

SIGN DESIGNATION			
YEAR 1996 A.D.T.	15,000	50,000	
YEAR 2016 A.D.T.	16,500	55,000	
D.H.V.	10%	10%	
D (DIRECTIONAL DISTRIBUTION)	67%	67%	
T (PERCENT B & C TRUCKS)	10%	10%	
V (DESIGN SPEED)	50 M.P.H.	60 M.P.H.	
LEGAL SPEED	45 M.P.H.	55 M.P.H.	
FUNCTIONAL CLASSIFICATION	URBAN ARTERIAL	URBAN FREEWAY	
STATION LIMITS	STA. 91+16.99 - STA. 115+00	STA. 115+00 - STA. 130+00	

MICROFILMED
NOV 14 1995

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
CUY-176-10.14
CITY OF CLEVELAND
CITY OF PARMA
VILLAGE OF BROOKLYN HEIGHTS
CUYAHOGA COUNTY

CALC. DATE	CUYAHOGA COUNTY	OHIO	1
CHKD. DATE	CUY-176-10.14	F.H.W.A. REGION	395
DATE			

NON-FEDERAL FUNDS

LIMITED ACCESS

This improvement is especially designed for through traffic and has been declared a limited access highway or freeway by action of the Director in accordance with the provisions of Section 5511.02 of the Revised Code of Ohio.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

THE STANDARD 1993 SPECIFICATIONS OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL GOVERN THIS IMPROVEMENT.

CONVENTIONAL SIGNS

COUNTY LINE	LIMITED ACCESS (ONLY)	LA
TOWNSHIP LINE	RIGHT OF WAY (ONLY)	RW
SECTION LINE	LIMITED ACCESS & RIGHT OF WAY	LA & RW
CORPORATION LINE	EXISTING RIGHT OF WAY	RW
FENCE LINE (EXIST.)	PROPERTY LINE	R
FENCE LINE (PROP.)	PROPERTY LINE IN EXIST. FENCE	X R X
CENTERLINE	RAILROAD	RR
TREES	STUMPS	TO BE REMOVED
GUARDRAIL (EXISTING)	(PROPOSED)	
UTILITY POLES, TELEPHONE	POWER	LIGHT

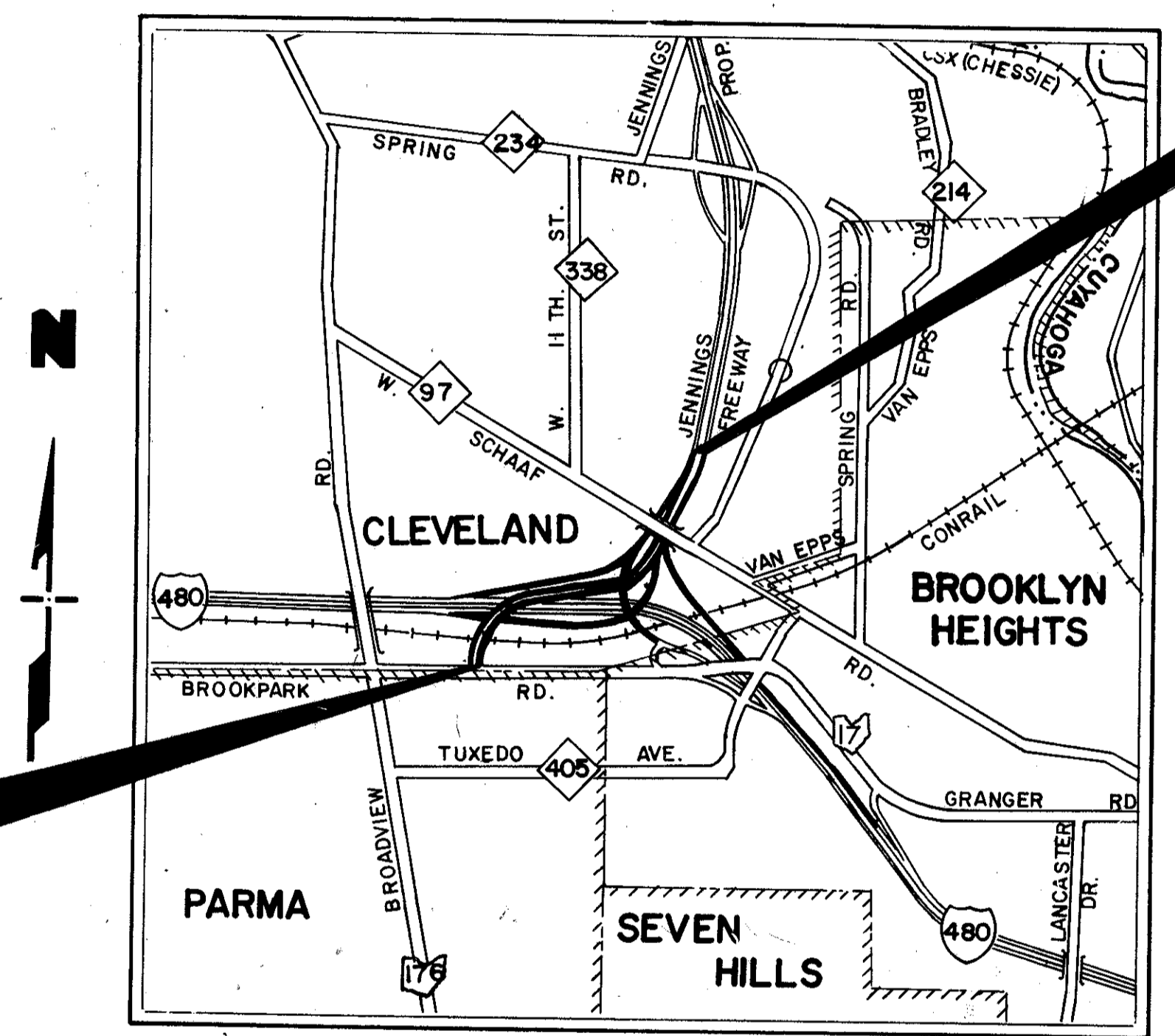
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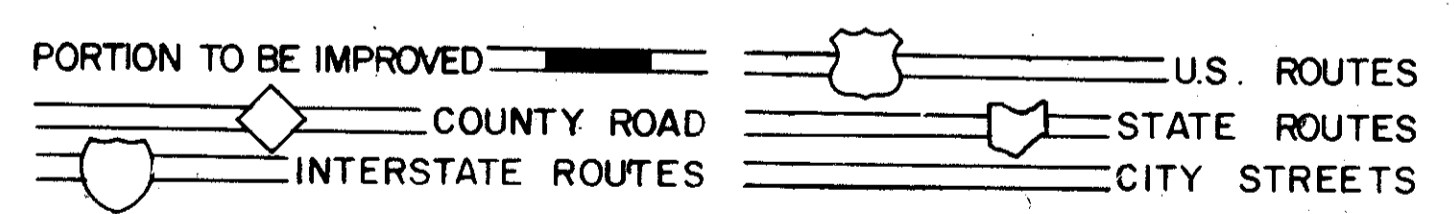
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GRADE SEPARATION WITH CONSOLIDATED RAIL CORPORATION

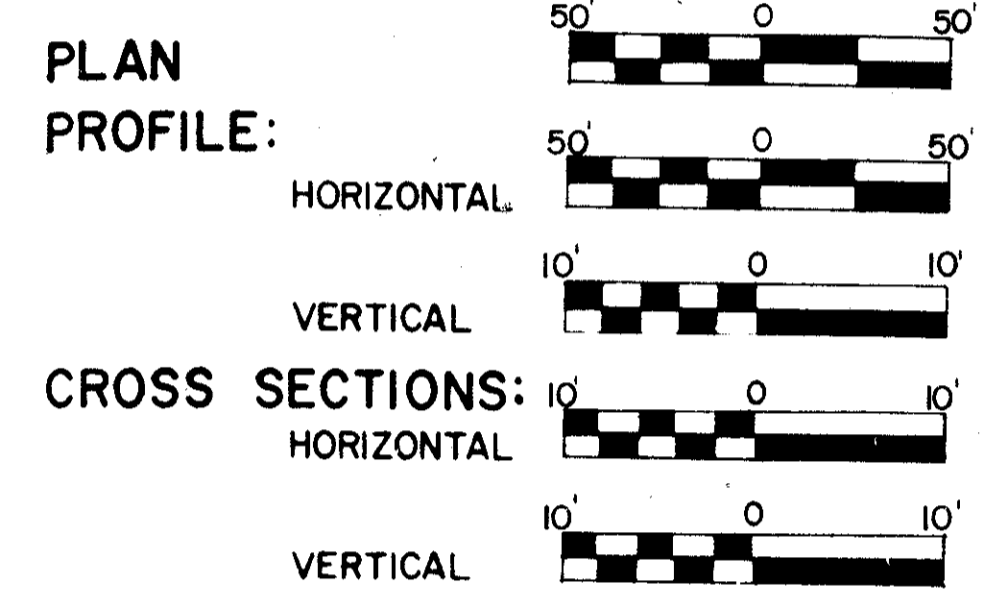


LOCATION MAP
SCALE IN FEET



END PROJECT
STA. 130+00.00 BK=
STA. 129+94.10 AHD

PLAN SCALES



SUPPLEMENTAL		SPECIFICATIONS	
NUMBER	DATE	NUMBER	DATE
802	4-13-90		
820	3-18-92		
841	5-16-84		
843	7-29-88		
862	12-16-88		
931	3-18-92		
942	3-18-92		
944	5-2-92		
962	1-23-90		
852	7-30-93		
910	5-20-91		
945	5-17-83		
940	6-10-87		

DISTRICT
CERTIFIED
ROADWAY
PLANS

APPROVED *Bryan J. Holden*
DATE 5-4-94 DISTRICT DEPUTY DIRECTOR OF TRANSPORTATION

APPROVED *B.D. Henschelmann*
DATE 6/9/94 ENGINEER, BUREAU OF BRIDGES AND STRUCTURAL DESIGN

APPROVED *Christopher L. Ryan*
DATE 7-11-94 DEPUTY DIRECTOR, DESIGN

APPROVED *Jerry Whay*
DATE 7-11-94 DIRECTOR, DEPARTMENT OF TRANSPORTATION

PROJECT DESCRIPTION

THE PRIMARY PURPOSE OF THIS IMPROVEMENT IS TO PROVIDE FOR GREATER CAPACITY ON AN IMPROVED ALIGNMENT OF SR-176 (JENNINGS FREEWAY) INCLUDING THE CONSTRUCTION OF AN INTERCHANGE SYSTEM WITH I-480. SIGNING, STRIPING, AND LIGHTING OF RELOCATED SR-176 AS WELL AS SIGNING AND STRIPING ON I-480 AND BROOKPARK ROAD WILL ALSO BE PART OF THIS PROJECT.

STANDARD CONSTRUCTION DRAWINGS

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
BP-1.1	2-21-92	F-1	11-10-83	MH-1	12-18-84	TC-21.40	9-1-92	TC-41.10	8-29-84	TC-71.10	9-10-91	HL-30.11	5-1-87		
BP-2.1	2-21-92	F-3	5-1-76	HW-4A	4-1-80	MH-3	12-18-84	TC-32.11	9-1-92	TC-41.20	3-26-79	TC-85.10	1-20-84	HL-30.21	5-1-87
BP-2.2	2-21-92	F-5	5-1-76	HW-4B	4-1-80	MH-5	6-12-75	TC-41.41	8-2-79	TC-41.40	6-18-79	TC-85.20	1-20-84	HL-30.22	5-1-87
BP-2.3	2-21-92							TC-51.11	1-20-84	TC-41.50	3-26-79			HL-30.31	5-1-87
BP-3.1	2-21-92			I-2A	12-18-84			TC-65.10	2-1-90	TC-42.10	8-19-77			HL-30.33	5-1-87
BP-5.1	2-21-92	GR-1.1	5-6-91	I-3A & B	4-1-80	MT-95.30	10-10-88	TC-65.11	2-1-90	TC-42.20	3-26-79			HL-50.11	5-1-87
BP-6.1	2-21-92	GR-1.2	10-30-92			MT-95.31	10-10-88	TC-7.65	3-1-79	TC-51.10	1-20-84	HL-10.11	5-1-87	HL-50.21	5-1-87
BP-7.1	10-30-92	GR-1.3	2-21-92	MC-5	6-12-75	MT-95.32	8-25-89	TC-12.30	1-20-84	TC-52.10	4-3-79	HL-10.12	5-1-87	HL-60.11	5-1-87
BP-8.1	2-21-92	GR-2.1	5-6-91	MC-9.4	10-30-92	MT-97.10	4-29-88	TC-16.20	1-20-84	TC-52.20	4-3-79	HL-10.13	5-1-87	HL-60.12	5-1-87
		GR-3.1	5-6-91	MC-1	6-13-69	MT-97.11	10-4-89	TC-21.10	9-1-92	TC-61.10	4-5-82	HL-10.31	5-1-87	HL-60.21	5-1-87
		GR-3.2	5-6-91	MC-4	7-26-76	MT-99.10	11-14-86	TC-21.20	9-1-92	TC-72.20	2-26-82	HL-20.11	5-1-87	AS-1-81	11-27-81
		GR-4.1	5-6-91	MC-7	10-15-76	MT-99.20	4-29-88	TC-22.10	9-1-92	TC-81.10	1-20-84	HL-20.13	5-1-87	EXJ-4-87	1-5-89
CB-4	11-10-83			MC-9.2	5-6-91	MT-101.60	7-1-92	TC-22.20	9-1-92	TC-81.20	1-20-84	HL-20.21	5-1-87	SD-1-69	6-12-69
CB-5	11-10-83			MC-9.3	10-30-92	MT-102.10	8-25-89	TC-31.21	9-1-92	TC-82.10	8-29-84	HL-20.22	5-1-87	VPF-1-90	2-1-92
CB-6	5-1-79			MC-10	5-1-76	MT-105.10	7-1-92	TC-32.10	9-1-92	TC-83.10	3-18-92	HL-20.23	5-1-87		
				MC-11	8-1-78	MT-105.11	7-1-92	TC-35.10	8-29-84	TC-83.20	1-20-84	HL-20.31	5-1-87		

Project: **1994 Contract No. 683**
Date of Letting **9-13**

1275
Revised 8-8-94
TITLE SHEET

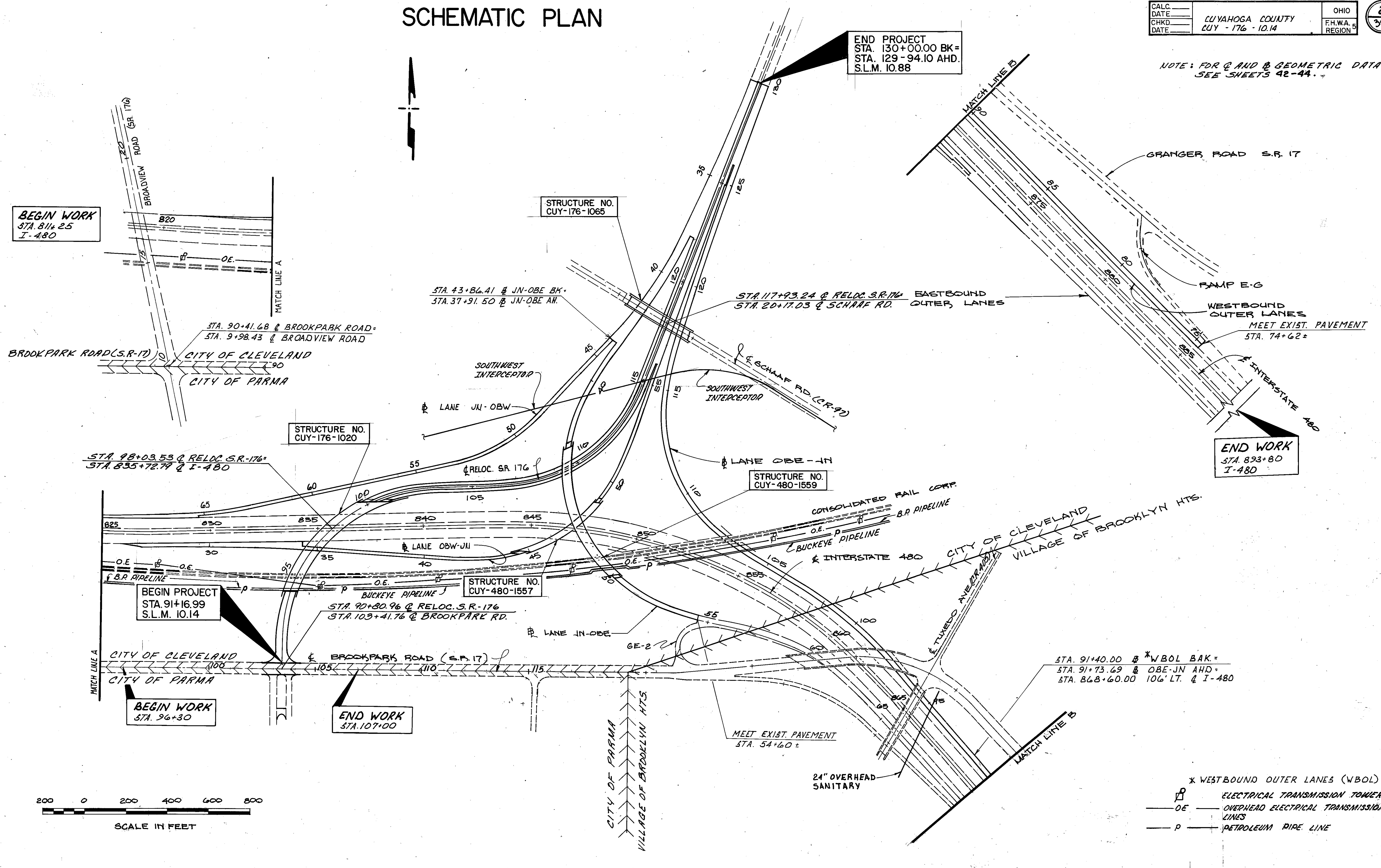
RELOC. S.R.-176

SCHEMATIC PLAN

CALC. _____	CUYAHOGA COUNTY	OHIO
DATE _____	CUY - 176 - 10.14	F.H.W.A. REGION 5
CHKD. _____		
DATE _____		

2
395

NOTE: FOR Q AND B GEOMETRIC DATA SEE SHEETS 42-44.



BEGIN WORK
STA. 814+25
I-480

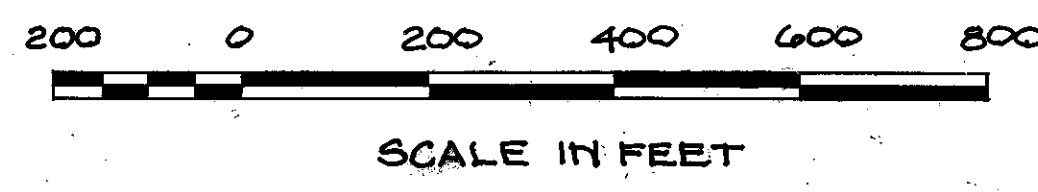
END PROJECT
STA. 130+00.00 BK=
STA. 129-94.10 AHD.
S.L.M. 10.88

END WORK
STA. 893+80
I-480

BEGIN PROJECT
STA. 91+16.99
S.L.M. 10.14

BEGIN WORK
STA. 96+30

END WORK
STA. 107+00



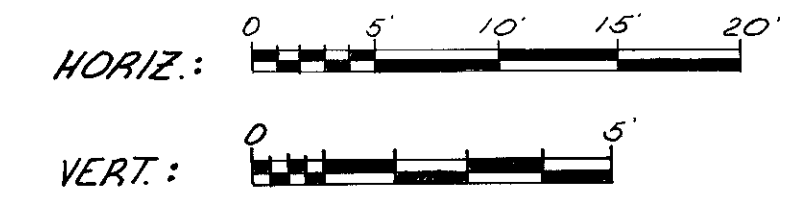
- x WESTBOUND OUTER LANES (WBOL)
- ⊕ ELECTRICAL TRANSMISSION TOWER
- OE — OVERHEAD ELECTRICAL TRANSMISSION LINES
- P — PETROLEUM PIPE LINE

RELOC. S.R. 176

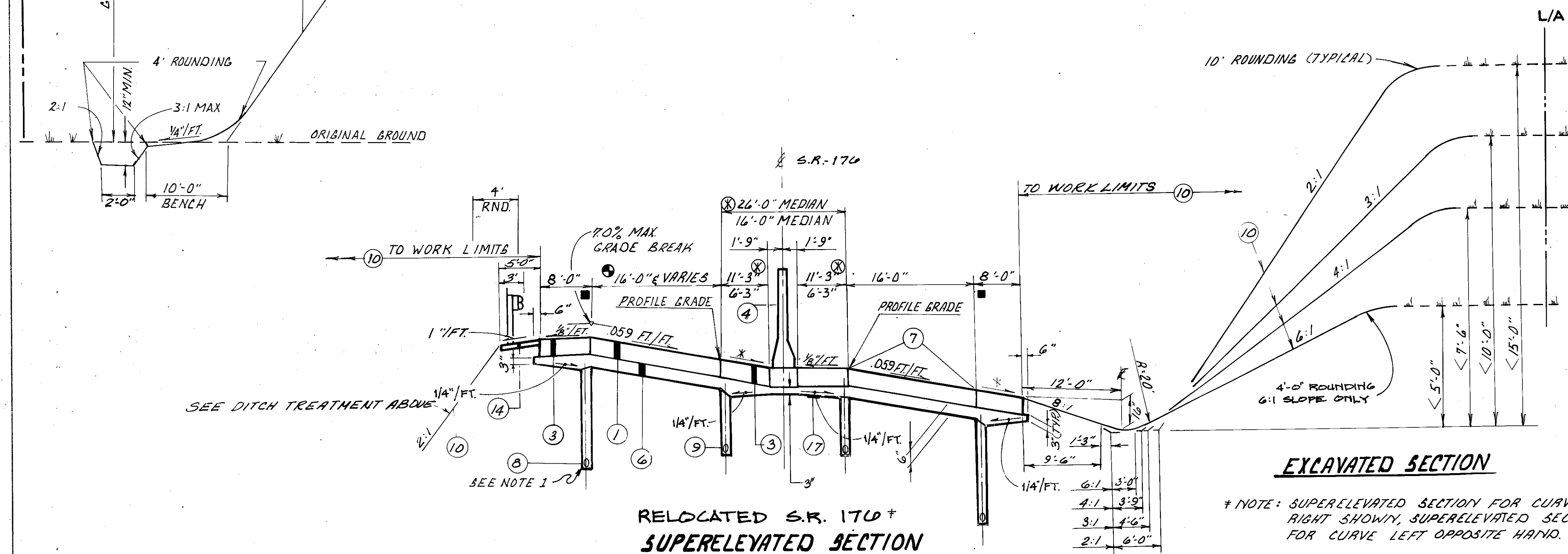
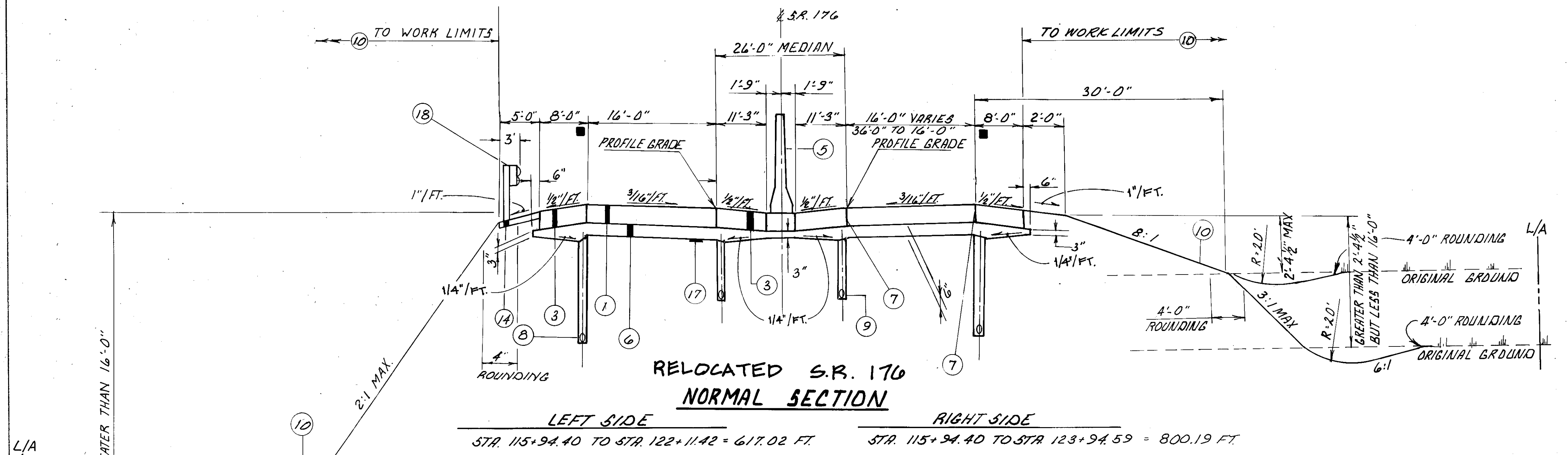
TYPICAL SECTIONS TYPE 451

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUY - 176 - 10.14	F.H.W.A. 5
CHKD.		REGION
DATE		

3
395



NOTE: OMIT UNDERDRAINS ON HIGH SIDE OF SUPERELEVATION SECTIONS UNLESS OTHERWISE SHOWN ON PLANS.



LEGEND

REF. No.	ITEM	DESCRIPTION
1	451	12" REINFORCED CONCRETE PAVEMENT
2	451	9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN
3	452	12" PLAIN CONCRETE PAVEMENT
4	622	CONCRETE BARRIER TYPE C-50, AS PER PLAN
5	622	CONCRETE BARRIER TYPE B-50, AS PER PLAN
6	310	SUBBASE TYPE II, (SEE PROPOSAL NOTE)
7		STANDARD LONGITUDINAL JOINT
8	605	6" DEEP PIPE UNDERDRAINS, WITH FABRIC WRAP
9	605	6" SHALLOW PIPE UNDERDRAINS, WITH FABRIC WRAP
10	659	SEEDING AND MULCHING
11	451	12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN
12		STANDARD LONGITUDINAL JOINT, WITHOUT TIE BARS
13	452	12" PLAIN CONCRETE PAVEMENT, AS PER PLAN
14	448	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 (UNDER GUARDRAIL), AS PER PLAN
15	609	CURB TYPE 2A
16	608	4" CONCRETE WALK
17	203	SUBGRADE COMPACTION
18	606	GUARD RAIL TYPE 5
19	611	REINFORCED CONCRETE APPROACH SLAB (T=15")
20	611	REINFORCED CONCRETE APPROACH SLAB (T=17")
21	611	REINFORCED CONCRETE APPROACH SLAB (T=19")
22		STANDARD LONGITUDINAL JOINT TYPE D
23	622	CONCRETE BARRIER, AS PER PLAN
24	254	PAVEMENT PLANING, BITUMINOUS, 1 1/4" MINIMUM
25	202	CURB REMOVED
26	202	WALK REMOVED
27	202	PAVEMENT REMOVED
28	407	TACK COAT
29	402	ASPHALT CONCRETE, AC-20
30	404	ASPHALT CONCRETE, AC-20
31	660	SODDING, AS PER PLAN
32	305	9" CONCRETE BASE, AS PER PLAN
33	305	10" CONCRETE BASE, AS PER PLAN
34	612	CONCRETE MEDIAN, AS PER PLAN
35	609	CURB, TYPE 6
36	609	CURB, TYPE 7

* NOTE: SUPERELEVATED SECTION FOR CURVE RIGHT SHOWN, SUPERELEVATED SECTION FOR CURVE LEFT OPPOSITE HAND.

■ PROVIDE RUMBLE STRIPS AS PER BP 8.1

CURVE RIGHT
 STA. 91+16.99 TO STA. 94+07.63 = 290.64 FT.
 * 16'-0" STA. 91+16.99 TO STA. 94+07.63
 * 24'-0" STA. 91+16.99 TO STA. 93+00.00
 VARIES 24'-0" TO 16'-0" STA. 93+00.00 TO STA. 94+00.00
 16'-0" STA. 94+00.00 TO STA. 94+07.63

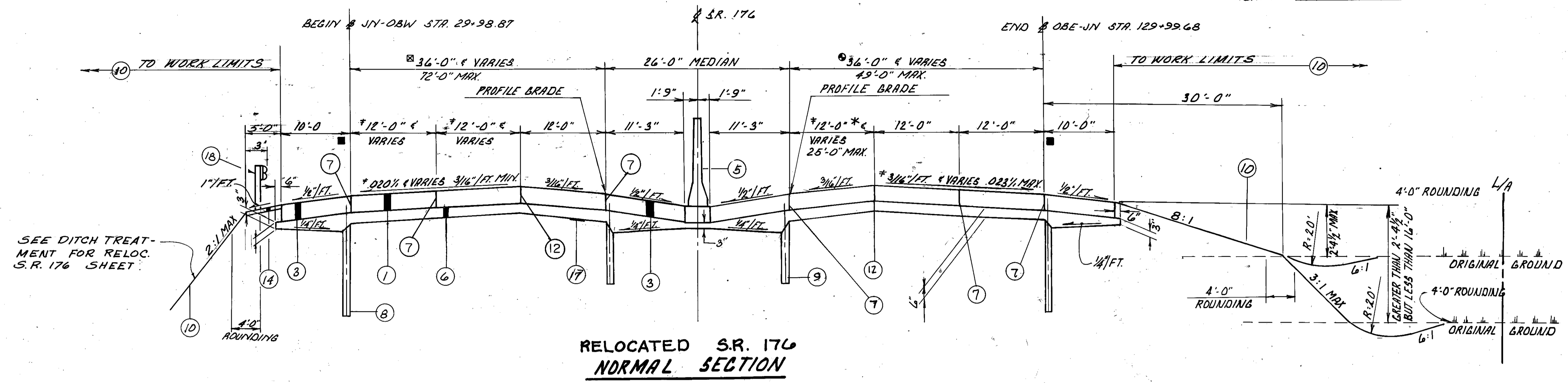
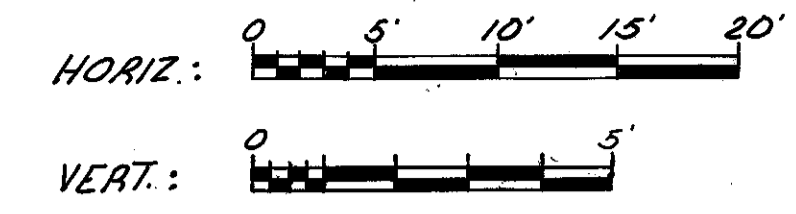
CURVE LEFT (OPPOSITE HAND)
 STA. 100+19.32 TO STA. 115+94.40 = 1575.08 FT.
 * 16'-0" STA. 100+19.32 TO STA. 110+00.00
 VARIES 16'-0" TO 26'-0" STA. 110+00.00 TO STA. 113+00.00
 26'-0" STA. 113+00.00 TO STA. 115+94.40

BRIDGE NO. CUY-176-10.20 STA. 94+32.63 TO STA. 99+69.32 = 536.69 FT.

RELOC. S.R. - 176

TYPICAL SECTIONS TYPE 451

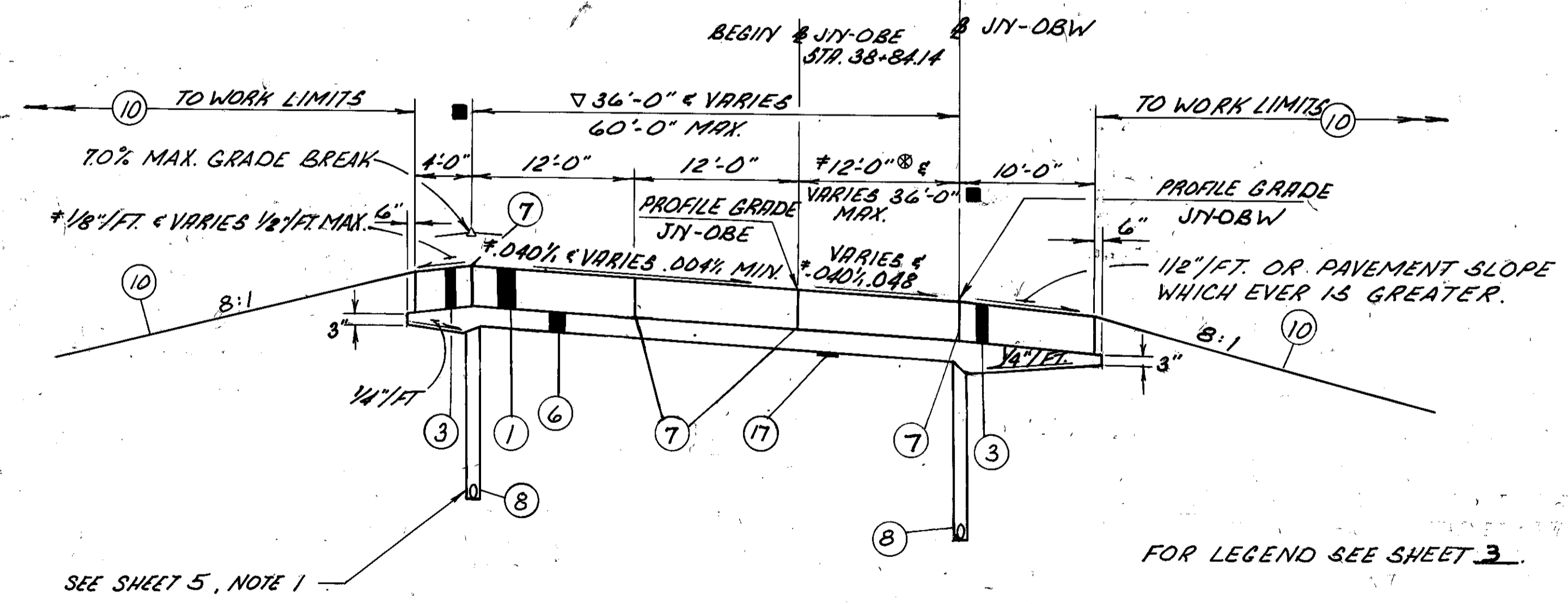
CALC.	CUYAHOGA COUNTY	OHIO	4 395
DATE	CUY - 176 - 10.14	F.H.W.A. REGION 5	
CHKD.			
DATE			



**RELOCATED S.R. 176
NORMAL SECTION**

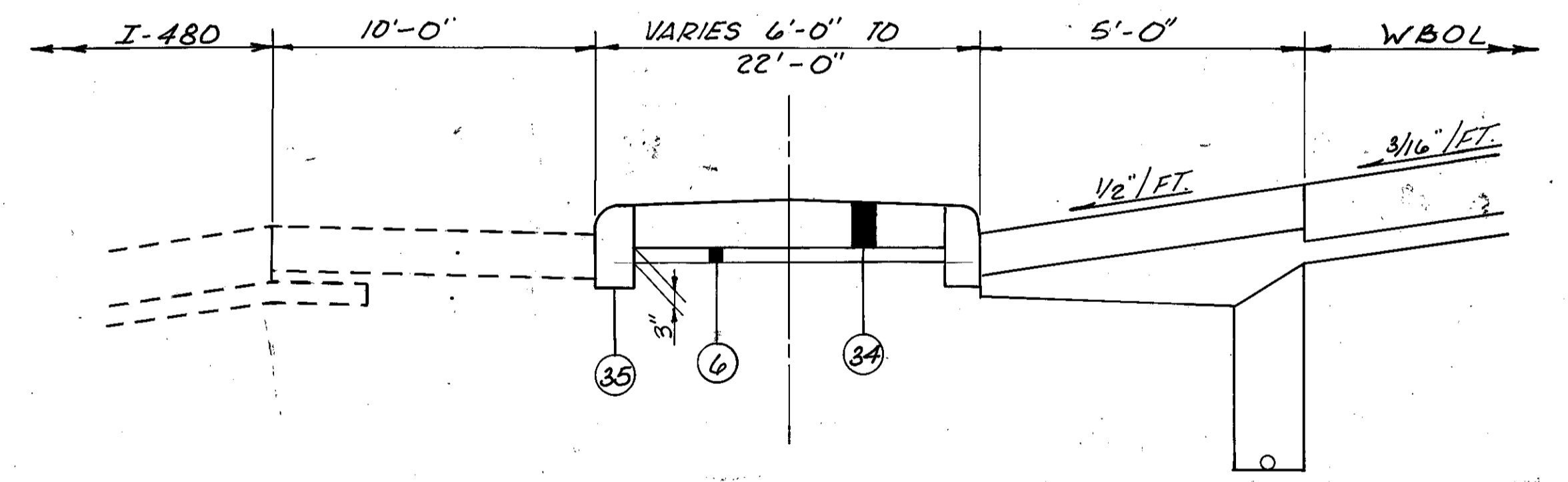
LEFT SIDE
 STA. 122+11.42 TO STA. 130+00.00 = 788.58 FT.
 VARIES 12'-0" TO 36'-0" STA. 122+11.42 TO STA. 129+98.87
 36'-0" STA. 129+98.87 TO STA. 130+00.00.

RIGHT SIDE
 STA. 123+94.59 TO STA. 130+00.00 = 605.41 FT.
 VARIES 49'-0" TO 36'-0" STA. 123+94.59 TO STA. 129+99.68
 36'-0" STA. 129+99.68 TO 130+00.00
 VARIES 25'-0" TO 12'-0" STA. 123+94.59 TO STA. 129+99.68
 12'-0" STA. 129+99.68 TO STA. 130+00.00



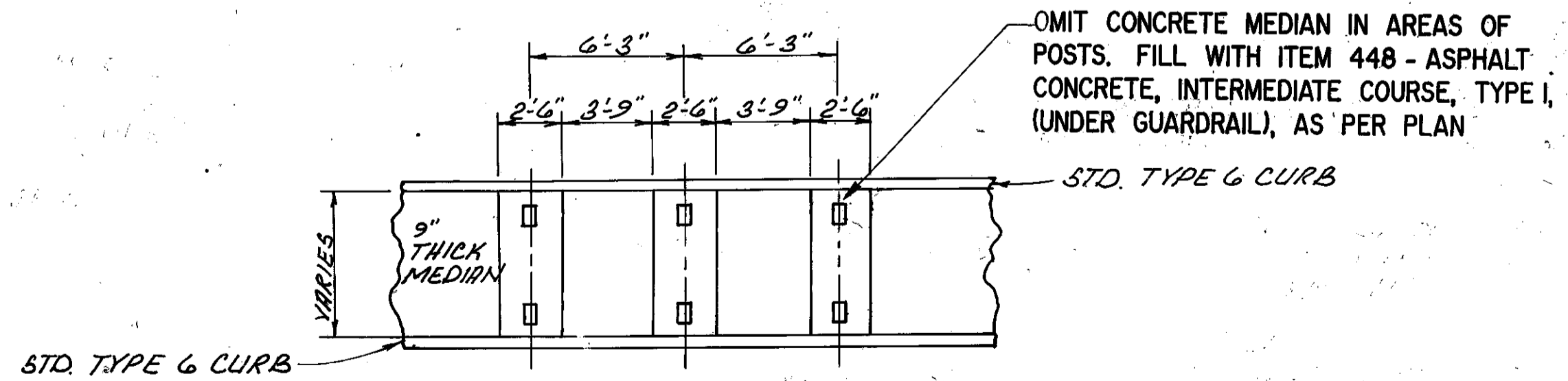
**JN-OBW
SUPERELEVATED SECTION**

STA. 37+84.13 TO STA. 43+53.08 = 568.95 FT.
 36'-0" STA. 37+84.13 TO STA. 38+84.14
 VARIES 36'-0" TO 60'-0" STA. 38+84.14 TO STA. 43+53.08
 12'-0" STA. 37+84.13 TO STA. 38+84.14
 VARIES 12'-0" TO 36'-0" STA. 38+84.14 TO STA. 43+53.08



CONCRETE MEDIAN DETAIL

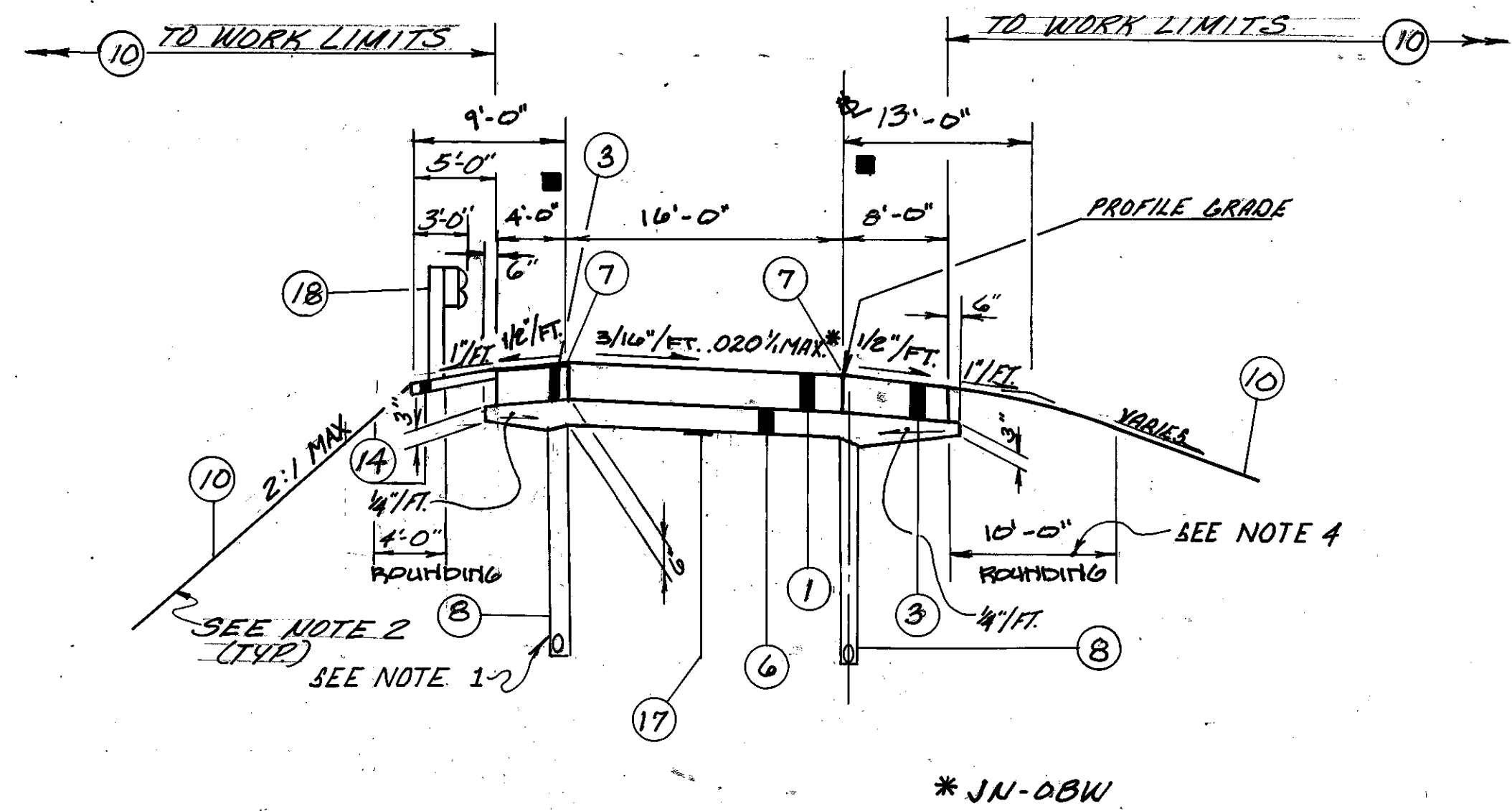
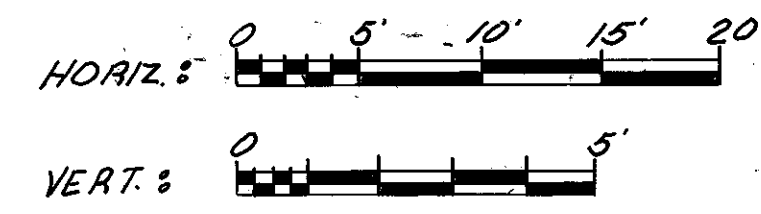
(APPLIES TO TYPICAL SECTION W.B.O.L., SHEET 6.)
 FOR DETAILS NOT SHOWN SEE STANDARD DRAWING MC-6 DATED 1-30-84



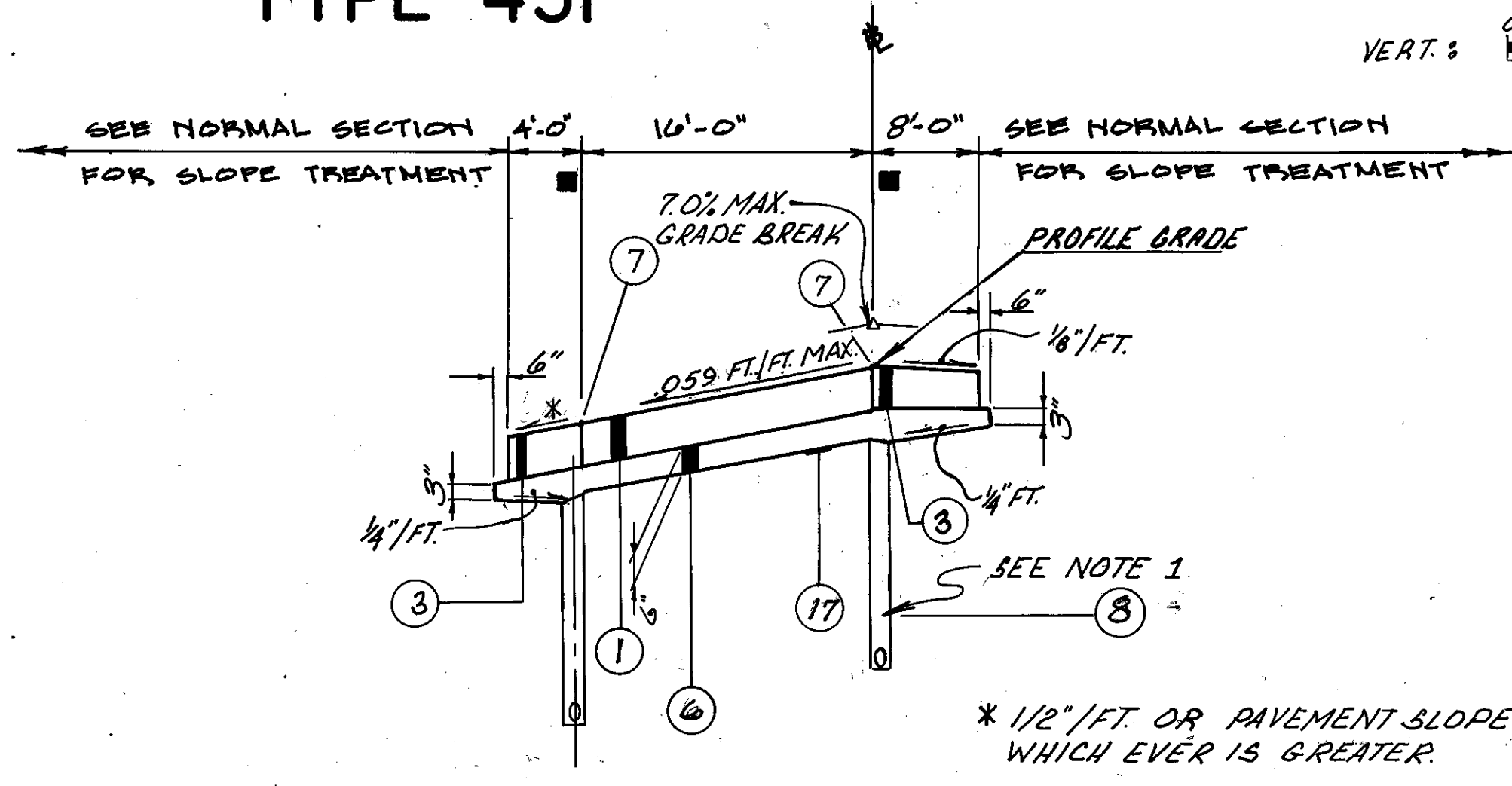
**MEDIAN JOINT DETAIL
AT GUARDRAIL POST**

TYPICAL SECTIONS TYPE 451

CALC.		OHIO
DATE	CUYAHOGA COUNTY	F.H.W.A. REGION 5
CHKD.	CUY-176-10.14	395
DATE		



* JN-OBW



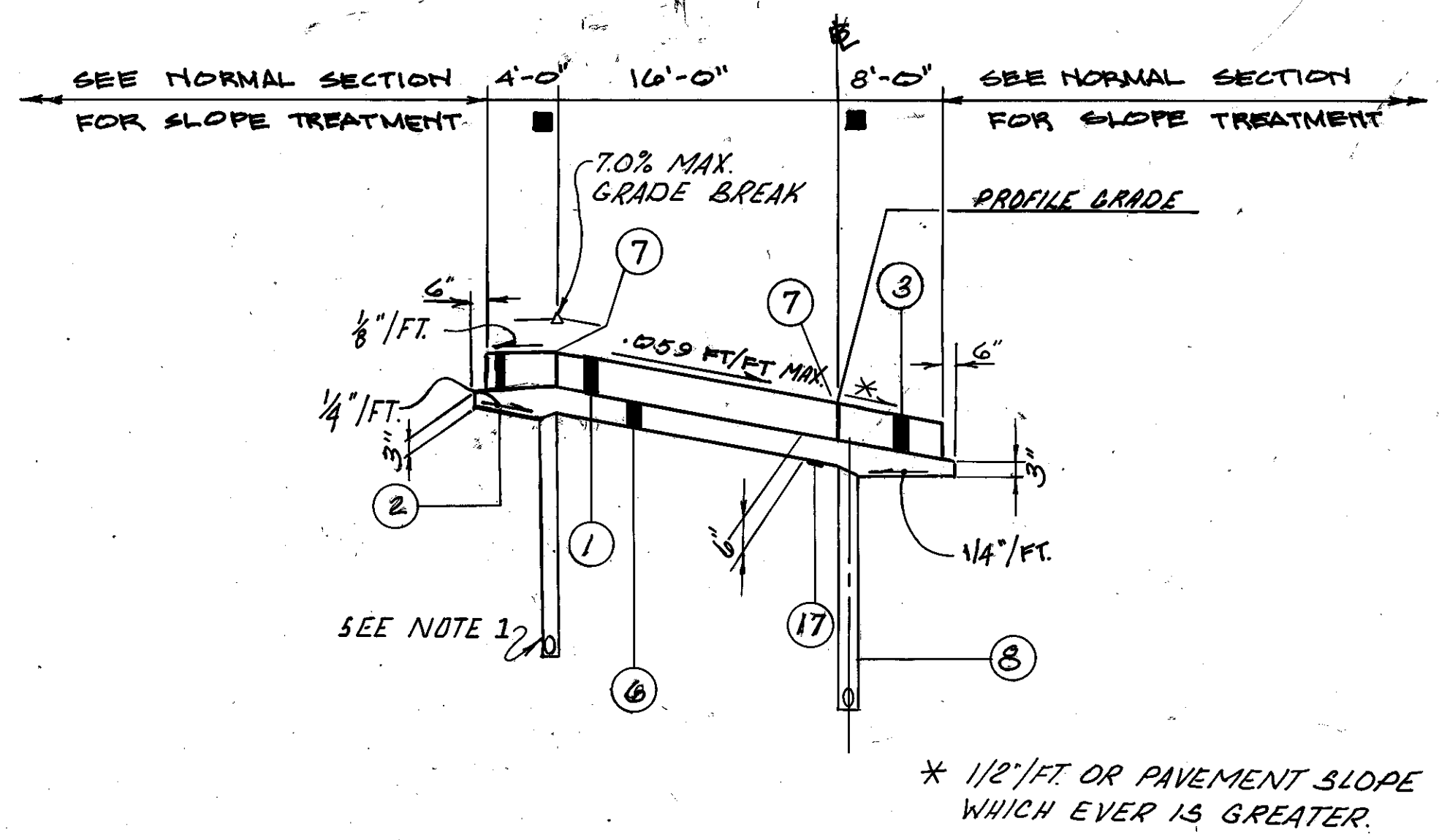
* 1/2" / FT. OR PAVEMENT SLOPE WHICH EVER IS GREATER.

NORMAL SECTION LANES JN-OBW & OBW-JN

- STA. 34+54.41 AHD. TO STA. 40+23.16 OBW-JN = 568.69 FT.
- STA. 53+37.02 TO STA. 55+88.05 OBW-JN = 251.03 FT.
- STA. 44+25.00 TO STA. 47+95.56 JN-OBW = 370.56 FT.
- STA. 54+23.40 TO STA. 62+00.00 JN-OBW = 776.60 FT.

SUPERELEVATED SECTION LANE OBW-JN

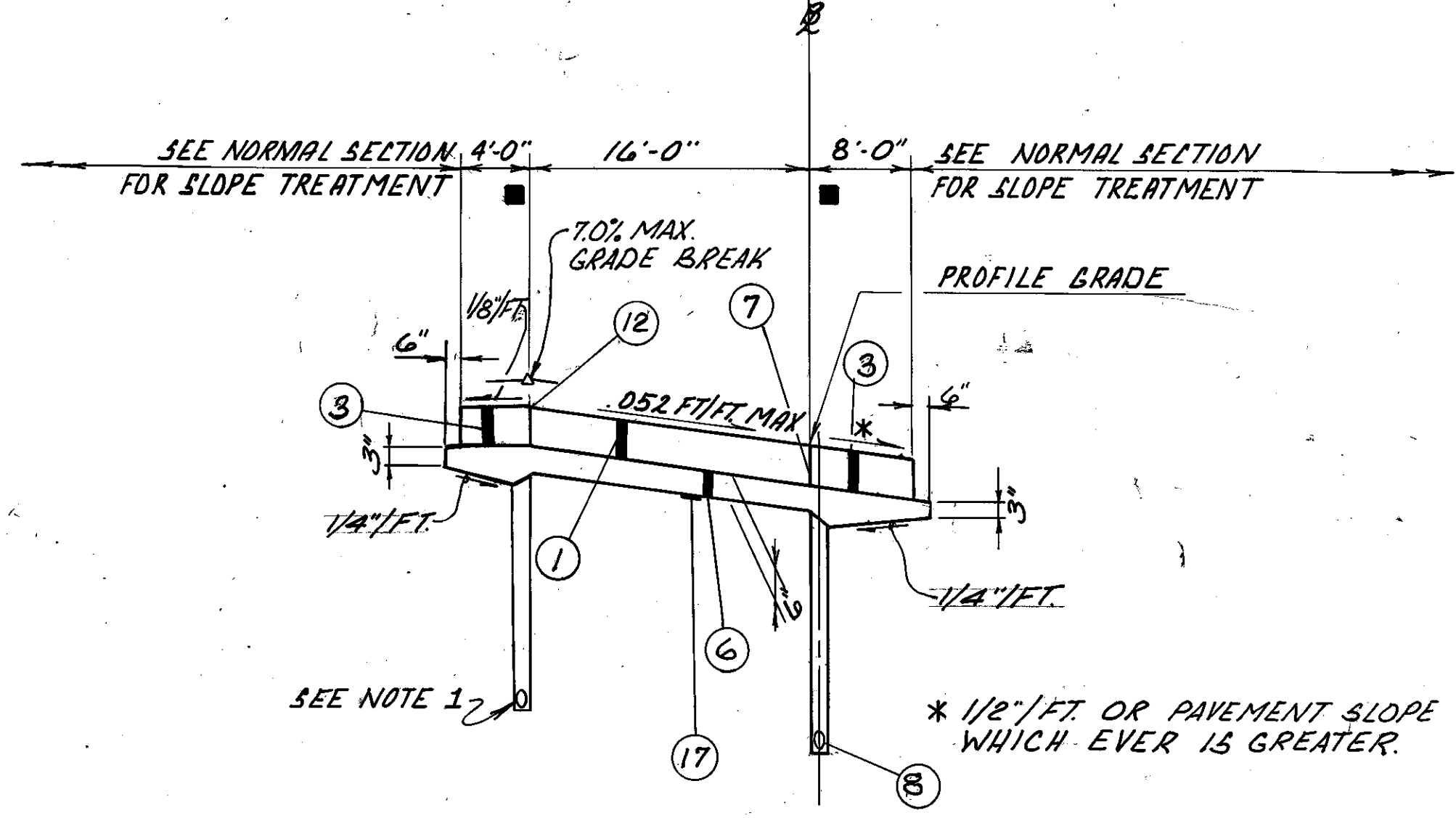
- STA. 40+23.16 TO STA. 44+89.83 = 466.67 FT.
- STA. 48+78.24 TO STA. 53+37.02 = 458.78 FT.
- BRIDGE NO. CUY-480-1557 STA. 45+39.83 TO STA. 48+48.24 = 308.41 FT.



* 1/2" / FT. OR PAVEMENT SLOPE WHICH EVER IS GREATER.

SUPERELEVATED SECTION LANE JN-OBW

- STA. 47+95.56 TO STA. 54+23.40 = 627.84 FT.



* 1/2" / FT. OR PAVEMENT SLOPE WHICH EVER IS GREATER.

SUPERELEVATED SECTION LANE JN-OBW

- STA. 43+53.08 TO STA. 44+25.00 (.048%) = 71.92 FT.
- STA. 62+00.00 TO STA. 65+35.29 (.052%) = 335.29 FT.

- NOTE 1: OMIT UNDERDRAINS ON HIGH SIDE OF SUPERELEVATION UNLESS OTHERWISE SHOWN ON PLANS.
- 2: SEE RELOCATED S.R.-176 SECTIONS FOR DITCH & SLOPE TREATMENT (SHEETS A-3 & A-4)
- 3: NOT USED
- 4: NO ROUNDING IS REQUIRED WHEN FORESLOPE IS 6:1 OR FLATTER.
- PROVIDE RUMBLE STRIPS AS PER BP 8.1

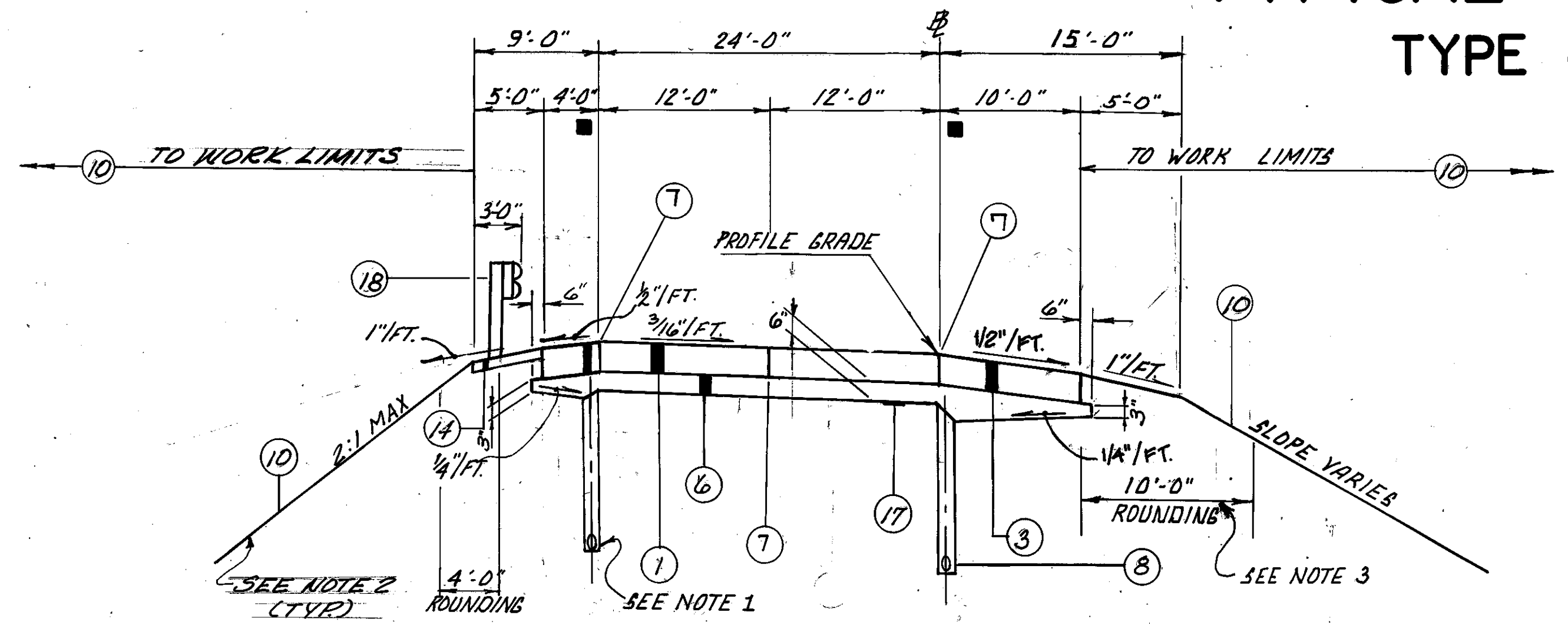
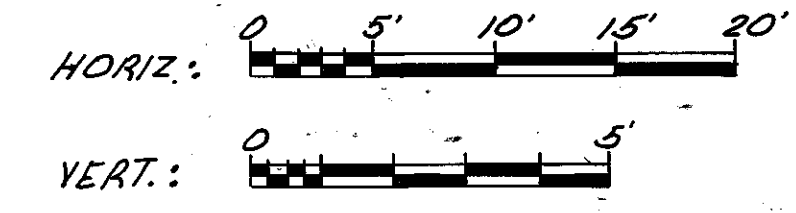
NOTE: FOR LEGEND SEE SHEET 3

C.S.R.-176

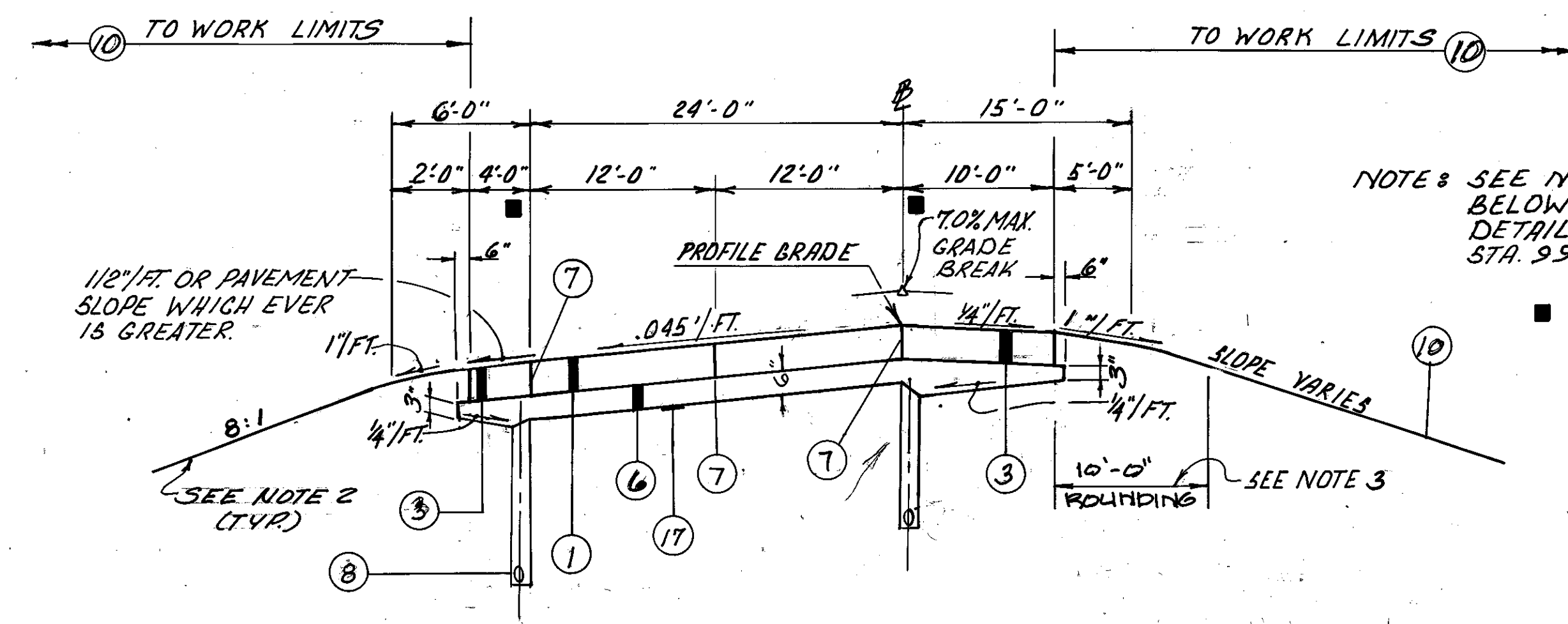
TYPICAL SECTIONS TYPE 451

CALC.		OHIO
DATE	CUYAHOGA COUNTY	F.H.W.A. REGION
CHKD.	CUY - 176 - 10.14	395
DATE		

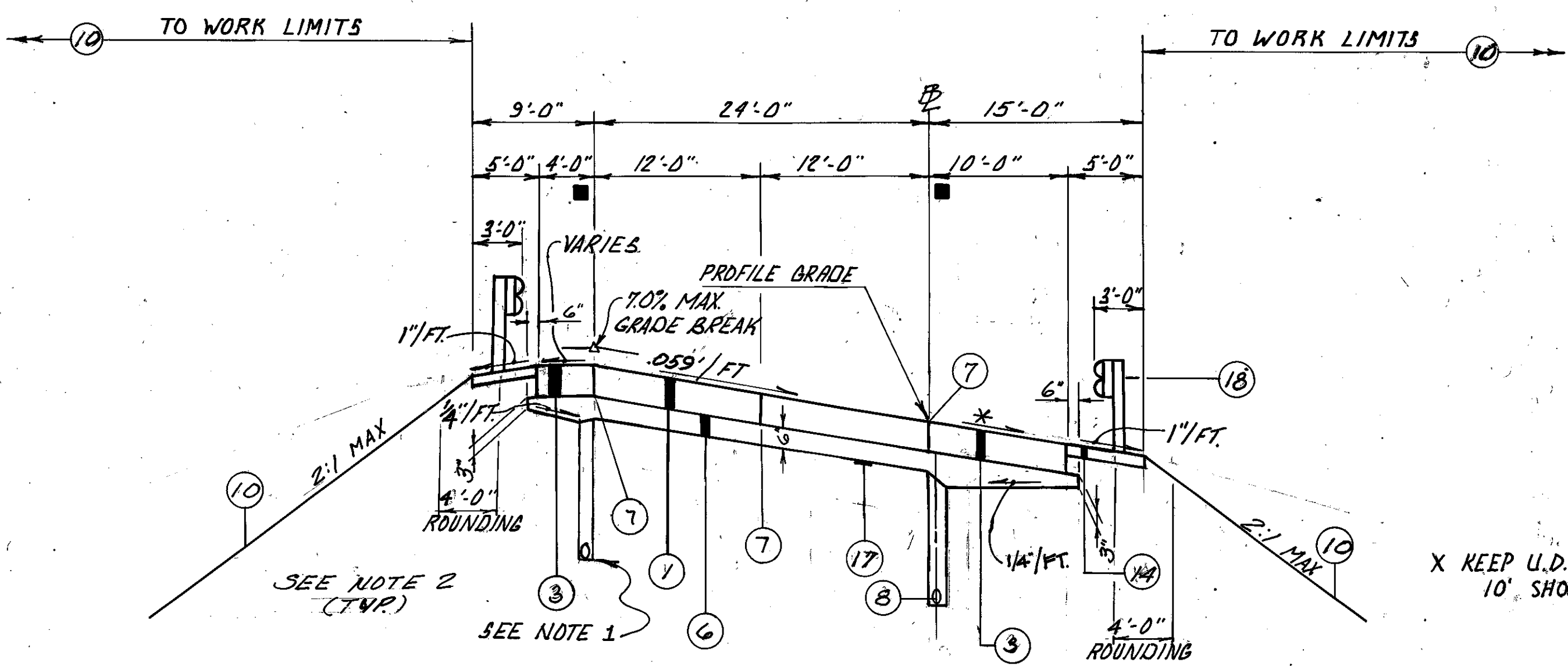
6
395



NORMAL SECTION LANE OBE-JN
STA. 117+77.05 TO STA. 123+93.89 = 616.84 FT.

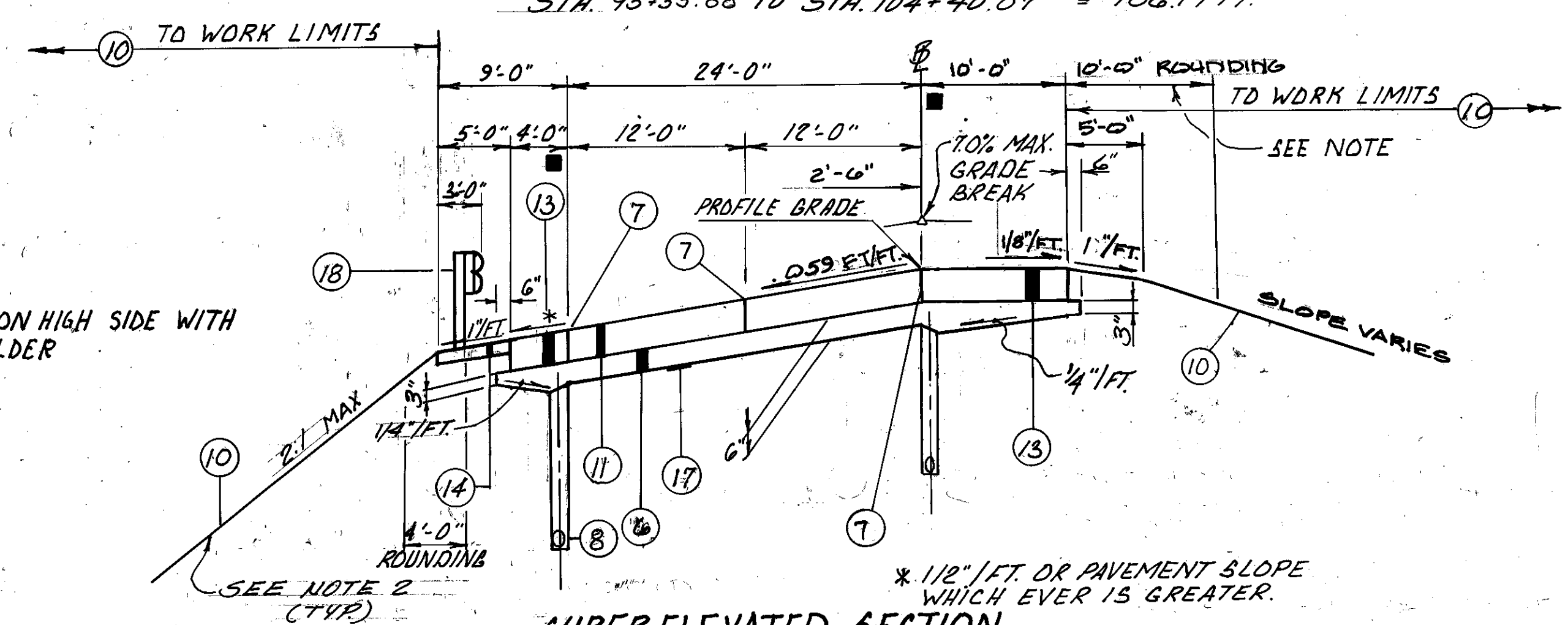


SUPERELEVATED SECTION LANE OBE-JN
STA. 95+33.88 TO STA. 104+40.07 = 906.19 FT.



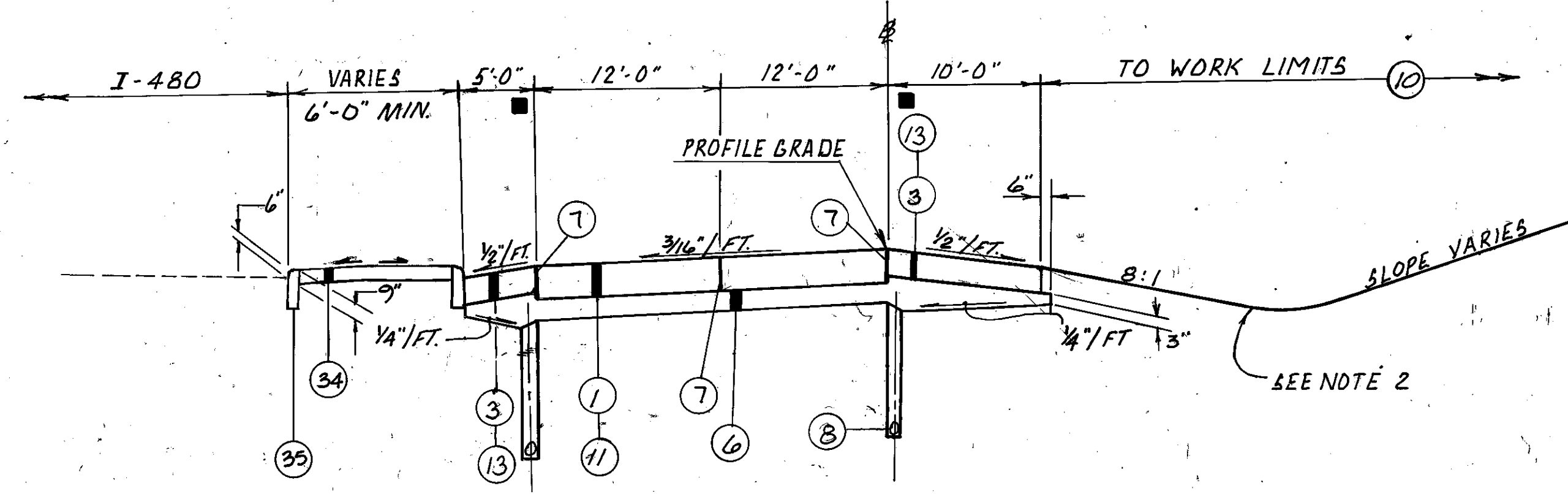
SUPERELEVATED SECTION LANE OBE-JN
STA. 104+40.07 TO STA. 117+77.05 = 1336.98 FT.
* 1/2" / FT OR PAVEMENT SLOPE WHICH EVER IS GREATER.

X KEEP U.D. ON HIGH SIDE WITH 10' SHOULDER



SUPERELEVATED SECTION LANE JN-OBE

STA. 43+57.71 TO STA. 43+86.41 BK. = 28.70 FT.
STA. 37+91.50 AHD. TO STA. 42+93.14 = 501.64 FT.
STA. 50+27.85 TO STA. 54+60± = 432.15 FT.
BRIDGE NO. CUY. -180-1559 STA. 43+23.14 TO STA. 49+97.85 = 674.71 FT.



NORMAL SECTION WBDL & LANE OBE-JN
WBDL STA. 74.62± TO STA. 91+40.00 BK. = 1648.00 FT.
OBE-JN STA. 91+73.69 (AH) TO STA. 95+33.88 = 360.19 FT.

- NOTE 1: OMIT UNDERDRAINS ON HIGH SIDE OF SUPERELEVATION SECTION UNLESS OTHERWISE SHOWN ON PLAN.
- NOTE 2: SEE RELOCATED SR-176 SECTIONS FOR DITCH AND SLOPE TREATMENT (SHEET A-31A-4)
- NOTE 3: NO ROUNDING IS REQUIRED WHEN FORESLOPE IS 6:1 OR FLATTER.

- NOTE 4: SEE NORMAL SECTION WBDL BELOW FOR CONCRETE MEDIAN DETAILS, STA. 91+73.69 (AH) TO STA. 99+05.
- PROVIDE RUMBLE STRIPS AS PER BP 81

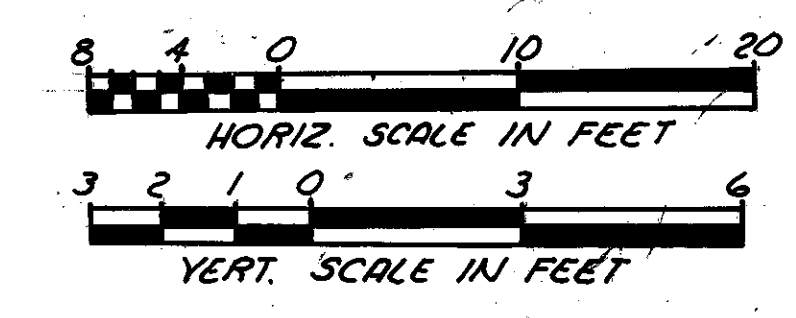
NOTE: FOR LEGEND SEE SHEET 3.

C.S.A.-176

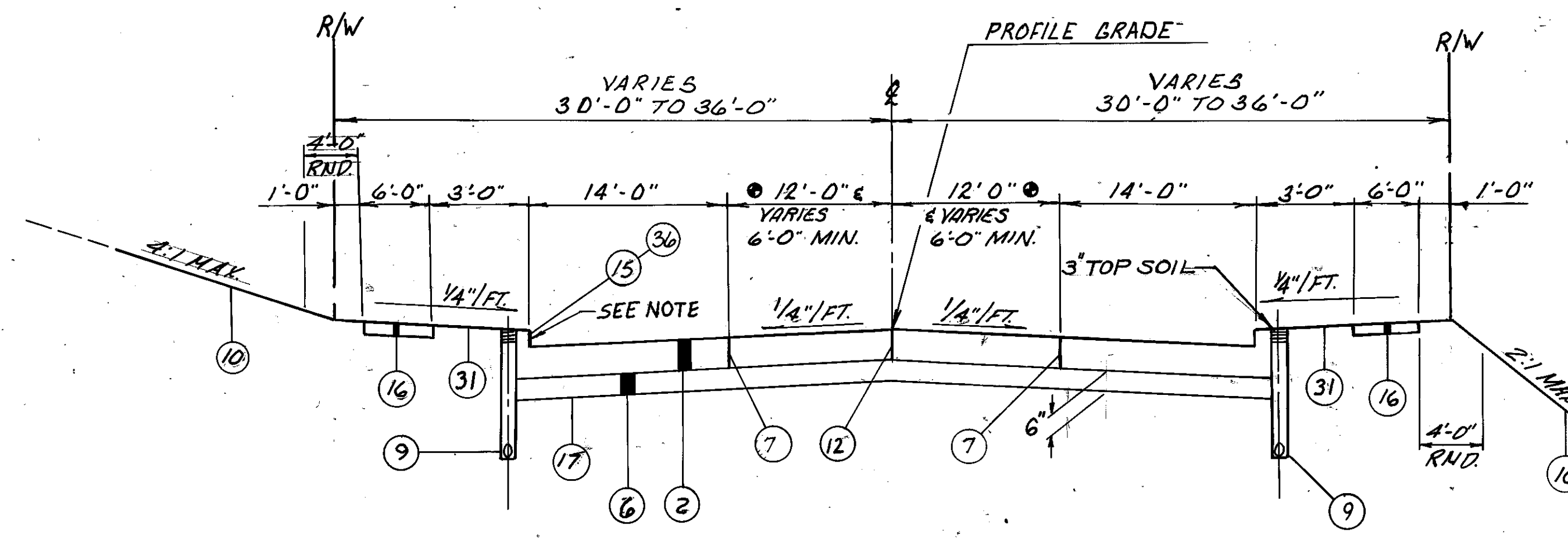
TYPICAL SECTIONS TYPE 451

CALC.		OHIO
DATE	CUYAHOGA COUNTY	F.H.W.A. REGION
CHKD.	CUY - 176-10.14	395
DATE		

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395

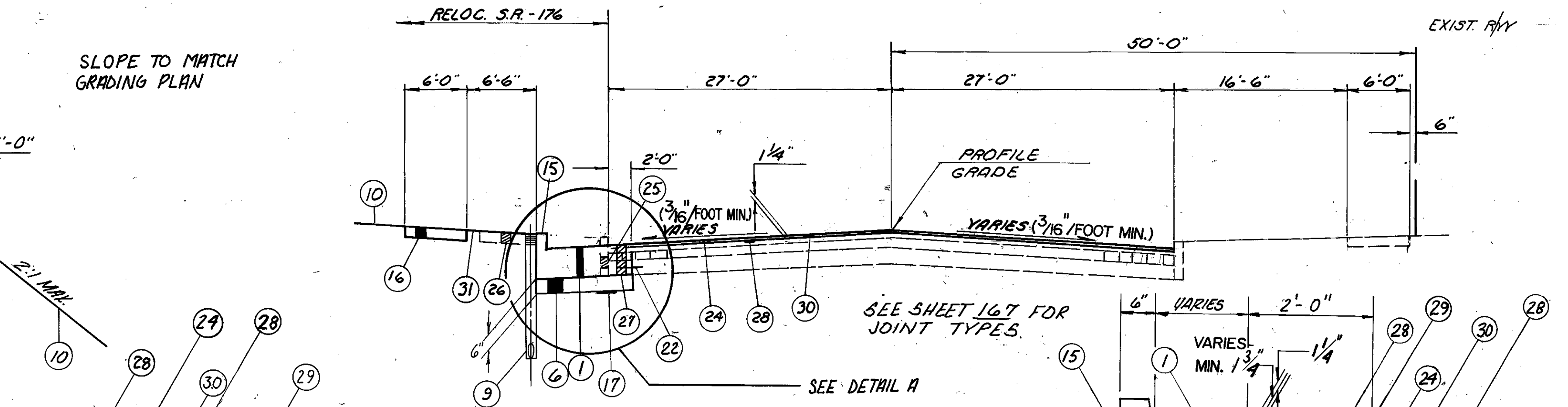


NOTE: SEE PLANS FOR LOCATIONS OF CURB TYPE 2A TO CURB TYPE 7 TRANSITIONS.



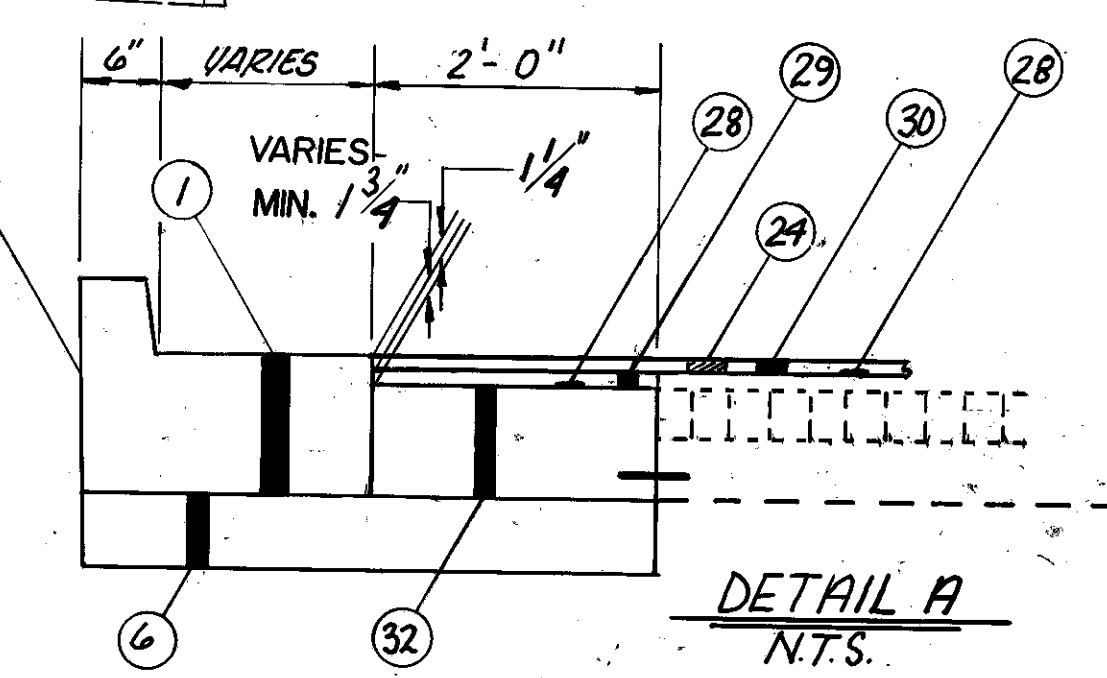
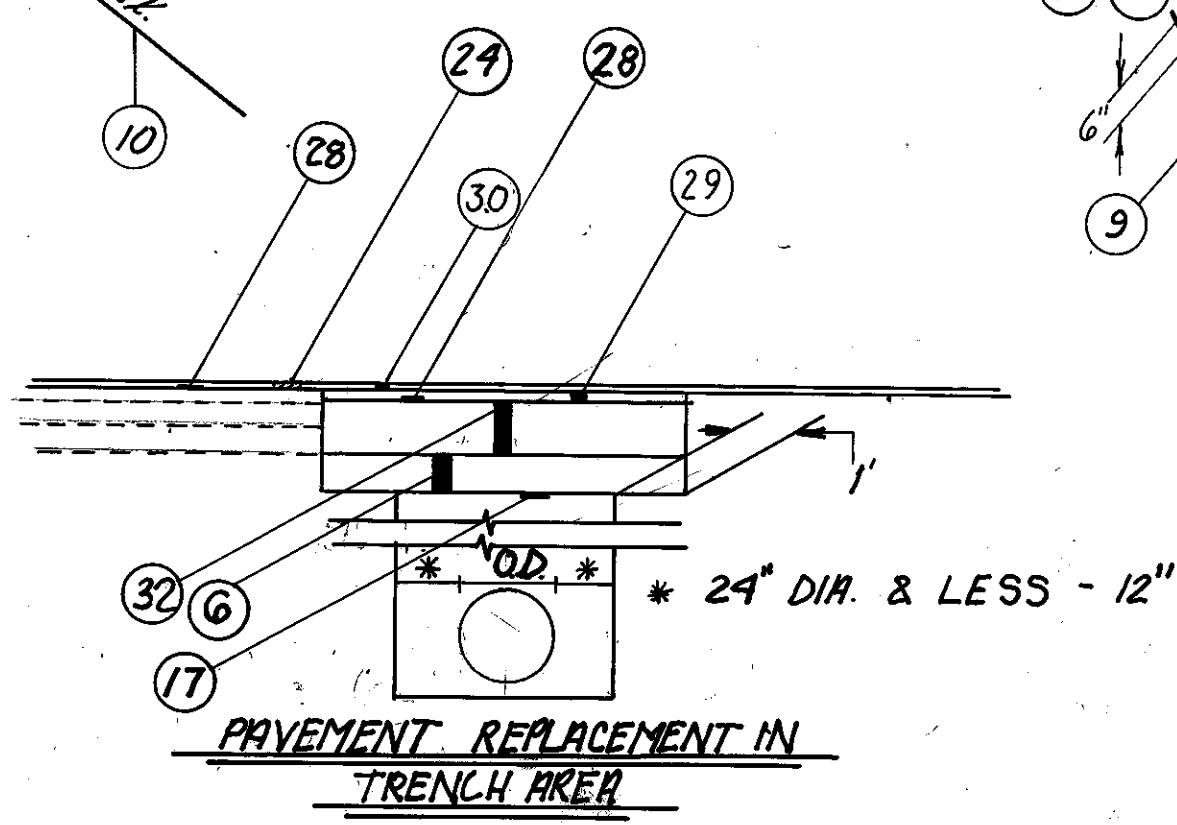
SCHAAF ROAD

STA 15+00.00 TO 17+84.56 = 284.56 FT.
STA 21+70.40 TO 23+60.00 = 189.60 FT.
6'-0" STA 15+00.00 TO STA 16+05.30
VARIES 6'-0" TO 12'-0" STA 16+05.30 TO STA 17+84.56
12'-0" STA 21+70.40 TO STA 21+77.87
VARIES 12'-0" TO 6'-0" STA 21+77.87 TO STA 23+57.87
6'-0" STA 23+57.87 TO STA 23+60.00
BRIDGE NO CUY-176-1065 STA 18+14.56 TO STA 21+40.40 = 325.84 FT.

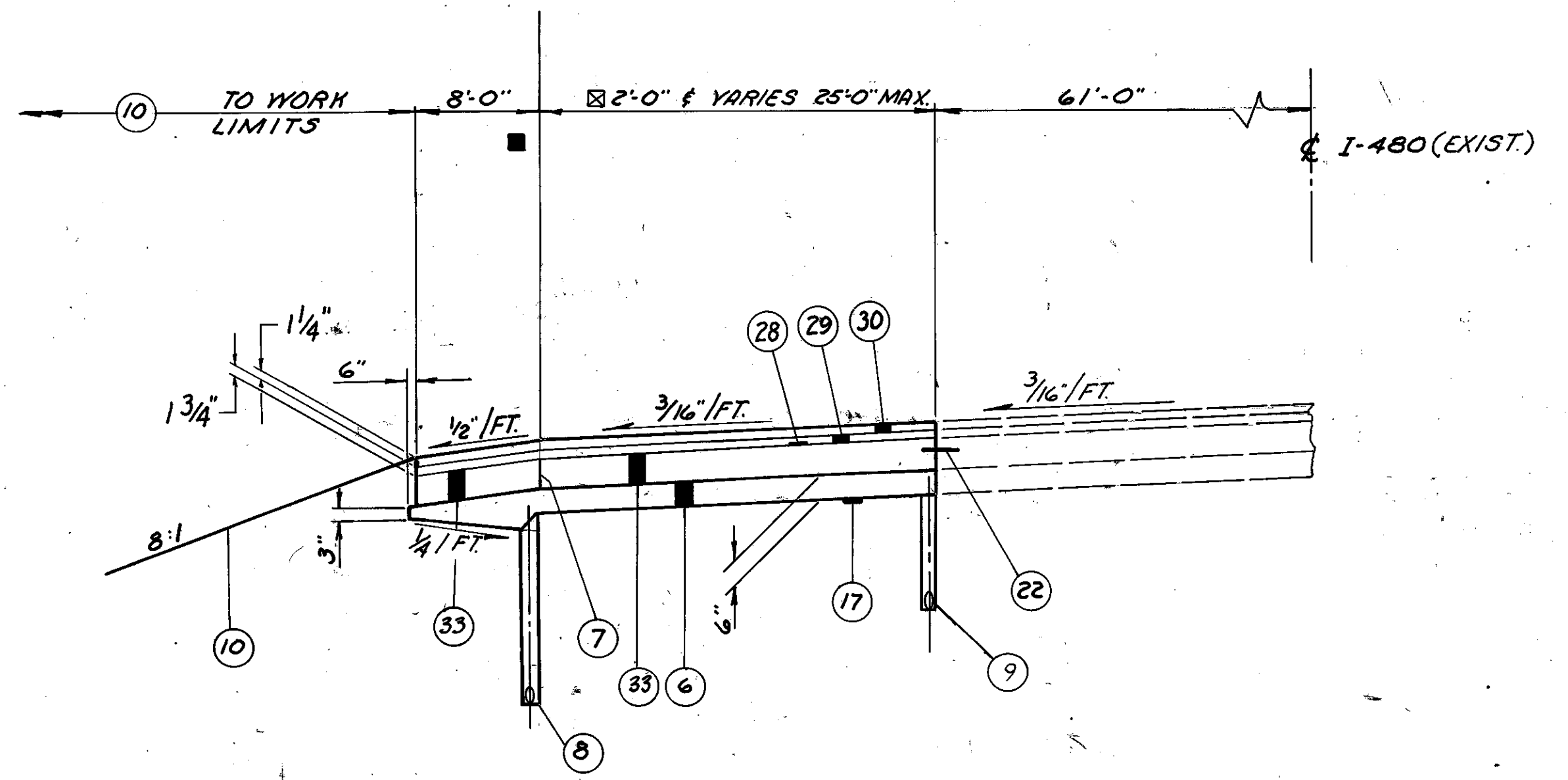


BROOKPARK ROAD

STA. 101+00 TO STA. 105+00 = 400 FT.

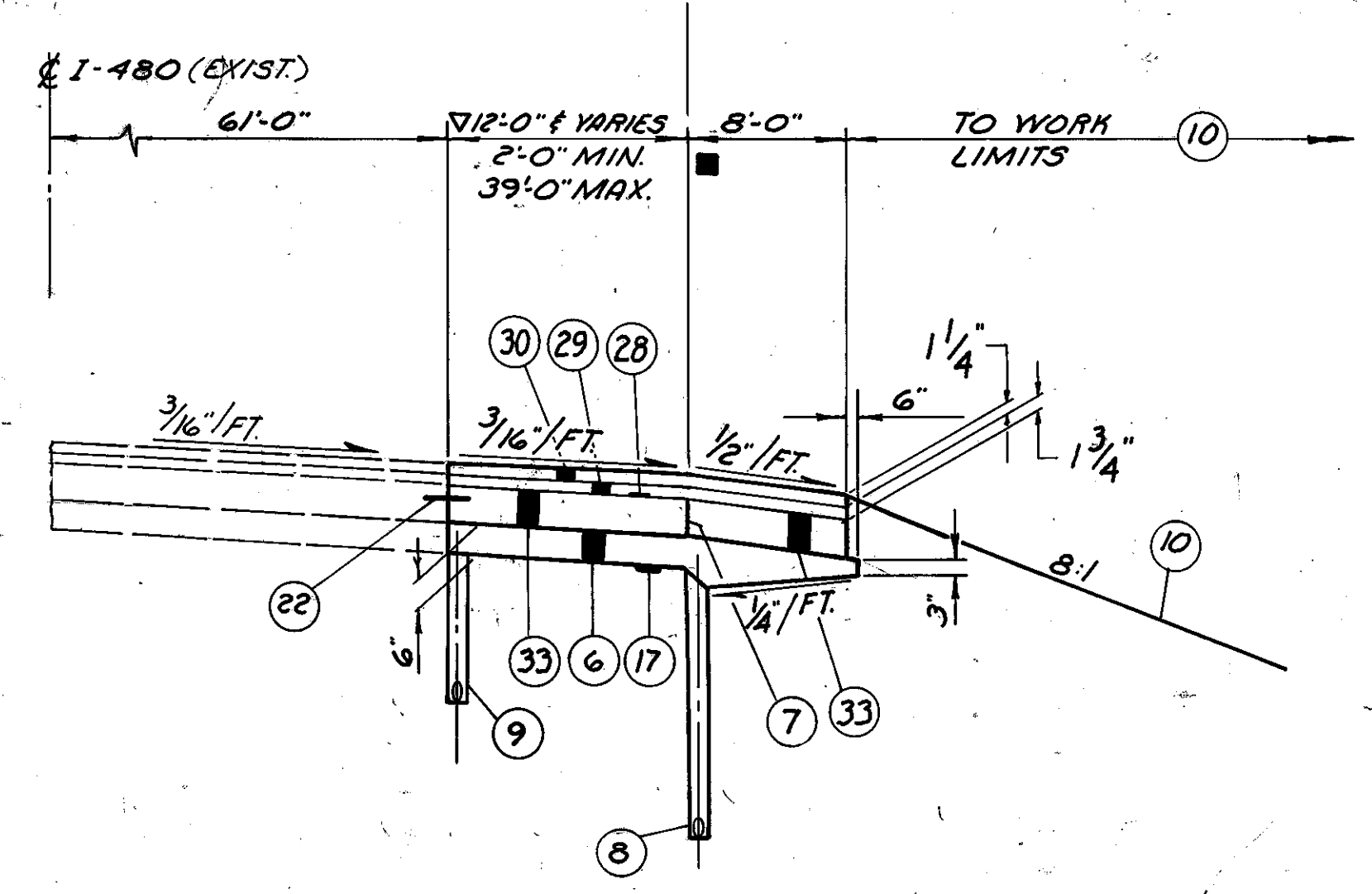


SEE SHEET 167 FOR JOINT TYPES



ACCELERATION LANE JN-OBYY TO I-480

STA 819+50.00 TO STA 829+50.00 I-480 = 1000.00 FT.
2'-0" STA 819+50.00 TO STA 820+30.00
VARIES 2'-0" TO 25'-0" STA 820+30.00 TO STA 829+50.00



DECELERATION LANE I-480 TO OBYY-JN

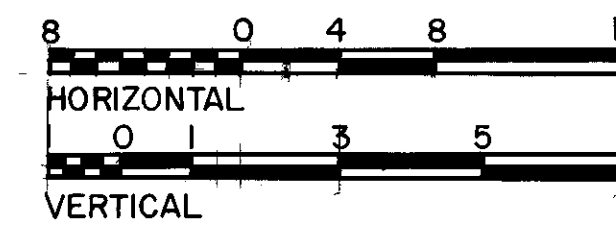
STA 825+85.57 TO STA 834+59.18 BK. = 873.50 FT.
2'-0" STA 825+85.57 TO STA 826+02.36
VARIES 2'-0" TO 12'-0" STA 826+02.36 TO STA 826+86.83
12'-0" STA 826+86.83 TO STA 829+39.22
VARIES 12'-0" TO 39'-0" STA 829+39.22 TO 834+59.18 BK.

PROVIDE RUMBLE STRIPS AS PER BP 8.1

NOTE: FOR LEGEND SEE SHEET 3.

DOC. S.R.-176

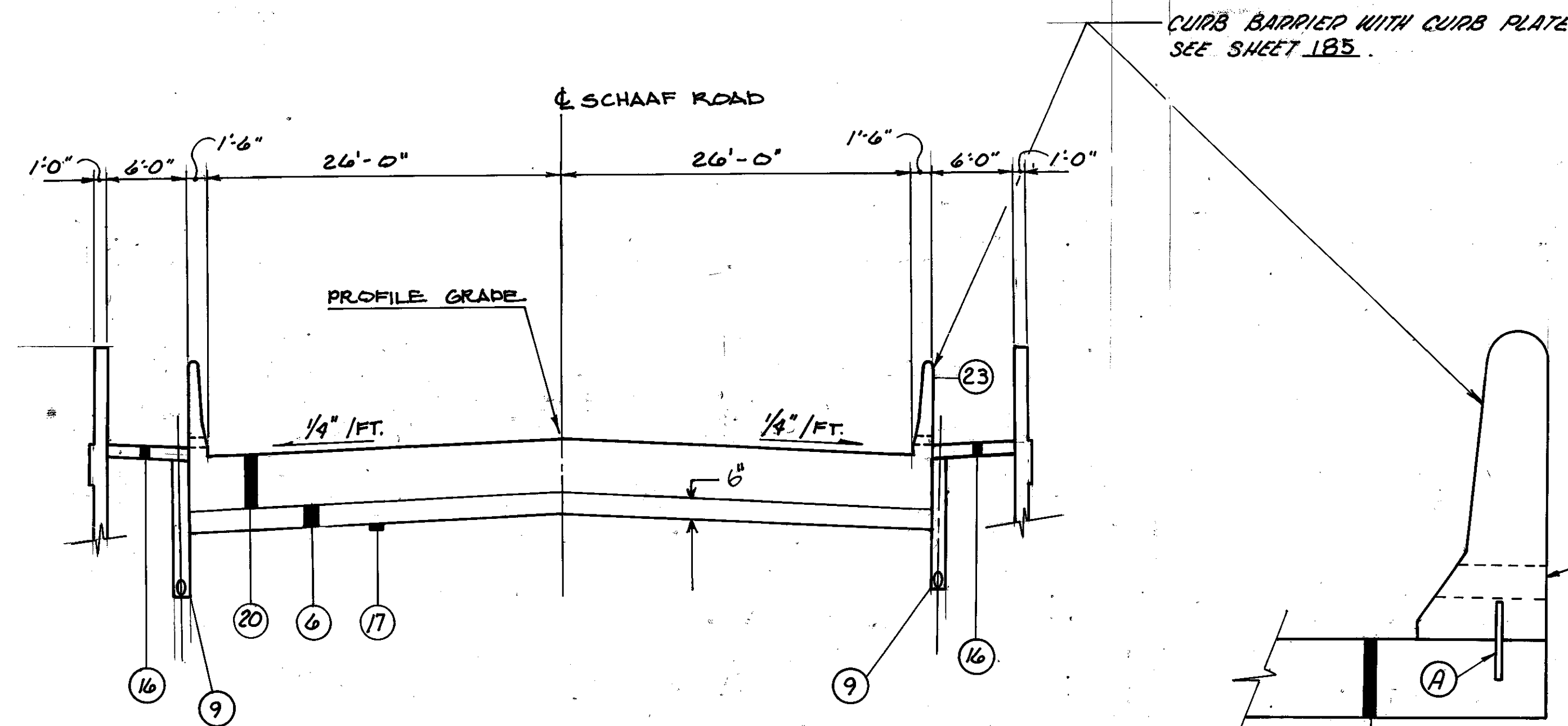
TYPICAL SECTIONS TYPE 45I



CALC.		OHIO
DATE	CUYAHOGA COUNTY	F.H.W.A. REGION
CHKD.	CUY - 176 - 10.14	
DATE		

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NOTE: SEE PLAN AND PROFILE SHEETS FOR WINGWALL AND TYPE 4A CURB LIMITS.

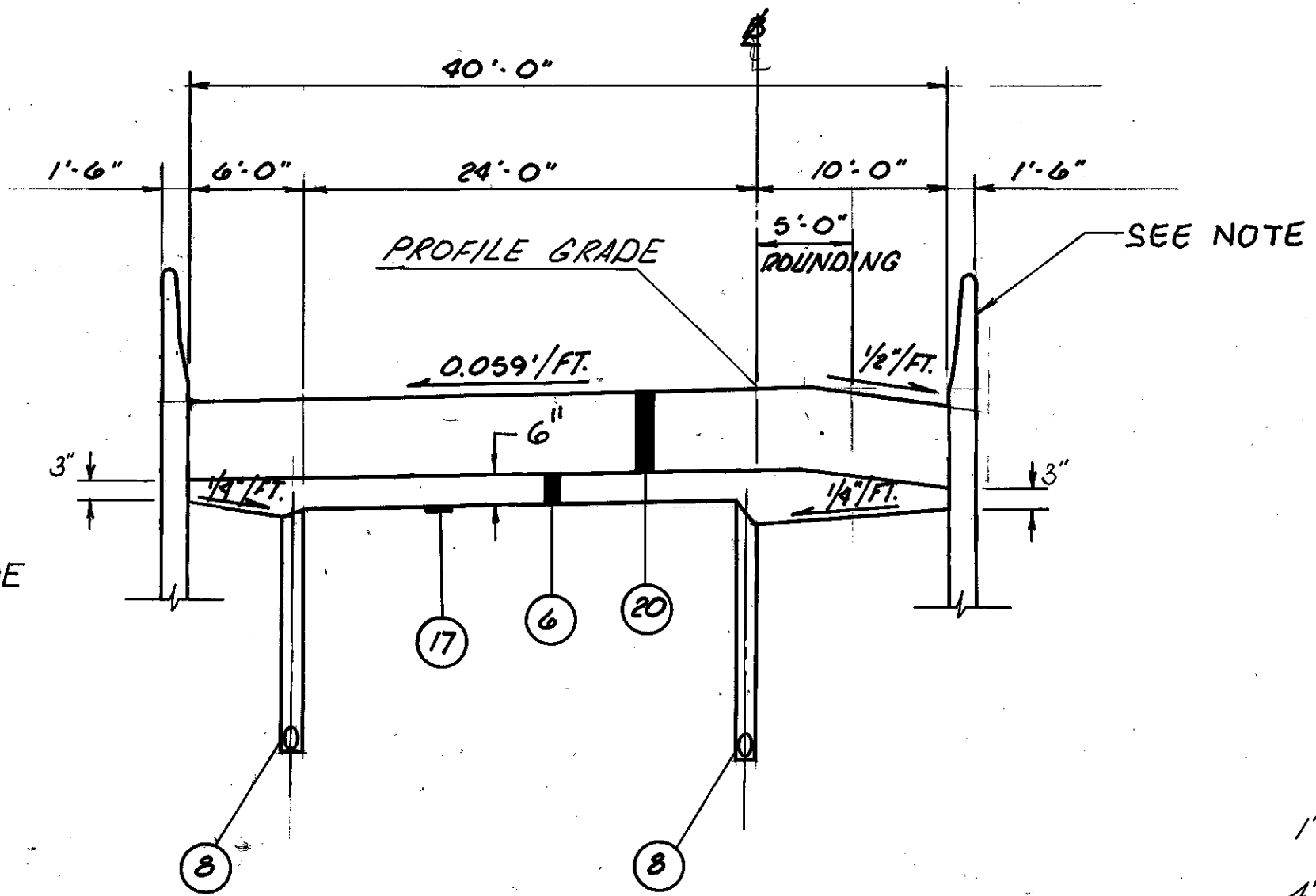


**TYPICAL APPROACH SLAB
SCHAAF ROAD**

STA. 17+84.56 TO STA. 18+14.56 = 30.00 FT.
STA. 21+40.40 TO STA. 21+70.40 = 30.00 FT.

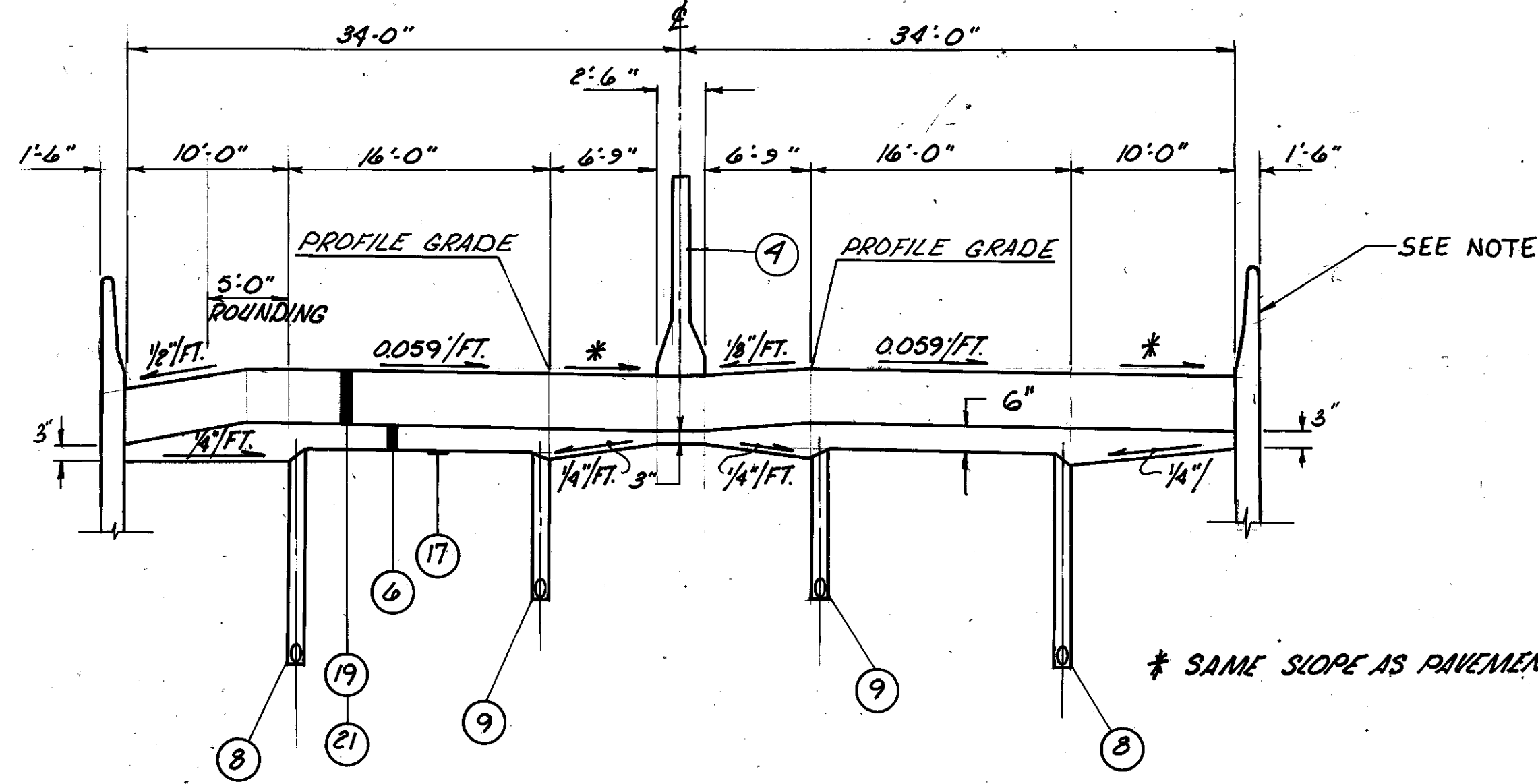
CURB BARRIER CONNECTION DETAIL

(N.T.S.)
A) #8 DEFORMED STEEL BARS, 12" LONG SPACED ON 4' CENTERS. OMIT DOWELS WHEN TOP IS CONSTRUCTED INTEGRAL WITH THE SHOULDER.



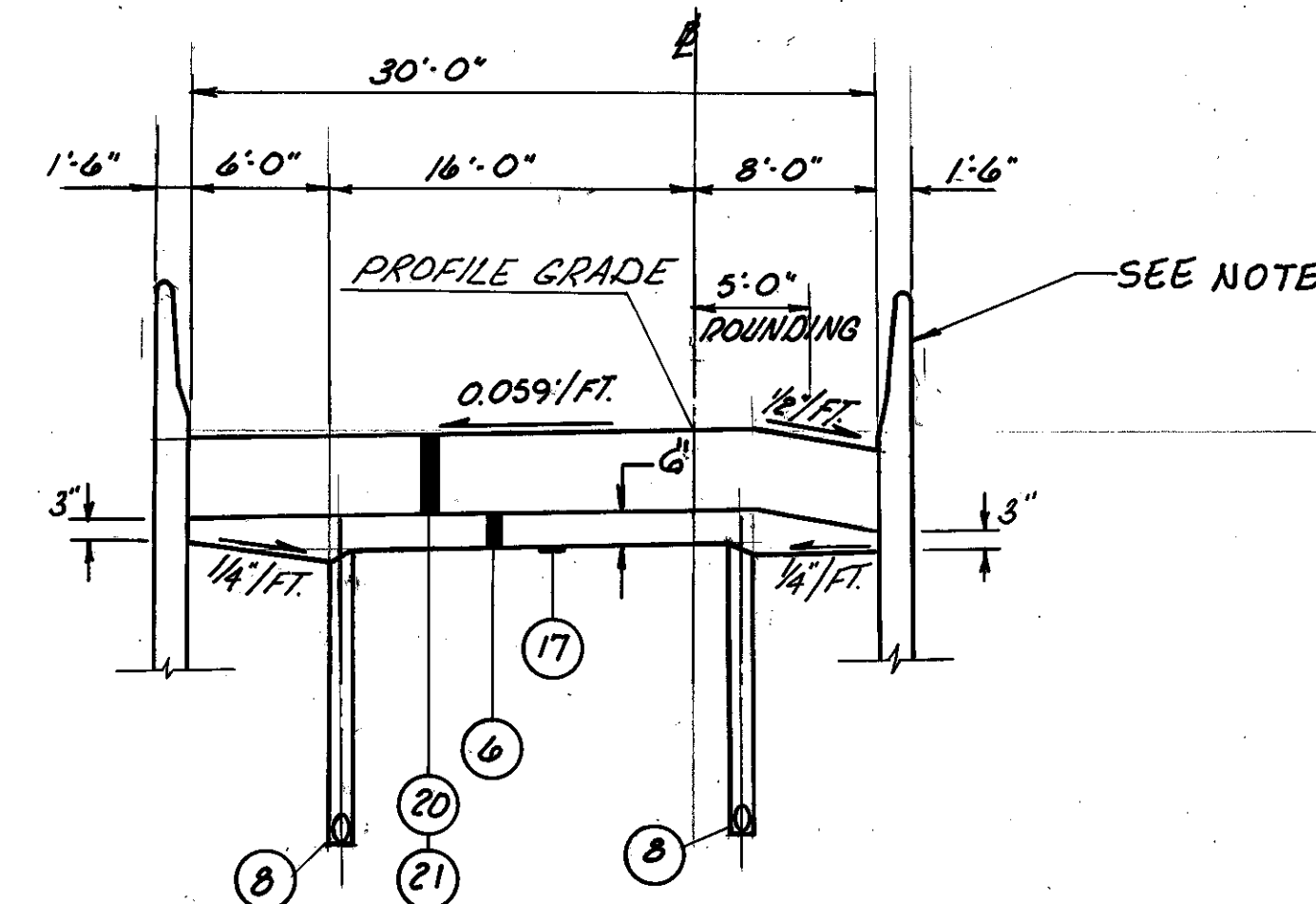
**TYPICAL APPROACH SLAB
JN-OBE**

STA. 42+93.14 TO STA. 43+23.14 = 30.00 FT.
STA. 49+97.85 TO STA. 50+27.85 = 30.00 FT.



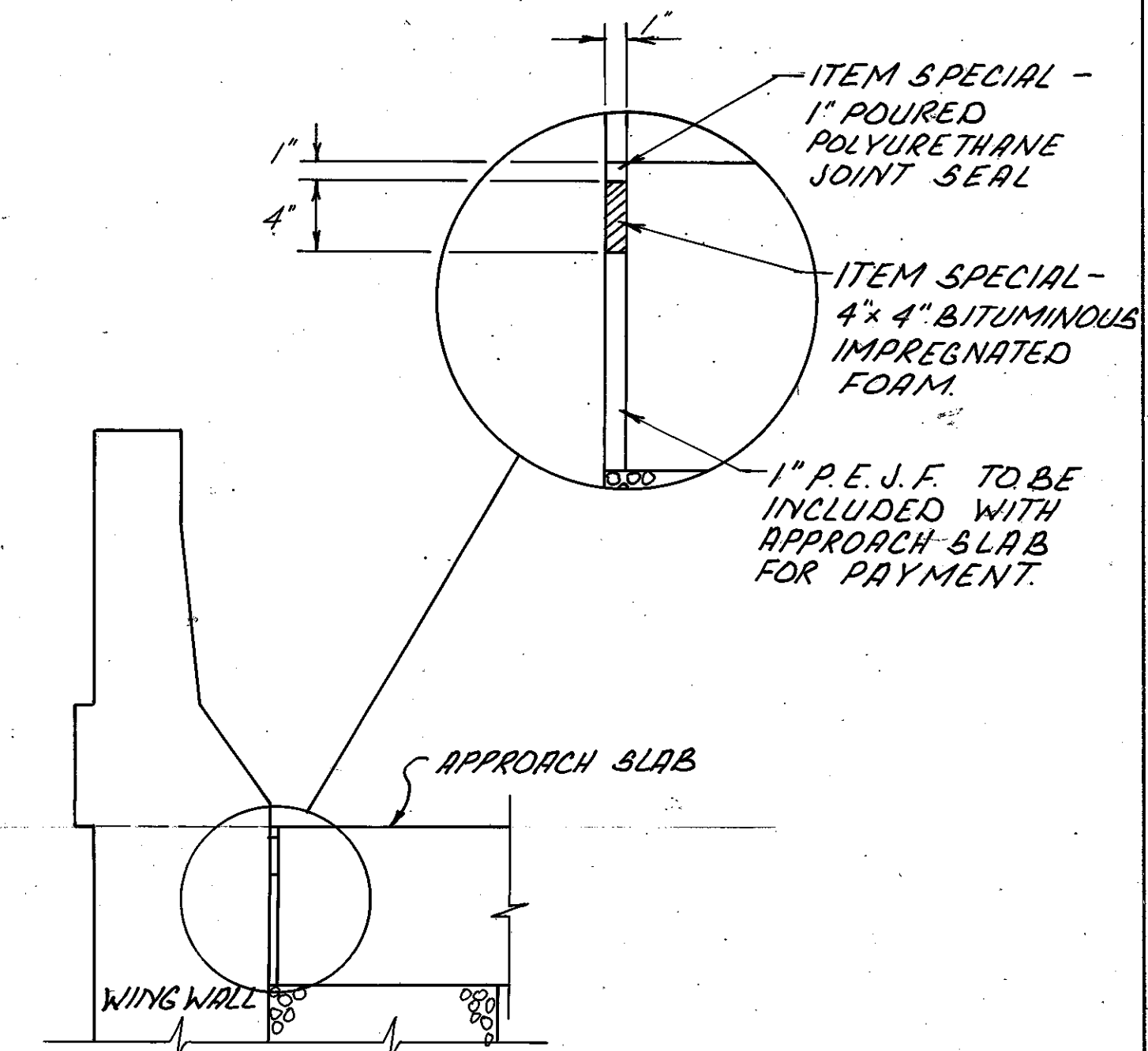
**TYPICAL APPROACH SLAB
RELOCATED S.R.-176**

19) STA. 94+07.63 TO STA. 94+32.63 = 25.00 FT.
21) STA. 99+69.32 TO STA. 100+19.32 = 50.00 FT.



**TYPICAL APPROACH SLAB
OBW-JN**

21) STA. 44+89.83 TO STA. 45+39.83 = 50.00 FT.
20) STA. 48+48.24 TO STA. 48+78.24 = 30.00 FT.



TYPICAL JOINT DETAIL

(N.T.S.)
BETWEEN WINGWALL AND APPROACH SLAB

NOTE: FOR LEGEND SEE SHEET 3.

DOC. S.P.-176

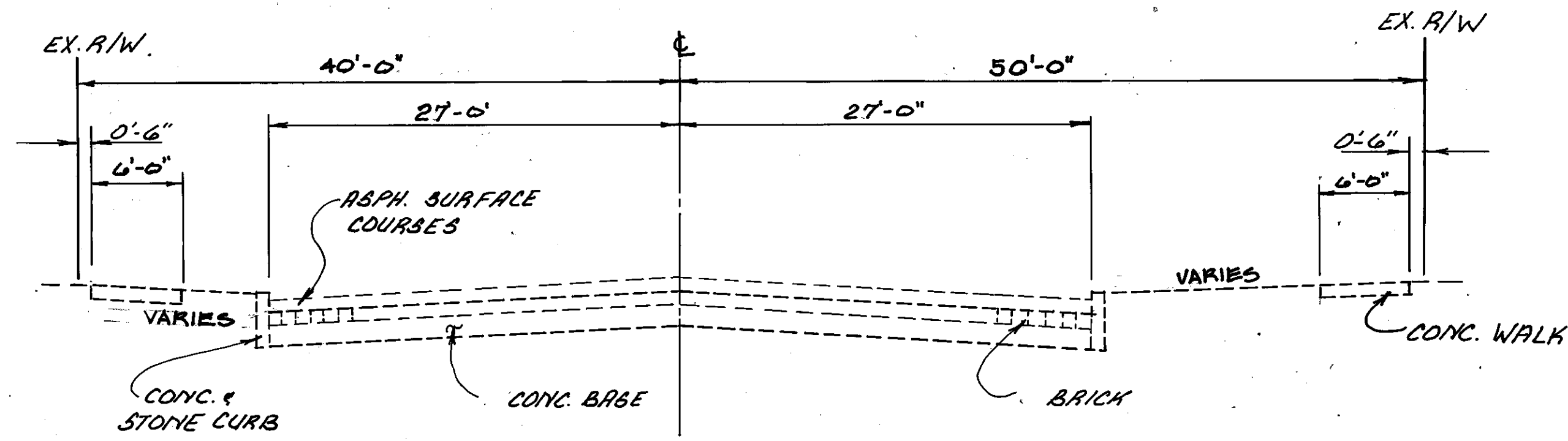
EXISTING TYPICAL SECTIONS

CALC.		OHIO
DATE	CUYAHOGA COUNTY	F.H.W.A. REGION 5
CHKD.	CUY - 176 - 10.14	395
DATE		

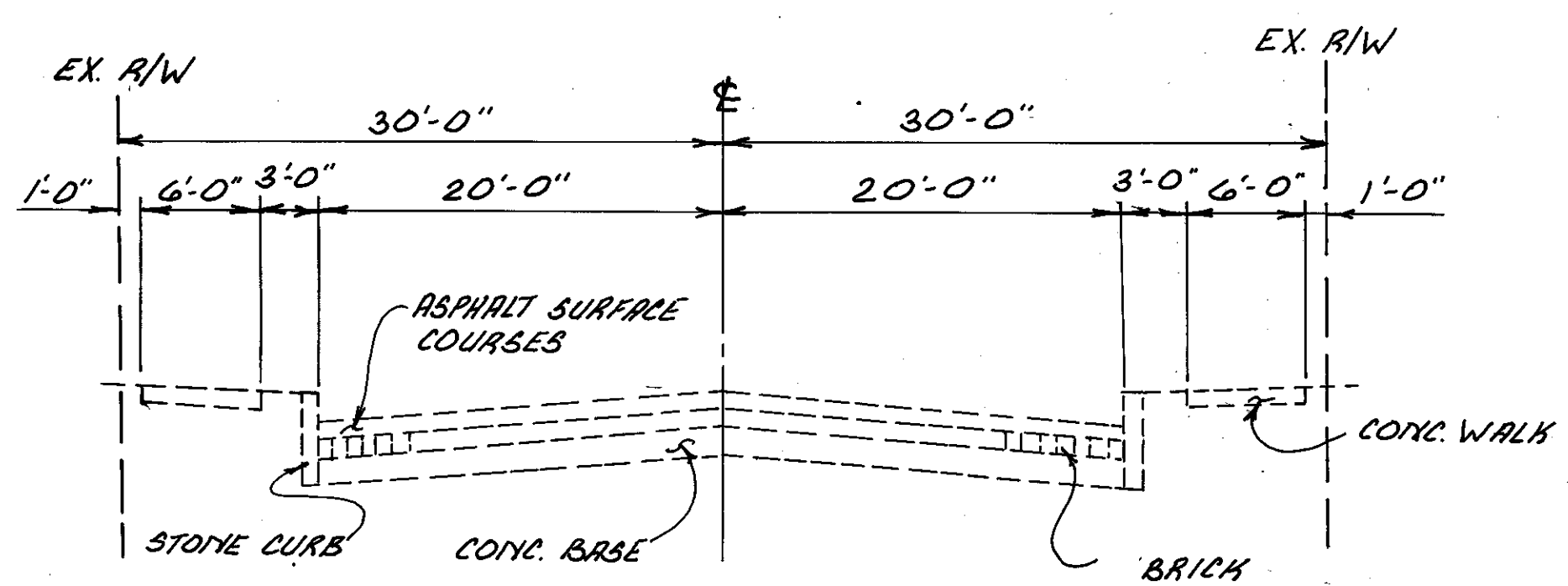
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395

HORIZ.: 0 5' 10' 15' 20'

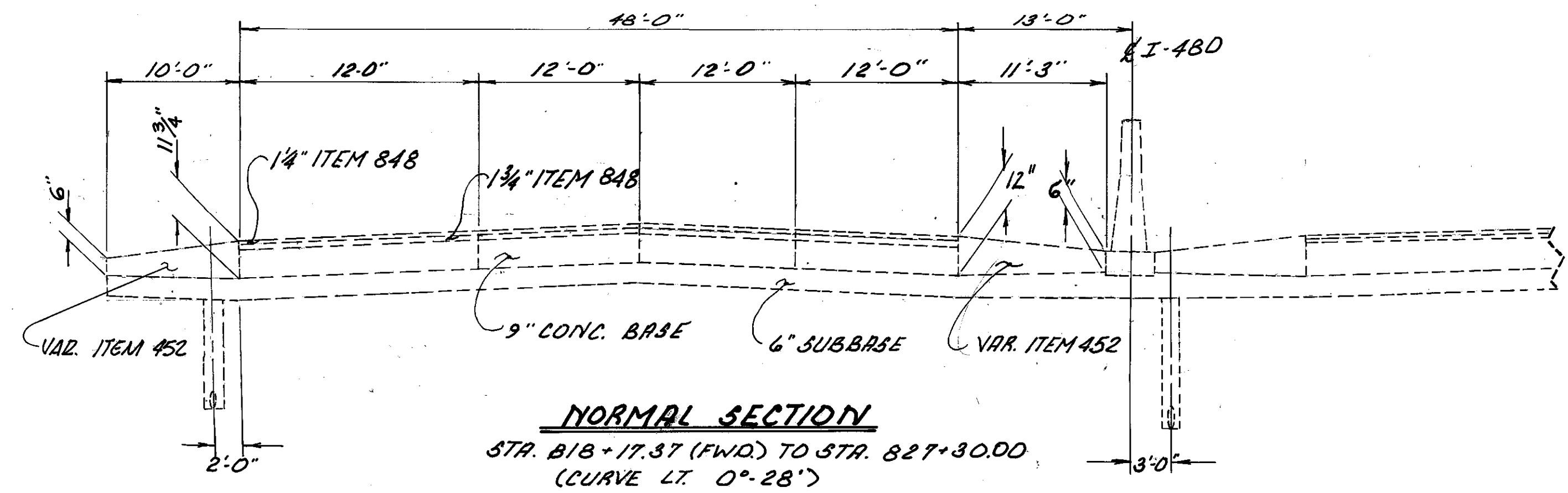
VERT.: 0 5'



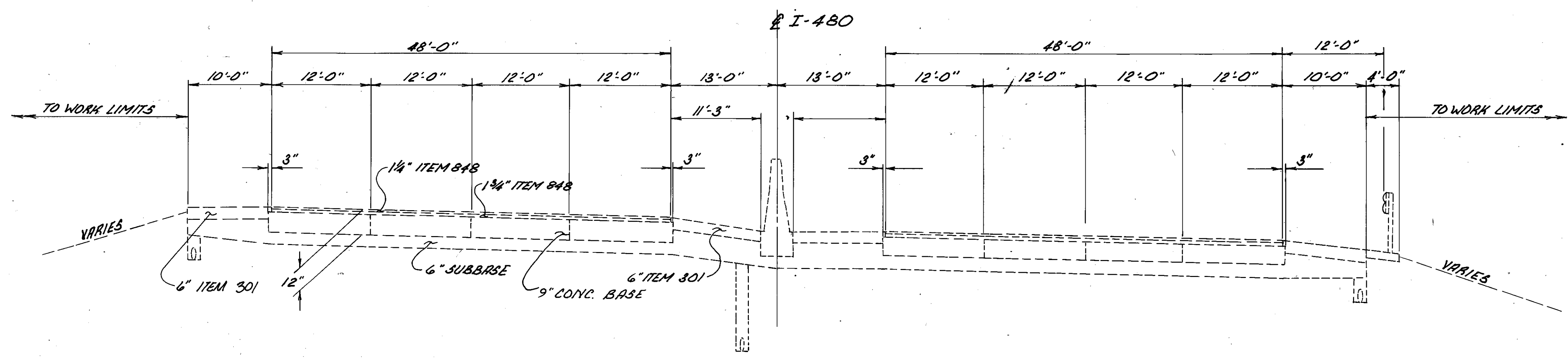
EXISTING BROOKPARK RD.



EXISTING SCHAAF RD.



NORMAL SECTION
STA. 818+17.37 (FWD.) TO STA. 827+30.00
(CURVE LT. 0°-28')



NORMAL SECTION
STA. 827+30.00 TO STA. 840+00.00
SUPERELEVATED SECTION
STA. 840+00.00 TO STA. 860+00.00

ATTACH. 3.A-176

GENERAL NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. 5 REGION

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ROUNDING OF CORNERS SHOWN ON CROSS SECTIONS

THE ROUNDED CORNERS SHOWN ON THE TYPICAL SECTIONS, APPLY TO ALL CROSS SECTIONS EVEN THOUGH OTHERWISE SHOWN ON THESE PLANS.

UNDERGROUND UTILITIES

THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF THE UTILITY AS REQUIRED BY SECTION 153.64 O.R.C.

UTILITY OWNERSHIP

THE FOLLOWING UTILITIES AND OWNERS ARE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

TELEPHONE:	AMERITECH 13630 LORAIN AVE, RM. 400 CLEVELAND, OHIO 44111 (216) 476-6136	AMERICAN TELEPHONE & TELEGRAPH 3833 WEYMOUTH ROAD MEDINA, OHIO 44256 (216) 723-9110
ELECTRIC:	CLEVELAND ELECTRIC ILLUMINATING CO. 55 PUBLIC SQUARE, P.O. BOX 5000 CLEVELAND, OHIO 44101 (216) 479-3452	CITY OF CLEVELAND CLEVELAND PUBLIC POWER (MELP) 1201 LAKESIDE AVENUE CLEVELAND, OHIO 44114 (216) 664-3922
NATURAL GAS:	EAST OHIO GAS COMPANY 1201 EAST 55TH STREET CLEVELAND, OHIO 44103 (216) 736-6803	COLUMBIA GAS OF OHIO, INC. 7080 FRY ROAD MIDDLEBURG HTS., OHIO 44130 (216) 243-1000
PETROLEUM:	BP OIL 4421 BRADLEY ROAD CLEVELAND, OHIO 44109 (216) 351-4777	
	CITY OF CLEVELAND WATER DEPARTMENT 1201 LAKESIDE AVENUE CLEVELAND, OHIO 44114 (216) 664-3351	CITY OF CLEVELAND SAFETY SIGNAL SYSTEM 310 CARNEGIE CLEVELAND, OHIO 44115 (216) 664-3247
	NORTHEAST OHIO REGIONAL SEWER DISTRICT (NEORS) 3826 EUCLID AVENUE CLEVELAND, OHIO 44115 (216) 881-6600	BUCKEYE PIPELINE COMPANY 4911 EAST HIGH STREET P.O. BOX 452 MANTUA, OHIO 44255 (216) 274-2234

CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER. (THE ACTUAL WORK LOCATIONS AND QUANTITIES USED AT THE ENGINEER'S DISCRETION SHALL BE MADE A MATTER OF RECORD BY INCORPORATION INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THIS PROJECT).

UTILITY COORDINATION WITH ADJACENT PROJECT (CUY - 176 - 10.88)

THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ADJACENT PROJECT, CUY - 176 - 10.88. THE 6" MEDIUM PRESSURE GAS LINE LOCATED ON SPRING ROAD FROM STA 3 + 00 TO STA 29 + 00 AT VARIOUS OFFSETS LEFT AND RIGHT MUST BE INSTALLED BEFORE THE 4" MEDIUM PRESSURE GAS LINE ON SCHAAF ROAD FROM STA. 17 + 50 TO STA 22 + 00 (23' LT.) CAN BE ABANDONED IN PLACE.

REMOVAL OF TREES OR STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED UNDER THE LUMP SUM BID FOR ITEM 201, CLEARING AND GRUBBING. THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED:

SIZES	NO. TREES	NO. STUMPS	TOTAL
18"	26	0	26
30"	31	0	31
48"	8	2	10
60"	0	0	0

ITEM 604 MONUMENT ASSEMBLY, AS PER PLAN

MONUMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS SHOWN ON STANDARD CONSTRUCTION DRAWING MC-1. FOR LOCATIONS AND DETAIL SEE SHT. 43.

ITEM 604 - CLEVELAND REGIONAL GEODETIC MONUMENT ASSEMBLY

THE CITY OF CLEVELAND WILL MARK THE LOCATION WHERE NEW MONUMENT BOXES ARE TO BE CONSTRUCTED. THE CONTRACTOR SHALL NOTIFY THE CITY OF CLEVELAND SURVEY DEPARTMENT AT LEAST THREE (3) WEEKS PRIOR TO BEGINNING MONUMENT BOX OPERATIONS IN ORDER TO HAVE LOCATIONS MARKED IN THE FIELD. THE CONTRACTOR SHALL CONSTRUCT MONUMENT BOXES AS PER STANDARD DRAWING MC-1, BUT WITH NEW CITY OF CLEVELAND MONUMENT BOX AS SHOWN ON SHEET 182. THE CITY OF CLEVELAND SURVEY DEPARTMENT SHALL BE RESPONSIBLE FOR SETTING THE ONE INCH STEEL RODS WHICH ARE TO BE PROVIDED BY THE CONTRACTOR.

SEEDING

QUANTITIES FOR SEEDING ARE CALCULATED FOR THE SOIL AREAS BETWEEN THE RIGHT-OF-WAY FENCE LINES, BETWEEN THE RIGHT-OF-WAY LINES IN UNFENCED AREAS, AND WITHIN THE WORK LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT.

ITEM 203 - ROADWAY EXCAVATION AND EMBANKMENT

- THE CONTRACTOR IS ADVISED TO NOTE THE REQUIREMENTS FOR BENCHING IN SECTION 203.09 OF THE SPECIFICATION WHEN EMBANKMENT IS TO BE PLACED AND COMPACTED ON HILLSIDES OR WHERE NEW EMBANKMENT IS TO BE COMPACTED AGAINST EXISTING EMBANKMENTS.
- THERE WILL BE LARGE QUANTITIES OF EXCAVATED MATERIAL AVAILABLE FROM PORTIONS OF THE PROJECT THAT THE CONTRACTOR MAY ELECT TO USE TO CONSTRUCT EMBANKMENTS IN OTHER AREAS OF THE PROJECT. THE CONTRACTOR IS ADVISED THAT MUCH OF THE EXCAVATED MATERIAL WILL BE CLASSIFIED A-4b SILTS. MATERIALS CLASSIFIED AS A-4b SILTS, MAY ONLY BE INCORPORATED INTO EMBANKMENTS UP TO A POINT THREE FEET (3') BELOW SUBGRADE ELEVATION.

IN ADDITION, THE CONTRACTOR IS ADVISED THAT SOME OF THE EXCAVATED MATERIAL MAY BE TOO WET TO BE INCORPORATED DIRECTLY IN THE EMBANKMENT WITHOUT A GREAT DEAL OF DRYING AND MAY ALSO LEAD TO COMPACTION PROBLEMS.

ITEM 203 - EMBANKMENT, USING GRANULAR MATERIAL

ALL FILL MATERIAL FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT BETWEEN STATION 92+00 AND STATION 102+00 ALONG RELOCATED S.R. 176; BETWEEN STATION 44+00 AND STATION 49+50 ALONG LANE DBW-JN; AND BETWEEN STATION 42+00 AND STATION 51+00 ALONG LANE JN-DBE SHALL BE ITEM 203-EMBANKMENT, GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED SIX (6) INCHES.

ITEM 203 PROOF ROLLING

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM 203 PROOF ROLLING 20 HOUR

ITEM SPECIAL, IMPACT ATTENUATOR, HEXFOAM SANDWICH SYSTEM

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING THE FOLLOWING IMPACT ATTENUATOR SYSTEM:

THE 6-BAY HEXFOAM SANDWICH IMPACT ATTENUATING SYSTEM (MODEL #209711H6S) MANUFACTURED BY ENERGY-ABSORPTION SYSTEMS, INC., ONE EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601 (TELEPHONE 312-467-6750).

THE ATTENUATOR SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN ON THE PLANS.

THE NOSE OF THE ATTENUATOR SHALL BE MARKED WITH THREE, EVENLY SPACED, FOUR (4) INCH WIDE HORIZONTAL STRIPES OF WHITE REFLECTIVE MATERIAL MEETING THE REQUIREMENTS OF CMS 730.19.

THE CURB REVEAL FOR THE CONCRETE MEDIAN AS DETAILED ON SHEET 8 SHALL BE LOWERED TO 3" AT THE LOCATION OF THE IMPACT ATTENUATOR.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE CONTRACT PRICE FOR ITEM SPECIAL, EACH, IMPACT ATTENUATOR, HEXFOAM SANDWICH SYSTEM. THIS ITEM SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS ITEM IN PLACE, INCLUDING ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM.

ITEM SPECIAL, IMPACT ATTENUATOR, TYPE 1

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING ONE OF THE FOLLOWING TYPES OF IMPACT ATTENUATOR SYSTEMS:

- THE BREAKMASTER IMPACT ATTENUATING SYSTEM MANUFACTURED BY ENERGY-ABSORPTION SYSTEMS, INC., ONE EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601 (TELEPHONE 312-467-6750).
- THE C.A.T. IMPACT ATTENUATING SYSTEM MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE 216-545-4373).

THE ATTENUATOR SHALL BE PLACED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN ON THE PLANS.

THE NOSE OF THE ATTENUATOR SHALL BE MARKED WITH THREE, EVENLY SPACED, FOUR (4) INCH WIDE HORIZONTAL STRIPES OF WHITE REFLECTIVE MATERIAL MEETING THE REQUIREMENTS OF CMS 730.19.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE CONTRACT PRICE FOR ITEM SPECIAL, EACH, IMPACT ATTENUATOR TYPE 1. THIS ITEM SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS ITEM IN PLACE, INCLUDING ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER TO CONSTRUCT A COMPLETE AND FUNCTIONAL IMPACT ATTENUATOR SYSTEM.

ITEM 604 MANHOLE ADJUSTED TO GRADE, AS PER PLAN

THE USE OF ADJUSTING RINGS SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL ADJUST THE EXISTING FRAME AND COVER TO MEET THE REVISED GRADE BY ADJUSTING THE HEIGHT OF THE SUPPORTING WALLS AND RESETTING THE EXISTING FRAME IN A NEW BED OF MORTAR OR CONCRETE.

RELOCATED STATE ROUTE 176

GENERAL NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. 5 REGION



ITEM 606 ANCHOR ASSEMBLY, TYPE E

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING AN ET-2000, OPTION "B", GUARDRAIL END TERMINAL AS MANUFACTURED BY SYRO STEEL COMPANY, 1170 N. STATE STREET, GIRARD, OHIO 44420 (TELEPHONE: 216-545-4373).

THE LENGTH OF THE ET-2000 SYSTEM IS CONSIDERED TO BE 50', INCLUSIVE OF TWO 25' LONG RAIL ELEMENTS. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE UNIT BID PRICE FOR ITEM 606, EACH, ANCHOR ASSEMBLY, TYPE E AND SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO CONSTRUCT A COMPLETE AND FUNCTIONAL ANCHOR ASSEMBLY SYSTEM, INCLUDING ALL RELATED HARDWARE, NOT SEPARATELY SPECIFIED, AS REQUIRED BY THE MANUFACTURER.

CONNECTION BETWEEN EXISTING AND PROPOSED GUARDRAIL

WHEN IT IS NECESSARY TO SPLICE PROPOSED GUARDRAIL TO EXISTING GUARDRAIL, ONLY THE EXISTING GUARDRAIL SHALL BE CUT, DRILLED, OR PUNCHED. THE CONNECTION SHALL BE MADE USING A "W-BEAM RAIL SPLICE" AS SHOWN ON STANDARD CONSTRUCTION DRAWING GR-1.1.1. PAYMENT SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE RESPECTIVE GUARDRAIL ITEMS.

PAVING UNDER GUARDRAIL

THIS OPERATION SHALL INCLUDE PREPARATION OF THE GRADED SHOULDER USING 203, LINEAR GRADING, AND PAVING UNDER THE GUARDRAIL USING 448, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 (UNDER GUARDRAIL), AS PER PLAN.

ITEM 203, LINEAR GRADING, SHALL CONSIST OF EXCAVATING TOPSOIL, PLACING GRANULAR MATERIAL AND APPLYING HERBICIDE AS SPECIFIED IN THE PLANS AND IN ACCORDANCE WITH THE FOLLOWING:

ALL COLLECTED DEBRIS AND TOPSOIL, INCLUDING RHIZOMES, ROOTS AND OTHER VEGETATIVE PLANT MATERIAL SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED IN 203.05.

THE REMOVED MATERIAL SHALL BE REPLACED WITH COMPACTABLE GRANULAR MATERIAL CONFORMING TO 203.02 PLACED TO GRADE AS DETAILED ON THE TYPICAL SECTION OR AS APPROVED BY THE ENGINEER.

HERBICIDE SHALL BE TRIFLAN E. C., SPIKE OR AN APPROVED EQUAL AND SHALL BE APPLIED TO THE PREPARED AREA AFTER FINAL LEVELING AND GRADING HAS BEEN COMPLETED. THE APPLICATION SHALL BE JUST PRIOR TO PAVING AND SHALL STRICTLY ADHERE TO THE MANUFACTURER'S INSTRUCTIONS.

ONLY PROPERLY LICENSED PERSONNEL SHALL APPLY HERBICIDES AS REQUIRED BY THE OHIO REVISED CODE.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 203, LINEAR GRADING.

PAVING UNDER GUARDRAIL SHALL CONSIST OF PLACING ITEM 448 TO THE DEPTH SPECIFIED USING ONE OF THE FOLLOWING METHODS:

METHOD A: 1) SET GUARDRAIL POSTS
2) PLACE ITEM 448

METHOD B: 1) PLACE ITEM 448

2) BORE ASPHALT AT POST LOCATIONS (MAY BE OMITTED IF STEEL POSTS ARE USED)

3) SET GUARDRAIL POSTS

4) PATCH AROUND POSTS. THE MATERIALS USED FOR PATCHING SHALL BE A BITUMINOUS CONCRETE APPROVED BY THE ENGINEER. PATCHED AREAS SHALL BE COMPACTED USING EITHER HAND OR MECHANICAL METHODS. FINISHED SURFACES SHALL BE SMOOTH AND SLOPED TO DRAIN AWAY FROM THE POSTS.

ALL EQUIPMENT, MATERIALS AND LABOR REQUIRED TO PERFORM THE WORK OUTLINED ABOVE, WITH THE EXCEPTION OF SETTING GUARDRAIL POSTS, SHALL BE INCLUDED FOR PAYMENT UNDER ITEM 448, ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 1 (UNDER GUARDRAIL) AS PER PLAN.

DOWEL BASKET ASSEMBLIES

WHERE DOWEL BASKET ASSEMBLIES ARE USED BY THE CONTRACTOR, ALL SPACER WIRES (SHIPPING WIRES) SHALL BE REMOVED FROM THE BASKET ASSEMBLIES PRIOR TO PAVING. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THE DOWEL BASKET ASSEMBLIES ARE STABLE AND HELD FIRMLY IN PLACE.

ITEM 451 9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN

ITEM 451 12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN

ITEM 452 12" PLAIN CONCRETE PAVEMENT, AS PER PLAN

WHERE THE NEW PAVEMENT BUTTS INTO THE EXISTING PAVEMENT, A DOWELLED TYPE Y JOINT PER BP-2.5 SHALL BE PROVIDED. GROUTING AND DRILLING REQUIREMENTS SHALL BE PER ITEM 255 AND BP-2.5 EXCEPT THE REQUIREMENT THAT THE DRILLING DEVICE SHALL BE CAPABLE OF DRILLING THREE HOLES AT ONE TIME SHALL BE WAIVED. ALL WORK AND MATERIALS REQUIRED TO PROVIDE THESE JOINTS SHALL BE INCIDENTAL TO THE PERTINENT ITEMS.

ITEM 305 9" CONCRETE BASE, AS PER PLAN

ITEM 305 10" CONCRETE BASE, AS PER PLAN

THE SECOND SENTENCE IN 305.01(A) SHALL READ "LOAD TRANSFER DEVICES ARE REQUIRED AT ALL TRANSVERSE CONTRACTION, CONSTRUCTION, AND EXPANSION JOINTS."

WHERE PROPOSED 305 BASE PAVEMENT IS TIED LONGITUDINALLY TO EXISTING PAVEMENT, TRANSVERSE JOINT SPACING AS REQUIRED IN BP- 2.2 SHALL BE WAIVED. TRANSVERSE JOINTS IN THE ITEM 305 BASE PAVEMENT SHALL BE LOCATED AT ALL EXISTING TRANSVERSE JOINTS IN THE ADJACENT PAVEMENT. JOINTS SHALL BE CONSTRUCTED TO FORM A CONTINUOUS LINE IN THE SAME ALIGNMENT AS THE TRANSVERSE JOINT IN THE ADJACENT EXISTING PAVEMENT.

WHERE PROPOSED 305 BASE PAVEMENT IS NOT TIED LONGITUDINALLY TO EXISTING PAVEMENT, JOINT SPACING IN THE PROPOSED 305 BASE SHALL BE IN ACCORDANCE WITH THE APPLICABLE STANDARD DRAWING.

ITEM 207 TEMPORARY BENCHES, DAMS AND SEDIMENT BASINS

THE SEDIMENT BASINS QUANTITIES LISTED IN THE TEMPORARY SOIL EROSION AND SEDIMENT CONTROL PLAN ON PAGES 38 THROUGH 41 AND IN THE NOTE BELOW ARE THE STORAGE VOLUMES REQUIRED FOR THE SEDIMENT BASIN. THE PAY QUANTITY FOR EACH BASIN SHALL BE DETERMINED AS THE ACTUAL AMOUNT OF EXCAVATION OR EMBANKMENT REQUIRED TO PROVIDE THAT STORAGE VOLUME.

WATERING AND MOWING PERMANENT SEEDED AREAS

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER TO PROMOTE GROWTH AND TO CARE FOR THE PERMANENT SEEDED AREAS, AS PER 659.09:

ITEM 659 WATER
ITEM 659 MOWING

250 M GAL
258 M SQ. FT.

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AS DIRECTED BY THE ENGINEER, FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES:

ITEM 207 TEMPORARY SEEDING AND MULCHING	22924 S.Y.
* ITEM 207 STRAW OR HAY BALES	300 EACH
* ITEM 207 TEMPORARY SLOPE DRAINS	100 L.F.
* ITEM 207 TEMPORARY BENCHES, DAMS AND SEDIMENT BASINS	300 C.Y.
* ITEM 207 TEMPORARY DIKES	200 C.Y.
ITEM 207 FILTER FABRIC FENCE	900 L.F.
* ITEM 601 TYPE C ROCK CHANNEL PROTECTION (WITHOUT FILTER)	10 C.Y.
ITEM 659 MOWING	258 M S.F.
ITEM 659 COMMERCIAL FERTILIZER	4.90 TON
ITEM 659 AGRICULTURAL LIMING	23.68 TON
ITEM 659 REPAIR SEEDING AND MULCHING	5731 S.Y.
ITEM 659 WATER	100 M GAL

* THESE QUANTITIES ARE IN ADDITION TO THE QUANTITIES SHOWN ON SHEET 41.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT 603 CONDUIT ITEM.

FARM DRAINS

ALL FARM DRAINS, WHICH ARE ENCOUNTERED DURING CONSTRUCTION, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS. EXISTING COLLECTORS WHICH ARE LOCATED BELOW THE ROADWAY DITCH ELEVATIONS, AND WHICH CROSS THE ROADWAY, SHALL BE REPLACED WITHIN THE CONSTRUCTION LIMITS BY ITEM 603 CONDUIT, TYPE B, ONE COMMERCIAL SIZE LARGER THAN THE EXISTING CONDUIT.

EXISTING COLLECTORS AND ISOLATED FARM DRAINS, WHICH ARE ENCOUNTERED ABOVE THE ELEVATION OF ROADWAY DITCHES, SHALL BE OUTLETTED INTO THE ROADWAY DITCH BY 603 TYPE F CONDUIT. THE OPTIMUM OUTLET ELEVATION SHALL BE ONE FOOT ABOVE THE FLOWLINE ELEVATION OF THE DITCH. LATERAL FIELD TILES WHICH CROSS THE ROADWAY SHALL BE INTERCEPTED BY 603, TYPE E CONDUIT, AND CARRIED IN A LONGITUDINAL DIRECTION TO AN ADEQUATE OUTLET OR ROADWAY CROSSING.

THE LOCATION, TYPE, SIZE AND GRADE OF REPLACEMENTS SHALL BE DETERMINED BY THE ENGINEER AND PAYMENT SHALL BE MADE ON FINAL MEASUREMENTS.

EROSION CONTROL PADS AND ANIMAL GUARDS SHALL BE PROVIDED AT THE OUTLET END OF ALL FARM DRAINS AS PER STANDARD CONSTRUCTION DRAWING MC-4, EXCEPT WHEN THEY OUTLET INTO A DRAINAGE STRUCTURE. PAYMENT FOR THE EROSION CONTROL PADS AND ANIMAL GUARDS AND ANY NECESSARY BENDS OR BRANCHES SHALL BE INCLUDED FOR PAYMENT IN THE PERTINENT CONDUIT ITEM.

GENERAL NOTES

CALC. G.C.F.	CUYAHOGA COUNTY	OHIO
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CHKD. E.M.S.	JENNINGS FREEWAY	F.H.W.A. 5
DATE 11/18/93		REGION



THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 603 6" CONDUIT, TYPE B 706.01, 706.08, OR 709.19 PS 46 MIN	100 LIN. FT.
ITEM 603 8" CONDUIT, TYPE E 706.01, 706.08, OR 707.19 PS 46 MIN	200 LIN. FT.
ITEM 603 6" CONDUIT, TYPE F 707.17 NON-PERFORATED	100 LIN. FT.
ITEM 601 ROCK CHANNEL PROTECTION TYPE C WITH FILTER	5 CU. YD.

SPRING DRAINS

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR DRAINING ANY SPRINGS SHOWN IN THE PLAN OR ENCOUNTERED DURING CONSTRUCTION.

SPRING DRAINS SHALL BE CONSTRUCTED AS SHOWN ON STANDARD CONSTRUCTION DRAWING MC-1 AND PAID FOR AT THE CONTRACT PRICE FOR:

ITEM 605 6' UNCLASSIFIED PIPE UNDERDRAIN, 707.17, ASTM D-3034 SDR 35, SS 931, OR SS944, PERFORATED AS PER 707.15.	300 LIN. FT.
ITEM 605 AGGREGATE DRAIN, FOR SPRINGS	100 LIN. FT.

INTERCEPTOR DRAIN

REFERENCE IS MADE TO THE DETAILED DRAWING ON SHEET NO. 189 SHOWING THE METHOD TO BE USED FOR INTERCEPTOR CUT SLOPE SEEPAGE WHICH MAY BE ENCOUNTERED DURING CONSTRUCTION. THE LOCATION AND LIMITS SHALL BE AS DETERMINED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE:

ITEM 605 6' UNCLASSIFIED PIPE UNDERDRAIN, 707.17, ASTM D-3034 SDR 35, SS931 OR SS944, PERFORATED PER 707.15.	1000 L.F.
ITEM 605 6' UNCLASSIFIED PIPE UNDERDRAIN, 707.17 ASTM D-3034 SDR 35, SS 931 OR SS 944, PERFORATED PER 707.15, FABRIC WRAPPED, AS PER PLAN	1000 L.F.
ITEM 603 6' CONDUIT, TYPE F, 707.17 NONPERFORATED ASTM D-3034, SDR 35, SS 931 OR SS 944	200 L.F.

THE CONTRACTOR SHALL NOT ORDER MATERIALS FOR "INTERCEPTOR DRAINS" UNTIL AUTHORIZED BY THE ENGINEER, AND IN THE EVENT NO CUT SLOPE SEEPAGE IS ENCOUNTERED, THESE ITEMS SHALL BE NON-PERFORMED.

EROSION CONTROL

ITEMS 601 AND 660 ARE PROVIDED IN THE PLANS FOR EROSION CONTROL. ROCK OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS, AND TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE 660. THE ENGINEER SHALL CHECK AND NONPERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

UNTREATED SEPTIC CONNECTIONS

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT, ANY UNTREATED SEPTIC DRAINAGE INTO THE HIGHWAY DRAINAGE SYSTEM. ANY PIPE CARRYING UNTREATED SEPTIC FLOW SHALL BE PLUGGED WITH CLASS C CONCRETE AT THE RIGHT-OF-WAY LINE. PAYMENT FOR PLUGGING SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 203 EXCAVATION.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT, AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF THE EXISTING SEWERS WITHIN THE WORK LIMITS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTIONS SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS AND MANHOLES CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE-MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE PERTINENT 603 CONDUIT ITEMS OF THE CONTRACT.

RESIDENTIAL AND COMMERCIAL DRAINAGE CONNECTIONS

EXISTING ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK, SHALL BE PROVIDED WITH UNOBSTRUCTED OUTLETS BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEW CONDUIT REQUIRED TO REPLACE OR EXTEND THE EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE:

ITEM 603 4' CONDUIT, TYPE E, 707.19 PS 46 MIN, 707.17 NON-PERFORATED, SS 931 OR SS 944	100 L.F.
ITEM 603 6' CONDUIT, TYPE F, 707.19 PS 46 MIN, 707.17 NON-PERFORATED, SS 931 OR SS 944	100 L.F.

UNRECORDED SANITARY CONNECTIONS

ANY UNRECORDED ACTIVE CONNECTION TO A SANITARY SEWER ENCOUNTERED DURING CONSTRUCTION SHALL BE RECONNECTED TO THE EXISTING SEWER, AS DIRECTED BY THE ENGINEER. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE WORK NOTED ABOVE:

ITEM 603 6' CONDUIT, TYPE C, AS PER PLAN	50 L.F.
ITEM 603 6' CONDUIT, TYPE B, AS PER PLAN	50 L.F.

THE FOLLOWING MATERIALS SHALL BE USED FOR ITEMS 603 6' CONDUIT, TYPE B AND C, AS PER PLAN: SS 945 OR 707.19 P.S. 46 MIN. ASTM D-3034 SDR 35, SS 942, SS 931, 706.01, 706.02 OR 706.08 WITH JOINTS PER 706.11 OR 706.12.

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER.

MANHOLES, CATCH BASINS AND INLETS REMOVED OR ABANDONED

THE CASTINGS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT-OF-WAY FOR SALVAGE BY CITY OF CLEVELAND FORCES.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 202 ITEM.

ITEM 604 MANHOLE NO. 3, AS PER PLAN

ITEM 604 MANHOLE NO. 5, AS PER PLAN

ALL ITEMS OF STANDARD DRAWINGS MH-3 AND MH-5 SHALL BE APPLICABLE, EXCEPT THAT THE CITY OF CLEVELAND STANDARD MANHOLE FRAME AND COVER SHALL BE USED AS DETAILED ON SHEETS 190 AND 191.

ITEM 604 - CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN

WORK SHALL INCLUDE ADJUSTING THE CATCH BASIN TO GRADE, AND REMOVING AND RECONSTRUCTING THE APRON WITH A CUT OFF WALL AS SHOWN IN THE DETAIL ON SHEET 183.

PAYMENT FOR THE ABOVE WORK SHALL BE MADE AT THE CONTRACT PRICE FOR:

ITEM 604 CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN. THIS ITEM SHALL INCLUDE ALL LABOR, TOOLS, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THIS ITEM.

ITEM 604 INLET, NO. 1 AND CATCH BASIN, NO. 2-2B

FOR GRASSED AREA ON BROOKPARK ROAD AND SCHAAF ROAD, WHICH, AS A RESULT OF THE CONSTRUCTION OF THIS PROJECT, RETAIN WATER SHALL BE DRAINED AS DIRECTED BY THE ENGINEER.

TO PROVIDE FOR THIS CONTINGENCY, THE FOLLOWING ESTIMATED QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY FOR THE WORK:

ITEM 603 12' CONDUIT TYPE C, 706.01 CLASS 3, 706.02 OR 706.08	200 L.F.
ITEM 603 12' CONDUIT TYPE B, 706.02	200 L.F.
ITEM 604 INLET, NO. 1	5 EACH
ITEM 604 CATCH BASIN, NO 2-2B	5 EACH

NONE OF THE ABOVE MATERIALS SHALL BE ORDERED BY THE CONTRACTOR UNTIL AUTHORIZED BY THE ENGINEER.

CONTINGENCY QUANTITY FOR FENCE

IF THE ENGINEER DETERMINES ANY EXISTING FENCE TO BE DAMAGED, SUCH FENCE SHALL BE REMOVED AND REPLACED.

THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS PURPOSE.

ITEM 607 FENCE, TYPE CLT	6000 L.F.
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ITEM 660 SODDING, AS PER PLAN

THE PREPARATION OF SODDED AREAS SHALL INCLUDE THREE (3) INCHES OF TOPSOIL FURNISHED AND PLACED BENEATH THE SOD IN ACCORDANCE WITH ITEM 653, EXCEPT THAT IGNITION TEST SAMPLING WILL NOT BE REQUIRED.

PAYMENT FOR PREPARING AND PLACING SODDED AREAS, INCLUDING THE 3' TOPSOIL BED, WILL BE MADE AT THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR ITEM 660 SODDING, AS PER PLAN.

JOINT SEALERS

ALL REFERENCES TO 705.01 OR 705.02, APPEARING ON STANDARD DRAWINGS OR ON THE PLANS, SHALL BE CONSIDERED TO READ 705.04.

RELOCATED STATE ROUTE 176

GENERAL NOTES

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CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

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ITEM SPECIAL - JOINT SEAL (BITUMEN IMPREGNATED FOAM)

- I. DESCRIPTION: THIS WORK SHALL CONSIST OF SEALING JOINTS USING BITUMEN IMPREGNATED FOAM IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND AS DIRECTED BY THE ENGINEER.
- II. MATERIAL: THE MATERIAL SHALL BE A PRECOMPRESSED BITUMEN IMPREGNATED FOAM JOINT SEALANT SUCH AS EMSEAL PCSA, PERMABAND ROYSTON UNIBAND 8100 OR AN APPROVED EQUAL. EMSEAL U.S.A., IS LOCATED AT 344 MILL ROAD IN STAMFORD, CT. 06903 AND HAS A TELEPHONE NUMBER OF (203) 322-3828. PERMABAND IS AVAILABLE FROM PERMAQUIK (CANADA) LTD WHICH IS LOCATED AT 3043 UNIVERSAL DRIVE IN MISSISSAUGA, ONTARIO L4X2E2; TELEPHONE (416) 625-9444. ROYSTON IS LOCATED AT 128 FIRST ST; PITTSBURG, PA 15238; TELEPHONE 828-1500.

ALL MATERIALS SHALL BE STORED AND INCORPORATED IN THE WORK AS RECOMMENDED BY THE MANUFACTURER.
- III. SURFACE PREPARATION: THE FACES TO WHICH THE SEAL MUST ADHERE SHALL BE SANDBLASTED CLEAN AND BE FREE OF FOREIGN MATERIAL SUCH AS DIRT, DUST, GREASE, FORM OIL, RELEASE AGENTS AND ANY OTHER MATERIAL DETRIMENTAL TO ADHESION OF THE SEALANT.
- IV. APPLICATION: JOINTS SEALS SHALL BE INSTALLED ONLY WHEN THE SURFACES ARE DRY AND THE SURFACE TEMPERATURE IS ABOVE 50F. BOTH CONCRETE SURFACES ADJACENT TO THE JOINT SEAL SHALL BE PRIMED AS RECOMMENDED BY THE MANUFACTURER. THE FOAM SEAL SHALL BE REMOVED FROM THE PACKAGING AND ITS NARROW EDGE INSERTED INTO THE JOINT OPENING. THE DEPTH FACE WITH THE SELF-ADHESIVE BACKING SHALL BE PRESSED AGAINST ONE SIDE OF THE JOINT SO THAT FOAM IS HELD IN PLACE WHILE IT RECOVERS.

AT TEMPERATURES ABOVE 70F THE MATERIAL WILL RECOVER IN A FEW HOURS. AT TEMPERATURES BELOW 70F THE RECOVERY SHALL BE ACCELERATED BY HEATING THE MATERIAL WITH AN OPEN FLAME, GAS BURNER, INFRA-RED LAMP OR HOT - AIR BLOWER.

A CONTINUOUS LENGTH OF JOINT SEAL SHALL BE ACHIEVED BY JOINING INDIVIDUAL STRIPS ONLY BY MEANS OF SCARFED JOINTS CUT AT 45 DEGREES OR LESS RELATIVE TO THE SIDES OF THE JOINT THE SCARFED ENDS MUST BE PUSHED WELL PAST ONE ANOTHER. THE SEAL SHALL NOT BE PULLED OR STRETCHED SO THAT GAPS BETWEEN SUCCESSIVE LENGTHS ARE PREVENTED.
- V. METHOD OF MEASUREMENT: FOOTAGE UNDER THIS ITEM SHALL BE THE LINEAR FEET OF BITUMEN IMPREGNATED FOAM SEAL INSTALLED IN THE OPEN JOINTS THAT ARE COMPLETE, IN PLACE AND ACCEPTED.
- VI. BASIS OF PAYMENT: THE ACCEPTED QUANTITIES OF SEALED JOINTS SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT, WHICH PRICE AND PAYMENT SHALL BE FULL COMPENSATION FOR PREPARING THE SURFACES, FURNISHING AND PLACING ALL MATERIALS AND ALL LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE JOINT SEAL ACCORDING TO SPECIFICATIONS, PAYMENT WILL BE MADE UNDER THE FOLLOWING:

ITEM SPECIAL 4' X 4' JOINT SEAL LIN FT
(BITUMEN IMPREGNATED FOAM)

ITEM SPECIAL - POURED POLYURATHANE JOINT SEAL

- I. DESCRIPTION: THIS WORK SHALL CONSIST OF SEALING JOINTS WITH POURED POLYURATHANE JOINT SEAL IN ACCORDANCE WITH THESE SPECIFICATIONS, IN REASONABLY CLOSE CONFORMITY WITH THE PLANS AND MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS AND AS DIRECTED BY THE ENGINEER.
- II. MATERIAL: THE MATERIAL FOR THIS ITEM IS A TWO PART, COLD APPLIED, CHEMICALLY CURING, SELF LEVELING, ELASTOMERIC, POLYURATHANE JOINT SEALANT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-S-00227E AND ASTM C-920. ALL MATERIALS SHALL BE STORED AND INCORPORATED IN THE WORK AS SPECIFIED BY THE MANUFACTURER.

- III. APPLICATION: THE CONCRETE SURFACES TO WHICH THE SEALER IS TO ADHERE SHALL FIRST BE THOROUGHLY CLEANED BY ABRASIVE BLASTING. POLYURATHANE JOINT SEAL SHALL BE POURED OVER THE FULL LENGTH OF THE BITUMEN IMPREGNATED FOAM SEAL PREVIOUSLY INSTALLED IN THE OPEN JOINT AND SHALL BE APPLIED ONLY WHEN THE CONCRETE IS DRY AND ITS TEMPERATURE IS ABOVE 50 DEGREES F. THE POURED JOINT SEALER SHALL ACT AS A SECOND SEAL UNDERNEATH AND ON TOP OF THE BITUMEN IMPREGNATED FOAM JOINT SEAL. THE INSTALLED AND CURED MATERIAL SHALL BE THE DEPTH AS SHOWN IN THE PLANS AND SHALL BE BONDED TO THE CONCRETE SIDES OF THE JOINT. ANY UNBONDED SECTION SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. DAMS AS REQUIRED TO CONTAIN THE POURED SEALER SHALL BE INCIDENTAL TO THIS ITEM OF WORK.
- IV. METHOD OF MEASUREMENT: FOOTAGE UNDER THIS ITEM SHALL BE THE LINEAR FEET OF URETHANE JOINT SEAL POURED OVER THE FOAM JOINT SEAL THAT ARE COMPLETE, IN PLACE AND ACCEPTED.
- V. BASIS OF PAYMENT: THE ACCEPTED QUANTITIES OF POURED POLYURETHANE JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT, WHICH PRICE AND PAYMENT SHALL BE IN FULL COMPENSATION FOR PREPARING THE SURFACES, FURNISHING AND PLACING ALL MATERIALS AND ALL OTHER MATERIAL, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE JOINT SEAL ACCORDING TO SPECIFICATIONS. PAYMENT WILL BE MADE UNDER:

ITEM SPECIAL POURED POLYURATHANE JOINT SEAL LIN FT

ITEM SPECIAL - GABIONS

- I. DESCRIPTION:
THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING THE GABIONS AND THE FILL MATERIAL AND ANY EXCAVATION OR OTHER WORK NECESSARY TO INSTALL THE GABIONS (BASKETS) AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
- II. MATERIAL
 - A. BASKET
 1. DIMENSION:
WIRE MESH BASKETS SHALL BE SUPPLIED AS SPECIFIED ON THE PLANS. THE HORIZONTAL LENGTH SHALL NOT BE LESS THAN 72 INCHES. THE GABION WIDTH SHALL BE MULTIPLES (2, 3 OR 4) OF THE HORIZONTAL WIDTH. THE HORIZONTAL WIDTH SHALL NOT BE LESS THAN 36 INCHES. DIMENSIONS ARE SUBJECT TO A TOLERANCE LIMIT OF +/- 3%.
 2. WIRE BASKET:
THE WIRE SHALL BE STEEL WELDED WIRE OR TWISTED WIRE MESH, FABRICATED IN SUCH A MANNER THAT THE SIDES, ENDS, LIDS AND DIAPHRAGMS CAN BE ASSEMBLED AT THE CONSTRUCTION SITE INTO RECTANGULAR UNITS.

THE WIRE MESH SHALL HAVE A MINIMUM SIZE OF U.S. STEEL WIRE GAGE NO. 11. THE TENSILE STRENGTH OF THE WIRE SHALL BE IN THE RANGE OF 60,000 TO 85,000 PSI. THE MESH OPENINGS SHALL BE 4 1/2" MAXIMUM AND THE AREA OF ANY MESH OPENING SHALL NOT EXCEED 10 SQ. INCHES.

THE WELDED WIRE MESH SHALL BE FORMED IN A UNIFORM SQUARE PATTERN WITH A RESISTANCE WELD AT EACH CONNECTION. THE MESH SHALL CONFORM TO AASHTO M 55 EXCEPT THAT THE WELD SHEAR STRENGTH SHALL BE 600 POUNDS FOR 11 GAGE WIRE. THE SPIRAL BINDERS FOR JOINING WELDED WIRE MESH PANELS SHALL BE FORMED FROM COATED WIRE CONFORMING TO AASHTO M 32 OF THE SAME GAGE AS THE WIRE MESH.

THE TWISTED WIRE MESH SHALL BE FORMED IN A UNIFORM HEXAGONAL PATTERN WITH NONRAVELING DOUBLE TWISTS. THE PERIMETER EDGES OF THE MESH FOR EACH PANEL SHALL BE TIED TO A SELVEDGE WIRE HAVING A MINIMUM SIZE OF 0.144 INCH DIAMETER (U.S. WIRE GAGE NO. 9) SO THAT THE SELVEDGE IS AT LEAST THE SAME STRENGTH AS THE BODY OF THE MESH.

3. PLACING PANELS:

THE JOINTS SHALL BE TIED IN SUCH A MANNER THAT STRENGTH AND FLEXIBILITY AT THE POINT OF CONNECTION IS AT LEAST EQUAL TO THE MESH. THE CONNECTING WIRE IS TO MEET OR EXCEED THE SAME SPECIFICATIONS AS THE WIRE USED IN THE MESH.

LACING WIRE FOR ASSEMBLING BASKETS AND INTERCONNECTING ADJACENT BASKETS AND INTERNAL CONNECTING WIRE FOR REINFORCING SIDE PANELS SHALL BE COATED STEEL WIRE HAVING A MINIMUM SIZE OF 0.082 INCH DIAMETER (U.S. WIRE GAGE NO. 13.5).

ALTERNATE METHODS AND FASTENERS FOR ASSEMBLING BASKETS AND INTERCONNECTING ADJACENT BASKETS IN LIEU OF LACING WIRE AND SPIRAL BINDERS MUST BE ACCEPTABLE TO THE GABION MANUFACTURER. ALTERNATE FASTENERS MUST REMAIN CLOSED WHEN SUBJECTED TO A 600 POUND TENSILE FORCE WHILE CONFINING THE MAXIMUM NUMBER OF WIRES TO BE CONFINED BY THE FASTENER GABION STRUCTURE. SUBMIT INSTALLATION PROCEDURES, FASTENER TEST RESULTS, AND GABION MANUFACTURER'S ACCEPTANCE SHALL BE SUBMITTED FOR APPROVAL OF ALTERNATE METHODS AND FASTENERS.

4. COATINGS:

THE WIRE SHALL BE GALVANIZED WITH A MINIMUM ZINC COATING OF 0.8 OUNCES PER SQUARE FOOT OF WIRE SURFACE.

WHERE ADDITIONAL COATING IS REQUIRED BY THE PLANS THE GALVANIZED WIRE SHALL BE COATED WITH PVC OR A FUSION BONDED EPOXY. THIS COATING SHALL BE GREY IN COLOR.

5. TESTS AND CERTIFICATION:

EACH SHIPMENT OF UNITS TO A JOB SITE SHALL BE ACCOMPANIED BY A CERTIFICATION WHICH STATES THAT THE MATERIAL CONFORMS TO THE REQUIREMENTS OF THIS SPECIFICATION. A SHIPMENT SHALL CONSIST OF ALL MATERIAL ARRIVING AT THE JOB SITE AT SUBSTANTIALLY THE SAME TIME. THE CERTIFICATION SHALL BE ON COMPANY LETTERHEAD AND SHALL BE SIGNED BY AN OFFICER OF THE COMPANY HAVING LEGAL AUTHORITY TO BIND THE COMPANY.

THE GABION BASKETS MAY BE OBTAINED FROM THE FOLLOWING MANUFACTURERS:

LANE ENTERPRISES INC.
BOX 345
PULASKI, PA. 16143
(412) 652-7747

RIVERDALE MILLS CORP.
130 RIVERDALE STREET
NORTHBRIDGE, MA 01534
(508) 234-8715 OR
(508) 234-8716

MACCAFERRI GABIONS, INC.
RR #2, BOX 43A
WILLIAMSPORT, MD 21795

TERRA AQUA GABIONS
4930 ENERGY WAY
RENO, NV 89503

A. ELONGATION:

THE WIRE MESH SHALL HAVE SUFFICIENT ELASTICITY TO PERMIT ELONGATION OF THE MESH EQUIVALENT TO A MINIMUM OF 10 PERCENT OF THE LENGTH OF THE SECTION OF THE MESH UNDER TEST WITHOUT REDUCING THE GAGE OR TENSILE STRENGTH OF THE INDIVIDUAL WIRE. ELONGATION TESTING SHALL OCCUR PRIOR TO COATING AND FABRICATION OF THE MESH.

B. LOAD TEST:

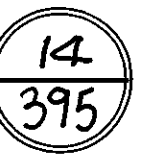
A SECTION OF THE MESH 6 FEET LONG AND NOT LESS THAN 3 FEET WIDE, AFTER FIRST BEING SUBJECTED TO THE ELONGATION TEST DESCRIBED ABOVE, SHALL WITHSTAND A LOAD TEST OF 6,000 POUNDS APPLIED TO AN AREA OF ONE SQUARE FOOT APPROXIMATELY IN THE CENTER OF THE SECTION UNDER TEST.

C. SINGLE STRAND CUT:

THE WIRE MESH SHALL BE FABRICATED IN SUCH A MANNER AS TO BE NON-RAVELING. THIS IS DEFINED AS THE ABILITY TO RESIST PULLING APART AT ANY OF THE TWISTS OR CONNECTIONS FORMING THE MESH.

GENERAL NOTES

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D. TENSILE STRENGTH:

THE TEST SHALL BE CONDUCTED ON THE WIRE MESH IN ACCORDANCE WITH DETAILS DESCRIBED IN ASTM A-392 EXCEPT THAT STRENGTH SHALL BE AS LISTED UNDER LOAD TEST. TENSILE TESTING SHALL OCCUR PRIOR TO COATING AND FABRICATION OF THE MESH.

E. ZINC COATING

THE MINIMUM WEIGHT OF COATING SHALL BE 0.8 OUNCES PER SQUARE FOOT. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH DETAILS DESCRIBED IN ASTM DESIGNATION A-90.

F. PVC COATING (MINIMUM THICKNESS 0.015 INCHES)

SPECIFIC GRAVITY SHALL BE 1.30 TO 1.35 Kg/Dm³ AS SPECIFIED IN ASTM D792.

HARDNESS SHALL BE 50 TO 60 AS SPECIFIED ASTM D2240.

RESISTANCE TO ABRASION SHALL BE TESTED AS PER ASTM D1242 WITH THE LOSS OF WEIGHT NOT BEING MORE THAN 0.195g.

EXPOSURE TO ULTRAVIOLET RAYS SHALL BE TESTED ACCORDING TO ASTM D1499 FOR 2000 HOURS AT 63 DEGREES CELSIUS.

G. FUSION BONDED EPOXY COATING

THE EPOXY SHALL BE FUSION BONDED IN ACCORDANCE WITH ASTM A884. ABRASIVE RESISTANCE SHALL BE TESTED AS PER ASTM D1242 WITH THE LOSS WEIGHT NOT BEING MORE THAN 0.19g.

B. FILL

1. SIZE:

GABION BASKETS SHALL BE FILLED WITH APPROVED STONE WITH A MINIMUM SIZE OF 4" AND A MAXIMUM SIZE OF 8", WITH BOTH STONE MEASUREMENTS MADE IN THE GREATEST DIMENSION. REVETMENT MATTRESS SHALL BE FILLED WITH SIZE NO. 1 STONE (AASHTO M43) IN ACCORDANCE WITH CMS TABLE 703-1.

2. THE STONE SHALL MEET THE FOLLOWING TESTS:

- A. THE FREEZE-THAW TEST: A MAXIMUM OF TEN PERCENT LOSS BY WEIGHT AFTER 25 CYCLES OF FREEZING AND THAWING IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO T103.
- B. SODIUM SULFATE OR MAGNESIUM SULFATE SOUNDNESS TEST: A MAXIMUM OF TEN PERCENT LOSS, BY WEIGHT AFTER TEN CYCLES OF THE TEST IN ACCORDANCE WITH THE REQUIREMENTS OF AASHTO T104.

III. CONSTRUCTION DETAILS

A. ASSEMBLY:

ASSEMBLY AND ERECTION OF THE BASKETS SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.

B. INSTALLATION:

THE ASSEMBLED UNITS SHALL BE CARRIED TO THE JOB SITE AND PLACED IN THEIR PROPER LOCATION. FOR STRUCTURAL INTEGRITY, ALL ADJOINING EMPTY BASKETS MUST BE LACED ALONG THE PERIMETER OF THEIR CONTACT SURFACES IN ORDER TO OBTAIN A MONOLITHIC STRUCTURE.

C. FILLING:

BASKETS SHALL BE FILLED WITH STONE CAREFULLY PLACED BY HAND OR MACHINE TO ASSURE ALIGNMENT AND AVOID BULGES WITH A MINIMUM OF VOIDS. ALONG ALL EXPOSED FACES AND EDGES, THE OUTER LAYERS OF STONE SHALL BE CAREFULLY PLACED AND PACKED BY HAND, ENSURING A NEAT, COMPACT SQUARE APPEARANCE.

GABIONS SHALL BE FILLED IN THREE LAYERS, APPROXIMATELY ONE FOOT AT A TIME. TWO CONNECTING WIRES SHALL BE PLACED BETWEEN EACH LAYER IN ALL CELLS ALONG ALL EXPOSED FACES OF THE GABION STRUCTURE. ALL CONNECTING WIRES SHALL BE LOOPED AROUND TWO MESH OPENINGS AND THE WIRE TERMINALS SHALL BE SECURELY TWISTED TO PREVENT THEIR LOOSENING.

THE CELLS IN ANY ROW SHALL BE FILLED IN STAGES SO THAT LOCAL DEFORMATION MAY BE AVOIDED, THAT IS, AT NO TIME SHOULD A CELL BE FILLED TO A DEPTH EXCEEDING ONE FOOT MORE THAN THE ADJOINING CELL.

THE LAST LAYER OF STONE SHALL BE LEVELED WITH THE TOP OF THE GABION TO ASSURE PROPER CLOSING OF THE LID AND PROVIDE AN EVEN SURFACE FOR THE NEXT COURSE.

D. LID CLOSING:

THE LIDS SHALL BE CLOSED TIGHT OVER THE FILLING UNTIL THE LID MEETS THE PERIMETER EDGES OF THE FRONT AND END PANELS. THE LID SHALL BE TIGHTLY LACED ALONG ALL EDGES, ENDS AND DIAPHRAGM(S) IN THE SAME MANNER AS DESCRIBED ABOVE FOR ASSEMBLY.

IV. PAYMENT:

THIS ITEM SHALL INCLUDE THE GABIONS, FILL MATERIAL, ANY EXCAVATION, AND ALL EQUIPMENT, LABOR AND MATERIAL TO COMPLETELY INSTALL THE BASKETS. PAYMENT SHALL BE MADE UNDER:

ITEM SPECIAL	GABIONS	CU YDS
ITEM SPECIAL	GABIONS WITH ADDITIONAL COATING	CU YDS

ITEM SPECIAL - MISCELLANEOUS METAL

EXISTING CASTINGS MAY PROVE TO BE UNSUITABLE FOR REUSE, AS DETERMINED BY THE ENGINEER. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE CASTINGS OF THE REQUIRED TYPE, SIZE, AND STRENGTH (HEAVY OR LIGHT DUTY) FOR THE PARTICULAR STRUCTURE IN QUESTION. ALL MATERIALS SHALL MEET ITEM 604 SPECIFICATIONS AND SHALL HAVE PRIOR APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL - MISCELLANEOUS METAL 2000 LBS.

THE CONTRACTOR IS CAUTIONED TO USE EXTREME CARE IN THE REMOVAL, STORAGE, AND REPLACEMENT OF ALL EXISTING CASTINGS. CASTINGS DAMAGED BY NEGLIGENCE OF THE CONTRACTOR, AS DETERMINED BY THE ENGINEER, SHALL BE REPLACED WITH PROPER NEW CASTINGS AT THE CONTRACTOR'S EXPENSE.

MAINTENANCE OF TRAFFIC NOTES

SPECIAL PROVISIONS

THE CONTRACTOR SHALL NOTIFY THE FOLLOWING IN WRITING, A MINIMUM OF SEVEN (7) DAYS IN ADVANCE OF THE DATE THE SCHAAF ROAD RUN AROUND IS IMPLEMENTED:

CITY OF CLEVELAND
 DIVISION OF ENGINEERING AND CONSTRUCTION
 ROOM 518, CITY HALL
 601 LAKESIDE AVENUE
 CLEVELAND, OHIO 44114
 ATTN: MR. JAMES DEIDRICK
 PHONE: (216) 664-2384

CITY OF CLEVELAND
 DIVISION OF TRAFFIC ENGINEERING
 2001 PAYNE AVENUE, 3RD FLOOR
 CLEVELAND, OHIO 44114
 ATTN: MR. DAVID RITZ, COMMISSIONER
 PHONE: (216) 664-3194

CITY OF CLEVELAND
 POLICE DEPARTMENT, SECOND DISTRICT
 3481 FULTON ROAD
 CLEVELAND, OHIO 44109
 PHONE: (216) 623-5200

CITY OF CLEVELAND
 FIRE DEPARTMENT
 1645 SUPERIOR AVENUE
 CLEVELAND, OHIO 44114
 PHONE: (216) 664-6892

REGIONAL TRANSIT AUTHORITY
 615 SUPERIOR AVENUE, N.W.
 CLEVELAND, OHIO 44113
 PHONE: (216) 566-5100

CITY OF CLEVELAND SCHOOL DISTRICT
 1380 E. 6TH STREET
 CLEVELAND, OHIO 44114
 PHONE: (216) 574-8255

IN ADDITION TO THE ABOVE, THE CONTRACTOR SHALL ALSO NOTIFY THE FOLLOWING IN WRITING A MINIMUM OF SEVEN (7) DAYS BEFORE RESTRICTING TRAFFIC OR IMPLEMENTING ANY OF THE PROPOSED CONSTRUCTION PHASES ALONG I-480 OR BROOKPARK ROAD:

STATE OF OHIO HIGHWAY PATROL
 CLEVELAND ADMINISTRATIVE OFFICE
 12323 BROADWAY
 CLEVELAND, OHIO 44125
 PHONE: (216) 587-4305

CITY OF PARMA
 DEPARTMENT OF ENGINEERING
 CITY HALL
 6611 RIDGE ROAD
 PARMA, OHIO 44129
 PHONE: (216) 885-8110

CITY OF PARMA
 POLICE DEPARTMENT
 5750 WEST 54TH STREET
 PARMA, OHIO 44129
 PHONE: (216) 888-3211

CITY OF PARMA
 FIRE DEPARTMENT
 5750 WEST 54TH STREET
 PARMA, OHIO 44129
 PHONE: (216) 885-1217

THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN ALL SIGNING DURING CONSTRUCTION.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, INSTALLING, MAINTAINING AND REMOVING THE GATES AND BARRICADES AT THE APPROXIMATE WORK LIMITS OF THE PROJECT. SEE STANDARD DRAWING MT-101.60.

ITEM 614 - MAINTAINING TRAFFIC

THE CONTRACTOR SHALL MAINTAIN TRAFFIC AT ALL TIMES IN ACCORDANCE WITH THE REQUIREMENTS OF SPECIFICATION 614. TWO WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY USE OF EXISTING PAVEMENT, COMPLETED PAVEMENT, ITEM 615 TEMPORARY ROADS AND PAVEMENT, AND TEMPORARY ROADWAYS SURFACED WITH 410 AGGREGATE AND STABILIZED WITH ITEM 616 CALCIUM CHLORIDE, AS SHOWN ON THE PLANS. THE LIMITS AND DURATION OF USE OF TEMPORARY ROADWAYS SHALL BE HELD TO AN ABSOLUTE MINIMUM, AND IN ALL CASES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER FOR THE MAINTENANCE OF TRAFFIC.

ITEM 404	BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC	500 C.Y.
ITEM 410	TRAFFIC COMPACTED SURFACE TYPE A OR B	1000 C.Y.
ITEM 608	TEMPORARY BITUMINOUS WALK	7500 S.F.
ITEM 616	CALCIUM CHLORIDE	200 TONS
ITEM 616	WATER	5000 MGAL.

ITEM 615 - TEMPORARY ROADS AND PAVEMENTS

ON THIS PROJECT THE TEMPORARY CLASS "A" PAVEMENT SHALL BE 21 FEET WIDE AND THE ROADWAY WIDTH SHALL BE NOT LESS THAN 33 FEET OUT TO OUT OF SHOULDERS AND 23.5 FEET FACE OF RAIL (WHERE GUARDRAIL IS USED) TO FACE OF CURB. THE ALIGNMENT AND PAVEMENT TYPICAL SECTION SHALL BE AS DETAILED ON THE ASSOCIATED PLAN PROFILE SHEET NO. 19.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY TO BE USED ITEM 615 - TEMPORARY PAVEMENT, CLASS "A", 2500 S.Y.

ALTHOUGH ESTIMATES FOR TEMPORARY GUARDRAIL, TEMPORARY EXCAVATION AND EMBANKMENT, AND TEMPORARY DRAINAGE FACILITIES HAVE BEEN SHOWN ON THE PLANS DETAILS, THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO, AND INCLUDED WITH, PAYMENT FOR ITEM 615 - TEMPORARY ROADS.

BROOKPARK ROAD

STAGE I

CONSTRUCT RELOCATED S.R. 176 ON AND OFF RAMPS ADJACENT TO THE NORTHERLY LANE OF EXISTING BROOKPARK ROAD. THE CONTRACTOR SHALL MAINTAIN TRAFFIC AS DETAILED ON SHEET NO. 26 OF THE PLANS.

STAGE II

WORK NECESSARY FOR THE CLOSURE OF W. 16TH STREET SHALL OCCUR DURING THIS STAGE. MAINTAIN TWO WAY TRAFFIC ON BROOKPARK ROAD AS PER STANDARD DRAWING MT-95.31. NOT MORE THAN ONE LANE SHALL BE CLOSED AT ANY TIME.

STAGE III

RESURFACING OF BROOKPARK ROAD BETWEEN STATION 101+00 AND STATION 105+00 SHALL OCCUR DURING THIS STAGE. TWO WAY TRAFFIC SHALL BE MAINTAINED AS PER STANDARD DRAWINGS MT-95.31 AND MT-95.32. NOT MORE THAN ONE LANE SHALL BE CLOSED AT ANY TIME IN EACH DIRECTION. ALL LANES SHALL BE OPENED TO TRAFFIC WHEN CONSTRUCTION IS NOT IN PROGRESS.

ACCESS TO S.R. 176

THE CONTRACTOR SHALL PROVIDE PORTABLE CONCRETE BARRIER AT THE INTERSECTION OF S.R. 176 ON AND OFF RAMPS AND BROOKPARK ROAD AS DETAILED ON SHEET NO. 26 OF THESE PLANS IN ORDER TO PREVENT ACCESS TO THE FREEWAY UNTIL IT IS OPENED TO TRAFFIC.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM 622	PORTABLE CONCRETE BARRIER, 32"	240 L.F.
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I-480

PHASE I

REMOVE AND REPLACE BRIDGE PIERS LOCATED IN CENTER MEDIAN. MAINTAIN EASTBOUND TRAFFIC AS PER STANDARD DRAWING MT-102.10, SEE SHEET NO. 24 OF THE PLANS FOR ADDITIONAL DETAILS. THE CONTRACTOR SHALL MAINTAIN WESTBOUND TRAFFIC AS DETAILED ON SHEET NO. 24 OF THE PLANS.

CLOSURE OF I-480 SHALL BE REQUIRED TO AVOID PERFORMING WORK OVER TRAVELED LANES DURING THE ERECTION OF STRUCTURAL STEEL. THE CLOSURE SHALL BE LIMITED TO THE HOURS OF 11:00 P.M. TO 5:00 A.M. AND PERIODS OF CLOSURE SHALL NOT EXCEED FIFTEEN (15) MINUTE INTERVALS. THE CONTRACTOR SHALL PROVIDE, ERECT AND MAINTAIN A PORTABLE CHANGEABLE MESSAGE SIGN APPROXIMATELY 3/4 MILE IN ADVANCE OF THE CLOSURE TO ADVISE TRAFFIC OF A POTENTIAL STOP CONDITION AND CONSTRUCTION DELAY.

PARTIAL CLOSURE OF I-480 SHALL BE REQUIRED TO AVOID PERFORMING WORK OVER TRAVELED LANES DURING DECK POURS AND BARRIER CONSTRUCTION AND SUBSEQUENT REMOVAL OF TEMPORARY FALSEWORK. THE PARTIAL CLOSURE SHALL BE LIMITED TO THE HOURS OF 10:00 A.M. AND 3:00 P.M. AND FROM 8:00 P.M. TO 5:00 A.M. TRAFFIC SHALL BE MAINTAINED AS PER STANDARD CONSTRUCTION DRAWING MT-95.30, AND A MINIMUM OF TWO LANES OF TRAFFIC SHALL BE MAINTAINED IN EACH DIRECTION.

PHASE II

CONSTRUCT LANES DBW-JN AND JN-DBW ADJACENT TO EXISTING I-480 AND LANE DBE-JN ABUTTING W.B.O.L. MAINTAIN EASTBOUND TRAFFIC AS PER STANDARD DRAWING MT-102.10, SEE SHEET NO. 25 OF THE PLANS FOR ADDITIONAL DETAILS. WESTBOUND TRAFFIC SHALL BE MAINTAINED AS DETAILED ON SHEET NO. 25 OF THE PLANS.

BRIDGES OVER CONRAIL AND I-480

CONRAIL AND I-480 SHALL BE PROTECTED FROM FALLING DEBRIS BY THE CONSTRUCTION OF FALSEWORK OR NETTING WHILE CONSTRUCTION WORK IS IN PROGRESS ON THE BRIDGES ABOVE.

SCHAAF ROAD

STAGE I

MAINTAIN TWO WAY TRAFFIC ON EXISTING SCHAAF ROAD AND CONSTRUCT THE TEMPORARY ROADWAY BETWEEN STATION 2+40 AND STATION 11+70.

PART A

CONSTRUCT THE TEMPORARY ROADWAY EXCEPT THAT REQUIRED ON EXISTING SCHAAF ROAD. DURING CONSTRUCTION OF THE EAST AND WEST ENDS, ADJACENT TO THE EDGE OF PAVEMENT OF EXISTING SCHAAF ROAD, THE CONTRACTOR SHALL MAINTAIN TRAFFIC AS DETAILED ON SHEET NO. 18 OF THE PLANS.

PART B

CONSTRUCT THE TEMPORARY PAVEMENT AT THE WESTERLY END OF EXISTING SCHAAF ROAD TO COMPLETE THE TEMPORARY ROADWAY. TWO WAY TRAFFIC WILL BE MAINTAINED ON SCHAAF ROAD ON ONE LANE DURING THIS TIME BY THE USE OF FLAGGERS AND AS DETAILED ON SHEET NO. 18 OF THE PLANS.

STAGE II

THE SCHAAF ROAD BRIDGE, INCLUDING APPROACH SLABS, WILL BE CONSTRUCTED DURING THIS STAGE. THE ENTIRE ROADWAY WILL BE CONSTRUCTED FROM THE EASTERLY BRIDGE APPROACH SLAB TO STATION 23+60, INCLUDING NEW WALK AND CURB. ALSO, THE NORTHERLY HALF OF SCHAAF ROAD SHALL BE CONSTRUCTED FROM STATION 15+00 TO THE WESTERLY BRIDGE APPROACH SLAB.

THE CONTRACTOR SHALL NOT CONSTRUCT CURB ON THE NORTHERLY SIDE OF SCHAAF ROAD FROM STATION 15+00 TO THE WESTERLY BRIDGE APPROACH SLAB IN ORDER TO PROVIDE MAINTENANCE OF TRAFFIC IN FUTURE STAGES. TEMPORARY PAVEMENT SHALL BE CONSTRUCTED ALONG THE NORTHERLY SIDE OF THE ROADWAY FROM STATION 13+50 TO STATION 17+55 TO MAINTAIN TRAFFIC DURING STAGE III CONSTRUCTION.

TEMPORARY CURB AND WALK WILL BE CONSTRUCTED FROM STATION 13+50 TO THE WEST END OF THE BRIDGE. THE WALK WILL BE LOCATED TWO (2) FEET FROM THE FACE OF THE TEMPORARY CURB.

STAGE III

PART A

CONSTRUCT THE SOUTHERLY HALF OF SCHAAF ROAD FROM STATION 15+00 TO THE WESTERLY BRIDGE APPROACH SLAB. ALSO, CONSTRUCT PERMANENT WALK ON THE SOUTHERLY SIDE OF THE ROAD FROM STATION 12+75 TO THE WESTERLY BRIDGE APPROACH SLAB.

MAINTAIN TWO WAY TRAFFIC ON SCHAAF ROAD USING THE TEMPORARY PAVEMENT CONSTRUCTED IN STAGE II, AS DETAILED ON SHEET NO. 20 OF THE PLANS.

PART B

CONSTRUCT PERMANENT WALK ON THE NORTHERLY SIDE OF SCHAAF ROAD FROM STATION 13+50 TO STATION 18+15.30, AND CONSTRUCT TYPE 6 CURB ON THE NORTHERLY SIDE OF SCHAAF ROAD FROM STATION 15+00 TO THE WESTERLY BRIDGE APPROACH SLAB.

MAINTENANCE OF TRAFFIC NOTES

CALC. J.A.A. DATE 3/12/93 CHKD. G.C.F. DATE 11/2/93	CUYAHOGA COUNTY CUY - 176 - 10.14 JENNINGS FREEWAY	OHIO F.H.W.A. REGION 5
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MAINTENANCE OF TRAFFIC

THE CONTRACTOR SHALL MAINTAIN SAFE AND SATISFACTORY ACCESS TO ABUTTING PROPERTY. THE CONTRACTOR SHALL MAINTAIN ADEQUATE PEDESTRIAN WALKS AT ALL INTERSECTIONS, INCLUDING TEMPORARY CONCRETE WALKS, WHERE DIRECTED BY THE ENGINEER. WHEN CONSTRUCTION IS ADJACENT TO RESIDENTIAL DRIVES, THE FOLLOWING PROCEDURES SHALL BE FOLLOWED, AS DIRECTED BY THE ENGINEER.

1. MAINTAIN ACCESS TO DRIVES BY ONLY CONSTRUCTING THE PORTIONS OF THE ROADWAY NOT IN CONFLICT WITH THE DRIVES. ADDITIONAL CONSTRUCTION JOINTS SHALL BE ALLOWED BY THE ENGINEER.
2. WHEN THE PAVED AREAS INSTALLED UNDER THE PRECEDING PARAGRAPH HAVE BEEN ADEQUATELY CURED, THE CONTRACTOR SHALL PROVIDE PARKING AREAS IN FRONT OF THE RESIDENCES BETWEEN THE CURB AND DRUM LINE. THE REMAINING PORTION OF THE PAVEMENT AND DRIVES SHALL THEN BE INSTALLED.
3. MAINTAIN ACCESS TO THE TEMPORARY RUNAROUND ON EITHER SIDE OF SCHAAF ROAD BY MEANS OF DRIVE APRONS WITH STOP SIGNS, AS SHOWN ON SHEET NO. 19 OF THE PLANS.

THE CONTRACTOR SHALL DIVERT TRAFFIC FROM NORMAL CHANNELS BY PLASTIC DRUMS, FLASHING ARROW PANELS COMPLYING WITH TC-35.10, AND TRAFFIC SIGNS AND PAVEMENT MARKINGS, AS SHOWN ON SHEET NOS. 18 THRU 20.

ALL CONSTRUCTION TRAFFIC CONTROL DEVICES USED FOR THIS PROJECT SHALL CONFORM TO THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (THE MANUAL), AND SHALL BE FURNISHED, ERECTED, MAINTAINED, AND REMOVED BY THE CONTRACTOR, EXCEPT AS NOTED BELOW.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY SAFEGUARDS, SUCH AS BARRICADES, FLAGGERS, AND SUCH OTHER TRAFFIC CONTROL DEVICES AS PROVIDED IN ITEM 614 - MAINTAINING TRAFFIC, SO AS TO AVOID DAMAGE AND/OR INJURY TO VEHICLES AND PERSONS USING THE ROADWAY DURING CONSTRUCTION.

EXISTING TRAFFIC CONTROL DEVICES LOCATED WITHIN THE WORK AREA, WHICH ARE REQUIRED FOR INTERIM OR PERMANENT TRAFFIC CONTROL, SHALL BE RELOCATED TO POINTS APPROVED BY THE ENGINEER. APPROPRIATE TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED, IN COMPLIANCE WITH THE MANUAL, AT ALL TIMES WHILE TRAFFIC IS MAINTAINED. THE COST OF RELOCATION, IF REQUIRED, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

PAYMENT FOR LABOR AND EQUIPMENT REQUIRED FOR THE CONSTRUCTION, MAINTENANCE AND SUBSEQUENT REMOVAL OF APPROACHES, DRIVEWAYS, BARRICADES, LIGHTS, DRUMS, FLASHING ARROW PANELS, SIGNS AND SIGN SUPPORTS, AND OTHER MISCELLANEOUS TRAFFIC CONTROL DEVICES, EXCEPT WHERE SPECIFIC ITEMS AND QUANTITIES ARE PROVIDED FOR ELSEWHERE IN THE PLANS, SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

PAYMENT FOR LABOR AND EQUIPMENT REQUIRED FOR THE REMOVAL OF FENCES, CONSTRUCTION OF TEMPORARY FENCES AND RESTORATION OF THE FENCES SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC.

FLASHING ARROW PANELS

DURING ANY CONSTRUCTION PHASE, IN WHICH A LANE IS CLOSED AND FLASHING ARROW PANELS ARE SHOWN ON THE PLANS, ELECTRIC POWERED OR SOLAR POWERED EQUIPMENT SHALL BE EXCLUSIVELY UTILIZED WHEN LOCATED WITHIN 300 FEET OF ANY RESIDENCE. DIESEL OR GASOLINE POWERED GENERATORS WILL NOT BE PERMITTED IN THESE AREAS.

CONSTRUCTION TRAFFIC

ALL CONSTRUCTION TRAFFIC SHALL USE ACCEPTABLE TRUCK ROUTES TO ACCESS THE CONSTRUCTION AREA. USE OF LOCAL RESIDENTIAL STREETS IS STRICTLY PROHIBITED UNLESS ALLOWED IN WRITING BY THE LOCAL ENFORCEMENT AUTHORITY.

TEMPORARY RAMPING OF VERTICAL SURFACES

IN ORDER TO PROVIDE FOR LOCAL ACCESS, LONGITUDINAL VERTICAL FACES ABUTTING DRIVES SHALL BE TEMPORARILY RAMPED. TRANSVERSE VERTICAL FACES SHALL BE TEMPORARILY RAMPED A MINIMUM OF TEN (10) FEET IN LENGTH AND TRAFFIC SHALL BE WARNED WITH DW-62 "BUMP" SIGNS IN ADVANCE OF THE RAMPED AREAS.

ALL CASTINGS ENCOUNTERED SHALL BE SET TO GRADE AND PAID FOR UNDER VARIOUS ITEMS DESCRIBED ELSEWHERE IN THE GENERAL NOTES OR SPECIFICATIONS. THE CASTING ELEVATION DIFFERENTIAL SHALL NOT BE GREATER THAN ONE (1) INCH WHEN EXPOSED TO TRAFFIC.

ALL TEMPORARY RAMPING SHALL BE INSTALLED, AT THE DIRECTION OF THE ENGINEER, USING ITEM 404 - BITUMINOUS CONCRETE FOR MAINTAINING TRAFFIC.

PAYMENT FOR WORK ZONE PAVEMENT MARKINGS AND SIGNS

THE FOLLOWING ITEMS ARE ESTIMATED ELSEWHERE IN THE PLANS AND ARE INCLUDED FOR USE ONLY AND IN AMOUNTS AS DIRECTED BY THE ENGINEER. THE PROVISIONS OF SECTION 104.02 WILL APPLY TO THESE ITEMS. THE AMOUNT OF THESE ITEMS AND THE LOCATIONS WHERE USED SHALL BE RECORDED AS USED, AND PAYMENT WILL BE BASED ON FINAL MEASUREMENTS.

ITEM 614 TEMPORARY CENTER LINE, CLASS I, 642 PAINT	0.19 MILE
ITEM 614 TEMPORARY CENTER LINE, CLASS I, 740.05, TYPE C	0.24 MILE
ITEM 614 TEMPORARY EDGE LINE, CLASS I, 642 PAINT	0.19 MILE
ITEM 614 TEMPORARY EDGE LINE, CLASS I, 740.05, TYPE C	5.80 MILE
ITEM 614 TEMPORARY LANE LINE, CLASS I, 740.05, TYPE C	2.48 MILE
ITEM 614 TEMPORARY CHANNELIZING LINE, CLASS I, 740.05	1.75 MILE
ITEM 614 BARRIER REFLECTOR, TYPE B	271 EACH
ITEM 614 OBJECT MARKER	285 EACH
ITEM 622 PORTABLE CONCRETE BARRIER, 32"	6745 LIN. FT.

INSTALLATION OF PAVEMENT MARKINGS

THE CONTRACTOR MAY REDUCE THE NUMBER OF THROUGH TRAFFIC LANES BY 50%, AS DIRECTED BY THE ENGINEER, IN ORDER TO REMOVE PAVEMENT MARKINGS, OR TO INSTALL TEMPORARY OR PERMANENT PAVEMENT MARKINGS. HE SHALL LIMIT THE AFOREMENTIONED CLOSURE TO BETWEEN THE HOURS OF 9:00 A.M. AND 3:00 P.M., UNLESS OTHERWISE APPROVED BY THE ENGINEER.

ALL PAVEMENT MARKINGS AND SIGNS REQUIRED FOR A PARTICULAR LANE CLOSURE OR TRAFFIC PATTERN SHALL BE INSTALLED ON A SINGLE WORK DAY, AND THE CORRESPONDING TRAFFIC PATTERN, AS DETAILED ON THE PLANS, SHALL BE IMPLEMENTED IMMEDIATELY.

ITEM 614 - BARRIER REFLECTORS, TYPE "B"

THESE REFLECTORS AND THEIR MOUNTING SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 802 EXCEPT THAT SPACING SHALL BE AT TEN (10) FEET CENTER TO CENTER.

THE COSTS ASSOCIATED WITH FURNISHING, INSTALLING, MAINTAINING AND WHERE NECESSARY, REPLACING REFLECTORS AS DESCRIBED IN SUPPLEMENTAL SPECIFICATION 802, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 614 - BARRIER REFLECTORS, TYPE "B".

ITEM SPECIAL - REPLACEMENT DRUM

DRUMS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLAN, SPECIFICATION AND PROPOSAL WHICH BECOME DAMAGED BY TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER AND PAID FOR UNDER ITEM SPECIAL - REPLACEMENT DRUM. PAYMENT FOR EACH NEW DRUM SHALL INCLUDE (1) THE COST OF REMOVING AND DISPOSING OF THE DAMAGED DRUM AND (2) PROVIDING, MAINTAINING, REPOSITIONING AND SUBSEQUENTLY REMOVING THE REPLACEMENT DRUM IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL DRUMS.

AN ESTIMATED QUANTITY OF ITEM SPECIAL - REPLACEMENT DRUM HAS BEEN CARRIED TO THE MAINTENANCE OF TRAFFIC SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL - REPLACEMENT DRUM	100 EACH
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LAW ENFORCEMENT OFFICER WITH PATROL CAR

THE CONTRACTOR SHALL PROVIDE AND PAY ALL COSTS FOR THE SERVICES OF LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR THE EXCLUSIVE PURPOSE OF CONTROLLING TRAFFIC WHENEVER A CHANGE IN THE TRAFFIC PATTERN TAKES PLACE OR DURING THE PLACEMENT OF PORTABLE CONCRETE BARRIERS. THE NUMBER OF OFFICERS AND CARS REQUIRED FOR THIS PURPOSE SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. THE OFFICERS SHALL MOVE THEIR PATROL CARS AS NECESSARY TO INSURE THEIR CONSTANT PRESENCE AT THE POINT(S) OF SLOWDOWN, STOPPAGE OR BACK UP. PAYMENT FOR THE ABOVE WILL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL - LAW ENFORCEMENT OFFICER WITH PATROL CAR	100 HOURS
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IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS REGARDING SCHEDULING AND PAYMENT OF LAW ENFORCEMENT OFFICER WITH PATROL CAR.

THIS REQUIREMENT DOES NOT PRECLUDE THE CONTRACTOR'S USE OF LAW ENFORCEMENT OFFICER FOR OTHER PURPOSES IN THE PROJECT AREA. HOWEVER, WHERE SUCH USE IS AT THE OPTION OF THE CONTRACTOR, PAYMENT FOR THE LAW ENFORCEMENT OFFICER'S SERVICES INVOLVED SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM 614 - MAINTAINING TRAFFIC.

PUBLIC SAFETY

THE PERIOD OF TIME THAT A HAZARD IS LEFT UNPROTECTED BY THE REMOVAL OF GUARDRAIL SHALL BE HELD TO AN ABSOLUTE MINIMUM AND IN NO CASE SHALL SUCH A PERIOD BE LONGER THAN ONE WORKING DAY. IF, AFTER ONE DAY, THE ENTIRE RUN OF GUARDRAIL CONSTRUCTION IS NOT COMPLETE THE FOLLOWING SHALL APPLY:

- A. IN AREAS WHERE EXISTING GUARDRAIL HAS BEEN REMOVED OR THE GUARDRAIL IS IN A PARTIAL STAGE OF COMPLETION, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TYPE II BARRICADES WITH TYPE C (STEADY BURNING) WARNING LIGHTS WITHIN THE LIMITS OF THE UNPROTECTED AREA. THE BARRICADES SHALL BE PLACED AT 50' INTERVALS AND OFFSET AT LEAST TWO FEET FROM THE EDGE OF THE TRAVELED ROADWAY AND IN CLOSE PROXIMITY TO THE CONSTRUCTION. THE APPROACH END OF A PARTIALLY COMPLETED RUN OF GUARDRAIL SHALL BE FASTENED AT GROUND LEVEL TO A STEEL DRUM.
- B. IF THE EXISTING GUARDRAIL IS FOR THE PROTECTION OF AN OBSTACLE (I.E. SIGN SUPPORT, BRIDGE PARAPET, ETC.) THE CONTRACTOR SHALL ERECT PORTABLE CONCRETE BARRIER AS DETAILED ON SHEET NO. 24 IN THE DIRECTION OF TRAFFIC. THE REQUIREMENTS OF PARAGRAPH "A" SHALL APPLY TO THE REMAINING GUARDRAIL WITHIN THE RUN. PORTABLE BARRIERS SHALL BE FLARED AT A 15:1 TAPER RATE AND SHALL INCLUDE A PORTABLE END TERMINAL AS PER MC-9.2.
- C. THE REQUIREMENTS STATED IN "A" SHALL APPLY FOR A PERIOD NOT TO EXCEED ONE WEEK. WHERE THE REBUILDING OR CONSTRUCTION OF ANY RUN OF GUARDRAIL CANNOT BE ACCOMPLISHED WITHIN ONE WEEK, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN PORTABLE CONCRETE BARRIER IN THE INTERIM TIME IT TAKES TO COMPLETE THE WORK. THE APPROACH END OF THE PORTABLE CONCRETE BARRIER SHALL BE FLARED TEN (10) FEET (150' AT 15:1 TAPER) AND SHALL INCLUDE A PORTABLE END TERMINAL AS PER MC-9.2 IN ADDITION, A TYPE II BARRICADE WITH TYPE B (HIGH INTENSITY FLASHER) WARNING LIGHT SHALL BE PLACED IN FRONT OF THIS INITIAL SECTION OF PORTABLE BARRIERS PROVIDE FOREWARNING TO THE APPROACHING TRAFFIC.

WHEN THE LANE ADJACENT TO THE GUARDRAIL IS CLOSED TO TRAFFIC, THE PROVISIONS OF PARAGRAPH "A" ABOVE SHALL APPLY AFTER ONE (1) DAY, THE PROVISIONS OF PARAGRAPH "B" SHALL APPLY AFTER FIVE (5) DAYS, AND THE PROVISION OF PARAGRAPH "C" SHALL APPLY AFTER 15 DAYS.

THE TERM "GUARDRAIL" AS USED HEREIN SHALL BE UNDERSTOOD TO COVER ALL TYPES OF GUARDRAIL, EXISTING OR PROPOSED FOR THE PROJECT, INCLUDING BARRIER DESIGN GUARDRAIL.

THE COST OF COMPLYING WITH THESE SAFETY PROCEDURES SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - MAINTAINING TRAFFIC.

GENERAL CONSTRUCTION SEQUENCE

THE CONTRACTOR IS REMINDED THAT, IN THE CONDUCT OF THIS PROJECT, HIS SEQUENCE OF OPERATIONS SHALL BE PLANNED AND EXECUTED IN SUCH A WAY AS TO MINIMIZE THE NUMBER OF LANE REDUCTIONS AND/OR LANE WIDTH REDUCTIONS REQUIRED TO MAINTAIN TRAFFIC THROUGH THE PROJECT. IN THIS REGARD, WHEN A TRAFFIC LANE IS CLOSED, ALL OPERATIONS TO THAT LANE SHALL BE PERFORMED IN AN ORDERLY SEQUENCE SUCH THAT IT WILL NOT BE NECESSARY TO AGAIN CLOSE THAT LANE UNTIL THE SURFACE COURSE PAVEMENT MARKING OPERATIONS BEGIN, IF UNABLE TO COMPLETE IN PHASE I OR PHASE II.

IT IS ALSO REQUIRED OF THE CONTRACTOR TO HAVE ALL NORMAL LANES OF TRAFFIC OPENED THROUGHOUT THE WINTER SEASON. NO LANE RESTRICTIONS, INCLUDING RAMPS, WILL BE ALLOWED DURING THIS TIME. THE CONTRACTOR IS CAUTIONED TO SCHEDULE HIS WORK, ESPECIALLY ASPHALT OVERLAYS, TO MEET THIS REQUIREMENT.

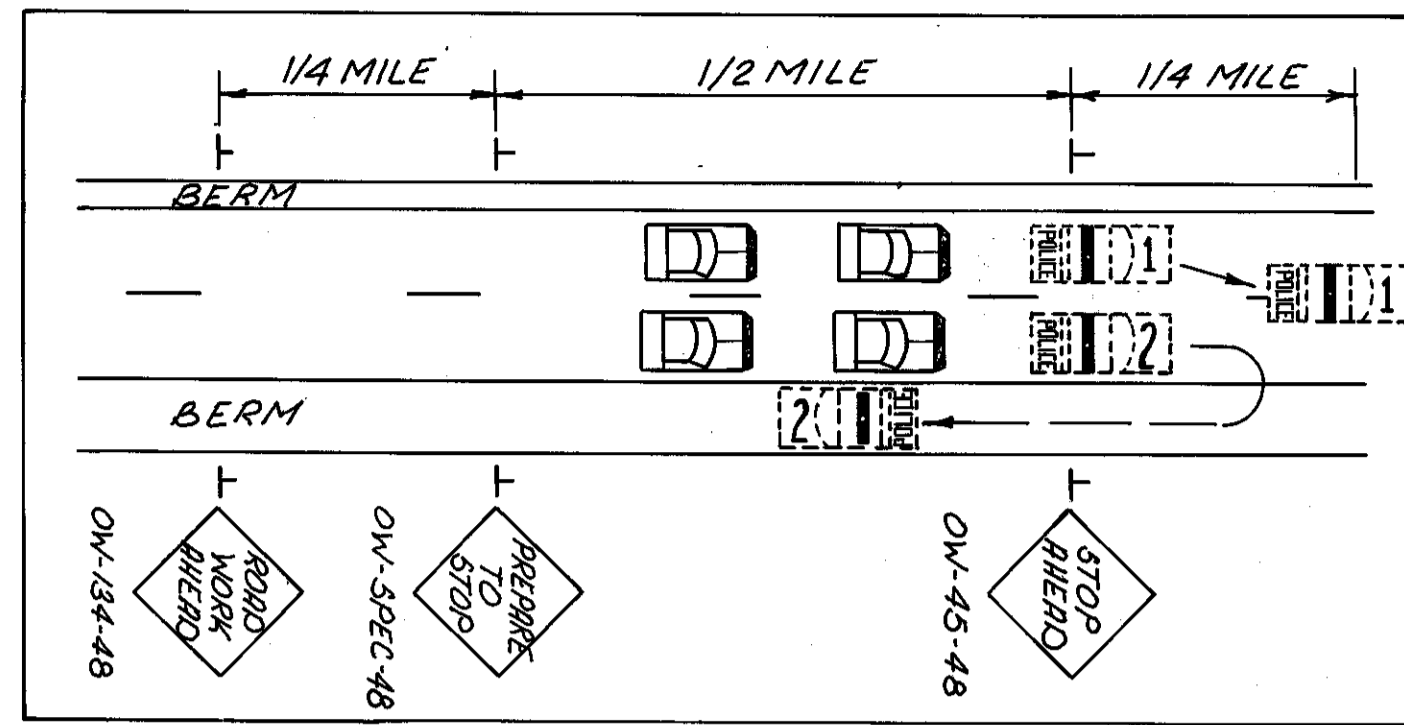
OVERHEAD SIGNS AND SUPPORTS THAT ARE BEING INSTALLED TO REPLACE EXISTING SIGNS AND SUPPORTS SHALL BE IN PLACE PRIOR TO THE REMOVAL OF THE EXISTING SIGNS AND SUPPORTS.

