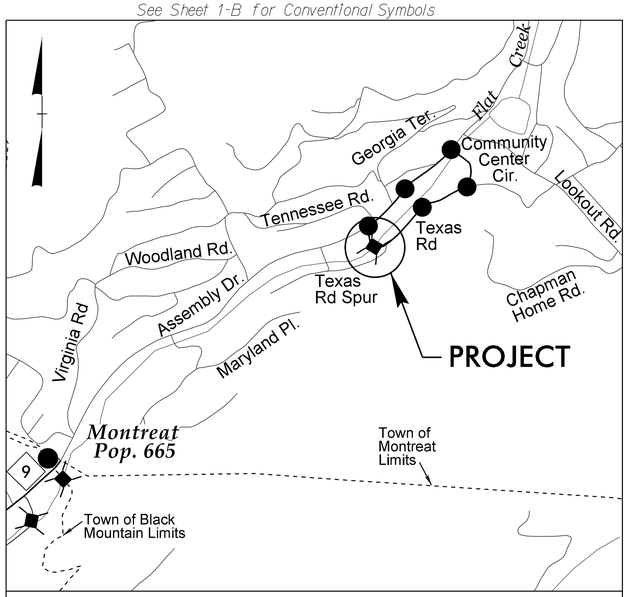
09/08/99

TIP PROJECT: B-5196

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



VICINITY MAP

DETOUR ROUTE

(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

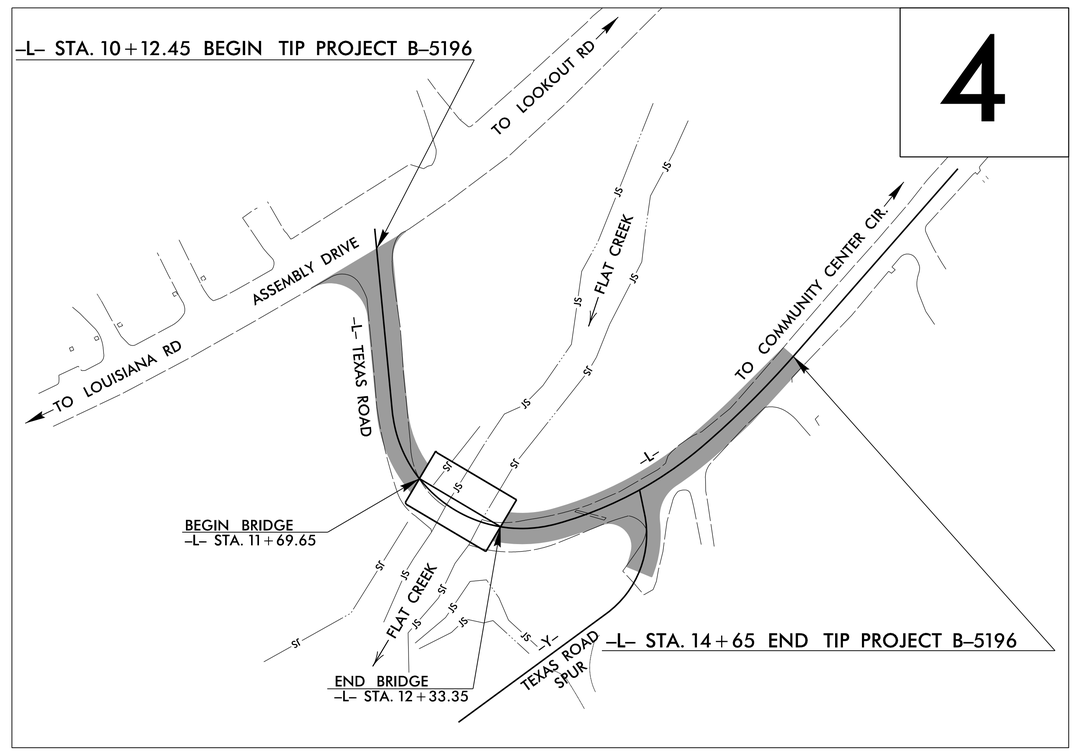
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5196	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
45252.1.1	BRZ-1329(6)	P.E.
45252.1.1	BRZ-1329(6)	R/W & UTIL.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: BRIDGE NO. 528 OVER FLAT CREEK ON TEXAS ROAD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RETAINING WALL, AND STRUCTURE



NAD 83/
NSRS 2007

SUNGATE DESIGN GROUP, P.A.
515 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-0258
ENG FIRM LICENSE NO. C-950

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF MONTREAT

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 266
ADT 2035 = 335
T = 7 % *
V = 20 MPH
* (TTST = 2% DUAL = 5%)

FUNC CLASS = RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5196	=	0.074 MILES
LENGTH OF STRUCTURE TIP PROJECT B-5196	=	0.012 MILES
TOTAL LENGTH OF TIP PROJECT B-5196	=	0.086 MILES

Prepared In the Office of:
KCI Associates of N.C., P.A.
4601 Six Forks Road
Landmark Center II, Suite 220
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266
http://www.kci.com

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 20, 2015

LETTING DATE:
AUGUST 2015

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

DEWAYNE SYKES, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: MOHAMMED E. MAHJOUB, E.I.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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02/03/15

PROJECT REFERENCE NO.	SHEET NO.
B-5196	1B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- 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 Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line
- Designated U/G Water Line (S.U.E.*)
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (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
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
B-5196	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B-5196

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	705661.5410	1018797.3470	2593.08	10+77.23	118.93 RT
5	BL-5	705550.9702	1018944.5083	2951.86	11+94.91	20.22 RT
4	BL-4	705565.6513	1019102.8256	2601.13	13+40.65	20.02 RT
3	BL-3	705780.8244	1019270.1477	2614.02	16+08.09	11.70 LT
6	BL-6	705423.8464	1018986.5981	2611.71	12+39.94	128.92 RT

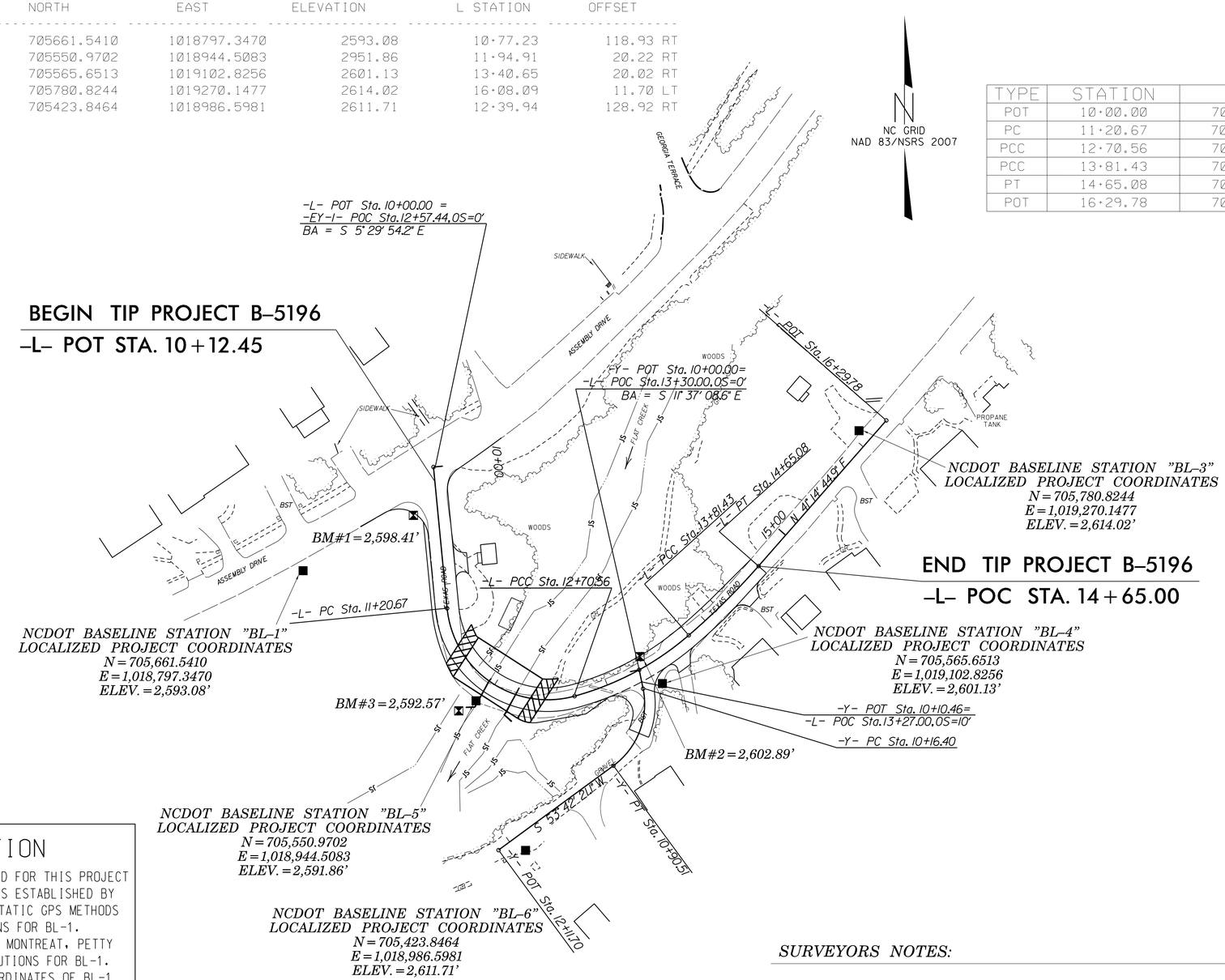
-L-

TYPE	STATION	NORTH	EAST
POT	10+00.00	705749.8110	1018908.3278
PC	11+20.67	705629.6941	1018919.8903
PCC	12+70.56	705555.0043	1019028.2672
PCC	13+81.43	705606.7354	1019125.3115
PT	14+65.08	705665.5886	1019184.6592
POT	16+29.78	705789.4257	1019293.2455

BM1 ELEVATION = 2598.41
N 705708.71 E 1018891.25
L STATION 10+39.27 20.94' RIGHT
RR SPIKE SET IN TREE

BM2 ELEVATION = 2602.89'
N 705588.65 E 1019083.83
L STATION 13+36.25 9.47' LEFT
RR SPIKE SET IN UTILITY POLE

BM3 ELEVATION = 2592.57'
N 705542.49 E 1018929.80
L STATION 11+89.84 35.82' RIGHT
RR SPIKE SET IN UTILITY POLE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY KCI TECHNOLOGIES, INC UTILIZING FAST STATIC GPS METHODS AND REDUNDANT NGS "OPUS" SOLUTIONS FOR BL-1.
NORTH CAROLINA GEODETIC HARN STATIONS MONTREAT, PETTY AND RRPT WERE USED TO DERIVE THE SOLUTIONS FOR BL-1.
THE NAD 83(2011) STATE PLANE GRID COORDINATES OF BL-1
NORTHING: 705661.541(ft) EASTING: 1018797.347(ft)
ELEVATION: 2593.08(ft)
THE AVERAGE COMBINED SCALE FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989534
THE LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 10+00.00 IS
N 22°33'53" E 44.50'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SURVEYORS NOTES:

1. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, FAST STATIC METHODS IN OCTOBER 2012 BY KCI TECHNOLOGIES, INC.

