21+50.00	414	0			
22+00.00	378	0			
22+50.00	217	0			
23+00.00	78	20			
23+50.00	39	41			
24+00.00	50	85			
24+50.00	44	247			
25+00.00	15	377			
25+50.00	8	250			
26+00.00	17	112			
26+50.00	22	94			
27+00.00	25	539			
27+50.00	12	3268			
28+00.00	0	5258			
28+50.00	131	2538			
29+00.00	465	49			
29+50.00	590	0			
30+00.00	419	0			
30+50.00	218	75			
31+00.00	67	309			
31+50.00	25	516			
32+00.00	32	510			
32+50.00	34	352			
33+00.00	53	142			
33+50.00	201	18			
34+00.00	468	0			
34+50.00	644	0			
35+00.00	627	0			
35+50.00	514	0			
36+00.00	368	0			

Station Y1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	9	2
10+45.00	3	1

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4960	X-1



9/17/2018
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morganfoster

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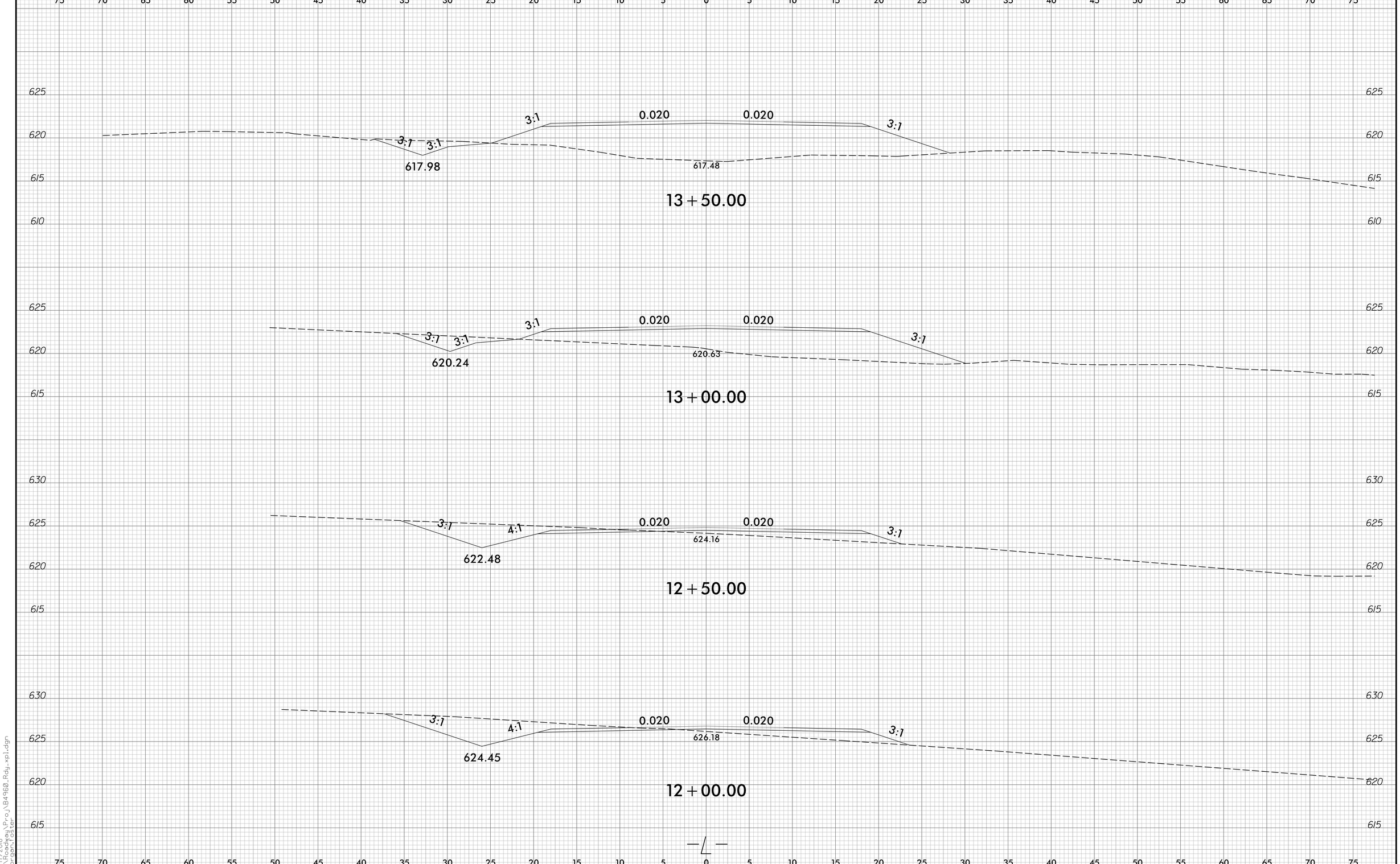

8/23/99

9/17/2018
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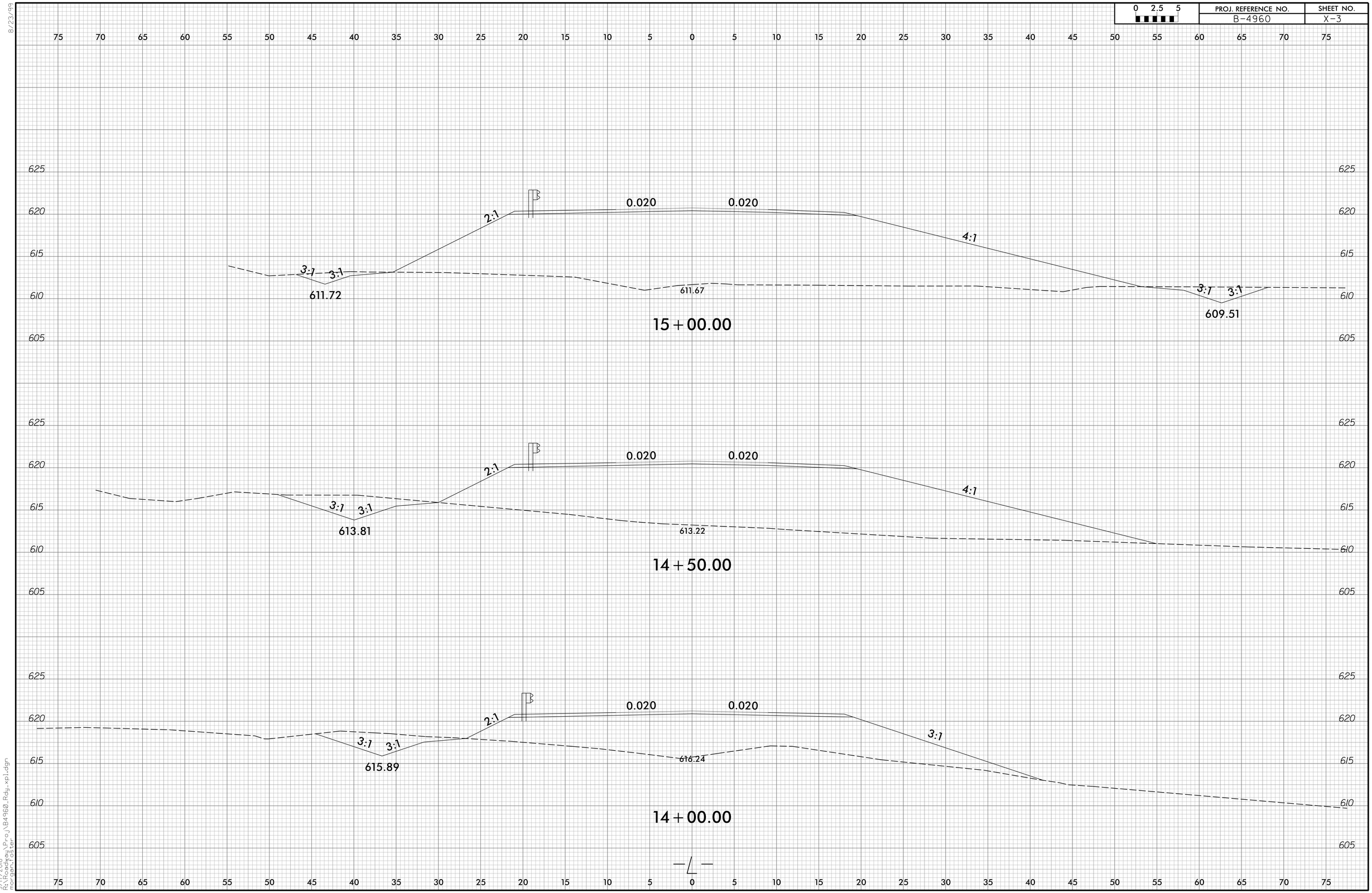
morganfoster