MAINTAINING VEHICULAR TRAFFIC

GENERAL PROVISIONS

1. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE SCHEDULE AND SEQUENCE OF THRU LANES TO BE MAINTAINED DESCRIBED ON SHEET NO. 16 AND IN THE MAINTENANCE OF TRAFFIC PLANS. THE CONTRACTOR SHALL SET UP AND OPERATE HIS EQUIPMENT IN SUCH A MANNER AS TO MINIMIZE ENCRoACHMENT UPON THE TRAVELLED WIDTH OF PAVEMENT.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THE RESPONSIBLE LAW ENFORCEMENT AGENCIES NOT LESS THAN SEVENTY TWO (72) HOURS PRIOR TO A SCHEDULED DISRUPTION OF TRAFFIC. THE CONTRACTOR SHALL ALSO NOTIFY MR. TONY URANKAR, DISTRICT PUBLIC INFORMATION OFFICER (581-2333, EXT. 244), SEVENTY TWO (72) HOURS PRIOR TO A SCHEDULED DISRUPTION OR CHANGE IN TRAFFIC PATTERNS. THE CONTRACTOR SHALL ALSO ERECT ADVANCE NOTIFICATION SIGNS A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO ANY TEMPORARY OR PERMANENT LANE CLOSURES, AS SHOWN ON SHEET NOS. 24 - 26.
3. NO STOPPAGE OF TRAFFIC OR ESTABLISHMENT OF LANE RESTRICTIONS SHALL OCCUR WITHOUT LAW ENFORCEMENT PERSONNEL AT EACH LOCATION TO DIRECT TRAFFIC.
4. DURING OVERHEAD CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE, IF DEEMED NECESSARY BY THE ENGINEER, SAFETY NETS AND OR OTHER SAFETY DEVICES UNDER THE STRUCTURES TO PROTECT TRAFFIC IN THE AREA OF CONSTRUCTION.
5. DURING NON-WORKING PERIODS, OPEN EXCAVATIONS SHALL BE DELINEATED WITH WARNING FLASHERS AND/OR OTHER APPROVED DEVICES AS DEEMED APPROPRIATE BY THE ENGINEER.
6. EXISTING SIGNS LOCATED WITHIN THE ROAD WORK AREAS WHICH ARE NECESSARY FOR INTERIM OR PERMANENT TRAFFIC CONTROL SHALL BE REMOVED AND REERECTED IN LOCATIONS AS APPROVED BY THE ENGINEER.
7. THE CONTRACTOR SHALL FURNISH, ERECT AND MAINTAIN ALL NEW WARNING AND INFORMATION SIGNS NECESSARY IN MAINTAINING TRAFFIC. THE CONTRACTOR SHALL DETERMINE WHAT SIGNS ARE NEEDED AND ADVISE THE ENGINEER TWO (2) WEEKS IN ADVANCE OF HIS DETAILED PLANS.
8. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION, AND SHALL BE PROPERLY MAINTAINED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE IMMEDIATELY REMOVED THEREAFTER. WHERE OPERATIONS ARE PERFORMED IN STAGES, THERE SHALL BE IN PLACE ONLY THOSE DEVICES THAT APPLY TO THE CONDITION PRESENT DURING THE STAGE IN PROGRESS. ALL SIGNS WITH MESSAGES WHICH DO NOT APPLY DURING A CERTAIN PERIOD SHALL BE COMPLETELY COVERED OR SET ASIDE FROM THE VIEW OF TRAFFIC.
9. ERECTION OF SPAN TYPE OVERHEAD SUPPORTS AND STRUCTURAL STEEL FOR BRIDGES SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT COMPLETE TRAFFIC STOPPAGE ON ALL LANES OF ANY DIRECTIONAL ROADWAY IS NO MORE THAN TEN (10) MINUTES IN ANY ONE CONSECUTIVE 30 MINUTE PERIOD. A MINIMUM OF TWO (2) LAW ENFORCEMENT PATROL VEHICLES SHALL BE USED TO PACE MOTORISTS TO A STOP. AFTER TRAFFIC HAS BEEN SLOWED, ONE (1) PATROL VEHICLE SHALL TRAVEL ALONG THE ROADWAY SHOULDER 500 FEET BEHIND THE BACK UP OF STOPPED VEHICLES. WHERE STOPPAGE OCCURS IN THE VICINITY OF FREEWAY ENTRANCES, THE CONTRACTOR SHALL PLACE FLAGGERS ON THE RAMPS TO STOP TRAFFIC. PATROL VEHICLES SHALL HAVE HIGH RISE FLASHING BEACONS TO PROVIDE ADEQUATE VISIBILITY TO APPROACHING MOTORISTS. WHEN THE ENGINEER DEEMS APPROPRIATE, THE CONTRACTOR SHALL ERECT AND MAINTAIN "ROADWORK AHEAD", "PREPARE TO STOP", AND "STOP AHEAD" SIGNS WITH FLASHING TWELVE (12) INCH TRAFFIC SIGNAL HEADS IN ACCORDANCE WITH 632.05. THESE SIGNS SHALL BE ILLUMINATED DURING NIGHT OPERATIONS. PATROL VEHICLES AND SIGNS SHALL BE LOCATED IN ACCORDANCE WITH THE FOLLOWING SKETCH. ERECTION OF SIGNS AND SIGN SPANS SHALL BE DONE AT NIGHT BETWEEN THE HOURS OF 10:00 P.M. AND 6:00 A.M.

MAINTENANCE OF TRAFFIC NOTES



PACING DETAIL

10. PLACEMENT OF FINAL ROADWAY PAVEMENT MARKINGS SHALL BE ACCOMPLISHED WITHIN THE PHASING IN THE MAINTENANCE OF TRAFFIC PLANS WHERE POSSIBLE. THE ENGINEER SHALL DETERMINE IF EXCEPTIONS NEED TO BE MADE. THE FINAL ROADWAY PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BETWEEN THE HOURS OF 10:00 P.M. AND 6:00 A.M. AS FOLLOWS: THE CONTRACTOR SHALL PROVIDE TWO (2) TRAILING VEHICLES PLUS A POLICE CRUISER WITH FLASHING BEACON FOLLOWING THE PAVEMENT MARKING EQUIPMENT WHEN MARKINGS ARE PLACED IN ORDER TO PROVIDE ADVANCE WARNING TO THE MOTORISTS OF THE TEMPORARY LANE CLOSURE AND CONSTRUCTION. THE TWO (2) TRAILING VEHICLES SHALL TRAVEL 500 FEET APART WITH THE REMOTE VEHICLE TRAVELING ON THE SHOULDER (LEFT OR RIGHT AS APPLICABLE) WHERE USABLE SHOULDER IS AVAILABLE. THE INTERMEDIATE TRAILING VEHICLE SHALL TRAVEL IN THE CLOSED LANE 500 FEET BEHIND THE PAVEMENT MARKING EQUIPMENT. THE POLICE CRUISER SHALL TRAVEL 500 TO 1000 FEET BEHIND THE REMOTE TRAILING VEHICLE.
11. A 45 MPH ADVISORY SPEED LIMITS ZONE WILL BE ESTABLISHED FOR THIS PROJECT AS INDICATED ON THE MAINTENANCE OF TRAFFIC SHEETS. THIS WILL REQUIRE NEW TEMPORARY DW-143-24 SPEED LIMITS SIGNS TO BE FURNISHED, ERECTED AND MAINTAINED BY THE CONTRACTOR, PER THE MAINTENANCE OF TRAFFIC PLANS. IN ADDITION, THE EXISTING SPEED LIMITS SIGNS ARE TO BE MODIFIED BY THE CONTRACTOR TO INCLUDE ALUMINUM SIGN OVERLAYS AND RELOCATION ON TEMPORARY SIGN SUPPORTS. SEE NOTE "MAINTENANCE OF TRAFFIC".
12. CONTRACTOR SHALL BE REQUIRED TO PROVIDE SUFFICIENT CREWS TO IMPLEMENT ALL OR A SUB-PHASE OF THE TRAFFIC CONTROL IN THE MAINTENANCE OF TRAFFIC PLANS WITHIN THE SAME WORK SHIFT, WITHIN THE TIME LIMITS ALLOWED. THIS WILL PREVENT ANY CONFUSION BETWEEN THE CONSTRUCTION PHASE TRAFFIC PATTERN AND THE EXISTING TRAFFIC PATTERN. THE MAINTENANCE OF TRAFFIC PLANS CAN BE SUB-PHASED BY CONCENTRATING ON ONE DIRECTION OR A LENGTH WITHIN THAT DIRECTION. HOWEVER, IN EACH SUB-PHASE THE MAINTENANCE OF TRAFFIC PLAN SHALL BE COMPLETELY IMPLEMENTED WITHIN THE SAME WORK SHIFT.
13. ADDITIONAL LANE CLOSURE FOR NIGHTTIME OPERATIONS SHALL ONLY BE IMPLEMENTED FROM 10:00 P.M. TO 6:00 A.M. THE CONTRACTOR SHALL SCHEDULE HIS OPERATIONS SO THAT THERE ARE SUFFICIENT CREWS TO DO THE WORK SCHEDULED WITHIN THIS EIGHT HOUR PERIOD. THE ONLY TIME THE HOURS MAY BE EXTENDED IS ON SATURDAY OR SUNDAY MORNING WHEN NO SPECIAL EVENT OR HOLIDAY IS OCCURRING. THE CONTRACTOR NEED NOT OPEN THE LANE UNTIL TRAFFIC IS BACKED UP ONE HALF MILE AS DETERMINED BY THE ENGINEER. AT THAT TIME, THE CONTRACTOR WILL HAVE FIFTEEN (15) MINUTES TO REOPEN THE LANE. IF THE LANE IS NOT OPENED IN FIFTEEN (15) MINUTES, LIQUIDATED DAMAGES SHALL APPLY.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BE AWARE OF THE BACKUP SO THAT WHEN THE ENGINEER NOTIFIES THE CONTRACTOR TO OPEN THE LANE, THE CONTRACTOR CAN DO SO. IN NO OTHER CASE MAY THESE HOURS BE EXTENDED.

THE CONTRACTOR SHALL CONTACT THE CITY OF CLEVELAND, THE CITY OF PARMA AND THE VILLAGE OF BROOKLYN HEIGHTS, FOR LISTINGS OF ALL SPECIAL EVENTS WHICH TAKE PLACE IN THE CITY OF CLEVELAND, THE CITY OF PARMA AND THE VILLAGE OF BROOKLYN HEIGHTS, THROUGHOUT THE DURATION OF THIS PROJECT. THE CONTRACTOR SHALL NOT IMPLEMENT THE ADDITIONAL LANE CLOSURE OR SHORT TERM LANE CLOSURE BEGINNING AT 12:00 NOON ON THE DAY AFTER A HOLIDAY OR SPECIAL EVENT OR WHEN THE ENGINEER DEEMS CLIMATOLOGICAL CONDITIONS TOO HAZARDOUS.

14. FOR ANY OPERATION NOT SPECIFICALLY MENTIONED IN THESE PLANS, THE TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH THE "OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
15. ALL LABOR, MATERIALS, EQUIPMENT AND ANY INCIDENTALS REQUIRED TO COMPLETE THE WORK AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614 - MAINTAINING TRAFFIC, UNLESS MENTIONED OTHERWISE IN THE PLANS.

MAJOR WORK ITEMS

THE FOLLOWING MAJOR WORK ITEMS WILL REQUIRE TRAFFIC MAINTENANCE PROCEDURES WHICH SHALL BE INCORPORATED INTO THE CONTRACTOR'S SEQUENCE OF OPERATIONS.

- A. INSTALLATION OF OVERHEAD SIGN SUPPORTS, INCLUDING SIGNS
- B. SHOULDER REPLACEMENT (WITH NEW PAVEMENT)
- C. ASPHALT CONCRETE OVERLAY
- D. PAVEMENT MARKING
- E. BRIDGE CONSTRUCTION

ITEM SPECIAL - REPLACEMENT SIGN

FLAT SHEET SIGNS FURNISHED BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENT OF THE PLANS, SPECIFICATIONS AND PROPOSAL WHICH BECOME DAMAGED BY THE TRAFFIC FOR REASONS BEYOND THE CONTROL OF THE CONTRACTOR SHALL BE REPLACED IN KIND WHEN ORDERED BY THE ENGINEER. REPLACEMENT SIGNS SHALL BE NEW. OTHER MATERIAL IN GOOD CONDITION MAY BE USED, BUT SUBJECT TO APPROVAL BY THE ENGINEER.

PAYMENT FOR THE NEW SIGNS SHALL BE MADE AT THE BID PRICE PER SQUARE FOOT FOR ITEM SPECIAL - REPLACEMENT SIGNS AND SHALL INCLUDE THE COST OF REMOVING AND DISPOSING OF THE DAMAGED SIGNS, HARDWARE AND SUPPORTS AND PROVIDING NECESSARY REPLACEMENT HARDWARE SUPPORTS, ETC.

AN ESTIMATED QUANTITY OF ITEM SPECIAL - REPLACEMENT SIGN HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL - REPLACEMENT SIGN 100 S.F.

ITEM SPECIAL - REPLACEMENT OF EXISTING DRUMS

DRUMS THAT ARE ALREADY IN PLACE ON W.B.O.L. BY THE GRANGER ROAD EXIT, SHALL BE REPLACED WITH NEW DRUMS PRIOR TO CONSTRUCTION AND SHALL REMAIN AFTER CONSTRUCTION, AND BECOME THE PROPERTY OF THE STATE.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL - REPLACEMENT OF EXISTING DRUMS 15 EACH

PORTABLE PRECAST BARRIERS

THE FOLLOWING GUIDELINES APPLY TO THE USE OF PORTABLE PRECAST CONCRETE BARRIERS TO SEPARATE WORK AREAS FROM THRU TRAFFIC.

ROADWAY (ROADWAY LOWERING AREA) - THE STANDARD BARRIER AS SHOWN ON STANDARD DRAWING MC-9.2 APPLIES TO ALL ROADWAY BARRIERS. THE BARRIER SECTIONS SHALL BE BOLTED TOGETHER. PAYMENT SHALL BE INCLUDED UNDER ITEM 622 - PORTABLE CONCRETE BARRIER.

THE ESTIMATED QUANTITIES FOR THIS WORK ARE TABULATED ON SHEET NO. 26.

PLANS OF OPERATIONS AND PROTECTION

THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR A COMPLETE SCHEDULE OF CONSTRUCTION OPERATIONS ALONG WITH THE PLANS CONTAINING HIS PROPOSED METHODS OF PREVENTING DEBRIS FROM FALLING ON THE TRAFFIC BELOW. THESE PLANS MUST BE SUBMITTED AND APPROVED PRIOR TO COMMENCING THE WORK. LANE CLOSURES AND TIMES OF IMPLEMENTATION SHALL BE APPROVED BY THE ENGINEER. NO REMOVAL WORK SHALL BE STARTED WITHOUT PRIOR APPROVAL OF THE ENGINEER. COSTS FOR PROTECTION OF THE PUBLIC SHALL BE INCLUDED WITH THE REMOVAL ITEM FOR PAYMENT.

SPECIAL PROVISIONS - RUMBLE STRIPS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FILLING IN THE RUMBLE STRIPS ON THE I-480 SHOULDERS DURING MAINTENANCE OF TRAFFIC OPERATIONS AND SUBSEQUENT REMOVAL OF THE SAME IMMEDIATELY AFTER COMPLETION OF THAT PHASE OF MAINTENANCE OF TRAFFIC.

THE FOLLOWING PAY ITEM AND QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY TO BE USED AS DIRECTED BY THE ENGINEER:

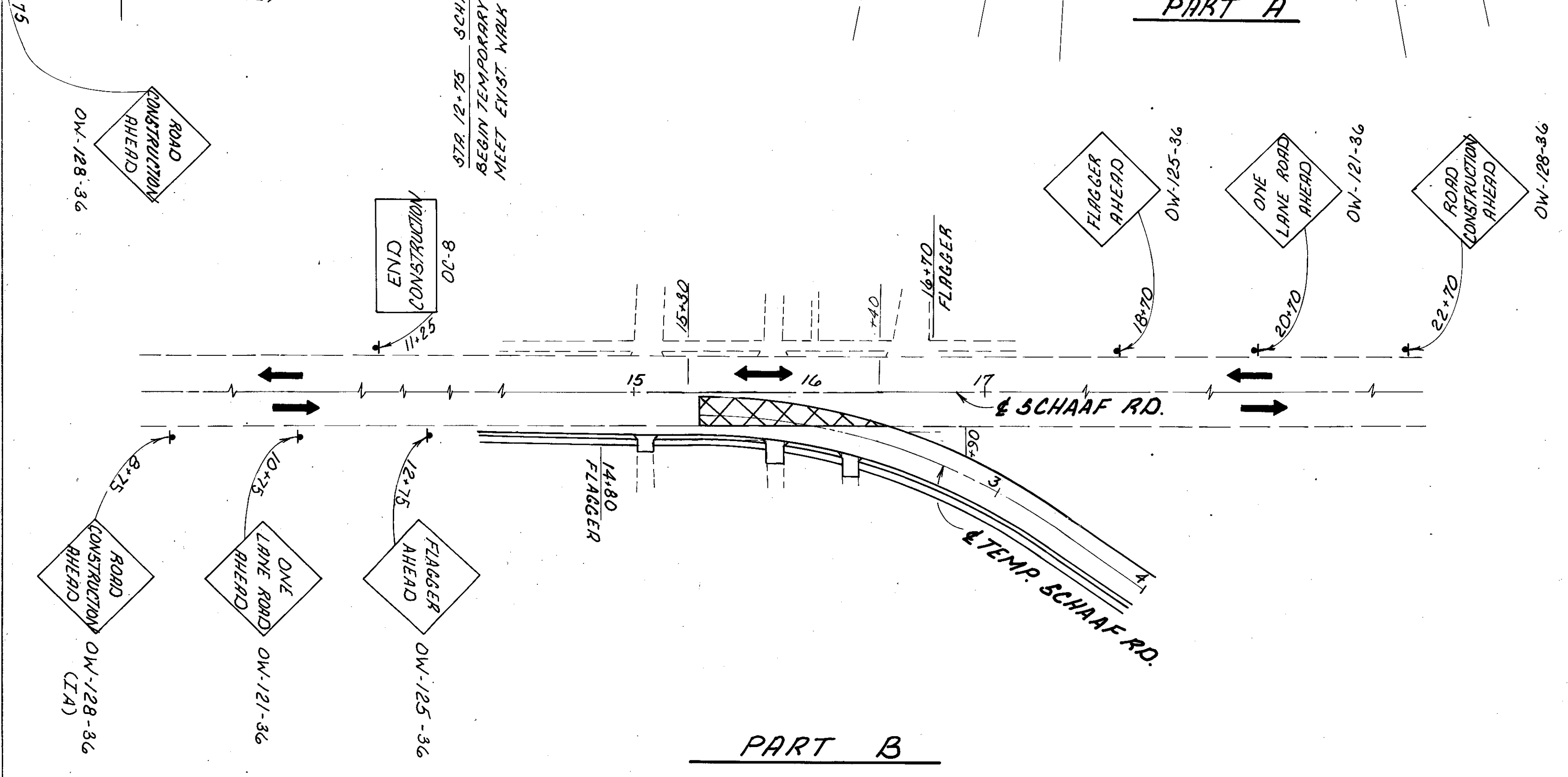
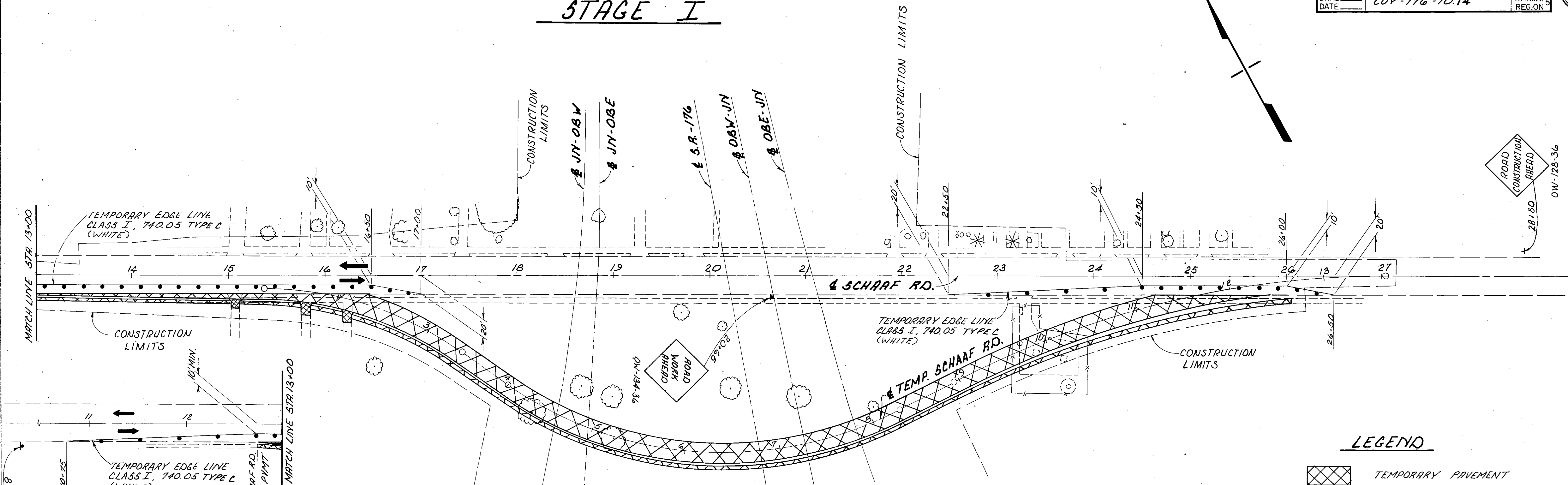
ITEM 404 ASPHALT CONCRETE, AC-20 1 C.Y.

STAGE I



CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

OHIO
 F.H.W.A. 5
 REGION

18
 395



LEGEND

-  TEMPORARY PAVEMENT
-  BRIDGE OR PAVEMENT CONSTRUCTION
- (XX) SIGN ERECTED IN PREVIOUS STAGE XX

NOTES

1. FOR TEMPORARY SCHARAF RD. GEOMETRICS SEE SHEET 19.

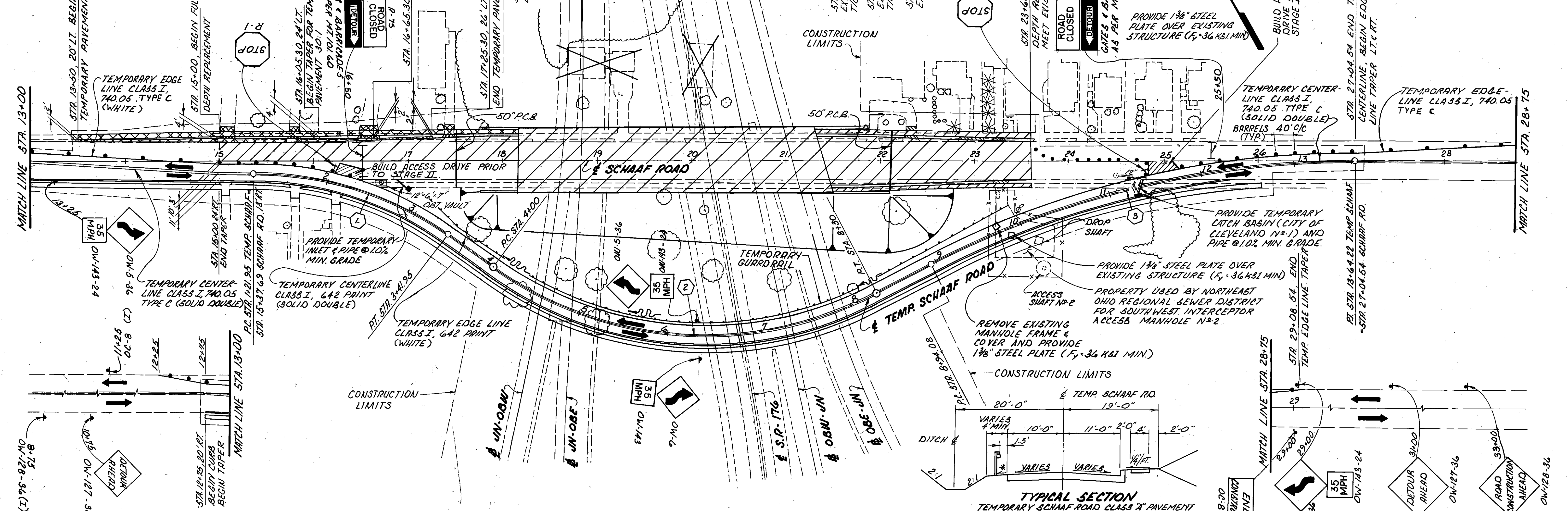
STATION	LEFT LANE 1		TRANSITION	CENTER LINE		RIGHT LANE 1		TRANSITION
	L-EP-1	OFFSET FROM C/L		PG	FROM C/L	R-EP-1	OFFSET FROM C/L	
1 +00	762.60	10		762.44	0	762.27	11	
+25	762.99	10	BEGIN	762.69	0	762.36	11	BEGIN
+50	763.33	10	END	762.93	0	762.49	11	END
+75	763.57	10		763.17	0	762.73	11	
2 +00	763.81	10		763.41	0	762.97	11	
+25	764.05	10		763.65	0	763.21	11	
+50	764.29	10		763.89	0	763.45	11	
+75	764.53	10		764.13	0	763.69	11	
3 +00	764.77	10		764.37	0	763.93	11	
+25	764.91	10	BEGIN	764.61	0	764.28	11	BEGIN
+50	765.00	10		764.85	0	764.68	11	
+75	765.10	10		765.09	0	765.08	11	
4 +00	765.22	10		765.35	0	765.49	11	
+25	765.36	10	END	765.63	0	765.93	11	END
+50	765.58	10		765.94	0	766.34	11	
+75	765.91	10		766.27	0	766.67	11	
5 +00	766.25	10		766.61	0	767.01	11	
+25	766.59	10		766.95	0	767.35	11	
+50	766.93	10		767.29	0	767.69	11	
+75	767.27	10		767.63	0	768.03	11	
6 +00	767.61	10		767.97	0	768.37	11	
+25	767.95	10		768.31	0	768.71	11	
+50	768.29	10		768.65	0	769.05	11	
+75	768.63	10		768.99	0	769.39	11	
7 +00	768.97	10		769.33	0	769.73	11	
+25	769.31	10		769.67	0	770.07	11	
+50	769.65	10		770.01	0	770.41	11	
+75	769.99	10		770.35	0	770.75	11	
8 +00	770.34	10	BEGIN	770.69	0	771.08	11	BEGIN
+25	770.82	10	END	771.03	0	771.29	11	END
+50	771.21	10		771.37	0	771.51	11	
+75	771.44	10		771.60	0	771.62	11	
9 +00	771.53	10		771.69	0	771.59	11	END
+25	771.47	10		771.63	0	771.46	11	
+50	771.26	10		771.42	0	771.25	11	
+75	770.90	10		771.06	0	770.89	11	
10 +00	770.40	10		770.56	0	770.39	11	
+25	769.85	10		770.01	0	769.84	11	
+50	769.33	10		769.49	0	769.32	11	
+75	768.93	10		769.09	0	768.92	11	
11 +00	768.69	10		768.85	0	768.68	11	
+25	768.58	10		768.74	0	768.57	11	
+50	768.63	10		768.79	0	768.62	11	
+75	768.80	10		768.96	0	768.79	11	

STAGE II

FOR LEGEND SEE SHEET 1B

CURVE DATA

① R.I. STA. 2+35.79 Δ = 36° 18' 00" RT. DC = 16° 30' 00" R = 347.24' T = 113.83' L = 220.00' CH = 26.33' E = 18.18' M = 17.27'	② R.I. STA. 6+41.00 Δ = 64° 30' 00" LT. DC = 15° 0' 00" R = 331.97' T = 241.00' L = 430.00' CH = 407.65' E = 69.67' M = 58.92'	③ R.I. STA. 11+34.02 Δ = 28° 12' 28.50" RT. DC = 6° 00' 00" R = 954.92' T = 239.93' L = 470.15' CH = 465.39' E = 29.68' M = 28.78'
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TYPICAL SECTION TEMPORARY SCHAAF ROAD CLASS 'A' PAVEMENT

13+00	14+00	15+00	21+00	3+00	4+00	5+00	6+00	7+00	8+00	12+00	13+00	28+00
760.60	761.03	761.41	761.78	762.29	762.65	763.04	763.41	763.89	764.37	764.85	765.35	765.85
765	765	765	765	765	765	765	765	765	765	765	765	765
760	760	760	760	760	760	760	760	760	760	760	760	760

Vertical curve data and notes:

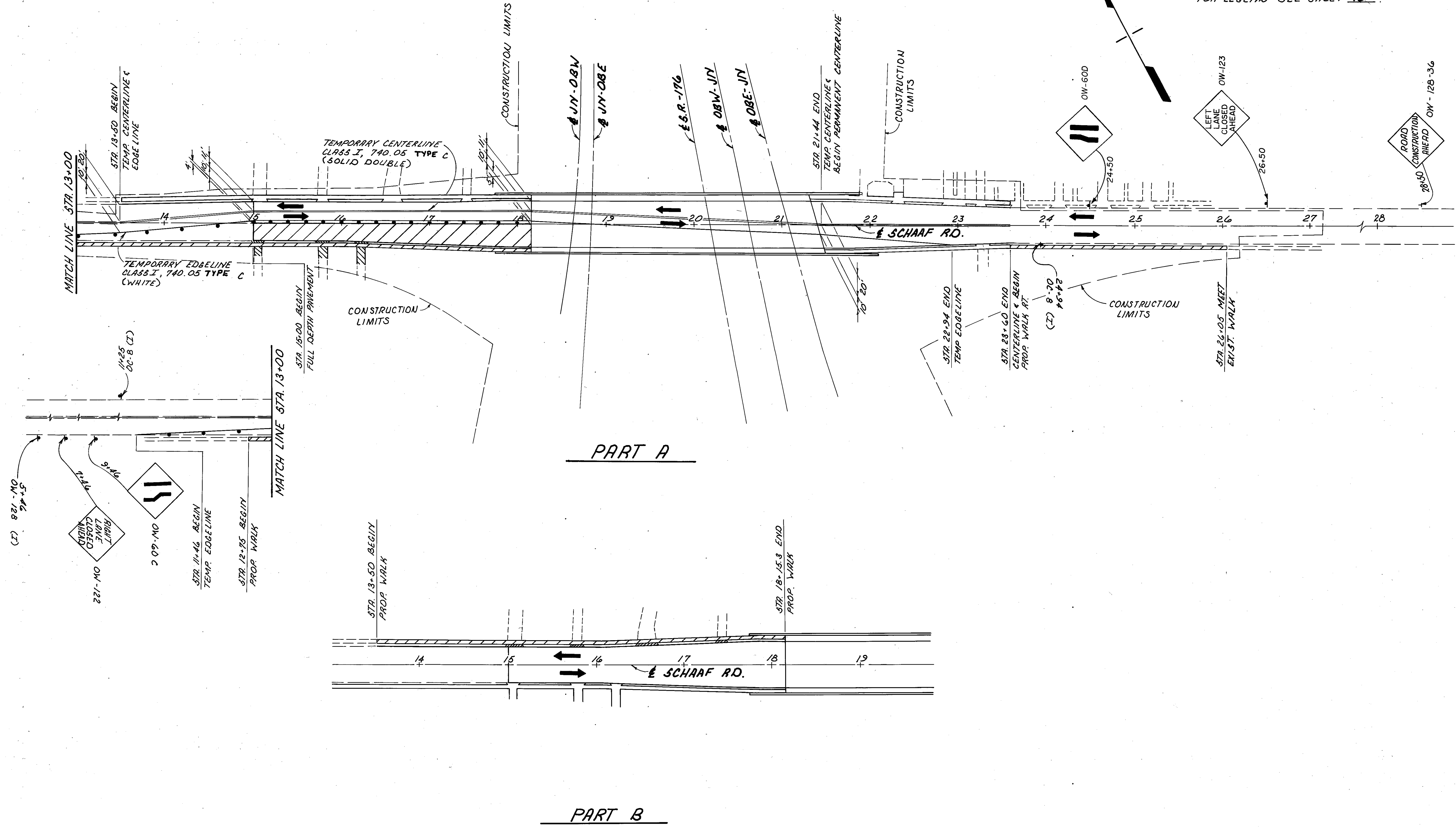
- STA. 9+75, 1' LT. ADJUST DROP MH. TO GRADE T/G-770.95 EX. 770.25
- STA. 9+85, 9' RT. ADJUST ACCESS OPENING TO GRADE T/G-770.74 EX. 770.25/1100
- PVI STA. 9+20 ELEV. 772.32
- PVI STA. 8+45 ELEV. 771.30
- PVI STA. 9+95 ELEV. 770.67
- PVI STA. 10+35 ELEV. 769.49
- PVI STA. 11+00 ELEV. 768.96
- PVI STA. 11+65 ELEV. 768.88
- Grades: +1.36%, -2.20%, -2.20%, +0.87%
- Vertical curves: 110' VC, 150' VC, 130' VC
- Notes on manhole depths and elevations.

RELOC. S.R.-176

STAGE III

CALC.	CUYAHOGA COUNTY	OHIO	20 395
DATE	CUY-176-10.14	F.H.W.A. REGION 5	
CHKD.			
DATE			

FOR LEGEND SEE SHEET 18



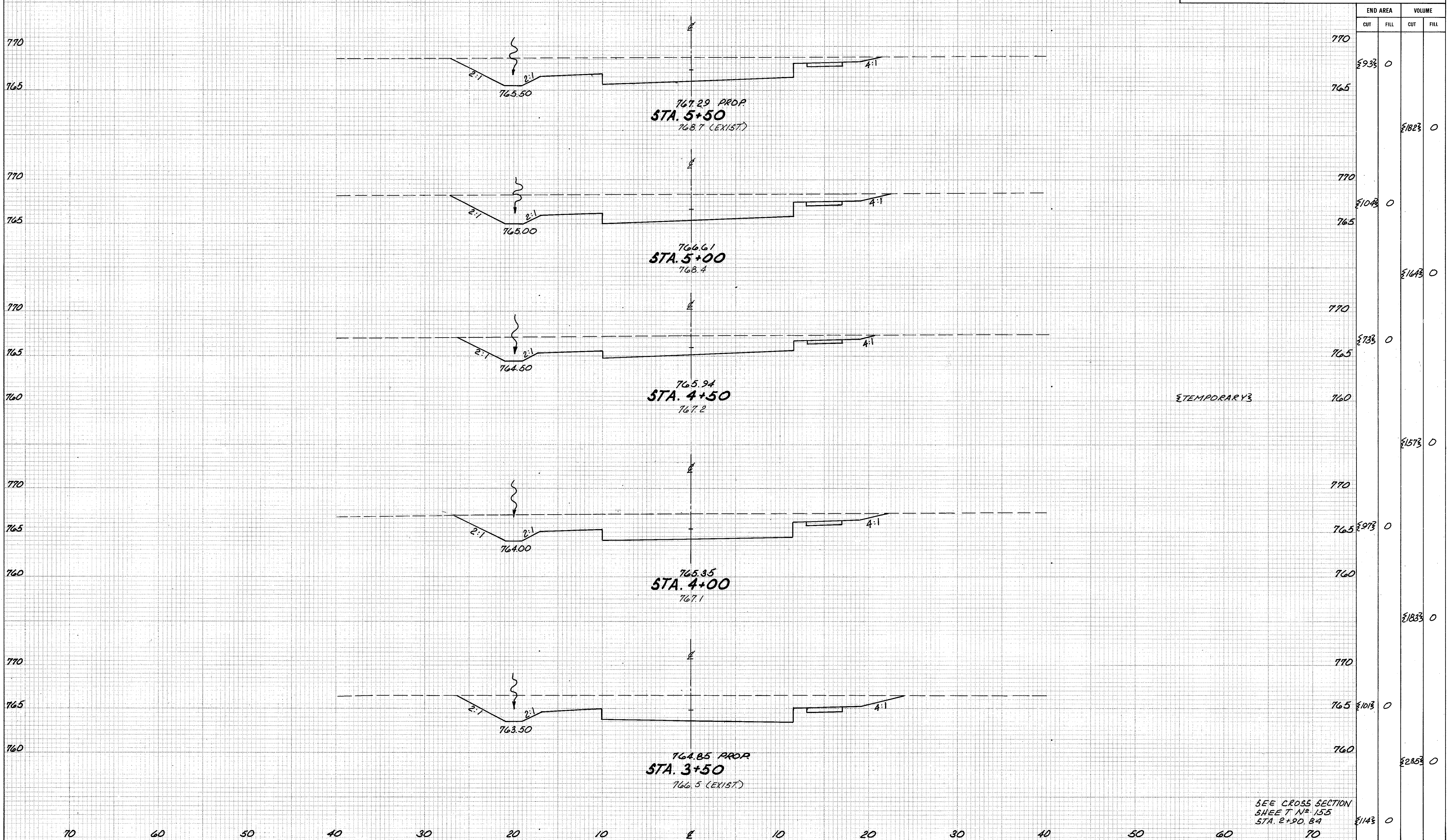
PART A

PART B

SEEDING
END WIDTH SQ. YDS.

CALC. DATE: CUYAHOGA COUNTY OHIO
CHKD. DATE: CUY-176-10.14 F.H.W.A. 5
DATE: REGION

21
1995



END AREA		VOLUME	
CUT	FILL	CUT	FILL
770	770		
765	765	5933	0
			1823
770	770		
765	765	1043	0
			1643
770	770		
765	765	733	0
760	760		1573
			1573
770	770		
765	765	973	0
760	760		1833
			1833
770	770		
765	765	1013	0
760	760		2353
			2353
770	770		
765	765	1143	0
760	760		

TEMPORARY

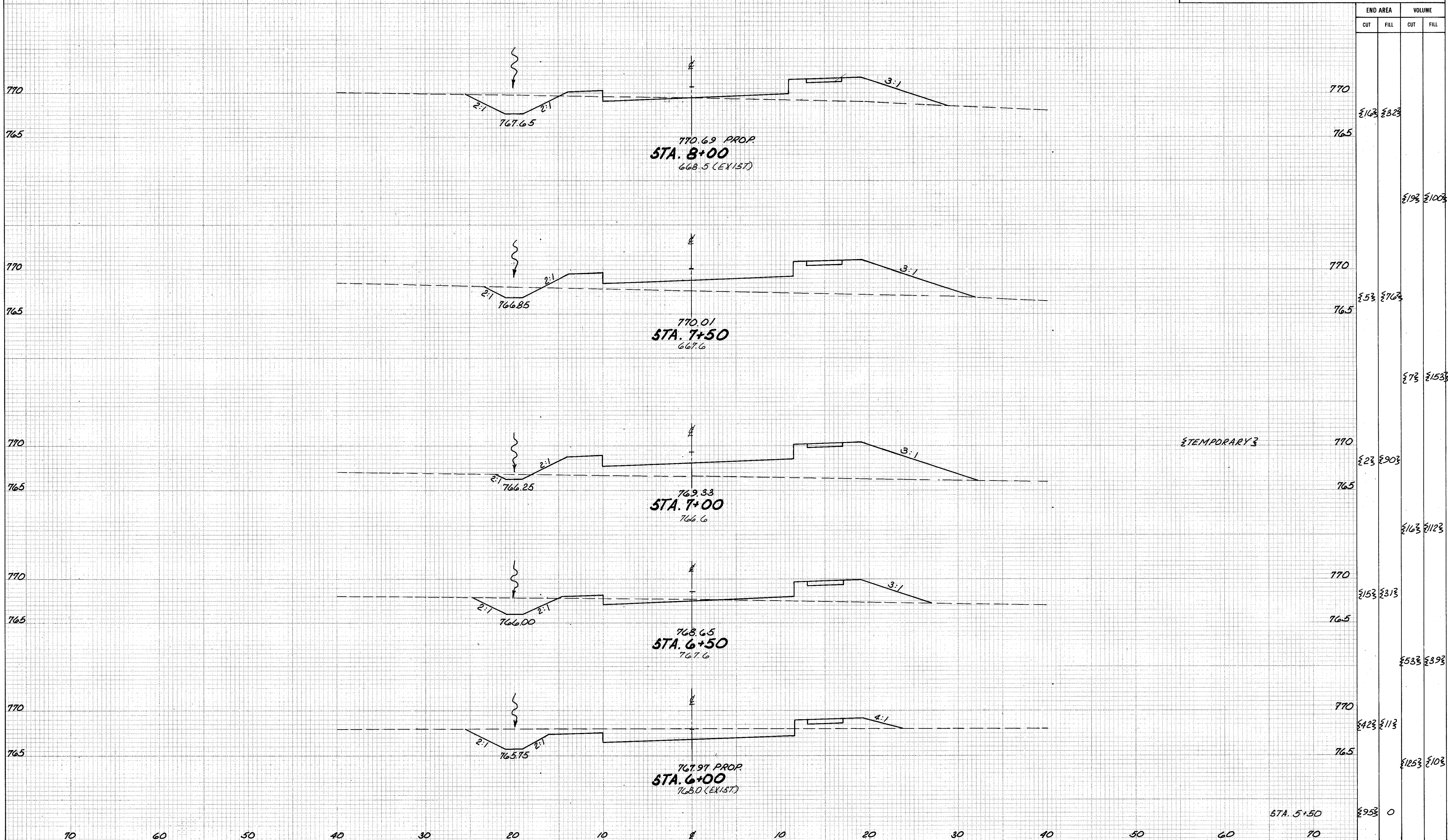
SEE CROSS SECTION SHEET NO. 155 STA. 2+90.84

TEMPORARY SCHAAF RD. CROSS SECTIONS STA. 3+50 TO STA. 5+50

RELOC. S.R. -176

SEEDING
END WIDTH SQ YDS.

CALC. DATE: CUYAHOGA COUNTY OHIO
CHKD. DATE: CUY-176-10.14 F.H.W.A. REGION 5
DATE: 22 395



TEMPORARY SCHAAF RD. CROSS SECTIONS STA. 6+00 TO STA. 8+00

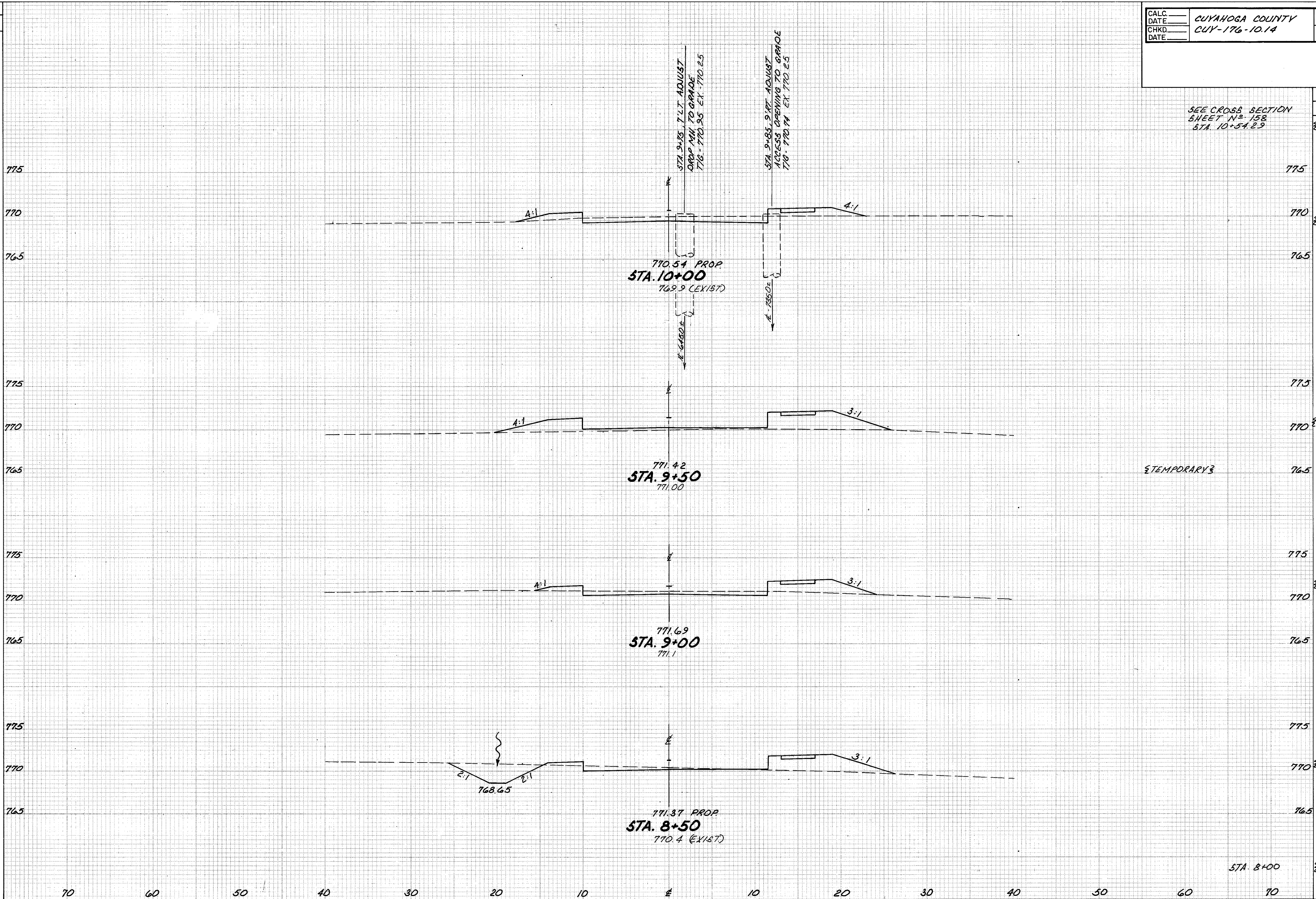
DRAWING BOARD FORM A-100, REV. 5-1

RELOC. S.R. -176

SEEDING
END WIDTH SQ. YDS.

CALC. DATE: CUYAHOGA COUNTY OHIO
CHKD. DATE: CUY-176-10.14 F.H.W.A. REGION 5
DATE: 395

23
395



SEE CROSS SECTION SHEET N^o. 158 STA. 10+54.29

END AREA	VOLUME	
	CUT	FILL
775	831 3/8	813
770	813 3/8	813 3/8
765		
775		
770	838 3/8	0
765		
775		
770	898 3/8	817 3/8
765		
775		
770	820 3/8	821 3/8
765		
775		
770	816 3/8	832 3/8
765		
775		
770	833 3/8	850 3/8
765		
775		
770	816 3/8	832 3/8
765		

TEMPORARY SCHAAF RD. CROSS SECTIONS STA. 8+50 TO STA. 10+00

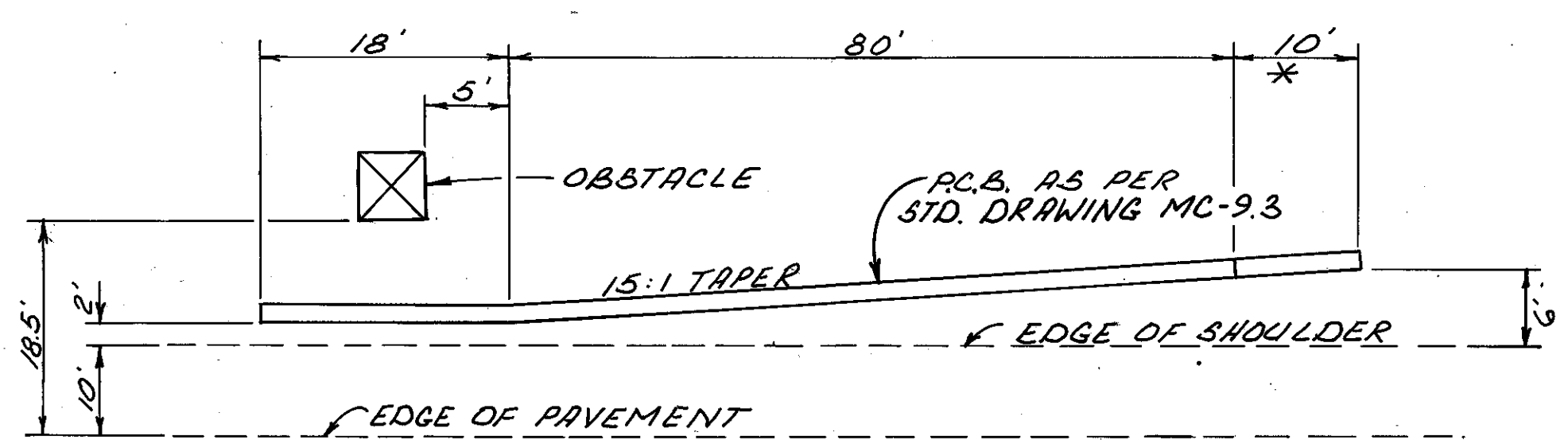
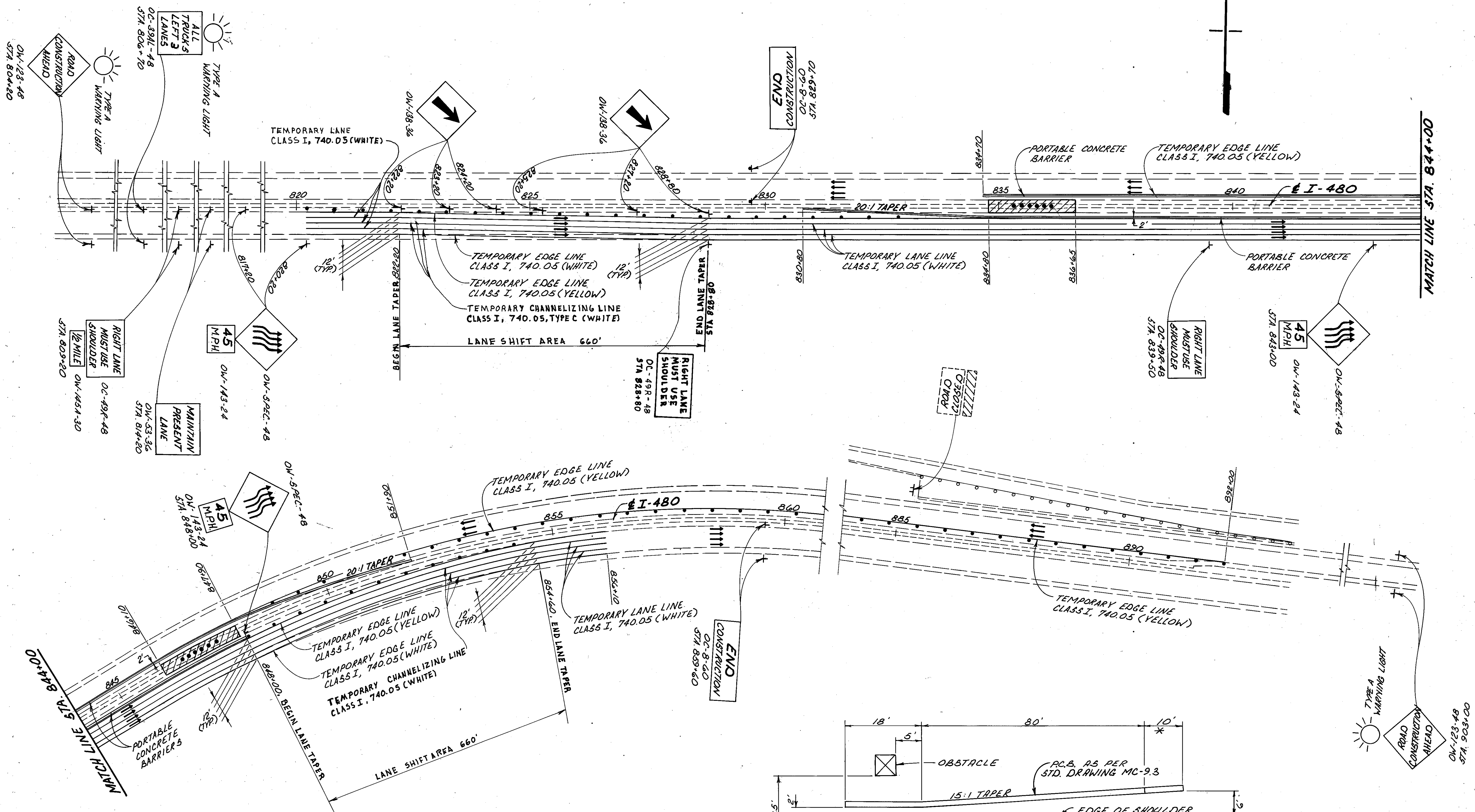
RELOC. S.R. - 176

DRAWING BOARD FORMER P.C. NO. 8-2

PHASE I

CALC.	CUYAHOGA COUNTY	OHIO
DATE		
CHKD.	CUY-176-10.14	F.H.W.A. 5
DATE		REGION

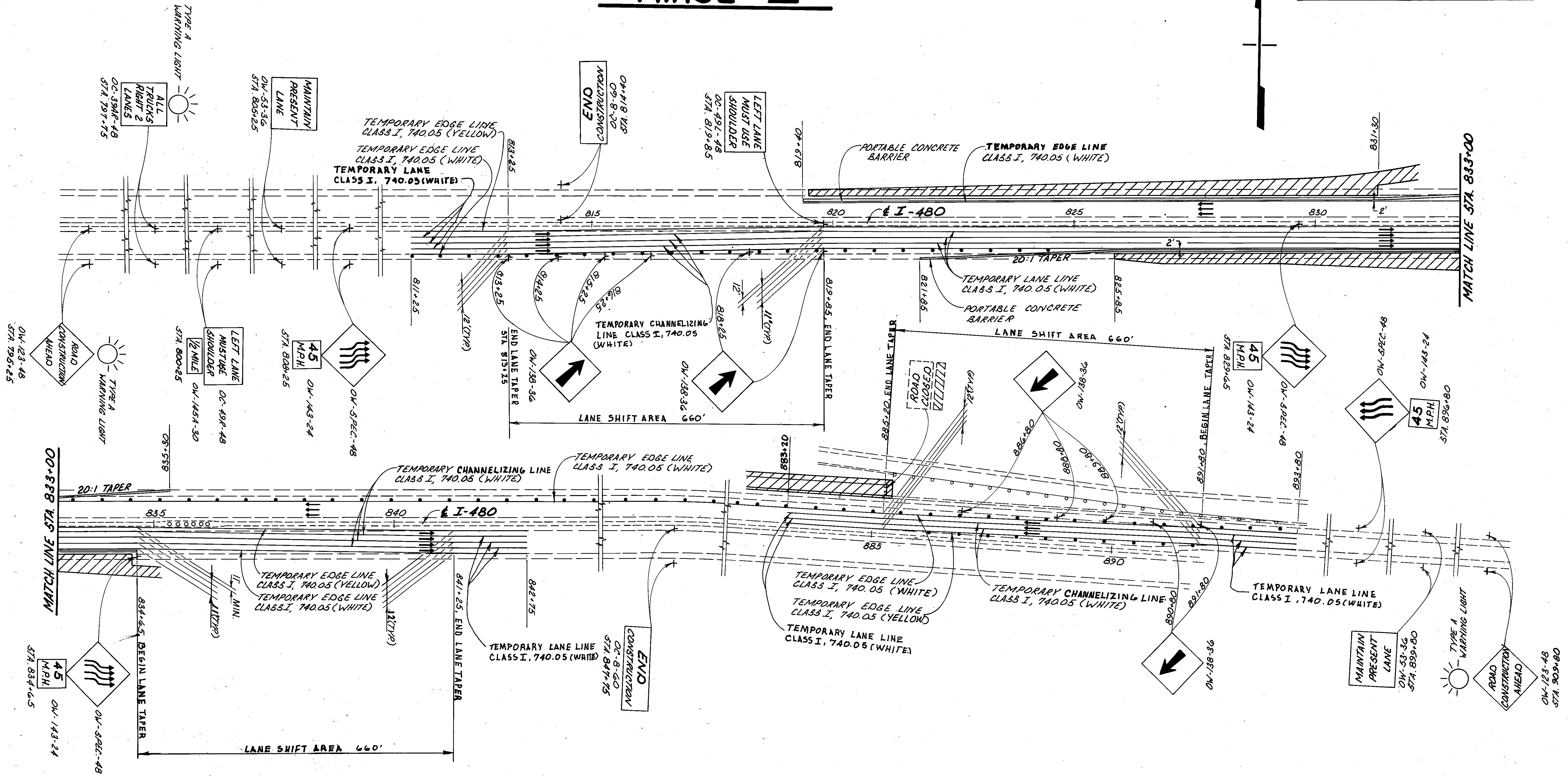
24
395



PHASE II

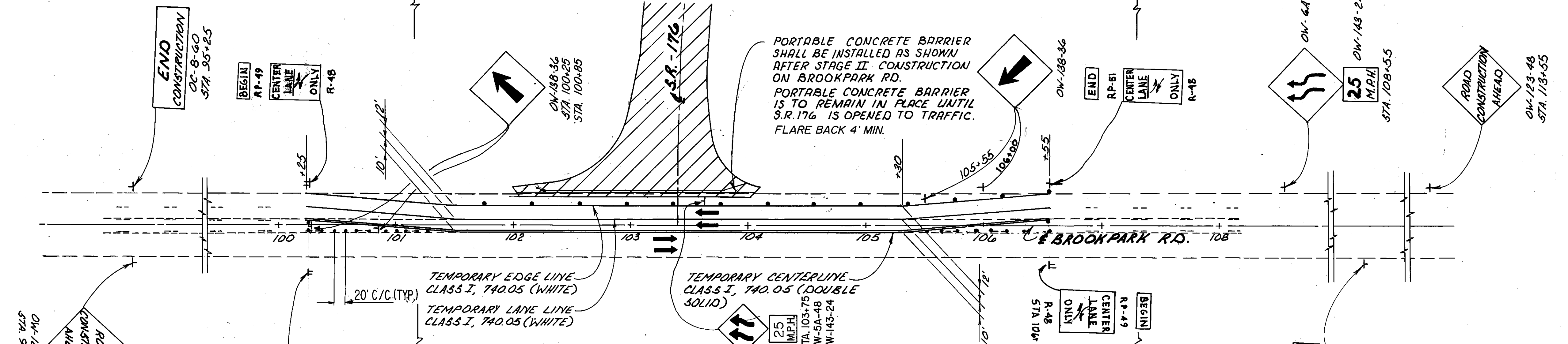
CALC.	CUYAHOGA COUNTY	OHIO
DATE		
CHKD.	CUY-176-10.14	F.H.W.A. REGION 5
DATE		

25
395



TEMPORARY STRIPING QUANTITIES

LOCATION # DENOTES TEMP SCHAFF RD.	614												622	
	20100	20300	21100	21300	22100	22300	22100	22300	23600	13300	13350	40020		
	TEMPORARY LANE LINE CLASS I (WHITE)	TEMPORARY CENTERLINE CLASS I (DOUBLE SOLID)	TEMPORARY EDGE LINE CLASS I (WHITE)	TEMPORARY EDGE LINE CLASS I (YELLOW)	TEMPORARY CHANNELIZING LINE CLASS I (WHITE)	BARRIER REFLECTOR TYPE B	OBJECT MARKER	PORTABLE CONCRETE BARRIER 32"						
	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	EACH	EACH	L.F.		
SCHAFF RD.														
STAGE 1A														
10+75 17+00 RT.							625							
22+50 26+50 RT.							400							
STAGE II														
12+25 14+50 LT.							225							
14+50 15+37.69 RT.							88							
#1+21.95 11+25 LT.					1003									
11+25 13+64.22 LT.							239							
27+04.54 29+08.54 LT.							204							
12+75 15+37.69 RT.														
4+21.95 11+60 -				1028										
11+50 13+64.22 -				214										
17+50 22+00										3	3	65		
STAGE III A														
11+46 22+9A							1148							
13+50 21+44				794										



T-480:												
PHASE I												
820+20	822+20	RT.										
822+20	828+80	RT.	600			200	200			1980		
828+80	848+00	RT.	5760			1920	1920			1980		
848+00	854+60	RT.				660	660					
854+60	856+10	RT.	450			150	150					
854+70	892+00	LT.					5730					
830+80	848+00	RT.								69	71	1720
834+70	851+90	LT.								69	71	1720
PHASE II												
811+25	813+25	RT.	600			200	200					
813+25	819+85	RT.				660	660			1980		
819+85	834+65	RT.	4440			1480	1480					
834+65	841+25	RT.				660	660			1320		
841+25	842+75	RT.	450			150	150					
819+40	883+20	LT.					6380					
883+20	885+20	LT.	400			200	200					
885+20	891+80	LT.				660	660			1320		
891+80	893+80	LT.	400			200	200					
821+85	834+65	RT.								51	53	1280
819+40	835+30	LT.								64	66	1590
BROOK PARK RD:												
100+25	106+55		630		630	630						
101+50	104+55									12	14	305
TOTAL												
MILES			3.730	1028	1901	1003	17.739	13530	8580	271	285	6745

* 642 PAINT
** 740.05 TYPE C

GENERAL SUMMARY

S H E E T										N U M B E R S										P&P SUB- TOTAL	ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	FOR AS PER PLAN SEE SHT. NO.
ITEM	10	11	12	14	15	16	17	26	33	34	35	36	37	41	43	160	174	177								
DRAINAGE (CONTINUED)																										
604																		10	604	01601	10	EACH	CATCH BASIN NO. 5, AS PER PLAN	183		
604																		2	604	01701	2	EACH	CATCH BASIN, NO. 5 WITH B GRATE, AS PER PLAN	183		
604																		1	604	01801	1	EACH	CATCH BASIN, NO. 5A, AS PER PLAN	183		
604																		2	604	02000	2	EACH	CATCH BASIN, NO. 6			
604			5															2	604	04500	7	EACH	CATCH BASIN, NO. 2-2B			
604																		4	604	09000	4	EACH	CATCH BASIN ADJUSTED TO GRADE			
604																		2	604	09001	2	EACH	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	12		
604																		5	604	09500	5	EACH	CATCH BASIN RECONSTRUCTED TO GRADE			
604																		2	604	09501	2	EACH	CATCH BASIN RECONSTRUCTED TO GRADE, AS PER PLAN	189		
604			5															5	604	10100	5	EACH	INLET, NO. 1			
604																		5	604	14602	5	EACH	INLET, NO. 3B50, (SEE PROPOSAL NOTE)			
604																		1	604	17900	1	EACH	INLET, NO. 2-A-8, (SEE PROPOSAL NOTE)			
604																		5	604	20600	5	EACH	INLET ADJUSTED TO GRADE			
604																	4	604	31501	7	EACH	MANHOLE, NO. 3, AS PER PLAN	12			
604																		2	604	32101	2	EACH	MANHOLE, NO. 5, AS PER PLAN, WITH 70611 JOINTS	12		
604																		3	604	34501	3	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	10		
604																		1	604	35501	1	EACH	MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN	183		
SPECIAL																		5	SPECIAL	60436600	5	EACH	PRECAST REINFORCED CONCRETE OUTLET			
SPECIAL				2000															SPECIAL	60450000	2000	POUND	MISCELLANEOUS METAL			
605																		11206	605	11110	11206	LIN FT	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP			
605																		13649	605	12210	13649	LIN FT	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP			
605				1300															605	13300	1300	LIN FT	6" UNCLASSIFIED PIPE UNDERDRAIN, 707.17, ASTM D-3034,			
605				1000															605	13301	1000	LIN FT	6" UNCLASSIFIED PIPE UNDERDRAIN, AS PER PLAN, 707.17, ASTM D-3034,	189		
605																		7748	605	13410	7748	LIN FT	6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP			
605				100															605	32200	100	LIN FT	AGGREGATE DRAIN FOR SPRINGS			
PAVEMENT																										
203									59001								20715	203	50000	82088	SQ YD	SUBGRADE COMPACTION				
254									2311									254	01000	2311	SQ YD	PAVEMENT PLANING, BITUMINOUS, 1 1/4" MIN.				
301																		301	10002	20	CU YD	BITUMINOUS AGGREGATE BASE, AC-20				
304																79		304	20000	114	CU YD	AGGREGATE BASE				
305									68									305	13001	68	SQ YD	9" CONCRETE BASE, AS PER PLAN	11			
305									1682								3074	305	14001	4756	SQ YD	10" CONCRETE BASE, AS PER PLAN	11			
310										9678							3440	310	20000	13298	CU YD	SUBBASE, TYPE II, (SEE PROPOSAL NOTE)				
402										245								402	20000	255	CU YD	ASPHALT CONCRETE, AC-20				
404										255						2		404	20000	265	CU YD	ASPHALT CONCRETE, AC-20				
407										734								407	10000	734	GALLON	TACK COAT				
408																11		408	10000	95	GALLON	BITUMINOUS PRIME COAT				
448											374							448	14101	374	CU YD	ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1, (UNDER GUARDRAIL), AS PER PLAN	11			
SPECIAL											3313							SPECIAL	45014000	3313	LIN FT	SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINT, 705.04				
451																89		451	13000	89	SQ YD	8" REINFORCED CONCRETE PAVEMENT				
451											2410							451	14001	2410	SQ YD	9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN	11			
451											20080						17316	451	16000	37396	SQ YD	12" REINFORCED CONCRETE PAVEMENT				
451											7041							451	16001	7041	SQ YD	12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN	11			
SPECIAL																	370	SPECIAL	45130000	370	LIN FT	PRESSURE RELIEF JOINT, TYPE A				
452																286		452	10000	286	SQ YD	6" PLAIN CONCRETE PAVEMENT				
452											20476						256	452	15000	20732	SQ YD	12" PLAIN CONCRETE PAVEMENT				
452											4505							452	15001	4505	SQ YD	12" PLAIN CONCRETE PAVEMENT, AS PER PLAN	11			
SPECIAL																	388	SPECIAL	51614010	388	LIN FT	POURED POLYURETHANE JOINT SEAL				
SPECIAL																	388	SPECIAL	51614600	388	LIN FT	STRUCTURAL JOINT OR JOINT SEALER MISC.: 4"X4" JOINT SEAL (BITUMEN IMPREGNATED FOAM)				
611												197						611	25000	197	SQ YD	REINFORCED CONCRETE APPROACH SLAB (T=15")				
611													763					611	30000	763	SQ YD	REINFORCED CONCRETE APPROACH SLAB (T=17")				
611														578				611	98100	578	SQ YD	APPROACH SLAB, MISC.: (T=19")				

CALCULATIONS

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 202 - PAVEMENT REMOVED					
EXT. 23000					
SCHAAF RD.					
STA. 15 + 00.00 TO STA. 23 + 60.00	860.00	40.00		3,822.2	SQ. YD.
BROOKPARK RD.					
STA. 101 + 49.54 TO STA. 104 + 54.88 LT	305.34	2.00		67.9	SQ. YD.
				=====	
			TOTAL	3,890	SQ. YD.
ITEM 202 - WALK REMOVED					
EXT. 30000					
SCHAAF RD.					
STA. 15 + 00.00 TO STA. 23 + 60.00 LT	860.00	6.00		5,160.0	SQ. FT.
STA. 15 + 00.00 TO STA. 23 + 60.00 RT	860.00	6.00		5,160.0	SQ. FT.
DEDUCT FOR DRIVES LT. & RT.	(204.00)	6.00		(1,224.00)	SQ. FT.
				=====	
				9096	SQ. FT.
BROOKPARK RD.					
STA. 101 + 49.54 TO STA. 104 + 54.88 LT	305.34	6.00		1,832.0	SQ. FT.
STA. 102 + 65.00 TO STA. 102 + 92.00 RT	27.00	6.00		162.0	SQ. FT.
STA. 103 + 10.00 TO STA. 103 + 71.00 RT	61.00	6.00		366.0	SQ. FT.
STA. 103 + 90.00 TO STA. 104 + 15.00 RT	25.00	6.00		150.0	SQ. FT.
STA. 104 + 54.88 TO STA. 104 + 80.00 LT	25.12	6.00		150.7	SQ. FT.
DEDUCT FOR DRIVES LT. & RT.	(105.00)	6.00		(630.00)	SQ. FT.
				=====	
				2,030.8	SQ. FT.
			TOTAL	11,127	SQ. FT.
ITEM 202 - CURB REMOVED					
EXT. 32000					
SCHAAF RD.					
STA. 15 + 00.00 TO STA. 23 + 60.00 LT	860.00			860.0	SQ. FT.
STA. 15 + 00.00 TO STA. 23 + 60.00 RT	860.00			860.0	SQ. FT.
				=====	
				1,720.0	SQ. FT.
BROOKPARK RD.					
STA. 102 + 65.00 TO STA. 104 + 15.00 RT	150.00			150.0	SQ. FT.
STA. 101 + 49.54 TO STA. 104 + 54.88 LT	305.34			305.3	SQ. FT.
STA. 104 + 54.88 TO STA. 104 + 80.00 LT	25.12			25.1	SQ. FT.
				=====	
				480.5	SQ. FT.
			TOTAL	2,201	SQ. FT.
ITEM 203 - SUBGRADE COMPACTION					
EXT. 50000					
ITEM 305 - 10" CONCRETE BASE, AS PER PLAN				1,682	SQ. YD.
ITEM 305 - 9" CONCRETE BASE, AS PER PLAN				68	SQ. YD.
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT				20,080	SQ. YD.
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN				7,041	SQ. YD.
ITEM 451 - 9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN				2,410	SQ. YD.
ITEM 452 - 12" PLAIN CONCRETE PAVEMENT				20,476	SQ. YD.
ITEM 452 - 12" PLAIN CONCRETE PAVEMENT, AS PER PLAN				4,505	SQ. YD.
ITEM 611 - APPROACH SLAB, MISC.: (T=19')				578	SQ. YD.
ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=17')				763	SQ. YD.
ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=15')				197	SQ. YD.
ITEM 622 - 50' CONCRETE BARRIER TYPE 'C', AS PER PLAN					
WITH DEDUCTIONS FOR APPROACH SLABS (75')	1683	3.5		654.5	SQ. YD.
ITEM 622 - 50' CONCRETE BARRIER TYPE 'B', AS PER PLAN					
WITHOUT DEDUCTIONS	1405.6	3.5		546.6	SQ. YD.
				=====	
			TOTAL	59,001	SQ. YD.

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 203 - LINEAR GRADING					
EXT. 60000					
I - 480					
ITEM 448 LENGTH	649.00			6.5	STATION
S.R. - 176					
ITEM 448 LENGTH	2093.00			20.9	STATION
DBW - JN					
ITEM 448 LENGTH	1108.00			11.1	STATION
DBE - JN					
ITEM 448 LENGTH	888.00			8.9	STATION
JN - DBW					
ITEM 448 LENGTH	1843.00			18.4	STATION
JN - DBE					
ITEM 448 LENGTH	920.00			9.2	STATION
				=====	
			TOTAL	75	STATION
ITEM 254 - PAVEMENT PLANNING, BITUMINOUS, 1 1/4" MIN.					
EXT. 01000					
BROOKPARK RD.					
STA. 101 + 00.00 TO STA. 105 + 00.00	400.00	52.00		2,311.1	SQ. YD.
				=====	
			TOTAL	2,311	SQ. YD.
ITEM 305 - 9" CONCRETE BASE, AS PER PLAN					
EXT. 13001					
BROOKPARK ROAD					
STA. 101 + 49.54 TO STA. 104 + 54.88	305.34	2.00		67.9	SQ. YD.
				=====	
			TOTAL	68	SQ. YD.
ITEM 305 - 10" CONCRETE BASE, AS PER PLAN					
EXT. 14001					
DBW-JN RIGHT SHOULDER					
STA. 825 + 85.57 TO STA. 826 + 85.57	100.00	9.00		100.0	SQ. YD.
STA. 826 + 85.57 TO STA. 834 + 59.18	773.61	8.00		687.7	SQ. YD.
				=====	
				787.7	SQ. YD.
JN-DBW RIGHT SHOULDER					
STA. 819 + 50.00 TO STA. 820 + 00.00	50.00	9.00		50.0	SQ. YD.
STA. 820 + 00.00 TO STA. 829 + 50.00	950.00	8.00		844.4	SQ. YD.
				=====	
				894.4	SQ. YD.
				=====	
			TOTAL	1,682	SQ. YD.
ITEM 310 - SUBBASE TYPE II, (SEE PROPOSAL NOTE)					
EXT. 20000					
ITEM 305 - 9" CONCRETE BASE, AS PER PLAN	68	SQ. YD.	6	11.3	CU. YD.
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT	20,080	SQ. YD.	6	3,346.6	CU. YD.
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN	7,041	SQ. YD.	6	1,173.6	CU. YD.
ITEM 451 - 9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN	2,410	SQ. YD.	6	401.6	CU. YD.
				=====	
				4,933.1	CU. YD.

CALCULATIONS

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 310 - SUBBASE TYPE II, (SEE PROPOSAL NOTE)(CONTINUED)					
RELOCATED S.R. 176 MEDIAN					
STA. 93 + 00.00 TO STA. 94 + 07.63	107.63	16.00	4.68	24.9	CU. YD.
STA. 100 + 19.32 TO STA. 110 + 00.00	980.68	16.00	4.68	226.6	CU. YD.
STA. 110 + 00.00 TO STA. 113 + 00.00	300.00	21.00	5.52	107.3	CU. YD.
STA. 113 + 00.00 TO STA. 130 + 00.00	1,700.00	26.00	6.36	867.6	CU. YD.
				1,226.5	CU. YD.
RELOCATED S.R. 176 SHOULDERS					
SUM OF 8' WIDE SHOULDER	3,890.85	8.00	5.76	553.4	CU. YD.
SUM OF 5' WIDE SHOULDER	120.45	5.00	4.80	8.9	CU. YD.
				562.3	CU. YD.
DBW-JN SHOULDERS					
SUM OF 4' WIDE SHOULDER	1,443.63	4.00	4.56	81.3	CU. YD.
SUM OF 8' WIDE SHOULDER	2,624.54	8.00	5.76	373.3	CU. YD.
SUM OF 9' WIDE SHOULDER	100.00	9.00	6.12	17.0	CU. YD.
				471.5	CU. YD.
WBOL SHOULDERS					
SUM OF 5' WIDE SHOULDER	1,678.00	5.00	4.80	124.3	CU. YD.
SUM OF 10' WIDE SHOULDER	1,678.00	10.00	6.48	335.6	CU. YD.
				459.9	CU. YD.
DBE-JN SHOULDERS					
SUM OF 10' SHOULDER	2,527.14	10.00	6.48	505.4	CU. YD.
SUM OF 4' SHOULDER	2,527.14	4.00	4.56	142.3	CU. YD.
				647.7	CU. YD.
JN-DBW SHOULDERS					
SUM OF 8' WIDE SHOULDER	3,082.21	8.00	5.76	438.4	CU. YD.
SUM OF 9' WIDE SHOULDER	100.00	9.00	6.12	17.0	CU. YD.
SUM OF 10' WIDE SHOULDER	1,355.34	10.00	6.48	271.1	CU. YD.
SUM OF 4' WIDE SHOULDER	2,107.56	4.00	4.56	118.6	CU. YD.
				845.1	CU. YD.
JN-DBE SHOULDERS					
SUM OF 10' WIDE SHOULDER	970.34	10.00	6.48	194.1	CU. YD.
SUM OF 4' WIDE SHOULDER	1,418.91	4.00	4.56	79.9	CU. YD.
				273.9	CU. YD.
RELOC. S.R. 176 APPROACH SLABS					
MAIN PAVEMENT	75.00	32.00	6.00	44.4	CU. YD.
MEDIAN	75.00	16.00	4.68	17.3	CU. YD.
SHOULDERS	150.00	11.50	6.96	37.1	CU. YD.
				98.8	CU. YD.
DBW-JN APPROACH SLABS					
MAIN PAVEMENT	80.00	16.00	6.00	23.7	CU. YD.
LEFT SHOULDER	80.00	7.50	5.64	10.4	CU. YD.
RIGHT SHOULDER	80.00	9.50	6.36	14.9	CU. YD.
				49.1	CU. YD.
JN-DBE APPROACH SLABS					
MAIN PAVEMENT	60.00	24.00	6.00	26.7	CU. YD.
LEFT SHOULDER	60.00	7.50	5.64	7.8	CU. YD.
RIGHT SHOULDER	60.00	11.50	6.96	14.8	CU. YD.
				49.3	CU. YD.
SCHAAF RD. APPROACH SLABS					
MAIN PAVEMENT	60.00	55.00	6.00	61.1	CU. YD.
				9,678	CU. YD.

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 402 - ASPHALT CONCRETE AC-20					
EXT. 20000					
DBW-JN					
STA. 825 + 85.57 TO STA. 826 + 02.36	16.79	10.00	1.75	0.9	CU. YD.
STA. 826 + 02.36 TO STA. 826 + 86.83	84.47	15.00	1.75	6.8	CU. YD.
STA. 826 + 86.83 TO STA. 829 + 39.22	252.39	20.00	1.75	27.3	CU. YD.
STA. 829 + 39.22 TO STA. 834 + 59.18	519.96	33.50	1.75	94.1	CU. YD.
				129.1	CU. YD.
JN-DBW					
STA. 819 + 50.00 TO STA. 820 + 30.00	80.00	10.00	1.75	4.3	CU. YD.
STA. 820 + 30.00 TO STA. 829 + 50.00	920.00	21.50	1.75	106.8	CU. YD.
				111.2	CU. YD.
BROOKPARK					
STA. 101 + 00.00 TO STA. 105 + 00.00	400.00	2.00	1.75	4.3	CU. YD.
				TOTAL	245 CU. YD.
ITEM 404 - ASPHALT CONCRETE AC-20					
EXT. 20000					
DBW-JN					
STA. 825 + 85.57 TO STA. 826 + 02.36	16.79	10.00	1.25	0.6	CU. YD.
STA. 826 + 02.36 TO STA. 826 + 86.83	84.47	15.00	1.25	4.9	CU. YD.
STA. 826 + 86.83 TO STA. 829 + 39.22	252.39	20.00	1.25	19.5	CU. YD.
STA. 829 + 39.22 TO STA. 834 + 59.18	519.96	33.50	1.25	67.2	CU. YD.
				92.2	CU. YD.
JN-DBW					
STA. 819 + 50.00 TO STA. 820 + 30.00	80.00	10.00	1.25	3.1	CU. YD.
STA. 820 + 30.00 TO STA. 829 + 50.00	920.00	21.50	1.25	76.3	CU. YD.
				79.4	CU. YD.
BROOKPARK					
STA. 101 + 00.00 TO STA. 105 + 00.00	400.00	54.00	1.25	83.3	CU. YD.
				TOTAL	255 CU. YD.
ITEM 407 - TACK COAT					
EXT. 10000					
DBW-JN					
(AREA IN SQ. YD.) X 0.1 GAL./SQ. YD. AREA = 2655.68 SQ. YD.				265.6	GAL.
JN-DBW					
(AREA IN SQ. YD.) X 0.1 GAL./SQ. YD. AREA = 2286.67 SQ. YD.				228.7	GAL.
BROOKPARK					
(AREA IN SQ. YD.) X 0.1 GAL./SQ. YD. AREA = 2399.04 SQ. YD.				239.9	GAL.
				TOTAL	734 GAL.
ITEM 448 - ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1,					
(UNDER GUARDRAIL), AS PER PLAN					
EXT. 14101					
I - 480					
STA. 839 + 50.00 TO STA. 843 + 25.00 LT	375.00	5.00	3.00	17.4	CU. YD.
STA. 802 + 75.00 TO STA. 804 + 12.00 RT	137.00	5.00	3.00	6.3	CU. YD.
STA. 892 + 75.00 TO STA. 894 + 12.00 RT	137.00	5.00	3.00	6.3	CU. YD.
				30.0	CU. YD.
S.R. - 176					
STA. 92 + 68.00 TO STA. 94 + 30.00 RT	162.00	5.00	3.00	7.5	CU. YD.
STA. 92 + 88.00 TO STA. 94 + 13.00 LT	125.00	5.00	3.00	5.8	CU. YD.
STA. 99 + 60.00 TO STA. 104 + 00.00 LT	440.00	5.00	3.00	20.4	CU. YD.
STA. 103 + 15.00 TO STA. 108 + 75.00 RT	560.00	5.00	3.00	25.9	CU. YD.
STA. 110 + 38.00 TO STA. 111 + 75.00 RT	137.00	5.00	3.00	6.3	CU. YD.
STA. 117 + 50.00 TO STA. 121 + 00.00 LT	669.00	5.00	3.00	31.0	CU. YD.
				96.9	CU. YD.

CALCULATIONS

		LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 448 - ASPHALT CONCRETE, INTERMEDIATE COURSE, TYPE 1, (UNDER GUARDRAIL), AS PER PLAN (CONTINUED)						
DBW - JN						
STA.	37 + 00.00 TO STA. 43 + 43.00	LT	643.00	5.00	3.00	29.8 CU. YD.
STA.	42 + 50.00 TO STA. 45 + 15.00	RT	265.00	5.00	3.00	12.3 CU. YD.
STA.	48 + 80.00 TO STA. 49 + 80.00	LT	100.00	5.00	3.00	4.6 CU. YD.
STA.	48 + 95.00 TO STA. 49 + 95.00	RT	100.00	5.00	3.00	4.6 CU. YD.
						51.3 CU. YD.
DBE - JN						
STA.	94 + 00.00 TO STA. 95 + 34.00	RT	134.00	5.00	3.00	6.2 CU. YD.
STA.	103 + 00.00 TO STA. 106 + 60.00	RT	360.00	5.00	3.00	16.7 CU. YD.
STA.	105 + 20.00 TO STA. 107 + 50.00	LT	394.00	5.00	3.00	18.2 CU. YD.
						41.1 CU. YD.
JN-DBW						
STA.	31 + 00.00 TO STA. 41 + 18.00	RT	1,018.00	5.00	3.00	47.1 CU. YD.
STA.	52 + 88.00 TO STA. 58 + 13.00	RT	525.00	5.00	3.00	24.3 CU. YD.
STA.	54 + 50.00 TO STA. 57 + 50.00	LT	300.00	5.00	3.00	13.9 CU. YD.
						85.3 CU. YD.
JN - DBE						
STA.	41 + 00.00 TO STA. 42 + 60.00	LT	160.00	5.00	3.00	7.4 CU. YD.
STA.	41 + 40.00 TO STA. 43 + 00.00	RT	160.00	5.00	3.00	7.4 CU. YD.
STA.	50 + 15.00 TO STA. 51 + 40.00	RT	125.00	5.00	3.00	5.8 CU. YD.
STA.	50 + 45.00 TO STA. 55 + 20.00	LT	475.00	5.00	3.00	22.0 CU. YD.
STA.	94 + 50.00 TO STA. 99 + 40.00	LT	15.50	2.50	3.00	26.6 CU. YD.
						69.2 CU. YD.
(BLOCK-OUT IN CONCRETE MEDIAN FOR GUARDRAIL POSTS - SEE SHEET 4)						
						TOTAL 374 CU. YD.
ITEM SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS, 705.04						
EXT. 45014000						
OWN - JN						
STA.	825 + 85.57 TO STA. 834 + 59.18		27.36			1,203.8 LIN. FT.
LENGTH/20' SPACING = 873.61/20 = 44						
JN - DBW						
STA.	819 + 50.00 TO STA. 829 + 50.00		20.58			1,029.0 LIN. FT.
LENGTH/20' SPACING = 1000/20 = 50						
BROOKPARK RD.						
STA.	101 + 00.00 TO STA. 105 + 00.00		54.00			1,080.0 LIN. FT.
LENGTH/20' SPACING = 400/20 = 20						
						TOTAL 3,313 LIN. FT.
ITEM 451 - 9" REINFORCED CONCRETE PAVEMENT, AS PER PLAN EXT. 14001						
SCHAAAF ROAD						
STA.	15 + 00.00 TO STA. 16 + 05.30		105.30	41.00		479.7 SQ. YD.
STA.	16 + 05.30 TO STA. 17 + 84.56		179.26	47.00		936.1 SQ. YD.
STA.	21 + 70.40 TO STA. 21 + 77.87		7.47	53.00		44.0 SQ. YD.
STA.	21 + 77.87 TO STA. 23 + 57.87		180.00	47.00		940.0 SQ. YD.
STA.	23 + 57.87 TO STA. 23 + 60.00		2.13	41.00		9.7 SQ. YD.
						TOTAL 2,410 SQ. YD.

		LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT EXT. 16000						
RELOCATED S.R.-176 LEFT SIDE						
STA.	93 + 00.00 TO STA. 94 + 00.00		100.00	20.00		222.2 SQ. YD.
STA.	94 + 00.00 TO STA. 94 + 07.63		7.63	16.00		13.6 SQ. YD.
STA.	100 + 19.32 TO STA. 122 + 11.42		2,192.10	16.00		3,897.1 SQ. YD.
						4,132.9 SQ. YD.
RELOCATED S.R.-176 RIGHT SIDE						
STA.	93 + 00.00 TO STA. 94 + 07.63		107.63	16.00		191.3 SQ. YD.
STA.	100 + 19.32 TO STA. 113 + 58.02		1,338.70	16.00		2,379.9 SQ. YD.
						2,571.3 SQ. YD.
DBW-JN						
STA.	34 + 54.47 TO STA. 44 + 89.83		1,035.36	16.00		1,840.6 SQ. YD.
STA.	48 + 78.24 TO STA. 53 + 44.10		465.86	16.00		828.2 SQ. YD.
						2,668.8 SQ. YD.
DBE-JN						
STA.	91 + 73.69 TO STA. 117 + 00.83		2,527.14	24.00		6,739.0 SQ. YD.
JN-DBW						
STA.	37 + 84.13 TO STA. 38 + 84.14		100.01	36.00		400.0 SQ. YD.
STA.	43 + 53.08 TO STA. 63 + 59.83		2,006.75	16.00		3,567.6 SQ. YD.
						3,967.6 SQ. YD.
						TOTAL 20,080 SQ. YD.
ITEM 451 - 12" REINFORCED CONCRETE PAVEMENT, AS PER PLAN EXT. 16001						
WBCL						
STA.	74 + 62.00 TO STA. 91 + 40.00		1,678.00	24.00		4,474.7 SQ. YD.
JN-DBE						
STA.	43 + 57.71 TO STA. 43 + 86.41		28.70	24.00		76.5 SQ. YD.
STA.	37 + 91.50 TO STA. 42 + 93.14		501.64	24.00		1,337.7 SQ. YD.
STA.	50 + 27.85 TO STA. 54 + 60.00		432.15	24.00		1,152.4 SQ. YD.
						2,566.6 SQ. YD.
						TOTAL 7,041 SQ. YD.
ITEM 452 - 12" PLAIN CONCRETE PAVEMENT EXT. 15000						
RELOC. S.R. 176 LT SHOULDER						
STA.	91 + 84.89 TO STA. 92 + 53.34		68.45	5.00		38.0 SQ. YD.
STA.	92 + 53.34 TO STA. 94 + 07.63		154.29	8.00		137.1 SQ. YD.
STA.	100 + 19.32 TO STA. 122 + 11.42		2,192.10	8.00		1,948.5 SQ. YD.
						2,123.7 SQ. YD.
RELOC. S.R. 176 RT SHOULDER						
STA.	91 + 49.87 TO STA. 92 + 01.87		52.00	5.00		28.9 SQ. YD.
STA.	92 + 01.87 TO STA. 94 + 07.63		205.76	8.00		182.9 SQ. YD.
STA.	100 + 19.32 TO STA. 113 + 58.02		1,338.70	8.00		1,190.0 SQ. YD.
						1,401.7 SQ. YD.

CALCULATIONS

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 452 - 12' PLAIN CONCRETE PAVEMENT (CONTINUED)					
RELOC. S.R. 176 MEDIAN					
STA. 93 + 00.00 TO STA. 94 + 07.63	107.63	12.50		149.5	SQ. YD.
STA. 100 + 19.32 TO STA. 110 + 00.00	980.68	12.50		1,362.1	SQ. YD.
STA. 110 + 00.00 TO STA. 113 + 00.00	300.00	17.50		583.3	SQ. YD.
STA. 113 + 00.00 TO STA. 130 + 00.00	1,700.00	22.50		4,250.0	SQ. YD.
				6,344.9	SQ. YD.
DBW-JN LT SHOULDER					
STA. 34 + 54.47 TO STA. 44 + 24.00	969.53	4.00		430.9	SQ. YD.
STA. 48 + 70.00 TO STA. 53 + 44.10	474.10	4.00		210.7	SQ. YD.
				641.6	SQ. YD.
DBW-JN RT SHOULDER					
STA. 34 + 54.47 TO STA. 44 + 89.83	1,035.36	8.00		920.3	SQ. YD.
STA. 48 + 78.24 TO STA. 56 + 93.81	815.57	8.00		725.0	SQ. YD.
				1,645.3	SQ. YD.
DBE-JN RT SHOULDER					
STA. 91 + 73.69 TO STA. 117 + 00.83	2,527.14	10.00		2,807.9	SQ. YD.
DBE-JN LT SHOULDER					
STA. 91 + 73.69 TO STA. 117 + 00.83	2,527.14	4.00		1,123.2	SQ. YD.
JN-DBW RT SHOULDER					
STA. 29 + 97.74 TO STA. 43 + 53.08	1,355.34	10.00		1,505.9	SQ. YD.
STA. 43 + 53.08 TO STA. 44 + 03.08	50.00	9.00		50.0	SQ. YD.
STA. 44 + 03.08 TO STA. 65 + 35.29	2,132.21	8.00		1,895.3	SQ. YD.
				3,451.2	SQ. YD.
JN-DBW LT SHOULDER					
STA. 37 + 84.13 TO STA. 38 + 84.14	100.01	4.00		44.4	SQ. YD.
STA. 43 + 52.80 TO STA. 63 + 60.35	2,007.55	4.00		892.2	SQ. YD.
				936.7	SQ. YD.
				20,476	SQ. YD.
ITEM 452 - 12' PLAIN CONCRETE PAVEMENT, AS PER PLAN					
EXT. 15001					
WBOL LT SHOULDER					
STA. 74 + 62.00 TO STA. 91 + 40.00	1,678.00	5.00		932.2	SQ. YD.
WBOL RT SHOULDER					
STA. 74 + 62.00 TO STA. 91 + 40.00	1,678.00	10.00		1,864.4	SQ. YD.
JN-DBE RT SHOULDER					
STA. 43 + 57.71 TO STA. 43 + 86.41	28.70	10.00		31.9	SQ. YD.
STA. 37 + 91.50 TO STA. 42 + 93.14	501.64	10.00		557.4	SQ. YD.
STA. 50 + 20.00 TO STA. 54 + 60.00	440.00	10.00		488.9	SQ. YD.
				1,078.2	SQ. YD.
JN-DBE LT SHOULDER					
STA. 38 + 84.14 TO STA. 43 + 86.41	502.27	4.00		223.2	SQ. YD.
STA. 37 + 91.50 TO STA. 42 + 93.14	501.64	4.00		223.0	SQ. YD.
STA. 50 + 45.00 TO STA. 54 + 60.00	415.00	4.00		184.4	SQ. YD.
				630.6	SQ. YD.
				4,505	SQ. YD.

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
ITEM 608 - 4' CONCRETE WALK					
EXT. 10000					
SCHAAF ROAD					
STA. 15 + 00.00 TO STA. 17 + 84.56 LT&RT	284.56	10.00		2,845.6	SQ. FT.
STA. 21 + 70.40 TO STA. 23 + 60.00 LT&RT	189.60	10.00		1,896.0	SQ. FT.
STA. 17 + 84.56 TO STA. 18 + 14.56 LT&RT	30.00	12.00		360.0	SQ. FT.
STA. 21 + 40.40 TO STA. 21 + 70.40 LT&RT	30.00	12.00		360.0	SQ. FT.
DEDUCT FOR DRIVES LT. & RT.	-204	5		(1,020.0)	SQ. FT.
				4,441.6	SQ. FT.
BROOKPARK RD.					
STA. 101 + 49.54 TO STA. 102 + 65.00 LT	115.46	6.00		692.8	SQ. FT.
STA. 103 + 75.00 TO STA. 104 + 54.88 LT	79.88	6.00		479.3	SQ. FT.
STA. 104 + 54.88 TO STA. 104 + 80.00 LT	25.12	6.00		150.7	SQ. FT.
STA. 102 + 65.00 TO STA. 104 + 15.00 RT	150.00	6.00		900.0	SQ. FT.
STA. 103 + 83.00	15.00	6.00		90.0	SQ. FT.
				2,312.8	SQ. FT.
				6,754	SQ. FT.
ITEM 608 - CURB RAMP TYPE 2					
EXT. 51000					
BROOKPARK RD.					
STA. 102 + 65 LT				1	EACH
STA. 103 + 75 LT				1	EACH
STA. 103 + 83 RT				1	EACH
				3	EACH
ITEM 609 - CURB TYPE 2-A					
EXT. 14000					
SCHAAF ROAD					
STA. 15 + 00.00 TO STA. 16 + 79.56 LT	179.56			179.6	LIN. FT.
STA. 15 + 00.00 TO STA. 16 + 79.56 RT	179.56			179.6	LIN. FT.
STA. 22 + 70.00 TO STA. 23 + 60.00 LT	90.00			90.0	LIN. FT.
STA. 22 + 83.00 TO STA. 23 + 60.00 RT	77.00			77.0	LIN. FT.
				526	LIN. FT.
ITEM 609 - CURB TYPE 6					
EXT. 26000					
BROOKPARK ROAD					
STA. 102 + 65.00 TO STA. 104 + 15.00 RT	150.00			150.0	LIN. FT.
STA. 104 + 54.88 TO STA. 104 + 80 LT	25.12			25.1	LIN. FT.
				175	LIN. FT.
ITEM 609 - CURB TYPE 7					
EXT. 28000					
SCHAAF RD.					
STA. 16 + 79.56 TO STA. 17 + 84.56 LT	105.00			105.0	LIN. FT.
STA. 16 + 79.56 TO STA. 17 + 84.56 RT	105.00			105.0	LIN. FT.
STA. 21 + 65.00 TO STA. 22 + 70.00 LT	105.00			105.0	LIN. FT.
STA. 21 + 78.00 TO STA. 22 + 83.00 RT	105.00			105.0	LIN. FT.
				420	LIN. FT.
ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=15')					
EXT. 25000					
RELOC. S.R. 176					
STA. 94 + 07.63 TO STA. 94 + 32.63	25.00	71.00		197.2	SQ. YD.
				197	SQ. YD.

CALCULATIONS

	LENGTH (FT.)	AVERAGE WIDTH (FT.)	DEPTH (IN.)	QUANTITY	UNITS
=====					
ITEM 611 - REINFORCED CONCRETE APPROACH SLAB (T=17')					
EXT. 30000					
SCHAAF ROAD					
STA. 17 + 84.56 TO STA. 18 + 14.56	30.00	55.00		183.3	SQ. YD.
STA. 21 + 40.40 TO STA. 21 + 70.40	30.00	55.00		183.3	SQ. YD.

				366.7	SQ. YD.
JN-DBE					
STA. 42 + 93.14 TO STA. 43 + 23.14	30.00	43.00		143.3	SQ. YD.
STA. 49 + 97.85 TO STA. 50 + 27.85	30.00	43.00		143.3	SQ. YD.

				286.7	SQ. YD.
DBW-JN					
STA. 48 + 48.24 TO STA. 48 + 78.24	30.00	33.00		110.0	SQ. YD.

				TOTAL	763 SQ. YD.
=====					
ITEM 611 - APPROACH SLAB, MISC.: (T=19")					
EXT. 98100					
DBW-JN					
STA. 44 + 89.83 TO STA. 45 + 39.83	50.00	33.00		183.3	SQ. YD.
RELDC. S.R. 176					
STA. 99 + 69.32 TO STA. 100 + 19.32	50.00	71.00		394.4	SQ. YD.

				TOTAL	578 SQ. YD.
=====					
ITEM 622 - 50' CONCRETE BARRIER TYPE 'B', AS PER PLAN					
EXT. 23405					
RELDC. S.R. 176					
STA. 115 + 94.40 TO STA. 130 + 00.00	1,405.60			1,405.6	LIN. FT.
DEDUCTIONS					
INLET @ STA. 119+50.00	20.00			(20.0)	LIN. FT.
OVERHEAD SIGN SUPPORT FOUNDATION @ STA. 125+00.00	10.00			(10.0)	LIN. FT.

				TOTAL	1,376 LIN. FT.
=====					
ITEM 622 - 50' CONCRETE BARRIER TYPE 'C', AS PER PLAN					
EXT. 23505					
RELDC. S.R. 176					
STA. 93 + 00.00 TO STA. 94 + 32.63	132.63			132.6	LIN. FT.
STA. 99 + 69.32 TO STA. 115 + 94.40	1,625.08			1,625.1	LIN. FT.
DEDUCTIONS					
INLET @ STA. 94 + 00.00	20.00			(20.0)	LIN. FT.
INLET @ STA. 103 + 50.00	20.00			(20.0)	LIN. FT.
INLET @ STA. 110 + 00.00	20.00			(20.0)	LIN. FT.

				TOTAL	1,698 LIN. FT.
=====					
ITEM 622 - CONCRETE BARRIER, AS PER PLAN					
EXT. 25001					
SCHAAF ROAD					
STA. 17 + 78.00 TO STA. 18 + 15.00 LT	37.00			37.0	LIN. FT.
STA. 17 + 53.00 TO STA. 18 + 15.00 RT	62.00			62.0	LIN. FT.
STA. 21 + 34.00 TO STA. 21 + 98.00 LT	64.00			64.0	LIN. FT.
STA. 21 + 50.00 TO STA. 21 + 98.00 RT	48.00			48.0	LIN. FT.

				TOTAL	211 LIN. FT.

ITEM 802 - BARRIER REFLECTOR, TYPE B2					
EXT. 00400					
SCHAAF ROAD					
STA. 18 + 14.56 TO STA. 21 + 40.40				RT & LT	8 EACH
ITEM 802 - BARRIER REFLECTOR, TYPE B					
EXT. 00200					
S.R. 176					
STA. 91 + 40.00 TO STA. 130 + 00.00				C	112 EACH
(BOTH SIDES OF BARRIER)					

STORM WATER POLLUTION PREVENTION PLAN

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

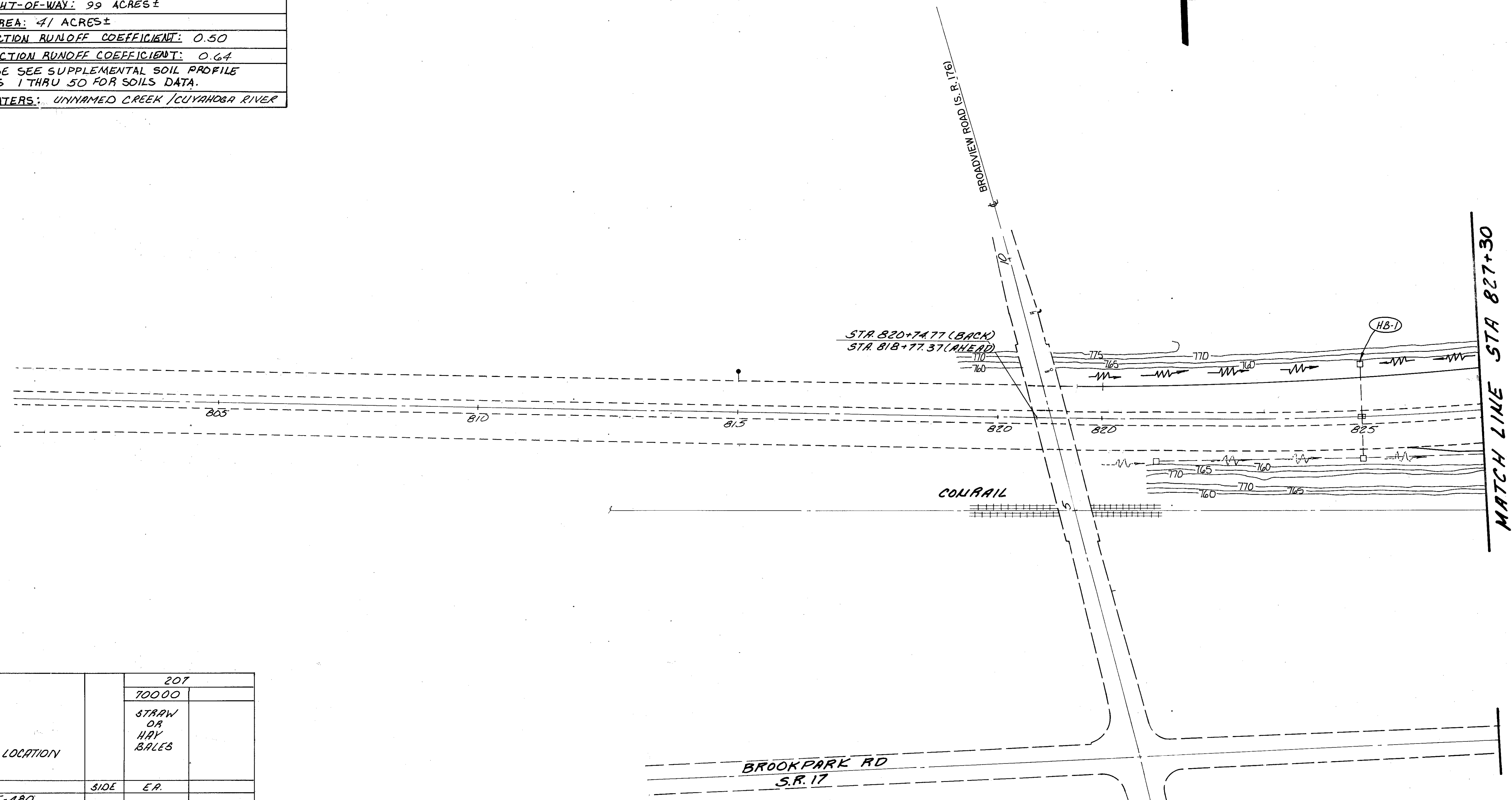
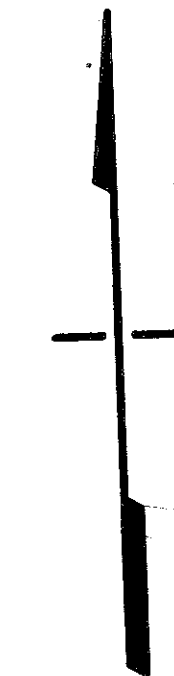
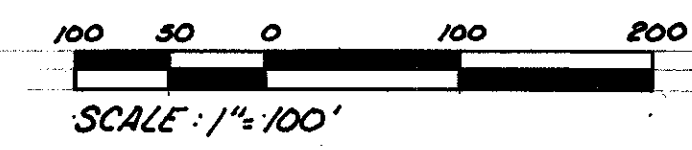
CUYAHOGA COUNTY
 CUY-176-10.14

OHIO
 F.H.W.A. 5
 REGION 5

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FOR LEGEND SEE SHEET 39.

SITE DATA	
GEOGRAPHIC LOCATION:	
LAT: 41° 26' 00"	LONG: 81° 41' 00"
USGS QUAD# NW/4 CLEVELAND SOUTH, OHIO	
SITE DESCRIPTION: NEW ROADWAY CONSTRUCTION	
AREA OF RIGHT-OF-WAY: 99 ACRES±	
DISTURBED AREA: 41 ACRES±	
PRE-CONSTRUCTION RUNOFF COEFFICIENT: 0.50	
POST-CONSTRUCTION RUNOFF COEFFICIENT: 0.64	
NOTE: PLEASE SEE SUPPLEMENTAL SOIL PROFILE SHEETS 1 THRU 50 FOR SOILS DATA.	
RECEIVING WATERS: UNNAMED CREEK / CUYAHOGA RIVER	



REF. NO.	LOCATION	SIDE	207	
			70000	STRAW OR HAY BALES
HB-1	I-480			
	825+00	LT.	8	
	TOTAL		8	

QUANTITIES CARRIED TO SHEET 41.

RELOC. S.R.-176

STORM WATER POLLUTION PREVENTION PLAN

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

CUYAHOGA COUNTY
 CUY - 176 - 10.14

OHIO
 F.H.W.A. 5
 REGION

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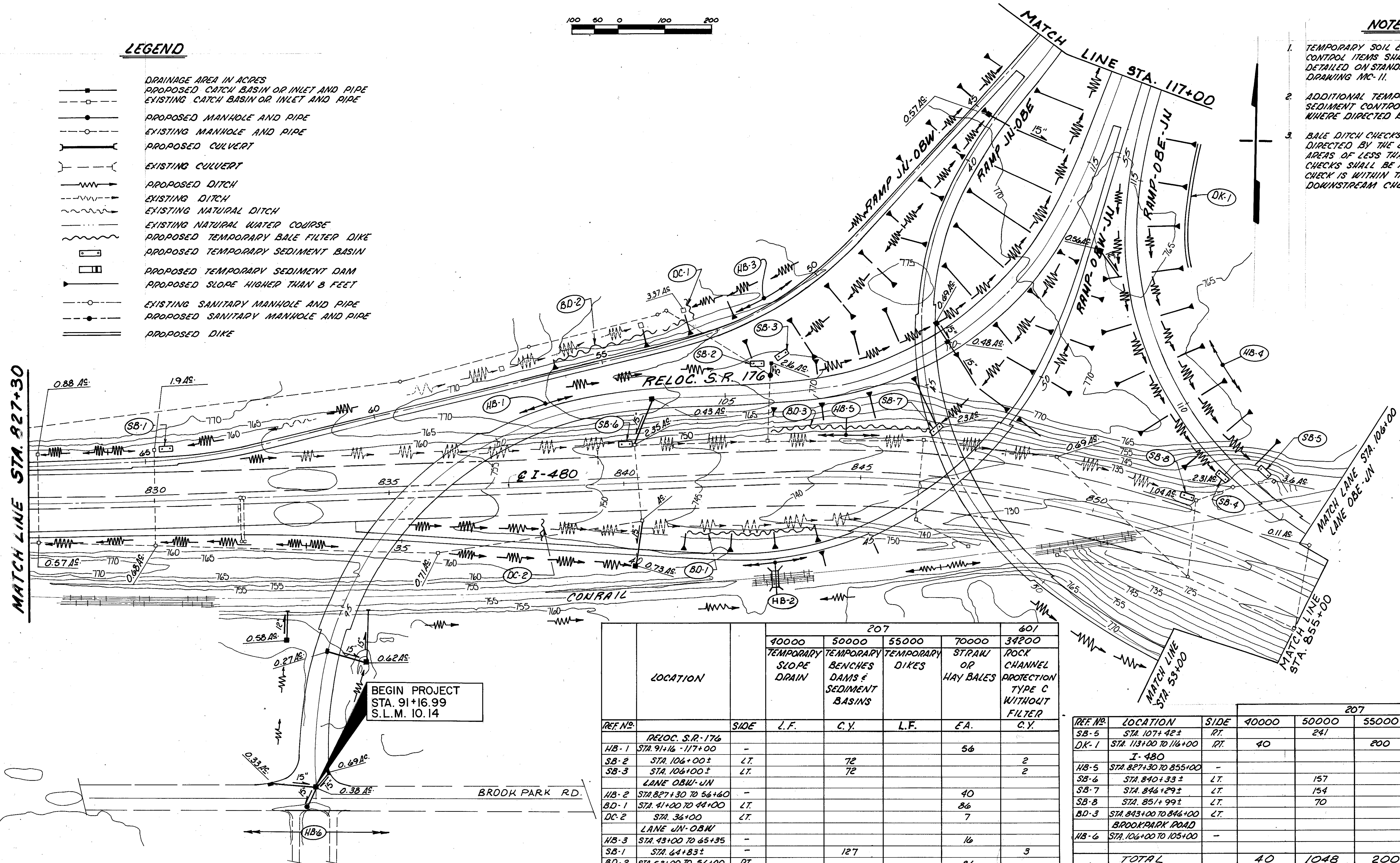


LEGEND

- DRAINAGE AREA IN ACRES
- PROPOSED CATCH BASIN OR INLET AND PIPE
- EXISTING CATCH BASIN OR INLET AND PIPE
- PROPOSED MANHOLE AND PIPE
- EXISTING MANHOLE AND PIPE
- PROPOSED CULVERT
- EXISTING CULVERT
- PROPOSED DITCH
- EXISTING DITCH
- EXISTING NATURAL DITCH
- EXISTING NATURAL WATER COURSE
- PROPOSED TEMPORARY BALE FILTER DIKE
- PROPOSED TEMPORARY SEDIMENT BASIN
- PROPOSED TEMPORARY SEDIMENT DAM
- PROPOSED SLOPE HIGHER THAN 8 FEET
- EXISTING SANITARY MANHOLE AND PIPE
- PROPOSED SANITARY MANHOLE AND PIPE
- PROPOSED DIKE

NOTES

1. TEMPORARY SOIL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE CONSTRUCTED AS DETAILED ON STANDARD CONSTRUCTION DRAWING MC-11.
2. ADDITIONAL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL ITEMS MAY BE REQUIRED WHERE DIRECTED BY THE ENGINEER.
3. BALE DITCH CHECKS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER FOR DRAINAGE AREAS OF LESS THAN ONE (1) ACRE. CHECKS SHALL BE PLACED SUCH THAT NO CHECK IS WITHIN THE BACK WATER OF A DOWNSTREAM CHECK.



REF. NO.	LOCATION	SIDE	207					601
			40000 TEMPORARY SLOPE DRAIN	50000 TEMPORARY BENCHES DAMS & SEDIMENT BASINS	55000 TEMPORARY DIKES	70000 STRAK OR HAY BALES	34200 ROCK CHANNEL PROTECTION TYPE C WITHOUT FILTER	
	RELOC. S.R. 176							
HB-1	STA. 91+16 - 117+00	-				56		
SB-2	STA. 106+00 ±	LT.		72			2	
SB-3	STA. 106+00 ±	LT.		72			2	
	LANE OBU-JN							
HB-2	STA. 827+30 TO 86+60	-				40		
BD-1	STA. 41+00 TO 44+00	LT.				86		
DC-2	STA. 36+00	LT.				7		
	LANE JN-OBW							
HB-3	STA. 43+00 TO 65+35	-				16		
SB-1	STA. 64+83 ±	-		127			3	
BD-2	STA. 53+00 TO 56+00	RT.				86		
DC-1	STA. 53+00	RT.				7		
	LANE OBE-JN							
HB-4	STA. 106+00 TO 117+00	-				16		
SB-4	STA. 108+04 ±	LT.		155			4	

REF. NO.	LOCATION	SIDE	207					601
			40000	50000	55000	70000	34200	
SB-5	STA. 107+42 ±	RT.		241			5	
DK-1	STA. 113+00 TO 116+00	RT.	40		200		8	
	I-480							
HB-5	STA. 827+30 TO 855+00	-				72		
SB-6	STA. 840+33 ±	LT.		157			4	
SB-7	STA. 846+29 ±	LT.		154			4	
SB-8	STA. 851+99 ±	LT.		70			2	
BD-3	STA. 843+00 TO 846+00	LT.				86		
	BROOK PARK ROAD							
HB-6	STA. 106+00 TO 105+00	-				24		
TOTAL			40	1048	200	496	34	

QUANTITIES CARRIED TO SHEET 41.

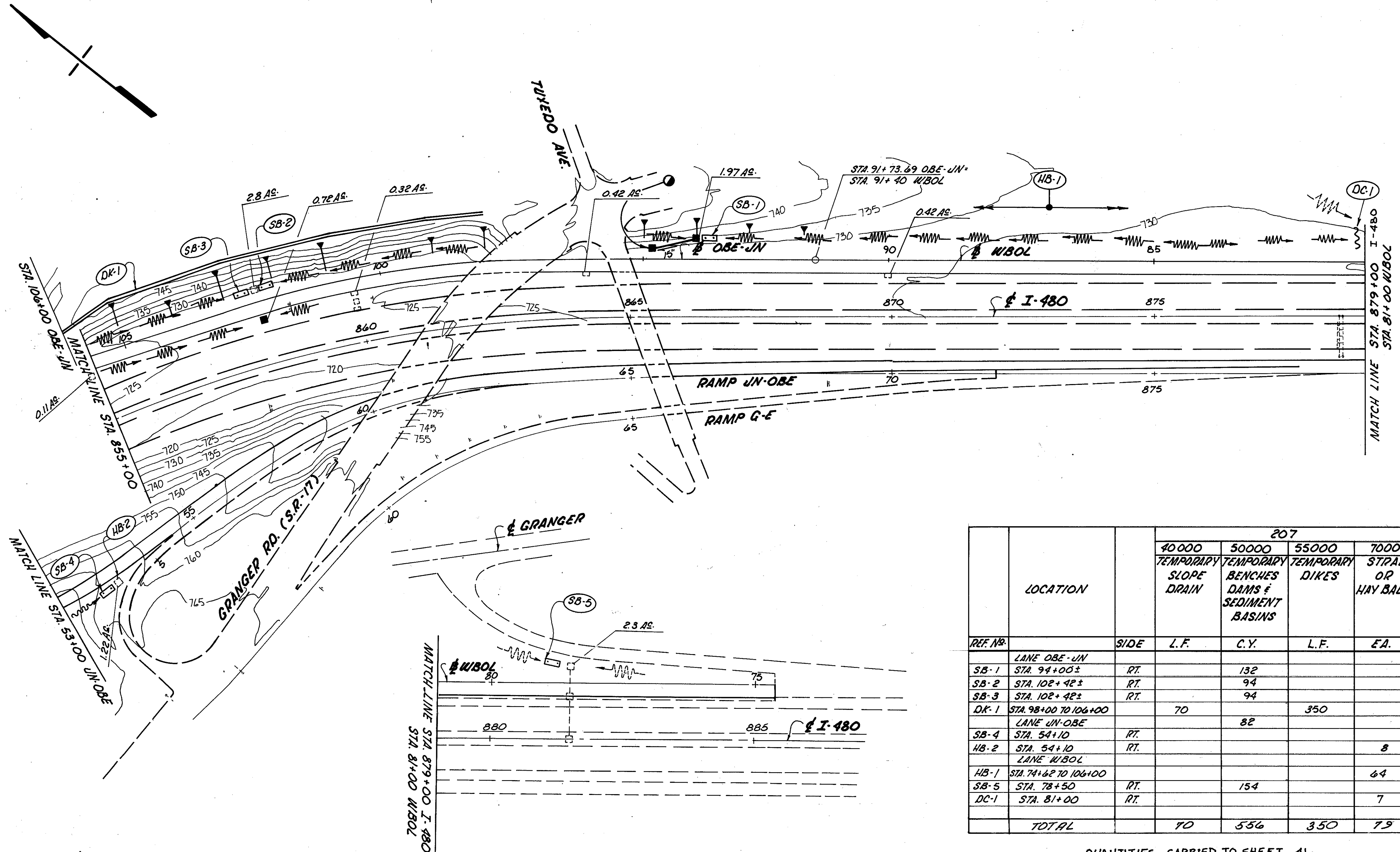
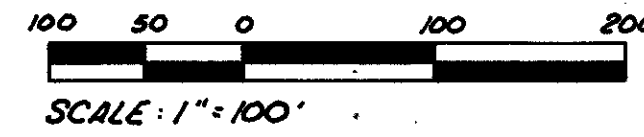
RELOC. S.R. 176

STORM WATER POLLUTION PREVENTION PLAN

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUV-176-10.14	F.H.W.A. 5
CHKD.		REGION
DATE		

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FOR LEGEND SEE SHEET 39



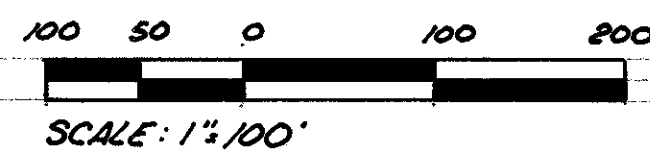
REF. NO.	LOCATION	SIDE	207				
			40000 TEMPORARY SLOPE DRAIN	50000 TEMPORARY BENCHES DAMS & SEDIMENT BASINS	55000 TEMPORARY DIKES	70000 STRAW OR HAY BALES	601 ROCK CHANNEL PROTECTION TYPE C WITHOUT FILTER
			L.F.	C.Y.	L.F.	EA.	C.Y.
SB-1	LANE OBE-JN STA. 94+00±	RT.		132			4
SB-2	STA. 102+42±	RT.		94			3
SB-3	STA. 102+42±	RT.		94			3
DK-1	STA. 98+00 TO 106+00		70		350		14
SB-4	LANE UN-OBE STA. 54+10	RT.		82			3
HB-2	STA. 54+10	RT.				8	
HB-1	LANE W/BOL STA. 74+62 TO 106+00					64	
SB-5	STA. 78+50	RT.		154			4
DC-1	STA. 81+00	RT.				7	
TOTAL			70	556	350	79	31

QUANTITIES CARRIED TO SHEET 41.

STORM WATER POLLUTION PREVENTION PLAN

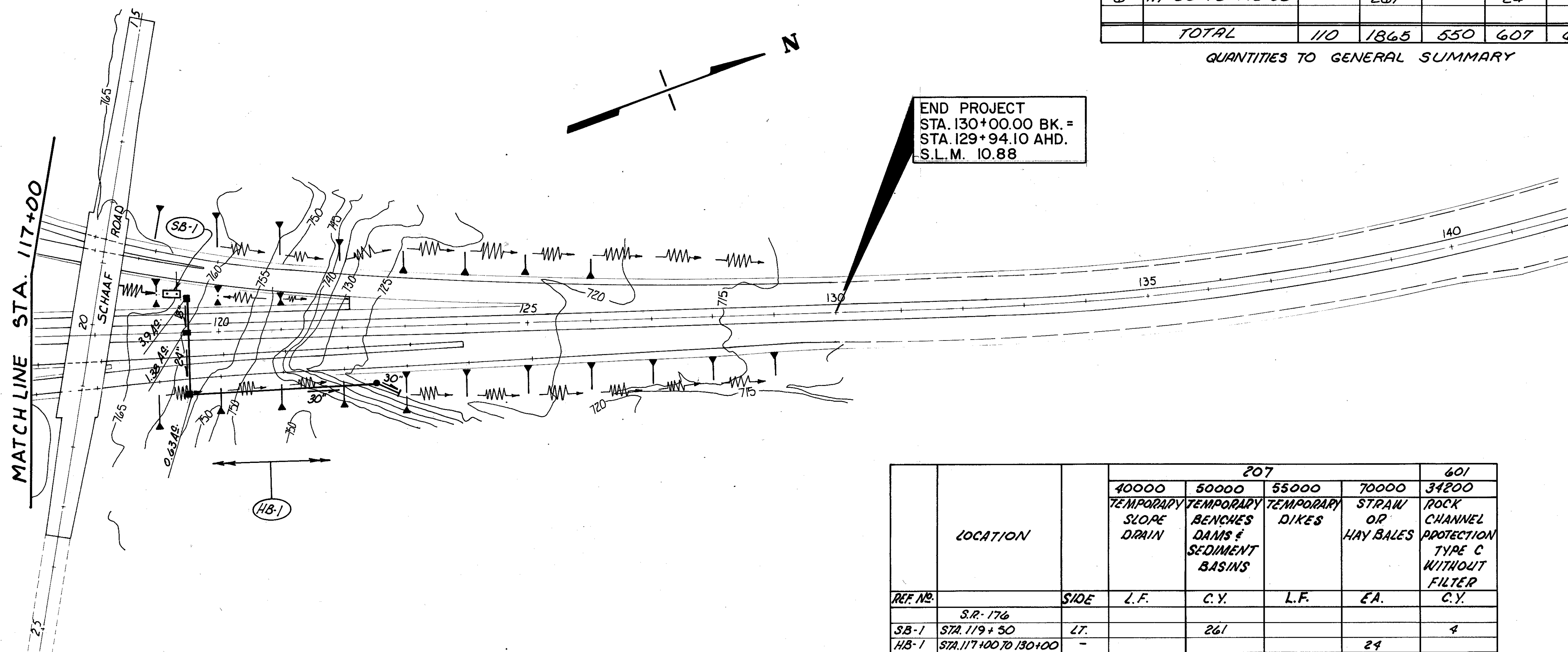
CALC. _____
 DATE _____
 CHKD. CUYAHOGA COUNTY
 DATE CLY - 176 - 10.88
 OHIO
 F.H.W.A. REGION 5
 41
 395

FOR LEGEND SEE SHEET 39



EROSION CONTROL SUB SUMMARY						
		207			601	
		40000	50000	55000	70000	34200
		TEMPORARY SLOPE DRAIN	TEMPORARY BENCHES, DAMS AND SEDIMENT BASINS	TEMPORARY DIKES	STRAW OR HAY BALES	ROCK CHANNEL PROTECTION TYPE C WITHOUT FILTER
SHT. NO.	LOCATION	L.F.	C.Y.	L.F.	EA.	C.Y.
3	801+00 TO 827+30				8	
4	827+30 TO 855+00	40	1048	200	496	34
5	855+00 TO 887+00	70	556	350	79	31
6	117+00 TO 142+00		261		24	4
TOTAL		110	1865	550	607	69

QUANTITIES TO GENERAL SUMMARY



END PROJECT
 STA. 130+00.00 BK. =
 STA. 129+94.10 AHD.
 S.L.M. 10.88

		207			601	
		40000	50000	55000	70000	34200
		TEMPORARY SLOPE DRAIN	TEMPORARY BENCHES DAMS & SEDIMENT BASINS	TEMPORARY DIKES	STRAW OR HAY BALES	ROCK CHANNEL PROTECTION TYPE C WITHOUT FILTER
REF. NO.	LOCATION	L.F.	C.Y.	L.F.	EA.	C.Y.
	S.R. 176					
SB-1	STA. 119+50	LT.	261			4
HB-1	STA. 117+00 TO 130+00	-			24	
TOTAL			261		24	4

QUANTITIES CARRIED TO SUB-SUMMARY THIS SHEET.

GEOMETRIC LAYOUT SCHEMATIC

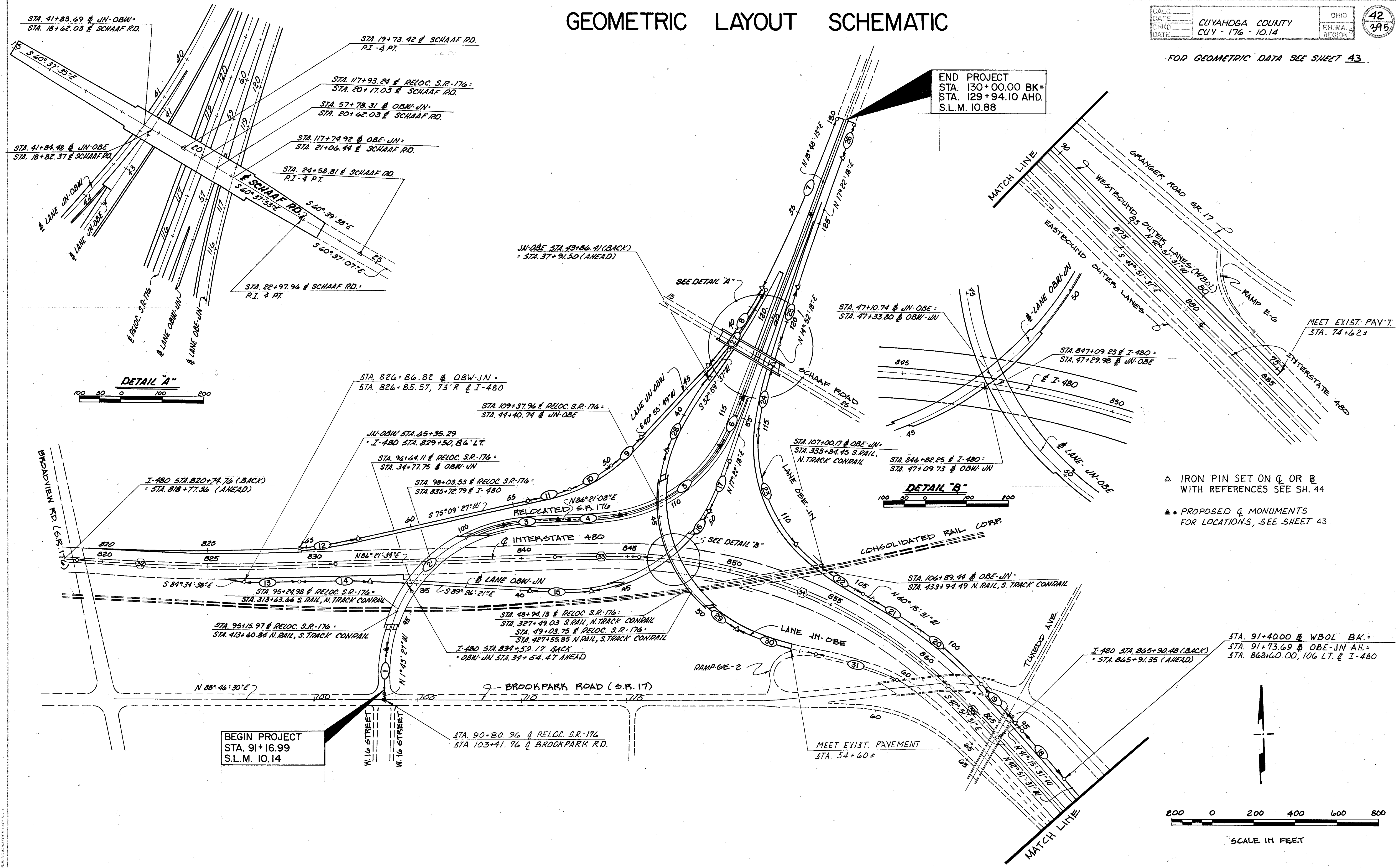
CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

CUYAHOGA COUNTY
 CUY - 176 - 10.14

OHIO
 F.H.W.A.
 REGION

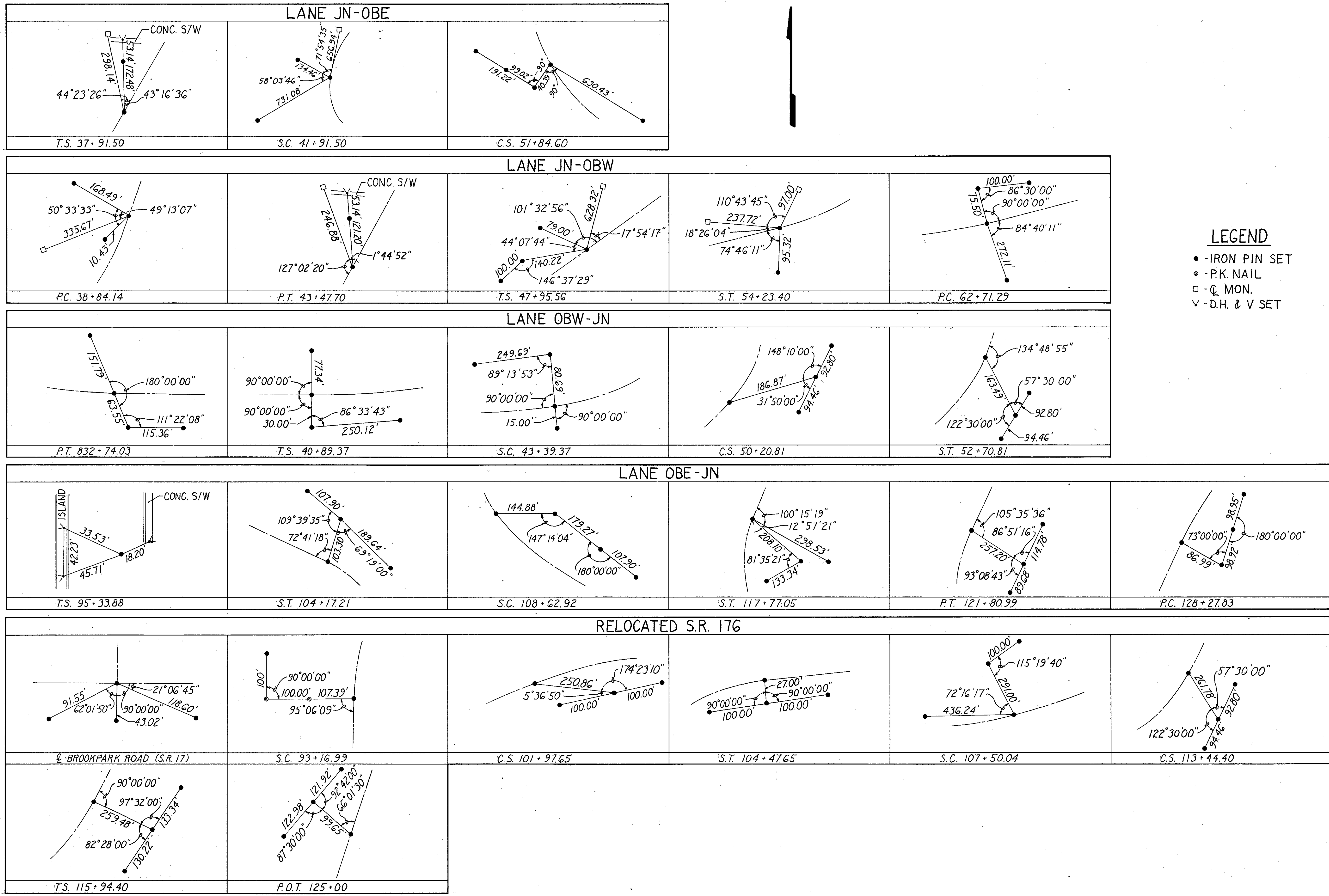
42
 295

FOR GEOMETRIC DATA SEE SHEET 43.



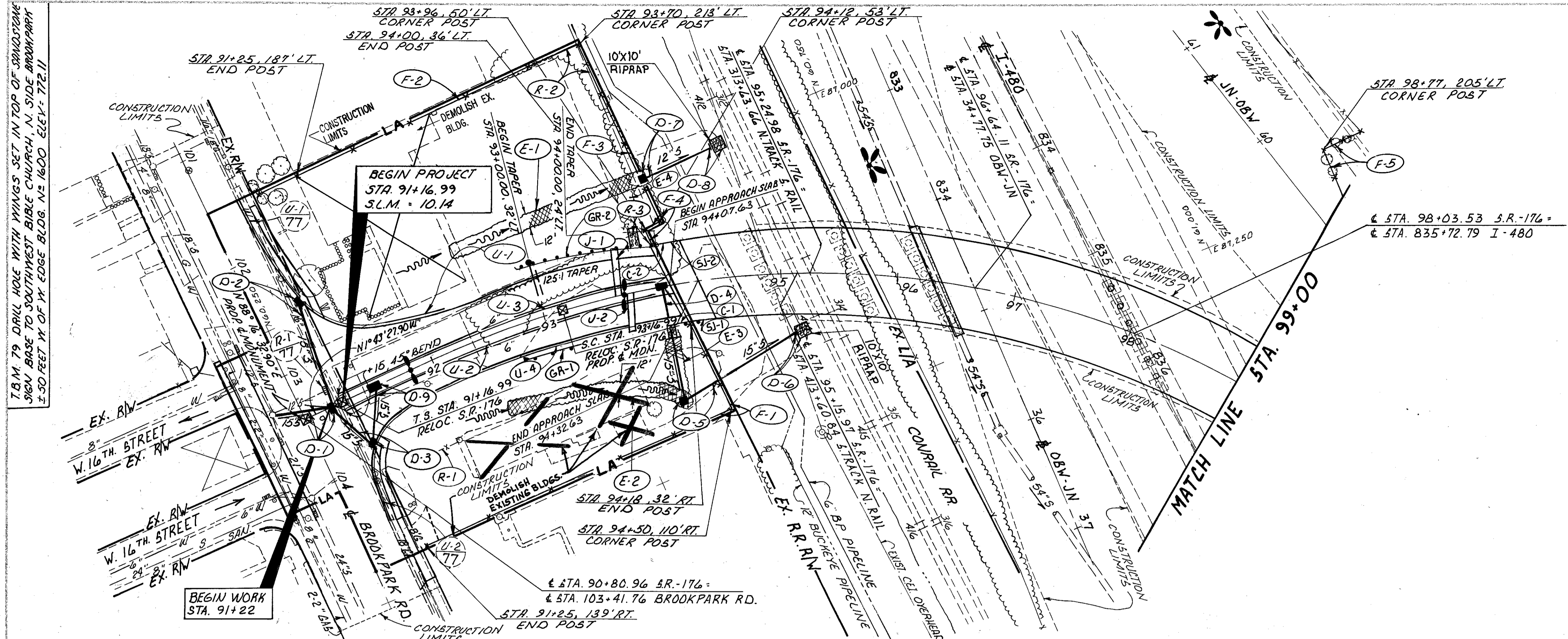
RELOC. S.R. 176

HORIZONTAL CONTROL



- LEGEND**
- - IRON PIN SET
 - - P.K. NAIL
 - ◻ - C. MON.
 - ∇ - D.H. & V SET

RELOC. S.R. - 176

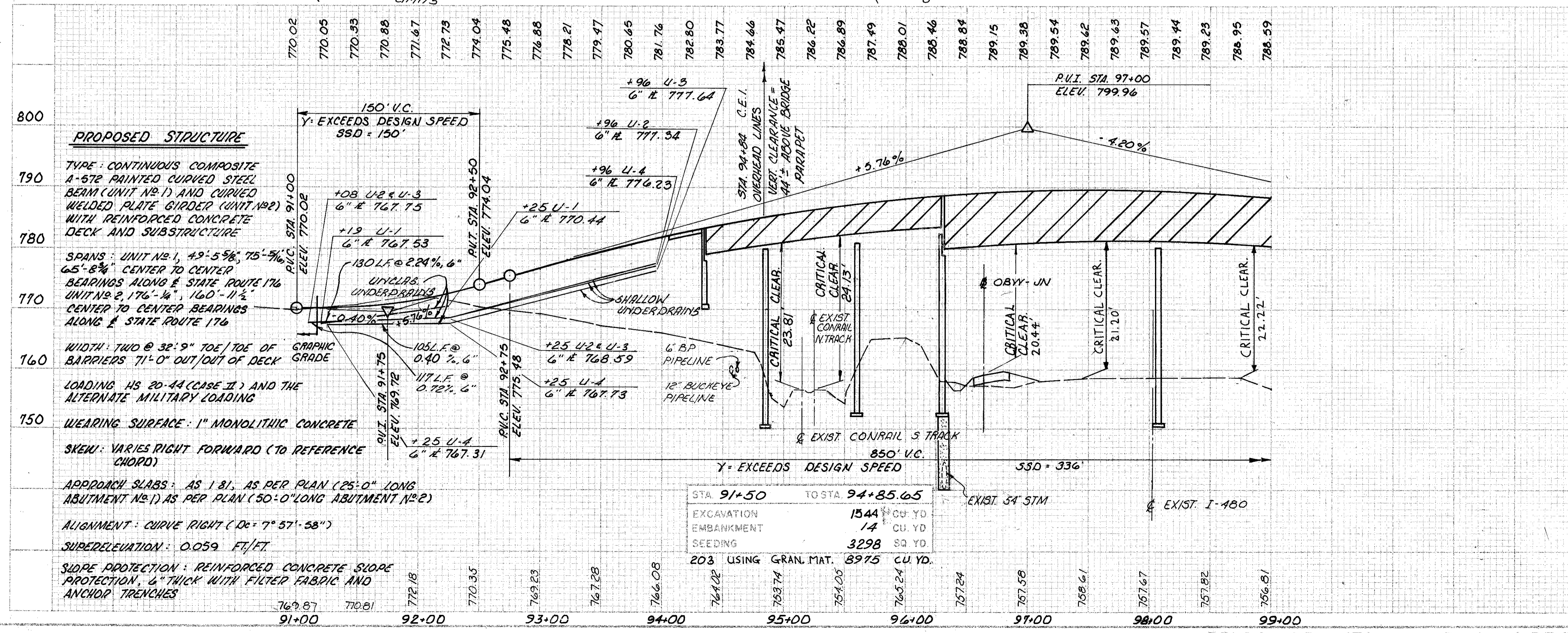


DRAINAGE STRUCTURE DATA

D-1	STA 91+08 & RELOC. S.R.-176, C.B. CITY OF CLEVEL. SUMP & TRAP W/ CURB PLATE T/G-769.65
D-2	STA 102+35, 36' LT. BROOKPARK RD. CATCH BASIN, CITY OF CLEVELAND No. 1 T/G-769.90
D-3	STA 91+25, 43' RT. RELOC. S.R.-176 CATCH BASIN, CITY OF CLEVELAND No. 1 T/G-769.68
D-4	STA 94+00, & RELOC. S.R.-176 INLET No. 3850 T/G-781.18
D-5	STA 94+00, 86' RT. RELOC. S.R.-176 C.B. No. 5 A.P.P. T/G-767.75
D-6	STA 95+17, 52' S. RT. RELOC. S.R.-176 HW-4A 15" # 753.50
D-7	STA 94+00, 92' LT. RELOC. S.R.-176 C.B. No. 5 A.P.P. T/G-767.75
D-8	STA 94+53, 108' LT. RELOC. S.R.-176 HW-4A 12" # 752.90
D-9	STA 91+45, & RELOC. S.R.-176 INLET No. 3850 T/G-769.62

REFERENCES

QUANTITIES FOR REFERENCED ITEMS	SHEET NUMBERS
ADDITIONAL LEGEND ITEMS	2
INTERSECTION DETAILS	167
PIPE PROFILES	66, 77, 80 & 176
JN-OBW P&P SHEETS	119, 121, 123, 125
OSW-UN P&P SHEETS	82, 84, 86
BROOKPARK RD. P&P SHEETS	77
BRIDGE PLANS	278-313
SPECIAL EXCAVATION	177



CURVE DATA

THETA-S	7° 57' 57.00" PT.	RT. STA.	98+22.05
LS	= 200	Δ	= 70° 9' 11.90" RT.
XC	= 199.61	DC	= 7° 57' 58"
YC	= 9.25	R	= 719.25'
L.T.	= 133.46	T	= 505.06'
S.T.	= 66.78	L	= 808.65'
L.C.	= 199.82	CH	= 826.66'
P	= 2.31	E	= 159.61'
K	= 99.93	M	= 130.62'

EXCAVATION	1544	CU YD
EMBANKMENT	14	CU YD
SEEDING	3298	SQ YD
203 USING GRAN. MAT. 8975 CU YD.		

RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 90+80.96 TO STA 99+00

REF. No.	ITEM No.		SIDE	202	SPECIAL	601	602	603	603	603	604	604	604	607	
	EXTENSION No.	DESCRIPTION		75000 FENCE REMOVED	45130000 PRESSURE RELIEF JOINT, TYPE A	10000 RIPRAP	20000 CONCRETE MASONRY	05200 12" CONDUIT, TYPE F, 707.05, TYPE C	05900 15" CONDUIT, TYPE B, 706.02	06700 15" CONDUIT, TYPE F, 707.05, TYPE C	00300 CATCH BASIN, CITY OF CLEV. NO.1 WITH TRAP	00300 CATCH BASIN, CITY OF CLEV. NO.1	01601 CATCH BASIN NO.5 AS PER PLAN	14602 INLET NO.3B50	23000 FENCE, TYPE CLT
LOCATION STATION TO STATION / OFFSET			LIN FT	LIN FT	SQ YD	CU YD	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	LIN FT	
D-1	91 + 08	*103 + 26	C/L							55	1				
D-2	*102 + 35	91 + 08	*LT							107		1			
D-3	91 + 08	91 + 25	RT							45		1			
D-4	94 + 00	94 + 00	RT							86			1		
D-5	94 + 00	95 + 17	RT						111						
D-6	95 + 53	95 + 53	RT			11	0.27						1		
D-7	94 + 00	94 + 53	LT					64					1		
D-8	94 + 53	94 + 53	LT			11	0.21								
D-9	91 + 45	91 + 45	C/L							47			1		
J-1	93 + 65	93 + 65	LT		40										
J-2	93 + 75	93 + 75	RT		32										
R-1	*104 + 15 / 90'	*104 + 15 / 90'	LT	30											
R-2	*101 + 50	*103 + 10	LT	290											
R-3	*103 + 10	*103 + 10	LT	130											
F-1	91 + 25	94 + 15	RT											360	
F-2	91 + 25	94 + 25	LT											300	
F-3	93 + 70	94 + 12	LT											165	
F-4	93 + 96	94 + 12	LT											30	
F-5	98 + 80	99 + 00	LT	80										[80]	
TOTALS				530	72	22	0.48	64	340	111	1	2	2	2	935

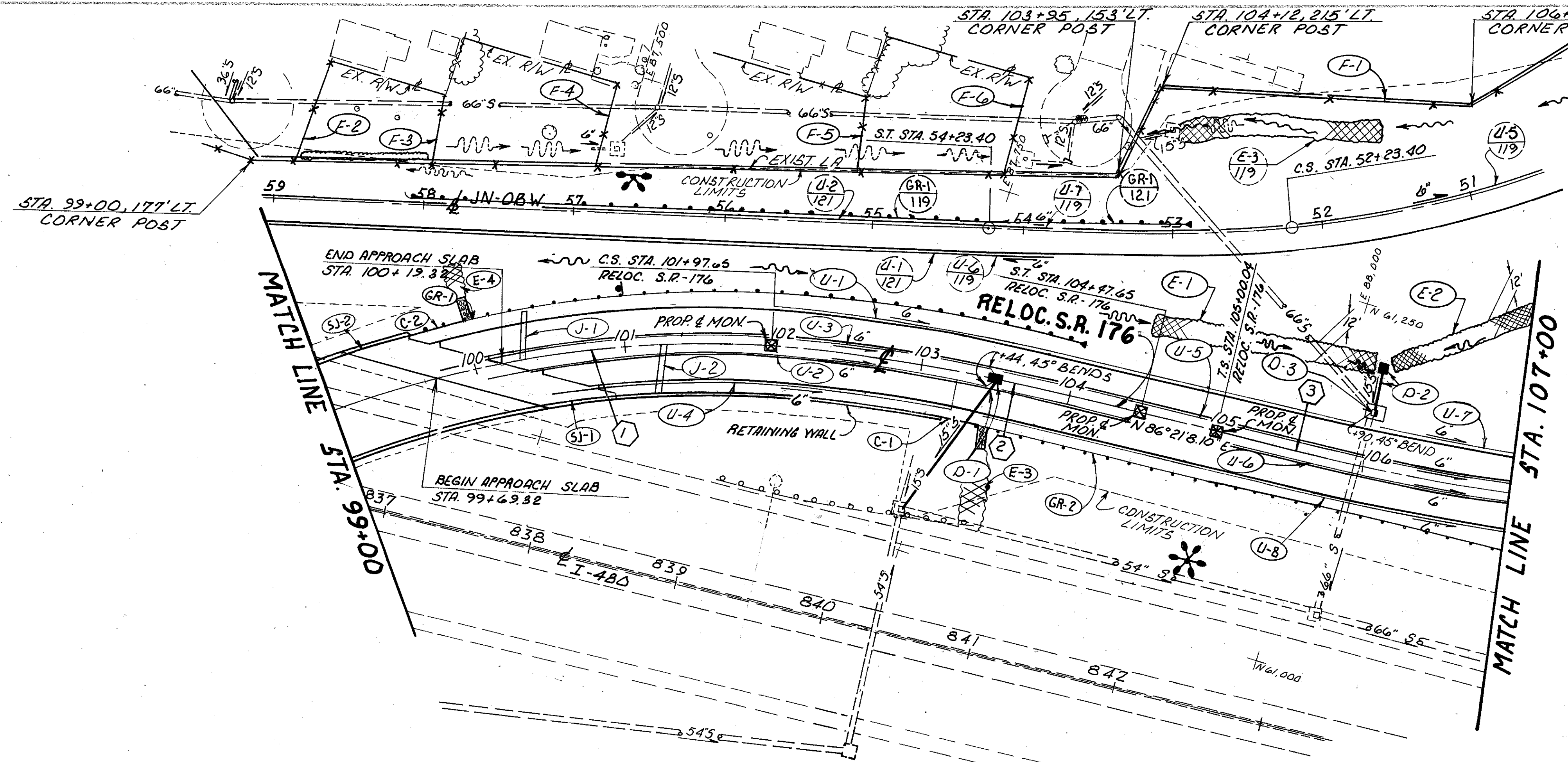
QUANTITIES IN BRACKETS ARE SUBJECT TO NON-PERFORMANCE DUE TO NOISE WALL CONSTRUCTION UNDER SEPERATE CONTRACT.
 * DENOTES BROOKPARK STATIONING

ESTIMATED QUANTITIES - STATION 90+80.96 TO STA 99+00

REF. No.	ITEM No.		SIDE	605	605	606	606	606	606	606	660	670	SPECIAL	609	SPECIAL	SPECIAL	802	802
	EXTENSION No.	DESCRIPTION		11110 6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	13410 6" UNCLASS- IFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	13000 GUARDRAIL, TYPE 5	26100 ANCHOR ASSEMBLY, TYPE E	26500 ANCHOR ASSEMBLY, TYPE T	35000 BRIDGE TERMINAL ASSEMBLY, TYPE 1	35100 BRIDGE TERMINAL ASSEMBLY, TYPE 2	20000 REINFORCED SODDING	40000 DITCH ERDSION PROTECTION	60120700 GABION, WITH ADDITIONAL COATING	24000 CURB, TYPE 4A	51614010 POURED POLYURETHANE JOINT SEAL	51614600 STRUCTURAL JOINT OR JOINT SEAL MISC. 4"x4" JOINT SEAL (BITUMEN IMPREG- NATED FOAM)	00100 BARRIER REFLECTOR, TYPE A	00200 BARRIER REFLECTOR, TYPE B
LOCATION STATION TO STATION / OFFSET			LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	SQ YD	SQ YD	CU. YD.	LIN. FT.	LIN. FT.	LIN FT	EACH	EACH	
U-1	91 + 19	92 + 25	LT		130													
U-2	91 + 08	93 + 96	RT	171	117													
U-3	91 + 08	93 + 96	LT	171	117													
U-4	91 + 25	93 + 96	RT	171	105													
E-1	92 + 45	93 + 95	LT									220						
E-2	92 + 45	93 + 95	RT									195						
E-3	94 + 00 / 70'	94 + 00 / 70'	RT							46			4					
E-4	93 + 87 / 60'	93 + 87 / 60'	LT							28			4					
GR-1	92 + 63	94 + 25	RT			87.5	1		1							3	10	
GR-2	92 + 88	94 + 13	LT			100		1			1					4	9	
C-1	94 + 03	94 + 29	RT															
C-2	93 + 90	94 + 16	LT													26		
SJ-1	94 + 29	94 + 42	RT												13		13	
SJ-2	94 + 16	94 + 29	LT											13		13		
TOTALS				513	469	187.5	1	1	1	1	74	415	8	52	26	26	7	19

QUANTITIES IN BRACKETS ARE SUBJECT TO NON-PERFORMANCE DUE TO NOISE WALL CONSTRUCTION UNDER SEPERATE CONTRACT.
 * DENOTES BROOKPARK STATIONING

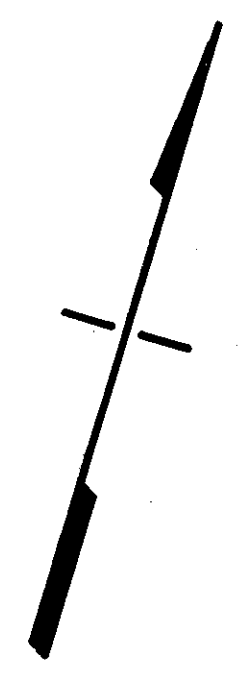
T&M 40 N.E. CORNER & MON. BOX OF CUL-DE-SAC AT
S. END W. 12TH STREET AT N. SIDE I-480 RIGHT-OF-WAY
ELEV. = 762.16



CURVE DATA

①	②	③
P.I. STA 98+22.05 $\Delta = 70^{\circ} 9' 11.90''$ $D_c = 7^{\circ} 57' 57''$ $R = 719.25'$ $T = 505.06'$ $L = 880.66'$ $CH = 826.67'$ $E = 159.62'$ $M = 130.63'$	$\text{THETA-S} = 9^{\circ} 57' 26.20''$ $LS = 250'$ $XC = 249.25'$ $YC = 14.45'$ $LT = 166.93'$ $ST = 83.57'$ $LC = 249.66'$ $P = 3.62'$ $K = 124.87'$	$\text{THETA-S} = 10^{\circ} 0' 0''$ $LS = 250'$ $XC = 249.24'$ $YC = 14.51'$ $LT = 166.93'$ $ST = 83.58'$ $LC = 249.66'$ $P = 3.63'$ $K = 124.87'$

CALC. DATE	CUYAHOGA COUNTY	OHIO	53
CHKD. DATE	CUY - 176 - 10.14	F.H.W.A. REGION	395
DATE			

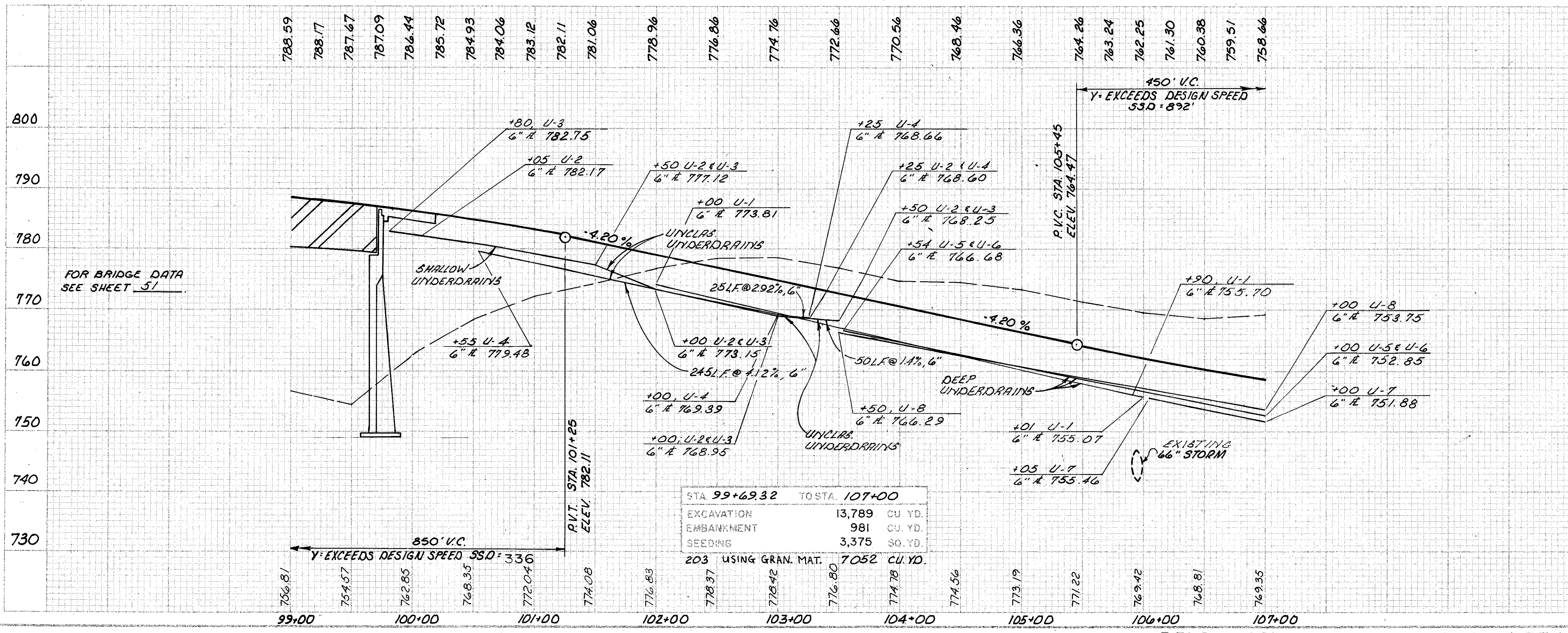


DRAINAGE STRUCTURE DATA

D-1	STA 103+50 & RELOC. S.R.-176 INLET N° 3B50	T/G - 772.19
D-2	STA 106+00, 66' LT. RELOC. S.R.-176 C.B. N° 5 A.P.D.	T/G - 757.20
D-3	STA 106+01, 36' LT. C.B. RECONSTRUCTED TO GRADE, AS PER PLAN	T/G - 761.00 EX. 764.75

REFERENCES

REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS	54
PIPE PROFILES	68 & 69
BRIDGE PLANS	278-313



STA 99+69.32	TOSTA 107+00
EXCAVATION	13,789 CU. YD.
EMBANKMENT	981 CU. YD.
SEEDING	3,375 SQ. YD.
203 USING GRAN. MAT.	7,052 CU. YD.

RELOC. S.R.-176

ESTIMATED QUANTITIES - STATION 99+00 TO STA 107+00

ITEM No. EXTENSION No.		SPECIAL 45130000 PRESSURE RELIEF JOINT, TYPE A	603 01500 6" CONDUIT, TYPE F, 707.17 NON- PERFORATED ASTM D-3034, SDR 35, SS 931 OR SS 944	603 05900 15" CONDUIT, TYPE B, 706.02	603 06100 15" CONDUIT, TYPE C, 706.01 CLASS 3 706.02 OR 706.08 E.S.	603 06700 15" CONDUIT, TYPE F, 707.05, TYPE C	604 01601 CATCH BASIN, NO. 5 AS PER PLAN	604 09501 CATCH BASIN RECONS- TRUCTED TO GRADE, AS PER PLAN	604 14602 INLET, NO. 3850	605 11110 6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	605 12210 6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	605 13410 6" UNCLASS- IFIED PIPE UNDERDRAIN, WITH FABRIC WRAP				
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT			
D-1	103 + 02 103 + 50	RT			40		70									
D-2	106 + 00 106 + 01	LT				30		1								
D-3	106 + 01	LT							1							
U-1	102 + 00 106 + 01	LT		15								390				
U-2	100 + 05 103 + 50	RT									145	100	100			
U-3	99 + 80 103 + 50	LT									170	100	100			
U-4	100 + 55 103 + 25	RT											270			
U-5	103 + 54 107 + 00	LT										346				
U-6	103 + 54 107 + 00	RT										346				
U-7	106 + 05 107 + 00	LT										95				
U-8	103 + 50 107 + 00	RT										350				
J-1	100 + 30	LT	32													
J-2	101 + 27	RT	32													
TOTALS			64	15	40	30	70	1	1	1	315	1727	470			

ESTIMATED QUANTITIES - STATION 99+00 TO STA 107+00

ITEM No. EXTENSION No.		802 00100 BARRIER REFLECTOR, TYPE A		802 00200 BARRIER REFLECTOR, TYPE B		202 75000 FENCE REMOVED		606 13000 GUARDRAIL, TYPE 5		606 26100 ANCHOR ASSEMBLY, TYPE E		606 35000 BRIDGE TERMINAL ASSEMBLY, TYPE 1		606 35100 BRIDGE TERMINAL ASSEMBLY, TYPE 2		607 23000 FENCE TYPE CLT		670 40000 DITCH EROSION PROTECTION		SPECIAL 60120700 GABION, WITH ADDITIONAL COATING		660 20000 REINFORCED SODDING		609 24000 CURB, TYPE 4A		SPECIAL 51614010 POURED POLYURETHANE JOINT SEAL		516 14600 STRUCTURAL JOINT OR JOINT SEAL MISC: 4"X4" JOINT SEAL (BITUMEN IMPREG- NATED FOAM)	
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	EACH	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	SQ YD	SQ YD	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	
E-1	104 + 45 105 + 95	LT													200														
E-2	106 + 05 107 + 00	LT													133														
E-3	103 + 46 / 180'	RT																											
E-4	100 + 02 / 50'	LT																											
GR-1	99 + 77 104 + 17	LT	8	1		365		1		1																			
GR-2	103 + 21 107 + 06	RT	4	7		375																							
F-1	**50 + 00 **59 + 30	RT				955									[955]														
F-2	**58 + 75	RT				75									[75]														
F-3	**57 + 95	RT				45									[45]														
F-4	**56 + 80	RT				58									[58]														
F-5	**55 + 05	RT				50									[50]														
F-6	**54 + 00	RT				70									[70]														
C-1	103 + 17 103 + 43	RT																											
C-2	99 + 73 99 + 99	LT																									26		
SJ-1	100 + 44 100 + 94	RT																										50	
SJ-2	99 + 16 99 + 66	LT																										50	
TOTALS			12	8	1253	740		1	1	1		1	1		1253	333		8	69		52			100			100		

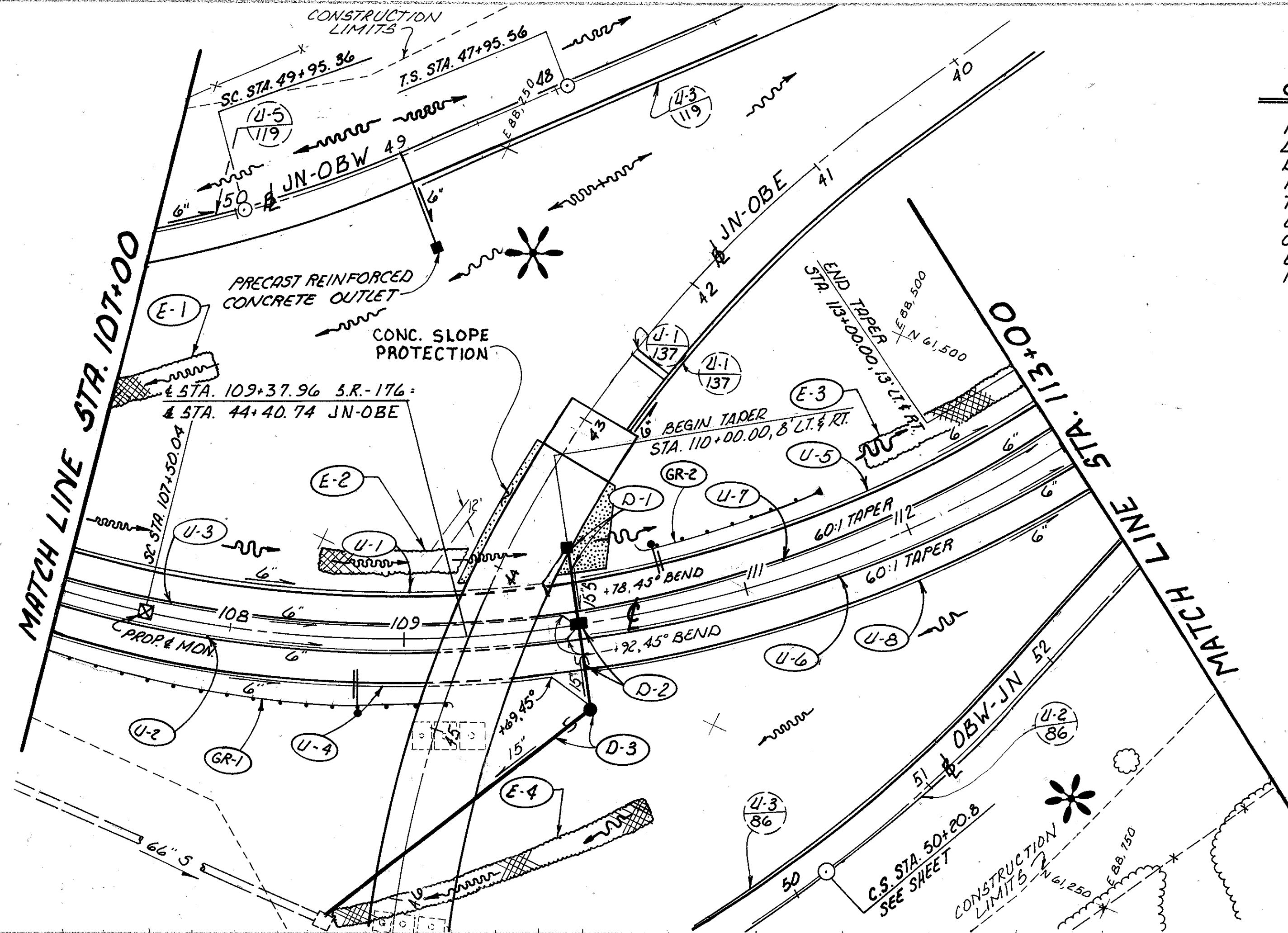
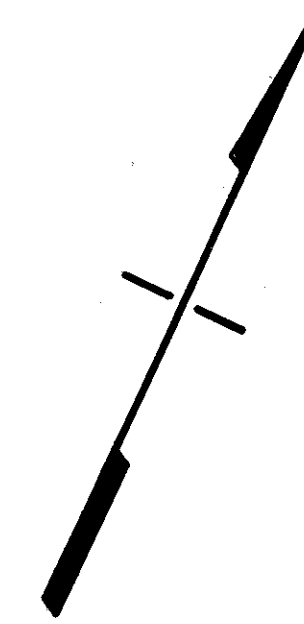
QUANTITIES IN BRACKETS ARE SUBJECT TO NON-PERFORMANCE DUE TO NOISE WALL CONSTRUCTION UNDER SEPARATE CONTRACT

** JN-DBW STATIONING

BENCHMARK: TBM 80 TOP NR. 40 NAIL
 SET UP 1' IN N. FIRE & FREE 60 W. OF
 CHAIN LINK FENCE AT E. EDGE OF OPEN FIELD
 300 S.W. OF MICROPIVOT TOWER
 ELEV. 768.94

CURVE DATA

P.I. STA 110+65.54
 $\Delta = 47^\circ 32' 53.00''$
 $D_c = 8^\circ 0' 0''$
 $R = 716.20'$
 $T = 315.50'$
 $L = 594.36'$
 $CH = 577.45'$
 $E = 66.41'$
 $M = 60.78'$



DRAINAGE STRUCTURE DATA

- (D-1) STA 110+00, 46' LT. RELOC. S.R.-176
C.B. 112.5 A.P.P. 716.748.43
- (D-2) STA 110+00 & RELOC. S.R.-176
INLET 112.3850 T/B-750.04
- (D-3) STA 110+00 50' RT. RELOC. S.R.-176
M.H. NO. 3 AS PER PLAN 716.750.20

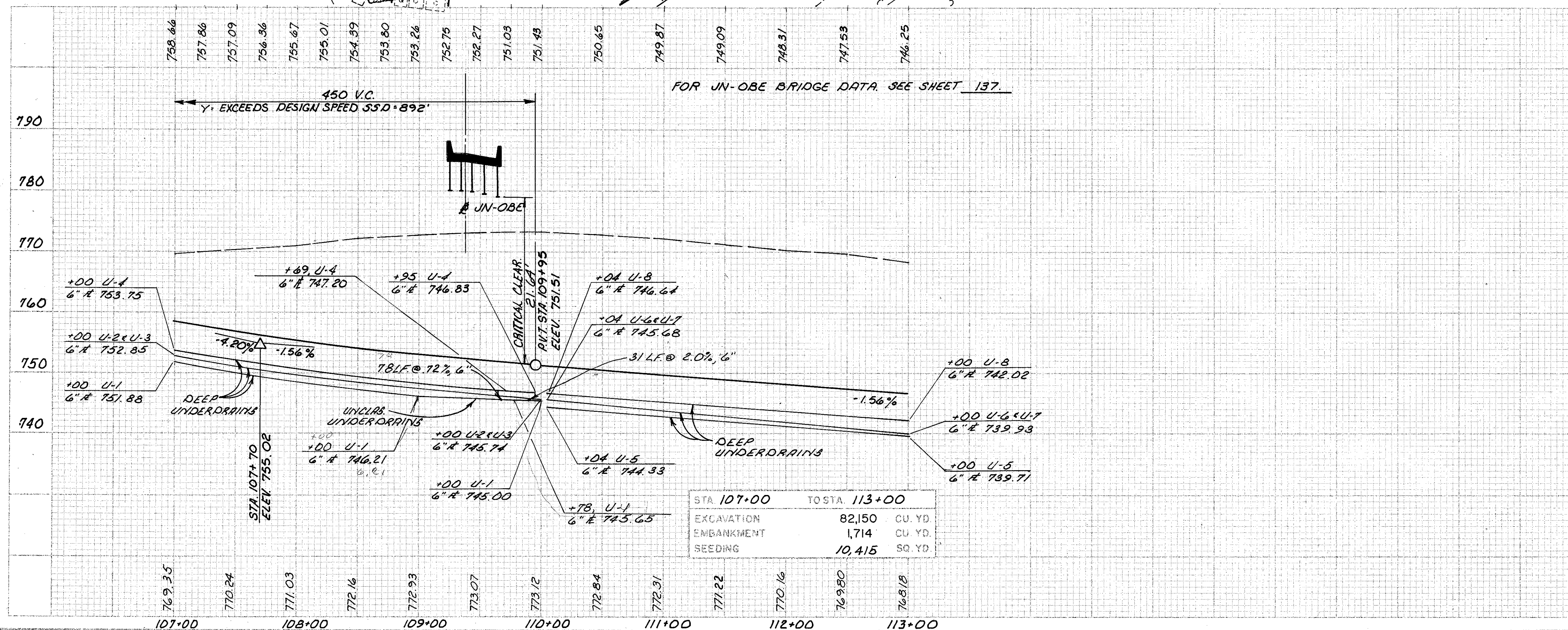
REFERENCES

QUANTITIES FOR REFERENCED ITEMS ...

PIPE PROFILES
 UN-OBE P&P SHEETS
 UN-OBVY P&P SHEETS
 OBVY-UN P&P SHEETS

SHEET NUMBERS

56
 70 & 176
 137 & 139
 119, 121, 123 & 125
 82, 84 & 86



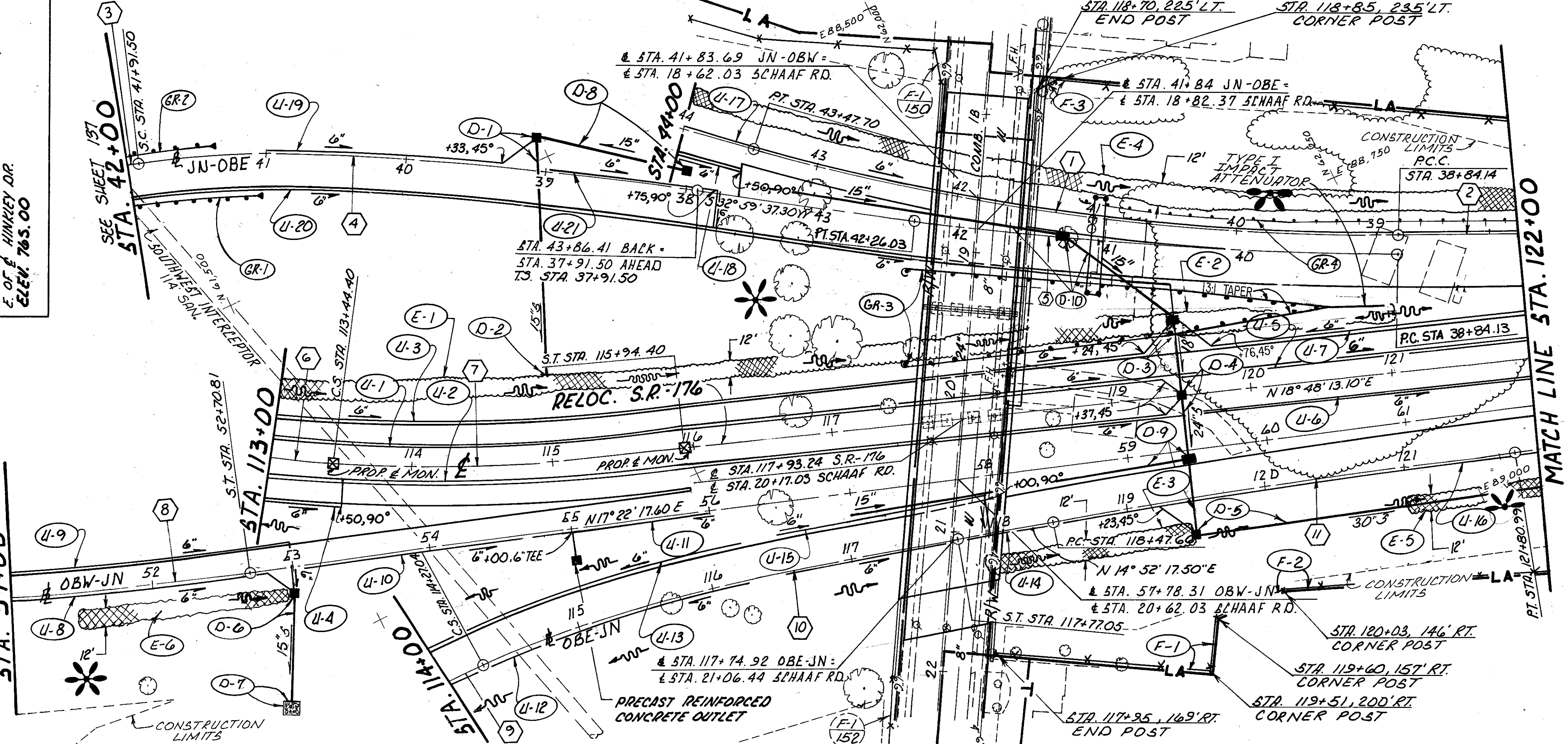
ESTIMATED QUANTITIES - STATION 107+00 TO STA 113+00

REF. No.	ITEM No.		SIDE	603	603	604	604	604	605	605	606	606	606	670	802
	EXTENSION No.	DESCRIPTION		01500	05900	01601	14602	31501	12210	13410	13000	26100	26500	40000	00100
	STATION TO STATION / OFFSET		LIN FT	LIN FT	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	SQ YD	EACH	
D-1	110 + 00	LT		46	1										
D-2	110 + 00	C/L		50		1									
D-3	110 + 00	RT		195			1								
U-1	107 + 00 110 + 00	LT	31					200	78						
U-2	107 + 00 110 + 00	RT						300							
U-3	107 + 00 110 + 00	LT						300							
U-4	107 + 00 109 + 95	RT						306							
U-5	110 + 04 113 + 00	LT						296							
U-6	110 + 04 113 + 00	RT						296							
U-7	110 + 04 113 + 00	LT						296							
U-8	110 + 04 113 + 00	RT						296							
E-1	107 + 00 107 + 55	LT											80		
E-2	108 + 50 109 + 35	LT											113		
E-3	111 + 95 113 + 00	LT											133		
E-4	108 + 68 110 + 18	RT											253		
GR-1	107 + 00 109 + 25	RT								212.5		1			3
GR-2	110 + 38 111 + 75	LT								75		1	1		5
TOTALS				31	291	1	1	1	2290	78	287.5	1	2	579	8

SPIRAL DATA

NO	THETA	LS	Xc	Yc	L.T.	S.T.	L.C.	P.	K
4	16°2'14"	400'	396.88'	37.11'	267.77'	134.34'	398.61'	9.30'	199.48'
7	10°0'0"	230'	249.24'	14.51'	166.93'	83.58'	249.66'	3.63'	124.87'
8	9°49'18.8"	230'	249.27'	14.26'	166.92'	83.57'	249.67'	3.57'	124.88'
10	14°0'0"	350'	347.92'	28.39'	234.07'	117.33'	349.07'	7.11'	174.66'

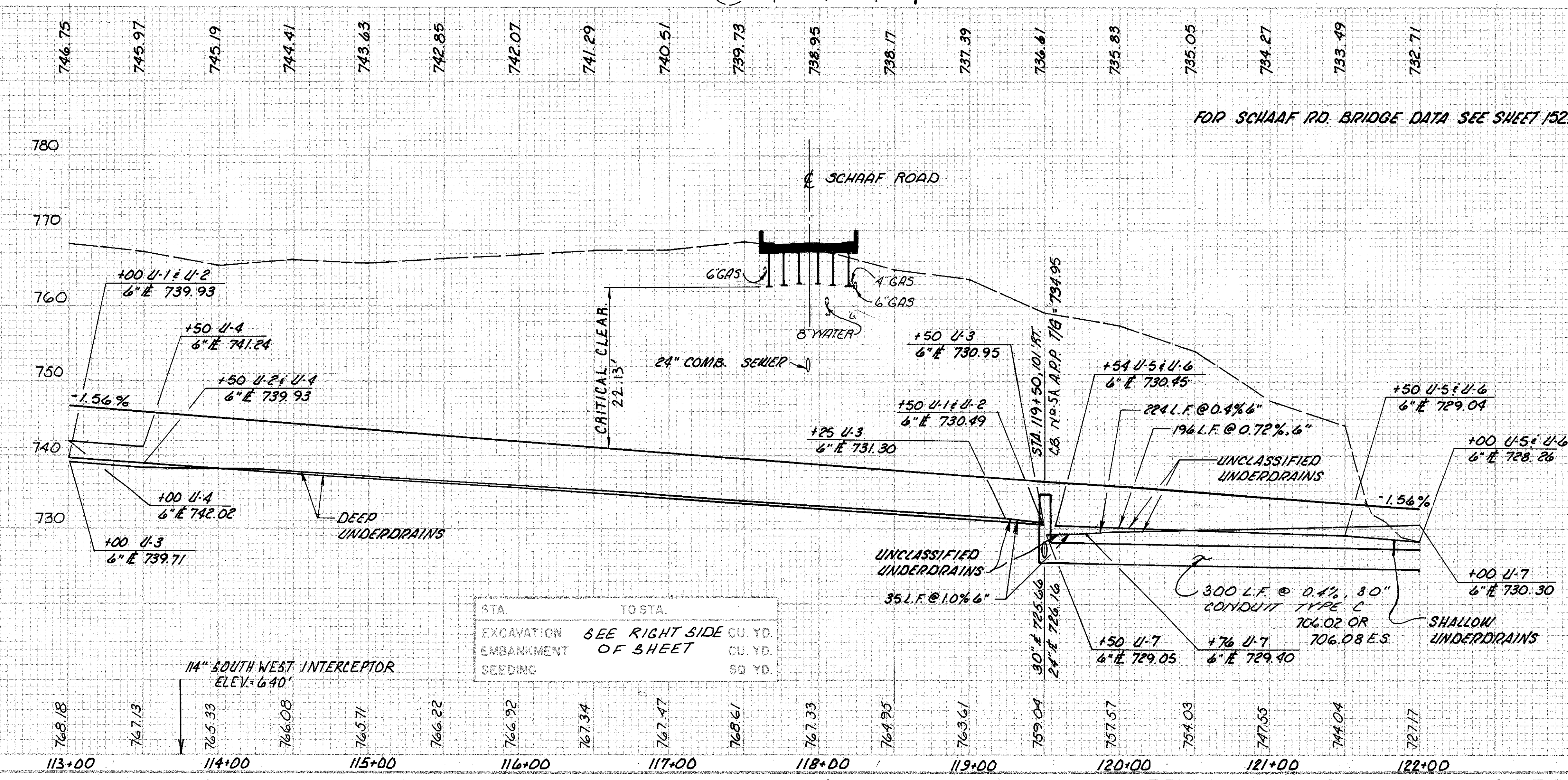
BENCHMARK: TBM BI CHISELED 30-S. ENO
 CONCRETE DRIVE TO RESIDENT NO. 910, 90±
 E. OF E. HINKLEY DR.
 ELEV. 785.00



- DRAINAGE STRUCTURE DATA**
- (D-1) STA. 45+00, 34' LT. JN-OBW
C.B. NO. 5 A.P.P. T/G = 756.25
 - (D-2) STA. 115+00, 62' LT. RELOC. S.R.-176
H.W. - 4.8
 - (D-3) STA. 119+50, 54' LT. RELOC. S.R.-176
C.B. NO. 4 A.P.P. T/G = 731.25
 - (D-4) STA. 119+50 & RELOC. S.R.-176
INLET NO. 3850 T/G = 735.88
 - (D-5) STA. 119+50 101' RT. RELOC. S.R.-176
C.B. NO. 5A A.P.P. T/G = 734.95
 - (D-6) STA. 53+00, 20' RT. OBW-JN
C.B. NO. 5 A.P.P. T/G = 747.30
 - (D-7) STA. 113+00, 45' LT. OBE-JN
HYV. 4A
 - (D-8) STA. 38+00 AH, 16' RT. JN-OBE
C.B. NO. 5 A.P.P. 752.60
 - (D-9) STA. 119+50, 146' RT. RELOC. S.R.-176
C.B. NO. 6, T/G = 737.10
 - (D-10) STA. 41+25 BK, 2' RT. JN-OBE
C.B. NO. 6, T/G = 740.80

CURVE DATA

NO	Δ	Dc	R	T	L	CH	E	M
1	16°19'29.5"	3°30'0"	1637.02'	233.35'	463.57'	462.02'	16.38'	16.38'
2	5°54'24"	0°40'0"	8594.37'	443.03'	853.27'	884.88'	11.41'	11.40'
3	7°38'00"	8°1'7"	714.53'	595.67'	993.10'	915.07'	215.73'	165.70'
5	8°17'12.8"	2°25'27"	2363.49'	171.25'	341.90'	341.60'	6.20'	6.18'
6	47°32'35"	8°0'0"	716.20'	315.50'	594.36'	577.45'	66.41'	60.78'
9	45°7'48.8"	8°0'0"	716.20'	297.61'	564.13'	549.66'	59.37'	54.83'
11	2°30'00"	0°45'0"	7639.44'	166.69'	333.33'	333.31'	1.82'	1.82'



REFERENCES SHEET NUMBERS

QUANTITIES FOR REFERENCED ITEMS 58

FOR SCHAAF RD. BRIDGE DATA SEE SHEET 152

ITEM	QUANTITY	UNIT
PIPE PROFILES	62, 63, 73, 142	176
PROFILES U-8 THRU U-11	62	
PROFILES U-12 THRU U-16	63	
PROFILES U-17 & U-18	61	
PROFILES U-19 THRU U-21	62	
PAVEMENT PROFILES		
JN-OBW	61	
JN-OBE	62	
OBW-JN	62	
OBE-JN	63	
SCHAAF RD. P&P SHEETS		
BRIDGE PLANS	1501	152
PAVEMENT DETAILS	358-379	171, 172 & 175

ITEM	QUANTITY	UNIT
S.R.-176 STA. 113+00 TO STA. 122+00		
EXCAVATION	170,271	CU. YD.
EMBANKMENT	13,477	CU. YD.
SEEDING	9,659	SQ. YD.
JN-OBE STA. 42+00 AND TO STA. 40+00 BK.		
EXCAVATION	67,758	CU. YD.
EMBANKMENT	3,384	CU. YD.
SEEDING	8,788	SQ. YD.
OBW-JN STA. 51+00 TO STA. 52+75.48		
EXCAVATION	12,775	CU. YD.
EMBANKMENT	724	CU. YD.
SEEDING	1,556	SQ. YD.
OBE-JN STA. 114+00 TO STA. 117+00		
EXCAVATION	35,471	CU. YD.
EMBANKMENT	1,039	CU. YD.
SEEDING	2,854	SQ. YD.

STA. TO STA.
 EXCAVATION SEE RIGHT SIDE CU. YD.
 EMBANKMENT OF SHEET CU. YD.
 SEEDING SQ. YD.

RELOC. S.R.-176

ESTIMATED QUANTITIES - STATION 113+00 TO STA 122+00

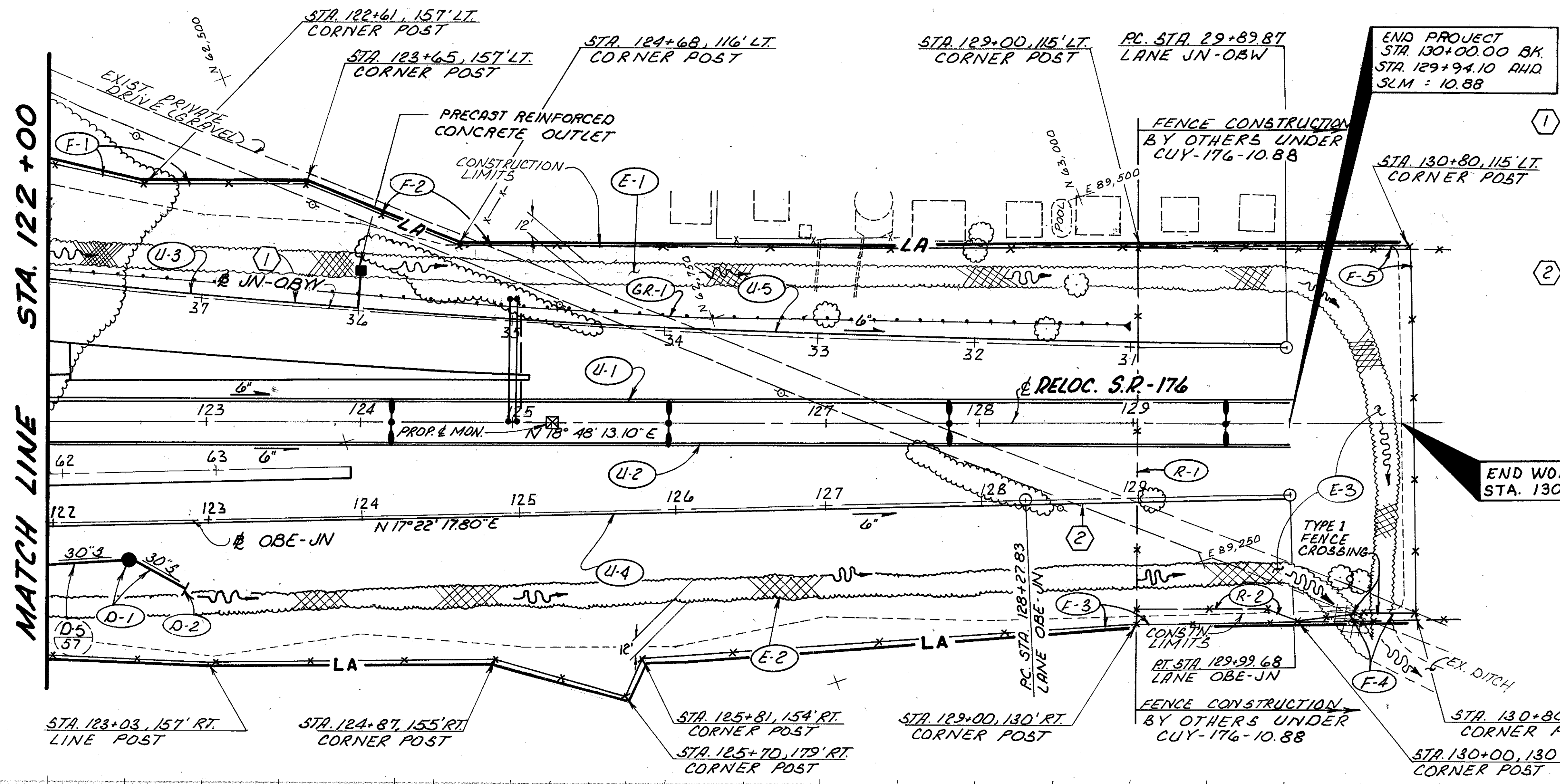
REF. No.	ITEM No. EXTENSION No.		601	602	603	603	603	603	603	603	603	604	604	604	604	
	DESCRIPTION		10000 RIPRAP	20000 CONCRETE MASONRY	05900 15" CONDUIT, TYPE B, 706.02	05901 15" CONDUIT, TYPE B, AS PER PLAN	06100 15" CONDUIT, TYPE C, 706.01	06700 15" CONDUIT, TYPE F, 707.05, TYPE C	07400 18" CONDUIT, TYPE B, 706.02, 1350 D-LOAD MINIMUM	10400 24" CONDUIT, TYPE B, 706.02, 1350 D-LOAD MINIMUM	13600 30" CONDUIT, TYPE C, 706.02 OR 706.08 E.S.	01201 CATCH BASIN, NO. 4, AS PER PLAN	01601 CATCH BASIN, NO. 5, AS PER PLAN	01801 CATCH BASIN, NO. 5A, AS PER PLAN	02000 CATCH BASIN, NO. 6,	14602 INLET NO. 3B50
			% DENOTES JN-OBE STATIONING * DENOTES JN-OBW STATIONING # DENOTES OBW-JN STATIONING ~ DENOTES OBE-JN STATIONING													
LOCATION	STATION TO STATION / OFFSET	SIDE	SQ YD	CU YD	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	EACH
D-1	*45 + 00 115 + 00	LT			170											
D-2	115 + 00	LT		0.25												
D-3	119 + 50	LT														
D-4	119 + 50	C/L														
D-5	119 + 50 122 + 50	RT														
D-6	#53 + 00 ~113 + 00	RT														
D-7	~113 + 00	LT	11	0.21												
D-8	~30 + 00 *45 + 00	RT														
D-9	117 + 00 119 + 50	RT					240	110								
D-10	~41 + 25BK. ~43 + 40BK.	RT			100	220										
TOTALS			11	0.46	270	460	110	76	54	101	300	1	3	1	2	1

ESTIMATED QUANTITIES - STATION 113+00 TO STA 122+00

REF. No.	ITEM No. EXTENSION No.		603	SPECIAL	605	605	605	606	606	606	606	SPECIAL	607	670	802
	DESCRIPTION		01500 6" CONDUIT, TYPE F, 707.17 NON-PERFORATED ASTM D-3034 SDR 35, SS 931 OR SS 944	60436600 PRECAST REINFORCED CONCRETE OUTLET	11110 6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	12210 6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	13410 6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	13000 GUARDRAIL, TYPE 5	15500 GUARDRAIL, BARRIER DESIGN, TYPE 5	26100 ANCHOR ASSEMBLY, TYPE E	26500 ANCHOR ASSEMBLY, TYPE T	69010350 IMPACT ATTENUATOR, TYPE 1	23000 FENCE, TYPE CLT	40000 DITCH EROSION PROTECTION	00100 BARRIER REFLECTOR, TYPE A
			% DENOTES JN-OBE STATIONING * DENOTES JN-OBW STATIONING # DENOTES OBW-JN STATIONING ~ DENOTES OBE-JN STATIONING												
LOCATION	STATION TO STATION / OFFSET	SIDE	LIN FT	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	LIN FT	SQ YD	EACH
U-1	113 + 00 119 + 50	LT													
U-2	113 + 00 119 + 50	RT													
U-3	113 + 00 119 + 50	LT	35												
U-4	113 + 00 113 + 50	RT													
U-5	119 + 54 122 + 00	LT													
U-6	119 + 54 122 + 00	RT													
U-7	119 + 50 122 + 00	LT	35												
U-8	#51 + 00 #53 + 00	RT	28												
U-9	#51 + 00 #53 + 00	LT	37												
U-10	#53 + 04 #55 + 00	RT	25												
U-11	#55 + 00 #56 + 00	RT			1										
U-12	~114 + 00 ~116 + 25	RT													
U-13	~114 + 00 ~116 + 25	LT													
U-14	~116 + 50 ~119 + 47	RT	33												
U-15	~116 + 50 ~118 + 00	LT	24												
U-16	~119 + 50 ~122 + 00	RT				350									
U-17	*58 + 00 *44 + 00	RT													
U-18	*43 + 50 *44 + 00	LT													
U-19	~39 + 09 ~47 + 00	RT	34												
U-20	~40 + 00 BK ~42 + 00 AHD	LT	30			50									
U-21	~43 + 75 BK ~39 + 00 AHD	RT													
E-1	113 + 00 119 + 45	LT													
E-2	119 + 55 121 + 05	LT													
E-3	117 + 95 119 + 45	RT													
E-4	*38 + 00 44 + 00	RT													
E-5	121 + 00 122 + 00	RT													
E-6	51 + 45 53 + 95	RT													
GR-1	~41 + 00 ~42 + 00	LT													
GR-2	~41 + 40 ~42 + 00	RT													
GR-3	117 + 50 121 + 00	LT													
GR-4	*38 + 00 *41 + 18	RT													
F-1	117 + 95 119 + 60	RT													
F-2	119 + 60 122 + 00	RT													
F-3	118 + 70 122 + 00	LT													
TOTALS			281	1	400	4594	1478	972.5	12.5	2	3	1	780	2393	15

QUANTITIES IN BRACKETS ARE SUBJECT TO NON-PERFORMANCE DUE TO NOISE WALL CONSTRUCTION UNDER SEPARATE CONTRACT

BENCHMARK: TBM 31 TOP ANTI-HEAD 1' UP IN W. SIDE OF 24" COTTONWOOD TREE 50' N. OF POLE NO. 251981 W. SIDE HINCKLEY DRIVE ELEV. 714.06



CURVE DATA

1	PI STA 39+41.90
	$\Delta = 5^{\circ} 54' 6.40''$
	$D_c = 0^{\circ} 40' 0''$
	$R = 8594.37'$
	$T = 443.03'$
	$L = 885.27'$
	$CH = 884.88'$
	$E = 11.41'$
	$M = 11.40'$
2	PI STA 129+13.76
	$\Delta = 1^{\circ} 25' 33.60''$
	$D_c = 0^{\circ} 50' 0''$
	$R = 6875.49'$
	$T = 85.93'$
	$L = 171.85'$
	$CH = 171.85'$
	$E = 0.54'$
	$M = 0.54'$

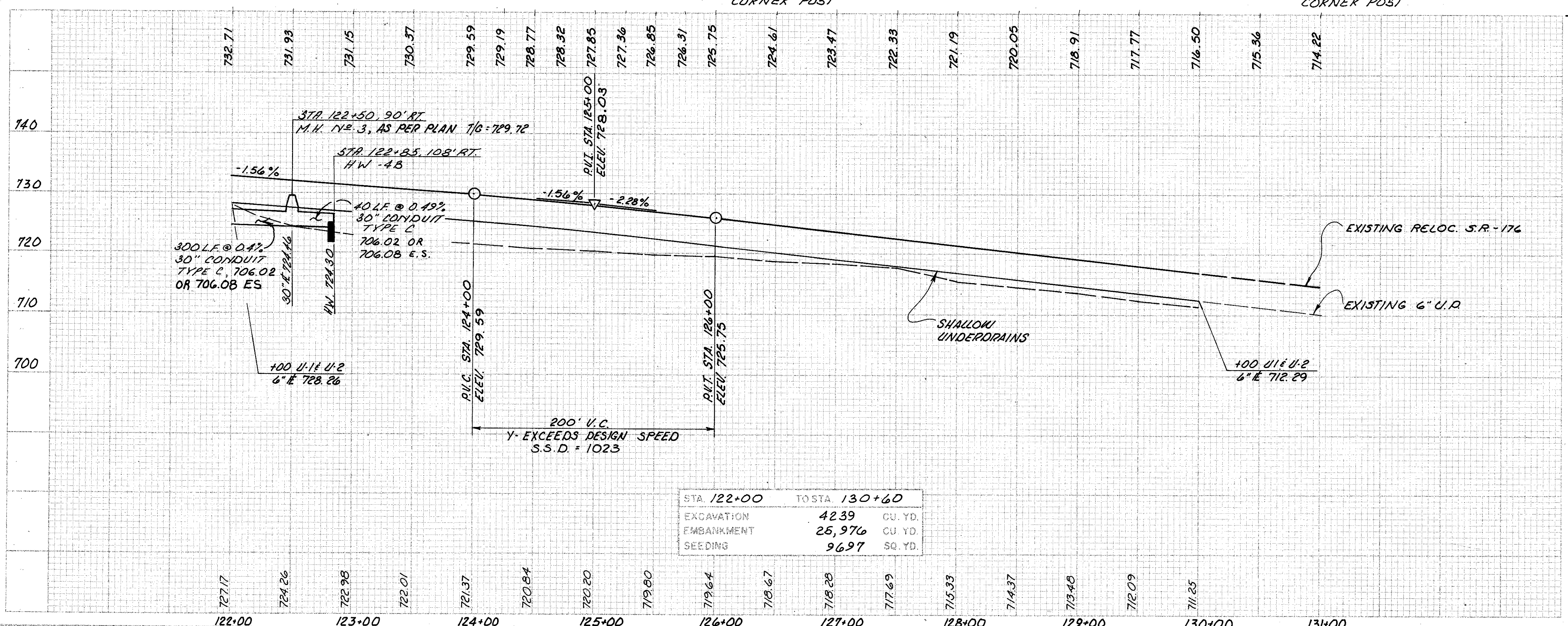
DRAINAGE STRUCTURE DATA

D-1	STA. 122+50, 90' RT. M.H. N ^o . 3, AS PER PLAN T/C = 729.72
D-2	STA. 122+85, 108' RT. H.W. - 4.8

NOTES: (F-4) & (F-5) SHALL INCLUDE THE CONSTRUCTION OF THE FENCE AS SHOWN AND THE SUBSEQUENT REMOVAL OF THE FENCE PRIOR TO THE START OF CONSTRUCTION FOR CUY-176-10.88.

(F-4), (F-5) & (E-3) MAY BE SUBJECT TO NON-PERFORMANCE IF CUY-176-10.88 IS BUILT FIRST.

(R-1) & (R-2) MAY BE SUBJECT TO NON-PERFORMANCE IF CUY-176-10.14 IS BUILT FIRST.



REFERENCES

QUANTITIES FOR REFERENCED ITEMS	60
PROFILES U-3 & U-5	61
PROFILE U-4	63
PAVEMENT DETAILS	172-175

STA. 122+00 TO STA. 130+60	
EXCAVATION	4239 CU. YD.
EMBANKMENT	25,976 CU. YD.
SEEDING	9697 SQ. YD.

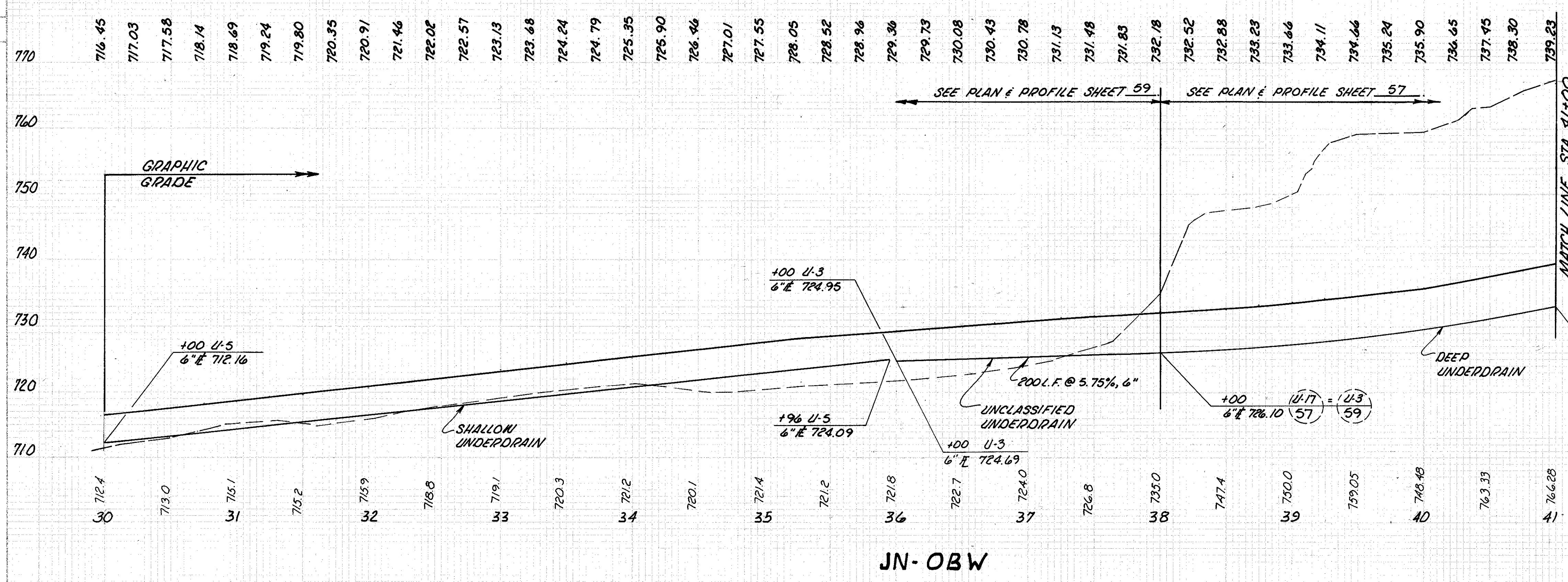
RELOC. SR. - 176 PLAN & PROFILE STA. 122+00 TO STA. 130+00

RELOC. S.R.-176

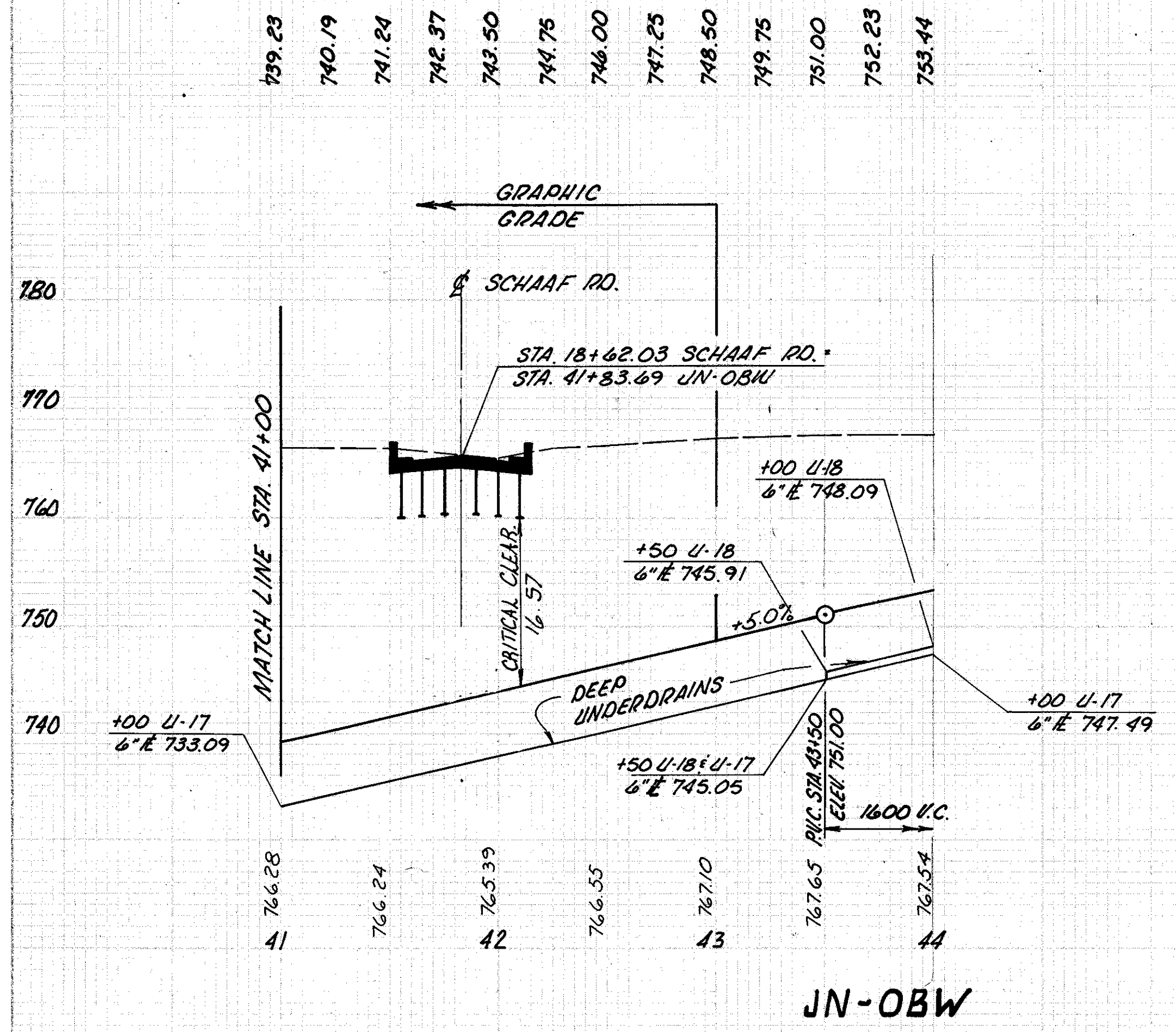
ESTIMATED QUANTITIES - STATION 122+00 TO STA 130+00

ITEM No. EXTENSION No.	DESCRIPTION		202	602	603	604	SPECIAL	605	605	606	606	607	670	802	
			75000 FENCE REMOVED	20000 CONCRETE MASONRY	13600 30" CONDUIT, TYPE C, 706.02 OR 706.08 E.S.	31501 MANHOLE, NO. 3, AS PER PLAN	60436600 PRECAST REINFORCED CONCRETE OUTLET	11110 6" SHALLOW PIPE UNDERDRAIN WITH FABRIC WRAP	13410 6" UNCLASS- IFIED PIPE UNDERDRAIN WITH FABRIC WRAP	13000 GUARDRAIL, TYPE 5	26100 ANCHOR ASSEMBLY, TYPE E	23000 FENCE, TYPE CLT	40000 DITCH EROSION PROTECTION	00100 BARRIER REFLECTOR, TYPE A	
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	LIN FT	CU YD	LIN FT	EACH	EACH	LIN FT	LIN FT	LIN FT	EACH	LIN FT	SQ YD	EACH	
D-1	122 + 50 122 + 85	RT			40	1									
D-2	122 + 85	RT		0.56											
U-1	122 + 00 130 + 00	LT						800							
U-2	122 + 00 130 + 00	RT						800							
U-3	*36 + 00 *38 + 00	RT					1		200						
U-4	**122 + 00 **130 + 00	RT						800							
U-5	*30 + 00 *35 + 96	RT						596							
E-1	*29 + 90 *38 + 00	RT													
E-2	122 + 00 130 + 00	RT											1067		
E-3	130 + 00 132 + 00	LT/RT											1067 (470)		
GR-1	*31 + 00 *38 + 00	RT								650	1			7	
F-1	122 + 00 123 + 30	LT											135		
F-2	123 + 30 129 + 00	LT											[580]		
F-3	122 + 00 130 + 00	RT											830		
F-4	130 + 00 130 + 80	RT											(80)		
F-5	129 + 00 130 + 80	LT/RT											(420)		
R-1	129 + 00	LT/RT											(235)		
R-2	129 + 00 130 + 00	RT											(110)		
TOTALS				845	0.56	40	.1	1	2996	200	650	1	2045	2604	7

QUANTITIES IN PARENTHESES ARE SUBJECT TO NON-PERFORMANCE AS DIRECTED BY THE ENGINEER.
 QUANTITIES IN BRACKETS ARE SUBJECT TO NON-PERFORMANCE DUE TO NOISE WALL CONSTRUCTION UNDER SEPERATE CONTRACT.
 * DENOTES JN-DBW STATIONING
 ** DENOTES DBE-JN STATIONING



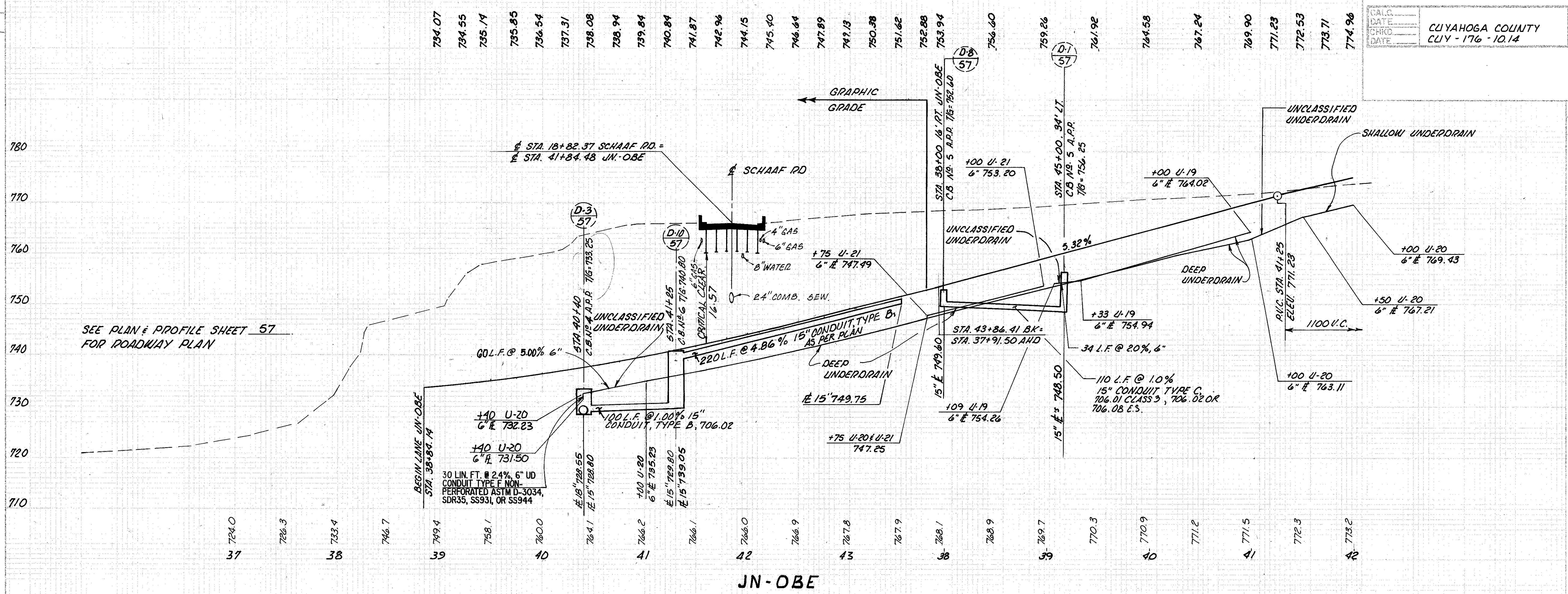
JN-OBW



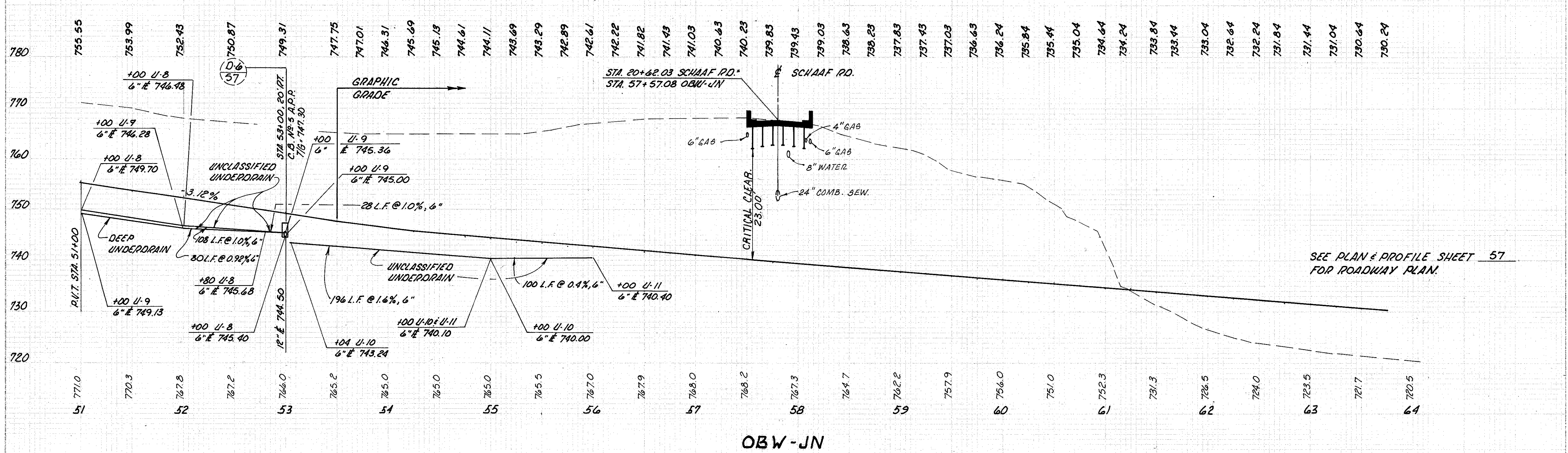
JN-OBW

ENG AREA		VOLUME	
CUT	FILL	CUT	FILL

SECTIONING
 END WORK
 SHEET NO.



