

PROJECT ID: 1227-12-72

WITH: 1227-12-71

COUNTY: MANITOWOC

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right-of-Way Plat
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plates
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS =



DESIGN DESIGNATION

A.A.D.T.	2023	=	21,140
A.A.D.T.	2043	=	23,500
D.H.V.		=	3,000
D.D.		=	58/42
T. (A.A.D.T)		=	15.2%
DESIGN SPEED		=	70 MPH
ESALS		=	12,000,000

CONVENTIONAL SYMBOLS

PLAN	
CORPORATE LIMITS	
PROPERTY LINE	
LOT LINE	
LIMITED HIGHWAY EASEMENT	
EXISTING RIGHT OF WAY	
PROPOSED OR NEW R/W LINE	
SLOPE INTERCEPT	
REFERENCE LINE	
EXISTING CULVERT	
PROPOSED CULVERT (Box or Pipe)	
COMBUSTIBLE FLUIDS	
MARSH AREA	
WOODED OR SHRUB AREA	

PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

	ROCK
	LABEL
	95.36
	T-20-N
	T-19-N
	T-20-N
	T-19-N
	T-20-N
	T-19-N
	T-20-N
	T-19-N
	T-20-N
	T-19-N

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

MANITOWOC - GREEN BAY

DEVIL'S RIVER STATE TRAIL - STH 96

IH 43

MANITOWOC COUNTY

STATE PROJECT NUMBER
1227-12-72

END PROJECT
STA 1988'NB'+34.85
Y = 391,437.561
X = 185,628.534

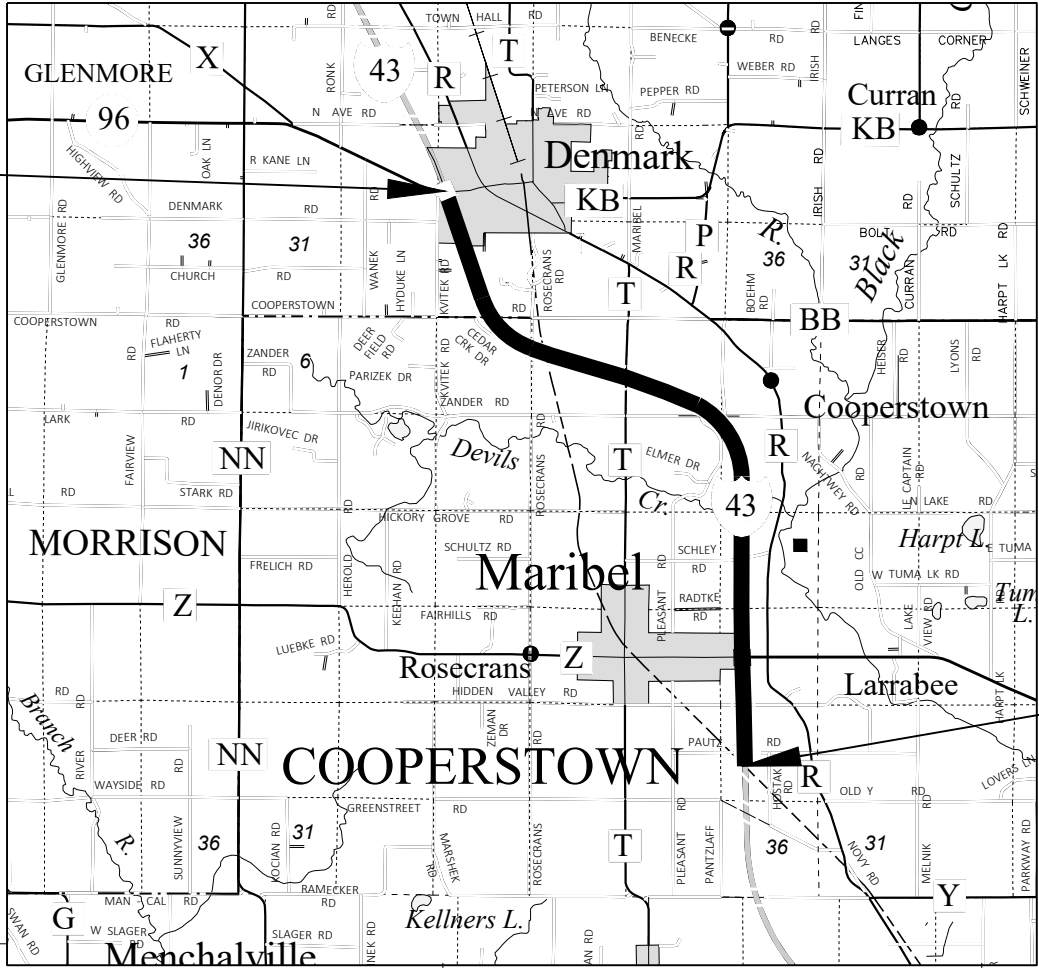
BROWN CO T-21-N
MANITOWOC CO T-20-N

T-22-N KEWAUNEE CO
T-21-N MANITOWOC CO

T-21-N
T-20-N

T-20-N
T-19-N

BEGIN PROJECT
STA 1606'NB'+74.07
Y = 362,219.588
X = 201,315.418



HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), MANITOWOC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

TRANS 220
PROJECT PLAN
FOR
DESIGN OF UTILITY FACILITY
ALTERATIONS OR RELOCATIONS

Date: _____

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	
Surveyor	NE REGION
Designer	J. MATERNOSKI
Project Manager	B. HAEN
Regional Examiner	
Regional Supervisor	C. DEGRAVE

APPROVED FOR THE DEPARTMENT
DATE: _____
(Signature)

E

GENERAL NOTES

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

ORDER OF SECTION 2 DETAIL SHEETS

- GENERAL NOTES
- PROJECT OVERVIEW
- TYPICAL SECTIONS
- CONSTRUCTION DETAILS
- PLAN DETAILS
- DETOUR

DNR LIAISON

MATT SCHAEVE
DNR NORTHEAST REGIONAL HEADQUARTERS
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GREEN BAY, WI 54313
(920) 366-1544
matthew.schaeve@wisconsin.gov

BROWN COUNTY HIGHWAY COMMISSIONER

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BROWN COUNTY HIGHWAY DEPT
2198 GLENDALE AVE.
GREEN BAY, WI 54303
(920) 492-4925
bc_highway@co.brown.wi.us

MANITOWOC COUNTY HIGHWAY COMMISSIONER

MARC HOLSEN
MANITOWOC CO. HIGHWAY DEPT.
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MANITOWOC, WI 54220
(920) 683-4353
marc.holsen@co.manitowoc.wi.us

NE REGION SURVEY COORDINATOR

CORMAC MCINNIS, RLS
944 VANDERPERREN WAY
GREEN BAY, WI 54304
(920)492-5638
cormac.mcinnis@dot.wi.gov

UTILITIES CONTACTS

COMPANY NAME
CONTACT NAME
ADDRESS
CITY, STATE, ZIP
PHONE
EMAIL

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER
ROW CROPS	0.08	0.16	0.22	0.12	0.20	0.27	0.15	0.24	0.33	0.19	0.28	0.38
	0.22	0.30	0.38	0.26	0.34	0.44	0.30	0.37	0.50	0.34	0.41	0.56
MEDIAN STRIP TURF	0.19	0.20	0.24	0.19	0.22	0.26	0.20	0.23	0.30	0.20	0.25	0.30
	0.24	0.26	0.30	0.25	0.28	0.33	0.26	0.30	0.37	0.27	0.32	0.40
SIDE STRIP TURF			0.25			0.27			0.28			0.30
			0.32			0.34			0.36			0.38
PAVEMENT:												
ASPHALT						.70 - .95						
CONCRETE						.80 - .95						
BRICK						.70 - .80						
DRIVES, WALKS						.75 - .85						
ROOFS						.75 - .95						
GRAVEL ROADS, SHOULDERS						.40 - .60						

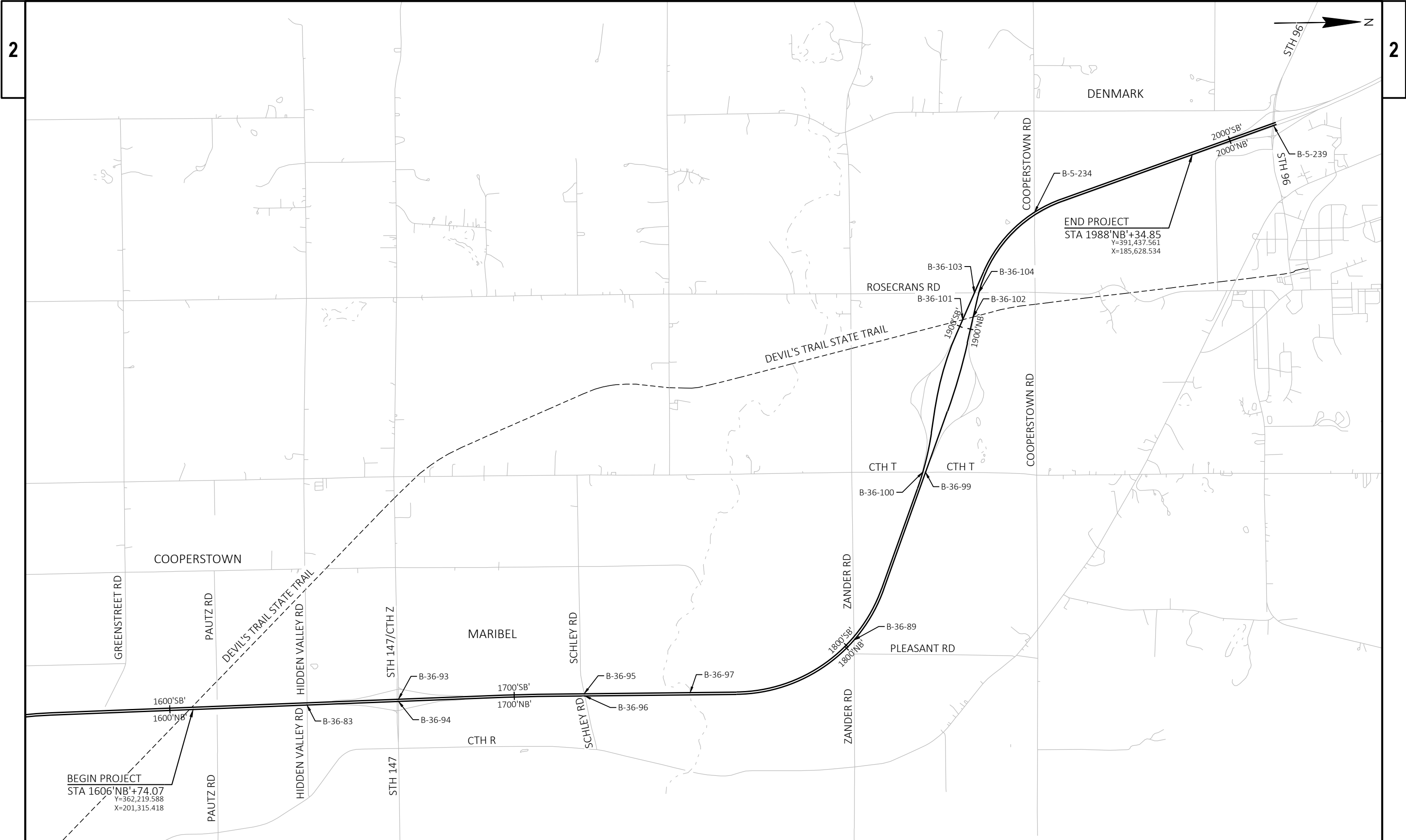
TOTAL PROJECT AREA = 71.80 ACRES

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.20 ACRES

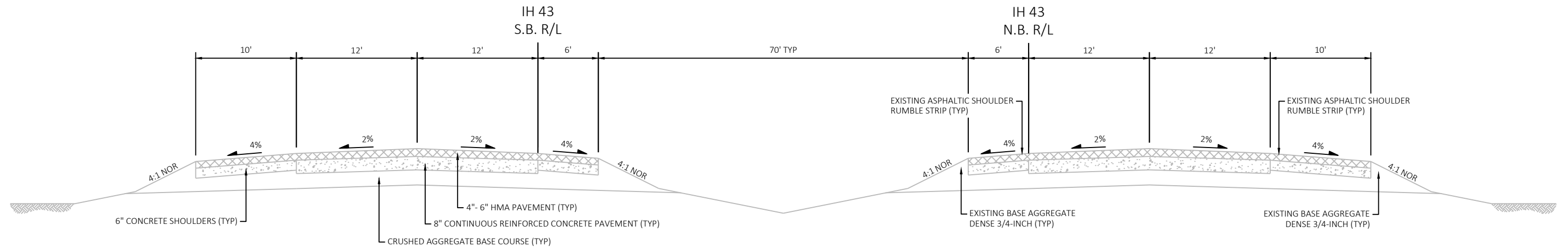
DIGGERSHOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

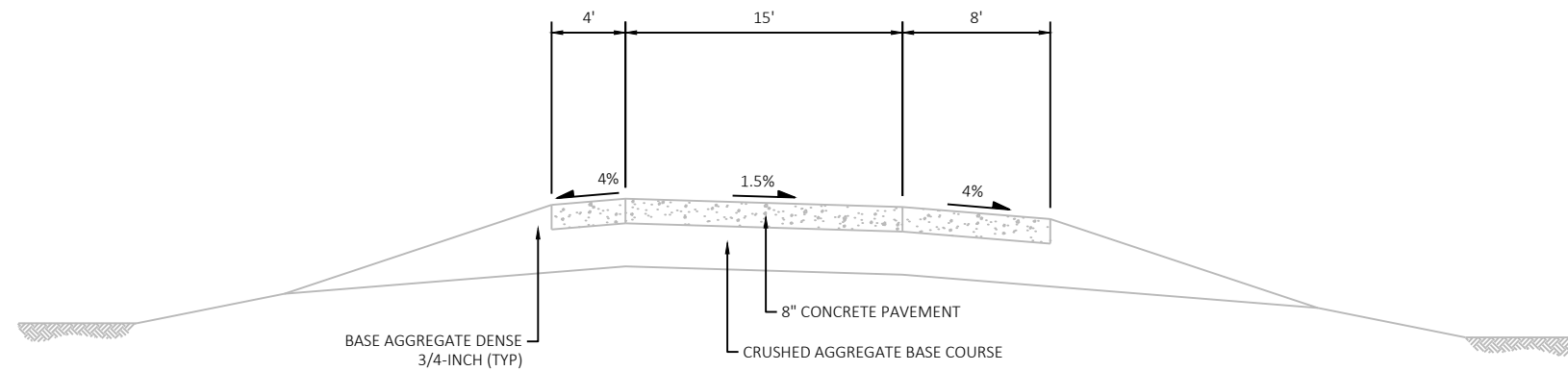


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PROJECT OVERVIEW	SHEET	E
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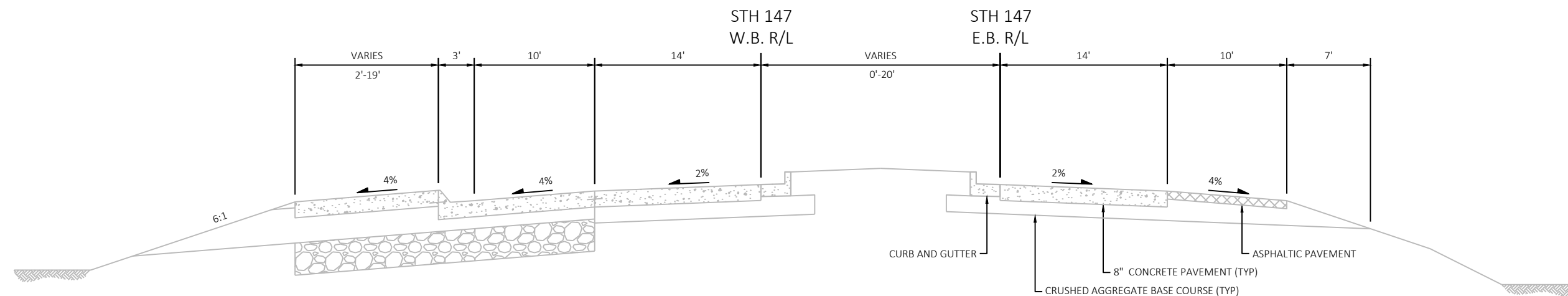


ASPHALT OVERLAYS 4" TOTAL THICKNESS AT EDGE OF TRAVEL LANES
CONCRETE TRAVEL LANES SLOPED AT 1.5 %
SUBGRADE SLOPED AT 1.5 %
CONCRETE SHOULDERS SLOPED AT 4.0 %

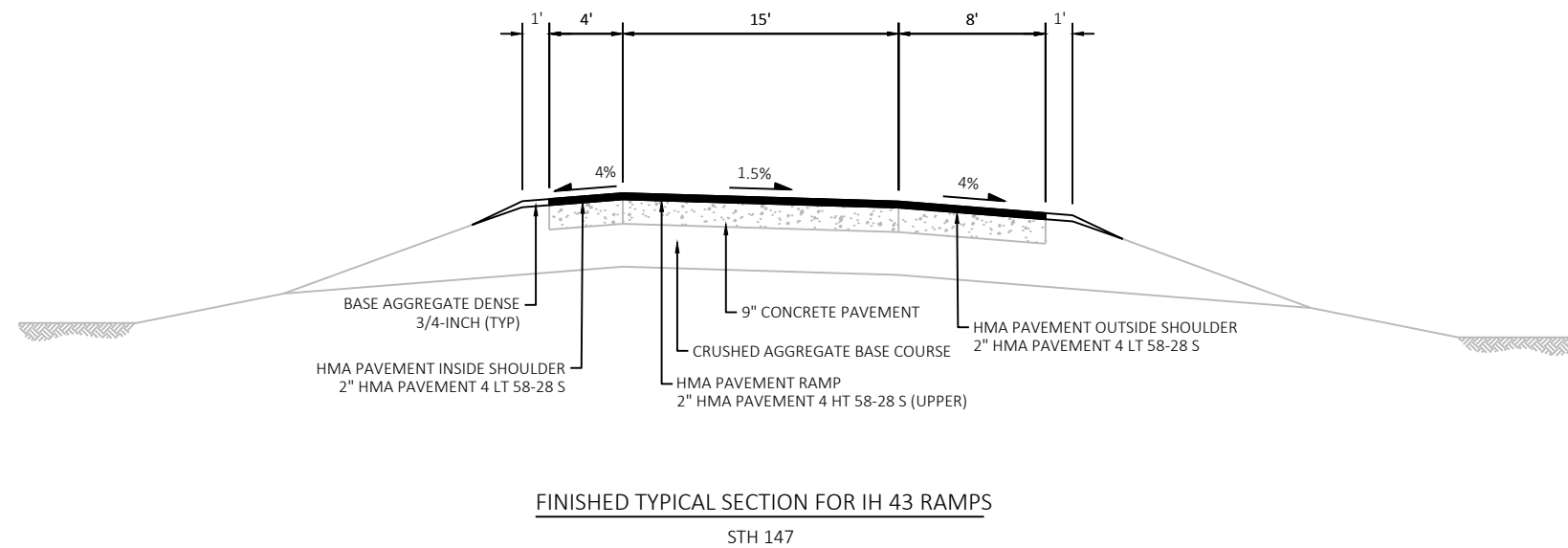
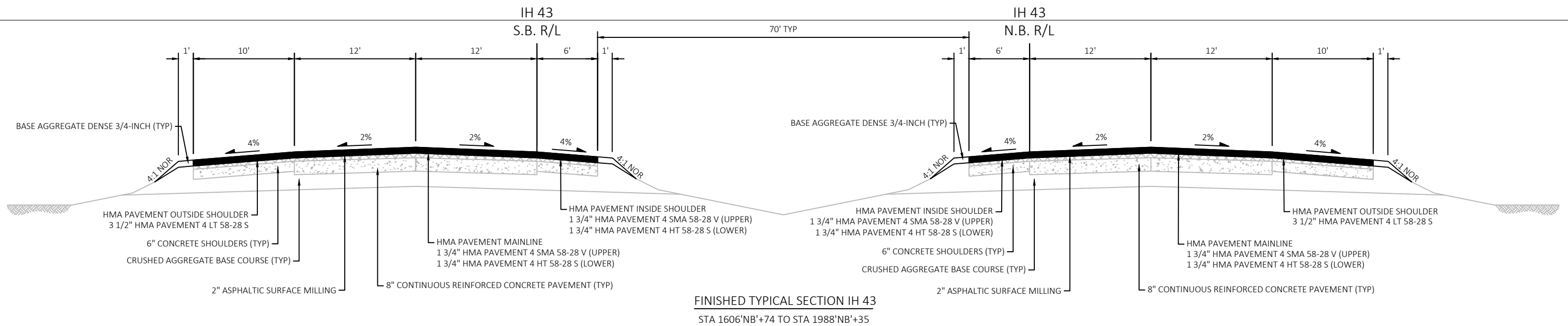
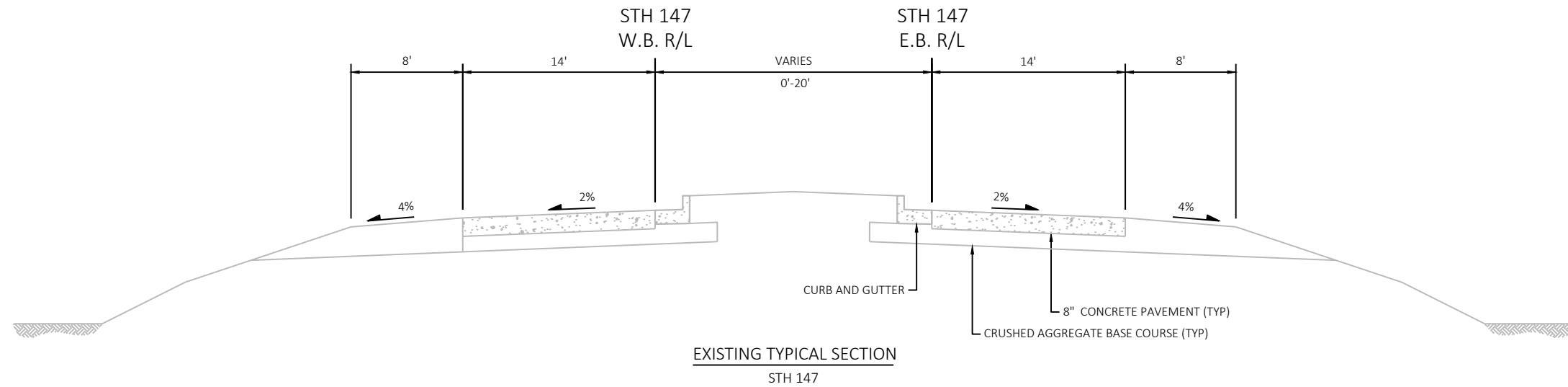
EXISTING TYPICAL SECTION IH 43
STH 1606'NB'+74 TO STA 1988'NB'+35

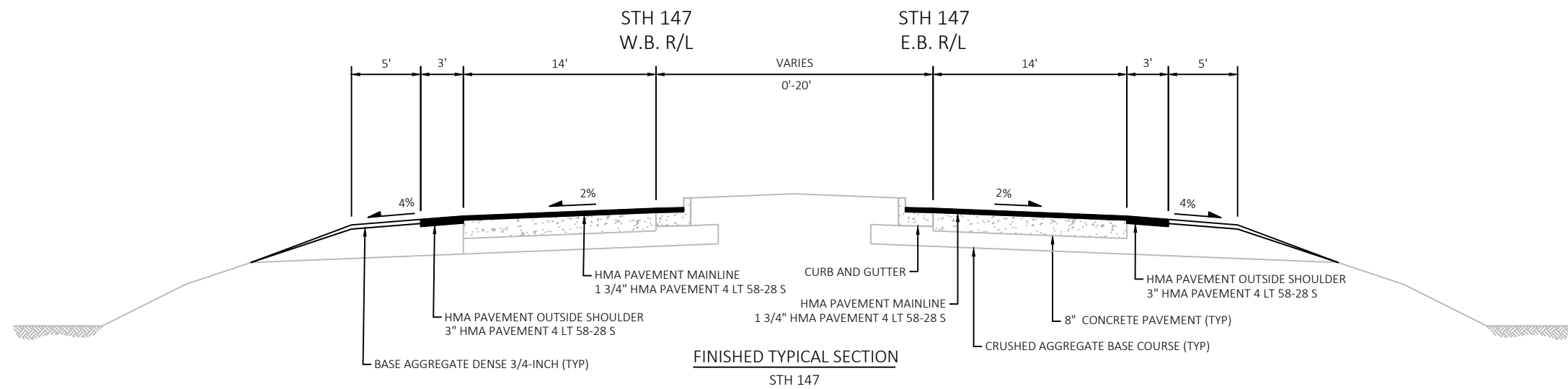
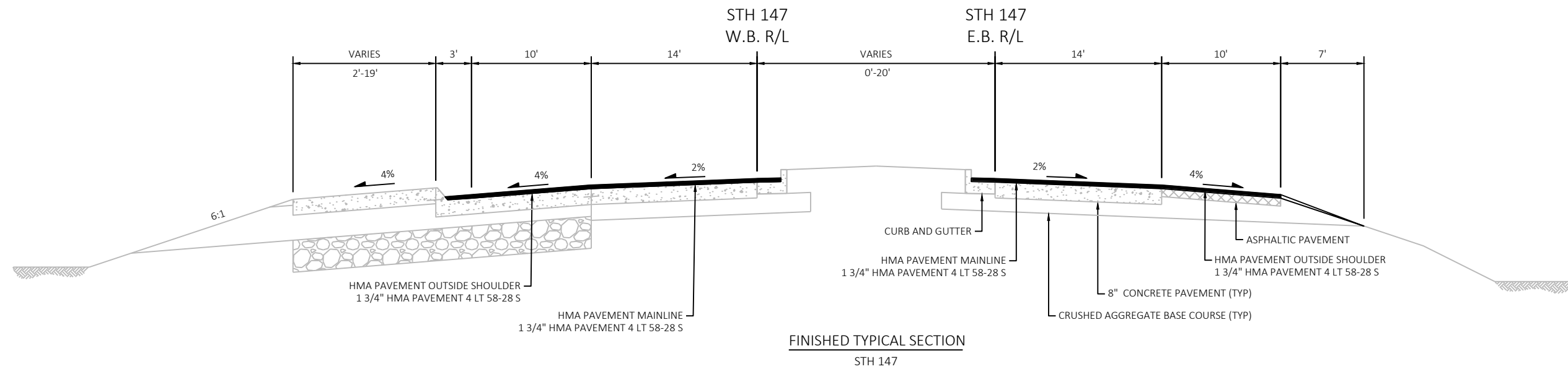


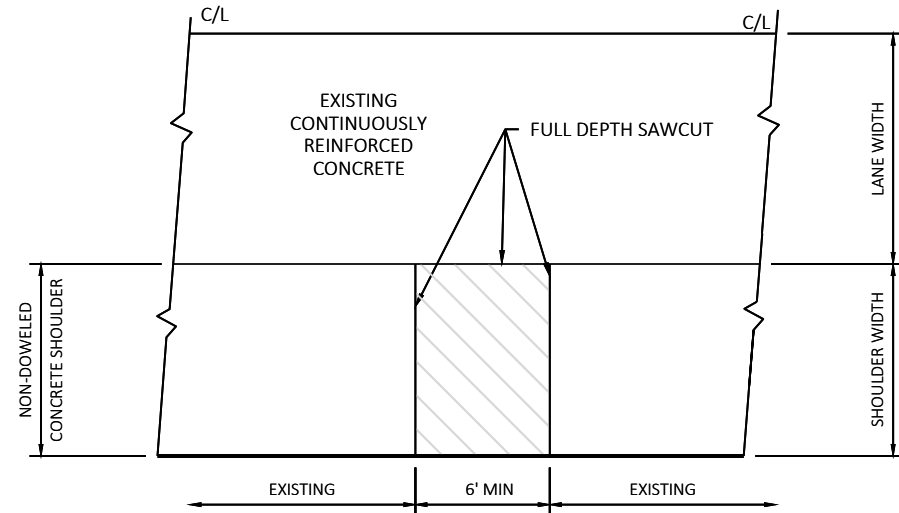
EXISTING TYPICAL SECTION FOR IH 43 RAMPS
STH 147



EXISTING TYPICAL SECTION
STH 147



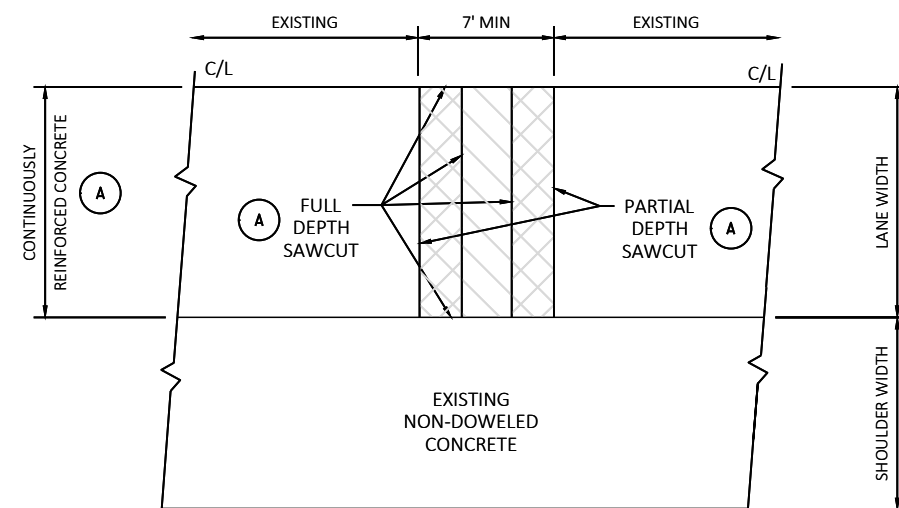




PLAN VIEW

FULL DEPTH CONCRETE PAVEMENT REMOVAL

SHOULDER ONLY



PLAN VIEW

FULL DEPTH CONCRETE PAVEMENT REMOVAL

MAINLINE ONLY

GENERAL NOTES

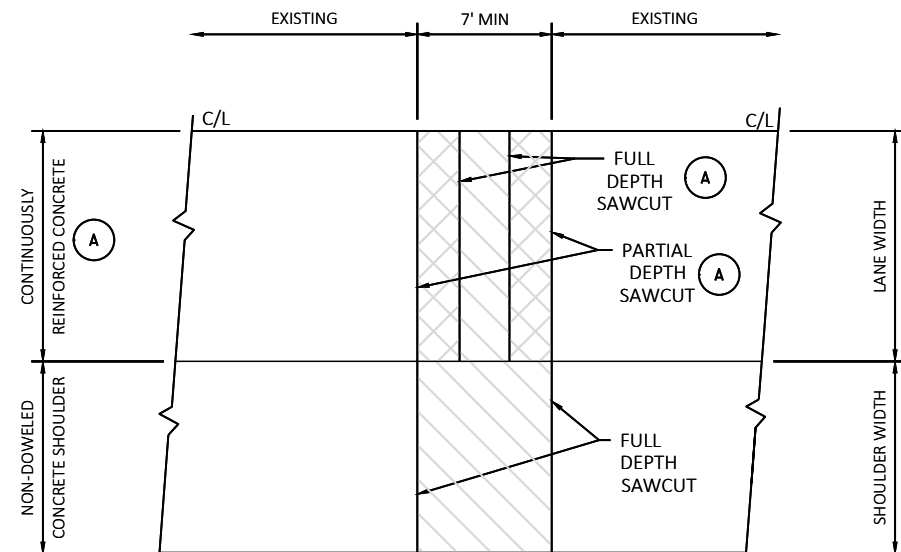
SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES. THE DEPARTMENT WILL NOT MEASURE CUTS TO REDUCE REMOVAL SLABS TO A WIDTH LESS THAN 7 FEET.

PROVIDE 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS ADJACENT TRANSVERSE JOINT OR CRACK.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NON-DOWELED AND THE PAVEMENT IS OVERLAID AFTER REPAIRING.

(A)

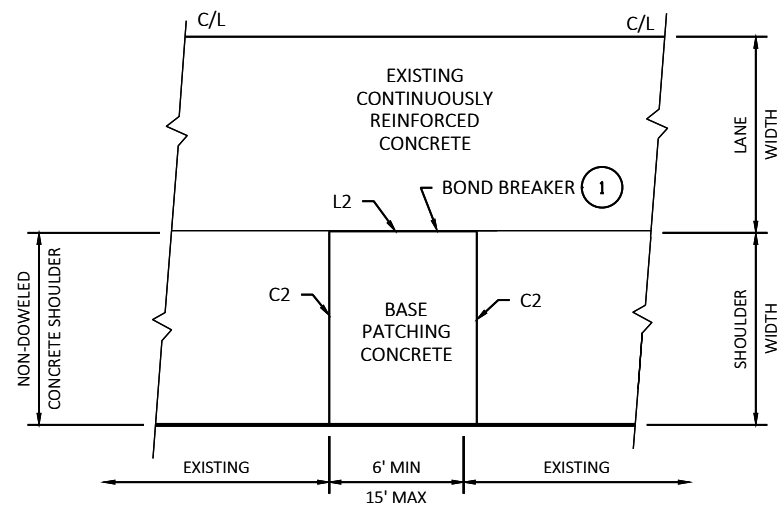
REFER TO SDD 13A7: CONTINUOUSLY REINFORCED CONCRETE PAVEMENT REPAIR AND REPLACEMENT FOR BASE PATCHING OF CONTINUOUSLY REINFORCED CONCRETE.



PLAN VIEW

FULL DEPTH CONCRETE PAVEMENT REMOVAL

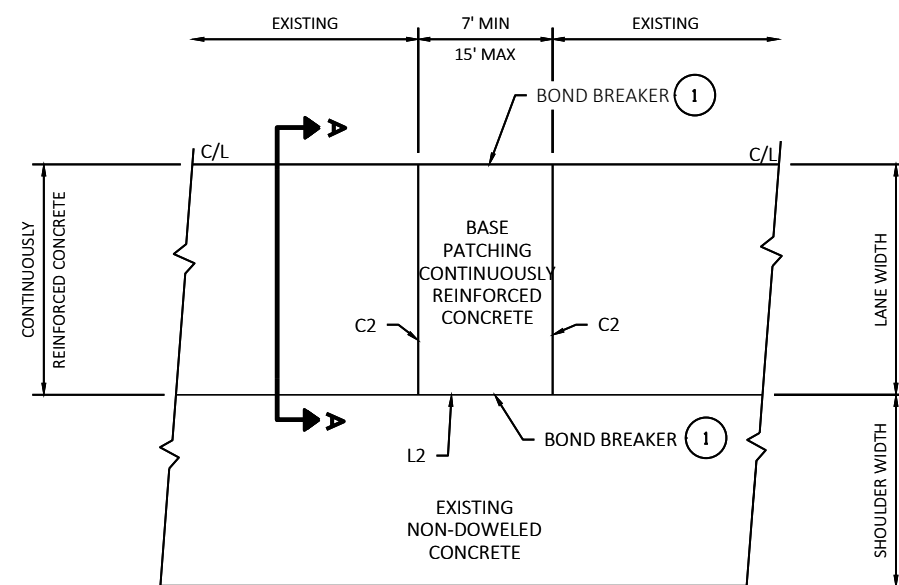
MAINLINE AND SHOULDER REPAIR



PLAN VIEW

SHOULDER BASE PATCH

15' MAXIMUM LENGTH



PLAN VIEW

LANE AND SHOULDER BASE PATCH

15' MAXIMUM LENGTH

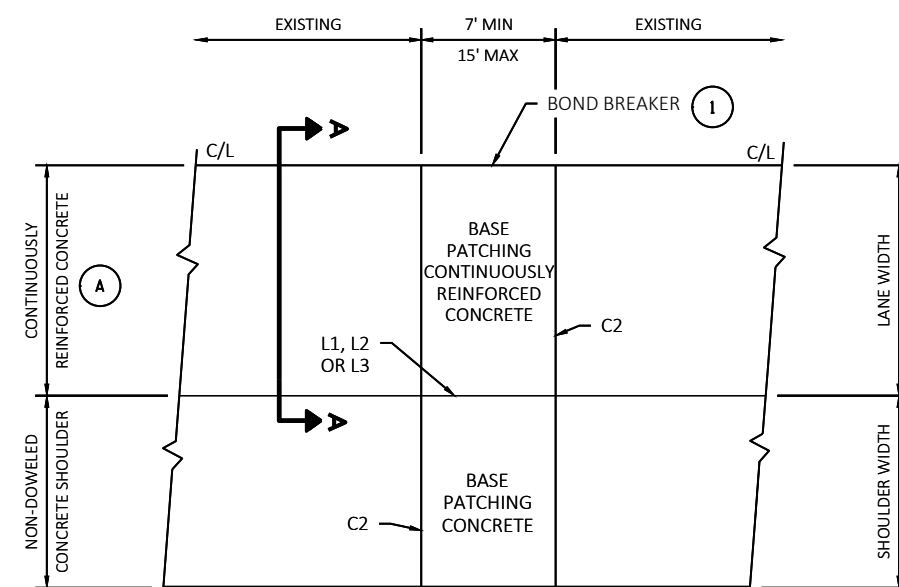
GENERAL NOTES

CONCRETE BASE PATCHES OF EXISTING NON-DOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

DO NOT SEAL OR FILL JOINTS.

(1) USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SHOULDER BASE PATCHES UP TO 15 FEET IN LENGTH.

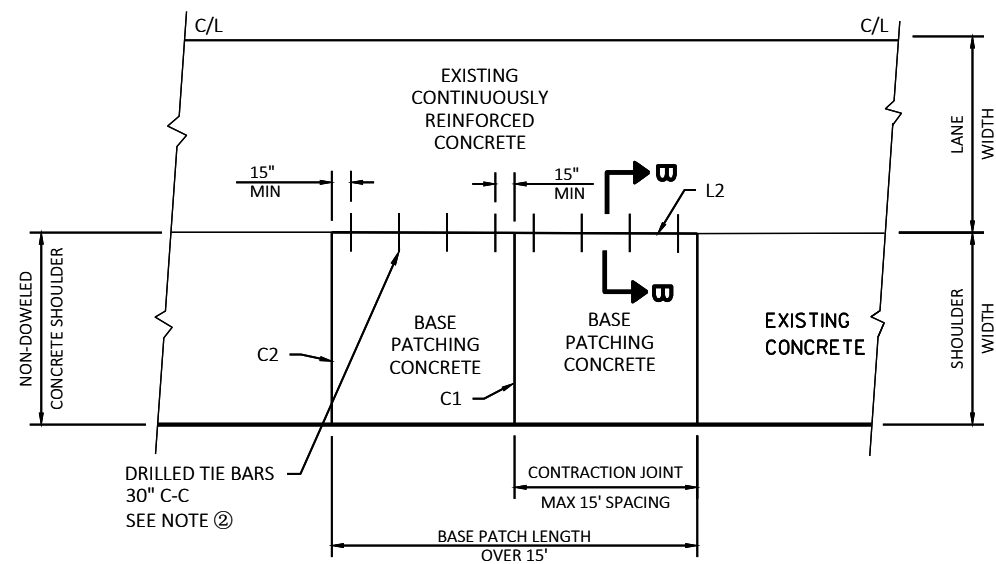
(A) REFER TO SDD 13A7: CONTINUOUSLY REINFORCED CONCRETE PAVEMENT REPAIR AND REPLACEMENT FOR BASE PATCHING OF CONTINUOUSLY REINFORCED CONCRETE.



PLAN VIEW

LANE AND SHOULDER BASE PATCH

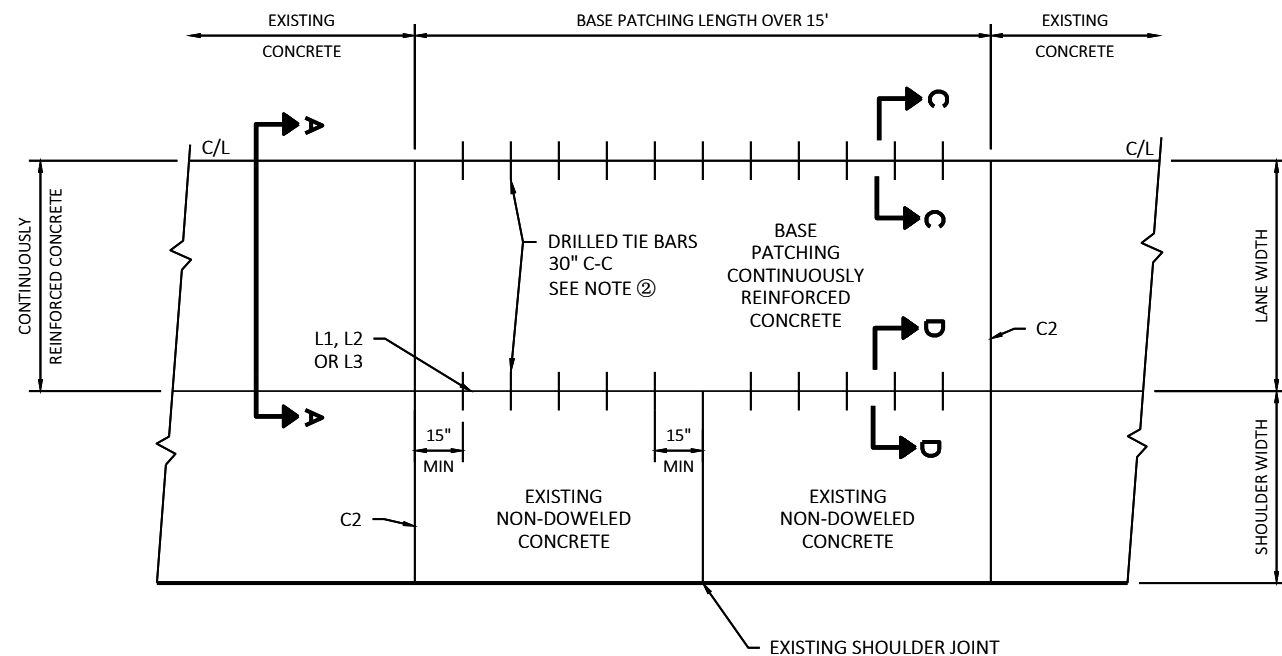
15' MAXIMUM LENGTH



PLAN VIEW

SHOULDER BASE PATCH

GREATER THAN 15' IN LENGTH



PLAN VIEW

MAINLINE BASE PATCH

GREATER THAN 15' IN LENGTH

NOTES

CONCRETE BASE PATCHES OF EXISTING NON-DOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

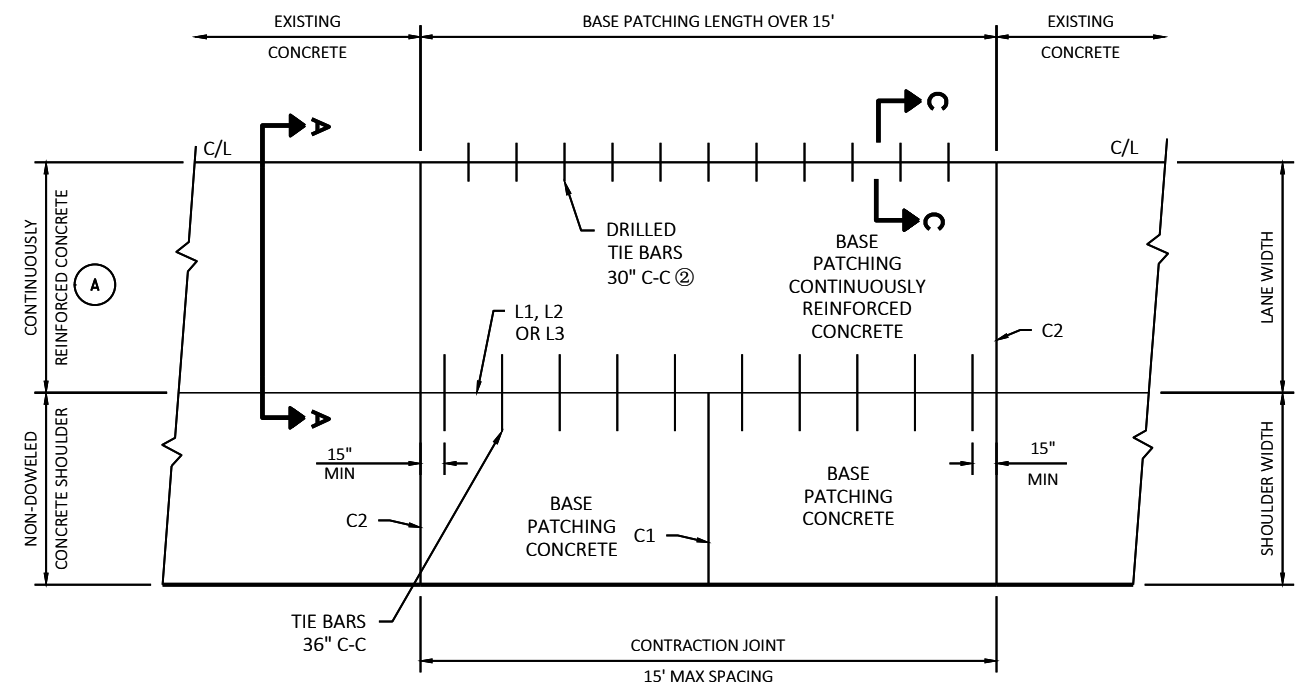
DRILLED TIE BARS ARE 12" NO. 6 BAR SPACED AT 30" C-C INTO EXISTING CONCRETE. TIE BARS PLACED IN NEW CONCRETE ARE 30" NO. 4 BARS SPACED AT 36". DRILLED TIE BARS WILL BE PAID UNDER THE DRILLED TIE BAR ITEM. ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

DO NOT SEAL OR FILL JOINTS.

WITH THE APPROVAL OF THE ENGINEER, FOR SHOULDER PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, DRILLED TIE BARS MAY BE INSTALLED ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES AND TO SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.

A

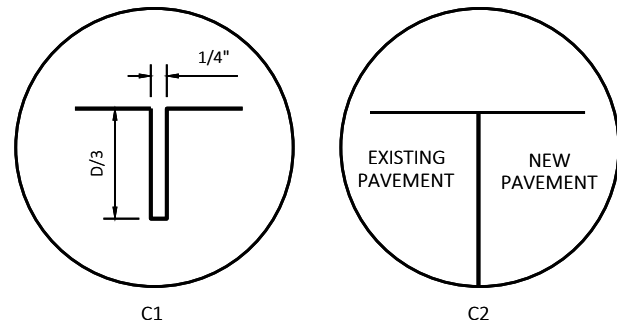
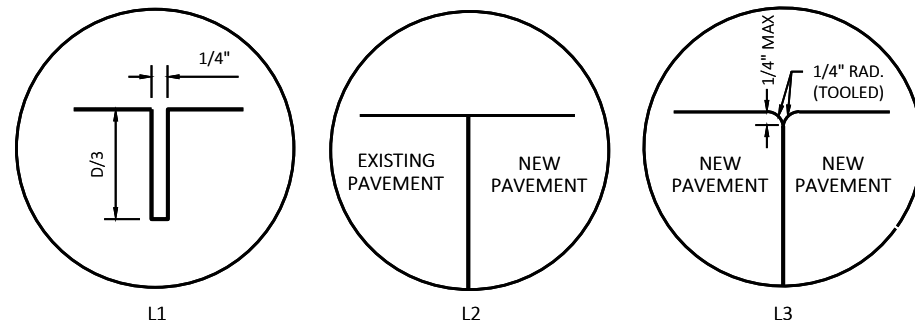
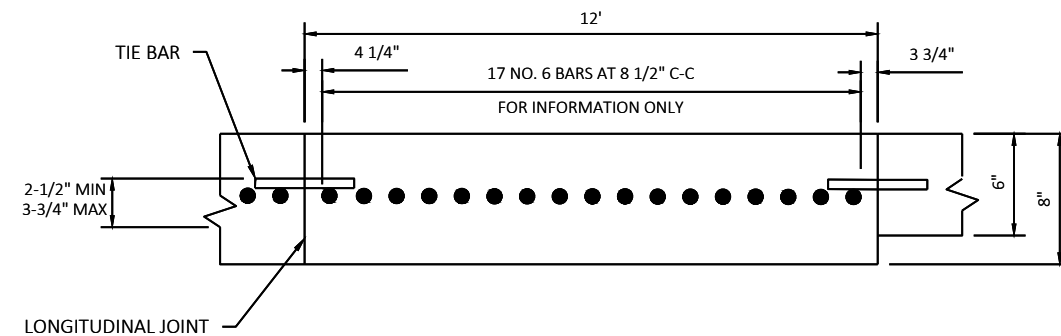
REFER TO SDD 13A7: CONTINUOUSLY REINFORCED CONCRETE PAVEMENT REPAIR AND REPLACEMENT FOR BASE PATCHING OF CONTINUOUSLY REINFORCED CONCRETE.



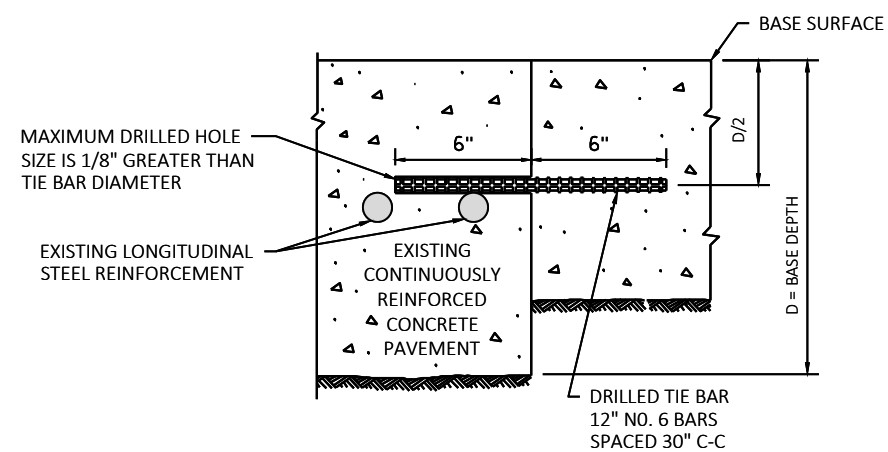
PLAN VIEW

MAINLINE AND SHOULDER BASE PATCH

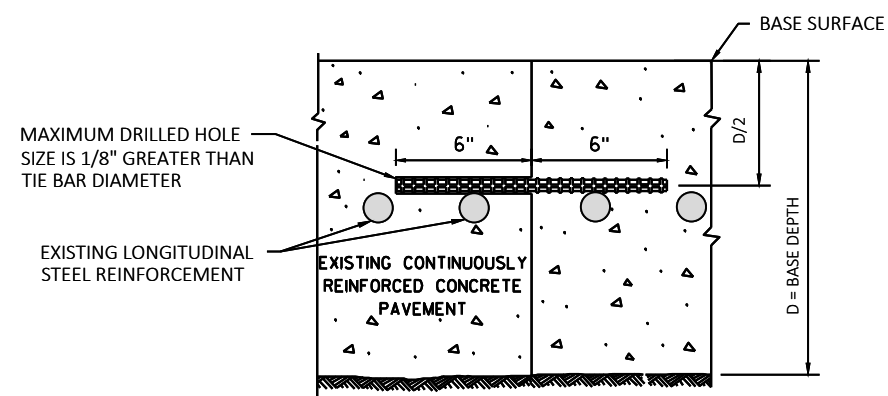
GREATER THAN 15' IN LENGTH

TRANSVERSE JOINTSLONGITUDINAL JOINTSSECTION A-AEXISTING LONGITUDINAL STEEL PLACEMENT IN CRCP REPAIRS

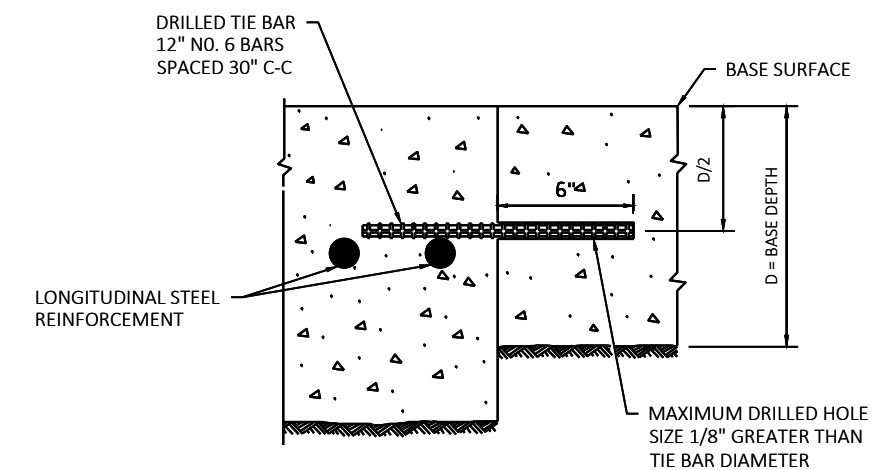
FOR INFORMATION ONLY

SECTION B-BDRILLED TIE BAR

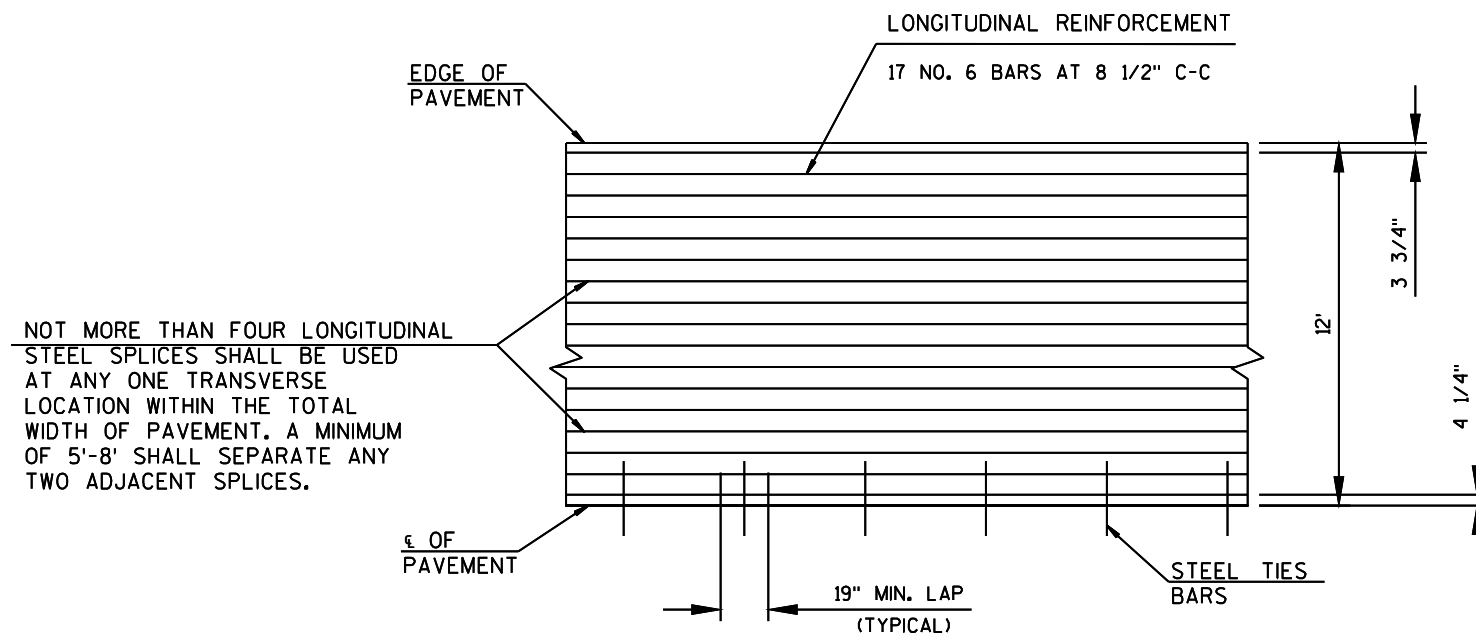
MAINLINE-SHOULDER

SECTION C-CDRILLED TIE BAR

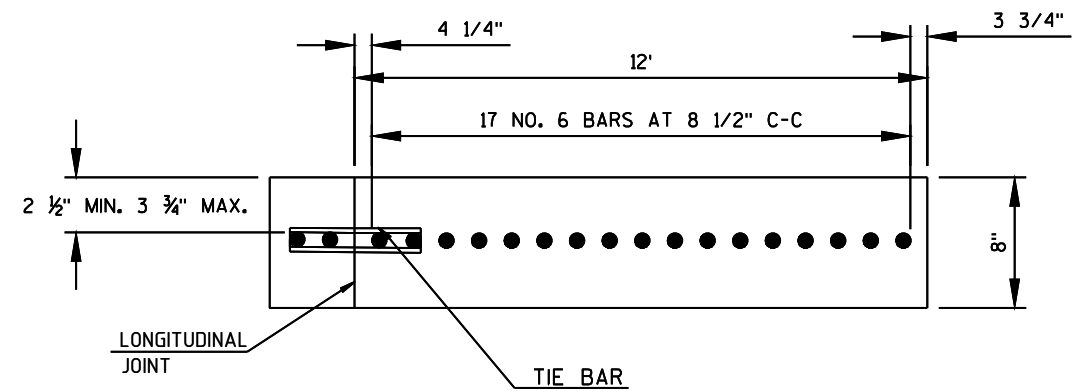
MAINLINE-SHOULDER

SECTION D-DDRILLED TIE BAR

MAINLINE-SHOULDER



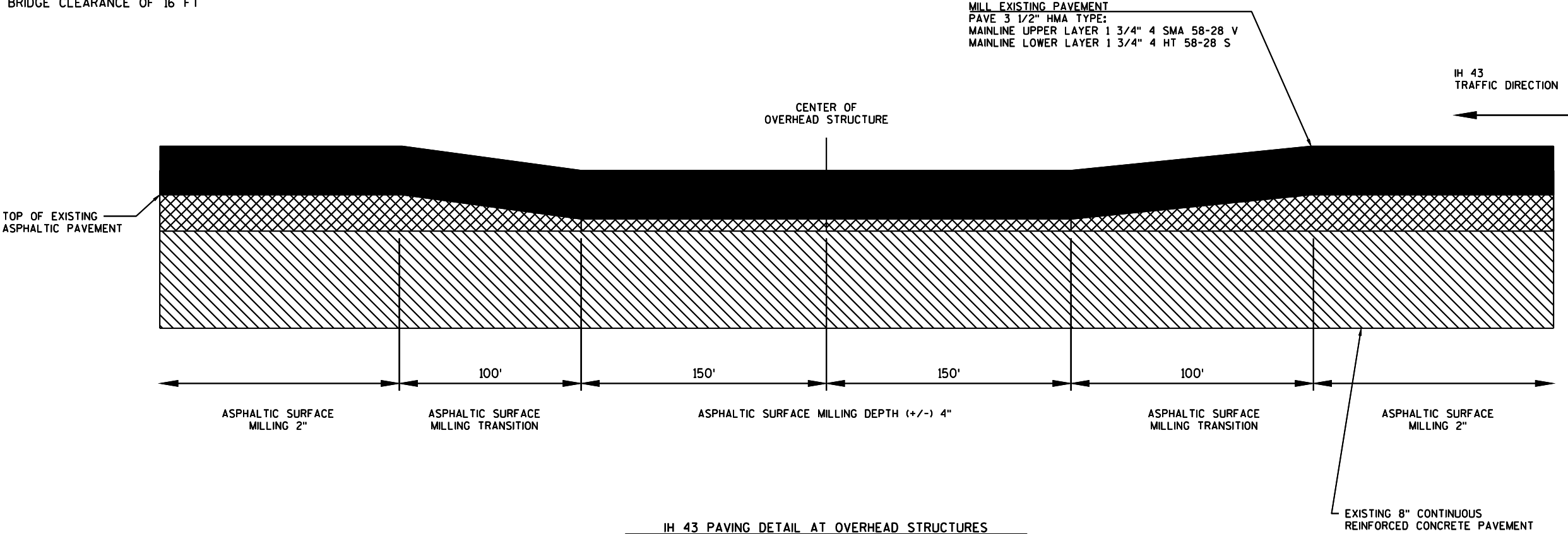
REINFORCEMENT STEEL PLACEMENT



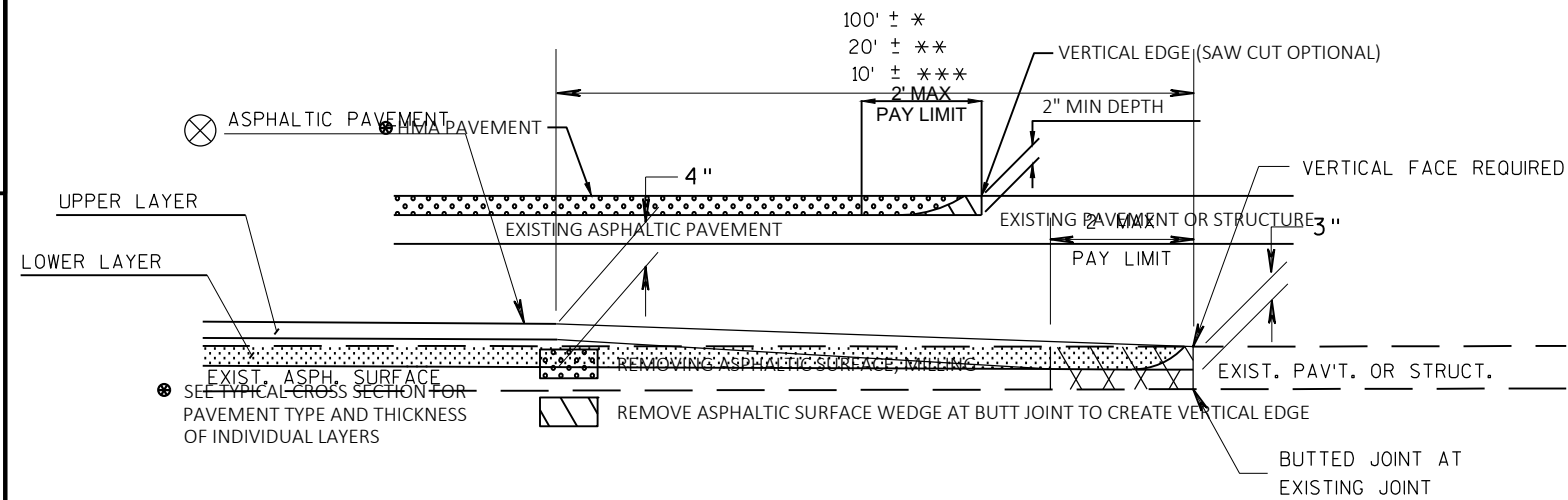
LONGITUDINAL CENTERLINE JOINT DETAIL

CONTINUOUSLY REINFORCED CONCRETE LONGITUDINAL BAR SPACING

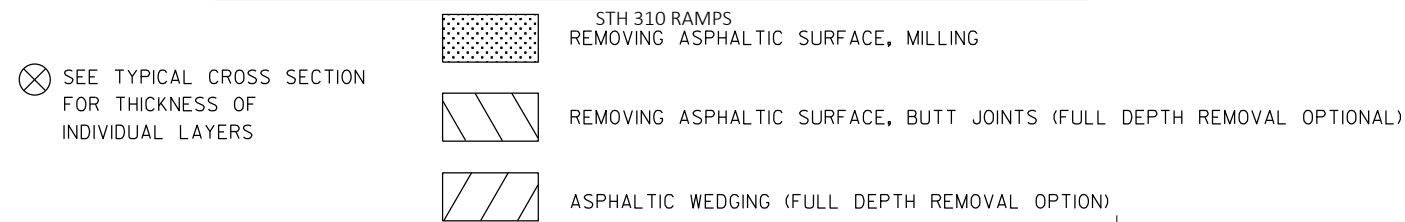
NOTE: SEE STANDARD DETAIL
FOR MORE INFORMATION



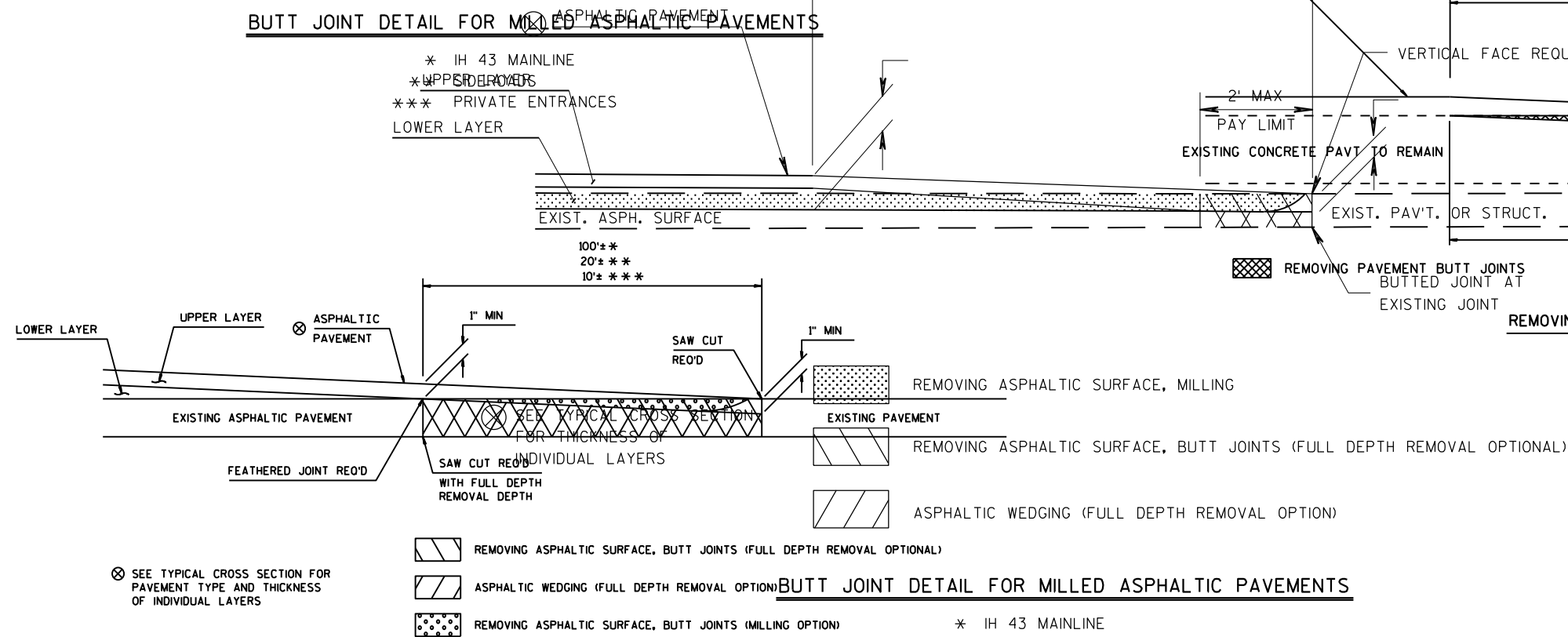
EXISTING VERTICAL BRIDGE CLEARANCE DATA					
Roadway	Bridge	Overpass	Clearance	Approximate Asphalt Depths	
				NORTHBOUND	SOUTHBOUND
EXISTING VERTICAL BRIDGE CLEARANCE DATA					
Roadway	Bridge	Overpass	Clearance	Approximate Asphalt Depths	
				NORTHBOUND	SOUTHBOUND
IH 43 NB	B-05-0234	COOPERSTOWN RD	23.78'	4"-6"	-
IH 43 SB	B-05-0234	COOPERSTOWN RD	16.48'	-	4"-6"
IH 43 NB	B-36-0083	HIDDEN VALLEY RD	17.43'	4"-6"	-
IH 43 SB	B-36-0083	HIDDEN VALLEY RD	16.59'	-	4"-6"
IH 43 NB	B-36-0089	ZANDER RD	16.26'	4"-6"	-
IH 43 SB	B-36-0089	ZANDER RD	17.21'	-	4"-6"
IH 43 NB	B-36-0088	FISHERVILLE RD	18.71'	4"-6"	-
IH 43 SB	B-36-0088	FISHERVILLE RD	16.26'	-	4"-6"
IH 43 NB	B-36-0090	GREENSTREET RD	16.48'	4"-6"	-
IH 43 SB	B-36-0090	GREENSTREET RD	17.22'	-	4"-6"



BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)



BUTT JOINT DETAIL FOR MILLED ASPHALTIC PAVEMENTS

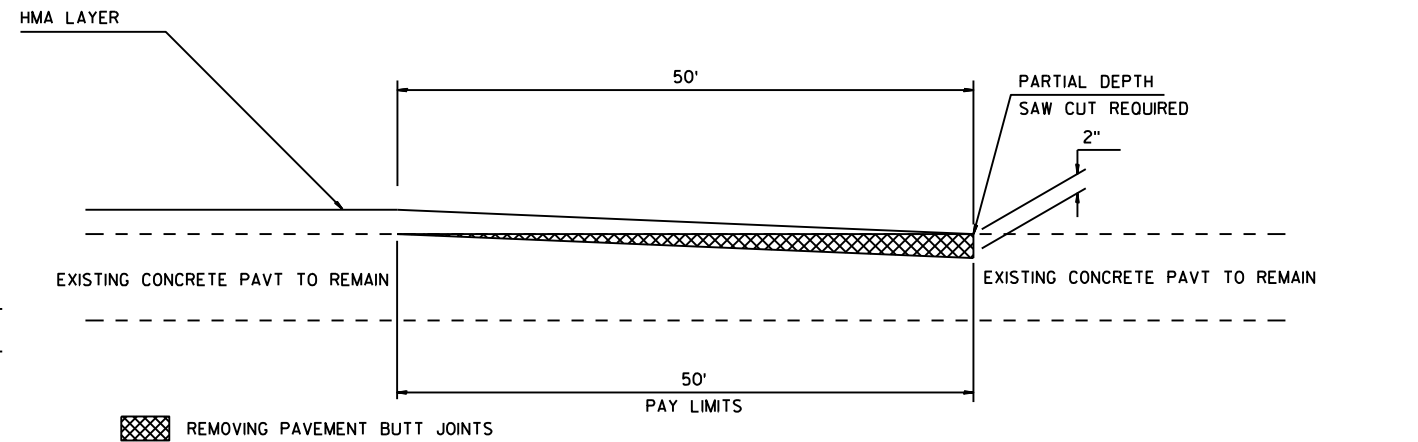


BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS

* MAINLINE
** SIDEROADS
*** PRIVATE ENTRANCES

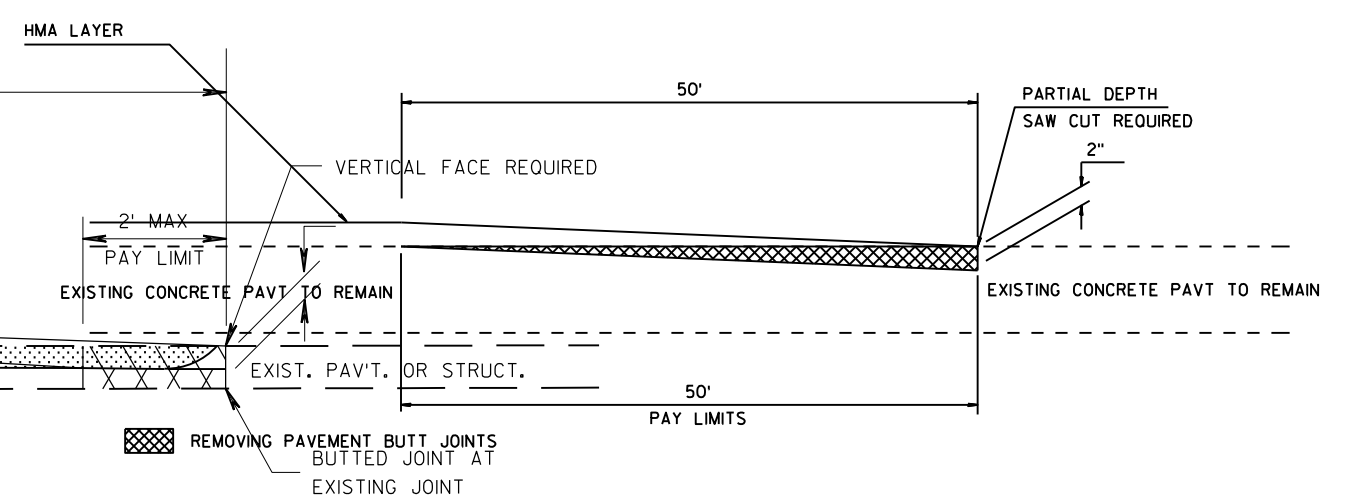
BUTT JOINT DETAIL FOR MILLED ASPHALTIC PAVEMENTS

* IH 43 MAINLINE
** SIDEROADS
*** PRIVATE ENTRANCES



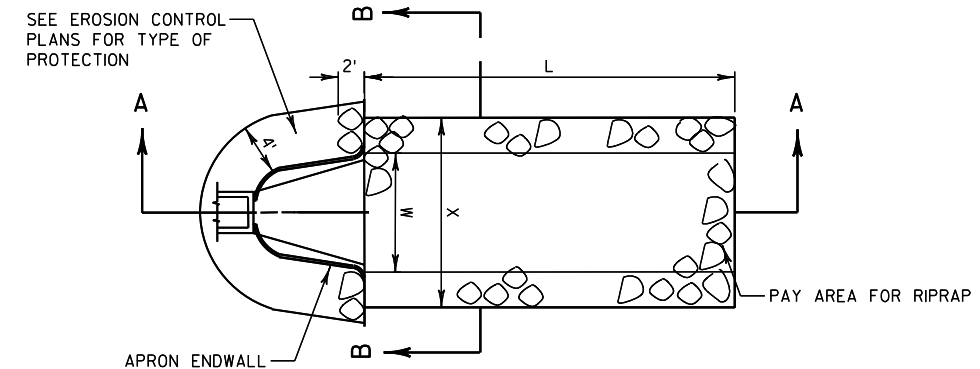
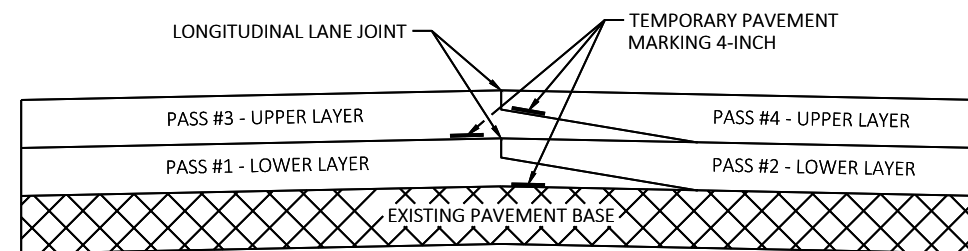
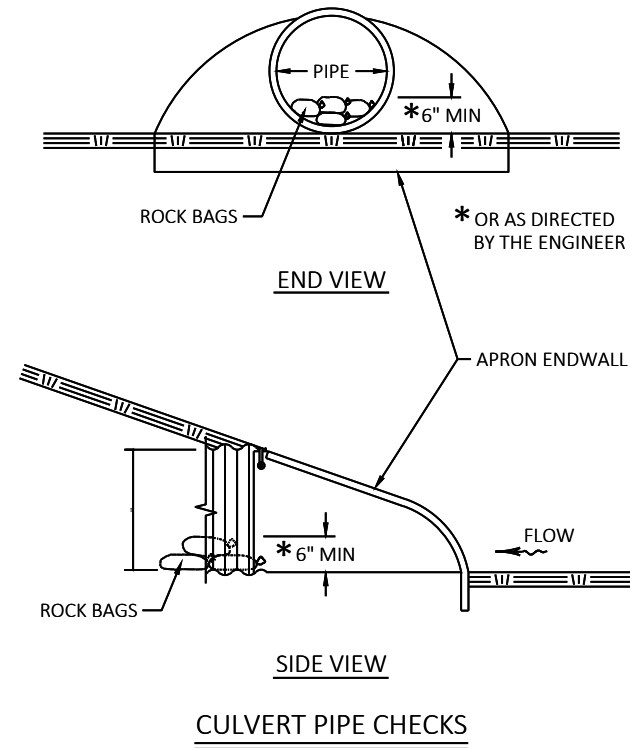
REMOVING PAVEMENT BUTT JOINT DETAIL

CTH V RAMPS
CTH K RAMPS



REMOVING PAVEMENT BUTT JOINT DETAIL

STH 147

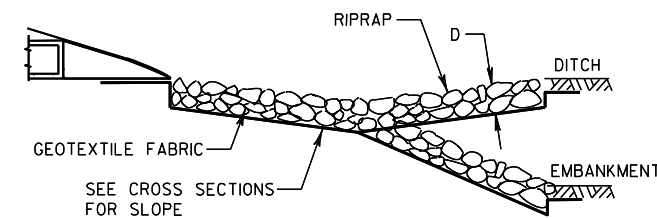
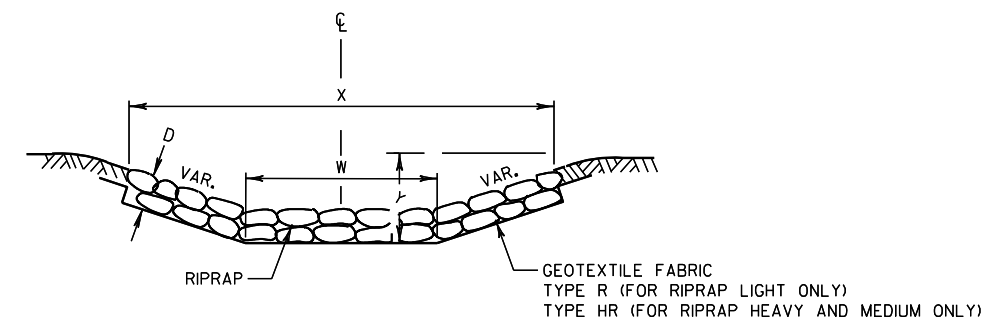
**PLAN VIEW**

L = 3 x W (NOR.) OR 10' MIN. OR AS INDICATED IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

D = 12" FOR RIPRAP LIGHT
18" FOR RIPRAP MEDIUM
24" FOR RIPRAP HEAVY

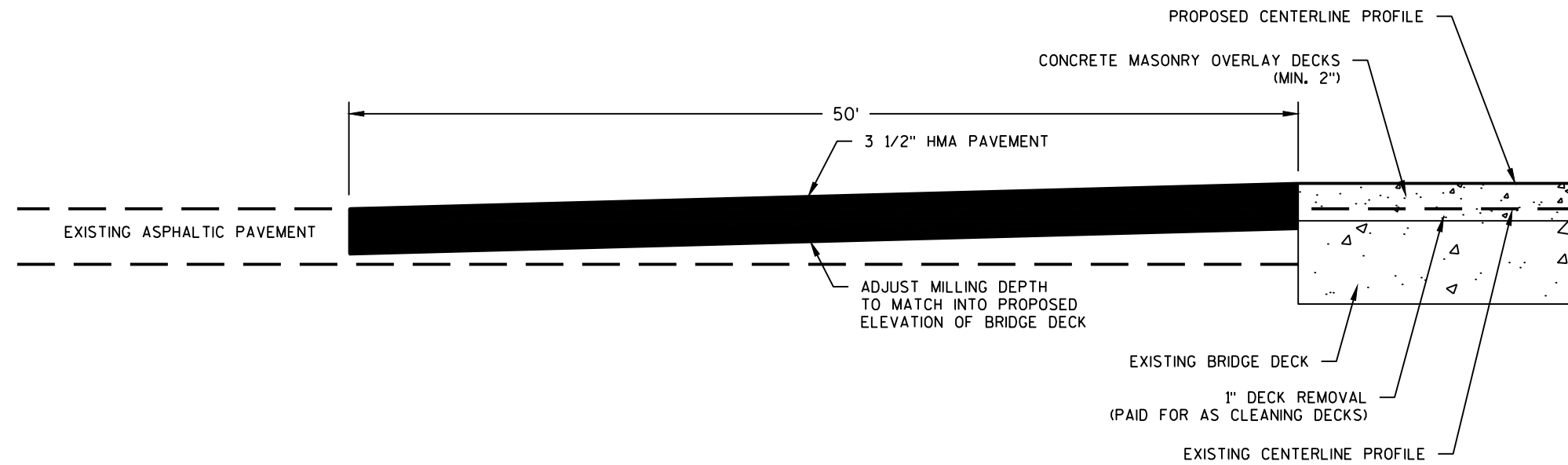
X = W + (2 X (PIPE DIAMETER))

Y = 0' FOR TYPICAL CULVERT DISCHARGE INTO DITCH
12" FOR CULVERT DISCHARGE DOWN EMBANKMENT SLOPE

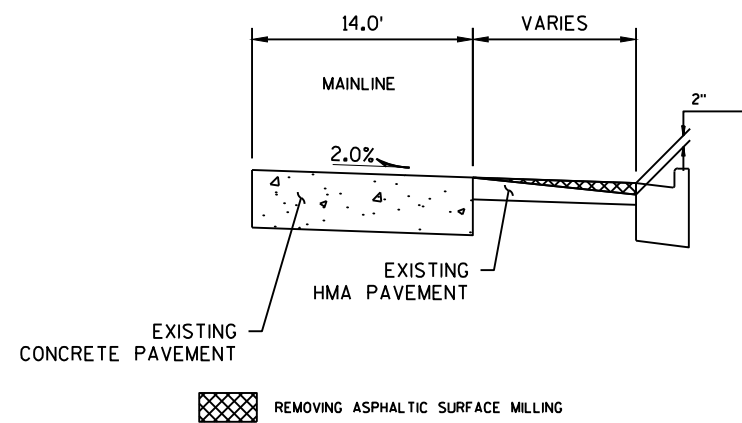
**SECTION A-A****SECTION B-B**

**RIPRAP AND GEOTEXTILE FABRIC DETAIL
AT APRON ENDWALLS**

SEE EROSION CONTROL PLAN FOR LOCATIONS



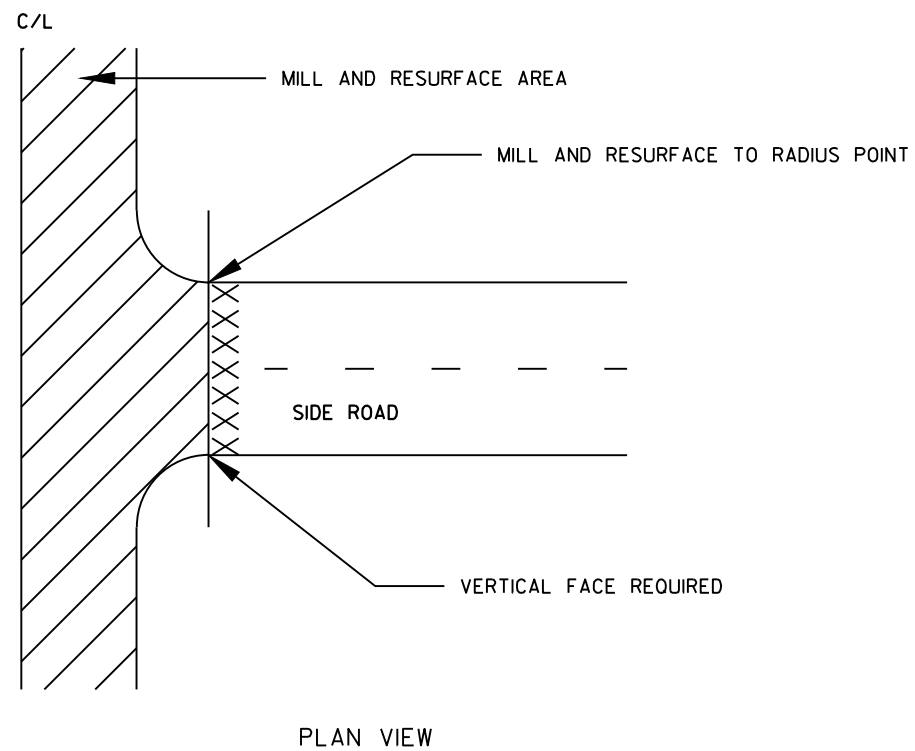
DETAIL FOR TRANSITION FROM STRUCTURE B-05-0239 TO ROADWAY



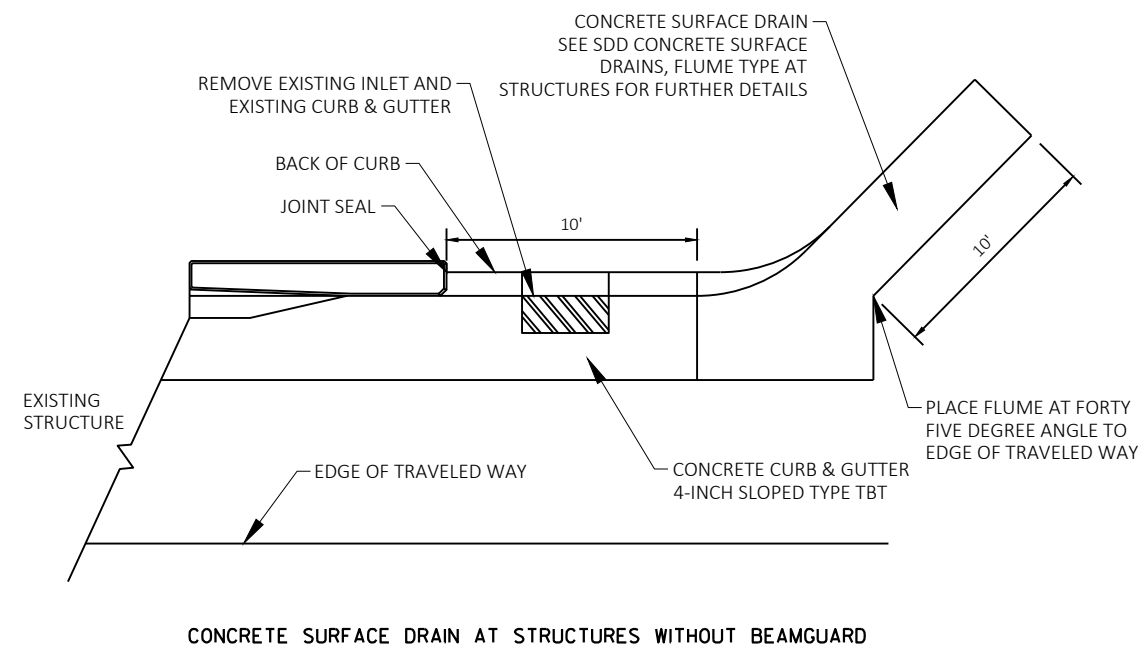
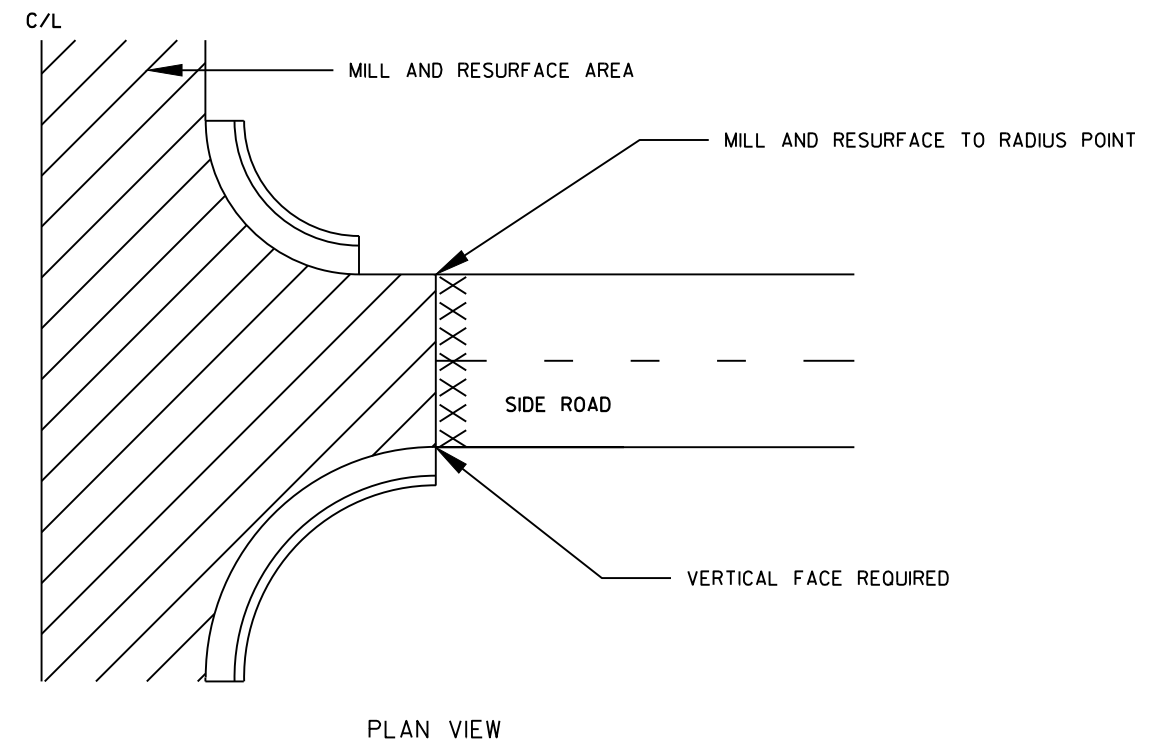
ASPHALTIC SURFACE MILLING AT DRIVEWAY ENTRANCE WITH CURB & GUTTER

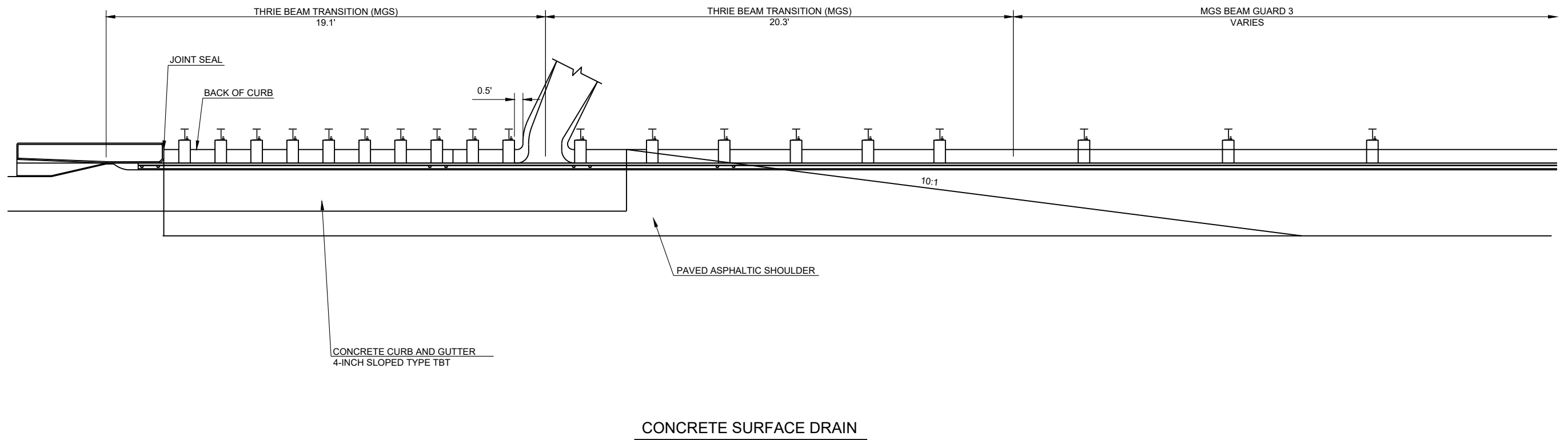
STH 147

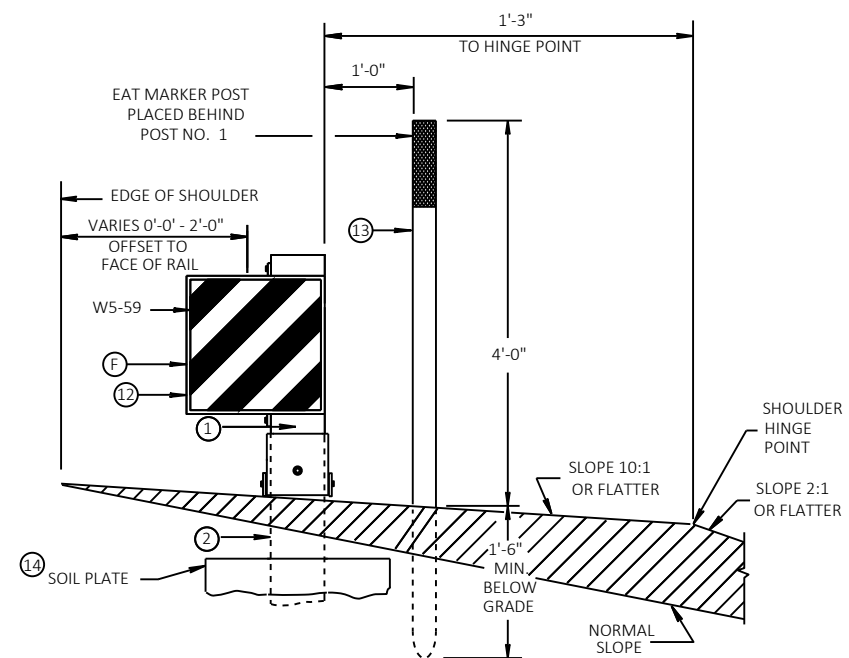
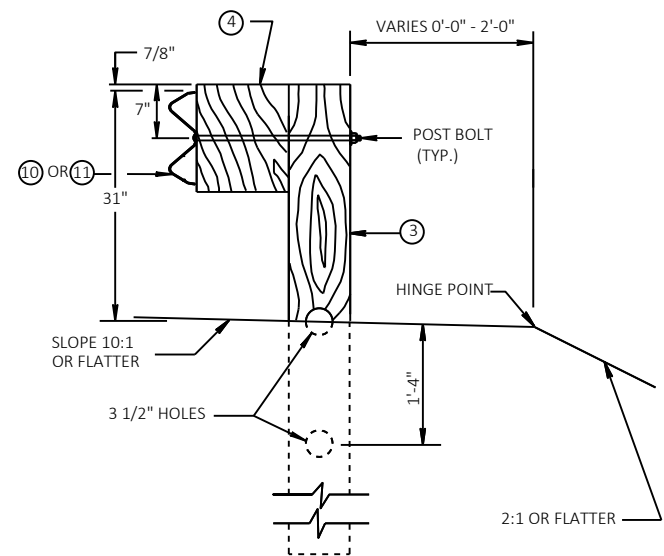
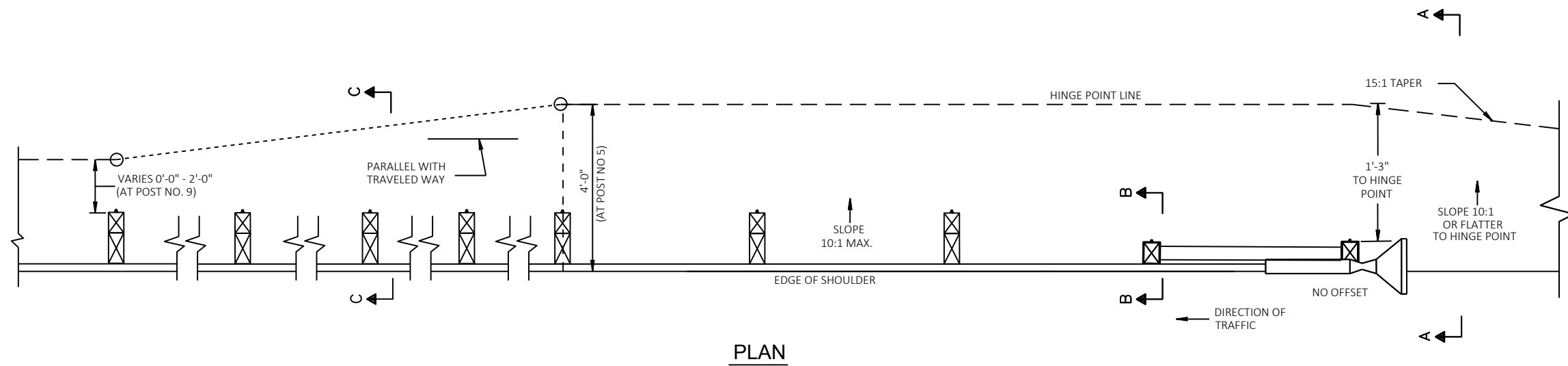
SIDE ROAD DETAIL - NO CURB & GUTTER
NOT TO SCALE



SIDE ROAD DETAIL - CURB & GUTTER
NOT TO SCALE







NOTE:
SEE SDD "MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL (MGS)" FOR
OTHER DETAILS AND NOTES.

MIDWEST GUARDRAIL SYSTEM EAT AT OVERPASSES

PROJECT NO: 1227-12-72

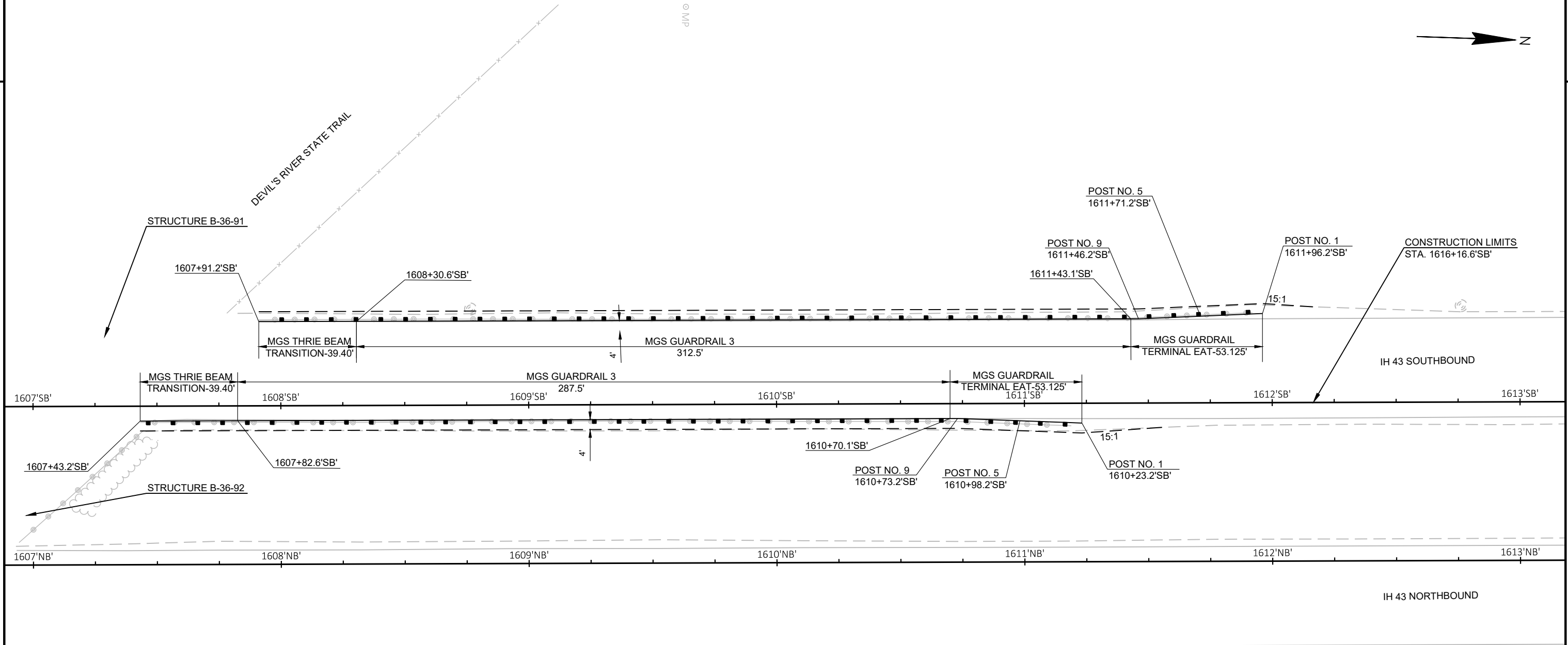
HWY: IH 43

COUNTY: MANITOWOC

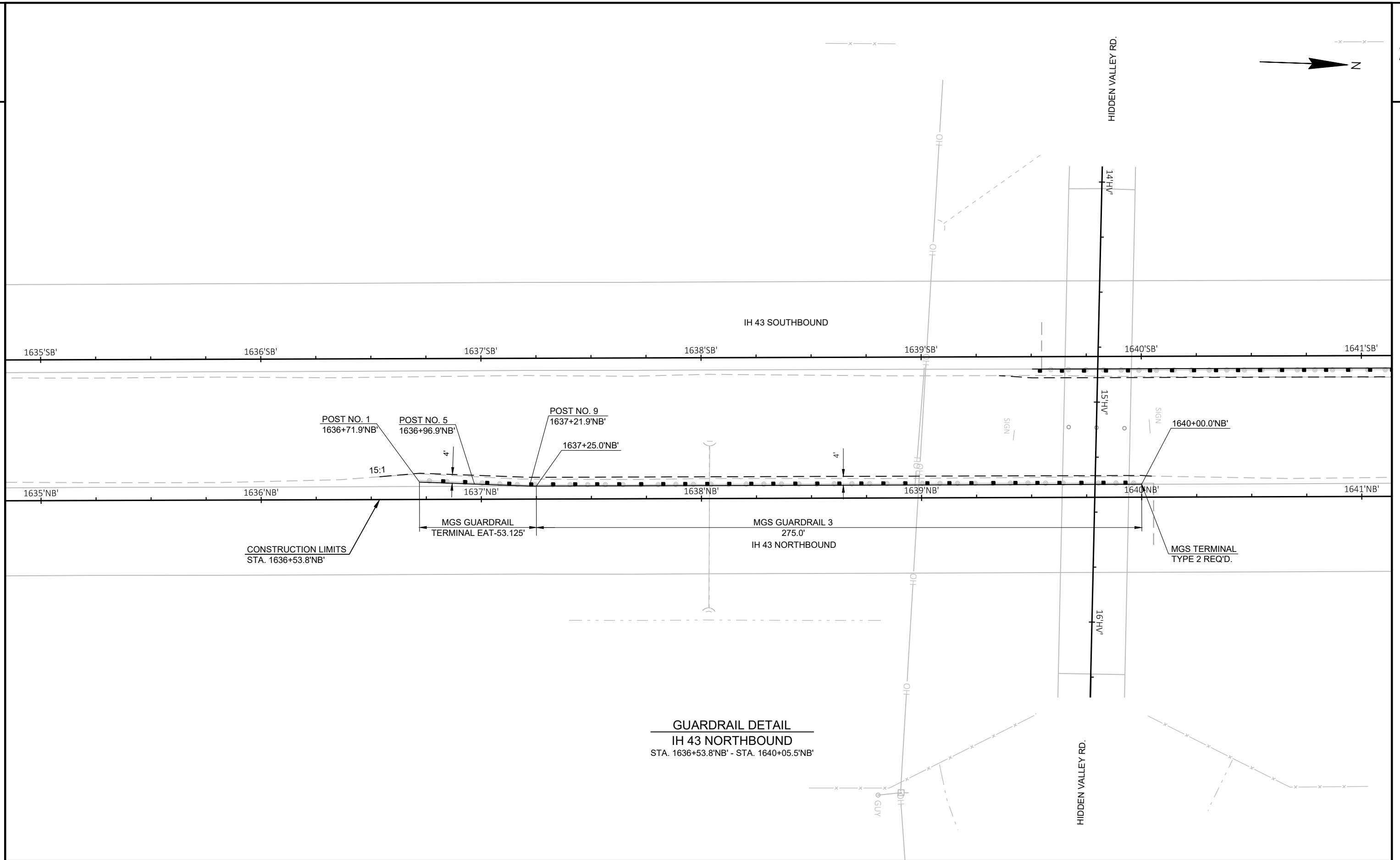
CONSTRUCTION DETAILS

SHEET

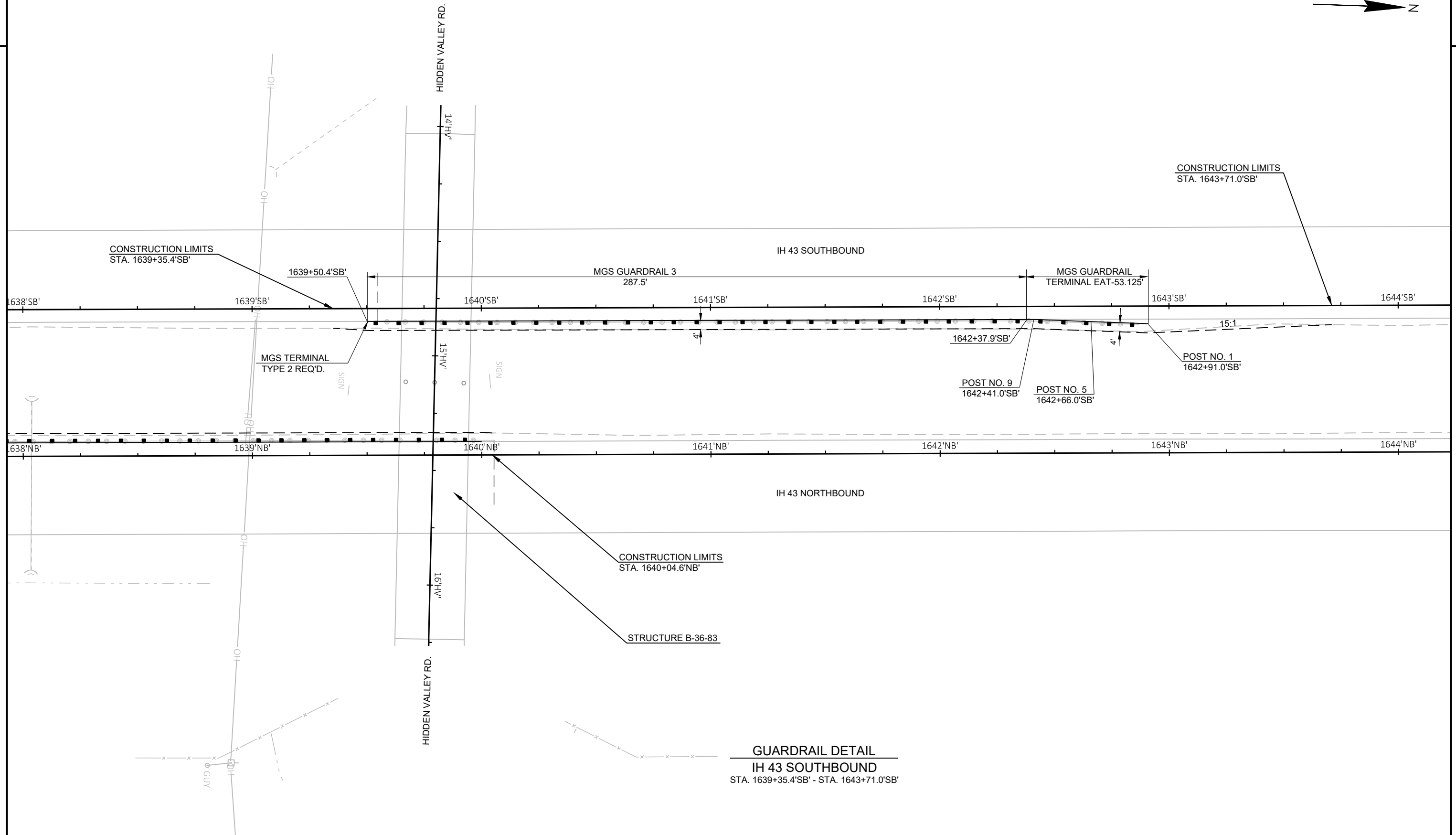
E



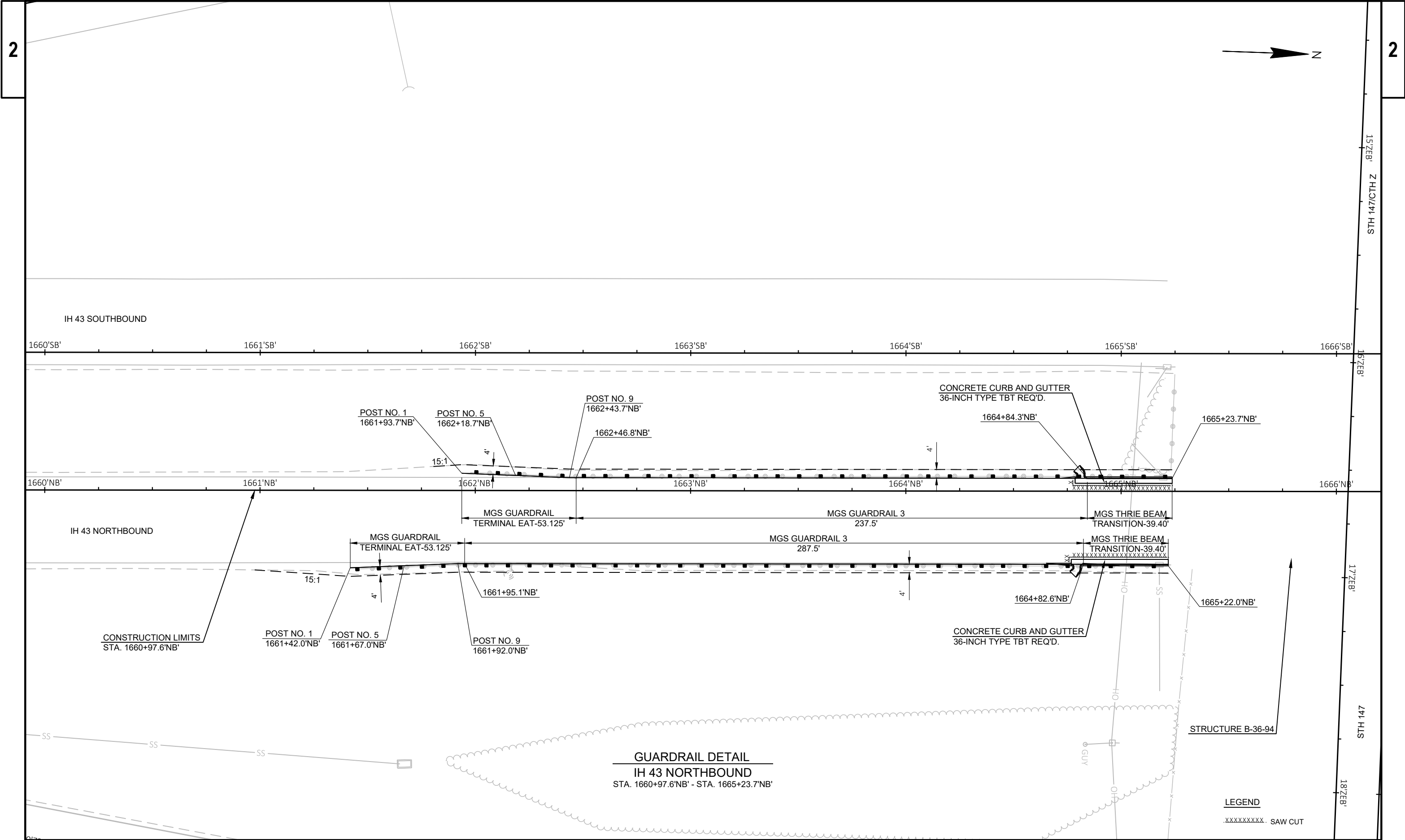
GUARDRAIL DETAIL
IH 43 SOUTHBOUND
STA. 1607+43.2'SB' - STA. 1612+16.6'SB'

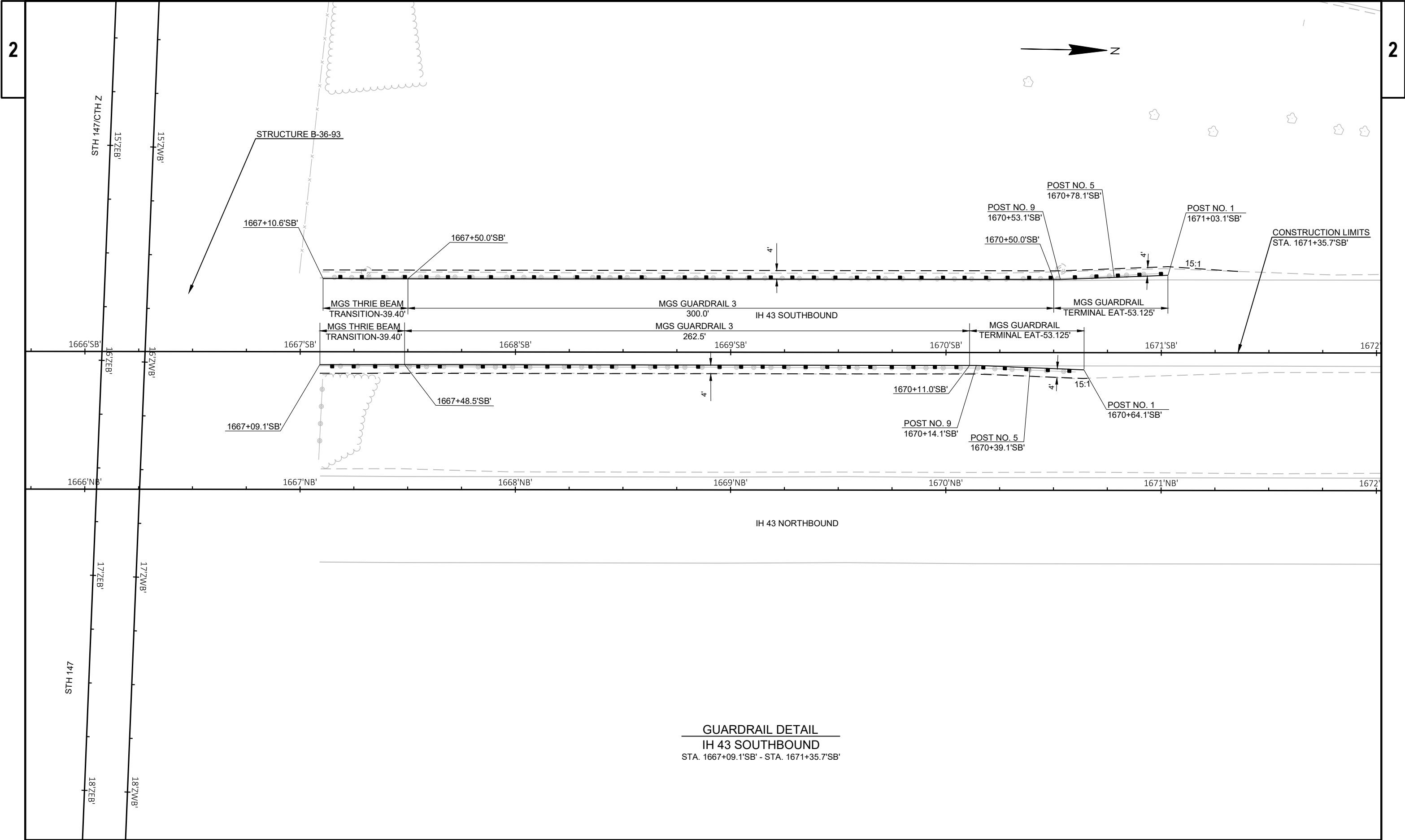


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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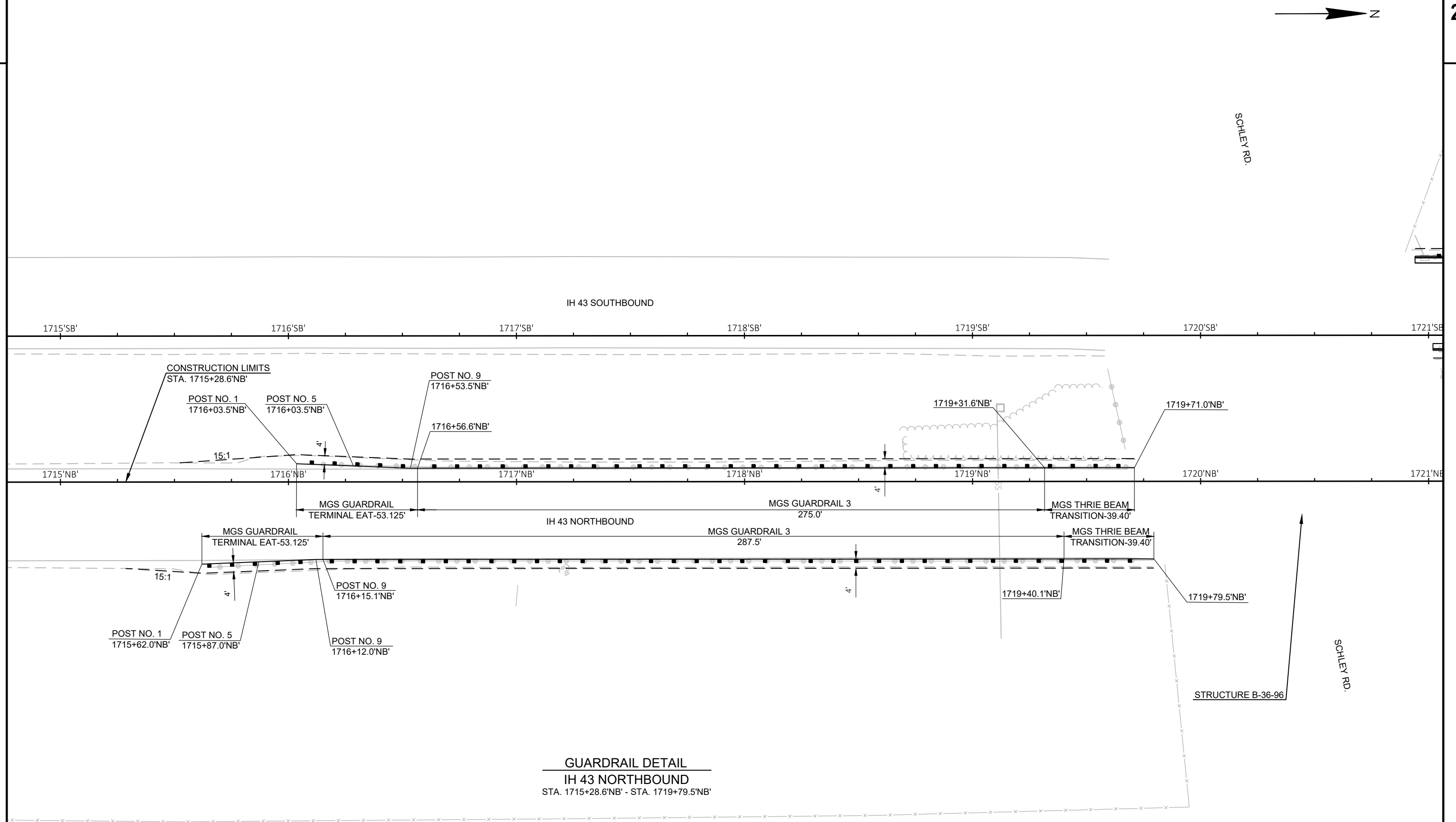
PROJECT NO: 1227-12-72	HWY: IH 33	COUNTY: MANITOWOC	PLAN DETAILS - IH 33	SHEET	E
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GUARDRAIL DETAIL
IH 43 SOUTHBOUND
STA. 1667+09.1'SB' - STA. 1671+35.7'SB'

PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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PROJECT NO: 1227-12-72

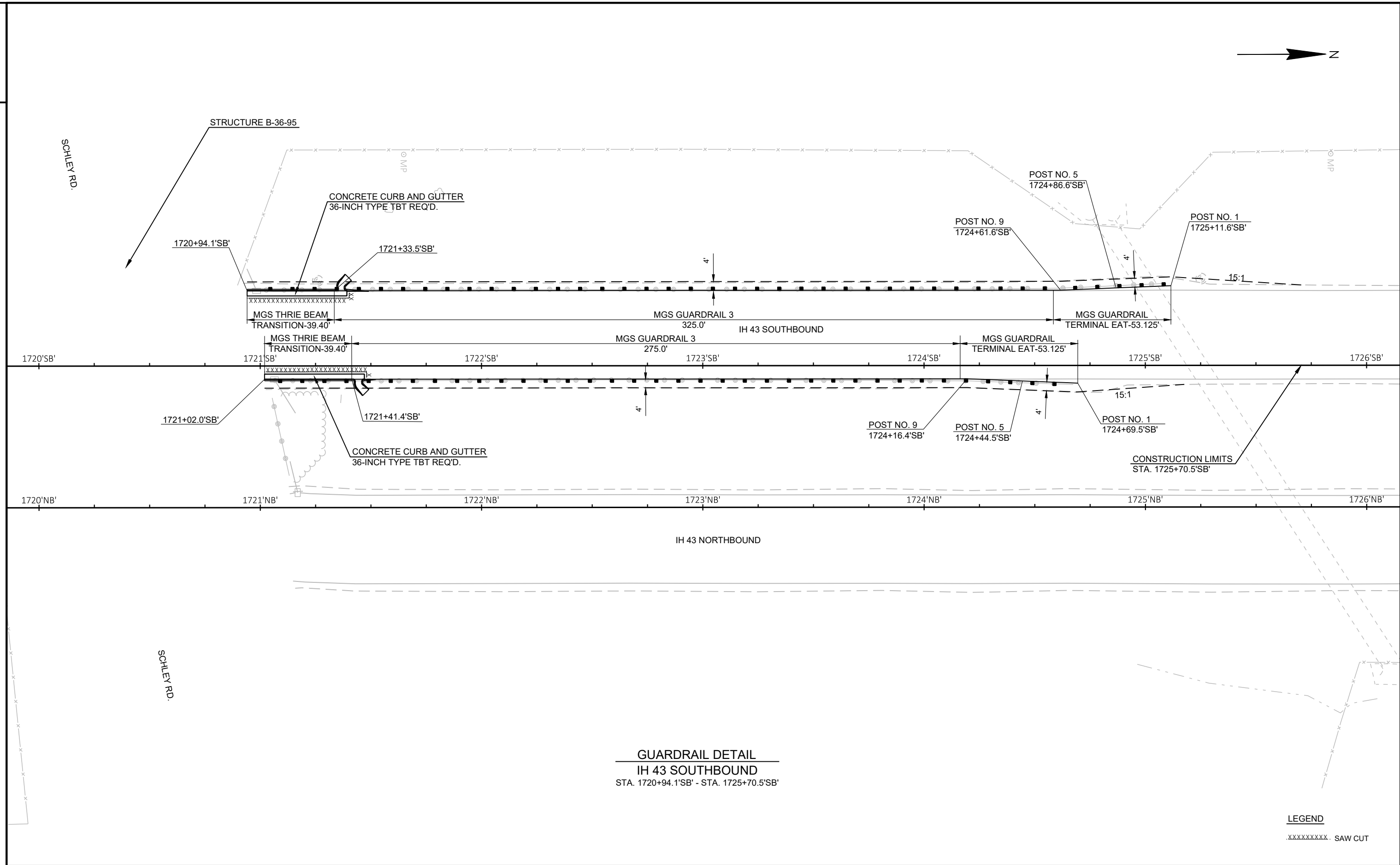
HWY: IH 43

COUNTY: MANITOWOC

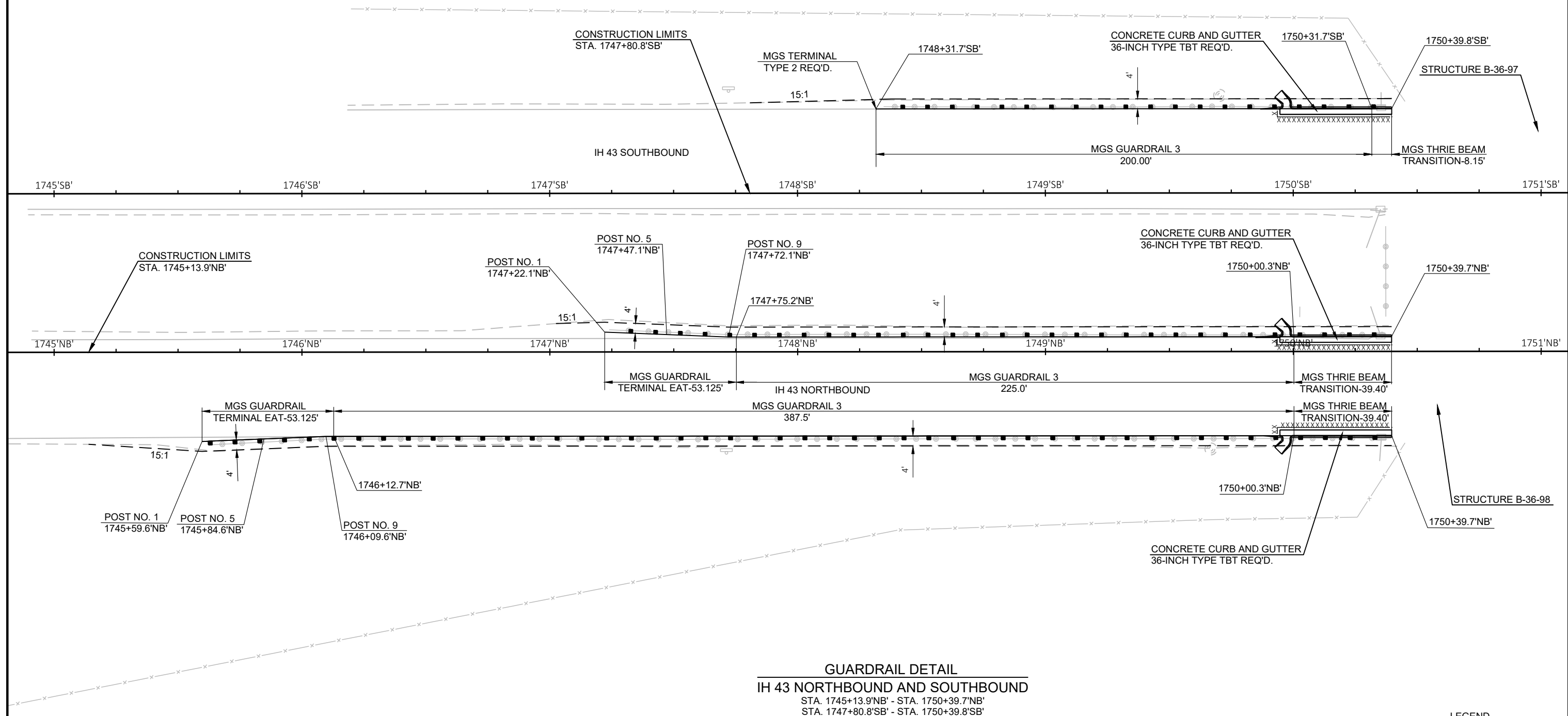
PLAN DETAILS - IH 43

SHEET

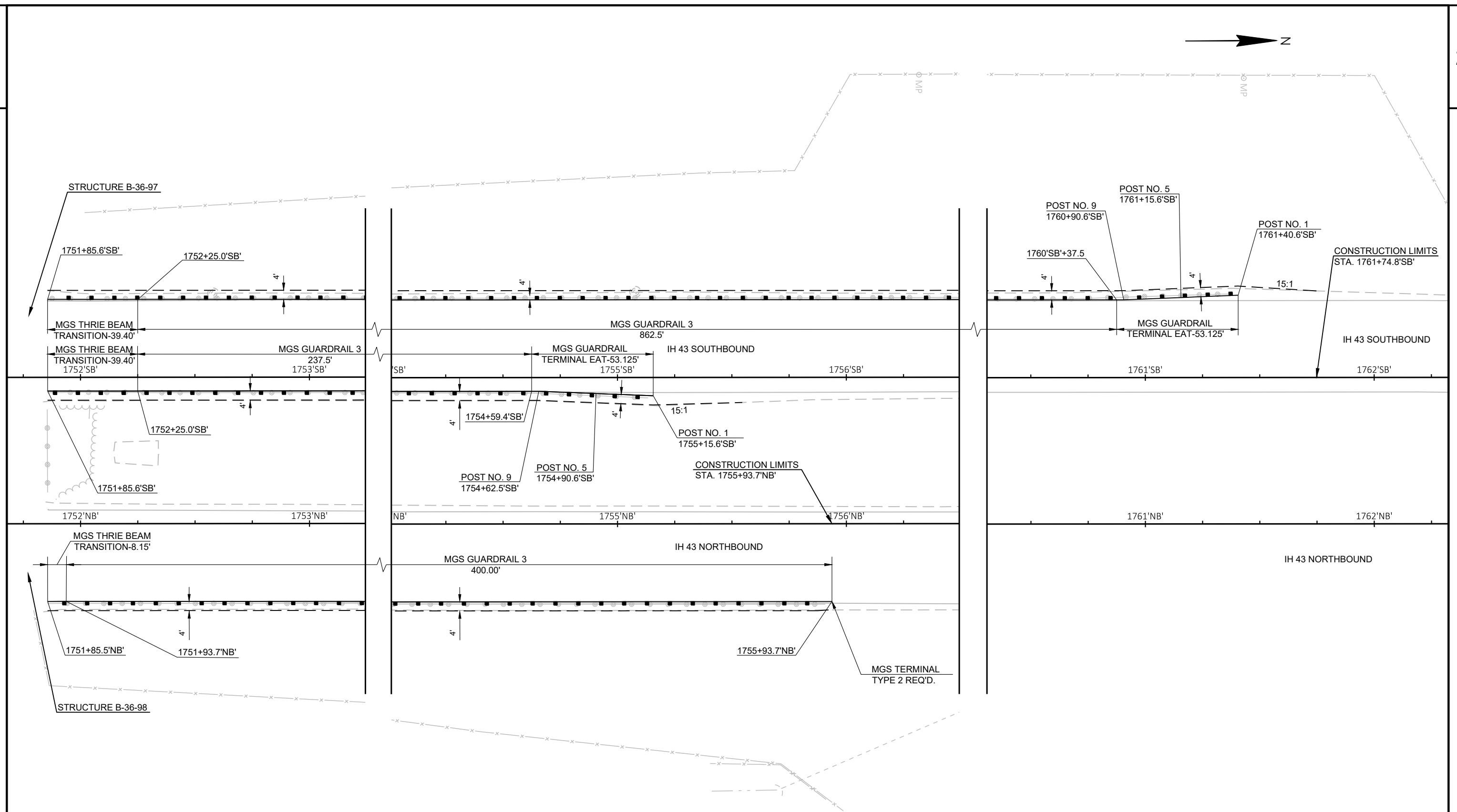
E



PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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PROJECT NO: 1227-12-72	HWY: IH 33	COUNTY: MANITOWOC	PLAN DETAILS - IH 33	SHEET	E
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GUARDRAIL DETAIL
IH 35 NORTHBOUND AND SOUTHBOUND
STA. 1751+85.5'NB' - STA. 1755+93.7'NB'
STA. 1751+85.6'SB' - STA. 1761+74.8'SB'

PROJECT NO: 1227-12-72

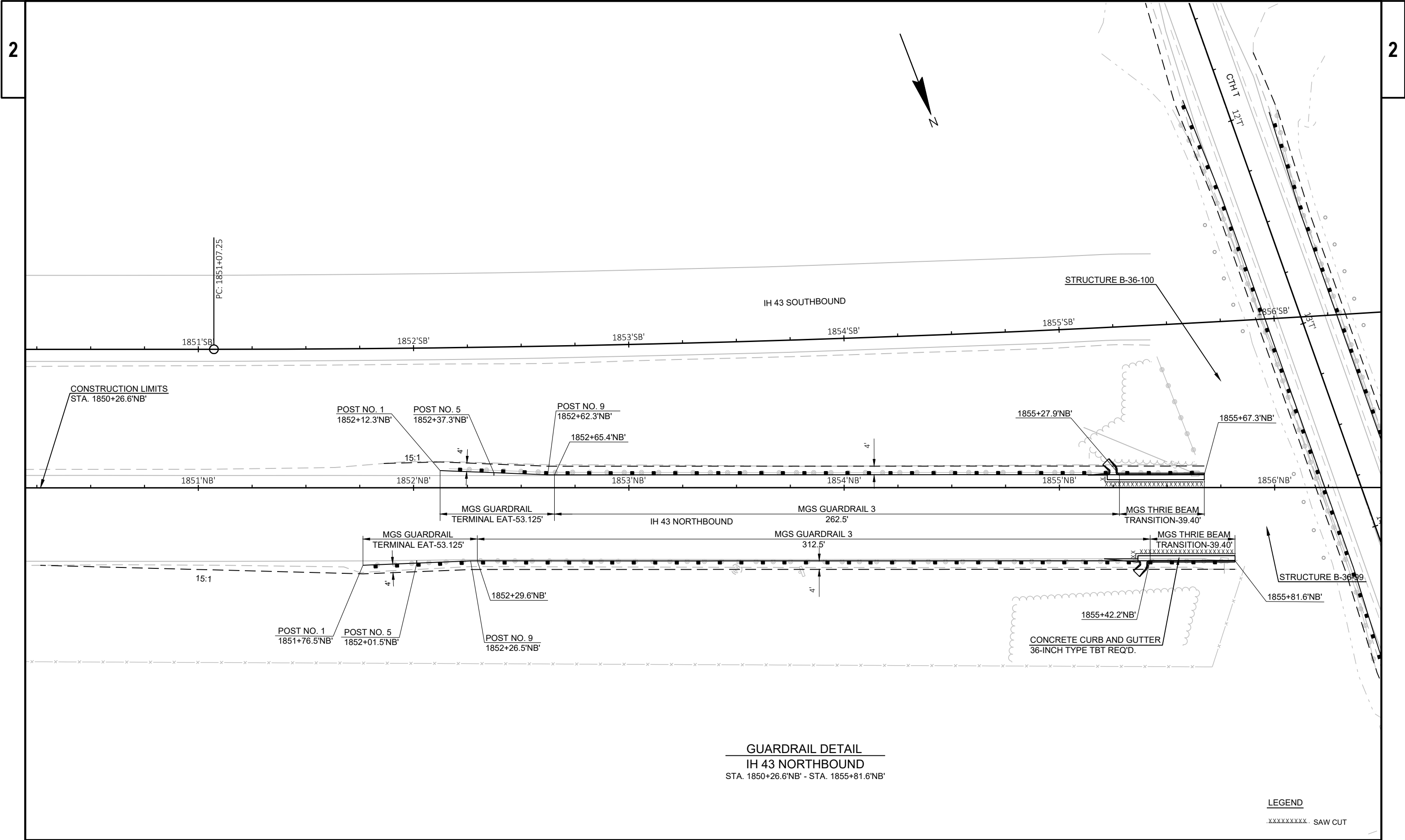
HWY: IH 35

COUNTY: MANITOWOC

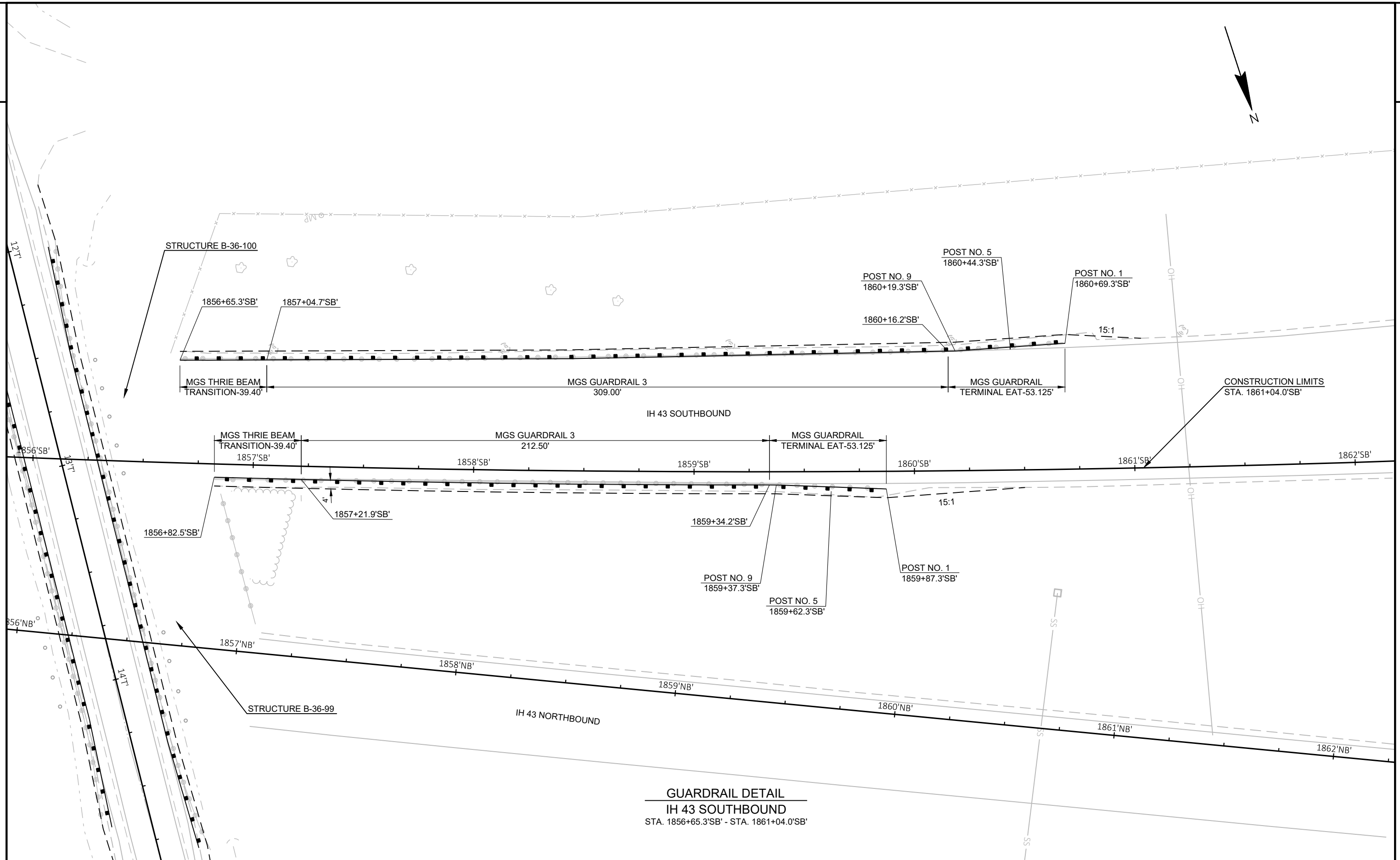
PLAN DETAILS - IH 35

SHEET

E

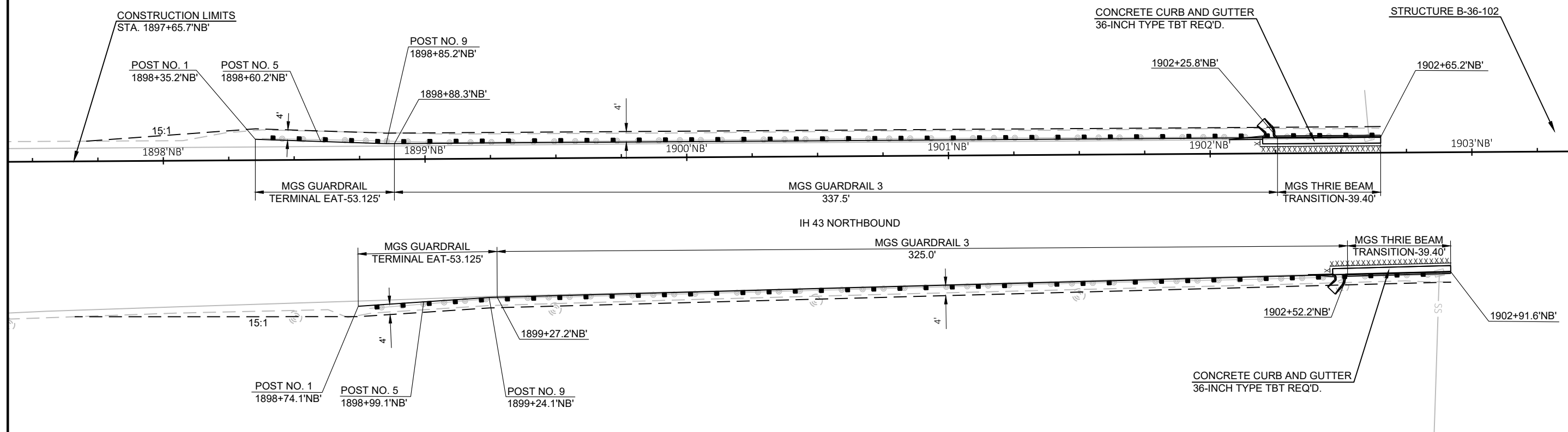


PROJECT NO: 1227-12-72	HWY: IH 33	COUNTY: MANITOWOC	PLAN DETAILS - IH 33	SHEET	E
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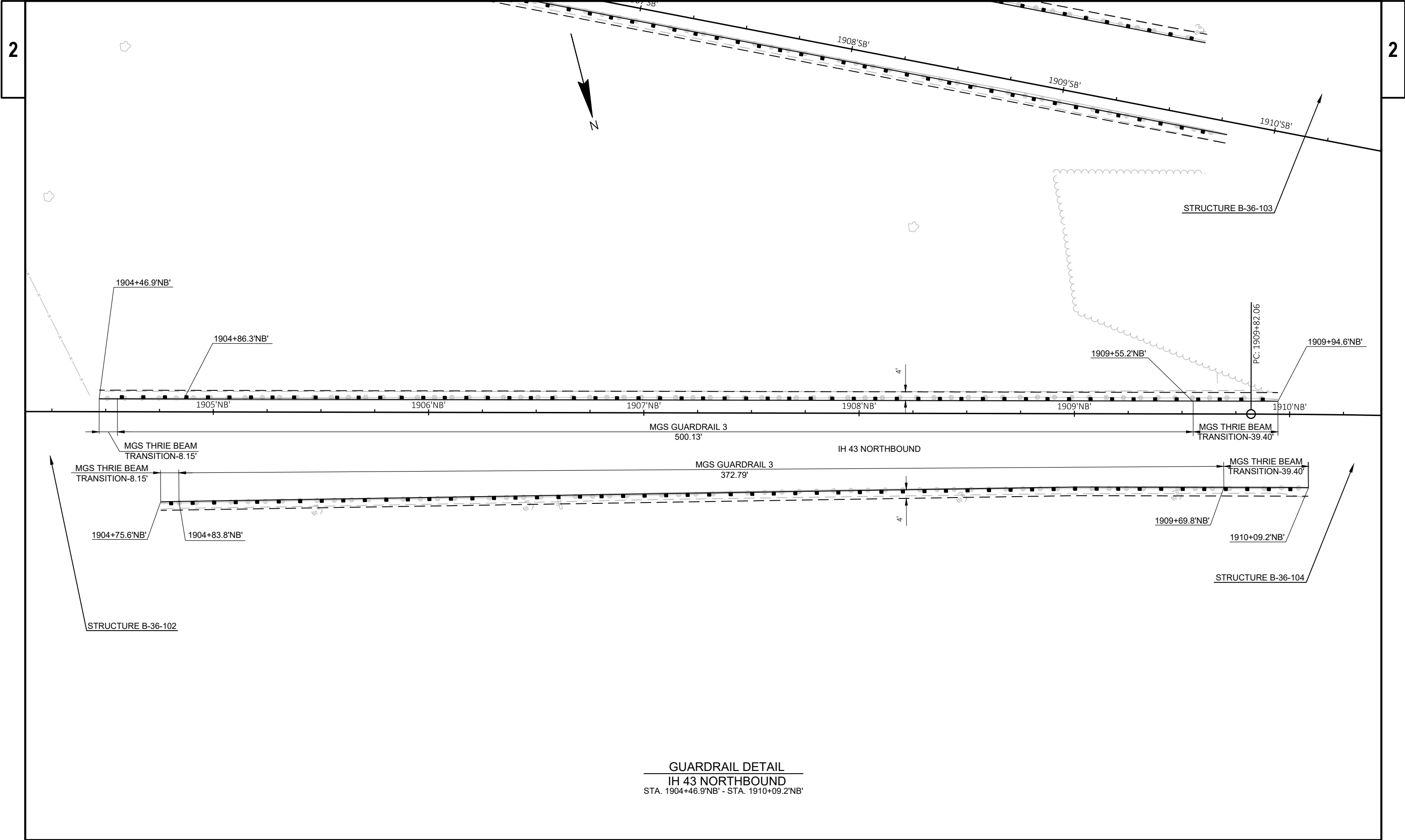
GUARDRAIL DETAIL
IH 43 SOUTHBOUND
STA. 1856+65.3'SB' - STA. 1861+04.0'SB'

PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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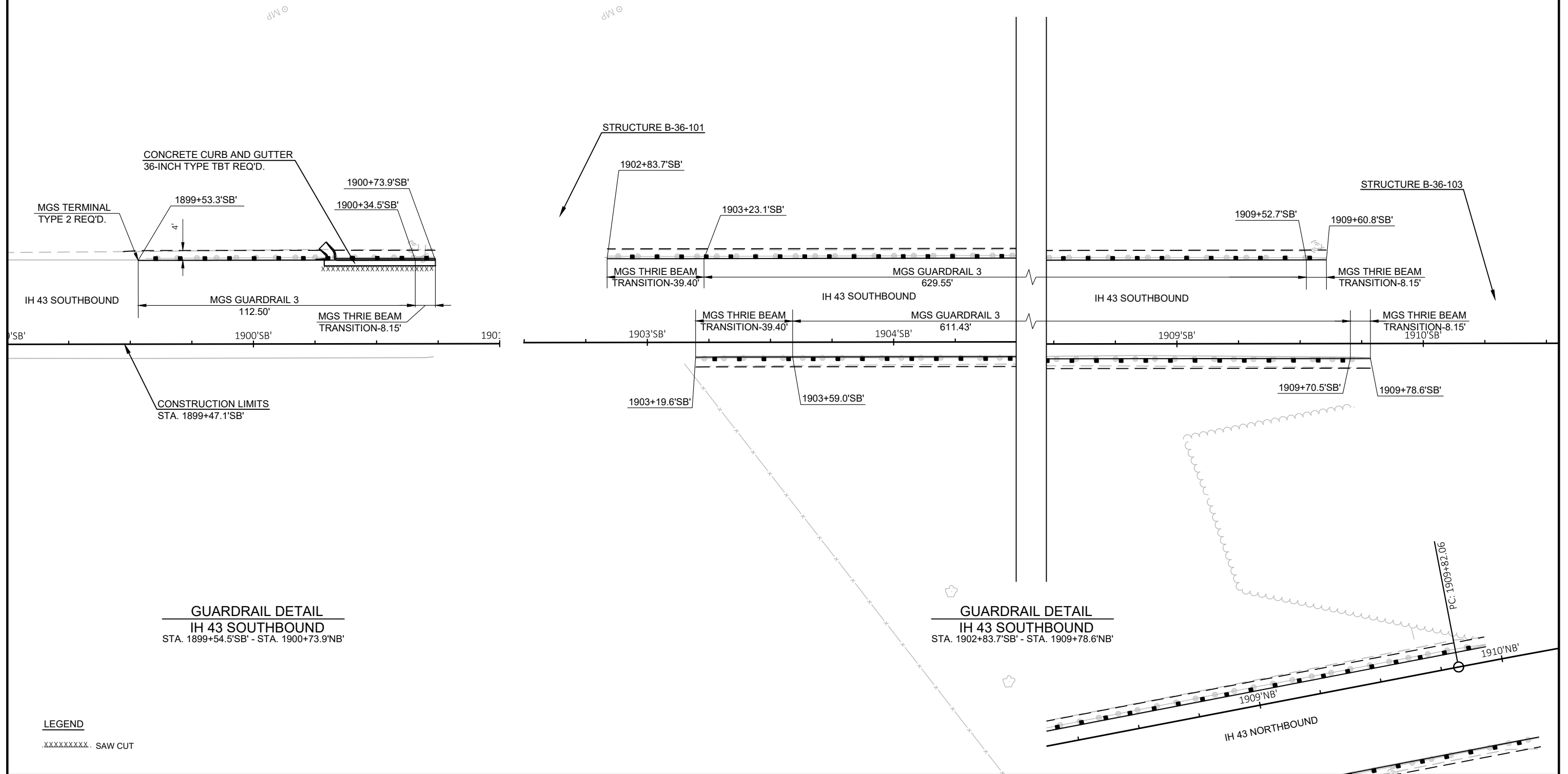


GUARDRAIL DETAIL
IH 43 NORTHBOUND
STA. 1897+65.7'NB' - STA. 1902+91.6'NB'

