



Andy Beshear
GOVERNOR

TRANSPORTATION CABINET

200 Mero Street
Frankfort, Kentucky 40601

Jim Gray
SECRETARY

March 19, 2026

CALL NO. 206
CONTRACT ID NO. 261112
ADDENDUM # 1

Subject: Bath County, NHPP 0646(068)
Letting March 26, 2026

(1) Added - Proposal Notes & Plan - Pages 1-151 of 151

Proposal revisions are available at <http://transportation.ky.gov/Construction-Procurement/>.

If you have any questions, please contact us at 502-564-3500.

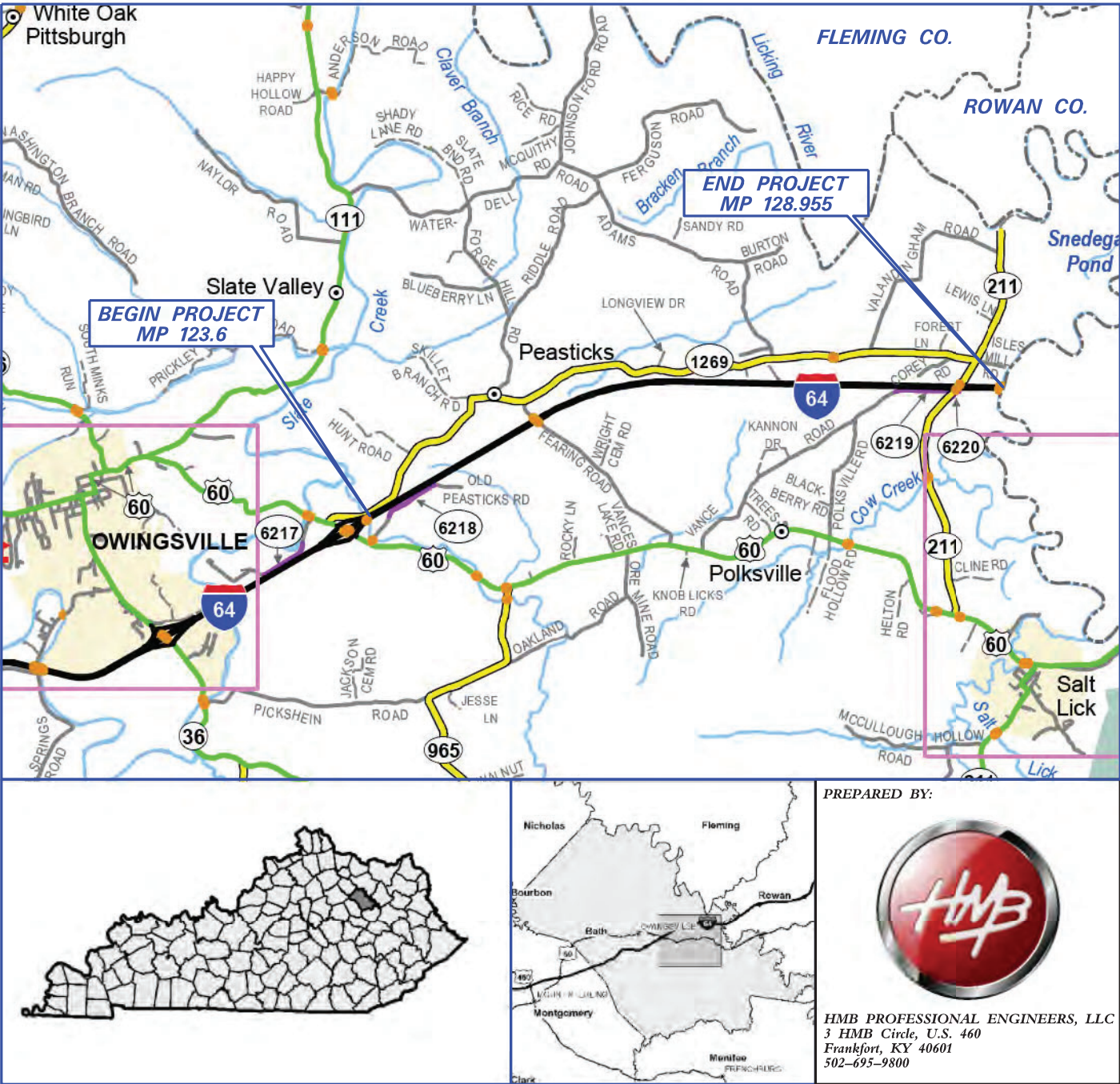
Sincerely,

A handwritten signature in black ink that reads "Rachel Mills".

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mr
Enclosures

PROJECT LOCATION



PROJECT LENGTH: 5.355 MILES
AADT: 18,733 (2024)

BATH COUNTY

PROJECT NUMBER:

NHPP 0646(068), FD52 006 0064 123-129

ITEM NUMBER:

9-22046

LETTING DATE:

MARCH 19, 2026

RECOMMENDED BY:

ANDRE JOHANNES, PE
(Project Manager)

DATE:

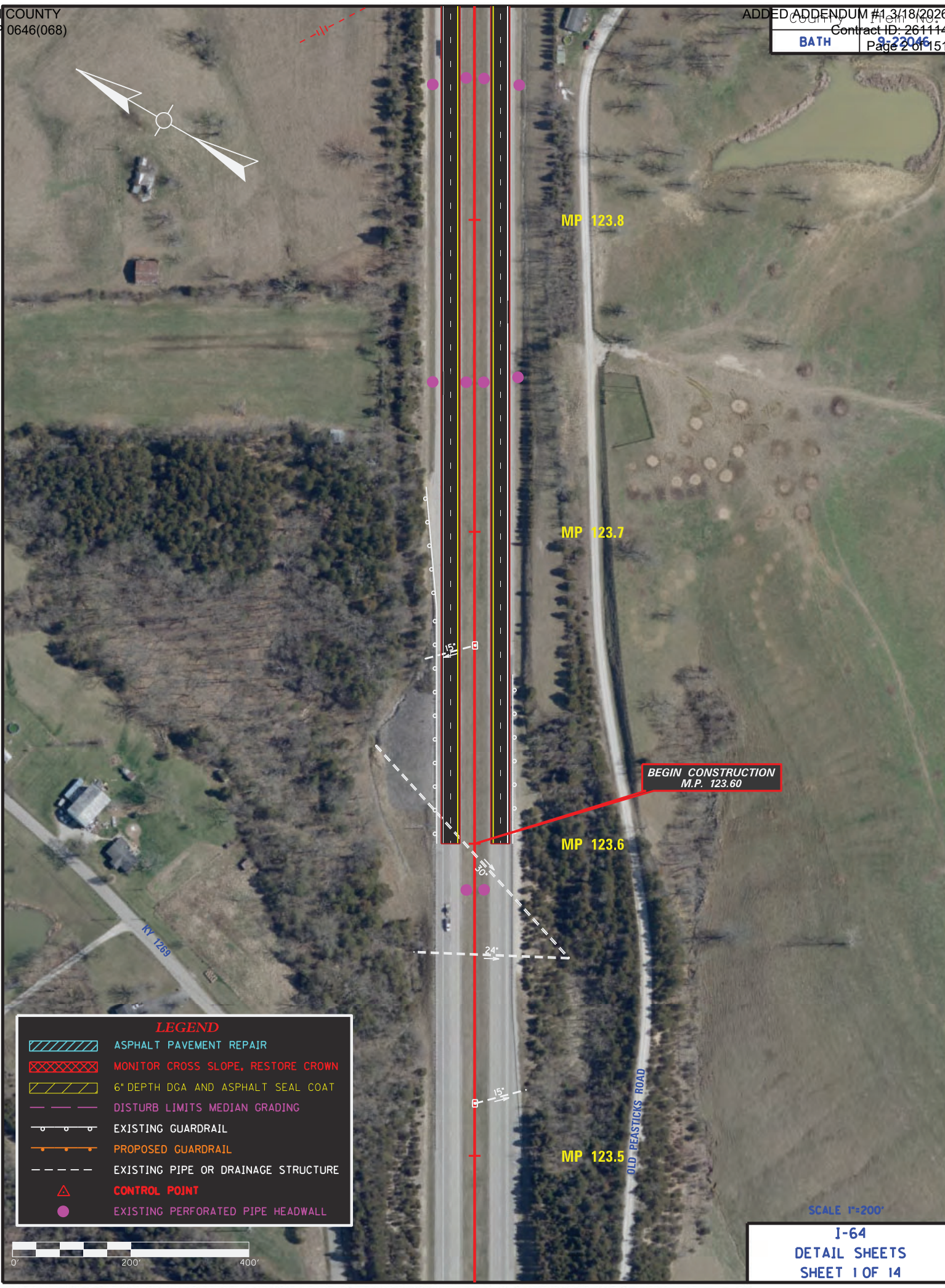
PLAN APPROVED BY:

DATE:

(State Highway Engineer)

FHWA APPROVED BY:

DATE:

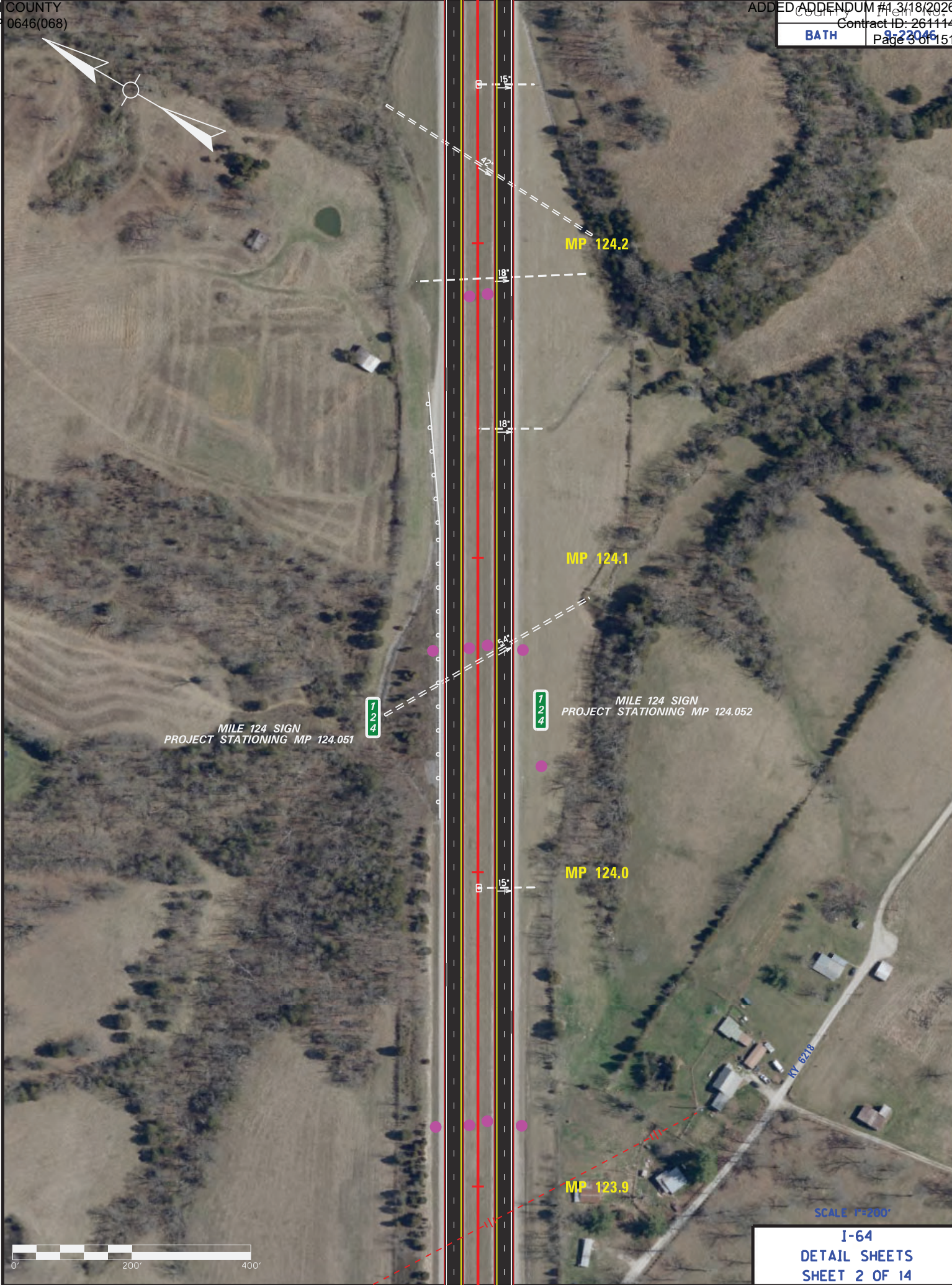


LEGEND

- ASPHALT PAVEMENT REPAIR
- MONITOR CROSS SLOPE, RESTORE CROWN
- 6" DEPTH DGA AND ASPHALT SEAL COAT
- DISTURB LIMITS MEDIAN GRADING
- EXISTING GUARDRAIL
- PROPOSED GUARDRAIL
- EXISTING PIPE OR DRAINAGE STRUCTURE
- CONTROL POINT
- EXISTING PERFORATED PIPE HEADWALL



SCALE 1"=200'



SCALE 1"=200'

I-64
DETAIL SHEETS
SHEET 2 OF 14



MONITOR CROSS SLOPES DURING
ASPHALT PLACEMENT, RESTORE
PAVEMENT CROWN WHERE WARRANTED

MP 124.6

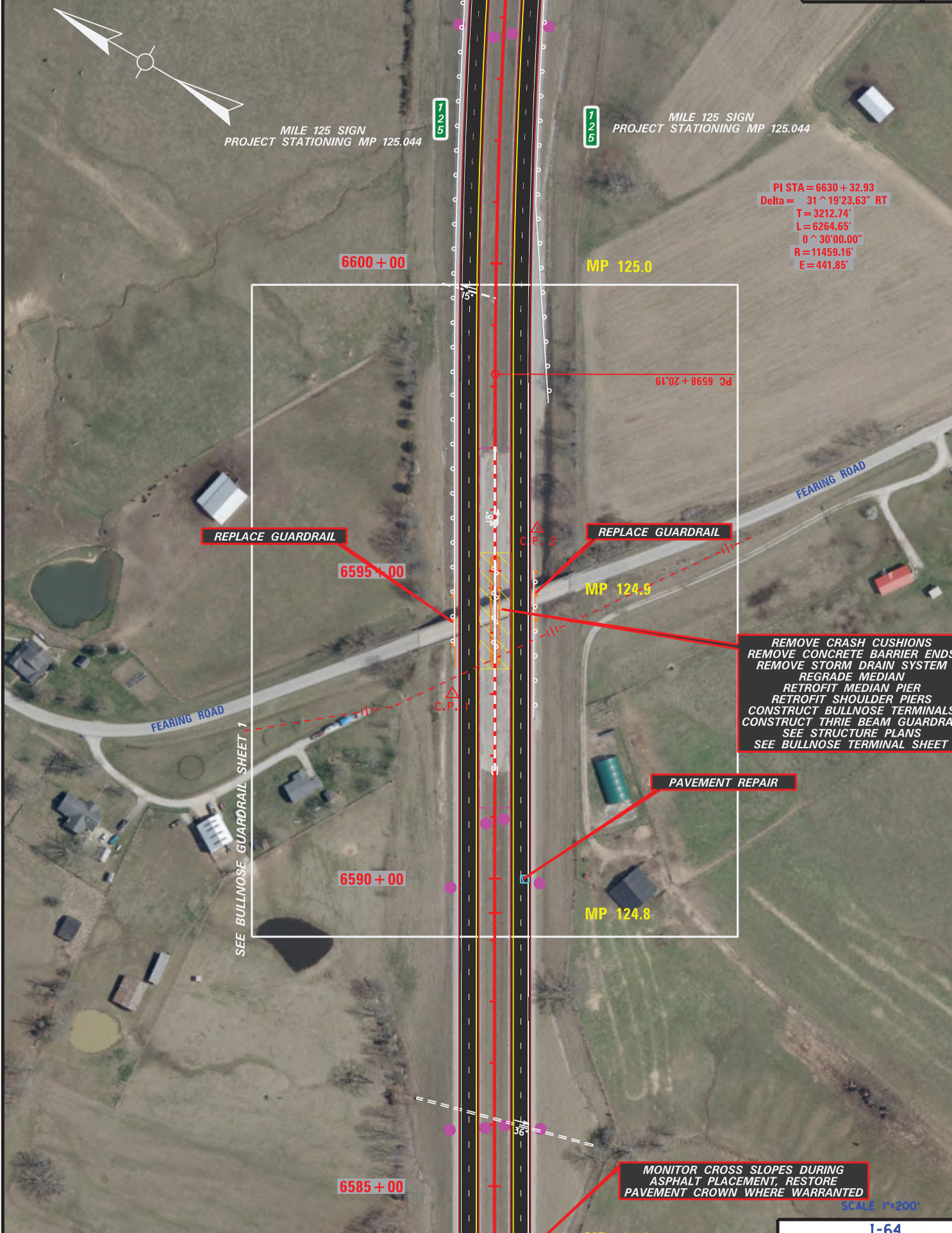
MP 124.5

MP 124.4

MP 124.3



SCALE 1"=200'



PI STA = 6630 + 32.93
Delta = 31 ^ 19' 23.63" RT
T = 3212.74'
L = 6264.65'
O ^ 30' 00.00"
R = 11459.16'
E = 441.85'

REMOVE CRASH CUSHIONS
REMOVE CONCRETE BARRIER ENDS
REMOVE STORM DRAIN SYSTEM
REGRADE MEDIAN
RETROFIT MEDIAN PIER
RETROFIT SHOULDER PIERS
CONSTRUCT BULLNOSE TERMINALS
CONSTRUCT THREE BEAM GUARDRAIL
SEE STRUCTURE PLANS
SEE BULLNOSE TERMINAL SHEET

MONITOR CROSS SLOPES DURING
ASPHALT PLACEMENT, RESTORE
PAVEMENT CROWN WHERE WARRANTED

SCALE 1"=200'



PAVEMENT REPAIR

MP 125.4

MP 125.3

MP 125.2

MP 125.1



SCALE 1"=200'



KY 1289

MP 125.8

MP 125.7

MP 125.6

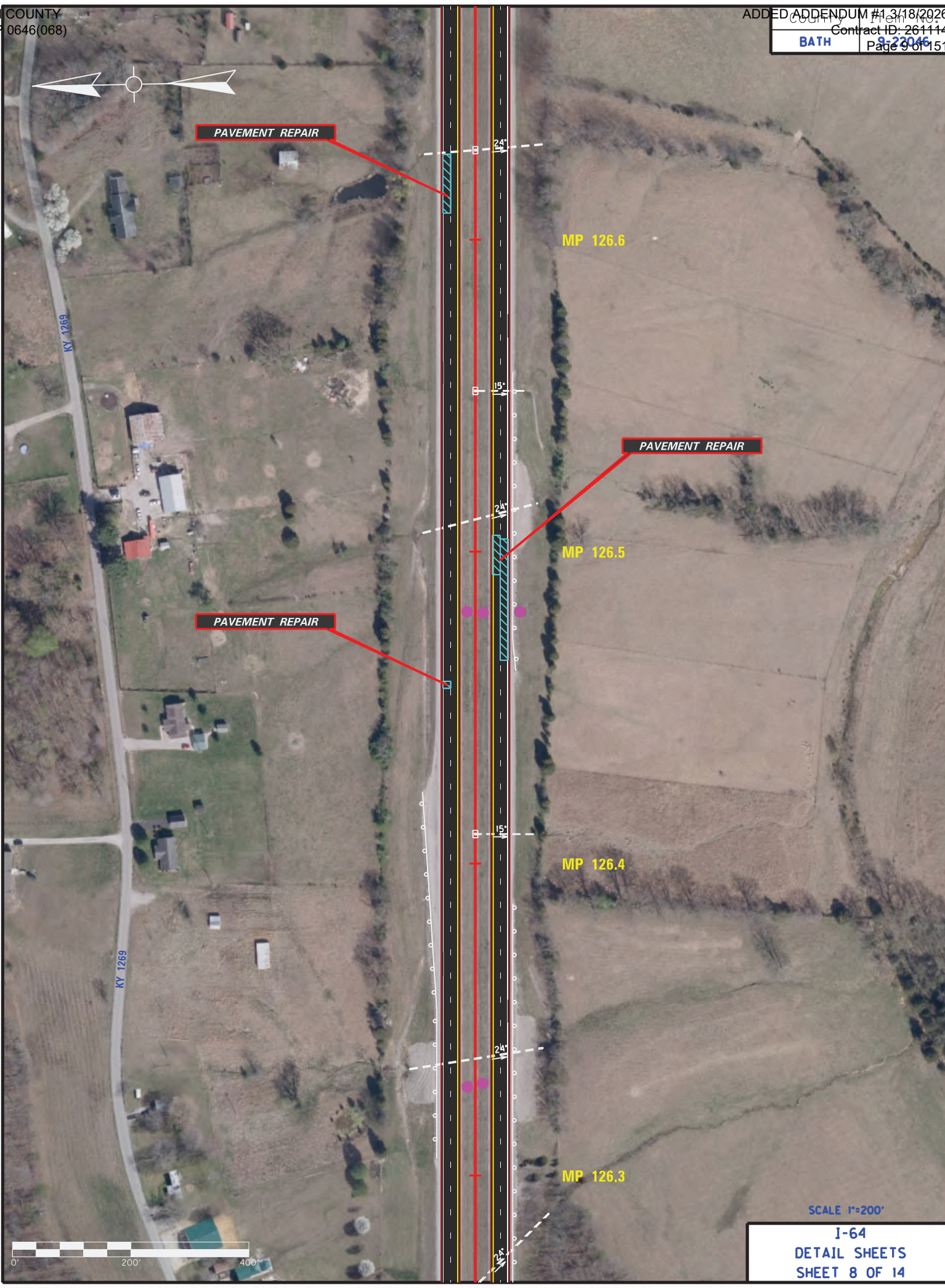
MP 125.5



SCALE 1"=200'

I-64
DETAIL SHEETS
SHEET 6 OF 14







PAVEMENT REPAIR

MILE 127 SIGN
PROJECT STATIONING MP 126.956

127

MP 127.0

127

MILE 127 SIGN
PROJECT STATIONING MP 126.956

MP 126.9

MONITOR CROSS SLOPES DURING
ASPHALT PLACEMENT, RESTORE
PAVEMENT CROWN WHERE WARRANTED

PAVEMENT REPAIR

MP 126.8

MP 126.7

KY 1269



SCALE 1"=200'



PAVEMENT REPAIR

MP 127.4

MP 127.3

MP 127.2

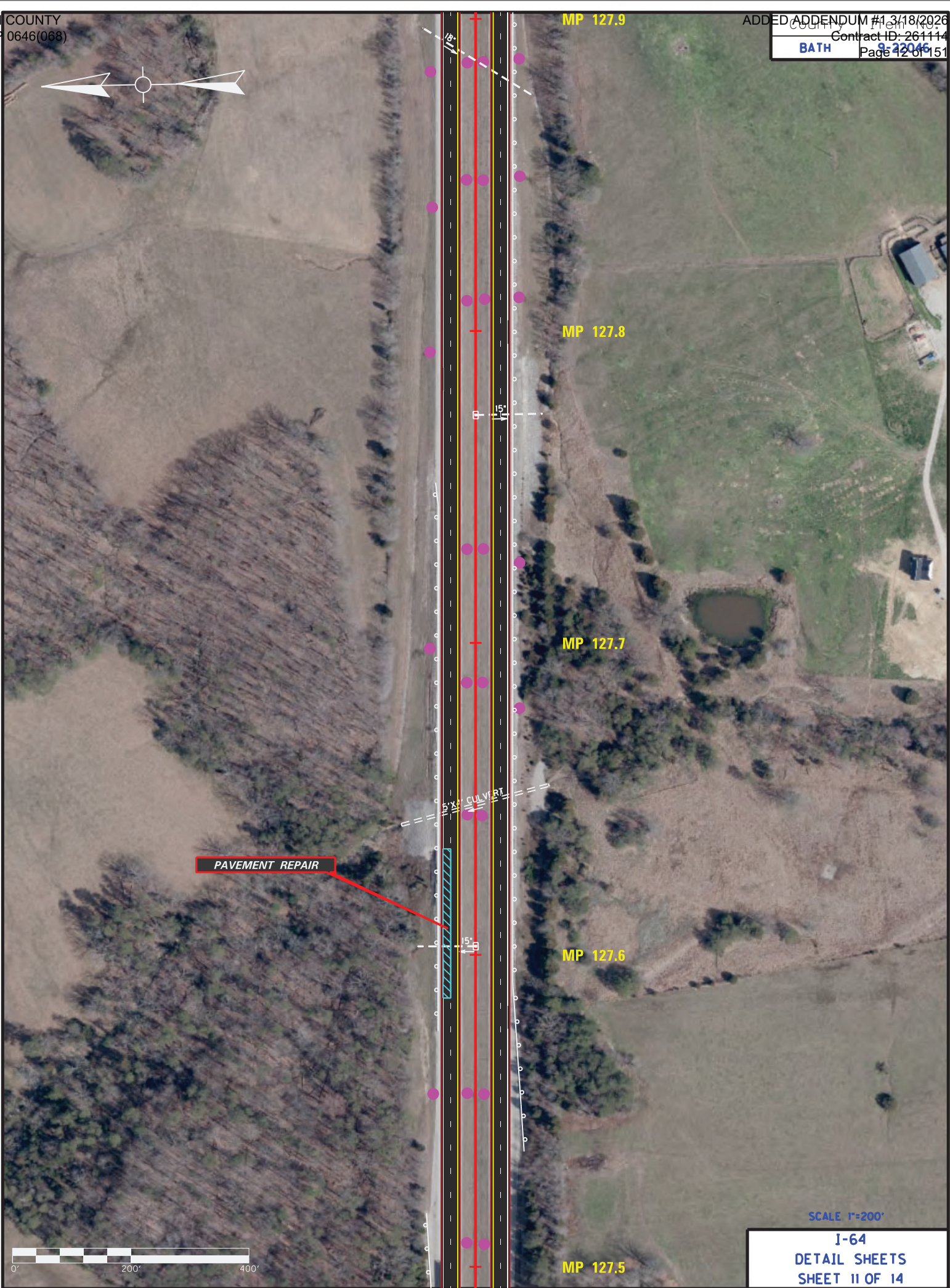
MP 127.1

16'x10' COVERT



SCALE 1"=200'

I-64
DETAIL SHEETS
SHEET 10 OF 14



PAVEMENT REPAIR

5'x20' CULVERT

MP 127.9

MP 127.8

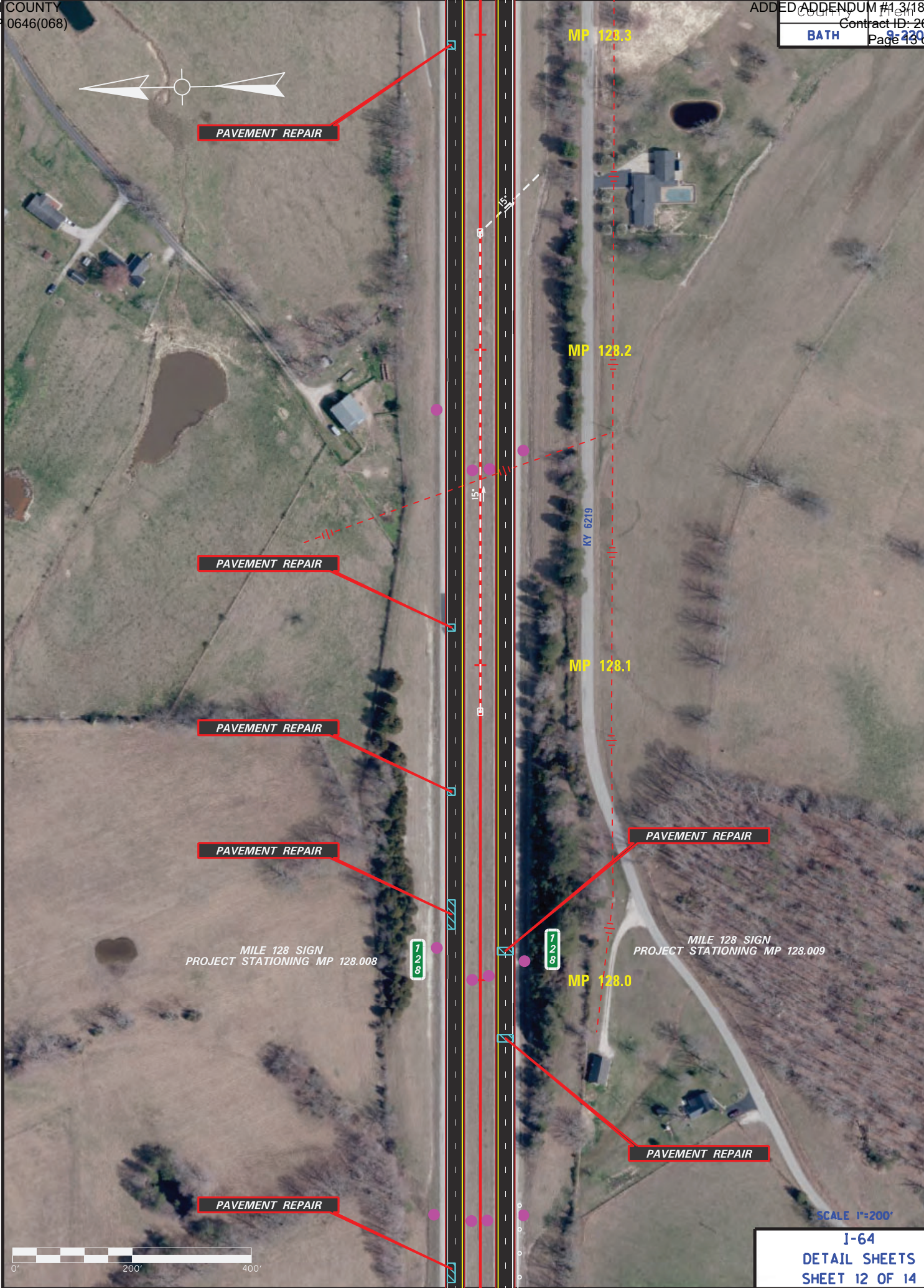
MP 127.7

MP 127.6

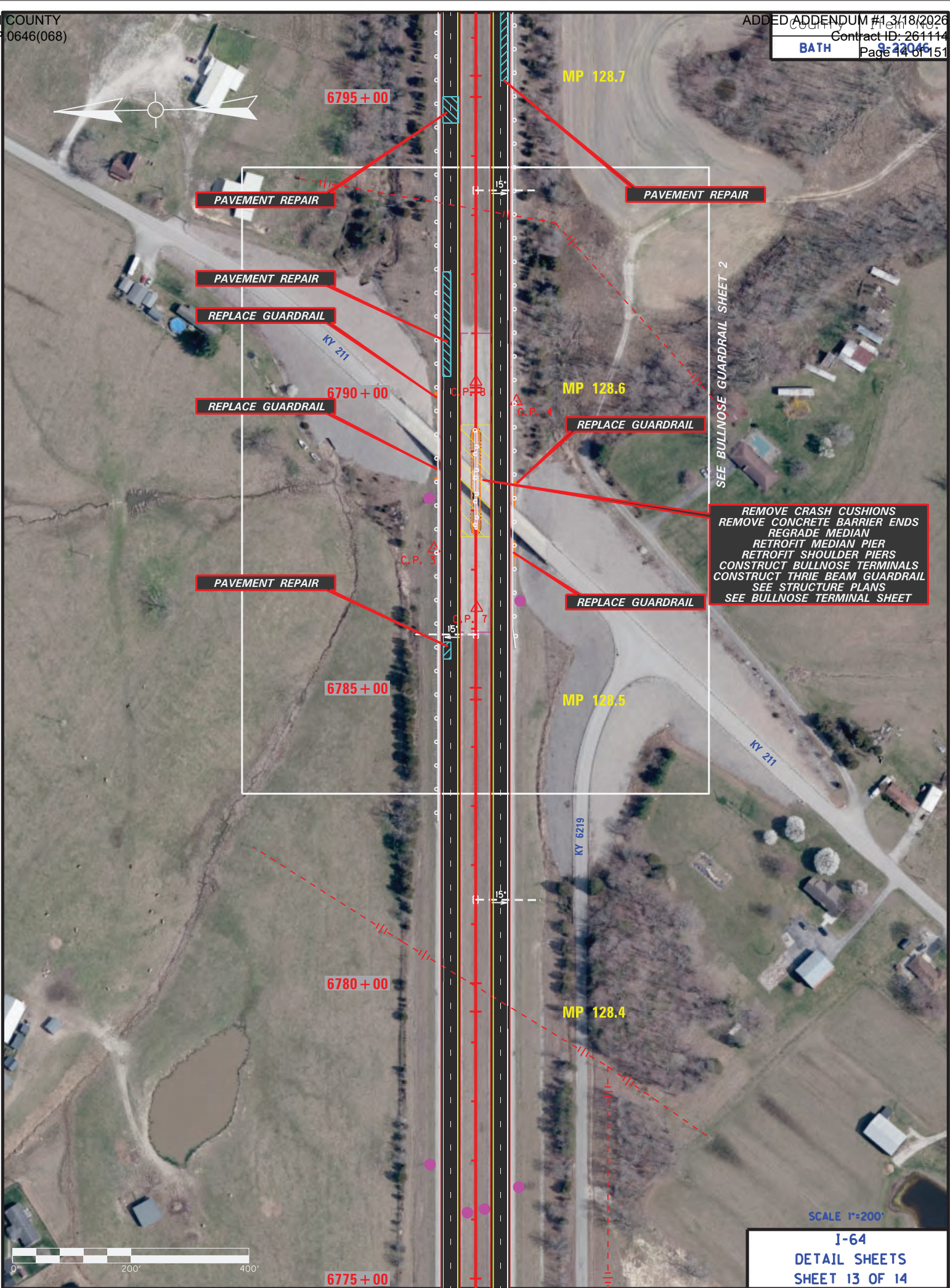
MP 127.5

SCALE 1"=200'

I-64
DETAIL SHEETS
SHEET 11 OF 14



SCALE 1"=200'

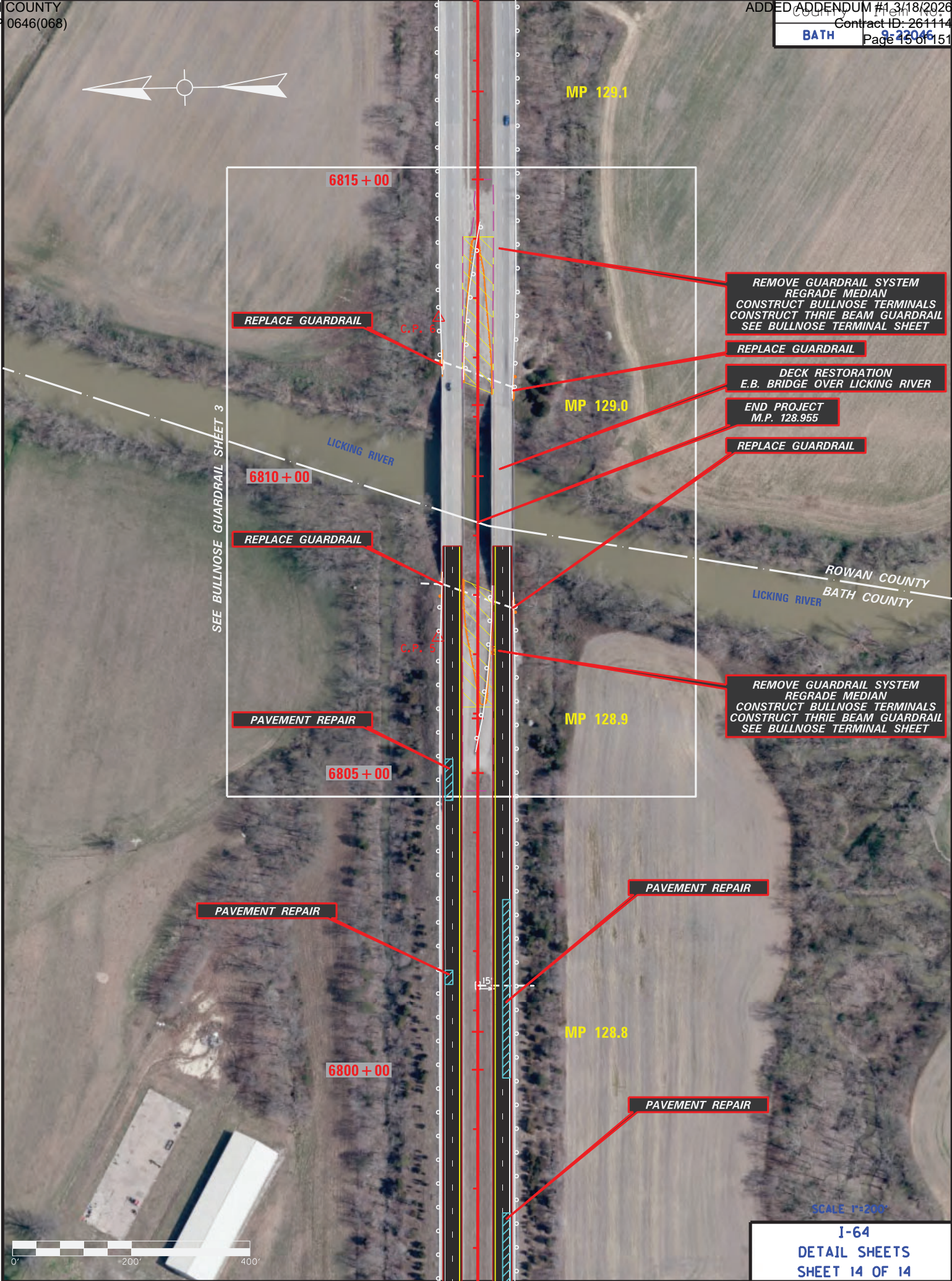


REMOVE CRASH CUSHIONS
REMOVE CONCRETE BARRIER ENDS
REGRADE MEDIAN
RETROFIT MEDIAN PIER
RETROFIT SHOULDER PIERS
CONSTRUCT BULLNOSE TERMINALS
CONSTRUCT THRIE BEAM GUARDRAIL
SEE STRUCTURE PLANS
SEE BULLNOSE TERMINAL SHEET

SEE BULLNOSE GUARDRAIL SHEET 2

SCALE 1"=200'

I-64
DETAIL SHEETS
SHEET 13 OF 14



SEE BULLNOSE GUARDRAIL SHEET 3

REPLACE GUARDRAIL

REMOVE GUARDRAIL SYSTEM
REGRADE MEDIAN
CONSTRUCT BULLNOSE TERMINALS
CONSTRUCT THRIE BEAM GUARDRAIL
SEE BULLNOSE TERMINAL SHEET

REPLACE GUARDRAIL

DECK RESTORATION
E.B. BRIDGE OVER LICKING RIVER

END PROJECT
M.P. 128.955

REPLACE GUARDRAIL

REPLACE GUARDRAIL

REMOVE GUARDRAIL SYSTEM
REGRADE MEDIAN
CONSTRUCT BULLNOSE TERMINALS
CONSTRUCT THRIE BEAM GUARDRAIL
SEE BULLNOSE TERMINAL SHEET

PAVEMENT REPAIR

PAVEMENT REPAIR

PAVEMENT REPAIR

PAVEMENT REPAIR

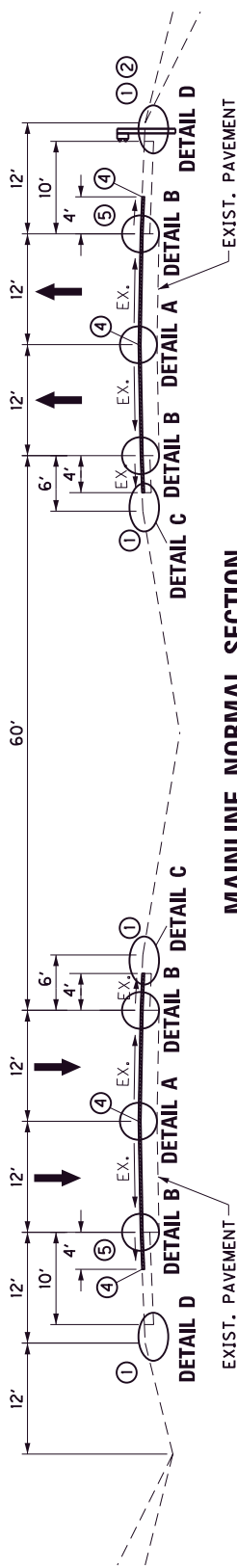


SCALE 1"=200'

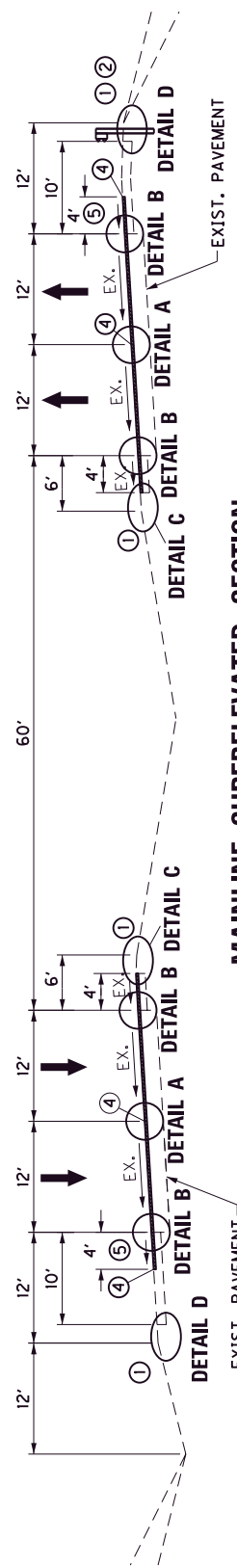
County	Item No.	Sheet
BATH	9-22046	

PROPOSED TYPICAL SECTIONS

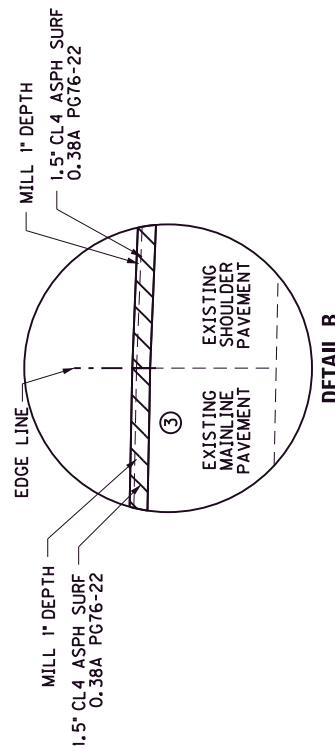
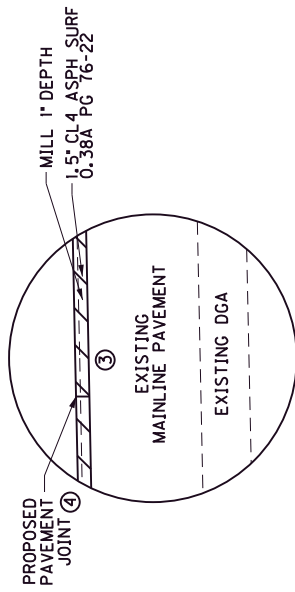
I-64



MAINLINE NORMAL SECTION



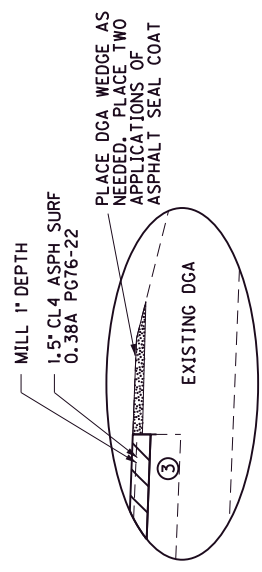
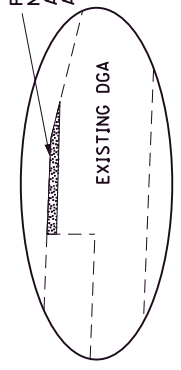
MAINLINE SUPERELEVATED SECTION



SURFACING SCHEDULE

MAINLINE & BOTH SHOULDERS	
ASPHALT PAVEMENT MILLING AND TEXTURING.....	1.0\"/>
CL4 ASPH SURFACE 0.38A PG76-22.....	1.5\"/>

- ① ASPHALT SEAL REQUIRED FROM OUTSIDE EDGE OF PAVED SHOULDER TO A POINT 2 FOOT DOWN THE DITCH OR FILL SLOPE (Where Applicable). TWO APPLICATIONS OF THE FOLLOWING : ASPHALT SEAL COAT 2.4 lbs. / S.Y. ASPHALT SEAL AGGREGATE 20 lbs. / S.Y.
- ② USE 7\"/>
- ③ APPLY ASPHALT MATERIAL FOR TACK AT A RATE OF 0.7 LBS/SY BETWEEN EACH LAYER OF ASPH. CONCRETE.
- ④ JOINT ADHESIVE
- ⑤ CONSTRUCT AT VARIABLE SLOPE, MATCHING EXISTING SHOULDER GRADE AT JOINT.

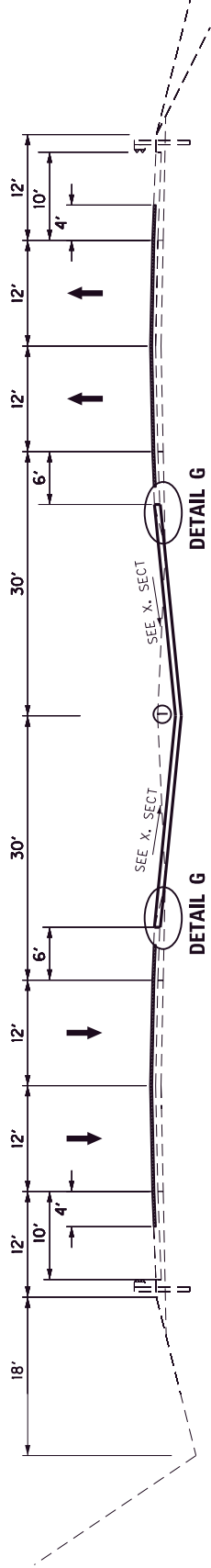


NOT TO SCALE

I-64
TYPICAL SECTIONS

PROPOSED TYPICAL SECTIONS
I-64

County	Item No.	Sheet
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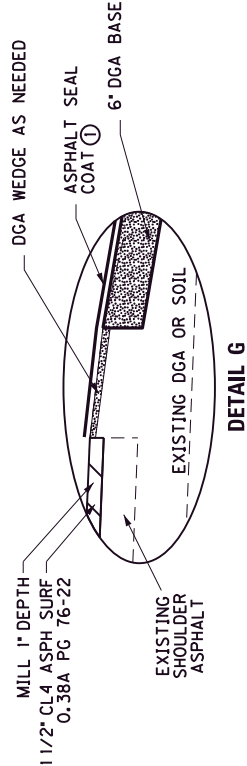
MEDIAN GRADING FOR BULLNOSE TERMINALS

SURFACING SCHEDULE

MEDIAN GRADING

DGA BASE.....	6" DEPTH
ASPHALT SEAL COAT/SEAL AGG.....	2 APPL.

- ① ASPHALT SEAL REQUIRED FROM OUTSIDE EDGE OF PAVED SHOULDER INCLUDING FULL WIDTH OF MEDIAN WITH TWO APPLICATIONS OF THE FOLLOWING :
ASPHALT SEAL COAT 2.4 lbs. / S.Y.
ASPHALT SEAL AGGREGATE 20 lbs. / S.Y.



NOTE: PAVING OF MEDIAN GRADING REQUIRED FROM 4' OUTSIDE THE LIMITS OF THE BULLNOSE TERMINALS AND INCLUDING AREAS IN WHICH ACCESS FOR MOWING EQUIPMENT IS ELIMINATED. SEE PLAN SHEETS.

I-64
TYPICAL SECTIONS

NOT TO SCALE

ITEM NUMBER	ITEM	UNIT	QUANTITY
00001	DGA BASE①	TON	2,290
00100	ASPHALT SEAL AGGREGATE①	TON	342
00103	ASPHALT SEAL COAT①	TON	41
00194	LEVELING & WEDGING PG76-22①	TON	250
00219	CL4 ASPH BASE 1.00D PG76-22①	TON	1,332
00342	CL4 ASPH SURF 0.38A PG76-22①	TON	16,683
02676	MOBILIZATION FOR MILL & TEXT①	LS	1
02677	ASPHALT PAVE MILLING & TEXTURING①	TON	12,486
20071EC	JOINT ADHESIVE①	LF	113,100
24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING①	TON	75
01982	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL WHITE②	EACH	14
01983	DELINEATOR FOR GUARDRAIL MONO DIRECTIONAL YELLOW②	EACH	28
02370	GUARDRAIL END TREATMENT TYPE 2M②	EACH	2
02381	REMOVE GUARDRAIL②	LF	1,423
21380ES719	GUARDRAIL THRIE BEAM②	LF	918
21802EN	G/R STEEL W BEAM-S FACE (7 FT POST)②	LF	462.5
24382EC	G/R STEEL W BM-S FACE-7 FT POST (NESTED)②	LF	112.5
25078ED	THRIE BEAM GUARDRAIL TRANSITION TL-3②	EACH	12
26236EC	THRIE BEAM BULLNOSE TERMINAL②	EACH	6
02704	SILT TRAP TYPE B	EACH	4
02705	SILT TRAP TYPE C	EACH	4
02707	CLEAN SILT TRAP TYPE B	EACH	4
02708	CLEAN SILT TRAP TYPE C	EACH	4
05950	EROSION CONTROL BLANKET	SQYD	6,125
05952	TEMP MULCH	SQYD	4,083
05953	TEMP SEEDING AND PROTECTION	SQYD	3,063
05963	INITIAL FERTILIZER	TON	0.4
05964	MAINTENANCE FERTILIZER	TON	0.2
05992	AGRICULTURAL LIMESTONE	TON	4
40030	TEMPORARY SILT FENCE	LF	950
01984	DELINEATOR FOR BARRIER - WHITE	EACH	122
01985	DELINEATOR FOR BARRIER - YELLOW	EACH	368
02003	RELOCATE TEMP CONC BARRIER	LF	2,440
02014	BARRICADE-TYPE III	EACH	10
02562	TEMPORARY SIGNS	SQFT	1,000

① CARRIED OVER FROM PAVING SUMMARY.