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4960	X-3



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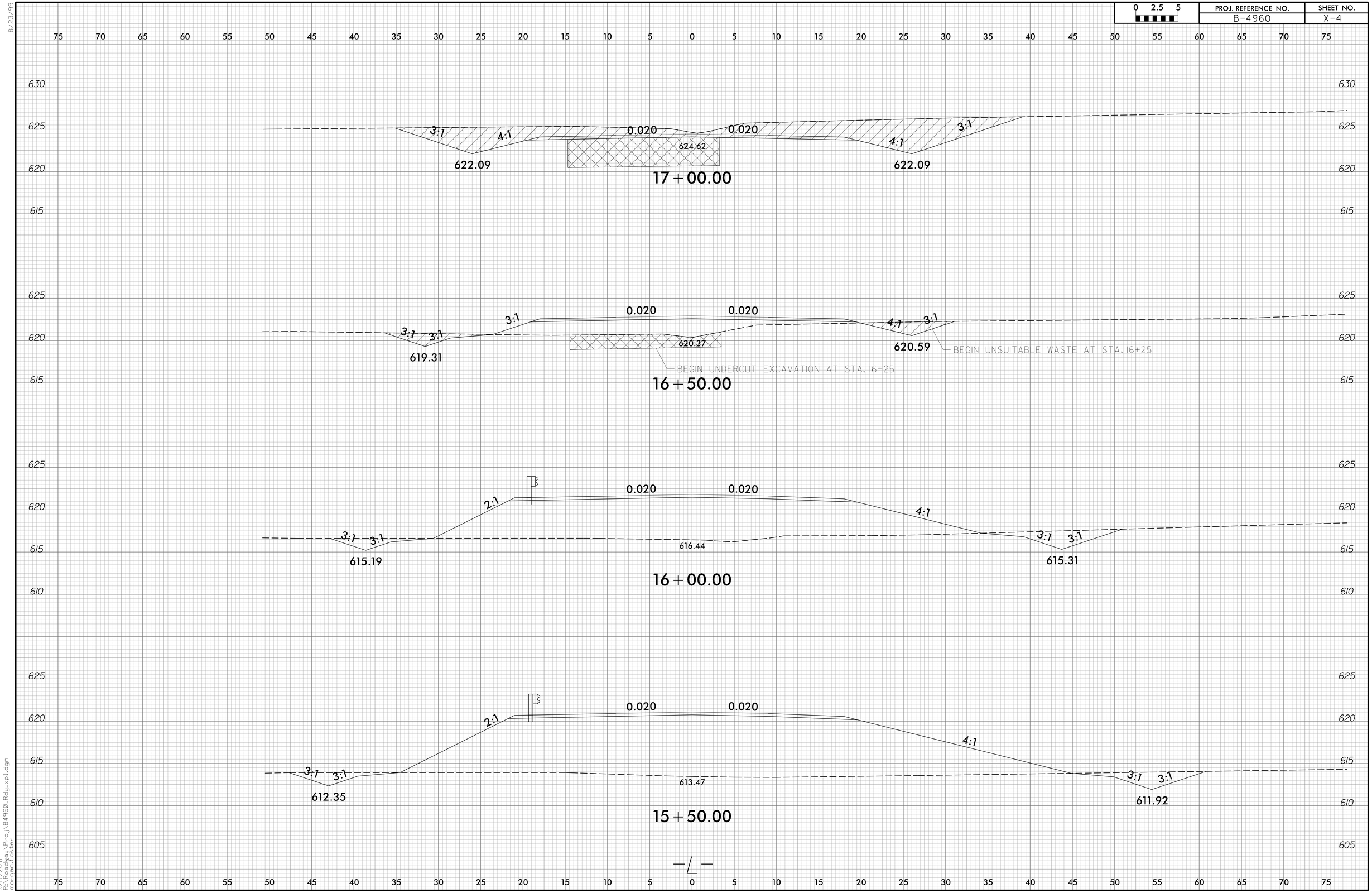
morganfoster

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4960	X-4



8/23/99

9/17/2018
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morganfoster

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
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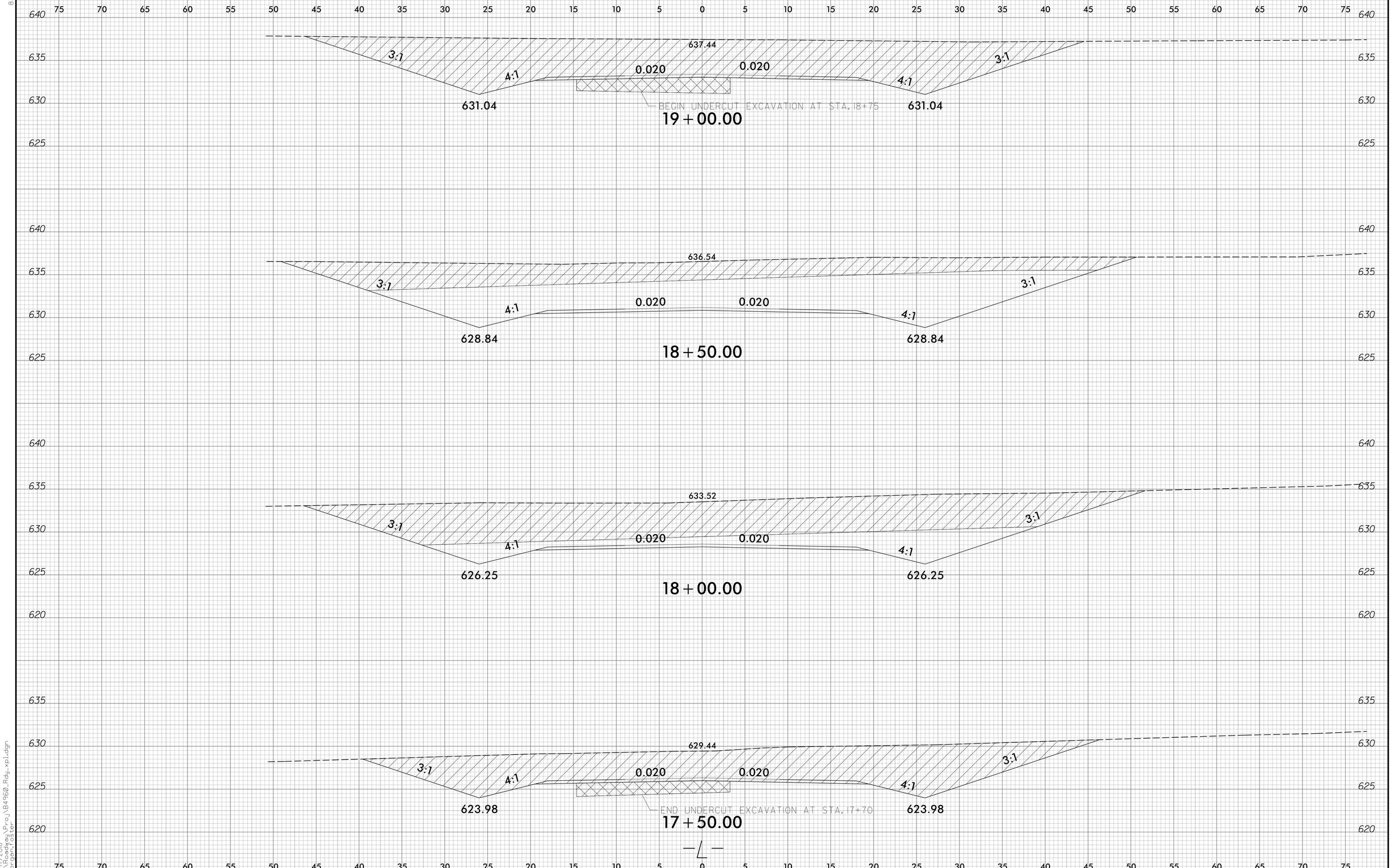