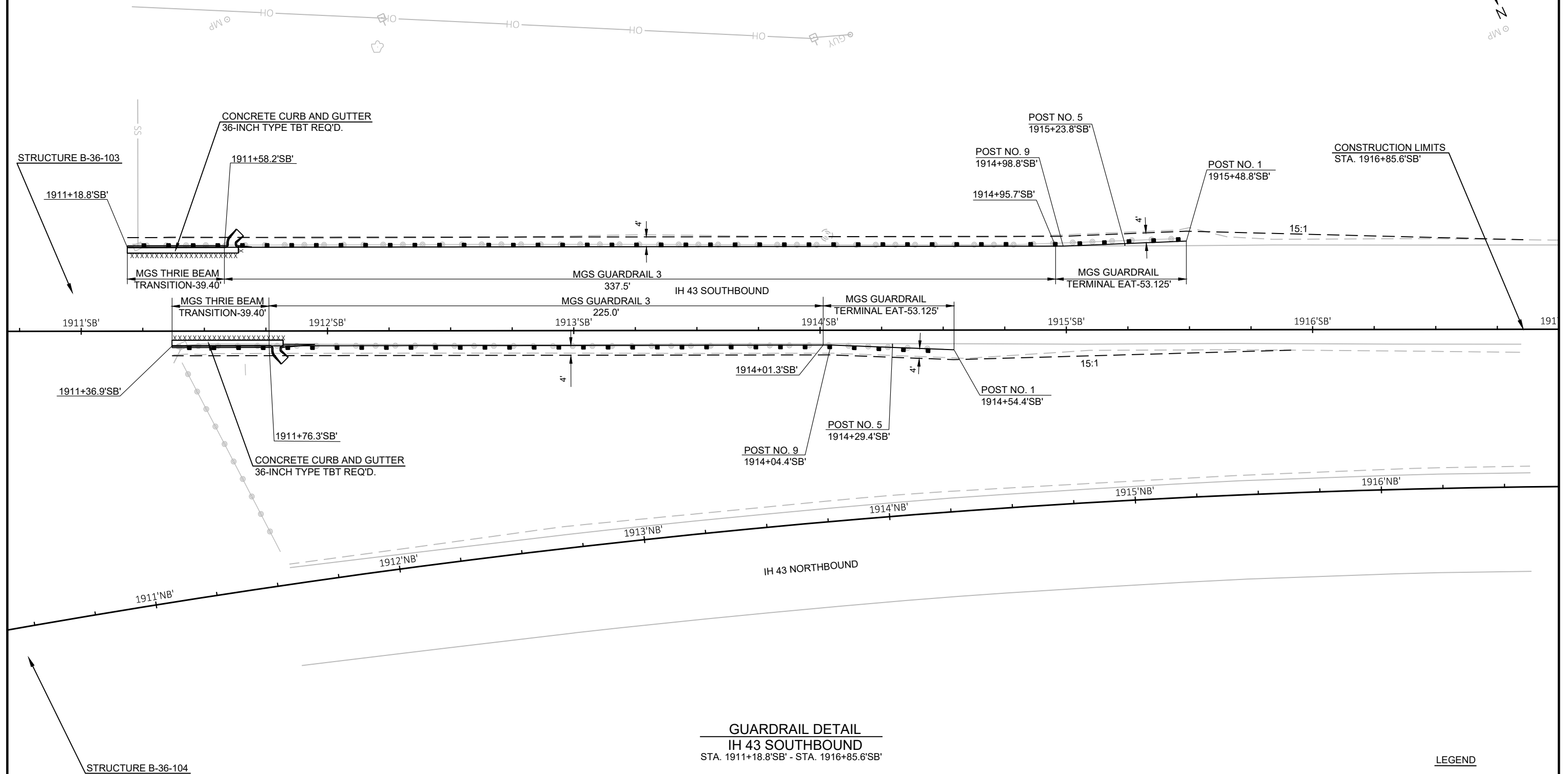
LEGEND
.XXXXXXXX. SAW CUT

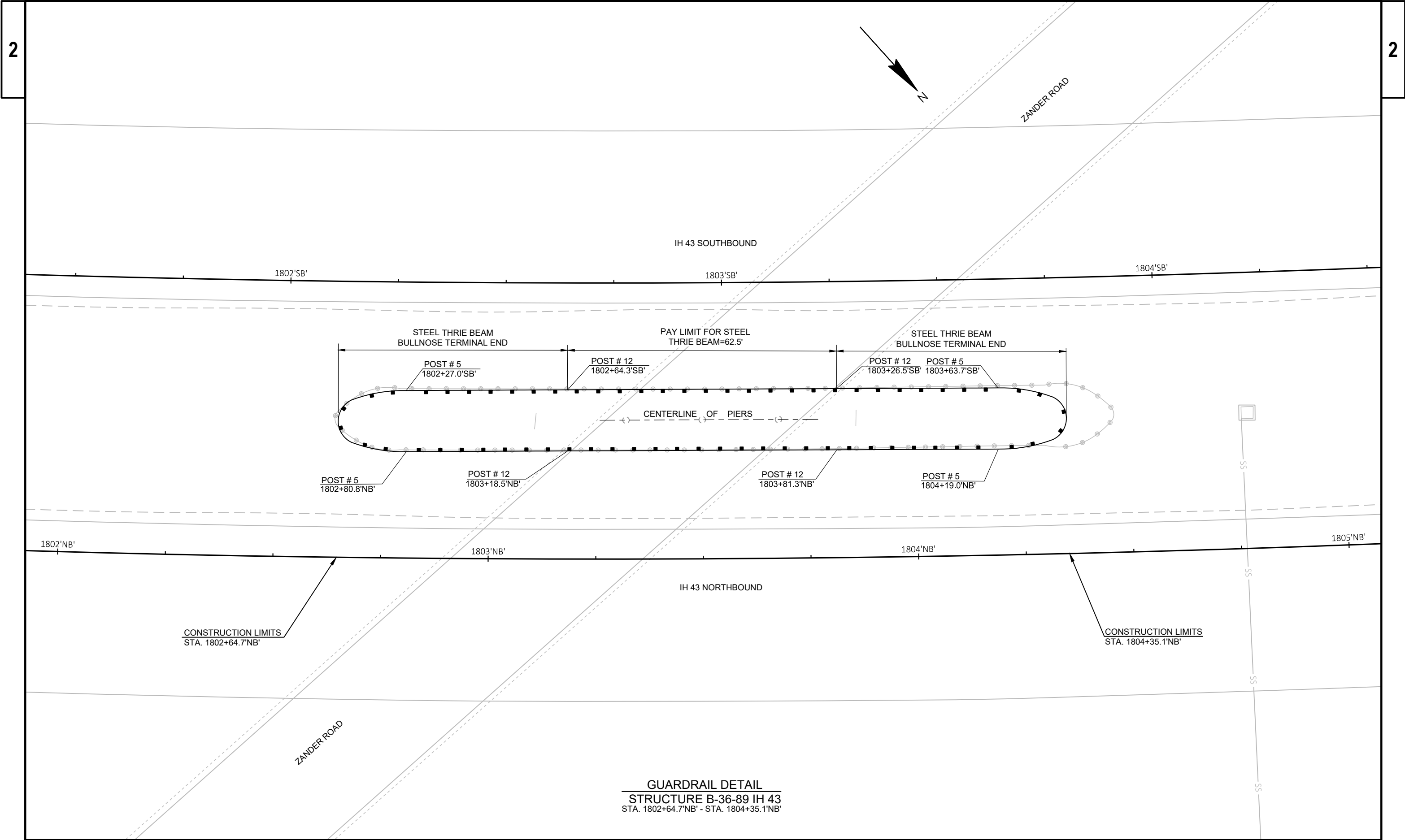


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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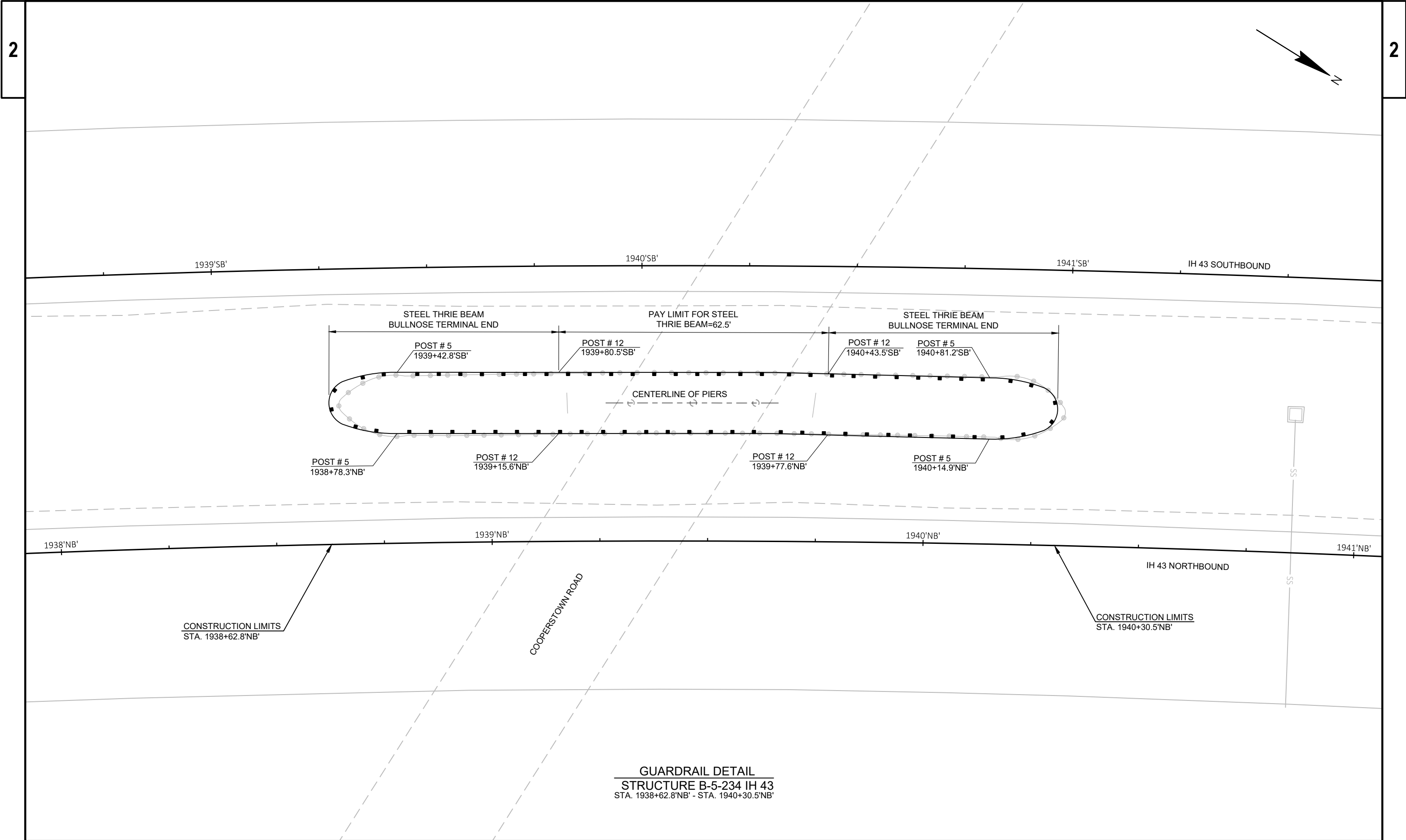


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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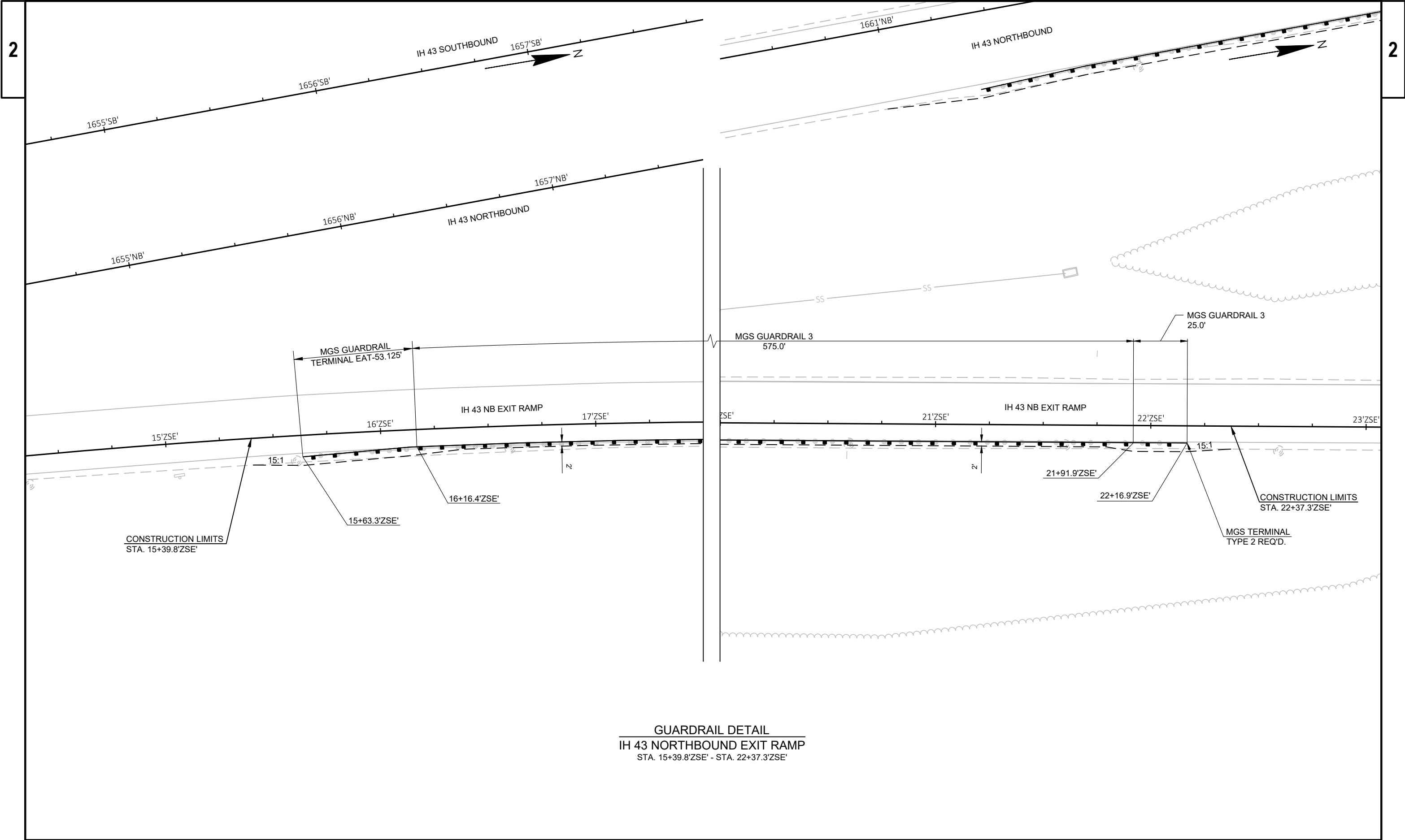




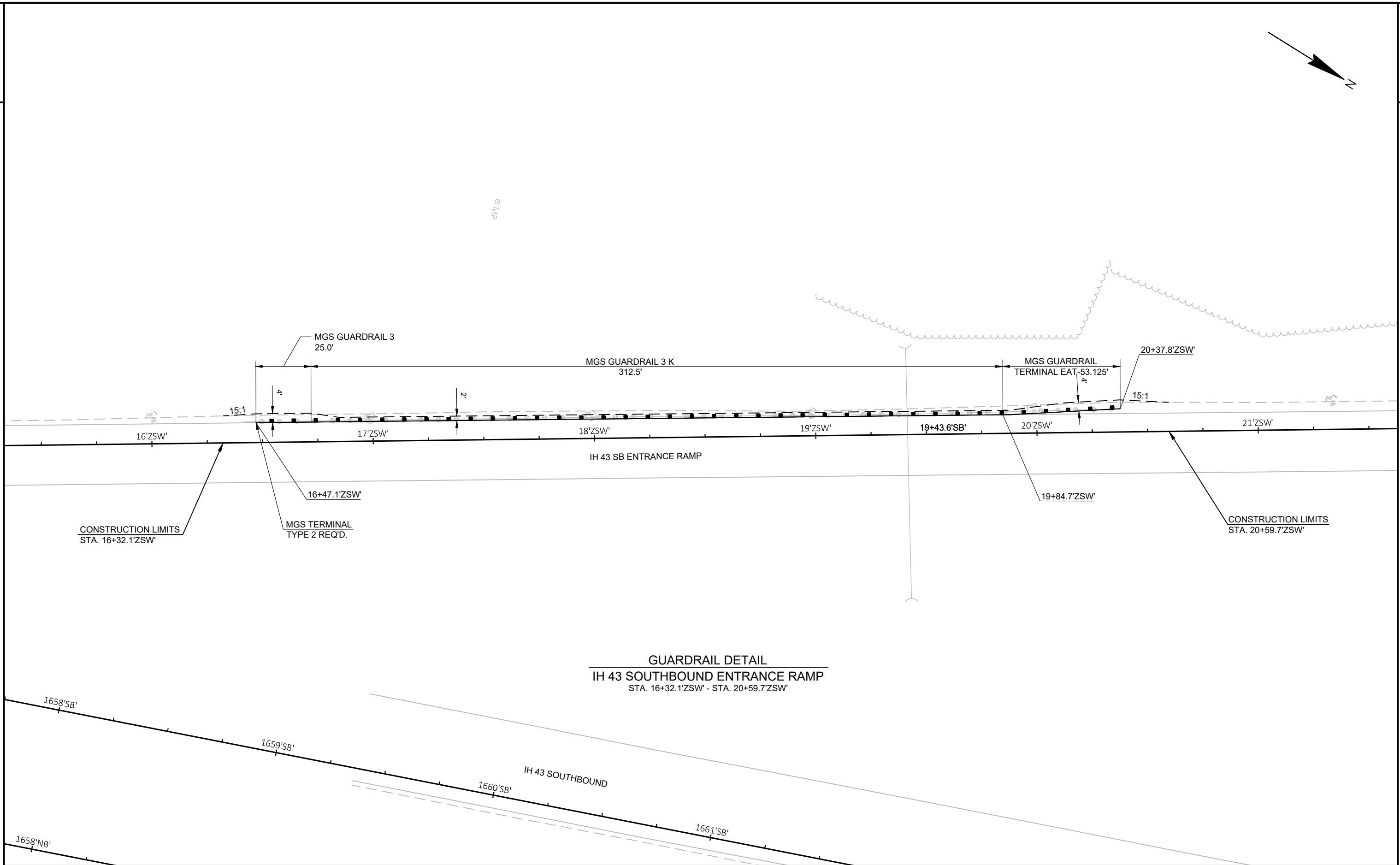
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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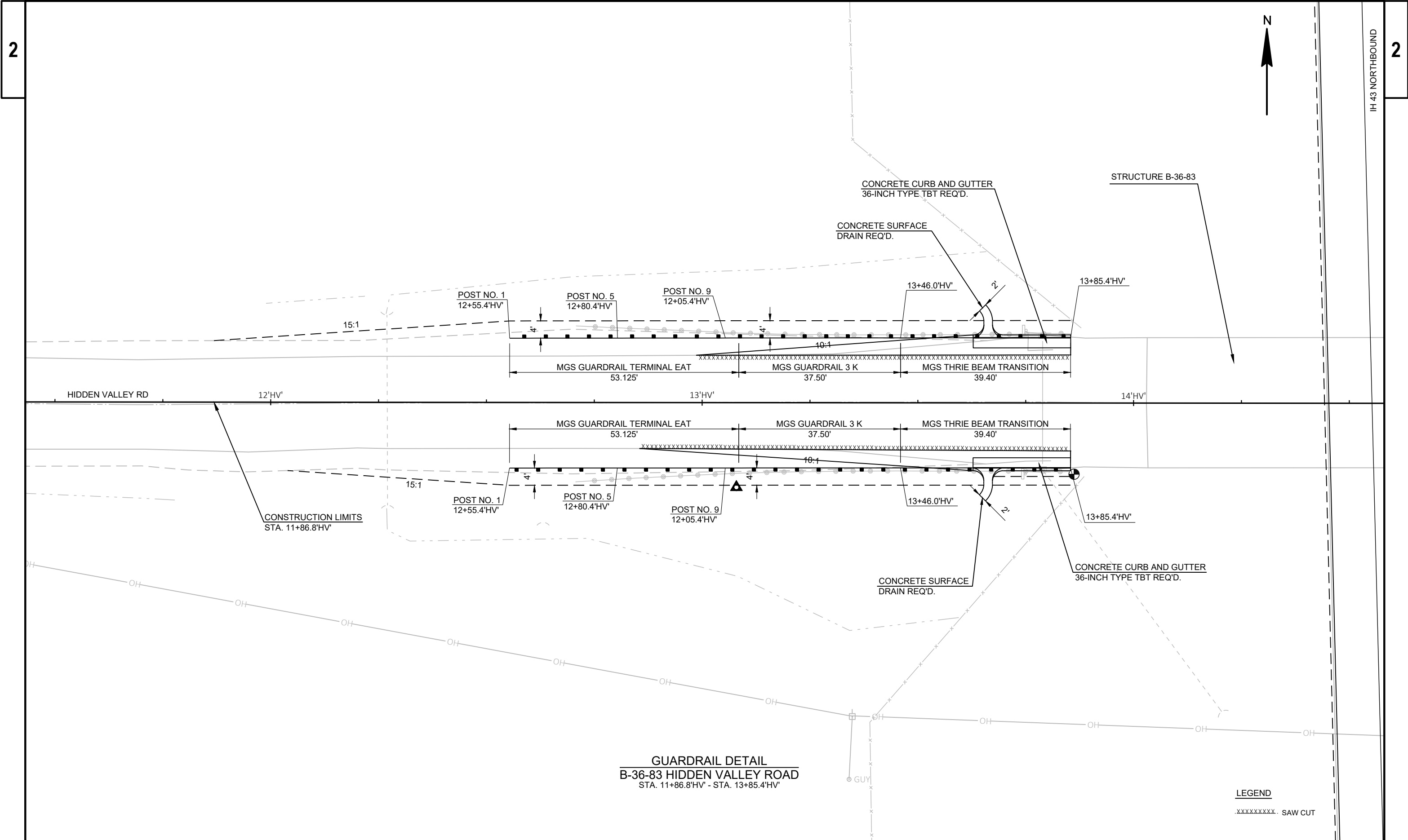


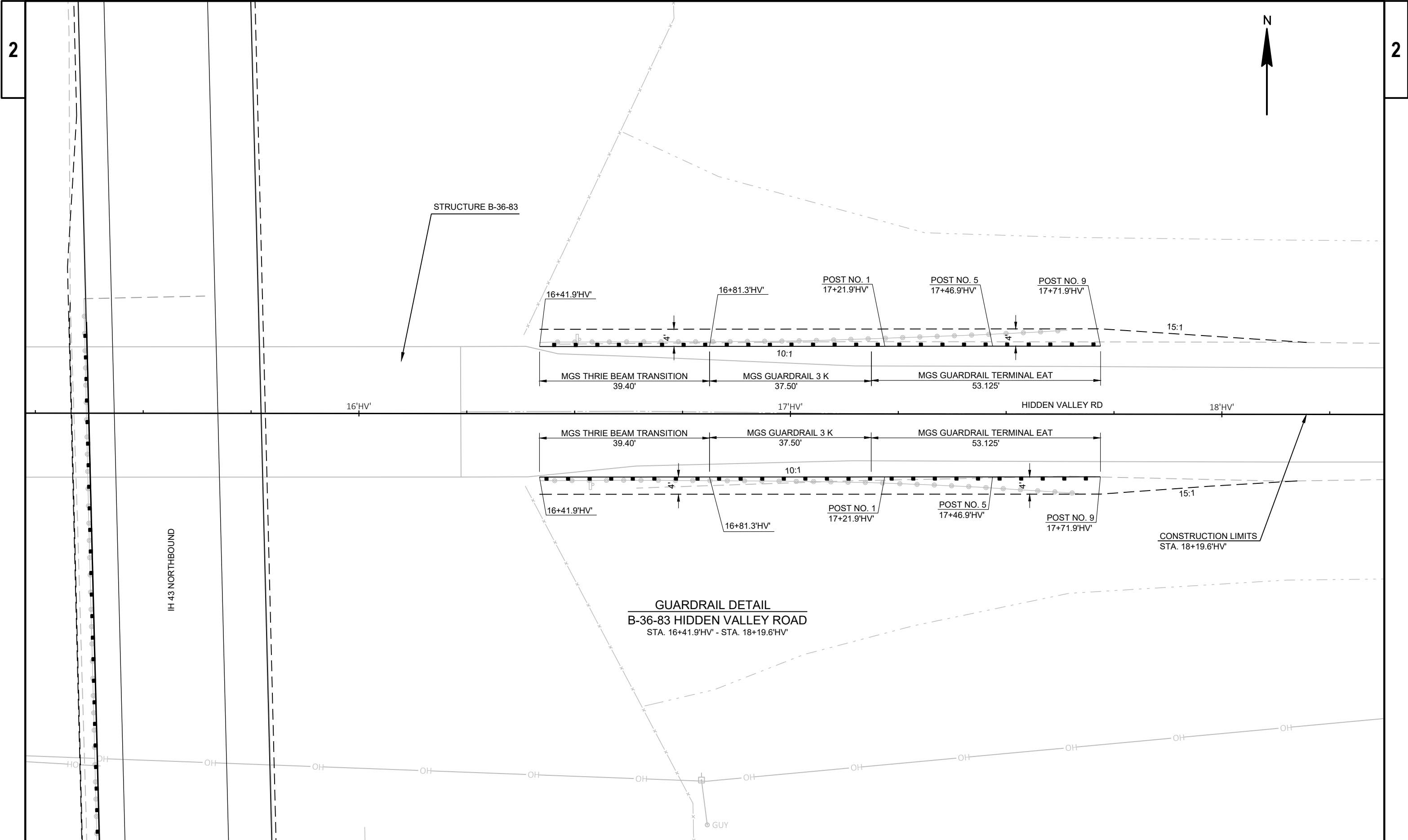
GUARDRAIL DETAIL
IH 43 NORTHBOUND EXIT RAMP
STA. 15+39.8'ZSE' - STA. 22+37.3'ZSE'



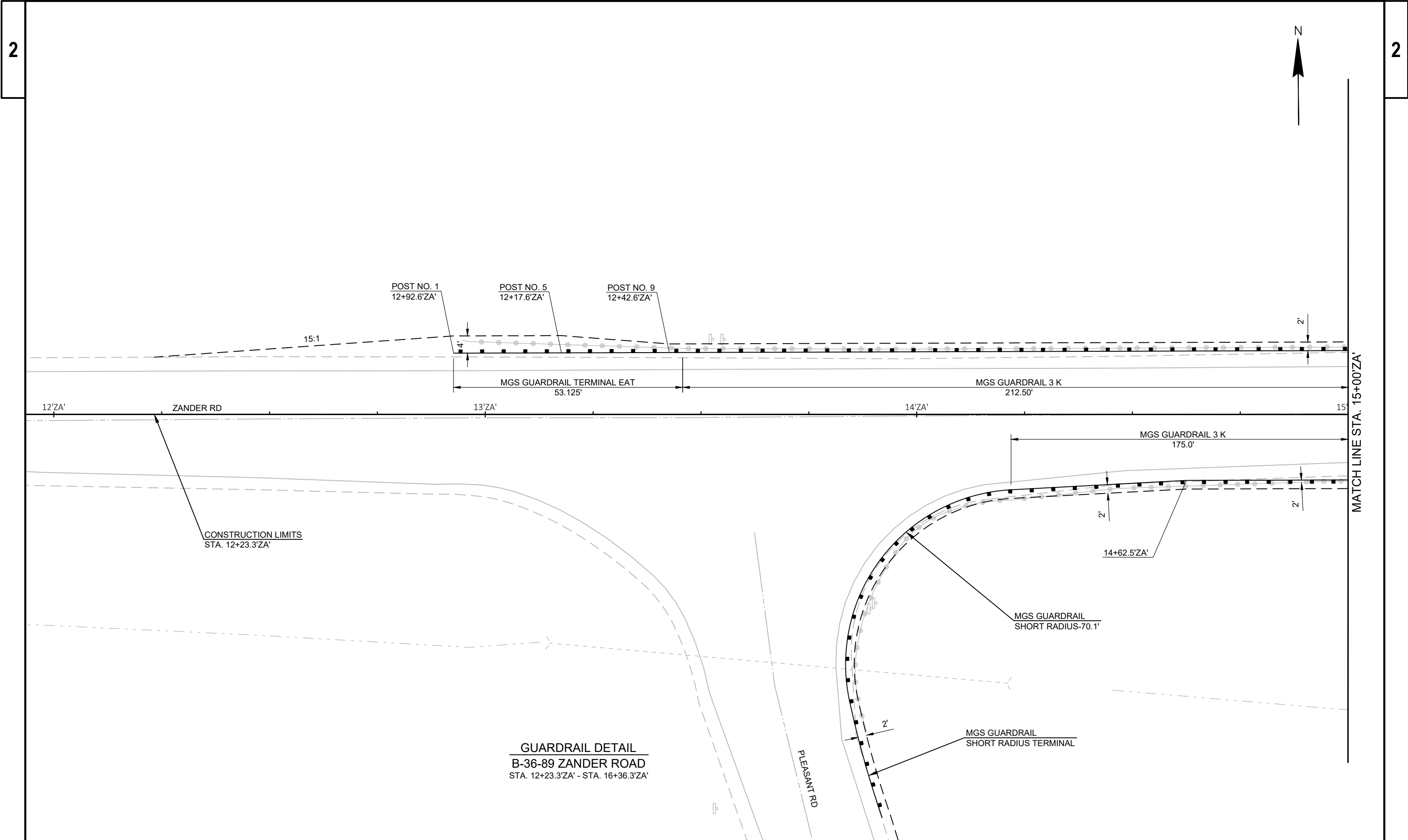
GUARDRAIL DETAIL
IH 43 SOUTHBOUND ENTRANCE RAMP
STA. 16+32.1'ZSW' - STA. 20+59.7'ZSW'

PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - IH 43	SHEET	E
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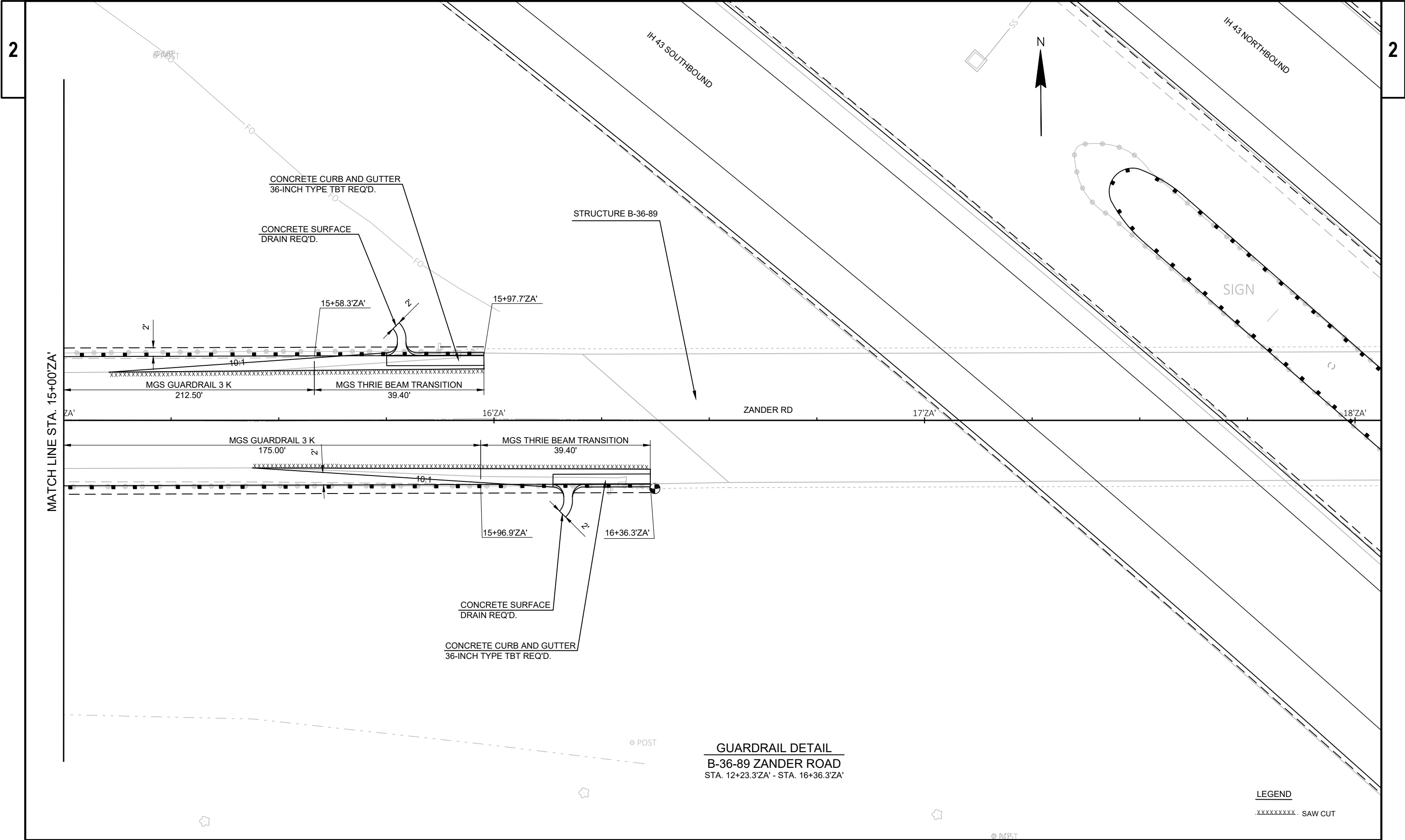




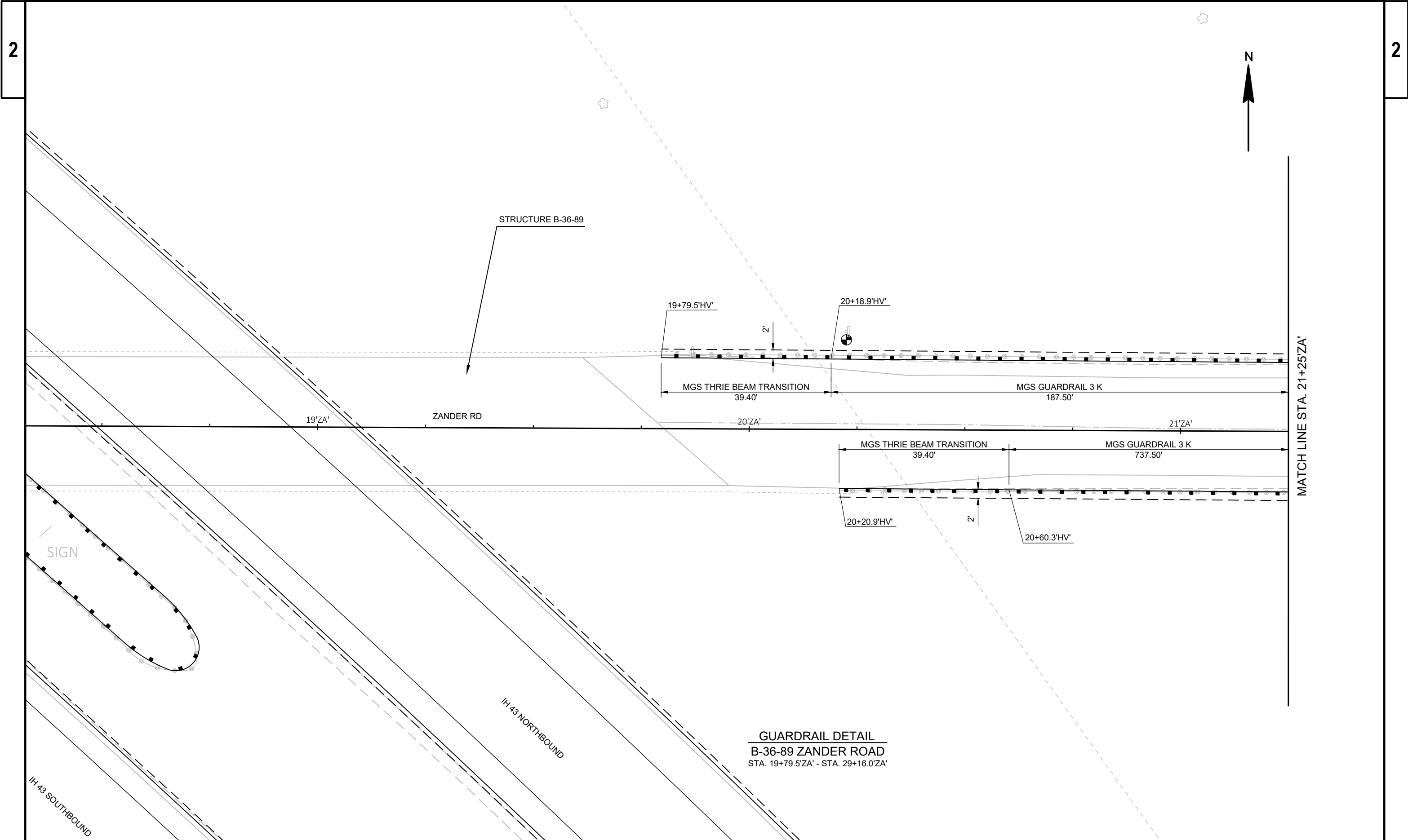
GUARDRAIL DETAIL
B-36-83 HIDDEN VALLEY ROAD
STA. 16+41.9'HV' - STA. 18+19.6'HV'



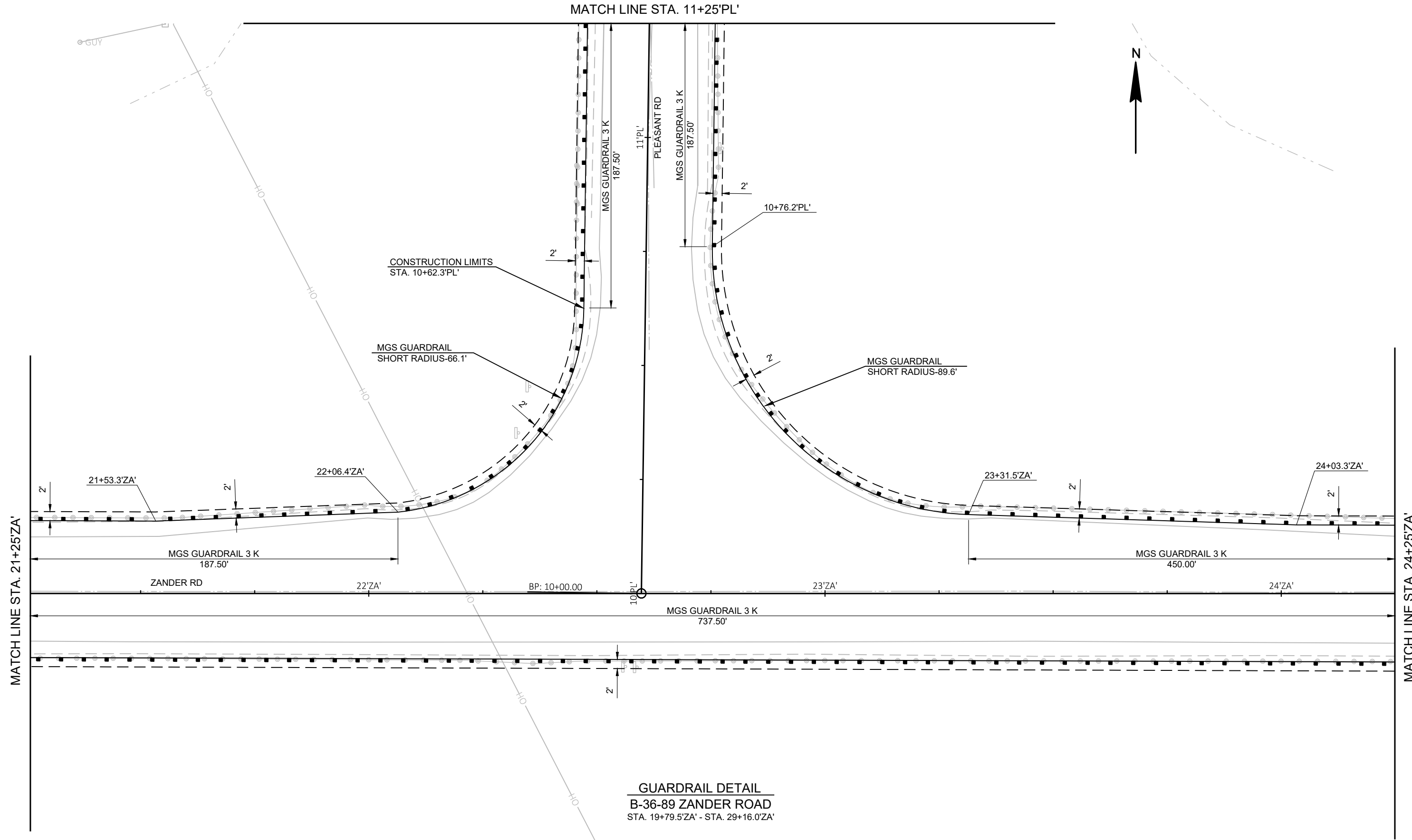
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - ZANDER ROAD	SHEET	E
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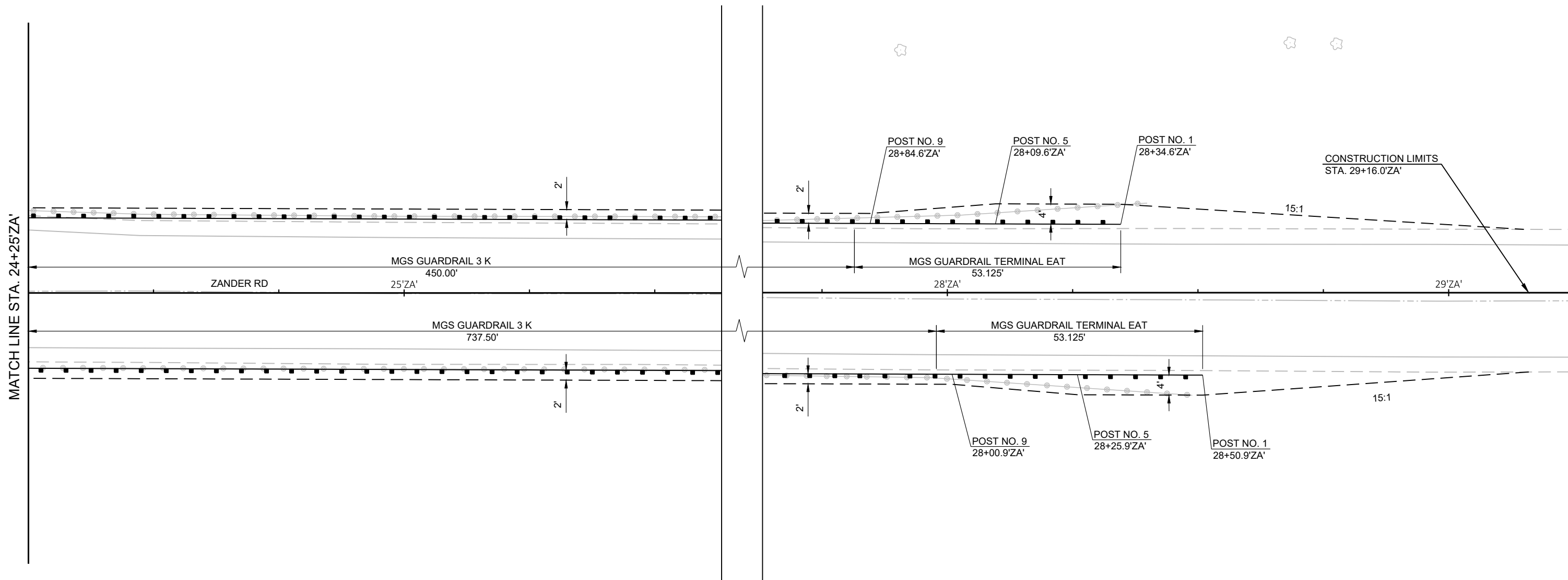
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - ZANDER ROAD	SHEET	E
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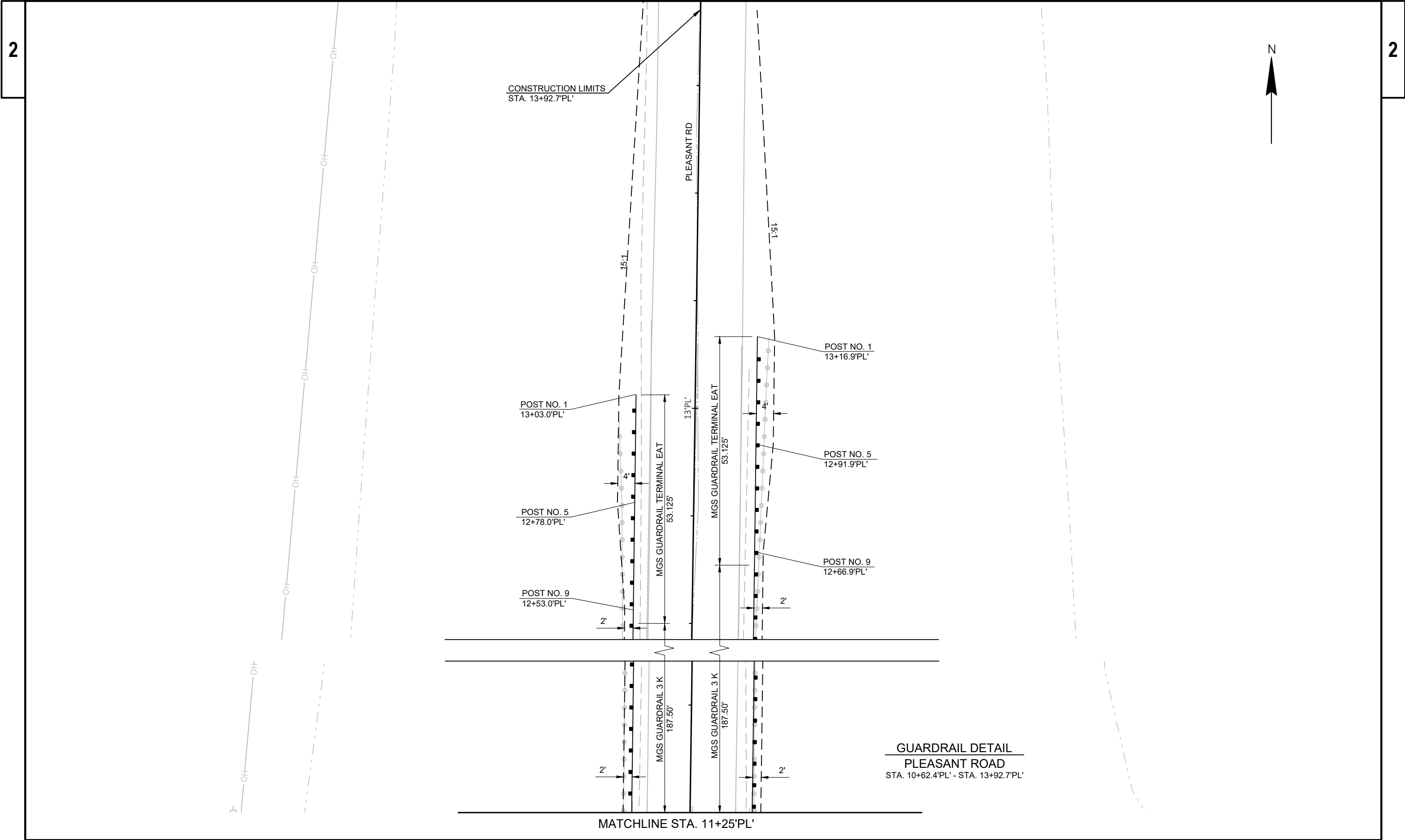
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - ZANDER ROAD	SHEET	E
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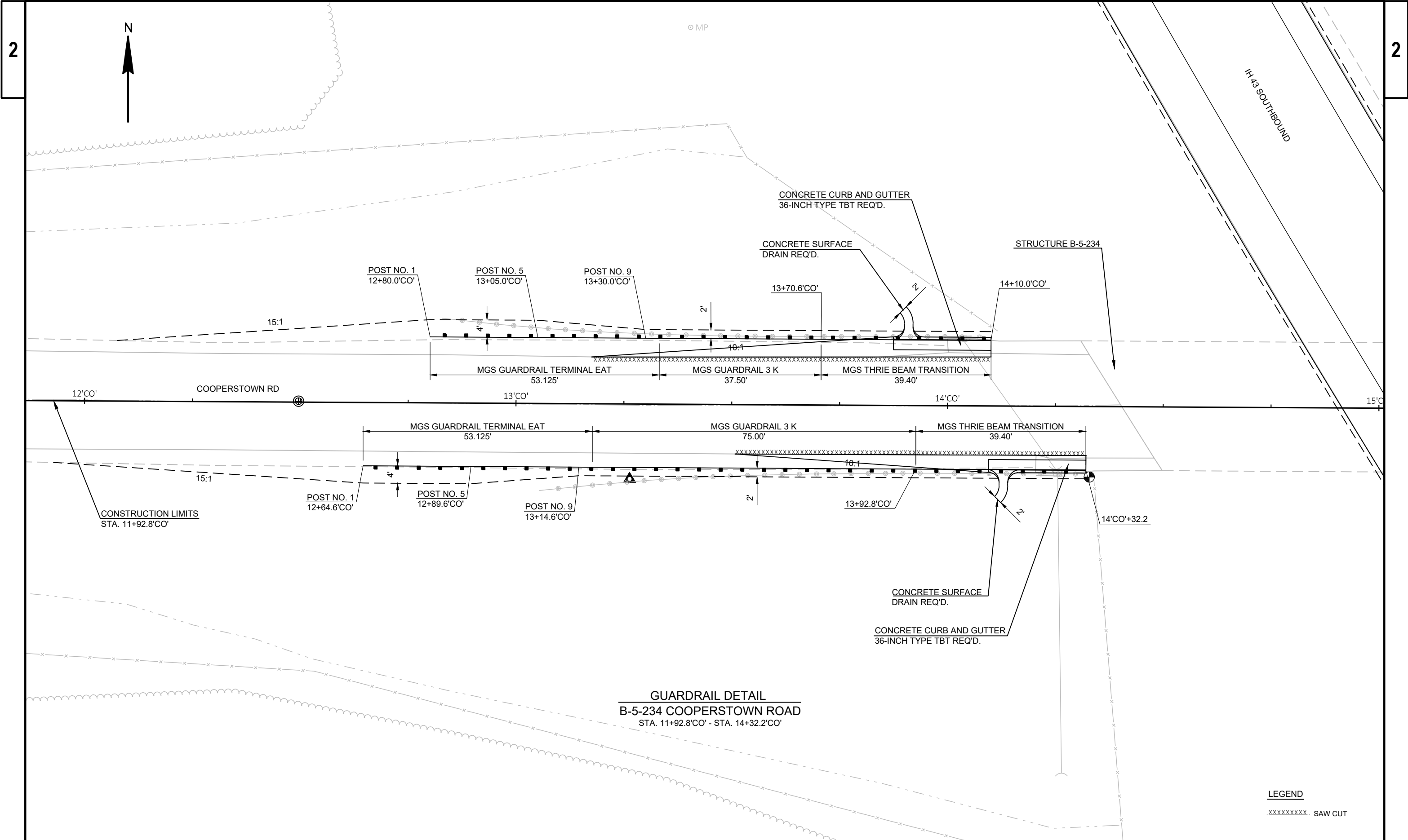
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - ZANDER ROAD	SHEET	E
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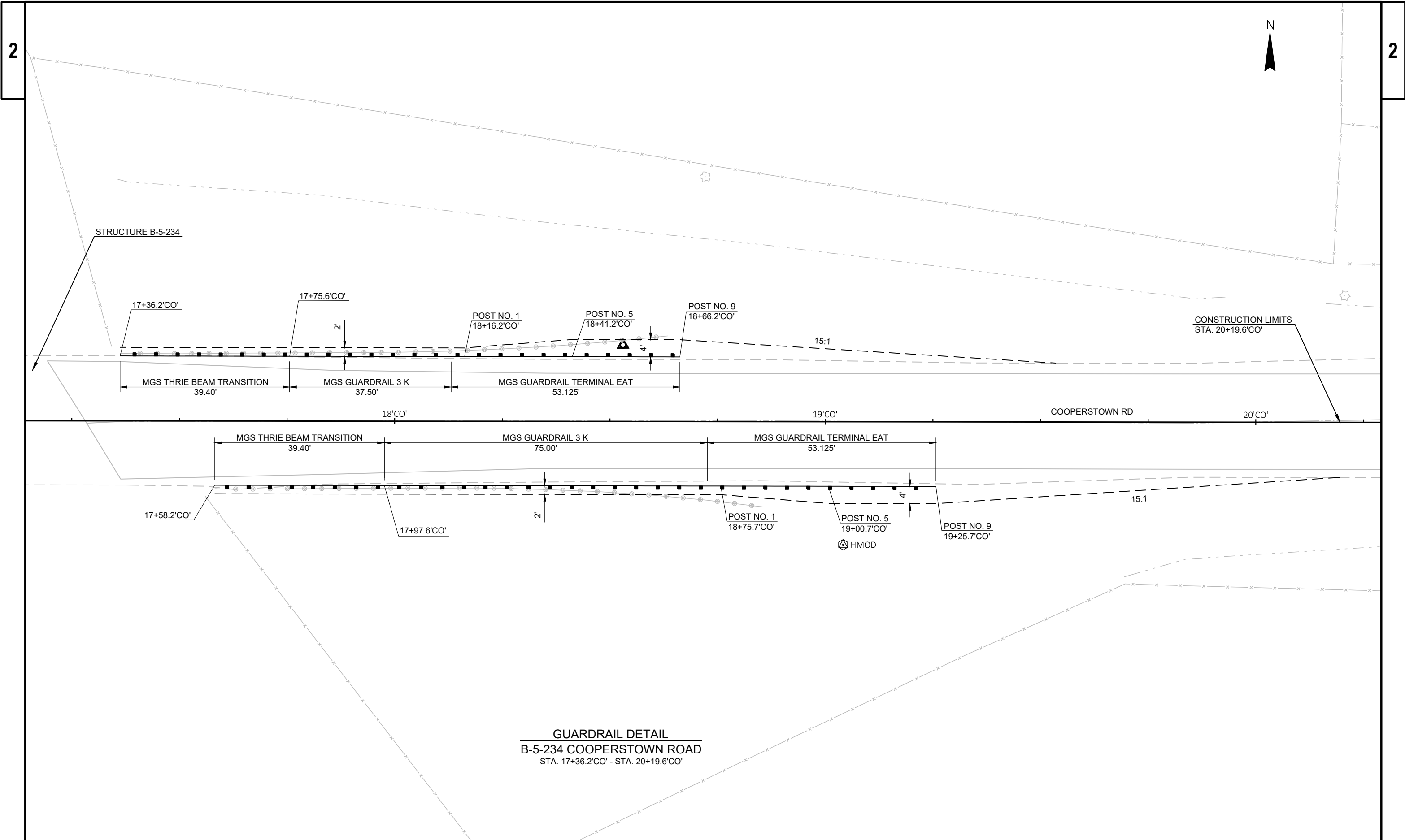


GUARDRAIL DETAIL
B-36-89 ZANDER ROAD
STA. 19+79.5'ZA' - STA. 29+16.0'ZA'



PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN DETAILS - PLEASANT ROAD	SHEET	E
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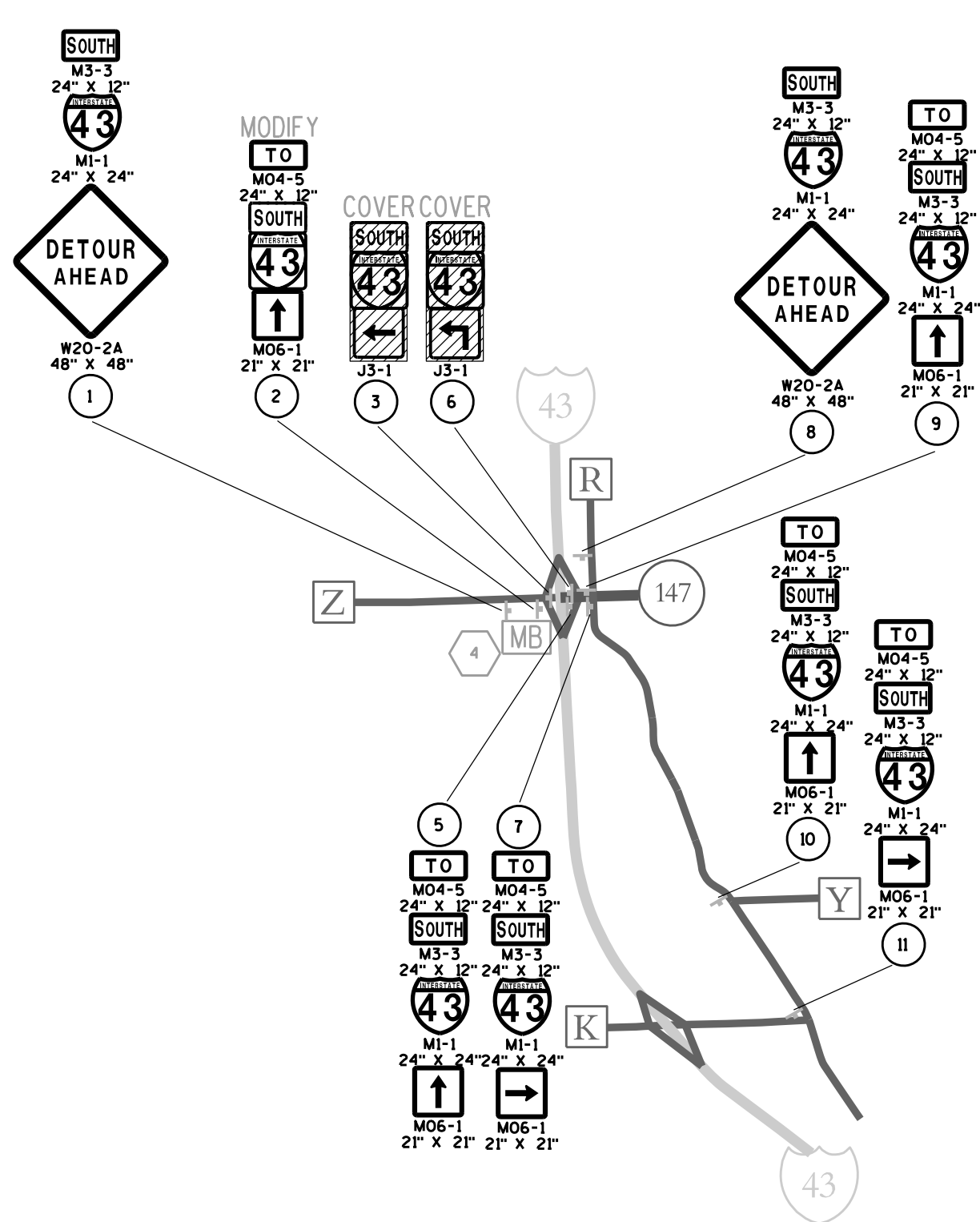
	SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
	PORTABLE CHANGEABLE MESSAGE SIGN
	SIGN MOUNTED ON TYPE III BARRICADE
	POST MOUNTED SIGN

□



	SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
	PORTABLE CHANGEABLE MESSAGE SIGN
	SIGN MOUNTED ON TYPE III BARRICADE
	POST MOUNTED SIGN

E

**LEGEND**

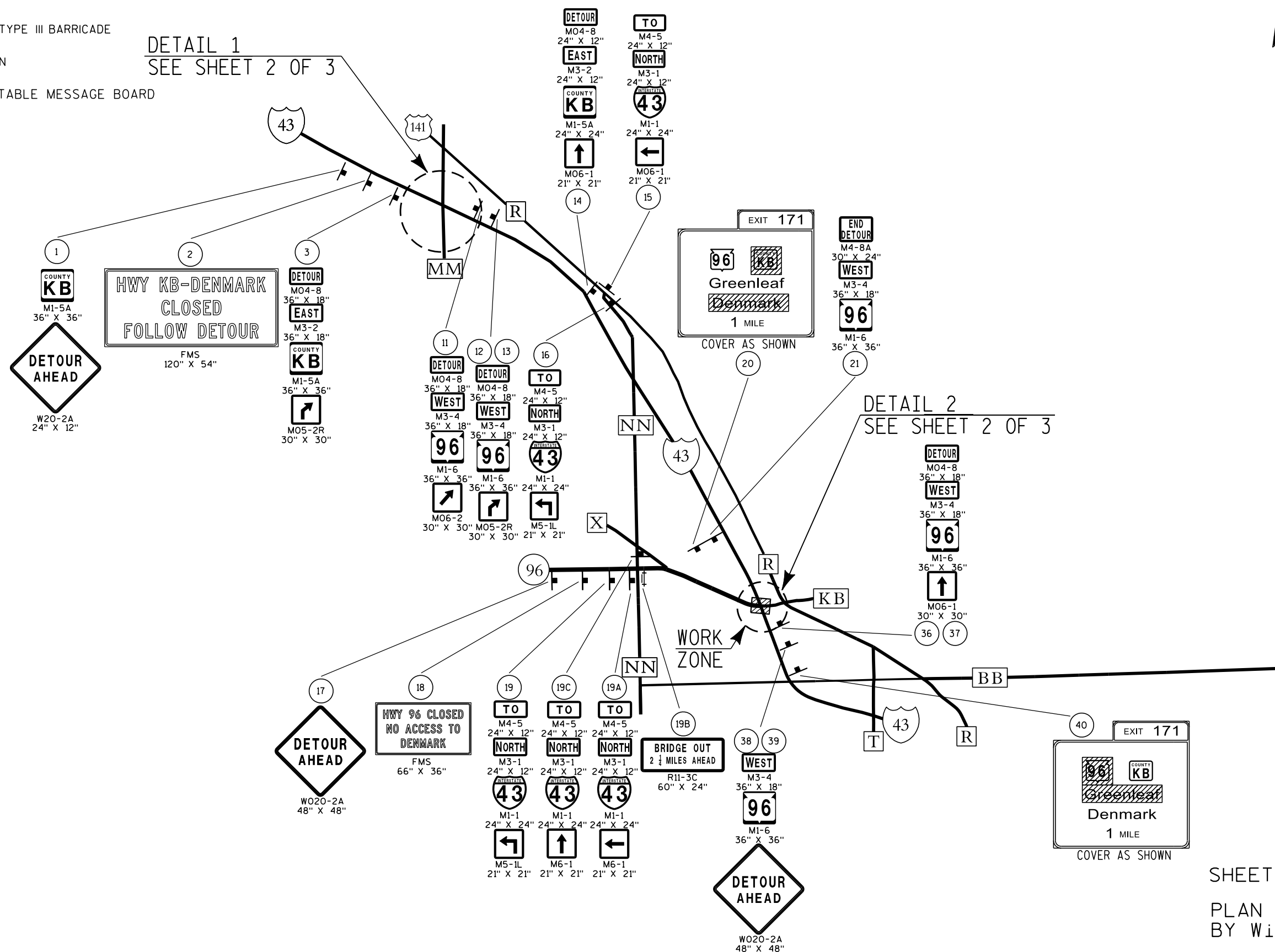
-  SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  SIGN MOUNTED ON TYPE III BARRICADE
-  POST MOUNTED SIGN

PLAN SHEET PRODUCED
BY WISDOT-NE REGION

LEGEND

- | | | |
|---|--|---------------|
|  | SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET | |
|  | SIGN MOUNTED ON TYPE III BARRICADE | |
|  | POST MOUNTED SIGN | $\frac{D}{S}$ |
|  | CHANGEABLE PORTABLE MESSAGE BOARD | |

DETAIL 1
SEE SHEET 2 OF 3



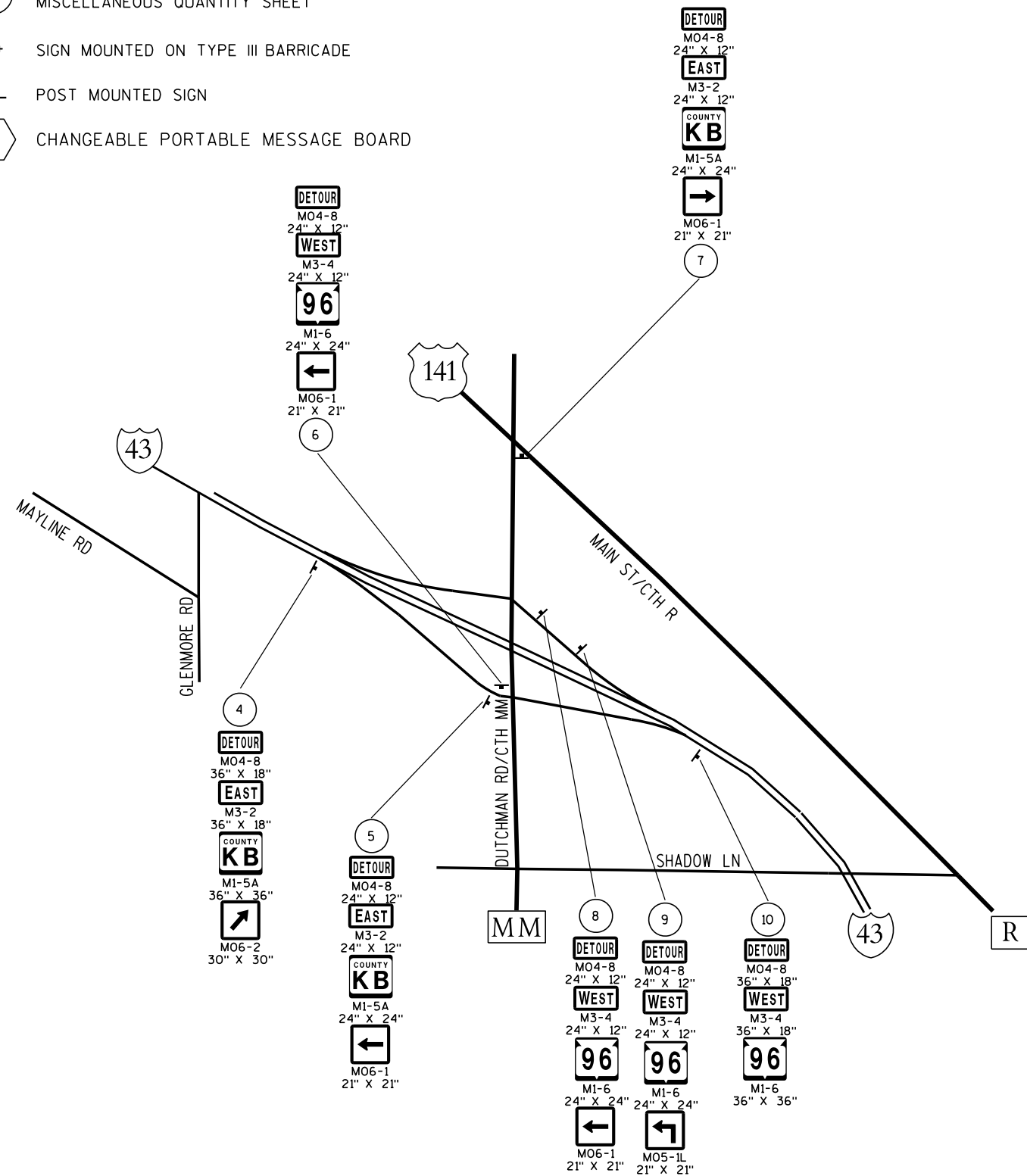
DETAIL 2
/ SEE SHEET 2 OF 3

SHEET 1 OF 3

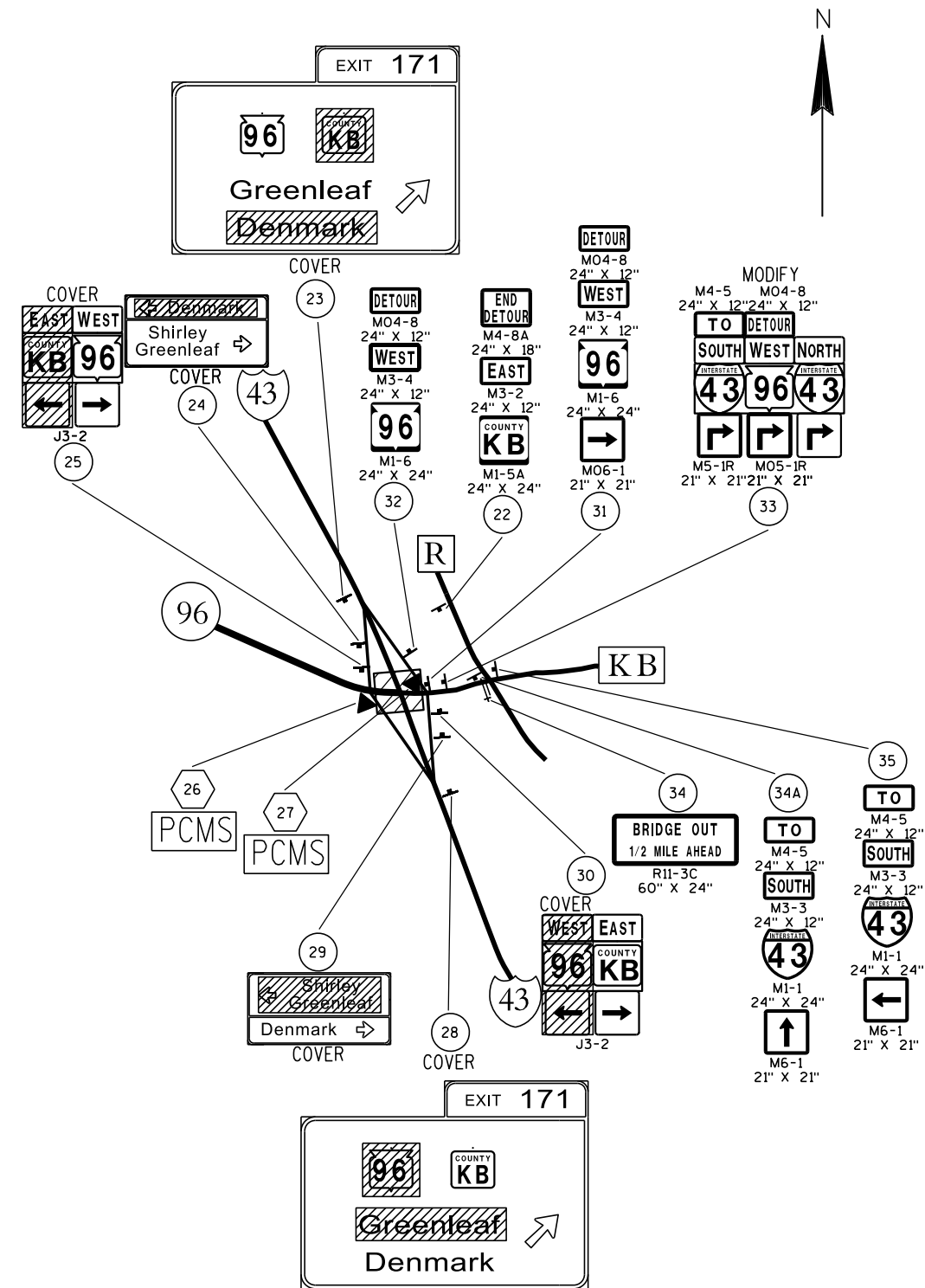
PLAN SHEET PRODUCED
BY WisDOT-NE REGION

LEGEND

- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
- ⇄ SIGN MOUNTED ON TYPE III BARRICADE
- ⊥ POST MOUNTED SIGN
- (X) CHANGEABLE PORTABLE MESSAGE BOARD



DETAIL 1



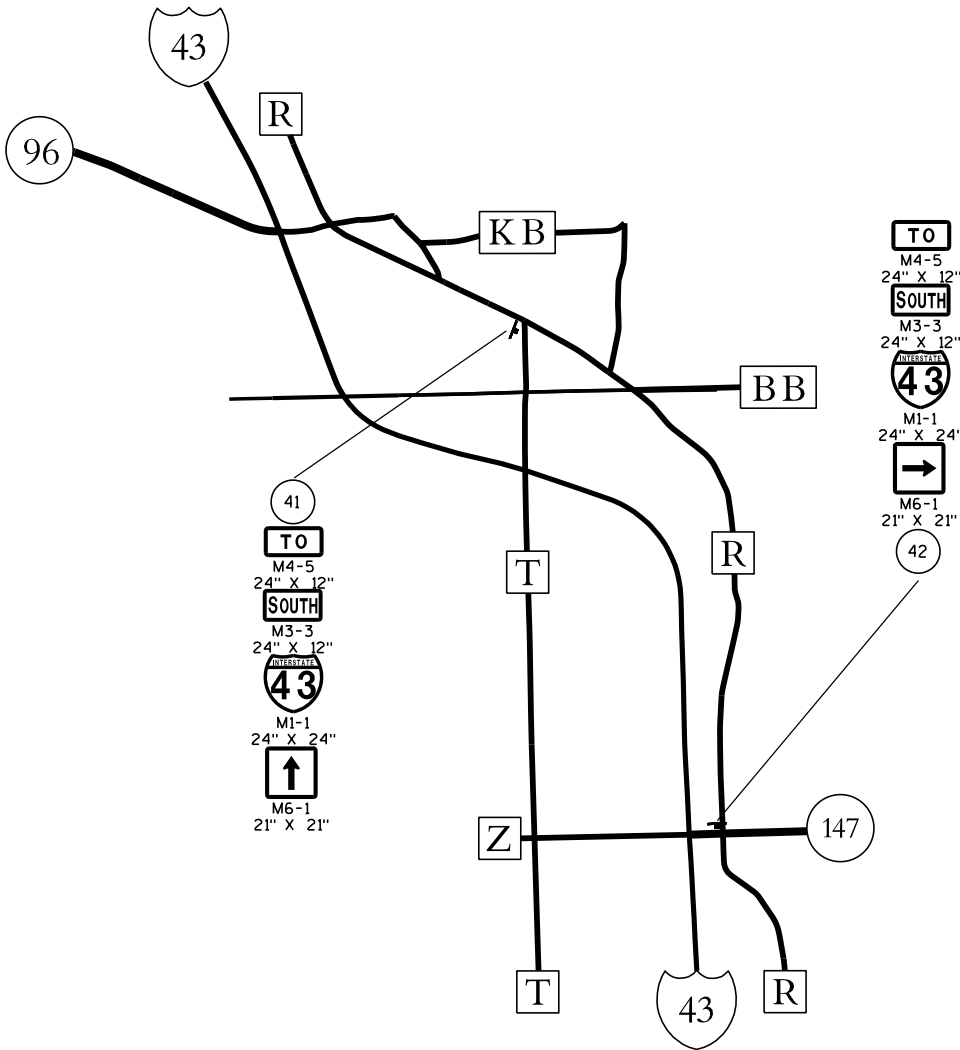
DETAIL 2

SHEET 2 OF 3

PLAN SHEET PRODUCED
BY WISDOT-NE REGION

LEGEND

- (X) SIGN NUMBER, REFER TO MISCELLANEOUS QUANTITY SHEET
- ⇄ SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN
- (X) CHANGEABLE PORTABLE MESSAGE BOARD



SHEET 3 OF 3
PLAN SHEET PRODUCED
BY WisDOT-NE REGION

REMOVING SMALL PIPE CULVERTS

						203.0100 REMOVING SMALL PIPE CULVERTS
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	EACH
0010	IH 43 NB	1699'NB'+16	-	1699'NB'+76	RT	1
0010	IH 43 SB	1699'SB'+70	-	1700'SB'+66	LT	1
0010	IH 43 NB	1755'NB'+71	-	1756'NB'+58	RT	1
PROJECT TOTAL						3

PREPARE FOUNDATION FOR ASPHALTIC PAVING

		211.0100 PREPARE FOUNDATION FOR ASPHALTIC PAVING
CATEGORY	PROJECT	LS
0010	1227-12-72	1
PROJECT TOTAL		1

FINISHING ROADWAY

		213.0100 FINISHING ROADWAY (PROJECT)
CATEGORY	PROJECT	EACH
0010	1227-12-72	1
PROJECT TOTAL		1

REMOVING PAVEMENT

						204.0105 REMOVING PAVEMENT BUTT JOINTS	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS	204.0120 REMOVING ASPHALTIC SURFACE MILLING	REMARKS
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	SY	SY	SY	
0010									
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	LT/RT	-	-	173,764	MAINLINE & SHOULDERS
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	LT/RT	-	-	172,496	MAINLINE & SHOULDERS
	IH 43 NB	1629'NB'+61	-	1630'NB'+21	LT	-	-	221	MEDIAN TURNAROUND
	STH 147 EB	12'EB'+28	-	12'EB'+94	LT/RT	449	-	-	
	STH 147 EB	12'ZEB'+83	-	15'ZEB'+29	LT/RT	-	-	-	MAINLINE
	STH 147 EB	19'EB'+49	-	19'EB'+99	RT	202	-	-	
	STH 147 WB	19'WB'+62	-	20'WB'+12	LT	123	-	-	
	STH 147 NE RAMP	10'ZNE'+75	-	20'ZNE'+20	LT/RT	-	-	-	RAMP
	STH 147 NW RAMP	10'ZNW'+94	-	22'ZNW'+22	LT/RT	-	-	-	RAMP
	IH 43 NB	1701'NB'+70	-	1702'NB'+25	LT	-	-	191	MEDIAN TURNAROUND
	IH 43 NB	1762'NB'+26	-	1762'NB'+82	LT	-	-	217	MEDIAN TURNAROUND
	IH 43 NB	1848'NB'+08	-	1848'NB'+70	LT	-	-	202	MEDIAN TURNAROUND
	IH 43 NB	1926'NB'+65	-	1927'NB'+24	LT	-	-	222	MEDIAN TURNAROUND
	IH 43 NB	1946'NB'+76	-	1947'NB'+32	LT	-	-	204	MEDIAN TURNAROUND
	IH 43 NB	1988'NB'+32	-	1988'NB'+34	LT/RT	-	9	-	
	IH 43 SB	1988'SB'+32	-	1988'SB'+34	LT/RT	-	9	-	
PROJECT TOTAL						774	18	347,517	

REMOVING APRON ENDWALL

					204.9060.S REMOVING APRON ENDWALL
CATEGORY	ROADWAY	STATION	OFFSET		EACH
0010	IH 43 NB	1638'NB'+03	LT		1
PROJECT TOTAL					1

REMOVING CURB & GUTTER

						204.0130 REMOVING CURB & GUTTER
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	LF
0010	HIDDEN VALLEY RD	10'HV+93	-	10'HV+98	RT	5
0010	HIDDEN VALLEY RD	10'HV+93	-	10'HV+98	LT	5
0010	IH 43 NB	1665'NB'+15	-	1665'NB'+20	RT	5
0010	IH 43 NB	1665'NB'+15	-	1665'NB'+20	LT	5
0010	IH 43 SB	1665'SB'+18	-	1665'SB'+23	RT	5
0010	IH 43 SB	1665'SB'+18	-	1665'SB'+23	LT	5
0010	IH 43 SB	1720'SB'+96	-	1721'SB'+01	LT	5
0010	IH 43 SB	1721'SB'+04	-	1721'SB'+09	RT	5
0010	IH 43 NB	1721'NB'+14	-	1721'NB'+19	LT	5
0010	IH 43 NB	1721'NB'+22	-	1721'NB'+27	RT	5
0010	IH 43 NB	1750'NB'+33	-	1750'NB'+38	RT	5
0010	IH 43 NB	1750'NB'+33	-	1750'NB'+38	LT	5
0010	IH 43 SB	1750'SB'+33	-	1750'SB'+38	RT	5
0010	IH 43 SB	1750'SB'+33	-	1750'SB'+38	LT	5
0010	ZANDER RD	15'ZA'+89	-	15'ZA'+94	LT	5
0010	ZANDER RD	16'ZA'+27	-	16'ZA'+32	RT	5
0010	IH 43 SB	1855'SB'+27	-	1855'SB'+32	LT	8
0010	IH 43 NB	1855'NB'+60	-	1855'NB'+65	LT	5
0010	IH 43 NB	1855'NB'+75	-	1855'NB'+80	RT	5
0010	IH 43 SB	1900'SB'+67	-	1900'SB'+72	LT	5
0010	IH 43 SB	1900'SB'+95	-	1901'SB'+00	RT	5
0010	IH 43 NB	1902'NB'+58	-	1902'NB'+63	LT	5
0010	IH 43 NB	1902'NB'+85	-	1902'NB'+90	RT	5
0010	IH 43 SB	1911'SB'+21	-	1911'SB'+26	LT	5
0010	IH 43 SB	1911'SB'+39	-	1911'SB'+44	RT	5
0010	IH 43 NB	1911'NB'+51	-	1911'NB'+59	RT	8
0010	COOPERSTOWN RD	14'CO'+00	-	14'CO'+05	LT	5
0010	COOPERSTOWN RD	14'CO'+22	-	14'CO'+27	RT	5
PROJECT TOTAL						146

REMOVING FENCE

						204.0170 REMOVING FENCE
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	LF
0010	IH 43 NB	1606'NB'+74	-	2012'NB'+81	RT	41,858
0010	IH 43 SB	1607'SB'+42	-	2012'SB'+81	LT	39,480
PROJECT TOTAL						81,338

REMOVING INLETS & SEALING PIPES

				204.0280 REMOVING INLETS	204.0280 SEALING PIPES
CATEGORY	ROADWAY	STATION	OFFSET	EACH	EACH
0010	HIDDEN VALLEY RD	10'HV+95	RT	1	1
0010	HIDDEN VALLEY RD	10'HV+95	LT	1	1
0010	IH 43 NB	1665'NB'+17	RT	1	1
0010	IH 43 NB	1665'NB'+17	LT	1	1
0010	IH 43 SB	1665'SB'+20	RT	1	1
0010	IH 43 SB	1665'SB'+20	LT	1	1
0010	IH 43 SB	1720'SB'+98	LT	1	1
0010	IH 43 SB	1721'SB'+06	RT	1	1
0010	IH 43 NB	1721'NB'+16	LT	1	1
0010	IH 43 NB	1721'NB'+24	RT	1	1
0010	IH 43 NB	1750'NB'+35	RT	1	1
0010	IH 43 NB	1750'NB'+35	LT	1	1
0010	IH 43 SB	1750'SB'+35	RT	1	1
0010	IH 43 SB	1750'SB'+35	LT	1	1
0010	ZANDER RD	15'ZA'+91	LT	1	1
0010	ZANDER RD	16'ZA'+29	RT	1	1
0010	IH 43 SB	1855'SB'+29	LT	2	1
0010	IH 43 NB	1855'NB'+62	LT	1	1
0010	IH 43 NB	1855'NB'+77	RT	1	1
0010	IH 43 SB	1900'SB'+69	LT	1	1
0010	IH 43 SB	1900'SB'+97	RT	1	1
0010	IH 43 NB	1902'NB'+60	LT	1	1
0010	IH 43 NB	1902'NB'+87	RT	1	1
0010	IH 43 SB	1911'SB'+23	LT	1	1
0010	IH 43 SB	1911'SB'+41	RT	2	1
0010	IH 43 NB	1911'NB'+53	RT	1	1
0010	COOPERSTOWN RD	14'CO'+02	LT	1	1
0010	COOPERSTOWN RD	14'CO'+24	RT	1	1
PROJECT TOTAL				30	28

REMOVING GUARDRAIL

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0165 REMOVING GUARDRAIL
						LF
0010	IH 43 SB	1607'SB'+41	-	1611'SB'+28	RT	387
0010	IH 43 SB	1607'SB'+85	-	1612'SB'+00	LT	416
0010	IH 43 NB	1636'NB'+66	-	1640'NB'+08	LT	342
0010	IH 43 SB	1639'SB'+52	-	1642'SB'+95	RT	344
0010	HIDDEN VALLEY RD	12'HV'+71	-	13'HV'+86	RT	115
0010	HIDDEN VALLEY RD	12'HV'+71	-	13'HV'+86	LT	115
0010	HIDDEN VALLEY RD	16'HV'+42	-	17'HV'+67	RT	125
0010	HIDDEN VALLEY RD	16'HV'+41	-	17'HV'+64	LT	123
0010	STH 147 SE RAMP	15'ZSE'+56	-	22'ZSE'+10	RT	654
0010	STH 147 SW RAMP	16'ZSW'+38	-	20'ZSW'+43	LT	405
0010	IH 43 NB	1661'NB'+38	-	1665'NB'+24	RT	386
0010	IH 43 NB	1661'NB'+90	-	1665'NB'+26	LT	336
0010	IH 43 SB	1667'SB'+06	-	1670'SB'+68	RT	363
0010	IH 43 SB	1667'SB'+09	-	1671'SB'+06	LT	397
0010	IH 43 NB	1715'NB'+58	-	1719'NB'+80	RT	422
0010	IH 43 NB	1716'NB'+00	-	1719'NB'+73	LT	373
0010	IH 43 SB	1720'SB'+95	-	1725'SB'+15	LT	420
0010	IH 43 SB	1721'SB'+02	-	1724'SB'+73	RT	371
0010	IH 43 NB	1745'NB'+57	-	1750'NB'+43	RT	486
0010	IH 43 NB	1747'NB'+19	-	1750'NB'+41	LT	322
0010	IH 43 SB	1748'SB'+33	-	1750'SB'+41	LT	208
0010	IH 43 NB	1751'NB'+84	-	1755'NB'+95	RT	411
0010	IH 43 SB	1751'SB'+82	-	1755'SB'+19	RT	338
0010	IH 43 SB	1751'SB'+84	-	1761'SB'+43	LT	959
0010	IH 43 NB	1802'NB'+65	-	1804'NB'+48	LT	377
0010	ZANDER RD	12'ZA'+95	-	15'ZA'+98	LT	303
0010	ZANDER RD	13'ZA'+85	-	16'ZA'+36	RT	290
0010	ZANDER RD	19'ZA'+79	-	22'ZA'+52	LT	546
0010	ZANDER RD	20'ZA'+21	-	28'ZA'+48	RT	828
0010	ZANDER RD	22'ZA'+77	-	28'ZA'+40	LT	833
PROJECT SUBTOTAL						11,995

REMOVING GUARDRAIL CONTINUED

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0165 REMOVING GUARDRAIL
						LF
0010	IH 43 NB	1851'NB'+71	-	1855'NB'+78	RT	407
0010	IH 43 NB	1852'NB'+08	-	1855'NB'+65	LT	357
0010	CTH T	11'T'+86	-	14'T'+62	RT	276
0010	CTH T	12'T'+05	-	14'T'+86	LT	282
0010	IH 43 SB	1856'SB'+81	-	1859'SB'+89	RT	308
0010	IH 43 SB	1856'SB'+85	-	1860'SB'+74	LT	387
0010	IH 43 NB	1898'NB'+30	-	1902'NB'+63	LT	433
0010	IN 43 NB	1898'NB'+70	-	1902'NB'+90	RT	420
0010	IH 43 SB	1899'SB'+51	-	1900'SB'+72	LT	120
0010	IH 43 SB	1902'SB'+90	-	1909'SB'+61	LT	671
0010	IH 43 SB	1903'SB'+16	-	1909'SB'+84	RT	668
0010	IH 43 NB	1904'NB'+47	-	1910'NB'+00	LT	553
0010	IH 43 NB	1904'NB'+71	-	1910'NB'+14	RT	543
0010	IH 43 SB	1911'SB'+31	-	1915'SB'+51	LT	421
0010	IH 43 SB	1911'SB'+34	-	1914'SB'+58	RT	324
0010	IH 43 NB	1938'NB'+64	-	1940'NB'+32	LT	350
0010	COOPERSTOWN RD	12'CO'+83	-	14'CO'+10	LT	127
0010	COOPERSTOWN RD	13'CO'+06	-	14'CO'+32	RT	127
0010	COOPERSTOWN RD	17'CO'+36	-	18'CO'+63	LT	127
0010	COOPERSTOWN RD	17'CO'+58	-	18'CO'+86	RT	128
PROJECT SUBTOTAL						7,029
PROJECT TOTAL						19,024

BASE PATCHING CONCRETE													
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	390.0303	416.0610	416.0620	690.0150	SPV.0180.01	SPV.0180.02	SPV.0180.03	REMARKS
						BASE PATCHING CONCRETE SY	DRILLED TIE BARS EACH	DRILLED DOWEL BARS EACH	SAWING CONCRETE LF	BASE PATCHING CONCRETE HES SY	CONTINUOUSLY REINFORCED CONCRETE REPAIR HES SY	CONTINUOUSLY REINFORCED CONCRETE REPAIR SHES SY	
0010													
	IH 43 NB	1606'NB'+74	-	1642'NB'+86	LT/RT	3	114	-	1,056	-	155	8	PROJECT LIMITS - MILE 164
	IH 43 NB	1642'NB'+86	-	1695'NB'+66	LT/RT	-	201	-	2,007	-	331	17	MILE 164 - MILE 165
	IH 43 NB	1695'NB'+66	-	1748'NB'+46	LT/RT	-	271	-	2,364	-	395	21	MILE 165 - MILE 166
	IH 43 NB	1748'NB'+46	-	1801'NB'+26	LT/RT	4	213	-	1,844	-	285	15	MILE 166 - MILE 167
	IH 43 NB	1801'NB'+26	-	1854'NB'+06	LT/RT	11	195	-	1,614	-	221	12	MILE 167 - MILE 168
	IH 43 NB	1854'NB'+06	-	1906'NB'+85	LT/RT	6	440	-	3,860	-	599	32	MILE 168 - MILE 169
	IH 43 NB	1906'NB'+85	-	1959'NB'+66	LT/RT	9	361	-	2,844	-	484	25	MILE 169 - MILE 170
	IH 43 NB	1959'NB'+66	-	1988'NB'+34	LT/RT	-	150	-	1,331	-	274	14	MILE 170 - PROJECT LIMITS
	IH 43 SB	1607'SB'+42	-	1642'SB'+86	LT/RT	-	116	-	1,068	-	191	10	PROJECT LIMITS - MILE 164
	IH 43 SB	1642'SB'+86	-	1695'SB'+66	LT/RT	4	149	-	1,238	-	231	12	MILE 164 - MILE 165
	IH 43 SB	1695'SB'+66	-	1748'SB'+46	LT/RT	-	246	-	2,254	-	380	20	MILE 165 - MILE 166
	IH 43 SB	1748'SB'+46	-	1800'SB'+75	LT/RT	4	142	-	1,084	-	187	10	MILE 166 - MILE 167
	IH 43 SB	1800'SB'+75	-	1854'SB'+04	LT/RT	8	93	-	588	-	103	5	MILE 167 - MILE 168
	IH 43 SB	1854'SB'+04	-	1907'SB'+24	LT/RT	-	304	-	2,610	-	629	33	MILE 168 - MILE 169
	IH 43 SB	1907'SB'+24	-	1959'SB'+66	LT/RT	4	501	-	4,794	-	799	42	MILE 169 - MILE 170
	IH 43 SB	1959'SB'+66	-	1988'SB'+34	LT/RT	11	61	-	270	-	39	2	MILE 170 - PROJECT LIMITS
	STH 147 EB	12'ZEB'+00	-	16'ZEB'+00	LT/RT	295	-	168	-	16	-	-	
	STH 147 SE RAMP	10'ZSE'+00	-	26'ZSE'+11	LT/RT	98	61	300	464	5	-	-	
	STH 147 SW RAMP	10'ZSW'+00	-	24'ZSW'+18	LT/RT	230	144	510	856	12	-	-	
	STH 147 NE RAMP	10'ZNE'+00	-	24'ZNE'+07	LT/RT	538	43	315	322	28	-	-	
	STH 147 NW RAMP	10'ZNW'+00	-	22'ZNW'+22	LT/RT	771	237	120	446	41	-	-	
	UNDISTRIBUTED					299	606	212	4,937	15	796	42	
PROJECT TOTAL						2,295	4,648	1,625	*37,851	117	6,099	321	

*ADDITIONAL QUANTITIES SHOWN ELSEWHERE

HMA ITEMS													
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0126.S	455.0605	460.0105.S	460.0110.S	460.5224	460.7224	460.8624	REMARKS
						REMOVING ASPHALTIC	TACK	HMA PWL TEST	HMA PWL	HMA	HMA	HMA	
						LONGITUDINAL NOTCHED	COAT	STRIP	TEST STRIP	PAVEMENT	PAVEMENT	PAVEMENT	
						WEDGE JOINT MILLING		VOLUMETRICS	DENSITY	4 LT 58-28 S	4 HT 58-28 S	4 SMA 58-28 V	
						LF	GAL	EACH	EACH	TON	TON	TON	
0010													
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	LT/RT	37,340	20,852	-	-	8,663	14,225	12,908	NB MAINLINE & SHOULDERS
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	LT/RT	37,272	20,699	-	-	8,575	14,134	12,825	SB MAINLINE & SHOULDERS
	IH 43 NB	1629'NB'+61	-	1630'NB'+21	LT	-	26	-	-	45	-	-	MEDIAN TURNAROUND
	STH 147 SE RAMP	10'ZSE'+00	-	25'ZSE'+23	LT/RT	-	238	-	-	179	-	235	RAMP & SHOULDERS
	STH 147 SW RAMP	10'ZSW'+00	-	23'ZSW'+53	LT/RT	-	203	-	-	158	-	197	RAMP & SHOULDERS
	STH 147 EB	12'EB'+28	-	20'EB'+12	LT/RT	-	424	-	-	151	-	589	STH 147 EB & WB
	STH 147 NE RAMP	10'ZNE'+75	-	24'ZNE'+07	LT/RT	-	198	-	-	153	-	192	RAMP & SHOULDERS
	STH 147 NW RAMP	10'ZNW'+94	-	22'ZNW'+22	LT/RT	-	240	-	-	180	-	238	RAMP & SHOULDERS
	IH 43 NB	1701'NB'+70	-	1702'NB'+25	LT	-	23	-	-	39	-	-	MEDIAN TURNAROUND
	IH 43 NB	1762'NB'+26	-	1762'NB'+82	LT	-	26	-	-	45	-	-	MEDIAN TURNAROUND
	IH 43 NB	1848'NB'+08	-	1848'NB'+70	LT	-	24	-	-	42	-	-	MEDIAN TURNAROUND
	IH 43 NB	1926'NB'+65	-	1927'NB'+24	LT	-	27	-	-	46	-	-	MEDIAN TURNAROUND
	IH 43 NB	1946'NB'+76	-	1947'NB'+32	LT	-	24	-	-	42	-	-	MEDIAN TURNAROUND
		UNDISTRIBUTED				-	-	1	1	-	-	-	
PROJECT TOTAL						74,612	43,004	1	1	18,318	28,359	27,184	

ASPHALTIC SHOULDER RUMBLE STRIPS						
						465.0400
						ASPHALTIC SHOULDER RUMBLE STRIPS
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	LF
0010	IH 43 NB	1606'NB'+74	-	1988'NB'+34	LT/RT	72,232
0010	IH 43 SB	1607'SB'+42	-	1988'SB'+34	LT/RT	72,075
PROJECT TOTAL						144,307

FENCE WOVEN WIRE 4-FT						
						616.0100
						FENCE
						WOVEN WIRE
						4-FT
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	LF
0010	IH 43 NB	1606'NB'+74	-	2012'NB'+81	RT	41,858
0010	IH 43 SB	1607'SB'+42	-	2012'SB'+81	LT	39,480
PROJECT TOTAL						81,338

APRON ENDWALLS AND CULVERT PIPE LINERS

						520.1018	520.8000	521.3118	522.1018
						APRON ENDWALLS FOR CULVERT PIPE 18-INCH	CONCRETE COLLARS FOR PIPE	CULVERT PIPE CORRUGATED STEEL 18-INCH	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 18- INCH
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	EACH	EACH	LF	EACH
0010	IH 43 NB	1638'NB'+03	-	1638'NB'+03	LT	-	-	-	1
0010	IH 43 NB	1699'NB'+16	-	1699'NB'+76	RT	2	-	60	-
0010	IH 43 SB	1699'SB'+70	-	1700'SB'+66	LT	2	-	100	-
0010	IH 43 NB	1755'NB'+71	-	1756'NB'+58	RT	2	-	95	-
0010	IH 43 NB	1784'NB'+86	-	1784'NB'+86	LT	-	1	-	-
PROJECT TOTAL						6	1	255	1

TRAFFIC CONTROL DETOUR SIGN SUMMARY - STH 147 ON-RAMP TO I-43 SB CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 12 DAYS	643.0900 SIGNS DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0920 COVERING TYPE II SIGNS EACH	REMARKS
	STH 147 ON-RAMP TO I-43 SB									
1	CTH Z, W. OF I-43, PLACE 1000' W. OF I-43 SB RAMP INTERSECTION	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	W 20-2A	48"x48"	1	12	12				
2	CTH Z, AT I-43 SB, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-5	24"x12"	1	12	12				
	"	MO 6-1	21"x21"	1	12	12				AHEAD
3	STH 147, BETWEEN I-43 RAMPS, COVER EXISITNG J3-1 SIGN AS SHOWN							1	1	COVER ENTIRE SIGN
4	STH 147 ON-RAMP TO I-43 SB, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1			7			
5	STH 147, BETWEEN I-43 RAMPS, PLACE PRIOR TO I-43 NB RAMP INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
6	STH 147, BETWEEN I-43 RAMPS, COVER EXISITNG J3-1 SIGN AS SHOWN							1	1	COVER ENTIRE SIGN
7	STH 147, AT CTH R, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH R INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				RIGHT
8	CTH R, N. OF STH 147, PLACE 1000' N. OF STH 147 INTERSECTION	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	W 20-2A	48"x48"	1	12	12				
9	CTH R, AT STH 147, PLACE RIGHT OF EXISTING R1-1 SIGN AT STH 147 INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
10	CTH R, N. OF CTH Y, PLACE 150' N. OF CTH Y INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
11	CTH R, AT CTH K, PLACE RIGHT OF EXISTING R1-1 SIGN AT CTH K INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-3	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				RIGHT

PAGE SUBTOTALS	29	336	7	2
STH 147 ON-RAMP TO 43 SB CLOSURE TOTALS	29	*336	*7	*2
* ADDITIONAL QUANTITY SHOWN ELSEWHERE				

TRAFFIC CONTROL DETOUR SIGN SUMMARY - I-43 SB OFF-RAMP TO STH 147 CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 12 DAYS	643.0900 SIGNS DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	REMARKS
	I-43 SB OFF-RAMP TO STH 147							
1	I-43 SB, N. OF STH 147, MODIFY EXISTING TYPE I GROUND MOUNT SIGN AS SHOWN	G 20-60	108"x24"	1	12	12		
2	I-43 SB, AT STH 147, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x18"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 6-1	30"x30"	1	12	12		AHEAD
3	I-43 SB, AT STH 147, MODIFY EXISTING TYPE I GROUND MOUNT SIGN AS SHOWN	G 20-60	108"x24"	1	12	12		
4	I-43 SB OFF-RAMP TO STH 147, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1			7	PLACE IN ADVANCE OF CLOSURE
5	I-43 SB, N. OF CTH K, PLACE 1000' N. OF CTH K EXIT RAMP ON RIGHT SHOULDER	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 5-2R	30"x30"	1	12	12		
6	I-43 SB, N. OF CTH K, PLACE 1000' N. OF CTH K EXIT RAMP IN MEDIAN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 5-2R	30"x30"	1	12	12		
7	I-43 SB, AT CTH K EXIT, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 6-2	30"x30"	1	12	12		TILT RIGHT
8	I-43 SB OFF-RAMP TO CTH K, PLACE RIGHT OF EXISTING R1-1 SIGN AT CTH K INTERSECTION	MO 4-5	24"x12"	1	12	12		
	"	M 1-6	24"x24"	1	12	12		147
	"	M 1-5A	24"x24"	1	12	12		Z
	"	MO 6-1	21"x21"	1	12	12		LEFT
9	CTH K, AT I-43 NB, PLACE IN MEDIAN AT I-43 NB RAMP INTERSECTION	MO 4-5	24"x12"	1	12	12		
	"	M 1-6	24"x24"	1	12	12		147
	"	M 1-5A	24"x24"	1	12	12		Z
	"	MO 6-1	21"x21"	1	12	12		LEFT

PAGE SUBTOTALS

27

312

7

I-43 SB OFF-RAMP TO 147 CLOSURE TOTALS

27

*312

*7

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

3

3

TRAFFIC CONTROL DETOUR SIGN SUMMARY - STH 147 ON-RAMP TO I-43 NB CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 12 DAYS	643.0900 SIGNS DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO. OF CYCLES	643.0920 COVERING TYPE II SIGNS EACH	REMARKS
	STH 147 ON-RAMP TO I-43 NB									
1	CTH Z, W. OF I-43, PLACE 1000' W. OF I-43 SB RAMP INTERSECTION	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	W 20-2A	48"x48"	1	12	12				
2	CTH Z, AT I-43, MODIFY EXISTING J2-1 SIGN AS SHOWN	MO 4-5	24"x12"	1	12	12				
	"	MO 6-1	21"x21"	1	12	12				AHEAD
3	CTH Z, AT I-43, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-5	24"x12"	1	12	12				
	"	MO 6-1	21"x21"	1	12	12				AHEAD
4	STH 147, AT I-43, COVER EXISTING J3-1 SIGN AT I-43 NB RAMP INTERSECTION							1	1	COVER ENTIRE SIGN
5	STH 147, E. OF I-43, COVER EXISTING J2-3 SIGN AS SHOWN							1	1	COVER "NORTH 43 ADV RIGHT"
6	STH 147, AT CTH R, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH R INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				LEFT
7	CTH R, S. OF STH 147, PLACE 1000' S. OF STH 147 INTERSECTION	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	W 20-2A	48"x48"	1	12	12				
8	CTH R, AT STH 147, PLACE RIGHT OF EXISTING R1-1 SIGN AT STH 147 INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
9	STH 147, E. OF CTH R, PLACE 1000' E. OF CTH R INTERSECTION	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	W 20-2A	48"x48"	1	12	12				
10	STH 147, AT CTH R, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH R INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
11	STH 147 ON-RAMP TO I-43 NB, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1			7			PLACE IN ADVANCE OF CLOSURE
12	CTH R, S. OF CTH BB, PLACE 150' S. OF CTH BB INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
13	CTH R, S. OF CTH T, PLACE 150' S. OF CTH T INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				AHEAD
14	CTH R, AT CTH KB, PLACE RIGHT OF EXISTING R1-1 SIGN AT CTH KB INTERSECTION	MO 4-5	24"x12"	1	12	12				
	"	M 3-1	24"x12"	1	12	12				
	"	M 1-1	24"x24"	1	12	12				43
	"	MO 6-1	21"x21"	1	12	12				LEFT
PAGE SUBTOTALS				38		444	7		2	
147 ON-RAMP TO 43 NB CLOSURE TOTALS				38		*444	*7		*2	

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

TRAFFIC CONTROL DETOUR SIGN SUMMARY - I-43 NB OFF-RAMP TO STH 147 CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 12 DAYS	643.0900 SIGNS DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	REMARKS
	I-43 NB OFF-RAMP TO STH 147 CLOSURE							
1	I-43 NB, S. OF STH 147, PLACE ON EXISTING TYPE I GROUND MOUNT SIGN AS SHOWN	G 20-60	108"x24"	1	12	12		
2	I-43 NB, AT STH 147 EXIT RAMP, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 6-1	30"x30"	1	12	12		AHEAD
3	I-43 NB, AT STH 147 EXIT RAMP, PLACE ON EXISTING TYPE I GROUND MOUNT SIGN AS SHOWN	G 20-60	108"x24"	1	12	12		
4	I-43 NB OFF-RAMP TO STH 147, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1			7	PLACE IN ADVANCE OF CLOSURE
5	I-43 NB, S. OF STH 96, PLACE 1000' S. OF STH 96 EXIT RAMP IN MEDIAN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 5-2R	30"x30"	1	12	12		
6	I-43 NB, S. OF STH 96, PLACE 1000' S. OF STH 96 EXIT RAMP ON RIGHT SHOULDER	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 5-2R	30"x30"	1	12	12		
7	I-43 NB, AT STH 96 EXIT RAMP, PLACE LEFT OF EXISTING TYPE I GROUND MOUNT SIGN	MO 4-5	36"x18"	1	12	12		
	"	M 1-6	36"x36"	1	12	12		147
	"	M 1-5A	36"x36"	1	12	12		Z
	"	MO 6-2	30"x30"	1	12	12		TILT RIGHT
8	I-43 OFF-RAMP TO STH 96, AT RAMP INTERSECTION, PLACE RIGHT OF EXISTING R1-1 SIGN	MO 4-5	24"x12"	1	12	12		
	"	M 1-6	24"x24"	1	12	12		147
	"	M 1-5A	24"x24"	1	12	12		Z
	"	MO 6-1	21"x21"	1	12	12		LEFT
9	STH 96, AT I-43 SB RAMP INTERSECTION, PLACE IN MEDIAN NEXT TO LEFT TURN LANE	MO 4-5	24"x12"	1	12	12		
	"	M 1-6	24"x24"	1	12	12		147
	"	M 1-5A	24"x24"	1	12	12		Z
	"	MO 6-1	21"x21"	1	12	12		LEFT
PAGE SUBTOTALS				27		312	7	
I-43 NB TO STH 147 CLOSURE TOTALS				27		*312	*7	

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

TRAFFIC CONTROL DETOUR SIGN SUMMARY - B-05-0239 STRUCTURE CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 30 DAYS	643.3000 DETOUR SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 SIGNS FIXED MESSAGE SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0910 COVERING SIGNS TYPE I EACH	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
1	I-43, N. OF US 141/CTH MM EXIT, PLACE 1/2 MILE N. OF EXIT RAMP TO 141/MM	M 1-5A	36"x36"	1	30	30								KB
	"	W 20-2A	48"x48"	1	30	30								
2	I-43, N. OF US 141/CTH MM EXIT, PLACE 1/4 MILE N. OF EXIT RAMP TO 141/MM	FMS	120"x54"	1					45					SEE SIGN DETAIL SHEET
3	I-43, N. OF US 141/CTH MM EXIT, PLACE 750' N. OF EXIT RAMP TO 141/MM	MO 4-8	36"x18"	1	30	30								
	"	M 3-2	36"x18"	1	30	30								
	"	M 1-5A	36"x36"	1	30	30								KB
	"	MO 5-2R	30"x30"	1	30	30								
4	I-43, N. OF US 141/CTH MM EXIT, PLACE LEFT OF EXISTING TYPE I SIGN AT EXIT RAMP TO 141/MM	MO 4-8	36"x18"	1	30	30								
	"	M 3-2	36"x18"	1	30	30								
	"	M 1-5A	36"x36"	1	30	30								KB
	"	MO 6-2	30"x30"	1	30	30								TILT RIGHT
5	I-43 OFF-RAMP TO 141/MM, PLACE 150' PRIOR TO RAMP INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-2	24"x12"	1	30	30								
	"	M 1-5A	24"x24"	1	30	30								KB
	"	MO 6-1	21"x21"	1	30	30								LEFT
6	US 141/CTH MM, AT I-43 SB INTERSECTION, PLACE ACROSS FROM J3-1 SIGN	MO 4-8	24"x12"	1	30	30								
	"	M 3-4	24"x12"	1	30	30								
	"	M 1-6	24"x24"	1	30	30								96
	"	MO 6-1	21"x21"	1	30	30								LEFT
7	US 141/CTH MM, AT CTH R INTERSECTION, PLACE RIGHT OF EXISTING J3-3 SIGN	MO 4-8	24"x12"	1	30	30								
	"	M 3-2	24"x12"	1	30	30								
	"	M 1-5A	24"x24"	1	30	30								KB
	"	MO 6-1	21"x21"	1	30	30								RIGHT
8	I-43 OFF-RAMP TO 141/MM, PLACE 150' PRIOR TO RAMP INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-4	24"x12"	1	30	30								
	"	M 1-6	24"x24"	1	30	30								96
	"	MO 6-1	21"x21"	1	30	30								LEFT
9	I-43 OFF-RAMP TO 141/MM, PLACE 750' PRIOR TO RAMP INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-4	24"x12"	1	30	30								
	"	M 1-6	24"x24"	1	30	30								96
	"	MO 5-1L	21"x21"	1	30	30								
10	I-43, S. OF US 141/CTH MM, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
11	I-43, S. OF US 141/CTH MM EXIT, PLACE LEFT OF EXISTING TYPE I SIGN AT EXIT RAMP TO 141/MM	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	MO 6-2	30"x30"	1	30	30								TILT RIGHT
12	I-43, N. OF US 141/CTH MM EXIT, PLACE 750' N. OF EXIT RAMP TO 141/MM IN MEDIAN	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	MO 5-2R	30"x30"	1	30	30								
13	I-43, N. OF US 141/CTH MM EXIT, PLACE 750' N. OF EXIT RAMP TO 141/MM ON RIGHT SHOULDER	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	MO 5-2R	30"x30"	1	30	30								

PAGE SUBTOTALS

46

1,350

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45

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TRAFFIC CONTROL DETOUR SIGN SUMMARY - B-05-0239 STRUCTURE CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 30 DAYS	643.3000 DETOUR SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 SIGNS FIXED MESSAGE SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0910 COVERING SIGNS TYPE I EACH	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
14	CTH R, AT CTH NN, PLACE 150' N. OF CTH NN INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-2	24"x12"	1	30	30								
	"	M 1-5A	24"x24"	1	30	30								KB
	"	MO 6-1	21"x21"	1	30	30								AHEAD
15	CTH R, AT CTH NN, PLACE LEFT OF EXISTING J3-2 SIGN ACROSS FROM INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-1	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								LEFT
16	CTH NN, S. OF CTH R, PLACE 500' PRIOR TO CTH R INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-1	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 5-1L	21"x21"	1	30	30								
17	STH 96, W. OF CTH NN, PLACE 1/4 MILE W. OF CTH NN INTERSECTION	W 20-2A	48"x48"	1	30	30								
18	STH 96, W. OF CTH NN, PLACE 850' W. OF CTH NN INTERSECTION	FMS	66"x36"	1					16.5					
19	STH 96, W. OF CTH NN, PLACE 500' W. OF CTH NN INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-1	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 5-1L	21"x21"	1	30	30								
19A	STH 96, AT CTH NN, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH NN INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-1	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								LEFT
19B	STH 96, AT CTH NN, PLACE IN SE QUADRANT OF CTH NN INTERSECTION	R 11-3C	60"x24"	2	30	60	60	120						2 1/4 MILES AHEAD
19C	CTH NN, AT CTH X, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH X INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-1	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								AHEAD
20	I-43, N. OF STH 96, COVER EXISTING TYPE I SIGN AS SHOWN										1	1		COVER SIGN AS SHOWN
21	I-43, N. OF STH 96, PLACE LEFT OF EXISTING TYPE I SIGN FOR SIGN #20	M 4-8A	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
22	CTH R, N. OF CTH KB, PLACE 1000' N. OF CTH KB INTERSECTION	M 4-8A	24"x18"	1	30	30								
	"	M 3-2	24"x12"	1	30	30								
	"	M 1-5A	24"x24"	1	30	30								KB
23	I-43, AT STH 96, COVER EXISTING TYPE I SIGN AT EXIT RAMP TO STH 96										1	1		COVER SIGN AS SHOWN
24	I-43 OFF-RAMP TO STH 96, COVER EXISTING D1-3 SIGN AS SHOWN										1		1	COVER SIGN AS SHOWN
25	I-43 OFF-RAMP TO STH 96, COVER EXISTING J3-2 SIGN AS SHOWN										1		1	COVER SIGN AS SHOWN
26	STH 96, BETWEEN I-43 RAMP INTERSECTIONS, FIELD DETERMINE LOCATION	PCMS		1						7				PLACE IN ADVANCE OF CLOSURE
27	STH 96, BETWEEN I-43 RAMP INTERSECTIONS, FIELD DETERMINE LOCATION	PCMS		1						7				PLACE IN ADVANCE OF CLOSURE
28	I-43, AT STH 96, COVER EXISTING TYPE I SIGN AT EXIT RAMP TO STH 96										1	1		COVER SIGN AS SHOWN
29	I-43 OFF-RAMP TO STH 96, COVER EXISTING D1-3 SIGN AS SHOWN										1		1	COVER SIGN AS SHOWN
30	I-43 OFF-RAMP TO STH 96, COVER EXISTING J3-2 SIGN AS SHOWN										1		1	COVER SIGN AS SHOWN
31	CTH KB, AT I-43 NB RAMP, PLACE 150' E. OF I-43 NB RAMP INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-4	24"x12"	1	30	30								
	"	M 1-6	24"x24"	1	30	30								96
	"	MO 6-1	21"x21"	1	30	30								RIGHT
32	I-43 ON-RAMP FROM STH 96, PLACE 250' N. OF STH 96 RAMP INTERSECTION	MO 4-8	24"x12"	1	30	30								
	"	M 3-4	24"x12"	1	30	30								
	"	M 1-6	24"x24"	1	30	30								96
PAGE SUBTOTALS				43		1,200	60	120	16.5	14		3	4	

TRAFFIC CONTROL DETOUR SIGN SUMMARY - B-05-0239 STRUCTURE CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 30 DAYS	643.3000 DETOUR SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1000 SIGNS FIXED MESSAGE SF	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0910 COVERING SIGNS TYPE I EACH	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
33	CTH KB, E. OF I-43 NB RAMP, MODIFY EXISTING J2-3 SIGN AS SHOWN	M 4-5	24"x12"	1	30	30								
	"	M 5-1R	21"x21"	1	30	30								
	"	MO 4-8	24"x12"	1	30	30								
	"	MO 5-1R	21"x21"	1	30	30								
34	CTH R, AT CTH KB, PLACE 150' N. OF CTH KB INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-3	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								AHEAD
34A	CTH KB, AT CTH R, PLACE ON RIGHT SHOULDER IN NW QUADRANT OF CTH R INTERSECTION	R 11-3C	60"x24"	1	30	30	30	60						1/2 MILE AHEAD
35	CTH KB, AT CTH R, PLACE 150' E. OF CTH R INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-3	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								LEFT
36	I-43, S. OF STH 96, PLACE 1/4 MILE S. OF STH 96 EXIT RAMP IN MEDIAN	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	MO 6-1	30"x30"	1	30	30								AHEAD
37	I-43, S. OF STH 96, PLACE 1/4 MILE S. OF STH 96 EXIT RAMP ON RIGHT SHOULDER	MO 4-8	36"x18"	1	30	30								
	"	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	MO 6-1	30"x30"	1	30	30								AHEAD
38	I-43, S. OF STH 96, PLACE 1/2 MILE S. OF STH 96 EXIT RAMP IN MEDIAN	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	W 20-2A	48"x48"	1	30	30								
39	I-43, S. OF STH 96, PLACE 1/2 MILE S. OF STH 96 EXIT RAMP ON RIGHT SHOULDER	M 3-4	36"x18"	1	30	30								
	"	M 1-6	36"x36"	1	30	30								96
	"	W 20-2A	48"x48"	1	30	30								
40	I-43, S. OF STH 96, COVER EXISTING TYPE I SIGN AS SHOWN										1	1		COVER SIGN AS SHOWN
41	CTH R, N. OF CTH T, PLACE 150' N. OF CTH T INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-3	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								AHEAD
42	CTH R, N. OF STH 147, PLACE 150' N. OF STH 147 INTERSECTION	M 4-5	24"x12"	1	30	30								
	"	M 3-3	24"x12"	1	30	30								
	"	M 1-1	24"x24"	1	30	30								43
	"	M 6-1	21"x21"	1	30	30								AHEAD

PAGE SUBTOTALS

35

1,050

30

60

0

0

1

0

PROJECT TOTALS

124

*3600

*90

*180

61.5

*14

*4

*4

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

TRAFFIC CONTROL SUMMARY																	
CATEGORY	LOCATION	DURATION	643.0300		643.0420		643.0705		643.0715		643.0800		643.0900		643.1205.S		REMARKS
			TRAFFIC CONTROL		TRAFFIC CONTROL		TRAFFIC CONTROL		TRAFFIC CONTROL		TRAFFIC CONTROL		TRAFFIC CONROL		BASIC TRAFFIC		
			DRUMS		BARRICADES		WARNING		WARNING		ARROW		SIGNS		QUEUE		
			TYPE III		LIGHTS TYPE A		LIGHTS TYPE C		BOARDS		SYSTEM						
		DAYS	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	
0010																	
	HIDDEN VALLEY RD	8	28	224	-	-	-	-	-	-	-	-	11	88	-	-	SDD 15D28, SDD 15C12
	ZANDER RD	12	38	456	-	-	-	-	-	-	-	-	11	132	-	-	SDD 15D28, SDD 15C12
	CTH T	5	38	190	-	-	-	-	-	-	-	-	11	55	-	-	SDD 15D28, SDD 15C12
	COOPERSTOWN RD	8	38	304	-	-	-	-	-	-	-	-	11	88	-	-	SDD 15D28, SDD 15C12
	STH 147 ON RAMP TO IH 43 SB	94	34	3,196	2	188	4	376	24	2,256	-	-	6	564	-	-	SDD 15D15
	STH 147 ON RAMP TO IH 43 NB	94	10	940	2	188	4	376	8	752	-	-	4	376	-	-	SDD 15D15
	IH 43 NB OFF RAMP TO STH 147	94	10	940	2	188	4	376	8	752	-	-	4	376	-	-	SDD 15D15
	IH 43 SB OFF RAMP TO STH 147	94	34	3,196	2	188	4	376	24	2,256	-	-	6	564	-	-	SDD 15D15
	STH 147	14	30	420	2	28	4	56	8	112	-	-	4	56	-	-	SDD 15D40
	IH 43 NB MAINLINE	94	490	46,060	33	3,102	66	6,204	17	1,598	2	188	48	4,512	1	94	SDD 15D12-D
	IH 43 SB MAINLINE	94	490	46,060	33	3,102	66	6,204	17	1,598	2	188	48	4,512	1	94	SDD 15D12-D
PROJECT SUBTOTAL			101,986		* 6,984		* 13,968		9,324		376		* 11,323		188		

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

PAVEMENT MARKING SUMMARY

CATEGORY	ROADWAY	STATION	TO	STATION	646.1020	646.1040		646.1555	646.3020	646.3555	646.5420	646.6120	646.8020	646.8120	646.8220	REMARKS
					MARKING	MARKING LINE		MARKING LINE	MARKING	MARKING LINE	MARKING	MARKING	MARKING		MARKING	
					LINE	GROOVED WET		GROOVED	LINE	GROOVED	AERIAL	STOP	MARKING		ISLAND	
					EPOXY	REF EPOXY		CONTRAST	EPOXY	CONTRAST	ENFORCEMENT	LINE	CORRUGATED		NOSE	
					4-INCH	4-INCH		PERMANENT TAPE	8-INCH	PERMANENT	BAR EPOXY	EPOXY	MEDIAN		EPOXY	
					WHITE	WHITE	YELLOW	WHITE	WHITE	WHITE	WHITE	18-INCH	EPOXY		YELLOW	
					SOLID	SOLID	SOLID	12.5' LINE, 37.5' GAP	SOLID	SOLID	SOLID	WHITE	YELLOW	YELLOW	YELLOW	
					LF	LF	LF	LF	LF	LF	EACH	LF	SF	LF	EACH	
0010																
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	-	34,418	38,161	9,544	-	-	-	-	-	-	-	MAINLINE
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	-	34,480	38,096	9,520	-	-	-	-	-	-	-	MAINLINE
	STH 147 SE RAMP	10'ZSE'+00	-	25'ZSE'+23	-	1,767	1,283	-	-	598	-	-	-	-	-	RAMP & GORE
	STH 147 SW RAMP	10'ZSW'+00	-	23'ZSW'+53	-	2,469	1,124	-	-	1,202	-	-	-	-	-	RAMP & GORE
	STH 147 EB	12'EB'+28	-	20'EB'+12	1,138	-	-	-	213	-	-	80	416	73	4	STH 147 EB & WB
	STH 147 NE RAMP	10'ZNE'+75	-	24'ZNE'+07	-	2,487	1,099	-	-	1,405	-	-	-	-	-	RAMP & GORE
	STH 147 NW RAMP	10'ZNW'+94	-	22'ZNW'+22	-	1,780	1,282	-	-	612	-	-	-	-	-	RAMP & GORE
	IH 43 NB	1860'NB'+83	-	1867'NB'+57	-	675	202	-	-	579	-	-	-	-	-	WAYSIDE RAMP & GORE
	IH 43 SB	1851'SB'+05	-	1864'SB'+75	-	1,362	134	-	-	1,259	-	-	-	-	-	WAYSIDE RAMP & GORE
	IH 43 NB	1894'NB'+07	-	1909'NB'+90	-	1,587	165	-	-	1,301	-	-	-	-	-	WAYSIDE RAMP & GORE
	IH 43 SB	1890'SB'+41	-	1896'SB'+90	-	656	150	-	-	600	-	-	-	-	-	WAYSIDE RAMP & GORE
	IH 43 NB	1947'NB'+82	-	1947'NB'+82	-	-	-	-	-	-	2	-	-	-	-	
	IH 43 NB	1954'NB'+42	-	1954'NB'+42	-	-	-	-	-	-	2	-	-	-	-	
	IH 43 NB	1961'NB'+02	-	1961'NB'+02	-	-	-	-	-	-	2	-	-	-	-	
	IH 43 NB	1967'NB'+61	-	1967'NB'+61	-	-	-	-	-	-	2	-	-	-	-	
	IH 43 NB	1974'NB'+20	-	1974'NB'+20	-	-	-	-	-	-	2	-	-	-	-	
PROJECT TOTAL					1,138	163,377		19,064	213	7,556	10	80	416	73	4	

TEMPORARY PAVEMENT MARKING

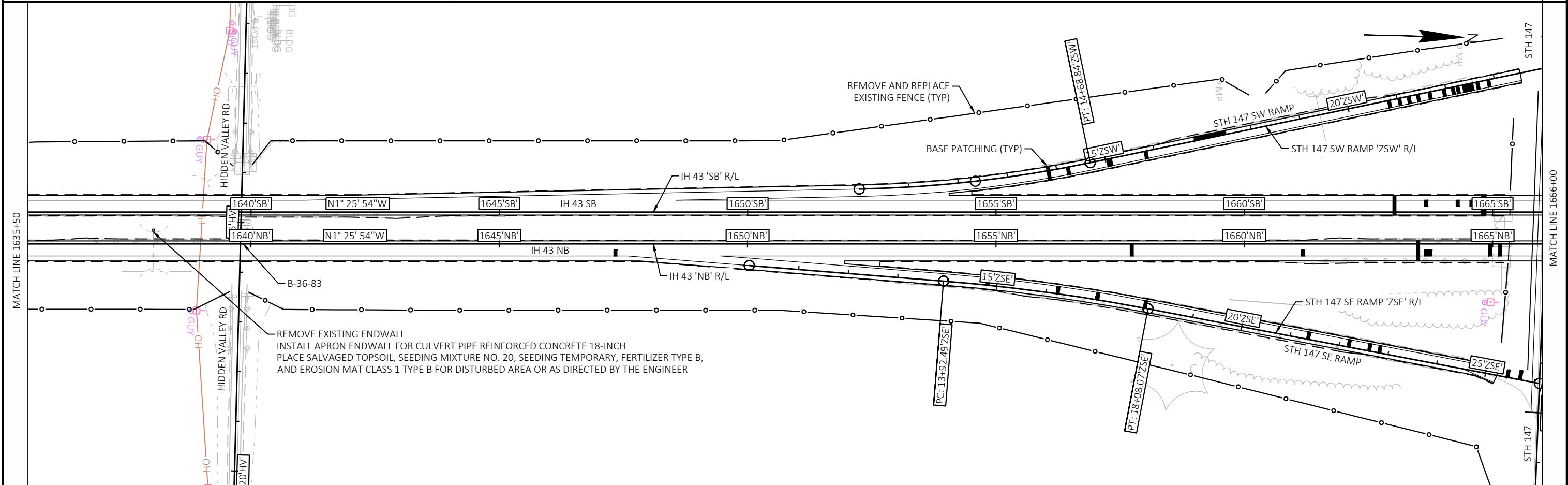
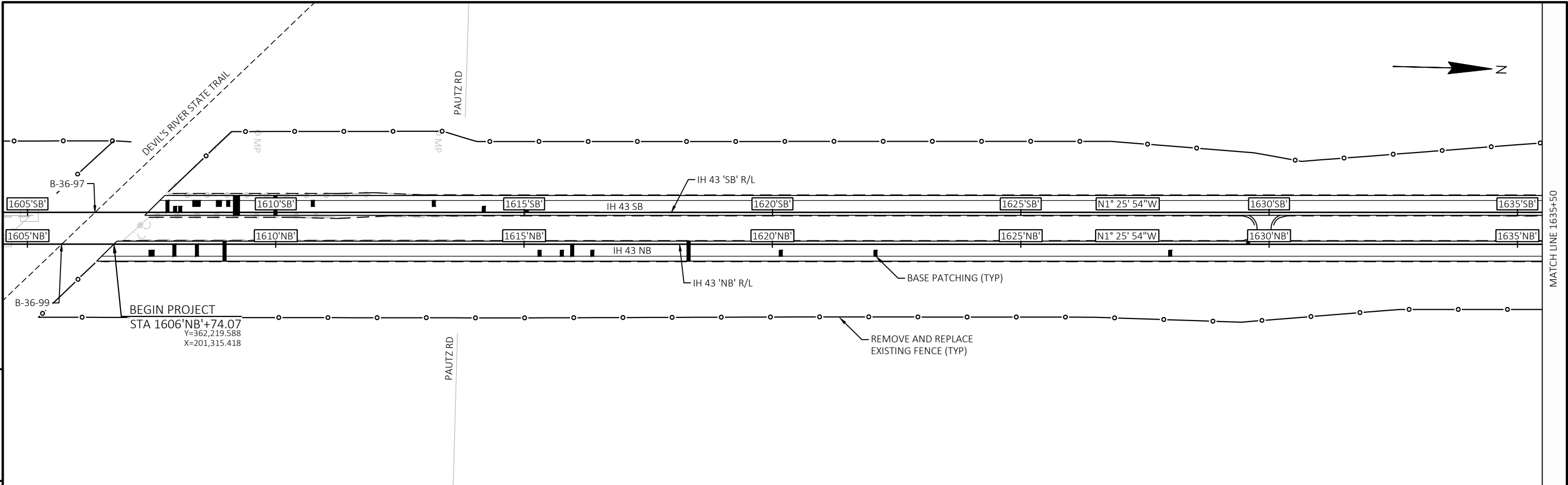
649.0105 TEMPORARY MARKING LINE PAINT 4-INCH								
CATEGORY	ROADWAY	STATION	TO	STATION	WHITE	WHITE	YELLOW	REMARKS
					4' SKIPS	SOLID	SOLID	
					LF	LF	LF	
0010								
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	3,054	-	-	CENTERLINE SKIPS ON MILLED SURFACE
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	3,046	-	-	CENTERLINE SKIPS ON MILLED SURFACE
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	3,054	-	-	CENTERLINE SKIPS ON LOWER LAYER
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	3,046	-	-	CENTERLINE SKIPS ON LOWER LAYER
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	3,054	44,817	40,910	SKIPS AND EDGELINES ON UPPER LAYER
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	3,046	44,420	40,786	SKIPS AND EDGELINES ON UPPER LAYER
PROJECT TOTAL					189,233			

CONSTRUCTION STAKING

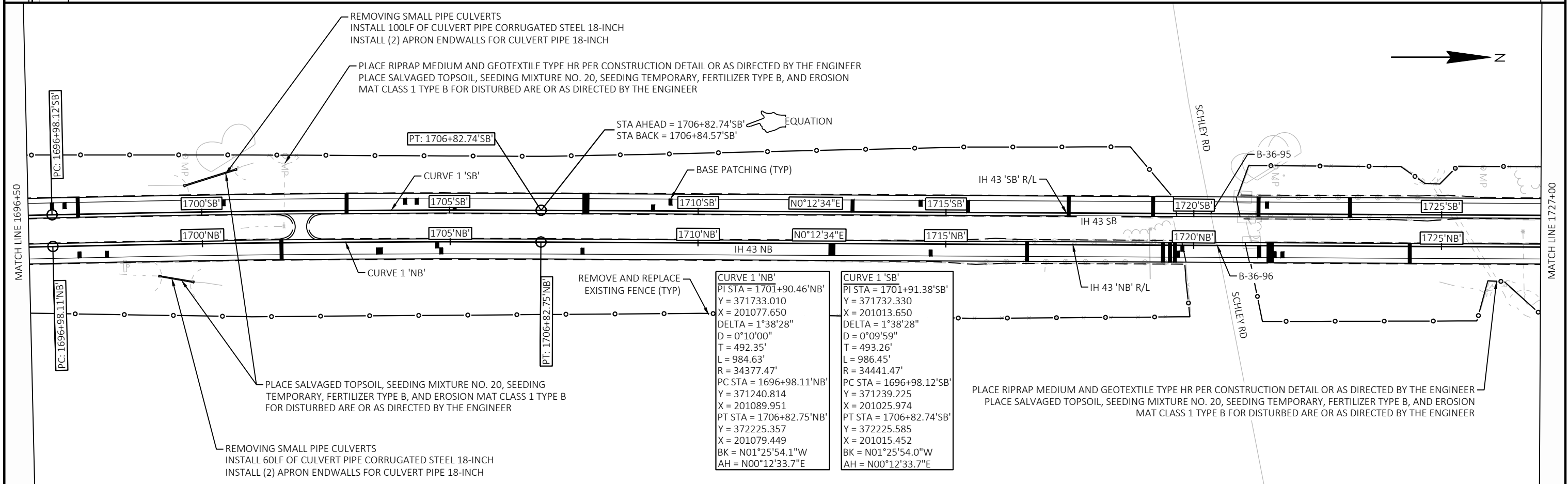
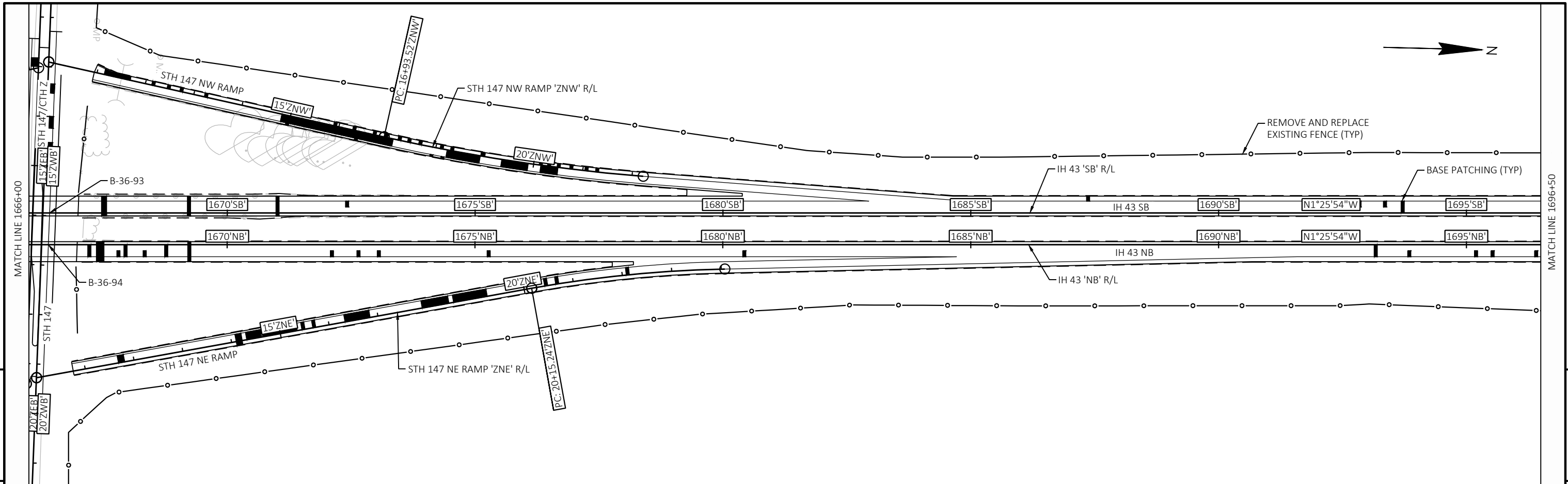
650.8000 CONSTRUCTION STAKING RESURFACING REFERENCE						
CATEGORY	ROADWAY	STATION	TO	STATION	LF	REMARKS
0010						
	IH 43 NB	1606'NB'+74	-	1988'NB'+34	38,161	
	IH 43 SB	1607'SB'+42	-	1988'SB'+34	38,096	
	STH 147 EB	12'ZEB'+28	-	20'ZEB'+12	784	
	STH 147 SE RAMP	10'ZSE'+00	-	26'ZSE'+11	1,582	
	STH 147 SW RAMP	10'ZSW'+00	-	24'ZSW'+18	1,725	
	STH 147 NE RAMP	10'ZNE'+00	-	24'ZNE'+07	1,802	
	STH 147 NW RAMP	10'ZNW'+00	-	22'ZNW'+22	1,588	
	IH 43 NB	1862'NB'+66	-	1867'NB'+57	492	SE WAYSIDE RAMP
	IH 43 SB	1857'SB'+10	-	1864'SB'+75	764	SW WAYSIDE RAMP
	IH 43 NB	1894'NB'+05	-	1902'NB'+14	815	NE WAYSIDE RAMP
	IH 43 SB	1890'SB'+39	-	1894'SB'+84	450	NW WAYSIDE RAMP
PROJECT TOTAL					86,259	

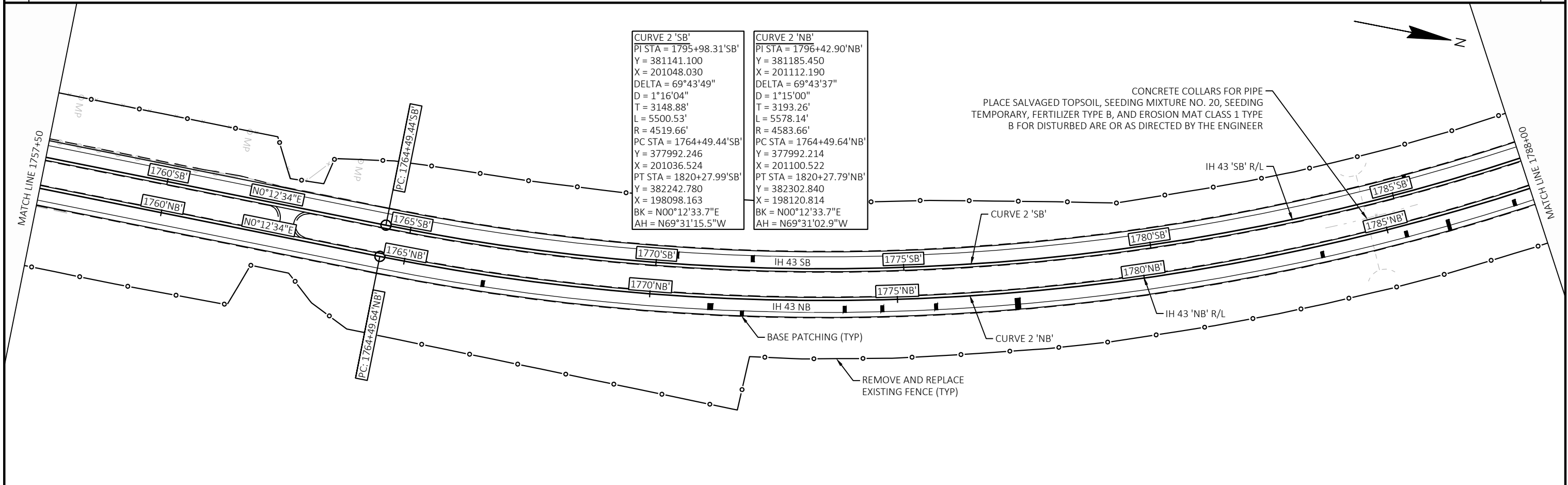
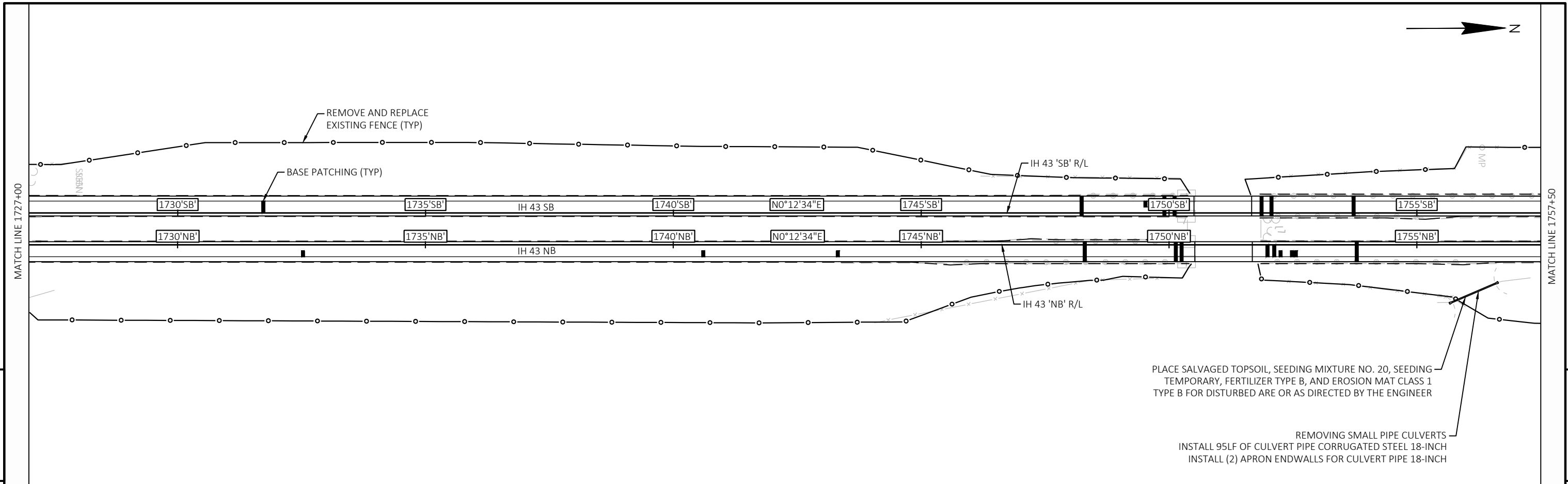
CONSTRUCTION STAKING SUPPLEMENTAL CONTROL

650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL		
CATEGORY	LOCATION	LS
0010	1227-12-71	1
PROJECT TOTAL		1

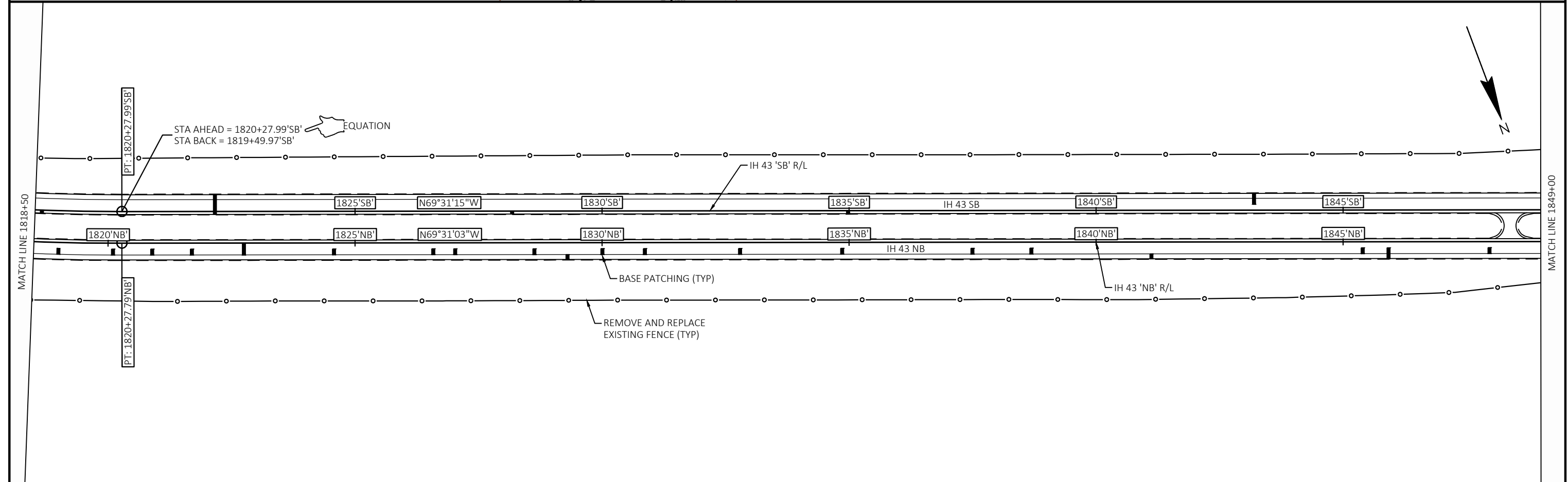
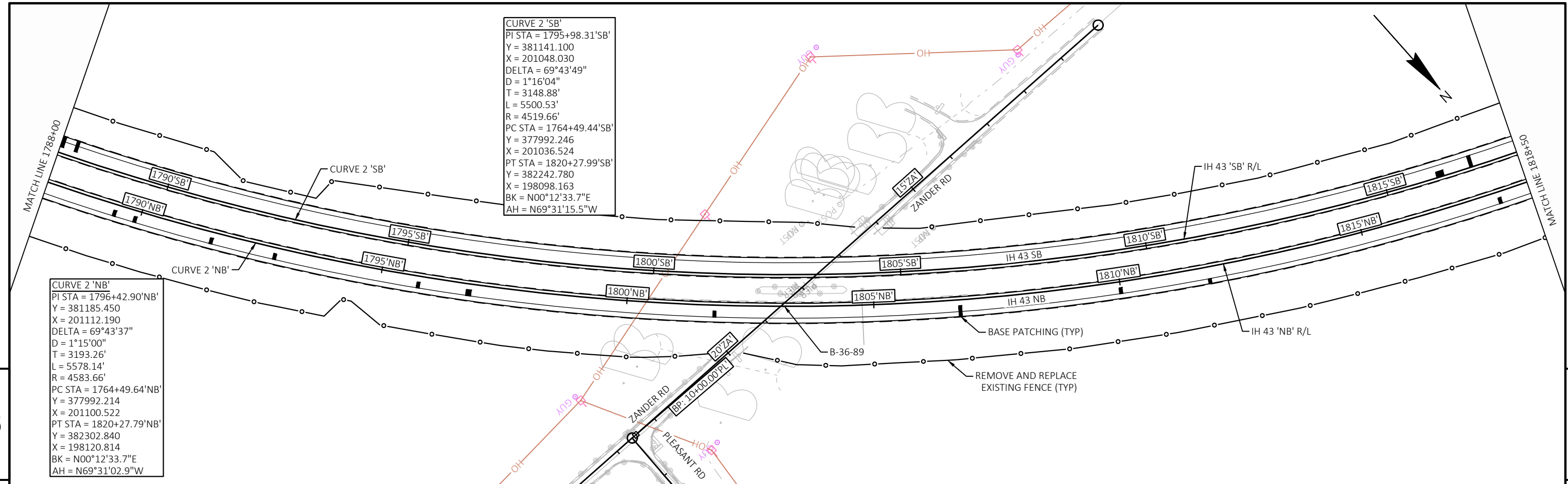


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN SHEETS	SHEET	E
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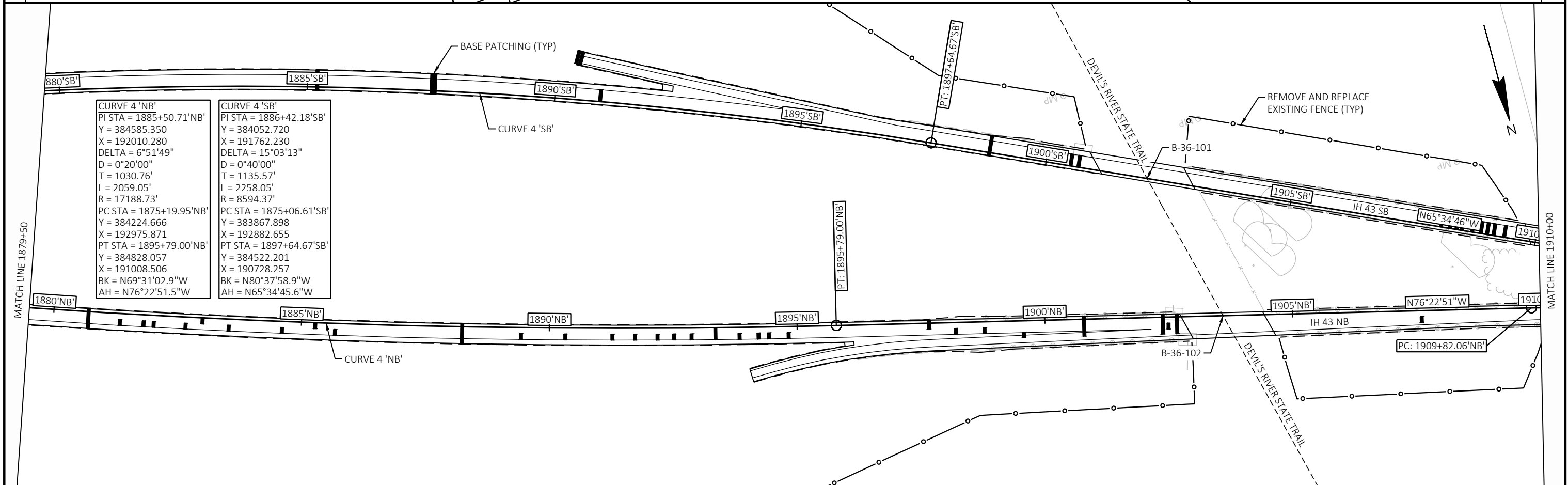
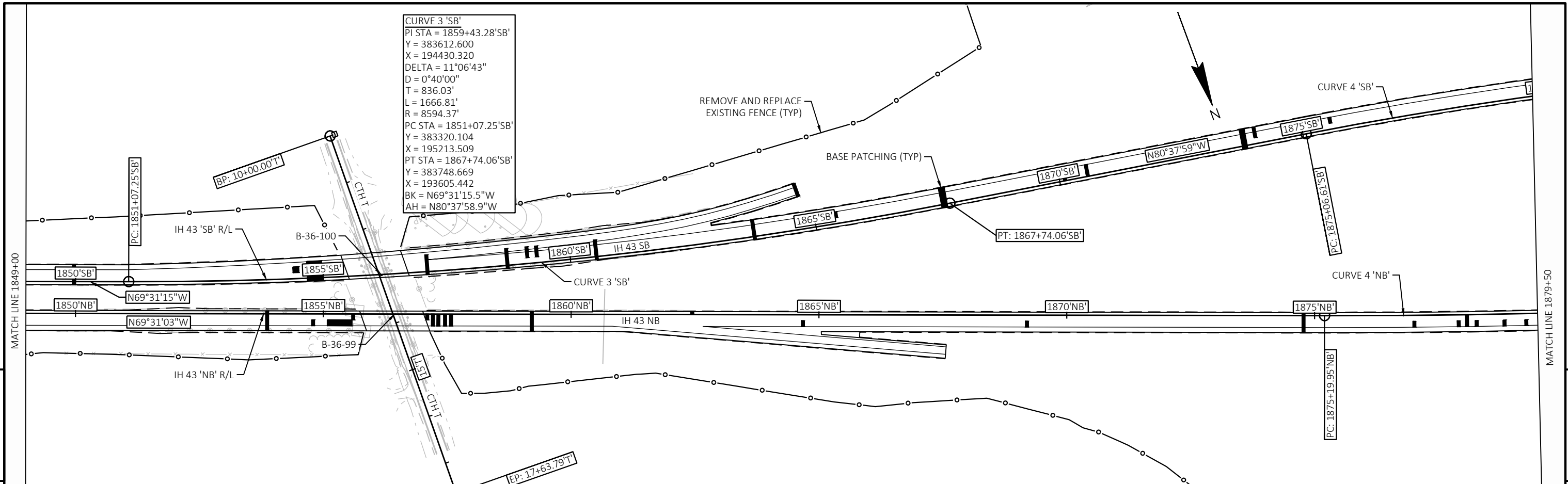


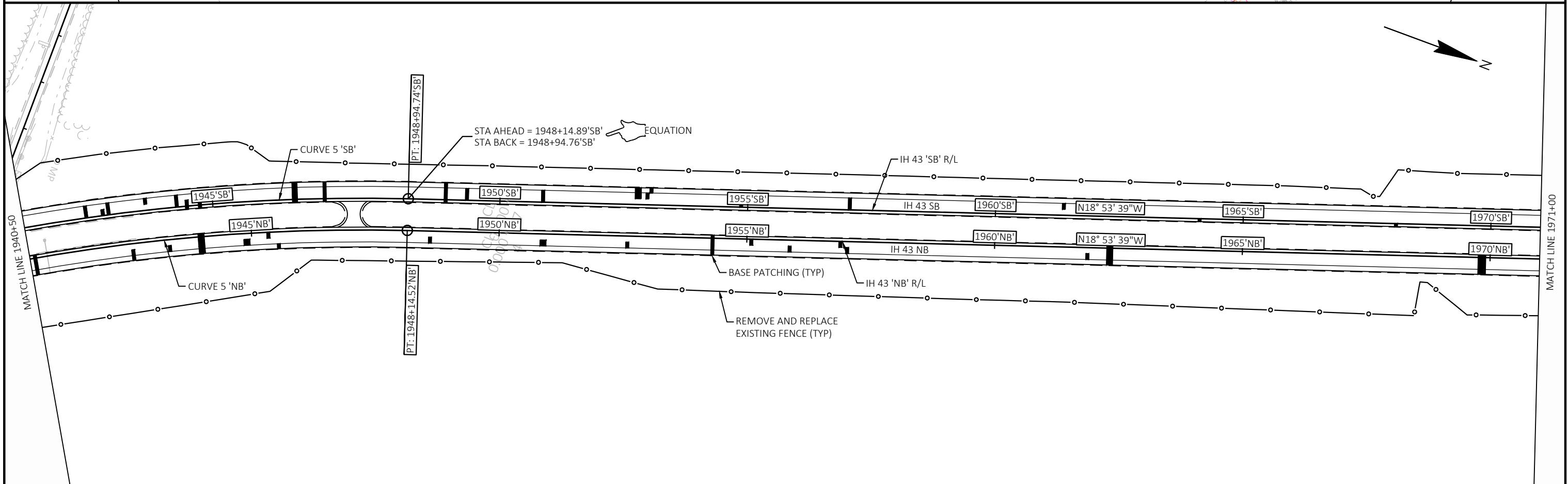
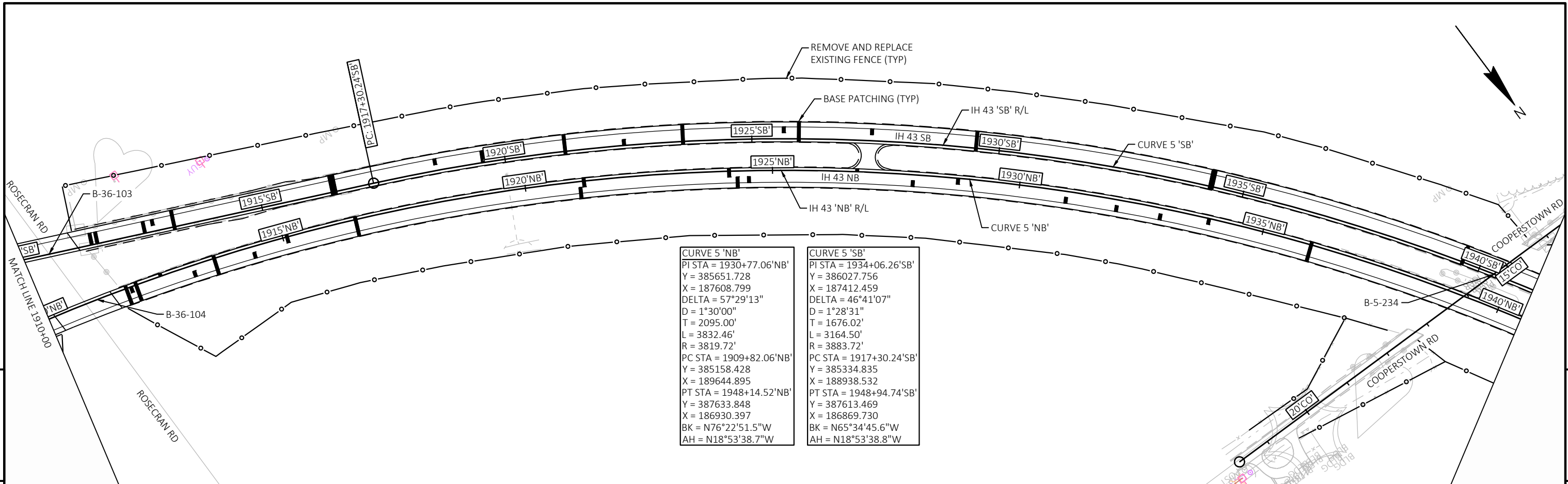


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN SHEETS	SHEET	E
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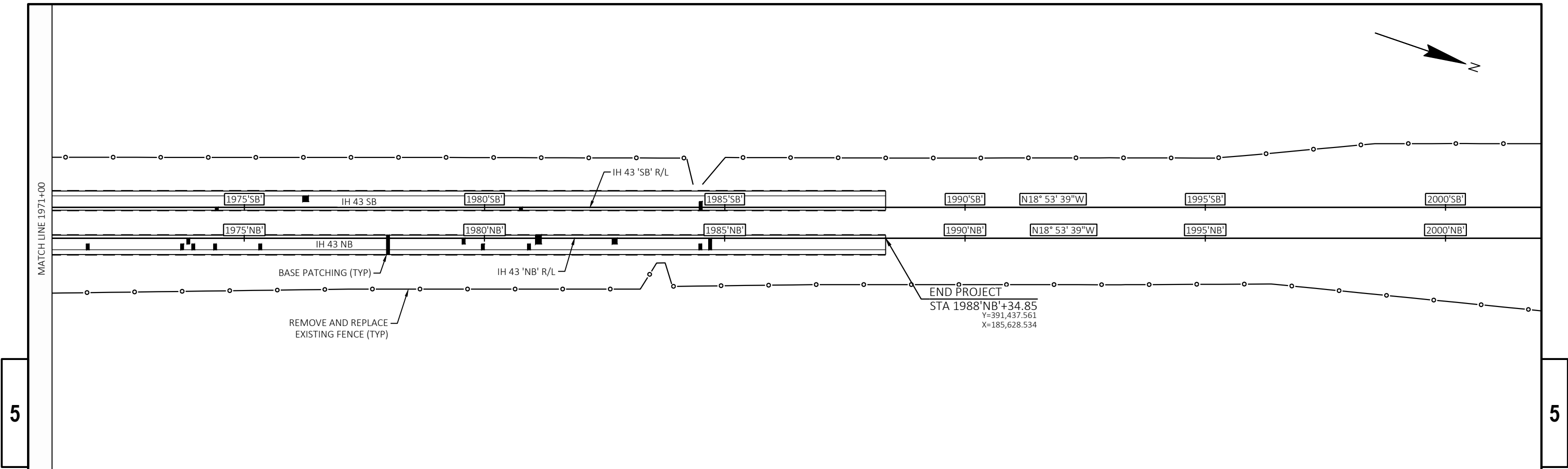


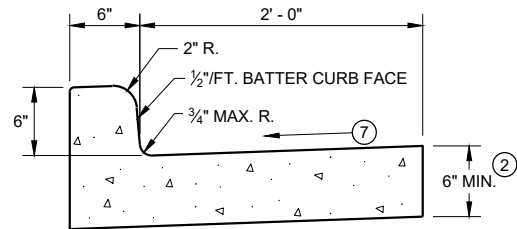
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN SHEETS	SHEET	E
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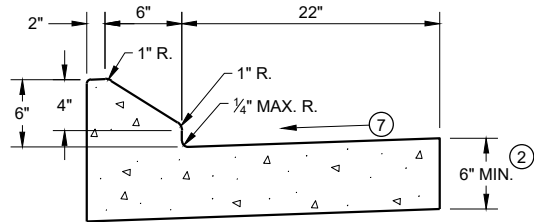


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	PLAN SHEETS	SHEET	E
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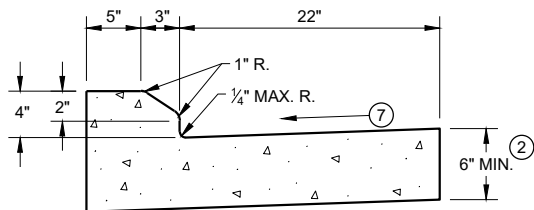




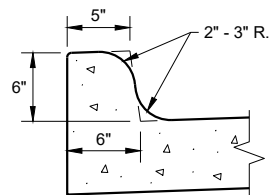
TYPES A^① & D



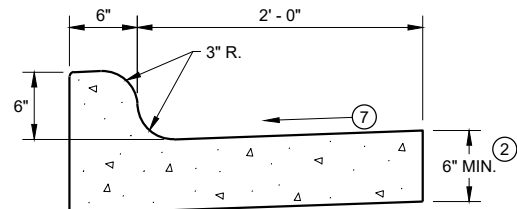
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

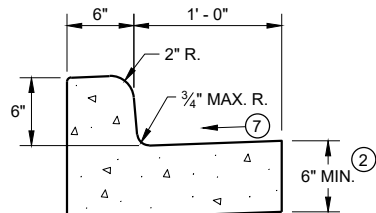


TYPES K^① & L
(OPTIONAL CURB SHAPE)



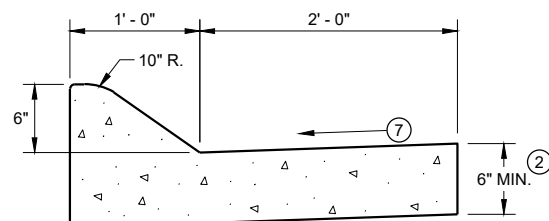
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

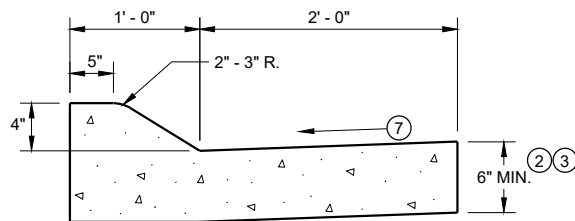


TYPES A^① & D

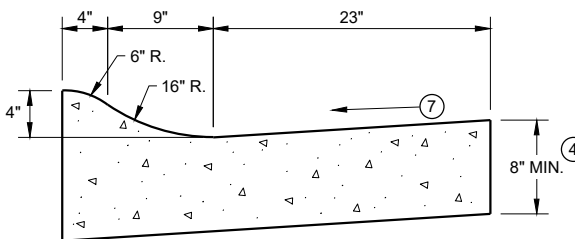
CONCRETE CURB AND GUTTER 18"



6" SLOPED CURB TYPES A^① & D



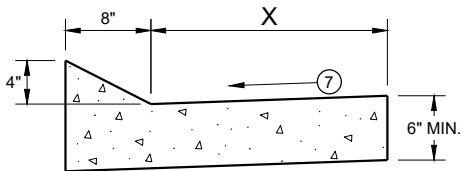
4" SLOPED CURB TYPES A^① & D



4" SLOPED CURB TYPES R^① & T^⑤

CONCRETE CURB AND GUTTER 36"

TBT & TBTT	X
30"	22"
36"	28"

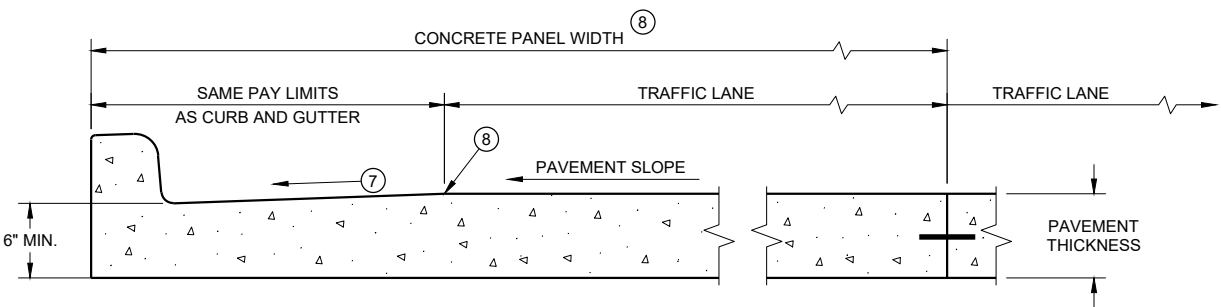


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

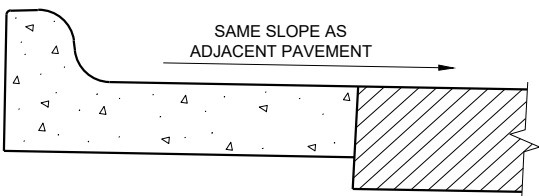
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER^⑥
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

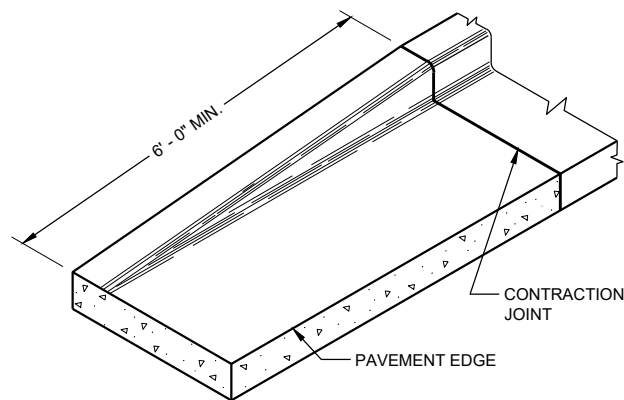
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

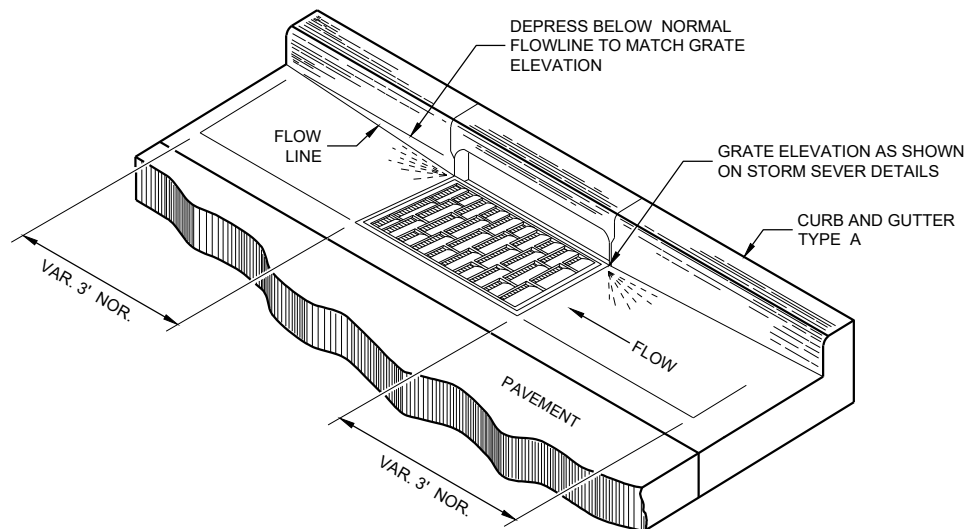
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

CONCRETE CURB AND GUTTER

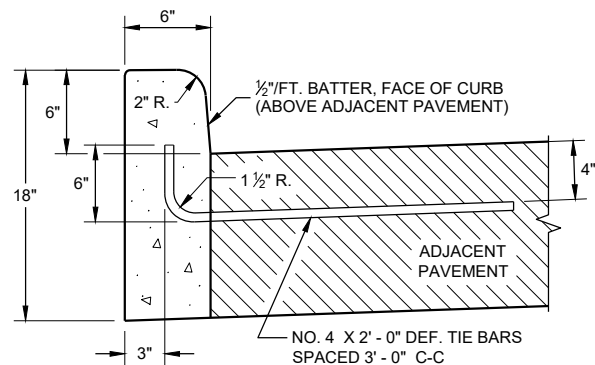
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



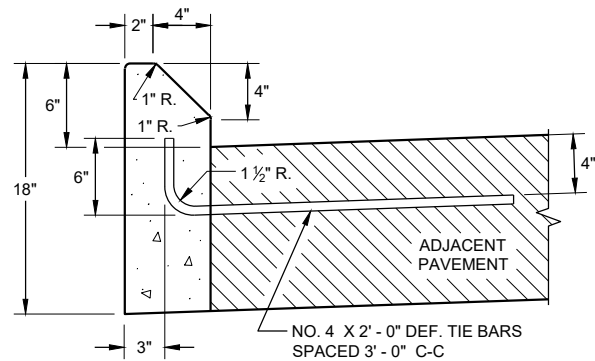
END SECTION CURB AND GUTTER



DETAIL OF CURB AND GUTTER AT INLETS
(TYPICAL H INLET COVER SHOWN)

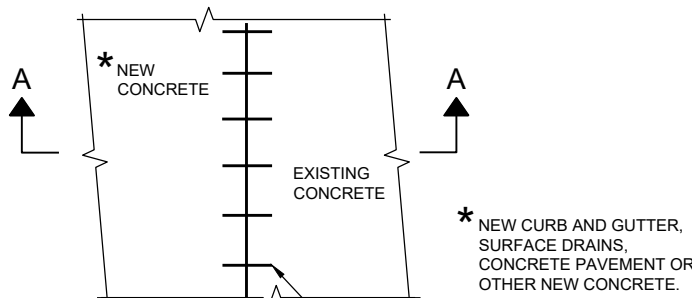


TYPES A^① & D

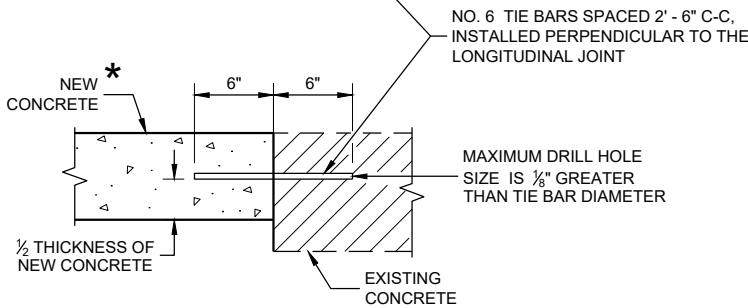


TYPES G^① & J

CONCRETE CURB



PLAN VIEW



SECTION A - A

TIE BARS DRILLED
INTO EXISTING PAVEMENT

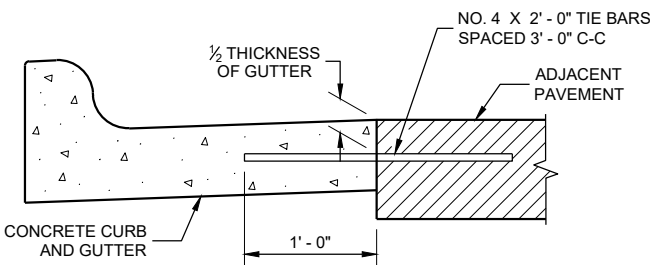
GENERAL NOTES

DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

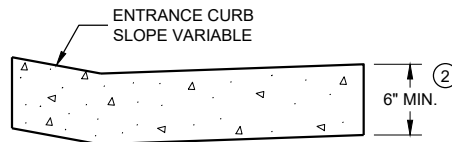
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2' - 0" BEHIND THE BACK OF CURBS.