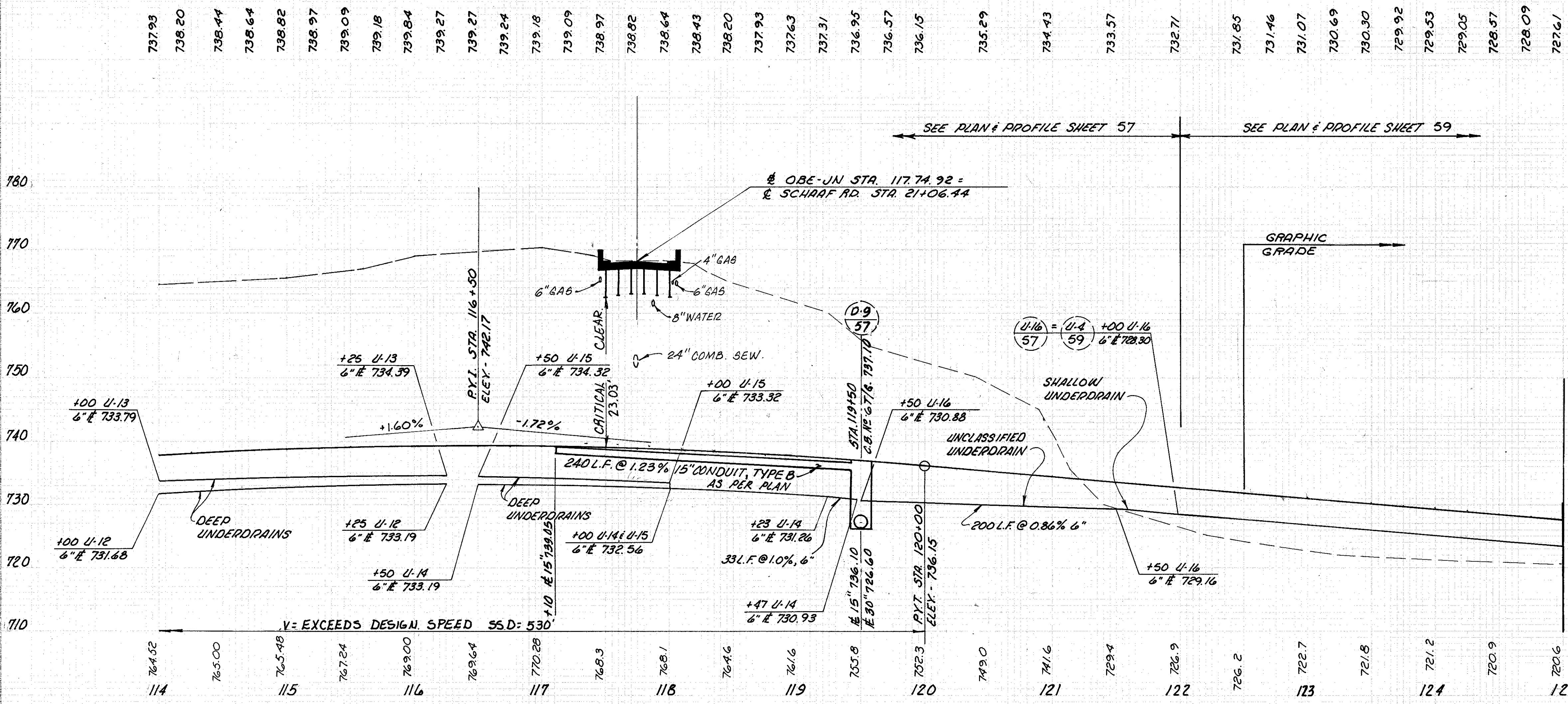
ERD AREA		VOLUME	
OUT	FILL	OUT	FILL



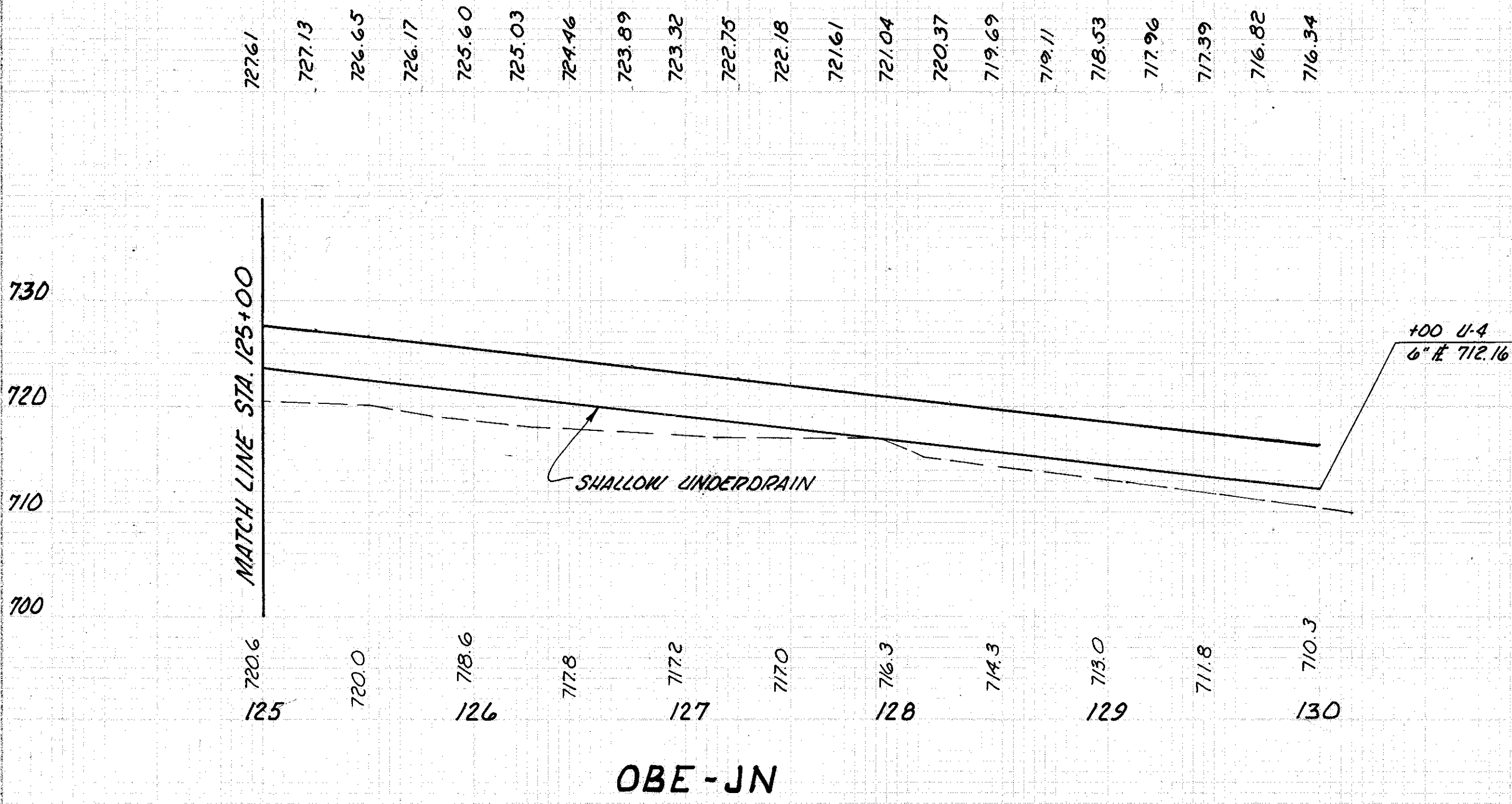
SEE PLAN & PROFILE SHEET 57 FOR ROADWAY PLAN.

PROFILE LANES OBW-JN & JN-OBE STA. 51+00 TO STA. 64+00

RELOC. S.R.-176

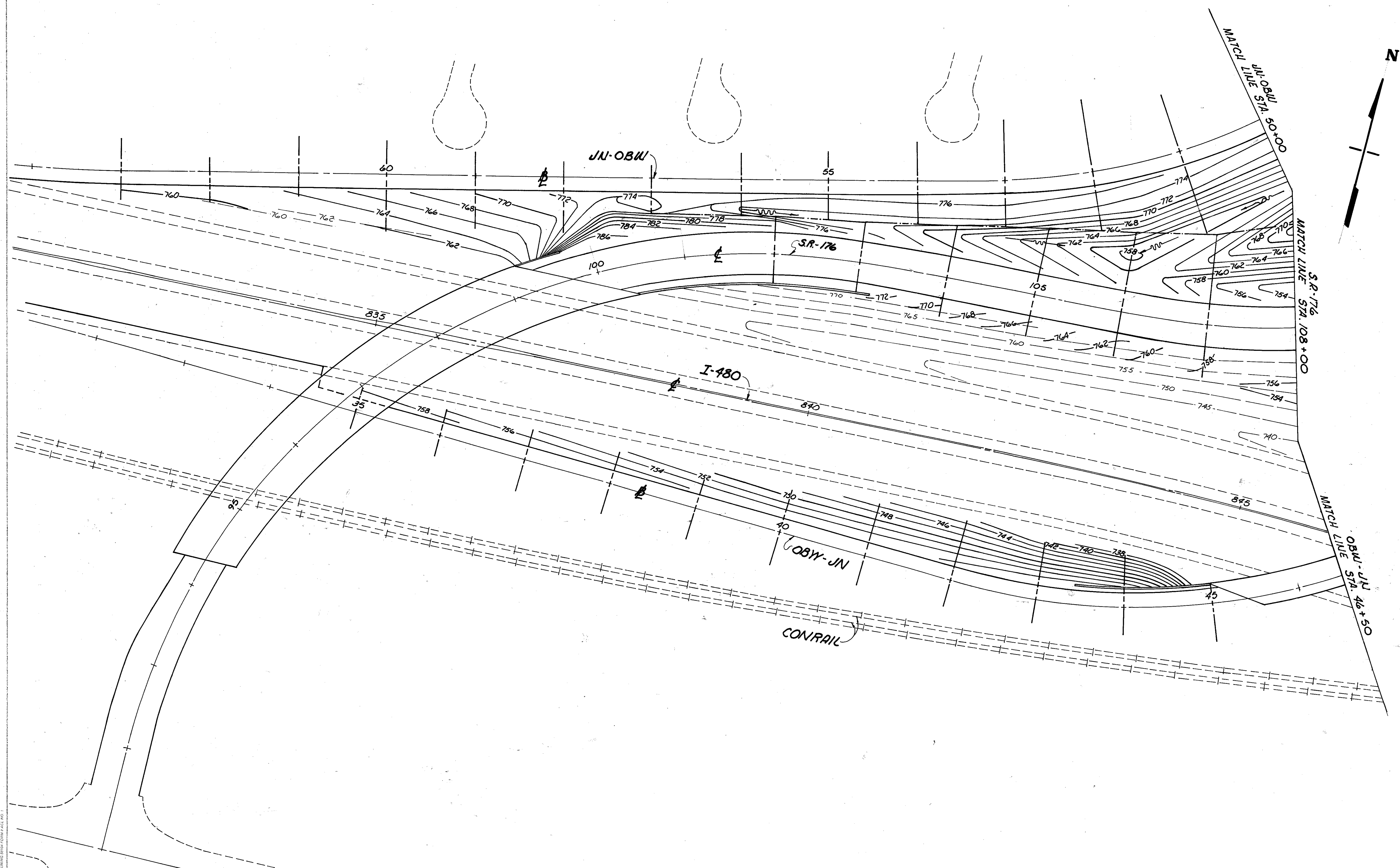


OBE - JN



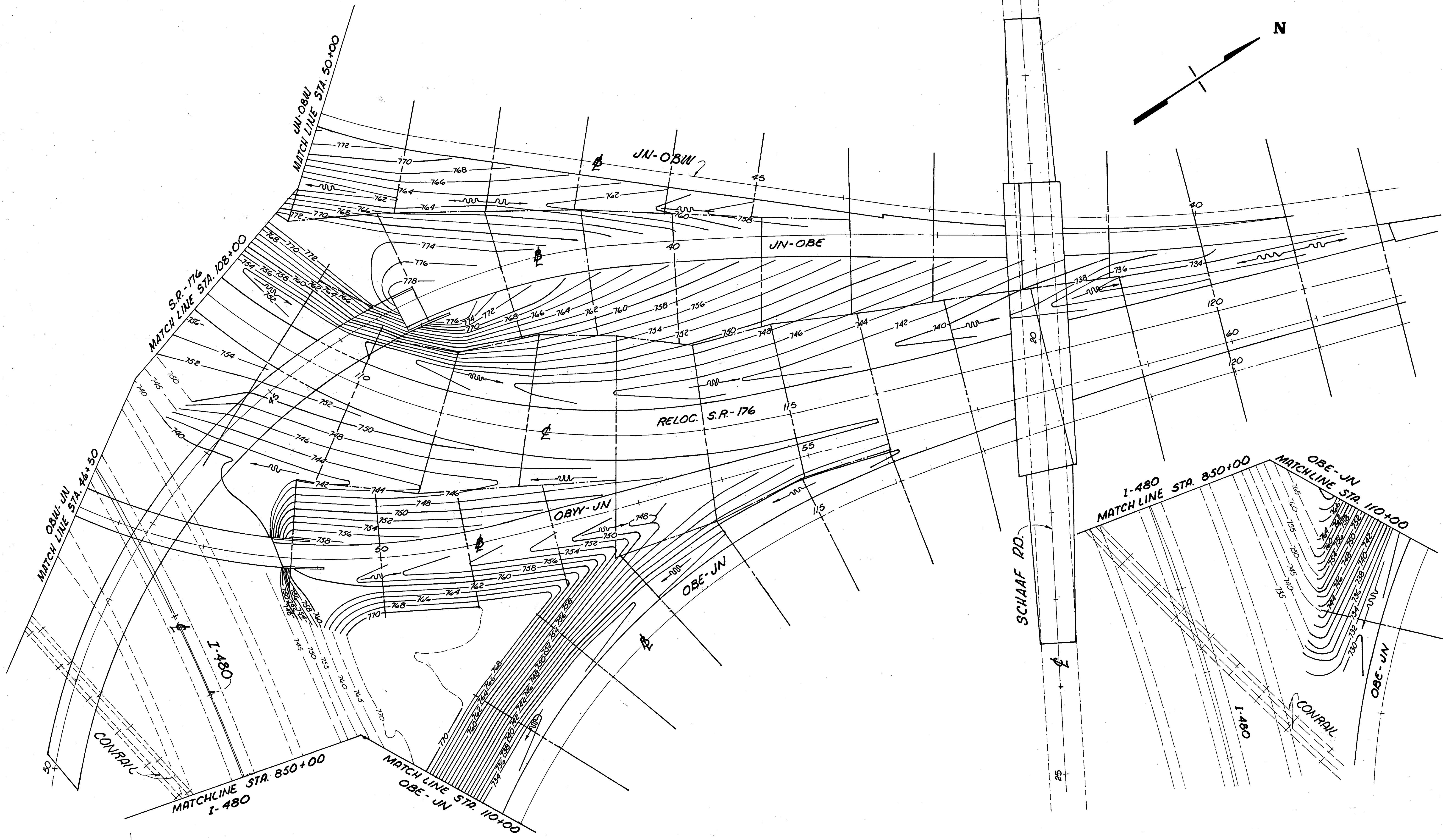
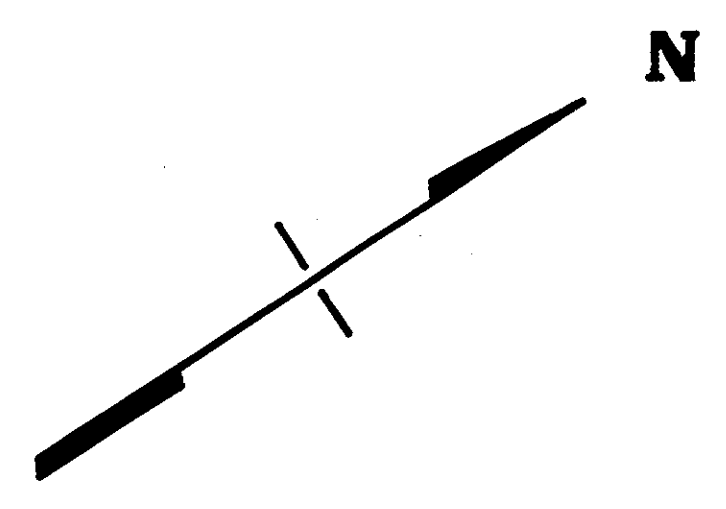
OBE - JN

END AREA		VOLUME	
CUT	FILL	CUT	FILL



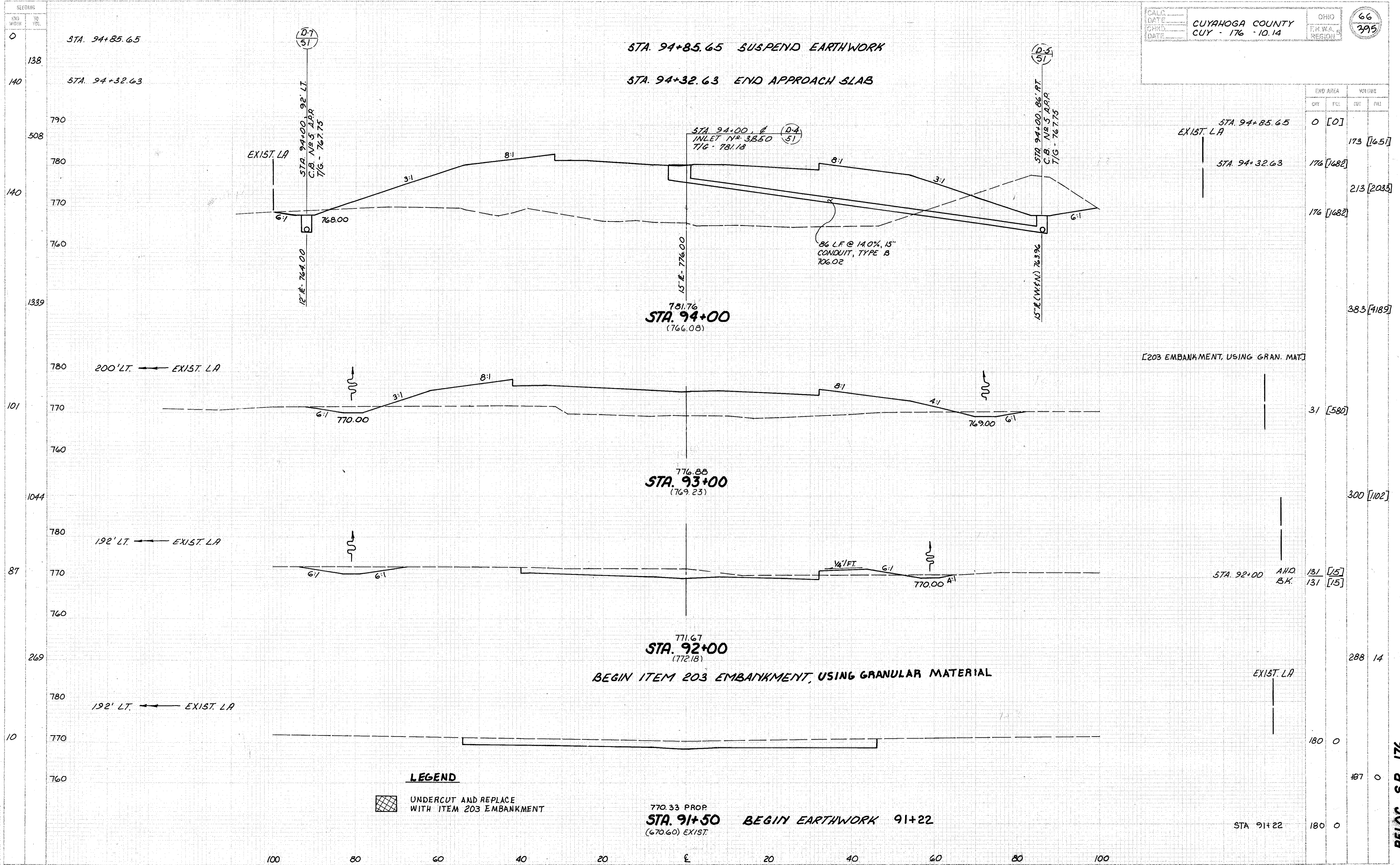
INTERCHANGE GRADING & CROSS SECTION INDEX PLAN

RELOC. SR.-176



INTERCHANGE GRADING & CROSS SECTION INDEX PLAN

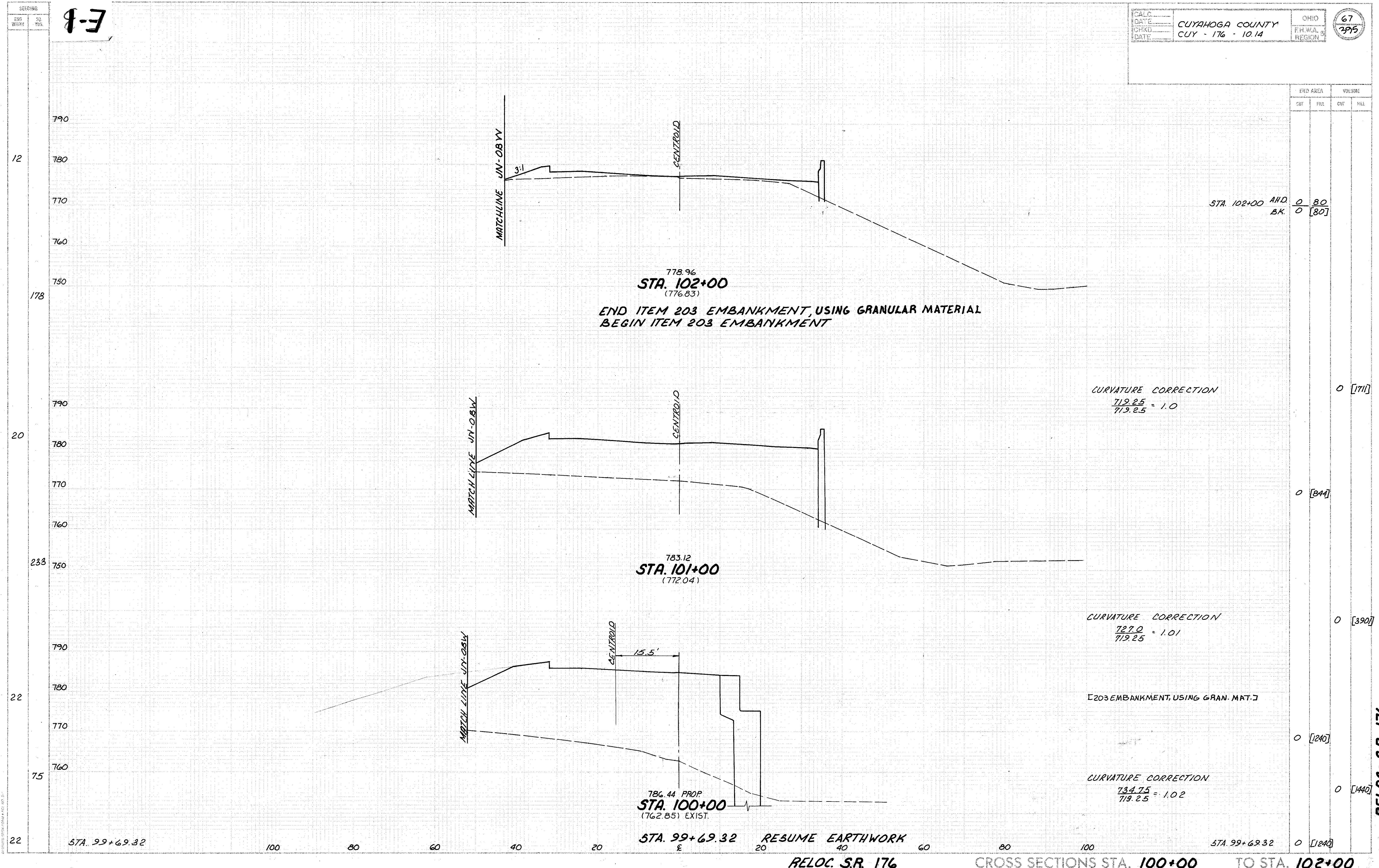
RELOC. S.R.-176



END AREA	VOLUME	
	CUT	FILL
0 [0]		173 [65]
176 [682]		213 [2033]
176 [682]		383 [4189]
31 [582]		300 [102]
131 [15]		288 14
131 [15]		187 0
180 0		180 0

LEGEND
 UNDERCUT AND REPLACE WITH ITEM 203 EMBANKMENT

770.33 PROP
STA. 91+50 BEGIN EARTHWORK 91+22
 (670.60) EXIST.



1-7

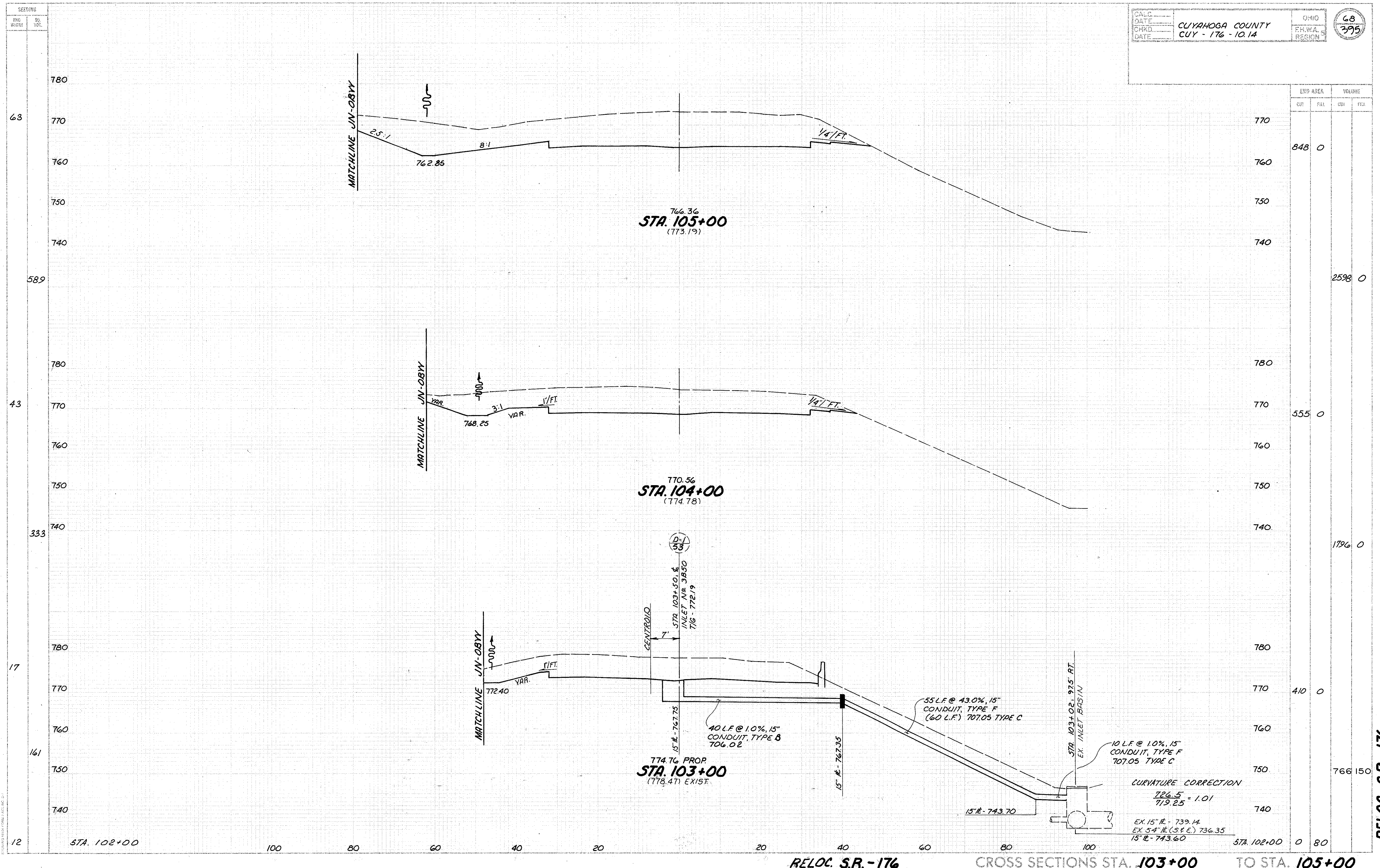
12

20

22

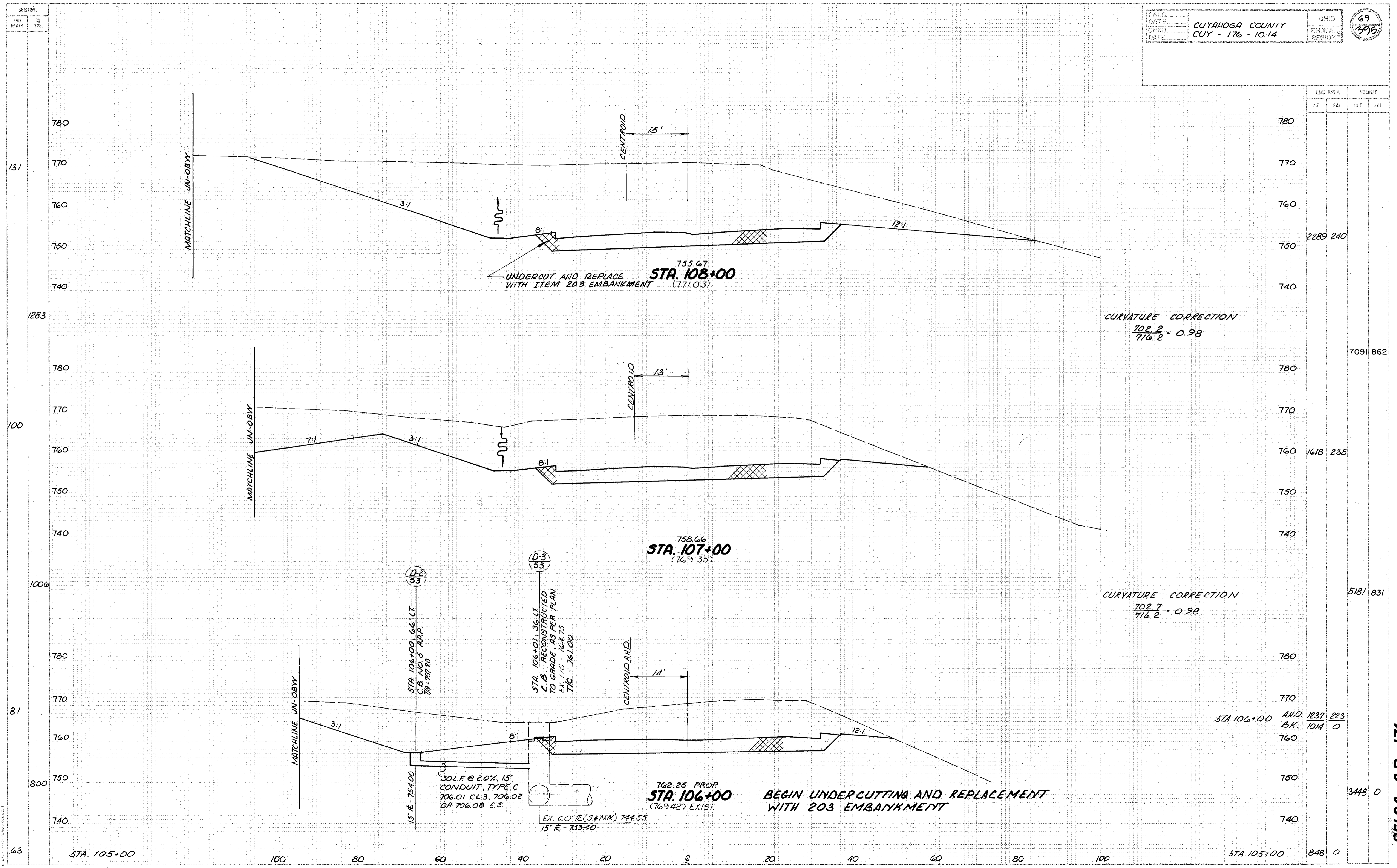
22

RELOC. S.R. 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	848	0	0
0	2598	0	0
0	555	0	0
0	1796	0	0
0	410	0	0
0	766	0	150

RELOC. S.R. - 176 CROSS SECTIONS STA. 103+00 TO STA. 105+00

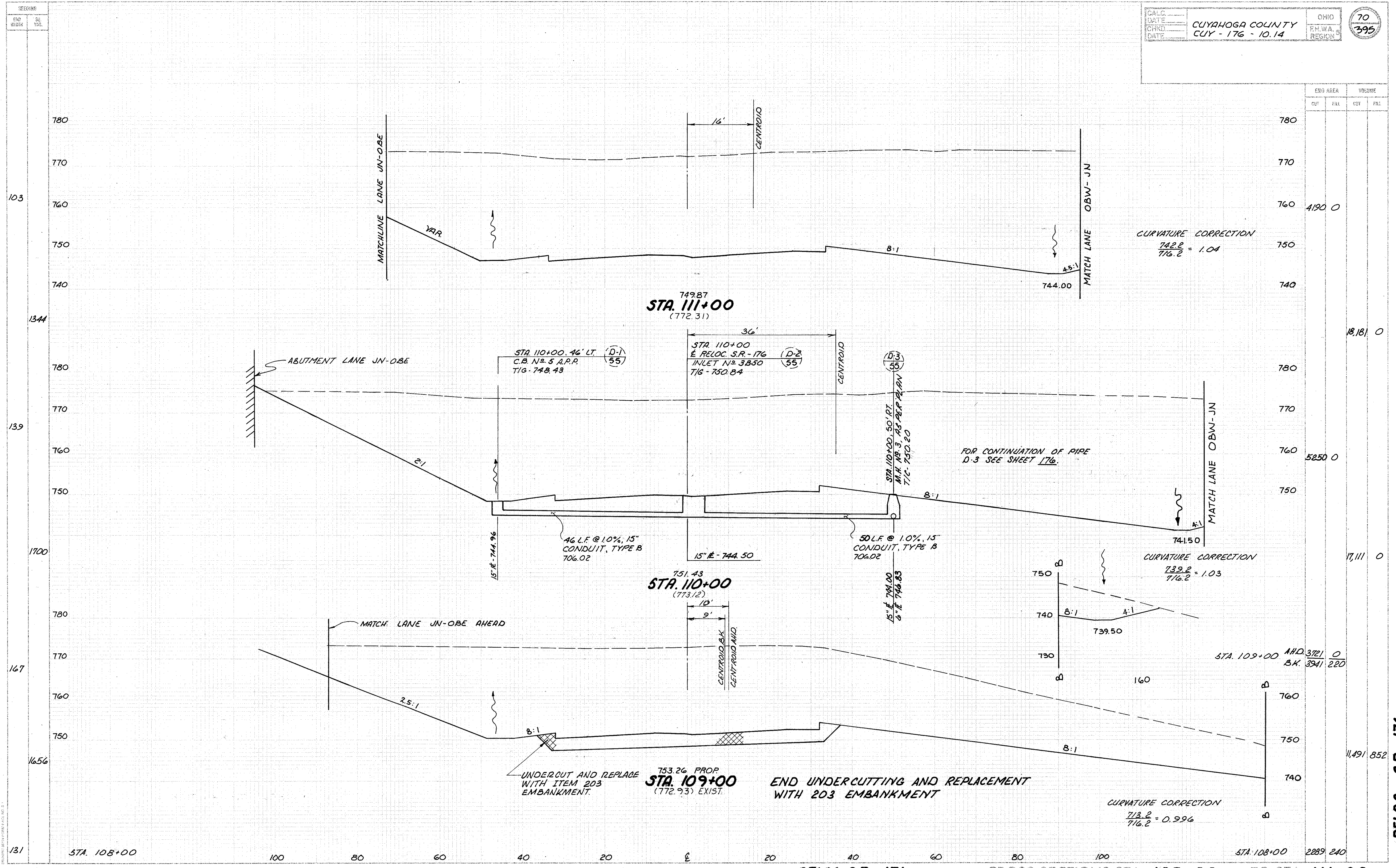


CURVATURE CORRECTION
 $\frac{702.2}{716.2} = 0.98$

CURVATURE CORRECTION
 $\frac{702.7}{716.2} = 0.98$

STA. 106+00 AND BK. 1014
 1237 223
 1014 0

STA.	EMB AREA		VOLUME	
	CUT	FILL	CUT	FILL
105+00	848	0		
106+00	1618	235		
107+00	2289	240		
108+00	7091	862		
TOTAL	5181	831	3448	0



STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
108+00			2289	240
109+00			11,491	852
110+00			17,111	0
111+00			5250	0
112+00			18,181	0
113+00				
114+00			4190	0

CURVATURE CORRECTION
 $\frac{739.2}{776.2} = 1.03$

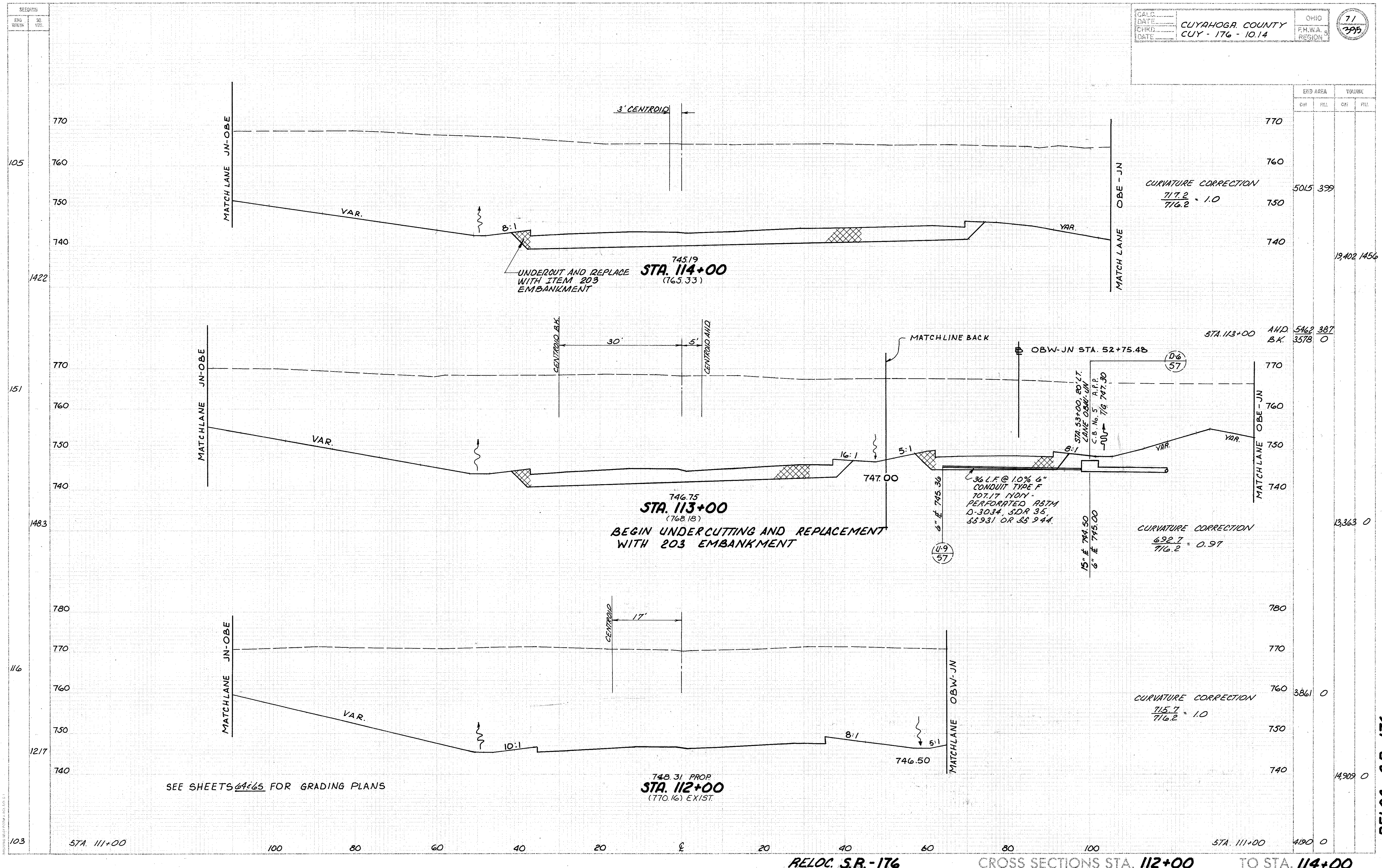
CURVATURE CORRECTION
 $\frac{713.2}{776.2} = 0.996$

FOR CONTINUATION OF PIPE
 D-3 SEE SHEET 176.

END UNDERCUTTING AND REPLACEMENT
 WITH 203 EMBANKMENT

UNDERCUT AND REPLACE
 WITH ITEM 203
 EMBANKMENT.

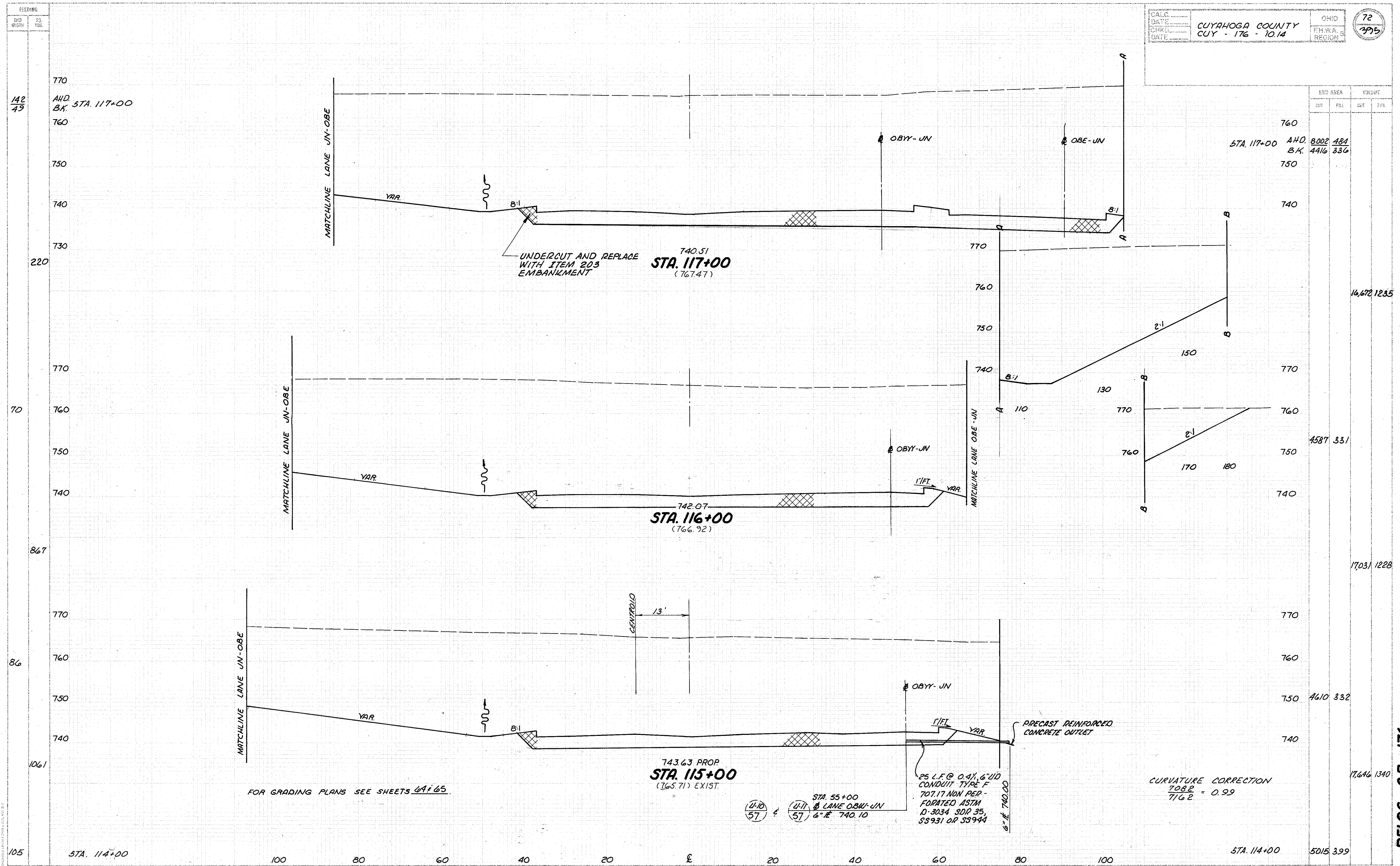
RELOC. S.R. - 176 CROSS SECTIONS STA. 109+00 TO STA. 111+00



STATION	EXIST. AREA		VOLUME	
	CUT	FILL	CUT	FILL
105				
1422				
151				
1483				
116				
1217				
103				
STA. 111+00				
STA. 113+00	AHD	5462	387	
	B.K.	3578	0	
STA. 114+00				
STA. 111+00				

RELOC. S.R.-176 CROSS SECTIONS STA. 112+00 TO STA. 114+00

RELOC. S.R.-176



142
 49
 70
 867
 86
 1061
 105

STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
117+00				
117+00	8002	484	14,672	1235
116+00	4587	331	17,031	1228
115+00	4610	332	17,646	1340
114+00	5015	399		

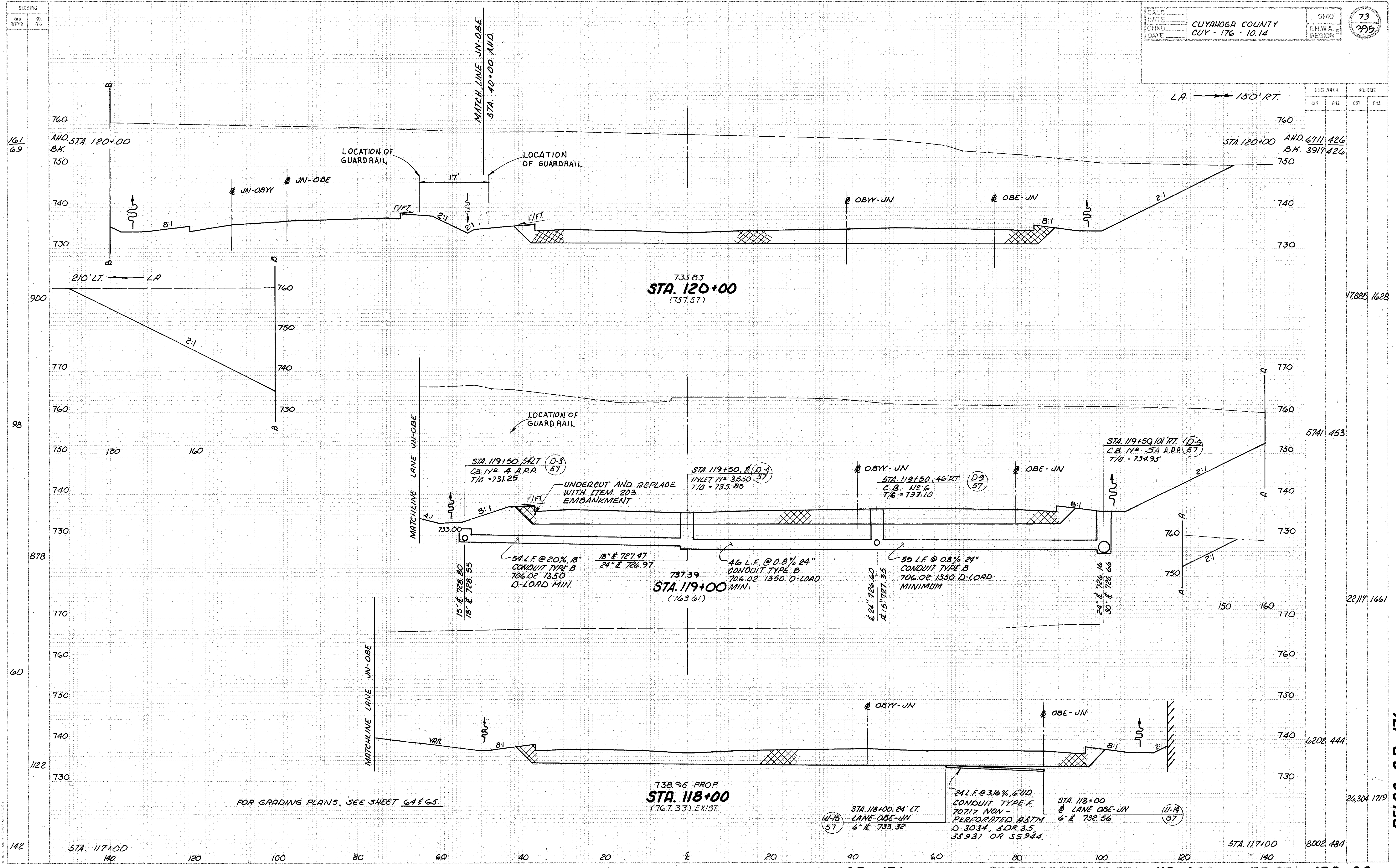
FOR GRADING PLANS SEE SHEETS 64 & 65

743.63 PROP
STA. 115+00
 (765.71) EXIST

25 L.F. @ 0.41, 6" ID
 CONDUIT TYPE F
 707.17 NON PER-
 FORATED ASTM
 D-3034 SDP 35,
 SS931 OR SS944

CURVATURE CORRECTION
 $\frac{708.2}{716.2} = 0.99$

RELOC. S.R.-176



END AREA	VOLUME	
	CUT	FILL
6711 426		
3917 426		
5741 453		
22,117 1661		
6202 444		
26,304 1719		
8002 484		

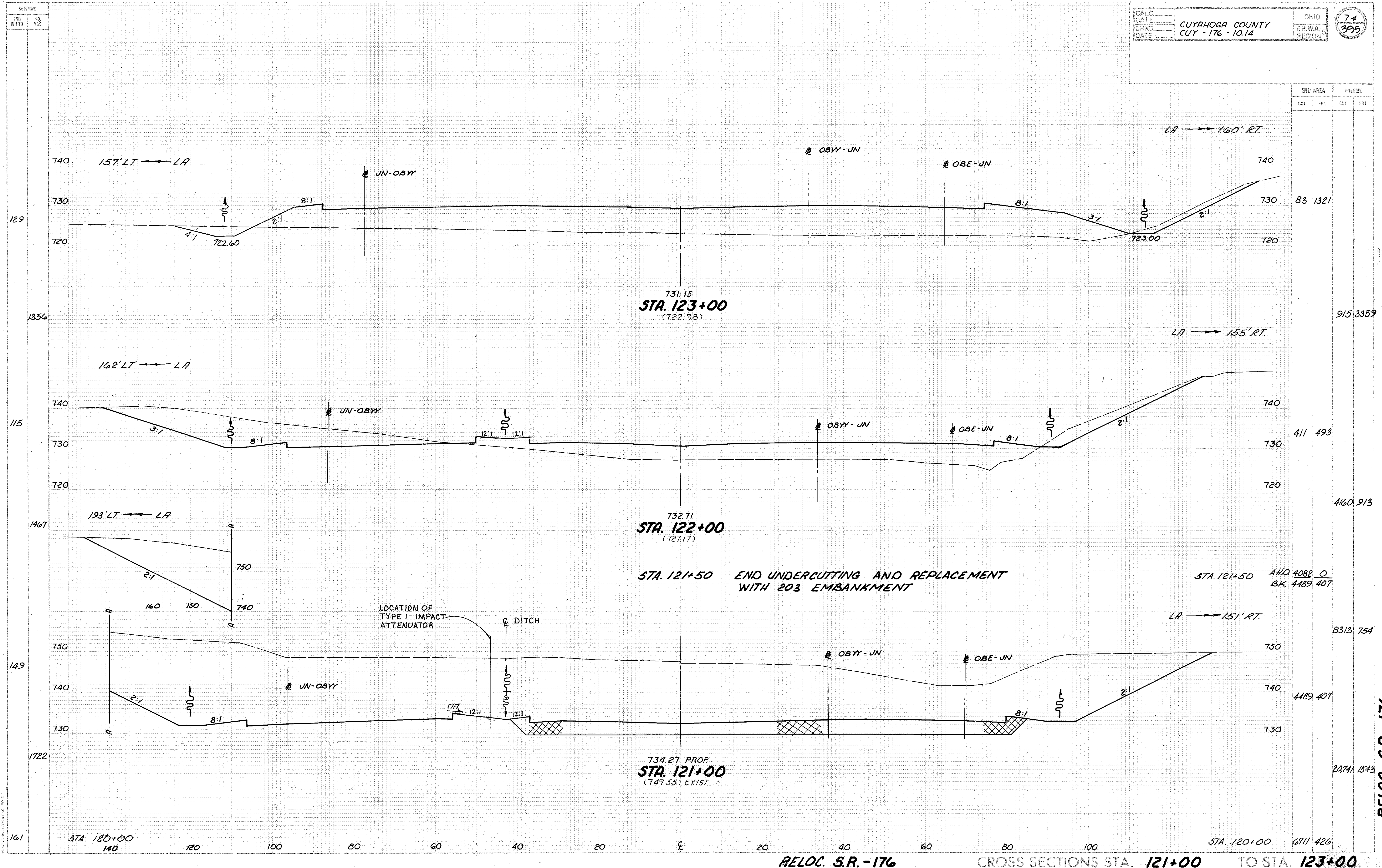
FOR GRADING PLANS, SEE SHEET 64 & 65.

738.95 PROP
STA. 118+00
 (767.33) EXIST.

RELOC. S.R. - 176

CROSS SECTIONS STA. 118+00 TO STA. 120+00

RELOC. S.R. - 176

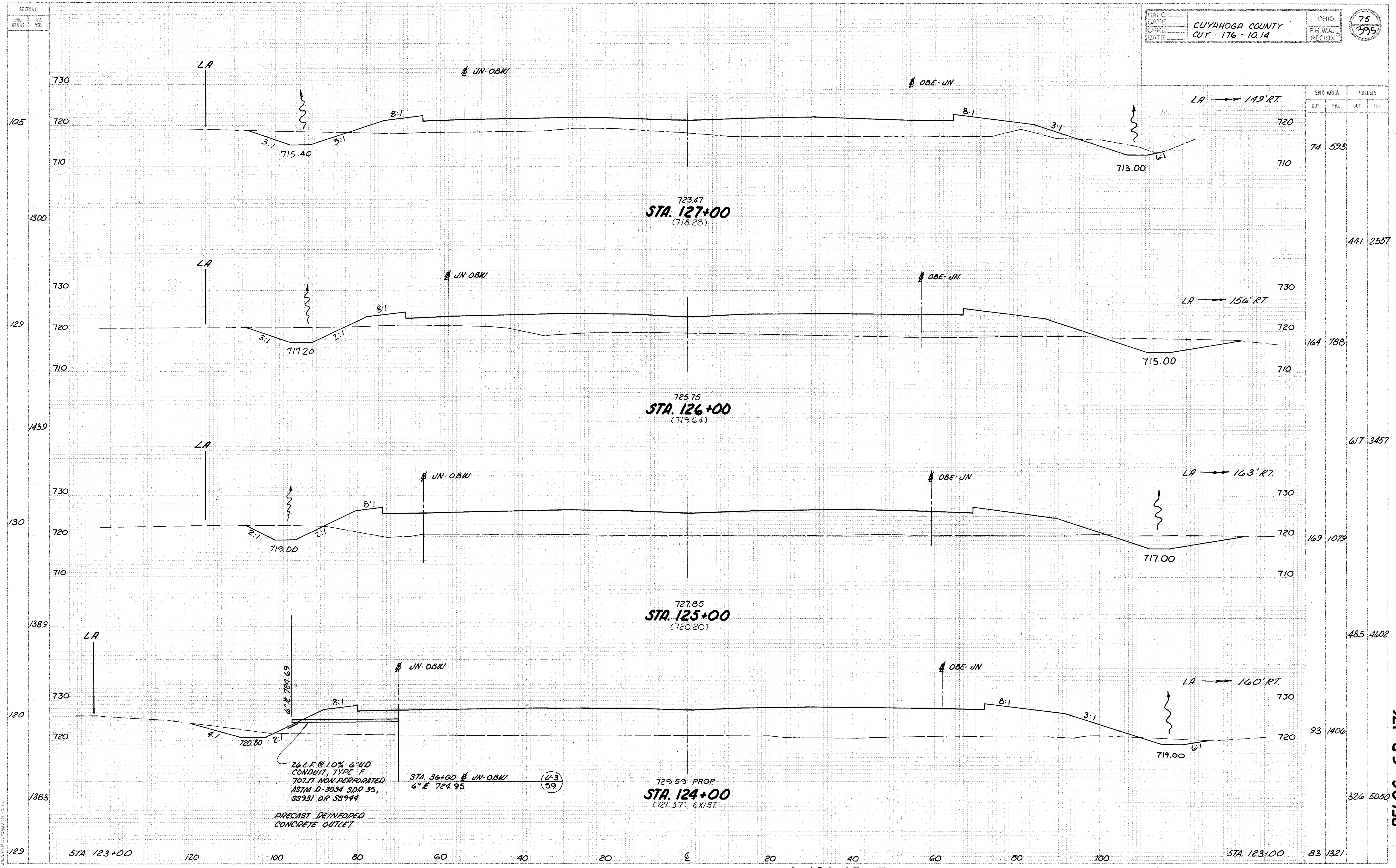


END AREA		VOLUME	
CUT	FILL	CUT	FILL
83	1321		
		915	3359
411	493		
		4160	913
		STA. 121+50	AHD 4082.0 B.K. 4489.407
			8313 754
			4489 407
			20741 1543
		6711	426

BRUNNEN & BRETHERTON ENGINEERS, INC.

RELOC. S.R. - 176

RELOC. S.R. - 176 CROSS SECTIONS STA. 121+00 TO STA. 123+00



26 L.F. @ 1.0% 6" I.D.
 CONDUIT, TYPE F
 707.17 NON PERFORATED
 ASTM D-3034 SDR 35,
 SS931 OR SS944
 PRECAST REINFORCED
 CONCRETE OUTLET

STA. 36+00 JN-OBW
 6" E 724.95

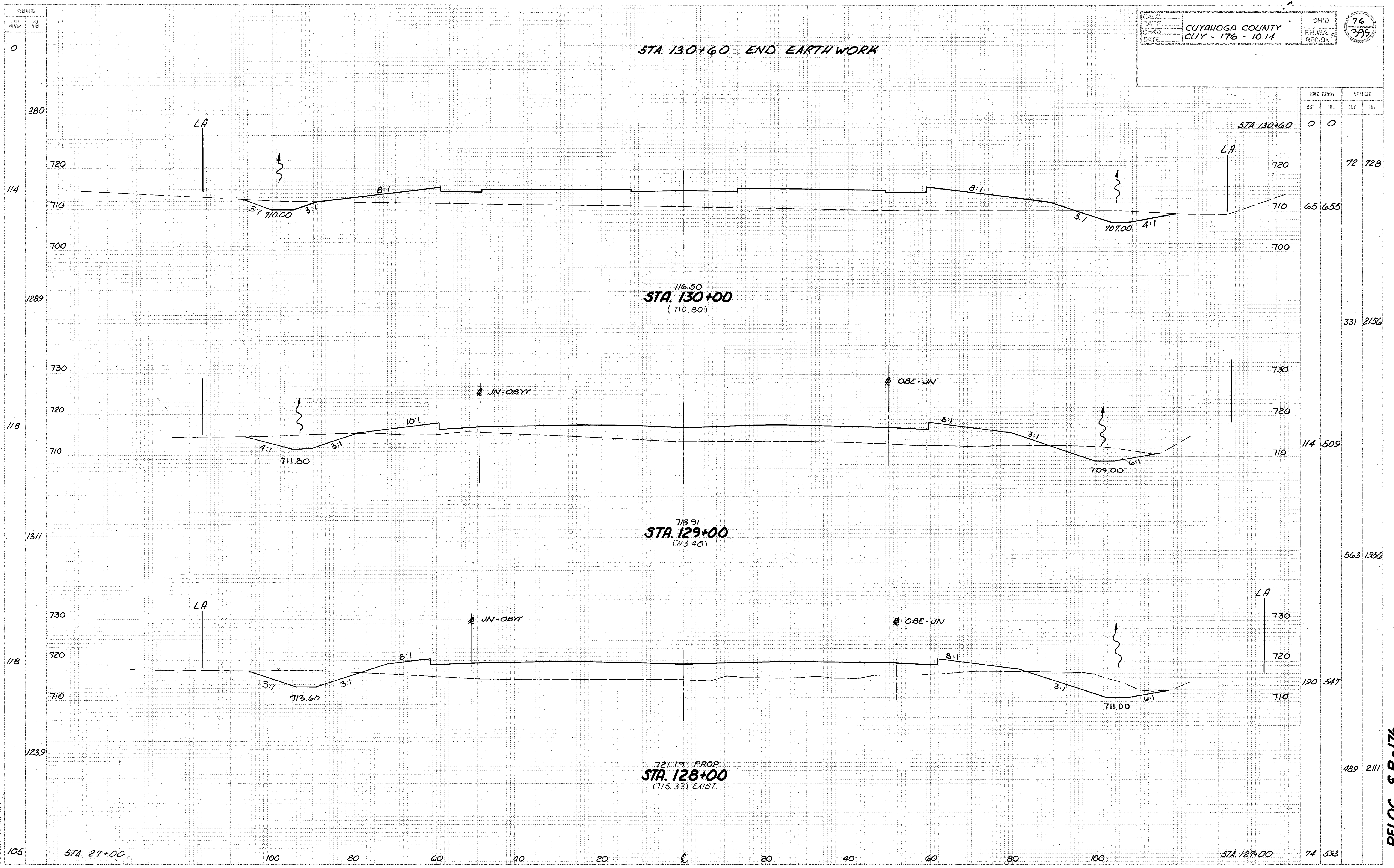
729.59 PROP
 STA. 124+00
 (721.37) EXIST

RELOC. SR-176

CALC. DATE: CUYAHOGA COUNTY
 CHKD. DATE: CUY - 176 - 10.14
 DATE: OHIO F.H.W.A. REGION

76
395

STA. 130+60 END EARTH WORK



RELOC. S.R.-176 CROSS SECTIONS STA. 128+00 TO STA. 130+00

RELOC. S.R.-176

BENCHMARK: TBM 79 DRILL HOLE WITH WINGS
 SET ON TOP OF SANDSTONE SIGN BASE TO S.W. CORNER
 CHURCH NORTH SIDE BROOKPARK 50'± W. OF WEST EDGE
 BUILDING 1600 ELEV. 772.11

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

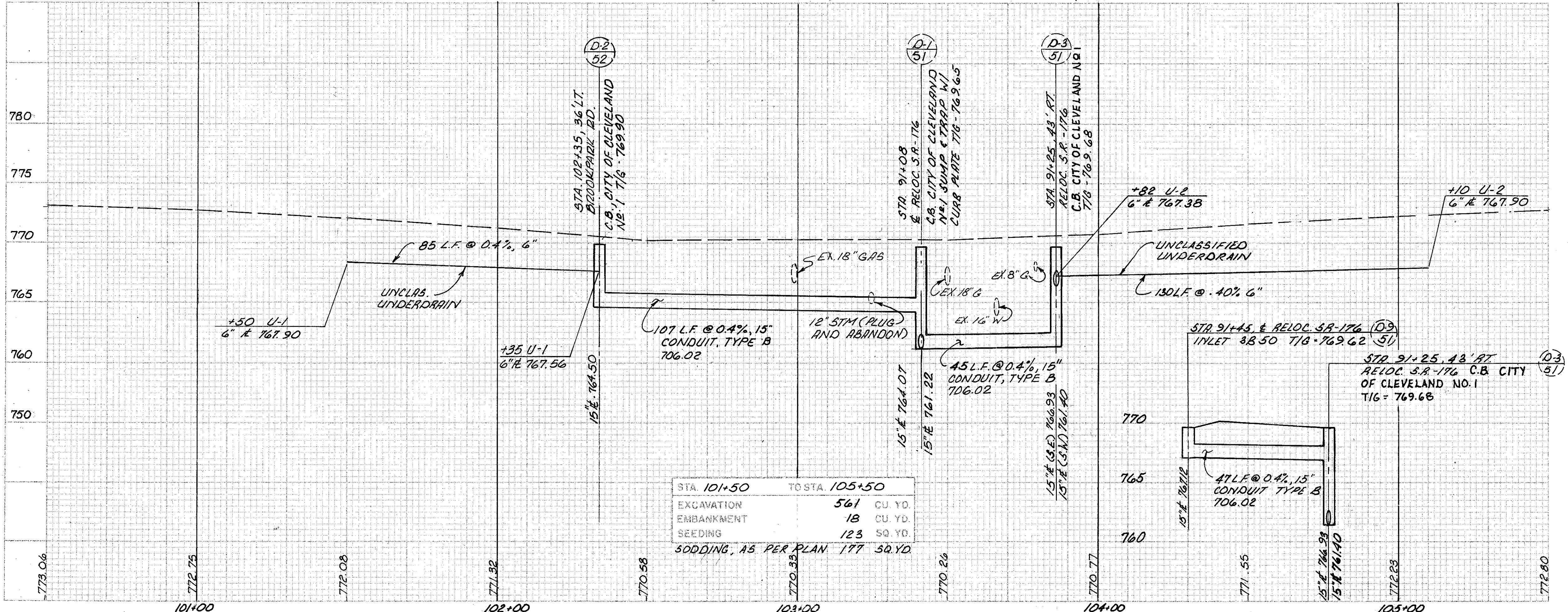
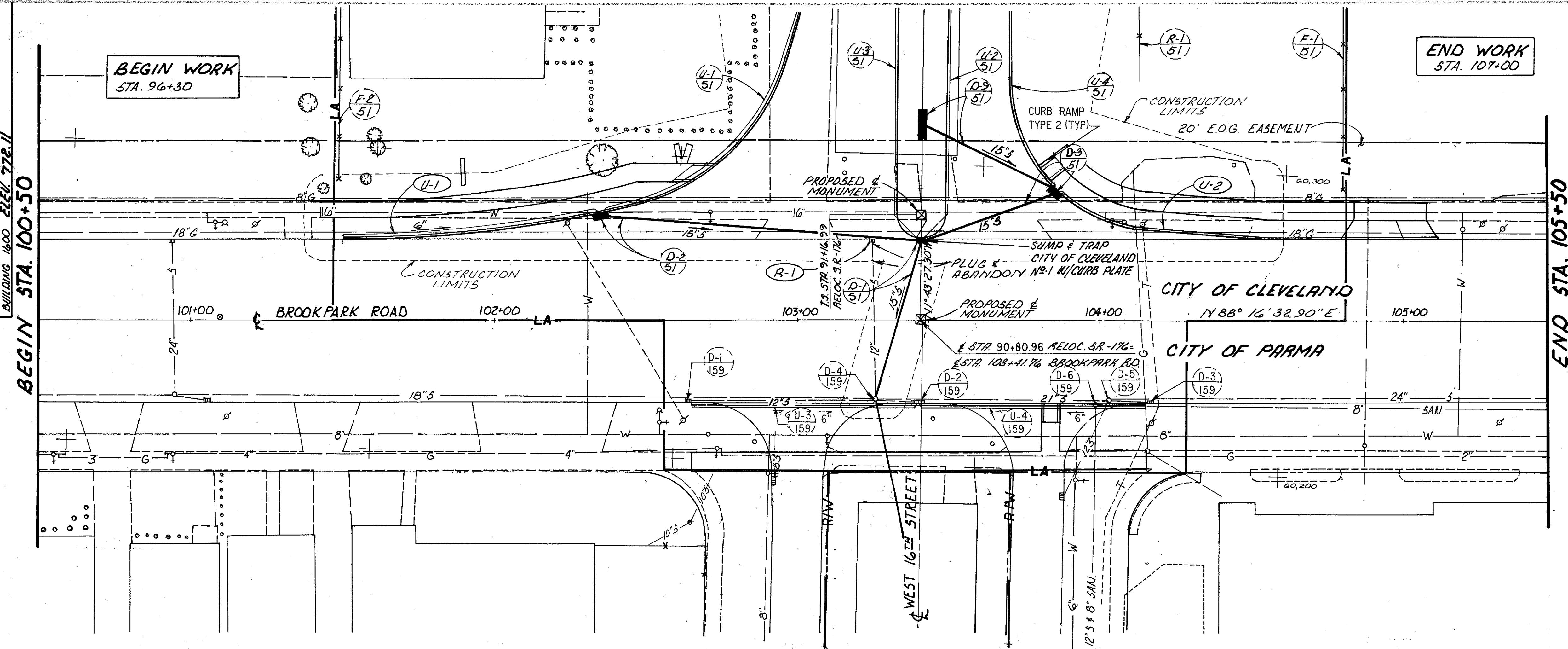
CUYAHOGA COUNTY
 CUJ - 176 - 10.14

OHIO
 F.W.A.
 REGION 7
 77
 395

CURVE DATA
 THETA-S = 7°57'57"
 L_s = 200'
 X_c = 199.61'
 Y_c = 9.26'
 L.T. = 133.47'
 ST. = 66.79'
 LC = 199.83'
 P = 2.32'
 K = 9.994'

PLAN:
 SCALE IN FEET

REFERENCES
 PAVEMENT REPLACEMENT
 IN TRENCH AREA . . . 7



PROFILE:
 HORIZ. 0 10 20 30 50
 VERT. 0 5 10
 SCALES IN FEET

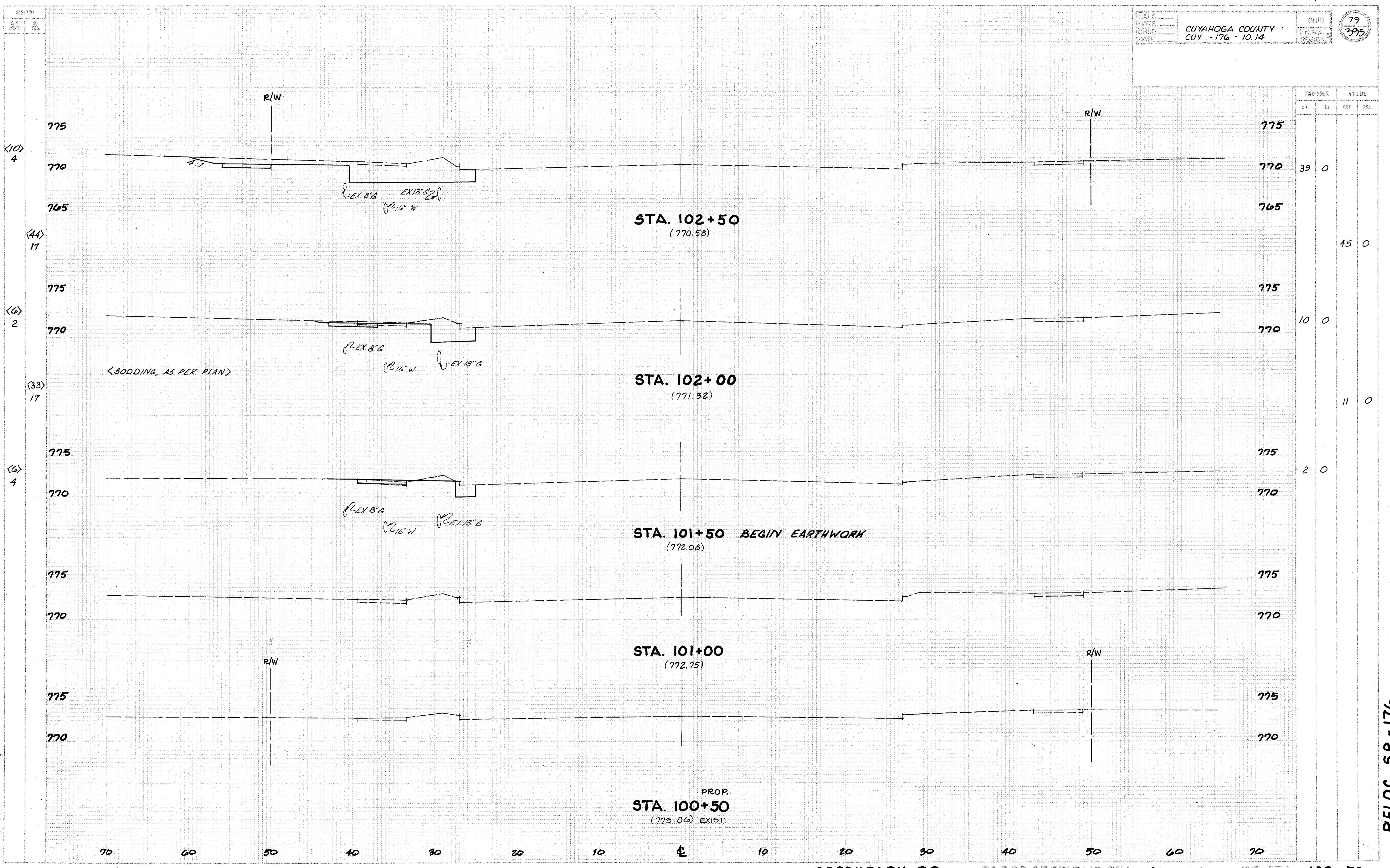
STA. 101+50	TO STA. 105+50
EXCAVATION	561 CU. YD.
EMBANKMENT	18 CU. YD.
SEEDING	123 SQ. YD.
SODDING, AS PER PLAN	177 SQ. YD.

BROOKPARK ROAD PLAN & PROFILE STA. 100+50 TO STA. 105+50

RELOC. S.R.-176

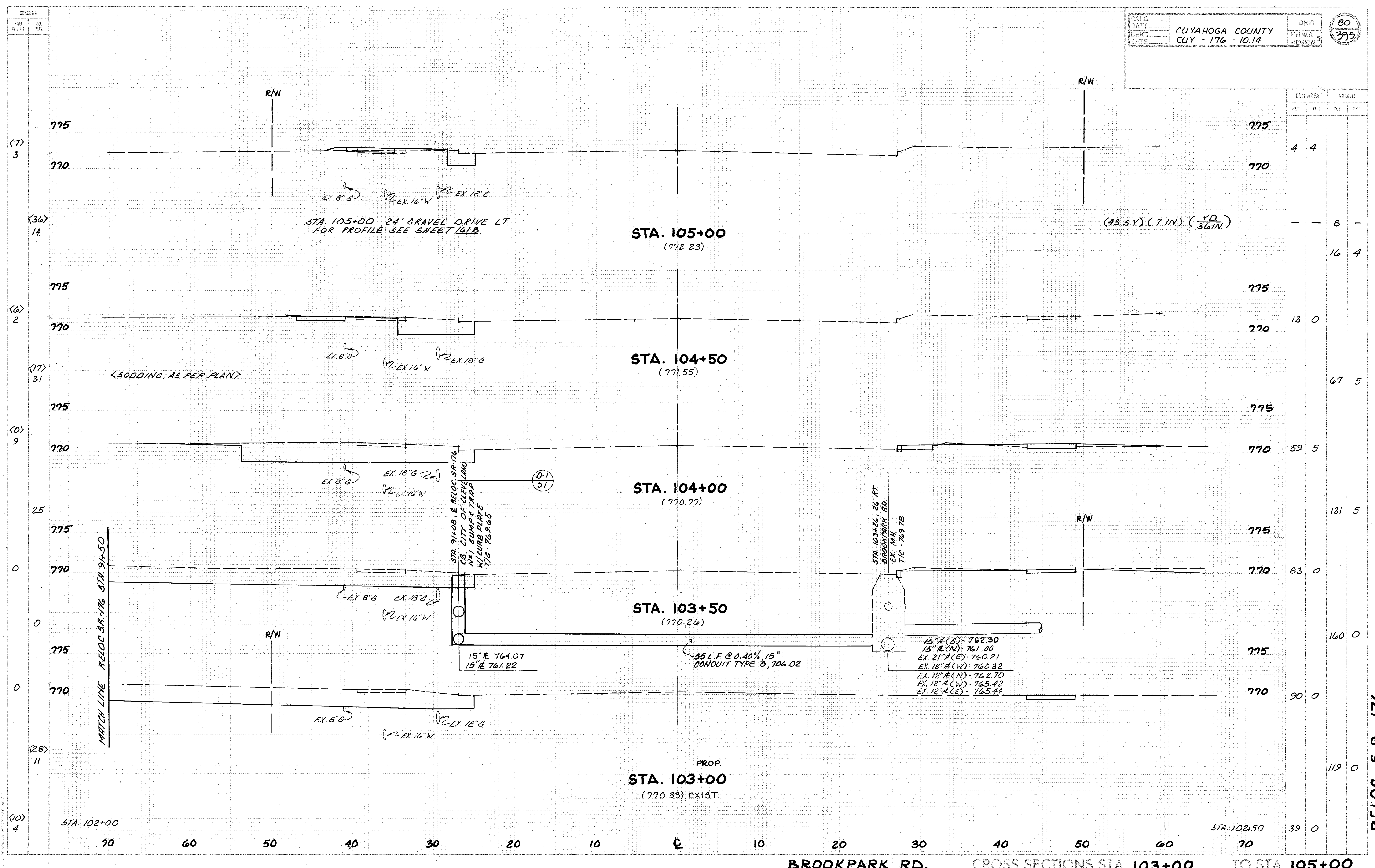
ESTIMATED QUANTITIES - STATION 100+50 TO STA 105+50

REF. No.	ITEM No. EXTENSION No.		SIDE	EACH	202	603	605										
	DESCRIPTION				58100 CATCH BASIN REMOVED	01500 6" CONDUIT, TYPE F, 707.17, NON- PERFORATED, ASTM D-3034, SDR 35, SS 931 DR SS 944	13410 6" UNCLASS- IFIED PIPE UNDERDRAIN, WITH FABRIC WRAP										
	LOCATION STATION TO STATION / OFFSET				LIN FT	LIN FT											
R-1	103 + 25		LT	1													
U-1	101 + 50	102 + 45	LT		10	90											
U-2	103 + 85	105 + 10	LT		10	130											
TOTALS				1	20	220											



BROOKPARK RD. CROSS SECTIONS STA. 100+50 TO STA. 102+50

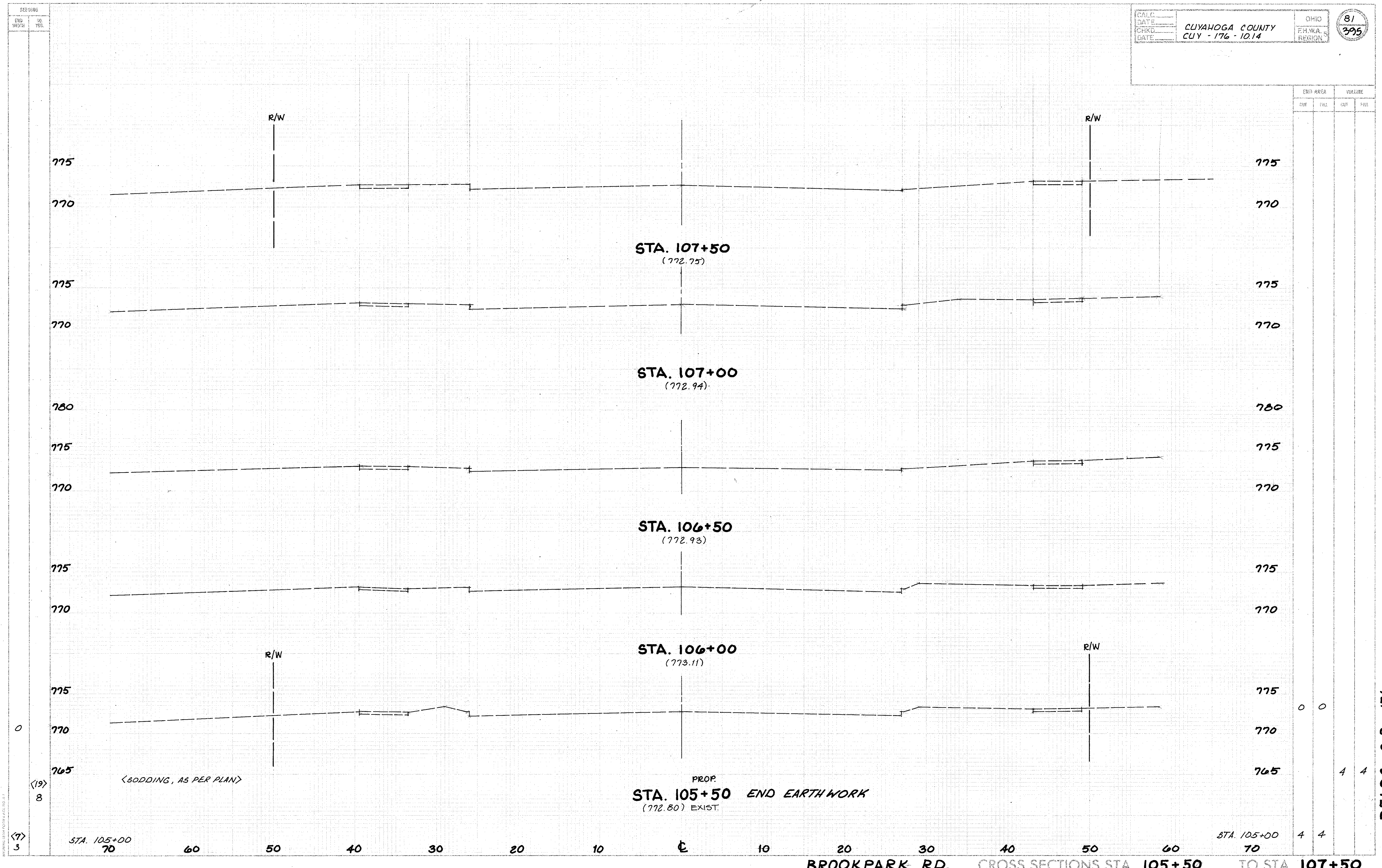
RELOC. S.R. - 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
4	4		
-	-	8	-
		16	4
		13	0
		67	5
59	5		
		131	5
83	0		
		160	0
		90	0
		119	0
39	0		

BROOKPARK RD. CROSS SECTIONS STA. 103+00 TO STA. 105+00

RELOC. S.R. - 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0	4	4
4	4		

SEEPIING
END WORK
NO. YRS.

0
(19)
8
(7)
3

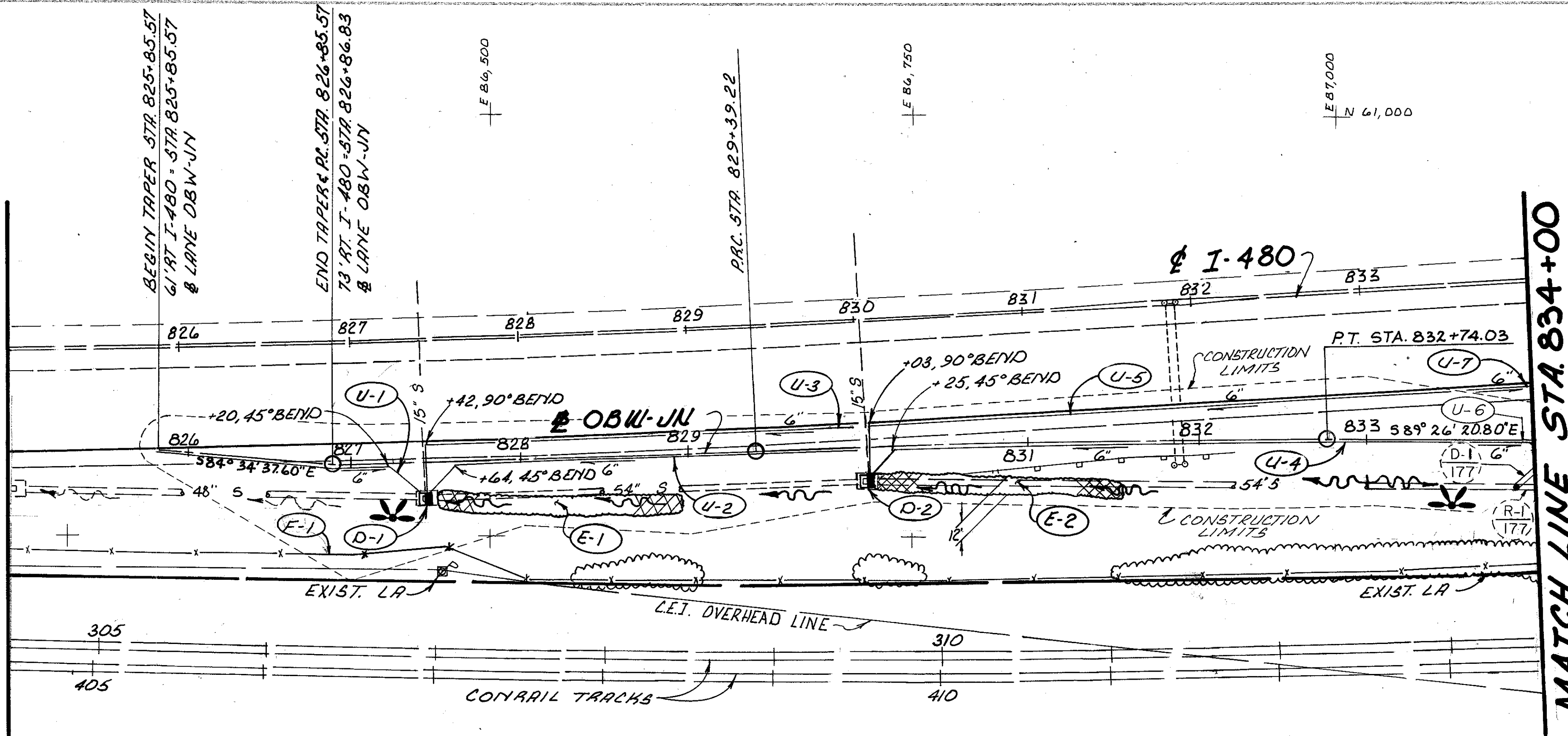
<BODDING, AS PER PLAN>

PROP.
STA. 105+50 END EARTHWORK
(772.80) EXIST.

BENCHMARK: TBM TO CHISELED SQUARE
N.E. CORNER CORNER CONCRETE SIGN BASE
I-480 STA 831+90, 95.3 RT.
ELEV. 757.96

MATCH LINE STA. 825+00

MATCH LINE STA. 834+00



CURVE DATA

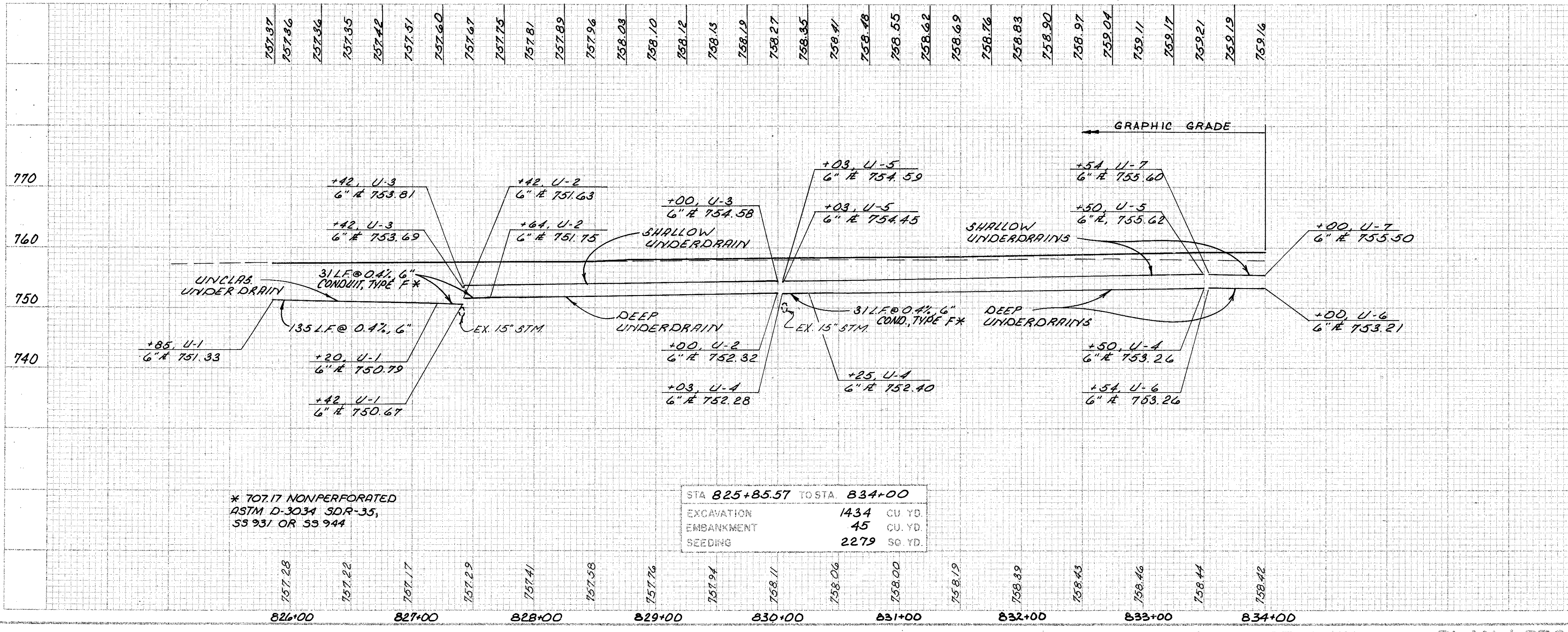
P.I. STA. 828+13.03
 $\Delta = 1^{\circ}10'15.10''$ LT.
 $DC = 0^{\circ}27'50''$
 $R = 12350.6667'$
 $T = 126.1982'$
 $L = 252.3877'$
 $CH = 252.3833'$
 $E = .6447'$
 $M = .6447'$

P.I. STA. 831+06.6712
 $\Delta = 3^{\circ}20'53.30''$ RT.
 $DC = 1^{\circ}0'0''$
 $R = 5729.5778'$
 $T = 167.4550'$
 $L = 334.8148'$
 $CH = 334.7671'$
 $E = 2.4465'$
 $M = 2.4455'$

DRAINAGE STRUCTURE DATA

- (D-1) STA 827+42, 22' RT. LANE OBW-JN
CATCH BASIN ADJUSTED TO GRADE,
AS PER PLAN TIG-755.83 EX. TIG-755.04
- (D-2) STA 830+03, 22.37' RT. LANE OBW-JN
C.B. ADJUSTED TO GRADE, AS PER PLAN
TIG-756.45 EX. TIG-755.44

REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS	83
ADDITIONAL LEGEND ITEMS	2
PAVEMENT DETAILS	168



* 707.17 NONPERFORATED
ASTM D-3034 SDR-35,
SS 931 OR SS 944

STA 825+85.57 TO STA. 834+00	
EXCAVATION	1434 CU. YD.
EMBANKMENT	45 CU. YD.
SEEDING	2279 SQ. YD.

RELOC. S.R. 176

ESTIMATED QUANTITIES - STATION 825+00 TO STA 834+00

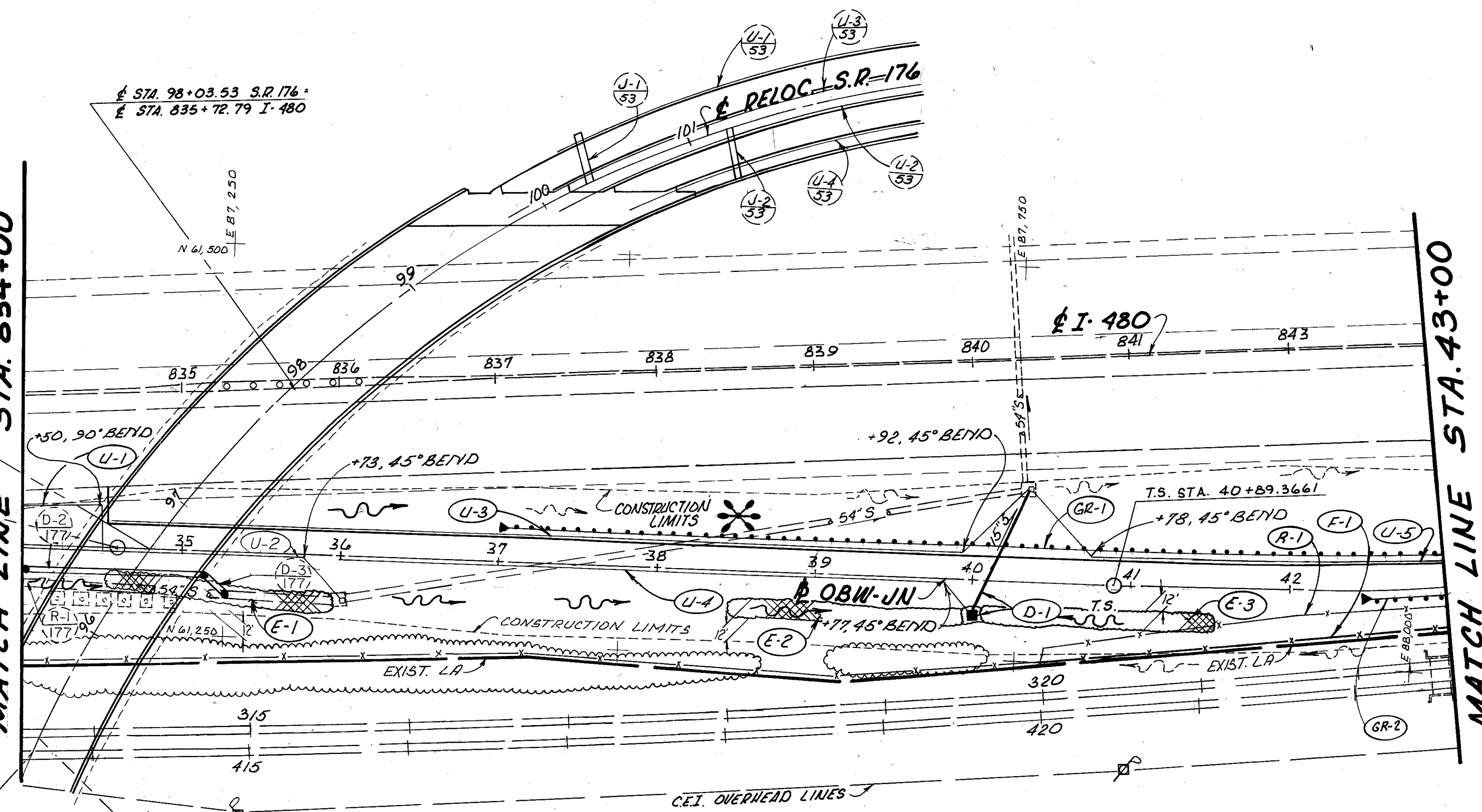
REF. No.	ITEM No. / EXTENSION No.		SIDE	603	604	605	605	605	605	670	202	607	625		
	STATION TO STATION / OFFSET			01500	09001	11110	12210	13410	40000	75000	23000	32000			
				DESCRIPTION	6" CONDUIT, TYPE F, 707.17, NON-PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	CATCH BASIN ADJUSTED TO GRADE, AS PER PLAN	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	DITCH EROSION PROTECTION	FENCE REMOVED	FENCE TYPE CLT	GROUND ROD		
				LIN FT	EACH	LIN FT	LIN FT	LIN FT	SQ YD	LIN. FT.	LIN. FT.	EACH			
D-1	827 + 42		RT		1										
D-2	830 + 03		RT		1										
U-1	825 + 85	827 + 42	RT	31				135							
U-2	827 + 42	830 + 00	RT	31			236								
U-3	827 + 42	830 + 00	LT	34		258									
U-4	830 + 03	833 + 50	RT	31			325								
U-5	830 + 03	833 + 50	LT	34		347									
U-6	833 + 54	834 + 00	RT				46								
U-7	833 + 54	834 + 00	LT			46									
E-1	827 + 47	828 + 97	RT						200						
E-2	830 + 08	831 + 58	RT						200						
F-1	826+60	827+60	RT							100	100		3		
TOTALS				161	2	651	607	135	400	100	100		3*		

* QUANTITY CARRIED TO LIGHTING GENERAL SUMMARY SHEET NO. 258

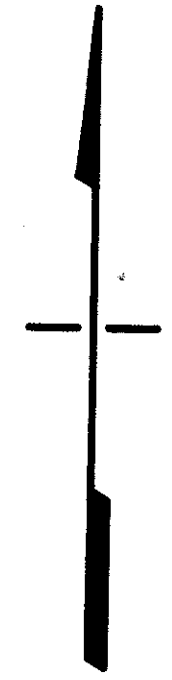
BENCHMARK: TBM 89 CHASELED SQ.
 S.E. CORNER INLET APPROX I-480 STA.
 830+00 LT.
 ELEV. 755.04

MATCH LINE STA. 834+00

MATCH LINE STA. 43+00

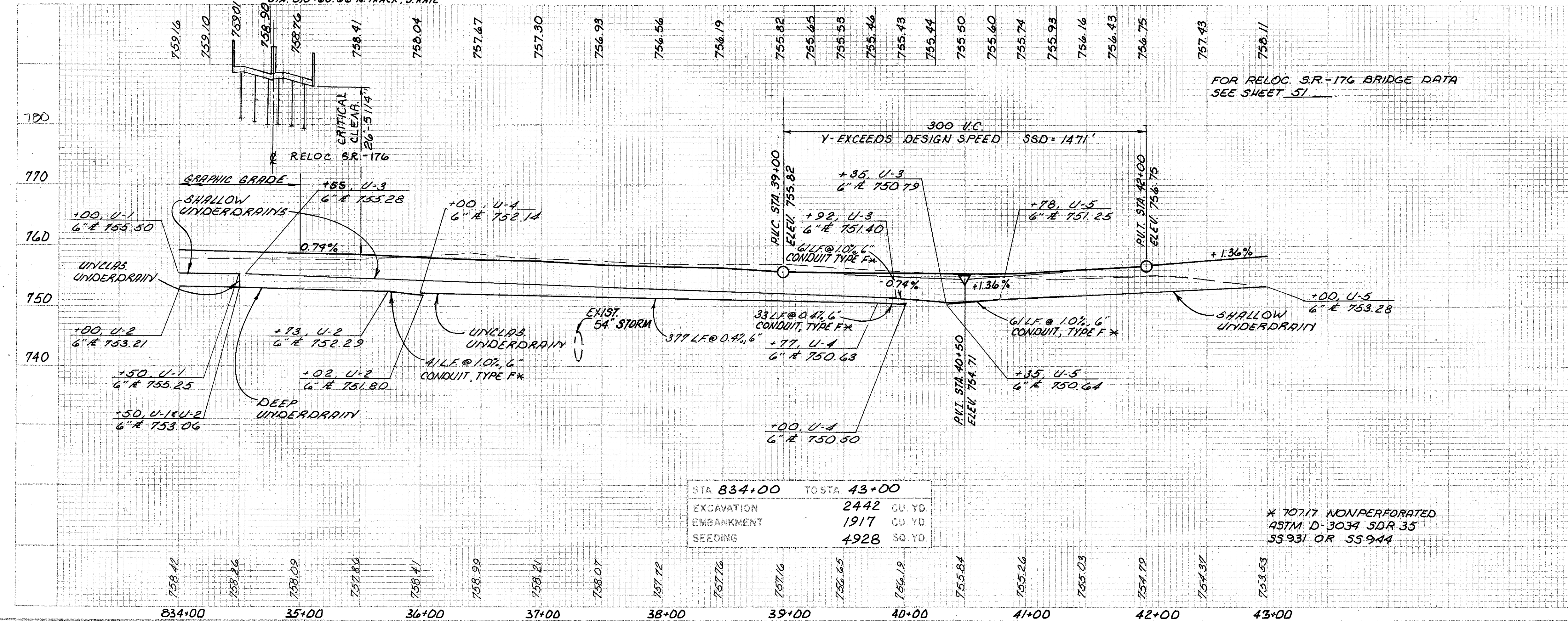


CURVE DATA
 THETA-S = 9° 49' 18.80" LT.
 LS = 250
 XC = 249.2663
 YC = 14.2554
 L.T. = 166.9239
 S.T. = 83.5673
 L.C. = 249.6736
 P = 3.5676
 K = 124.8777



DRAINAGE STRUCTURE DATA
 (D-1) STA. 40+00, 23' RT.
 L.B. N.P. 5 APR 76 = 753.25

STA 834+59.17 & LANE OBW-JN BK =
 STA. 34+54.47 & LANE OBW-JN AHD
 STA. 95+15.97 S.R. 176 =
 STA. 413+60.84 S. TRACK, N. RAIL
 STA. 95+24.98 S.R. 176 =
 STA. 313+63.66 N. TRACK, S. RAIL



REFERENCES
 QUANTITIES FOR REFERENCED ITEMS 85
 ADDITIONAL LEGEND ITEMS 2
 PIPE PROFILES 92
 PAYEMENT DETAILS 168
 RELOC. S.R. - 176 P&P SHEETS 51, 53, 55, 57 & 59
 SPECIAL EXCAVATION 177
 PIPE PROFILE - RELOCATED 54" STM 90

FOR RELOC. S.R. - 176 BRIDGE DATA
 SEE SHEET 51

* 70717 NONPERFORATED
 ASTM D-3034 SDR 35
 55931 OR 55944

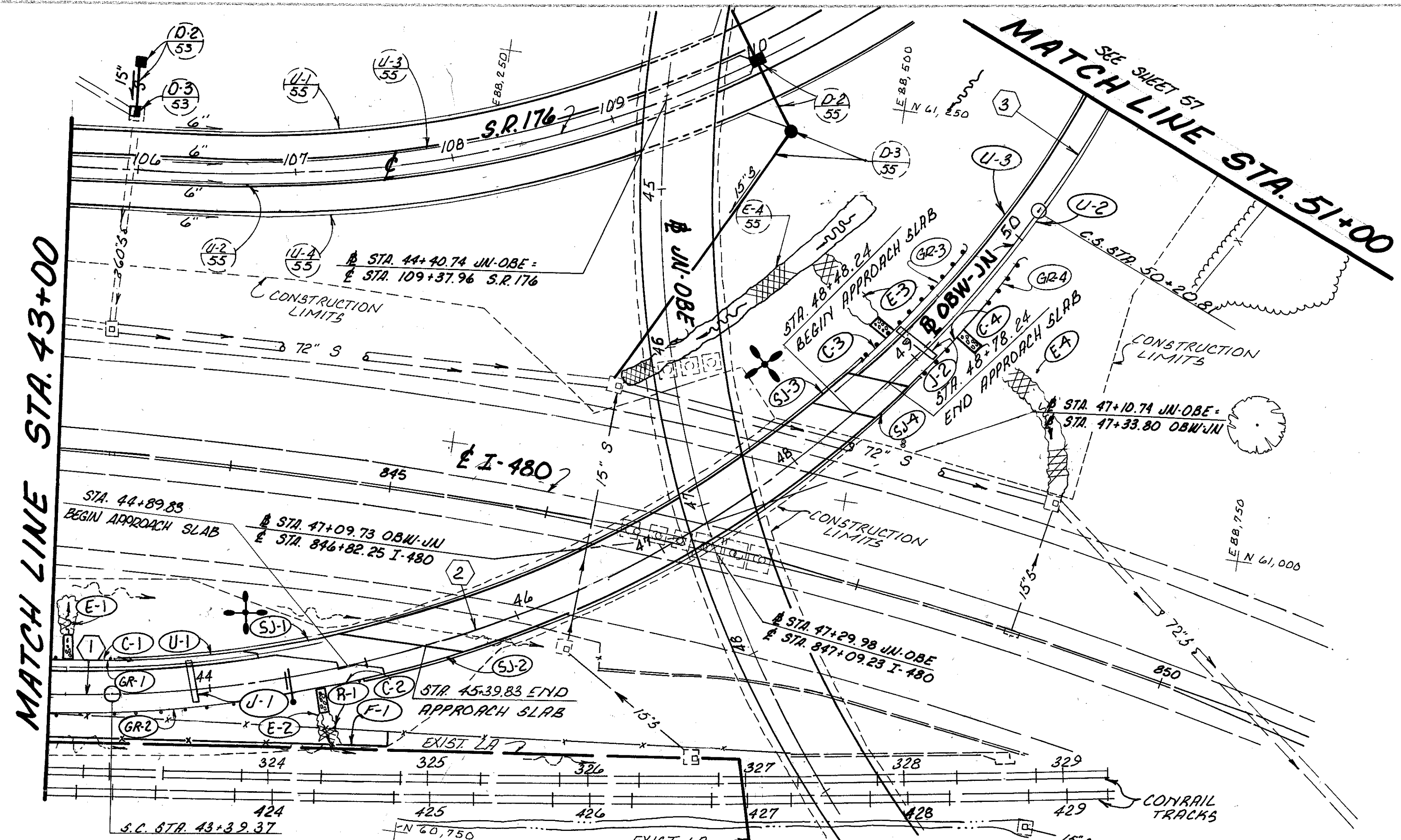
RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 834+00 TO STA 43+00

REF. No.	ITEM No. / EXTENSION No.		SIDE	202	603	603	604	605	605	605	606	606	607	670	625	802
	STATION TO STATION / OFFSET			75000 FENCE REMOVED	01500 6' CONDUIT, TYPE F, 707.17, NON-PERFORATED, ASTM D-3034, SDR 35, SS 931 DR SS 944	05900 15' CONDUIT, TYPE B, 706.02	01601 CATCH BASIN, NO. 5, AS PER PLAN	01110 6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	12210 6' DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	13410 6' UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	13000 GUARDRAIL TYPE 5	26100 ANCHOR ASSEMBLY, TYPE E	23000 FENCE, TYPE CLT	40000 DITCH EROSION PROTECTION	32000 GROUND ROD	00100 BARRIER REFLECTOR, TYPE A
				LIN FT	LIN FT	LIN FT	EACH	LIN FT	LIN FT	LIN FT	LIN FT	EACH	LIN FT	SQ YD	EACH	EACH
D-1	40 + 00	40 + 35	RT			88	1									
U-1	834 + 00	834 + 50	LT					50		37						
U-2	834 + 00	36 + 02	RT		41				173							
U-3	834 + 55	40 + 35	LT		61			542								
U-4	36 + 00	40 + 00	RT		33					377						
U-5	40 + 35	43 + 00	LT		61			222								
E-1	34 + 47	35 + 97	RT											200		
E-2	38 + 45	38 + 95	RT											200		
E-3	40 + 05	41 + 55	RT											200		
R-1	40 + 44	43 + 00	RT	266												
F-1	40 + 44	43 + 00	RT										260		3	
GR-1	37 + 00	43 + 00	LT								550	1				7
GR-2	42 + 50	43 + 00	RT									1				1
TOTALS				266	196	88	1	814	173	414	550	2	260	600	3*	8

* QUANTITY CARRIED TO LIGHTING GENERAL SUMMARY SHEET NO. 258

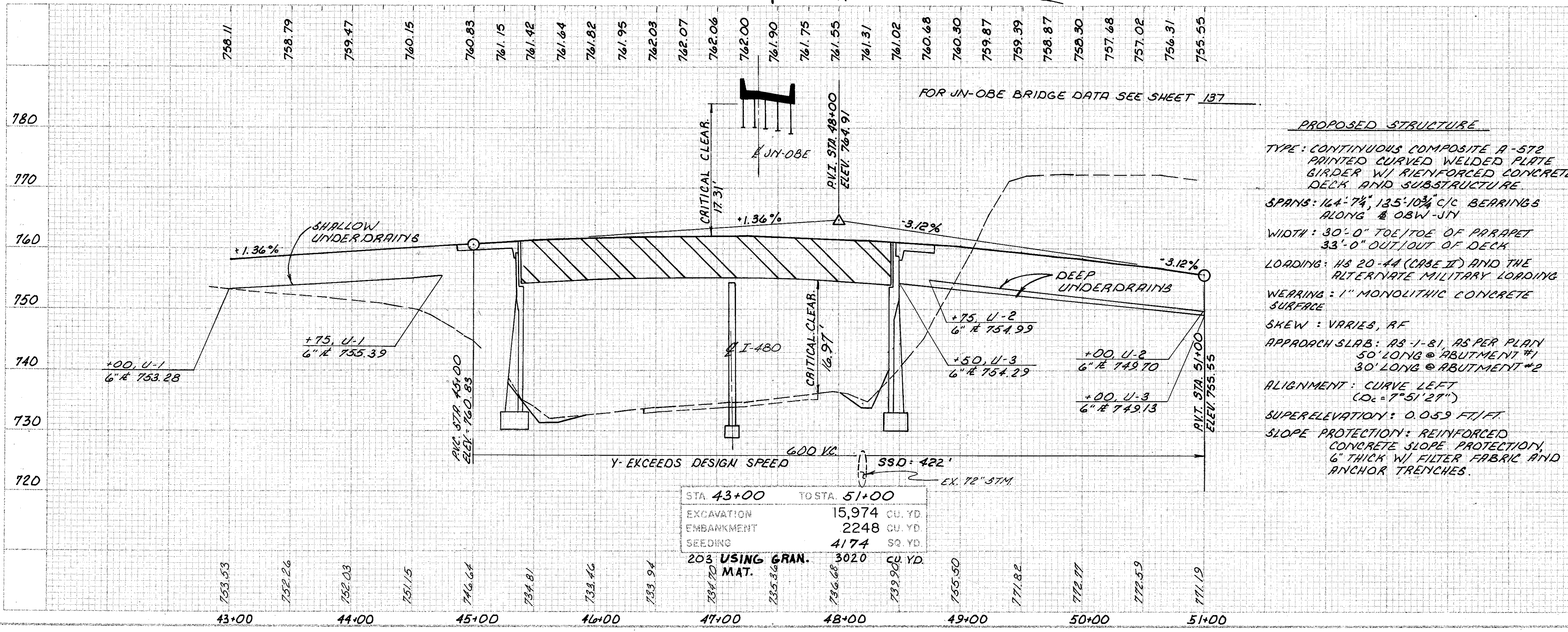
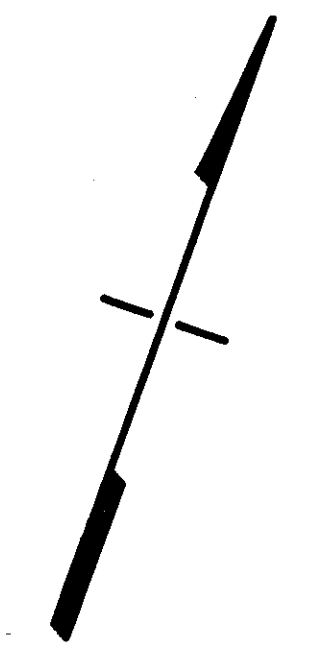
BENCHMARK: TBM 71 CHISELED SQ.
N.W. CORNER INLET I-480 STA.
846+80 80 FT.
ELEV. 750.30



CURVE DATA

①	②
THETA-S = 9°49'18.8"	P.I. STA. 47+07.26
Ls = 250'	Δ = 53°32'42.2"
Xc = 249.27'	Dc = 7°51'27"
Yc = 14.26'	R = 729.18'
L.T. = 166.92'	T = 367.90'
S.T. = 83.57'	L = 681.44'
L.C. = 249.67'	C _H = 656.92'
P = 3.57'	E = 87.55'
K = 124.88'	M = 78.17'

③
THETA-S = 9°49'18.8"
Ls = 250'
Xc = 249.27'
Yc = 14.26'
L.T. = 166.92'
S.T. = 83.57'
L.C. = 249.67'
P = 3.57'
K = 124.88'



REFERENCES

QUANTITIES FOR REFERENCED ITEMS	SHEET NUMBERS
BRIDGE PLANS	314-336
ADDITIONAL LEGEND ITEMS	2
PIPE PROFILES	69 & 70

PROPOSED STRUCTURE

TYPE: CONTINUOUS COMPOSITE A-572 PAINTED CURVED WELDED PLATE GIRDER W/ REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 124'-7 1/4", 135'-10 3/4" C/C BEARINGS ALONG # OBW - JN

WIDTH: 30'-0" TOE/TOE OF PARAPET 33'-0" OUT/OUT OF DECK

LOADING: HS 20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING

WEARING: 1" MONOLITHIC CONCRETE SURFACE

SKIEW: VARIES, AF

APPROACH SLABS: AS 1-81, AS PER PLAN 50' LONG @ ABUTMENT #1 30' LONG @ ABUTMENT #2

ALIGNMENT: CURVE LEFT (C_c = 7°51'27")

SUPERELEVATION: 0.059 FT/FT

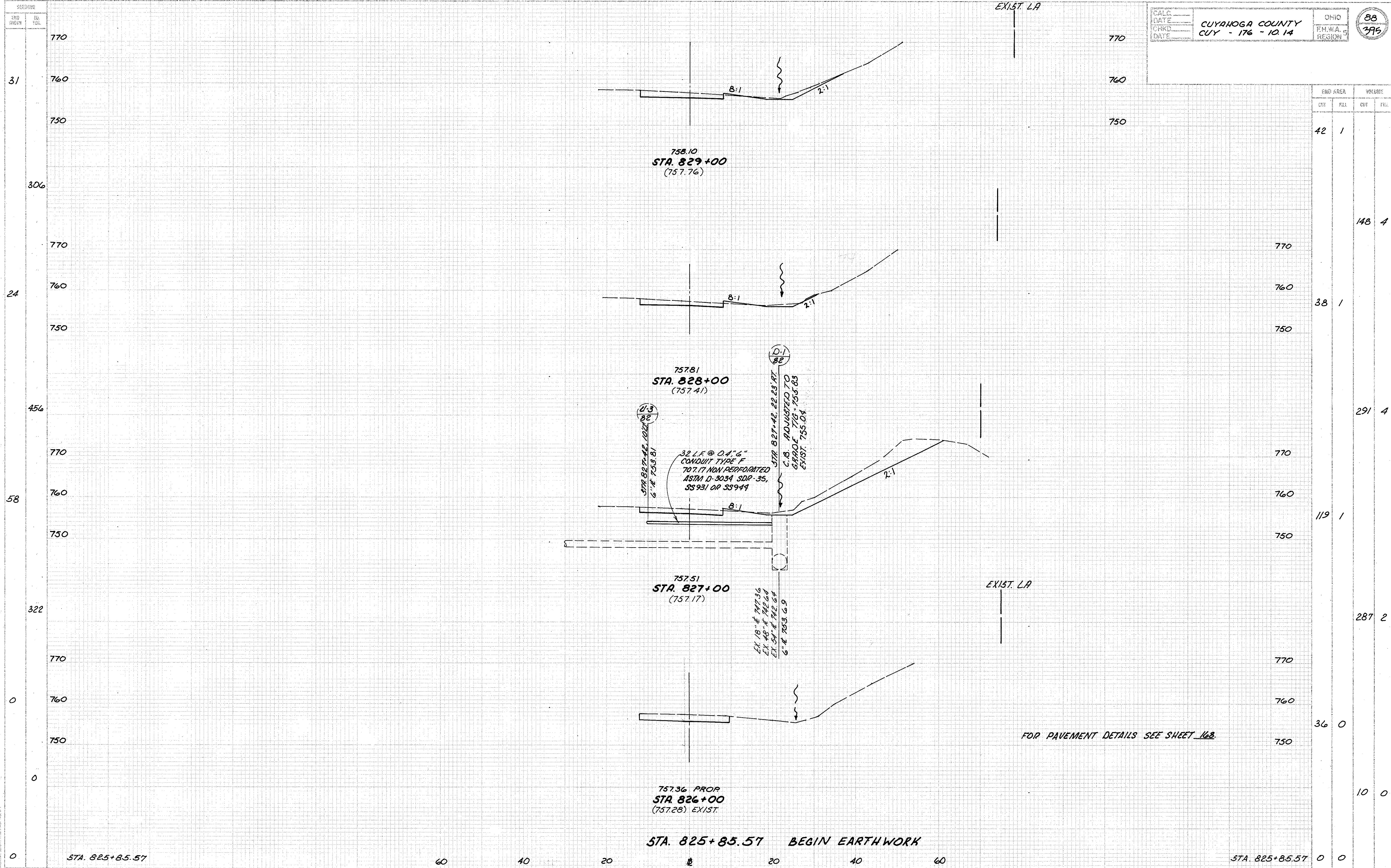
SLOPE PROTECTION: REINFORCED CONCRETE SLOPE PROTECTION, 6" THICK W/ FILTER FABRIC AND ANCHOR TRENCHES.

RELOC. S.R. 176

ESTIMATED QUANTITIES - STATION 43+00 TO STA 51+00

REF. No.	ITEM No. EXTENSION No.		SIDE	202	SPECIAL	605	605	606	606	606	606	607	625	SPECIAL	660	609	802	802	SPECIAL	SPECIAL
	STATION TO STATION / OFFSET			75000	45130000	11110	12210	13000	26500	35000	35100	23000	32000	60120700	20000	24000	00100	00200	51614010	51614600
				FENCE REMOVED	PRESSURE RELIEF JOINT, TYPE A	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY, TYPE T	BRIDGE TERMINAL ASSEMBLY, TYPE 1	BRIDGE TERMINAL ASSEMBLY, TYPE 2	FENCE TYPE CLT	GROUND ROD	GABION, WITH ADDITIONAL COATING	REINFORCED SODDING	CURB TYPE 4A	BARRIER REFLECTOR TYPE A	BARRIER REFLECTOR TYPE B	POLYURETHANE JOINT SEAL	STRUCTURAL JOINT OR JOINT SEAL MISC. (4"x4" JOINT SEAL (BITUMEN IMPREGATED FOAM))
				LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	LIN FT	EACH	CU YD	SQ YD	LIN FT	EACH	EACH	LIN FT	LIN FT
U-1	43 + 00	44 + 75	LT			175														
U-2	48 + 75	51 + 00	RT				225													
U-3	48 + 50	51 + 00	LT				250													
J-1	43 + 90		C/L		30															
J-2	49 + 08		C/L		30															
R-1	43 + 00	45 + 00	RT	213																
F-1	43 + 00	45 + 00	RT									224	2							
GR-1	43 + 00	43 + 34	LT					25		1										
GR-2	43 + 00	44 + 92	RT					187.5		1							4	11		
GR-3	48 + 71	49 + 71	LT					75	1			1					2	8		
GR-4	49 + 05	50 + 05	RT					75	1			1					2			
C-1	43 + 13	43 + 39	LT																	
C-2	44 + 70	44 + 96	RT																	
C-3	48 + 67	48 + 93	LT																	
C-4	49 + 00	49 + 26	RT																	
SJ-1	44 + 28	44 + 95	LT																	67
SJ-2	45 + 20	45 + 60	RT																	40
SJ-3	48 + 37	48 + 67	LT																	30
SJ-4	48 + 55	48 + 85	RT																	30
E-1	43 + 10 / 45'		LT												4	28				
E-2	44 + 67 / 30'		RT												4	19				
E-3	48 + 96 / 60'		LT												4	46				
E-4	49 + 29 / 70'		RT												4	92				
TOTALS				213	60	175	475	362.5	2	2	2	224	2*	16	185	104	8	19	167	167

* QUANTITY CARRIED TO LIGHTING GENERAL SUMMARY SHEET NO. 258



31
306
24
456
58
322
0
0

EXIST. LA

EXIST. LA

FOR PAVEMENT DETAILS SEE SHEET 168.

758.10
STA. 829+00
(757.76)

757.81
STA. 828+00
(757.41)

757.51
STA. 827+00
(757.17)

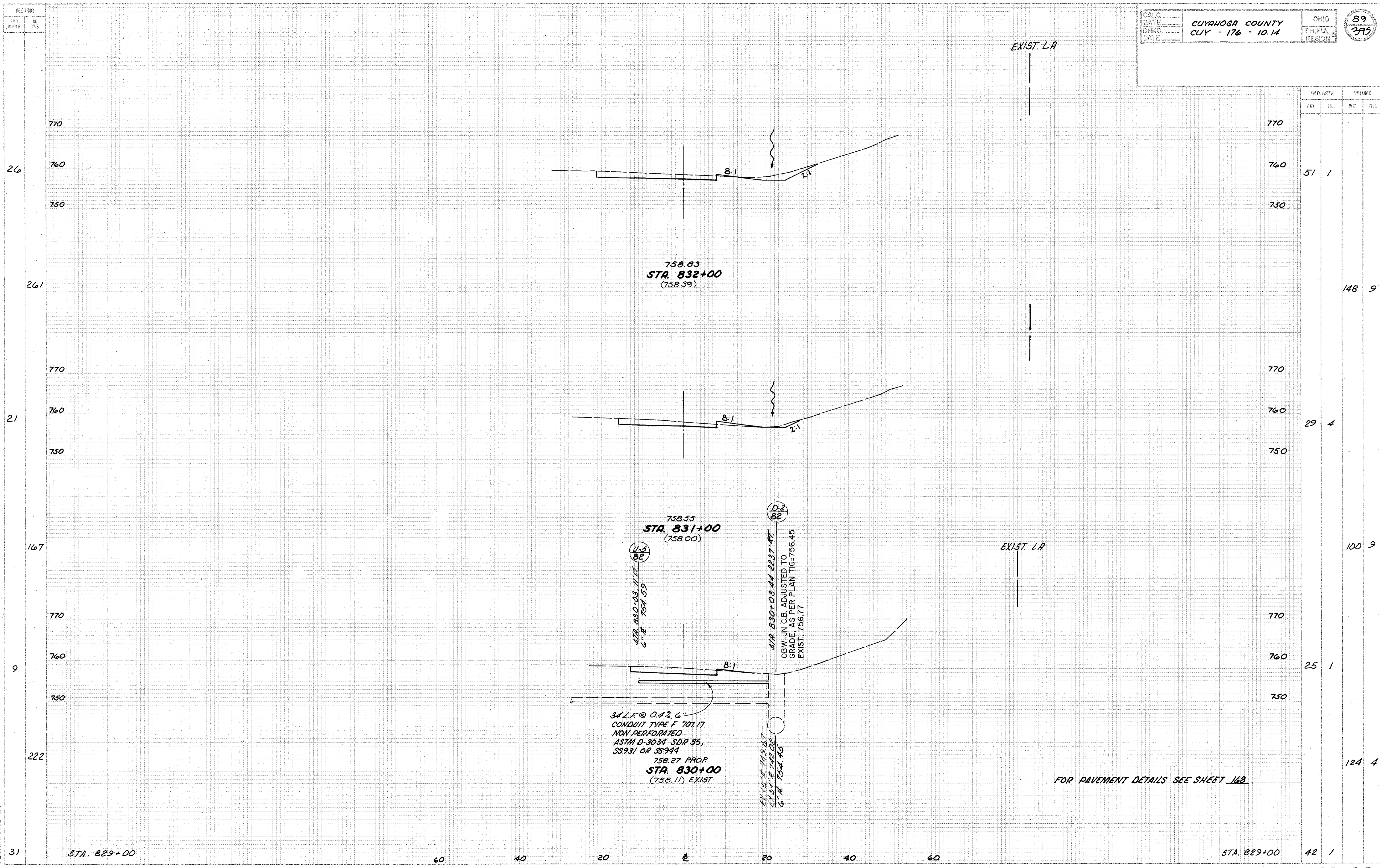
757.36 PROP
STA. 826+00
(757.28) EXIST.

STA. 825+85.57 BEGIN EARTHWORK

LANE OBYJ-JN

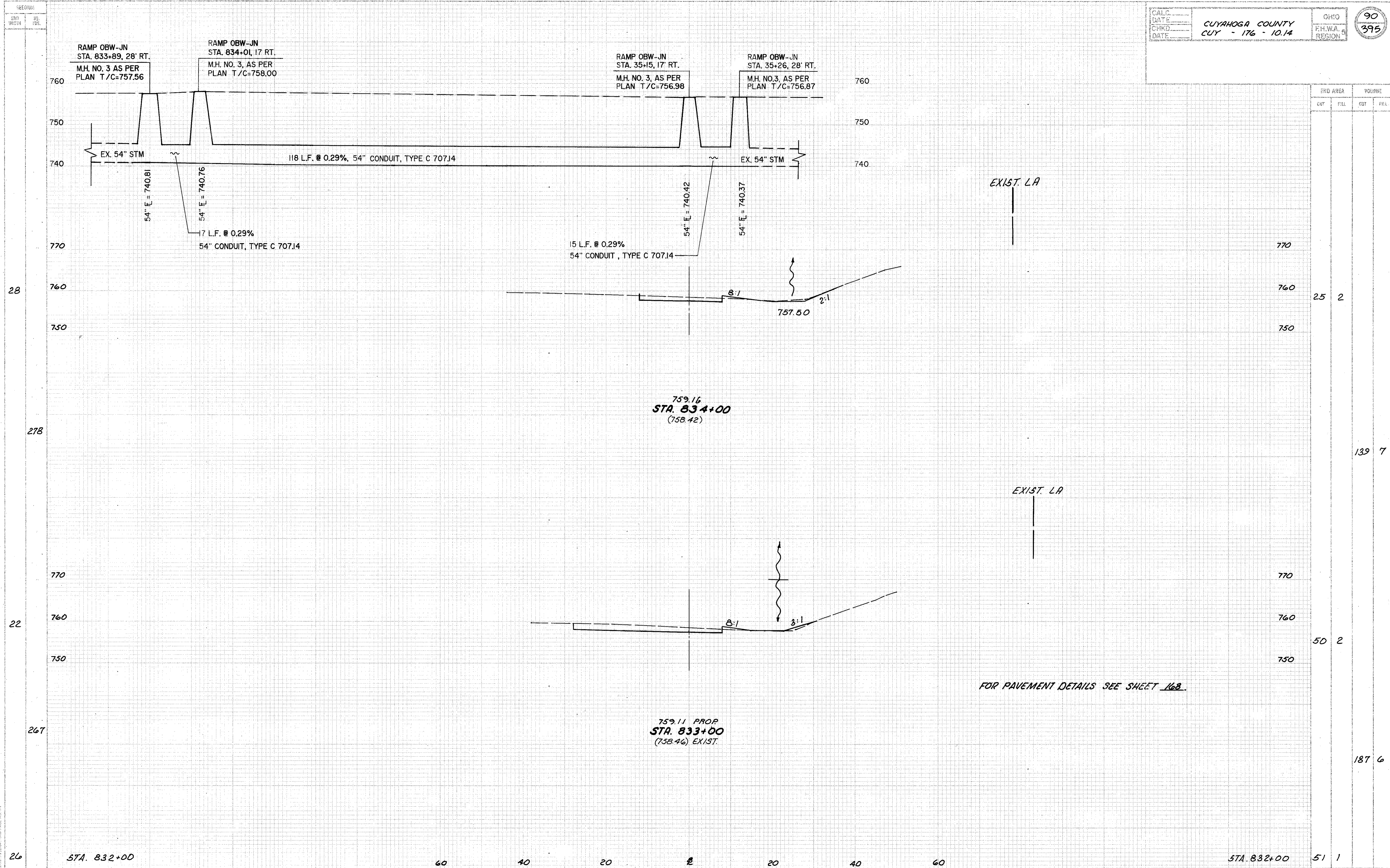
CROSS SECTIONS STA. 826+00 TO STA. 829+00

RELOC. S.R.-176



SUB AREA		VOLUME	
OUT	FILL	OUT	FILL
51	1		
		148	9
29	4		
		100	9
25	1		
		124	4
42	1		

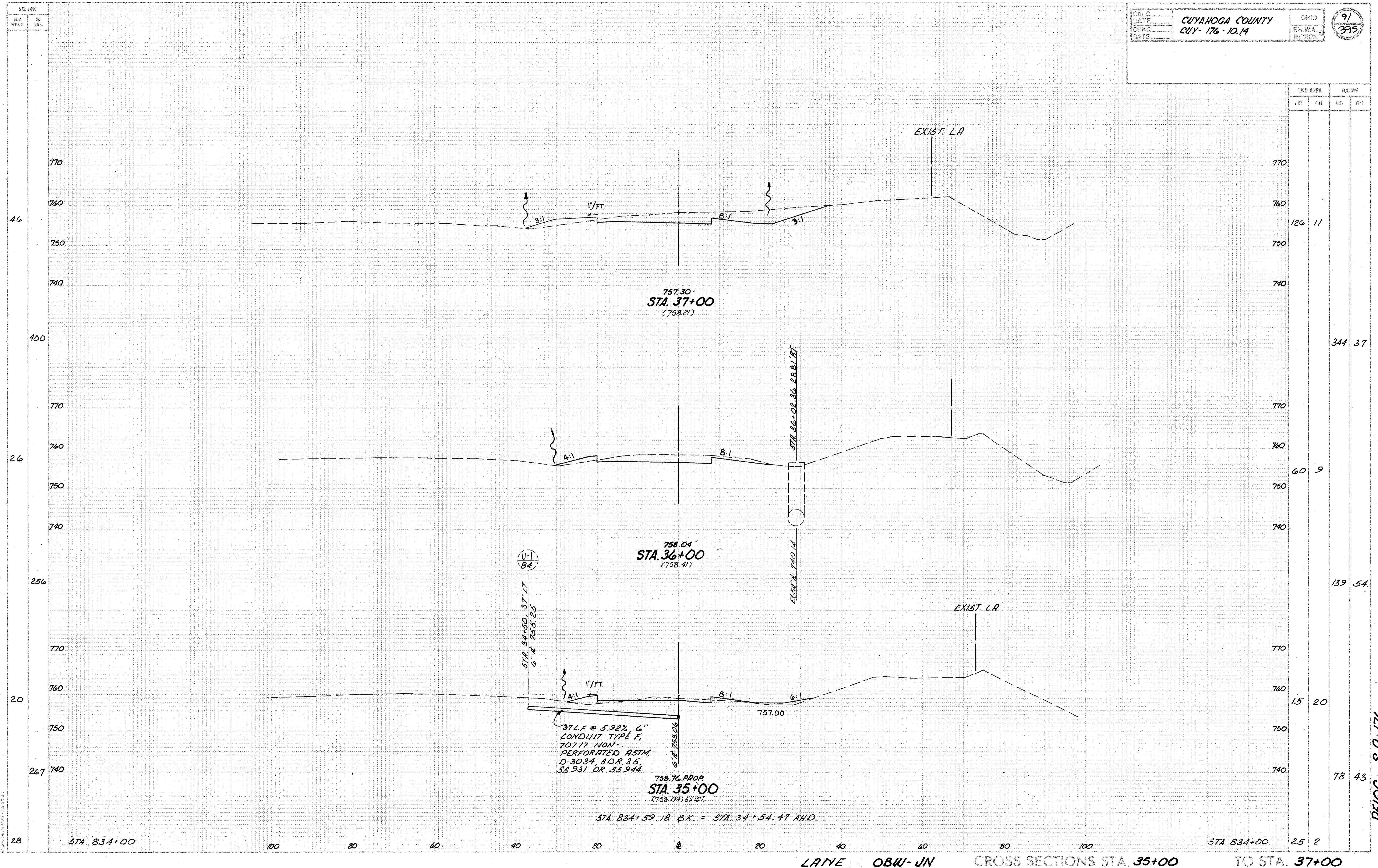
FOR PAVEMENT DETAILS SEE SHEET 168.



STATION	CROSS SECTION AREA		VOLUME	
	CUT	FILL	CUT	FILL
28			25	2
278			139	7
22			50	2
267			187	6
26			51	1

LANE OBYN-JN CROSS SECTIONS STA. 833+00 TO STA. 834+00

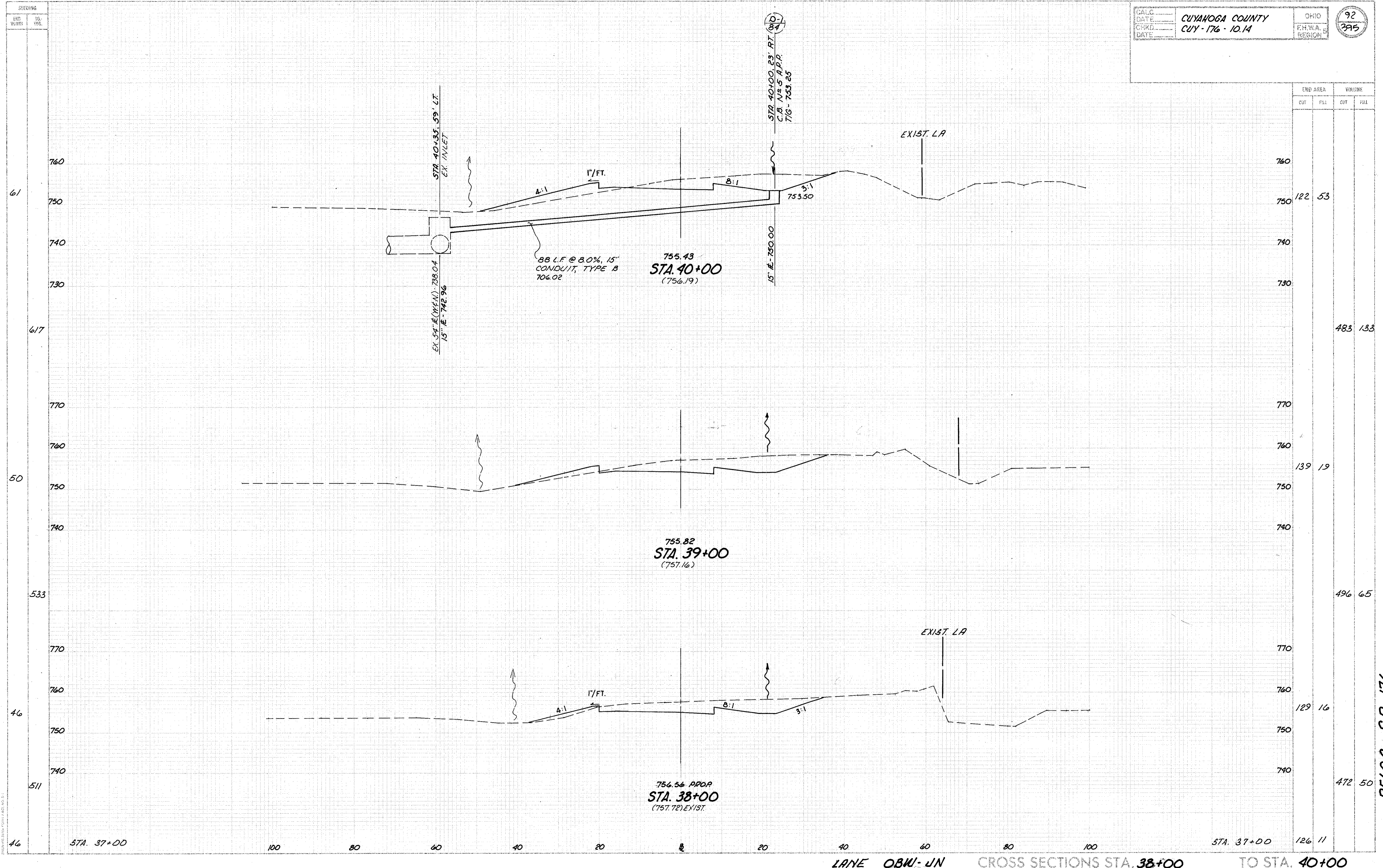
RELOC. S.R. - 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		126	11
		344	37
		60	9
		139	54
		15	20
		78	43
		25	2

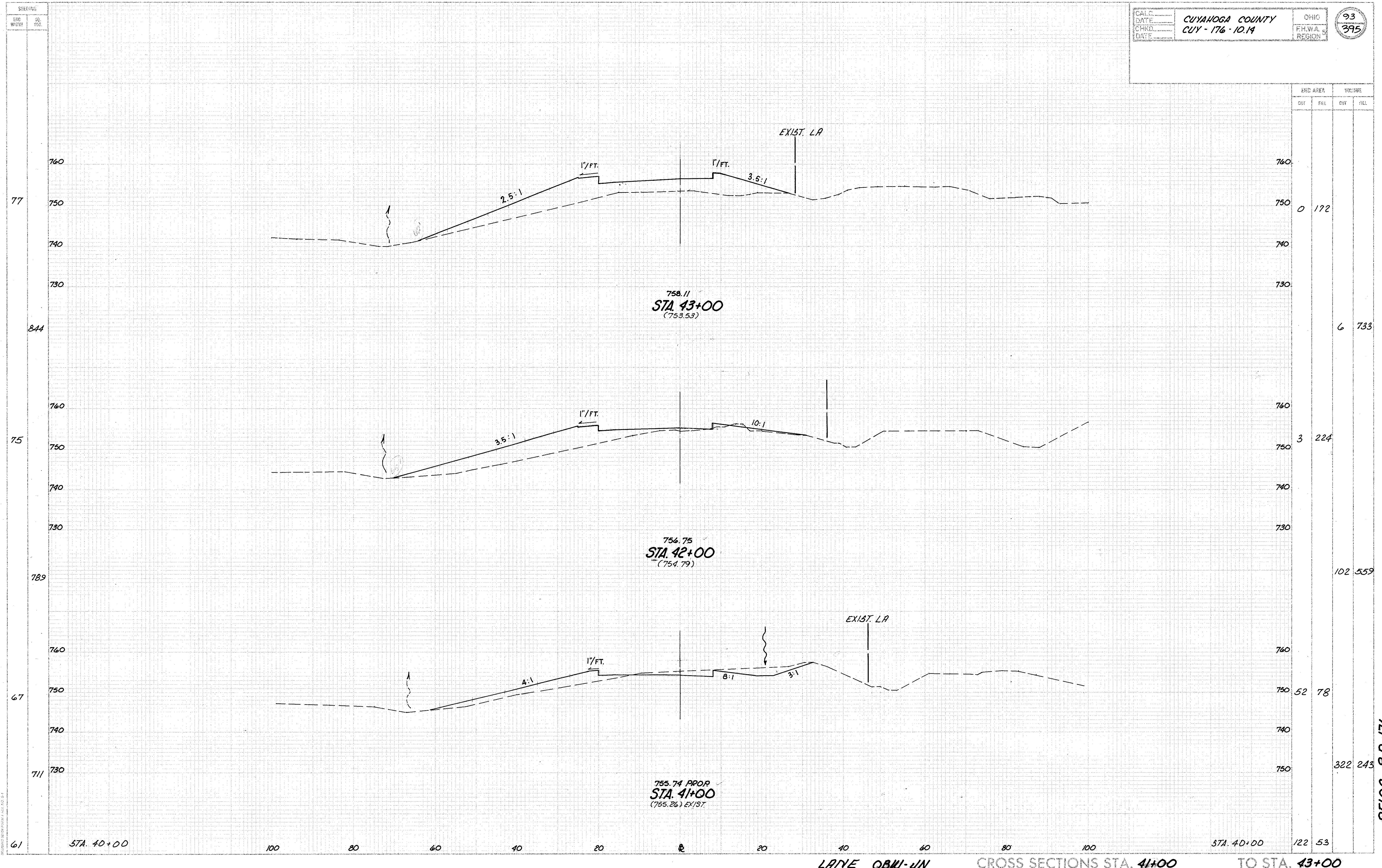
LANE OBW-JN CROSS SECTIONS STA. 35+00 TO STA. 37+00

RELOC. S.R.-176



RELOC. S.R. 176

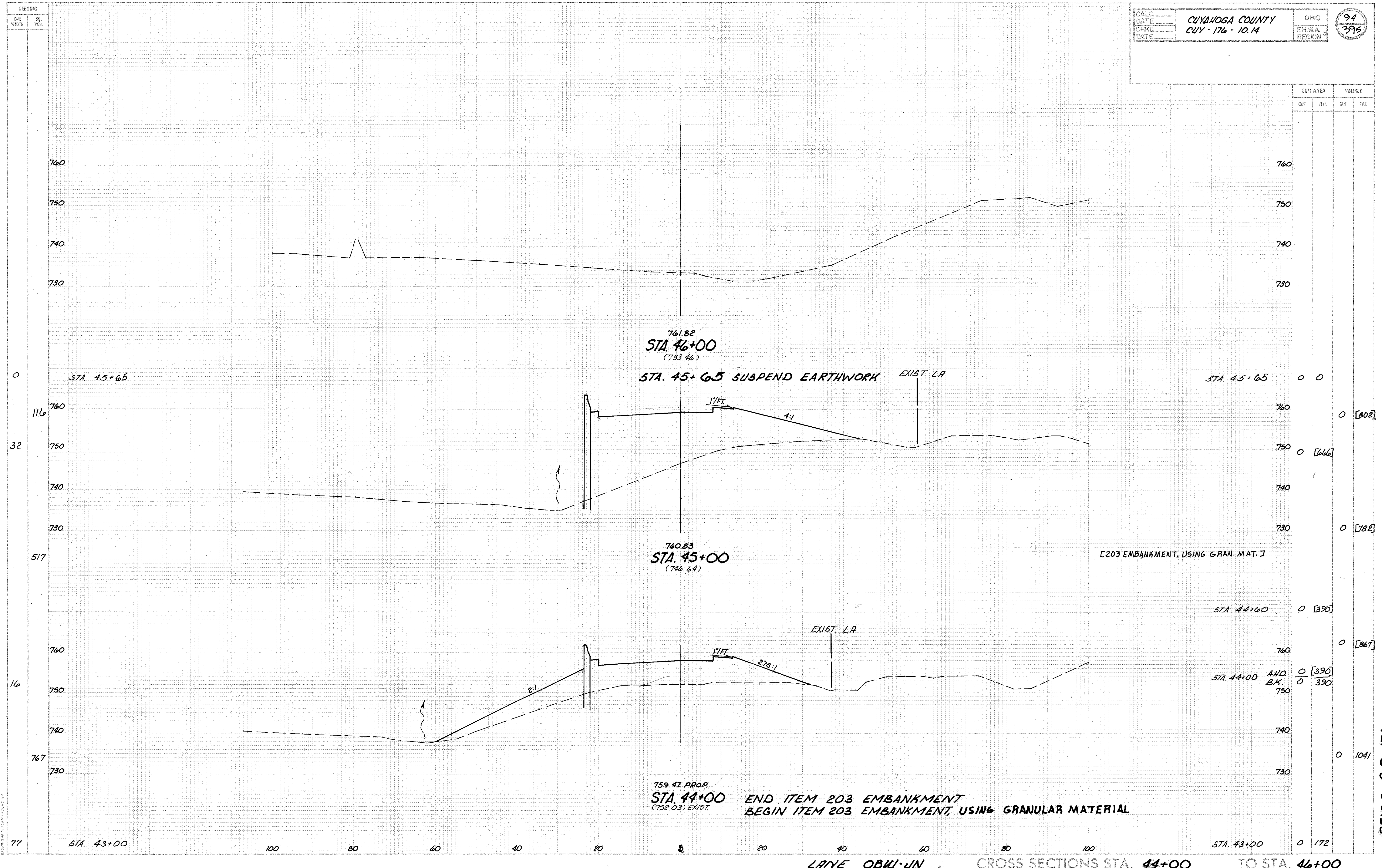
LANE OBM: JN CROSS SECTIONS STA. 38+00 TO STA. 40+00



ERC AREA		VOLUME	
CUT	FILL	CUT	FILL
		0	172
		6	733
		3	224
		102	559
		52	78
		322	243
122	53		

LANE OBU-JN CROSS SECTIONS STA. 41+00 TO STA. 43+00

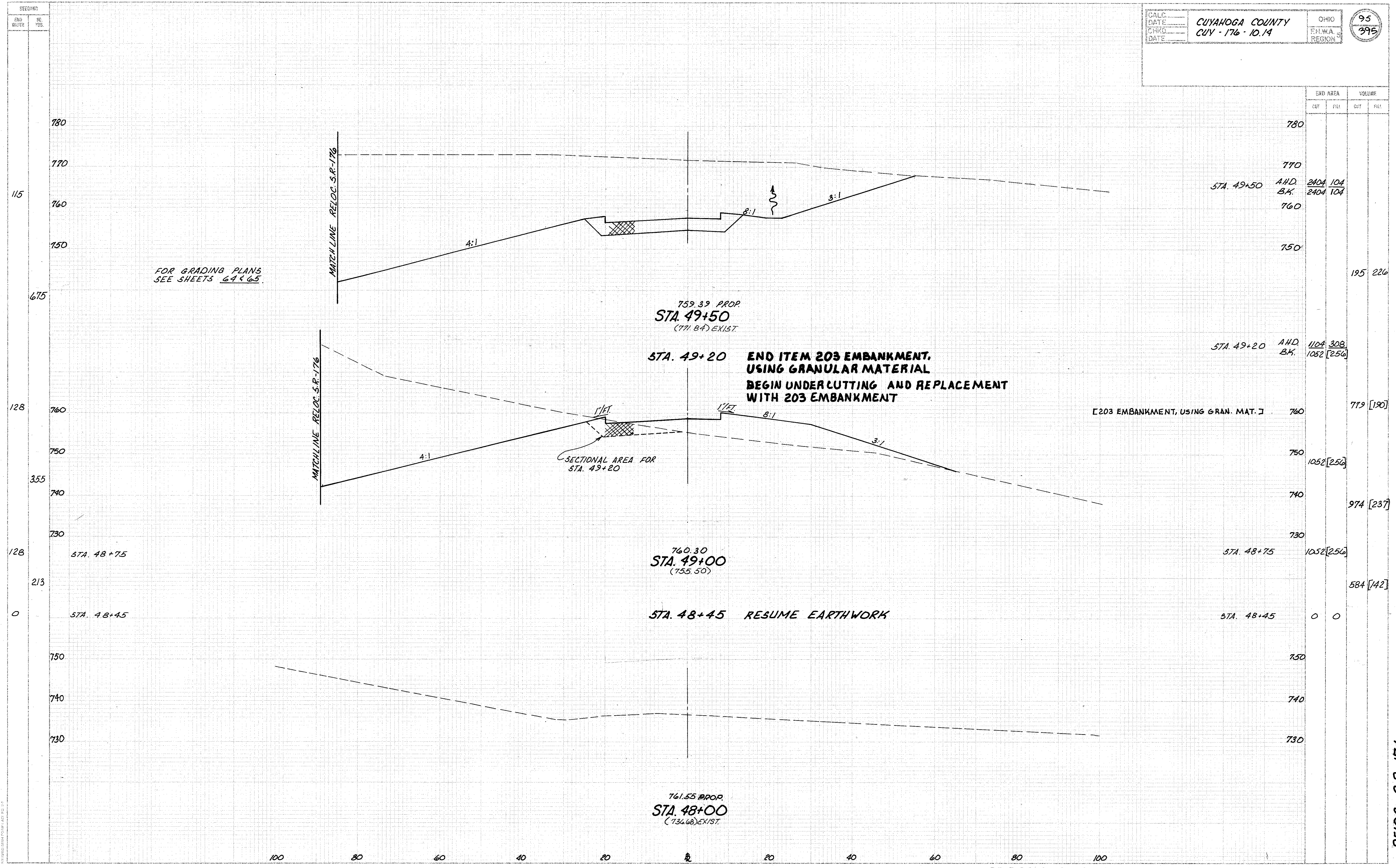
RECLOC. S.P. 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0	0	0
0	0	0	[802]
0	0	0	[666]
0	0	0	[782]
0	0	0	[390]
0	0	0	[867]
0	0	0	[390]
0	0	0	390
0	0	0	1041
0	0	0	172

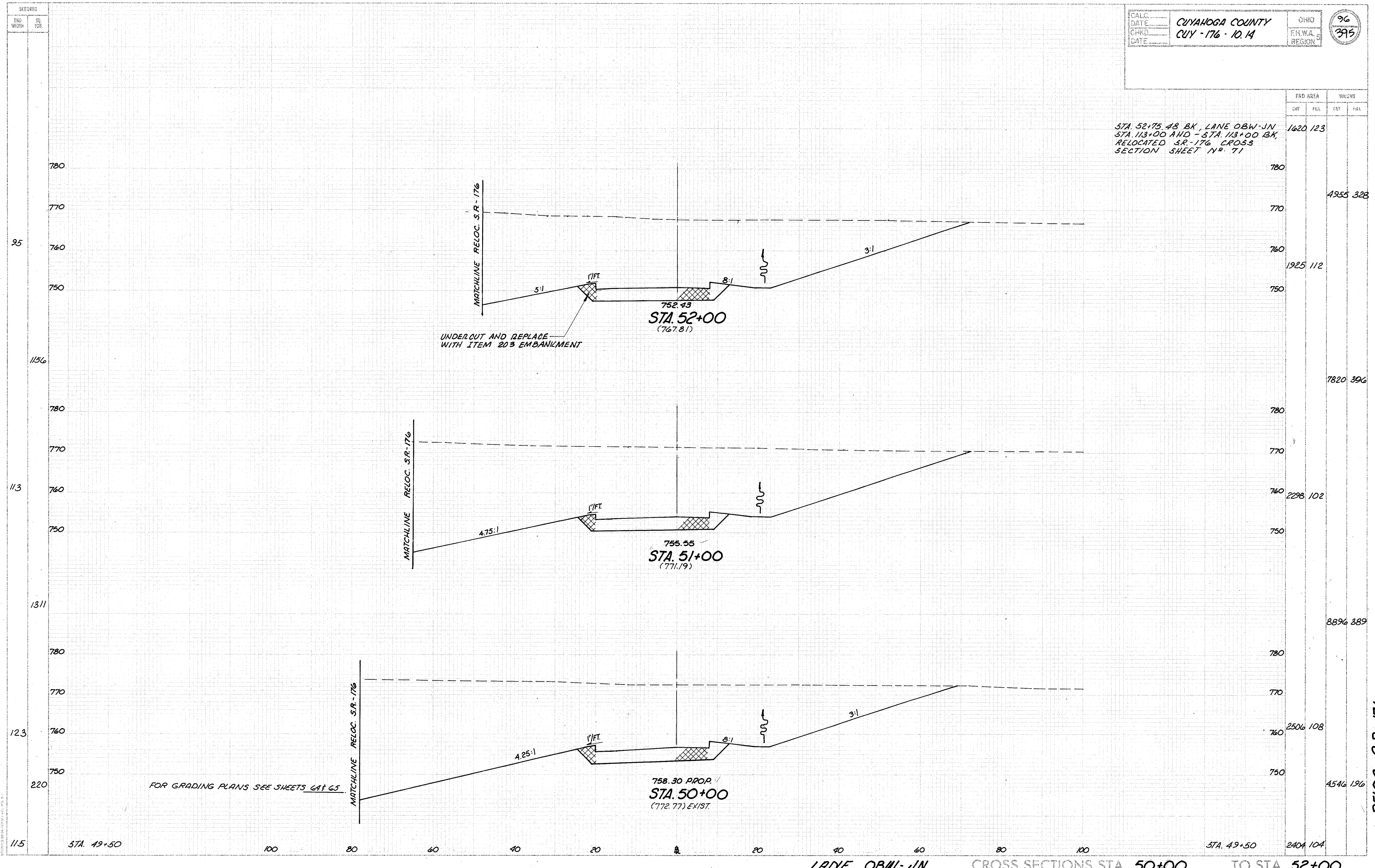
LANE OBW-JN CROSS SECTIONS STA. 44+00 TO STA. 46+00

REL. OC. S.R. - 176



STA.	AHD.	BK.	END AREA		VOLUME	
			CUT	FILL	CUT	FILL
STA. 49+50	760		2404	104		
			2404	104		
					195	226
STA. 49+20	760		1104	308		
			1052	[256]		
					779	[190]
			1052	[256]		
					974	[237]
STA. 48+75	730		1052	[256]		
					584	[42]
STA. 48+45	0		0	0		

LANE OBW-JN CROSS SECTIONS STA. 48+00 TO STA. 49+50

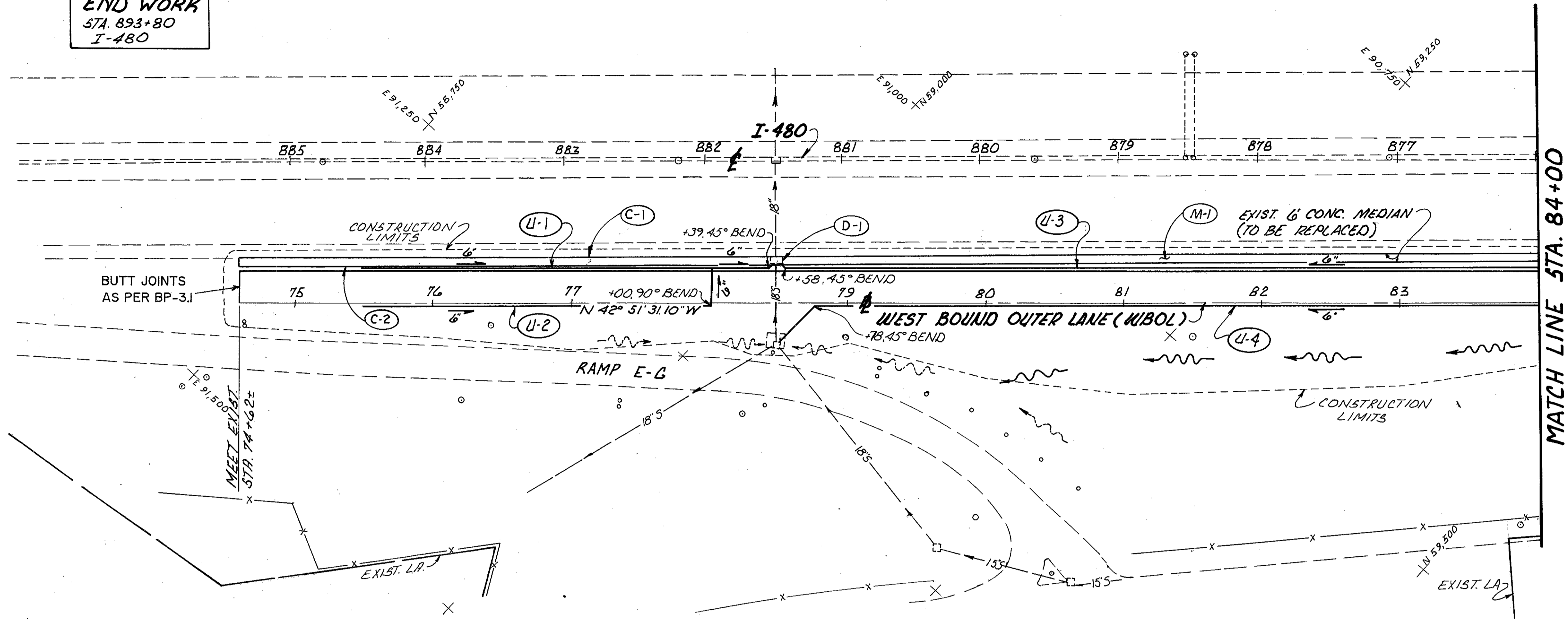


RELOC. S.R. - 176

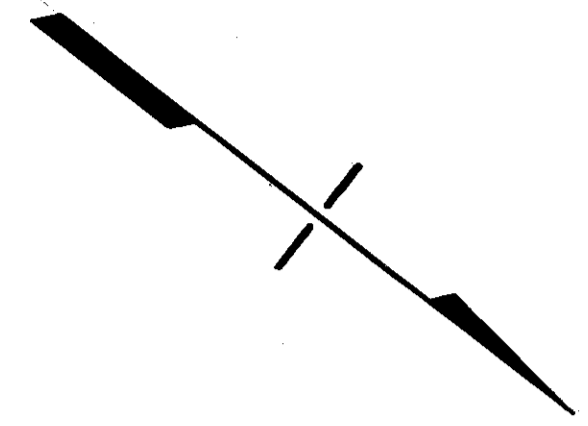
LANE OBW-JN CROSS SECTIONS STA. 50+00 TO STA. 52+00

BENCHMARK: TBM 82 CHISELED "X" AT TRIANGLE TRAFFIC ISLAND AT INTERSECTION S.R. 171 AND I-480 OFF RAMP BETWEEN "DO NOT ENTER" SIGN POST ELEV. 728.64

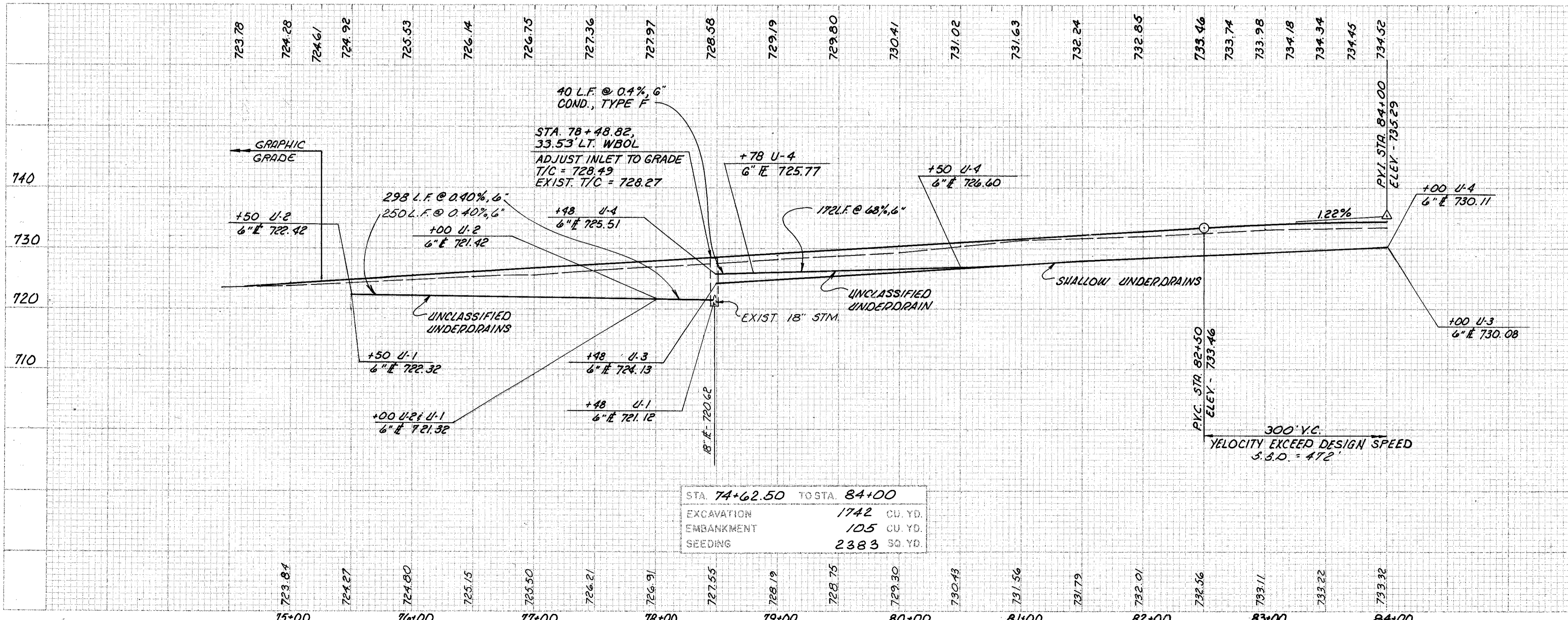
END WORK
 STA. 893+80
 I-480



(D-1) STA. 78+48.82, 33.53' LT. WBOL
 INLET ADJUSTED TO GRADE
 EX. T/C = 728.27 T/C = 728.49



REFERENCE	SHEET NUMBER
QUANTITIES FOR REFERENCED ITEMS...	98
PAVEMENT DETAILS	172



STA. 74+62.50 TO STA. 84+00	
EXCAVATION	1742 CU. YD.
EMBANKMENT	105 CU. YD.
SEEDING	2383 SQ. YD.

300' V.C.
 VELOCITY EXCEED DESIGN SPEED
 S.S.D. = 472'

RELOC. S.R.-176

ESTIMATED QUANTITIES - STATION 74+62.50 TO STA 84+00

REF. No.	ITEM No. / EXTENSION No.		SIDE	202	202	203	310	603	604	605	605	606	606	606	609	612
	STATION TO STATION / OFFSET			30600	32000	50000	20000	01500	20600	11110	13410	13000	26100	26500	26000	42001
DESCRIPTION				CONCRETE MEDIAN REMOVED	CURB REMOVED	SUBGRADE COMPACTION	SUBBASE, TYPE II	6' CONDUIT, TYPE F, 707.17 NON-PERFORATED ASTM D-3034, SDR 35, SS 931 OR SS 944	INLET ADJUSTED TO GRADE	6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6' UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5,	ANCHOR ASSEMBLY, TYPE E	ANCHOR ASSEMBLY, TYPE T	CURB, TYPE 6,	CONCRETE MEDIAN, AS PER PLAN
LOCATION				SQ YD	LIN FT	SQ YD	CU YD	LIN FT	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	LIN FT	SQ YD
U-1	75 + 50	78 + 48	LT					10				287				
U-2	75 + 50	78 + 00	RT									274				
U-3	78 + 48	84 + 00	LT					10		542						
U-4	78 + 48	84 + 00	RT					40		350	172					
M-1	74 + 62.5	84 + 00	LT	521		521	43									521
D-1	78 + 48.82 / 33.53'		LT						1							
C-1	74 + 62.5	84 + 00	LT		938										938	
C-2	74 + 62.5	84 + 00	LT		938										938	
TOTALS				521	1876	521	43	60	1	892	733				1876	521

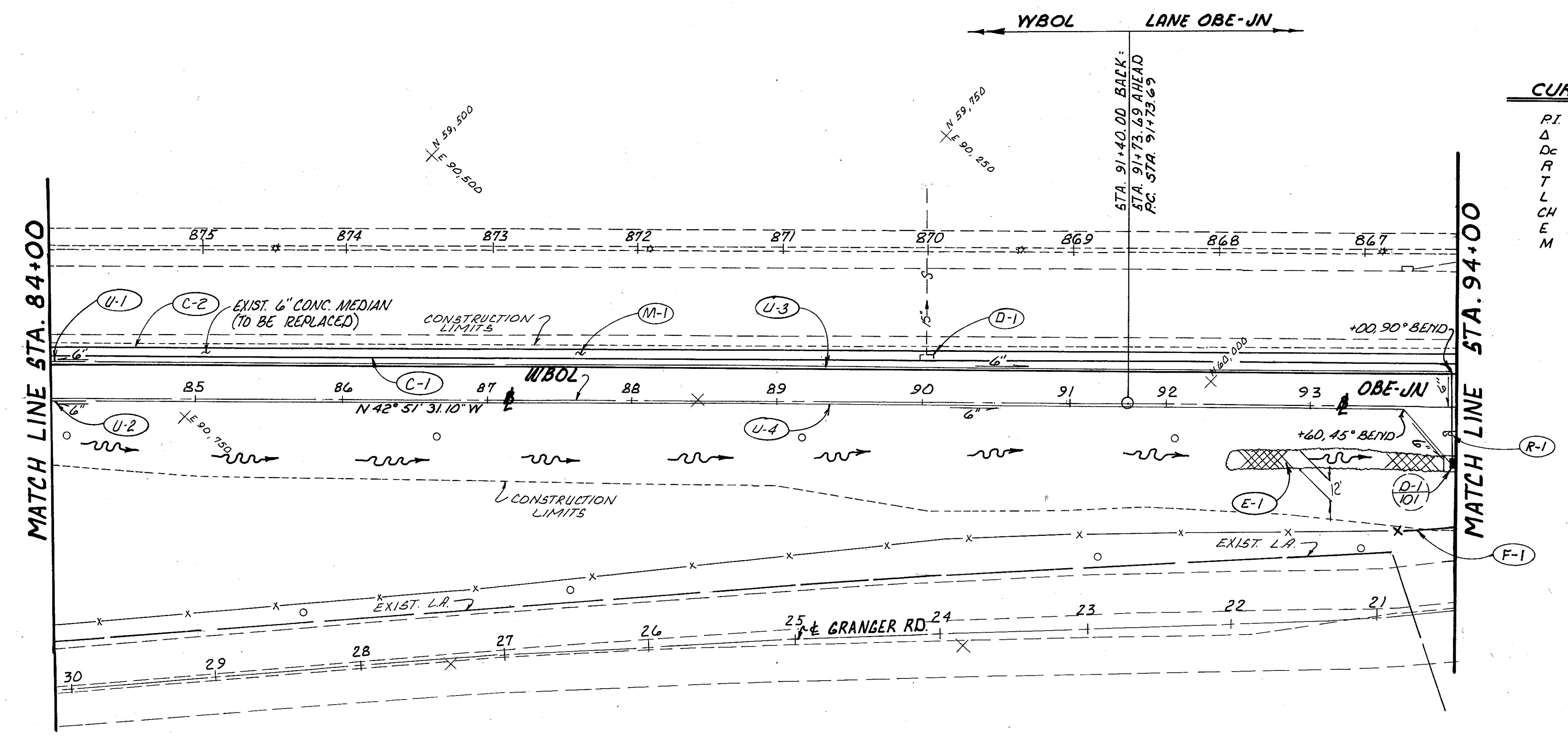
* DENOTES I-480 STATIONING

BENCHMARK: TBM 83 CURVELED "Y" ON NORTH
EDGE CONCRETE MEDIAN AT N. BOUND RAMP
STA. 28+75.1, 40.11 MI. OF E. MON. BOX
ELEV. 730.81

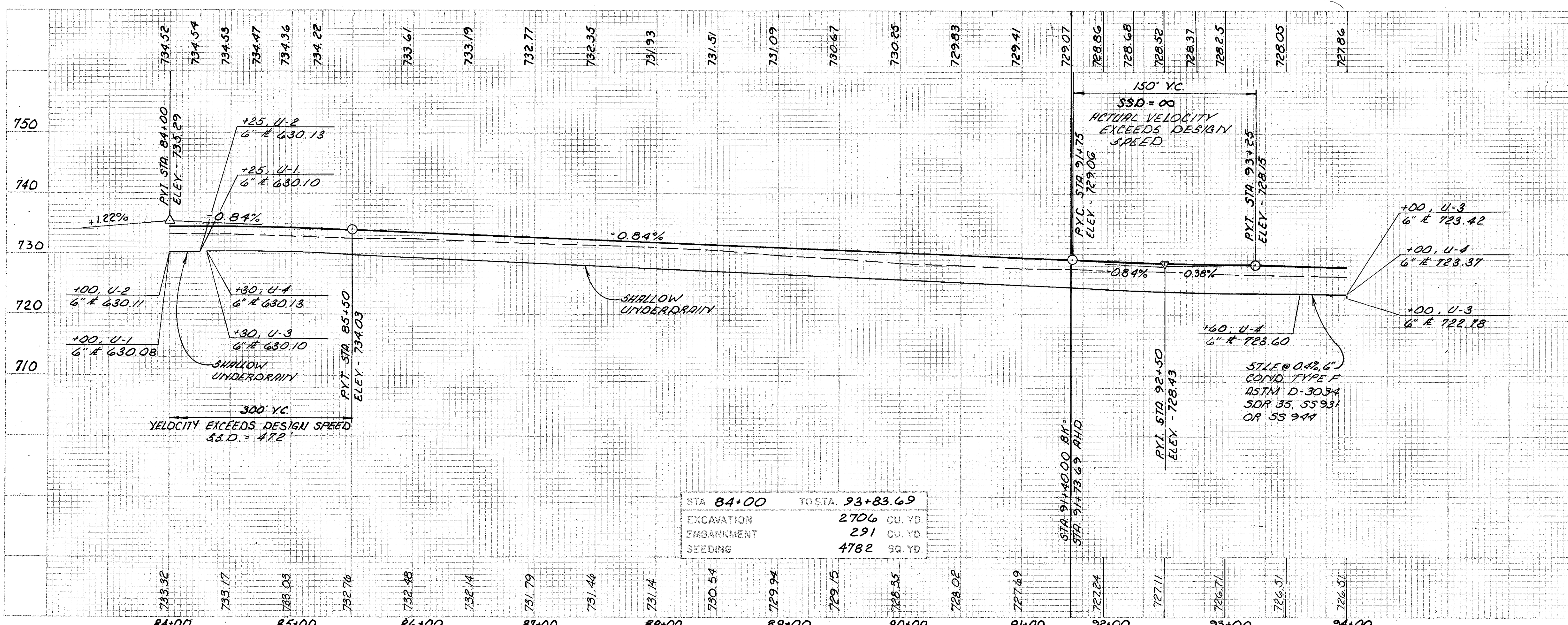
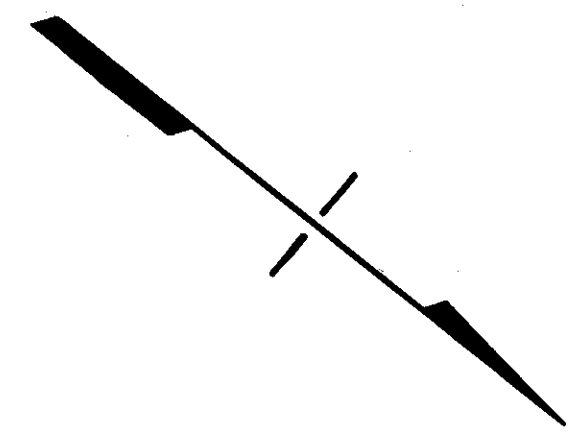
BENCHMARK: TBM 84 CURVELED "Y" N. EDGE
CONCRETE MEDIAN AT N. BOUND RAMP STA. 24+98.2
OPP. BROOKLYN APTS. GREENHOUSE
ELEV. 742.84

CURVE DATA

PI. STA. 93+33.70
Δ = 1°36'00"
Dc = 0°30'00"
R = 11459.16'
T = 160.01'
L = 320.00'
CH = 319.99'
E = 1.12'
M = 1.12'



(D-1) STA. 90+03, 29' LT. WBOL
INLET ADJUSTED TO GRADE
EXIST. T/C = 729.98 T/C = 730.14



STA. 84+00	TO STA. 93+83.69
EXCAVATION	2706 CU. YD.
EMBANKMENT	291 CU. YD.
SEEDING	4782 SQ. YD.

REFERENCE SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS... 100

RELOC. S.R.-176

ESTIMATED QUANTITIES - STATION 84+00 TO STA 94+00

ITEM No. EXTENSION No.	DESCRIPTION			202	202	202	202	203	310	603	604	605	607	609	612	670
				30600	32000	38000	75000	50000	20000	01500	20600	11110	23000	26000	42001	40000
			CONCRETE MEDIAN REMOVED	CURB REMOVED	GUARDRAIL REMOVED	FENCE REMOVED	SUBGRADE COMPACTION	SUBBASE TYPE II	6' CONDUIT, TYPE F 707.17 NON- PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	INLET ADJUSTED TO GRADE	6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	FENCE TYPE CLT	CURB, TYPE 6	CONCRETE MEDIAN, AS PER PLAN	DITCH EROSION PROTECTION	
REF. No.	LOCATION STATION TO STATION / OFFSET		SIDE	SQ YD	LIN FT	LIN FT	LIN FT	SQ YD	CU YD	LIN FT	EACH	LIN FT	LIN FT	LIN FT	SQ YD	SQ YD
U-1	84 + 00	84 + 25	LT										25			
U-2	84 + 00	84 + 25	RT										25			
U-3	84 + 30	94 + 00	LT							64			936			
U-4	84 + 30	94 + 00	RT							57			896			
E-1	92 + 45	93 + 95	RT													200
R-1	93 + 88	94 + 00	RT			12										
M-1	84 + 00 BK.	94 + 00 AHD.	LT	599				599	50						599	
D-1	90 + 03	29'	LT								1					
C-1	84 + 00 BK.	94 + 00 AHD.	LT		966									966		
C-2	84 + 00 BK.	94 + 00 AHD.	LT		966									966		
F-1	93 + 50	94 + 00	RT				50						50			
TOTALS				599	1932	12	50	599	50	121	1	1882	50	1932	599	200

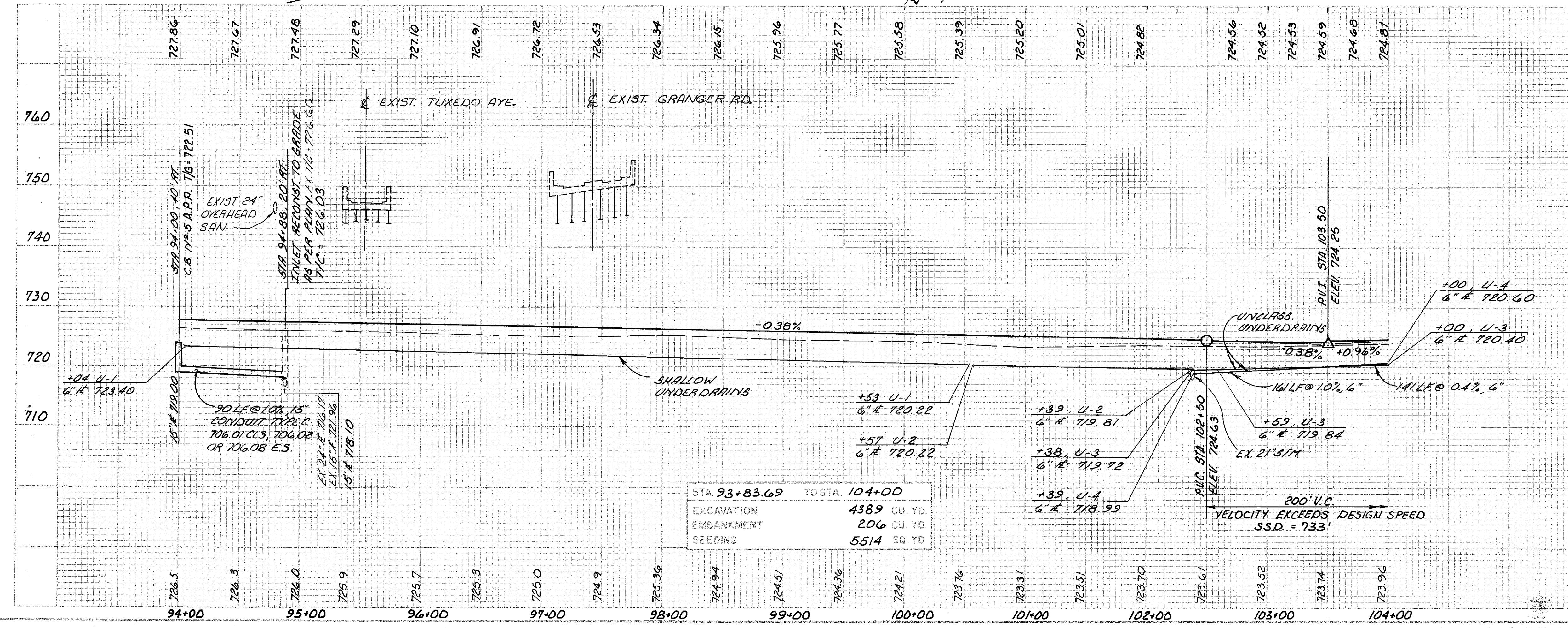
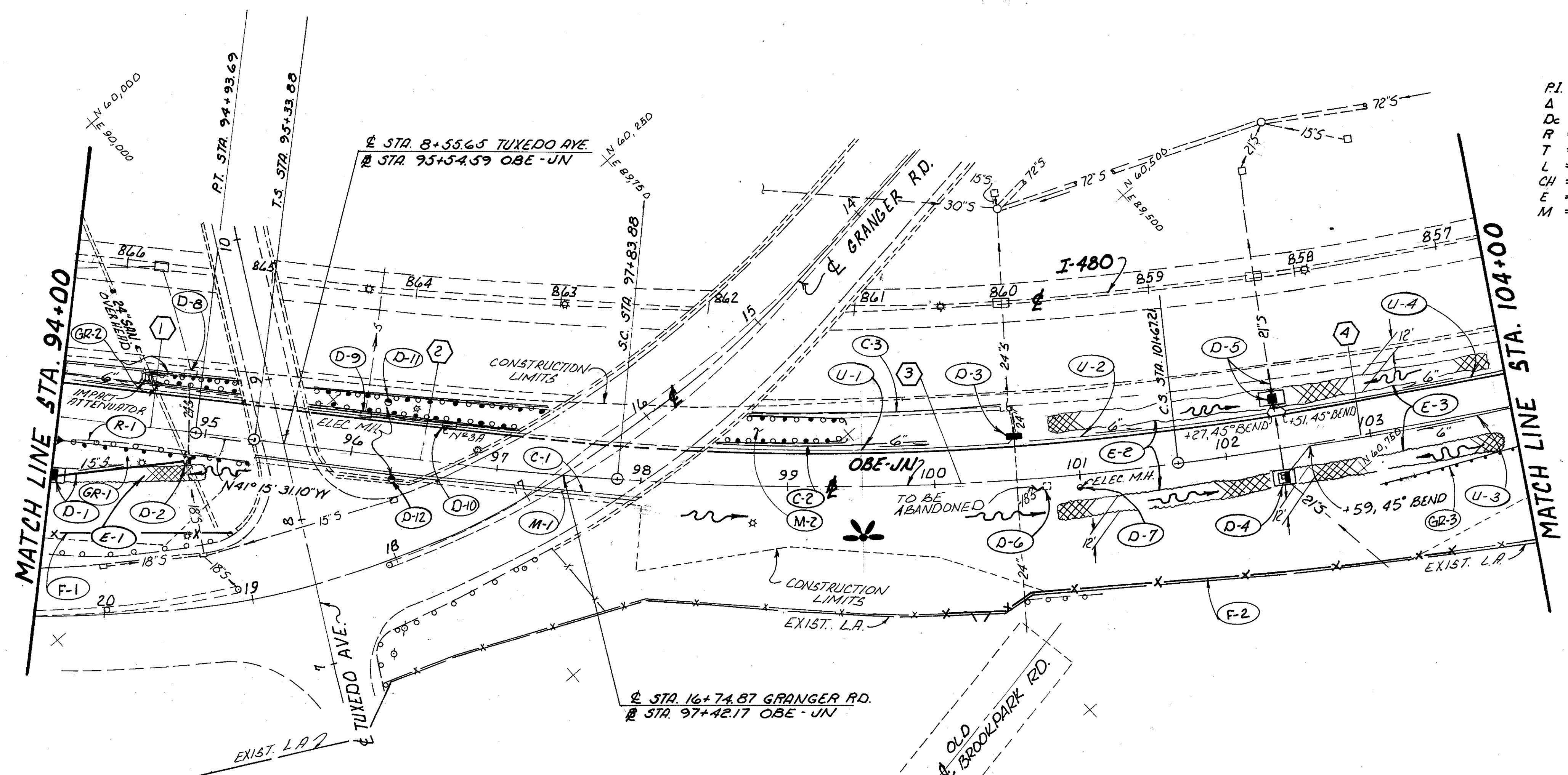
BENCHMARK: TBM 49 CHISELED "X"
TOP CURB S.E. CORNER SIDEWALK AT S.E.
CORNER INTERSECTION OF TUXEDO AND S.R.17
ELEV. 749.12

CURVE DATA

①	②	③	④
PI. STA. 93+33.70	PI. STA. 99+76.19		
Δ = 1° 36' 0"	Δ = 11° 30' 0"		
Dc = 0° 30' 0"	Dc = 3° 0' 0"		
R = 11459.16'	R = 1909.86'		
T = 160.01'	T = 192.31'		
L = 320.00'	L = 383.33'		
CH = 319.99'	CH = 382.69'		
E = 1.12'	E = 9.66'		
M = 1.12'	M = 9.61'		
THETA = 3° 45' 0"	THETA = 16° 0' 0"		
LS = 250'	LS = 400'		
Xc = 249.89'	Xc = 249.89'		
Yc = 5.45'	Yc = 5.45'		
LT = 166.70'	LT = 166.70'		
ST = 83.37'	ST = 83.37'		
LC = 249.95'	LC = 249.95'		
P = 136'	P = 136'		
H = 124.98'	H = 124.98'		

DRAINAGE STRUCTURE DATA

- (D-1) STA. 94+00, 40' RT. OBE-JN
C.B. 17" x 5" A.P.P. T/G = 724.00
- (D-2) STA. 94+88, 20' RT. OBE-JN
C.B. RECONSTRUCTED TO GRADE
AS PER PLAN. EX. T/G = 726.60 T/G = 726.03
- (D-3) STA. 100+53, 30.5' LT. OBE-JN
INLET NO. 2-A-8 (SEE PROPOSAL NOTE)
T/G = 724.62
- (D-4) STA. 102+38, 21' RT. OBE-JN
C.B. ADJ. TO GRADE T/G = 722.33 EX. 722.45
- (D-5) STA. 102+39, 36' LT. OBE-JN
C.B. 17" x 5" A.P.P. T/G = 722.51
- (D-6) STA. 100+70, 6.4' RT. OBE-JN
CATCH BASIN REMOVED
- (D-7) STA. 100+99, 8.4' RT. OBE-JN
PULL BDX REMOVED AND REPLACED
T/G = 725.00 EX. T/G = 723.74
- (D-8) STA. 94+84, 40' LT. OBE-JN
INLET ADJUSTED TO GRADE
EXIST. T/G = 726.99 T/G = 726.79
- (D-9) STA. 96+05, 29' LT. OBE-JN
INLET ADJUSTED TO GRADE
EXIST. T/G = 726.49 T/G = 726.14
- (D-10) STA. 96+64, 29' LT. OBE-JN
INLET ADJUSTED TO GRADE
EXIST. T/G = 726.02 T/G = 725.77
- (D-11) STA. 96+23, 38' LT. OBE-JN
PULL BOX REMOVED & REPLACED
EXIST. T/G = 726.95 T/G = 726.66
- (D-12) STA. 96+30, 15' RT. OBE-JN
PULL BOX REMOVED & REPLACED
EXIST. T/G = 727.54 T/G = 727.08



STA. 93+83.69	TO STA. 104+00
EXCAVATION	4389 CU. YD.
EMBANKMENT	206 CU. YD.
SEEDING	5514 SQ. YD.

REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS ...	102
PIPE PROFILES	113

RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 94+00 TO STA 104+00

CALC. J.A.A. DATE 3/12/93
 CHKD. G.C.F. DATE 11/2/93
 CUYAHOGA COUNTY
 CUY - 176 - 10.14
 JENNINGS FREEWAY
 OHIO
 F.H.W.A. REGION 5

102
395

ITEM No.	EXTENSION No.	DESCRIPTION	202	202	603	603	603	604	604	604	604	604	625	
			58100	58200	06100	08900	10400	01601	09000	09501	17900	20600	32101	31506
		CATCH BASIN REMOVED		INLET REMOVED	15' CONDUIT, TYPE C, 706.01 CLASS 3, 706.02 DR 706.08 E.S.	21' CONDUIT, TYPE B, 706.02, 1350 D-LOAD MINIMUM	24' CONDUIT, TYPE B, 706.02, 1350 D-LOAD MINIMUM	CATCH BASIN, NO. 5, AS PER PLAN	CATCH BASIN ADJUSTED TO GRADE	CATCH BASIN RECONSTRUCTED TO GRADE, AS PER PLAN	INLET NO. 2-A-8	INLET ADJUSTED TO GRADE	MANHOLE NO. 5, AS PER PLAN	PULL BOX REMOVED AND REPLACED
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	EACH	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	EACH	EACH	EACH
D-1	94 + 00 94 + 88	RT			90			1						
D-2	94 + 88	RT								1				
D-3	100 + 53	LT		1					4			1		
D-4	102 + 38	RT								1				
D-5	102 + 39	LT					8		1					
D-6	100 + 70	RT	1											
D-7	100 + 99	RT												1
D-8	94 + 84	LT												1
D-9	96 + 05	LT												1
D-10	96 + 64	LT												1
D-11	96 + 23	LT												1
D-12	96 + 30	RT												1
	TOTALS		1	1	90	8	4	2	1	1	1	3		3

ITEM No.	EXTENSION No.	DESCRIPTION	202	202	202	203	310	603	605	605	607	607	609	612	612	670
			30600	32000	75000	50000	20000	01500	11110	13410	23000	61200	26000	40000	42001	40000
		CONCRETE MEDIAN REMOVED		CURB REMOVED	FENCE REMOVED	SUBGRADE COMPACTION	SUBBASE, TYPE II	6' CONDUIT, TYPE F 707.17, NON-PERFORATED ASTM D-3034, SDR 35, SS 931 OR SS 944	6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6' UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	FENCE TYPE CLT	GATE TYPE CLT	CURB, TYPE 6	4' CONCRETE MEDIAN	CONCRETE MEDIAN, AS PER PLAN	DITCH EROSION PROTECTION
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	SQ YD	LIN FT	LIN FT	SQ YD	CU YD	LIN FT	LIN FT	LIN FT	LIN FT	EACH	LIN FT	SQ YD	SQ YD	SQ YD
U-1	94 + 04 100 + 53	LT						10	639							
U-2	100 + 57 102 + 39	LT						10	170							
U-3	102 + 38 104 + 00	RT						30		141						
U-4	102 + 39 104 + 00	LT						10		149						
F-1	94 + 00 95 + 25	RT			125						125					
F-2	100 + 00 103 + 40	RT			340						326	1				
M-1	95 + 34 97 + 95	RT	174			174	15							174		
M-2	94 + 00 99 + 05	LT	868			868	72								868	
C-1	95 + 34 97 + 95	RT		261											261	
C-2	94 + 00 100 + 00	LT		600											600	
C-3	94 + 00 100 + 60	LT		660											660	
E-1	94 + 05 95 + 05	RT														133
E-2	100 + 83 102 + 83	RT<														400
E-3	102 + 92 103 + 92	RT<														400
	TOTALS		1042	1521	465	1042	87	60	809	290	451	1	1521	174	868	933

ITEM No.	EXTENSION No.	DESCRIPTION	202	202	606	606	606	606	606	SPECIAL
			38000	98100	13000	25001	26100	26500	35141	69010400
		GUARDRAIL REMOVED		REMOVAL MISC: IMPACT ATTENUATOR REMOVED	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY TYPE A, AS PER PLAN	ANCHOR ASSEMBLY TYPE E	ANCHOR ASSEMBLY TYPE T	BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN	IMPACT ATTENUATOR, HEXFOAM SANDWICH SYSTEM
REF. No.	LOCATION STATION TO STATION / OFFSET	SIDE	LIN FT	EACH	LIN FT	EACH	EACH	EACH	EACH	EACH
R-1	94 + 00 95 + 34	RT	134							
GR-1	94 + 00 95 + 34	RT			62.5		1		1	
GR-2	94 + 50 99 + 40	LT	950	1	900			2	1	
GR-3	103 + 00 104 + 00	RT			75	1				
	TOTALS		1084	1	1037.5	1	1	2	1	1

RELOCATED STATE ROUTE 176

BENCHMARK: TBM 80 CHISELED 1/4" TOP OF
 THREADED BOLT ON W. SIDE HIGHWAY POWER POLE
 BASE 50' S. OF CENTERLINE RAILROAD, 400' ± S.
 OF SCHAFF RD.
 ELEV. 757.04

①
 THETA = 3° 45' 0"
 LS = 250'
 Xc = 249.89'
 Yc = 5.45'
 LT = 166.70'
 ST = 83.37'
 LC = 249.95'
 P = 1.36'
 H = 124.98'

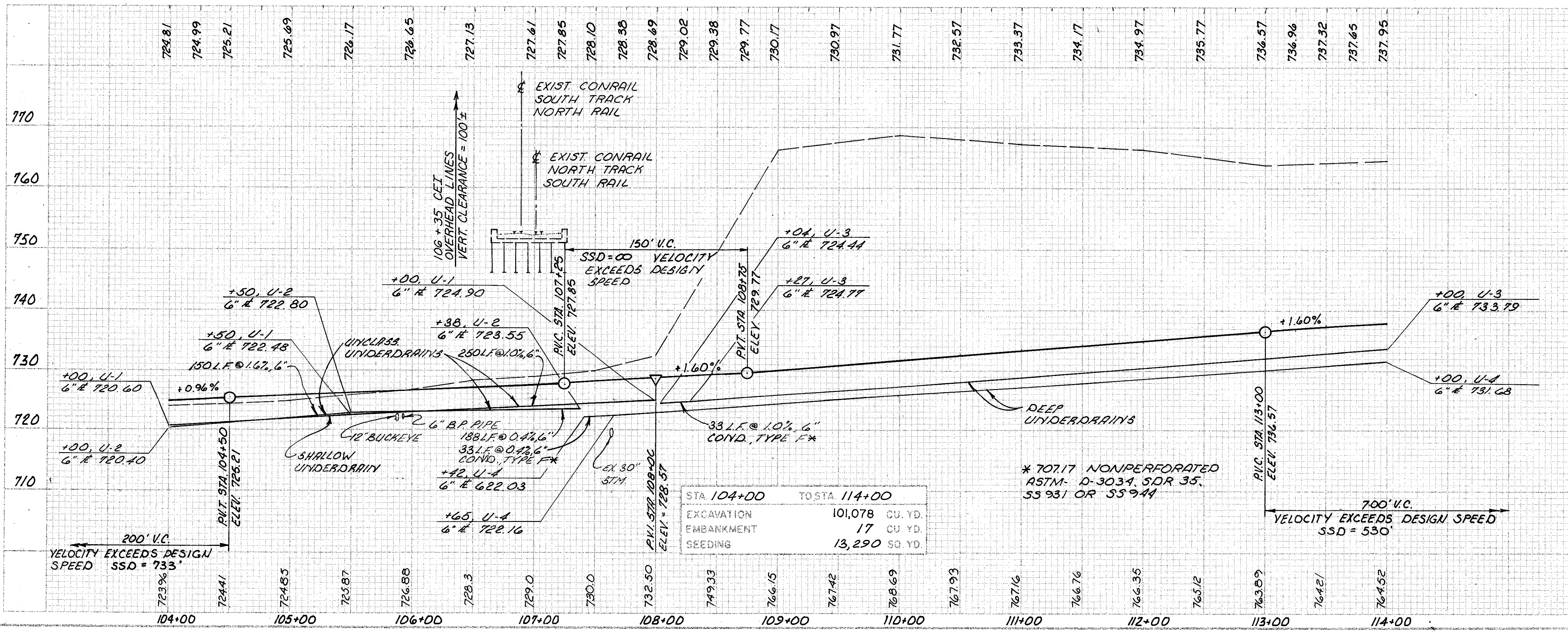
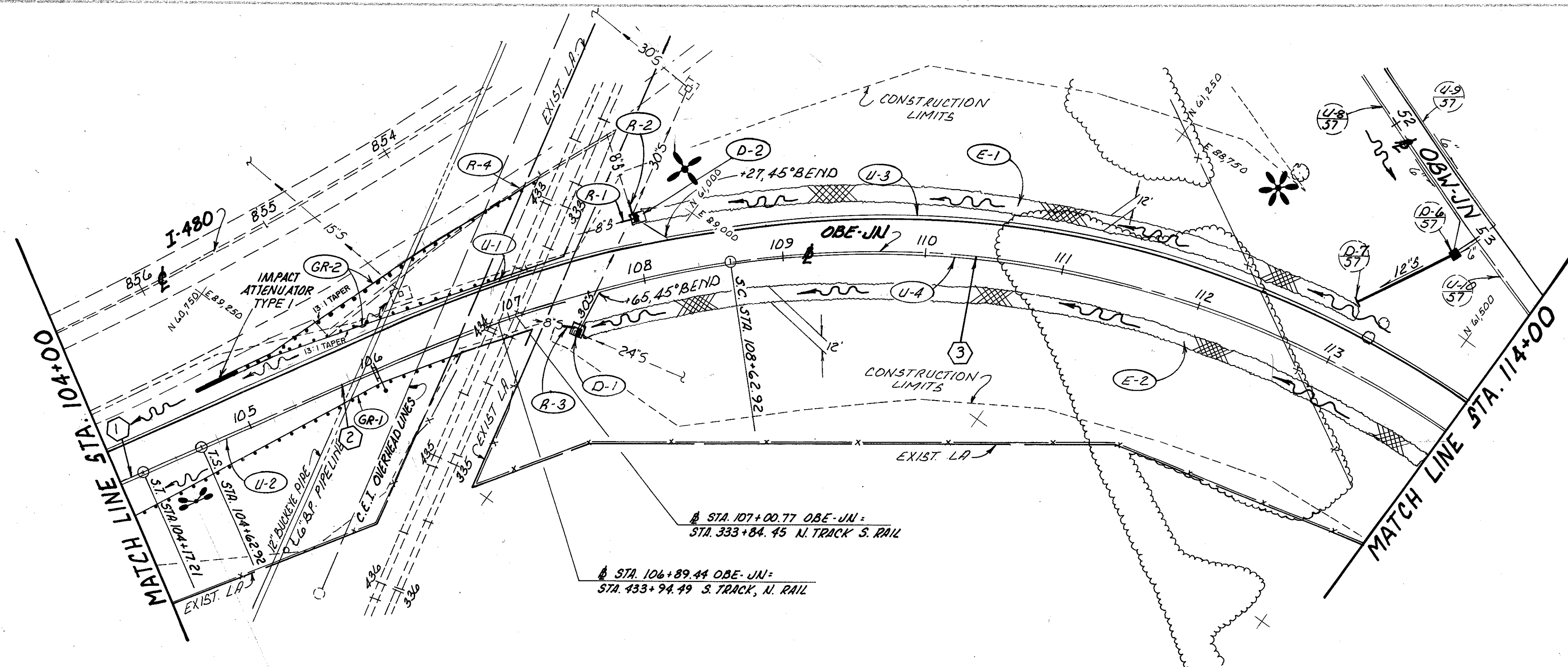
②
 THETA = 16° 0' 0"
 LS = 400'
 Xc = 396.89'
 Yc = 37.03'
 LT = 267.76'
 ST = 134.33'
 LC = 398.62'
 P = 9.28'
 H = 199.48'

③
 P.I. STA. 111+60.53
 Δ = 45° 7' 48.60"
 Dc = 8' 0' 0"
 R = 716.20'
 T = 297.61'
 L = 564.13'
 CH = 549.66'
 E = 59.37'
 M = 54.83'

DRAINAGE STRUCTURE DATA

① D-1 STA 107+42, 23' RT. LANE OBE-JN
 C.B. RECONSTRUCTED TO GRADE
 T/B = 726.05 EX. 728.02

② D-2 STA 108+04, 47' LT. LANE OBE-JN
 C.B. RECONSTRUCTED TO GRADE
 T/B = 727.70 EX. 730.41



REFERENCES

QUANTITIES FOR REFERENCED ITEM...
 OBE-JN P&P SHEETS 104, 82, 84 & 86
 PIPE PROFILES 176

SHEET NUMBER

LANE OBE - JN PLAN & PROFILE STA. 104+00 TO STA. 114+00

RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 104+00 TO STA 114+00

REF. No.	ITEM No. / EXTENSION No.		SIDE	202	202	603	604	605	605	605	606	606	606	SPECIAL	670	603	
	STATION TO STATION / OFFSET			30700	35100	01500	09500	11110	12210	13410	13000	15500	35141	69010350	40000	01800	
DESCRIPTION			LIN FT	LIN FT	LIN FT	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	SQ YD	LIN FT	
				CONCRETE BARRIER REMOVED	PIPE REMOVED, 24" AND UNDER	6" CONDUIT, TYPE F, 707.17, NON-PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	CATCH BASIN RECON-STRUCTED TO GRADE	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	GUARDRAIL, BARRIER DESIGN, TYPE 5	BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN	IMPACT ATTENUATOR, TYPE 1	DITCH EROSION PROTECTION	8" CONDUIT, TYPE B, 706.02	
R-1	108 + 04		LT		10											10	
R-2	108 + 04		LT		10											10	
R-3	107 + 42		RT		10											10	
R-4	*852 + 50	*855 + 00	LT	260													
D-1	107 + 42		RT				1										
D-2	108 + 04		LT				1										
U-1	104 + 00	108 + 00	LT					150		250							
U-2	104 + 00	107 + 38	RT							338							
U-3	108 + 04	114 + 00	LT			33			573								
U-4	107 + 42	114 + 00	RT			33			635								
E-1	108 + 09	113 + 03	LT												661		
E-2	107 + 47	114 + 00	RT												870		
GR-1	104 + 00	106 + 60	RT							237.5			1				
GR-2	104 + 75	107 + 50	LT							362.5	25		2	1			
TOTALS				260	30	66	2	150	1208	588	600	25	3	1	1531	30	

* DENOTES I-480 STATIONING

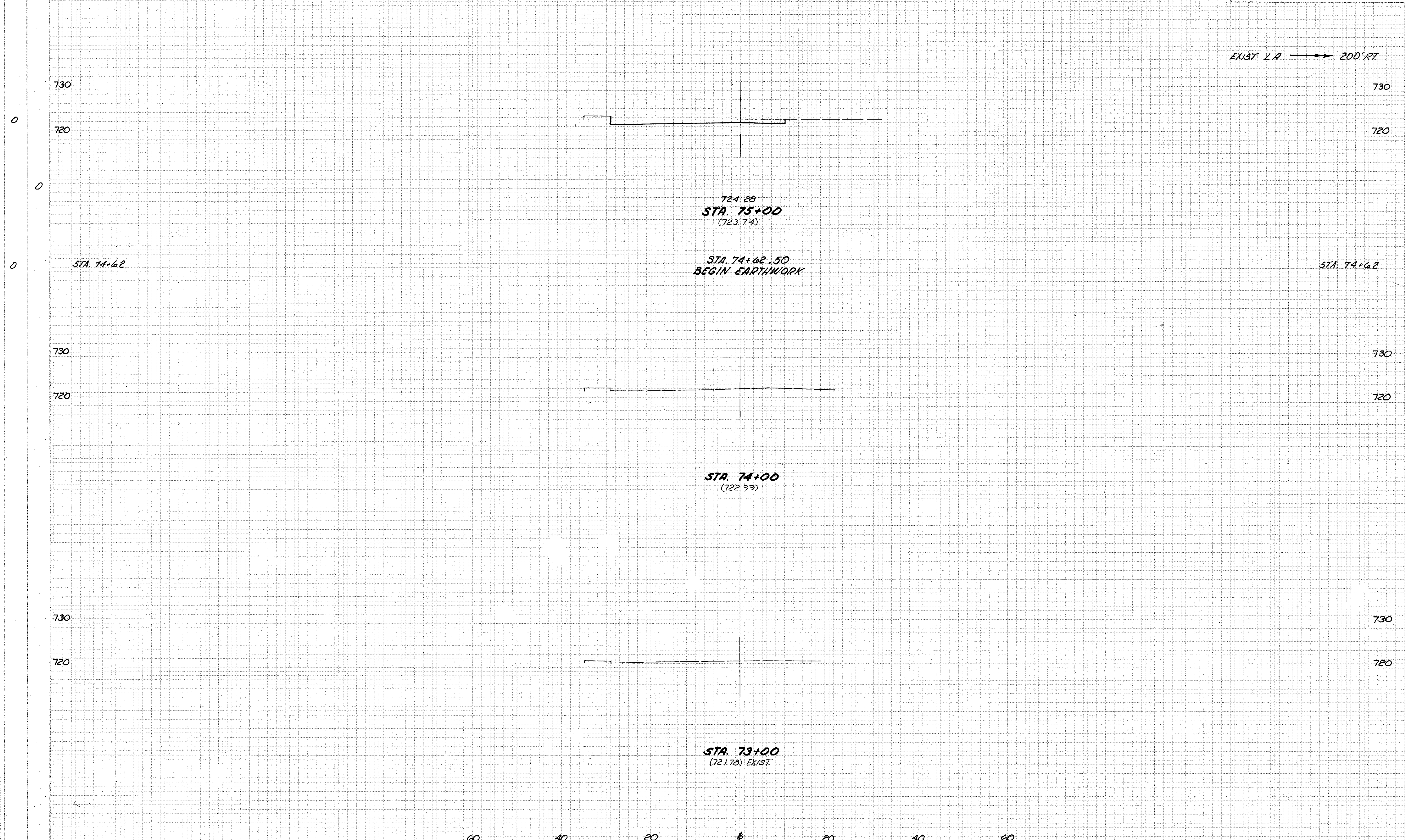
SECTIONING
END WIDTH 36 YDS.

CALC. _____
DATE _____
CHKD. _____
DATE _____

CUYAHOGA COUNTY
CUY - 176 - 10.14

OHIO
F.H.W.A. 5
REGION

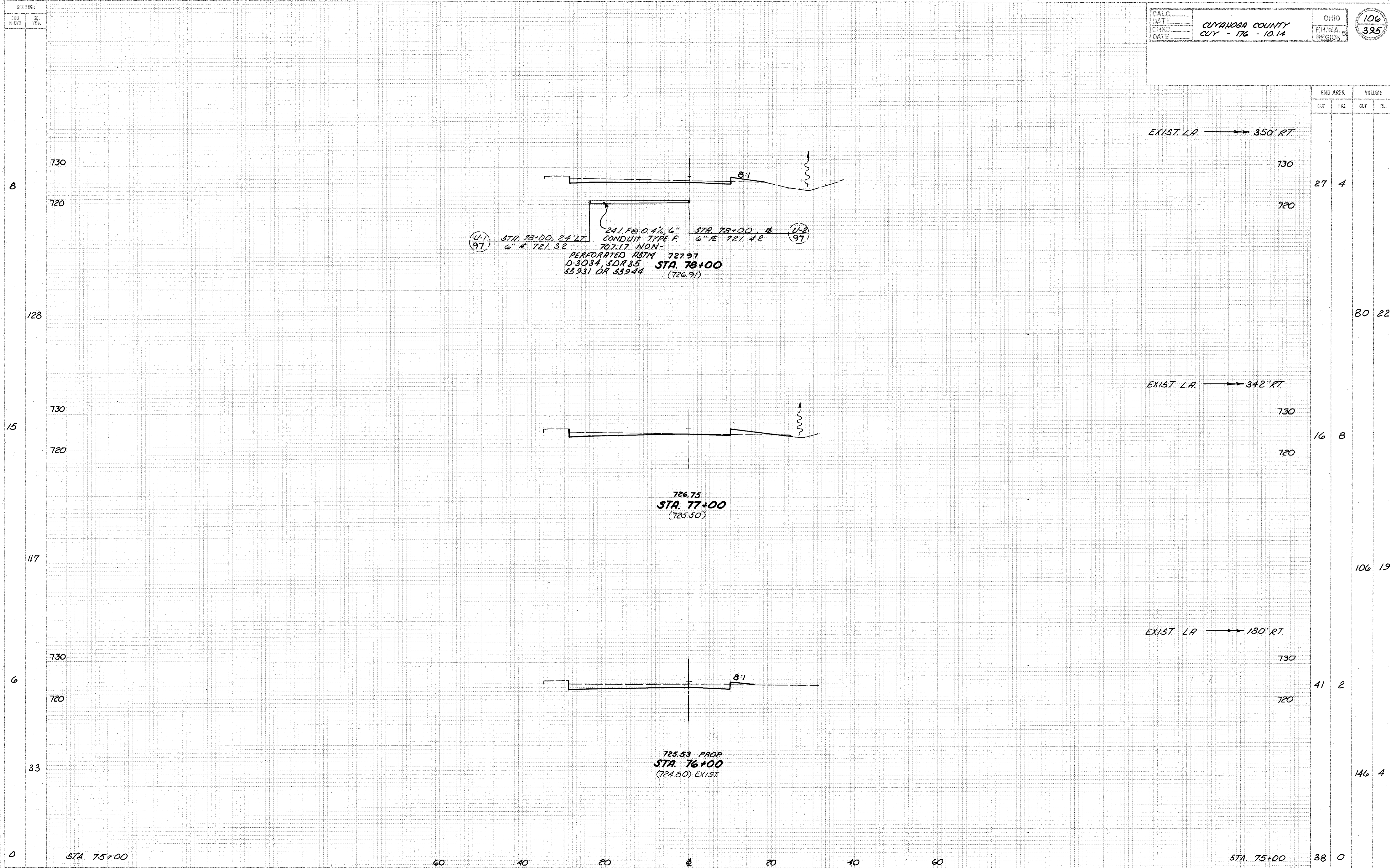
105
395



AREA		VOLUME	
CUT	FILL	CUT	FILL
38	0		
		27	0
0	0		

LANE WBOL/OBE - JN CROSS SECTIONS STA. 73+00 TO STA. 75+00

RELOC. S.R. - 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
27	4	80	22
16	8	106	19
41	2	146	4
38	0		

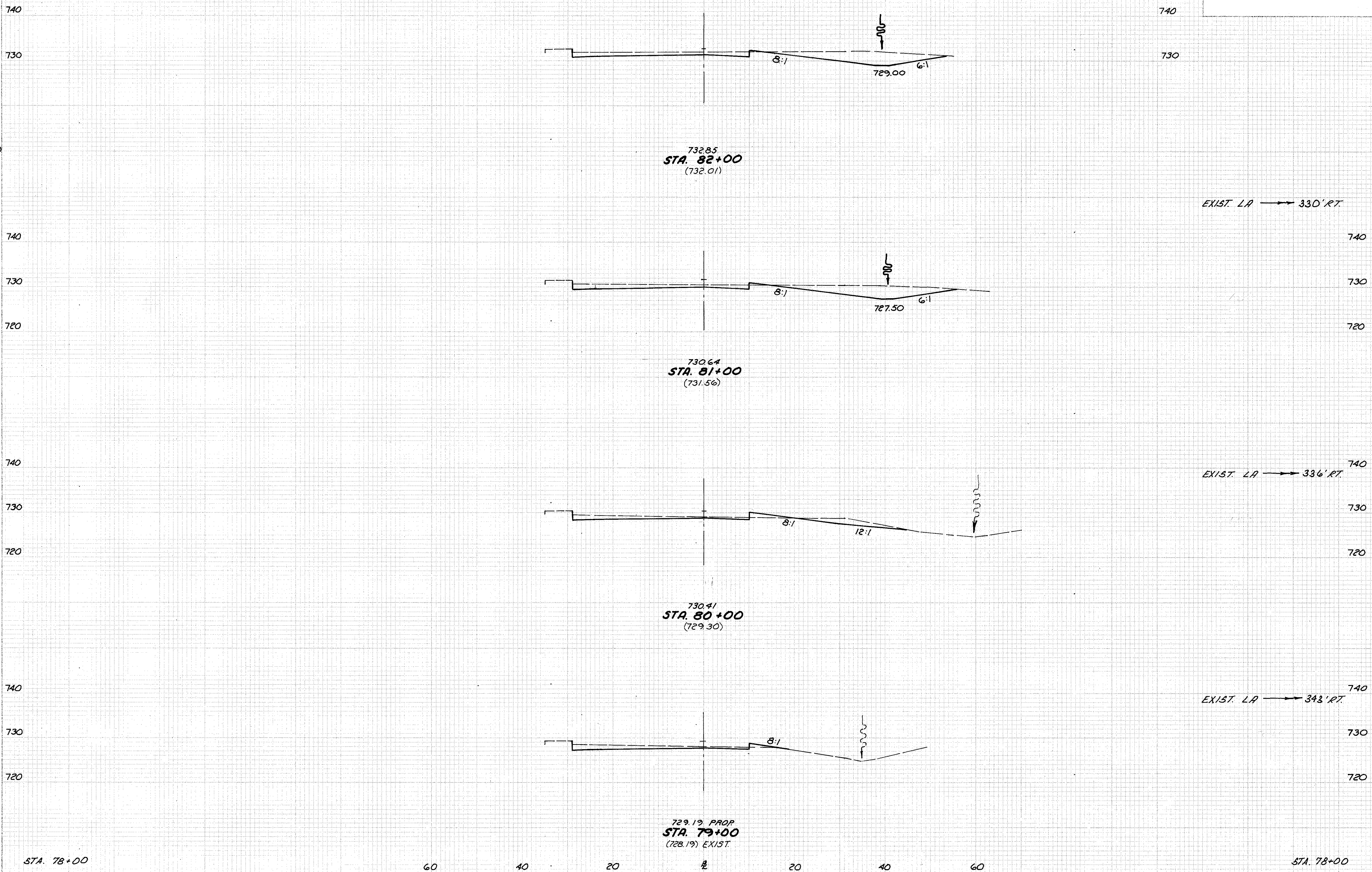
LANE WBOL/OBE - JN CROSS SECTIONS STA. 76+00 TO STA. 78+00

RELOC. S.R. - 176

44
 46
 450
 35
 244
 9
 94
 8

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____
CUYAHOGA COUNTY
CUY - '176 - 10.14
 OHIO
 F.H.W.A. REGION
107
395

EXIST. LA → 336' RT.



CUT AREA		FILL VOLUME	
CUT	FILL	CUT	FILL
100	1		
		357	6
93	2		
		239	13
86	5		
		115	15
26	3		
		98	13
27	4		

STA. 78+00

STA. 78+00

732.85
STA. 82+00
(732.01)

730.64
STA. 81+00
(731.56)

730.41
STA. 80+00
(729.30)

729.19 PROP
STA. 79+00
(728.19) EXIST.

LANE WBOL / OBE - JN

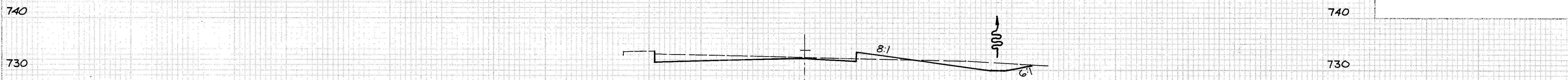
CROSS SECTIONS STA. 79+00

TO STA. 82+00

RELOC. S.R. - 176

SEEDING
 34
 34
 328
 25
 356
 39
 461
 44

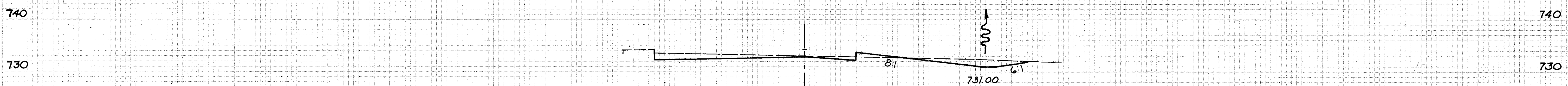
EXIST. LA → 147' RT.



733.61
STA. 86+00
 (732.46)

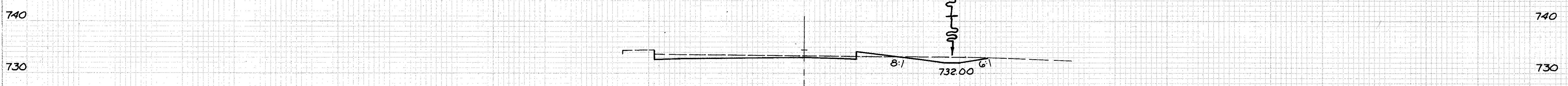
END AREA		VOLUME	
CUT	FILL	CUT	FILL
57	11		
		187	30
44	5		
		152	17
38	4		
		230	9
86	1		
		344	4
100	1		

EXIST. LA → 158' RT.



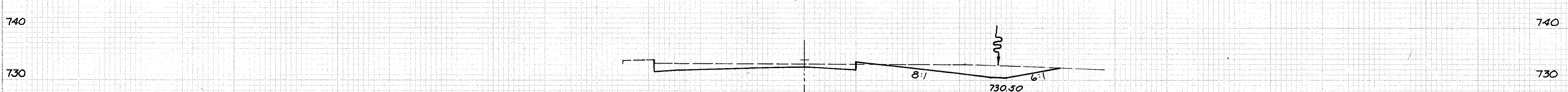
734.36
STA. 85+00
 (733.03)

EXIST. LA → 167' RT.



734.52
STA. 84+00
 (733.32)

EXIST. LA → 357' RT.