9/17/2018
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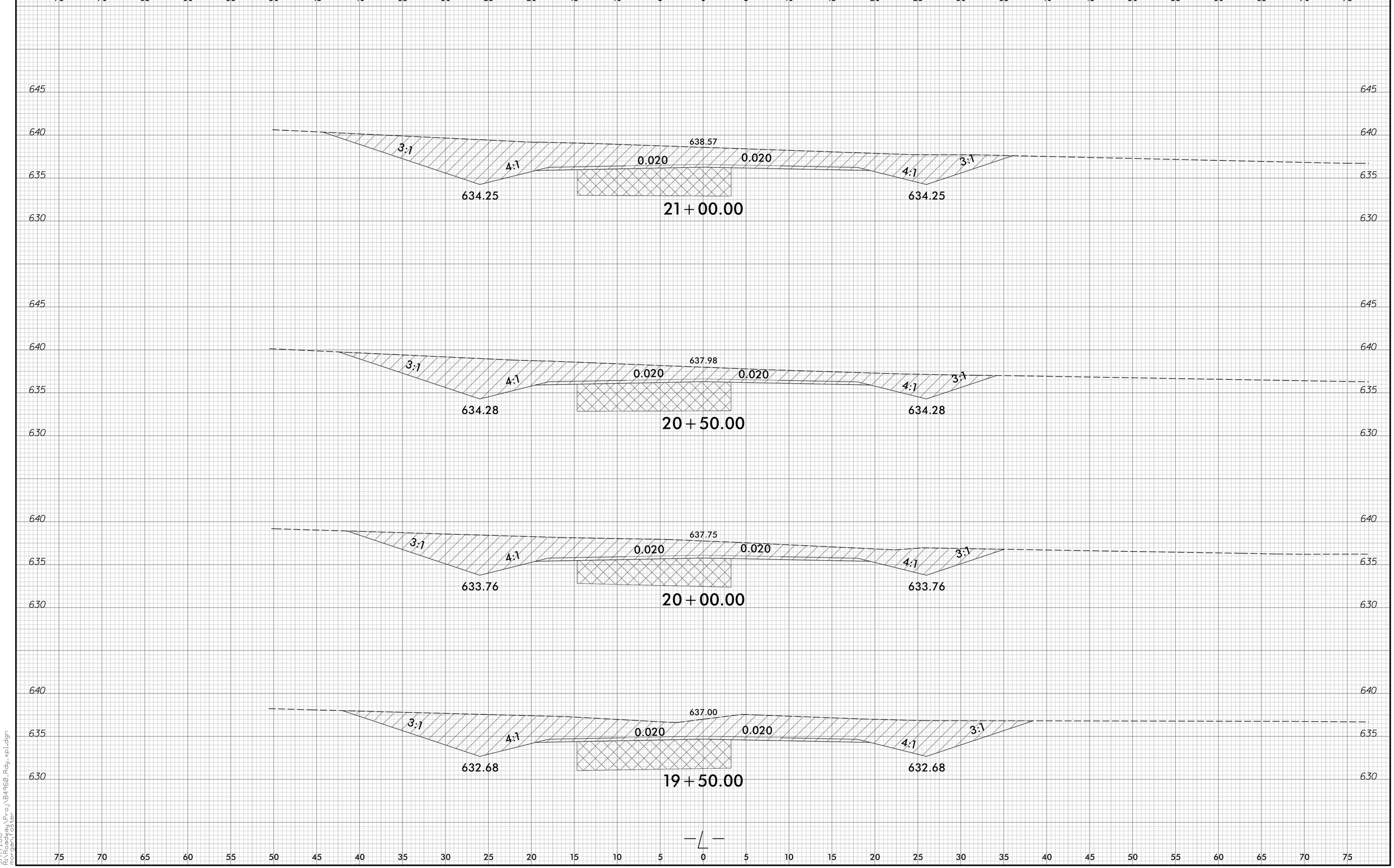
morganfoster

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4960	X-6



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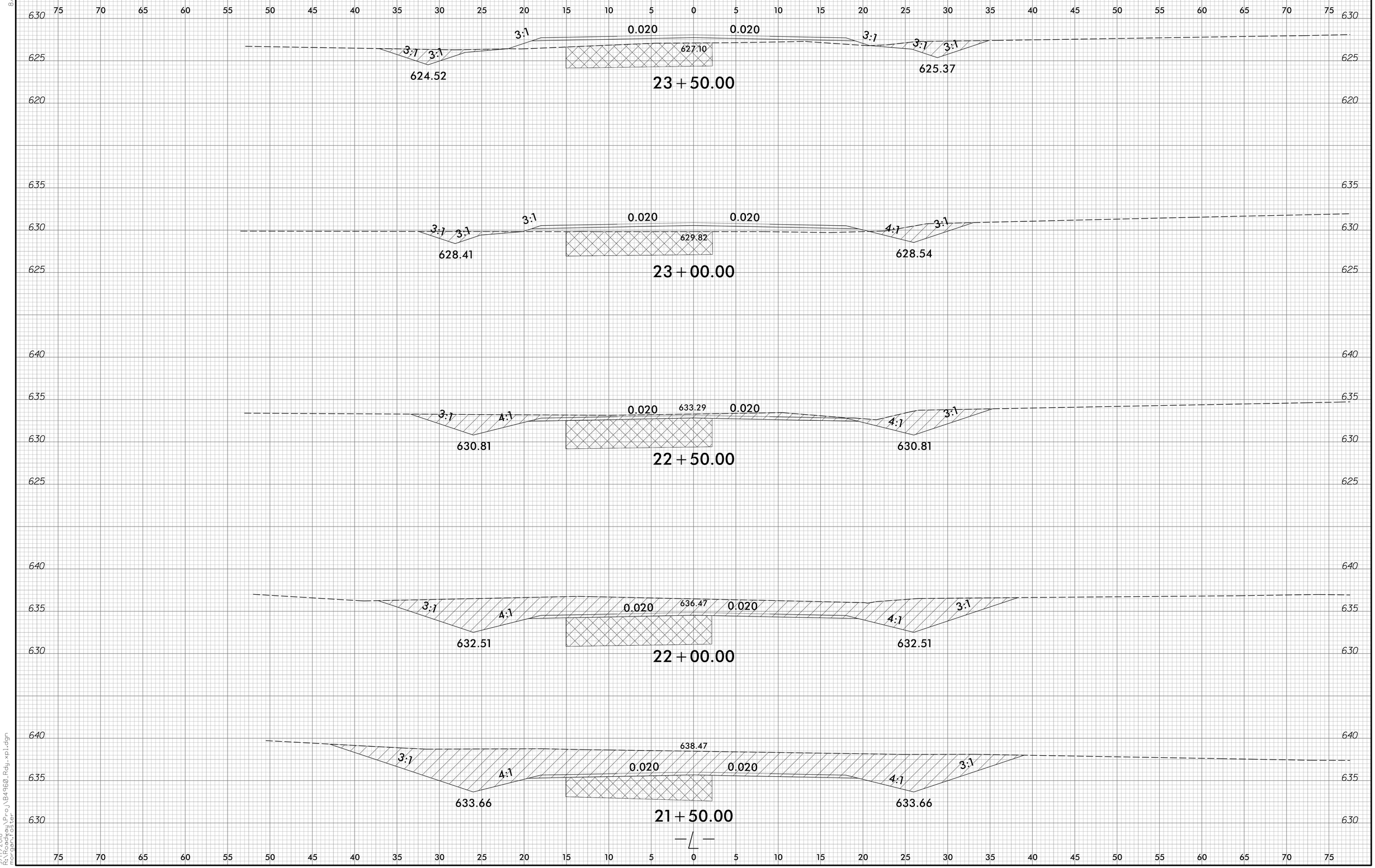

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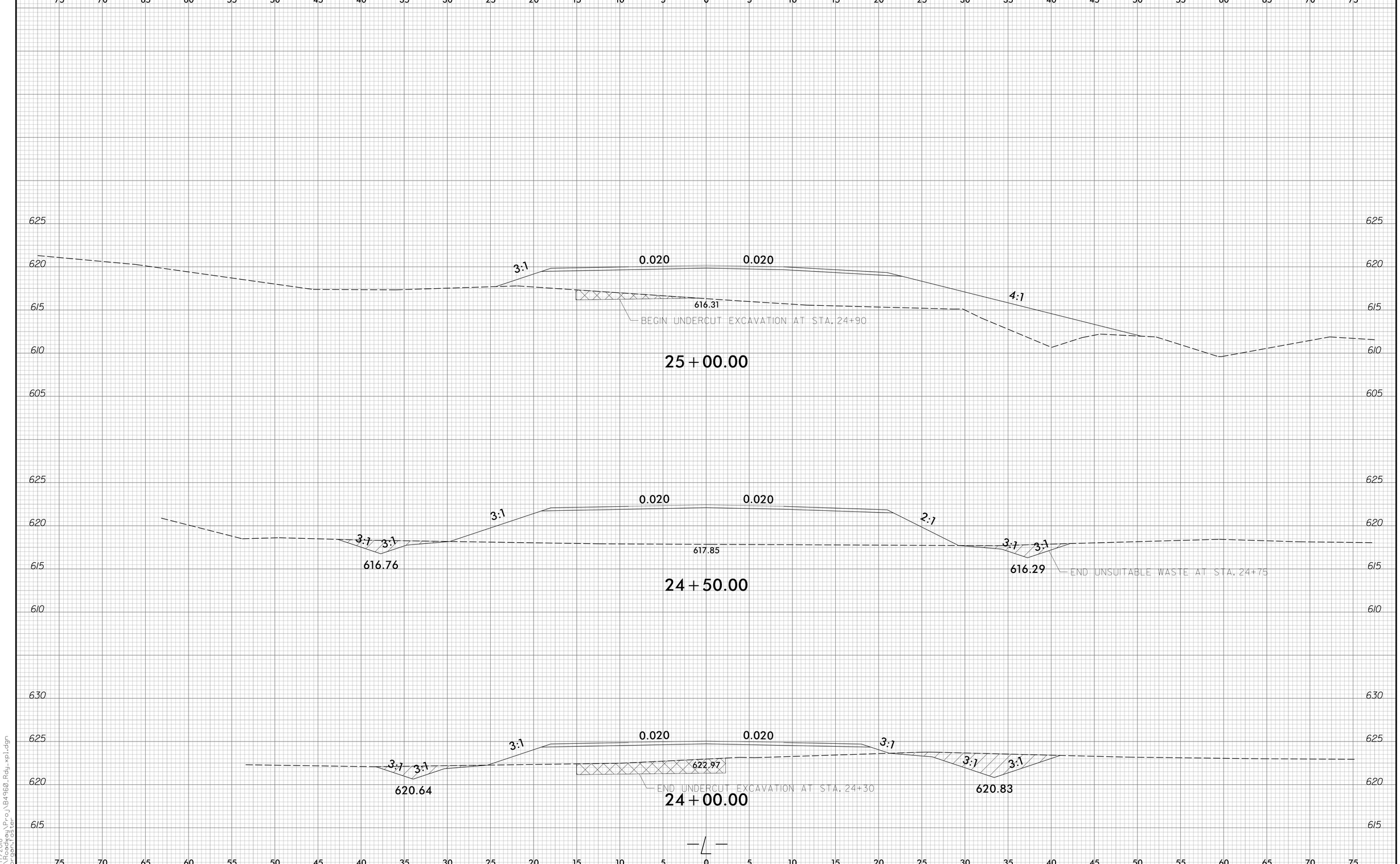
	B-4960	X-8