GEOID MODEL—GEOID 12A
(NOTE: DRAWING IS NOT TO SCALE)

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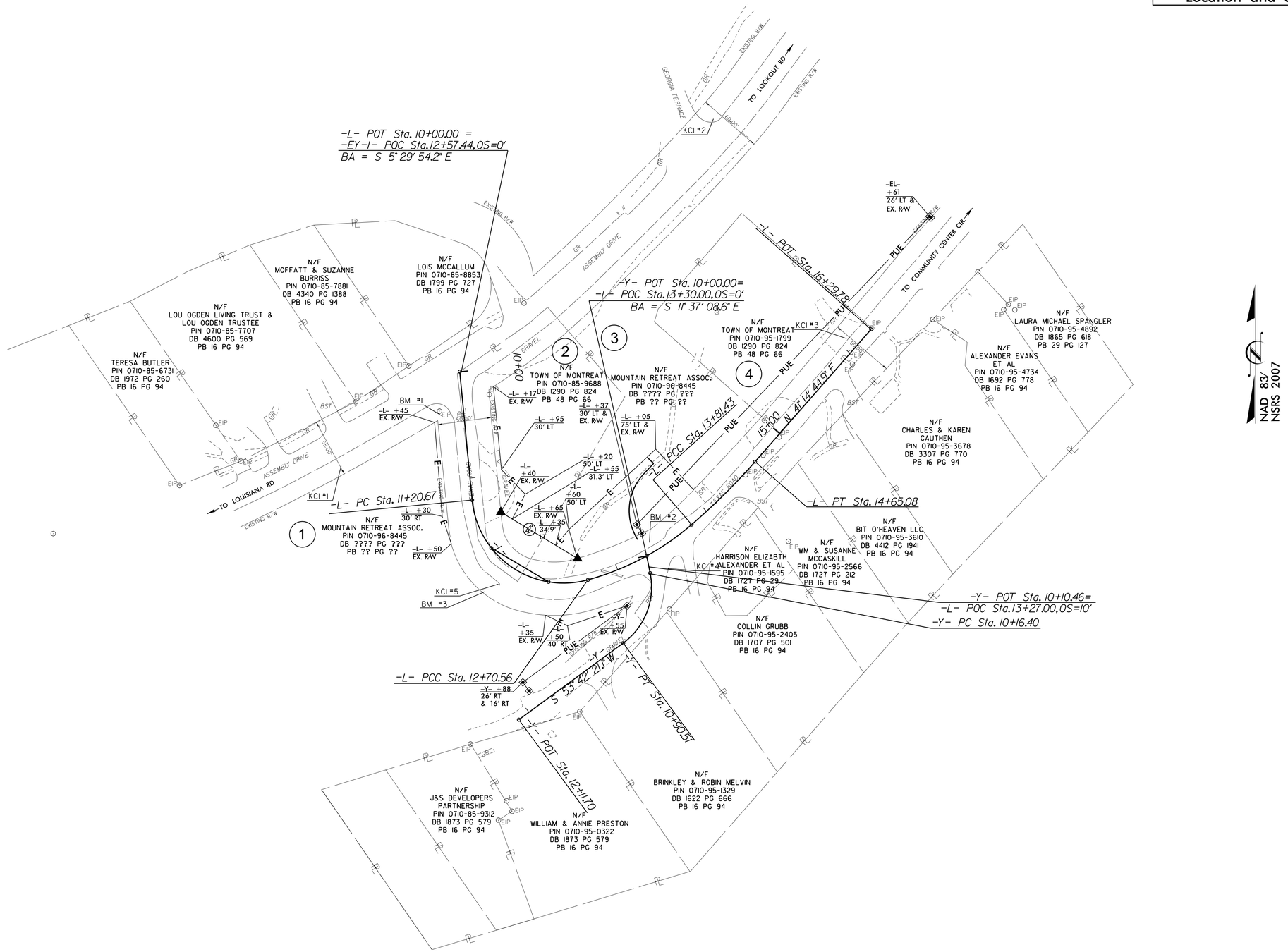
RIGHT-OF-WAY SHEET B-5196

PROJECT REFERENCE NO.	SHEET NO.
B-5196	1D-1
Location and Surveys	



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PROJECT REFERENCE NO.	SHEET NO.
B-5196	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

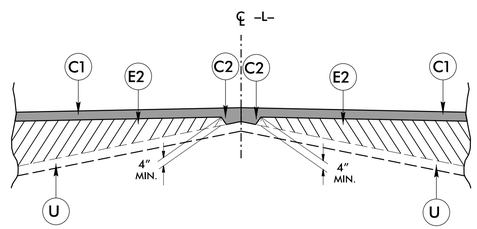
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KCI
http://www.kci.com
Engineers • Planners • Scientists • Construction Managers
4601 Six Forks Road, Landmark Center II, Suite 220
Raleigh, NC 27609-5210
Phone (919) 783-9214 • Fax (919) 783-9266

PRELIMINARY PAVEMENT SCHEDULE

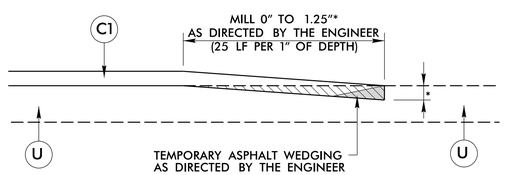
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 4″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
R	2′-6″ CONCRETE CURB AND GUTTER.
S	4″ CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).

ALL PAVEMENT EDGE SLOPES ARE 1:1



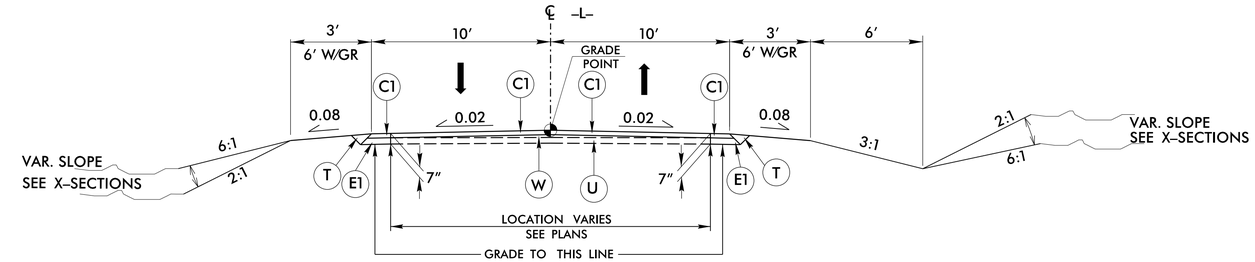
Detail Showing Method of Wedging

PROFILE KEY–IN DETAIL



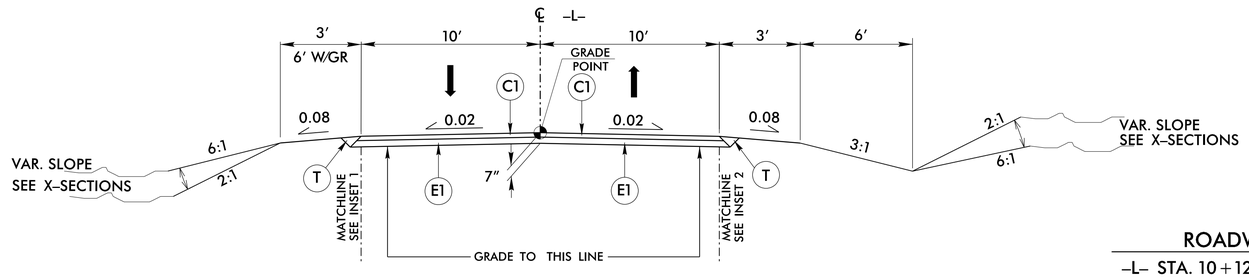
* MILL DEPTH AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER

** SEE TYPICALS FOR MIX TYPE



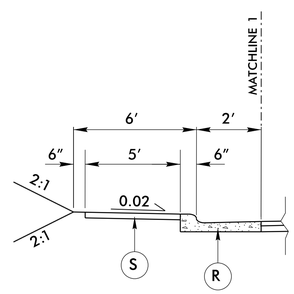
ROADWAY TYPICAL SECTION NO. 1

ROADWAY TYPICAL SECTION NO. 1
–L– STA. 13+80.00 TO STA. 14+65.00

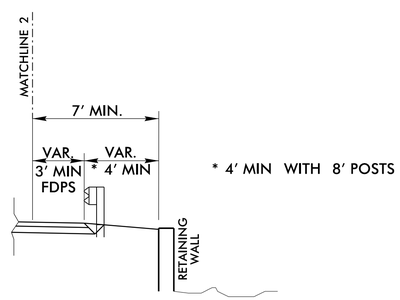


ROADWAY TYPICAL SECTION NO. 2

ROADWAY TYPICAL SECTION NO. 2
–L– STA. 10+12.45 TO STA. 11+69.65 (BEGIN BRIDGE)
–L– STA. 12+33.35 (END BRIDGE) TO STA. 13+80.00