733.98 PROP
STA. 83+00
 (733.11) EXIST.

STA. 82+00

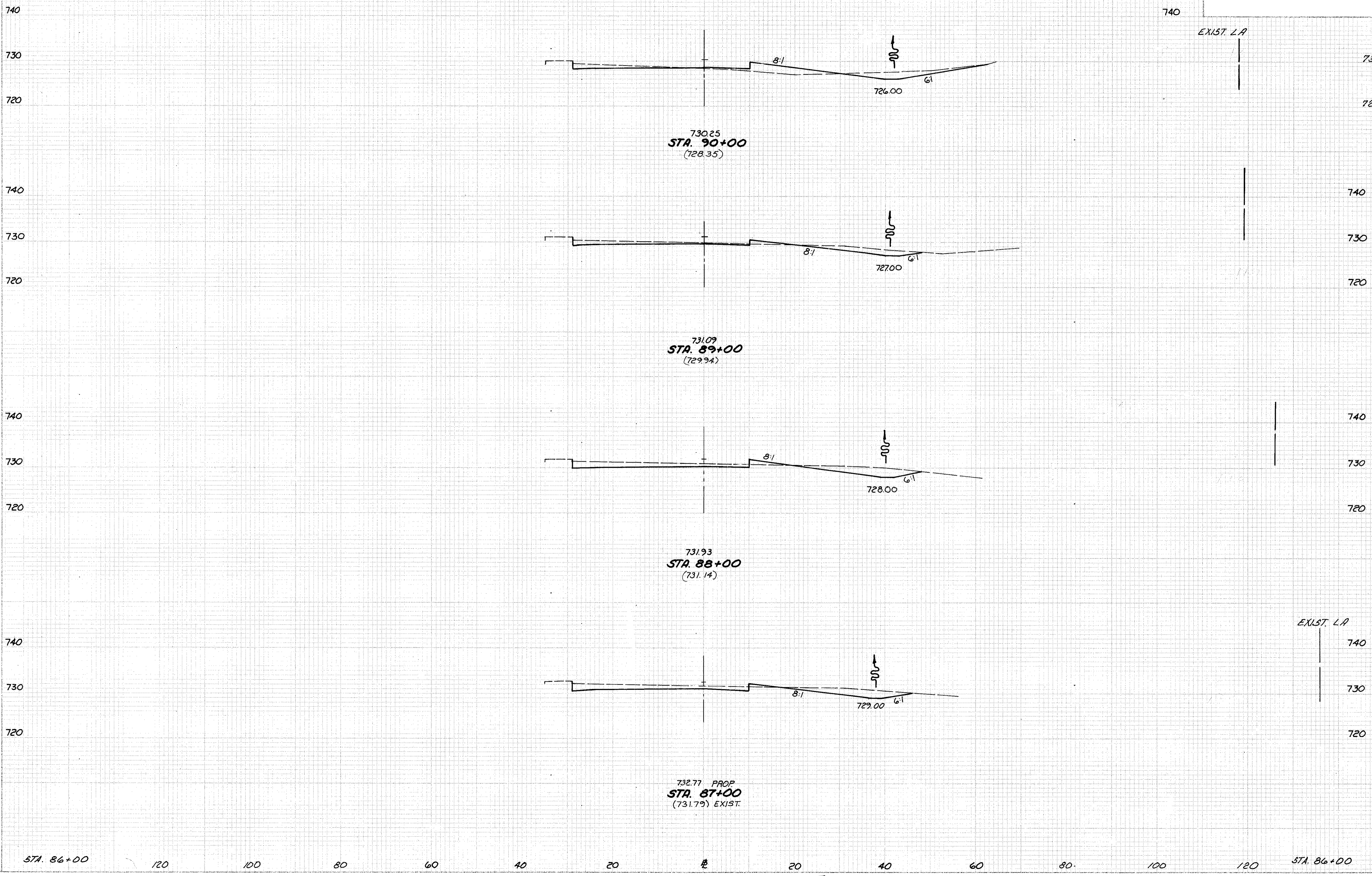
STA. 82+00

60 40 20 0 20 40 60

RELOC. S.R.-176

SECTIONS
 52
 500
 38
 422
 38
 411
 36
 389
 34

CALC. DATE: CUYAHOGA COUNTY OHIO
 CHKD. DATE: CUY - 176 - 10.14 P.M.A. 5 REGION 109
 DATE: 395



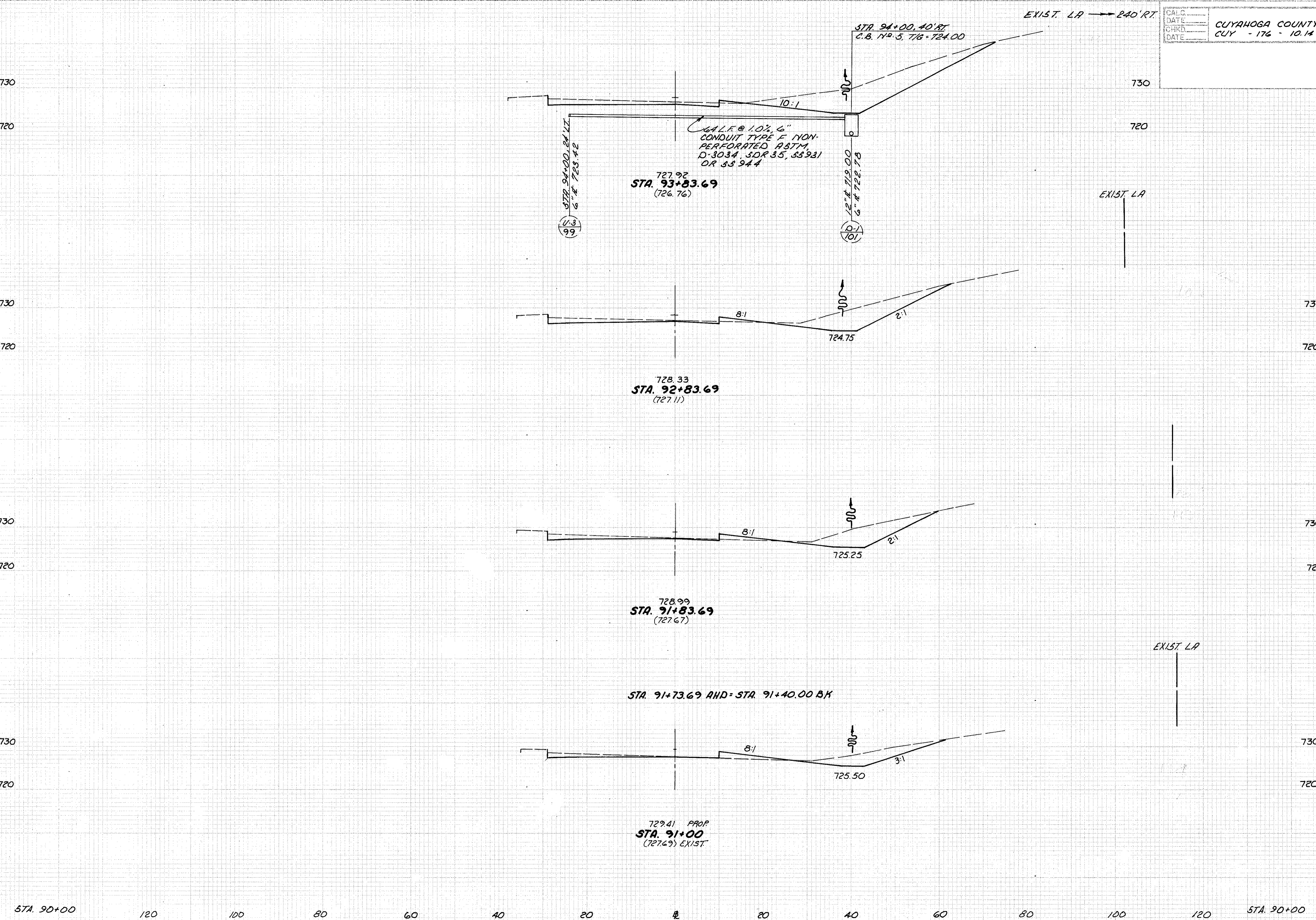
EXIST. AREA		VOLUME	
CUT	FILL	CUT	FILL
44	30		
		170	63
48	4		
		219	15
70	4		
		261	13
71	3		
		237	26
57	11		

STA. 86+00 120 100 80 60 40 20 0 20 40 60 80 100 120 STA. 86+00

LANE WBOL / OBE - JN CROSS SECTIONS STA. 87+00 TO STA. 90+00

RELOC. S.R. - 176

SECTIONS
 END WIDTH
 67
 56
 600
 52
 488
 53
 583
 52



DATE	CUYAHOGA COUNTY	OHIO	110
CHKD.	CLY - 176 - 10.14	F.H.W.A.	395
DATE		REGION	

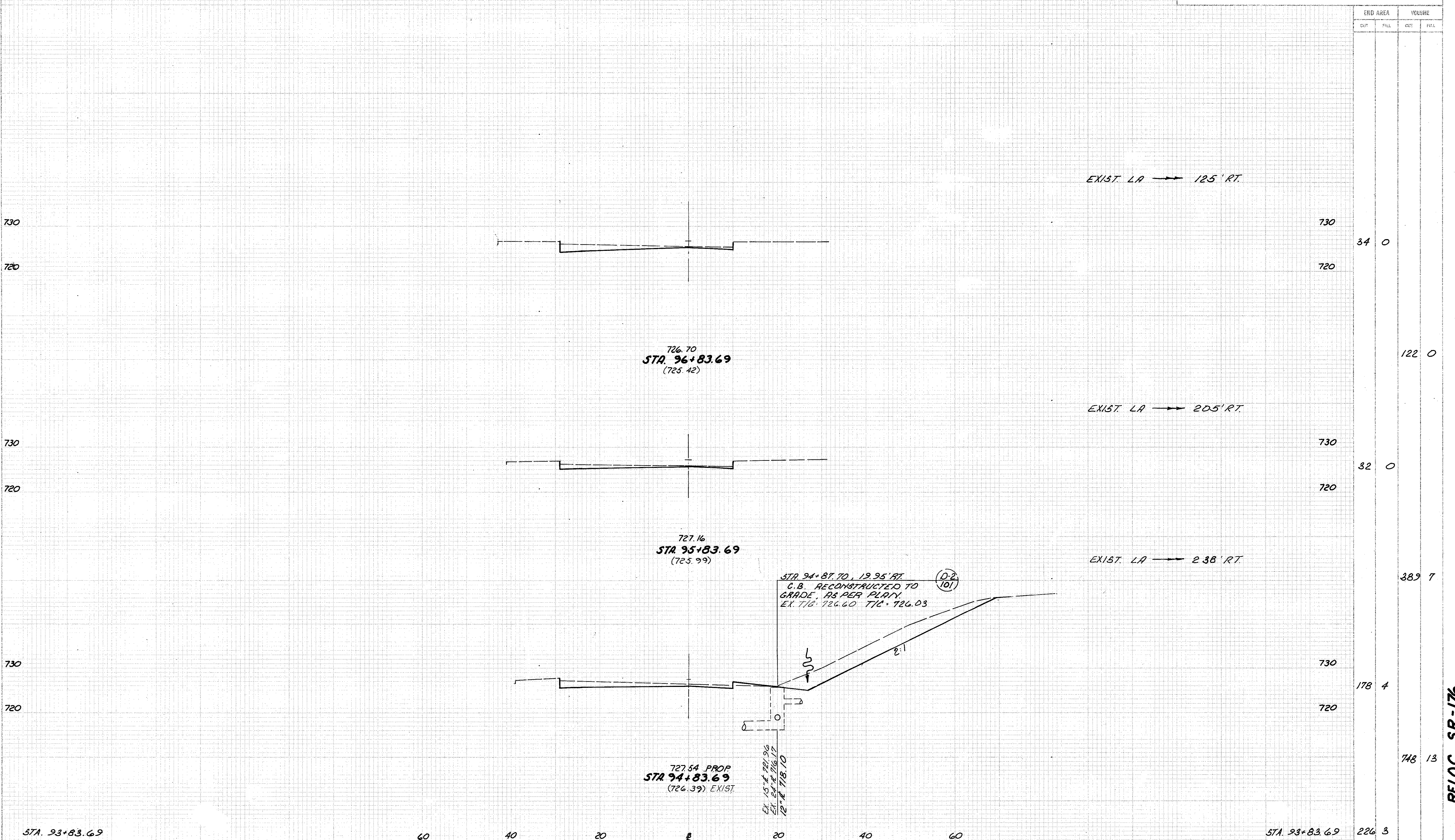
END AREA		VOLUME	
CUT	FILL	CUT	FILL
226	3		
		661	13
131	4		
		435	19
		104	6
		165	17
		74	12
		219	78
44	30		

LANE WBOL I OBE - JN CROSS SECTIONS STA. 91+00 TO STA. 93+83.69

RELOC. SR. 176

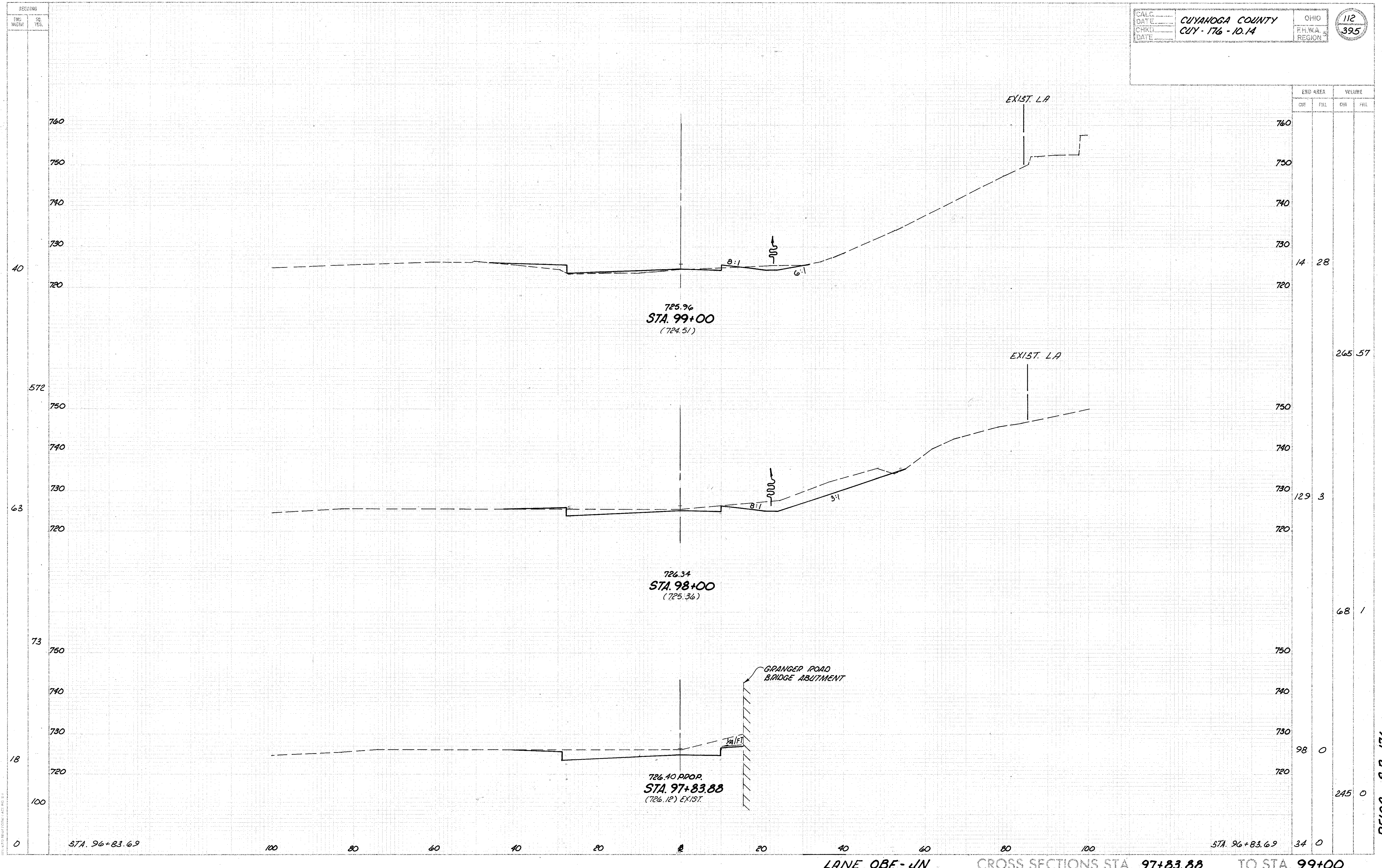
SECTIONS
 END WIDTH
 SQ. YDS.
 0
 0
 0
 356
 64
 728
 67

CALC. DATE	CUYAHOGA COUNTY	OHIO	111
CHKD. DATE	CUY - 176 - 10.14	F.H.W.A. REGION 5	395
DATE			



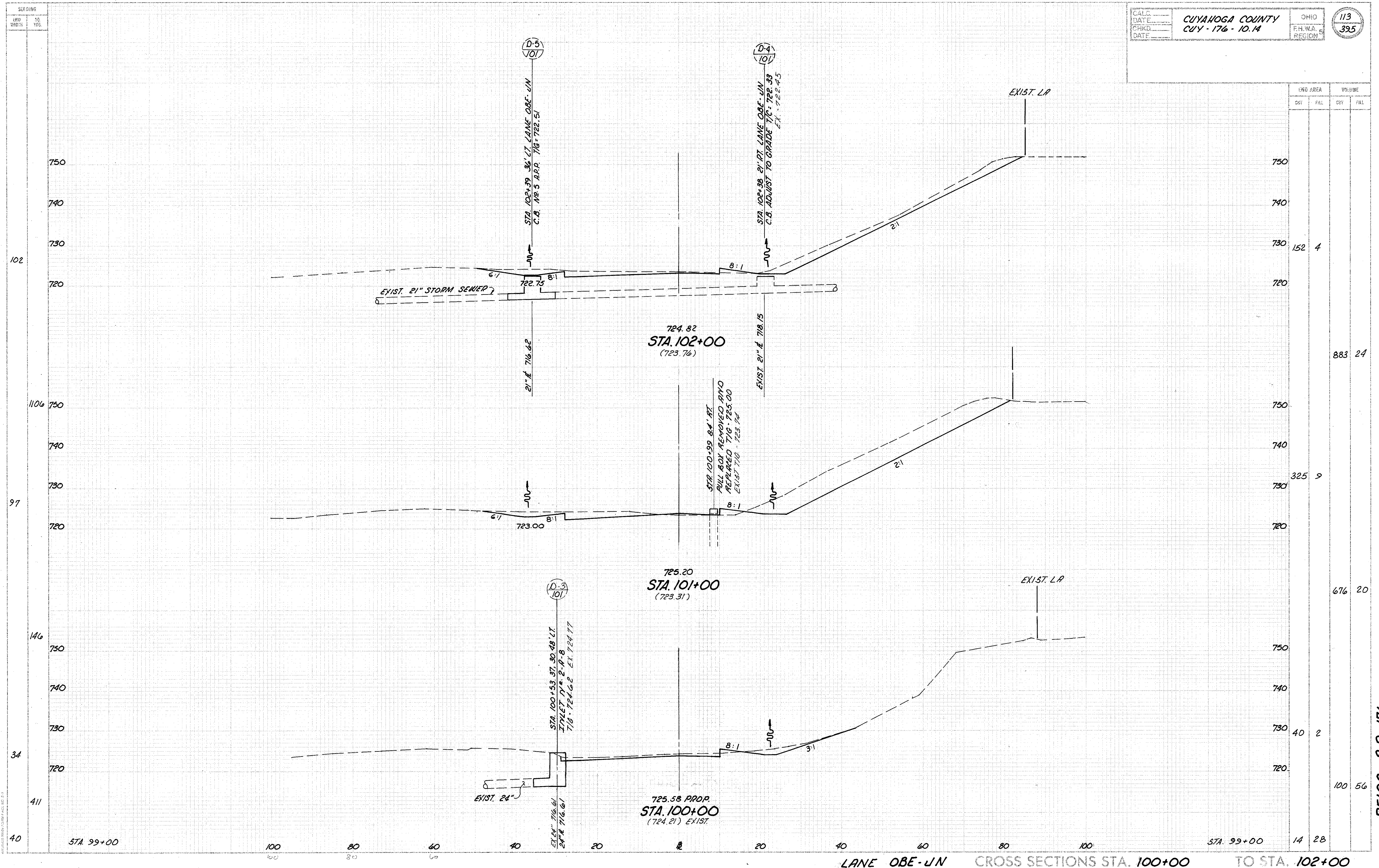
LANE WBOL / OBE - JN CROSS SECTIONS STA. 94+83.69 TO STA. 96+83.69

RELOC. S.R. - 176



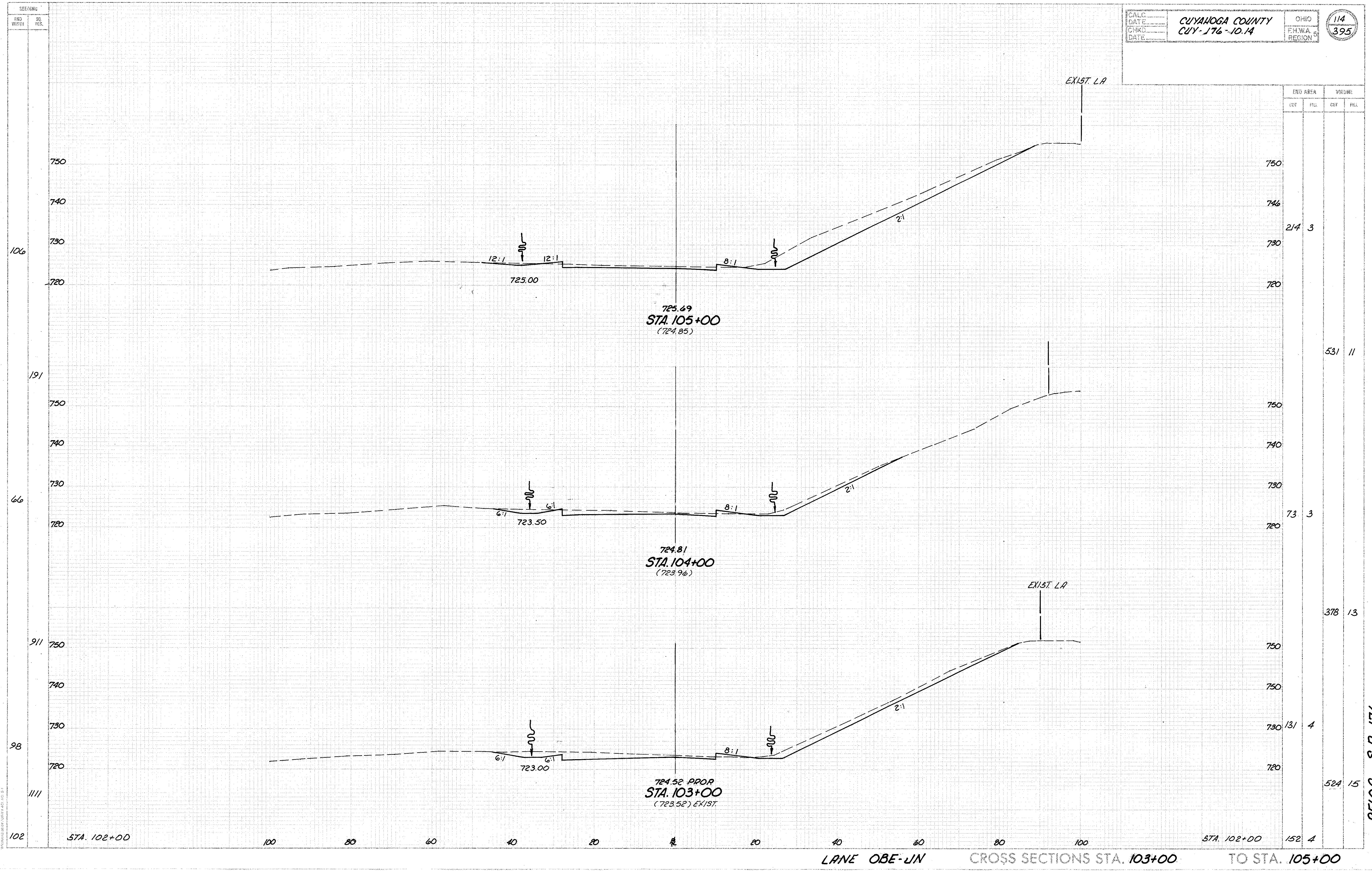
END AREA		VOLUME	
CUT	FILL	CUT	FILL
14	28		
		265	57
129	3		
		68	1
98	0		
		245	0
34	0		

RETOC. S.R.-176



RELOC. S.R. 176

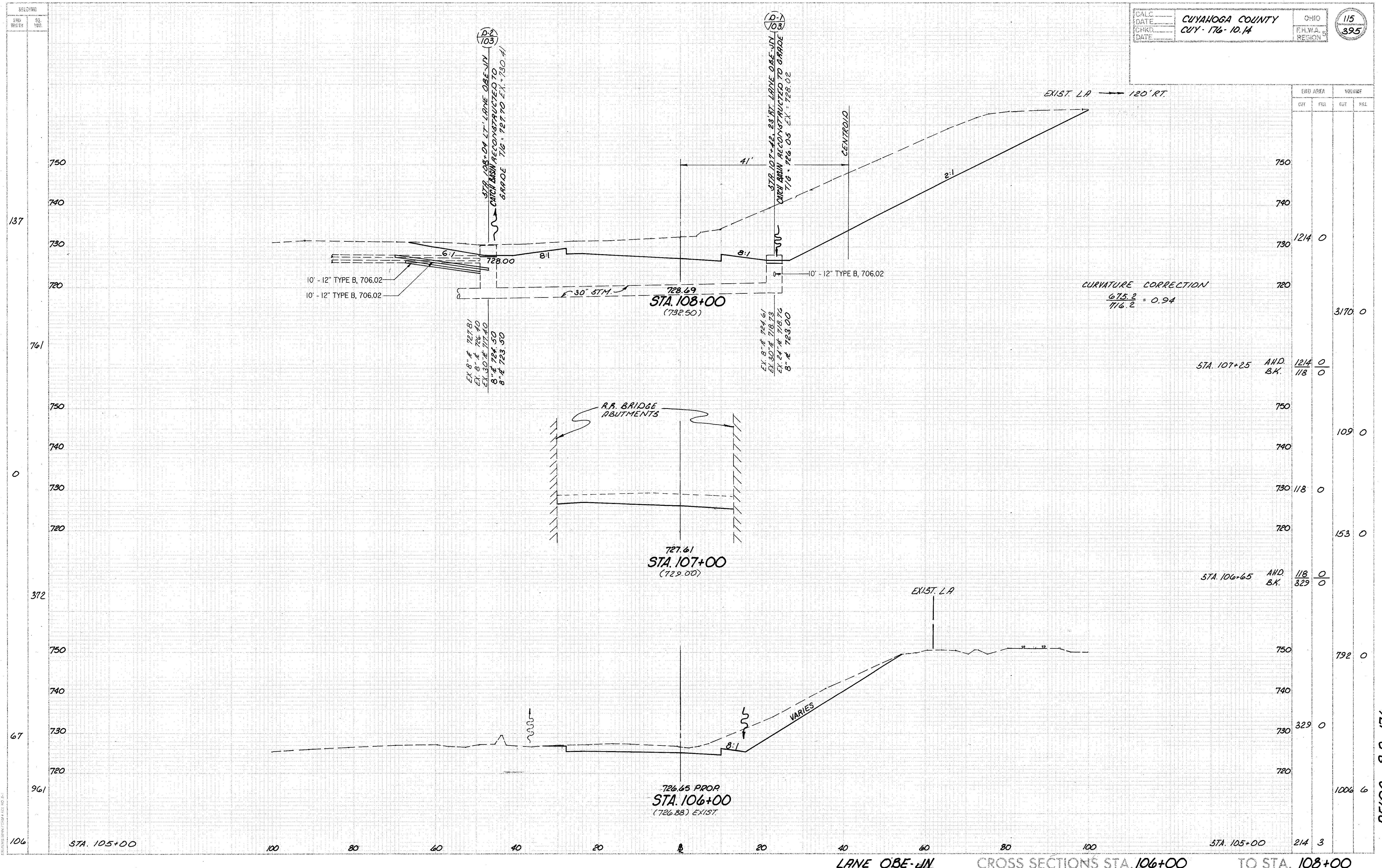
RELOC. S.R. 176



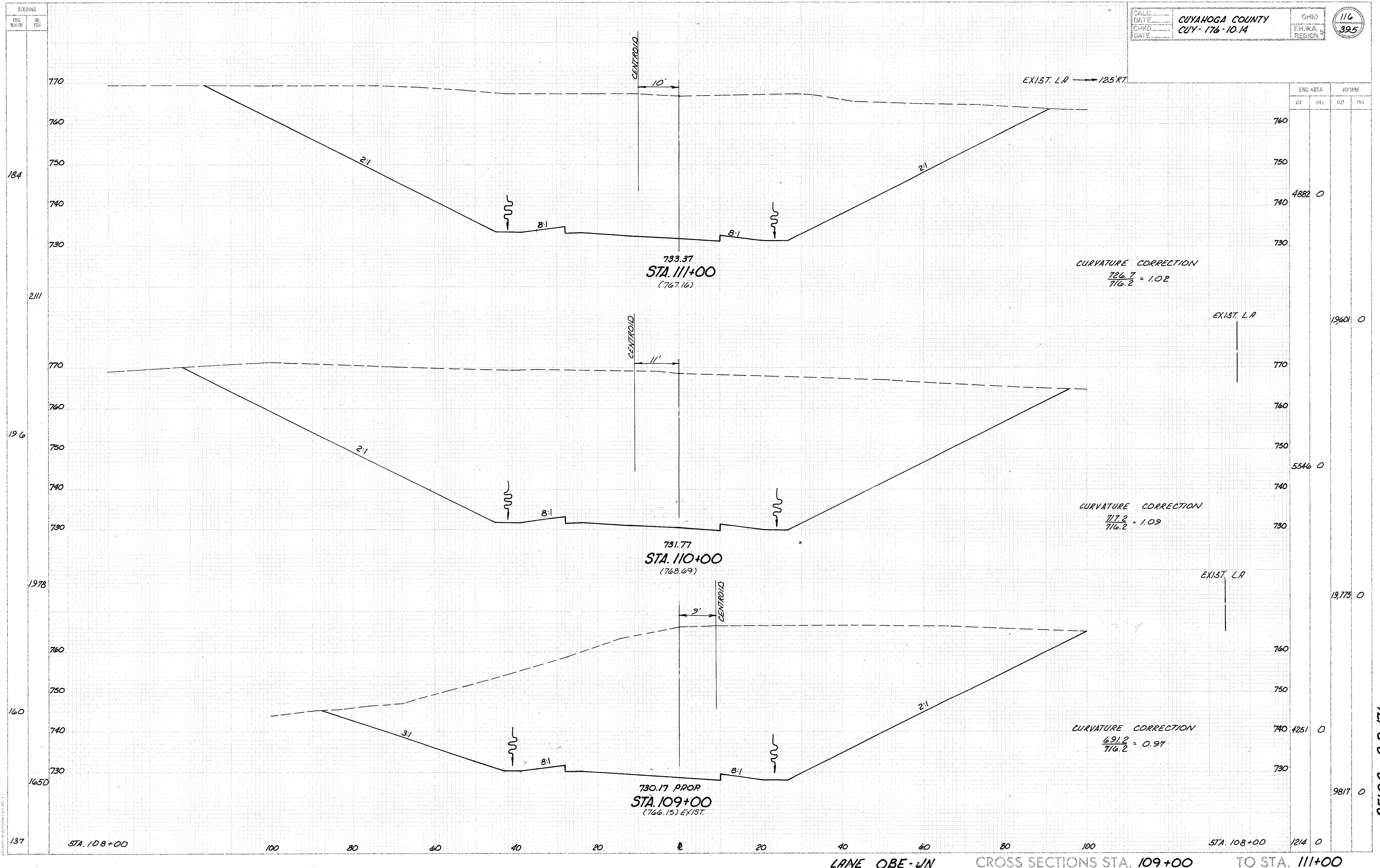
END AREA		VOLUME	
CUT	FILL	CUT	FILL
214	3	531	11
73	3	378	13
131	4	524	15
152	4		

RELOC. S.R.-176

LANE OBE-VIN CROSS SECTIONS STA. 103+00 TO STA. 105+00



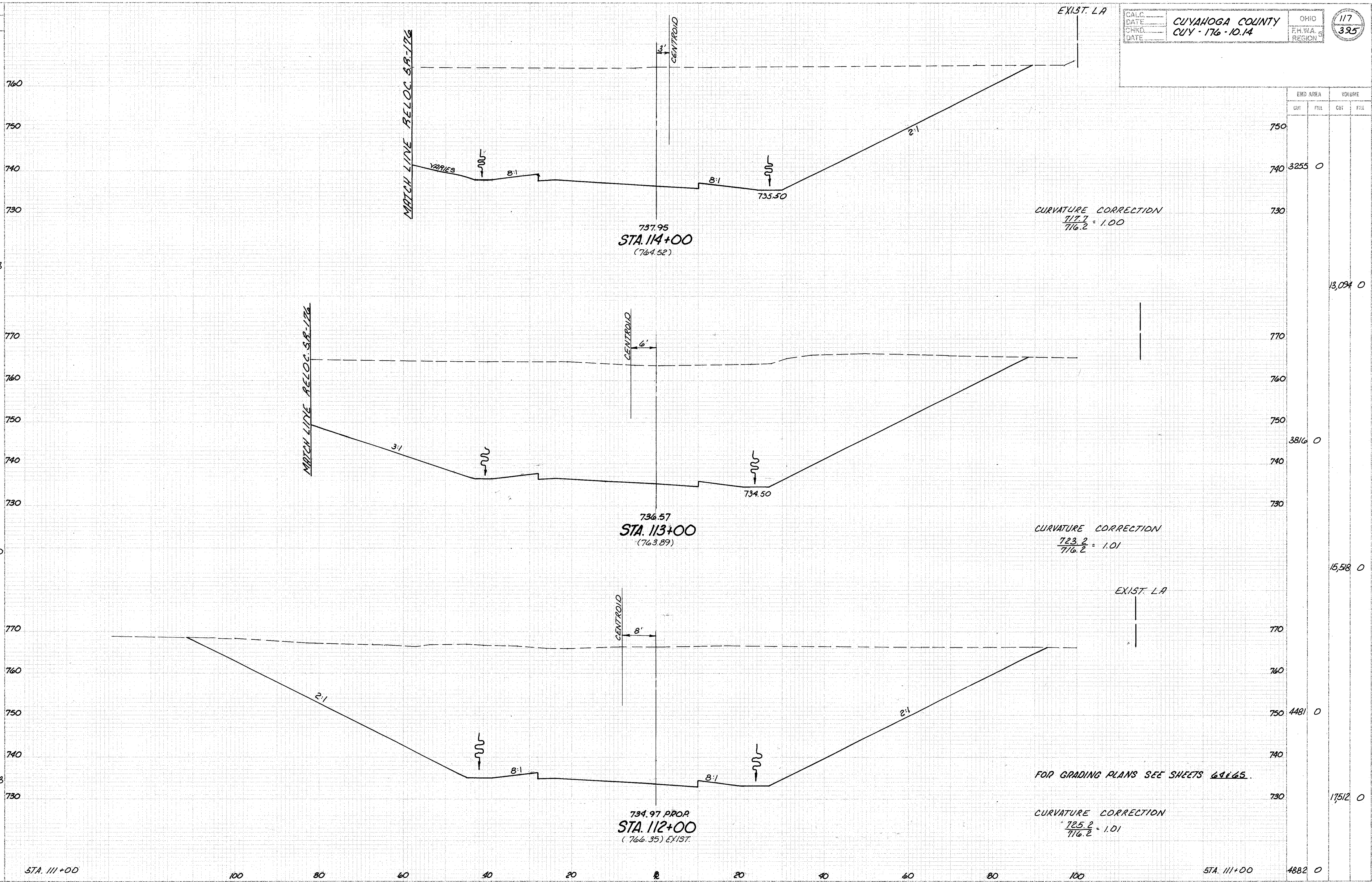
RELOC. S.P. - 176



SEE PLAN
 184
 2111
 196
 1978
 160
 1650
 137

STA. 108+00 100 80 60 40 20 0 20 40 60 80 100 STA. 108+00

116
1433
142
1800
182
2033
184



CALC.	CUYAHOGA COUNTY	OHIO	117
DATE	CUY-176-10.14	F.H.W.A. REGION	335
CHKD.			
DATE			

END AREA	VOLUME	
	CUT	FILL
750		
740	3255	0
730		
720		13,094
710		
700		
690		3816
680		
670		15,518
660		
650		4481
640		
630		17,512
620		
610		
600		4882

CURVATURE CORRECTION
 $\frac{717.1}{716.2} = 1.00$

CURVATURE CORRECTION
 $\frac{723.2}{716.2} = 1.01$

CURVATURE CORRECTION
 $\frac{725.2}{716.2} = 1.01$

FOR GRADING PLANS SEE SHEETS 64 & 65.

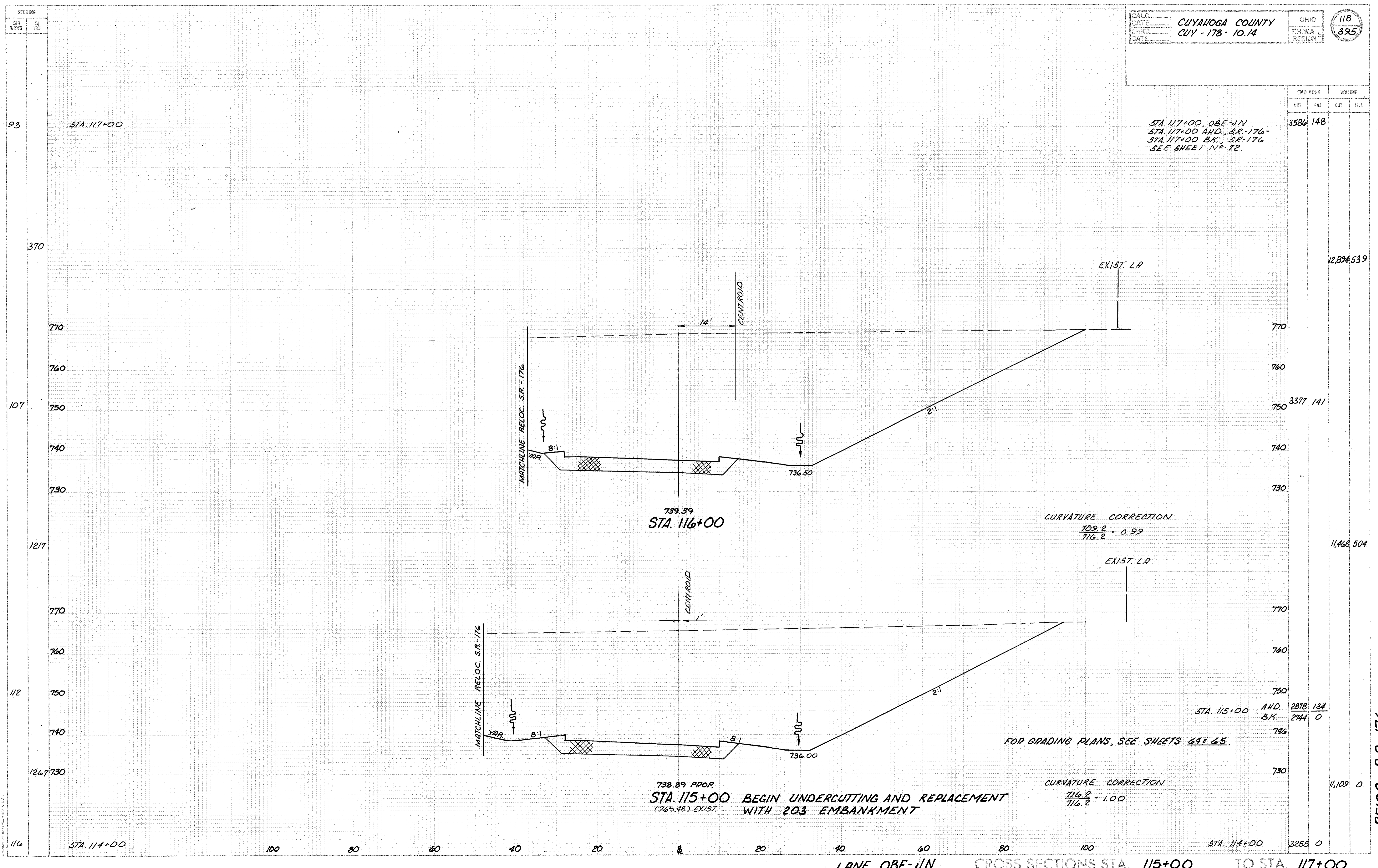
EXIST. L.A.

EXIST. L.A.

RELOC. S.R. 176

STA. 111+00 100 80 60 40 20 0 20 40 60 80 100 STA. 111+00 4882 0

LANE OBE-JN CROSS SECTIONS STA. 112+00 TO STA. 114+00



STA. 117+00, OBE-JN
 STA. 117+00 AHD. S.R. 176-
 STA. 117+00 BK. S.R. 176
 SEE SHEET N° 72.

END AREA		VOLUME	
CUT	FILL	CUT	FILL
3586	148		
		12,894	539
		3377	141
		11,468	504
		2878	134
		2744	0
		11,109	0
		3255	0

CURVATURE CORRECTION
 $\frac{709.2}{716.2} = 0.99$

CURVATURE CORRECTION
 $\frac{716.2}{716.2} = 1.00$

FOR GRADING PLANS, SEE SHEETS 64 & 65.

739.39
 STA. 116+00

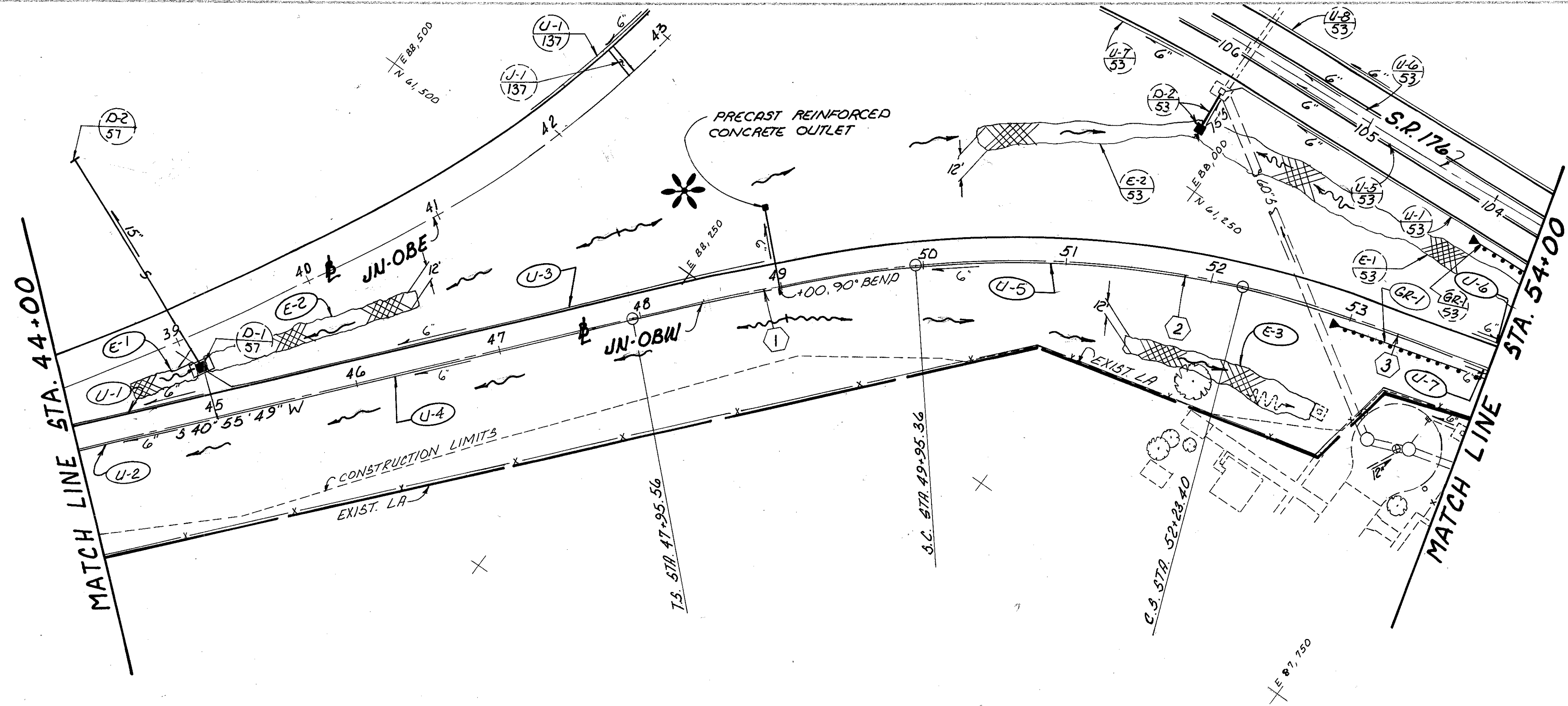
738.89 PROP
 STA. 115+00 BEGIN UNDERCUTTING AND REPLACEMENT
 (765.48) EXIST. WITH 203 EMBANKMENT

RELOC. S.R. 176

LANE OBE-JN CROSS SECTIONS STA. 115+00 TO STA. 117+00

BENCHMARK: TBM 39 CHISELED SQUARE IN E. SIDE TOP OF CONCRETE AT FENCE CORNER PROVED 750 ± E. OF RESIDENCE NO. 4921 W. 12TH WHERE EAST-WEST CHAIN LINK FENCE TURN N. S. ELEV. 768.52

BENCHMARK: TBM 40 NORTHEAST CORNER CENTERLINE MAN. BOX OF CUL. DE. S.W. AT SOUTH END W. 12TH STREET AT N. SIDE I-480 RIGHT OF WAY OF WAY ELEV. 762.16

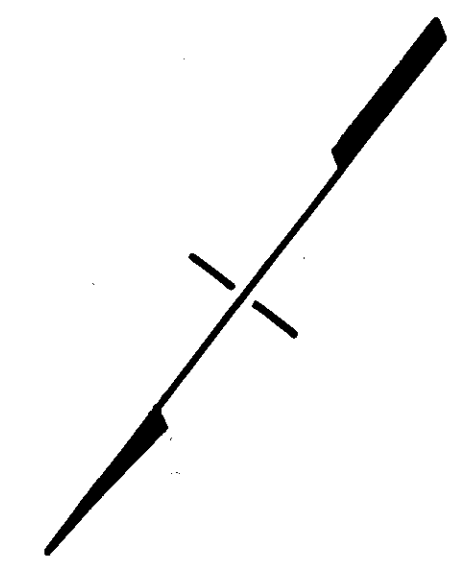


CURVE DATA

①
 THETA = 8°00'00"
 Ls = 200'
 Xc = 199.61'
 Yc = 9.30'
 L.T. = 133.47'
 ST = 66.79'
 LC = 199.83'
 P = 2.33'
 K = 99.94'

②
 P.I. STA. 51+10.45
 Δ = 18°13'38"
 Dc = 8°00'00"
 R = 716.20'
 T = 114.89'
 L = 227.84'
 CH = 226.88'
 E = 9.16'
 M = 9.04'

③
 THETA = 8°00'00"
 Ls = 200'
 Xc = 199.61'
 Yc = 9.30'
 L.T. = 133.47'
 ST = 66.79'
 LC = 199.83'
 P = 2.33'
 K = 99.94'

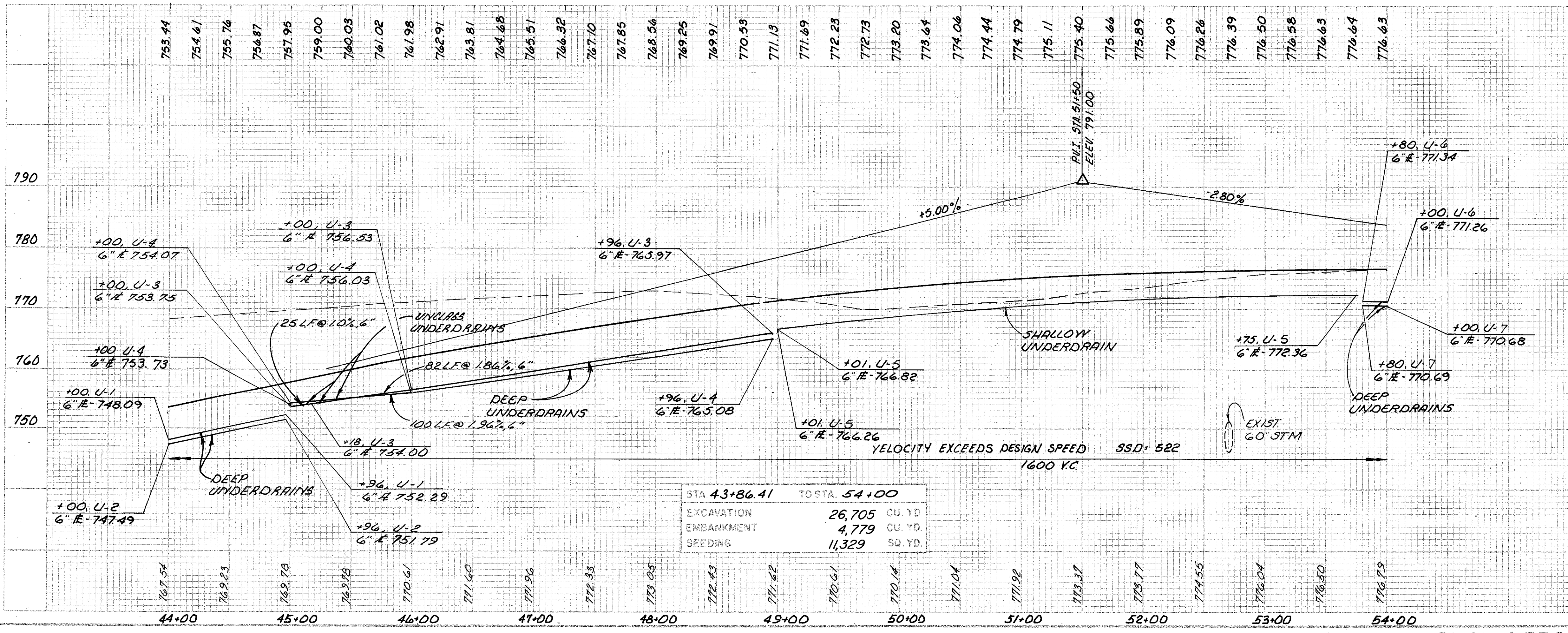


REFERENCES

QUANTITIES FOR REFERENCED ITEMS
 PIPE PROFILE
 UN-OBE P&P SHEETS
 RELOC. S.R. 176 P&P SHEETS

SHEET NUMBERS

120
 69, 128 & 142
 137 & 139
 51, 53, 55, 57 & 59



LANE JU-OBW PLAN & PROFILE STA. 44+00 TO STA. 54+00

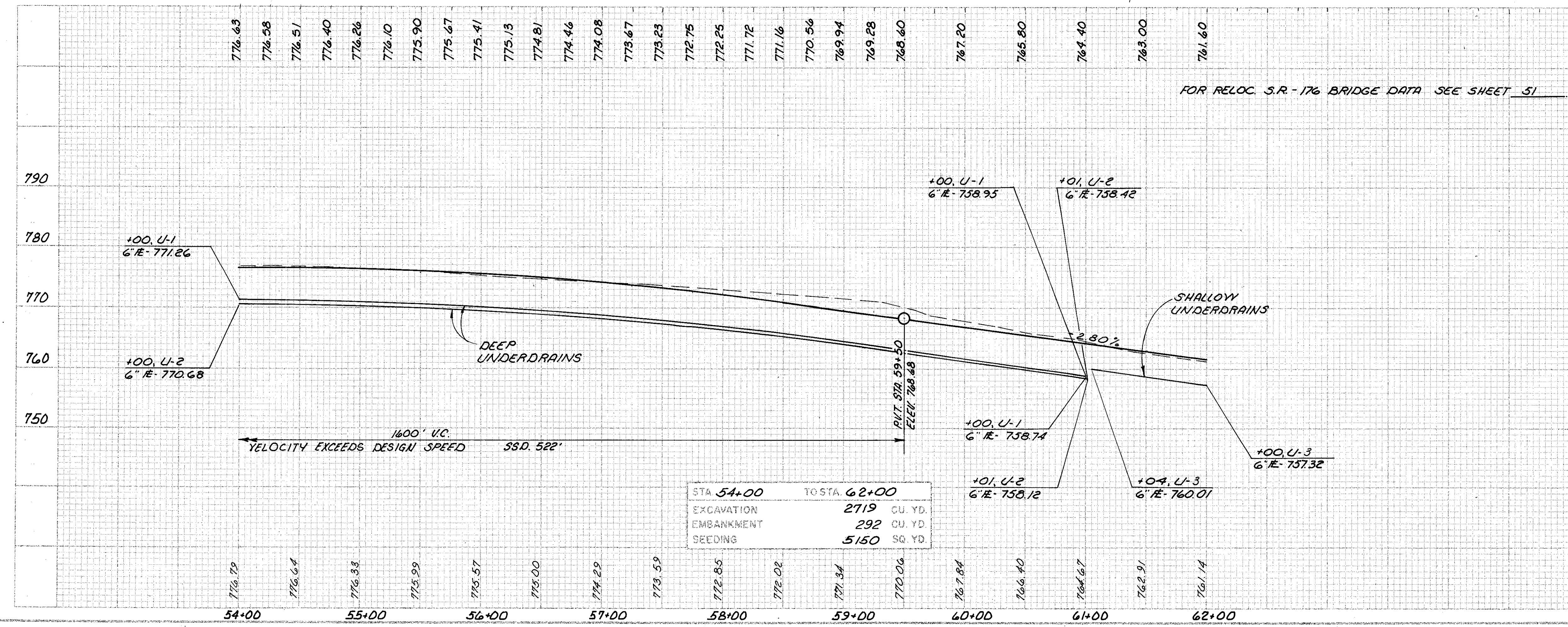
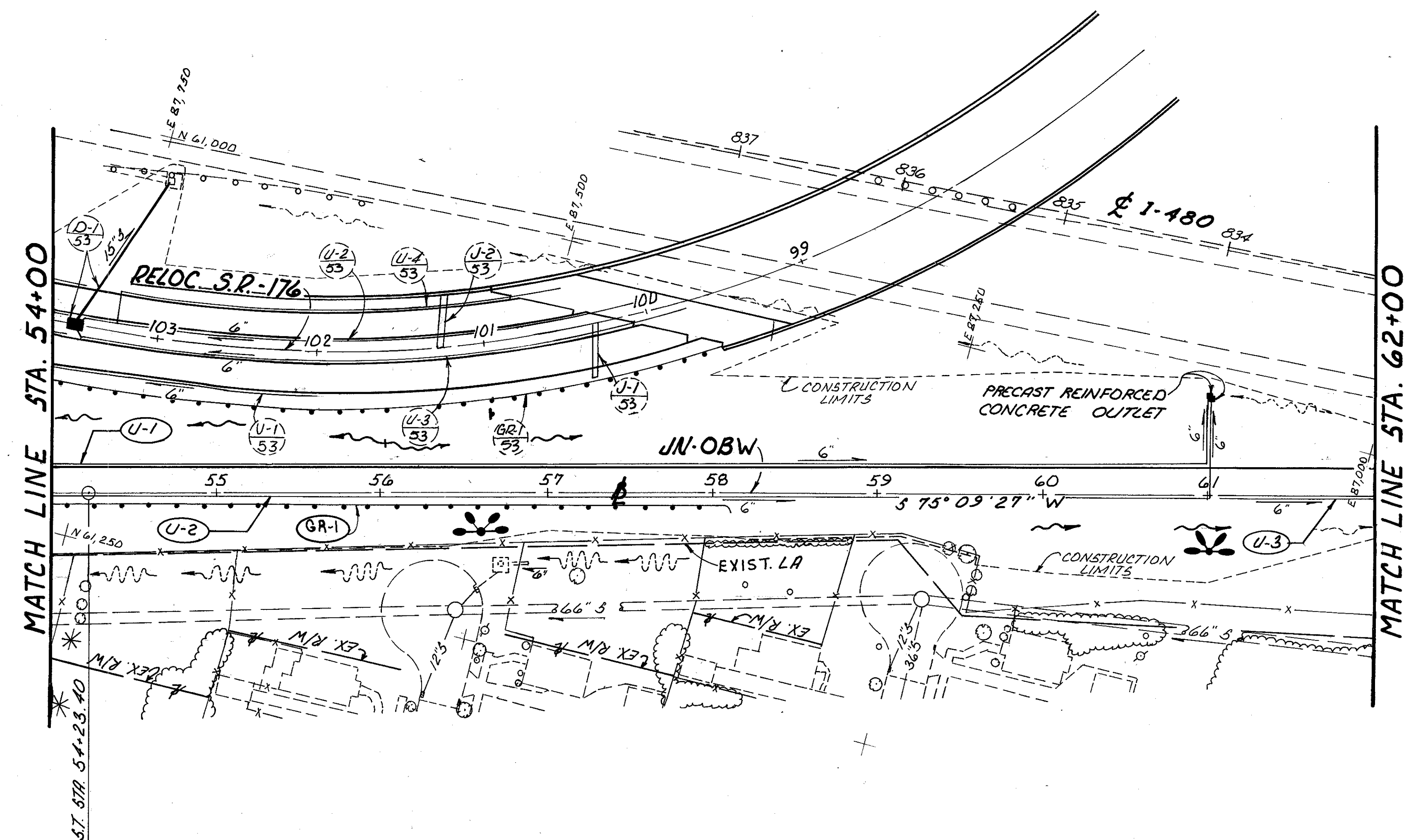
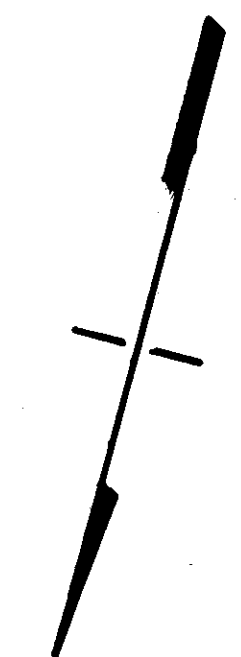
RELOC. S.A. 176

ESTIMATED QUANTITIES - STATION 44+00 TO STA 54+00

REF. No.	ITEM No. EXTENSION No.		SIDE	603	SPECIAL	605	605	605	606	606	670	802				
	STATION TO STATION / OFFSET			01500	60436600	11110	12210	13410	13000	26100	40000	00100				
DESCRIPTION				6" CONDUIT, TYPE F, 707.17, NON-PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	PRECAST REINFORCED CONCRETE OUTLET	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY, TYPE E	DITCH EROSION PROTECTION	BARRIER REFLECTOR, TYPE A				
				LIN FT	EACH	LIN FT	LIN FT	LIN FT	LIN FT	EACH	S.Y.	EACH				
U-1	44 + 00	44 + 96	LT					96								
U-2	44 + 00	44 + 96	RT					96								
U-3	45 + 00	48 + 96	LT	25				296	82							
U-4	45 + 00	48 + 96	RT	34				296	100							
U-5	49 + 00	53 + 75	RT	56	1	475										
U-6	53 + 80	54 + 00	LT					20								
U-7	53 + 80	54 + 00	RT					20								
E-1	44 + 45	44 + 95	LT								67					
E-2	45 + 05	46 + 55	LT								200					
E-3	51 + 45	52 + 95	RT								200					
GR-1	52 + 88	54 + 00	RT						62.5	1			2			
TOTALS				115	1	475	824	182	62.5	1	467	2				

BENCHMARK: TBM 86 CHISELED "X" S.W. CORNER MON. BOX AT S. END N. 19TH AVE. DE-SMC (N. OF T-480) ELEV. 764.93

CURVE DATA
 THETA - S = 8° 00' 00"
 LS = 200'
 Xc = 199.61'
 Yc = 9.30'
 L.T. = 133.47'
 S.T. = 66.79'
 L.C. = 199.83'
 P = 2.33'
 H = 99.94'



REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS	122
GRADING PLANS	64 & 65
PIPE PROFILES	68 & 131
RELOC. S.R.-176 P&P SHEETS	51, 53, 55, 57 & 59

FOR RELOC. S.R.-176 BRIDGE DATA SEE SHEET 51

RELOC. S.R.-176

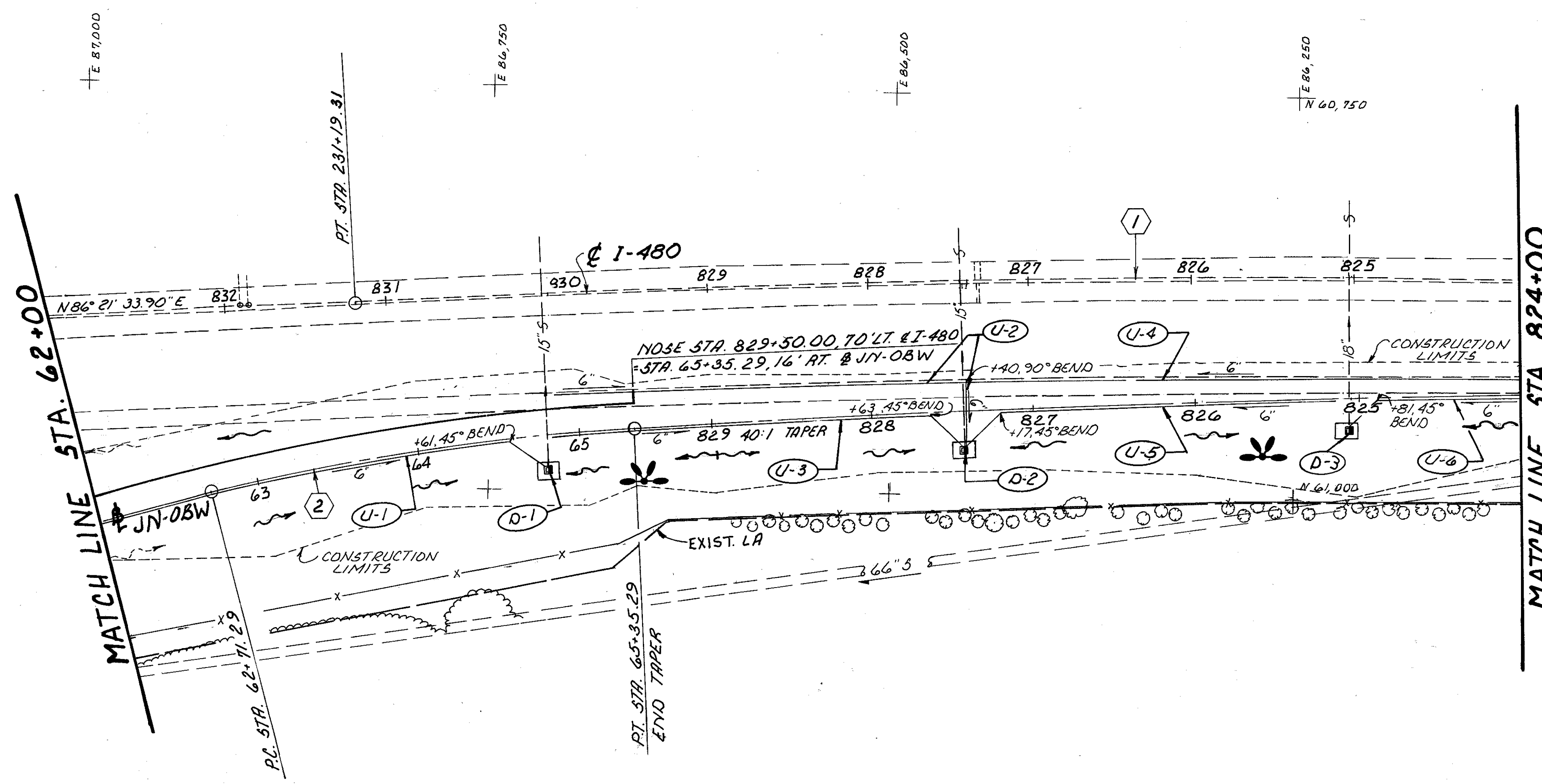
ESTIMATED QUANTITIES - STATION 54+00 TO STA 62+00

ITEM No. EXTENSION No.	DESCRIPTION			603	SPECIAL	605	605	606	606	606	802				
				01500	60436600	11110	12210	13000	26100	26500	00100				
			6" CONDUIT, TYPE F, 707.17 NON- PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	PRECAST REINFORCED CONCRETE OUTLET	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY, TYPE E	ANCHOR ASSEMBLY, TYPE T	BARRIER REFLECTOR, TYPE A					
REF. No.	LOCATION STATION TO STATION / OFFSET		SIDE	LIN FT	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH				
U-1	54 + 00	61 + 00	LT	41	1			700							
U-2	54 + 00	61 + 01	RT	59				701							
U-3	61 + 04	62 + 00	RT			96									
GR-1	54 + 00	58 + 13	RT					400		1	4				
TOTALS				100	1	96	1401	400		1	4				

BENCHMARK: TBM TO CHISELED SQUARE N.E. CORNER CONCRETE SIGN
 BASE I-480 STA. 831+90, 95'± RIGHT
 ELEV. 757.96

CURVE DATA

①	②
PI. STA. 824+98.87	PI. STA. 64+03.66
Δ = 5°47'45"	Δ = 10°33'36"
Dc = 0°28'00"	Dc = 4°00'00"
R = 12277.67'	R = 1432.39'
T = 621.51'	T = 132.37'
L = 1241.96'	L = 264.00'
Ch = 1241.43'	Ch = 263.63'
E = 15.72'	E = 6.10'
M = 15.70'	M = 6.08'



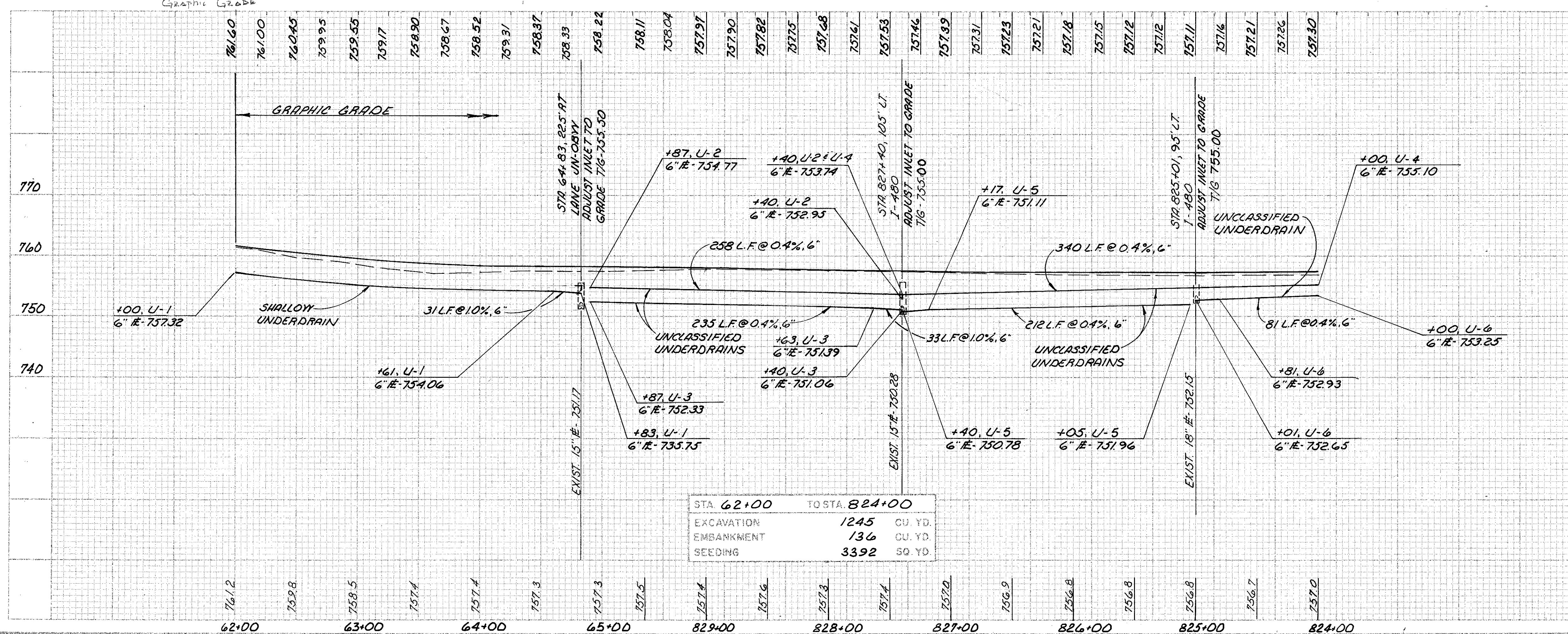
DRAINAGE STRUCTURE DATA

- ①-1 STA. 64+83, 22.5' RT. LANE JN-OBW
CATCH BASIN ADJUSTED TO GRADE
T/G - 755.50
- ①-2 STA. 827+40.5, 105' LT. I-480
CATCH BASIN ADJUSTED TO GRADE
T/G - 755.00
- ①-3 STA. 825+01, 95' LT. I-480
CATCH BASIN ADJUSTED TO GRADE
T/G - 755.00

REFERENCES

QUANTITIES FOR REFERENCED ITEMS 124
 PAYEMENT DETAILS 169
 PIPE PROFILES 136

SHEET NUMBERS



RELOC. S.A. - 176

ESTIMATED QUANTITIES - STATION 62+00 TO STA 824+00

ITEM No. EXTENSION No.	603 01500		604 09000		605 11110		605 13410										
	DESCRIPTION		6" CONDUIT, TYPE F, 707.17 NON- PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944		CATCH BASIN ADJUSTED TO GRADE		6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP		6" UNCLASS- IFIED PIPE UNDERDRAIN, WITH FABRIC WRAP								
REF. No.	LOCATION STATION TO STATION / OFFSET		SIDE	LIN FT	EACH	LIN FT	LIN FT	LIN FT									
D-1	*64 + 83		RT		1												
D-2	**827 + 40		LT		1												
D-3	**825 + 01		LT		1												
U-1	*62 + 00	*64 + 83	RT	31		261											
U-2	*64 + 87	**827 + 40	LT	41			258										
U-3	*64 + 87	**827 + 40	RT	33			235										
U-4	**824 + 00	**827 + 40	LT				340										
U-5	**825 + 05	**827 + 40	LT	33			212										
U-6	**824 + 00	**825 + 01	LT	28			81										
TOTALS				166	3	261	1126										

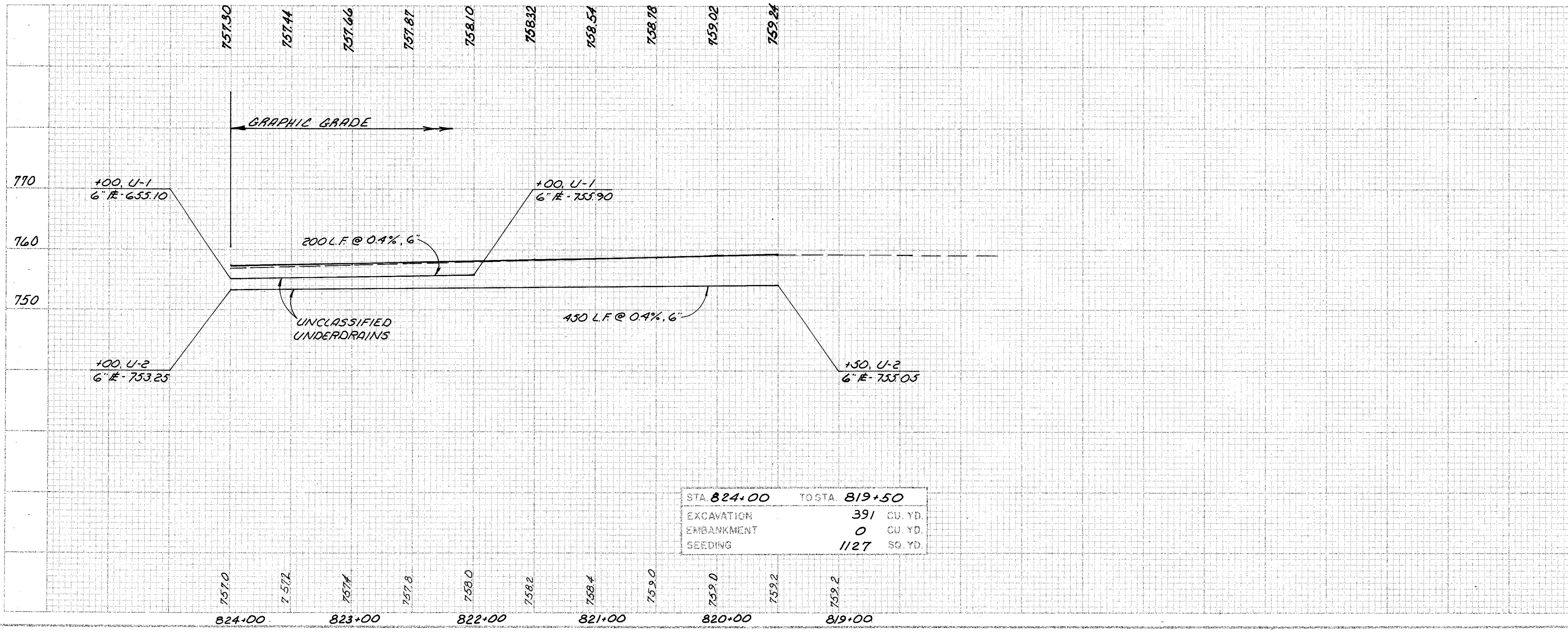
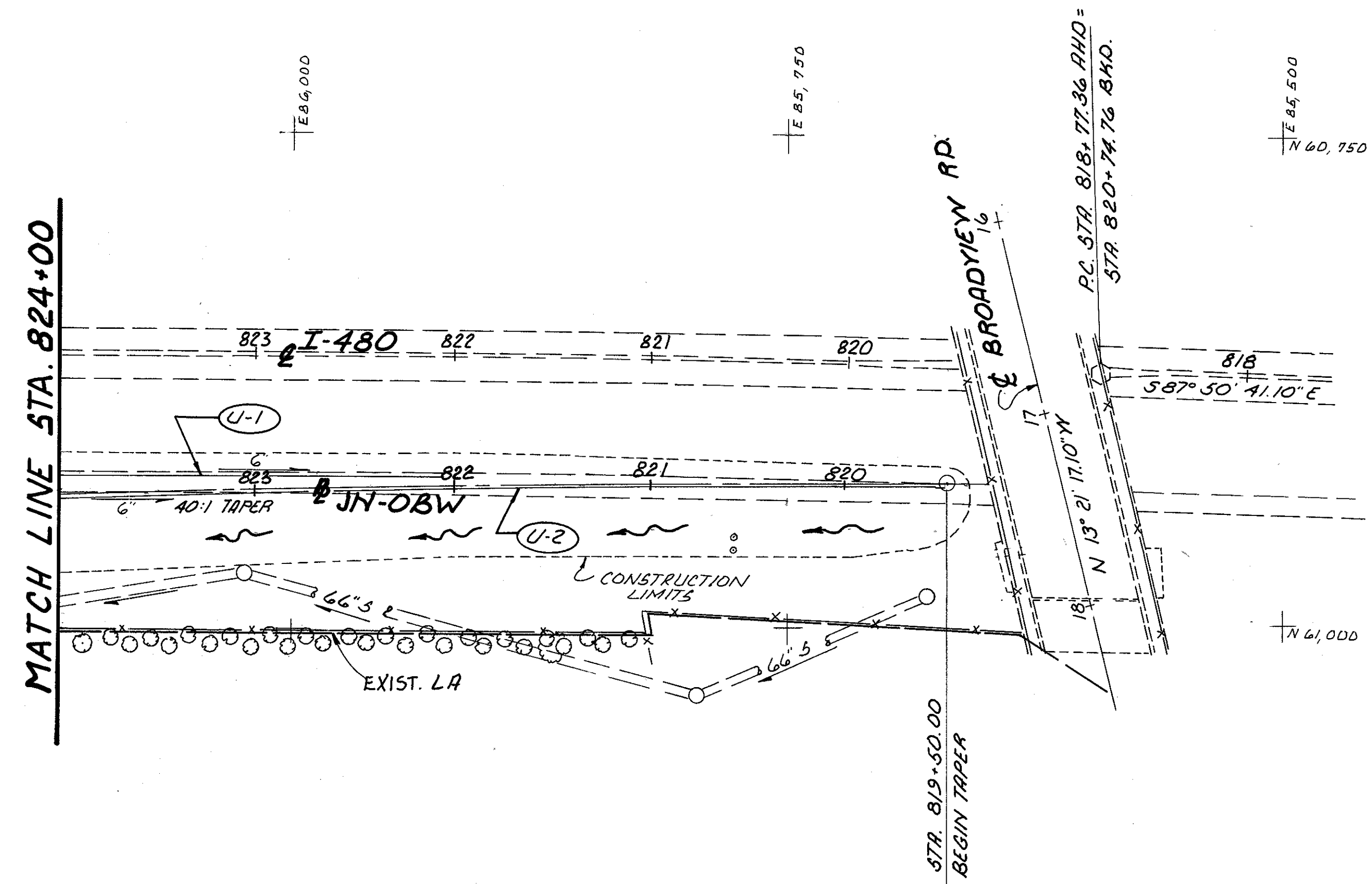
* DENOTES JN-OBW STATIONING
** DENOTES I-480 STATIONING

BENCHMARK: TBM 43 CHISELED "X"
IN CURB AT EAST SIDE NORTH EXPANSION
JOINT AT N.E. CORNER BROADVIEW
BRIDGE OVER I-480
ELEV. 777.92

CURVE DATA I-480

PI STA. 824+98.87
 $\Delta = 5^{\circ}47'45''$
 $Dc = 0^{\circ}28'00''$
 $R = 12277.67'$
 $T = 621.51'$
 $L = 1241.96'$
 $Ch = 1241.43'$
 $E = 15.72'$
 $M = 15.70'$

BEGIN WORK
 STA. 811+25
 I-480



STA 824+00	TO STA 819+50
EXCAVATION	391 CU. YD.
EMBANKMENT	0 CU. YD.
SEEDING	1127 SQ. YD.

REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCED ITEMS	126
PAYMENT DETAILS	169

NOTE: (GR-1) IS SHOWN ON SHEET 234,
 BUT THE QUANTITIES FOR THIS ITEM
 HAVE BEEN CARRIED TO SHEET 126.

RELOC. S.R.-176

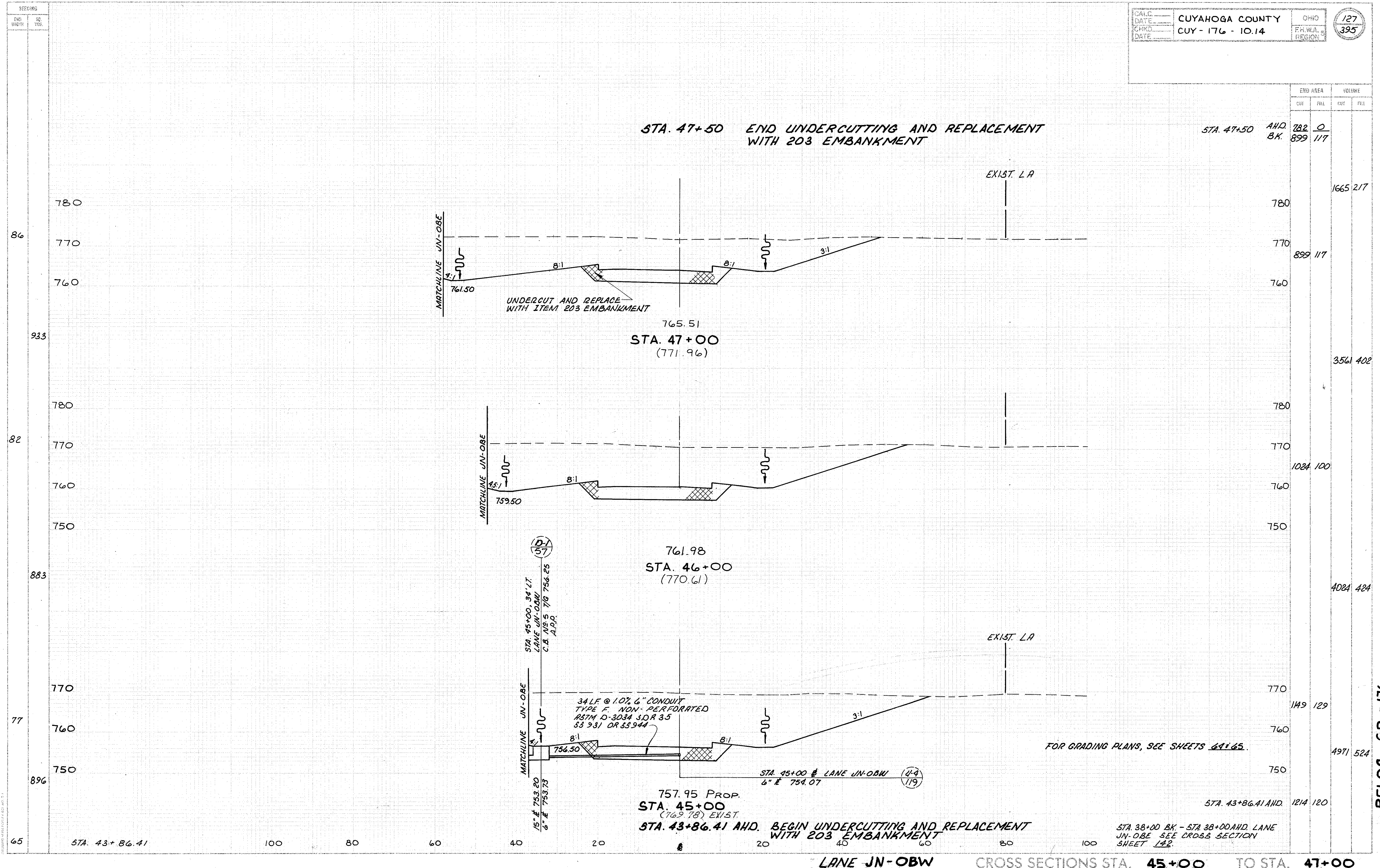
1-3

ESTIMATED QUANTITIES - STATION 824+00 TO STA 819+50

ITEM No. EXTENSION No.	605 13410 6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP		606 13000 GUARDRAIL, TYPE 5		606 26100 ANCHOR ASSEMBLY, TYPE E		606 26500 ANCHOR ASSEMBLY, TYPE T											
	DESCRIPTION																	
REF. No.	LOCATION STATION TO STATION / OFFSET		SIDE	LIN FT	LIN FT	EACH	EACH											
U-1	*822 + 00	*824 + 00	LT	200														
U-2	*819 + 50	*824 + 00	LT	450														
GR-1	*802 + 75	*804 + 12	RT		75	1	1											
TOTALS				650	75	1	1											

* DENOTES I-480 STATIONING

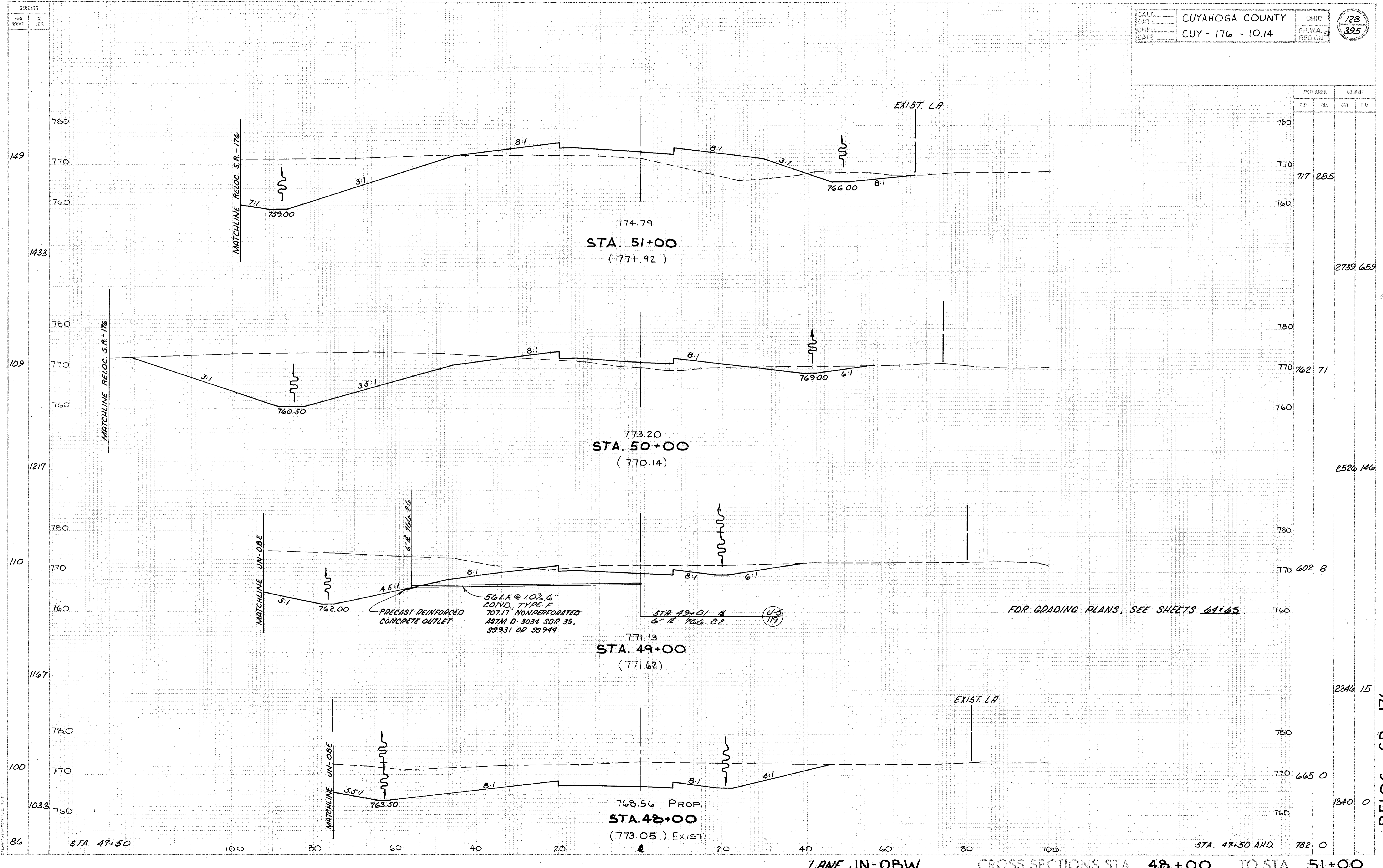
RELOCATED STATE ROUTE 176



STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
STA. 47+50	AHD. 782	0		
	BK. 899	117		
			1665	217
			899	117
				3561 402
				1024 100
				4024 424
				149 129
				4971 524
				1214 120

LANE JN-OBW CROSS SECTIONS STA. 45+00 TO STA. 47+00

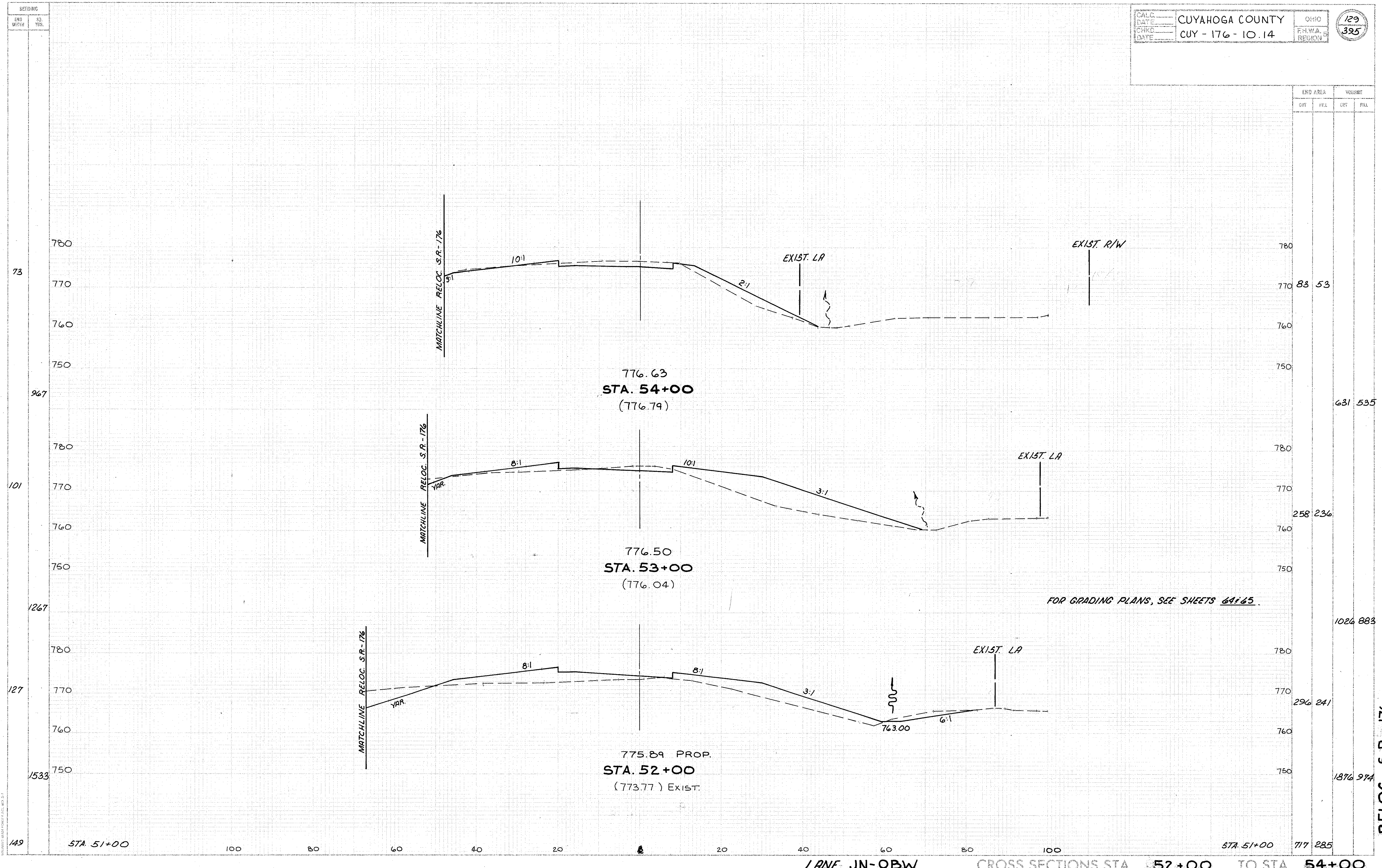
RELOC. SR. - 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
149	1433	717	235
109	1217	762	71
110	1167	602	8
100	1033	665	0
86		1340	0
		2739	659
		2526	146
		2346	15

LANE JN-OBW CROSS SECTIONS STA. 48+00 TO STA. 51+00

RELOC. SR. - 176



FOR GRADING PLANS, SEE SHEETS 64 & 65.

LANE JN-OBW. CROSS SECTIONS STA. 52+00 TO STA. 54+00

RELOC. S.R. - 176

149

73

967

101

1267

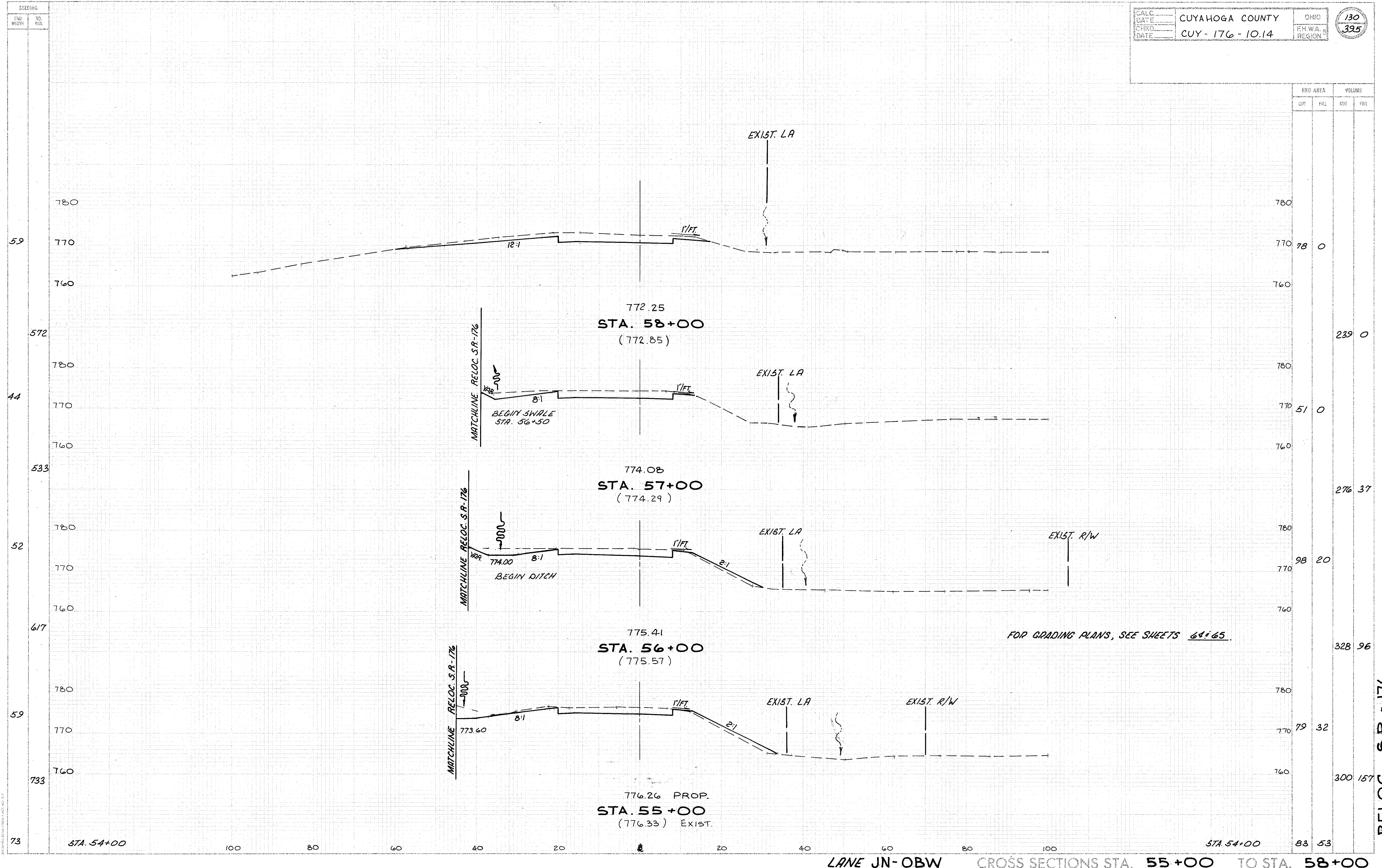
127

1533

STA. 51+00

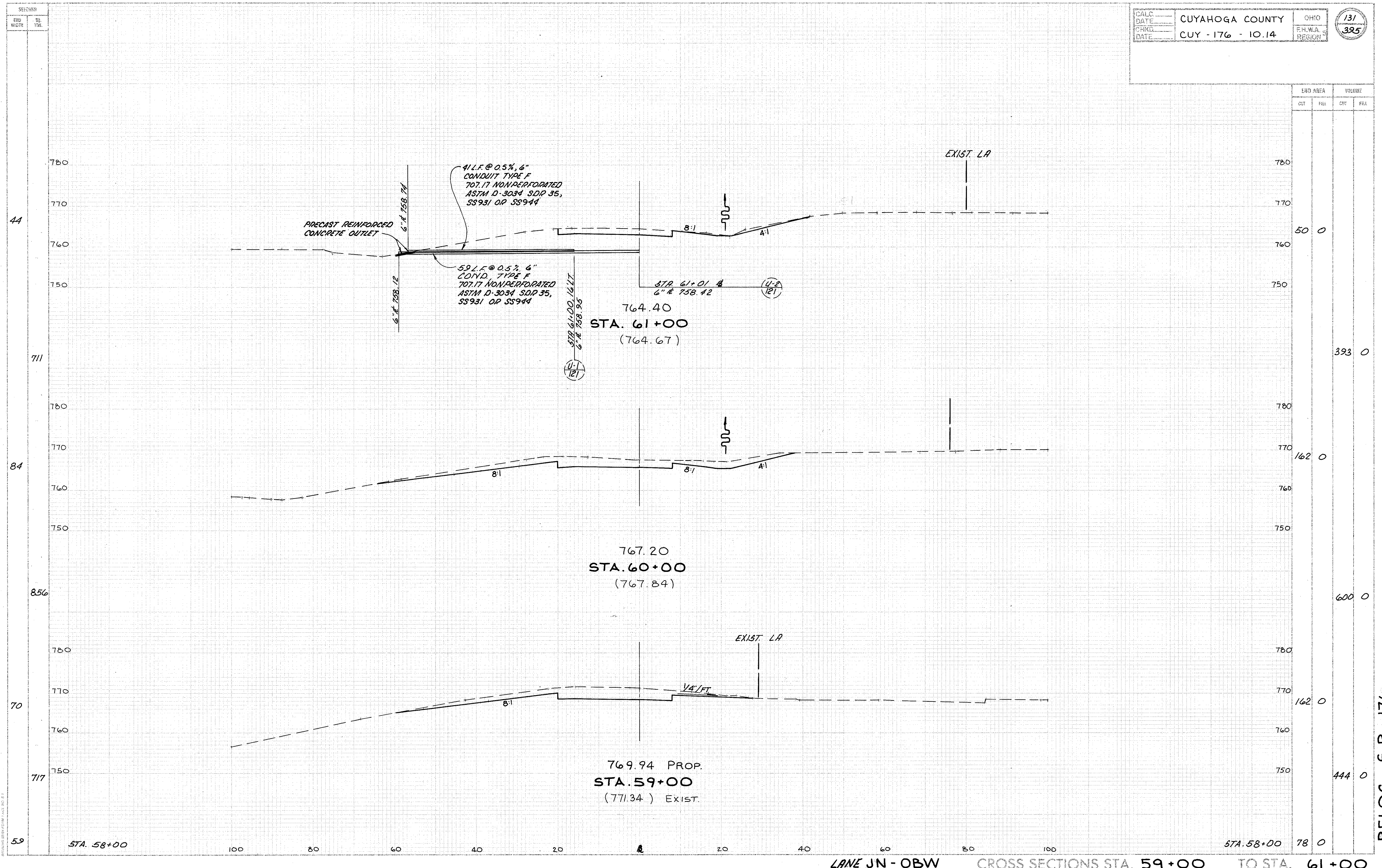
STA. 51+00

717 285



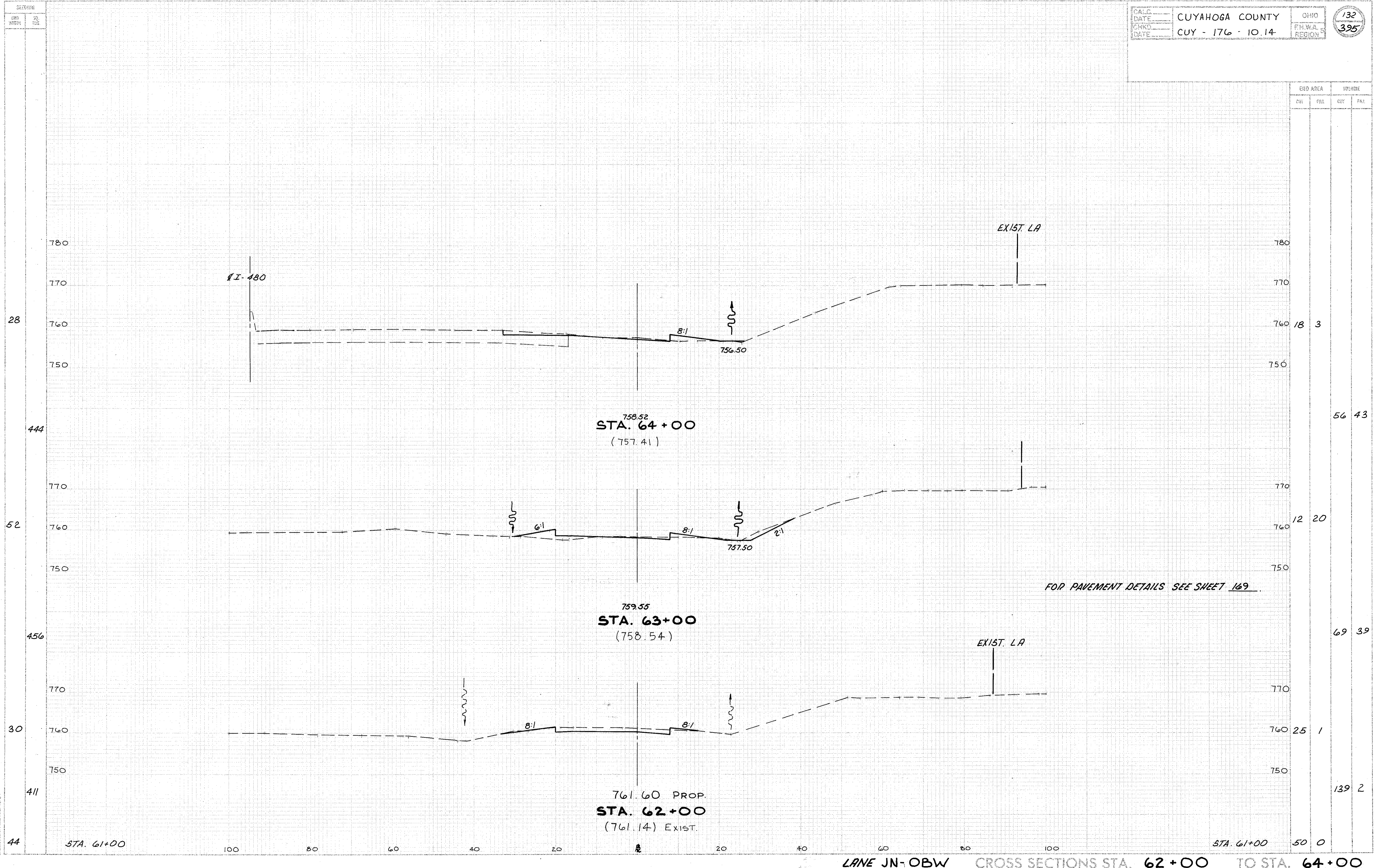
RELOC. S.R.-176

LANE JN-OBW CROSS SECTIONS STA. 55+00 TO STA. 58+00



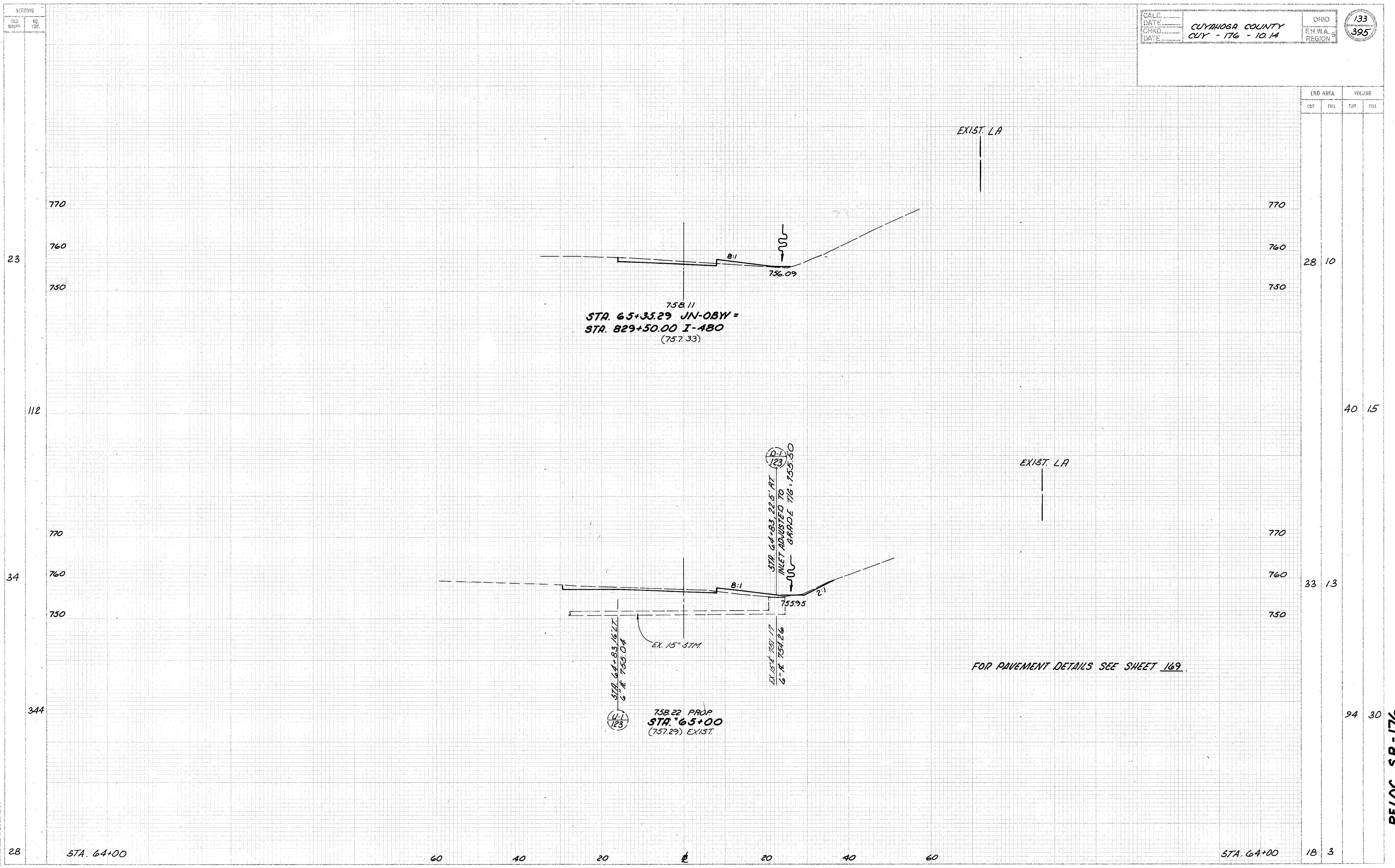
RELOC. S.R.-176

LANE JN - OBW CROSS SECTIONS STA. 59+00 TO STA. 61+00



LANE JN-OBW CROSS SECTIONS STA. 62+00 TO STA. 64+00

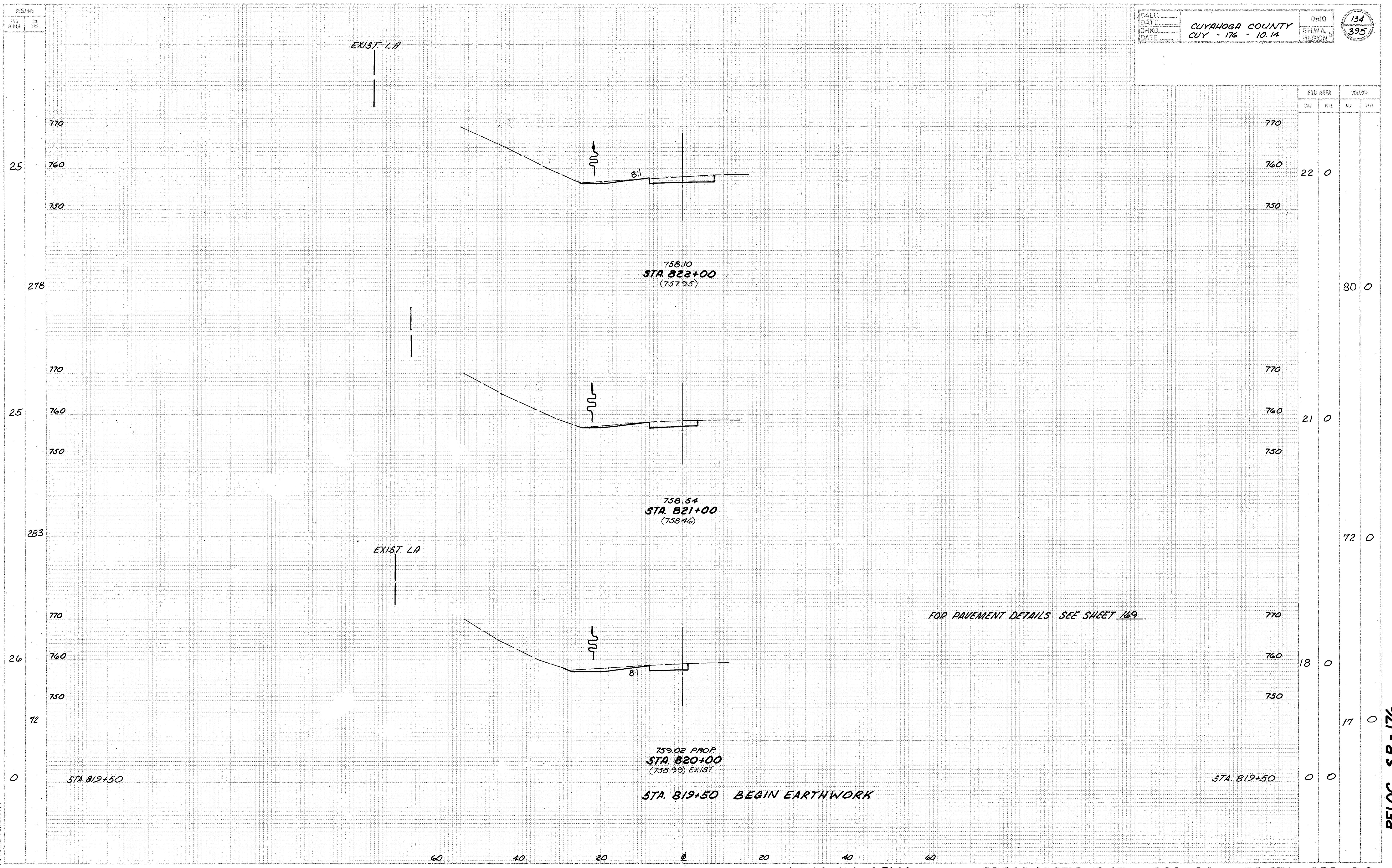
RELOC. S. R. 176



END AREA		VOLUME	
CUT	FILL	CUT	FILL
28	10	40	15
33	13	94	30
18	3		

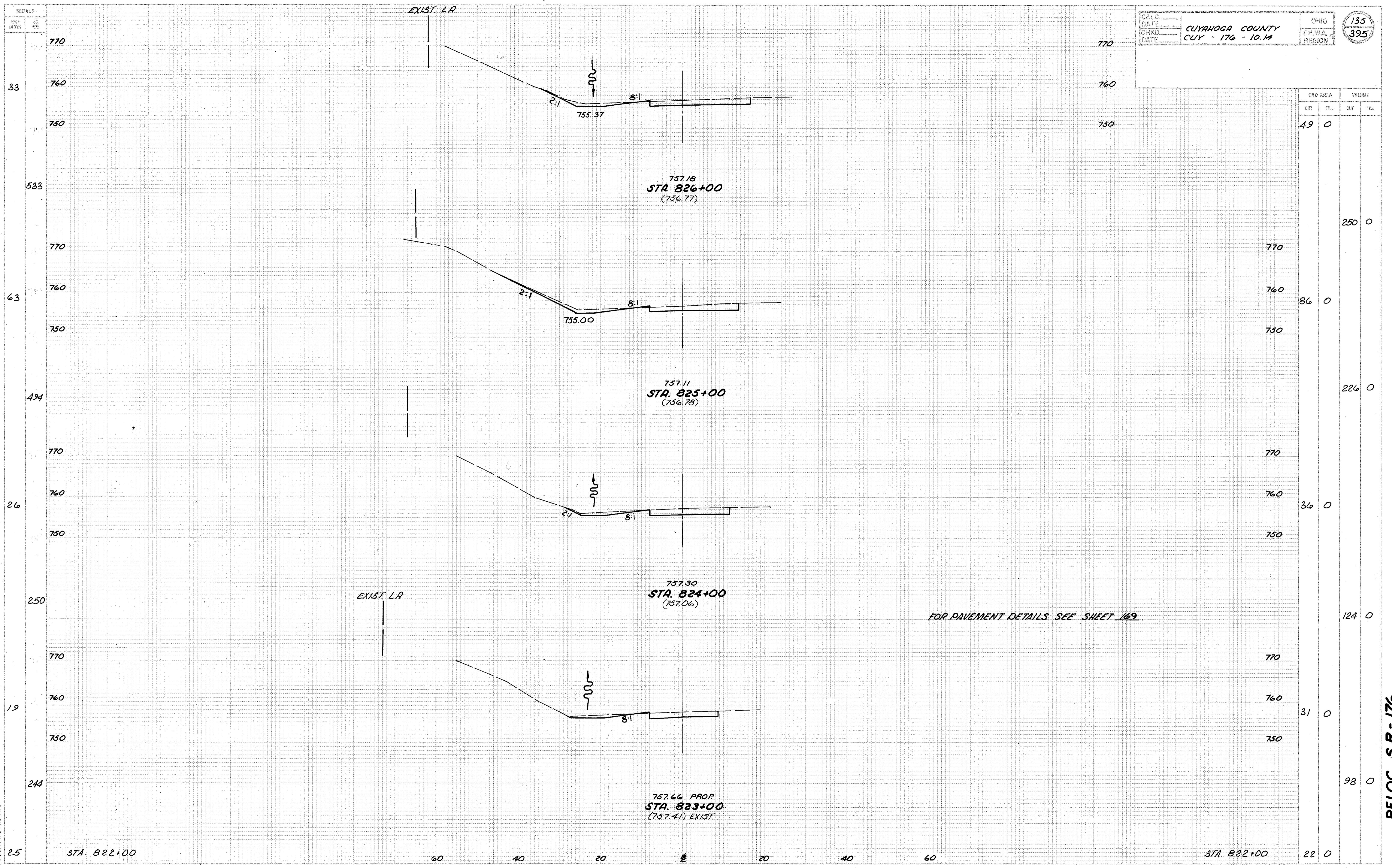
LANE JN-OBVY CROSS SECTIONS STA. 65+00 TO STA. 65+35.29

RELOC. S.R. - 176



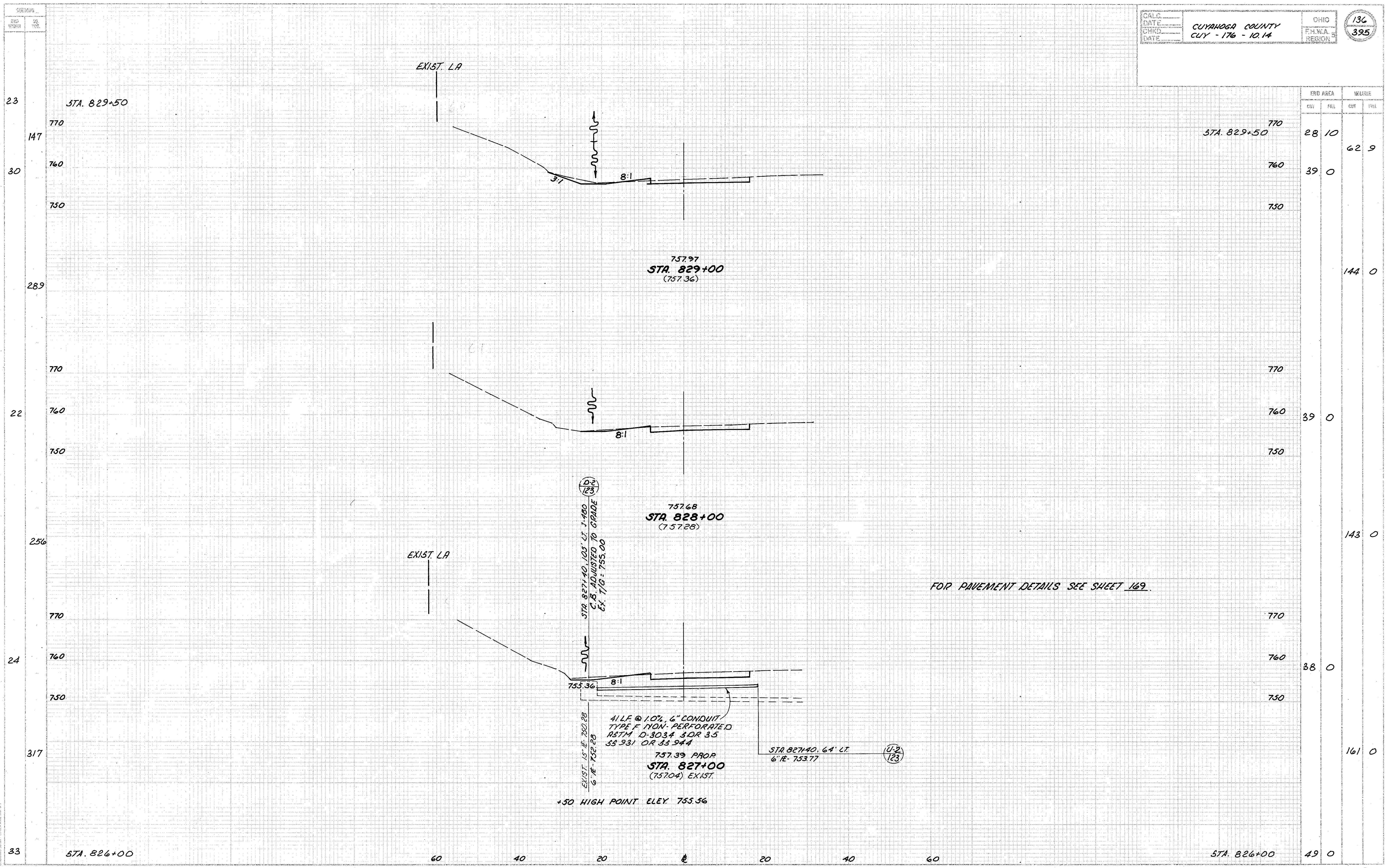
SECTIONS
 END WIDTH
 SR. YDS.
 25
 278
 283
 26
 12
 0

RELOC. S.R. - 176



CROSS AREA		VOLUME	
CUT	FILL	CUT	FILL
49	0		
		250	0
86	0		
		226	0
36	0		
		124	0
31	0		
		98	0
22	0		

RELOC. S.R. - 176



END AREA	VOLUME	
	CUT	FILL
STA. 829+50	28 10	62 9
	39 0	
		144 0
	39 0	
		143 0
	38 0	
		161 0
STA. 826+00	49 0	

FOR PAVEMENT DETAILS SEE SHEET 169.

+50 HIGH POINT ELEV. 755.56

4 LF @ 10% 6" CONDUIT
 TYPE F NON-PERFORATED
 ASTM D-3034 SDR 35
 SS 931 OR SS 944

757.39 PROP
STA. 827+00
 (757.04) EXIST.

STA. 827+40, 64' LT.
 6" E - 753.77

STA. 827+40, 105' LT. 1-190
 C.B. ADJUSTED TO GRADE
 EX. TIG = 755.00

757.68
STA. 828+00
 (757.28)

757.97
STA. 829+00
 (757.36)

STA. 829+50

STA. 826+00

STA. 826+00

LANE JN-OBYY

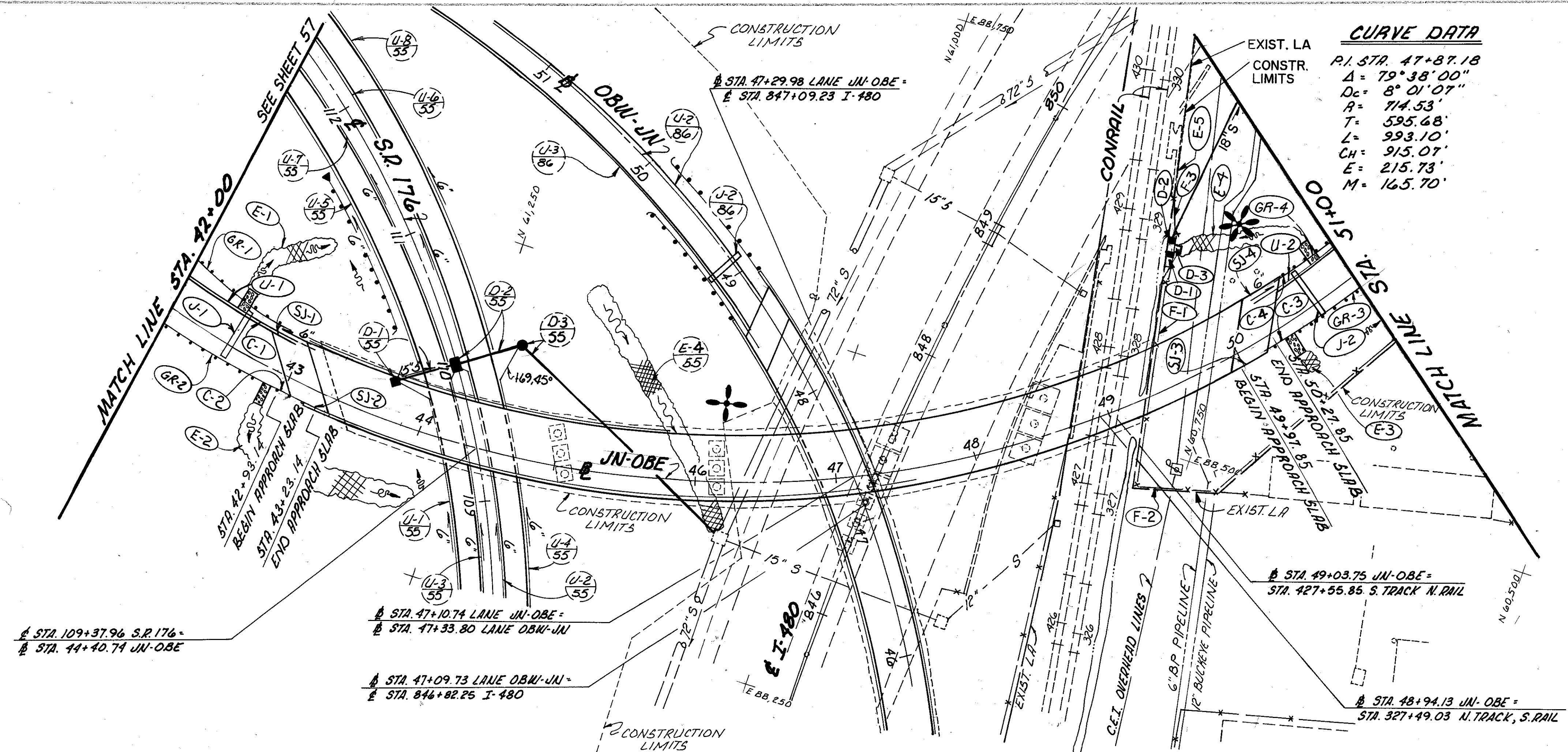
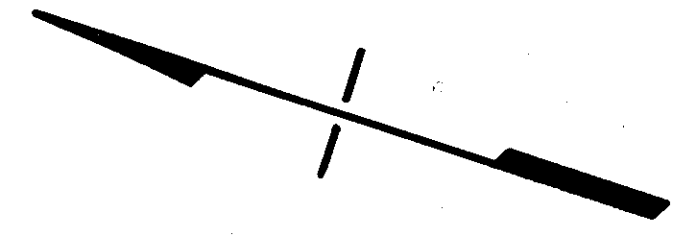
CROSS SECTIONS STA. 827+00 TO STA. 829+00

RELOC. S.R. - 176

BENCHMARK: CHISELED SQUARE N.W. CORNER
MILEET I-480 STA. 846+20 80' ± RT. 7841.2
ELEV. 730.30

BENCHMARK: TBM 85 CHISELED SQUARE IN
CONCRETE AT WEST END OF CB GRATE NORTH OF ON-RAMP
FROM BROOKWAY TO I-480 EASTBOUND LANE JN-OBE
STA. 49+00 RT.
ELEV. 761.33

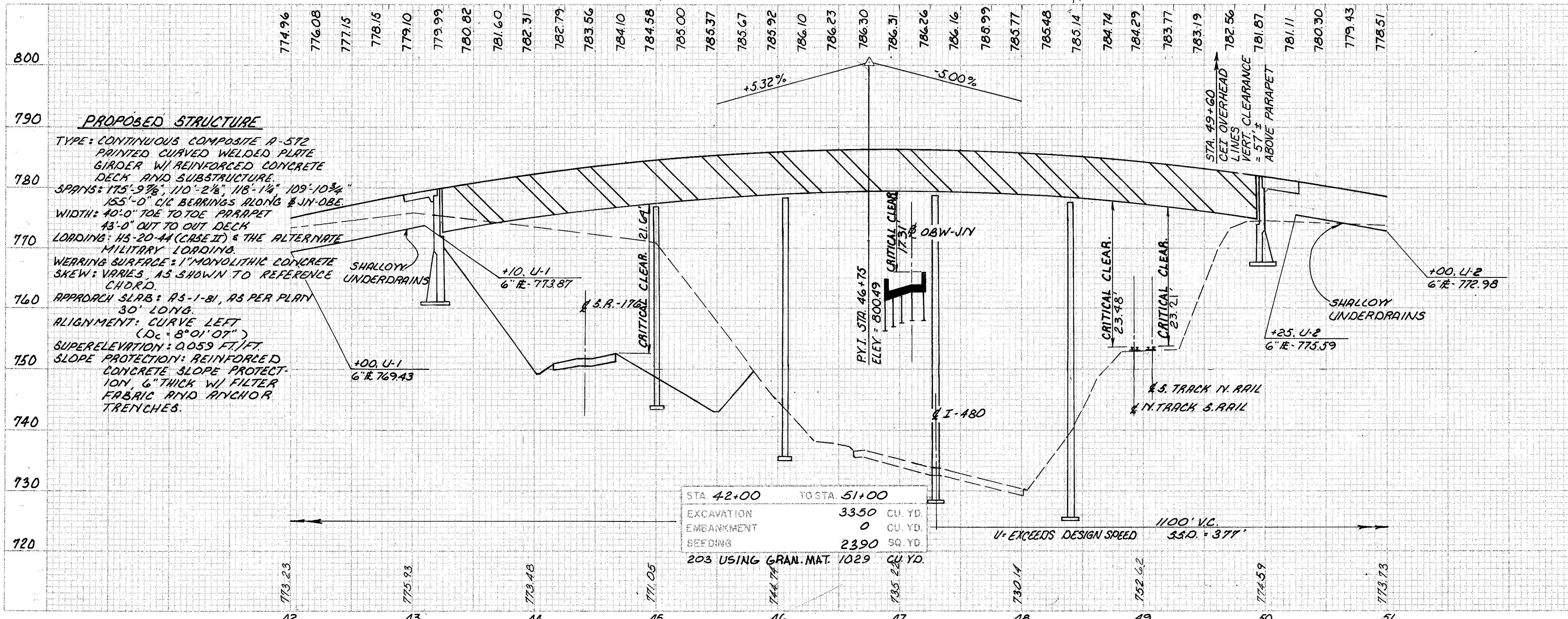
CURVE DATA
P.I. STA. 47+87.18
Δ = 79° 38' 00"
Dc = 8° 01' 07"
R = 714.53'
T = 595.68'
L = 993.10'
Ch = 915.07'
E = 215.73'
M = 165.70'



- (D-1) STA. 49+96 87' LT CB No. 5, WITH B GRATE, AS PER PLAN T/G = 748.75 (NO DIKE)
- (D-2) STA. 50+00 93' LT CB No. 5, WITH B GRATE, AS PER PLAN T/G = 748.25
- (D-3) STA. 50+05 91' LT PAVED GUTTER, TYPE I-2

REFERENCES

QUANTITIES FOR REFERENCED ITEMS	SHEET NUMBERS
ADDITIONAL LEGEND ITEMS	2
PIPE PROFILES	70
OBU-JN BRIDGE DATA	176A
BRIDGE PLANS JN-OBE	86
	337-357



STA 42+00	TO STA 51+00	
EXCAVATION	3350	CU. YD.
EMBANKMENT	0	CU. YD.
BEDDING	2390	SQ. YD.
	203 USING GRAN. MAT.	1029 CU. YD.

LANE JN-OBE PLAN & PROFILE STA. 42+00 TO STA. 51+00

RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 42+00 TO STA 51+00

REF. No.	ITEM No. EXTENSION No.		SIDE	SPECIAL 45130000	605 11110	606 13000	606 35000	606 35100	606 20000	SPECIAL 60120700	609 24000	SPECIAL 51614010	SPECIAL 51614600	202 75000	607 23000	607 61200	625 32000	802 00100	802 00200
	DESCRIPTION			PRESSURE RELIEF JOINT, TYPE A	6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	BRIDGE TERMINAL ASSEMBLY, TYPE 1	BRIDGE TERMINAL ASSEMBLY, TYPE 2	REINFORCED SODDING	GABION, WITH ADDITIONAL COATING	CURB, TYPE 4A	POURED POLYURETHANE JOINT SEAL	STRUCTURAL JOINT OR JOINT SEAL MISC. 4"x4" JOINT SEAL (BITUMEN IMPREGNATED FOAM)	FENCE REMOVED	FENCE TYPE CLT	GATE, TYPE CLT	GROUND ROD	BARRIER REFLECTOR, TYPE A	BARRIER REFLECTOR, TYPE B
LOCATION STATION TO STATION / OFFSET	LINE FT	LINE FT	LINE FT	EACH	EACH	SO YD	CU YD	LINE FT	LINE FT	LINE FT	LINE FT	LINE FT	LINE FT	LINE FT	EACH	EACH	EACH	EACH	
U-1	42 + 00	43 + 10	LT		110														
U-2	50 + 25	51 + 00	LT		100														
J-1	42 + 50		C/L	38															
J-2	50 + 66		C/L	38															
GR-1	42 + 00	42 + 71	LT			37.5	1											1	15
GR-2	42 + 00	43 + 12	RT			87.5	1											2	14
GR-3	50 + 12	51 + 00	RT			75		1										2	
GR-4	50 + 55	51 + 00	LT			37.5		1										1	
C-1	42 + 49	42 + 75	LT								26								
C-2	42 + 90	43 + 16	RT								26								
C-3	50 + 08	50 + 34	RT								26								
C-4	50 + 51	50 + 77	LT								26								
SJ-1	42 + 75	43 + 03	LT									28	28						
SJ-2	43 + 16	43 + 32	RT									16	16						
SJ-3	49 + 88	50 + 08	RT									20	20						
SJ-4	50 + 20	50 + 51	LT									31	31						
E-1	42 + 46 / 75'		LT					69	4										
E-2	42 + 87 / 50'		RT					147	4										
E-3	50 + 37 / 30'		RT					14	4										
E-4	50 + 80 / 60'		LT					83	4										
F-1	49 + 00 RT	50 + 30 LT												220	220		2		
F-2	49 + 00 RT	49 + 45 RT												60	60		2		
F-3	50 + 05		LT																
TOTAL				76	210	237.5	2	2	313	16	104	95	95	280	280	1	4*	6	29

* QUANTITY CARRIED TO LIGHTING GENERAL SUMMARY SHEET NO. 258

*REPAIR OF SLOPE NEAR SOUTHWEST ABUTMENT OF CUY-480-1565 (CONRAIL BRIDGE)

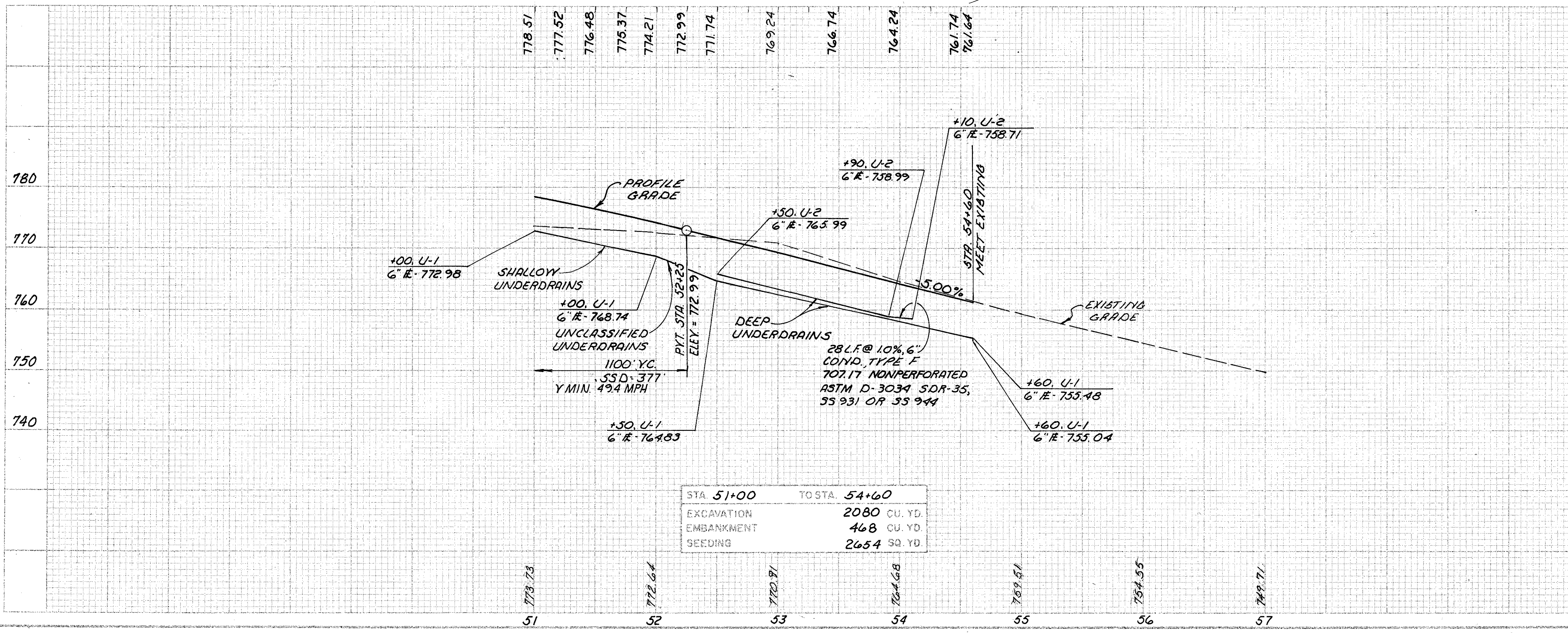
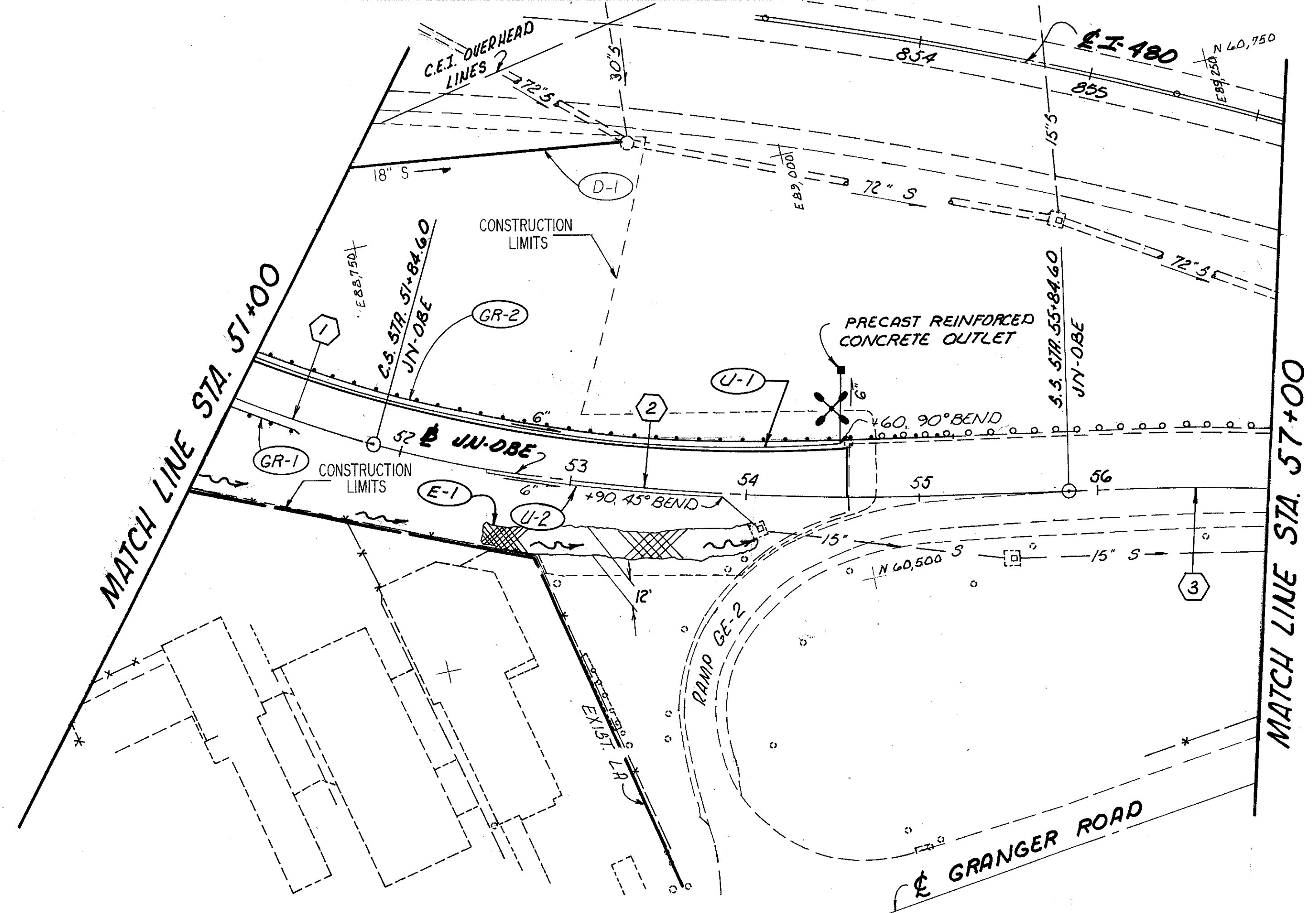
REF. No.	ITEM No. EXTENSION No.		SIDE	203* 12000	203* 20000	659* 10000	601 37501	603 08200	604 01701	18" BEND
	DESCRIPTION			EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION	EMBANKMENT	SEEDING AND MULCHING	PAVED GUTTER, TYPE 1-2, AS PER PLAN	18" CONDUIT, TYPE F 707.05 TYPE C	CATCH BASIN, No. 5 WITH B GRATE, AS PER PLAN	
LOCATION STATION TO STATION / OFFSET	CU YD	CU YD	SQ YD	LINE FT	LINE FT	EACH	EACH			
E-5		100	475	275						
D-1	49 + 96					8	1			
D-2	50 + 00					112	1			
D-3	50 + 05				5					
TOTAL		100	475	275	5	120	2			

RELOCATED STATE ROUTE 176

BENCHMARK: TBM 85 CHISELED
 SQUARE IN CONCRETE AT WEST EDGE
 C.B. GRATE NORTH OF ON-RAMP
 FROM BROOKPARK TO I-480
 EASTBOUND LANE JN-OBE
 STA. 48+00 RT.
 ELEV. 761.33

CURVE DATA

①	②
PI. STA. 47+87.18	THETA-6 = 16° 00' 00"
Δ = 79° 38' 00"	LS = 400'
Dc = 8° 01' 07"	XC = 396.89'
R = 714.53'	YC = 37.03'
T = 595.48'	LT = 267.76'
L = 993.10'	ST = 134.33'
CN = 915.07'	LC = 398.62'
E = 215.73'	P = 9.28'
M = 165.70'	K = 199.48'
③	
THETA-5 = 16° 02' 14"	
LS = 400'	
XC = 396.88'	
YC = 37.11'	
LT = 267.77'	
ST = 134.34'	
LC = 398.61'	
P = 9.30'	
K = 199.48'	

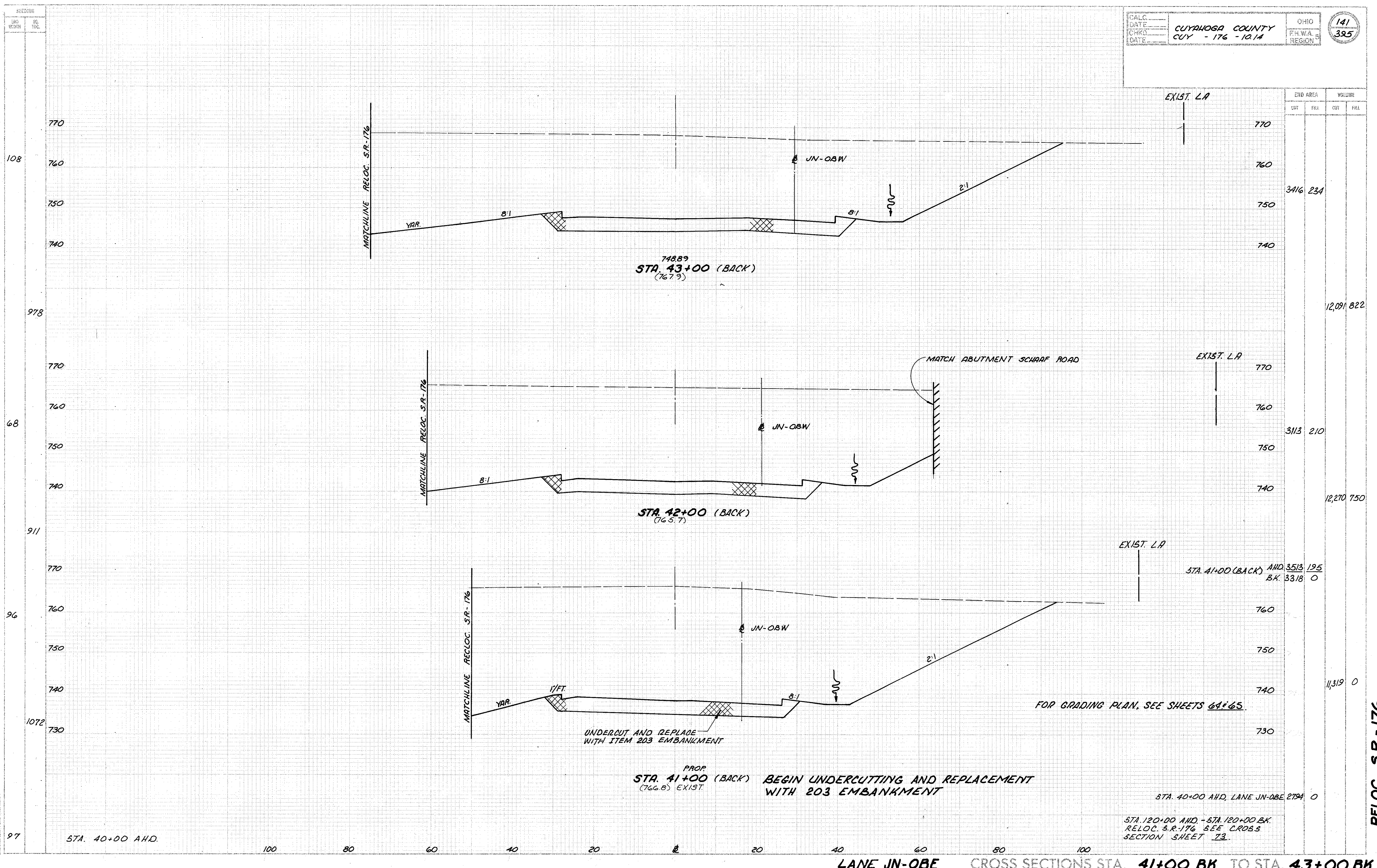


REFERENCES	SHEET NUMBERS
QUANTITIES FOR REFERENCE ITEMS	140
PIPE PROFILES	148

RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 51+00 TO STA 57+00

REF. No.	ITEM No. EXTENSION No.		SIDE	202	603	603	SPECIAL	605	605	605	606	606	670	802	18" BEND		
	STATION TO STATION / OFFSET			38000	08200	01500	60436600	11110	12210	13410	13000	26500	40000	00100			
				GUARDRAIL REMOVED	18" CONDUIT, TYPE F 707.05 TYPE C	6' CONDUIT TYPE F, 707.17, NON-PERFORATED, ASTM D-3034, SDR 35, SS 931 OR SS 944	PRECAST REINFORCED CONCRETE OUTLET	6' SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6' DEEP PIPE UNDERDRAIN, WITH FABRIC WRAP	6' UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	GUARDRAIL, TYPE 5	ANCHOR ASSEMBLY, TYPE T	DITCH EROSION PROTECTION	BARRIER REFLECTOR, TYPE A			
				LIN FT	LIN FT	LIN FT	EACH	LIN FT	LIN FT	EACH	LIN FT	EACH	S.Y.	EACH	EACH		
U-1	51 + 00	54 + 60	LT			44	1	100	210	50							
U-2	51 + 00	54 + 10	RT			28			140								
E-1	52 + 55	54 + 05	RT										200				
GR-1	51 + 00	51 + 40	RT								25	1		1			
GR-2	51 + 00	55 + 20	LT	50							425			8			
D-1	51 + 00	53 + 16	LT		164										1		
TOTALS				50	164	72	1	100	350	50	450	1	200	9			



SECTIONS
 108
 978
 68
 911
 96
 1072
 97

STA. 40+00 AHD.

100 80 60 40 20 0 20 40 60 80 100

PROP. STA. 41+00 (BACK) BEGIN UNDERCUTTING AND REPLACEMENT WITH 203 EMBANKMENT
 (766.8) EXIST.

748.89
 STA. 43+00 (BACK)
 (767.9)

STA. 42+00 (BACK)
 (765.7)

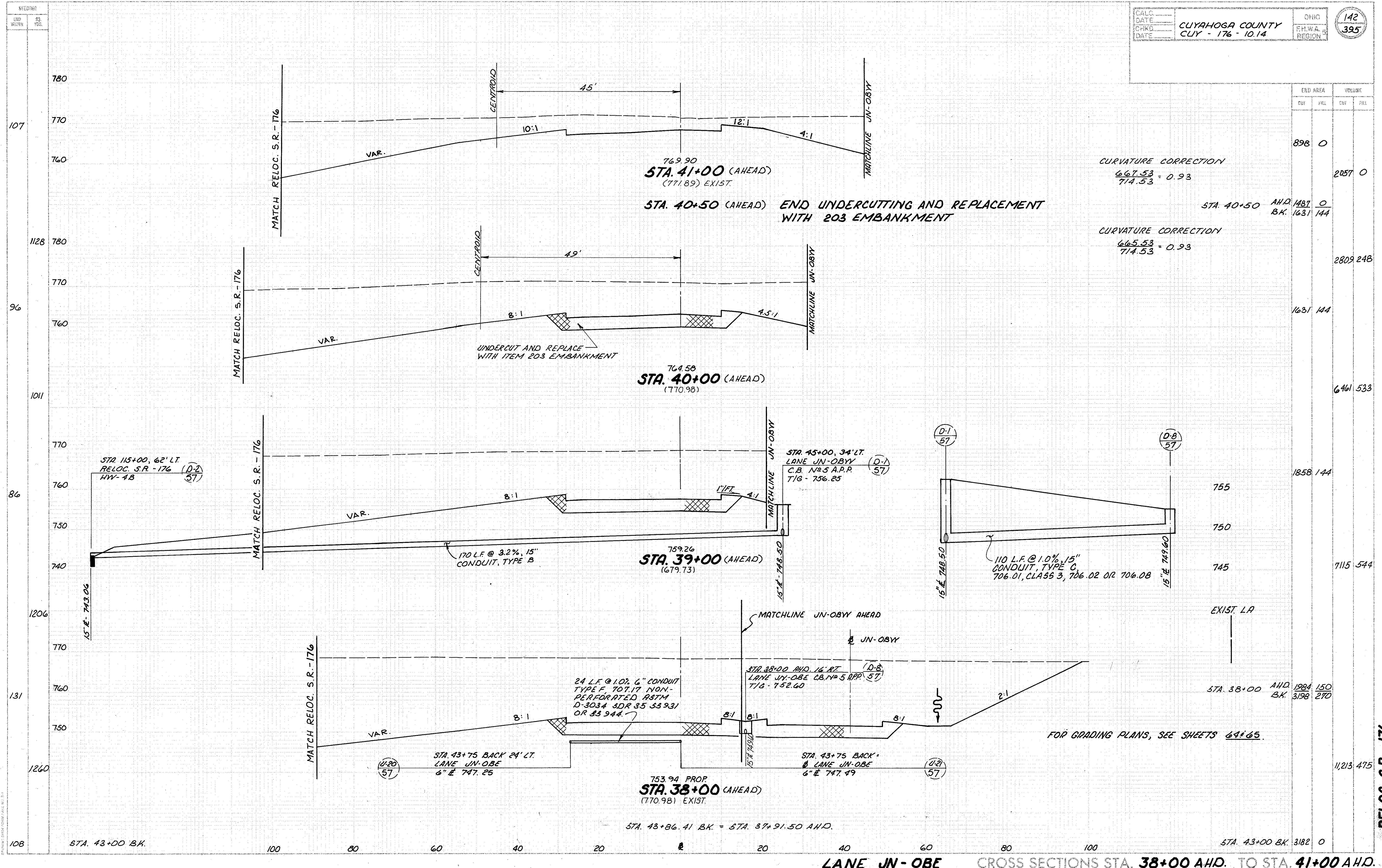
EXIST. L.A.
 STA. 41+00 (BACK) AHD. 3513 195
 BK. 3318 0

STA. 40+00 AHD. LANE JN-OBE 2794 0

STA. 120+00 AHD. - STA. 120+00 BK.
 RELOC. S.R.-176 SEE CROSS
 SECTION SHEET 73.

LANE JN-OBE CROSS SECTIONS STA. 41+00 BK. TO STA. 43+00 BK.

RELOC. S.R.-176



CURVATURE CORRECTION
 $\frac{667.53}{714.53} = 0.93$

CURVATURE CORRECTION
 $\frac{665.53}{714.53} = 0.93$

STA. 40+50 AHD. 1487.0
 BK. 1631.144

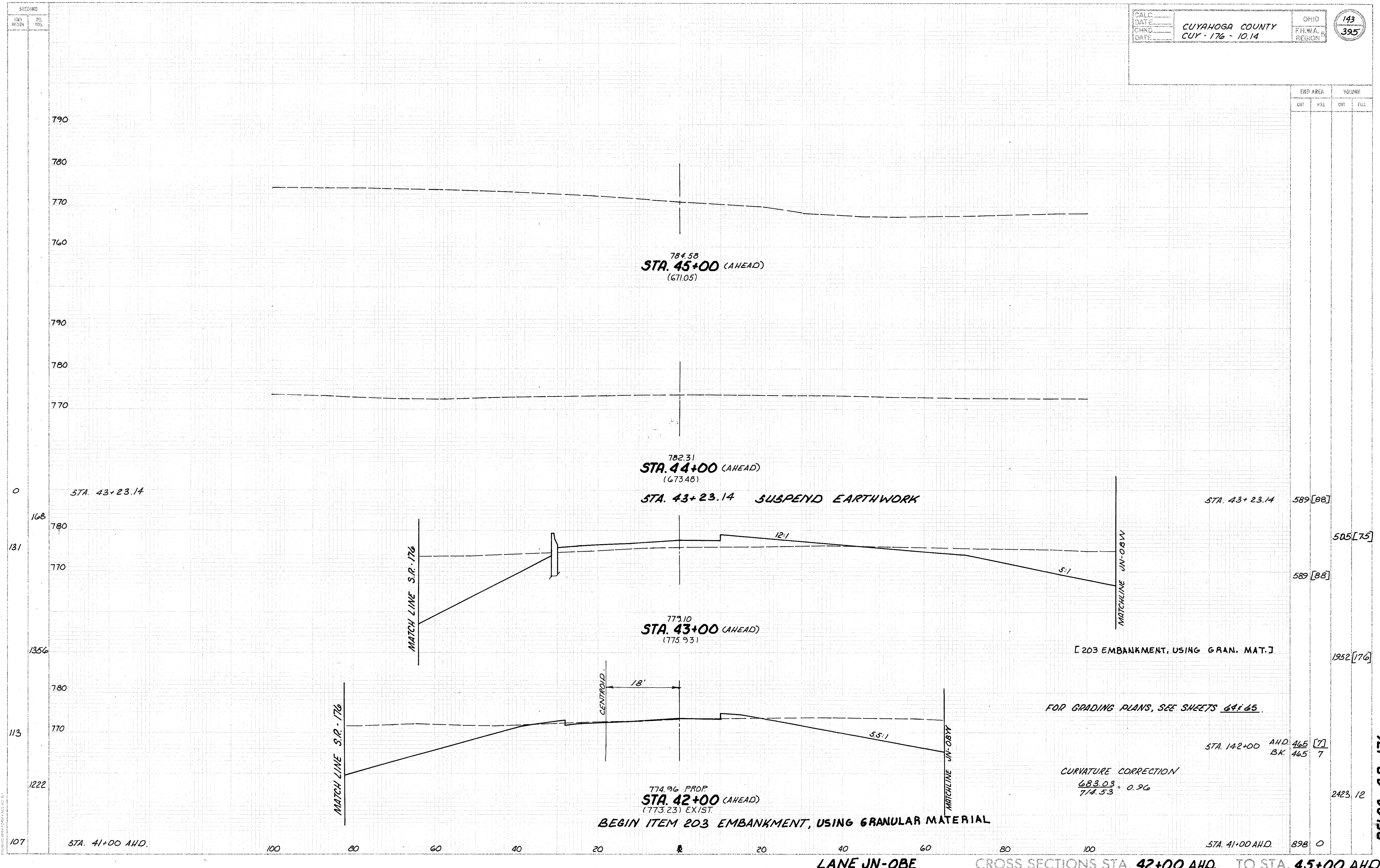
STA. 38+00 AHD. 1984.150
 BK. 3198.270

END AREA	VOLUME	
	CUT	FILL
898.0		2057.0
1631.144		2809.248
6461.533		
1858.144		
7115.544		
1984.150		
3198.270		
11213.475		
3182.0		

FOR GRADING PLANS, SEE SHEETS 64 & 65.

LANE JN-OBE CROSS SECTIONS STA. 38+00 AHD. TO STA. 41+00 AHD.

RELOC. S.R. - 176



RELOC. S.R. 176

SECTION
NO. _____
DATE _____

CALC. _____
DATE _____
CHKD. _____
DATE _____

CUYAHOGA COUNTY
CUY - 176 - 10.14

OHIO
ENR. DIV.
REGION 5

144
395

790
780
770
760
750
740
730

790
780
760
750
740
730

END AREA
CUT FILL

VOLUME
CUT FILL

786.31
STA. 47+00 (AHEAD)
(735.22)

785.92 PROP.
STA. 46+00 (AHEAD)
(744.74) EXIST.

100 80 60 40 20 0 20 40 60 80 100

LANE JN-OBE CROSS SECTIONS STA. 46+00 AHD. TO STA. 47+00 AHD.

RELOC. S.R. 176

SEEDING
 END WIDTH SO.
 YRS.

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

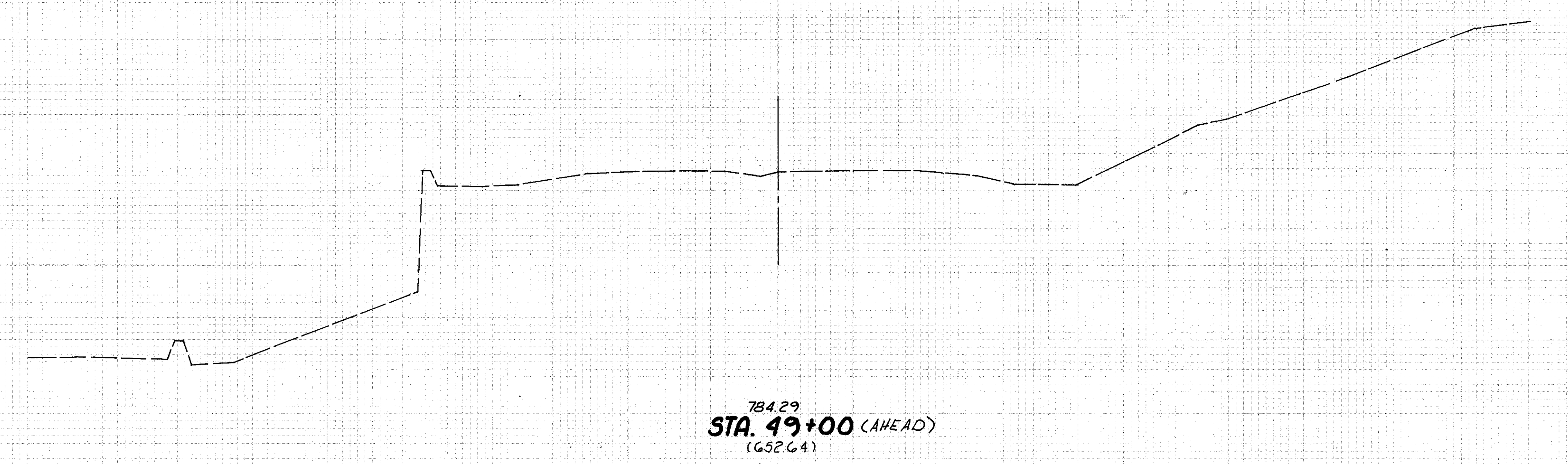
CUYAHOGA COUNTY
 CUY - 176 - 10.14

OHIO
 F.H.W.A. REGION
 145
 395

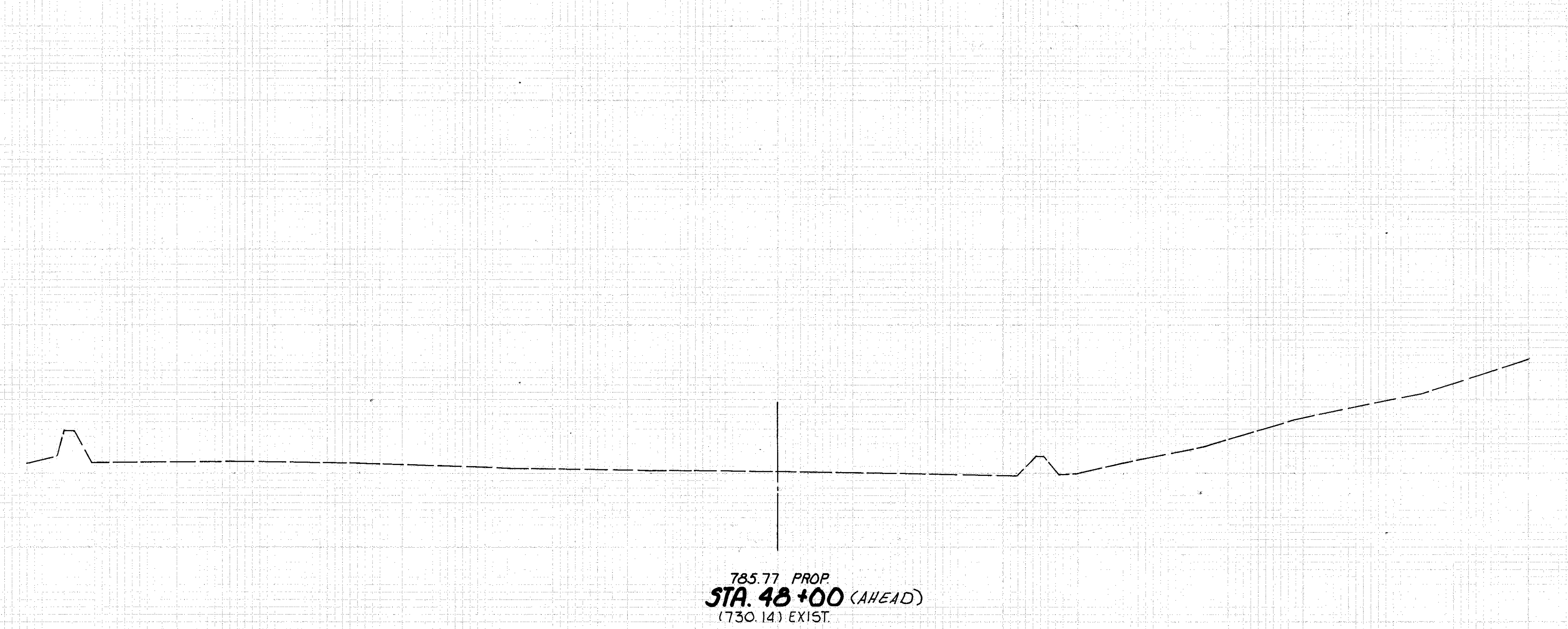
790
780
770
760
750
740
730
720

790
780
770
760
750
740
730
720

END AREA		VOLUME	
CUT	FILL	CUT	FILL



784.29
STA. 49+00 (AHEAD)
 (652.64)

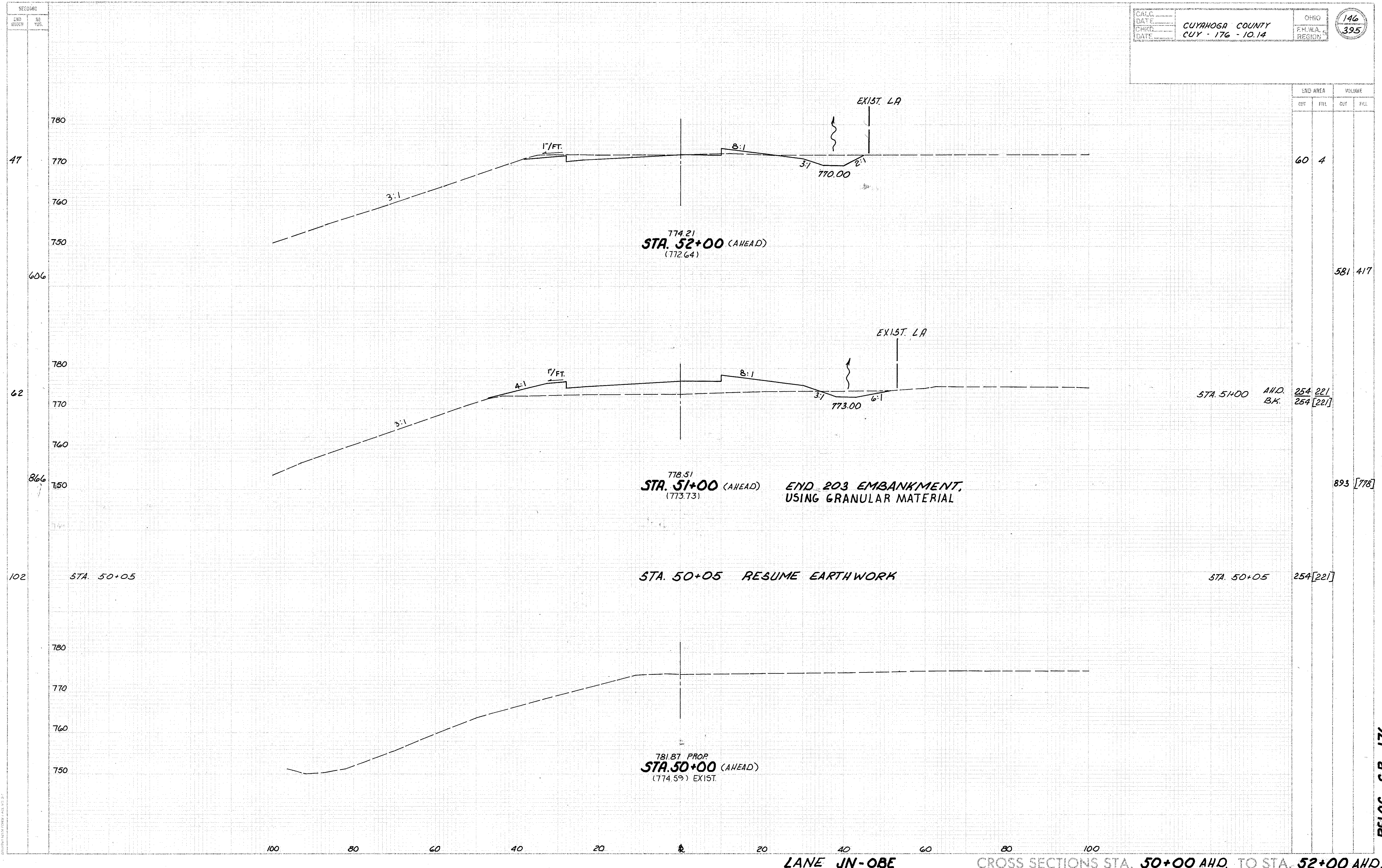


785.77 PROP
STA. 48+00 (AHEAD)
 (730.14) EXIST.

100 80 60 40 20 0 20 40 60 80 100

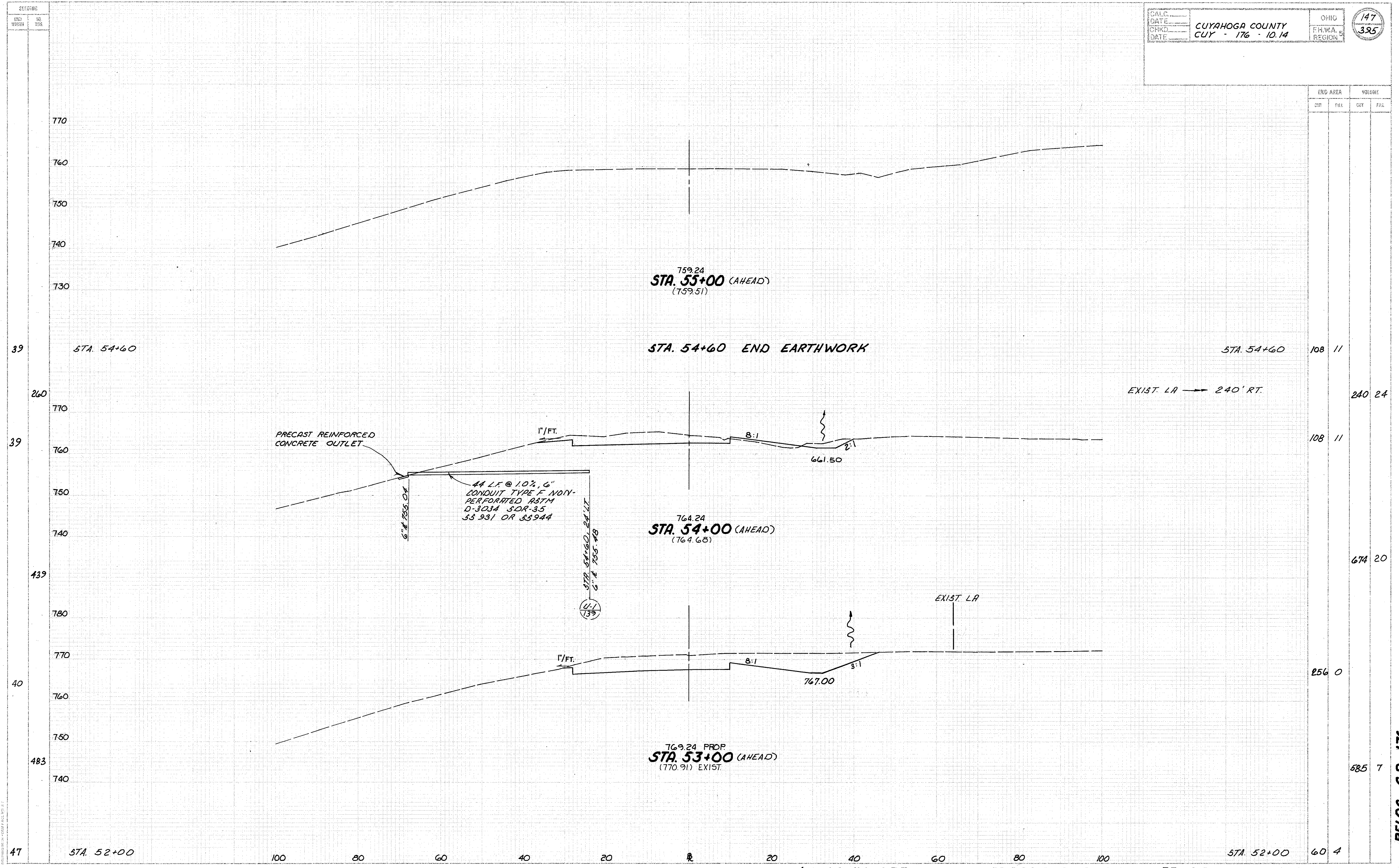
LANE JN-OBE CROSS SECTIONS STA. 48+00 AHD. TO STA. 49+00 AHD.

RELOC. S.R. - 176



RELOC. S.R. 176

LANE JN-OBE CROSS SECTIONS STA. 50+00 AHD. TO STA. 52+00 AHD.



LANE JN-OBE CROSS SECTIONS STA. 53+00 AHD. TO STA. 55+00 AHD.

RELOC. S.R. 176

SECTION

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

OHIO
 F.H.W.A.
 REGION

148
 395

END AREA		VOLUME	
CUT	FILL	CUT	FILL

760
 750
 740
 730
 720

749.24
STA. 57+00 (AHEAD)
 (749.71)

760
 750
 740
 730

754.24 PROP
STA. 56+00 (AHEAD)
 (754.55) EXIST.

100 80 60 40 20 0 20 40 60 80 100

LANE JN - OBE CROSS SECTIONS STA. 56+00 AHD. TO STA. 57+00 AHD.

RELOC. S.R. 176

SECTION

END STA. SQ. YDS.

CALC. _____
 DATE _____
 CHRD. _____
 DATE _____

CUYAHOGA COUNTY
 CUY - 176 - 10.14

OHIO
 F.M.W.A.
 REGION

149
 395

760
750
740
730
720
710

760
750
740
730
720
710

760
750
740
730
720
710

END AREA		VOLUME	
CUT	FILL	CUY	FIL

735.01
STA. 59+84.61 (AHEAD)
 (735.86)

739.24
STA. 59+00 (AHEAD)
 (740.16)

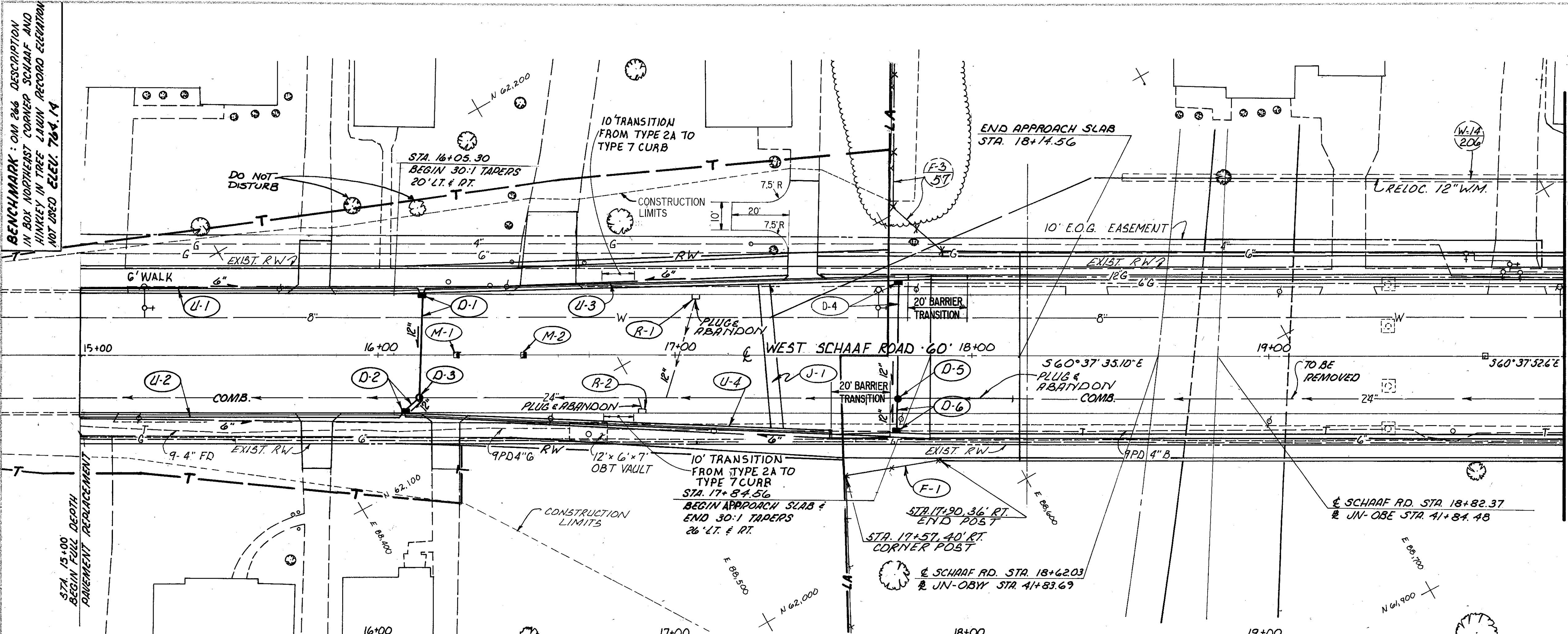
744.24 PROP.
STA. 58+00 (AHEAD)
 (715.05) EXIST.

100 80 60 40 20 0 20 40 60 80 100

LANE JN - OBE CROSS SECTIONS STA. 58+00 AHD. TO STA. 59+84.61 AHD.

RELOC. SR. 176

BRITNISH WESTINGHOUSE ELECTRIC & MANUFACTURING CO. CINCINNATI, OHIO



MATCH LINE STA. 20+00

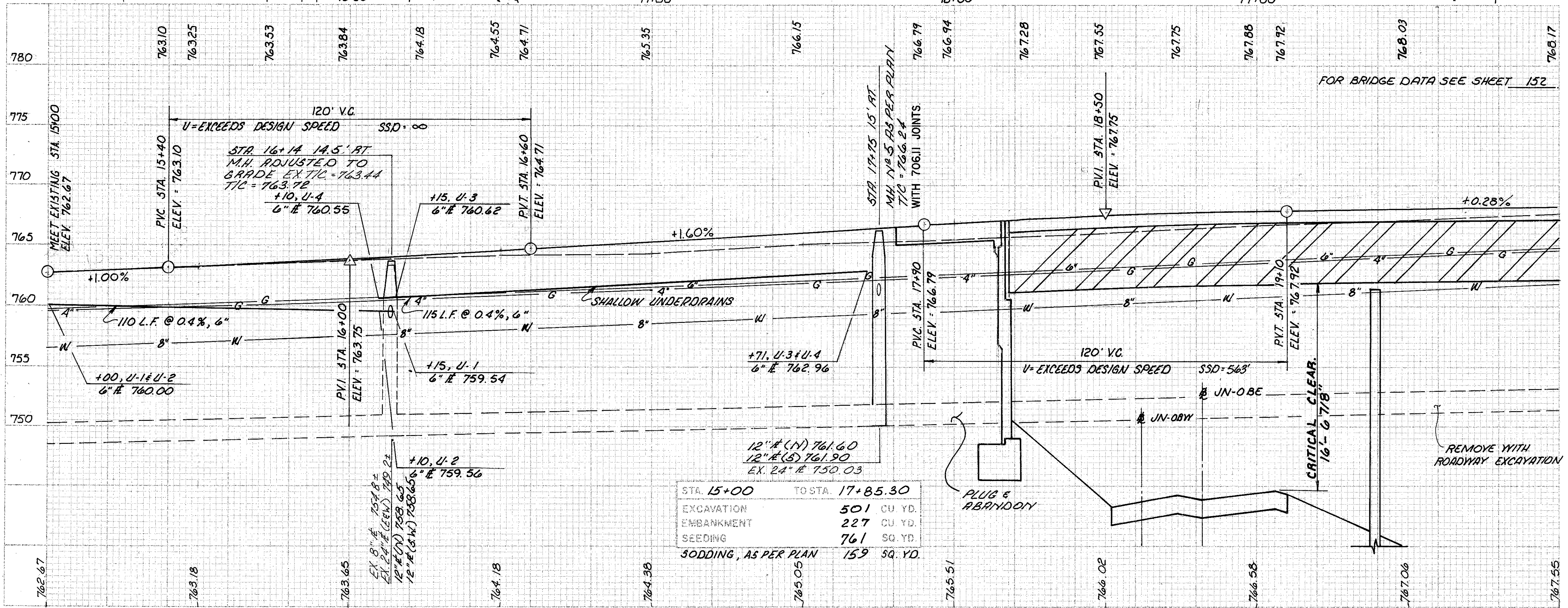
PLAN: 1" = 30'
 SCALE IN FEET

DRAINAGE DATA STRUCTURE

- (D-1) STA. 16+15, 20' LT. C.B. CITY OF CLEVELAND N#1 W/ITRAP TIC-763.54
- (D-2) STA. 16+10, 20' RT. C.B. CITY OF CLEVELAND N#1 W/ITRAP TIC-763.38
- (D-3) STA. 16+14, 15' RT. ADJUST M.H. TO GRADE, AS PER PLAN, EX. TIC-763.44 TIC-763.72
- (D-4) STA. 17+75, 26' LT. C.B. CITY OF CLEVELAND N#1 W/ITRAP TIC-765.85
- (D-5) STA. 17+75, 15' RT. M.H. N#5 AS PER PLAN WITH 706.11 JOINTS TIC-766.24
- (D-6) STA. 17+75, 26' RT. C.B. CITY OF CLEVELAND N#1 W/ITRAP TIC-765.85
- (M-1) STA. 16+26 & MONUMENT BOX ADJUSTED TO GRADE TIC-764.14
- (M-2) STA. 16+49 & MONUMENT BOX ADJUSTED TO GRADE TIC-764.49

REFERENCES

QUANTITIES FOR REFERENCED ITEMS...	SHEET NUMBERS
PIPE PROFILES	151
DRIVE PROFILES	155 & 156
DRIVE QUANTITIES	161, 161A, & 161B
BRIDGE PLANS	160
	358 - 379



PROFILE: 1" = 30'
 HORIZ.
 1" = 5'
 VERT.
 SCALES IN FEET

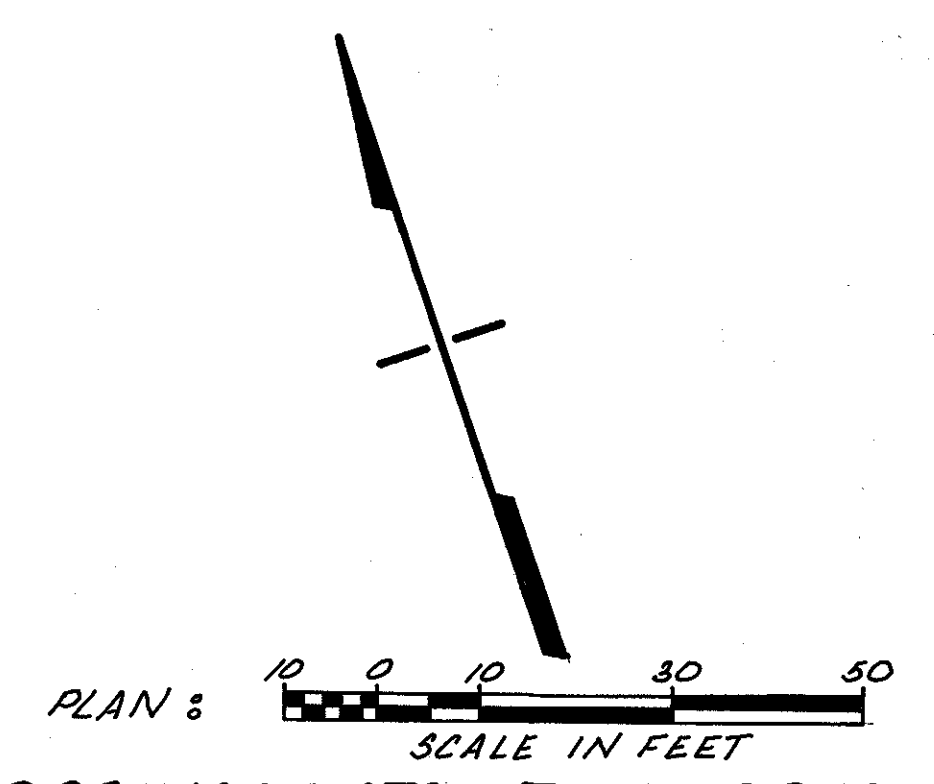
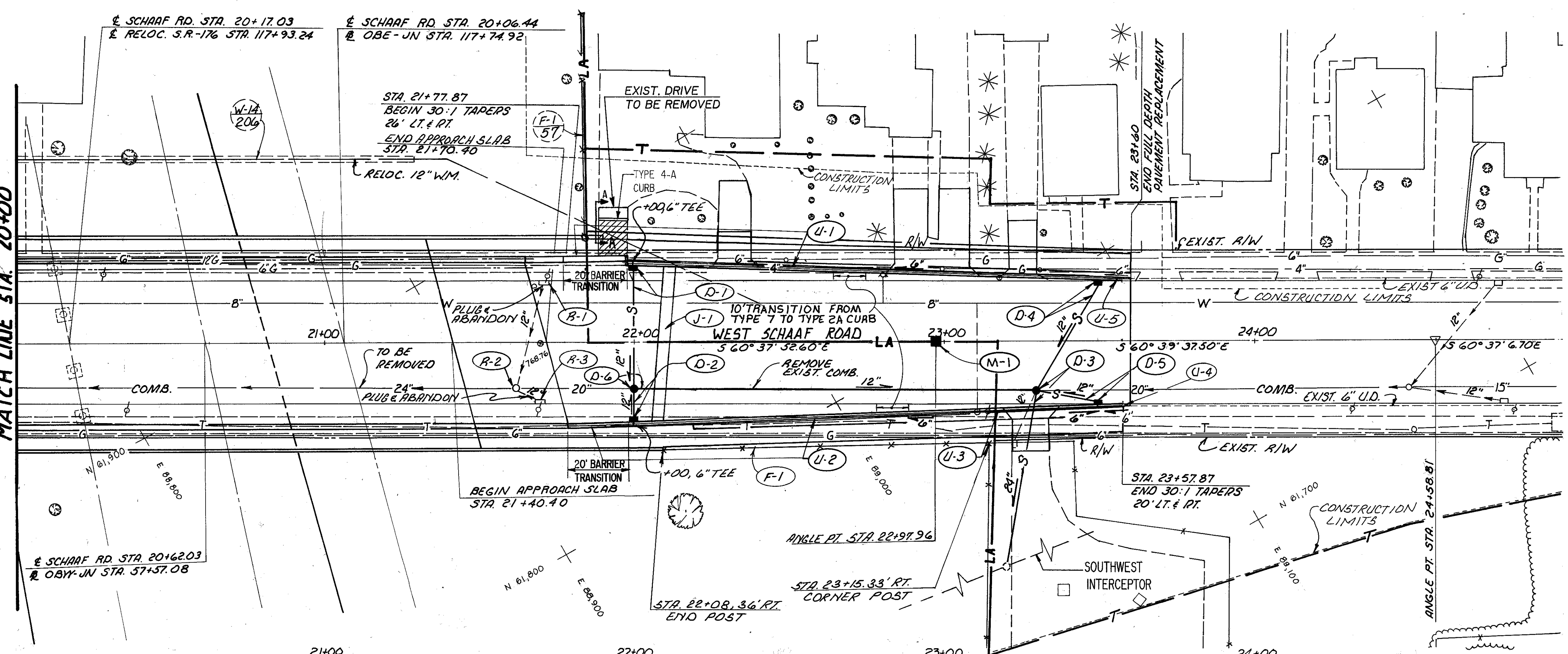
RELOC. S.R. - 176

ESTIMATED QUANTITIES - STATION 15+00 TO STA 20+00

REF. No.	ITEM No. EXTENSION No.		202	SPECIAL	603	604	604	604	604	605	605	607			
	STATION TO STATION / OFFSET	SIDE	58100	45130000	04400	00300	32101	34501	39500	11110	13410	23000			
	DESCRIPTION		CATCH BASIN REMOVED	PRESSURE RELIEF JOINT, TYPE A	12' CONDUIT, TYPE B, 706.02	CATCH BASIN, CITY OF CLEVELAND NO. 1, WITH TRAP	MANHOLE, NO. 5, AS PER PLAN WITH 706.11 JOINTS	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	MONUMENT BOX ADJUSTED TO GRADE	6" SHALLOW PIPE UNDERDRAIN, WITH FABRIC WRAP	6" UNCLASSIFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	FENCE, TYPE CLT			
			EACH	LIN FT	LIN FT	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT			
R-1	17 + 07	LT	1												
R-2	16 + 89	RT	1												
D-1	16 + 15	LT			34	1									
D-2	16 + 10	RT			7	1									
D-3	16 + 14	RT						1							
D-4	17 + 75	LT			40	1									
D-5	17 + 75	RT					1								
D-6	17 + 75	RT			10	1									
U-1	15 + 00 16 + 15	LT									115				
U-2	15 + 00 16 + 10	RT									110				
U-3	16 + 15 17 + 71	LT								156					
U-4	16 + 10 17 + 71	RT								161					
M-1	16 + 26	C/L							1						
M-2	16 + 49	C/L							1						
J-1	17 + 32	C/L		48											
F-1	17 + 57 17 + 90	RT										33			
TOTALS			2	48	91	4	1	1	2	317	225	33			

BENCHMARK: ON 719 SET IN TRENCH OF W. SCHAAF RD. APPROX. 1500' W. OF OLD BIRDY PARK RD. APPROX. 150' E. OF W. 11th ST. ELEV. 768.54

MATCH LINE STA. 20+00

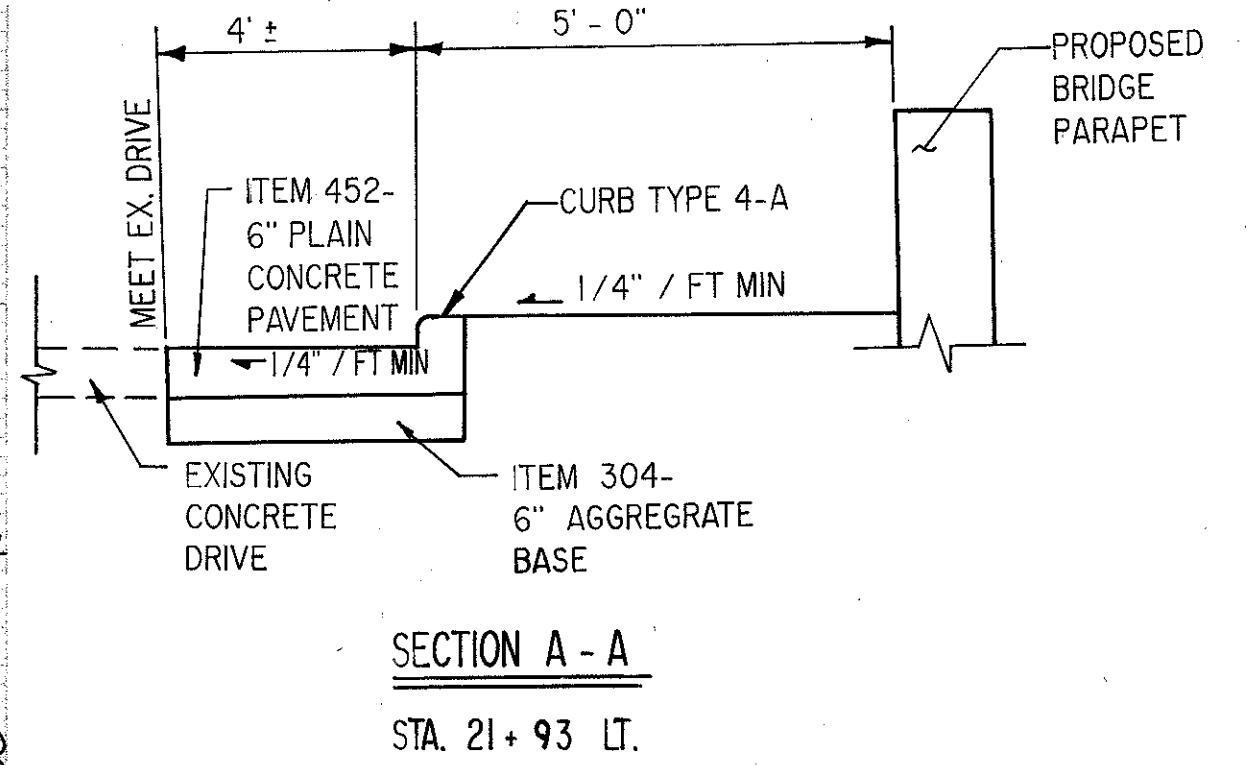
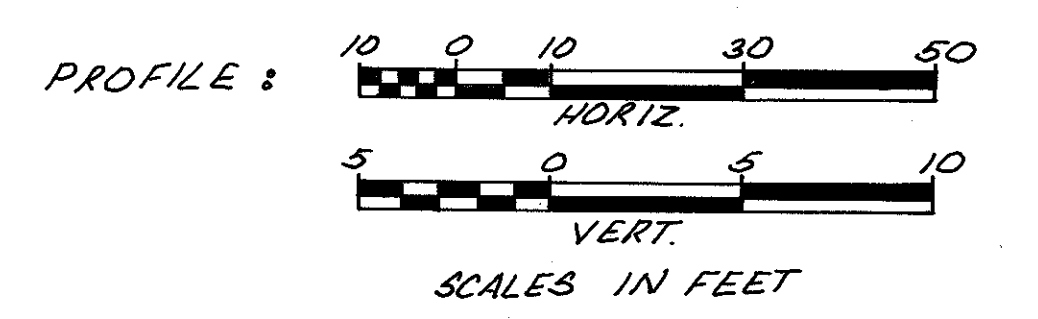
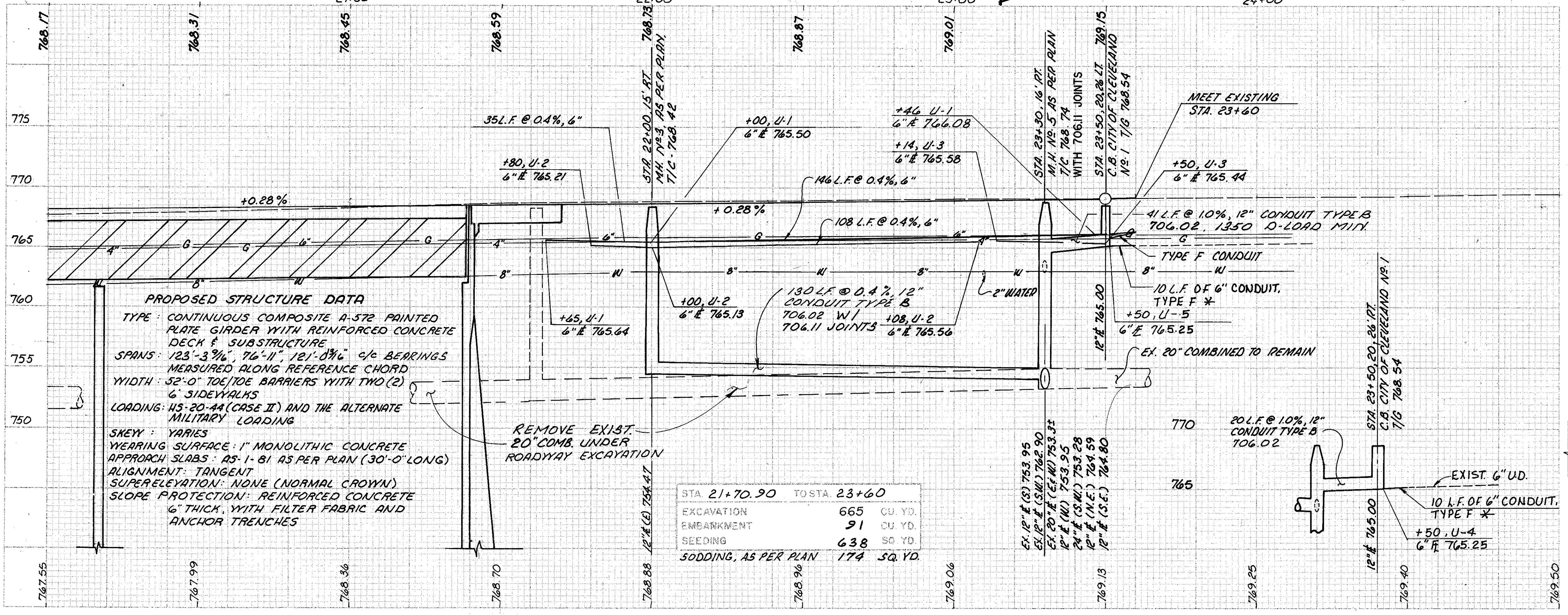


- DRAINAGE STRUCTURE DATA**
- (D-1) STA. 22+00, 25' LT. C.B. CITY OF CLEVELAND N#1 W/TRAP T/G-768.02
 - (D-2) STA. 22+00, 25' RT. C.B. CITY OF CLEVELAND N#1 W/TRAP T/G-768.02
 - (D-3) STA. 23+30, 16' RT. M.H. N#5 AS PER PLAN WITH 706.11 JOINTS TIC = 768.74
 - (D-4) STA. 23+50, 20' LT. C.B. CITY OF CLEVELAND N#1 W/TRAP T/G-768.54
 - (D-5) STA. 23+50, 20' RT. C.B. CITY OF CLEVELAND N#1 W/TRAP T/G-768.54
 - (D-6) STA. 22+00, 15' RT. M.H. N#3 AS PER PLAN, T/G-768.42

REFERENCES

QUANTITIES FOR REFERENCED ITEMS...	SHEET NUMBERS
PIPE PROFILES	153
DRIVE PROFILES	157
DRIVE QUANTITIES	161, 161A, 4, 161B
BRIDGE PLANS	160
	358-379

* 70717 NON-PERFORATED ASTM D-3034, SDR35, SS931 OR SS 944



	STA. 21+70.90	TOSTA 23+60
EXCAVATION	665	CU YD.
EMBANKMENT	91	CU YD.
SEEDING	638	SQ YD.
SODDING, AS PER PLAN	174	SQ YD.

RELOC. S.R. - 176

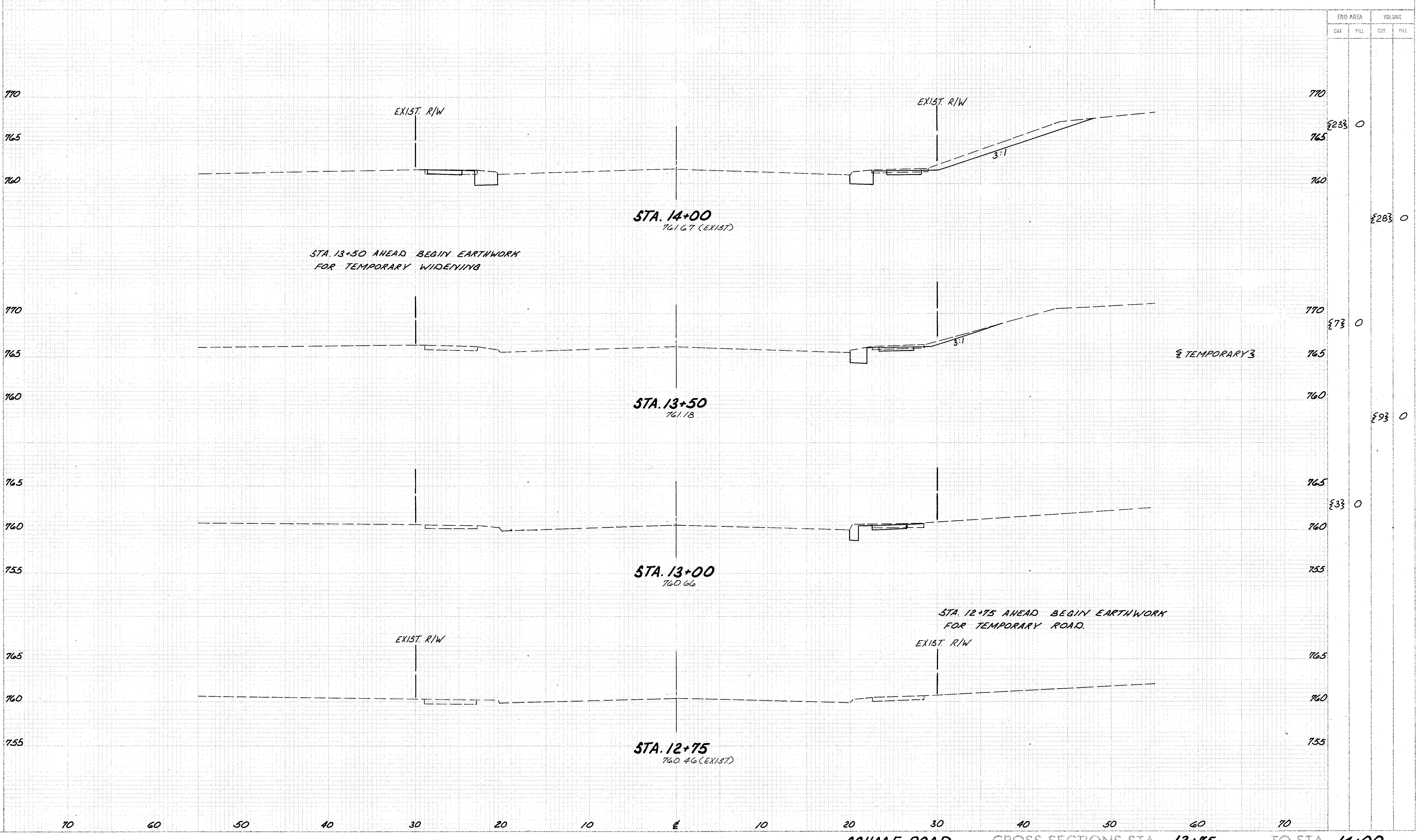
ESTIMATED QUANTITIES - STATION 20+00 TO STA 25+00

REF. No.	ITEM No. EXTENSION No.		SIDE	202	202	SPECIAL	603	603	603	604	604	604	604	605	607
	STATION TO STATION / OFFSET			58000 MANHOLE REMOVED	58100 CATCH BASIN REMOVED	45130000 PRESSURE RELIEF JOINT, TYPE A	01500 6' CONDUIT, TYPE F, 707.17 NON- PERFORATED ASTM D-3034, SDR 35, SS 931 OR SS 944	04400 12' CONDUIT, TYPE B, 706.02 WITH 706.11 JOINTS	10400 24' CONDUIT, TYPE B, 706.02, 1350 D-LOAD MINIMUM WITH 706.11 JOINTS	00300 CATCH BASIN, CITY OF CLEVELAND NO. 1 WITH TRAP	31501 MANHOLE, NO. 3, AS PER PLAN	32101 MANHOLE, NO. 5, AS PER PLAN WITH 706.11 JOINTS	38700 CLEVELAND REGIONAL GEODETIC MONUMENT ASSEMBLY	13410 6' UNCLASS- IFIED PIPE UNDERDRAIN, WITH FABRIC WRAP	23000 FENCE, TYPE CLT
			EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH	LIN FT	LIN FT	
R-1	21 + 68		LT												
R-2	21 + 62		RT	1											
R-3	21 + 69		RT		1										
D-1	22 + 00		LT					40		1					
D-2	22 + 00		RT					10		1					
D-3	23 + 30		RT						73			1			
D-4	23 + 50		LT					41		1					
D-5	23 + 50		RT					20		1					
D-6	22 + 00	23 + 30	RT					130			1				
U-1	21 + 56	22 + 00	LT											181	
U-2	21 + 80	23 + 08	RT											128	
U-3	23 + 14	23 + 50	RT											36	
U-4	23 + 50	23 + 60	RT					10							
U-5	23 + 50	23 + 60	LT					10							
J-1	22 + 10		C/L			50									
M-1	22 + 97.96		C/L										1		
F-1	22 + 08	23 + 15	RT												107
TOTALS				1	2	50	20	241	73	4	1	1	1	345	107

SECTION
 END WIDTH SQ. YDS.

SCALE _____ DATE _____ COUNTY CUYAHOGA COUNTY
 CHKD _____ DATE _____ CUY-176-10.14
 REGION OHIO
 REGION

153A
 395

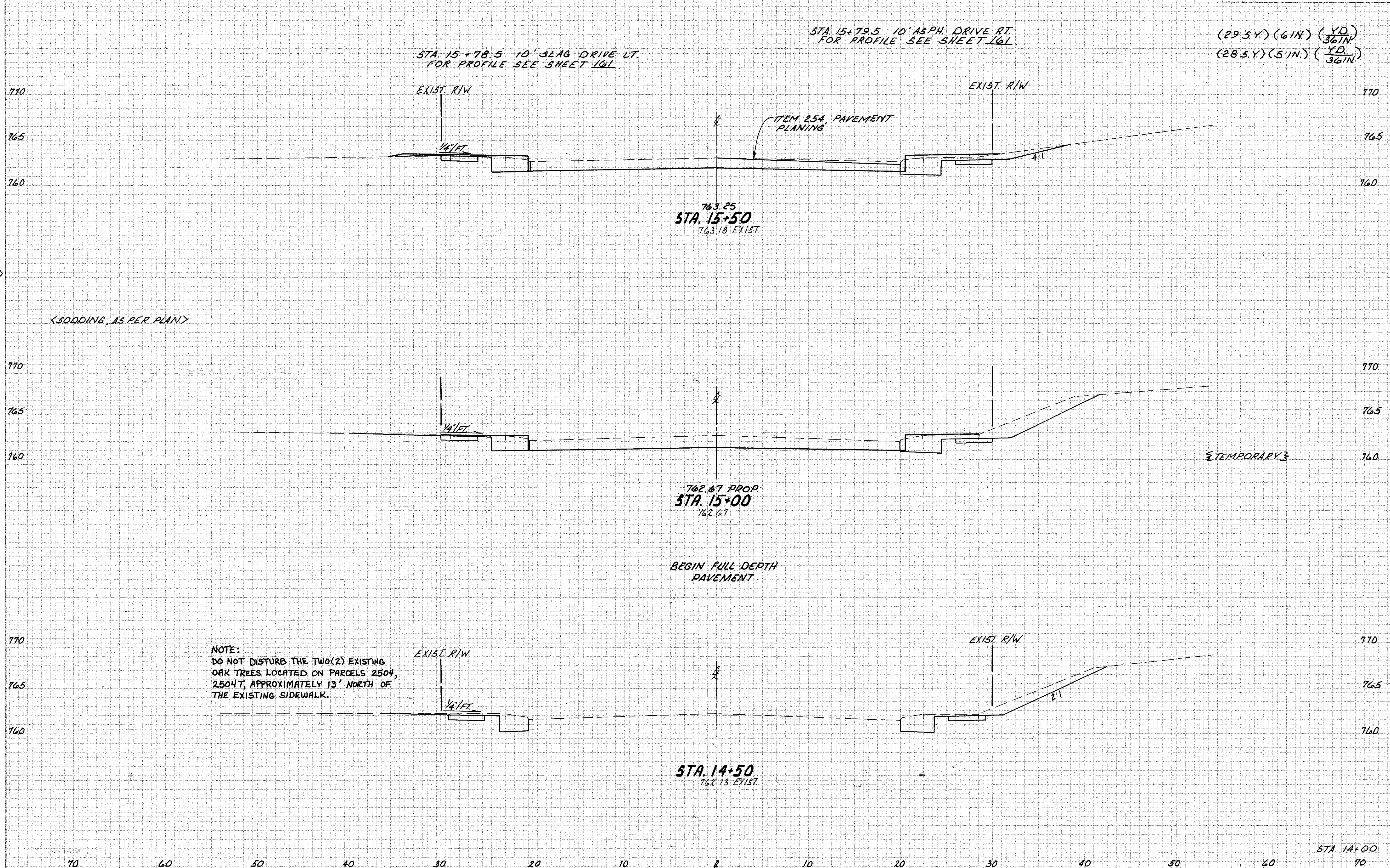


RELOC. S. R. - 176

SCHAAF ROAD CROSS SECTIONS STA. 12+75 TO STA. 14+00

SEEDING
 END WIDTH SQ. YDS.
 11 (5)
 31 (28)
 0 (5)

CALC	_____	OHIO
DATE	_____	15A
CHKD	CUYAHOGA COUNTY	F.H.W.A. REGION
DATE	CUY - 176 - 1014	395



END AREA		VOLUME	
CUT	FILL	CUT	FILL
-	-	5	-
-	-	4	-
2203	0	483	0
54	7	100	8
323	0		
54	2		
		533	0
253	0		
		443	0
233	0		

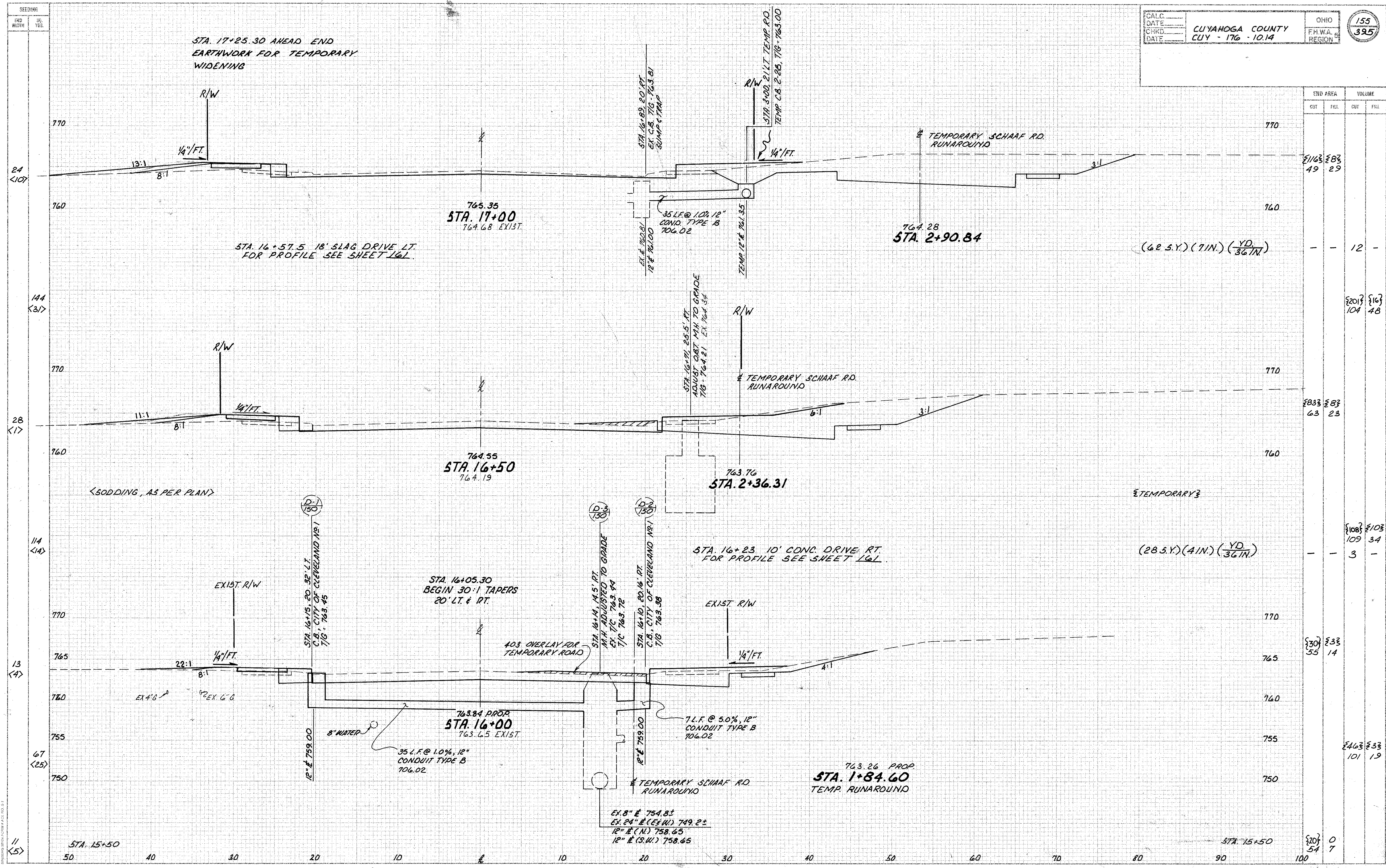
NOTE:
 DO NOT DISTURB THE TWO(2) EXISTING
 OAK TREES LOCATED ON PARCELS 2504,
 2504T, APPROXIMATELY 13' NORTH OF
 THE EXISTING SIDEWALK.