② CARRIED OVER FROM GUARDRAIL SUMMARY.

ITEM NUMBER	ITEM	UNIT	QUANTITY
02650	MAINTAIN & CONTROL TRAFFIC	LS	1
02654	TRUCK MOUNTED ATTENUATOR	EACH	2
02671	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	4
02898	RELOCATE CRASH CUSHION	EACH	6
03171	CONCRETE BARRIER WALL TYPE 9T	LF	6,120
06511	PAVE STRIPING-TEMP PAINT-6 IN	LF	129,900
06531	PAVE STRIPING REMOVAL-6 IN	LF	87,238
06549	PAVE STRIPING-TEMP REM TAPE-B	LF	12,000
06550	PAVE STRIPING-TEMP REM TAPE-W	LF	9,600
06551	PAVE STRIPING-TEMP REM TAPE-Y	LF	9,600
06585	PAVEMENT MARKER TY IVA-MW TEMP	EACH	225
06586	PAVEMENT MARKER TY IVA-MY TEMP	EACH	165
08912	CRASH CUSHION TY VI CLASS T TL3	EACH	6
20411ED	LAW ENFORCEMENT OFFICER	HOURL	300
25075EC	QUEUE PROTECTION VEHICLE	HOURL	300
25117EC	FURNISH QUEUE PROTECTION VEHICLES	MONT	7
26136EC	PORTABLE QUEUE WARNING ALERT SYSTEM	MONT	7
26137EC	QUEUE WARNING PCMS	MONT	28
26138EC	QUEUE WARNING PORTABLE RADAR SENSORS	MONT	28
26237EC	CONNECTED ARROW PANEL	MONT	7
02697	EDGELINE RUMBLE STRIPS	LF	113,100
06401	FLEXIBLE DELINEATOR POST-M/W	EACH	263
06542	PAVE STRIPING-THERMO-6 IN W	LF	70,688
06543	PAVE STRIPING-THERMO-6 IN Y	LF	56,550
06556	PAVE STRIPING-DUR TY 1-6 IN W	LF	760
06557	PAVE STRIPING-DUR TY 1-6 IN Y	LF	608
06613	INLAID PAVEMENT MARKER-B W/R	EACH	707
01310	REMOVE PIPE	LF	520
02200	ROADWAY EXCAVATION	③ CUYD	1,715
02545	CLEARING AND GRUBBING	④ LS	1
02565	OBJECT MARKER TYPE 2	EACH	4
02625	REMOVE HEADWALL	EACH	2
02726	STAKING	LS	1
06410	STEEL POST TYPE 1	LF	32
10020NS	FUEL ADJUSTMENT	DOLL	28,430
10030NS	ASPHALT ADJUSTMENT	DOLL	71,409
26233EC	MOBILIZATION - FOR CONCRETE SURFACE TREATMENT	LS	1
26248EC	ELECTRONIC DELIVERY MANAGEMENT SYSTEM-AGG	LS	1
24891EC	PAVE MOUNT INFRARED TEMP EQUIPMENT	SQFT	1,357,173

③ 1,715 CY EXC., 615 CY EMB.

④ APPROXIMATELY 2 ACRES.

BATH COUNTY

[illegible]

⑥ NOTE: STRUCTURES QUANTITIES WERE NOT INCLUDED IN THE GENERAL SUMMARY.

I-64

BATH COUNTY

ITEM NO. 9-22046 , PAVEMENT REHABILITATION

MILEPOINT 123.600 TO 128.955

PAVING SUMMARY

PAVING AREAS (SY)			
ITEM	TOTAL	ITEM	TOTAL
MAINLINE AND SHOULDERS		DGA SHOULDERS	
1.0" ASPHALT PAVE MILLING & TEXTURING	201,063	ASPHALT SEAL AGGREGATE	12,567
1.5" CL4 ASPH SURF 0.38A PG76-22	201,063	ASPHALT SEAL COAT	12,567
RUMBLE STRIP ERADICATION (MOT)		MEDIAN GRADING	
1.5" ASPHALT PAVE MILLING & TEXTURING	1,166	6" DGA BASE	4,544
1.5" CL4 ASPH SURF 0.38A PG76-22	1,166	ASPHALT SEAL AGGREGATE	4,544
		ASPHALT SEAL COAT	4,544

PAVING SUMMARY			
ITEM CODE	ITEM	UNIT	QUANTITY
00001	DGA BASE (1)	TON	2,290
00100	ASPHALT SEAL AGGREGATE (2)	TON	342
00103	ASPHALT SEAL COAT (3)	TON	41
00194	LEVELING & WEDGING PG76-22	TON	250
			-
00219	CL4 ASPH BASE 1.00D PG76-22 (4)	TON	1,332
			-
00342	CL4 ASPH SURF 0.38A PG76-22	TON	16,683
			-
02676	MOBILIZATION FOR MILL & TEXT	LS	1
02677	ASPHALT PAVE MILLING & TEXTURING (5)	TON	12,486
20071EC	JOINT ADHESIVE	LF	113,100
24970EC	ASPHALT MATERIAL FOR TACK NON-TRACKING (6)	TON	75
			-
			-

(1) INCLUDES 723 TONS TO WEDGE SHOULDER DROP-OFFS.

(2) BASED ON COVERAGE OF 50% OF SHOULDERS, 100% COVERAGE OF DGA FOR MEDIAN GRADING AND BASED ON 2 APPLICATIONS OF 20 LBS/SY.

(3) BASED ON COVERAGE OF 50% OF SHOULDERS, 100% COVERAGE OF DGA FOR MEDIAN GRADING AND BASED ON 2 APPLICATIONS OF 2.4 LBS/SY.

(4) CARRIED OVER FROM PAVEMENT REPAIR DETAIL. ALL ITEMS CARRIED OVER TO GENERAL SUMMARY

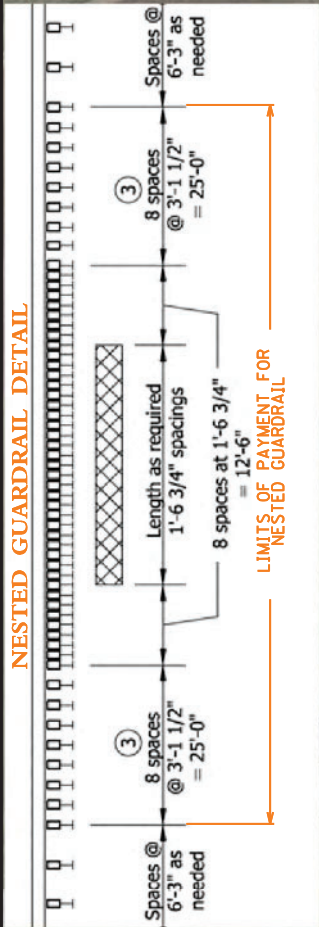
(5) INCLUDES 1,332 TONS FROM PAVE. REPAIR DETAIL.

(6) BASED ON APPLICATION RATE OF 0.7 LBS/SY.

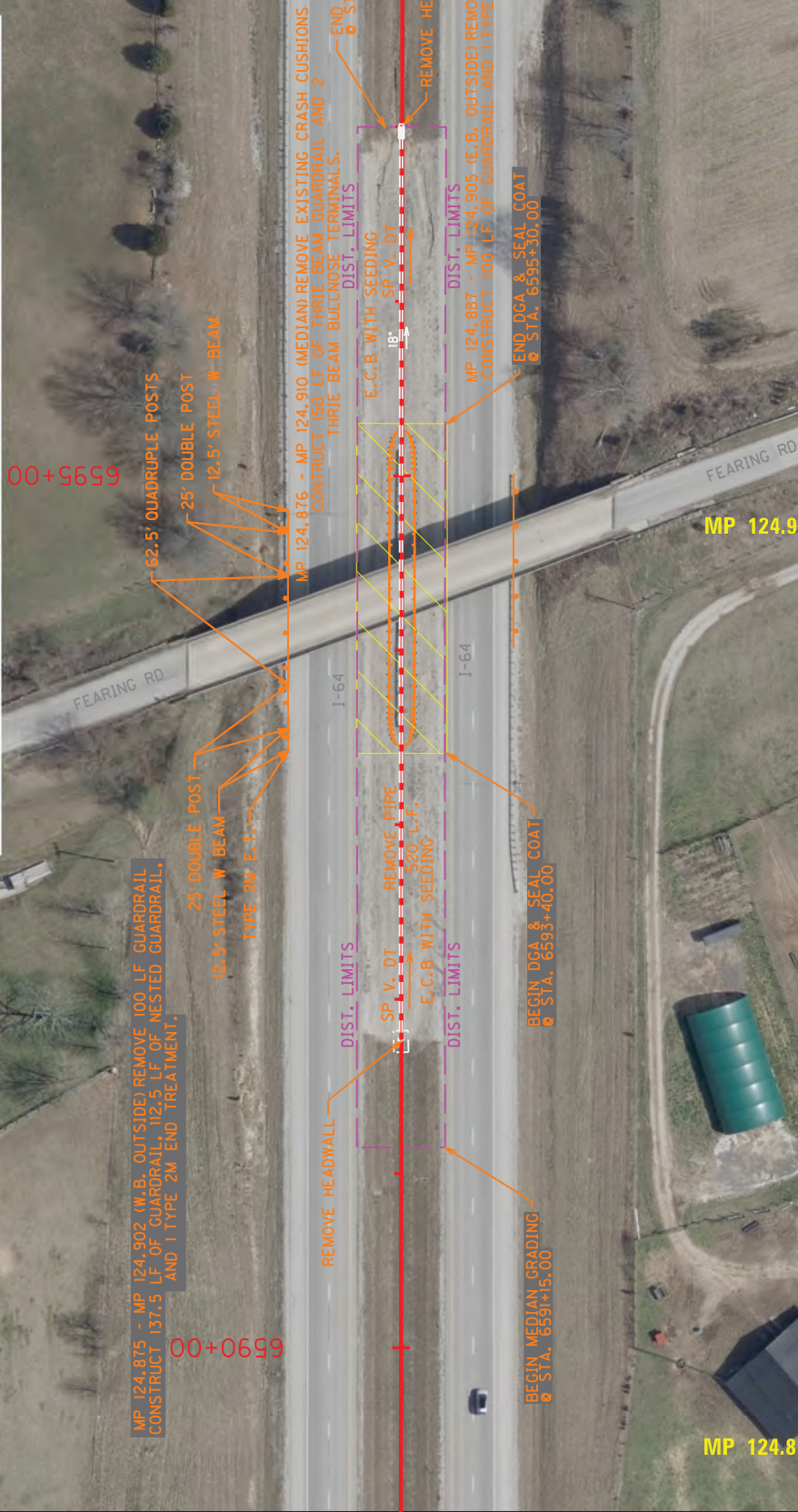
ASPHALT MIXES CALC. BASED ON 110 LBS/SY/IN

County	Item No.	Shee
BATH	9-22046	1

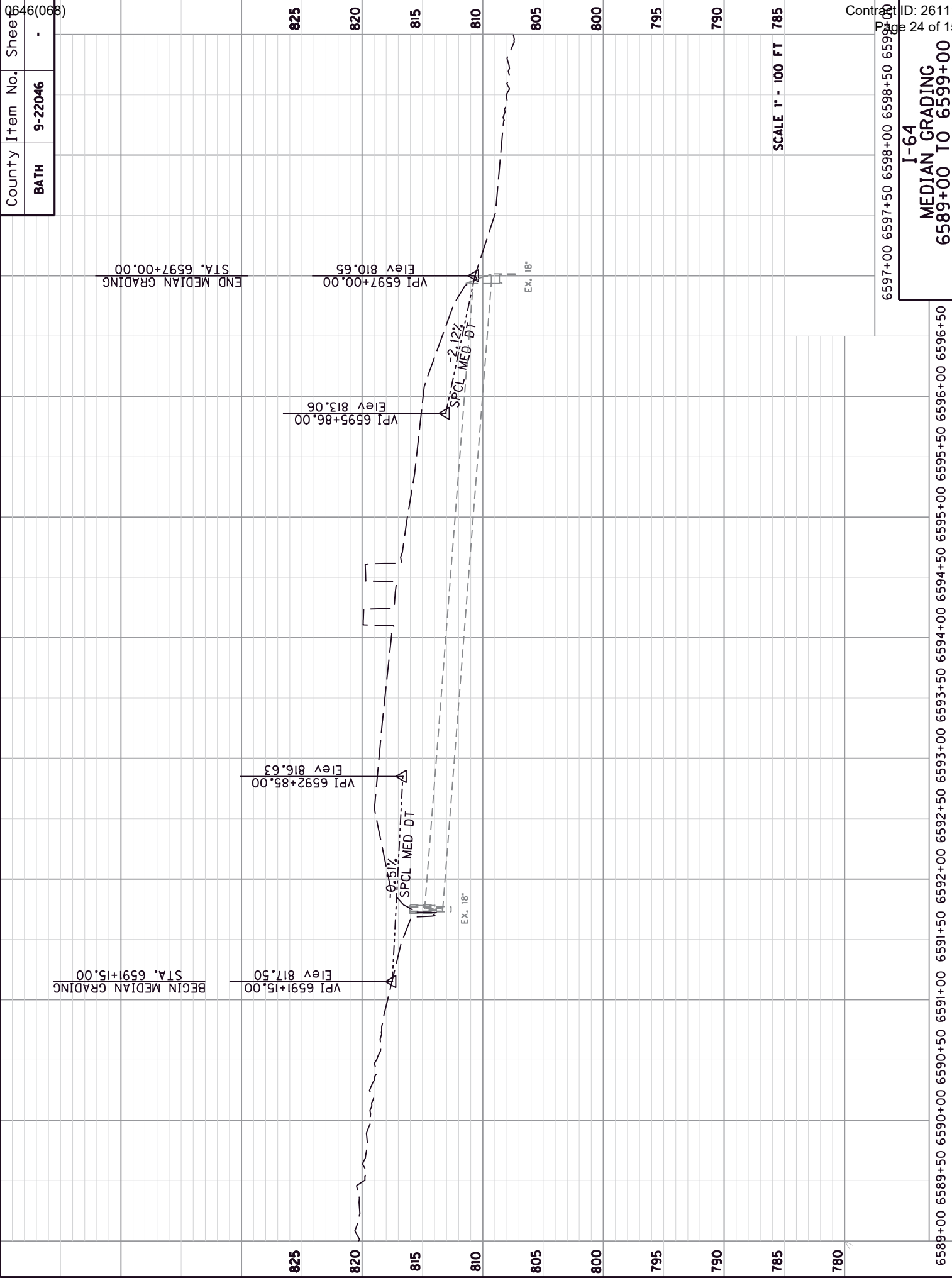
POST NUMBER	STATION	OFFSET
5A	6595+10.41	5.53
5B	6595+10.41	-5.51



POST NUMBER	STATION	OFFSET
5A	6593+60.41	5.53
5B	6593+60.41	-5.51



County	Item No.	Sheet
BATH	9-22046	-



I-64
MEDIAN GRADING
6589+00 TO 6599+00

County	Item No.	Sheet
BATH	9-22046	2



POST NUMBER	STATION	OFFSET
5A	6787+75.18	5.53
5B	6787+75.18	-5.51

MP 128.570 - MP 128.578 (W.B. OUTSIDE) REMOVE 50 LF GUARDRAIL
CONSTRUCT 25 LF OF GUARDRAIL AND 1 THREE BEAM GUARDRAIL TRANSITION TL-3.

MP 128.589 - MP 128.598 (W.B. OUTSIDE) REMOVE 87.5 LF GUARDRAIL
CONSTRUCT 50 LF OF GUARDRAIL AND 1 THREE BEAM GUARDRAIL TRANSITION TL-3.

6785+00

6790+00

MP 128.553 - MP 128.587 (MEDIAN) REMOVE EXISTING CRASH CUSHIONS
CONSTRUCT 150 LF OF THREE BEAM GUARDRAIL AND 2
THREE BEAM BULLNOSE TERMINALS.

DIST. LIMITS
SP. V. DT.
E.C.B. WITH SEEDING
DIST. LIMITS

DIST. LIMITS
SP. V. DT.
E.C.B. WITH SEEDING
DIST. LIMITS

BEGIN MEDIAN GRADING
@ STA. 6785+94.00

BEGIN DGA & SEAL COAT
@ STA. 6787+55.00

END DGA & SEAL COAT
@ STA. 6789+45.00

END MEDIAN GRADING
@ STA. 6791+00.00

MP 128.542 - MP 128.551 (E.B. OUTSIDE) REMOVE 50 LF GUARDRAIL
CONSTRUCT 25 LF OF GUARDRAIL AND 1 THREE BEAM GUARDRAIL TRANSITION TL-3.

MP 128.5

MP 128.6

POST NUMBER	STATION	OFFSET
5A	6789+25.18	5.53
5B	6789+25.18	-5.51

NOTE: STATION AND OFFSETS ARE TO CENTER OF GUARDRAIL POST

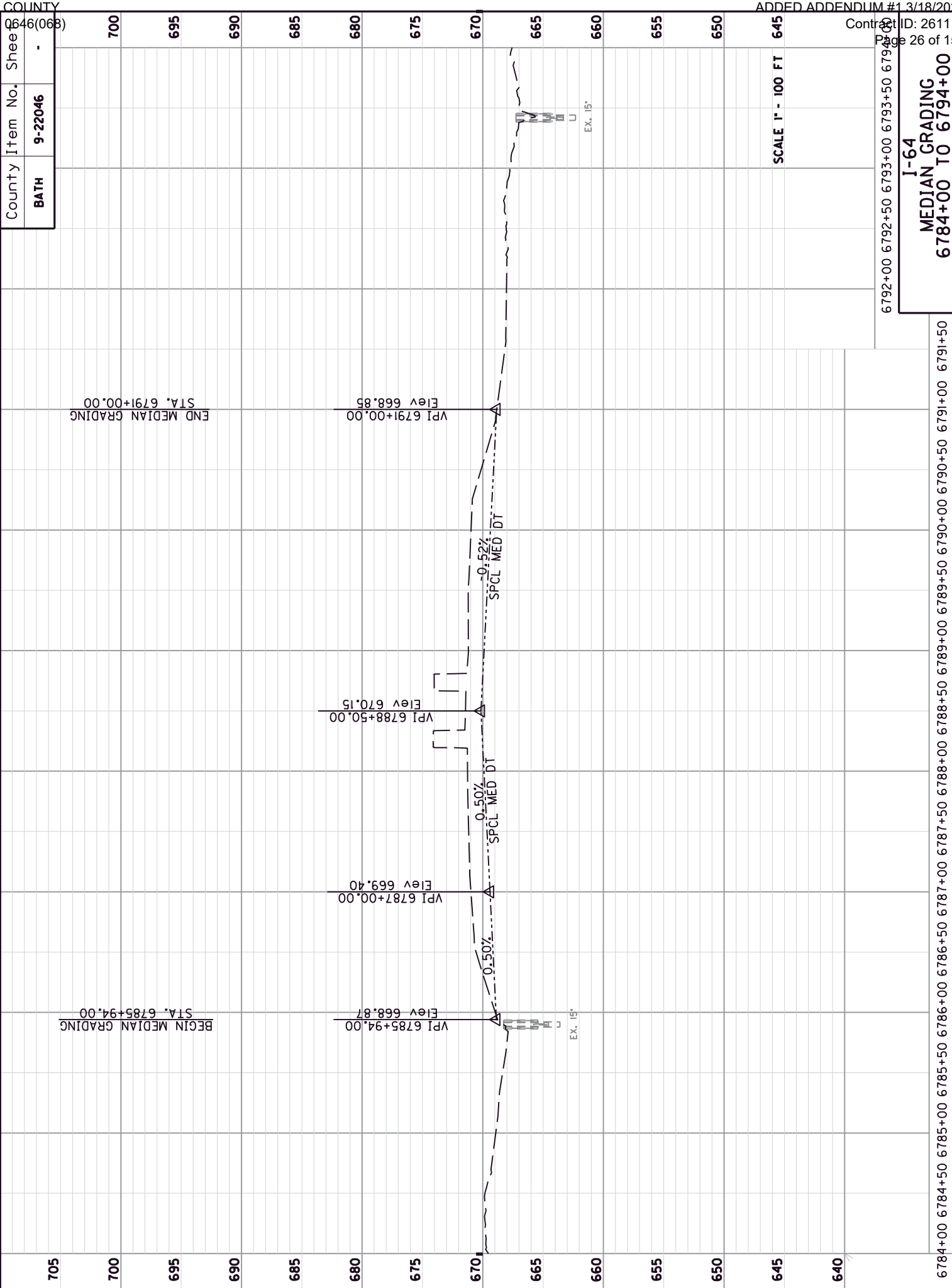
DGA BASE AND ASPHALT SEAL COAT

PROPOSED DISTURB LIMITS



I-64
BULL NOSE GUARDRAIL
SHEET 2 OF 3





County	Item No.	Sheet
BATH	9-22046	-

I-64
MEDIAN GRADING
6784+00 TO 6794+00

POST NUMBER	STATION	OFFSET
5A	6813+83.37	-10.02
5B	6813+83.03	1.15



POST NUMBER	STATION	OFFSET
5A	6806+30.92	14.03
5B	6806+31.26	2.85

MP 128.938 - MP 128.947 (W.B. OUTSIDE) REMOVE 50 LF GUARDRAIL
CONSTRUCT 25 LF OF GUARDRAIL AND 1 THIRIE BEAM GUARDRAIL TRANSITION TL-3.

00+00.89

00+00.89

00+00.89

BEGIN MEDIAN GRADING
@ STA. 6804+10.00

3.5 DEG.

3.397 DEG.

3.995 DEG.

CUT TO LENGTH

I-64
DIST. LIMITS
E.C.B. WITH SEEDING
SP. V. DT.

MP 129.003 - MP 129.053 (MEDIAN) REMOVE EXISTING GUARDRAIL AND CRASH CUSHIONS
CONSTRUCT 358 LF OF THIRIE BEAM GUARDRAIL, 1 THIRIE BEAM BULLNOSE TERMINAL
AND 2 THIRIE BEAM GUARDRAIL TRANSITION TL-3.

END MEDIAN GRADING
@ STA. 6815+00

I-64

MP 128.904 - MP 128.945 (MEDIAN) REMOVE EXISTING GUARDRAIL AND CRASH CUSHIONS
CONSTRUCT 260 LF OF THIRIE BEAM GUARDRAIL, 1 THIRIE BEAM BULLNOSE TERMINAL
AND 2 THIRIE BEAM GUARDRAIL TRANSITION TL-3.

I-64
DIST. LIMITS
BEGIN DCA & SEAL COAT
@ STA. 6806+11.00

CUT TO LENGTH
1.3806 DEG
3.5 DEG.

END DCA & SEAL COAT
@ STA. 6814+04.00

E.C.B. WITH SEEDING

I-64

MP 128.930 - MP 128.939 (E.B. OUTSIDE) REMOVE 50 LF GUARDRAIL
CONSTRUCT 25 LF OF GUARDRAIL AND 1 THIRIE BEAM GUARDRAIL TRANSITION TL-3.

MP 128.9

MP 129.0

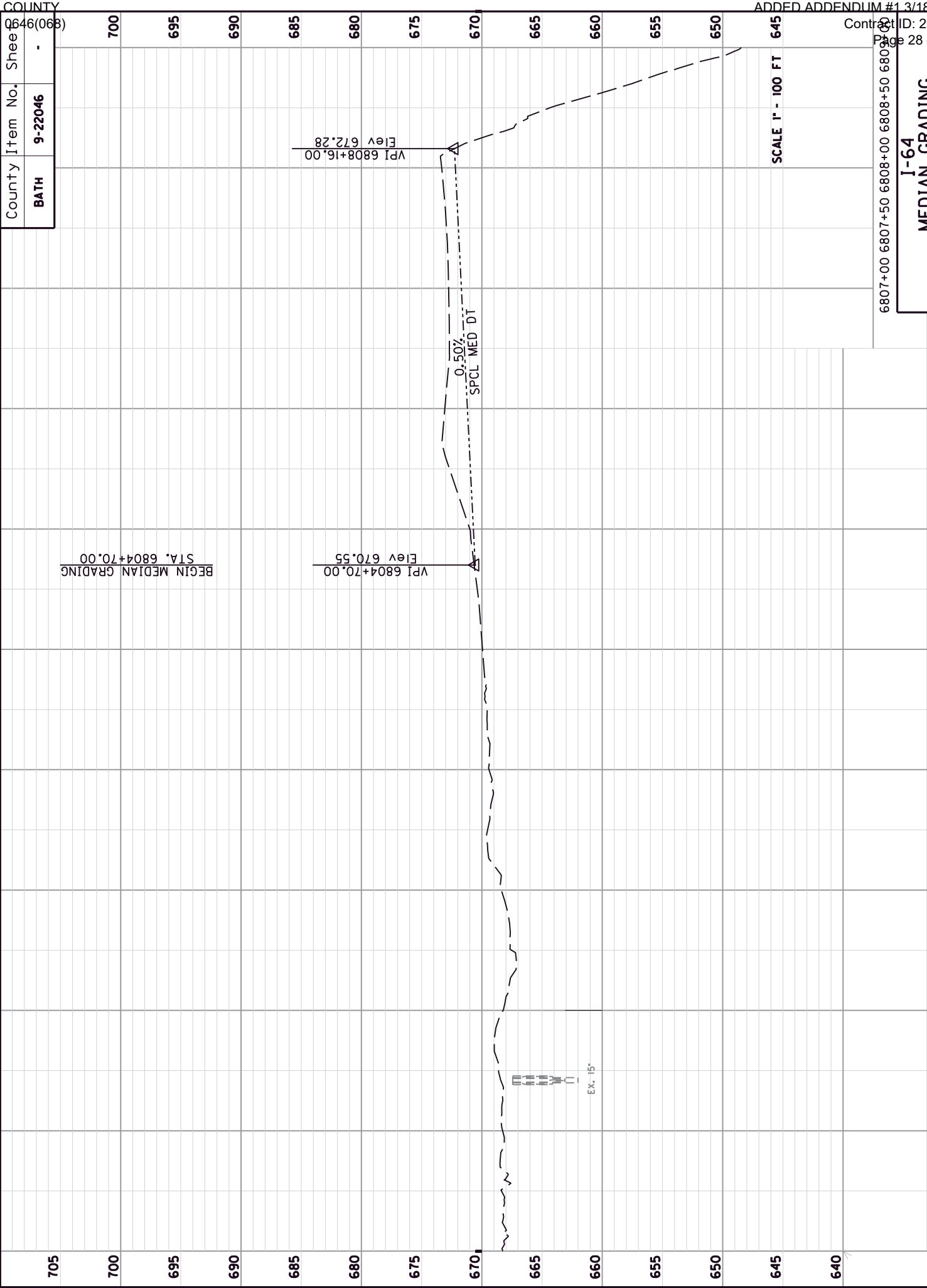
NOTE: STATION AND OFFSETS ARE TO CENTER OF GUARDRAIL POST

DCA BASE AND ASPHALT SEAL COAT

PROPOSED DISTURB LIMITS

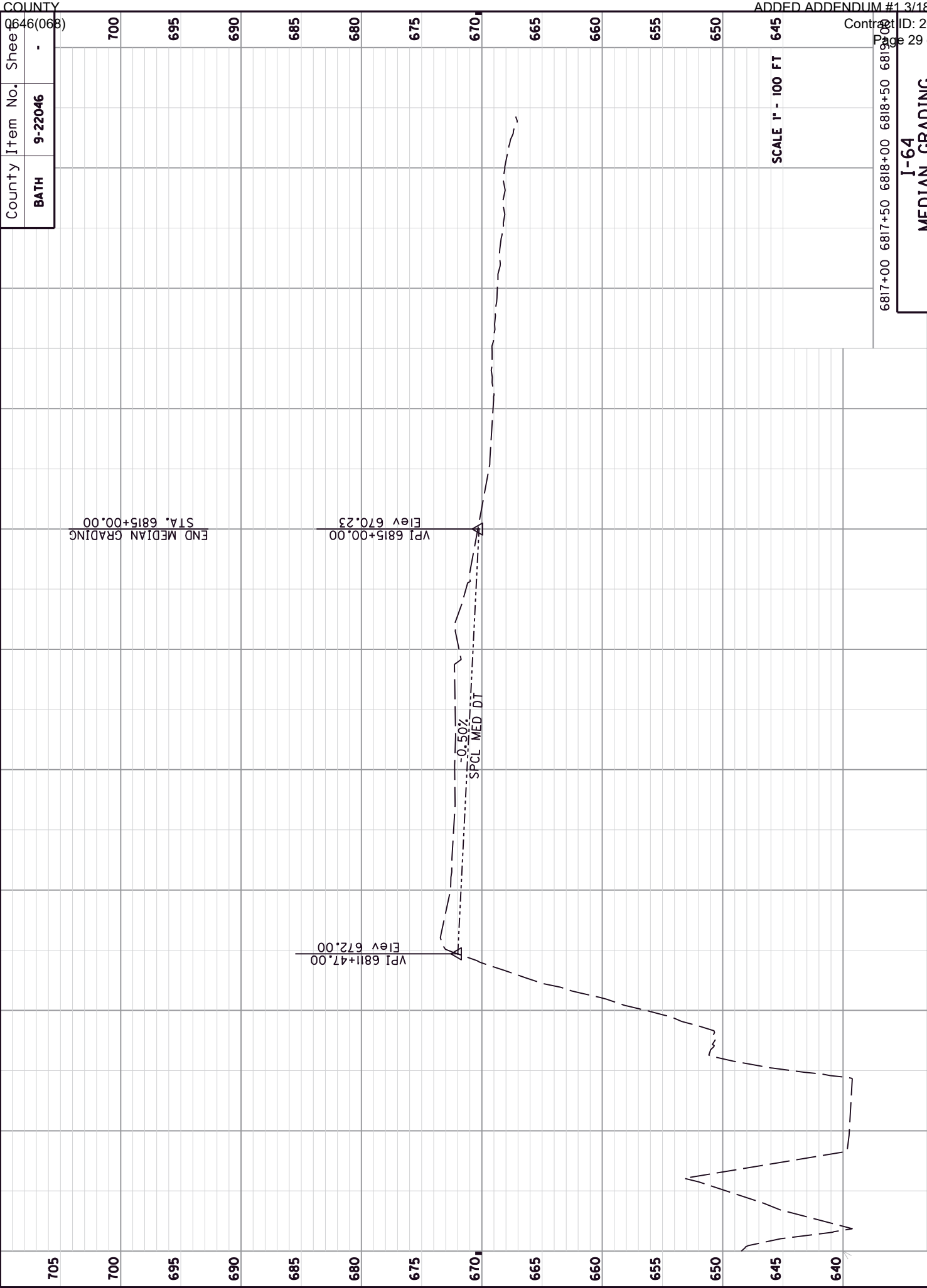


BULL NOSE GUARDRAIL DETAIL
SHEET 3 OF 3



County	Item No.	Sheet
BATH	9-22046	-

I-64
MEDIAN GRADING
6799+00 TO 6809+00



County	Item No.	Sheet
BATH	9-22046	-

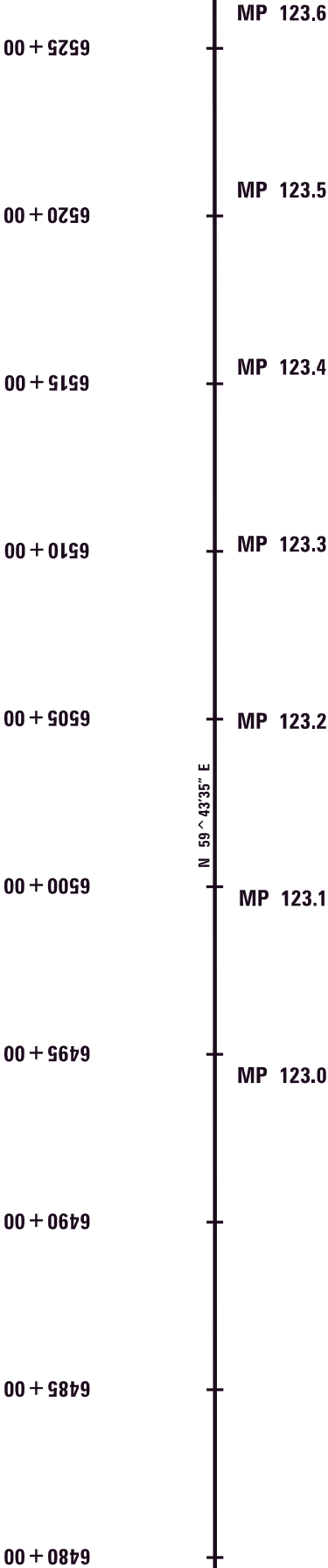
I-64
MEDIAN GRADING
6809+00 TO 6819+00

6817+00 6817+50 6818+00 6818+50 6819+00

County	Item No.	Sheet
BATH	9-22046	-

MAINLINE ALIGNMENT

POINT	STATION	NORTHING (Y)	EASTING (X)
P.O.B.	6478 + 44.00	3944045.43	5502858.03



SCALE 1"=500'

I-64

COORDINATE CONTROL



County	Item No.	Sheet
BATH	9-22046	-

MAINLINE ALIGNMENT

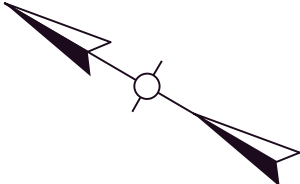
POINT	STATION	NORTHING (Y)	EASTING (X)
P.I.	6568 + 25.48	3948573.27	5510614.68

6530 + 00 6535 + 00 6540 + 00 6545 + 00 6550 + 00 6555 + 00 6560 + 00 6565 + 00 6570 + 00 6575 + 00 6580 + 00

N 59° 43' 35" E N 59° 47' 47" E

MP 123.7 MP 123.8 MP 123.9 MP 124.0 MP 124.1 MP 124.2 MP 124.3 MP 124.4 MP 124.5 MP 124.6

PI 6568 + 25.48
Delta = 0° 04' 11.98" RT



SCALE 1"=500'

I-64

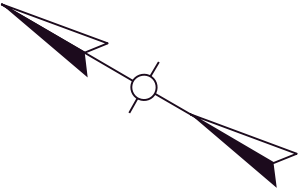
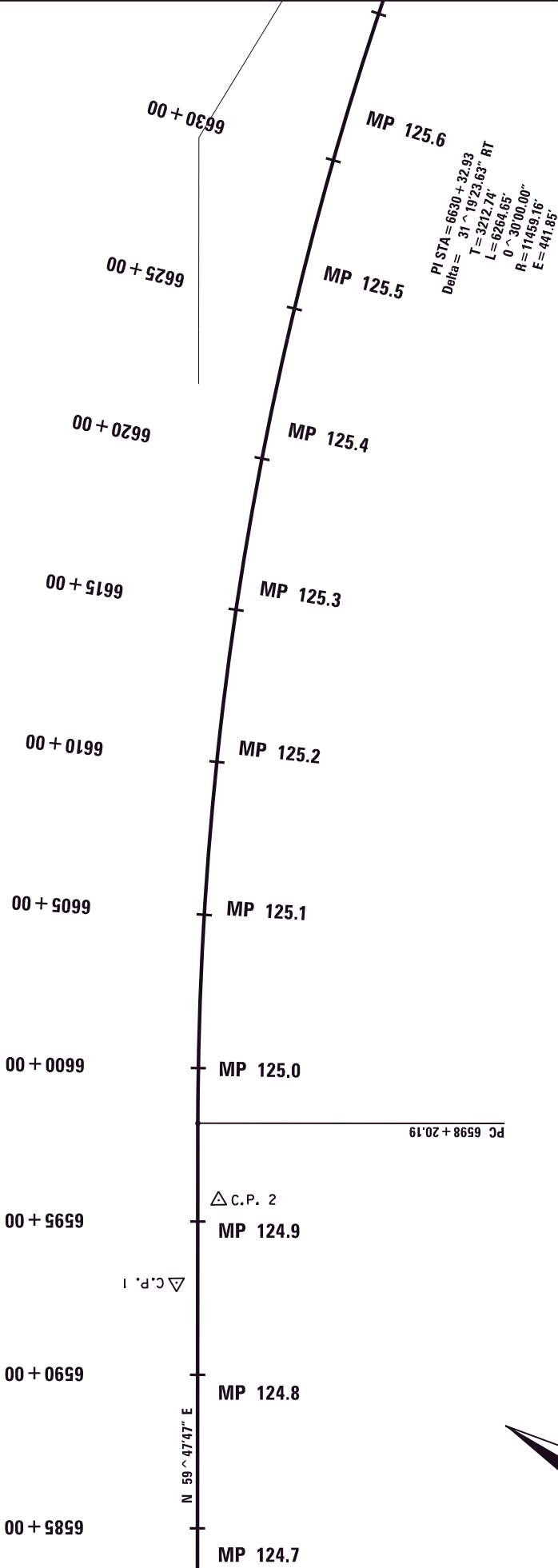
COORDINATE CONTROL

COORDINATE CONTROL POINTS					
POINT	DESCRIPTION	State Plane Coordinates			OFFSET
		NORTH (Y)	EAST (X)	ELEV. (Z)	
CP 1	IRON PIN & CAP	3949878.05	5512718.61	817.69	-69.22
CP 2	IRON PIN & CAP	3949894.45	5513020.08	814.28	68.28

MAINLINE ALIGNMENT

POINT	STATION	NORTHING (Y)	EASTING (X)
P.C.	6598 + 20.19	3950079.83	5513202.84
P.I.	6630 + 32.93	3951696.08	5515979.43

PI 6630 + 32.93



SCALE 1"=500'

I-64

COORDINATE CONTROL

County	Item No.	Sheet
BATH	9-22046	-

MAINLINE ALIGNMENT

POINT	STATION	NORTHING (Y)	EASTING (X)
P.T.	6660 + 84.84	3951633.31	5519191.56



SCALE 1"=500'

I-64

COORDINATE CONTROL



County	Item No.	Sheet
BATH	9-22046	-

6740 + 00

6735 + 00

6730 + 00

6725 + 00

6720 + 00

6715 + 00

6710 + 00

6705 + 00

6700 + 00

6695 + 00

6690 + 00

MP 127.6

MP 127.5

MP 127.4

MP 127.3

MP 127.2

MP 127.1

MP 127.0

MP 126.9

MP 126.8

MP 126.7

S 88 ^ 52'50" E



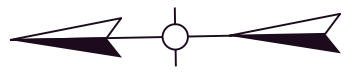
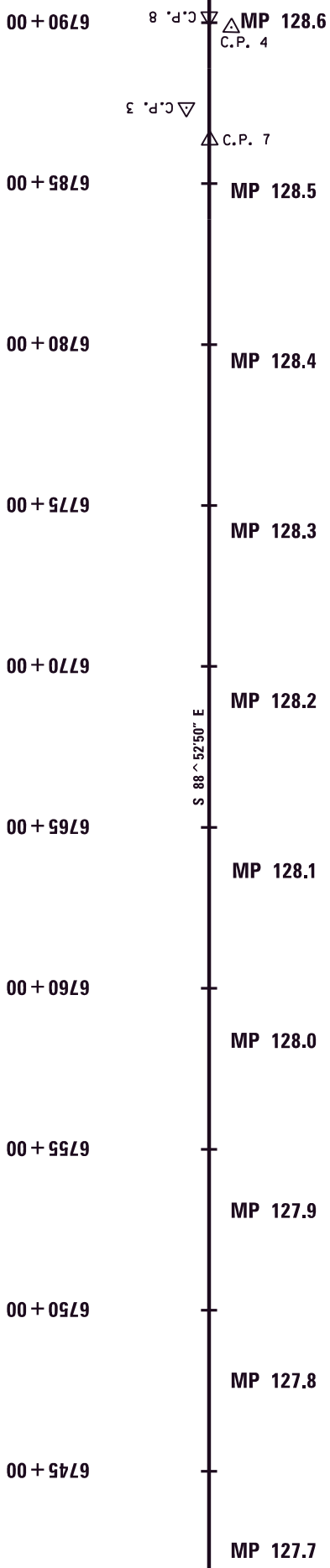
SCALE 1"=500'

I-64

COORDINATE CONTROL



COORDINATE CONTROL POINTS						
POINT	DESCRIPTION	State Plane Coordinates			STATION	OFFSET
		NORTH (Y)	EAST (X)	ELEV. (Z)		
CP 3	IRON PIN & CAP	3951456.48	5531841.48	670.20	6787 + 35.80	-70.37
CP 4	IRON PIN & CAP	3951312.33	5532087.96	670.35	6789 + 85.05	68.95
CP 7	IRON PIN & CAP	3951386.33	5531739.49	670.34	6786 + 35.20	1.77
CP 8	IRON PIN & CAP	3951380.14	5532122.10	671.12	6790 + 17.86	0.48



SCALE 1"=500'

I-64

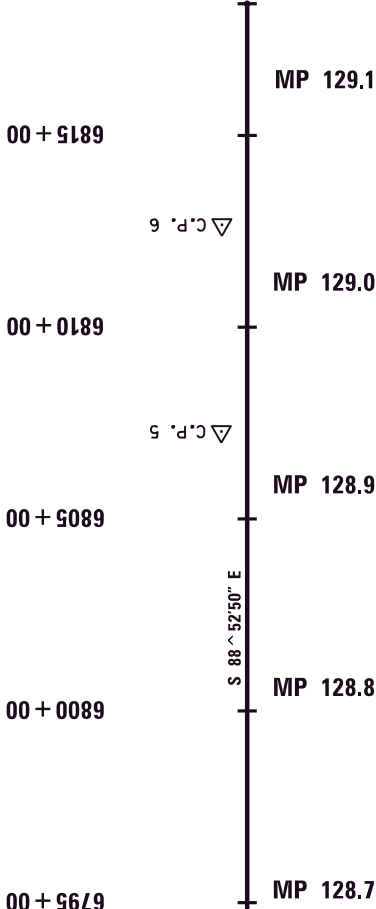


COORDINATE CONTROL

COORDINATE CONTROL POINTS						
POINT	DESCRIPTION	State Plane Coordinates			STATION	OFFSET
		NORTH (Y)	EAST (X)	ELEV. (Z)		
CP 5	IRON PIN & CAP	3951414.25	5533833.20	672.86	6807 + 27.96	-67.06
CP 6	IRON PIN & CAP	3951402.62	5534371.88	672.74	6812 + 66.77	-65.96

County	Item No.	Sheet
BATH	9-22046	-

MAINLINE ALIGNMENT				
POINT	STATION	NORTHING (Y)	EASTING (X)	
P.O.E	6818 + 42.72	3951325.42	5534946.43	



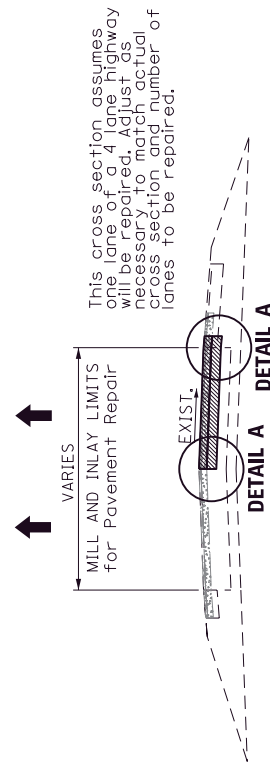
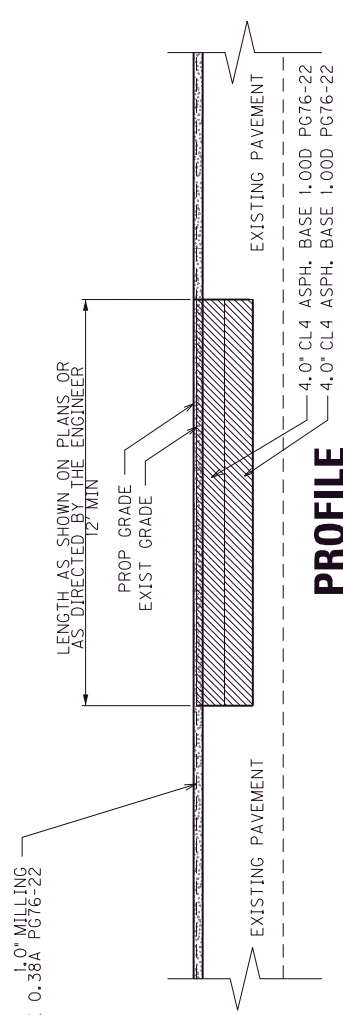
SCALE 1"=500'

I-64

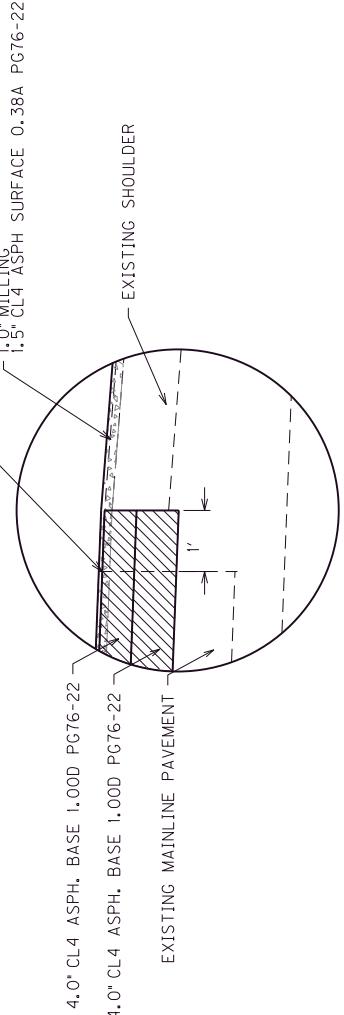
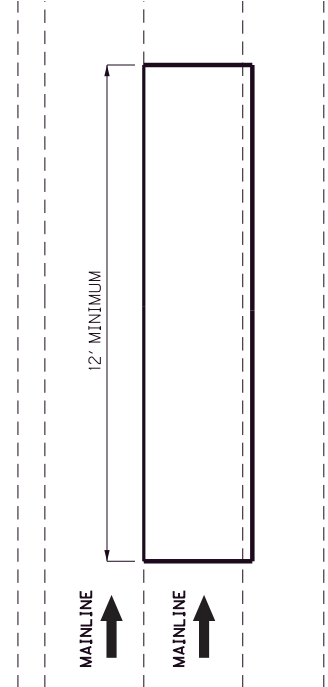
COORDINATE CONTROL

I-64 ASPHALT PAVEMENT REPAIR DETAIL

County	Item No.	Sheet
BATH	9-22046	



CROSS SECTION



DETAIL A

PLAN VIEW

BID ITEM	(BATH COUNTY)	1,332 TONS	1,332 TONS
* 2677	ASPHALT PAVE MILLING AND TEXTURING		
* 219	CL4 ASPH BASE 1,00D PG76-22		

NOTES

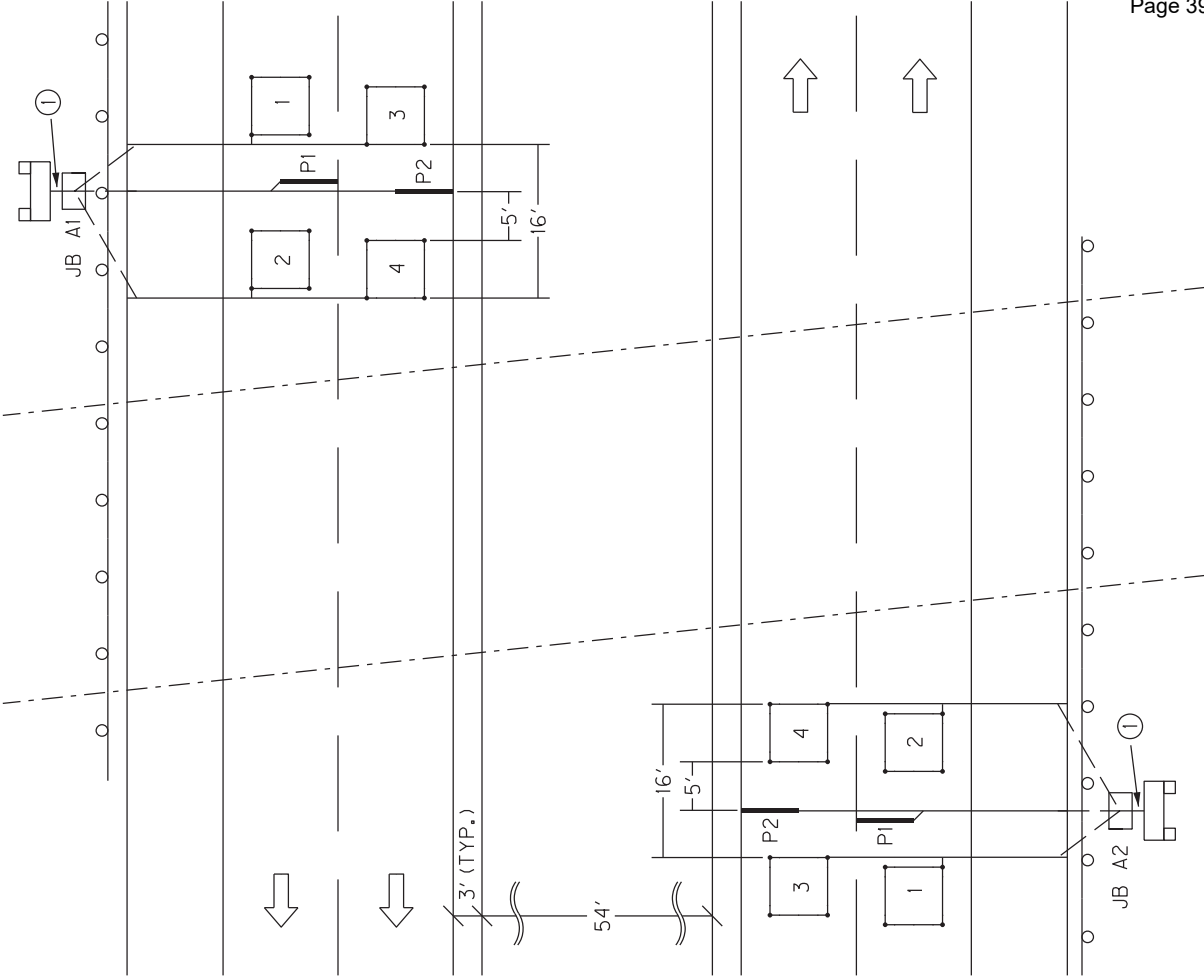
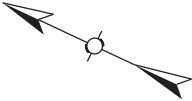
1. Caution: Existing concrete pavement may exist below the asphalt pavement.
2. Pavement repairs shall be performed at locations selected by and as directed by the Engineer. The Engineer will assess, select and mark areas for treatment. The full lane width will be removed and replaced. The Engineer may elect to perform repairs on one lane or multiple lanes. For estimate purposes, quantities were estimated based on 4.0" thicknesses with additional quantity added to be used as directed by the engineer for additional depth repairs or additional locations.
3. Complete pavement repair operations in one continuous operation. Do not leave an unprotected hole with no workers present.
4. The item ASPHALT PAVE MILLING AND TEXTURING includes removal of all asphalt to the required depth.
5. Perform typical mill and inlay operations with resurfacing items subject to payment as part of the resurfacing operation after completion of the asphalt pavement repairs. Allow traffic to run on the asphalt pavement repairs a minimum of 14 days prior to initiation of the typical mill and inlay operations.