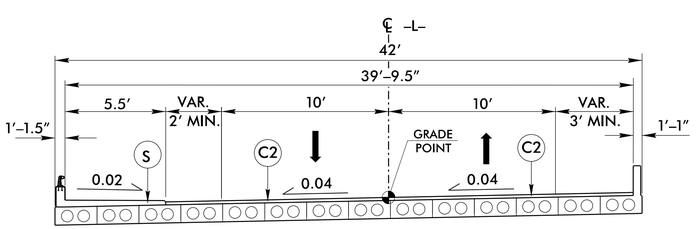


INSET 1
–L– STA. 11+15.00 TO STA. 11+69.65 LT (BEGIN BRIDGE)
–L– STA. 12+33.35 (END BRIDGE) TO STA. 13+33 LT

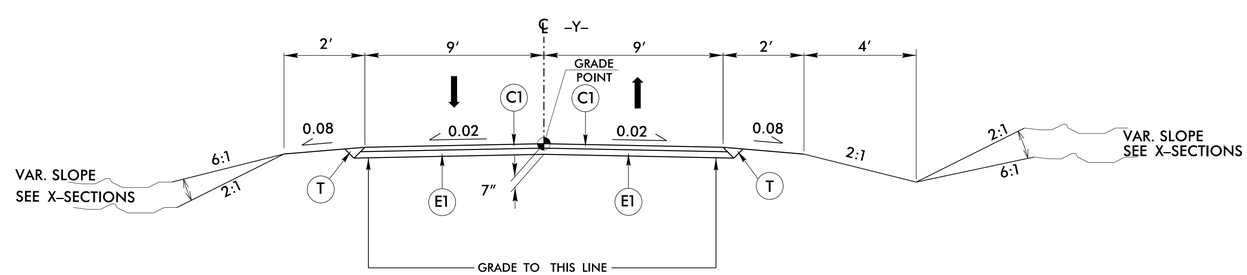


* 4′ MIN WITH 8′ POSTS

INSET 2
–L– STA. 10+66.00 TO STA. 11+69.65 RT (BEGIN BRIDGE)



STRUCTURE TYPICAL SECTION
(CORED SLAB)
–L– STA. 11+69.65 TO STA. 12+33.35



ROADWAY TYPICAL SECTION NO. 3

ROADWAY TYPICAL SECTION NO. 3
–Y– STA. 10+10.46 TO STA. 10+55.00

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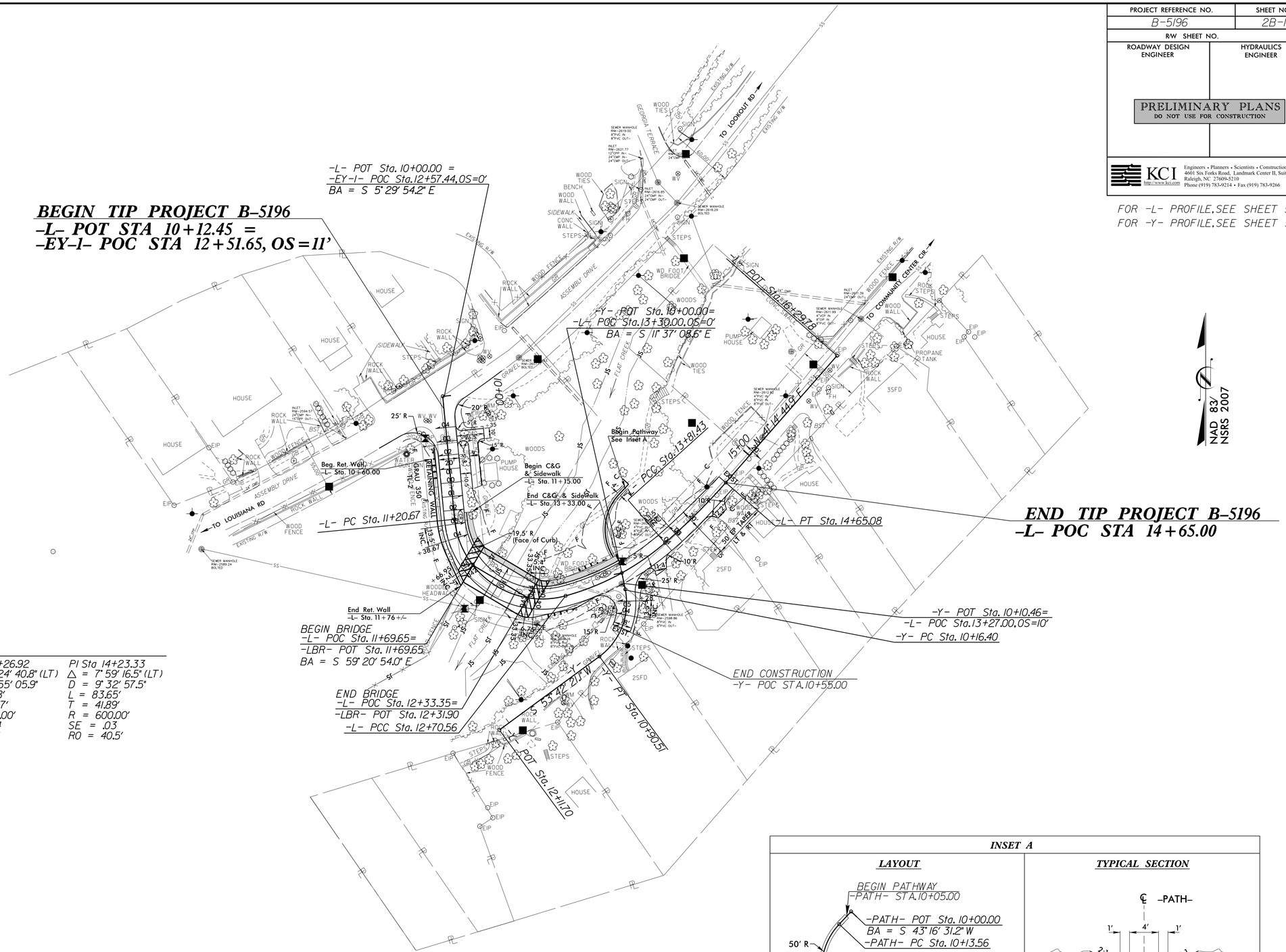
PROJECT REFERENCE NO.	SHEET NO.
B-5196	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

KCI
Engineers • Planners • Scientists • Construction Managers
4601 Six Forks Road, Landmark Center II, Suite 220
Raleigh, NC 27609-5210
Phone (919) 783-9214 • Fax (919) 783-9266
http://www.kci.com

FOR -L- PROFILE, SEE SHEET 5
FOR -Y- PROFILE, SEE SHEET 5



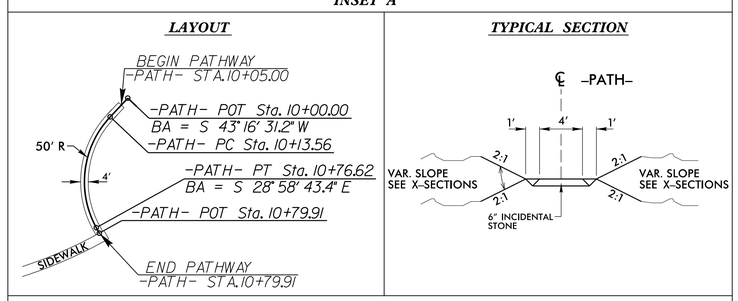
-L-

PI Sta 12+22.90	PI Sta 13+26.92	PI Sta 14+23.33
△ = 99° 51' 23.7" (LT)	△ = 25° 24' 40.8" (LT)	△ = 7° 59' 16.5" (LT)
D = 66° 37' 22.8"	D = 22° 55' 05.9"	D = 9° 32' 57.5"
L = 149.88'	L = 110.88'	L = 83.65'
T = 102.23'	T = 56.37'	T = 41.89'
R = 86.00'	R = 250.00'	R = 600.00'
SE = .04	SE = .04	SE = .03
RO = 54'	RO = 54'	RO = 40.5'

-Y-

PI Sta 10+58.07
△ = 65° 19' 29.7" (RT)
D = 88° 08' 50.5"
L = 74.11'
T = 41.67'
R = 65.00'

INSET A


LAYOUT

TYPICAL SECTION

4' PATHWAY DESIGN
(FOR PROFILE SEE SHEET 5)

REVISIONS

8/17/99

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4/04/06

COMPUTED BY: T. CAREY	DATE: 04/08/2015
CHECKED BY: B. SMITH	DATE: 04/10/2015

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
B-5196	3A-1

SUMMARY OF EARTHWORK IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. + %	BORROW	WASTE
-L- 10+12.45	11+69.65		1,093	1,093	
SUBTOTAL:			1,093	1,093	
-L- 12+33.35	14+65.00	9	1,147	1,138	
-Y- 10+10.46	10+55.00	12	55	43	
-PATH- 10+05.00	10+79.91	2	120	118	
SUBTOTAL:		23	1,342	1,319	
PROJECT TOTAL:		23	2,414	2,391	
EST 5% TO REPLACE TOP SOIL ON BORROW PIT				120	
GRAND TOTAL:		23		2,510	
SAY:		25		2,635	

NOTE:
APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

EXISTING PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	11+38.00	11+96.00	RT	119
-L-	12+17.00	12+60.00	RT	95
			TOTAL:	214
			SAY:	215

BREAKING OF PAVEMENT SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
-L-	10+12.45	11+38.00	CL	289
-L-	12+60.00	13+80.00	CL	268
			TOTAL:	557
			SAY:	560

SUMMARY OF RIP RAP

LINE	STATION	STATION	LOC	RIP RAP CLASS I	II	A	B	RR (TON)	GF (SY)	DDE (CY)	DETAIL	COMMENTS
-L-	11+28.00		LT				X	1	5			
-L-	11+90.00		RT		X			45	55			STREAMBANK STAB.
-L-	12+18.00		RT		X			40	45			STREAMBANK STAB.
-L-	12+50.00	13+00.00	RT				X	11	25			TOE PROTECTION
-L-	12+72.00		LT				X	1	5			
-L-	13+00.00		RT				X	2	7			

	TOTAL (TON)	SAY
CLASS I		
CLASS II	85	85
CLASS A		
CLASS B	15	15
DDE (CY)		
	TOTAL (SQ. YD)	SAY
GEOTEXTILE	142	145

ABBREVIATIONS	
CY	CUBIC YARD
DDE	DRAINAGE DITCH EXCAVATION
GF	GEOTEXTILE FOR DRAINAGE
LOC	LOCATION
RR	RIP RAP
SY	SQUARE YARD

2'- 6" CURB & GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L-	11+15.00	11+63+/-	48
-L-	12+39+/-	13+33.00	94
		TOTAL:	142
		SAY:	160