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑨ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



TYPICAL TIE BAR LOCATION^①



DRIVEWAY ENTRANCE CURB^⑨
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



SDD 08D02-a Concrete Surface Drains, Flume Type at Structures

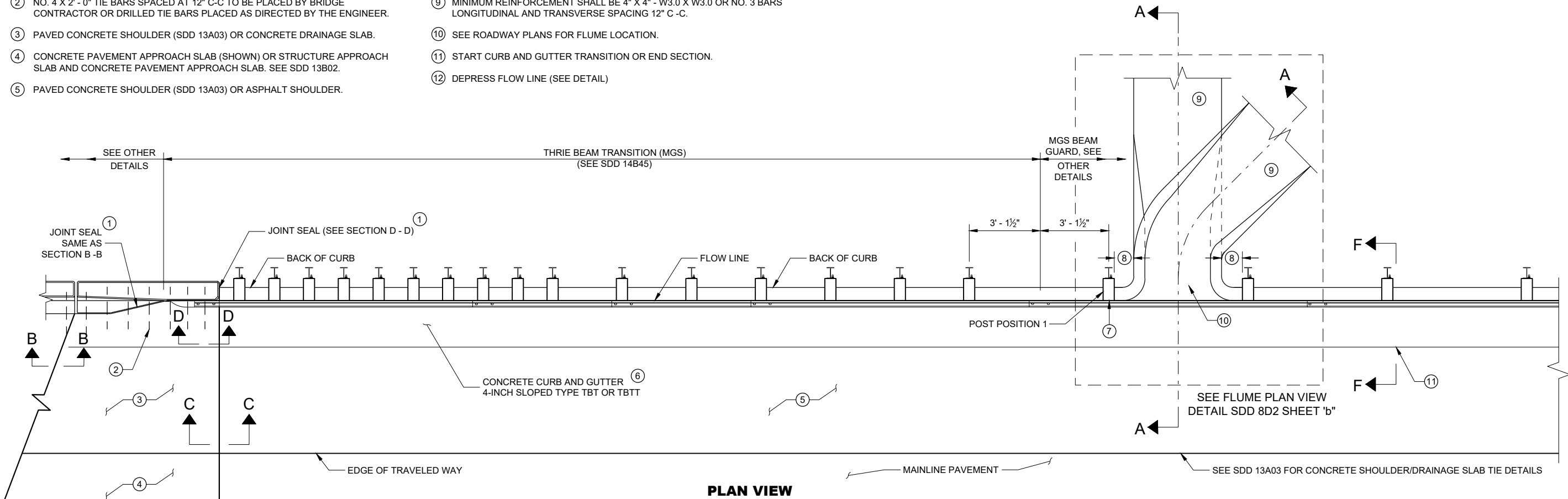
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

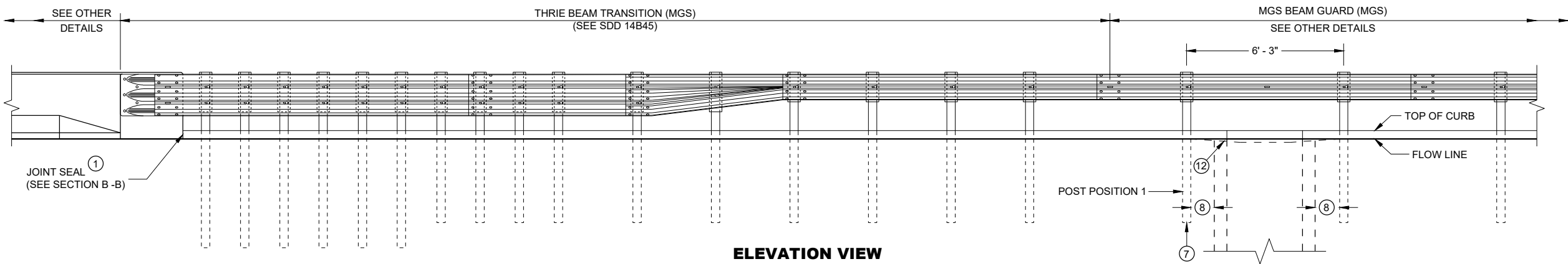
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 1 USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 2 NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- 3 PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- 4 CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02.
- 5 PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.

- 6 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- 7 PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- 8 CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- 9 MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- 10 SEE ROADWAY PLANS FOR FLUME LOCATION.
- 11 START CURB AND GUTTER TRANSITION OR END SECTION.
- 12 DEPRESS FLOW LINE (SEE DETAIL)



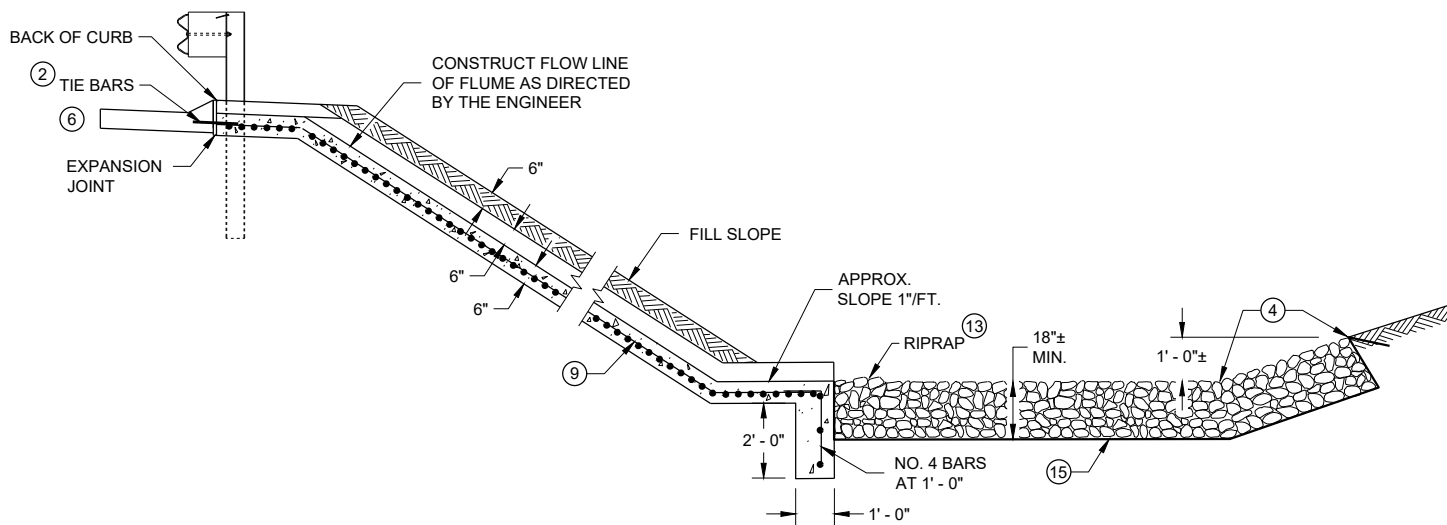
PLAN VIEW



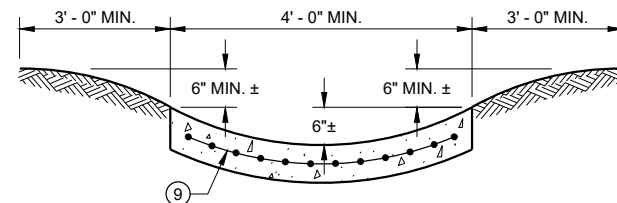
ELEVATION VIEW

**CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES**

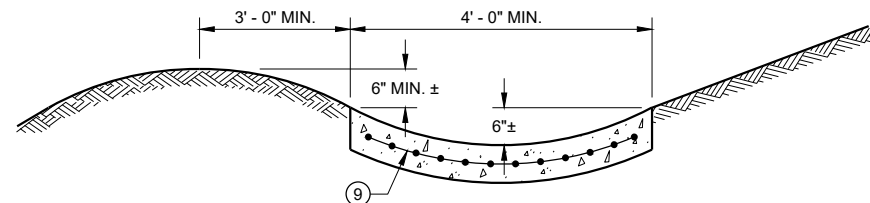
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



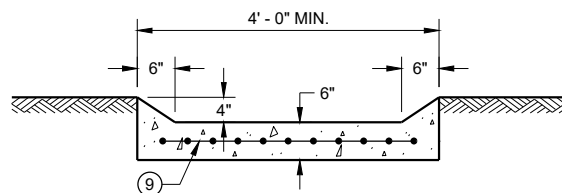
SECTION A - A



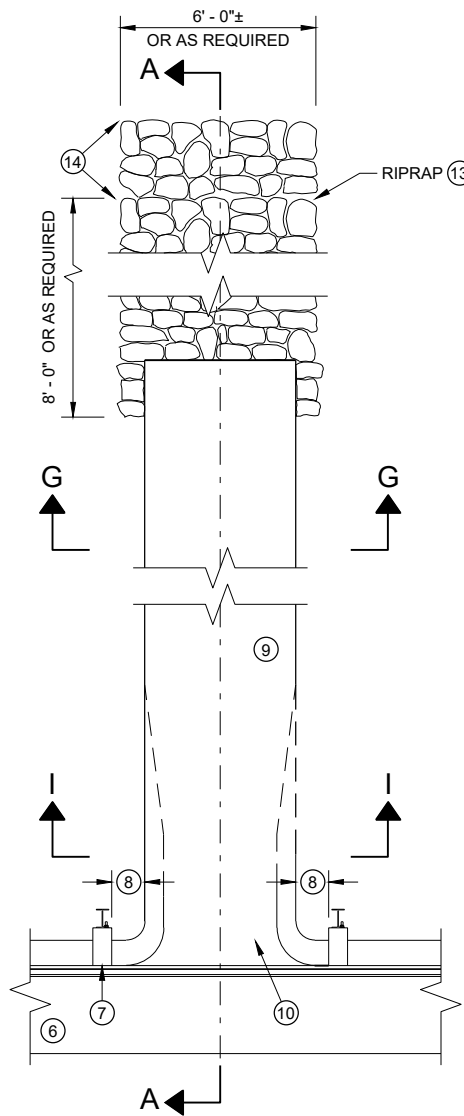
SECTION G - G



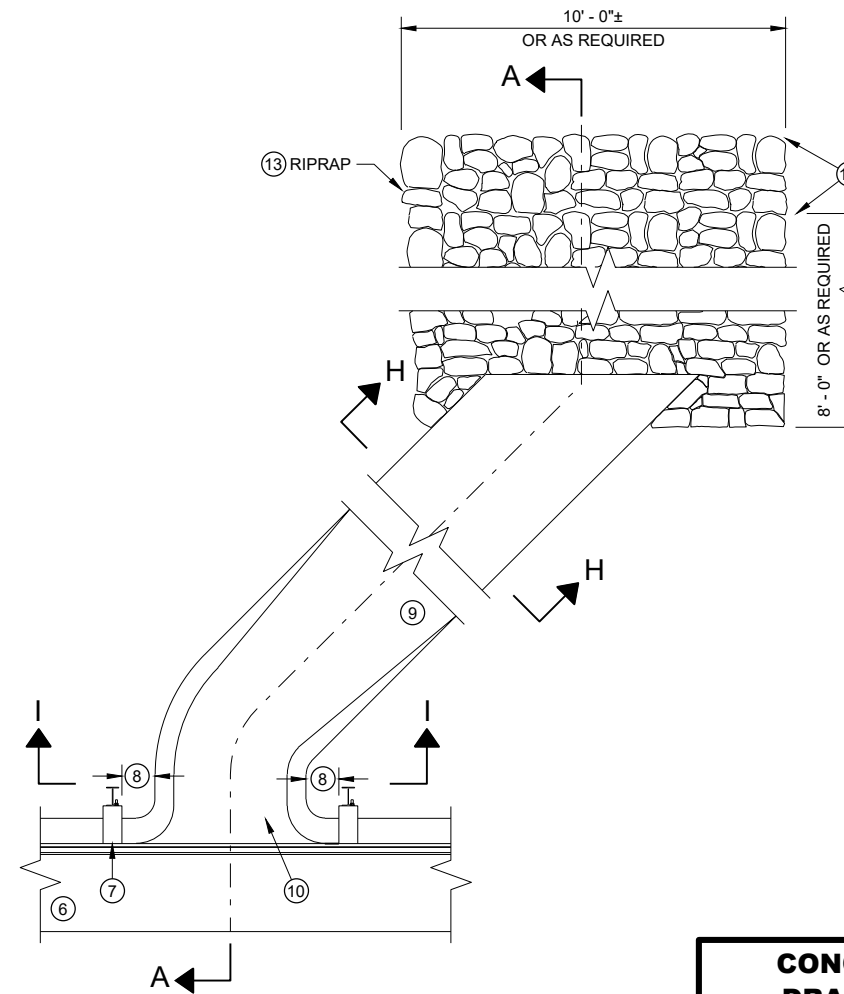
SECTION H - H



SECTION I - I



**PLAN VIEW
PERPENDICULAR FLUME**



**PLAN VIEW
SKEWED FLUME**

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

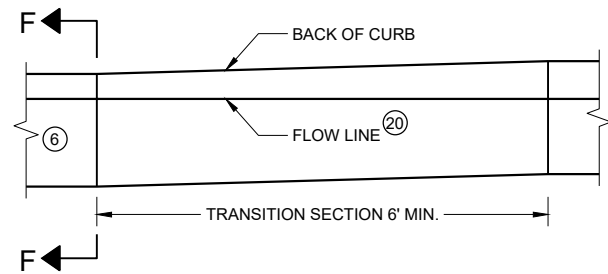
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBT. USE TYPE TBT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.

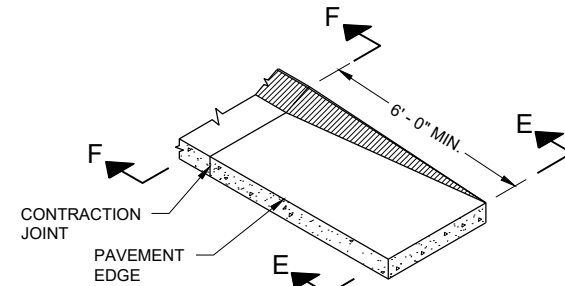
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH AS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.

**CONCRETE SURFACE
DRAINS FLUME TYPE
AT STRUCTURES**

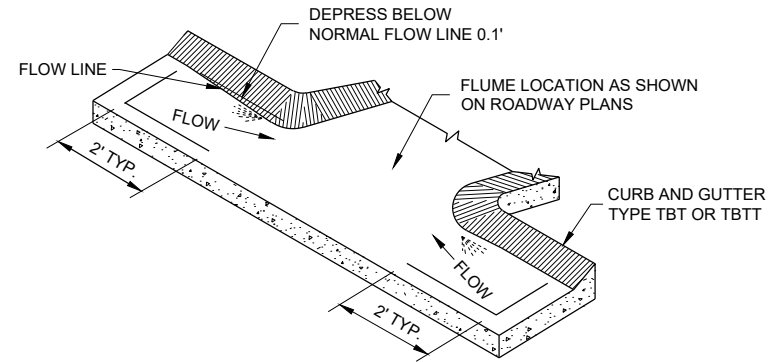
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



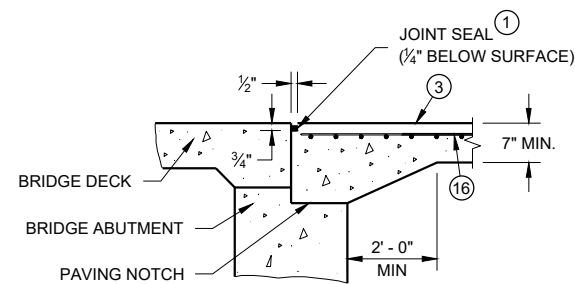
**CURB AND GUTTER TRANSITION SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



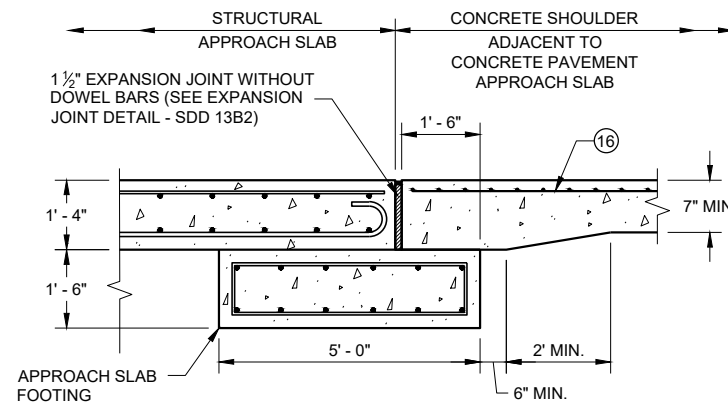
**CURB AND GUTTER END SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBTT**



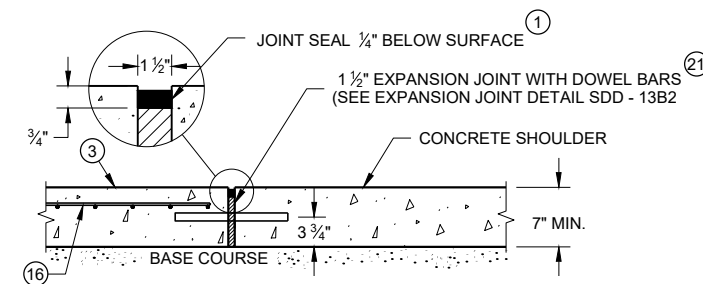
**CURB AND GUTTER FLOW LINE DEPRESSION
AT FLUMES CONCRETE CURB AND GUTTER
4-INCH SLOPED 36 INCH TYPE TBT OR TBTT**



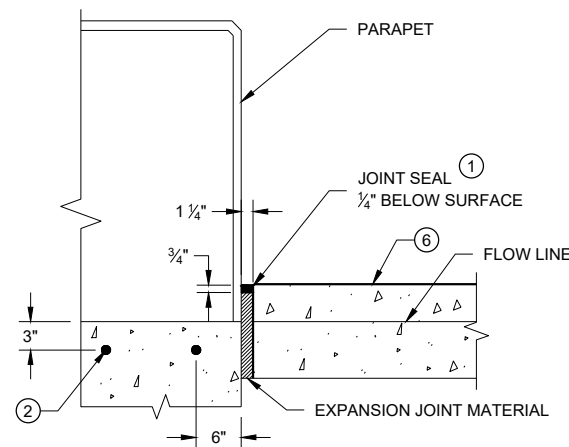
SECTION B-B



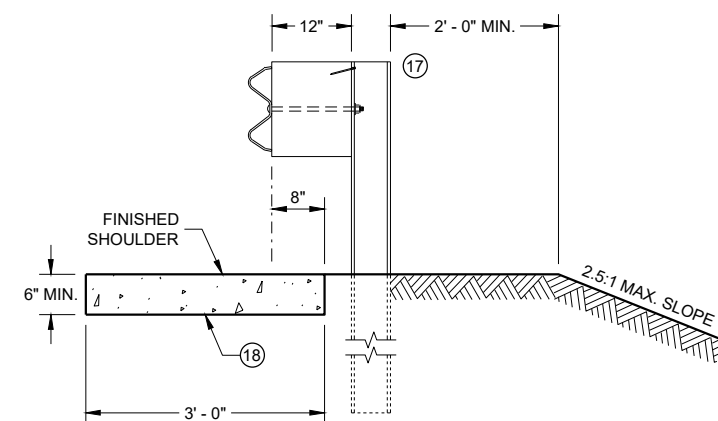
**SECTION C - C
JOINT DETAIL FOR BRIDGE WITH STRUCTURAL
APPROACH SLAB AND CONCRETE APPROACH SLAB**



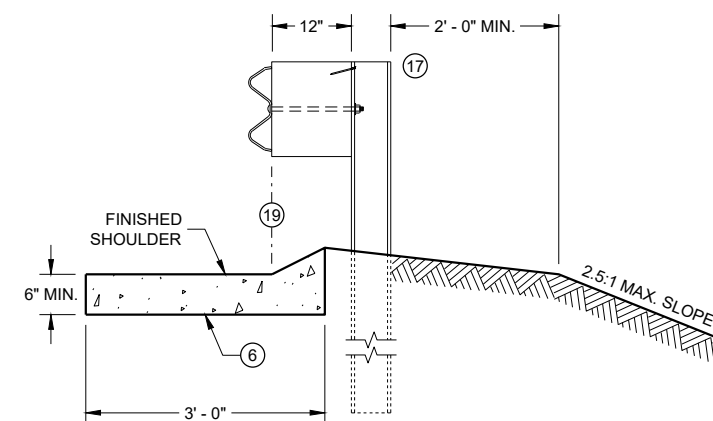
**SECTION C - C
JOINT DETAIL FOR BRIDGE APPROACH
WITH CONCRETE SHOULDERS**



SECTION D - D



SECTION E - E



SECTION F - F

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBTT. USE TYPE TBTT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE FLUME BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER FLUME BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE EDGE OF FLUME TO POSTS.
- ⑨ MINIMUM REINFORCEMENT SHALL BE 4" X 4" - W3.0 X W3.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑩ SEE ROADWAY PLANS FOR FLUME LOCATION.
- ⑪ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑫ DEPRESS FLOW LINE (SEE DETAIL)
- ⑬ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑭ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑮ GEOTEXTILE FABRIC TYPE HR.
- ⑯ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
- ⑰ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑱ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBTT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑲ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑳ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ㉑ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.

CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

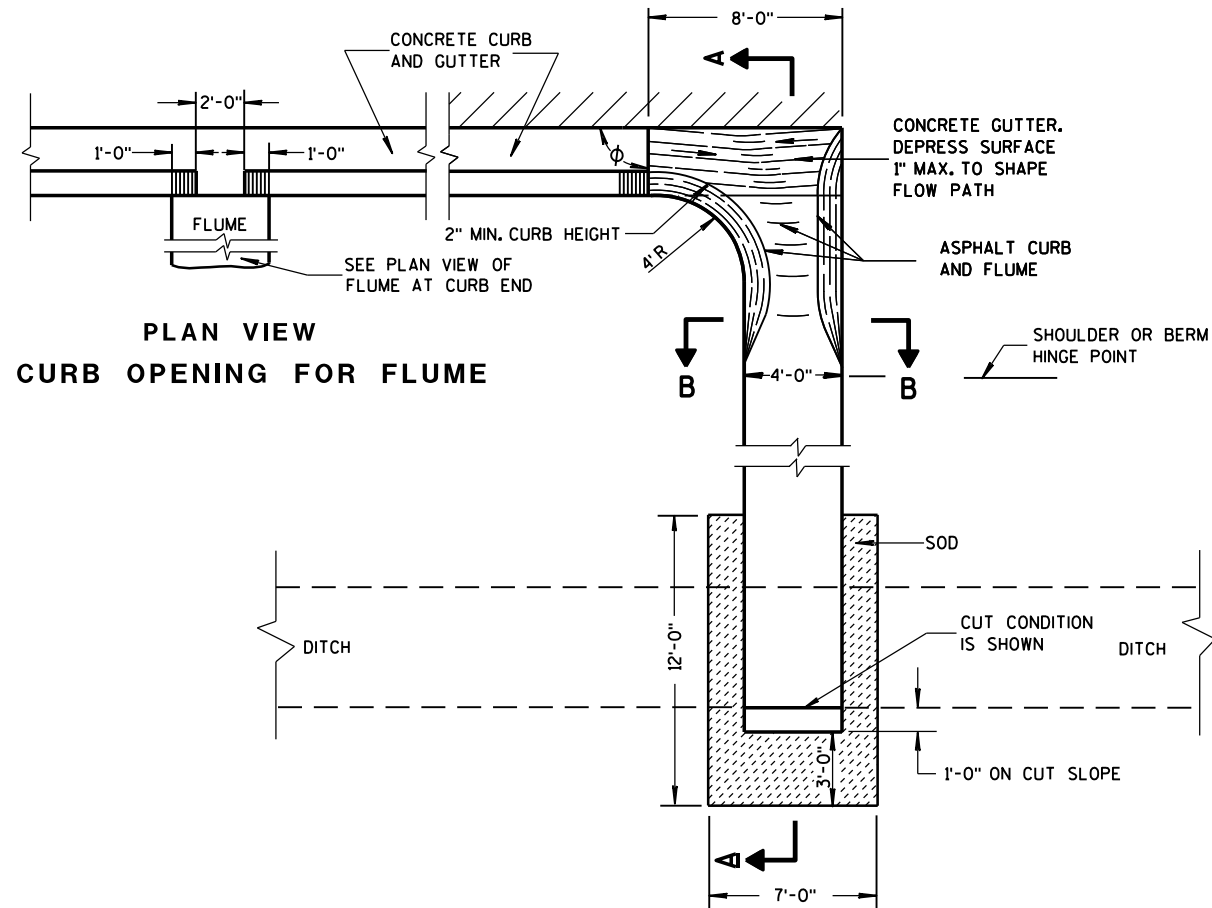
APPROVED
February 2020 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



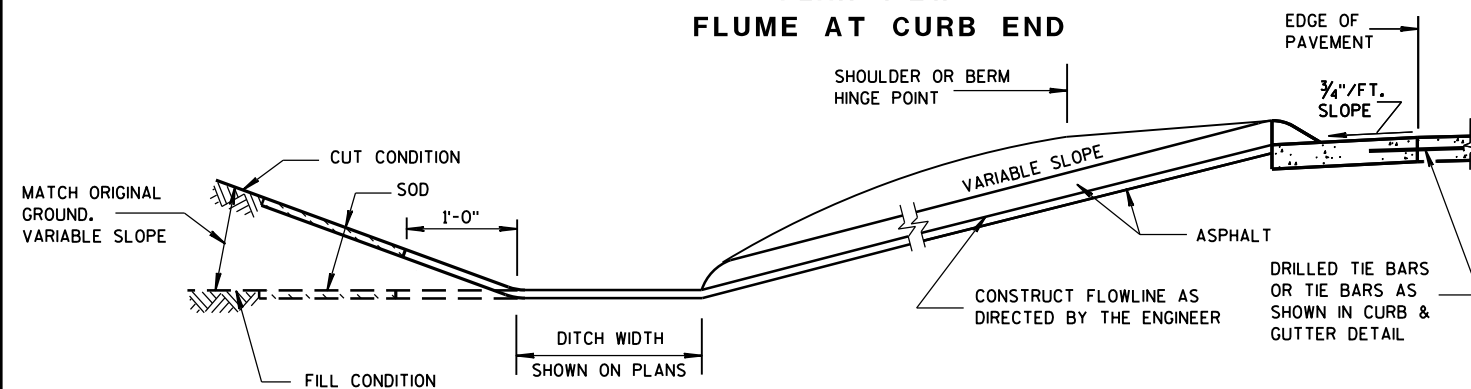
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS
TO GUTTER IN 1'-0"

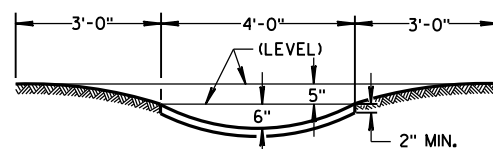
INCREASE ϕ FROM RIGHT ANGLE
TO BEST FIT FIELD CONDITIONS



PLAN VIEW FLUME AT CURB END



SECTION B-B



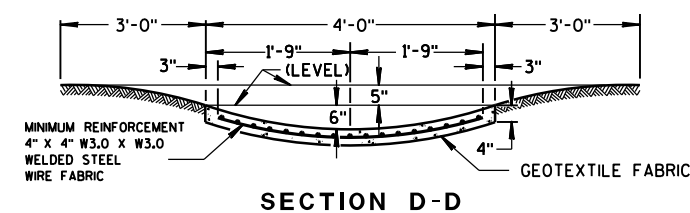
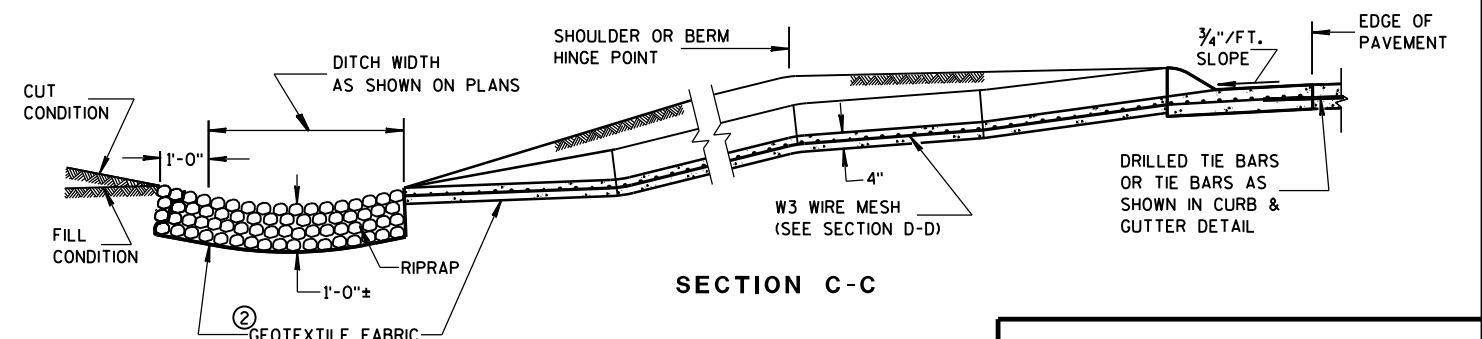
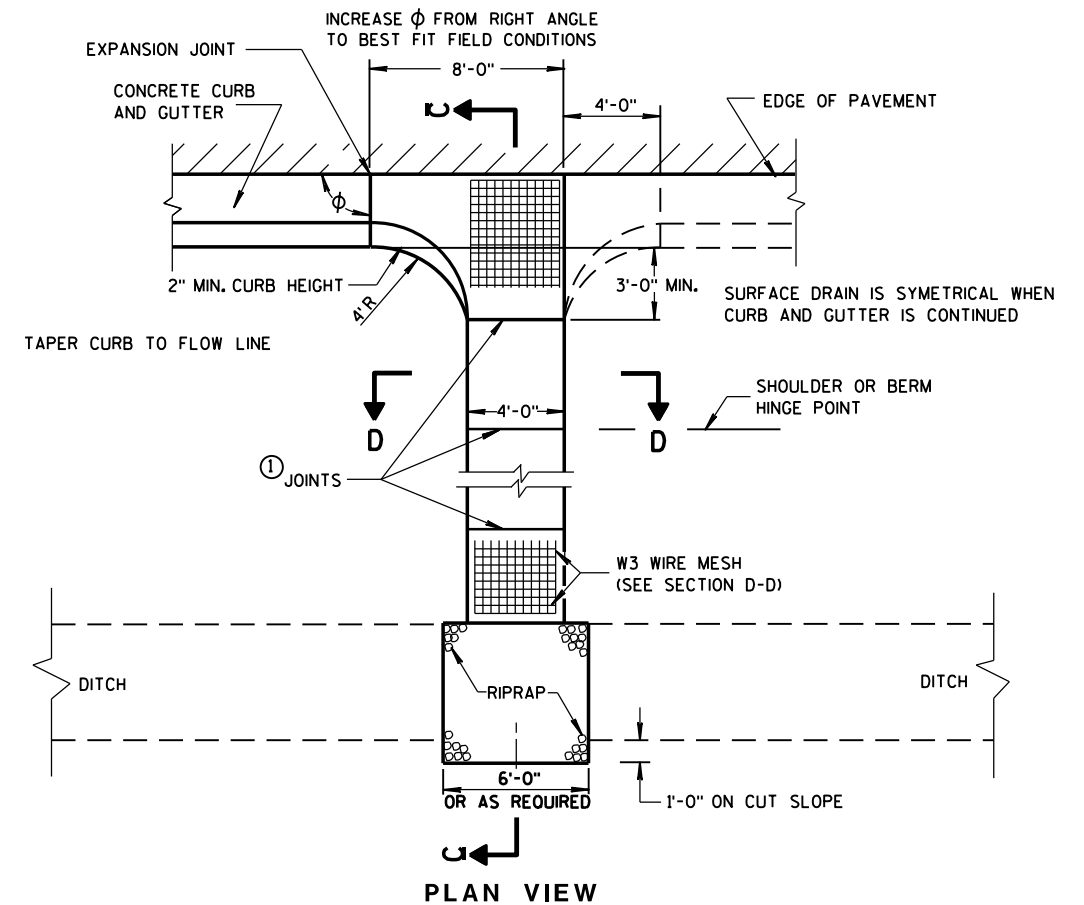
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

③ CONCRETE SURFACE DRAIN



CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

9/4/08
DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



SDD 8f1 Apron Endwalls for Culvert Pipe

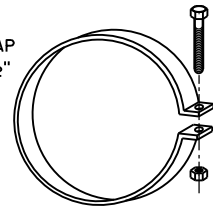
METAL APRON ENDWALLS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)						APPROX. SLOPE	BODY	
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1/2")	L (±1½")	L1 ①	L2 ①			W (±2")
12	.064	.060	6	6	6	21	12	17½	24	2½ to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21¾	30	2½ to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28¼	36	2½ to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29⅝	42	2½ to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37¼	48	2½ to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52¼	60	2½ to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59¾	72	2½ to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75⅝	84	2½ to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2¼ to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85½	102	2¼ to 1	3 Pc.
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109x	.105x	18	42	12	87	—	—	132	1½ to 1	3 Pc.
84	.109x	.105x	18	45	12	87	—	—	138	1½ to 1	3 Pc.
90	.109x	.105x	18	37	12	87	—	—	144	1½ to 1	3 Pc.
96	.109x	.105x	18	35	12	87	—	—	150	1½ to 1	3 Pc.

* EXCEPT CENTER PANEL
SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS								
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 ⁷ / ₈	72 ¹ / ₈	24	2	3 to 1
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1
24	3	9 ¹ / ₂	43 ¹ / ₂	30	73 ¹ / ₂	48	3	3 to 1
27	3 ¹ / ₄	10 ¹ / ₂	49 ¹ / ₂	24	73 ¹ / ₂	54	3 ¹ / ₄	3 to 1
30	3 ¹ / ₂	12	54	19 ³ / ₄	73 ¹ / ₂	60	3 ¹ / ₂	3 to 1
36	4	15	63	34 ³ / ₄	97 ³ / ₄	72	4	3 to 1
42	4 ¹ / ₂	21	63	35	98	78	4 ¹ / ₂	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5 ¹ / ₂	27	65	33 ¹ / ₄ -35 ^{**}	98 ^{**} / ₄ -100 ^{**}	90	5 ¹ / ₂	2 ¹ / ₂ to 1
60	6	30-35 ^{**}	60	39	99	96	5	2 to 1
66	6 ¹ / ₂	24-30 ^{**}	72-78 ^{**}	21-27 ^{**}	99	102	5 ¹ / ₂	2 to 1
72	7	24-36 ^{**}	78	21	99	108	6	2 to 1
78	7 ¹ / ₂	24-36 ^{**}	78	21	99	114	6 ¹ / ₂	2 to 1
84	8	36	90 ¹ / ₂	21	111 ¹ / ₂	120	6 ¹ / ₂	1 ¹ / ₂ to 1
90	8 ¹ / ₂	41	87 ¹ / ₂	24	111 ¹ / ₂	132	6 ¹ / ₂	1 ¹ / ₂ to 1

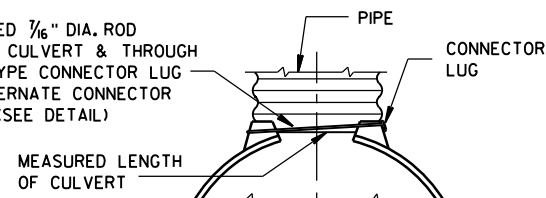
* MINIMUM
** MAXIMUM

1" WIDE, 12 GA. (0.109"
THICK) GALVANIZED STRAP
WITH STANDARD 6" X 1/2"
BAND BOLT AND NUT



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP

THREADED 1/6" DIA. ROD
AROUND CULVERT & THROUGH
TANK TYPE CONNECTOR LUG
OR ALTERNATE CONNECTOR
STRAP (SEE DETAIL)



TYPE 1
FOR 12" THRU 24" CORR. PIPE

THREADED 1/6" DIA. ROD
OVER TOP OF APRON, SIDE
LUGS TO BE RIVETED TO
APRON



TYPE 2
FOR 30" THRU 96" CORR. PIPE

MEASURED LENGTH
OF CULVERT

CONNECTOR SECTION
TO BE PAID FOR AS
PART OF END SECTION

COUPLING BAND
REQUIRED

12"

RIVETED OR
BOLTED

TYPE 3
FOR 42" THRU 96" CORR. PIPE

DIMPLED OR CORRUGATED
COUPLING BAND

2 - 1/2" X 6"
BAND BOLTS

RIVETED OR BOLTED AT
DIMPLES (6" C-C FOR
CORRUGATED BAND)

MEASURED
LENGTH
OF CULVERT

TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

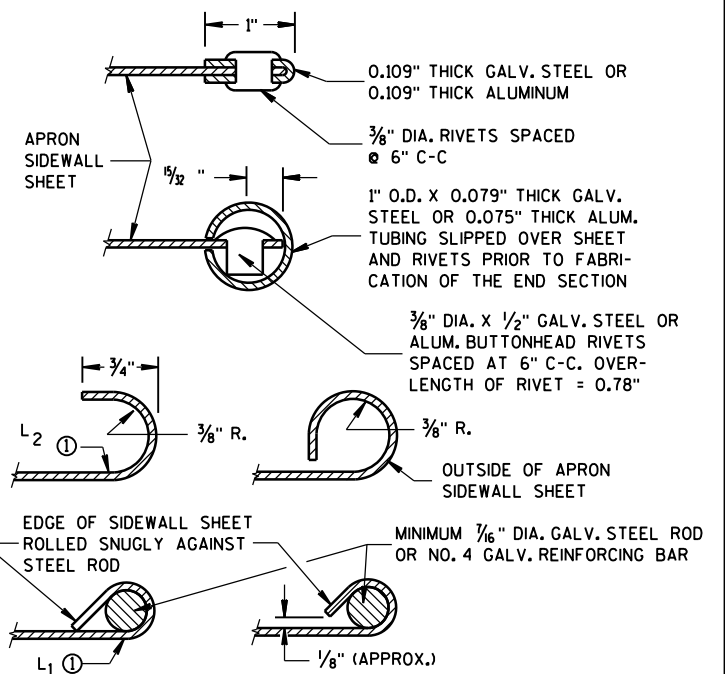
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,
AND CORRUGATED BAND FITS INSIDE ENDWALL.
DIMPLED BAND MAY BE USED WITH HELICALLY
CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE
ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5
AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL
CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO
CIRCUMFERENTIAL CORRUGATIONS AT EACH END
USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON
THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE
STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL
OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR
ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE
OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL
THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH
OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE
PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS
FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS.
FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED
EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH
GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE
ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM
NUTS AND BOLTS FOR ALUMINUM UNITS.

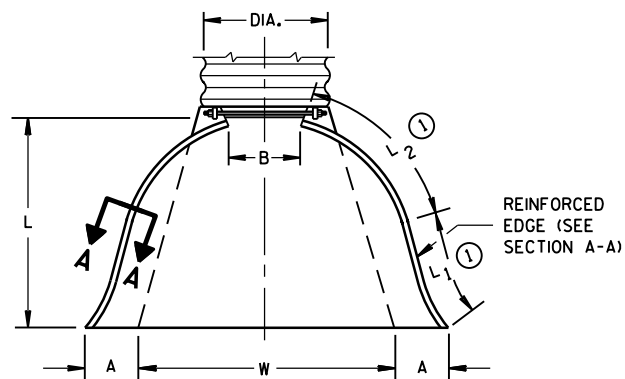
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT
TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT
TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED
INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

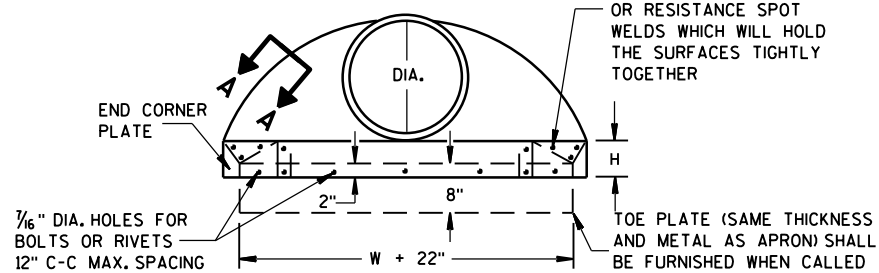
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-30-94
DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

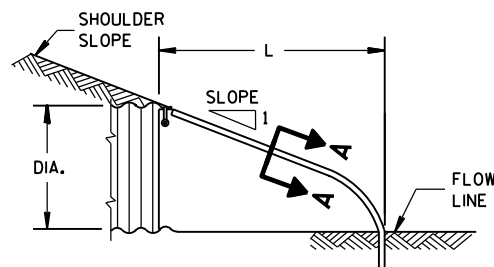


PLAN VIEW

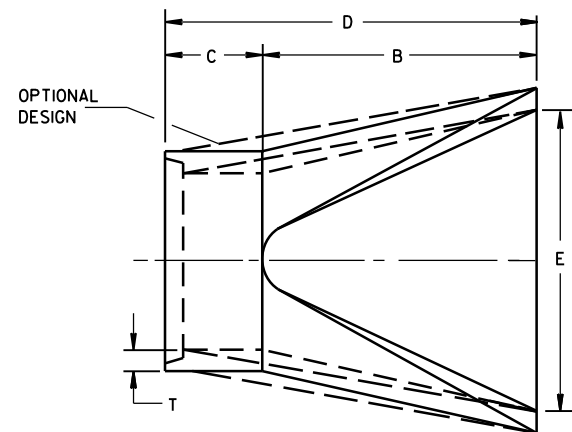
END CORNER PLATES MAY
BE FASTENED TO APRON
PROPER BY BOLTS, RIVETS,
OR RESISTANCE SPOT
WELDS WHICH WILL HOLD
THE SURFACES TIGHTLY
TOGETHER



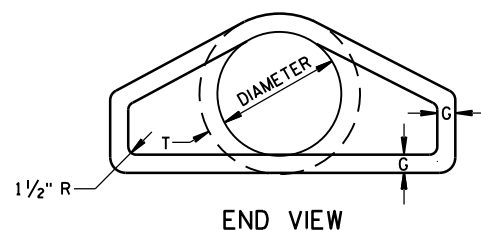
END VIEW



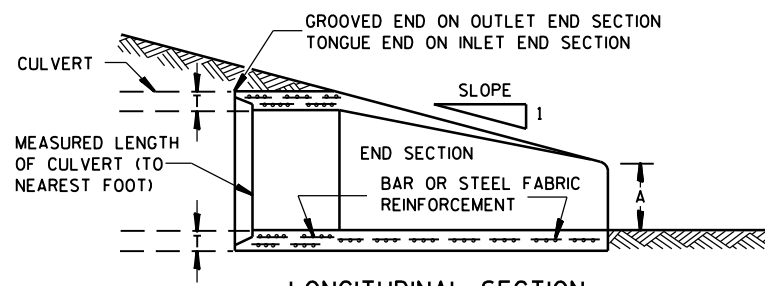
SIDE ELEVATION
METAL ENDWALLS



PLAN



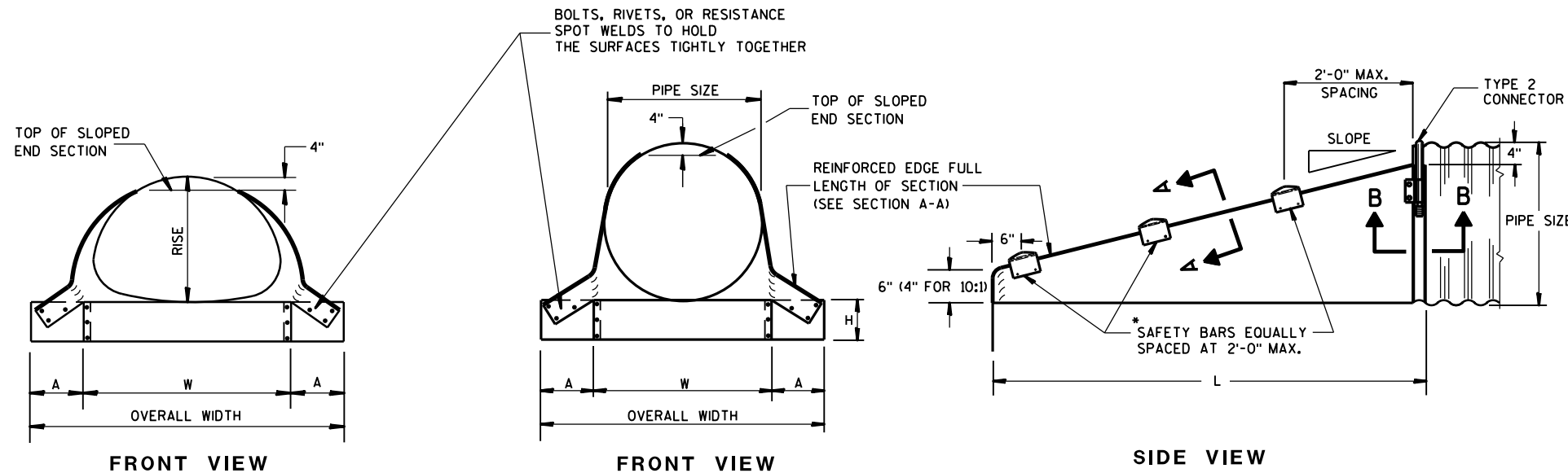
END VIEW



LONGITUDINAL SECTION
CONCRETE ENDWALLS



SDD 8f7 Steel Apron Endwalls for Culvert Pipe and Pipe Arch Sloped Side Drains



GENERAL NOTES

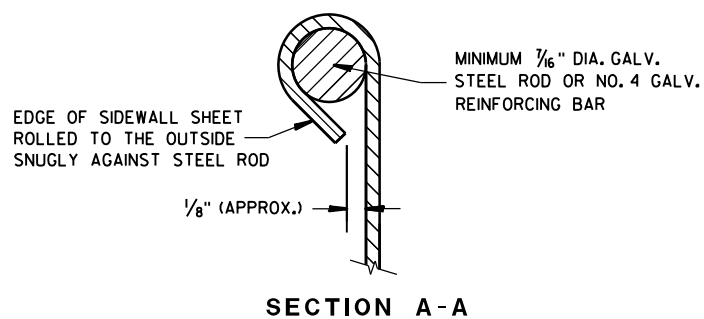
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

SLOPED END SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS, SECTION 521 FOR STEEL APRON ENDWALLS.

SAFETY BARS SHALL BE FABRICATED FROM GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL.

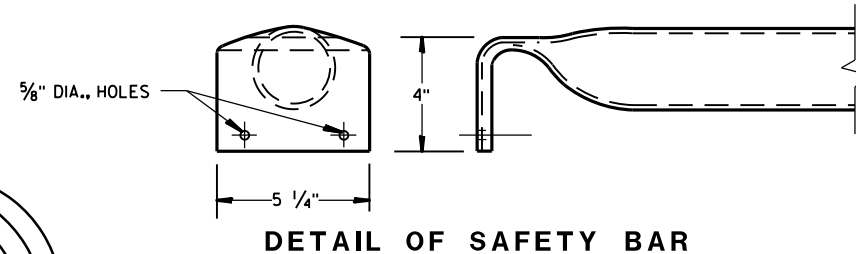
STEEL APRON ENDWALLS FOR CULVERT PIPE SLOPED SIDE DRAINS

PIPE DIA. (IN.)	MIN. THICK. (Inches)	DIMENSIONS (Inches)				L DIMENSIONS					
		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	.064	8	6	21	37	4:1	20	6:1	30	10:1	70
18	.064	8	6	24	40	4:1	32	6:1	48	10:1	100
21	.064	8	6	27	43	4:1	44	6:1	66	10:1	130
24	.064	8	6	30	46	4:1	56	6:1	84	10:1	160
30	.109	12	9	36	60	4:1	80	6:1	120	10:1	220
36	.109	12	9	42	66	4:1	104	6:1	156	10:1	280
42	.109	16	12	48	80	4:1	128	6:1	192	—	—
48	.109	16	12	54	86	4:1	152	6:1	228	—	—
54	.109	16	12	60	92	4:1	176	6:1	264	—	—
60	.109	16	12	66	98	4:1	200	6:1	300	—	—



*NOTE: THREE SAFETY BARS ARE SHOWN. ACTUAL NUMBER OF BARS REQUIRED AT A 2'-0" C-C MAX. SPACING WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

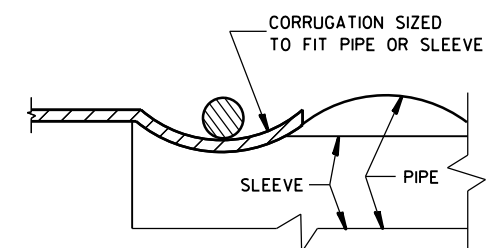
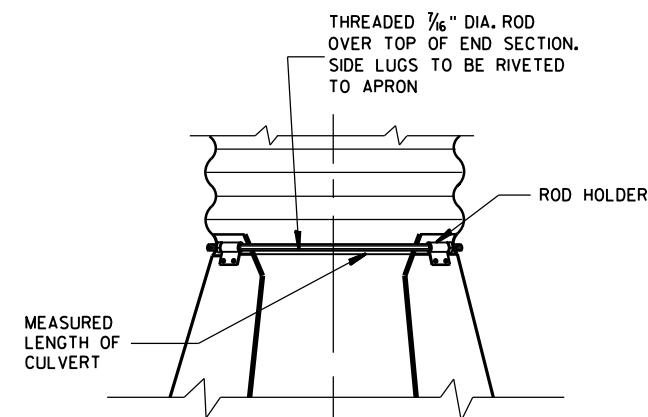
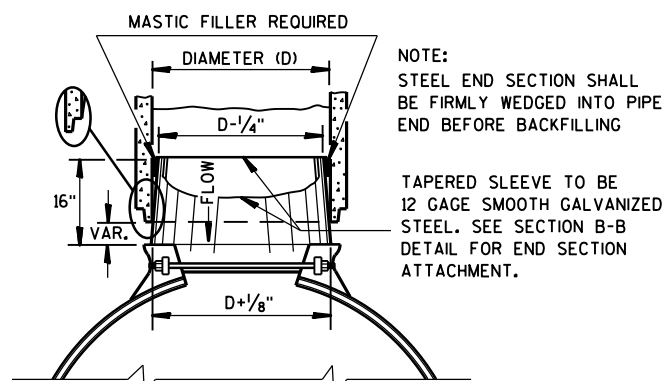
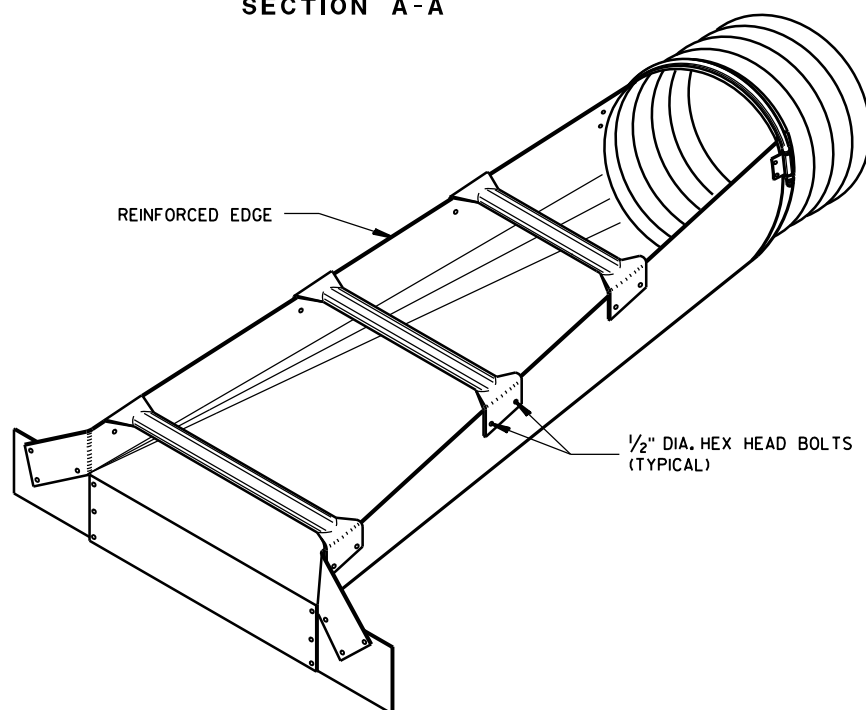
3" GALVANIZED PIPE, FLATTEN ENDS, THEN BEND OUTSIDE 4" TO MATCH END SECTION SIDES.



STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED SIDE DRAINS

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches) ①	DIMENSIONS (Inches)				L DIMENSIONS					
	SPAN	RISE		A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
15	17	13	.064 *	7	6	30	44	4:1	19	6:1	30	10:1 ②	70
18	21	15	.064 *	8	6	27	43	4:1	20	6:1	30	10:1	70
21	24	18	.064 *	8	6	30	46	4:1	32	6:1	48	10:1	100
24	28	20	.064 *	8	6	34	50	4:1	40	6:1	60	10:1	120
30	35	24	.079 *	12	9	41	65	4:1	56	6:1	84	10:1	160
36	42	29	.109 *	12	9	48	72	4:1	76	6:1	114	10:1	210
42	49	33	.109	16	12	55	87	4:1	92	6:1	138	—	—
48	57	38	.109	16	12	63	95	4:1	112	6:1	168	—	—
54	64	43	.109	16	12	70	102	4:1	132	6:1	198	—	—

① * MINIMUM THICKNESS OF ALL 10:1 SLOPED SIDE DRAINS IS 0.109".
② ACTUAL SLOPE GREATER THAN 10:1.



SECTION B-B

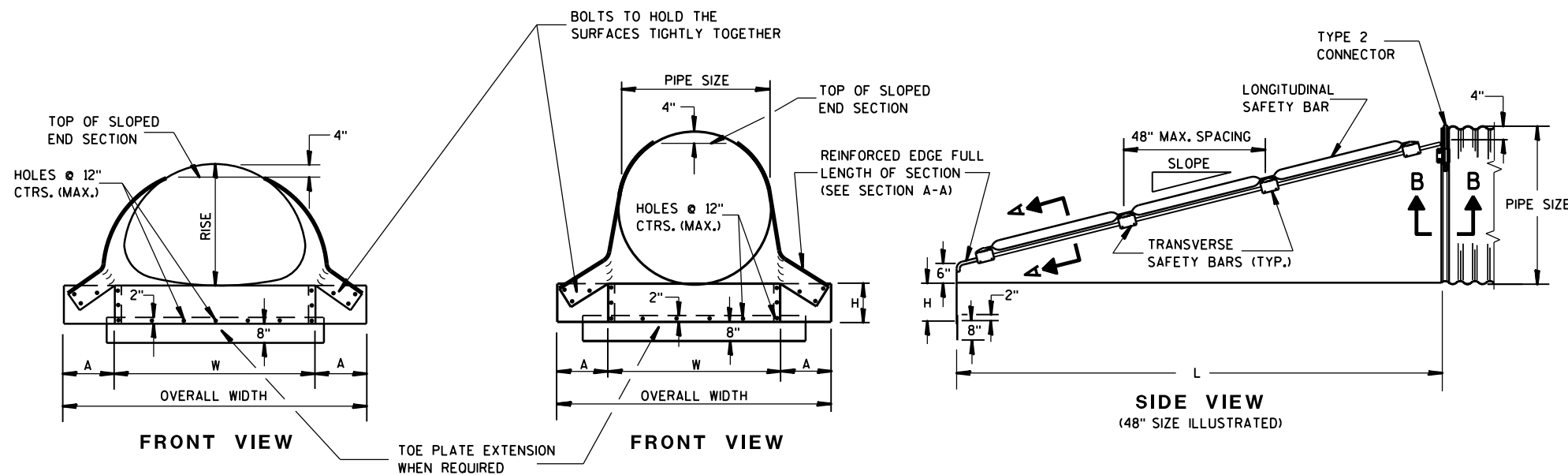
STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED SIDE DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/14/2012
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



SDD 8f8 Steel Apron Endwalls for Culvert Pipe and Pipe Arch Sloped Cross Drains



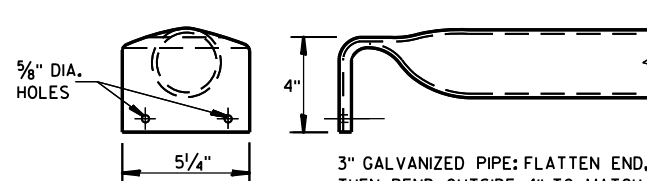
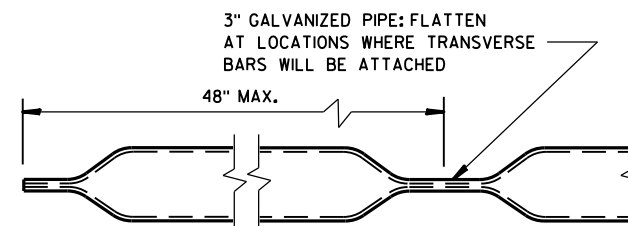
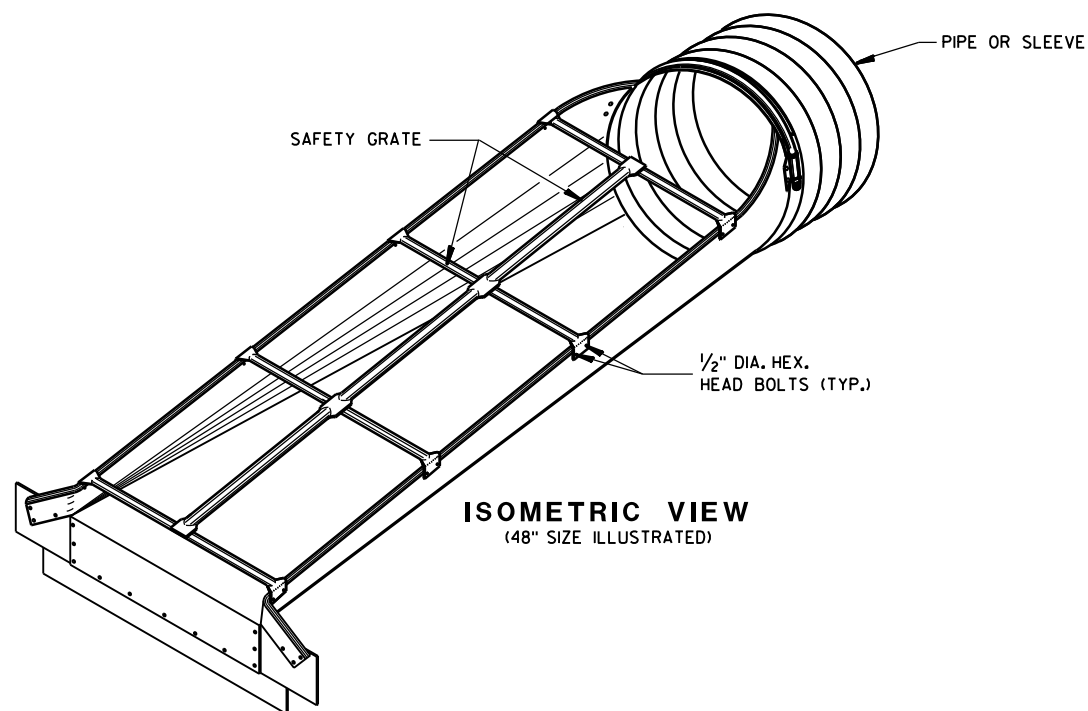
GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

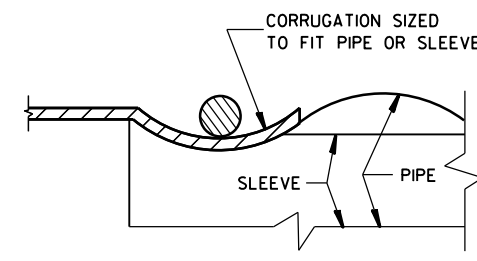
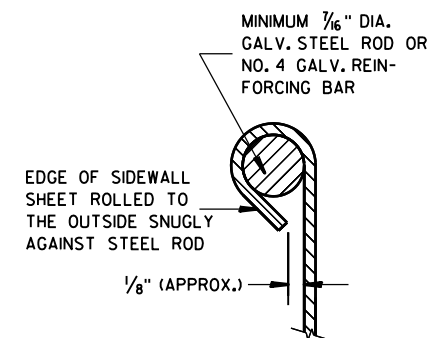
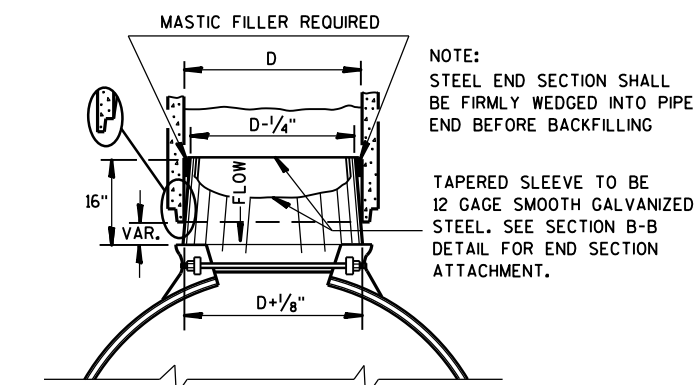
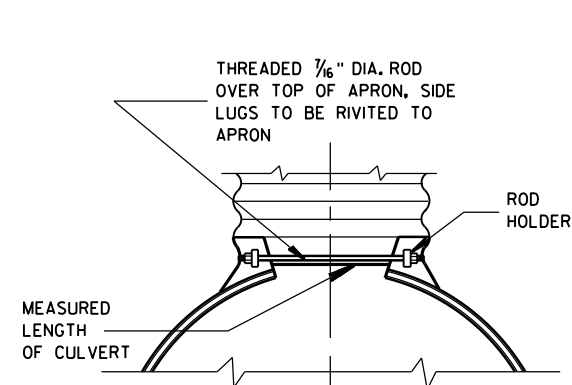
SAFETY GRATES SHALL BE FABRICATED FROM 3-INCH DIAMETER GALVANIZED PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL. THE LONGITUDINAL BAR SHALL BE WELDED TO THE TRANSVERSE BARS WHERE THE BARS CROSS. THE NUMBER OF TRANSVERSE BARS REQUIRED WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

SLOPED STEEL ENDWALLS LOCATED AT THE ENDS OF CONCRETE CULVERT PIPE SHALL BE FURNISHED WITH STEEL ADAPTER SLEEVES.

STEEL APRON ENDWALLS FOR CULVERT PIPE CROSS DRAINS										
PIPE DIA. (IN.)	MIN. THICK. IN.	GAGE	DIMENSIONS (inches)				L DIMENSIONS			
			A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
36	.109	12	12	9	42	66	4:1	104	6:1	156
42	.109	12	16	12	48	80	4:1	128	6:1	192
48	.109	12	16	12	54	86	4:1	152	6:1	228
54	.109	12	16	12	60	92	4:1	176	6:1	264
60	.109	12	16	12	66	98	4:1	200	6:1	300



STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED CROSS DRAINS											
EQUIV. DIA. (IN.)	INCHES		MIN. THICK. IN.	GAGE	DIMENSIONS (inches)				L DIMENSIONS		
	SPAN	RISE			A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	LENGTH INCHES
30	35	24	.079	14	12	9	41	65	4:1	56	84
36	42	29	.109	12	12	9	48	72	4:1	76	114
42	49	33	.109	12	16	12	55	87	4:1	92	138
48	57	38	.109	12	16	12	63	95	4:1	112	168
54	64	43	.109	12	16	12	70	102	4:1	132	198
60	71	47	.109	12	16	12	77	109	4:1	148	222



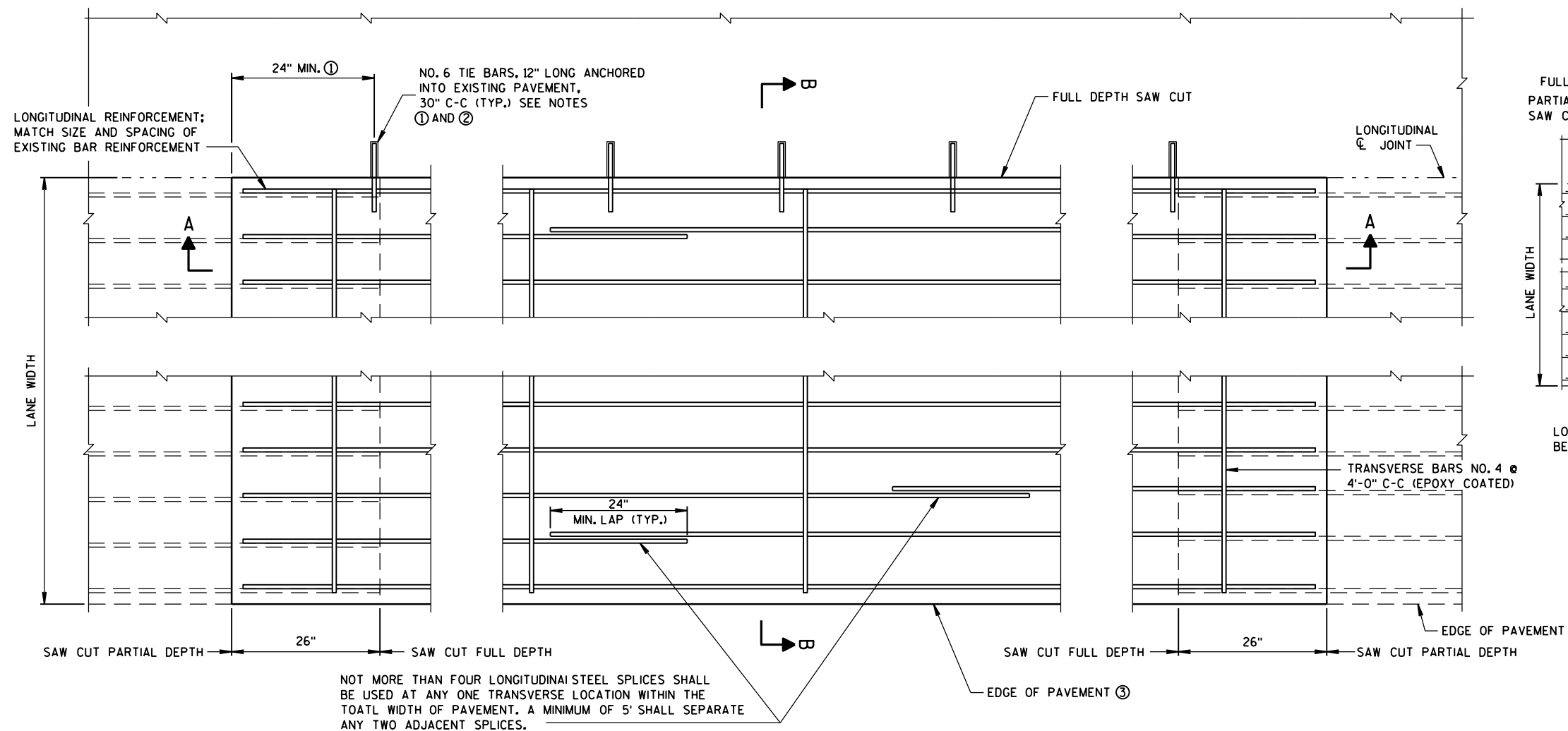
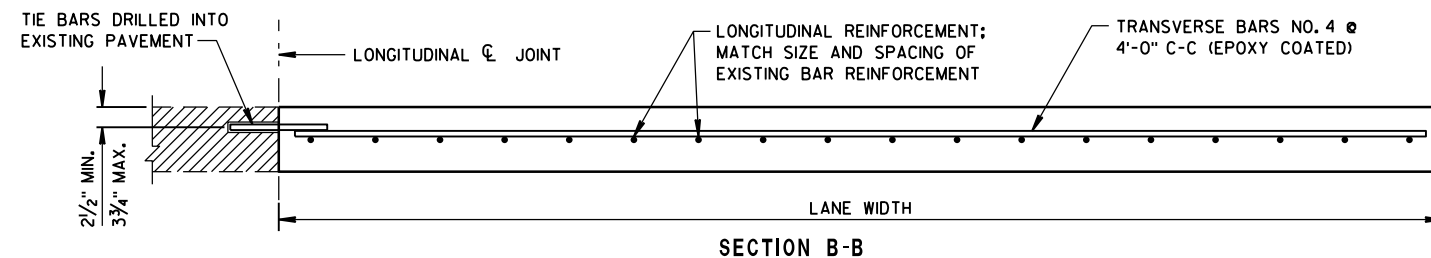
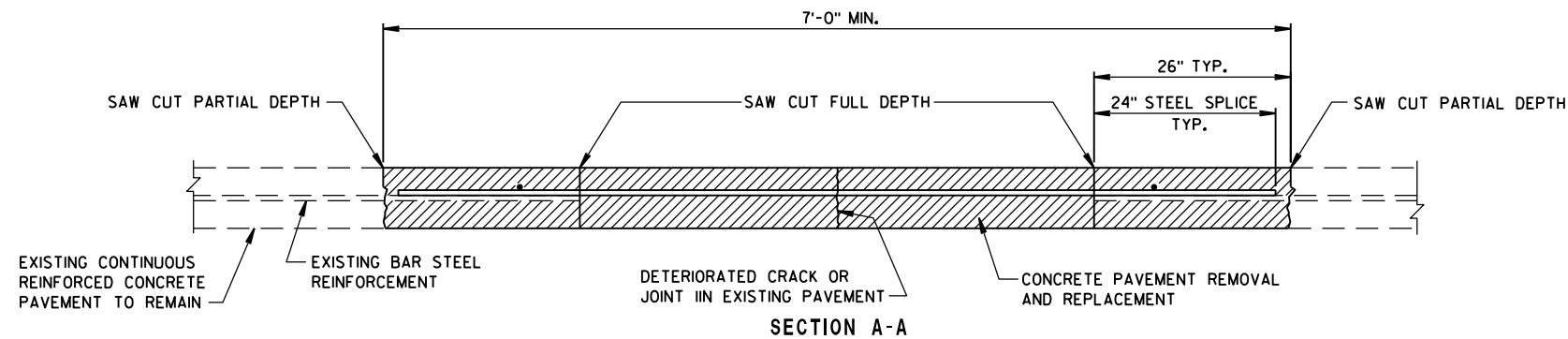
STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED CROSS DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 6/5/2012 /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



SDD 13a7 Continuously Reinforced Concrete Pavement Repair and Replacement



GENERAL NOTES

PLACE ALL BAR STEEL REINFORCEMENT AT MID PAVEMENT DEPTH UNLESS OTHERWISE NOTED.

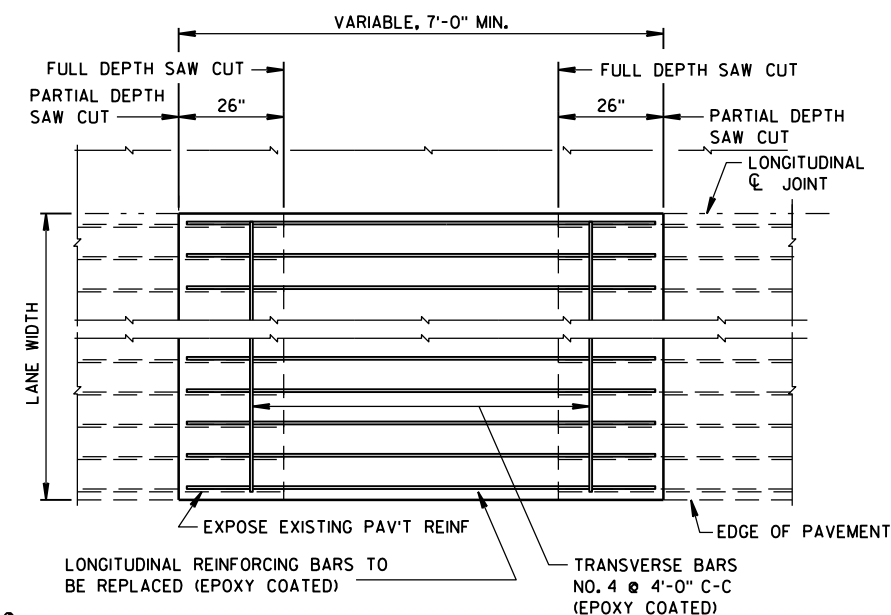
PAY FOR THE TRANSVERSE AND LONGITUDINAL JOINT SAW CUT AS LINEAR FEET OF "SAWING CONCRETE".

WHEN THE PASSING AND TRAVELING LANES ARE TO BE REPLACED, REPLACE THE PASSING LANE FIRST.

ADD TRANSVERSE STEEL BARS TO REPAIRS GREATER THAN 6' IN LENGTH, USE NO. 4 BARS PLACED TRANSVERSELY AND SPACED 4' C-C. PAYMENT SHALL BE INCIDENTAL TO "CONCRETE PAVEMENT CONTINUOUS REINFORCEMENT".

TIE ALL CONCRETE PAVEMENT REPAIRS WHICH ARE GREATER THAN 15' IN LENGTH, AND ARE ADJACENT TO EXISTING CONCRETE PAVEMENT, TO THE EXISTING PAVEMENT USING TIE BARS. DETAILS FOR TIE BAR CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS AND STANDARD DETAIL DRAWINGS.

- ① PROVIDE A MINIMUM DISTANCE OF 24 INCHES FROM AN EXISTING TRANSVERSE JOINT OR THE EDGE OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.
- ② ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.
- ③ SAW CUT THE LONGITUDINAL EDGE JOINT IF THE ADJACENT SHOULDER IS CONCRETE.



LONGITUDINAL STEEL PLACEMENT IN CRCP REPAIRS

PLAN VIEW

CONTINUOUSLY REINFORCED
CONCRETE PAVEMENT
REPAIR AND REPLACEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

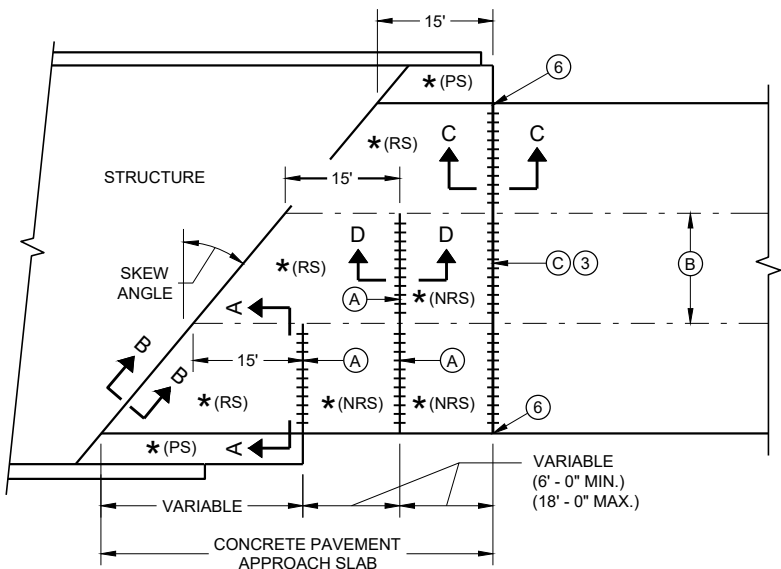
APPROVED

DATE 11/1/2011

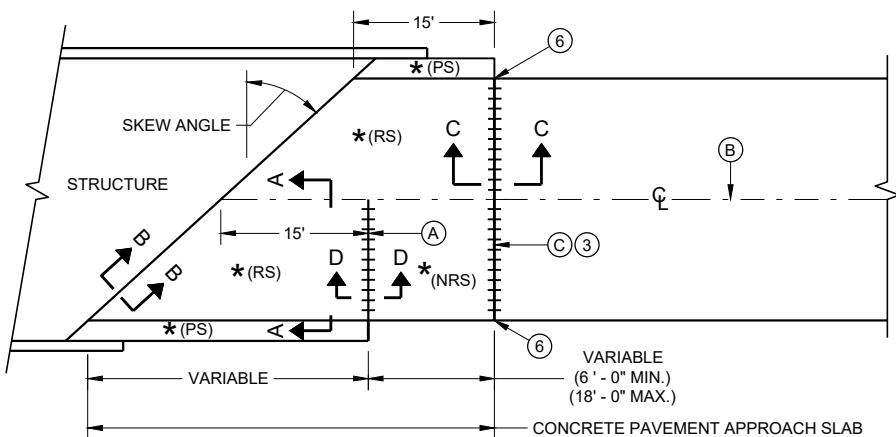
FHWA

/S/ Deb Bischoff
PAVEMENT POLICY & DESIGN ENGINEER

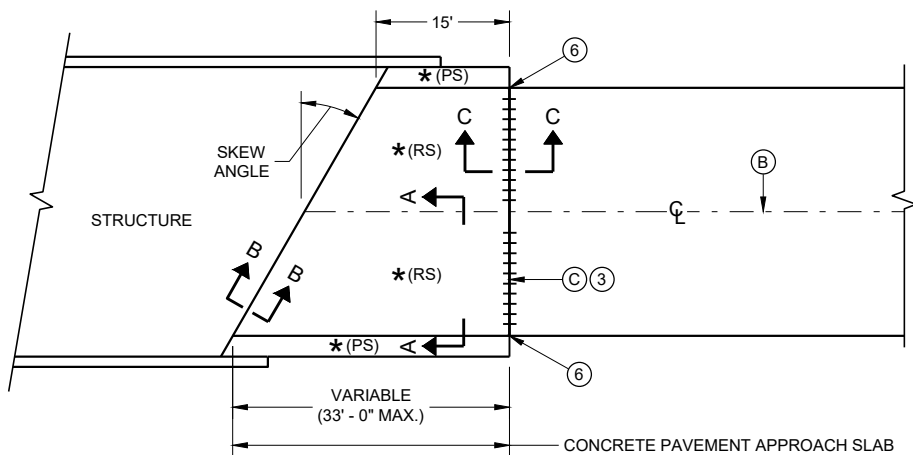
REINFORCEMENT STEEL PLACEMENT IN CONTINUOUSLY REINFORCED CONCRETE PAVEMENT REPLACEMENT



**SKewed APPROACH
(PAVEMENT MORE THAN TWO LANES)**



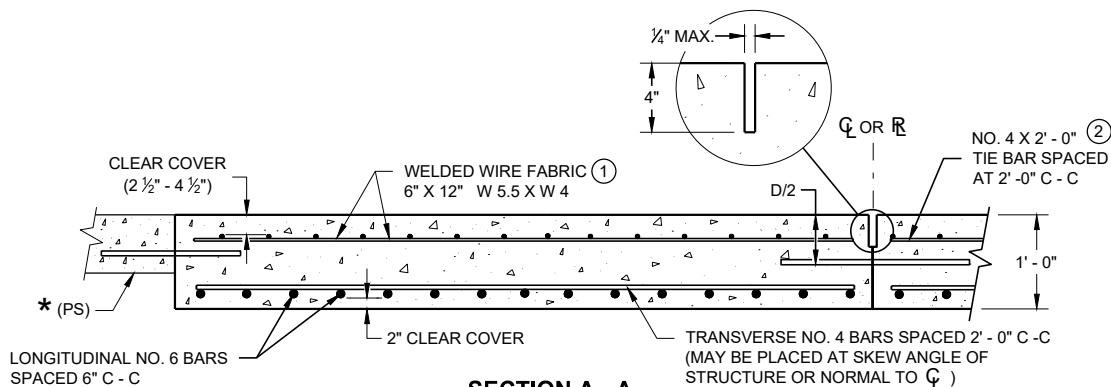
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



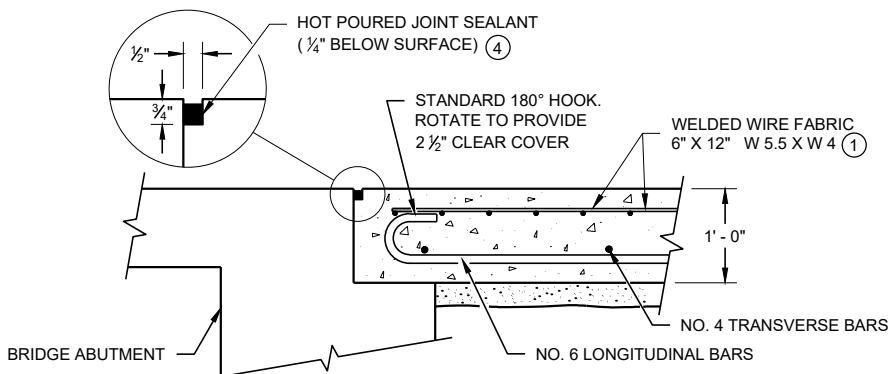
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

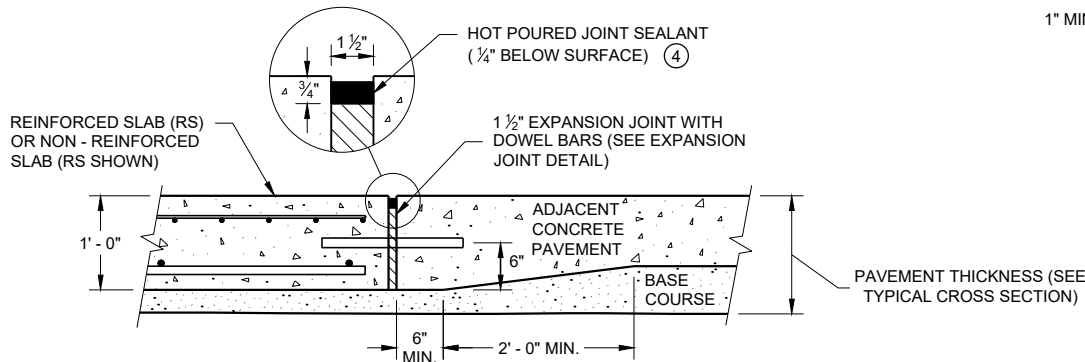
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



**SECTION B - B
BEND DETAIL
BOTTOM REINFORCEMENT**



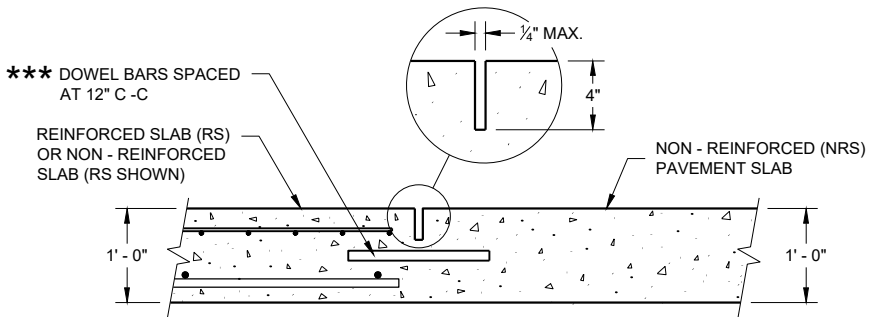
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

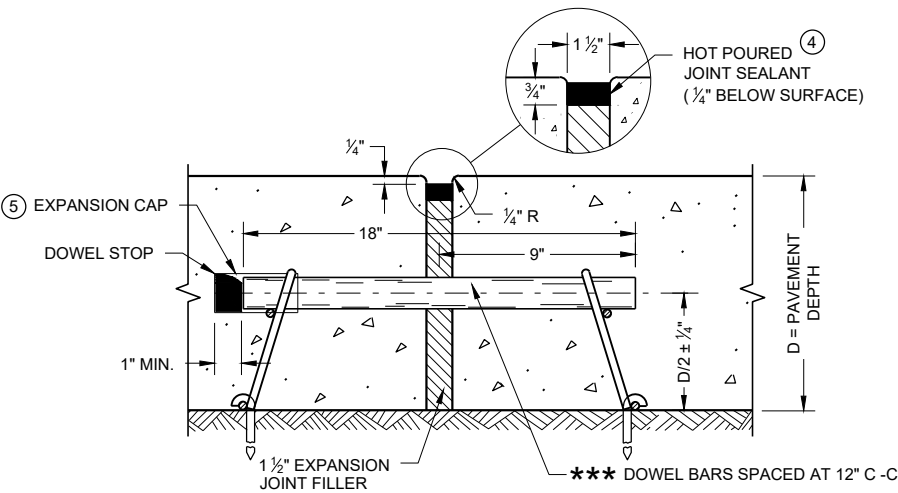
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- STANDARD CONTRACTION JOINT NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.
- STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.



**SECTION D - D
CONTRACTION JOINT**



EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

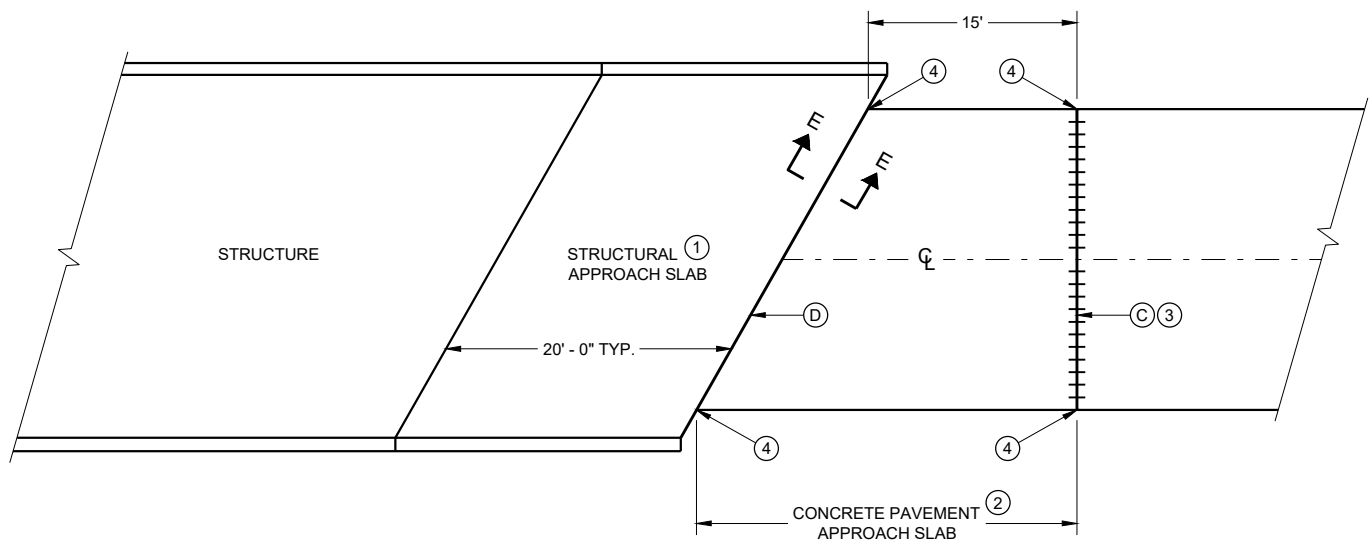
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR

FHWA



SDD 13B02-b Structural Approach Slab and Concrete Pavement Approach Slab

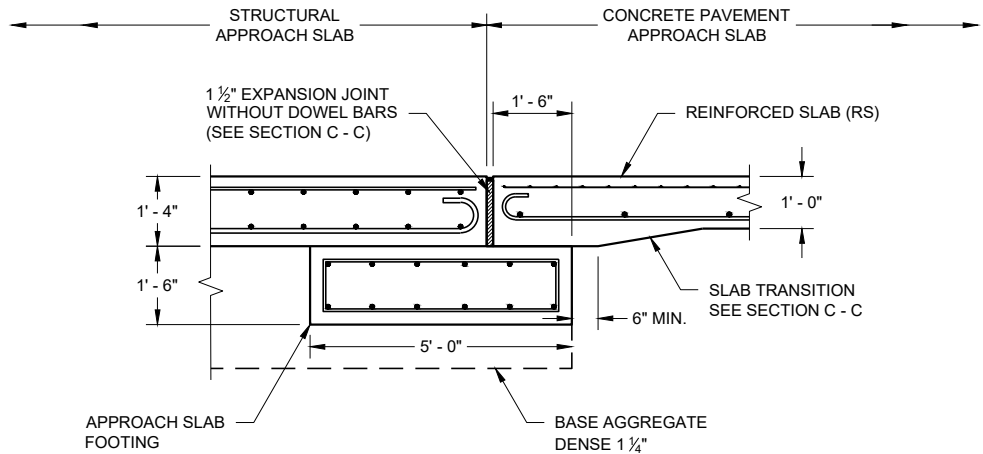


GENERAL NOTES

ALL PROJECTS THAT INVOLVE A STRUCTURAL APPROACH SLAB WILL ALSO HAVE A CONCRETE PAVEMENT APPROACH SLAB.

- (1) SEE BRIDGE PLAN.
- (2) CONFORM TO SDD 13B02 SHEET A FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS
- (3) DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- (4) EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO CL OR RL.
- (D) 1 1/2" EXPANSION JOINT (NO DOWELS)

BRIDGE APPROACHES



SECTION E - E
FOOTING DETAIL
STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH

STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
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APPROVED
November 2018 /S/ Peter Kemp P.E.
DATE PAVEMENT SUPERVISOR
FHWA



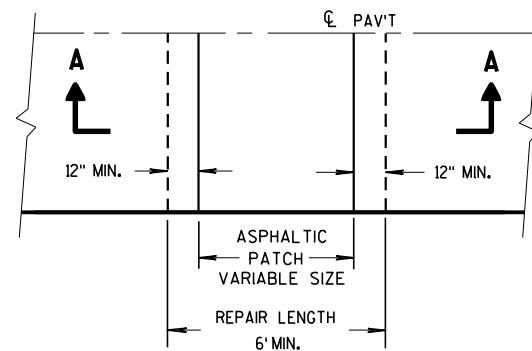
GENERAL NOTES

SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES.

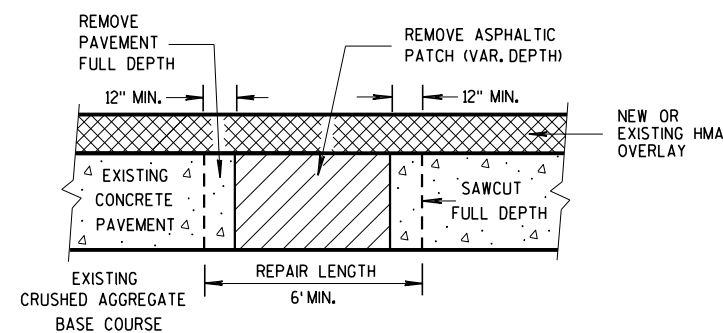
PROVIDE 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS TO ADJACENT TRANSVERSE JOINT OR CRACK.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NONDOWELED AND THE PAVEMENT IS TO BE OVERLAID AFTER REPAIRING.

① DOWEL BARS MIGHT NOT EXIST.

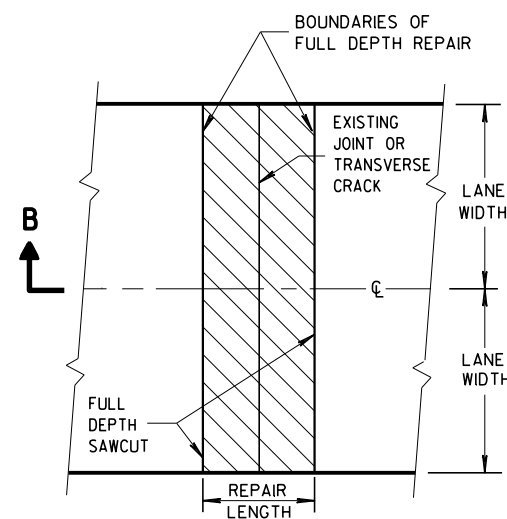


PLAN VIEW

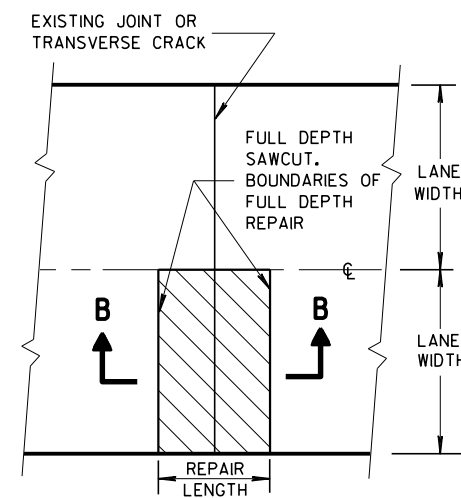


SECTION A-A

HMA PATCH REMOVAL

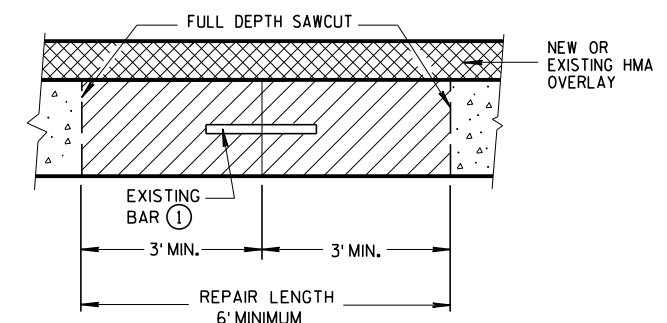


PLAN VIEW
(DOUBLE LANE REPAIR)



PLAN VIEW
(SINGLE LANE REPAIR)

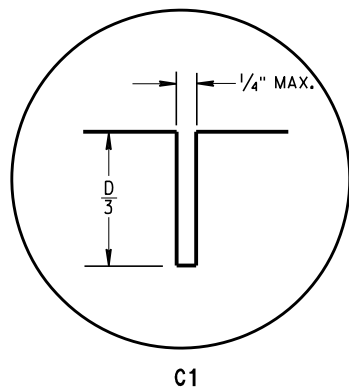
FULL DEPTH CONCRETE PAVEMENT REMOVAL



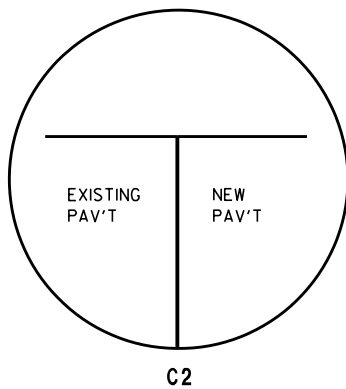
SECTION B-B
CONCRETE REMOVAL

BASE PATCHING CONCRETE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

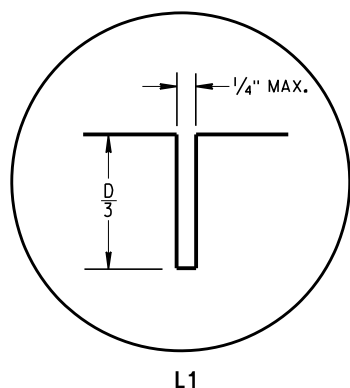


C1

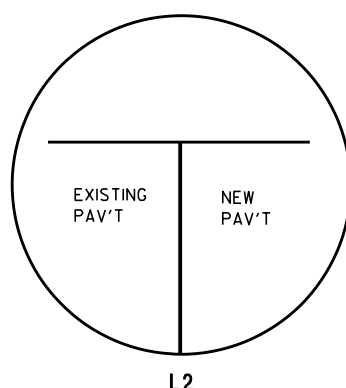


C2

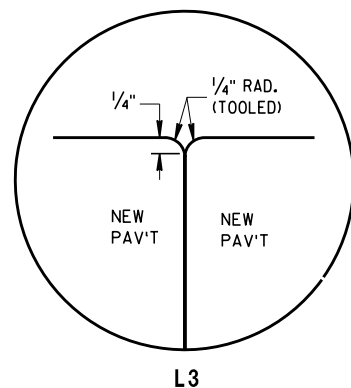
TRANSVERSE JOINTS



L1

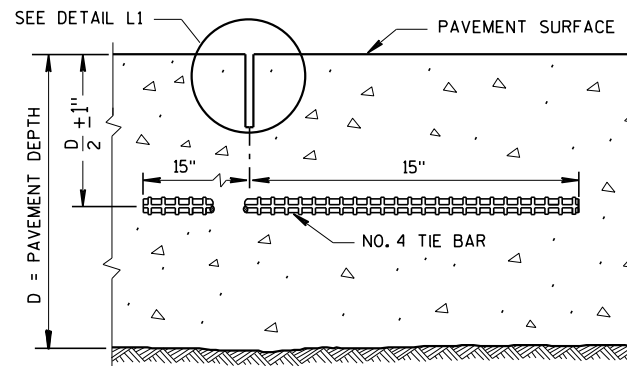


L2

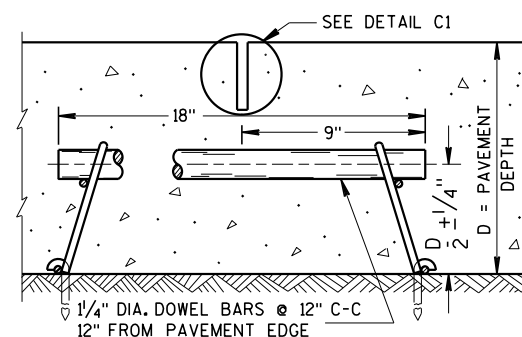


L3

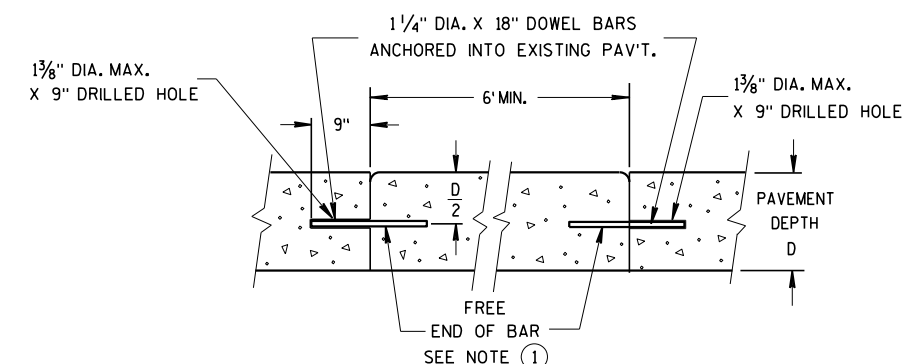
LONGITUDINAL JOINTS



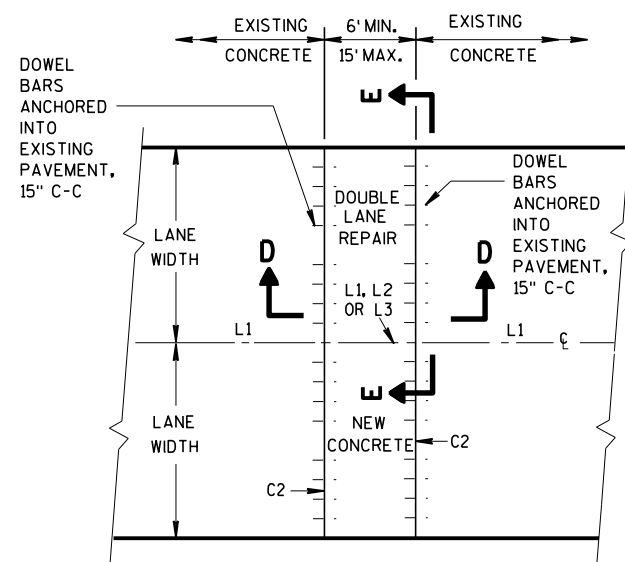
SECTION C-C
SAWED LONGITUDINAL JOINT



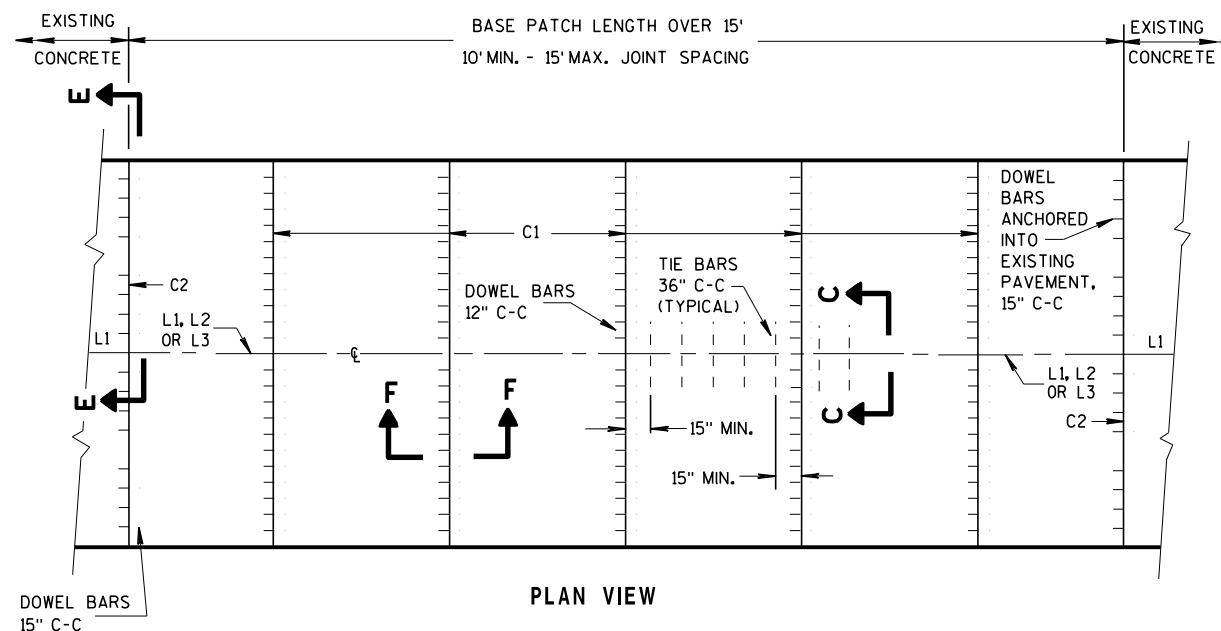
SECTION F-F
CONTRACTION JOINT



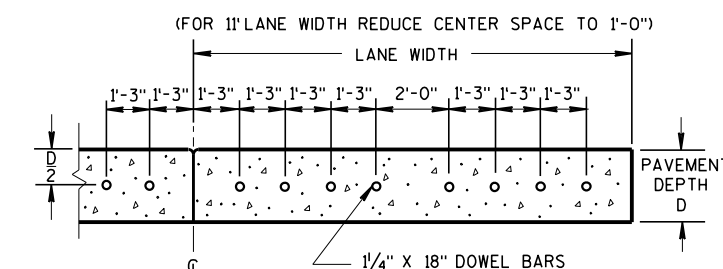
SECTION D-D



PLAN VIEW
MULTI-LANE CONCRETE BASE PATCH
15' MAXIMUM LENGTH



PLAN VIEW
MULTI-LANE CONCRETE BASE PATCH
GREATER THAN 15' IN LENGTH



SECTION E-E
SPACING OF DOWEL BARS
ANCHORED INTO EXISTING PAVEMENT

GENERAL NOTES

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

CONCRETE BASE PATCHES OF EXISTING NONDOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

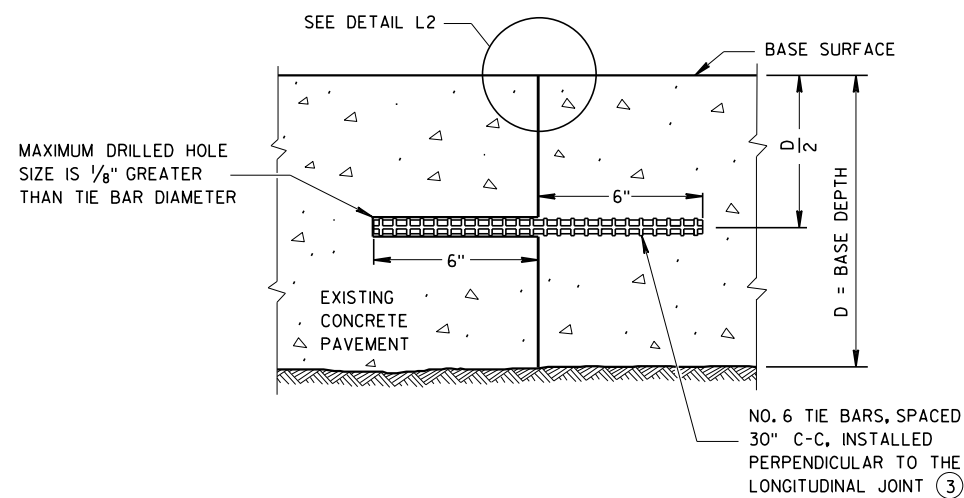
PROVIDE A MINIMUM DISTANCE OF 15 INCHES FROM AN EXISTING TRANSVERSE JOINT OR THE EDGE OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.

- ① APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

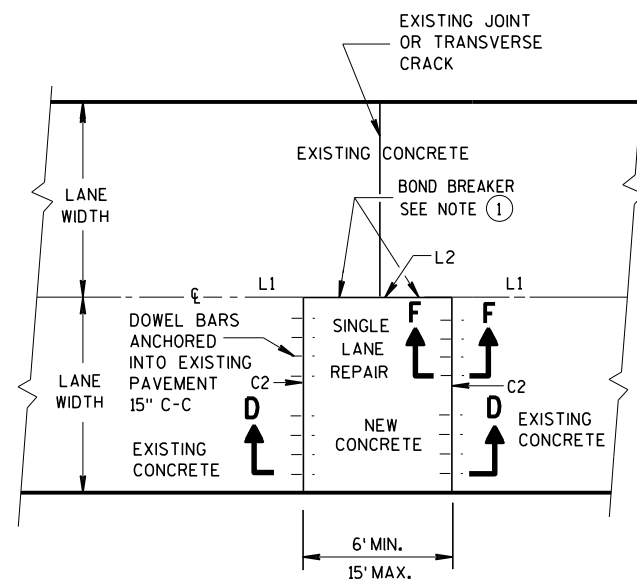


GENERAL NOTES

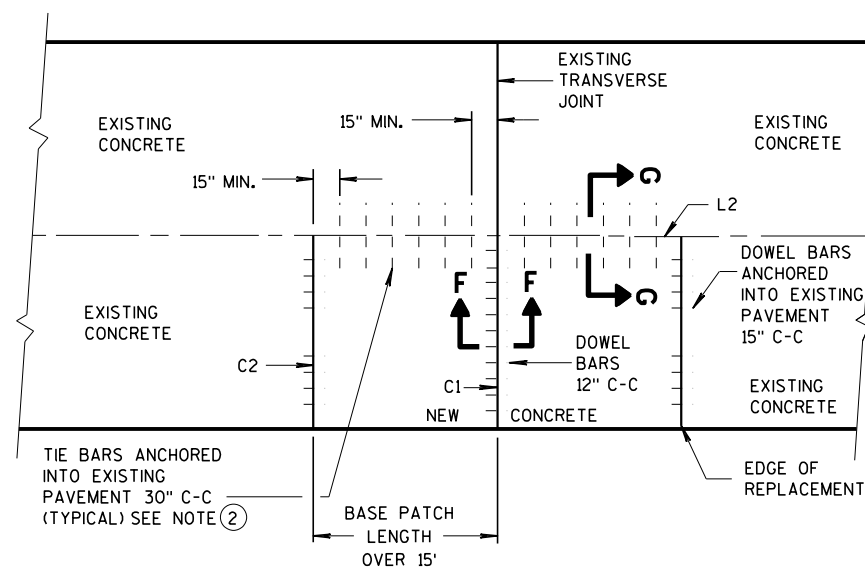
- ① USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SINGLE LANE BASE PATCHES UP TO 15 FEET IN LENGTH.
- ② WITH THE APPROVAL OF THE ENGINEER, FOR SINGLE LANE PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, DRILLED TIE BARS MAY BE INSTALLED ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES IN A HOLE OF SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.
- ③ ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



SECTION G-G
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



PLAN VIEW
SINGLE LANE CONCRETE BASE PATCH
15' MAXIMUM LENGTH



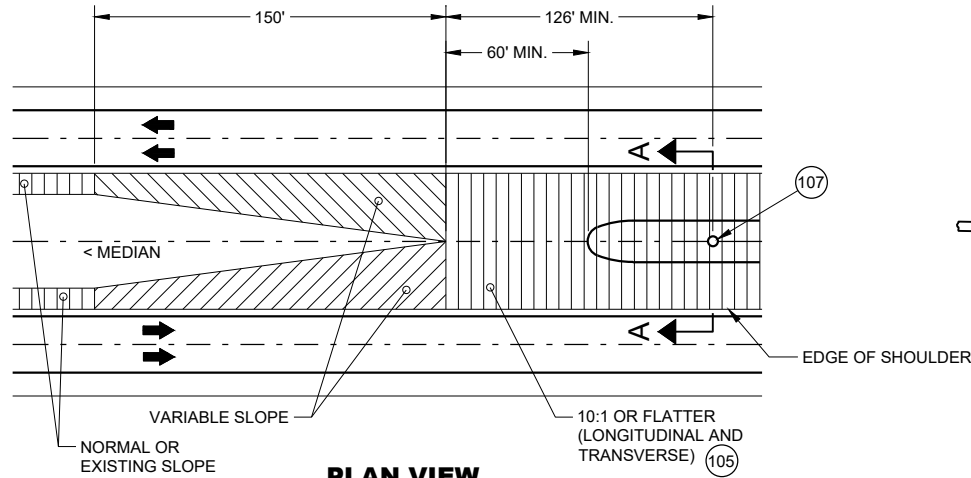
PLAN VIEW
SINGLE LANE CONCRETE BASE PATCH
GREATER THAN 15' IN LENGTH

BASE PATCHING CONCRETE

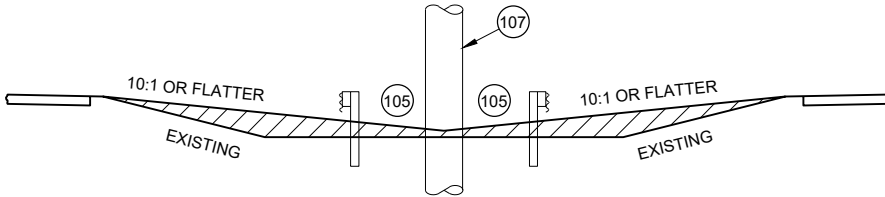
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA

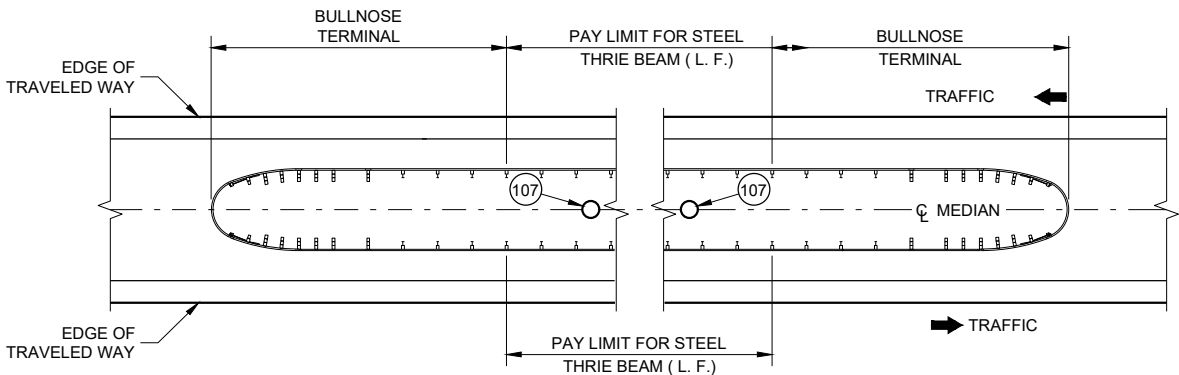
SDD 14B26-a Steel Thrie Beam Bullnose Terminal



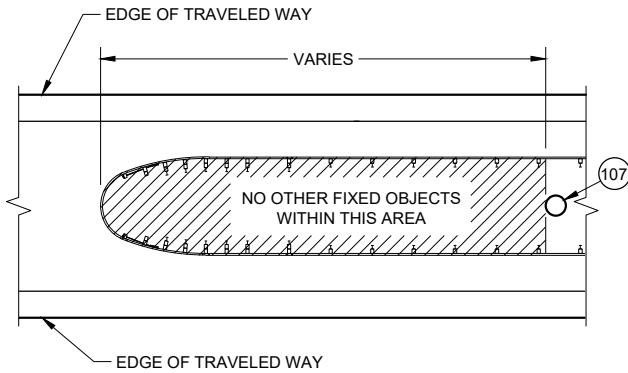
**PLAN VIEW
GRADING AT BULLNOSE**
(ALL INSTALLATIONS)



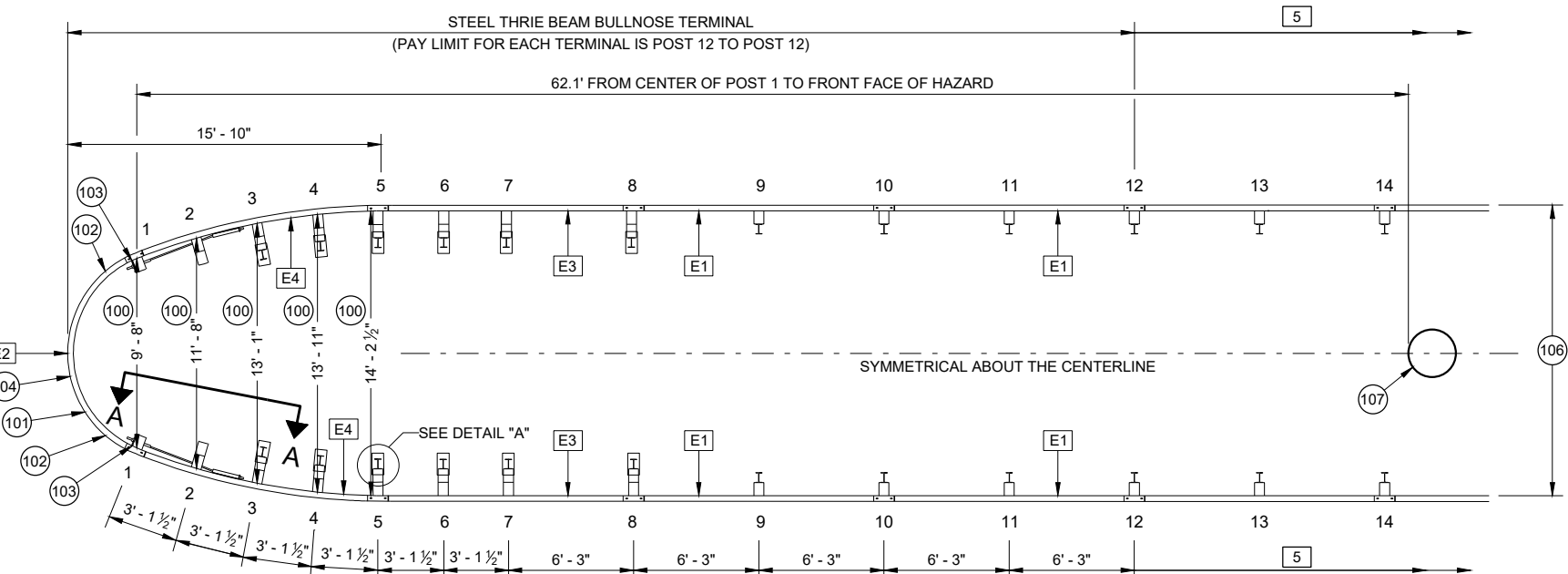
**SECTION A-A
MEDIAN GRADING**
(ALL INSTALLATIONS)



MEDIAN HAZARD PROTECTION PAY LIMITS



**HAZARD FREE AREA
INSIDE BULLNOSE**



**PLAN VIEW
TYPICAL BULLNOSE LAYOUT**

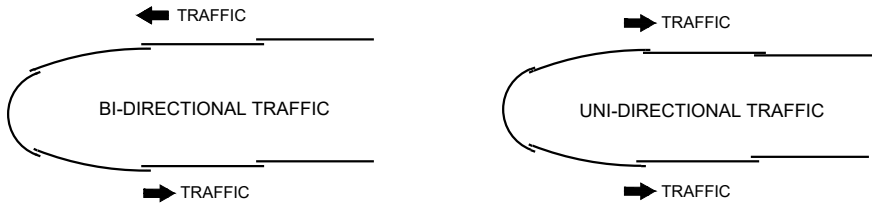
GENERAL NOTES

THRIE BEAM RAILS MAY NEED TO BE FIELD BENT TO FIT THE LOCATION.

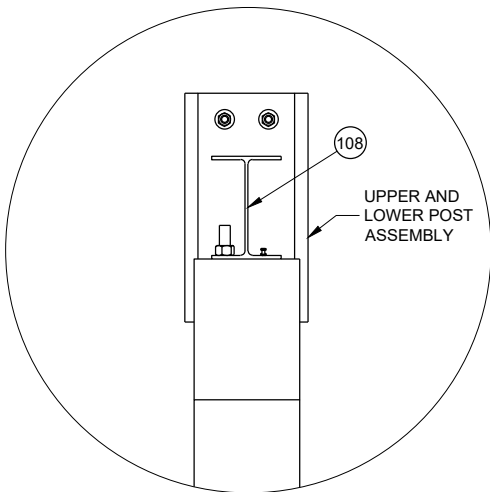
SEE STANDARD DETAIL DRAWINGS 14B26 SHEETS a-h.

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2". MINIMUM DIAMETER OF THE ROCK REMOVAL IS 12" DIAMETER

- [E1] UNBENT STANDARD THRIE BEAM RAIL B1 (POST 8 TO POST 10 AND POST 10 TO POST 12)
- [E2] SLOTTED THRIE BEAM RAIL E1 (POST 1 TO POST 1)
- [E3] SLOTTED THRIE BEAM RAIL B3 (POST 5 TO POST 8)
- [E4] SLOTTED THRIE BEAM RAIL E4 (POST 1 TO POST 5)
- [5] BEYOND POST 12: CONSTRUCT STEEL THRIE BEAM - USE UNBENT STANDARD THRIE BEAM RAIL NO. 5.
- (100) DIMENSIONS ARE FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO POST OR BLOCK.
- (101) U-BOLT CABLE CLIPS (3 PER CABLE) SPACED OUT ON NOSE, TO HOLD CABLE TO BACKSIDE OF THE RAIL.
- (102) NOSE CABLE WITH SWAGGED END BUTTONS.
- (103) NOSE CABLE ANCHOR PLATE (BACKSIDE OF SPLICE).
- (104) THE SLACK IN THE NOSE CABLES SHALL BE EVENLY DISTRIBUTED BETWEEN THE CABLE CLIP FASTENERS AND POST NO. 1 ON EITHER SIDE OF THE NOSE.
- (105) MINIMUM WORKING WIDTH 4' - 2".
- (106) MAX. WIDTH OF SYSTEM IS 14' - 2 1/2" MEASURED FROM THE BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO A POST OR BLOCK.
- (107) FIXED OBJECT OR OTHER HAZARD.
- (108) PLAN IS TO PROVIDE STATION OFFSET TO CENTER OF POST 5 IN PLANS.



LAPPING DETAIL

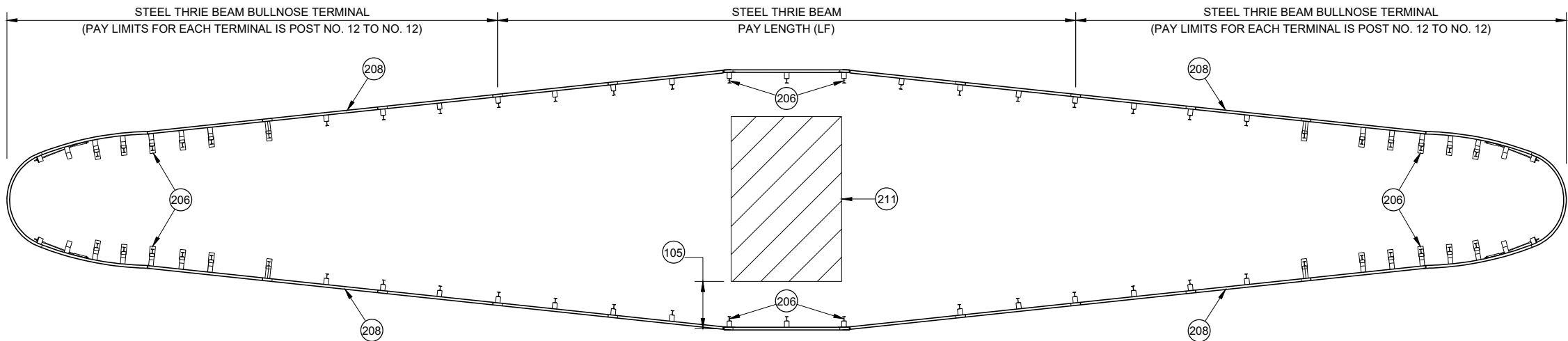


DETAIL "A"

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

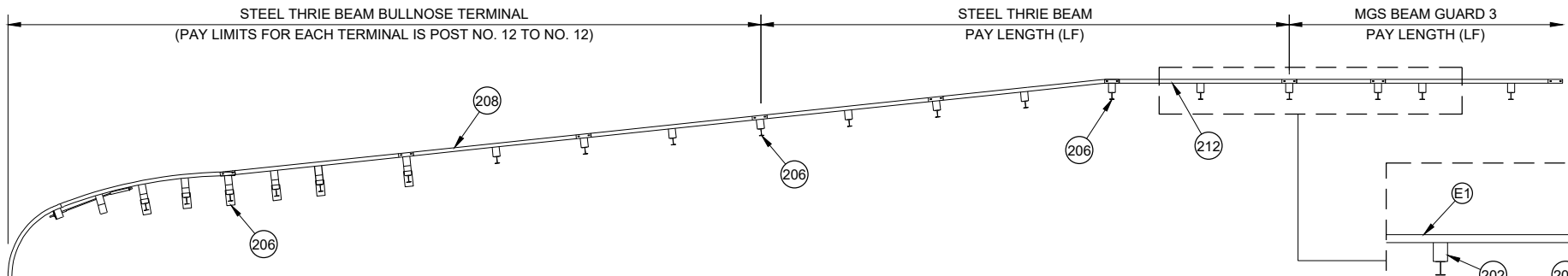
SDD 14B26-b Variable Width Steel Thrie Beam Bullnose Terminal



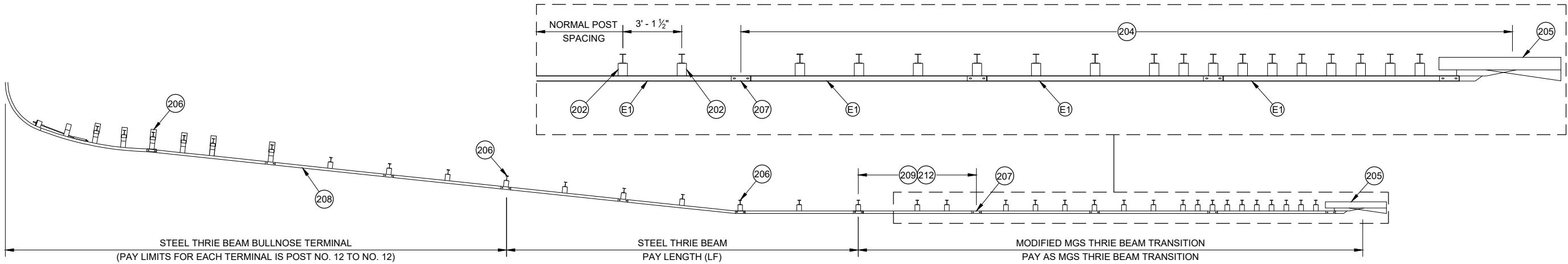
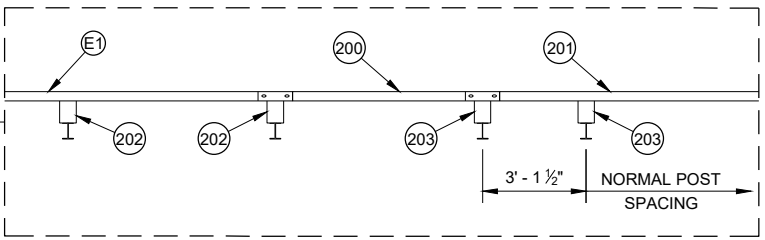
VARIABLE WIDTH BULLNOSE

GENERAL NOTES

- 200 6' - 3" ASYMMETRICAL 10-GAUGE W-BEAM TO THRIE BEAM GUARD TRANSITION. SEE SDD 14B45 FOR MORE INFORMATION.
- 201 W-BEAM RAIL. SEE SDD 14B42 FOR MORE INFORMATION.
- 202 SEE POST NO. 9 AND ALL STEEL THRIE BEAM POST BEYOND DETAIL.
- 203 SEE SDD 14B42 FOR INSTALLATION INFORMATION.
- 204 SEE SDD 14B45 FOR INSTALLATION DETAILS. REPLACE ASYMMETRICAL W-BEAM TO THRIE BEAM TRANSITION AND W-BEAM RAIL WITH E1. PAY FOR MODIFIED THRIE BEAM TRANSITION.
- 205 CONCRETE BARRIER OR BRIDGE RAIL.
- 206 SEE PLAN FOR STATION AND OFFSET TO CENTER OF POST.
- 207 SEE PLAN FOR STATION AND OFFSET TO CENTER OF SPLICE.
- 208 SEE PLAN FOR FLARE RATE.
- 209 A MINIMUM OF 25 FT OF THRIE BEAM TANGENT BEFORE TRANSITIONING TO BEAM GUARD OR THRIE BEAM TRANSITION.
- 210 NOT ALL BULLNOSE HARDWARE SHOWN. SEE OTHER SHEETS IN 14B26.
- 211 WIDER HAZARD TO BE SHIELDED.
- 212 TRANSITION RAIL HEIGHT TO 31" OVER THE LENGTH OF A 12' - 6" BEAM SECTION.