* Only items listed will be considered for payment and will be considered full compensation for the work required. Any other items of work not listed for payment will be considered incidental to other items of work.

* (CARRIED ON PAVING SUMMARY)

NOT TO SCALE

BATH CO. I-64 ~m.p. 124.8
LAT/LONG N 38.15275, W 83.69232
STATION 775



SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

ALL LOOPS SHALL BE 6'X6' SQUARE AND SHALL BE INSTALLED 16' FROM LEADING EDGE TO LEADING EDGE AS SHOWN. PIEZOELECTRIC SENSORS (PIEZOS) SHALL BE INSTALLED 5' FROM THE EDGE OF LOOPS WITH THE EDGE OF EACH PIEZO FLUSH WITH THE EDGE OF THE CORRESPONDING DRIVING LANE. LOOPS AND PIEZOS SHALL BE INSTALLED SPLICE-FREE TO THE CABINET AND A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED INSIDE EACH JUNCTION BOX AND CABINET. ALL LOOPS AND PIEZOS SHALL BE LABELED IN ALL JUNCTION BOXES AND CABINETS. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS AND PIEZOS INSIDE THE CABINETS.

INSTALL ONE (1) 1/4" CONDUIT FROM EACH SAW SLOT TO NEAREST JUNCTION BOX.

INSTALL TWO (2) TYPE A JUNCTION BOXES (JB A1, JB A2).

INSTALL TWO (2) 20"x20"x8" CABINETS MOUNTED TO TWO (2) WOOD POSTS EACH.

CODED NOTE:

- ① INSTALL ONE (1) 2" CONDUIT.
- REMOVE EX. TRAFFIC DATA COLLECTION EQUIPMENT (BOXES, CONDUIT, WIRES, ETC.) AND DISPOSE OF OFF THE PROJECT.

Permanent Traffic Data Acquisition Station
Estimate Of Quantities

Revised February 2025

PERMANENT TRAFFIC DATA ACQUISITION STATIONS
ESTIMATE OF QUANTITIES

Bid Item Code	Description	Unit	Quantity
4793	CONDUIT 1 ¼ INCH	LIN FT	80
4795	CONDUIT 2 INCH	LIN FT	20
4811	ELECTRICAL JUNCTION BOX TYPE B	EACH	
4820	TRENCHING AND BACKFILLING	LIN FT	90
4821	OPEN CUT ROADWAY	LIN FT	
4829	PIEZOELECTRIC SENSOR	EACH	4
4830	LOOP WIRE	LIN FT	1600
4833	WIRE – NO. 8	LIN FT	
4834	WIRE – NO. 6	LIN FT	
4850	CABLE NO. 14/1 PAIR	LIN FT	
4871	POLE – 35’ WOODEN	EACH	
4895	LOOP SAW SLOT AND FILL	LIN FT	380
4899	ELECTRICAL SERVICE	EACH	
4960	REMOVE AND REPLACE SIDEWALK	SQYD	
20213EC	INSTALL PAD MOUNT ENCLOSURE	EACH	
20359NN	GALVANIZED STEEL CABINET	EACH	2
20360ES818	WOOD POST	EACH	4
20391NS835	ELECTRICAL JUNCTION BOX TYPE A	EACH	2
20392NS835	ELECTRICAL JUNCTION BOX TYPE C	EACH	
20468EC	ELECTRICAL JUNCTION BOX 10x8x4	EACH	
21543EN	BORE AND JACK CONDUIT – 2 INCH	LIN FT	
23206EC	INSTALL CONTROLLER CABINET	EACH	
24963ED	LOOP TEST	EACH	

**MATERIAL, INSTALLATION, AND BID ITEM NOTES FOR
PERMANENT TRAFFIC DATA ACQUISITION STATIONS**

1. DESCRIPTION

Except as specified in these notes, all work shall consist of furnishing and installing all materials necessary for permanent data acquisition station equipment installation(s) and shall be performed in accordance with the current editions of:

- The Contract
- Division of Planning Standard Detail Sheets
- Kentucky Transportation Cabinet, Department of Highways, *Standard Specifications for Road and Bridge Construction*
- Kentucky Transportation Cabinet, Department of Highways, Standard Drawings
- National Fire Protection Association (NFPA) 70: *National Electrical Code*
- Institute of Electrical and Electronic Engineers (IEEE), *National Electrical Safety Code*
- Federal Highway Administration, *Manual on Uniform Traffic Control Devices*
- American Association of State Highway and Transportation Officials (AASHTO), *Roadside Design Guide*.
- Standards of the utility company serving the installation, if applicable

The permanent traffic data acquisition station layout(s) indicate the extent and general arrangement of the proposed installation and are for general guidance. Any omission or commission shown or implied shall not be cause for deviation from the intent of the plans and specifications. Information shown on the plans and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusion as to the conditions encountered. The Department of Highways (Department) does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information shown. If any modifications of the plans or specifications are considered necessary by the Contractor, details of such modifications and the reasons, therefore, shall be submitted in writing to the Engineer for written approval prior to beginning such modified work.

The Contractor shall contact all utility companies and the district utility agent prior to beginning construction to insure proper clearance and shielding from existing and proposed utilities. The Contractor shall use all possible care in excavating on this project so as not to disturb any existing utilities whether shown on the plans or not shown on the plans. Any utilities disturbed or damaged by the Contractor during construction shall be replaced or repaired to original condition by the Contractor at no cost to the department. If necessary, to avoid existing utilities, the Contractor shall hand dig areas where poles or conduit cross utilities.

The Contractor shall be responsible for all damage to public and/or private property resulting from his work.

The Contractor shall inspect the project site prior to submitting a bid and shall be thoroughly familiarized with existing conditions. Submission of a bid will be considered an affirmation of this inspection having been completed. The Department will not honor any claims resulting from site conditions.

2. MATERIALS

All proposed materials shall be approved prior to being utilized. The Contractor shall submit for material approval an electronic file of descriptive literature, drawings and any requested design data for the proposed materials. After approval, no substitutions of any approved materials may be made without the written approval of the Engineer.

Materials requiring sampling shall be made available a sufficient time in advance of their use to allow for necessary testing.

2.1. Anchoring

2.1.1. Anchor and Anchor Rod

Anchor, except rock anchor, shall be expanding type, with a minimum area of 135 square inches.

Anchor rod shall be galvanized steel, double-eye, have a minimum diameter of 5/8 inches, and a minimum length of 84 inches. Minimum holding capacity shall be 15,400 lbs.

Rock anchor shall be galvanized steel, triple-eye, expanding type, with a minimum diameter of ¾ inch, a minimum 53 inches long, and a minimum tensile strength of 23,000 lb.

2.1.2. Guy Wire and Guy Guard

Guy wire shall be Class A, Zinc-coated, 3/8 inch diameter, high strength grade steel (minimum 10,800 lb.) and galvanized per ASTM A475. Guy guard shall be 8' long, fully-rounded, yellow, and able to be securely attached to the guy wire.

2.1.3. Strandvise for Guy Wire

Strandvise for guy wire shall be 3/8 inch and rated to hold a minimum of 90% of the rated breaking strength (RBS) of the strand used.

2.2. Asphalt

Asphalt shall be a minimum CL2 Asph Surf 0.38B PG64-22 and conform to the *Standard Specifications for Road and Bridge Construction*.

2.3. Backer Rod

Backer rod shall be ½ inch diameter, closed cell polyethylene foam and shall meet or exceed the following physical properties:

- Density (average): 2.0 lbs/cu.ft. (minimum): ASTM D 1622 test method
- Tensile Strength: 50 PSI (minimum): ASTM D 1623 test method
- Compression Recovery: 90% (minimum): ASTM D 5249 test method
- Water Absorption: 0.03 gm/cc (maximum): ASTM C 1016 test method

2.4. Cabinets

2.4.1. Galvanized Steel Cabinet

Galvanized Steel Cabinet shall be constructed of 16 or 14 gauge galvanized steel and shall meet or exceed the industry standards set forth by UL 50 and NEMA 3R. The finish shall be an ANSI 61 gray polyester powder finish inside and out over the galvanized steel. Cabinet shall have minimum inside dimensions of 20 inches high by 20 inches wide by 8 inches deep.

The cabinet shall be equipped with the following:

- Drip shield top
- Seam-free sides, front, and back, to provide protection in outdoor installations against rain, sleet, and snow
- Hinged cover with 16 gauge galvanized steel continuous stainless steel pin.
- Cover fastened with captive plated steel screws, knob or latch
- Hasp and staple for padlocking
- No gaskets or knockouts
- Back panel for terminal block installation
- Post mounting hardware
- Terminal Blocks

2.4.2. Anchor Bolt for Pad Mounted Cabinet

Anchor bolt for pad mounted cabinet shall be galvanized steel with minimum dimensions of 3/8 inch by 6 inches.

2.5. Concrete

Concrete shall be Class A and conform to the *Standard Specifications for Road and Bridge Construction*.

2.6. Conduit and Conduit Fittings

Conduit and conduit fittings shall be rigid steel unless otherwise specified.

Conduit shall be zinc galvanized inside and out and conform to the NEC, UL Standard 6, and ANSI C-80.1.

Rigid Steel Conduit Fittings shall be galvanized inside and out and conform to the NEC, UL Standard 514B, and ANSI C-80.4. Intermediate Metal Conduit (IMC) will not be approved as an acceptable alternative to rigid steel conduit.

2.7. Conduit sealant

Conduit sealant shall be weather-, mold-, and mildew-resistant and chemically resistant to gasoline, oil, dilute acids and bases. Conduit sealant shall be closed cell type and shall meet or exceed the following properties:

- | | |
|------------------------------------|--------------------------|
| • Cure Time | 20 minutes max. |
| • Density | 64.4 kg/m3; 6 lbs/ft3 |
| • Compressive Strength (ASTM 1691) | 13.8 MPa; 330 or 300 psi |

- Tensile Strength (ASTM 1623) 15.9 MPa; 270 or 250 psi
- Flexural Strength (ASTM D790) 14.5 MPa; 460 or 450 psi
- Service Temperature -20 to 200 F

2.8. Electrical Service Meter Base
Electrical service meter base shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

2.9. Electrical Service Disconnect
Electrical service disconnect shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

2.10. Flashing Arrow
Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction*.

2.11. Ground Fault Circuit Interrupter (GFCI) Receptacle
Ground Fault Circuit Interrupter Receptacle shall be 2-pole, 3-wire, 20 Amp, 125 Volt, 60 Hz, NEMA 5-20R configuration and meet or exceed the following standards and certifications:

- NEMA WD-1 and WD-6
- UL 498 and 943
- NOM 057
- ANSI C-73

This item shall include a UL listed, 4 inch x4 inch x 2¹/₈ inch box with ³/₄ inch side and end knockouts and a 1½ inches deep, single-receptacle cover to house the GFCI receptacle. Box and cover shall be hot rolled, galvanized steel with a minimum thickness of 0.62 inches.

2.12. Grounding
2.12.1. Ground Rod
Ground Rod shall be composite shaft consisting of a pure copper exterior (5 mil minimum) that has been inseparably molten welded to a steel core. Ground Rod shall have a minimum diameter of 5/8 inch, a minimum length of 8 feet and shall be manufactured for the sole purpose of providing electrical grounding.

2.12.2. Ground Rod Clamp
Ground rod shall be equipped with a one piece cast copper or bronze body with a non-ferrous hexagonal head set screw and designed to accommodate a 10 AWG solid through 2 AWG stranded grounding conductor.

2.13. Grout
2.13.1. Grout for Inductive Loop Installation
Grout for inductive loop installation shall be non-shrink, shall meet the requirements of the *Standard Specifications for Road and Bridge Construction*,

and shall be included on the KYTC Division of Materials, *List of Approved Materials*.

2.13.2. Grout for Piezoelectric Sensor Installation

Grout for piezoelectric sensor installation shall be per the piezoelectric sensor manufacturer's recommendation. Grout shall be suitable for installation in both asphalt and Portland cement pavements. Grout shall have a short curing time (tack free in ten minutes; open to traffic in forty minutes; and fully cured within sixty minutes) to prevent unnecessary lane closure time and should be of sufficient consistency to prevent running when applied on road surfaces with a drainage cross slope. Particulate matter within the grout shall not separate or settle and the grout shall not shrink during the curing process.

2.14. Hardware

Except where specified otherwise, all hardware such as nuts, bolts, washers, threaded ends of fastening devices, etc. with a diameter less than 5/8 inch shall be passivated stainless steel, alloy type 316 or type 304. Stainless steel hardware shall meet ASTM F593 and F594 for corrosion resistance. All other nuts and bolts shall meet ASTM A307 and shall be galvanized.

2.14.1. Conduit Strap

Conduit strap shall be double-hole, stainless steel, and sized to support specified conduit. Conduit strap shall attach to wood pole or post with two 2 1/4 inch wood screws.

2.14.2. Mounting Strap for Pole Mount Cabinet

Mounting strap for pole mount cabinet shall be 3/4 inch x 0.03 inch stainless steel; equipped with clips or buckles to securely hold strap.

2.14.3. Metal Framing Channel and Fittings

Metal framing channel shall be 1 5/8 inches wide galvanized steel that conforms to ASTM A1011 and ASTM A653. One side of the channel shall have a continuous slot with in-turned edges to accommodate toothed fittings.

Fittings shall be punch pressed from steel plates and conform to ASTM A575 and the physical requirements of ASTM A1011.

2.15. Junction Box

2.15.1. Junction Box Type A, B, or C

Junction Box Type A, B, or C shall meet or exceed ANSI/SCTE 77-2007, Tier 15. Box shall have an open bottom. A removable, non-slip cover marked "PLANNING" shall be equipped with a lifting slot and attached with a minimum of two 3/8 inch stainless steel hex bolts and washers. Type A Box shall have nominal inside dimensions of 13 inches wide by 24 inches long by 18 inches deep. Type B Box shall have nominal inside dimensions of 11 inches wide by 18 inches long by 12

inches deep. Type C Box shall have nominal inside dimensions of 24 inches wide by 36 inches long by 30 inches deep.

2.15.2. Aggregate for Junction Box Type A, B, or C

Aggregate for junction box type A, B, or C shall be gradation size no. 57 and conform to the *Standard Specifications for Road and Bridge Construction*.

2.15.3. Junction Box 10x8x4

Junction Box Type 10x8x4 shall be constructed of a UV-stabilized, nonmetallic material or non-rusting metal and be weatherproof in accordance with NEMA 4X. Box shall be equipped with an overhanging door with a continuous durable weatherproof gasket between the body and door. Door shall be hinged with screws, hinge(s) and pin(s) and shall be equipped with a padlockable latch on the side opposite the hinge(s). Junction Box 10x8x4 shall have minimum inside dimensions of 10 inches high by 8 inches wide by 4 inches deep.

2.16. Maintain and Control Traffic

Materials for the bid item Maintain and Control Traffic shall conform to the *Standard Specifications for Road and Bridge Construction*, and the KYTC Department of Highways *Standard Drawings*.

2.17. Piezoelectric Sensor

Piezoelectric sensor (piezo) shall provide a consistent level voltage output signal when a vehicle axle passes over it, shall have a shielded transmission cable attached, and shall meet the following requirements:

- Dimensions: such that sensor will fit in a ¾ inch wide by 1 inch deep saw cut. Total length shall be 6 feet unless specified otherwise.
- Output uniformity: ± 7% (maximum)
- Typical output level range: 250mV (minimum) from a wheel load of 400 lbs.
- Working temperature range: -40° to 160° F.
- Sensor life: 30 million Equivalent Single Axle Loadings (minimum)

Shielded transmission cable shall be coaxial and shall meet the following requirements:

- RG 58C/U with a high density polyethylene outer jacket rated for direct burial
- Length shall be a minimum of 100 feet. Installations may exceed 100 feet so the piezo shall be supplied with a lead-in of appropriate length so that the cable can be installed splice-free from the piezo to the cabinet.
- Soldered, water resistant connection to the sensor.

One installation bracket for every 6 inches of sensor length shall also be supplied. Piezo shall be a RoadTrax BL Class I or approved equal.

2.18. Saw Slot Sealant

Saw Slot Sealant shall be non-shrink, non-stringing, moisture cure, polyurethane

encapsulant suitable for use in both asphalt and concrete pavements. It shall provide a void-free encapsulation for detector loop cables and adequate compressive yield strength and flexibility to withstand heavy vehicular traffic and normal pavement movement.

The cured encapsulant shall meet or exceed the following:

- Hardness (Indentation): 35-65 Shore A, ASTM D2240
- Tensile Strength: 150 psi minimum, ASTM D412
- Elongation: 125% minimum 2 inch/minute pull, ASTM D412
- Tack-free Drying Time: 24 hours maximum, ASTM C679
- Complete Drying Time: 30 hours maximum, KM 64-447
- Chemical Interactions (seven day cure at room temperature, 24-hour immersion, KM 64-446):
 - Motor Oil: No effect
 - Deicing Chemicals: No effect
 - Gasoline: Slight swell
 - Hydraulic Brake Fluid: No effect
 - Calcium Chloride (5%): No effect

2.19. Seeding and Protection

Material for Seeding and Protection shall be Seed Mixture Type I and conform to the *Standard Specifications for Road and Bridge Construction*.

2.20. Signs

Materials for signs shall conform to the *Standard Specifications for Road and Bridge Construction*.

2.21. Splicing Materials

2.21.1. Electrical Tape

Electrical tape shall be a premium grade, UL-listed, all-weather, vinyl-insulating tape with a minimum thickness of 7 mil. Tape shall be flame retardant and resistant to abrasion, moisture, alkalis, acids, corrosion, and weather (including ultraviolet exposure).

2.21.2. Splice Kit

Splice kit shall be inline resin-type and rated for a minimum of 600V. Resin shall be electrical insulating-type and shall provide complete moisture and insulation resistance.

2.22. Steel Reinforcing Bar

Steel reinforcing bar shall be #5 and shall conform to the *Standard Specifications for Road and Bridge Construction*.

2.23. Terminal Block

Terminal block shall be rated for a minimum of 300 V and have a minimum of six

terminal pairs with 9/16-inch nominal spacing (center to center) for connecting loop and piezoelectric sensor wires to cable assemblies. Terminal block shall have screw type terminal strips to accommodate wire with spade-tongue ends.

2.24. Warning Tape

Warning tape shall be acid and alkali resistant formulated for direct burial. Tape shall be a minimum of 3 inches wide by 4.0 mils (nominal) thick, and shall be permanently imprinted with a minimum 1 inch black legend on a red background warning of an electric line. Tape shall meet or exceed the following industry specifications:

- American Gas Association (AGA) 72-D-56
- American Petroleum Institute (API) RP 1109
- American Public Works Association (APWA) Uniform Color Code
- Department of Transportation (DOT) Office of Pipeline Safety USAS B31.8
- Federal Gas Safety Regulations S 192-321 (e)
- General Services Administration (GSA) Public Buildings Service Guide: PBS 4-1501, Amendment 2
- National Transportation Safety Board (NTSB) PSS 73-1
- Occupational Safety and Health Administration (OSHA) 1926.956 (c) (1)

2.25. Wire and Cable

All cable and wire shall be plainly marked in accordance with the National Electrical Code (NEC).

2.25.1. Loop Wire

Loop wire shall be 14 AWG, stranded, copper, single conductor, and shall conform to the International Municipal Signal Association (IMSA) Specification No. 51-7.

2.25.2. Cable No. 14/1 Pair

Cable No. 14/1 pair loop lead-in cable shall be 14 AWG, stranded, copper paired, electrically shielded conductors, and shall conform to IMSA 19-2.

2.25.3. Grounding conductor

Grounding conductor and bonding jumper shall be solid or stranded, 4 AWG bare copper.

2.25.4. Service Entrance Conductor

Service entrance conductor shall be stranded, copper, Type USE-2, sized as required to comply with the NEC.

2.25.5. Terminal for electrical wire or cable

Terminal for electrical wires or cables shall be insulated, solderless, spade tongue terminals of correct wire and stud size. Terminal for electrical wires or cables shall be incidental to the wire or cable (including piezoelectric sensor transmission cable) to be connected to terminal strips.

2.26. Wood Post

Wood post shall be Southern Pine pretreated to conform to the American Wood Preservers’ Association (AWPA) C-14 or UC4B and shall have minimum dimensions of 4 inches by 4 inches by 8 feet long (for Galvanized Steel Cabinet) or 4 feet long (for Junction Box 10x8x4), sawed on all four sides with both ends square.

2.27. Wooden Pole

Wooden pole shall be a Class IV wood pole of the length specified and shall conform to the *Standard Specifications for Road and Bridge Construction* except the pole shall be treated in accordance with AWPA P9 Type A.

3. CONSTRUCTION METHODS

The plans indicate the extent and general arrangement of the installation and are for guidance. When the Contractor deems any modifications to the plans or specifications necessary, details of such changes and the reasons shall be submitted in writing to the engineer for written approval prior to beginning the modified work.

After the project has been let and awarded, the Division of Construction shall notify the Division of Planning of the scheduled date for a Pre-Construction meeting so that prior arrangements can be made to attend. This will allow the Division of Planning an opportunity to address any concerns and answer any questions that the Contractor may have before beginning the work.

The Division of Planning Equipment Management Team (502-564-7183) shall be notified a minimum of seven days before any work pertaining to these specifications begins to allow their personnel the option to be present during installation.

Unless otherwise specified, installed materials shall be new.

Construction involving the installation of loops or piezoelectric sensors shall not be performed when the temperature of the pavement is less than 38°F.

A final inspection will be performed by a member of the Central Office Division of Planning equipment staff after the installation is complete to verify that the installation is in compliance with the plans and specifications.

Any required corrective work shall be performed per the *Standard Specifications for Road and Bridge Construction*.

3.1. Anchoring

Furnish: Anchor, anchor rod, guy wire, strand vise, guy guard.

Anchor shall be installed in relatively dry and solid soil. Rock anchor shall be installed in solid rock. Excavate the hole at a 45° to 60° angle in line with the guy (hole size shall be slightly larger than the expanded anchor – see manufacturer’s recommendation). Attach rod to anchor, install assembly into hole, and expand anchor. Backfill and tamp entire disturbed area. The effectiveness of the anchor is dependent upon the thoroughness of backfill tamping. Attach guy to strand vise on pole and anchor rod and tighten to required tension. Install guy guard on guy.

3.2. Bore and Jack Pipe – 2”

Furnish: Steel Encasement Pipe, 2”

Bore and jack pipe – 2” shall conform to the Section 706 of the *Standard Specifications for Road and Bridge Construction*.

3.3. Cleanup and Restoration

Furnish: Seed Mix Type 1 (as required); fertilizer (as required); agricultural limestone (as required); mulch or hydromulch (as required); tackifier (as required).

The Contractor shall be responsible for repairing any damage to public and/or private property resulting from his work. Upon completion of the work, restore all disturbed highway features in like kind design and materials. This shall include filling any ruts and leveling ground appropriately. Contractor shall dispose of all waste and debris off the project. Sow all disturbed earthen areas with Seed Mix Type 1 per Section 212 of the *Standard Specifications for Road and Bridge Construction*. All materials and labor necessary for cleanup and restoration shall be considered incidental to other bid items.

3.4. Conduit

Furnish: Conduit; conduit fittings; bushings (grounding where required); LB condulets (as required); weatherheads (as required); conduit straps; hardware; conduit sealant.

Conduit that may be subject to regular pressure from traffic shall be laid to a minimum depth of 24 inches below grade. Conduit that will not be subject to regular pressure from traffic shall be laid to a minimum depth of 18 inches below grade.

Conduit ends shall be reamed to remove burrs and sharp edges. Cuts shall be square and true so that the ends will butt together for the full circumference of the conduit. Tighten couplings until the ends of the conduit are brought together. Do not leave exposed threads. Damaged portions of the galvanized surfaces and untreated threads resulting from field cuts shall be painted with an Engineer-approved, rust inhibitive paint. Conduit bends shall have a radius of no less than 12 times the nominal diameter of the conduit, unless otherwise shown on the plans.

Contractor shall install a bushing (grounding bushing where required) on both ends of all conduits. Cap spare conduits on both ends with caps or conduit sealant.

Conduit openings in junction boxes and cabinets shall be waterproofed with a flexible, removable conduit sealant, working it around the wires, and extending it a minimum 1 inch into the end of the conduit.

After the conduit has been installed and prior to backfilling, the conduit installation shall be inspected and approved by the Engineer.

3.5. Electrical Service

Furnish: Meter base, service disconnect, wire, GFCI AC duplex receptacle with box and cover; conduit, conduit fittings, bushings (grounding where required); LB condulets (as required); weatherhead; conduit straps; hardware; conduit sealant; ground rod with clamp; grounding conductor.

Prior to any construction, the Contractor shall initiate a work order with the local power

company for the installation of electrical service to the site. A representative from the Division of Planning and the local power company shall be consulted prior to choosing an exact location for the pole. The Contractor shall clear the right-of-way for the electrical service drop.

Contractor shall obtain electrical inspections, memberships, meter base, service disconnect and any other requirements by the utility serving the installation and pay all fees as required.

Install meter-base and disconnect panel with a 30-ampere, fused, circuit breaker inside. Install a manufactured weatherproof hub connector to connect the conduit to the top of the meter base and service disconnect.

Install a rigid $\frac{3}{4}$ inch conduit with three 8 AWG service conductors from the cabinet, through the service disconnect to the meter base and a $1\frac{1}{4}$ " conduit with three 8 AWG service conductors from the meter base to a weatherhead two feet from the top of the electrical service pole. Install conduit straps 30 inches on center and provide a drip loop where the wire enters the weatherhead. Splice electric drop with service entrance conductors at the top of the pole.

The limit of conduit incidental to "Install Electrical Service" for a pad mounted cabinet is 24 inches beyond face of service pole.

Install a 120-volt, 20-amp GFCI AC duplex receptacle with box and cover in the automatic data recorder (ADR) cabinet.

Install a ground rod with clamp. Install a grounding conductor wire from the meter base, through the disconnect panel, to the ground rod clamp. Install grounding conductor in $1\frac{3}{4}$ " conduit from service disconnect to ground rod.

After completing the installation and before the electrical service is connected, obtain a certificate of compliance from the Kentucky Department of Housing, Buildings and Construction, Electrical Inspection Division.

3.6. Flashing Arrow

Furnish: Arrow Panel

Construction of Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction*.

3.7. Galvanized Steel Cabinet

Furnish: Cabinet; wood posts; concrete; conduit fittings; metal framing channel; pipe clamp; terminal block(s); spade tongue wire terminals; wire labels; hardware.

Where right-of-way allows, locate the cabinet such that it is outside the clear zone in accordance with the *Roadside Design Guide*. Install Cabinet such that the door of the

cabinet faces the roadway.

Excavate as required and install wood posts to a depth of 36 inches and place concrete around posts as shown on the standard detail sheets. Install metal framing channel with pipe clamp between posts.

Install Cabinet on wood posts 38 inches above the finished grade as shown on the standard detail sheets. Install a unistrut between posts when two posts are specified.

Install the required number of terminal blocks on the cabinet back plate. Install a spade tongue terminal on each loop and piezo sensor wire entering the cabinet and connect wires to terminal block(s). Wiring shall be neat and orderly. Label all wires and cables inside cabinet.

Install conduit from ground to cabinet and attach to pipe clamp. Install locknuts to attach conduit to cabinet and install a conduit bushing as shown on the standard detail sheets.

3.8. Grounding

Furnish: Ground rod with clamp; grounding conductor.

At sites with electrical or solar service, all conduits, poles, and cabinets shall be bonded to ground rods and the electrical system ground to form a complete grounded system.

Install such that top of ground rod is a minimum of 3 inches below finished grade.

Grounding systems shall have a maximum 25 ohms resistance to ground. If the resistance to ground is greater than 25 ohms, two or more ground rods connected in parallel shall be installed. Adjacent ground rods shall be separated by a minimum of 6 feet.

3.9. Install Pad Mount Enclosure

Furnish: Concrete; anchor bolts with washers and nuts; conduit; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the enclosure from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site.

Where right-of-way allows, locate the enclosure such that it is outside the clear zone in accordance with the *Roadside Design Guide*.

Excavate as required, and place concrete to construct the enclosure foundation as specified on the standard detail sheets. Install enclosure on the concrete base such that the door(s) of the enclosure opens away from traffic (hinges away from traffic). Install anchor bolts, washers, and nuts to secure the enclosure to the foundation.

Install ground rod with clamp and install one $\frac{3}{4}$ inch rigid conduit from enclosure base to

ground rod. Install a grounding conductor from ground rod to enclosure base and bond to each conduit bushing in the base.

Install one $\frac{3}{4}$ inch rigid steel conduit for electrical service from the base of the enclosure to 24 inches beyond the concrete base. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with a cap, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit."

Install specified rigid steel conduit(s) into the base of the enclosure for sensor wire entry. Install one spare 2-inch conduit from the enclosure base to 2 feet beyond the concrete base. Plug spare conduit on both ends with a cap, conduit sealant or electrical tape.

The limit of all conduits incidental to "Install Pad Mount Enclosure" is 24 inches beyond the edge of the concrete base.

Wiring in enclosure shall be neat and orderly. Label all wires and cables inside enclosure. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

3.10. Install Controller Cabinet

Furnish: Mounting brackets; mounting straps; conduit; LB condulets; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; cable staples; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the cabinet from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site. Any existing holes in the cabinet not to be reused shall be covered or plugged to meet NEC requirements.

Install mounting brackets and secure cabinet to pole with mounting straps.

Install a ground rod with clamp. Install grounding conductor in 1- $\frac{3}{4}$ " conduit from cabinet to ground rod.

Install one $\frac{3}{4}$ inch rigid steel conduit with two lb. condulets from cabinet to electrical service disconnect box. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with cap, plumbers putty, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit".

Install specified rigid steel conduit(s) and type LB conduit(s) into the bottom of the

cabinet for sensor wire entry. The limit of conduits incidental to “Install Controller Cabinet” is 24 inches beyond the face of the pole.

Wiring in cabinet shall be neat and orderly. Label all wires and cables inside cabinet. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

3.11. Junction Box Type 10x8x4

Furnish: Junction box; wood post; conduit fittings; wire labels; hardware.

Where right-of-way allows, locate the junction box such that it is outside the clear zone in accordance with the Roadside Design Guide.

Excavate as required and install wood post(s) to a depth of 18 inches. Install junction box on wood post such that the bottom of the box is 18 inches above the finished grade as shown on the standard detail sheets. Box shall be installed with four (4) 2½ inch wood screws and washers.

Install locknuts to attach conduit to junction box and install a conduit bushing as shown on the standard detail sheets.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

3.12. Junction Box Type A, B, or C

Furnish: Junction box, No. 57 aggregate; grounding conductor

Excavate as required and place approximately 12 inches of No. 57 aggregate beneath the proposed junction box to allow for drainage. Install specified junction box type A, B, or C near the edge of pavement, flush with finished grade per the detail sheets. Where required, orient the box so that the dimensions comply with the National Electrical Code. Stub conduits with grounding bushings into junction box at its base to accommodate wires and connect grounding conductor to all grounding bushings. Backfill to existing grade, and restore disturbed area to the satisfaction of the Engineer.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

3.13. Loops - Proposed

Furnish: Wire; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for loop installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the precise layout locations on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist.

Upon completion of this meeting, the Contractor shall measure out and mark the proposed loop locations with spray paint or chalk such that the saw slots will be parallel

and perpendicular to the direction of traffic. Marked lines shall be straight and exact to the locations determined and sized as shown on the plans. Unless indicated otherwise, loops shall be 6 feet by 6 feet square and loops in the same lane shall be spaced 16 feet from leading edge to leading edge.

On resurfacing, rehabilitation, and new construction projects that include new asphalt pavement, the Contractor shall install loops prior to laying the final surface course. On projects with milling and texturing, the Contractor may install the loops prior to or after the milling operation; however, if installed prior to milling, the Contractor shall be responsible for ensuring that the loops are installed at a depth such that the milling operation will not disturb the newly installed loops. The Contractor shall correct damage caused by the milling operations to newly installed loops prior to placement of the final surface course at no additional cost to the Cabinet.

For projects that include the installation of new asphalt and piezoelectric sensors, the Contractor shall mark or otherwise reference all loops installed prior to the final surface course such that the loops can be accurately located when the piezoelectric sensors are installed after placement of the final surface course.

For projects that do not have asphalt surfacing, the Contractor shall install the loops in the surface of the pavement.

The Prime Contractor shall coordinate the installation of loops with the electrical sub-Contractor and the Engineer to ensure correct operation of the completed installation.

The following is a typical step by step procedure for the installation of a loop.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and centered in the lane.
- Make each saw-cut 3/8-inch wide and at a depth such that the top of the backer rod is a minimum of 2 inches below the surface of rigid (PCC/Concrete) pavement or 4 inches below the surface of asphalt pavement.
- Drill a 1½ inch core hole at each corner and use a chisel to smooth corners to prevent sharp bends in the wire.
- Clean ALL foreign and loose matter out of the slots and drilled cores and within 1 foot on all sides of the slots using a high-pressure washer.
- Completely dry the slots and drilled cores and within 1 foot on all sides of the slots using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a 1½ inch hole on a 45° angle to the conduit adjacent to the roadway.
- Closely inspect all cuts, cores, and slots for jagged edges or protrusions prior to the placement of the wire. All jagged edges and protrusions shall be ground or re-cut and cleaned again.

- Place the loop wire splice-free from the termination point (cabinet or junction box) to the loop, continue around the loop for four turns, and return to the termination point.
- Push the wire into the saw slot with a blunt object such as a wooden stick. Make sure that the loop wire is pushed fully to the bottom of the saw slot.
- Install conduit sealant to a minimum of 1" deep into the cored 1½ inch hole.
- Apply loop sealant from the bottom up and fully encapsulate the loop wires in the saw slot. The wire should not be able to move when the sealant has set.
- Cover the encapsulated loop wire with a continuous layer of backer rod along the entire loop and home run saw slots such that no voids are present between the loop sealant and backer rod.
- Finish filling the saw cut with non-shrinkable grout per manufacturer's instructions. Alleviate all air pockets and refill low spaces. There shall be no concave portion to the grout in the saw slot. Any excess grout shall be cleaned from the roadway to alleviate tracking.
- Clean up the site and dispose of all waste off the project.
- Ensure that the grout has completely cured prior to subjecting the loop to traffic. Curing time varies with temperature and humidity.

Exceptions to installing loop wire splice-free to the junction box or cabinet may be considered on a case-by-case basis and must be pre-approved by the Engineer. If splices are allowed, they shall be located in a junction box and shall conform to the construction note for Splicing.

If loop lead-in cable (Cable No. 14/1 Pair) is specified, cable shall be installed splice free to the cabinet ensuring that extra cable is left in each junction box or cabinet. All wires and cables shall be labeled in each junction box and cabinet.

Loop inductance readings shall be between 100 and 300 microhenries. The difference of the loop inductance between two loops in the same lane shall be ± 20 microhenries. Inductance loop conductors shall test free of shorts and grounds. Upon completion of the project, all loops must pass an insulation resistance test of a minimum of 100 million ohms to ground when tested with a 500 Volt direct current potential in a reasonably dry atmosphere between conductors and ground.

3.14. Loop Test

When noted on a data collection station layout sheet that there are existing inductive loops within the limits of the project, notify the Engineer in writing, a minimum of 14 calendar days prior to beginning milling operations. After milling and prior to placing asphalt inlay, conduct an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground. The Department may also conduct its own tests with its own equipment.

If the tests indicate the loop resistances are above the specified limit and the Engineer determines the system is operable, proceed with the asphalt inlay. If the test indicates the loop resistance is not within the specified limits or if the Engineer determines the system is otherwise not operable, prior to placing the asphalt inlay install and test new loop detectors according to the station layout, notes, and Detail Drawings.

The Engineer will contact and maintain liaison with the District Planning Engineer and the Division of Planning in order to coordinate any necessary work.

3.15. Maintain and Control Traffic

Furnish (all as required): Drums, traffic cones, barricades used for channelization purposes, delineators, and object markers.

Maintain and Control Traffic shall conform to the plans, the Standard Specifications for Road and Bridge Construction, and the KYTC Department of Highways Standard Drawings.

3.16. Open Cut Roadway

Furnish: Concrete, reinforcing bars.

Excavate trench by sawing and chipping away roadway to dimensions as indicated on the detail sheets. After placing conduit, install concrete and steel reinforcing bars per the *Standard Specifications for Road and Bridge Construction*. Restore any disturbed sidewalk to its original condition.

3.17. Piezoelectric Sensor

Furnish: Piezoelectric sensor and cable; sensor support brackets; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for piezoelectric sensor (piezo) installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the final layout on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist. Roadway ruts at the proposed piezo location shall not be in excess of ½ inch under a 4-foot straight edge.

Install the piezo perpendicular to traffic in the final surface course of the pavement. Locate the sensor in the lane as shown on the site layout drawing. Eleven-foot length sensors shall be centered in the lane.

The following is a typical step by step procedure for the installation of a piezo. Refer specifically to the manufacturer's instructions provided with the sensor prior to installation.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and properly positioned in the lane.

Material, Installation, and Bid Item Notes for
Permanent Traffic Data Acquisition Stations

Revised February 2025

- It is strongly recommended that a $\frac{3}{4}$ inch wide diamond blade be used for cutting the slot, or that blades be ganged together to provide a single $\frac{3}{4}$ inch wide cut. The slot shall be wet cut to minimize damage to the pavement.
- Cut a slot $\frac{3}{4}$ inch wide ($\pm 1/16$ inch) by 1 inch minimum deep. The slot should be a minimum of 2 inches longer than the sensor (including the lead attachment). Drop the saw blade an extra $\frac{1}{2}$ inch down on both ends of the sensor. The lead out of the passive cable should be centered on the slot.
- Cut the slot for the passive cable $\frac{1}{4}$ inch wide and at a depth so that the top of the backer rod is a minimum of 2 inches below the road surface.
- Clean ALL foreign and loose matter out of the slot and within 1 foot on all sides of the slot using a high-pressure washer.
- Completely dry the slot and within 1 foot on all sides of the slot using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a $1\frac{1}{2}$ inch hole on a 45° angle to the conduit adjacent to the roadway.
- Place strips of 2-4-inch-wide tape strips on the pavement along the lengths of both sides of the sensor slot, $1/8$ inch away from the slot.
- Wear clean, protective latex (or equivalent) gloves at all times when handling sensors. Visually inspect sensor to ensure it is straight. Check lead attachment and passive cable for cuts, gaps, cracks and/or bare wire. Verify that the correct sensor type and length is being installed by checking the data sheet. Verify there is sufficient cable to reach the cabinet. Piezo lead-in cable shall not be spliced.
- Test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within $\pm 20\%$ of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Record the sensor serial number and the test results and label "pre-installation." This information should be stored in the counter cabinet and/or returned to Department Planning personnel.
- Lay the sensor next to the slot and ensure that it is straight and flat.
- Clean the sensor with steel wool or an emery pad and wipe with alcohol and a clean, lint-free cloth.
- Place the installation bracket clips every 6 inches along the length of the sensor.
- Bend the tip of the sensor downward at a 30° angle. Bend the lead attachment end down at a 15° angle and then 15° back up until level (forming a lazy Z).
- Place the sensor in the slot, with the brass element $3/8$ inch below the road surface along the entire length. The tip of the sensor should be a minimum of 2 inches from the end of the slot and should not touch the bottom of the slot. The top of the plastic installation bracket clips should be $1/8$ inch below the surface of the road. The lead attachment should not touch the bottom or sides of the slot. Ensure the sensor ends are pushed down per the manufacturer's instructions.
- Visually inspect the length of the sensor to ensure it is at uniform depth along its length and it is level (not twisted, canted or bent).

- On the passive cable end, block the end of the slot approximately 3-5 inches beyond the end of the lead attachment area creating an adequate “dam” so that the sensor grout does not flow out.
- Use one bucket of sensor grout per piezo installation. Overfill the slot with sensor grout and allow to cure for a minimum of 10 minutes before continuing with the installation. Ensure that sensor grout fills around and beneath the sensor completely and that there is not a trough on top.
- Remove the tape along the sides of the saw slot when the adhesive starts to cure.
- Carefully remove the dam from the end of the sensor.
- Route the lead-in cable through the saw slot
- Install conduit sealant to a minimum of 1” deep into the cored 1½ inch hole.
- Cover the lead-in cable with encapsulant, backer rod, and grout.
- If necessary, after the grout has hardened, grind with an angle grinder until the profile is a 1/16-inch mound. There shall be no concave portion to the mound.
- Clean up the site and dispose of all waste off the project.
- Ensure that the sensor grout has completely cured prior to subjecting the sensor to traffic. Curing time will vary with temperature and humidity.

Upon installation, test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within $\pm 20\%$ of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Perform a functional test of the piezo with an oscilloscope to ensure that the sensor is generating a proper response to the passage of vehicles.

Record the sensor serial number and the test results and label “post-installation.” This information should be stored in the counter cabinet and/or returned to Department Planning personnel.

3.18. Pole – Wooden

Furnish: Pole; anchoring equipment (as required); hardware (as required).

Excavate and install wood pole to a minimum depth of one-sixth the total pole height. Place backfill material in hole and compact until flush with existing grade. Install guy wire, guy guard, anchor, anchor rod, and strand vise, if necessary. Anchor shall be a minimum of one-third the pole height from the face of the pole. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.19. Removal of Existing Equipment

The Contractor shall remove existing materials (including but not limited to: poles, anchors, cabinets, junction boxes, conduit and wire) not to be reused. Contractor shall dispose of all removed materials off the project. All materials and labor necessary for the removal of existing equipment shall be considered incidental to other bid items.

3.20. Signs

Furnish: Signs; sign standards; hardware.

Construction of signs shall conform to the *Standard Specifications for Road and Bridge Construction*.

3.21. Splicing

Furnish: Splice kit; solder.

These notes describe the splicing process (if permitted) and are not intended to grant permission to splice. Permission to splice shall be determined by the Division of Planning and the locations shall be shown on the layout sheet. If splicing is needed but not shown on the layout sheet, the Contractor shall receive prior written approval from the Division of Planning.

All splices shall conform to the provisions of the NEC.

Splices for loop and loop lead-in wire shall be twisted and soldered. Abrade the outer jacket of both wires to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced loop conductors shall test free of shorts and unauthorized grounds and shall have an insulating resistance of at least 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.

For piezos, the same type coax cable, supplied by the manufacturer, shall be used to splice to the sensor's lead-in cable. Cables shall be soldered. Abrade the outer jacket of both cables to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced piezo cables shall be tested and have a minimum resistance of 20 megohms, a maximum dissipation factor of 0.03, a capacitance within the manufacturer's recommended range based upon the length of additional cable. A functional test of the piezo shall be performed to ensure that the sensor is generating a proper response to the passage of vehicles.

3.22. Trenching and Backfilling

Furnish: Warning tape; seed mix type I; cereal rye or German foxtail-millet; mulch; concrete (as required); asphalt (as required).

Excavate trench and provide required cover as shown on the standard detail sheets. After placing conduit, backfill material shall be placed and compacted in lifts of 9 inches or less. Install warning tape as shown on the detail sheet. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.23. Wiring

Furnish: Wire; wire labels; spade tongue wire terminals (as required).

Installation of all wiring shall conform to the NEC. Permanent identification numbers

shall be affixed to all wires in all junction boxes and cabinets (see Layout(s) for loop and piezo numbers).

Additional lengths of each loop and piezo sensor wire shall be neatly coiled in all cabinets and junction boxes as follows:

Enclosure Type	Additional length of each wire
Galvanized Steel Cabinet	2' – 3'
Pad Mount Cabinet (332)	6' - 8'
Pole Mount Cabinet (336)	3' - 4'
Junction Box Type 10x8x4	2' – 3'
Junction Box Type A, B, or C	2' – 3'

3.24. Wood Post

Furnish: Wood post; concrete (as required); seed mix type I; cereal rye or German foxtail-millet; mulch.

Excavate hole to specified depth and place concrete, if required. Install post, backfill to existing grade, and tamp backfill. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

3.25. Remove and Replace Sidewalk

Furnish: Lumber, stakes, nails or screws, and concrete.

Remove existing sidewalk to install rigid conduit from edge of roadway to nearest junction box or cabinet. Form, pour and finish concrete in place of old existing sidewalk making sure to replace the expansion joints in their respective locations. Concrete shall conform to the *Kentucky Standard Specifications for Road and Bridge Construction* for sidewalks.

4. BID ITEM NOTES AND METHOD OF MEASUREMENT FOR PAYMENT

Only the bid items listed will be measured for payment. All other items required to complete the vehicle detection installation shall be incidental to other items of work. Payment at the contract unit price shall be full compensation for all materials, labor, equipment and incidentals to furnish and install these items.

4.1. Bore and Jack Pipe – 2”

Bore and jack pipe – 2” shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

4.2. Conduit

Conduit shall include furnishing and installing specified conduit in accordance with the specifications. This item shall include conduit fittings, bodies, boxes, weatherheads, expansion joints, couplings, caps, conduit sealant, electrical tape, clamps, bonding straps and any other necessary hardware. Conduit will be measured in linear feet.

4.3. Electrical Service

Electrical Service shall include furnishing and installing all necessary materials and payment of all fees toward the complete installation of an electrical service which has passed all required inspections. Incidental to this item shall be furnishing and installing:

- Meter-base per utility company’s specifications
- Service disconnect panel per utility company’s specifications
- Meter base and service disconnect entrance hubs, waterproof
- Service entrance conductors
- Rigid steel conduit
- Rigid steel conduit fittings
- Conduit straps
- Weatherhead
- Duplex GFCI receptacle, 120-volt, 20-amp
- Ground rod with clamp
- Grounding conductor

Also incidental to this item shall be any necessary clearing of right of way for the electrical service drop.

Electrical service will be measured in individual units each.

4.4. Flashing Arrow

Flashing Arrow shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

4.5. Galvanized Steel Cabinet

Galvanized Steel Cabinet shall include furnishing and installing galvanized steel cabinet on post as specified. Incidental to this item shall be furnishing and installing grounding hardware, and any necessary post/pole mounting hardware. Also incidental to this item shall be furnishing and installing the required number of terminal blocks and connection of all

sensors to the terminal blocks. Galvanized Steel Cabinet will be measured in individual units each.

4.6. Install Pad Mount Enclosure

Install Pad Mount Enclosure shall include installing a Department-furnished enclosure as specified on the detail sheets.