SUB-REGIONAL & REGIONAL LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-L- 11+28.00	LT	0401		2596.9			
-L- 11+28.00	LT	0401	0402		2593.9	2593.6	
-L- 12+72.00	LT	0403		2597.5			
-L- 12+72.00	LT	0403	0404		2594.5	2589.3	
-L- 13+40.00	RT	0405		2601.2			
-L- 13+00.00	RT	0405	0406		2598.9	2598.1	
SHEET TOTALS							

STATION	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-L- 11+28.00												
-L- 11+28.00		20'										
-L- 12+72.00												
-L- 12+72.00		28'							X			
-L- 13+40.00												
-L- 13+00.00												
SHEET TOTALS		48'										

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	36" (.079)	42" (.109)	48" (.109)	R.C. PIPE (CLASS III) 15"	18"	24"	30"	36"	42"	48"
-L- 11+28.00														
-L- 11+28.00														
-L- 12+72.00														
-L- 12+72.00														
-L- 13+40.00														
-L- 13+00.00														
SHEET TOTALS														

STATION	R.C. PIPE (CLASS IV) 12"	15"	18"	24"	30"	36"	42"	48"	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-L- 11+28.00															
-L- 11+28.00															
-L- 12+72.00															
-L- 12+72.00															
-L- 13+40.00															
-L- 13+00.00		44'													
SHEET TOTALS		44'													

STATION	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET	D.I. STD. 840.14 OR 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72		PIPE REMOVAL LIN.FT.	REMARKS
-L- 11+28.00	1			1	1																
-L- 11+28.00																					
-L- 12+72.00	1			1			1														
-L- 12+72.00																					
-L- 13+40.00	1										1	1									
-L- 13+00.00																					
SHEET TOTALS	3			2	1		1				1	1									

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

"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.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	SHOP CURVED	DOUBLE FACED	WARRANT POINT APPROACH END	TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	TRAILING END	W APPROACH END	TRAILING END
-L-	10+50.31	11+65.44	RIGHT	89.25'	32.50'		11+65.44 (BR RAIL)		3'	7'	16.18'		4.2'	
-L-	12+27.65	12+77.25	RIGHT	41.00'	18.75'			12+27.65 (BR)	6'	9'				
-L-	12+56.56	13+22.85	LEFT	41.00'	18.75'		12+56.56 (BR RAIL)		7.5'	10.5'	25'		1'	
			SUBTOTAL	171.25'	70.00'									
		LESS ANCHOR DEDUCTIONS:												
		GRAU 350 TL-2	3 @ 28.50' =	-85.50'										
		TYPE III	1 @ 18.75' =	-18.75'										
		SC TYPE III	2 @ 18.75' =		-37.50'									
		ANCHOR DEDUCTION TOTAL:		-104.25'	-37.50'									
			PROJECT TOTAL	67.00'	32.50'									
			SAY	75'	37.50'									
		ADDITIONAL GUARDRAIL POST =		5										

SURVEY LINE	ANCHORS XI MOD	B-77	GRAU 350	M-350	XIII	TYPE III	SHOP CURVED TYPE III	GRAU 350 TL-2	AT-1	TEMP. CRASH CUSHIONS EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-						1		1								ATTACH STR. ANCH. UNIT TO EXTENDED BRIDGE RAIL (SEE STR. PLANS); USE 8' LENGTH POSTS
-L-							1	1								SHOP CURVED TYPE III RADIUS = 25'
-L-							1	1								SHOP CURVED TYPE III RADIUS = 68.5' RADIUS FOR 11' ; ATTACH STR. ANCH. UNIT TO EXTENDED BRIDGE RAIL (SEE STR. PLANS)
SUBTOTAL																
LESS ANCHOR DEDUCTIONS																
GRAU 350 TL-2																
TYPE III																
SC TYPE III																
ANCHOR DEDUCTION TOTAL																
PROJECT TOTAL																
SAY						1	2	3								
ADDITIONAL GUARDRAIL POST																

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PROJECT REFERENCE NO.	SHEET NO.
B-5196	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-0490

FOR -L- PROFILE, SEE SHEET 5
FOR -Y- PROFILE, SEE SHEET 5

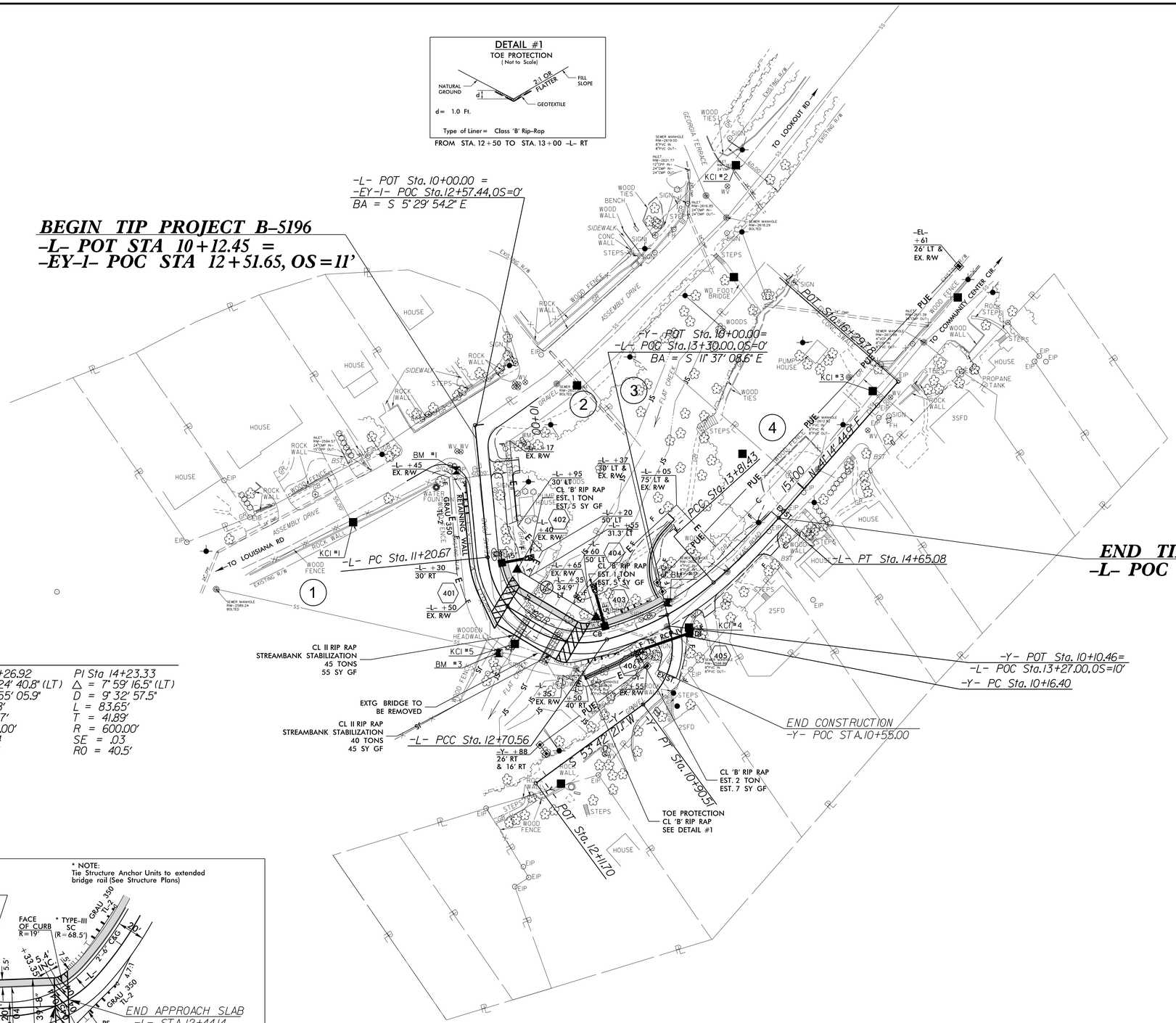
NAD 83/
NSRS 2007

DETAIL #1
TOE PROTECTION
(Not to Scale)

d = 1.0 Ft.

Type of Liner = Class 'B' Rip-Rap

FROM STA. 12+50 TO STA. 13+00 -L- RT

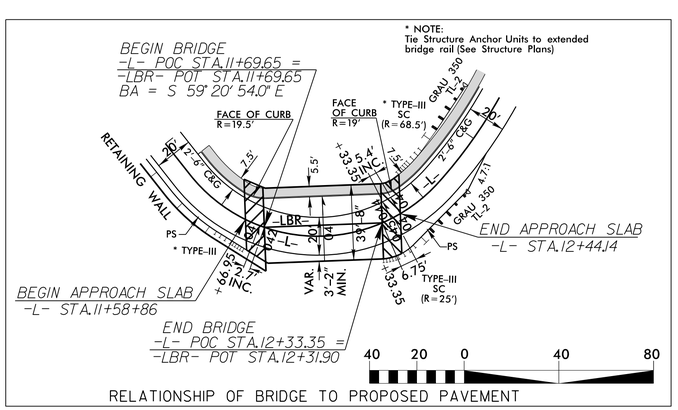


-L-

PI Sta 12+22.90	PI Sta 13+26.92	PI Sta 14+23.33
Δ = 99° 51' 23.7" (LT)	Δ = 25° 24' 40.8" (LT)	Δ = 7° 59' 16.5" (LT)
D = 66° 37' 22.8"	D = 22° 55' 05.9"	D = 9° 32' 57.5"
L = 149.88'	L = 110.88'	L = 83.65'
T = 102.23'	T = 56.37'	T = 41.89'
R = 86.00'	R = 250.00'	R = 600.00'
SE = .04	SE = .04	SE = .03
R0 = 54'	R0 = 54'	R0 = 40.5'

-Y-

PI Sta 10+58.07
Δ = 65° 19' 29.7" (RT)
D = 88° 08' 50.5"
L = 74.11'
T = 41.67'
R = 65.00'