TEMPORARY

RELOC. S.P.-176

REVISED B-19-94

SCHAAF ROAD CROSS SECTIONS STA. 14+50 TO STA. 15+50



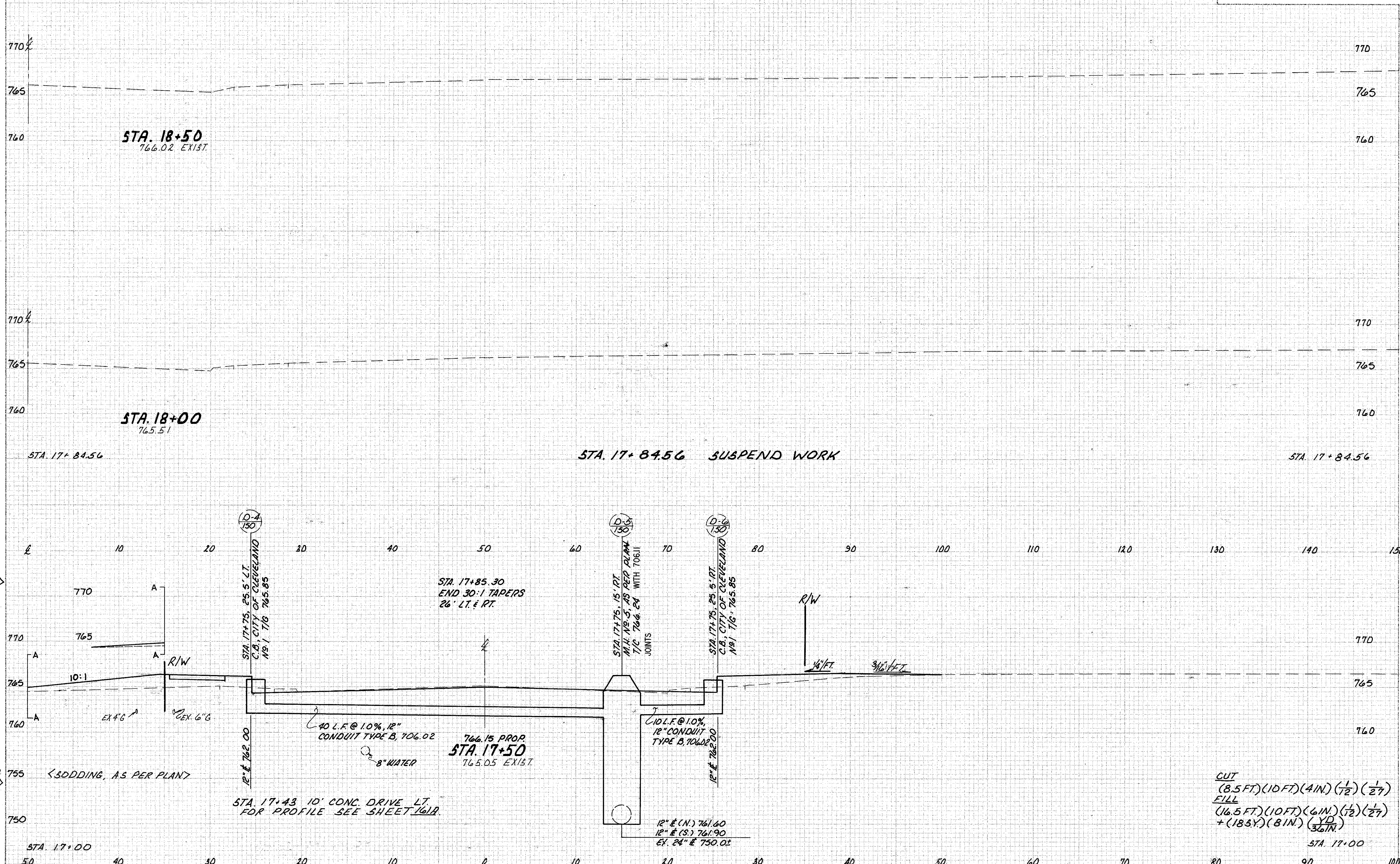
END AREA		VOLUME	
CUT	FILL	CUT	FILL
1163.49	883.29		
		12	
833.63	883.23		
		3	
303.55	833.14		
		7	
203.54	833.19		

SCHAAF ROAD CROSS SECTIONS STA. 16+00 TO STA. 17+00

RELOC. S. R. - 176

SEEDING
 EMB. WIDTH SQ. YDS.
 29 <57>
 29 <5>
 29A <42>
 24 <10>

CALC. _____
 DATE _____
 CHKD. _____
 DATE _____
 CUYAHOGA COUNTY
 CUY - 176 - 10.14
 OHIO
 F.H.W.A. REGION 5
 156
 395

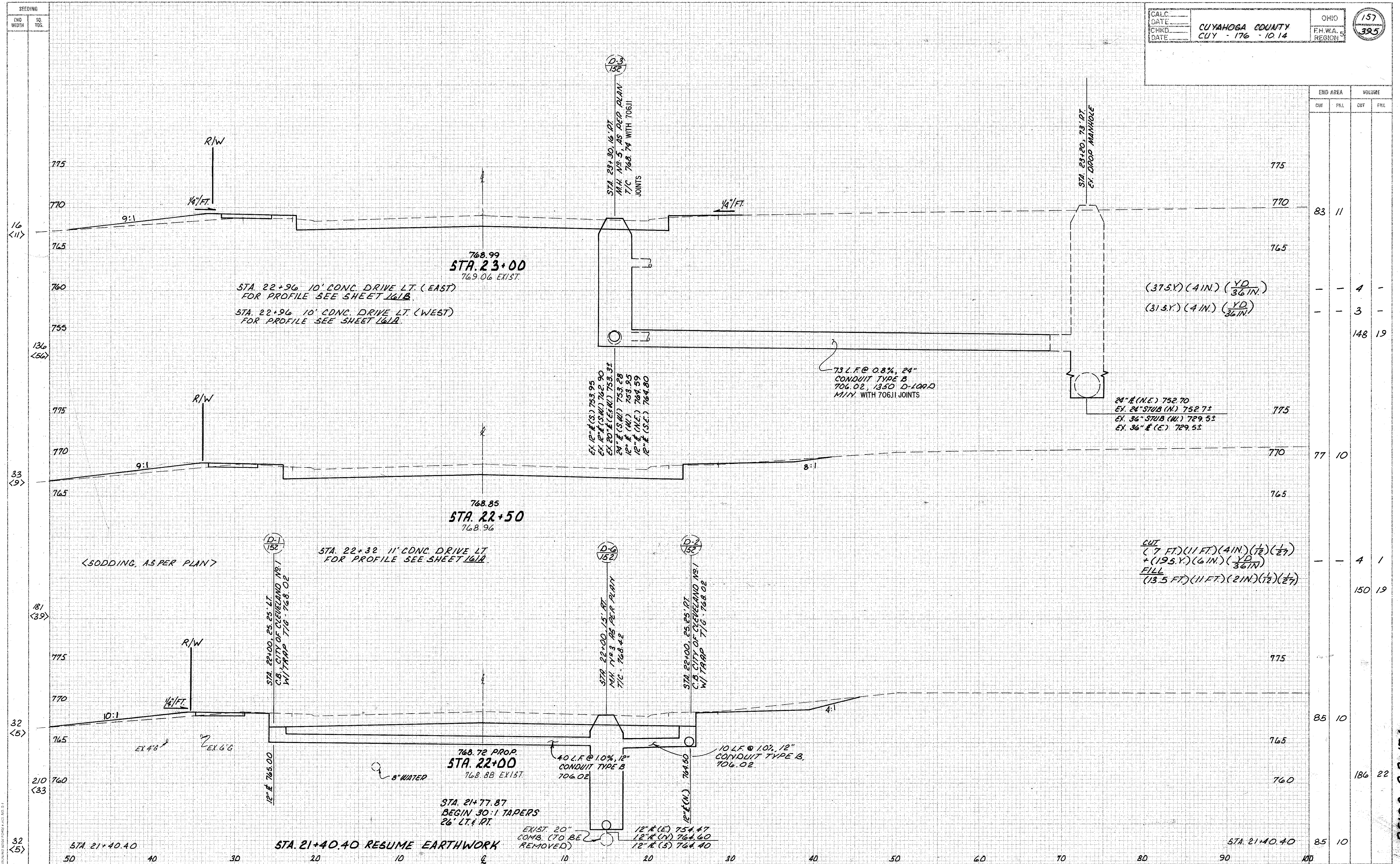


END AREA		VOLUME	
CUT	FILL	CUT	FILL
		8	38
		10	49
		8	38
		49	29
		52	62
		-	-
		1	7

CUT
 (8.5 FT)(10 FT)(4 IN.) (1/2) (1/27)
 FILL
 (16.5 FT)(10 FT)(6 IN.) (1/2) (1/27)
 + (18.5 Y)(8 IN.) (3/16 IN.)

SCHARF ROAD CROSS SECTIONS STA. 17+50 TO STA. 18+50

RELOC. S.R. - 176



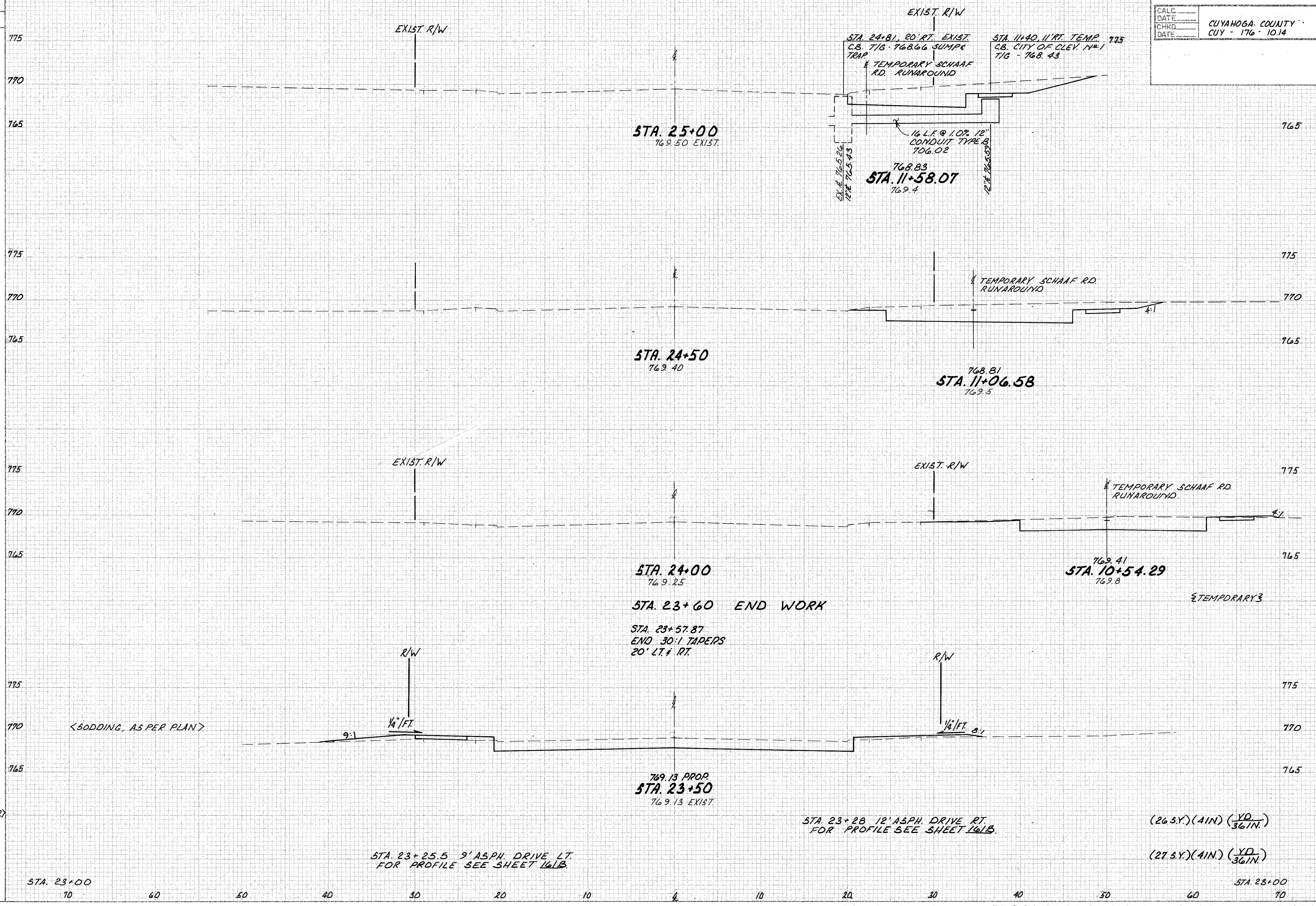
END AREA		VOLUME	
CUT	FILL	CUT	FILL
83	11		
-	-	4	-
-	-	3	-
		148	19
-	-	4	1
		150	19
85	10		
		186	22
85	10		

SCHAAF ROAD CROSS SECTIONS STA. 22+00 TO STA. 23+00

RELOC. S.R. 176

SEEDING
 END WIDTH 30 YDS.
 17 <A>
 19 <A>
 17 <A>
 92 <A2>
 16 <A1>

CALC. DATE: CUYAHOGA COUNTY OHIO
 CHKD. DATE: CUY - 176 - 10.14 F.H.W.A. REGION 158
 325



END AREA		VOLUME	
CUT	FILL	CUT	FILL
2403	0		
		3843	0
		5493	0
		5793	513
		5313	513
		66	15
			24
			138
			24
			3
			3
		83	11

SCHAAF ROAD CROSS SECTIONS STA. 23+50 TO STA. 25+00

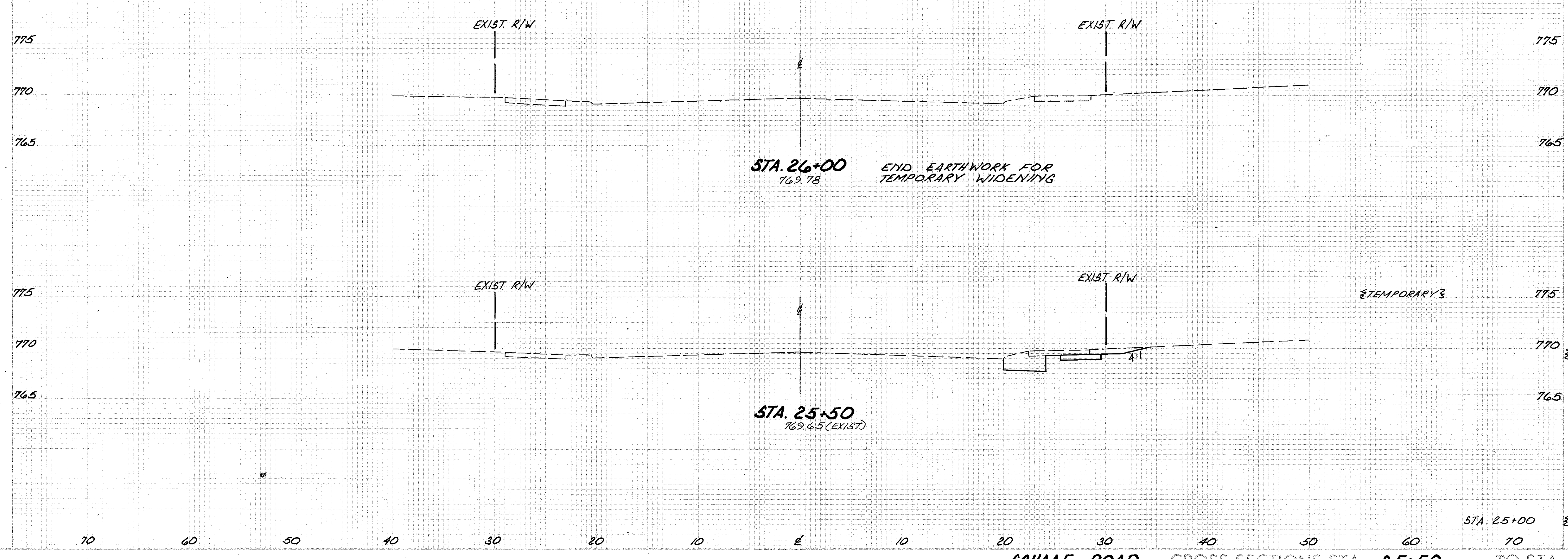
RELOC. S.R. - 176

SEEDING

END WIDTH SQ. YDS.

DATE	CUYAHOGA COUNTY	OHIO	158A 395
CHKD.	CUY-176-10.14	F.H.W.A.	
DATE		REGION	

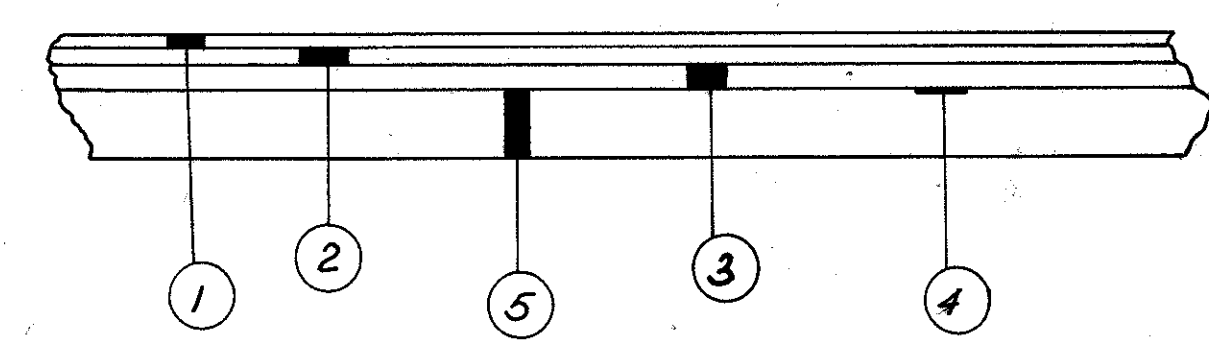
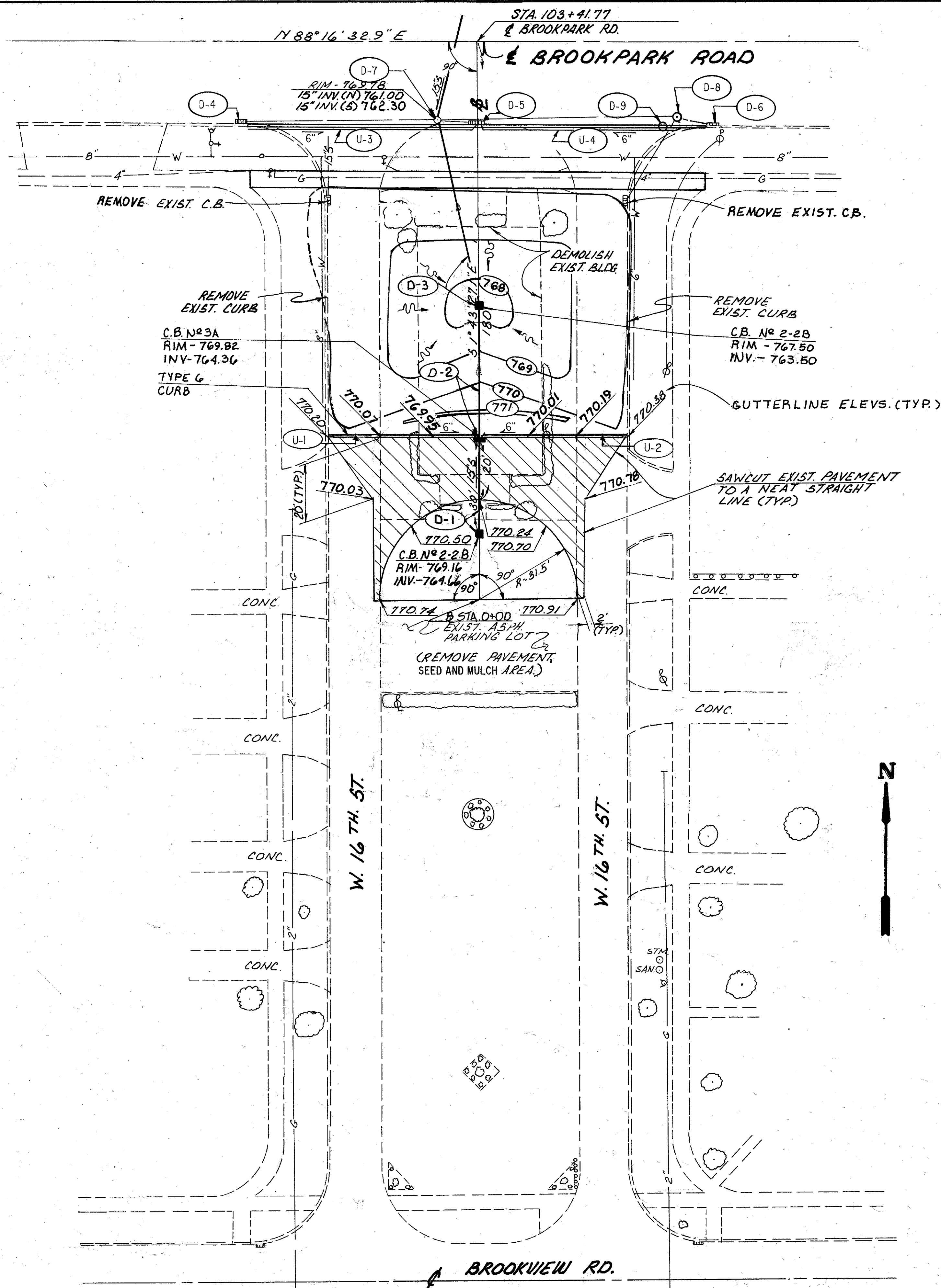
END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0	0	0
0	0	0	0
0	0	0	0



70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

SCHAAF ROAD CROSS SECTIONS STA. 25+50 TO STA. 26+00

RELOC. S.R.-176



- ① 1/4" ITEM 404
- ② 1 3/4" ITEM 402
- ③ 5" ITEM 301
- ④ BITUMINOUS PRIME COAT
- ⑤ 6" ITEM 304

PAVEMENT BUILD-UP DETAIL

ESTIMATED QUANTITIES														
202	202	203	203	301	304	402	404	408	603	604	203	603	659	604
58100	32000	12000	20000	10002	20000	20000	20000	10000	06100	00800	50000	26000	10000	04500
CATCH BASIN REMOVED	CURB REMOVED	EXCAVATION NOT INCLUDING EMBANKMENT	EMBANKMENT	BITUMINOUS AGGR. BASE AC-20	AGGREGATE BASE	ASPHALT CONCRETE AC-20	ASPHALT CONCRETE AC-20	BITUMINOUS PRIME COAT	15" CONDUIT, TYPE F, 707.17 CLASS 3, 10' LONG OR LONGER OF 707.08, 6.6'	C.B. No. 3A	SUBGRADE COMPACTION	CURB TYPE G	SEEDING AND MULCHING	C.B. No. 2-2B
EA.	LF.	CY.	CY.	CY.	CY.	CY.	CY.	GAL.	LF.	EA.	S.Y.	LF.	S.Y.	EA.
2	200	316	16	20	35	10	7	84	133	1	210	95	1266	2

NOTE: QUANTITIES CARRIED TO P & P SUB-SUMMARY

- FOR (D-1) PIPE PROFILE SEE SHEET 159A.
- FOR (D-2) PIPE PROFILE SEE SHEET 159A.
- FOR (D-3) PIPE PROFILE SEE SHEET 159A.
- FOR (U-1) PIPE PROFILES SEE SHEET 159A
- FOR (U-2) PIPE PROFILES SEE SHEET 159A

REF. NO.	LIN FT	603	605	605
		01500	13410	11110
U-1		10	48	
U-2		10	47	
U-3		10		75
U-4		10		75
TOTAL		40	95	150

REF. NO.	STATION	SIDE	604	604	604
			09500	34501	35501
			CATCH BASIN RECONSTRUCTED TO GRADE	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN
D-4	102 + 64	RT			
D-5	103 + 39	RT			
D-6	104 + 17	RT			
D-7	103 + 26	RT			
D-8	104 + 03	RT			
D-9	103 + 98	RT			
TOTAL			3	2	1

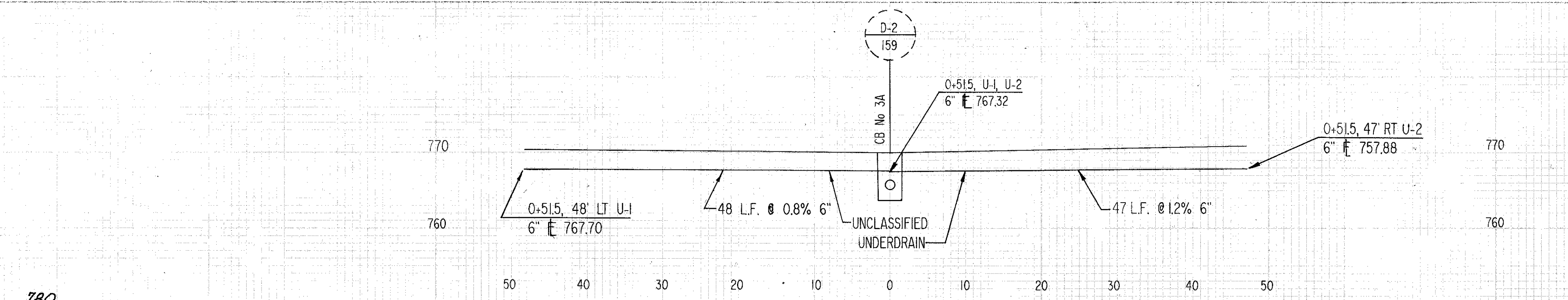
RELOC. S.R. 176

SEEDING
 END
 MONTH
 SS.
 YRS.

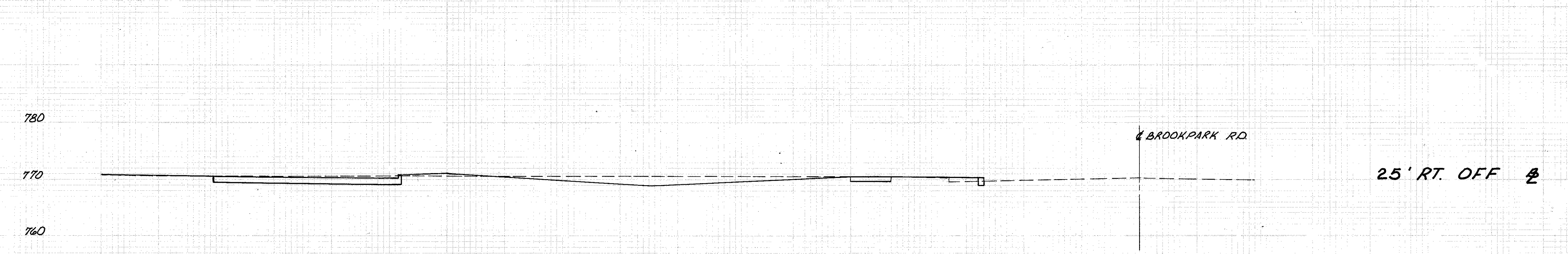
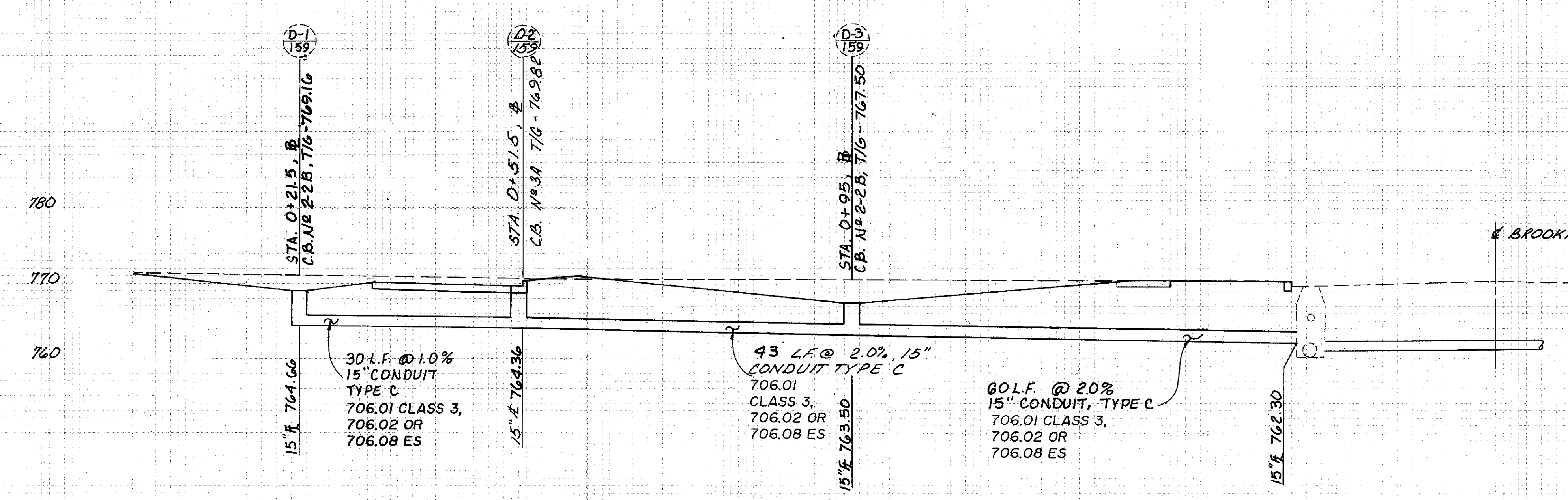
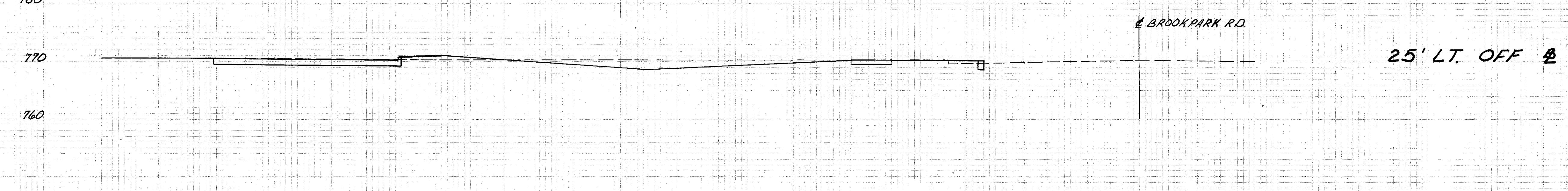
CALC. _____
 DATE _____
 CHKD. _____
 DATE _____

CUYANOGA COUNTY
 CUY-176-10.14

OHIO
 F.H.W.A. REGION 6
 159A
 395



END AREA		VOLUME	
CUT	FILL	CUT	FILL



W. 16 TH. ST. PROFILES

RELOC. S.R. -176

SHEET NO.	PLAN PROFILE	STATION	SIDE	EXISTING		TYPE	W	L	L/2	DRIVE TURN- AROUND S.Y.	GROSS AREA S.Y.	DRIVE WALK S.Y.	APRON AREA S.Y.	PAVEMENT REMOVED S.Y.	202	304	404	408	202	451	452	609	609		
				23000	20000										10000	10000	32000	13000	10000	26000	24000				
														AGGREGATE BASE	ASPHALT COLLECTOR AC-20	BITUMINOUS PRIMECOAT	CURB REMOVED	REINFORCED CONCRETE PAVEMENT	PLAIN CONCRETE PAVEMENT	CURB TYPE 6	CURB TYPE 4-A				
														C.Y.	C.Y.	GAL.	L.F.	S.Y.	S.Y.	L.F.	L.F.				
BROOKPARK ROAD.																									
51	161B	105+00	LT.	GRAVEL	CONC.	COMM.	24'	6'	3'		43	23	18	23		7.2	-	-	30	43	-	80	-		
SCHAAF ROAD																									
150	161	15+78.5	LT.	SLAG	CONC.	RES.	10'	3'			28	13	4	18		5.2	-	-	-	-	18	-	-		
150	161	15+79.5	RT.	ASPHALT	CONC.	RES.	10'	3'			29	13	4	18		4.8	.62	4.4	-	-	29	-	-		
150	161	16+23	RT.	CONC.	CONC.	RES.	10'	3'			28	13	4	28		4.7	-	-	-	-	28	-	-		
150	161	16+57.5	LT.	SLAG	CONC.	COMM.	18'	3'			62	19	7	26		16.3	-	-	-	-	26	-	-		
150	161A	17+43	LT.	CONC.	CONC.	RES.	10'	3'		25	46	13	4	51		11.8	-	-	-	-	71	-	-		
152	-	21+93	LT.	CONC.	CONC.	RES.	10'	3'			17	13	4	17		0.8	-	-	-	-	5	-	10		
152	161A	22+32	LT.	CONC.	CONC.	RES.	11'	3'			49	14	5	49		7.3	-	-	-	-	44	-	-		
152	161A-B	22+96 (EAST & WEST DRIVES)	LT	CONC.	CONC.	RES.	24'	3'			74	23	9	74		12.3	-	-	-	-	74	-	-		
152	161B	23+25.5	LT.	ASPH.	CONC.	RES.	9'	3'			27	13	4	17		4.4	.55	4.0	-	-	17	-	-		
152	161B	23+28	RT.	ASPH.	CONC.	COMM.	12'	3'			26	15	5	20		4.4	.37	2.7	-	20	-	-			
TOTAL *														341		79	2	11	30	89	286	30	10		

NOTES:

IMPRESSED (TOOLED) LONGITUDINAL JOINTS WITHOUT TIE BARS SHALL BE CONSTRUCTED AT THE CENTER LINE OF ALL CONCRETE DRIVES AND SHALL BE SEALED WITH 705.04 JOINT SEALER. ADDITIONAL JOINTS SHALL BE CONSTRUCTED AT TWELVE (12) FOOT MAXIMUM CENTERS AS DIRECTED BY THE ENGINEER. IN LIEU OF IMPRESSED JOINT CONSTRUCTION, LONGITUDINAL JOINTS MAY BE SAWED IN ACCORDANCE WITH 451.08 AND SEALED WITH 705.04 JOINT SEALER. LONGITUDINAL JOINTS SHALL BE A MINIMUM OF ONE-QUARTER (1/4) INCH WIDE BY ONE-FORTH (1/4) TO ONE-THIRD (1/3) THE SLAB THICKNESS DEEP.

IMPRESSED (TOOLED) TRANSVERSE JOINTS WITHOUT DOWELS SHALL BE CONSTRUCTED AT TWELVE (12) FOOT MAXIMUM CENTERS FOR ALL CONCRETE DRIVES AND SEALED WITH 705.04 JOINT SEALER; ALL AT THE DIRECTION OF THE ENGINEER. IN LIEU OF IMPRESSED JOINT CONSTRUCTION, TRANSVERSE JOINTS MAY BE SAWED IN ACCORDANCE WITH 451.08 AND SEALED WITH 705.04 JOINT SEALER. TRANSVERSE JOINTS SHALL BE A MINIMUM ONE-QUARTER (1/4) INCH WIDE BY ONE-FORTH (1/4) THE SLAB THICKNESS DEEP.

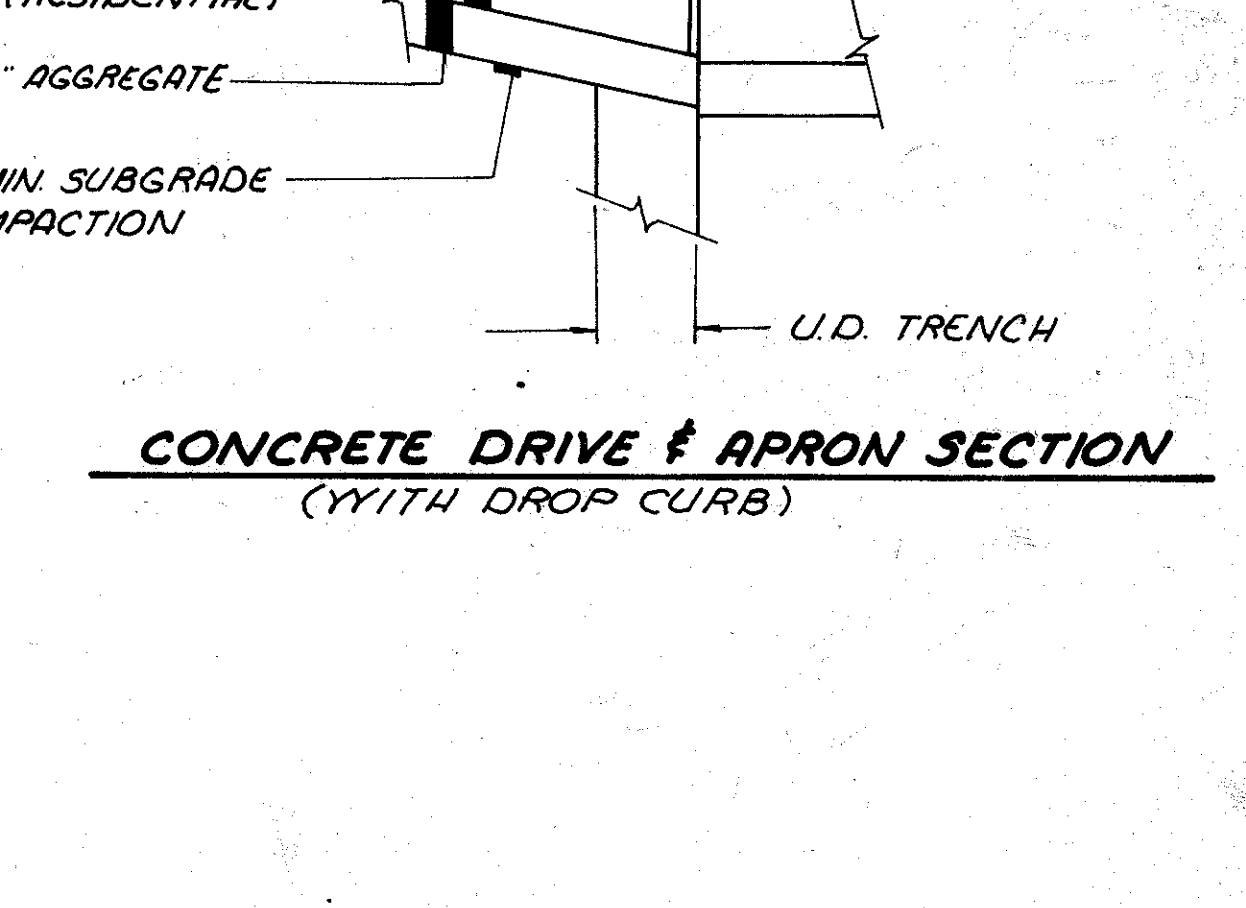
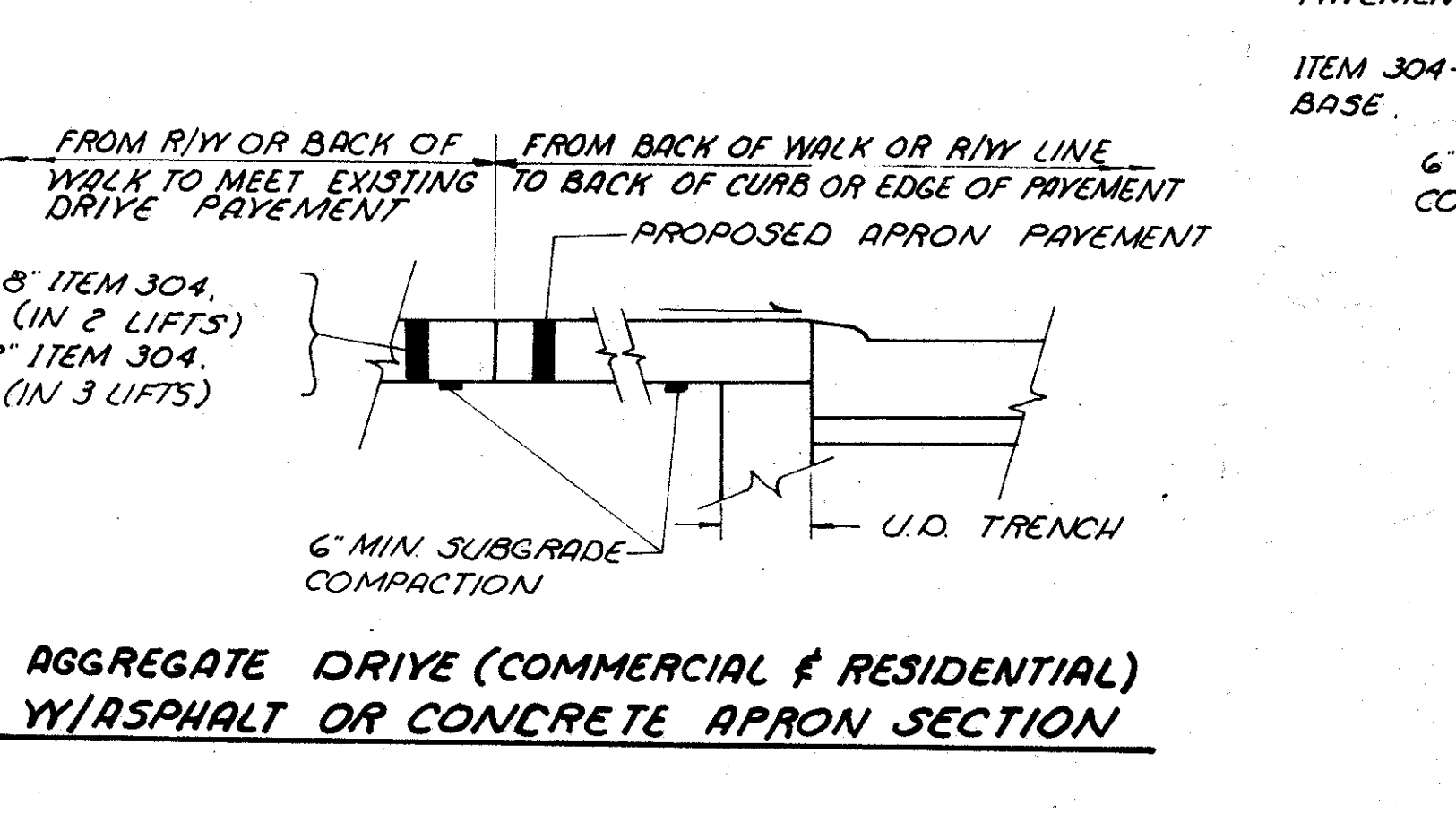
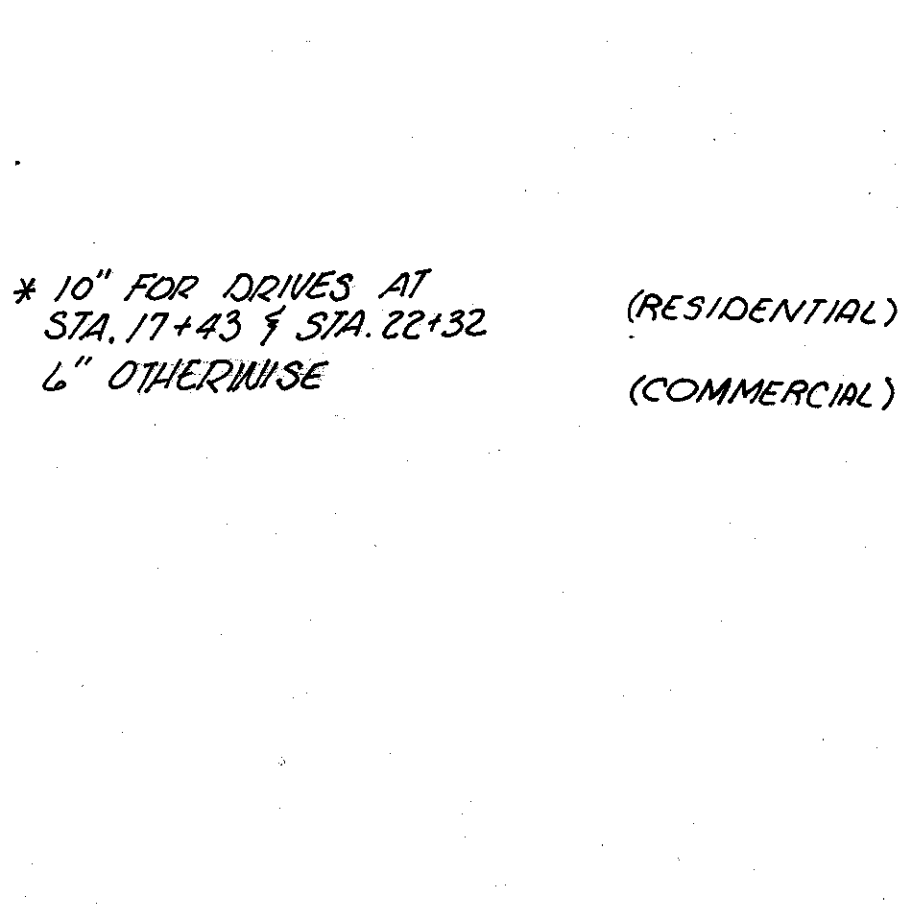
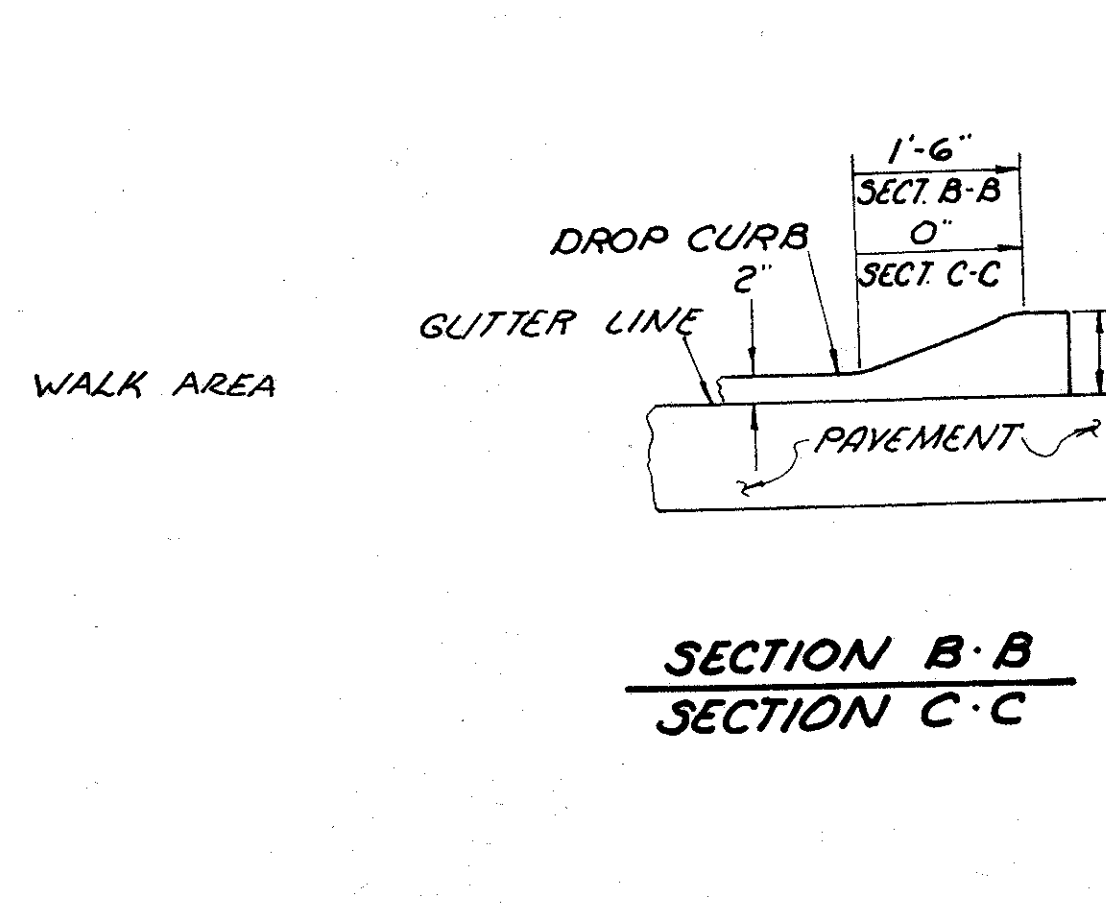
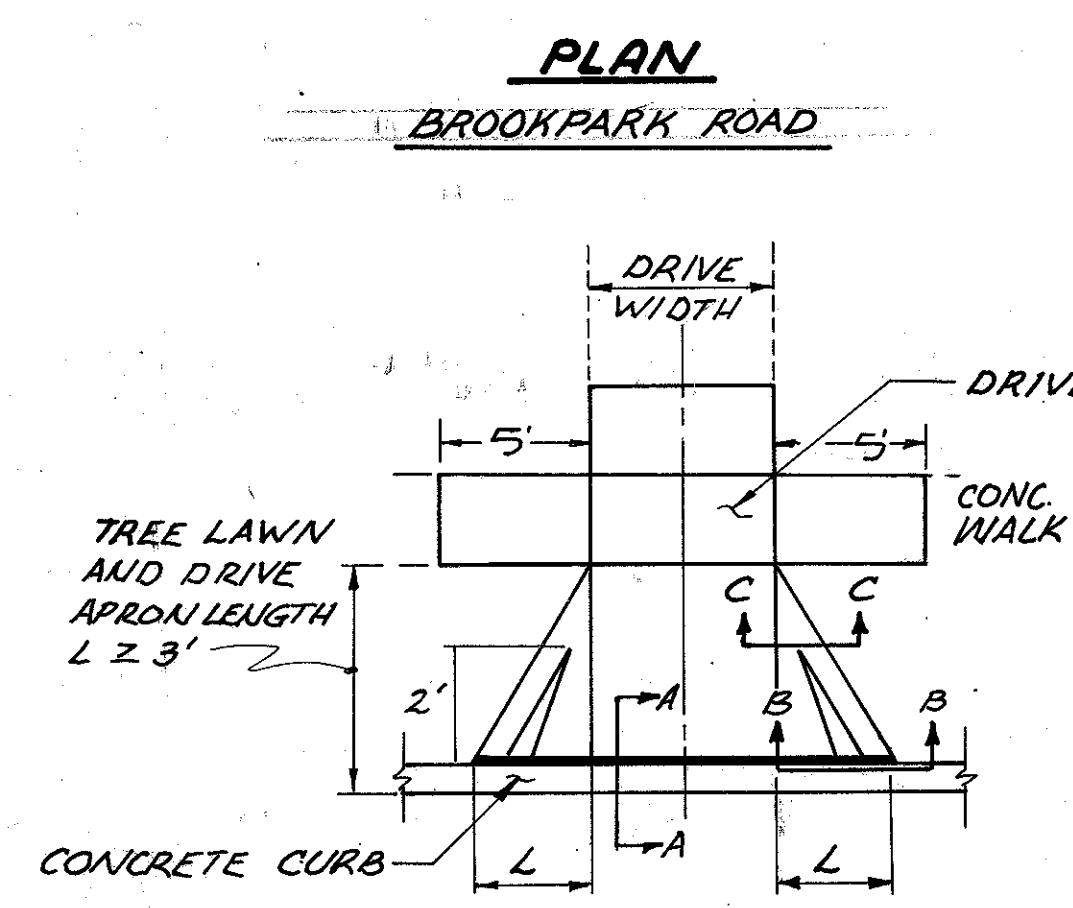
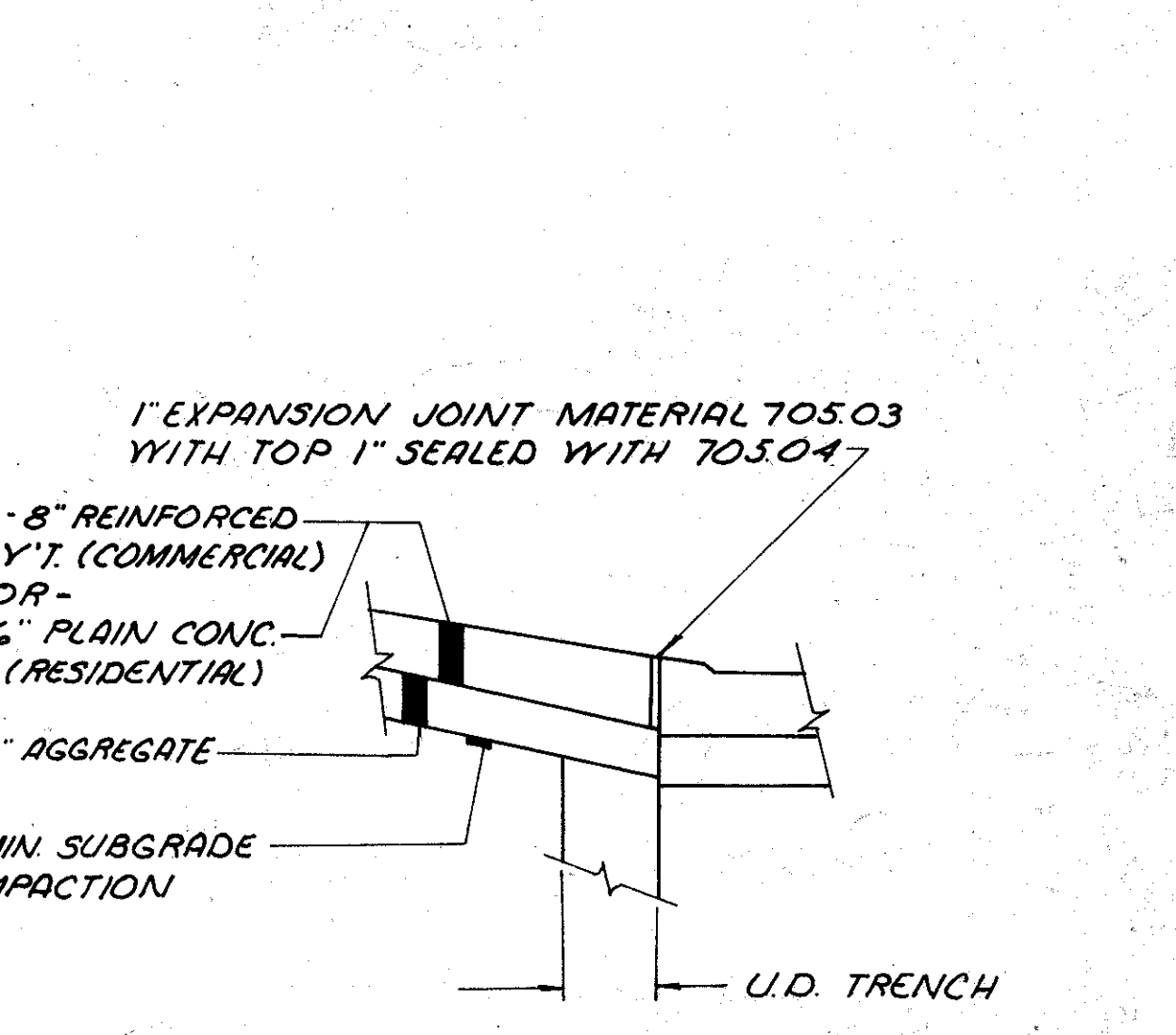
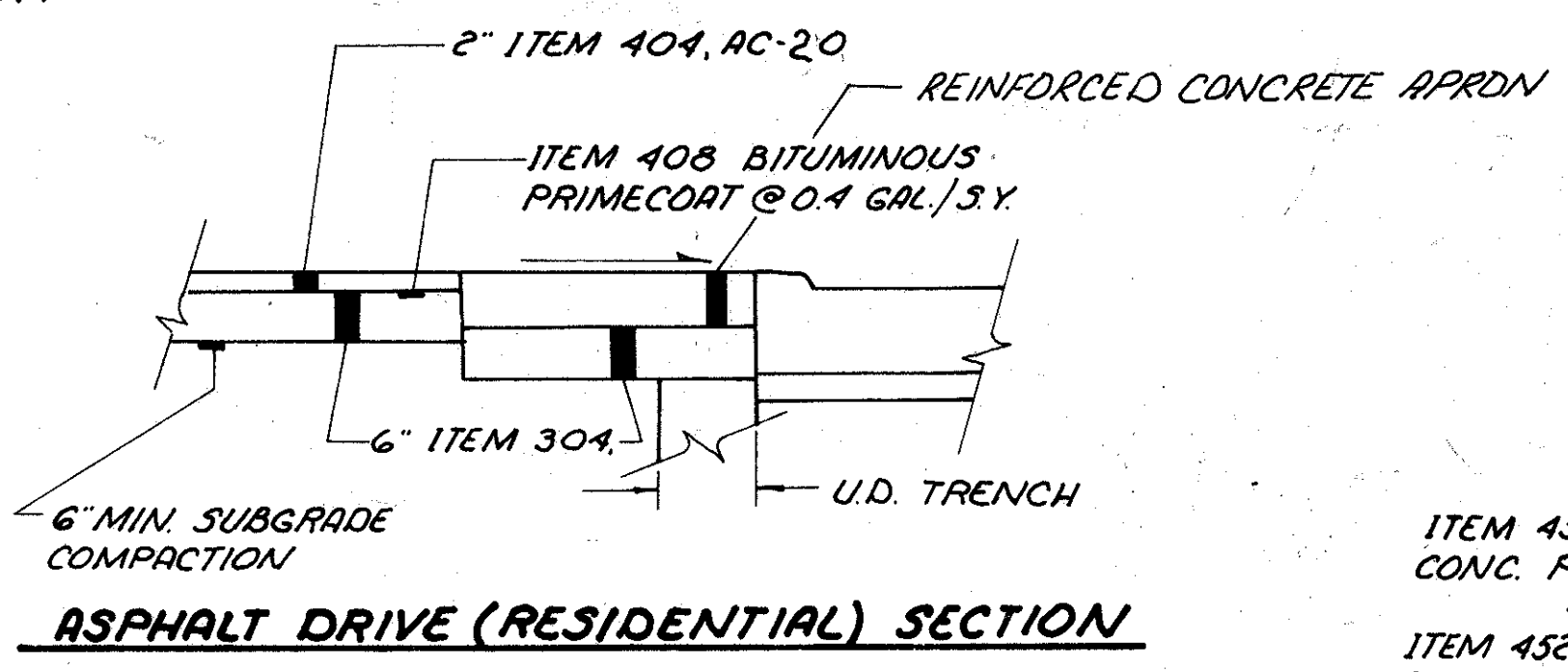
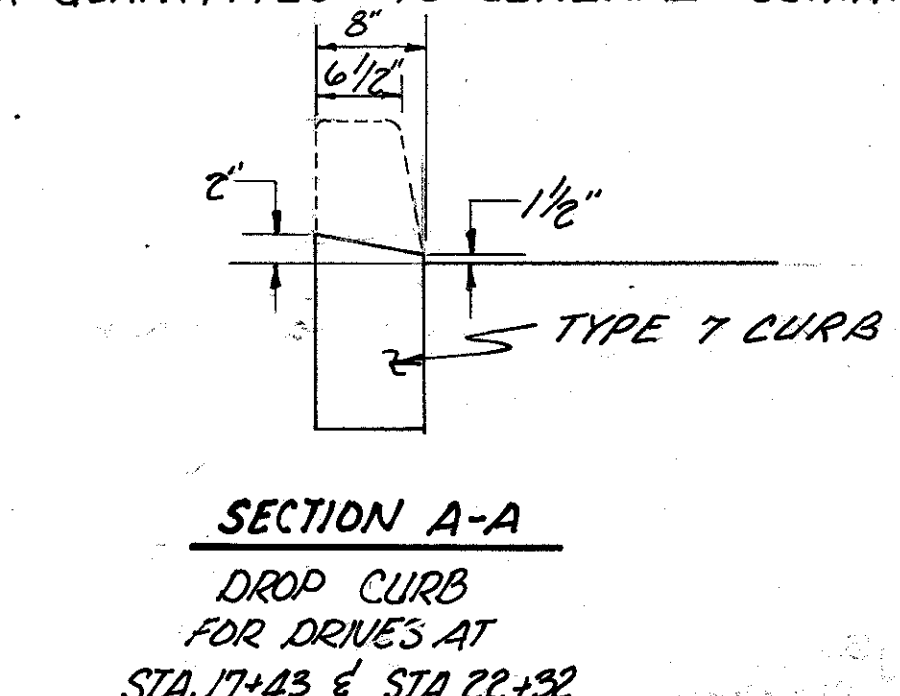
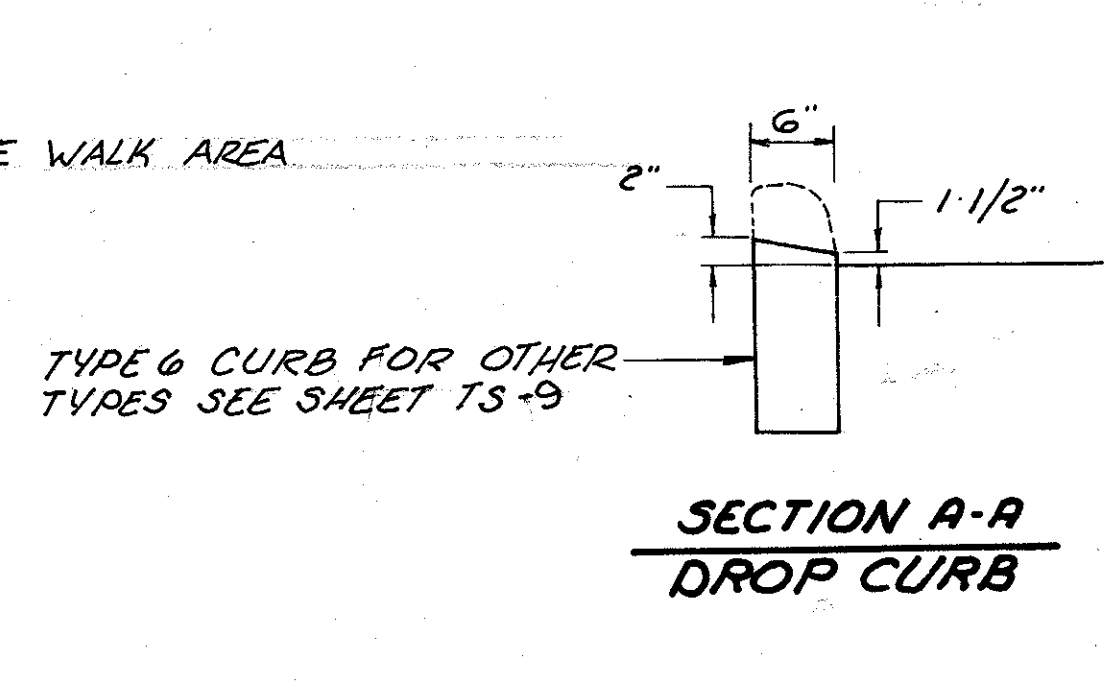
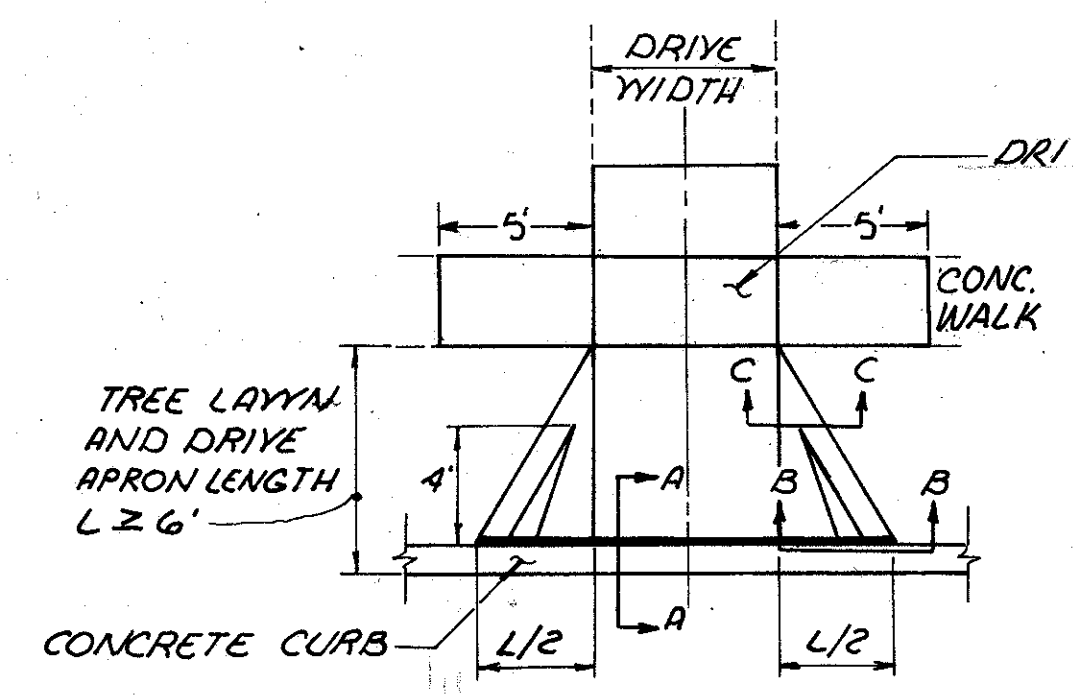
WIRE FABRIC MESH CONFORMING TO 709.10 SHALL BE 6"x6" (W4xW4) INSTALLED PER STANDARD CONSTRUCTION DRAWING BP 1.1 FOR ALL REINFORCED CONCRETE DRIVES.

CONCRETE DRIVES SHALL BE CONSTRUCTED THROUGH NEW OR EXISTING CONCRETE WALKS ONE-HALF (1/2) INCH EXPANSION JOINT MATERIAL 705.03 SHALL BE PROVIDED WHERE DRIVES ABUT CONCRETE DRIVES CROSS THROUGH SIDEWALK, THE DRIVE PROFILES SHALL MATCH THE WALK CROSS SLOPE.

DRIVEWAY DROPS SHALL BE FORMED WHEN CURB IS PLACED OR SHALL BE SAW CUT, STONE GROUND OR DIAMOND GROUND TO FORM A SMOOTH AND EVEN FINISHED SURFACE. CURB DAMAGED DUE TO NEGLIGENCE OF CONTRACTOR DURING INSTALLATION OF DRIVE DROPS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE STATE.

EXCAVATION QUANTITIES FOR DRIVES ARE SHOWN ON THE CROSS SECTION SHEETS AND HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

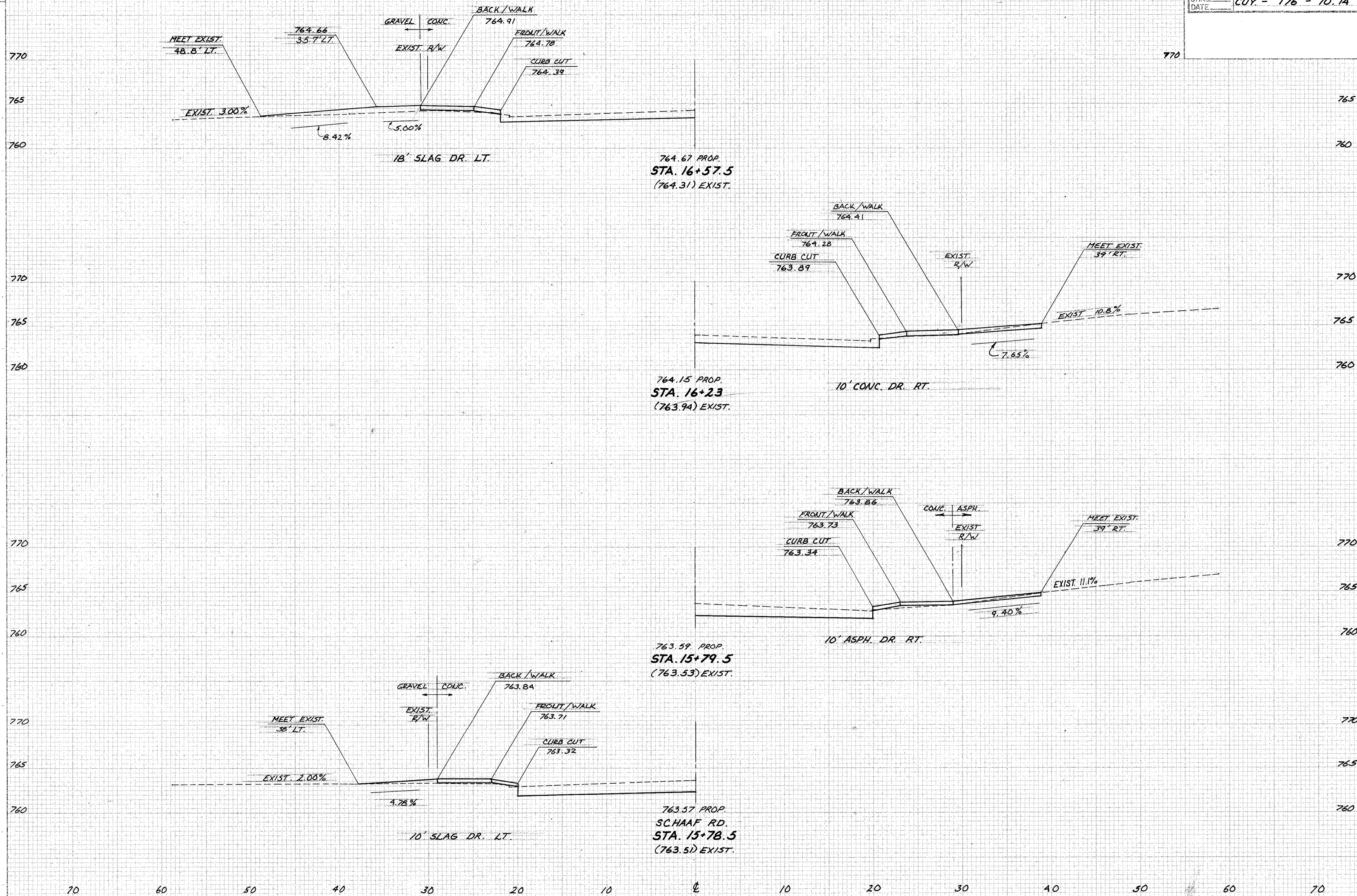
* QUANTITIES TO GENERAL SUMMARY



SEEDING
 EMB WIDTH
 SQ YDS.

CALC. DATE: CUYAHOGA COUNTY OHIO
 CHKD. DATE: CUY - 176 - 10.14 F.H.W.A. REGION
 DATE: 395

161
 395



STATION	EMB AREA		VOLUME	
	CUT	FILL	CUT	FILL
765				
760				
770				
765				
760				
770				
765				
760				
770				
765				
760				
770				
765				
760				

764.67 PROP.
 STA. 16+57.5
 (764.31) EXIST.

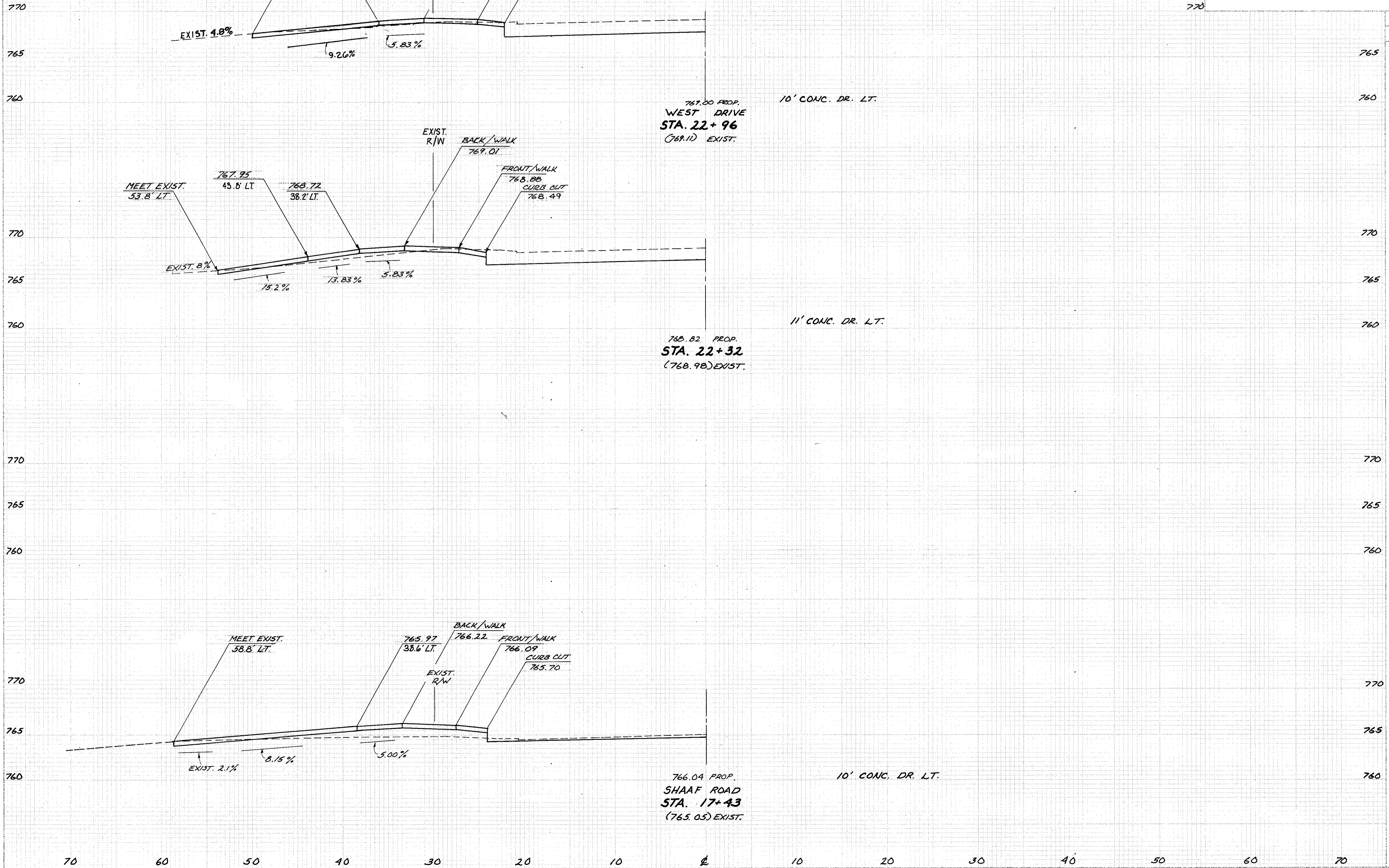
764.15 PROP.
 STA. 16+23
 (763.94) EXIST.

763.59 PROP.
 STA. 15+79.5
 (763.53) EXIST.

763.57 PROP.
 SCHAAF RD.
 STA. 15+78.5
 (763.51) EXIST.

SCHAAF ROAD DRIVE PROFILES CROSS SECTIONS STA. 15+78.5 TO STA. 16+57.5

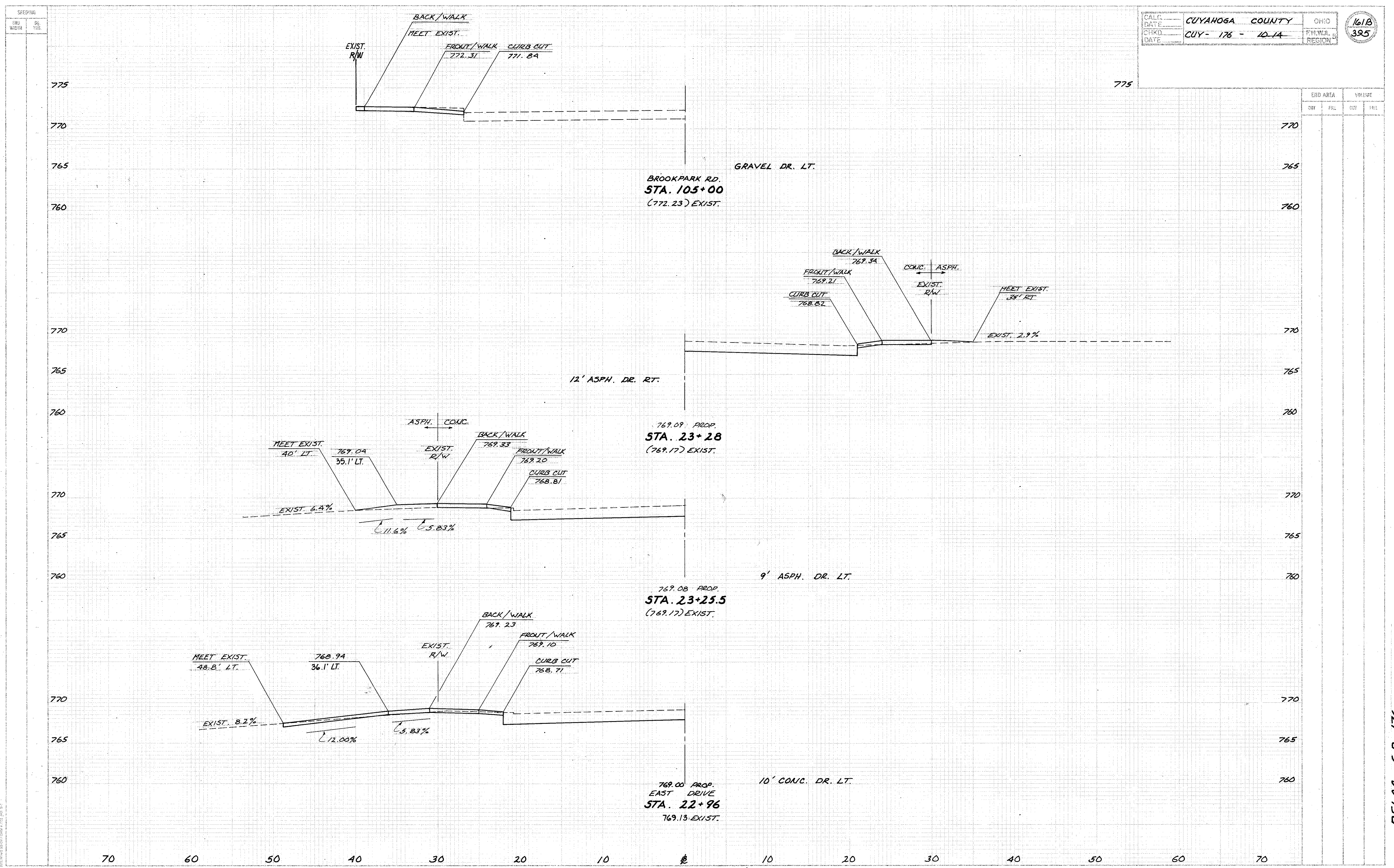
RELOC. S.R. 176



ELEVATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
770				
765				
760				
770				
765				
760				
770				
765				
760				
770				
765				
760				

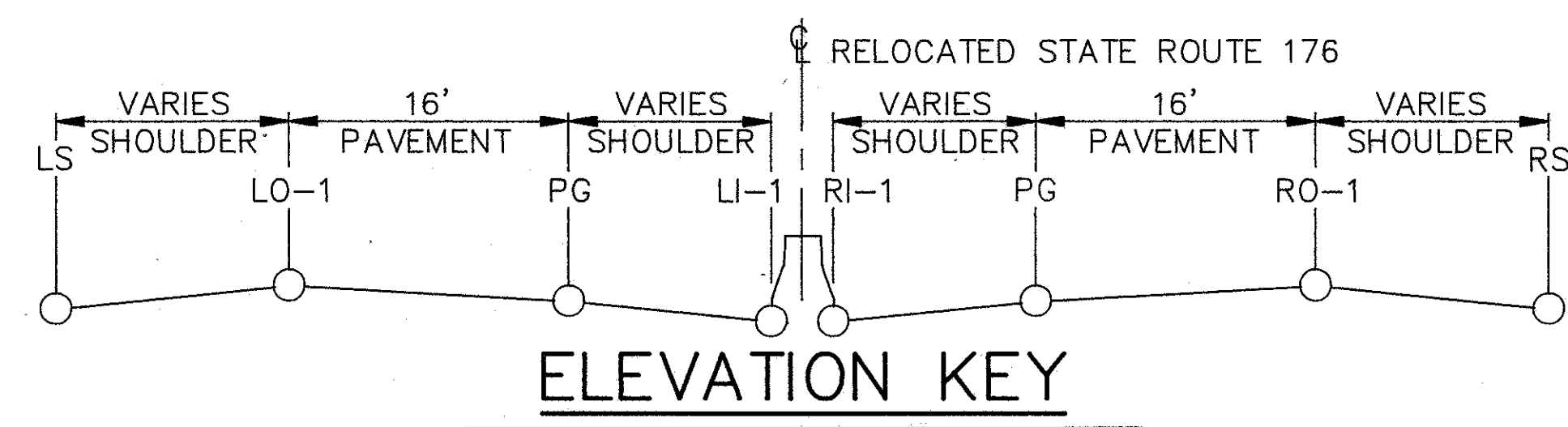
SCHAAF ROAD DRIVE PROFILES CROSS SECTIONS STA. 17+43 TO STA. 22+96

RELOC. S.R. 176



SCHAAF ROAD/BROOKPARK ROAD DRIVE PROFILES CROSS SECTIONS STA. 22+96 TO STA. 105+00

RELOC. S.R. 176



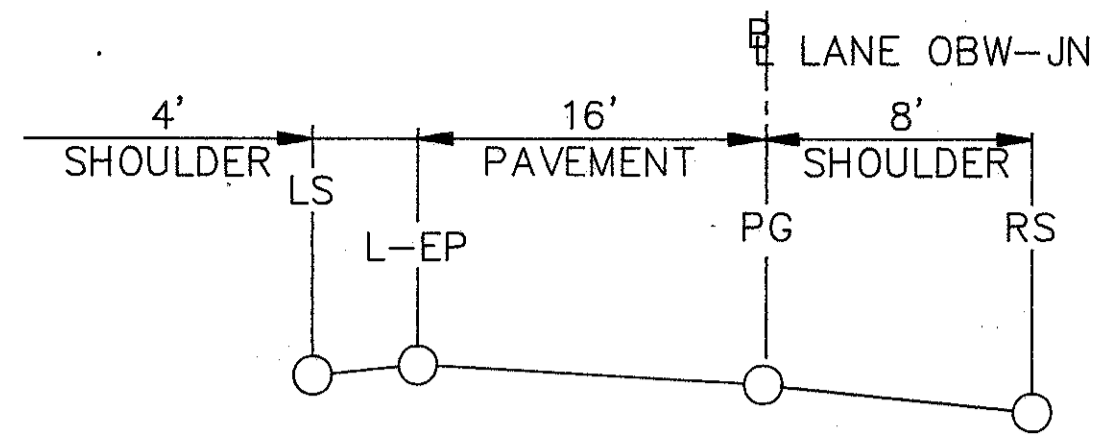
PAVEMENT ELEVATIONS

STATION	LS	OFFSET FROM C/L	TRAN-SITION	LO-1	OFFSET FROM C/L	TRAN-SITION	PG	OFFSET FROM C/L	REF.	LI-1	OFFSET FROM C/L	TRAN-SITION
120 + 00	735.75	37		736.08	29		735.83	13		735.34	1.25	
+ 25	735.36	37		735.69	29		735.44	13		734.95	1.25	
+ 50	734.97	37		735.30	29		735.05	13		734.56	1.25	
+ 75	734.58	37		734.91	29		734.66	13		734.17	1.25	
121 + 00	734.19	37		734.52	29		734.27	13		733.78	1.25	
+ 25	733.80	37		734.13	29		733.88	13		733.39	1.25	
+ 50	733.41	37		733.74	29		733.49	13		733.00	1.25	
+ 75	733.02	37		733.35	29		733.10	13		732.61	1.25	
122 + 00	732.63	37		732.96	29		732.71	13		732.22	1.25	
+ 25				732.51	25		732.32	13		731.83	1.25	
+ 50				732.12	25		731.93	13		731.44	1.25	
+ 75				731.73	25		731.54	13		731.05	1.25	
123 + 00				731.34	25		731.15	13		730.66	1.25	
+ 25				730.95	25		730.76	13		730.27	1.25	
+ 50				730.56	25		730.37	13		729.88	1.25	
+ 75				730.17	25		729.98	13		729.49	1.25	
124 + 00				729.78	25		729.59	13	PVC	729.10	1.25	
+ 25				729.38	25		729.19	13		728.70	1.25	
+ 50				728.95	25		728.77	13		728.28	1.25	
+ 75				728.51	25		728.32	13		727.83	1.25	
125 + 00				728.04	25		727.85	13	PVI	727.36	1.25	
+ 25				727.55	25		727.36	13		726.87	1.25	
+ 50				727.03	25		726.85	13		726.36	1.25	
+ 75				726.50	25		726.31	13		725.82	1.25	
126 + 00				725.94	25		725.75	13	PVT	725.26	1.25	
+ 25				725.37	25		725.18	13		724.69	1.25	
+ 50				724.80	25		724.61	13		724.12	1.25	
+ 75				724.23	25		724.04	13		723.55	1.25	
127 + 00				723.66	25		723.47	13		722.98	1.25	
+ 25				723.09	25		722.90	13		722.41	1.25	
+ 50				722.52	25		722.33	13		721.84	1.25	
+ 75				721.95	25		721.76	13		721.27	1.25	
128 + 00				721.38	25		721.19	13		720.70	1.25	
+ 25				720.81	25		720.62	13		720.13	1.25	
+ 50				720.24	25		720.05	13		719.56	1.25	
+ 75				719.67	25		719.48	13		718.99	1.25	
129 + 00				719.10	25		718.91	13		718.42	1.25	
+ 25				718.53	25		718.34	13		717.85	1.25	
+ 50				717.96	25		717.77	13		717.28	1.25	
+ 75				717.39	25		717.20	13		716.71	1.25	
+ 94.10				716.82	25		716.63	13		716.14	1.25	

PAVEMENT ELEVATIONS

STATION	RI-1	OFFSET FROM C/L	TRAN-SITION	PG	OFFSET FROM C/L	REF.	RO-1	OFFSET FROM C/L	TRAN-SITION	RS	OFFSET FROM C/L	TRAN-SITION
120 + 00	735.34	1.25		735.83	13							
+ 25	734.95	1.25		735.44	13							
+ 50	734.56	1.25		735.05	13							
+ 75	734.17	1.25		734.66	13							
121 + 00	733.78	1.25		734.27	13							
+ 25	733.39	1.25		733.88	13							
+ 50	733.00	1.25		733.49	13							
+ 75	732.61	1.25		733.10	13							
122 + 00	732.22	1.25		732.71	13							
+ 25	731.83	1.25		732.32	13							
+ 50	731.44	1.25		731.93	13							
+ 75	731.05	1.25		731.54	13							
123 + 00	730.66	1.25		731.15	13							
+ 25	730.27	1.25		730.76	13							
+ 50	729.88	1.25		730.37	13							
+ 75	729.49	1.25		729.98	13							
124 + 00	729.10	1.25		729.59	13	PVC						
+ 25	728.70	1.25		729.19	13							
+ 50	728.28	1.25		728.77	13							
+ 75	727.83	1.25		728.32	13							
125 + 00	727.36	1.25		727.85	13	PVI						
+ 25	726.87	1.25		727.36	13							
+ 50	726.36	1.25		726.85	13							
+ 75	725.82	1.25		726.31	13							
126 + 00	725.26	1.25		725.75	13	PVT						
+ 25	724.69	1.25		725.18	13							
+ 50	724.12	1.25		724.61	13							
+ 75	723.55	1.25		724.04	13							
127 + 00	722.98	1.25		723.47	13							
+ 25	722.41	1.25		722.90	13							
+ 50	721.84	1.25		722.33	13							
+ 75	721.27	1.25		721.76	13							
128 + 00	720.70	1.25		721.19	13							
+ 25	720.13	1.25		720.62	13							
+ 50	719.56	1.25		720.05	13							
+ 75	718.99	1.25		719.48	13							
129 + 00	718.42	1.25		718.91	13							
+ 25	717.85	1.25		718.34	13							
+ 50	717.28	1.25		717.77	13							
+ 75	716.71	1.25		717.20	13							
+ 94.10	716.14	1.25		716.63	13							

RELOCATED STATE ROUTE 176



ELEVATION KEY

PAVEMENT ELEVATIONS

STATION	LS	OFFSET FROM B/L	TRAN-SITION	L-EP	OFFSET FROM B/L	TRAN-SITION	PG	OFFSET FROM B/L	REF.	RS	OFFSET FROM B/L	TRAN-SITION
35 + 25	758.68	20		758.85	16		758.60	0		758.26	8	
+ 50	758.49	20		758.66	16		758.41	0		758.08	8	
+ 75	758.31	20		758.48	16		758.23	0		757.89	8	
36 + 00	758.12	20		758.29	16		758.04	0		757.71	8	
+ 25	757.94	20		758.11	16		757.86	0		757.52	8	
+ 50	757.75	20		757.92	16		757.67	0		757.34	8	
+ 75	757.57	20		757.74	16		757.49	0		757.15	8	
37 + 00	757.38	20		757.55	16		757.30	0		756.97	8	
+ 25	757.20	20		757.37	16		757.12	0		756.78	8	
+ 50	757.01	20		757.18	16		756.93	0		756.60	8	
+ 75	756.83	20		757.00	16		756.75	0		756.41	8	
38 + 00	756.64	20		756.81	16		756.56	0		756.23	8	
+ 25	756.46	20		756.63	16		756.38	0		756.04	8	
+ 50	756.27	20		756.44	16		756.19	0		755.86	8	
+ 75	756.09	20		756.26	16		756.01	0		755.67	8	
39 + 00	755.90	20		756.07	16		755.82	0	PVC	755.49	8	
+ 25	755.74	20		755.91	16		755.66	0		755.32	8	
+ 50	755.62	20		755.79	16		755.54	0		755.20	8	
+ 75	755.55	20		755.71	16		755.46	0		755.13	8	
40 + 00	755.51	20		755.68	16		755.43	0		755.10	8	
+ 25	755.52	20		755.68	16	BEGIN	755.46	0		755.13	8	
+ 50	755.48	20		755.65	16		755.51	0	PVI	755.17	8	
+ 75	755.48	20		755.65	16		755.60	0		755.26	8	
41 + 00	755.53	20		755.70	16		755.74	0		755.41	8	
+ 25	755.63	20		755.79	16		755.93	0		755.59	8	
+ 50	755.76	20		755.93	16		756.16	0		755.82	8	
+ 75	755.94	20		756.11	16		756.43	0		756.10	8	
42 + 00	756.17	20		756.33	16		756.75	0	PVT	756.42	8	
+ 25	756.41	20		756.58	16		757.09	0		756.79	8	BEGIN
+ 50	756.66	20		756.82	16		757.43	0		757.18	8	
+ 75	756.89	20	BEGIN	757.07	16		757.77	0		757.56	8	
43 + 00	757.12	20		757.31	16		758.11	0		757.95	8	
+ 25	757.34	20	END	757.56	16	END	758.45	0		758.34	8	END
+ 50	757.61	20		757.85	16		758.79	0		758.71	8	
+ 75	757.95	20		758.19	16		759.13	0		759.05	8	
44 + 00	758.29	20		758.53	16		759.47	0		759.39	8	
+ 25	758.63	20		758.87	16		759.81	0		759.73	8	
+ 50	758.97	20		759.21	16		760.15	0		760.07	8	
+ 75	759.31	20		759.55	16		760.49	0		760.41	8	
45 + 00	759.65	20		759.89	16		760.83	0	PVC	760.75	8	
+ 25	759.97	20		760.20	16		761.15	0		761.06	8	
+ 50	760.24	20		760.47	16		761.42	0		761.33	8	
+ 75	760.46	20		760.70	16		761.64	0		761.56	8	
46 + 00	760.64	20		760.87	16		761.82	0		761.73	8	
+ 25	760.77	20		761.00	16		761.95	0		761.86	8	
+ 50	760.85	20		761.09	16		762.03	0		761.95	8	
+ 75	760.89	20		761.12	16		762.07	0		761.98	8	

PAVEMENT ELEVATIONS

STATION	LS	OFFSET FROM B/L	TRAN-SITION	L-EP	OFFSET FROM B/L	TRAN-SITION	PG	OFFSET FROM B/L	REF.	RS	OFFSET FROM B/L	TRAN-SITION
47 + 00	760.88	20		761.11	16		762.06	0		761.97	8	
+ 25	760.82	20		761.06	16		762.00	0		761.92	8	
+ 50	760.72	20		760.95	16		761.90	0		761.81	8	
+ 75	760.57	20		760.80	16		761.75	0		761.66	8	
48 + 00	760.37	20		760.61	16		761.55	0	PVI	761.47	8	
+ 25	760.13	20		760.36	16		761.31	0		761.22	8	
+ 50	759.84	20		760.07	16		761.02	0		760.93	8	
+ 75	759.50	20		759.74	16		760.68	0		760.60	8	
49 + 00	759.12	20		759.35	16		760.30	0		760.21	8	
+ 25	758.69	20		758.92	16		759.87	0		759.78	8	
+ 50	758.21	20		758.45	16		759.39	0		759.31	8	
+ 75	757.69	20		757.92	16		758.87	0		758.78	8	
50 + 00	757.12	20		757.35	16		758.30	0		758.21	8	
+ 25	756.52	20	BEGIN	756.75	16	BEGIN	757.67	0		757.58	8	BEGIN
+ 50	755.95	20		756.15	16		757.02	0		756.88	8	
+ 75	755.33	20	END	755.50	16		756.29	0		756.10	8	
51 + 00	754.66	20		754.83	16		755.55	0	PVT	755.32	8	
+ 25	753.95	20		754.12	16		754.77	0		754.49	8	
+ 50	753.24	20		753.40	16		753.99	0		753.66	8	END
+ 75	752.53	20		752.69	16		753.21	0		752.88	8	
52 + 00	751.82	20		751.98	16		752.43	0		752.10	8	
+ 25	751.11	20		751.27	16		751.65	0		751.32	8	
+ 50	750.40	20		750.56	16	END	750.87	0		750.54	8	
+ 75	749.67	20		749.84	16		750.09	0		749.76	8	
53 + 00	748.89	20		749.06	16		749.31	0		748.98	8	
+ 25	748.11	20		748.28	16		748.53	0		748.20	8	
+ 50	747.33	20		747.50	16		747.75	0		747.42	8	

RELOCATED STATE ROUTE 176

JOINT LEGEND

- (E) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (L) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (P) PRESSURE RELIEF JOINT TYPE A

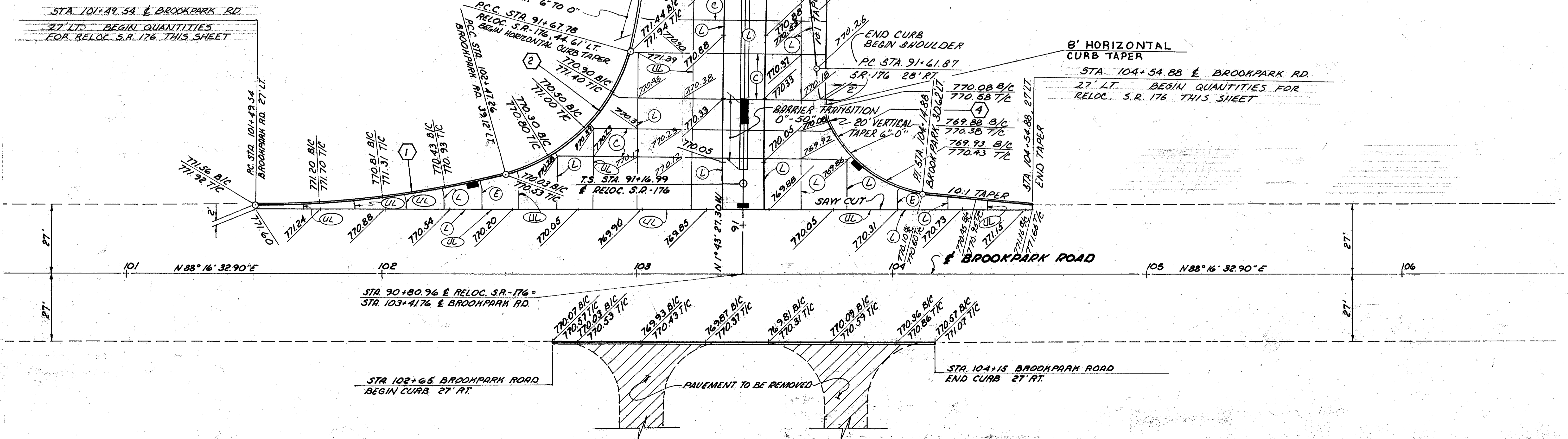
CURVE DATA

THETA-S: 7° 57' 57.00" RT.
 LS = 200'
 XC = 199.61'
 YC = 9.25'
 LT = 133.46'
 ST = 66.78'
 LC = 199.82'
 P = 2.31'
 K = 99.93'

PI = STA. 98+22.05
 Δ = 70° 9' 11.90" RT.
 DC = 7° 57' 58"
 R = 719.25'
 T = 505.06'
 L = 880.65'
 CH = 826.66'
 E = 159.61'
 M = 130.62'

ITEM	203	310	451	452	609	622
EXT.	50000	20000	16000	15000	14000	23505
DESC.	SUBGRADE COMPACTION	SUBBASE TYPE II (SEE PROGRAM NOTE)	12" REINFORCED CONCRETE PAVEMENT	12" PLAIN CONCRETE PAVEMENT	CURB TYPE 2-A	50" CONC. BARRIER TYPE C AS PER PLAN
LOCATION						
S.R. 176/ BROOKPARK	1533	244	1208	256	302	178

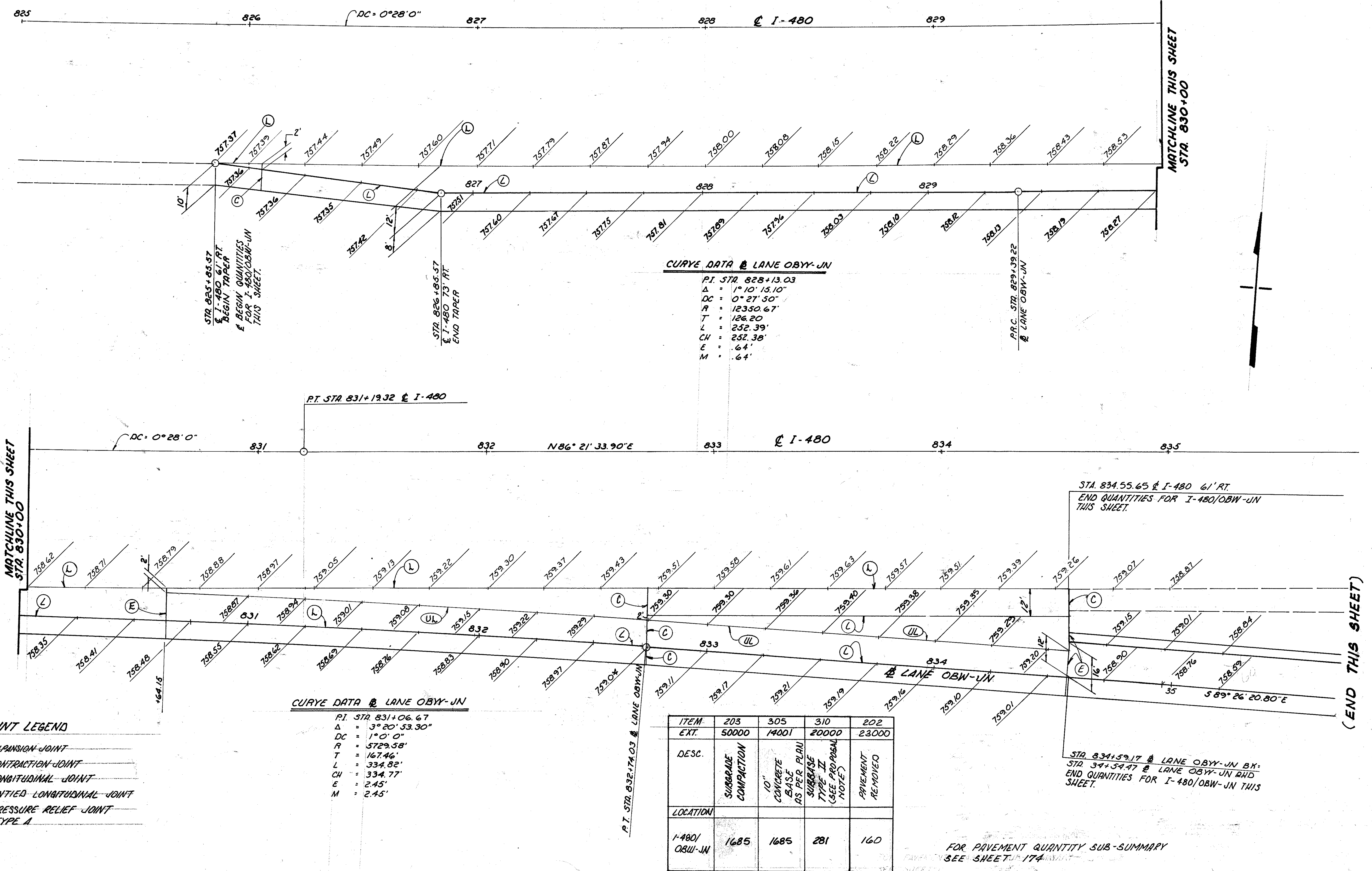
FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET NO 17A



1	2	3	4
Δ = 14° 08' 28.00"	Δ = 59° 27' 02.70"	Δ = 12° 42' 21.10"	Δ = 84° 41' 00.30"
R = 400.00'	R = 70.00'	R = 400.00'	R = 50.00'
T = 49.61'	T = 39.97'	T = 44.53'	T = 45.56'
L = 98.72'	L = 72.63'	L = 88.70'	L = 73.90'
C = 98.47'	C = 69.42'	C = 88.52'	C = 67.36'

6/10
 173.61
 103.91

RELOC. S.R.-176



CURVE DATA @ LANE OBYJ-JN

P.I. STA. 828+13.03
 $\Delta = 1^\circ 10' 15.10''$
 $DC = 0^\circ 27' 50''$
 $R = 12330.67'$
 $T = 126.20'$
 $L = 252.39'$
 $CH = 252.39'$
 $E = .64'$
 $M = .64'$

CURVE DATA @ LANE OBYJ-JN

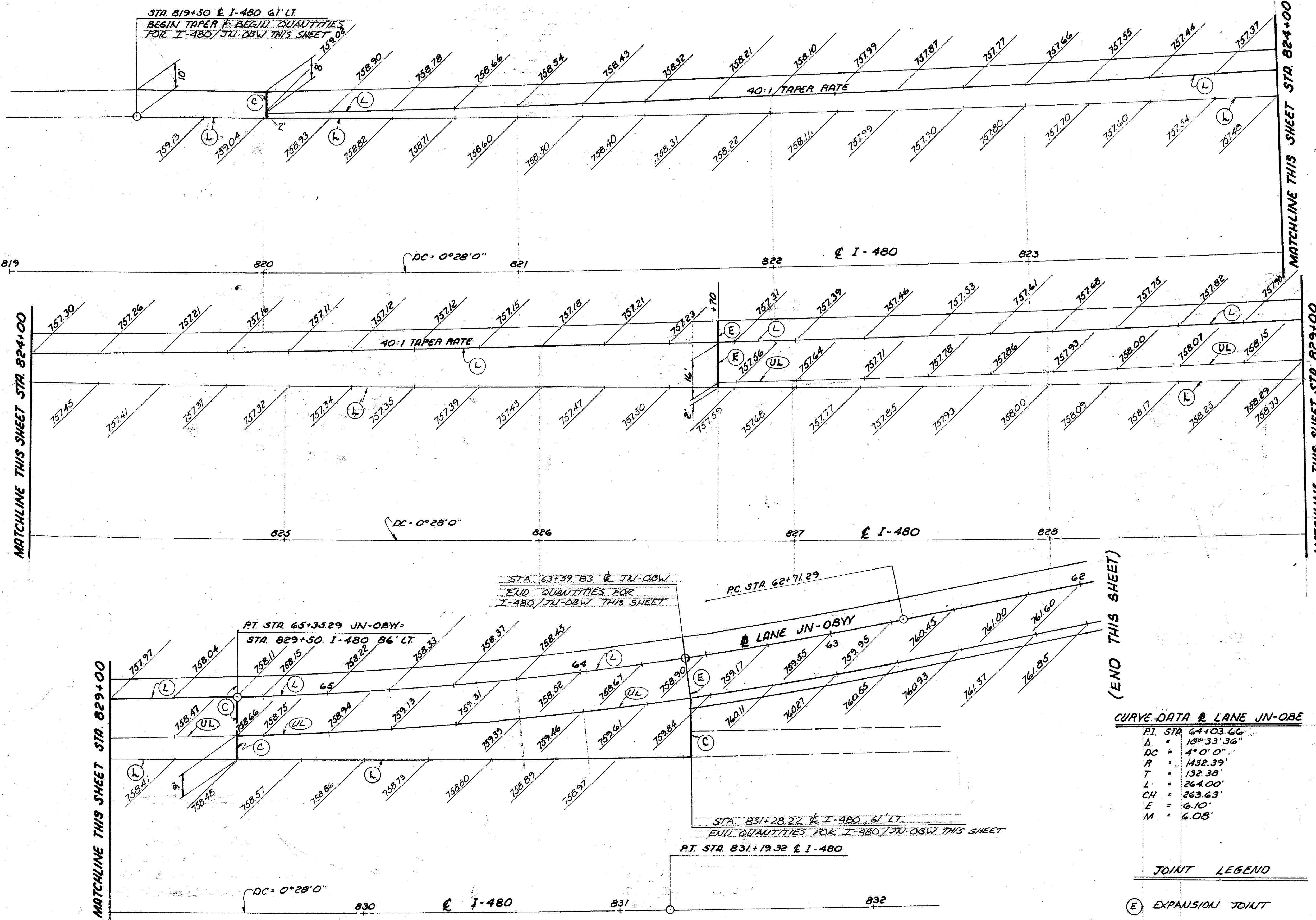
P.I. STA. 831+06.67
 $\Delta = 3^\circ 20' 53.30''$
 $DC = 1^\circ 0' 0''$
 $R = 5729.58'$
 $T = 167.46'$
 $L = 334.82'$
 $CH = 334.77'$
 $E = 2.45'$
 $M = 2.45'$

JOINT LEGEND

- (E) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (L) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (PR) PRESSURE RELIEF JOINT TYPE A

ITEM	203	305	310	202
EXT.	50000	14001	20000	23000
DESC.	SUBGRADE COMPACTION	CONCRETE BASE AS PER PLAN	SUBGRADE TYPE II (SEE PROPOSAL NOTE)	PAVEMENT REMOVED
LOCATION				
I-480/ OBYJ-JN	1685	1685	281	160

FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET 174



(END THIS SHEET)

CURVE DATA & LANE JN-OBW

PI. STA 64+03.66
 $\Delta = 10^{\circ}33'36''$
 $DC = 4^{\circ}0'0''$
 $R = 1432.39'$
 $T = 132.38'$
 $L = 264.00'$
 $CH = 263.63'$
 $E = 6.10'$
 $M = 6.08'$

JOINT LEGEND

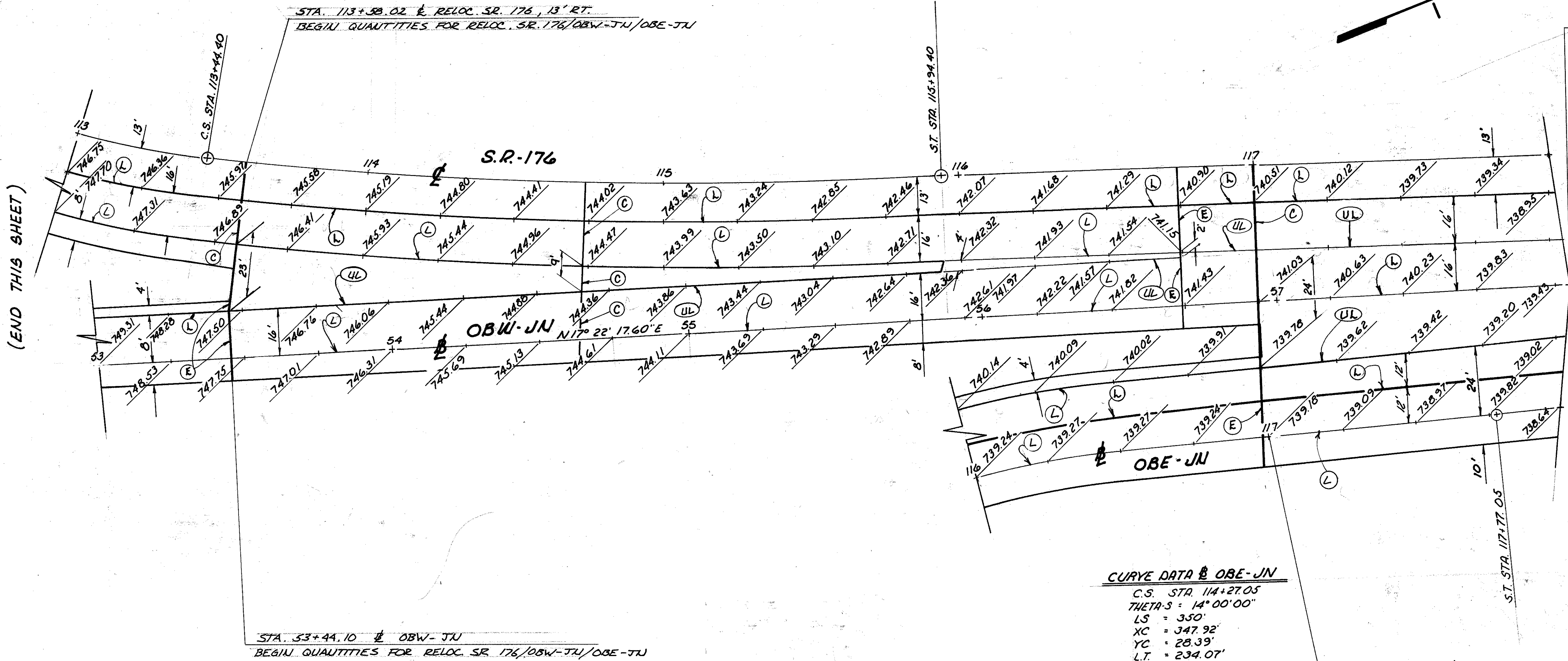
- (E) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (L) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (P) PRESSURE RELIEF JOINT TYPE A.

ITEM	202	203	305	310	451
EXT.	23000	50000	14001	20000	16000
DESC.	PAVEMENT REMOVED	SUBGRADE COMPACTION	10" CONCRETE BASE	SUBGRADE TYPE II (SEE PROPOSAL NOTE)	12" REINFORCED CONCRETE PAVEMENT
LOCATION	I-480/JN-OBW				
	867	1986	1389	331	597

FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET 174.

CURVE DATA @ S.R-176

THETA-S = 10° 00' 00"
 LS = 250'
 XC = 249.24'
 YC = 14.57'
 LT = 166.93'
 ST = 83.58'
 LC = 249.66'
 P = 3.63'
 K = 124.87'



QUANTITIES CONTINUED ON SHEET 172

MATCH LINE STA. 118+00 S.R-176
 MATCH LINE STA. 58+00 OBW-JN
 MATCH LINE STA. 118+00 OBE-JN
 FOR CONTINUATION SEE SHEET NO. 172

(END THIS SHEET)

CURVE DATA @ OBE-JN

C.S. STA. 114+27.05
 THETA-S = 14° 00' 00"
 LS = 350'
 XC = 347.92'
 YC = 28.39'
 LT = 234.07'
 ST = 117.33'
 LC = 349.07'
 P = 7.11'
 K = 174.65'

STA. 117+00.83 @ OBE-JN
 BEGIN QUANTITIES FOR RELOC.
 S.R. 176 / OBE-JN / OBW-JN

JOINT LEGEND

- (L) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (E) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (P) PRESSURE RELIEF JOINT TYPE A

ITEM	203	310	451
EXT.	50000	20000	16000
DESC.	SUBGRADE	CONTRACTION	SUBBASE TYPE II
			12" REINFORCED CONC. PAVEMENT
S.R.176/ OBW-JN/ OBE-JN	9039	1506	9039

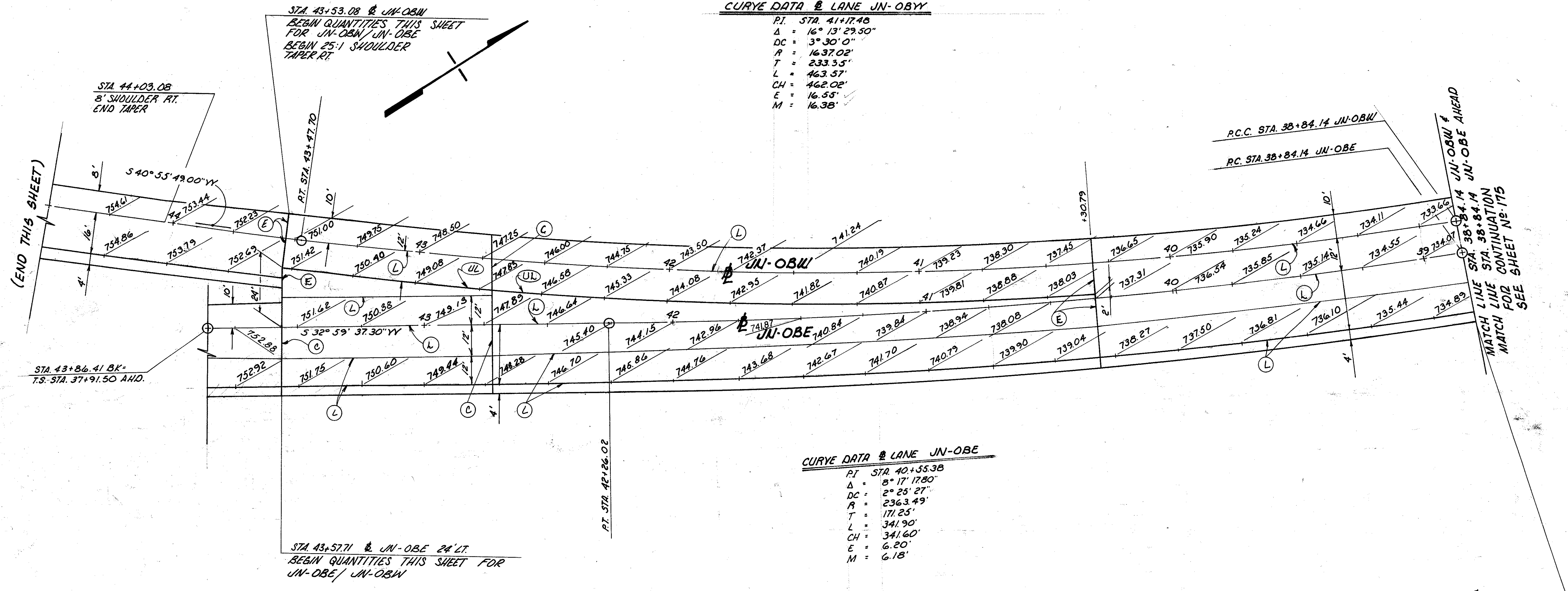
FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET 174.

CURVE DATA @ LANE JN-OBW

PI STA 41+17.48
 Δ = 16° 13' 29.50"
 DC = 3° 30' 0"
 R = 1637.02'
 T = 233.55'
 L = 463.57'
 CH = 462.02'
 E = 16.55'
 M = 16.38'

CURVE DATA @ LANE JN-OBE

PI STA 40+35.38
 Δ = 8° 17' 17.80"
 DC = 2° 25' 27"
 R = 2363.49'
 T = 171.25'
 L = 341.90'
 CH = 341.60'
 E = 6.20'
 M = 6.18'



(END THIS SHEET)

MATCH LINE CONTINUATION
 MATCH LINE FOR SHEET NO. 175
 SEE

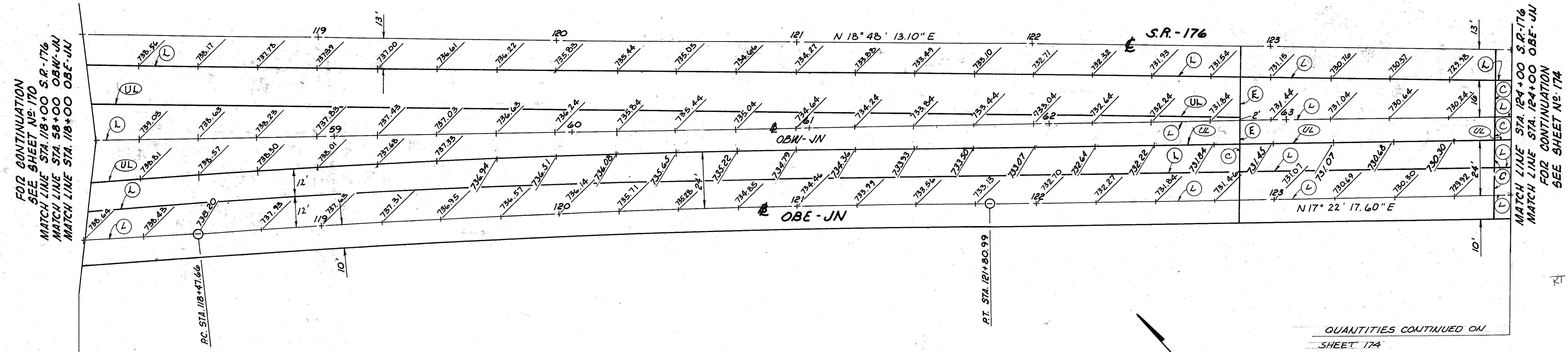
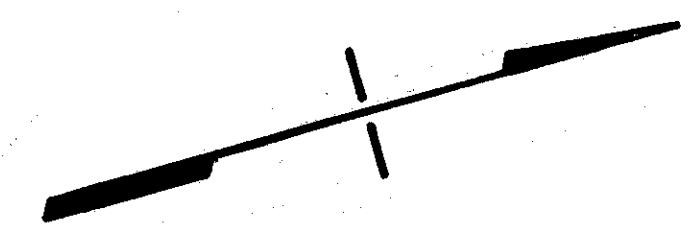
JOINT LEGEND

- ⊕ EXPANSION JOINT
- ⊖ CONTRACTION JOINT
- ⊙ LONGITUDINAL JOINT
- ⊙ UNTIED LONGITUDINAL JOINT
- ⊙ PRESSURE RELIEF JOINT TYPE A

ITEM	203	310	451
EXT	50000	20000	16000
DESC.	SUBGRADE COMPACTION	SUBBASE TYPE II	12" REINFORCED CONC. PAVT.
LOCATION			
LANES			
JN-OBW	2271	378	2271
JN-OBE			

FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET 174.

STA 38+84.14 @ JN-OBE 24' LT.
 STA 38+84.14 @ JN-OBW
 END QUANTITIES THIS SHEET FOR JN-OBW/JN-OBE



FOR CONTINUATION
SEE SHEET No. 170
MATCH LINE STA. 118+00 S.R.-176
MATCH LINE STA. 58+00 OBN-JN
MATCH LINE STA. 118+00 OBE-JN

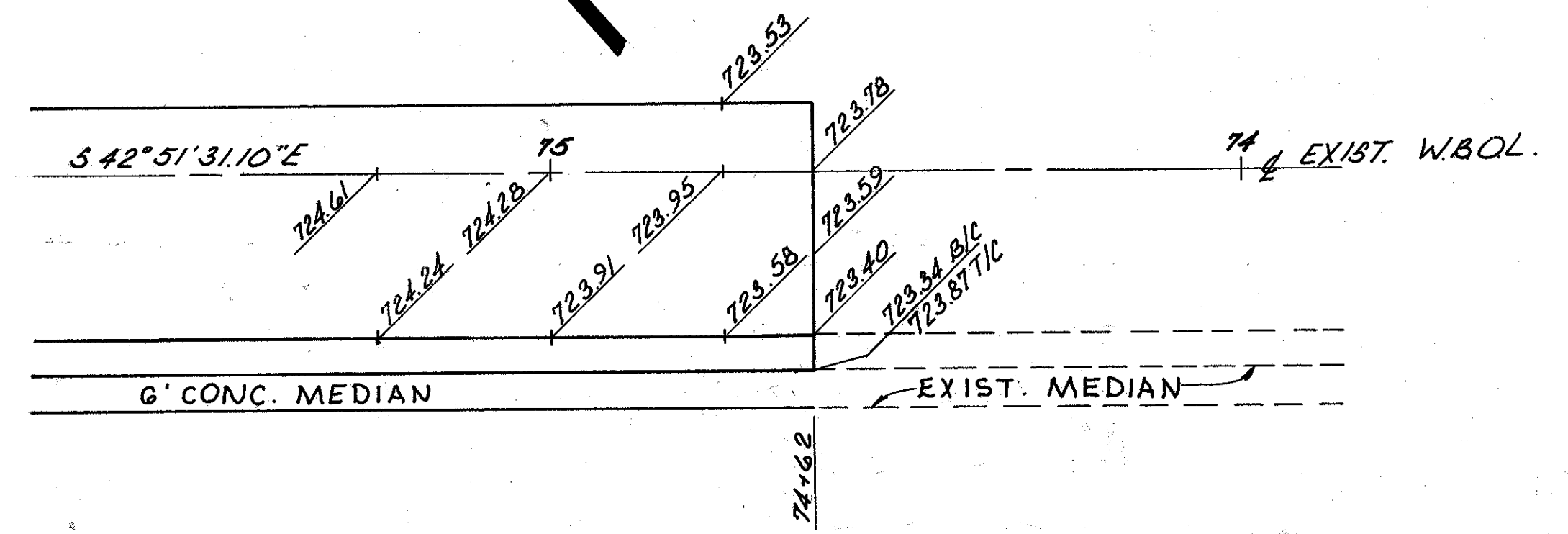
MATCH LINE STA. 124+00 S.R.-176
MATCH LINE STA. 124+00 OBE-JN
FOR CONTINUATION
SEE SHEET No. 174

QUANTITIES CONTINUED FROM
SHEET 170

QUANTITIES CONTINUED ON
SHEET 174

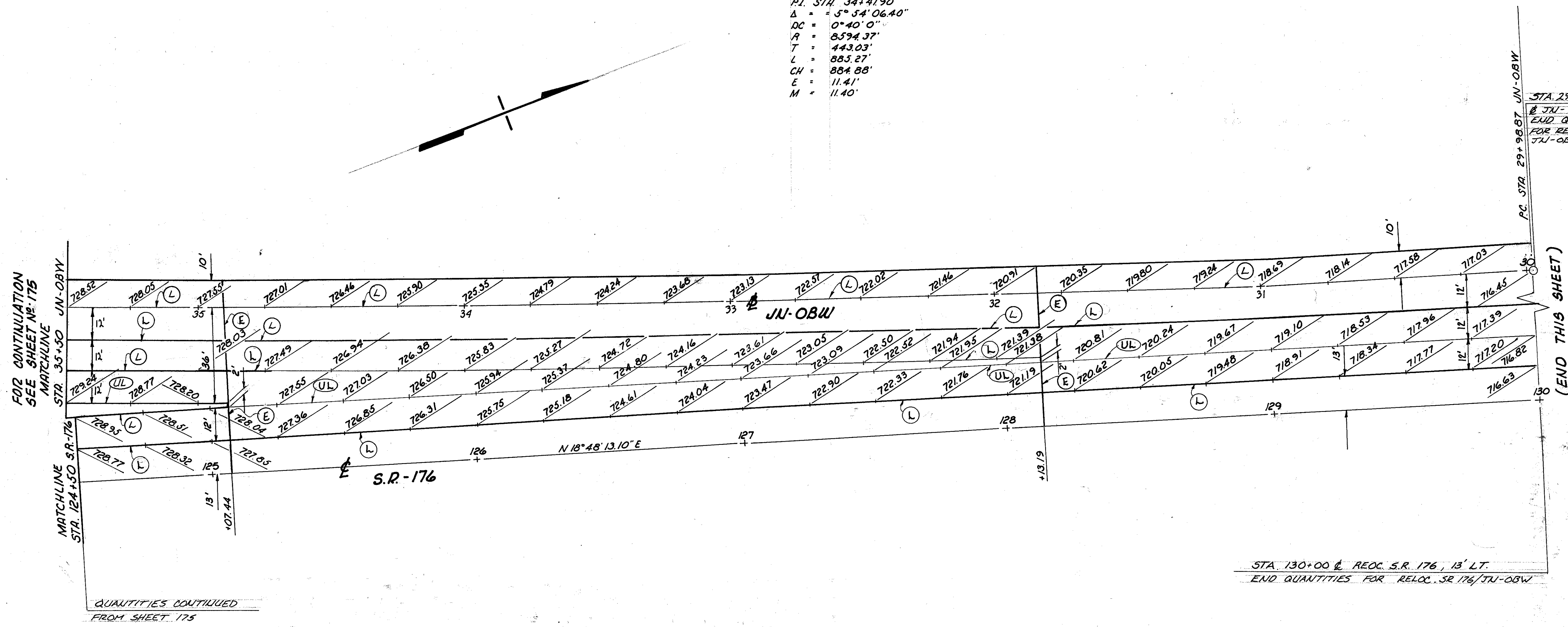
CURVE DATA @ OBE-JN
 P.I. STA. 120+14.35
 $\Delta = 2^\circ 30' 00''$
 $DC = 0^\circ 45' 00''$
 $R = 7639.44'$
 $T = 166.69'$
 $L = 333.34'$
 $CH = 333.31'$
 $E = 1.82'$
 $M = 1.82'$

- JOINT LEGEND**
- (E) EXPANSION JOINT
 - (C) CONTRACTION JOINT
 - (L) LONGITUDINAL JOINT
 - (UL) UNIFIED LONGITUDINAL JOINT
 - (P) PRESSURE RELIEF JOINT TYPE A



CURVE DATA @ LANE JN-OBW

P.I. STA. 34+41.90
 $\Delta = 5^{\circ} 54' 06.40''$
 $OC = 0^{\circ} 40' 0''$
 $R = 8594.37'$
 $T = 443.03'$
 $L = 885.27'$
 $CH = 884.88'$
 $E = 11.41'$
 $M = 11.40'$



FOR CONTINUATION
SEE SHEET NO. 175

MATCHLINE
STA. 35+50 JN-OBW

MATCHLINE
STA. 124+50 S.R.-176

STA. 29+97.74
JN-OBW
END QUANTITIES
FOR RELOC. SR. 176
JN-OBW

P.C. STA. 29+98.87 JN-OBW

(END THIS SHEET)

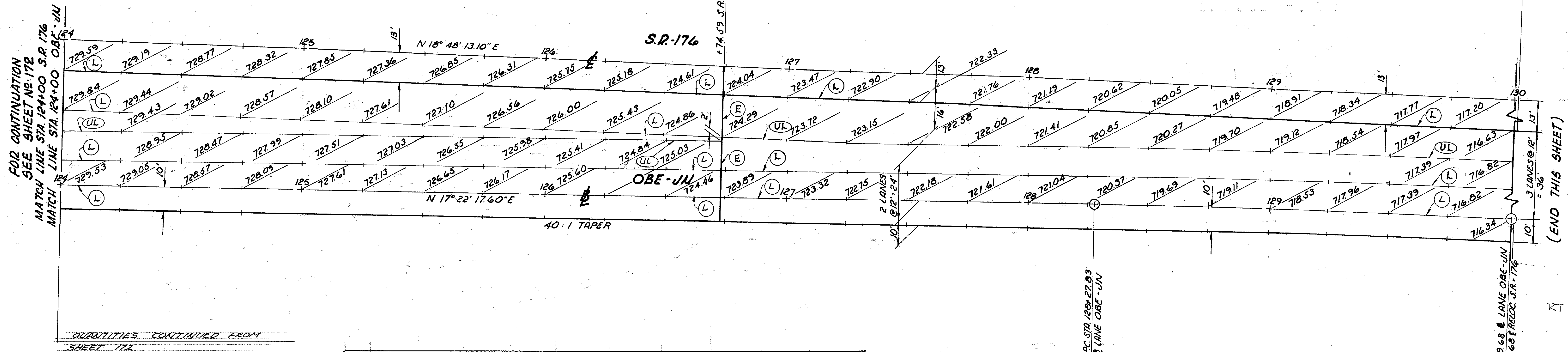
QUANTITIES CONTINUED
FROM SHEET 175

STA. 130+00 @ RELOC. S.R. 176, 13' LT.
END QUANTITIES FOR RELOC. SR. 176/JN-OBW

JOINT LEGEND

- (E) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (L) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (P) PRESSURE RELIEF JOINT
TYPE A

RELOC. S.R. -176



FOR CONTINUATION
SEE SHEET NO. 172
MATCH LINE STA 124+00 S.R. 176
MATCH LINE STA 124+00 OBE-JN

(END THIS SHEET)

QUANTITIES CONTINUED FROM
SHEET 172

SHEET NO.	PAVEMENT QUANTITY SUB-SUMMARY								
	ITEM	203	305	310	451	452	809	622	202
	E.X.T.	50000	14001	20000	16000	15000	14000	23505	23000
	DESC.								
	LOCATION								
167	S.R. 176/BROOK PARK	1533		244	1208	256	302	178	
168	E-480/OBW-JN	1685	1685	281					160
169	E-480/JN-OBW	1986	1389	331	597				867
170, 171, 174	S.R. 176/OBW-JN	9039		1506	9039				
171	JN-OBW/JN-OBW	2271		378	2271				
173, 175	S.R. 176/JN-OBW	4201		700	4201				
	TOTALS *	20715	3074	3440	17316	256	302	178	1027

* QUANTITIES TO GENERAL SUMMARY

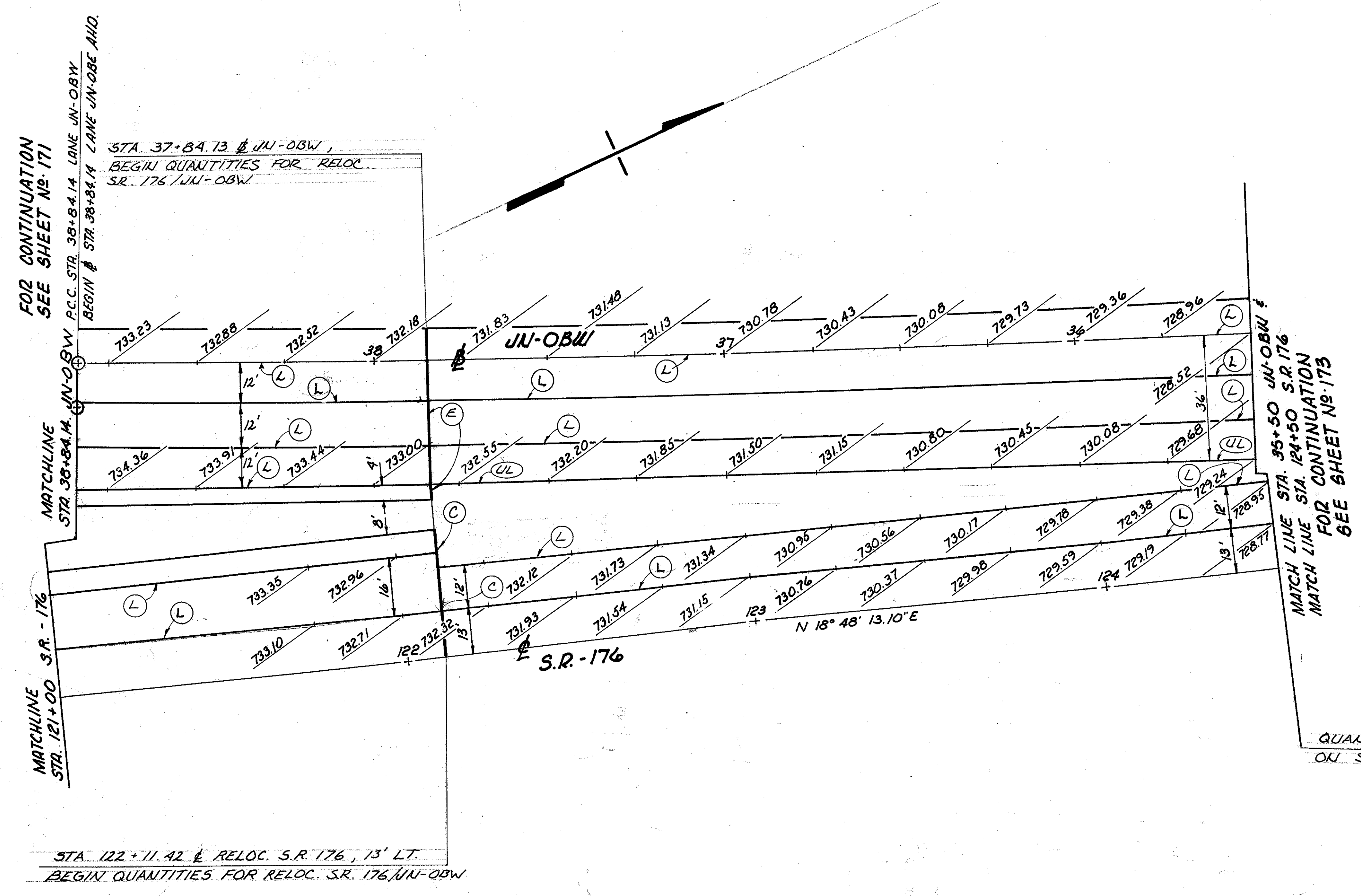
CURVE DATA @ OBE-JN

P.I. STA. 129+13.76
 $\Delta = 1^\circ 25' 55.60''$
 DC = $0^\circ 50' 00''$
 R = 6875.49
 T = 85.93'
 L = 171.85'
 CH = 171.85'
 E = .54'
 M = .54'

JOINT LEGEND

- (E) EXPANSION JOINT
- (C) CONTRACTION JOINT
- (L) LONGITUDINAL JOINT
- (UL) UNTIED LONGITUDINAL JOINT
- (P) PRESSURE RELIEF JOINT TYPE A

STA. 130+00 @ OBE-JN
 END QUANTITIES FOR
 RELOC. SR. 176/OBW-JN/OBE-JN



CURVE DATA @ LANE JN-OBW

PI.	STA. 34+41.90
Δ	5° 34' 06.40"
DC	0° 40' 00"
R	8594.37'
T	443.03'
L	885.27'
CH	884.88'
E	11.41'
M	11.40'

STA. 122+11.42 @ RELOC. S.R. 176, 13' LT.
 BEGIN QUANTITIES FOR RELOC. S.R. 176/JN-OBW

QUANTITIES CONTINUED
 ON SHEET NO. 173

- JOINT LEGEND**
- (E) EXPANSION JOINT
 - (C) CONTRACTION JOINT
 - (L) LONGITUDINAL JOINT
 - (UL) UNTIED LONGITUDINAL JOINT
 - (P) PRESSURE RELIEF JOINT TYPE A

ITEM	203	310	451
EXT.	50000	20000	16000
DESC.	SUBGRADE	SUBBASE	12" REINFORCED CONCRETE PAVEMENT
	COMPACTION	TYPE II	
LOCATION			
S.R. 176/JN-OBW	4201	700	4201

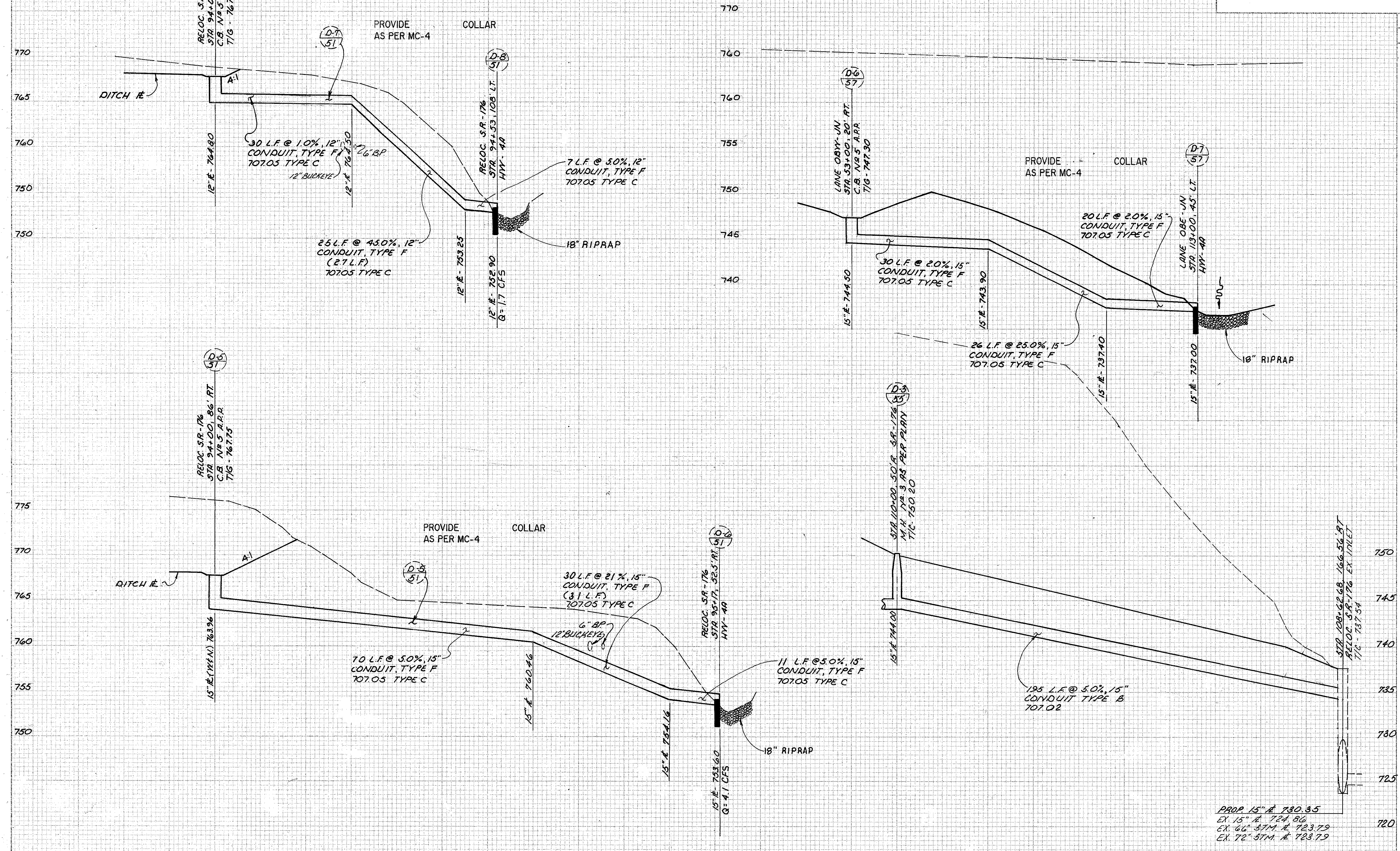
FOR PAVEMENT QUANTITY SUB-SUMMARY SEE SHEET 174

E-1

SEEDING	
NO	SO
87%	70%

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CLY - 176 - 10.14	F.H.W.A. REGION
CHKD.		
DATE		

176
325

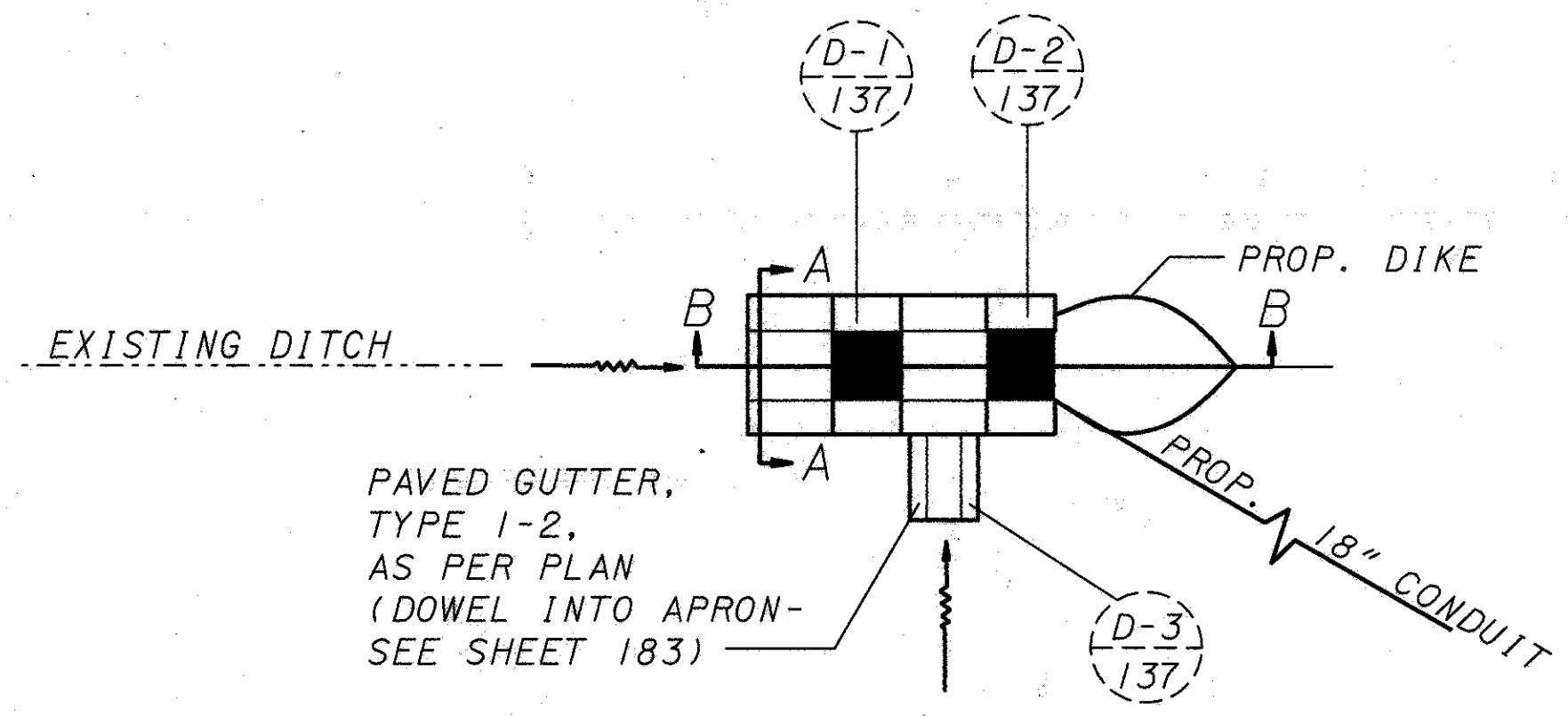


END AREA		VOLUME	
CUT	FILL	CUT	FILL

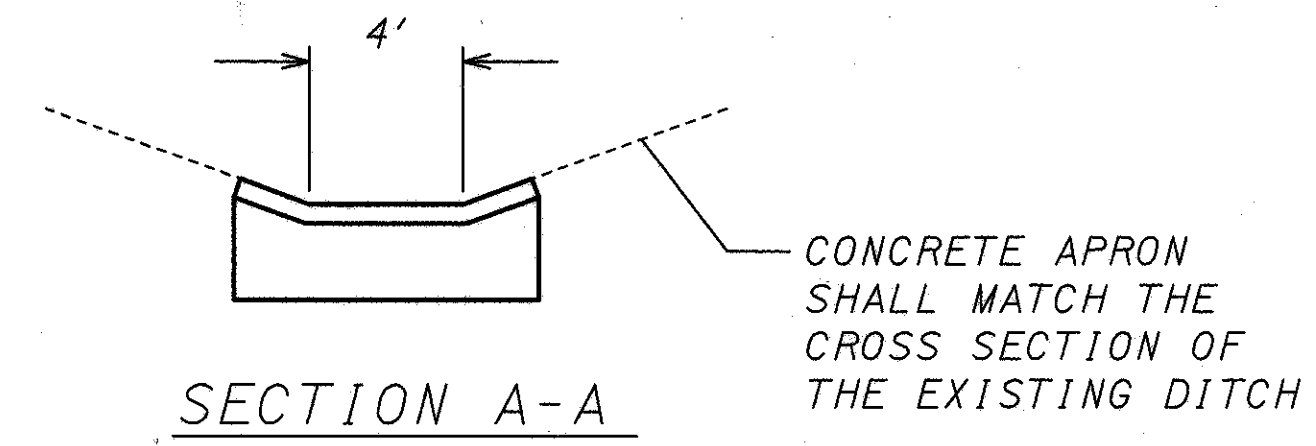
PROP 15" E 730.35
 EX 15" E 724.86
 EX 66" 57M E 723.79
 EX 72" 57M E 723.79

PIPE PROFILES

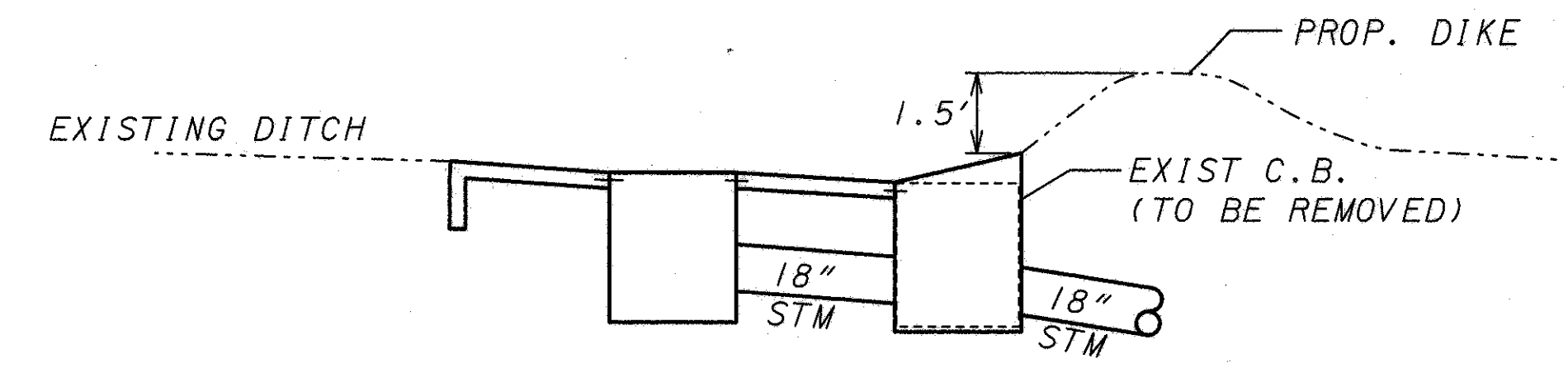
RELOC. S.R. - 176



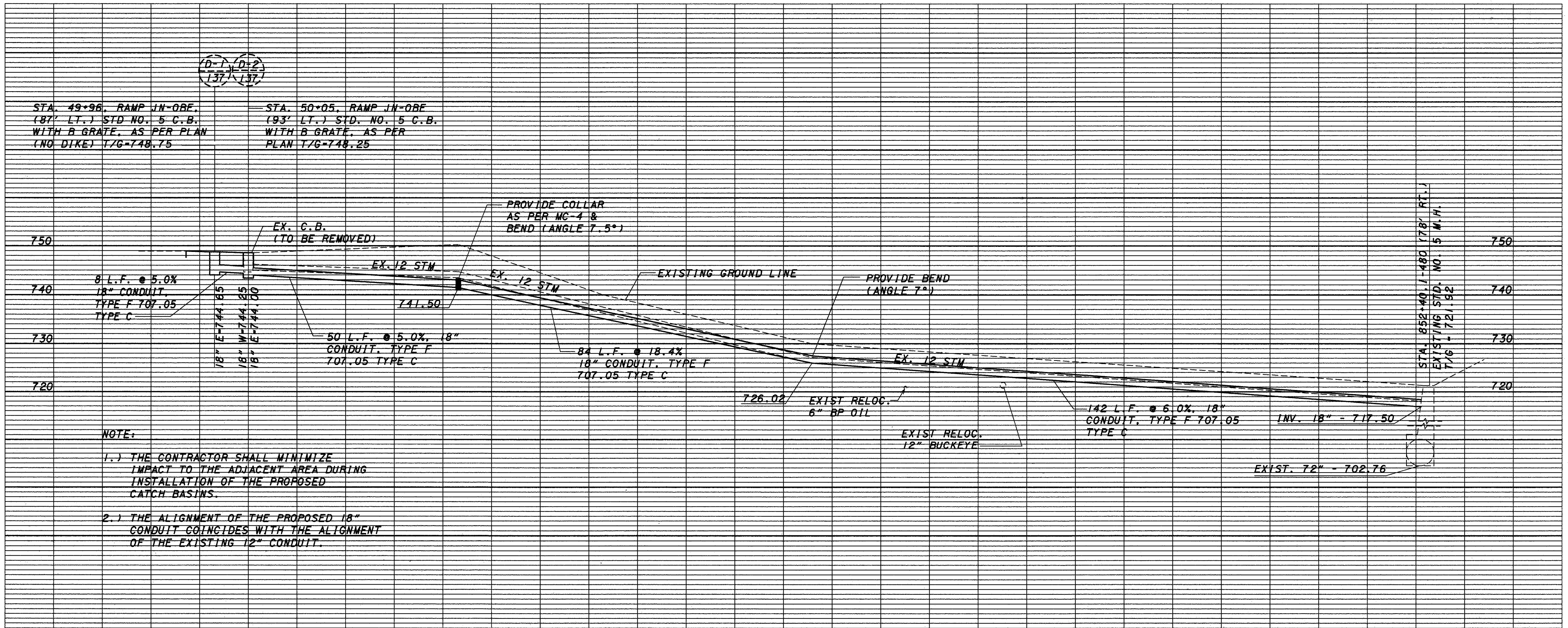
PLAN VIEW
SOUTHWEST CORNER
OF BR CUY-480-1565
(CONRAIL BRIDGE)



SECTION A-A
CONCRETE APRON
SHALL MATCH THE
CROSS SECTION OF
THE EXISTING DITCH



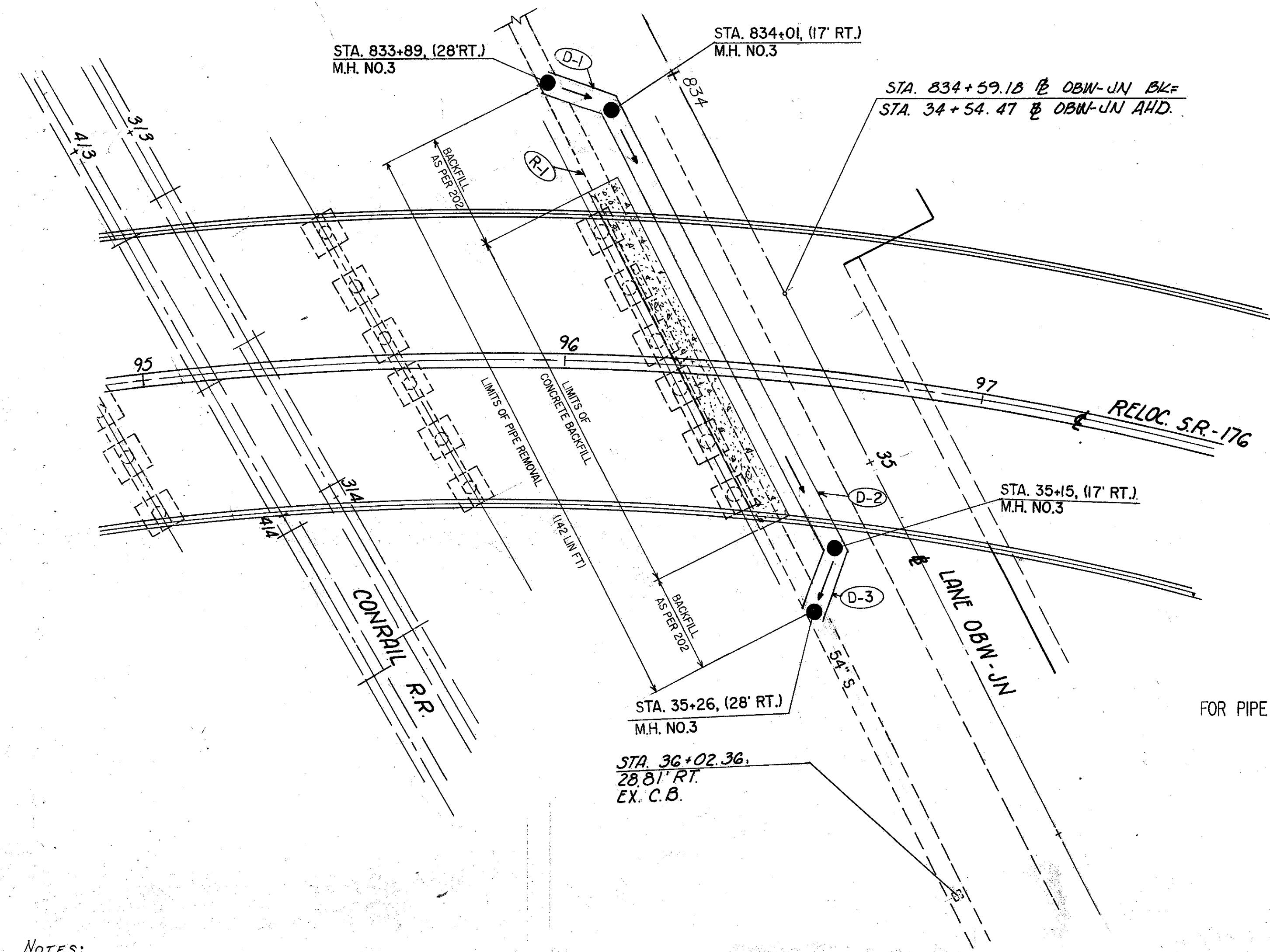
SECTION B-B



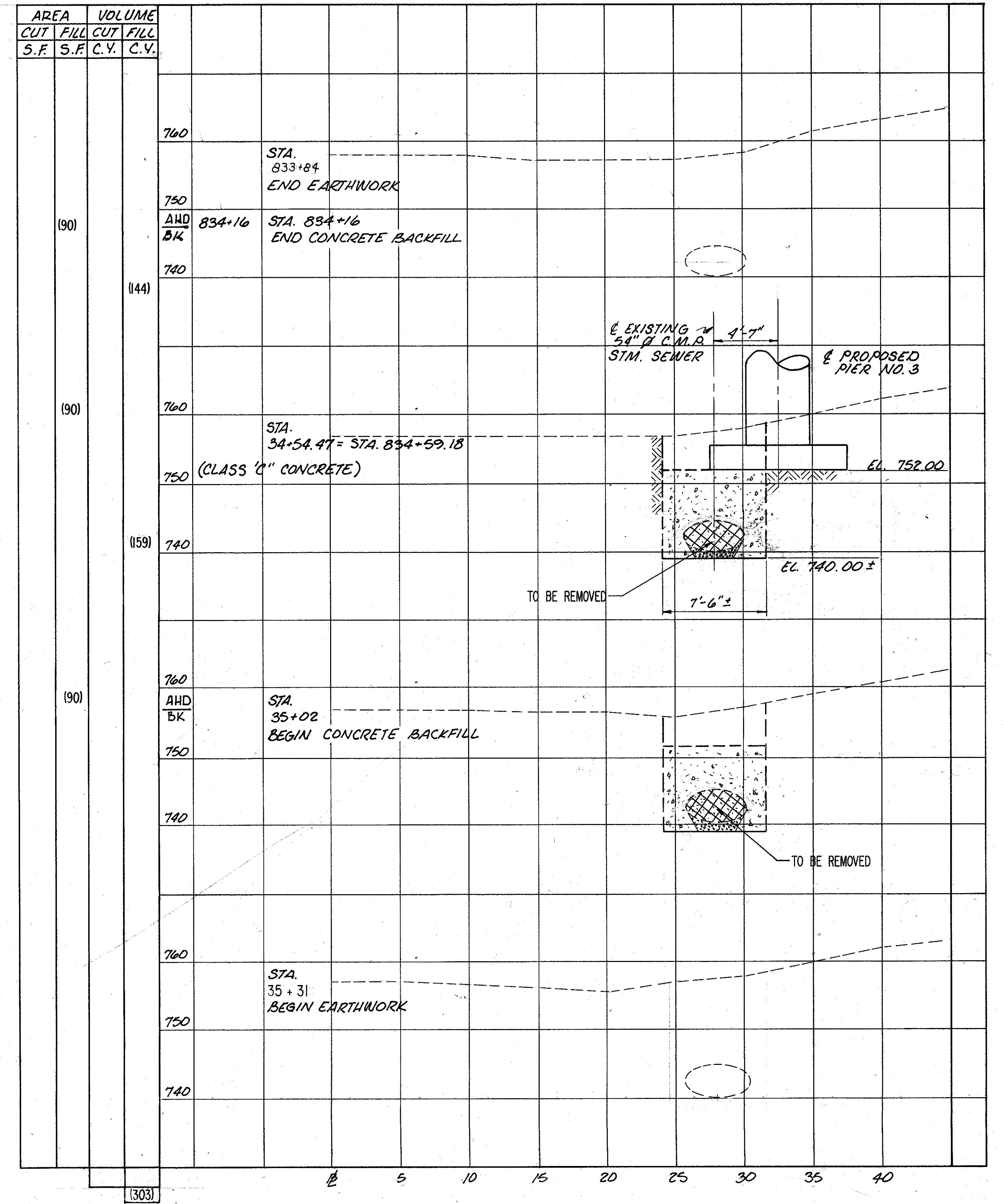
PLOTTED BY: lennon
 PLOTTED FROM: /usr/odot/pid08448/08448gxa.dg
 PLOT SUBMITTED: 06-MAY-1994 13:50
 08448GXA.DGN

STATION	SIDE	202	603	604	511
		35200	22600	31501	51100
PIPE REMOVED, OVER 24"		54" CONDUIT TYPE C	MANHOLE NO. 3, AS PER PLAN	CLASS C CONCRETE MISC. BACKFILL	
LIN FT		LIN FT	EACH	CU. YD.	
D-1	833+89 TO 834+01	RT.	17	1	
D-2	834+01 TO 35+15	RT.	118	2	
D-3	35+15 TO 35+26	RT.	15	1	
R-1	833+89 TO 35+26	RT.	142		
R-2	834+16 TO 35+02	RT.			303
TOTAL			142	150	4
					303

QUANTITIES TO GENERAL SUMMARY



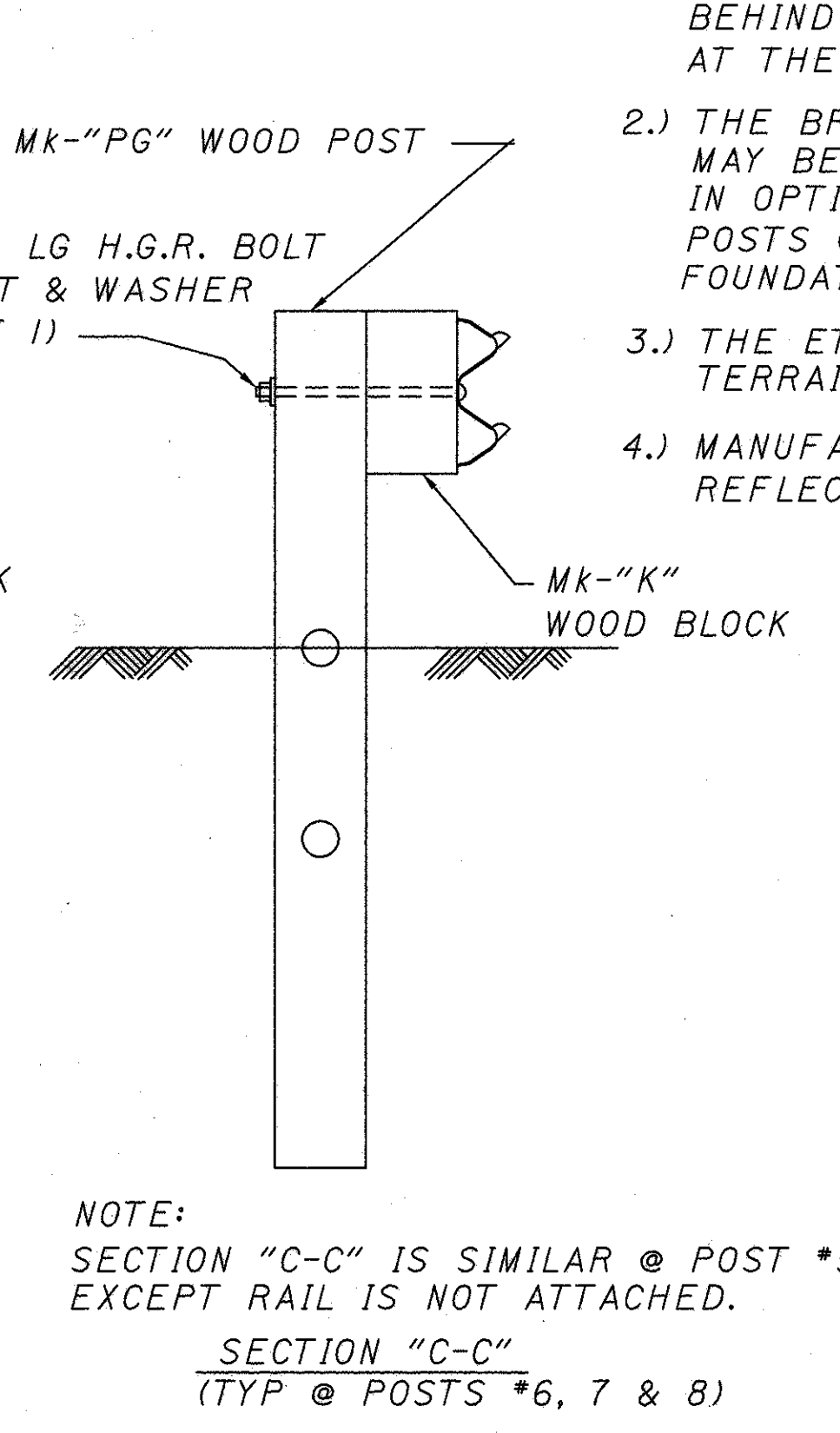
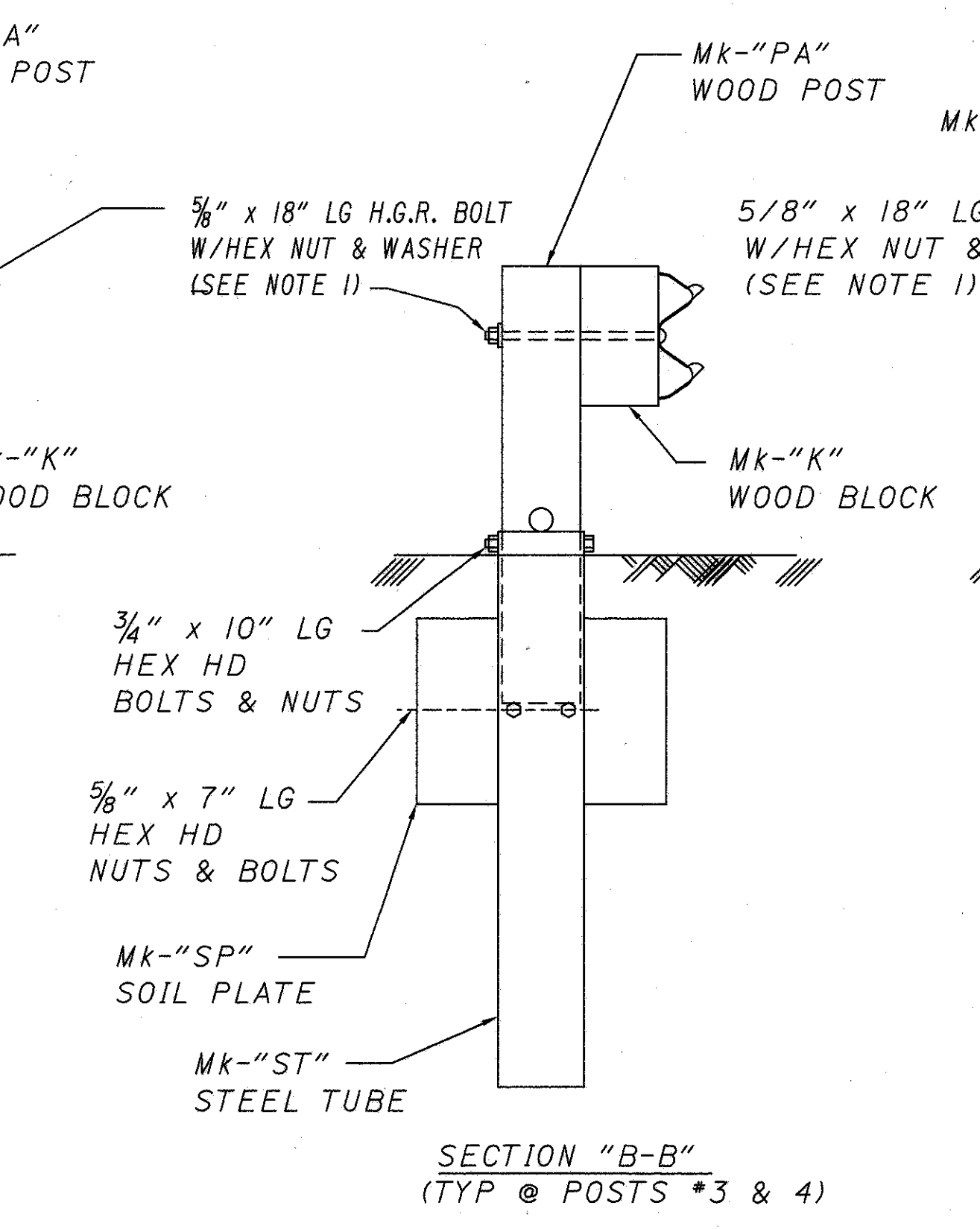
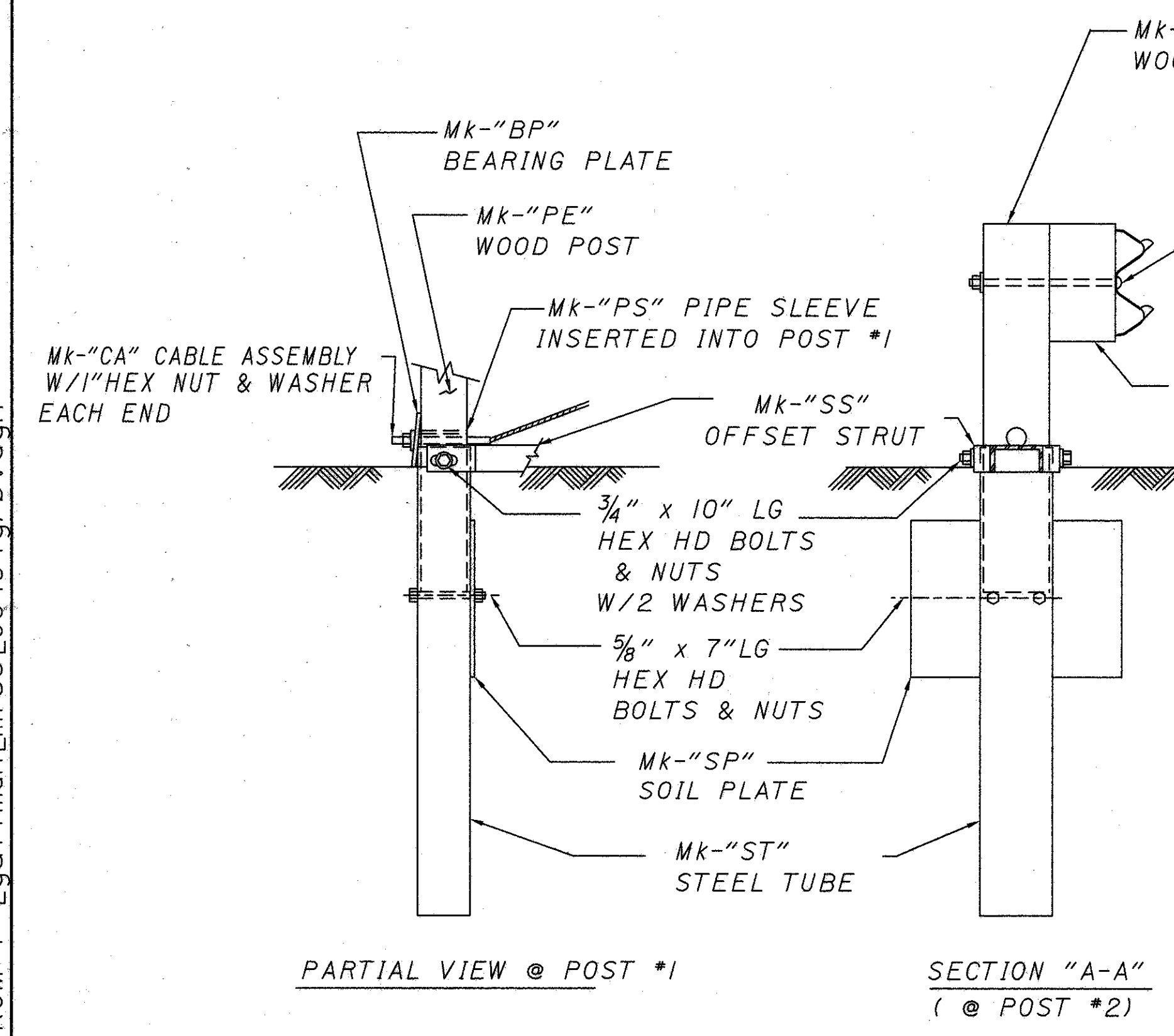
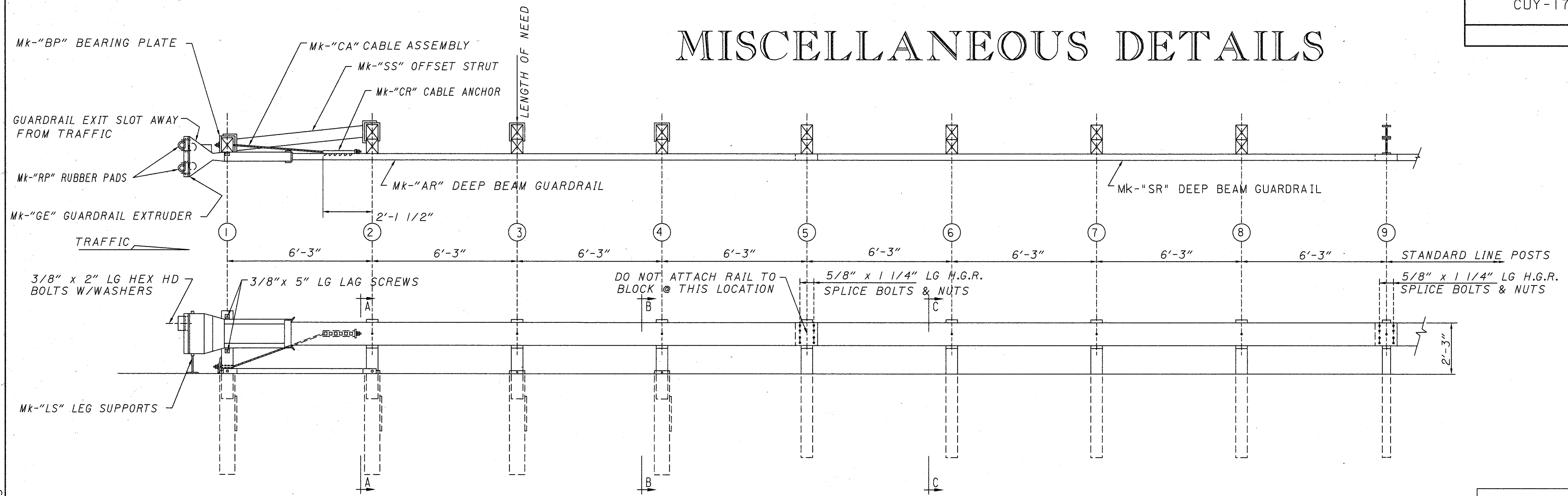
NOTES:
 1. THE EXISTING TRENCH WIDTH IS APPROXIMATELY 7'-6" WIDE. ALTHOUGH THIS DIMENSION WAS USED TO DETERMINE EARTHWORK AND BACKFILL QUANTITIES, ADDITIONAL EXCAVATION MAY BE REQUIRED TO REMOVE ALL OF THE EXISTING BACKFILL MATERIAL AND ANY DETERIORATED SHALE AS DIRECTED BY THE ENGINEER.



RELOC. S.R.-176

SPECIAL EXCAVATION

MISCELLANEOUS DETAILS



- NOTES:
- 1.) THE 5/8" FLAT WASHER IS USED UNDER THE NUT, BEHIND THE POST ONLY. NO WASHER IS USED AT THE RAIL.
 - 2.) THE BREAKAWAY POSTS @ LOCATIONS *5, 6, 7 & 8 MAY BE AS SHOWN OR MAY UTILIZE POSTS AS SHOWN IN OPTION "A" WITH FOUNDATION TUBES. POSTS @ LOCATIONS *1,2,3 & 4 MUST USE FOUNDATION TUBES.
 - 3.) THE ET-2000 WAS TESTED ON FLAT & LEVEL TERRAIN. IT IS NOT RECOMMENDED ON SLOPES.
 - 4.) MANUFACTURER SUGGESTS CUSTOMER TO PROVIDE REFLECTORIZATION OF TERMINAL.

BILL OF MATERIAL		
MK	QTY	DESCRIPTION
PE	1	WOOD POST
LS	2	LEG SUPPORT
RP	2	RUBBER PAD
SR	1	DEEP BEAM GUARD RAIL (12GA)
AR	1	DEEP BEAM GUARD RAIL (12GA)
PS	1	PIPE SLEEVE
SP	4	SOIL PLATE
K	7	WOOD BLOCK
PG	4	WOOD POST
PA	3	WOOD POST
ST	4	STEEL TUBE
BP	1	BEARING PLATE
CR	1	CABLE ANCHOR
CA	1	CABLE ASSEMBLY
SS	1	OFFSET STRUT (LEFT OR RIGHT)
GE	1	GUARDRAIL EXTRUDER
HARDWARE		
	4	3/4" x 10" HEX HD BOLT
	4	3/4" HEX NUT
	4	3/4" WASHER
	7	5/8" x 18" H.G.R. POST BOLT
	16	5/8" x 1 1/4" H.G.R. SPLICE BOLT
	8	5/8" x 7" HEX HD BOLT
	16	5/8" H.G.R. NUT
	15	5/8" HEX NUT
	7	5/8" WASHER
	2	3/8" x 5" LAG SCREW
	4	3/8" x 2" HEX HD BOLT
	4	3/8" WASHER
	2	1" HEX NUT
	2	1" WASHER

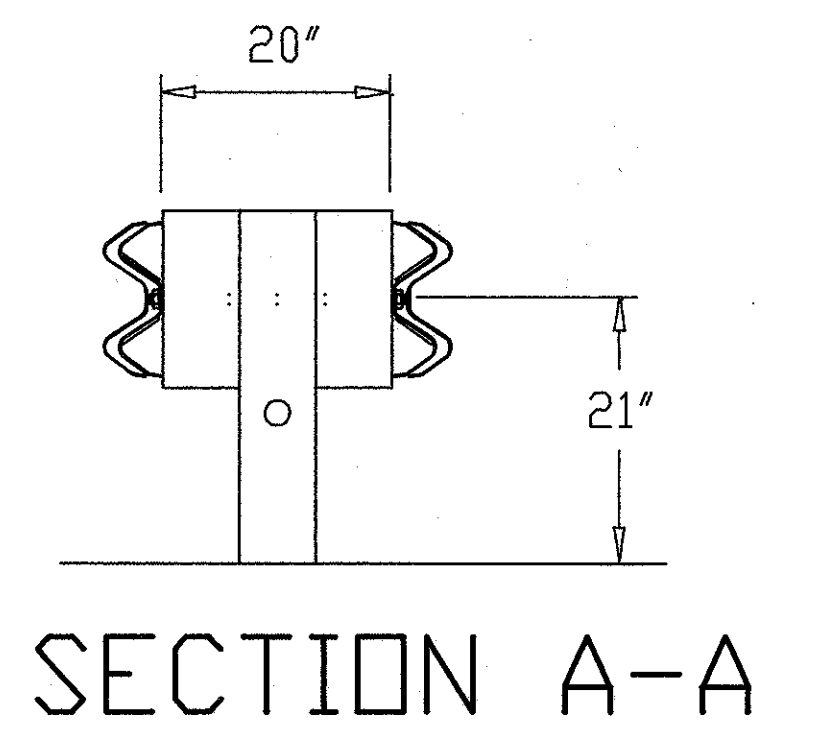
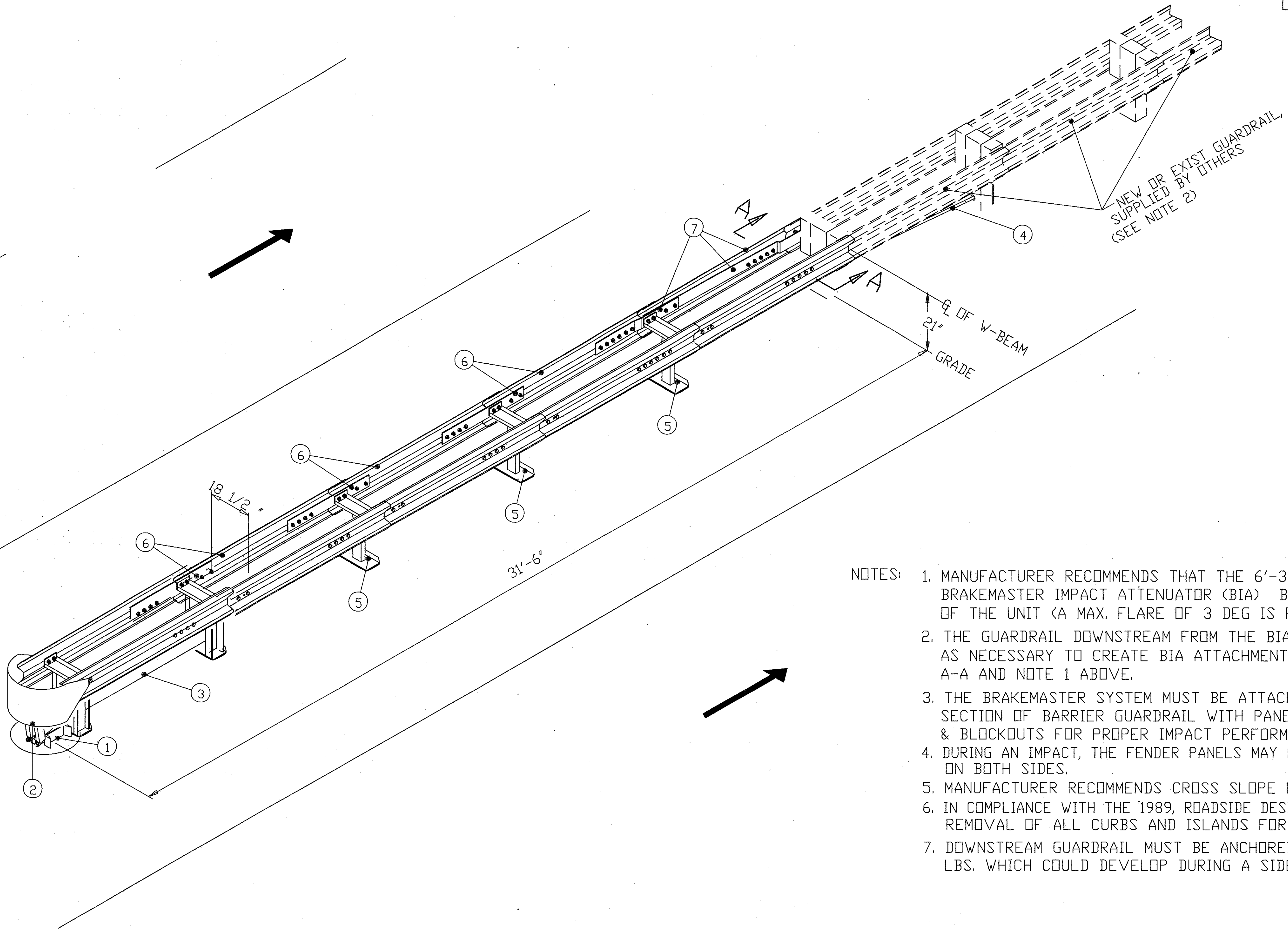
STATE OF OHIO
 DEPARTMENT OF TRANSPORTATION
 DISTRICT 12 LOCATION & DESIGN

TYPE E ANCHOR ASSEMBLY
 PLAN, ELEVATION & SECTIONS
 OPTION "B"

PLOT SUBMITTED: 12-MAY-1994 09:32
 PLOTTED BY: jilman
 PLOTTED FROM: i:\bgul\man\mi.sc\08434grb.b.dgn

MISCELLANEOUS DETAILS

CUYAHOGA COUNTY CUY-176-10.14	OHIO	179 395
	FHWA REGION 5	
	FEDERAL PROJECT	



- NOTES:
1. MANUFACTURER RECOMMENDS THAT THE 6'-3" SECTION DIRECTLY BEHIND THE BRAKEMASTER IMPACT ATTENUATOR (BIA) BE PARALLEL TO THE CENTERLINE OF THE UNIT (A MAX. FLARE OF 3 DEG IS PERMISSIBLE).
 2. THE GUARDRAIL DOWNSTREAM FROM THE BIA SHOULD BE TAPERED & TRANSITIONED AS NECESSARY TO CREATE BIA ATTACHMENT REQUIREMENTS AS SHOWN IN SECTION A-A AND NOTE 1 ABOVE.
 3. THE BRAKEMASTER SYSTEM MUST BE ATTACHED TO A 12'-6" MIN. SECTION OF BARRIER GUARDRAIL WITH PANEL ON BOTH SIDES OF 6" MIN. POSTS & BLOCKOUTS FOR PROPER IMPACT PERFORMANCE.
 4. DURING AN IMPACT, THE FENDER PANELS MAY FLARE OUT AS MUCH AS 4'-0" ON BOTH SIDES.
 5. MANUFACTURER RECOMMENDS CROSS SLOPE NOT TO EXCEED 8% (5 DEG.) (12:1).
 6. IN COMPLIANCE WITH THE 1989, ROADSIDE DESIGN GUIDE, MANUFACTURER RECOMMENDS REMOVAL OF ALL CURBS AND ISLANDS FOR PROPER IMPACT PERFORMANCE.
 7. DOWNSTREAM GUARDRAIL MUST BE ANCHORED TO WITHSTAND A TENSION OF 120,000 LBS. WHICH COULD DEVELOP DURING A SIDE ANGLE IMPACT.

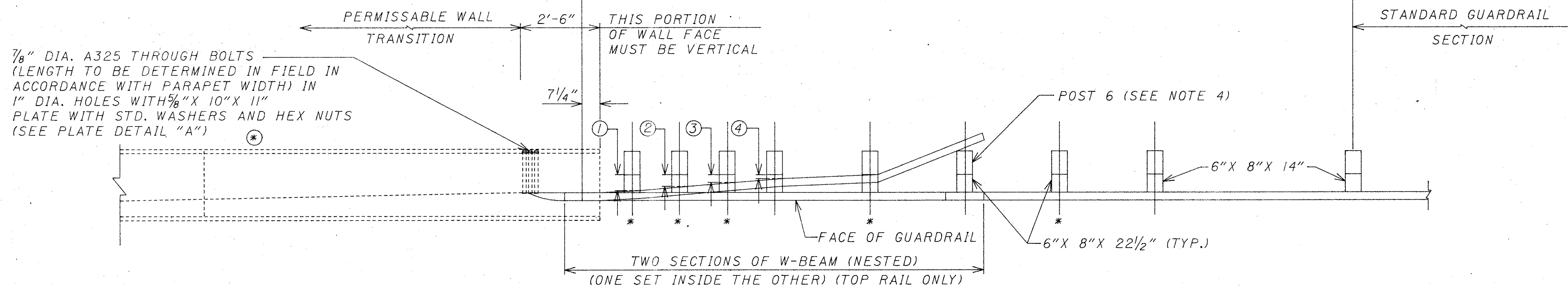
AUGUST 12, 1992

STATE OF OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 LOCATION & DESIGN				
IMPACT ATTENUATOR TYPE 1 (BRAKEMASTER)				
DESIGNED	TRACED	CHECKED	REVIEWED	REVISED
DATE	DATE	DATE	DATE	SHEET /

MISCELLANEOUS DETAILS

RELOC. S.R-176

BRIDGE TERMINAL ASSEMBLY, TYPE 4, AS PER PLAN



PLAN

* — FOR ATTACHMENT TO ABUTMENT WALLS, THIS ITEM REQUIRES THE USE OF POLYESTER RESIN ANCHORS WITH FEMALE THREADED INSERTS (10" LONG) TO ACCEPT 7/8" DIAMETER BOLTS. (PLATE DETAIL NOT REQUIRED)

* GUARDRAIL NOT ATTACHED TO POSTS. BLOCKOUT FASTENED TO POST WITH STD. POST BOLT.

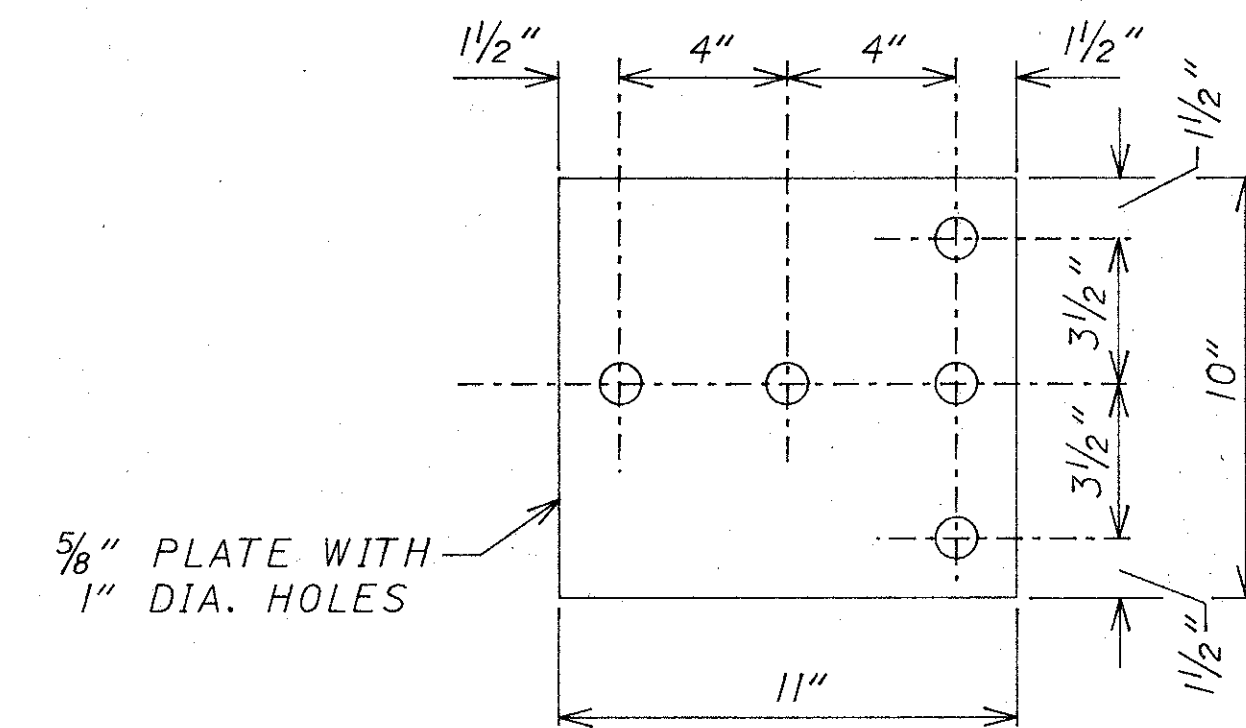
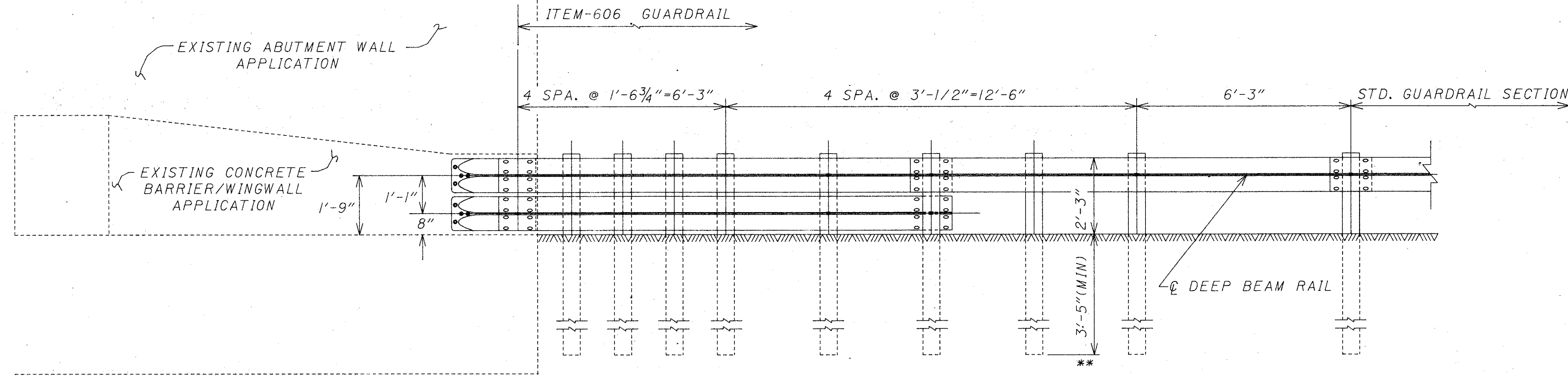


PLATE DETAIL "A"



ELEVATION

** SEE STD. CONSTRUCTION DRAWING GR-1.2 FOR ADDITIONAL POST EMBEDMENT DETAILS.

GENERAL NOTES

1. THIS GUARDRAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO A VERTICAL CONCRETE SHAPE AND SHOULD NOT BE CONNECTED DIRECTLY TO A CONCRETE SAFETY SHAPE. CONCRETE SAFETY SHAPE BARRIERS SHOULD BE TRANSITIONED TO A VERTICAL SHAPE AT THE GUARDRAIL CONNECTION.
2. THE RUBRAIL MAY BE SHOP BENT IN THE LAST 3 FEET TO FACILITATE INSTALLATION.
3. BOTTOM WOOD BLOCKS, LOCATED ON POSTS 1,2,3, AND 4 ARE CENTER DRILLED AND SECURED WITH 5/8" CARRIAGE BOLTS.
4. POSTS 1,2,3,4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKS AND/OR LOWER BEAM.
5. SEE STANDARD CONSTRUCTION DRAWINGS GR-1.2 AND GR-3.4 FOR ADDITIONAL DETAILS.

BLOCKOUT CHART BOTTOM BEAM WOOD BLOCKS 1'-2" X 6"	
POST	THICKNESS
①	7"
②	6"
③	4.5"
④	3"

THIS DETAIL MODIFIES A BRIDGE TERMINAL ASSEMBLY, TYPE 4 FOR CONNECTION TO A VERTICAL WALL. ALL DIMENSIONS AND DETAILS SHOWN ARE IN AGREEMENT WITH THE APPROVED CRASHWORTHY GUARDRAIL TRANSITION FOUND IN "FHWA TECHNICAL ADVISORY T 5040.26" AND THE "ROADSIDE DESIGN GUIDE"

MAY 26, 1992

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 12 LOCATION & DESIGN

BRIDGE TERMINAL ASSEMBLY,
TYPE 4,
AS PER PLAN

DESIGNED LDH DATE	DRAWN JAG DATE	CHECKED ENF DATE	REVIEWED DATE	REVISED SHEET
-------------------------	----------------------	------------------------	------------------	------------------

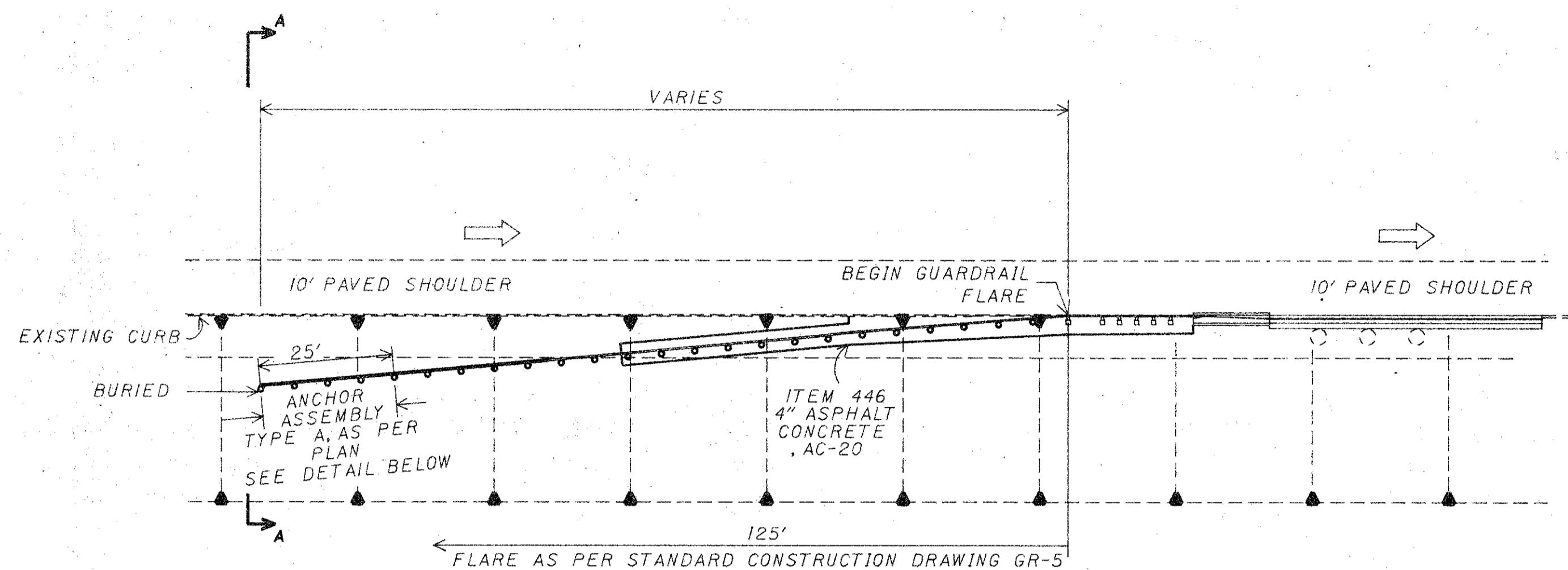
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MISCELLANEOUS DETAILS

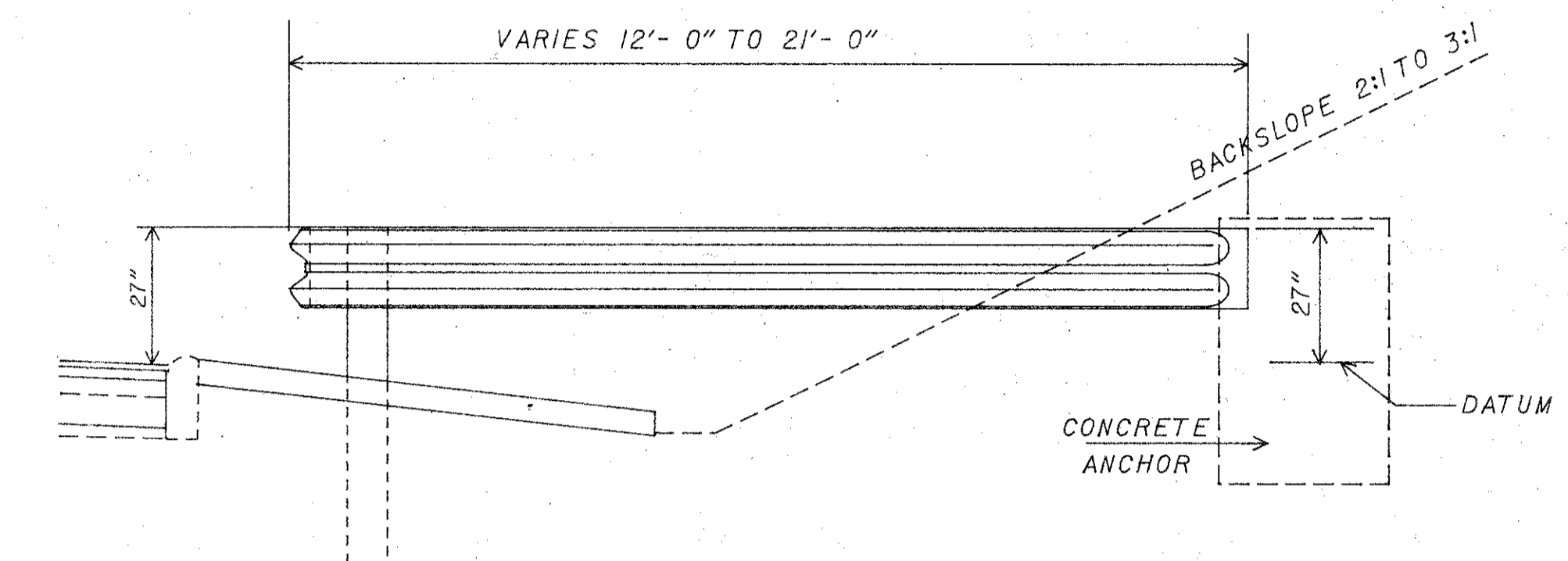
CUYAHOGA COUNTY
CUY - 176 - 10.14

OHIO
FHWA
REGION 5
FEDERAL
PROJECT

181
395

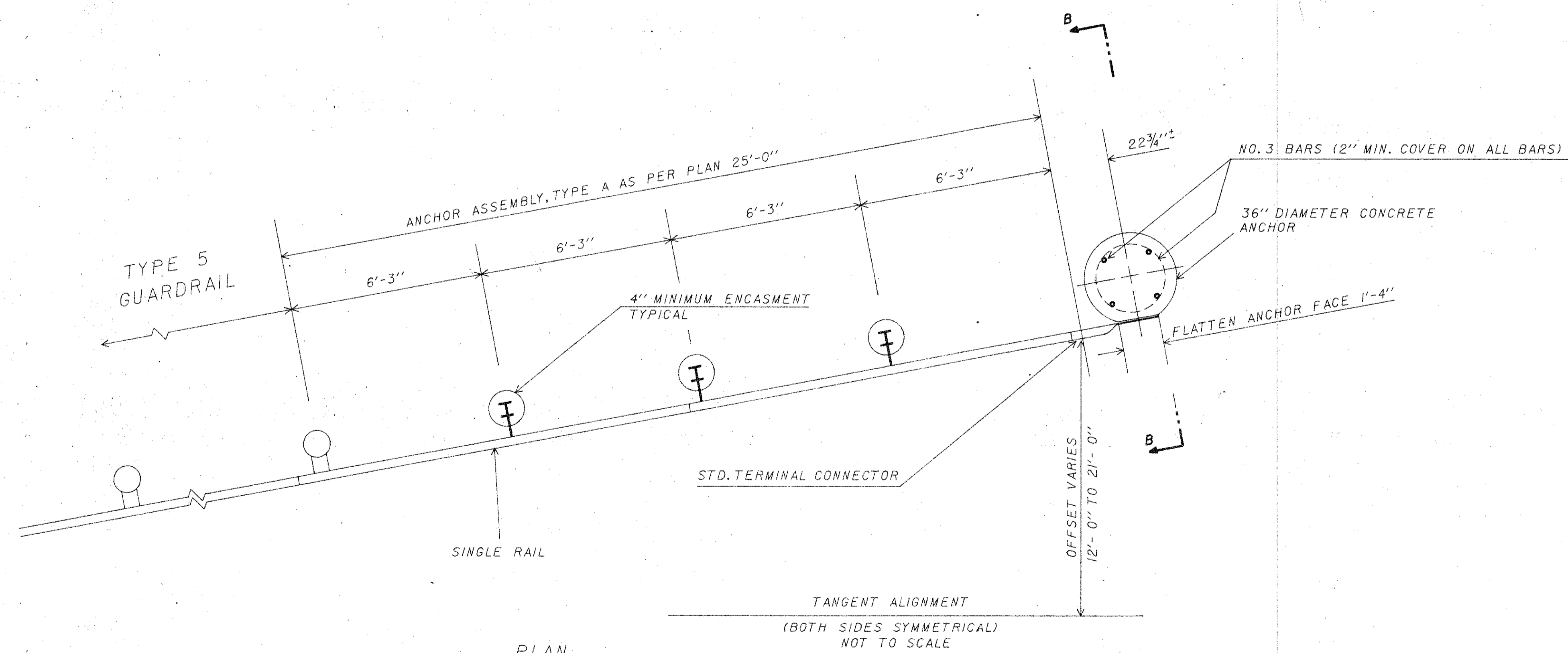


BRIDGE ANCHOR ASSEMBLY DETAIL
SCALE: 1" = 20'

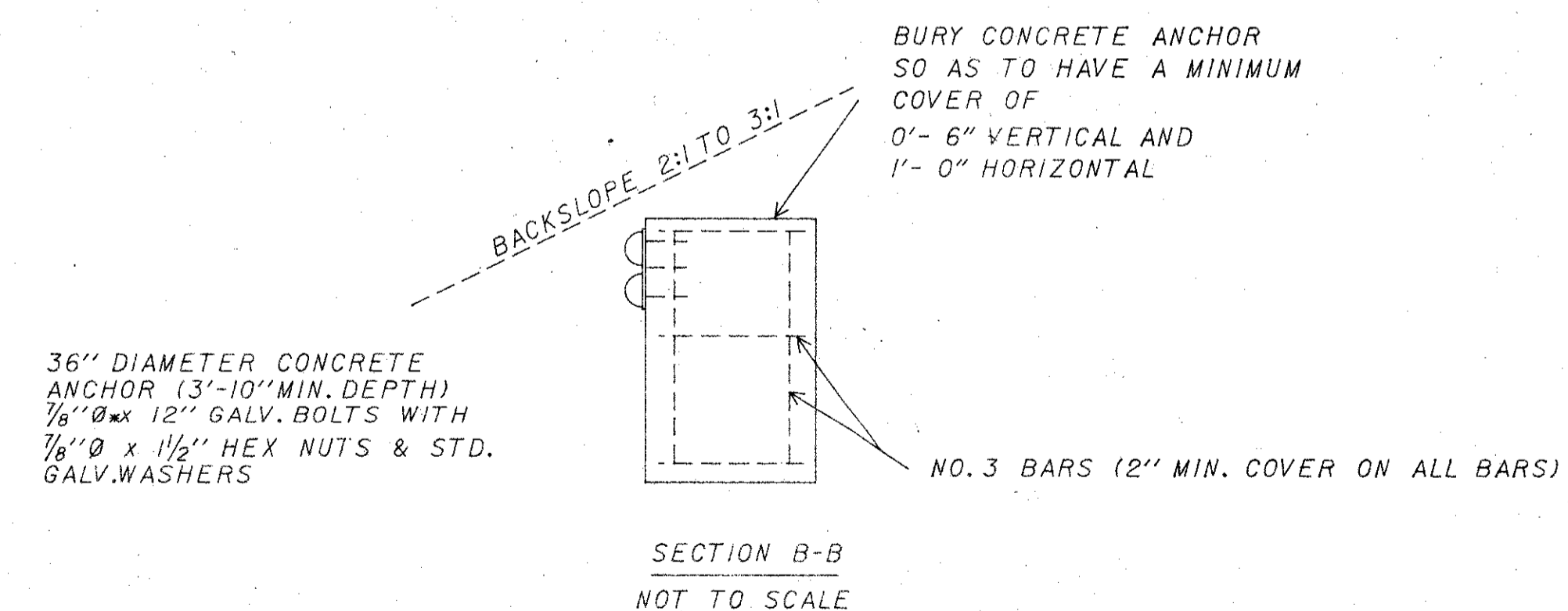


SECTION A-A
NOT TO SCALE

NOTE: FOR ADDITIONAL DETAILS AND GUARDRAIL FLARE OFFSETS
SEE STANDARD CONSTRUCTION DRAWINGS GR-5.J (10-30-92)



PLAN
ANCHOR ASSEMBLY, TYPE A AS PER PLAN
FOR FURTHER DETAILS SEE STD. DRAWING GR-4.J (5-6-91)
NOT TO SCALE

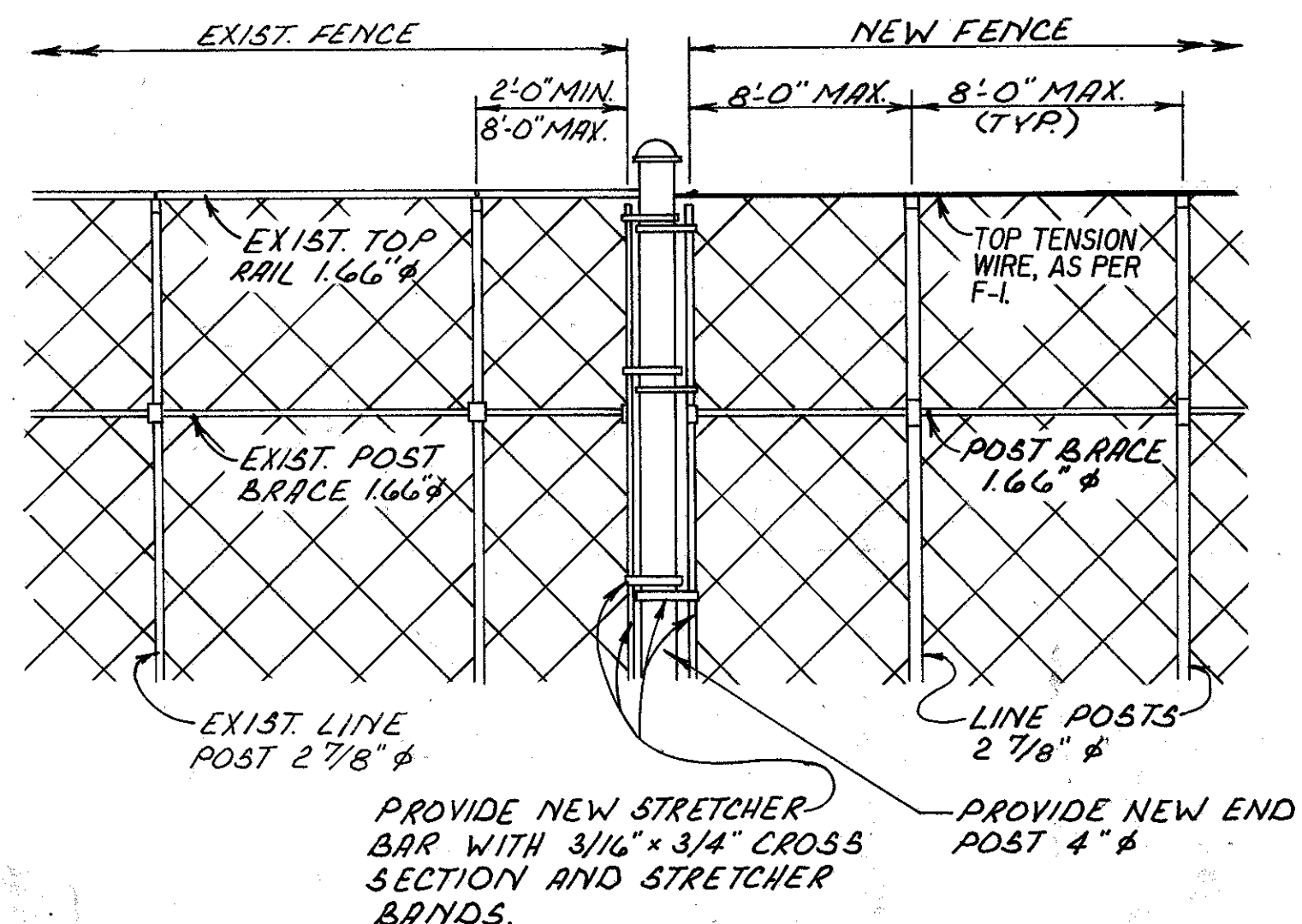


SECTION B-B
NOT TO SCALE

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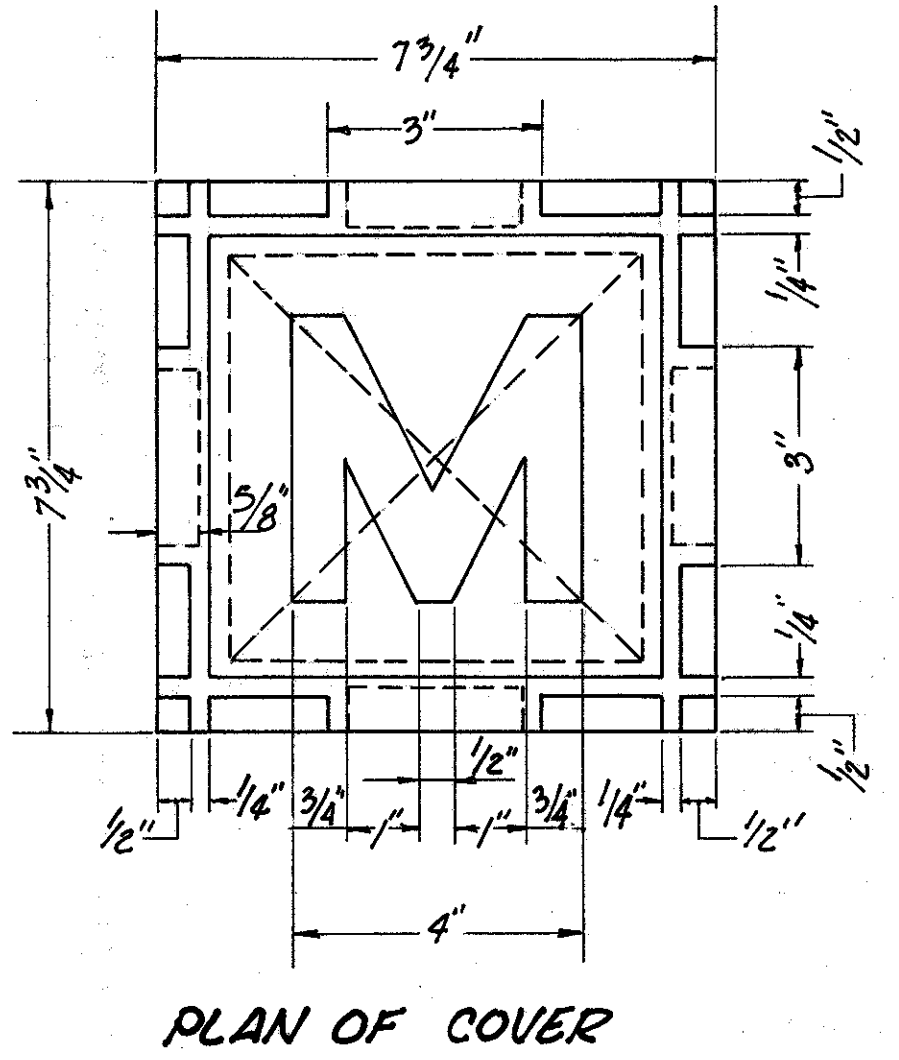
PLOT SUBMITTED: 12-JAN-1994 06:41

PLOT SUBMITTED BY: odot

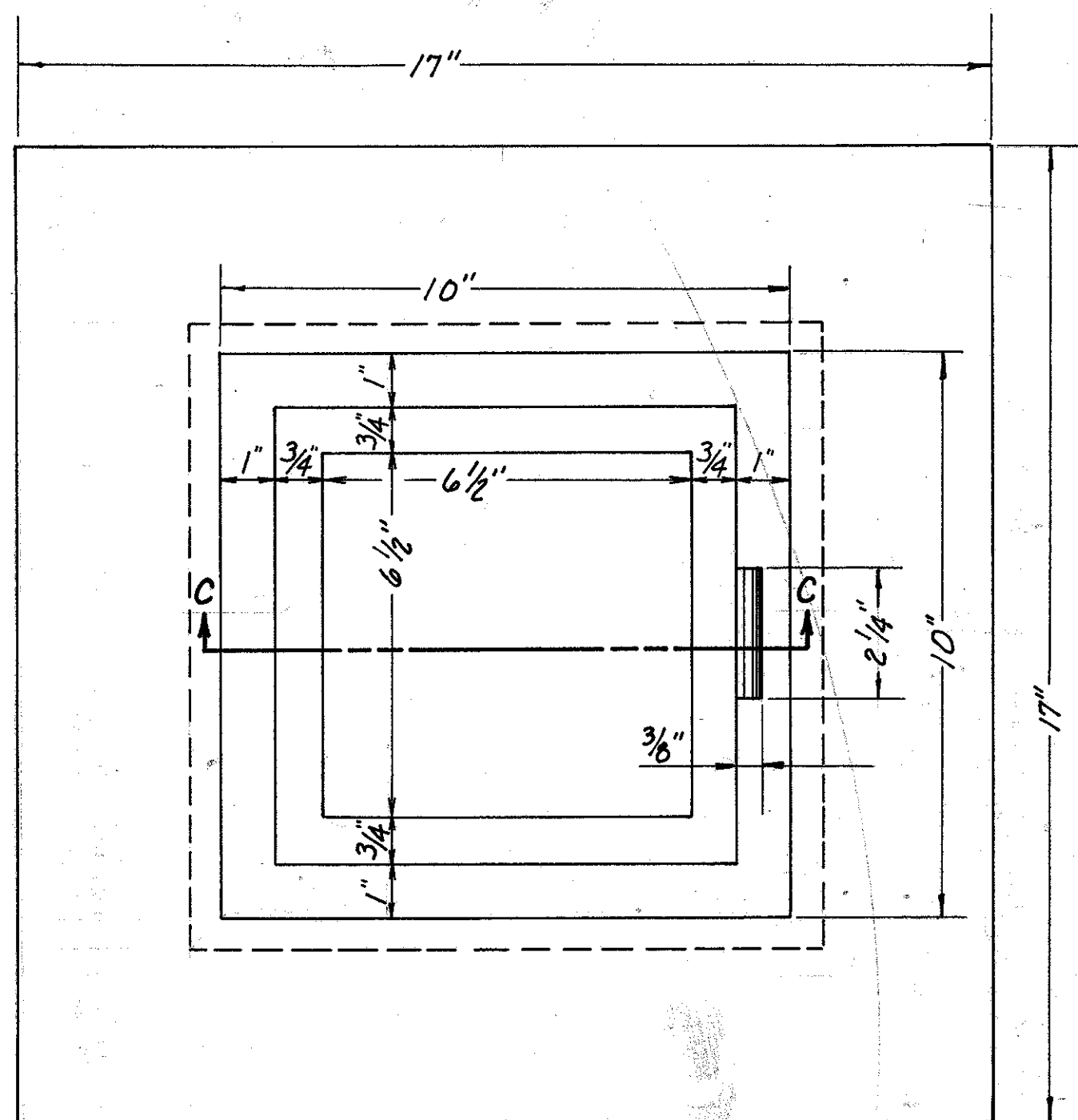


CONNECTION OF NEW FENCE TO EXISTING FENCE DETAIL

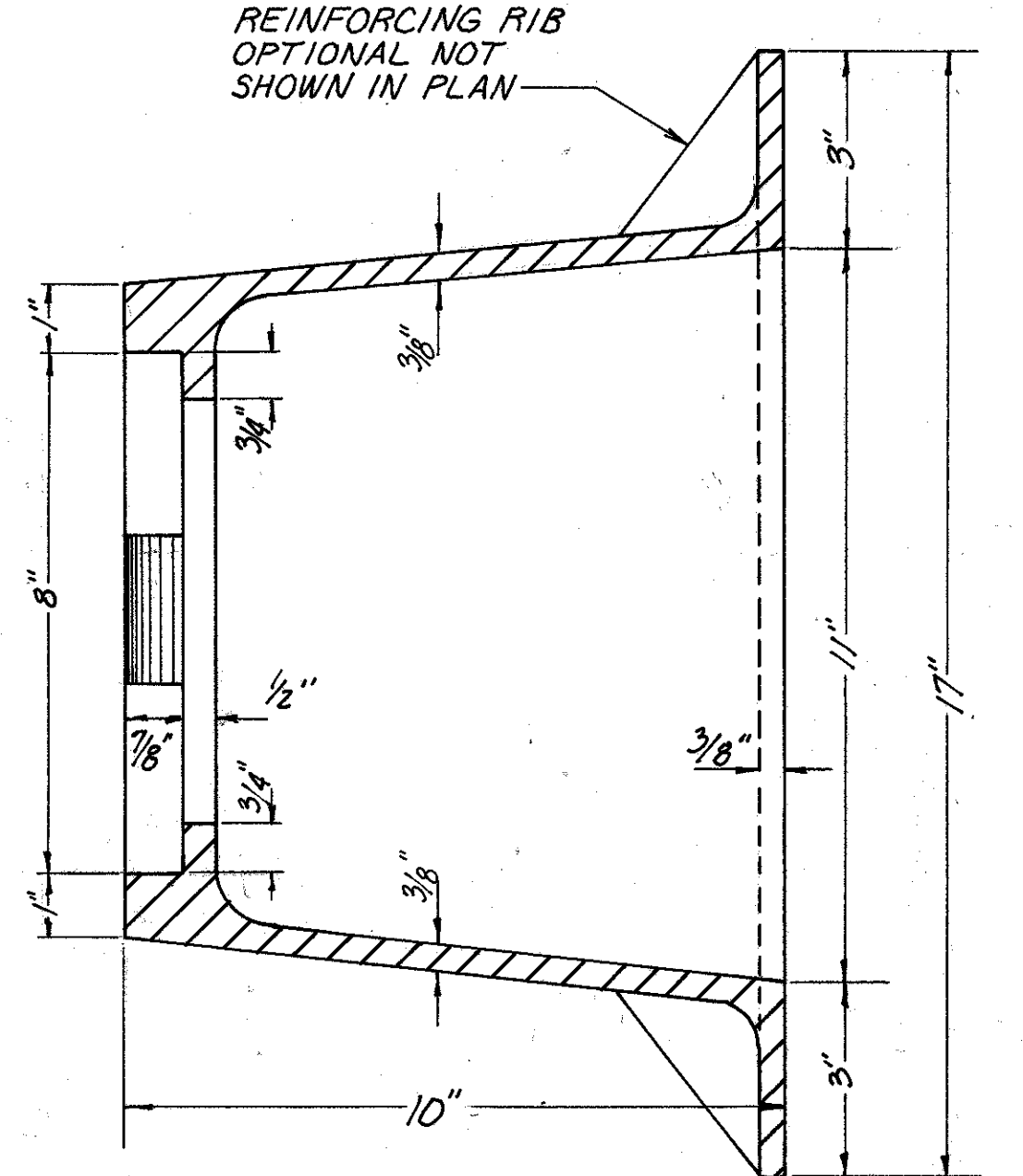
FOR DETAILS NOT SHOWN SEE STANDARD DRAWING F-1



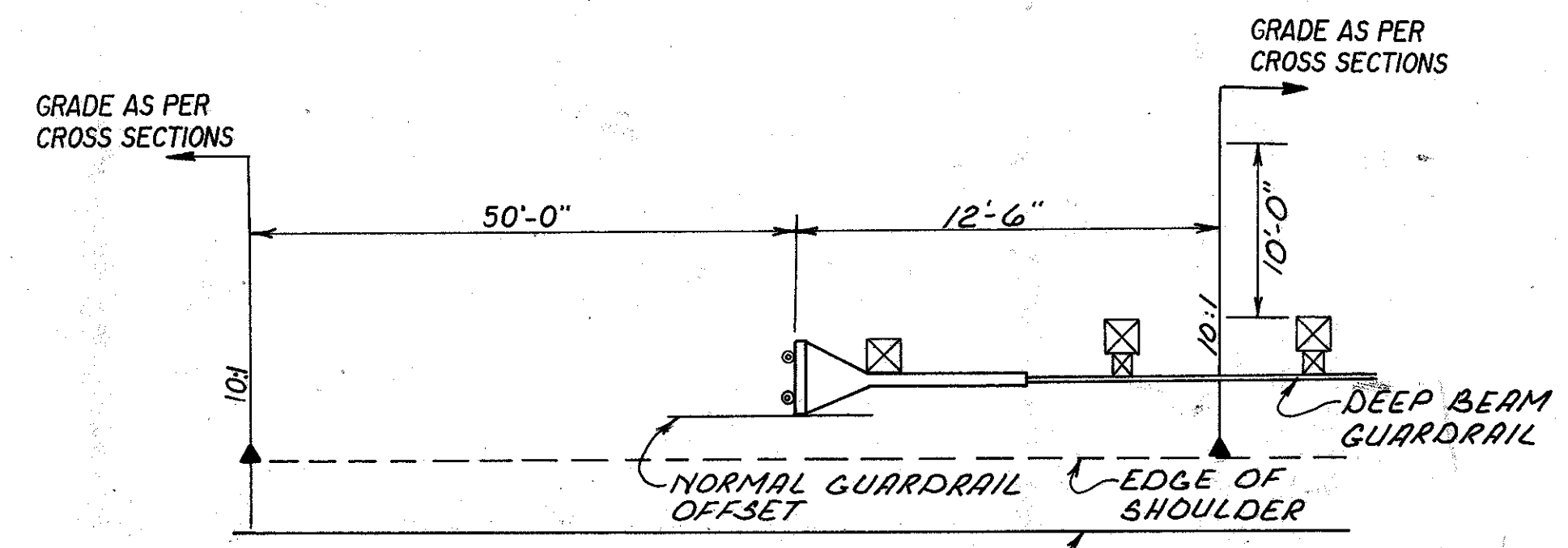
PLAN OF COVER



PLAN OF FRAME (RIBS NOT SHOWN)

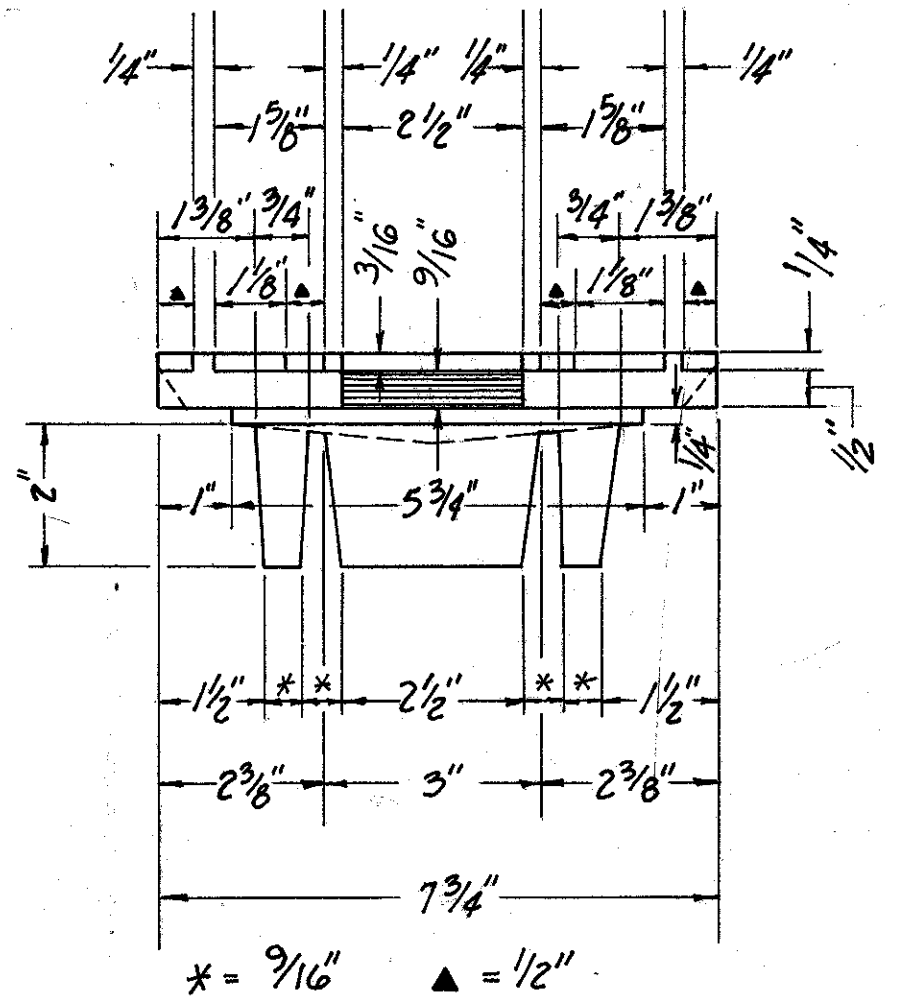


SECTION OF FRAME

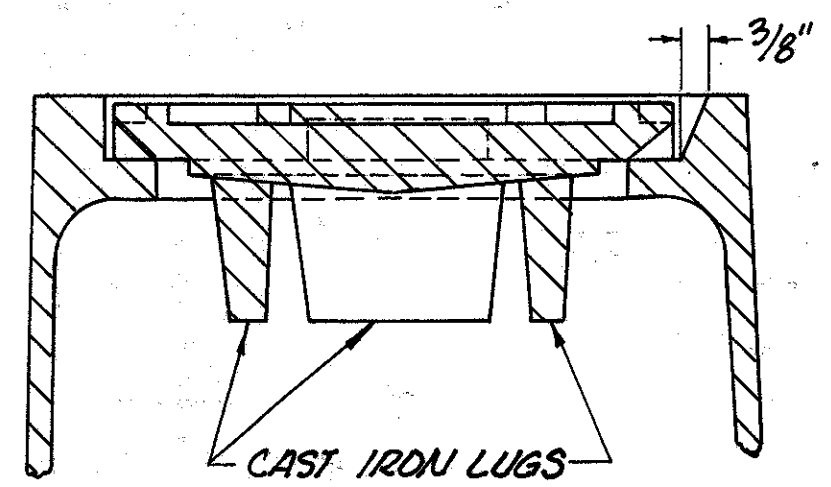


PLAN

NOTE: FOR GUARDRAIL DETAILS NOT SHOWN, SEE TYPE E ANCHOR ASSEMBLY DETAIL SHEET 179.