**1/2 PLAN VIEW
VARIABLE WIDTH BULLNOSE
WITH CONNECTION TO MGS BEAM GUARD**

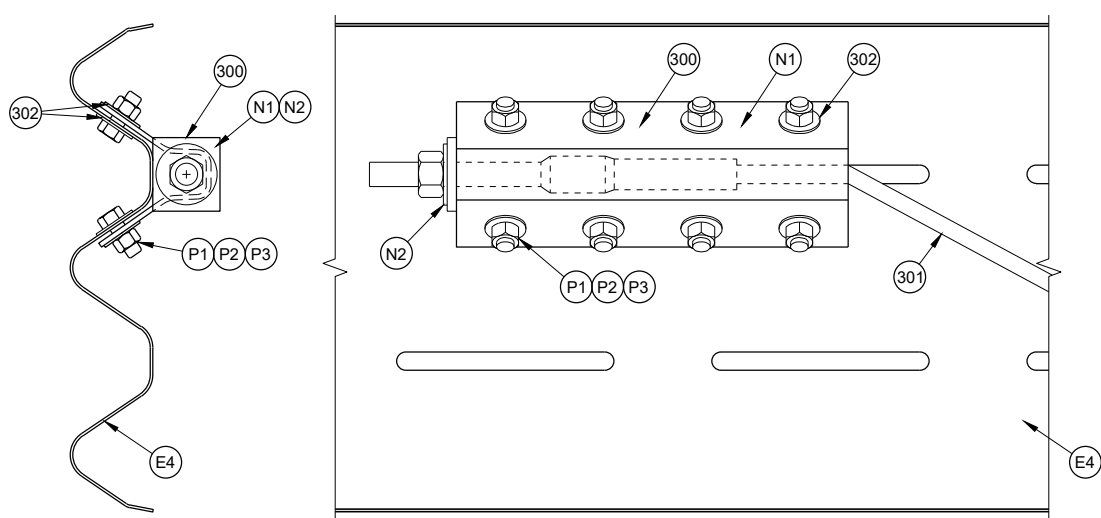


**1/2 PLAN VIEW
VARIABLE WIDTH BULLNOSE
WITH CONNECTION TO RIGID BARRIER**

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

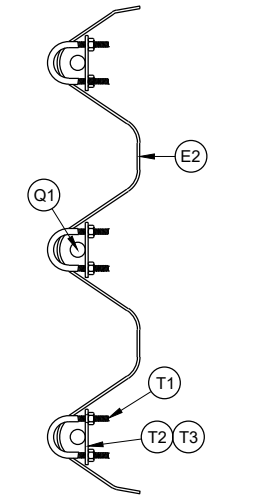
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B26-c Steel Thrie Beam Bullnose Terminal

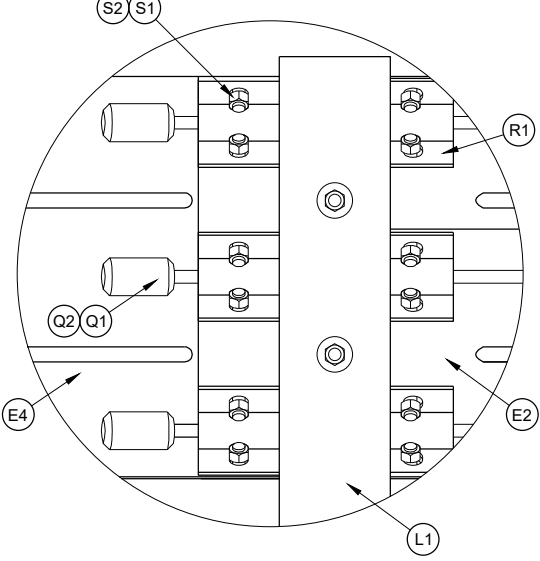


**PROFILE VIEW
CABLE ANCHOR
ASSEMBLY CONNECTION**

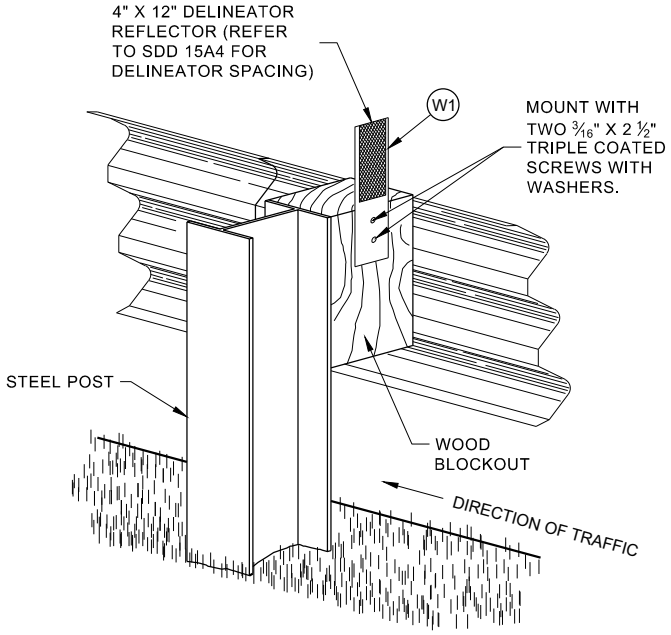
CABLE ANCHOR ASSEMBLY



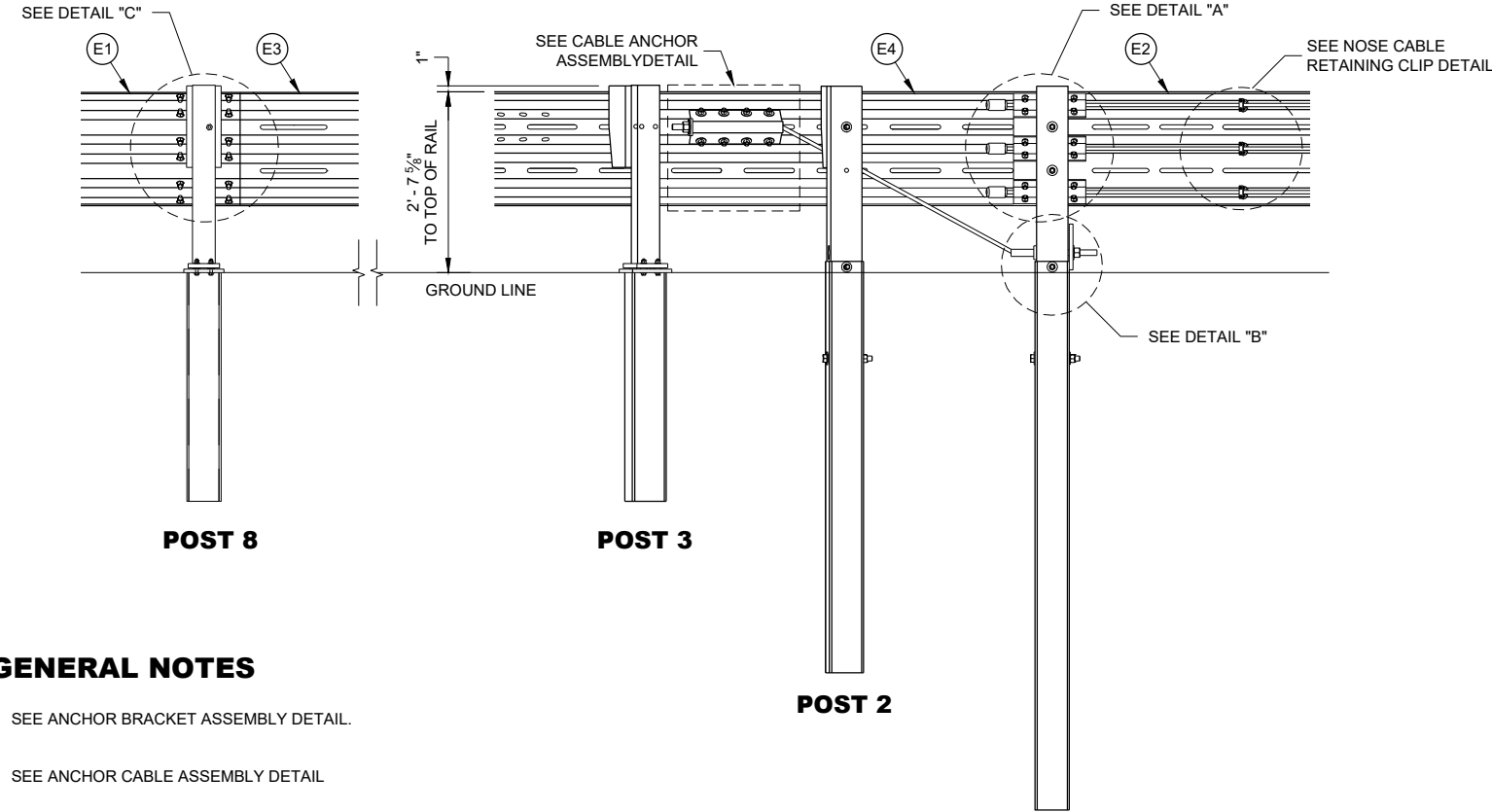
**NOSE CABLE
RETAINING CLIP**



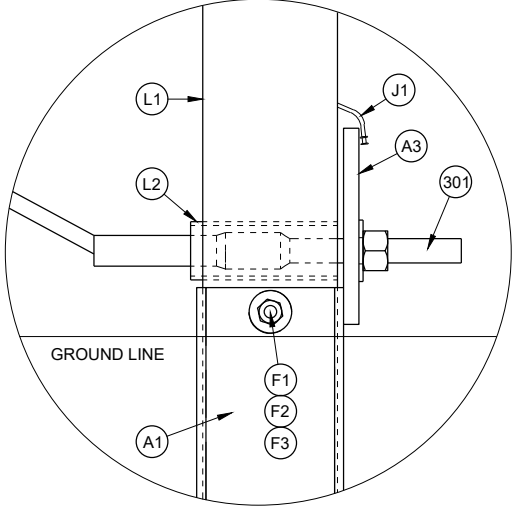
DETAIL "A"



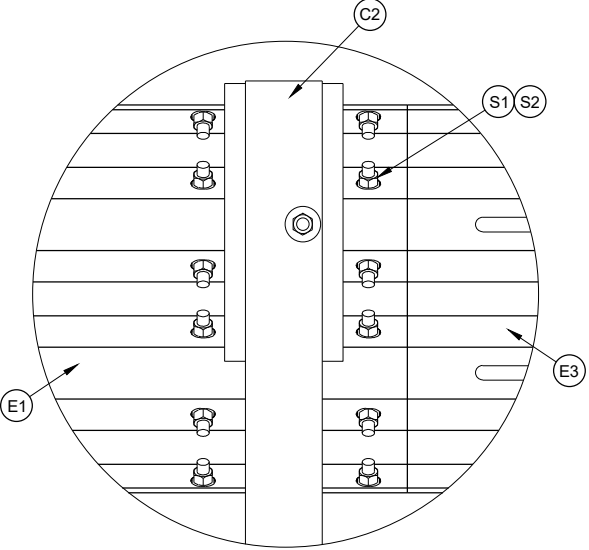
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**



CROSS SECTION A - A



DETAIL "B"



**DETAIL "C"
THRIE BEAM SPLICE**

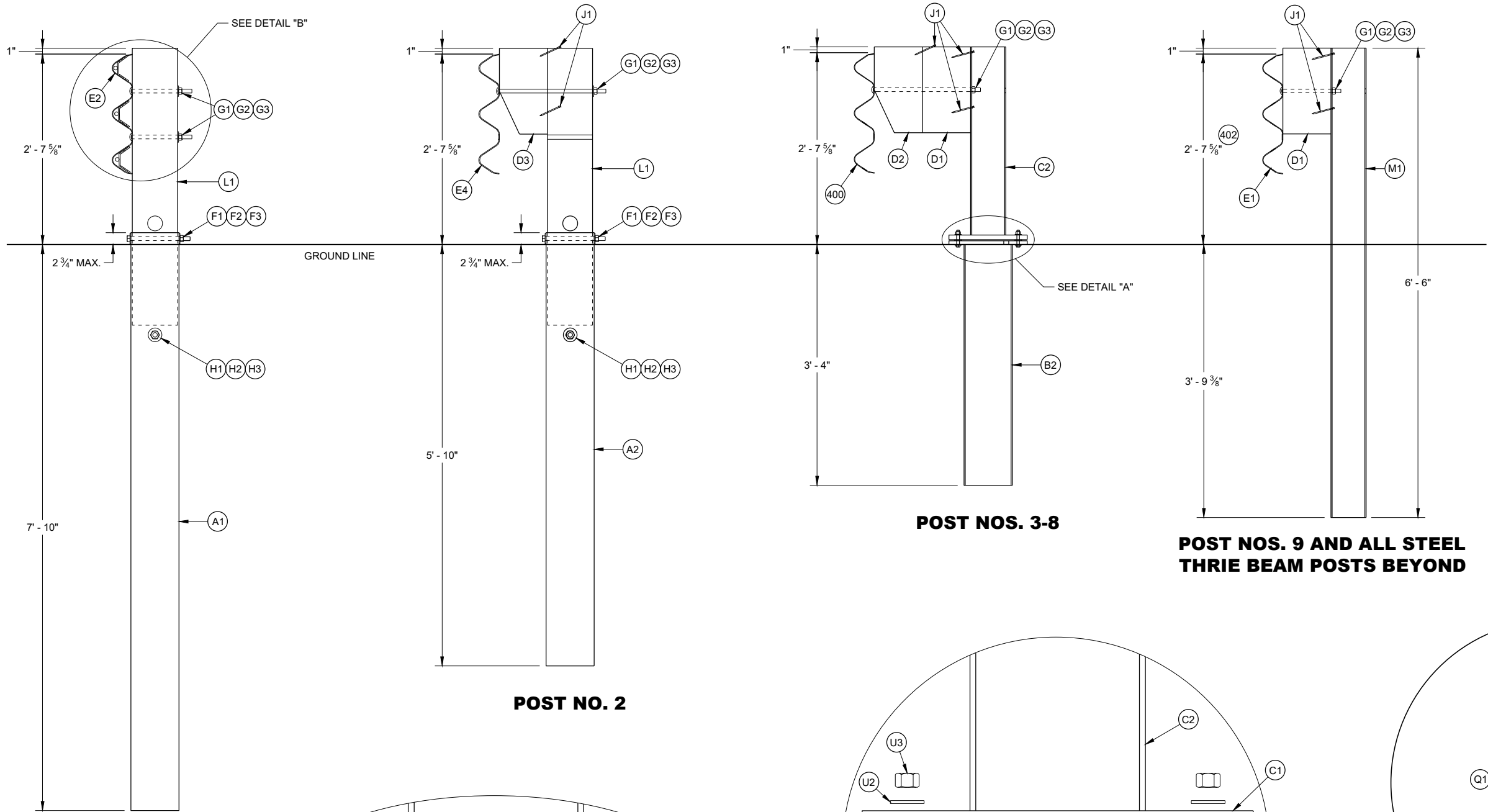
GENERAL NOTES

- (300) SEE ANCHOR BRACKET ASSEMBLY DETAIL.
- (301) SEE ANCHOR CABLE ASSEMBLY DETAIL.
- (302) ONE WASHER BETWEEN BOLT HEAD AND RAIL AND BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.
- (303) ONE WASHER BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B26-d Steel Thrie Beam Bullnose Terminal



GENERAL NOTES

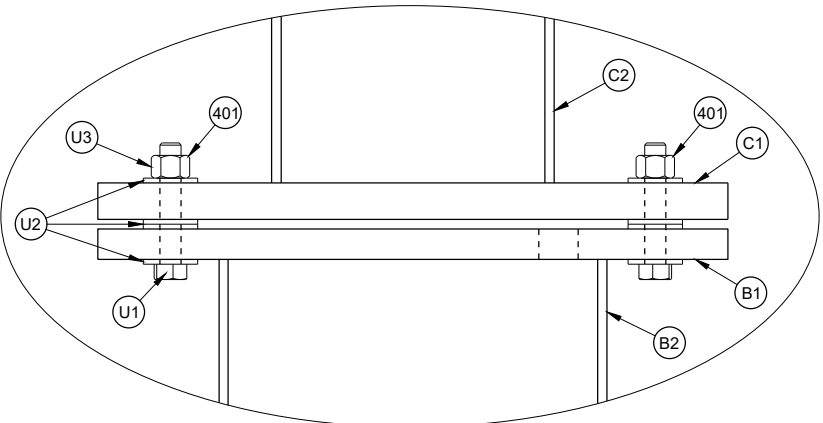
- 400 RAIL CAN BE E3 OR E4 DEPENDING ON POST LOCATION.
- 401 TORQUE BOLD BETWEEN 60-75 FT-LB
- 402 HEIGHT WILL VARY WITHIN HEIGHT TRANSITION TO OTHER HARDWARE. SEE NOTE 213, SHEET "b".

POST NO. 1

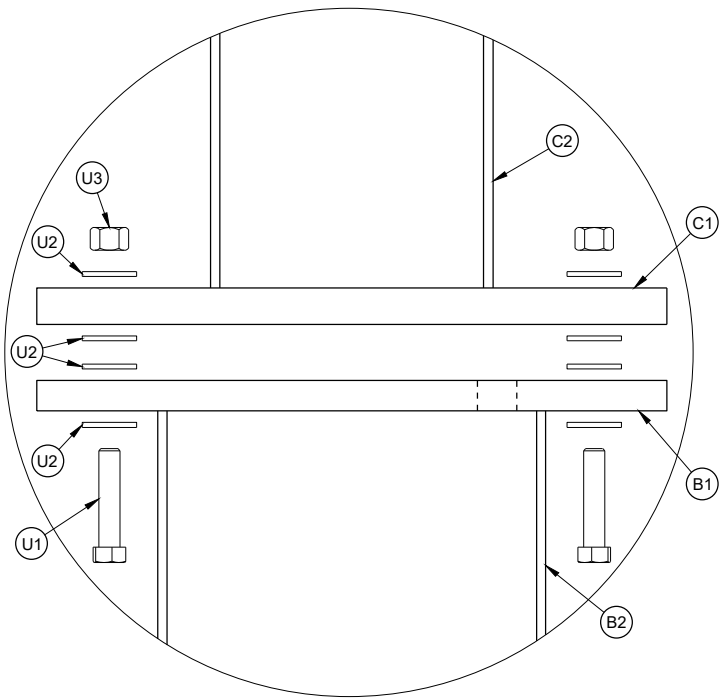
POST NO. 2

POST NOS. 3-8

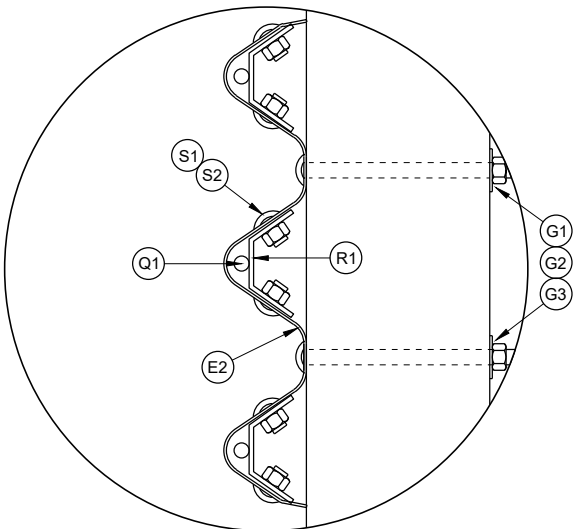
POST NOS. 9 AND ALL STEEL THRIE BEAM POSTS BEYOND



DETAIL "A"



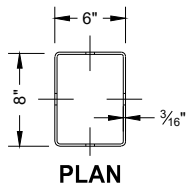
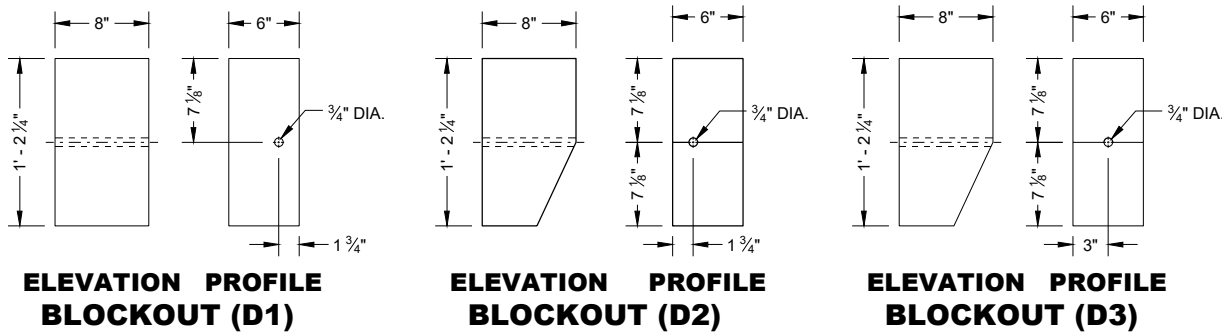
EXPLODED VIEW
DETAIL "A"



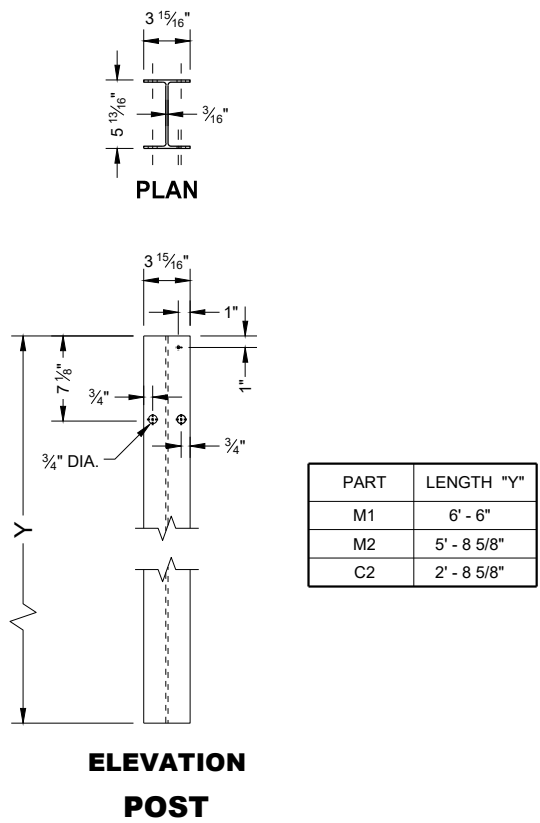
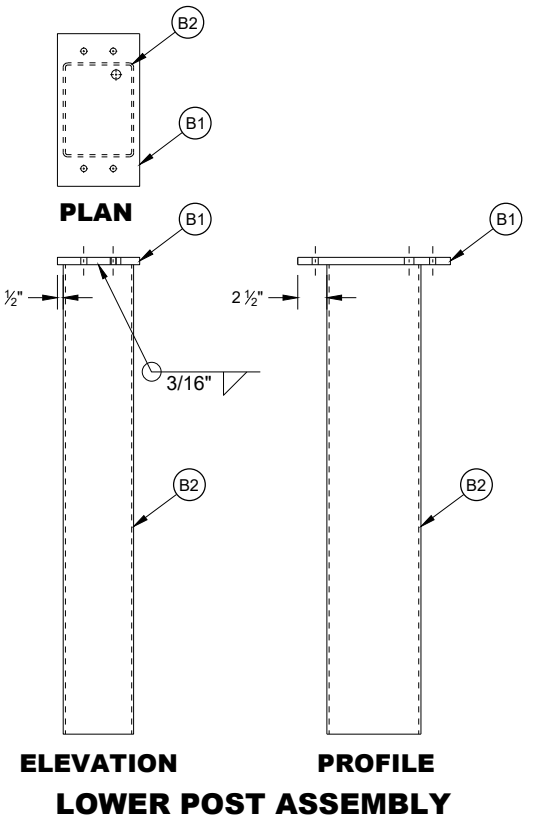
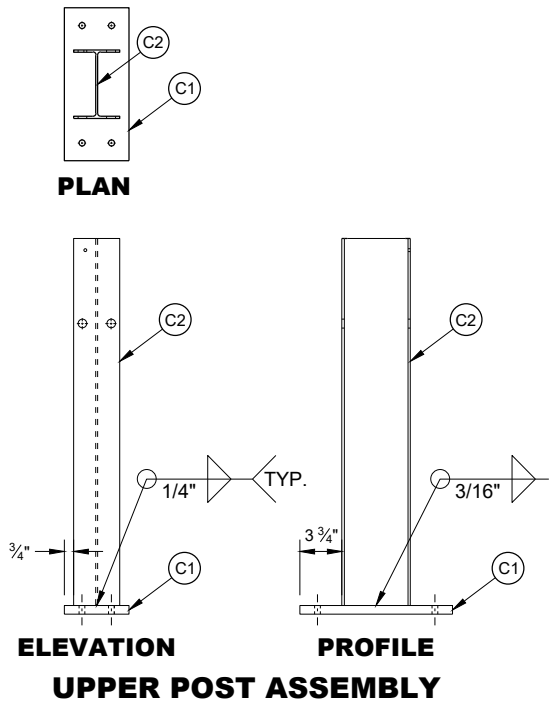
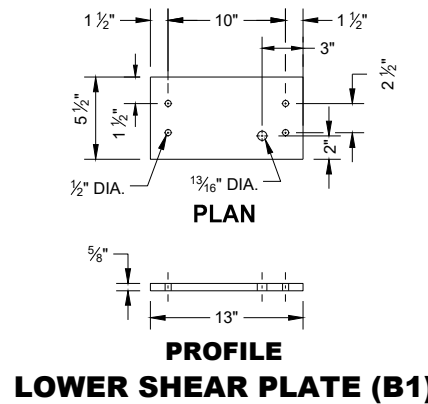
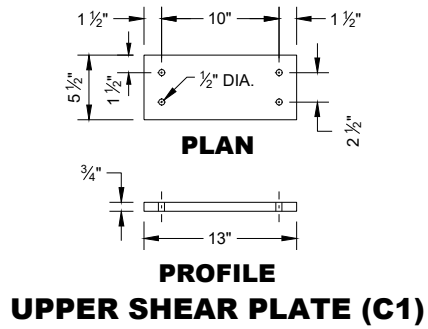
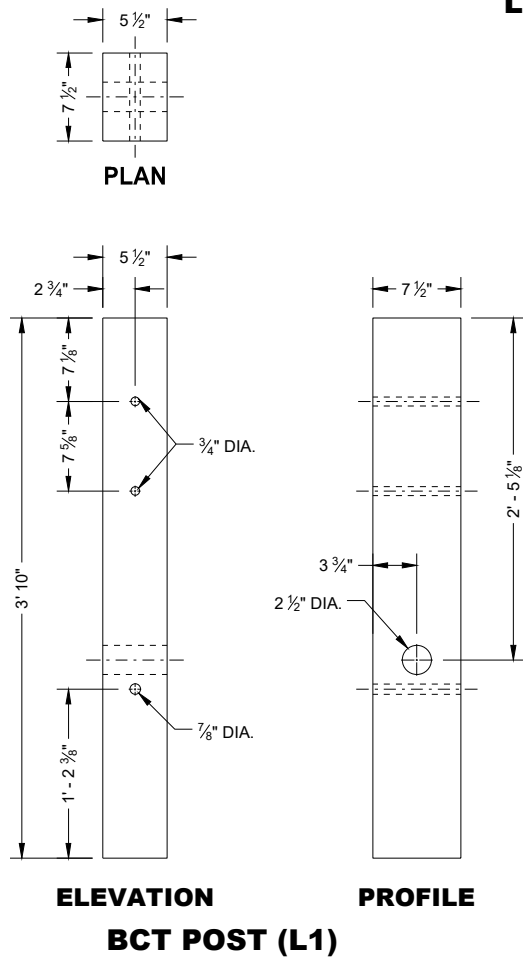
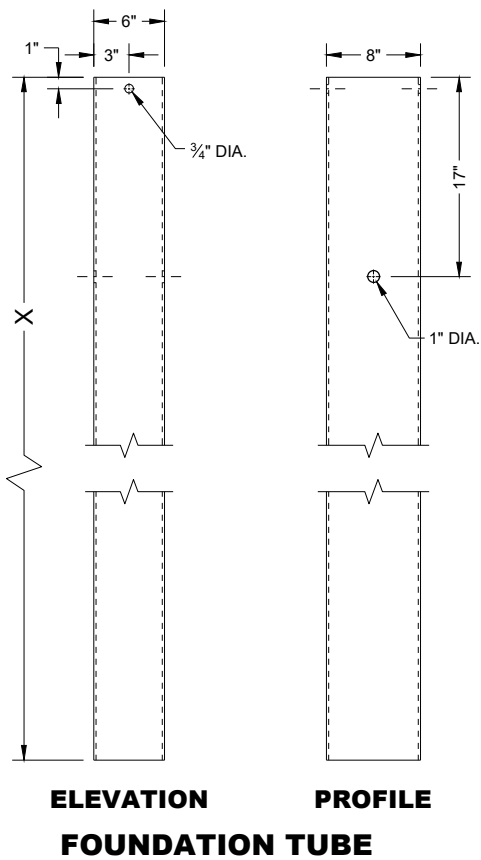
DETAIL "B"

STEEL THRIE BEAM
BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



PART	LENGTH "X"
A1	8' - 0"
A2	6' - 0"
B2	3' - 6"

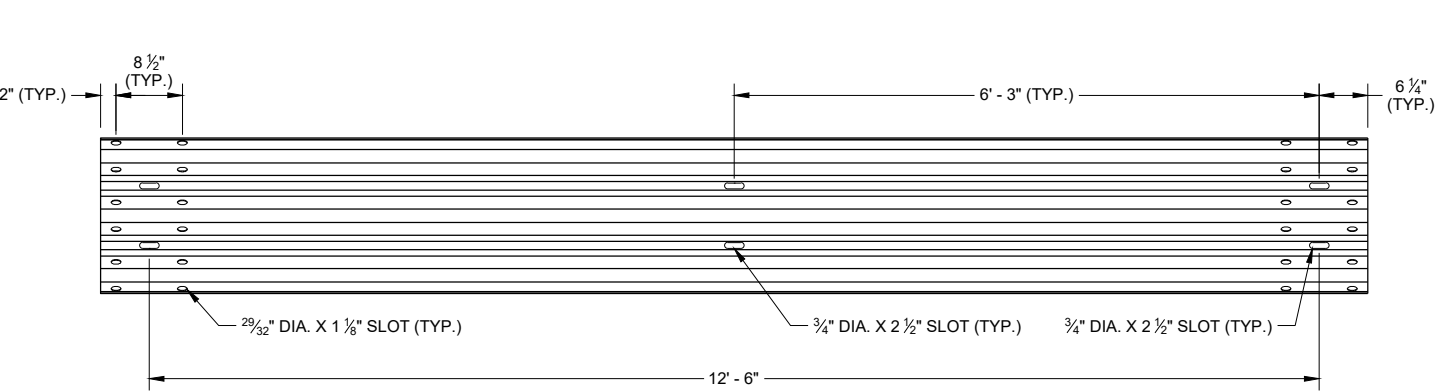


PART	LENGTH "Y"
M1	6' - 6"
M2	5' - 8 5/8"
C2	2' - 8 5/8"

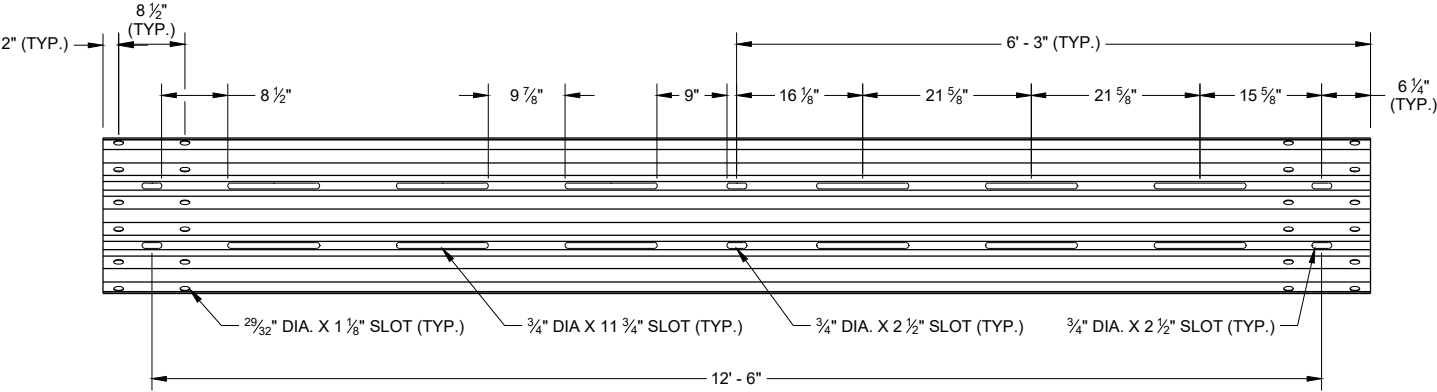
STEEL THRIE BEAM
BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

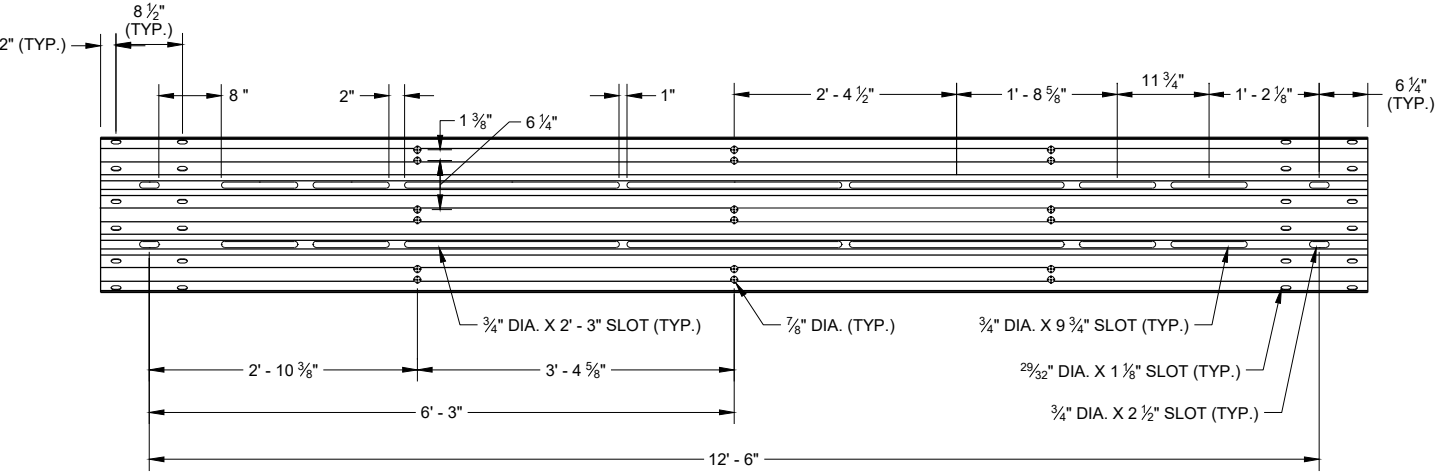
SDD 14B26-f Steel Thrie Beam Bullnose Terminal



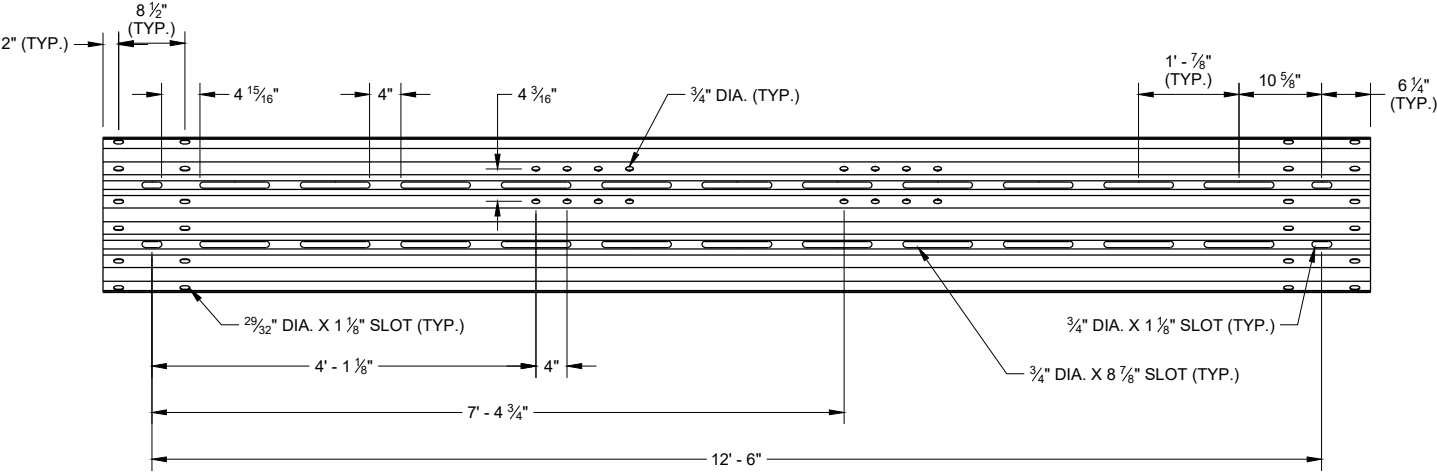
SLOTTED THRIE BEAM RAIL E1



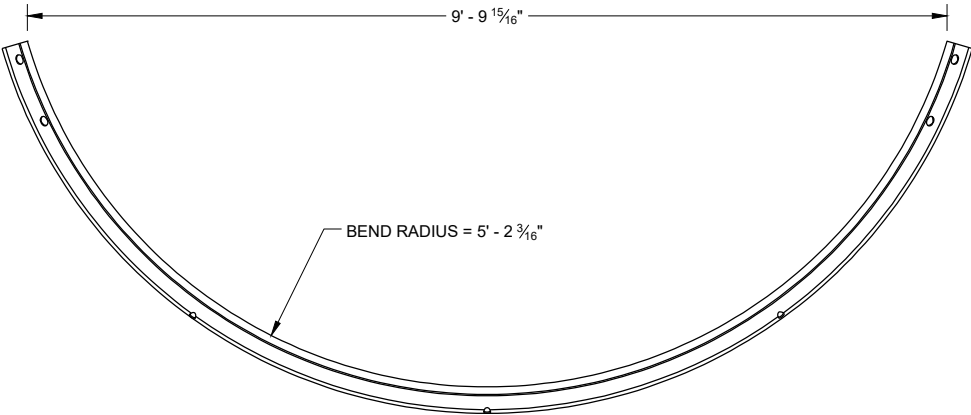
SLOTTED THRIE BEAM RAIL E3



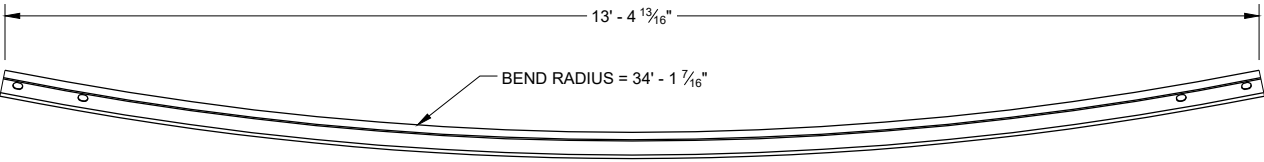
**ELEVATION VIEW NON - RADIUSED
SLOTTED THRIE BEAM RAIL E2**



**ELEVATION VIEW NON - RADIUSED
SLOTTED THRIE BEAM RAIL E4**



**PLAN VIEW
SLOTTED THRIE BEAM RAIL E2**

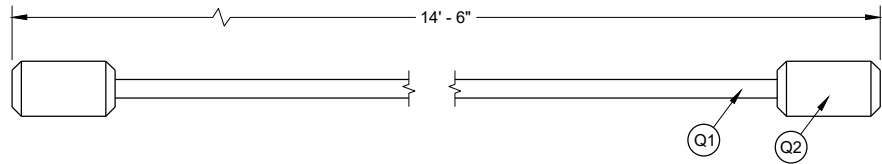


**PLAN VIEW
SLOTTED THRIE BEAM RAIL E4**

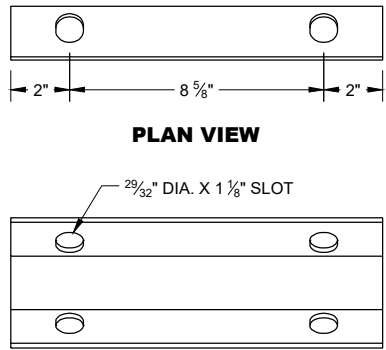
**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

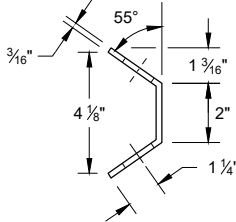
SDD 14B26-g Steel Thrie Beam Bullnose Terminal



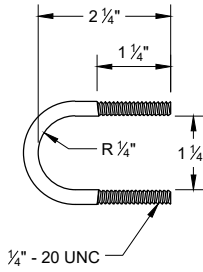
NOSE CABLE AND SWAGE BUTTON



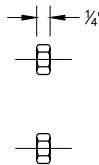
**ELEVATION VIEW
NOSE CABLE ANCHOR (R1)**



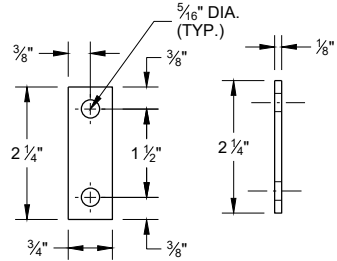
PROFILE VIEW



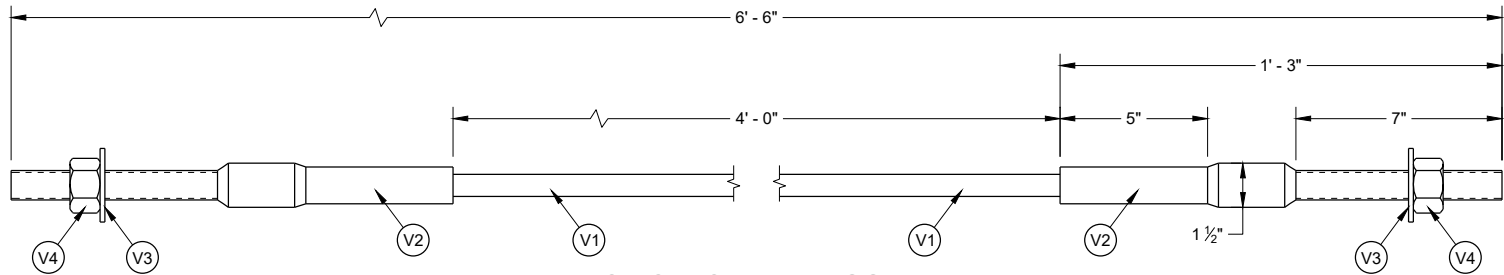
**U - BOLT
(T1)**



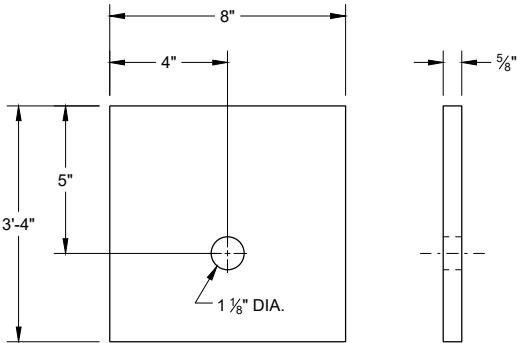
**U - BOLT
NUT (T3)**



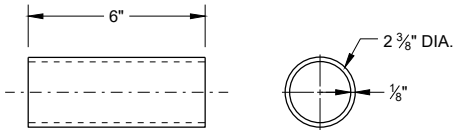
**ELEVATION VIEW PROFILE VIEW
U - BOLT
PLATE WASHER (T2)**



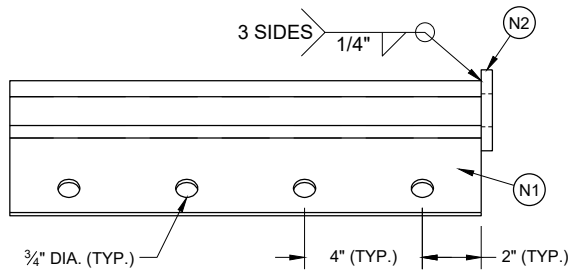
ANCHOR CABLE ASSEMBLY



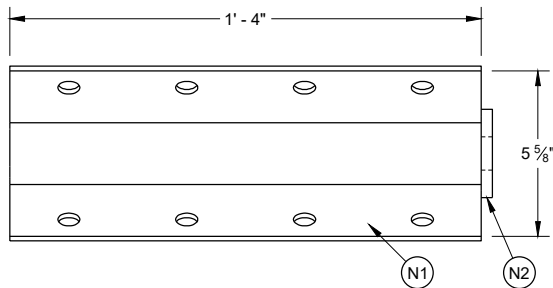
**ELEVATION VIEW PROFILE VIEW
BCT BEARING PLATE (A3)**



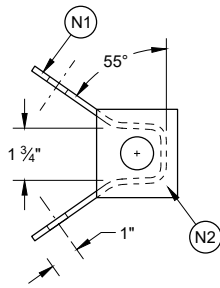
**ELEVATION VIEW PROFILE VIEW
BCT POST SLEEVE (L2)**



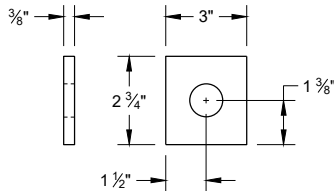
PLAN VIEW



**ELEVATION VIEW
ANCHOR BRACKET ASSEMBLY (N1)**



PROFILE VIEW

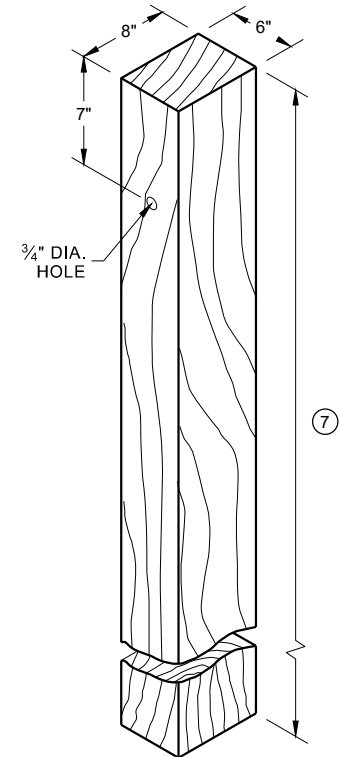


**ANCHOR BRACKET
END PLATE (N2)**

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

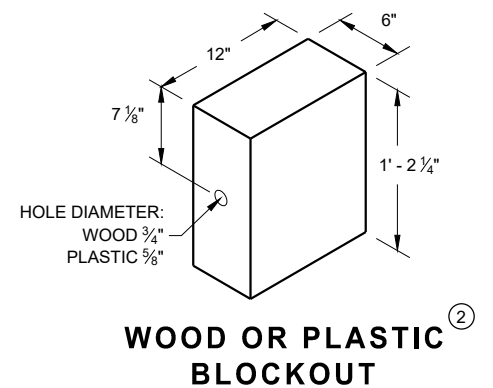
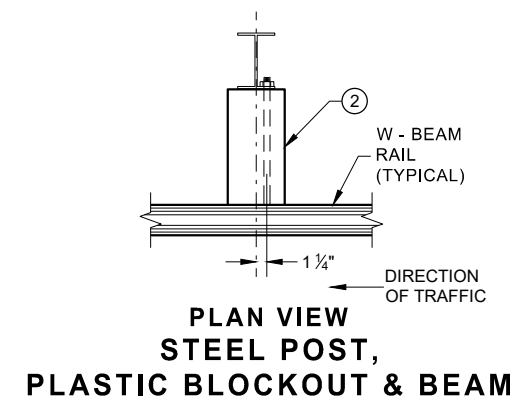
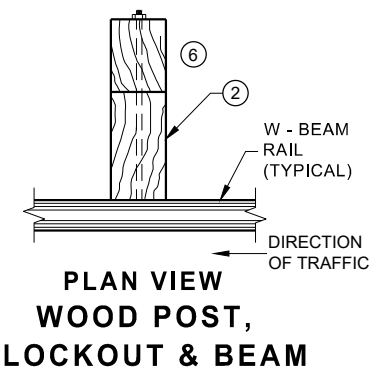
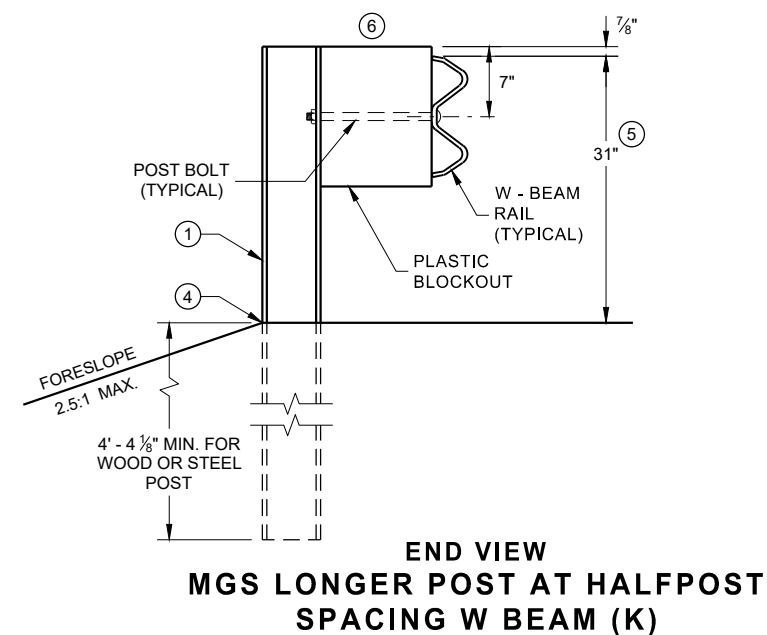
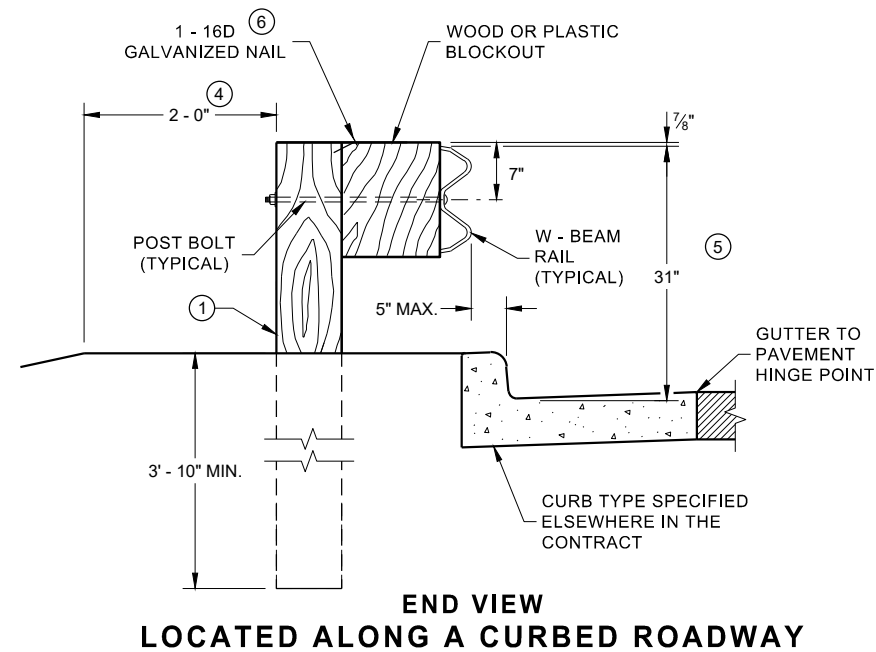
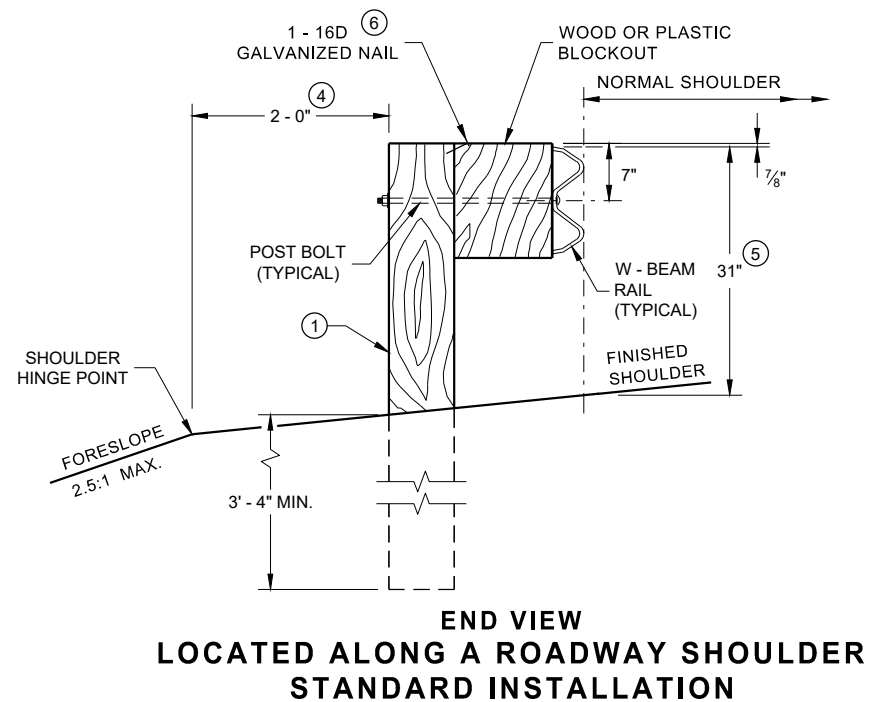
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

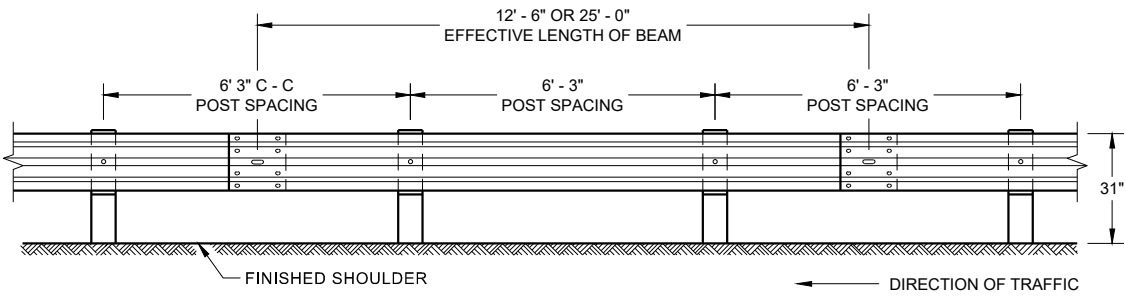
-
- Diagram illustrating the end view of a steel or wood post set in rock. The post is 12" wide and 2" thick. The rock is 44 1/2" MIN. high, where "A" is $\geq 22"$. The post is embedded 20" MINIMUM in solid rock if shortened post is used where "A" is $\leq 22"$. The post is surrounded by foundation backfill. Dimensions include 2 1/2" for the post width, 2" MIN. for the rock thickness, and 12" for the post width.
- END VIEW**
- SETTING STEEL OR WOOD POST IN ROCK**
- ③



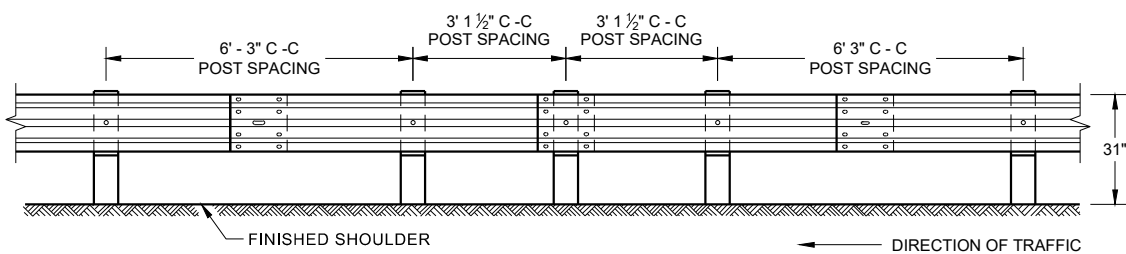
**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**

WOOD POST (6" X 8") NOMINAL ^①

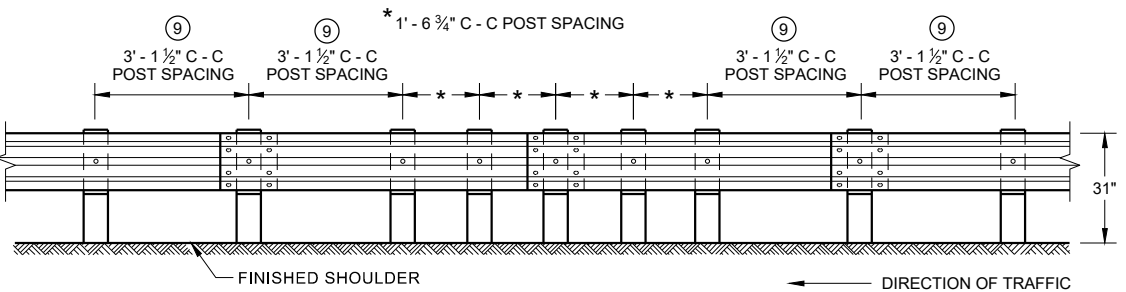




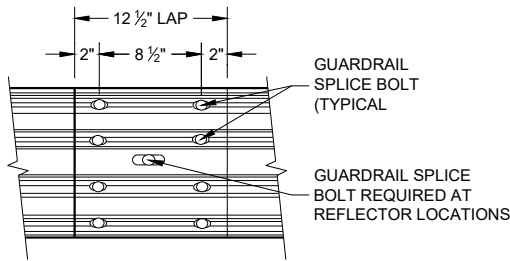
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



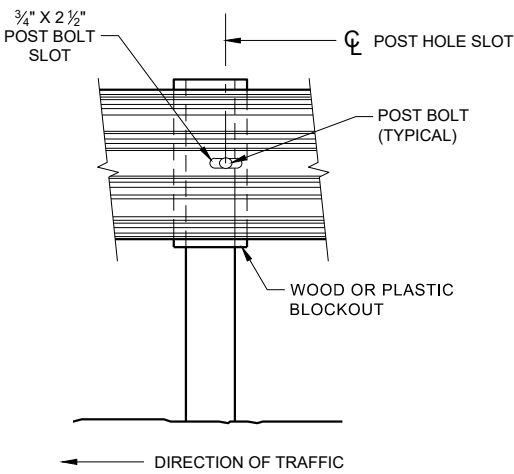
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



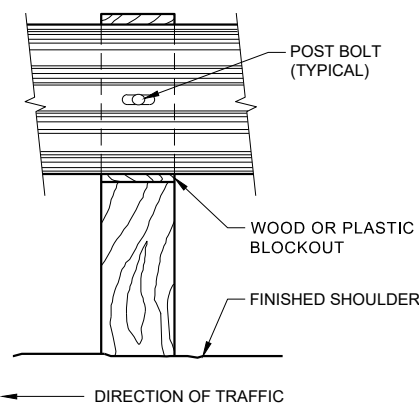
**FRONT VIEW
QUARTER POST SPACING (QS)**



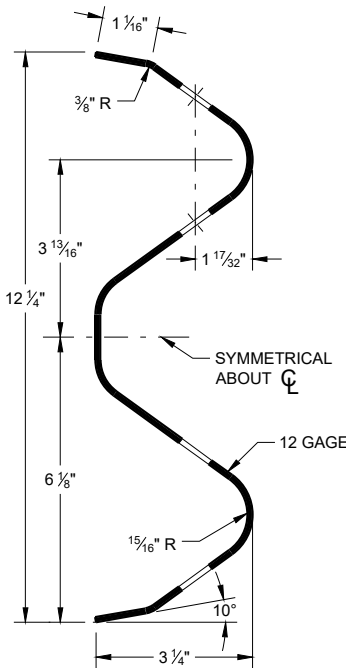
**FRONT VIEW
MID-SPAN BEAM SPLICE**



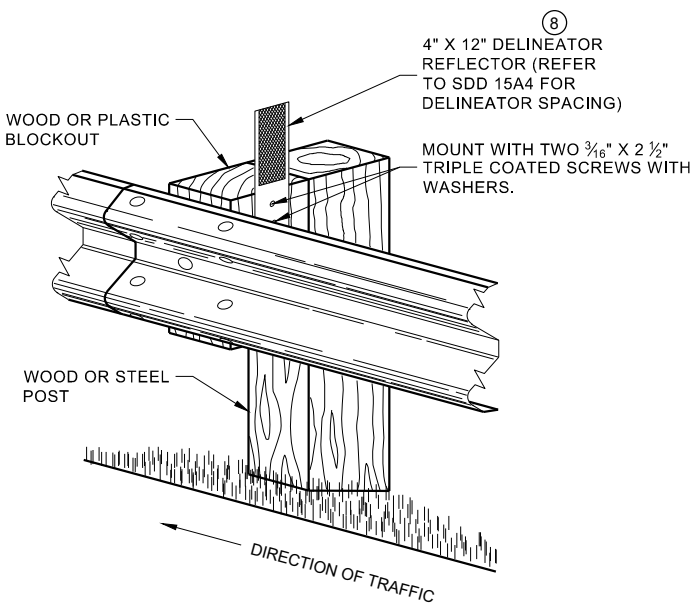
FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



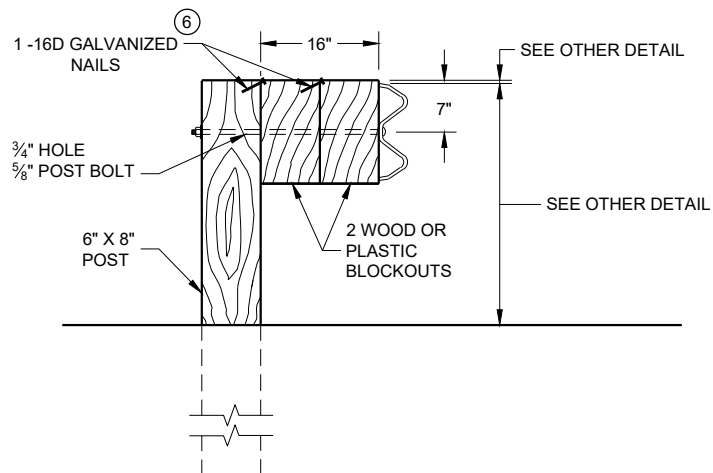
SECTION THRU W-BEAM RAIL



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

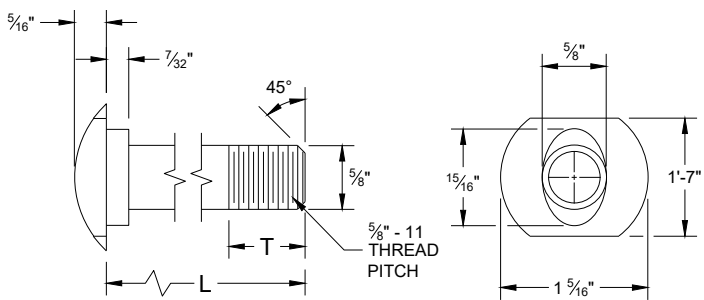
- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



DETAIL FOR 16" BLOCKOUT DEPTH

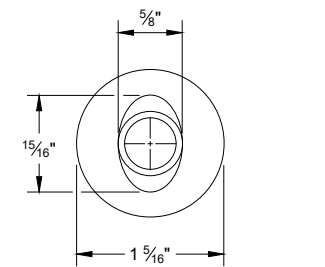
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

- NOTE:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF $\frac{3}{16}$ ".
 2. IF THE BOLT EXTENDS MORE THAN $\frac{1}{4}$ " FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

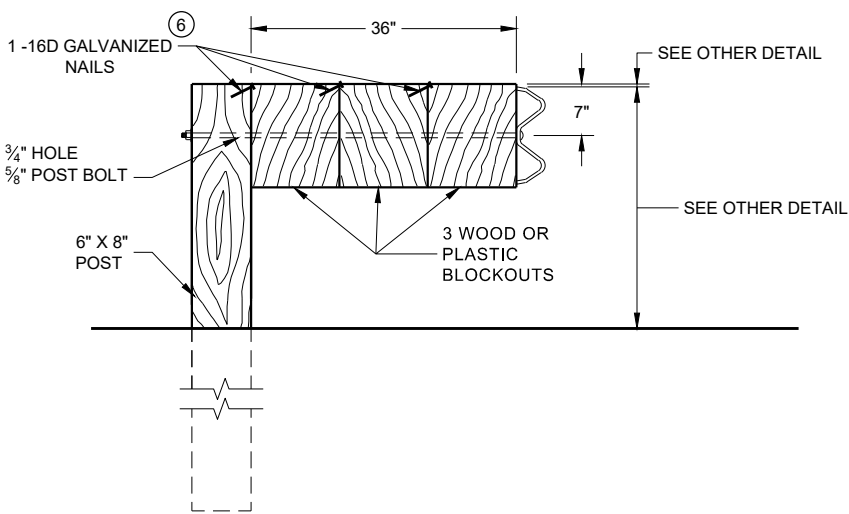


POST BOLT TABLE

L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



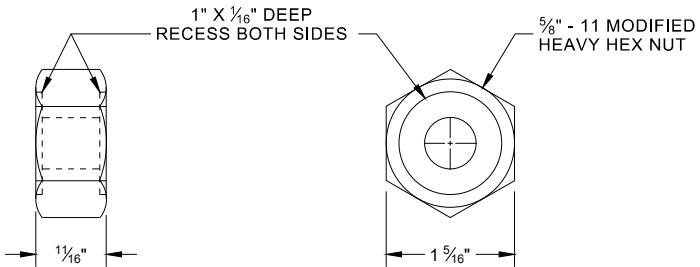
ALTERNATE BOLT HEAD



DETAIL FOR 36" BLOCKOUT DEPTH

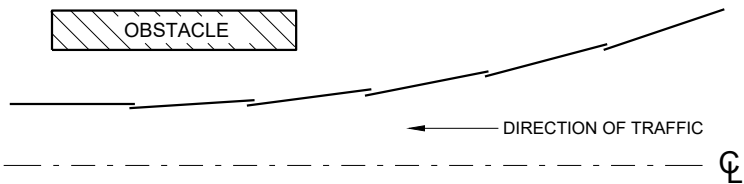
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

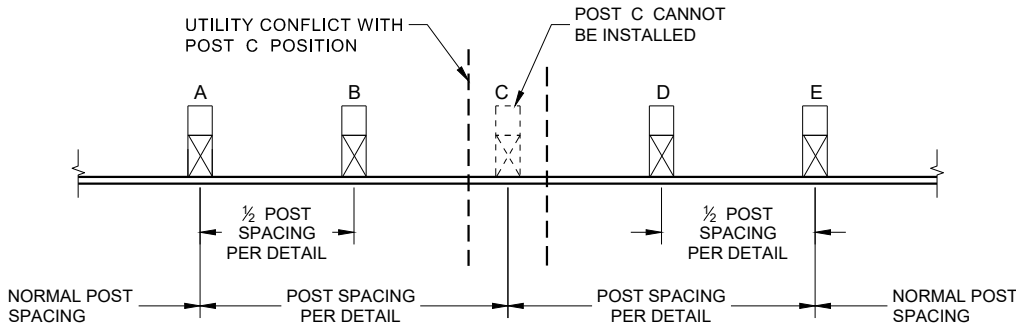


POST BOLT, SPLICE BOLT AND RECESS NUT

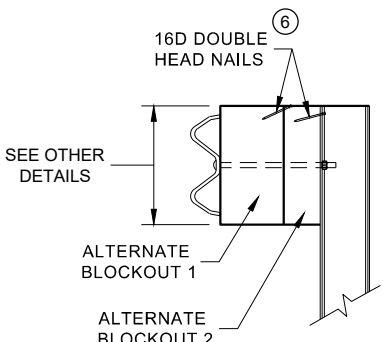
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



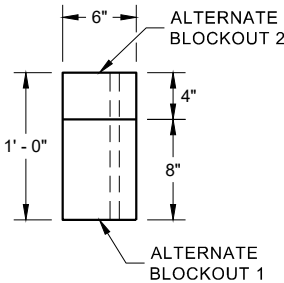
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

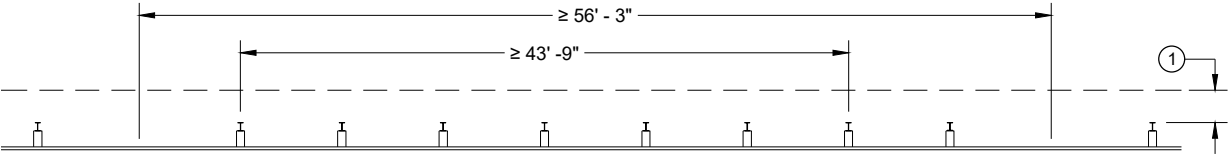


PLAN VIEW

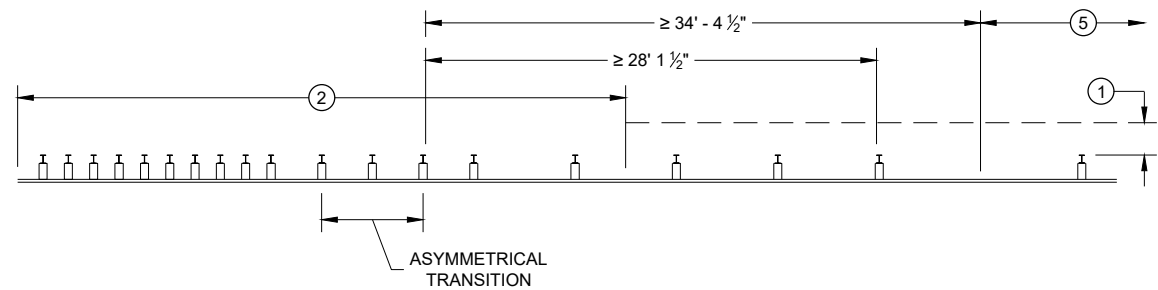
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

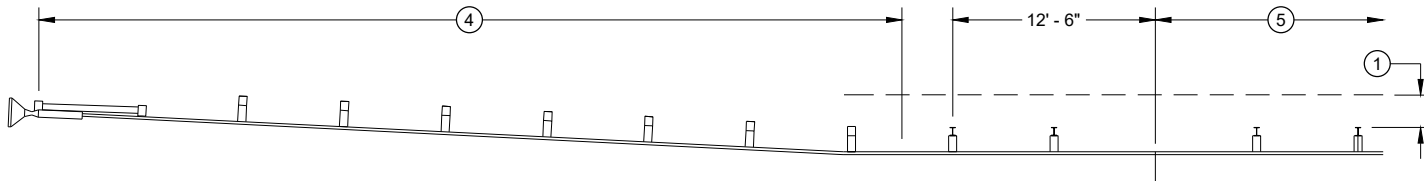
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



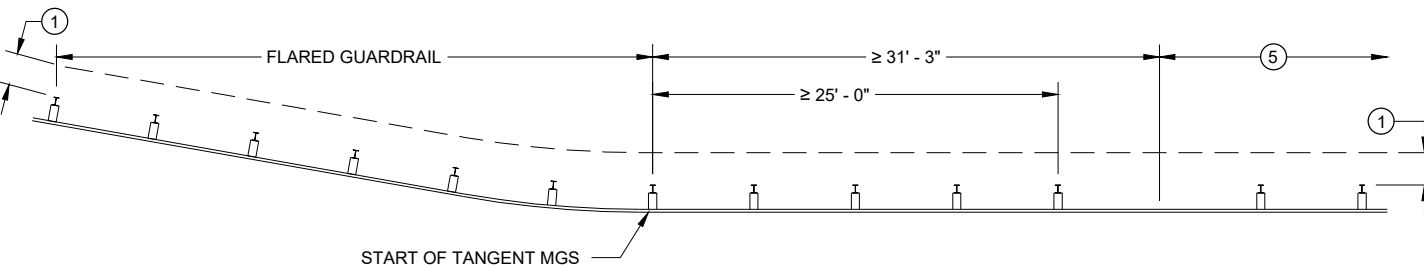
MISSING POST IN NORMAL BEAM GUARD RUN



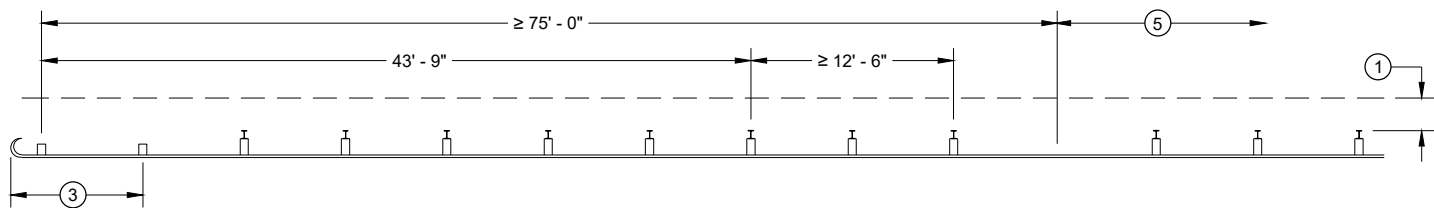
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



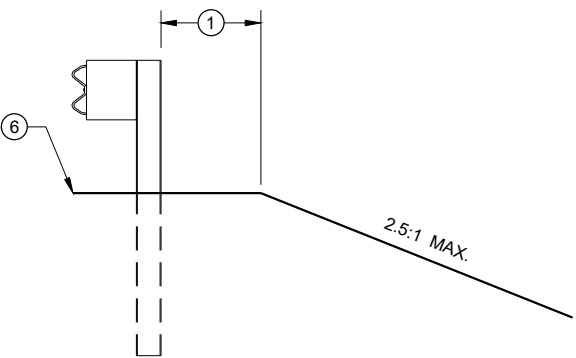
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



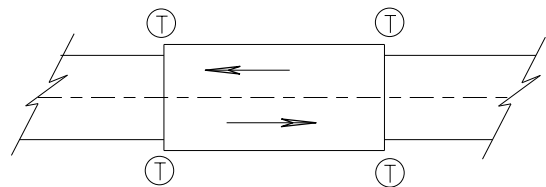
CROSS SECTION VIEW

- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER DESIGN.

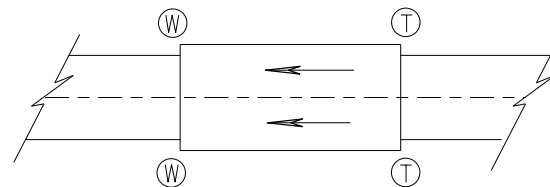
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
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FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

GENERAL NOTES

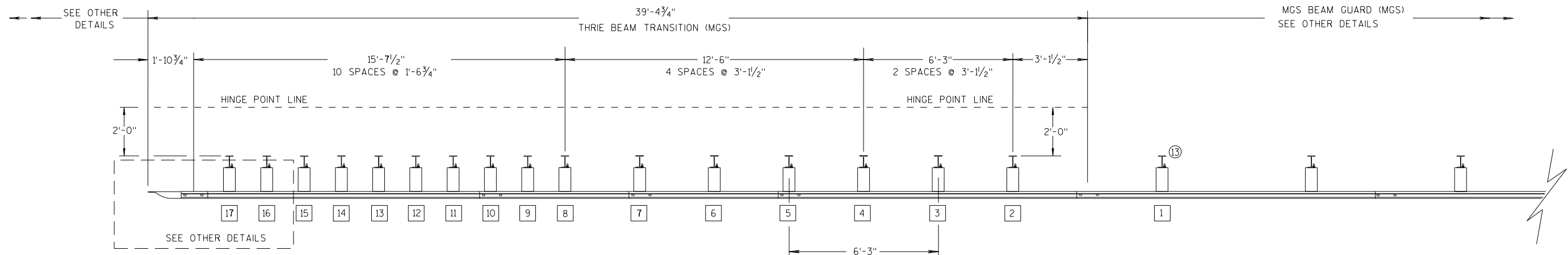
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

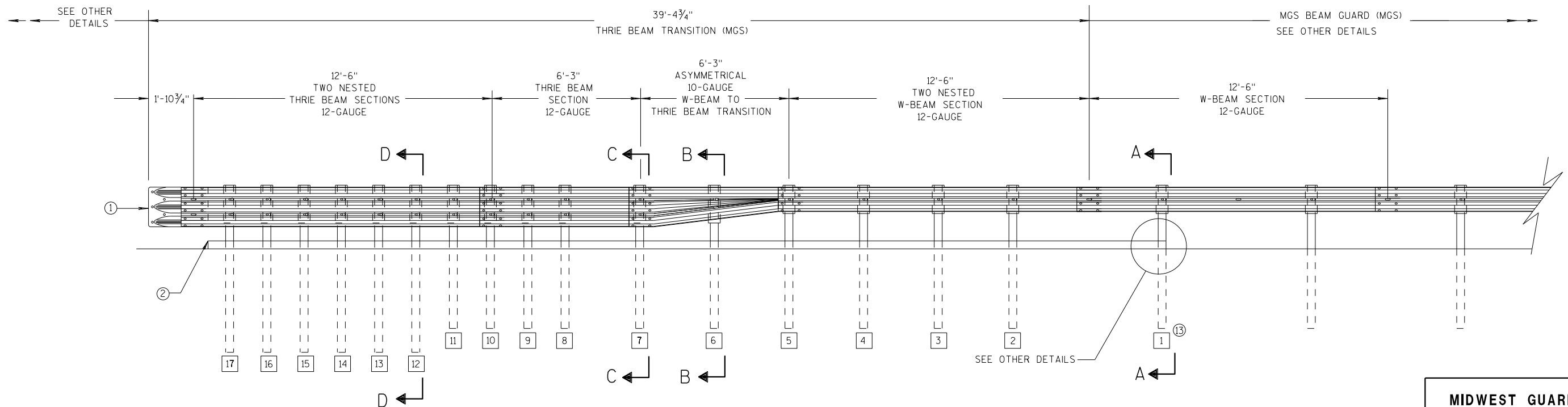
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

- S.D.D. 14 B 45-5b**

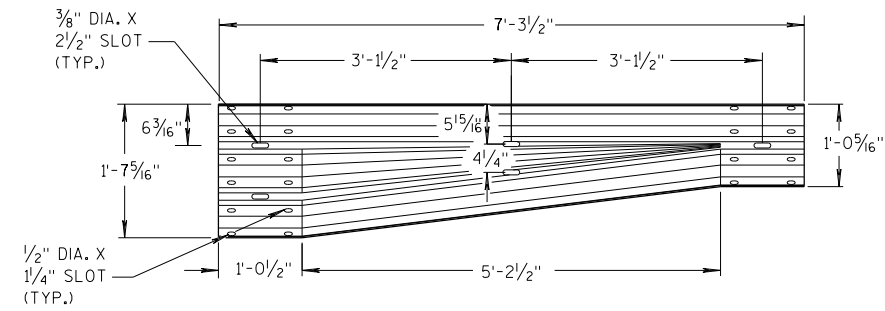


S.D.D. 14 B 45-5b

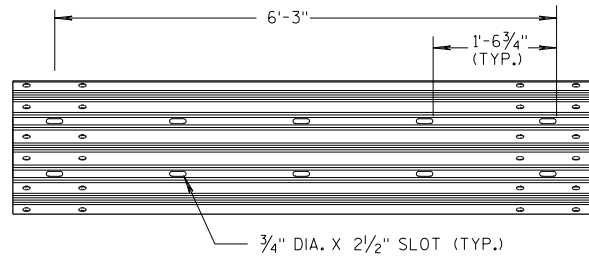


S.D.D. 14 B 45-5b

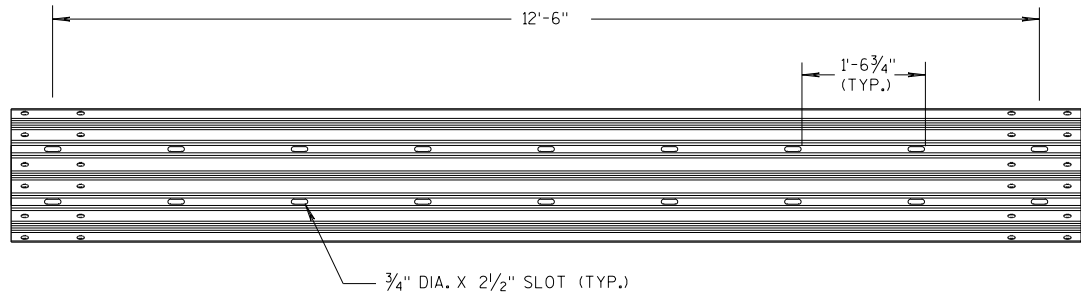




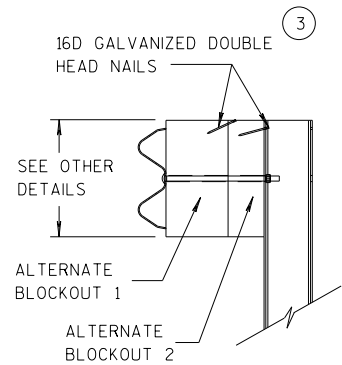
W-BEAM TO THRIE BEAM TRANSITION SECTION



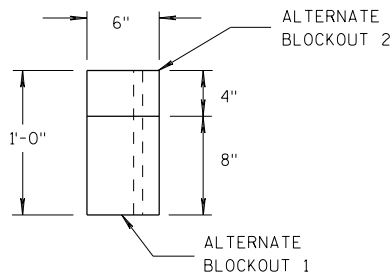
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

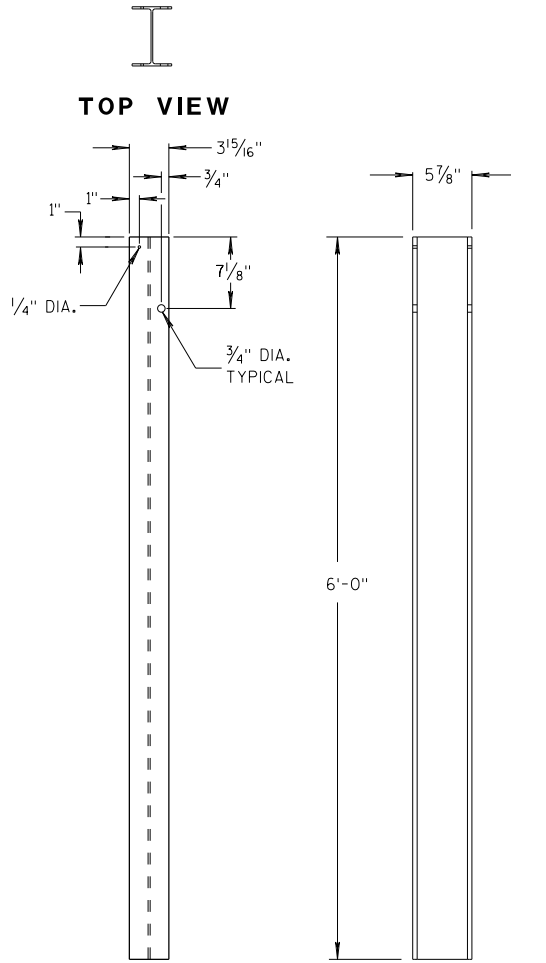


SIDE VIEW



TOP VIEW

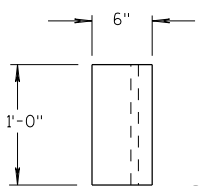
ALTERNATE WOOD BLOCKOUT DETAIL



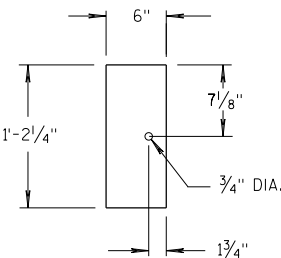
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

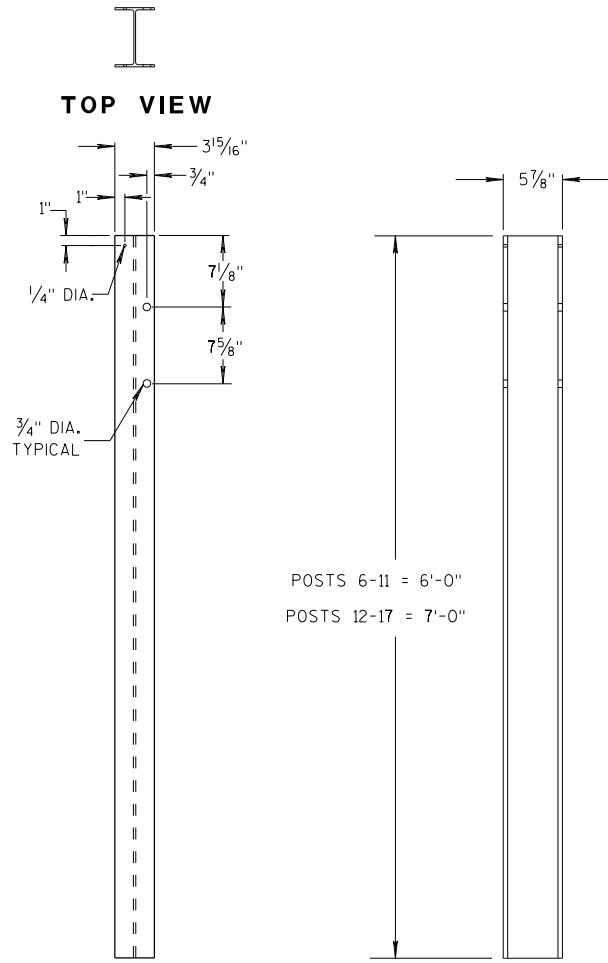


TOP VIEW



FRONT VIEW

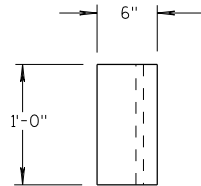
BLOCKOUT POSTS 1-5



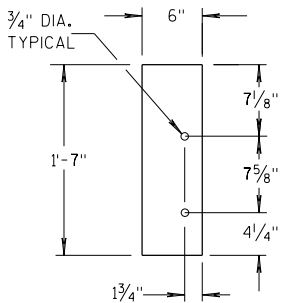
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

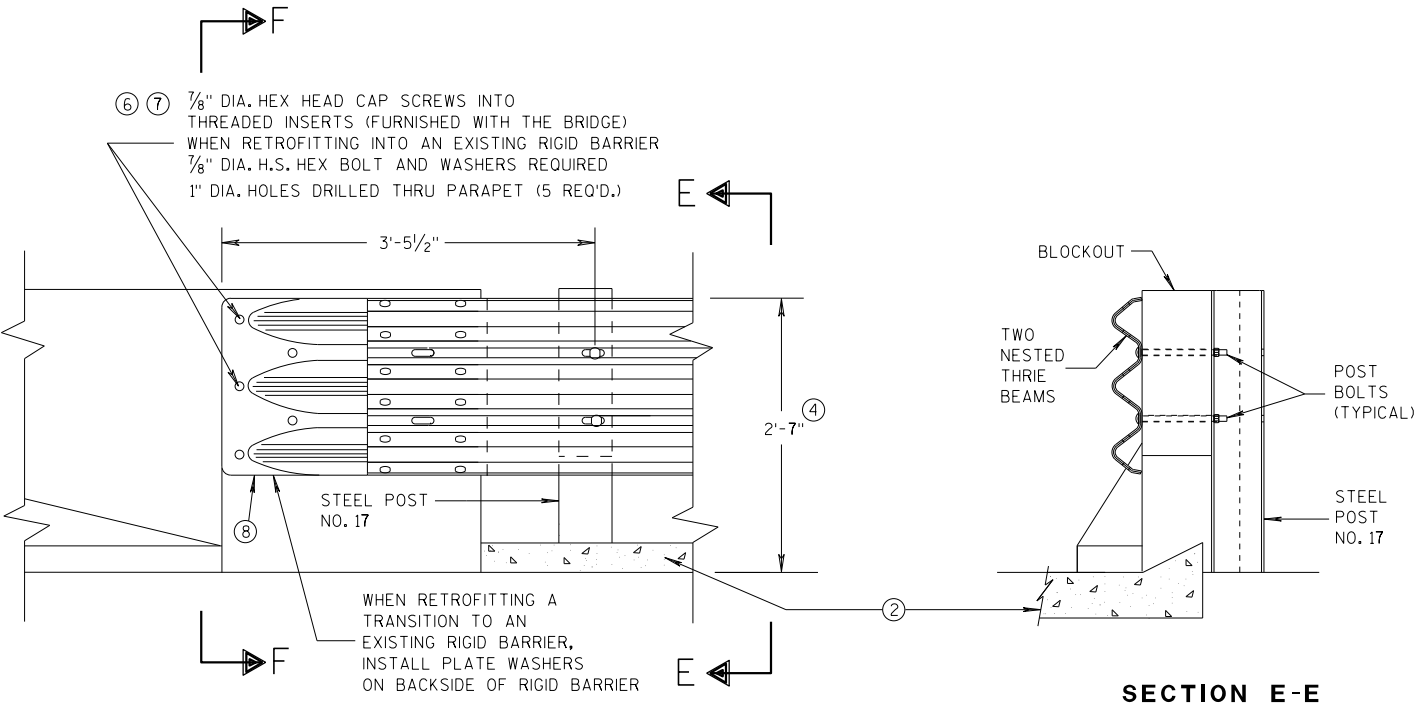
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

(13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

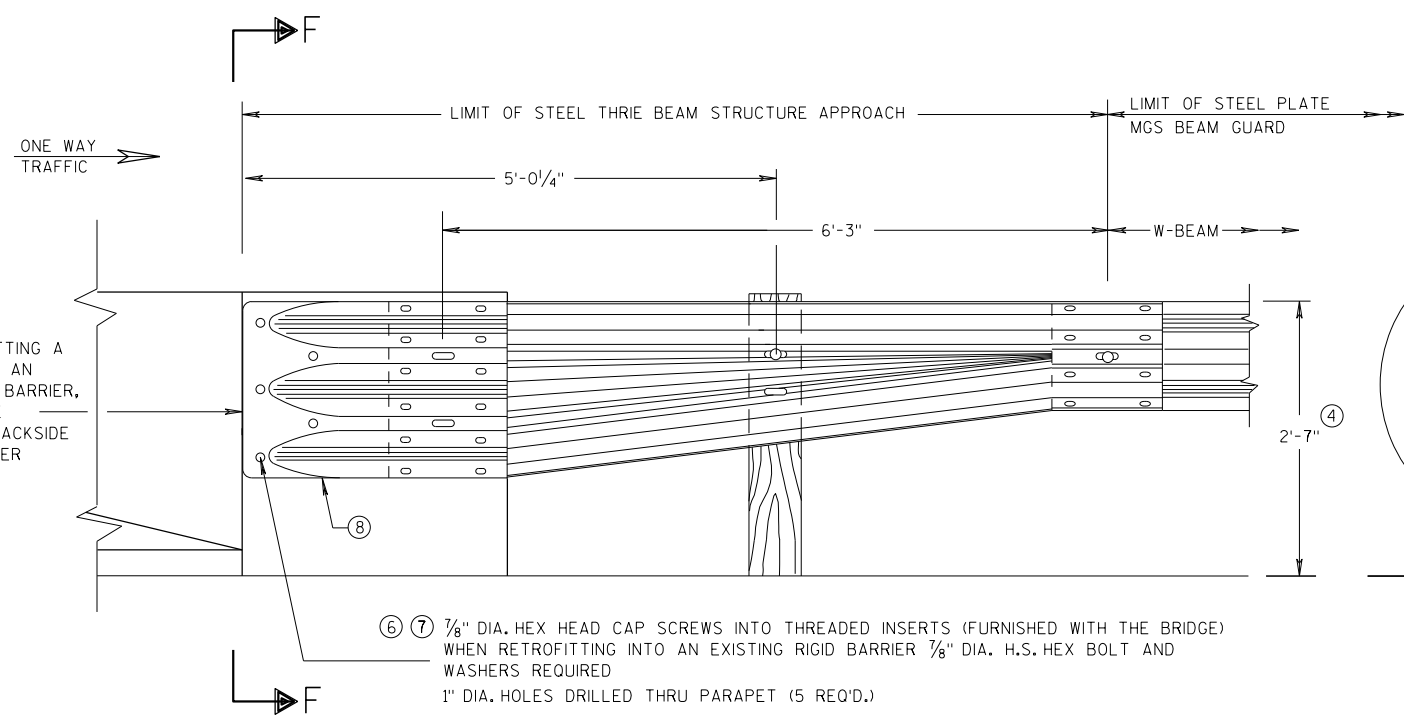
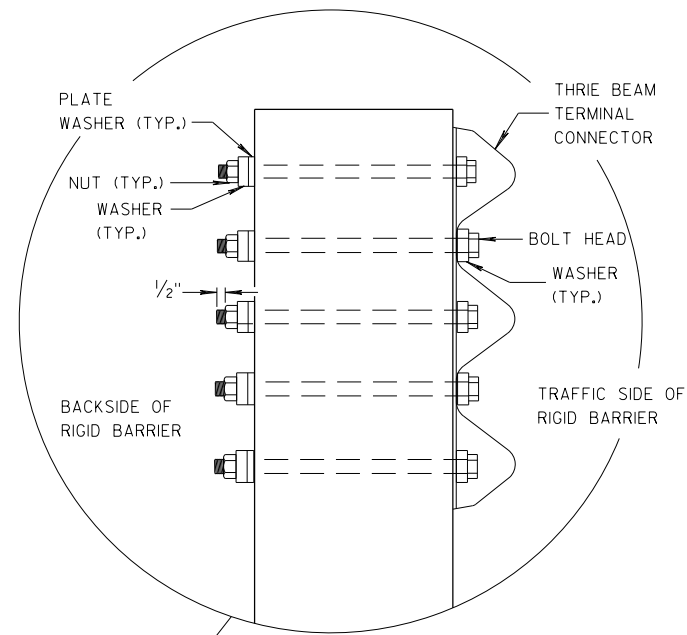
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

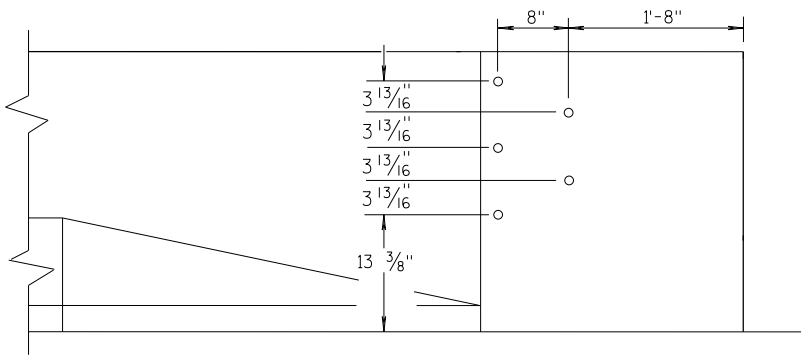


GENERAL NOTES

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



SECTION F-F



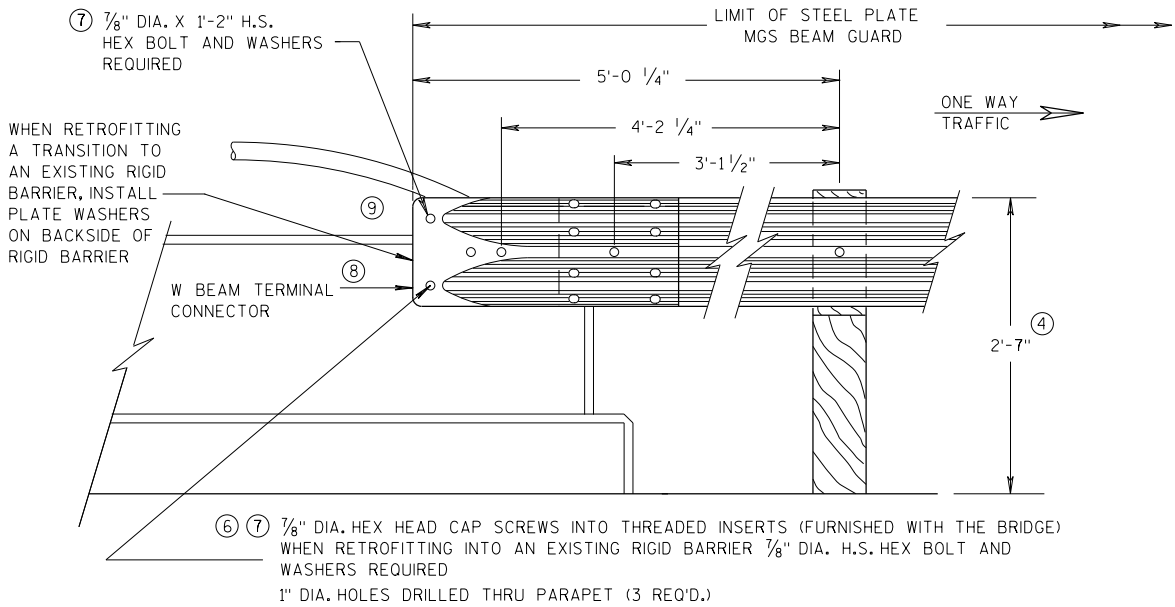
DRILL HOLE LOCATION

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

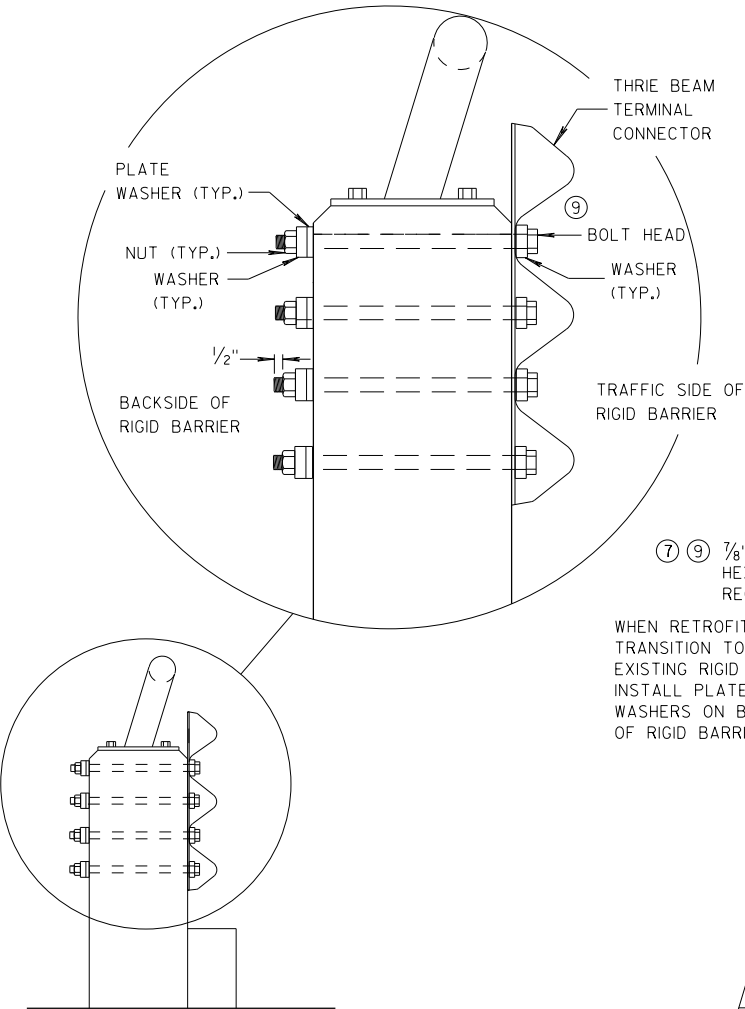
GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

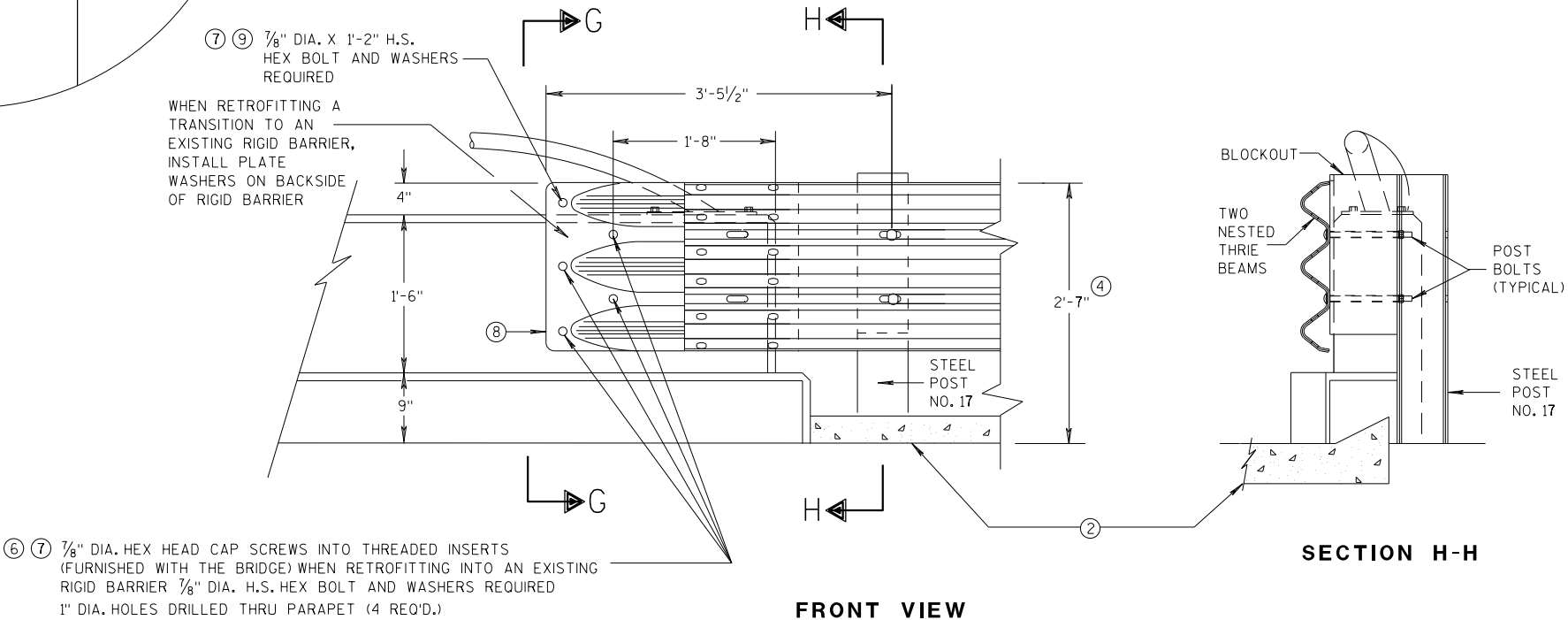
- ②
- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④
- TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥
- DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦
- BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧
- THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨
- BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



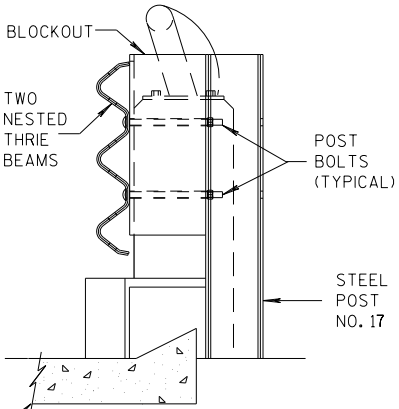
FRONT VIEW
W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION G-G



FRONT VIEW



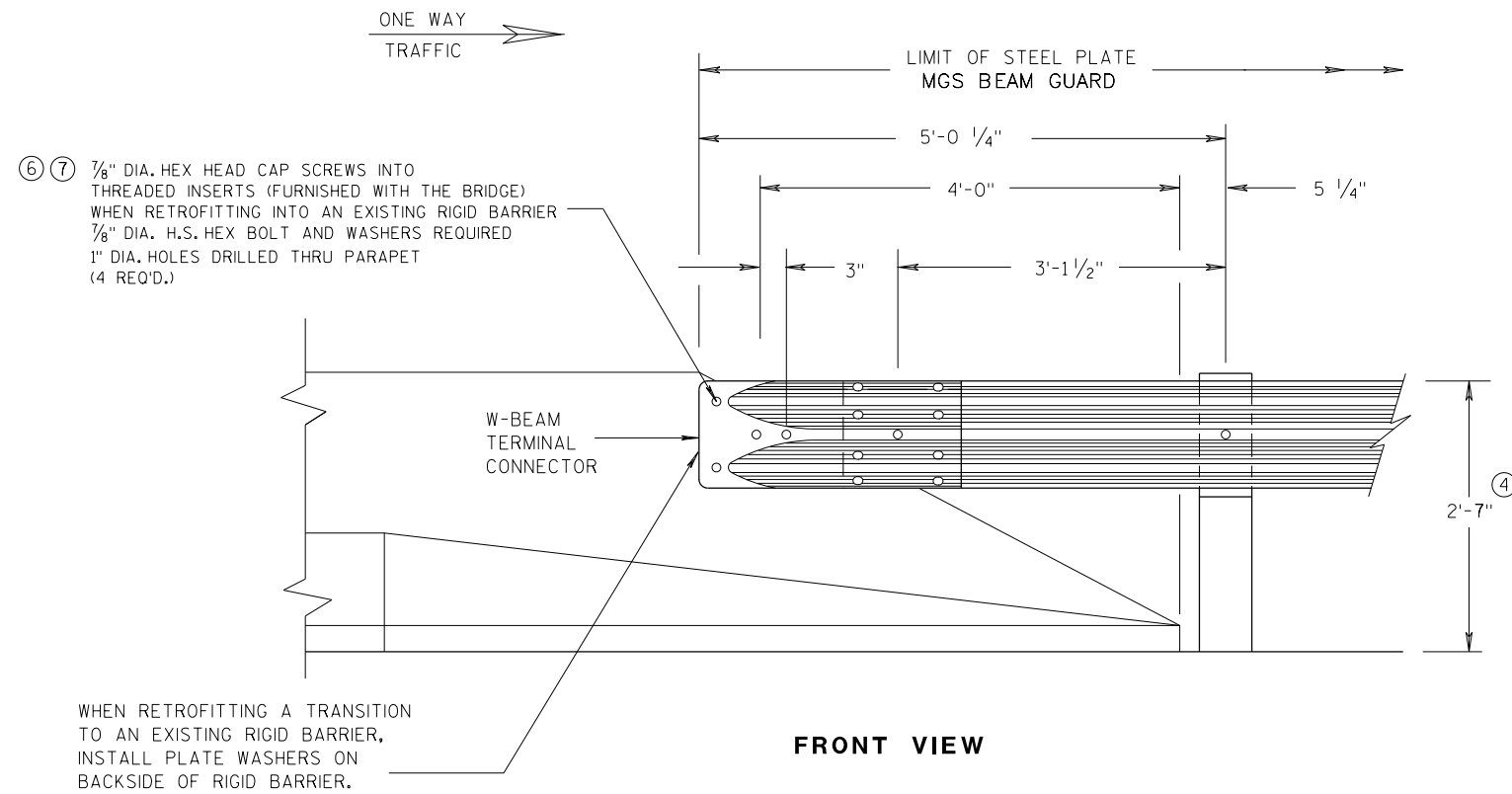
SECTION H-H

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

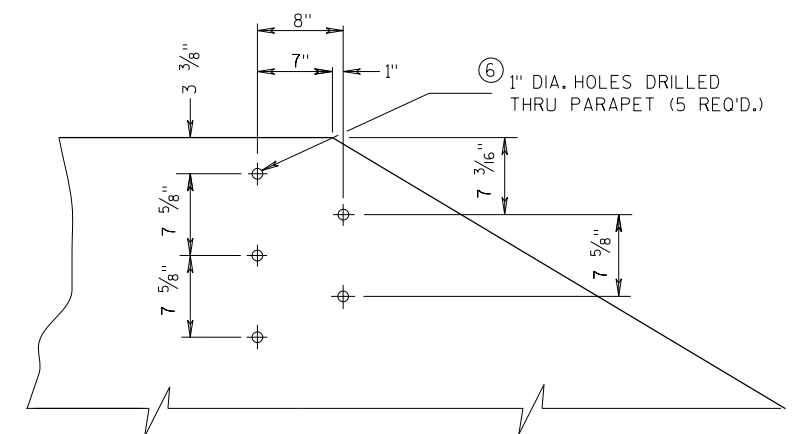
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07/2018
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ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



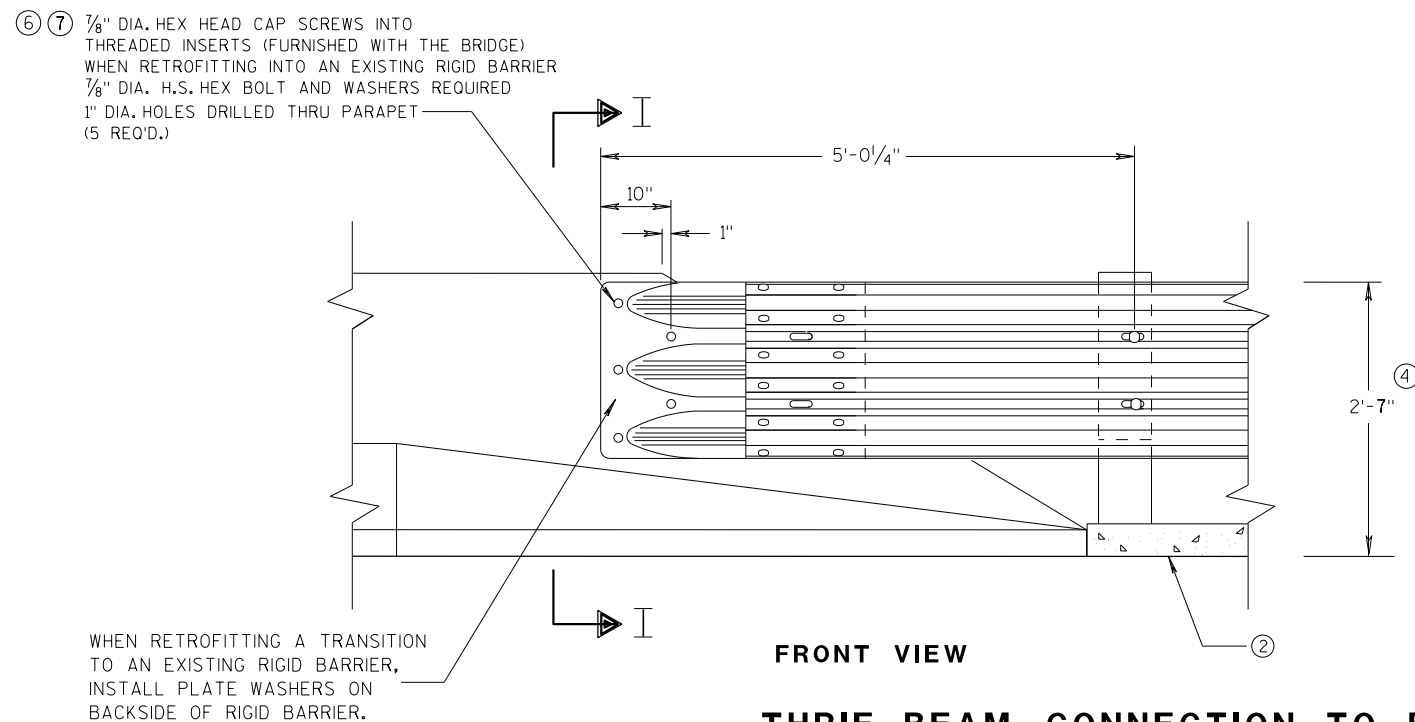
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

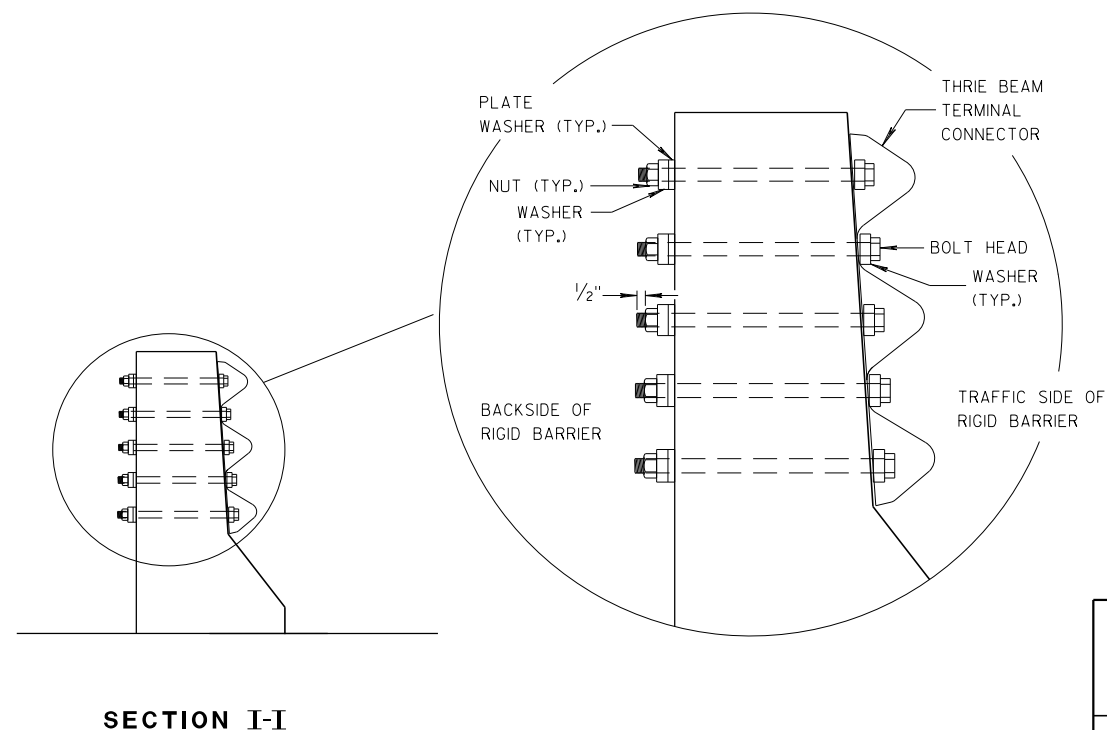
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



**DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION**



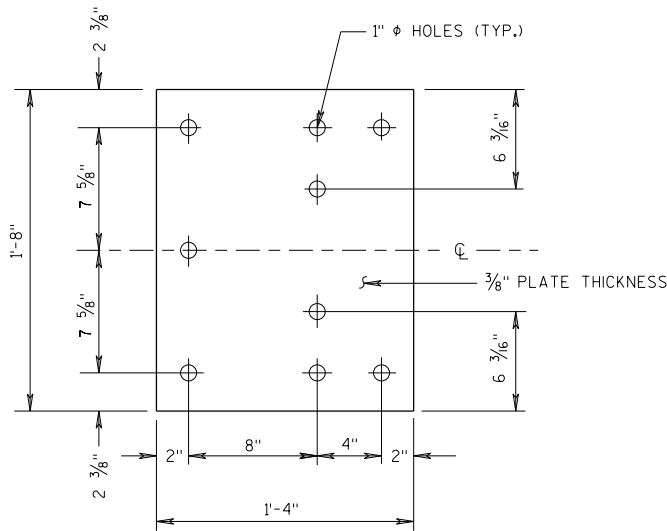
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



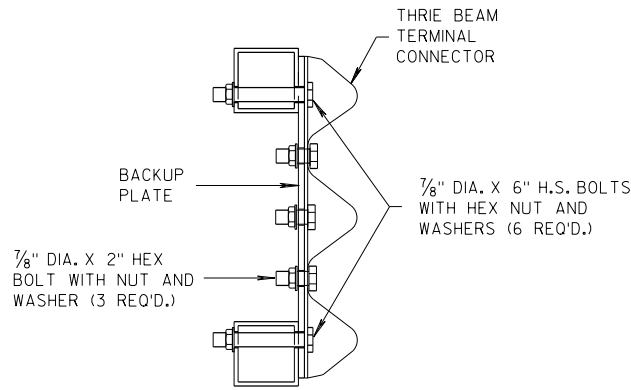
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

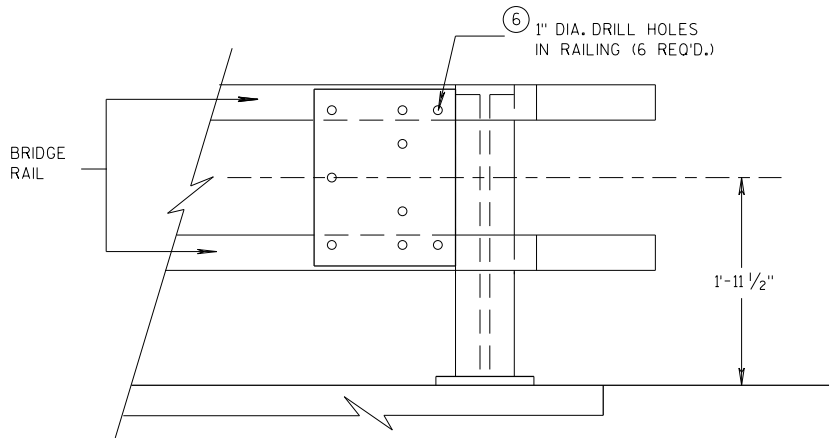
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FHWA



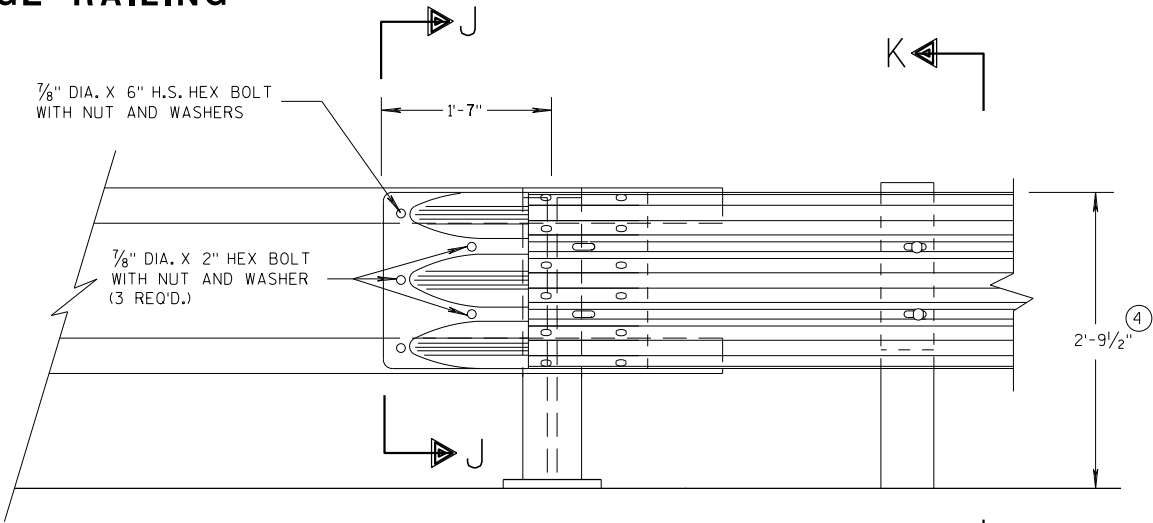
BACK-UP PLATE DETAIL



SECTION J-J

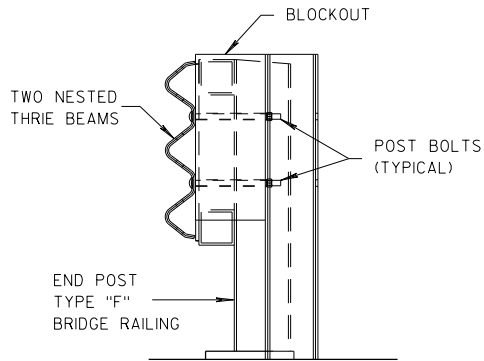


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

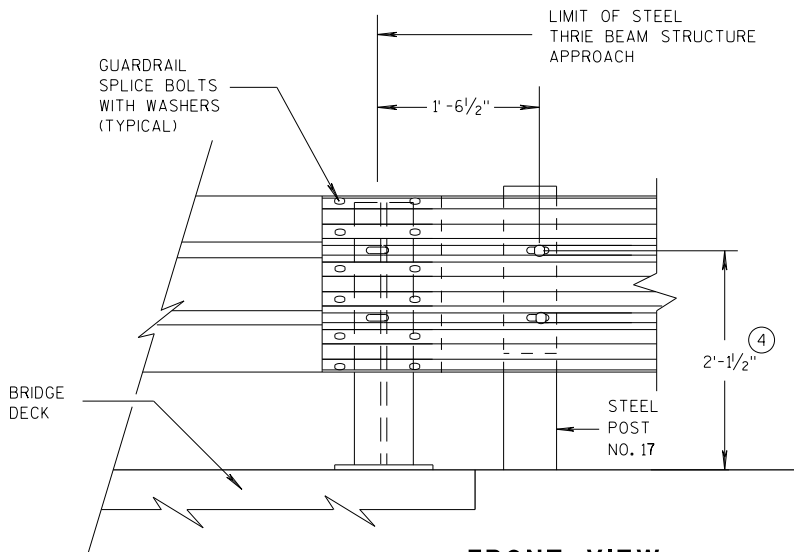
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.



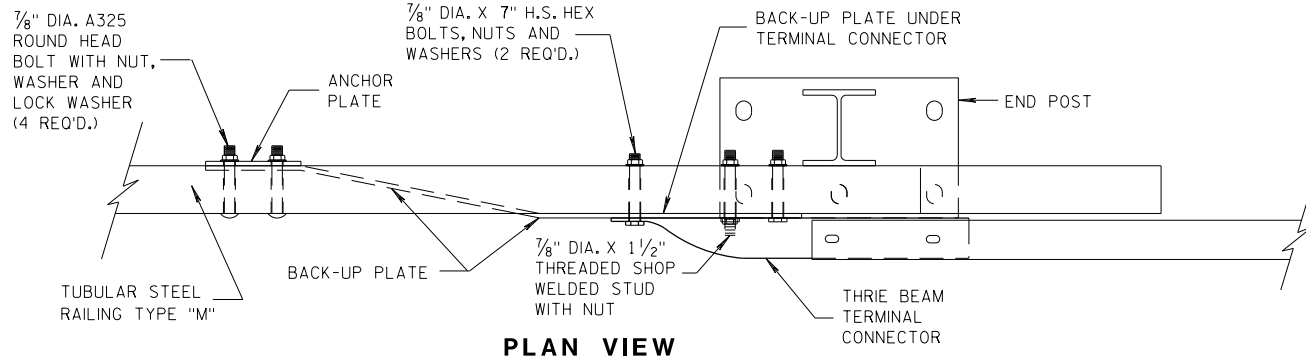
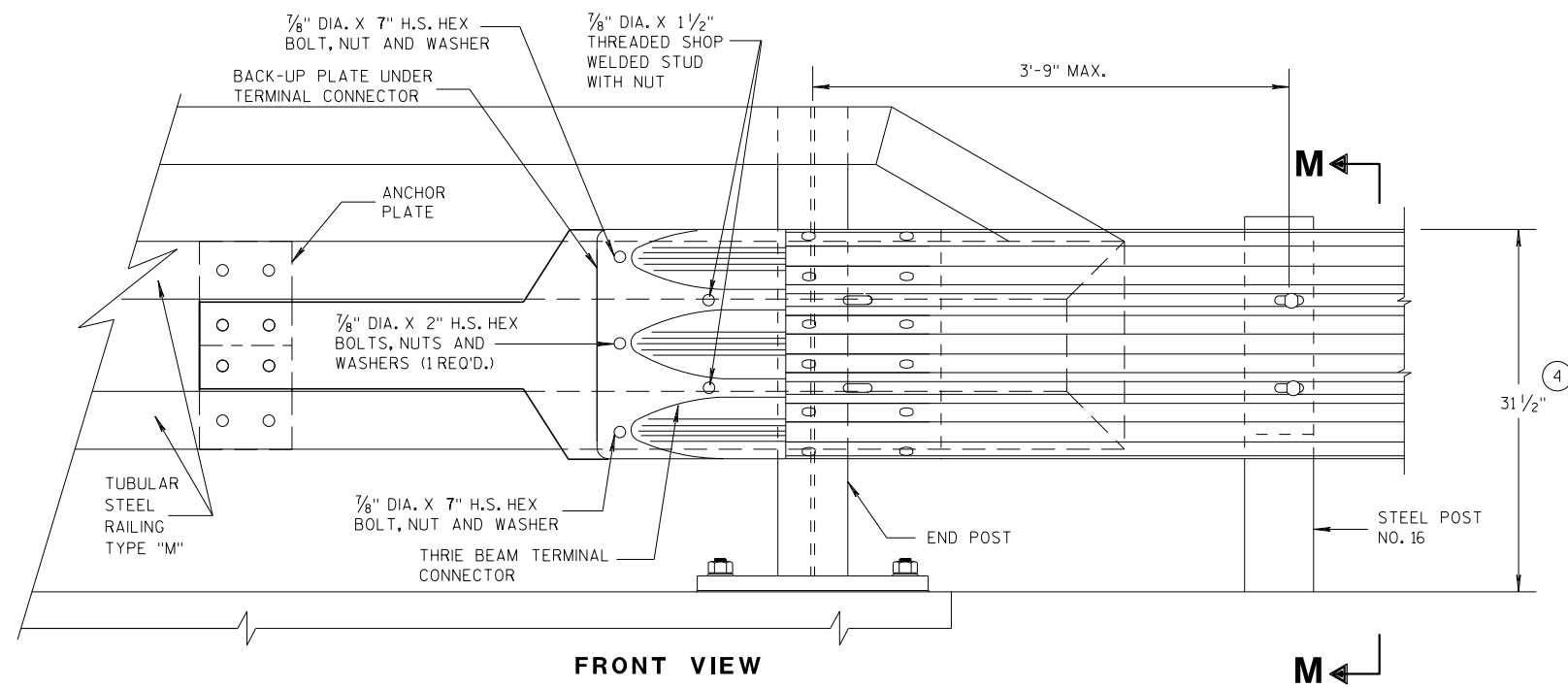
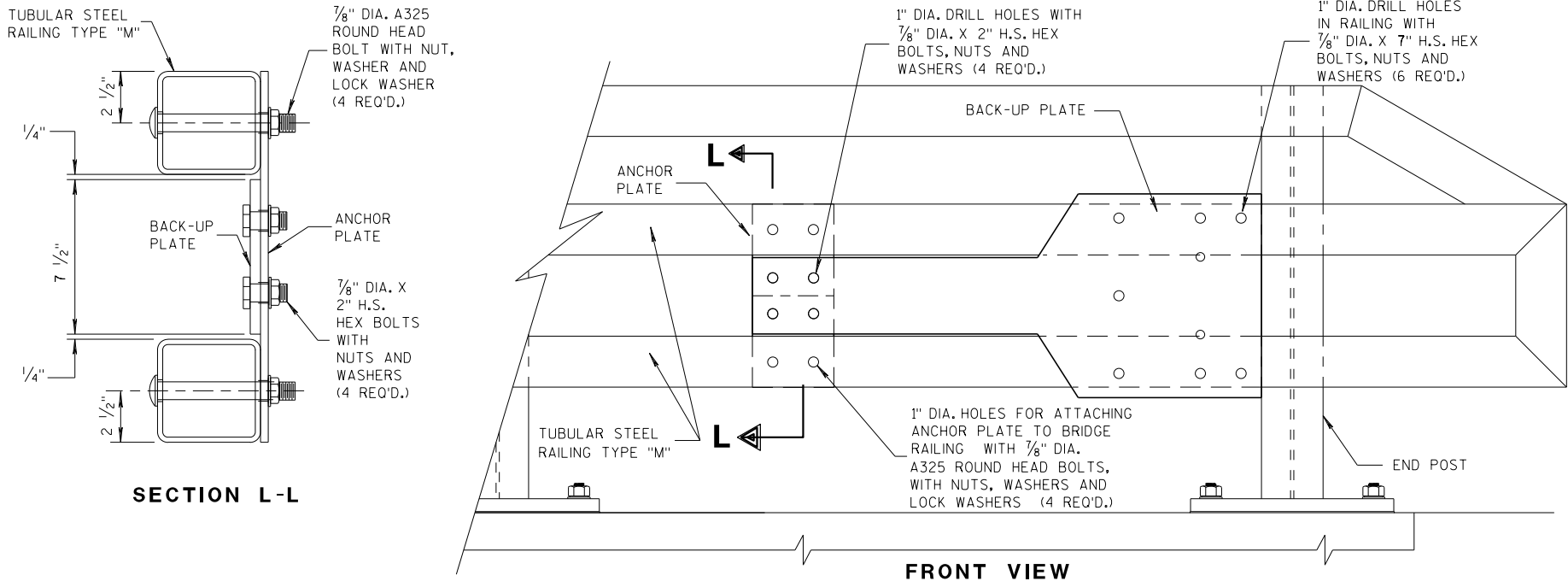
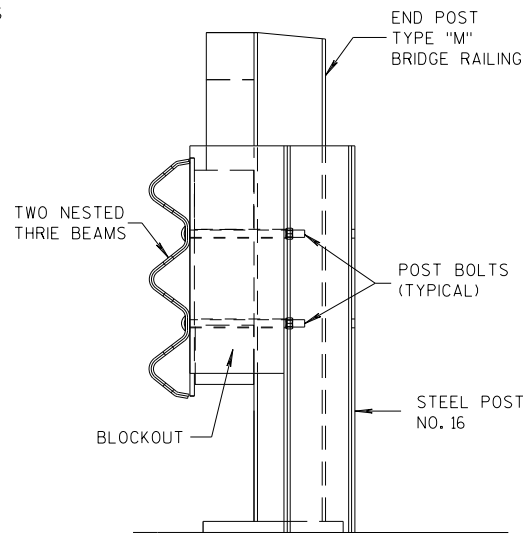
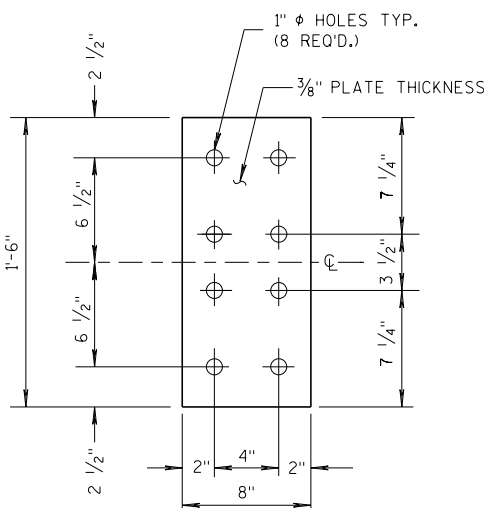
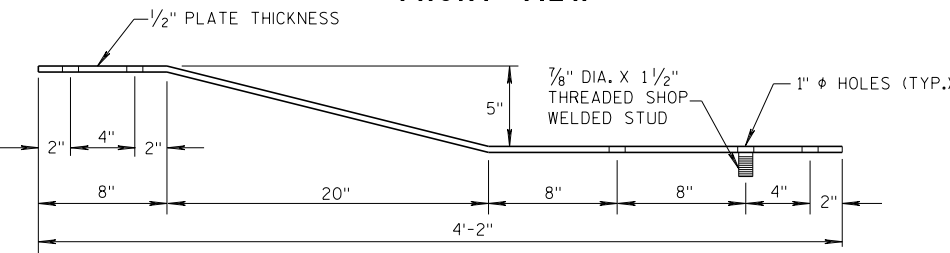
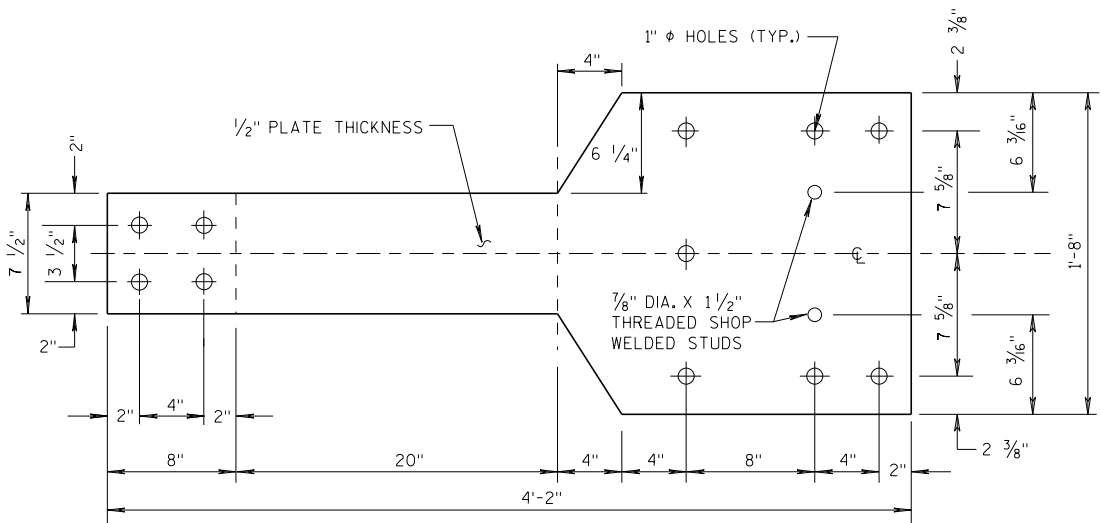
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR



COVER PLATE PANELS ARE $\frac{3}{16}$ " THICK.

ALL STIFFENERS ARE $\frac{1}{4}$ " THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

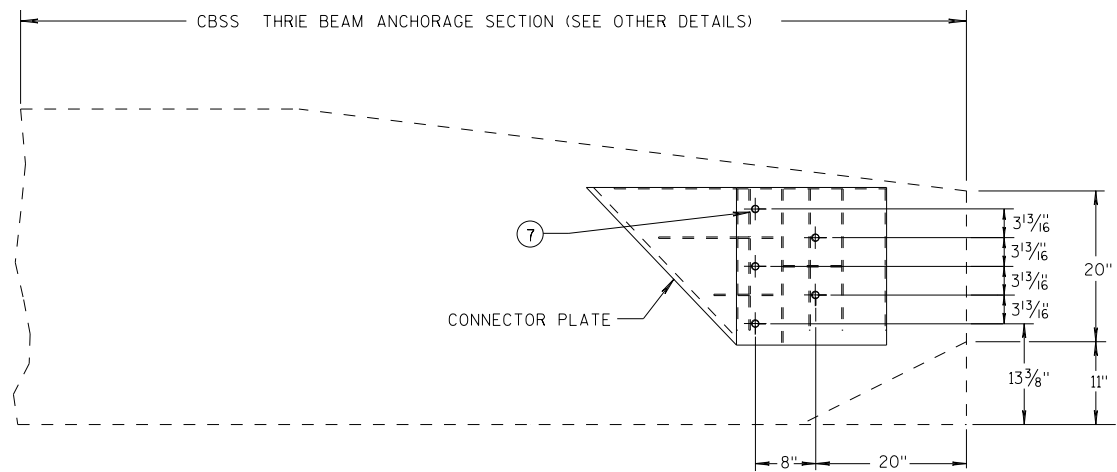
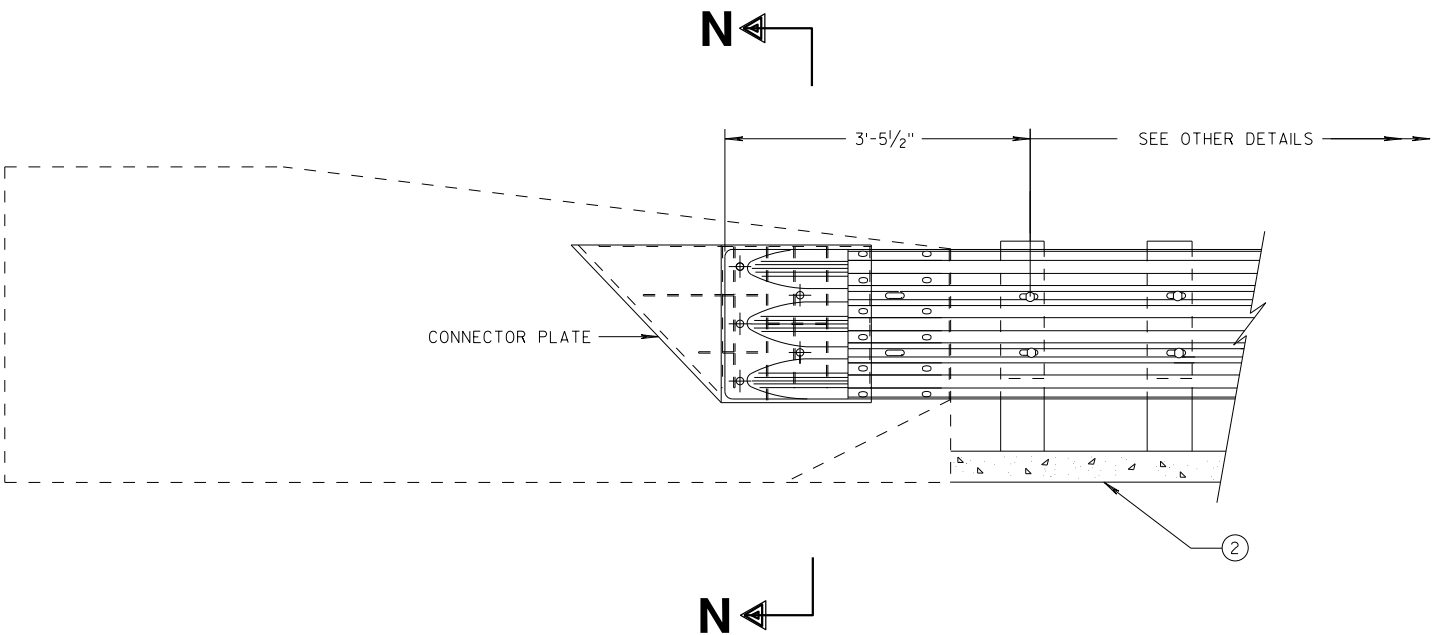
- 10 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND $\frac{3}{16}$ " FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 11 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
 $\frac{3}{16}$ " FILLET WELD BY 1" LONG SPACED AT 2".

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A × B × C × D)	THICKNESS
P1	1		20" × 20"	3/16"
P2	1		20" × 20" × 28 3/16"	3/16"
P3	1		39" × 3 5/8" × 20" × 19 5/16"	3/16"
S1	4		18 7/16" × 3 5/8" × 18 3/4"	1/4"
S2	1		10 1/4" × 2 1/16" × 10 3/8" × 1/2"	1/4"
S3	1		3" × 1 1/16" × 3 1/8" × 1/2"	1/4"
S4	1		6 1/8" × 2 1/16"	1/4"
S5	1		6 1/8" × 1 1/16"	1/4"
S6	1		7 3/4" × 1 3/4"	1/4"
S7	1		2 9/16" × 6" × 3 5/8" × 5 7/8"	1/4"
S8	1		1 5/32" × 7 1/2" × 2 1/2" × 7 3/8"	1/4"
S9	1		6 1/16" × 6 3/16" × 1 3/32"	1/4"
S10	1		1 7/8" × 9 7/8" × 3 5/8" × 9 1/16"	1/4"
S11	1		8 1/2" × 8 3/4" × 1 3/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED <u>7/2018</u> DATE	<u>/S/ Rodney Taylor</u> ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



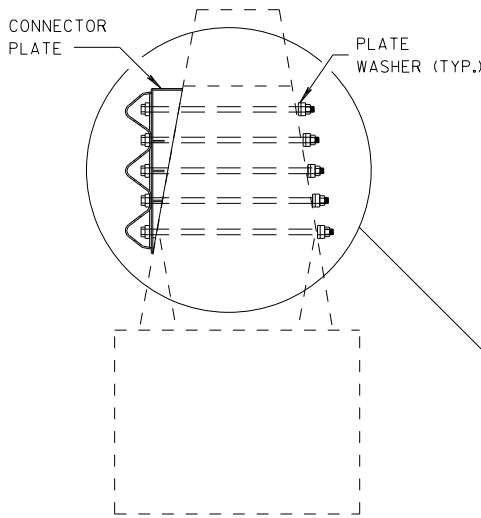
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

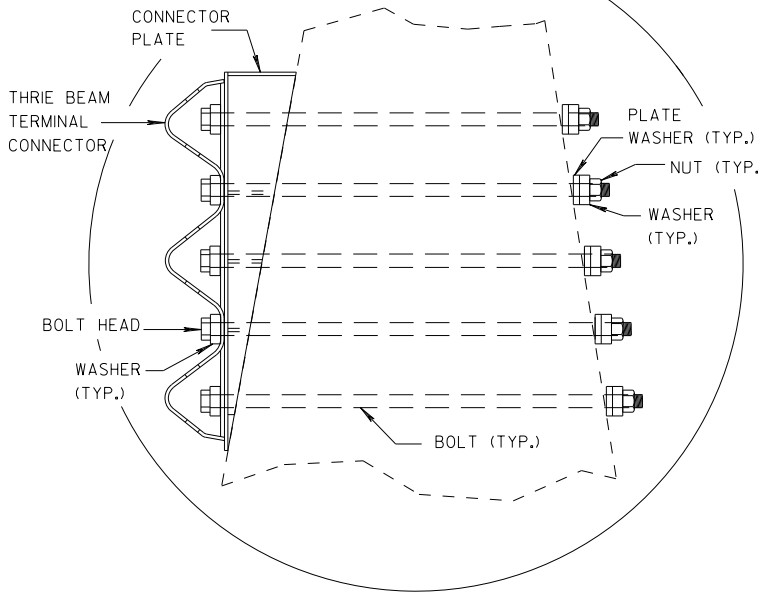
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE BARRIER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(7) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE BARRIER AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



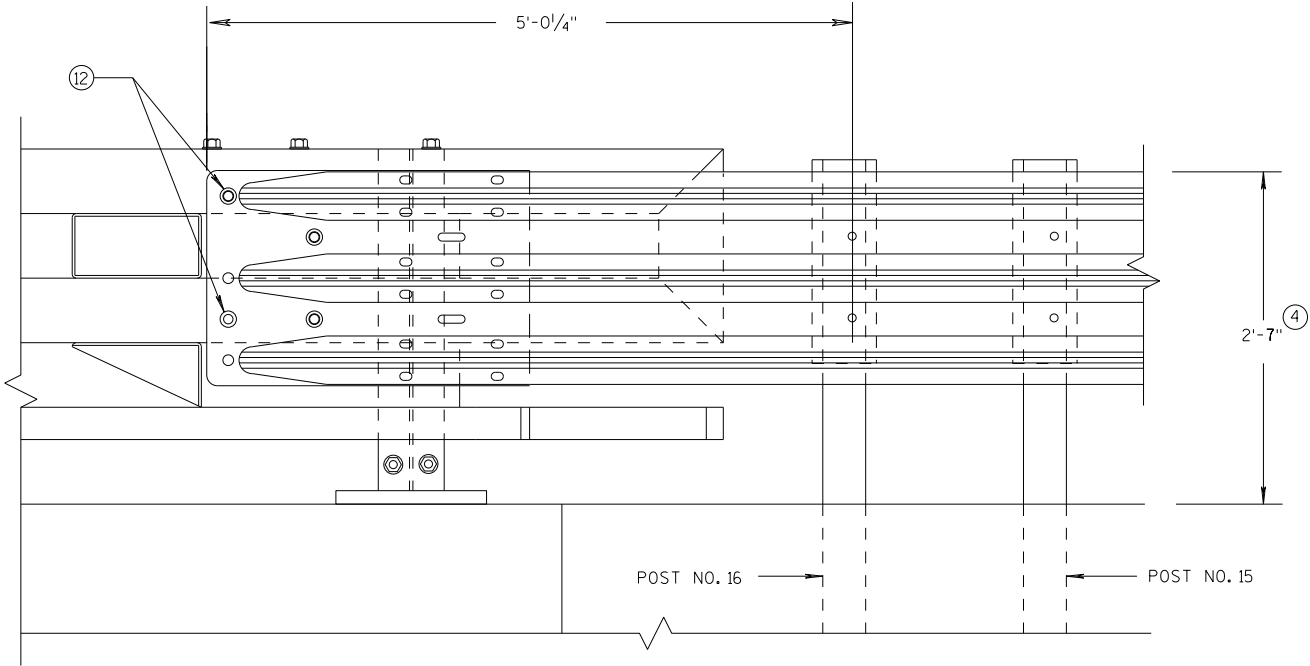
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

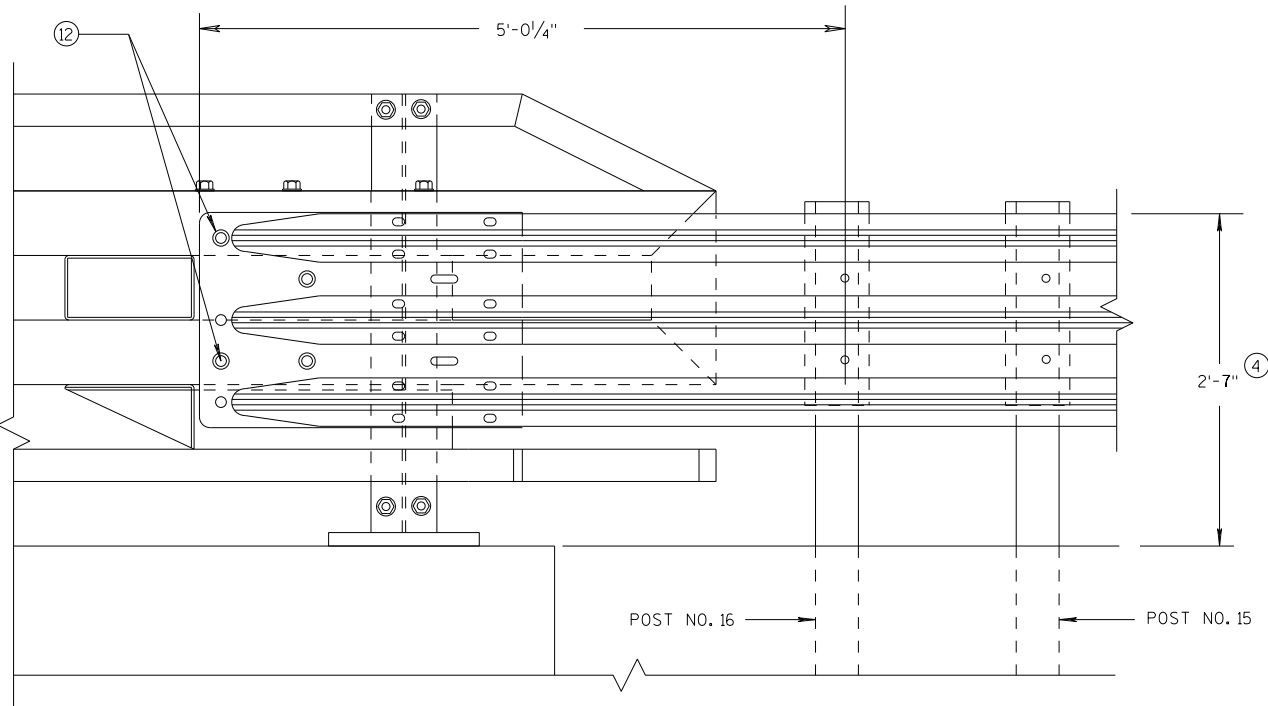
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ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND $\frac{1}{2}$ -INCH BEYOND NUT.



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

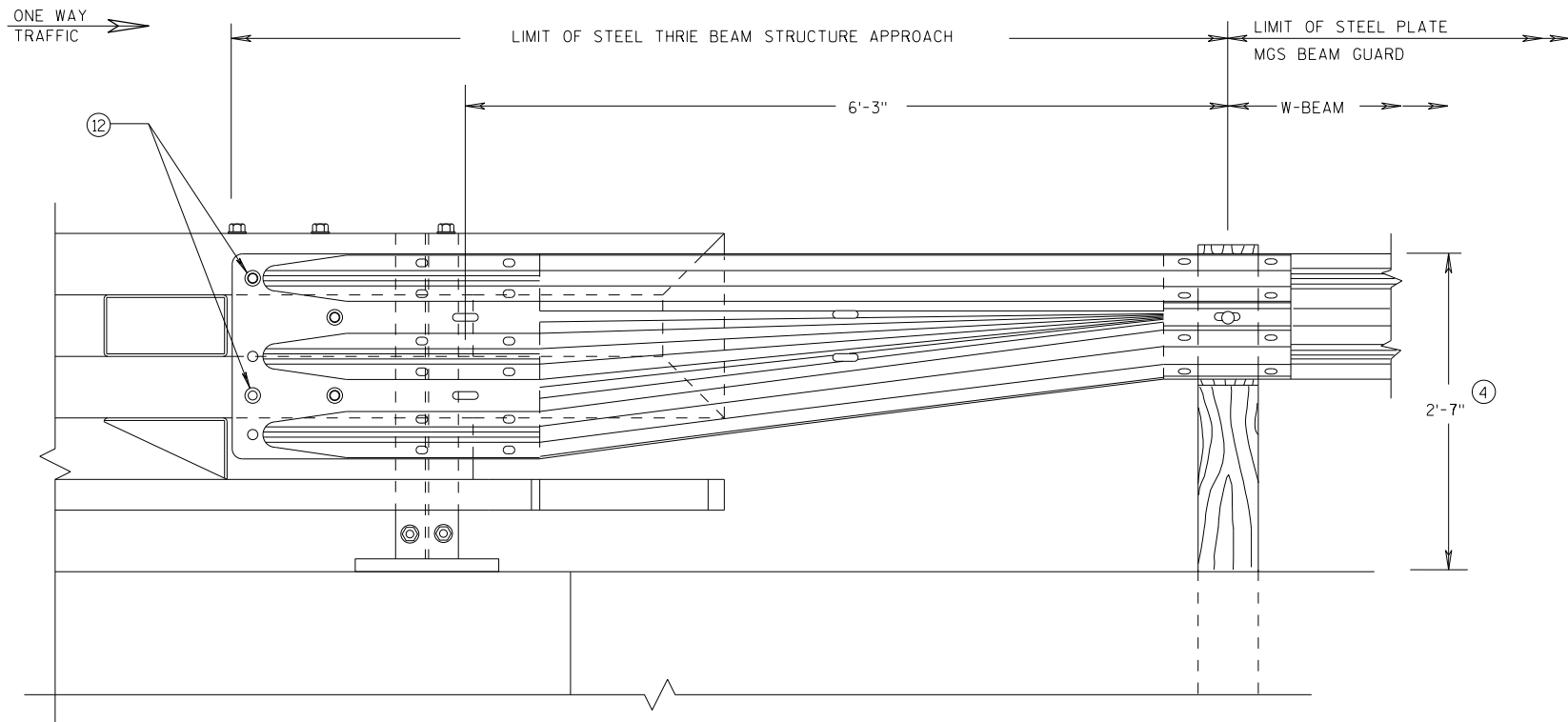


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

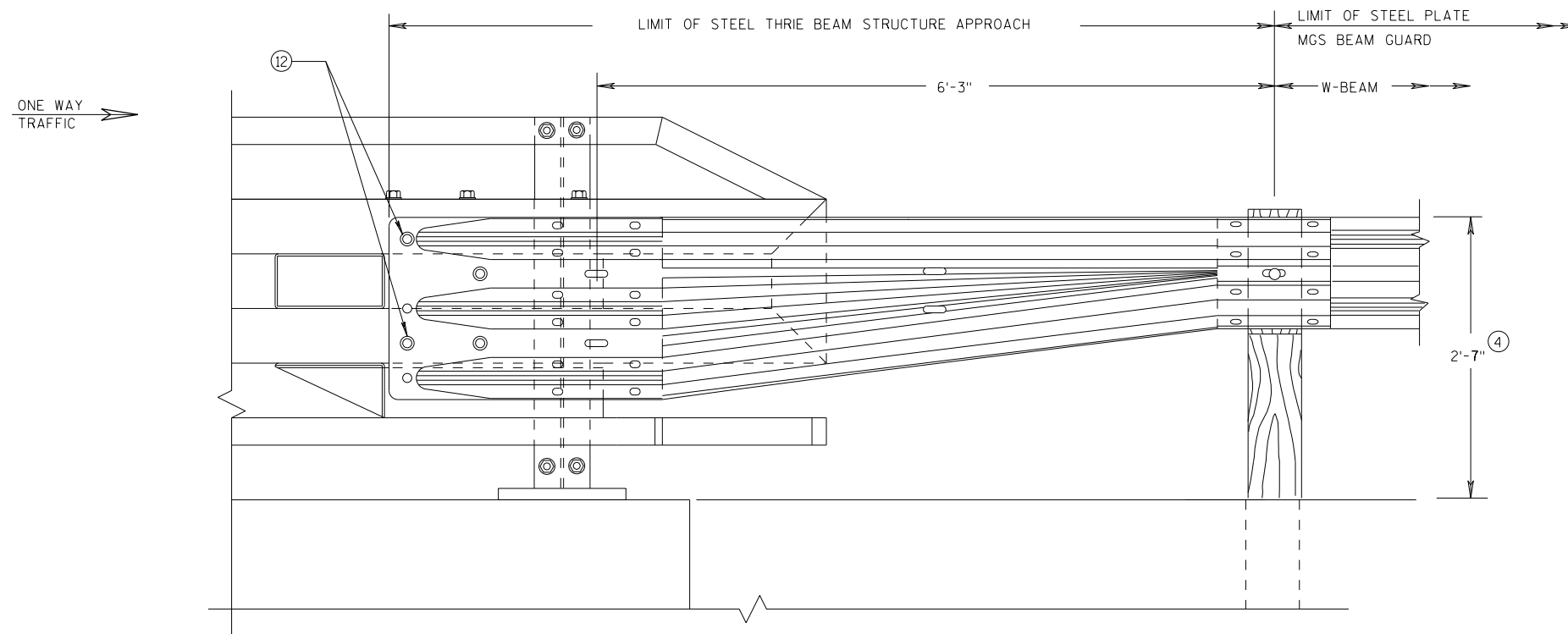
APPROVED	/S/ Rodney Taylor
7/2018	ROADWAY STANDARDS DEVELOPMENT
DATE	UNIT SUPERVISOR
FHWA	



FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY3"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND $\frac{1}{2}$ -INCH BEYOND NUT.



FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

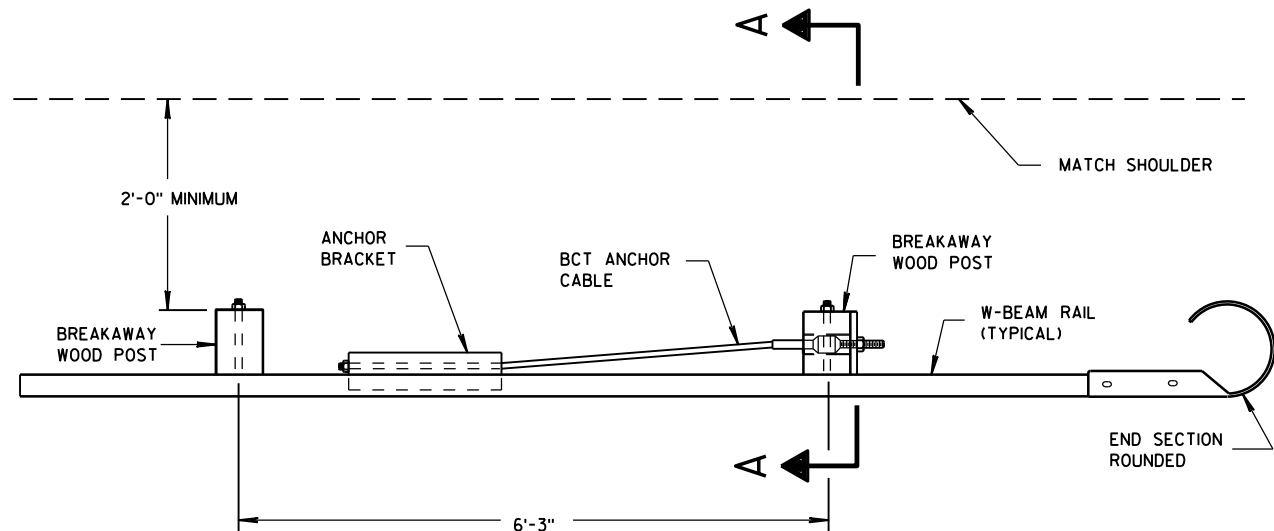
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

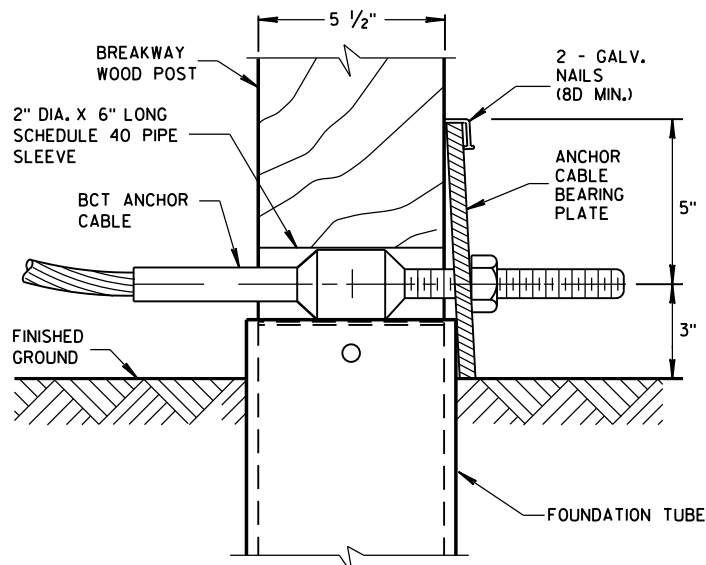
APPROVED	/S/ Rodney Taylor
DATE	ROADWAY STANDARDS DEVELOPMENT
FHWA	UNIT SUPERVISOR



SDD 14b47-a Midwest Guardrail System (MGS) Type 2 Terminal - Terminal Layout, End and Section Detail

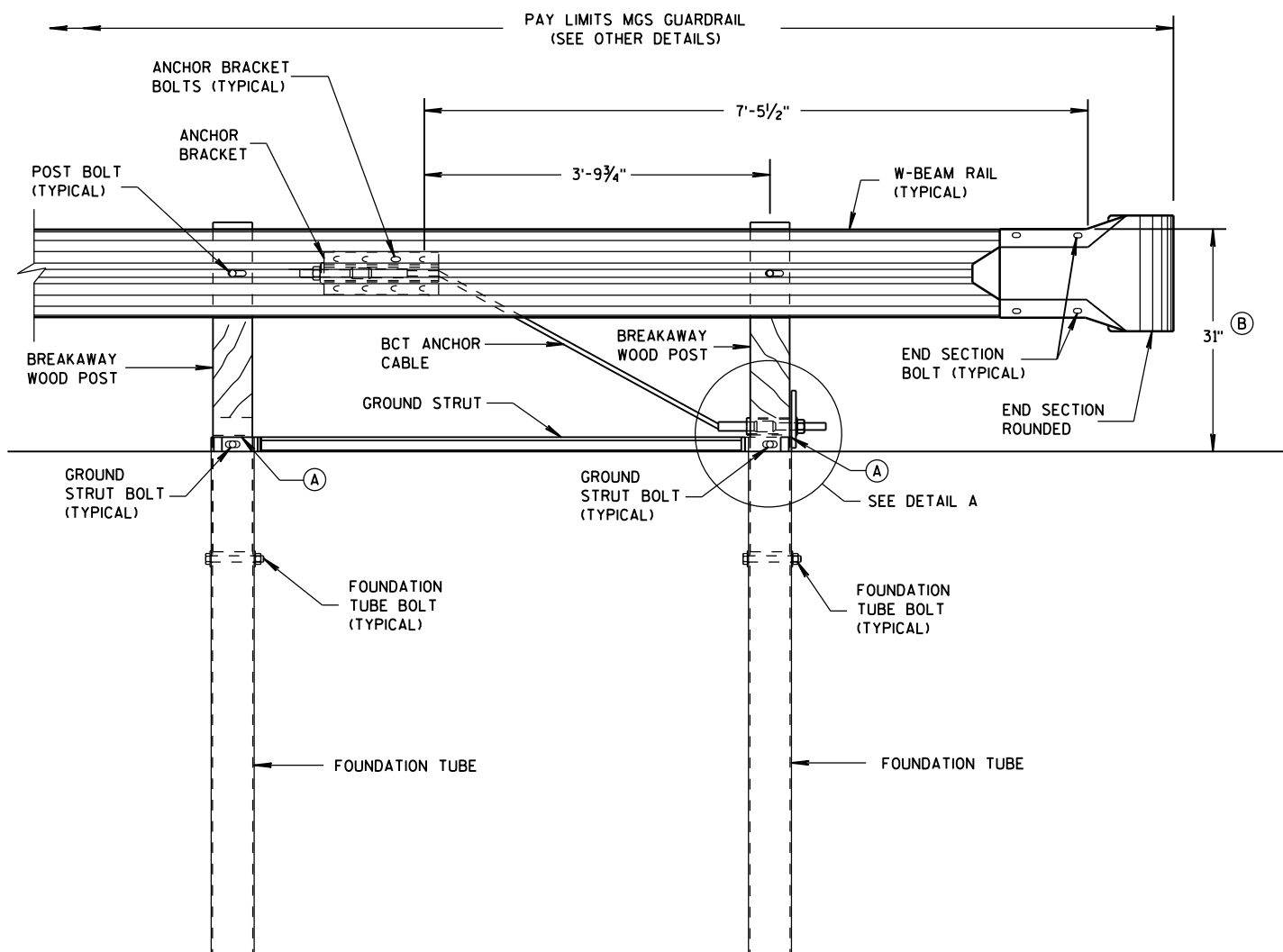


PLAN VIEW



DETAIL A

POST NO. 1
GROUND STRUT NOT SHOWN FOR CLARITY.



FRONT VIEW

END RAIL DETAIL

GENERAL NOTES

SEE SDD 14 B 42 FOR MORE INFORMATION.

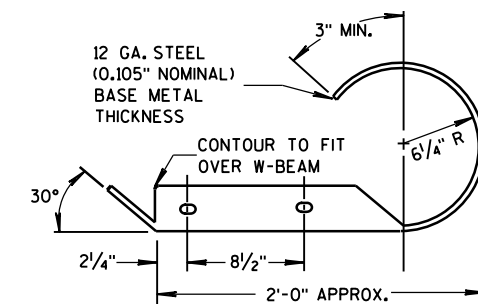
END SECTION BOLTS AND NUTS HAVE THE SAME MATERIAL REQUIREMENTS AS SPLICE BOLTS.

FOUNDATION TUBE BOLTS ARE $\frac{7}{8}$ " DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 $\frac{7}{8}$ " DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

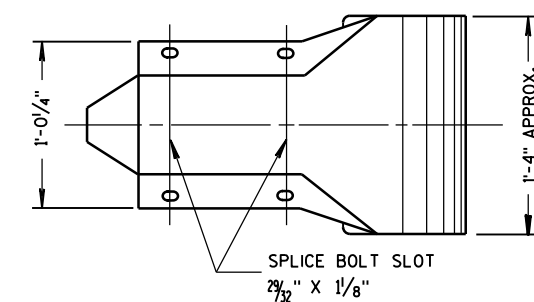
ANCHOR BRACKET AND GROUND STRUT BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 HEX HEAD BOLT. ANCHOR BRACKET BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 $\frac{5}{8}$ " DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

W-BEAM END SECTION ROUNDED HAS THE SAME MATERIAL PROPERTIES AS STANDARD STEEL RAIL.

- (A) TOP OF FOUNDATION TUBE SHALL BE NO MORE THAN 3" ABOVE FINISHED GROUND.
- (B) FOR NEW CONSTRUCTION TOP OF RAIL IS $31" \pm 1"$.
FOR EXISTING INSTALLATIONS TOP OF RAIL IS BETWEEN $27\frac{3}{4}"$ TO $32" \pm 1"$.

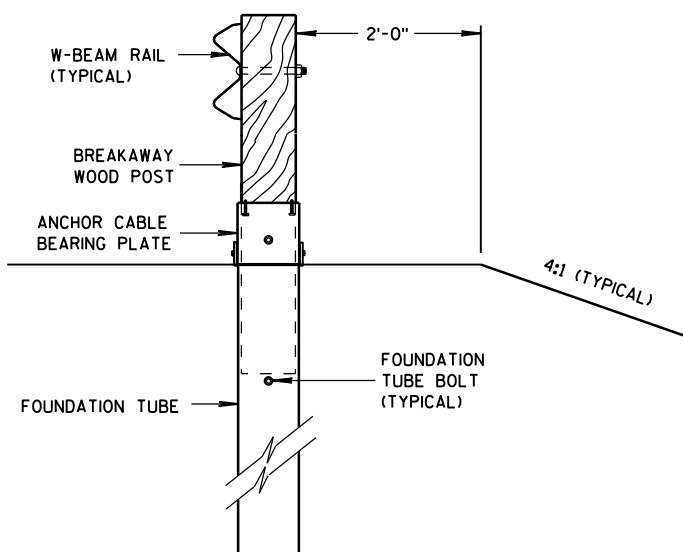


PLAN VIEW



FRONT VIEW

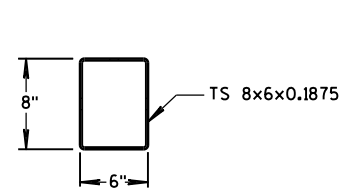
W BEAM END
SECTION ROUNDED



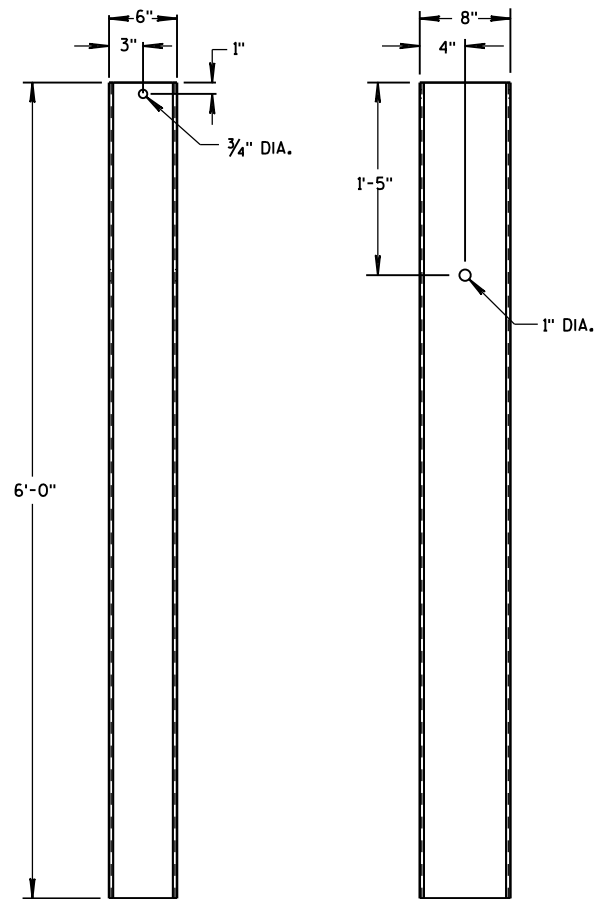
SECTION A-A

MIDWEST GUARDRAIL
SYSTEM (MGS) TYPE 2 TERMINAL

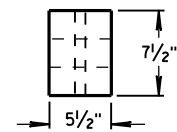
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



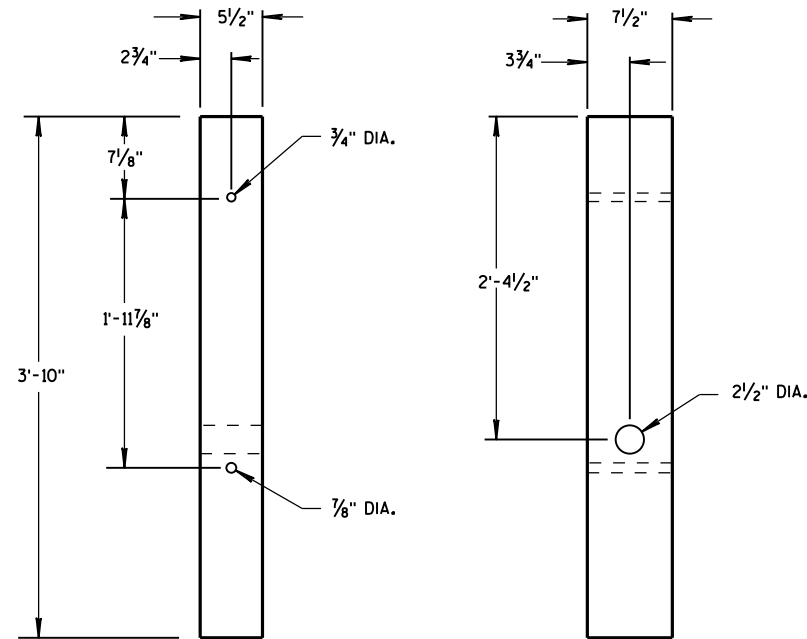
PLAN VIEW



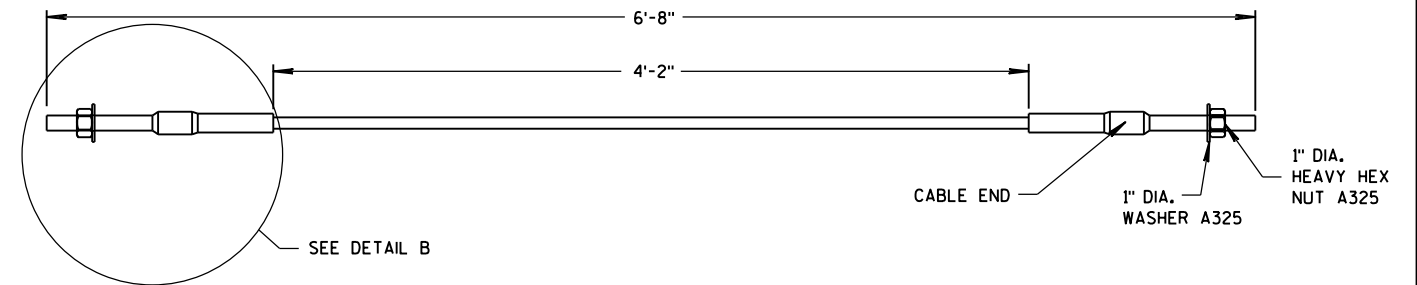
FRONT VIEW
SIDE VIEW
FOUNDATION TUBE



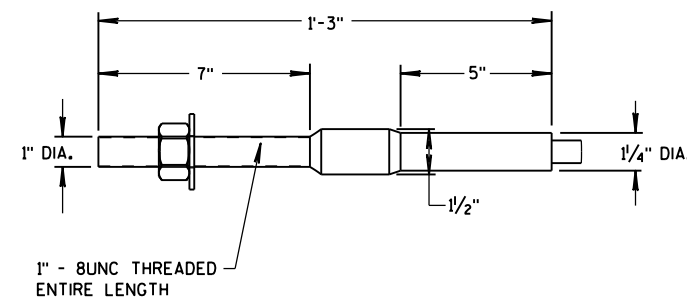
PLAN VIEW



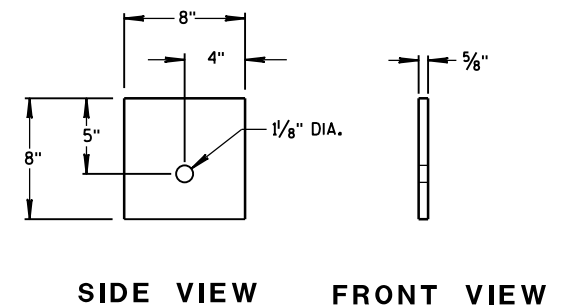
FRONT VIEW
SIDE VIEW
BREAKAWAY WOOD POST



BCT ANCHOR CABLE



DETAIL B



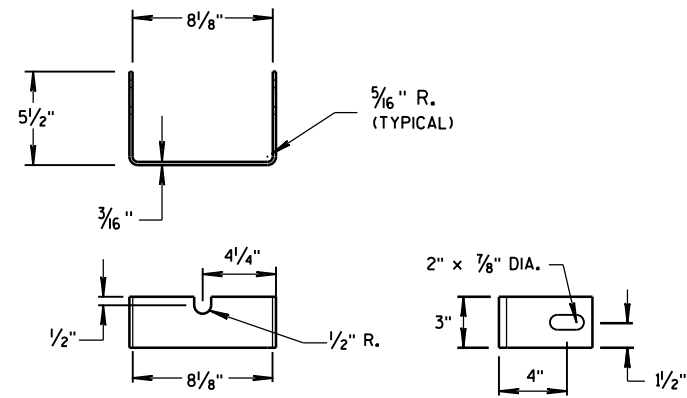
SIDE VIEW
FRONT VIEW
ANCHOR CABLE
BEARING PLATE

MIDWEST GUARDRAIL
SYSTEM (MGS) TYPE 2 TERMINAL

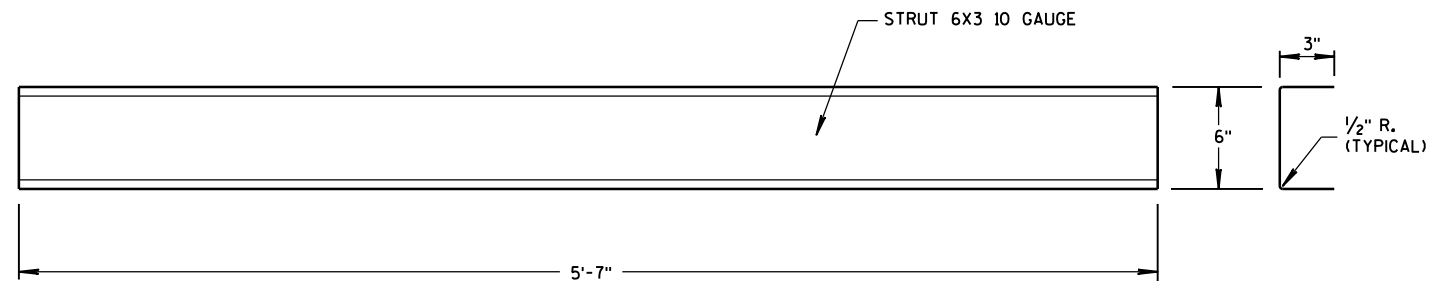
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



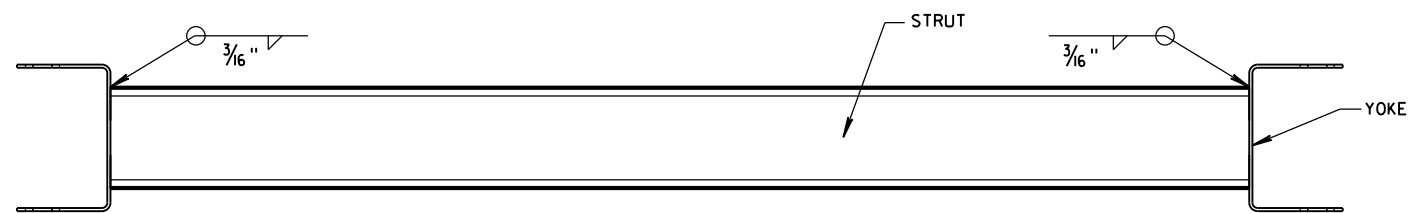
SDD 14b47-c MGS Type 2 Terminal - Ground Strut, Strut and Yoke Details, Cable Barrier Anchor Bracket Details



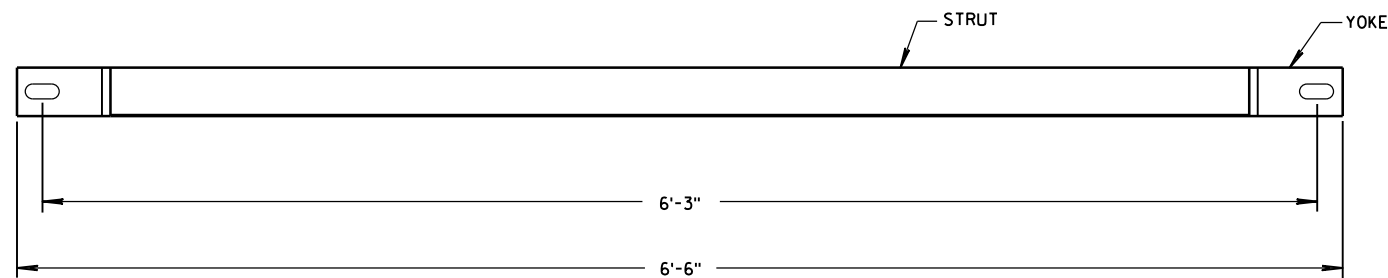
YOKE DETAIL



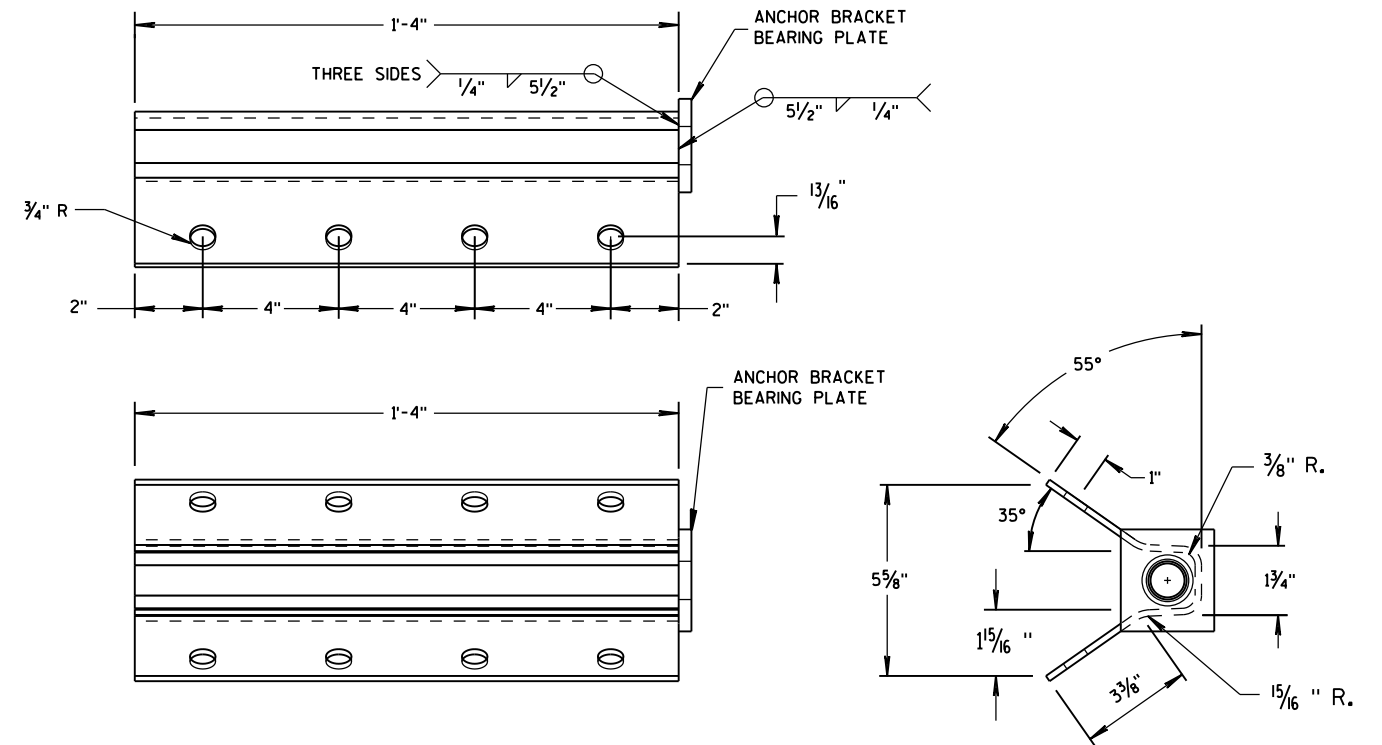
STRUT DETAIL



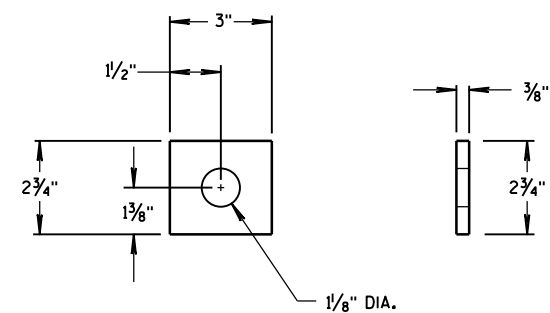
PLAN VIEW



FRONT VIEW
GROUND STRUT DETAIL



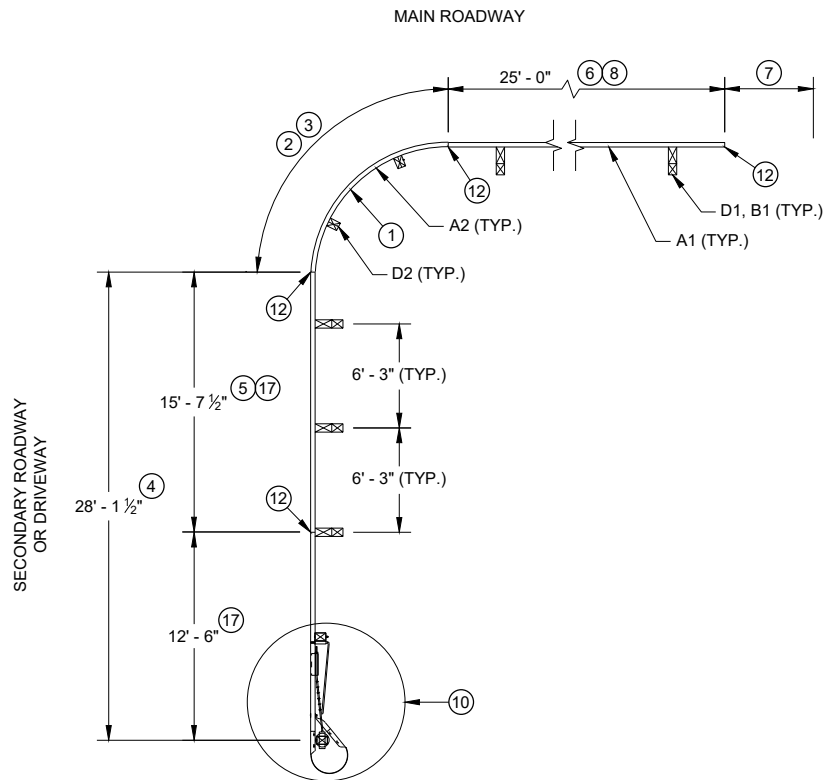
ANCHOR BRACKET



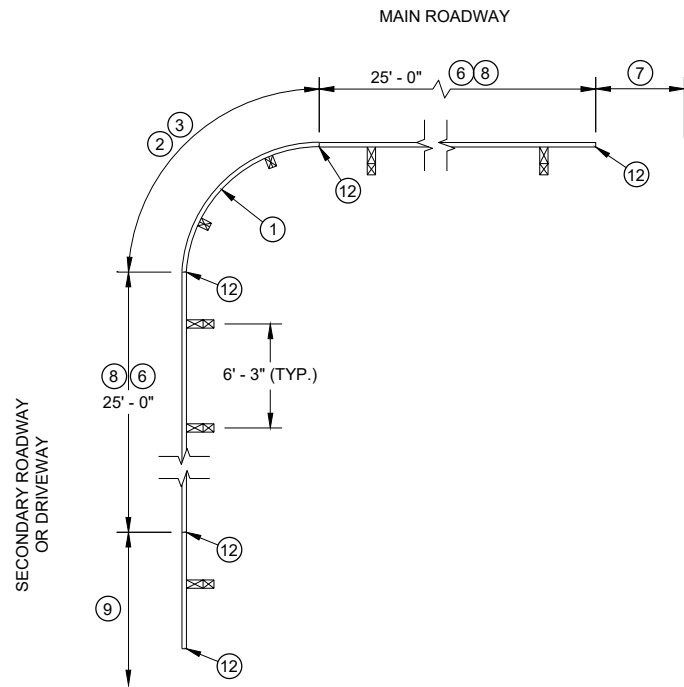
ANCHOR BRACKET
BEARING PLATE

MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 2 TERMINAL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2014 DATE	/S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

SDD 14B53-a Short Radius Beam Guard and Terminal (MGS) - Layout



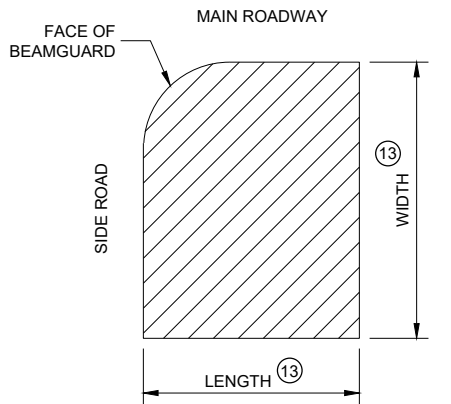
PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
SHORT RADIUS TERMINAL ON
SECONDARY ROAD OR DRIVEWAY



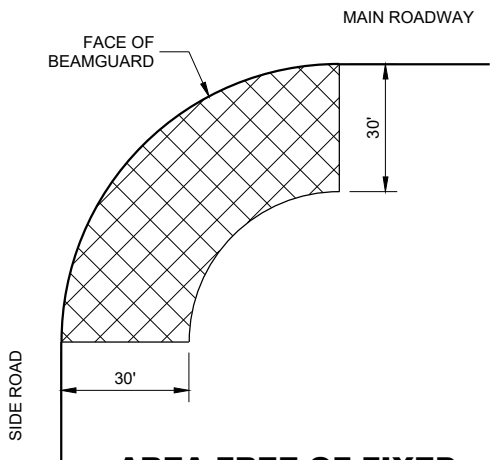
PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
EAT, ADDITIONAL BEAM GUARD
OR
TRANSITION TO RIGID BARRIER ON
SECONDARY ROAD OR DRIVEWAY

TABLE FOR RADIUS OF 32' AND LESS

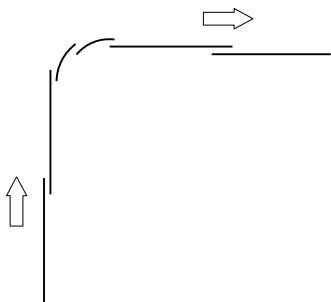
RADIUS (FT)	LENGTH (FT)	WIDTH (FT)
8	25	15
16	30	15
24	40	20
32	50	30



AREA FREE OF FIXED
OBJECTS FOR RADIUS
32' AND LESS



AREA FREE OF FIXED
OBJECTS FOR RADIUS
GREATER THAN 32'



LAP SPLICE DETAIL

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

SEE SDD 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.

GALVANIZE PARTS AFTER FABRICATION.

WELDING TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI / AWS D1.1.

UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.

UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERTICAL.

ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUT.

UNLESS NOTED OTHERWISE, CUT OR PROVIDE BOLTS THAT ARE 1/4" TO 1/2" BEYOND THE NUT.

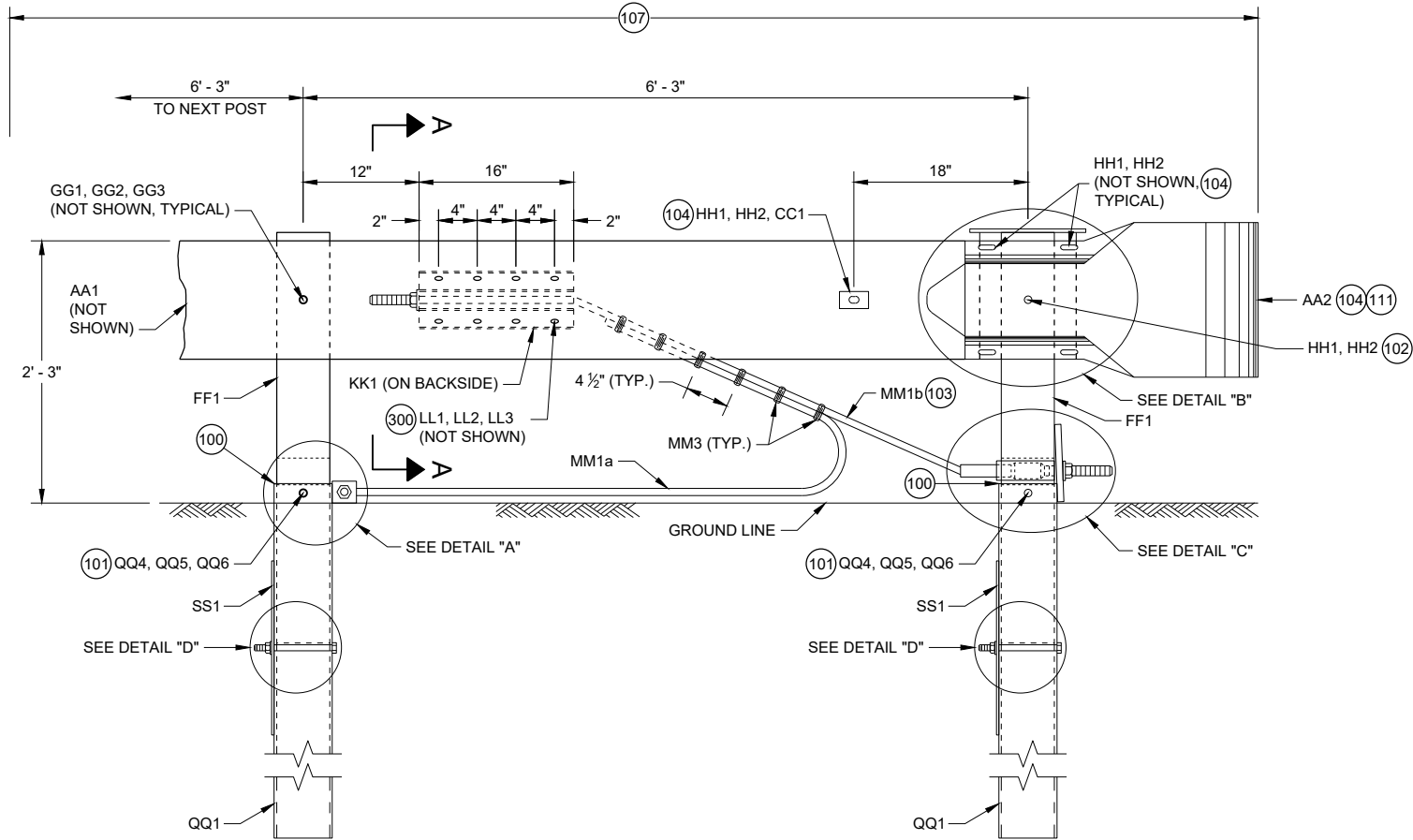
DRAWINGS ARE NOT TO SCALE.

- 1 RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- 2 CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6' - 3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE (CRT) POSTS.
- 3 WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAIL IS RESTED ON TOP OF LAG SCREW.
- 4 MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID WITH BEAM GUARD ITEM.
- 5 ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.
- 6 MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TO TRANSITION TO RIGID BARRIER. ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.
- 7 BEAM GUARD, EAT, OR TRANSITION TO RIGID BARRIER. SEE PLAN.
- 8 TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.
- 9 ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.
- 10 SHORT RADIUS TERMINAL (SEE OTHER DETAILS).
- 11 HEIGHT VARIES. SEE NOTE (8) AND (8).
- 12 BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRES PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.
- 13 SEE TABLE FOR VALUES.
- 14 MAXIMUM HEIGHT FOR CENTER OF HOLE IS 3/4" ABOVE FINISHED GROUND ±1".
- 15 DRILL POST 1 5/8" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.
- 16 SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.
- 17 TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL (CRT).

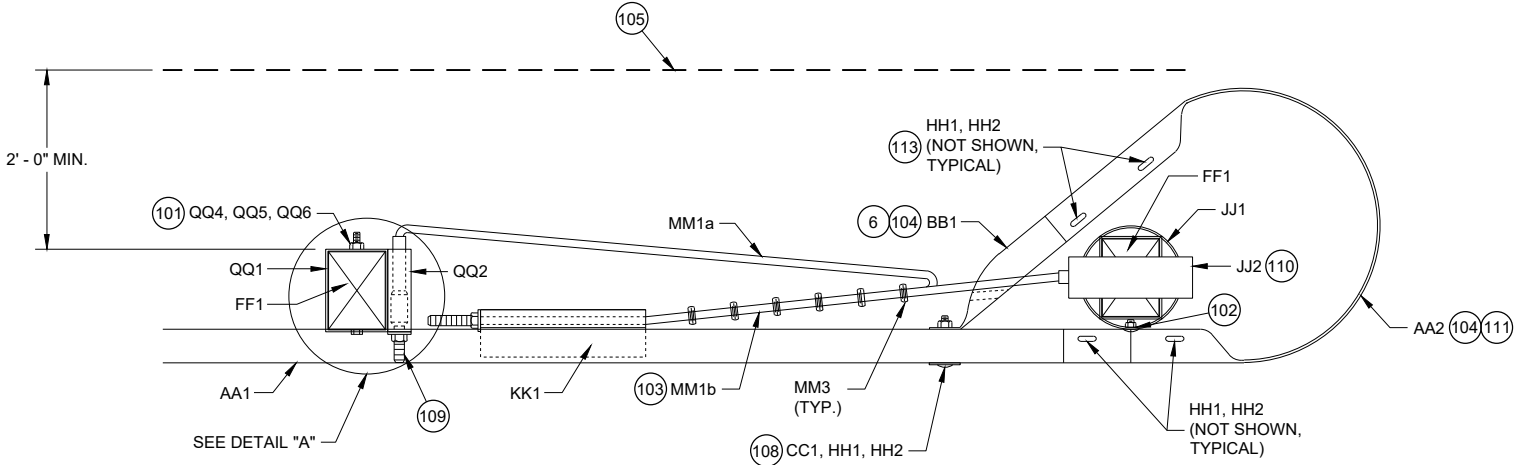
SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14B53-b Short Radius Beam Guard and Terminal (MGS) - Short Radius Terminal View, Detail A



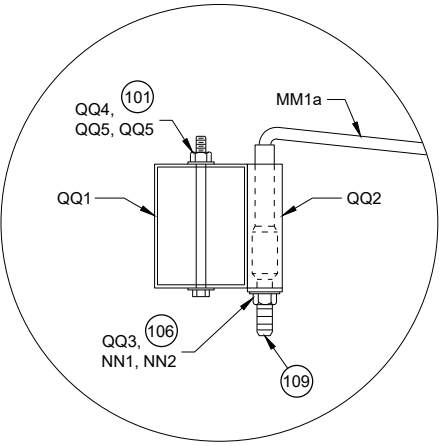
**PROFILE VIEW
SHORT RADIUS TERMINAL**



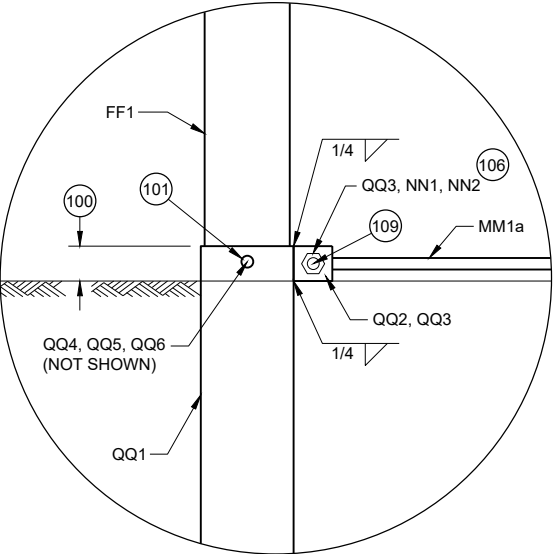
**TOP VIEW
SHORT RADIUS TERMINAL**

GENERAL NOTES

- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL "B".
- (103) CABLE IS TAUT.
- (104) ADJUST AA2 AND BB1 TO FIT.
- (105) BREAK POINT OF SHOULDER.
- (106) TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL "A" PROFILE VIEW.
- (107) PAY LIMIT FOR BEAM GUARD.
- (108) SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.
- (109) CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.
- (110) SEE STEEL PIPE ASSEMBLY DETAILS.
- (111) ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.
- (112) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.
- (113) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.



**TOP VIEW
DETAIL "A"
(WOOD BREAKAWAY AND BEAM
GUARD RAIL POSTS NOT SHOWN)**



**PROFILE VIEW
DETAIL "A"**

**SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)**

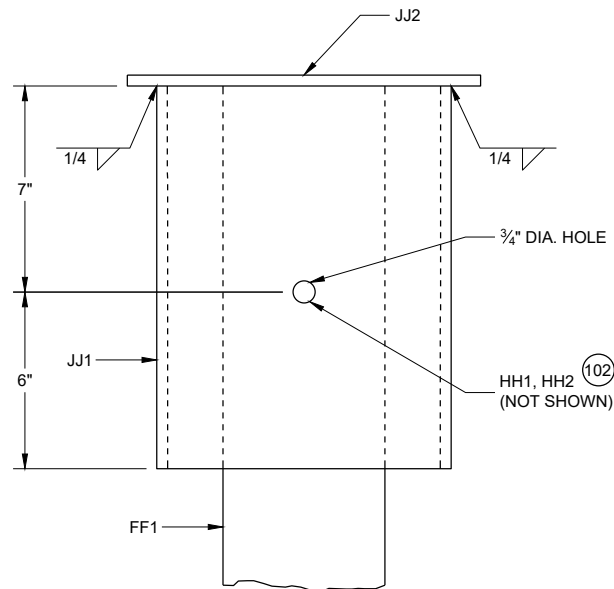
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



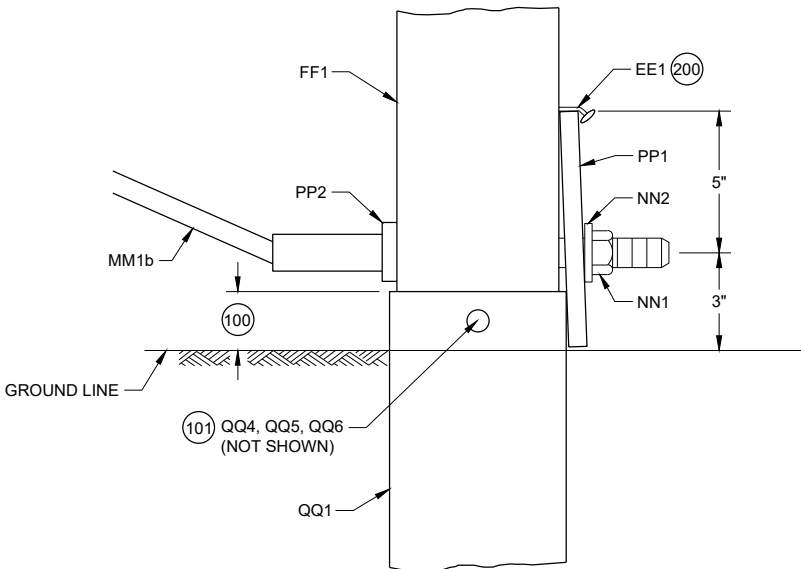
SDD 14B53-c Short Radius Beam Guard and Terminal (MGS) - Terminal Details B, C and D

GENERAL NOTES

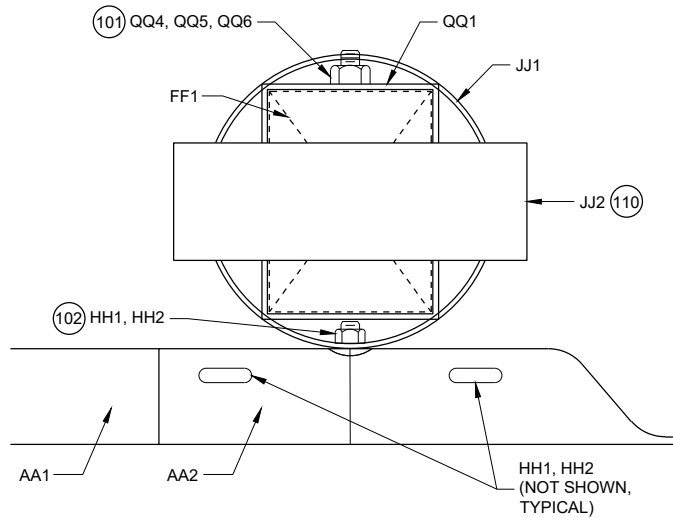
(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.



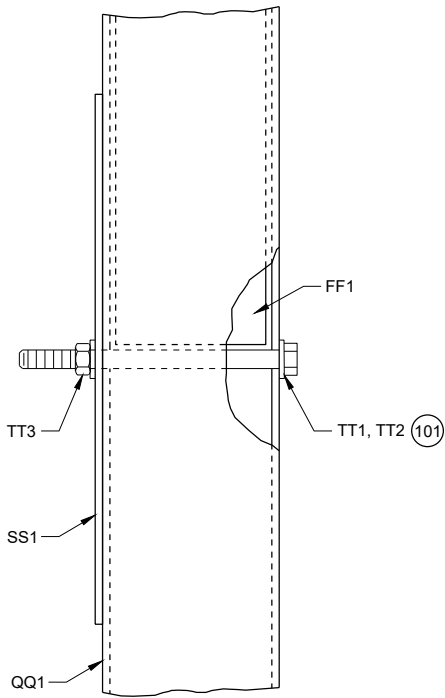
PROFILE VIEW
DETAIL "B"
STEEL PIPE ASSEMBLY
(BEAM GUARD AND W BEAM
END SECTION NOT SHOWN)



PROFILE VIEW
DETAIL "C"



PLAN VIEW
DETAIL "B"
STEEL PIPE ASSEMBLY



PROFILE VIEW
DETAIL "D"

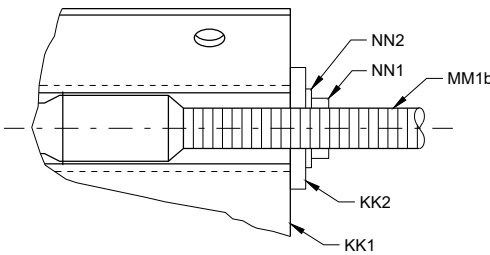
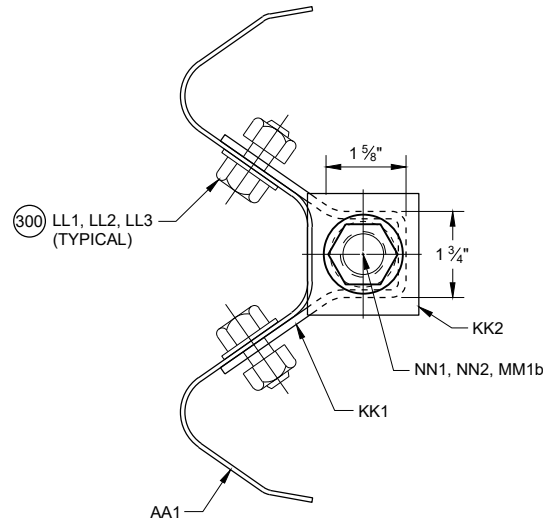
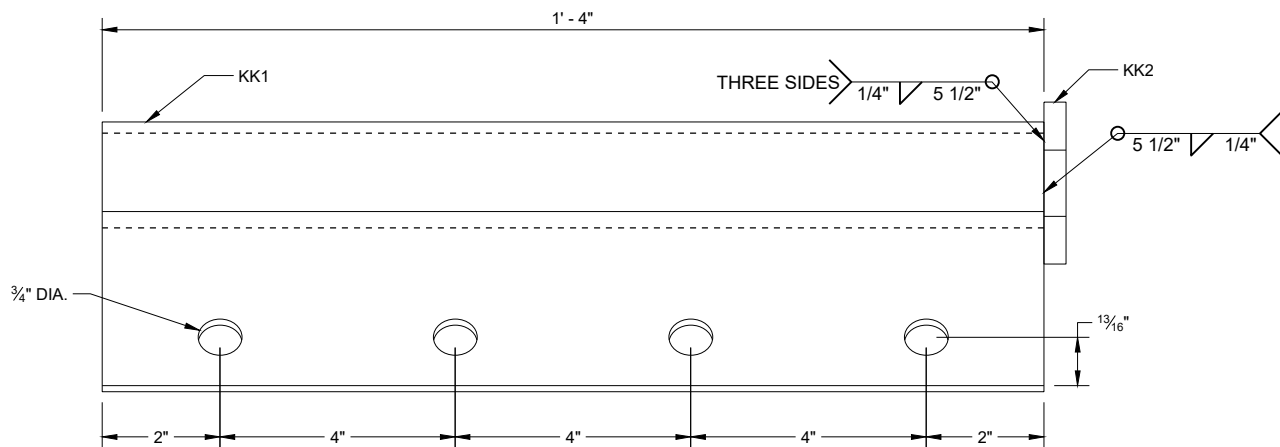
SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

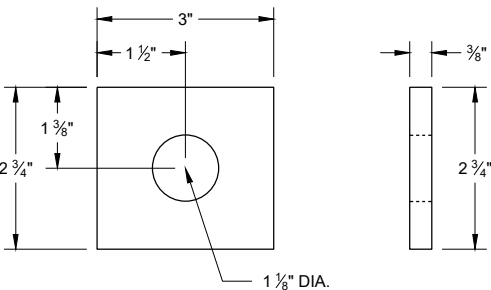
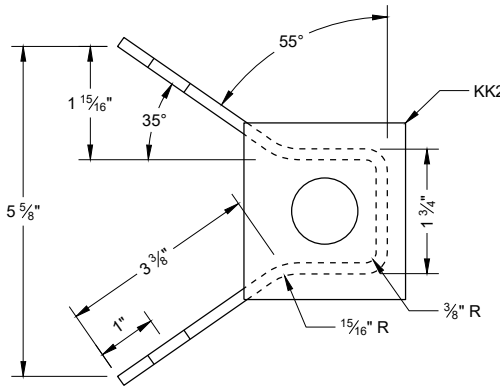
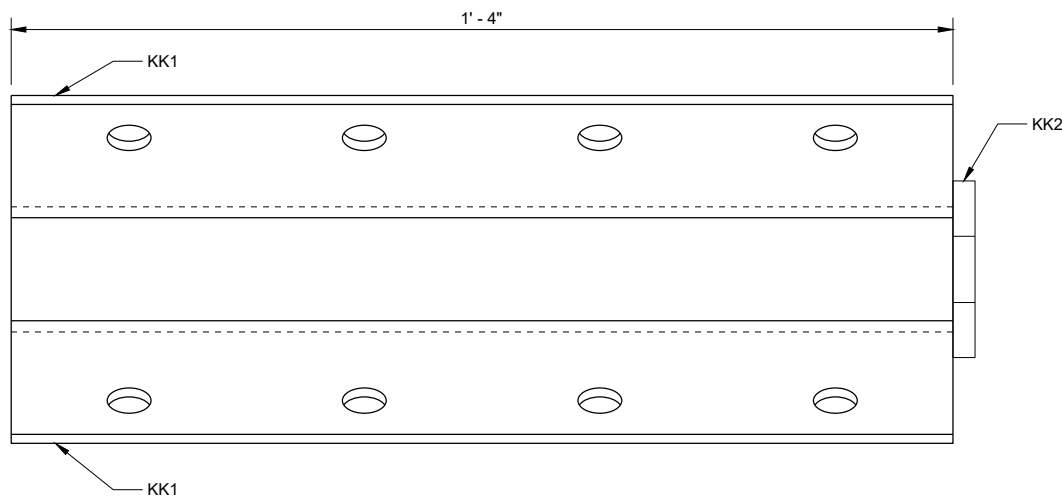
SDD 14B53-d Short Radius Beam Guard and Terminal (MGS) - Terminal Anchor Bracket and Bracket Bearing Details

GENERAL NOTES

300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT (8) LL1 AND LL3 REQUIRED. SIXTEEN (16) LL2 REQUIRED.



SECTION A - A



ANCHOR BRACKET BEARING PLATE (KK2)

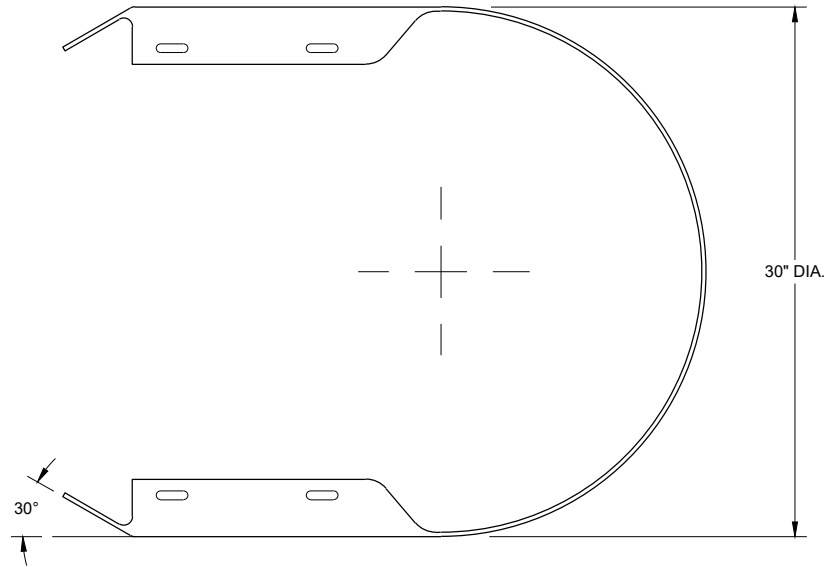
ANCHOR BRACKET (KK1, KK2)

SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

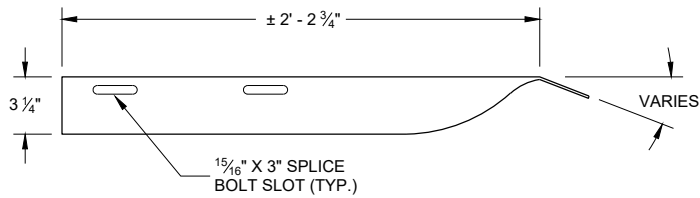
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

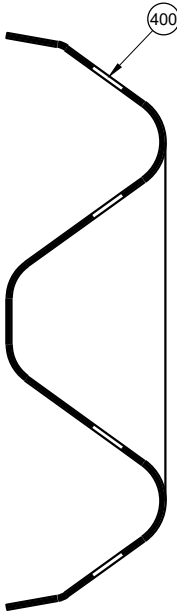
- (400) CROSS SECTION OF PART IS TO FIT OVER AA1 .
- (401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



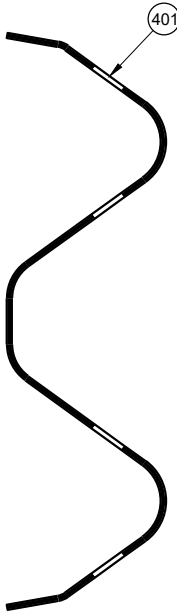
TOP VIEW



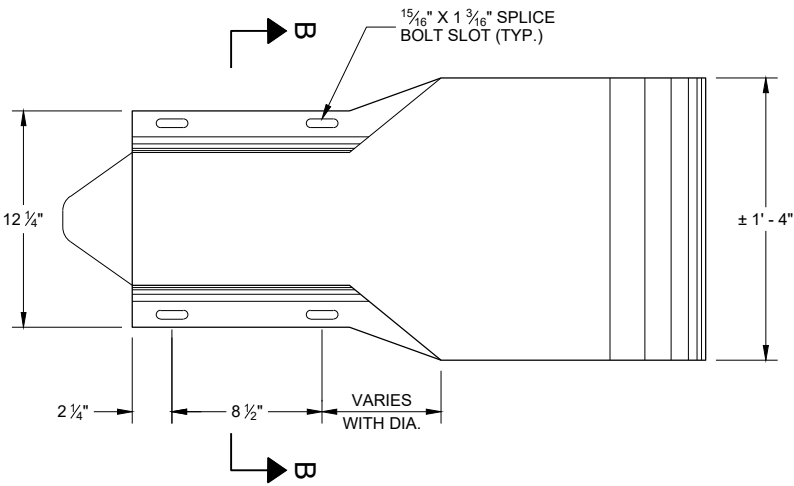
TOP VIEW



SECTION B -B

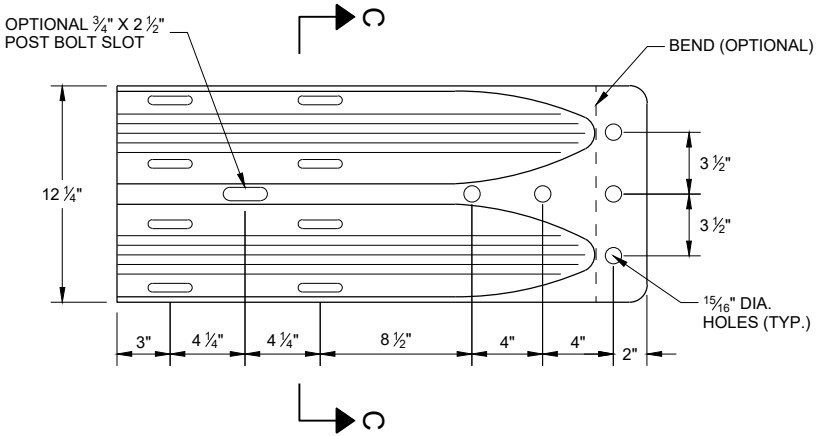


SECTION C -C



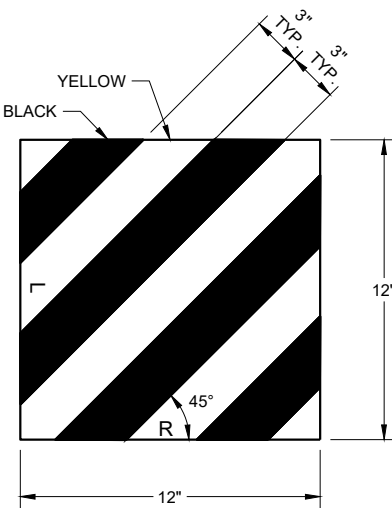
PROFILE VIEW

W BEAM
END SECTION BUFFER (AA2)



PROFILE VIEW

W BEAM
TERMINAL CONNECTOR (BB1)

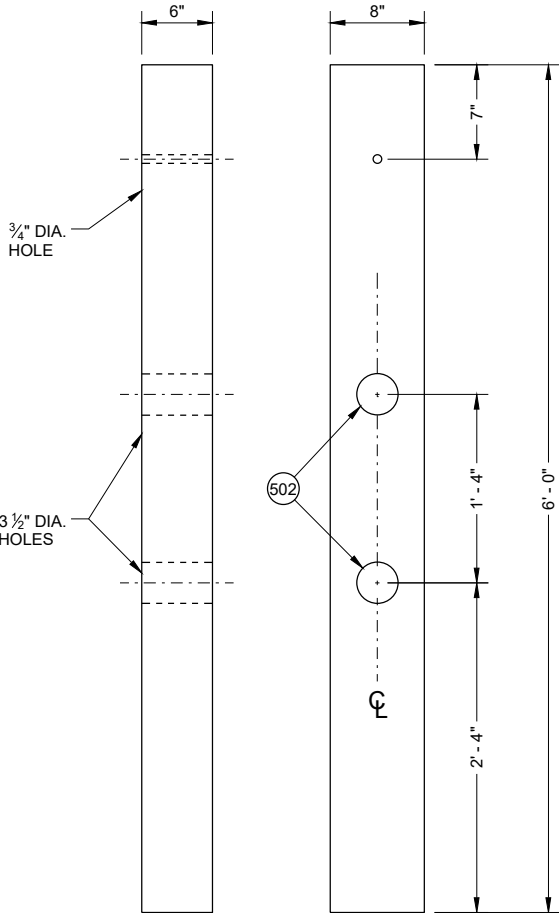


REFLECTIVE SHEETING (UU1, UU2)

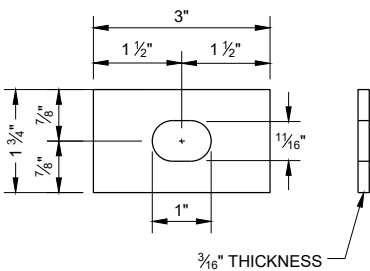
SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

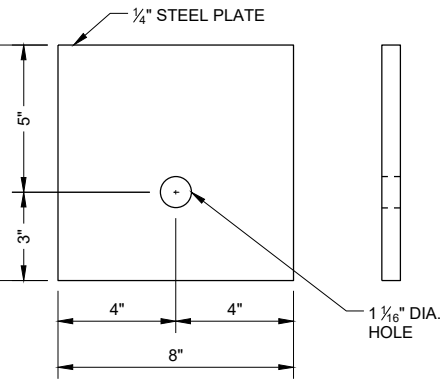
SDD 14B53-f Short Radius Beam Guard and Terminal (MGS)-Cable Assembly, Terminal Post Details, Tube, Plate, Washer



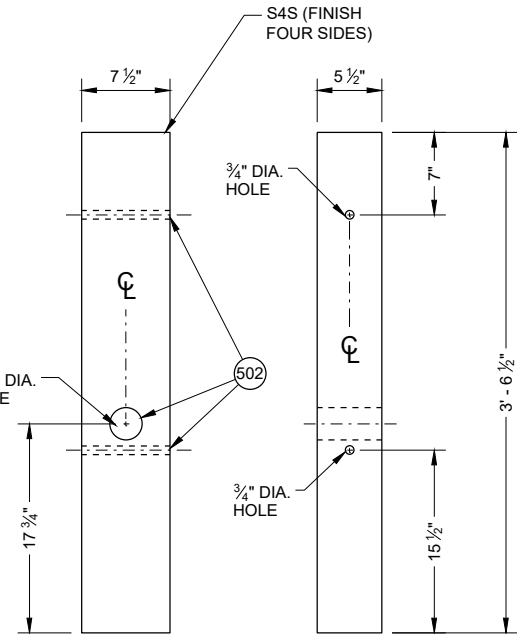
FRONT VIEW SIDE VIEW
CONTROLLED RELEASE POST (CRT) (DD2)



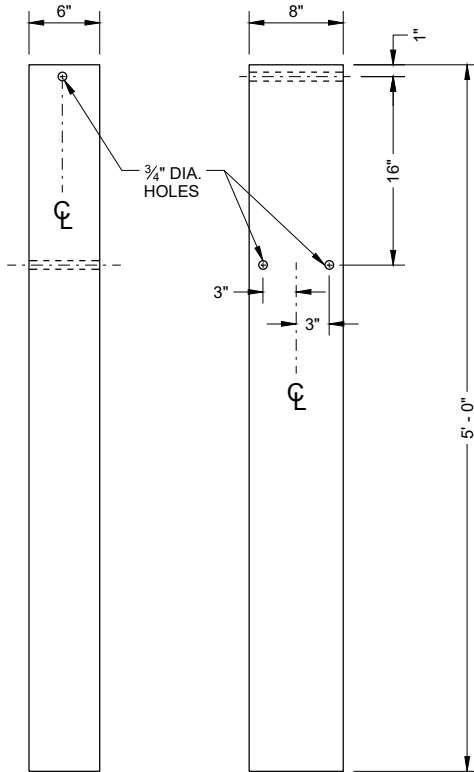
RECTANGULAR PLATE WASHER (CC1)



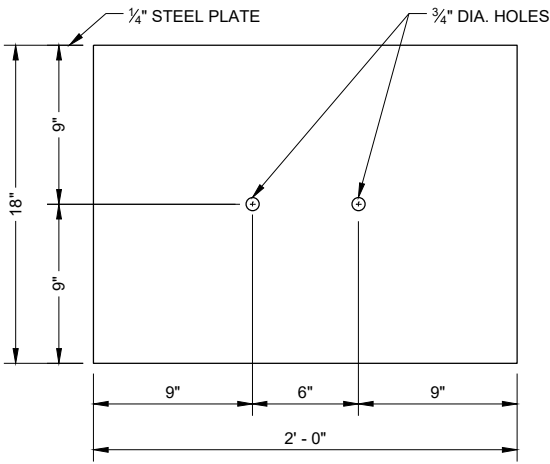
BEARING PLATE (PP1)



FRONT VIEW SIDE VIEW
WOOD BREAKAWAY POST (FF1)



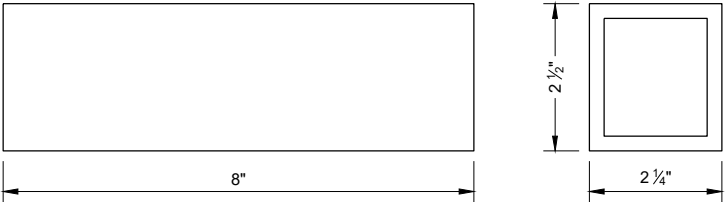
FRONT VIEW SIDE VIEW
FOUNDATION TUBE (QQ1)



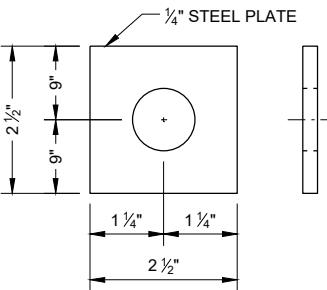
SOIL PLATE (SS1)

GENERAL NOTES

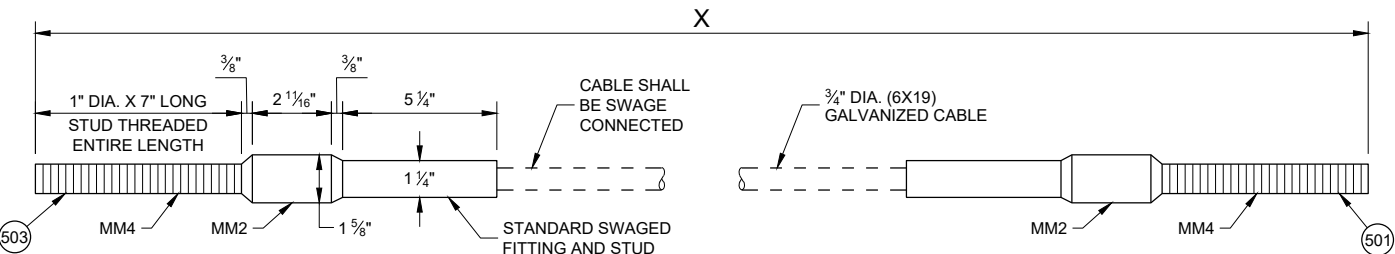
- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHMENT OF SS1.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



FOUNDATION TUBE - ANCHOR CABLE TUBE (QQ2)



ANCHOR CABLE TUBE END PLATE (QQ3)



CABLE ASSEMBLY (MM1a, MM1b)

"X" LENGTH

MM1b	9' - 0"
MM1b	6' - 8"

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

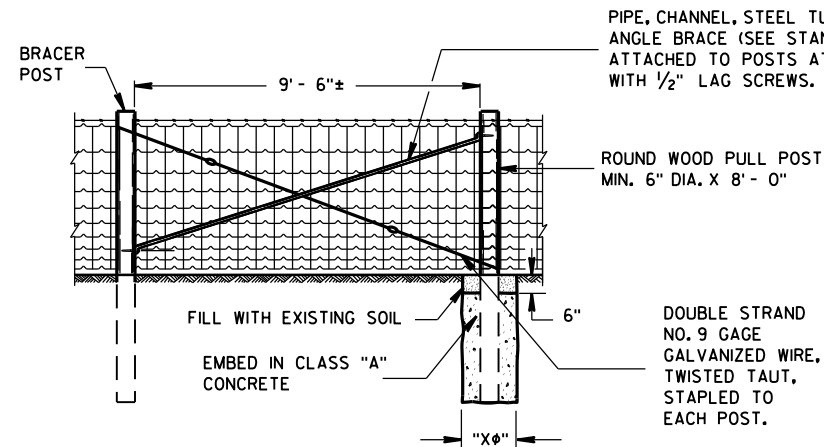
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



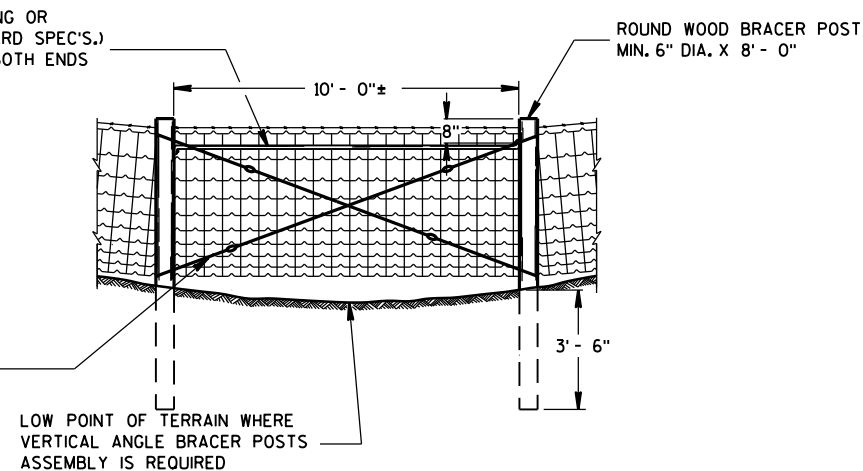
SDD 15b1-a Fence Woven Wire

NOTE: PULL OR STRETCHER POST ASSEMBLIES SHALL BE PLACED MIDWAY BETWEEN END POSTS AND CORNER POSTS WHERE A RUN OF FENCE EXCEEDS 660' BUT IS LESS THAN 1,320'. FOR RUNS OF FENCE IN EXCESS OF 1,320' MAXIMUM SPACING OF PULL OR STRETCHER POST ASSEMBLIES SHALL BE 660'± C-C.

ILLUSTRATION SHOWS POSITION OF STANDARD STEEL BRACE, DOUBLE STRAND GALVANIZED WIRE, AND THE POST TO BE EMBEDDED IN CONCRETE WHEN WIRE FENCE IS INSTALLED FROM LEFT TO RIGHT. THE BRACES SHALL BE POSITIONED ON THE OPPOSITE DIAGONALS AND THE OPPOSITE POST SHALL BE EMBEDDED IN CONCRETE WHEN WIRE FENCE IS INSTALLED FROM RIGHT TO LEFT.



PULL OR STRETCHER POSTS ASSEMBLY



VERTICAL ANGLE BRACER POSTS ASSEMBLY

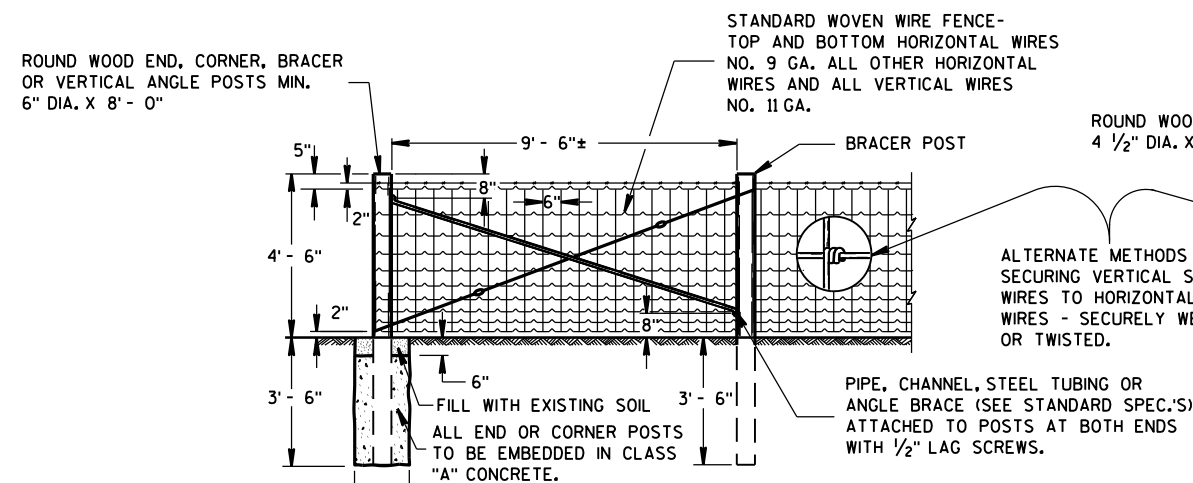
GENERAL NOTES

"Xφ" = DIAMETER OF THE POST PLUS 12".

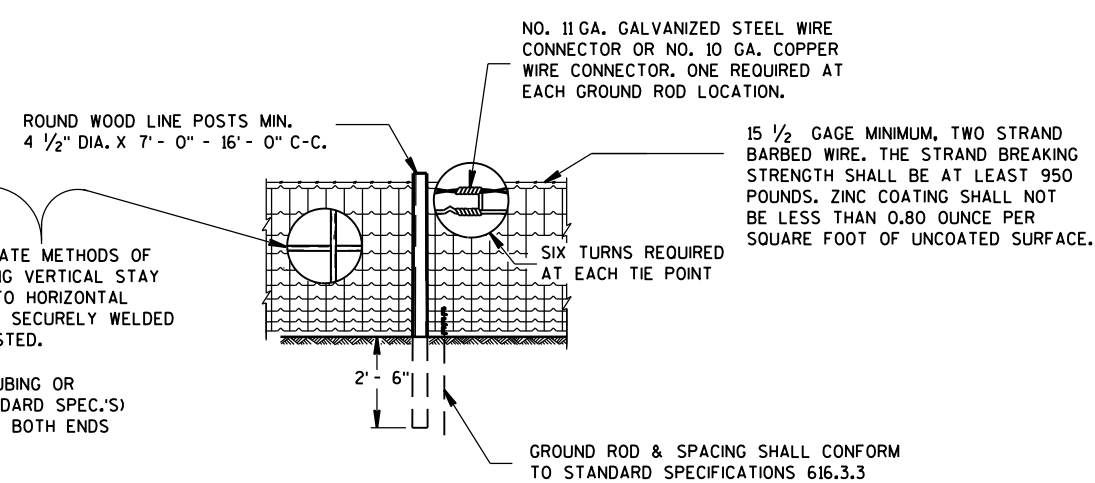
FENCE STAPLES SHOULD NEVER BE DRIVEN VERTICALLY INTO WOOD POSTS (WITH BOTH LEGS PARALLEL WITH THE WOOD GRAIN), DOING SO CAN SEPARATE THE GRAIN AND SIGNIFICANTLY REDUCE THE HOLDING POWER, ROTATING THE STAPLES SLIGHTLY OFF VERTICAL STRADDLES THE GRAIN AND PROVIDES MORE RESISTANCE TO PULL-OUT.

DO NOT STAPLE WIRE TIGHT TO THE LINE POSTS. ALLOW MOVEMENT OF WIRE FOR EXPANSION AND CONTRACTION. STAPLE ARRANGEMENT SHALL BE THE SAME FOR ALL OTHER POSTS EXCEPT THAT THEY SHALL BE DRIVEN TIGHT TO POSTS. ALL STAPLES SHALL BE 2" X 9 GAGE AND SHALL BE MANUFACTURED FROM GALVANIZED WIRE OR HOT DIP GALVANIZED AFTER FORMING. STAPLES SHALL HAVE SLASH-CUT POINTS.

FENCE SHALL BE LOCATED 3'-0" INSIDE THE RIGHT OF WAY LINE UNLESS OTHERWISE INDICATED ON THE PLANS.

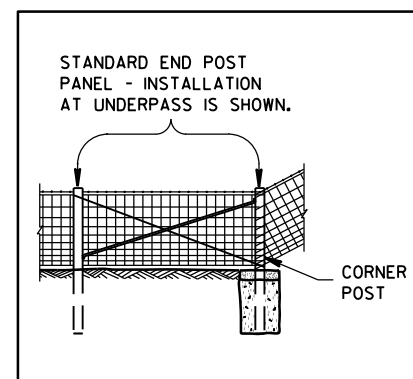


END OR CORNER POSTS ASSEMBLY

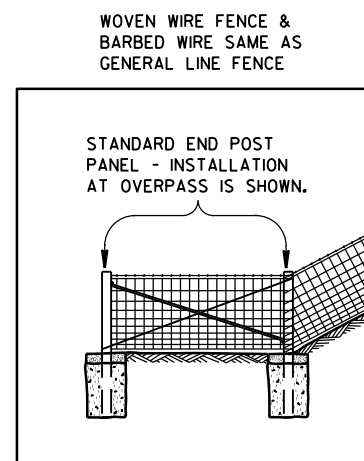


LINE FENCE CONSTRUCTION

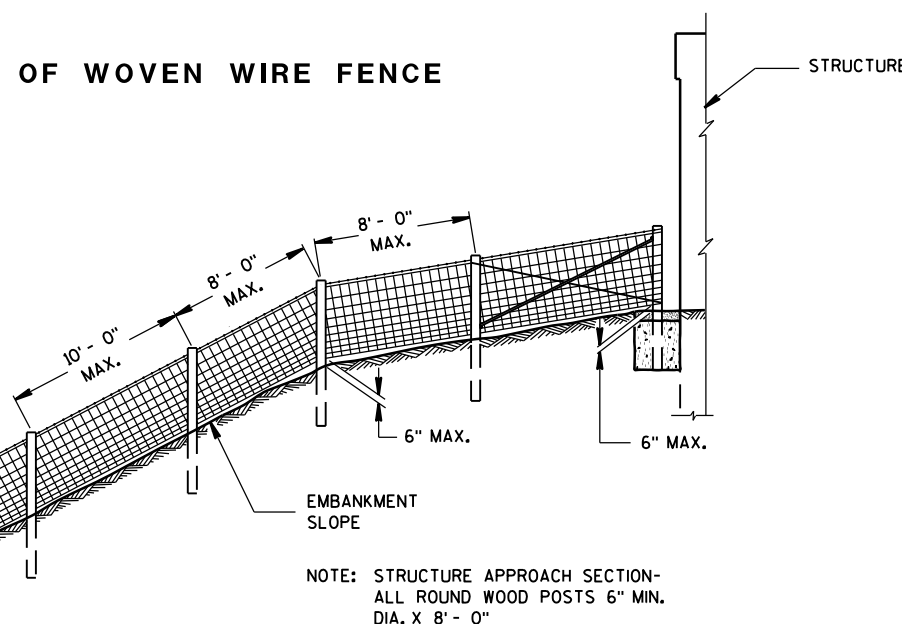
GENERAL ROADSIDE VIEW OF WOVEN WIRE FENCE



ALTERNATE FENCE DESIGN AT STRUCTURE



FENCE DESIGN AT STRUCTURE APPROACH



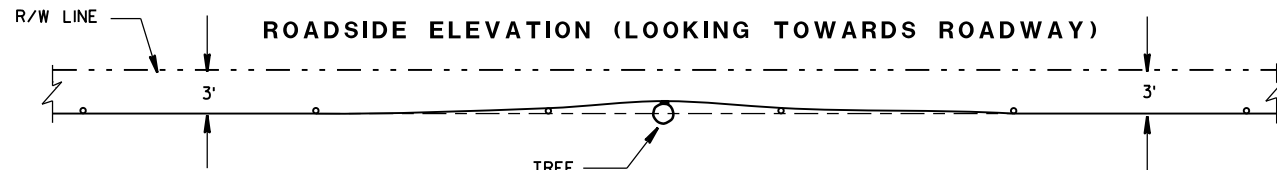
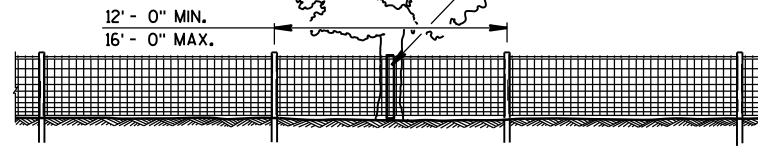
FENCE WOVEN WIRE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

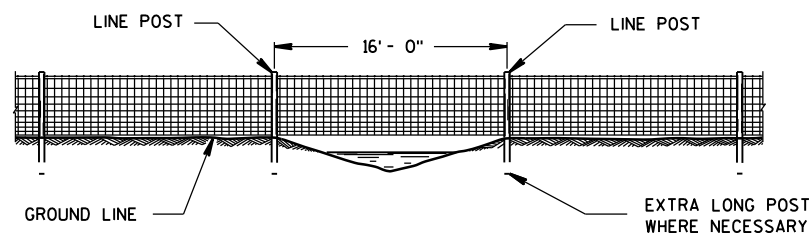


NOTE: TREE IN NORMAL FENCE LINE SPECIFICALLY ORDERED BY ENGINEER TO REMAIN IN PLACE.

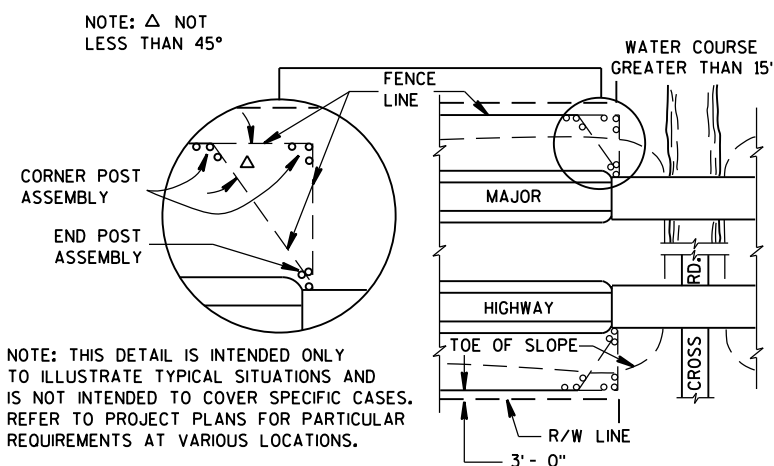
2" X 6" DOUGLAS FIR OR SO. YELLOW PINE PLACED BETWEEN TREE AND WOVEN WIRE FENCE. WOVEN WIRE FENCE AND BARBED WIRE TO BE STAPLED TO 2" X 6" LIKE AS TO LINE POST. 2" X 6" NOT FASTENED TO TREE.



PLAN VIEW
FENCE DESIGN AT TREES REMAINING
IN NORMAL FENCE LINE

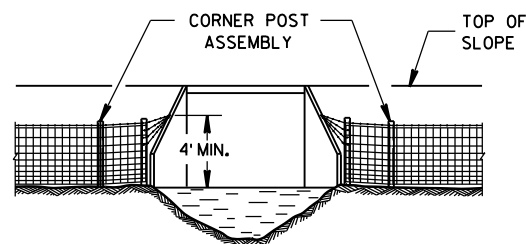


FENCE CONSTRUCTION OVER STREAM
COURSES OF 15 FT. OR LESS IN WIDTH

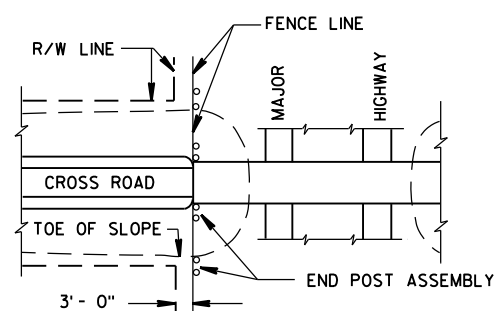


PLAN VIEW
MAJOR HIGHWAY OVERPASS OR STREAM COURSE
CROSSING OF GREATER THAN 15 FT. IN WIDTH

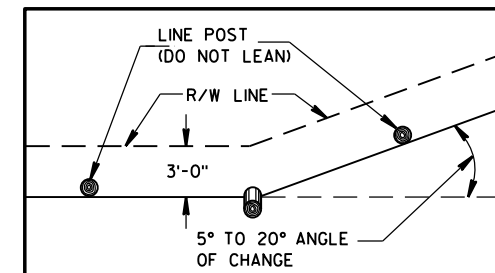
FENCE LOCATION AT STRUCTURES



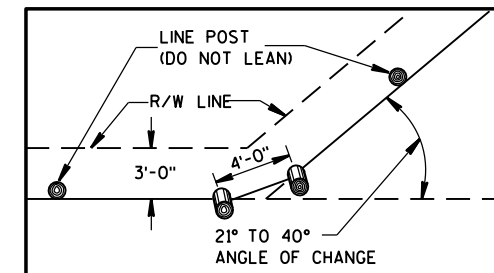
FENCE INSTALLATION TO WINGWALLS



PLAN VIEW
MAJOR HIGHWAY UNDERPASS



PLAN VIEW
SINGLE POST CORNER



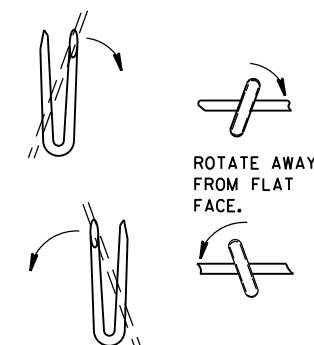
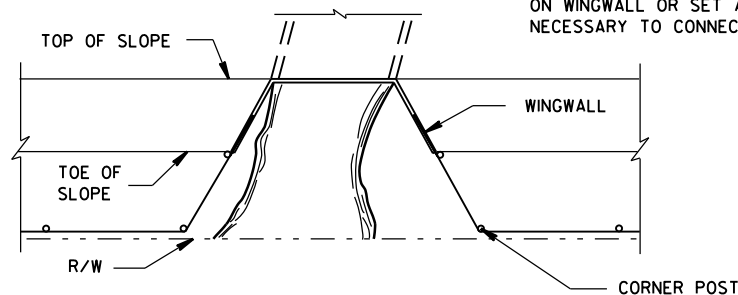
PLAN VIEW
DOUBLE POST CORNER

RIGHT OF WAY LINE CHANGE 40° AND LESS

NOTE: SINGLE AND DOUBLE POSTS SHALL BE A MIN. 6" DIA. X 8'-0" WITH A LEAN OF 4" TOWARD THE OUTSIDE OF THE CURVE.

WHEN THE RIGHT OF WAY LINE CHANGE IS MORE THAN 40° USE THE CORNER OR STRETCHER POSTS ASSEMBLY.

NOTE: PLACE A MINIMUM OF 4 STRANDS OF BARBED WIRE, 6" MAXIMUM CENTERS IN FAN SHAPE CONNECTED TO AN EYE BOLT ON WINGWALL OR SET A LONE POST WHEN NECESSARY TO CONNECT BARBED WIRE.



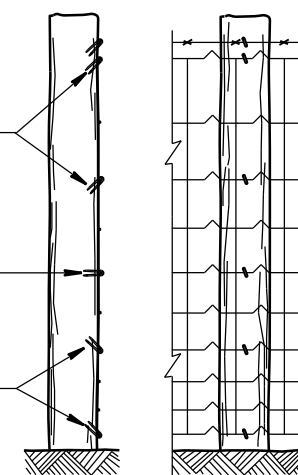
LINE POST

NOTE: WHEN POSTS ARE DRIVEN THE SMALL END SHALL BE DOWN.

STAPLES SLOPED DOWNWARD FOR SUSTAINED GRADES AND OVER KNOLLS.

STAPLES LEVEL FOR LEVEL GROUND.

SLOPE UPWARDS WHEN FENCE TENDS TO LIFT.



END
ELEVATION
FARM
SIDE
ELEVATION
FENCE MOUNTING DETAIL

FENCE WOVEN WIRE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4/4/2008
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

STRUCTURE B-05-0234 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	279	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	25	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	678	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	70	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	948	-

STRUCTURE B-36-0083 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	217	BOTH PARAPETS
509.9050.S	CLEANING PARAPETS	LF	528	BOTH PARAPETS
604.9015.S	RESEAL CRUSHED AGGREGATE SLOPE PAVING	SY	197	-
SPV.0060	PAINT BEARINGS AT ABUTMENTS	EACH	8	
SPV.0090	HOT RUBBER JOINTS	LF	60	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	450	-

STRUCTURE B-36-0089 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	327	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	4	COLUMN
509.9050.S	CLEANING PARAPETS	LF	794	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	86	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	1,800	-

STRUCTURE B-36-0093 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	154	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	25	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	378	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	80	-

STRUCTURE B-36-0094 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	152	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	25	PARAPET
509.9050.S	CLEANING PARAPETS	LF	374	BOTH PARAPETS
SPV.0060	CONCRETE GIRDER END REPAIR	EACH	1	G1
SPV.0090	HOT RUBBER JOINTS	LF	80	-

STRUCTURE B-36-0095 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	118	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	5	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	290	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	80	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	569	-

STRUCTURE B-36-0096 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	118	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	9	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	290	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	80	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	569	-

STRUCTURE B-36-0097 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	120	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	5	PARAPET
509.9050.S	CLEANING PARAPETS	LF	296	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	80	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	520	-

STRUCTURE B-36-0099 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	117	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	15	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	288	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	86	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	568	-

STRUCTURE B-36-0100 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	112	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	22	ABUTMENTS, PARAPET, WINGS
509.9050.S	CLEANING PARAPETS	LF	276	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	104	-
SPV.0180	CONCRETE BRIDGE DECK METHACRYLATE FLOOD SEAL	SY	690	-

STRUCTURE B-36-0101 TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	173	BOTH PARAPETS
509.9050.S	CLEANING PARAPETS	LF	423	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	100	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	800	-

STRUCTURE B-36-0102 TOTAL ESTIMATED QUANTITIES

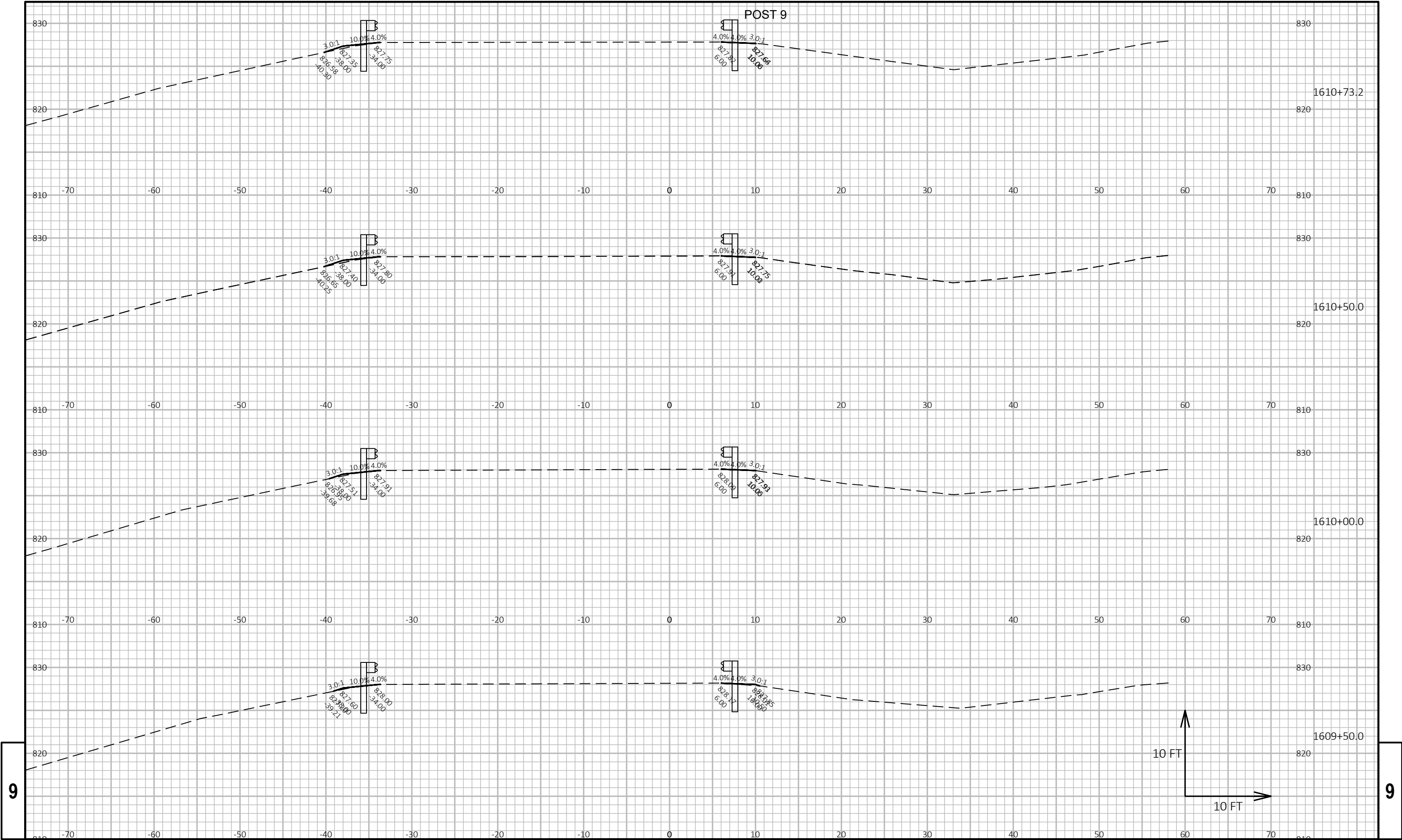
BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	154	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	31	ABUTMENTS & PARAPET
509.9050.S	CLEANING PARAPETS	LF	378	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	111	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	1,600	-

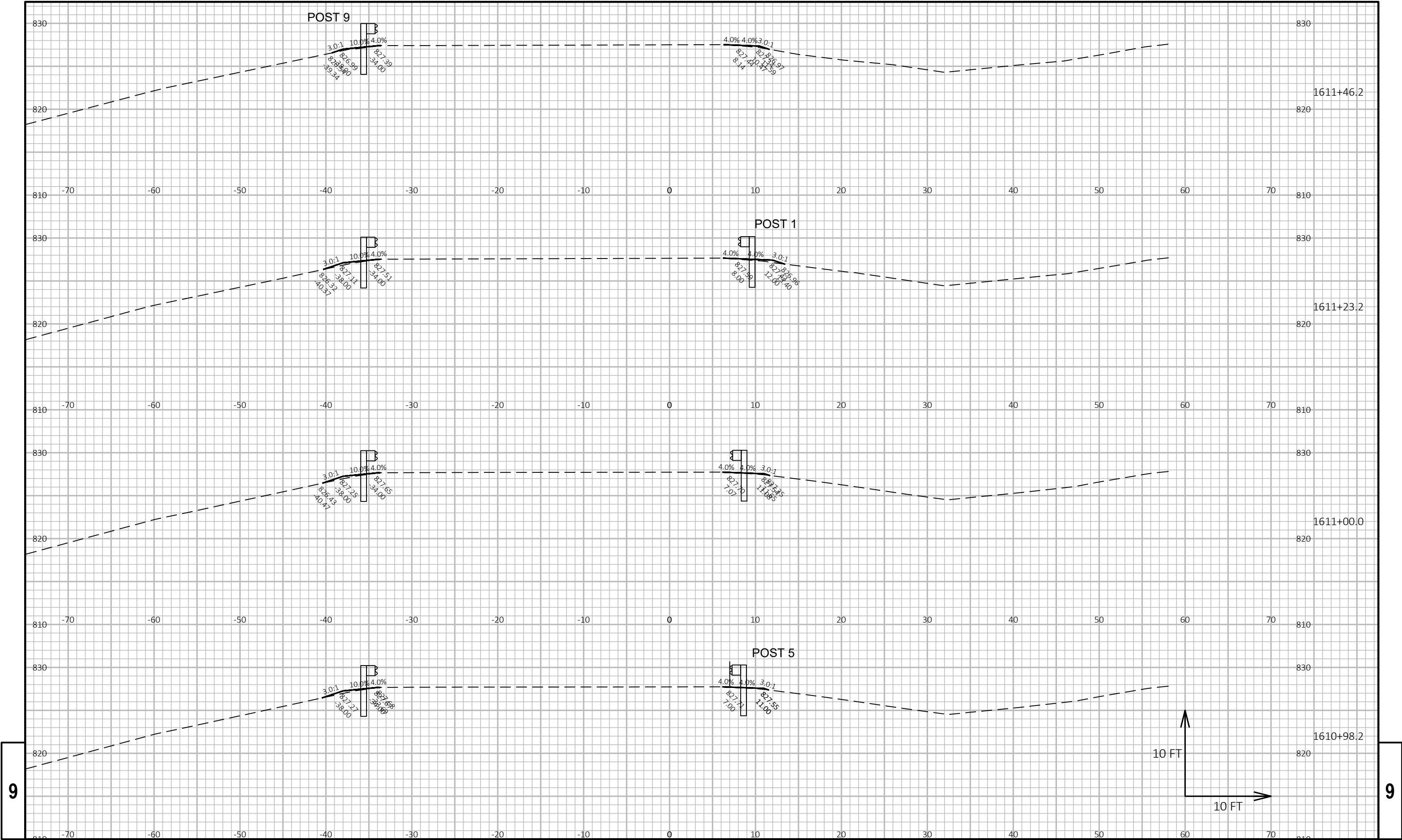
STRUCTURE B-36-0103 TOTAL ESTIMATED QUANTITIES

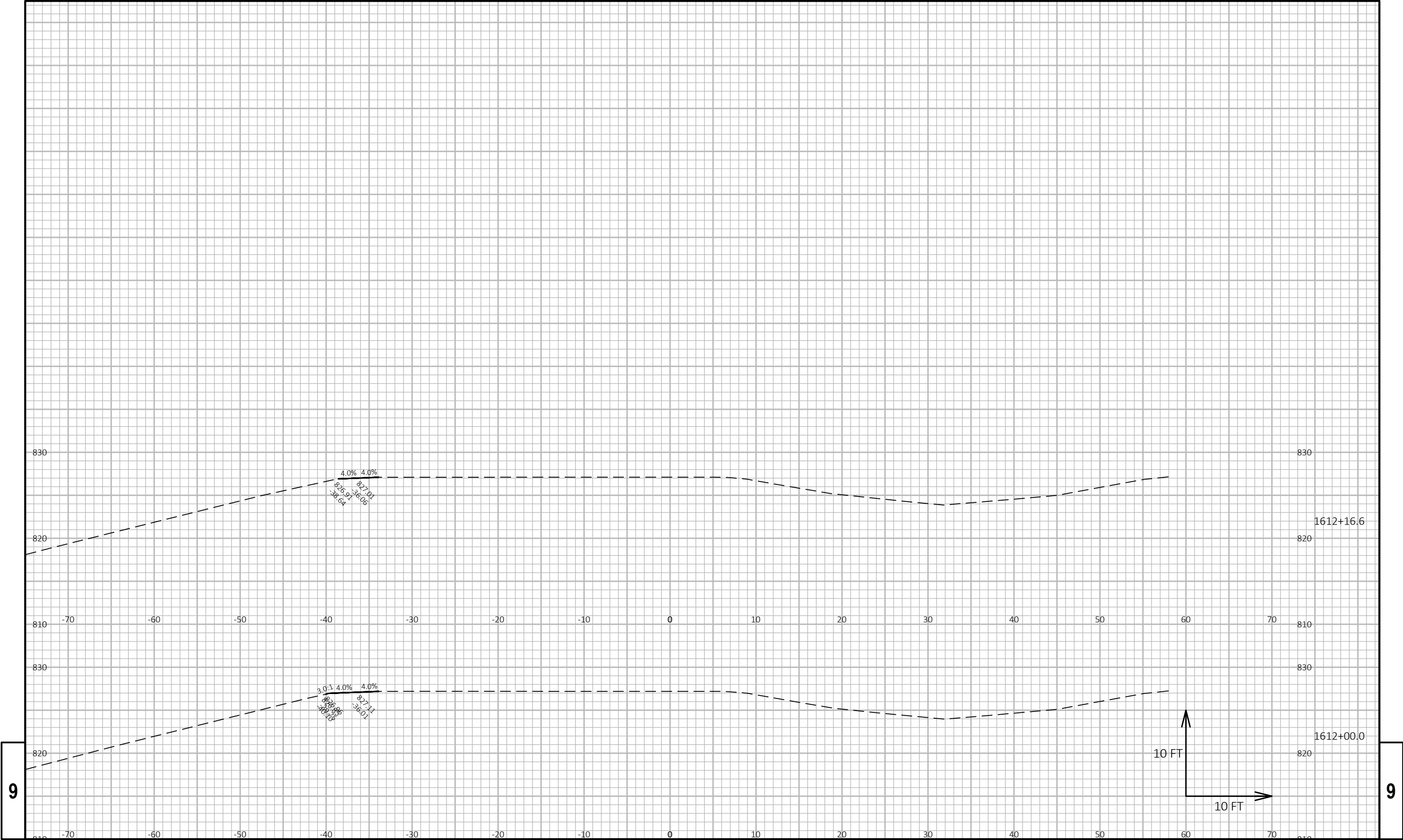
BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	132	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	40	ABUTMENTS & PARAPET
509.9050.S	CLEANING PARAPETS	LF	324	BOTH PARAPETS
604.9015.S	RESEAL CRUSHED AGGREGATE SLOPE PAVING	SY	370	-
SPV.0090	HOT RUBBER JOINTS	LF	80	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	200	-

STRUCTURE B-36-0104 TOTAL ESTIMATED QUANTITIES

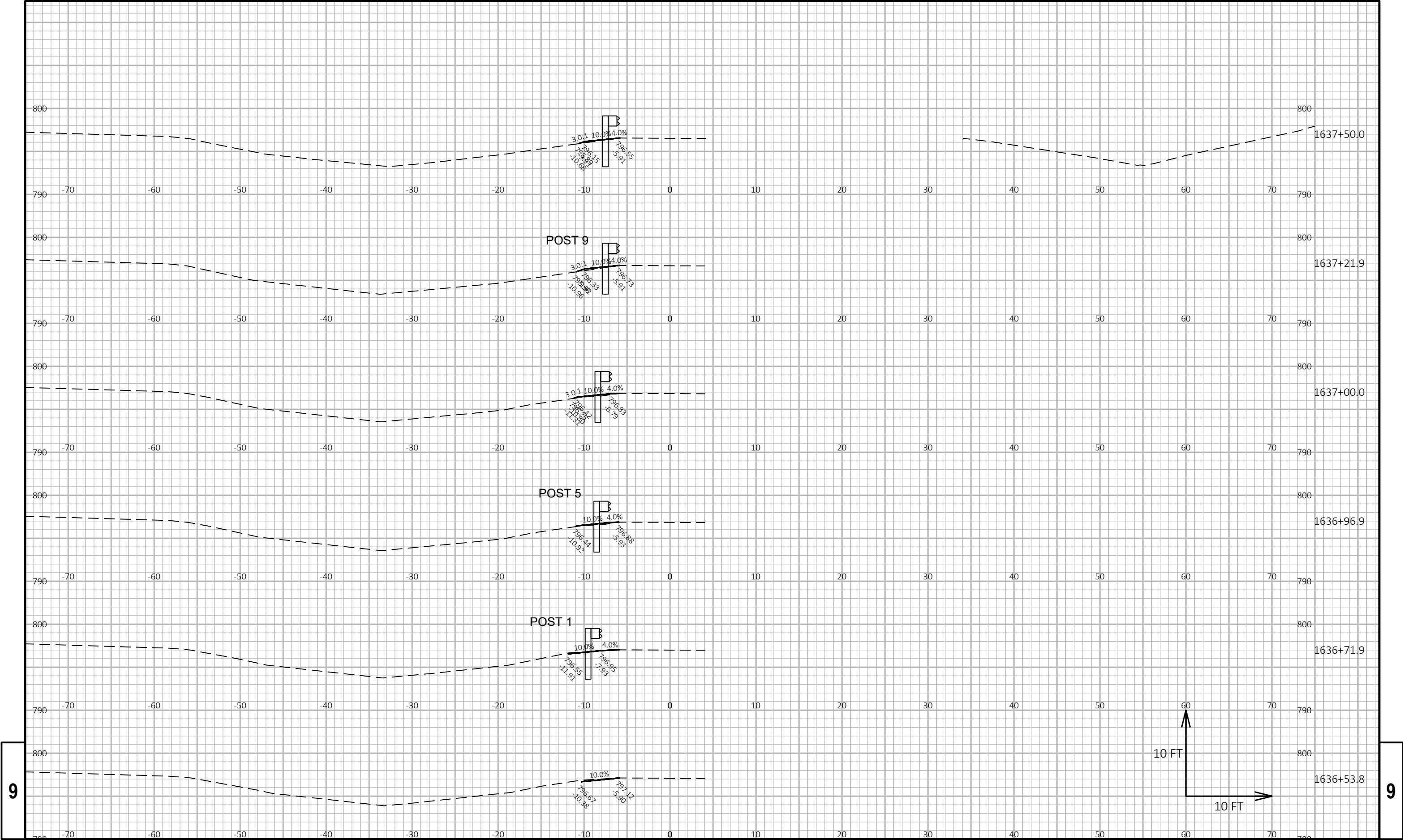
BID ITEM NUMBER	BID ITEM DESCRIPTION	UNIT	QUANTITY	COMMENTS
502.3210	PIGMENTED SURFACE SEALER	SY	125	BOTH PARAPETS
509.1500	CONCRETE SURFACE REPAIR	SF	30	ABUTMENTS & PARAPET
509.9050.S	CLEANING PARAPETS	LF	308	BOTH PARAPETS
SPV.0090	HOT RUBBER JOINTS	LF	80	-
SPV.0165	SEAL DECK CRACKS (TK 9030)	SF	1,400	-







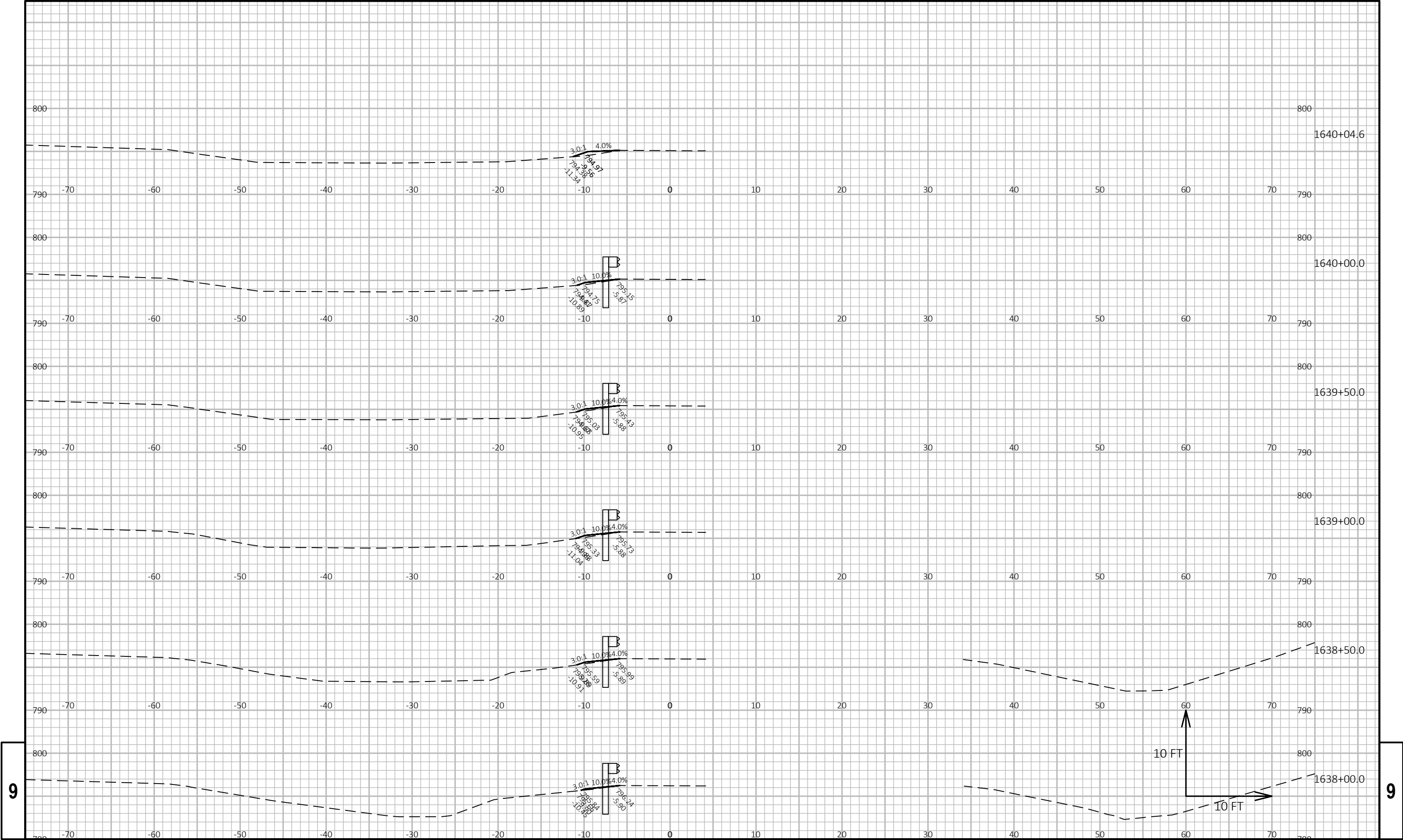
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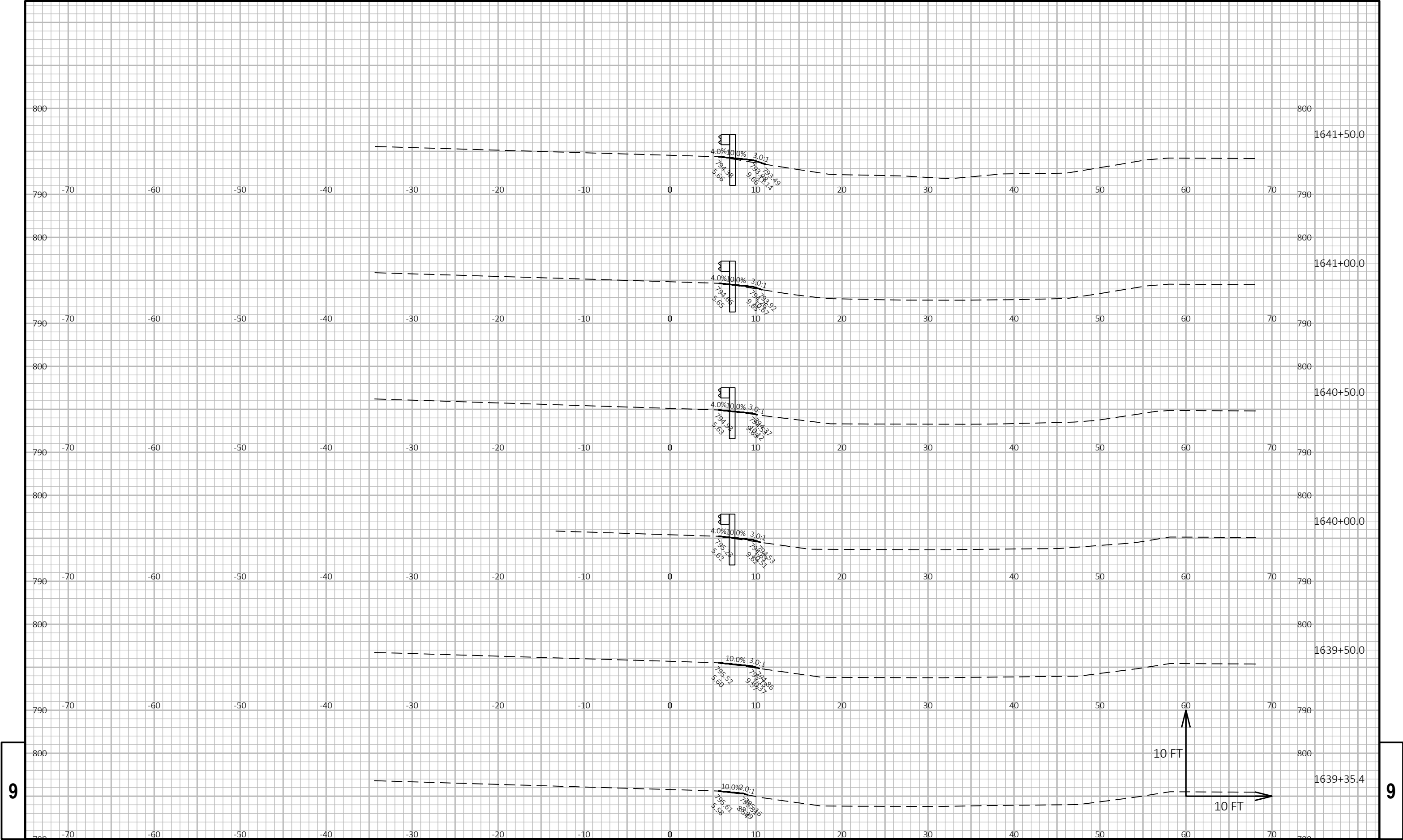
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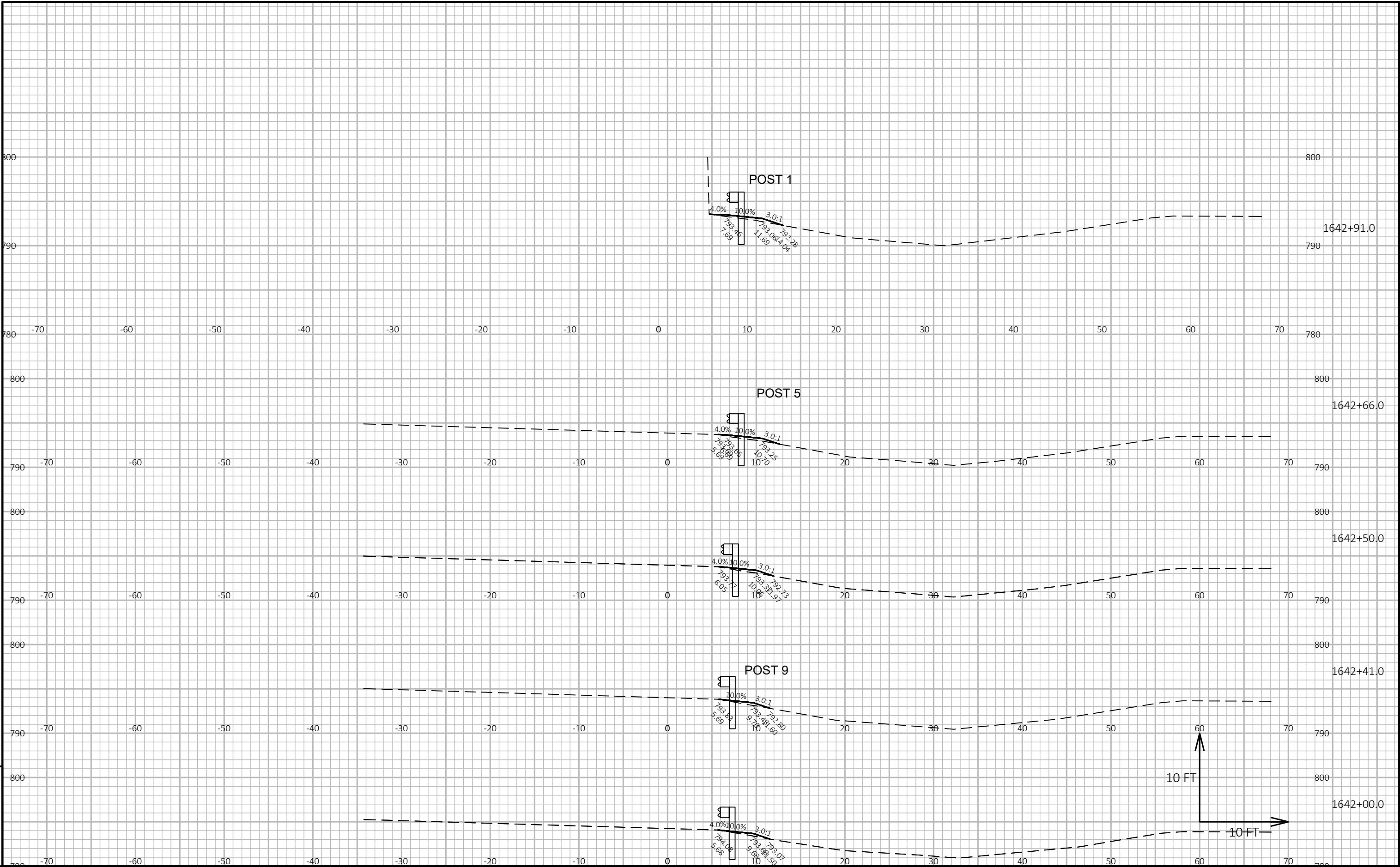
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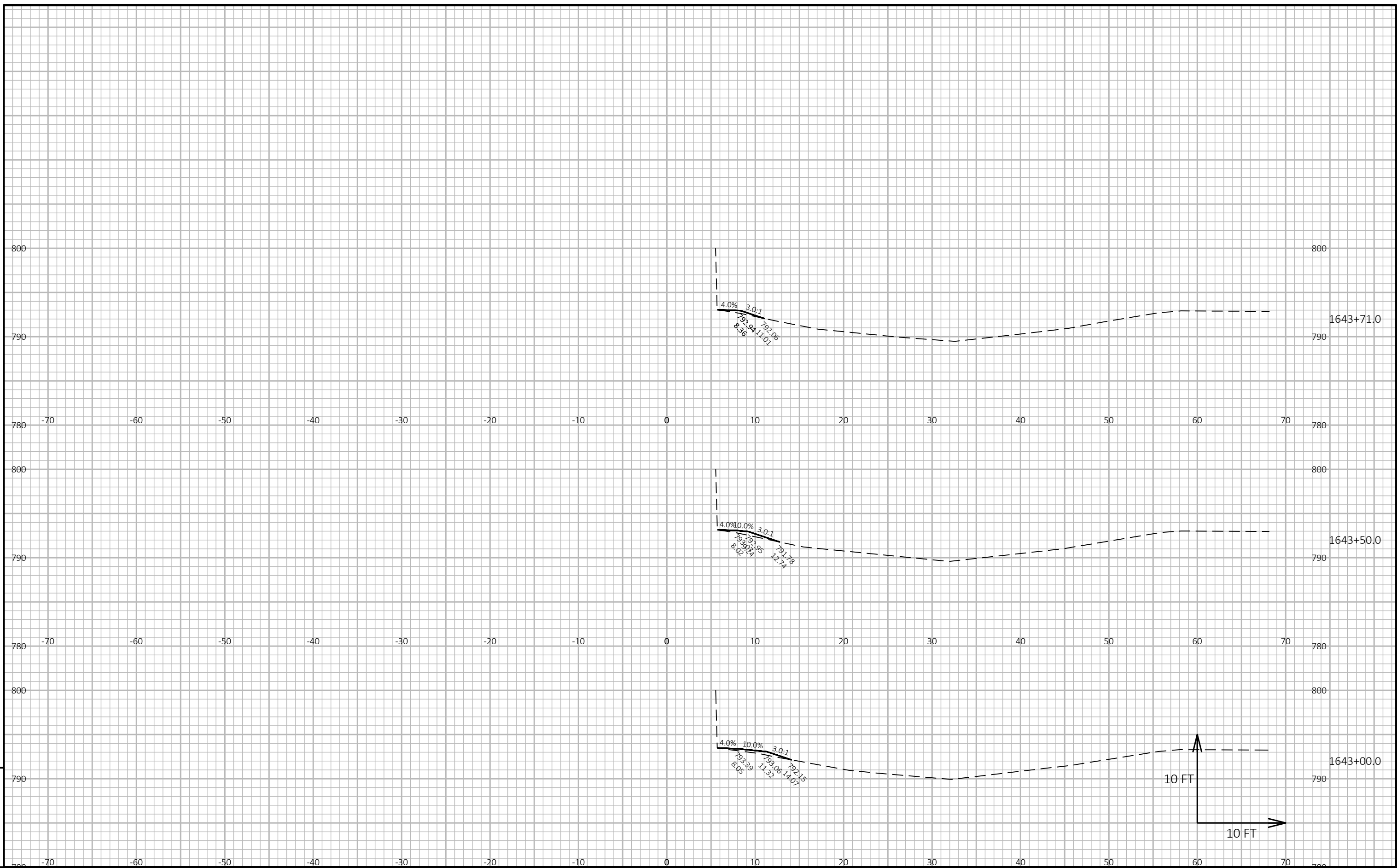


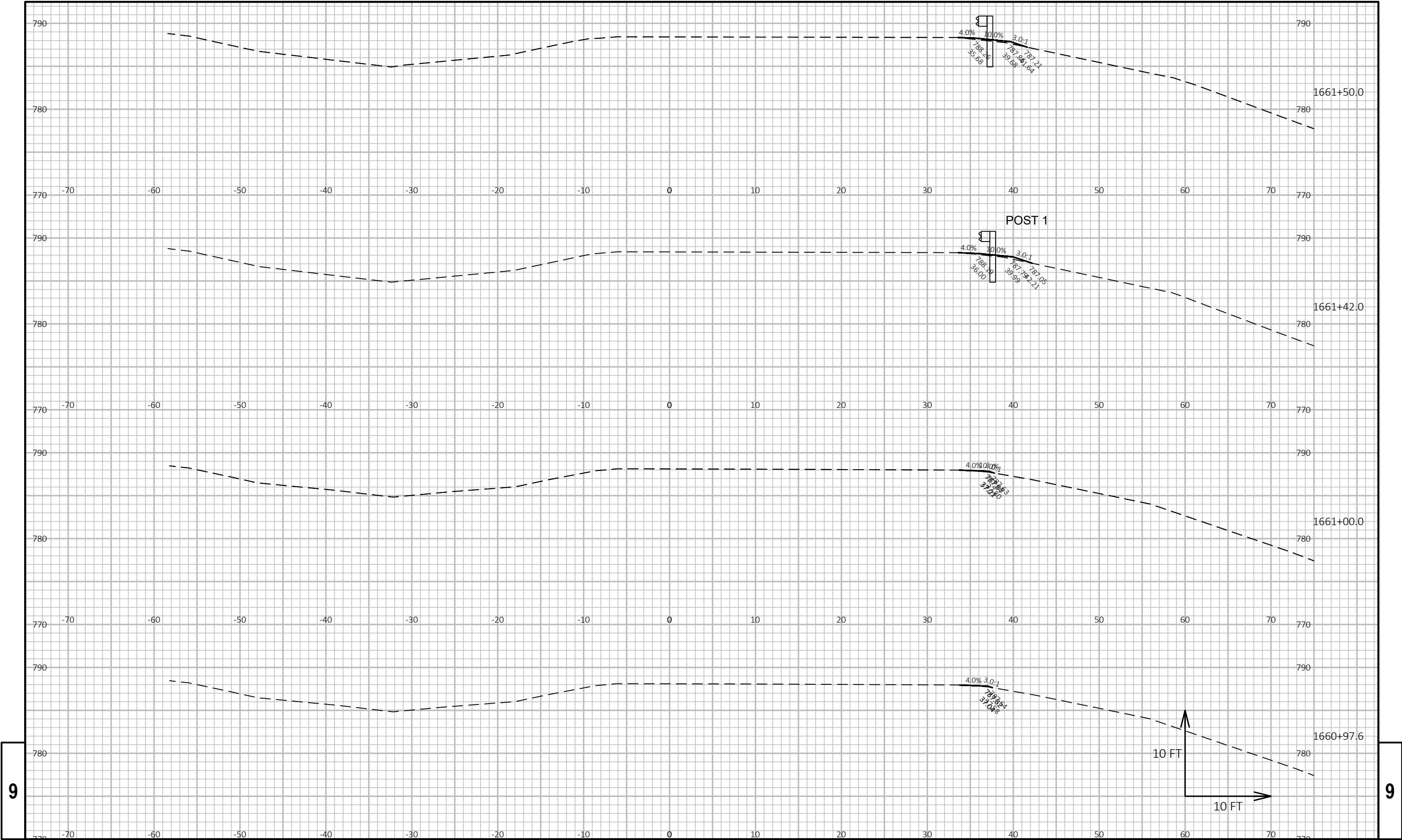
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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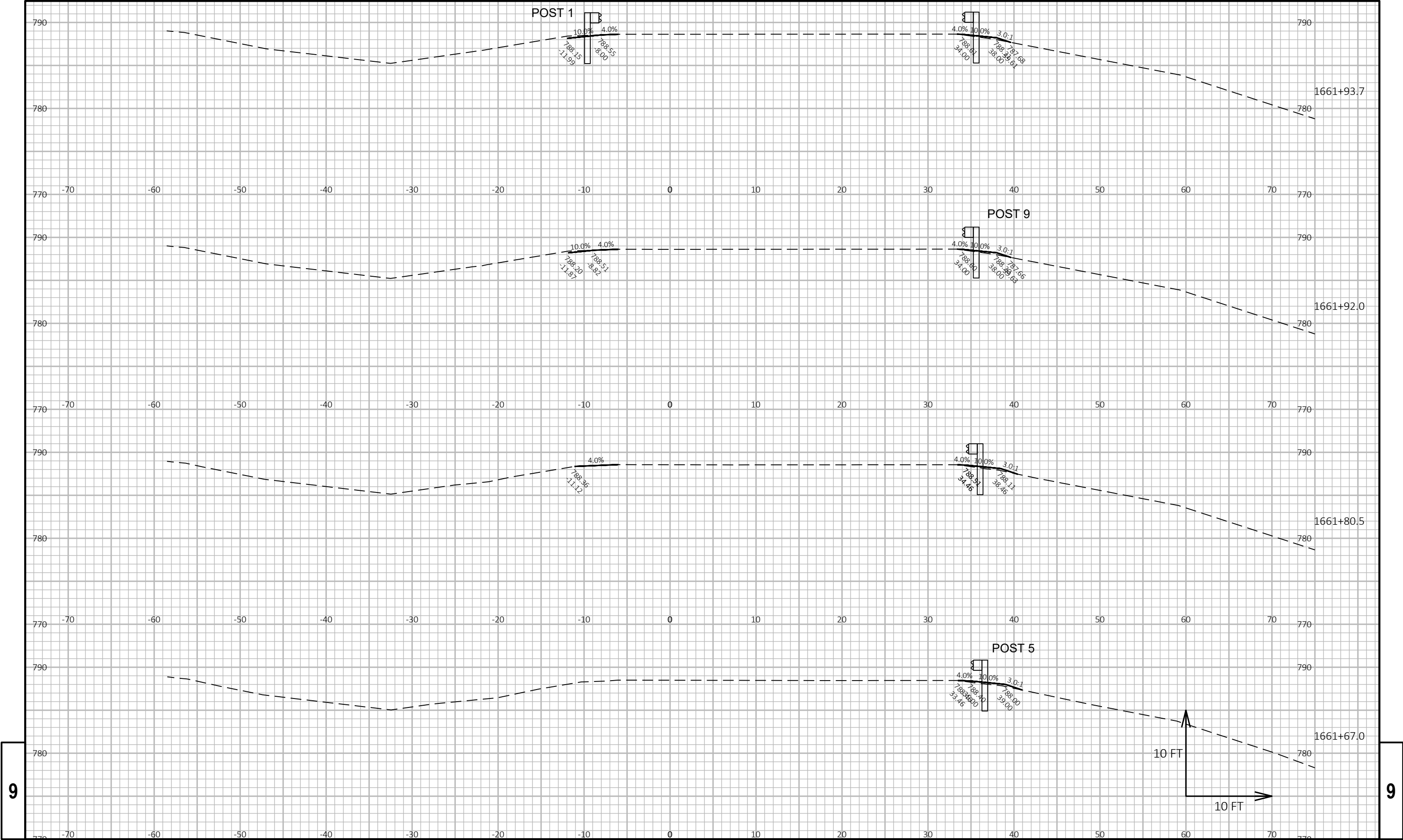




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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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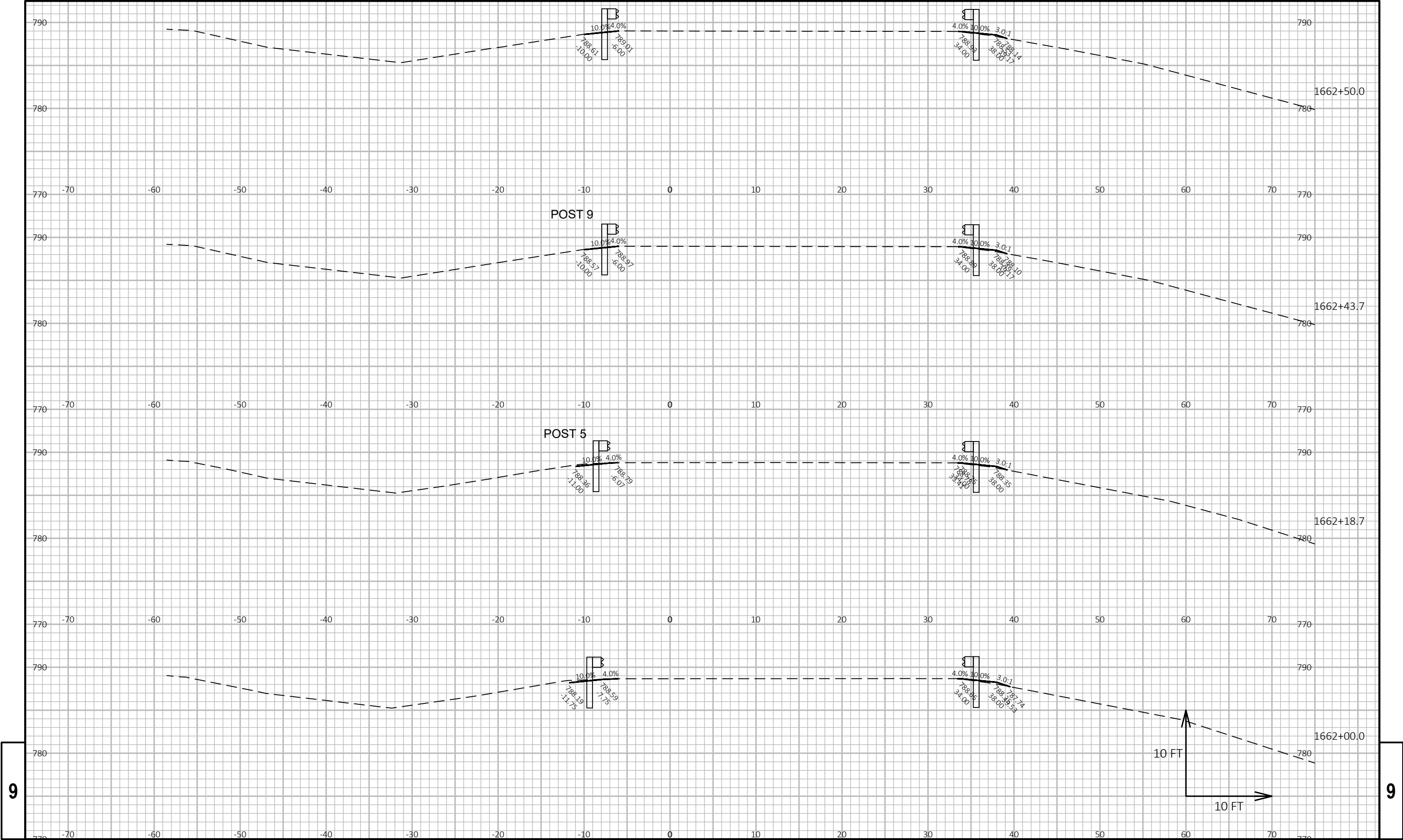


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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET	E
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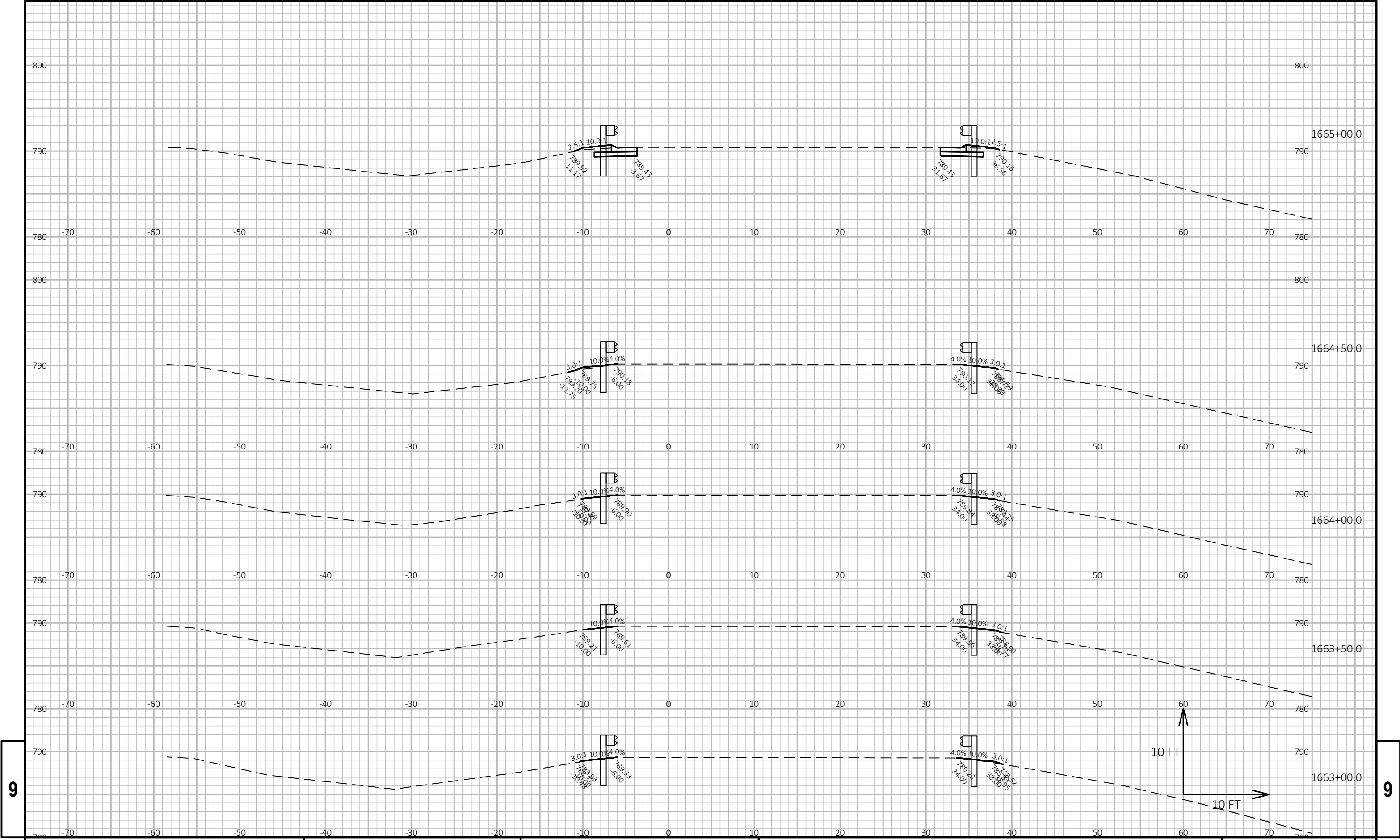
FILE NAME : I:\45\450504 IH 43 WISDOT GUARDRAIL\C3D\SHEETSPLAN\12271272 PLAN\090201_XS.DWG	PLOT DATE : 1/27/2021 10:57 AM	PLOT BY : GARNICA, BRANDON	PLOT NAME :	PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.	WISDOT/CADDs SHEET 49
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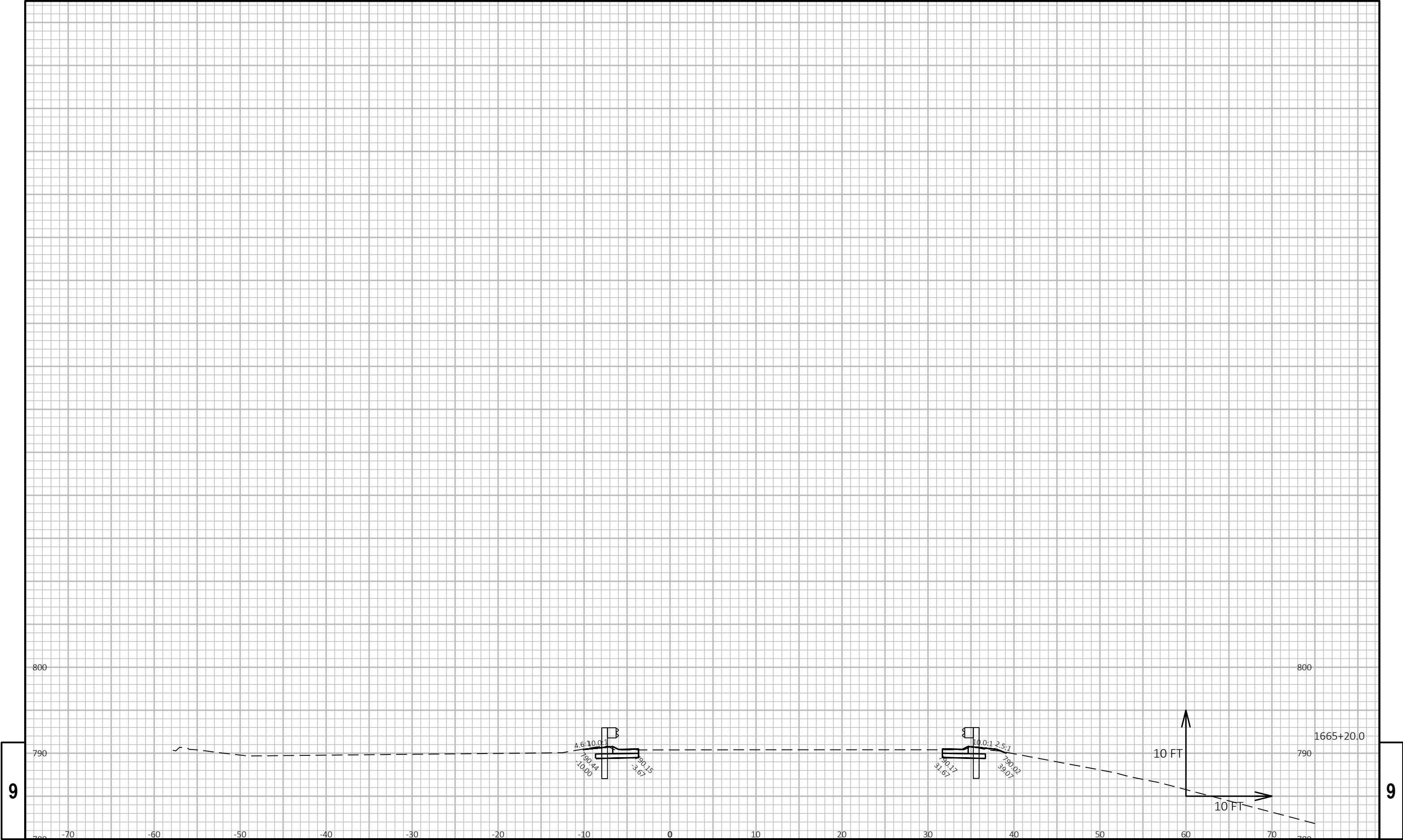
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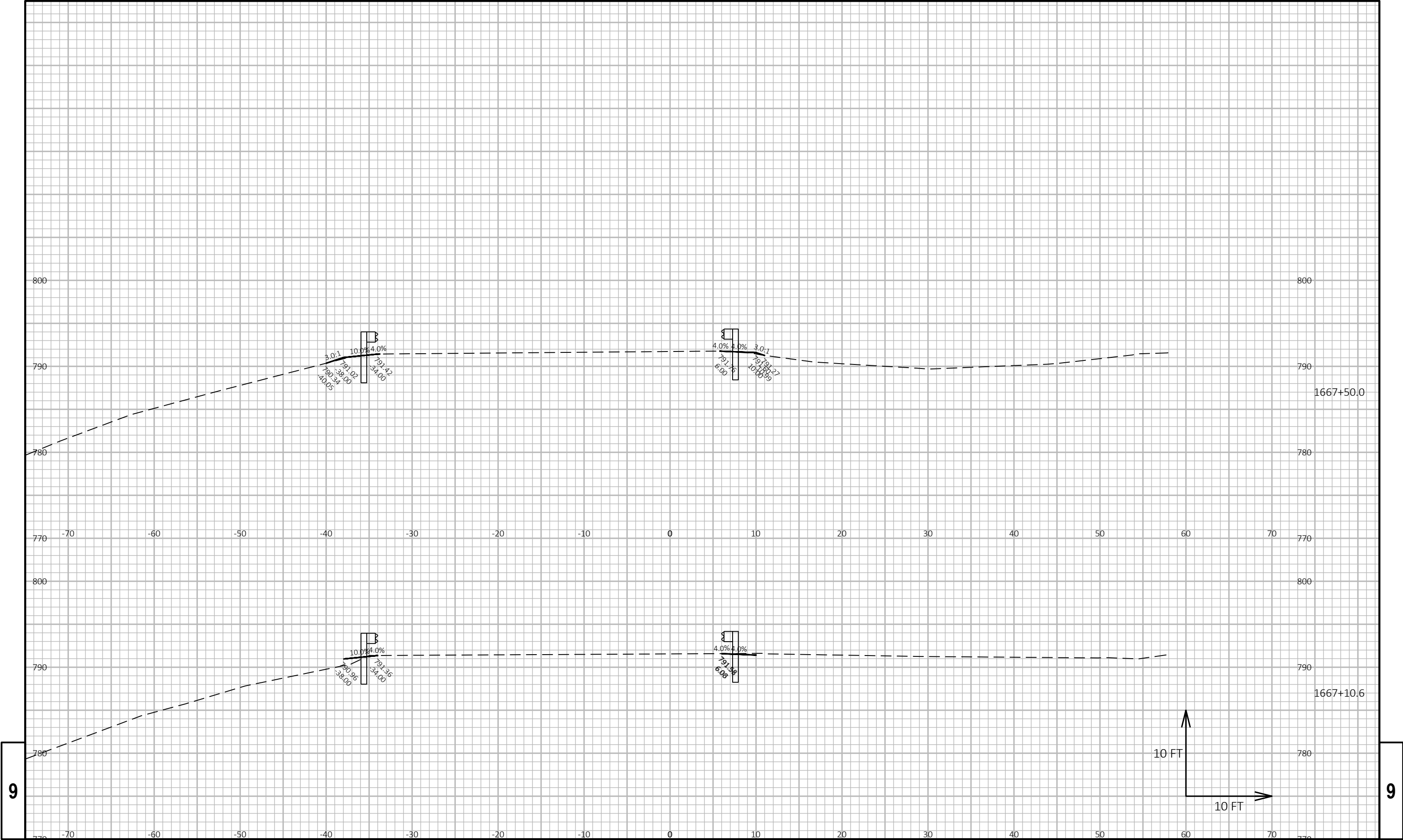
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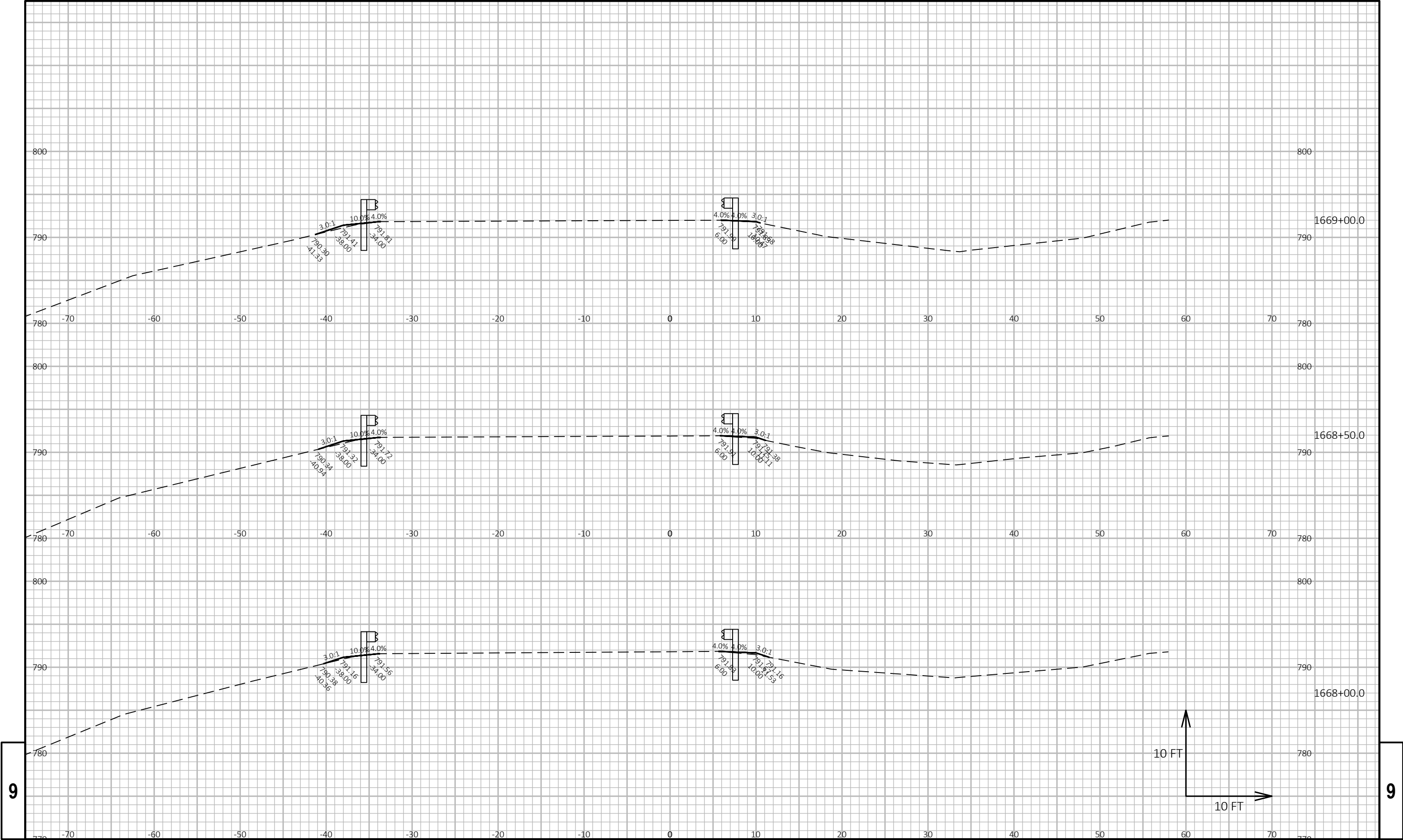
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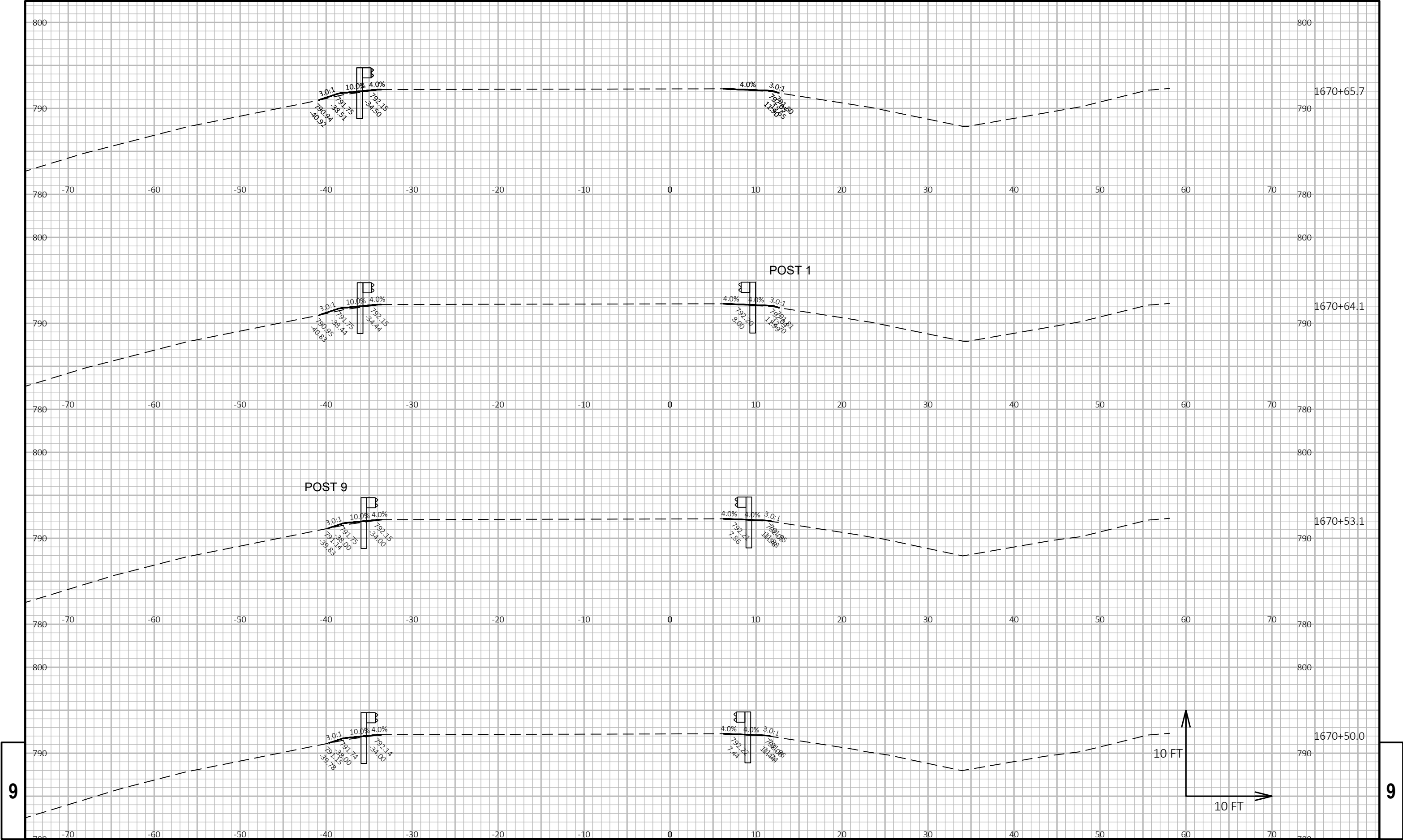
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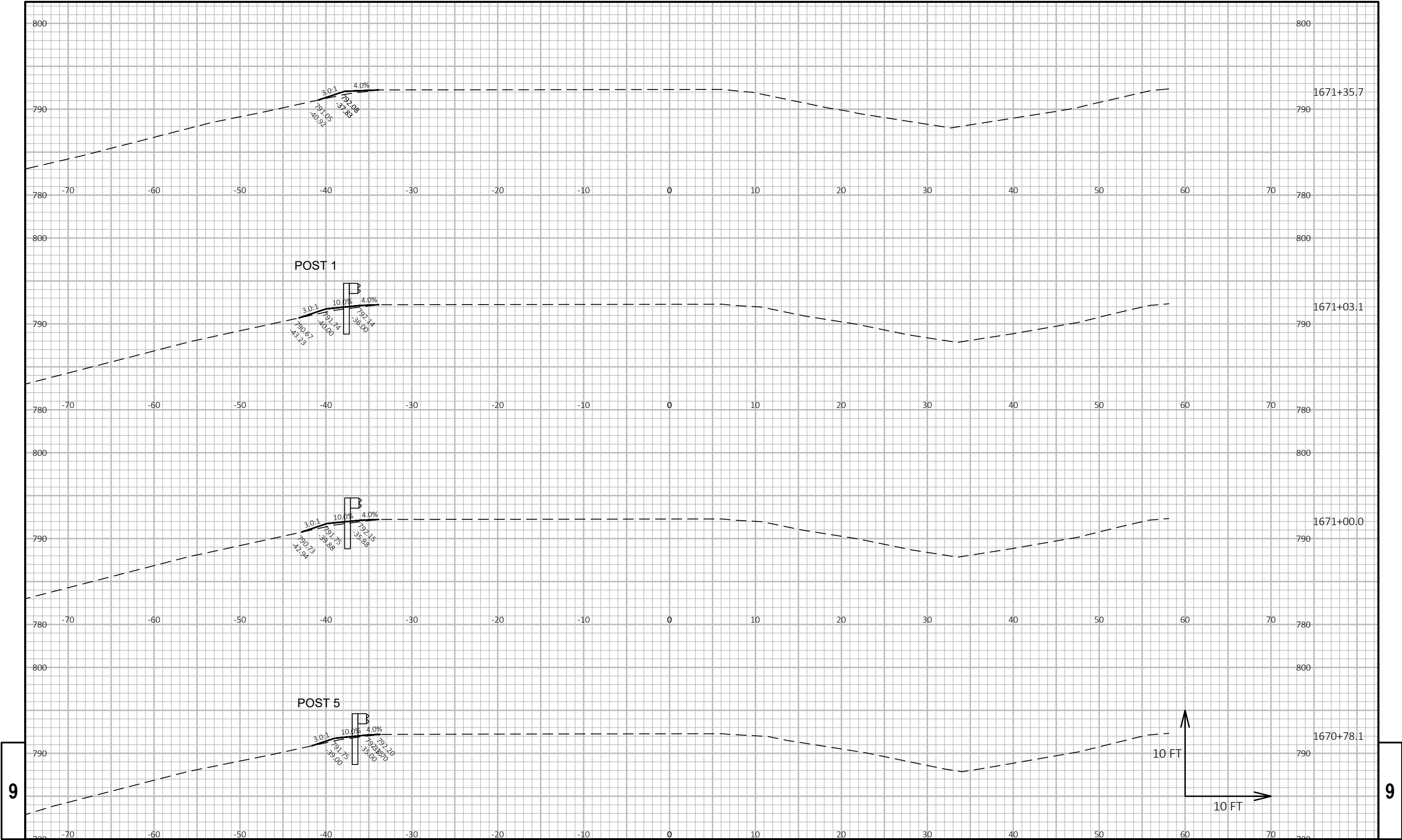