This item shall include obtaining the enclosure from KYTC and transporting it to the installation site and furnishing and installing the following:

- Concrete foundation (including any excavation necessary)
- Anchor bolts, lock washers, and nuts
- Conduit
- Conduit fittings (including grounding bushings)
- Weatherhead
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Pad Mount Enclosure will be measured in individual units each.

4.7. Install Controller Cabinet

Install Controller Cabinet shall include installing a Department-furnished cabinet as specified on the detail sheets.

This item shall include obtaining the cabinet from KYTC and transporting it to the installation site and furnishing and installing the following:

- Conduit
- Conduit Fittings
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Controller Cabinet will be measured in individual units each.

4.8. Junction Box Type 10" x 8" x 4"

Junction Box Type 10"x8"x4" shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include connectors, splice sleeves, conduit fittings, mounting materials and any other items required to complete the installation. Incidental to this item shall be furnishing and installing specified post (wood, channel, metal, etc.) as required for the installation. Junction Box Type 10"x8"x4" will be measured in individual units each.

4.9. Junction Box Type A, B, or C

Junction Box Type A, B, or C shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include excavation, furnishing and installing #57 aggregate, backfilling around the box, and restoration of disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing a

grounding conductor bonding all conduit grounding bushings in the box. Junction Box Type A, B, or C will be measured in individual units each.

4.10. Loop Saw Slot and Fill

Loop Saw Slot and Fill shall include sawing and cleaning saw slots and furnishing and installing conduit sealant, loop sealant, backer rod, grout, or other specified material. Loop Saw Slot and Fill will be measured in linear feet of sawed slot.

4.11. Maintain and Control Traffic

Maintain and Control Traffic shall be measured for payment per the *Standard Specifications for Road and Bridge Construction*.

4.12. Open Cut Roadway

Open Cut Roadway shall include excavating trench (sawing and chipping roadway) to dimensions as indicated on the detail sheets and furnishing and placing concrete, steel reinforcing bars, and asphalt. This item also includes restoring any disturbed sidewalk to its original condition. Open Cut Roadway will be measured in linear feet.

4.13. Piezoelectric Sensor

Piezoelectric sensor (piezo) shall include sawing and cleaning saw slots and furnishing and installing piezo in accordance with the specifications. This item shall include furnishing and installing lead-in wire, conduit sealant, encapsulation material, backer rod, grout, testing, and accessories. Piezo will be measured in individual units each.

4.14. Pole – 35' Wooden

Pole – 35' Wooden shall include excavation, furnishing and installing specified wood pole, backfilling and restoring disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing guy wire, anchor and anchor rod, strand vise, and guy guard, if specified.

Pole – 35' Wooden will be measured in individual units each.

4.15. Signs

Signs shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

4.16. Trenching and Backfilling

Trenching and Backfilling shall include excavation, warning tape, backfilling, temporary erosion control, seeding, protection and restoration of disturbed areas to original condition. This item shall include concrete, asphalt or approved replacement material for sidewalks, curbs, roadways, etc. (if required). Trenching and backfilling will be measured in linear feet.

4.17. Wire or Cable

Wire or cable shall include furnishing and installing specified wire or cable within saw slot, conduit, junction box, cabinet, or overhead as indicated on the detail sheets. Incidental to this item shall be the labeling of all wires and cables in each junction box, cabinet and splice

box, and furnishing and installing other hardware required for installing cable. Wire or Cable will be measured in linear feet.

4.18. Wood Post

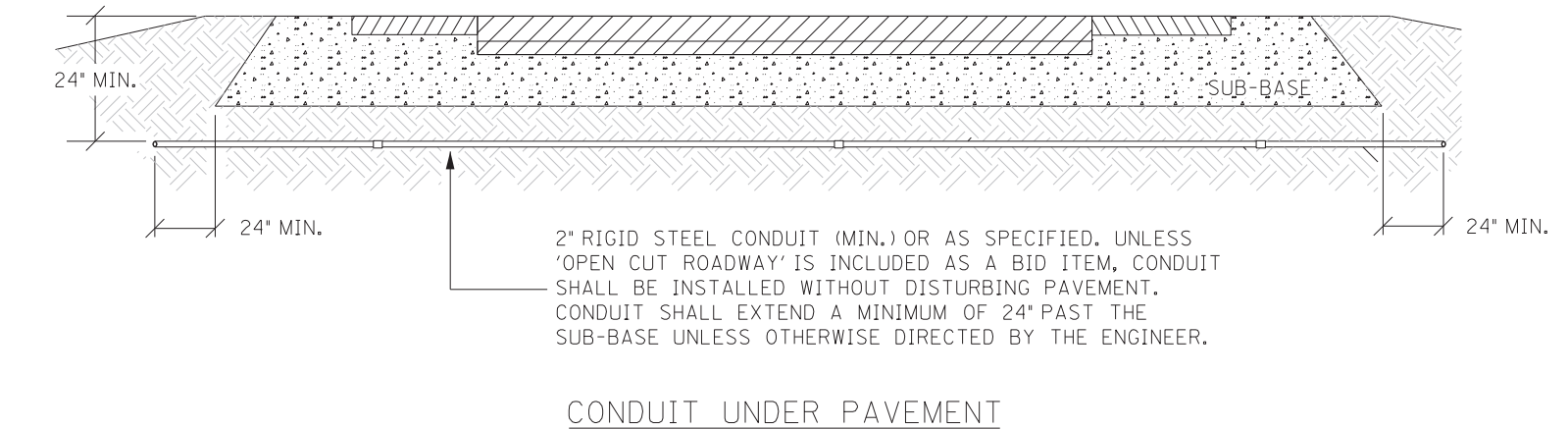
Wood Post shall include furnishing and installing wood post as specified. This item shall include excavation, furnishing and placing concrete (if required), backfilling around the post, and restoration of disturbed areas to the satisfaction of the engineer. Wood Post will be measured in individual units each.

4.19. Remove and Replace Sidewalk

Remove and Replace Sidewalk shall include removing existing sidewalk to install conduit and/or junction box (if required) and replacing old existing sidewalk with new sidewalk after installation of required items. This item includes removing old sidewalk and disposing of off the project and forming, pouring and finishing the new sidewalk after installation of required items.

4.20. Loop Test

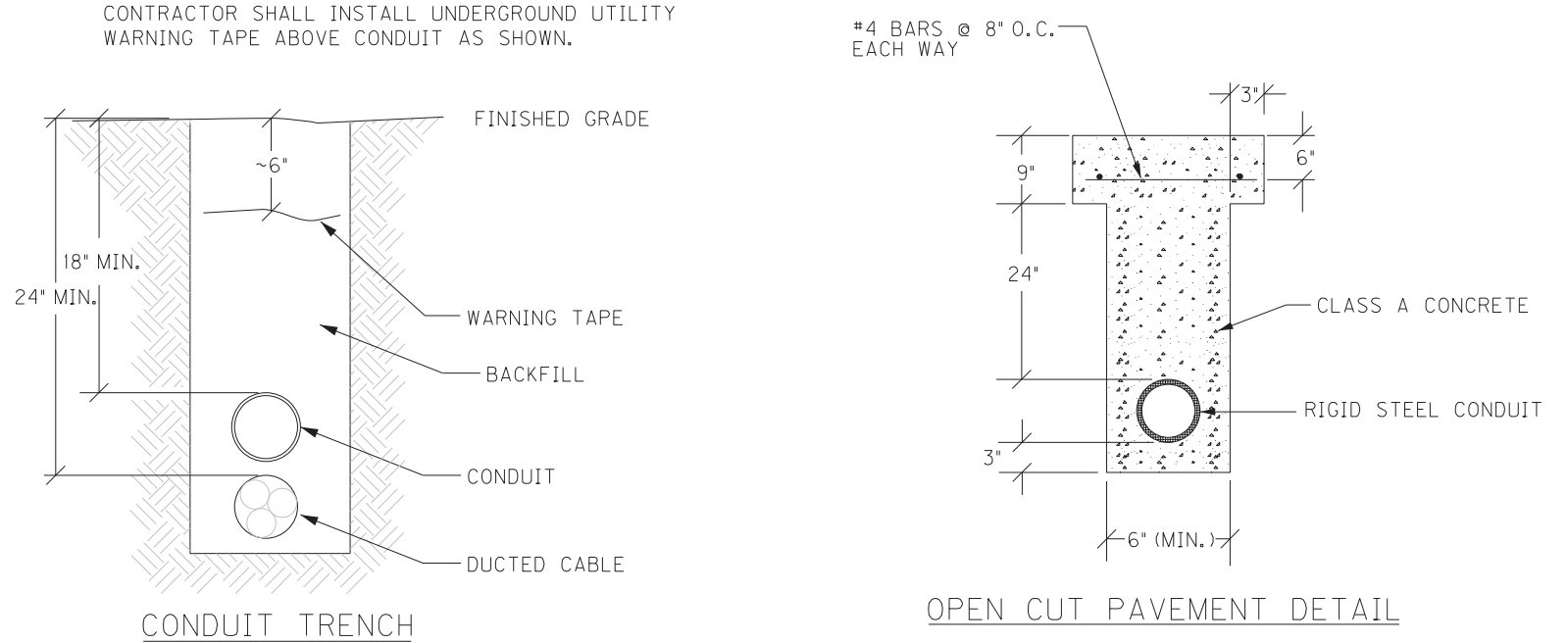
Loop Test includes conducting an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.



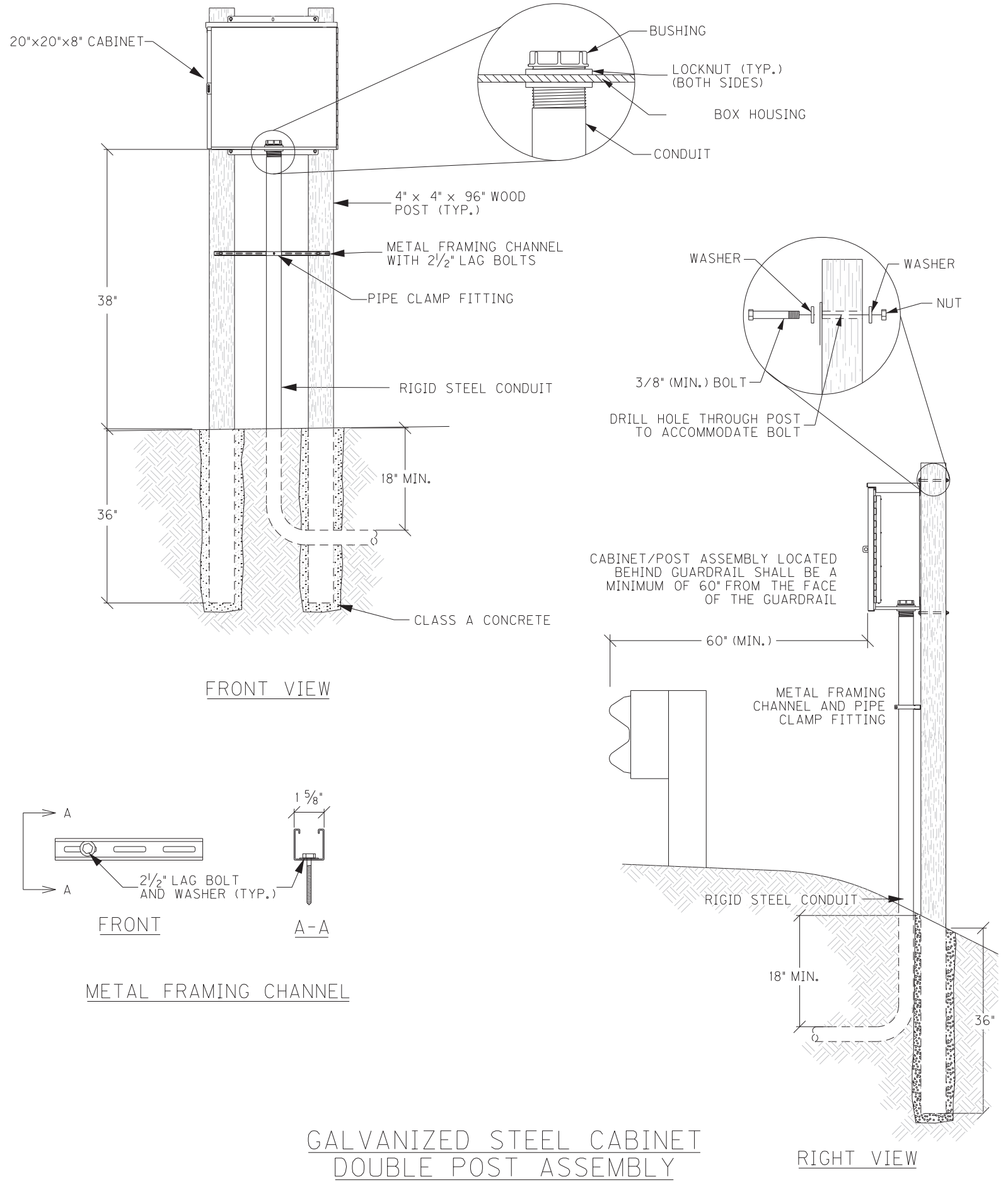
TOTAL TRENCH WIDTH SHALL BE 3" (NOM.) WIDER THAN THE SUM OF THE OUTSIDE DIAMETER(S) OF THE CONDUIT(S) INSTALLED. CONDUIT(S) SHALL BE CENTERED IN TRENCH.

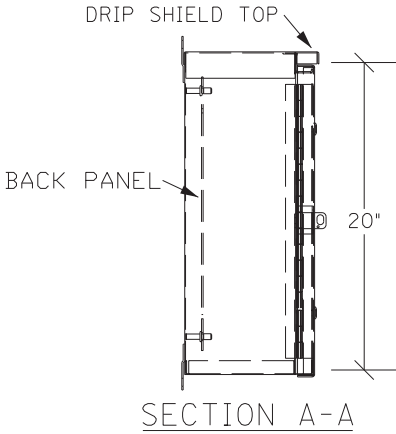
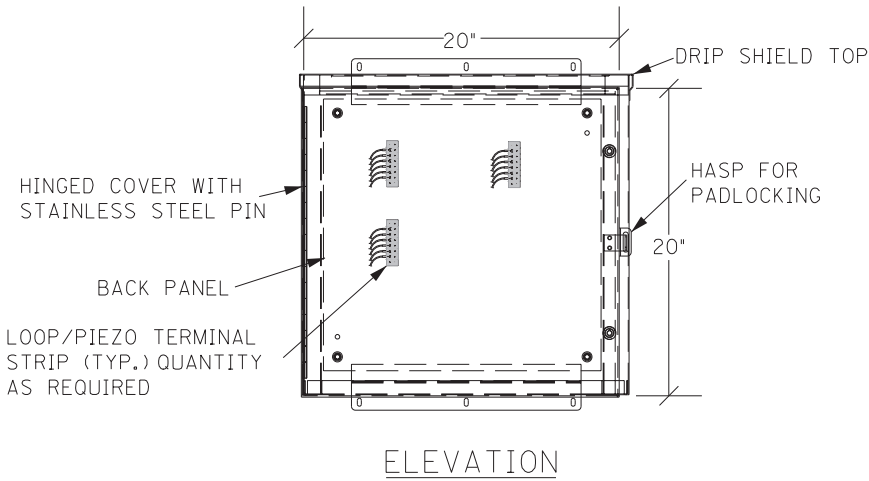
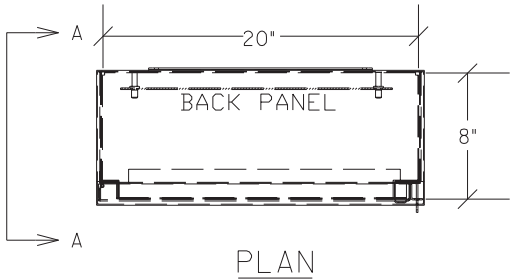
CONTRACTOR SHALL PLACE BACKFILL IN LIFTS (9" MAX.) COMPACT BACKFILL, AND RESTORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER

CONTRACTOR SHALL INSTALL UNDERGROUND UTILITY WARNING TAPE ABOVE CONDUIT AS SHOWN.

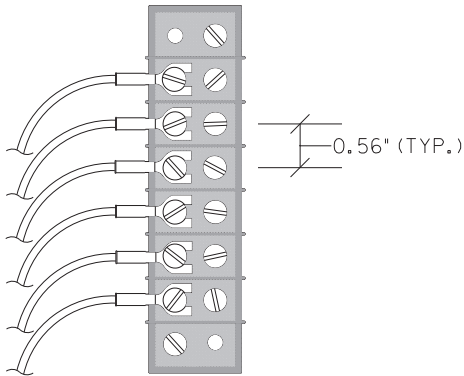
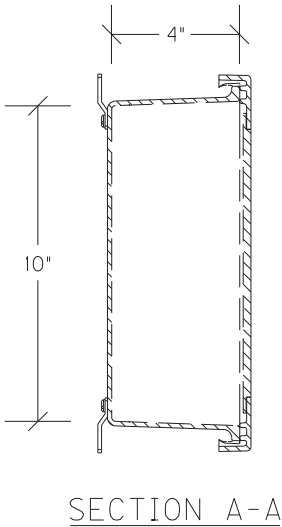
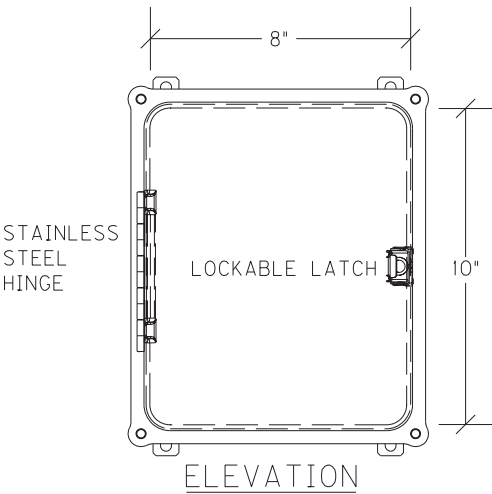
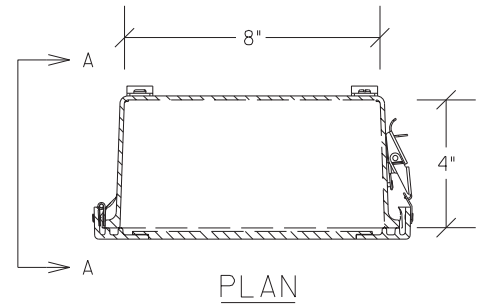


CONDUIT INSTALLATION

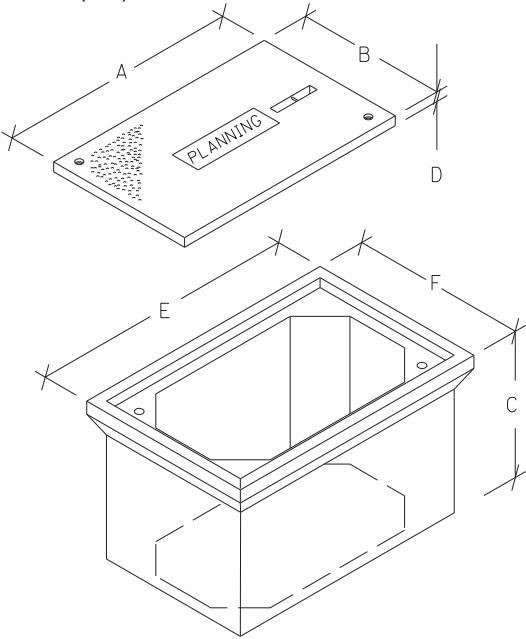




GALVANIZED STEEL CABINET

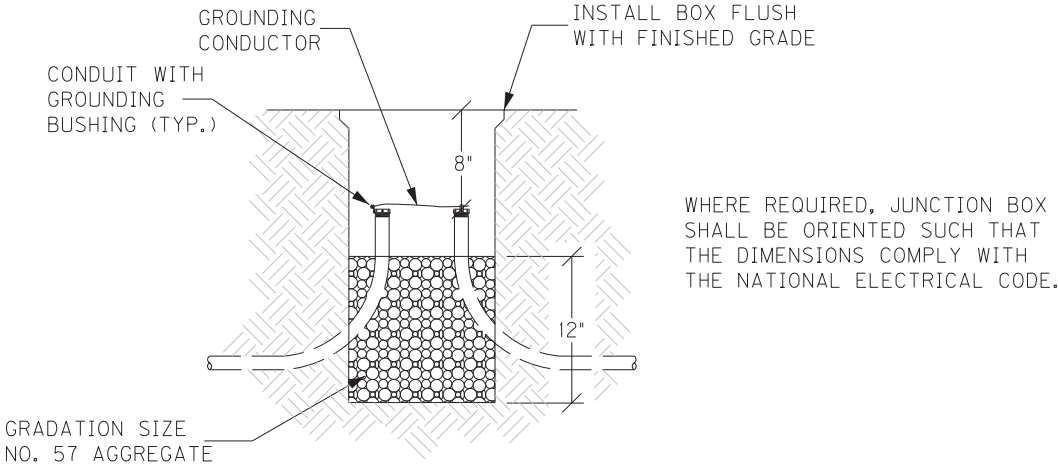


JUNCTION BOX 10"X8"X4"

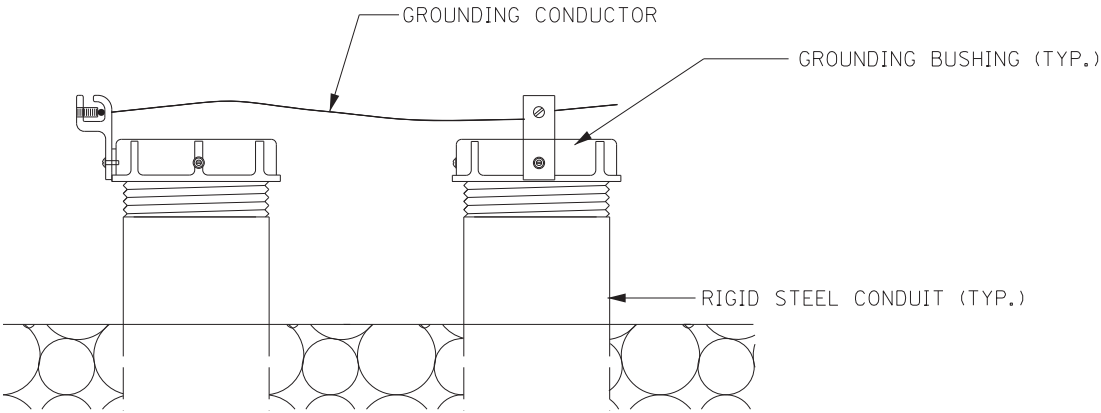


JUNCTION BOX DIMENSIONS (NOMINAL)						
	A	B	C	D*	E	F
TYPE A	23"	14"	18"	2"	25"	16"
TYPE B	18"	11"	12"	1¾"	20"	13"
TYPE C	36"	24"	30"	3"	38"	26"

* MINIMUM
STACKABLE BOXES ARE PERMITTED

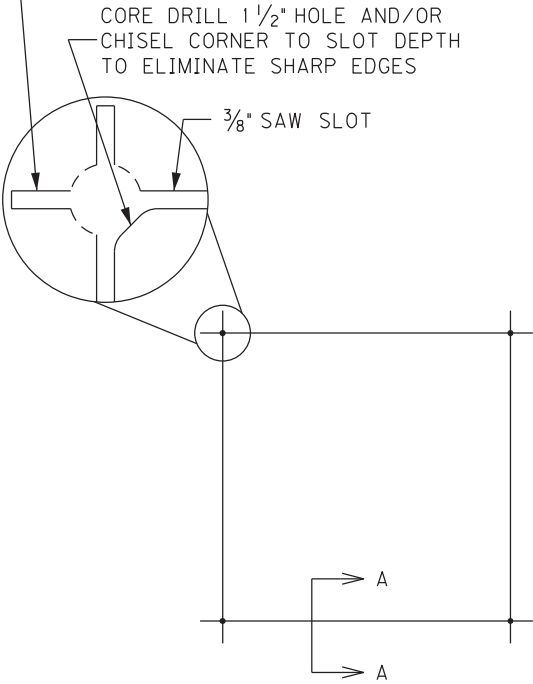


ELEVATION



GROUNDING DETAIL

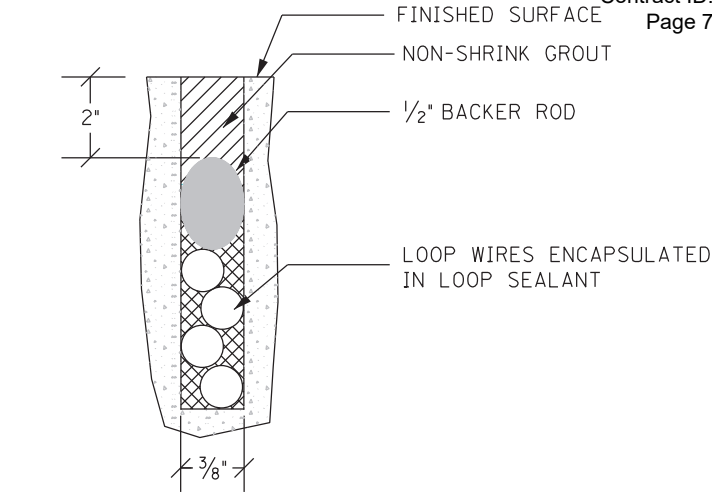
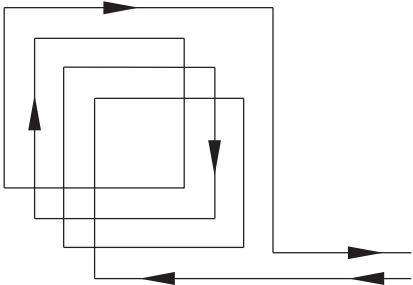
JUNCTION BOX - TYPE A, TYPE B, TYPE C



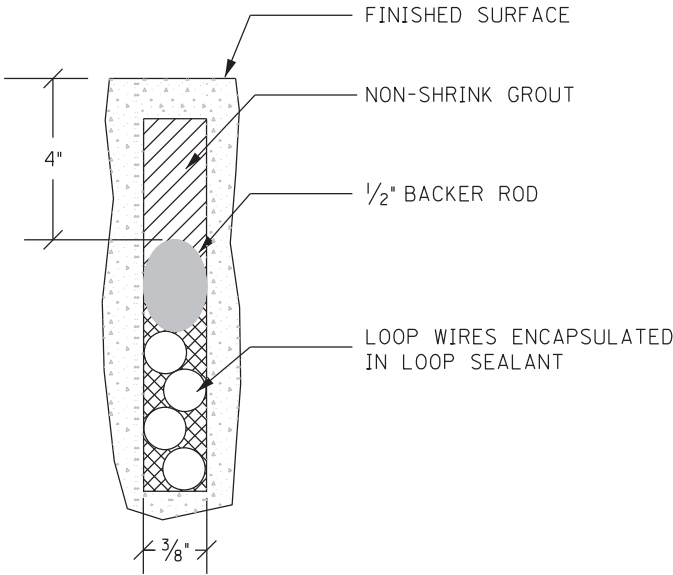
SAW CUT PLAN

UNLESS SPECIFIED OTHERWISE, ALL LOOPS
SHALL BE 6' x 6' SQUARE, CENTERED IN EACH LANE,
WITH FOUR (4) TURNS OF 14 AWG LOOP WIRE.

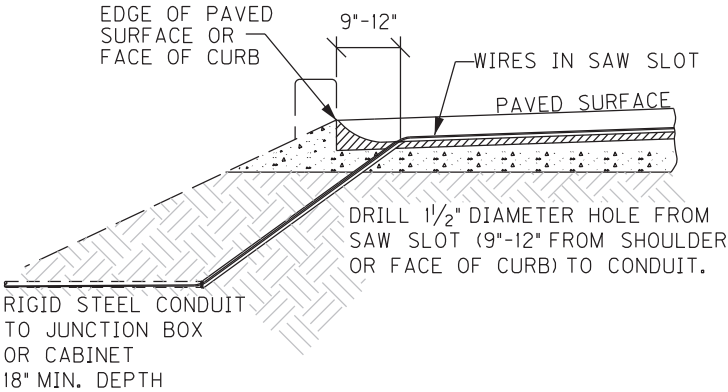
ADJACENT SAW SLOTS SHALL BE A MINIMUM OF
12" APART.



SECTION A-A (CONCRETE)



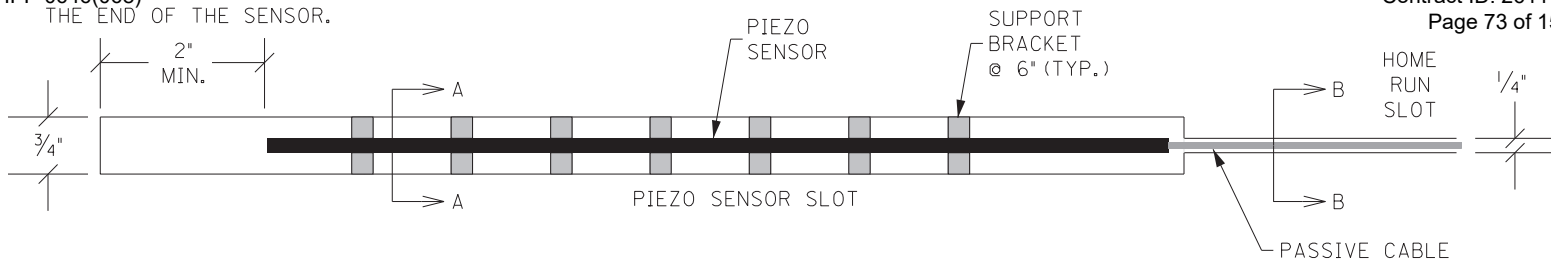
SECTION A-A (ASPHALT)



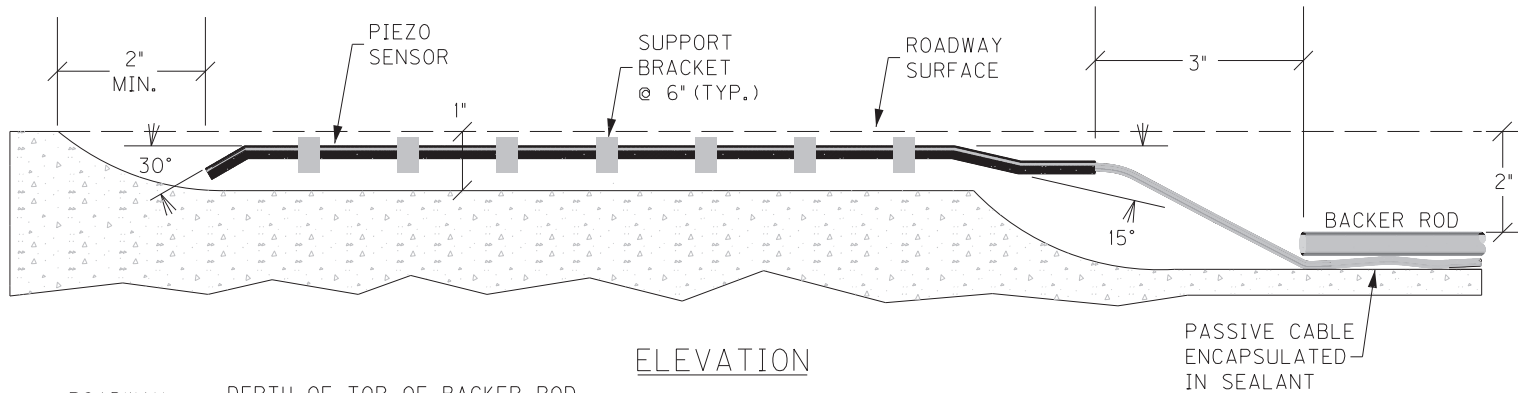
SAW SLOT EDGE OF PAVEMENT TRANSITION

INDUCTIVE LOOP DETECTOR

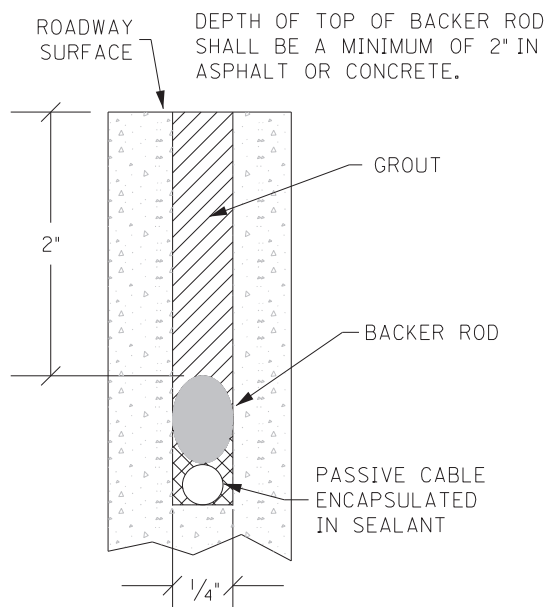
PIEZOELECTRIC SAW SLOT A
OF 2" BEYOND
THE END OF THE SENSOR.



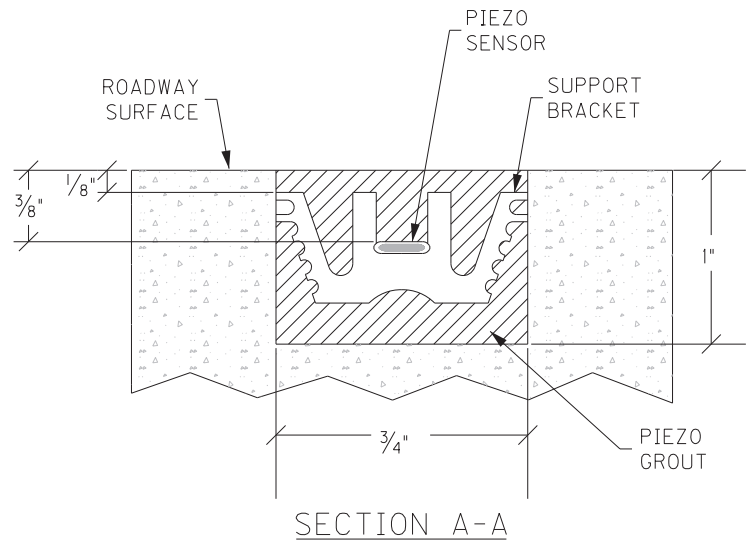
PLAN



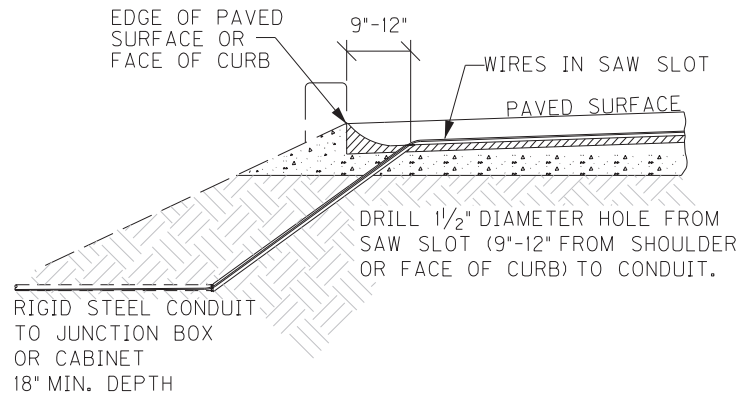
ELEVATION



SECTION B-B



SECTION A-A



PIEZOELECTRIC SENSOR INSTALLATION

SPECIFICATIONS

ALL REFERENCES TO THE STANDARD SPECIFICATIONS ARE TO THE 2019 EDITION OF THE KENTUCKY DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION WITH SUPPLEMENTAL SPECIFICATIONS.

ALL REFERENCES TO THE AASHTO SPECIFICATIONS ARE TO THE LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION.

SPECIAL NOTES

SPECIAL NOTE FOR CONCRETE SEALING

DESIGN LOAD

THE COLUMNS AND CRASH WALL ARE DESIGNED FOR 600 KIP COLLISION FORCE.

DESIGN METHOD

ALL REINFORCED CONCRETE MEMBERS ARE DESIGNED BY THE LOAD AND RESISTANCE FACTOR METHOD AS SPECIFIED IN THE CURRENT AASHTO SPECIFICATIONS.

MATERIALS DESIGN SPECIFICATIONS

FOR CLASS "A" REINFORCED CONCRETE:
FOR STEEL REINFORCEMENT:
F'C = 3500 psi
FY = 60000 psi

REINFORCEMENT

DIMENSIONS SHOWN FROM THE FACE OF CONCRETE TO BARS ARE TO CENTER OF BAR UNLESS OTHERWISE SHOWN. CLEAR DISTANCE TO THE FACE OF CONCRETE IS 2" UNLESS NOTED OTHERWISE. SPACING OF BARS IS FROM CENTER TO CENTER OF BARS.

DRILLING AND ANCHORING INTO EXISTING CONCRETE

FOR ANCHORING NEW REINFORCING STEEL INTO EXISTING CONCRETE, SEE SECTIONS 511 AND 602.03.04 OF STANDARD SPECIFICATIONS. AVOID DRILLING THROUGH COLUMN REINFORCEMENT (VERTICAL AND HOOP). IF REINFORCEMENT CAN NOT BE LOCATED PRIOR TO DRILLING AND IS HIT, STOP DRILLING IMMEDIATELY, SHIFT DRILL TEMPLATE LOCATION AND RE-DRILL. THE COST OF THIS WORK, INCLUDING LABOR, TOOLS, AND MATERIALS IS TO BE RE-IDENTICAL TO THE UNIT BID PRICE FOR STEEL REINFORCEMENT.

BONDING NEW CONCRETE TO EXISTING CONCRETE

IMMEDIATELY PRIOR TO PLACING NEW CLASS "A" CONCRETE, THE SURFACE AREAS OF EXISTING CONCRETE ARE TO BE COATED WITH A TWO-COMPONENT EPOXY RESIN SYSTEM IN ACCORDANCE WITH SECTIONS 511 AND 826 OF THE STANDARD SPECIFICATIONS. THE COST OF THIS WORK, INCLUDING LABOR, TOOLS, AND MATERIALS IS TO BE INCIDENTAL TO THE UNIT BID PRICE FOR CLASS "A" CONCRETE.

CONCRETE SEALING

CONTRARY TO THE SPECIFICATIONS, DO NOT APPLY MASONRY COATING. INSTEAD APPLY CONCRETE SEALER IN ACCORDANCE WITH THE SPECIAL NOTE FOR CONCRETE SEALING.

BEVELED EDGES

ALL EXPOSED EDGES SHALL BE BEVELED $\frac{3}{4}$ " UNLESS OTHERWISE SHOWN.

TRAFFIC CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTING AND MAINTAINING PROPER BARRICADES AND ADVANCE WARNING SIGNALS FOR ROAD CONSTRUCTION AND ROAD CLOSURE.

 COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	REVISION DATE		
	USER: \$\$\$\$\$\$ DATE PLOTTED: \$\$\$/\$\$\$/\$\$\$\$		

HMB PROFESSIONAL ENGINEERS	DATE: 12/20/25	GENERAL NOTES		ROUTE	ITEM NO.	COUNTY OF	DRAWING NUMBER
	DESIGNED BY:	B. FILE	B. REID		9-22046	BATH	
	DETAILED BY:	B. FILE	B. REID	CROSSING	SHEET NO.		
				I-64	5		

OpenRoads Designer v10.12.02.4

UTILITIES

BEFORE BEGINNING WORK, LOCATE ALL EXISTING UTILITIES. CONSIDER LOCATION OF ANY UTILITIES SHOWN ON THE EXISTING OR CONTRACT DRAWINGS TO BE APPROXIMATE AND FOR INFORMATIONAL PURPOSES ONLY. THE DEPARTMENT DOES NOT WARRANT THE LOCATIONS AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS. THE CONTRACTOR MUST MAKE HIS OWN DETERMINATION, EXCEPT AS SHOWN ON THE PLANS, WORK AROUND AND DO NOT DISTURB EXISTING UTILITIES.

REMOVE CONCRETE MASONRY

THE EXISTING NON-STRUCTURAL CONCRETE BARRIER ATTACHED OR ADJACENT TO THE EXISTING PIERS OR BETWEEN PIER STEMS IS TO BE REMOVED AS SHOWN IN THE PLANS. ALL CONCRETE REMOVAL, INCLUDING ANY STEEL REINFORCEMENT, WILL BE MEASURED AND PAID AS "REMOVE CONCRETE MASONRY."

STRUCTURES EXCAVATION

THE COST FOR ANY EXCAVATION REQUIRED TO REMOVE AND CONSTRUCT CRASHWALL IS INCIDENTAL TO THE UNIT BID PRICE FOR CLASS A.

PLANS OF EXISTING STRUCTURES

AS AN AID TO THE CONTRACTOR, PLANS OF THE EXISTING BRIDGES ARE AVAILABLE (SEE DRAWING NUMBERS 16431 AND 16284). THE COMPLETENESS AND ACCURACY OF THE DRAWINGS IS NOT GUARANTEED.

VERIFYING FIELD CONDITIONS

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE ORDERING MATERIAL. NEW MATERIAL THAT IS UNSUITABLE BECAUSE OF VARIATIONS IN THE EXISTING STRUCTURE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

DAMAGE TO THE STRUCTURES

THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING STRUCTURES. IT SHOULD BE ALLOWED TO FALL DUE TO THE CONTRACTOR'S ACTIONS. THE CONTRACTOR IS RESPONSIBLE FOR BOTH THE REMOVAL AND REPLACEMENT OF THE FALLEN PORTION AT THE CONTRACTOR'S EXPENSE.

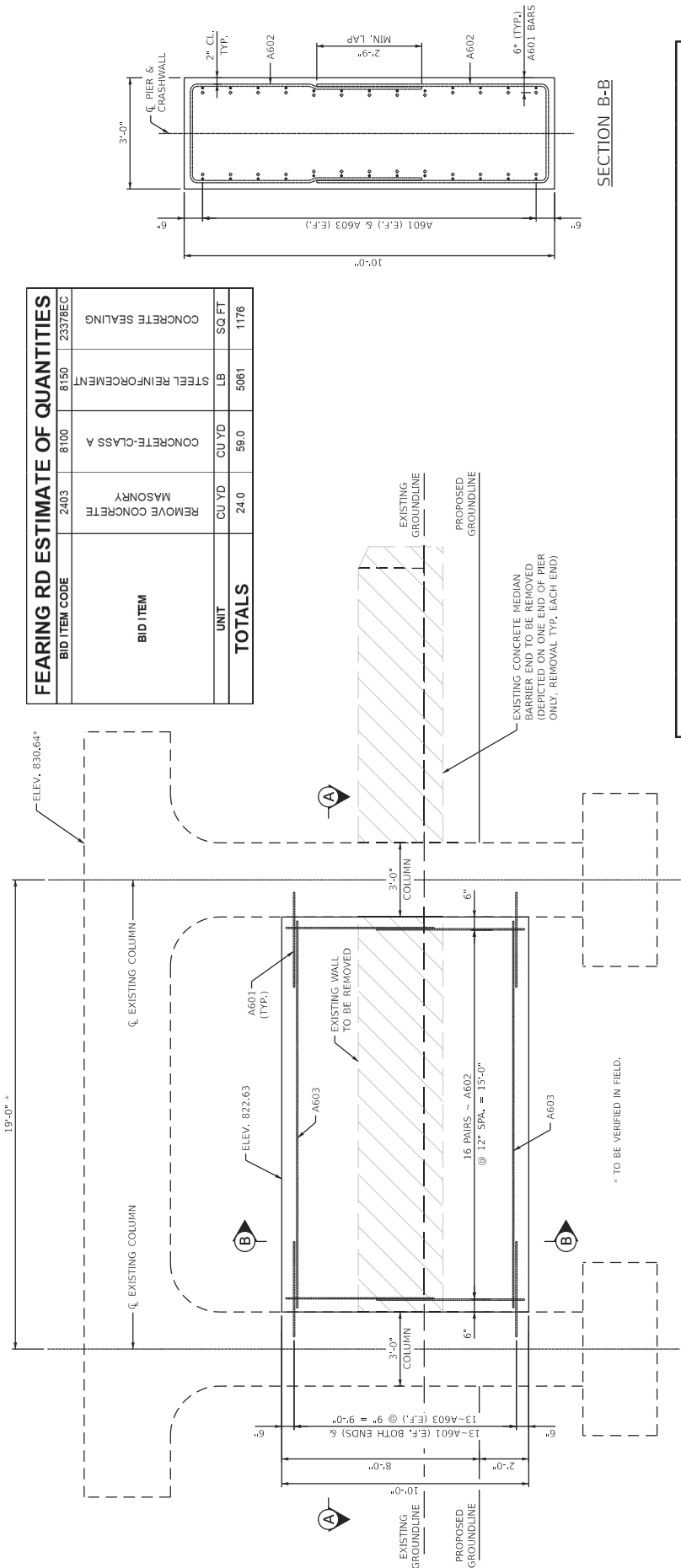
ABBREVIATIONS

	Q.	CENTERLINE	EQ.	EQUAL	TYP	UNLESS NOTED OTHERWISE
	COL	COLUMN	MIN	MINIMUM	UNO	
	CLR	CLEAR	MAX	MAXIMUM	VAR	
	EF	EACH FACE	PROJ	PROJECTION		
	EMBED	EMBEDMENT	SPA	SPACE		

PROJECT ESTIMATE OF QUANTITIES					
BID ITEM CODE	2403	8100	8150	2337BEC	
BID ITEM	REMOVE CONCRETE MASONRY	CONCRETE-CLASS A	STEEL REINFORCEMENT	CONCRETE SEALING	
	CU YD	CU YD	LB	SQ FT	
	68.0	186.0	15143	3566	
TOTALS					

[illegible]

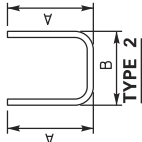
FEARING RD ESTIMATE OF QUANTITIES					
BID ITEM CODE		2403	8100	8150	23378EC
BID ITEM		REMOVE CONCRETE MASONRY		CONCRETE CLASS A	
UNIT		CU YD	CU YD	LB	SQ FT
TOTALS		24.0	59.0	5061	1176
		CONCRETE REINFORCEMENT		CONCRETE SEALING	



SECTION B-B

FEARING RD BILL OF REINFORCEMENT

MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	
				FT	IN	FT	IN
A601	STR	156	#6	4	0	DOWEL	
A602	STR	96	#6	15	2	WALL VERTICAL	
A603	STR	78	#6	15	11	WALL HORIZONTAL	