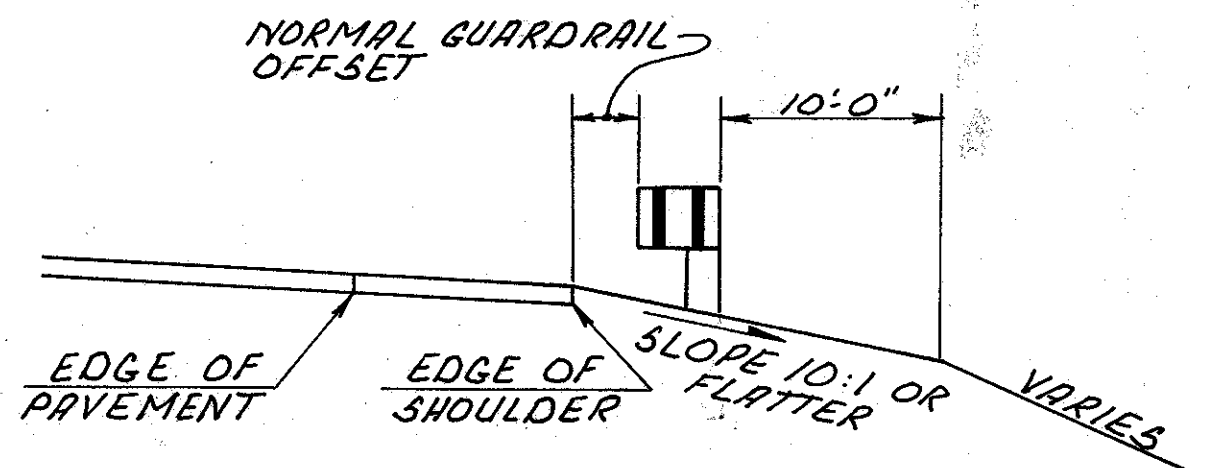


SIDE VIEW OF COVER



SECTION "C" - "C" SIDE VIEW OF COVER LID IN PLACE

MINIMUM WEIGHT OF COVER - 15 POUNDS
MINIMUM WEIGHT OF FRAME - 70 POUNDS

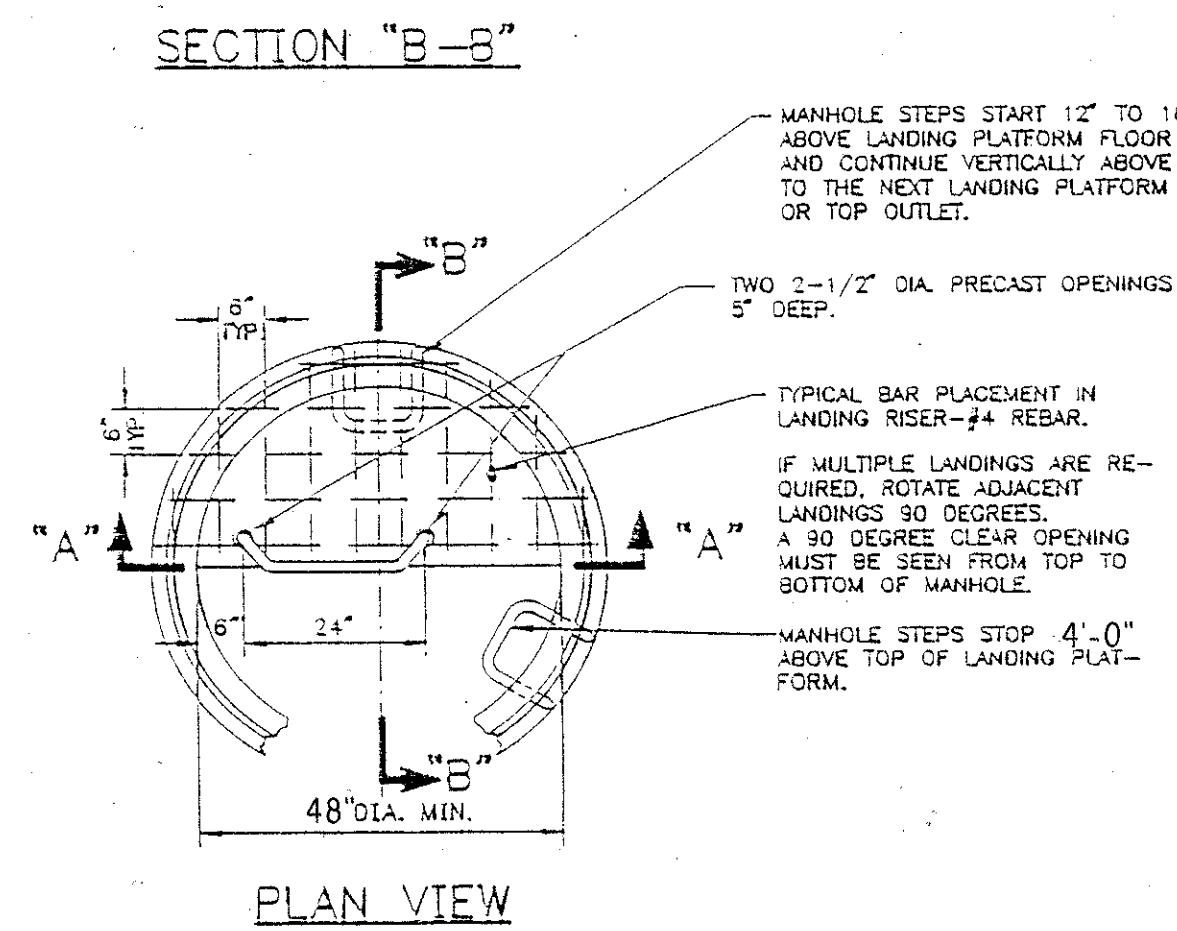
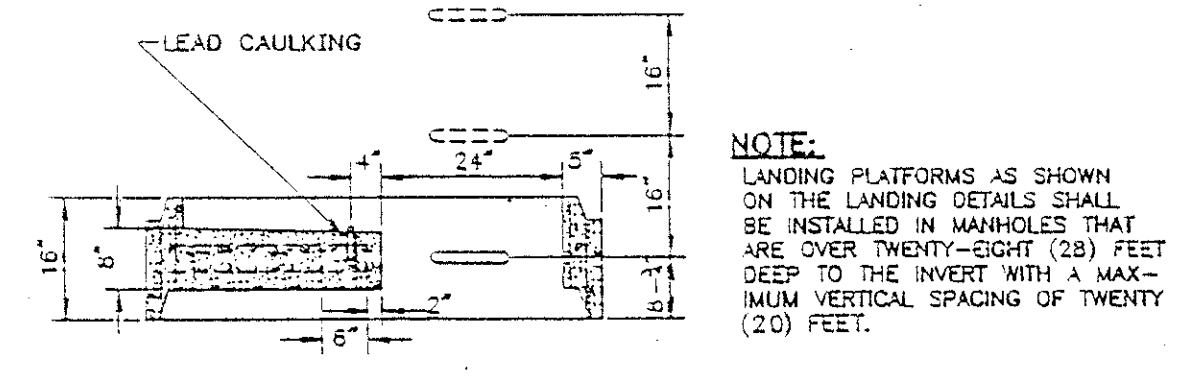
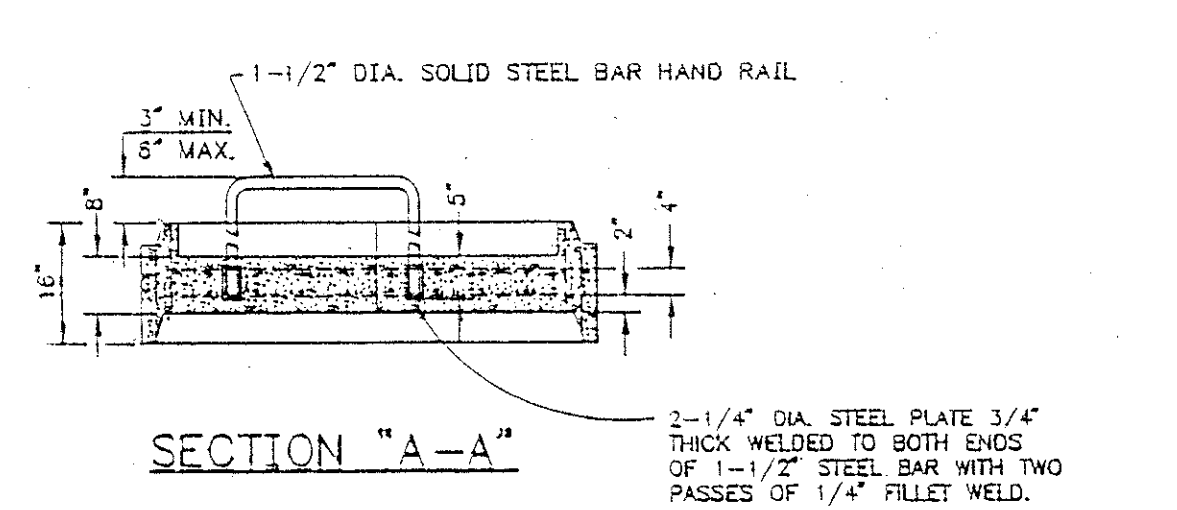


ELEVATION

TYPICAL GRADING DETAIL FOR TYPE E ASSEMBLIES

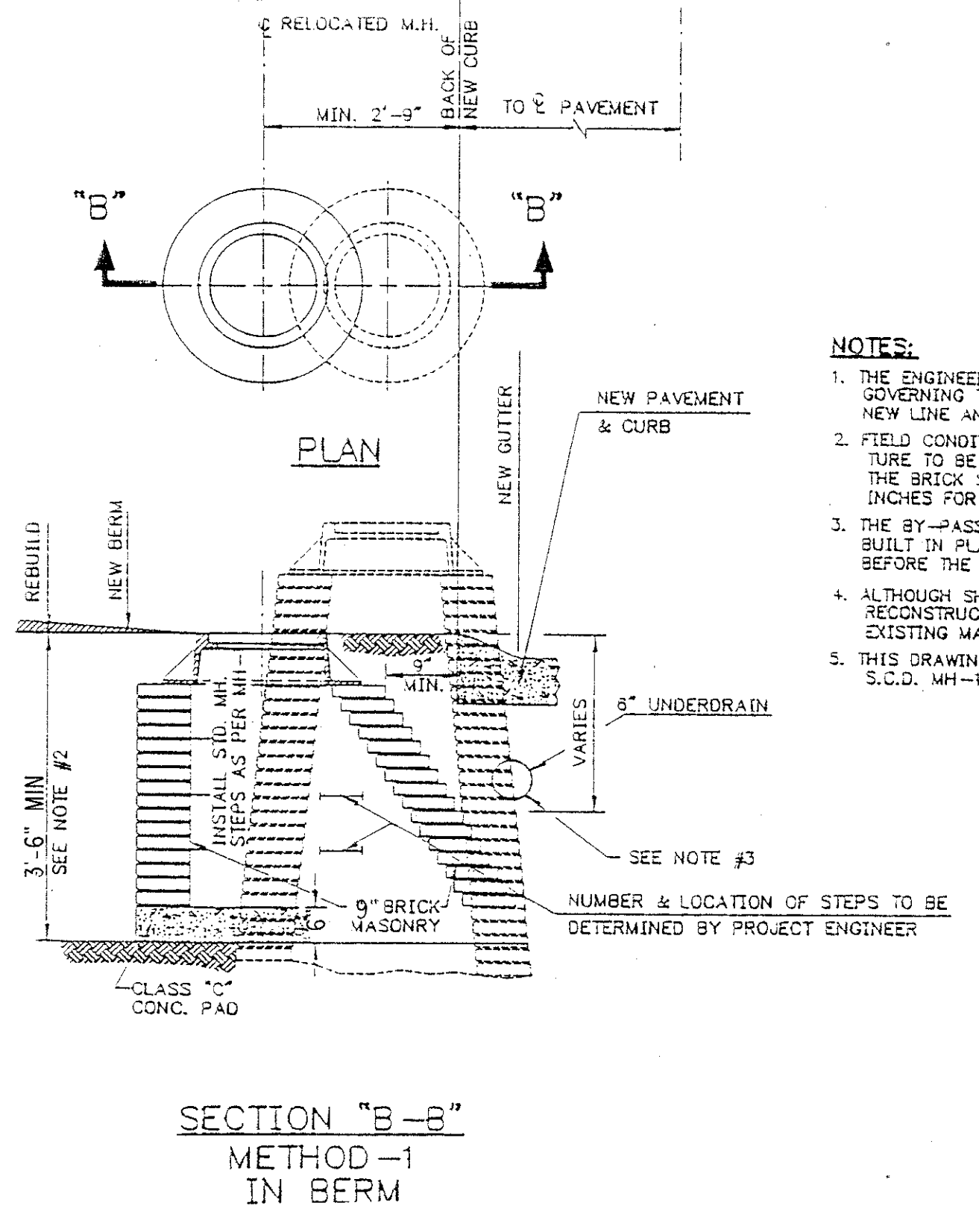
CITY OF CLEVELAND STANDARD DETAIL OF MONUMENT BOX FRAME AND COVER

RELOC. S.R. - 176



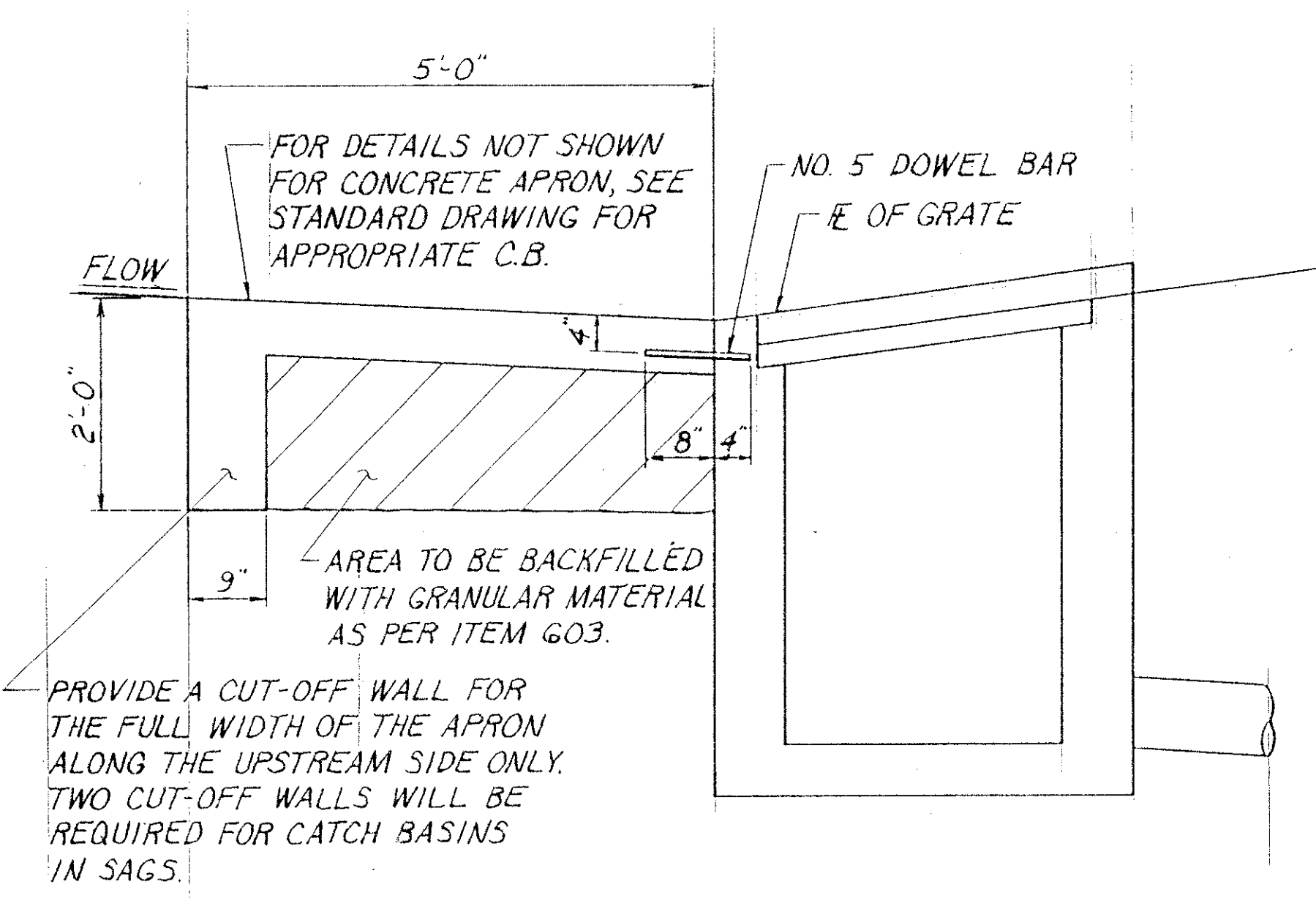
16" LANDING RISER DETAIL FOR PRECAST MANHOLE

ITEM 604 - MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN



RECONSTRUCTION OF EXISTING MANHOLE WHICH OBSTRUCTS NEW CURB LOCATION

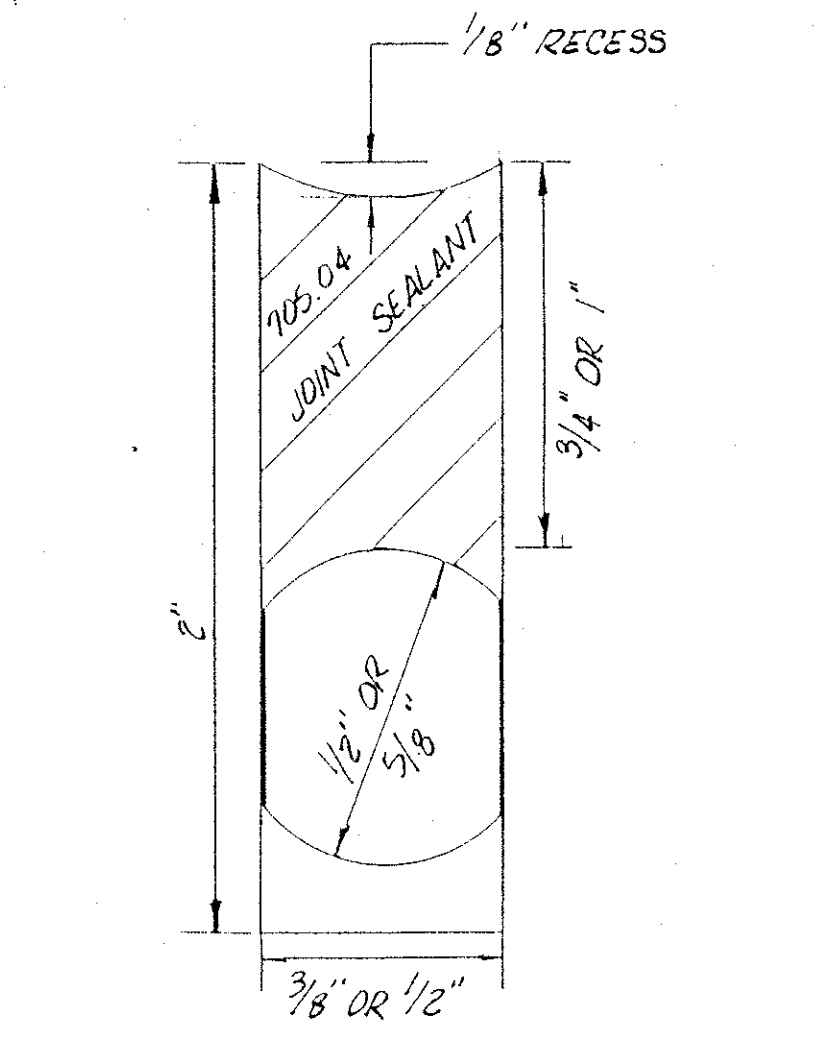
- NOTES:**
1. THE ENGINEER SHALL INVESTIGATE THE FIELD CONDITIONS GOVERNING THE EXISTING MANHOLE WITH RESPECT TO THE NEW LINE AND ELEVATION OF PAVEMENT AT CURB.
 2. FIELD CONDITIONS WILL GOVERN THE AMOUNT OF STRUCTURE TO BE DEMOLISHED AND REBUILT. CORBELLING OF THE BRICK SHALL NOT EXCEED ONE AND ONE-HALF (1-1/2) INCHES FOR EACH COURSE.
 3. THE BY-PASSING SIX (6) INCH UNDERDRAINS SHALL BE BUILT IN PLACE AROUND THE REBUILT (CORBELLED) WALL BEFORE THE CONSTRUCTION OF PAVEMENT IS STARTED.
 4. ALTHOUGH SHOWN AS EXISTING BRICK, THIS METHOD OF RECONSTRUCTION MAY BE UTILIZED FOR ALL TYPES OF EXISTING MANHOLE WALLS.
 5. THIS DRAWING IS USED IN CONJUNCTION WITH O.D.O.T. S.C.D. MP-1.



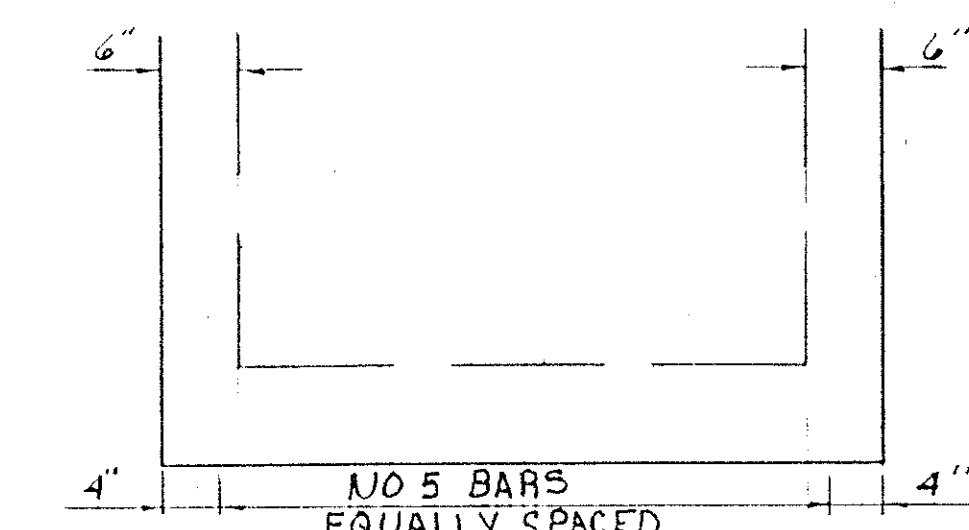
CATCH BASIN SECTION

- NOTES:**
- THIS DETAIL SHALL BE USED FOR NO. 4, NO. 5 & NO. 5A CATCH BASINS, AS PER PLAN. FOR DETAILS NOT SHOWN SEE STD. DWG. CB-4, CB-5 AND CB-5A.
 - THE REQUIREMENTS OF ITEM 604 SHALL GOVERN THE REPLACEMENT OF THE EXISTING CATCH BASIN. THE WORK SHALL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING CATCH BASIN AND ITS SUBSEQUENT REPLACEMENT. THE CONCRETE APRON SHALL BE REPLACED AND BACKFILLED AS SHOWN HERE AND IN THE PERTINENT STANDARD DRAWING.
 - PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 604 CATCH BASIN, NO. 4, 5 OR 5A, AS PER PLAN, AND SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, LABOR, TOOLS AND EQUIPMENT INCIDENTAL TO COMPLETE THIS ITEM OF WORK.

THE NUMBER OF BARS NEEDED ALONG EACH SIDE OF A NO. 4 CATCH BASIN WITH A CONCRETE APRON IS 7. FOR A NO. 5 & 5A CATCH BASIN THE NUMBER OF BARS NEEDED ALONG EACH SIDE WITH A CONCRETE APRON IS 4.



ITEM SPECIAL - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS, - 705.04

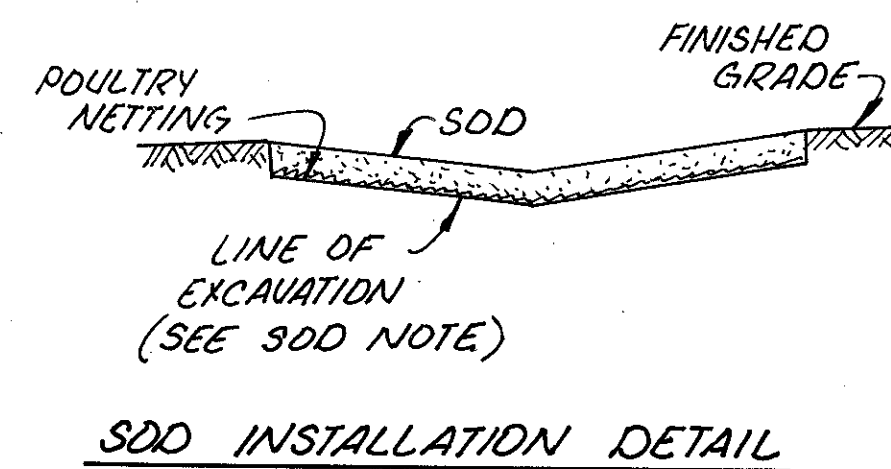
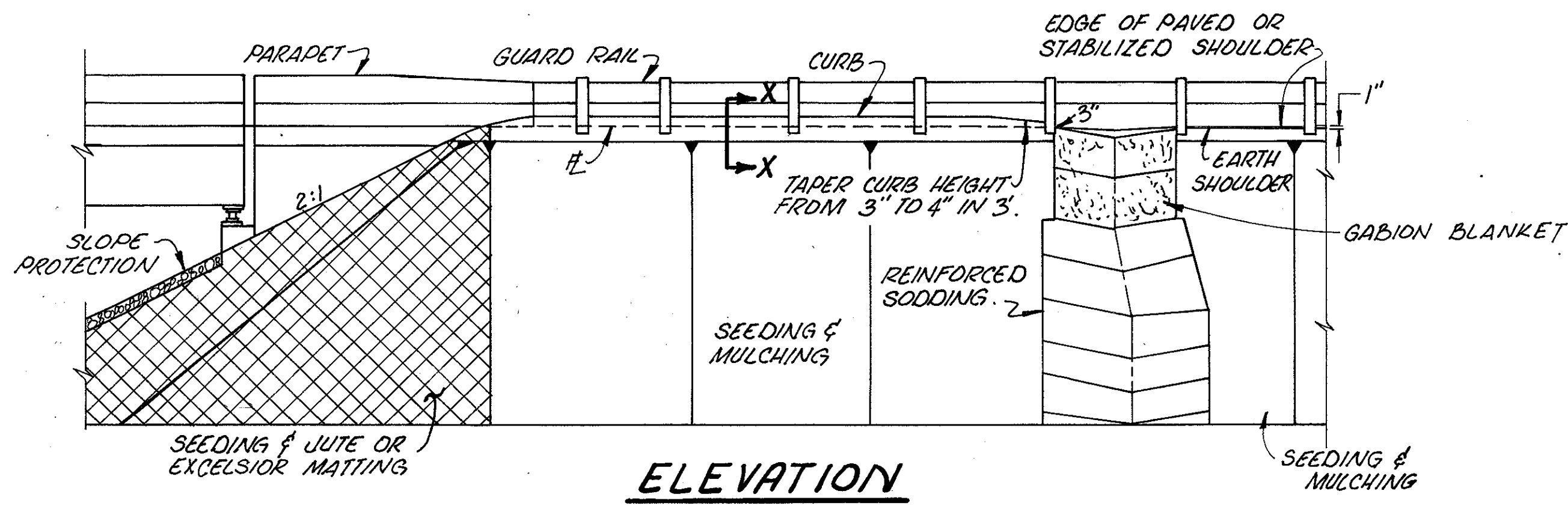
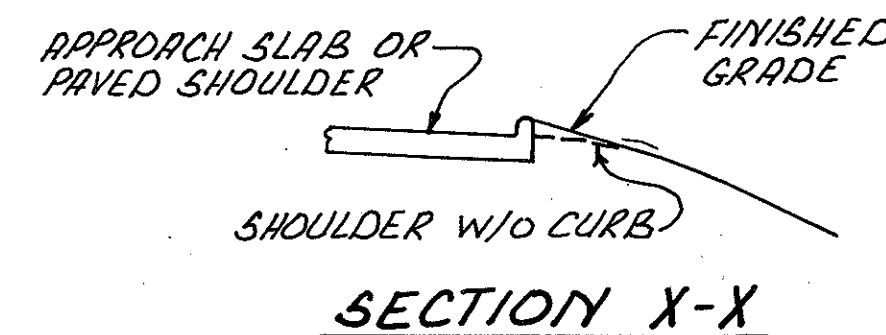
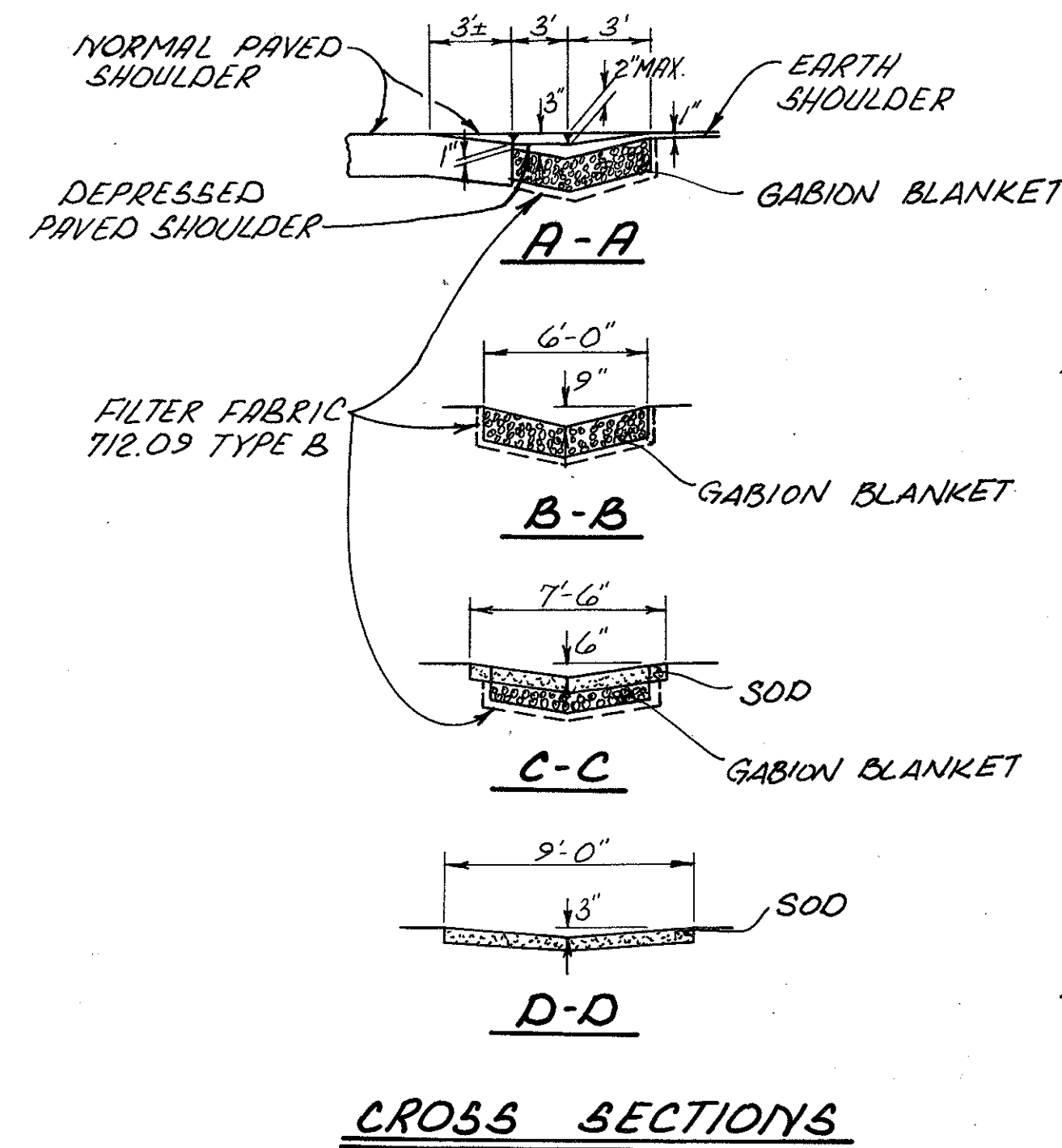
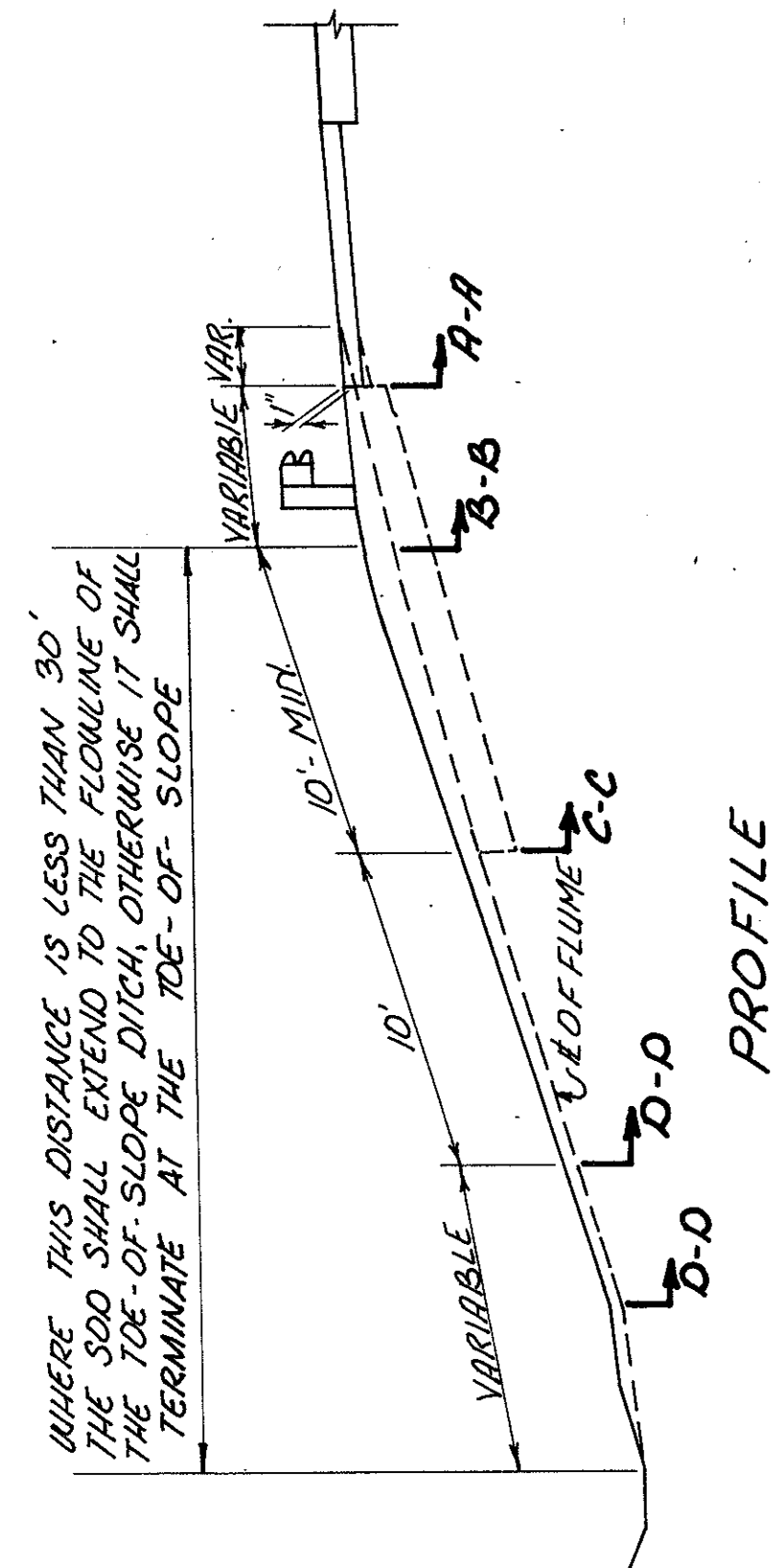
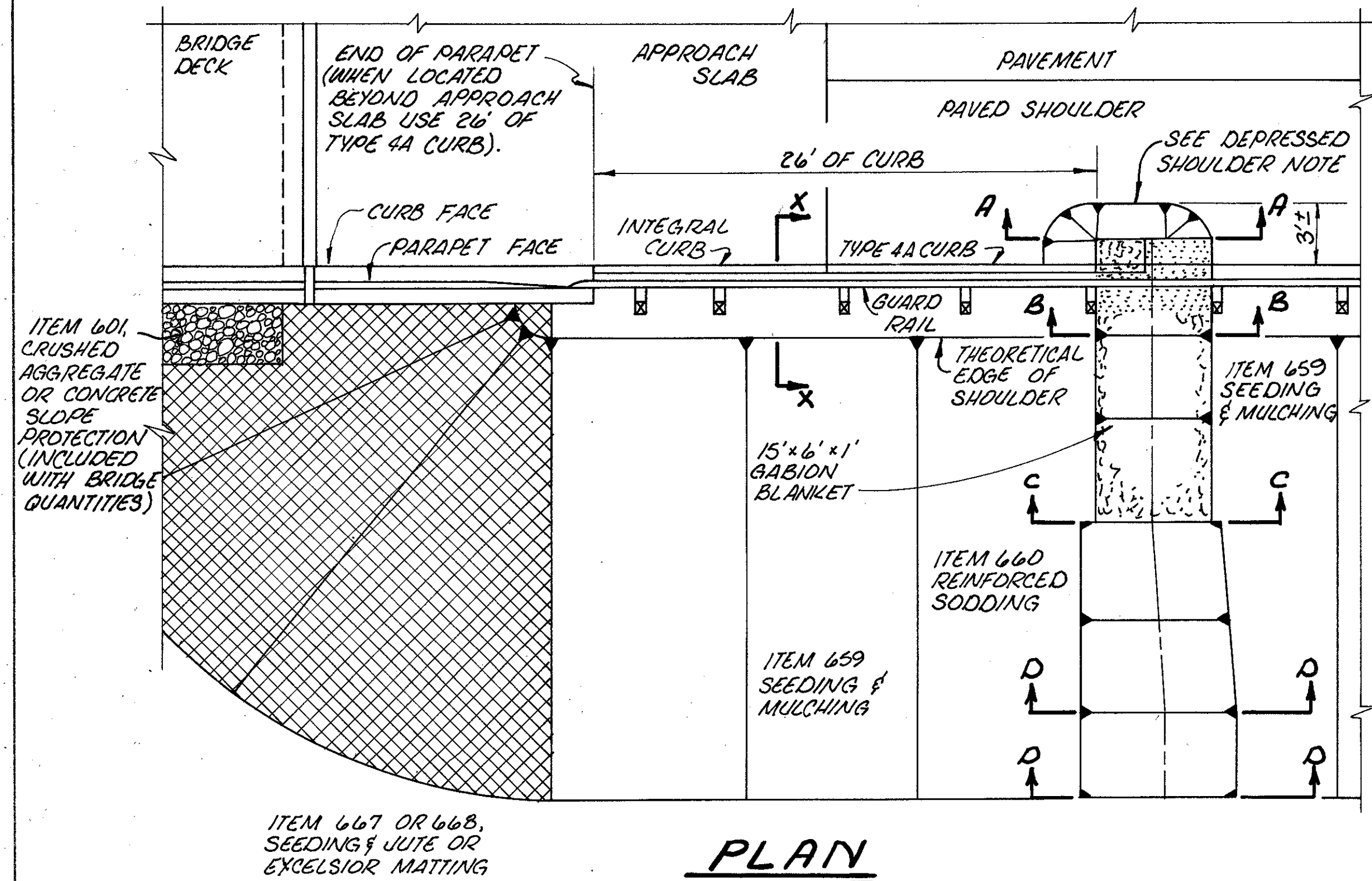


BAR LOCATION DETAIL

CATCH BASIN NO.	TOTAL # OF BARS FOR A	
	STD. APRON	SAG APRON
4	7	14
5 & 5A	12	16

- NOTE:**
- THE FURNISHING AND PLACING OF STEEL FOR THE 5/8" x 12" DOWEL BARS SHALL BE PER 509 REINFORCING STEEL. THE DOWEL BARS SHALL BE EPOXY COATED PER 50910. THE DOWEL BARS SHALL BE INSTALLED PER 510 OR CAST INTO THE BASIN. BOLT OR INSERTS MAY BE USED THE CATCH BASIN SHALL BE PRECAST OR CAST-IN-PLACE CONCRETE, BRICK OR CONCRETE BLOCK WILL NOT BE PERMITTED. THE 6" CONCRETE APRON SHALL BE REINFORCED PER 601.04 (3).

CATCH BASIN NO. 4, 5 & 5A AS PER PLAN



NOTES

DEPRESSED SHOULDER: THIS PORTION OF THE SHOULDER SHALL BE DEPRESSED TO ASSURE POSITIVE DRAINAGE INTO THE GABION FLUME. ESPECIALLY IN THE SHOULDER AREA IT IS IMPORTANT TO EXCAVATE AND SHAPE THE SUBGRADE ACCORDING TO THE CROSS SECTIONS.

PLACING REINFORCED SODDING: PRIOR TO THE PLACEMENT OF SOD, GALVANIZED POULTRY NETTING SHALL BE PLACED ON THE FINISHED SUBGRADE. THE NETTING SHALL BE 4 FOOT WIDE. POULTRY FENCE OR EQUIVALENT, WITH 2 INCH MESH AND NO. 20 GAUGE MINIMUM WIRE. EACH STRAND SHALL BE STAKED SECURELY TO THE SUBGRADE BY USING 1" X 1" X 8" WOOD STAKES OR T-SHAPED PINS OF THE SIZE STATED IN 660.06. THE STAKES OR PINS SHALL BE PLACED AT 4 FOOT INTERVALS ON THE TOP AND BOTTOM AND IN ROWS 4 FEET APART. THE FENCE SHALL BE FASTENED TO THE WOOD STAKES WITH METAL STAPLES. WHERE THE SODDING IS FROM 8 FEET TO 9 FEET WIDE, TWO STRANDS OF NETTING FOR A TOTAL WIDTH OF 8 FEET IS PERMITTED.

SOD: SOD SHALL BE LAID IN ACCORDANCE WITH 660. SPECIAL CARE SHALL BE TAKEN TO EXCAVATE THE SOD BED TO A PROPER DEPTH SO THAT THE SOD IS FLUSH WITH THE SURROUNDING GRADE.

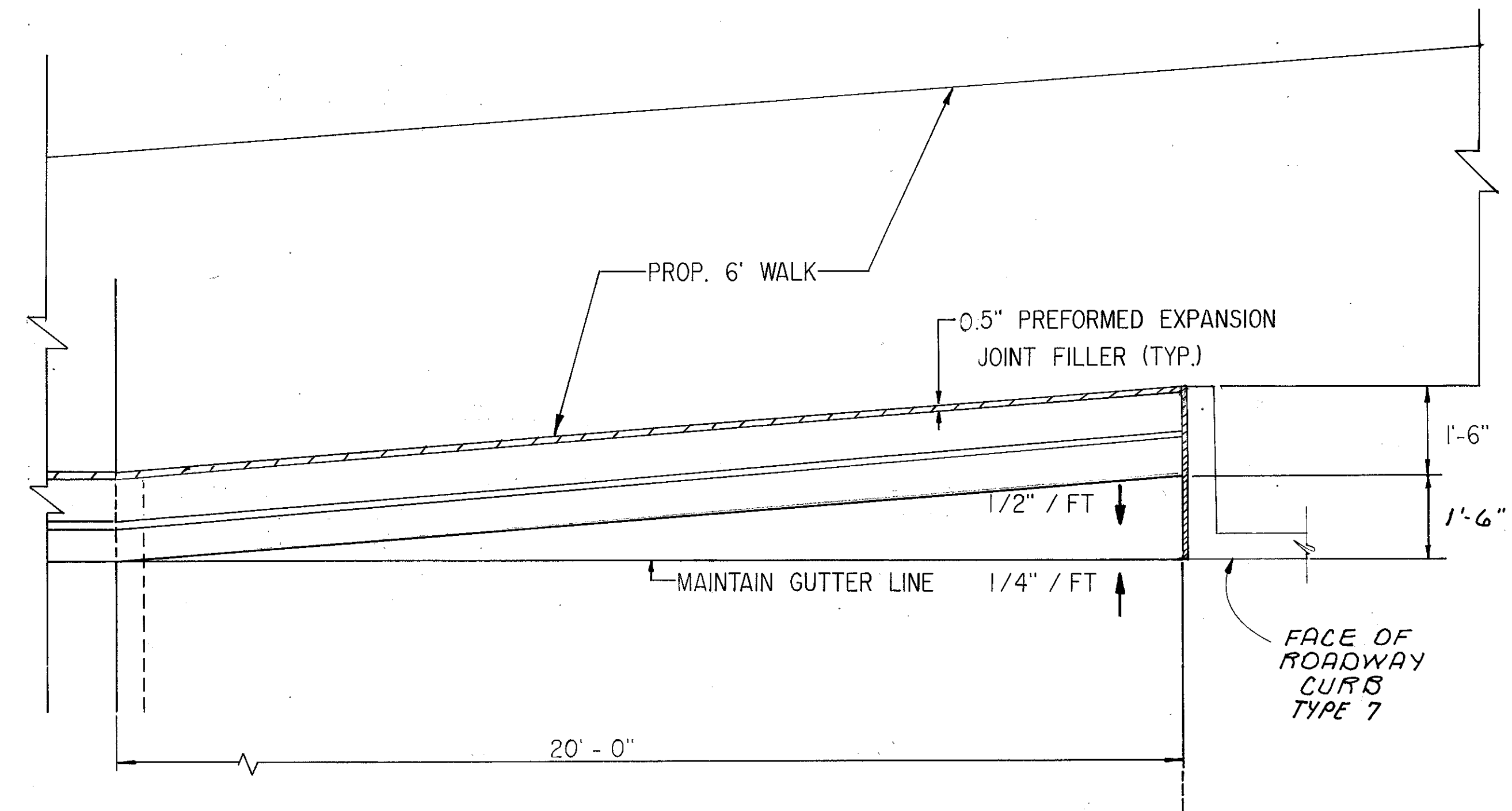
PAYMENT: PAYMENT FOR ALL THE ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 660, SQUARE YARD, REINFORCED SODDING.

GABION BLANKET

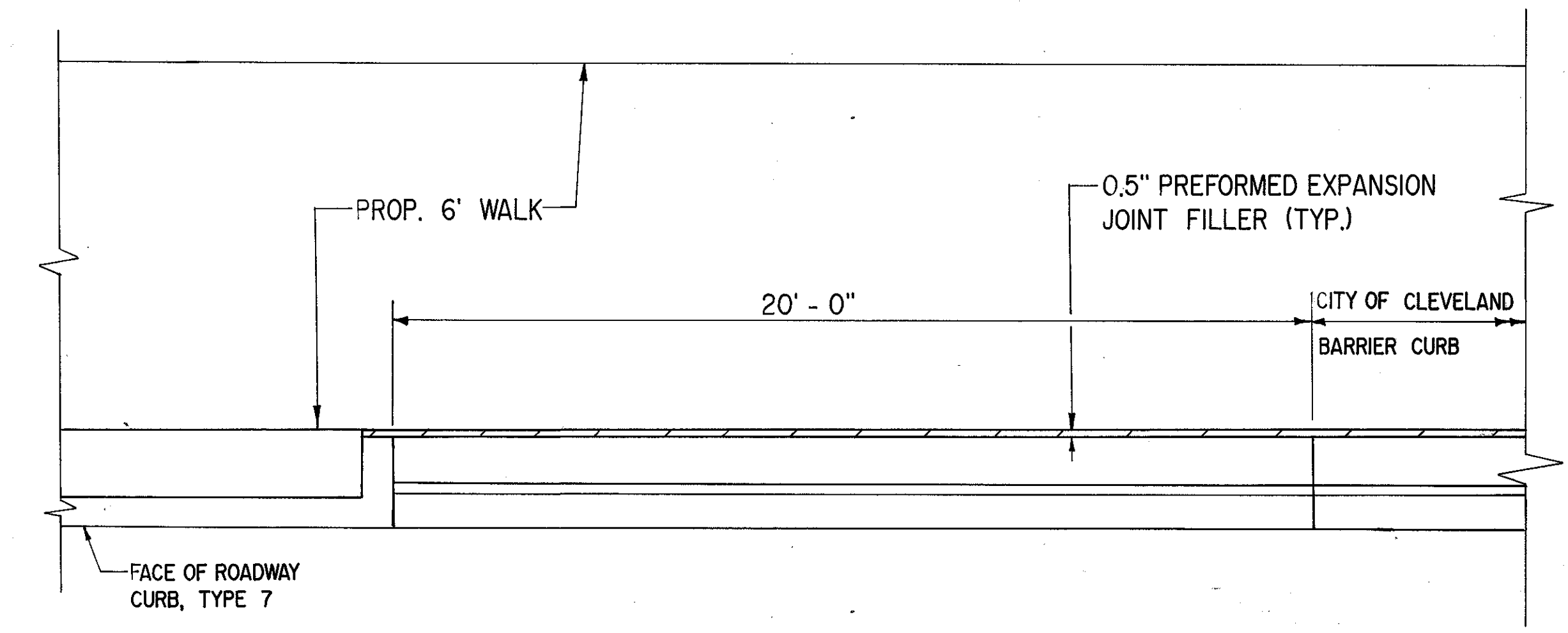
ITEM SPECIAL - GABION, WITH ADDITIONAL COATING, SHALL BE INSTALLED IN ACCORDANCE WITH THIS DETAIL AND THE ATTACHED NOTES.

PLACING FILTER FABRIC

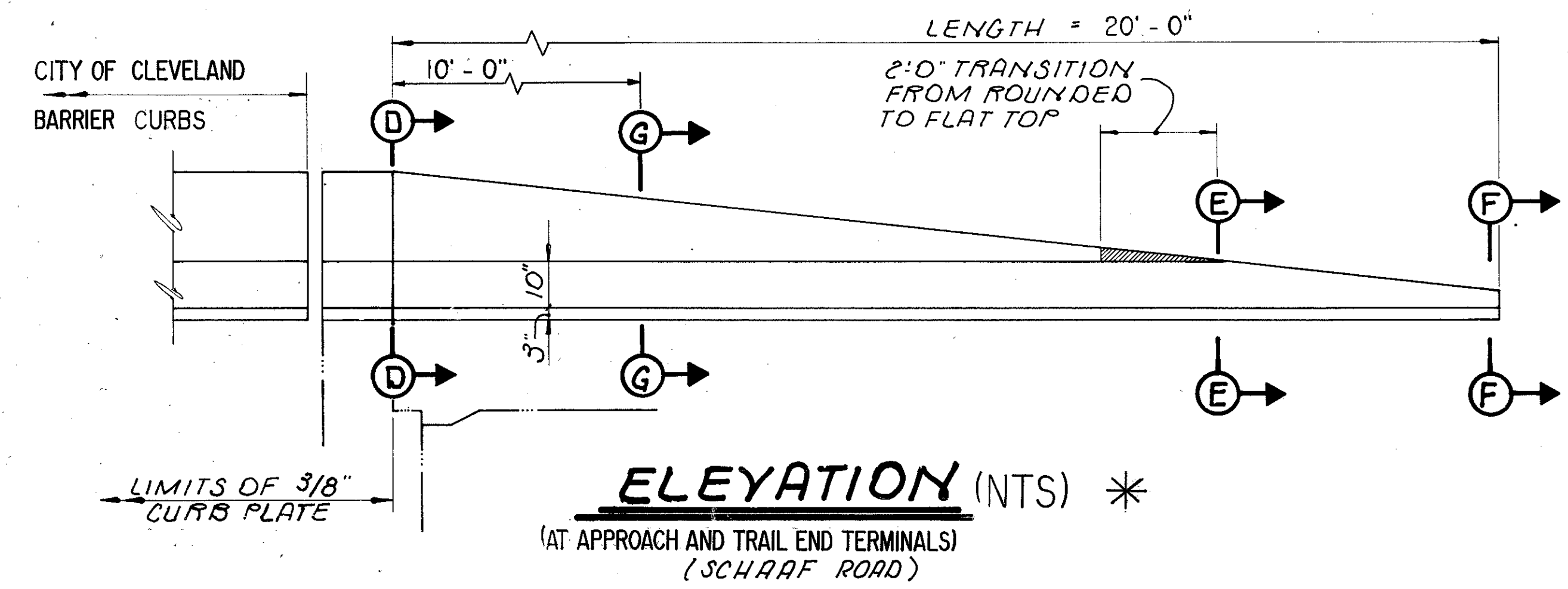
FILTER FABRIC, 712.09 TYPE B SHALL BE PLACED IN ACCORDANCE WITH THE SECOND PARAGRAPH OF 601.08. IN ADDITION, SECURING PINS AS PROVIDED IN 601.08 SHALL BE PLACED TO COINCIDE WITH THE GABION BLANKET WIRE BASKET IN SUCH A MANNER SO AS TO PREVENT DOWNWARD MIGRATION OF THE WIRE BASKET LOWER SURFACE. ALL COSTS OF FURNISHING AND INSTALLING FILTER FABRIC SHALL BE INCLUDED IN ITEM SPECIAL - GABION, WITH ADDITIONAL COATING.



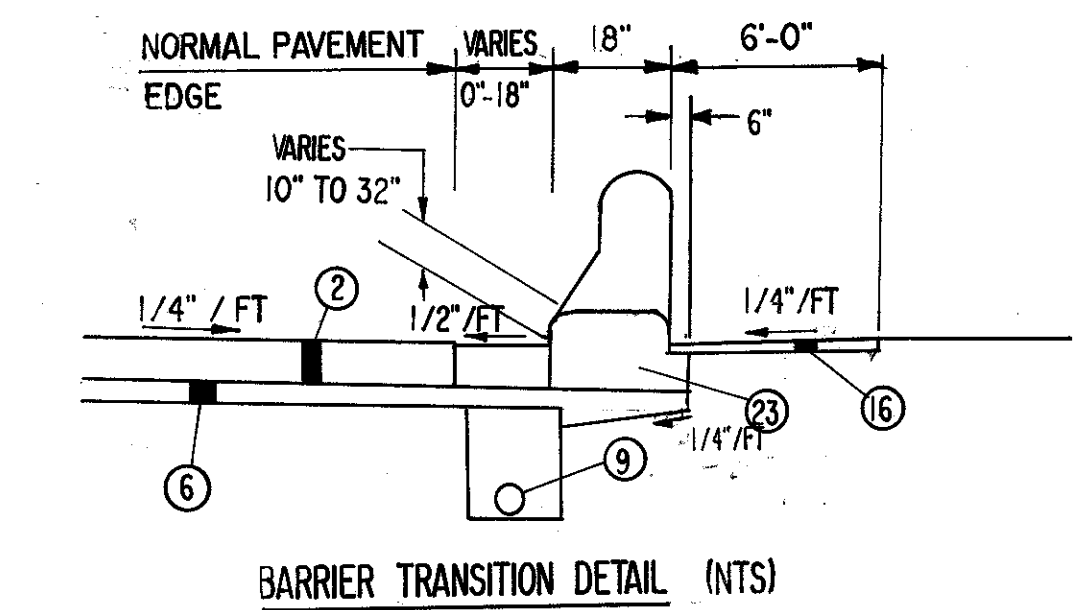
PLAN (NTS)
APPROACH END TERMINAL
(SCHAAF ROAD)



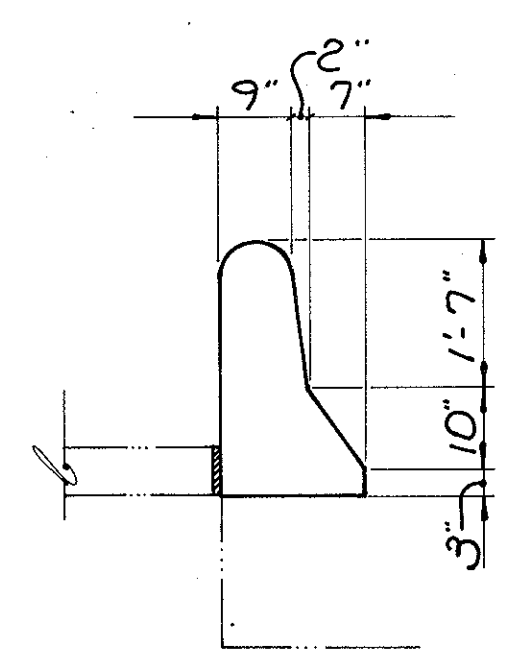
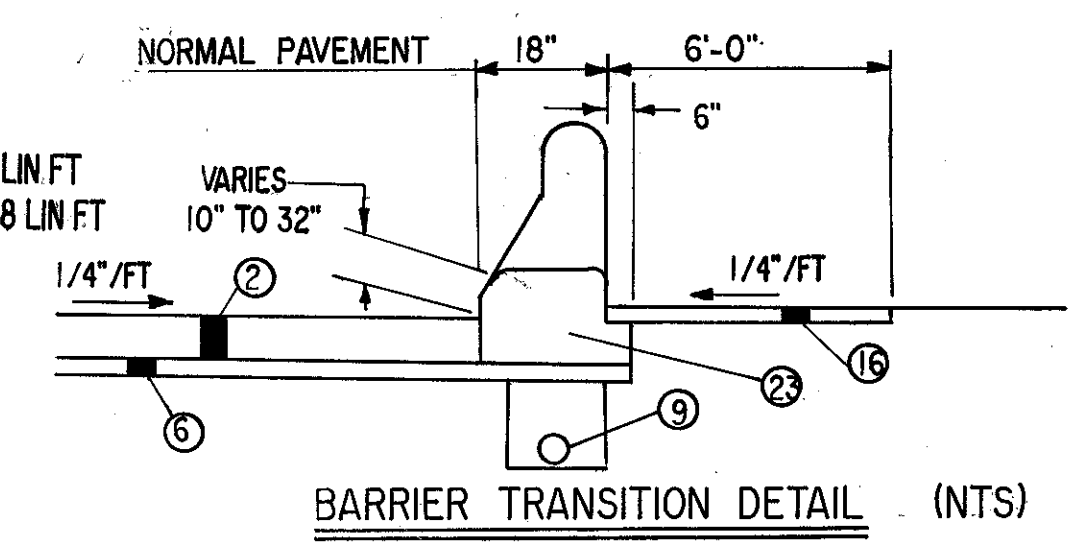
PLAN (NTS)
TRAIL END TERMINAL
(SCHAAF ROAD)
(* VERTICAL TAPER SAME AS APPROACH END TERMINAL)



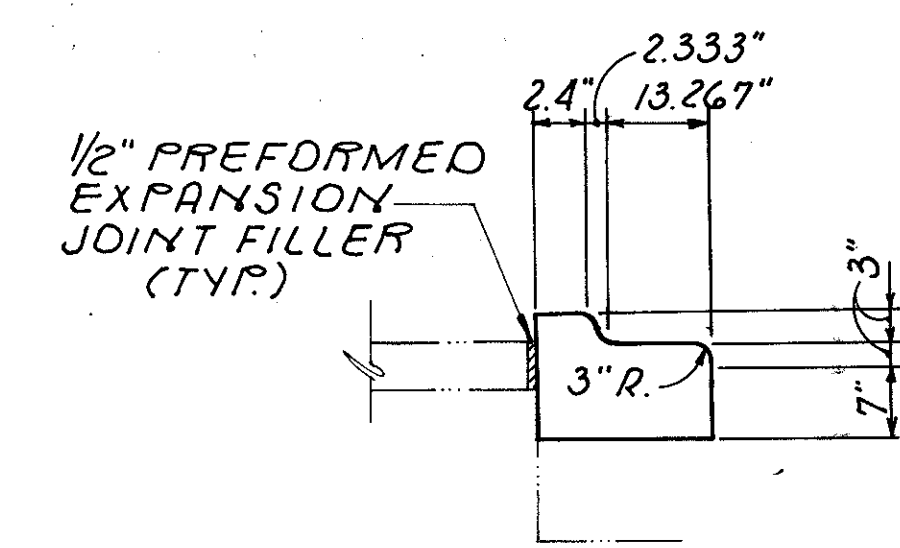
SCHAAF ROAD
STA. 17+78 TO STA. 18+15 (RT) = 37 LIN FT
STA. 21+34 TO STA. 21+98 (LT) = 64 LIN FT



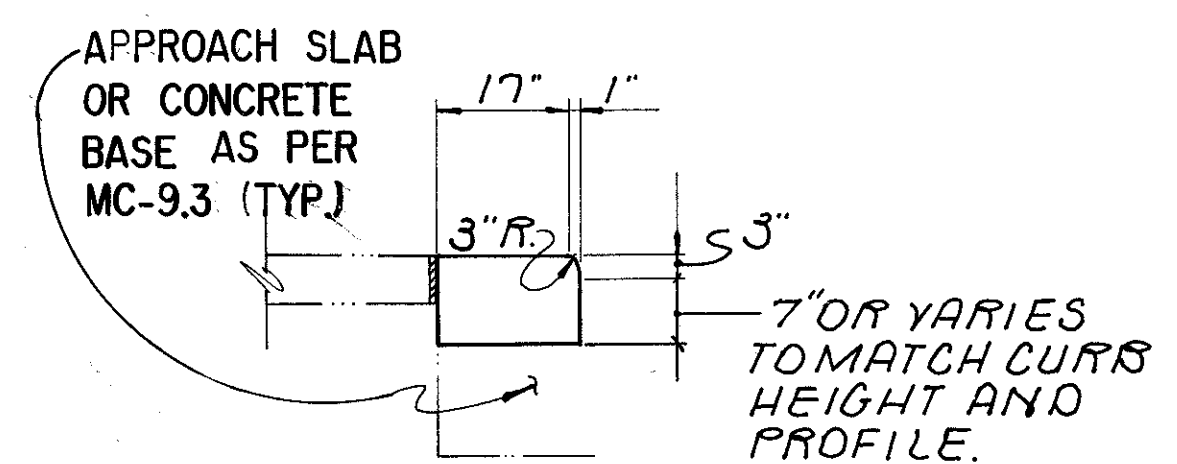
SCHAAF ROAD
STA. 17+53 TO STA. 18+15 (LT) = 62 LIN FT
STA. 21+50 TO STA. 21+98 (RT) = 48 LIN FT



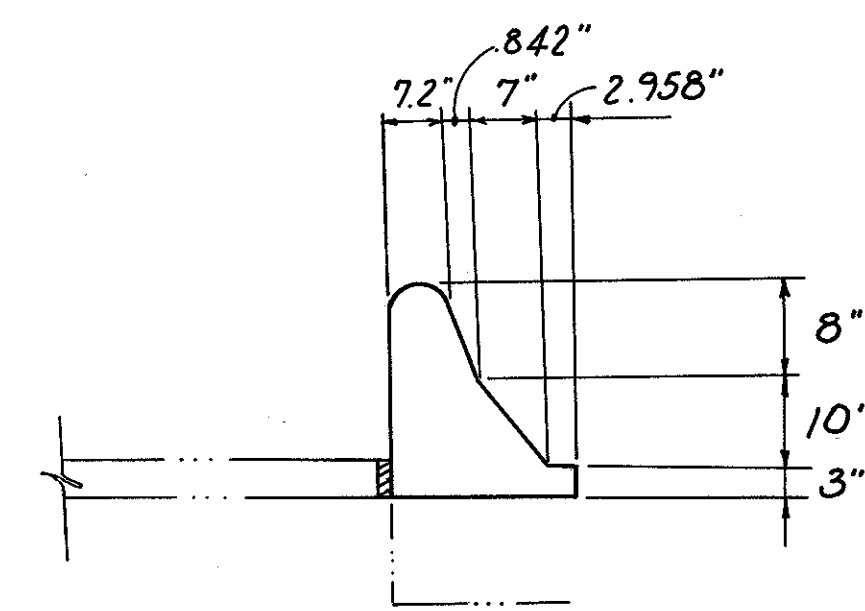
SECTION D-D



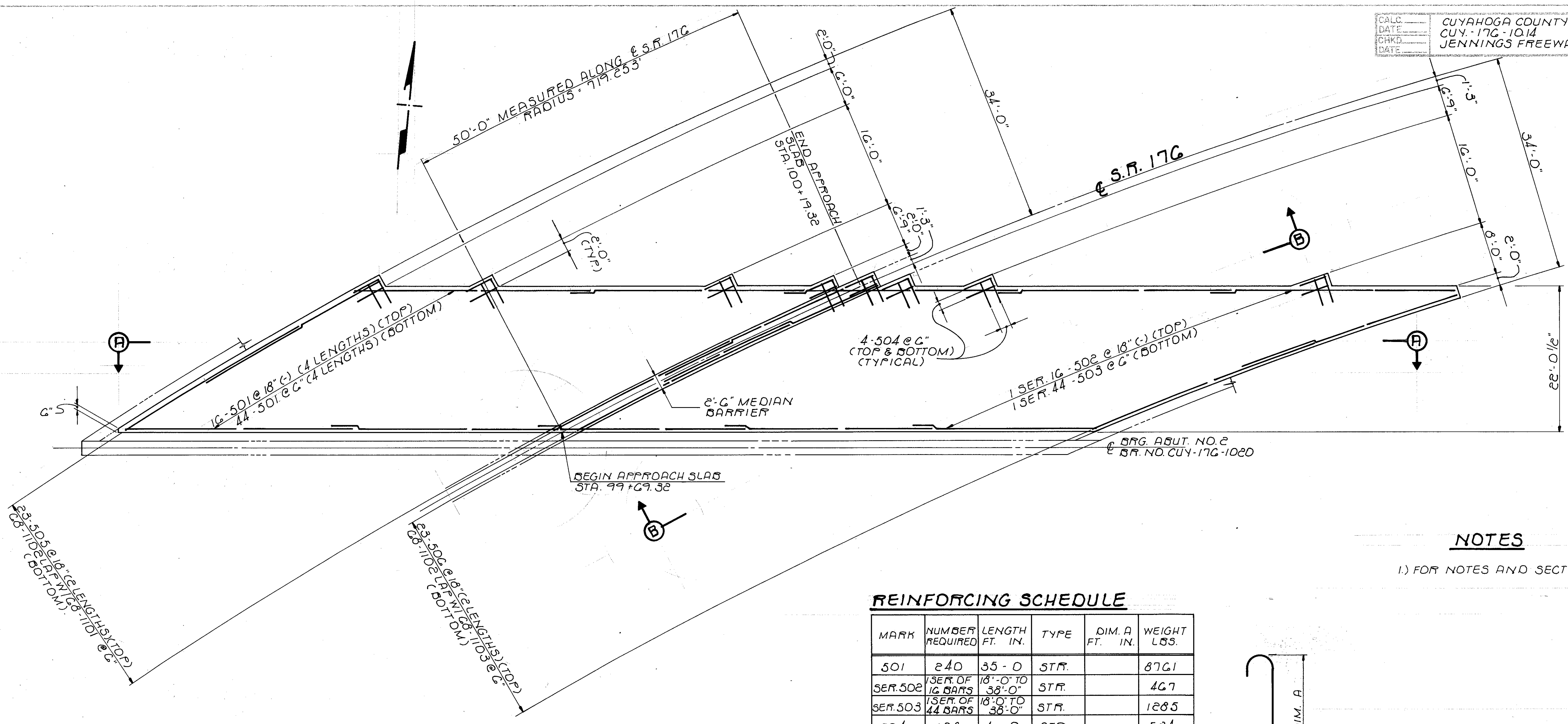
SECTION E-E



SECTION F-F



SECTION G-G



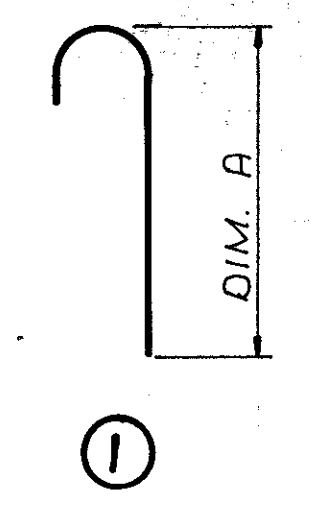
PLAN
APPROACH SLAB NO. 2
BR. NO. CUY-17G-1020

NOTES

1.) FOR NOTES AND SECTIONS SEE SHT. 187/395

REINFORCING SCHEDULE

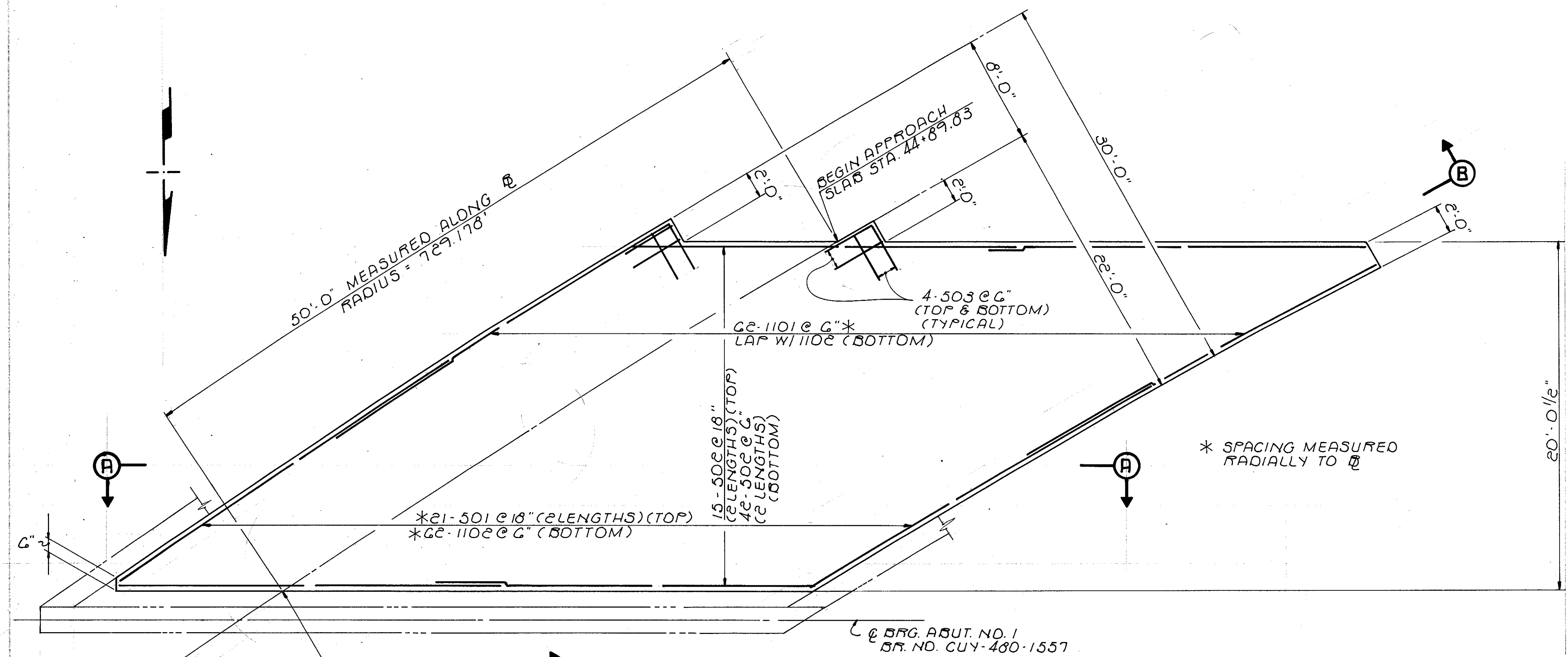
MARK	NUMBER REQUIRED	LENGTH FT. IN.	TYPE	DIM. A FT. IN.	WEIGHT LBS.
501	240	35-0	STR.		8761
SER. 502	1 SER. OF 16 BARS	18'-0" TO 38'-0"	STR.		467
SER. 503	1 SER. OF 44 BARS	18'-0" TO 38'-0"	STR.		1285
504	128	4-0	STR.		534
505	46	26-6	STR.		1272
506	46	31-6	STR.		1511
1101	68	30-0	STR.		10839
1102	136	31-9	I	30-2	22942
1103	68	40-0	STR.		14451
TOTAL WEIGHT					62062



RELOC. S.R. 17G

NOTES:

- 1.) FOR ADDITIONAL DETAILS NOT SHOWN, SEE STANDARD DWG. AS-1-81.
- 2.) ALL REINFORCING STEEL SHALL BE EPOXY COATED.
- 3.) ABBREVIATION P.E.J.F. = PREFORMED EXPANSION JOINT FILLER.

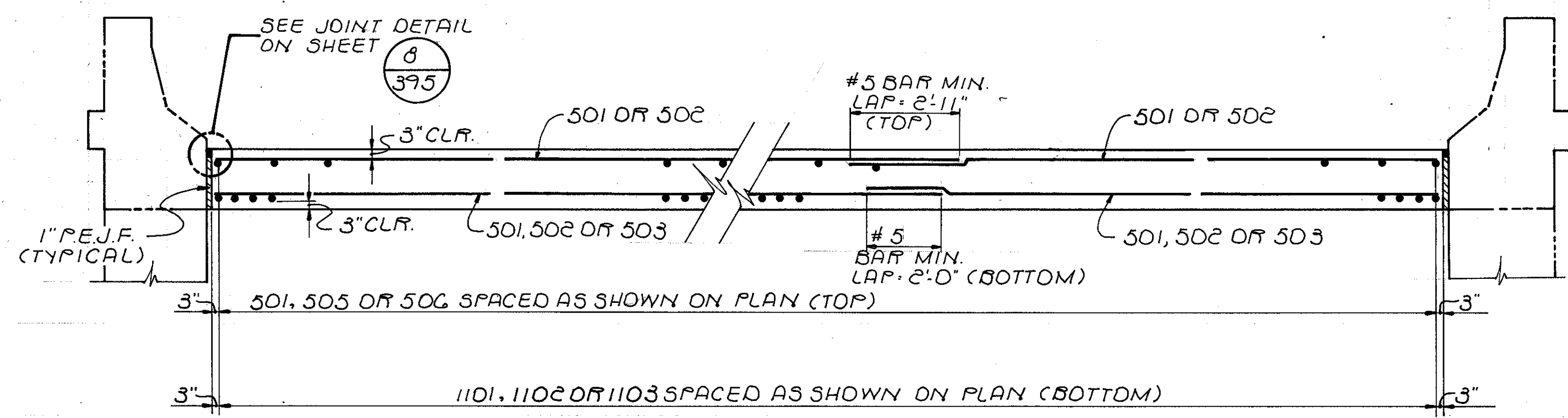
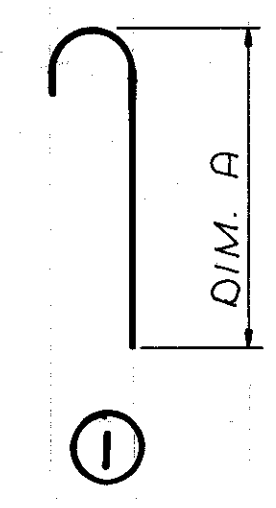


PLAN

APPROACH SLAB NO. 1
BR. NO. CUY-480-1557

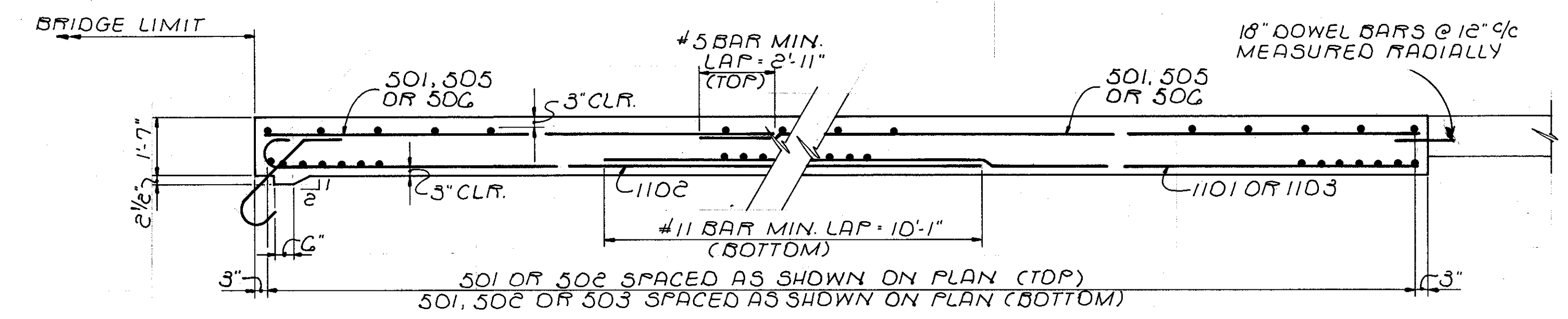
REINFORCING SCHEDULE

MARK	NUMBER REQUIRED	LENGTH FT. IN.	TYPE	DIM A FT. IN.	WEIGHT LBS.
501	42	30-0	STR.		1314
502	114	40-0	STR.		4756
503	32	4-0	STR.		134
1101	62	33-3	STR.		10953
1102	62	34-10	I	33-3	11476
TOTAL WEIGHT					28633



SECTION A-A

NOTE: MEDIAN BARRIER ALONG S.R. 176 NOT SHOWN. SEE TYPICAL SECTION ON SHEET 8/395



SECTION B-B

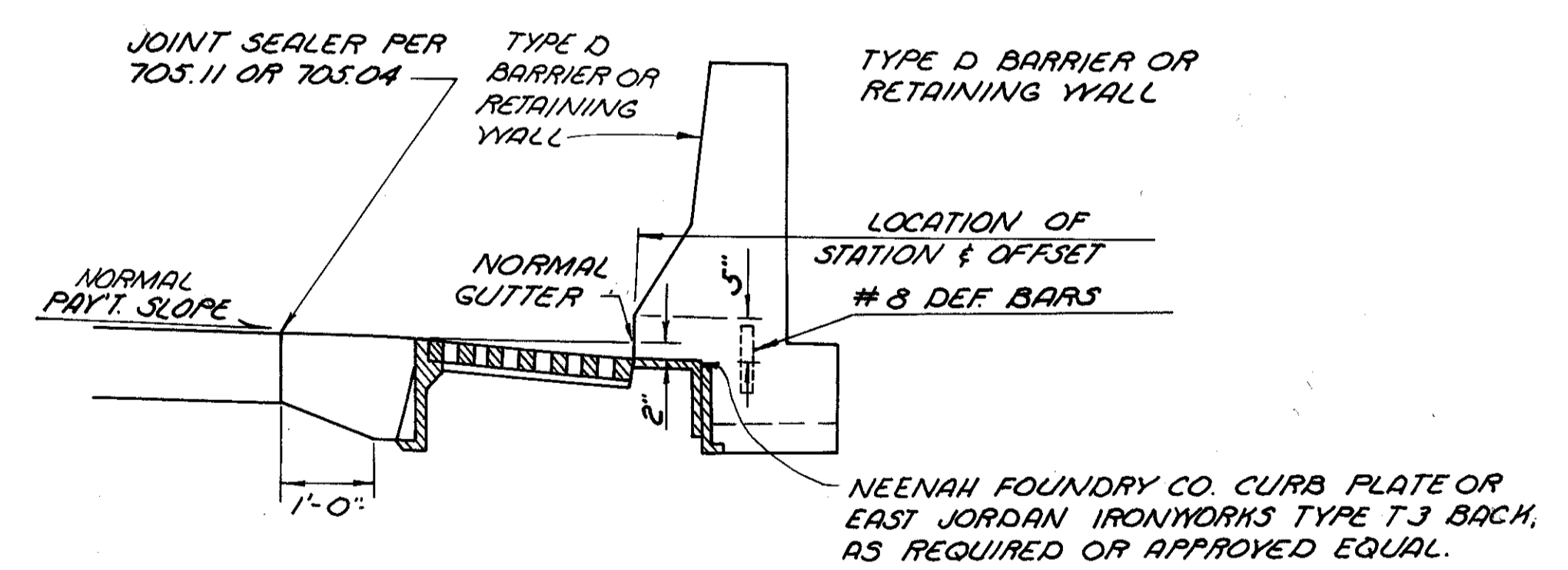
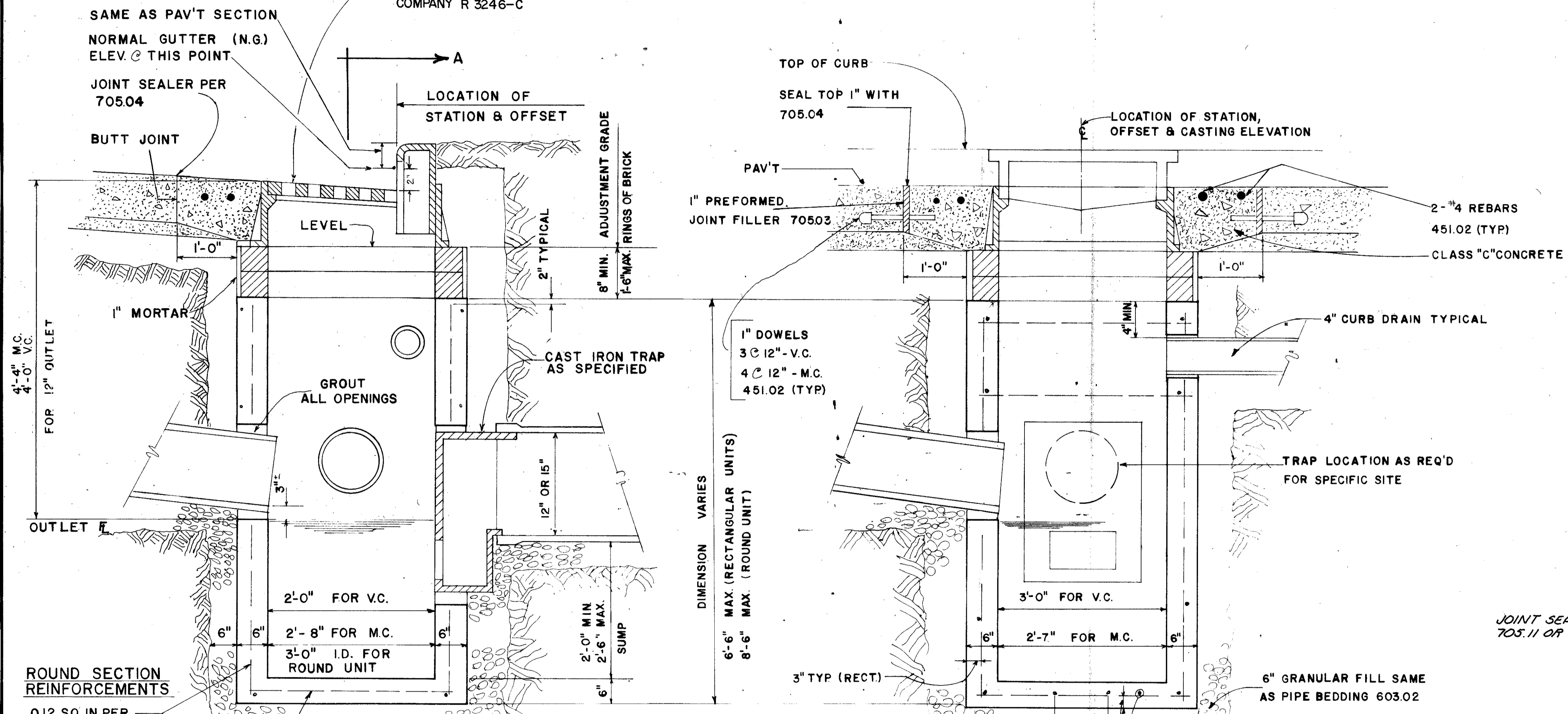
No.1 CATCH BASIN

LEGEND
V.C. - VERTICAL CURB
M.C. - MOUNTABLE CURB
T/C - TOP OF CASTING
N.G. - NORMAL GUTTER

EAST JORDAN IRONWORKS INC. CAT. NO. 7035 WITH TYPE M4 "V" GRATE AND TYPE T1 BACK OR NEENAH FOUNDRY COMPANY R 3246-C

ALTERNATE BASIN SHAPE
A ROUND PRECAST CONCRETE UNIT MAY BE USED IN LIEU OF RECTANGULAR UNIT. THE ROUND SECTION SHALL BE A 36" I.D. UNIT WITH INTEGRAL BASE AND PRECAST TOP TRANSITION (ROUND TO RECTANGULAR) SECTION TO FIT CASTING BEING USED. TRANSITION UNIT REQUIRES A#5 REBAR AT CORNERS OF RECTANGULAR SHAPED SECTION AND 3x8 W6xW5 WELDED WIRE FABRIC IN VERTICAL SECTION.

- NOTES**
- ALL REINFORCING SHALL BE 709#4 DEFORMED BARS AND SUFFICIENT TO PERMIT SHIPPING AND PLACEMENT WITHOUT DAMAGE FOR RECTANGULAR SHAPE.
 - CONCRETE SHALL BE ODOT 499 CLASS "C" 4000 PSI IN 28 DAYS.
 - BOX-OUT PAID FOR AS PAV'T IN PORTLAND CONCRETE (PCC) PAV'T AND AS PART OF THE CATCH BASIN IN ASPHALTIC CONCRETE PAV'T (ACP)-NO DEDUCTION IN PAV'T OR CURB QUANTITY BECAUSE OF CASTINGS. FOR FULL WIDTH ACP CONSTRUCT A PCC APRON THE SIZE OF THE BOX-OUT - DELETE DOWELS WHEN USED WITH A PCC CURB AND GUTTER MAINTAIN GUTTER WIDTH.



VERTICAL CURB
No.1-VC-CB

SECTION A-A

MOUNTABLE CURB
No.1-MC-CB

ALTERNATE
IF APPROVED BY THE ENGINEER 8" THICK MASONRY WALLS MAY BE USED IN LIEU OF PRECAST UNITS.

TRAP
EAST JORDAN IRONWORKS, INC. CAT. NO. 5964-12 OR 15, NEENAH FOUNDRY CO. CAT. NO. R-3707-12 OR 15 OR APPROVED EQUAL.

REST OF DETAIL SAME AS VERTICAL CURB DETAILS

REVISIONS	DATE

CITY OF CLEVELAND
ENGINEERING DIVISION
ANTHONY A. DIPIETRO-DIRECTOR OF PUBLIC SERVICE

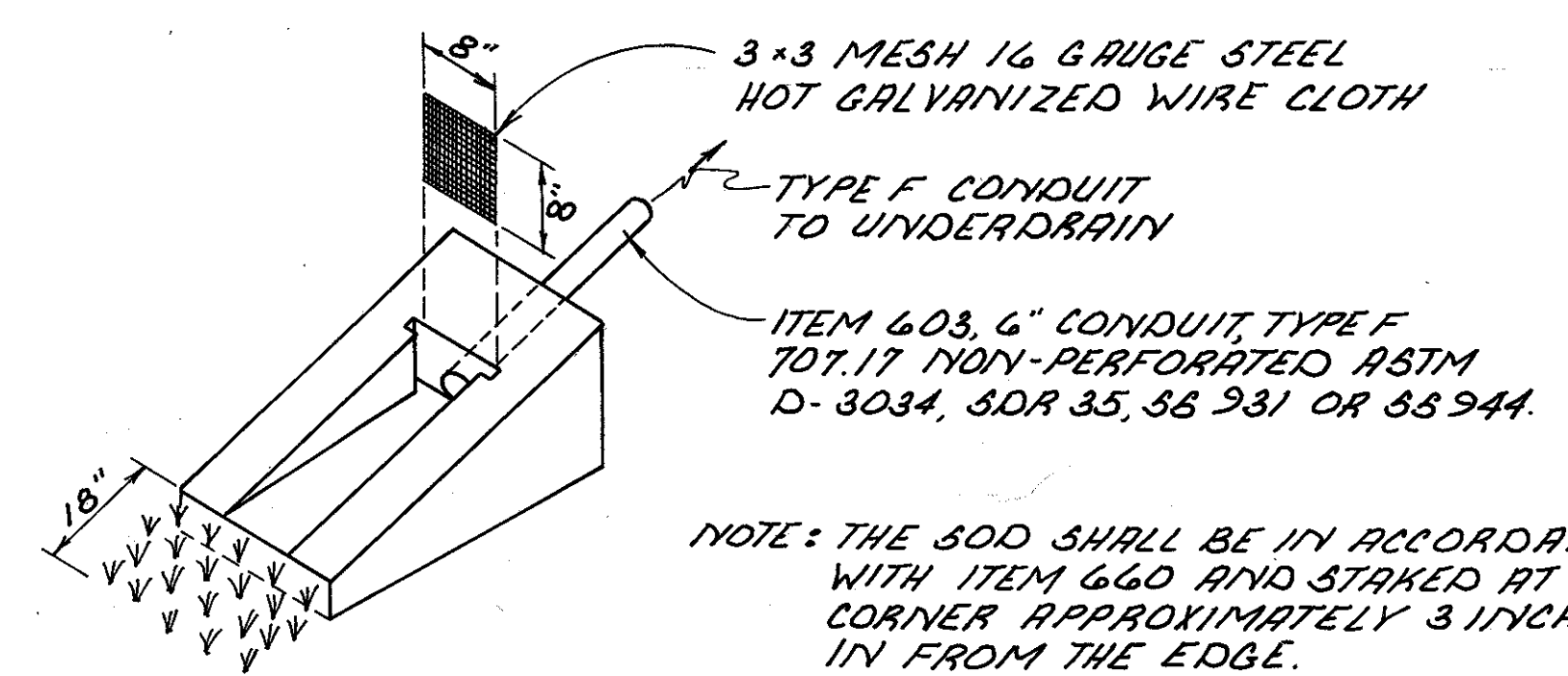
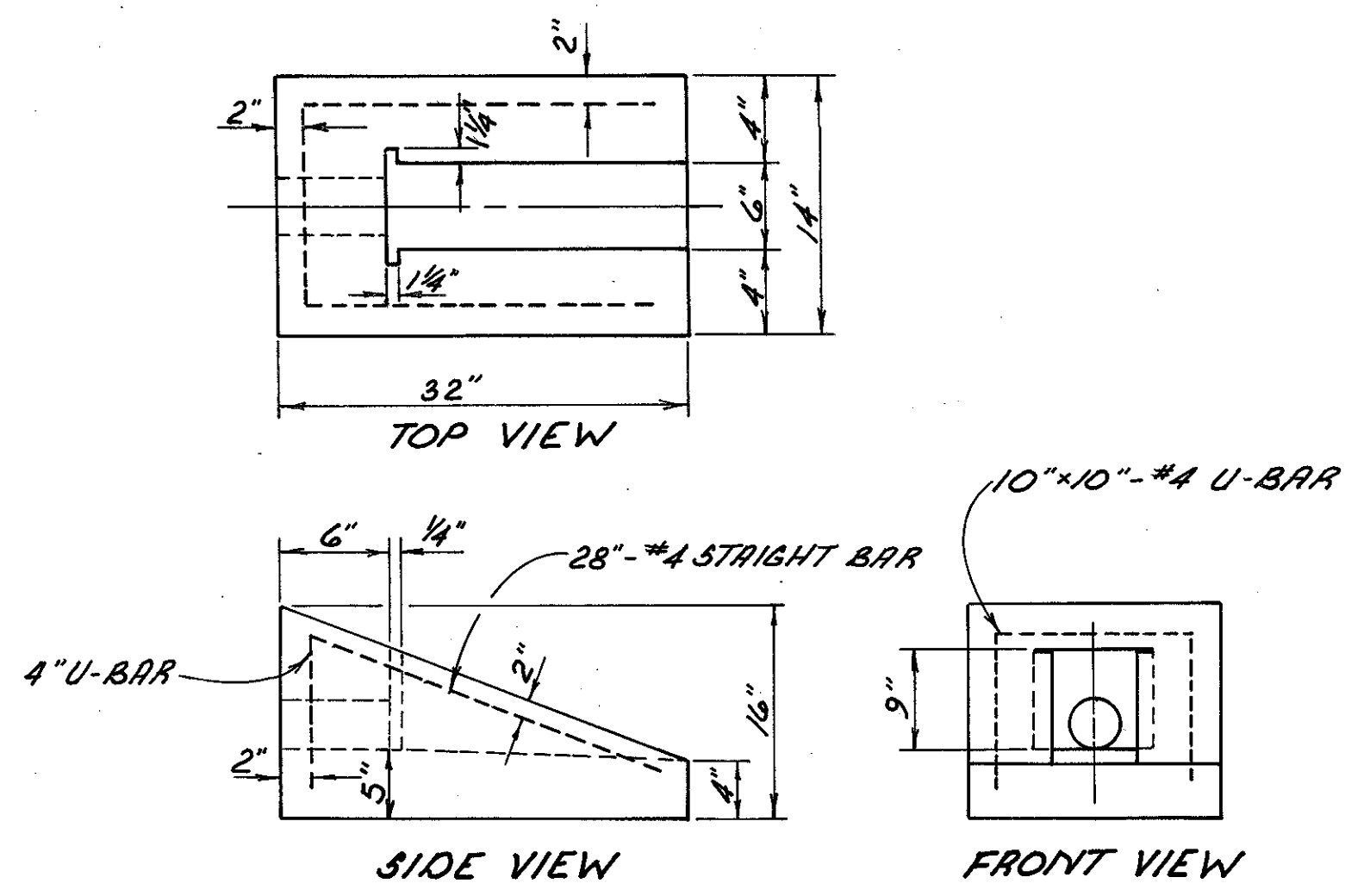
RECTANGULAR PRECAST CONCRETE No.1 CATCH BASIN
NO SCALE

DRAWN BY: *[Signature]* DATE: 6-7-90
SUBMITTED BY: _____ DATE: _____
ENG. OF DESIGN
APPROVED: _____ DATE: _____
COMM. OF ENG.

RELOC. SR-176

PRECAST REINFORCED CONCRETE OUTLET

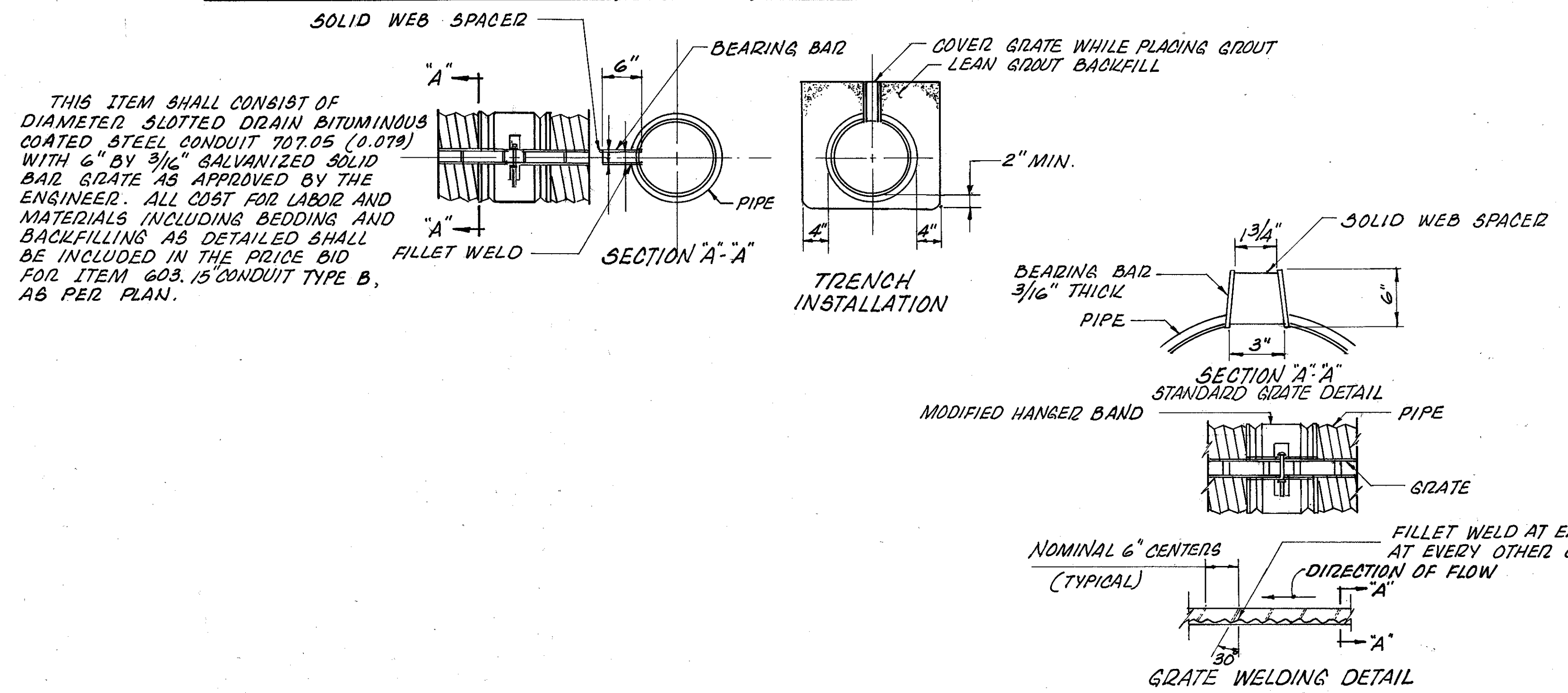
THE CONCRETE OUTLET SHALL MEET THE REQUIREMENTS OF ITEM 604 IN THE CONSTRUCTION & MATERIALS SPECIFICATIONS. PAYMENT SHALL BE MADE ON AN EACH BASIS. PAYMENT SHALL INCLUDE THE COST OF THE SOD & WIRE CLOTH.



NOTE: THE SOD SHALL BE IN ACCORDANCE WITH ITEM 660 AND STAKED AT EACH CORNER APPROXIMATELY 3 INCHES IN FROM THE EDGE.

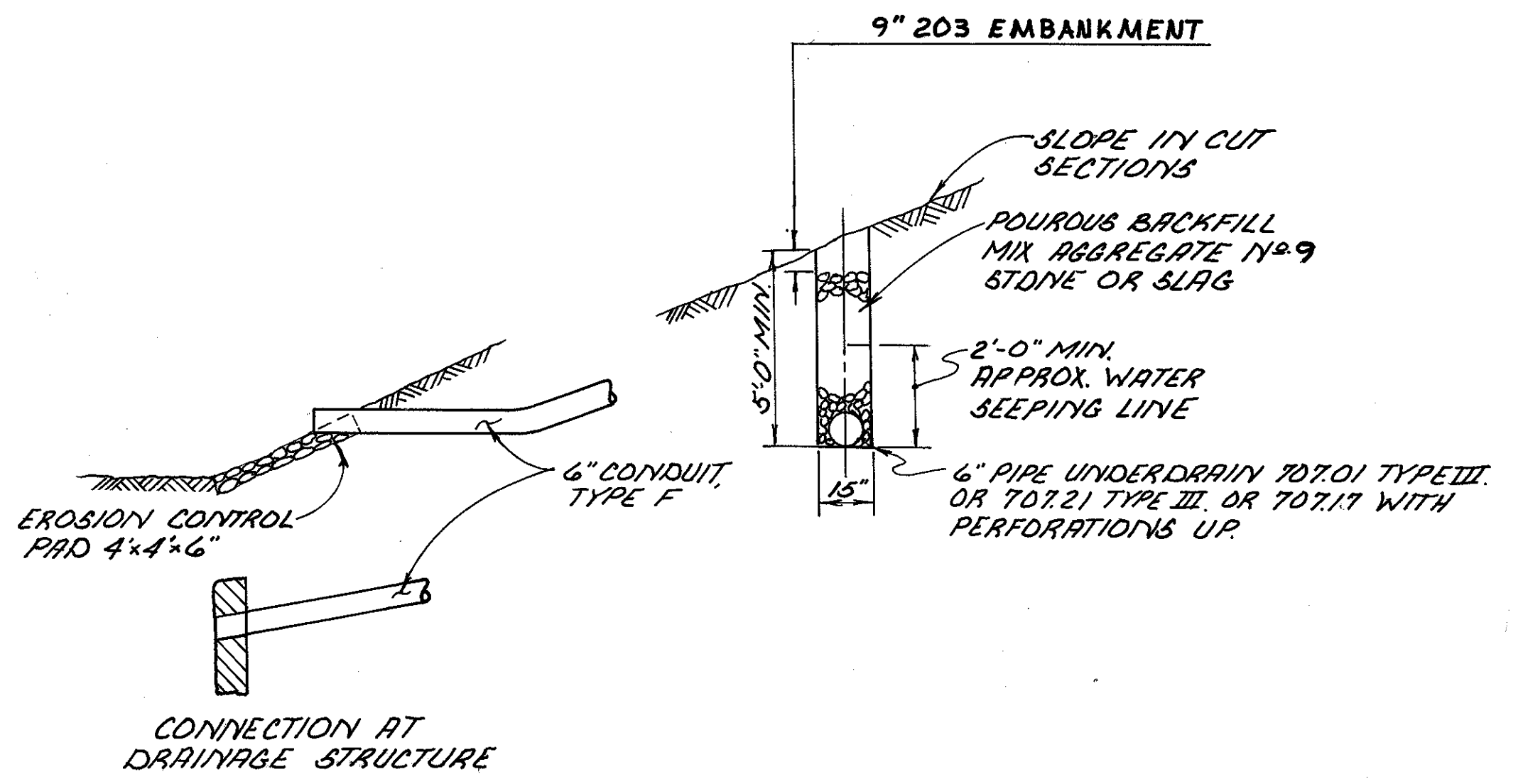
ALL REQUIRED REINFORCING STEEL AS LISTED ON THE STANDARD CONSTRUCTION DRAWINGS SHALL BE EPOXY COATED IN ACCORDANCE WITH 709.00 OR 709.14 AND PLACED AS PER 509.10. ALL COSTS OF THIS TREATMENT SHALL BE INCLUDED IN THE COST OF THIS ITEM.

ITEM 603 15" CONDUIT, TYPE B, AS PER PLAN

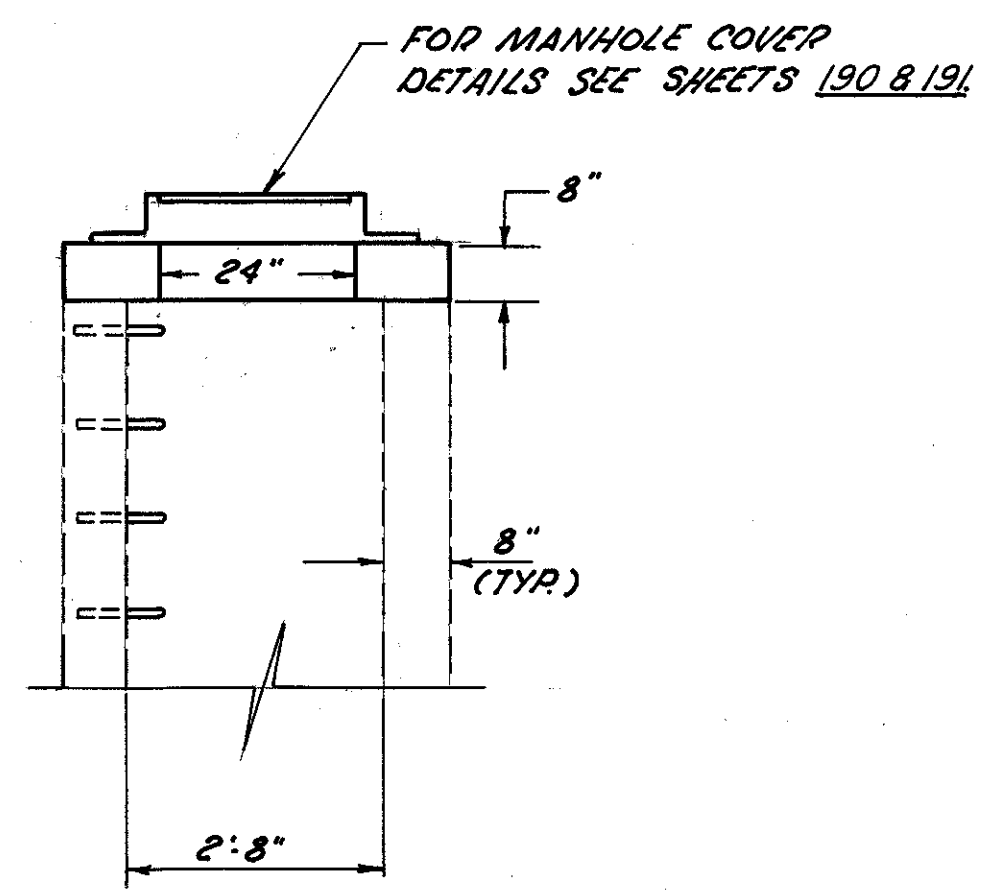
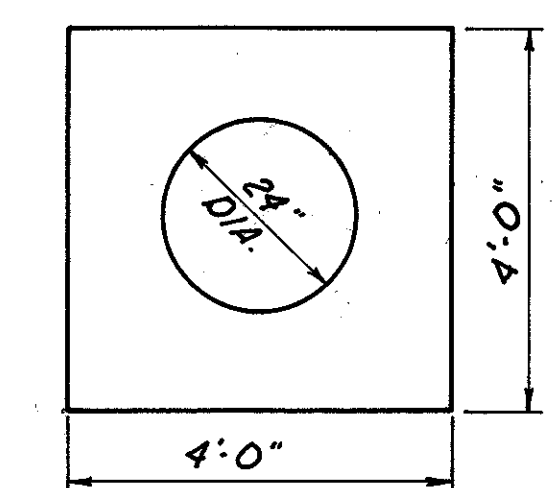


THIS ITEM SHALL CONSIST OF DIAMETER SLOTTED DRAIN BITUMINOUS COATED STEEL CONDUIT 707.05 (0.075) WITH 6" BY 3/16" GALVANIZED SOLID BAR GRATE AS APPROVED BY THE ENGINEER. ALL COST FOR LABOR AND MATERIALS INCLUDING BEDDING AND BACKFILLING AS DETAILED SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 603.15 CONDUIT TYPE B, AS PER PLAN.

DETAIL FOR INTERCEPTING DRAIN



- NOTES:
- SEE GENERAL NOTE SHEET 12.
 - OUTLET INTERCEPTING DRAINS EITHER INTO DITCH DRAINAGE STRUCTURE OR OR ONTO AN EROSION CONTROL PAD AT ROADWAY DITCH LINE.
 - SEEPAGE MAY NOT BE APPARENT AT THE TIME OF SLOPE EXCAVATION & THE CONTRACTOR MAY BE REQUIRED TO INSTALL THE DRAINS AFTER THE SLOPE EXCAVATION.
 - WHERE FINE SOILS ARE ENCOUNTERED THE PIPE TRENCH SHALL BE LINED WITH 712.03 FILTER FABRIC TYPE H, AS DIRECTED BY THE ENGINEER.



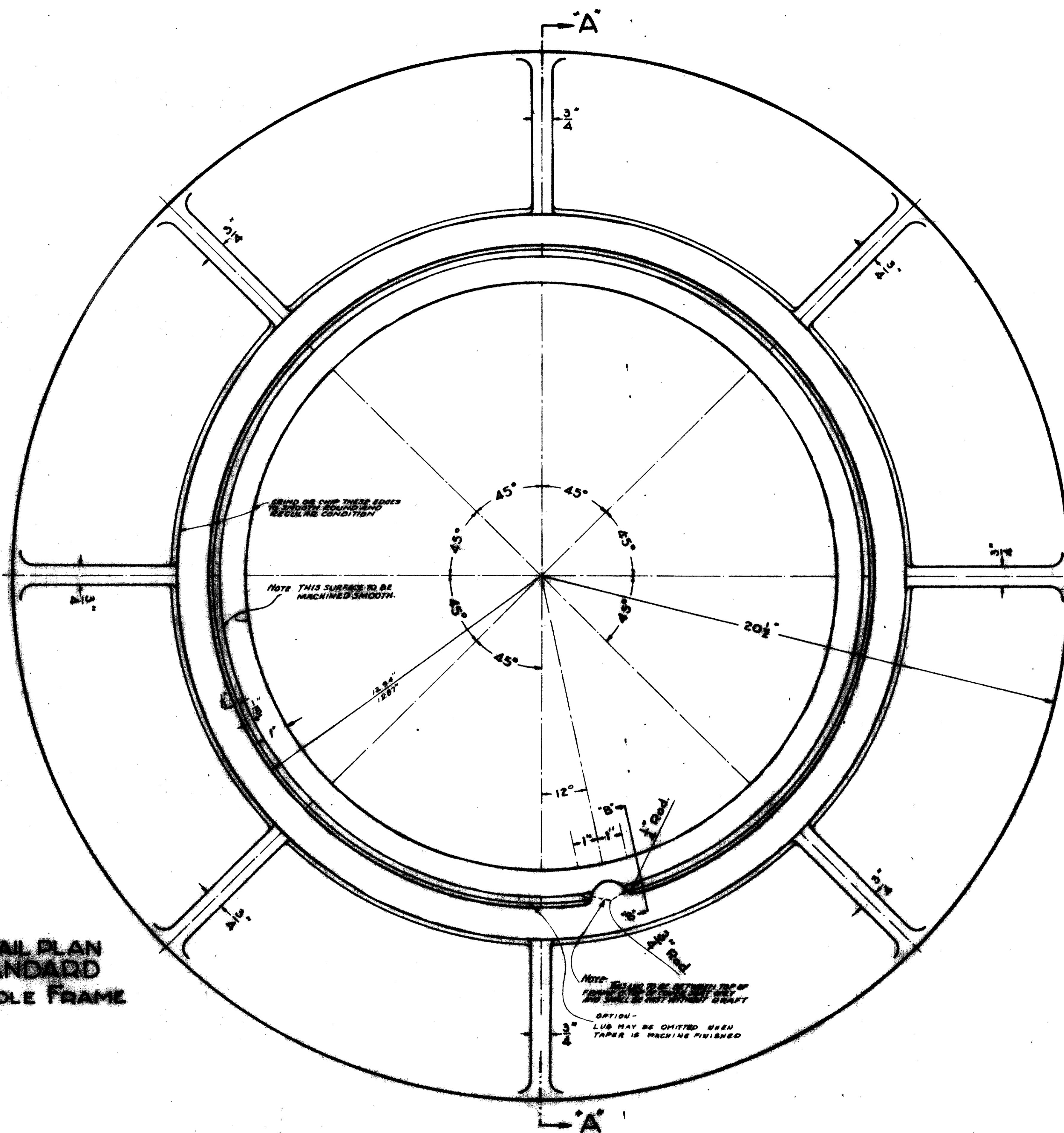
CATCH BASIN RECONSTRUCTED TO GRADE, AS PER PLAN

SCALE: 1/2" = 1'-0"

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

190
295

CUYAHOGA COUNTY
CUY-176-10.14



**DETAIL PLAN
STANDARD
MANHOLE FRAME**

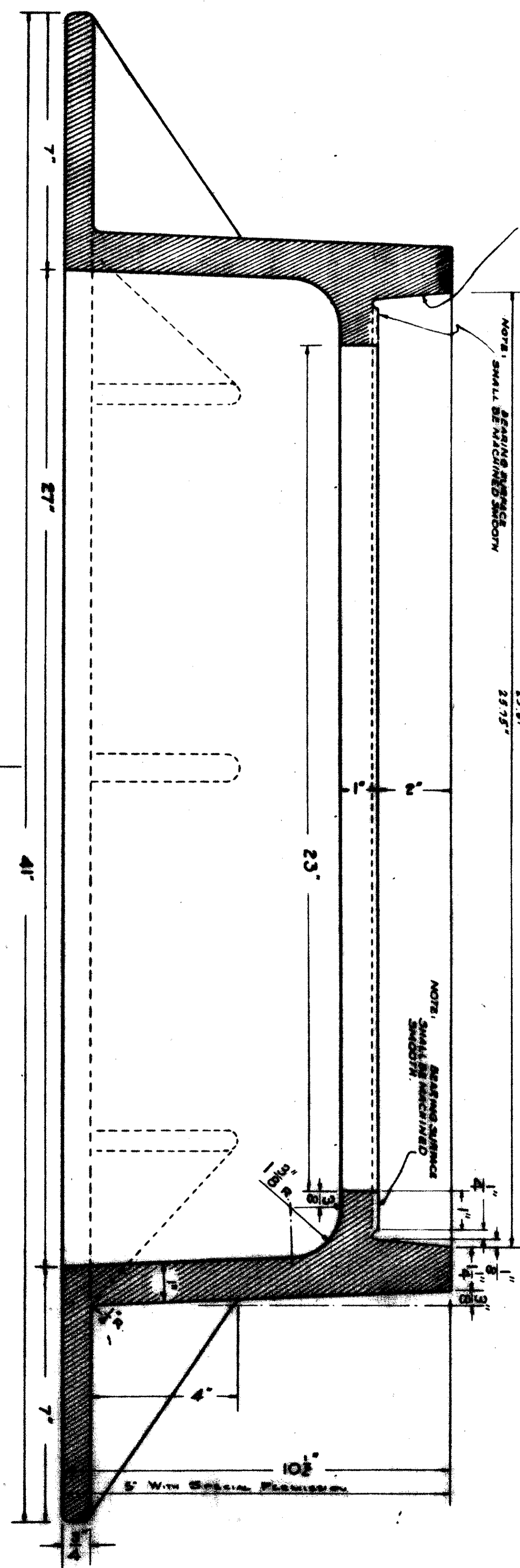
GRIND OR CHIP THESE EDGES TO SMOOTH ROUND AND REGULAR CONDITION

NOTE THIS SURFACE TO BE MACHINED SMOOTH.

NOTE: FRAME TO BE SET WITH TOP OF TYPICAL CURB OR GROUND SURFACE AND SHALL BE CAST WITHOUT DRAFT

OPTION - LUG MAY BE OMITTED WHEN TAPER IS MACHINE FINISHED

EXCEPT WHERE LIMITS ARE NOTED - A CASTING VARIATION OF 1/8" PER FOOT PERMITTED.



TAPERED SURFACE MUST BE STRAIGHT SMOOTH AND FREE FROM IRREGULARITIES
OPTION - TAPER MAY BE MACHINE FINISHED TO OR BELOW MACHINED BEAT.

NOTE: SURFACE SHALL BE MACHINED SMOOTH

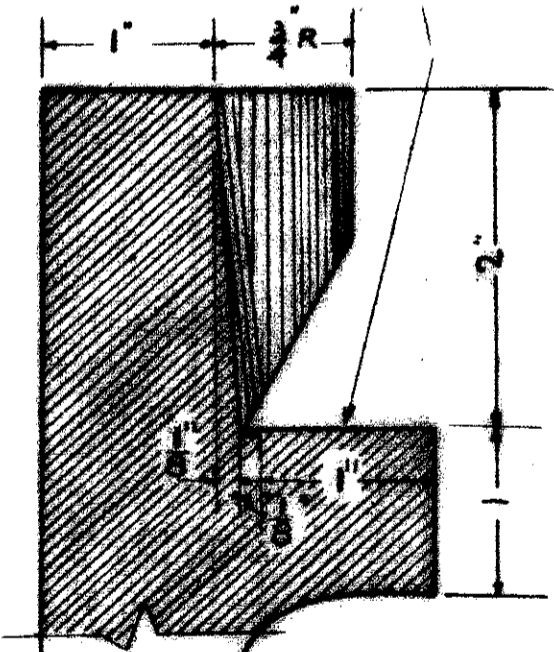
12 1/2"

23 1/2"

NOTE: MACHINED SURFACE SHALL BE MACHINED SMOOTH

SECTION THRU A-A

THIS SURFACE TO BE MACHINED SMOOTH



SECTION B-B

REVISED BY:
ROACHE-CIUNI-LYNN ASSOC.
JULY 92

MINIMUM WEIGHT OF FRAME - 400 POUNDS
TRYGVE HOFF & ASSOCIATES
ENGINEERS
1822 EAST 187TH STREET CLEVELAND, OHIO 44106

CITY OF CLEVELAND
STANDARD MANHOLE FRAME

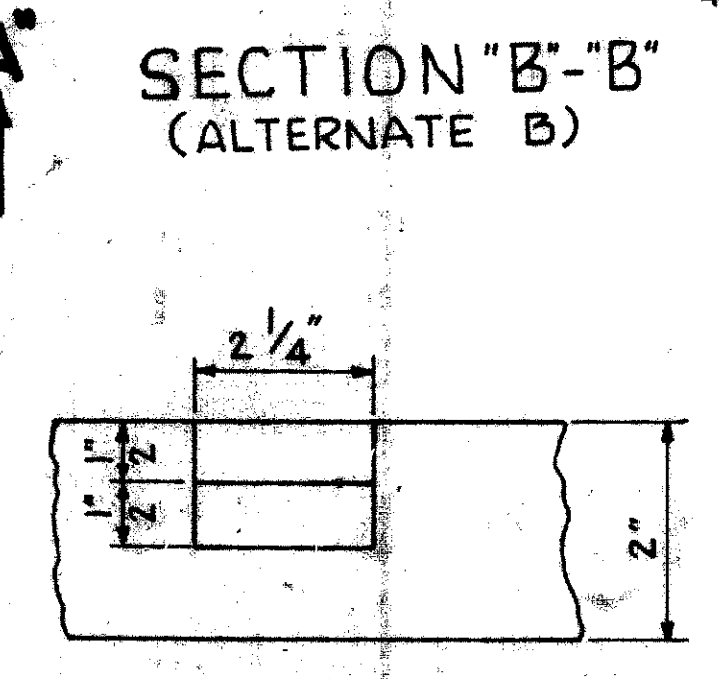
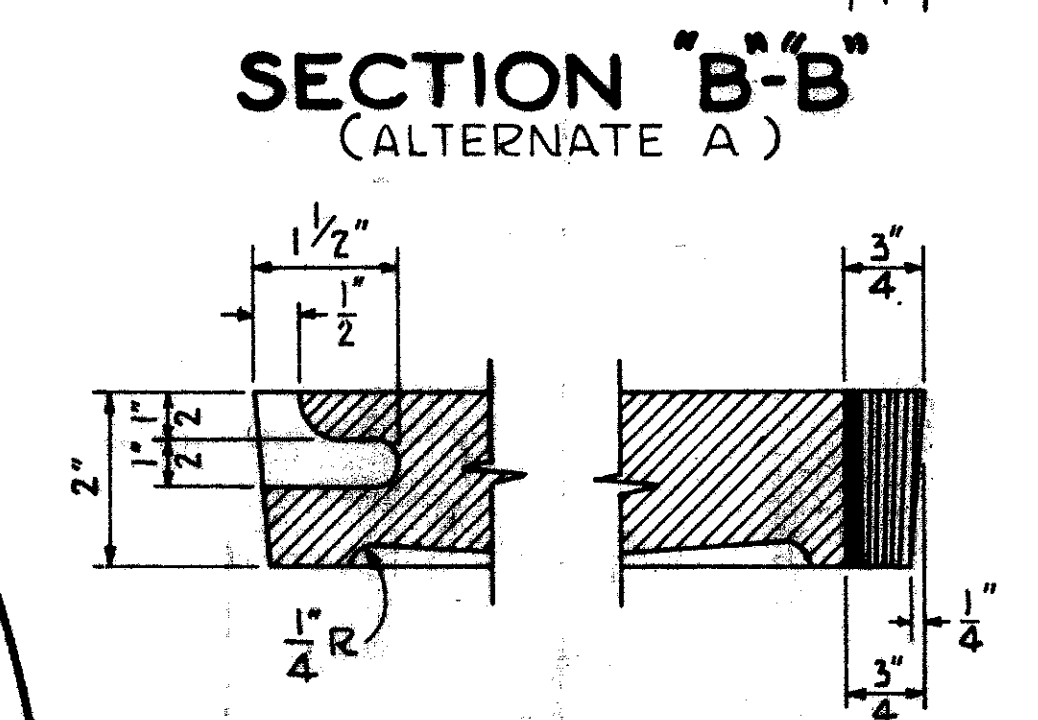
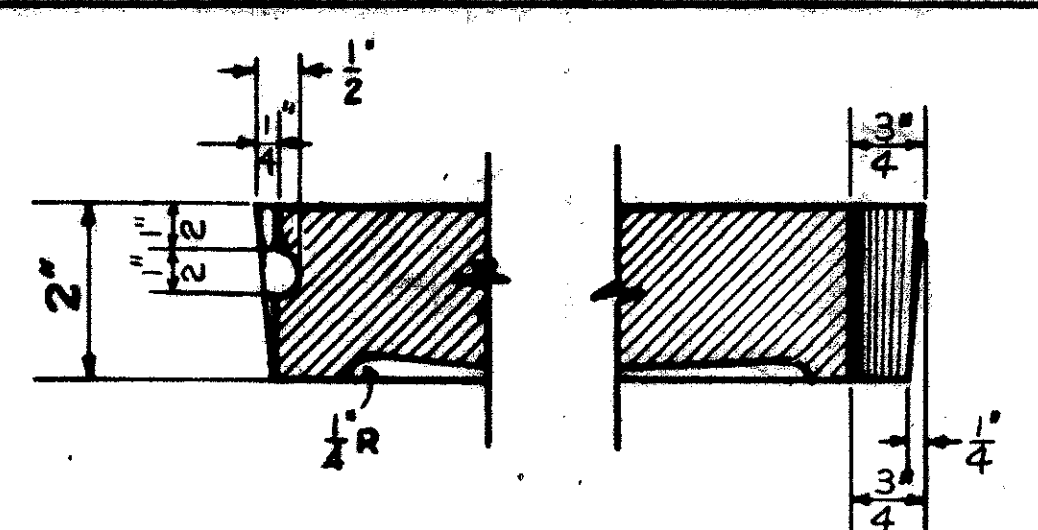
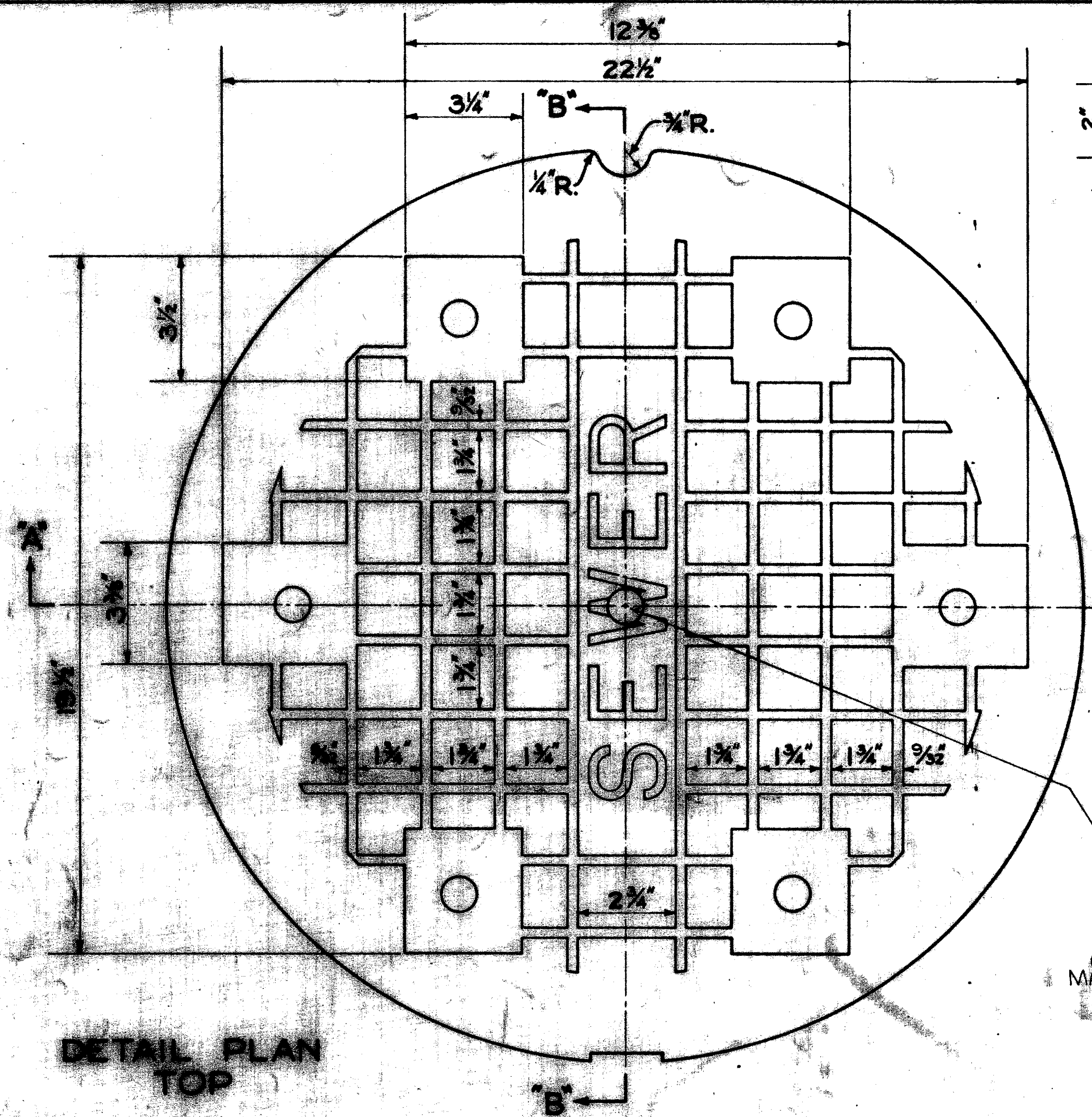
SCALE N.T.S. DATE

RELOC. S.R. - 176

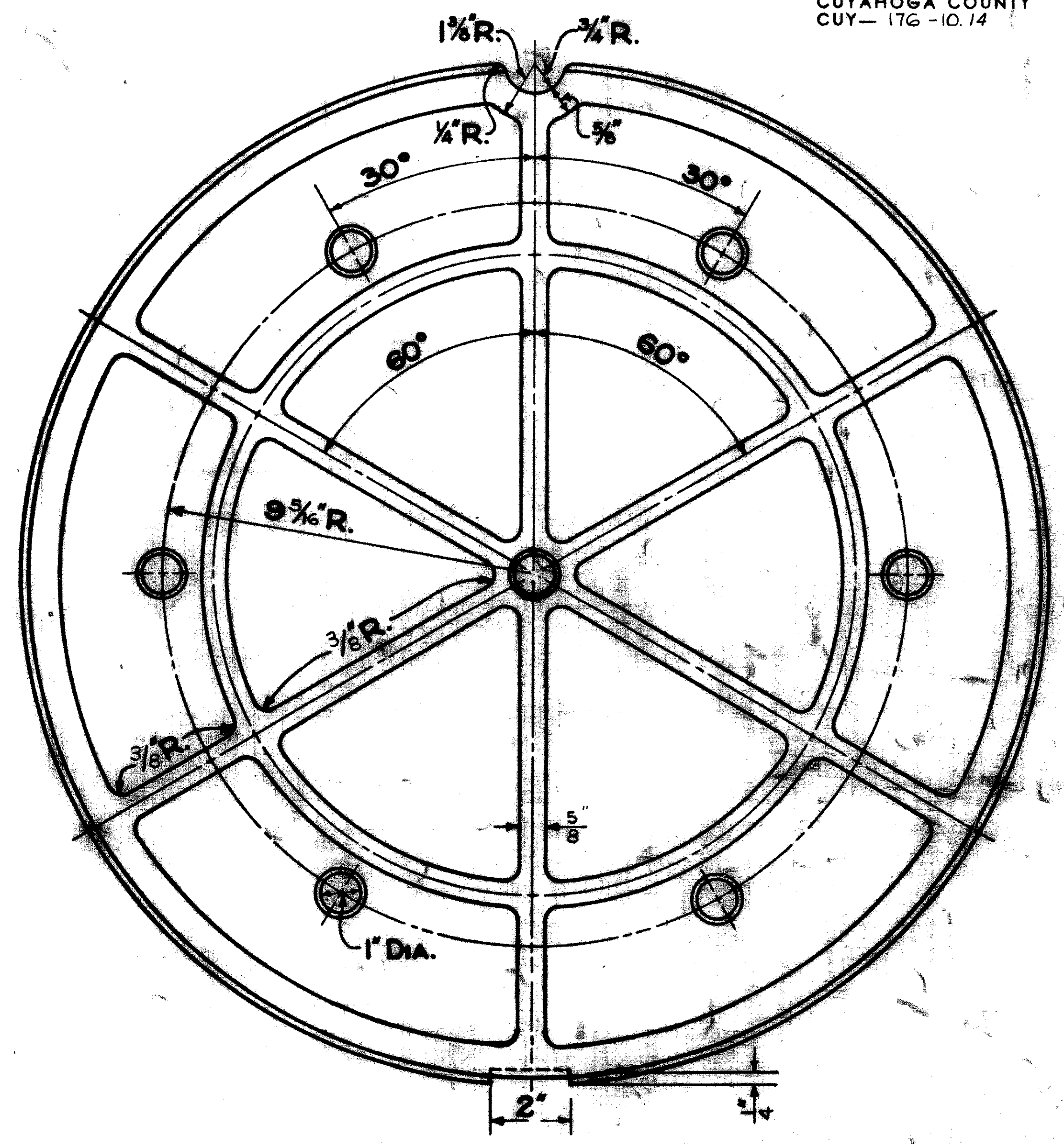
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

191
395

CUYAHOGA COUNTY
CUY-176-10.14

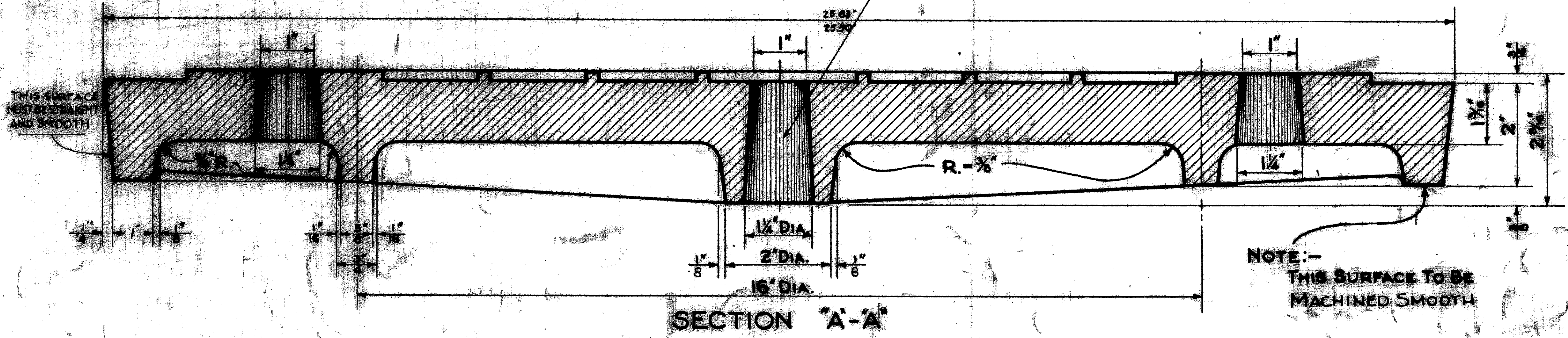


OPTION
CENTER HOLE
MAY BE OMITTED



DETAIL PLAN
TOP

DETAIL PLAN
BOTTOM



SECTION 'A-A'

NOTE:-
THIS SURFACE TO BE
MACHINED SMOOTH

REVISED BY:
ADACHE-CIUNI-LYNN ASSOC.
JULY 92

MINIMUM WEIGHT OF COVER - 195 POUNDS
TRYGVE HOFF & ASSOCIATES
ENGINEERS
1922 EAST 107TH STREET CLEVELAND, OHIO 44106

CITY OF CLEVELAND
STANDARD MANHOLE COVER

DATE	REVISION	BY

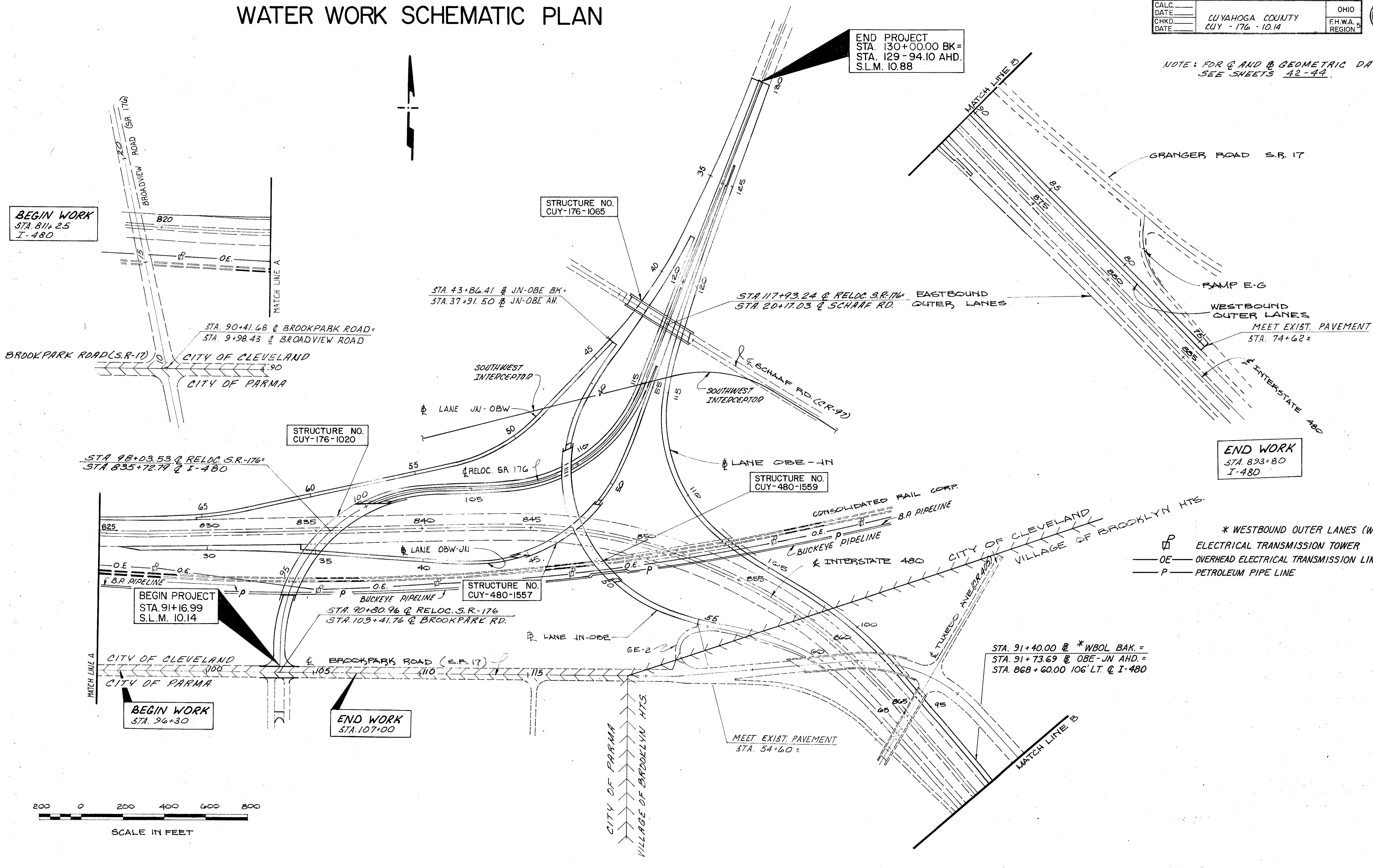
CONT. NO. SHEET NO.

RELOC. SR-176

WATER WORK SCHEMATIC PLAN

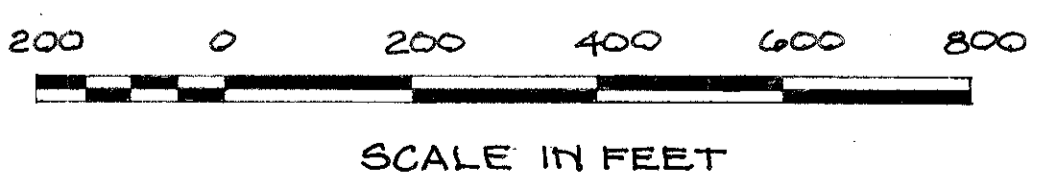
DATE	CUYAHOGA COUNTY	OHIO	192 295
CHKD	LUY - 176 - 10.14	F.H.W.A. 5	
DATE		REGION	

NOTE: FOR Q AND B GEOMETRIC DATA
SEE SHEETS 42-44.



- * WESTBOUND OUTER LANES (WBOL)
- ELECTRICAL TRANSMISSION TOWER
- OE — OVERHEAD ELECTRICAL TRANSMISSION LINES
- P — PETROLEUM PIPE LINE

STA. 91+40.00 @ *WBOL BAK. =
STA. 91+73.69 @ OBE-JN AHD. =
STA. 868+60.00 106' LT. @ I-480



RELOC. S.R. 176

WATER WORK NOTES

CALC. _____	CUYAHOGA COUNTY	OHIO
DATE _____	CUY - 176 - 10.14	F.H.W.A. 5
CHKD. _____		REGION
DATE _____		

193
296

WATERWORK NOTES

GENERAL

SCOPE OF WORK

THE WORK CONTEMPLATED UNDER THIS CONTRACT COMPRISES THE FURNISHING AND INSTALLING COMPLETE WITH VALVES AND OTHER APPURTENANCES, WATER MAIN RELOCATIONS AND PERFORMING OTHER INCIDENTAL WORK NECESSARY AS SHOWN ON SHEET NO. 205 THRU 206

GENERAL NOTES

THE EXACT LOCATION OF EXISTING WATER LINES AND UNDERGROUND STRUCTURES IS NOT KNOWN. INFORMATION SHOWN ON THE PLANS WAS OBTAINED FROM CLEVELAND WATER DEPARTMENT DRAWINGS.

THE STATIC HEAD USED FOR BOTH DESIGN AND TESTING SHALL BE MEASURED FROM ELEVATION 1320. THE FIELD TESTING HEAD SHALL BE 75 PSI PLUS THAT DUE TO THE STATIC HEAD, BUT IN NO CASE LESS THAN 150 PSI.

THE CONTRACTOR SHALL NOTIFY THE CLEVELAND WATER DEPARTMENT INSPECTION AND ENFORCEMENT THREE (3) WEEKS PRIOR TO STARTING ANY WATER WORKS CONSTRUCTION. CALL 664-2342.

AFTER AWARD OF CONTRACT, THE CONTRACTOR THROUGH THE PROJECT ENGINEER SHALL SUBMIT TO THE CITY OF CLEVELAND WATER DEPARTMENT, INSPECTION AND ENFORCEMENT SECTION, A CONSTRUCTION SCHEDULE RELATING TO WATERWORK.

WATERWORK SHALL CONFORM TO ALL WATERWORK NOTES AS SHOWN IN PROJECT SPECIFICATIONS. IN ADDITION IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH ALL NEW MATERIALS REQUIRED FOR ALL NEW OR RELOCATED INSTALLATIONS, UNLESS OTHERWISE SPECIFICALLY NOTED WORKWORK, AND ALSO DO ALL EXCAVATING, SHEETING, BACKFILLING AND PROVIDE CRANE SERVICE IF NEEDED.

ALL WATERWORK SHALL CONFORM TO CLEVELAND WATER DEPARTMENT STANDARDS.

IN RAISING WATER VALVE BOXES AND MANHOLE RING AND COVER, INSERTS ARE NOT PERMITTED. WATER VALVE BOXES AND MANHOLE RING AND COVER THEMSELVES MUST BE RAISED AND ADJUST TO PROPOSED GRADE.

DEFINITIONS

WHEREVER IN THESE SPECIFICATIONS OR IN OTHER CONTRACT DOCUMENTS THE FOLLOWING TERMS OR PRONOUNS IN PLACE OF THEM ARE USED, THE INTENT AND MEANING SHALL BE INTERPRETED AS FOLLOWS:

THE STATE

THE STATE IS THE STATE OF OHIO ACTING THROUGH ITS AUTHORIZED REPRESENTATIVE.

ENGINEER

THE ENGINEER IS DISTRICT DEPUTY DIRECTOR OR DISTRICT ENGINEER, THE DISTRICT CONSTRUCTION ENGINEER OR THE DISTRICT MAINTENANCE ENGINEER OR THE PROJECT ENGINEER ASSIGNED TO ADMINISTER THE CONTRACT, OR THEIR DULY DESIGNATED DEPUTIES, AGENTS, OR REPRESENTATIVES.

THE CITY

THE CITY IS THE DIRECTOR, DEPARTMENT OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND OR THEIR DULY DESIGNATED DEPUTIES, AGENTS OR REPRESENTATIVES.

STATUS OF CITY INSPECTORS

INSPECTORS AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES ARE AUTHORIZED TO INSPECT ALL WORK DONE AND MATERIALS FURNISHED, SUCH INSPECTION MAY EXTEND TO ALL OR ANY PART OF THE WATERWORK, AND TO THE PREPARATION OR MANUFACTURE OF THE MATERIALS TO BE USED IN THE WATERWORK. THE CITY INSPECTOR AS DESIGNATED BY THE DIRECTOR OF PUBLIC UTILITIES WILL MAKE WORK INSTRUCTIONS THROUGH THE PROJECT ENGINEER. ARRANGEMENTS FOR CITY INSPECTORS ARE TO BE MADE BY NOTIFYING INSPECTION AND ENFORCEMENT DIVISION OF WATER 664-2342, WITHIN THE TIME SPECIFIED. NO WORK SHALL BE ACCEPTED UNLESS INSPECTED.

ACCESS TO WORK AND PLACE OF MANUFACTURE

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND DIRECTOR OF PUBLIC UTILITIES, AT LEAST SEVEN (7) DAYS PREVIOUS TO THE COMMENCEMENT OF THE MANUFACTURE OF ANY MATERIALS, OF THE TIME AND PLACE WHERE THE MANUFACTURE IS TO COMMENCE, IN ORDER THAT A REPRESENTATIVE OF THE ENGINEER AND DIRECTOR MAY BE PRESENT TO INSPECT THE MANUFACTURE. THE CONTRACTOR SHALL PROVIDE, WITHOUT CHARGE OR EXPENSE TO THE STATE AND CITY, ALL NECESSARY ASSISTANCE TO THE ENGINEER AND DIRECTOR WHEN REQUIRED FOR INSPECTION OR VERIFICATION OF WORK DONE.

CLOSING VALVES

THE CLOSING OF ALL VALVES ON EXISTING MAINS FOR MAKING CONNECTIONS, TEST, OR ANY OTHER CAUSE, SHALL BE DONE BY THE CITY AND SUFFICIENT WRITTEN NOTICE SHALL BE GIVEN TO THE CITY, BY THE CONTRACTOR, SO THAT THE WORK MAY BE DONE WITH A MINIMUM OF INCONVENIENCE TO THE PUBLIC AND DELAY TO THE CONTRACTOR.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS

FIGURED DIMENSIONS ON DRAWINGS SHALL TAKE PRECEDENT OVER MEASUREMENTS BY SCALE, AND DETAILED DRAWINGS ARE TO TAKE PRECEDENCE OVER GENERAL DRAWINGS AND SHALL BE CONSIDERED AS EXPLANATORY OF THEM AND NOT AS INDICATING EXTRA WORK. IF, HOWEVER, ANY OF THE DETAILED DRAWINGS SHOW MORE ELABORATE OR EXTENSIVE WORK THAN IS NORMALLY SPECIFIED AND INDICATED BY THE CONTRACT DRAWINGS, NOTICE THEREOF MUST BE GIVEN TO THE ENGINEER BY THE CONTRACTOR WITHIN TEN (10) DAYS AFTER RECEIPT OF SUCH DETAILED DRAWINGS IN ORDER THAT THE DRAWINGS MAY BE AMENDED OR THE ADDITIONAL EXPENSE ON ACCOUNT OF SUCH WORK MAY BE ADJUSTED AND AUTHORIZED. IF THE ENGINEER DOES NOT RECEIVE SUCH NOTICE FROM THE CONTRACTOR WITHIN TEN (10) DAYS AFTER THE DETAILED DRAWINGS HAVE BEEN RECEIVED BY HIM, IT IS HEREBY AGREED THAT THE CONTRACTOR ACCEPTS THE DRAWINGS AND WILL EXECUTE THEM WITHOUT CLAIM FOR EXTRA COMPENSATION.

ERRORS AND DISCREPANCIES

IF THE CONTRACTOR, IN THE COURSE OF HIS WORK, FINDS ANY DISCREPANCY BETWEEN THE PLANS, DESCRIPTION AND LOCATION OF WORK AND ESTIMATE OF QUANTITIES, THE PHYSICAL CONDITION OF THE LOCALITY, OR ANY ERRORS IN PLANS OR IN THE LAYOUT AS GIVEN BY THE DRAWINGS AND INSTRUCTIONS WHICH MAKE IT IMPOSSIBLE FOR HIM TO COMPLETE THE WORK REQUIRED UNDER THE PLANS AND SPECIFICATIONS, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER IN WRITING AND THE ENGINEER SHALL VERIFY THE SAME. ANY WORK DONE AFTER SUCH DISCOVERY, UNTIL AUTHORIZED, SHALL BE DONE AT THE CONTRACTOR'S RISK.

FLOODS AND FREEZING WEATHER

PROPER FACILITIES SHALL BE PROVIDED FOR PROTECTING THE WORK FROM DAMAGE BY FLOOD RAIN OR FROST, AND WORK DONE IN FREEZING WEATHER SHALL BE DONE IN SUCH MANNER AS THE ENGINEER MAY APPROVE. VALVES SHALL BE PROTECTED FROM FREEZING UNTIL BACKFILLED IN THE COMPLETED WORK.

ADDITIONAL WORK

(A) ATTENTION IS CALLED TO THE FACT THAT THE WORK OF THIS CONTRACT INCLUDED CERTAIN PERFORMANCE AS INCIDENTAL TO THE ITEMIZED REQUIREMENTS HEREOF, THOUGH NOT EXCLUSIVE AS FOLLOWS: TO PERFORM ALL EXCAVATION, BACKFILLING, SHEETING, SHORING, AND TO TEST AND CHLORINATE THE INSTALLATION. THE STATE WILL MAKE NO SPECIFIC OR SEPARATE PAYMENT OR ALLOWANCE, BUT THE COST THERE SHALL BE INCLUDED IN THE PRICES STIPULATED TO BE PAID FOR UNDER THE VARIOUS WATERWORK ITEMS OF WORK TO BE DONE UNDER THIS CONTRACT.

(B) PRELIMINARY FLUSHING: BEFORE BEING PLACED IN SERVICE, ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED FROM THE NEW WATER MAIN OR EXTENSIONS TO EXISTING MAINS BY A THOROUGH FLUSHING THROUGH THE HYDRANTS OR BY OTHER APPROVED MEANS. EACH VALVED SECTION OF NEWLY LAID PIPE SHALL BE FLUSHED INDEPENDENTLY. THIS SHALL BE DONE AFTER THE PRESSURE TEST AND MAY BE DONE BEFORE OR AFTER THE TRENCH SHALL HAVE BEEN BACKFILLED.

TESTING MAINS

(A.) ALL PIPES, VALVES, FITTINGS, ETC., SHALL BE LAID IN SUCH A MANNER AS TO LEAVE ALL JOINTS WATERTIGHT. AFTER THE PIPE IS LAID, SUCH LENGTHS OF THE WATER MAIN AS THE DIRECTOR OR HIS DESIGNATE MAY DETERMINE, SHALL BE TESTED UNDER HYDROSTATIC PRESSURE INDICATED IN GENERAL NOTES.

(B.) THE HYDROSTATIC TEST SHALL BE UNDER THE DIRECTION OF THE DIRECTOR OF PUBLIC UTILITIES OR HIS DESIGNATE. THE CONTRACTOR MAY OBTAIN WATER FOR TESTING BY OBSERVING THE RULES AND REGULATIONS ENFORCED IN THE MUNICIPALITIES OR TOWNSHIPS IN WHICH THE WORK IS BEING DONE. THE CITY WILL FURNISH A PRESSURE GAUGE FOR MEASURING THE PRESSURE ON THE WATER MAIN, BUT THE CONTRACTOR SHALL FURNISH A SUITABLE PUMP, PIPES, TEST HEADS AND ALL APPLIANCES, LABOR, FUEL AND OTHER APPURTENANCES NECESSARY TO MAKE THESE TESTS.

(C.) THE HYDROSTATIC TEST PRESSURE SHALL BE FOR A DURATION OF A MINIMUM OF TWO (2) HOURS WITH ALL VALVES CLOSED DURING WHICH TIME THE INTERNAL PRESSURE SHALL REMAIN WITHIN 5 PSI OF THE SPECIFIED TEST PRESSURE. SHOULD THE TEST PRESSURE DROP MORE THAN 5 PSI, THE CONTRACTOR SHALL RECHARGE THE WATER MAIN TO THE SPECIFIED TEST PRESSURE AND LOCATE AND REPAIR THE LEAK TO THE SATISFACTION OF THE CITY. ANY DAMAGED OR DEFECTIVE PIPE, PIPE JOINTS, FITTINGS, VALVES, HYDRANTS OR APPURTENANCES SHALL BE REPAIRED OR REPLACED WITH SOUND MATERIAL AND THE HYDROSTATIC PRESSURE TEST REPEATED.

(D.) AFTER A SECTION OF THE WATER MAIN HAS BEEN TESTED, THE CONTRACTOR SHALL FLUSH THE SAME. IN THE CASE OF SUPPLY MAINS WHERE DRAINS ARE CONNECTED TO VALVE OR DRAIN VALVES, THE CONTRACTOR SHALL, WITHIN A REASONABLE TIME AFTER THE TEST HAS BEEN COMPLETED, PUMP ALL WATER OUT OF THE VAULTS. FLUSHING SHALL BE DONE IN ACCORDANCE WITH THESE SPECIFICATIONS.

(E.) IN COLD WEATHER IMMEDIATELY AFTER TESTING A SECTION OF THE WATER MAIN, THE CONTRACTOR SHALL OPEN ALL VALVES, AND IN THE CASE OF SUPPLY MAINS ALL AIR RELIEF VALVES, BYPASSES AND DRAINS AND PROPERLY DRAIN BONNETS OF ALL VALVES IN THE SECTION OF THE WATER MAIN, AND TAKE ALL OTHER PRECAUTIONS NECESSARY TO PREVENT INJURY TO WATER MAIN AND APPURTENANCES DUE TO FREEZING.

(F.) IN ORDER TO BE ABLE TO MAKE PROPER ALLOWANCE FOR LEAKAGE AT VALVES, AIR RELIEF VALVES, BYPASSES, AND DRAINS, ONLY SECTIONS OF WATER MAIN TO BE TESTED SHALL HAVE SUCH VALVES, TEST PLUGS AND CAPS ACCESSIBLE.

(G.) IN TESTING NEW MAINS, THE CONTRACTOR SHALL NOT BE PERMITTED TO USE ANY PART OF THE EXISTING MAINS IN HIS TEST UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS. THE LIMITS OF THE HYDROSTATIC SHALL BE AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROVIDE BLIND FLANGES, PLUGS OR CAPS, DEPENDING ON DESIGN, TO THE TESTED LENGTH OF THE PROPOSED MAIN SO THAT IT WILL BE COMPLETELY INDEPENDENT OF THE SAID EXISTING MAINS. PROPER RESTRAINT OF ALL BLIND FLANGES, PLUGS OR CAPS TO PREVENT BLOWOFF SHALL BE PROVIDED AND IN THE CASE OF DEAD END MAINS CONCRETE PIERS WILL BE REQUIRED. NO EXTRA PAYMENT WILL BE MADE AND THE ENTIRE COST SHALL BE DEEMED TO BE INCLUDED IN THE BID PRICE.

WATER MAIN DISINFECTION

(A.) WATER MAIN DISINFECTION SHALL CONSIST OF: FLUSHING WATER MAINS AFTER THE HYDROSTATIC TEST AND PRIOR TO THE CHLORINATION PROCEDURE; THE CHLORINATION PROCEDURE, THE FINAL FLUSHING AND SAMPLING.

1. TAPS, TAPPING SADDLES, SERVICE PIPES, COMBINATION BLOWOFFS, AND EXISTING WATER MAINS WITH READILY ACCESSIBLE CONTROL VALVES, AND ALL PIPES, APPLIANCES, LABOR AND OTHER APPURTENANCES SHALL BE FURNISHED OR PROVIDED BY THE CONTRACTOR. THEY SHALL BE USED FOR INTRODUCING DISINFECTING AGENT AND WATER FOR FLUSHING INTO THE NEW OR EXTENDED WATER MAINS. TAPS OR SERVICE PIPES SHALL BE A MINIMUM ONE INCH (1") SIZE OF COPPER TO IRON PIPE THREAD CONFIGURATION. ADDITIONAL TAPS SHALL BE FURNISHED BY CONTRACTOR IF NECESSARY. COMBINATION BLOWOFFS AND SAMPLING TAPS SHALL BE: EITHER TAPPED OUTLET OR REGULAR BRANCH OUTLET TEES; AND/OR TAPPED PLUGS OR PIPE ENDS WHICH SHALL BE PLUGGED; OR HAVE ENDS CONNECTED TO WATER SYSTEM AFTER SATISFACTORY DISINFECTION AND FLUSHING. TAPPING OF WATER MAINS FOR CHLORINATION SHALL BE IN ACCORDANCE WITH THAT SPECIFIED IN PARAGRAPH "WORK TO BE DONE BY CITY".

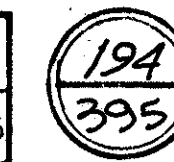
2. ON EXISTING WATER MAINS AND ON NEW, RELOCATED OR EXTENDED WATER MAINS PLACED IN SERVICE ONLY THE CITY WILL OPERATE THE VALVES. THE CONTRACTOR WILL COOPERATE WITH CITY'S CHLORINATION CREW IN COORDINATING THE CHLORINATION AND FLUSHING IN DETERMINING THE AMOUNTS AND EXTENT OF CHLORINATION AND FLUSHING.

3. SUCH LENGTHS OF THE WATER MAIN AS THE CITY MAY DETERMINE, SHALL BE CHLORINATED; HOWEVER, IN NO CASE SHALL THE LENGTH EXCEED THAT WHICH CAN BE CHLORINATED SATISFACTORILY IN ONE (1) WORK DAY. SUCH MAXIMUM LENGTH IS GENERALLY UP TO THREE (3) MILES TOTAL, INCLUDING BRANCHES AND CONNECTING WATER MAIN(S), FOR SIXTEEN INCH (16") AND SMALLER; AND THREE (3) VALVE SECTIONS, OR TWO (2) MILES, FOR TWENTY INCH (20") OR LARGER WATER MAINS.

4. THE CONTRACTOR SHALL PREPARE AND PRESENT TO THE CITY FOR APPROVAL A PLAN FOR ALL DISINFECTION FROM THE HYDROSTATIC TESTING TO THE FINAL FLUSHING FOR THE NEW OR EXTENDED WATER MAIN, INCLUDING ANY BRANCHES. THE DISINFECTION PLAN SHALL SHOW COMPLETE LAYOUT, INCLUDING SIZES AND LOCATION OF: (A) FLUSHING WATER SOURCE; (B) WATER SOURCE FOR CHLORINATION UTILIZING CALCIUM HYPOCHLORITE SOLUTION FURNISHED IN MIXING DRUM; (C) BLENDING WATER SOURCE TO ASSURE PROPER AND UNIFORM CONCENTRATION OF CHLORINATION SOLUTION THROUGHOUT THE WATER MAIN TO BE DISINFECTED; (D) OUTLETS TO BE UTILIZED OR PROVIDED FOR THE DRAWING AND FINAL FLUSHING OF CHLORINE SOLUTION THROUGH AND FROM THE WATER MAIN BEING DISINFECTED; AND (E) TYPE, NUMBER, SEQUENCE AND SIZES OF OUTLETS INCLUDING FIRE HYDRANTS AND VALVES TO BE OPERATED.

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5. BEFORE HYDROSTATIC TESTING WILL BE PERMITTED, THE CONTRACTOR SHALL OBTAIN FROM THE CITY, DIVISION OF WATER & HEAT, PERMITS AND SALES, MISCELLANEOUS SERVICE RECEIPT (MR. CARD), APPROVED WATER MAIN PLANS OF THE NEW WATER MAIN OR WHICH EXTENSION SHALL BE USED IN PREPARATION OF THE PLAN FOR DISINFECTION. UPON RECEIPT OF APPROVAL BY THE COMMISSIONER OF WATER AND HEAT OF THE PLAN FOR DISINFECTION, THE CONTRACTOR SHALL SUBMIT THE PLANS TO THE INSPECTION AND ENFORCEMENT RESIDENT INSPECTOR ALONG WITH THE MISCELLANEOUS SERVICE RECEIPT (MR. CARD). ONLY UPON RECEIPT OF THE PLANS AND MR. CARD WILL THE CHLORINATION PROCEDURE BE PERFORMED. THE CITY'S CHLORINATION CREW WILL INSPECT THE ENTIRE JOB AS TO BEING IN ACCORDANCE WITH APPROVED PLANS AND FOOTAGE LENGTH ON MAINS TO BE CHLORINATED.

6. CHLORINATION PROCEDURE FOR DISINFECTING NEW OR EXTENDED WATER MAINS SHALL BE BY THE CONTINUOUS FEED METHOD USING A SOLUTION FORMED BY MIXING WATER AND CALCIUM HYPOCHLORITE. NO OTHER FORM OF CHLORINE WILL BE USED. AMERICAN WATER WORKS ASSOCIATION AWWA STANDARD FOR DISINFECTING WATER MAINS - ANSI/AWWA C-651-86 SHALL BE FOLLOWED AS TO NEED, PROCEDURES, METHODS, HOLDING TIME, FREE CHLORINE RESIDUAL, APPLICATION AND CONFINEMENT TO WATER MAIN BEING DISINFECTED. WATER USED FOR CHLORINATION, BLENDING OF CHLORINATION SOLUTION TO DETERMINED CONCENTRATION, AND TO FEED DOSAGE INTO FULL LENGTH OF MAINS TO BE DISINFECTED SHALL BE OBTAINED AS FOR TESTING.

7. THE CITY WILL SUPPLY THE PUMP, SOLUTION MIXING PADDLE, 35 GALLON DRUM, GASOLINE POWERED ELECTRIC GENERATOR, AND SUPPLY OF POWDERED CALCIUM HYPOCHLORITE. THE CONTRACTOR SHALL SUPPLY ALL PIPES, HOSES, VALVES, FITTINGS, ETC., FOR USE EITHER TO CONVEY WATER, CHLORINE SOLUTION OR COMBINATION THEREOF AND TO DISPOSE OF HIGHLY CHLORINATED WATER FLUSHED TO WASTE.

8. THE CONTRACTOR SHALL COOPERATE WITH THE CITY'S CHLORINATION CREW OR RESIDENT INSPECTOR BY OPERATING ANY REQUIRED WATER MAIN APPURTENANCES TO ASSURE THE DISINFECTION OF SUCH APPURTENANCES AND OF ANY PIPE BRANCHES TO ASSURE CHLORINATION SOLUTION IS CONFINED TO WATER MAIN BEING DISINFECTED.

9. THE WATER DEPARTMENT CHLORINATION CREW WILL DETERMINE THE LENGTH OF TIME THE CHLORINE SOLUTION IS TO BE HELD IN THE WATER MAIN BEING DISINFECTED.

(B.) FLUSHING

1. BEFORE DISINFECTION ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED FROM THE NEW WATER MAIN OR EXTENSIONS TO EXISTING MAINS BY A THOROUGH FLUSHING THROUGH THE HYDRANTS OR BY OTHER APPROVED MEANS. EACH VALVE SECTION OF THE NEWLY LAID PIPE SHALL BE FLUSHED INDEPENDENTLY. THIS SHALL BE DONE AFTER THE PRESSURE TEST. FLUSHING SHALL BE IN ACCORDANCE WITH ANSI/AWWA C651 STANDARD FOR DISINFECTING WATER MAINS. WHERE THE FLUSHING VELOCITY SPECIFIED THEREIN CANNOT BE ATTAINED, FLUSHING RATES AS DETERMINED BY THE DIRECTOR TO BE SUFFICIENT SHALL BE PERMITTED. IF IN THE OPINION OF THE DIRECTOR THE FLUSHING PRIOR TO THE CHLORINATION PROCEDURE DOES NOT REMOVE DIRT OR OTHER ACCUMULATIONS IN THE PIPE, THE PIPE SHALL BE CLEANED BY MECHANICAL MEANS BY THE CONTRACTOR AND THE FLUSHING SHALL BE REPEATED.

2. THE FLUSHING OF THE CHLORINATION SOLUTION SHALL BE DONE BY THE CONTRACTOR UNTIL THE CHLORINE SOLUTION IS TOTALLY FLUSHED OUT OF THE SYSTEM BEING DISINFECTED. ALL FLUSHING SHALL BE UNDER THE CONTROL OF THE DIRECTOR OF PUBLIC UTILITIES, OR HIS DESIGNATE. THE CONTRACTOR SHALL OBTAIN WATER FOR FLUSHING IN THE SAME MANNER AS FOR TESTING.

3. IN FLUSHING, THE CONTRACTOR SHALL PROPERLY DISPOSE OF THE CHLORINATION SOLUTION. ONLY POINTS OF DISCHARGE APPROVED BY THE CITY'S CHLORINATION CREW SHALL BE UTILIZED WITHOUT ANY TREATMENT TO CHEMICALLY NEUTRALIZE THE SOLUTION. IN CASES WHERE DIRECT DISPOSAL IS NOT APPROVED, THE CONTRACTOR SHALL NEUTRALIZE THE CHLORINE SOLUTION AS PROVIDED IN APPENDIX B OF AWWA C-651. CONTRACTOR SHALL OBTAIN APPROVAL, IN WRITING, OF THE LOCAL SEWER AUTHORITY BEFORE DISPOSING TO A SANITARY SEWER. A COPY OF SUCH WRITTEN APPROVAL SHALL BE PROVIDED TO THE RESIDENT INSPECTOR AND CHLORINATION CREW BEFORE ANY FLUSHING IS BEGUN.

4. THE CITY'S CHLORINATION CREW WILL DETERMINE WHEN THE DISINFECTION SOLUTION HAS BEEN SATISFACTORILY FLUSHED FROM THE MAIN AND BRANCHES.

(C.) SAMPLING

1. A TIME PERIOD AS DETERMINED BY THE CITY SHALL ELAPSE BEFORE WATER SAMPLES ARE TAKEN FROM THE WATER MAIN(S) AND BRANCH(ES) TO DETERMINE THE BACTERIOLOGICAL QUALITY OF THE WATER THEREIN. IN NO CASE, SHALL THE TIME PERIOD BE LESS THAN TWENTY-FOUR (24) HOURS. NO SAMPLES SHALL BE TAKEN FROM FIRE HYDRANTS. THE CONTRACTOR SHALL ASSIST THE CITY'S CHLORINATION CREW IN OBTAINING SAMPLES. THE CITY WILL FURNISH ALL CONTAINERS AND CONTROL PROCEDURES FOR OBTAINING SAMPLES. THE CITY WILL DETERMINE THE NUMBER AND LOCATIONS OF SAMPLES TO BE TAKEN FROM THE DISINFECTED SECTIONS. THE CITY WILL DETERMINE THE BACTERIOLOGICAL QUALITY OF THE WATER SAMPLES. IF SAMPLING RESULTS IN TWO (2) CONSECUTIVE POSITIVE SAMPLES, THE PROCEDURE OF CHLORINATION, FLUSHING AND SAMPLING SHALL BE REPEATED. FIGURE 1, SUGGESTED COMBINATION AND SAMPLING TAP, TAKEN FROM AWWA C-651, IS HEREIN MADE A PART OF THESE SPECIFICATIONS.

2. IN CASES WHERE THE LENGTH OF WATER MAIN IS LESS THAN 350 FEET, AFTER HYDROSTATIC TESTING ONLY, PRELIMINARY FLUSHING AND SAMPLING WILL BE DONE; HOWEVER, IF THERE ARE TWO (2) POSITIVE SAMPLES, AFTER FLUSHING, THE ENTIRE PROCEDURE OF PRELIMINARY FLUSHING, CHLORINATION, FLUSHING AND SAMPLING SHALL BE REQUIRED. THE CITY'S CHLORINATION CREW WILL COMPLETE AND DISTRIBUTE THE CHLORINATION APPROVAL FORM.

CONTRACTOR'S LABOR

THE CONTRACTOR SHALL FURNISH AT LEAST TWO (2) TRAINED WORKMEN TO PERFORM ALL LABOR UNDER THE SUPERVISION AND DIRECTION OF THE CITY'S CHLORINATION CREW. THE CONTRACTOR'S LABORERS SHALL PERFORM ALL DUTIES SPECIFIED IN WATER MAIN DISINFECTION GENERAL NOTE. THE CONTRACTOR SHALL PROVIDE PROPER EQUIPMENT AND PROTECTIVE CLOTHING AS MAY BE REQUIRED BY THE LABORERS IN PERFORMING THE NEEDED TASK. THE CITY WILL MIX THE CHLORINATION SOLUTION TO BE USED BY THE CONTRACTOR FOR DISINFECTING.

ACCESS PITS

(A.) THE CONTRACTOR SHALL PROVIDE TIGHTLY WOOD SHEETED ACCESS PITS, CONFORMING TO THE REQUIREMENTS OF THE SPECIFIC SAFETY REQUIREMENTS OF THE INDUSTRIAL COMMISSION OF OHIO RULE IC-3-11, FOR ACCESS TO ALL WATER MAIN APPURTENANCES TO BE UTILIZED IN DISINFECTING WATER MAINS.

(B.) THE CONTRACTOR SHALL HAVE ON HAND READY FOR USE, PUMPING EQUIPMENT TO DEWATER ANY AND ALL ACCESS PITS USED FOR DISINFECTING WATER MAINS AND SHALL DEWATER THE ACCESS PITS WHEN ORDERED BY THE DIRECTOR.

CONNECTION OF NEW MAINS

WHEN THE NEW MAINS HAVE BEEN TESTED AND CHLORINATED AND ARE READY TO BE CONNECTED TO THE OLD MAIN, THE CONTRACTOR SHALL MAKE SUCH CONNECTIONS AT A TIME DESIGNATED BY THE CITY. PRIOR TO SHUTTING DOWN THE EXISTING MAINS, THE CONTRACTOR SHALL TAKE SUITABLE PRECAUTIONS TO ASSURE A MINIMUM INTERRUPTION TO SERVICE, INCLUDING THE FOLLOWING:

(A) PERFORM ALL NECESSARY EXCAVATION, INCLUDING BELL HOLES, EXPOSING THE EXISTING MAIN SUFFICIENTLY FOR THE OPERATION OF THE PIPE SAW BY THE CITY, OR PIPE CUTTING BY THE CONTRACTOR.

(B) REMOVE THE CAP OR PLUG FROM THE END OF THE NEW MAIN.

(C) SWAB THE INSIDE OF ALL PIPES, BENDS AND SLEEVES TO BE USED IN CONNECTION THOROUGHLY WITH A CHLORINE SOLUTION OF AT LEAST 100 P.P.M.

(D) MAKE UP AS MUCH OF THE CONNECTION AS POSSIBLE OUTSIDE THE DITCH TO ELIMINATE THE NEED FOR MAKING MOST OF THE NECESSARY JOINTS DURING THE SHUTDOWN. BY CAREFUL MEASUREMENT ALL PIPE CUTS CAN BE MADE BY THE CONTRACTOR PRIOR TO SHUTTING DOWN.

(E) HAVE SUFFICIENT MANPOWER AND EQUIPMENT ON THE SITE TO PERFORM THE OPERATION IN A MINIMUM OF TIME.

PAINTING

(A) IT IS THE INTENTION OF THESE SPECIFICATIONS TO PROVIDE THAT ALL METAL WORK SUBJECT TO CORROSION SHALL BE SATISFACTORILY PROTECTED BY A DURABLE COATING OF PAINT OR OTHER APPROVED MATERIAL AND THAT ALL METAL SURFACES NOT BURIED IN EARTH, OR IN CONCRETE SHALL BE LEFT CLEAN AND WELL PAINTED AT THE COMPLETION OF THE CONTRACT. UNLESS OTHERWISE SPECIFIED, THE PROTECTION SHALL BE AT LEAST THAT GIVEN BY THREE (3) COATS OF APPROVED PAINT. THE FIRST COAT IS TO BE APPLIED AT THE SHOP BEFORE THE METAL HAS RUSTED AND AFTER ALL GREASE, DIRT AND SCALE HAS BEEN REMOVED. BOLTS AND NUTS SHALL NOT BE SHOP COATED, BUT SHALL RECEIVE THREE (3) COATS OF APPROVED PAINT AFTER INSTALLATION.

(B) ALL METAL WORK WHICH HAS NOT BEEN COATED BEFORE THE ARRIVAL ON THE JOB SHALL BE GIVEN A TEMPORARY PROTECTIVE COATING OF SUCH A NATURE AS TO PERMIT THE READY ADHERENCE OF FUTURE COATINGS. THE TEMPORARY COATING SHALL BE A GOOD GRADE ASPHALTIC PAINT OR OTHER APPROVED MATERIAL. THE TEMPORARY PROTECTION SHALL APPLY PARTICULARLY TO THE VALVE BOXES AND COVERS, MANHOLE RINGS AND COVERS, LADDERS AND LADDER RUNGS, DRESSER TYPE COUPLINGS AND ELSEWHERE WHEN IN THE OPINION OF THE CITY, SUCH PROTECTION IS NECESSARY.

(C) ALL SURFACES OF METAL WHICH WILL BE IN CONTACT AFTER ASSEMBLING SHALL BE PAINTED, AT LEAST ONE COAT, BEFORE ASSEMBLING. THE FINAL COAT OF PAINT ON ALL EXPOSED WORK SHALL BE GIVEN SHORTLY BEFORE THE COMPLETION OF THE CONTRACT.

(D) WHERE PAINTING CLAUSES APPEAR HEREINAFTER, THEY SHALL TAKE PRECEDENCE OVER THIS SECTION, EXCEPT THAT TEMPORARY PROTECTION HEREIN DESCRIBED MAY BE REQUIRED.

(E) ALL OF THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR THE PARTICULAR ITEM REQUIRING THE PAINTING.

TESTS, INSPECTION AND REPORTS

NOTWITHSTANDING THE REQUIREMENTS OF ANY OTHER PROVISIONS OF THESE SPECIFICATIONS, THE CONTRACTOR SHALL ARRANGE FOR AND PAY ALL COSTS INVOLVED FOR SHOP INSPECTION OF ALL MATERIALS FURNISHED, MANUFACTURE OF ALL PIPE, VALVES, FITTINGS, ETC., FIELD AND SHOP WELDS AND WELDING, AND FURNISH TO THE STATE AND THE CITY OF CLEVELAND COPIES OF ALL SHOP, FABRICATION, MANUFACTURE AND OTHER RELATED INSPECTION REPORTS OF MATERIALS FURNISHED. THIS INSPECTION SHALL BE DONE BY A RECOGNIZED INSPECTION LABORATORY APPROVED BY THE CITY OF CLEVELAND. IN THE CASE OF ANY ITEM NOT SPECIFICALLY MENTIONED IN THE "WATERWORK NOTES," OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS - JANUARY 1, 1993 SHALL GOVERN.

HANDLING PIPE AND ACCESSORIES

(A) UNLOADING PIPE, FITTINGS, VALVES, HYDRANTS, AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE UNLOADED AT THE POINT OF DELIVERY, HAULED TO AND DISTRIBUTED AT THE SITE OF THE PROJECT BY THE CONTRACTOR. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. IN LOADING AND UNLOADING, THEY SHALL BE LIFTED BY HOISTS OR SLID, OR ROLLED ON SKIDWAYS IN SUCH MANNER AS TO AVOID SHOCK. UNDER NO CIRCUMSTANCES SHALL THEY BE DROPPED. PIPE HANDLED ON SKIDWAYS MUST NOT BE SKIDDED OR ROLLED AGAINST PIPE ALREADY ON THE GROUND.

(B) AT SITE OF WORK: IN DISTRIBUTING THE MATERIAL AT THE SITE OF THE WORK, EACH PIECE SHALL BE UNLOADED OPPOSITE OR NEAR THE PLACE WHERE IT IS TO BE LAID IN THE TRENCH.

(C) PROTECTION OF PIPE COATING: PIPE SHALL BE HANDLED IN SUCH MANNER THAT A MINIMUM AMOUNT OF DAMAGE TO THE COATING WILL RESULT. ANY PIPE OR FITTING, THE COATING OF WHICH HAS BEEN DAMAGED IN SHIPPING OR HANDLING, SHALL HAVE THE DAMAGED PORTION WELL CLEANED AND COVERED WITH AN ASPHALT PAINT, APPROVED BY THE CITY BEFORE BEING PLACED IN THE WORK. THE CONTRACTOR SHALL THOROUGHLY COAT ALL EXPOSED PART OF BOLTS AND NUTS WITH AN APPROVED ASPHALT PAINT, AFTER ALL PIPE HAS BEEN LAID AND BEFORE BACKFILLING HAS BEEN PLACED. ALL FIELD COATINGS SHALL BE FURNISHED BY THE CONTRACTOR.

(D.) PROTECTION OF CONCRETE PIPE: IF, IN THE PROCESS OF MANUFACTURE, TRANSPORTATION, OR HANDLING, ANY CONCRETE PIPE OR SPECIAL RECEIVES ANY INDENTATION OR DEFORMATION TO THE CONCRETE, STEEL ENDS OR CONNECTIONS, THE REMOVAL OF WHICH WILL IN ANY DEGREE INJURE IT, SUCH PIPE OR SPECIAL SHALL BE REJECTED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

(E) PIPE KEPT CLEAN: THE INTERIOR OF THE PIPE, FITTINGS, AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND FOREIGN MATTER AT ALL TIMES.

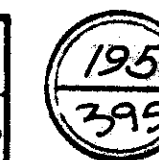
(F) FROST PROTECTION: VALVES AND HYDRANTS BEFORE INSTALLATION SHALL BE DRAINED AND STORED IN A MANNER THAT WILL PROTECT THEM FROM DAMAGE BY FREEZING.

CHANGES IN WATER MAINS

(A) WHEREVER IT BECOMES NECESSARY, IN THE OPINION OF THE ENGINEER OR CITY TO CHANGE THE LOCATION OR ELEVATION OF WATER MAINS AND HYDRANTS, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING WATER LINE MATERIALS REQUIRED TO MAKE THE CONNECTION, AND SHALL FURNISH AND INSTALL COMPLETE ALL THE DUCTILE IRON PIPE, PRESTRESSED CONCRETE CYLINDER PIPE, FITTINGS, AND VALVES TO MAKE THE CONNECTIONS INDICATED, EXCEPT TAPPING SLEEVES AND VALVES WHICH SHALL BE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE CITY. THE CONTRACTOR SHALL ALSO FURNISH ALL NECESSARY LABOR, MATERIALS, TOOLS, AND EQUIPMENT AND MAKE THE EXCAVATION, BACKFILL, AND REPAVING FOR SUCH CONNECTIONS. PAYMENT FOR THIS WILL BE INCLUDED IN PRICE BID UNDER APPROPRIATE ITEM FOR SIZE OF WATER MAIN OR CONNECTION TO BE INSTALLED. ALL PIPES, VALVES, AND APPURTENANCES REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR. (SEE WORK TO BE DONE BY THE CITY).

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WORK TO BE DONE BY THE CITY OF CLEVELAND

(A) THE CITY WILL INSTALL ALL BRANCH SLEEVES AND VALVES FURNISHED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUPPLY THE BRANCH SLEEVES AND VALVES AND DO ALL THE NECESSARY EXCAVATION, BACKFILLING AND REPAVING REQUIRED THEREFORE. THE CONTRACTOR SHALL FURNISH ALL AIR COMPRESSORS REQUIRED FOR THE WORK.

1. THE CITY WILL INSTALL ALL BRANCH SLEEVES, TAPPING SLEEVES AND TAPPING VALVES ON ALL CAST IRON, DUCTILE IRON AND CONCRETE PIPE OF ALL SIZES.
2. THE CITY WILL MAKE THE PRESSURE TAPS ON CAST IRON OR DUCTILE IRON WATER MAINS FOR TAP SIZES UP TO AND INCLUDING 16 INCHES, AND ON CONCRETE WATER MAINS FOR TAP SIZES UP TO AND INCLUDING 12 INCHES.
3. THE CONTRACTOR SHALL ARRANGE FOR AND SHALL PAY FOR ALL PRESSURE TAPS OF 20 INCH AND LARGER ON CAST IRON OR DUCTILE IRON WATER MAINS AND FOR ALL PRESSURE TAPS OF 16 INCH AND LARGER ON CONCRETE WATER MAINS. THE CONTRACTOR'S COSTS FOR SUCH ARRANGEMENTS FOR PRESSURE TAPPING SHALL BE INCLUDED IN THE APPROPRIATE BID ITEM.
4. THE CITY WILL NOT OPERATE EQUIPMENT PROVIDED BY THE CONTRACTOR. HOWEVER, THE CITY WILL INSTALL ALL BRANCH SLEEVES, TAPPING SADDLES AND TAPPING VALVES AS INDICATED HEREIN AND WILL ASSIST IN MAKING THE PRESSURE TAP WHERE PRESSURE TAPPING IS PROVIDED BY THE CONTRACTOR. THE CITY WILL ONLY OPERATE EQUIPMENT BELONGING TO THE CITY.

IN LOCATIONS WHERE BRANCH SLEEVES AND VALVES CANNOT BE INSTALLED, THE CONTRACTOR WILL BE REQUIRED TO CUT IN TEES AND SLEEVE-IN THE REMAINDER OF THE CUT SECTION OF THE EXISTING MAIN. OR, WHEN OTHERWISE REQUIRED WHERE THE CONTRACTOR MUST MAKE PIPE CUTS, IT IS CALLED TO THE CONTRACTOR'S ATTENTION THAT THE WATER DEPARTMENT HAS ON HAND AT HARVARD YARDS MOTOR OPERATED PIPE CUTTERS WHICH ARE AVAILABLE FOR CUTTING PIPE BY CITY FORCES. CONTRACTOR SHALL DO ALL NECESSARY EXCAVATION, BACKFILLING AND REPAVING AND ALL AIR COMPRESSOR AND CRANE SERVICE SHALL BE FURNISHED BY THE CONTRACTOR.

EXCAVATION

- (A) THE CONTRACTOR SHALL REMOVE ALL EXISTING STRUCTURES, ROADWAYS, DRIVEWAYS AND OTHER SIMILAR MATERIALS AND MAKE ALL EXCAVATION NECESSARY FOR THE PROPER CONSTRUCTION OF THE WATER MAIN, PIPE CONNECTIONS AND APPURTENANT STRUCTURES. THE EXCAVATION SHALL INCLUDE THE REMOVAL, HANDLING, REHANDLING AND DISPOSAL OF MATERIALS ENCOUNTERED IN THE WORK AND SHALL INCLUDE ALL PUMPING, BAILING, DRAINAGE, SHEETING AND BRACING. MOREOVER, THE CONTRACTOR MUST ASSUME ALL RESPONSIBILITY FOR ANY ADDED EXPENSE OR OTHER LIABILITY WHICH MAY ARISE BY MEANS OF QUICKSAND, OBSTACLES OR CONDITIONS FORESEEN AND UNFORESEEN OR ENCOUNTERED IN THE WORK OF THIS CONTRACT.
- (B) TRENCHES SHALL IN EVERY CASE BE OF SUFFICIENT WIDTH TO PERMIT SOLID PACKING OF BACKFILL UNDER AND AROUND PIPES, AND SATISFACTORY CONSTRUCTION OF ALL APPURTENANCES AND FOR SUCH SHEETING AND SHORING, PUMPING AND DRAINING AS MAY BE NECESSARY.
- (C) THE TRENCH SHALL BE DUG TO THE ALIGNMENT AND DEPTH REQUIRED AND ONLY SO FAR IN ADVANCE OF PIPE LAYING AS THE ENGINEER SHALL PERMIT. THE TRENCH SHALL BE SO BRACED AND DRAINED THAT WORKMEN MAY WORK THEREIN SAFELY AND EFFICIENTLY. IT IS ESSENTIAL THAT THE DISCHARGE FROM PLUMPS BE LED TO NATURAL DRAINAGE CHANNELS, TO DRAINS, OR TO SEWERS.
- (D) THE TRENCH WIDTH MAY VARY WITH AND DEPEND UPON THE DEPTH OF TRENCH AND THE NATURE OF THE EXCAVATED MATERIAL ENCOUNTERED, BUT IN ANY CASE SHALL BE OF AMPLE WIDTH TO PERMIT THE PIPE TO BE LAID AND JOINTED PROPERLY AND OF THE BACKFILL TO BE PLACED AND COMPACTED PROPERLY. THE MINIMUM WIDTH OF UNSHEETED, TRENCH SHALL BE EIGHTEEN (18) INCHES AND FOR PIPE TEN (10) INCHES OR LARGER; AT LEAST TWELVE (12) INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE FOR CONCRETE PIPE AND EIGHTEEN (18) INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE FOR IRON AND STEEL PIPE, EXCEPT BY CONSENT OF THE ENGINEER. THE MAXIMUM CLEAR WIDTH OF TRENCH SHALL BE NOT MORE THAN TWO (2) FEET GREATER THAN THE OUTSIDE PIPE DIAMETER. WHEN SHEETING AND BRACING IS USED, THE TRENCH WIDTH SHALL BE INCREASED ACCORDINGLY.
- (E) THE TRENCH, UNLESS OTHERWISE SPECIFIED, SHALL HAVE A FLAT BOTTOM CONFORMING TO THE GRADE TO WHICH THE PIPE IS TO BE LAID. THE PIPE SHALL BE LAID UPON SOUND SOIL CUT TRUE AND EVEN, SO THAT THE BARREL OF THE PIPE WILL HAVE A BEARING FOR ITS FULL LENGTH.

(F) ANY PART OF THE TRENCH EXCAVATED BELOW GRADE SHALL BE FILLED AND THOROUGHLY COMPACTED WITH BEDDING MATERIAL AS SPECIFIED IN PARAGRAPH 603.02 OF THE ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS.

(G) WHEN THE UNCOVERED TRENCH BOTTOM AT SUBGRADE IS SOFT AND IN THE OPINION OF THE ENGINEER CANNOT SUPPORT THE PIPE, A FURTHER DEPTH AND OR WIDTH SHALL BE EXCAVATED AND BACKFILLED TO PIPE FOUNDATION GRADE AS REQUIRED UNDER (F), OR OTHER APPROVED MEANS SHALL BE ADOPTED TO ASSURE A FIRM FOUNDATION FOR THE PIPE.

(H) LEDGE ROCK, BOULDERS, LARGE STONES, AND SHALE SHALL BE REMOVED TO PROVIDE A CLEARANCE OF AT LEAST SIX (6) INCHES BELOW ALL PARTS OF THE PIPE, VALVES, OR FITTINGS AND A CLEAR WIDTH OF SIX (6) INCHES ON EACH SIDE OF ALL CONCRETE PIPE AND NINE (9) INCHES ON EACH SIDE OF ALL CAST IRON AND STEEL PIPE SHALL BE PROVIDED.

(I) EXCAVATION BELOW SUBGRADE IN ROCK, SHALE OR IN BOULDERS SHALL BE BACKFILLED TO SUBGRADE AS REQUIRED UNDER (F).

(J) BELL HOLES OR AMPLE DIMENSIONS SHALL BE DUG IN EARTH TRENCHES AT EACH JOINT TO PERMIT THE JOINTING TO BE MADE PROPERLY. ADEQUATE CLEARANCE FOR PROPER JOINTING PIPE LAID IN ROCK SHALL BE PROVIDED AT BELL HOLES.

(K) THE USE OF EXCAVATING MACHINERY WILL BE PERMITTED EXCEPT IN PLACES WHERE ITS OPERATION WILL CAUSE DAMAGE TO TREES, BUILDINGS, OR EXISTING STRUCTURES ABOVE OR BELOW GROUND, IN WHICH CASE HAND METHODS SHALL BE EMPLOYED.

(L) TREES, FENCES, POLES AND ALL OTHER PROPERTY SHALL BE PROTECTED UNLESS THEIR REMOVAL IS AUTHORIZED. ANY PROPERTY DAMAGED SHALL BE SATISFACTORILY RESTORED BY THE CONTRACTOR.

(M) HYDRANTS UNDER PRESSURE, VALVE PIT COVERS, VALVE BOXES, CURB STOP BOXES FIRE OR POLICE CALL BOXES, OR OTHER UTILITY CONTROLS SHALL BE LEFT UNOBSTRUCTED AND ACCESSIBLE DURING THE CONSTRUCTION PERIOD.

(N) THE CONTRACTOR SHALL MAINTAIN ALL EXCAVATIONS IN GOOD ORDER DURING THE CONSTRUCTION, SO AS NOT TO HINDER OR INJURE THE PIPE LAYING, MASONRY OR OTHER WORK. HE SHALL TAKE ALL REASONABLE PRECAUTIONS TO PREVENT MOVEMENT OF THE SIDES OF SUCH EXCAVATION, AND SHALL REMOVE AT HIS OWN EXPENSE ANY MATERIAL SLIDING INTO THE EXCAVATION.

SHEETING AND BRACING

(A) THE CONTRACTOR SHALL FURNISH AND PUT IN PLACE SUCH SHEETING AND BRACING AS MAY BE REQUIRED TO SUPPORT THE SIDES OF TRENCHES OR OTHER EXCAVATION AND SHALL REMOVE SUCH SHEETING AND BRACING, AS THE TRENCH OR EXCAVATION IS FILLED UP, UNLESS THE ENGINEER SHALL ORDER IT LEFT IN PLACE, IN WHICH CASE THE CONTRACTOR SHALL CUT THE PLANK OFF AT A HEIGHT AS ORDERED BY THE ENGINEER, OR AS CALLED FOR ON THE CONTRACT DRAWINGS. THAT PORTION OF THE TIMBER ORDERED TO BE LEFT IN PLACE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE BID PER THOUSAND FEET BOARD MEASURE. NO PAYMENT WILL BE MADE FOR WASTED ENDS. A QUANTITY OF 100 M.B.F. HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR ITEM SPECIAL - SHEETING LEFT IN PLACE.

(B) FOR ALL EXCAVATIONS FOR THE WORK DESCRIBED HEREIN, THE CONTRACTOR SHALL FURNISH AND PLACE SHEETING AND BRACING SO AS TO REDUCE TO A MINIMUM THE POSSIBILITY OF INJURY OR DAMAGE TO THE SAME.

(C) IF THE ENGINEER IS OF THE OPINION THAT AT ANY POINT SUFFICIENT OR PROPER SUPPORTS, SHEETING, OR BRACINGS HAVE NOT BEEN PROVIDED, HE MAY ORDER ADDITIONAL SUPPORTS, SHEETING OR BRACING, AT THE EXPENSE OF THE CONTRACTOR, AND THE COMPLIANCE WITH SUCH ORDERS BY THE CONTRACTOR SHALL NOT RELIEVE OR RELEASE HIM FROM HIS RESPONSIBILITY FOR SUFFICIENCY OF SUCH SUPPORTS.

(D) SHEETING AND BRACING SHALL BE PROVIDED IN ACCORDANCE WITH RULE 1C-3-11 OF THE SAFETY REQUIREMENTS OF THE INDUSTRIAL COMMISSION OF OHIO.

PREQUALIFICATIONS OF CONTRACTOR FOR TAPPING (SERVICE CONNECTIONS - 1" TAPS ONLY)

THAT THE COMMISSIONER OF WATER IS AUTHORIZED TO DEEM PERSONS OR FIRMS QUALIFIED TO TAP MAINS FOR SERVICE CONNECTION REINSTALLATION AFTER QUALIFICATIONS OF TAPPER, INSPECTION OF EQUIPMENT, AND PROVEN ABILITY AND WORKMANSHIP HAVE BEEN ESTABLISHED AS TO TAP SIZES TO HIS SATISFACTION. TO DETERMINE THE QUALIFICATIONS OF ANY PERSON OR FIRM TO TAP MAINS, THE COMMISSIONER OR HIS DESIGNEE SHALL WITNESS THE INSTALLATION OF A SERVICE CONNECTION IN A WATER MAIN UNDER PRESSURE AND INSPECT TAPPING EQUIPMENT TO BE USED BY TAPPER. UPON SUCCESSFUL COMPLETION OF A TAP SIZE, THE TAPPER SHALL BE CERTIFIED BY LETTER FROM THE COMMISSIONER TO THE DIRECTOR OF TRANSPORTATION OF TAPPER'S COMPETENCE AND QUALIFICATIONS. THIS QUALIFICATION MAY BE REVOKED BY THE COMMISSIONER OF WATER, IF IT IS DETERMINED THAT THE TAPPER'S COMPETENCY IS NOT MAINTAINED OR EQUIPMENT IS CHANGED.

NO TAPPING SHALL BE DONE WITH OUT THE KNOWLEDGE AND APPROVAL OF THE DIVISION OF WATER AND HEAT INSPECTOR. FOR EACH TAP TO BE MADE TO REINSTALL A WATER SERVICE CONNECTION, THE TAPPER SHALL OBTAIN AND COMPLETE A CITY OF CLEVELAND "CITY METER REPAIRS HY" FORM C OF C 101-130A FROM THE INSPECTOR. FAILURE TO PRESENT FORM AT TIME OF COMPLETION OF REINSTALLATION SHALL BE CAUSE FOR IMMEDIATE DISQUALIFICATION.

REMOVAL OF EXCAVATED MATERIAL

(A) ALL SURPLUS MATERIAL AND SUCH OTHER MATERIAL AS THE ENGINEER MAY DEEM UNFIT FOR USE AS BACKFILL SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ODOT SPECIFICATION 202 SO AS TO GIVE A MINIMUM OF INCONVENIENCE TO THE PUBLIC. IN CASE OF SETTLEMENT AFTER BACKFILL, THE CONTRACTOR SHALL SUPPLY SUFFICIENT MATERIAL IN ACCORDANCE WITH ITEM 603 TO MAKE UP FOR THE DEFICIENCY.

(B) IN THE STORING OF EXCAVATED MATERIAL, WHICH IS TO BE USED AS A BACKFILL, THE CONTRACTOR SHALL EXERCISE CARE SO AS TO AVOID INCONVENIENCING THE PUBLIC. EXCAVATED MATERIAL WILL NOT BE ALLOWED TO BE STORED ON THE STREETS.

(C) ANY MATERIAL WHICH MAY SPILL OR DRIP FROM VEHICLES BY HAULING IN THE STREETS SHALL BE REMOVED AND THE STREETS CLEANED BY THE CONTRACTOR, TO THE SATISFACTION OF THE ENGINEER.

(D) WHEN SO DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ALL EXCAVATED MATERIALS FROM THE SITE.

LAYING PIPE

(A) PROPER IMPLEMENTS, TOOLS, AND FACILITIES, SATISFACTORY TO THE ENGINEER, SHALL BE PROVIDED AND USED BY THE CONTRACTOR FOR THE SAFE AND CONVENIENT PROSECUTION OF THE WORK. ALL PIPE, FITTINGS, AND VALVES SHALL BE CAREFULLY LOWERED INTO THE TRENCH, PIECE BY PIECE, BY MEANS OF DERRICK, PROPER SLINGS, AND OTHER SUITABLE TOOLS OR EQUIPMENT, IN SUCH MANNER AS TO PREVENT DAMAGE TO PIPE OR COATING. UNDER NO CIRCUMSTANCES SHALL PIPE OR ACCESSORIES BE DROPPED OR DUMPED INTO THE TRENCH. IF ANY DEFECTIVE PIECE IS DISCOVERED WHILE PIPE IS SUSPENDED OR AFTER BEING LAID, A NEW PIECE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

(B) ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH, AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING.

(C) AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF PIPE SHALL BE CLOSED BY APPROVED MEANS, AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE. NO PIPE SHALL BE LAID IN WATER, OR WHEN THE TRENCH CONDITIONS OR THE WEATHER IS UNSUITABLE FOR SUCH WORK, EXCEPT BY PERMISSION OF THE ENGINEER.

(D) WHEREVER NECESSARY TO DEFLECT PIPE FROM A STRAIGHT LINE, EITHER IN THE VERTICAL OR HORIZONTAL PLANE TO AVOID OBSTRUCTIONS, TO PLUMB STEMS, OR FOR OTHER REASONS, THE DEGREE OF DEFLECTION SHALL BE APPROVED BY THE ENGINEER.

(E) BEFORE LAYING DUCTILE IRON PIPE, ALL LUMPS, BLISTERS AND EXCESS COAL TAR COATING SHALL BE REMOVED FROM THE BELL AND SPIGOT ENDS OF EACH PIPE. THE PIPE ENDS SHALL THEN BE KEPT CLEAN UNTIL JOINTS ARE MADE.

(F) BEFORE LAYING CONCRETE PIPE, THE PIPE ENDS SHALL BE MADE SMOOTH WITH EMERY CLOTH, FILE OR OTHER APPROVED MEANS, WIRE BRUSHED AND WIPED UNTIL CLEAN AND DRY. PIPE ENDS SHALL BE KEPT CLEAN UNTIL JOINTS ARE MADE. AFTER CLEANING AND DRYING, ALL CONTACT SURFACES OF THE GASKETS AND STEEL JOINT RINGS SHALL BE COATED WITH AN APPROVED FLAX SOAP BEFORE ENTERING THE SPIGOT ENDS INTO THE SOCKET. IMMEDIATELY AFTER THE JOINT IS PULLED TOGETHER, THE PIPE SHALL BE BLOCKED WITH WOOD BLOCKING. A SURCINGLE SHALL BE INSTALLED AROUND THE JOINT AND THE PIPE SHALL BE SECURED WITH EARTH OR SAND AS REQUIRED, CAREFULLY TAMPED UNDER AND ON EACH SIDE UP TO THE SPRING-LINE OF THE PIPE, INCLUDING THE BELL HOLES. ALL BLOCKING SHALL BE REMOVED WHEN BACKFILL HAS REACHED THE SPRING LINE FOR THE PIPE.

WATER WORK NOTES

FLOATING

THE CONTRACTOR SHALL TAKE EVERY PRECAUTION AGAINST THE FLOATING OF THE PIPE DUE TO WATER COMING INTO THE TRENCH, OR THROUGH CAVING IN, FLUSHING OR PUDDLING. IN CASE OF SUCH FLOATING THE CONTRACTOR SHALL REPLACE THE PIPE AT HIS OWN EXPENSE AND MAKE WHOLLY GOOD ANY INJURY OR DAMAGE WHICH MAY HAVE RESULTED.

PLUGGING DEAD ENDS

STANDARD RESTRAINED PLUGS WITH CLAMPS SHALL BE INSERTED INTO THE BELLS OF ALL DEAD ENDS OF PIPES, TEES, OR CROSSES, AND SPIGOT ENDS SHALL HAVE RESTRAINED CAPS AND CLAMPS INSTALLED BY THE CONTRACTOR, ON ALL MAINS CONSTRUCTED BY HIM AND ON EXISTING WATER MAINS WHERE INDICATED IN THE CONTRACT DRAWINGS. CONCRETE PIERS SHALL BE PLACED WHEN CALLED FOR ON THE CONTRACT DRAWINGS, OR ORDERED BY THE CITY. THE COST OF FURNISHING AND INSTALLING THE PLUGS IN NEW WATER MAINS SHALL BE INCLUDED IN THE PER LINEAR FOOT PRICE BID FOR THE VARIOUS SIZES OF NEW WATER MAINS. THE COST OF FURNISHING AND INSTALLING THE PLUG IN EXISTING WATER MAIN SHALL BE INCLUDED IN THE UNIT PRICE BID FOR EACH "ITEM SPECIAL-PLUGGING EXISTING WATER MAINS AND BRANCHES," CLASSIFIED AS TO SIZE AS SHOWN ELSEWHERE IN THESE PLANS. PAYMENT FOR TEMPORARY PLUGS OR CAPS FOR TESTING AND CHLORINATION SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAL FOOT OF WATER MAIN TO BE TESTED AND CHLORINATED.