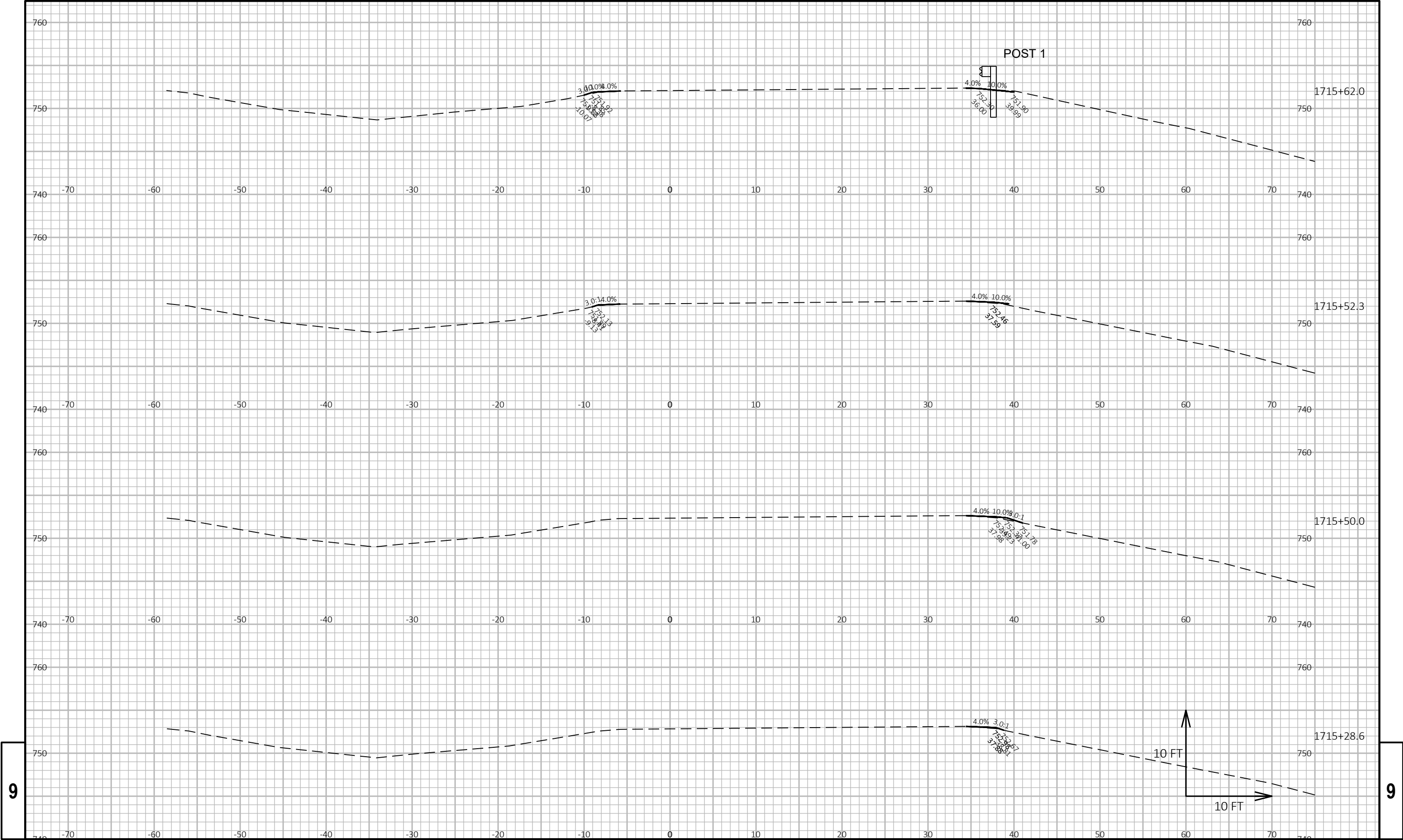
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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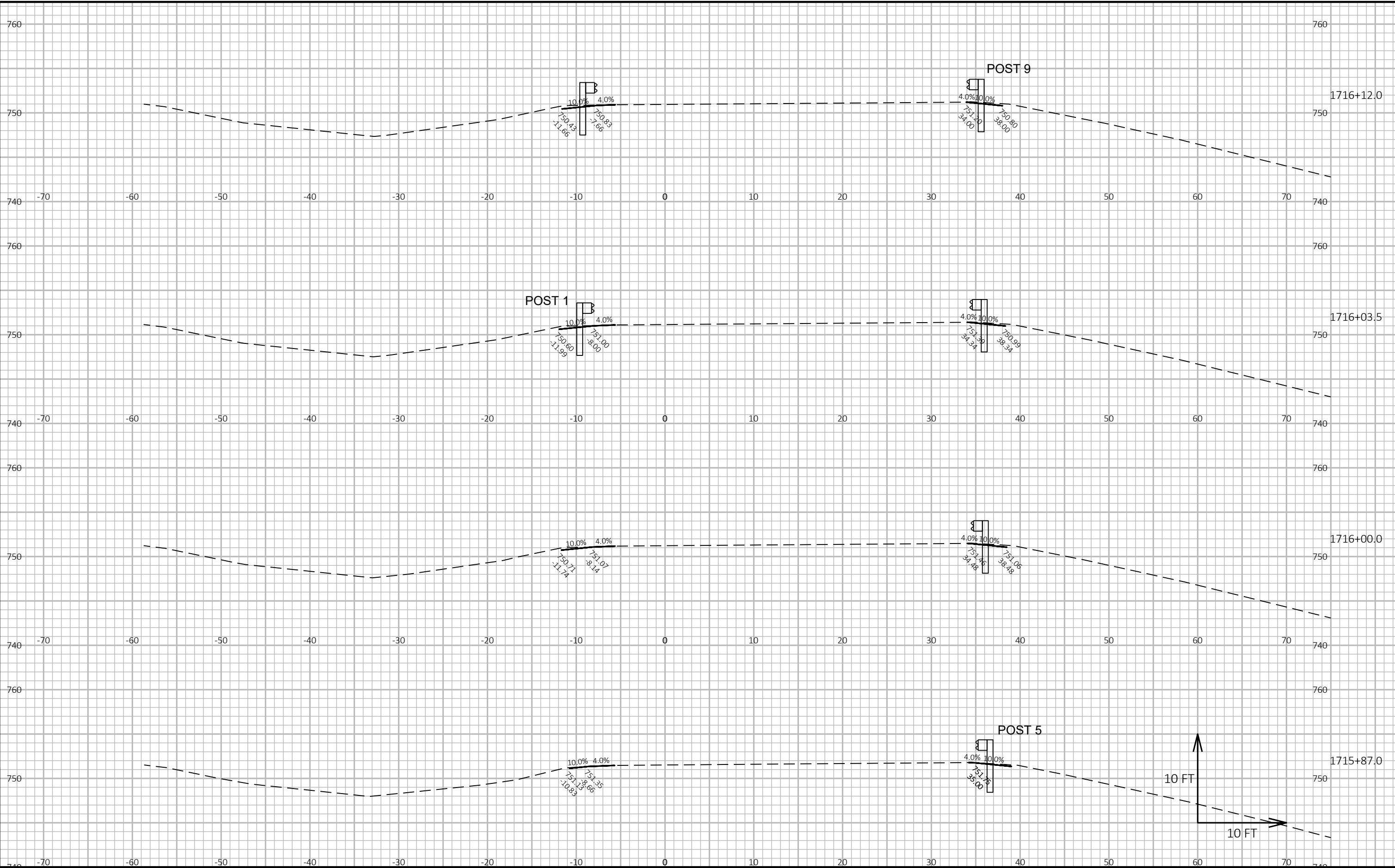






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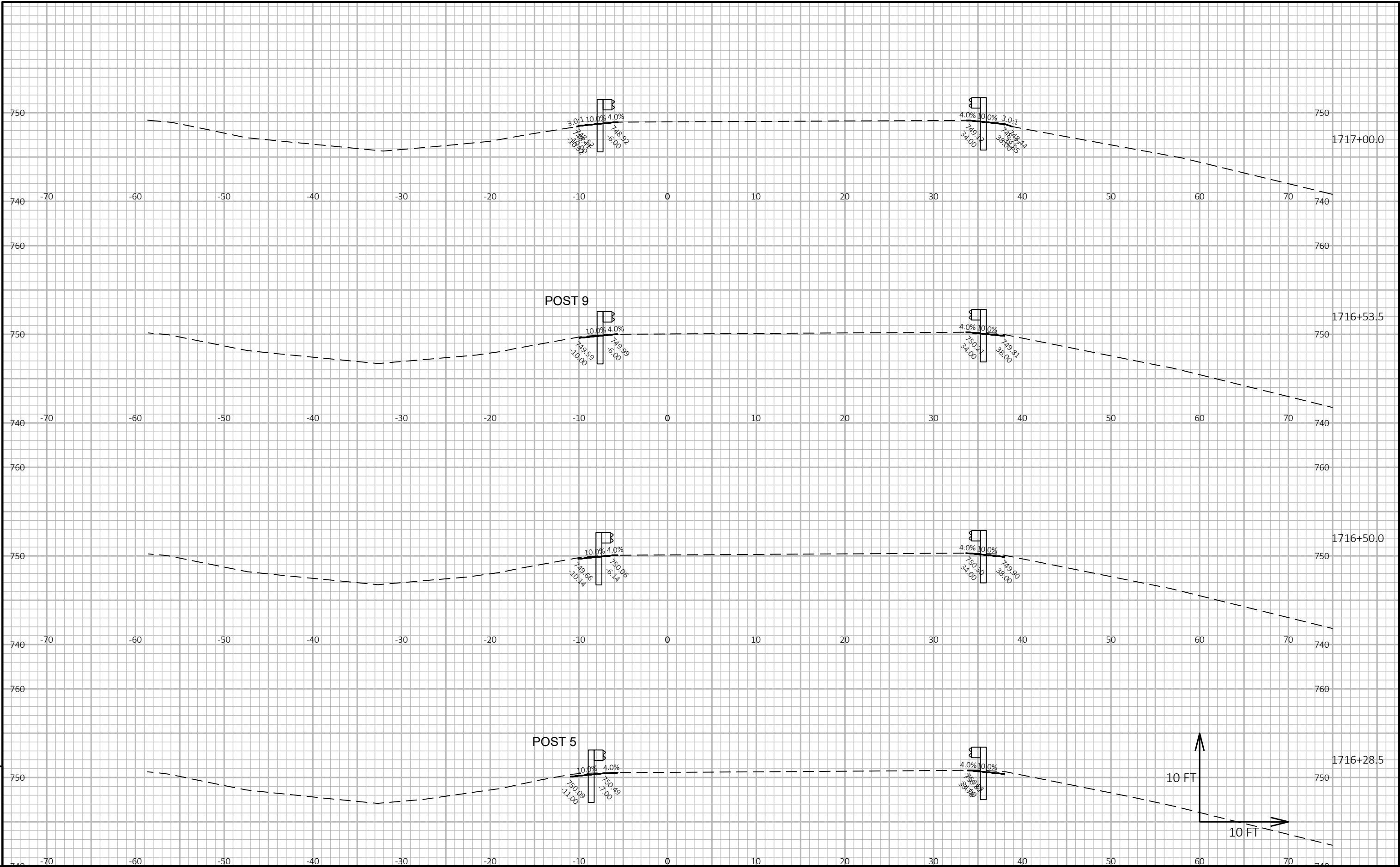
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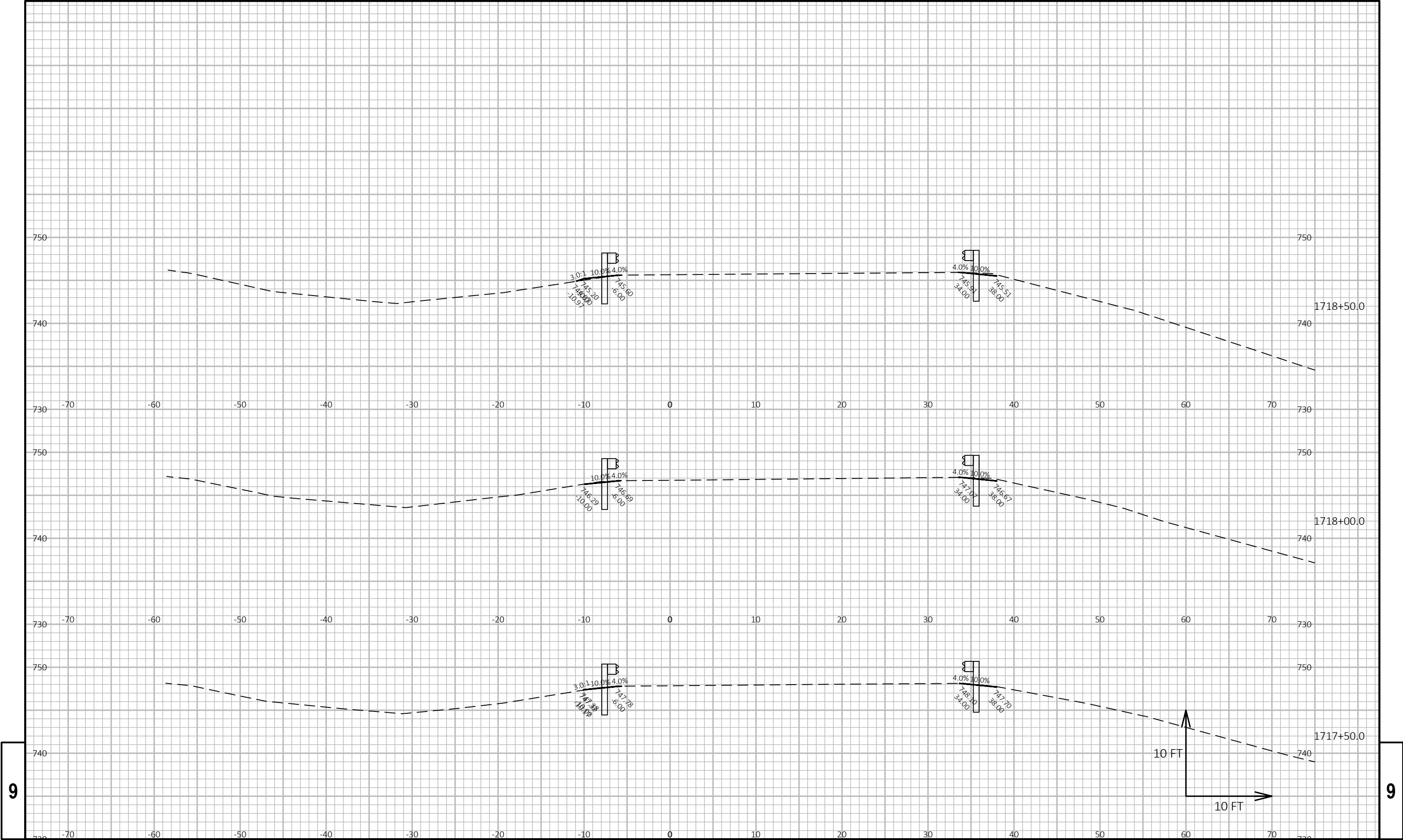
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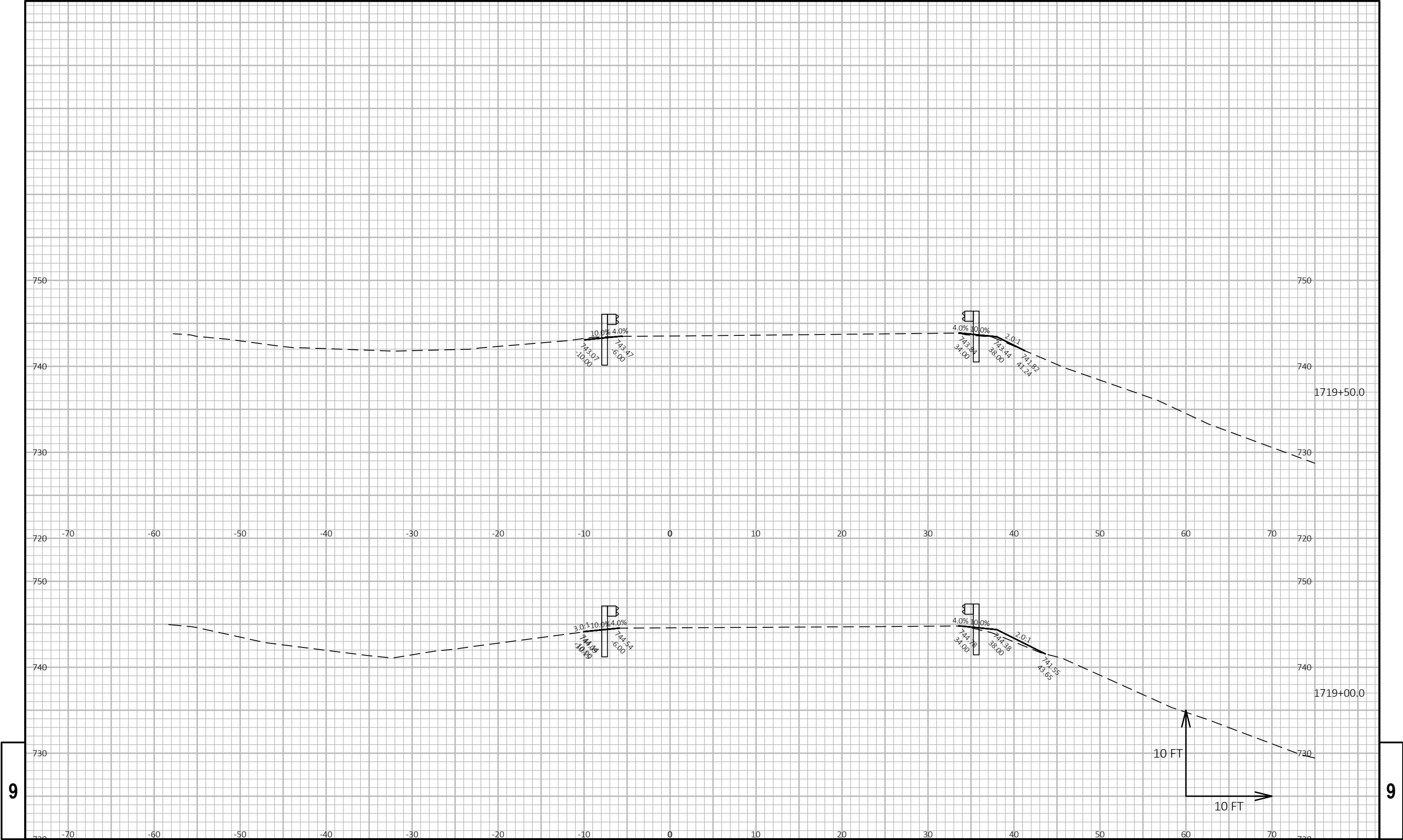


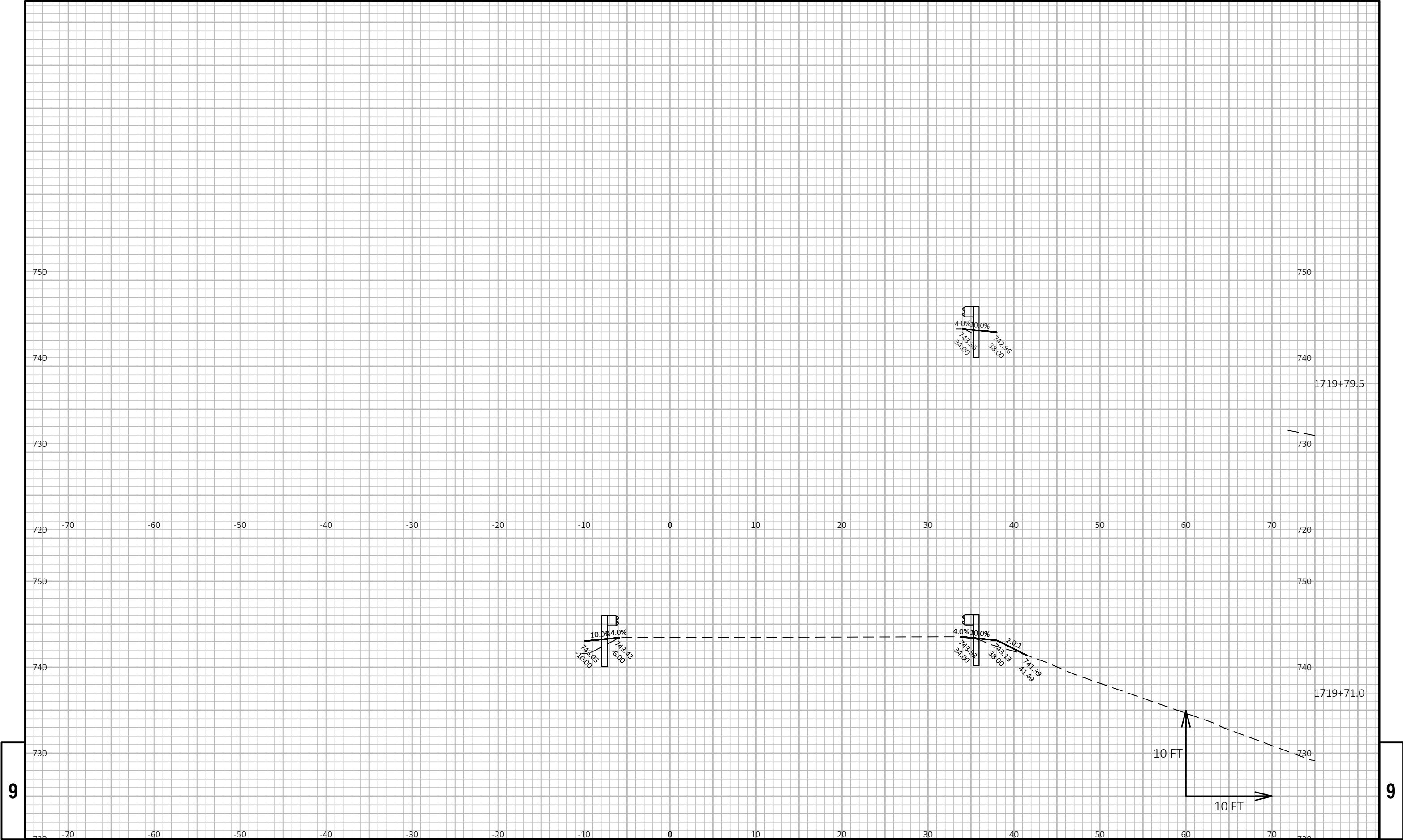
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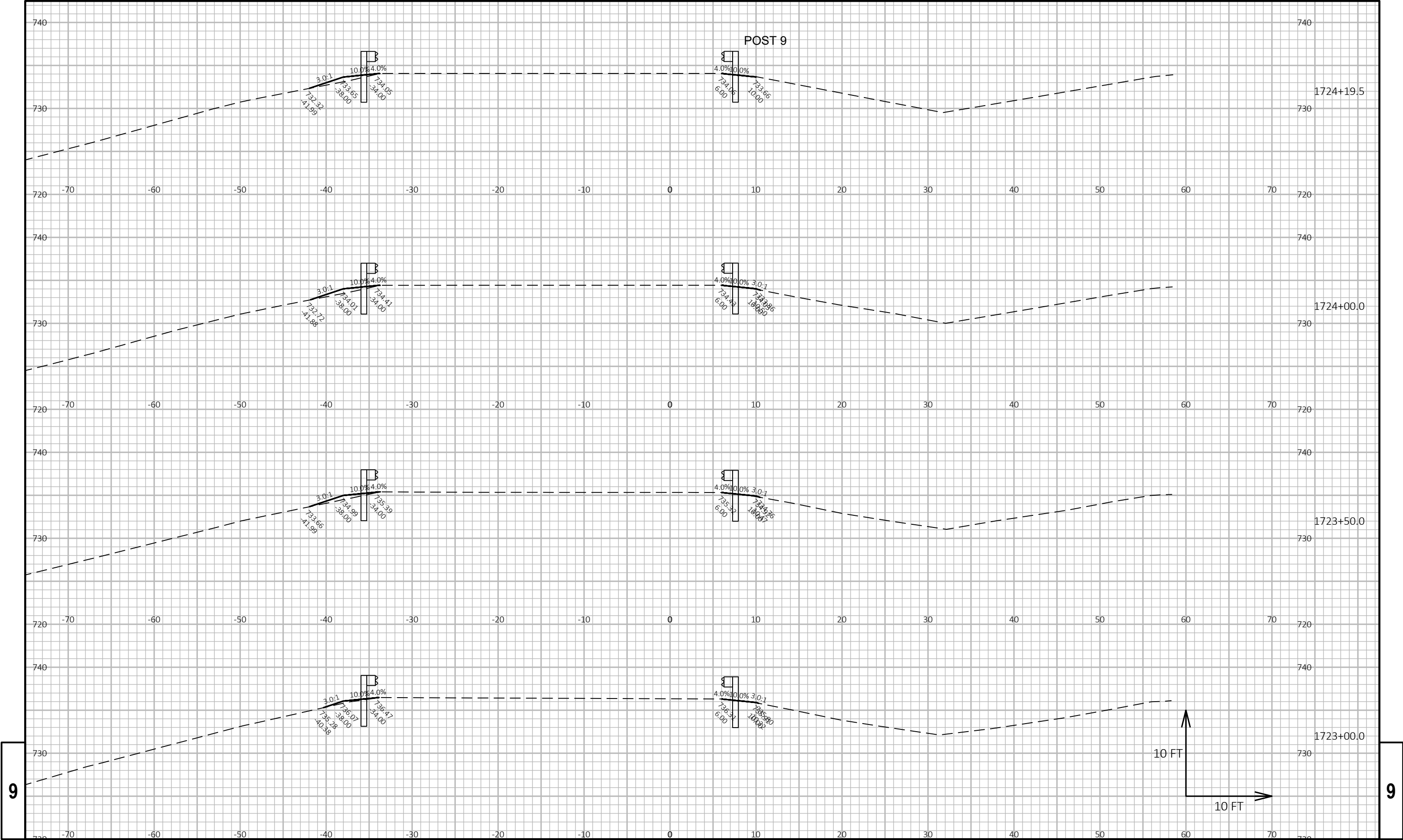
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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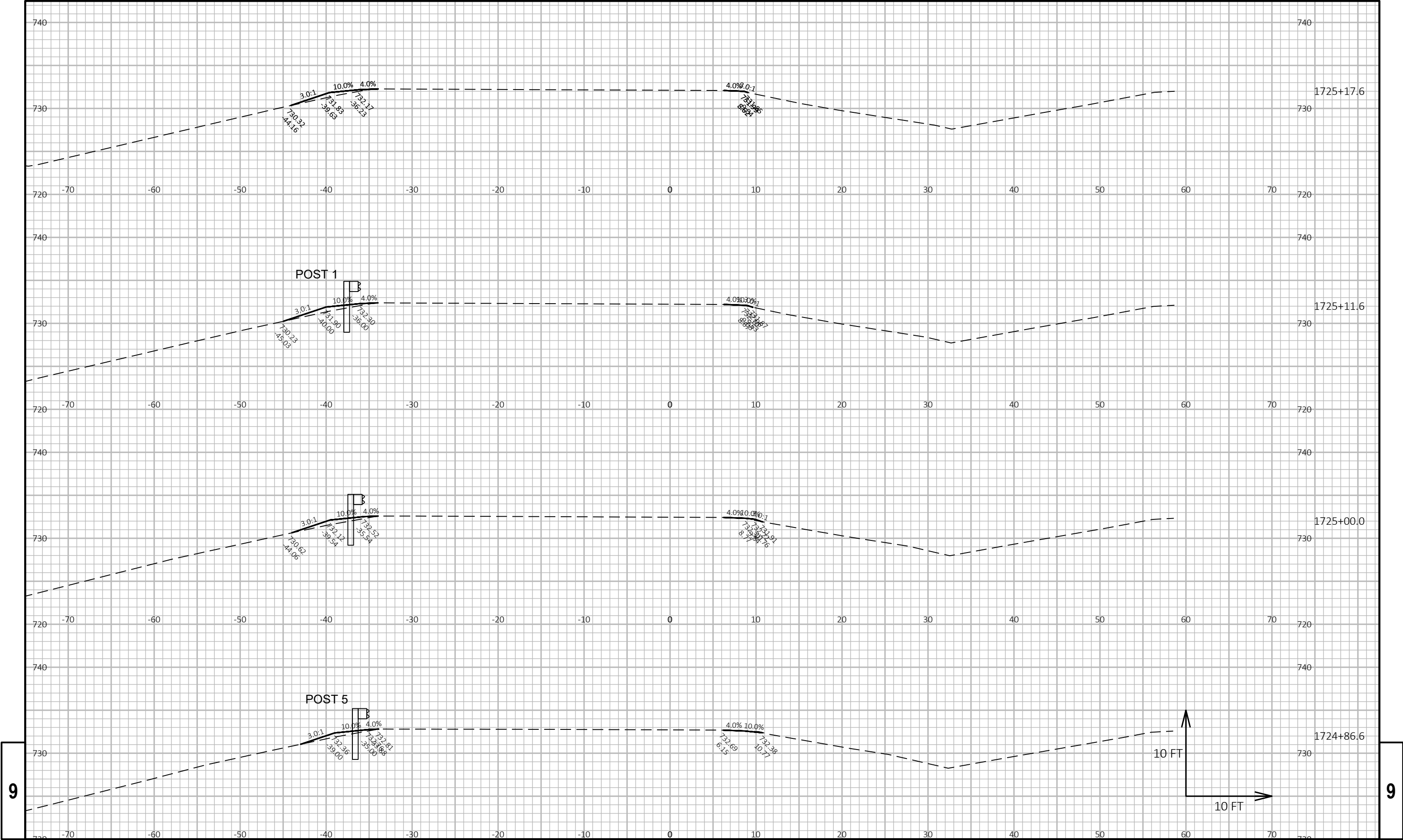


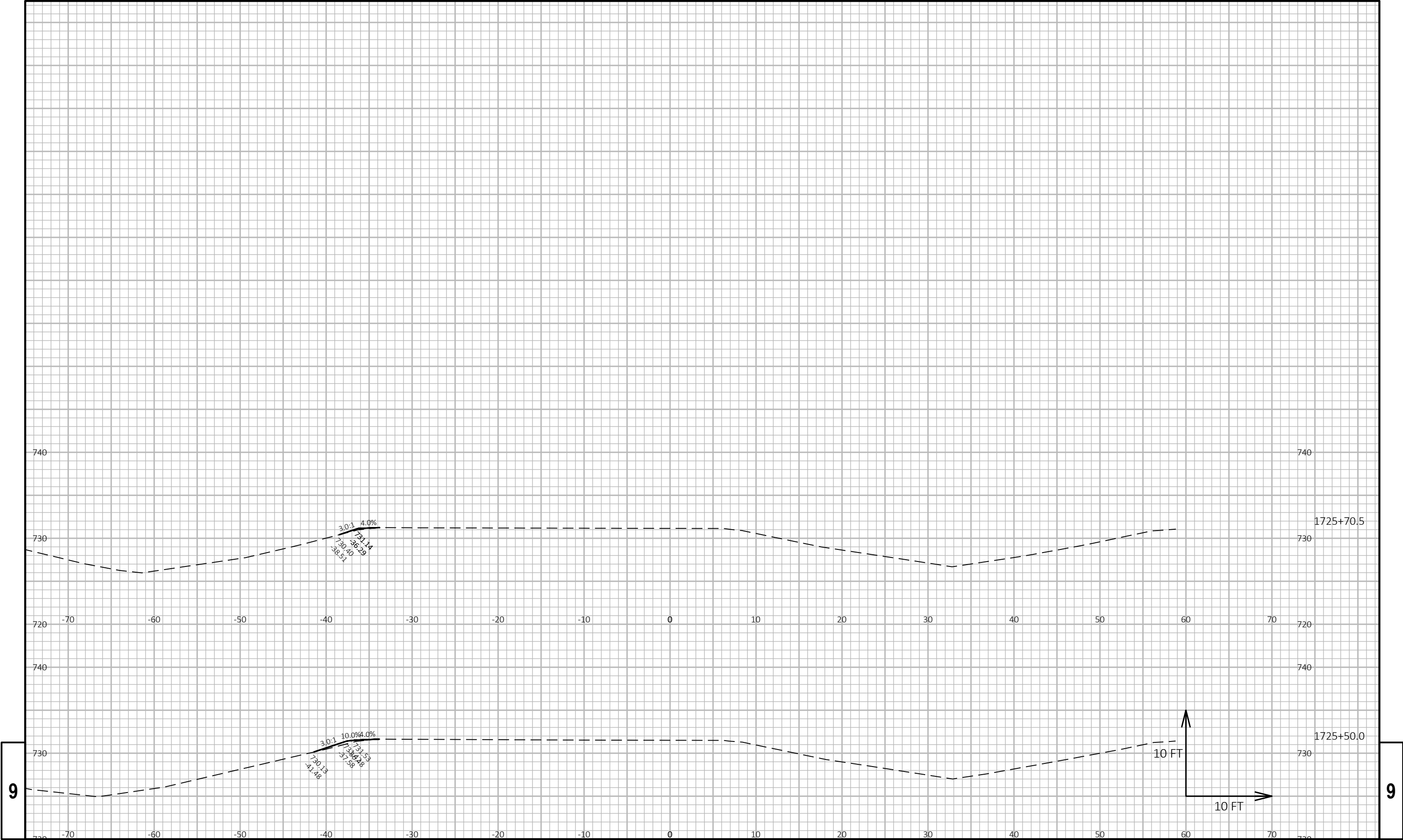


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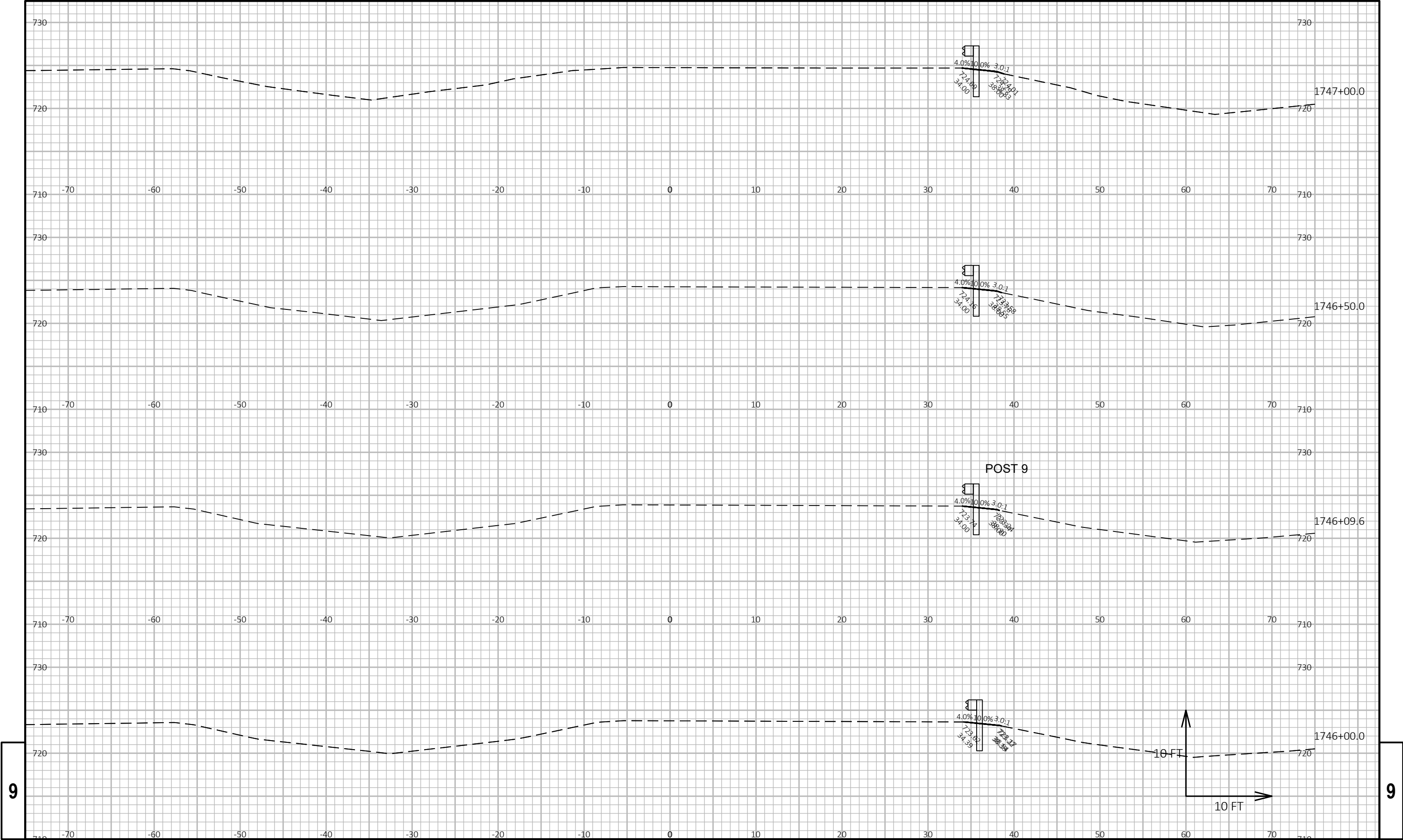
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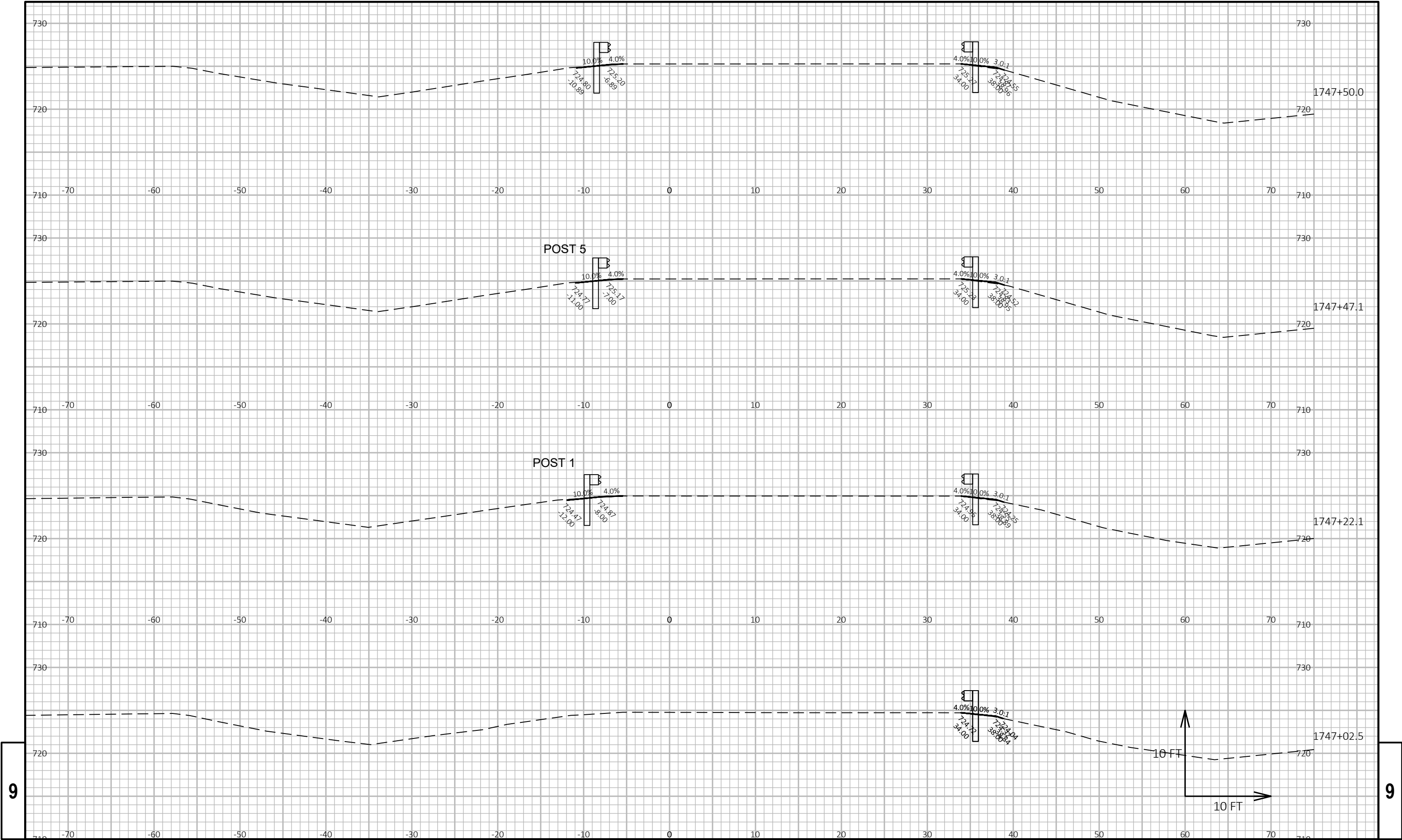


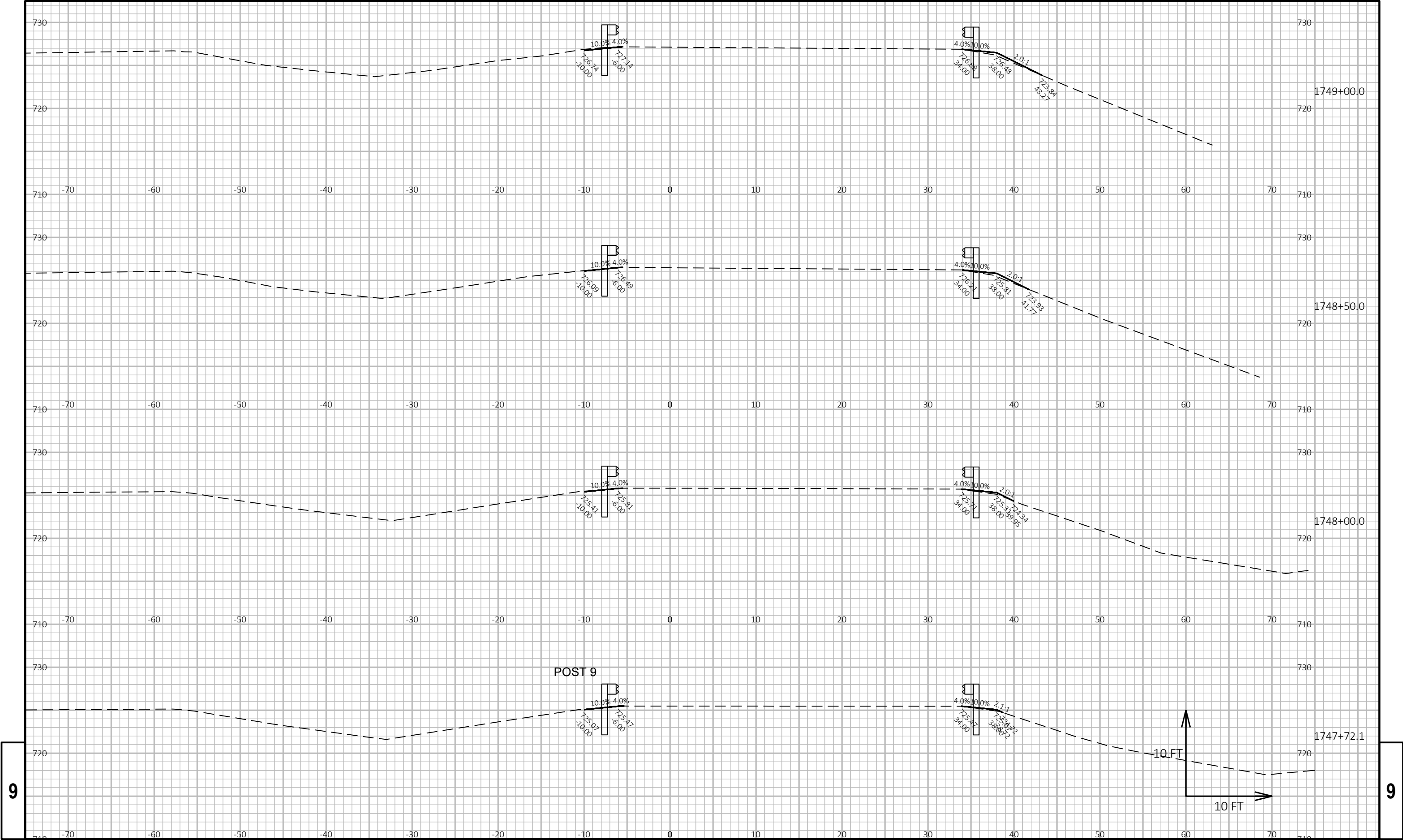


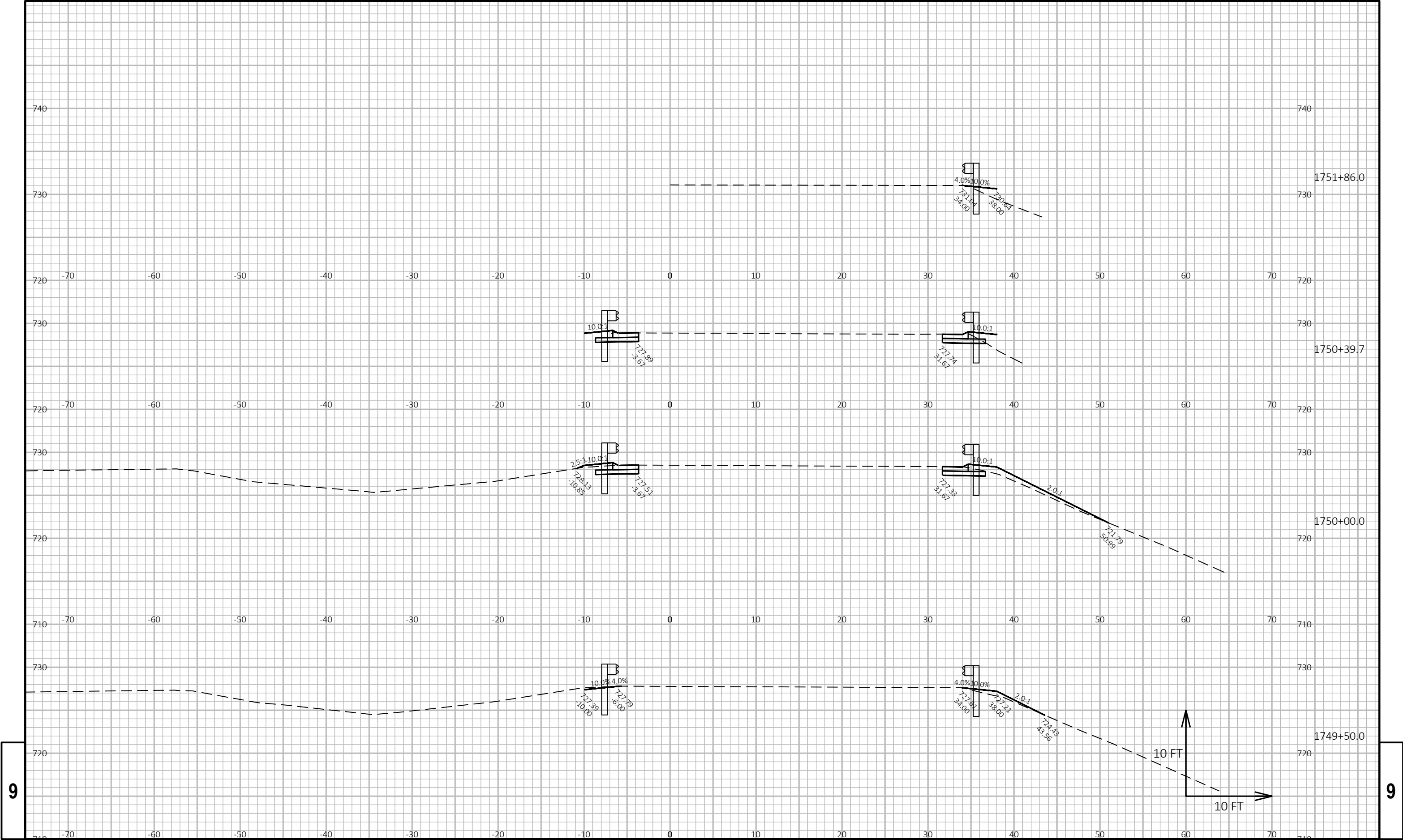
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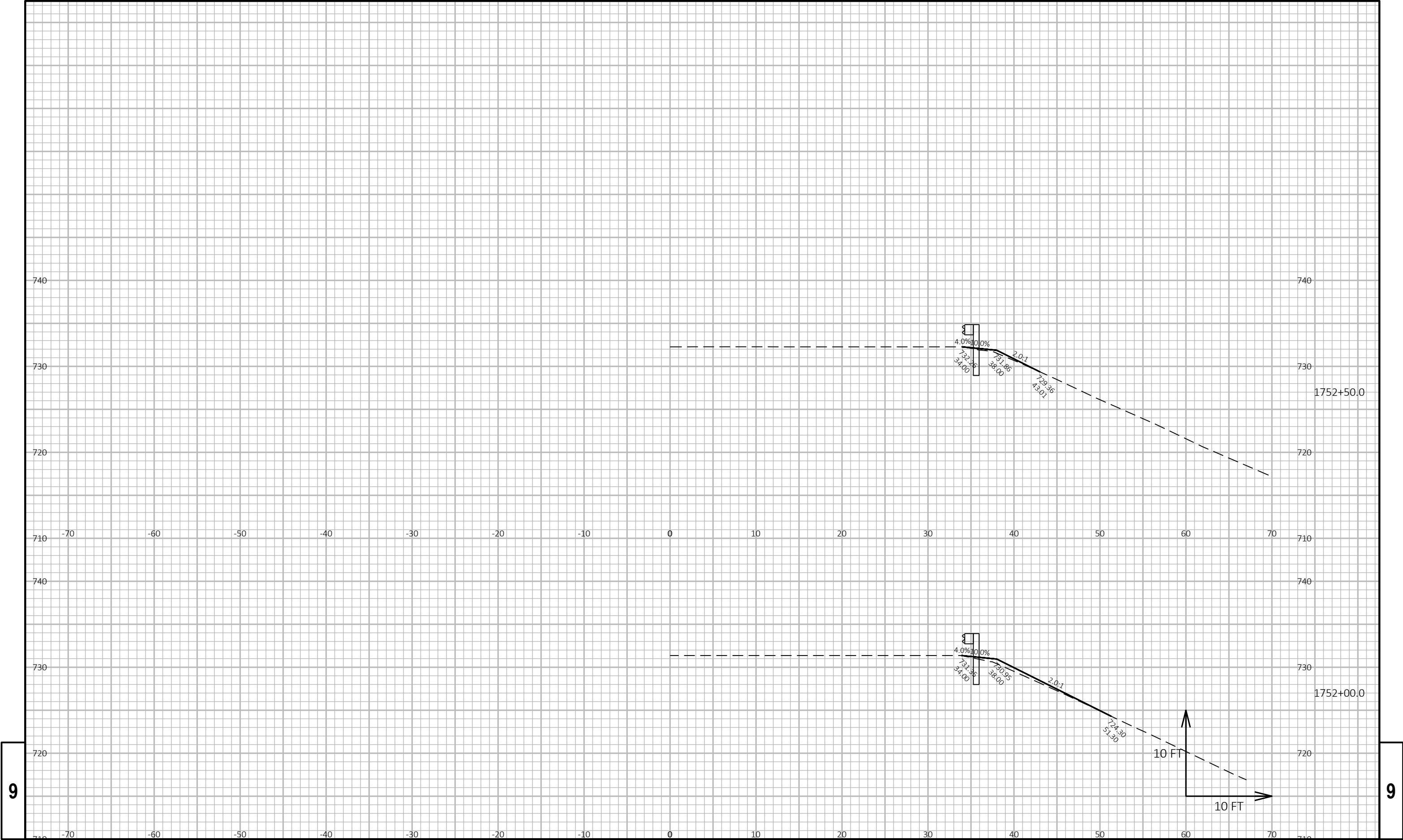
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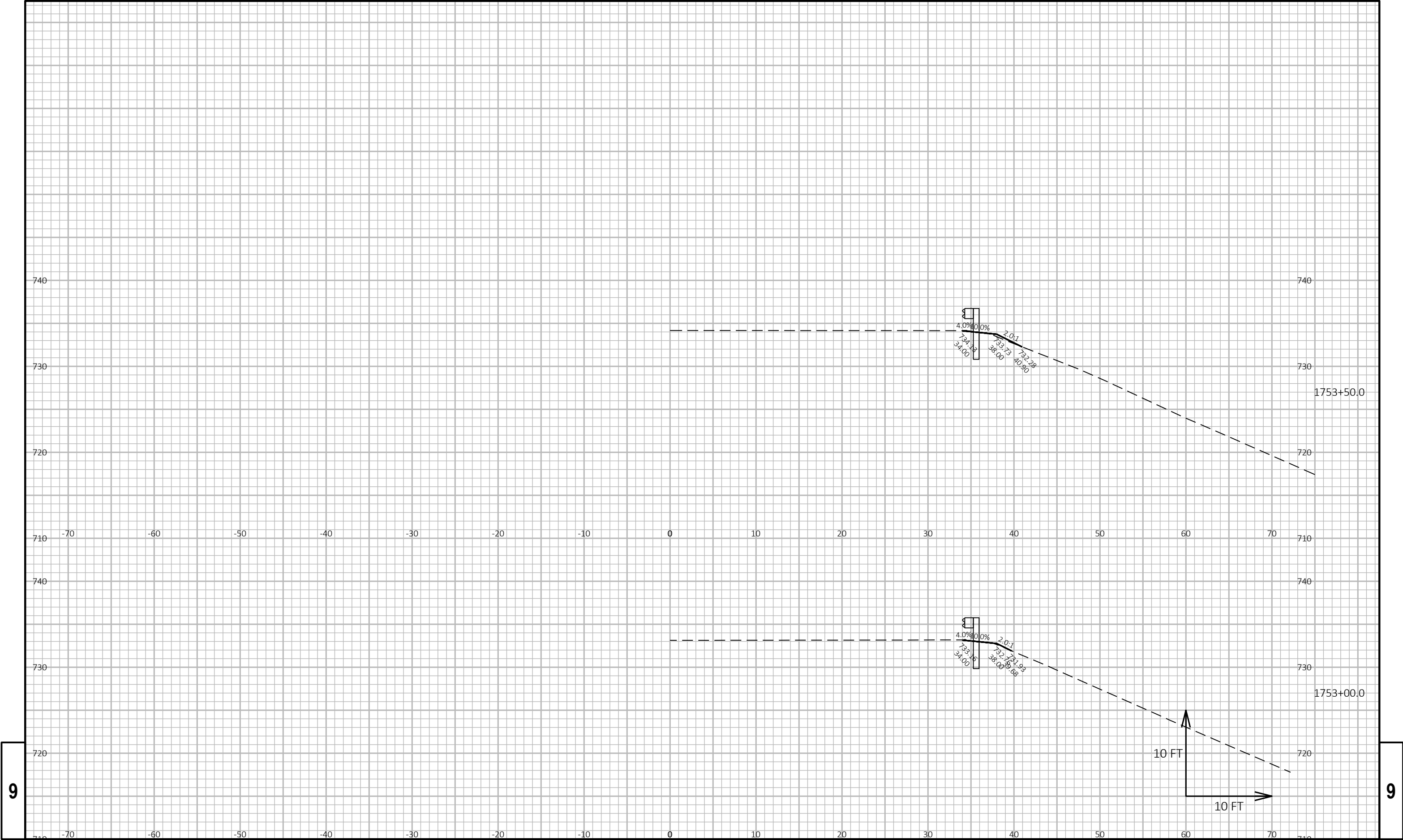


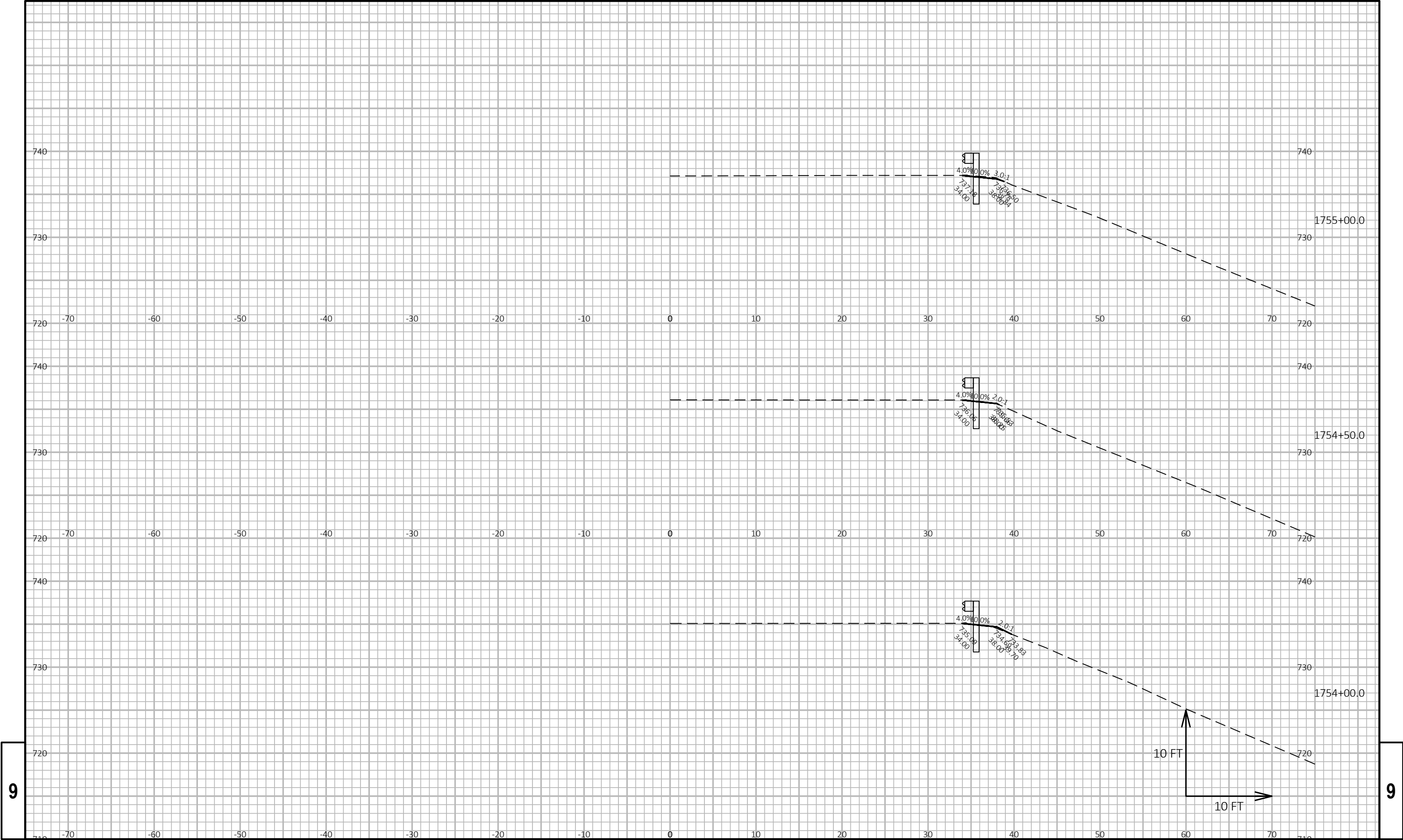








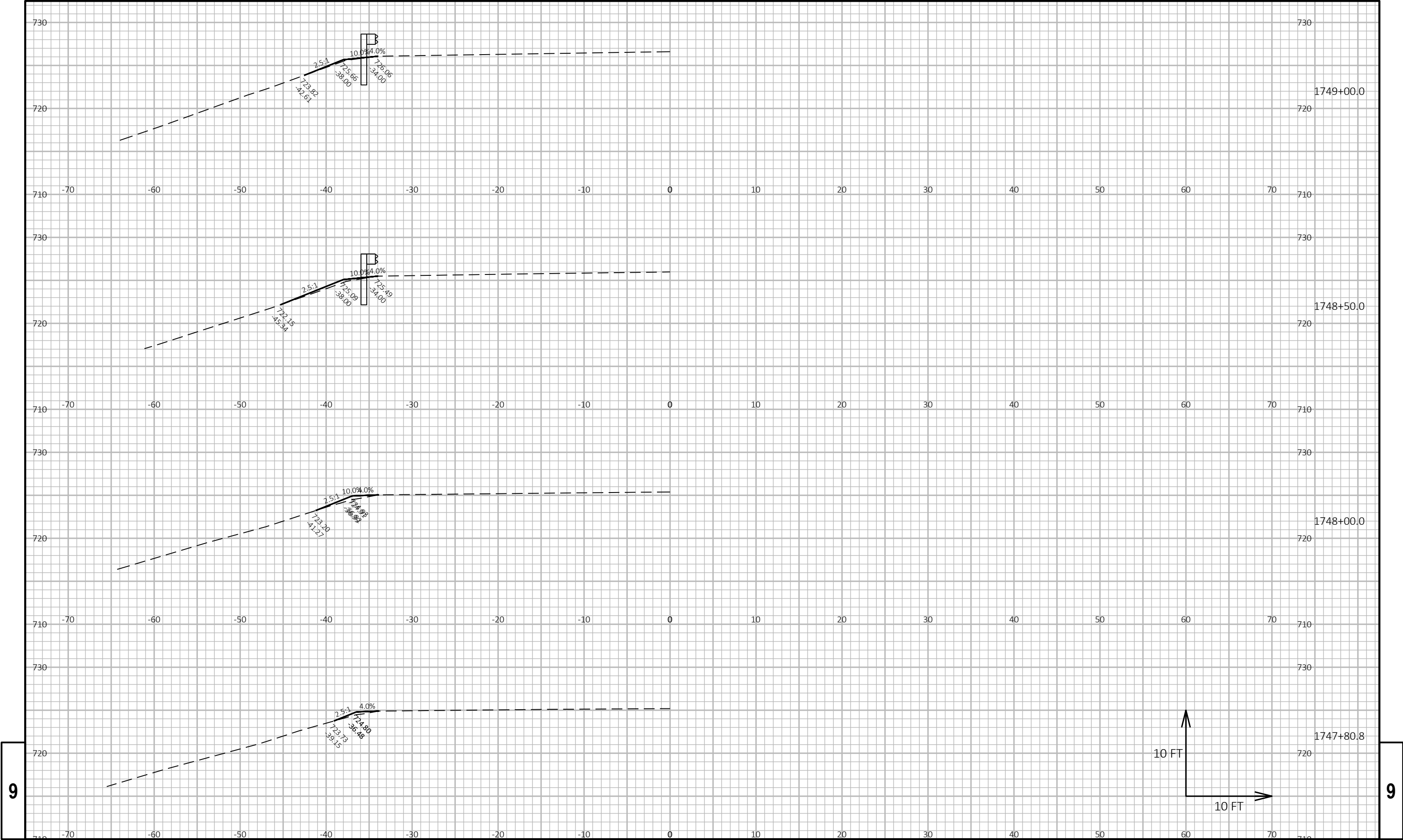




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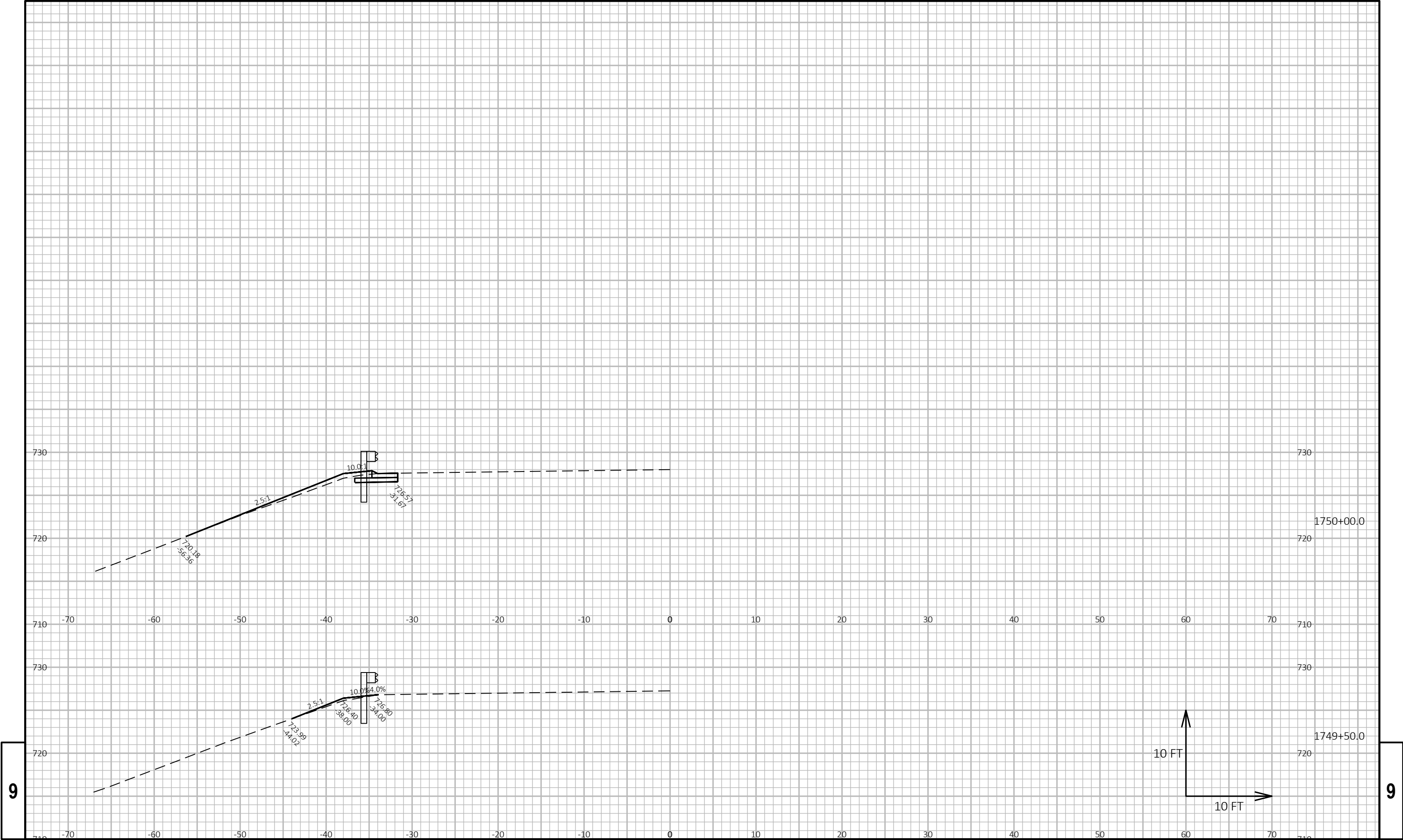
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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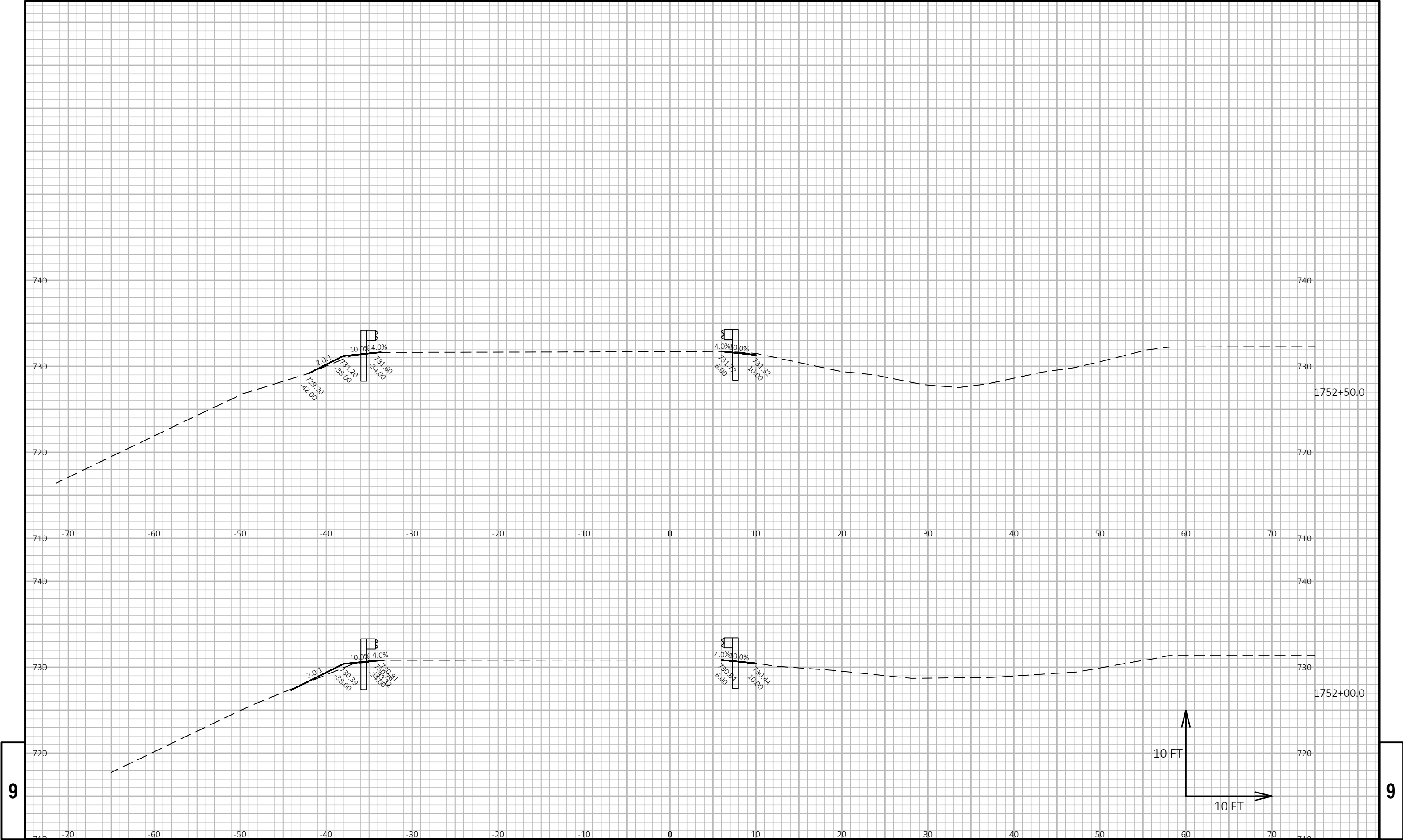
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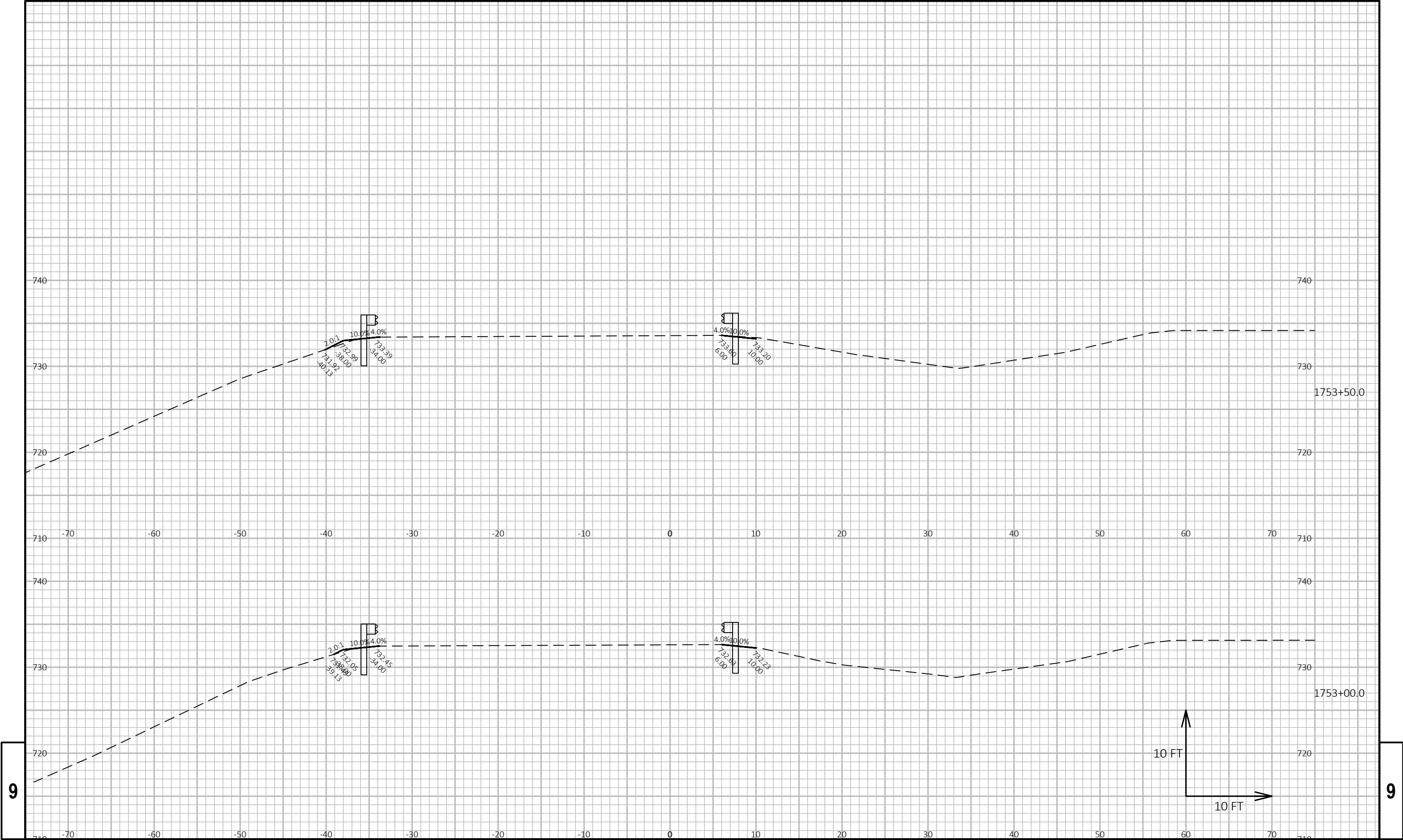
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET E
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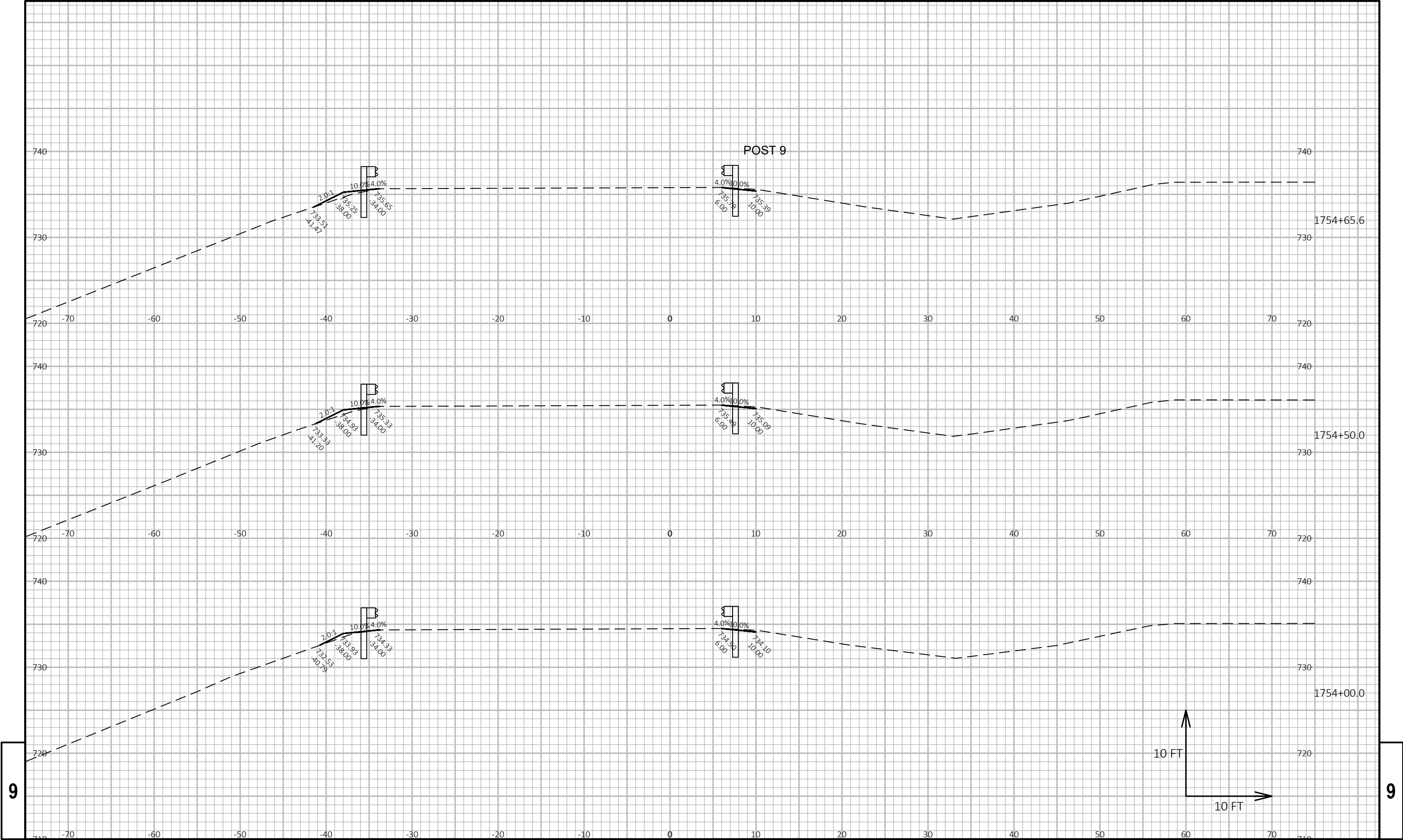
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE SOUTH	SHEET	E
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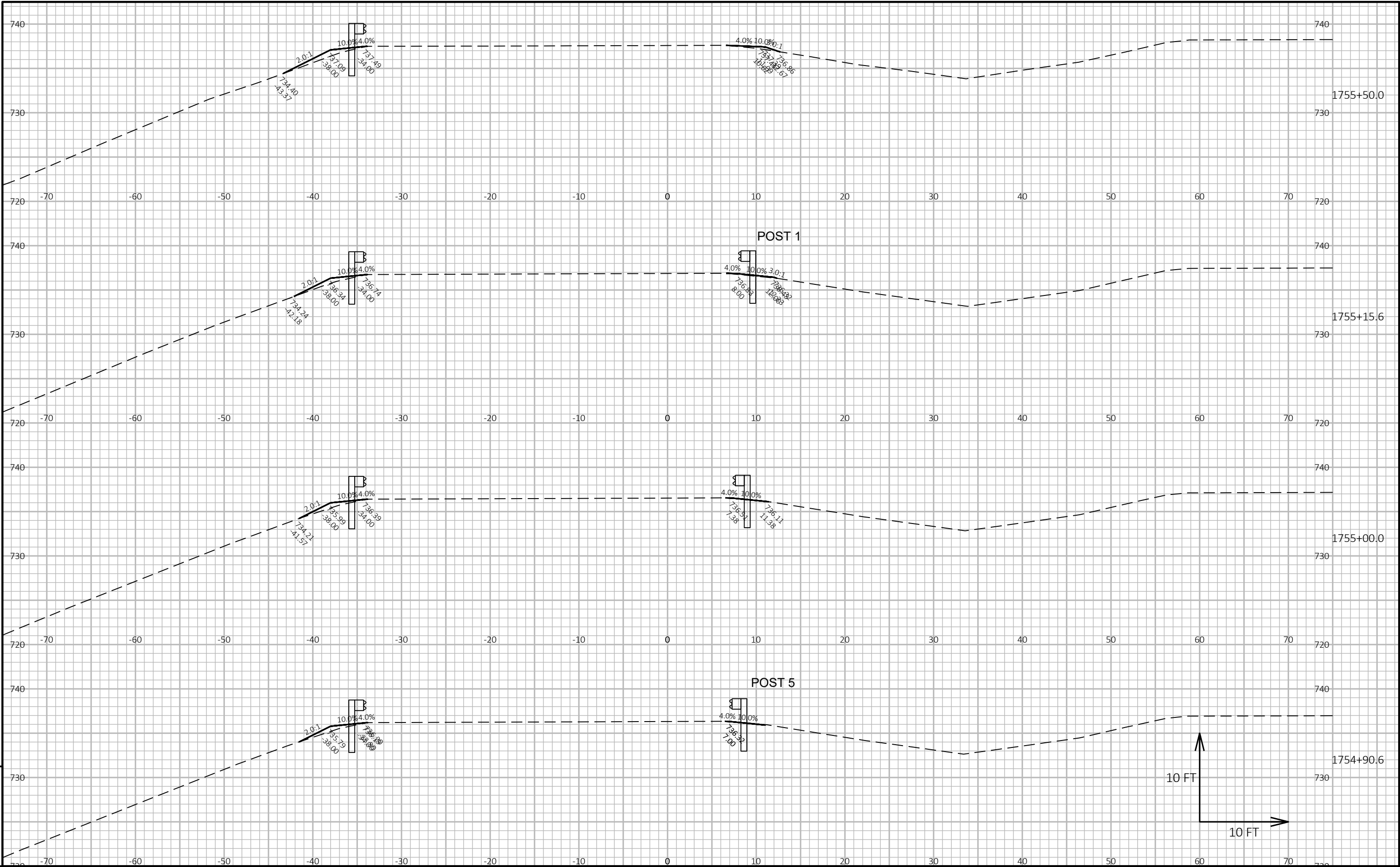


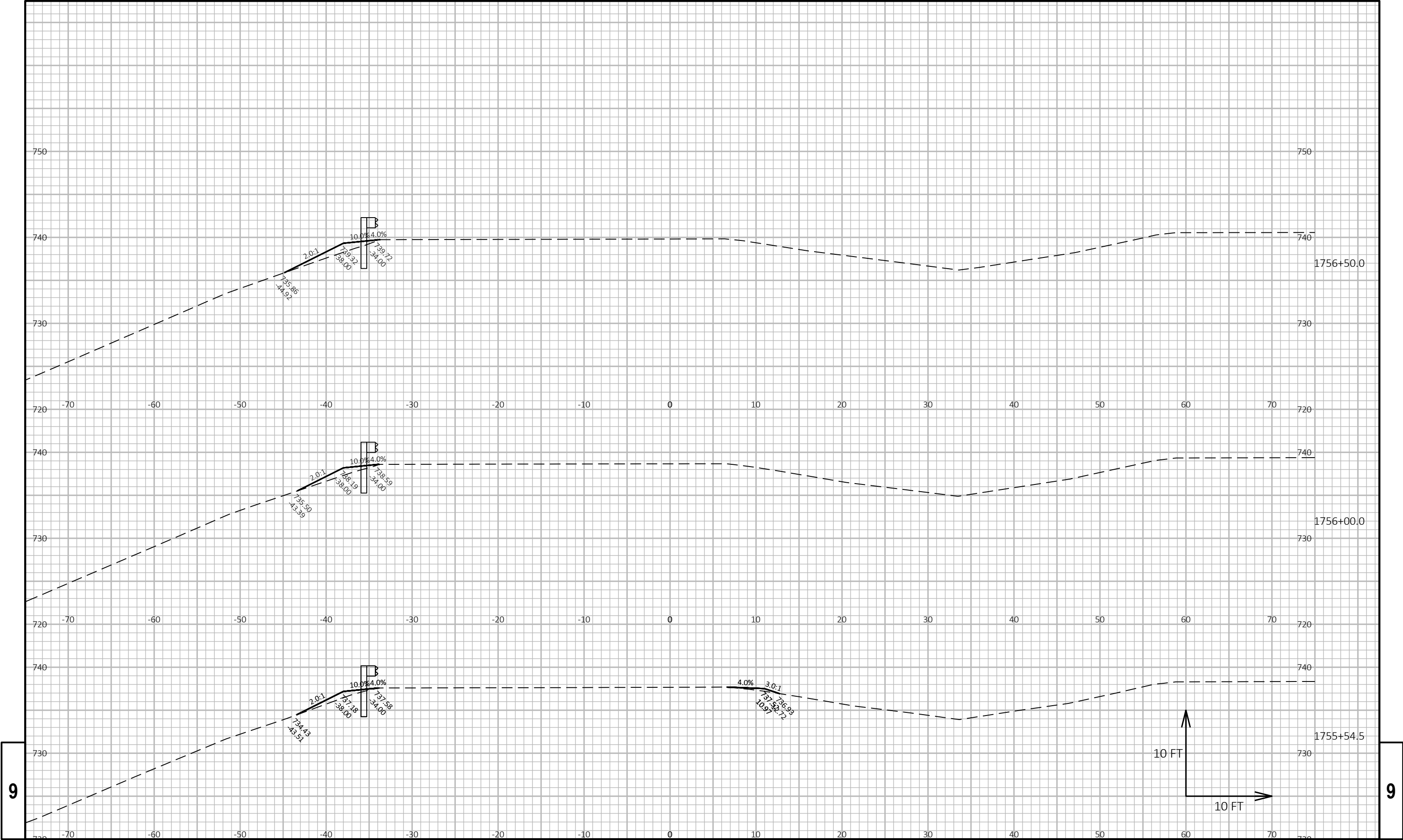


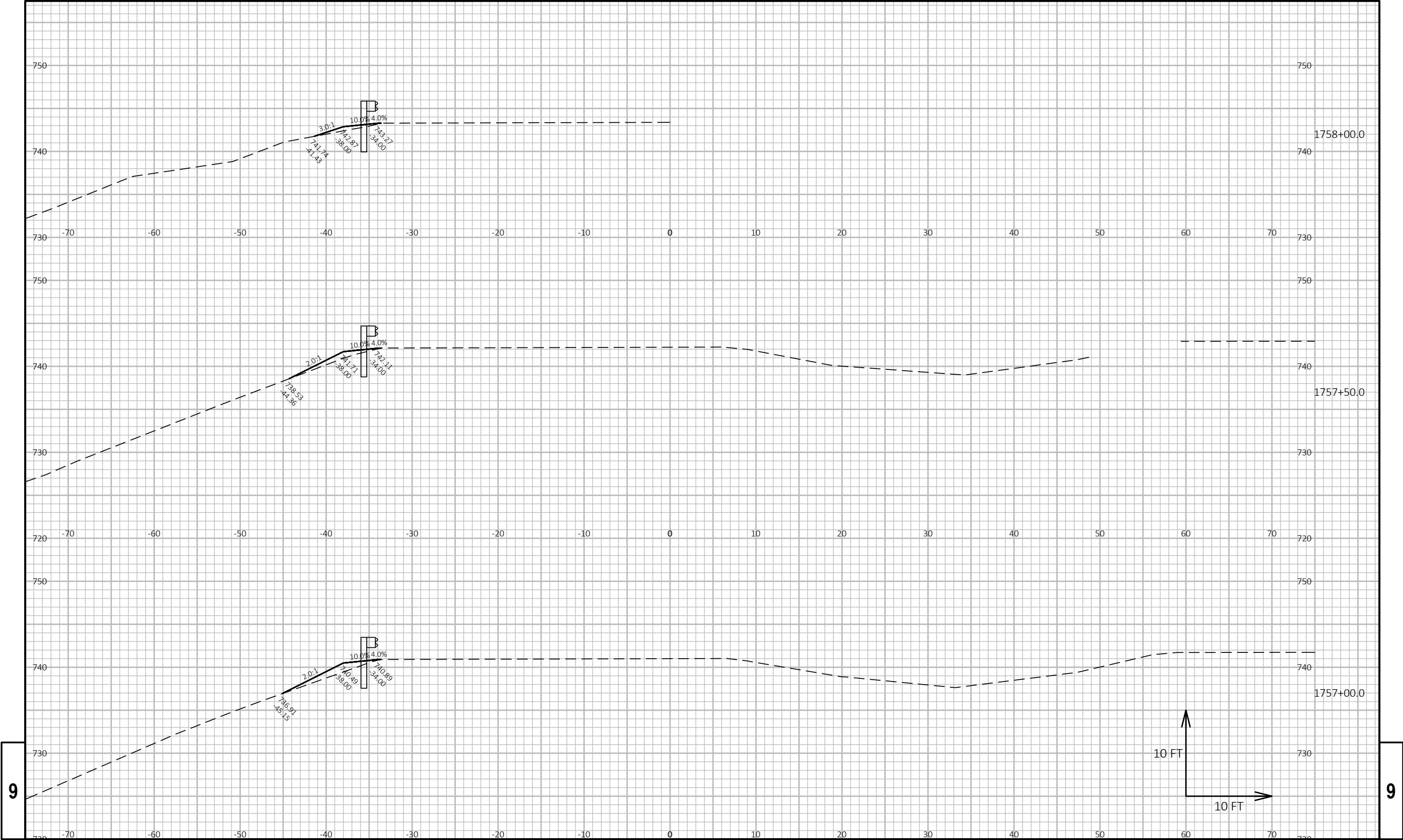
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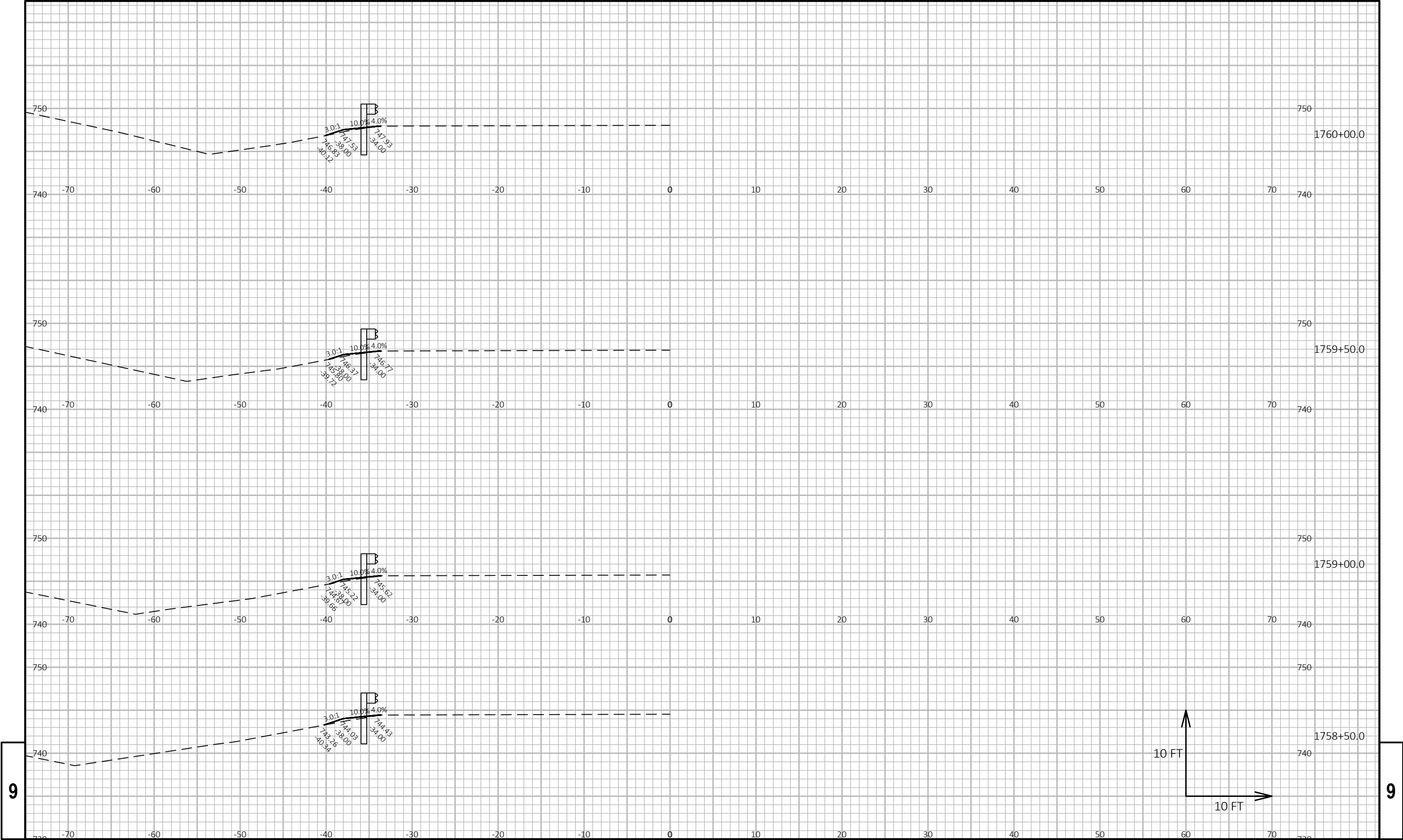




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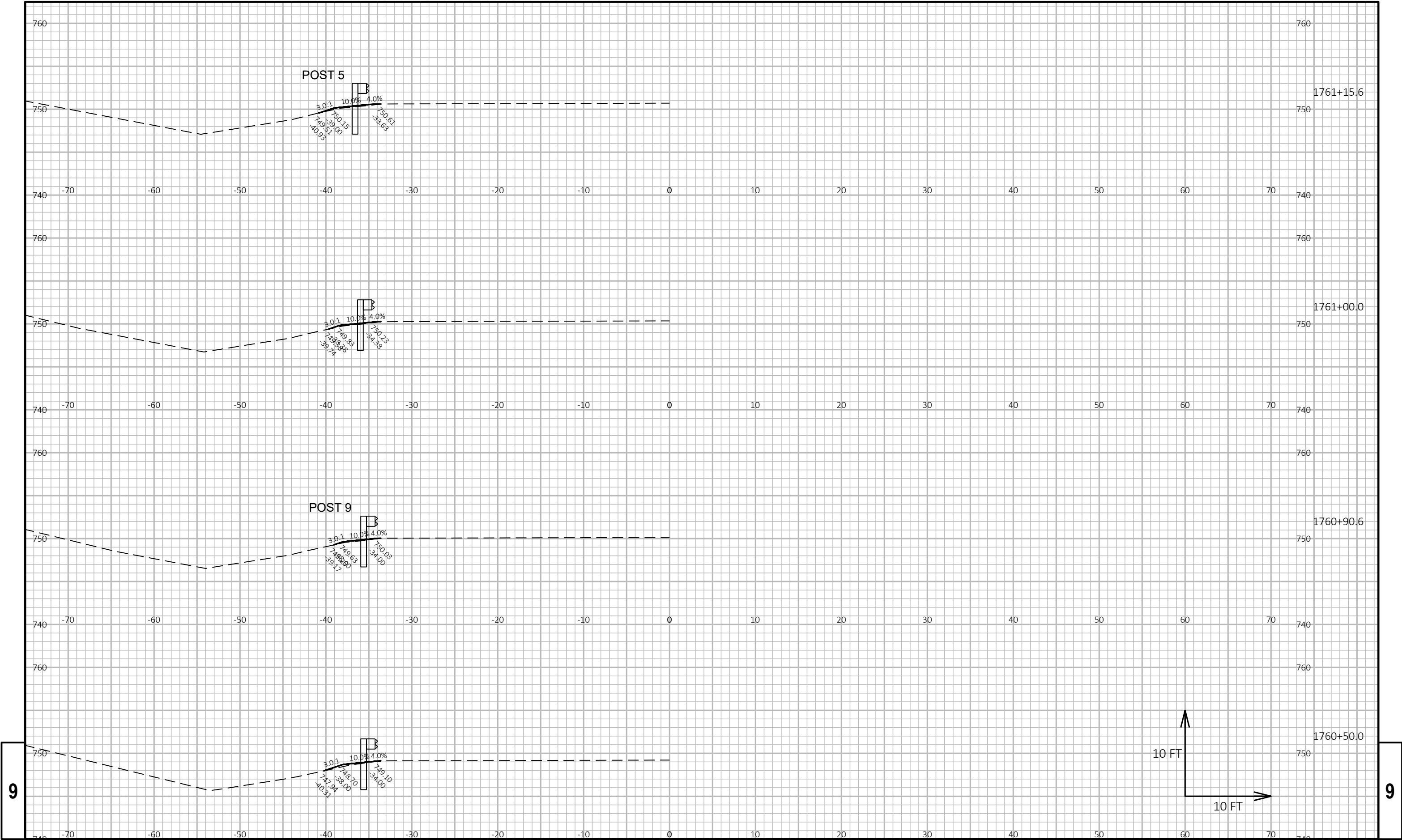
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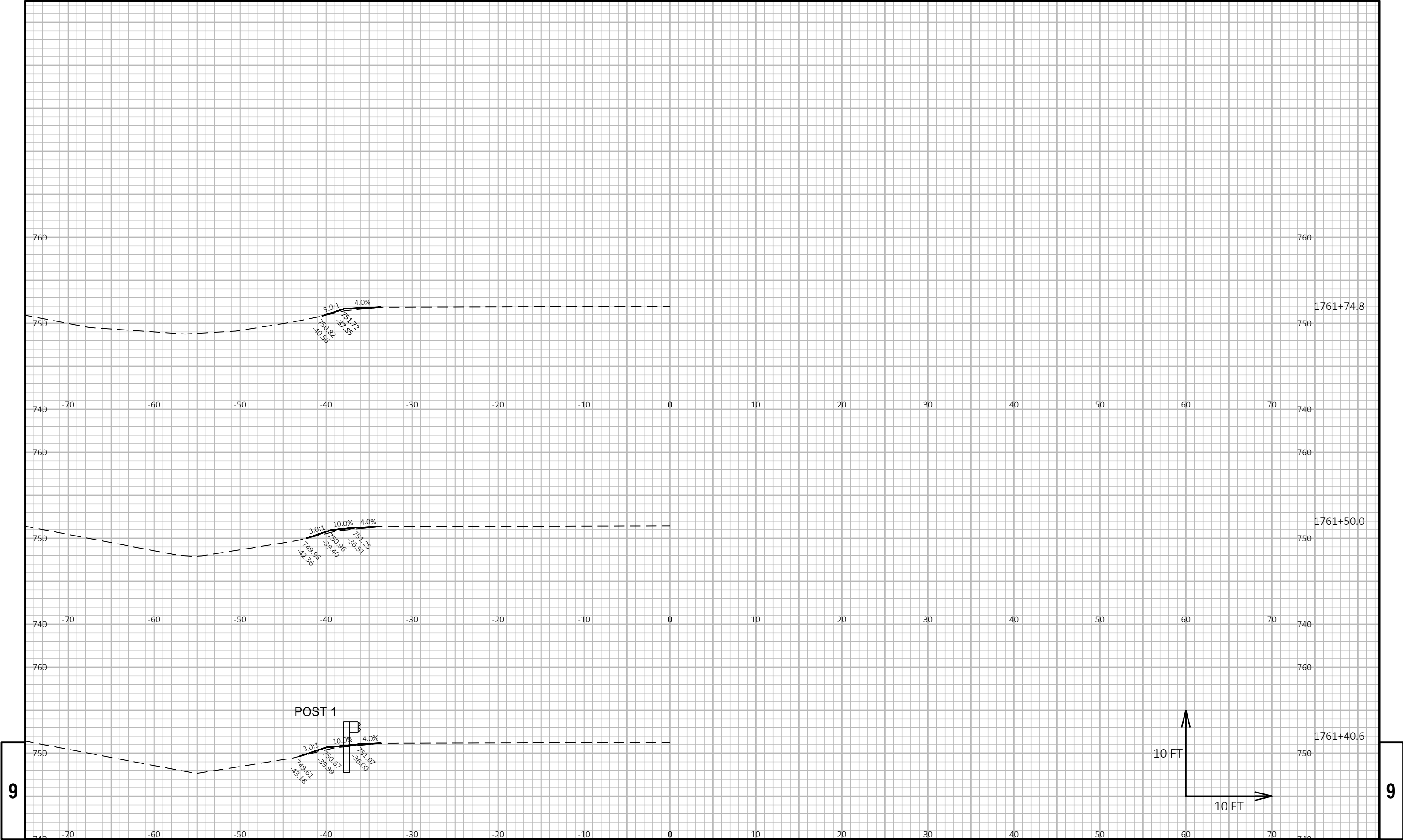
PROJECT NO: 1227-12-72			HWY: IH 43			COUNTY: MANITOWOC			CROSS SECTIONS: MAIN LINE SOUTH			SHEET			E
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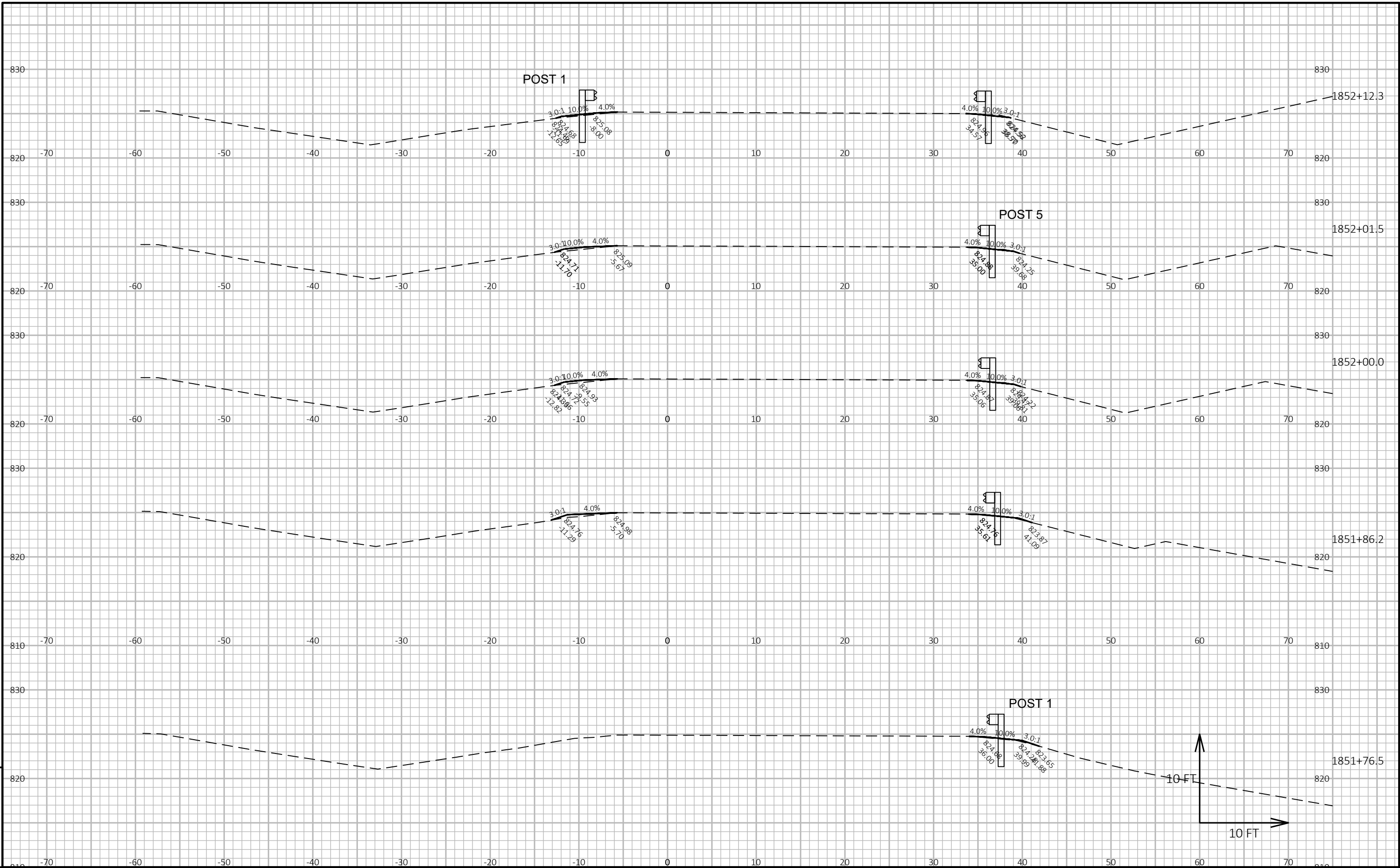


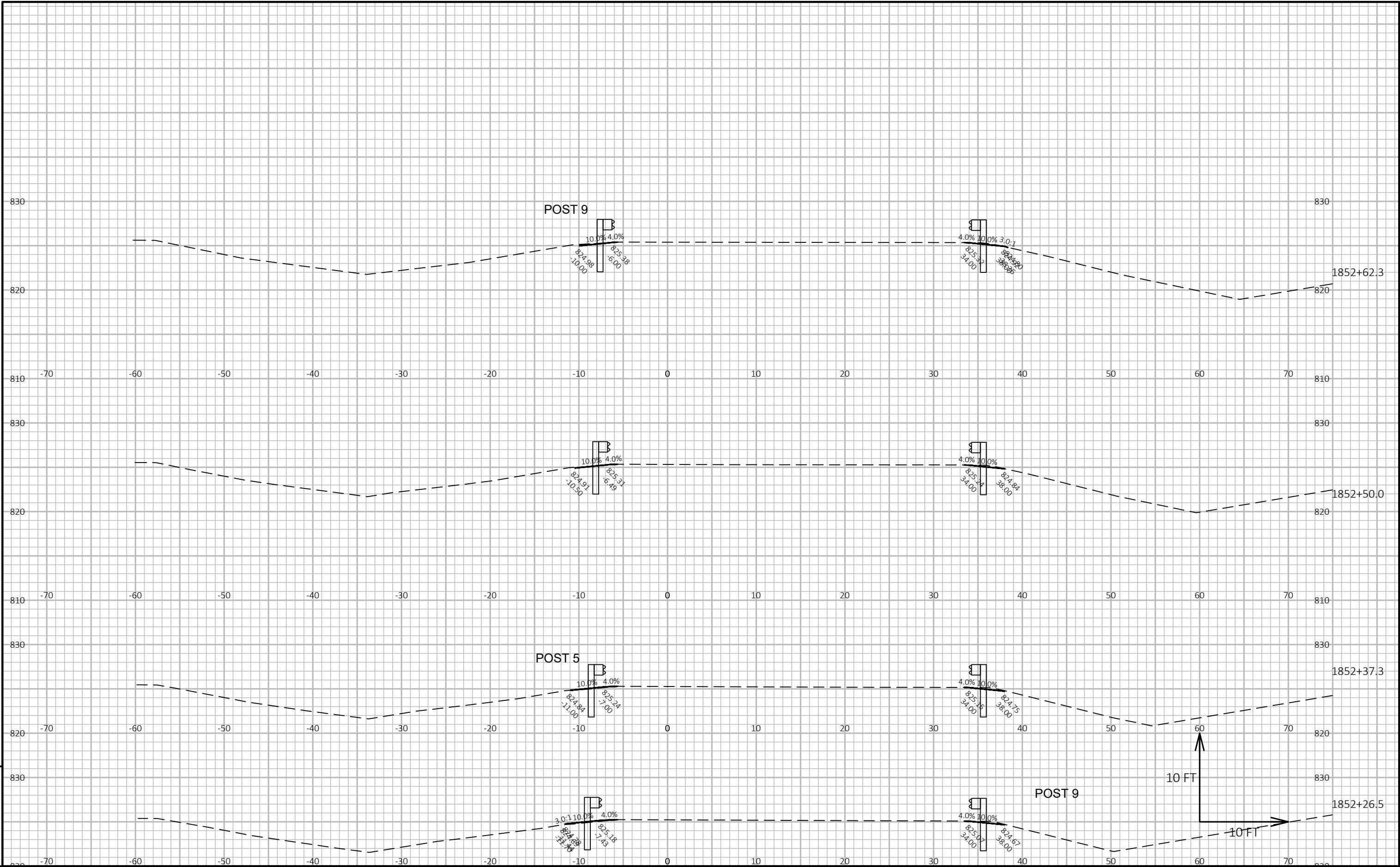
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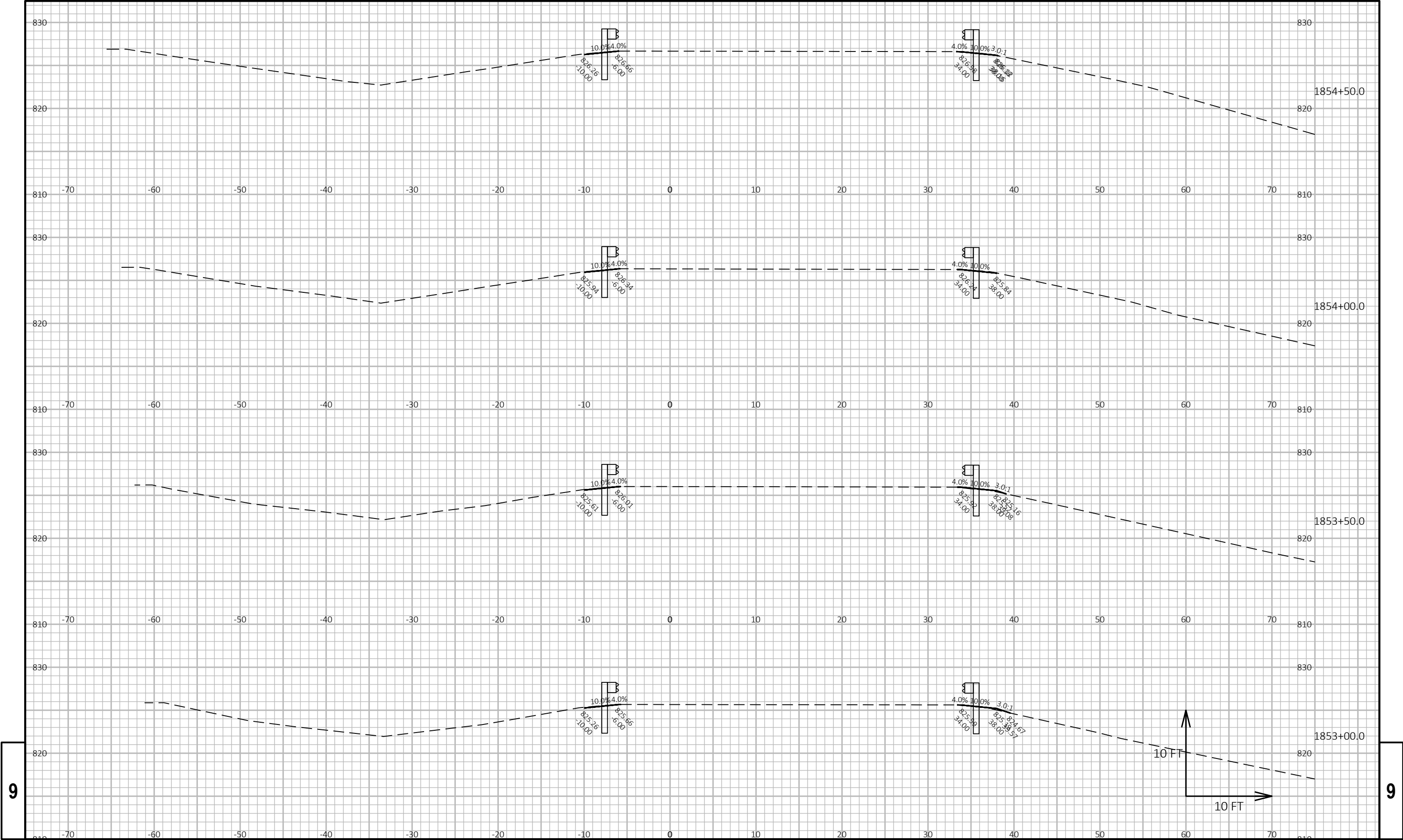
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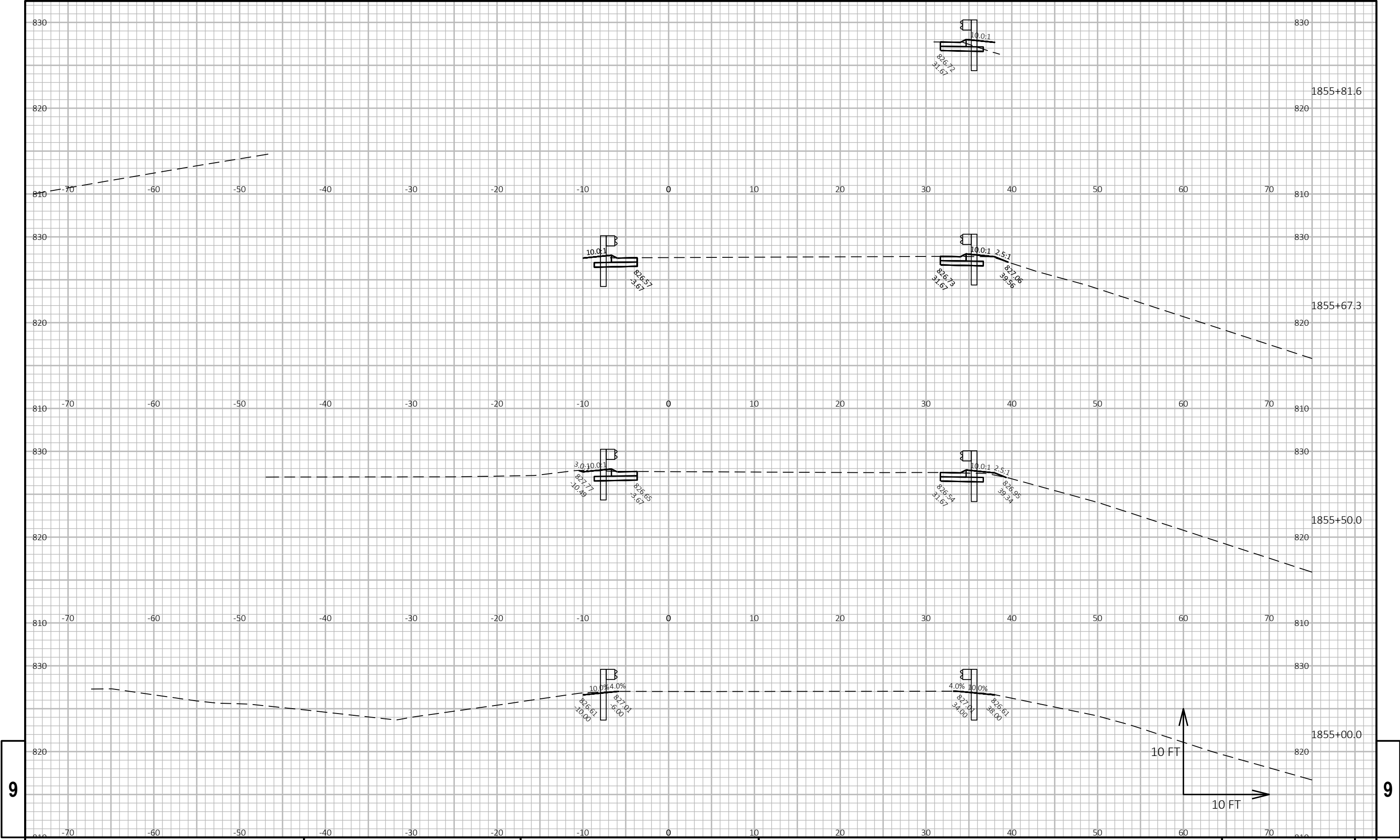






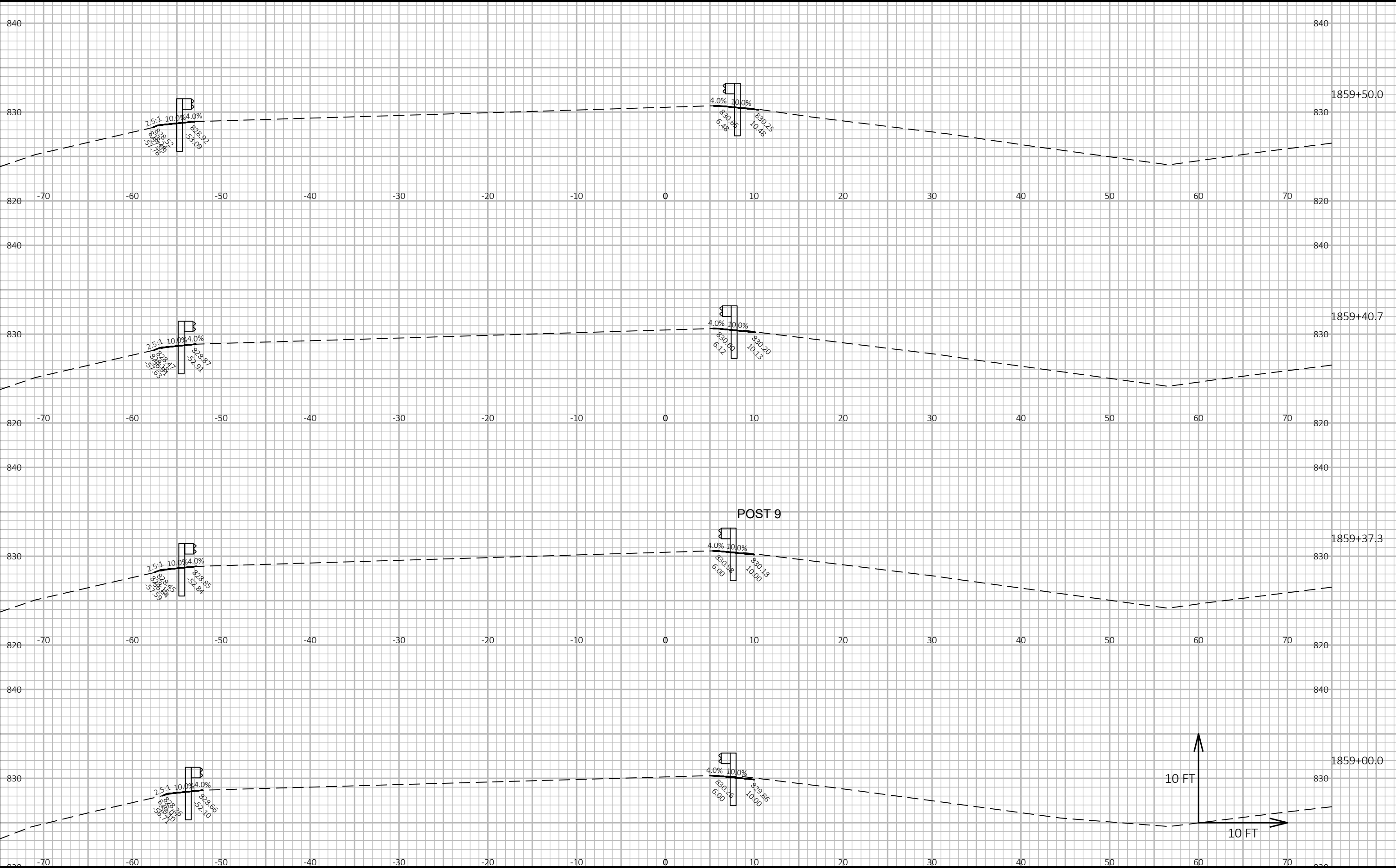


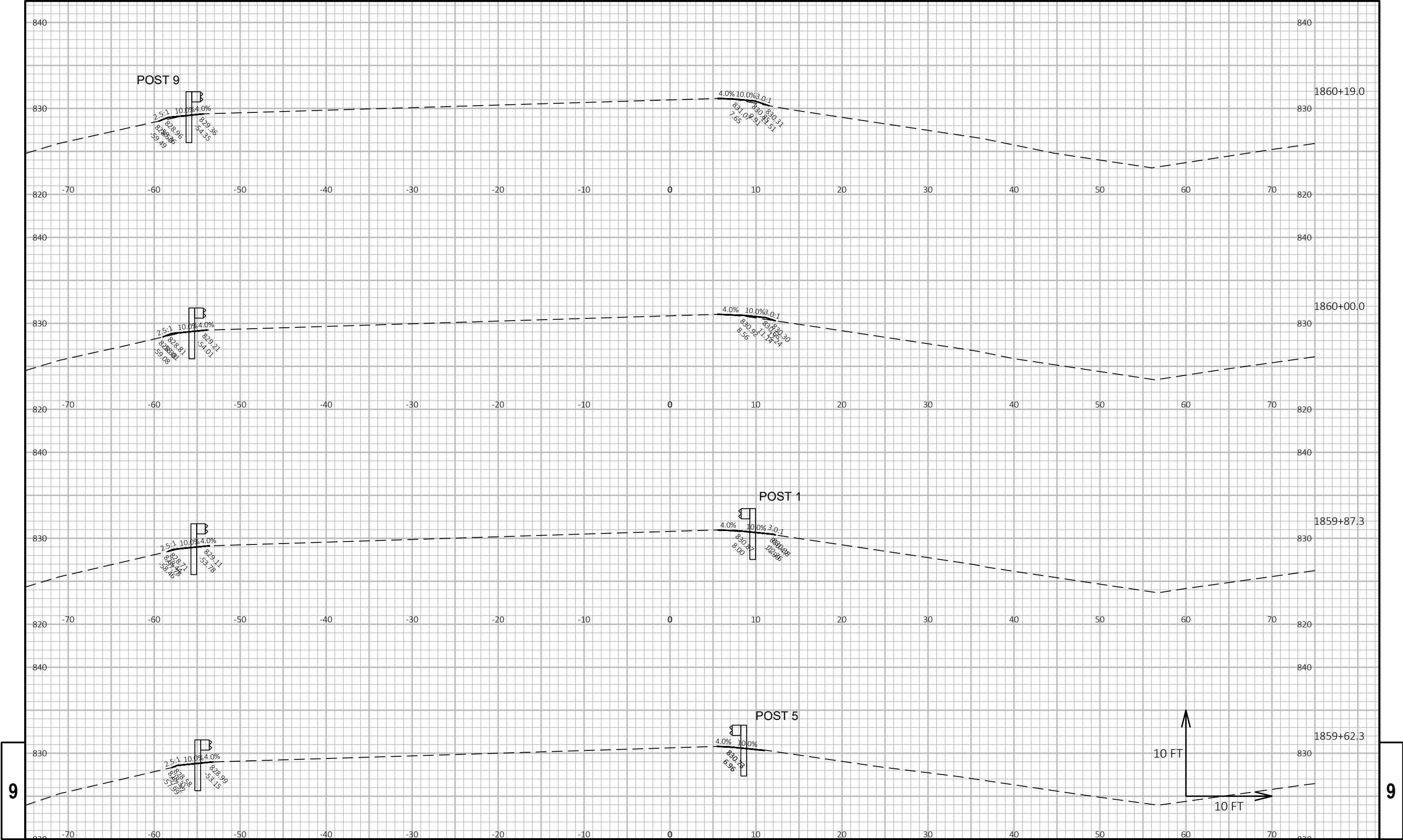


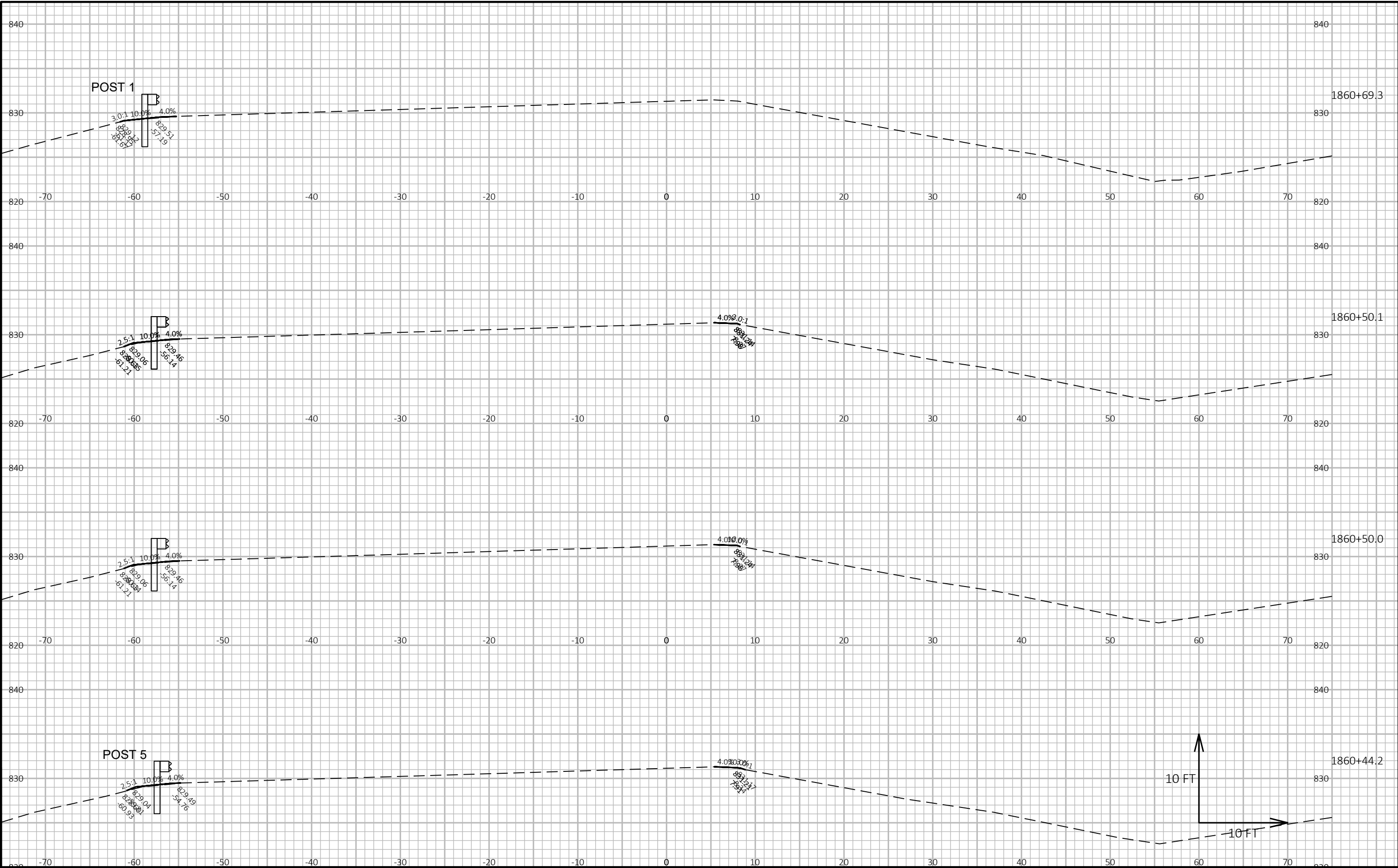


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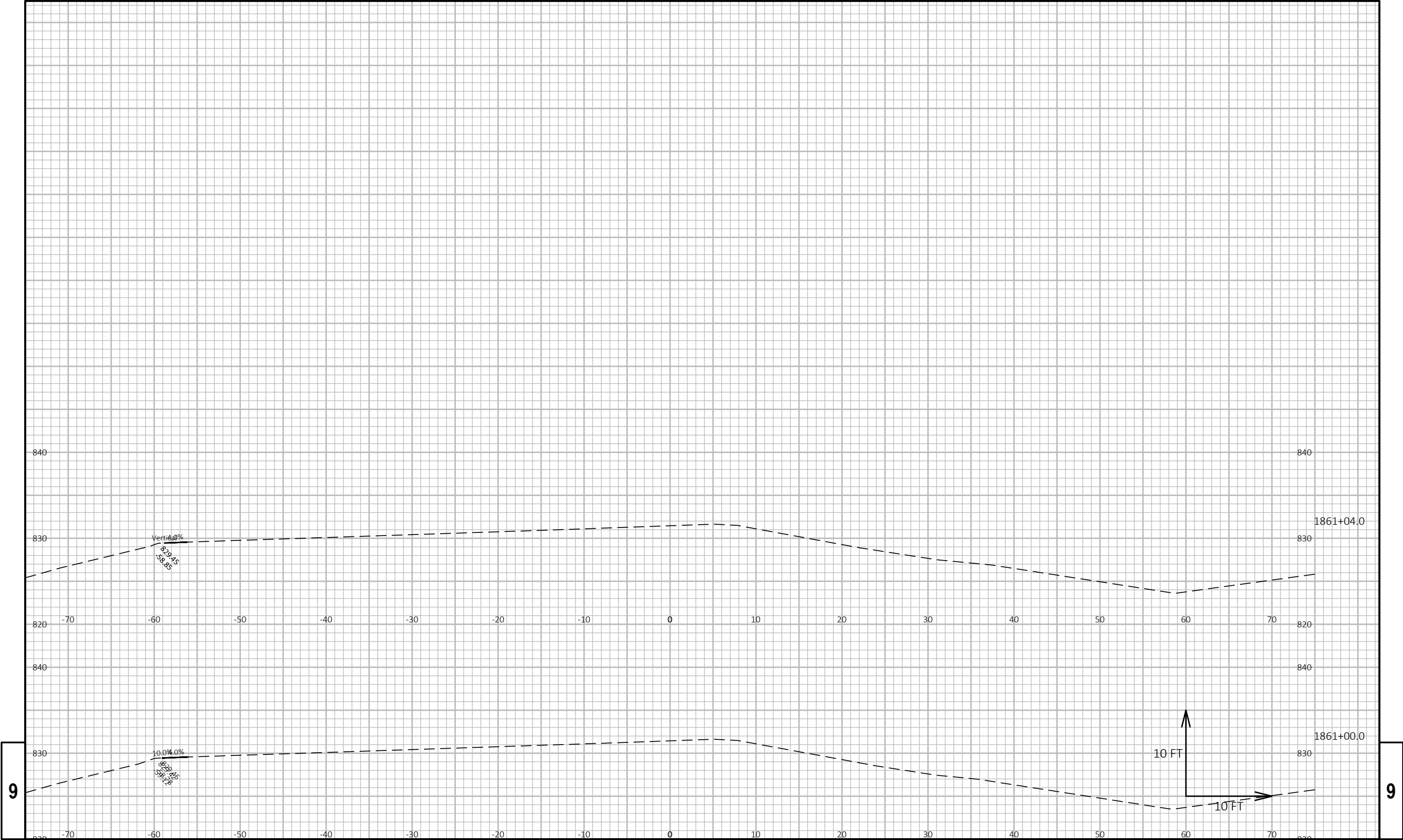
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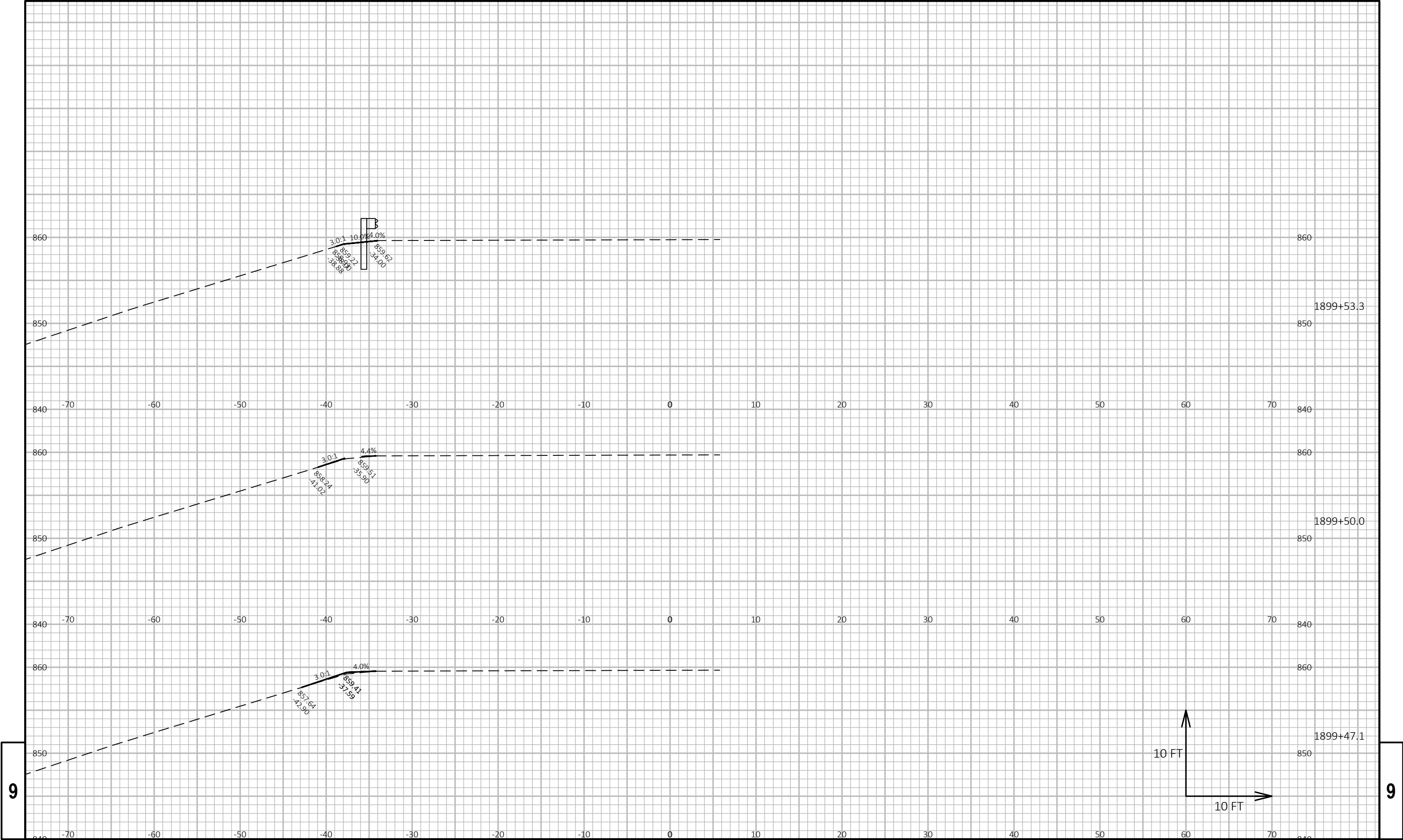


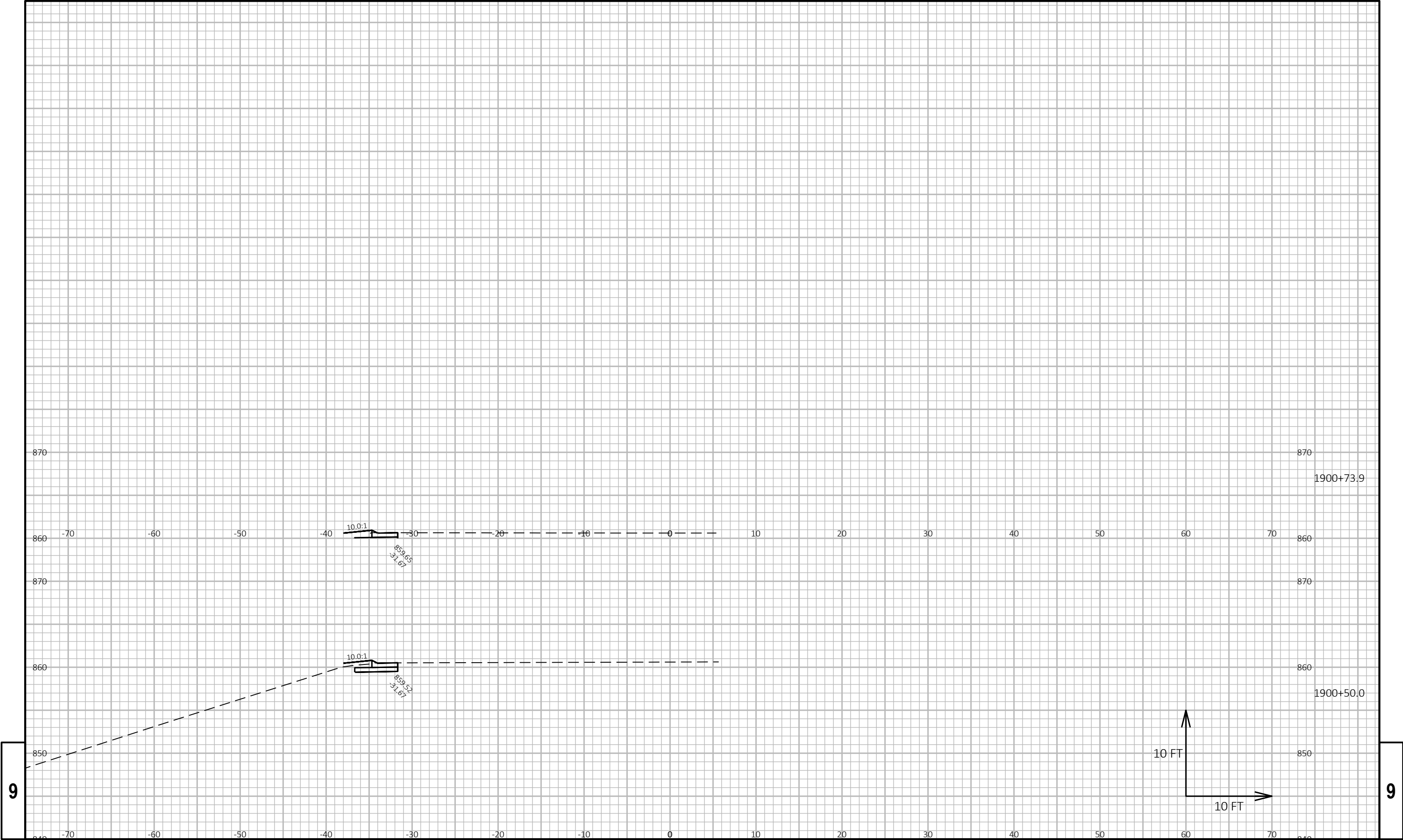


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET E
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET E
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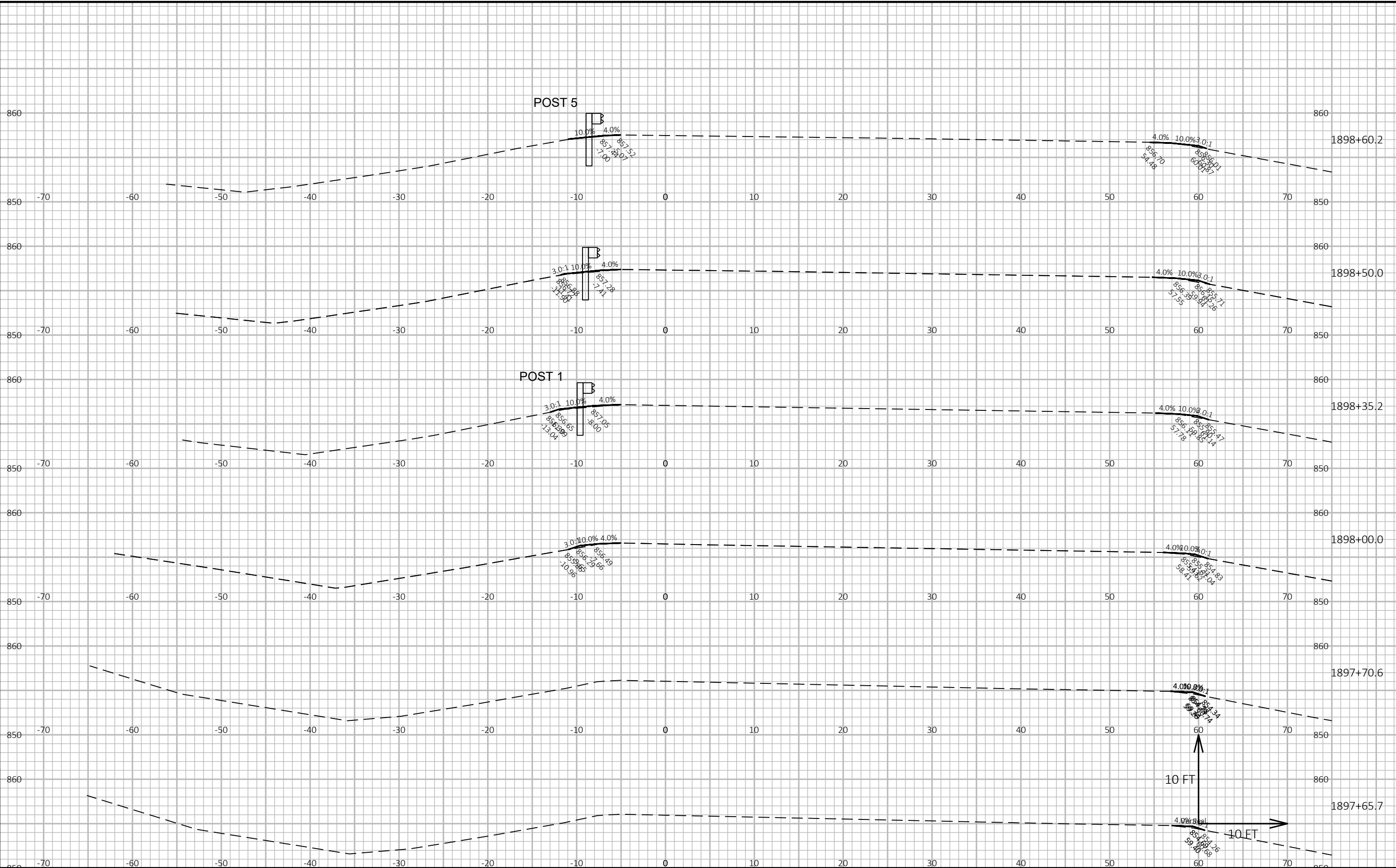