RELATIONSHIP OF BRIDGE TO PROPOSED PAVEMENT

NOTE: SEE DETAIL SHEET 2B-1 FOR DIMENSIONS AND SUPERS

REVISIONS

8/17/99

28-APR-2015 14:47
28-APR-2015 12:51 B-5196 Montreat\Roadway\Proj\B-5196_Rdy_psh_4.dgn
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PROJECT REFERENCE NO.	SHEET NO.
B-5196	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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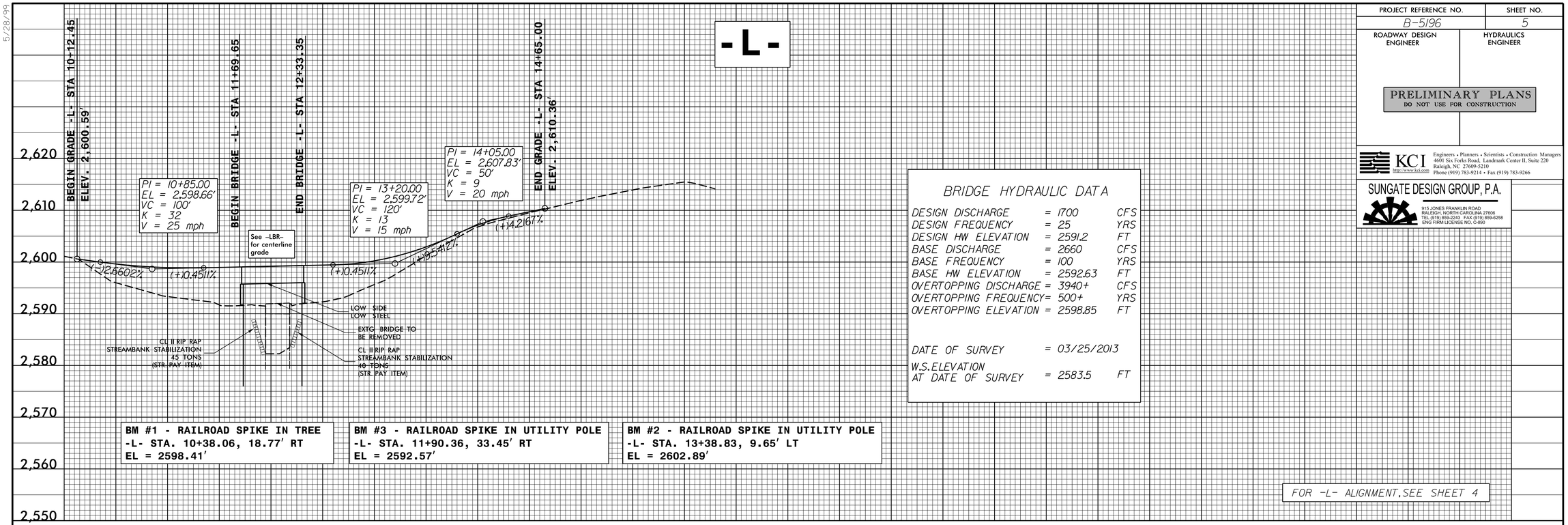


BRIDGE HYDRAULIC DATA

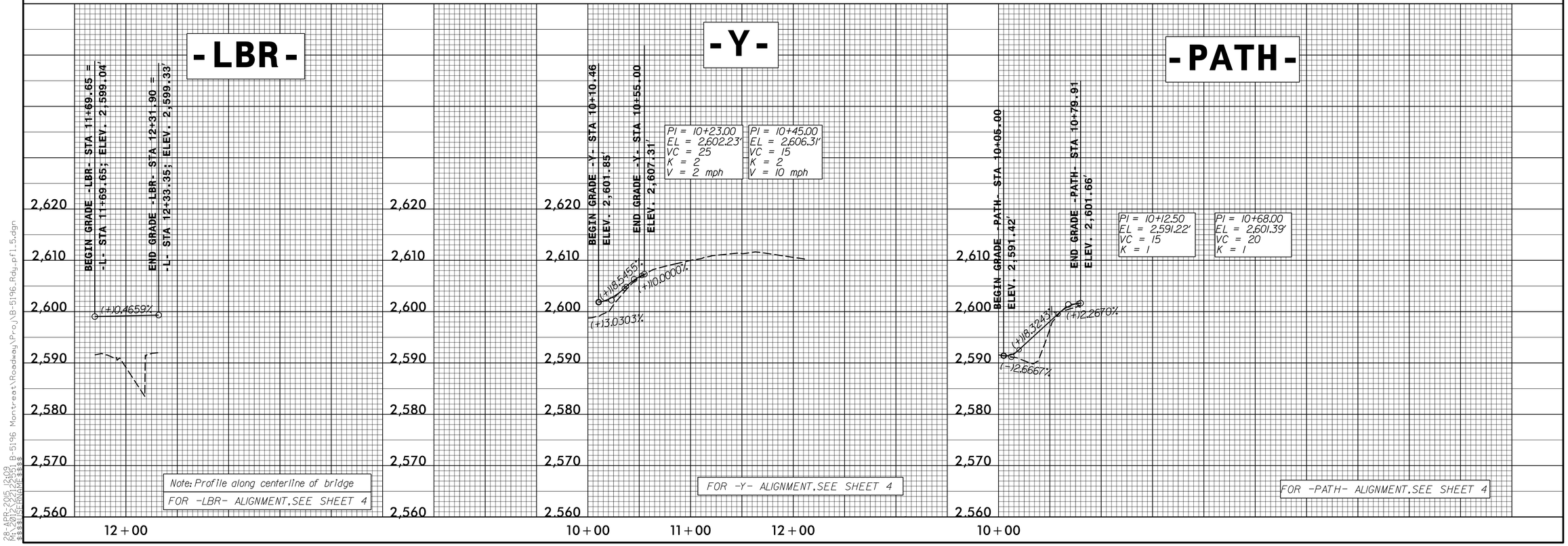
DESIGN DISCHARGE	= 1700	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2591.2	FT
BASE DISCHARGE	= 2660	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2592.63	FT
OVERTOPPING DISCHARGE	= 3940+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2598.85	FT
DATE OF SURVEY	= 03/25/2013	
W.S.ELEVATION AT DATE OF SURVEY	= 2583.5	FT

BM #1 - RAILROAD SPIKE IN TREE
-L- STA. 10+38.06, 18.77' RT
EL = 2598.41'

BM #3 - RAILROAD SPIKE IN UTILITY POLE
-L- STA. 11+90.36, 33.45' RT
EL = 2592.57'

BM #2 - RAILROAD SPIKE IN UTILITY POLE
-L- STA. 13+38.83, 9.65' LT
EL = 2602.89'

FOR -L- ALIGNMENT, SEE SHEET 4



Note: Profile along centerline of bridge

FOR -LBR- ALIGNMENT, SEE SHEET 4

FOR -Y- ALIGNMENT, SEE SHEET 4

FOR -PATH- ALIGNMENT, SEE SHEET 4

5/28/99
28-APR-2015 14:09
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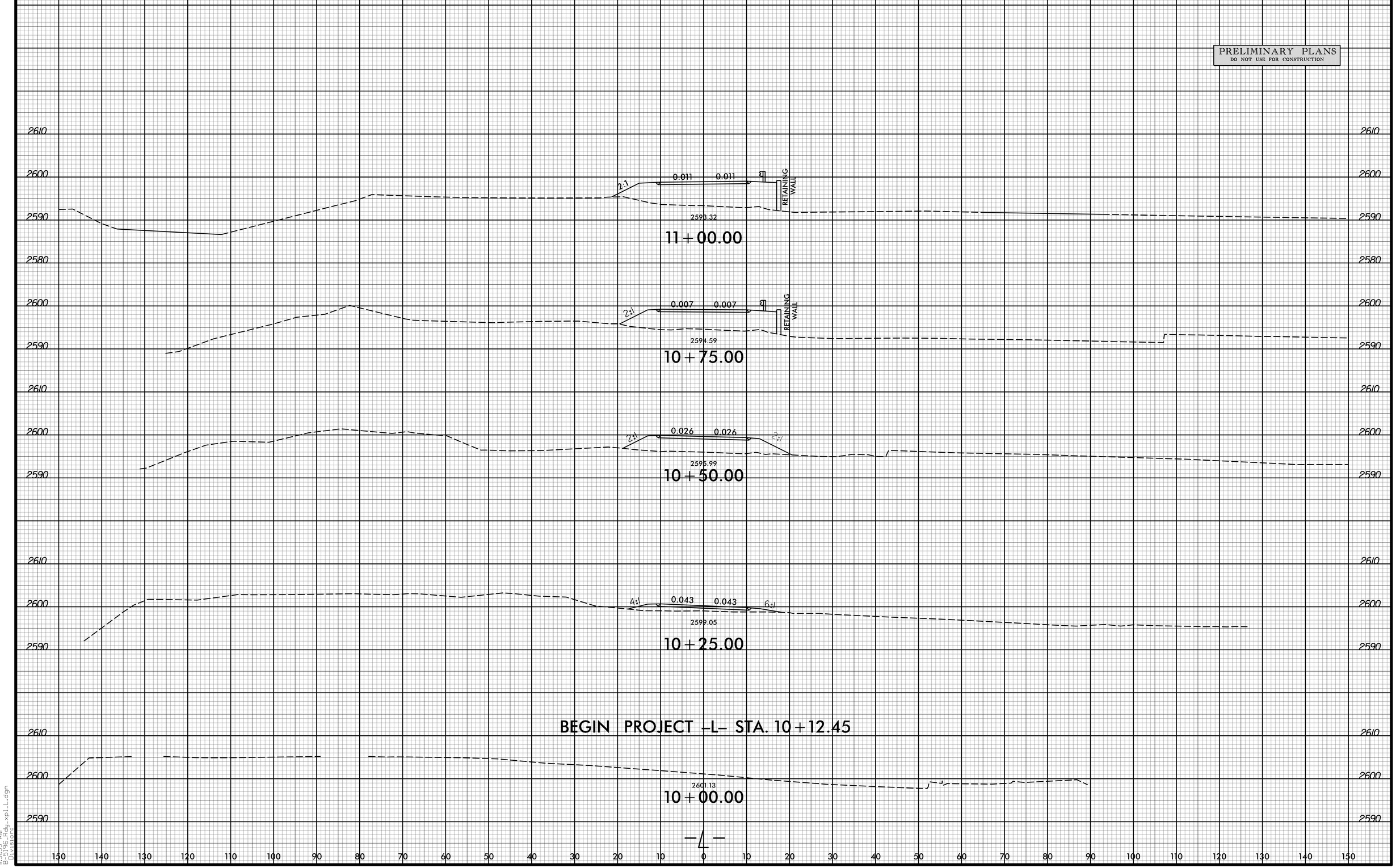
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5196	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