BACKFILLING

- (A) BACKFILL, UNLESS OTHERWISE SPECIFIED, MAY BE MADE WITH MATERIAL EXCAVATED FROM TRENCHES, PROVIDING IT IS SATISFACTORY TO THE CITY. IF, IN THE OPINION OF THE CITY, THE MATERIAL EXCAVATED IS UNSATISFACTORY, THEN THE CONTRACTOR SHALL FURNISH AT HIS OWN EXPENSE OTHER MATERIAL SUITABLE FOR BACKFILL. ALL BACKFILL SHALL BE FREE FROM SLAG, CINDERS, RUBBISH AND OTHER OBJECTIONABLE MATERIAL.
- (B) BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE BROUGHT TO THE GRADE OF THE BOTTOM OF THE PIPE, EXCEPT AT FIELD JOINTS. WHEREVER THE BOTTOM OF THE TRENCH HAS BEEN EXCAVATED BELOW THE BOTTOM OF THE PIPE, THE CONTRACTOR SHALL PLACE SAND, OR OTHER MATERIAL SATISFACTORY TO THE ENGINEER TO BRING THE BOTTOM OF THE TRENCH TO THE GRADE OF THE BOTTOM OF THE PIPE. THIS BED SHALL BE THOROUGHLY TAMPED BEFORE THE PIPE IS LAID.
- (C) UNLESS OTHERWISE SPECIFIED, THE BACKFILL UNDER, AROUND AND TO A DEPTH OF ONE (1) FOOT ABOVE THE TOP OF ALL PIPE SHALL BE MADE WITH SAND IN ACCORDANCE WITH 703.02, WHICH MATERIAL SHALL BE FREE FROM OBJECTIONABLE MATERIAL NOTED ABOVE. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL, SO AS TO AVOID INJURING, DISTORTING OR MOVING THE PIPE DURING COMPACTION. ABOVE THIS LEVEL THE BACKFILL SHALL BE MADE WITH MATERIAL SATISFACTORY TO THE CITY.
- (D) BACKFILLING AS NOTED IN PARAGRAPH (D) SHALL BE TAMPED IN THIN LAYERS, SIMULTANEOUSLY ON EACH SIDE OF THE PIPE, AND THOROUGHLY COMPACTED, SO AS TO PROVIDE A SOLID BACKING AGAINST THE EXTERNAL SURFACE OF THE PIPE.
- (E) ONLY AFTER THE BACKFILL PREVIOUSLY MENTIONED HAS BEEN SATISFACTORILY COMPACTED, MAY WORK PROCEED IN PLACING THE REMAINING BACKFILL WHICH MUST BE CAREFULLY PLACED AND COMPACTED IN FOUR INCH LAYERS BY TAMPING, WITH MECHANICAL TAMPERS OR ROLLING. ALL PRECAUTIONS MUST BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE NUMBER OF MEN TAMPING SHALL BE NOT LESS THAN THE NUMBER BACKFILLING, AND ADDITIONAL MEN SHALL BE KEPT IN THE TRENCH TO SPREAD THE MATERIAL.
- (F) BACKFILLING SHALL NOT BE DONE IN FREEZING WEATHER, EXCEPT BY PERMISSION OF THE ENGINEER, AND IT SHALL NOT BE MADE WITH FROZEN MATERIAL, NOR SHALL ANY FILL BE MADE WHERE THE MATERIAL ALREADY IN THE DITCH IS FROZEN.
- (G) ALL BACKFILL SHALL BE MADE WITH SAND, ITEM 703.02 OF O.D.O.T. SPECIFICATIONS WHERE PERMANENT PAVEMENTS, CURBS, DRIVEWAYS, OR SIDEWALKS HAVE BEEN OPENED FOR OR UNDERCUT BY THE EXCAVATION, WHERE ORDERED BY THE ENGINEER.
- (H) SPECIAL TREATMENT OF THE TRENCH WILL BE REQUIRED WHERE CINDER OR ACTIVE SULPHUR BEARING SHALL OR CLAYS EXCAVATION EXCEEDING ONE FOOT MEASURED FROM THE TOP SURFACE IS ENCOUNTERED. BEFORE LAYING THE PIPE, THE BOTTOM OF THE TRENCH SHALL BE DUG BELOW GRADE AND THEN BROUGHT TO THE GRADE OF THE PIPE IN THE FOLLOWING MANNER: A FOUR (4) INCH LAYER OF CRUSHED LIMESTONE SHALL BE PLACED ON THE ENTIRE WIDTH OF THE BOTTOM OF THE TRENCH FOLLOWED BY A FILLER OF HYDRATED LIME AND A LAYER OF THREE (3) INCHES OF SAND. THE CRUSHED LIMESTONE SHALL BE WELL GRADED FROM FINE TO COARSE AND FREE FROM SLAG, CINDERS, ASHES, RUBBISH OR OTHER OBJECTIONABLE MATERIAL. ALL LIMESTONE MUST BE CAPABLE OF BEING PASSED THROUGH A 3/4 INCH SIEVE. ON TOP OF THIS LAYER OF CRUSHED STONE, HYDRATED LIME SHALL BE SUPPLIED IN THE AMOUNT OF 3/8 OF A POUND PER SQUARE FOOT OF TRENCH. THIS BED OF CRUSHED LIMESTONE SHALL BE THOROUGHLY TAMPED BEFORE THE 3" LAYER OF SAND IS PLACED. THE BACKFILL AROUND AND TO THE DEPTH OF 3" ABOVE THE TOP OF PIPE SHALL BE MADE WITH SAND. THE CONTRACTOR MUST USE SPECIAL CARE IN PLACING THIS PORTION

OF THE BACKFILL SO AS TO AVOID INJURING OR MOVING THE PIPE WHEN COMPACTING SAME. ON TOP OF THE SAND THE CONTRACTOR SHALL PLACE ANOTHER LAYER OF CRUSHED LIMESTONE FIVE (5) INCHES THICK ON THE ENTIRE WIDTH OF THE TRENCH. ON TOP OF THE COMPACTED LAYER OF LIMESTONE HYDRATED LIME SHALL THEN BE APPLIED IN THE AMOUNT OF 3/4 OF A POUND PER SQUARE FOOT OF TRENCH. THE REMAINING BACKFILL SHALL BE MADE WITH SAND CAREFULLY PLACED AND COMPACTING BY TAMPING, OR ROLLING. ALL PRECAUTIONS SHALL BE TAKEN TO ELIMINATE FUTURE SETTLEMENT. THE TREATMENT OF THE TRENCH BOTTOM, PREVIOUSLY DESCRIBED, MAY BE OMITTED WHERE THE CINDER DEPTH MEASURED FROM THE TOP SURFACE DOES NOT EXCEED 2'-6".

PROVISIONS FOR PROTECTING THE WORK

THE CONTRACTOR SHALL FURNISH ALL THE NECESSARY EQUIPMENT, SHALL TAKE ALL NECESSARY PRECAUTIONS AND SHALL ASSUME THE ENTIRE COST OF HANDLING ANY SEWAGE, SEEPAGE, STORM SURFACE AND FLOOD FLOWS OR ICE, WHICH MAY BE ENCOUNTERED AT ANY TIME DURING THE CONSTRUCTION OF THE WORK. THE MANNER OF PROVIDING FOR THESE OCCURRENCES SHALL MEET WITH THE APPROVAL OF THE ENGINEER. AFTER INSTALLATION, THE CONTRACTOR SHALL FURNISH AND MAINTAIN SATISFACTORY PROTECTION TO ALL EQUIPMENT WHETHER OF THIS OR OTHER CONTRACT AGAINST INJURY BY WEATHER, FLOODING OR BY DIRECT OR INCIDENTAL DAMAGE FROM HIS OWN OPERATIONS, LEAVING ALL WORK IN A PERFECT CONDITION AT THE COMPLETION OF THE CONTRACT. NO EXTRA PAYMENT WILL BE MADE FOR THIS WORK BUT THE ENTIRE COST OF THE SAME SHALL BE INCLUDED IN THE WORK TO BE DONE IN THIS CONTRACT.

DRAWINGS

(A) THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL, DUPLICATE PRINTS OF ALL SHOP DRAWINGS AS DEVELOPED BY THE FABRICATOR, FOR CONCRETE PIPE, FITTINGS AND SPECIALS, AND MISCELLANEOUS DETAILS, SUCH AS VALVES, DRAIN FORGEINGS, PRECAST VALVES, CASTINGS, ETC. DRAWINGS SHALL INCLUDE DETAILS, LAYOUTS AND LAYING SCHEDULE FOR ALL PIECES FURNISHED REQUIRING DRAWING SUBMITTAL.

(B) ONE PRINT OF EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE DIRECTOR. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE DIRECTOR ONE (1) REPRODUCIBLE TRACINGS ON CLOTH OR MYLAR, OF EACH DRAWING. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED. DRAWINGS SHALL BE ON A COMPOSITE SHEETS 24" X 36". NO SMALLER SHEETS WILL BE ACCEPTED. MYLAR FILM THICKNESS SHALL BE 4 MILS.

(C) THE APPROVAL OF THE DRAWINGS BY THE DIRECTOR SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

TUNNELING

TUNNELING WILL NOT BE PERMITTED.

LISTS AND INVOICES

(A) THE CONTRACTOR SHALL FURNISH THE CITY WITH THE LIST IN DUPLICATE OF PIECES IN EACH SHIPMENT OF PIPE AND SPECIALS, GIVING THE SERIAL NUMBER AND DESIGNATION OF EACH PIPE AND SPECIAL SENT AT THAT TIME.

(B) THE MATERIAL SHALL BE SHIPPED IN SUCH SECTIONS AS THE CITY MAY ORDER.

ITEM SPECIAL- DUCTILE IRON PIPE AND FITTINGS

WORK INCLUDED

(A) THE CONTRACTOR SHALL UNDER THIS ITEM, FURNISH ALL THE MATERIALS FOR AND SHALL PROPERLY CONSTRUCT AND CONNECT IN PLACE AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED, ALL DUCTILE IRON PIPE AND FITTINGS, INCLUDING ALL EXCAVATION WORK, THE CUTTING INTO AND REMOVAL OF EXISTING PIPE, BACKFILLING, SAND BACKFILL, AND REPAVING, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT. IN GENERAL THIS WORK SHALL INCLUDE THE FURNISHING, LAYING, CONNECTING, PAINTING AND TESTING OF PIPE AND FITTINGS, THE EXCAVATION, SHEETING AND SHORING, BACKFILLING, SAND BACKFILL, PAVEMENT REPAIRS, MAINTENANCE OF TRAFFIC, THE CUTTING INTO, REMOVAL AND STORAGE OF EXISTING MAINS AND THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS AND EQUIPMENT TO COMPLETE THE WORK AS SPECIFIED, SHOWN OR ORDERED.

(B) IN MAKING THE CONNECTION TO EXISTING MAINS WHERE BRANCH SLEEVES CAN BE USED, THE CONTRACTOR SHALL SUPPLY THE SAME. THE DIVISION OF WATER WILL INSTALL THE BRANCH SLEEVE AND MAKE THE PRESSURE TAP IN ACCORDANCE WITH "WORK TO BE DONE BY THE CITY". IF THE INSTALLATION OF BRANCH SLEEVES AND VALVES CANNOT BE ACCOMPLISHED, THE CONTRACTOR WILL BE REQUIRED TO USE TEES AND SLEEVES TO COMPLETE THE CONNECTION. THE CONTRACTOR WILL BE REQUIRED TO MAKE THE NECESSARY EXCAVATION, BACKFILL AND REPAVING.

DUCTILE-IRON PIPE AND FITTINGS

(A) ALL PIPE AND FITTINGS SHALL BE MANUFACTURED IN ALL RESPECTS IN ACCORDANCE WITH, AND SHALL MEET THE REQUIREMENTS OF THE LATEST "AMERICAN NATIONAL STANDARD" SPECIFICATIONS FOR DUCTILE-IRON PIPE CENTRIFUGALLY CAST IN METAL MOLDS OR SANDLINED MOLDS, AND DUCTILE IRON FITTINGS FOR WATER AND OTHER LIQUIDS, ADOPTED BY THE AMERICAN WATER WORKS ASSOCIATION; WHICH STANDARDS EXCEPT AS HEREIN MODIFIED ARE MADE A PART OF THESE SPECIFICATIONS. PIPE UP TO AND INCLUDING 20 INCHES SHALL HAVE RETAINED MECHANICAL JOINT PIPE AND FITTINGS. BOLTLESS RESTRAINED PIPE AND FITTINGS SHALL BE USED WHERE CALLED FOR ON THE CONTRACT DRAWINGS. PIPE 24-INCH AND LARGER SHALL HAVE BOLTLESS RESTRAINED SLIP-ON JOINTS WITHIN "RESTRAINED DISTANCE" SHOWN ON THE CONTRACT DRAWINGS.

(B) ALL PIPE AND FITTINGS SHALL BE CEMENT LINED AND OF THE SIZE AND THICKNESS AND PRESSURE CLASSES NOTED ON THE RESPECTIVE CONTRACT DRAWING OR DIRECTLY SPECIFIED. ALL FITTINGS ON PIPE SIZES UP TO AND INCLUDING 12-INCHES MAY BE OF THE SHORT BODIED TYPE.

(C) THE CONTRACTOR SHALL FURNISH CENTRIFUGAL CAST DUCTILE-IRON CEMENT LINED PIPE. DUCTILE-IRON METAL SHALL HAVE A MINIMUM TENSILE STRENGTH OF 60,000 PSI, MINIMUM YIELD STRENGTH OF 42,000 PSI AND MINIMUM ELONGATION OF 10 PERCENT AND SHALL BE FOR THE THICKNESS CLASS NOTED ON THE CONTRACT DRAWINGS OR DIRECTLY SPECIFIED. PIPE MAY BE FURNISHED IN 18 OR 20 FOOT NOMINAL LAYING LENGTHS, THE CENTRIFUGALLY CAST DUCTILE SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD ANSI A21.51-1976/AWWA C151-76 AND ALL SUBSEQUENT AMENDMENTS THERETO. PIPE ON STRAIGHT RUNS SHALL HAVE PUSH-ON SINGLE RUBBER-GASKET COMPRESSION JOINTS, ALL IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11-80/AWWA C111-80 RUBBER-GASKET JOINTS FOR DUCTILE-IRON PRESSURE PIPE AND FITTINGS. ALL PIPE SHALL BE CEMENT LINED. FOR PIPE SIZES UP TO AND INCLUDING 20-INCHES, RETAINED MECHANICAL JOINTS SHALL BE FURNISHED AT BENDS, TEES, CROSSES, SPECIAL FITTINGS AND BETWEEN VERTICAL OFFSETS OR BENDS, ON HYDRANT BRANCHES AND SHALL BE RETAINED AS SPECIFIED IN "RETAINED MECHANICAL JOINTS" SECTION.

(D) THE CONTRACTOR SHALL FURNISH DUCTILE-IRON CEMENT LINED FITTINGS. ALL DUCTILE-IRON FITTINGS ON PIPE SIZES 16" AND LARGER SHALL BE MANUFACTURED IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.10-82/AWWA C110-82 AND ALL SUBSEQUENT AMENDMENTS THERETO. METAL FOR FITTINGS SHALL CONFORM TO AMERICAN NATIONAL STANDARD ANSI A21.10-82. ALL FITTINGS MAY BE OF THE SHORT BODIED TYPE IN ACCORDANCE WITH ANSI/AWWA C153/A21.53-84 AND ALL SUBSEQUENT AMENDMENTS THERETO.

(E) STANDARD THICKNESS AND PIPE CLASS TABLES THE THICKNESS OF THE CENTRIFUGALLY CAST DUCTILE IRON PIPE SHALL CONFORM TO THE FOLLOWING TABLE:

SIZE	STANDARD THICKNESS OF CENTRIFUGALLY CAST, DUCTILE IRON PIPE					FITTINGS CLASS
	WORKING PRESSURE	STANDARD THICKNESS CLASSES				
		52	53	54	56	
6"	350	.31	.34	.37	.43	350
8"	350	.33	.36	.39	.45	350
12"	350	.37	.40	.43	.49	350
24"	350	.44	.47	.50	.56	350

(F) ALL FITTINGS, UNLESS OTHERWISE NOTED IN THE CONTRACT DRAWINGS, SUCH AS BENDS, TEES, CROSSES, HYDRANT BRANCHES, ETC. SHALL HAVE BELL AND BELL, BELL AND PLAIN ENDS OF THE MECHANICAL BOLTED STUFFING-BOX TYPE WITH PIPE OR FITTING PLAIN END SEALING GASKET AND BOLTED FOLLOWER GLAND. MECHANICAL JOINT FITTINGS SHALL BE THE MECHANICAL JOINTED BOLTED STUFFING-BOX TYPE IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11-80/AWWA C111-80 RUBBER-GASKET JOINTS FOR DUCTILE IRON AND GRAY-IRON PRESSURE PIPE AND FITTINGS. ALL FITTINGS SHALL BE CEMENT LINED. ALL MECHANICAL JOINTS SHALL BE RETAINED AS SPECIFIED IN "RETAINED MECHANICAL JOINTS" SECTION. PIPE AND FITTINGS WITHIN "RESTRAINED-DISTANCE" ON PIPE SIZES 24-INCH AND LARGER SHALL BE FURNISHED WITH BOLTLESS RESTRAINED SLIP-ON JOINTS.

(G) WHERE "RESTRAINED DISTANCES" ARE SHOWN ON THE PLANS OR DIRECTLY SPECIFIED, PIPE AND FITTINGS HAVING APPROVED SLIP-ON SINGLE RUBBER-GASKET BOLTLESS RESTRAINED TYPE JOINTS SHALL BE FURNISHED.

(H) GLANDS FOR ALL MECHANICAL JOINT PIPE AND FITTINGS SHALL BE DUCTILE-IRON. BOLTS AND NUTS SHALL BE CORROSION RESISTANT, HIGH-STRENGTH, LOW ALLOY STEEL IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI A21.11-80/AWWA C111-80 RUBBER GASKET JOINTS FOR DUCTILE-IRON AND GRAY-IRON PRESSURE PIPE AND FITTINGS. GASKETS SHALL BE OF RUBBER OR OTHER EQUALLY EFFECTIVE PROTECTION AGAINST UNEVEN DISTORTION OF GASKET.

WATER WORK NOTES

CALC. _____	CUYAHOGA COUNTY	OHIO
DATE _____	CUY 176-10-14	F.H.W.A. 5
CHKD. _____		REGION
DATE _____		

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(I) WHERE FITTINGS ARE SHOWN WHICH ARE NOT COVERED BY THE ABOVE SPECIFICATIONS, THEY IN SUCH PARTICULARS AS ARE LACKING THEREON SHALL CONFORM TO THE DIMENSIONS AND OTHERWISE MEET THE SPECIFICATIONS FOR THE RESPECTIVE TYPE WHICH ARE CARRIED IN THE LATEST REVISIONS TO THE CURRENT EDITION OF THE DUCTILE IRON PIPE RESEARCH ASSOCIATION "HANDBOOK OF DUCTILE IRON PIPE" OR WHICH ARE OTHERWISE SHOWN ON THE CONTRACT DRAWINGS.

(J) WHEREVER CHANGES IN LINE AND GRADES OF THE MAIN AS SHOWN ON THE DRAWINGS ARE NOT STANDARD FITTING DEFLECTIONS, THE CONTRACTOR WILL BE PERMITTED TO SUBMIT DETAILS USING COMBINATIONS OF STANDARD FITTINGS AND SMALL DEFLECTIONS (NOT TO EXCEED THE MANUFACTURER'S MAXIMUM SUGGESTED JOINT OPENING) IN THE ADJOINING LENGTHS OF PIPE.

(K) ON NEW OR EXTENDED WATER MAINS, UP TO AND INCLUDING 20-INCH DIAMETER WHERE WATER MAINS END OR TERMINATE AND ARE NOT CONNECTED TO EXISTING MAINS, RETAINED MECHANICAL BELL JOINT PLUGS ARE TO BE INSTALLED. ON MAINS 24" AND LARGER AN APPROVED TYPED RESTRAINED CAP/PLUG SHALL BE FURNISHED AND INSTALLED. PLUGS CAPS SHALL BE FURNISHED WITH TWO (2) PLUGGED TWO INCH (2") TAPS FOR DRAIN AND AIR RELIEF CONNECTIONS.

(L) CLOSURE PIECES SHALL BE ACCURATELY MEASURED AND CUT IN THE FIELD AND INSTALLED USING SOLID SHORT PATTERN SLEEVES HAVING MECHANICAL BELL JOINTS. MECHANICAL BELL JOINT SLEEVES SHALL BE OF THE RETAINED TYPE AS SPECIFIED IN SECTION 1-8, E: "RETAINED MECHANICAL JOINTS".

(M) TESTS, INSPECTION, REPORTS AND ANALYSES OF TESTS OF SAMPLES FOR ALL MATERIALS SHALL BE FURNISHED IN ACCORDANCE WITH THESE SPECIFICATIONS.

(N) BITUMASTIC COATING SHALL BE APPLIED ON THE EXTERIOR OF ALL DUCTILE IRON PIPE AND FITTINGS IN ACCORDANCE WITH AWWA SPECIFICATIONS.

CEMENT LINING

ALL PIPE FITTINGS SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE LINING SHALL CONFORM TO THE AMERICAN NATIONAL STANDARD A21.4-1980 (AWWA C104-80) AND ALL SUBSEQUENT AMENDMENTS THERETO.

MARKING

ALL PIPE AND FITTINGS SHALL BE SUITABLY MARKED TO DENOTE THE MANUFACTURER, CLASS, DATE, WEIGHT AND OTHER ELEMENTS OF IDENTIFICATION.

FACING AND DRILLING

ALL FLANGES SHALL BE CAST SOLID AND FACED ACCURATELY AT RIGHT ANGLES TO THE AXIS OF THE PIPE. ALL FLANGES SHALL BE COATED WITH WHITE LEAD IMMEDIATELY AFTER THEY HAVE BEEN FACED AND DRILLED. ALL FLANGED PIPE AND FITTINGS SHALL BE FACED AND DRILLED TO ANSI B16-1, 125 LB. DRILLING, UNLESS SPECIAL DRILLING IS CALLED FOR. WHERE TAP OR STUD BOLTS ARE REQUIRED, FLANGES SHALL ALSO BE TAPPED.

LAYING

(A) PROPER AND SUITABLE TOOLS AND APPLIANCES FOR THE SAFE AND CONVENIENT HANDLING AND LAYING OF THE PIPE AND FITTINGS SHALL BE USED. GREAT CARE SHALL BE TAKEN TO PREVENT THE PIPE COATING AND FITTINGS FROM BEING DAMAGED PARTICULARLY ON THE INSIDE OF THE PIPES AND FITTINGS AND ANY SUCH DAMAGE SHALL BE REMEDIATED AS DIRECTED. ALL PIPES AND FITTINGS SHALL BE CAREFULLY EXAMINED BY THE CONTRACTOR FOR DEFECTS JUST BEFORE LAYING AND NO PIPE OR FITTINGS SHALL BE LAID WHICH IS KNOWN TO BE DEFECTIVE.

(B) IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER HAVING BEEN LAID, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE OR FITTING IN A SATISFACTORY MANNER, BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL PIPES AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE THEY ARE LAID, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE COMPLETED WORK, AND WHEN LAID, SHALL CONFORM TO THE LINES AND GRADES. OPEN ENDS OF PIPES SHALL BE KEPT PLUGGED WITH A BULKHEAD DURING CONSTRUCTION.

(C) PIPE LAID IN TRENCH SHALL BE LAID TO A FIRM AND EVEN BEARING FOR ITS FULL LENGTH. PRECAUTIONS SHALL BE TAKEN AGAINST FLOATING.

(D) IT IS THE INTENTION OF THESE SPECIFICATIONS TO SECURE FIRST CLASS WORKMANSHIP IN THE PLACING OF PIPE AND ACCESSORIES. IN SUCH DETAILS AS ARE NOT SPECIFICALLY MENTIONED HEREIN OR CALLED FOR ON THE DRAWINGS, THE CONTRACTOR WILL BE REQUIRED TO CONFORM WITH THE APPLICABLE SECTIONS OF THE LATEST AMERICAN NATIONAL STANDARD ANSI/AWWA C600-77, INSTALLATION OF GRAY AND DUCTILE CAST IRON WATER MAINS AND APPURTENANCES AS ADOPTED BY THE AMERICAN WATER WORKS ASSOCIATION.

CUTTING PIPE

WHENEVER THE PIPES REQUIRE CUTTING TO FIT INTO THE LINES, THE WORK SHALL BE DONE IN A SATISFACTORY MANNER SO AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE. WHEN A PIECE OF PIPE IS CUT TO FIT INTO THE LINE, NO PAYMENT WILL BE MADE FOR THE PORTION CUT OFF AND NOT USED IN THE LINE.

JOINTS

(A) FLANGED JOINTS

(1) FLANGED JOINTS SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS. FLANGES SHALL BE EITHER CAST STEEL, FORGED OR ROLLED STEEL, OR PROPERLY WELDED AND MACHINED FABRICATED STEEL PLATES, WELDED TO PIPE WITH TWO CONTINUOUS WELDS. THEY SHALL HAVE PLAIN FACES AND SHALL BE FACED TRUE AND SMOOTH AT RIGHT ANGLES TO THE AXIS OF THE PIPE AND SHALL BE SPOT FACED ON THE BACK. DRILLING SHALL CONFORM TO ANSI B16.1, 125 LBS. EACH BLIND FLANGE SHALL BE CAST IRON AND HAVE BOSSES TAPPED AT TOP AND BOTTOM FOR TWO (2) INCH STANDARD PIPE AND FURNISHED WITH PLUGS.

(2) ALL BOLTS AND NUTS USED IN THE FINISHED WORK FOR FLANGES SHALL BE MADE OF SILICON BRONZE (ASTM B 98-74A, ALLOY A) OR STAINLESS STEEL (ASTM A 276-75, TYPE 302). THE ENDS OF ALL BOLTS MUST BE FINISHED TO STANDARD RADIUS IN ACCEPTABLE MANNER. ALL SCREW THREADS SHALL BE AMERICAN STANDARD COARSE THREAD (N.C.). STUD BOLTS DOUBLE END (ROD) SHALL BE USED TO MAKE THE FLANGED JOINTS ON PIPE. ALL DIMENSIONS TO BE ACCORDING TO AMERICAN STANDARD HEAVY. BOLTS AND NUTS SHALL BE DELIVERED TO THE FIELD FREE FROM GREASE, RUST AND DIRT AND SHALL BE PROPERLY PROTECTED FROM MOISTURE AND DIRT IN THE FIELD. GASKETS FOR FLANGED PIPE SHALL BE 5X MANILA ROPE PATTERN OR OTHER APPROVED TYPE.

(B) SLIP-ON JOINTS

ALL PIPE UNLESS OTHERWISE REQUIRED, SHOWN ON CONTRACT DRAWING, DIRECTLY SPECIFIED OR CONNECTED TO FITTINGS, VALVES AND HYDRANTS SHALL HAVE SOCKET BY PLAIN END RUBBER-GASKET PUSH-ON JOINTS WITH RADially COMPRESSED LOCKED IN PLACE RUBBER RING GASKETS APPROVED BY THE COMMISSIONER OF WATER. SLIP-ON COMPRESSION JOINTS SHALL CONFORM TO THE REGULAR AND SPECIAL REQUIREMENT FOR PUSH-ON JOINTS IN AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11-80 FOR RUBBER GASKET JOINTS FOR DUCTILE-IRON AND GRAY-IRON PRESSURE PIPE AND FITTINGS.

(C) MECHANICAL JOINTS

ALL FITTINGS AND PIPE BELL ENDS CONNECTED TO FITTINGS, UNLESS OTHERWISE REQUIRED, SHOWN ON CONTRACT DRAWINGS, OR DIRECTLY SPECIFIED SHALL HAVE BELL OR PLAIN END JOINTS OF THE MECHANICAL BOLTED STUFFING-BOX TYPE WITH SEALING GASKET AND BOLTED DUCTILE-IRON FOLLOWER GLAND AND, WHERE REQUIRED OR CALLED FOR ON THE CONTRACT DRAWINGS, BE OF THE SPECIFIED RETAINED TYPE. BOLTS AND NUTS FOR MECHANICAL JOINTS SHALL BE CORROSION RESISTANT, HIGH STRENGTH, LOW ALLOY STEEL. MECHANICAL JOINTS SHALL CONFORM TO THE REGULAR AND SPECIAL REQUIREMENT THAT ALL GLANDS SHALL BE DUCTILE-IRON WITH JOINT DIMENSIONS AND TOLERANCES, BOLT HOLES AND SLOTS, GASKETS, RUBBER, QUALITY CONTROL, BOLTS AND NUTS AND MARKING BE IN CONFORMANCE WITH AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11-80 FOR RUBBER-GASKET JOINTS FOR DUCTILE-IRON AND GRAY-IRON PRESSURE PIPE AND FITTINGS. WHERE REQUIRED OR CALLED FOR ON THE CONTRACT DRAWINGS, MECHANICAL JOINTS SHALL BE RETAINED AS SPECIFIED IN PARAGRAPH E, "RETAINED MECHANICAL JOINTS". ALL MECHANICAL JOINTS SHALL BE POLYETHYLENE ENCASED AS SPECIFIED IN PARAGRAPH G, "POLYETHYLENE ENCASEMENTS OF JOINTS".

(D) VICTAULIC TYPE COUPLINGS

(1) WHERE SHOWN ON THE DRAWINGS OR WHERE REQUIRED, THE CONTRACTOR SHALL FURNISH AND INSTALL VICTAULIC TYPE COUPLINGS FOR CONNECTION OF DUCTILE IRON REDUCERS TO VALVES, CONCRETE PIPE OR STEEL PIPE. STEEL PIPE ENDS SHALL BE FABRICATED AND GROOVED AS INDICATED ON THE DRAWINGS. THE COUPLINGS SHALL BE ADAPTED FOR INSTALLATION ON SHOULDERED END CAST IRON SPACERS, REDUCERS AND FITTINGS AND DESIGNED FOR NOT LESS THAN THE WORKING PRESSURE NOTED ON THE CONTRACT DRAWINGS. COUPLINGS SHALL BE COMPOSED OF MALLEABLE IRON HOUSINGS HELD TOGETHER WITH STEEL BOLTS HEAT TREATED AND "HOT-DIP" GALVANIZED AND WITH A CONTINUOUS HOLLOW, MOLDED RUBBER SEALING RING, OF SUCH TYPE THAT THE SEAL BECOMES TIGHT AS THE PRESSURE WITHIN THE PIPE INCREASES. THE JOINTS SHALL BE CONSTRUCTED AND INSTALLED AND BE EQUAL IN ALL RESPECTS TO THOSE MANUFACTURED BY THE VICTAULIC COMPANY OF AMERICA. MALLEABLE HOUSINGS SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR MALLEABLE IRON CASTINGS ASTM DESIGNATION A 47-68". BOLTS SHALL BE MANUFACTURED BY THE COUPLING MANUFACTURER AND SHALL BE HEAT TREATED STEEL BOLTS HAVING 100,000 PSI. TENSILE STRENGTH. ALL BOLTS AND NUTS SHALL BE ZINC COATED BY THE "HOT-DIP" METHOD ACCORDING TO ASTM DESIGNATION A123.

(2) ALL METAL PARTS OF THE COUPLINGS SHALL BE COATED AT THE SHOP WITH ONE COAT OF BITUMINOUS PRIMER FURNISHED BY THE SAME MANUFACTURER WHO FURNISHES THE COATINGS AS SPECIFIED UNDER "COATING".

(E) RETAINED MECHANICAL JOINTS (4 INCH THROUGH 20 INCH PIPE)

ON ALL PIPE AND FITTINGS AT BENDS, TEES, CROSSES, SPECIAL FITTINGS, BETWEEN VERTICAL OFFSETS OR BENDS, ON HYDRANT BRANCHES, ON VALVES AND HYDRANT BASE ELBOWS UP TO AND INCLUDING 24-INCH SIZE WHERE SHOWN ON THE DRAWINGS OR WHERE REQUIRED BY "RESTRAINED DISTANCE", THE CONTRACTOR SHALL FURNISH AND INSTALL RETAINED TYPE MECHANICAL JOINTS. PIPE AND FITTING BELL JOINT AND GASKETS SHALL BE FURNISHED AS SPECIFIED. GLANDS FOR RETAINED MECHANICAL JOINTS SHALL BE BOLTED TYPE OF DUCTILE-IRON MATERIAL CONFORMING TO AMERICAN NATIONAL STANDARD ANSI/AWWA C111/A21.11-80 FOR RUBBER-GASKET JOINTS FOR DUCTILE-IRON AND GRAY-IRON PRESSURE PIPE AND FITTINGS AND/OR CONFORMING WITH ASTM A 536-80 WITH THE ADDITIONAL REQUIREMENT THAT ALL SUCH GLANDS SHALL BE OF THE DUCTILE-IRON GRADE 60-42-10 MINIMUM REQUIREMENTS OF CENTRIFUGALLY CAST DUCTILE-IRON PIPE. RETAINED MECHANICAL JOINTS SHALL BE EQUIPPED WITH CUPPED END SQUARE HEAD CORROSION RESISTANT ALLOY STEEL OR COPPER-BEARING DUCTILE IRON SET SCREWS THREADED THROUGH TAPPED AND THREADED HOLES IN THE GLAND LIP. GLAND FLANGE SHALL BE THICKENED AND GLAND LIP SHALL BE EXTENDED TO PROVIDE FOR GLAND STRENGTH AND SET SCREW SIZE. NO SPLIT RETAINER GLANDS SHALL BE USED. LONGER BOLTS FOR JOINT ASSEMBLY SHALL BE FURNISHED WITH RETAINER GLANDS. SET SCREWS SHALL BE MINIMUM FIVE-EIGHTHS INCH (5/8") SIZE. NUMBER OF PERPENDICULAR SET SCREWS PER RETAINED JOINT SHALL BE: 4 FOR 4" PIPE, 6 FOR 6" PIPE, MINIMUM OF 8 FOR 8" PIPE, MINIMUM OF 12 FOR 10" PIPE, 16 FOR 12" PIPE, 24 FOR 16" PIPE AND 28 FOR 20" PIPE. WEDGE ACTION TYPE RETAINED MECHANICAL JOINTS HAVING TWIST-OFF NUTS MAY BE USED IF APPROVED BY THE COMMISSIONER OF WATER AND HEAT AS TO SIZE, NUMBER AND BOLT SIZE. WHERE JOINT DEFLECTION IS NECESSARY FOR ALIGNMENT SUCH DEFLECTION SHALL BE LIMITED TO 3 DEGREES. SET SCREWS SHALL BE TIGHTENED AFTER JOINT IS MADE TO 75 FOOT-POUNDS TORQUE. SET-SCREW TIGHTENING SHALL BE DONE AFTER THE JOINT BOLTS HAVE BEEN TIGHTENED. SET SCREWS SHALL ALL BE MADE FINGER-TIGHT AND TIGHTENED TO MAXIMUM TORQUE BY ALTERNATING TO OPPOSITE SIDES. ALL RETAINED MECHANICAL JOINT RETAINER GLANDS SHALL BE OF A DESIGN APPROVED BY THE COMMISSIONER OF WATER AND HEAT. ALL RETAINED JOINTS SHALL BE RATED FOR 250 PSI PRESSURE. ALL RETAINED JOINTS SHALL BE POLYETHYLENE ENCASED AS SPECIFIED IN PARAGRAPH G.

(F) BOLTLESS RESTRAINED SLIP-ON JOINTS (GREATER THAN 20 INCH PIPE)

WHERE DUCTILE-IRON PIPE SIZE IS GREATER THAN 20-INCHES AND ON PIPE AND FITTINGS WHERE "RESTRAINED DISTANCE" IS REQUIRED OR SHOWN ALL RESTRAINT SHALL BE OF THE BOLTLESS RESTRAINED SLIP-ON JOINT TYPE AND SHALL EXTEND TO THE LIMITS SHOWN ON THE CONTRACT DRAWING. VALVES WITHIN "RESTRAINED DISTANCES" SHALL BE OF THE TYPE INDICATED ON THE CONTRACT DRAWINGS. BOLTLESS RESTRAINED SLIP-ON JOINTS SHALL BE OF A DESIGN APPROVED BY THE COMMISSIONER OF WATER.

(G) POLYETHYLENE ENCASEMENT

ALL MECHANICAL JOINTS, ALL RETAINED MECHANICAL JOINTS AND ALL PIPE AND FITTING WHERE SHOWN ON THE DRAWING OR WHERE REQUIRED SHALL BE POLYETHYLENE ENCASED. POLYETHYLENE ENCASEMENT FOR MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS OR ANY JOINT REQUIRING BOLTS SHALL BE GENERALLY IN ACCORDANCE WITH AMERICAN NATIONAL STANDARD ANSI/AWWA C105/A21.582 FOR POLYETHYLENE ENCASEMENT FOR DUCTILE-IRON PIPING FOR WATER AND OTHER LIQUIDS. MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS AND ALL BOLTED JOINTS SHALL HAVE DOUBLE POLYETHYLENE ENCASEMENT OF CLASS "C" (BLACK) FILM, METHOD "C" DOUBLING SHEET AND PROVIDING ONE FOOT (1') MINIMUM OVERLAP ON PIPE OR FITTING ON BOTH SIDES OF JOINT. ALL PIPE AND FITTINGS WHERE SHOWN ON THE DRAWINGS OR WHERE OTHERWISE REQUIRED TO BE POLYETHYLENE ENCASED SHALL BE ENCASED USING CLASS "C" FILM, METHOD "B". POLYETHYLENE ENCASEMENT SHALL BE SECURELY TAPED SNUG AROUND PIPE AND FITTINGS.

(H) ALL BOLTS AND NUTS ON ALL MECHANICAL JOINTS AND RETAINED MECHANICAL JOINTS SHALL HAVE FIELD APPLIED THREE (3) COATS OF BITUMASTIC COATING PRIOR TO POLYETHYLENE ENCASEMENT.

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CHKD _____		REGION
DATE _____		



PAINTING

AFTER ERECTION AND BEFORE POLYETHYLENE ENCASMENT, ALL EXPOSED OR DAMAGED COATING AND ALL BOLTS FOR MECHANICAL JOINTS, RETAINED MECHANICAL JOINTS, FLANGES AND VICTAULIC OR COMPRESSION TYPE BOLTED SLEEVED COUPLINGS SHALL BE CLEANED AND PAINTED WITH THREE (3) FIELD COATS OF KOPPERS BITUMASTIC SUPER TANK SOLUTION OR EQUIVALENT.

DRAWINGS

(A) THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR FOR APPROVAL DUPLICATE PRINTS OF ALL SHOP DRAWINGS FOR PIPE AND FITTINGS AND MISCELLANEOUS OR SPECIAL DETAILS OF PIPE AND FITTINGS JOINTS WHICH ARE NOT STANDARD CONSTRUCTION OR FULLY DETAILED IN THE REGULAR CATALOGUE OF THE COMPANY FURNISHING THE PIPE, FITTINGS AND SPECIALS. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN APPROVED.

(B) THE APPROVAL OF THE DRAWINGS BY THE DIRECTOR SHALL NOT RELIEVE THE CONTRACTOR OF ANY OF HIS OBLIGATIONS IN CONNECTION WITH THIS CONTRACT.

ITEM SPECIAL - VALVES

WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL MATERIALS FOR AND SHALL PROPERLY SET IN PLACE AND CONNECT AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER, ALL AIR RELIEF VALVES, DRAIN VALVES AND GATE VALVES OF THE VARIOUS SIZES AND TYPE SPECIFIED OR ORDERED, ALL AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT.

AIR RELIEF VALVES

ALL AIR RELIEF VALVES OR AIR VENT VALVES SHALL BE 2-INCH BRONZE ANGLE METER VALVES WITH A BRONZE WATER METER 2-INCH IRON PIPE THREAD COMPANION FLANGE, AND A 2-INCH EXTRA HEAVY BRASS "CLOSE" (2-INCH LONG) NIPPLE. 2-INCH AIR RELIEF VALVES SHALL BE EQUAL IN ALL RESPECTS TO THE 2-INCH ANGLE METER VALVE MANUFACTURED BY J. JONES CO. NO. J-1527-F, FORD METER BOX CO. NO. FV-7, OR MUELLER CO. NO. H-14286.

CHECK VALVES

(A) TYPE OF VALVES

ALL CHECK VALVES SHALL BE OF THE SWING GATE TYPE, WITH HINGED GATES SEATING IN A VERTICAL OR INCLINED POSITION. CHECK VALVES SHALL BE CONSTRUCTED TO BE USED IN A HORIZONTAL POSITION.

(B) MATERIAL

CHECK VALVES 2" AND UNDER SHALL BE OF ALL BRONZE CONSTRUCTION, AND CHECK VALVES 3" AND OVER IN SIZE SHALL HAVE IRON BODIES WITH BRONZE MOUNTINGS.

(C) BODIES AND COVERS

THE BODIES OF ALL CHECK VALVES SHALL BE PROVIDED WITH HANDHOLES OR MANHOLES OF SUFFICIENT SIZE TO PERMIT REMOVAL OF SWING GATES. CHECK VALVES 2" AND UNDER IN SIZE SHALL HAVE HANDHOLES FITTED WITH THREADED CAPS, CHECK VALVES 3" TO 12" INCLUSIVE IN SIZE SHALL BE PROVIDED WITH HANDHOLES HAVING FLANGED COVERS. ALL FLANGED COVERS SHALL BE SECURELY BOLTED IN PLACE. ARROWS SHALL BE CAST ON THE VALVE BODIES TO ASSURE PROPER INSTALLATION. THE ARROWS SHALL POINT IN THE DIRECTION OF FLOW IN THE LINE.

(D) GATES

CHECK VALVES 12" AND UNDER IN SIZE SHALL BE PROVIDED WITH ONE GATE AND SHALL BE EQUIPPED WITH AN OUTSIDE LEVER. THE GATES FOR CHECK VALVES 6" AND UNDER IN SIZE SHALL BE OF CAST BRONZE; THE GATES FOR CHECK VALVES 8" AND OVER IN SIZE SHALL BE OF CAST IRON WITH BRONZE GATE RINGS. THE GATES SHALL BE SO CONSTRUCTED TO PREVENT THEIR SWINGING HIGHER THAN HORIZONTAL WHEN WIDE OPEN AND FREE OF THE WATERWAY, ALSO TO PREVENT THEM FROM BECOMING STUCK IN THE OPEN POSITION. GATES FOR CHECK VALVES 2" AND UNDER IN SIZE SHALL BE ATTACHED TO THE HINGES BY MEANS OF A HUB OR STUD ON BACK OF GATE, ON WHICH THE GATE SHALL BE FREE TO ROTATE. GATES FOR CHECK VALVES 3" AND LARGER IN SIZE SHALL BE ATTACHED TO HINGES BY MEANS OF HUBS, STUDS OR HINGE PINS. WHERE HINGE PINS ARE USED FOR ATTACHING GATES TO HINGES THE MOVEMENT OF GATES SHALL BE CONFINED TO PREVENT EXCESSIVE TILTING ON HINGES.

(E) HINGES AND PINS

THE HINGES AND PINS FOR SUSPENDING GATES OF CHECK VALVES SHALL BE OF CAST BRONZE, ALL PINS USED FOR FASTENING GATES TO HINGES AND FOR SUSPENDING HINGES IN BODIES OR CHECK VALVES SHALL BE OF GRADE FOUR BRONZE. WHERE PINS ATTACHING HINGES TO BODIES ARE ACCESSIBLE FROM THE OUTSIDE OF BODIES, THEY SHALL BE RETAINED IN PLACE BY MEANS OF REMOVABLE BRONZE SIDE PLUGS. ALL PINS SHALL BE SECURELY FASTENED IN PLACE.

(F) SEAT AND GATE RINGS

ALL CHECK VALVES HAVING CAST IRON BODIES SHALL HAVE BODY SEAT RINGS OF BRONZE SCREWED IN PLACE. WHERE GATES ARE MADE OF MATERIAL OTHER THAN BRONZE, THEY SHALL BE FITTED WITH BRONZE SEAT RINGS SECURELY FASTENED IN PLACE. THE FACES OF GATE AND SEAT RINGS COMING INTO CONTACT SHALL BE MACHINED FLAT TO PROVIDE TIGHT JOINTS. THE DIMENSIONS OF BRONZE SEAT AND GATE RINGS FOR THE VARIOUS SIZE CHECK VALVES SHALL NOT BE LESS THAN THOSE GIVEN IN SECTION FOR BOTTOM WEDGE GATE VALVES OF THE SAME SIZE.

(G) FLANGE ENDS

THE END FLANGES OF FLANGED AND CHECK VALVES SHALL CONFORM IN DIMENSION AND DRILLING TO THE "AMERICAN 125 LB. CAST IRON FLANGE STANDARD" UNLESS OTHERWISE ORDERED.

(H) SCREW ENDS

ALL 2" CHECK VALVES AND UNDER SHALL BE MADE WITH SCREW ENDS. THE 3" CHECK VALVES SHALL BE FURNISHED WITH SCREW ENDS WHENEVER REQUIRED BY THE ENGINEER. THREADS TO BE INSIDE IRON PIPE THREADS.

(I) BOLTS AND NUTS

ALL BOLTS AND NUTS FOR FLANGED COVERS SHALL MEET REQUIREMENTS OF THESE SPECIFICATIONS.

GATE VALVES

(A) TYPE OF VALVES

THE GATE VALVES SHALL BE MANUFACTURED IN FULL COMPLIANCE WITH THE STANDARD SPECIFICATIONS FOR GATE VALVES FOR ORDINARY WATER WORKS SERVICE OF THE AMERICAN WATER WORKS ASSOCIATION AWWA C-500-80 OR LATEST REVISION THEREOF AND IN ADDITION SHALL COMPLY WITH THE FOLLOWING SUPPLEMENTARY REQUIREMENTS OR BE EQUAL TO VALVES PRESENTLY FURNISHED TO CITY UNDER REQUIREMENT CONTRACT.

- 1) ALL GATE VALVES SHALL BE OF THE NONREVOLVING DOUBLE DISC PARALLEL SEAT BOTTOM WEDGE OR SIDE WEDGE TYPE.
- 2) ALL GATE VALVES 20 INCHES AND OVER SHALL INCLUDE BYPASS VALVES ATTACHED THERETO.
- 3) IN OPENING OR CLOSING THE VALVE, THE GATES SHALL BE FORCED ASCEND OR DESCEND BY REASON OF THE THRUST EXERTED UPON THEM BY THE VALVE STEM NUT: THIS THRUST BEING GENERATED BY THE ROTATION OF THE VALVE STEM.
- 4) IN CLOSING THE VALVE THE DISCS, WHEN OPPOSITE THE PORTS, SHALL BE PRESSED FIRMLY AGAINST THE BODY SEATS BY WEDGES OR SOME OTHER DEVICE EQUALLY SUITABLE TO THE ENGINEER.
- 5) THE DESIGN OF THE MECHANICAL WEDGING ACTION SHALL BE SUCH THAT SEATING FORCE IS APPLIED EQUALLY TO TWO OR MORE CONTACT POINTS NEAR THE OUTER EDGE OF EACH DISC AT OR ABOVE OR BELOW THE HORIZONTAL CENTERLINE OF DISC. THE MECHANISM SHALL BE DESIGNED SO THAT ALL WEDGING MEMBERS ARE ACTIVATED AT ONE TIME. IT SHOULD BE OF THE TYPE WHICH WILL ELIMINATE UNBALANCED SEATING PRESSURE AND MINIMIZE DISTORTION OF THE DISC.
- 6) ALL GATE VALVES, 16 INCH AND UNDER, SHALL BE CONSTRUCTED TO WORK VERTICALLY. VALVES OVER 16 INCH SHALL BE CONSTRUCTED TO WORK HORIZONTALLY.
- 7) ALL VALVES TO HAVE MECHANICAL JOINTS WITH BELL END UNLESS OTHERWISE NOTED.

(B) VALVES WITH STATIONARY STEMS

ALL GATE VALVES, UNLESS OTHERWISE ORDERED, SHALL BE MADE WITH SINGLE NONRISING STEMS.

(C) OUTSIDE SCREW AND YOKE VALVES

GATE VALVES WITH OUTSIDE SCREW AND YOKES, SHALL BE MADE WITH SINGLE RISING STEMS. ALL OUTSIDE SCREW AND YOKE VALVES SHALL BE EQUIPPED WITH WHEELS FOR OPERATING SAME. WHEELS ARE TO BE MALLEABLE IRON. WHEELS SHALL HAVE CAST ON THEM AN ARROW INDICATING THE DIRECTION OF TURNING FOR OPENING THE VALVE.

(D) HUB ENDS

THE DIMENSIONS OF THE BELLS ON VALVES UP TO AND INCLUDING 20 INCHES IN DIAMETER SHALL CONFORM TO THOSE FOR CLASS "D" PRESSURE FITTINGS AS REQUIRED BY AWWA C100 ON VALVES 24 INCHES AND LARGER IN SIZE. THE BELL DIMENSIONS SHALL BE FOR THE CLASSES ORDERED.

(E) VICTAULIC ENDS

VICTAULIC ENDS SHALL CONFORM TO THE DIMENSIONS GIVEN ON THE CONTRACT DRAWINGS.

(F) MECHANICAL JOINT ENDS

THE BELL DIMENSIONS SHALL CONFORM TO TABLE 11.1 OF ANSI A-21.11 (AWWA C111), "A MECHANICAL JOINT FOR CAST IRON PRESSURE PIPE AND FITTINGS". JOINTS TO BE OF RETAINED TYPE.

(G) FLANGE ENDS

THE END FLANGES OF FLANGED END GATE VALVES SHALL CONFORM IN DIMENSIONS AND DRILLING TO THE "AMERICAN 125 LB. CAST IRON FLANGE STANDARD", UNLESS OTHERWISE ORDERED.

(H) SCREW ENDS

ALL 2-INCH GATE VALVES AND UNDER SHALL BE MADE WITH SCREW ENDS, UNLESS OTHERWISE SPECIFIED. THE 3 INCH AND 4 INCH HANDWHEEL GATE VALVES SHALL BE FURNISHED WITH SCREW ENDS WHENEVER REQUIRED BY THE ENGINEER. THREADS TO BE INSIDE STANDARD IRON PIPE THREADS.

(I) SOLDER JOINT ENDS

THE END CONNECTION SOCKETS OF SOLDER-JOINT GATE VALVES SHALL BE MADE TO CLOSE TOLERANCES AND SMOOTHLY FIT TYPE K AND L COPPER TUBING TO PERMIT MAKING SWEAT JOINTS. DEPTH OF JOINTS ON 1-1/2 INCH VALVES SHALL NOT BE LESS THAN 1-3/16 INCH AND ON 2-INCH VALVES, NOT LESS THAN 1-3/8 INCH.

(J) SLIP-ON JOINT ENDS

ALL VALVES 4" UP TO AND INCLUDING 12" IN DIAMETER WHEN SPECIFICALLY ORDERED SHALL BE FURNISHED WITH SLIP-ON JOINT ENDS COMPLETE WITH GASKETS WHICH WILL FIT THE PLAIN-END OF ALL CAST IRON PIPE CLASSES 150, 200 OR 250 MANUFACTURED TO SPECIFICATIONS ANSI A21.8 OF LATEST REVISION INCLUDING THE PLAIN-END OF ALL MAKES OF CAST IRON PIPE OF SLIP CONNECTION TYPE.

(K) BYPASSES

BYPASSES WITH GATE VALVES SHALL BE PROVIDED ON VALVES 20 INCH AND LARGER. THE BYPASSES SHALL BE LOCATED ON OR BELOW THE HORIZONTAL CENTERLINE OF THE VALVES. BYPASS VALVES SHALL BE OF THE SAME SIZE AS THE BYPASS AND SHALL CONFORM TO THE REQUIREMENT OF THESE SPECIFICATIONS FOR THE SPECIFIC VALVE USED. THE SIZE REQUIREMENTS OF THE BYPASS SHALL BE AS FOLLOWS: 20 INCH VALVES SHALL BE PROVIDED WITH 3 INCH BYPASSES; VALVES 24 INCH TO 30 INCH INCLUSIVE SHALL BE PROVIDED WITH 4 INCH BYPASSES; VALVES 36 INCH TO 42 INCH INCLUSIVE SHALL BE PROVIDED WITH 6 INCH BYPASSES; 48 INCH VALVES SHALL BE PROVIDED WITH 8 INCH BYPASSES.

(L) DOWEL PINS

ALL GEAR VALVES SHALL HAVE TWO DOWEL PINS SET IN THE FLANGES CONNECTING THE DOME AND BODY. SIZE OF PINS TO BE SHOWN IN PLANS.

(M) BOSSES

OUTSIDE SCREW AND YOKE, GATE VALVES 6 INCHES AND LARGER IN SIZE SHALL BE PROVIDED WITH TWO BOSSES ON ONE SIDE OF THE BODY, LOCATED ON THE HORIZONTAL CENTERLINE OF GATE VALVES, TO PERMIT THE INSTALLATION OF BYPASS AROUND THE GATE. BOSSES ARE TO BE LEFT SOLID AND OF AMPLE SIZE TO PERMIT DRILLING AND TAPPING FOR BYPASSES HAVING DIAMETERS NOT LESS THAN ONE SIXTH OF THE NOMINAL SIZE OF GATE VALVE.

(N) FLANGES

WHEN FLANGED VALVES ARE REQUIRED, THE FLANGES SHALL BE FACED AND DRILLED. BOLT HOLES SHALL BE SPOT FACED ON THE BACK WHEN NECESSARY TO SECURE AN EVEN BEARING. ALL BOLT HOLES SHALL BE OF THE SIZE SHOWN ON THE DRAWINGS TO BE SUBMITTED AND APPROVED; SHALL BE ACCURATELY DRILLED FROM TEMPLATES, SPACED EQUAL DISTANCES APART AND SHALL STRADDLE HORIZONTAL AND VERTICAL AXIS, ALL AS SHOWN ON THE DRAWINGS. THE DIMENSIONS AND DRILLING OF ALL END FLANGES SHALL CONFORM TO THE SPACING INDICATED ON THE DRAWINGS WHICH SHALL BE THE "AMERICAN 125 LB. CAST IRON FLANGE STANDARD". FLANGES SHALL BE PLAIN FACE WITH A SMOOTH FINISH.

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(O) MARKING

ALL GATE VALVES 3 INCHES AND OVER SHALL HAVE THE IDENTITY OF MAKER, SIZE AND THE YEAR WHEN MADE AND ALSO THE LETTERS "C.W.D." CAST UPON ITS BODY OR DOME IN RAISED LETTERS.

(P) STUFFING BOXES

THE STUFFING BOX ON EACH GATE VALVE 3 INCHES OR OVER MUST BE SEPARATE FROM THE DOME AND FASTENED TO IT BY BOLTS. FOR 2 INCH VALVES AND UNDER, THE STUFFING BOXES MAY BE FORMED IN THE DOME OF THE VALVE. WHEN REQUIRED BY THE ENGINEER, VALVES 16 INCHES AND SMALLER SHALL BE FURNISHED WITH "O" RING TYPE SEAL PLATE. THE SEAL PLATE SHALL BE FITTED WITH AT LEAST TWO (2) "O" RINGS, THE LOWER "O" RING SERVING AS THE PRESSURE SEAL AND THE UPPER "O" RING AS A COMBINED DIRT AND MOISTURE SEAL. THE "O" RINGS SHALL BE COMPOUNDED TO MEET ASTM D-200, AND HAVE PHYSICAL PROPERTIES SUITABLE FOR THE APPLICATION.

(Q) SEAT AND GATE RINGS

DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS SHALL BE PROPORTIONED TO FIT THE TEST PRESSURE REQUIRED, AND SHALL MEET THE APPROVAL OF THE ENGINEER. GATE RINGS SHALL BE ROLLED OR PRESSED INTO GROOVES MACHINED IN THE DISCS OR FASTENED BY SOME OTHER METHOD ACCEPTABLE TO THE CITY. DIMENSIONS OF THE BRONZE SEAT AND GATE RINGS FOR GATE VALVES SHALL BE + OR - 1/8 INCH OF THAT SPECIFIED IN THE FOLLOWING TABLES. BODY SEAT RINGS SHALL BE MADE OF GRADE ONE BRONZE. GATE SEAT RINGS SHALL BE MADE OF GRADE ONE BRONZE.

BODY AND GATE RINGS
 (DIMENSIONS IN INCHES)

BODY WEDGE

VALVE SIZE	BODY RINGS			GATE RINGS			
	A FACE	B DEPTHS	C THICKNESS	D THICKNESS	F FACE	F THICKNESS	G DEPTHS
3	7/16	9/16	3/16	3/16	1/2	5/32	1/4
4	1/2	9/16	3/16	3/16	9/16	1/8	5/16
6	1/2	9/16	3/16	5/16	9/16	1/8	5/16
8	5/8	5/8	3/16	7/32	11/16	5/32	5/16
10	3/4	5/8	3/16	7/32	11/16	5/32	11/32
12	3/4	5/8	7/32	7/32	15/16	5/32	11/32
16	1	3/4	1/4	9/32	1	3/16	1/2
20	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
24	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
30	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4
36	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4
42	1-3/4	1-1/2	1/2	1/2	1-3/4	1/2	7/8
48	2	1-3/4	1/2	5/8	2	5/8	1

SIDE WEDGE

VALVE SIZE	BODY RINGS			GATE RINGS			
	A FACE	B DEPTHS	C THICKNESS	D THICKNESS	E FACE	F THICKNESS	G DEPTHS
3	13/32	1/2	3/16	3/16	ALL BRONZE DISC		
4	7/16	9/16	3/16	3/16	1/2	5/32	21/64
6	1/2	11/16	9/32	1/4	5/8	5/32	21/64
8	17/32	11/16	9/32	1/4	11/16	5/32	21/64
10	5/8	13/16	3/8	5/16	13/16	5/32	21/64
12	5/8	13/16	3/8	5/16	13/16	5/32	21/64
16	3/4	1	15/32	3/8	7/8	3/16	13/32
20	7/8	1-5/16	17/32	7/16	1	1/4	17/32
24	1-1/16	1-3/8	21/32	1/2	1-3/16	5/16	19/32
30	1-5/16	1-1/2	25/32	1/2	1-7/16	5/16	19/32
36	1-1/2	1-1/2	27/32	1/2	1-9/16	5/16	19/32
42	1-3/4	1-9/16	29/32	9/16	1-13/16	5/16	5/8
48	2	1-5/8	29/32	5/8	2-1/16	3/8	11/16

(R) VALVE STEM

ALL GATE VALVES SHALL BE OF SINGLE SCREW TYPE. ALL THE STEMS SHALL BE OF BRONZE AND MEET THE MINIMUM TENSILE STRENGTH, MAXIMUM NOMINAL YIELD AND MAXIMUM ELONGATION. THE THREADS OF STEMS AND STEM NUTS SHALL BE ACME, MODIFIED ACME OR ONE-HALF V TYPE. THE LENGTH OF THE FLAT ON THE VALVE STEM SHALL BE EQUAL TO THE HEIGHT OF THE OPERATING NUT. IF REQUESTED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS. THE DIAMETERS OF STEMS AT THE BASE OF THE THREAD SHALL BE NOT LESS THAN THOSE SHOWN BELOW, SUFFICIENT LENGTH TO ALLOW THE REMOVAL OF PACKING WITHOUT NECESSITATING THE REMOVAL OF THE OPERATING NUT. THE STEM OPENING AND THRUST BEARING RECESS SHALL BE GRADE ONE, BRONZE BUSHED WITH TWO "O" RING SEALS LOCATED ABOVE THE THRUST COLLAR OR HAVE AN "O" RING LOCATED ABOVE THE THRUST COLLAR AND ONE BELOW FORMING A LUBRICANT CHAMBER. THE NUMBER OF THREADS PER INCH SHALL BE GIVEN BELOW:

SIZE OF VALVE INCHES	MINIMUM TENSILE STRENGTH	DIA. OF STEM AT BASE OF THREAD-IN	MAXIMUM NOMINAL YIELD	NO. OF THREADS PER IN.	NO. ELONG.
1	60,000 PSI	0.469	35,000 PSI	4	15%
1 1/2	"	"	"	"	"
2	"	"	"	"	"
3	"	0.859	"	"	"
4	"	"	"	3	"
6	"	1.000	"	"	"
8	"	"	"	"	"
10	"	1.125	"	"	"
12	"	1.188	"	"	"
16	"	1.438	"	"	"
20	"	1.772	20,000 PSI	"	"
24	"	1.980	"	2	"
30	80,000 PSI	2.480	32,000 PSI	"	"
36	"	2.730	"	"	"
42	"	3.230	"	"	"
48	"	3.750	"	"	"

THE MANUFACTURER SHALL SUPPLY DATA CONCERNING TORQUE AND END PULL OR PUSH AT THE REQUEST OF THE DIRECTOR.

(S) WRENCH CAPS

THE WRENCH CAPS AND RETAINING NUTS ON HEADS OF VALVE STEMS AND PINION SHAFTS SHALL BE OF BRONZE OR DUCTILE IRON SPECIFICATION A 536, ON VALVES 24 INCH AND OVER, WRENCH CAPS SHALL BE 2 INCH SQUARE AND 2 INCH DEEP. ON VALVES 4 INCHES TO 20 INCHES INCLUSIVE, THEY SHALL BE 1-3/4 INCHES SQUARE ON TOP, 1-7/8 INCHES SQUARE AT BASE, AND 1-3/4 INCHES DEEP. ON 3 INCH VALVES AND UNDER THEY SHALL BE 1-1/4 INCHES SQUARE ON TOP, 1-3/8 INCHES SQUARE AT BASE AND 1-1/2 INCHES DEEP. MACHINED WRENCH CAPS FOR VALVES 3-INCHES TO 48-INCHES INCLUSIVE SHALL BE FITTED TO A MACHINED SQUARE STEM OR PINION SHAFT AND HELD IN PLACE BY A RETAINING NUT OF BRONZE, ON 1-1/2 INCH AND 2-INCH VALVES THE WRENCH CAP SHALL BE SECURED TO THE SHAFT WITH A BRASS PIN. WRENCH CAPS SHALL HAVE A CUTAWAY SKIRT TO PERMIT EASY ACCESS TO GLAND BOLTS.

(T) VALVES

VALVES ARE TO OPEN CLOCKWISE EXCEPT THOSE 2 INCHES AND UNDER. ALL GATE VALVES 3 INCHES AND OVER INCLUDING BYPASS VALVES, SHALL BE MADE TO OPEN BY TURNING IN A CLOCKWISE DIRECTION. ALL VALVES ARE TO BE SO MADE THAT THEY CAN BE EASILY OPERATED.

(U) FACING OF GATES

ALL DISCS OF GATES AND THREADS FOR SEAT RINGS IN THE BODY SHALL BE MACHINED TRUE AND A GROOVE OR GROOVES SHALL BE MACHINED IN EACH DISC OR GATE FOR THE RECEPTION OF THE FACE RING. THE DISC AND SEAT RINGS SHALL BE SECURELY AND RIGIDLY ATTACHED TO THE DISCS OR BODY SEATS IN A MANNER APPROVED BY THE ENGINEER, AND THE RINGS ARE TO BE FINISHED TO A TRUE SURFACE.

(V) ROLLERS AND SCRAPERS

IN ALL VALVES 20 INCH IN DIAMETER AND LARGER, DESIGNED TO LIE HORIZONTALLY, EACH GATE OR DISC SHALL BE PROVIDED WITH TWO BRONZE ROLLERS TRAVELLING ON BRONZE TRACKS AND PROVIDED WITH SUITABLE BRONZE SCRAPER; OR TWO STAINLESS STEEL ROLLERS TRAVELLING ON STAINLESS STEEL FACED TRACKS AND PROVIDED WITH SUITABLE STAINLESS STEEL SCRAPERS. THE THICKNESS OF THE FACING OF THE TRACKS SHALL BE NOT LESS THAN 1/4 INCHES. THE BRONZE SHALL BE CLASS 1 AND THE STAINLESS STEEL SHALL BE ASTM A 276-75, TYPE 302.

(W) VALVE GUIDES

ALL VALVES 20 INCHES IN DIAMETER AND LARGER, SHALL BE PROVIDED WITH GUIDES OR TRACKS WHICH SHALL BE MADE STRAIGHT AND TRUE, AND ALL IRREGULARITIES MUST BE MACHINED OFF. THE GUIDES OR TRACKS OF HORIZONTAL VALVES SHALL BE SUBSTANTIALLY FACED WITH A MINIMUM OF 1/4 INCH OF GRADE ONE BRONZE, OR STAINLESS STEEL ASTM A 276-75, TYPE 302, SATISFACTORY TO THE DIRECTOR, SECURELY FASTENED AND PLANED OFF SMOOTH AND TRUE.

(X) GEARING

ALL VALVES 20 INCHES IN DIAMETER AND LARGER SHALL BE EQUIPPED WITH ENCLOSED CUT TOOTH STEEL GEARS. GEARS, SHAFTS AND BEARINGS, SHALL BE SUCH AS TO PRODUCE EASY OPERATION WITHOUT BENDING OR TWISTING.

(Y) DOWEL PINS

ALL GEAR VALVES SHALL HAVE TWO DOWEL PINS SET IN THE FLANGES CONNECTING THE DOME AND BODY. SIZE OF THE PINS TO BE SHOWN IN PLANS.

(Z) INDICATORS

ALL VALVES 20 INCHES IN DIAMETER AND OVER, SHALL BE EQUIPPED WITH INDICATORS DENOTING THE POSITIONS OF THE GATE. THE MOVING PART AND BEARINGS TO BE OF BRONZE OR BRONZE-LINED.

(AA) GREASE CASES

ALL VALVES 20 INCHES IN DIAMETER AND LARGER, SHALL HAVE WATERTIGHT GREASE CASES INSTALLED. THE GREASE CASES SHALL BE OF THE EXTENDED TYPE AND SHALL BE MADE OF CAST IRON CONFORMING TO ASTM SPECIFICATION SERIAL DESIGNATION: A 126, CLASS B OR ANY SURSEQUENT AMENDMENT THERETO. BEARING SURFACES FOR VALVE STEM AND PINION SHAFT SHALL BE BRONZED BUSHED WITH GRADE ONE BRONZE. THE GREASE CASES SHALL BE SECURELY BOLTED TO THE VALVE BONNET THROUGH A HEAVY CAST IRON YOKE. THE YOKE SHALL BE OF SUFFICIENT LENGTH TO PROVIDE SPACE FOR REPACKING VALVE AND GREASE CASE STUFFING BOXES. ALL GREASE CASES SHALL BE PROVIDED WITH A REMOVABLE COVER SECURELY BOLTED IN PLACE TO ALLOW EASY ACCESS TO THE GEARS. THERE SHALL ALSO BE PROVIDED CONVENIENT FILLING AND DRAINING PLUGS AND SUFFICIENT OIL TO FULLY SUBMERGE THE PINION GEAR. THE VALVES SHALL BE DELIVERED WITH THE GREASE CASES FILLED WITH THE PROPER OIL AS RECOMMENDED BY THE MANUFACTURER.

(BB) BRONZE PARTS

THE STEMS, RETAINING NUTS, DISC AND SEAT RINGS SHALL BE OF SOLID BRONZE. OTHER PARTS SUCH AS WEDGES, GLANDS, THRUST BEARINGS, GEAR SPINDLES, ROLLERS, SCRAPERS TRACKS, STEM NUTS, AND ALL OTHER PARTS COMING TOGETHER IN OPERATION, SHALL BE OF BRONZE OR STAINLESS STEEL OF A THICKNESS NO LESS THAN 1/4 OF AN INCH AND AS SHOWN ON DRAWINGS SUBMITTED AND APPROVED. ALL 2 INCH VALVES AND UNDER SHALL BE MADE ENTIRELY OF BRONZE, EXCEPT HANDWHEELS WHICH SHALL BE MADE OF MALLEABLE IRON.

(CC) CAST IRON PARTS

THE BODIES, COVERS, DISCS, FRAMES, ETC., OF ALL GATE VALVES 3 INCHES AND OVER SHALL BE CAST IRON EXCEPT ITEMS SPECIFYING BRONZE BODIES.

(DD) WATERWAY OPENING

WITH THE VALVE OPEN, AN UNOBSTRUCTED WATERWAY SHALL BE AFFORDED, THE DIAMETER OF WHICH IS NOT TO BE LESS THAN THE FULL NOMINAL DIAMETER OF THE VALVE.

MATERIAL SPECIFICATIONS

(A) STRENGTH OF VALVES

THE GATE AND CHECK VALVES 3 INCHES TO 12 INCHES SHALL BE DESIGNED FOR 200 PSI WORKING PRESSURE AND 16 INCH AND ABOVE 150 PSI. SHALL WITHSTAND AN INTERNALLY APPLIED HYDROSTATIC PRESSURE AT ALL POINTS OF AT LEAST 300 POUNDS PER SQUARE INCH, EXCEPT AS SPECIFIED IN SECTION ON "HYDROSTATIC TESTS AT THE FACTORY". A FACTOR OF SAFETY OF NOT LESS THAN 10 SHALL BE USED ON THE DESIGN. SHOULD TESTS REVEAL ANY WEAKNESS THE VALVES FROM THAT DESIGN SHALL BE REJECTED, AND A NEW DESIGN MADE.

(B) REINFORCEMENT AT FLANGES

ALL VALVE FLANGES SHALL BE REINFORCED BY FILLETS IN ACCORDANCE WITH THE MANUFACTURER'S PRACTICE PROVEN SATISFACTORY IN ACTUAL SERVICE.

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(C) JOINTS

ALL JOINTS OF THE VALVES SHALL BE FACED TRUE IN A LATHE OR PLANER, AND PUT TOGETHER WITH A GASKET OF SOME MATERIAL ACCEPTABLE TO THE ENGINEER.

(D) BOLT HOLES

ALL BOLT HOLES SHALL BE ACCURATELY DRILLED FROM TEMPLATES AND SPACE EQUAL DISTANCES APART.

(E) BOLTS AND NUTS

ALL BOLTS AND NUTS SHALL BE MADE OF SILICON BRONZE (ASTM B-98-75 ALLOY A), STAINLESS STEEL (ASTM A 276-55, TYPE 302), DUCTILE IRON (ASTM A 536 SQUARE GRADE 65-45-12), KORETEN A OR AN ACCEPTABLE EQUIVALENT.

(F) PARTS TO BE INTERCHANGEABLE

ALL PARTS OF VALVES OF THE SAME SIZE AND MAKE MUST BE PERFECTLY INTERCHANGEABLE AND ALL WORK MUST BE DONE IN A THOROUGH AND WORKMANLIKE MANNER.

(G) CASTINGS

ALL CASTING, WHETHER OF BRONZE, IRON OR STEEL, SHALL BE SOUND AND SMOOTH WITHOUT COLD SHUTS, SWELLS, LUMPS, SCABS, BLISTERS, SAND HOLES OR OTHER IMPERFECTIONS, AND SHALL BE MADE IN ACCORDANCE WITH THE BEST MODERN FOUNDRY PRACTICE TO OBTAIN CASTINGS OF THE BEST QUALITY AND/OR OF UNIFORM THICKNESS. NO WELDING, PLUGGING OR FILLING OF HOLES OR OTHER DEFECTS WILL BE PERMITTED. FOR PARTS WHOSE THICKNESS IS LESS THAN ONE (1) INCH, CASTINGS BEING THINNER THAN THE SPECIFIED THICKNESS BY 0.06 INCH OR MORE SHALL BE REJECTED; AND FOR PARTS FOR WHOSE THICKNESS IS ONE (1) INCH OR MORE, CASTINGS BEING THINNER THAN SPECIFIED BY 0.08 INCH OR MORE SHALL BE REJECTED.

(H) BRONZE PARTS

- 1) BRONZE FOR PARTS, OTHER THAN THOSE LISTED BELOW, SHALL BE GRADE ONE OR APPROVED EQUIVALENT.
- 2) VALVE STEMS, PINION SHAFTS, STEM NUTS, WRENCH CAPS AND RETAINING NUTS SHALL BE MADE OF GRADE THREE BRONZE.
- 3) DISC RINGS SHALL BE MADE OF GRADE FIVE BRONZE.

(I) TESTS OF BRONZE

- 1) IF REQUESTED, A MANUFACTURER'S CERTIFICATE OF TEST SHALL BE FURNISHED WITH ALL BRONZE STEMS.
- 2) ALL STEMS OF 16 INCH GATE VALVES AND OVER SHALL HAVE A PROLONGATION ON ONE END OF EACH STEM, OF THE SAME DIMENSIONS AND CROSS SECTION AS THE STEM, AND OF SUFFICIENT LENGTH TO ENABLE THE CUTTING OF SPECIMENS PARALLEL WITH THE LONGITUDINAL AXIS OF THE STEM SPECIMENS SHALL BE CUT FROM PROLONGATIONS ONE-HALF WAY BETWEEN SURFACE AND CENTRAL AXIS. OTHER METHODS OF TEST WILL BE CONSIDERED BY THE ENGINEER, BUT MUST BE SUBMITTED IN DETAIL WITH THE BID.
- 3) FOR ALL STEMS OF GATE VALVES SMALLER THAN 16 INCHES, NOT LESS THAN TWO TEST PIECES SHALL BE CAST FROM THE MOLTEN METAL OF EACH HEAT FROM WHICH VALVE STEMS ARE BEING MADE.
- 4) ALL STEMS MADE FROM BRONZE SHOWING LESS STRENGTH ELONGATION AND OR DUCTILITY THAN ABOVE REQUIRED SHALL BE REJECTED.
- 5) TESTS OF VALVE STEMS, OR THE VARIOUS PARTS OF ANY VALVE, MAY BE MADE AT ANY TIME BEFORE OR AFTER DELIVERY, AND IF FOUND TO BE DEFICIENT IN STRENGTH OR UNSATISFACTORY TO THE ENGINEER, THE WHOLE LOT OR SHIPMENT MAY BE REJECTED.

(J). CAST IRON

- 1) QUALITY: CAST IRON SHALL CONFORM TO ASTM SPECIFICATION A 126, CLASS B, OR LATEST REVISION THEREOF. ALL IRON CASTINGS SHALL BE TOUGH AND WITHOUT BRITTLNESS, SUCH AS MAY BE CUT, DRILLED CHIPPED BY HAND WITH DUE EASE. A BLOW FROM HAMMER SHALL PRODUCE AN INDENTATION ON THE EDGE OF THE CASTING WITHOUT FLAKING THE METAL.

- 2) TEST BARS FROM THE MOLTEN METAL FROM WHICH THE VALVES ARE BEING MADE SHALL BE TESTED AT SUCH TIME AND IN SUCH MANNER AS THE ENGINEER MAY REQUIRE. THE REQUIREMENTS OF ASTM SPECIFICATIONS A 126 CHARACTERISTICS OF THE IRON CASTINGS. SHOULD THE RESULT OBTAINED FROM THE BAR TESTED FAIL TO SHOW THAT THE CAST IRON MEETS THE REQUIREMENTS HEREIN SPECIFIED, THE ENTIRE MELT WILL BE REJECTED. TEST BARS, HOWEVER, WHOSE FAILURE IS DUE TO INHERENT DEFECTS SHALL NOT BE CONSIDERED. ALL VALVES MADE FROM IRON SHOWING LESS STRENGTH THAN CALLED FOR IN THE ASTM SPECIFICATIONS SHALL BE REJECTED.

(K) QUALITY OF MATERIALS

GRADE ONE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 62.

GRADE TWO CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 132, ALLOY A.

GRADE THREE CAST BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 132, ALLOY B.

GRADE FOUR ROLLED BRONZE SHALL CONFORM TO THE PROPERTIES OF ASTM B 21, ALLOY A (ONE-HALF HARD).

GRADE FIVE BRONZE SHALL BE SUFFICIENTLY MALLEABLE TO CONFORM TO DOVETAILED GROOVES WHEN PEENED OR ROLLED, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, WITHOUT DEFORMATION, OF 4,000 PSI, AND SHALL HAVE THE FOLLOWING CHEMICAL COMPOSITION:

COPPER, PERCENT	91.0
TIN, PERCENT	0.0
ZINC, PERCENT	5.0
LEAD, PERCENT	4.0

SILICON BRONZE SHALL CONFORM TO ASTM SPECIFICATION B 98, ALLOY A.

STAINLESS STEEL SHALL CONFORM TO ASTM SPECIFICATION A 276, TYPE 302.

CAST IRON SHALL CONFORM TO ASTM SPECIFICATIONS A 126, CLASS B. WROUGHT IRON SHALL BE TOUGH FIBEROUS, AND UNIFORM IN CHARACTER, SPECIMENS CUT FROM BARS AND BROKEN IN A TESTING MACHINE SHALL SHOW A TENSILE STRENGTH OF NOT LESS THAN 4500 PSI WITH AN ELONGATION OF 18 PERCENT IN EIGHT DIAMETERS.

(L) OTHER MATERIALS

ALL OTHER MATERIALS USED IN THE MANUFACTURE OF THESE VALVES AND NOT SPECIFIED IN THE SPECIFICATIONS SHALL BE OF THE BEST QUALITY OF THEIR KINDS, AND SUBJECT TO INSPECTION, TESTS, AND APPROVAL BY THE ENGINEER.

(M) CHEMICAL ANALYSIS

CHEMICAL ANALYSIS OF THE MATERIAL USED SHALL BE FURNISHED BY THE CONTRACTOR WHENEVER REQUIRED BY THE ENGINEER.

(N) CLEANING OF CASTINGS

ALL IRON CASTINGS SHALL BE THOROUGHLY CLEANED ON THE OUTSIDE AND INSIDE SURFACES, AND PROTECTED FROM RAIN OR MOISTURE UNTIL THEY ARE PAINTED.

(O) HYDROSTATIC TESTS AT SHOP

ALL GATE VALVES SHALL BE TESTED IN THE SHOP BY HYDROSTATIC PRESSURE BY CLOSING THE VALVE AND APPLYING THE REQUIRED TEST PRESSURE IN THE BODY AND DOME OF THE VALVE AS SPECIFIED BELOW:

3" AND UNDER.....	300 PSI	- NO TIME REQUIREMENT
4" THROUGH 12".....	400 PSI	- NO TIME REQUIREMENT
14" THROUGH 20".....	300 PSI	- FOR 15 MINUTES, DROP PRESSURE TO 150 PSI, THEN ELEVATE AGAIN TO 300 PSI FOR 15 MINUTES- A TOTAL OF 1/2 HOUR.
24" THROUGH 48".....	300 PSI	- FOR 1/2 HOUR, DROP PRESSURE TO 150 PSI, THEN ELEVATE AGAIN TO 300 PSI FOR 30 MINUTES- A TOTAL OF 1 HOUR.

THIS IS A MODIFICATION OF SECTION 29 OF THE "STANDARD SPECIFICATIONS AWWA DESIGNATION: C 500 71". ALL LEAKS, FLAWS OR OTHER DEFECTS DEVELOPED IN MAKING THESE TESTS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER OR THE ENTIRE PIECE SHALL BE REJECTED. AFTER TESTING, ALL VALVES SHALL BE THOROUGHLY DRAINED. ALL EQUIPMENT FOR TESTING AND ALL TESTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE.

(P) PERFORMANCE TESTS

EACH VALVE SHALL BE OPERATED IN THE POSITION THAT IT WILL ASSURE IN SERVICE, AND FOR THE FULL LENGTH OF GATE TRAVEL IN BOTH DIRECTIONS TO DEMONSTRATE THE FREE AND PERFECT FUNCTIONING OF ALL PARTS IN THE INTENDED MANNER. ANY DEFECTS OF WORKMANSHIP SHALL BE CORRECTED AND THE TEST REPEATED UNTIL SATISFACTORY PERFORMANCE IS DEMONSTRATED.

PLACING AND TESTING

- A. ALL VALVES SHALL BE SET ACCURATELY AND CAREFULLY TO THE LINES AND GRADES GIVEN. ALL CONNECTIONS TO PIPE SHALL HAVE THE NECESSARY FLANGED, LEAD, SOLDERED JOINT, SCREWED OR VICTAULIC ENDS AS REQUIRED UNDER THE VARIOUS SECTIONS OF THESE SPECIFICATIONS AND AS SHOWN ON THE VALVE SCHEDULE.
- B. AFTER THE VALVES ARE SET IN PLACE AND READY TO OPERATE, THE CONTRACTOR SHALL TEST THEM UNDER WORKING PRESSURE AND CONDITIONS HEREIN SPECIFIED UNDER "GENERAL - TESTING MAINS". ANY VALVE FOUND TO LEAK SHALL BE MADE WATERTIGHT AND IF FOUND TO BE OF FAULTY DESIGN, SHALL BE SATISFACTORILY REPAIRED OR REPLACED BY THE CONTRACTOR.

PAINTING

- A. IRON BODY VALVES SHALL EITHER BE DIPPED IN ASPHALT PAINT AND ALL BRONZE PARTS CLEANED, OR ALL IRON CASTINGS SHALL BE PAINTED INSIDE BEFORE ASSEMBLING WITH TWO (2) COATS OF APPROVED PAINT, AND AFTER PASSING THE HYDRAULIC TEST, SHALL BE GIVEN AT LEAST TWO (2) COATS OF APPROVED PAINT OUTSIDE.
- B. AFTER ERECTION, ALL EXPOSED METAL SURFACES OF VALVES EXCEPT BRASS OR BRONZE SHALL BE PAINTED WITH TWO (2) FIELD COATS OF COAL TAR PITCH PAINT USING INERTOL 66, OR KOPPERS BITUMASTIC 50 OR APPROVED EQUAL.

INSPECTION

THE ENGINEER OR HIS AUTHORIZED DESIGNATE WILL INSPECT THE MATERIAL AND WORK DONE, AS THE INTEREST OF THE CITY OR STATE MAY REQUIRE. HE SHALL HAVE UNRESTRICTED ACCESS TO THE CONTRACTOR'S PLANT, AND TO ALL PARTS OF THE WORK; AND OTHER PLACES AT WHICH THE PREPARATION OF THE MATERIAL AND THE CONSTRUCTION OF THE DIFFERENT PARTS OF THE WORK TO BE DONE UNDER THESE SPECIFICATIONS ARE CARRIED ON, AND HE SHALL RECEIVE ALL FACILITIES AND ASSISTANCE TO CARRY OUT HIS WORK OF INSPECTION AND TESTING IN A MANNER SATISFACTORY TO THE ENGINEER. SUCH INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, OR ANY MODIFICATIONS THEREOF AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE.

DATE OF PROPOSAL

PROPOSAL SHALL BE ACCOMPANIED BY DRAWINGS FURNISHED BY THE MANUFACTURER, FULLY AND DISTINCTLY ILLUSTRATING AND DESCRIBING AND GIVING THE WEIGHT OF THE VALVES PROPOSED TO BE FURNISHED.

DRAWINGS

- A. PRIOR TO THE MANUFACTURE OF ANY VALVES, THE CONTRACTOR SHALL SUBMIT FOR THE APPROVAL OF THE ENGINEER AND DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND COMPLETE WORKING, DETAIL, AND DIMENSION DRAWINGS SHOWING THICKNESS AND KINDS OF MATERIAL, AND SIMILAR INFORMATION.
- B. ONE (1) PRINT EACH OF THE DRAWINGS SUBMITTED WILL BE RETURNED WITH THE CRITICISMS OR APPROVAL OF THE ENGINEER. IN CASE THE DRAWINGS ARE NOT APPROVED, THE CONTRACTOR SHALL AGAIN SEND FOR APPROVAL DUPLICATE REVISED PRINTS OF THE DRAWINGS TO TAKE CARE OF THE CRITICISMS NOTED, AND AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER THREE (3) SETS OF MYLAR OR REPRODUCIBLE CLOTH, ONE OF WHICH SHALL BE FURNISHED TO THE DIRECTOR OF PUBLIC UTILITIES OF THE CITY OF CLEVELAND, AND ONE (1) SET RETURNED TO THE CONTRACTOR. NO WORK SHALL BE DONE IN THE SHOP UNTIL AFTER THE DRAWINGS HAVE BEEN FINALLY APPROVED.
- C. IF THE VALVE FURNISHED IS ONE PREVIOUSLY APPROVED FOR WHICH DRAWINGS ARE PRESENTLY ON FILE WITH THE DEPARTMENT OF PUBLIC UTILITIES, THE DRAWING REQUIREMENT WILL BE WAIVED.

PAYMENT

THE UNIT PRICE STIPULATED FOR EACH "ITEM SPECIAL - VALVES" CLASSIFIED AS TO SIZE AND TYPE, SHALL INCLUDE THE FURNISHING, PLACING, TESTING AND PAINTING OF THE AIR RELIEF LOCKS, DRAIN VALVES, GATE VALVES, CHECK VALVES, INCLUDING BYPASS VALVES, OPERATING NUTS, VALVE BOXES AND COVERS AND OTHER ACCESSORIES AND APPURTENANCES AND THE FURNISHING OF ALL MATERIALS, LABOR, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR AS SHOWN.

RELOC. S.R. 1716

WATER WORK NOTES

CALC. DATE	CUYAHOGA COUNTY	OHIO
CHKD. DATE	CUY-176-10-14	F.H.W.A. REGION
DATE		

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395

ITEM SPECIAL- 6" HYDRANT RELOCATED

WORK INCLUDED

THE WORK INCLUDED UNDER THIS ITEM SHALL CONSIST OF REMOVING AND RELOCATING EXISTING HYDRANTS AS DETAILED ON SHEET NO. ___ AND AT THE LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, INCLUDING EXCAVATING, REMOVING AND RELOCATING OF EXISTING HYDRANTS AND APPURTENANCES, SHEETING AND BRACING, BRANCH PIPE AND FITTINGS, BACKFILL, LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO MAKE THIS A COMPLETE ITEM OF WORK.

MATERIALS

ALL HYDRANTS TO BE RELOCATED MUST BE IN GOOD CONDITION. ALL OTHER MATERIALS AND APPURTENANCES NECESSARY FOR THE PROPER COMPLETION OF THIS ITEM SHALL BE OF THE KIND AND GRADE CALLED FOR IN THESE PLANS FOR THE PARTICULAR KIND OF CONSTRUCTION IN WHICH THE MATERIALS ARE USED.

SETTING

- GENERAL LOCATION: THE HYDRANT SHALL BE LOCATED IN A MANNER TO PROVIDE COMPLETE ACCESSIBILITY, AND IN SUCH A MANNER THAT THE POSSIBILITY OF DAMAGE FROM VEHICLES OR INJURY TO PEDESTRIANS WILL BE MINIMIZED.
- LOCATION REGARDING CURB LINES: WHEN PLACED BEHIND CURB THE HYDRANT SHALL BE SET SO THAT THERE IS A MINIMUM OF FOUR (4) FEET OF CLEARANCE FROM THE FACE OF CURB TO THE CLOSEST PORTION OF THE HYDRANT.
- LOCATION REGARDING SIDEWALK: WHEN SET IN THE LAWN SPACE BETWEEN THE CURB AND THE SIDEWALK OR BETWEEN THE SIDEWALK AND THE PROPERTY LINE, NO PORTION OF THE HYDRANT OR NOZZEL CAP SHALL BE WITHIN 6 INCHES OF THE SIDEWALK.
- POSITION OF NOZZLE: THE HYDRANT SHALL STAND PLUMB WITH THE NOZZLES POINT TOWARD THE ROAD AT AN ANGLE OF 45 DEGREES THEREFROM. WHERE THE HYDRANT BRANCH PIPING IS PARALLEL WITH OR NOT AT RIGHT ANGLES TO THE CURB, THE CONTRACTOR SHALL RELEASE SWIVEL HEAD BOLTS AND ADJUST THE HYDRANT NOZZLES TO FACE THE ROAD AT THE PROPER ANGLE. A HYDRANT WITHOUT SWIVEL HEADS WILL BE ADJUSTED BY THE CITY OF CLEVELAND WHERE NECESSARY TO CORRECT THE ANGLE OF THE NOZZLES. THE ELEVATION SHALL CONFORM TO THE ESTABLISHED GRADE WITH TOPS OF FROST CASING AT LEAST FOUR INCHES ABOVE GRADE.
- DRAINAGE AT HYDRANT: DRAINAGE SHALL BE PROVIDED AT THE BASE OF THE HYDRANT BY FILLING AROUND THE ELBOW WITH COARSE GRAVEL OR CRUSHED STONE TO AT LEAST 6 INCHES ABOVE THE WASTE OPENING. WHEREVER A HYDRANT IS SET IN ROCK, CLAY OR OTHER IMPERVIOUS SOIL, THE TRENCH SHALL BE WIDENED AND DEEPENED ON EACH SIDE OF THE HYDRANT BASE AND THE SPACE SHALL BE FILLED COMPACTLY WITH COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND OF SUFFICIENT QUANTITY TO ABSORB ALL WATER TO BE DRAINED FROM THE HYDRANT WHEN THE VALVE IS CLOSED.
- ANCHORAGE FOR HYDRANT: THE HYDRANT SHALL BE SET ON A STONE SLAB OR SIMILAR FOUNDATION AND THE BASE OF THE HYDRANT AND THE HYDRANT TEE SHALL BE WELL BRACED AGAINST UNEXCAVATED EARTH AT THE END OF THE TRENCH WITH CONCRETE BRACKING, OR IT SHALL BE TIED TO THE PIPE WITH SUITABLE RODS OR CLAMPS AS DIRECTED BY THE ENGINEER.
- CLEANING: THE HYDRANT SHALL BE THOROUGHLY CLEANED OF DIRT AND FOREIGN MATTER BEFORE SETTING.

PAYMENT

THE UNIT PRICE STIPULATED FOR EACH "ITEM SPECIAL - 6" HYDRANT RELOCATED, SHALL INCLUDE ALL EXCAVATION, SHEETING, REMOVING AND RELOCATING HYDRANT, BRANCH PIPE AND FITTINGS, TESTING, PAINTING, BACKFILLING AND FURNISHING ALL LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN PLACE.

ITEM SPECIAL- MISCELLANEOUS METAL WORK

WORK INCLUDED

- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MISCELLANEOUS METAL WORK WHICH IS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT AND IS NOT SPECIFICALLY INCLUDED UNDER THE OTHER ITEMS OR THESE SPECIFICATIONS.
- IN GENERAL, THE WORK SHALL INCLUDE THE REPLACEMENT OF ANY VALVE BOXES, COVERS, MANHOLE RINGS AND COVERS, WATER SERVICE STOP BOXES, BRONZE BOLTS, MANHOLE STEPS, EXTENSION STEMS AND BRACE STRUCTURAL MEMBERS AND OTHER SIMILAR ITEMS DETERMINED BY THE ENGINEER AS BEING UNSUITABLE.

MATERIALS

ALL CASTINGS SHALL CONFORM TO THE REQUIREMENTS OF ITEM 604 OF THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIALS SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF THE ASTM SPECIFICATIONS A 36. ALL BRONZE BOLTS AND NUTS SHALL CONFORM TO THE U. S. STANDARD SIZES, AND SHALL BE CLEAN CUT AND HAVE WELL FITTED THREADS. ALL BRONZE BOLTS AND NUTS SHALL BE TOBIN OR MANGANESE BRONZE, OR OF SIMILAR APPROVED MATERIAL.

ALUMINUM, EXCEPT AS OTHERWISE REQUIRED, SHALL BE ALUMINUM ALLOY EQUIVALENT TO SPECIFICATION 6063; RIVETS AND SCREWS SHALL BE 2017 ALLOY; ALUMINUM PLATE AND STRUCTURAL SHAPES SHALL BE 2017 ALLOY; ALUMINUM PLATE AND STRUCTURAL SHAPES SHALL BE 6061-T6 AND EXTRUDED SHAPES SHALL BE 6063-T5; ALL AS MANUFACTURED BY THE ALUMINUM COMPANY OF AMERICA, OR EQUAL.

BRASS SHALL BE OF A COMMERCIAL GRADE CONFORMING TO THE "STANDARD SPECIFICATIONS FOR BRASS PLATE, SHEET, STRIP AND ROLLED BAR", ASTM DESIGNATION B 36-71, ALLOY NO. 3.

COPPER-SILICON ALLOY OR "EVERDUR" SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR COPPER-SILICON ALLOY PLANT, SHEET, STRIP AND ROLLED BAR FOR GENERAL PURPOSES"; ASTM DESIGNATION B97-70, TYPE B.

STAINLESS STEEL RODS AND FASTENERS SHALL CONFORM TO THE REQUIREMENTS OF "SPECIFICATIONS FOR HOT ROLLED AND COLD-FINISHED STAINLESS AND HEAT-RESISTANT BARS". ASTM DESIGNATION A 276-72, TYPE 304. ALL WROUGHT IRON SHALL MEET THE REQUIREMENTS OF THE "SPECIFICATIONS FOR ROLLED WROUGHT IRON SHAPES AND BARS", ASTM DESIGNATION A 207-68, OR THE "SPECIFICATIONS FOR WROUGHT IRON PLATES", ASTM DESIGNATION A42-66.

CAST IRON VALVE BOXES AND COVERS SHALL BE GRAY IRON CASTINGS, IN WHICH APPEARANCE AND DIMENSION TOLERANCES ARE PRIMARY CONSIDERATIONS AND STRENGTH IS NOT A PRIMARY OR MAJOR CONSIDERATION. VALVE BOXES AND COVERS SHALL BE ASTM DESIGNATION A 49 WITH NO SPECIFIC REQUIREMENT AS TO CLASS. CHEMICAL COMPOSITION SHALL NOT BE CONSIDERED, BUT THE MATERIAL SHALL BE OF GOOD QUALITY AND OF SUCH CHARACTER AS SHALL MAKE THE METAL OF THE CASTINGS STRONG, TOUGH AND OF EVEN GRAIN. THE METAL SHALL BE MADE WITHOUT ANY MIXTURE OF CINDER IRON OR OTHER INFERIOR METAL.

WORKMANSHIP AND FINISH SHALL CONFORM SUBSTANTIALLY TO THE DIMENSIONS ON THE CONTRACT DRAWINGS OR FURNISHED DRAWINGS. THE CASTINGS SHALL BE FREE FROM INJURIOUS DEFECTS, CRACKS, GAS HOLES, FLAWS, AND EXCESSIVE SHRINKAGE. ADDITIONAL INSPECTION MAY BE MADE AT THE PROJECT OR WORK SITE. INSPECTION SHALL BE VISUAL INSPECTION FOR APPEARANCE AND SURFACE SMOOTHNESS IN COMPARISON WITH SAMPLES ACCEPTED AS STANDARD.

SAMPLE CASTINGS FROM EACH PATTERN, WHEN REQUIRED BY THE ENGINEER, SHALL BE SUBMITTED BY THE MANUFACTURER FOR THE PURPOSE OF ESTABLISHING STANDARDS OF APPEARANCE AND DIMENSIONAL TOLERANCES. THE MANUFACTURER SHALL CERTIFY THAT HIS PRODUCT CONFORMS TO THESE SPECIFICATIONS. EACH CERTIFICATION SO FURNISHED SHALL BE SIGNED BY AN AUTHORIZED AGENT OF THE MANUFACTURER.

CLEANING AND TESTING

ALL CASTINGS SHALL BE THOROUGHLY CLEANED AND SUBJECTED TO A CAREFUL HAMMER TEST.

NO CASTINGS SHALL BE COATED UNLESS CLEAN AND FREE FROM RUST, AND APPROVED IN THESE RESPECTS BY THE ENGINEER OR HIS AUTHORIZED INSPECTOR IMMEDIATELY BEFORE BEING DIPPED.

COATING

EACH COATING SHALL BE SPRAYED OR BRUSHED INSIDE AND OUT WITH ONE COAT OF ASPHALTIC COMPOUND VARNISH. THE VARNISH SHALL BE MADE OF HIGH GRADE ASPHALT FLUXED AND BLENDED WITH PROPERLY TREATED DRYING OILS AND THINNED TO A PROPER CONSISTENCY WITH A VOLATILE SOLVENT. THE VARNISH SHALL BE MADE TO COMPLY WITH FEDERAL SPECIFICATION 77-V-51A OR JOINT ARMY-NAVY SPECIFICATION JAN-P-450. OTHER METHODS OF COATING AND TYPES OF COATING MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER. IN ADDITION TO THE SHOP COAT, THE CASTINGS SHALL RECEIVE TWO (2) COATS OF APPROVED PAINT.

INSPECTION

THE ENGINEER OR HIS AUTHORIZED REPRESENTATIVE SHALL HAVE THE RIGHT TO INSPECT THE MATERIAL AND WORK DONE, AS THE INTERESTS OF THE CITY OR STATE MAY REQUIRE. SUCH INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM SAID WORK STRICTLY IN ACCORDANCE WITH THE SPECIFICATIONS, AND ANY MODIFICATION THEREOF, AS HEREIN PROVIDED, AND WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND MADE GOOD BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL MANHOLE RINGS AND COVERS MUST BE SOUND AND SHALL CONFORM TO THESE SPECIFICATIONS, AND ANY DEFECTIVE CASTINGS WHICH MAY HAVE PASSED THE INSPECTOR AT THE WORKS, OR ELSEWHERE, SHALL BE AT ALL TIMES LIABLE TO REJECTION WHEN DISCOVERED, UNTIL THE DATE OF FINAL PAYMENT UNDER THIS CONTRACT.

STEPS AND LADDERS

DUCTILE IRON STEPS AND LADDERS OF THE SIZE AND SHAPE SHOWN ON THE CONTRACT DRAWINGS SHALL BE BUILT INTO THE BRICK AND CONCRETE MASONRY OF THE MANHOLES AS INDICATED ON THE DRAWINGS.

RIMS AND COVERS

(A) ALL CAST IRON MANHOLE RIMS AND COVERS OF THE FORMS, DIMENSIONS AND DETAIL SHOWN ON THE CONTRACT DRAWINGS SHALL BE FURNISHED AND INSTALLED AS DIRECTED.

(B) THE RIMS SHALL BE PROPERLY SET IN PLACE IN A FULL BED OF MORTAR OF POURED MONOLITHIC IN THE MASONRY, AT SUCH ELEVATION AS TO MAKE THE TOP OF THE RIM CONFORM TO THE FINISHED SURFACES OF THE STRUCTURES OR THE FINISHED GRADE AS ESTABLISHED BY THE ENGINEER.

DETAILED DRAWINGS

COMPLETE DETAILED-DRAWINGS OF MISCELLANEOUS METAL WORK SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL, PRIOR TO THE MANUFACTURE OF ANY WORK TO BE FURNISHED UNDER THIS ITEM IN ACCORDANCE WITH THESE SPECIFICATIONS.

PAINTING

ALL MISCELLANEOUS METAL WORK NOT GALVANIZED SHALL BE THOROUGHLY CLEANED AND GIVEN THREE (3) COATS OF COAL TAR PITCH, USING INTERTOL 50 OR BITUMASTIC 50, OR APPROVED EQUAL.

MEASUREMENT

THE MISCELLANEOUS METAL WORK SHALL BE THE METAL WORK ACTUALLY FURNISHED AND PLACED IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE DETAILED DRAWINGS APPROVED BY THE DIRECTOR. IN THE COMPUTING OF WEIGHTS, IF NOT DETERMINED BY WEIGHING, ONE (1) CUBIC FOOT OF CAST IRON SHALL BE ASSUMED TO WEIGH FOUR HUNDRED AND FIFTY (450) POUNDS, AND ONE (1) CUBIC FOOT OF STEEL SHALL BE ASSUMED TO WEIGH FOUR HUNDRED AND NINETY (490) POUNDS. THE WEIGHT OF CAST IRON SHALL BE USED FOR CAST IRON VALVE BOXES AND COVERS AND ANY CAST IRON SECTIONS OF VALVE BOXES AND COVERS. ~~WHERE PLASTIC PIPE IS USED AS THE EXTENSION, THE PIPE SHALL BE INCLUDED IN THE CAST IRON WEIGHT WITH NO SEPARATE ALLOWANCE FOR LENGTH OR WEIGHT.~~

PAYMENT

THE UNIT PRICE STIPULATED PER POUND FOR MISCELLANEOUS METAL WORK SHALL INCLUDE THE FURNISHING, ERECTING, MACHINING, FITTING, ADJUSTING, BOLTING, CLEANING AND PAINTING OF ALL MISCELLANEOUS METAL WORK, AND THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR AS SHOWN. THE FOLLOWING ESTIMATED QUANTITIES ARE INCLUDED IN THE GENERAL SUMMARY FOR THIS WORK:

ITEM SPECIAL- MISCELLANEOUS METAL WORK 1,000 LBS.

ITEM SPECIAL- FURNISHING AND SETTING 6" HYDRANT COMPLETE

WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL HYDRANTS, HYDRANT BRANCH AND FITTINGS, VALVES, VALVE BOXES AND COVERS, CAULKING MATERIAL, LABOR, TOOLS, AND EQUIPMENT FOR AND SHALL PROPERLY CONNECT AT THE LOCATION SHOWN ON THE CONTRACT DRAWINGS, 6" HYDRANTS, COMPLETE, AS REQUIRED FOR THE PROPER COMPLETION OF THE WORK INCLUDED UNDER THIS CONTRACT.

HYDRANTS

THE 6" HYDRANT DETAILS SHOWN IN THE PLANS IS A CITY OF CLEVELAND STANDARD. IN ADDITION TO THE 6" HYDRANT DETAILS IN THE PLANS, THE CITY OF CLEVELAND HAS APPROVED THREE (3) ADDITIONAL 6" HYDRANT DETAILS ON FILE AT 1201 LAKESIDE AVENUE, CLEVELAND, OHIO 44114. THE DRAWING NOS. ARE D525, D526, AND D530.

SETTING

(A) GENERAL LOCATION: THE HYDRANT SHALL BE LOCATED IN A MANNER TO PROVIDE COMPLETE ACCESSIBILITY, AND IN SUCH MANNER THAT THE POSSIBILITY OF DAMAGE FROM VEHICLES OR INJURY TO PEDESTRIANS WILL BE MINIMIZED.

(B) LOCATION REGARDING CURB LINES: WHEN PLACED BEHIND CURB THE HYDRANT BARREL SHALL BE SET SO THAT NO PORTION OF THE HYDRANT WILL BE LESS THAN 2 FEET FROM THE FACE OF THE CURB.

(C) LOCATION REGARDING SIDEWALK: WHEN SET IN THE LAWN SPACE BETWEEN THE CURB AND THE SIDEWALK, OR BETWEEN THE SIDEWALK AND THE PROPERTY LINE, NO PORTION OF THE HYDRANT OR NOZZEL CAP SHALL BE WITHIN 6 INCHES OF THE SIDEWALK.

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CHKD. _____		REGION
DATE _____		

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(D) POSITION OF NOZZLE : THE HYDRANT SHALL STAND PLUMB WITH THE NOZZLES POINTING TOWARD THE ROAD END AT AN ANGLE OF FORTY-FIVE DEGREES THEREFROM. WHERE HYDRANT BRANCH PIPING IS PARALLEL WITH OR NOT AT RIGHT ANGLES TO THE CURB, THE CONTRACTOR SHALL RELEASE SWIVEL HEAD BOLTS AND ADJUST THE HYDRANT NOZZLES TO FACE THE ROAD AT THE PROPER ANGLE. A HYDRANT WITHOUT SWIVEL HEADS WILL BE ADJUSTED BY THE CITY WHERE NECESSARY TO CORRECT THE ANGLE OF NOZZLES. THE ELEVATION SHALL CONFORM TO THE ESTABLISHED GRADE WITH TOPS OF FROST CASING AT LEAST FOUR (4) INCHES ABOVE GRADE.

(E) CONNECTION TO MAIN : THE HYDRANT SHALL BE CONNECTED TO THE MAIN PIPE WITH A BRANCH CONTROLLED BY THE INDEPENDENT GATE VALVES OF THE SAME SIZE AS THE HYDRANT, EXCEPT AS OTHERWISE DIRECTED.

(F) DRAINAGE AT HYDRANT : DRAINAGE SHALL BE PROVIDED AT THE BASE OF THE HYDRANT BY FILLING AROUND THE ELBOW WITH COARSE GRAVEL OR CRUSHED STONE TO AT LEAST SIX (6) INCHES ABOVE THE WASTE OPENING. WHEREVER A HYDRANT IS SET IN ROCK, CLAY OR OTHER IMPERVIOUS SOIL, THE TRENCH SHALL BE WIDENED AND DEEPENED ON EACH SIDE OF THE HYDRANT BASE AND THE SPACE SHALL BE FILLED COMPACTLY WITH COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND OF SUFFICIENT QUANTITY TO ABSORB ALL WATER TO BE DRAINED FROM THE HYDRANT WHEN THE VALVE IS CLOSED.

(G) ANCHORAGE FOR HYDRANT : THE HYDRANT SHALL BE SET ON A STONE SLAB OR A SIMILAR FOUNDATION AND THE BASE OF THE HYDRANT AND THE HYDRANT TEE SHALL BE WELL BRACED AGAINST UNEXCAVATED EARTH AT THE END OF THE TRENCH WITH CONCRETE BACKING, OR IT SHALL BE TIED TO THE PIPE WITH SUITABLE RODS OR CLAMPS, TIED WITH MECHANICAL JOINT FITTING OR AS DIRECTED BY THE ENGINEER.

(H) CLEANING : THE HYDRANT SHALL BE THOROUGHLY CLEANED OF DIRT OR FOREIGN MATTER BEFORE SETTING.

PAYMENT

(A) THE UNIT PRICE STIPULATED TO BE PAID FOR EACH ITEM SPECIAL - "FURNISHING AND SETTING 6" HYDRANT" SHALL INCLUDE FURNISHING HYDRANT, HYDRANT BRANCH AND FITTINGS, VALVES, VALVE BOXES AND COVERS, SETTING, TESTING, PAINTING, EXCAVATING, SHEETING AND SHORING, BACKFILLING, AND THE FURNISHING OF ALL LABOR, MATERIAL, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THE WORK AS SPECIFIED OR SHOWN.

ITEM SPECIAL- EXTEND AND ADJUST HYDRANT TO GRADE

WORK INCLUDED

THE WORK INCLUDED UNDER THIS ITEM SHALL CONSIST OF EXTENDING AND ADJUSTING EXISTING HYDRANTS TO GRADE AS DETAILED ON SHEET NO. 144 AND AT THE LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, INCLUDING EXCAVATING, REMOVING AND RESETTING OF EXISTING HYDRANTS AND APPURTENANCES, SHEETING AND BRACING, BACKFILL, LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO MAKE THIS A COMPLETE ITEM OF WORK.

SETTING

(A) GENERAL LOCATION : THE HYDRANT SHALL BE LOCATED IN A MANNER TO PROVIDE COMPLETE ACCESSIBILITY, AND IN SUCH A MANNER THAT THE POSSIBILITY OF DAMAGE FROM VEHICLES OR INJURY TO PEDESTRIANS WILL BE MINIMIZED.

(B) LOCATION REGARDING CURB LINES: WHEN PLACED BEHIND CURB THE HYDRANT SHALL BE SET SO THAT THERE IS A MINIMUM OF TWO (2) FEET OF CLEARANCE FROM THE FACE OF CURB TO THE CLOSEST PORTION OF THE HYDRANT.

(C) LOCATION REGARDING SIDEWALK : WHEN SET IN THE LAWN SPACE BETWEEN THE CURB AND THE SIDEWALK OR BETWEEN THE SIDEWALK AND THE PROPERTY LINE, NO PORTION OF THE HYDRANT OR NOZZEL CAP SHALL BE WITHIN 6 INCHES OF THE SIDEWALK.

(D) POSITION OF NOZZLE : THE HYDRANT SHALL STAND PLUMB WITH THE NOZZLES POINT TOWARD THE ROAD AT AN ANGLE OF 45 DEGREES THEREFROM. WHERE THE HYDRANT BRANCH PIPING IS PARALLEL WITH OR NOT AT RIGHT ANGLES TO THE CURB, THE CONTRACTOR SHALL RELEASE SWIVEL HEAD BOLTS AND ADJUST THE HYDRANT NOZZLES TO FACE THE ROAD AT THE PROPER ANGLE. A HYDRANT WITHOUT SWIVEL HEADS WILL BE ADJUSTED BY THE CITY OF CLEVELAND WHERE NECESSARY TO CORRECT THE ANGLE OF THE NOZZLES. THE ELEVATION SHALL CONFORM TO THE ESTABLISHED GRADE WITH TOPS OF FROST CASING AT LEAST FOUR INCHES ABOVE GRADE.

(E) DRAINAGE AT HYDRANT : DRAINAGE SHALL BE PROVIDED AT THE BASE OF THE HYDRANT BY FILLING AROUND THE ELBOW WITH COARSE GRAVEL OR CRUSHED STONE TO AT LEAST 6 INCHES ABOVE THE WASTE OPENING. WHEREVER A HYDRANT IS SET IN ROCK, CLAY OR OTHER IMPERVIOUS SOIL, THE TRENCH SHALL BE WIDENED AND DEEPENED ON EACH SIDE OF THE HYDRANT BASE AND THE SPACE SHALL BE FILLED COMPACTLY WITH COARSE GRAVEL OR BROKEN STONE MIXED WITH COARSE SAND OF SUFFICIENT QUANTITY TO ABSORB ALL WATER TO BE DRAINED FROM THE HYDRANT WHEN THE VALVE IS CLOSED.

(F) ANCHORAGE FOR HYDRANT : THE HYDRANT SHALL BE SET ON A STONE SLAB OR SIMILAR FOUNDATION AND THE BASE OF THE HYDRANT AND THE HYDRANT TEE SHALL BE WELL BRACED AGAINST UNEXCAVATED EARTH AT THE END OF THE TRENCH WITH CONCRETE BACKING, OR IT SHALL BE TIED TO THE PIPE WITH SUITABLE RODS OR CLAMPS AS DIRECTED BY THE ENGINEER.

(G) CLEANING : THE HYDRANT SHALL BE THOROUGHLY CLEANED OF DIRT AND FOREIGN MATTER BEFORE SETTING.

PAYMENT

THE UNIT PRICE STIPULATED FOR EACH "ITEM SPECIAL - EXTEND AND ADJUST HYDRANT TO GRADE" SHALL INCLUDE ALL EXCAVATION, SHEETING, REMOVING AND RESETTING HYDRANT, EXTENDING BRANCH, TESTING, PAINTING, BACKFILLING AND FURNISHING ALL LABOR, TOOLS, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN PLACE.

ITEM SPECIAL-WATER SERVICE CONNECTIONS

GENERAL

NEW AND UNUSED MATERIALS SHALL BE USED IN THE FOLLOWING SITUATION INVOLVING WATER SERVICE CONNECTIONS.

1. WHERE A SERVICE CONNECTION IS DISTURBED FOR LOWERING, RAISING OR RELOCATING BETWEEN THE WATER MAIN AT THE "CORPORATION SHUTOFF VALVE" AND THE CURB SHUTOFF VALVE, IT SHALL BE TOTALLY REPLACED WITH NEW AND UNUSED MATERIALS, FROM THE "CORPORATION SHUTOFF VALVE" TO CURB SHUTOFF VALVE.
2. WHERE A SERVICE CONNECTION IS DISTURBED FOR LOWERING, RAISING, OR EXTENDING ON THE "PROPERTY SIDE" OF THE CURB SHUTOFF VALVE, THE PIPING MATERIALS AND FITTINGS SHALL BE TOTALLY REPLACED WITH NEW AND UNUSED MATERIALS FROM THE EXISTING CURB SHUTOFF VALVE TO THE NEW CURB SHUTOFF VALVE REQUIRED AS A RESULT OF THE EXTENSION. HOWEVER, IF THE EXISTING SERVICE CONNECTION ENCOUNTERED IN THE WORK IS FOUND TO BE LEAD OR GALVANIZED PIPE, IT IS TO BE TOTALLY REPLACED FROM "CORPORATION SHUTOFF VALVE" TO THE "CURB SHUTOFF VALVE" WITH COPPER. THE ADDITIONAL COPPER PIPING WILL BE PAID FOR SEPARATELY UNDER "ITEM SPECIAL-COPPER WATER TUBING" WITH THE CONTRACTOR BEING RESPONSIBLE TO FURNISH THE PROPER SIZE PIPE.
3. WHERE A SERVICE CONNECTION IS DISTURBED FOR LOWERING, RAISING OR EXTENDING, IT SHALL BE EXTENDED IN A STRAIGHT PROLONGATION OF THE EXISTING CONNECTION AND WHERE THE "PROPERTY SIDE" SERVICE CONNECTION PIPING IS NOT IMMEDIATELY CONTIGUOUS TO THE EXTENDED SERVICE CONNECTION CURB SHUTOFF, ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO RECONNECT SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL ALSO INSTALL THE MATERIAL AND COMPLETE THE RECONNECTION TO RESTORE SERVICE, HOWEVER, ANY RECONNECTION ON THE "PROPERTY SIDE" OF THE CURB SHUTOFF MUST BE PARALLEL TO THE STREET CENTERLINE OR RIGHT-OF-WAY FROM THE CURB SHUTOFF. IF UPON INSPECTION OF THE "PROPERTY SIDE" PIPING, IT IS FOUND UNSUITABLE FOR SUCH RECONNECTION, THE CONNECTION SHALL NOT BE DISTURBED UNTIL SUCH TIME AS THE MUNICIPALITY HAS ARRANGED FOR REPLACEMENT.
4. WHERE A CONNECTION IS INADVERTENTLY DAMAGED OR BROKEN WHICH WAS NOT TO BE DISTURBED, ONLY THE DAMAGED PORTION NEEDS TO BE REPLACED. IF THE EXTENT OF DAMAGE CANNOT BE FULLY ASSESSED, THE CONNECTION SHALL BE REPLACED, AS NOTED IN ITEM 1 ABOVE, AT THE CONTRACTOR'S EXPENSE.

5. ANY TAPPING REQUIRED SHALL BE PERFORMED BY THE CONTRACTOR. THE CONTRACTOR MUST BE QUALIFIED TO TAP MAINS IN ACCORDANCE WITH THE "PREGUALIFICATIONS OF CONTRACTOR FOR TAPPING" GENERAL NOTE.

WORK INCLUDED

IN ADDITION TO THE WORK DESCRIBED ABOVE, THE CONTRACTOR SHALL INSTALL NEW AND/OR RECONSTRUCT WATER SERVICE CONNECTIONS AS DETAILED IN THE PLANS.

PIPE MATERIAL FOR SERVICE CONNECTIONS

THE FOLLOWING PIPE MATERIAL SHALL BE USED FOR THE SERVICE CONNECTIONS ON THIS PROJECT:

COPPER WATER TUBING, TYPE K, ASTM B88-74, 1" TO 3" DIAMETER

PAYMENT

THE FOLLOWING PAY ITEMS ARE LISTED IN THE GENERAL SUMMARY FOR WATER SERVICE CONNECTION WORK:

ITEM SPECIAL-EXTEND 3/4" WATER SERVICE CONNECTION, COMPLETE

ITEM SPECIAL-EXTEND 3" WATER SERVICE CONNECTION, COMPLETE

ITEM SPECIAL- RETAP, RECONNECT, AND EXTEND 3/4" SERVICE CONNECTION, SHORT SIDE COMPLETE

ITEM 604- MANHOLE ADJUSTED TO GRADE, AS PER PLAN

THE CONTRACTOR SHALL ADJUST THE EXISTING MANHOLE FRAME AND COVER TO FIT THE REVISED GRADE BY EXCAVATING AROUND THE FRAME AND RAISING OR LOWERING THE FRAME AND COVER BY ADDING TO OR REMOVING THE EXISTING BRICKS AND MORTAR. USE OF ADJUSTING RINGS SHALL NOT BE PERMITTED. IF REQUIRED BY THE ENGINEER, NEW FRAMES AND/OR COVERS WILL BE PAID FOR UNDER "ITEM SPECIAL-MISCELLANEOUS METAL".

PAYMENT

THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR ITEM 604 - "MANHOLE ADJUSTED TO GRADE, AS PER PLAN", WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR ADJUSTING THE MANHOLE FRAME AND COVER, EXCAVATION, TAMPING EARTH, BRICK AND MASONRY MATERIAL AND FOR ALL LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO THIS ITEM.

ITEM SPECIAL - CUTTING-IN VALVE WITH VALVE BOX, COMPLETE

WORK INCLUDED

THE DIVISION OF WATER WILL SET THE TIME OF INSTALLATION AND THE CONTRACTOR WILL DO ALL PIPE CUTTING AND INSTALLING UNDER THE SUPERVISION OF THE DIVISION OF WATER AND HEAT. THE CONTRACTOR SHALL FURNISH AND HAUL TO THE PROPER LOCATION THE HUB VALVE AND VALVE BOX COMPLETE, STANDARD NO. 38 DRESSER COUPLING OR APPROVED SMITH BLAIR COUPLING OR APPROVED EQUAL, CAST IRON PIPE AND LEAD FOR THE INSTALLATION. THE CONTRACTOR SHALL EXCAVATE, PROVIDE SHEETING AND BRACING AS NECESSARY, BACKFILL AND REPAVE AS NECESSARY.

QUALITY OF VALVES

THE VALVES SHALL COMPLY WITH THE REQUIREMENTS OF THE "ITEM SPECIAL - VALVES" OF THESE SPECIFICATIONS, INsofar AS THEY APPLY.

PAYMENT

THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE UNIT PRICE BID FOR EACH "ITEM SPECIAL - CUTTING IN VALVE WITH VALVE BOX COMPLETE", CLASSIFIED AS TO SIZE. THE PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL EXCAVATION, SHEETING, BRACING, BACKFILLING, REPAVING, FURNISHING AND INSTALLING THE CUTTING-IN VALVE AND THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM OF WORK.

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ITEM SPECIAL-2" AIR RELIEF VALVE WITH VALVE BOX, COMPLETE.

WORK INCLUDED

THE CONTRACTOR SHALL FURNISH PIPE WITH A 2" AIR RELIEF CONNECTION AND FURNISH AND INSTALL THE 2" AIR RELIEF COMPLETE, INCLUDING VALVE BOXES, AS SHOWN IN THE "WATER WORK DETAILS" AT THE LOCATIONS SHOWN IN THE PLANS.

PAYMENT

THE WORK INCLUDED IN THIS ITEM SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE BID FOR EACH "ITEM SPECIAL - 2" AIR RELIEF VALVE WITH VALVE BOX, COMPLETE WHICH PRICE AND PAYMENT SHALL CONSTITUTE FULL PAYMENT FOR FURNISHING AND INSTALLING ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND APPLIANCES NECESSARY TO COMPLETE THIS ITEM.

ABANDONED WATERWORK

WORK INCLUDED

ALL WATER MAINS DESIGNATED ON THE PLANS TO BE ABANDONED SHALL BE LEFT IN PLACE AFTER IT IS TAKEN OUT OF SERVICE. ALL LINE VALVE BOXES AND STEMS SHALL BE REMOVED TO AT LEAST ONE FOOT BELOW THE PROPOSED SUBBASE. ALL HYDRANTS SHALL BE COMPLETELY REMOVED. ALL SERVICE CURB STOPS AND BOXES ON ABANDONED LINES SHALL BE REMOVED. ALL REMOVED WATERWORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY HIM.

REMOVED WATERWORK

ALL WATER MAINS AND APPURTENANCES NOTED AS "REMOVE(D)" SHALL BE REMOVED BY THE CONTRACTOR AND THE TRENCH OR CAVITY BACKFILLED AS PER ITEM 203 - "ODOT SPECIFICATIONS" AT NO ADDITIONAL COST TO THE STATE.

PLUGGING EXISTING SERVICE CONNECTIONS

THE WORK INCLUDED UNDER THIS ITEM SHALL CONSIST OF PLUGGING EXISTING SERVICE CONNECTIONS AT THE MAIN BY TURNING OFF CORPORATION STOP VALVE, CRIMPING THE PIPE AND PLACING A CONCRETE COLLAR AROUND THE MAIN. THE CONTRACTOR SHALL REMOVE THE CURB STOP VALVE AND BOX, AND ABANDON THE SERVICE LINE IN PLACE. ALL WORK SHALL BE AS DIRECTED BY THE CITY OF CLEVELAND WATER DEPARTMENT AND APPROVED BY THE ENGINEER AND SHALL INCLUDE SHEETING AND BRACING, BACKFILL, LABOR, MATERIALS, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THIS WORK.

IF NO EXISTING CORPORATION STOP IS FOUND AT THE MAIN, THE CONTRACTOR SHALL CUT THE CONNECTION AT THE MAIN AND INSTALL A REPAIR CLAMP AROUND THE MAIN.

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE PER EACH FOR ITEM SPECIAL - PLUGGING EXISTING SERVICE CONNECTION AND PER EACH FOR ITEM 202 - REMOVAL MISC.: CURB STOP BOX REMOVED, COMPLETE.

ITEM SPECIAL-VAULTS, MANHOLES OR CHAMBERS

WORK INCLUDED

UNDER THESE ITEMS THE CONTRACTOR SHALL FURNISH ALL NECESSARY LABOR, MATERIALS, INCLUDING FRAMES, COVERS, AND STEPS, TOOLS AND EQUIPMENT FOR THE CONSTRUCTION, COMPLETE, OF ALL MISCELLANEOUS MASONRY STRUCTURES AND INCLUDING ALL WATER MAIN DRAIN AND PITOMETER VAULTS, METER AND FIRE SERVICE VAULTS, ACCESS AND ANCHORAGE MANHOLES, VALVE CHAMBERS, ANCHORS, PIERS AT PIPE BENDS AND UNDER LINE VALVES, FLOORS FOR DRAIN AND VALVE VAULTS, AND OTHER APPURTENANT WORK TOGETHER WITH THE HAULING, MIXING, PLACING, FORMING, SCAFFOLDING, SHEETING AND BRACING, GROUTING, PLASTERING, CURING, ETC., ALL AS SPECIFIED, REQUIRED OR SHOWN ON THE CONTRACT DRAWINGS.

BRICK AND MASONRY MATERIAL

THE MATERIAL FURNISHED BY THE CONTRACTOR FOR THE VARIOUS KINDS OF MASONRY CONSTRUCTION TO BE CONSTRUCTED SHALL CONFORM TO THE FOLLOWING OHIO DEPARTMENT OF TRANSPORTATION (ODOT) SPECIFICATIONS:

- (A) ALL BRICK FURNISHED AND USED SHALL BE NO. 2 SHALE BRICK AND SHALL COMPLY WITH THE REQUIREMENTS FOR "GRADE SA" ASTM C 32, OR ODOT 704.02 CONCRETE BRICK.
- (B) PORTLAND CEMENT SHALL CONFORM TO THE REQUIREMENTS OF 701.04 (ASTM C 150 TYPE 1) ODOT.
- (C) FINE AGGREGATE FOR MORTAR OR GROUT SHALL CONFORM TO THE REQUIREMENTS OF 703.03 ODOT.
- (D) AGGREGATE FOR PORTLAND CEMENT CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF 703.02 ODOT.
- (E) ALL WATER SHALL BE CLEAN AND ACCURATELY MEASURED FOR EACH BATCH OF CONCRETE.
- (F) ALL PLAIN CONCRETE SHALL BE THE ODOT 499 CLASS "C".
- (G) ALL REINFORCING STEEL SHALL BE ODOT ITEM 509.
- (H) ALL CEMENT MORTAR SHALL BE MIXED IN THE PROPORTION OF ONE (1) PART OF CEMENT TO THREE (3) PARTS OF SAND, EXCEPT THE MORTAR FOR BRICK CATCH BASINS AND SEWER MANHOLES WHICH SHALL BE 1 TO 2 MIX.
- (I) PRECAST MASONRY VAULT SECTIONS MAY BE FURNISHED IF THEY MEET THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS ON FILE WITH THE CLEVELAND DIVISION OF WATER OR APPROVED BY THE ENGINEER.

VAULT, MANHOLE AND CHAMBER CONSTRUCTION

- (A) ALL VAULTS, MANHOLES, CHAMBERS, BRICK NECKS & EXTENSION, AND TEMPORARY EXTENSIONS SHALL BE BUILT IN ACCORDANCE WITH THE CONTRACT DRAWINGS.
- (B) THE WALLS OF CIRCULAR STRUCTURES SHALL BE BUILT OF NO. 2 SHALE BRICK OR CONCRETE BRICK LAID IN 1:3 PORTLAND CEMENT MORTAR, WITH BRICK ARRANGED RADially AS HEADERS, FORMING A WALL NINE (9) INCHES THICK. IN DEEP MANHOLES, THE WALL SHALL BE THIRTEEN (13) INCHES THICK BELOW A POINT 12 FEET FROM THE SURFACE. ALL OF THE BRICK COMPOSING SAID STRUCTURES SHALL BE LAID IN FULL MORTAR BEDS AND JOINTS, WITH NO MORTAR JOINTS APPEARING ON THE INNER SURFACE OF THE MANHOLE EXCEEDING THREE-EIGHTS (3/8) INCHES THICK.
- (C) THE TOP OF THE WALL OF STRUCTURES SHALL BE PROPERLY LEVELED OFF WITH MORTAR SO AS TO FORM A FLAT SURFACE UPON WHICH THE CAST IRON MANHOLE RING IS TO REST, AND THE STRUCTURE SHALL BE BUILT TO PROPER HEIGHT AS INDICATED BY THE CONTRACT DRAWINGS.
- (D) THE ENTIRE OUTER SURFACE OF ALL BRICK STRUCTURES SHALL BE PLASTERED WITH A SMOOTH COATING OF 1:3 PORTLAND CEMENT MORTAR, AT LEAST ONE-HALF (1/2) INCH THICK.
- (E) PRECAST OR CAST IN PLACE CONCRETE MASONRY CONSTRUCTION SHALL FOLLOW THE APPLICABLE SECTION OF ITEM 604 ODOT SPECIFICATION.

PAYMENT

PAYMENT SHALL BE MADE AT THE CONTRACT UNIT PRICE BID PER EACH "ITEM SPECIAL - VAULTS, MANHOLES OR CHAMBERS" CLASSIFIED AS TO SIZE AND TYPE. COMPLETE AND ACCEPTED IN PLACE INCLUDING FRAMES, COVERS & STEPS, PAYMENT FOR BRICK OR CONCRETE MASONRY IS TO BE INCLUDED IN THE UNIT PRICE BID FOR THE ITEM IN WHICH IT IS USED AND SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL THE REQUIREMENTS OF THIS ITEM INCLUDING ALL NECESSARY MATERIAL, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS TO MAKE THIS A COMPLETE ITEM OF WORK.

PAYMENT FOR CONCRETE ANCHORS AND PIERS IS TO BE INCLUDED IN THE UNIT PRICE BID FOR "ITEM SPECIAL - WATER MAINS" (NEW LINES), ITEM SPECIAL - PRESTRESSED CONCRETE CYLINDER PIPE" OR "ITEM SPECIAL - PLUGGING EXISTING WATER MAINS AND BRANCHES".

ITEM SPECIAL-INSTALL METER SETTING, COMPLETE

WORK INCLUDED

THE CONTRACTOR SHALL FURNISH ALL THE MATERIAL AND SHALL INSTALL THE METER SETTING ASSEMBLY IN THE NEW VAULTS AT THE LOCATIONS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER.

INSTALLATION OF ALL NECESSARY PIPE, FITTINGS, VALVES, ETC. AS SHOWN IN THE DETAILS INCLUDING THE METER SETTING ASSEMBLY SHALL BE PERFORMED BY THE CONTRACTOR.

MATERIALS REQUIRED FOR EACH SIZE AND TYPE OF INSTALLATION HAVE BEEN TABULATED IN THESE NOTES - SEE "MATERIALS REQUIRED FOR INSTALLATION". THE NECESSARY DIMENSIONS AND OTHER DETAILS ARE INCLUDED IN THE DETAILED PLAN SECTION.

REMOVAL OF THE METER AND METER SETTING FROM THE EXISTING VAULT AND DELIVERY TO CLEVELAND'S HARVARD YARD WILL ALSO BE INCLUDED IN THIS ITEM OF WORK.

MEASUREMENT

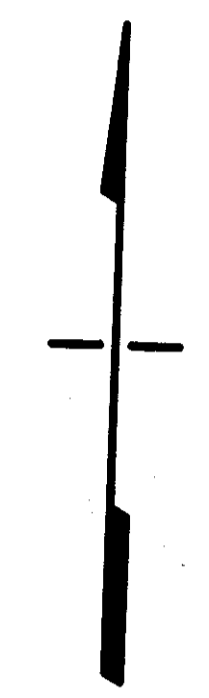
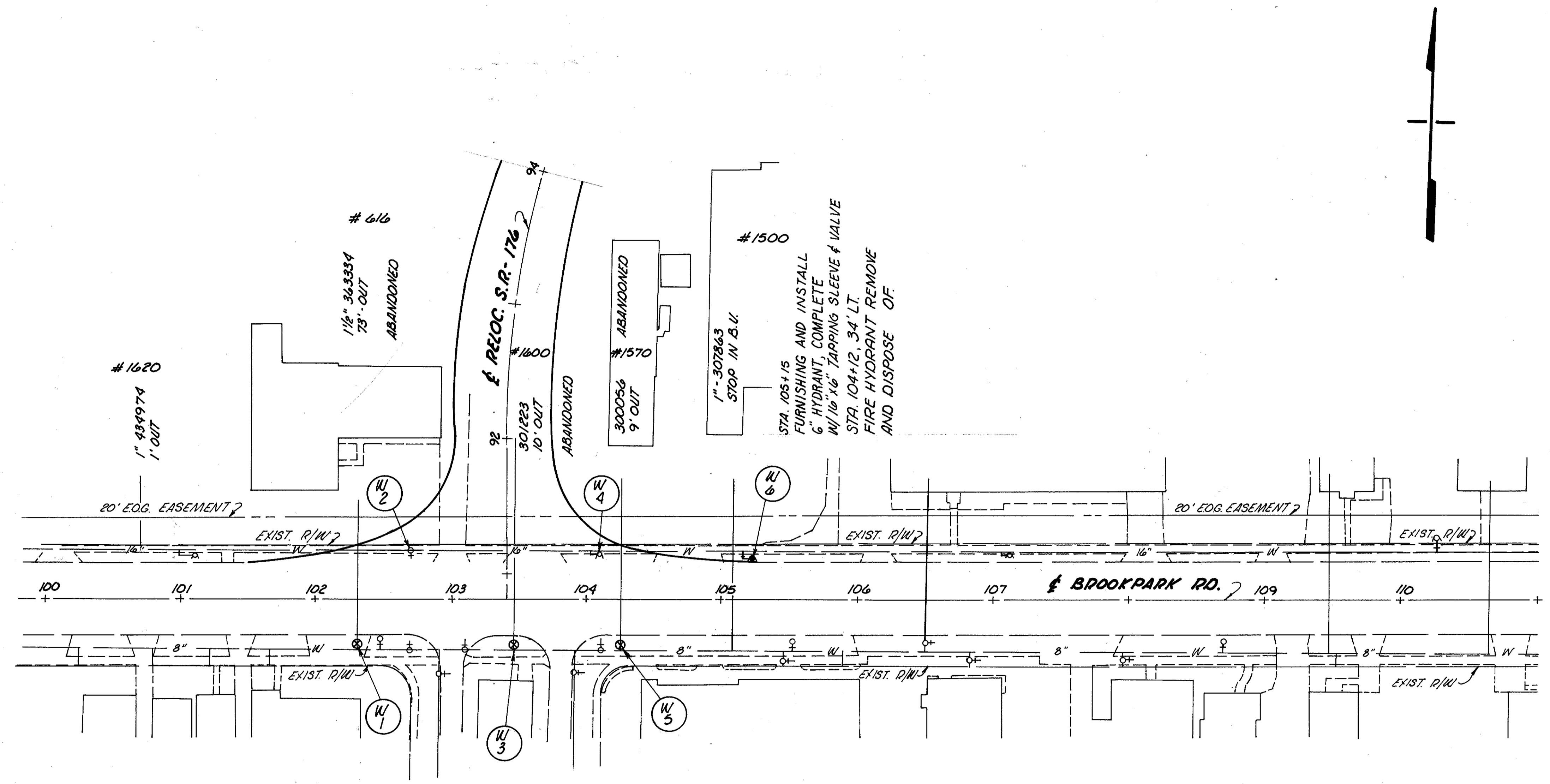
THE METER SETTING TO BE PAID FOR SHALL BE THE ACTUAL NUMBER OF EACH UNIT LISTED AND ESTIMATED SEPARATELY BY SIZE, COMPLETED AND ACCEPTED.

PAYMENT

PAYMENT FOR THIS WORK WILL BE AT THE CONTRACT PRICE BID FOR EACH ITEM SPECIAL - "INSTALL METER SETTING, COMPLETE", CLASSIFIED BY PIPE SIZE. THIS PRICE AND PAYMENT SHALL CONSTITUTE FULL COMPENSATION FOR PERFORMING ALL THE REQUIREMENTS OF THIS ITEM INCLUDING REMOVAL AND DELIVERY OF EXISTING METER AND METER SETTING, FURNISHING ALL NECESSARY MATERIALS (INCLUDING PIPE, FITTINGS, AND VALVES), LABOR TOOLS, EQUIPMENT SUPPLIES AND INCIDENTALS.

WATERWORK GENERAL SUMMARY

ITEM	S H E E T															ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	FOR AS PER PLAN SEE SHEET	
	195		201		205		207															
202																	202	75600	1	EACH	METER VAULT, REMOVED	
202																	202	75610	1	EACH	VALVE BOX REMOVED	
202																	202	98100	1	EACH	REMOVAL MISC. LEADED HYDRANT TEE REMOVED	
604																	604	34501	1	EACH	MANHOLE ADJUSTED TO GRADE, AS PER PLAN	202
638					1												638	10700	4	EACH	FIRE HYDRANT REMOVED AND DISPOSED OF	
638					1												638	10800	6	EACH	VALVE BOX ADJUSTED TO GRADE	
638																	638	10900	3	EACH	SERVICE BOX ADJUSTED TO GRADE	
SPECIAL					1												SPECIAL	63824106	1	EACH	16" X 6" TAPPING SLEEVE-VALVE COMPLETE	
SPECIAL																	SPECIAL	63821010	534	LIN FT	12" WATER MAIN DUCTILE IRON PIPE WITH BOLTLESS RESTRAINED JOINTS AND FITTINGS, ANSI CLASS 56	
SPECIAL																	SPECIAL	63822904	270	LIN FT	24" STEEL CASING PIPE	
SPECIAL																	SPECIAL	63823506	2	EACH	8" CUTTING-IN VALVE WITH VALVE BOX, COMPLETE	
SPECIAL																	SPECIAL	63824500	2	EACH	2" AIR RELIEF VALVE WITH VALVE BOX, COMPLETE	
SPECIAL					1												SPECIAL	63824600	2	EACH	FURNISHING AND SETTING 6" HYDRANT, COMPLETE	
SPECIAL																	SPECIAL	63825000	1,000	LBS	MISCELLANEOUS METAL WORK	
SPECIAL																	SPECIAL	63825504	1	EACH	INSTALL 3" METER SETTING, COMPLETE	
SPECIAL																	SPECIAL	63825704	1	EACH	3" METER VAULT	
SPECIAL																	SPECIAL	63826708	1	EACH	RETAP, RECONNECT AND EXTEND 3/4" SERVICE CONNECTION, SHORT SIDE COMPLETE	
SPECIAL																	SPECIAL	63829406	2	EACH	EXTEND 3/4" WATER SERVICE CONNECTION, COMPLETE	
SPECIAL																	SPECIAL	63829504	1	EACH	EXTEND 3" WATER SERVICE CONNECTION, COMPLETE	
SPECIAL																	SPECIAL	63830300	6	EACH	PLUGGING EXISTING SERVICE CONNECTION	
SPECIAL	100																SPECIAL	63830500	100	MBF	SHEETING LEFT IN PLACE	

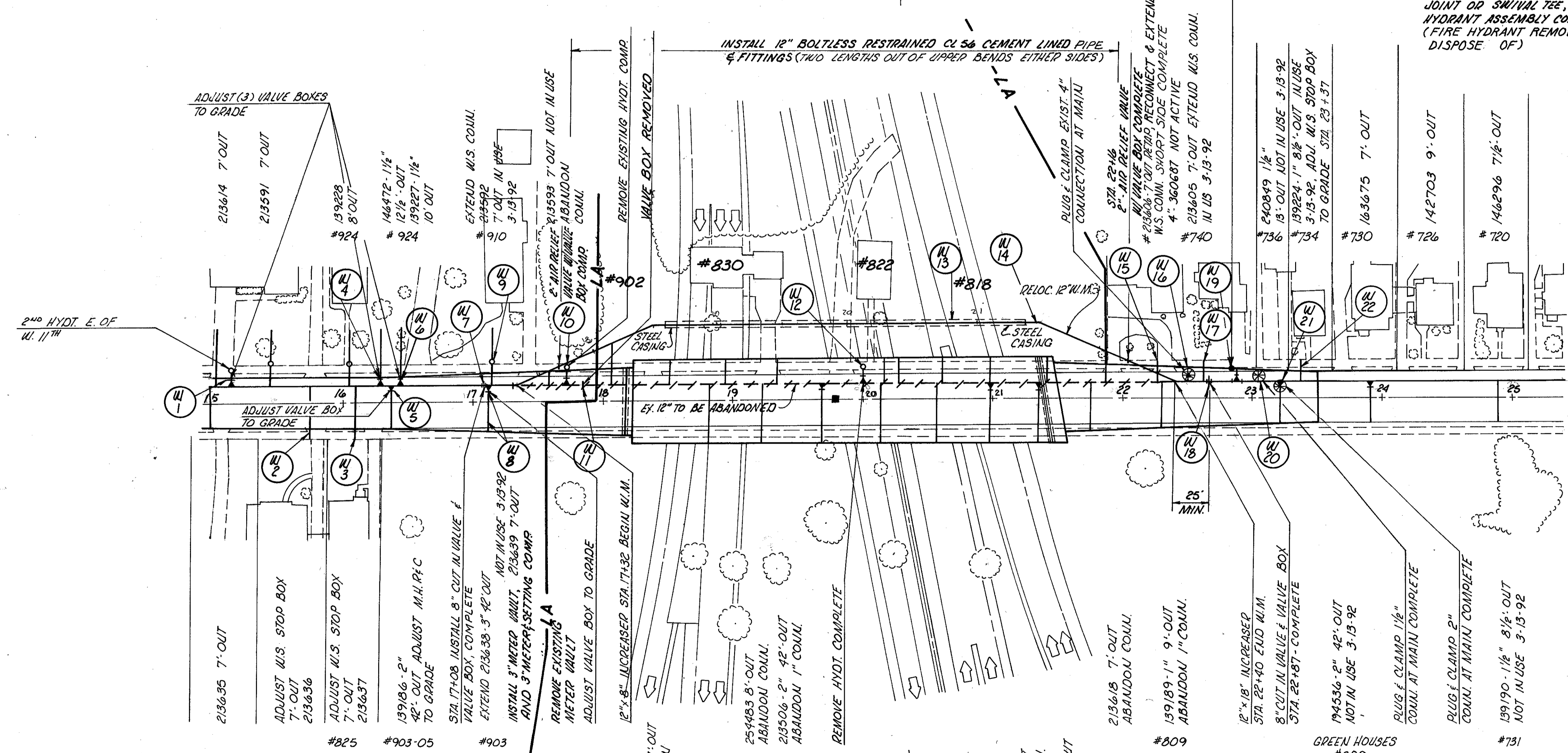
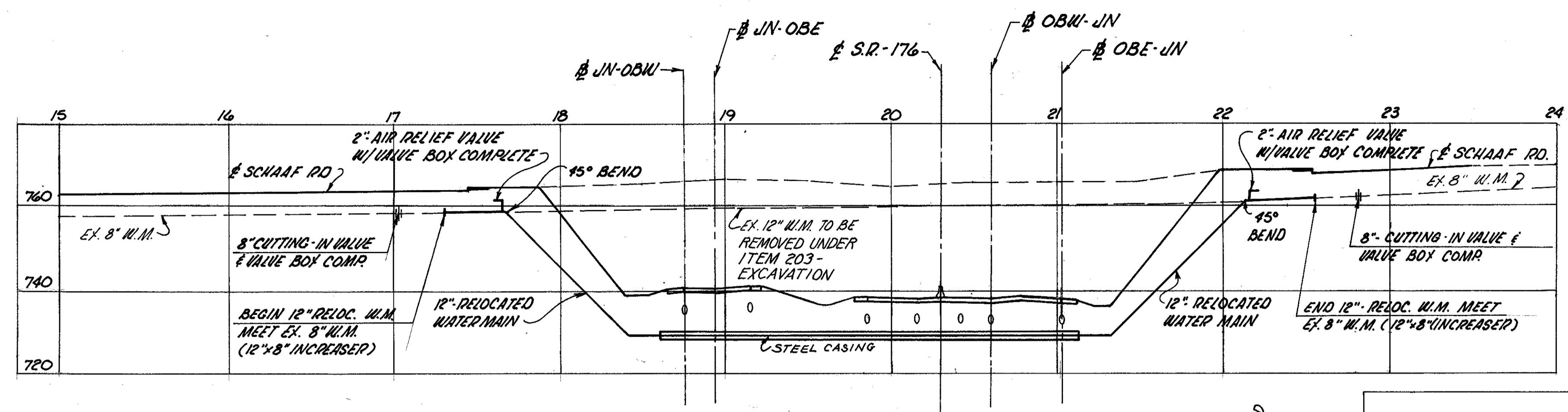


ITEM NO. EXTENSION NO.	SPEC. 63830300	SPEC. 63810700	SPEC. 63810800	SPEC. 63824600	SPEC. 63824106
BROOKPARK RD. LOCATION	PLUGGING EXISTING SERVICE CONNECTION OF	FIRE HYDRANT PLUG AT TEE AND DISPOSE OF	VALVE BOX ADJUSTED TO GRADE	FURNISHING AND SETTING 6" HYDRANT, COMPLETE W/ 1/2" x 6" TAP SLEEVE VALVE & BOX	16" x 6" TAPPING SLEEVE, VALVE WITH BOX
REF. STATION TO STATION SIDE	EA.	EA.	EA.	EA.	EA.
W-1 102+31 RT.	1				
W-2 102+70 LT.			1		
W-3 103+46 RT.	1				
W-4 104+12 LT.		1			
W-5 104+25 RT.	1				
W-6 105+15 LT.				1	1
TOTALS	3	1	1	1	1

(RM. # 768)

REVISIONS			1ST HIGH SERVICE
NO.	DATE	BY	
			DEPARTMENT OF PUBLIC UTILITIES DIVISION OF WATER CLEVELAND, OHIO
			SUBJECT BROOKPARK RD. (@ W. 16TH ST. & RELOC. S.R.-176) HYDR. PLUGGING & ADJUSTMENTS OF WATER APPURTENANCES
APPROVED: <i>Donald T. Johnson</i> 3-22-94 ENGINEER OF WATER MAIN DESIGN REVIEW			NO. B-2981

FOR QUANTITIES SEE SHEET 207.



- #902 - 139226 - 1" 13922-1" 7 1/2" OUT ABANDON CONN.
- #830 - 213611 7" OUT ABANDON CONN.
- #822 - 139225 - 1" 7" OUT ABANDON CONN.
- 143930 - 2" 14" OUT ABANDON CONN.
- #818 - 213610 7" OUT ABANDON CONN.
- #800 - 213609 7" OUT (BOO WRECKED BY B-B WRECK CO.) ABANDON CONN.
- 240849 1 1/2" 15" OUT NOT IN USE 3-13-92
- 139224 - 1" 8 1/2" OUT IN USE 3-13-92 ADJ. M.S. STOP BOX TO GRADE STA. 23+37
- 163675 7" OUT
- 142703 9" OUT
- 146296 7 1/2" OUT
- 213635 7" OUT
- ADJUST M.S. STOP BOX 7" OUT 213636
- ADJUST M.S. STOP BOX 7" OUT 213637
- 139186 - 2" 42" OUT ADJUST M.H.P.C. TO GRADE
- STA. 17+08 INSTALL 8" CUT IN VALVE & VALVE BOX, COMPLETE
- EXTEND 213638 - 3" 42" OUT NOT IN USE 3-13-92
- INSTALL 3" METER HUNT, 213639 7" OUT AND 3" METER SETTING COMP.
- REMOVE EXISTING METER VALVE
- ADJUST VALVE BOX TO GRADE
- 12" x 8" INCREASER STA. 17+32 BEGIN W.M.
- 213621 7" OUT ABANDON CONN.
- 254483 8" OUT ABANDON CONN.
- 213506 - 2" 42" OUT ABANDON 1" CONN.
- REMOVE HYD. COMPLETE
- 139187 - 1" 8 1/2" OUT ABANDON CONN.
- 213620 7" OUT ABANDON CONN.
- 3" 213619 42" OUT ABANDON 3" CONN.
- 139188 - 2" 42" OUT ABANDON CONN.
- 213618 7" OUT ABANDON CONN.
- 139189 - 1" 9" OUT ABANDON 1" CONN.
- 12" x 18" INCREASER STA. 22+40 END W.M.
- 8" CUT IN VALVE & VALVE BOX STA. 22+87 - COMPLETE
- 194536 - 2" 42" OUT NOT IN USE 3-13-92
- PLUG & CLAMP 1 1/2" CONN. AT MAIN COMPLETE
- PLUG & CLAMP 2" CONN. AT MAIN COMPLETE
- 139190 - 1 1/2" 8 1/2" OUT NOT IN USE 3-13-92

STA. 22+87 CUT OUT EXIST. LEADED TEE & INSTALL RETAINED MECHANICAL JOINT OR SWIVAL TEE, WITH NEW 6" HYDRANT ASSEMBLY COMPLETE (FIRE HYDRANT REMOVE AND DISPOSE OF)

REVISIONS		
NO.	DATE	BY

1ST HIGH SERVICE

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER
CLEVELAND, OHIO

SUBJECT W. SCHAAF RD. - 12" W.M. RELOCATION
(FR. 215' SE OF 2ND HYDT., SE OF W. 117TH, SE. 534' TO CONN.), (STA. 17+32, TO STA. 22+40)

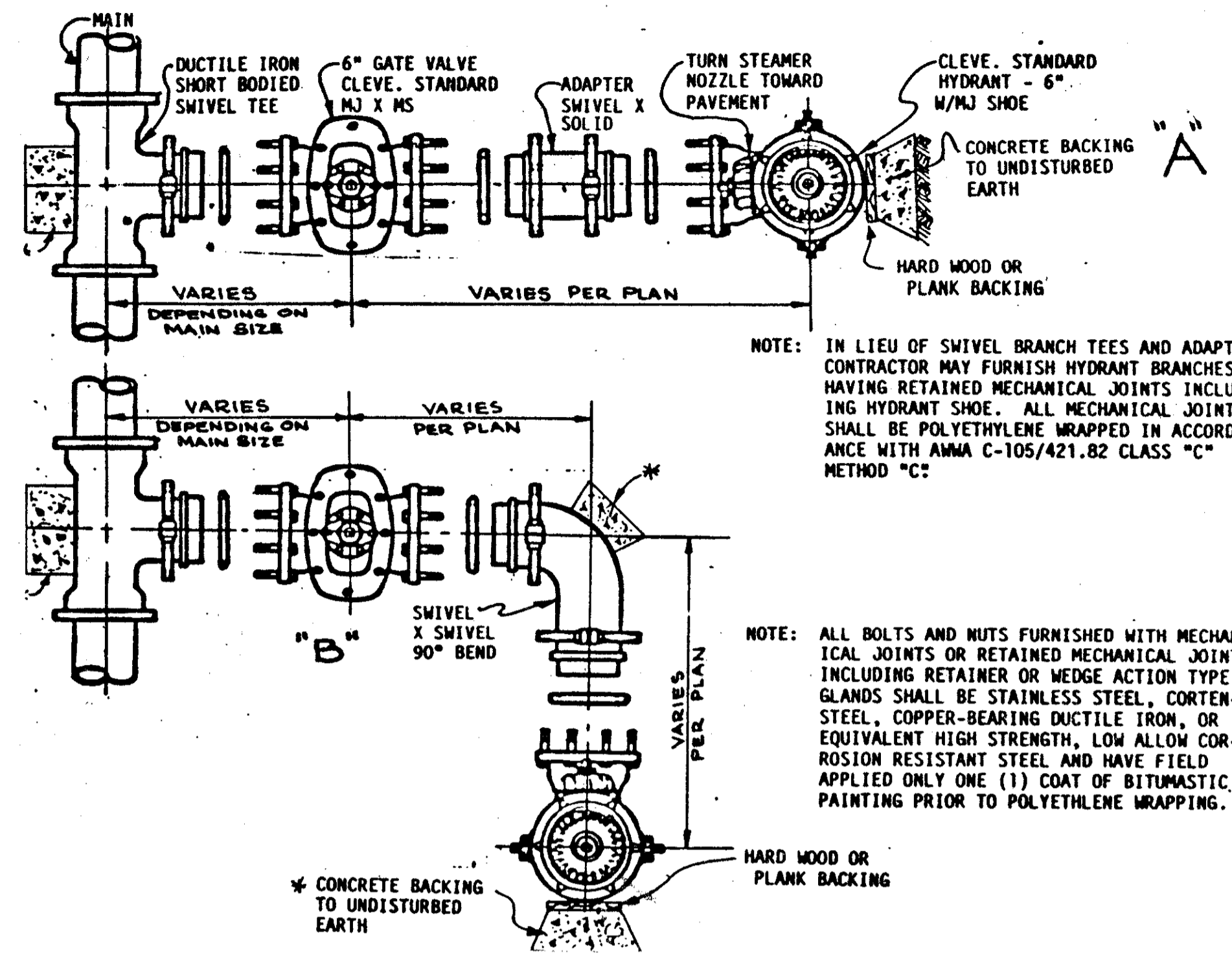
APPROVED: *Donald L. Jubar 3-22-94*
ENGINEER OF WATER MAIN DESIGN REVIEW

NO. B-2982

RELOC. S.R.-176

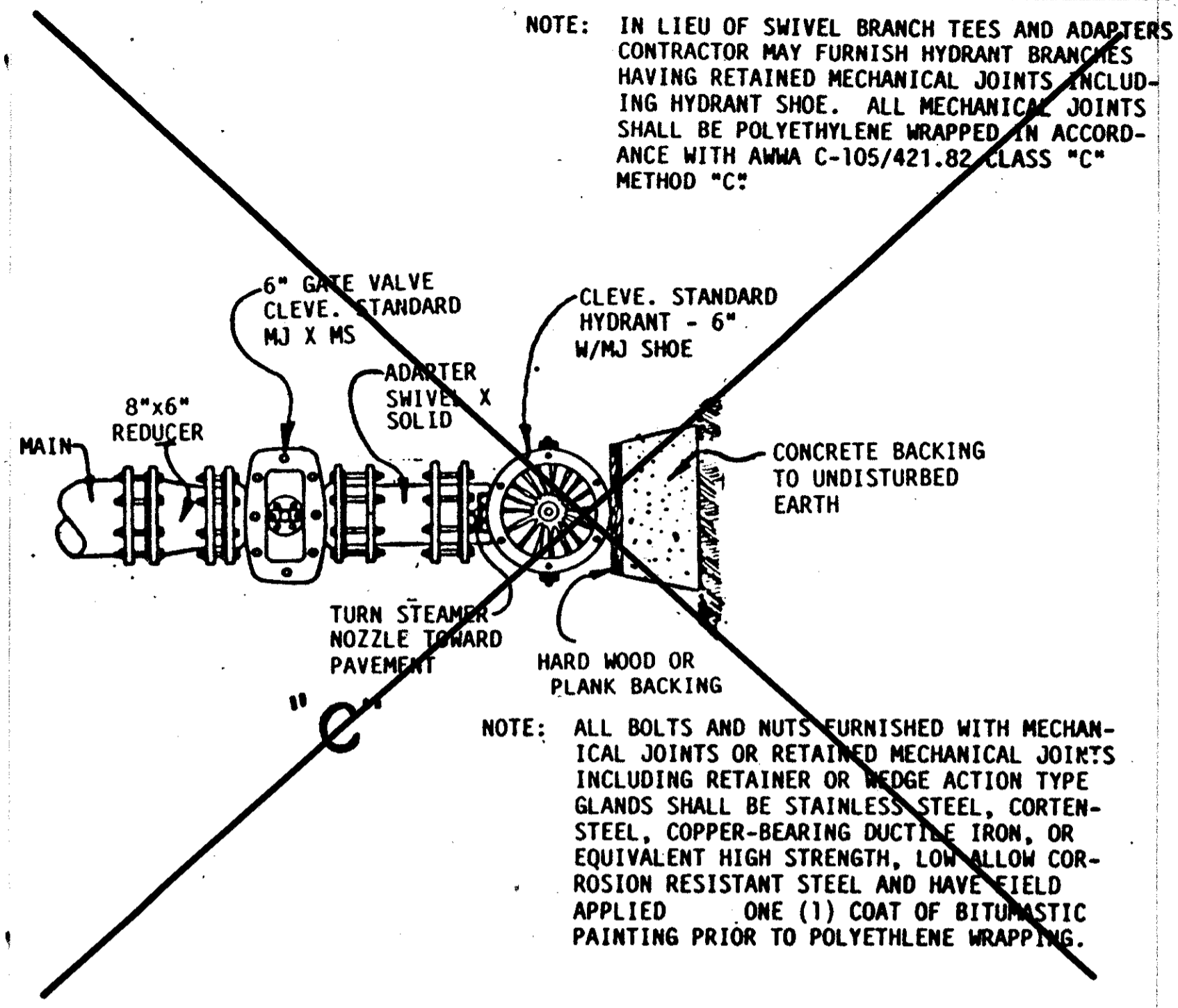
ESTIMATED QUANTITIES SCHAAF ROAD

REF. No.	ITEM No. EXTENSION No.			202 75600	202 75610	604 34500	638 10700	638 10800	638 10900	SPEC 63821010	SPEC 63822904	SPEC 63823506	SPEC 63824500	SPEC 63824600	SPEC 63825504	SPEC 63825704	SPEC 63826300	SPEC 63829406	SPEC 63829504	SPEC 63830300	202 98100			
	STATION	TO	SIDE	EACH	EACH	EACH	EACH	EACH	EACH	12" WATER MAIN DUCTILE IRON PIPE WITH BOLTLESS RESTRAINED JOINTS AND FITTINGS, ANSI CLASS 56 LIN FT	24" STEEL CASING PIPE LIN FT	8" CUTTING-IN VALVE WITH VALVE BOX, COMPLETE EACH	2" AIR RELIEF VALVE WITH VALVE BOX, COMPLETE EACH	FURNISHING AND SETTING 6" HYDRANT, COMPLETE EACH	INSTALL 3' METER SETTING COMPLETE EACH	3' METER VAULT EACH	RETAP, RECONNECT AND EXTEND 3/4" WATER SERVICE CONNECTION, SHORT SIDE, COMPLETE EACH	EXTEND 3/4" WATER SERVICE CONNECTION, COMPLETE EACH	EXTEND 3" WATER SERVICE CONNECTION, COMPLETE EACH	PLUGGING EXISTING SERVICE CONNECTION EACH	REMOVAL MISC.: HYDRANT LEADED TEE REMOVED EACH	8' X 22 1/2 DEGREE HORIZONTAL BEND EACH	8' X 45 DEGREE VERTICAL BEND EACH	
W-1	15 + 15		LT					1																
W-2	15 + 78		RT						1															
W-3	16 + 10		RT						1															
W-4	16 + 28		LT					1																
W-5	16 + 37		RT			1		1																
W-6	16 + 45		LT					1																
W-7	17 + 09		LT									1												
W-8	17 + 12		RT	1				1							1	1				1				
W-9	17 + 15		LT															1						
W-10	17 + 72		LT				1																	
W-11	17 + 84		LT		1																			
W-12	20 + 00		LT				1																	
W-13	18 + 47	21 + 47	LT								270													
W-14	17 + 32	22 + 40	LT							534			2									4	4	
W-15	22 + 27		LT														1							
W-16	22 + 51		LT																		1			
W-17	22 + 62		LT															1						
W-18	22 + 67		LT									1												
W-19	22 + 87		LT				1							1								1		
W-20	23 + 05		LT																		1			
W-21	23 + 20		LT																		1			
W-22	23 + 37		LT						1															
TOTALS				1	1	1	3	5	3	534	270	2	2	1	1	1	1	1	2	1	3	1	4	4



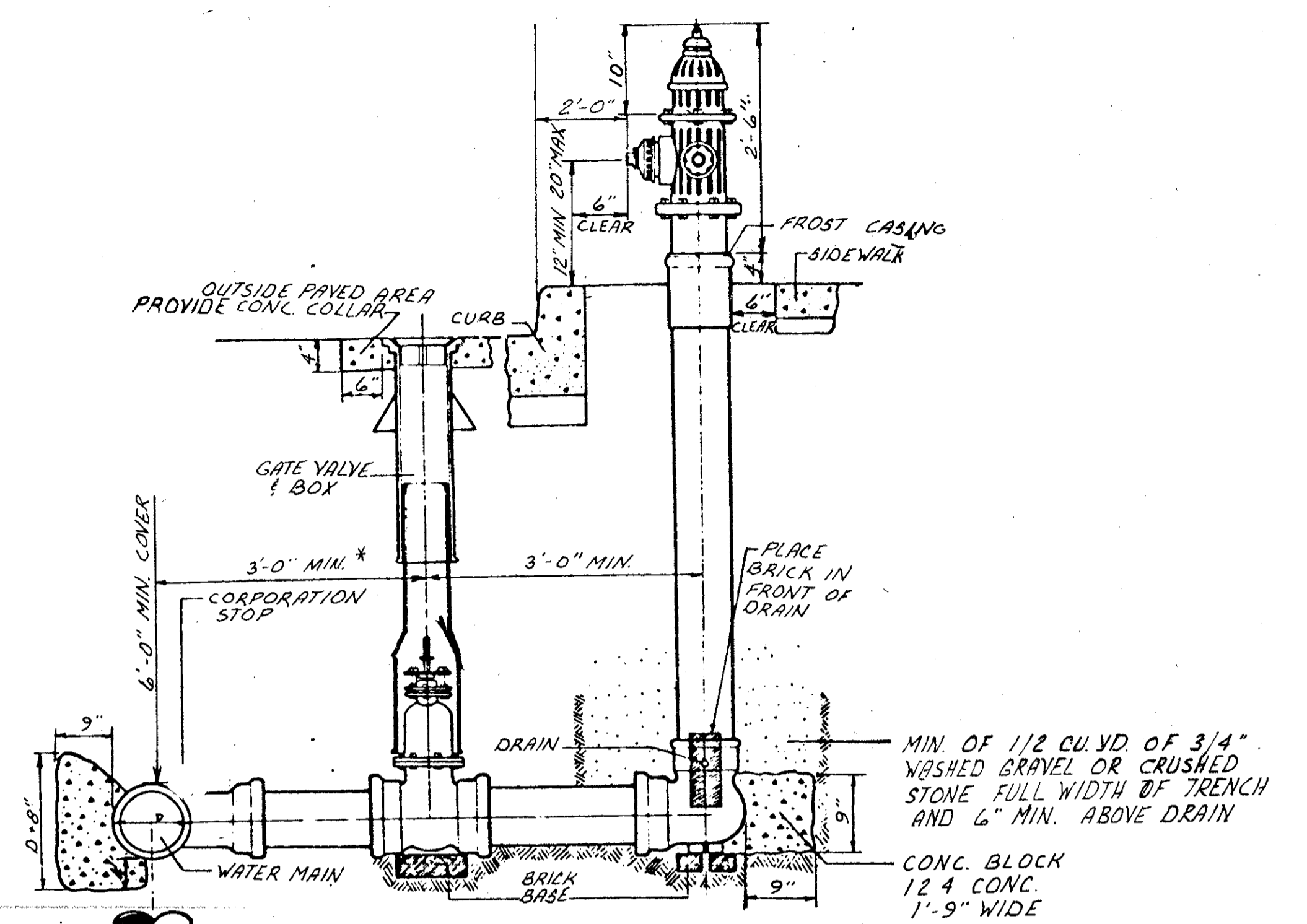
NOTE: IN LIEU OF SWIVEL BRANCH TEES AND ADAPTERS CONTRACTOR MAY FURNISH HYDRANT BRANCHES HAVING RETAINED MECHANICAL JOINTS INCLUDING HYDRANT SHOE. ALL MECHANICAL JOINTS SHALL BE POLYETHYLENE WRAPPED IN ACCORDANCE WITH AMMA C-105/421.82 CLASS "C" METHOD "C".

NOTE: ALL BOLTS AND NUTS FURNISHED WITH MECHANICAL JOINTS OR RETAINED MECHANICAL JOINTS INCLUDING RETAINER OR WEDGE ACTION TYPE GLANDS SHALL BE STAINLESS STEEL, CORTEN-STEEL, COPPER-BEARING DUCTILE IRON, OR EQUIVALENT HIGH STRENGTH, LOW ALLOW CORROSION RESISTANT STEEL AND HAVE FIELD APPLIED ONLY ONE (1) COAT OF BITUMASTIC PAINTING PRIOR TO POLYETHYLENE WRAPPING.



NOTE: IN LIEU OF SWIVEL BRANCH TEES AND ADAPTERS CONTRACTOR MAY FURNISH HYDRANT BRANCHES HAVING RETAINED MECHANICAL JOINTS INCLUDING HYDRANT SHOE. ALL MECHANICAL JOINTS SHALL BE POLYETHYLENE WRAPPED IN ACCORDANCE WITH AMMA C-105/421.82 CLASS "C" METHOD "C".

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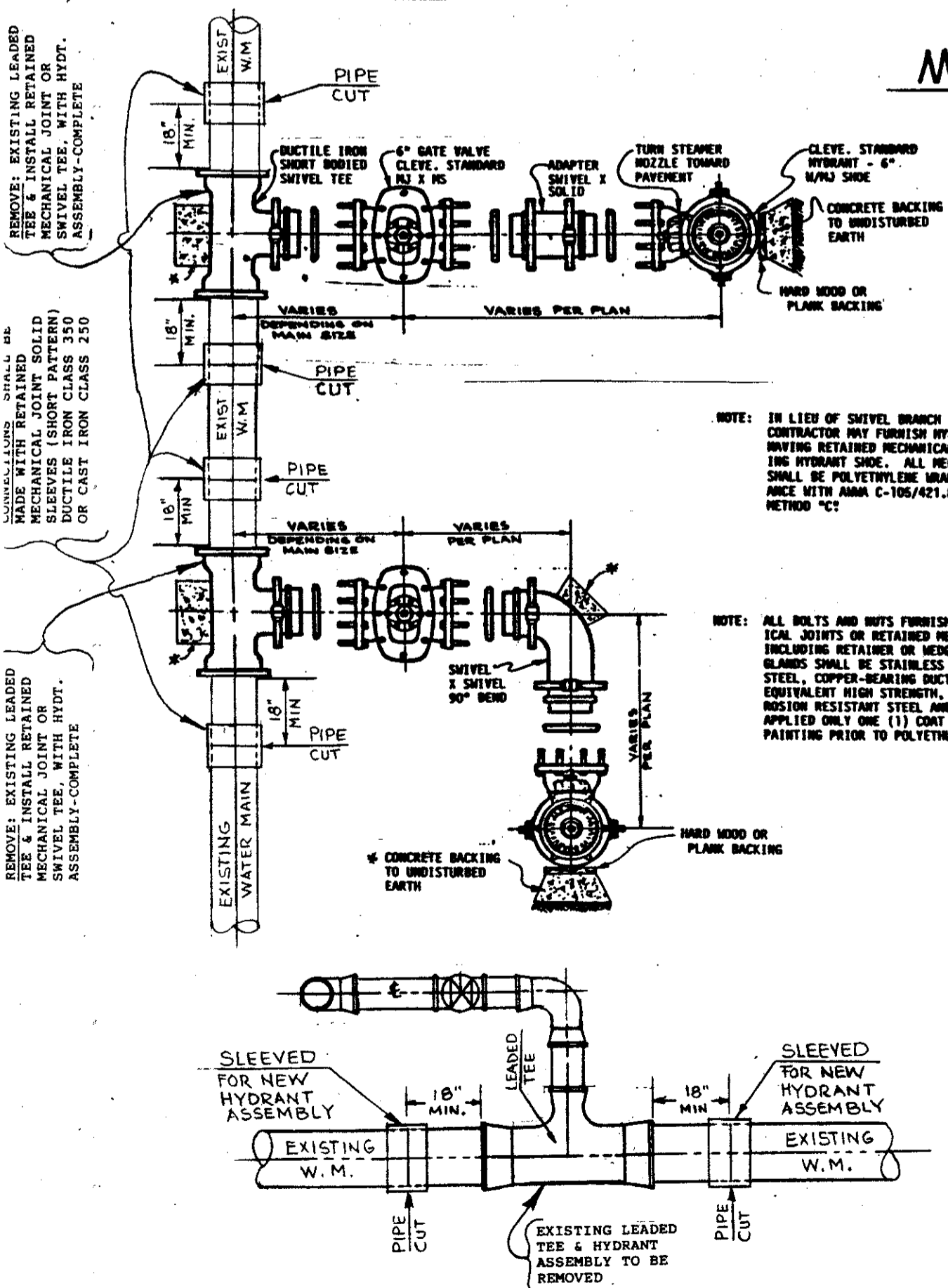
MIN. OF 1/2 CU. YD. OF 3/4" WASHED GRAVEL OR CRUSHED STONE FULL WIDTH OF TRENCH AND 6" MIN. ABOVE DRAIN

NOTES: ALL FIRE HYDRANTS AND VALVE BOXES SHALL BE SECURELY BRACED WHEN SET AND BACK FILLED. ALL FIRE HYDRANTS, VALVES, VALVE BOXES, AND FITTINGS SHALL MEET THE LATEST STANDARD SPECIFICATION FOR CONSTRUCTING WATER MAINS AND APPURTENANCE OF THE DEPT. OF PUBLIC UTILITIES, CITY OF CLEVELAND

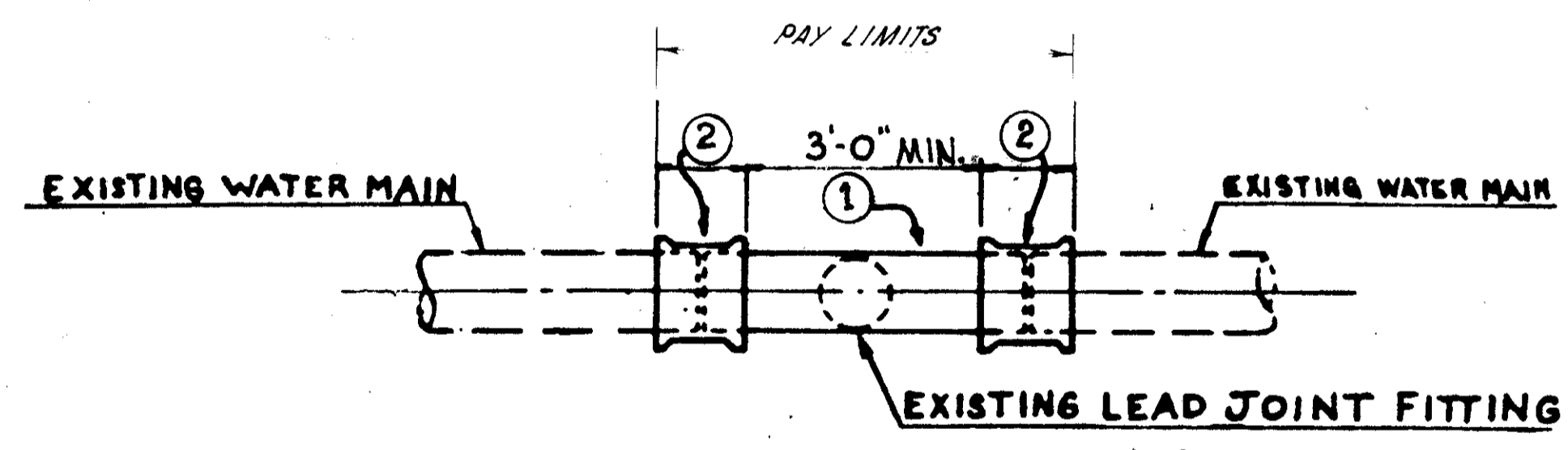
TYPICAL 6" FIRE HYDRANT ASSEMBLY INSTALLATION INCLUDING TEE FROM MAIN NECESSARY 6" CEMENT LINED PIPE, 6" VALVE, VALVE BOX & COVER, 6" FIRE HYDRANT & APPROVED INSTALLATION.

* IF EXCEEDS ONE 18' LENGTH OF PIPE, USE RESTRAIN JOINTS EXCEPT AT TEE AND VALVE.

MISCELLANEOUS DETAIL OF FURNISHING AND SETTING 6" HYDRANT, COMPLETE



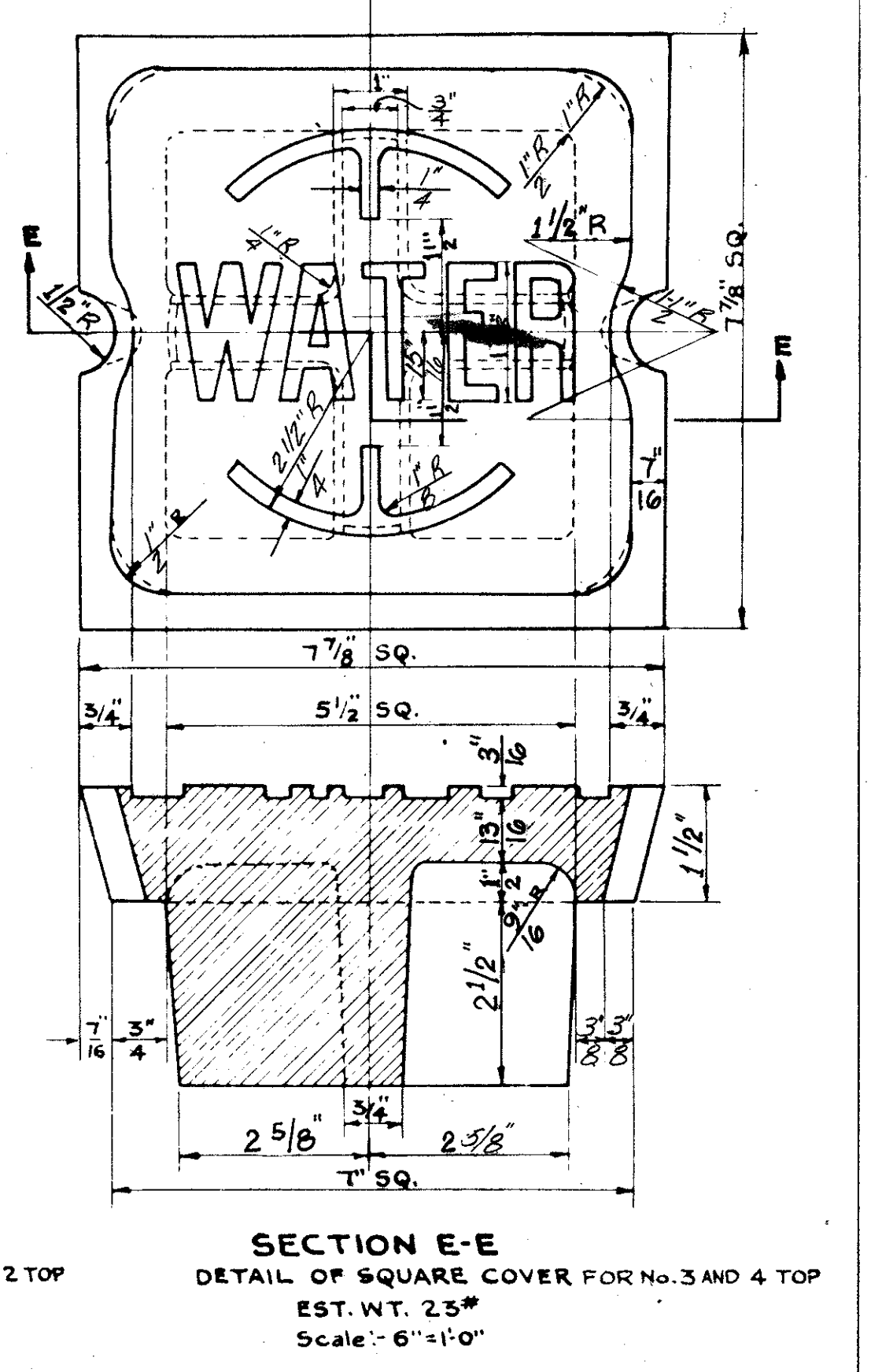
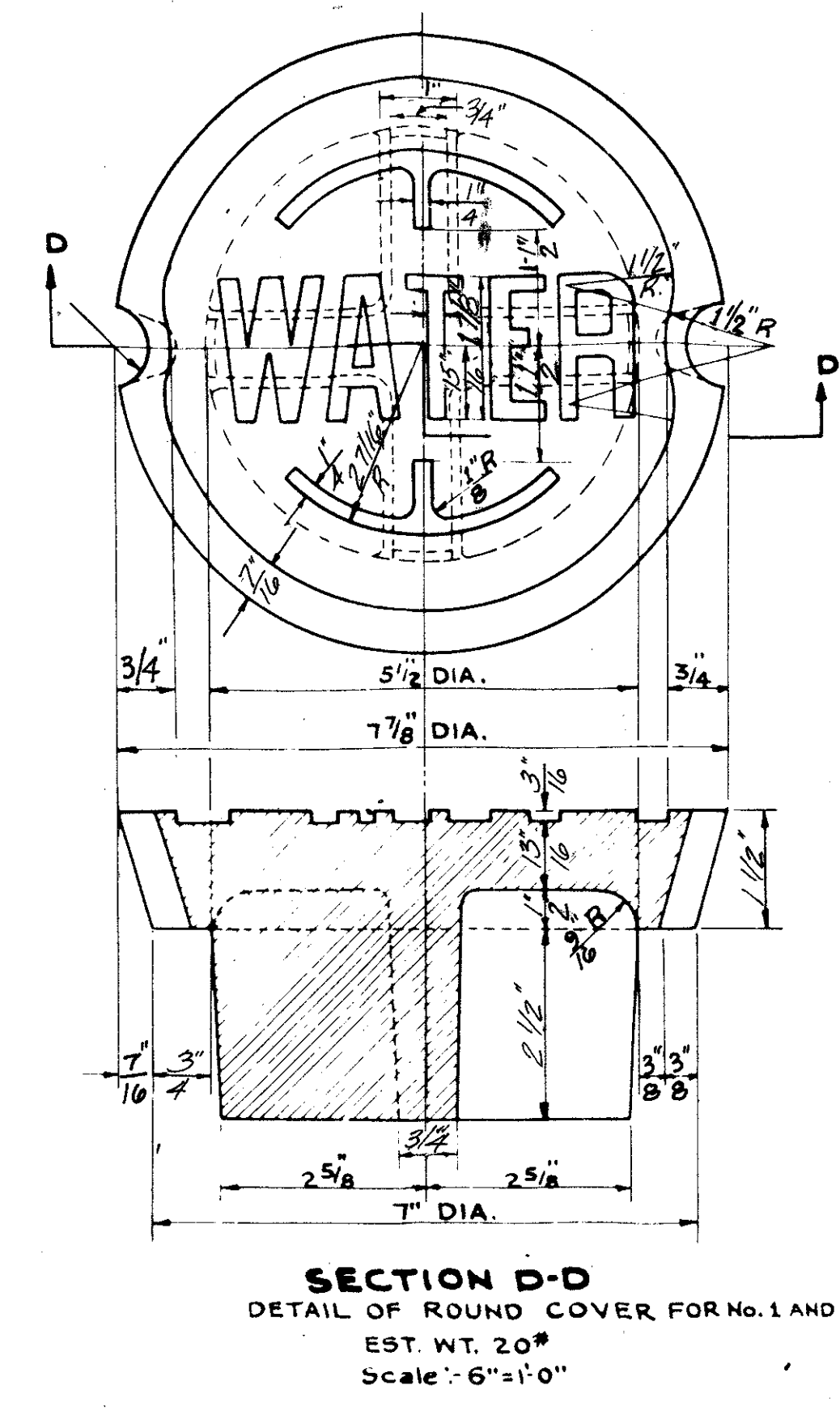
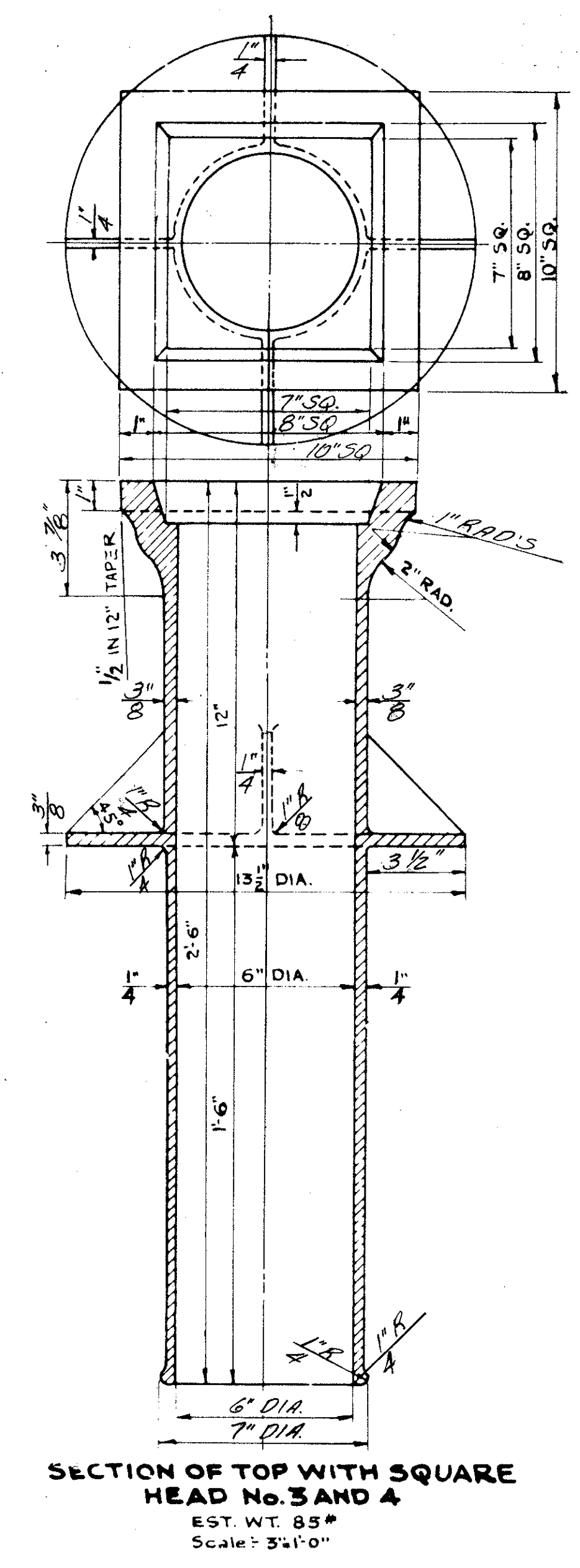
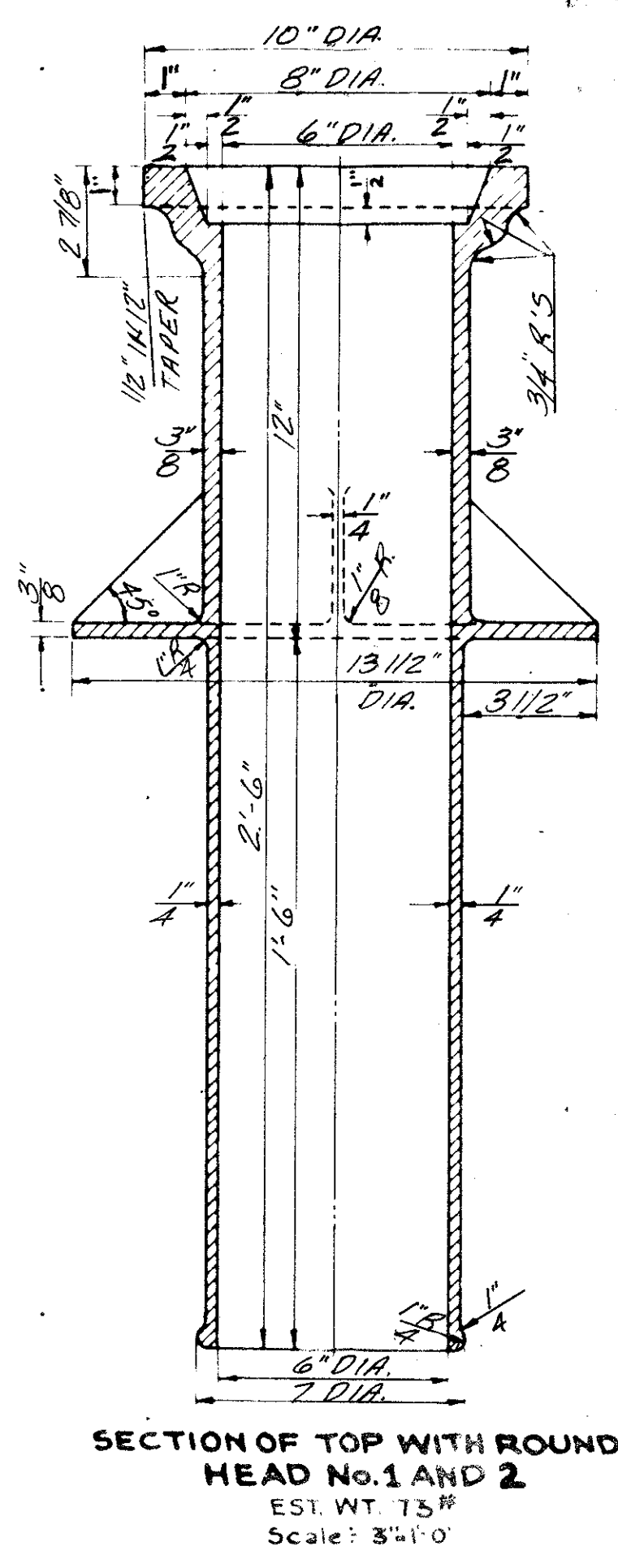
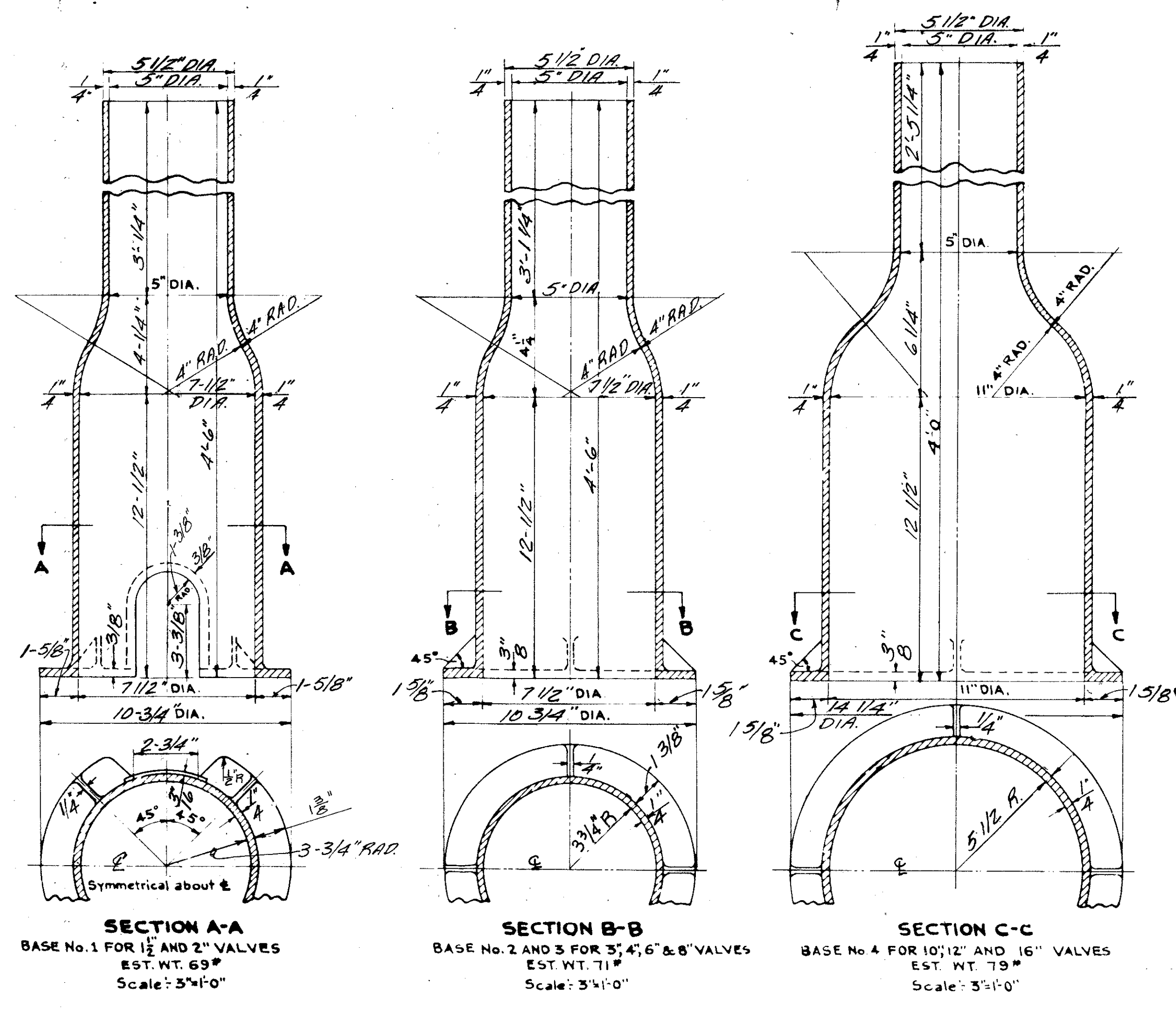
LEADED HYDT. TEE REMOVAL DETAILS



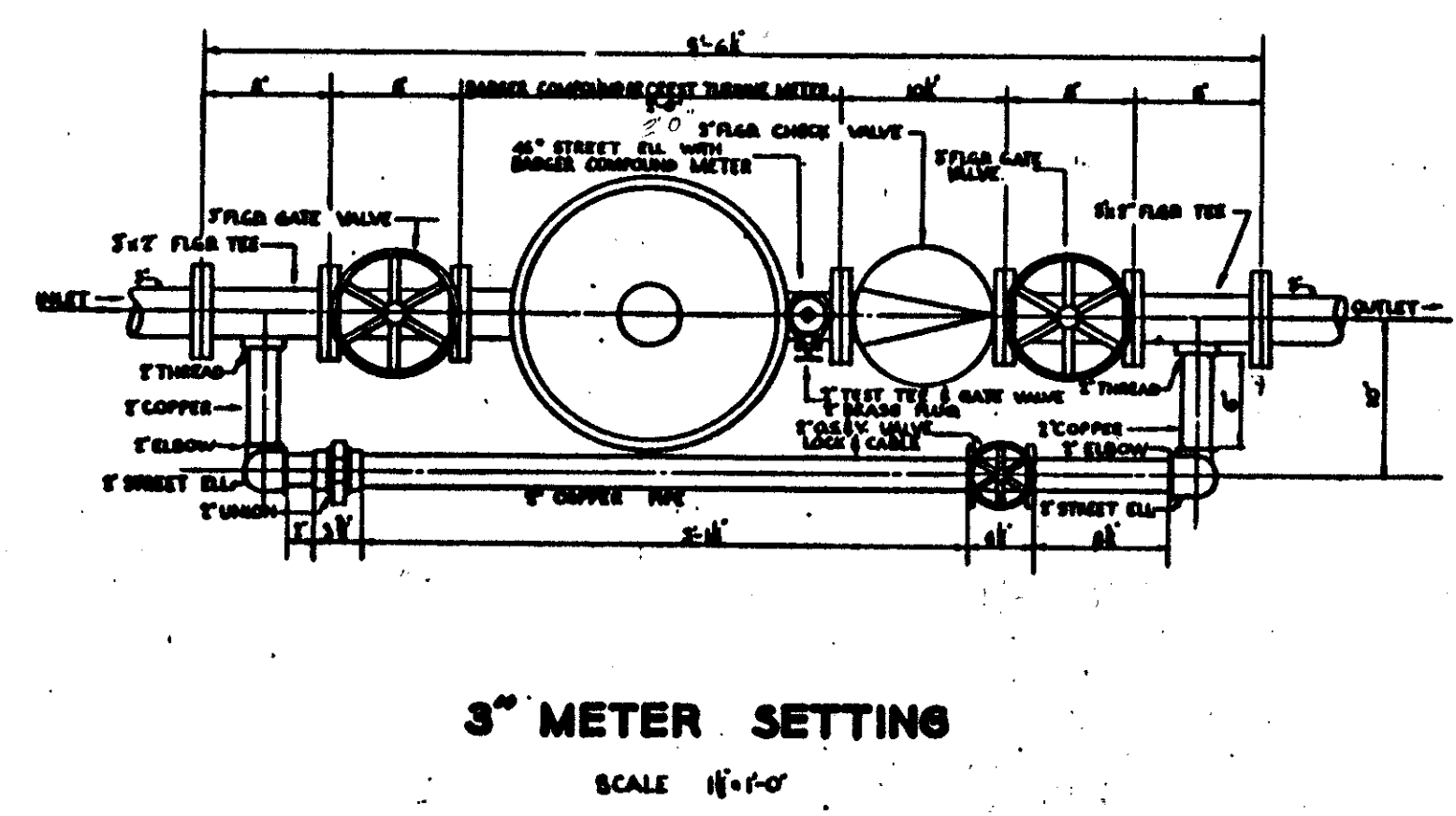
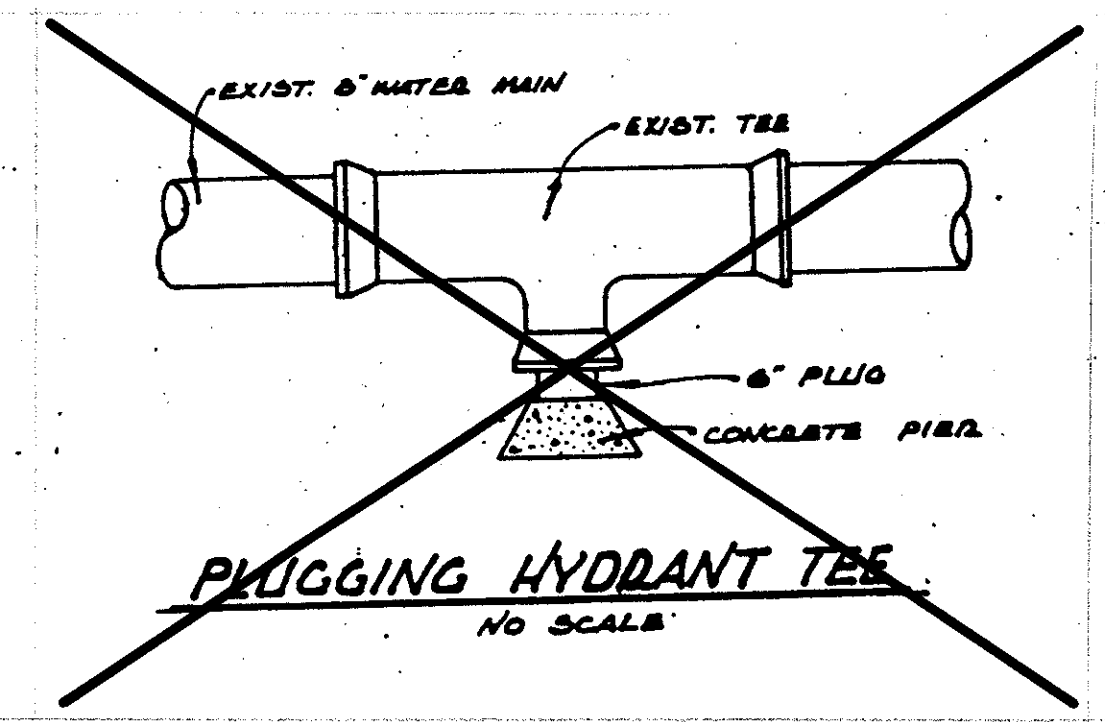
- ① PLAIN END * PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT-TO-SUIT)
- ② CONNECTIONS SHALL BE MADE WITH DRESSER COUPLING STYLE NO 38 W/STOPS REMOVED OR RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT PATTERN) DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250.

SPOOL PIECE INSTALLATION DETAIL

PAYMENT SHALL BE MADE PER EACH HYDRANT LEADED TEE REMOVED.



VALVE BOXES



MATERIALS REQUIRED FOR INSTALLATION

- 3\"/>
 - 1 3\"/>
 - 1 3\"/>
 - 1 3\"/>
 - 2 #2
 - 2 #2
 - 2 #2

PLUS:

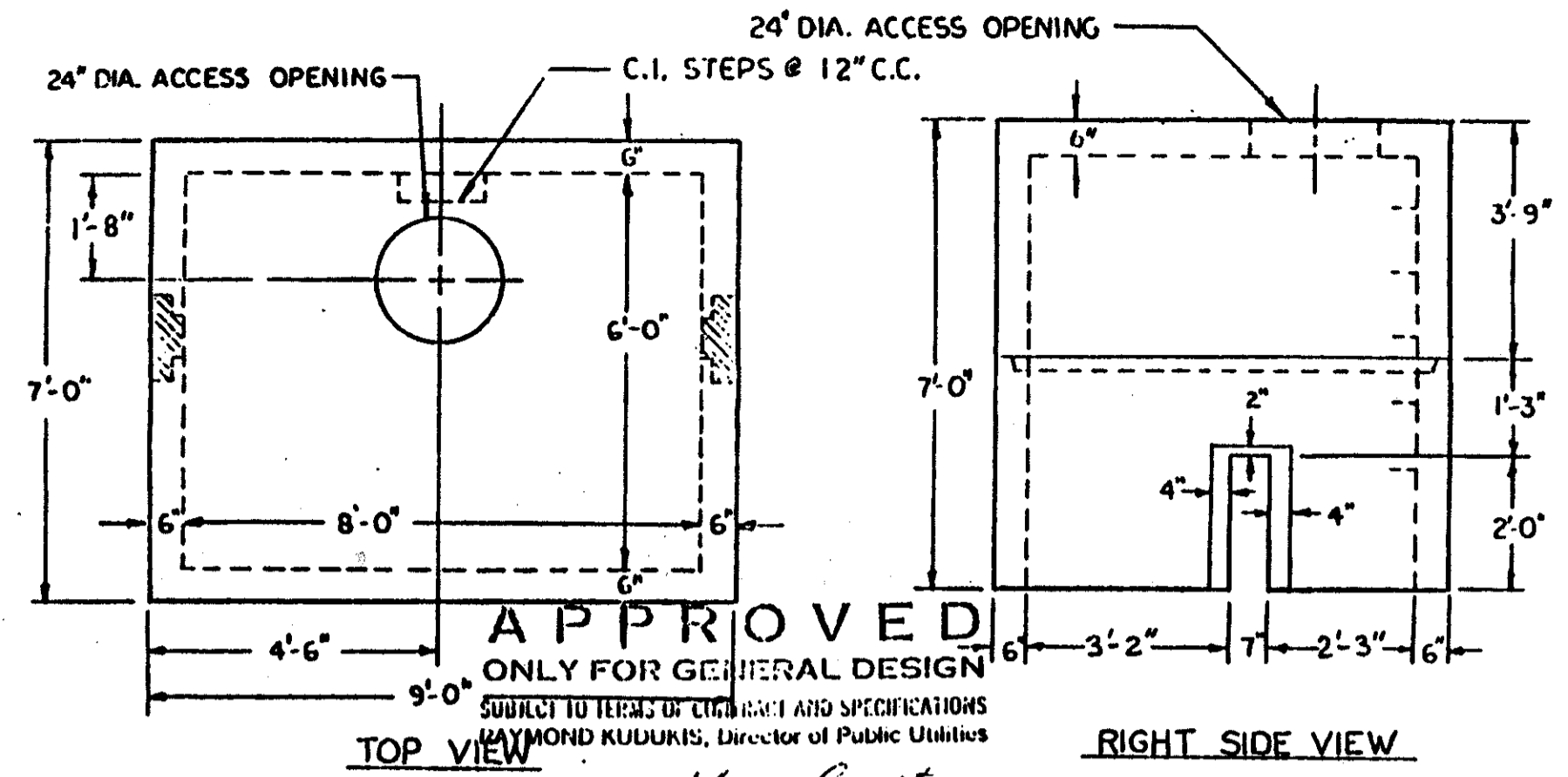
Alternate #1 **IF DUCTILE IRON PIPE IS USED:**

 - X#ft 3\"/>
 - 1 3\"/>
 - X#lbs

Alternate #2 **IF COPPER PIPE IS USED:**

 - X#ft
 - 2 3\"/>
 - 2 3\"/>
 - 2 3\" x 7 1/2\"/>
 - 8 5/8\" x 2\"/>
 - 1 3\"/>**

RELOC. S.R. 176



NOTES:
 UTILIZED FOR 3" DOMESTIC METER SERVICE.
 USE OF A BACKFLOW PREVENTOR WILL
 INCREASE THE SIZE (LENGTH) OF THE
 VAULT NEEDED.

CLEVELAND DIVISION OF WATER
 MEMV METER VAULT: NON-TRAFFIC BEARING

SCALE: 3/8"=1'
 DATE: 3-4-75

APPROVED BY:
 CITY OF CLEVELAND
 DIVISION OF WATER

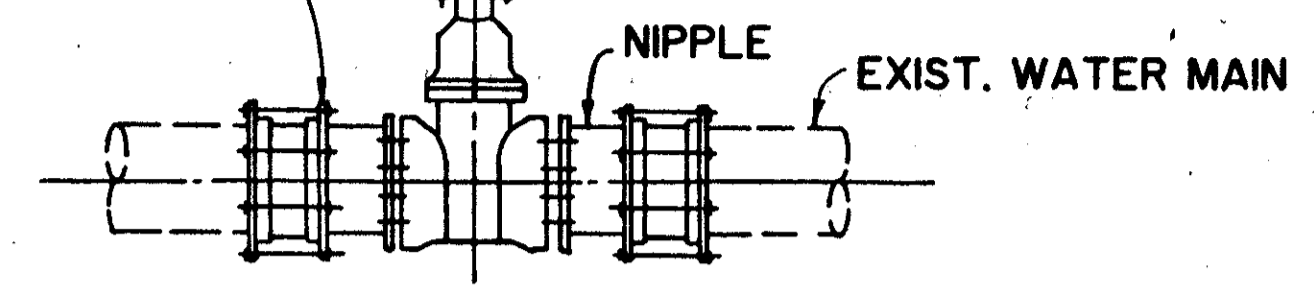
DRAWN BY: l3e
 REVISED: 3-9-75
 12-5-75
 12-18-75

MACK INDUSTRIES, INC.
 VALLEY CITY, OHIO 44380

DRAWING NUMBER: NV-3

DRESSER COUPLING STYLE
 No 38 W/STOPS REMOVED OR
 APPROVED EQUAL; OR RETAINED
 MECHANICAL JOINT SOLID
 SLEEVES (SHORT PATTERN).

C.W.D. SQUARE HEAD RETAINED
 MECHANICAL BELL END GATE
 VALVE W/VALVE BOX COMPLETE.



NOTE:
 BEFORE CUTTING EXISTING WATER MAIN THE NIPPLES SHALL BE
 CONNECTED TO THE MECHANICAL JOINT BELL END GATE VALVE.
 AFTER CUTTING PIPE FINAL CONNECTIONS SHALL BE MADE WITH
 COUPLINGS/SOLID SLEEVES AS SPECIFIED.

CUT-IN-VALVE DETAIL

EXCAVATION GUIDELINES FOR SINGLE CONNECTION INSTALLATIONS

NOTE: All Excavations are to be made to a point 1 1/2 ft. below the bottom of main.

Size of TAP	Size of MAIN	WIDTH @ Main	TOTAL LENGTH*	Size of BORE
3/4"	Any size Main	4 feet	4 feet	2" or larger
1"	Any size Main	4 feet	4 feet	2" or larger
1 1/2"	Any size Main	4 feet	5 feet	3" or larger
2"	Any size Main	4 feet	8 feet	3" or larger
3"	4"/6"/8"	4 feet	8 feet	8" or larger
	10"/12"/16"	4 feet	9 feet	8" or larger
4"	4"/6"/8"	4 feet	8 feet/6 inches	10" or larger
	10"/12"/16"	4 1/2 feet	9 feet	10" or larger
6"	Any size Main	5 feet	9 feet	12" or larger
8"	Any size Main	6 feet	10 feet	14" or larger

NOTE: The above Excavation dimensions are also applicable to similarly sized tapping sleeves and valves.

EXCAVATION GUIDELINES FOR TAPPING SLEEVES AND VALVES

Size of TS&V	WIDTH @ Main	TOTAL LENGTH
10" X 10"	6 feet	10 feet
12" X 12" or 10"	6 feet	10 feet
16" X 16" or 12" or 10"	7 feet	12 1/2 feet

** TOTAL LENGTH is inclusive of 1 1/2 feet behind the water main which is being tapped.

EXCAVATIONS AND ALLOWANCES FOR VAULTS AND METER SETTINGS

NOTE: Excavations must be 3' wider and 3' longer than the size of vault needed.

Connection Size	Type	Outside Vault Measurements	Height
3/4" and 1"	General	58" Outside diameter (Round)	70 inches
1 1/2" and 2"	General	72" Outside diameter (Round)	75 inches
3"	General	7 feet by 9 feet	7 feet
4"	General	7 feet by 11 feet	7 feet
6" and 8"	General	7 feet by 13 feet	7 feet
4"	Fire	5 feet by 9 feet or 7 feet by 9 feet or 72" Round (NO SIAMESE)	7 feet
6" and 8"	Fire	7 feet by 9 feet	7 feet
1 1/2" or 2"	General with 4"-6" or 8" Fire	7 feet by 9 feet (DOUBLE VAULT)	7 feet
3"	General with 4"-6" or 8" Fire	7 feet by 11 feet (DOUBLE VAULT)	7 feet
4"	General with 6" Fire (ONLY)	7 feet by 12 feet (DOUBLE VAULT)	7 feet

NOTE: Vault size is applicable whether or not the vault is traffic-bearing. The term "DOUBLE VAULT" is used to describe one vault which houses BOTH a General Service Connection and a Fire Protection Service Connection.

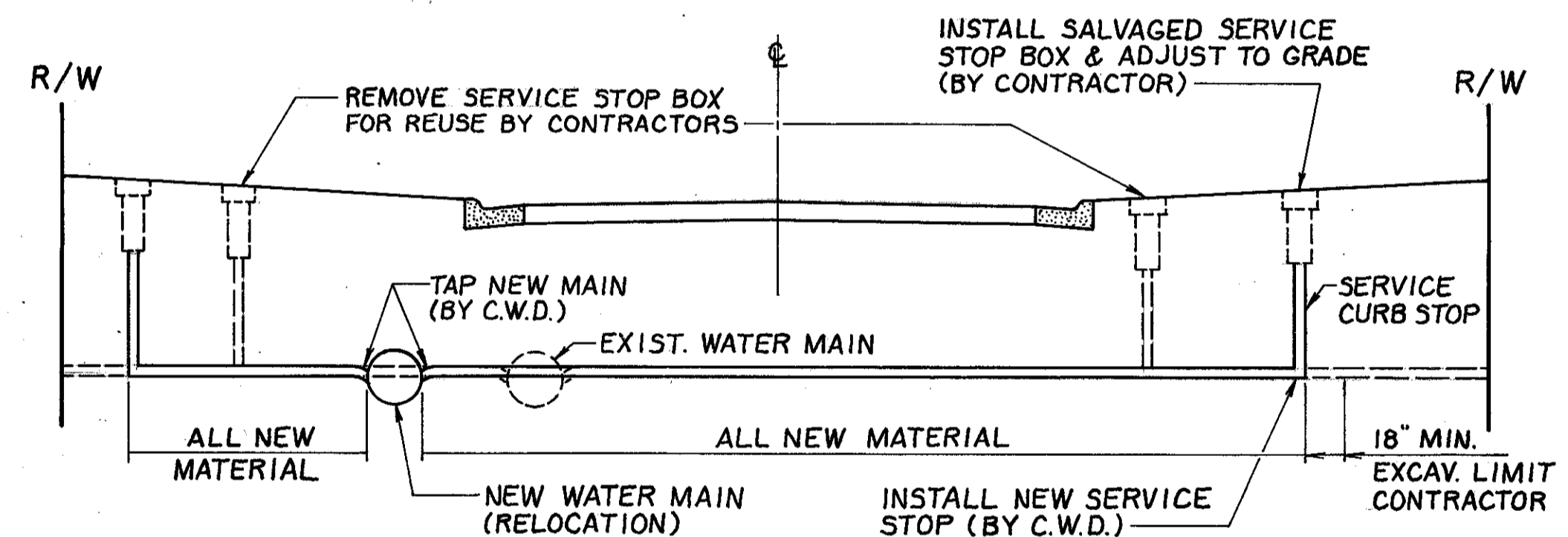
MATERIALS REQUIRED FOR INSTALLATION

3" METER SETTING - FLANGED

1	2"	H.W. Gate Valve, Flanged	2	2"x6"	Galvanized Nipples
1	2"	Ring Gaskets	1	2"x10"	Galvanized Nipple
2	3"	2" x 10" Brass Nipple	2	2"	Galvanized Elbows-90°
2	3"	H.W. Gate Valves, Flanged	2	2"	Galvanized St. Elbows
1	3"	Swing Gate Check Valve, Flanged	1	2"	Male to Female
1	2"	O.S.Y. Valve, Screwed	40"	2"	Galvanized Pipe, Extra Heat
2	3"	Double Flanged Test Tees, 2" Tap	1	3"	CURRENT Meter OR
26	5/8"x2 1/2"	Machine Bolts	1-3"	Compound Meter	8-5/8"x2" Machine Bolts
2	5/8"x3"	Stud Bolts	1-2"	Brass 45° St. El.	1-2" Brass 45° St. El.*
4	5/8"	Hex Bolts			
5	3"	Ring Gaskets			*St. El used only if meter is Badger Compound

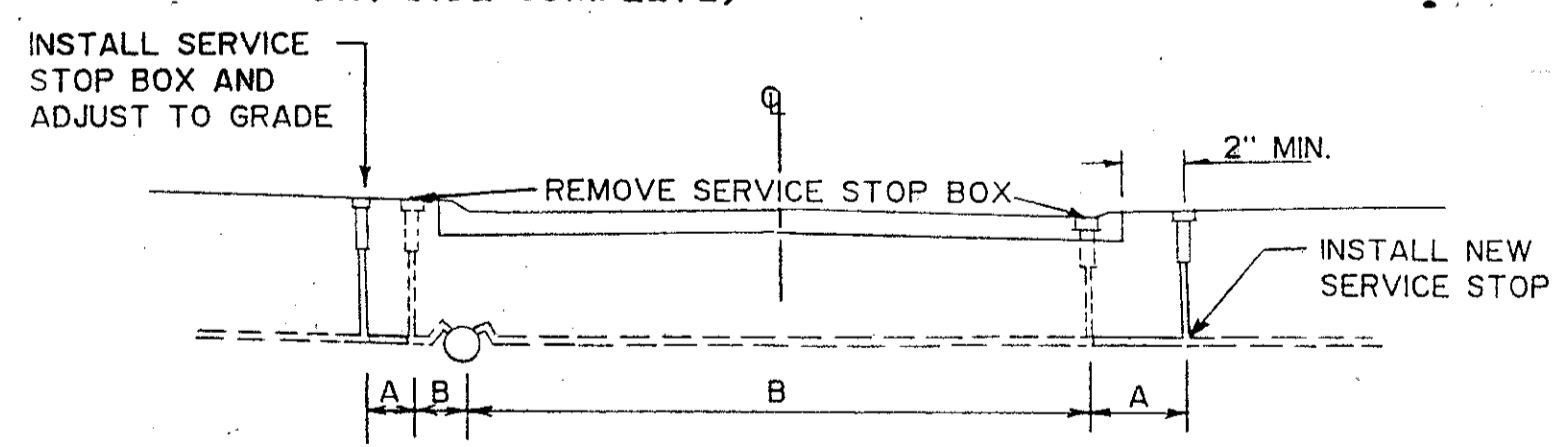
3" METER SETTING - SOLDERED

1	2"	H.W. Gate Valve, Screwed	1	2"	Stm. Coupling, Copper to Iron, Male
2	3"	Flanged Gaskets	1	2"	Stm. Union, Copper to Iron, Female
8	5/8"x2"	Machine Bolts	2	3"x3"x2"	Stm. Tees, Copper to Iron, Female
15"	3"	Copper Tubing - Hard	15"	3"	Copper Tubing - Hard
1	2"x10"	Brass Nipple	62"	2"	Copper Tubing - Hard
2	3"x7 1/2"	4-Hole Brass Flanges	21lb		Special Solder
1	2"	O.S.Y. Gate Valve, Copper to Copper	1	3"	CURRENT Meter OR
1	3"	Stm. Swing Gate-Check Valve, Cooper to Copper			1-3" Compound Meter AND (if Badger Compound is used)
2	3"	Stm. H.W. Gate Valves, Copper to Copper			1-2" Brass St. El. 45°
2	2"	Stm. Elbows, Copper to Copper			
2	2"	Stm. St. Ells, Copper to Copper			
2	3"	Stm. Couplings, Copper to Iron, Male			



INSTALL AND EXTEND WATER SERVICE CONNECTION AT WATER MAIN RELOCATION & INSTALL SERVICE CONNECTION RELOCATION
 (RETAP, RECONNECT & EXTEND 3/4" WATER SERVICE SHORT SIDE COMPLETE)

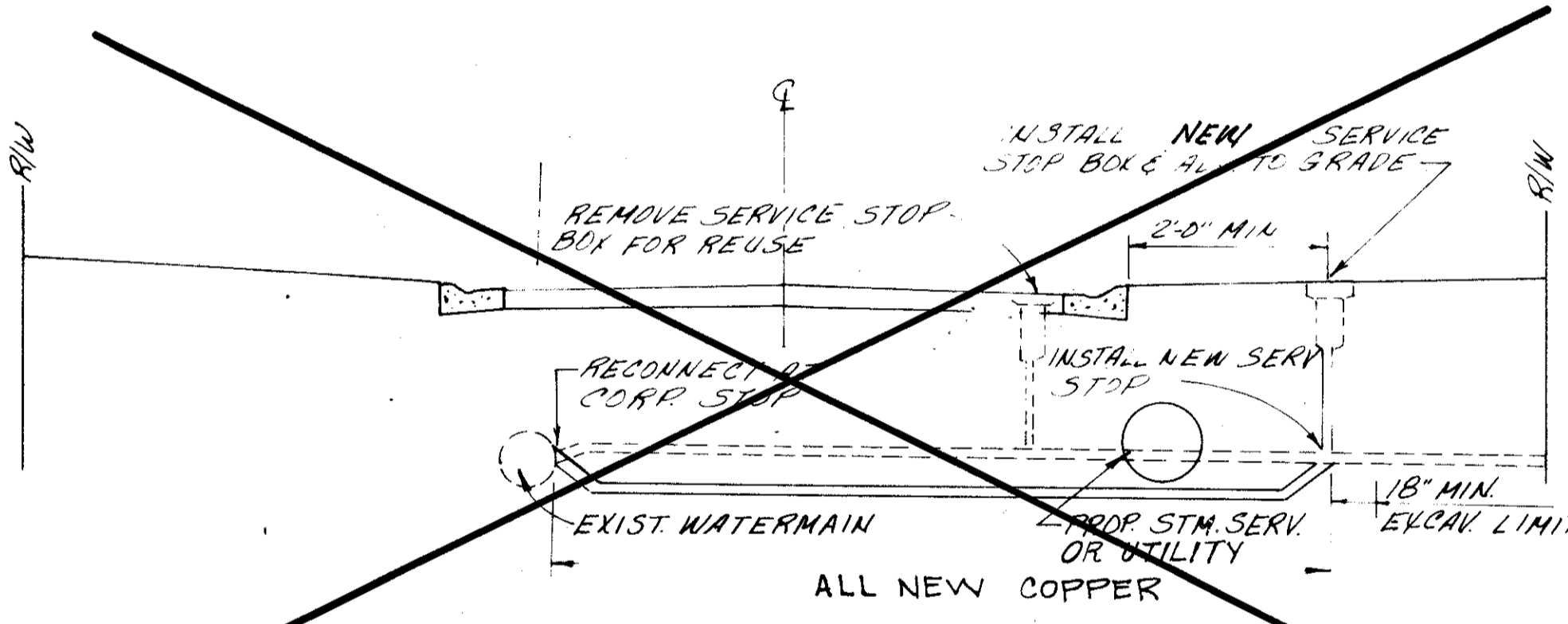
INSTALL SALVAGED SERVICE STOP BOX & READJUST TO GRADE UPON COMPLETION OF ALL ROADWAY GRADING: (TYPICAL)



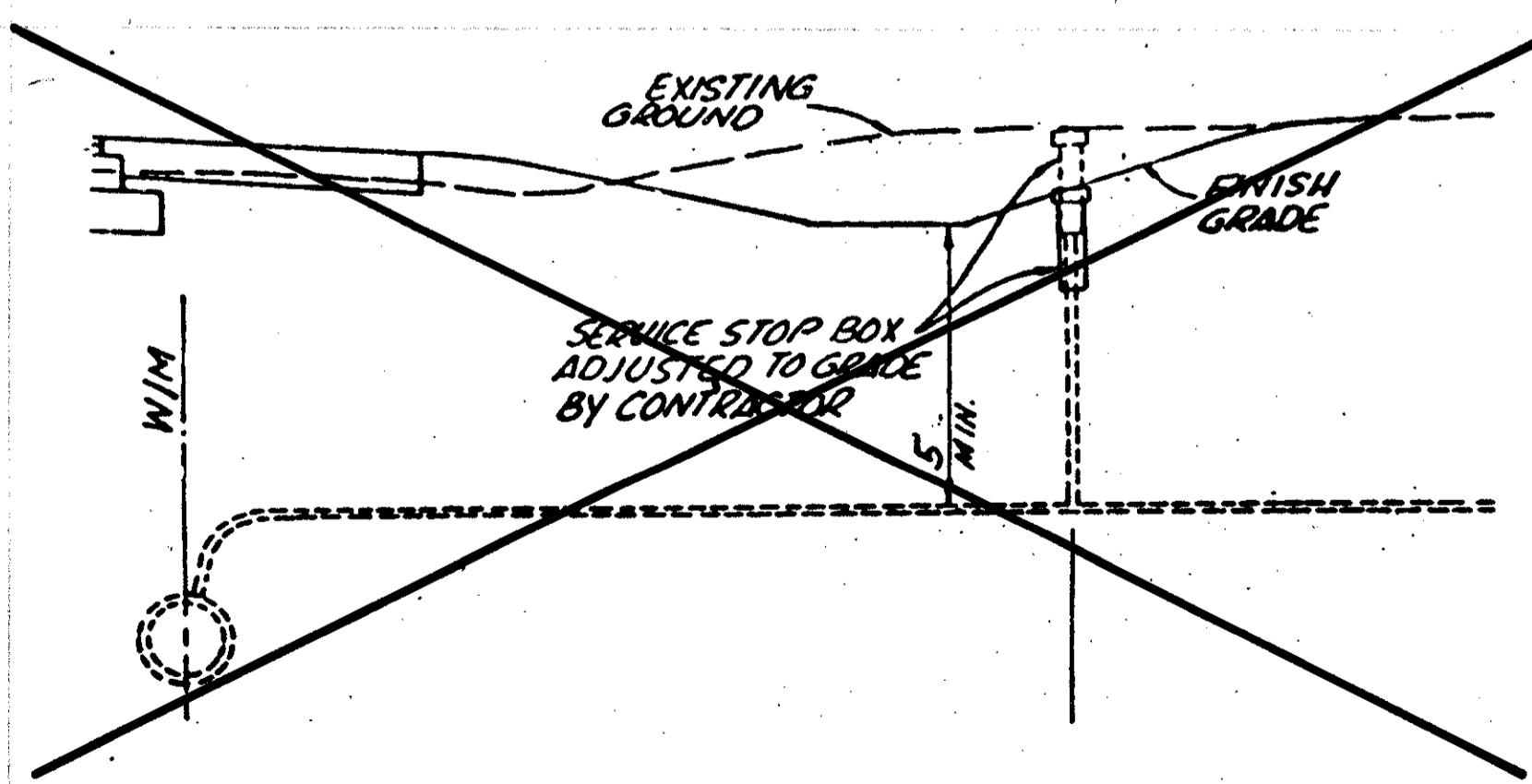
A- INSTALL NEW COPPER
 B- REPLACE WITH NEW COPPER ONLY IF EXISTING PIPE IS LEAD OR GALVANIZED MATERIAL. PAYMENT MADE UNDER ITEM SPECIAL-COPPER WATER TUBING.