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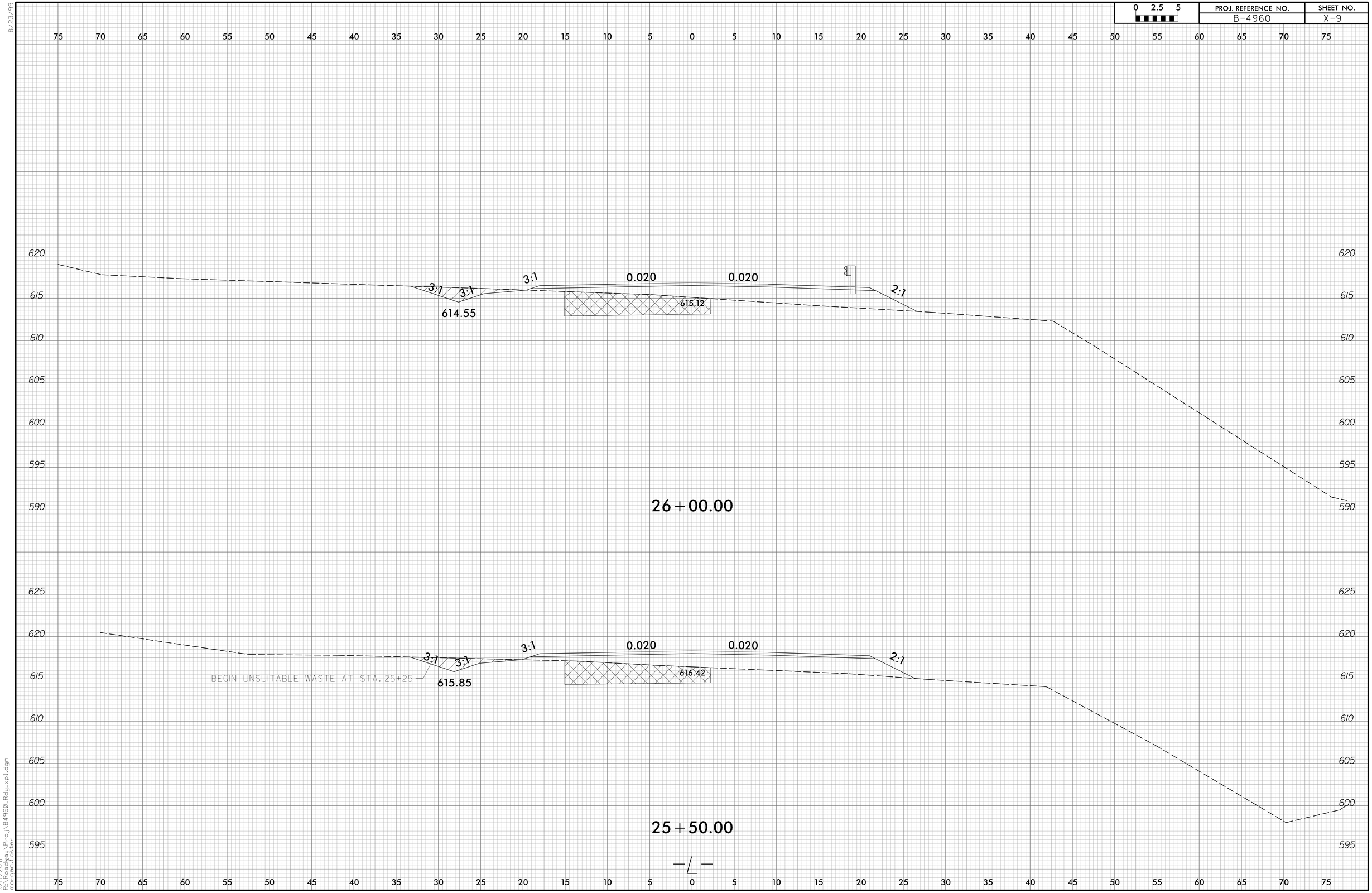

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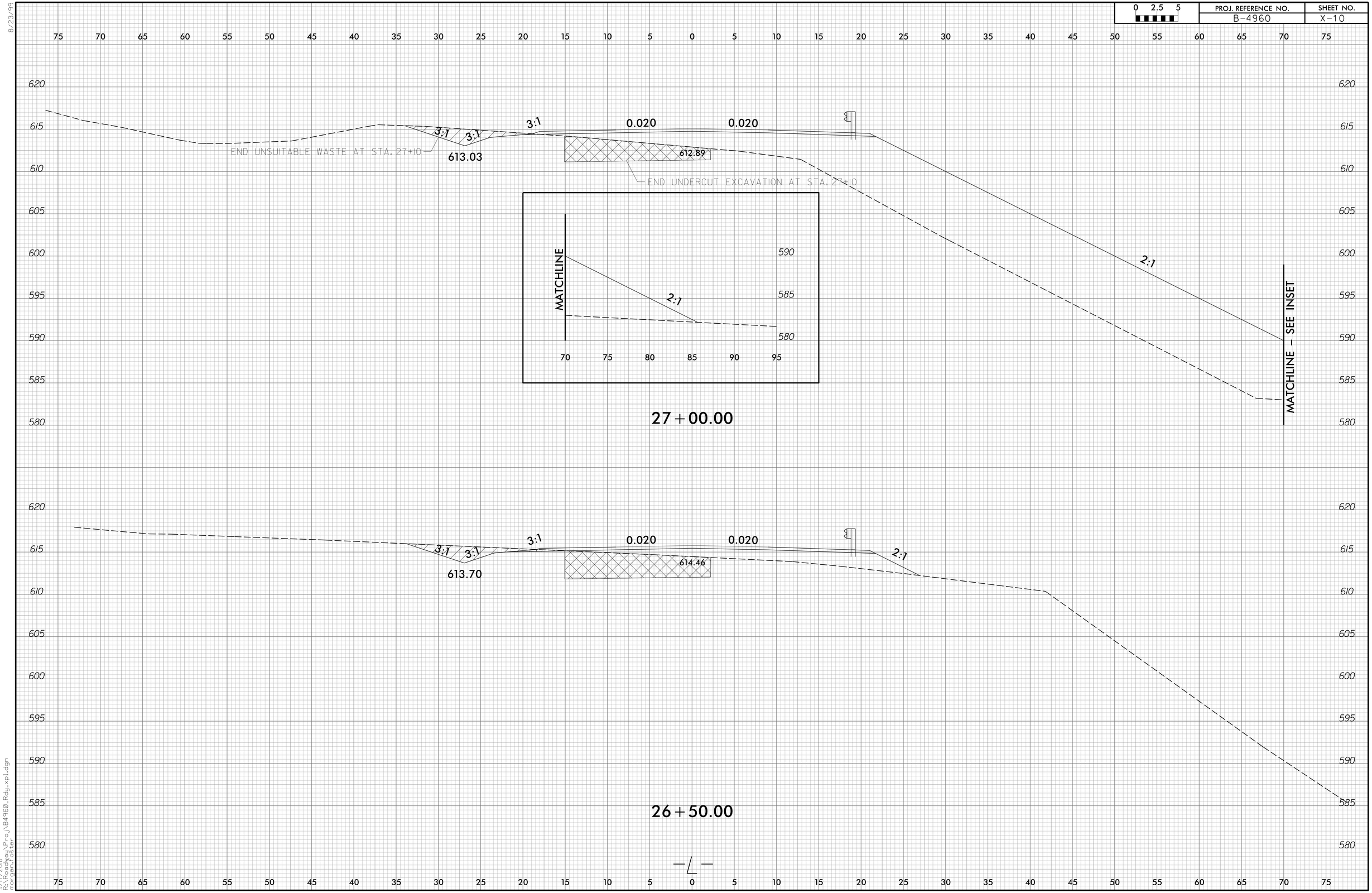
	B-4960	X-10