8/23/99

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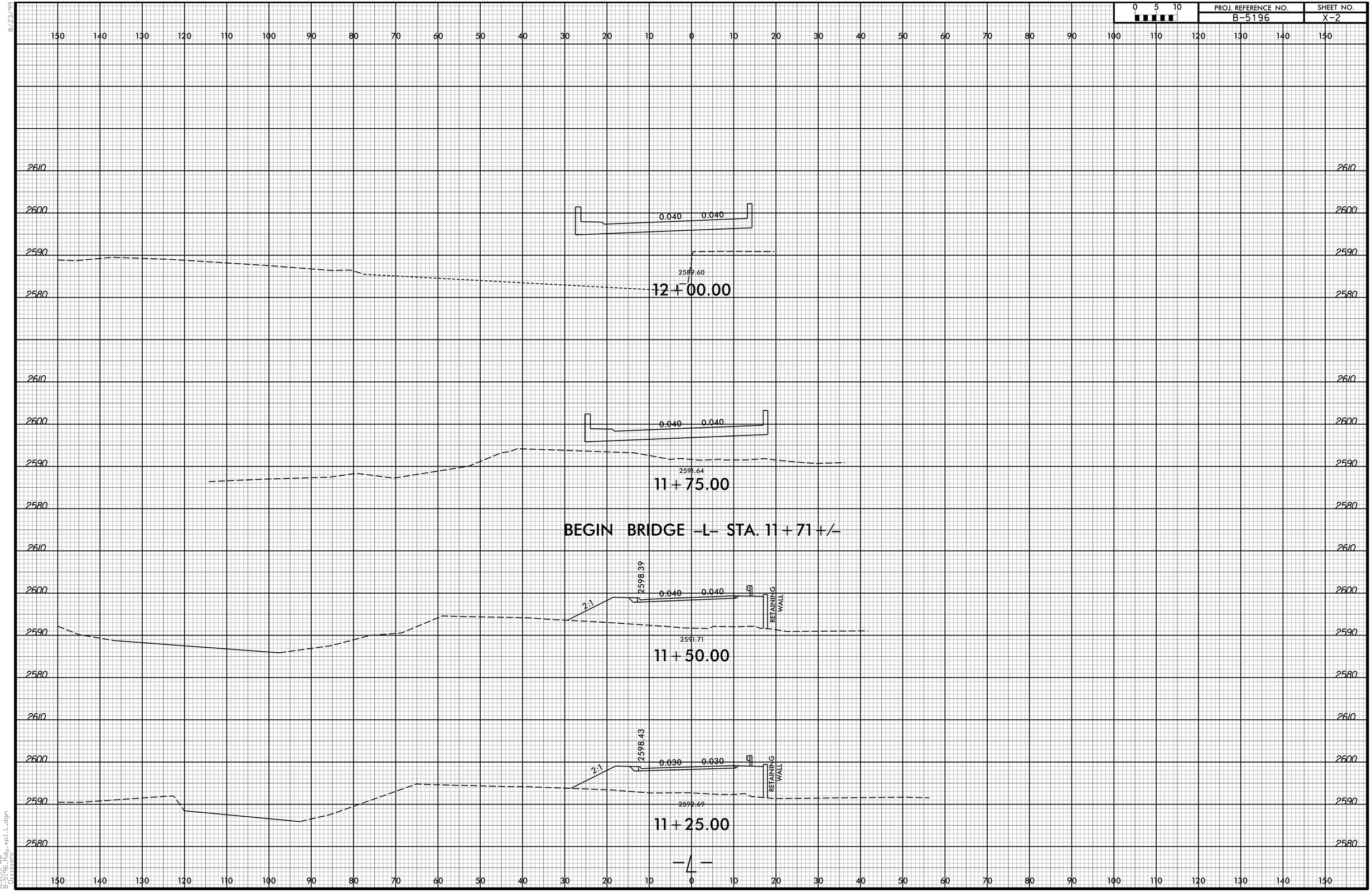
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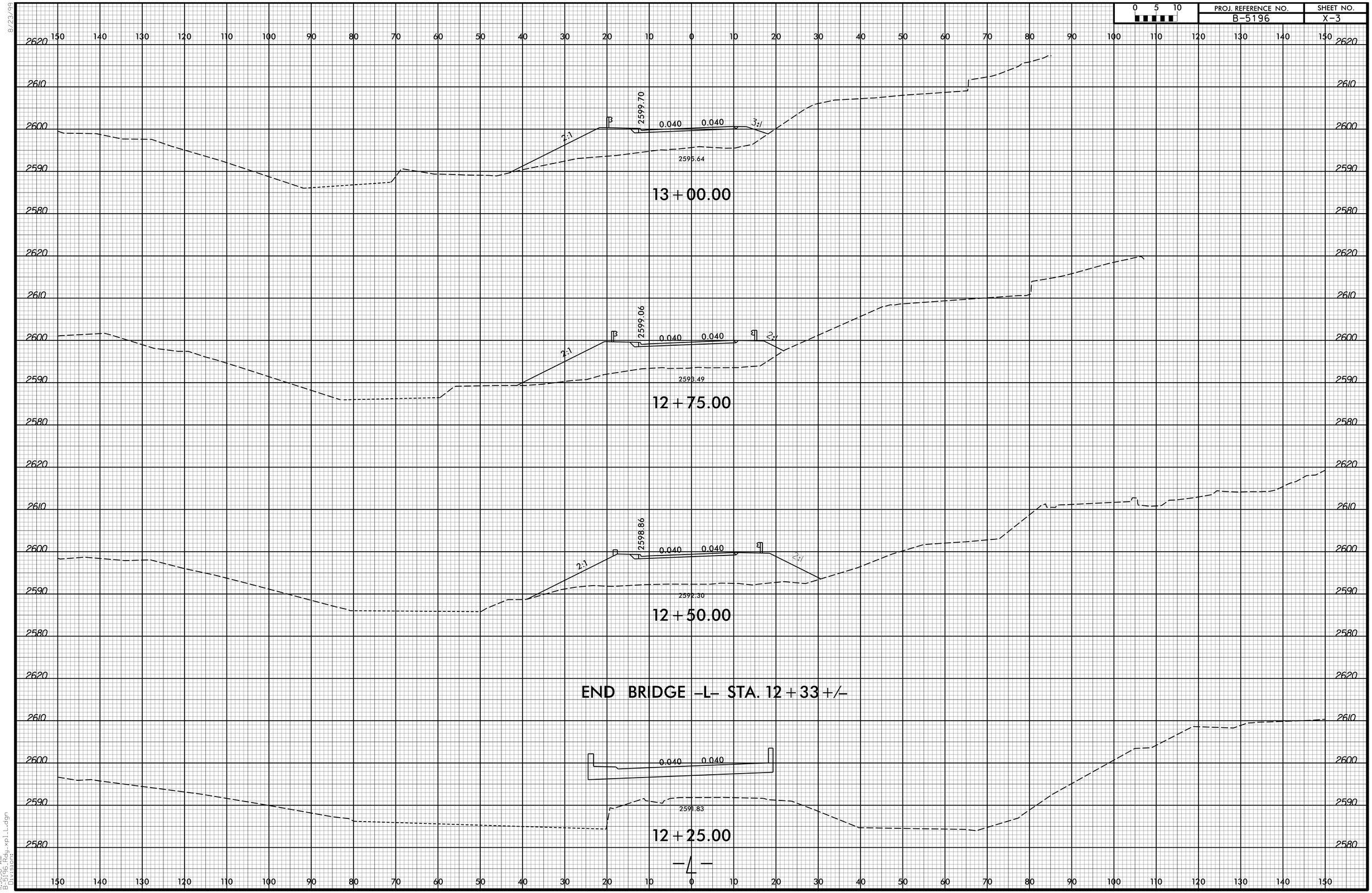
2610
2600
2590
2580
0.040
0.040
2589.60
12+00.00
2591.64
11+75.00
BEGIN BRIDGE -L- STA. 11+71+/-
2598.39
2:1
RETAINING WALL
2591.71
11+50.00
2598.43
0.030
2592.69
11+25.00
-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5196	X-3



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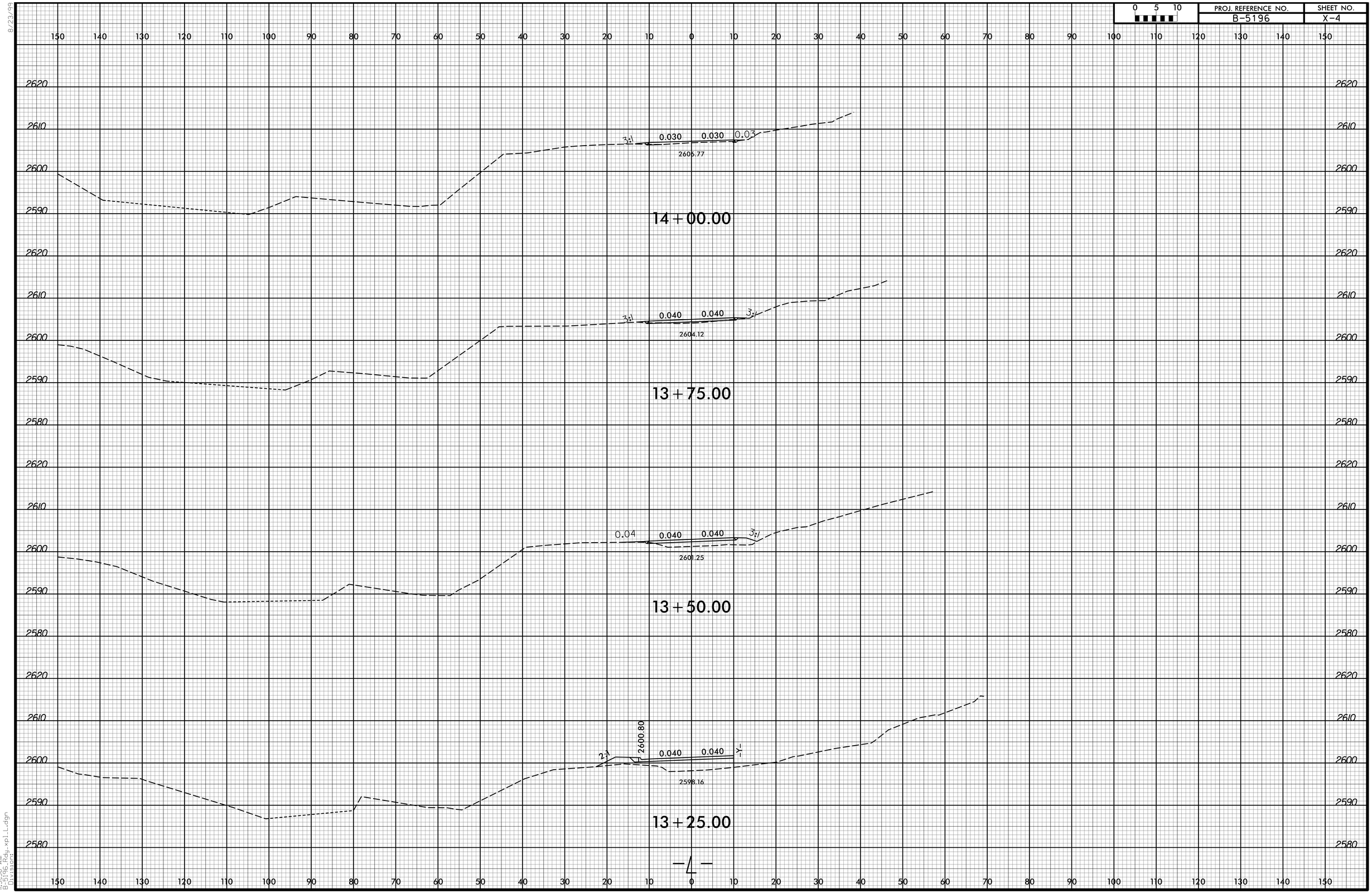