ELEVATION - PIER 2

FEARING RD

SECTION A-A



DATE: 12/20/25
DESIGNED BY: H. KULE
CHECKED BY: B. REED

ROUTE: FEARING RD

PIER 2 (MEDIAN) CRASHWALL

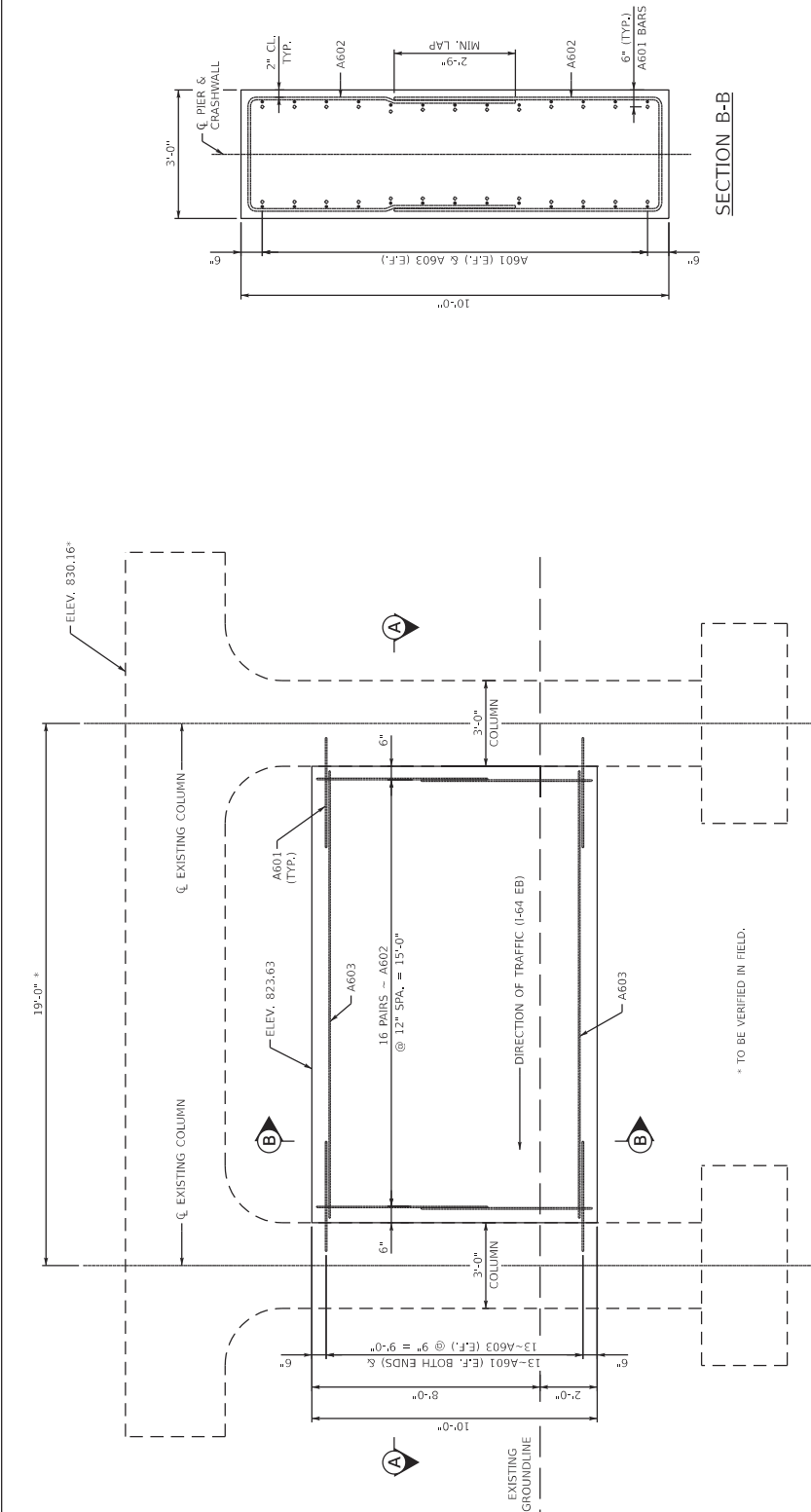
ITEM NO. 9-22046
SHEET NO. S 2

COUNTY OF BATH
DRAWING NUMBER

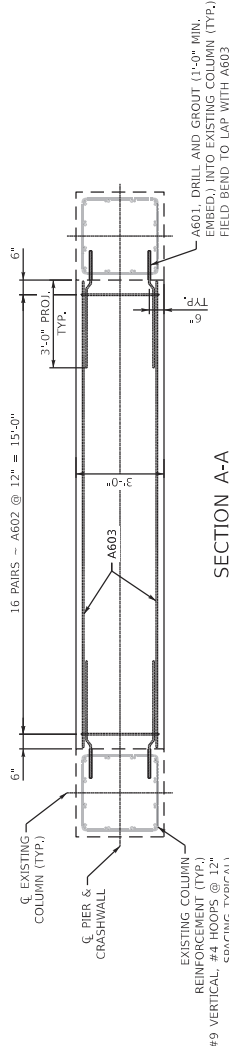


DATE PLOTTED: 5/5/2025
USER: 5554USER555

FILE NAME: 5554USER555



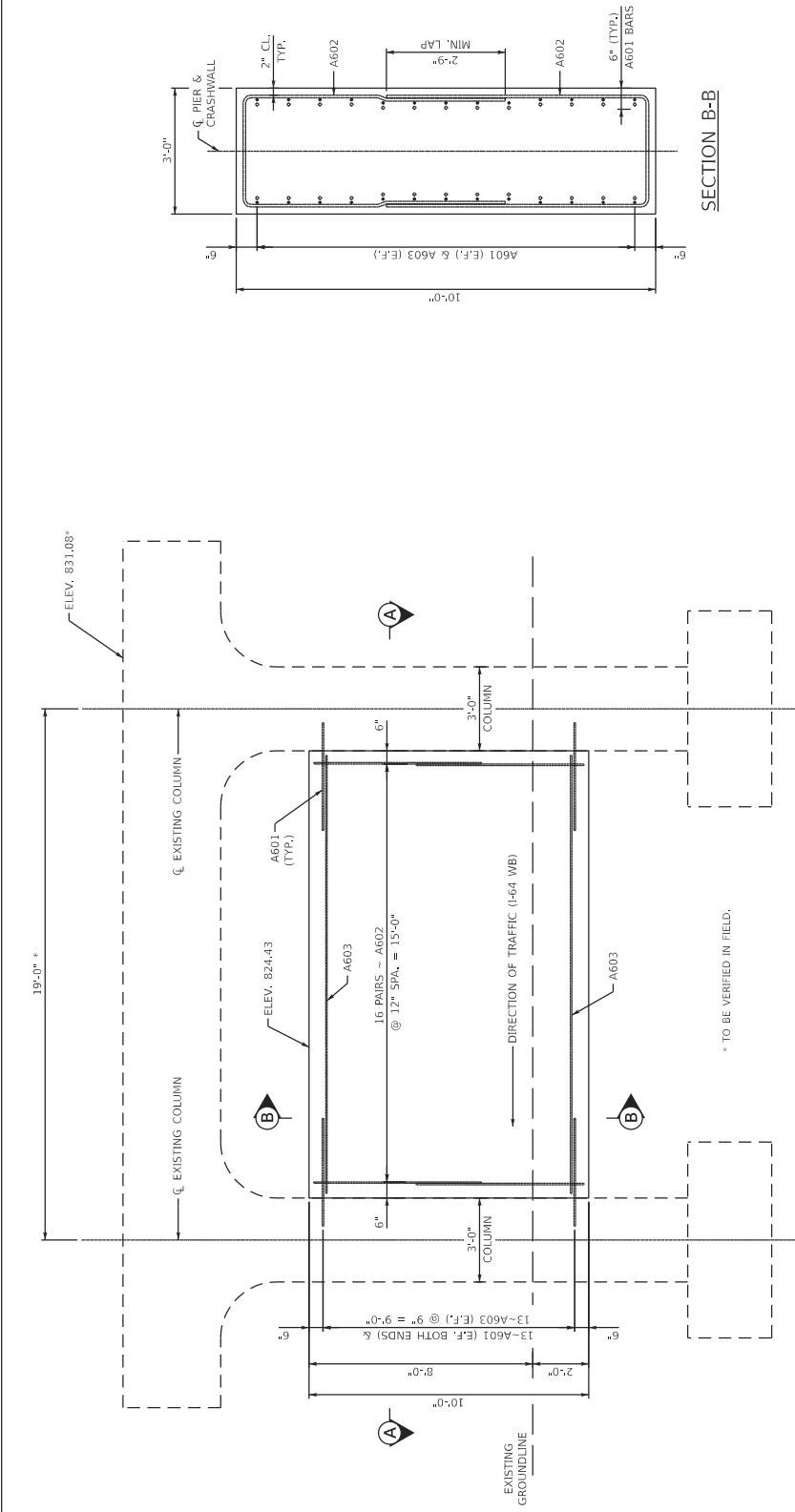
SECTION B-B



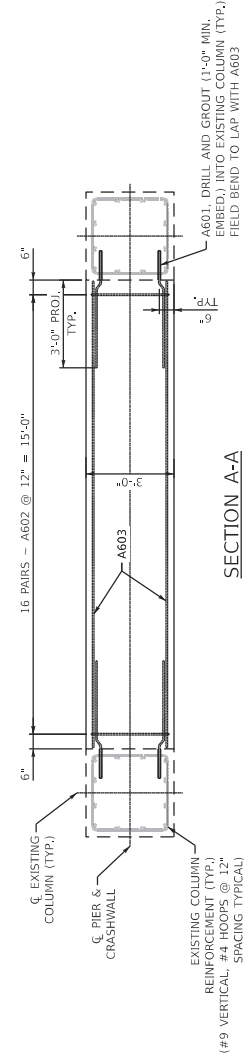
SECTION A-A

COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	REVISION	DATE	HMB PROFESSIONAL ENGINEERS	DATE	12/2/25	CHECKED BY: B. REED	PIER 1 (I-64 EB) CRASHWALL CROSSING I-64 EASTBOUND	ROUTE FEARING RD	ITEM NO. 9-22046 SHEET NO. S 3	COUNTY OF BATH DRAWING NUMBER

Downloaded Designer 10.12.22.4

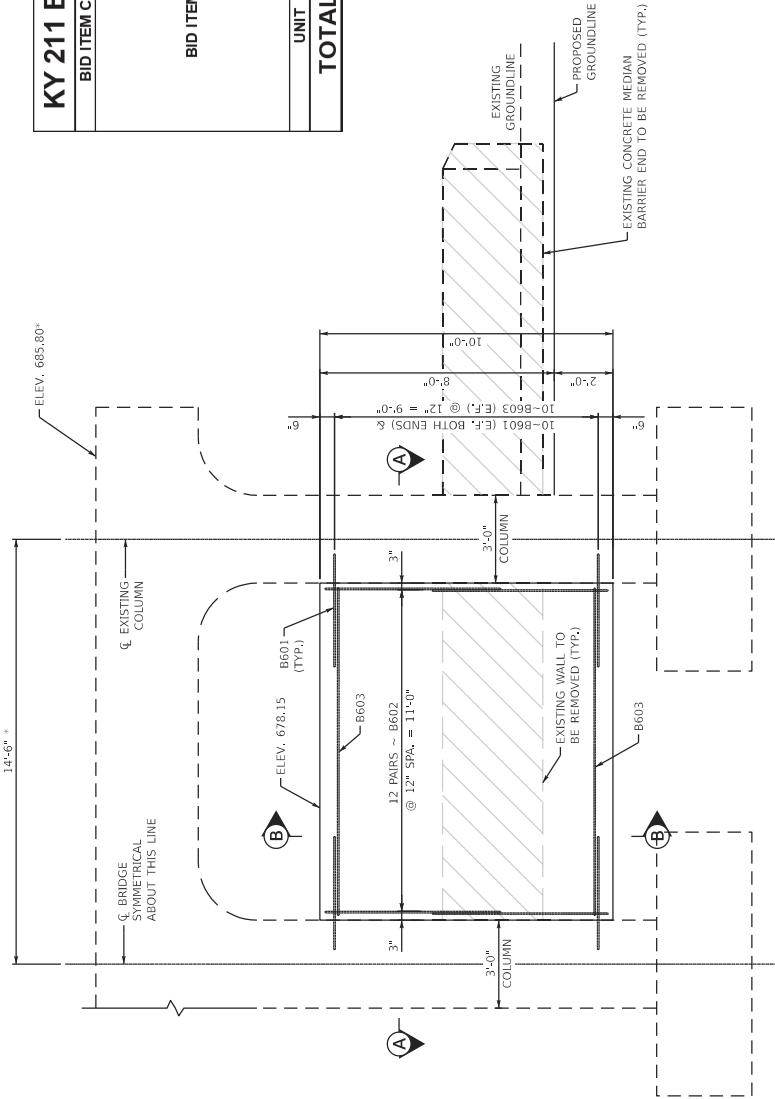


SECTION B-B



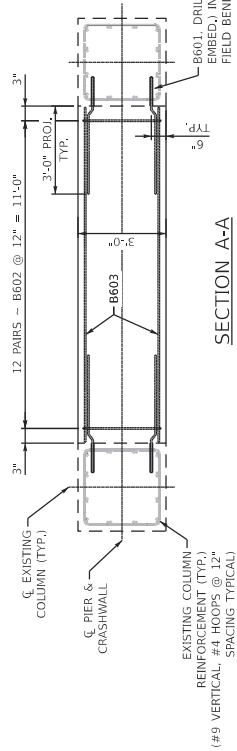
	COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	REVISION	DATE		PREPARED BY HMB PROFESSIONAL ENGINEERS	DATE: 12/2025		CHECKED BY B. REED	PIER 3 (I-64 WB) CRASHWALL CROSSING I-64 WESTBOUND	ROUTE FEARING RD	ITEM NO. 9-22046 SHEET NO. 5 4	COUNTY OF BATH DRAWING NUMBER
						DESIGNED BY: B. REED						
						DETAILED BY: B. REED						
FILE NAME: \$\$\$DATE\$\$\$ DATE PLOTTED: \$\$\$DATE\$\$\$ USER: \$\$\$USER\$\$\$												

KY 211 ESTIMATE OF QUANTITIES					
BID ITEM CODE		2403	8100	8150	23378EC
BID ITEM	UNIT	REMOVE CONCRETE MASONRY	CONCRETE-CLASS A	STEEL REINFORCEMENT	CONCRETE SEALING
		CU YD	CU YD	LB	SQ FT
		TOTALS			
		44.0	127.0	10082	

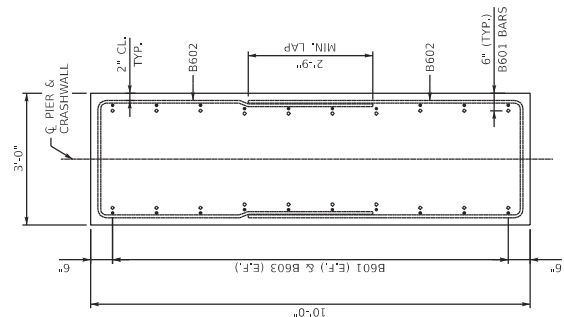


ELEVATION - PIER 2
KY 211

* TO BE VERIFIED IN FIELD.



SECTION B-B



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS



HMB PROFESSIONAL
ENGINEERS

DATE: 3/20/25
DESIGNED BY: B. FOLEY
CHECKED BY: B. FOLEY

PIER 2 (MEDIAN) CRASHWALL
CROSSING: I-64

ROUTE: KY 211

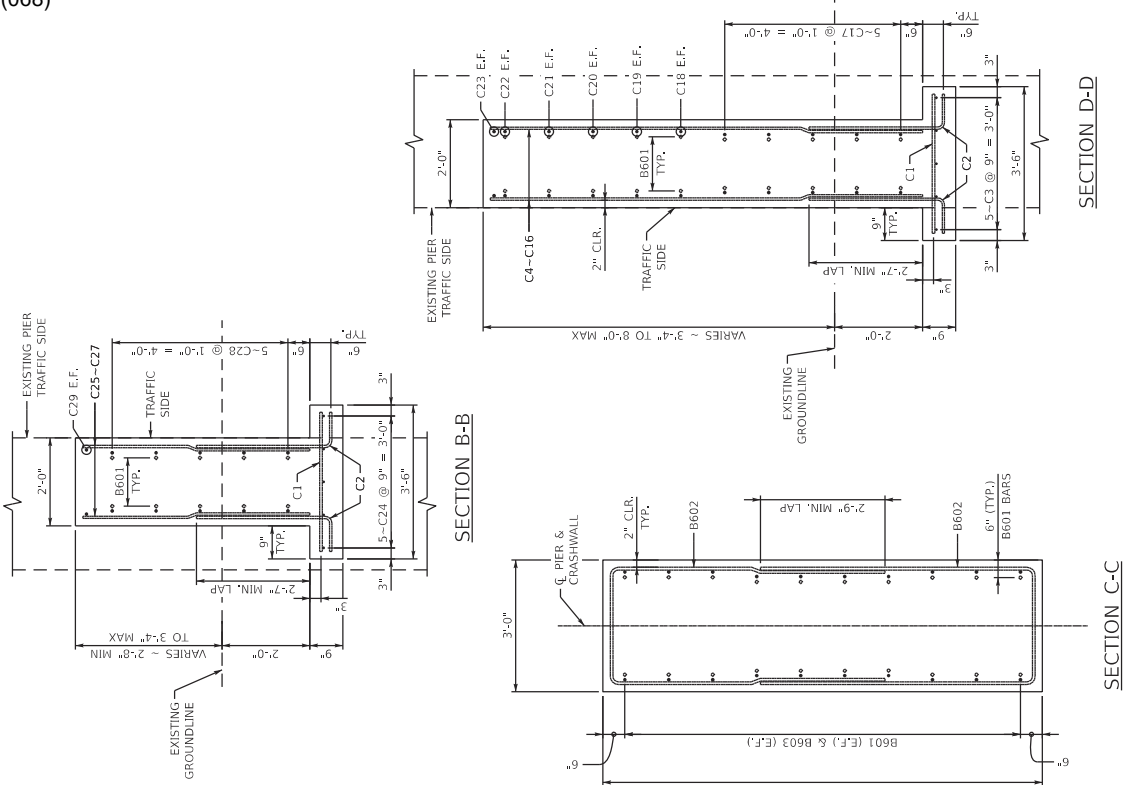
ITEM NO.: 9-22046
SHEET NO.: 55

COUNTY OF: BATH
DRAWING NUMBER



 COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS	REGION DATE 	 HMB ENGINEERS	DESIGNED BY: B. RILEY		DATE: 12/20/25	CHECKED BY: B. RILEY		ROUTE KY 211	COUNTY OF BATH	SHEET NO. 56	DRAWING NUMBER
			DESIGNED BY: B. RILEY		DATE: 12/20/25	CHECKED BY: B. RILEY					
TITLE: PERS 1 AND 3 CRASHWALL CROSSING I-64											
USER: \$\$\$\$\$\$55555555 DATE PLOTTED: 05/20/25 05:55 FILE NAME: \$\$\$55designs \$\$\$persed \$\$\$5555											

KY 211 BILL OF REINFORCEMENT										
MARK	TYPE	NO.	SIZE	LENGTH		LOCATION	A		B	
				FT	IN		FT	IN		
B601	STR	300	#6	4	0	DOWEL				
B602	2	144	#6	15	2					
B603	STR	120	#6	11	5		WALL VERTICAL	6	3	2
C1	STR	62	#5	3	2	WALL HORIZONTAL				
C2	5	124	#5	3	11	INCLINED WALL FOOTINGS				
C3	STR	10	#5	24	8	INCLINED WALL FOOTINGS	0	9	3	2
C4	STR	4	#5	9	9	LEADING INCLINED WALL FOOTING				
C5	STR	8	#5	9	4	LEADING INCLINED WALL VERTICAL E.F.				
C6	STR	8	#5	9	0	LEADING INCLINED WALL VERTICAL E.F.				
C7	STR	8	#5	8	7	LEADING INCLINED WALL VERTICAL E.F.				
C8	STR	8	#5	8	3	LEADING INCLINED WALL VERTICAL E.F.				
C9	STR	8	#5	7	10	LEADING INCLINED WALL VERTICAL E.F.				
C10	STR	8	#5	7	6	LEADING INCLINED WALL VERTICAL E.F.				
C11	STR	8	#5	7	1	LEADING INCLINED WALL VERTICAL E.F.				
C12	STR	8	#5	6	9	LEADING INCLINED WALL VERTICAL E.F.				
C13	STR	8	#5	6	4	LEADING INCLINED WALL VERTICAL E.F.				
C14	STR	8	#5	6	0	LEADING INCLINED WALL VERTICAL E.F.				
C15	STR	8	#5	5	7	LEADING INCLINED WALL VERTICAL E.F.				
C16	STR	8	#5	5	3	LEADING INCLINED WALL VERTICAL E.F.				
C17	STR	20	#5	24	8	LEADING INCLINED WALL VERTICAL E.F.				
C18	STR	4	#5	23	0	LEADING INCLINED WALL HORIZONTAL E.F.				
C19	STR	4	#5	17	8	LEADING INCLINED WALL HORIZONTAL E.F.				
C20	STR	4	#5	12	4	LEADING INCLINED WALL HORIZONTAL E.F.				
C21	STR	4	#5	7	0	LEADING INCLINED WALL HORIZONTAL E.F.				
C22	STR	4	#5	3	0	LEADING INCLINED WALL HORIZONTAL E.F.				
C23	STR	4	#5	25	1	TOP OF LEADING INCLINED WALL				
C24	STR	10	#5	5	8	TRAILING INCLINED WALL FOOTING				
C25	STR	8	#5	5	0	TRAILING INCLINED WALL VERTICAL E.F.				
C26	STR	8	#5	4	9	TRAILING INCLINED WALL VERTICAL E.F.				
C27	STR	8	#5	4	6	TRAILING INCLINED WALL VERTICAL E.F.				
C28	STR	20	#5	5	8	TRAILING INCLINED WALL HORIZONTAL E.F.				
C29	STR	4	#5	5	8	TOP OF TRAILING INCLINED WALL				

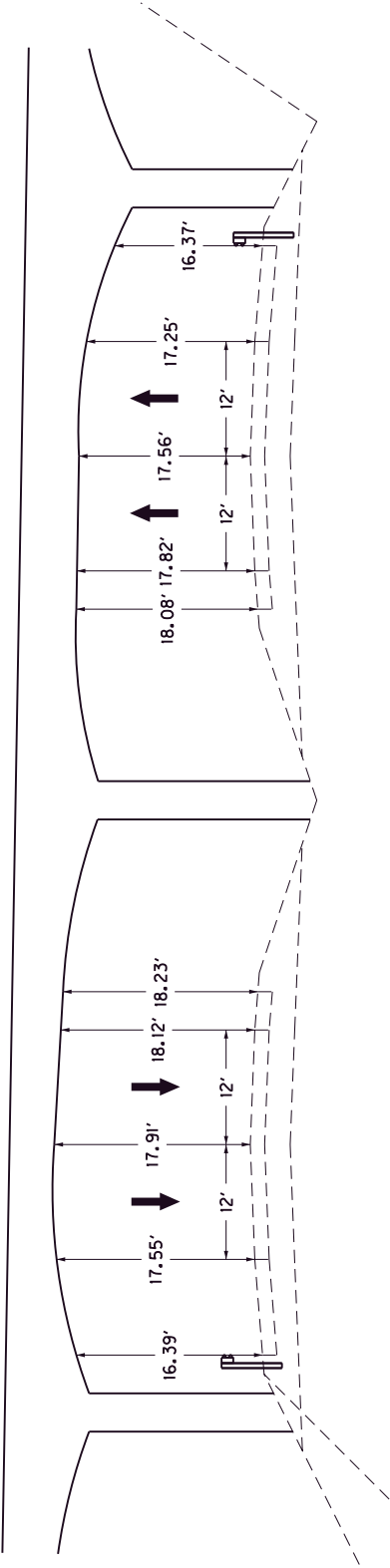


EXISTING CLEARANCE DETAIL

FEARING ROAD (CR 1100) OVER I-64

MP 124.88

County	Item No.	Sheet
BATH	9-22046	-



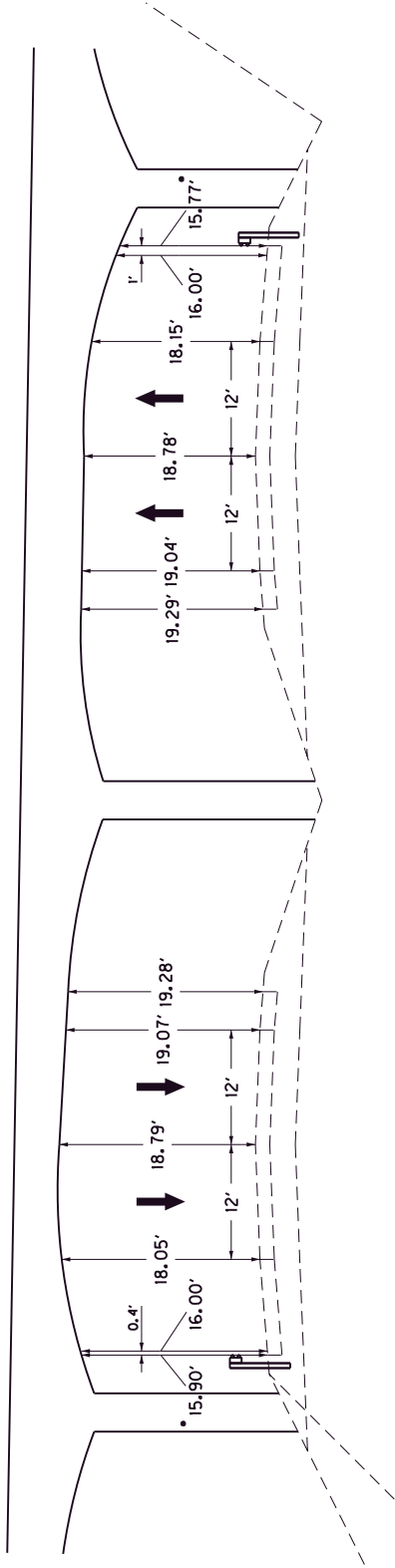
• NO ACTION REQUIRED.

I-64
VERTICAL CLEARANCE

EXISTING CLEARANCE DETAIL

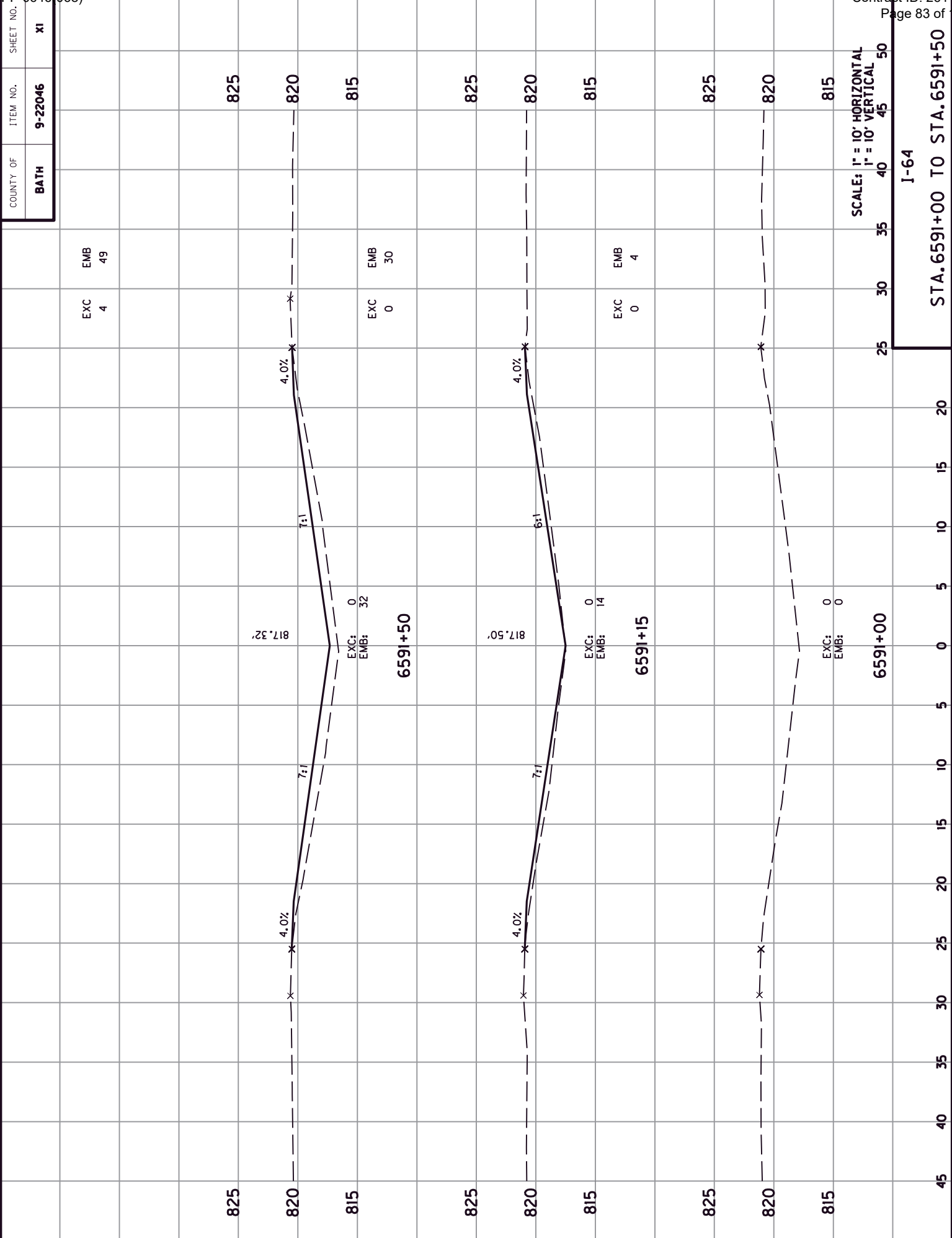
KY 211 OVER I-64
MP 128.55

County	Item No.	Sheet
BATH	9-22046	-



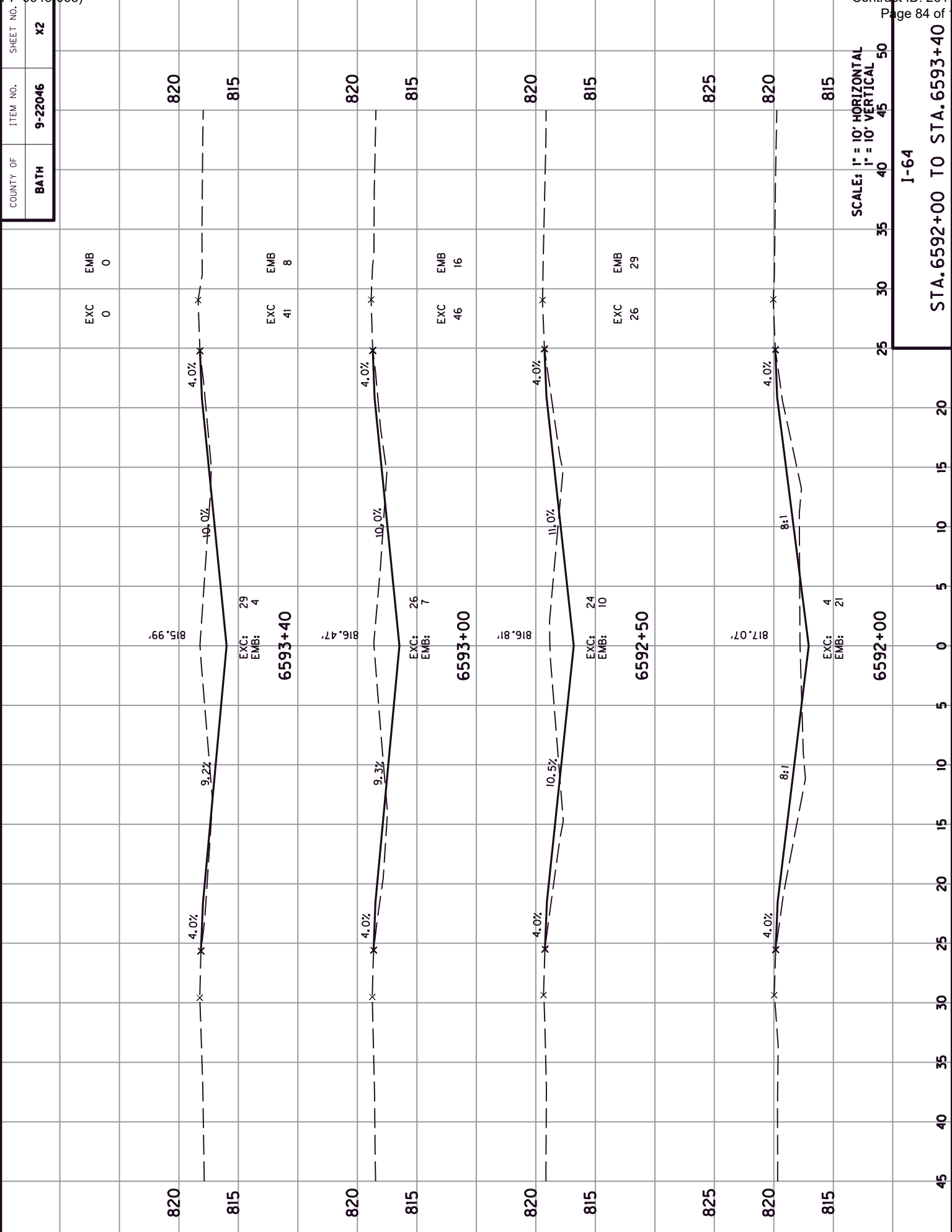
I-64
VERTICAL CLEARANCE

• NO ACTION REQUIRED.



I-64

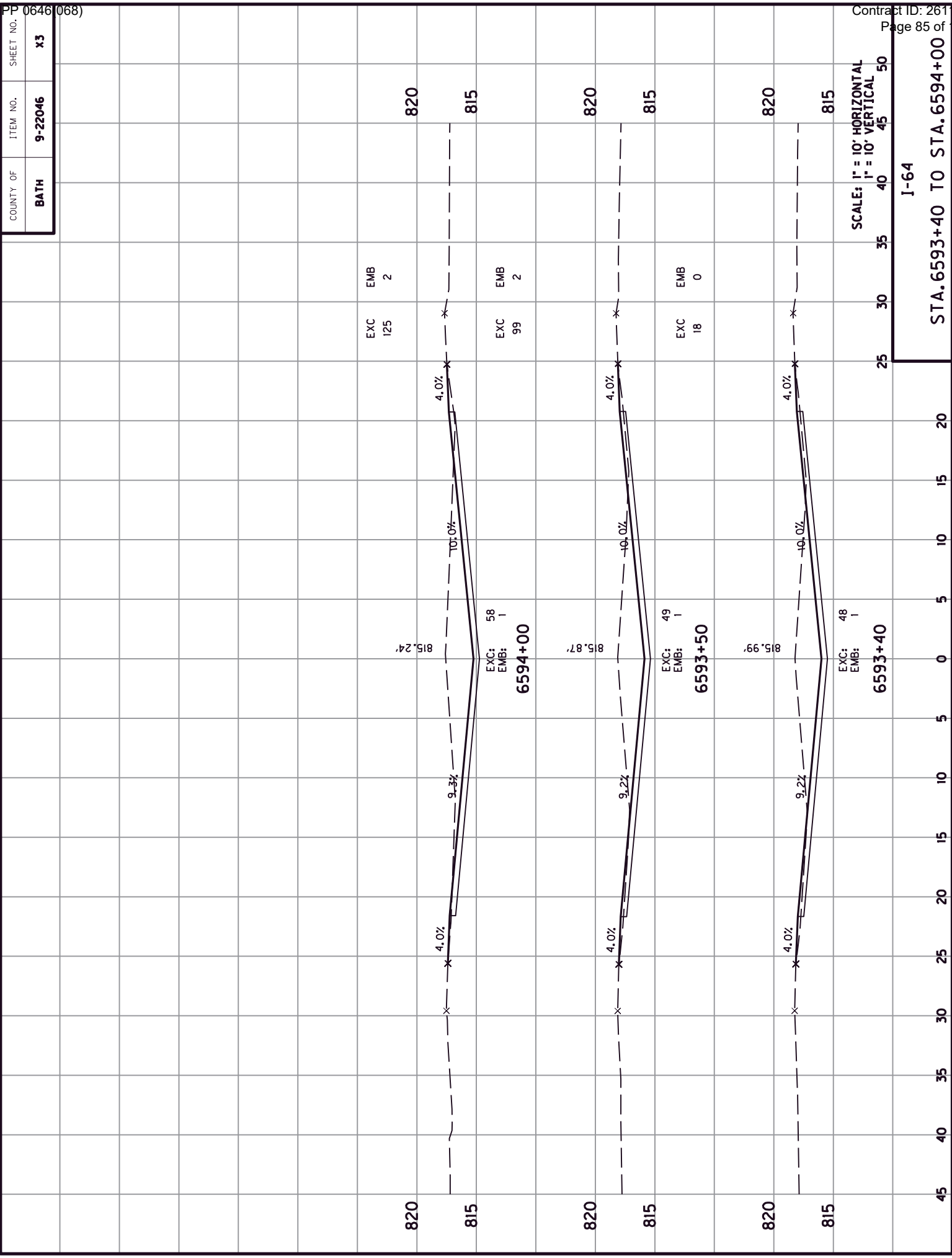
STA. 6591+00 TO STA. 6591+50



I-64

STA. 6592+00 TO STA. 6593+40

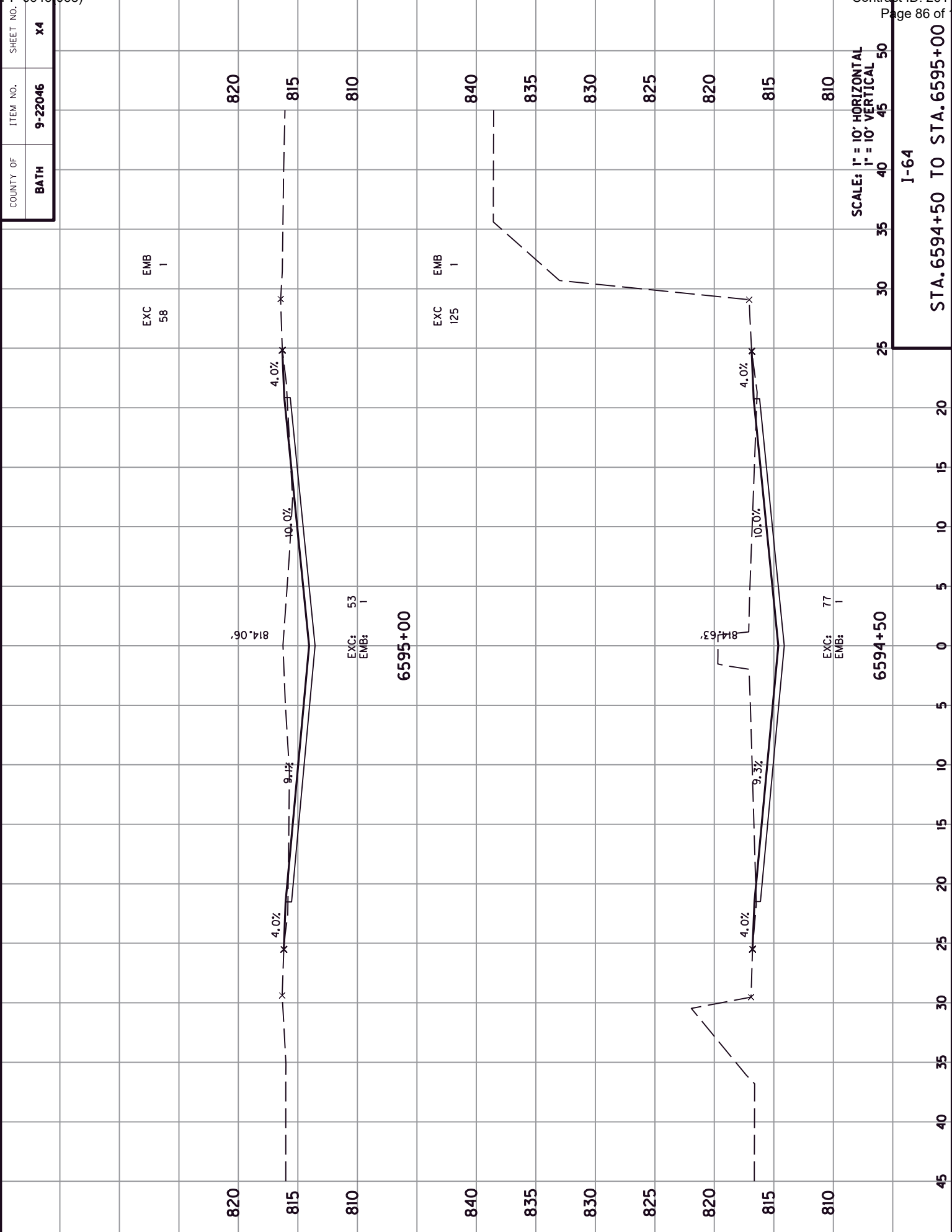
COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	X3



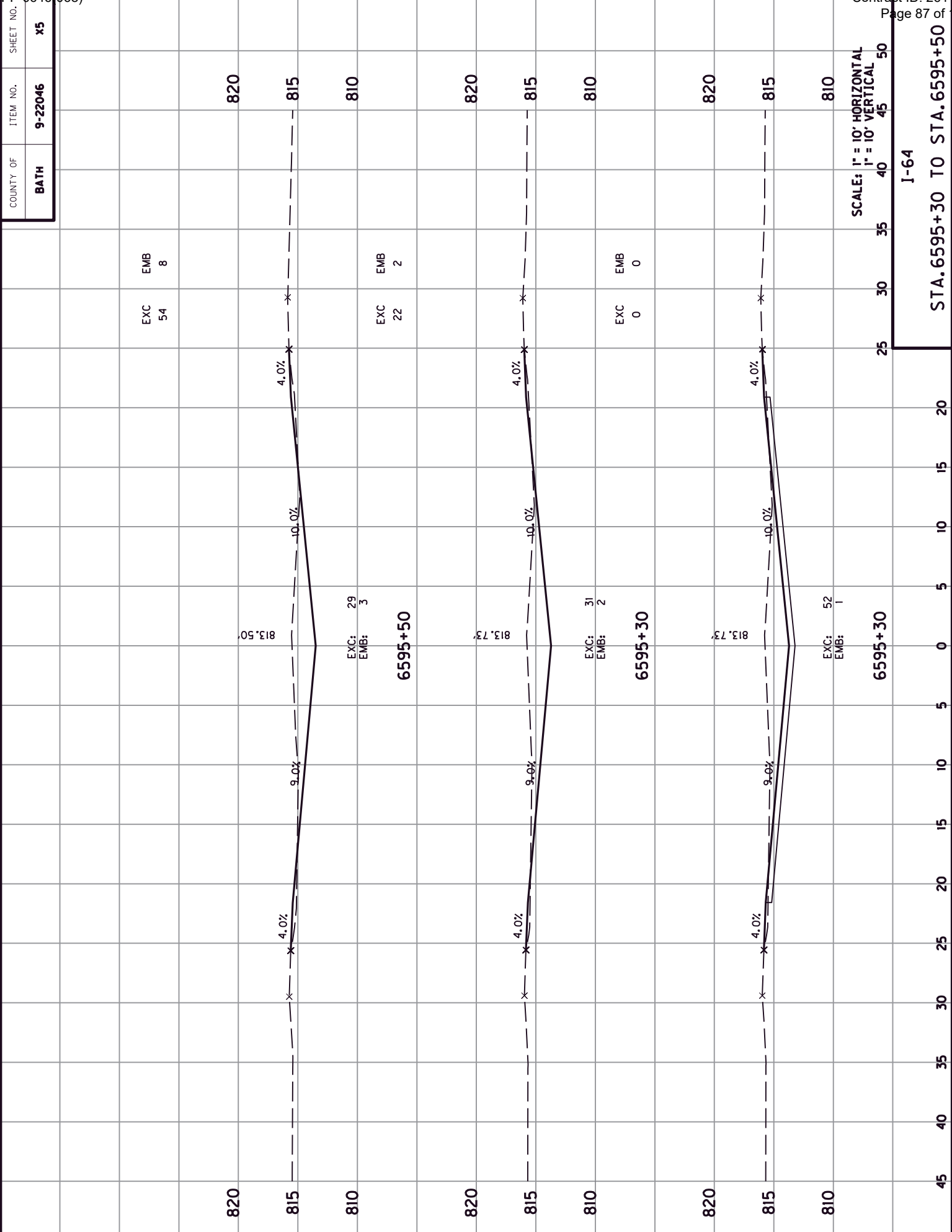
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1" = 10' VERTICAL

I-64

STA. 6593+40 TO STA. 6594+00

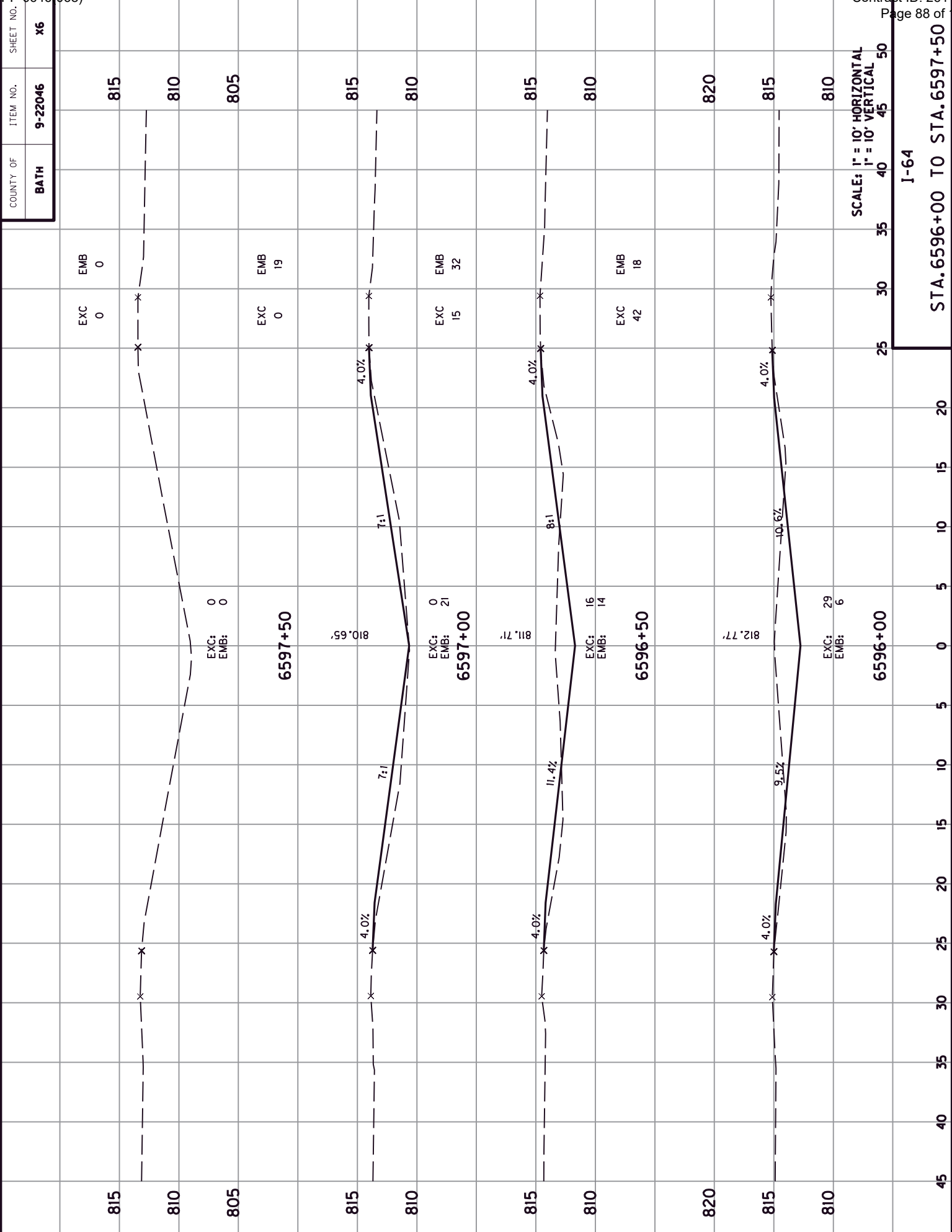


I-64
STA. 6594+50 TO STA. 6595+00



I-64

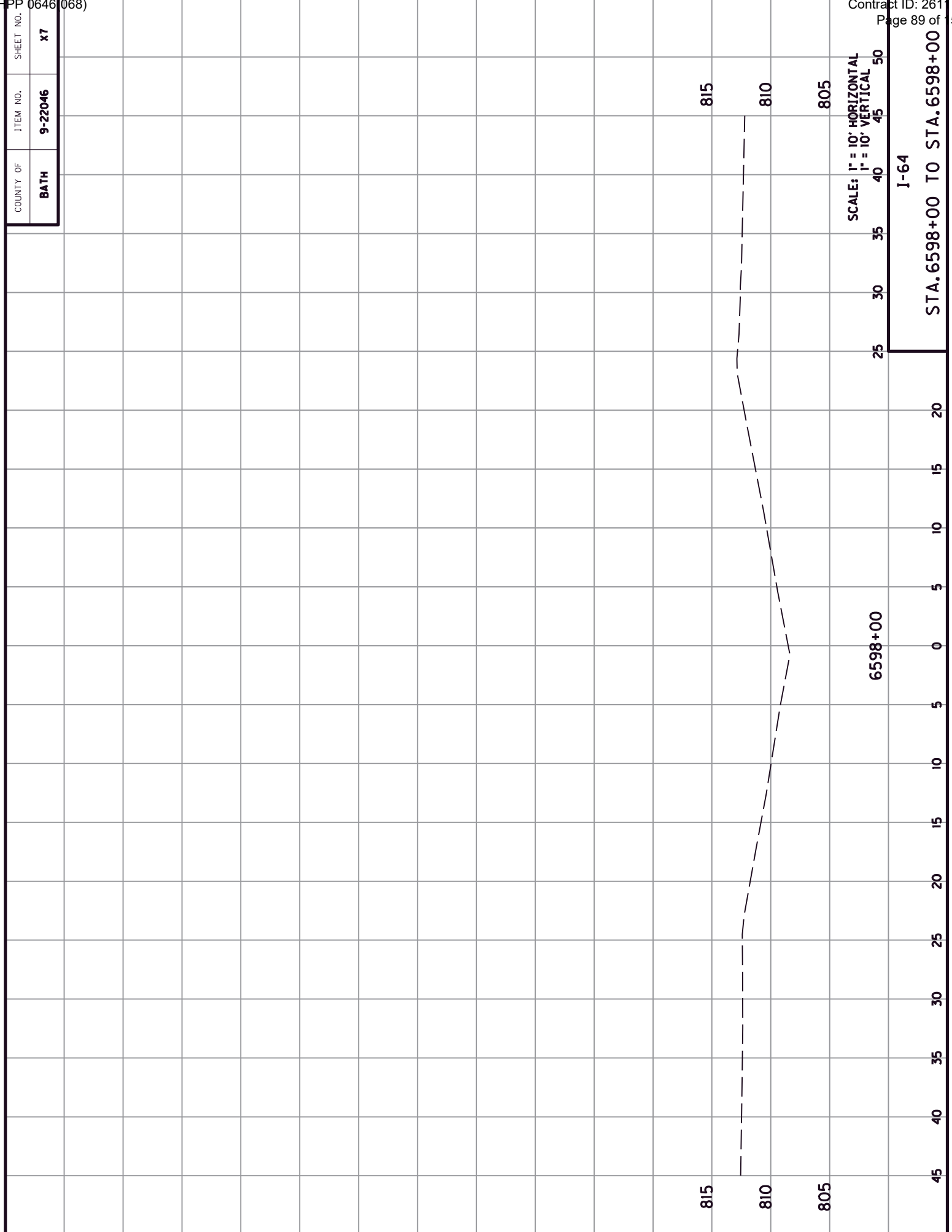
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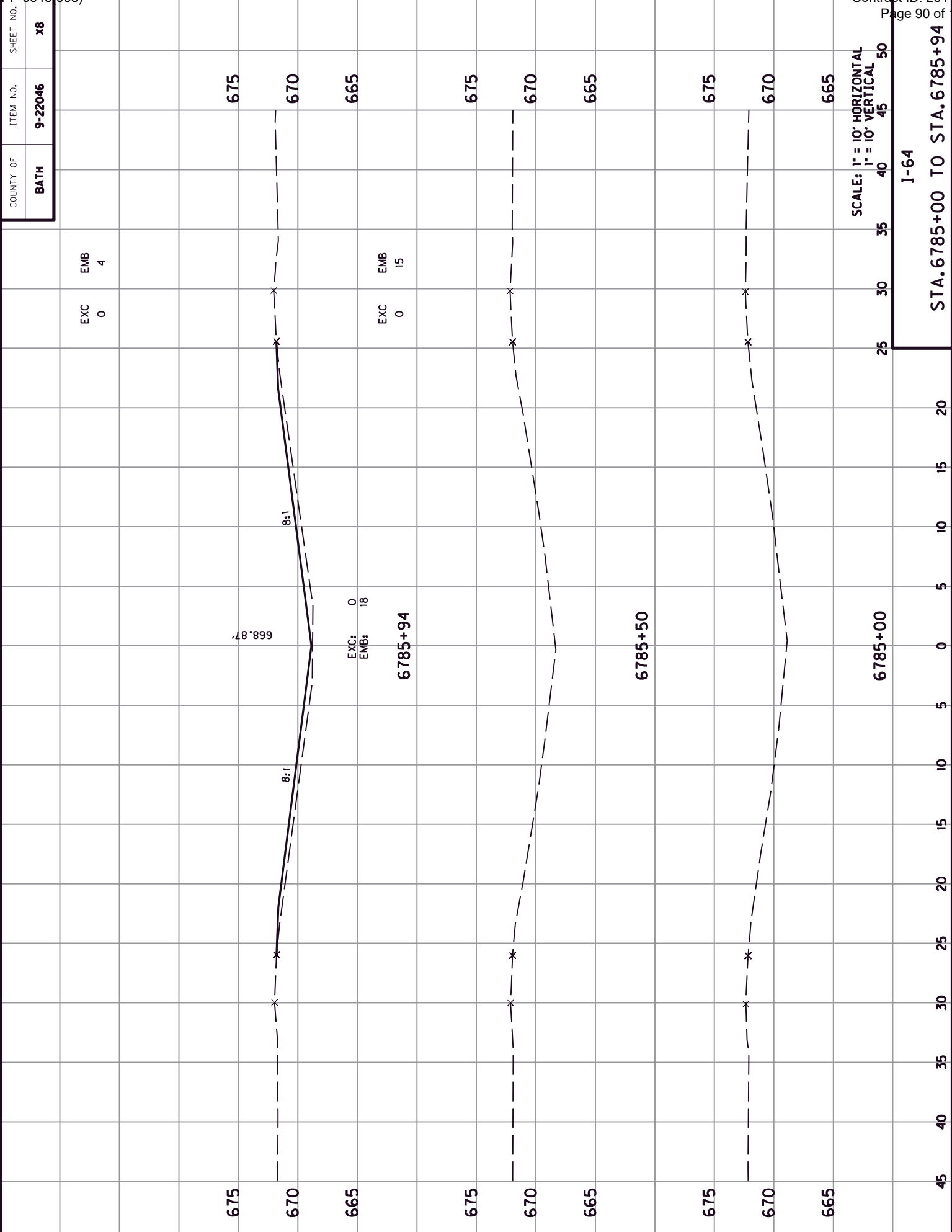