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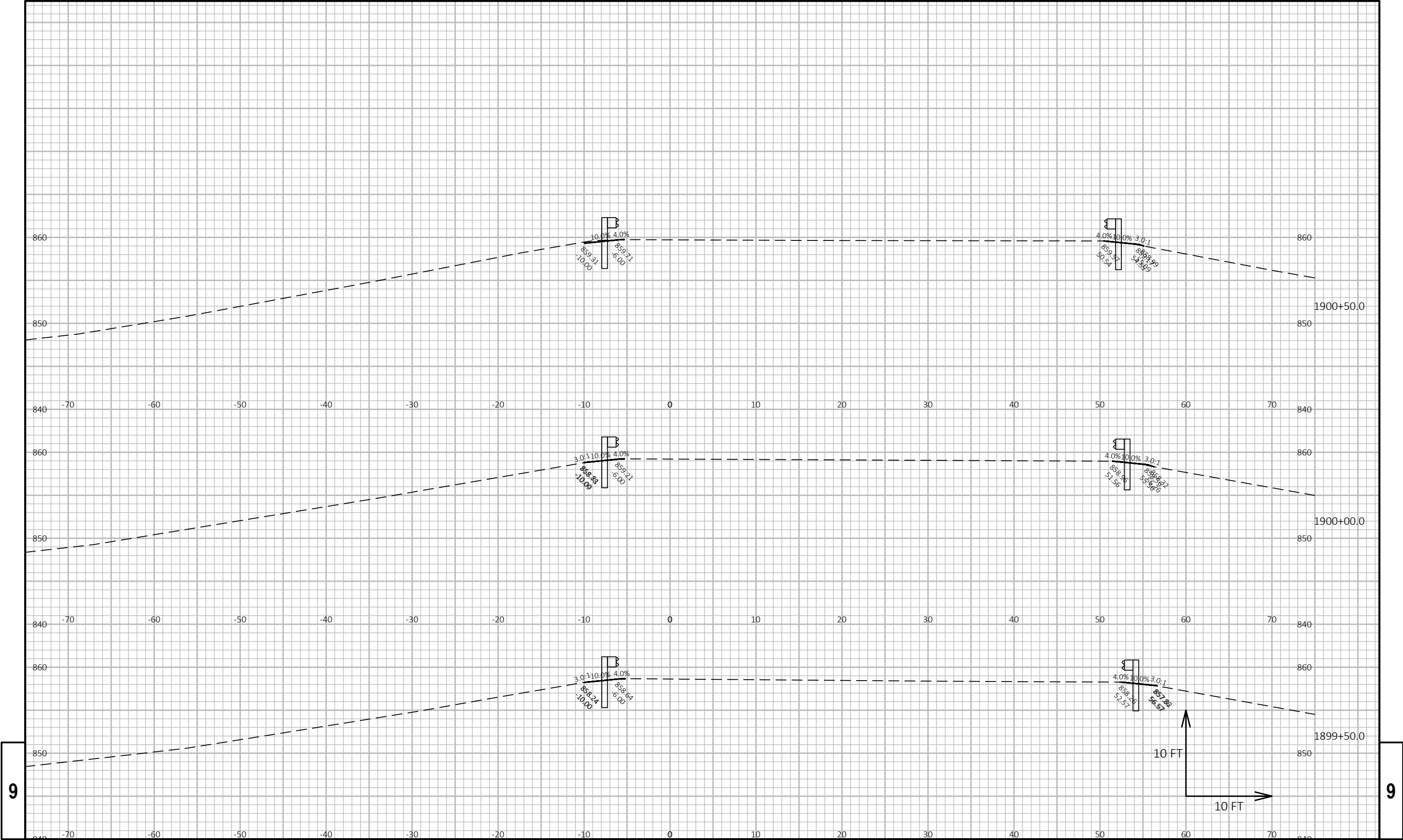
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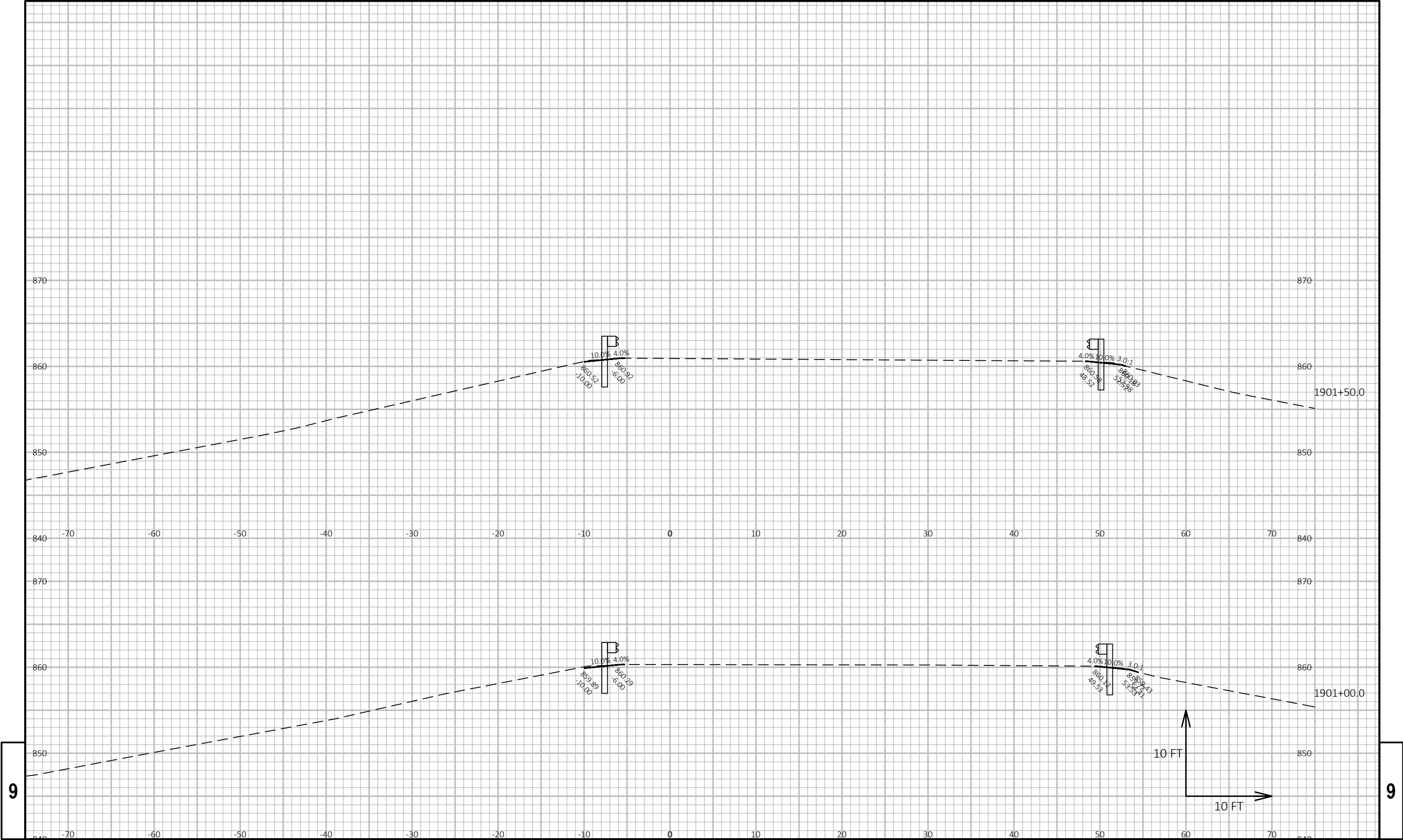


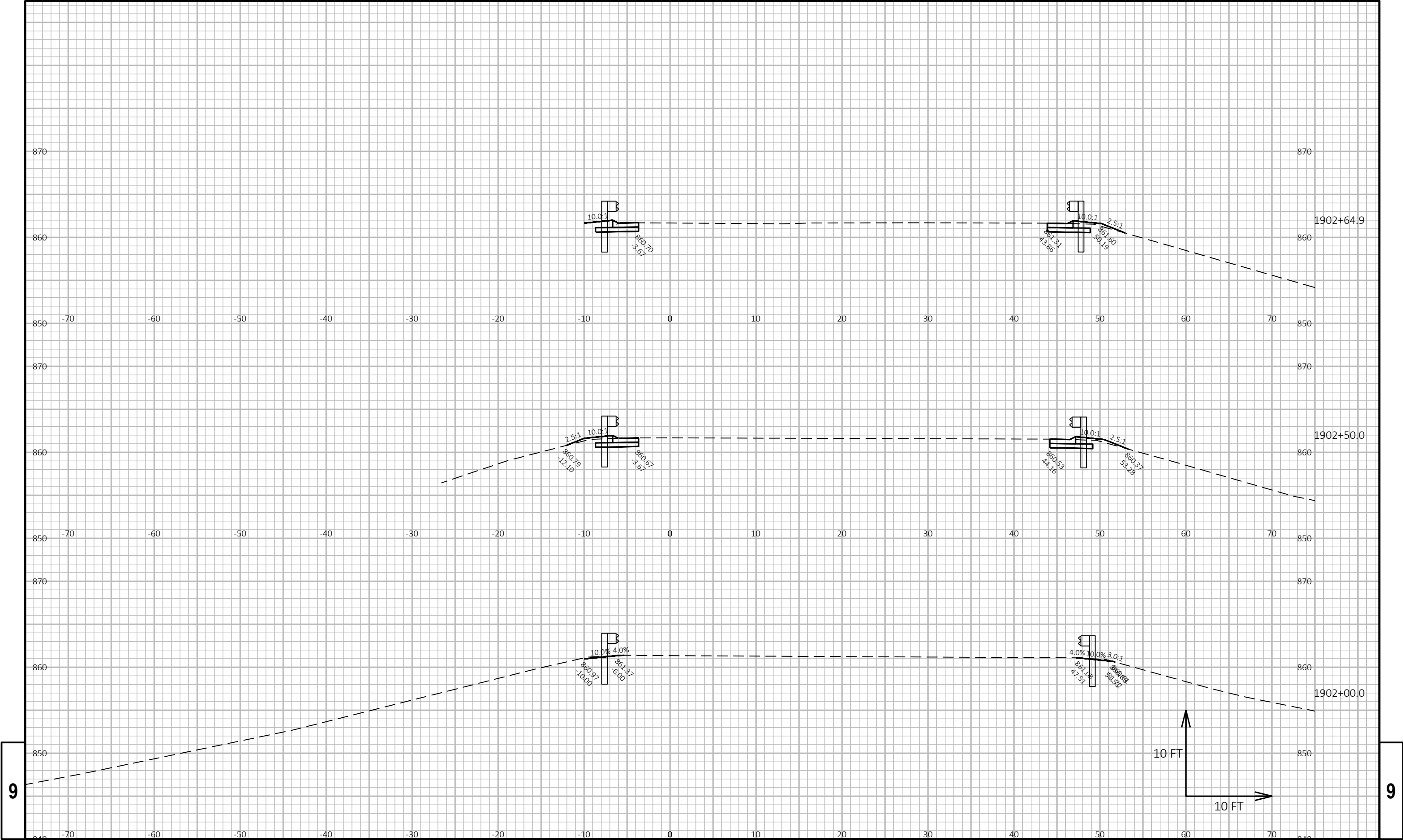
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PROJECT NO: 1227-12-72		HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET	E
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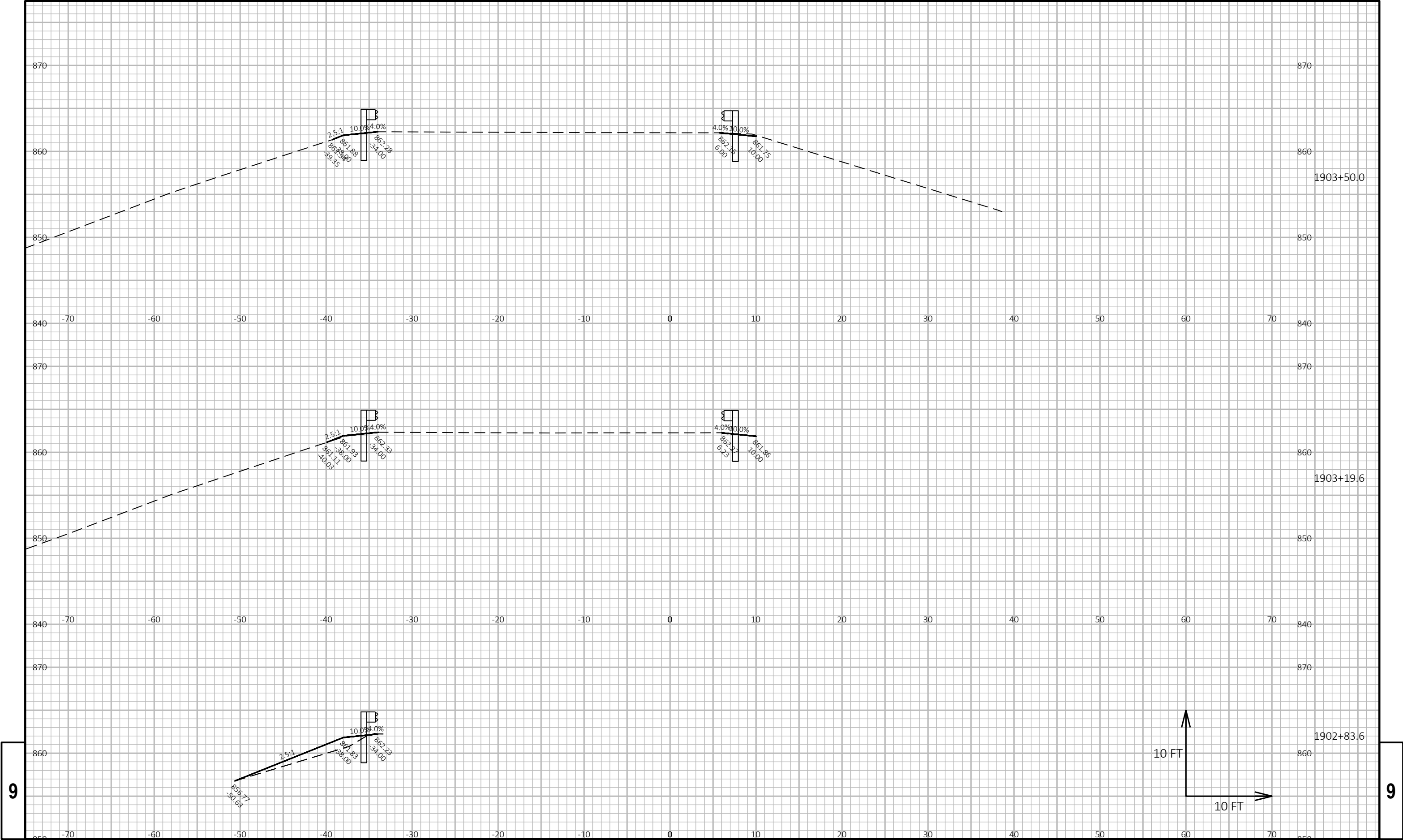




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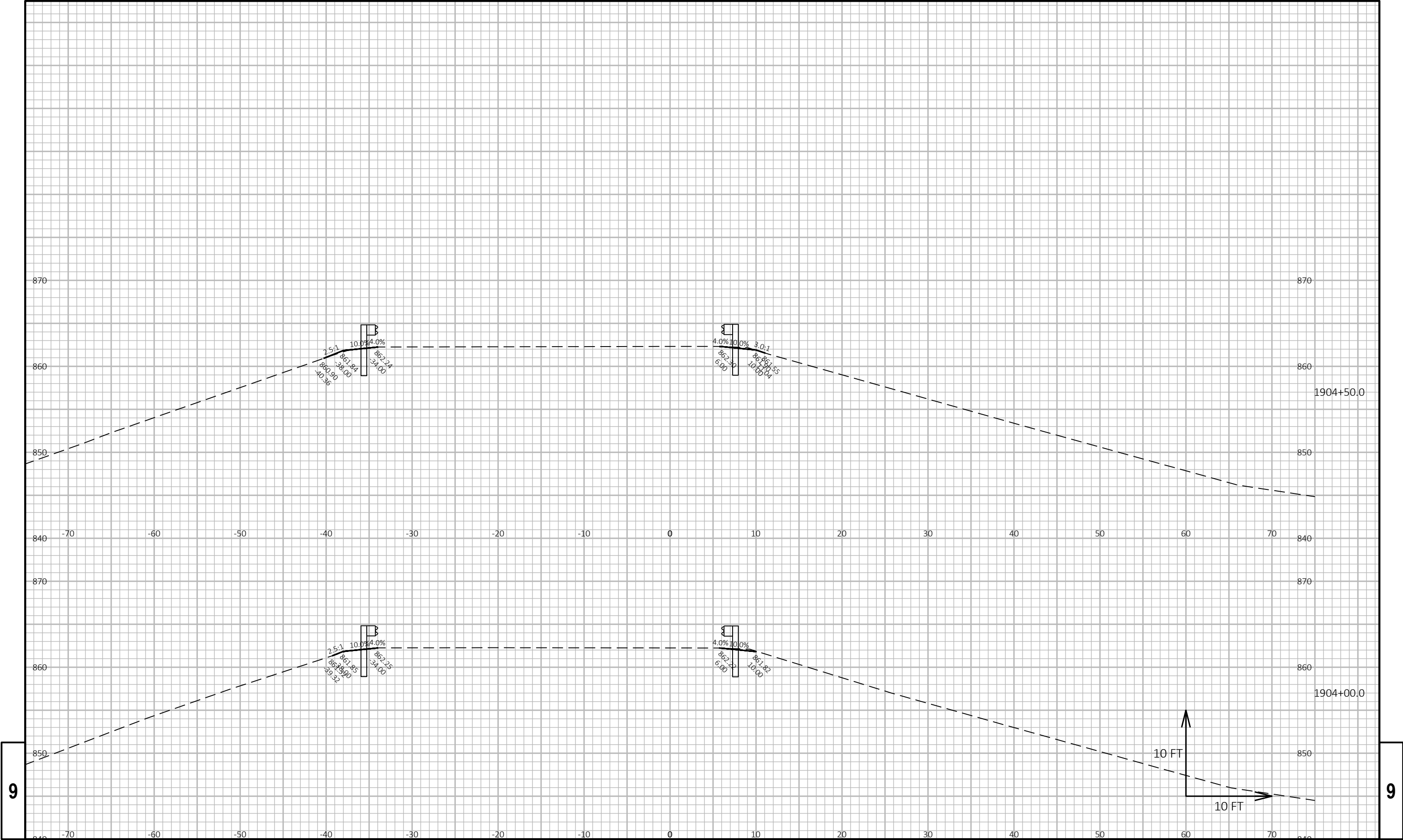
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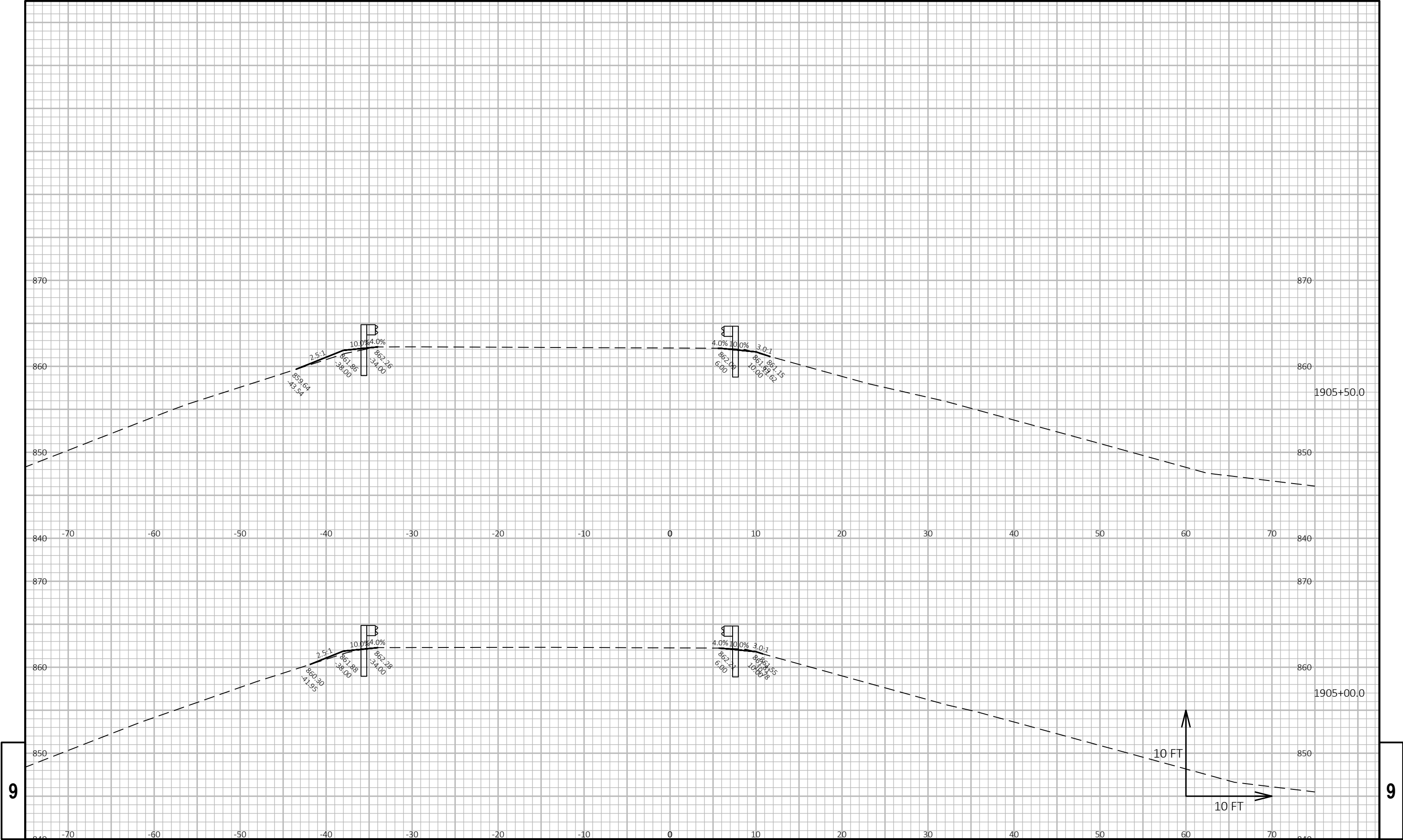
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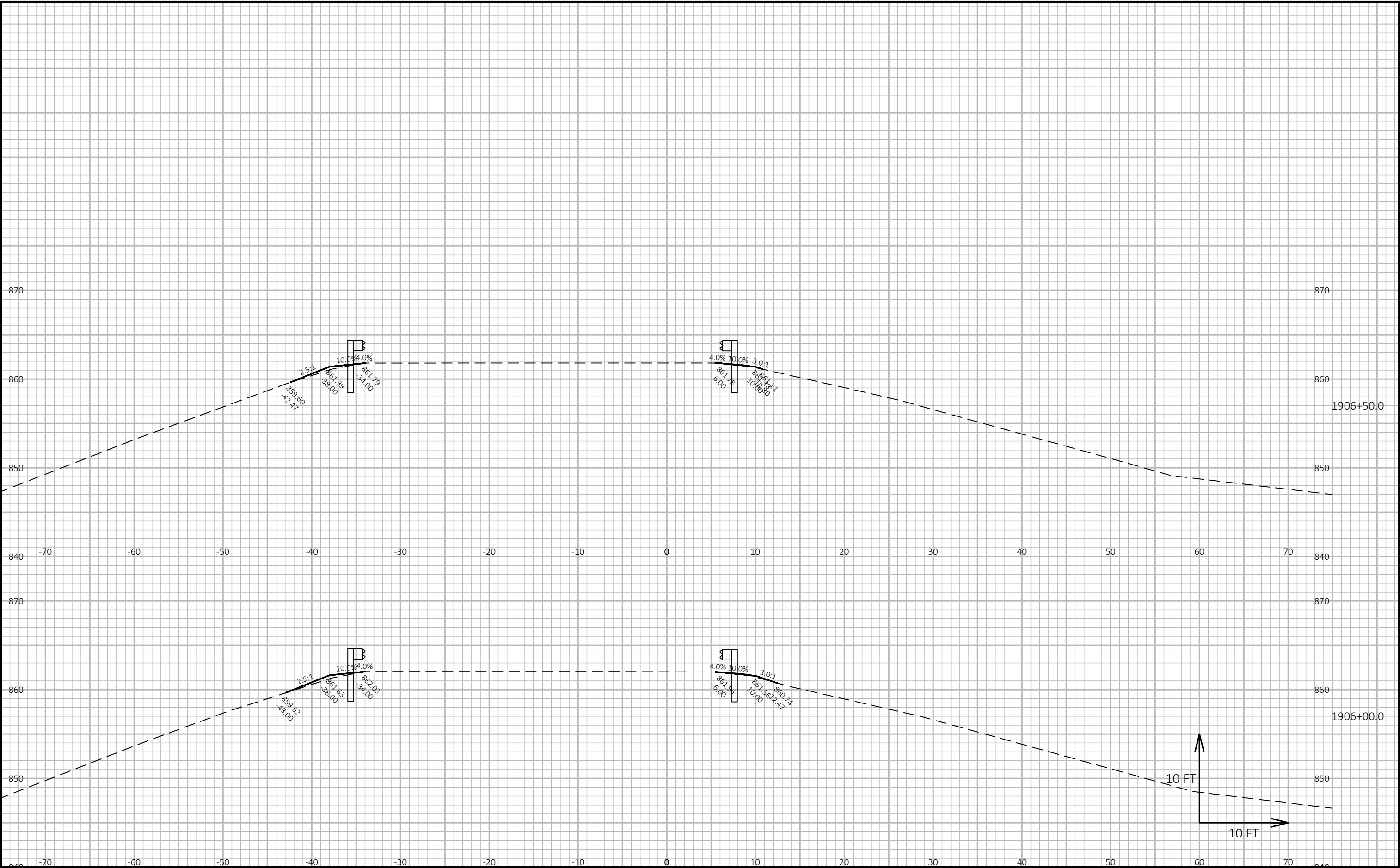


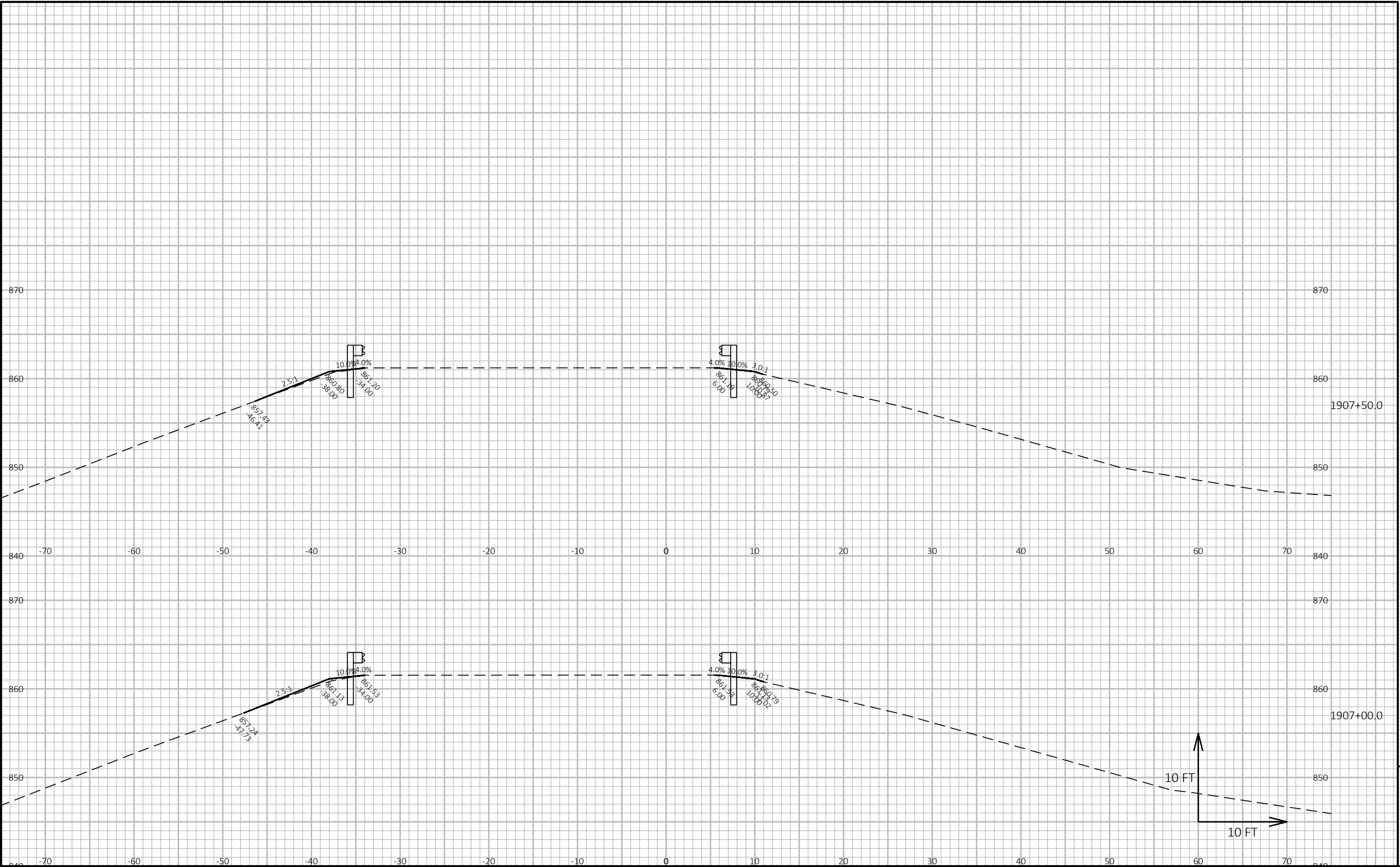
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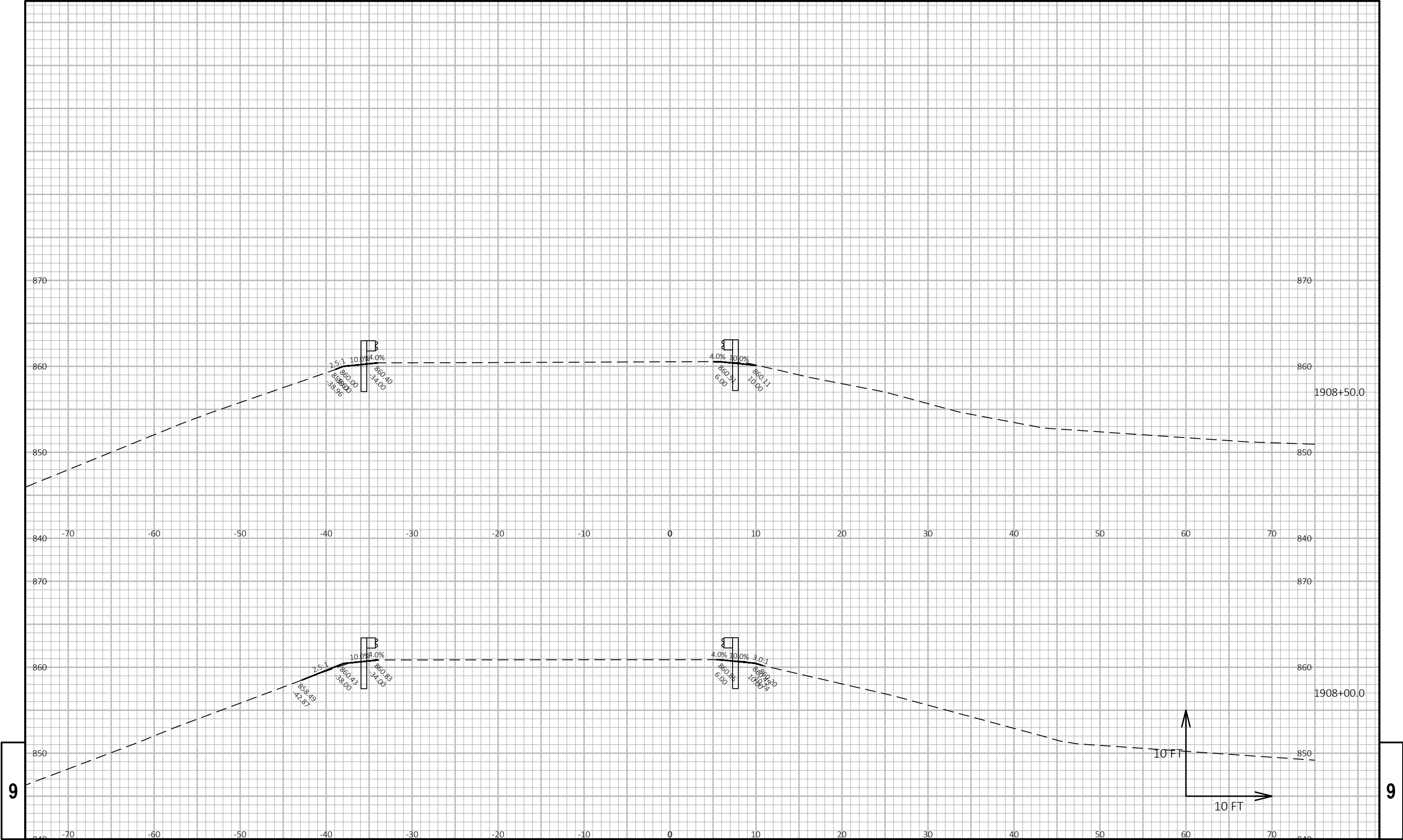




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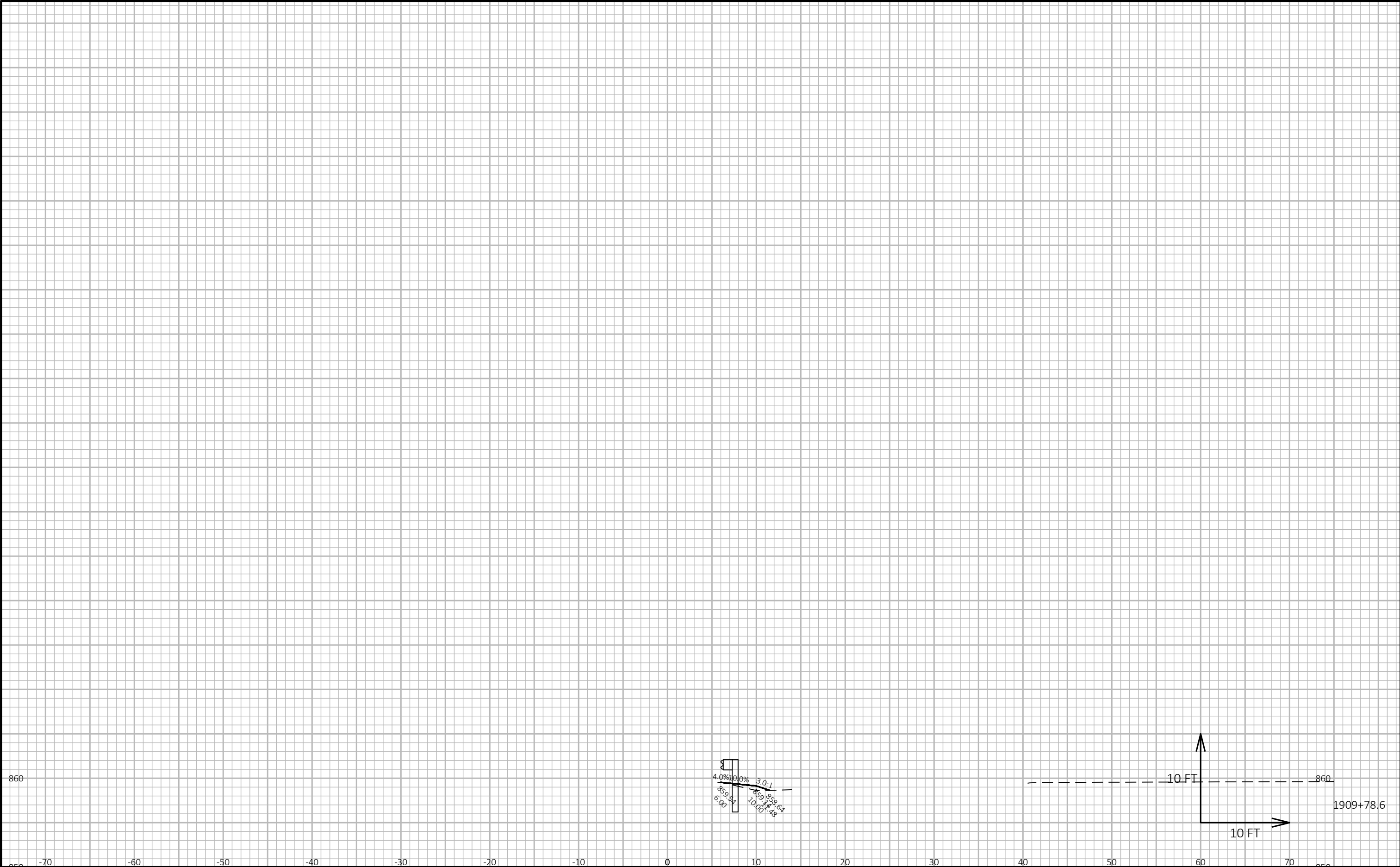
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET	E
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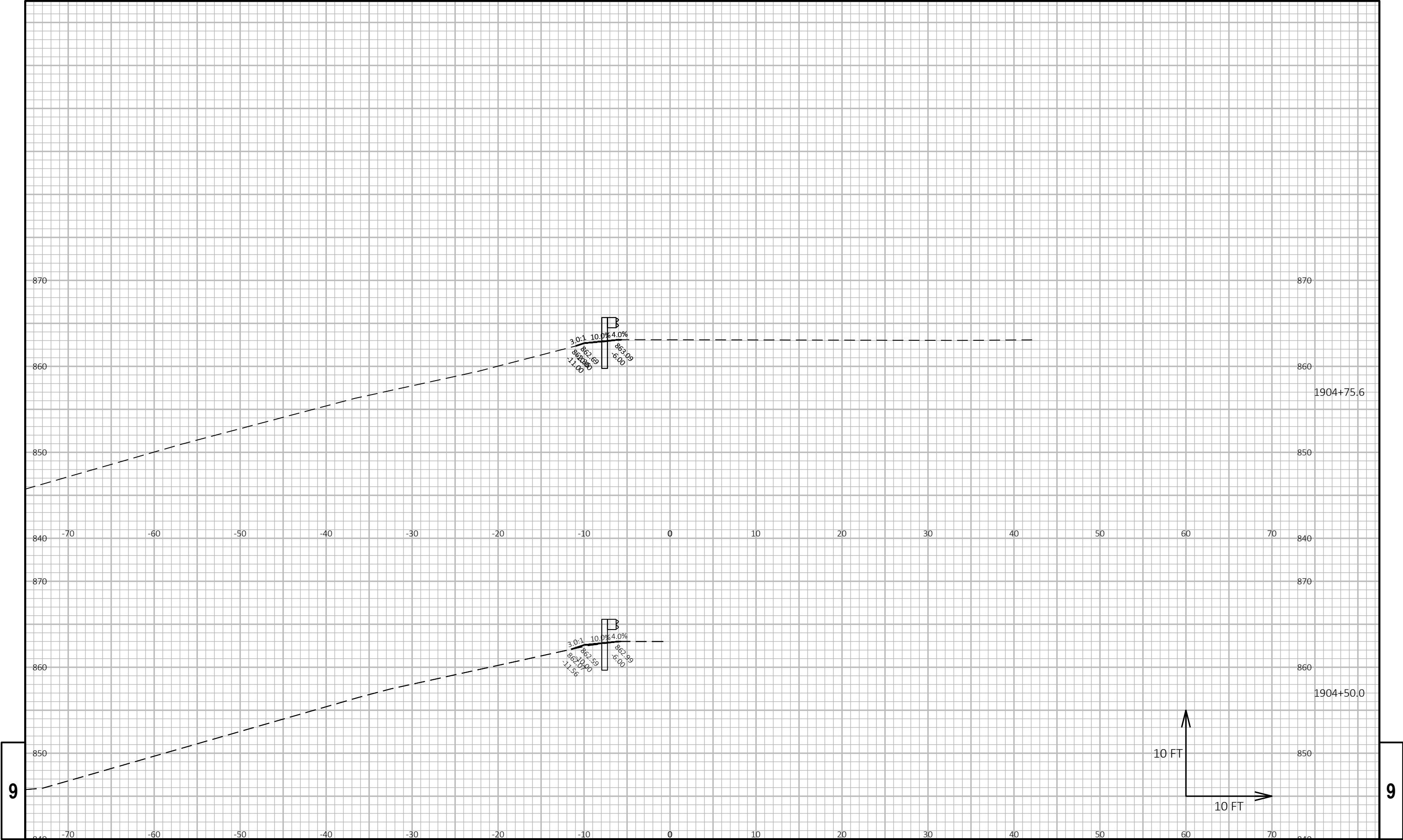
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PROJECT NO: 1227-12-72				HWY: IH 43				COUNTY: MANITOWOC				CROSS SECTIONS: MAIN LINE NORTH		SHEET		E

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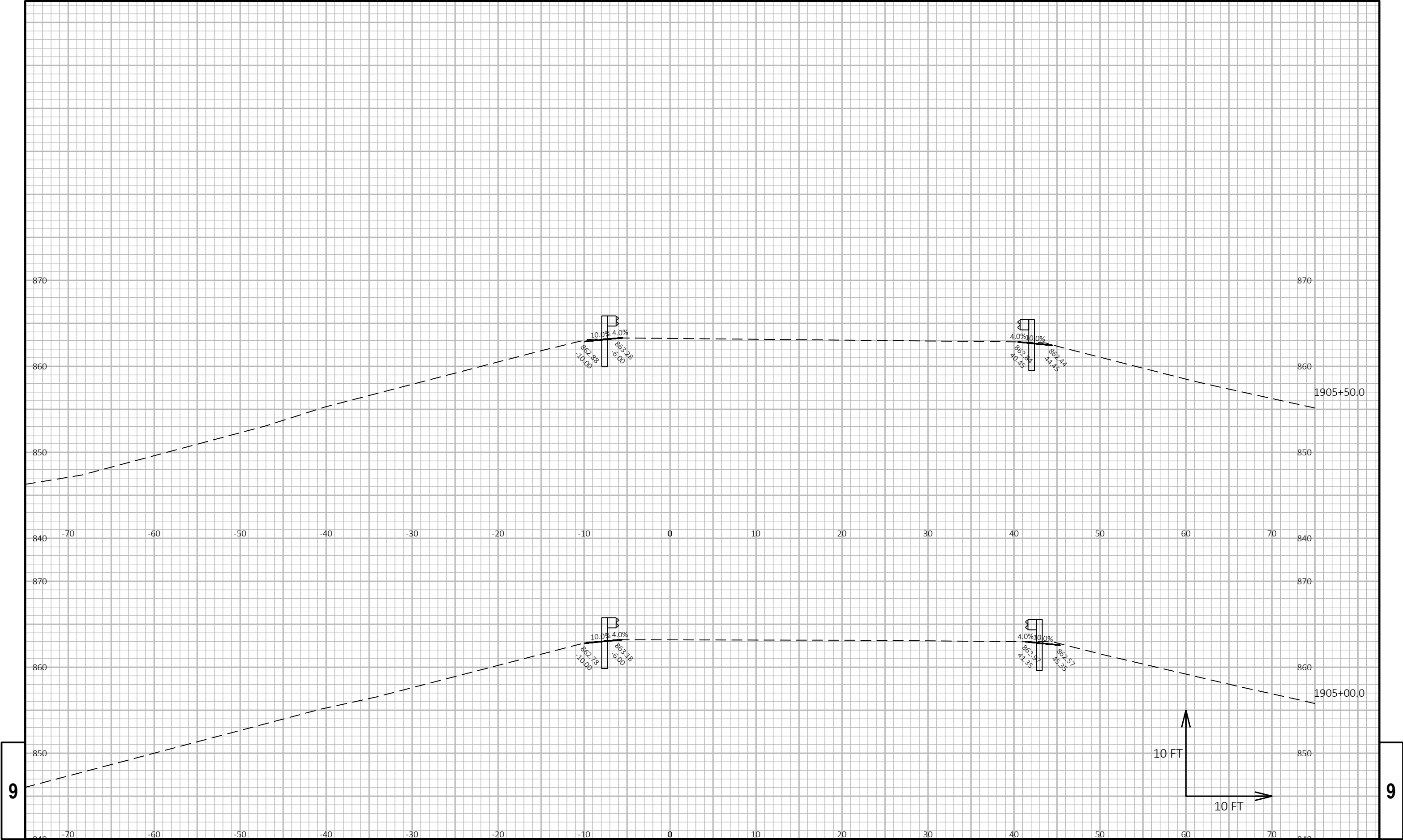
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET E
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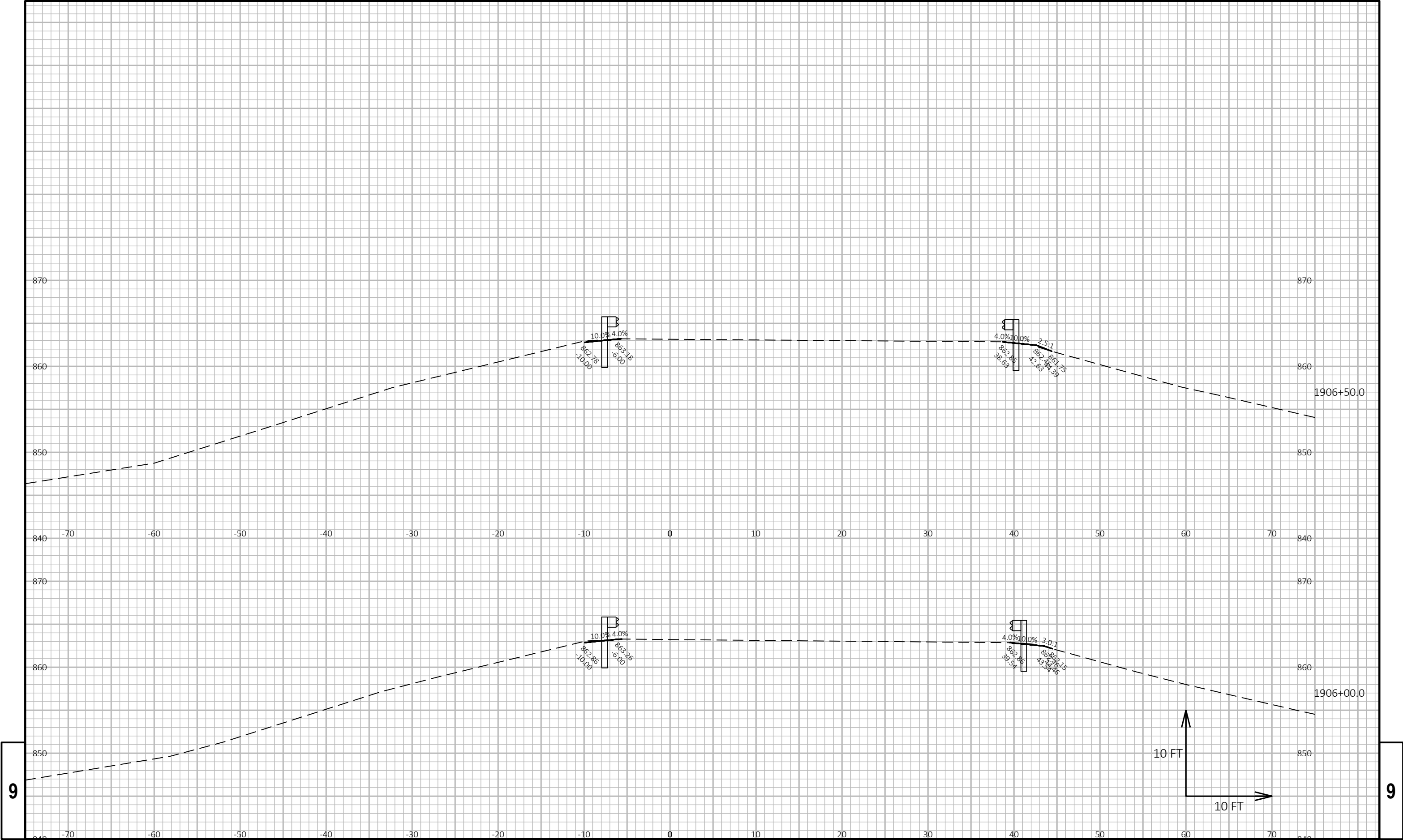
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PROJECT NO: 1227-12-72			HWY: IH 43			COUNTY: MANITOWOC			CROSS SECTIONS: MAIN LINE NORTH			SHEET			E
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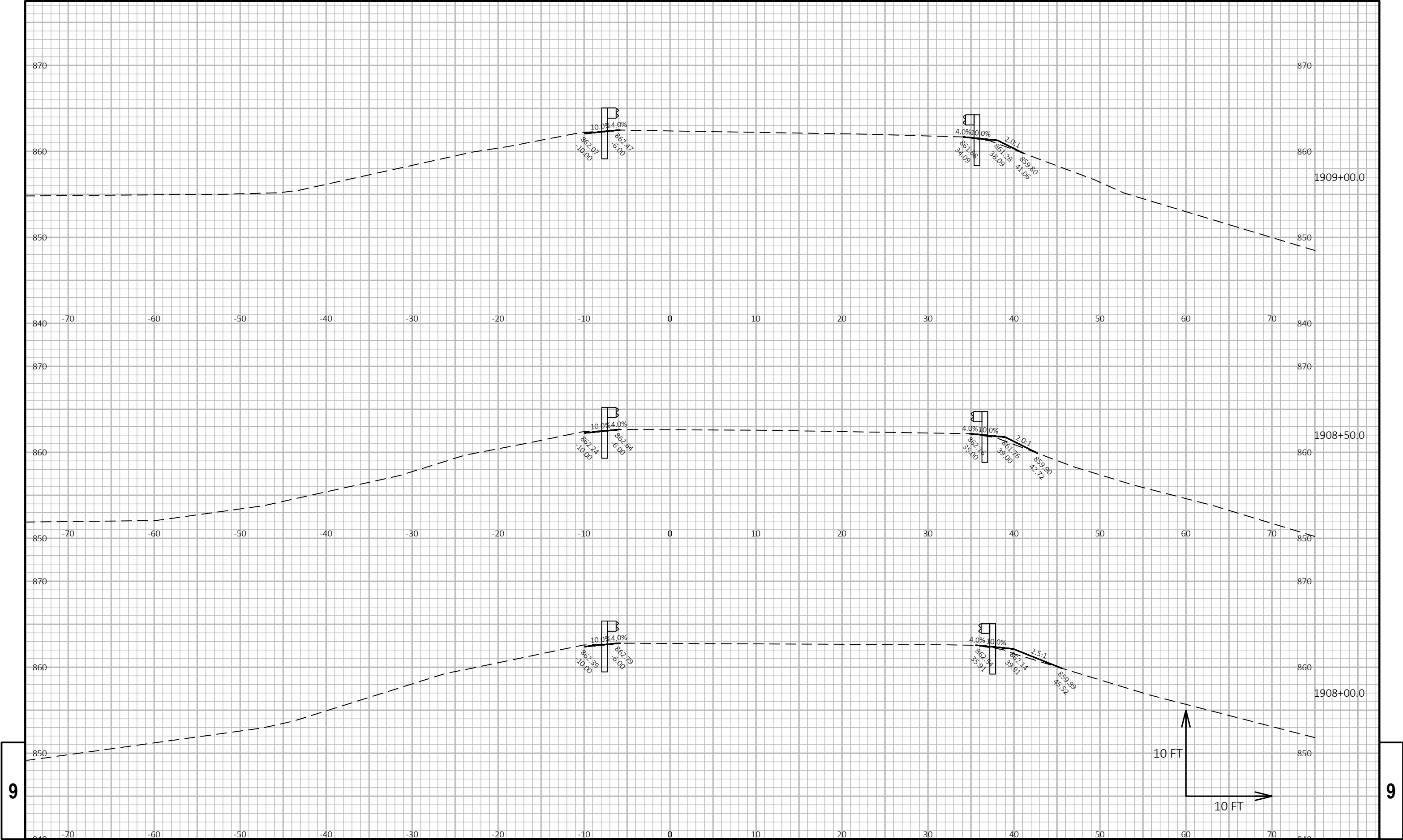
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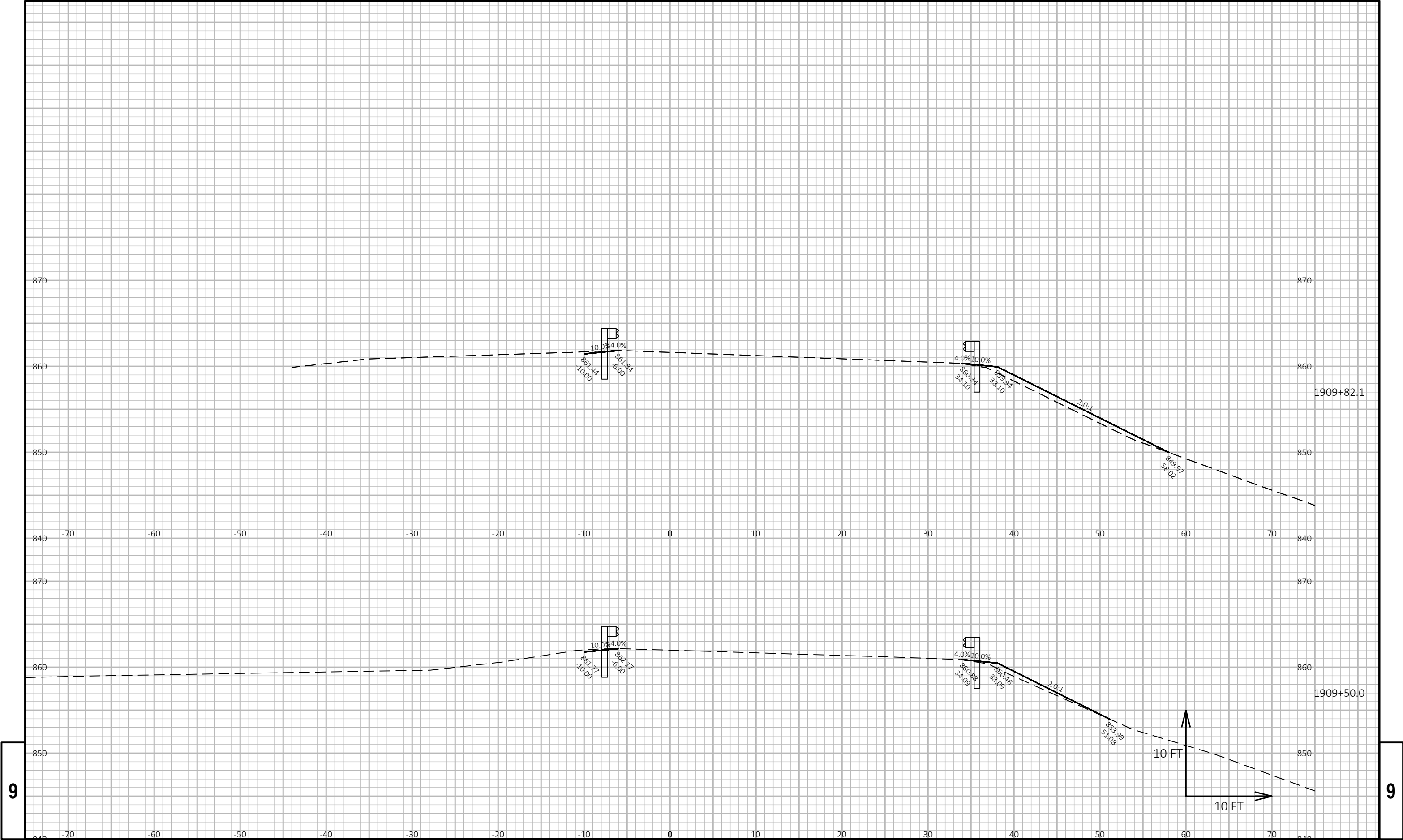
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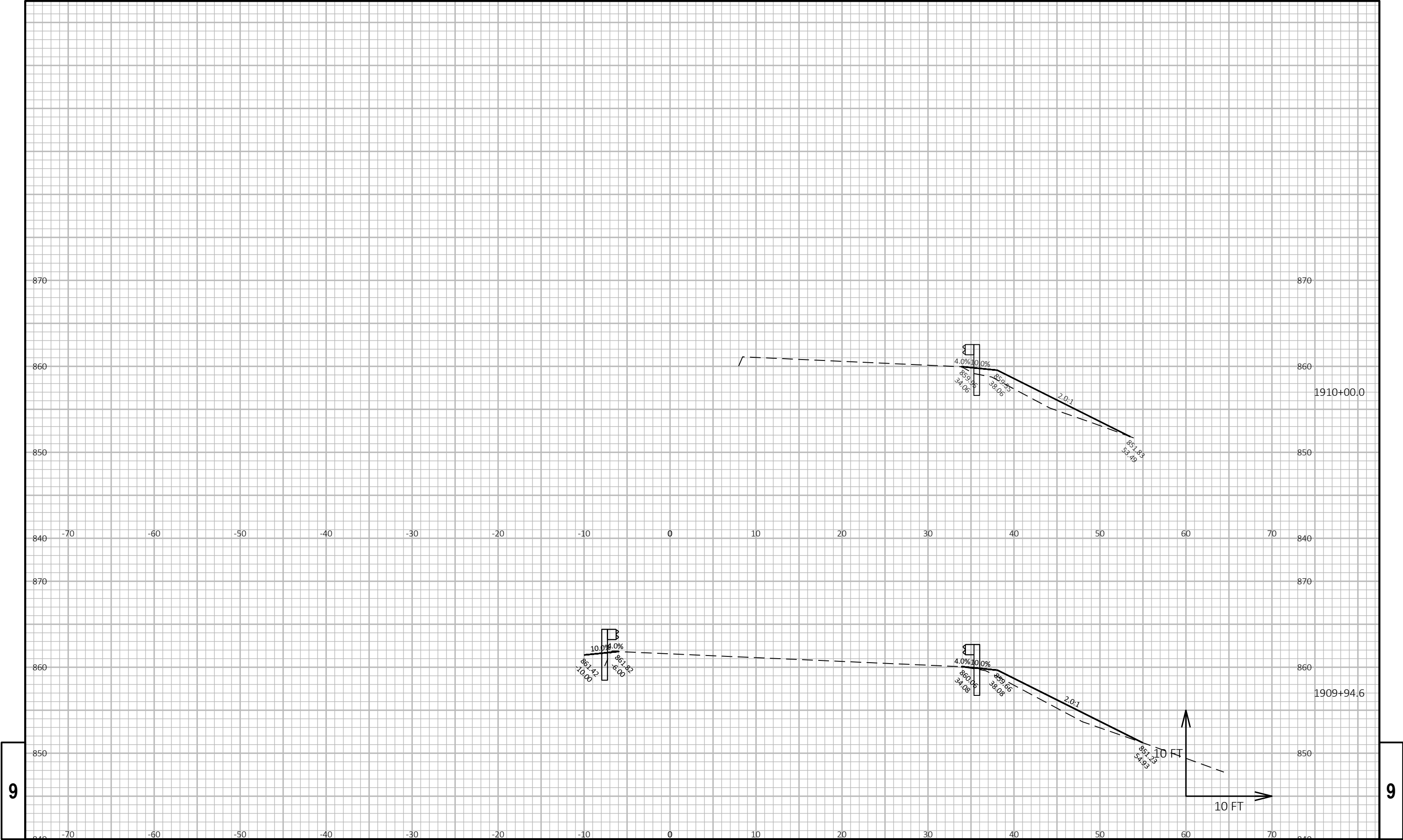


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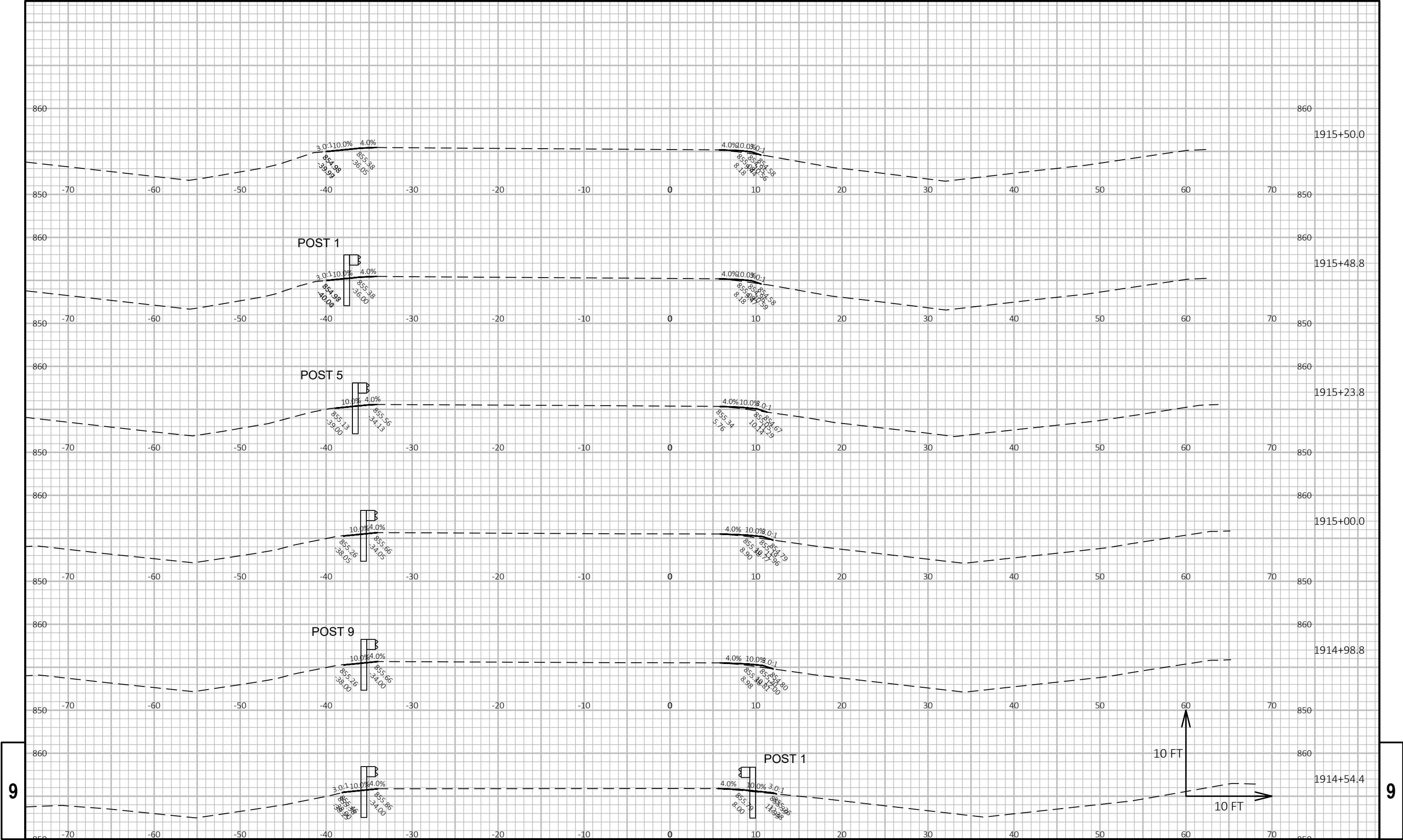






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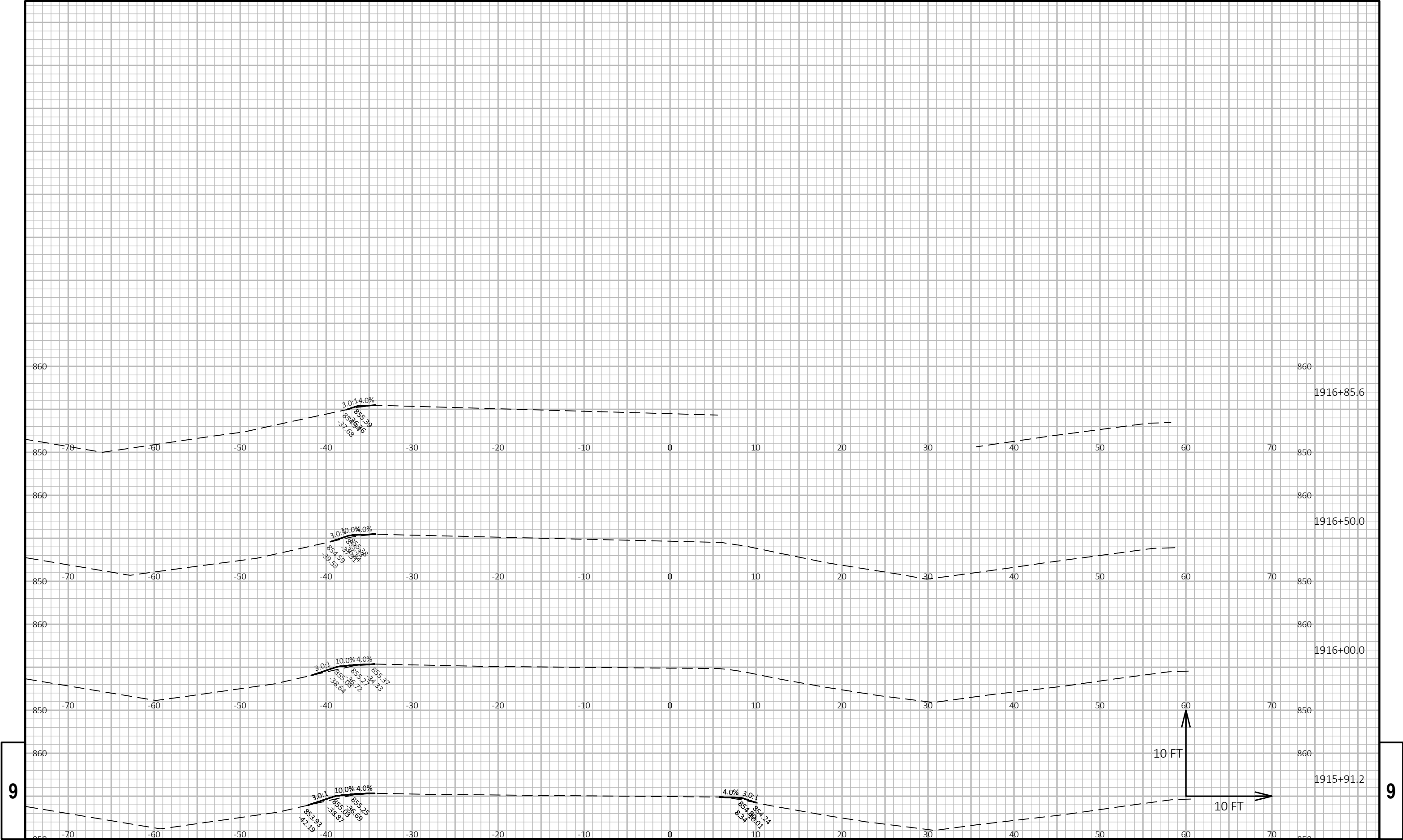
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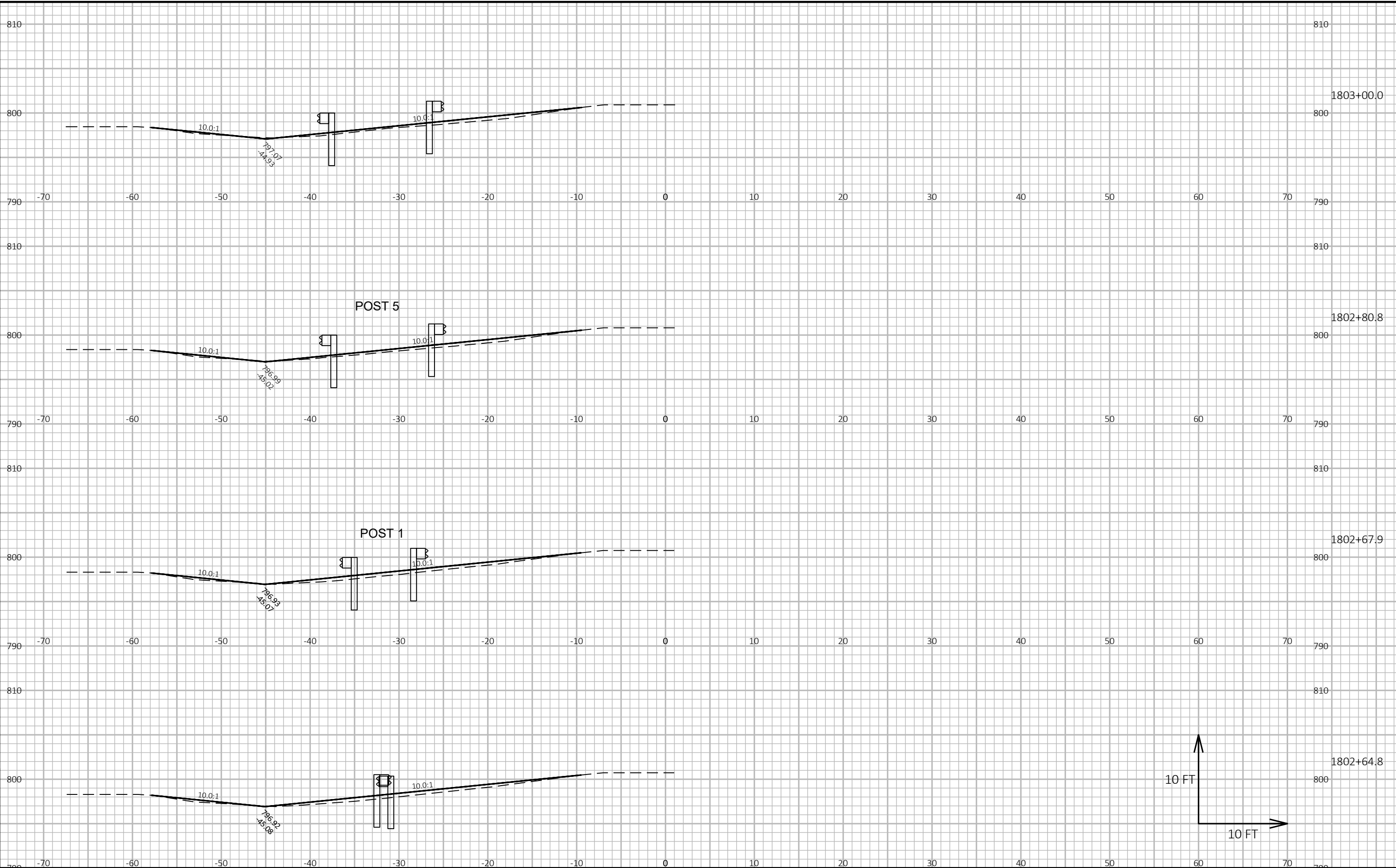


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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: MAIN LINE NORTH	SHEET	E
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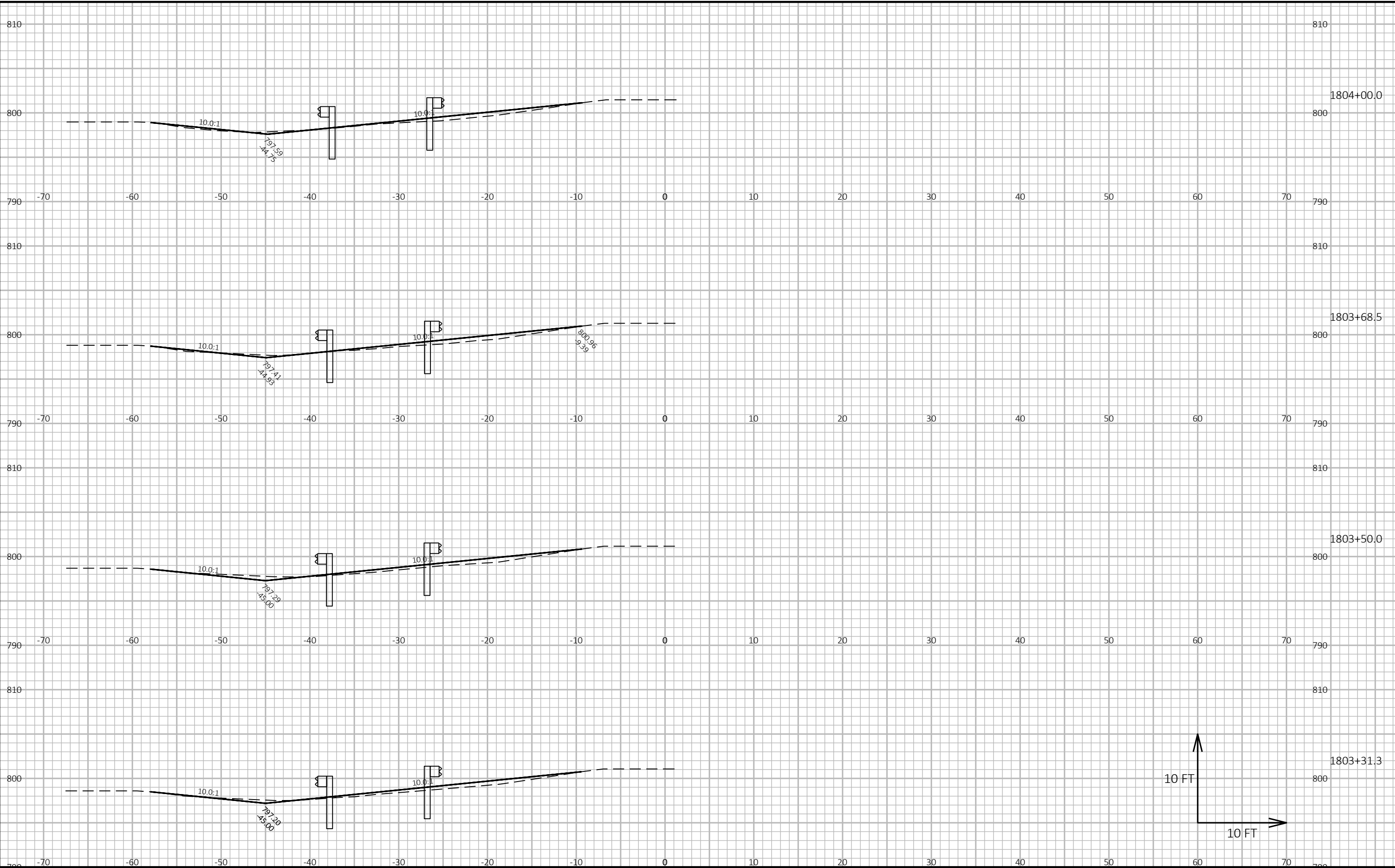




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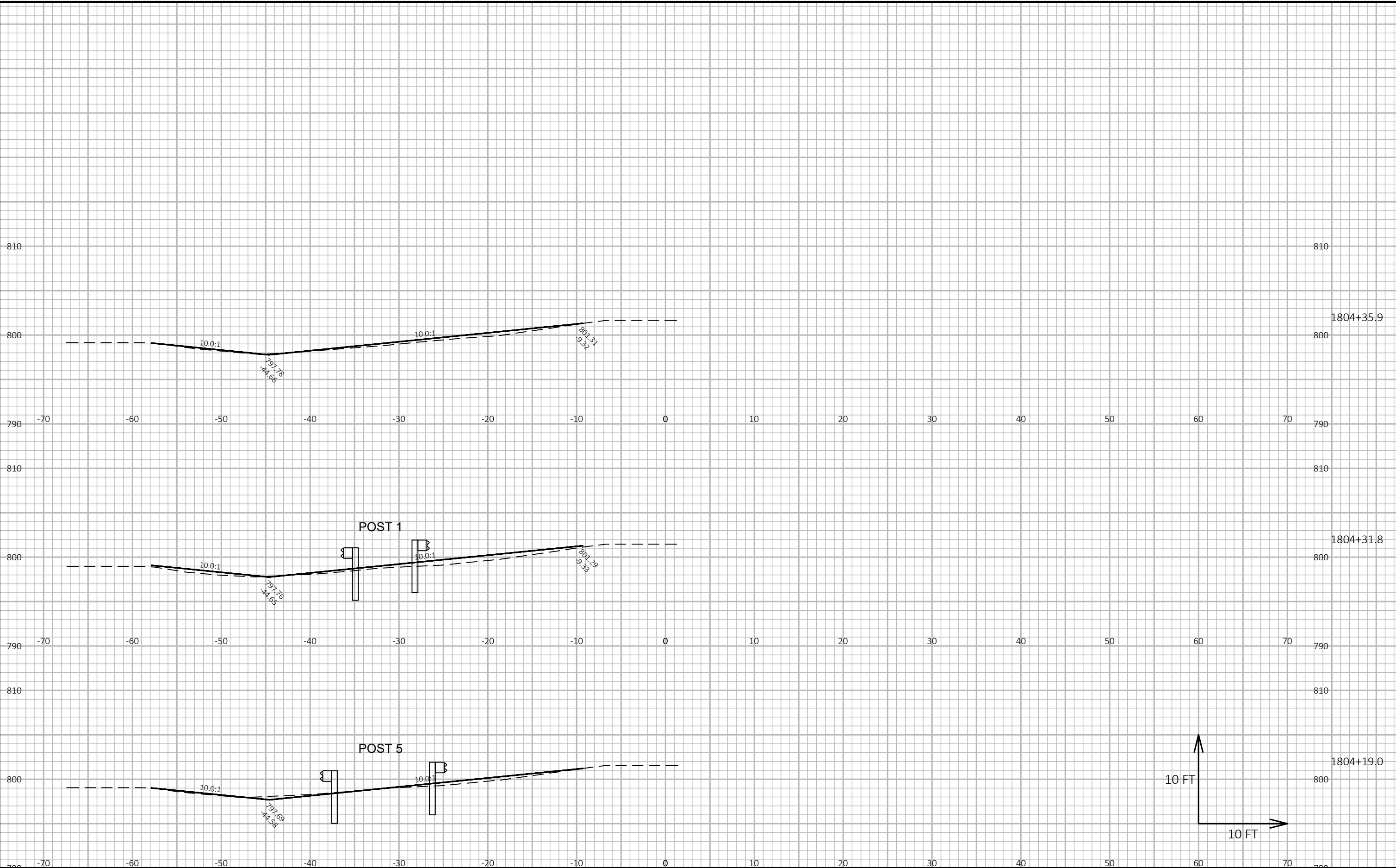
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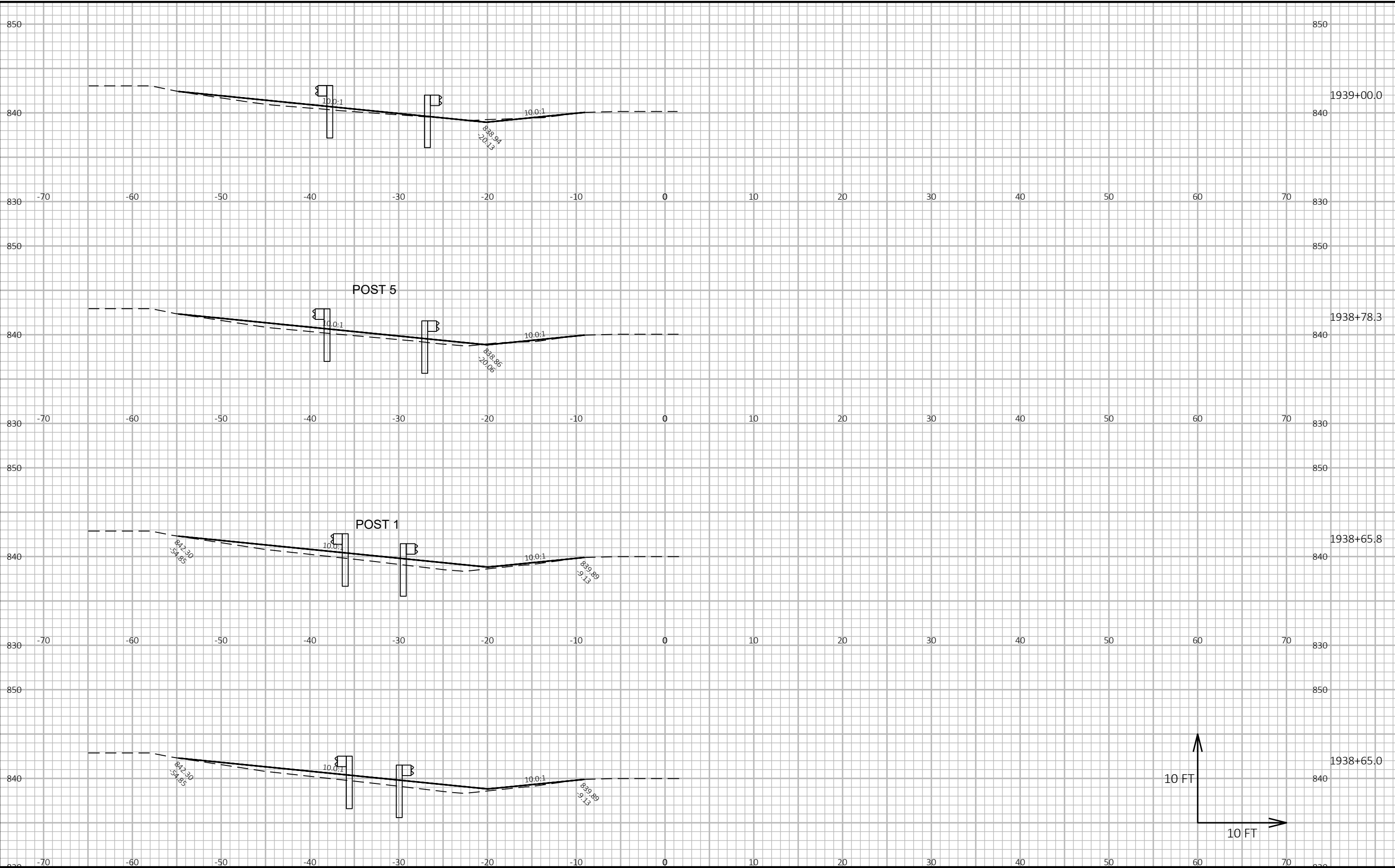


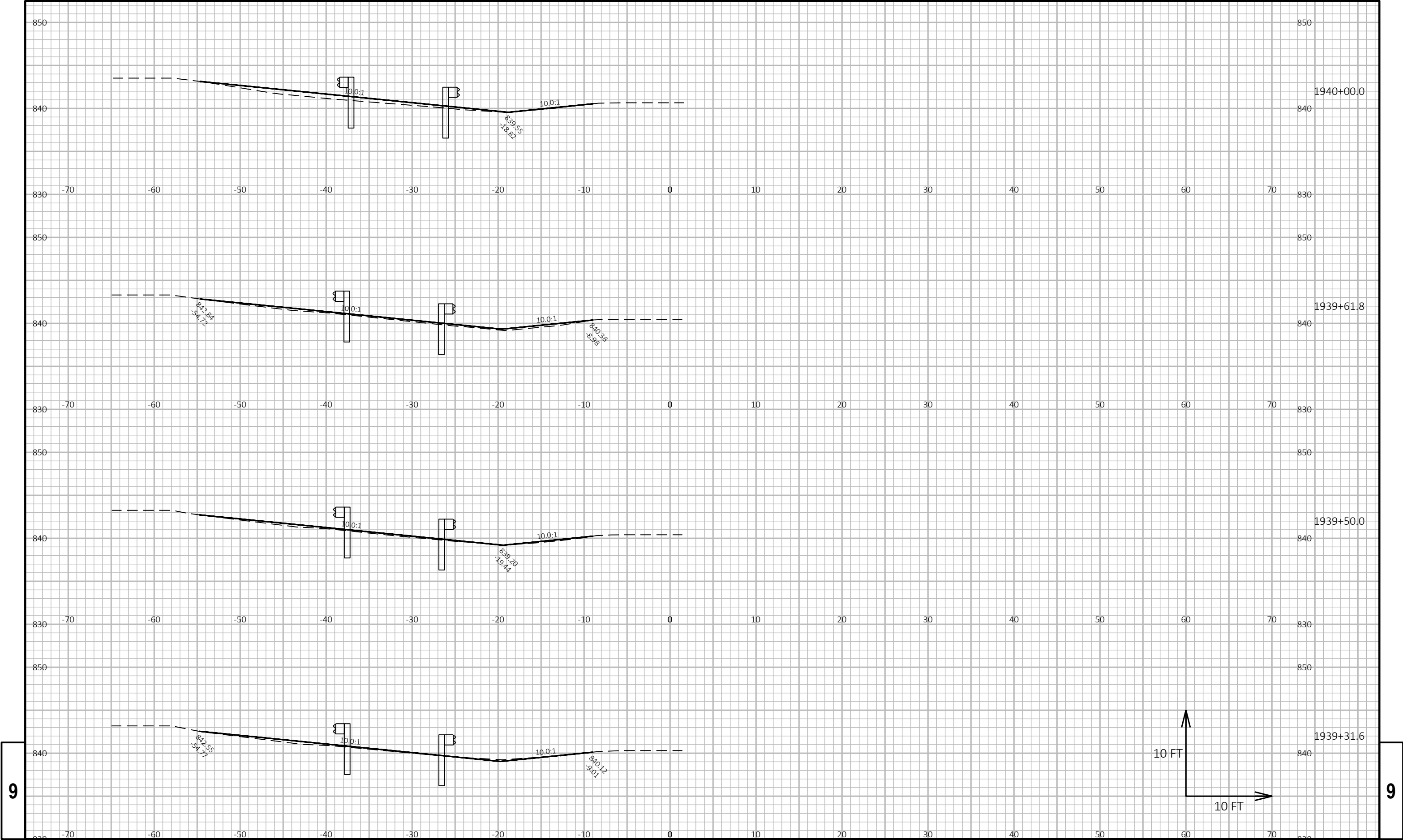
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PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: BULLNOSE ZANDER	SHEET E
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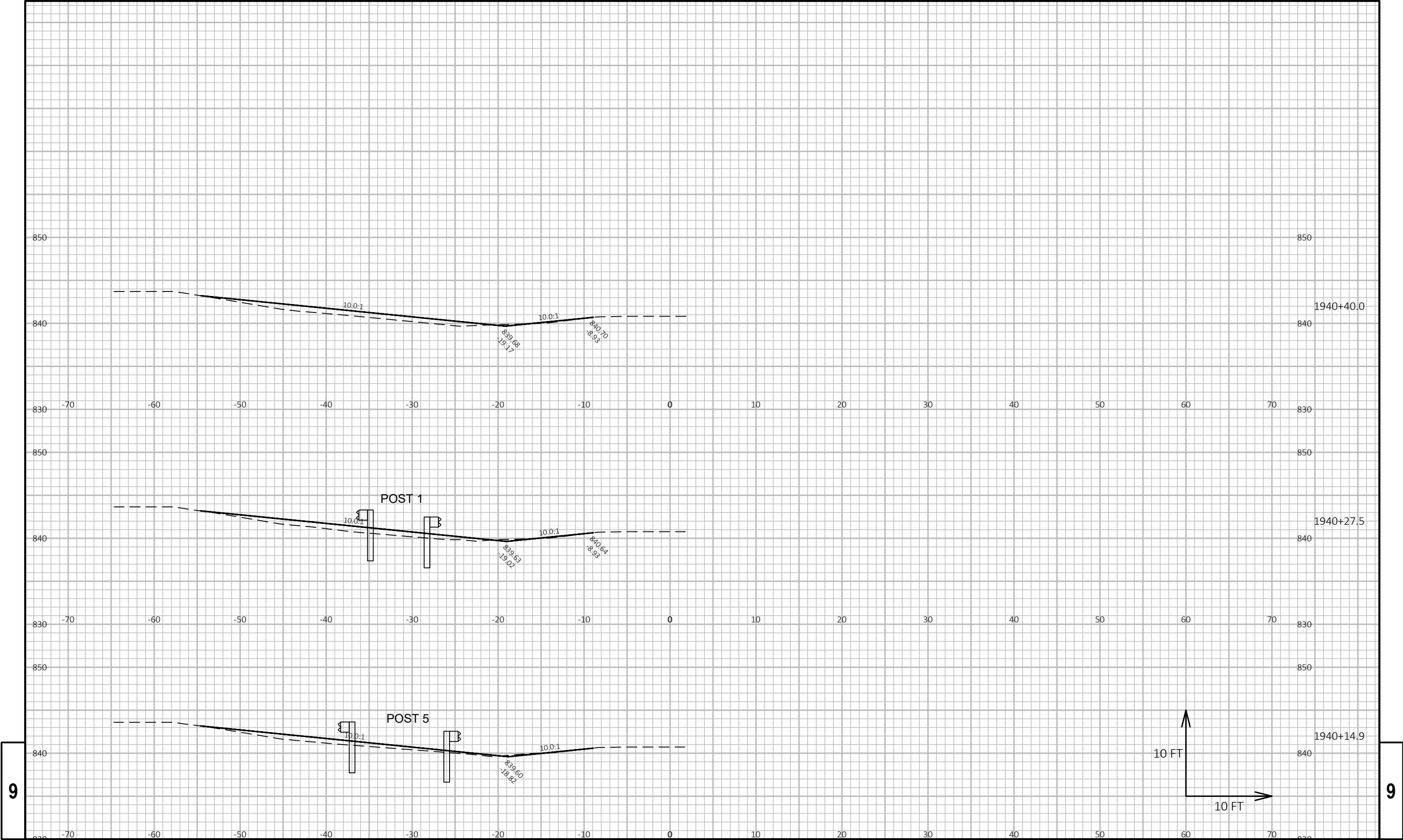




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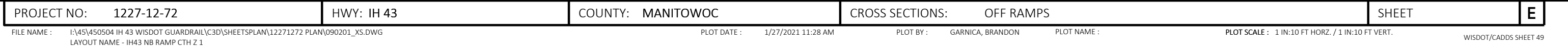
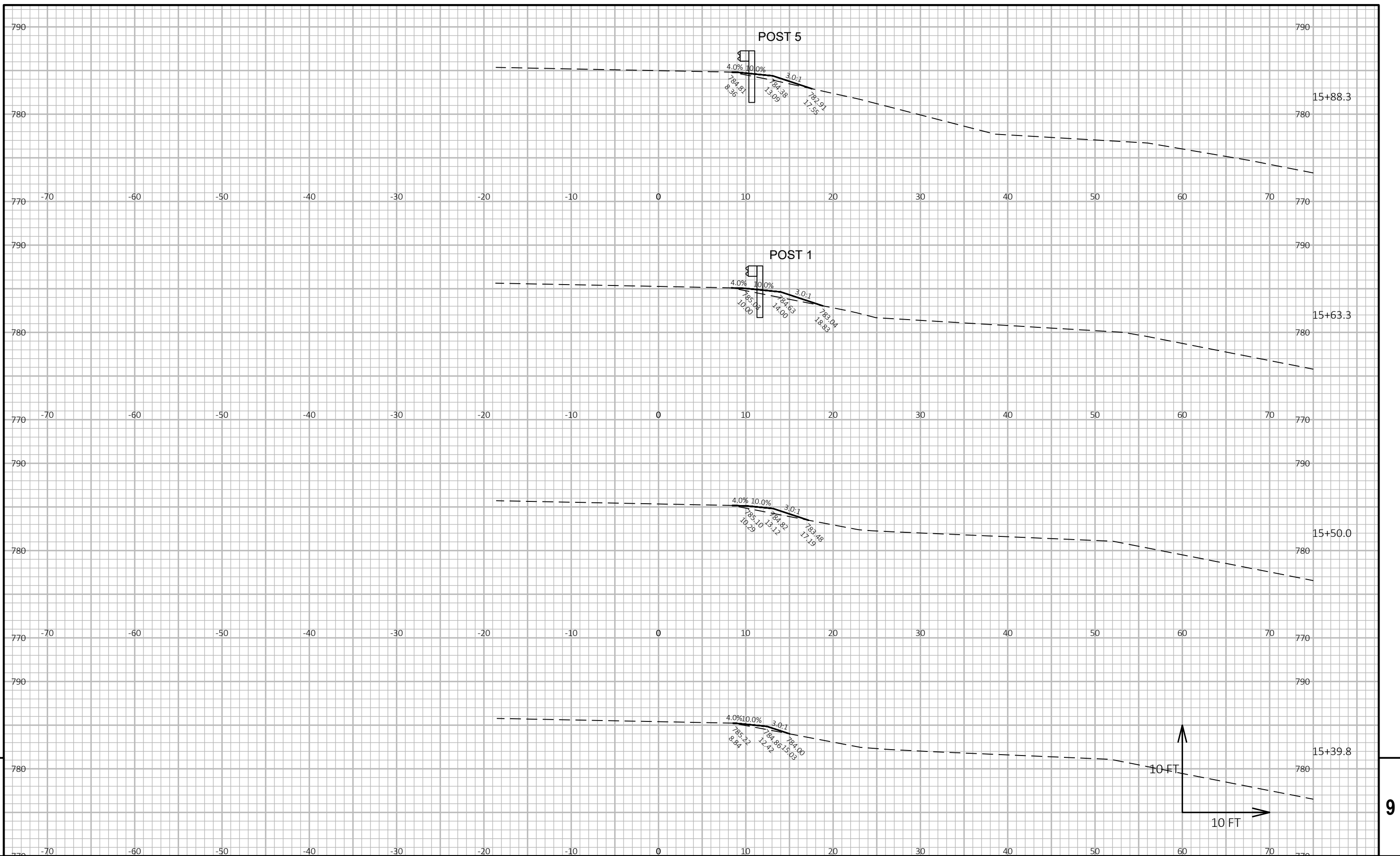
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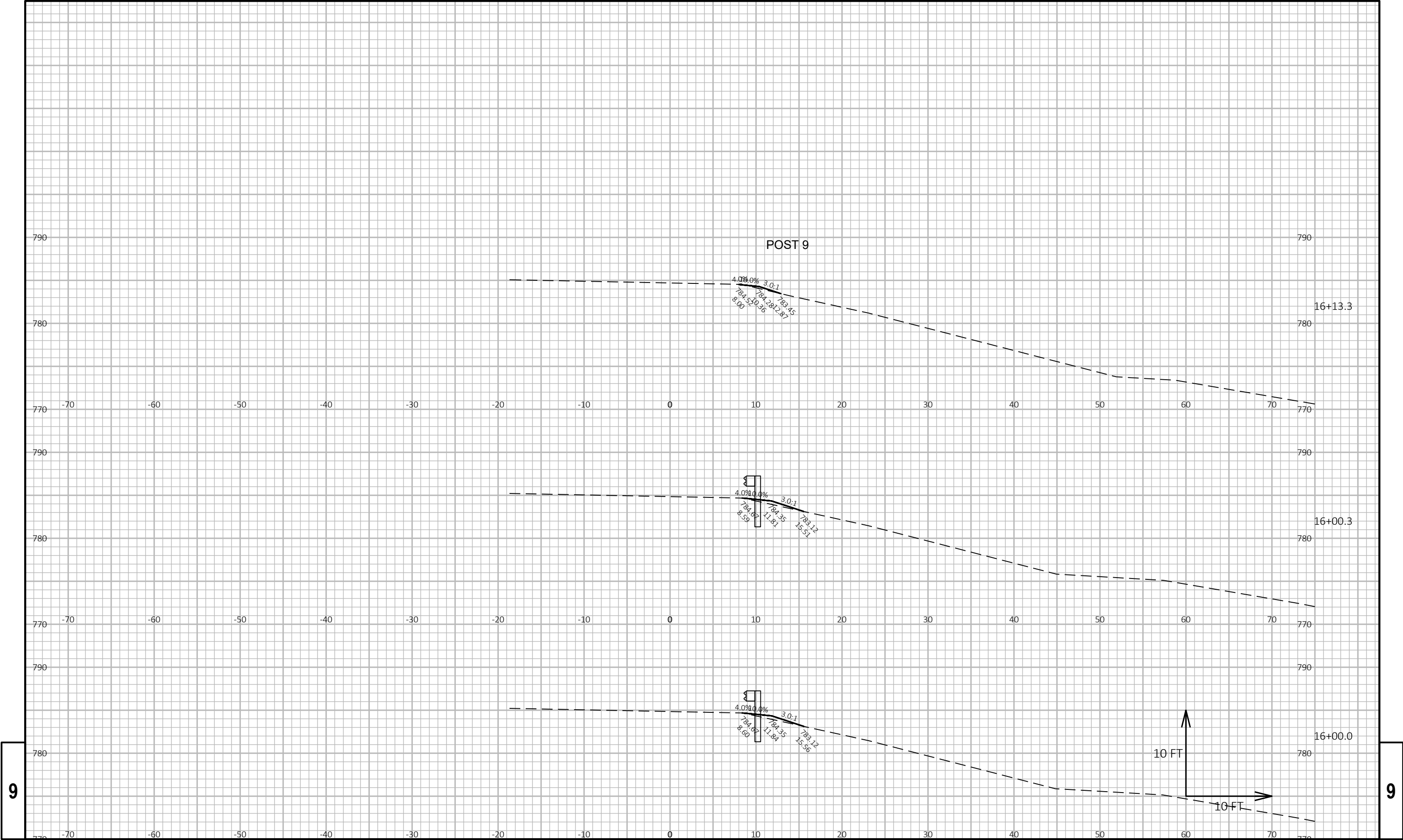
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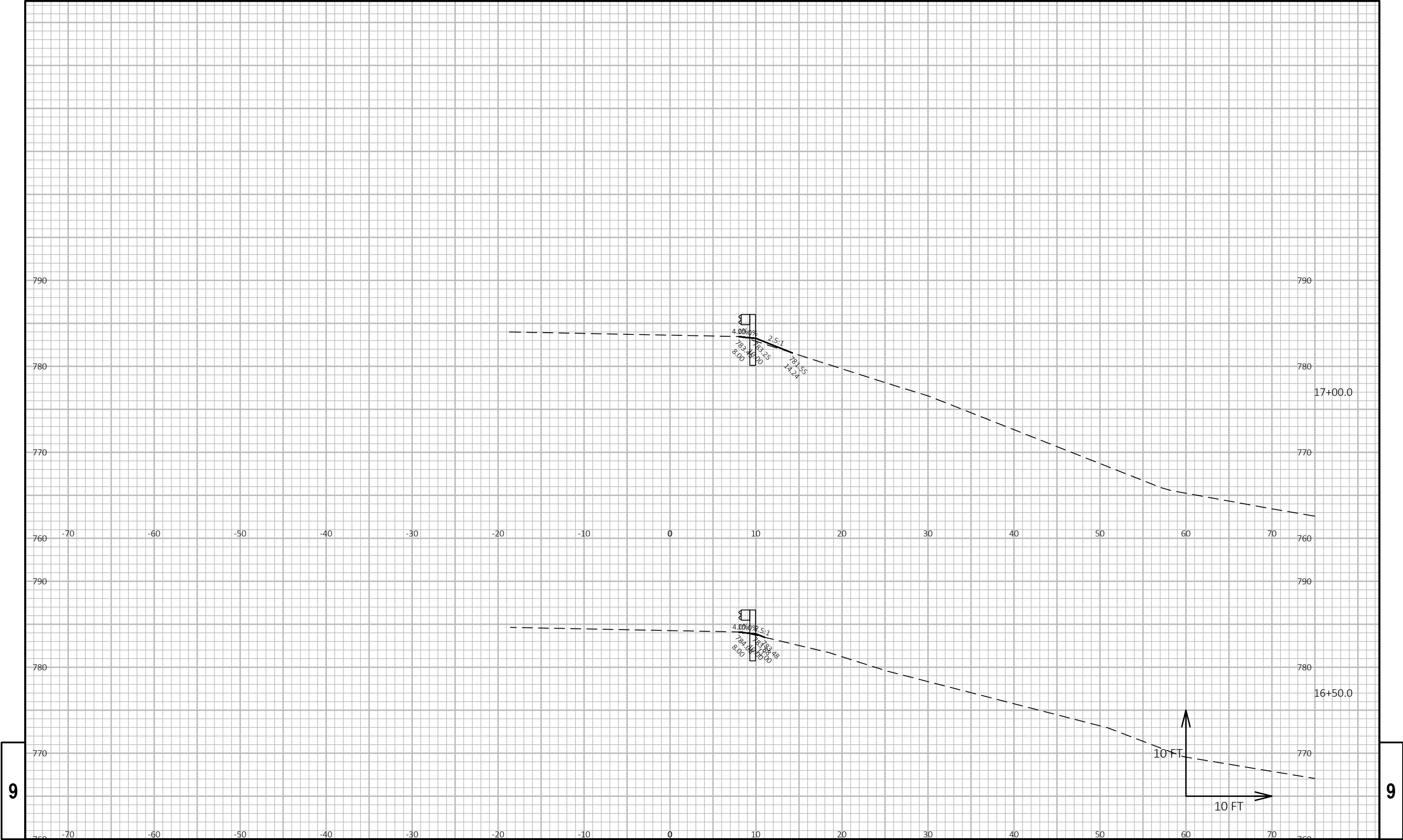
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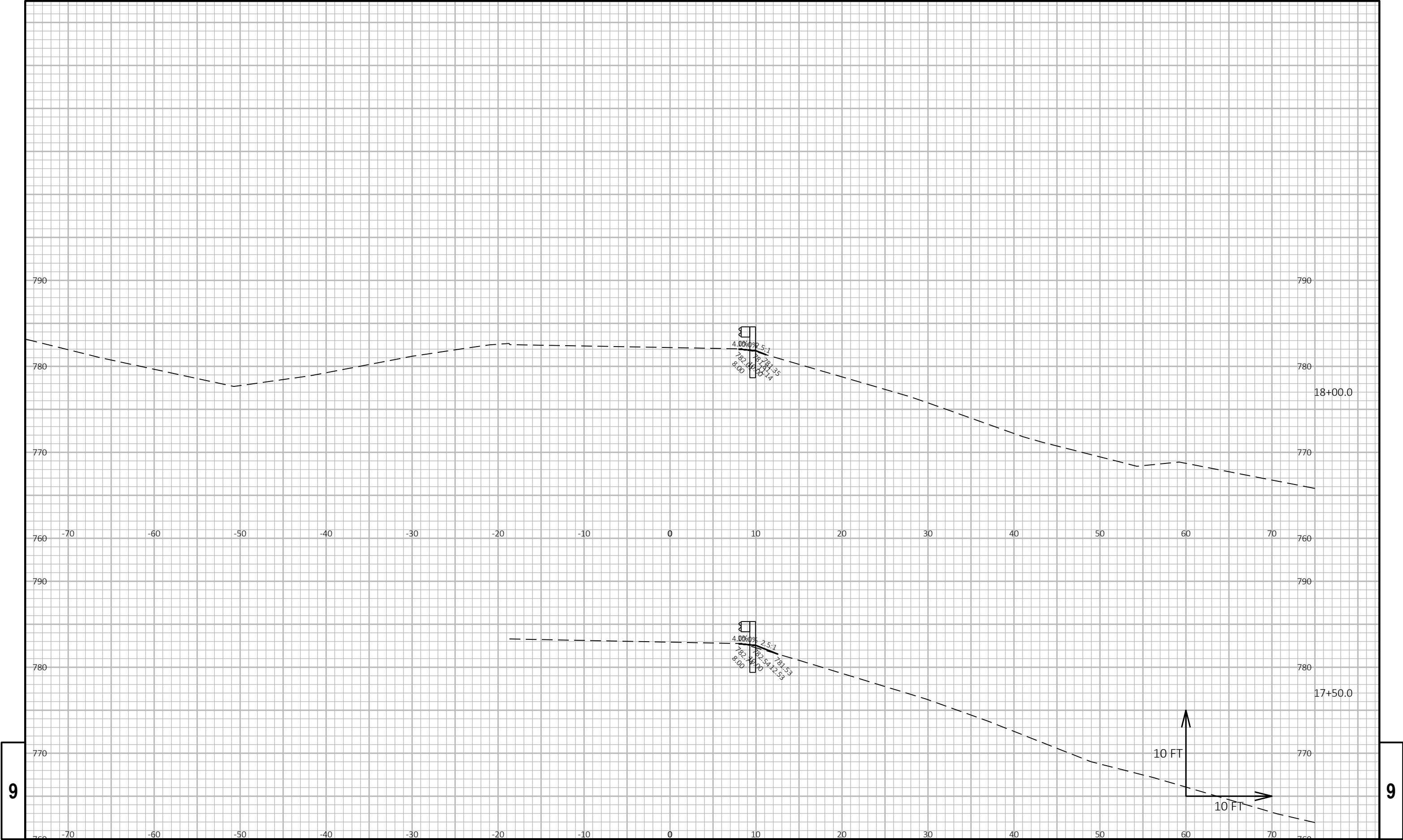




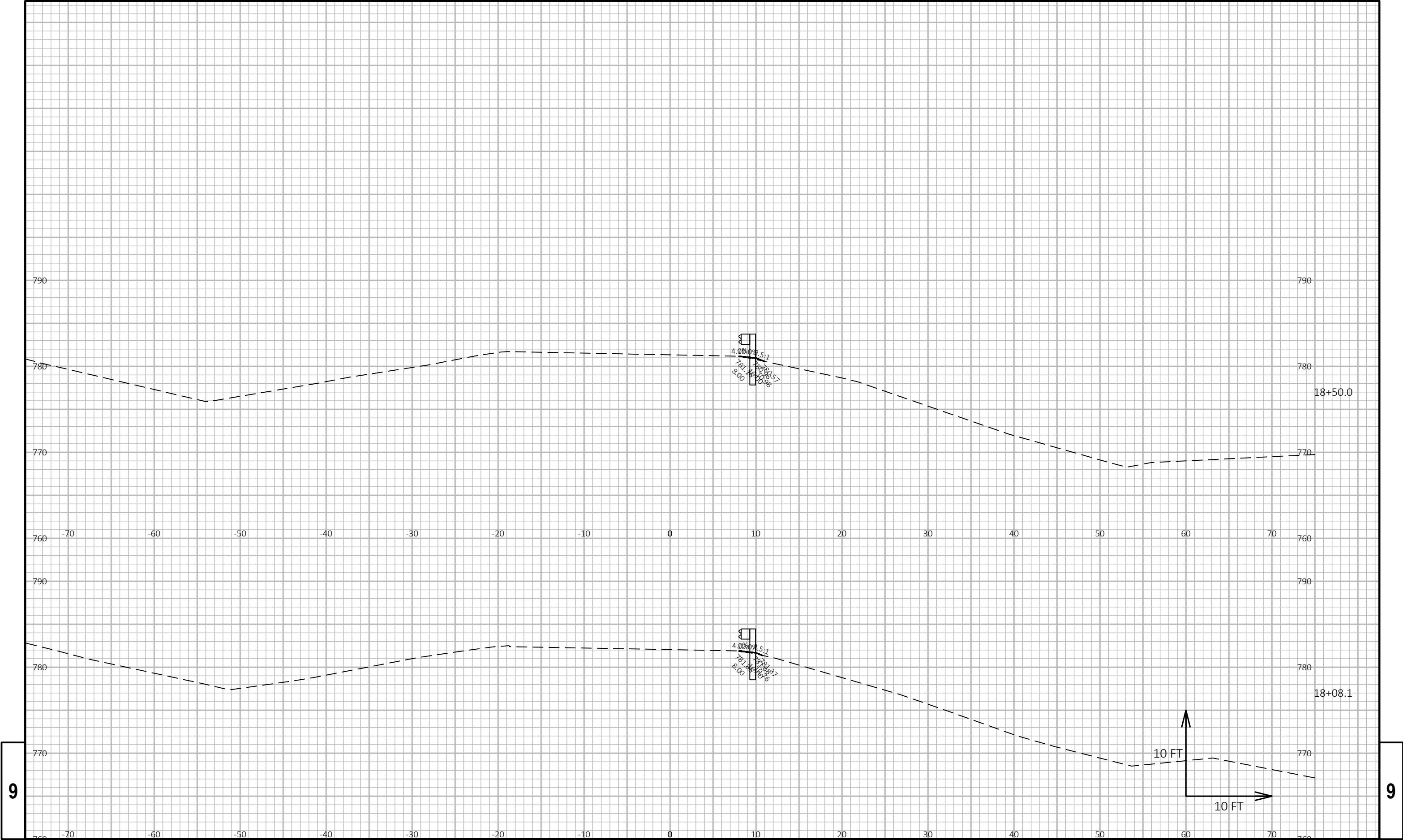
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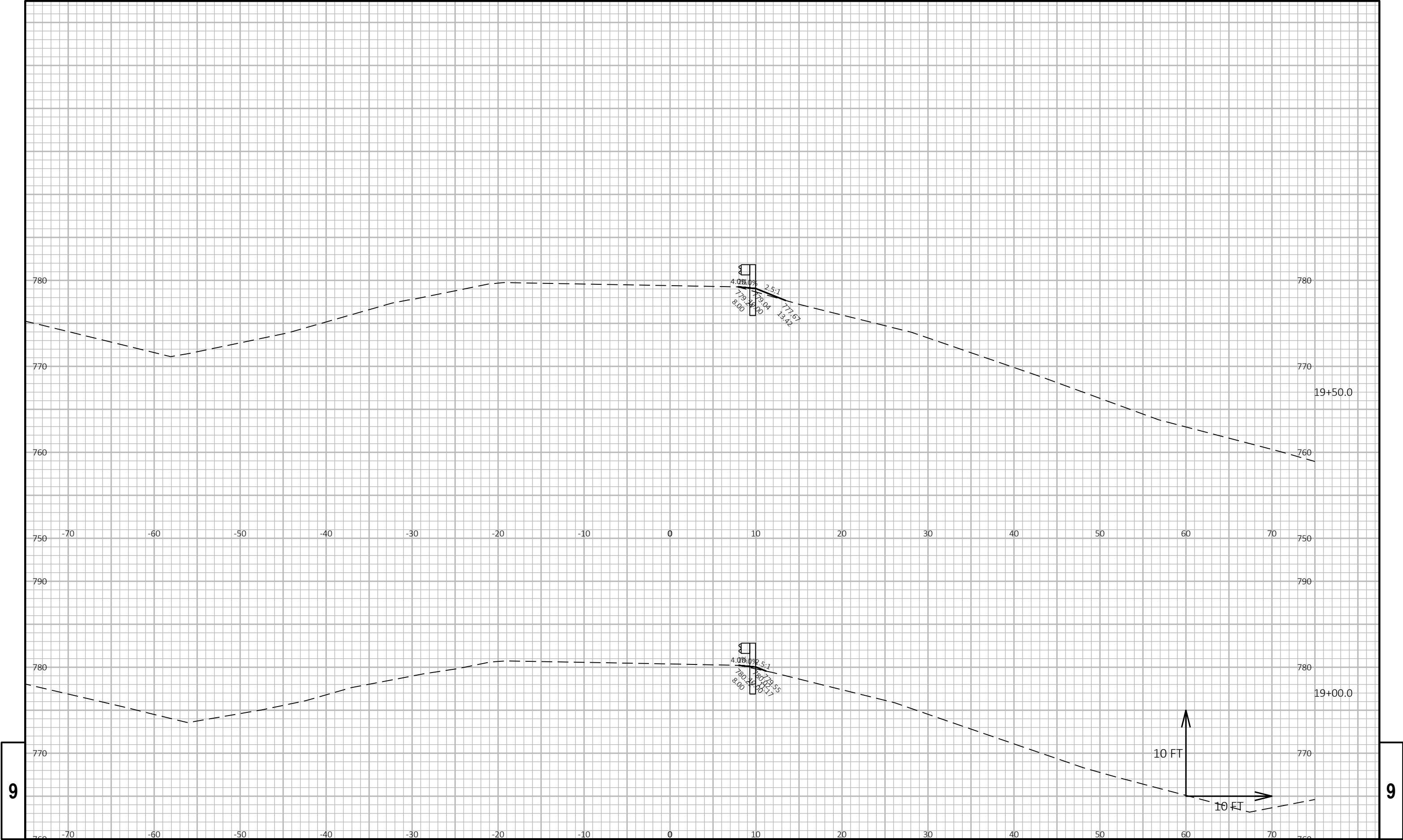
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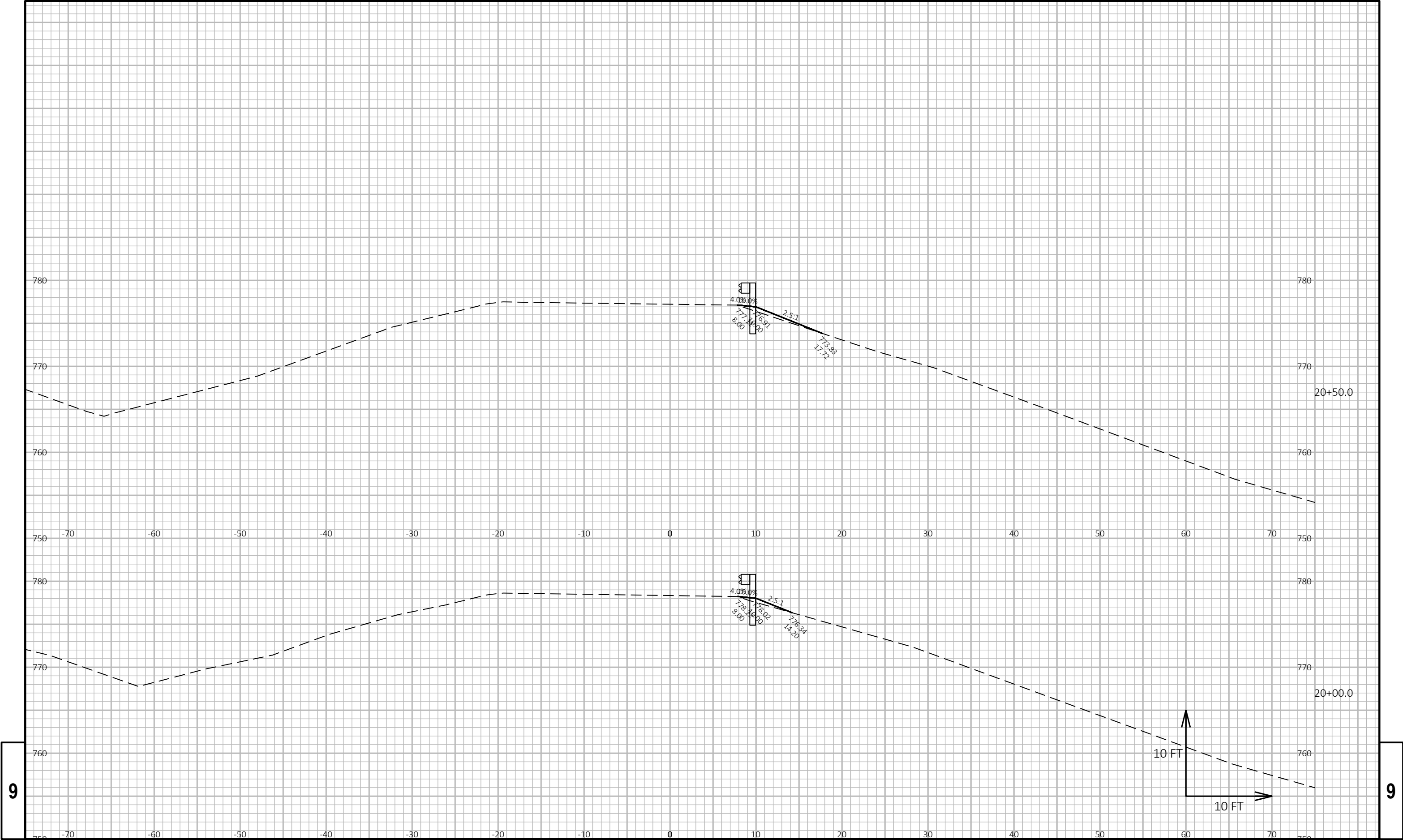


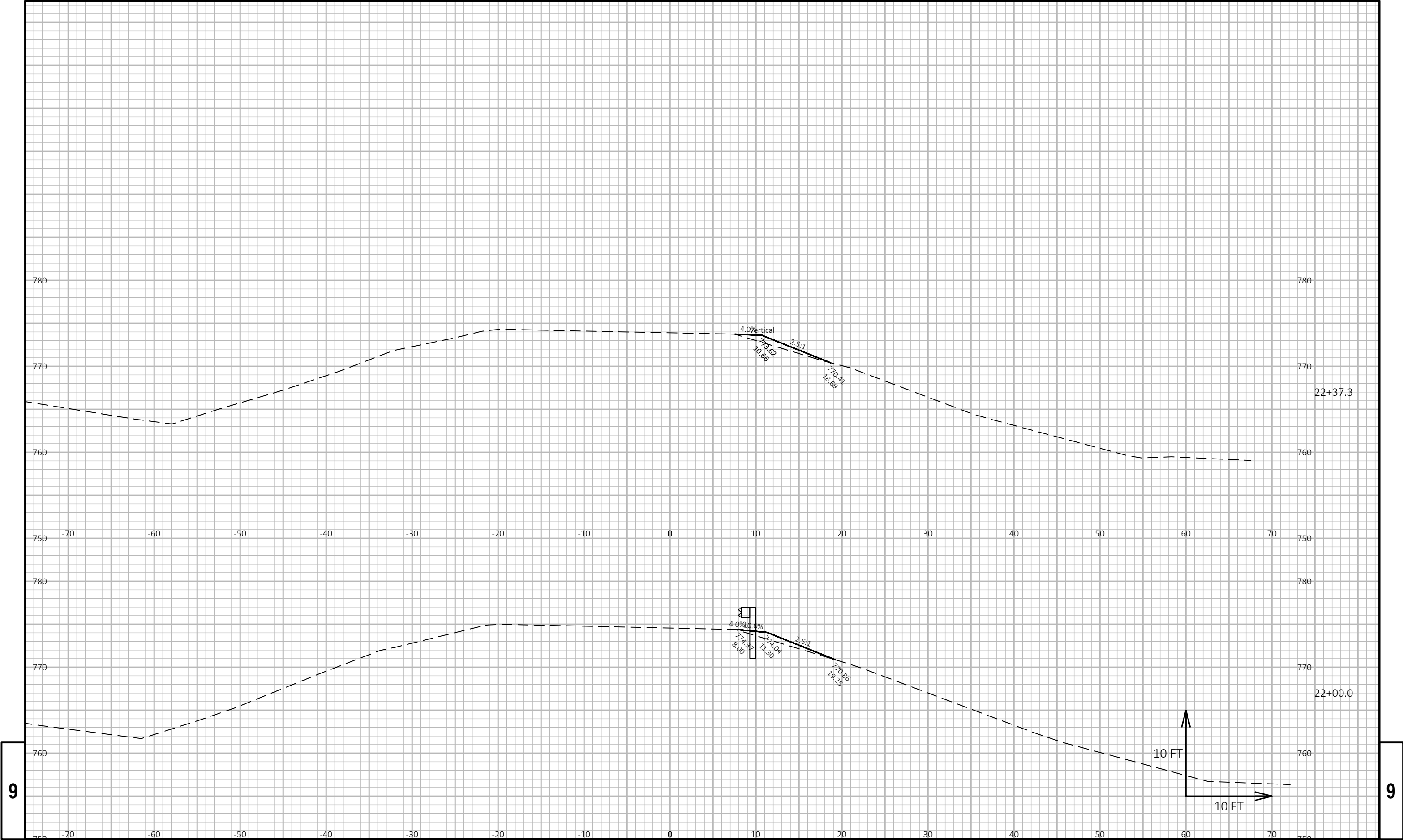


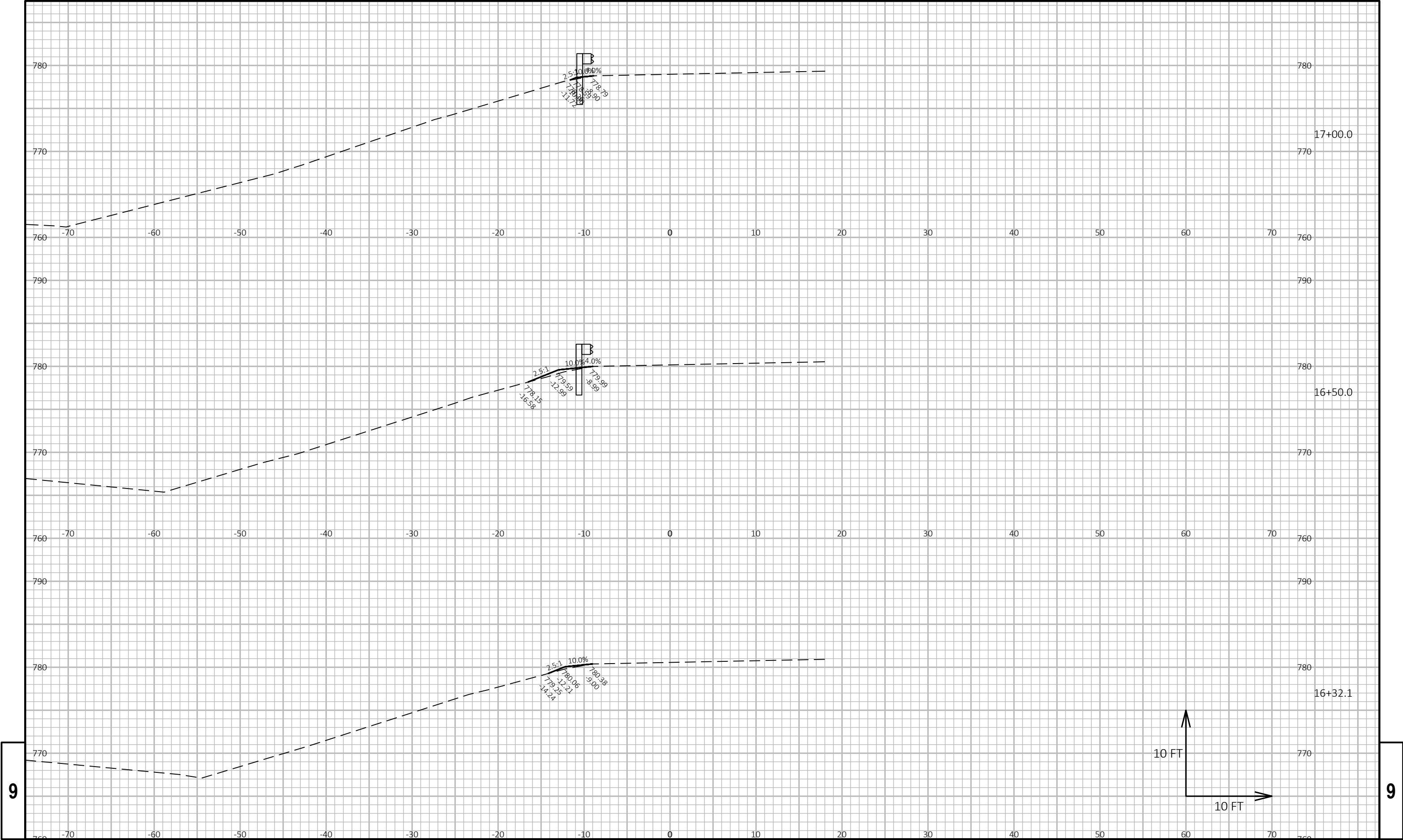
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: OFF RAMPs	SHEET E
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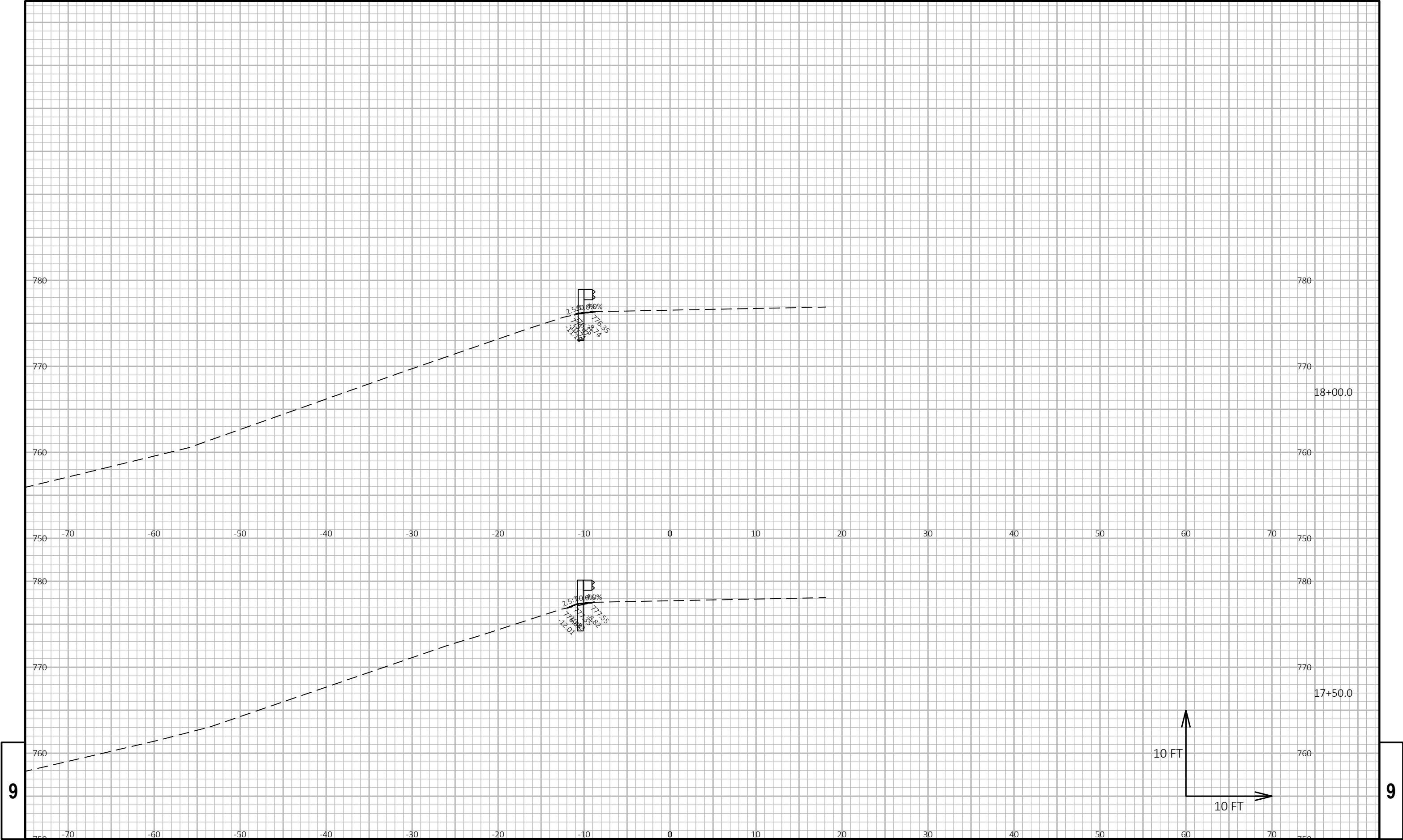


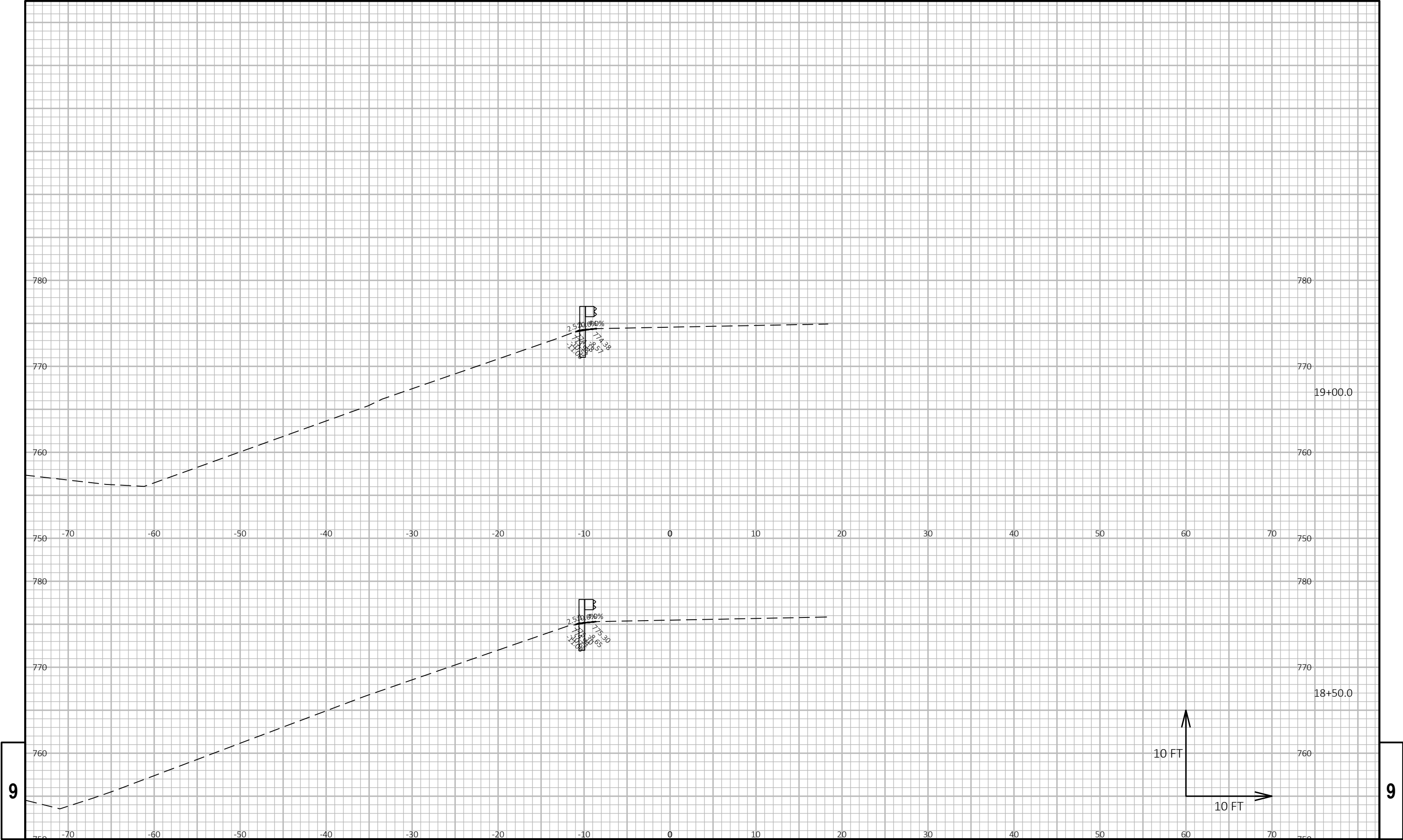


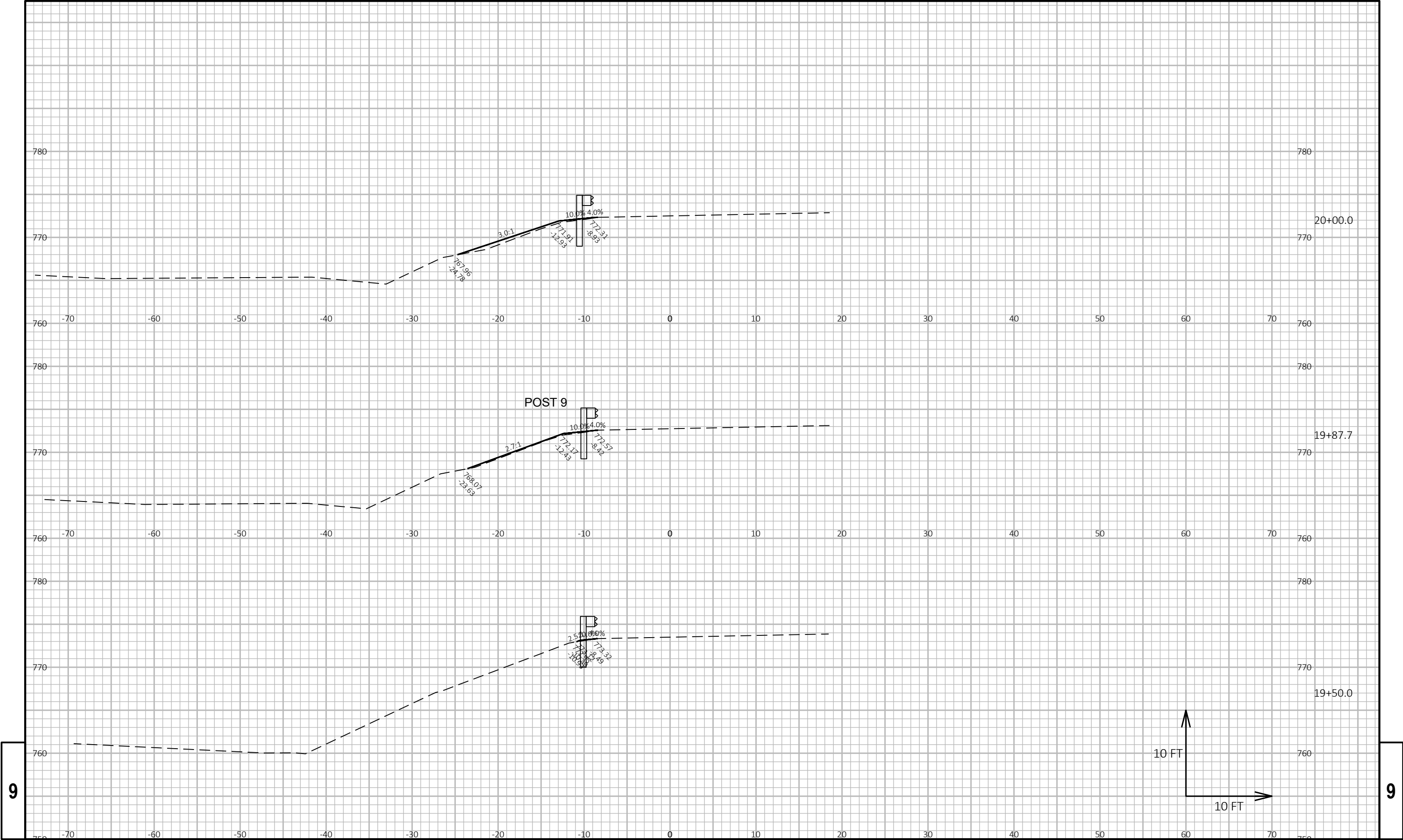


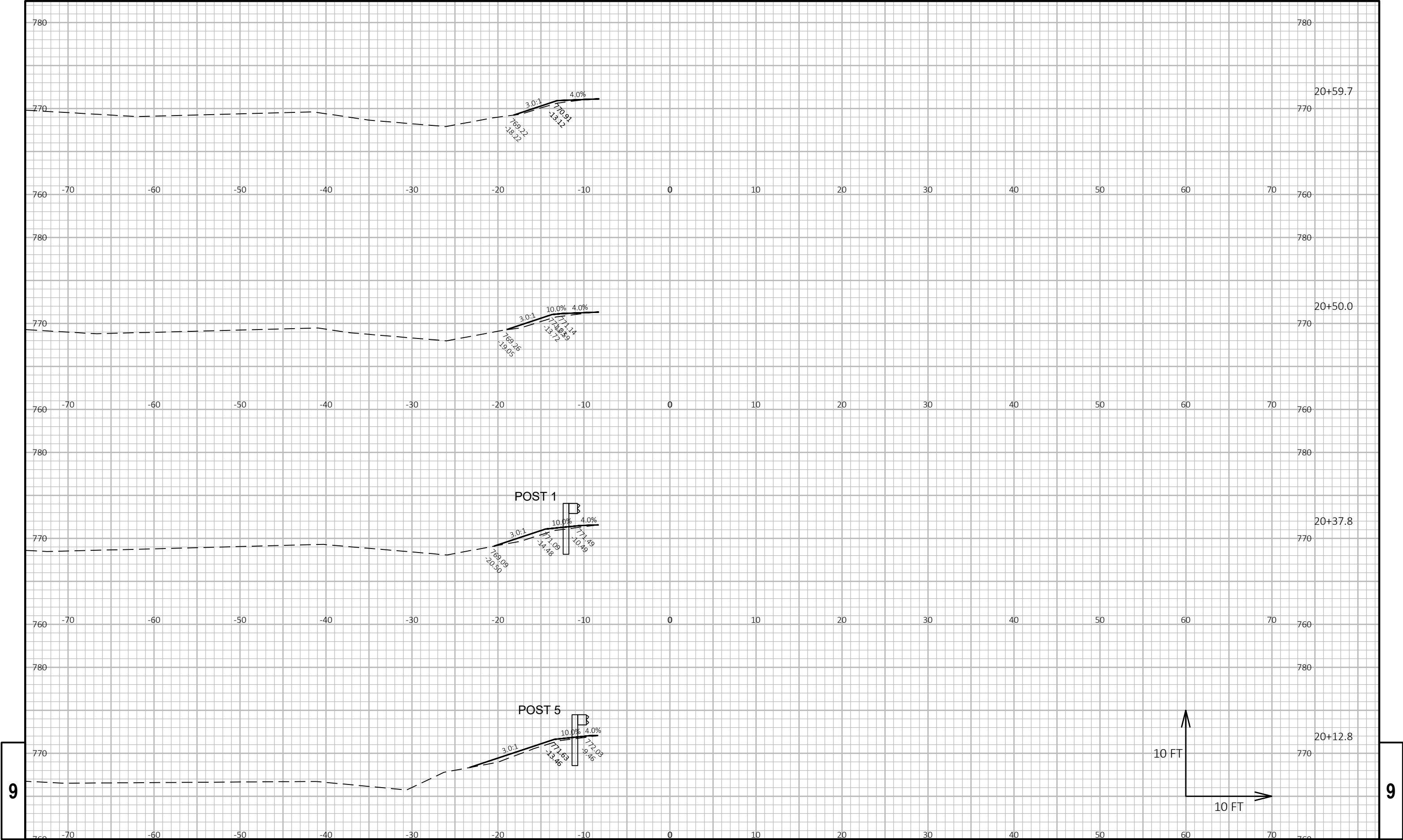


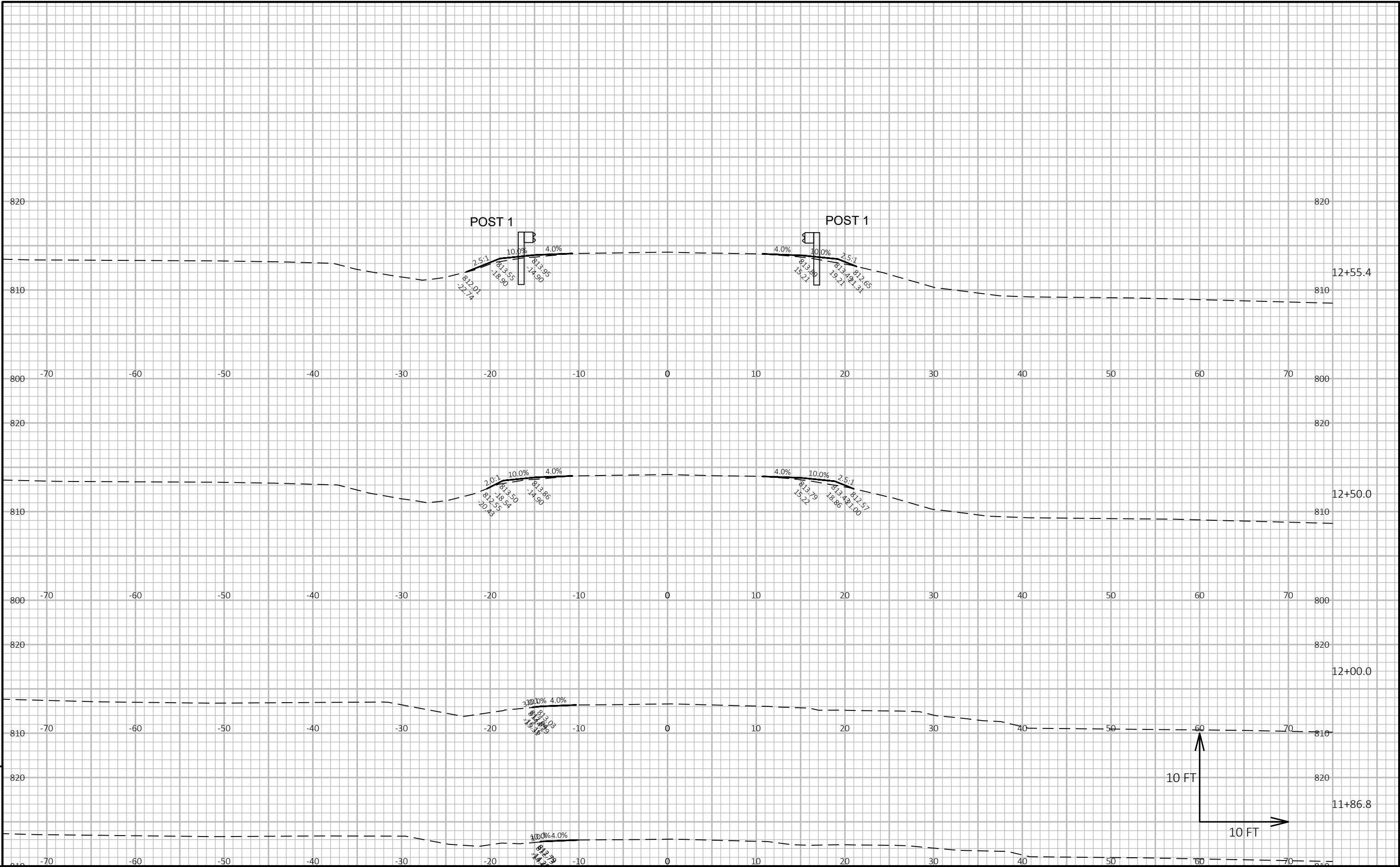




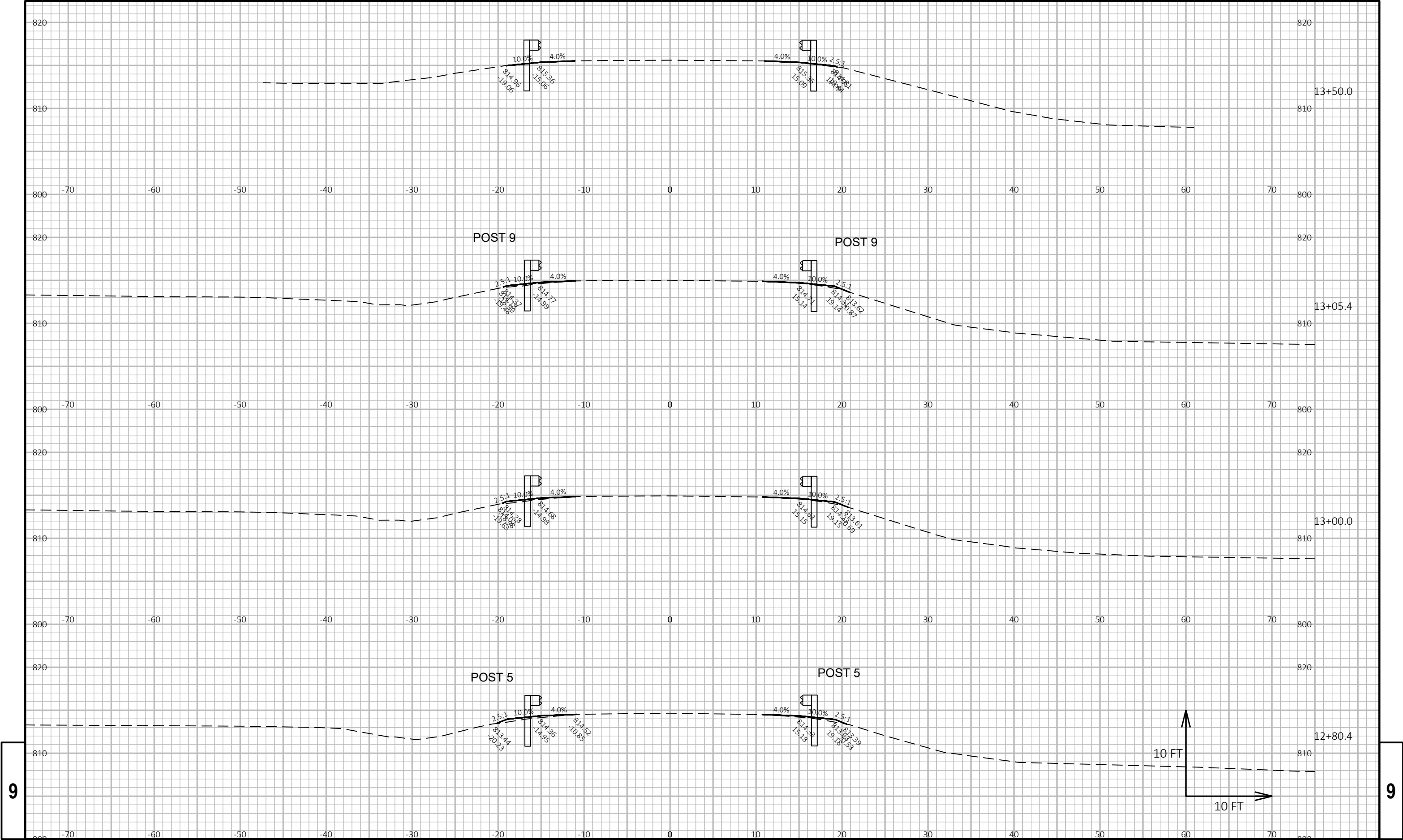








PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: HIDDEN VALLEY RD	SHEET E
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PROJECT NO: 1227-12-72

HWY: IH 43

COUNTY: MANITOWOC

CROSS SECTIONS: HIDDEN VALLEY RD

SHEET

E

FILE NAME : I:\45\450504 IH 43 WISDOT GUARDRAIL\C3D\SHEETSPLAN\12271272 PLAN\090203_XS.DWG
LAYOUT NAME - Hidden Valley WB 3

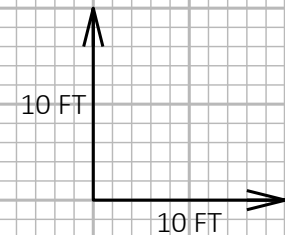
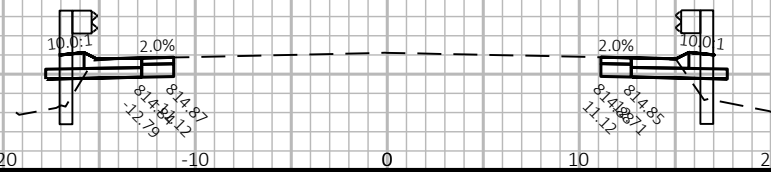
PLOT DATE : 1/27/2021 11:34 AM