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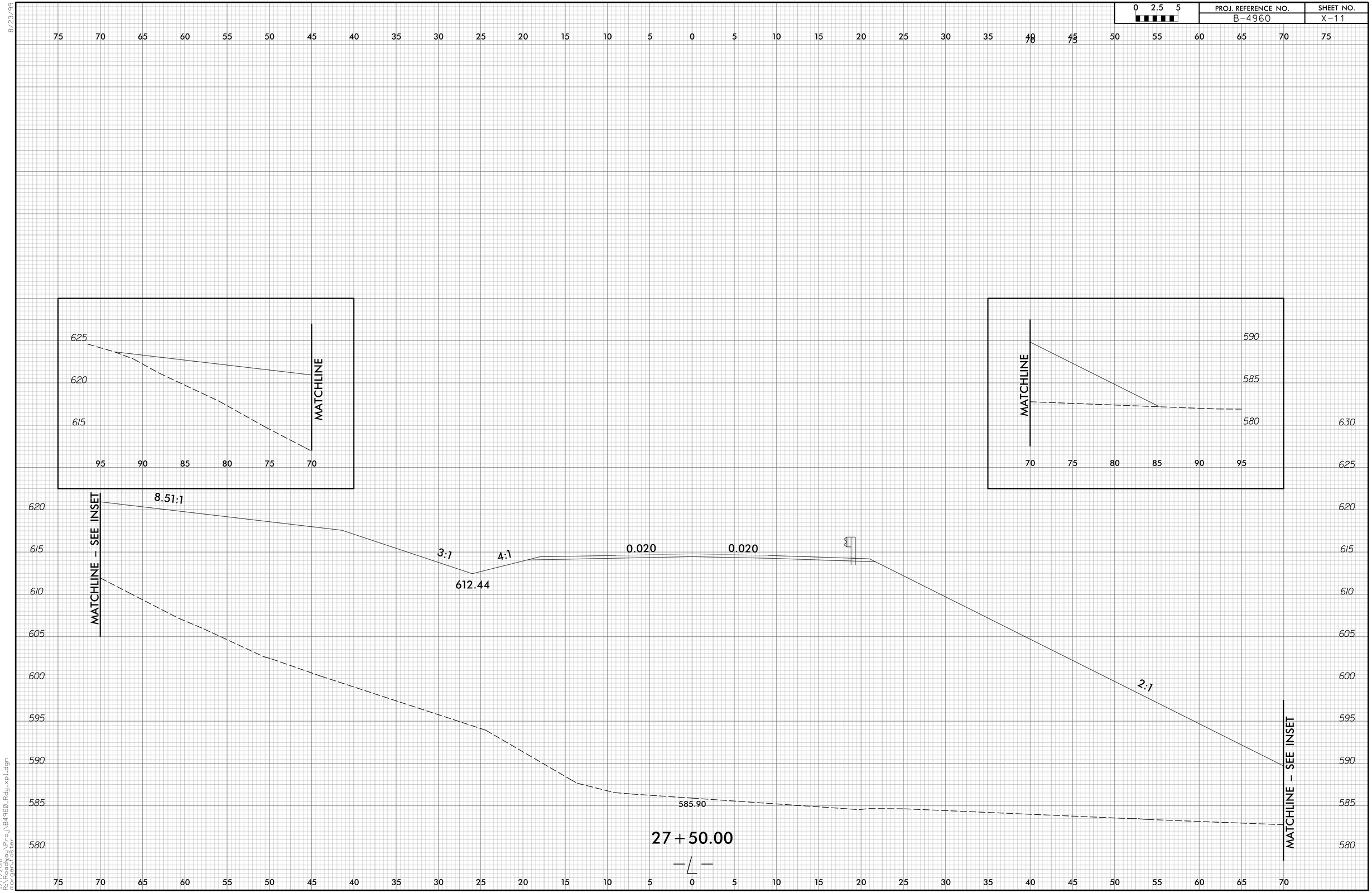

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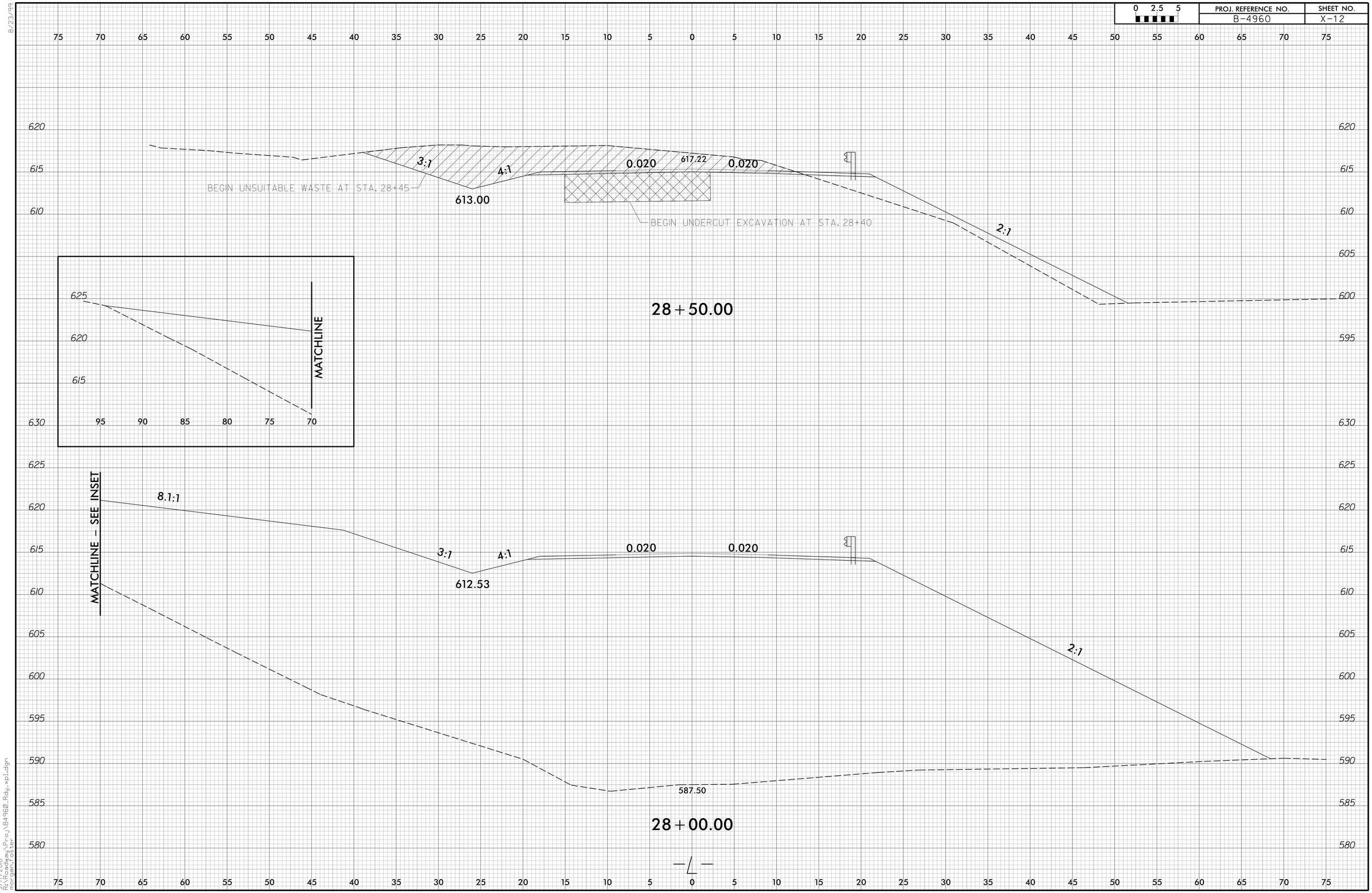