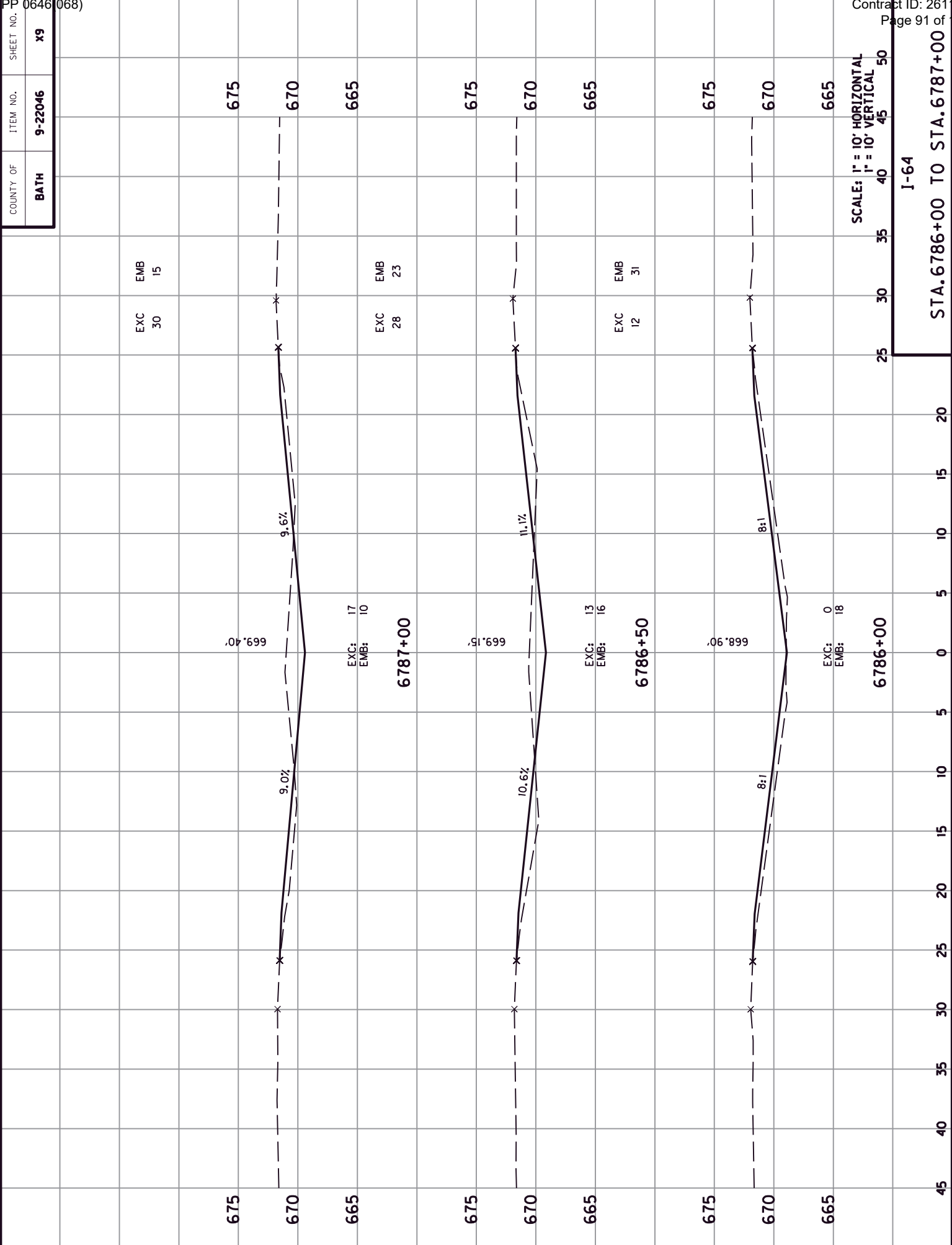
I-64

STA. 6596+00 TO STA. 6597+50

COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	X7

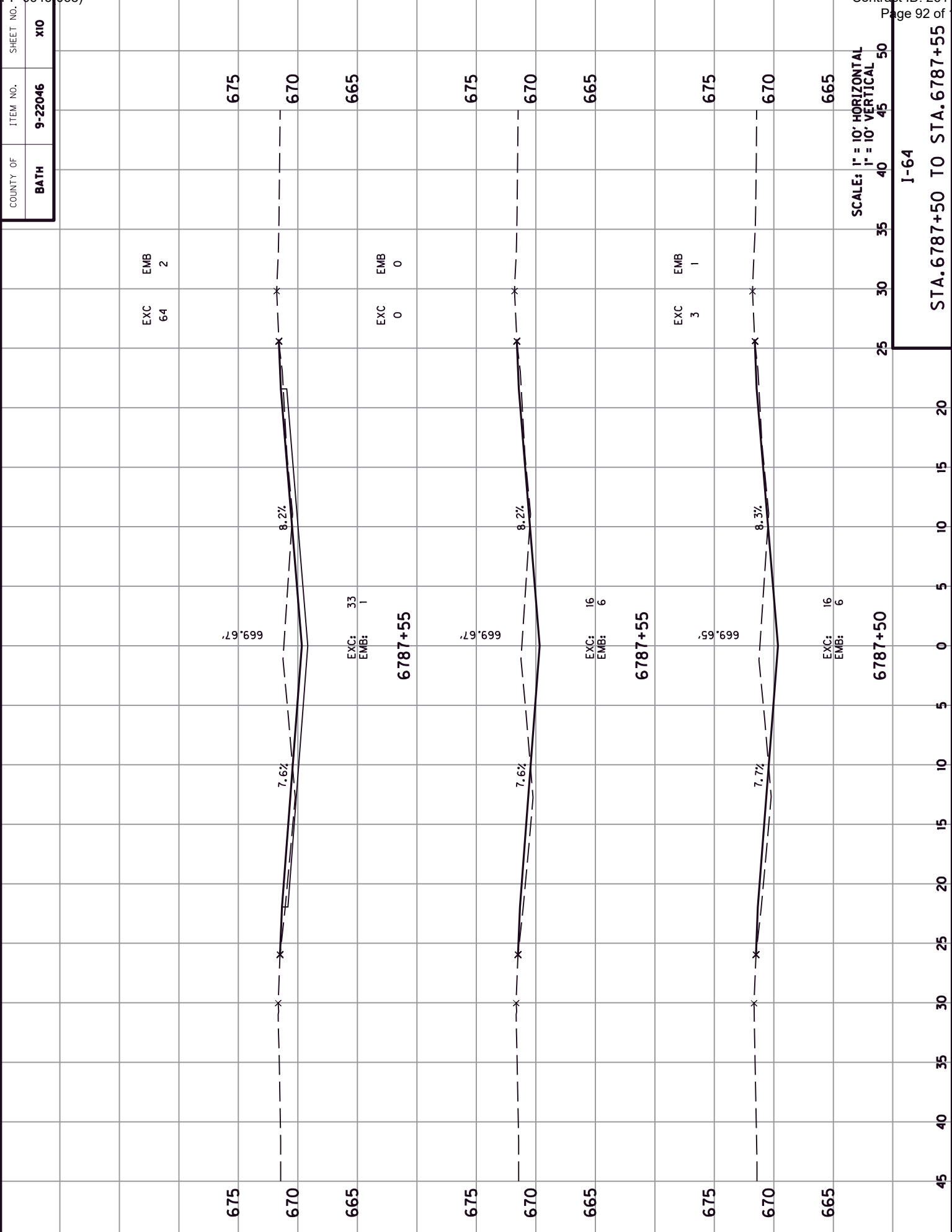






I-64

STA. 6786+00 TO STA. 6787+00

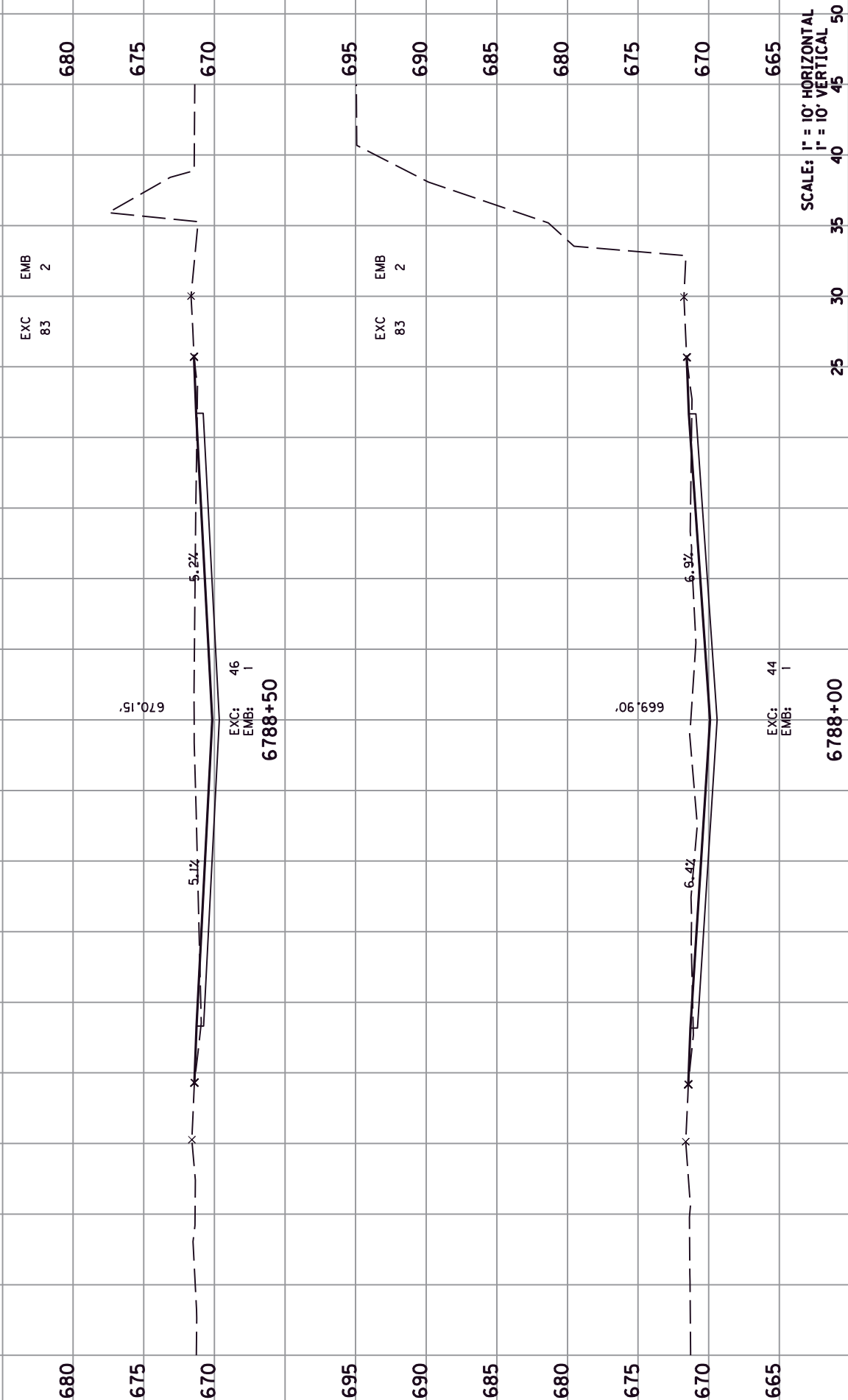


SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

J-64

STA. 6787+50 TO STA. 6787+55

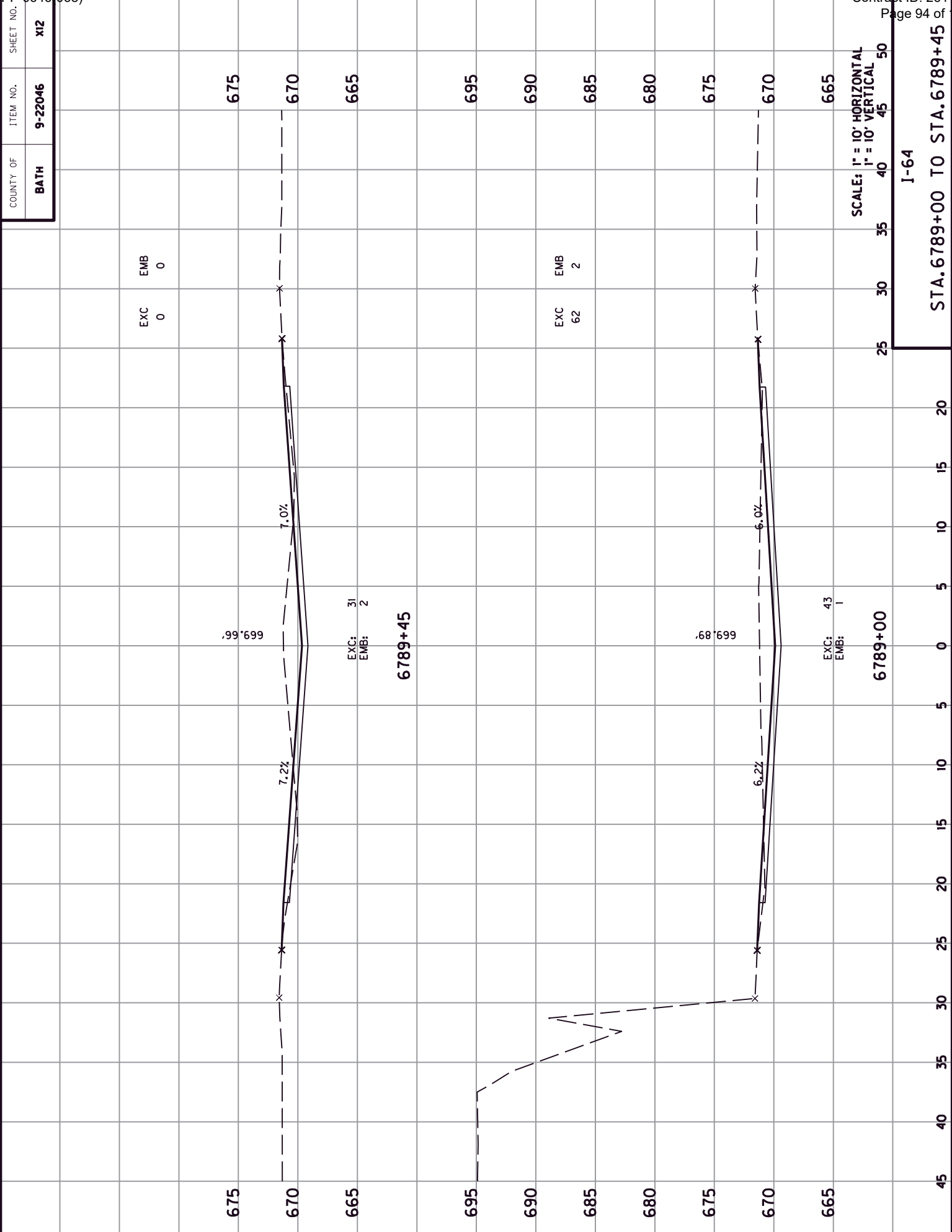
COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	XII



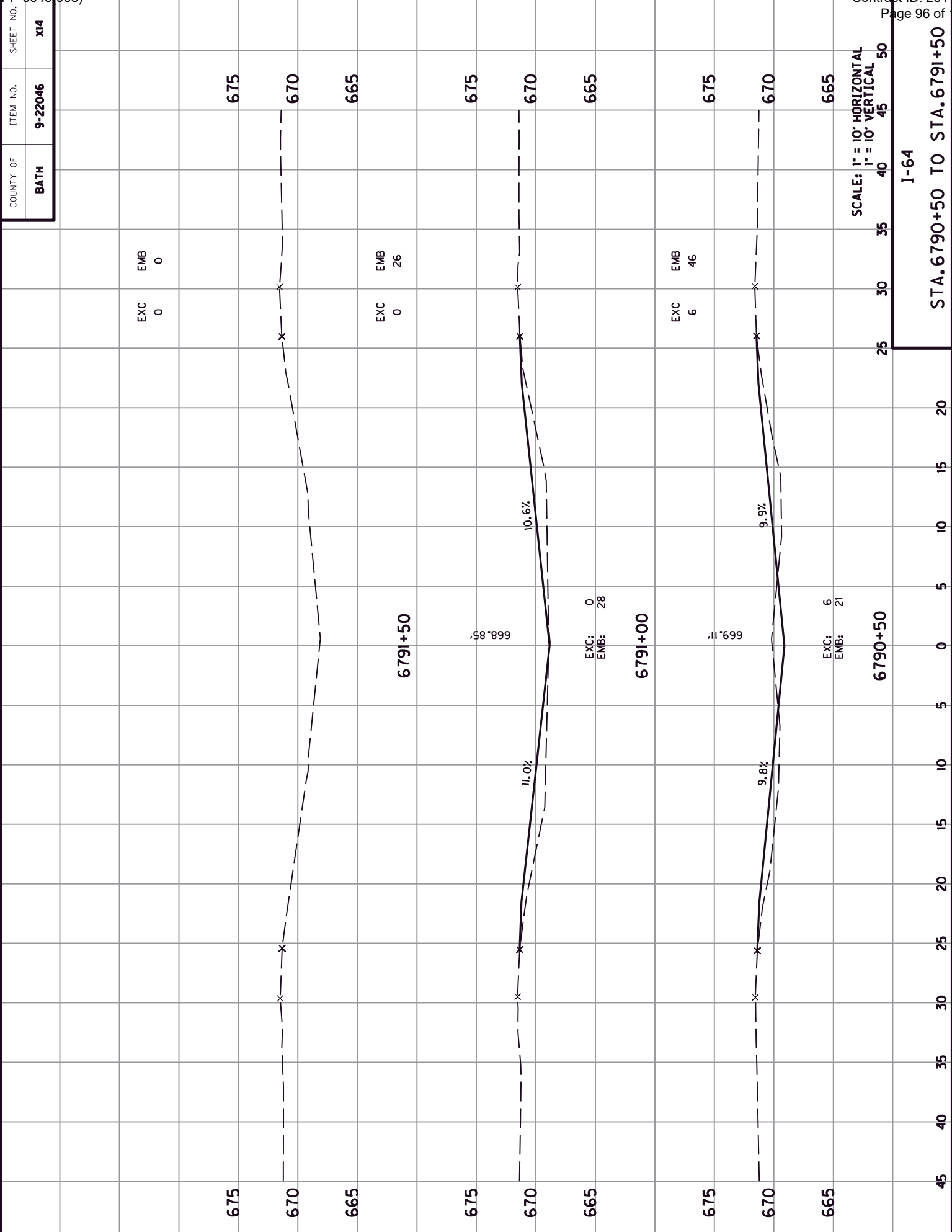
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

I-64

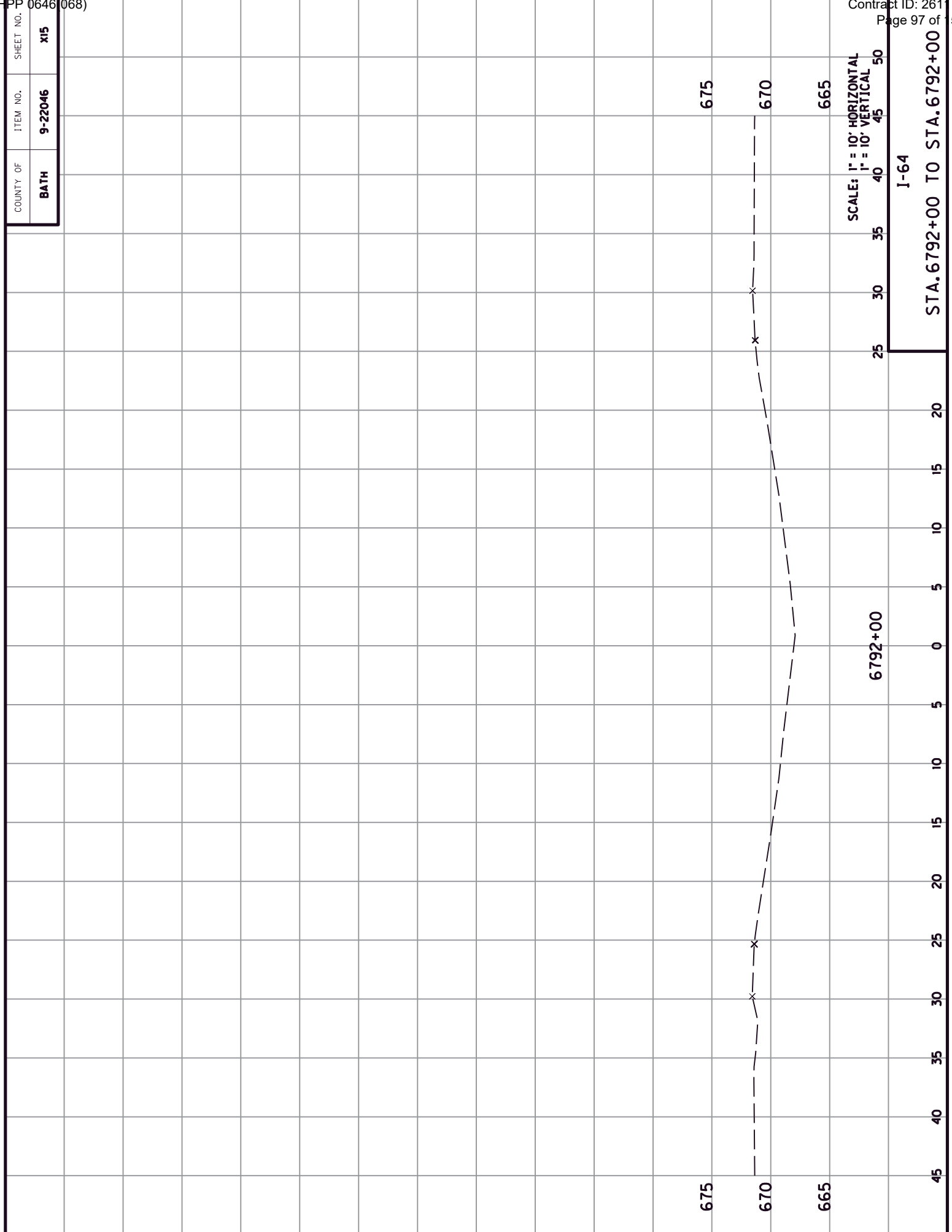
STA. 6788+00 TO STA. 6788+50

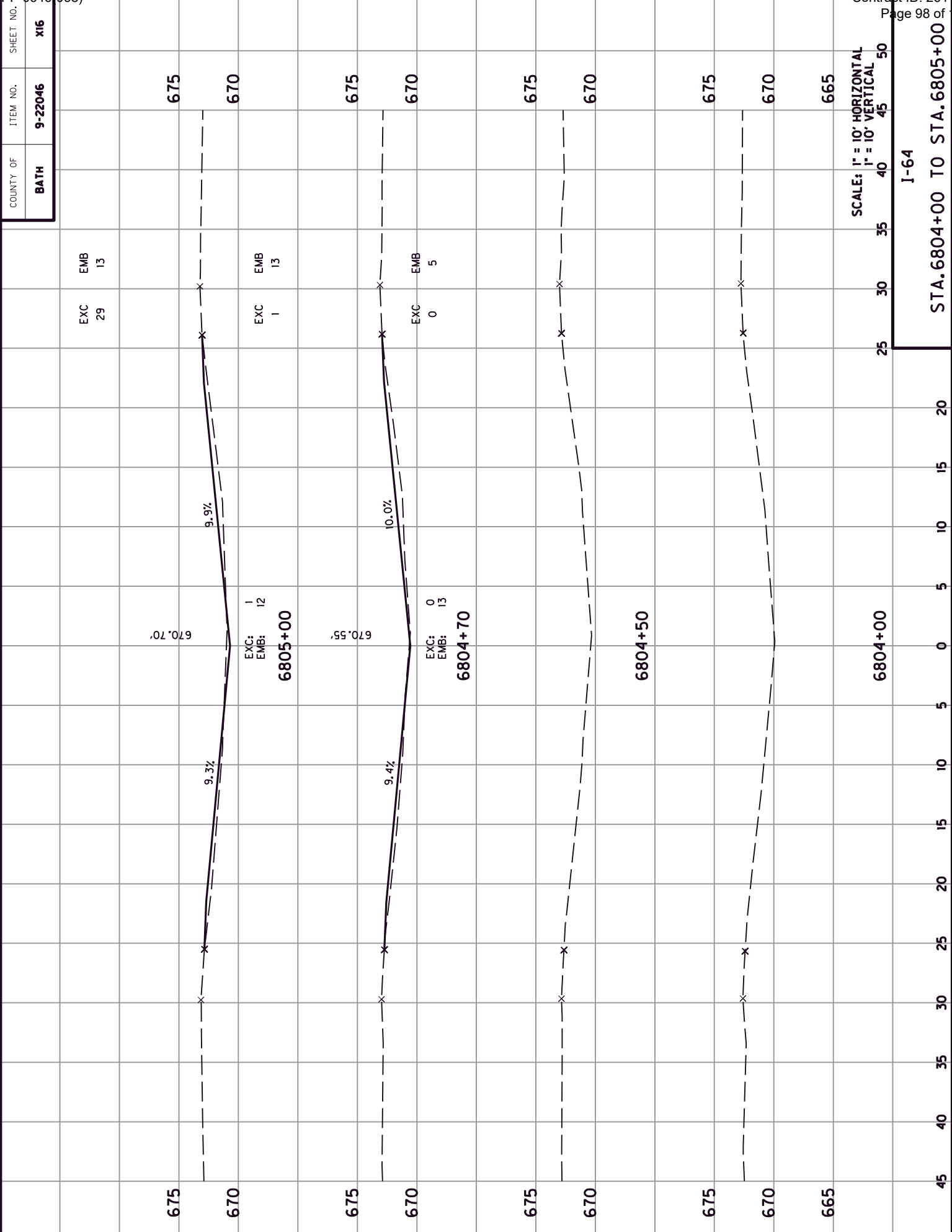


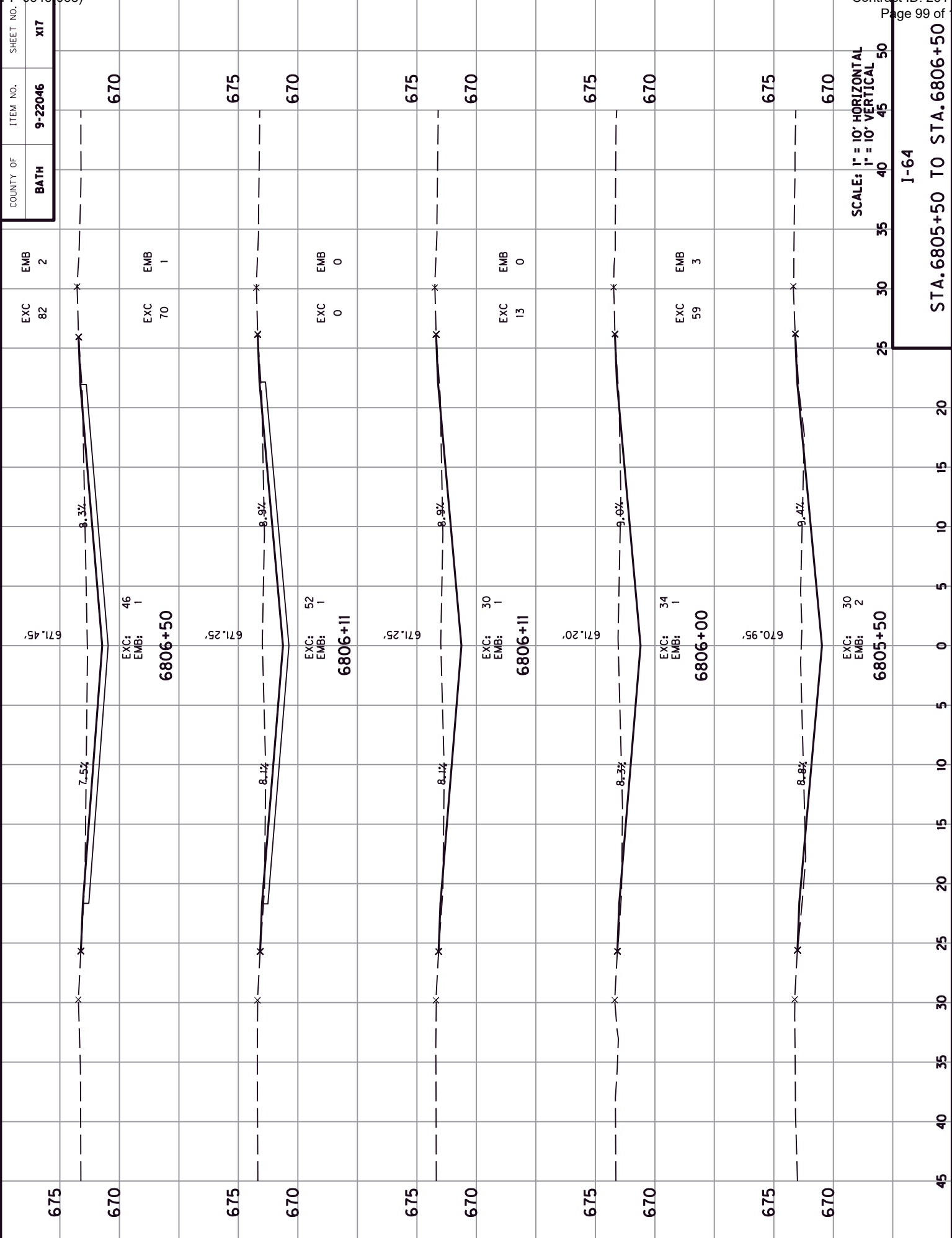
STA. 6789+45 TO STA. 6790+00



COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	X15



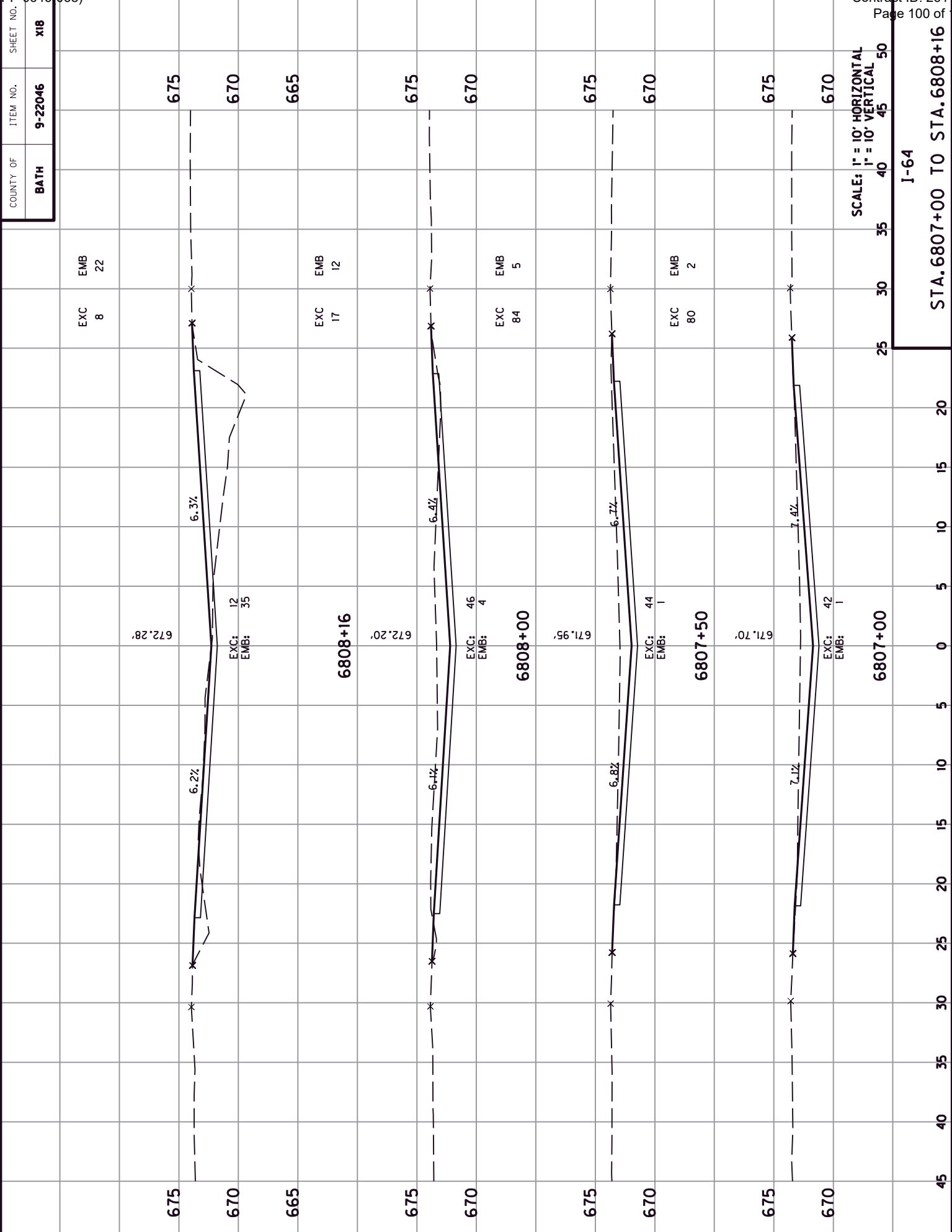




SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

J-64

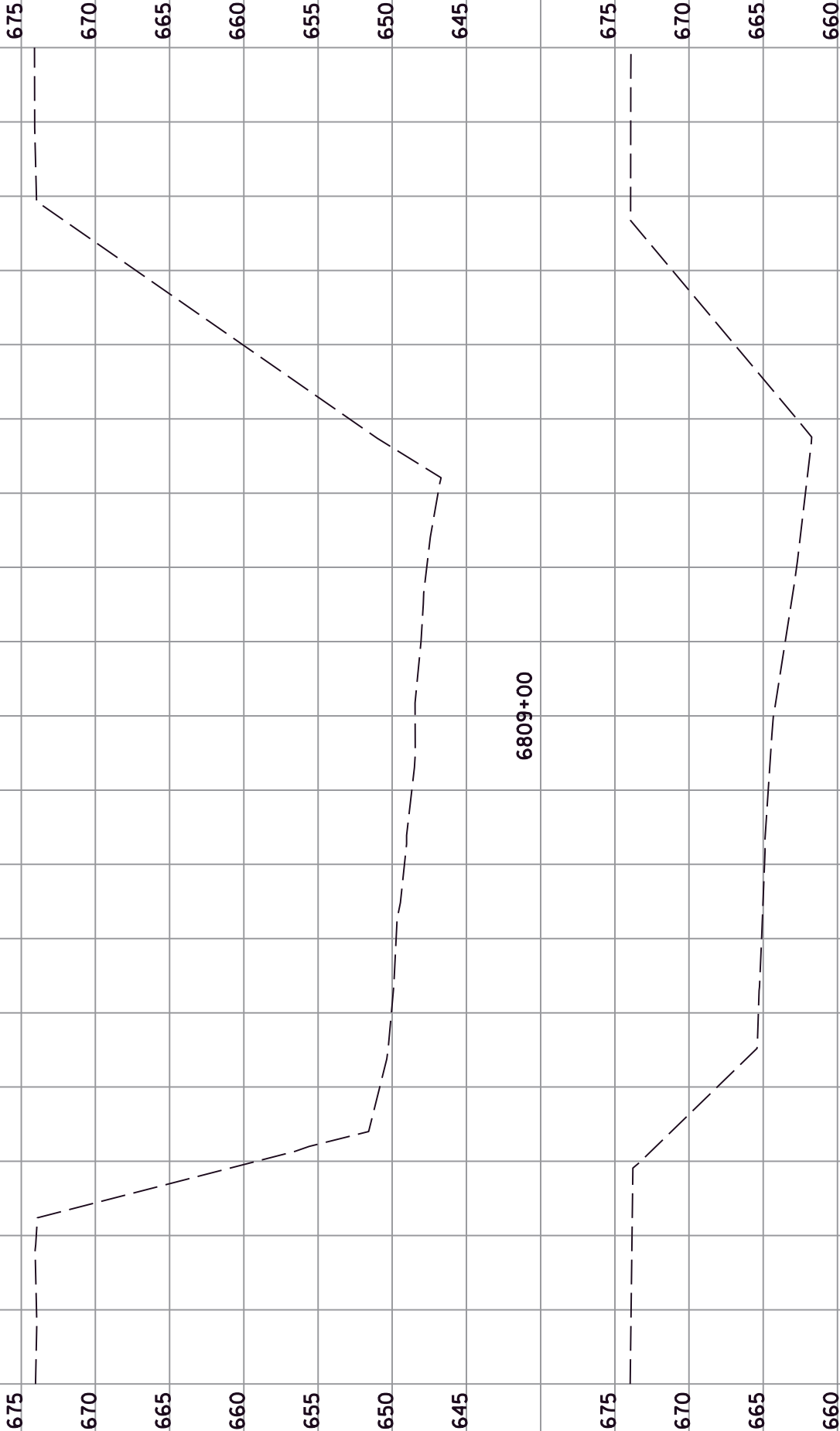
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I-64

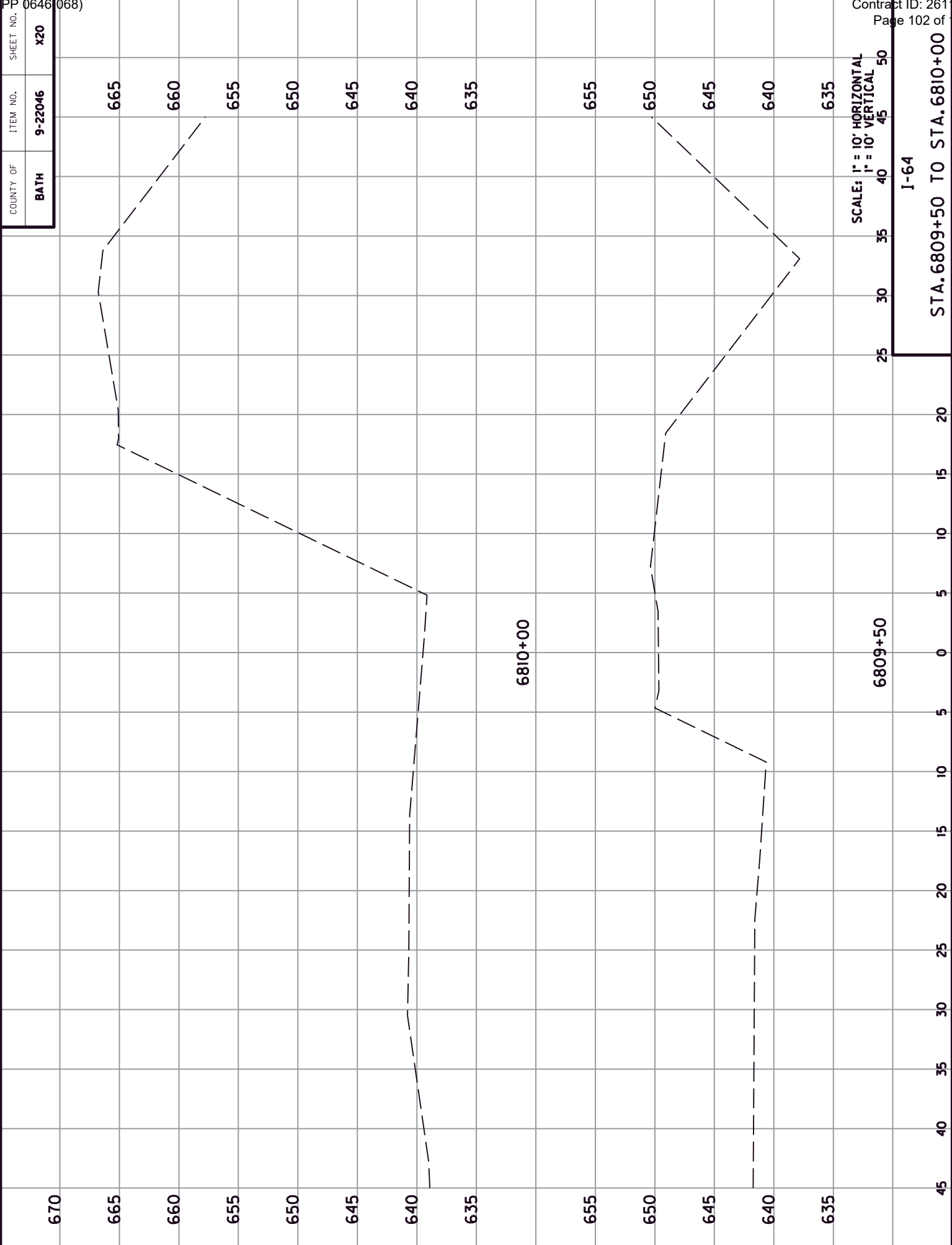
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COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	X19