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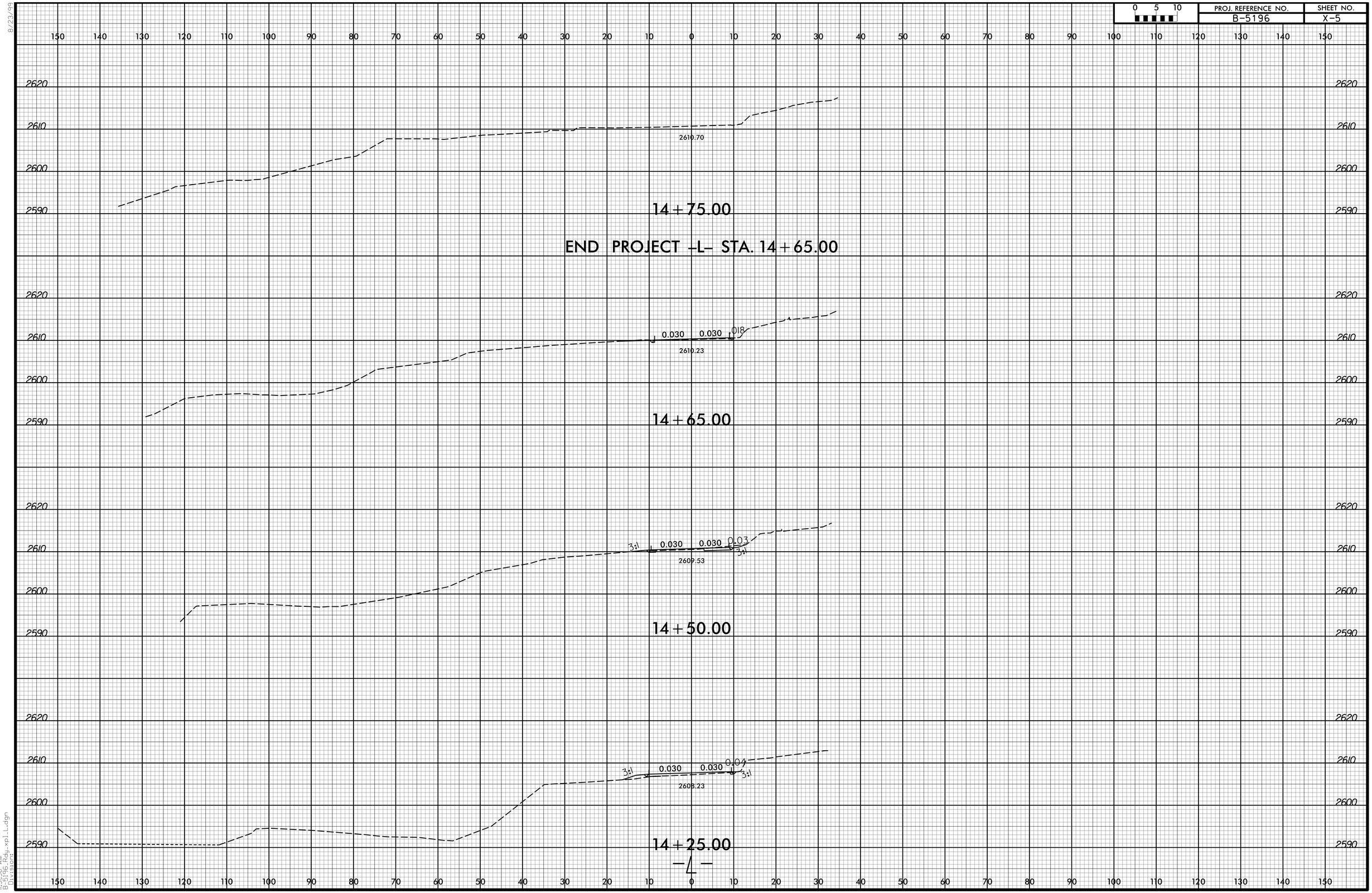

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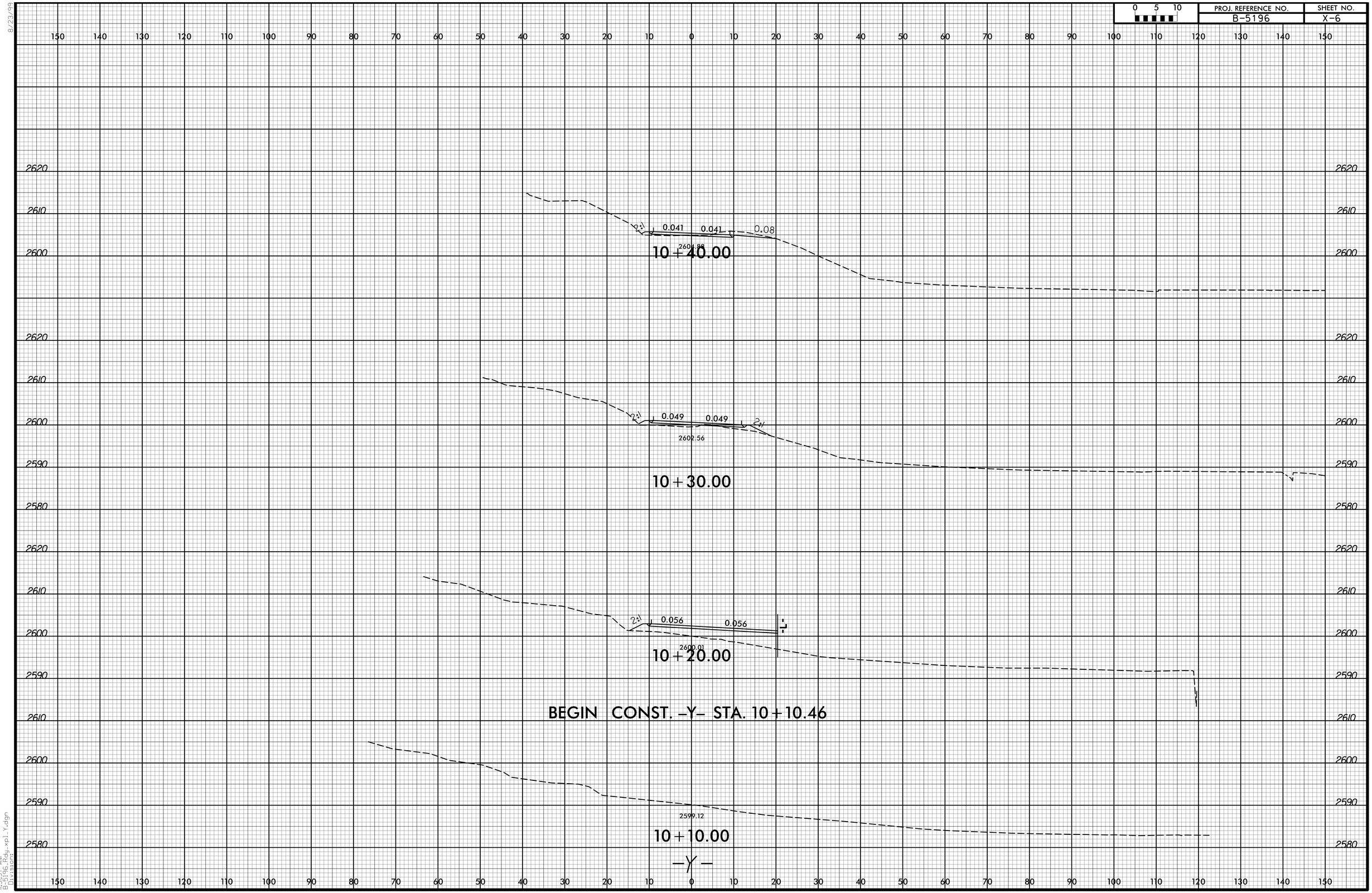