PLOT BY : GARNICA, BRANDON

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDs SHEET 49

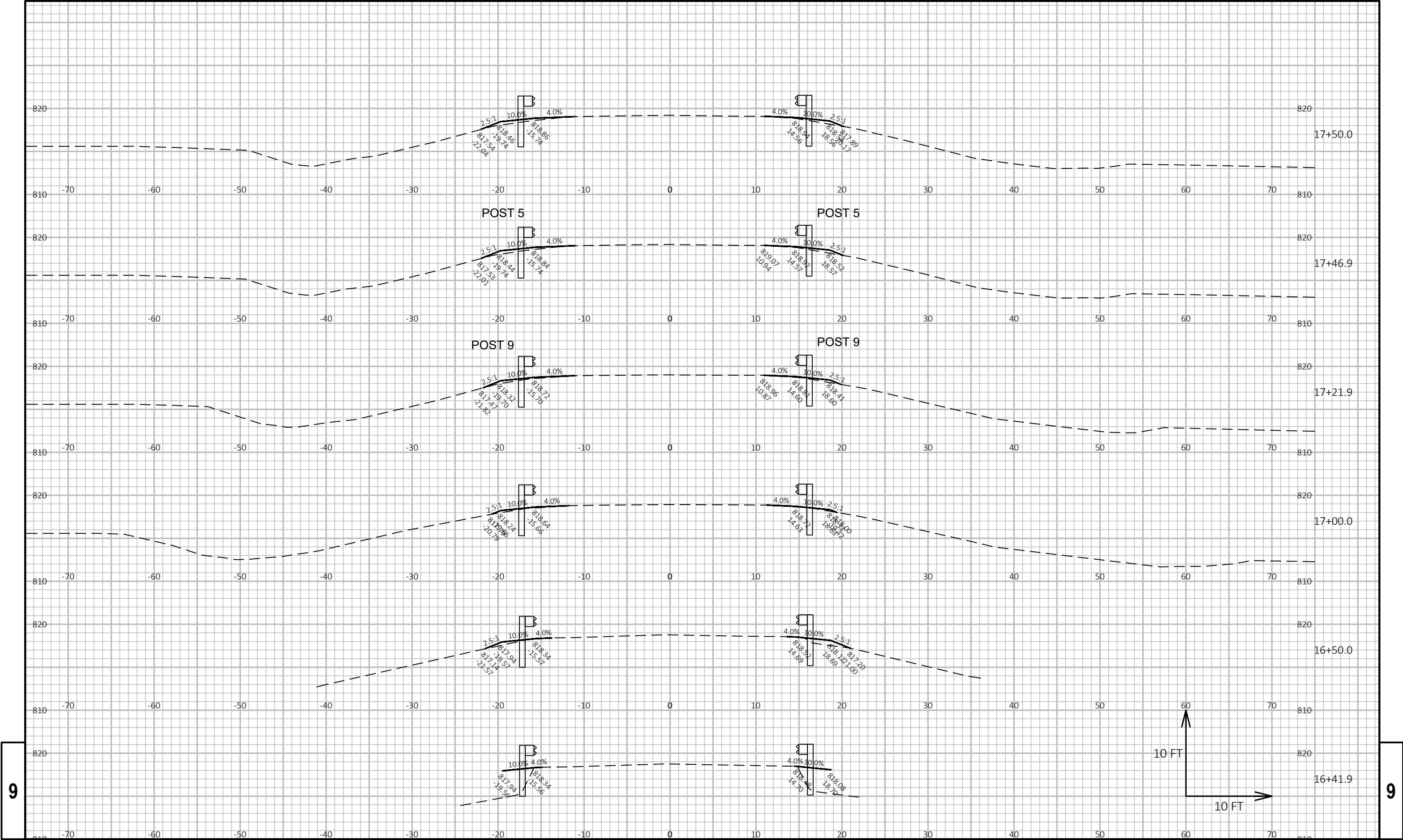


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820

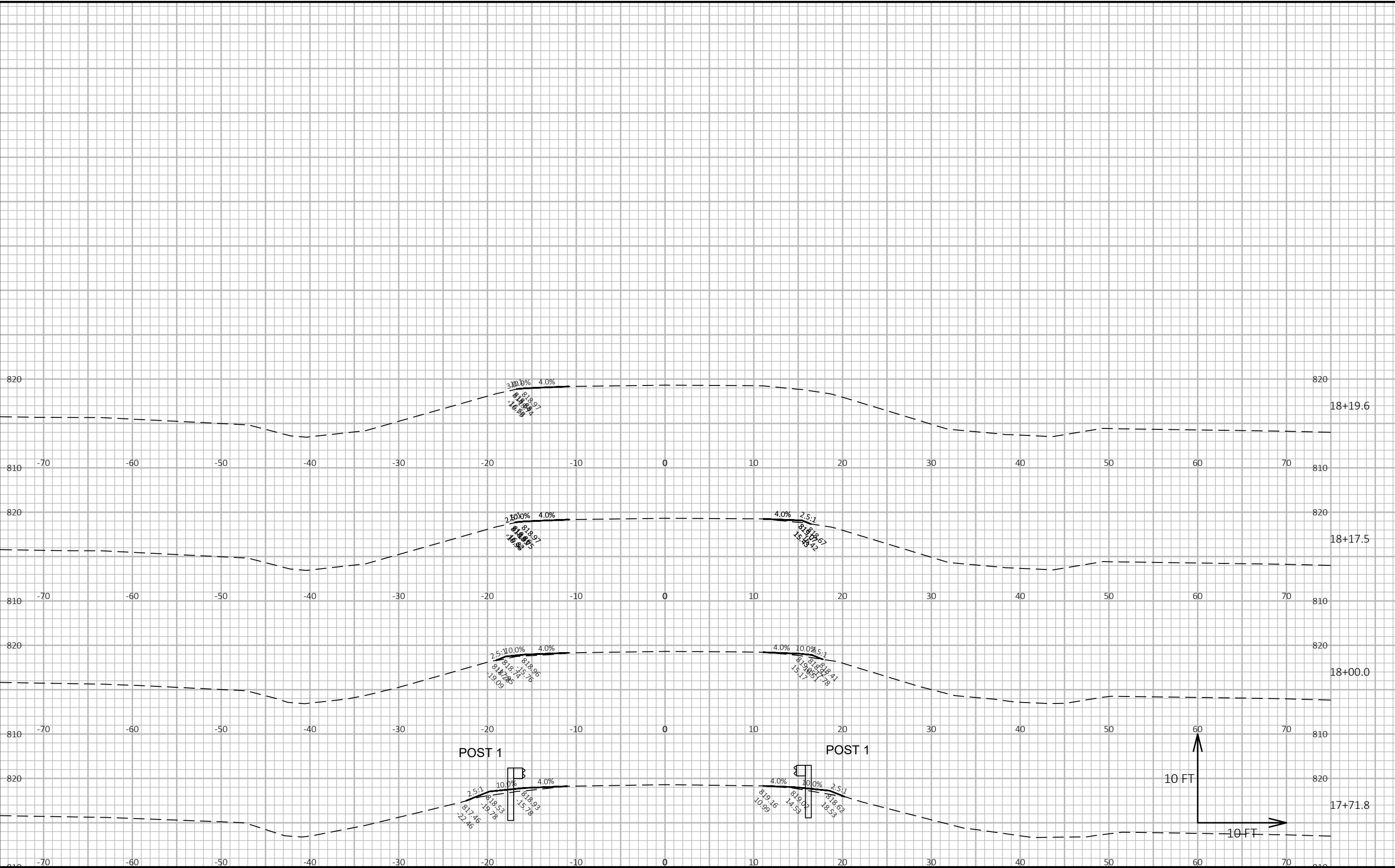
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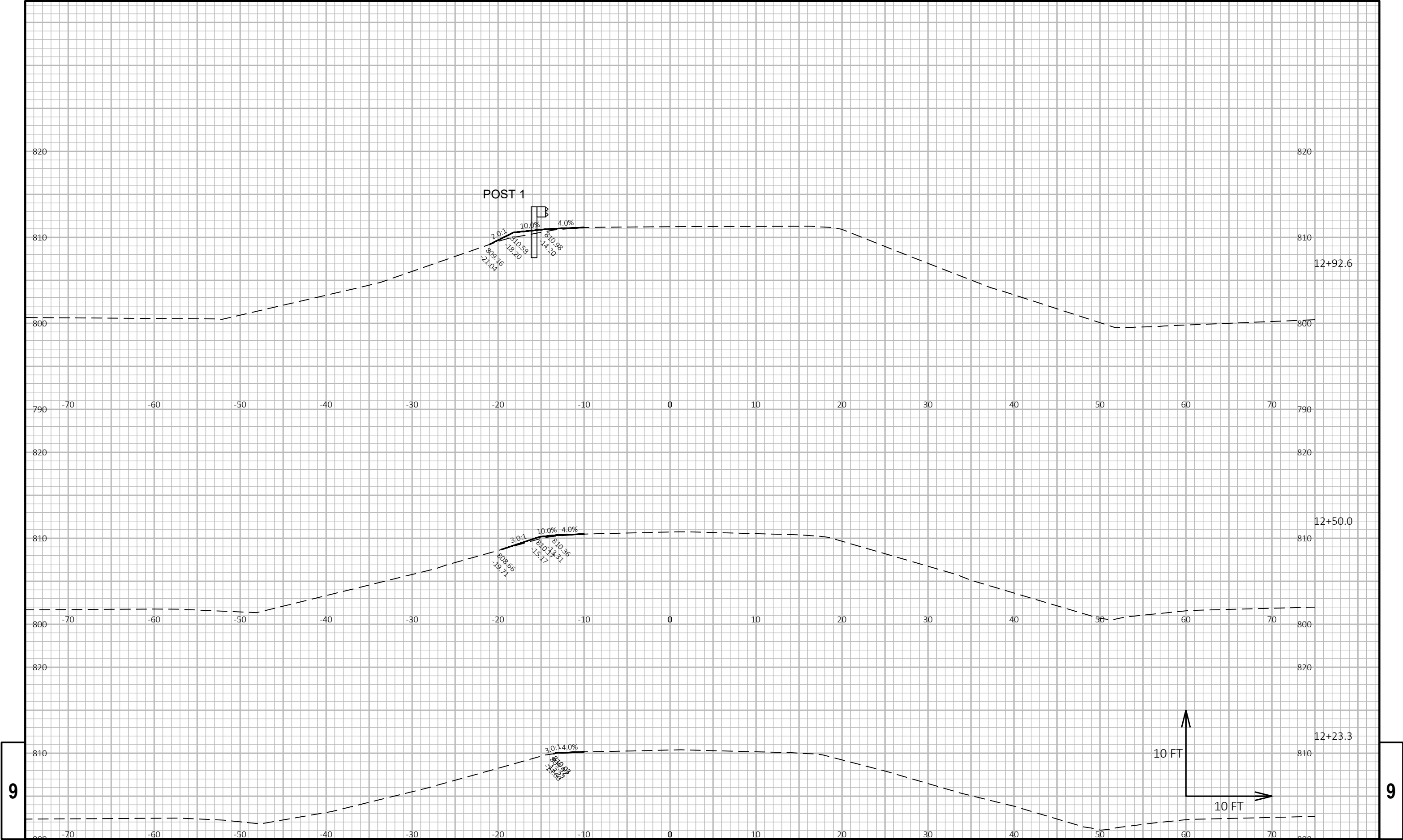


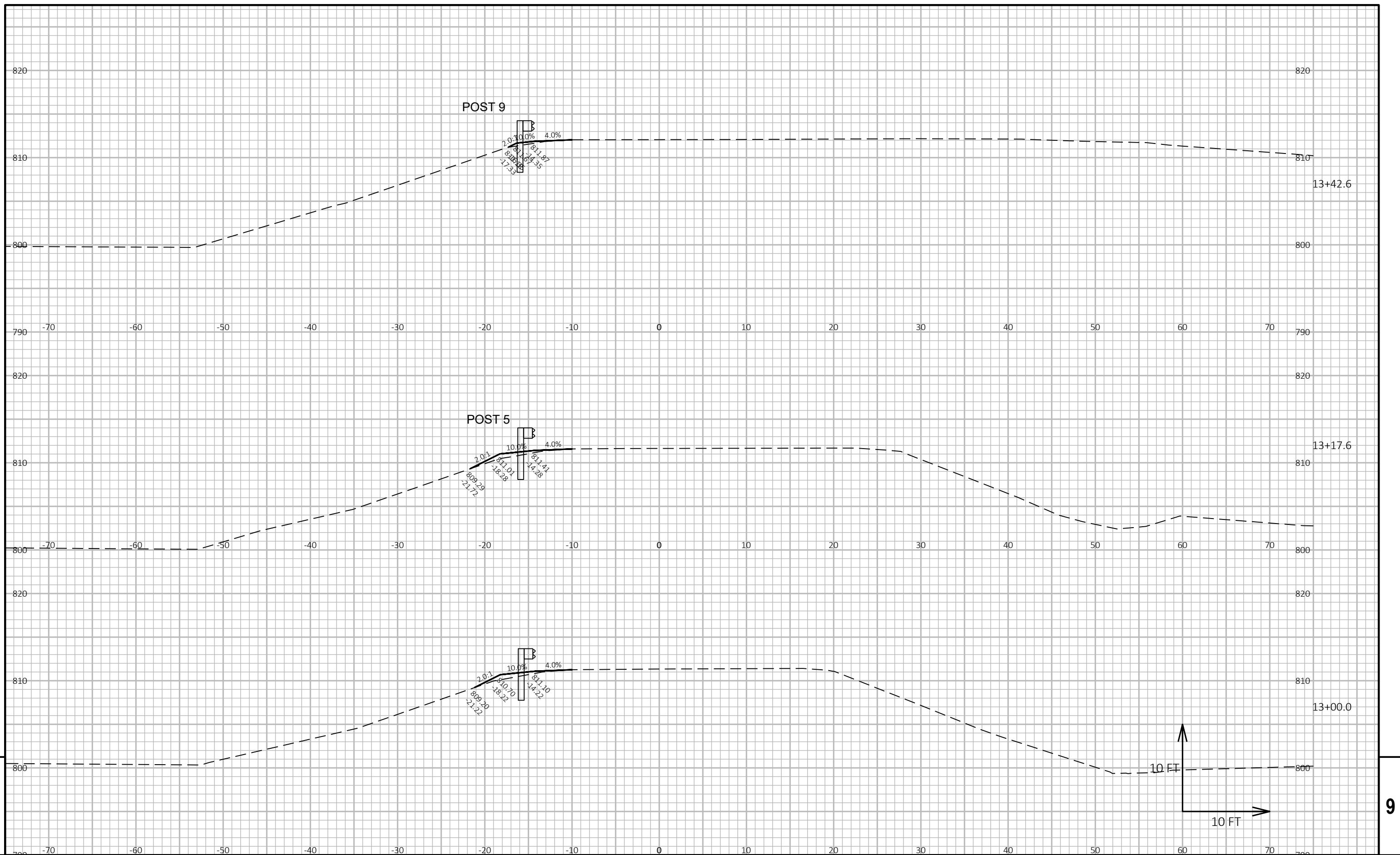
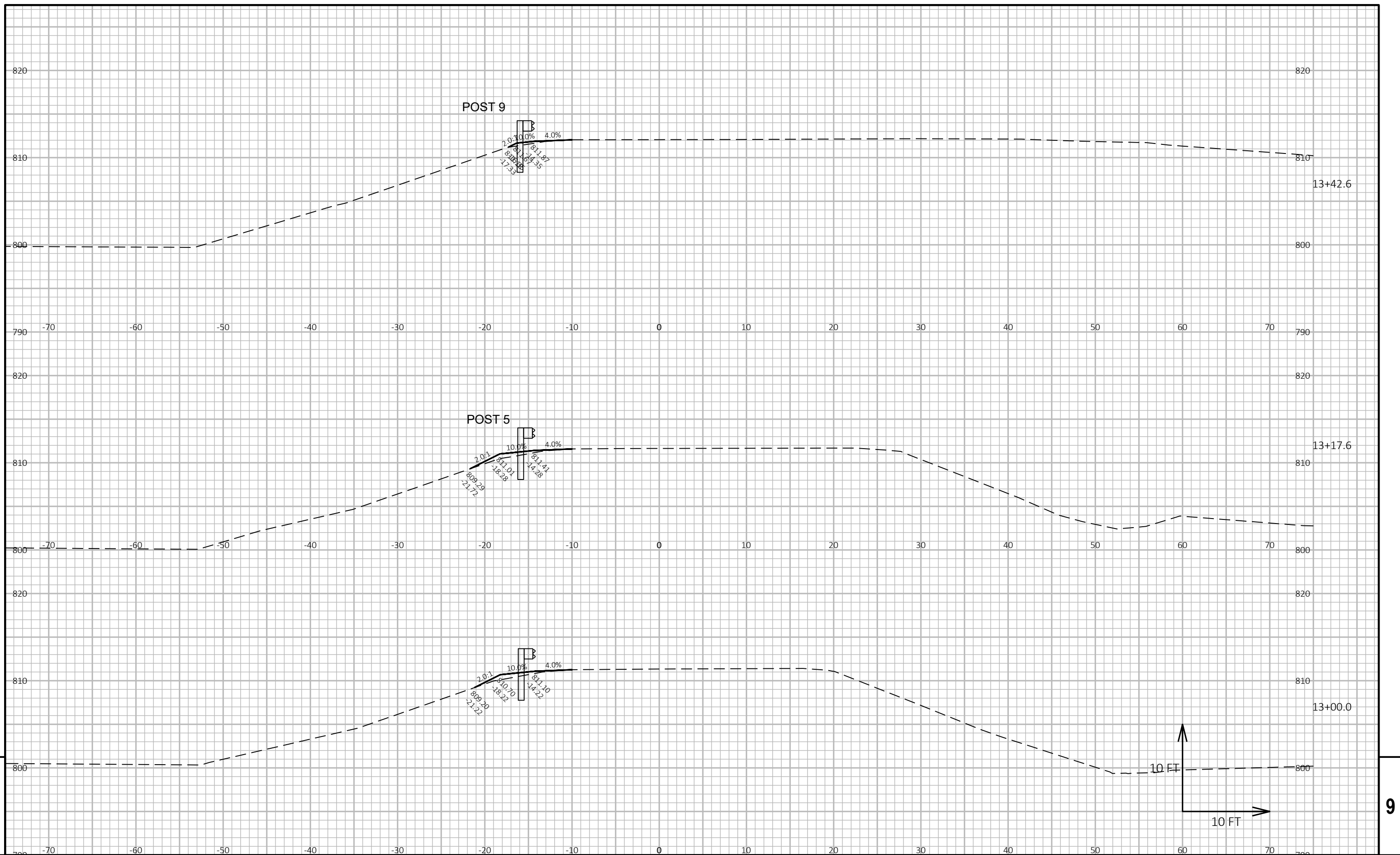
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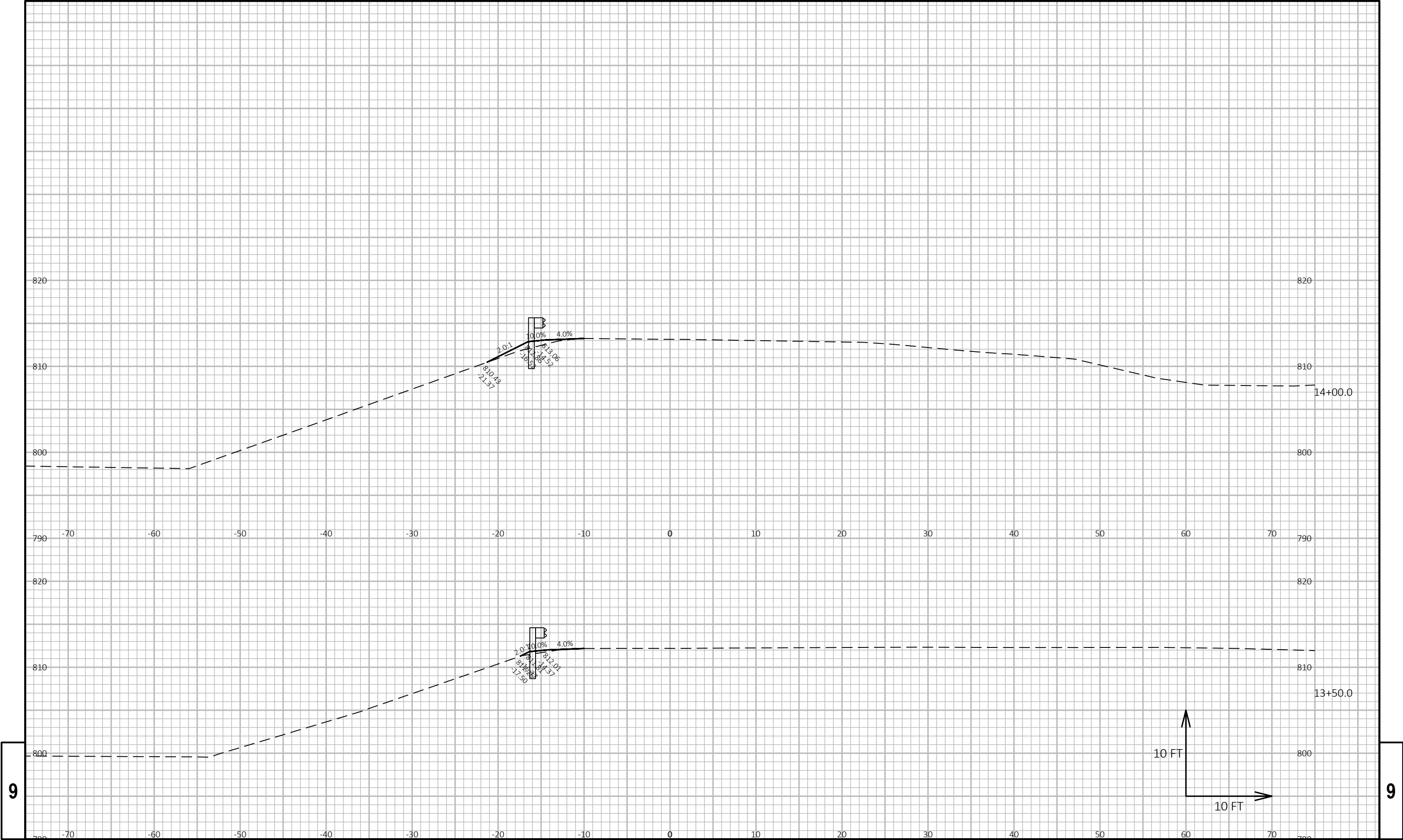
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: HIDDEN VALLEY RD	SHEET E
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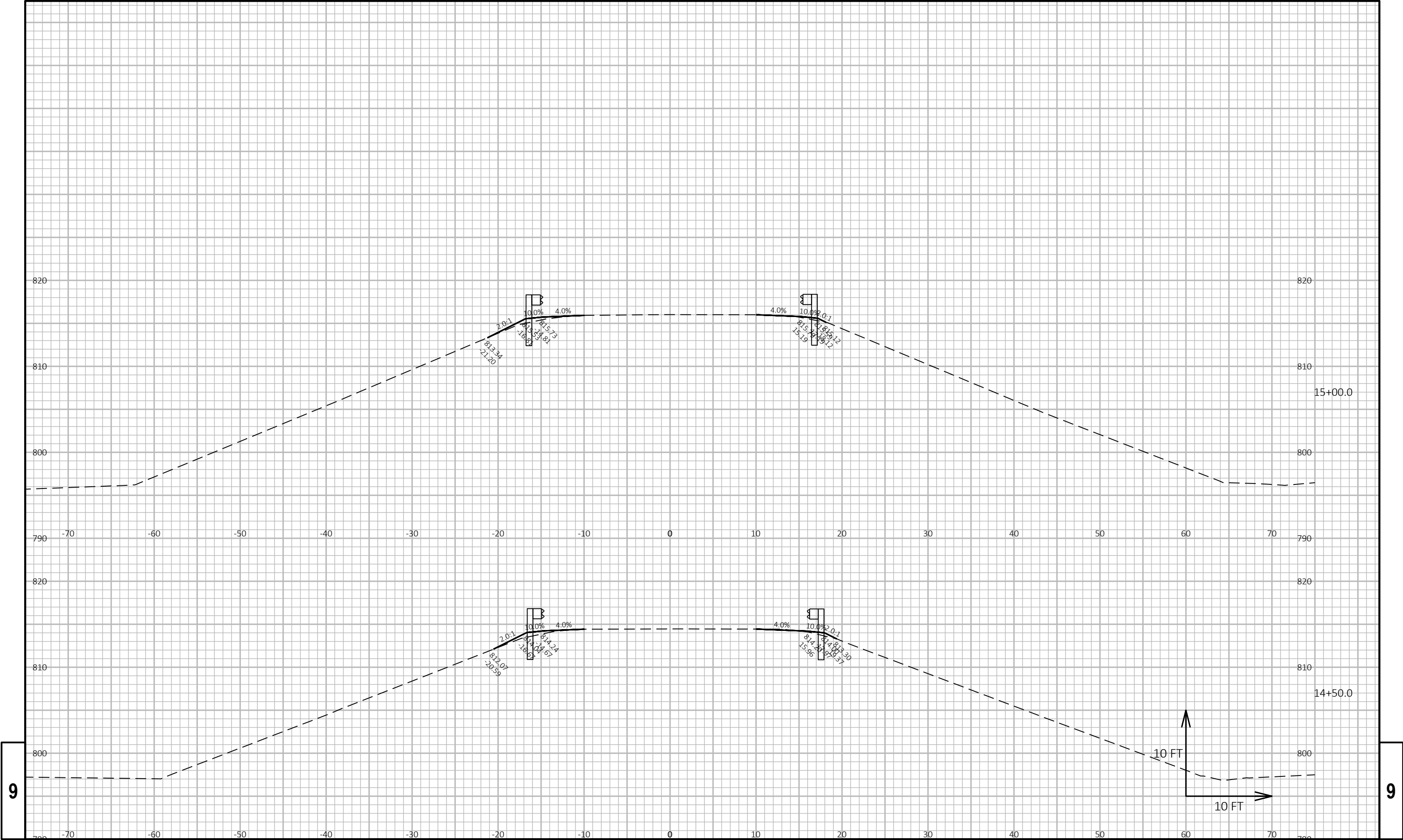


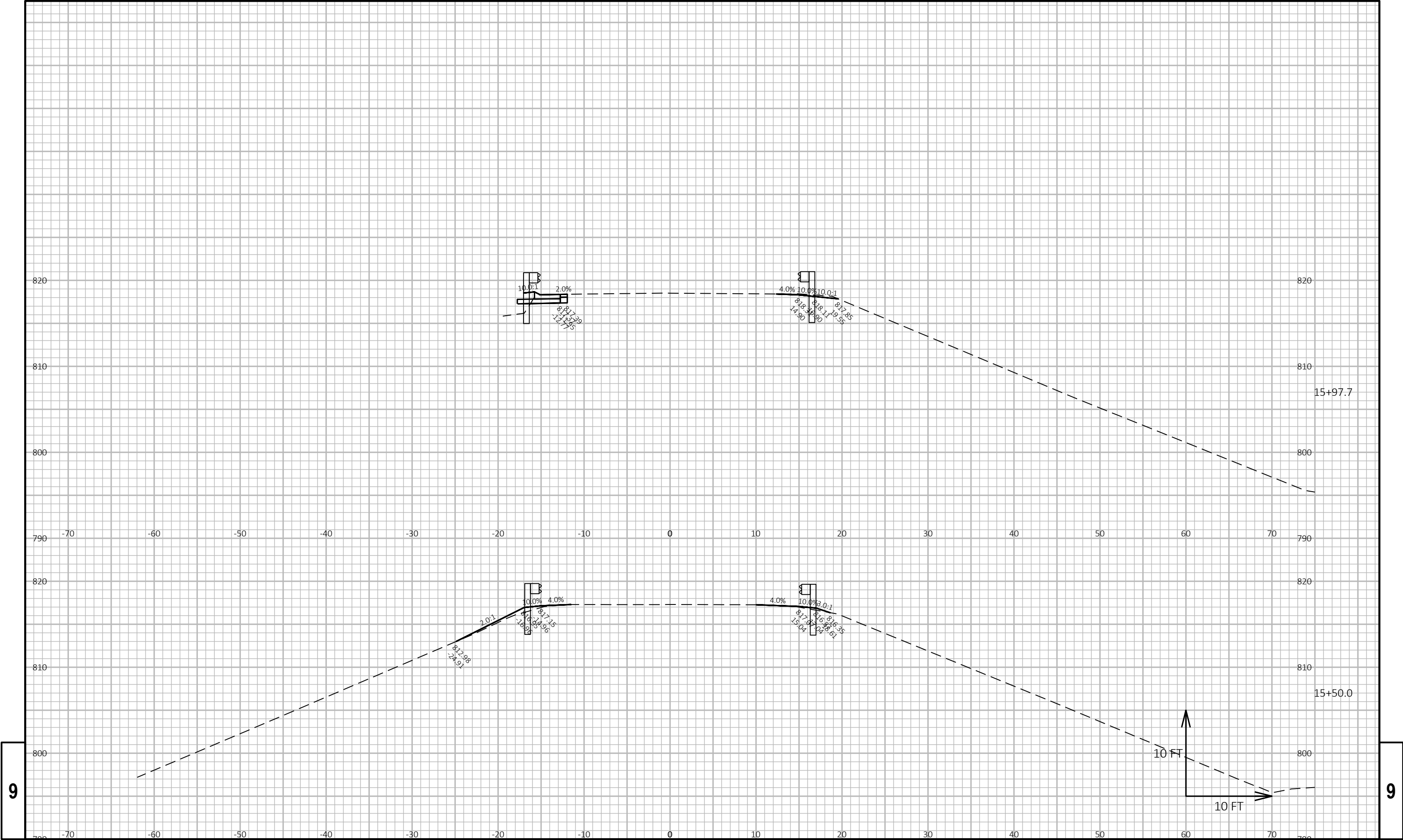




PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: ZANDER RD	SHEET	E
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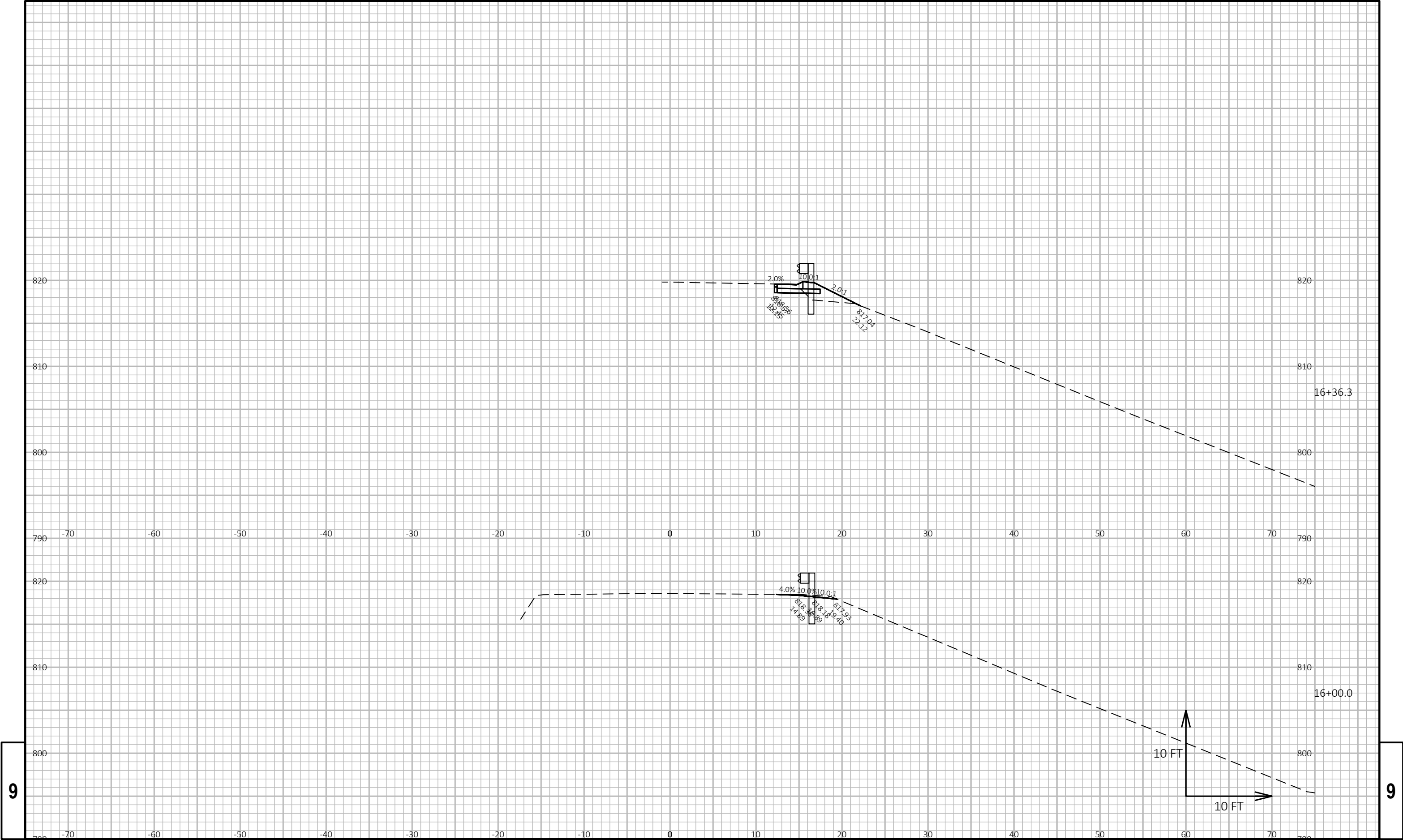


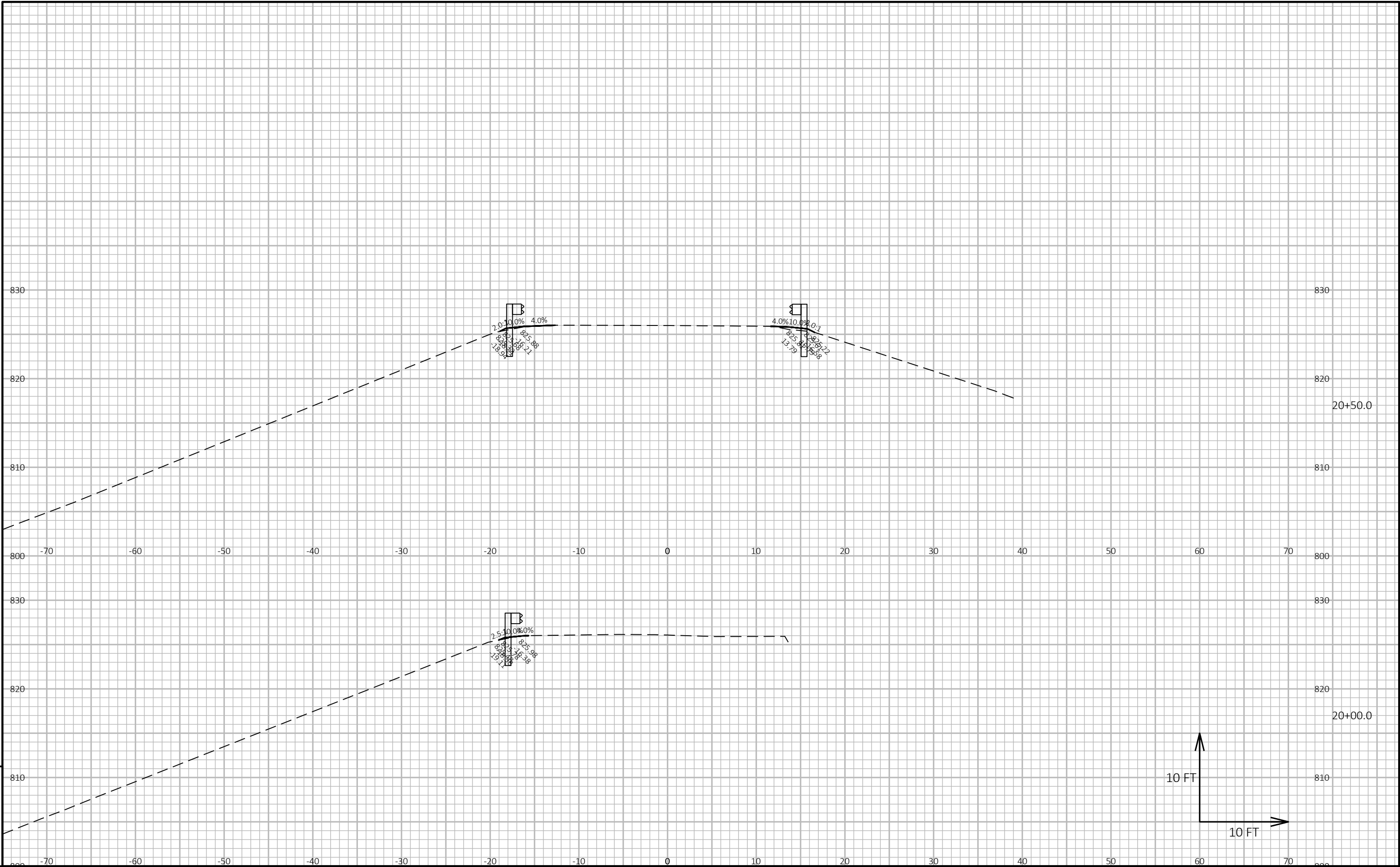


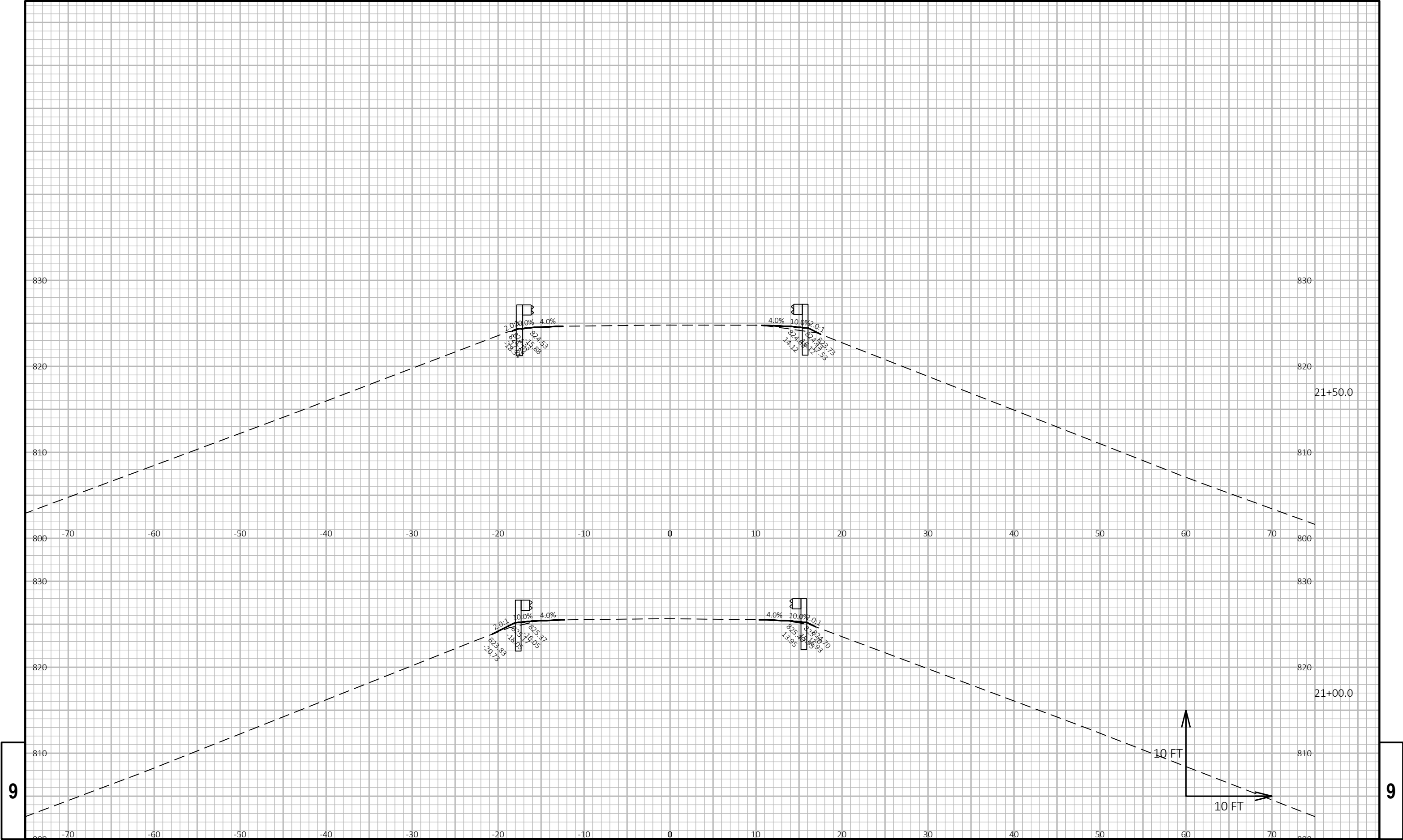
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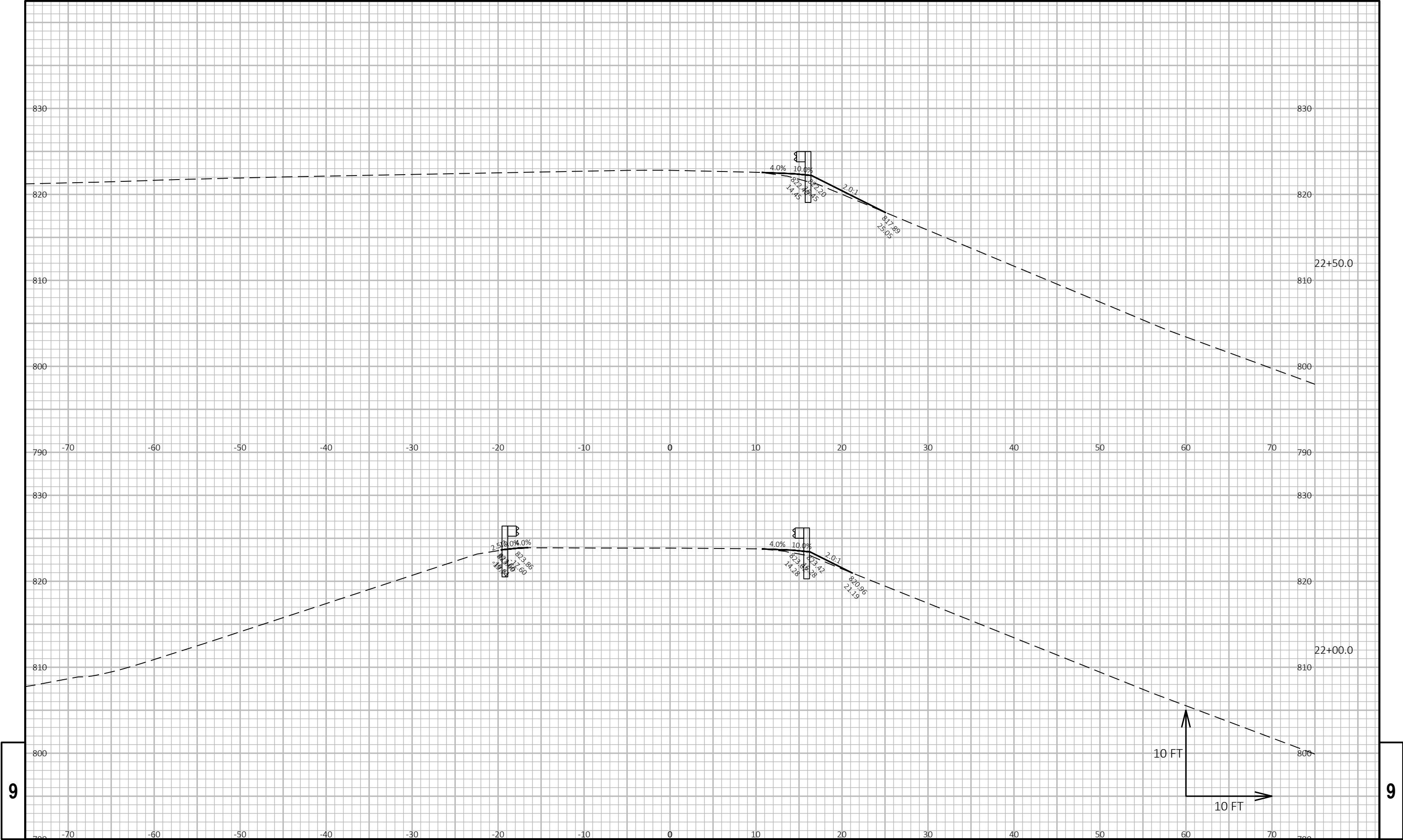
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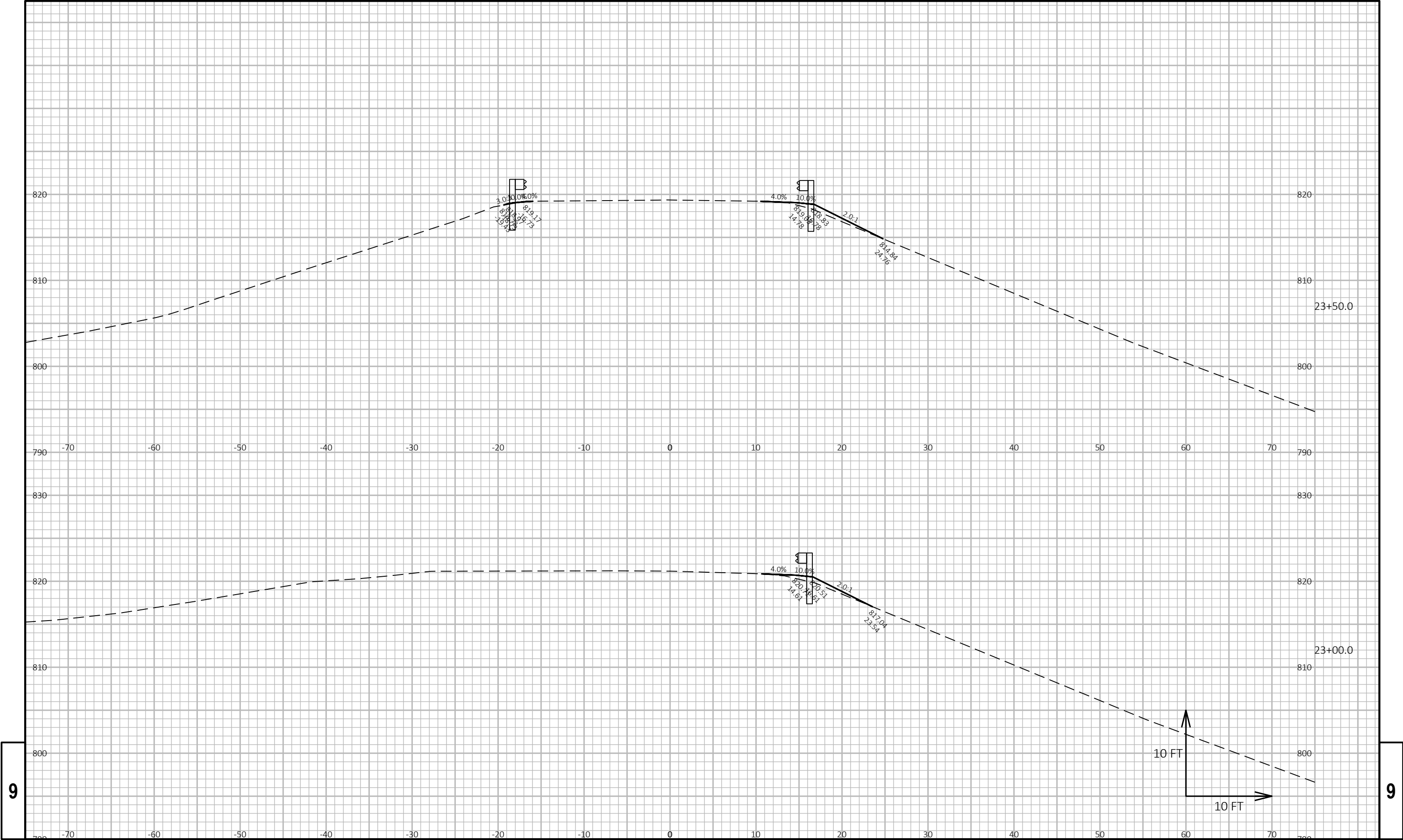
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: ZANDER RD	SHEET E
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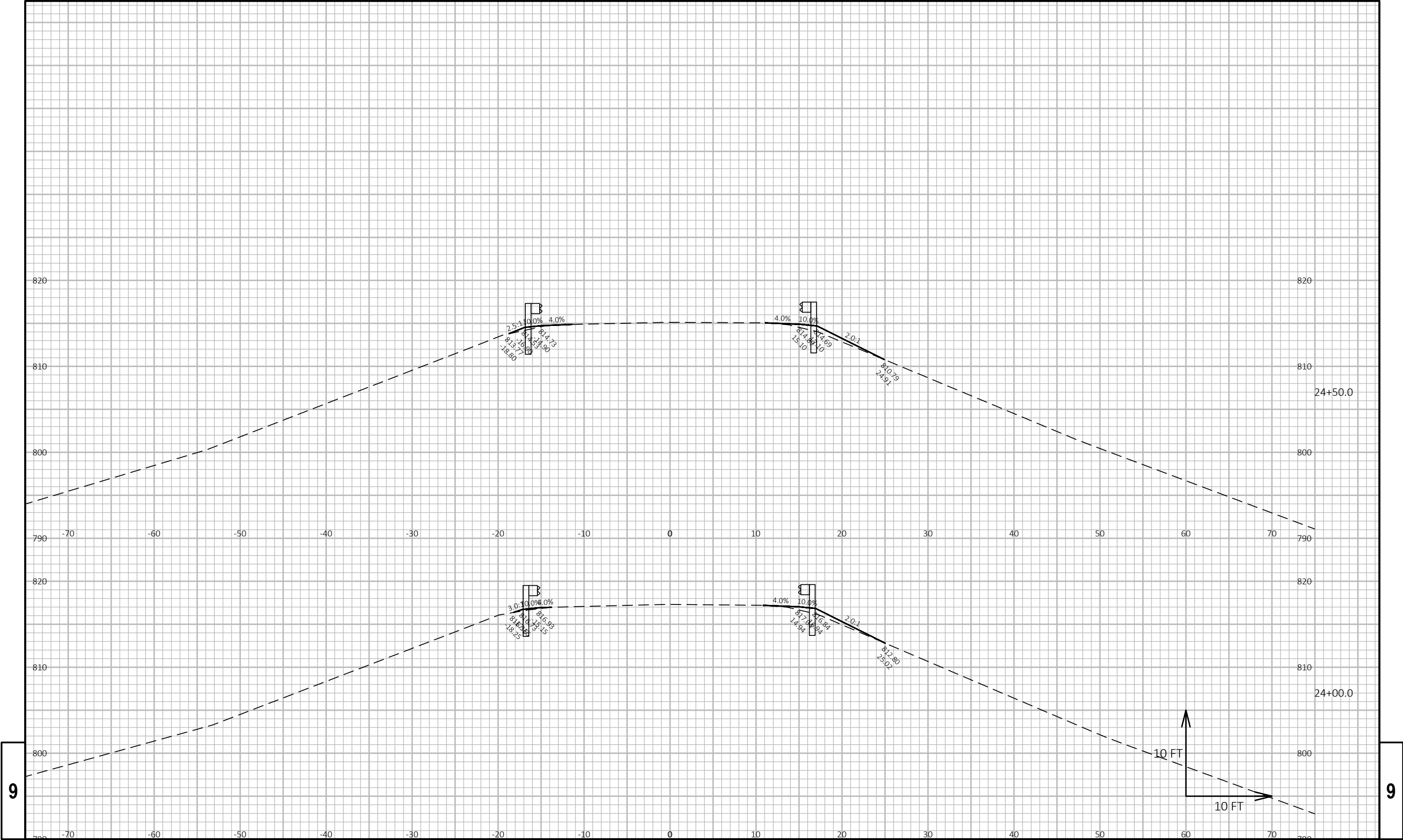


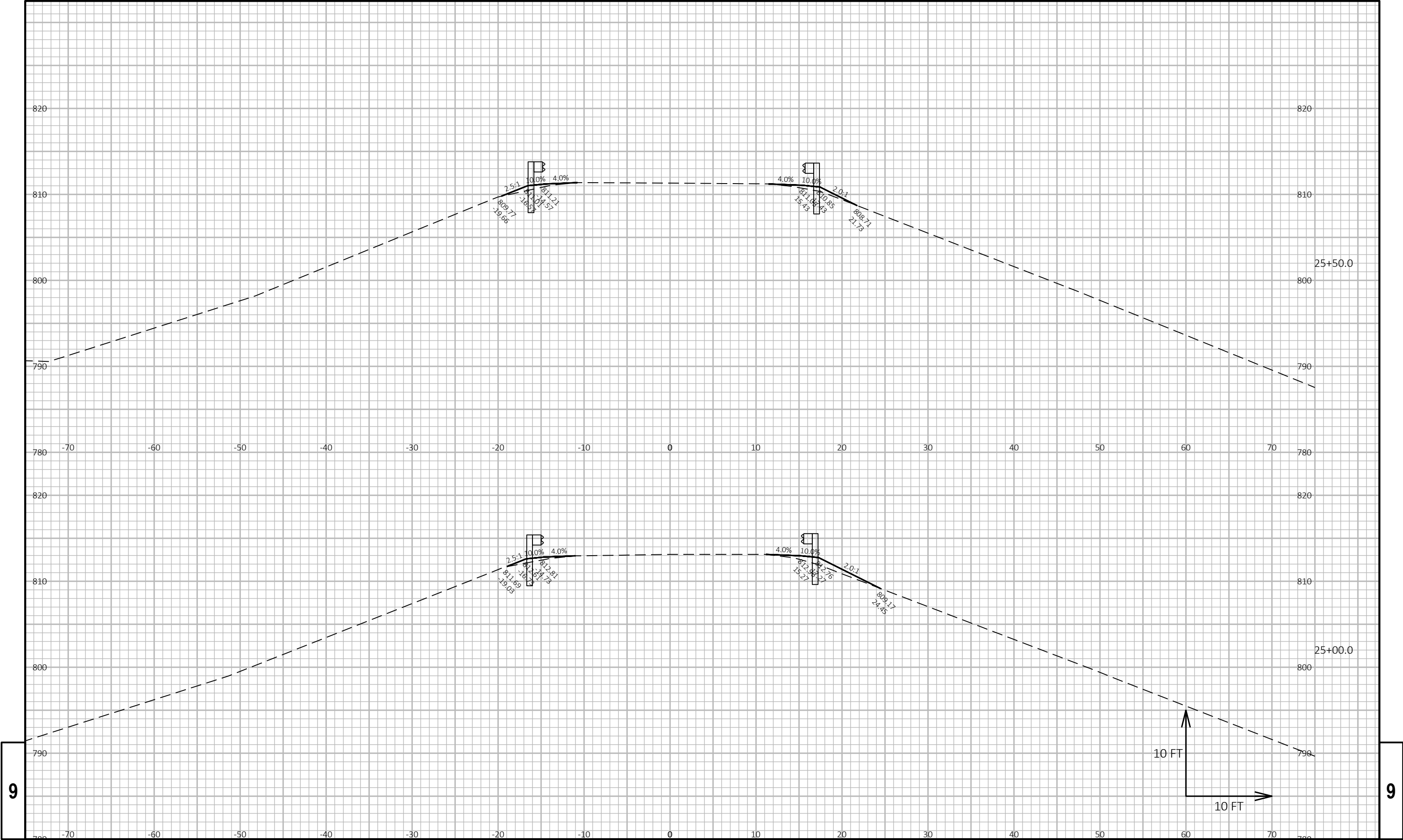


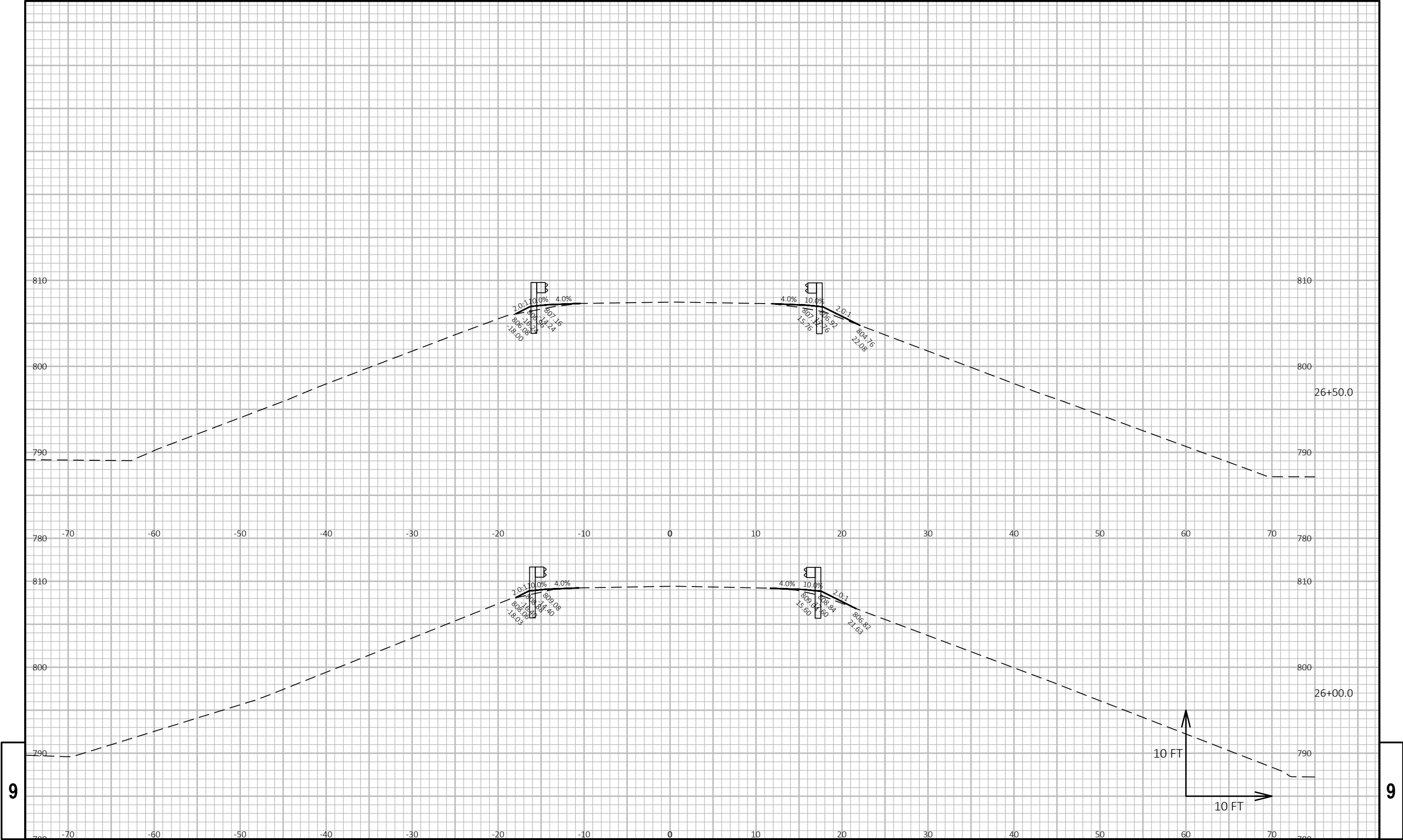


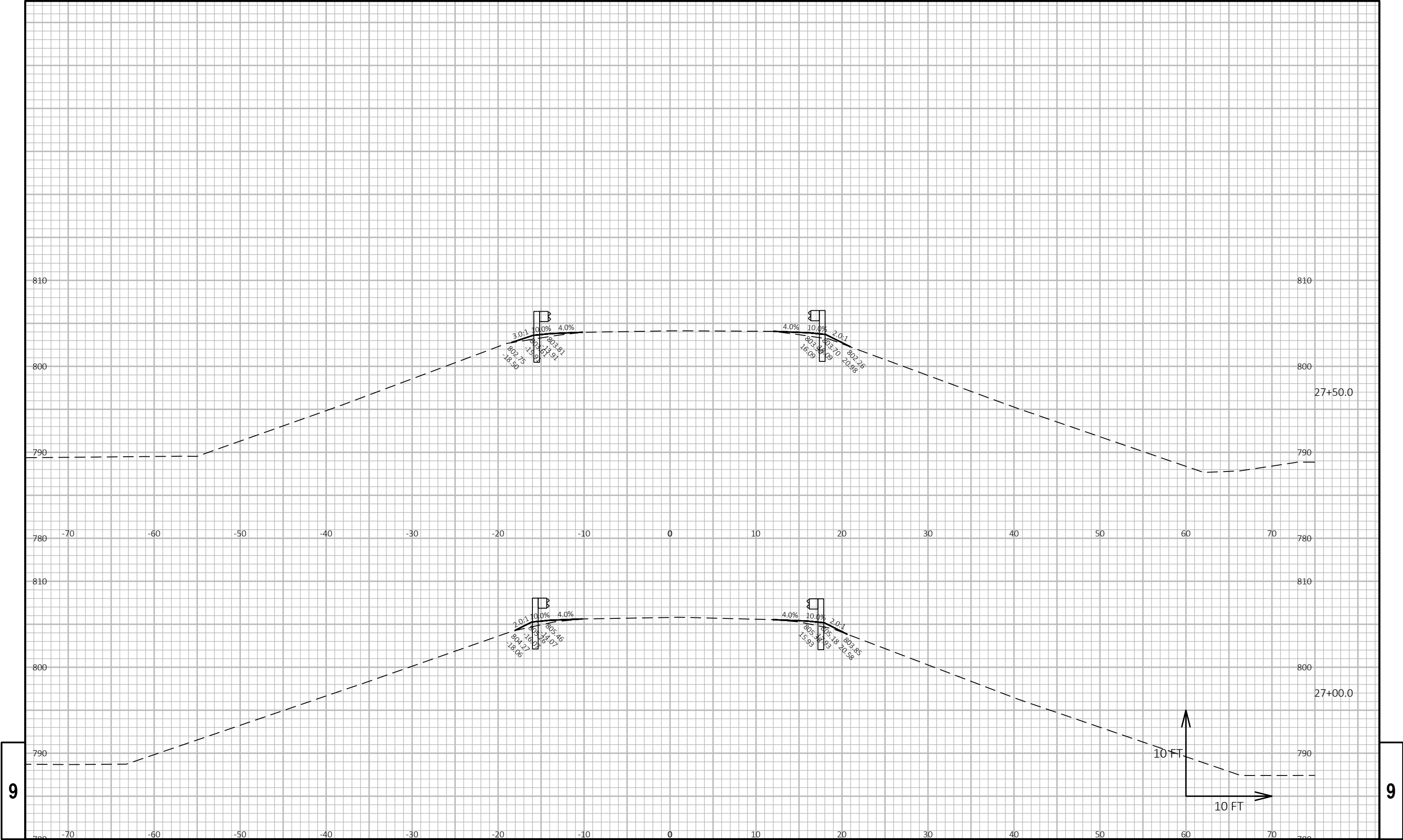


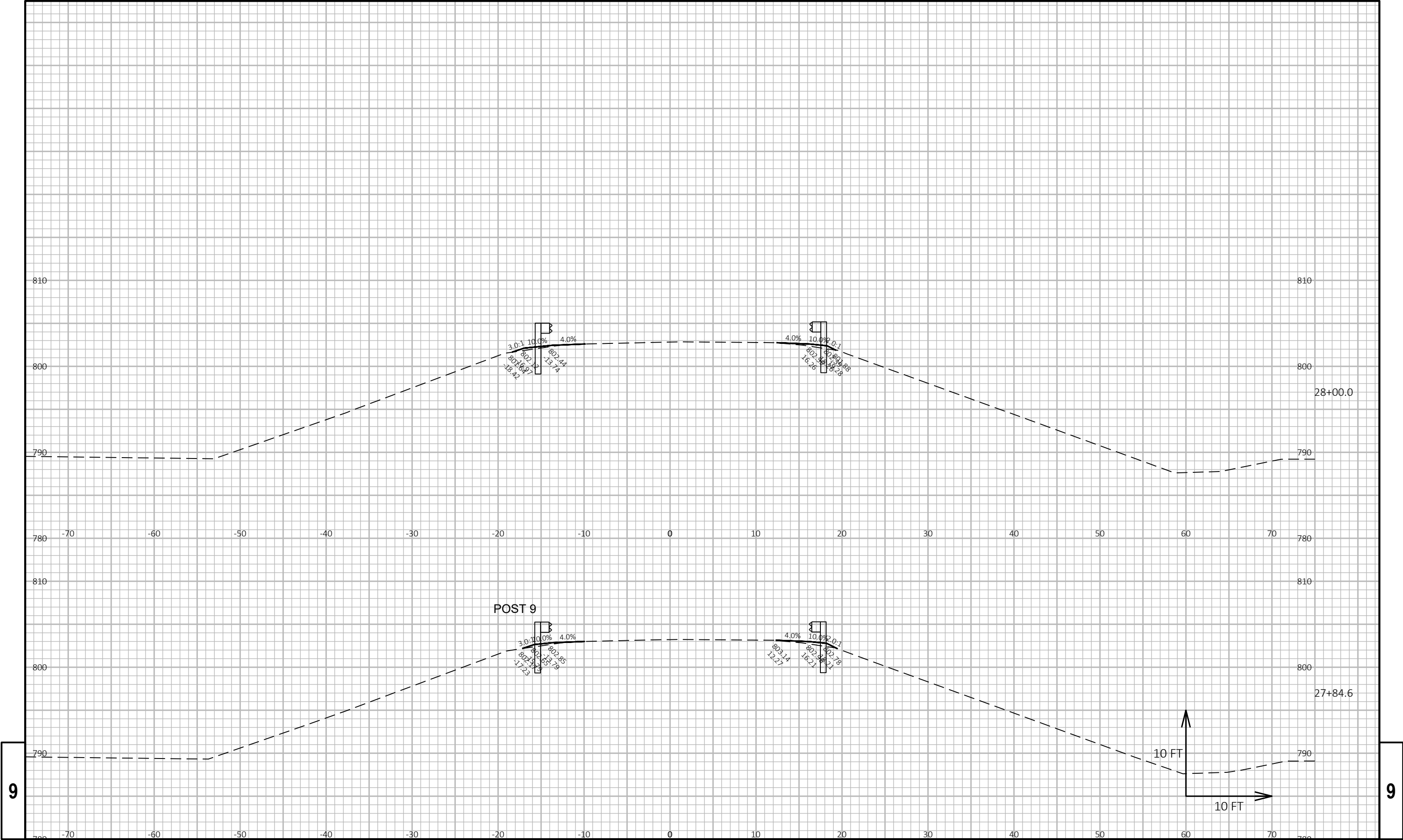


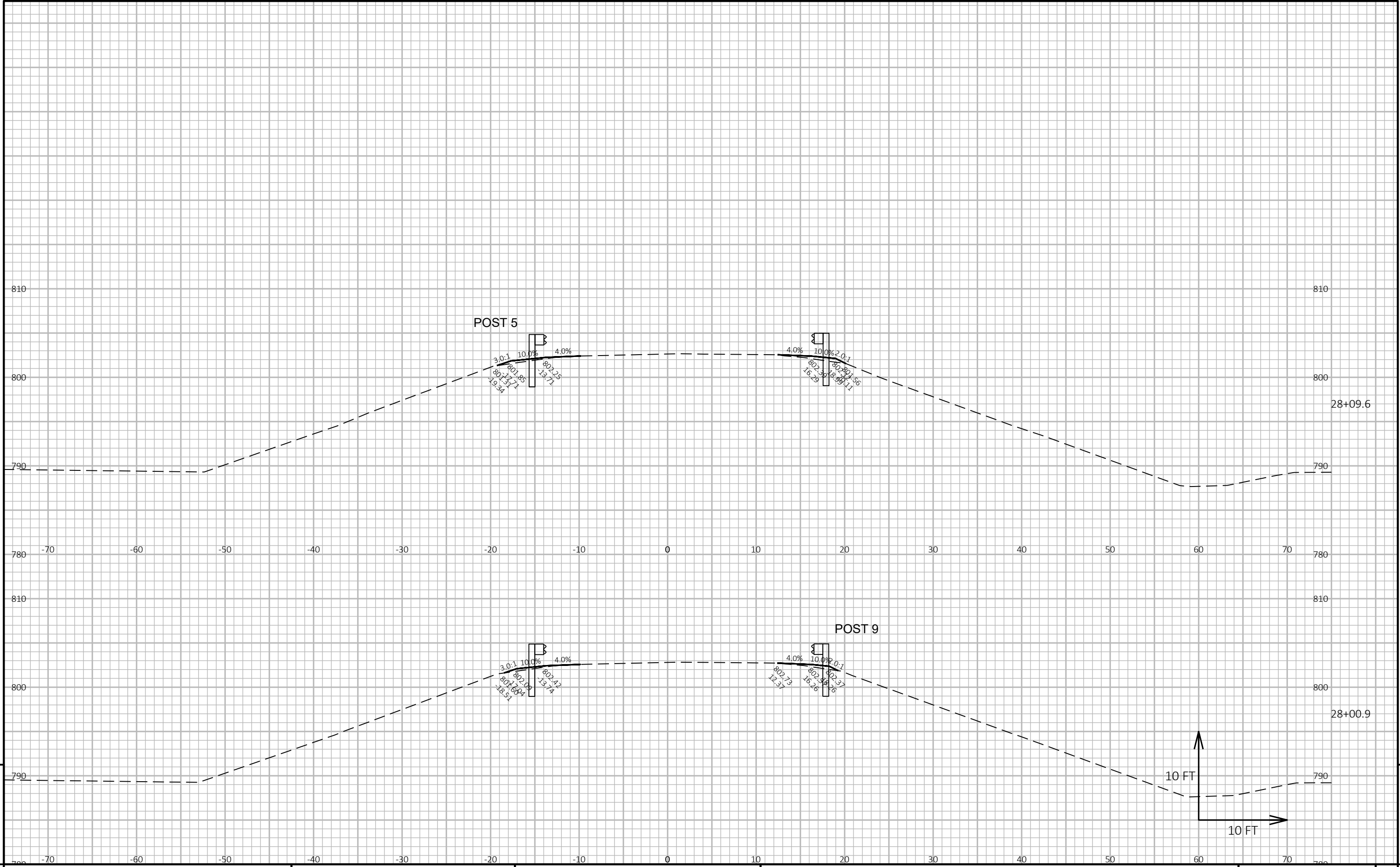






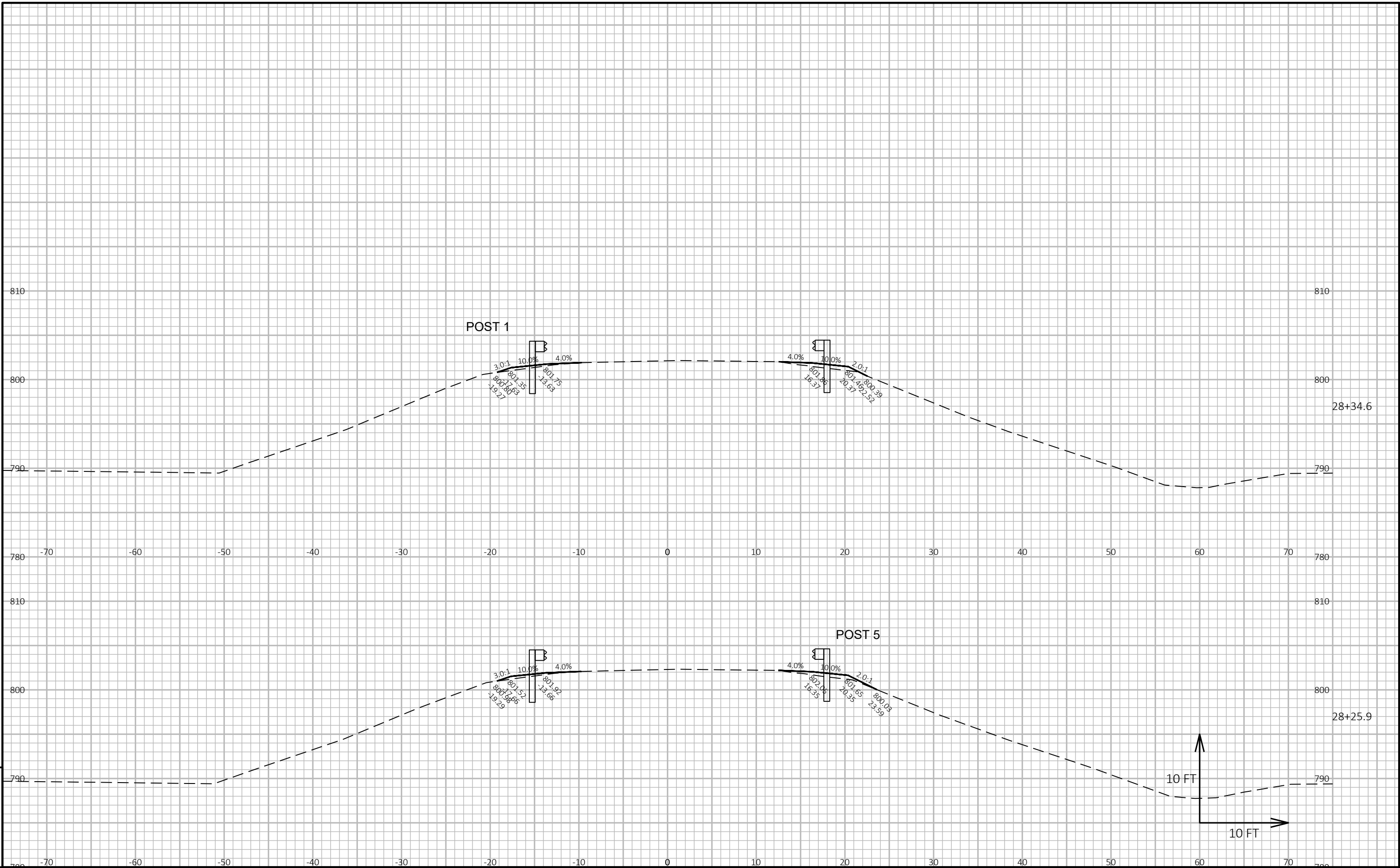


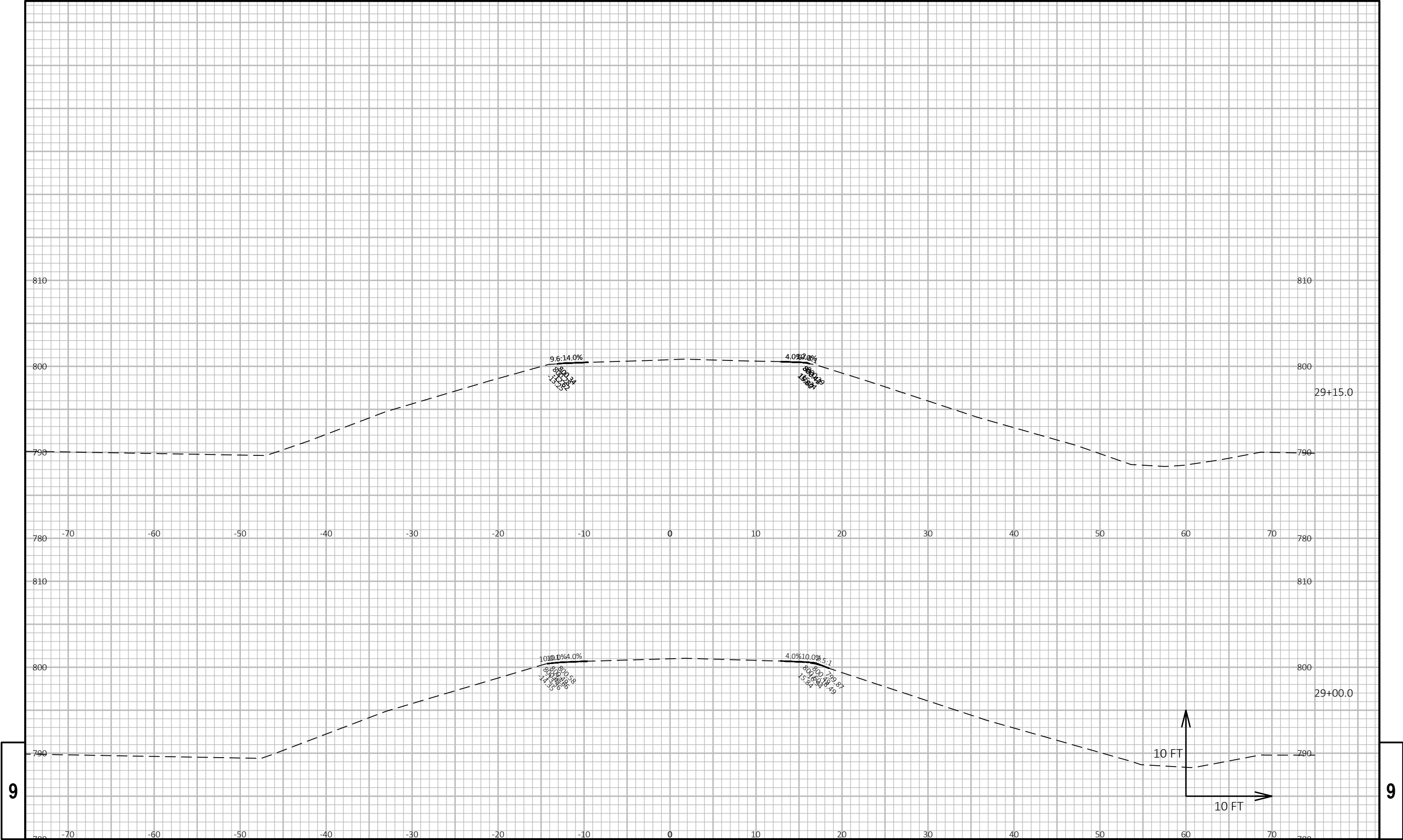


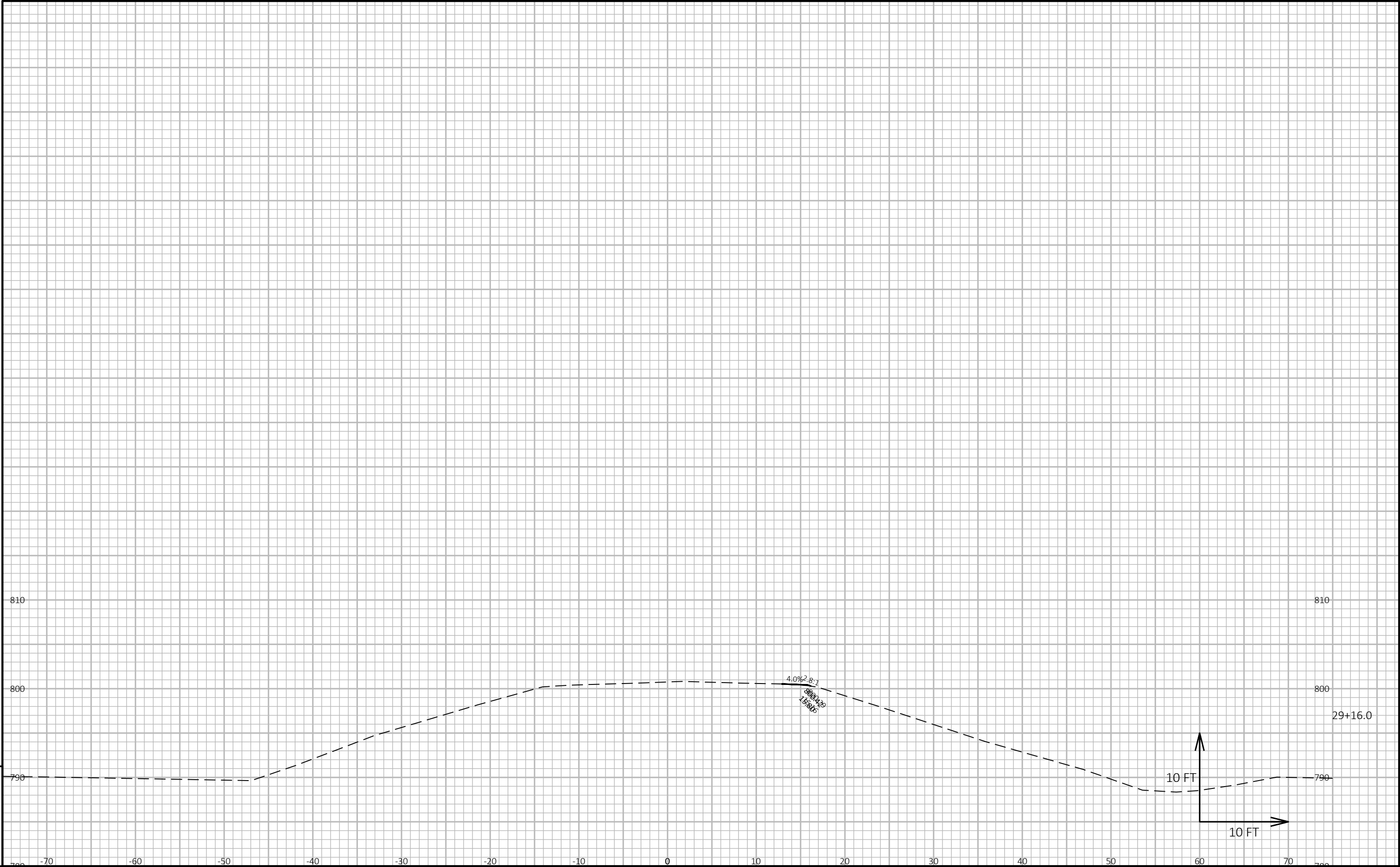


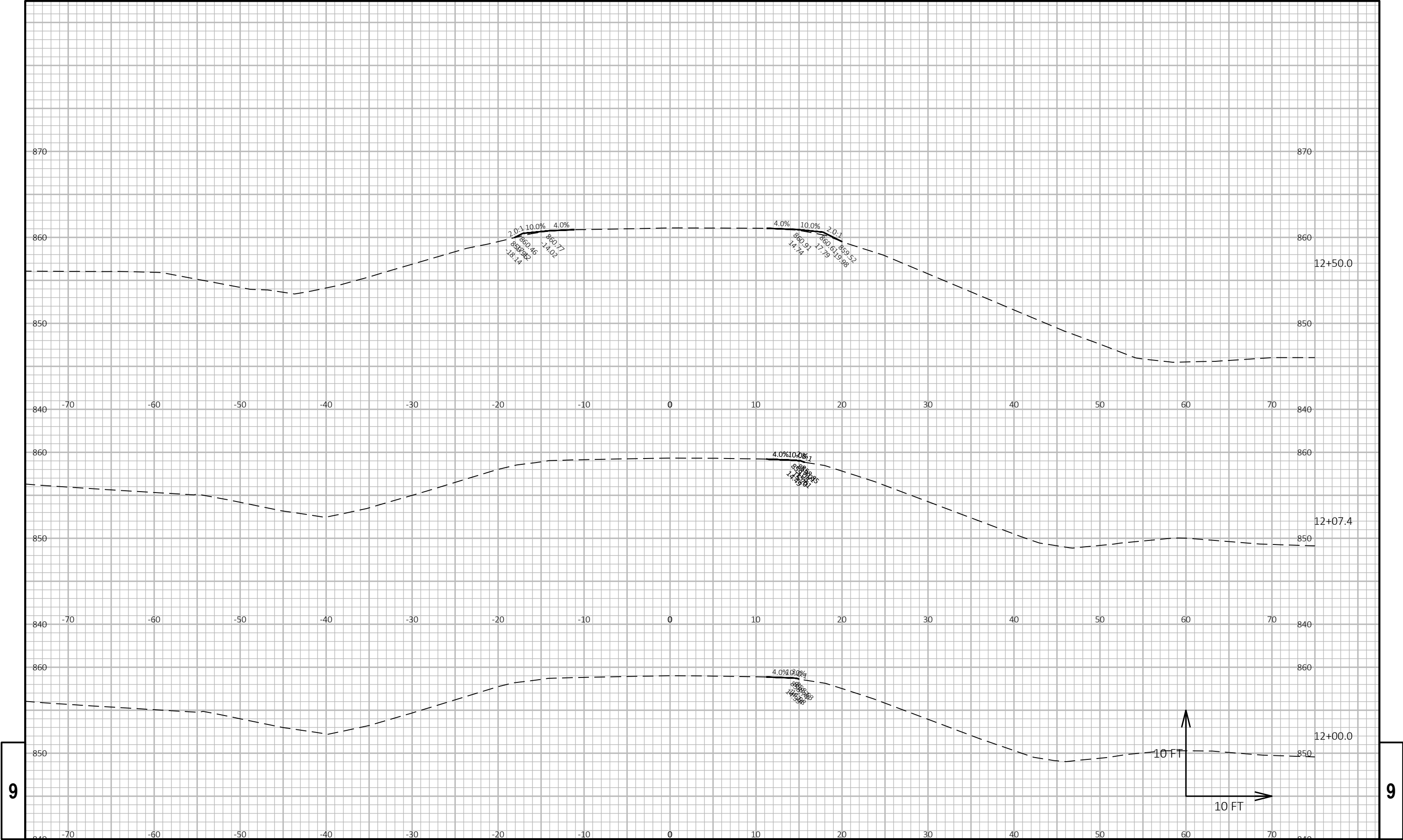
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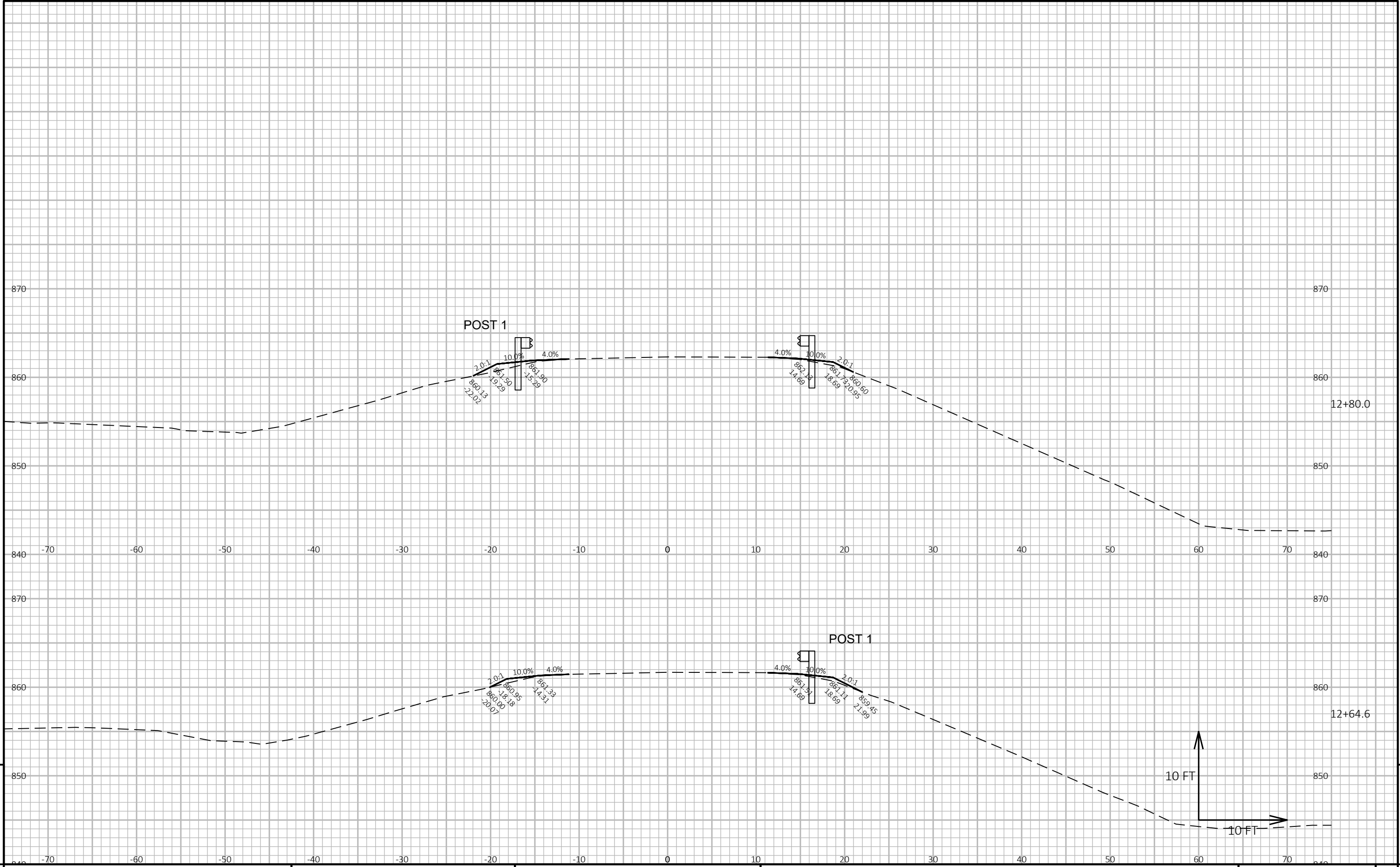
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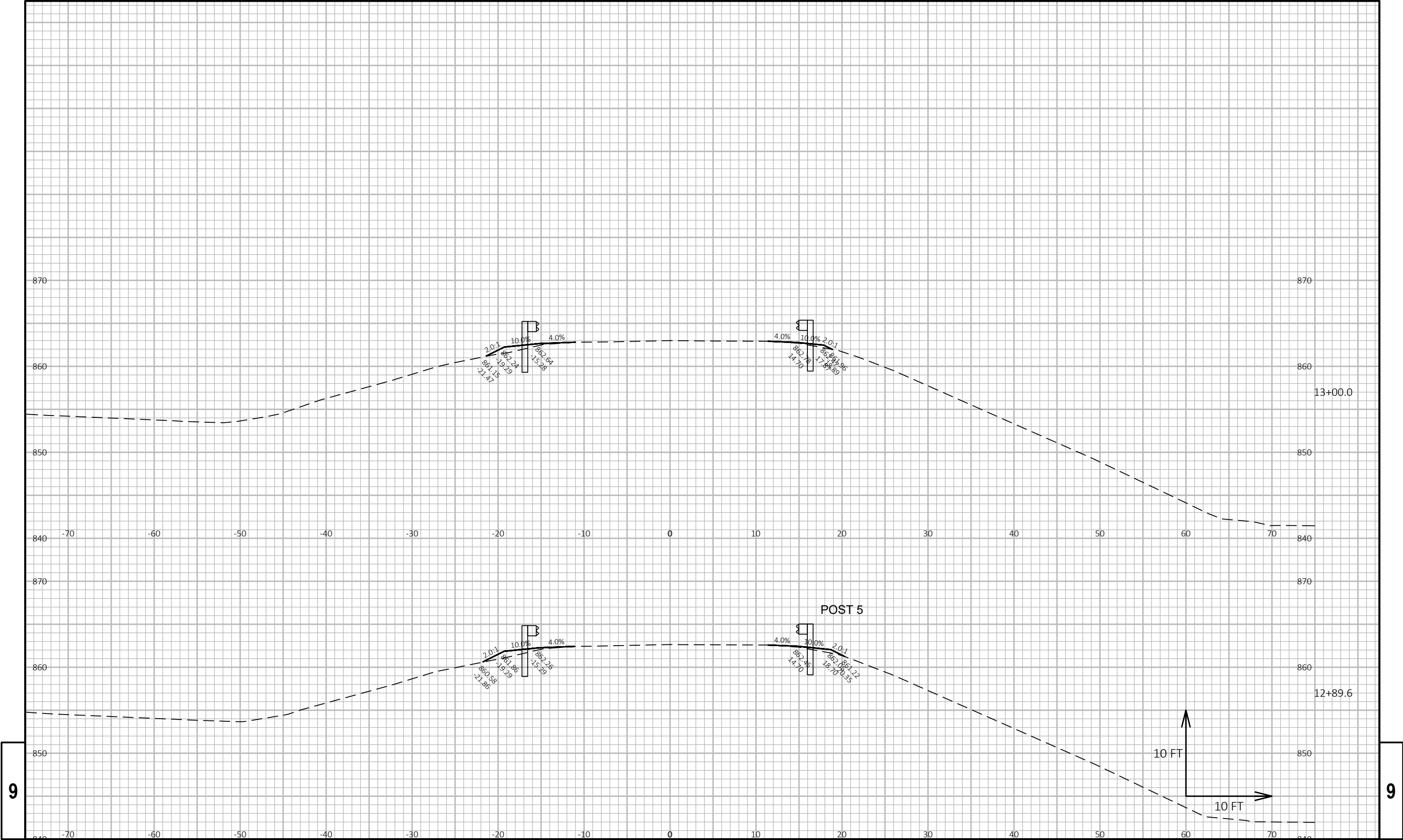




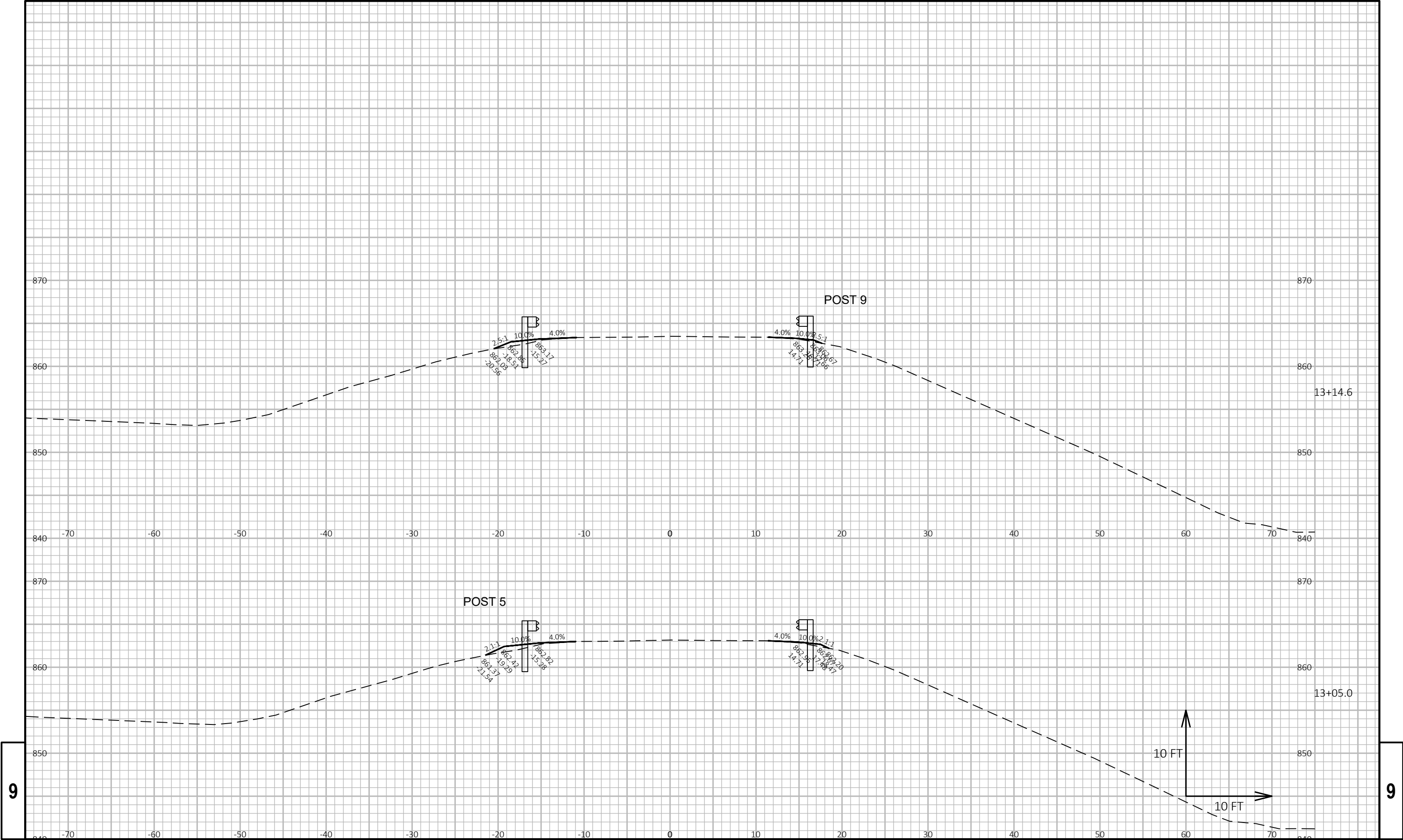


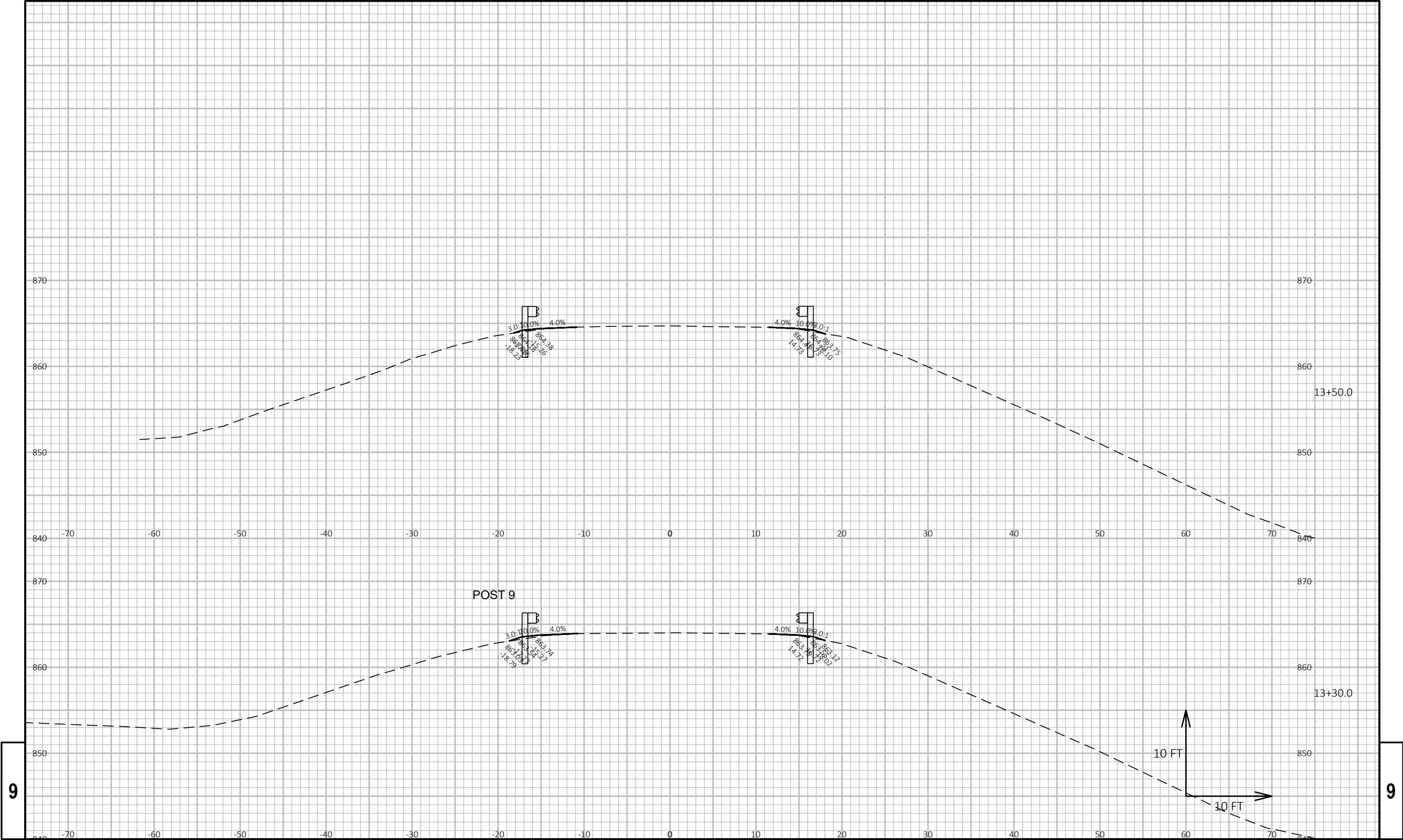


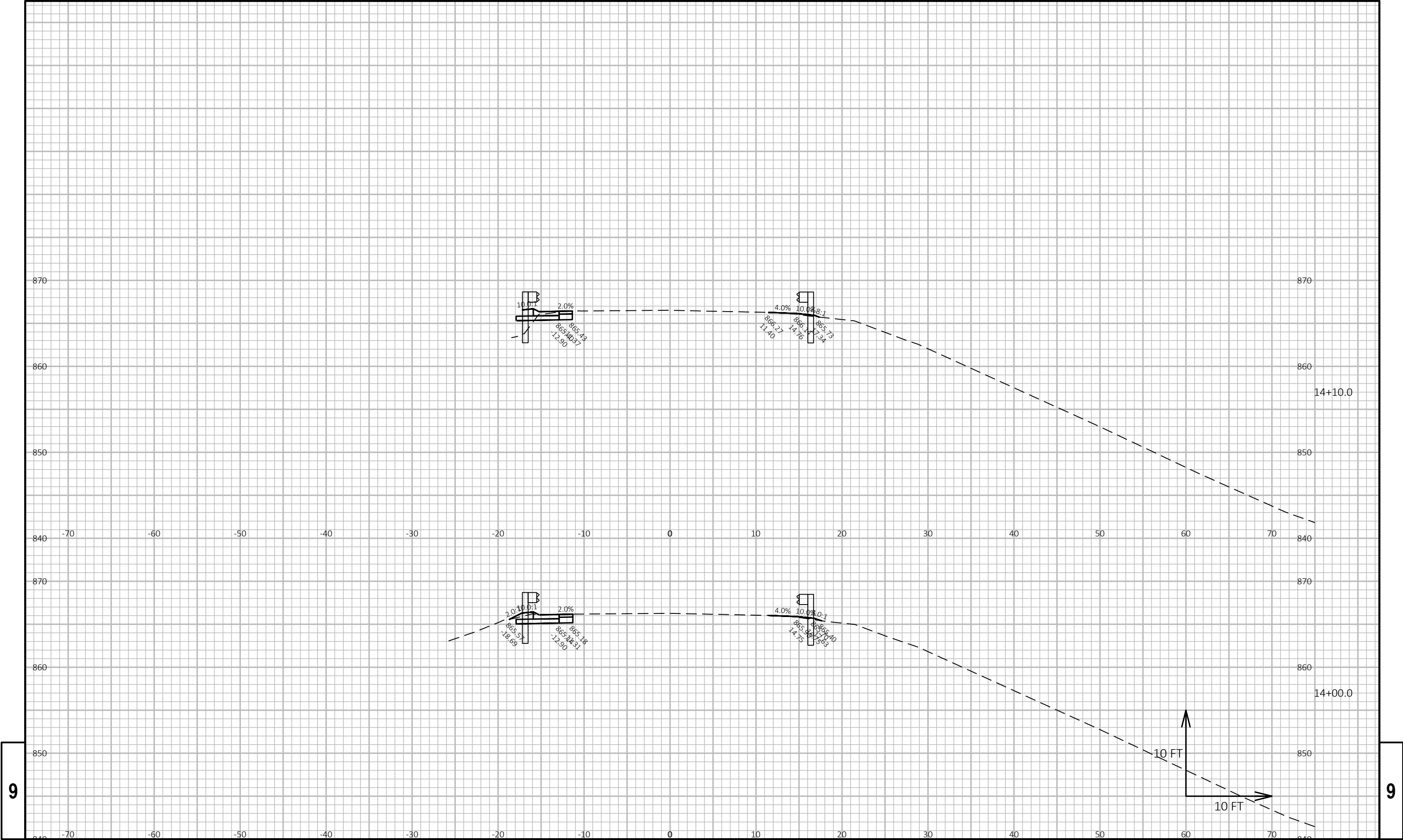


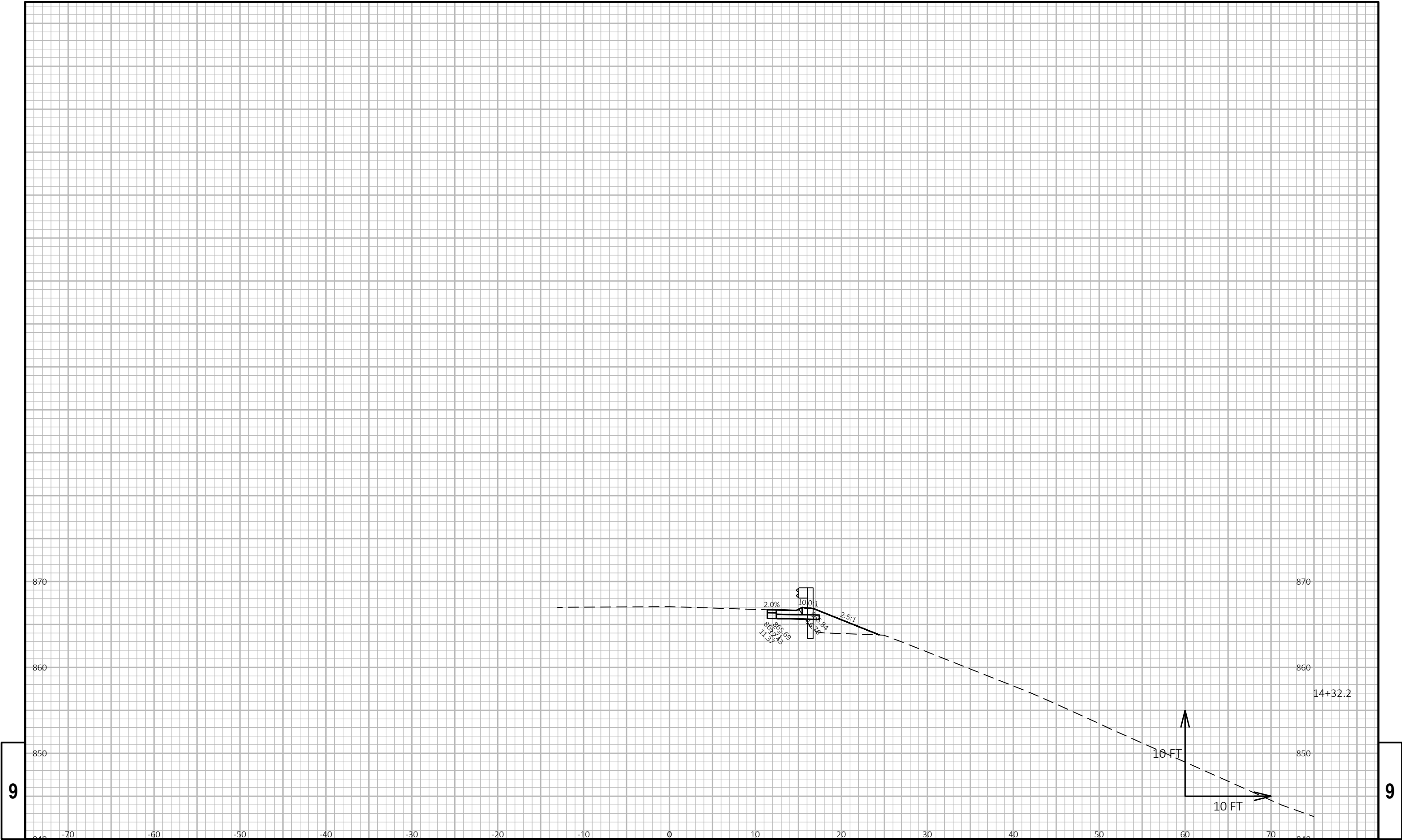


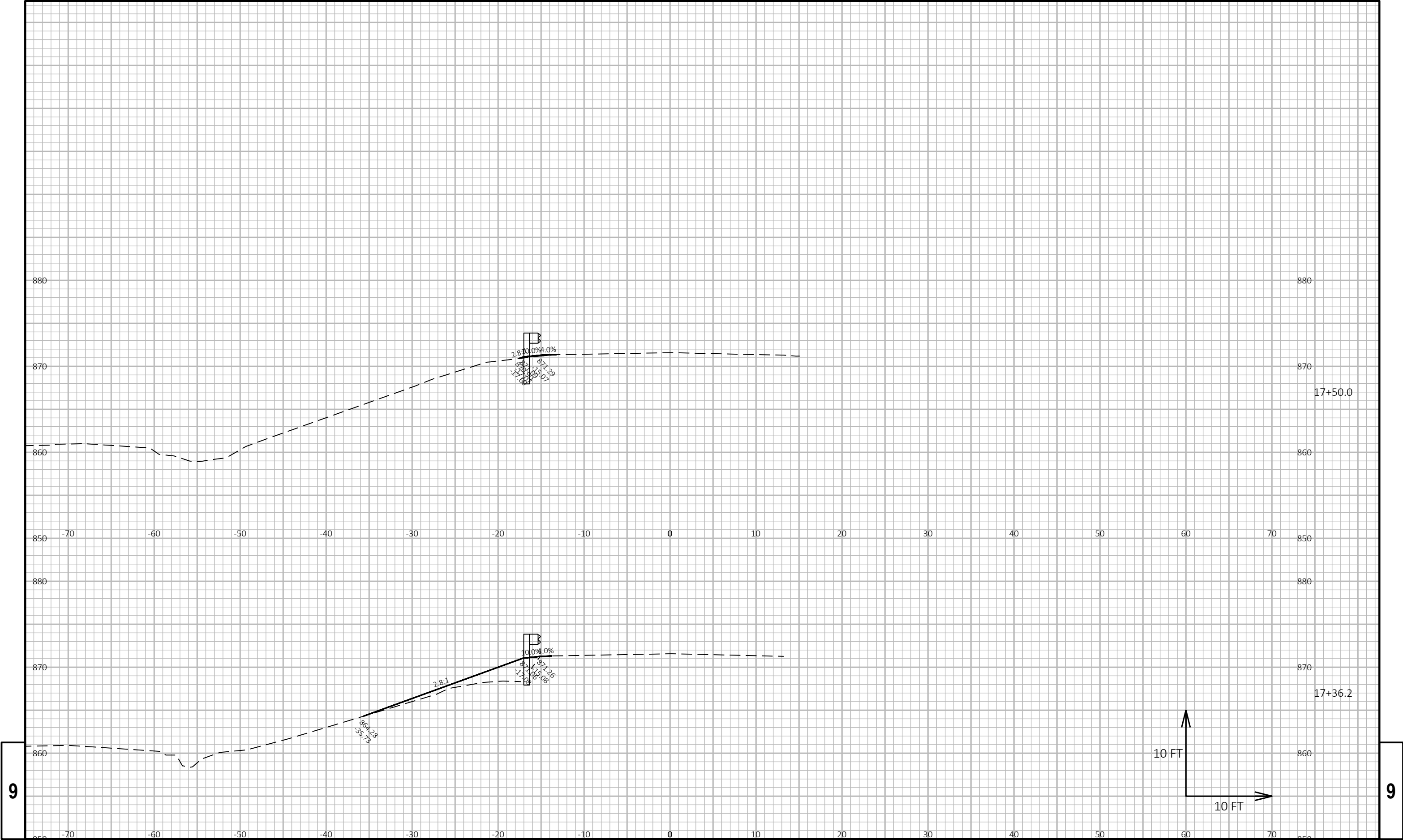
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	PROJECT NO: 1227-12-72		HWY: IH 43		COUNTY: MANITOWOC		CROSS SECTIONS: COOPERSTOWN RD		SHEET		
									E		



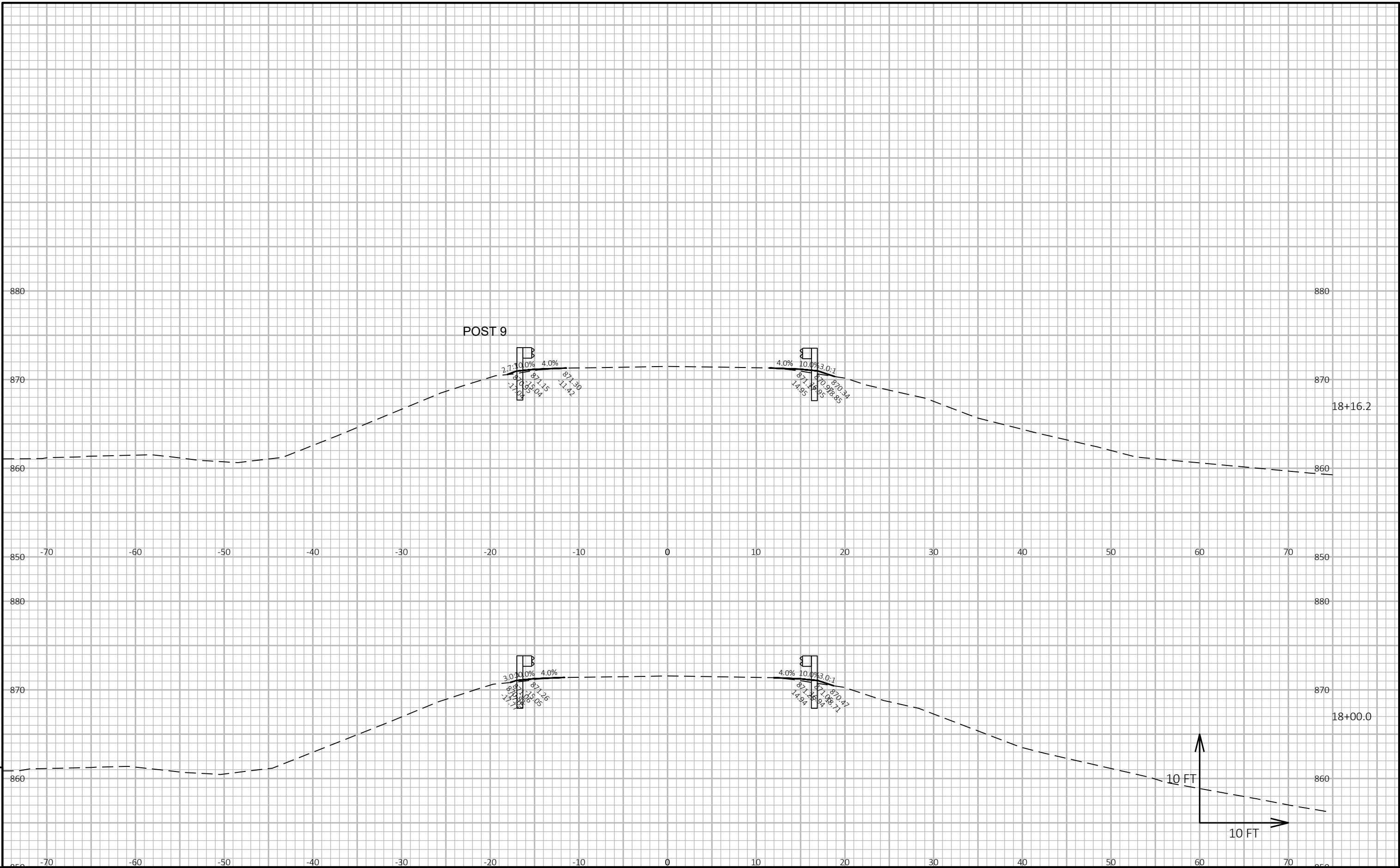


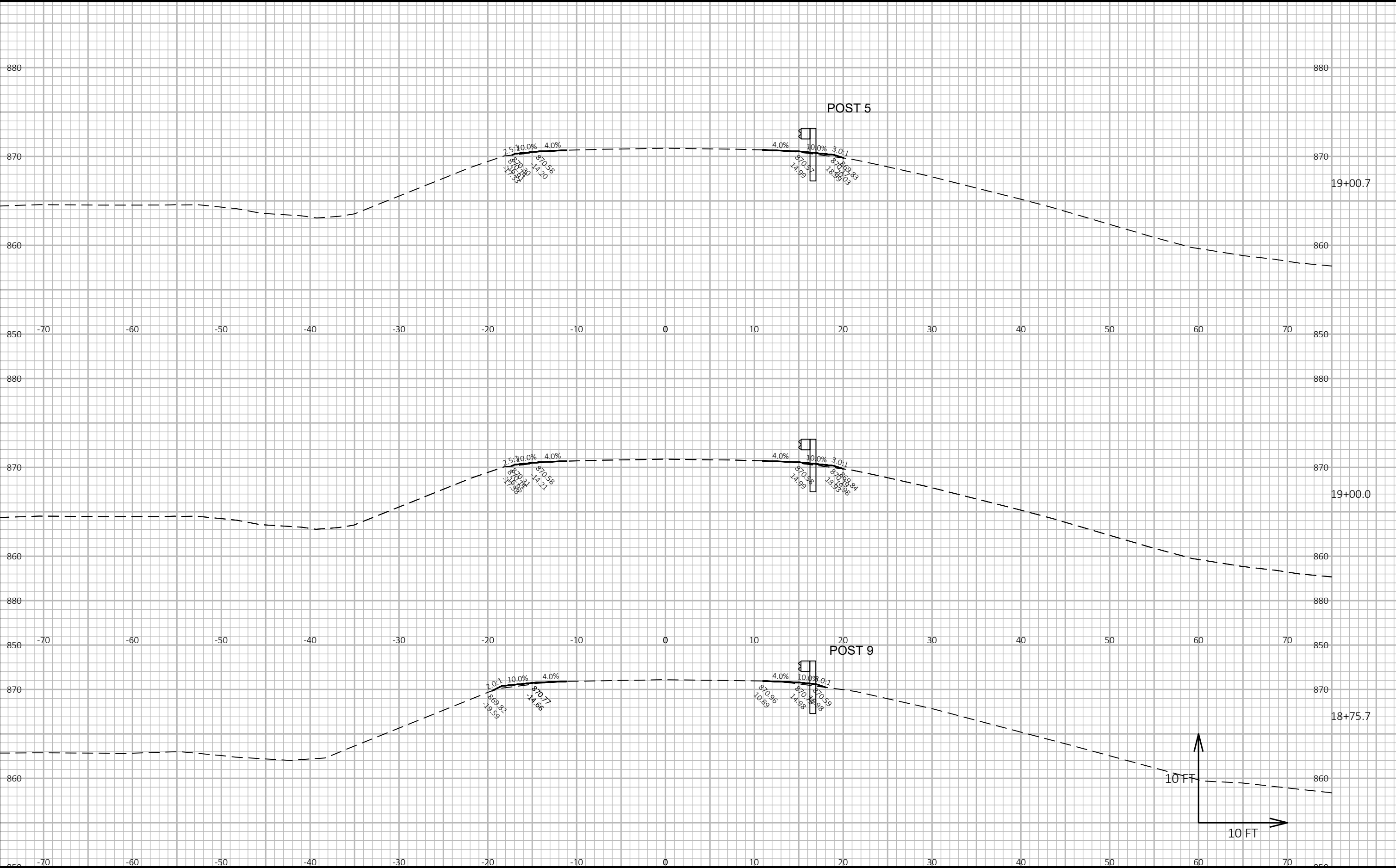




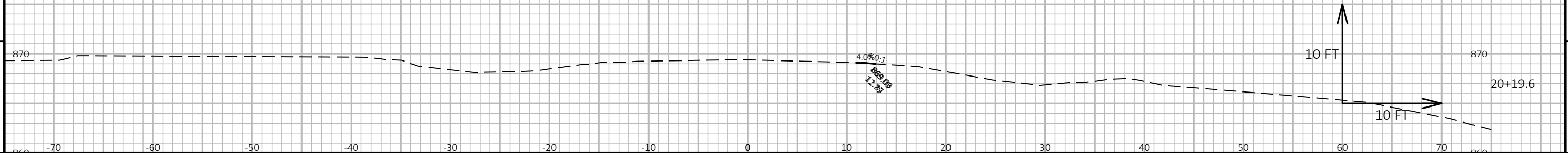


PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: COOPERSTOWN RD	SHEET E
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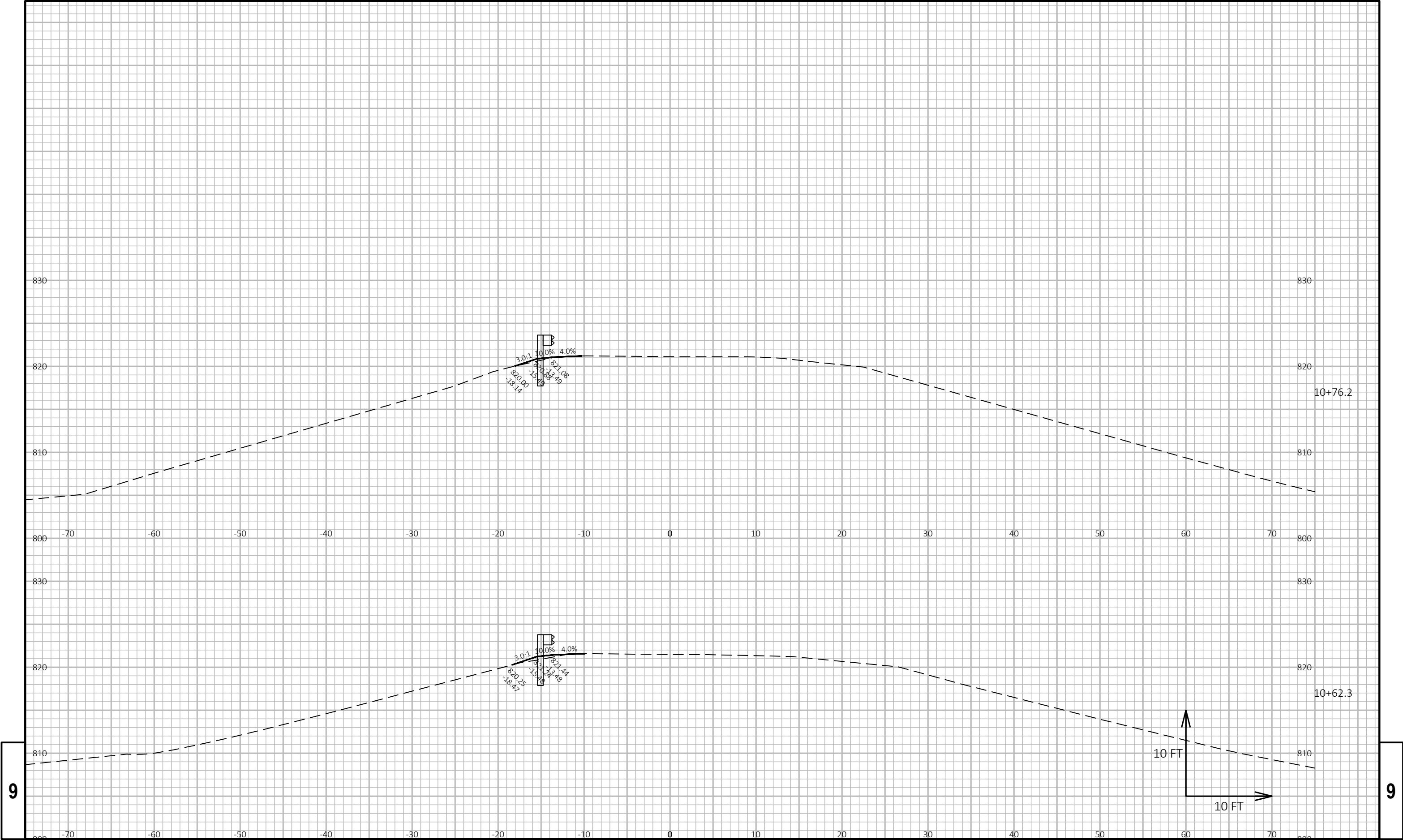


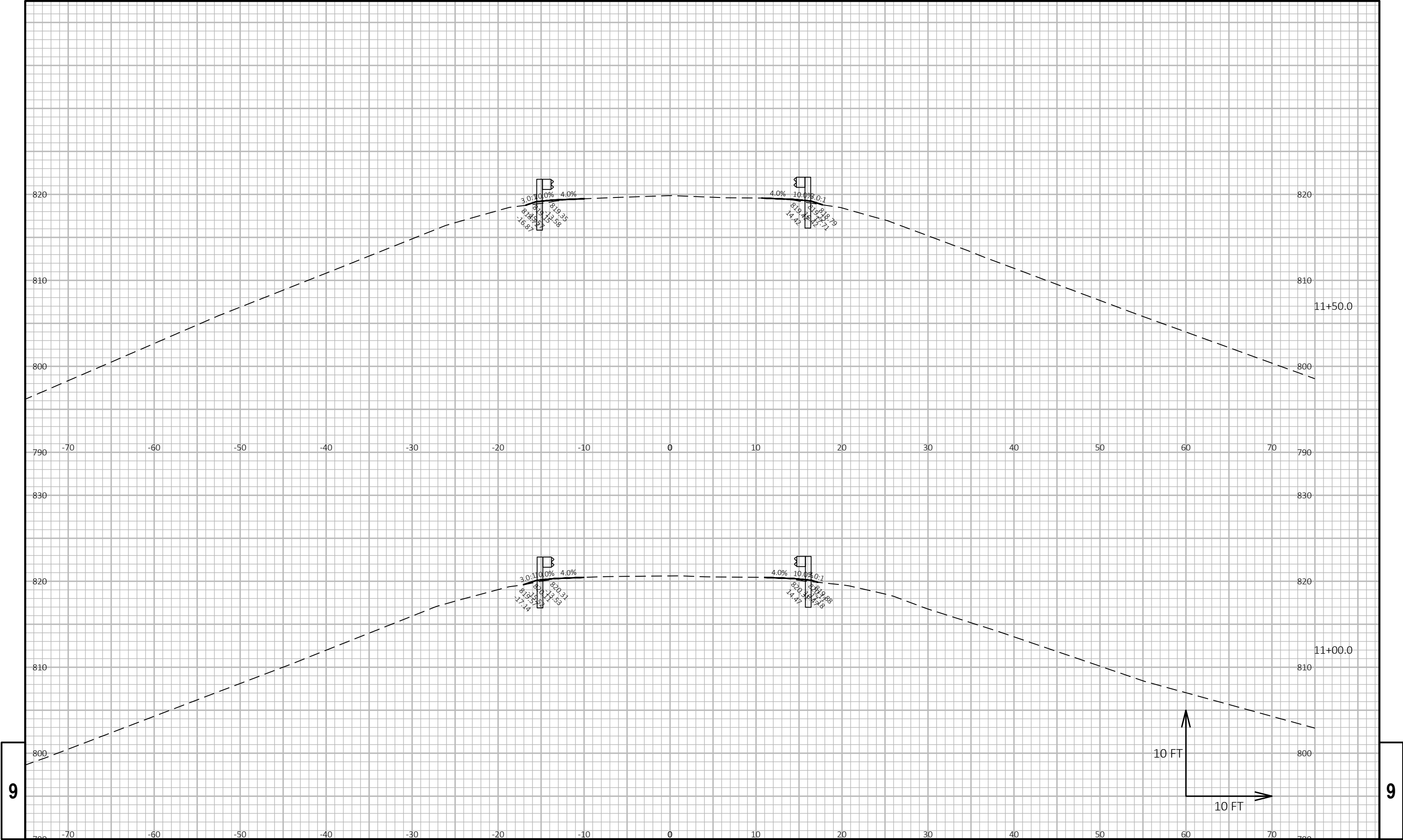
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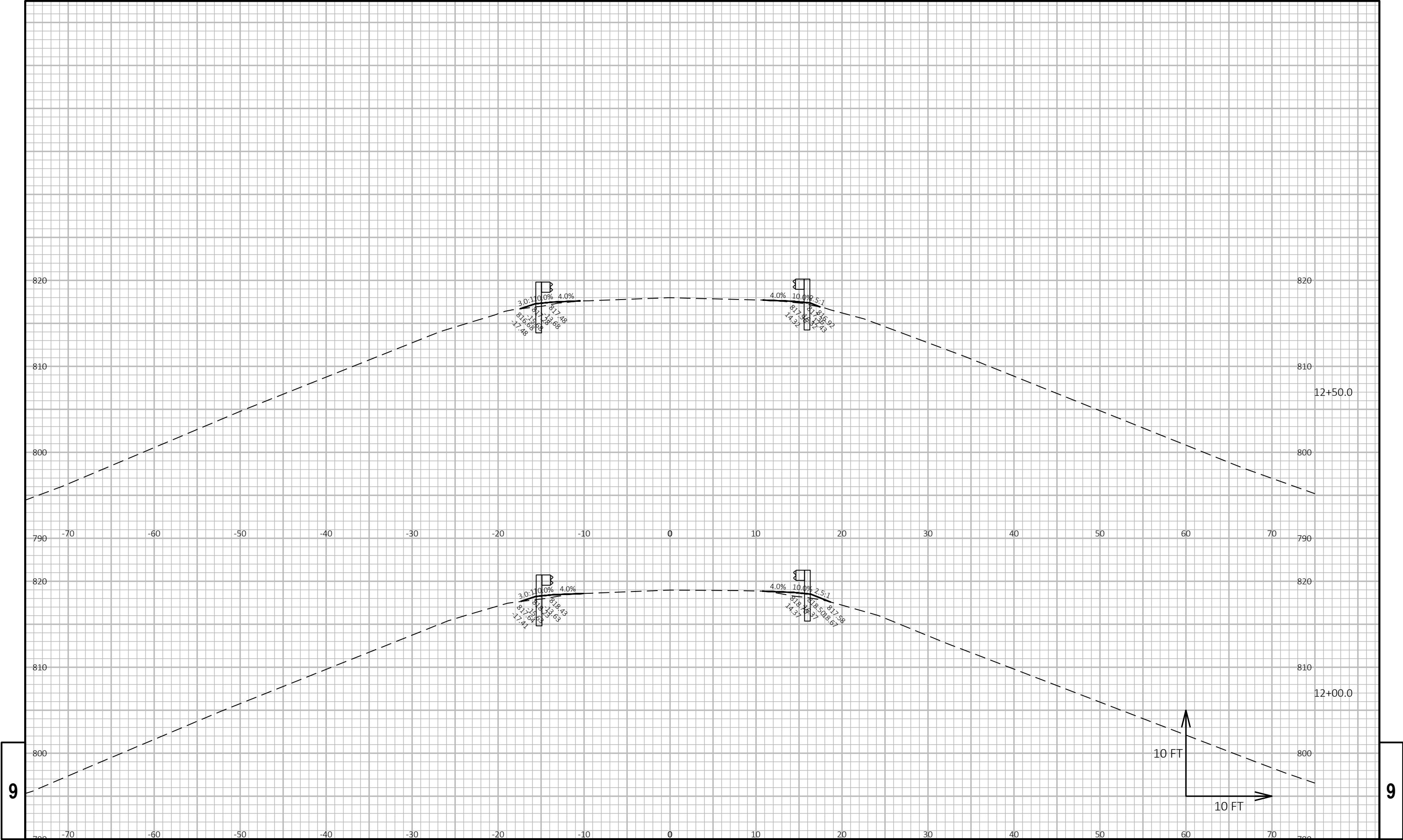


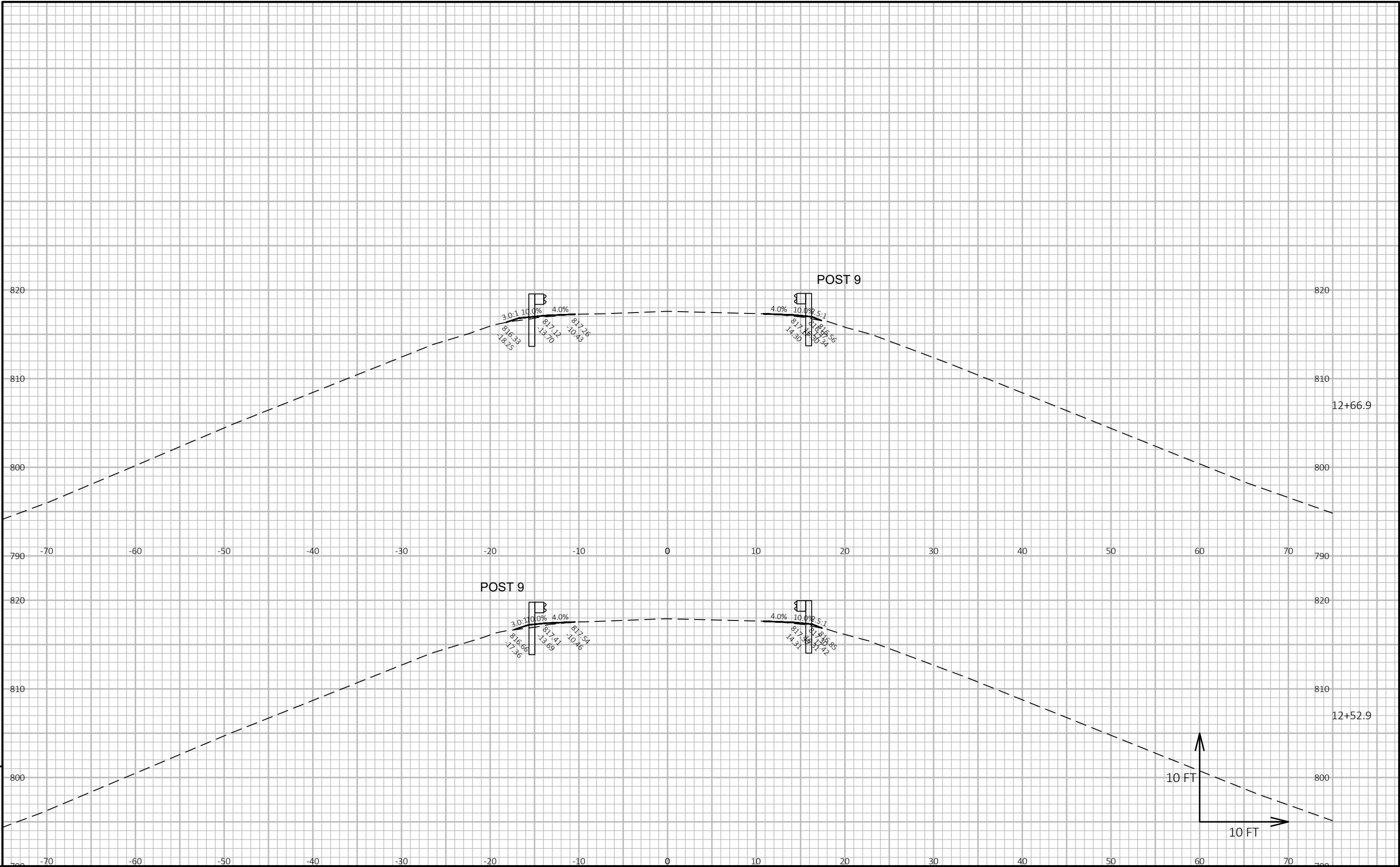
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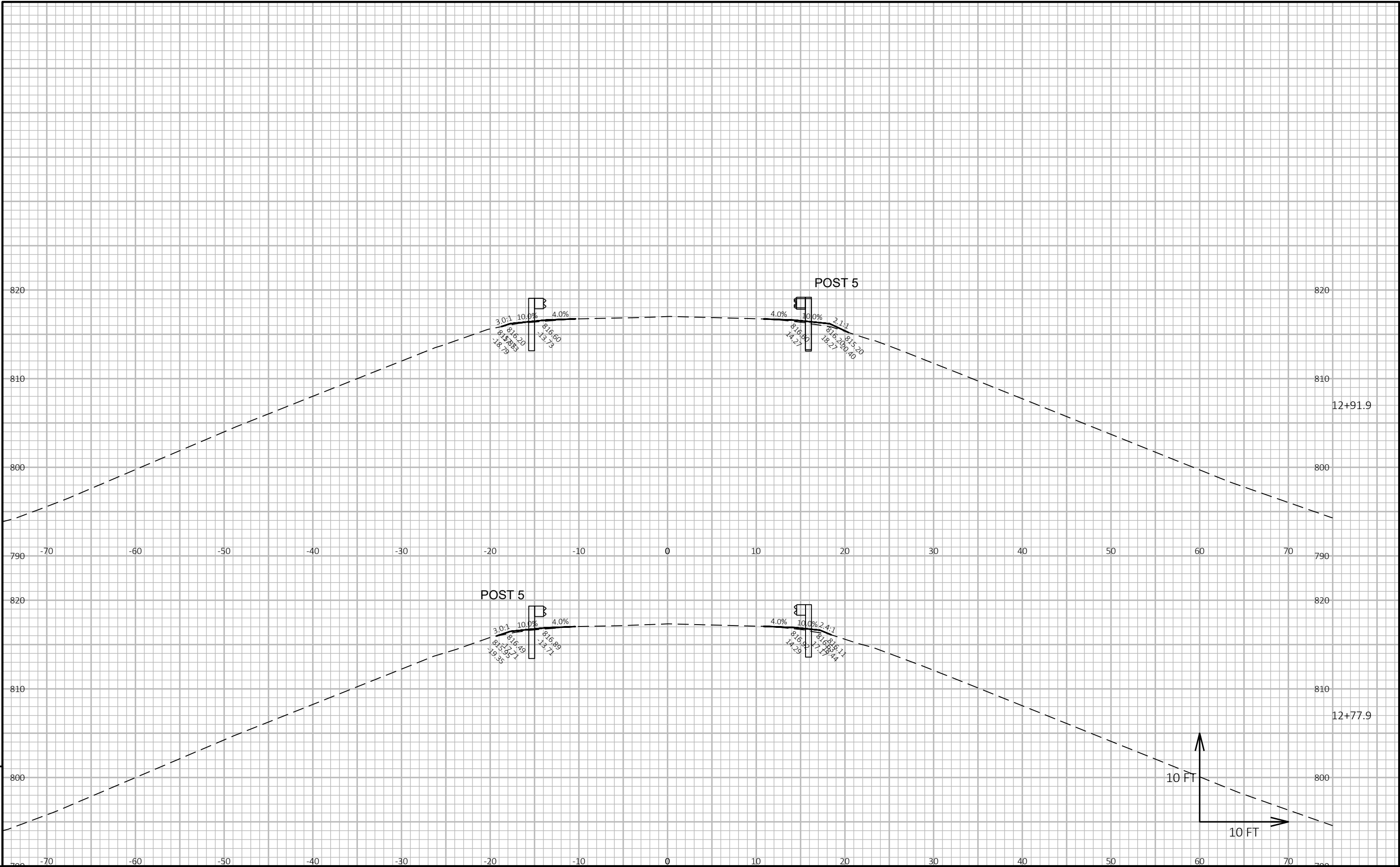
PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: COOPERSTOWN RD	SHEET E
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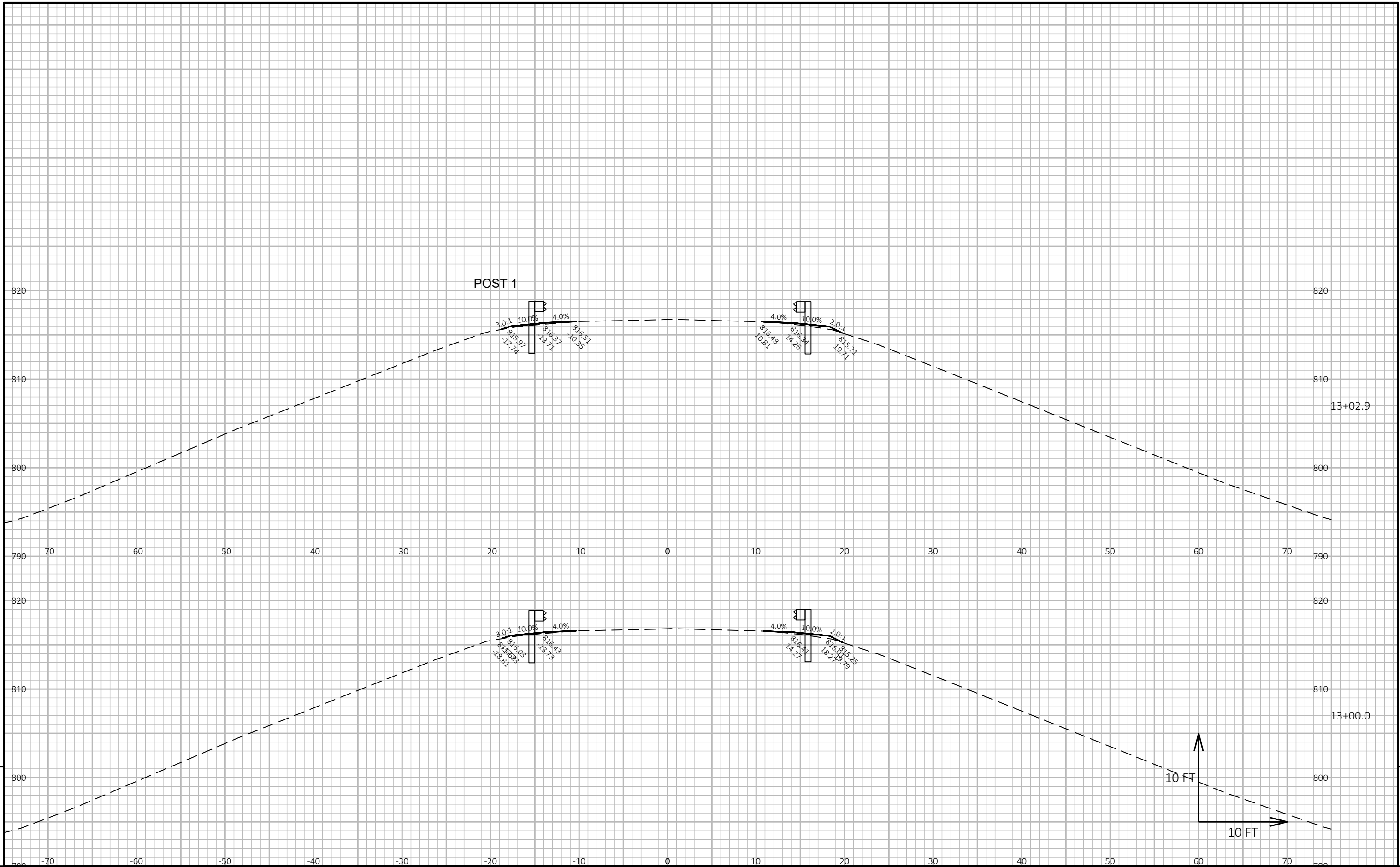


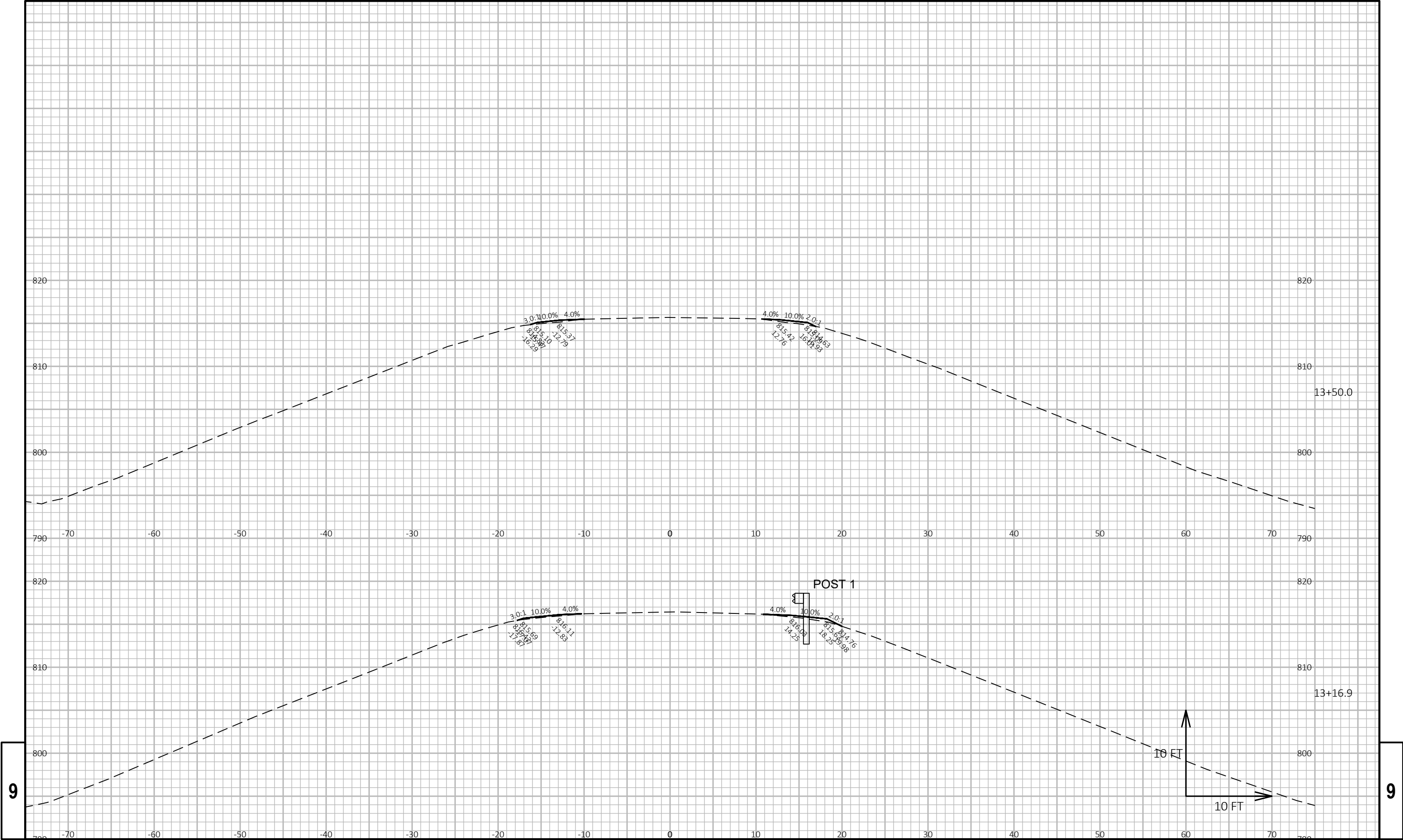


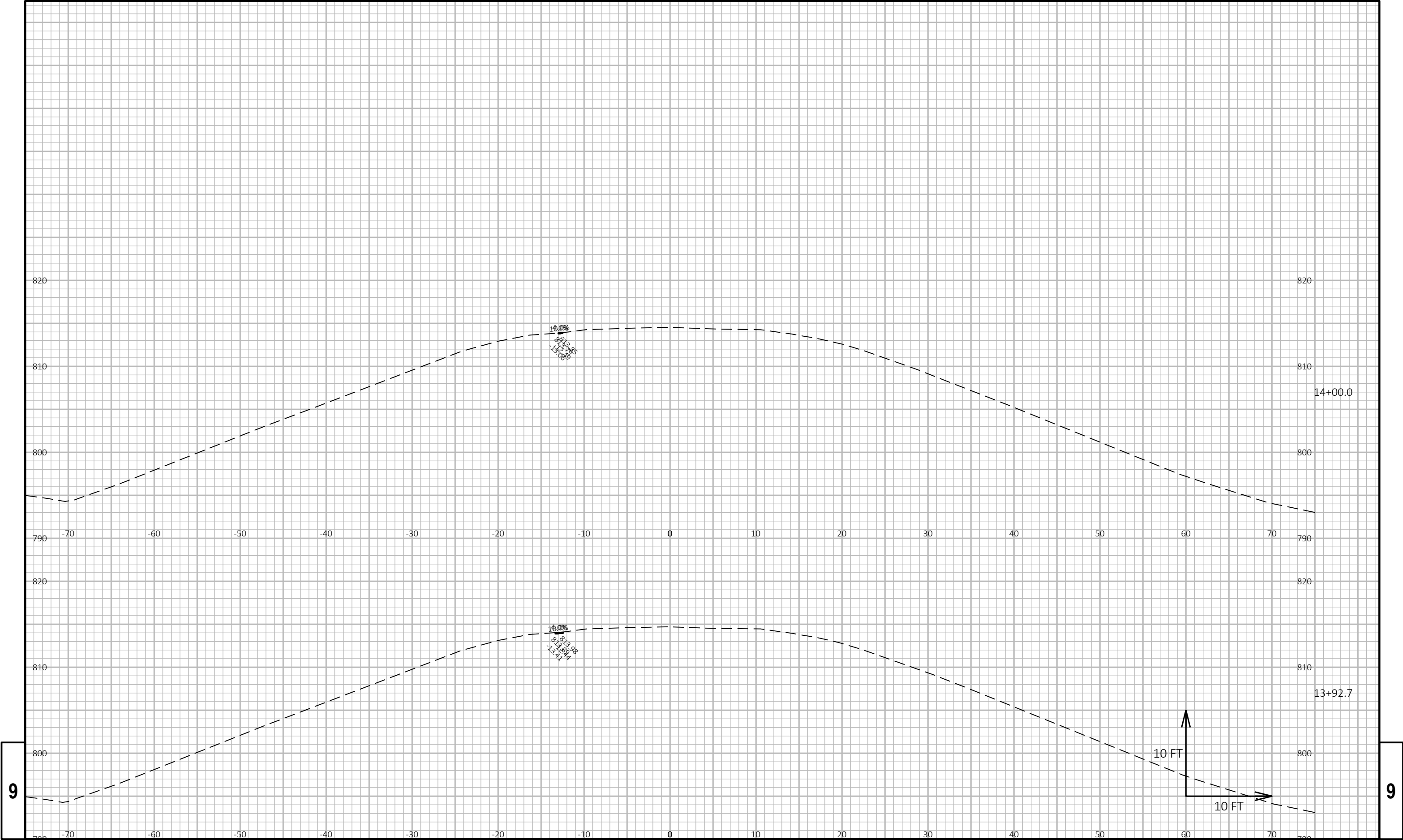












PROJECT NO: 1227-12-72	HWY: IH 43	COUNTY: MANITOWOC	CROSS SECTIONS: PLEASANT RD	SHEET E
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