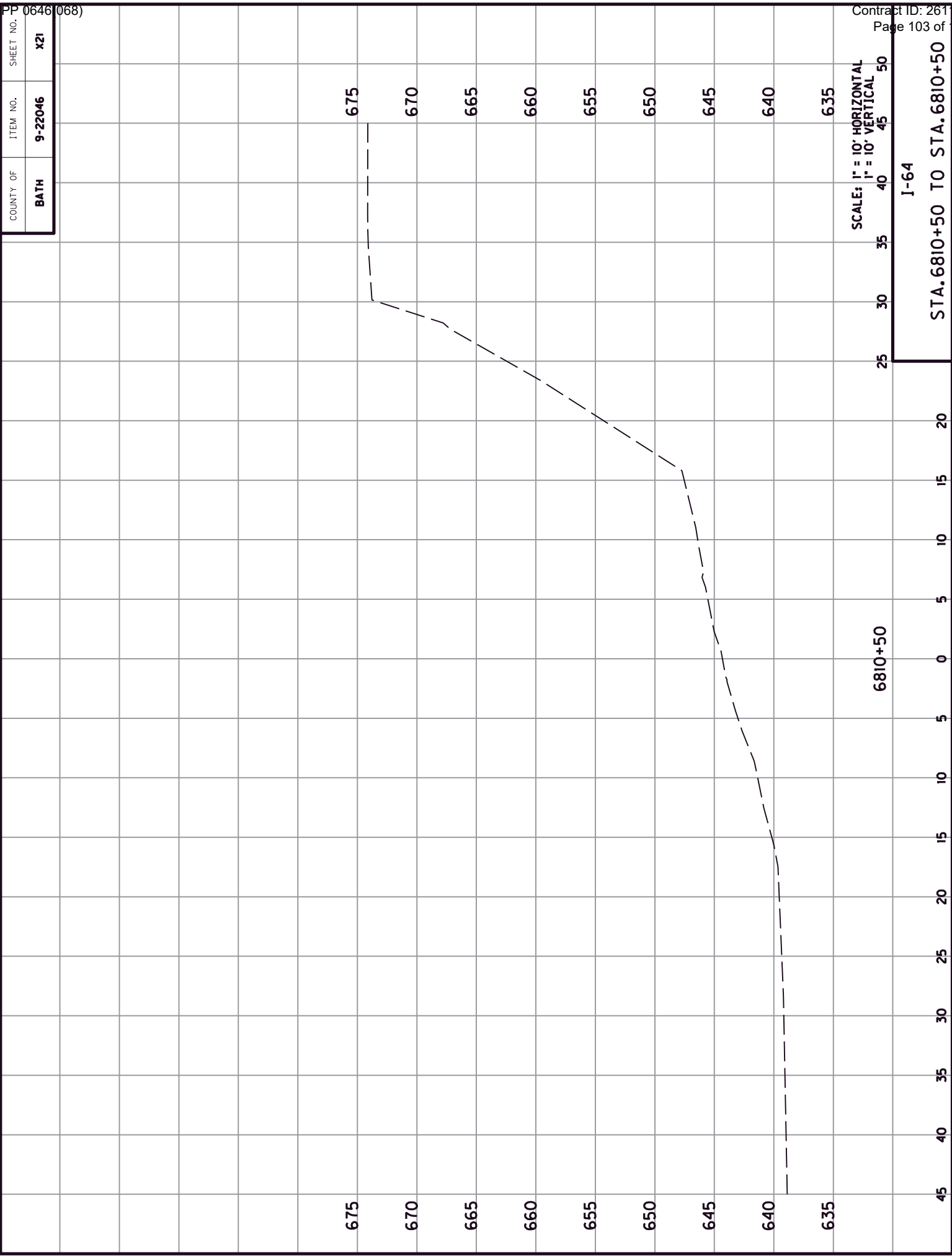


SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

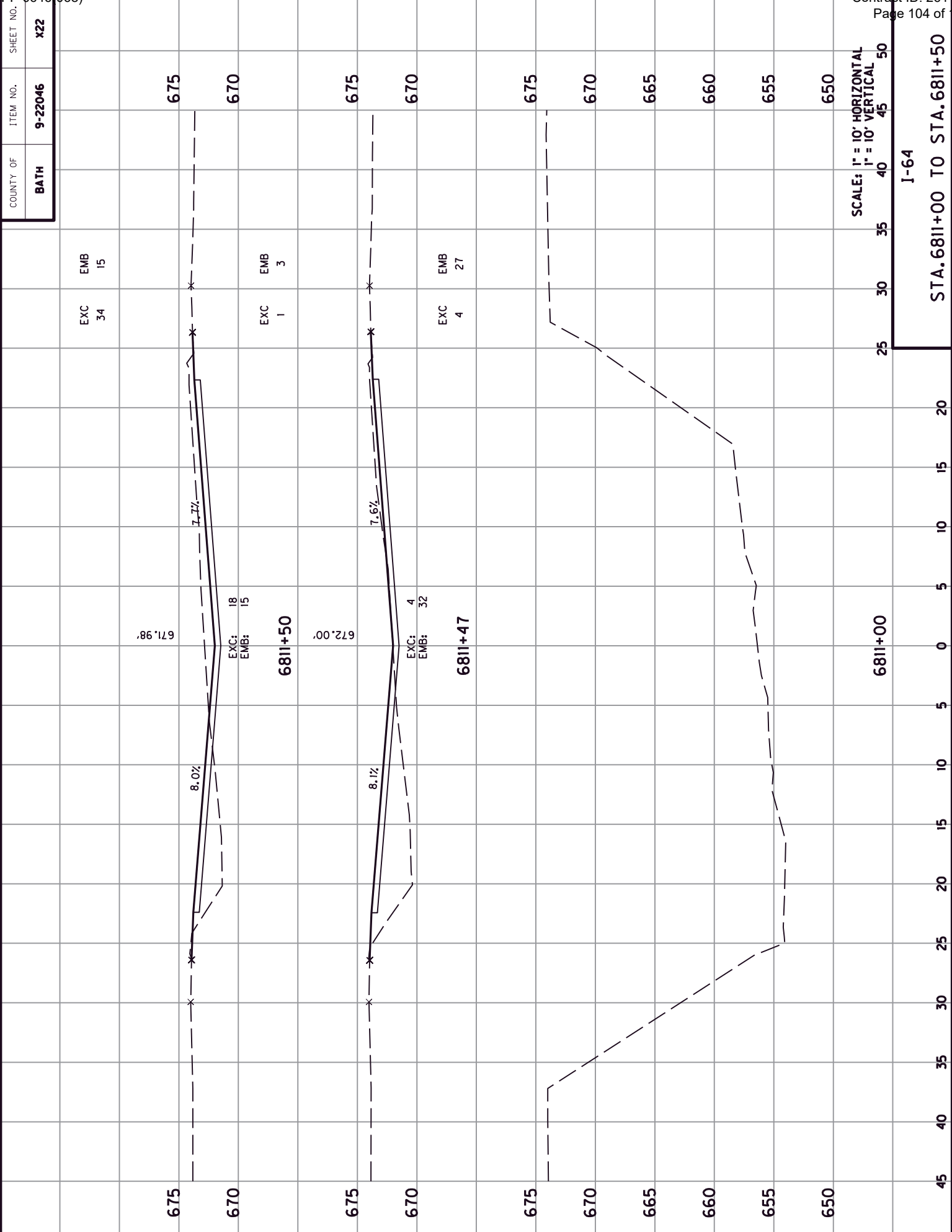
I-64
STA. 6808+50 TO STA. 6809+00

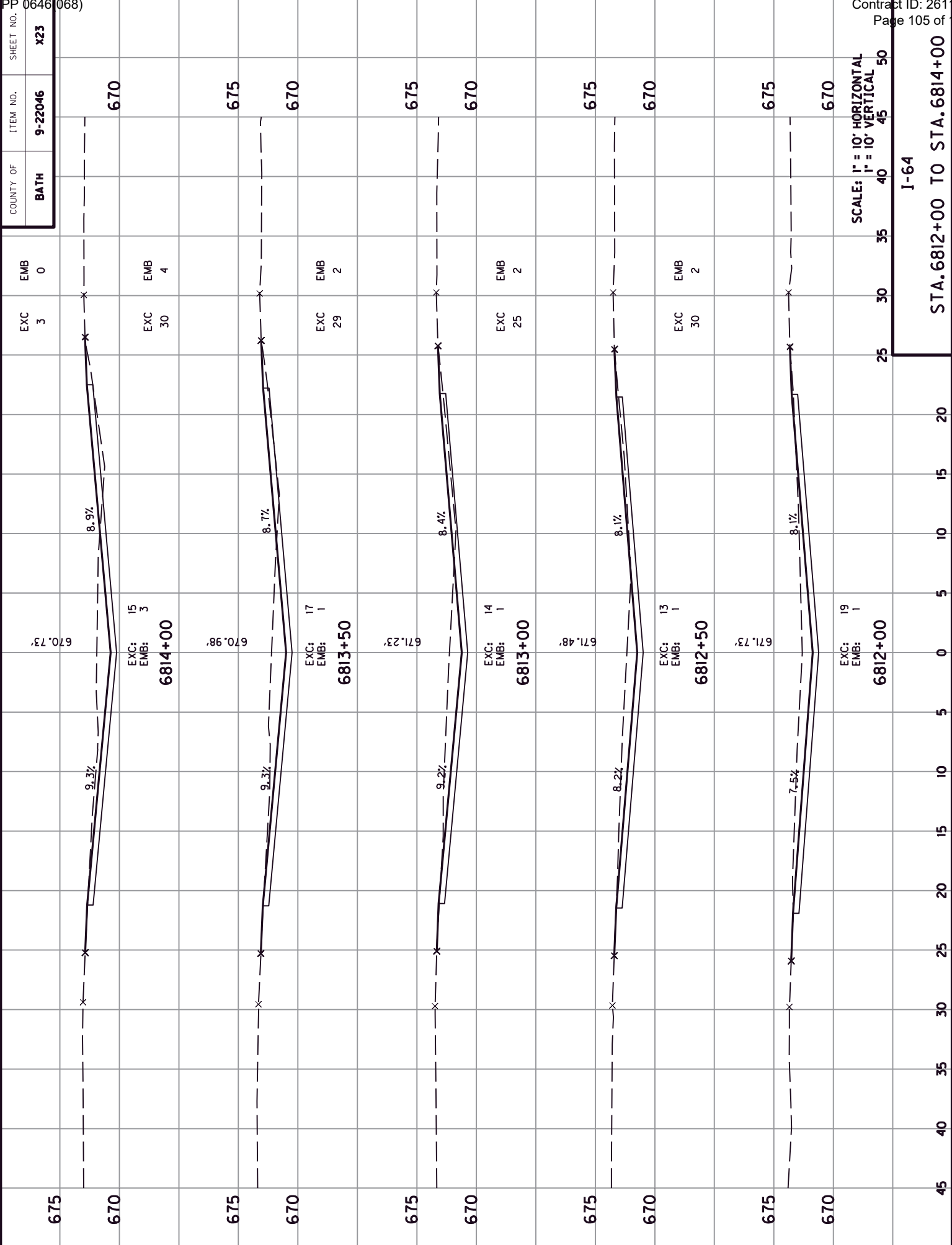


COUNTY OF	ITEM NO.	SHEET NO.
BATH	9-22046	X21



I-64
STA. 6810+50 TO STA. 6810+50

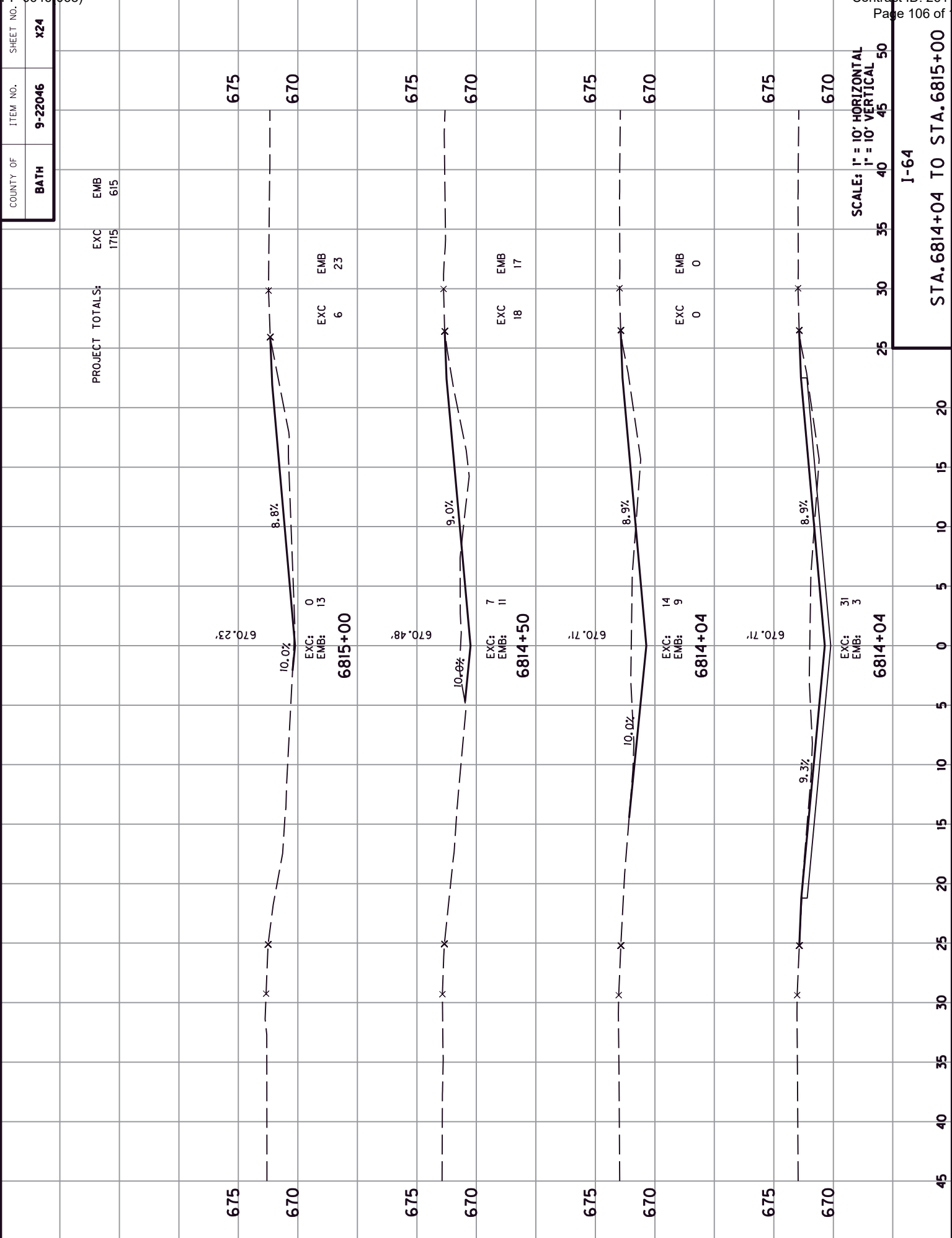




SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL

J-64

STA. 6812+00 TO STA. 6814+00



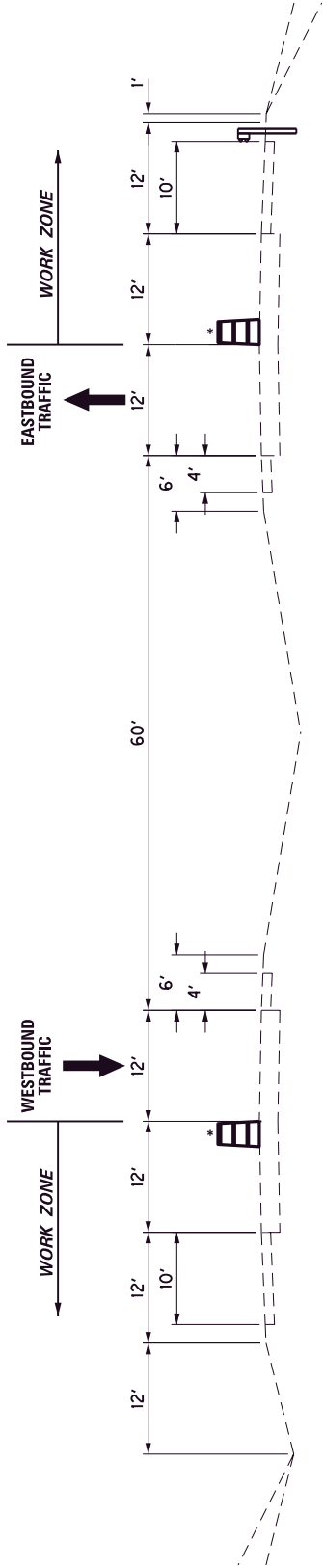
J-64

STA. 6814+04 TO STA. 6815+00

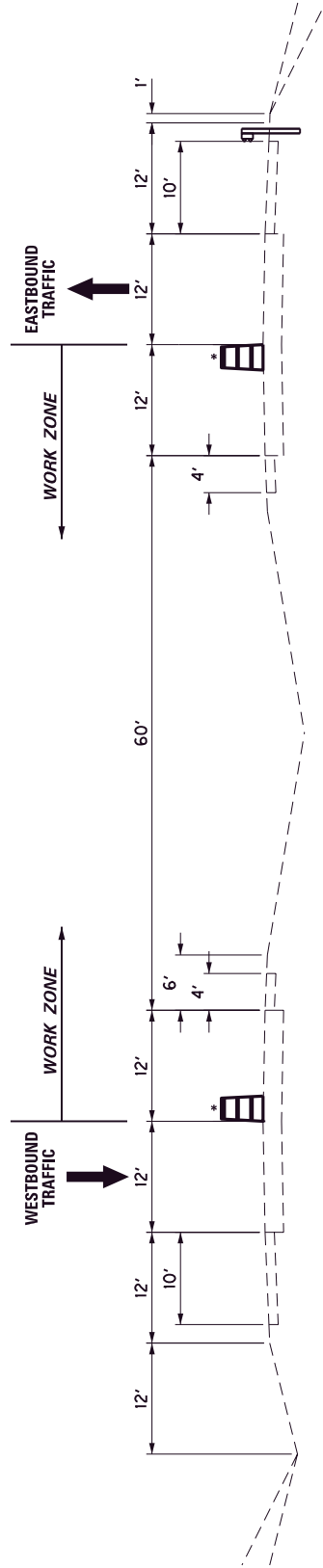
M.O.T. TYPICAL SECTIONS

I-64

County	Item No.	Sheet
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OUTSIDE LANE CLOSURE



INSIDE LANE CLOSURE

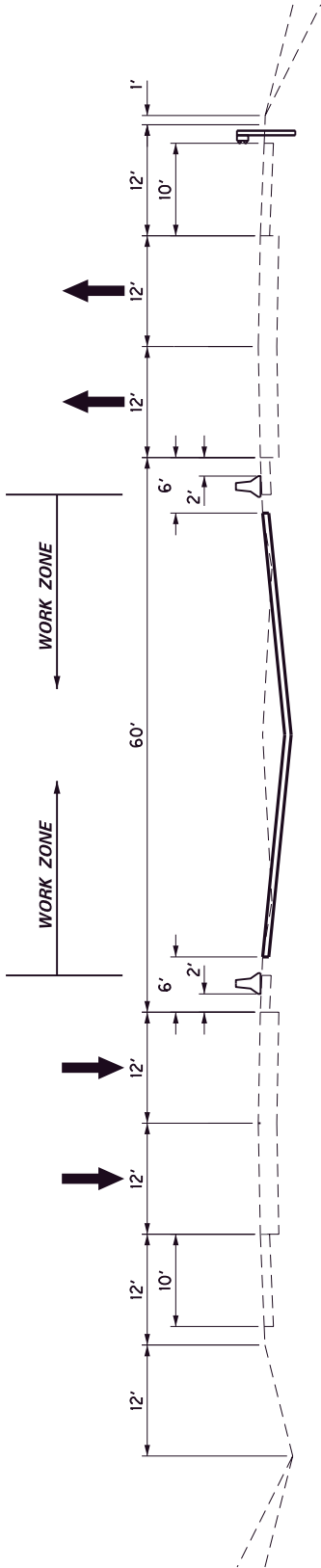
*
MOVE DRUM TEMPORARILY WHEN NECESSARY
TO ALLOW EQUIPMENT TO PASS. IMMEDIATELY
MOVE DRUMS INTO CLOSED LANE AS SOON AS
PRACTICAL TO RESTORE LANE WIDTHS.

I-64
MAINTENANCE OF TRAFFIC
TYPICAL SECTIONS

NOT TO SCALE

M.O.T. TYPICAL SECTIONS
I-64

County	Item No.	Sheet
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MEDIAN REGRAIDING FOR BULLNOSE TERMINALS

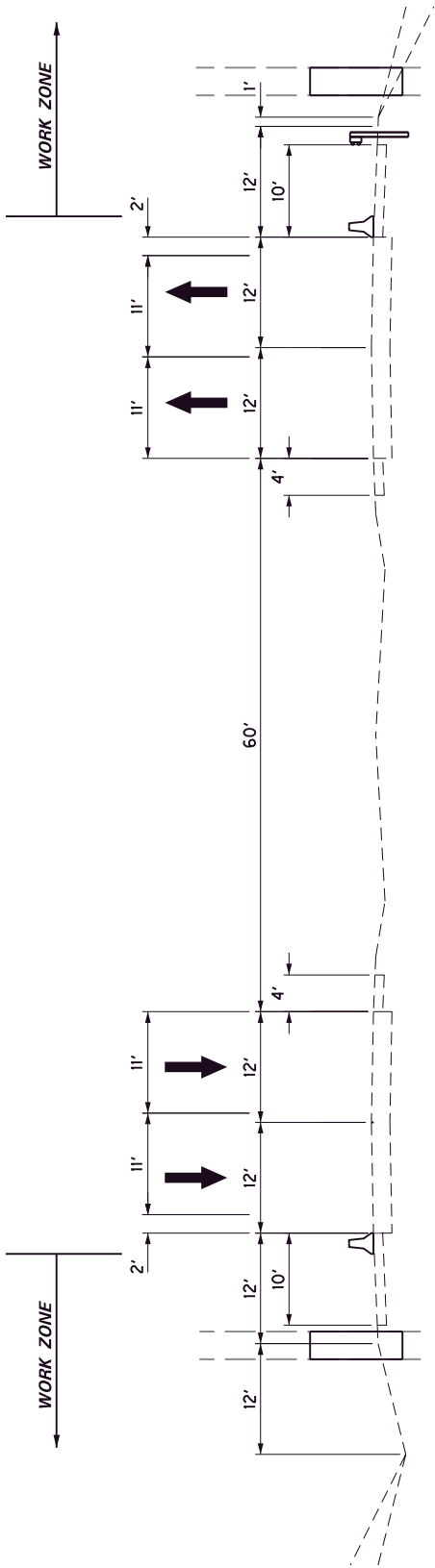


MEDIAN REGRAIDING FOR BULLNOSE TERMINALS
(AT LICKING RIVER BRIDGE)

M.O.T. TYPICAL SECTIONS

I-64

County	Item No.	Sheet
BATH	9-22046	



SHOULDER PIER RETROFIT

M.O.T. TYPICAL SECTIONS

I-64

County	Item No.	Sheet
BATH	9-22046	



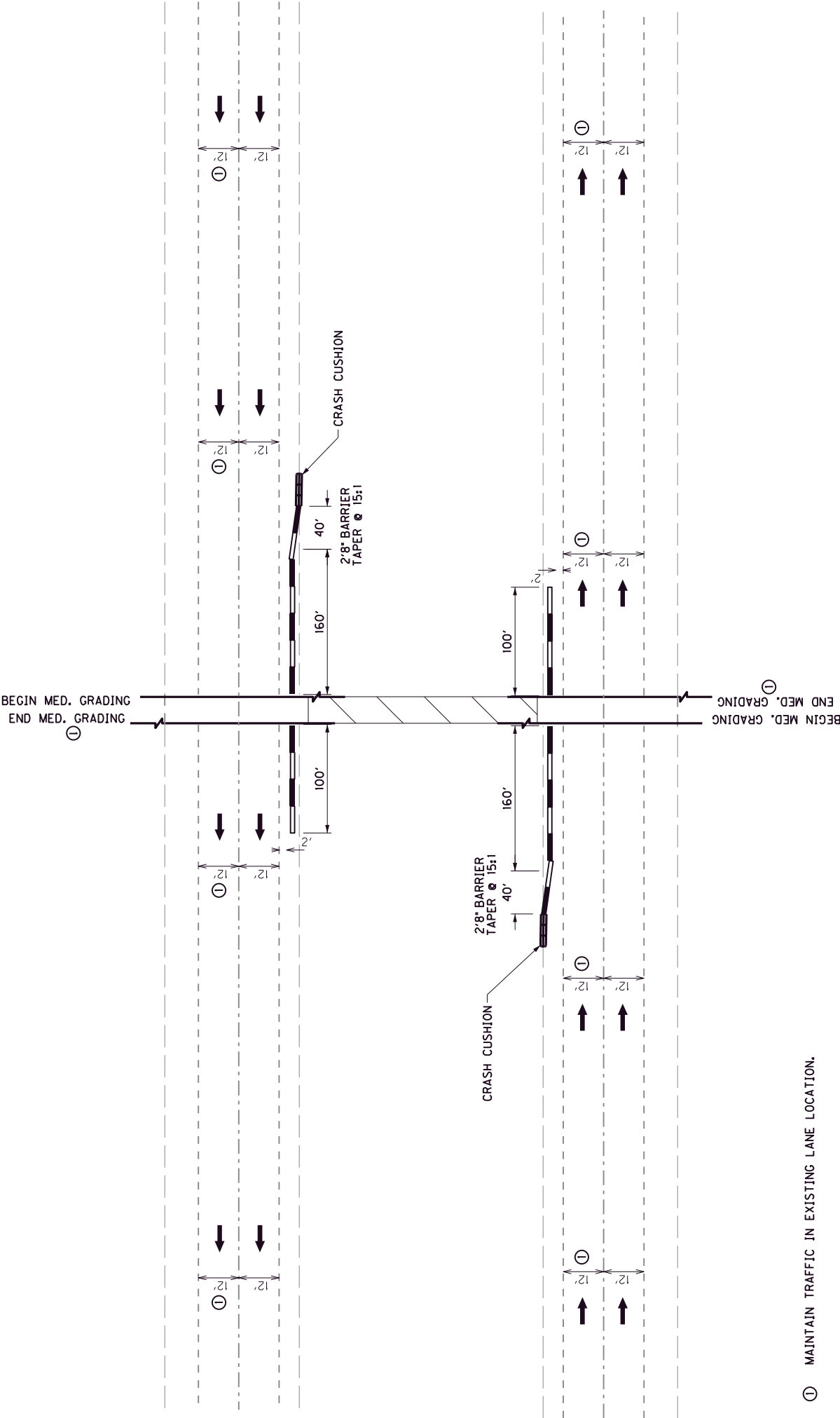
BRIDGE RESTORATION AND WATERPROOFING
INSIDE LANE CONSTRUCTION
(AT LICKING RIVER BRIDGE)



BRIDGE RESTORATION AND WATERPROOFING
OUTSIDE LANE CONSTRUCTION
(AT LICKING RIVER BRIDGE)

M.O.T. TYPICAL SECTIONS
I-64

County	Item No.	Sheet
BATH	9-22046	



NOT TO SCALE

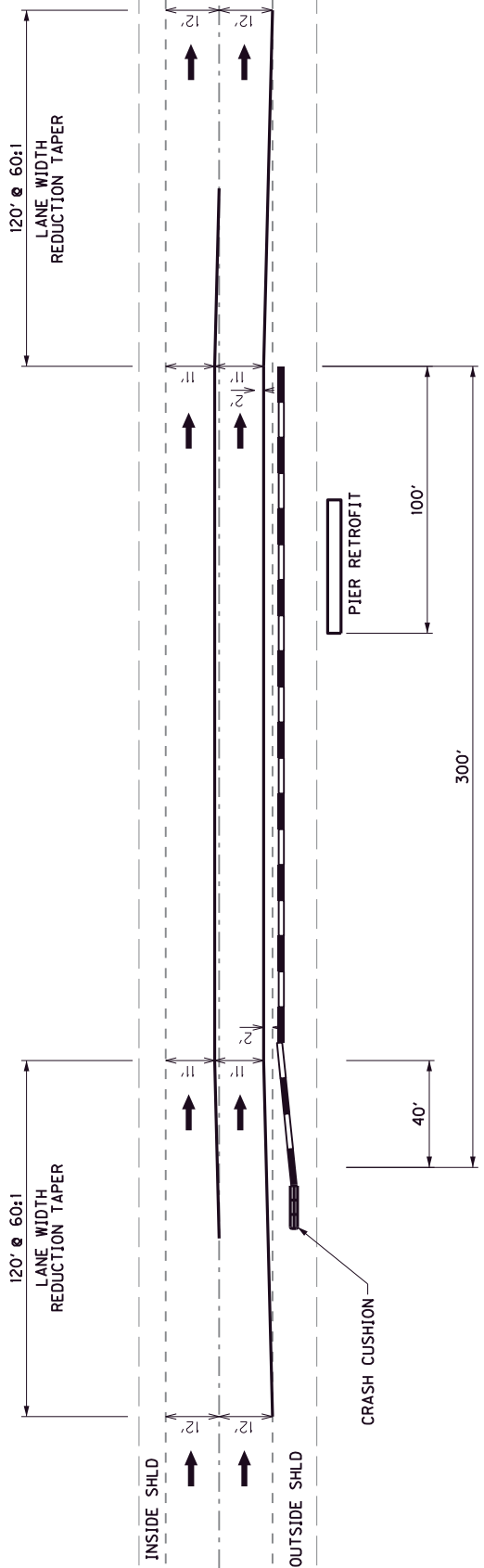
TEMP. TRAFFIC SCHEMATIC
I-64
MEDIAN GRADING

TEMP. CONC. BARRIER

M.O.T. TYPICAL SECTIONS

I-64

County	Item No.	Sheet
BATH	9-22046	



SHOULDER PIER RETROFIT

NOT TO SCALE

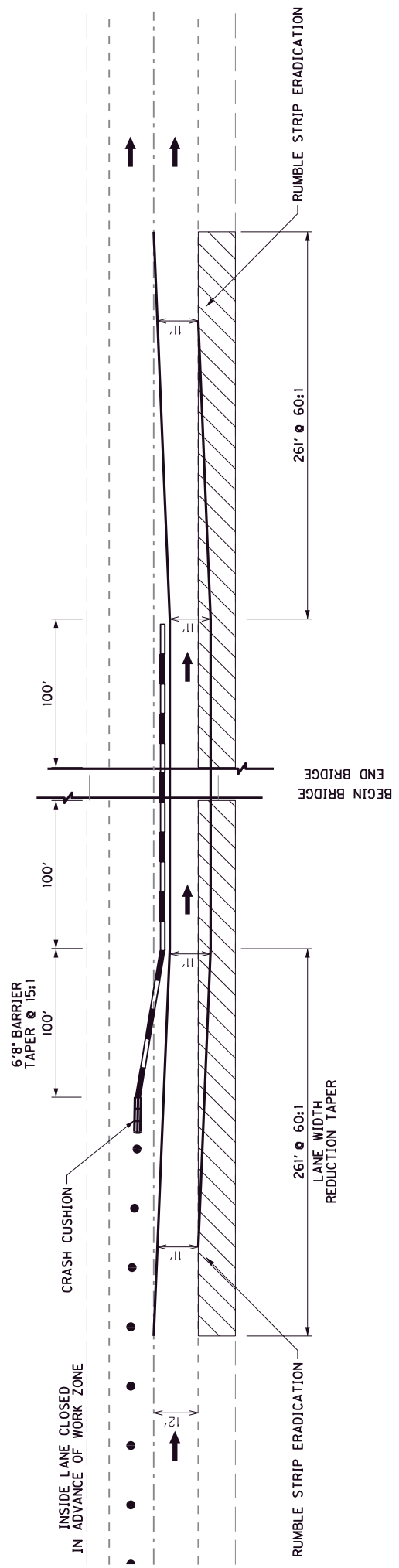
I-64
TEMP. TRAFFIC SCHEMATIC
SHOULDER PIER RETROFIT

TEMP. CONC. BARRIER

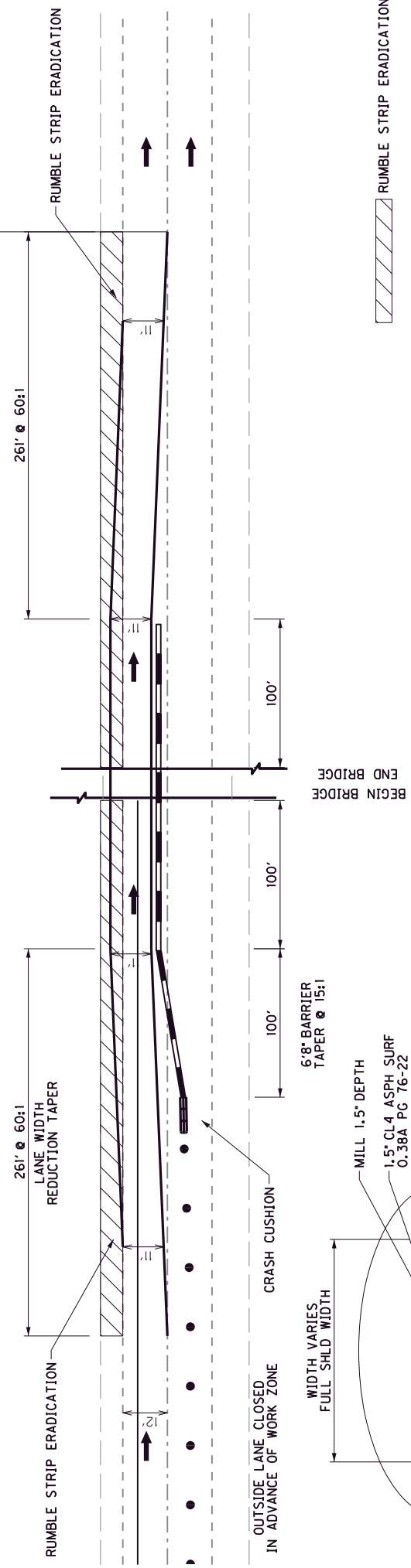
M.O.T. TYPICAL SECTIONS

I-64 (EB) OVER LICKING RIVER

County	Item No.	Sheet
BATH	9-22046	



INSIDE CONSTRUCTION

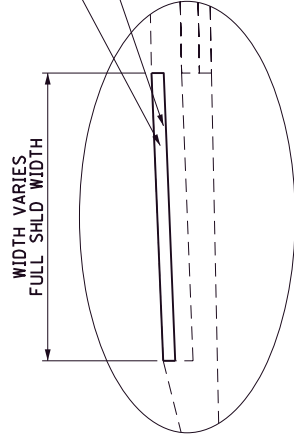


OUTSIDE CONSTRUCTION

6'8" BARRIER
TAPER @ 15:1

261' @ 60:1
LANE WIDTH
REDUCTION TAPER

261' @ 60:1



RUMBLE STRIP ERADICATION
BRIDGE APPROACH

- RUMBLE STRIP ERADICATION
- TRAFFIC DRUMS
- TEMP. CONC. BARRIER

NOT TO SCALE

I-64
TEMP. TRAFFIC SCHEMATIC
DECK RESTORATION

**TRAFFIC CONTROL PLAN
BATH COUNTY
I-64
NHPP 0646(068)
FD52 006 0064 123-129
Item No. 9-22046**

THIS PROJECT IS A FULLY CONTROLLED ACCESS HIGHWAY

TRAFFIC CONTROL GENERAL

Except as provided herein, “Maintain and Control Traffic” shall be in accordance with the Standard Specifications and the Standard Drawings, and the Manual on Uniform Traffic Control Devices (MUTCD), current Edition at the time of letting. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic". All lane closures used on the Project will be in compliance with the appropriate Standard Drawings.

Contrary to Section 106.01, traffic control devices used on this project may be new or used, in like new condition at the beginning of the work and maintained in like new condition until completion of the work. Traffic control devices will conform to the current edition of the MUTCD.

Reduce the speed limit in work areas to 60 miles per hour and establish higher fines for work zone speeding violations. The extent of these areas within the project limits will be restricted to the proximity of actual work areas as determined by the Engineer. Notify the Engineer a minimum of 12 hours prior to using the higher fine signs. At the beginning of the work zone, the “BEGIN HIGHER FINE ZONE” signs will be dual mounted. At the end of the work zone, the “END HIGHER FINE ZONE” signs will be dual mounted as well. Remove or cover the signs or turn off flashers when the highway work zone does not have workers present for more than a two-hour period of time. Payment for the signs will be at the unit bid price for Temporary Signs. Any relocation or covering of the signs or operation of flashers will be incidental to “Maintain and Control Traffic”, lump sum.

Night work will be allowed on this project. Obtain approval from the Engineer for the method of lighting prior to its use.

TRAFFIC PHASING OVERVIEW

This project will be completed by maintaining 2 lanes of travel open per direction when practical and by reducing traffic to 1 lane when required.

Median regrading, replacement of existing median guardrail and bridge median pier retrofits will be completed by maintaining 2 lanes of mainline traffic per direction in the original lane configuration and using temporary concrete median barrier and inside shoulder closure.

Shoulder pier retrofits and guardrail will be constructed by maintaining 2 lanes of traffic per direction, traffic lane shifts and reduction of lane widths to 11’ and use of temporary concrete median barrier and outside shoulder closure.

The eastbound Licking River Bridge deck restoration will be performed by shifting traffic partially onto shoulders, use of temporary concrete barrier, and while maintaining 1 – 11’ lane of traffic per direction of travel.

Most other items of work will be accomplished while maintaining one lane of traffic per direction of travel in the original traffic lane location.

Any request for changes to the maintenance of traffic plan and phasing must be made by the contractor in writing and approved by the engineer prior to implementation.

PROJECT PHASING & CONSTRUCTION PROCEDURES

Reduction of Traffic to 1 Lane per direction

No work will be allowed on the project and all lane closures will be prohibited during the following holiday and event dates:

Easter	April 3 rd , 2026 – April 5 th , 2026
Memorial Day	May 22 nd , 2026 – May 25 th , 2026
Independence Day	July 3 rd , 2026 – July 5 th , 2026
Labor Day	September 4 th , 2026 – September 7 th , 2026
Thanksgiving	November 26 th , 2026 – November 29 th , 2026
Christmas	December 25 th , 2026 – December 27 th , 2026
New Year	January 1 st , 2027 – January 3 rd , 2027
Memorial Day	May 28 th , 2027 – May 31 st , 2027
Independence Day	July 2 nd , 2027 – July 4 th , 2027
Labor Day	September 3 rd , 2027 – September 6 th , 2027

Penalties as specified in the Special Note for Project Completion and Liquidated Damages will be applied for any time that a lane closure is in place during a prohibited time or date.

PROJECT PHASING:

The contractor will be allowed to establish the phasing sequence for proposed items of work on the project provided the proposed phasing complies with all requirements listed herein. The contractor shall establish his own schedule for completion of each segment of construction and each item of construction within the segment and establish the sequence of lane closures necessary to complete the work in each segment.

The contractor's schedule shall comply with the above allowable dates of lane closures, and shall meet the following sequence requirements:

No work may be performed on the bridge deck restoration items for the eastbound I-64 bridge over Licking River until after July 1, 2026.

No work may be performed on mainline I-64 resurfacing, eastbound or westbound, until after April 1, 2027.

Complete Median Pier Retrofit construction prior to final mill and inlay operations.

Complete Shoulder Pier Retrofit construction prior to final mill and inlay operations.

Complete Median Grading and Bullnose Terminal installation prior to final mill and inlay operations.

Complete other guardrail replacement items prior to final mill and inlay operations.

Complete eastbound bridge deck restoration of the Licking River prior to final mill and inlay operations.

Complete asphalt pavement repairs and allow traffic to travel on the patches a minimum of 2 weeks prior to final mill and inlay operations.

Median Grading and Bullnose Terminals

Reduce traffic to one lane, closing the inside lanes to traffic and install temporary concrete barrier along the inside shoulder along the limits of the proposed median grading. Restore traffic to two lanes per direction of travel with the inside shoulders closed. Complete median grading, DGA and Asphalt Seal Coat, and guardrail construction maintaining 2 lanes of traffic per direction of travel in the original lane locations.

Shoulder Pier Retrofit

Utilizing alternating lane closures, reconfigure striping, reducing lane widths to 11', shifting traffic 2' to the inside, and install temporary concrete barrier along the outside shoulder. Complete traffic shifts for narrowing of lanes at 60:1 taper rates. While maintaining 2 lanes of traffic per direction, complete shoulder pier retrofits and restore guardrail.

Licking River Bridge Restoration

Complete bridge restoration activities in 2 half width phases. Utilizing alternating lane closures, eradicate existing shoulder rumble strips by milling and inlaying both inside and outside shoulders with asphalt surface in the limits of the proposed traffic shift. Close one lane of traffic in advance of the bridge restoration work area during each half width phase, reconfigure striping to reduce the lane width and partially shift traffic onto shoulders, and erect temporary concrete

barrier in accordance with the MOT plans and typical sections. Complete the replacement of the existing bridge end connectors on the outside bridge wings in conjunction with the bridge restoration activities in the outside lanes and outside shoulder. See Special Note for Fixed Completion Date and Liquidated Damages for applicable penalties for failure to complete within the specified number of Calendar Days for this activity.

Asphalt Pavement Repairs

Complete asphalt pavement repairs utilizing short duration, alternating lane closures. Complete work on each repair area daily, working continuously to backfill each repair area that is milled by the end of each shift.

Final Asphalt Surfacing and All Other Items of Work

Complete all other items of work including but not limited to, milling and inlay of the final asphalt surface, final pavement markings and all other items of work using alternating inside and outside lane closures maintaining traffic in the original lane locations.

LANE CLOSURES

Contrary to Section 112.04.17, lane closures, whether long term or short term, will not be measured for payment and will be incidental to the bid item "Maintain and Control Traffic".

Remove lane closures and restore traffic to two lanes per direction as soon as practical upon the completion of the work requiring the lane closure. Do not leave lane closures in place during long periods of inactivity. Once an activity has been initiated that requires a lane closure, actively pursue work on that activity with the normal weekly schedule and resources until completion and remove the lane closure as soon as practical.

The contractor is encouraged to perform multiple items of work utilizing the same lane closure when practical to do so in order to expedite the work and reduce the total duration of lane closures.

SHOULDER PREPARATION AND RESTORATION

Traffic will be required to travel on the existing shoulders for prescribed activities and prescribed locations on the project. Where not required to travel on shoulders, traffic may also tend to shy away from equipment, traveling partially onto shoulders for a distance. Clean any debris from the shoulders prior to beginning any work on the project and periodically when debris accumulates throughout the duration of the project. Monitor shoulder conditions and perform repairs as necessary if damage develops. Repairs to shoulders are to be paid by the tons of milling measured, asphalt material for tack, and the measured tons of the asphalt mixture used. Use asphalt base, asphalt surface or leveling and wedging for repairs as directed by the engineer. No direct payment for these repairs will be made other than measurement and payment of established contract work items necessary to make the repairs. No additional mobilization or traffic control will be considered for payment for these potential repairs.

LAW ENFORCEMENT OFFICER

Law enforcement officers may be required to be furnished on the project at any time when traffic is reduced to one lane and at other times as directed by the engineer. The contractor will be required to establish an agreement with a local law enforcement agency to provide an officer and police cruiser to be used to warn traffic of lane closures and stopped traffic ahead. The contractor will be responsible for reimbursing the agency of the costs for this service. This requirement is solely for the intent of warning traffic of a potential danger ahead and not for the purpose of the issuance of traffic violations. The officer should however have authority to issue citations if necessary and at his discretion. Patrolling for speeding and issuance of higher fine citations should be performed by a separate officer and the contractor will not be required to reimburse the agency for that operation.

LANE WIDTHS

The minimum clear lane width will be 11'. Make provisions for the passage of wide loads up to 16' except during bridge deck restoration activities for the eastbound I-64 bridge over Licking River. Use a lane closure all times when work is performed in the lane or adjacent shoulder.

SIGNS

Additional traffic control signs in addition to normal lane closure signing detailed on the Standard Drawings may be required by the Engineer. Additional signs needed for lane closures may include, but are not limited to, dual mounted LEFT/RIGHT LANE CLOSED 1 MILE, LEFT/RIGHT LANE CLOSED 2 MILE, LEFT/RIGHT LANE CLOSED 3 MILE, SLOWED/STOPPED TRAFFIC AHEAD, KEEP LEFT/RIGHT. Signage for reduced speed limits and higher fine work zones will be furnished, relocated, and maintained by the Contractor.

Contrary to section 112, individual signs will be measured only once for payment, regardless of how many times they are set, reset, removed and relocated during the duration of the project. Replacements for damaged signs or signs directed to be replaced by the Engineer due to poor legibility or reflectivity will not be measured for payment.

A quantity of signs has been included for "Roadwork Ahead" signs on entrance ramps, extra higher fine signs, keep left/keep right and speed limit signs between interchanges. These are to be paid for only once regardless of how many times they are moved or relocated.

SPEED LIMIT REDUCTIONS AND HIGHER FINE ZONES

Install all signing for speed zone reductions in accordance with Standard Drawing TTC-170.

Reduce the speed limit to 60 MPH when conditions in the Special Note for Speed Zone Signing are met and utilize variable Speed Limit Signs for the duration of the project.

Utilize higher fine zone signs in strict accordance with Standard Drawing TTC-170.

TYPE III BARRICADES

Utilize Type III Barricades to deter traffic from entering a closed lane and at all other locations required by the Standard Drawings or MUTCD. Place Type III Barricades in advance of pavement repair locations until such time that the milled repair area is backfilled. During phases that temporary barrier is not employed, place Type III Barricades in the closed lanes at half mile intervals. Type III Barricades will be measured and paid once per project regardless of how many times they are installed or re-installed.

ARROW PANELS

Connected Arrow Panels will be required to be used on the project. The Department **WILL NOT** take possession of the flashing arrows upon completion of the work. See Special Note for Connected Arrow Panels.

PORTABLE CHANGEABLE MESSAGE SIGNS

Provide portable changeable message signs (PCMS) in advance of and within the project at locations to be determined by the Engineer. PCMS being bid independently of the Queue Warning System shall be used as directed by the engineer. The PCMS will be in operation at all times. In the event of damage or mechanical/electrical failure, the contractor will repair or replace the PCMS immediately. PCMS will be paid for once, no matter how many times they are moved or relocated. The Department **WILL NOT** take possession of the signs upon completion of the work.

TRUCK MOUNTED ATTENUATORS

Furnish and install MUTCD compliant truck mounted attenuators (TMA) in advance of work areas when workers are present less than 12 feet from traffic and not protected by temporary barrier. If there is less than 500 feet between work sites, only a single TMA will be required at a location directed by the Engineer. Locate the TMAs at the individual work sites and move them as the work zone moves within the project limits. All details of the TMA installations shall be approved by the Engineer. The Department **WILL NOT** take possession of the TMAs upon completion of the work.

GUARDRAIL

Guardrail may be removed and later reinstalled at the contractor's expense to access the work areas. Reinstall guardrail that has been temporarily removed for access as soon as practical after completion of the activity necessitating the guardrail removal. Reinstall guardrail that has been removed for bridge end connector replacement, or other scheduled removal activities as soon as possible and upon completion of the activity necessitating the guardrail removal.

A lane closure or shoulder closure will be required at all times guardrail is not in place. All blunt ends will be eliminated by removal of additional posts and pinning the blunt end to the ground and covering the end with soil or DGA. Maintain drums at 20' spacing in any area in which guardrail has been removed until such time it is replaced.

The contractor shall be responsible for repairs to guardrail damaged by traffic during construction. Payment for the removal of damaged guardrail and installation of new guardrail and/or end treatments will be made at the contract unit price. Repairs to guardrail damaged by traffic during construction shall be made as soon as possible.

PAVEMENT MARKINGS

Remove or cover the lenses of raised pavement markers that do not conform to the traffic control scheme in use, or as directed by the Engineer. Replace or uncover lenses before a closed lane is reopened to traffic. No direct payment will be made for removing or covering and uncovering the lenses, but will be incidental to "Maintain and Control Traffic," lump sum.

Place temporary and permanent striping in accordance with Section 112, 713, and 714, except that:

1. Temporary and permanent striping will be 6" in width.
2. Edge lines will be required for temporary striping for lane closures greater than 3 days duration.
3. Existing, temporary, or permanent striping will be in place before a lane is opened to traffic. Utilize Type IVA temporary pavement markers on 40' spacing for skip lines where traffic remains in 2 lanes that have been shifted. Utilize Type IVA temporary pavement markers for lane closure tapers, and along one lane traffic shifts. Type IVA temporary pavement markers will not be required for one lane traffic operations except where traffic lanes are being shifted and will not be required adjacent to temporary concrete barriers with proposed barrier wall delineators.
4. Permanent striping will be Thermoplastic Pavement Markings on asphalt pavement and Durable Type I Tape on concrete bridge decks.
5. Striping removal will be performed by water blasting methods only in a non-destructive manner. The Contractor will be required to adjust his operations to ensure no damage results to ultimate pavement due to striping removal efforts. Temporary removable tape will be used to mask lines and for temporary striping on permanent pavement that is not to be replaced. Temporary striping and striping removal will be used for temporary markings within the resurfacing limits.

Should the Contractor change the existing striping pattern, the Contractor is to restripe the roadway back to its original configuration at his own expense if no work is anticipated for a period of time.

ADJACENT LANE DROP-OFFS

No vertical drop-off, two inches or greater, should occur between adjacent lanes where traffic is expected to cross in a lane-change maneuver.

- Less than two inches—no protection required

Note: Warning signs (MUTCD - Uneven Lane, W8-11) should be placed in advance of and at 1500 feet intervals, or as directed by the Engineer, throughout the drop-off area. Dual posting on both sides of the traveled way shall be required. (MUTCD - Uneven

Lane, W8-11)

- Two to four inches—plastic drums or vertical panels should be used in accordance with MUTCD and Kentucky Standard Drawings. Place Type III Barricades at the beginning of the lane or shoulder closures, and place additional Type III Barricades spaced at 2,500 feet, or as directed by the Engineer, during the time the lane closure is in place.
- Greater than four inches

Channelizing devices should be used in accordance with MUTCD, Kentucky Standard Drawings and these notes. A 5 foot buffer between the edge of the travel lane and the drop-off should be provided with channelization devices. A positive separation is needed when the buffer cannot be achieved. In lieu of positive separation, a pavement wedge may be constructed with compacted cuttings from milling, DGA, or asphalt mixtures with a 3:1 or flatter slope when workers are not present. When the drop-off is greater than 4 inches and within 10 feet of the traveled lane, positive separation should be considered. Place Type III Barricades at the beginning of the lane or shoulder closures, and place additional Type III Barricades spaced at 2,500 feet, or as directed by the Engineer, during the time the lane closure is in place, except when positive separation is in use. When concrete barriers are used, special reflective devices or steady-burn lights should be used for overnight installations.

- Temporary Conditions

For temporary conditions, drop-off areas greater than 4", and less than 5' from the edge of traveled way, may be protected by drums at 50' spacing provided work is pursued continually until the drop-off is eliminated, with the utilization of adequate lighting to illuminate the area during nighttime operations.

PROJECT TRAFFIC COORDINATOR

Designate an employee to be traffic coordinator. The designated Traffic Coordinator must meet the requirements of section 112.03.12 of the Standard Specifications. The Traffic Coordinator will report all incidents throughout the work zone to the Engineer on the project. The Contractor will furnish the name and telephone number where the Traffic Coordinator can be contacted at all times.

The Project Traffic Coordinator shall be available to receive traffic control notifications 24 hours daily for the duration of the project. Immediate response to all traffic control notifications is required and responding personnel should be on project within 1 hour of notification to the traffic coordinator to address traffic control issues.

This project is designated a "Significant Project" and subject to the requirements of section 112.03.12 of the Specifications for projects of that designation.

COORDINATION OF WORK

The Contractor is advised that other projects may be in progress within or in the near vicinity of this project. The traffic control of those projects may affect this project, and the traffic control of this project may affect those projects. The Contractor will coordinate the work on this project with the work of the other contractors. In case of conflict, the Engineer will determine the relative priority to give to work phasing on the various projects.

CONTRACTOR'S AND CONTRACTOR'S EMPLOYEES' VEHICLES

Contractor's employees and vehicles, or trucks shall not use the median or median crossovers for turnarounds or park in the median. Employee parking in the median or within the clear zone will only be allowed when behind barrier wall. All turnarounds of trucks and employee vehicles shall be performed at the nearest interchange. In accordance with Section 112.03.03 of the Specifications, place all construction equipment and materials outside the clear zone, beyond the ditch, behind guardrail or off the existing right of way when not in use.

WIDE LOADS

Wide load detours will not be established on this project except during bridge restoration activities for eastbound I-64 over Licking River. Provide for passage of wide loads up to 16 feet (except for certain activities as described in this section). Wide loads may use a portion of the shoulder to allow for passage. Temporarily shift traffic drums to allow for passage of wide loads when necessary.

While the lane closures for the eastbound I-64 over Licking River work is in place and temporary concrete barrier in place, wide loads will be required to exit at the US 60 Owingsville (Exit 123) exit eastbound. While the lane closure and barriers are in place, place a sign 1 mile in advance of Exit 123 eastbound advising "Wide Load Use Exit 123". Place an additional sign immediately in advance of the Exit 123 eastbound off ramp advising "Wide Load Must Exit". Wide load signs shall be dual mounted and oversized 4' X 8' with black letters on orange reflective sheeting. Erect M4-10 detour with left or right arrow supplemented by M4-8A (modified to say "WIDE LOAD") on the Exit 123 eastbound off ramp in advance of US 60, in advance of the US60/KY801 intersection, and in advance of the KY801/I64 eastbound on ramp. Supplement post mounted signs with PCMS when deemed necessary by the engineer.

The contractor shall be required to notify the engineer 2 weeks prior to beginning work on the eastbound I-64 over Licking River rehabilitation activities. The contractor shall also be required to notify the Kentucky Office of Overweight-Over-Dimensional Permits a minimum of 2 weeks in advance of the proposed wide load detour. The contractor shall provide the Office of Overweight-Over-Dimensional Permits details of the restricted width, the exact location, the proposed times of the width restrictions, and advise of the proposed routing of the wide load detour.