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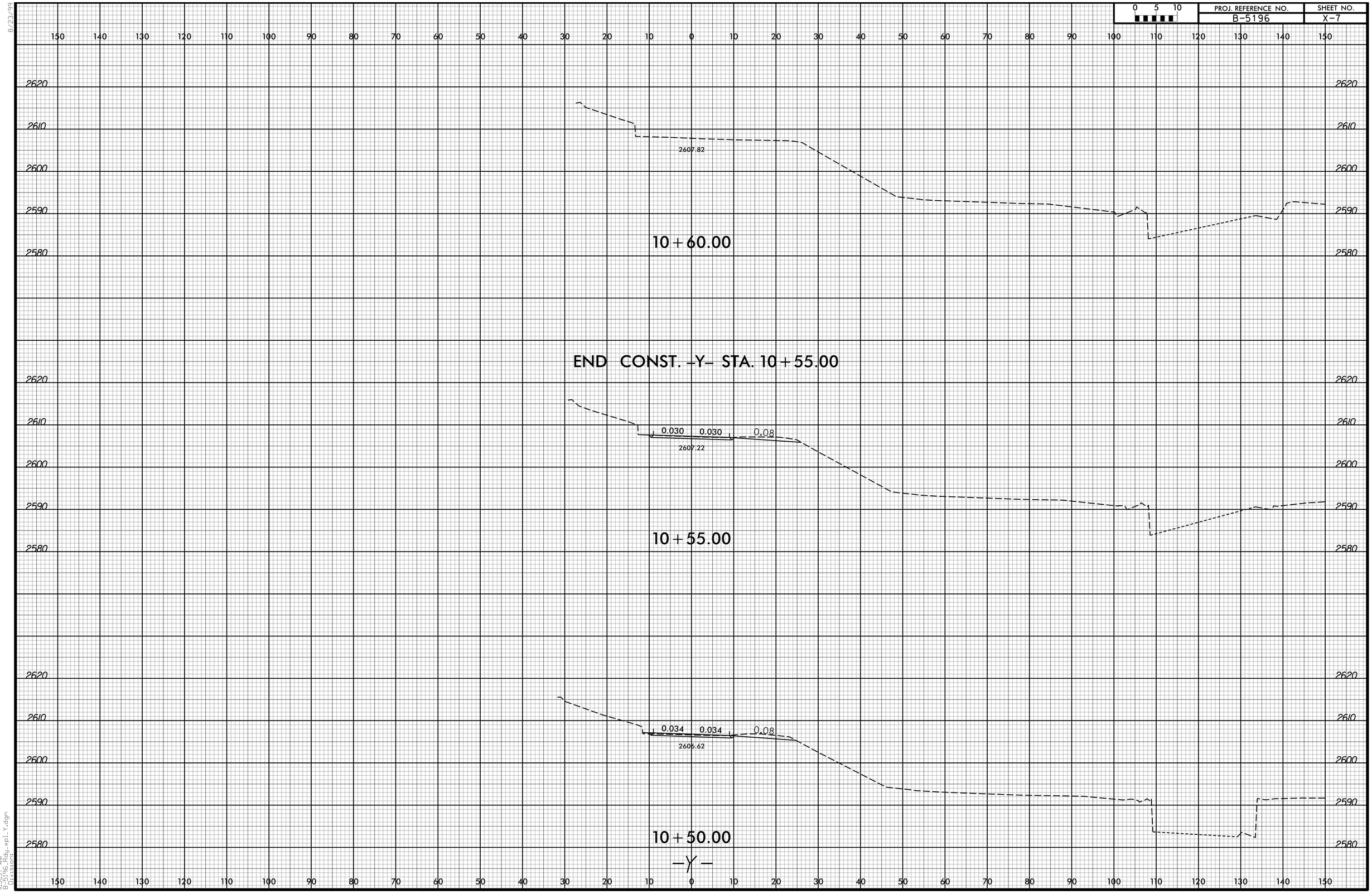

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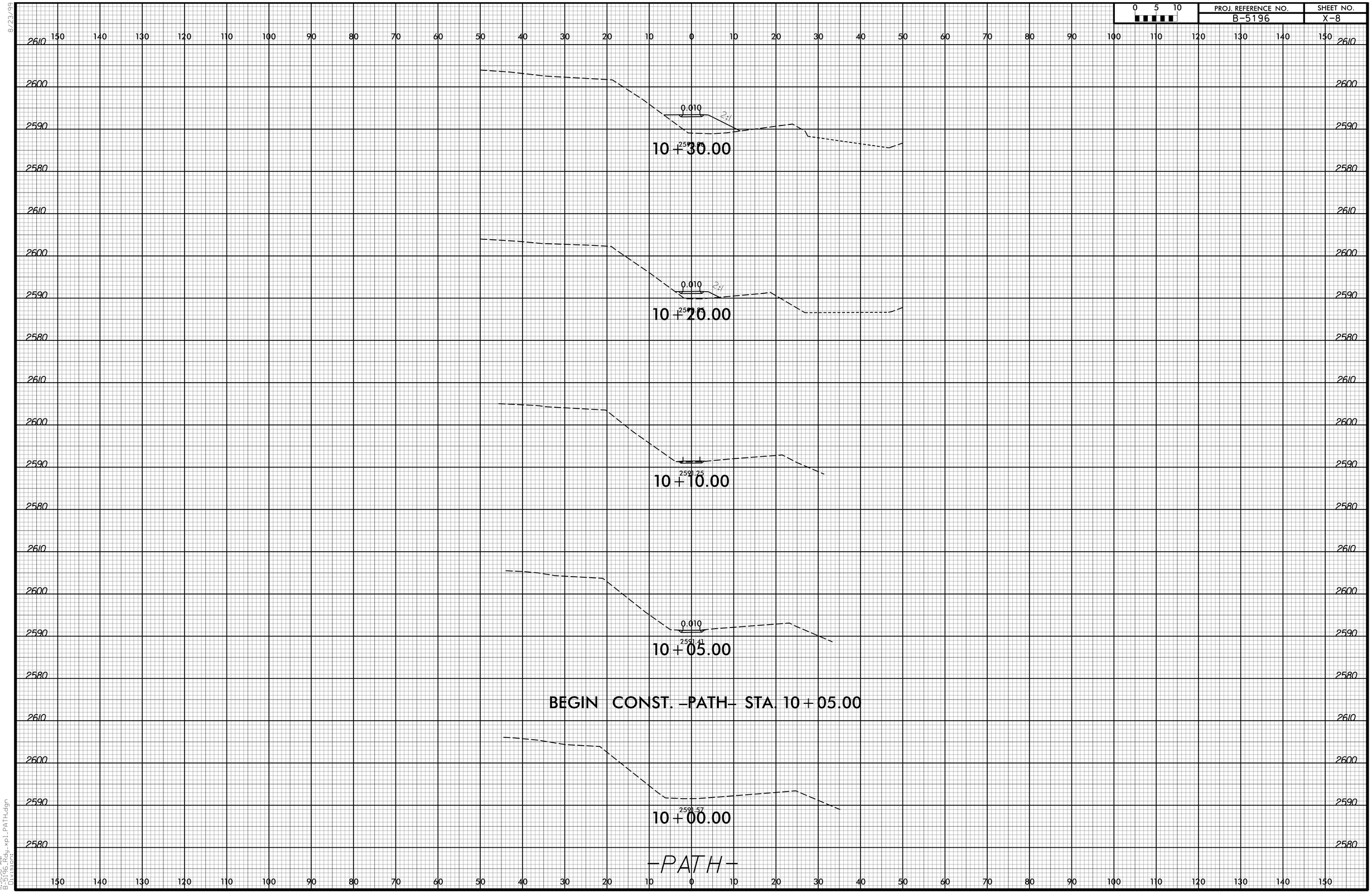

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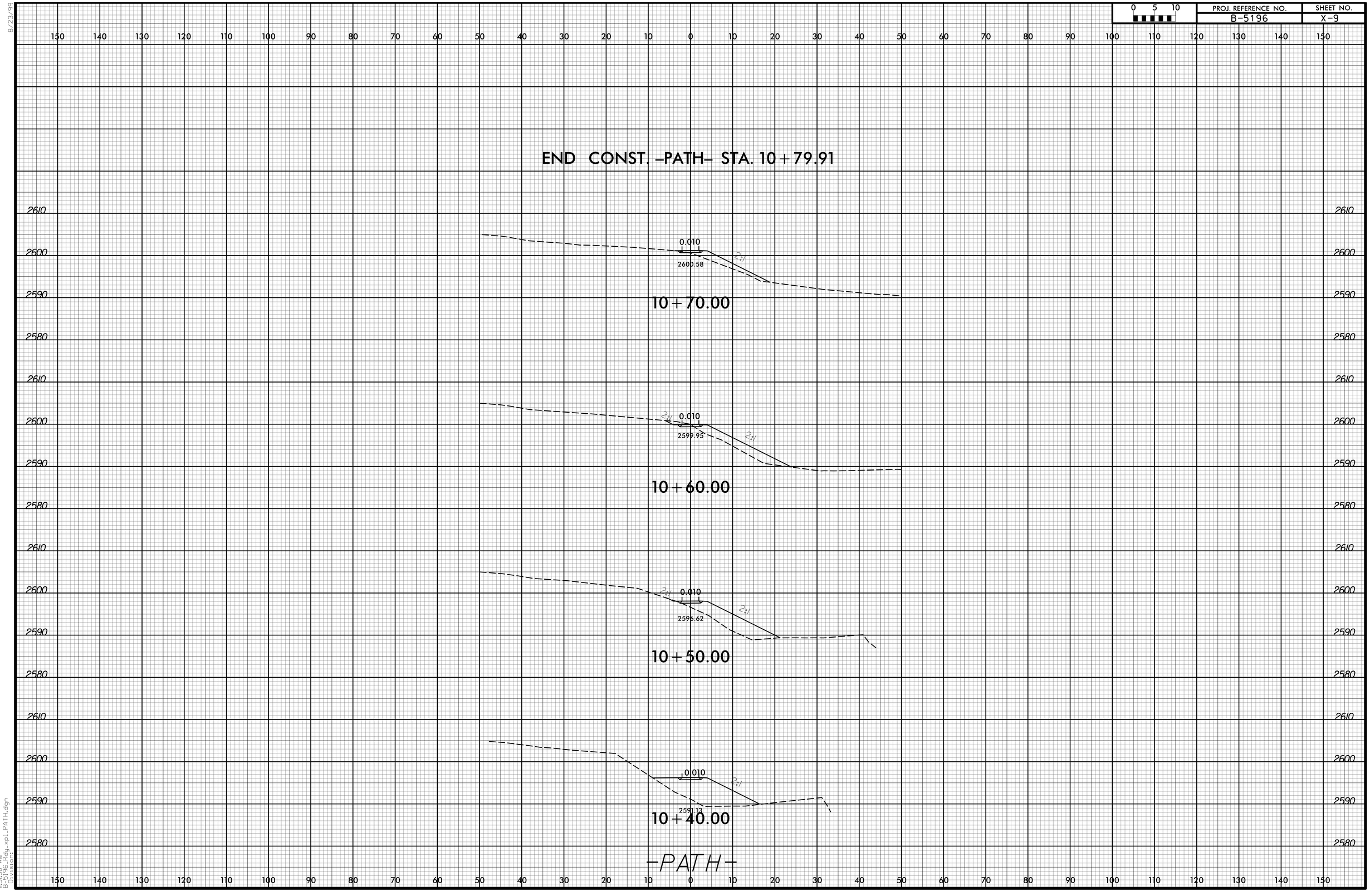

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