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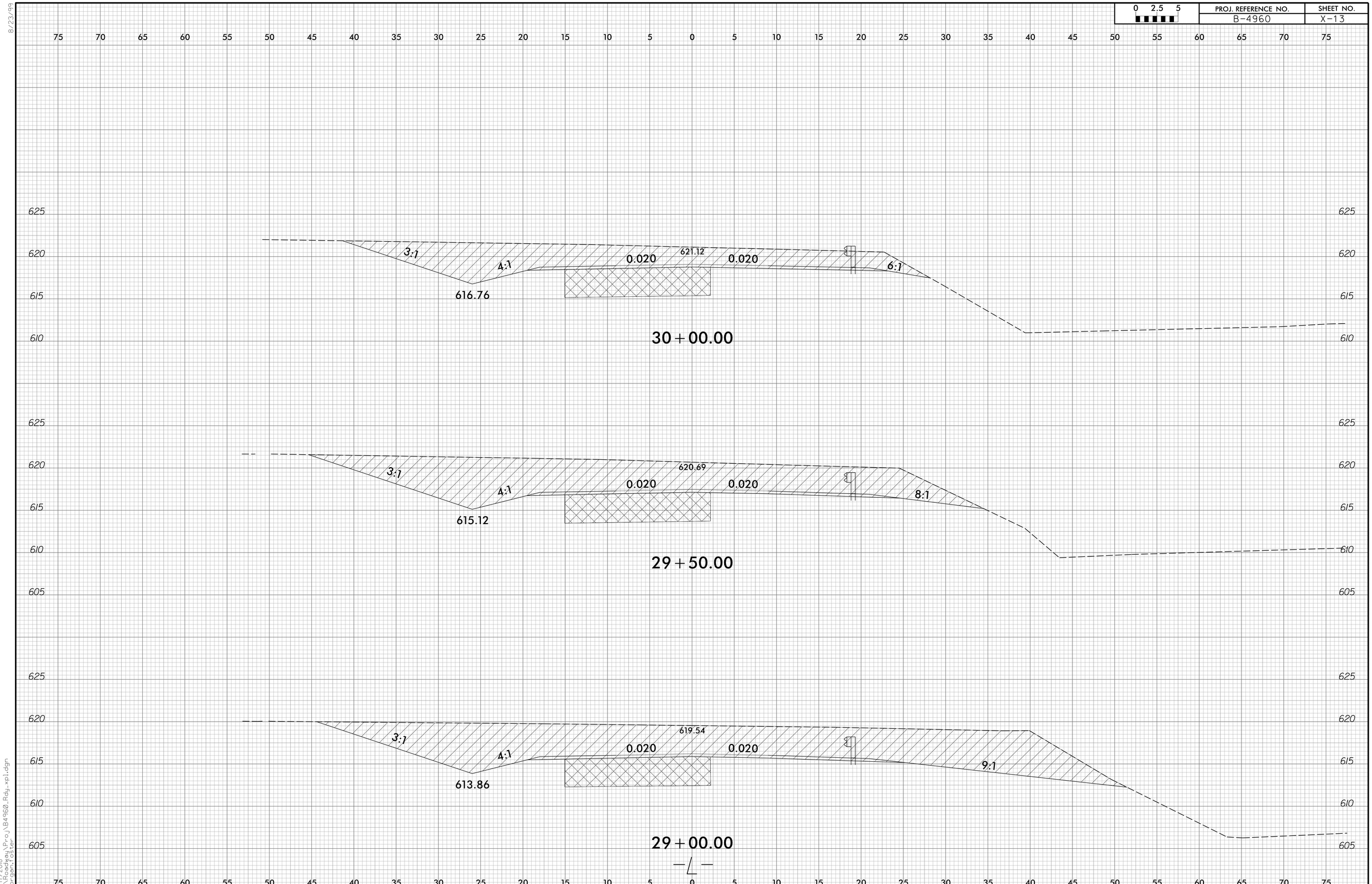

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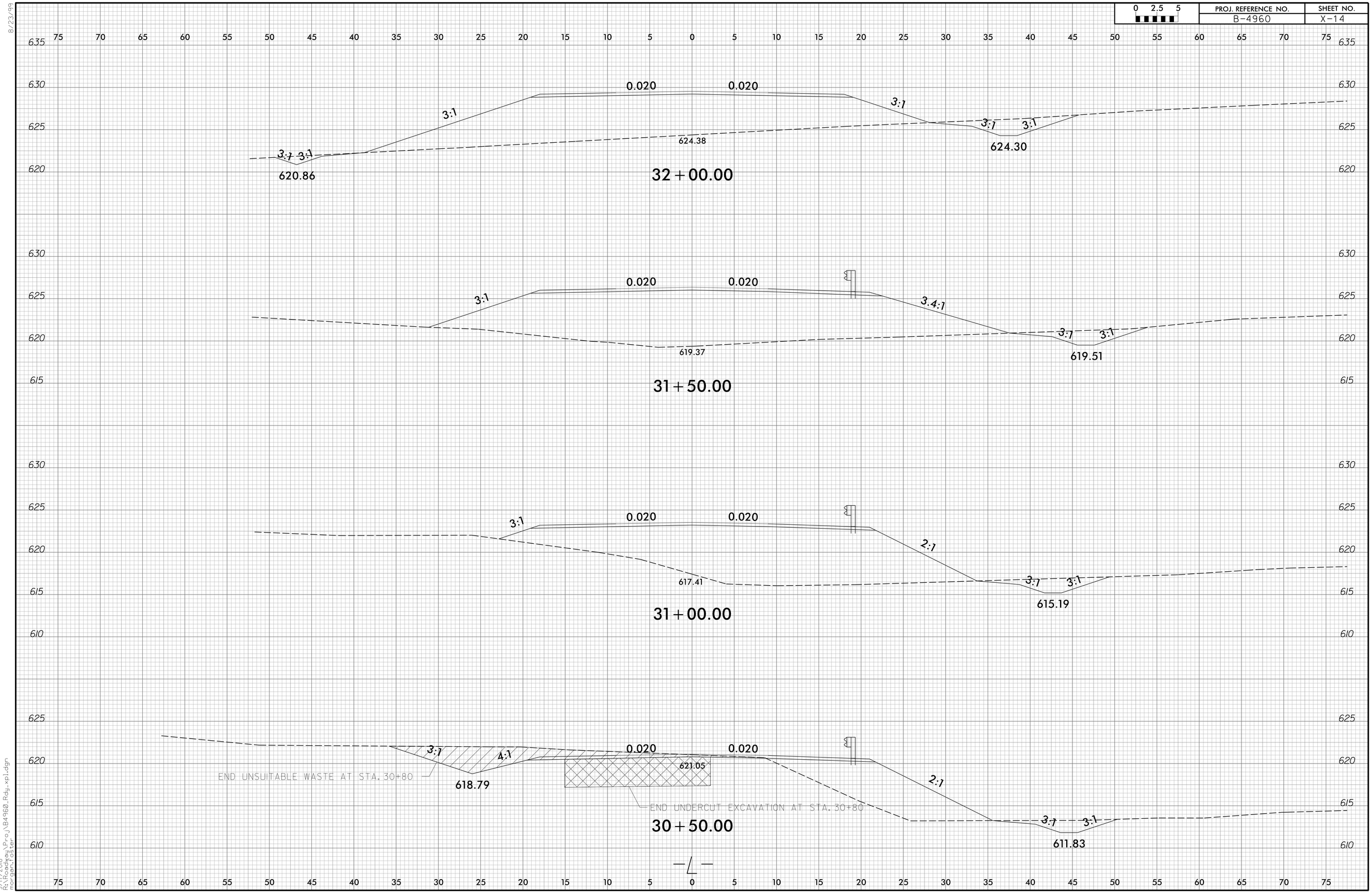