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**THIS PROJECT IS A FULLY
CONTROLLED ACCESS HIGHWAY**

I. DESCRIPTION

Perform all work in accordance with the Department's 2019 Standard Specifications, Supplemental Specifications, Applicable Special Provisions, and Applicable Standard and Sepia Drawings, except as hereafter specified. Article references are to the Standard Specifications. Furnish all materials, labor, equipment, and incidentals for the following work:

- (1) Maintain and Control Traffic; (2) Guardrail; (3) Asphalt Pavement and Milling and Texturing; (4) Pavement Markers and Markings; (5) Bridge Barrier Retrofit; (6) Grading and Drainage; (7) All other work specified as part of this contract.

II. MATERIALS

Except as specified in these notes or on the drawings, all materials will be according to the Standard Specifications and applicable Special Provisions and Special Notes. The Department will sample and test all materials according to Department's Sampling Manual and the Contractor will have the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing, unless otherwise specified in these notes.

- A. **Maintain and Control Traffic.** See Traffic Control Plan.
- B. **Pavement Markings - 6 inch.** Use Thermoplastic Pavement Markings for permanent striping on asphalt pavement. Use Durable Type 1 Tape on Bridge Deck Surfaces.
- C. **Asphalt Material for Tack Non-Tracking.** See “Special Note for Non-Tracking Tack Coat”.
- D. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”
- E. **Portable Queue Warning Alert System.** See “Special Note for Portable Queue Warning Alert System”.
- F. **Queue Protection Vehicle.** See “Special Note for Queue Protection Vehicle”.

- G. **Asphalt Seal Aggregate.** Use crushed limestone #8 or #9m meeting requirements of section 805 of the Specifications.
- H. **Electronic Delivery Management System.** See Special Note for Electronic Delivery Management System for aggregate. See Special Note for Electronic Delivery Management System for asphalt.
- I. **Connected Arrow Panels.** See Special Note for Connected Arrow Panels.
- J. **Guardrail.** Contrary to RBE-210, all median guardrail to be constructed between Thrie Beam Bridge Connectors and Thrie Beam Bull-Nose Terminals will be constructed with Thrie Beam Guardrail in lieu of Steel W Beam Guardrail.

Use 7' guardrail posts on all steel w beam guardrail installed on outside shoulders.

III. CONSTRUCTION METHODS

- A. **Maintain and Control Traffic.** See Traffic Control Plan. Use waterblasting methods only for striping removal when necessary, in lieu of abrasive or other methods.
- B. **Site Preparation.** Be responsible for all site preparation. Do not disturb existing signs. This item will include, but is not limited to, incidental excavation and backfilling; removal of all obstructions or any other items; disposal of materials; sweeping and removal of debris; shoulder preparation and restoration, temporary and permanent erosion and pollution control; and all incidentals. Site preparation will be only as approved or directed by the Engineer.
- C. **Disposal of Waste.** Dispose of all cuttings, debris, and other waste off the right-of-way at approved sites obtained by the Contractor. The contractor will be responsible for obtaining any necessary permits for this work. Temporary openings in the right of way fence for direct access to waste sites off the right of way or for access to other public roads will not be allowed. No separate payment will be made for obtaining the necessary permits but will be incidental to the other items of the work. Disposal of existing cuttings and brush shall adhere to Section 202 of the current Standard Specifications.
- D. **Final Dressing, Clean Up, and Seeding and Protection.** After all work is completed, completely remove all debris from the job site. Perform Class A Final Dressing on all disturbed areas. Sow disturbed earthen areas with Seed Mixture No. I or Seed Mixture No. II as applicable and use erosion control blanket in lieu of "Seeding and Protection" in all seeding applications.

- E. **Guardrail.** Remove guardrail where necessary to replace median guardrail and median grading, replace bridge end connectors, or other activities necessary requiring removal of guardrail for access. Replace guardrail as soon as practical at the conclusion of the work requiring the removal of the guardrail.

Locations are listed as station and offsets to the center of guardrail post for replacement of median guardrail at the twin structures. Minor adjustments to the post spacing may be allowed for bolt hole alignment only unless otherwise approved by the engineer.

Contrary to RBE-210, guardrail will not be transitioned to Steel W Beam guardrail and rail laps will not be transitioned to mid post location. The 6'3" Non-Symmetrical Transition to W-Beam noted in BHS-014 will be replaced with Thrie Beam Guardrail and guardrail lap location adjusted to 25' from the end of the Thrie Beam Guardrail at the connection point at the bridge wing. The additional post at 21' 10.5" from the bridge wing as depicted in BHS-014 will be required. Field drill guardrail as necessary to connect to this post.

It is anticipated that one segment of Thrie Beam Guardrail will not be at the standard 12.5' length and will require field cutting and field drilling of holes for this one location per system. This proposed nonstandard length location has been identified on the plan sheets. Paint all field cut and field drilled exposed steel with zinc paint meeting requirements of the specifications.

For attachment of Thrie-Beam Guardrail Transitions drill through the full width of the existing wing concrete and attach with the same bolt diameter and same nut, bolt and washer requirements as described in BHS-014.

- F. **Pavement Striping and Inlaid Pavement Markers.** Pavement striping will be in accordance with Section 112 for temporary striping and Section 714 for Thermoplastic Markings and Durable Type 1 Tape, except that:

- (1). Striping will be 6" in width.
- (2). Permanent striping or temporary striping will be in place before a lane is opened to traffic.
- (3). Pavement Markers shall be installed per the current Standard Drawings.

- G. **On-Site Inspection.** In accordance with section 102.06, each Contractor submitting a bid for this work will make a thorough inspection of the site prior to submitting a bid and will thoroughly familiarize himself with existing conditions so that the work can be expeditiously performed after a contract is awarded. Submission of a bid will be considered evidence of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department.

- H. **Caution:** Information shown on the drawings and in this proposal, and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusions as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information above.
- I. **Utility Clearance.** It is not anticipated that utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require that utilities be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities.
- J. **Asphalt Material for Tack Non-Tracking.** See “Special Note for Non-Tracking Tack Coat”.
- K. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”.
- L. **Portable Queue Warning Alert System.** See Special Note for Portable Queue Warning Alert System.
- M. **Queue Protection Vehicle.** See Special Note for Queue Protection Vehicle.
- N. **Electronic Delivery Management System.** See Special Note for Electronic Delivery Management System for aggregate. See Special Note for Electronic Delivery Management System for asphalt.
- O. **Connected Arrow Panels.** See Special Note for Connected Arrow Panels.
- P. **Pipe and Small Drainage Structure Removal.** Remove pipe and small drainage structures where indicated in the plans and dispose off the Right of Way. Backfill with compacted lifts with material obtained from the project or other materials as approved by the engineer.
- Q. **Nested Guardrail.** Construct “nested” guardrail approximately 112.5’ in length at the westbound Fearing Road outside shoulder pier, see plan sheet and nested guardrail detail. Nested guardrail will consist of two ply rail, and double posts (3.25’ spacing) and quadruple posts (1.625’ spacing) for the distances detailed in the plan sheets and in the guardrail summary.

IV. METHOD OF MEASUREMENT

- A. **Maintain and Control Traffic.** See Traffic Control Plan. Only the bid items listed will be measured for payment. No measurement or payment for removal or covering of existing pavement marker lenses will be made and will be considered incidental to “Maintain and Control Traffic”.
- B. **Site Preparation.** Other than the bid items listed, site preparation will not be measured for payment but will be incidental to the other items of work.
- C. **Asphalt Material for Tack Non-Tracking.** See “Special Note for Non-Tracking Tack Coat”.
- D. **Joint Adhesive.** See “Special Note for Longitudinal Pavement Joint Adhesive”.
- E. **Portable Queue Warning Alert System.** See Special Note for Portable Queue Warning Alert System.
- F. **Queue Protection Vehicle.** See Special Note for Queue Protection Vehicle.
- G. **Electronic Delivery Management System.** See Special Note for Electronic Delivery Management System for aggregate. See Special Note for Electronic Delivery Management System for asphalt.
- H. **Connected Arrow Panels.** See Special Note for Connected Arrow Panels.
- I. **Guardrail.** Thrie-Beam Guardrail Transition will be measured and include construction from the bridge wing to the post at 18’9” as in accordance with BHS-014. The Steel Thrie Beam Bullnose Terminal will be measured per each and includes construction to post number 12, in accordance with RBE-210. All other guardrail between post 12 of the Bullnose Terminal and the pay limits of the Thrie Beam Guardrail Transition will be measured as Guardrail Thrie Beam.

V. BASIS OF PAYMENT

No direct payment will be made other than for the bid items listed. All other items required to complete the construction will be incidental to the bid items listed. Existing signs damaged by the Contractor will be replaced by the Contractor at his expense. Payment will be made in accordance with the KYTC Standard Specifications, current edition with supplemental specifications and current Standard Drawings unless otherwise specified herein.

- A. **Maintain and Control Traffic.** See Traffic Control Plan.
- B. **Site Preparation.** Other than the bid items listed, no direct payment will be allowed for site preparation but will be incidental to the other items of work.

- C. **Pavement Marker Removal.** No direct payment will be made for the removal of the existing pavement markers prior to the milling operation and shall be considered incidental to milling and texturing.
- D. **Temporary Striping.** In accordance with Section 714.04.01, the Department will NOT measure temporary paint used for interim markings for Thermoplastic Paint applications.
- E. **Lane Closures.** Contrary to Section 112, lane closures will not be measured for payment but will be incidental to the bid item "Maintain and Control Traffic". Arrow boards, portable message boards, and signs shall be paid for one time regardless of how many times they are moved.
- F. **Waterblasting Striping Removal.** Waterblasting Striping Removal will be required for all striping removal applications. Striping removal will only be measured and paid for removal operations necessary to revise striping for purposes of employing new traffic schemes or removal of temporary lines necessary to restore traffic to its original lane locations. No measurement or payment will be made for striping removal to correct errant lines or removal of any temporary or interim markings that were installed for the convenience of the contractor.
- G. **Joint Adhesive.** See "Special Note for Longitudinal Pavement Joint Adhesive"
- H. **Asphalt Material for Tack Non-Tracking.** See Special Note for Non Tracking Tack Coat.
- I. **Guardrail.** The Department will only measure and pay for the removal of guardrail and placement of new guardrail for items of work that have an established contract quantity of guardrail items. Removal of guardrail may be allowed for other work items for access to the work area, however the removal and reinstallation of guardrail for these applications will be at the contractor's expense.

Payment for Bullnose Terminals, Thrie Beam Transitions, and Guardrail Thrie Beam will include all work and materials necessary to complete the system as described in the plan sheets, Standard Drawings, and Sepia drawings, including but not limited to additional posts where shown, drilling existing concrete wing and installation of custom length bolts, and any modifications to guardrail lengths, field drilling, repair painting of field cuts or drill holes, and any other item of work required to complete the system.
- J. **Portable Queue Warning Alert System.** See Special Note for Portable Queue Warning Alert System. No measurement or payment for Portable Queue Warning Alert System, Message Boards, or Sensors will be made for months that there is no activity on the project or lane closures.

- K. **Queue Protection Vehicle.** See Special Note for Queue Protection Vehicle. No measurement or payment for Queue Protection Vehicle or Furnish Queue Protection Vehicle will be made for months that there is no activity on the project or lane closures.
- L. **Truck Mounted Attenuator.** Truck mounted attenuator will be measured and paid as 1 each per project and include all use and implementation as required for the entirety of the project.
- M. **Electronic Delivery Management System.** See Special Note for Electronic Delivery Management System for aggregate. See Special Note for Electronic Delivery Management System for asphalt.
- N. **Connected Arrow Panels.** See Special Note for Connected Arrow Panels.
- O. **Pipe and Small Drainage Structure Removal.** Payment for Remove Pipe will include the excavation, removal and disposal and backfill. Payment for Remove Headwall will include excavation, removal and disposal and backfill of the small drainage structure. Removal of the inlet and outlet of the storm system at the Fearing Road overpass will be paid as Remove Headwall regardless of their classification as an inlet/outlet or headwall.
- P. **Seeding and Protection.** No direct payment will be made made for Seeding and Protection and will be considered incidental to Erosion Control Blanket in accordance with the Specifications.
- Q. **Mobilization for Concrete Surface Treatment.** Measurement and payment for Mobilization for Concrete Surface Treatment will be at 1 L.S. per the project and will be considered full compensation for mobilization for all structures scheduled to receive the sealing on the project.
- R. **Nested Guardrail.** Measurement and payment of nested guardrail (G/R Steel W BM-S Face 7 FT Post (Nested)) shall be made in accordance with Section 719.04.12 of the specifications and will include the additional items beyond those required for typical steel beam guardrail installations, including the additional ply guardrail (double ply), and increased post spacing of double post spacing (3.25') where required, and quadruple post spacing (1.5625') where required.

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This project is intended to construct a thin mill and inlay both eastbound and westbound.

- 1. The dimensions shown on the typical section for pavement and shoulder widths and thickness are nominal or typical dimensions. The actual dimensions to be constructed may be varied to fit existing conditions as directed or approved by the Engineer. It is not intended that existing pavement or shoulders be widened unless otherwise specified in the Proposal.
- 2. The contractor as part of his site visit shall inventory for existing overhead utility locations and conduct any operations in the vicinity of an overhead utility observing safe minimum clearances. The following approximate overhead utility locations were observed on the project:

Mile	123.886	Mile	128.159	Mile	128.657
Mile	124.878	Mile	128.408		

CAUTION: All utilities should be avoided on this project. If any utility is impacted, it will be the contractor’s responsibility to contact the affected utility and cover any costs associated with the impact.

- 3. The contractor is advised that the planned locations of work were established by correlation of locations to the official KYTC Mile Point Route Log and the established stationing may not match the existing reference markers (MP signs).
- 4. Quantities of guardrail removal and installation of new guardrail have been established for areas requiring removal for specific repairs or replacement. The contractor will place traffic drums on 20’ spacing in the areas and pin down exposed blunt ends until such time that guardrail is re-established. Either a lane closure or shoulder closure shall be in place at any time that a section of guardrail is not in place. Hang guardrail daily on all posts driven and eliminate all blunt ends by the end of each day’s production shift. The contractor shall either install end treatments on the leading end of each string of guardrail by the end of each day’s shift or pin the leading end guardrail down and cover with DGA or soil until such time that an end treatment can be installed.
- 5. The Contractor shall deliver existing salvaged guardrail system materials to the Central Sign Shop and Recycle center at 1224 Wilkinson Blvd in Frankfort, KY. Contact Section Supervisor at (502) 564-8187 to schedule the delivery of material. Deliver the material between the hours of 8:00AM and 3:30PM, Monday through Friday. There is a Guardrail Delivery Verification Sheet which must be completed and signed by the Contractor, Engineer and a representative of the Central Sign

Shop and Recycle Center. A copy of this sheet is included elsewhere in the proposal.

6. Flexible Delineators shall meet the requirements of Section 830 and 838 of the Standard Specifications and be placed in accordance with Section 3D of the M.U.T.C.D., current edition and current Standard Drawing.
7. This project requires the use of a Material Transfer Vehicle. In accordance with Section A of 403.03.05.
8. See Special Note for Signing Variable Work Zone Speed Limits in Construction Work Zones for speed posting requirements. Also, higher fine signs are set up in the project to be installed while workers are present in the work zone and not protected by barrier wall.
9. The contractor is to take care not to damage any existing roadway signs. Any roadway signs that are damaged during construction are to be replaced at the contractor's expense in accordance with section 105.08 of the standard specifications.
10. Quantities of Asphalt Seal Coat and Seal Aggregate, and DGA base have been established to wedge and eliminate greater than 1 inch drop offs. Due to the inconsistent nature of the slopes outside the paved shoulder, and due to the presence of existing guardrail, application of asphalt seal coat will not be practical in all locations. The intent is to provide a DGA wedge to eliminate drop-off situations and to re-establish the typical stone shoulder width where needed and where practical to do so. Minor grading of existing DGA shoulders may be required to remove excess material, debris, or vegetation, or on wide shoulders to eliminate rutted and shoved material, prior to placement of the new DGA material. Perform the minor grading as needed and flat roll the surface prior to placement of additional DGA or Asphalt Seal Coat.
11. Quantities of DGA Base, Asphalt Seal Coat and Seal Aggregate have been established to provide stone base with seal coat coverage in median locations where access will be severed by construction of new Bullnose Guardrail Terminal systems. Limit DGA and Asphalt Seal Coat in the median to limits established in the bullnose terminal grading details. Apply seeding with erosion control blanket at all other locations.
12. Any grading, sod removal or clearing of vegetation necessary to prepare the roadside shoulders for placement of the DGA wedge and asphalt seal coat will be considered site preparation and will not be measured for payment.
13. Remove any existing signs that may conflict with construction in the median grading areas or ramp acceleration extension area. Protect and store signs in a covered, dry building or shed, and reinstall signs at their prior installed locations at

the conclusion of the grading operation. No direct payment will be made for removing, storing, and re-installation of existing roadway signs and will be considered incidental to Maintain and Control Traffic.

14. Guardrail quantities have been established to replace all bridge end connectors (both inside shoulder connectors and outside shoulder connectors), and to replace all median guardrail at overhead bridges having median piers and at twin bridge structures with Bull-Nose Terminals and Thrie Beam Guardrail. Quantities have been established to remove guardrail for access to outside shoulder pier retrofit locations and re-establishment of guardrail at the conclusion of the pier retrofit work.
15. A quantity of roadway excavation has been established to perform regrading of the median at overhead bridge median piers and at the twin bridge structures in preparation for new guardrail, see Cross Sections. Construct median slopes between 4% and 10% cross slope as shown in the cross sections and as designed to maintain drainage. Roadway Excavation will only be measured and paid for work items in which cross sections have been provided. Any other grading or excavation necessary to complete the project will be considered as site preparation and incidental to other items of work.
16. Quantities have been established to remove the existing storm drain system at the Fearing Road overpass.
17. It is believed that the existing asphalt surface course within the project limits is approximately 2" in thickness. The proposed milling depth has been established at 1" with the goal of leaving approximately 1" of the existing surface in place. This method should primarily result in an increase in the roadway profile elevation of approximately 0.5". Shoulder slopes shall be increased from the new roadway profile elevation to match the existing shoulder grade at the edge of the proposed mill and inlay.
18. Two tangent locations have been identified to monitor cross slopes during placement of the final asphalt surface layer and restore crown to 2% +/- 0.5% (eastbound MP 124.5 to MP 124.7 and westbound MP 126.8 to MP 127.0). The existing cross slopes for these segments are unknown. The contractor will be required to develop a strategy to measure and assess existing cross slopes and place an increased depth of asphalt surface course at the crown point to increase the proposed cross slopes in these identified areas to target 2.0%. The contractor shall use automatic grade control on the paving equipment to assist in controlling the resulting cross slope and monitor results with survey equipment, smart level, or other approved means and adjust the process as necessary.
19. NOTE: A cable barrier system exists east of the Licking River Bridge. Exercise caution to not damage the existing cable barrier. Any damages caused by the contractor's equipment will be repaired at the contractor's expense by a contractor that is qualified in cable barrier repairs.

REFERENCES

- 1. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019.
- 2. FHWA Manual on Uniform Traffic Control Devices – 2023 Edition.
- 3. Kentucky Department of Highways Standard Drawings, Current Edition, as applicable:

BHS-014	THRIE-BEAM GUARDRAIL TRANSITION (TL-3)
RBB-002-010	GUARDRAIL AND BRIDGE END DRAINAGE
RBE-100-12	CRASH CUSHION TYPE 6 CLASS T (TL2 AND TL3)
RBE-210	STEEL THRIE-BEAM BULLNOSE TERMINAL, SHEETS 1-12 AND NOTES
RBI-001-12	TYPICAL GUARDRAIL INSTALLATIONS
RBI-002-07	TYPICAL GUARDRAIL INSTALLATIONS
RBM-135	SHEET 12: DELINEATORS FOR CONCRETE BARRIERS
RBM-135	SHEET 13: CONCRETE BARRIER WALL TYPE 9T (TEMPORARY)
RBR-001-13	GUARDRAIL STEEL BEAM (“W” BEAM)
RBR-005-11	GUARDRAIL COMPONENTS
RBR-010-06	GUARDRAIL TERMINAL SECTIONS
RBR-015-06	GUARDRAIL STEEL POSTS
RBR-018-00	GUARDRAIL TRANSITIONS
RBR-025-07	GUARDRAIL END TREATMENT TYPE 2M, SHEETS 1-2 AND NOTES
RBR-055-01	DELINEATORS FOR GUARDRAIL
RBR-060-00	DELINEATORS AT NARROW SHOULDER BRIDGES
RBR-100-07	GUARDRAIL STEEL BEAM (THRIE BEAM)
RDX-210-03	TEMPORARY SILT FENCE
RDX-225-01	SILT TRAP TYPE B
RDX-230-02	SILT TRAP TYPE C
RGS-002-06	SUPERELEVATION FOR MULTI-LANE PAVEMENT
RGX-001-06	MISCELLANEOUS STANDARDS
RPM-100-11	CURB AND GUTTER CURBS AND VALLEY GUTTER
TPM-105-04	INLAID PAVEMENT MARKER ARRANGEMENTS MULTILANE ROADWAYS
TPM-170-01	FLEXIBLE DELINEATOR POST ARRANGEMENTS FOR HORIZONTAL CURVES
TPR-130-01	RUMBLE STRIP DETAILS MULTI-LANE ROADWAYS AND RAMPS
TTC-115-04	LANE CLOSURE MULTI-LANE HIGHWAY CASE I
TTC-120-04	LANE CLOSURE MULTI-LANE HIGHWAY CASE II
TTC-135-03	SHOULDER CLOSURE
TTC-155-02	TEMPORARY PAVEMENT MARKER ARRANGEMENTS FOR CONSTRUCTION ZONES
TTC-160-02	TEMPORARY PAVEMENT MARKER ARRANGEMENTS FOR LANE CLOSURES
S-TTC-170	SPEED ZONE SIGNING FOR WORK ZONES, SHEETS 1-4
TTD-125-03	PAVEMENT CONDITION WARNING SIGNS
TTS-110-02	MOBILE OPERATION FOR PAINT STRIPING CASE III
TTS-115-02	MOBILE OPERATION FOR PAINT STRIPING CASE IV
TTS-120-02	MOBILE OPERATION FOR DURABLE STRIPING CASE I
TTS-140	CHANNELIZING DEVICES (INCLUDING BARRICADES)

4. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2019, Including - Supplemental Specifications, as applicable:

PROJECT SPECIFIC SPECIAL NOTES

Special Note	Typical Section Dimensions <i>attached</i>
Special Note	Before You Dig <i>attached</i>
Special Note	Fixed Completion Date and Liquidated Damages <i>attached</i>
Special Note	Special Note for Asphalt Milling and Texturing <i>attached</i>
Special Note	Special Note for Ribbon Thermo Striping Application <i>attached</i>
Special Note	Special Note for Electronic Delivery Management System (e-Ticketing) <i>attached</i>
Special Note	Special Note for Electronic Delivery Management System (e-Ticketing) (Agg.) <i>attached</i>
Special Note	Special Note for Concrete Sealing <i>attached</i>
Special Note	Special Note for Connected Arrow Panels <i>attached</i>
Special Note	Special Note for Signing Variable Work Zone Speed Limits in Construction Work Zones <i>attached</i>

UNIFORM SPECIAL NOTES

Special Note	Portable Changeable Message Signs <i>attached</i>
General Note	Asphalt Pavement Ride Quality (Cat A) <i>attached</i>
General Note	Compaction of Asphalt Mixtures (Option A) <i>attached</i>
Special Note	Guardrail Delivery Verification Sheet <i>attached</i>
Special Note	Special Note for Significant Project <i>attached</i>
Special Note	Special Note for Longitudinal Pavement Joint Adhesive <i>attached</i>
Special Note	Special Note for Paver Mounted Temperature Profiles <i>attached</i>
Special Note	Special Note for Non-Tracking Tack Coat <i>attached</i>
Special Note	Special Note for Experimental KYCT and Hamburg Testing <i>attached</i>
Special Note	Special Note for Recycled Asphalt Pavement (RAP) Stockpile Management <i>attached</i>
Special Note	Special Note for Portable Queue Warning Alert System <i>attached</i>
Special Note	Special Note for Queue Protection Vehicle <i>attached</i>

SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS
I-64
BATH COUNTY
ITEM NO. 9-22046

The dimensions shown on the typical sections for pavement and shoulder widths are nominal or typical dimensions. The actual dimensions to be constructed may be varied to fit existing conditions as directed or approved by the Engineer. It is not intended that existing pavement or shoulders be widened or narrowed **EXCEPT** where specified elsewhere in the Proposal.

SPECIAL NOTE FOR BEFORE YOU DIG

**I-64
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The contractor is instructed to call 1-800-752-6007 to reach KY 811, the one-call system for information on the location of existing underground utilities. The call is to be placed a minimum of two (2) and no more than ten (10) business days prior to excavation. The contractor should be aware that owners of underground facilities are not required to be members of the KY 811 one-call before-u-dig (bud) service. The contractor must coordinate excavation with the utility owners, including those whom do not subscribe to KY 811. It may be necessary for the contractor to contact the county court clerk to determine what utility companies have facilities in the area.

**SPECIAL NOTE FOR FIXED COMPLETION DATE AND
LIQUIDATED DAMAGES**

**I-64
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ITEM NO. 9-22046**

Liquidated Damages in the amount specified in the Standard Specifications, per calendar day, will be assessed for each day work remains incomplete beyond the Specified Project Completion Date. This project has a Fixed Project Completion Date of August 31, 2027.

Holiday and event dates have been established in the Traffic Control Plan that prohibit all lane closures on the project. A penalty of \$10,000 per day will be assessed for each day, or portion of a day, that a lane closure is in place or any work is performed on a date that lane closures are prohibited by the Traffic Control Plan.

No work may begin on asphalt milling and final asphalt surfacing, final pavement markings, and rumble strips until after April 1, 2027. All other items of work except final asphalt surfacing, final pavement markings and rumble strips, shall be completed by November 15, 2026. Liquidated Damages in the amount specified in the Standard Specifications, per calendar day, will be assessed for each day work remains incomplete beyond November 15, 2026 for any item in the contract except asphalt milling and final asphalt surfacing, final pavement markings, and rumble strips.

Additionally, the contractor will be required to complete all bridge restoration work and guardrail bridge end connector work that requires one lane traffic shifted onto shoulders for the eastbound bridge over the Licking River, within 30 consecutive Calendar Days. The contractor will be responsible for choosing the proposed start date for this work. Calendar Days will be tracked and charged from the time that traffic is reduced to one lane for the installation of the temporary barrier wall until such time that the contractor completes all items of work associated with the bridge restoration and waterproofing and outside shoulder guardrail, removes temporary barrier wall and restores traffic to 2-12' lanes in the eastbound direction of travel. Failure to complete all bridge restoration and waterproofing work, guardrail work, and restoration of traffic to 2-12' lanes in the eastbound direction of travel, within 30 consecutive Calendar Days will result in an agreed upon penalty in the amount of \$5,000 per day. Liquidated Damages in the amount of \$5,000 per day will be charged for each Calendar Day over the allowed 30 consecutive Calendar Days that bridge restoration work and guardrail work for the eastbound bridge over Licking River remains incomplete or traffic remains in the restricted lane configuration for this item of work.

Multiple penalties will be applied for multiple lane closures that are not in compliance with the Traffic Control Plan. Penalties for non-compliant lane closures, and penalties for failure to complete specific items of work within the allowable duration will be assessed in addition to any other applicable Liquidated Damages, or other penalties, if applicable.

All Liquidated Damages and any other applicable penalties will be applied cumulatively and concurrently.

Also contrary to Section 108, Liquidated Damages and penalties for non-compliant lane closures will be charged during the months of December through March.

**SPECIAL NOTE FOR
ASPHALT MILLING AND TEXTURING
I-64
BATH COUNTY
ITEM NO. 9-22046**

The Contractor will take possession and dispose of the millings at a location off the right of way.

It is intended to remove only the top 1” depth of the existing asphalt surface (approximately ½ the depth of the believed existing 2” depth surface). The engineer reserves the right to adjust the actual depth of milling if unsatisfactory results are observed using this method.

Removal of the existing pavement markers prior to the milling operation is considered incidental to the bid item “Asphalt Pave Milling & Texturing”.

**SPECIAL NOTE FOR
RIBBON THERMO STRIPING APPLICATION
I-64
BATH COUNTY
ITEM NO. 9-22046**

Contrary to Section 714.02.05 of the Standard Specifications for Road and Bridge Construction, application of 6 inch and 12 inch white and yellow “long-line” thermoplastic striping will be required to be by ribbon-extrusion gun at all locations that are to be applied over milled rumble strips in lieu of an extrusion die application. Also, ribbon-extrusion gun application may be used for all other 6 inch and 12 inch white and yellow “long-line” thermoplastic striping on this project in lieu of an extrusion die application.

SPECIAL NOTE FOR ELECTRONIC DELIVERY MANAGEMENT SYSTEM (e-Ticketing)

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department’s Standard Specifications for Road and Bridge Construction current edition.

1.0 DESCRIPTION. Incorporate an e-Ticketing Delivery Software for weighed asphalt material delivered to the project to report loads and provide daily running totals of weighed asphalt material for pay items and incidental work during the construction processes from the point of measurement and loading to the point of incorporation to the project.

2.0 MATERIALS AND EQUIPMENT. Contractor shall supply material data in JavaScript Object Notation (JSON) documents to the KYTC e-Ticketing Delivery Software (KYTC e-Ticketing Portal) via Application Programming Interface (API) or direct connection. Test and verify that ticket data can be shared from the original source no fewer than 30 days prior to material placement activities. An e-Ticketing Delivery Software supplier can provide a qualified representative for on-site technical assistance during the initial setup, pre-construction verifications, and data management and processing as needed during the Project to maintain material data delivery capabilities. Virtual meetings may be hosted in lieu of on-site meetings when deemed appropriate by the Engineer.

Provide e-Ticketing Delivery Software that will meet the following:

- 1. The e-Ticketing Delivery Software shall be fully integrated with the Contractor’s Load Read-Out scale system at the material source location.
- 2. The e-Ticketing Delivery Software shall provide real-time delivery to KYTC e-Ticketing Portal.
- 3. Transmit any updates to the ticket data within 5 minutes of a change.

3.0 CONSTRUCTION. Provide the Engineer with the manufacturer’s specifications and all required documentation for data access at the pre-construction conference.

A. Construction Requirements

- 1. Install and operate software in accordance with the manufacturer’s specifications.
- 2. Verify that all pertinent information is provided by the software within the requirements of this Special Note.

B. Data Deliverables

Provide to the Engineer a means in which to gather report summaries by way of iOS apps, web pages, or any other method at the disposal of the Engineer. The Engineer may request data at any time during the project.

1. Asphalt Material

a. Real-time Continuous Data Items

Provide the Engineer access to JSON documents capable of being transmitted through the KYTC’s e-Ticketing Portal that displays the following information in real-time with a web-based system compatible with iOS and Windows environments.

- Each Truck
 - Supplier Name
 - Supplier Address
 - Supplier Phone
 - Plant location
 - Date
 - Time at source
 - Project Location

- Contract ID#
- Carrier Name
- Unique Truck ID
- Description of Material
- Mix Design Number
- Gross, Tare and Net Weight
- Weighmaster

4.0 MEASUREMENT. The Department will not measure the electronic delivery management system.

5.0 PAYMENT. The Department will not measure this work for payment and will consider all items contained in this note to be incidental to the asphalt mixtures on the project, as applicable.

SPECIAL NOTE FOR ELECTRONIC DELIVERY MANAGEMENT SYSTEM (e-Ticketing)

This Special Note will apply when indicated on the plans or in the proposal. Section references herein are to the Department’s Standard Specifications for Road and Bridge Construction current edition.

1.0 DESCRIPTION. Incorporate an e-Ticketing Delivery Software for weighed aggregate material delivered to the project to report loads and provide daily running totals of weighed aggregate material for pay items and incidental work during the construction processes from the point of measurement and loading to the point of incorporation to the project.

2.0 MATERIALS AND EQUIPMENT. Contractor shall supply material data in JavaScript Object Notation (JSON) documents to the KYTC e-Ticketing Delivery Software (KYTC e-Ticketing Portal) via Application Programming Interface (API) or direct connection. Test and verify that ticket data can be shared from the original source no fewer than 30 days prior to material placement activities. An e-Ticketing Delivery Software supplier can provide a qualified representative for on-site technical assistance during the initial setup, pre-construction verifications, and data management and processing as needed during the Project to maintain material data delivery capabilities. Virtual meetings may be hosted in lieu of on-site meetings when deemed appropriate by the Engineer.

Provide e-Ticketing Delivery Software that will meet the following:

- 1. The e-Ticketing Delivery Software shall be fully integrated with the Contractor’s Load Read-Out scale system at the material source location.
- 2. The e-Ticketing Delivery Software shall provide real-time delivery to KYTC e-Ticketing Portal.
- 3. Transmit any updates to the ticket data within 5 minutes of a change.

3.0 CONSTRUCTION. Provide the Engineer with the manufacturer’s specifications and all required documentation for data access at the pre-construction conference.

A. Construction Requirements

- 1. Install and operate software in accordance with the manufacturer’s specifications.
- 2. Verify that all pertinent information is provided by the software within the requirements of this Special Note.

B. Data Deliverables

Provide to the Engineer a means in which to gather report summaries by way of iOS apps, web pages, or any other method at the disposal of the Engineer. The Engineer may request data at any time during the project.

1. Aggregate Material

a. Real-time Continuous Data Items

Provide the Engineer access to JSON documents capable of being transmitted through the KYTC’s e-Ticketing Portal that displays the following information in real-time with a web-based system compatible with iOS and Windows environments.

- Each Truck
 - Supplier Name
 - Supplier Address
 - Supplier Phone
 - Plant location
 - Date
 - Time at source
 - Project Location

- Contract ID#
- Carrier Name
- Unique Truck ID
- Description of Material
- Load Number
- Gross, Tare and Net Weight
- Weighmaster

4.0 MEASUREMENT. The Department will measure the electronic delivery management system as a lump sum item.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

1. Payment is full compensation for all work associated with providing all required equipment, training, and documentation.
2. Payment will be full compensation for costs related to providing the e-Ticketing Delivery Software, including integration with plant load-out systems, and report viewing/exporting process. All quality control procedures including the software representative’s technical support and on-site training shall be included in the Contract lump sum price.

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
26248EC	ELECTRONIC DELIVERY MGMT SYSTEM-AGG	LS

SPECIAL NOTE FOR CONCRETE SEALING

These Notes or designated portions thereof, apply where so indicated on the plans, proposals or bidding instruction.

- I. **DESCRIPTION.** Perform all work in accordance with the Department's 2019 Standard Specifications, and applicable Supplemental Specifications, the attached sketches, and these Notes. Section references are to the Standard Specifications.
This work consists of: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.

II. **MATERIALS.**

- A. **Sealer.** Use a sealer from the KYTC list of approved materials.
- B. **Coverage Rate:** Follow all manufacturers recommendations for coverage rates except the application rate must not exceed the square footage coverage rate per gallon of sealer as given in the chart below. If the manufacturer recommends a coverage rate greater than given in the table below, apply sealer at the rate given in the table below for the chosen sealers silane percentage.

% Silane	Coverage rate (ft ² /gallon)
100	300
40	120
20	60

III. **CONSTRUCTION.**

- A. **Curing Compound.** Contrary to Section 609.03.12 of the specifications, curing compound is not to be used on this deck due to potentially causing issues with the concrete sealer. During the deck pour, finishing, and tining operations the Class AA concrete shall be kept continuously moist with the use of a mister until burlap or curing blankets are applied to the surface. At no point should water be pooling or running off the surface or the surface of the concrete be allowed to become dry. After the burlap or curing blankets are installed, cure in accordance with the specifications. Include all costs in the unit price bid for Class AA concrete. Failure to properly cure the concrete in accordance with this note and the specifications may result in weakened or cracked concrete. If the concrete is weakened or cracked due to improper curing, the contractor will be responsible for providing alternates to fix the issues to the Engineer for review and the contractor will be solely responsible for all costs to do so, up to complete replacement. Do not begin any construction on fixing any issues without approval of the Engineer.

- B. Contract Time.** Concrete Sealing may need to be installed after contract time has elapsed in a separate mobilization and after the Engineer has declared the project otherwise complete. Liquidated damages shall not be charged provided Concrete Sealing is complete within 60 days after the last concrete pour on the structure. When the Contractor has not completed Concrete Sealing within the time frame allotted, Liquidated Damages shall be charged at 25 percent of the original contract daily charge from the expiration of the time allowed until the Contractor completes the work except the Department will not deduct liquidated damages when weather limitations prohibit the Contractor from performing the work.
- C. Cleaning the Deck.** Dry clean the deck to remove all loose debris. Remove all visible hydrocarbons from the surface with detergent approved by the manufacturer of the deck sealant. Pressure wash all surfaces to be sealed at 2000 to 3000 psi. Install pressure gauges at each wand to verify pressure. Use 30° fan tip or as recommended by the manufacturer of the deck sealant. Hold pressure washing wand a minimum of 45° from the deck with a maximum stand-off distance of 12 inches.
- D. Sealing the Deck.** Allow new concrete to cure a minimum 28 days prior to application of sealer. Monitor weather conditions prior to sealer application. Refer to manufacturer's recommendations for proper ambient conditions. Do not apply sealer if precipitation is anticipated within the time stated by the manufacturer. Allow the deck to dry 24 hours (after washing or rain event) before sealer application. The deck can be reopened to traffic while drying. Sealer must be applied within 48 hours of washing or the deck must be rewashed. Divide the deck into predefined areas of specific square footage to aid in determining usage. Comply with manufacturer's usage recommendation. Using a low pressure pump, apply sealer and spread evenly with broom or squeegee; do not allow pooling to remain. When each predefined area is complete, measure the amount of sealer used to verify proper usage. After sealing, follow manufacturer's recommended cure time before opening to traffic. On vertical surfaces, apply the sealer in a flooding application from the bottom up, so the material runs down 6 to 8 inches below the spray pattern.
- E. Inspection:** Monitor all aspects of the project to assure compliance to this specification. Observe and document general conditions during the entirety of the project. Verify that each phase of work has been satisfactorily completed prior to beginning the next phase. Phases are described as follows:
1. Dry cleaning to remove loose debris, verify and document:
 - a. All debris has been removed and disposed of properly.
 2. Removal of hydrocarbons, verify and document:
 - a. The manufacturer's recommended detergent is used for removal.
 - b. Hydrocarbons have been satisfactorily removed.
 3. Pressure washing, verify and document:
 - a. Washing pressure at the wand.
 - b. Tip size used.
 - c. Wash angle and stand-off distance.

- d. The deck is satisfactorily cleaned.
- 4. Sealer application, verify and document:
 - a. Proper cure time for new concrete.
 - b. Deck surface is dry.
 - 1. Document time since washed.
 - 2. Was deck opened to traffic after washing?
 - c. Ambient conditions.
 - 1. Document ambient temperature, surface temperature, relative humidity, and dew point.
 - d. Application and distribution method.
 - e. Coverage to be complete and even.
 - f. Material is not allowed to remain pooled.
 - g. Monitor material usage.
 - h. No traffic until proper cure time is allowed.

IV. MEASUREMENT

- A. Concrete Sealing.** The Department will measure the quantity per square feet of each area sealed.
- B. Mobilization – For Concrete Surface Treatment.** The Department will pay the lump sum bid for an additional mobilization when Concrete Sealing must be performed after the Engineer has deemed the project complete except for Concrete Sealing, structure is opened to traffic, and Contractor has fully demobilized.

V. PAYMENT

- A. 23378EC - Concrete Sealing – Sq. Ft.** Payment at the contract unit price per square feet is full compensation for the following: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.
- B. 26233EC - Mobilization – For Concrete Surface Treatment – L.S.** Payment at the contract lump sum price bid shall be full compensation for the Contractor to remobilize on the project to perform Concrete Sealing as detailed herein this special note.

Special Note for Connected Arrow Panels

1. DESCRIPTION

Furnish, install, operate, and maintain connected arrow panels at the locations shown on the plans or designated by the Engineer. Remove and retain possession of arrow panels when they are no longer needed on the project. The connected arrows panels shall be capable of reporting real-time lane closure and location information to the Kentucky Transportation Operations Center as well as for third party GPS vendors (Mapping, Navigation, Connected Vehicles, etc).

2. MATERIALS & EQUIPMENT

2.1. General

Conform to the current requirements of the Standard Drawings and the MUTCD. Mount on traffic-worthy carriages that meet all applicable safety standards. Devices shall be compliant with current MASH standards. Use either diesel powered, electric, or solar powered. A portable dynamic message sign may be used to simulate an arrow panel if it meets the requirements in this section. The use of retrofit kits to modify older arrow panel equipment to become "connected" will be allowed as long as they are in compliance with this special note, meet the manufacturer's specifications and recommendations, and are approved by the Engineer.

Materials installed on the project shall be provided by the Contractor in new or like-new condition, shall be corrosion resistant, and in strict accordance with all the details shown within Contractor's Plans approved by KYTC. The Contractor shall maintain an adequate inventory of parts and replacement units to support maintenance and repair of the arrow panels. Pre-deployment is a condition of the system's acceptance and is based on the successful performance demonstration for a (5) day continuous period in accordance with this specification and as set forth in the plans.

2.2. Capabilities and Performance Requirements

2.2.1. Power System: The arrow panels power source shall be capable of maintaining power as well as ability to broadcast location and operations data for year-round deployment in a stand-alone state and without intervention.

2.2.2. Display: Type C Arrow panels as defined in Part 6 of the MUTCD are required for all applications. The following display requirement shall apply to Connected Arrow Panels:

- Minimum display size shall be 96 inches wide by 48 inches tall.
- Minimum legibility distance is 1 mile.
- Minimum number of elements (or pixels) is 15.
- Elements shall be capable of at least 50% dimming from full brightness. Use dimmed mode for nighttime operation.
- Color presented by elements shall be yellow.

2.2.3. Operating Modes: Connected Arrow Panel shall be switched between the following modes in accordance with the contract or as directed by the Engineer:

- Blank – The unit is turned ON, but the display shall be blank and the connected arrow panel shall make transmissions to the data feed.
- Flashing Left/Right Arrow
- Flashing Double Arrow
- Alternating Diamond/Flashing Caution

2.2.4. GPS and Remote Communications: The connected arrow panels shall be connected to the cloud and provide a data feed compliant with latest specification of the U.S Department of Transportation Work Zone Data Exchange (WZDx) Device Feed. Furthermore, the real time data program shall be in compliance with “Title 23 of the Code of Federal Regulations (CFR) Chapter 1 Subchapter F Part 511.305-315 (<https://www.ecfr.gov/current/title-23/part-511/subpart-C>).” Arrow panels shall have the ability to receive and transmit the GPS coordinates (latitude and longitude) within a 30-foot diameter of its true location. Arrow panels shall transmit status and location as follows: a). Mode change within 2 minutes. b). Location (if moved more than 500 feet) within 2 minutes. c). Health check every 30 minutes.

Data shall be accessible through a website and the Contractor shall provide a username and password for protection. The website shall be accessible seven (7) days a week and twenty - four (24) hours a day. The website shall provide historical & real-time data in graphical and numerical formats and shall have the capability of being integrated within the Department's Traffic Operations Center (if requested). The website should be compatible to most handheld devices. Data shall be saved on the manufacturer's network for up to (5) years from the deployment date of system and shall be provided at the request of the Department at any time within the (5) year window. The use of the website shall be included within the price of connected arrow panels.

3. CONSTRUCTION

The Contractor will be required to perform a trial run with the arrow panels to be utilized for a project at least 1 week prior to being deployed in the presence of the Engineer. The trial run shall go through a series of steps and meet all the following requirements to the satisfaction of the Engineer to ensure the devices are communicating and responding in the provided WZDx Device Feed:

- Make sure device is turned on, with a blank display, and at the start location – Make sure it is blank and the data feed accurately represents this.
- Right Arrow – Turn the arrow panel to right and wait at least 5 minutes, so the data is archived.
- Left Arrow – Turn the arrow panel to left and wait at least 5 minutes, so the data is archived.
- Move 500’ – Blank the display. Move the arrow panel at least 500’ (try to minimize as much as possible).

- Wait 5 minutes after 1st move – Turn on Right Arrow Display. Wait 5 minutes to see if the location is refined.
- Move 500’ again – Blank the display. Move the arrow panel again at least 500’ (try to minimize as much as possible).
- Wait 5 minutes after 2nd move – Turn on Left Arrow Display. Wait 5 minutes to see if the location is refined.
- Right Arrow again – Change to right arrow to make sure the device location and information is updated.
- Wait 1 hour (if on roadway wait as long as possible) – Wait 1 hour to see how much the check-in occurs.
- Turn Device Off – Turn the device off and record information.

Once the arrow panels are approved by the Engineer, install them at the beginning of the lane closure taper per plan or as the Engineer directs and ensure the panels operate continuously when deployed on the project. The Contractor shall have available one portable flashing arrow that has been approved in reserve. Place the reserve arrow panel in operation if one is damaged or if there is mechanical or electrical failure. A qualified technician will be responsible to correct any deficiencies in accordance with Section 112.03.15 deemed necessary by the Engineer.

When the connected arrow panel is not displaying the flashing left or right arrow, the display shall be blank and the connected arrow panel shall make transmissions to the data feed. When a connected arrow panel is switched to Flashing Left Arrow mode or Flashing Right Arrow mode, the display shall flash accordingly, and the connected arrow panel shall transmit its location and its current operating mode to the data feed. The Connected Arrow Panels central server shall provide real-time status change alerts to a list of designated personnel via text and/or email. An alert shall be sent each time a device is switched between operating modes (i.e., switched between ON mode and OFF mode; each time a connected arrow panel is switched between blank, flashing left arrow mode, flashing right arrow mode, flashing caution mode), each alert shall include the current operating mode, the previous operating mode, the date and time of the mode switch, and the location (latitude and longitude) of the device at the time of the mode switch.

4. MEASUREMENT

The Department will measure each item below in Months. For partial months the Department will pay in 0.25 increments based on the number of calendar days in the below table.

Partial Month Payment Schedule	
<u>Days</u>	<u>Increment</u>
0-7 days	0.25
8-14 days	0.50
15-21 days	0.75
22-31 days	1.00

The Department will not measure any costs associated with the required cellular communications (SAT communications will be required, if cellular is not available), all supporting field equipment, website access, and unlimited data reports accessible by the Engineer, but will consider them incidental to this item of work. The Department will not measure the reserved flashing arrows for payment and will consider them incidental to this item of work. The Department will not measure installation, maintenance, or removal for payment and will consider them incidental to this item of work. Always maintain system components in good working condition. Repair or replace damaged or malfunctioning components, at no cost to the Department, as soon as possible and within (12) hours of notification by the Engineer. The quantity to be paid for arrow panels will be the maximum number of arrow panels in use at any one time on the project.

5. PAYMENT

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
26237EC	Connected Arrow Panels	MONTH

Special Note for Signing Variable Work Zone Speed Limits in Construction Work Zones

This note establishes criteria for implementing variable work zone speed limits in construction work zones.

1. Definition

A variable work zone speed limit is in effect only when specified work zone conditions are present.

2. Application of Variable Work Zone Speed Limits

Post a reduced work zone speed limit of 60 miles per hour only where any of the following work zone conditions are present **and** only for the length of the affected roadway:

- Workers present within 15 feet of the traveled way
- Frequent construction vehicle entry/exit
- Temporary barrier within 2 feet of a travel lane
- Drop-offs greater than 2 inches within 8 feet of a travel lane
- Uneven or milled surfaces

If the Engineer determines a condition that is present but not listed above warrants a reduced work zone speed limit, the Contractor shall lower the speed limit to 60 mph as directed by the Engineer.

3. Location and Placement of Speed Zone Signs

Install speed zone signs per [Standard Drawing TTD-130, Option A](#), and every two (2) miles throughout the project. If an interchange is present, install a set of signs within 500 feet of the on-ramp termination, then every two (2) miles unless another interchange is located within that distance.

Put the reduced work zone speed limit into operation by switching on the flashing lights of the first speed zone sign located upstream of the work zone condition.

Operationalize the reduced speed limit **(a)** only in the direction affected by the work zone condition and **(b)** only for the length of roadway affected. For example, if a work zone condition is only present in the northbound direction along a three-mile segment, only put the reduced speed limit into effect on that segment. Retain the original posted speed limit along all remaining northbound segments and the entirety of the southbound direction.

The first speed limit sign located downstream of the point at which the work zone condition ends should **(a)** reinstate the original posted speed limit and **(b)** have no flashing lights activated.

4. Duration of Reduced Speed Limit Posting

The reduced work zone speed limit should remain in effect so long as the following are present:

- Any condition listed in Section 2, or
- Any other condition identified by the Engineer as warranting a speed limit reduction.

If a work zone condition is expected to be paused for less than six hours, do not reinstate the original posted speed limit during this period.

5. Penalties

If the Engineer observes the reduced work zone speed limit has not been put into effect as defined in Section 3, they should alert the Contractor of their failure to comply with this Special Note. If the signing is not in compliance within one (1) hour from initial notification by the Engineer, a penalty of \$200 per hour will be assessed on an hourly basis beginning from the initial notification of non-compliance.