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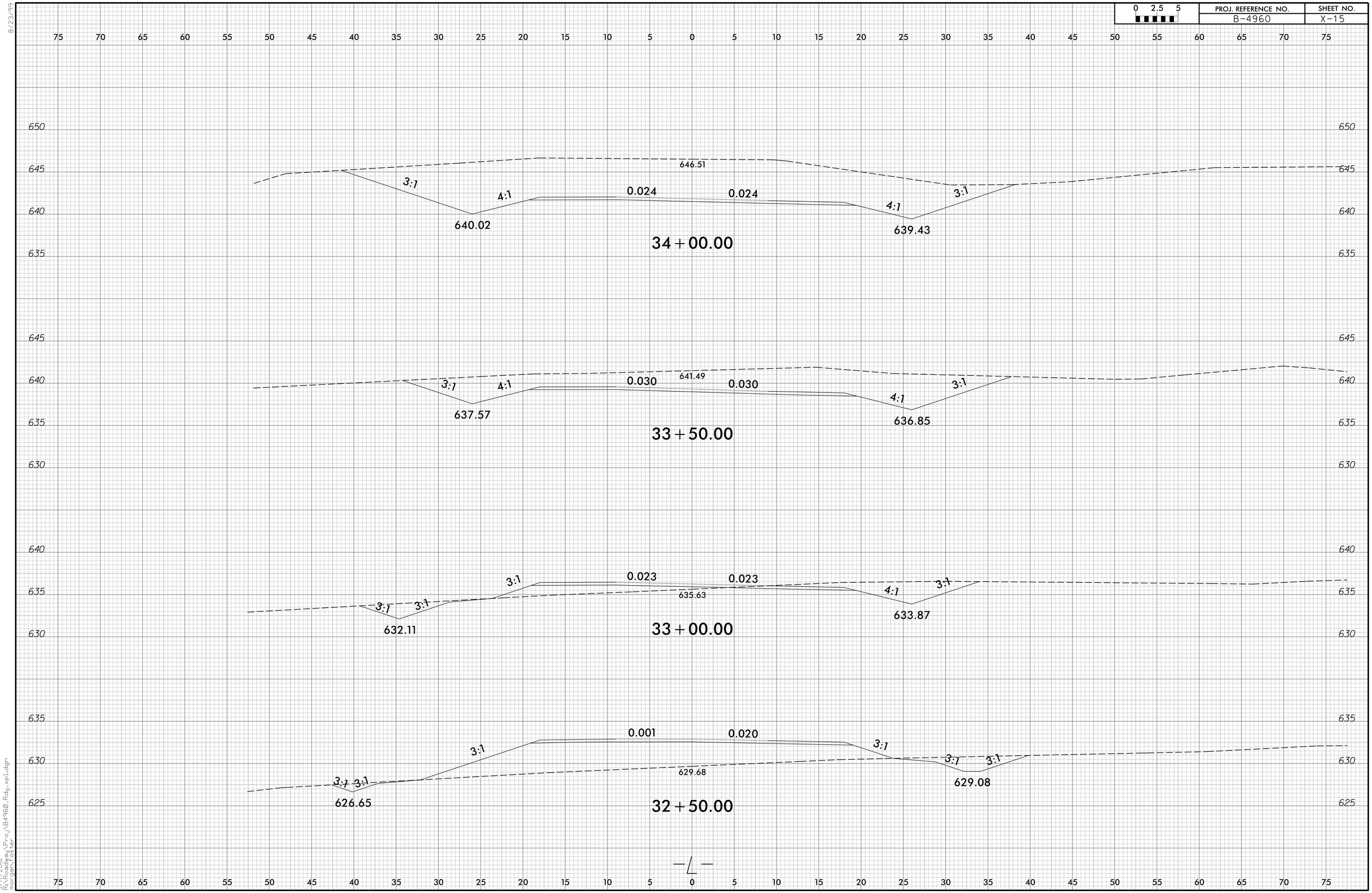

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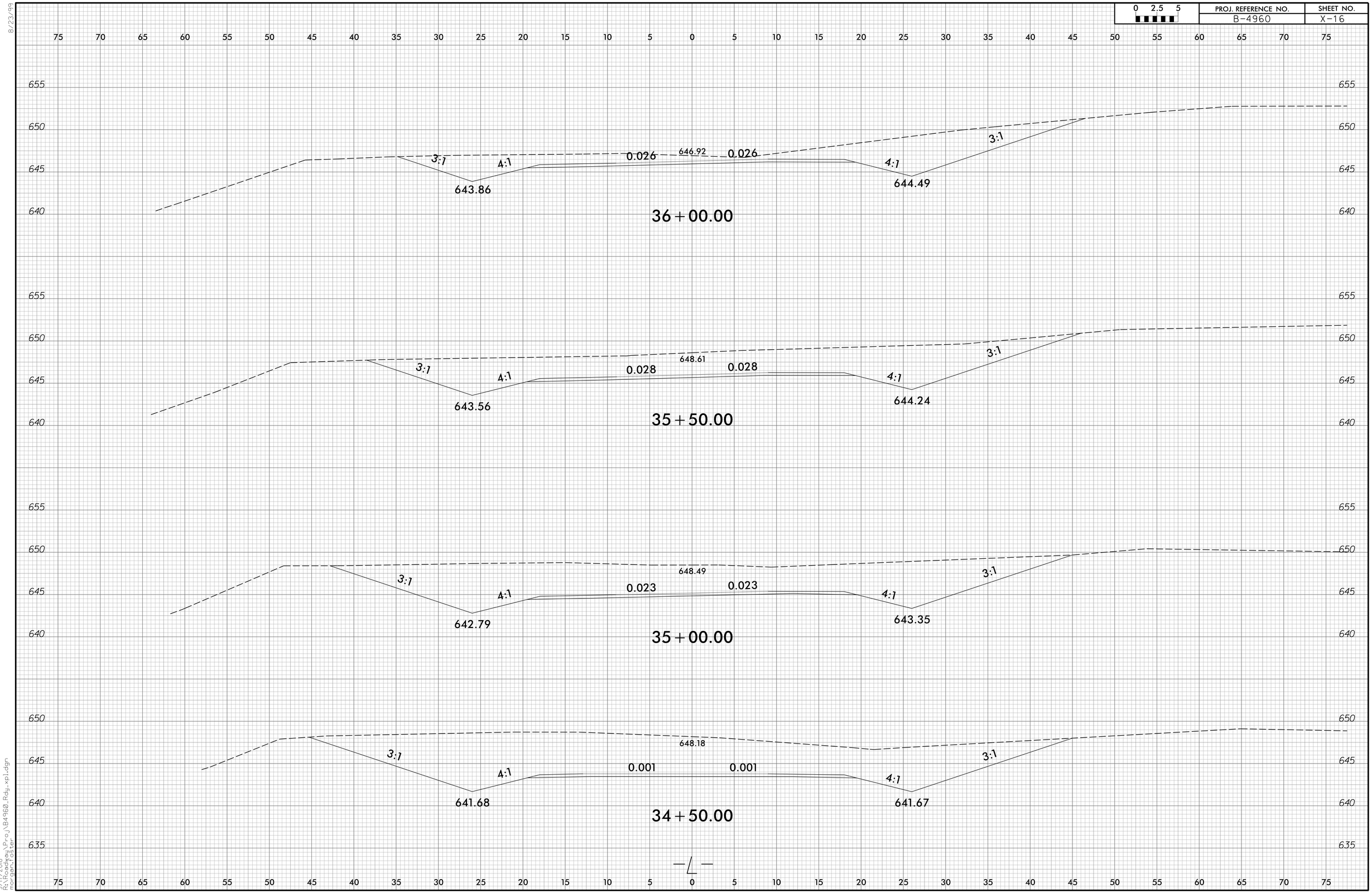

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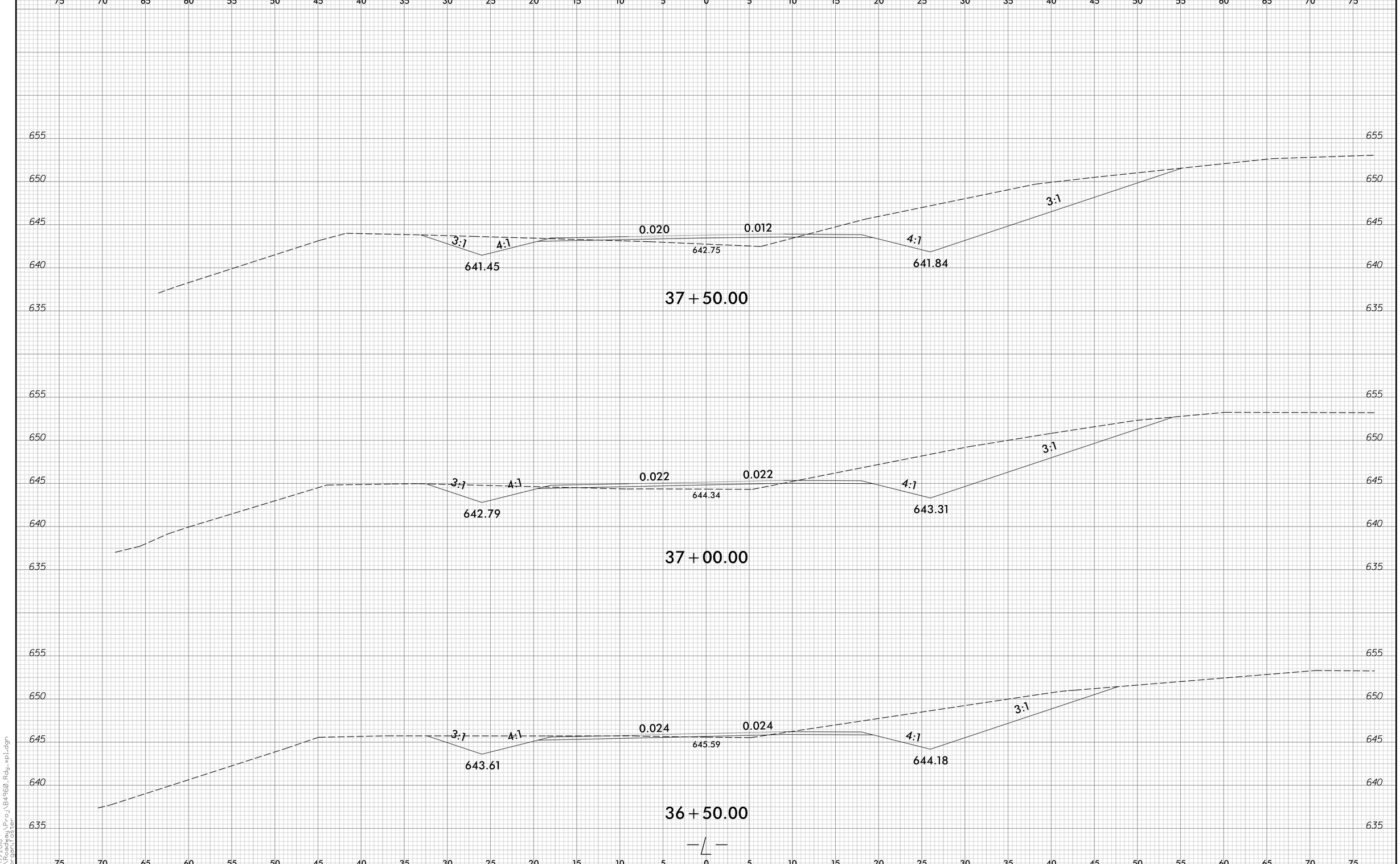

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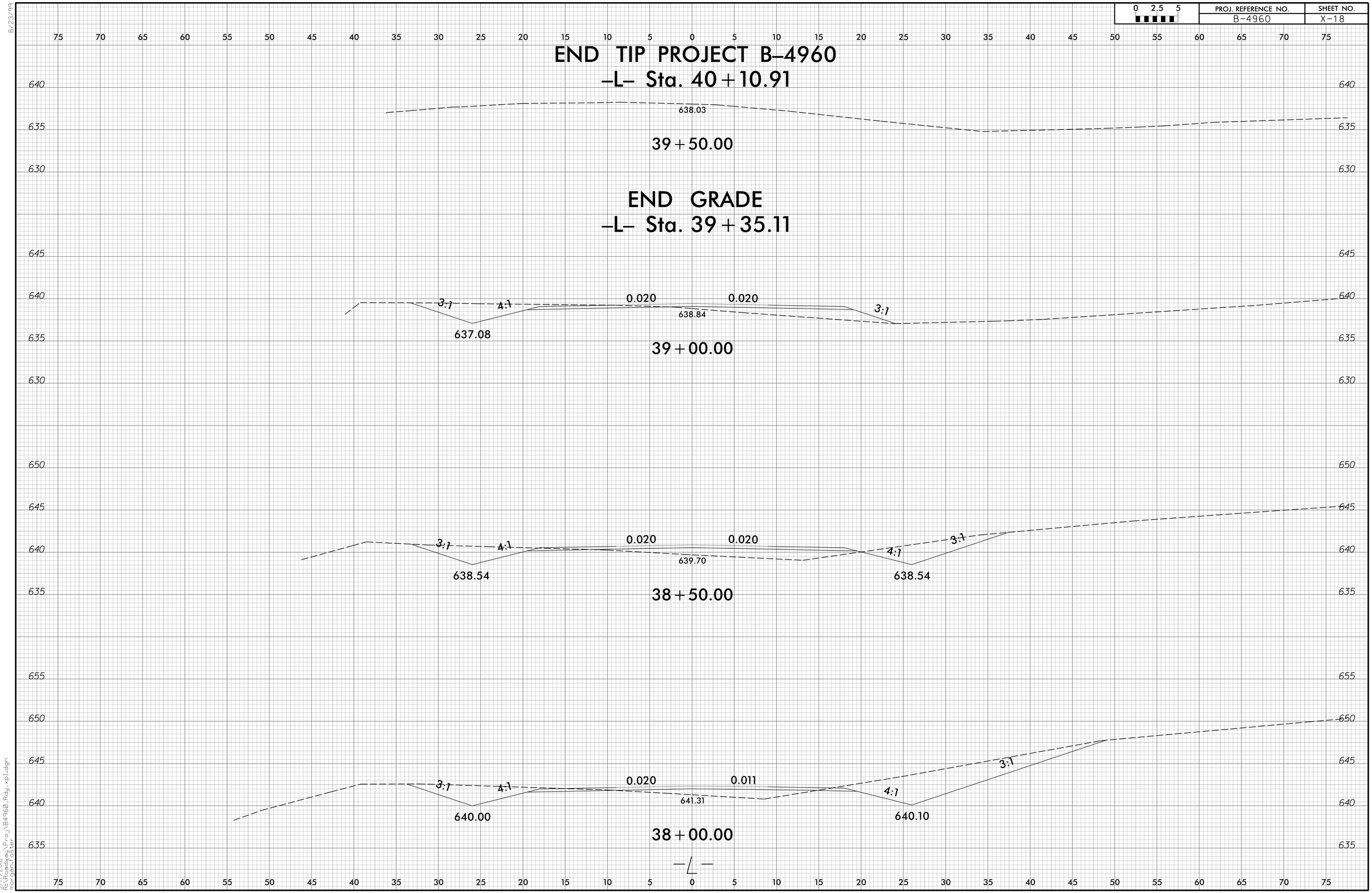

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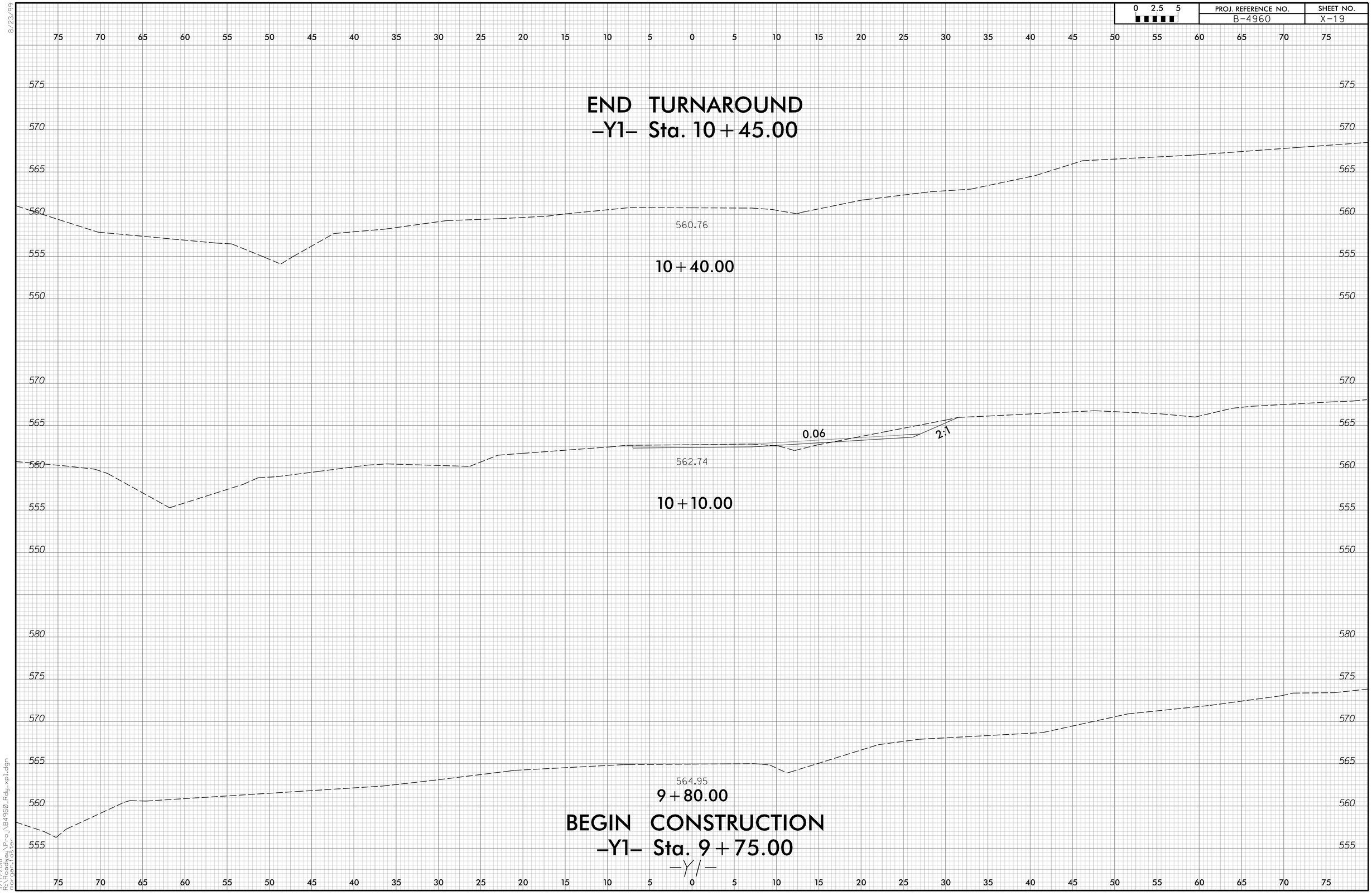
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4960	X-19



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