ITEM SPECIAL-EXTEND WATER SERVICE CONNECTION, COMPLETE

EXTEND EXISTING CONNECTIONS



CONNECTION OFFSET TO CLEAR NEW STORM SEWER OR UTILITY



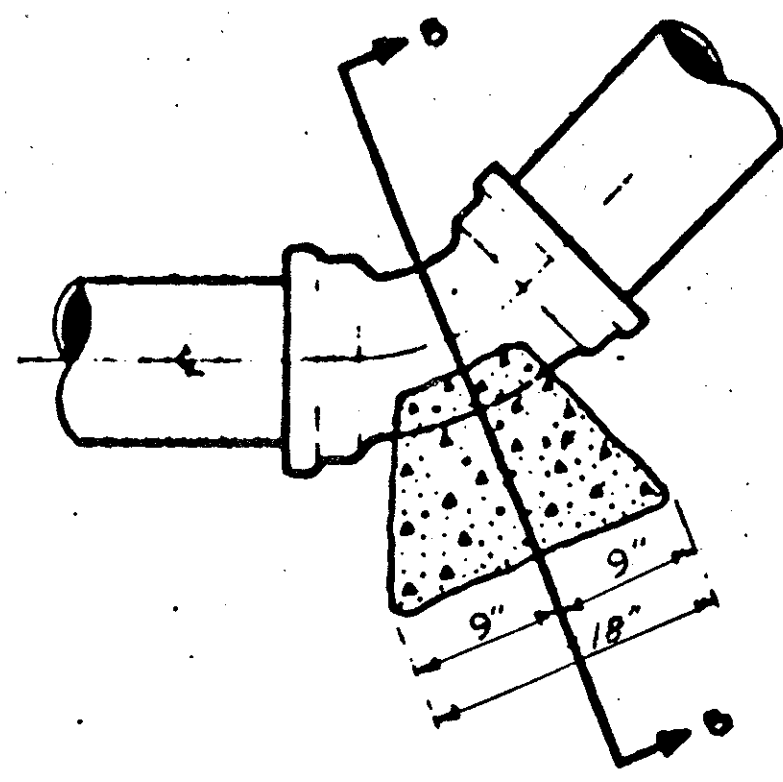
NOTE: NEW SERVICE CONNECTIONS SHALL BE INSTALLED TO CLEAR ALL EXIST. AND PROPOSED LONGITUDINAL SEWERS AND UTILITIES. NO ADDITIONAL PAYMENT WILL BE MADE TO OFFSET NEWLY INSTALLED CONNECTION.

MISCELLANEOUS WATER SERVICE CONNECTION DETAILS

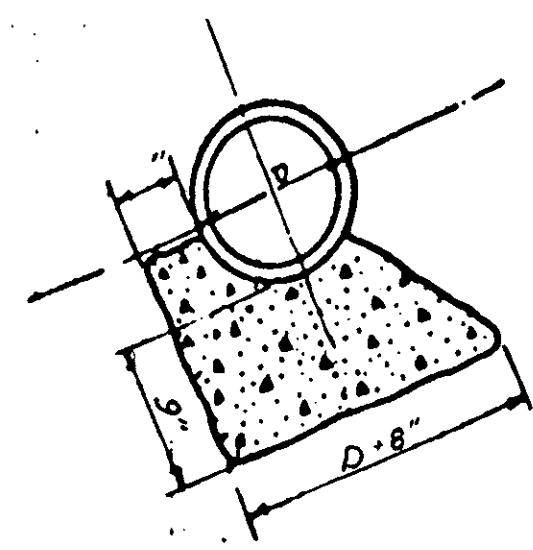
RELOC. S.R. 176

TYPICAL BUTTRESS

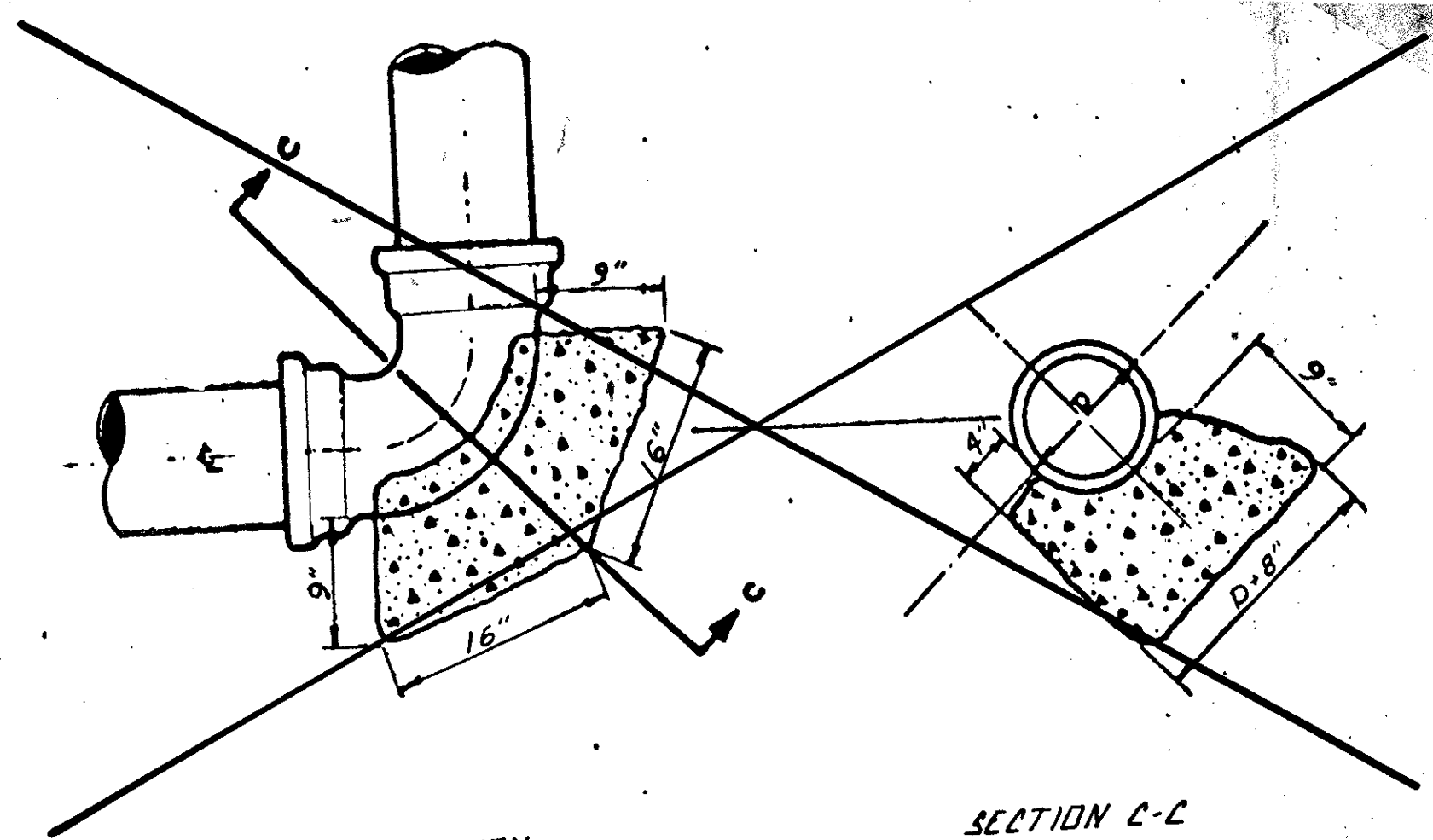
NOTES: CARRY ALL BEARING SURFACES TO FIRM GROUND
ALL JOINTS TO BE LEADED



ELEVATION
1/8 BEND (45°)



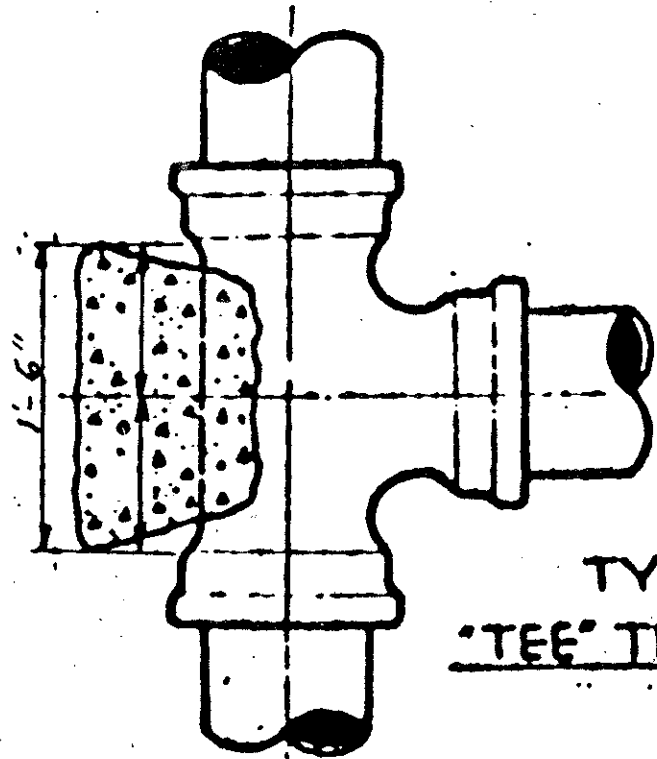
SECTION B-B



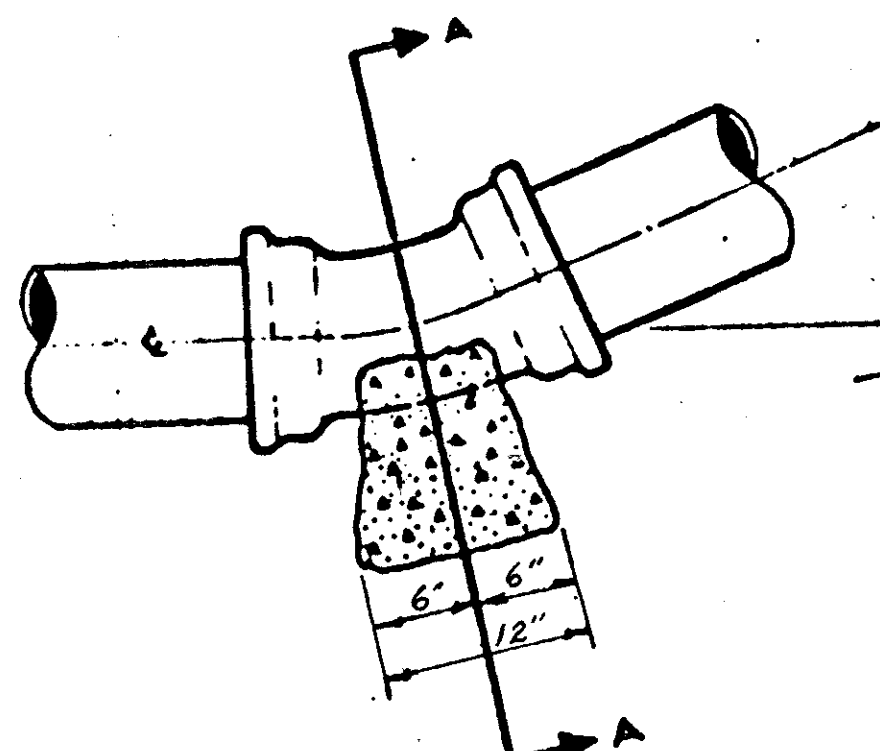
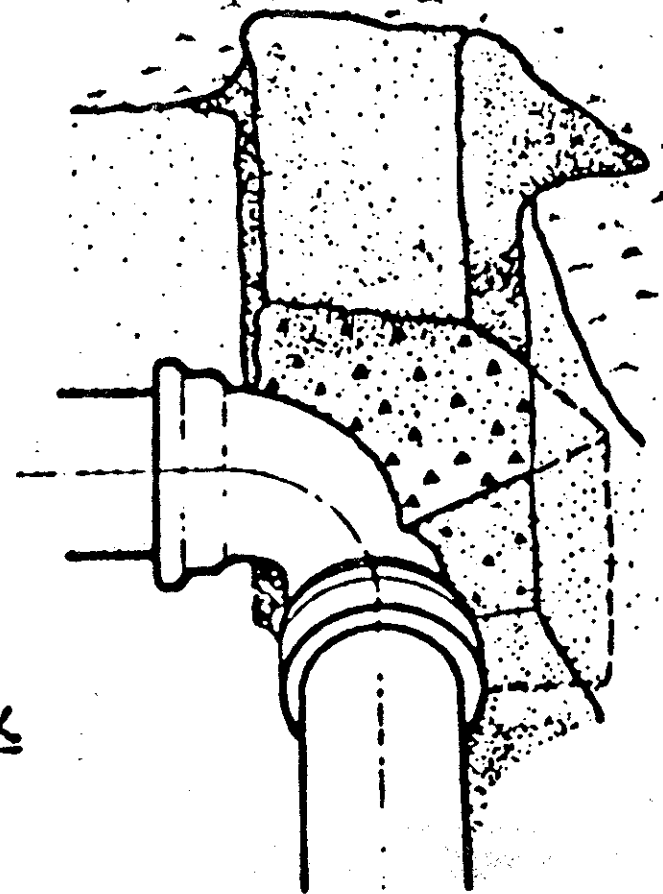
ELEVATION
1/4 BEND (90°)

SECTION C-C

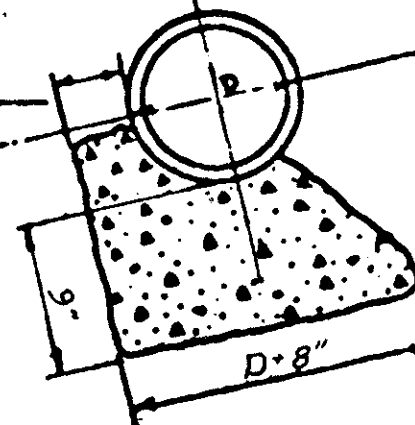
THRUST BLOCK INSTALLATION



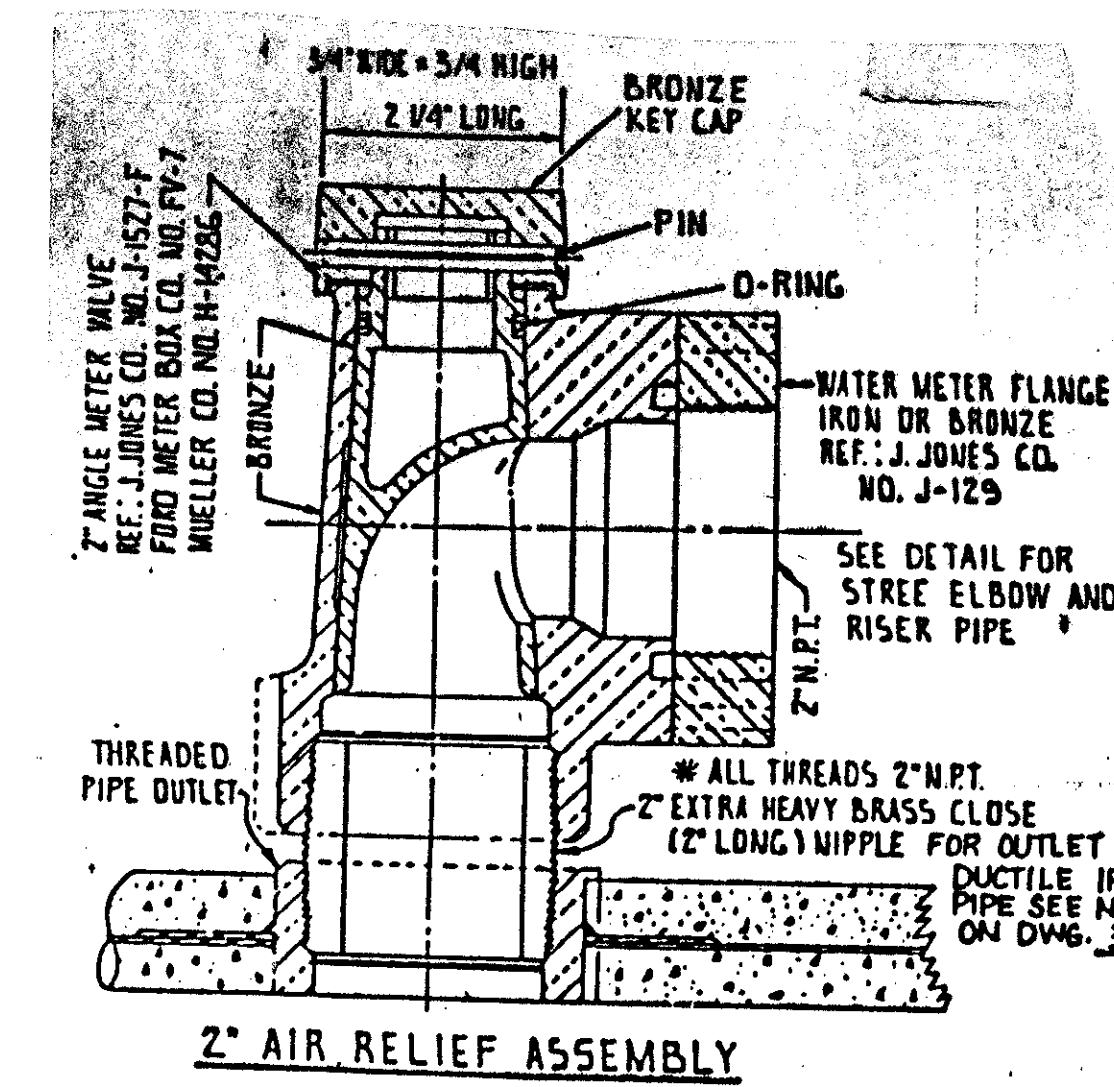
TYPICAL
"TEE" THRUST BLOCK



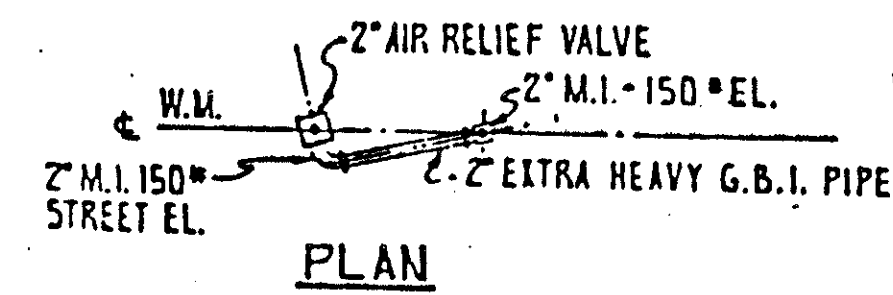
ELEVATION
1/16 BEND (22 1/2°)



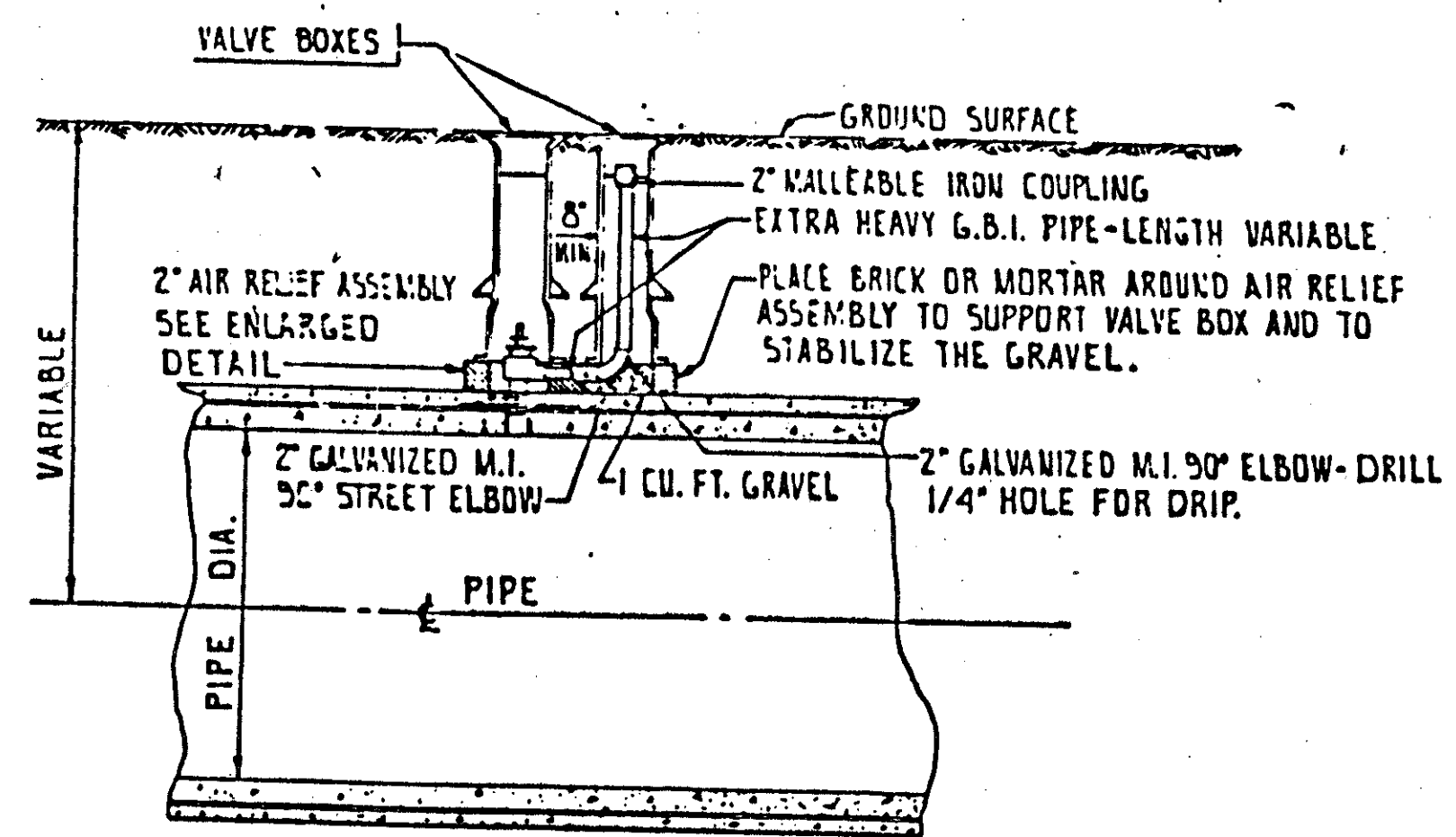
SECTION A-A



2" AIR RELIEF ASSEMBLY

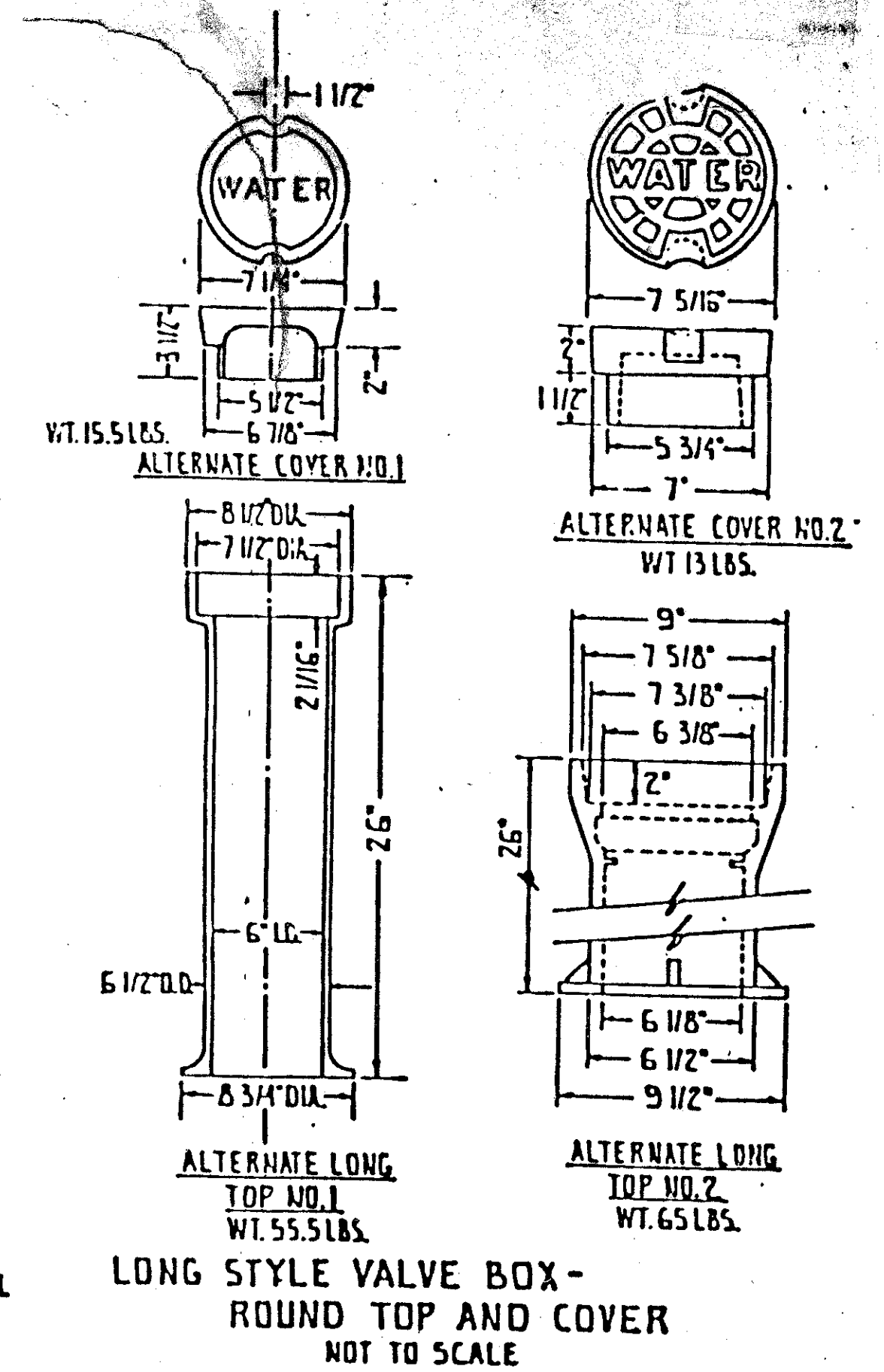


PLAN

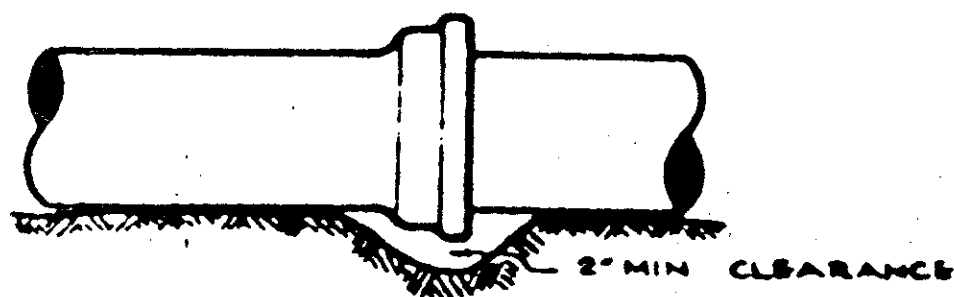


DOUBLE VALVE BOX ASSEMBLY

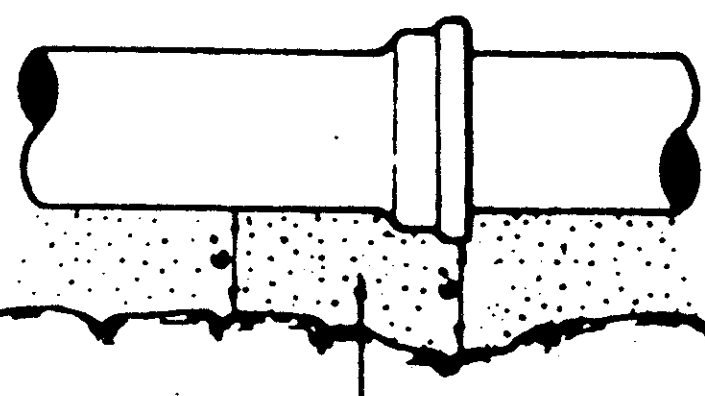
DETAIL OF 2" AIR RELIEF VALVE INSTALLATION
NOT TO SCALE



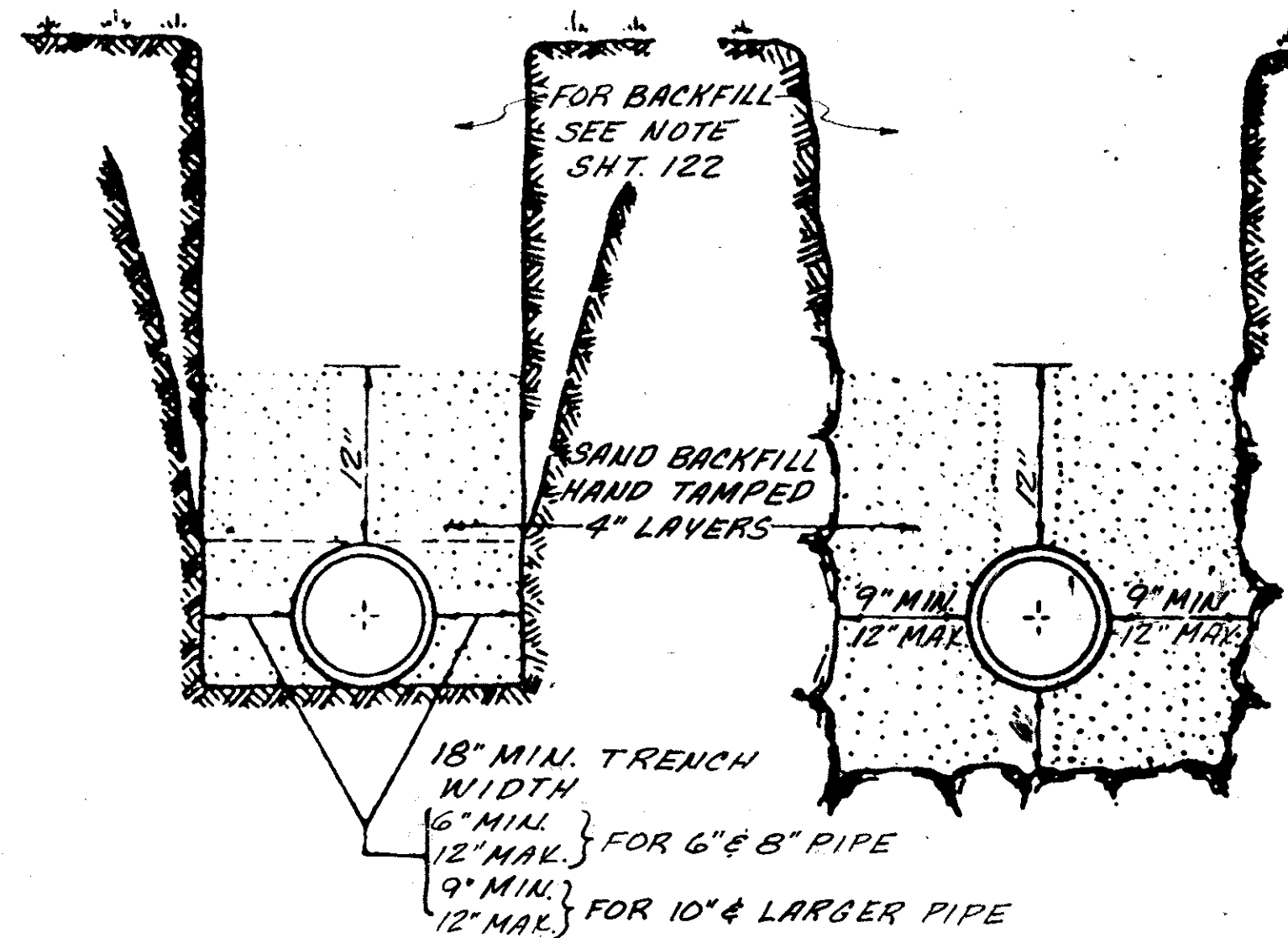
LONG STYLE VALVE BOX -
ROUND TOP AND COVER
NOT TO SCALE



ORDINARY BEDDING

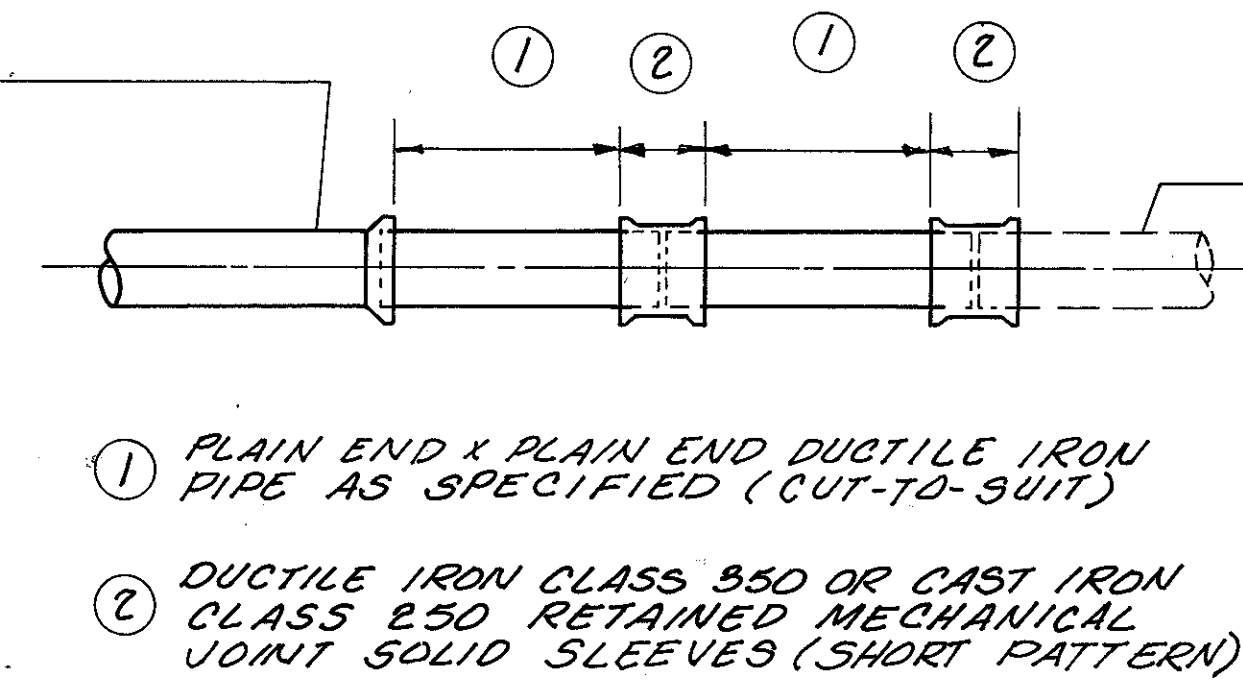


BEDDING IN ROCK



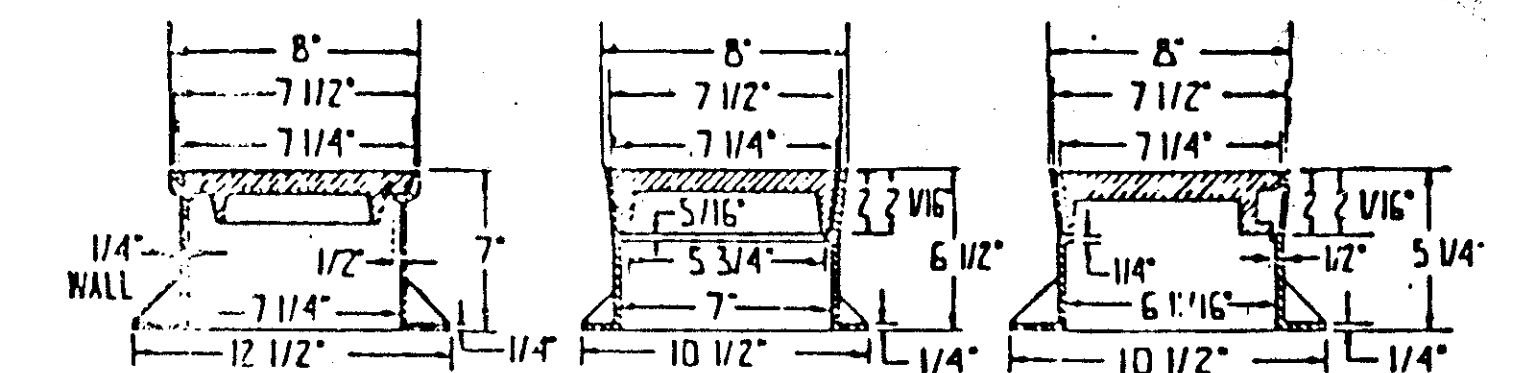
ORDINARY BEDDING
TRENCH EXCAVATION

BEDDING IN ROCK



SLEEVE INSTALLATION DETAIL

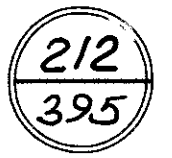
- ① PLAIN END x PLAIN END DUCTILE IRON PIPE AS SPECIFIED (CUT-TO-SUIT)
- ② DUCTILE IRON CLASS 350 OR CAST IRON CLASS 250 RETAINED MECHANICAL JOINT SOLID SLEEVES (SHORT PATTERN)



ALTERNATE SHORT TOP NO. 1
ALTERNATE SHORT TOP NO. 2
ALTERNATE SHORT TOP NO. 3
SHORT STYLE VALVE BOX - ROUND TOP AND COVER
NOT TO SCALE

TRAFFIC NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. REGION 5



MAINTENANCE OF TRAFFIC SIGNAL/FLASHER INSTALLATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC SIGNAL/FLASHER INSTALLATIONS WITHIN THE PROJECT UNDER THE FOLLOWING CONDITIONS:

- A. EXISTING SIGNAL/FLASHER INSTALLATIONS WHICH THE PLANS REQUIRE THE CONTRACTOR TO ADJUST, MODIFY, ADD ONTO OR REMOVE, OR WHICH THE CONTRACTOR ACTUALLY ADJUSTS, MODIFIES OR OTHERWISE DISTURBS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ENTIRE INSTALLATION (AT AN INTERSECTION) FROM THE TIME HIS OPERATIONS FIRST DISTURB THE INSTALLATION UNTIL THE INSTALLATION HAS BEEN SUBSEQUENTLY REMOVED OR MODIFIED AND THE WORK IS ACCEPTED.
- B. NEW OR REUSED SIGNAL/FLASHER INSTALLATIONS OR DEVICES, INSTALLED BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THESE FROM THE TIME OF INSTALLATION UNTIL THE WORK IS ACCEPTED.

THE CONTRACTOR SHALL CORRECT AS QUICKLY AS POSSIBLE ALL OUTAGES OR MALFUNCTIONS. HE SHALL PROVIDE THE CITY AND THE ENGINEER SUCH ADDRESSES AND PHONE NUMBERS WHERE HIS MAINTENANCE FORCES CAN BE CONTACTED. THE CONTRACTOR SHALL PROVIDE ONE OR MORE PERSONS TO RECEIVE ALL CALLS AND DISPATCH THE NECESSARY MAINTENANCE FORCES TO CORRECT OUTAGES. SUCH A PERSON OR PERSONS MAY BE USED TO PERFORM OTHER DUTIES AS LONG AS PROMPT ATTENTION IS GIVEN TO THESE CALLS AND A PERSON IS READILY AVAILABLE CONTINUOUSLY TWENTY-FOUR HOURS A DAY, SEVEN DAYS A WEEK. ALL LAMP OUTAGES, CABLE OUTAGES, ELECTRICAL FAILURES, EQUIPMENT MALFUNCTIONS AND MISALIGNED SIGNAL HEADS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN FOUR HOURS AFTER THE CONTRACTOR HAS BEEN NOTIFIED OF THE OUTAGE.

IN THE EVENT NEW SIGNALS ARE DAMAGED PRIOR TO ACCEPTANCE ALL DAMAGED EQUIPMENT EXCEPT POLES AND CONTROL EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE SIGNAL BACK IN SERVICE WITHIN EIGHT HOURS AFTER THE CONTRACTOR'S NOTIFICATION OF THE OUTAGE.

IF POLES AND/OR CONTROL EQUIPMENT ARE DAMAGED AND MUST BE REPLACED, THE CONTRACTOR SHALL MAKE TEMPORARY REPAIRS AS NECESSARY TO BRING THE SIGNAL BACK INTO FULL OPERATION WITHIN THE ALLOWED EIGHT (8) HOUR PERIOD, AND SHALL MAKE PERMANENT REPAIRS OR REPLACEMENT AS SOON THEREAFTER AS POSSIBLE.

NONE OF THE ABOVE SHALL BE CONSTRUED AS COLLECTIVE OF CONSECUTIVE OUTAGE TIME PERIODS AT ANY ONE LOCATION. THAT IS, WHERE MORE THAN ONE OUTAGE OCCURS AT ANY ONE LOCATION, THEN THE ALLOTTED TIME LIMIT SHALL BE FOR THE WORST SINGLE OUTAGE.

WHERE OUTAGES ARE THE DIRECT RESULT OF A VEHICLE ACCIDENT THE RESPONSE OF THE CONTRACTOR SHALL BE AS OUTLINED ABOVE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION OF ANY COMPENSATION FOR THIS WORK FROM THOSE PARTIES RESPONSIBLE FOR THE DAMAGE.

WHERE THE CONTRACTOR HAS FAILED TO OR CANNOT RESPOND TO AN OUTAGE OR SIGNAL EQUIPMENT MALFUNCTION, AT THESE LOCATIONS WITHIN HIS RESPONSIBILITY, WITHIN PERIODS AS SPECIFIED ABOVE, THE ENGINEER MAY INVOKE THE PROVISIONS OF SECTION 105.15 AND ANY SUBSEQUENT BILLINGS TO THE STATE OR THE CITY OF CLEVELAND FOR POLICE SERVICES AND MAINTENANCE SERVICES BY CITY FORCES SHALL BE DEDUCTED FROM MONIES DUE OR TO BECOME DUE THE CONTRACTOR IN ACCORDANCE WITH PROVISIONS OF SECTION 105.15.

ANY VEHICULAR TRAFFIC SIGNAL HEAD, EITHER NEW OR EXISTING WHICH WILL BE OUT OF OPERATION SHALL BE COVERED IN THE MANNER DESCRIBED IN 632.24.

ALL COSTS RESULTING FROM THE ABOVE REQUIREMENTS SHALL BE CONSIDERED TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 614, MAINTAINING TRAFFIC.

REMOVAL OF EXISTING STATE ROUTE 176 SIGNS ON BROADVIEW ROAD

PRIOR TO THE FREEWAY OPENING, THE CONTRACTOR SHALL CONTACT THE TRAFFIC DEPARTMENT AT THE OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 12 OFFICE IN ORDER TO REMOVE THE EXISTING STATE ROUTE 176 SIGNS ON BROADVIEW ROAD, NORTH OF S.R. 17 (PHONE 581-2333 EXT. 296). TWO WEEKS ADVANCE NOTICE SHALL BE GIVEN.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SUPPLEMENTAL SPECIFICATIONS 857, 858, 861, 957, 958 AND 961 ON THE TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS RESPECTIVE REFERENCES TO ITEMS 630, 631, 633, 730, 731 AND 733.

MAINTENANCE OF TRAFFIC STANDARD CONSTRUCTION DRAWINGS

REFERENCES TO SECTION 621, OR SUPPLEMENTAL SPECIFICATIONS 806, 847, 906 OR 947 ON THE STANDARD CONSTRUCTION DRAWINGS OR ELSEWHERE IN THESE PLANS SHALL BE CONSIDERED TO READ AS REFERENCES TO THE APPROPRIATE PORTIONS OF SECTIONS 641, 642, 643, 644, 645 AND 740.

POWER SUPPLY FOR TRAFFIC SIGNALS

ELECTRIC POWER SHALL BE OBTAINED FROM THE CLEVELAND ELECTRIC ILLUMINATING COMPANY AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 120 VOLTS.

ITEM 625 PULL BOXES, AS PER PLAN

THE MATERIAL FOR THE BOXES AND COVERS SHALL BE SAND AND GRAVEL BOUND TOGETHER WITH A FIBER REINFORCED POLYMER RESIN ADEQUATELY WITH A BOX WALL THICKNESS OF AT LEAST 1/2 INCH. OPENINGS SHALL BE RECTANGULAR. BOX DEPTH MAY BE ACHIEVED BY EXTENSIONS OR STACKING. COVERS SHALL BE SLIP RESISTANT AND SHALL BARE THE CAST WORD "TRAFFIC". COVERS SHALL FIT TIGHTLY AND BE SECURED BY STEEL HARDWARE CONSISTING OF A STANDARD 3/8" - 16 N C HEX BOLTS WITH WASHERS. BOX SIZE AND STRENGTH SHALL CONFORM TO THE FOLLOWING TABLE:

NOMINAL SIZE (INCHES)	CLEAR OPENING (SQUARE INCHES APPROXIMATE)	MINIMUM TEST LOAD	
		DEPTH (INCHES)	(POUNDS) *
12 X 12	144	18	15,000
17 X 30	510	18	15,000

* THE PULL BOX WITH ANY EXTENSIONS SHALL SUPPORT THE TEST LOAD DISTRIBUTED UNIFORMLY AT THE COVER CENTER OVER A 10 BY 10 INCH AREA.

THE ITEMS SUPPLIED SHALL BE IN CONFORMANCE WITH THE ABOVE REFERENCED SPECIFICATION AND SHALL BE SUPPLEMENTED WITH THE LATEST EDITION OF THE ODOT CMS. PAYMENT FOR ACCEPTED MATERIALS WILL BE MADE AT THE UNIT BID PRICE OF EACH ITEM.

ALL PULL BOXES WITHIN THE CONSTRUCTION LIMITS SHALL BE CONSTRUCTED AS PER THE DETAILS IN THE STANDARD CONSTRUCTION DRAWING HL-30.11. UNDERDRAIN OUTLETS SHALL BE PROVIDED FOR EACH PULL BOX. AN ESTIMATED QUANTITY OF 25 LINEAR FEET OF ITEM 603 UNDERDRAIN, TYPE E IS PROVIDED IN THE GENERAL SUMMARY TO BE USED AS PER THE STANDARD DRAWINGS OR AS DIRECTED BY THE ENGINEER.

ITEM 630 - REMOVAL OF SIGN SERVICE

INCIDENTAL TO THE REMOVAL, RELOCATION OR MODIFICATION OF A SIGN SUPPORT IN ACCORDANCE WITH SPECIFICATION 630.12, SIGN SERVICE TO THE SUPPORT SHALL ALSO BE REMOVED. SIGN SERVICE CABLES SHALL BE DISCONNECTED AT THE SERVICE PULLBOX AND REMOVED. CONNECTION OF THE REMAINING CABLES SHALL CONFORM TO 625.17 TO INSURE CIRCUIT CONTINUITY.

ITEM 630 - SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN

THIS ITEM SHALL INCLUDE ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO PROVIDE AND INSTALL POLE MOUNTED SIGN SUPPORTS AS DETAILED ON SHEET 250. SIGNS SHALL BE PAID FOR SEPARATELY.

REMOVAL OF EXISTING ITEMS

ALL 630 REMOVAL ITEMS NOT SPECIFICALLY INCLUDING STORAGE OR REERECTION SHALL BECOME THE PROPERTY OF THE CONTRACTOR. REMOVAL AND DISPOSAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ITEM 631 - REMOVAL OF DISCONNECT SWITCH AND DISPOSAL

INCIDENTAL TO THE REMOVAL OF DISCONNECT SWITCH, THE DISCONNECT SWITCH ENCLOSURE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

ITEM 631 - REMOVAL OF LUMINAIRE AND DISPOSAL

INCIDENTAL TO THE REMOVAL OF LUMINAIRE, SIGNS WIRED, BALLAST AND THE MOUNTING BRACKET ASSEMBLY SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR.

ITEM 631 - ENCLOSURE PADLOCKS

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH SPECIFICATION 631.08 SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 48KA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS, AND KEYING IN ACCORDANCE WITH THE FOREGOING SPECIFICATION.

ITEM 631 BALLAST, BY TYPE, INTEGRAL

BALLAST FOR MERCURY VAPOR LUMINAIRES SHALL BE MOUNTED WITHIN THE LUMINAIRE HOUSING (INTEGRAL) OR MOUNTED IN A WEATHERPROOF HOUSING ATTACHED TO OR BESIDE THE LUMINAIRE (CONTIGUOUS). BALLAST HOUSINGS SHALL BE OF CORROSION RESISTANT MATERIALS.

INTEGRAL BALLASTS SHALL BE USED TO LIGHT ALL NON-STRUCTURALLY MOUNTED OVERHEAD SIGNS AS SHOWN IN THE PLANS.

ITEM 631 SIGN FLASHER ASSEMBLY, AS PER PLAN

THIS ITEM SHALL CONSIST OF A PAIR OF FLASHING BEACONS, A FLASHER CONTROL UNIT WITH ENCLOSURE, AND MOUNTING HARDWARE. MOUNTING HARDWARE SHALL BE COMPATIBLE WITH OVERHEAD SIGN SUPPORT TYPE TC-12.30. INCANDESCENT LAMPS SHALL BE INCLUDED FOR THE 12" FLASHING BEACONS. THE BEACONS, CONTROL UNIT, AND ENCLOSURE SHALL CONFORM TO SECTION 731.06 OF THE SPECIFICATIONS. THE SIGN, SUPPORT, FOUNDATION, AND LIGHTING FOR THE SIGN WILL BE PAID FOR SEPARATELY.

632 VEHICULAR SIGNAL HEAD, 3 OR 5 SECTION, 12" LENS, 1-WAY, AS PER PLAN

SECTION 732.01 OF THE SPECIFICATIONS IS MODIFIED FOR THIS PROJECT AS FOLLOWS:

- A. SIGNAL HEADS AND VISORS SHALL BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND MEET THE SPECIFICATIONS.
- B. PLASTIC LENSES SHALL BE USED.
- C. PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- D. PROPER EXTERIOR COLORS SHALL BE OBTAINED BY USE OF COLORED PLASTIC MATERIAL RATHER THAN PAINTING.
- E. SIGNAL HEADS SHALL BE RIGID MOUNTED WITH CENTER LINE OF RED LENSES AT CENTER LINE OF MAST ARM.

632 PEDESTRIAN SIGNAL HEADS, TYPE D2, AS PER PLAN

SECTION 732.05 OF THE SPECIFICATIONS IS MODIFIED FOR THIS PROJECT AS FOLLOWS:

- A. SIGNAL HEADS AND VISORS MAY BE CONSTRUCTED OF POLYCARBONATE PLASTIC AND SHALL MEET THE SPECIFICATIONS.
- B. PLASTIC LENSES SHALL BE USED.

RELOCATED STATE ROUTE 176

TRAFFIC NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. 5 REGION



- C. PIPE, SPACERS, AND FITTINGS CONSTRUCTED OF POLYCARBONATE PLASTIC MAY BE USED IN LIEU OF GALVANIZED STEEL OR ALUMINUM.
- D. INSTALLATION SHALL BE PER ODOT STANDARD CONSTRUCTION DRAWING TC-85.10 WITH THE EXCEPTION THAT "CLAM SHELLS" SHALL NOT BE USED.
- E. INTERNATIONAL SYMBOLS SHALL BE USED.

ITEM 632 LOOP DETECTOR UNITS, BY TYPE, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF 632 AND 732.07 OR 732.08, LOOP DETECTOR UNITS SHALL HAVE THE FOLLOWING REQUIREMENTS OR FEATURES:

THE OUTPUT DEVICE SHALL BE A RELAY, AND ALL CONTACTS SHALL BE INCLUDED IN THE WIRING HARNESS.

THE UNIT SHALL BE SELF TUNING.

THE UNIT'S ELECTRICAL CONNECTION PLUGS OR WIRING HARNESS SHALL ALLOW READY REPLACEMENT WITH A SINGLE CHANNEL AMPLIFIER AS DESCRIBED IN THE FINAL PARAGRAPH OF 732.07.

ITEM 633 CONTROLLER, ACTUATED (4) PHASE, SOLID STATE DIGITAL, MICROPROCESSOR, AS PER PLAN

PLAN

1. THE CABINET SHALL BE BASE MOUNTED.
2. THE CABINET SHALL BE DELIVERED PREWIRED AND SHALL INCLUDE FOUR (4) ADDITIONAL LOOP DETECTOR WIRING HARNESSES FOR FUTURE USE.
3. OVERLAP PROGRAMMING SHALL BE BY USE OF AN INTERCHANGEABLE PLUG IN PRINTED CIRCUIT BOARD ASSEMBLY AS DESCRIBED IN PART 14 OF TS-1, 1983.
4. IN ADDITION TO NEMA REQUIREMENTS, THE CONFLICT MONITOR SHALL ALSO HAVE EXTENDED MONITORING IN ACCORDANCE WITH 733.04, PART 3B. ALSO, THE CONFLICT MONITOR SHALL HAVE AUTO LOGGING AND CENTRAL COMPUTER REPORTING FEATURES.
5. THE FOLLOWING SWITCHES SHALL BE ACCESSIBLE VIA THE POLICE DOOR PANEL:
 - A. SIGNAL SHUTDOWN
 - B. FLASH CONTROL
 - C. AUTOMATIC/MANUAL TRANSFER
6. THE FOLLOWING SWITCHES SHALL BE MOUNTED ON THE SWITCH PANEL IN THE CABINET:
 - A. RUN/STOP TIME
 - B. CONTROLLER SHUTDOWN
 - C. DETECTOR TEST
7. THE CONTROLLER SHALL BE COMPATIBLE WITH THE EXISTING CITY OF CLEVELAND CLOSED LOOP SYSTEM AND SHALL INCLUDE ALL COMMUNICATION AND INTERFACE EQUIPMENT THAT WILL ENABLE TRANSMISSION AND RECEPTION OF ALL REQUIRED PATTERN AND COMMAND DATA TO AND FROM THE CENTRAL OFFICE COMPUTER, THE MASTER CONTROLLER AND THE LOCAL INTERSECTION CONTROLLERS.

PAYMENT FOR "ITEM 633 - CONTROLLER, ACTUATED (4) PHASE, SOLID STATE DIGITAL MICROPROCESSOR, AS PER PLAN" WILL BE AT THE CONTRACT BID PRICE PER EACH COMPLETE AND IN PLACE INCLUDING ALL CONNECTIONS TESTED AND ACCEPTED.
8. A TELEPHONE MODEM AT THE BROOKPARK ROAD/RELOCATED S.R. 176 INTERSECTION SHALL BE COMPLETELY WIRED TO REPORT CABINET FAILURES, DETECTOR FAILURES AND TRAFFIC COUNTS. THE CONTROLLER SHALL BE COMPLETELY COMPATIBLE WITH THE CITY OF CLEVELAND CLOSED LOOP SYSTEM SOFTWARE. THE CONTROLLER AND SOFTWARE SHALL BE LIMITED TO THE FOLLOWING TWO (2) MANUFACTURER'S:

<ol style="list-style-type: none"> 1. TRANYST CORPORATION 4920 WOOD LANE CIRCLE TALLAHASSEE, FLORIDA 32303 (904) 562-2253 "SMARTWAYS" CLOSED LOOP 	<ol style="list-style-type: none"> 2. AUTOMATIC SIGNAL/EAGLE SIGNAL 8004 CAMERON ROAD AUSTIN, TEXAS 78753 "MARC" CLOSED LOOP
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ITEM 633 - CONTROLLER WORK PAD

REFERENCES TO ITEM 608 - 4" CONCRETE WALK FOR CONTROLLER WORK PADS ON THE STANDARD CONSTRUCTION DRAWINGS IN THESE PLANS SHALL BE CONSIDERED TO READ AS REFERENCES TO ITEM 633 - CONTROLLER WORK PAD.

ITEM SPECIAL - PHONE DROP

THIS ITEM OF WORK SHALL CONSIST OF SUPPLYING A PHONE DROP TO THE CONTROLLER AT THE BROOKPARK ROAD/RELOCATED S.R. 176 INTERSECTION. IT SHALL INCLUDE CONDUIT RISER, TRENCH, CONDUIT, SHIELDED TWO (2) CONDUCTOR CABLE, LIGHTING ARRESTOR AND CABINET TERMINALS TO COMPLETELY WIRE TO THE TELEPHONE MODEM SPECIFIED IN PLANS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ARRANGEMENTS WITH THE LOCAL TELEPHONE COMPANY TO HAVE TELEPHONE SERVICE DROP INSTALLED AT THE LOCATION SHOWN IN THE PLANS.

PAYMENT FOR "ITEM SPECIAL - PHONE DROP" WILL BE AT THE CONTRACT UNIT PRICE FOR EACH PHONE DROP IN PLACE, COMPLETELY INSTALLED IN THE CONTROLLER SHOWN IN THE PLANS, WIRED, TESTED AND ACCEPTED.

TYPICAL PLACEMENT OF GF SERIES SIGNS

FOR DETAILS ON THE PLACEMENT OF THE GF SERIES SIGNS MOUNTED IN THE GORE, SEE SHEET 251.

FORMER CONSTRUCTION PLANS

FOR EXISTING SIGNING DETAILS REFER TO APPLICABLE PLANS LISTED BELOW:

COUNTY, ROUTE AND SECTION	
CUY-480-12.08	CUY-480-15.81
CUY-480-12.75	CUY-480-15.84
CUY-480-15.22	

COPIES OF THESE PLANS ARE AVAILABLE FOR REFERENCE THROUGH ODOT DISTRICT 12.

PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS, GENERAL

GENERAL

OVERHEAD SIGN SUPPORTS CAN BE SEPARATED INTO MAJOR SECTIONS SUCH AS END FRAMES, TRUSSES, VERTICAL POLES AND CANTILEVER ARMS. FOR THE IMPLEMENTATION OF THIS WORK ITEM IT WILL BE BENEFICIAL TO REFER TO THE MAJOR SECTIONS OF THE OVERHEAD SIGN SUPPORTS RATHER THAN THE WHOLE SUPPORT. MORE SPECIFIC INSTRUCTIONS AND FLEXIBILITY CAN BE GIVEN BASED UPON THE UNIT OF MEASURE AND PAYMENT PER MAJOR SUPPORT SECTION.

THE PROTECTIVE COATING OF OVERHEAD SIGN SUPPORT SECTIONS SHALL BE A FOUR PART PROCESS TO INCLUDE SURFACE PREPARATION FOLLOWED BY A THREE STEP COATING SYSTEM. THIS THREE STEP COATING SYSTEM SHALL CONSIST OF AN EPOXY PRIME COAT, AN EPOXY INTERMEDIATE COAT AND AN URETHANE TOP COAT, WITH EACH COAT A DIFFERENT COLOR. FOR AN EXPLANATION OF THE MATERIALS TO BE USED SEE NOTE ENTITLED "COATING SYSTEM". THE PURPOSE OF THIS COATING IS TO PROVIDE PROTECTION FOR NEW (UNWEATHERED) AND OLDER WEATHERED GALVANIZED STEEL SUPPORT SECTIONS FROM CORROSIVE ELEMENTS IN THE ATMOSPHERE. COATING AND SURFACE PREPARATION OF NEW GALVANIZED SUPPORT SECTIONS SHOULD BE DONE BY THE MANUFACTURER.

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO COMPLY WITH POLLUTION LAWS, RULES OR REGULATIONS OF FEDERAL, STATE OR LOCAL AGENCIES. THE COATING MATERIALS SPECIFIED FOR THE WORK CAN BE HAZARDOUS TO THE HEALTH OF THE APPLICATOR IF NOT APPLIED AS PER THE MANUFACTURER'S INSTRUCTIONS. THE CONTRACTOR SHALL FOLLOW THE DATA SHEET AND THE LABEL ON THE PAINT CONTAINERS. THESE PRECAUTIONS SHALL INCLUDE THE USE OF RESPIRATORS AND EYE AND SKIN PROTECTION AS SPECIFIED. THE CONTRACTOR SHALL ALSO INSURE THAT HIS PAINTING OPERATIONS AND LOCATIONS WILL NOT ENDANGER OR ADVERSELY AFFECT THE PUBLIC IN GENERAL.

THE PROPOSED CLEANING AND COATING OPERATIONS SHALL BE PERFORMED ONLY WHEN AMBIENT TEMPERATURE IS 50 DEGREES FAHRENHEIT OR ABOVE. ALL STEEL SURFACES OF TRUSS AND END FRAMES INCLUDING THE WELDED AREAS, BALLAST ENCLOSURE MOUNTING BRACKET AND THE BASE PLATES ARE TO BE CLEANED AND COATED. BEFORE EACH COATING IS APPLIED, IT SHALL BE MIXED WITH AN APPROVED POWER MECHANICAL MIXER TO A UNIFORM CONSISTANCY WHICH SHALL BE MAINTAINED DURING ITS APPLICATION. EACH COAT SHALL BE APPLIED IN A WORKMANLIKE MANNER AS A CONTINUOUS FILM OF UNIFORM THICKNESS WHICH IS FREE OF HOLIDAYS, PORES, RUNS OR SAGS. ALL COATS SHALL BE APPLIED BY BRUSH. THINNING OF PAINT IS STRICTLY PROHIBITED. PAINT NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COATING SHALL PENETRATE ALL JOINTS AND CONNECTIONS. THE ENGINEER SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY CLEANING OR COATING OPERATIONS SO THAT INSPECTION SERVICES CAN BE PROVIDED.

THE COATING SYSTEM SHALL CONSIST OF A POLYAMIDE CURED EPOXY PRIME COAT, A POLYAMIDE CURED INTERMEDIATE COAT AND AN ALIPHATIC POLYURETHANE TOP COAT. THE COATING MATERIALS USED SHALL BE THOSE AS LISTED FROM ONE OF THE FOLLOWING MANUFACTURERS OR APPROVED EQUAL.

<p>AMERON 210 NORTH BERRY STREET BREA, CA 92621 LOCAL PHONE: (216) 896-3602 PRIME COAT: AMERCOAT 71 INTERMEDIATE COAT: AMERLOCK 400 (LIGHT GREY) TOP COAT: AMERCOAT 450 HS (MEDIUM GREY)</p>	<p>PORTER PAINT CO. 400 SOUTH 13TH STREET LOUISVILLE, KY 40201 LOCAL PHONE: (216) 562-6709 PRIME COAT: PORTER PAINTS MCR 4300 INTERMEDIATE COAT: PORTER PAINTS MCR 4300 TOP COAT: PORTER PAINTS HYTHANE</p>
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<p>POLY-CARB 33095 BAINBRIDGE ROAD P.O. BOX 39278 SOLON, OHIO 44139 LOCAL PHONE: (216) 248-1223 PRIME COAT: MARK-60 (ULTRAPDX) INTERMEDIATE COAT: MARK-60 (ULTRAPDX)(LIGHT GREY) TOP COAT: MARK-73 (ULTRA-KOTE)(MEDIUM GREY)</p>	<p>SHERWIN WILLIAMS CO. 761 BETA DRIVE MAYFIELD VILLAGE, OHIO 44143 LOCAL PHONE: (216) 461-8287 PRIME COAT: TILE-CLAD II HI-BILD PRIMER INTERMEDIATE COAT: HI-SOLIDS CATALYZED EPOXY (PURE WHITE)(SLATE GREY) TOP COAT: HI-BILD ALIPHATIC POLYURETHANE ENAMEL</p>
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GLIDDEN COATINGS AND RESINS
801 CANTERBURY ROAD
WESTLAKE, OHIO 44145
LOCAL PHONE: (216) 835-7167
PRIME COAT: GLID-GUARD EPOXY CHROMATE METAL
PRIMER NO. 5251/5252 (OLIVE GREEN)
INTERMEDIATE COAT: GLID GUARD EPOXY CHEMICAL
RESISTANT FINISH NO. 5240 SERIES (LIGHT GREY)
TOP COAT: GLID-THANE ONE ALIPHATIC
POLYURETHANE COATINGS NO. 6100 SERIES
(MEDIUM GREY)

ALL THREE COATS OF THE SYSTEM SHALL BE MANUFACTURED BY THE SAME COMPANY TO INSURE COMPATIBILITY AMONG COATS.

SURFACE PREPARATION, NEW SUPPORT SECTIONS

NEW, UNWEATHERED GALVANIZED SUPPORT SECTIONS SHALL HAVE THEIR SURFACE PREPARATION AS WELL AS THEIR PROTECTIVE COATING APPLIED AT THE PROJECT SITE.

THE SUPPORT SECTIONS SHALL BE PREPARED FOR COATING BY SSPC-SP1 FOLLOWED BY SSPC-SP7 (SOLVENT CLEANING FOLLOWED BY A BRUSH BLAST). BEFORE THE PREPARED SURFACE DEGRADES FROM THE PRESCRIBED STANDARDS, THE PRIME COAT SHALL BE APPLIED. IN EVERY CASE, THE SURFACE SHALL BE COATED WITH THE EPOXY PRIME COAT ON THE SAME DAY OF SURFACE PREPARATION. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER DAMAGE TO THE PREPARED SURFACE.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING, TRANSPORTATION COSTS AND MATERIALS NECESSARY TO ACCOMPLISH THIS ITEM OF WORK PER MAJOR SUPPORT SECTION.

BASIS OF PAYMENT WILL BE FOR ITEM SPECIAL - SURFACE PREPARATION, NEW SUPPORT SECTIONS AT CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

RELOCATED STATE ROUTE 176

TRAFFIC NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. REGION 5

214
395

COATING, EPOXY PRIME COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF AN EPOXY PRIMER TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL BE BETWEEN 1.5 TO 2.0 MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR. THE COLOR OF THIS COAT SHALL BE NOTICEABLY DIFFERENT FROM THE BASE MATERIAL AND OTHER PROPOSED COATS.

THIS COAT SHALL IN ALL CASES BE APPLIED OVER SURFACES THAT WERE PREPARED EARLIER THAT SAME DAY. THE THINNING OF THE EPOXY MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED 1.5 TO 2.0 MILS BUT IS AT LEAST 1.25 MILS, THE CONTRACT BID PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16 2/3%. IF THE DEFICIENCY OF COATING IS MORE THAN THAT 16 2/3% (I.E., THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.25 MILS) THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

THE EPOXY PRIME COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING TWO COMPONENT COMPOSITIONS CONFORMING TO ITS LISTED PROPERTIES:

AMERCOAT 71:
% SOLIDS BY VOLUME: 47% +/- 3%
POT LIFE: 8 HOURS AT 77 DEGREES F (25 DEGREES C)
DRYING TIME: 4 HOURS AT 77 DEGREES F

EPOXY CHROMATE METAL PRIMER NO. 5251/5252:
% SOLIDS BY VOLUME: 35.1% +/- 2%
POT LIFE: 24 HOURS AT 80 DEGREES F, 5 HOURS AT 100 DEGREES F
DRYING TIME: 1 HOUR TO TOUCH, 3-4 HOURS RECOAT
VICOSITY: BASE 67-72 KU (STORMER)
CURING AGENT 53-57 KU (STORMER)
% SOLIDS BY WEIGHT: 47.9% +/- 2%

MCR-4301 EPOXY PRIMER:
% SOLIDS BY VOLUME: 48.0% +/- 2%
POT LIFE: 30 HOURS AT 50-60 DEGREES F, 16 HOURS AT 80-100 DEGREES F
DRYING TIME: 4-6 HOURS AT 50-60 DEGREES F

MARK-60 (ULTRAPOX):
% SOLIDS BY WEIGHT: 50% +/- 5%
POT LIFE: 6 HOURS AT 75 DEGREES F
DRYING TIME: 2-3 HOURS INTIAL SET AT 75 DEGREES F
VICOSITY: 300-500 CPS AT 75 DEGREES F

TILE-CLAD II HI-BILD PRIMER:
% SOLIDS BY VOLUME: 48% +/- 2%
POT LIFE: 8 HOURS AT 77 DEGREES F
DRYING TIME: 1 HOUR TO TOUCH, 6 HOURS TO RECOAT AT 77 DEGREES F
% SOLIDS BY WEIGHT: 63% +/- 2%

FOR NEW SUPPORT SECTIONS THIS PRIME COAT SHALL BE APPLIED AT THE PROJECT SITE. VERIFICATION BY THE MANUFACTURER OF THE COATING MATERIAL FOR THE PRIME COAT PROCEDURES WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE PRIME COAT.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS AND MATERIALS TO ACCOMPLISH THIS ITEM OF WORK. THIS PRIME COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE INTERMEDIATE AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE FOR ITEM SPECIAL - COATING, EPOXY PRIME COAT, SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

COATING, INTERMEDIATE COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF EPOXY TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN SIX (6.0) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR. THINNING OF THE EPOXY MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COLOR OF THIS COAT SHALL BE LIGHT GREY.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED SIX (6.0) MILS, BUT IS AT LEAST FIVE (5.0) MILS, THE CONTRACT PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 16 2/3%. IF THE DEFICIENCY OF COATING IS MORE THAN THAT 16 2/3% (I.E., THE AVERAGE DRY FILM THICKNESS IS LESS THAN 5.0 MILS) THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

THE EPOXY INTERMEDIATE COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING TWO COMPONENT COMPOSITIONS CONFORMING TO ITS LISTED PROPERTIES:

AMERLOCK 400:
% SOLIDS BY VOLUME: 83% +/- 2%
POT LIFE: 2 1/2 HOURS AT 70 DEGREES F
DRYING TIME: 20 HOURS AT 70 DEGREES F

GLID-GUARD EPOXY CHEMICAL RESISTANT FINISH NO. 5240 SERIES:
% SOLIDS BY VOLUME: 44.7% +/- 2%
POT LIFE: 10 HOURS AT 80 DEGREES F TO HANDLE
DRYING TIME: 4 HOURS AT 77 DEGREES F TO HANDLE
VICOSITY: 68-72 KU
% SOLIDS BY WEIGHT: 60% +/- 2%

MCR 4361 HIGH BUILD EPOXY (OFF WHITE):
% SOLIDS BY VOLUME: 49.4% +/- 2%
POT LIFE: 30 HOURS AT 50-60 DEGREES F, 16 HOURS AT 80-100 DEGREES F
DRYING TIME: 1-2 HOURS AT 60-80 DEGREES F

MARK-60 (ULTRAPOX):
% SOLIDS BY WEIGHT: 52% +/- 5%
POT LIFE: 6 HOURS AT 75 DEGREES F
DRYING TIME: 2-3 HOURS INTIAL SET AT 75 DEGREES F
VICOSITY: 300-500 CPS AT 75 DEGREES F

HI-SOLIDS CATALYZED EPOXY:
% SOLIDS BY VOLUME: 61% +/- 2% (PURE WHITE)
POT LIFE: 5 HOURS AT 77 DEGREES F
DRYING TIME: 1 HOUR TO TOUCH, 4 HOURS TACK FREE, 6 HOURS TO RECOAT AT 77 DEGREES F AND 50% R.H.
% SOLIDS BY WEIGHT: 77% +/- 2% (PURE WHITE)

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE EPOXY PRIME COAT AND BEFORE THE APPLICATION OF THE EPOXY INTERMEDIATE COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE INTERMEDIATE COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THIS INTERMEDIATE COAT SHALL BE APPLIED AT THE PROJECT SITE.

VERIFICATION BY THE MANUFACTURER FOR THE INTERMEDIATE COAT PROCEDURE WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE INTERMEDIATE COAT.

PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS AND MATERIALS TO ACCOMPLISH THIS ITEM OF WORK. THIS INTERMEDIATE COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND TOP COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE FOR ITEM SPECIAL - COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

COATING, URETHANE TOP COAT, SUPPORT SECTIONS

THIS ITEM SHALL CONSIST OF THE APPLICATION OF ONE (1) COAT OF URETHANE TO SUPPORT SECTIONS. THE TOTAL DRY FILM THICKNESS OF THIS COAT SHALL NOT BE LESS THAN ONE AND ONE HALF (1.5) MILS. IF MORE THAN ONE PASS IS NECESSARY TO OBTAIN THE REQUIRED THICKNESS, THAT COST SHALL BE BORNE BY THE CONTRACTOR. THINNING OF THE URETHANE MATERIAL IS STRICTLY PROHIBITED. MATERIAL NOT CAPABLE OF BEING APPLIED AS SPECIFIED SHALL NOT BE USED. THE COLOR OF THIS COAT SHALL BE MEDIUM GREY.

WHEN THE AVERAGE DRY FILM THICKNESS OF THIS COAT OVER THE ENTIRE SUPPORT SECTION IS LESS THAN THE SPECIFIED ONE AND ONE HALF (1.5) MILS, BUT IS AT LEAST ONE (1.0) MIL, THE CONTRACT PRICE FOR THIS ITEM SHALL BE REDUCED IN DIRECT PROPORTION TO THE PERCENT DEFICIENCY OF COATING UP TO 33 1/3%. IF THE DEFICIENCY OF COATING IS MORE THAN THAT 33 1/3% (I.E., THE AVERAGE DRY FILM THICKNESS IS LESS THAN 1.0 MIL) THE WORK FOR THIS ITEM SHALL BE CONSIDERED UNSATISFACTORY AND SHALL BE RECOATED AT THE FULL EXPENSE OF THE CONTRACTOR, INCLUDING ALL LABOR, EQUIPMENT AND MATERIAL.

THE URETHANE TOP COAT CHOSEN BY THE CONTRACTOR SHALL BE ONE OF THE FOLLOWING MATERIALS CONFORMING TO ITS LISTED PROPERTIES:

AMERCOAT 450 HS:
% SOLIDS BY VOLUME: 66% +/- 3%
POT LIFE: 4 HOURS AT 70 DEGREES F
DRYING TIME: 8 HOURS AT 70 DEGREES F DRY THROUGH

GLID-THANE ONE POLYURETHANE COATINGS NO. 6100 SERIES:
% SOLIDS BY VOLUME: 39% +/- 2%
DRYING TIME: 8-12 HOURS AT 77 DEGREES F TO HANDLE
VICOSITY: 100-250 CPS
% SOLIDS BY WEIGHT: 52-56%

HYTHANE 4610 ALIPHATIC POLYURETHANE:
% SOLIDS BY VOLUME: 43.4% +/- 2%
POT LIFE: 12 HOURS AT 75 DEGREES F
DRYING TIME: 3/4 HOURS TO TOUCH AT 75 DEGREES F

MARK-73 (ULTRA-KOTE):
% SOLIDS BY VOLUME: 52.5% +/- 2%
POT LIFE: 8 HOURS AT 75 DEGREES F
DRYING TIME: 4-5 HOURS AT 75 DEGREES F TACK FREE
VICOSITY: 70-75 KU AT 75 DEGREES F
% SOLIDS BY WEIGHT: 55% +/- 2%

HI-BILD ALIPHATIC POLYURETHANE ENAMEL:
% SOLIDS BY VOLUME: 40% +/- 2% (CATALYZED)
POT LIFE: 6 HOURS AT 77 DEGREES F
DRYING TIME: 30 MIN. TO TOUCH, 4 HOURS TACK FREE, 18 HOURS MIN., 72 HOURS MAX. TO RECOAT
% SOLIDS BY WEIGHT: 48% +/- 2%

AT LEAST 24 HOURS BUT NO MORE THAN THREE (3) DAYS SHALL ELAPSE AFTER THE APPLICATION OF THE EPOXY INTERMEDIATE COAT AND BEFORE THE APPLICATION OF THE URETHANE TOP COAT. SURFACES SHALL IN ALL CASES BE CLEAN BEFORE THE TOP COAT IS APPLIED.

FOR NEW SUPPORT SECTIONS, THIS TOP COAT SHALL BE APPLIED AT THE PROJECT SITE.

VERIFICATION BY THE MANUFACTURER FOR THE TOP COAT PROCEDURE WILL BE REQUIRED. CAREFUL HANDLING AND STORAGE WILL BE REQUIRED TO PREVENT ANY SCRAPING, MARRING OR OTHER SURFACE DAMAGE TO THE TOP COAT.

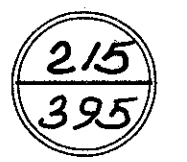
PAYMENT SHALL INCLUDE ALL LABOR, EQUIPMENT, HANDLING COSTS AND MATERIALS TO ACCOMPLISH THIS ITEM OF WORK. THIS TOP COAT SHALL BE MANUFACTURED BY THE SAME COMPANY SUPPLYING THE PRIME AND INTERMEDIATE COATS. A PROPERLY CALIBRATED DRY FILM THICKNESS INSTRUMENT WILL BE USED TO CHECK THE COATING.

BASIS OF PAYMENT WILL BE FOR ITEM SPECIAL - COATING, URETHANE TOP COAT, SUPPORT SECTIONS AT THE CONTRACT BID PRICE PER EACH MAJOR SUPPORT SECTION.

RELOCATED STATE ROUTE 176

TRAFFIC NOTES

CALC. G.C.F. DATE 5/4/93	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. E.M.S. DATE 11/18/93	JENNINGS FREEWAY	F.H.W.A. REGION 5



PREQUALIFICATION

PRIOR TO USE, THE CONTRACTOR SHALL SUBMIT TO THE DIRECTOR, COPIES OF THE MANUFACTURER'S CERTIFIED TEST DATA SHOWING THAT THE MATERIAL COMPLIES WITH THE REQUIREMENTS OF THIS SPECIFICATION. THE TEST DATA SHALL INCLUDE THE BRAND NAME OF THE PAINT, NAME OF MANUFACTURER, NUMBER OF THE LOT TESTED AND DATE OF MANUFACTURE. WHEN THE PAINT HAS BEEN APPROVED BY THE DIRECTOR, FURTHER PERFORMANCE TESTING BY THE MANUFACTURER WILL NOT BE REQUIRED UNLESS THE FORMULATION OR MANUFACTURING PROCESS HAS BEEN CHANGED, IN WHICH CASE NEW CERTIFIED TEST RESULTS WILL BE REQUIRED.

ACCEPTANCE

THE MANUFACTURER SHALL SUBMIT CERTIFIED TEST DATA IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION. THE STATE RESERVES THE RIGHT TO SAMPLE AND TEST DELIVERED LOTS FOR COMPLIANCE.

LOCATIONS

THE FOLLOWING SUMMARY OF MAJOR SUPPORT SECTIONS TO HAVE A PROTECTIVE COATING APPLIED IS NOTED BELOW:

SUPPORT NO.	MAJOR SECTIONS
2	1 POLE, 1 ARM
3	1 POLE, 1 ARM
5	1 POLE, 1 ARM
8	1 POLE, 1 ARM
9	2 END FRAMES
11	1 POLE, 1 ARM
20	2 END FRAMES
21	1 POLE, 1 ARM
22	1 POLE, 1 ARM
24	1 POLE, 1 ARM
27	1 POLE, 1 ARM
28	1 POLE, 1 ARM
29	1 POLE, 1 ARM
30	1 POLE, 1 ARM
31	1 POLE, 1 ARM
32	2 END FRAMES
118	1 POLE

THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY:

ITEM SPECIAL SURFACE PREPARATION, NEW SUPPORT SECTIONS	33 EACH
ITEM SPECIAL COATING, EPOXY PRIME COAT, SUPPORT SECTIONS	33 EACH
ITEM SPECIAL COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTIONS	33 EACH
ITEM SPECIAL COATING, URETHANE TOP COAT, SUPPORT SECTIONS	33 EACH

ITEM 862 - RAISED PAVEMENT MARKER

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR THE INSTALLATION OF RAISED PAVEMENT MARKERS. INSTALLATION SHALL COINCIDE WITH FINAL PAVEMENT MARKING APPLICATIONS. LOCATIONS OF RAISED PAVEMENT MARKERS SHALL BE AS PER STANDARD CONSTRUCTION DRAWINGS TC-65.10 AND TC-65.11.

ITEM 862 RAISED PAVEMENT MARKER	1769 EACH
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RELOCATED STATE ROUTE 176

TRAFFIC CONTROL - GENERAL SUMMARY

ITEM	215	219	221	223	224	225	248	ITEM	EXT.	TOTAL	UNIT	DESCRIPTION	AS PER PLAN SEE SHEET
603							75	603	01400	75	LIN FT	6' CONDUIT, TYPE E	
620						113		620	10300	113	EACH	DELINEATOR, TYPE C, POST MOUNTED	
620						29		620	15300	29	EACH	DELINEATOR, TYPE D, POST MOUNTED	
625							168	625	25400	168	LIN FT	CONDUIT, 2", 713.04	
625							259	625	25500	259	LIN FT	CONDUIT, 3", 713.04	
625							326	625	29000	326	LIN FT	TRENCH	
625							70	625	29600	70	LIN FT	TRENCH IN PAVED AREA, TYPE B	
625							1	625	31600	1	EACH	PULL BOX, 713.081, 17' X 30', AS PER PLAN	212
625							4	625	31600	4	EACH	PULL BOX, 713.081, 12' X 12", AS PER PLAN	212
625				17			5	625	32000	22	EACH	GROUND ROD	
630				83.8				630	00000	83.8	CU YD	CONCRETE FOR ANCHOR BASE FOUNDATION	
630			9.9					630	00100	10.3	CU YD	CONCRETE FOR EMBEDDED FOUNDATION	
630			857					630	03100	857	LIN FT	GROUND MOUNTED SUPPORT, NO. 3 POST	
630			525					630	04100	525	LIN FT	GROUND MOUNTED SUPPORT, NO. 4 POST	
630			199					630	06400	199	LIN FT	GROUND MOUNTED SUPPORT, S4X7.7 BEAM	
630			105					630	06500	68	LIN FT	GROUND MOUNTED SUPPORT, W6X9 BEAM	
630			47					630	07000	47	LIN FT	GROUND MOUNTED SUPPORT, W8X18 BEAM	
630			51					630	07500	51	LIN FT	GROUND MOUNTED SUPPORT, W10X22 BEAM	
630			14					630	08100	14	LIN FT	ONE WAY SUPPORT, NO.4 POST	
630			20					630	09000	22	EACH	BREAKWAY BEAM CONNECTION	
SPECIAL	33							SPECIAL	63009102	33	EACH	SURFACE PREPARATION, NEW SUPPORT SECTION	
SPECIAL	33							SPECIAL	63009104	33	EACH	COATING, EPOXY PRIME COAT, SUPPORT SECTION	
SPECIAL	33							SPECIAL	63009106	33	EACH	COATING, EPOXY INTERMEDIATE COAT, SUPPORT SECTION	
SPECIAL	33							SPECIAL	63009108	33	EACH	COATING, URETHANE TOP COAT, SUPPORT SECTION	
630				1				630	10300	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-16.20, DESIGN 3, 35' ARM	
630				1				630	20200	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 2, 22' ARMS	
630				1				630	20300	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 3, 16' ARMS	
630				1				630	20600	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 6, 23' ARMS	
630				1				630	20800	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 8, 28' ARMS	
630				3				630	20800	3	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 8, 26' ARMS	
630				2				630	21000	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 10, 30' ARMS	
630				1				630	21000	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 10, 28' ARMS	
630				2				630	21200	2	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-12.30, DESIGN 12, 32' ARMS	
630				1				630	36500	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6, 68' SPAN	
630				1				630	37000	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 6, 71' SPAN	
630				1				630	48000	1	EACH	OVERHEAD SIGN SUPPORT, TYPE TC-7.65, DESIGN 8, 82' SPAN	
630				19				630	75000	19	EACH	SIGN ATTACHMENT ASSEMBLY	
630				13				630	75106	13	EACH	LUMINAIRE SUPPORT ASSEMBLY, TYPE TC-31.21	
630			1					630	79100	1	EACH	SIGN HANGER ASSEMBLY, MAST ARM	
630			2	1				630	79501	3	EACH	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN	250
630			19					630	79600	19	EACH	SIGN SUPPORT ASSEMBLY, BRIDGE MOUNTED, TYPE 1	
630			951	37				630	80102	988	SQ FT	SIGN, FLAT SHEET, TYPE G	
630			518	4188				630	80204	4706	SQ FT	SIGN, EXTRUSHEET, TYPE G	
630			59	1642				630	80300	1701	SQ FT	SIGN, TEMPORARY OVERLAY	
630			2	6				630	82000	8	EACH	SIGN BACKING ASSEMBLY	
630				5				630	82500	5	EACH	EXISTING SIGN REVISED WITH DEMOUNTABLE COPY	

RELOCATED STATE ROUTE 176

TRAFFIC CONTROL - GENERAL SUMMARY

ITEM	215	219	221	223	224	225	248											ITEM	EXT.	TOTAL	UNIT	DESCRIPTION	AS PER PLAN SEE SHEET
630			5															630	84900	5	EACH	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	
630			3															630	85100	3	EACH	REMOVAL OF GROUND MOUNTED SIGN AND REERECTION	
630			4															630	86002	4	EACH	REMOVAL OF GROUND MOUNTED POST SUPPORT AND DISPOSAL	
630			4															630	86102	4	EACH	REMOVAL OF GROUND MOUNTED BEAM SUPPORT AND DISPOSAL	
630				2														630	87100	2	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND REERECTION	
630				14														630	87400	14	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	
630				3														630	89706	3	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	
630				1														630	89802	1	EACH	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	
631					16													631	84000	16	EACH	SIGN SERVICE	
631					27													631	84300	27	EACH	SIGN WIRED	
631					16													631	85100	16	EACH	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	
631					1													631	86910	1	EACH	BALLAST, TYPE CMRI-100-120, INTEGRAL	
631					1													631	87154	1	EACH	BALLAST, TYPE CMRI-175-120, INTEGRAL	
631					37													631	87202	37	EACH	BALLAST, TYPE CMRI-175-480, INTEGRAL	
631					2													631	87302	2	EACH	BALLAST, TYPE CMRI-250-480, INTEGRAL	
631					13													631	87206	13	EACH	BALLAST, TYPE CMRI - 175 - 240, INTEGRAL	
631					7													631	88000	7	EACH	PHOTOELECTRIC CONTROL	
631					1													631	89100	1	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21 WITH 100 WATT LAMP	
631					51													631	89200	51	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21 WITH 175 WATT LAMP	
631					2													631	89300	2	EACH	MERCURY VAPOR LUMINAIRE, TYPE TC-31.21 WITH 250 WATT LAMP	
631					1													631	92000	1	EACH	SIGN FLASHER ASSEMBLY	
631					1													631	92001	1	EACH	SIGN FLASHER ASSEMBLY, AS PER PLAN	212
631					19													631	94200	19	EACH	REMOVAL OF LUMINAIRE AND DISPOSAL	
631					4													631	94304	4	EACH	REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	
632							5											632	00303	5	EACH	VEHICULAR SIGNAL HEAD, 3 SECTION, 12' LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	212
632							2											632	00503	2	EACH	VEHICULAR SIGNAL HEAD, 5 SECTION, 12' LENS, 1-WAY, POLYCARBONATE, AS PER PLAN	212
632							4											632	20601	4	EACH	PEDESTRIAN SIGNAL HEAD, TYPE D2, AS PER PLAN	212
632							7											632	25000	7	EACH	COVERING OF VEHICULAR SIGNAL HEAD	
632							4											632	26000	4	EACH	PEDESTRIAN PUSHBUTTON	
632							3											632	27000	3	EACH	LOOP DETECTOR AMPLIFIER	
632							4											632	27009	4	EACH	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, AS PER PLAN	213
632							497											632	27500	497	LIN FT	LOOP DETECTOR PAVEMENT CUTTING	
632							724											632	40200	724	LIN FT	SIGNAL CABLE, 2 CONDUCTOR, NO. 14 AWG	
632							326											632	40500	326	LIN FT	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG	
632							758											632	40700	758	LIN FT	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG	
632							199											632	40900	199	LIN FT	SIGNAL CABLE, 9 CONDUCTOR, NO. 14 AWG	
632							1											632	63000	1	EACH	PHONE DROP	
632							1262											632	64900	1262	LIN FT	LOOP DETECTOR WIRE, TYPE E	
632							302											632	65200	302	LIN FT	LOOP DETECTOR LEAD-IN CABLE	
632							116											632	67200	116	LIN FT	POWER CABLE, 2 CONDUCTOR, NO. 8 AWG	
632							1											632	70000	1	EACH	POWER SERVICE	
632							1											632	70400	1	EACH	CONDUIT RISER, 2' DIAMETER	

TRAFFIC CONTROL - GENERAL SUMMARY

ITEM	215	219	221	223	224	225	248												ITEM	EXT.	TOTAL	UNIT	DESCRIPTION	AS PER PLAN SEE SHEET
632							2												632	71000	2	EACH	CABLE SUPPORT ASSEMBLY	
632							5.2												632	72000	5.2	CU YD	CONCRETE FOR ANCHOR BASE FOUNDATION	
632							1												632	80500	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DESIGN 11, 45' ARM	
632							1												632	81301	1	EACH	SIGNAL SUPPORT, TYPE TC-81.20, DESIGN 3, AS PER PLAN, WITH MAST ARMS TC-81.20 DES 1, 25' ARM & TC-81.20 DES 2, 32' ARM COMBINATION	249
632					1														632	82101	1	EACH	STRAIN POLE, TYPE TC-8110, DESIGN 11 16', AS PER PLAN	251
632							2												632	89900	2	EACH	PEDESTAL, 8', WITH TRANSFORMER BASE	
633							1												633	24001	1	EACH	CONTROLLER, ACTUATED, 4 PHASE, SOLID STATE DIGITAL, AS PER PLAN	212
633							1.0												633	70000	1.0	CU YD	CONCRETE FOR CABINET FOUNDATION	
642		0.36																	642	00202	0.36	MILE	LANE LINE, TYPE 2	
642		0.46																	642	00302	0.46	MILE	CENTER LINE, TYPE 2	
642		510																	642	00402	510	LIN FT	CHANNELIZING LINE, TYPE 2	
642		128																	642	00702	128	LIN FT	TRANSVERSE LINE, TYPE 2	
642		2680																	642	30000	2680	LIN FT	REMOVAL OF PAVEMENT MARKING	
642		0																	642	30000	0	EACH	REMOVAL OF PAVEMENT MARKING	
644		10.32																	644	00100	10.32	MILE	EDGE LINE	
644		7.63																	644	00200	7.63	MILE	LANE LINE	
644		4614																	644	00400	4614	LIN FT	CHANNELIZING LINE	
644		100																	644	00500	100	LIN FT	STOP LINE	
644		600																	644	00600	600	LIN FT	CROSSWALK LINE	
644		1837																	644	00700	1837	LIN FT	TRANSVERSE LINE	
644		245																	644	00900	245	SQ FT	ISLAND MARKING	
644		8																	644	01300	8	EACH	LANE ARROW	
644		3																	644	01400	3	EACH	WORD ON PAVEMENT, 72"	
644		6673																	644	30000	6673	LIN FT	REMOVAL OF PAVEMENT MARKING	
644		0																	644	30000	0	EACH	REMOVAL OF PAVEMENT MARKING	
862	1769																		862	00100	1769	EACH	RAISED PAVEMENT MARKER	

PAVEMENT MARKING QUANTITIES

		ITEM 644																
SHEET NO.	LOCATION	SIDE	00100		00200	00400		00500	00600		00700		00900	01300	01400	30000	30020	
			EDGE LINES		LANE LINE	CHANNELIZING LINES		STOP LINE	CROSS WALK LINES	TRANSVERSE LINES		ISLAND MARKING	LANE ARROW	WORD "ONLY" ON PAV'T. 72"				
			YELLOW	WHITE		WHITE	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. FT.	EACH	EACH	LIN. FT.			EACH
RELOC. S.R.-176																		
225	91+15	130+00	LT&RT.		3725	125												
225	91+15	130+00	RT.	7770														
225	91+08	91+15	LT&RT.										105					
	91+08	93+00	LT.			280			120									
	91+30	LT&RT.						220										
	91+40	LT.					32											
	91+54	LT.												2				
225	92+00	130+00	LT.		3537		1119											
225	92+30	LT.																
225	92+90	LT.												2				
229	117+54.39	120+74.44	RT.			320												
	122+11.42	124+73.60	LT.						285									
	125+45	130+00	LT.			455												
LANE OBW-JN																		
226	83+15.82	57+48.10		2637														
226	34+54.47	57+48.10		2134			160											
LANE JN-OBW																		
226	34+52.13	65+35.29		2182		864	938		260									
226	35+2.5	66+55.29		3130														
229	37+84.13	38+84.13		100														
W.B.O.L./OBE-JN																		
228	66+40	128+75		5754			481											
	66+40	130+00			6360													
	71+20	130+00		5538			684		500									
LANE JN-OBE																		
227	88+84.13	878+00		3916		4268												
227	43+56.05	872+90		2934														
227	54+60	871+90							4456									
RAMP G-E-2																		
227	1+70	5+15			345													
227	2+20	5+15		250			45											
RAMP G-E																		
227	871+90	872+90					100											
227	871+90	878+00							690									
RAMP E-G																		
228	66+40	75+12					872											
BROOKPARK RD.																		
225	97+80																	
	99+30																	
	100+80																	
	101+60																	
	102+50																	
	102+80	RT.				34												
	102+90	103+80	RT.				200											
	103+80	LT&RT					180											
	103+88	104+87	LT&RT						107		140							
	103+95	LT.				34												
TOTAL																		
TOTAL (MILES)																		
GRAND TOTAL																		

		ITEM 644																
SHEET NO.	LOCATION	SIDE	00100		00200	00400		00500	00600		00700		00900	01300	01400	30000	30020	
			EDGE LINES		LANE LINE	CHANNELIZING LINES		STOP LINE	CROSS WALK LINES	TRANSVERSE LINES		ISLAND MARKING	LANE ARROW	WORD "ONLY" ON PAV'T. 72"				
			YELLOW	WHITE		WHITE	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. FT.	EACH	EACH	LIN. FT.			EACH
I-480																		
226	819+40	893+80	LT.						14450									
	811+25	856+10	RT.	4485	4142	13455												
	819+50	829+50	LT.			120									1000			
	831+12.67	834+56	RT.			687					565							
	825+85.57	831+2.67	RT.													527		
TOTAL																		
TOTAL (MILES)																		
GRAND TOTAL																		
ITEM 642 TYPE 2																		
SHEET NO.	LOCATION	SIDE	00202	00302	00402	00702		30000	30020									
			LANE LINE	DOUBLE SOLID CENTER LINE	SOLID DASH CENTER LINE	CHANNELIZING LINE	TRANSVERSE LINE	WHITE	YELLOW	REM. OF PAV'T. MARKING	REM. OF PAV'T. MARKING							
			LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH							
BROOKPARK RD.																		
225	96+30	102+80	LT&RT.	1300	635	140												
	103+95	104+80	LT&RT.		170				1880									
	104+80	107+00	LT&RT.						800									
	103+95	107+00	LT&RT.	610														
	97+70	102+80	RT.				510											
	96+30	97+50	LT&RT.															
SCHAFF RD.																		
228	14+00	24+50					1050											
TOTAL																		
TOTAL (MILES)																		
GRAND TOTAL																		

SUMMARY OF OVERHEAD SIGNING QUANTITIES

SHEET NO.	REFERENCE NO.	ELEVATION SHEET NO.	STATION	SIGN CODE NUMBER	630																				625															
					SIGNS					OVERHEAD SIGN SUPPORT TYPE															CONC. FOR ANCHOR BASE FOUNDATIONS	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	EXIST SIGNS REVISED WITH DEMOUNTABLE COPY	SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN	REMOVAL OF OVERHEAD MOUNTED SIGN AND REECTION	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	SIGN ATTACHMENT ASSEMBLY	SIGN BACKING ASSEMBLY	LUMINAIRE SUPPORT ASSEMBLY TYPE TC-31.21				GROUND ROD		
					SIGN SIZE INCLUDING GLARE SHIELD	TEMP. OVERLAY SIGN SIZE	EXTRU SHEET TYPE G	FLAT SHEET TYPE G	TEMP. OVERLAY	TC-12.30					TC-7.65					TC-16.20																				
										DESIGN #3	DESIGN #6	DESIGN #8		DESIGN #10	DESIGN #12	DESIGN #2	DESIGN #6		DESIGN #8	DESIGN #3	CONC. FOR ANCHOR BASE FOUNDATIONS	REMOVAL OF OVERHEAD MOUNTED SIGN AND DISPOSAL	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-12.30	EXIST SIGNS REVISED WITH DEMOUNTABLE COPY										SIGN SUPPORT ASSEMBLY, POLE MOUNTED, AS PER PLAN	REMOVAL OF OVERHEAD MOUNTED SIGN AND REECTION	REMOVAL OF OVERHEAD SIGN SUPPORT AND DISPOSAL, TYPE TC-7.65	SIGN ATTACHMENT ASSEMBLY		SIGN BACKING ASSEMBLY	2'-9" ARM
EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.												
BROOKPARK RD.																																								
234	27	244	96+00 (E.B.)	GH-III	9x7	8.5x6	63		51	1																														
235	28A		104+25 (W.B.)	GH-III	9x7	8.5x6	63		51		1																													
	28B		(E.B.)	GH-III	9x7	8.5x6	63		51																															
	29		113+50 (W.B.)	M-52-B	10x4.5	9.5x3.5	45		33.25																															
RELOC. S.R. 176																																								
235	30A	245	99+00 (S.B.)	R-26A-36	3x3.5			10.5																																
	30B			R-27A-36	3x3.5			10.5																																
	31		108+75 (N.B.)	GB-I	19x9	18.5x8	171		148																															
240	32A		125+00 (S.B.)	GE-I	13x10		130																																	
	32B			GE-I	17x10		170																																	
	32C			GE-I	14x10		140																																	
235	118	251	101+00 (S.B.)	W-47-48	4x4		16																																	
235	21	251	110+50 (S.B.)	W-55-288	24x8.5		204																																	
TOTAL TO GENERAL SUMMARY							4188	37	1642	1	1	3	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

* FOR INFORMATION ONLY

RELOC. S.R. 176

SUMMARY OF OVERHEAD SIGNING QUANTITIES

CALC. DATE	CUYAHOGA COUNTY	OHIO	224 395		
CHKD. DATE				CUY-176-10.14	F.H.W.A. REGION 5
DATE					

SHEET N ^o	REFERENCE N ^o	ELEVATION SHEET N ^o	STATION	REMOVAL OF LUMINAIRE AND DISPOSAL	SIGN SERVICE	SIGNS WIRED	REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	BALLAST, INTEGRAL TYPE CMRT					MERCURY VAPOR LUMINAIRE TYPE TC-31.21			SIGN FLASHER ASSEMBLY	PHOTO ELECTRIC CONTROL	SIGN FLASHER ASSEMBLY, AS PER PLAN	TAPERED STRAIN POLE, TYPE TC-81.10 DESIGN #1 MOD. 16	632			
														100W	175W	250W						EA.	EA.	EA.
									EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.						EA.		
I-480																								
230	1A	241	701+50 (E.B.)	GH-I	2	1																		
				GEP-84																				
230	1B		701+50	GB-I	2	1						3												
				GEP-84																				
				GEP-84																				
231	2		799+50 (E.B.)	GB-I	2	1	1	1				3												
				GEP-84																				
232	3		750+55 (E.B.)	GE-I	2	1	1	1	1			3												
				GEP-84																				
				GEP-84																				
	4A		764+25 (E.B.)	GB-I	2	1						1												
				GEP-192																				
				GEP-84																				
	4B			GB-I	2	1						2												
				GEP-84																				
				GEP-84																				
	4C			GE-I	2	1						3												
				GEP-84																				
234	5	242	804+00 (E.B.)	GB-I		1	1		1			2												
				GEP-84																				
235	7B	243	891+85 (E.B.)	GEP-192																				
235	7C	243		GE-I		1						2												
				GEP-84																				
				GB-I		1	1		1				2											
				GEP-192																				
WBOL (I-480)																								
237	9A	242	889+55 (W.B.)	GE-I	3	1	1	1	1			2												
				GEP-96																				
				GE-I			1					3												
				GEP-96																				
				GEP-96																				
	II		901+80 (W.B.)	GB-I	2	1	1	1	1			3												
				GEP-96																				
JN-OBE																								
240	20A	243	41+00	GE-I		1	1		1			2												
	20B			GE-I		1						2												
OBE-JN																								
235	22	243	106+00	GB-I		1	1		1			2												
OBW-JN																								
235	24	243	44+50	GB-I		1	1		1			2												

SHEET N ^o	REFERENCE N ^o	ELEVATION SHEET N ^o	STATION	SIGN CODE NUMBER	REMOVAL OF LUMINAIRE AND DISPOSAL	SIGN SERVICE	SIGNS WIRED	REMOVAL OF DISCONNECT SWITCH AND DISPOSAL	DISCONNECT SWITCH WITH ENCLOSURE, TYPE X	BALLAST INTEGRAL TYPE - CMRT					MERCURY VAPOR LUMINAIRE TYPE TC-31.21			SIGN FLASHER ASSEMBLY	PHOTO ELECTRIC CONTROL	SIGN FLASHER ASSEMBLY, AS PER PLAN	STRAIN POLE TYPE TC-81.10 DESIGN #1 MOD. 16 AS PER PLAN	632			
															100W	175W	250W						EA.	EA.	EA.
										EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.						EA.		
BROOKPARK RD.																									
234	27	244	96+00 (E.B.)	GH-III		1	1		1			1													
235	28A		104+25 (W.B.)	GH-III		1	1		1			1													
	28B		(E.B.)	GH-III		1	1		1			1													
	29		113+50 (W.B.)	M-52-B		1	1		1	1															
RELOC. S.R. 176																									
235	31	245	108+75 (N.B.)	GB-I		1	1		1			2													
240	32A		125+00 (S.B.)	GG-I		1	1		1			2													
	32B			GE-I		1						2													
	32C			GE-I		1						2													
235	11B	251	101+00 (S.B.)	W-47-48		1	1		1																
235	21	251	110+50 (S.B.)	W-55-200		1	1		1			3													
TOTAL (BOTH SIDES)					19	16	27	4	16	1	13	1	37	2	1	51	2	1	7	1	1				
QUANTITIES TO GENERAL SUMMARY																									

RELOC. S.R. 176

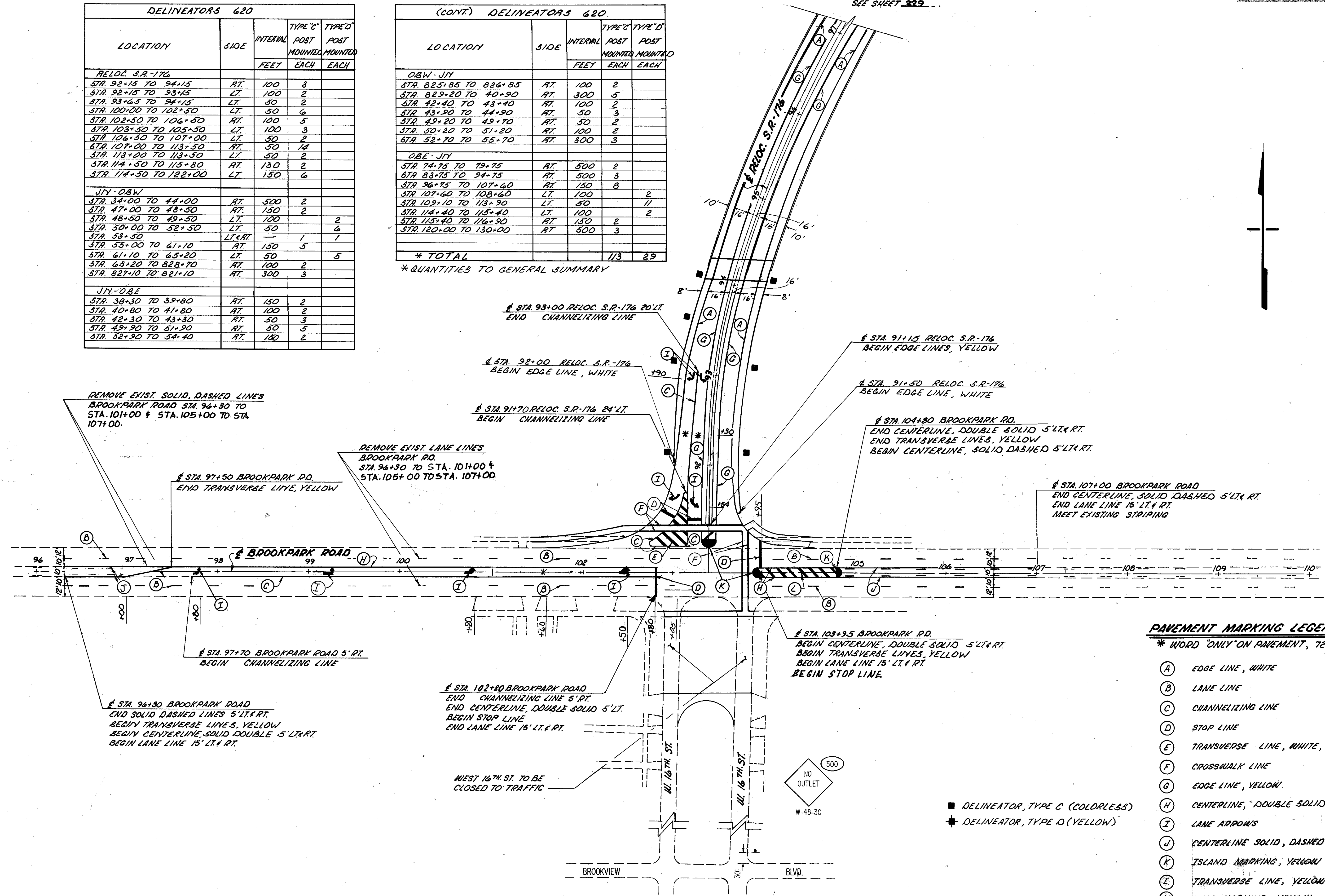
ACL Form no. 1

FOR CONTINUATION OF S.R. 176 STRIPING
SEE SHEET 229...

DELINEATORS 620				
LOCATION	SIDE	INTERVAL FEET	TYPE 'C'	TYPE 'D'
			POST MOUNTED EACH	POST MOUNTED EACH
RELOC. S.R. 176				
STA. 92+15 TO 94+15	RT.	100	3	
STA. 92+15 TO 93+15	LT.	100	2	
STA. 93+65 TO 94+15	LT.	50	2	
STA. 100+00 TO 102+50	LT.	50	6	
STA. 102+50 TO 106+50	RT.	100	5	
STA. 103+50 TO 105+50	LT.	100	3	
STA. 106+50 TO 109+00	LT.	50	2	
STA. 109+00 TO 113+50	RT.	50	14	
STA. 113+00 TO 113+50	LT.	50	2	
STA. 114+50 TO 115+80	RT.	130	2	
STA. 114+50 TO 122+00	LT.	150	6	
JTY-OBW				
STA. 34+00 TO 44+00	RT.	500	2	
STA. 47+00 TO 48+50	RT.	150	2	
STA. 48+50 TO 49+50	LT.	100		2
STA. 50+00 TO 52+50	LT.	50		6
STA. 53+50	LT. & RT.		1	1
STA. 55+00 TO 61+10	RT.	150	5	
STA. 61+10 TO 65+20	LT.	50		5
STA. 65+20 TO 828+70	RT.	100	2	
STA. 827+10 TO 821+10	RT.	300	3	
JTY-OBE				
STA. 38+30 TO 39+80	RT.	150	2	
STA. 40+80 TO 41+80	RT.	100	2	
STA. 42+30 TO 43+30	RT.	50	3	
STA. 49+90 TO 51+90	RT.	50	5	
STA. 52+90 TO 54+40	RT.	150	2	

(CONT.) DELINEATORS 620				
LOCATION	SIDE	INTERVAL FEET	TYPE 'C'	TYPE 'D'
			POST MOUNTED EACH	POST MOUNTED EACH
OBW-JTY				
STA. 825+85 TO 826+85	RT.	100	2	
STA. 829+20 TO 40+90	RT.	300	5	
STA. 42+40 TO 43+40	RT.	100	2	
STA. 43+90 TO 44+90	RT.	50	3	
STA. 49+20 TO 49+70	RT.	50	2	
STA. 50+20 TO 51+20	RT.	100	2	
STA. 52+70 TO 55+70	RT.	300	3	
OBE-JTY				
STA. 74+75 TO 79+75	RT.	500	2	
STA. 83+75 TO 94+75	RT.	500	3	
STA. 96+75 TO 107+60	RT.	150	8	
STA. 107+60 TO 108+60	LT.	100		2
STA. 109+10 TO 113+90	LT.	50		11
STA. 114+40 TO 115+40	LT.	100		2
STA. 115+40 TO 116+90	RT.	150	2	
STA. 120+00 TO 130+00	RT.	500	3	
* TOTAL			113	29

* QUANTITIES TO GENERAL SUMMARY



PAVEMENT MARKING LEGEND

- * WORD "ONLY ON PAVEMENT, 72"
- (A) EDGE LINE, WHITE
- (B) LANE LINE
- (C) CHANNELIZING LINE
- (D) STOP LINE
- (E) TRANSVERSE LINE, WHITE, 12' C/C
- (F) CROSSWALK LINE
- (G) EDGE LINE, YELLOW
- (H) CENTERLINE, DOUBLE SOLID
- (I) LANE ARROWS
- (J) CENTERLINE SOLID, DASHED
- (K) ISLAND MARKING, YELLOW
- (L) TRANSVERSE LINE, YELLOW
- (M) CURB MARKING, YELLOW

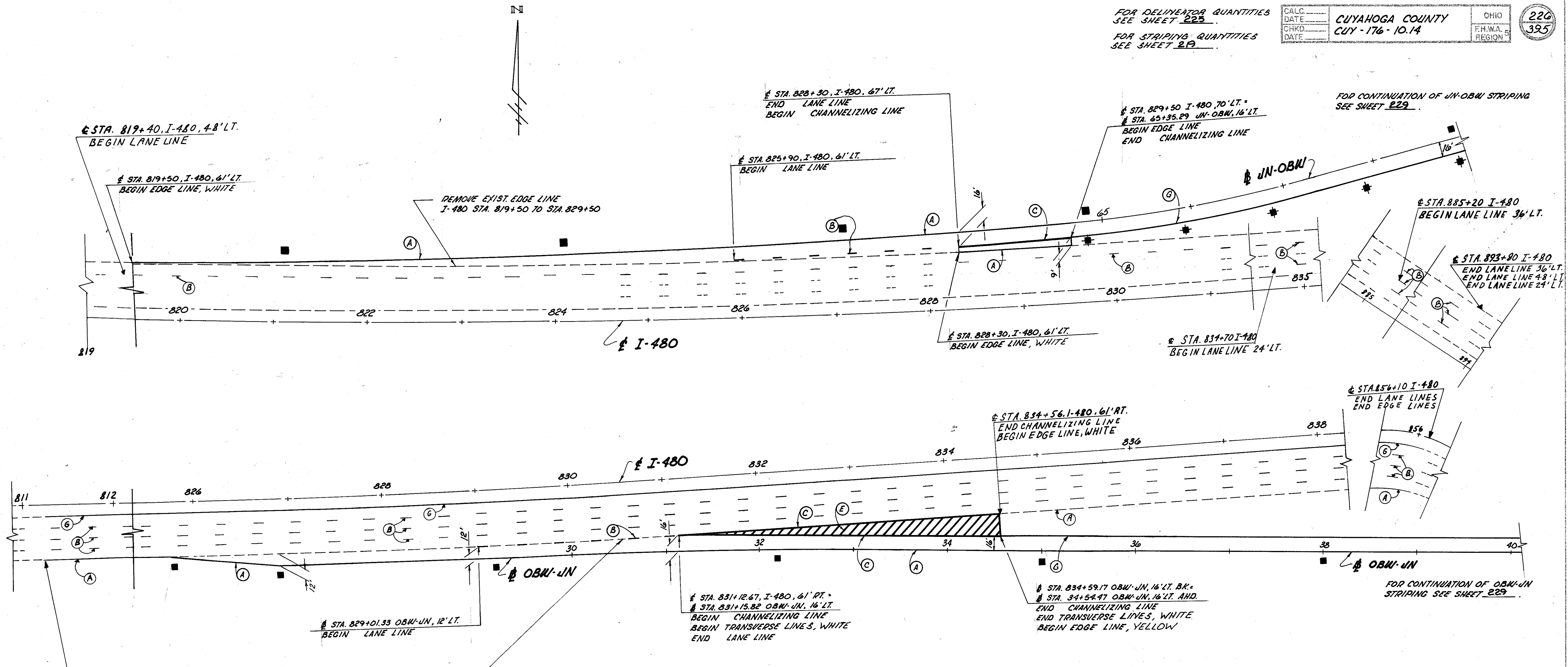
- DELINEATOR, TYPE C (COLORLESS)
- ◆ DELINEATOR, TYPE D (YELLOW)

RELOC. S.R. 176

FOR DELINEATOR QUANTITIES
SEE SHEET 225
FOR STRIPING QUANTITIES
SEE SHEET 229

FOR CONTINUATION OF JN-OBW STRIPING
SEE SHEET 229

FOR CONTINUATION OF OBW-JN STRIPING
SEE SHEET 229



PAVEMENT MARKING LEGEND

- * WORD "ONLY" ON PAVEMENT, 72"
- (A) EDGE LINE, WHITE
- (B) LANE LINE
- (C) CHANNELIZING LINE
- (D) STOP LINE
- (E) TRANSVERSE LINE, WHITE, 12' C/C
- (F) CROSSWALK LINE
- (G) EDGE LINE, YELLOW
- DELINEATORS, TYPE C (COLORLESS)
- ✦ DELINEATORS, TYPE D (YELLOW)

RELOC. S.P. 176

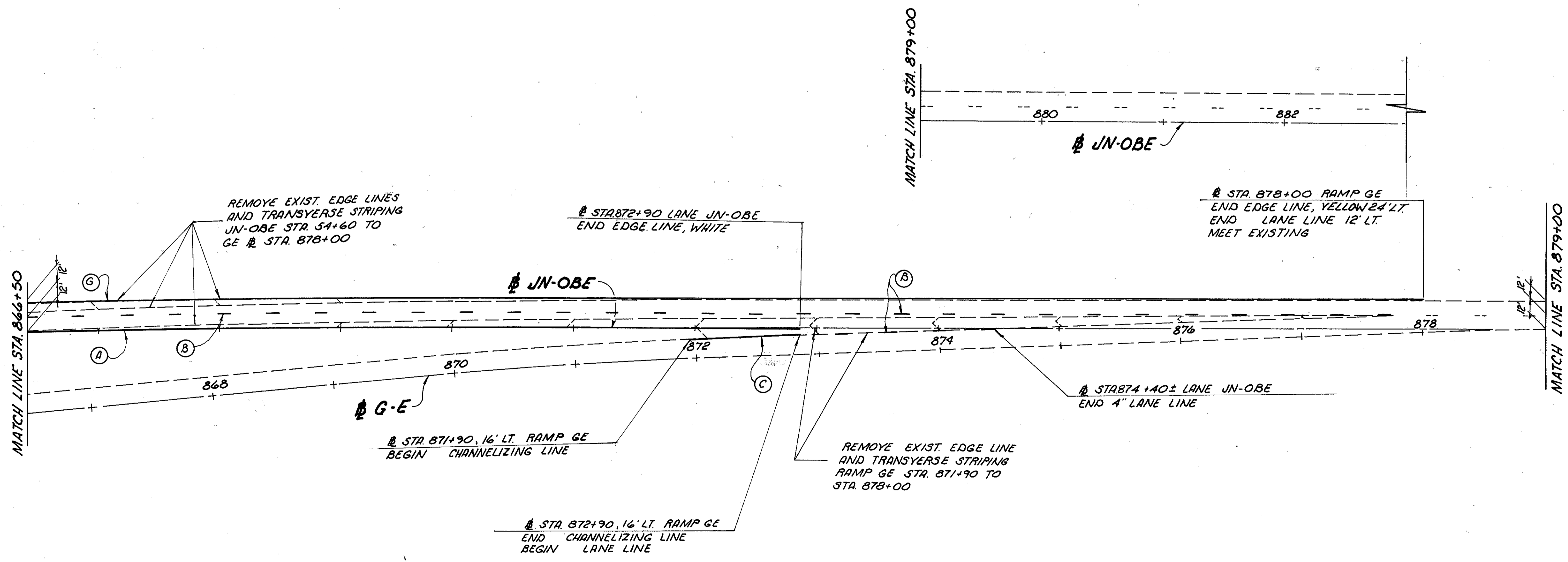
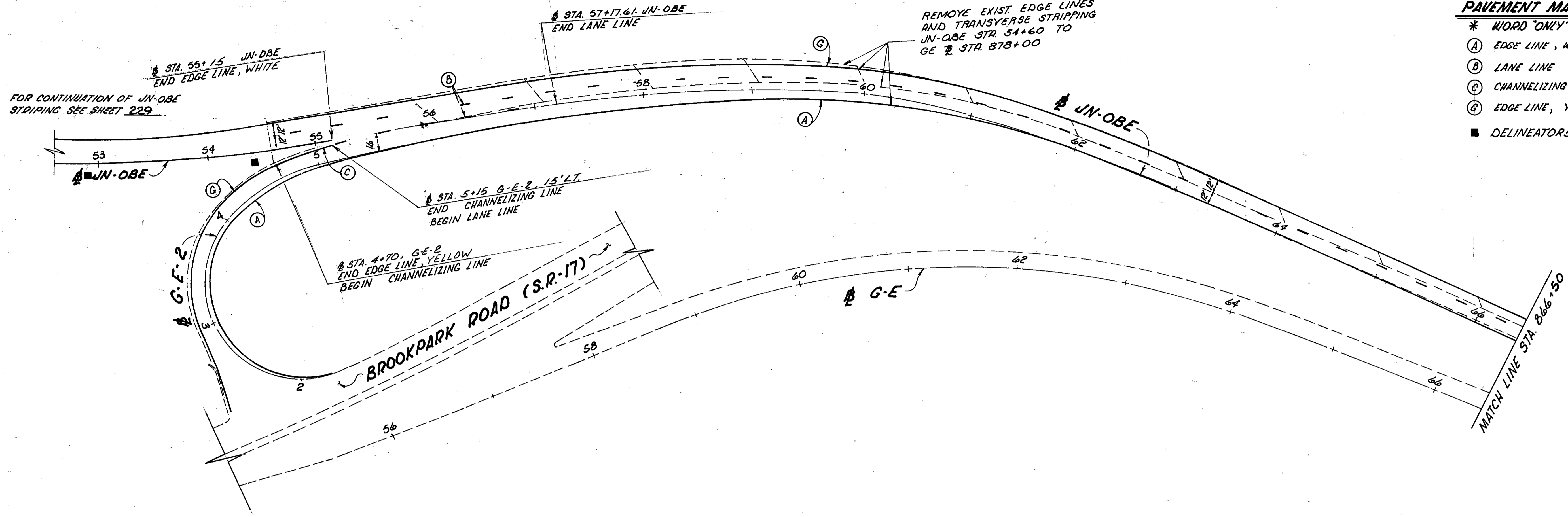
FOR DELINEATOR QUANTITIES
SEE SHEET 225
FOR STRIPING QUANTITIES
SEE SHEET 219

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUY - 176 - 10.14	F.H.W.A. REGION
CHKD.		
DATE		

227
395

PAVEMENT MARKING LEGEND

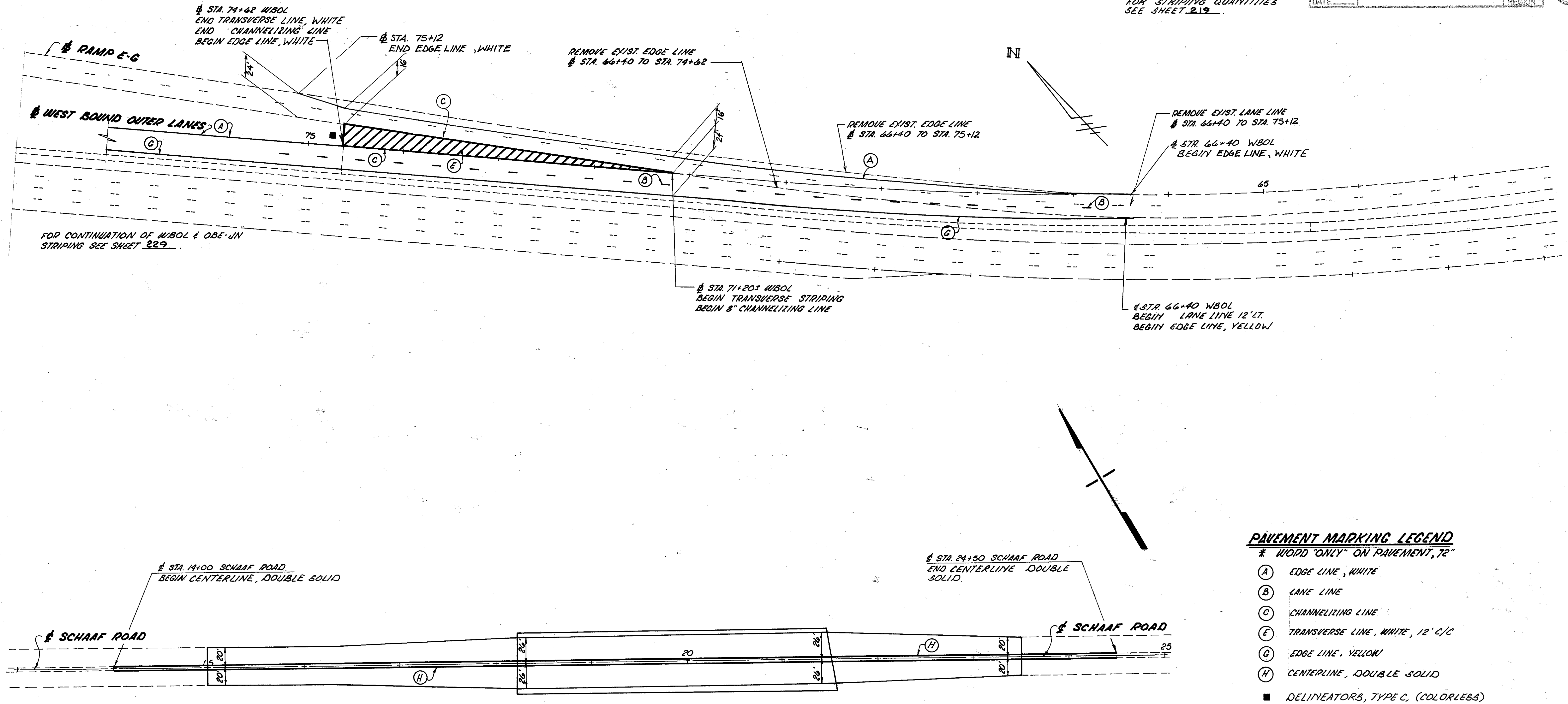
- * WORD "ONLY" ON PAVEMENT, 72"
- (A) EDGE LINE, WHITE
- (B) LANE LINE
- (C) CHANNELIZING LINE
- (G) EDGE LINE, YELLOW
- DELINEATORS, TYPE C (COLORLESS)



FOR DELINEATOR QUANTITIES
SEE SHEET 225
FOR STRIPING QUANTITIES
SEE SHEET 219

CALC.	CUYANOGA COUNTY	OHIO
DATE	CUY 176-10.14	E.H.W.A.
CHKD.		REGION
DATE		

228
295



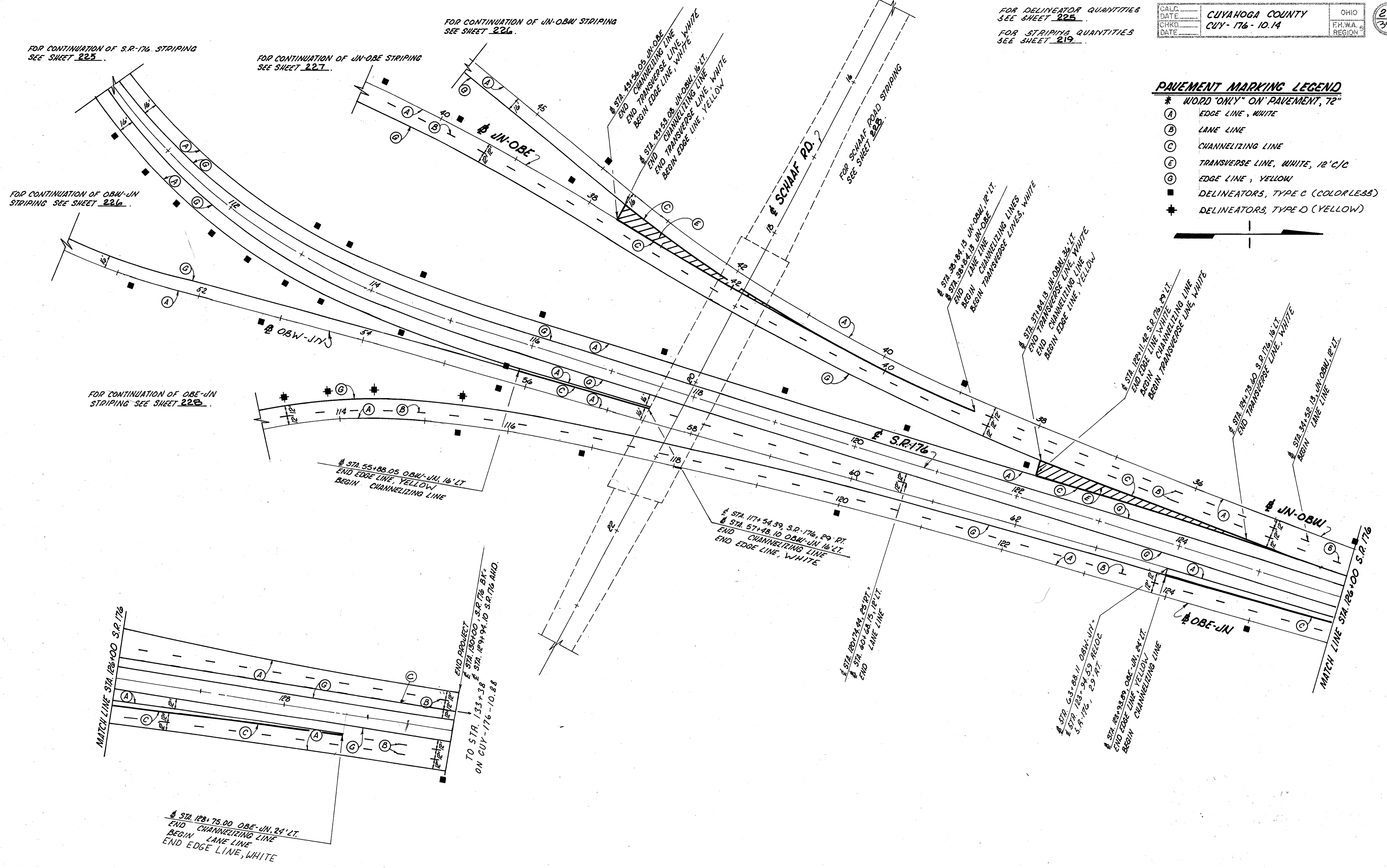
PAVEMENT MARKING LEGEND

- * WORD "ONLY" ON PAVEMENT, 72"
- (A) EDGE LINE, WHITE
- (B) LANE LINE
- (C) CHANNELIZING LINE
- (E) TRANSVERSE LINE, WHITE, 12' C/C
- (G) EDGE LINE, YELLOW
- (H) CENTERLINE, DOUBLE SOLID
- DELINEATORS, TYPE C, (COLORLESS)

FOR DELINEATOR QUANTITIES
SEE SHEET 225
FOR STRIPING QUANTITIES
SEE SHEET 219

PAVEMENT MARKING LEGEND

- * WORD "ONLY" ON PAVEMENT, 72"
- (A) EDGE LINE, WHITE
- (B) LANE LINE
- (C) CHANNELIZING LINE
- (E) TRANSVERSE LINE, WHITE, 12' C/C
- (G) EDGE LINE, YELLOW
- DELINEATORS, TYPE C (COLORLESS)
- ◆ DELINEATORS, TYPE D (YELLOW)



FOR CONTINUATION OF S.R. 176 STRIPING
SEE SHEET 225

FOR CONTINUATION OF JN-OBW STRIPING
SEE SHEET 227

FOR CONTINUATION OF JN-OBW STRIPING
SEE SHEET 226

FOR CONTINUATION OF OBW-JN STRIPING
SEE SHEET 226

FOR CONTINUATION OF OBE-JN STRIPING
SEE SHEET 228

MATCH LINE STA. 126+00 S.R. 176

STA. 128+75.00 OBE-JN, 24' LT.
END CHANNELIZING LINE
BEGIN LANE LINE
END EDGE LINE, WHITE

STA. 55+88.05 OBW-JN, 16' LT.
END EDGE LINE, YELLOW
BEGIN CHANNELIZING LINE

END PROJECT
STA. 130+00, S.R. 176 BK+
STA. 129+94.10 S.R. 176 AHD.
TO STA. 133+38
ON CUY-176-10.88

STA. 117+54.39 S.R. 176, PP RT.
STA. 57+48.10 OBW-JN, 16' LT.
END CHANNELIZING LINE
END EDGE LINE, WHITE

STA. 80+74.44, 25' RT.
STA. 80+68.15, 17' LT.
END LANE LINE

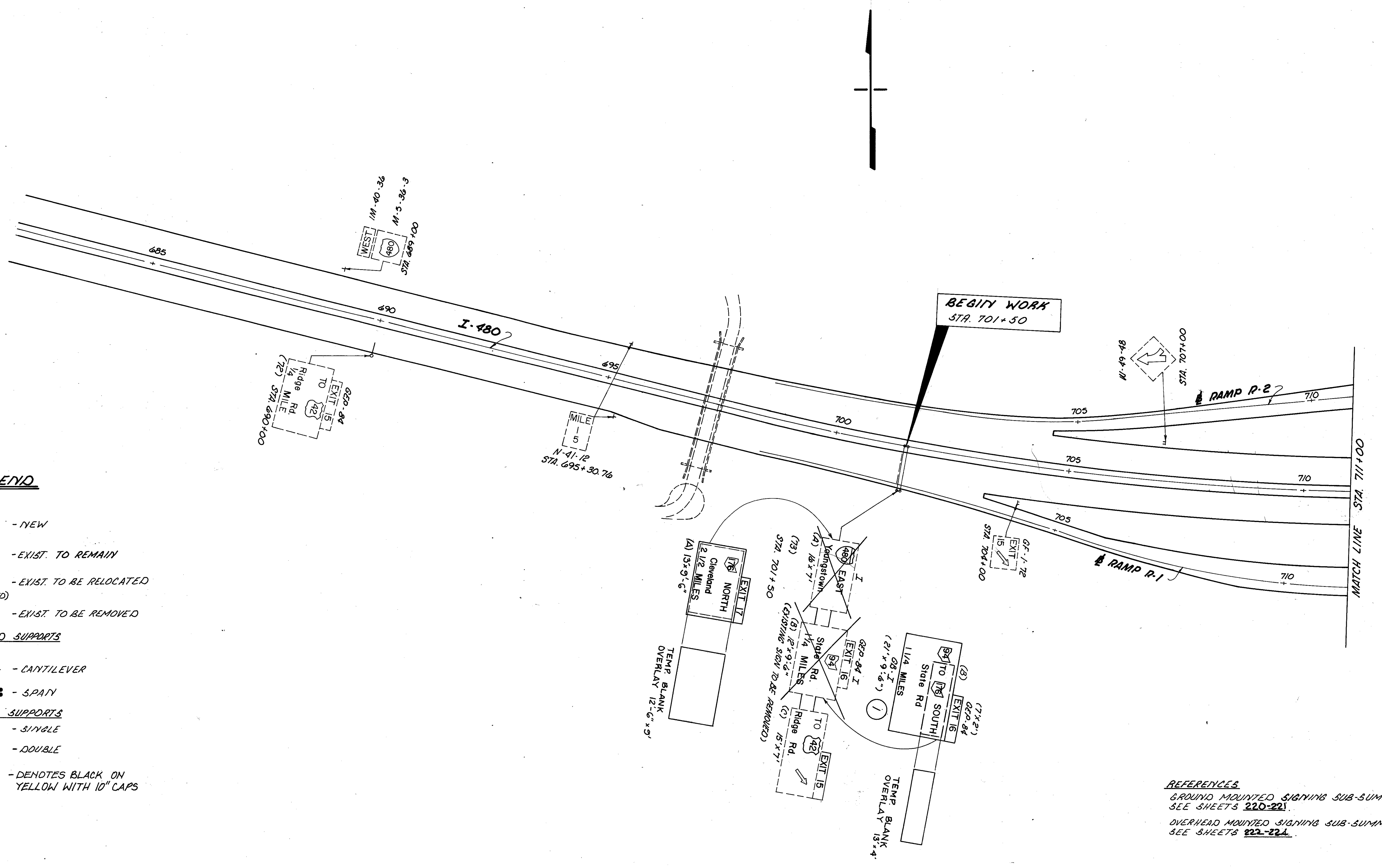
STA. 63+88.11 OBW-JN+
STA. 123+34.59 RELOC
S.R. 176, 25' RT.

STA. 128+98.99 OBE-JN, 24' LT.
END EDGE LINE, YELLOW
BEGIN CHANNELIZING LINE

OBE-JN

MATCH LINE STA. 126+00 S.R. 176

RELOC. S.R. 176



LEGEND

SIGNS

- NEW
- EXIST. TO REMAIN
- EXIST. TO BE RELOCATED (TO BE RELOCATED)
- EXIST. TO BE REMOVED

OVERHEAD SUPPORTS

- | | | |
|--|--|--------------|
| EXIST. | NEW | |
| | | - CANTILEVER |
| | | - SPAN |

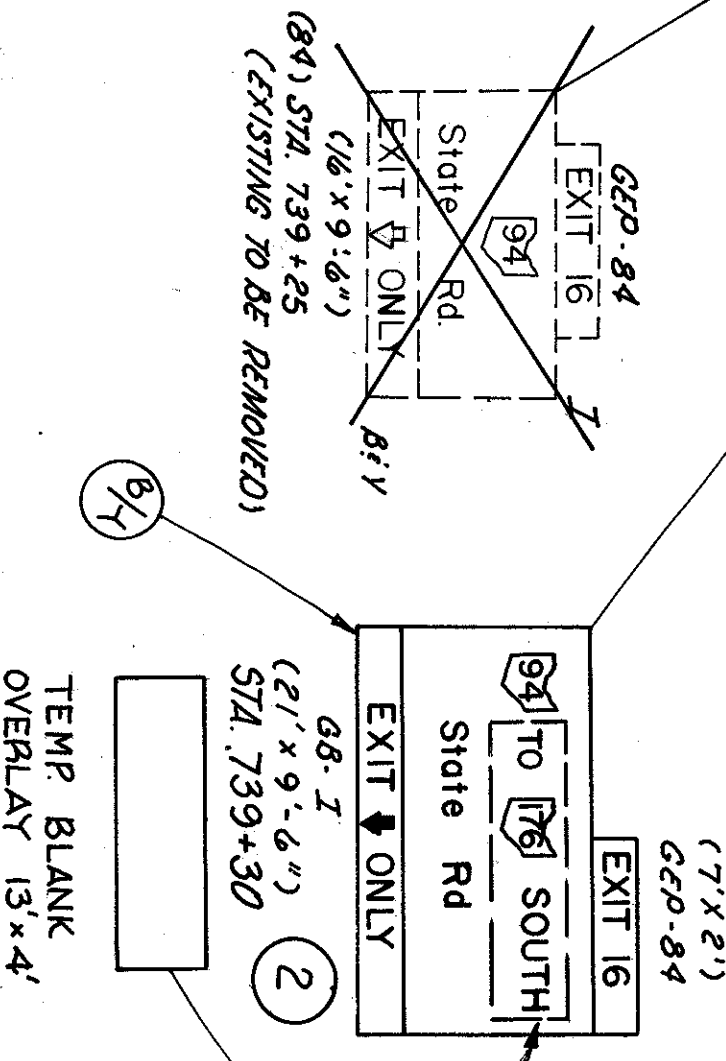
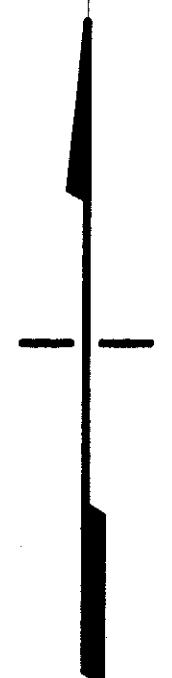
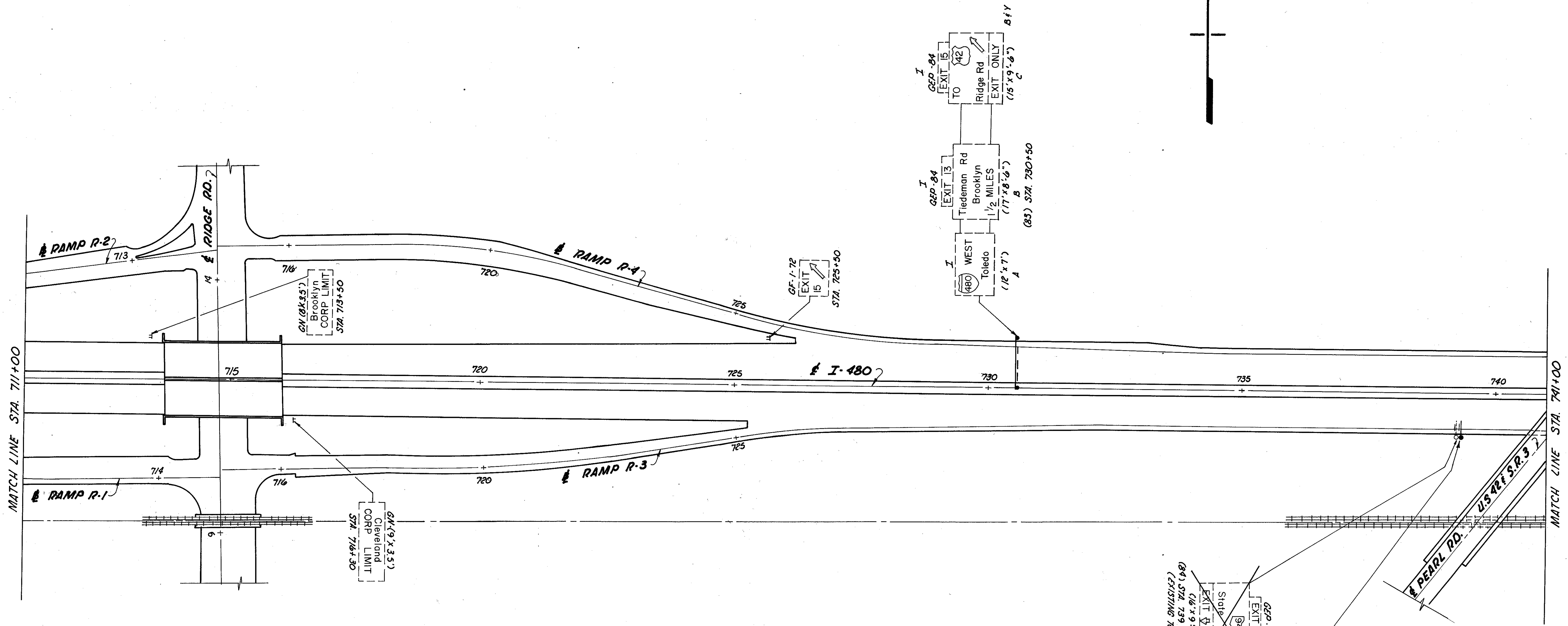
GROUND SUPPORTS

- SINGLE
- DOUBLE
- DENOTES BLACK ON YELLOW WITH 10" CAPS

REFERENCES

GROUND MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 220-221

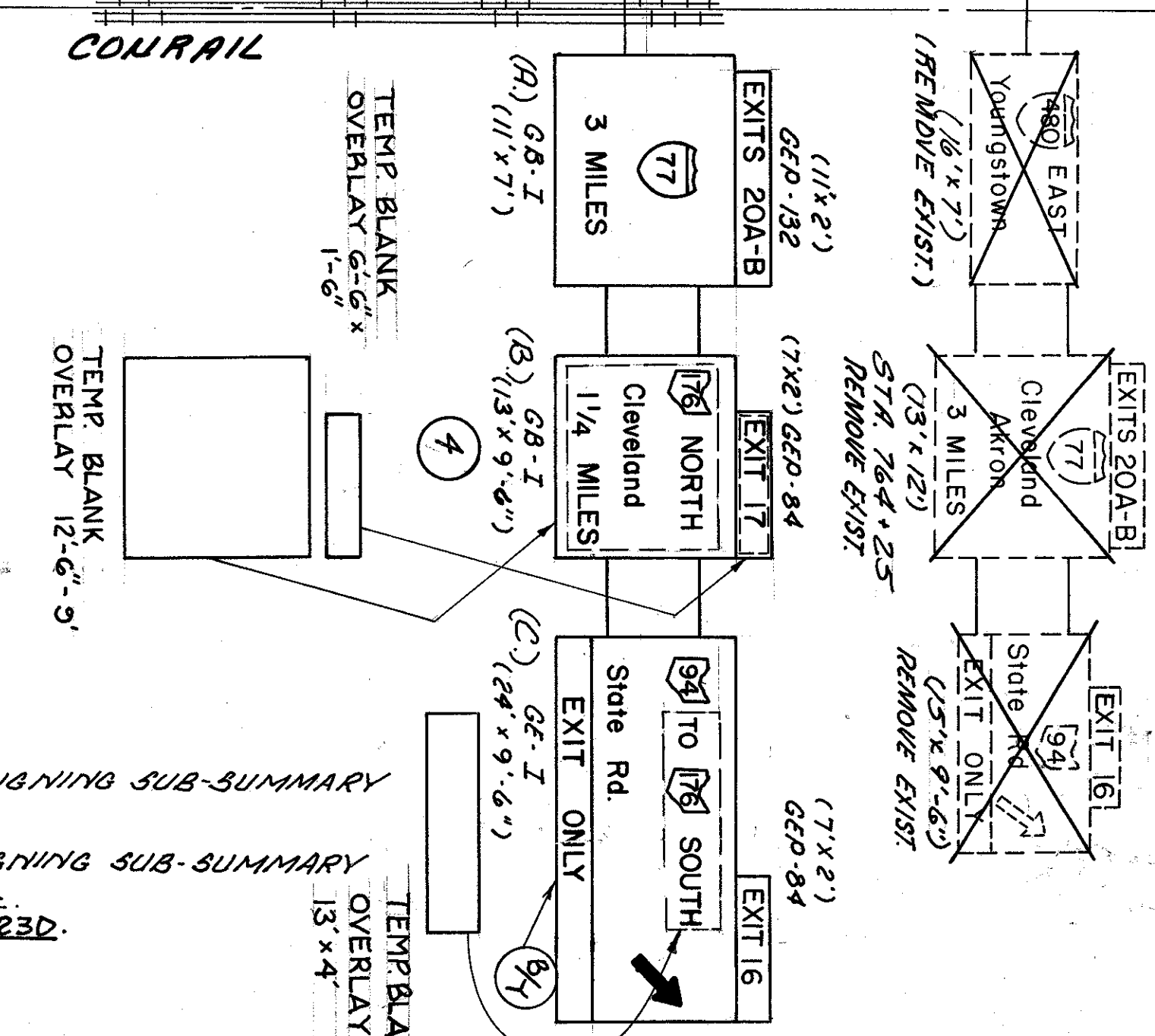
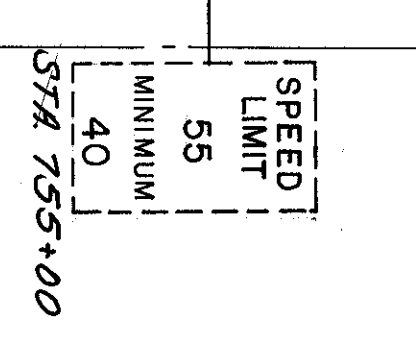
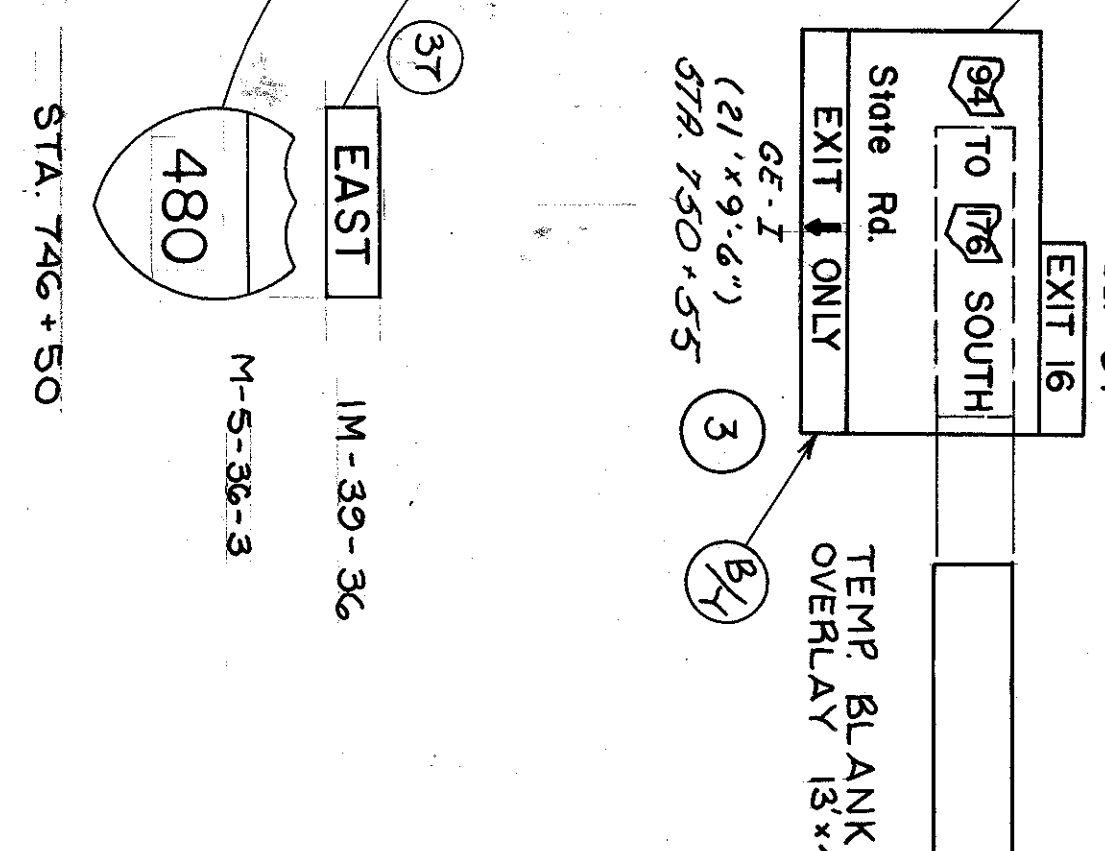
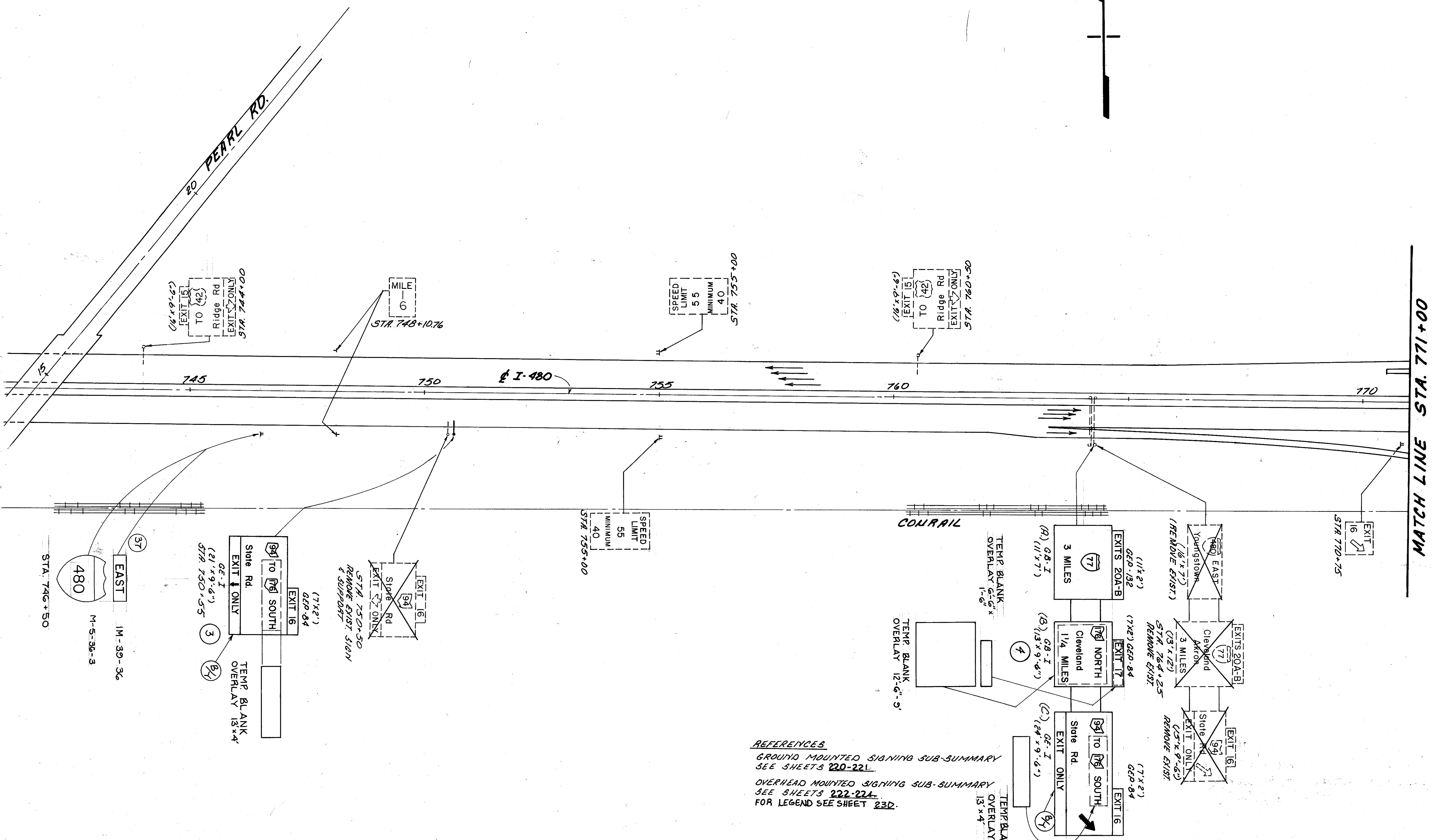
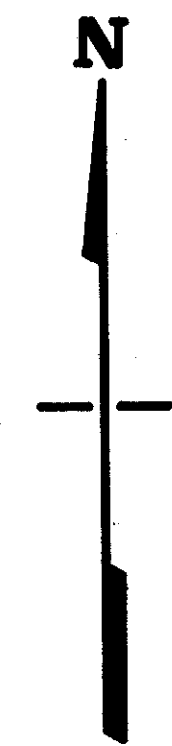
OVERHEAD MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 222-224



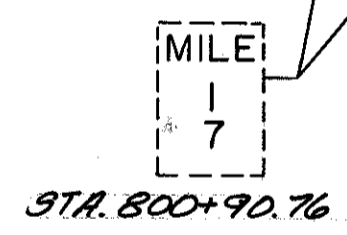
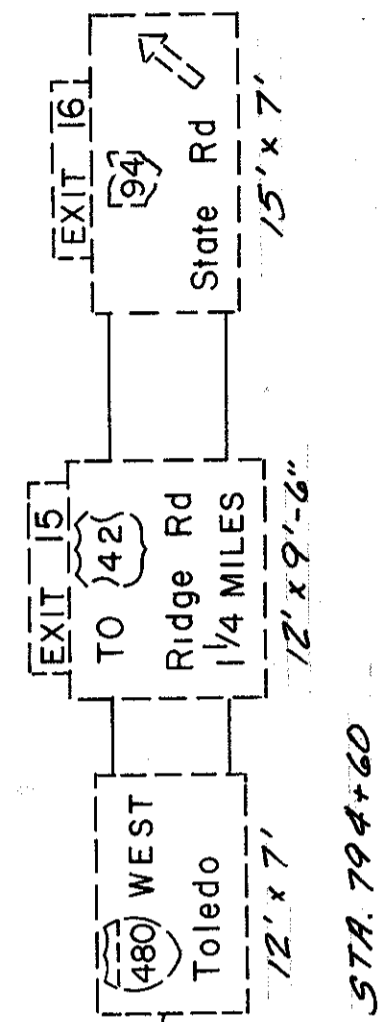
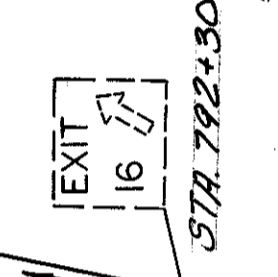
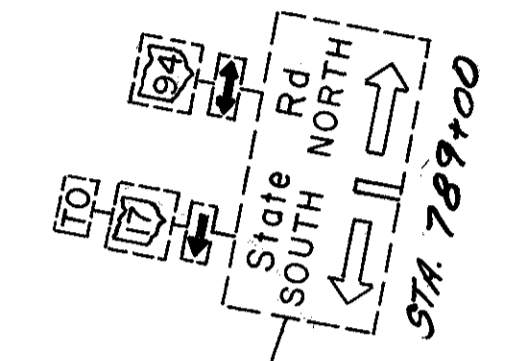
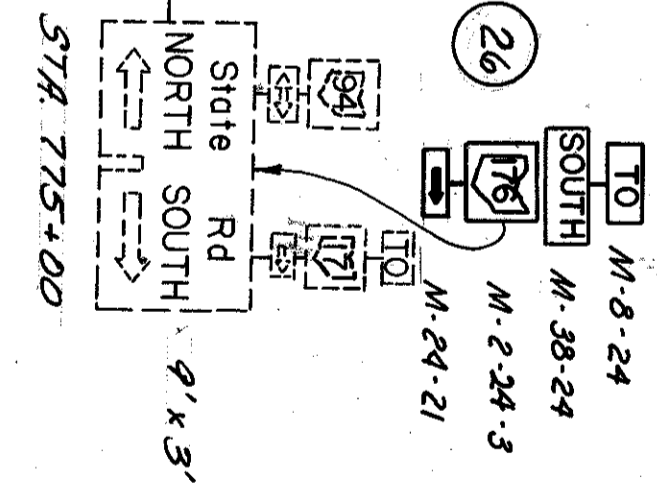
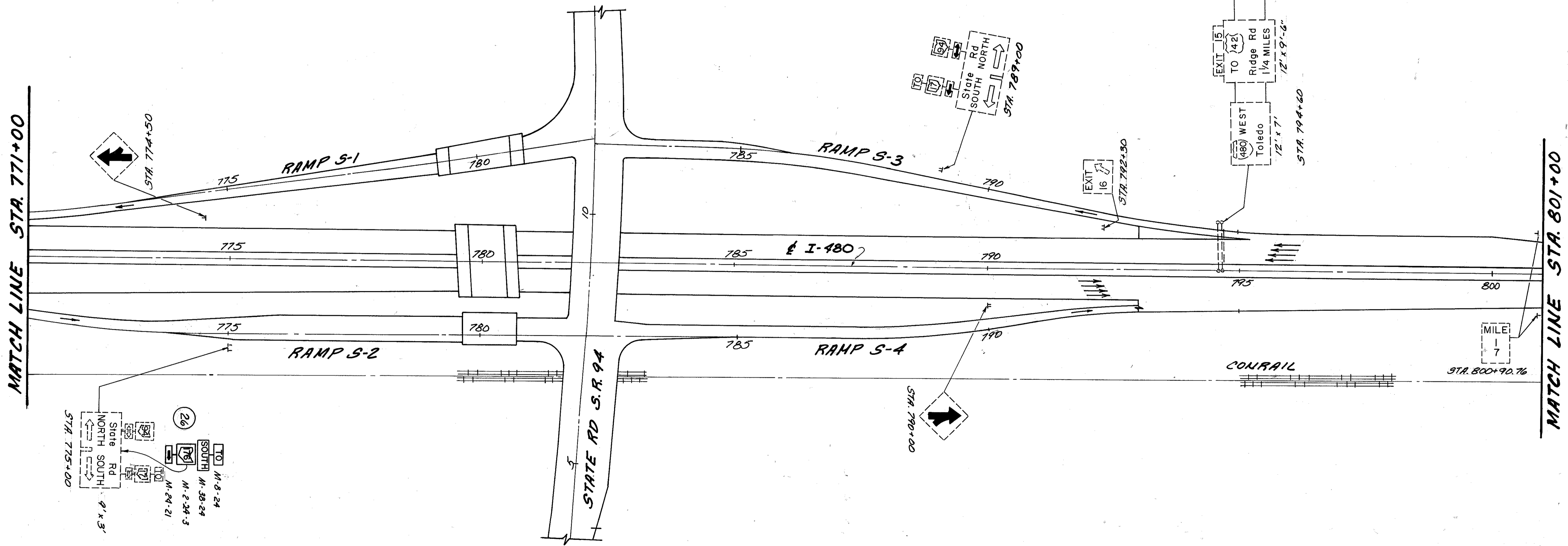
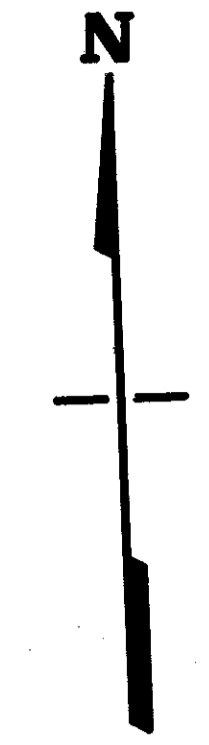
REFERENCES
 GROUND MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 220-221
 OVERHEAD MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 222-224
 FOR LEGEND SEE SHEET 230

SIGNING I-480 STA. 711+00 TO STA. 741+00

REL. C. S.R. 176

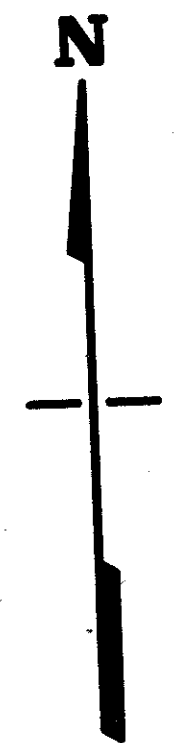


REFERENCES
GROUND MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 220-221
OVERHEAD MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 222-224
FOR LEGEND SEE SHEET 23D.



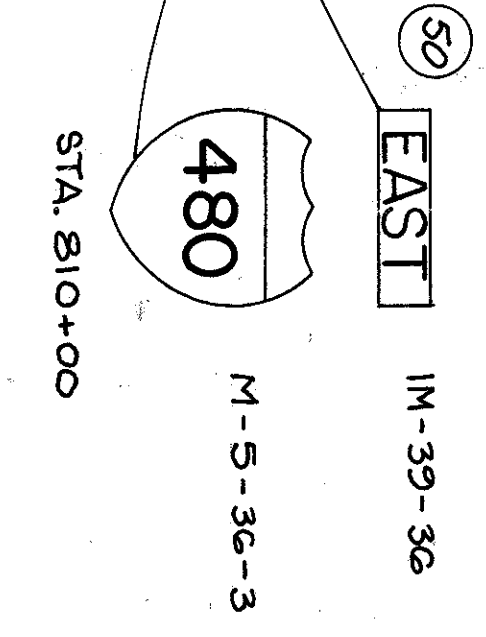
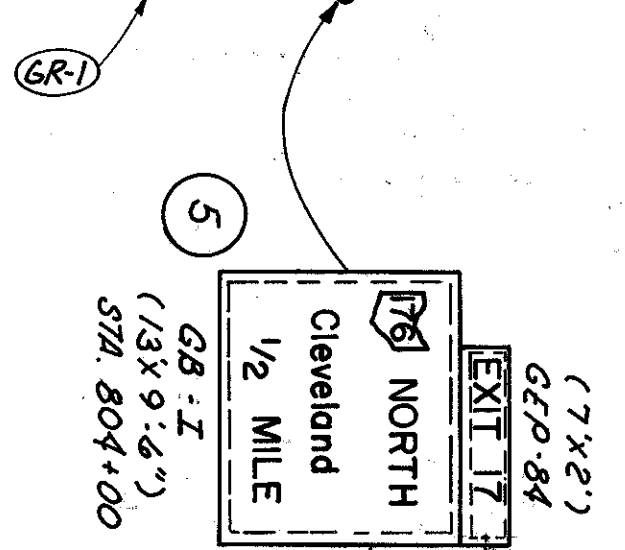
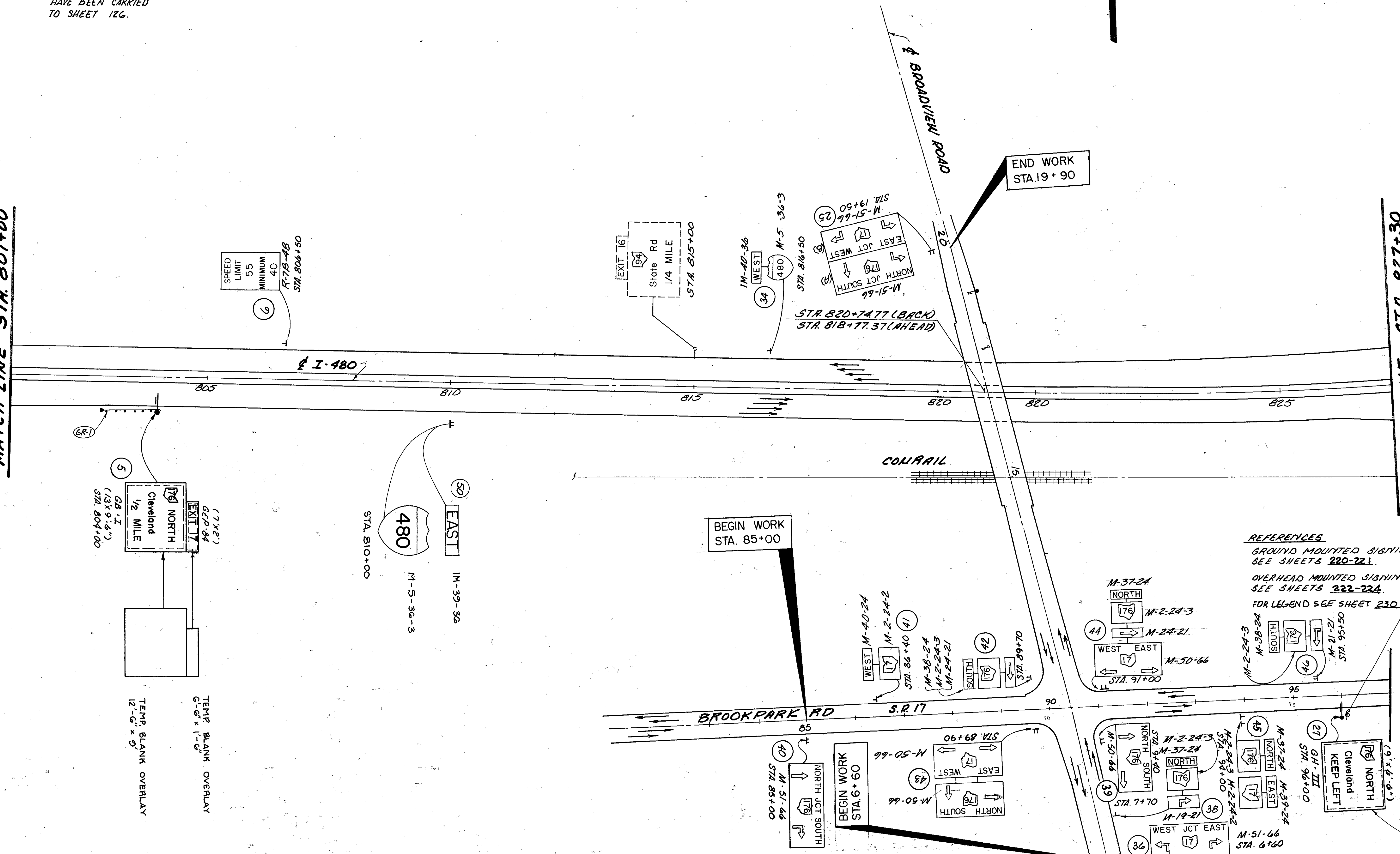
REFERENCES
GROUND MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 220-221
OVERHEAD MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 222-224
FOR LEGEND SEE SHEET 230.

NOTE:
QUANTITIES FOR (GR-1)
HAVE BEEN CARRIED
TO SHEET 126.



MATCH LINE STA 801+00

MATCH LINE STA 827+30



BEGIN WORK
STA. 85+00

END WORK
STA. 19+90

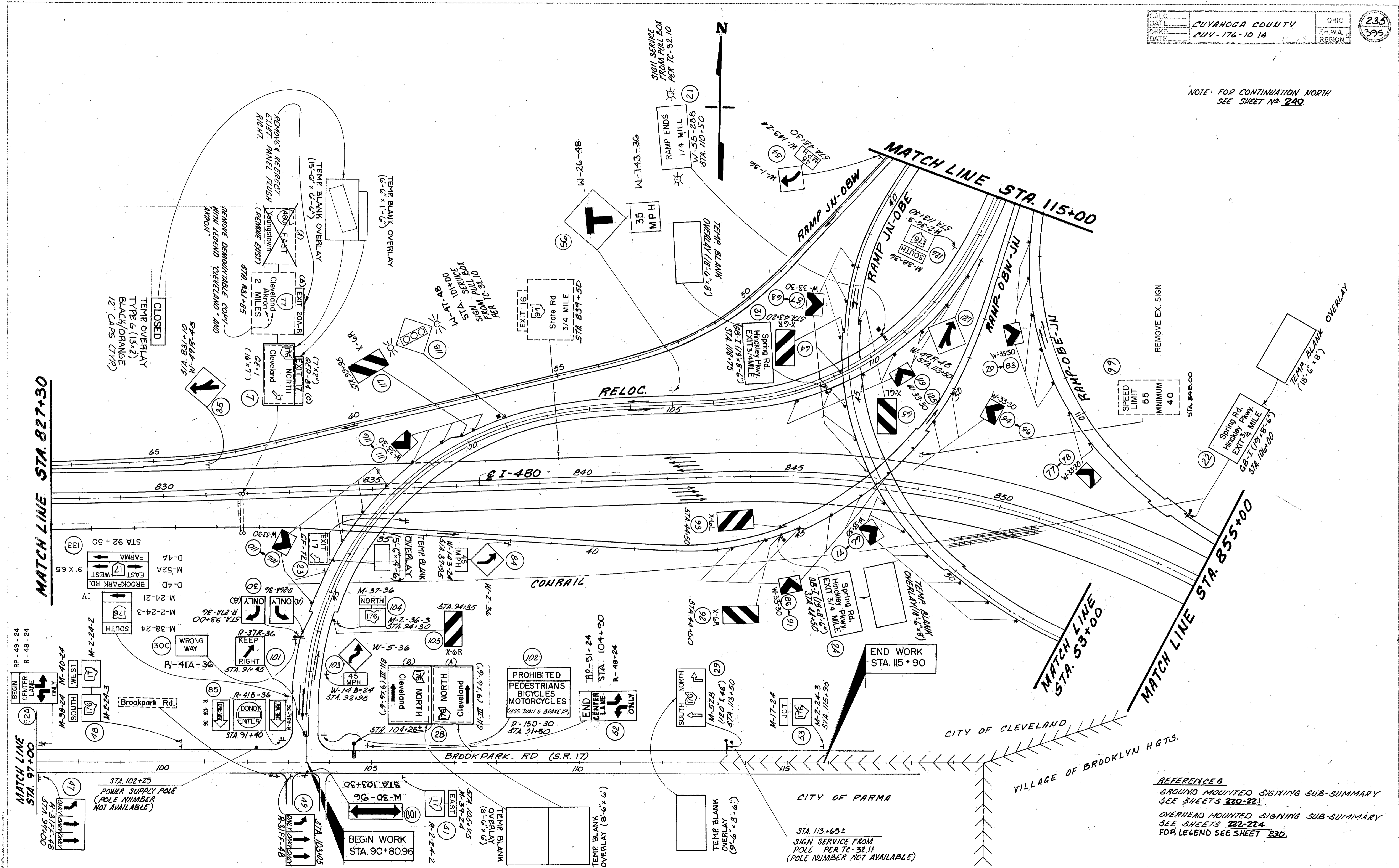
REFERENCES
GROUND MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 220-221.
OVERHEAD MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 222-224.
FOR LEGEND SEE SHEET 230.

STA. 96+15±
SIGN SERVICE FROM
POLE # 541077
PER TC-32-11

TEMP. BLANK OVERLAY
12'-0" x 9"

TEMP. BLANK
OVERLAY
8'-0" x 6"

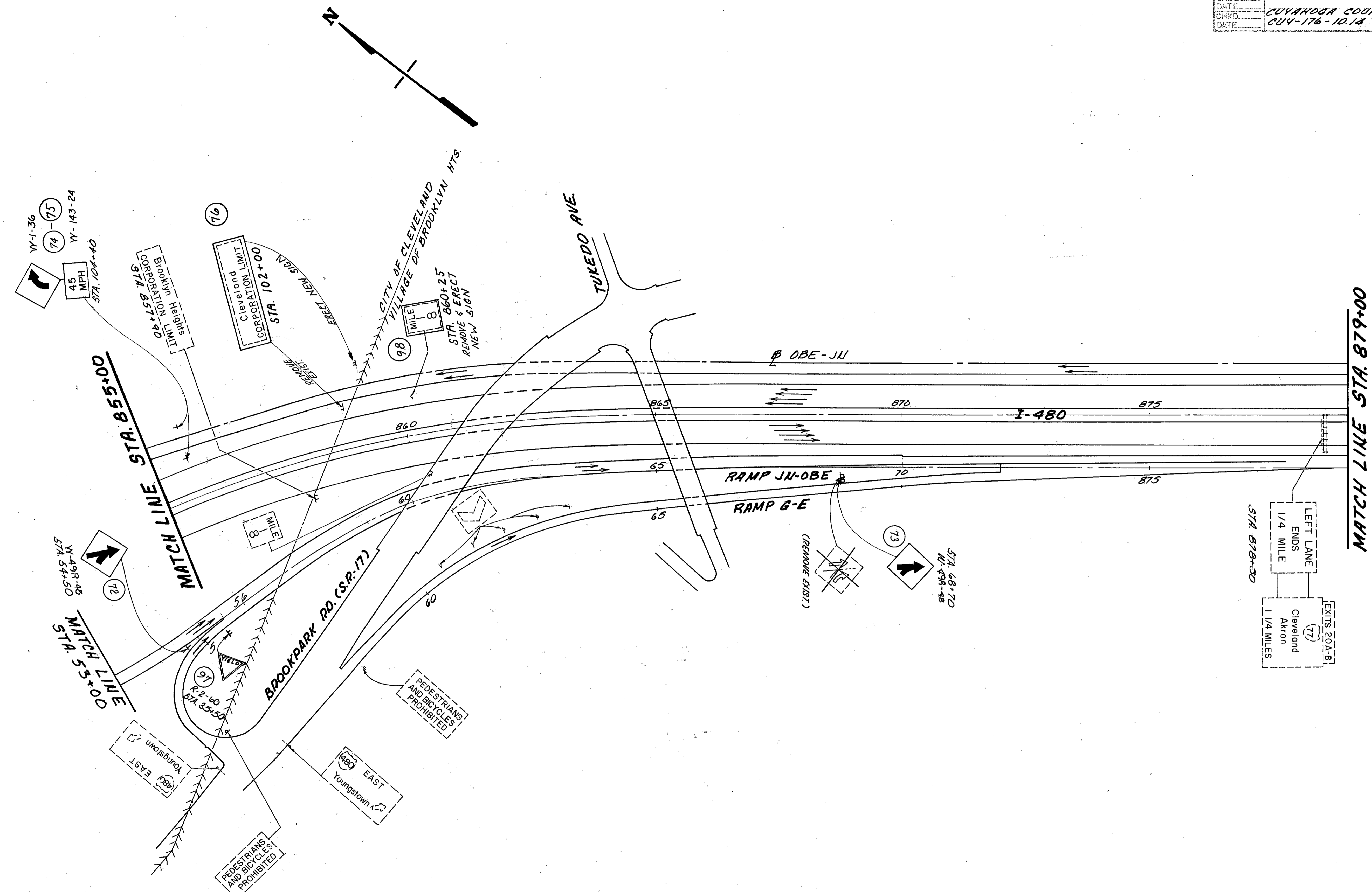
NOTE: FOR CONTINUATION NORTH SEE SHEET NO. 240



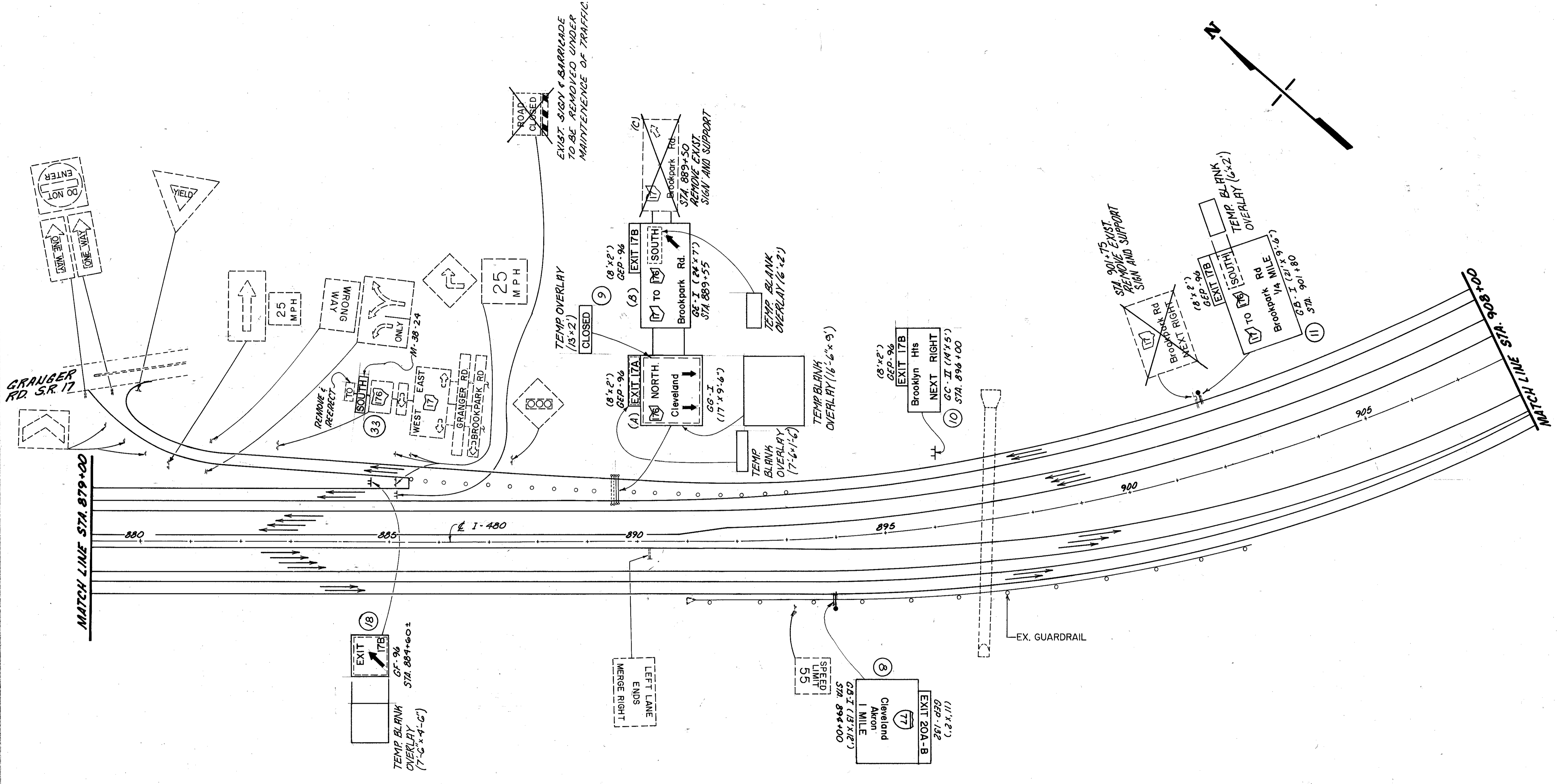
REFERENCES
 GROUND MOUNTED SIGNING SUB-SUMMARY SEE SHEETS 220-221.
 OVERHEAD MOUNTED SIGNING SUB-SUMMARY SEE SHEETS 222-224.
 FOR LEGEND SEE SHEET 230.

SIGNING I-480 STA 827+30 TO STA 855+00

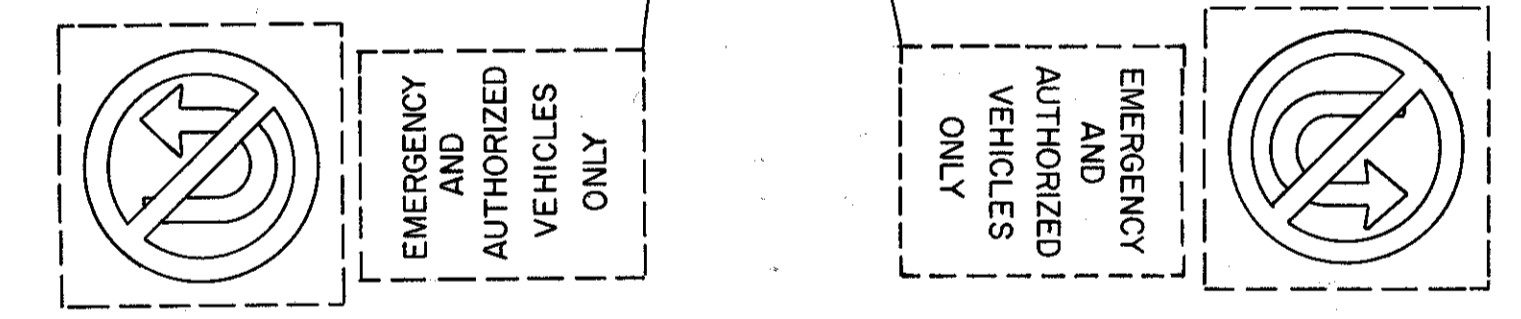
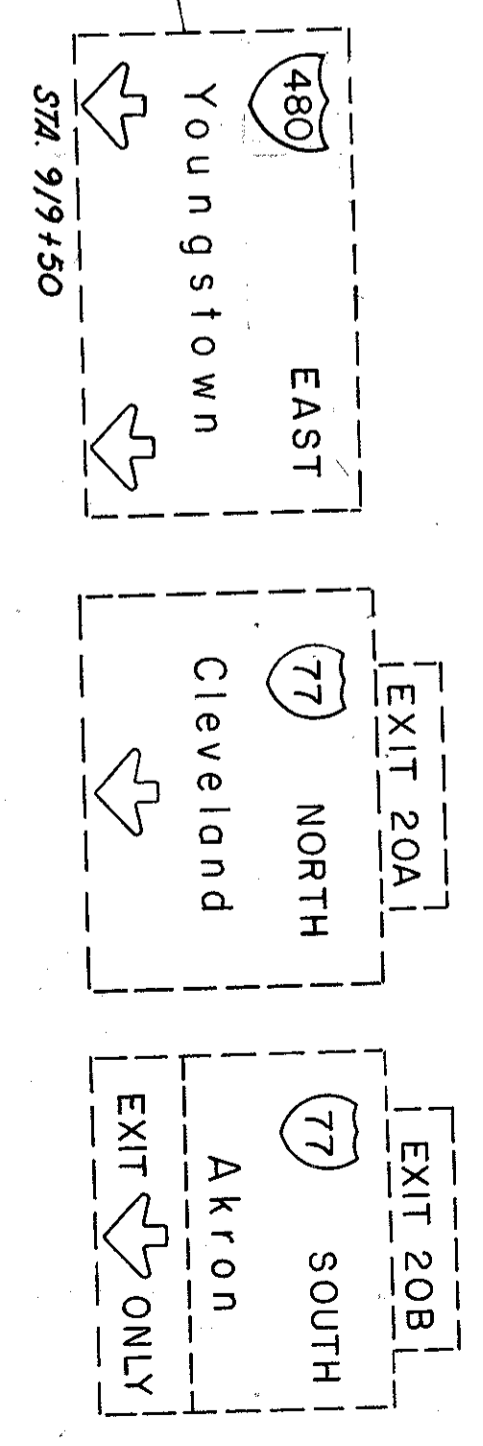
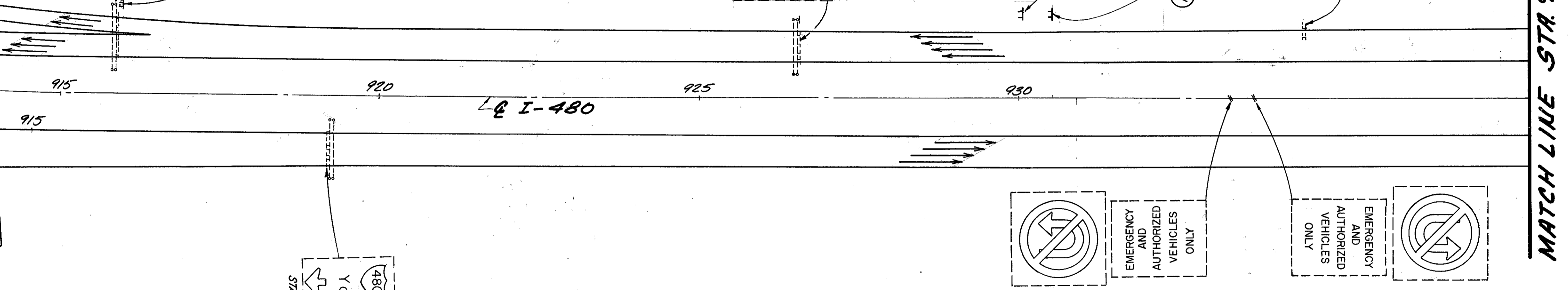
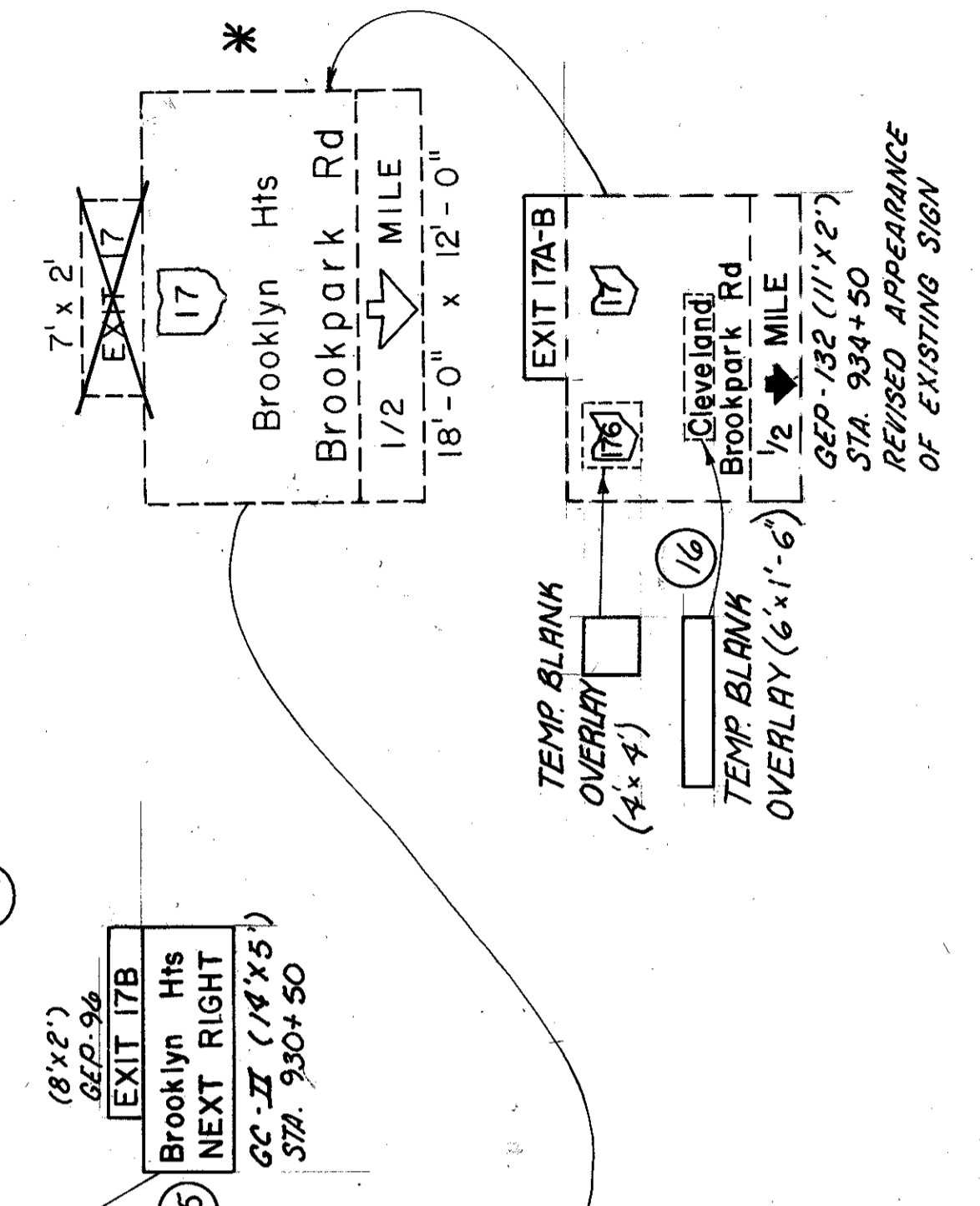
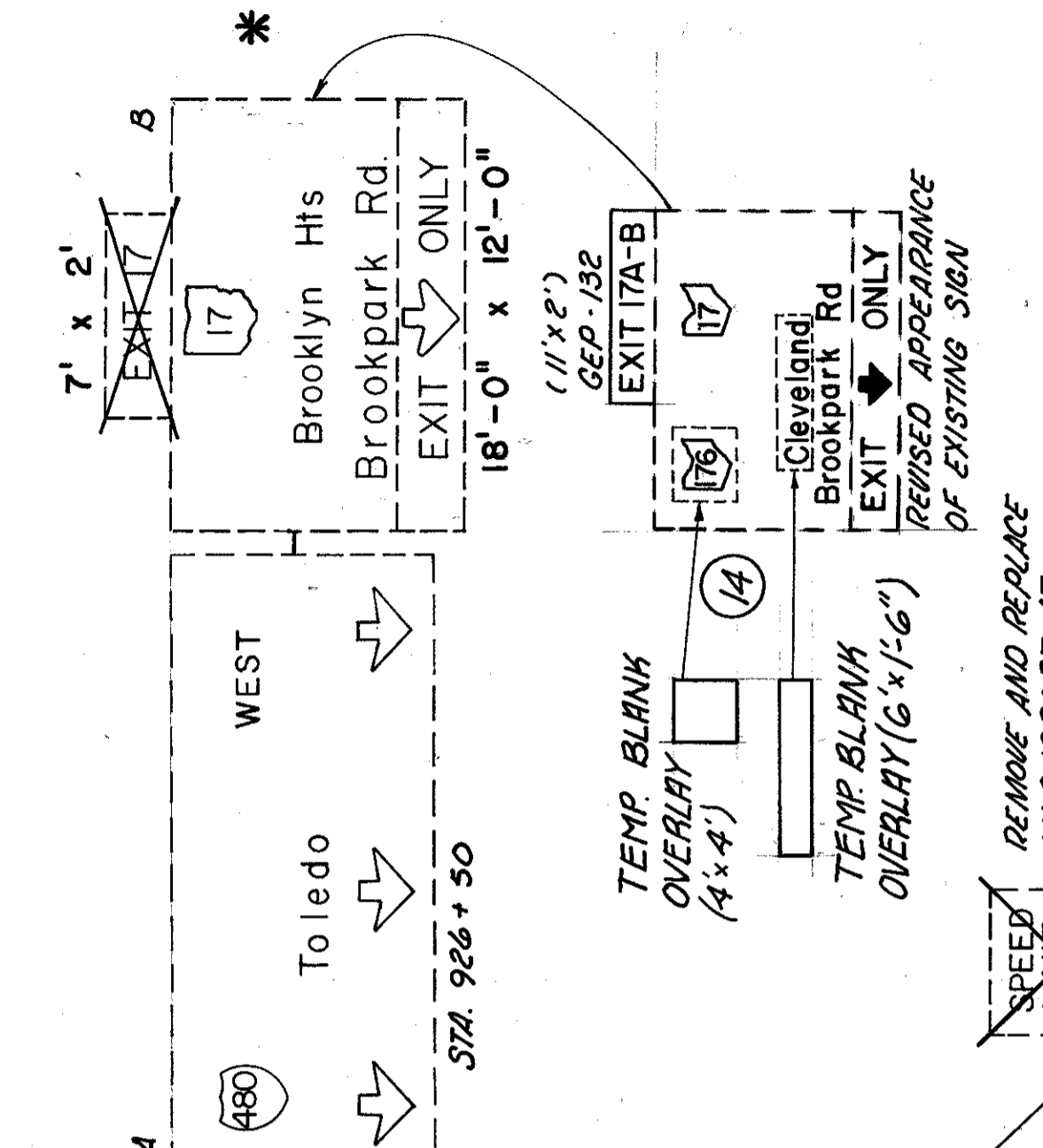
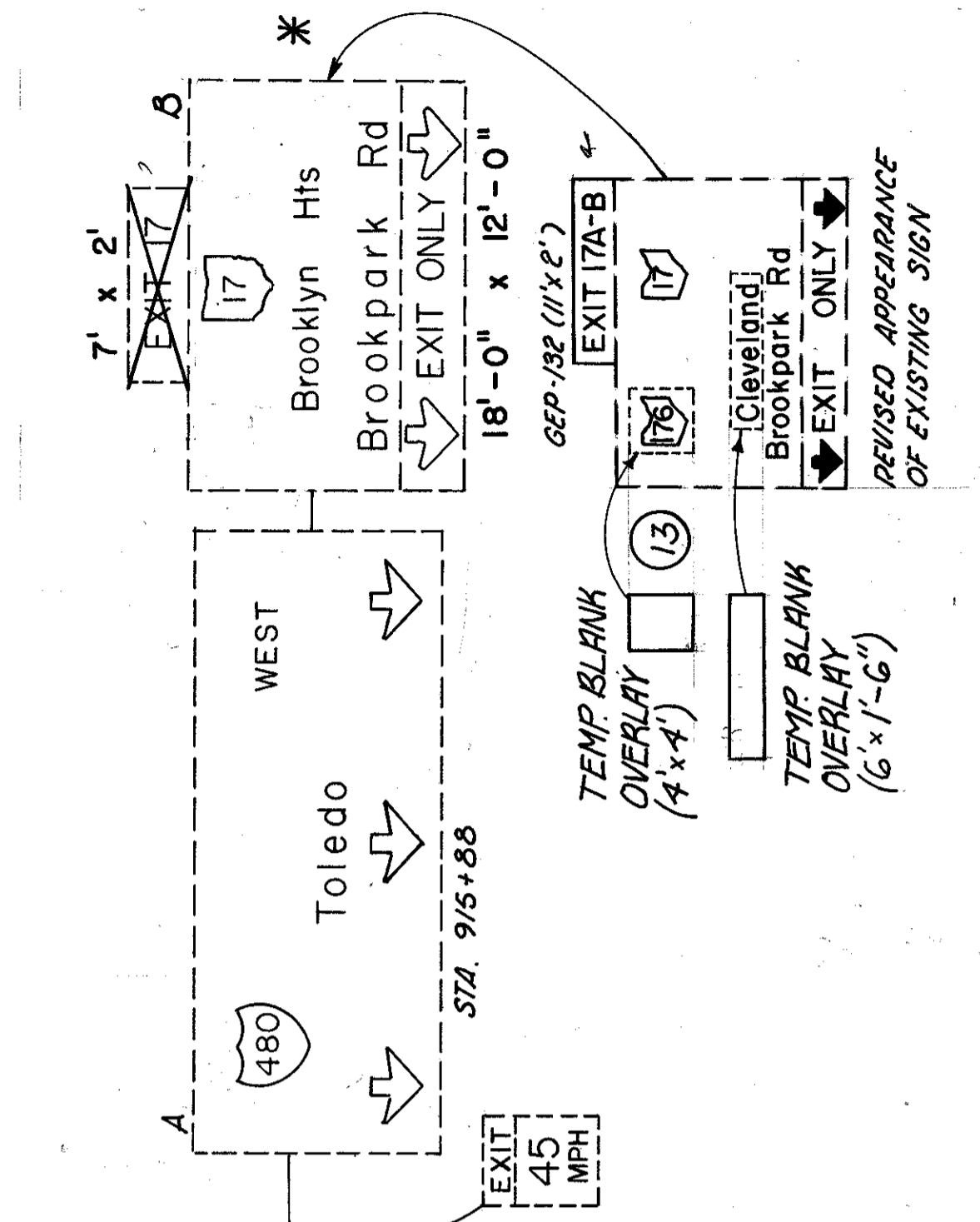
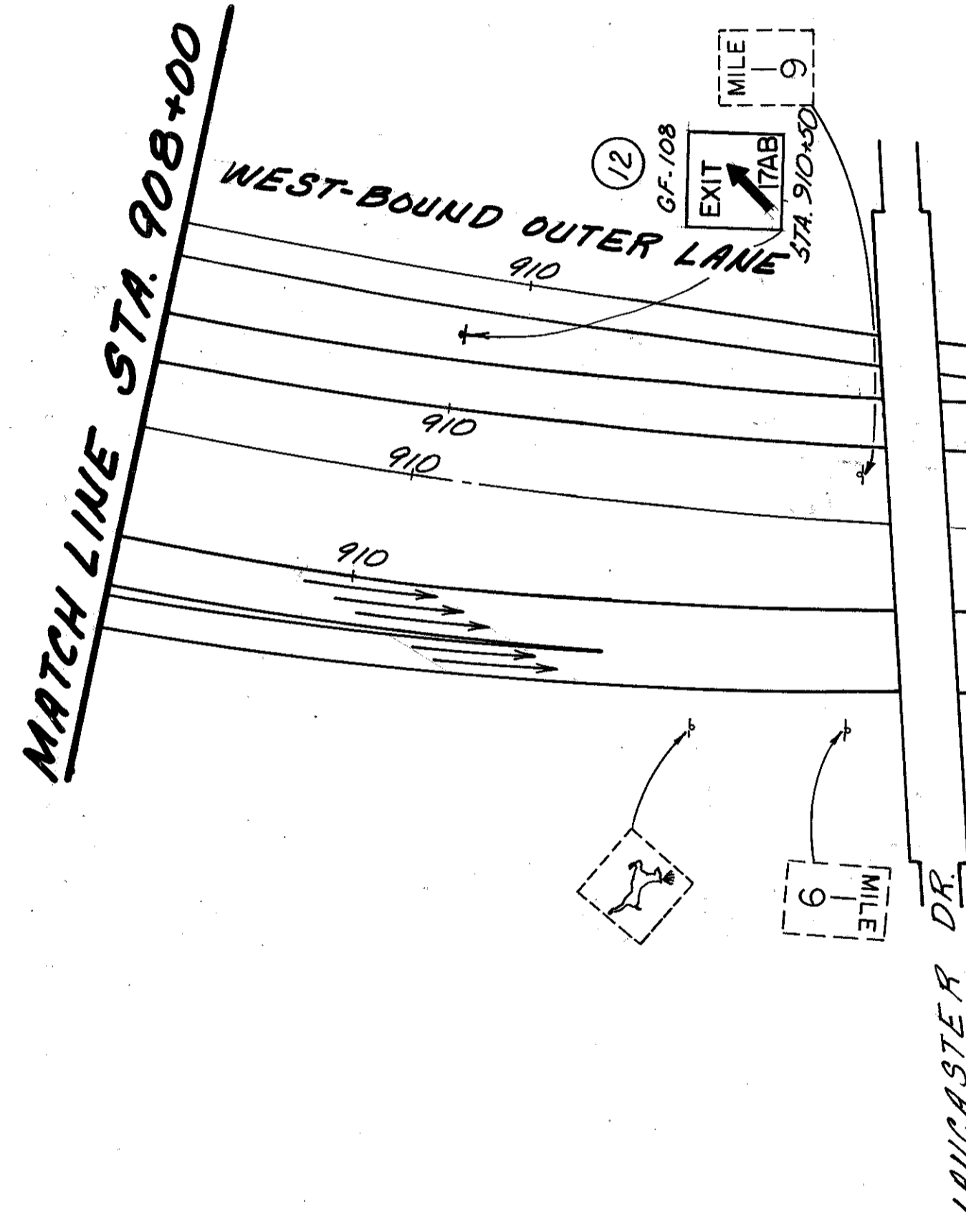
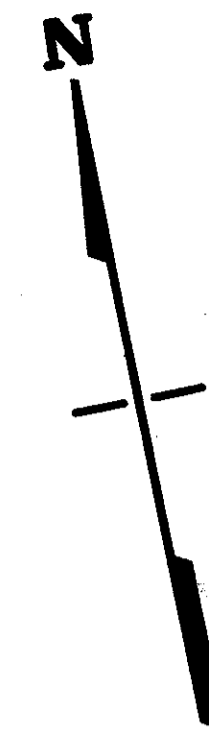
RELOC. S.P. 176



REFERENCES
 GROUND MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 220-221
 OVERHEAD MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 222-224
 FOR LEGEND SEE SHEET 230



REFERENCES
 GROUND MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 220-221
 OVERHEAD MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 222-224
 FOR LEGEND SEE SHEET 230

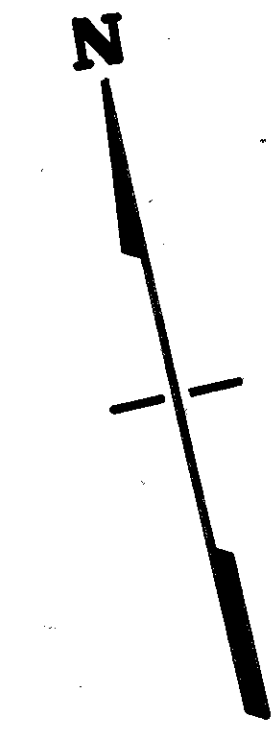


NOTE:
THE SIGNS FOR EXIT 17 MARKED BY AN * ON THIS SHEET AND SHEET NO. 312 AND HAVE THE LEGEND "BROOKPARK RD." ARE MOUNTED USING DEMOUNTABLE COPY AND ARE TO BE REVISED AS FOLLOWS:

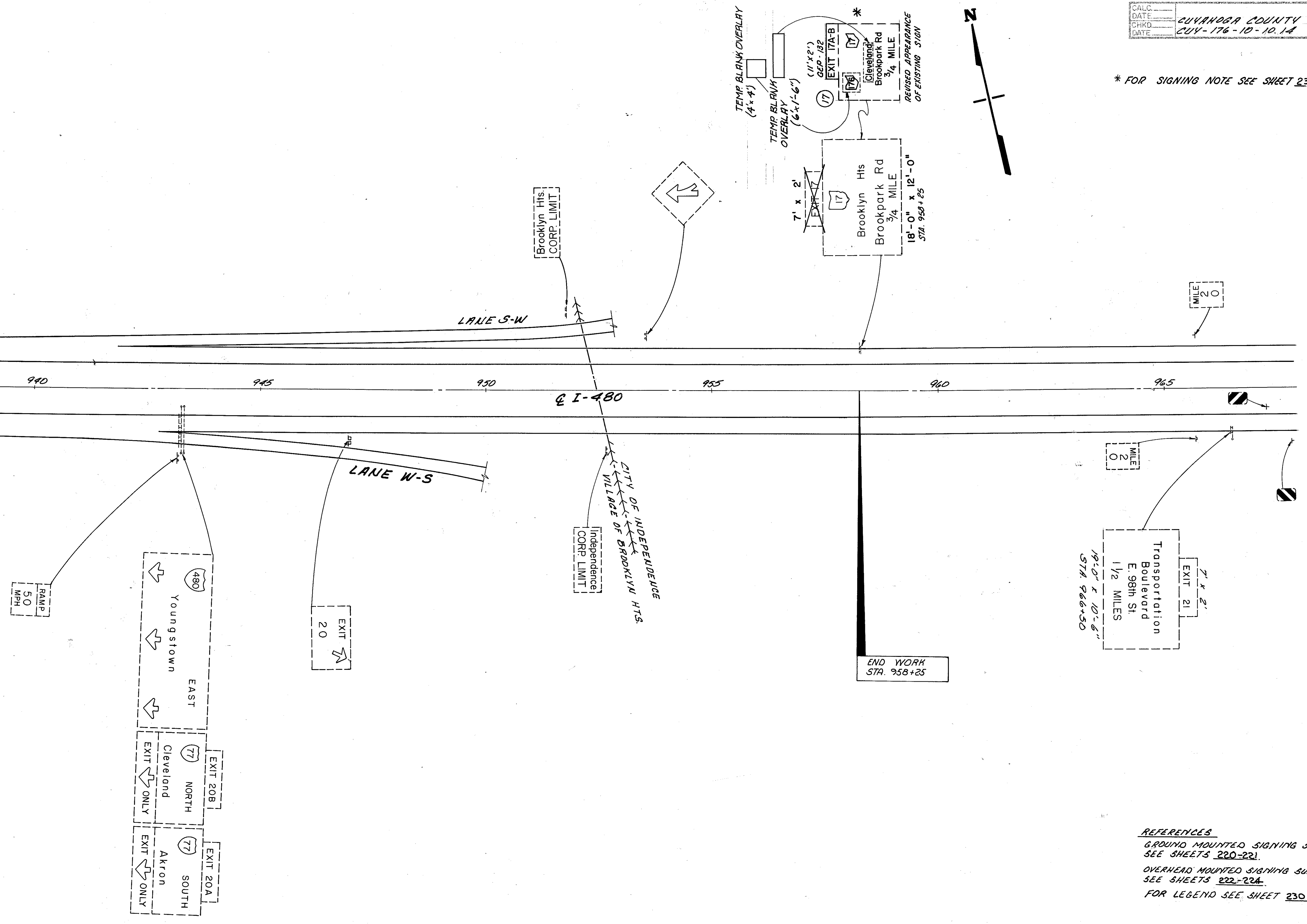
- 1) REALIGN THE S.R.-17 SHIELD TO THE RIGHT.
- 2) ADD S.R.-176 SHIELD ON LEFT.
- 3) REMOVE COPY BROOKLYN HTS. AND ADD NEW LEGEND "CLEVELAND" IN DEMOUNTABLE COPY.
- 4) REMOVE EXIST. EXIT PANEL AND INSTALL NEW PANEL TO READ EXITS 17A-B.

REFERENCES:
GROUND MOUNTED SIGNING SUB-SUMMARY SEE SHEETS 220-221.
OVERHEAD MOUNTED SIGNING SUB-SUMM SEE SHEETS 222-224.
FOR LEGEND SEE SHEET 230.

* FOR SIGNING NOTE SEE SHEET 230.



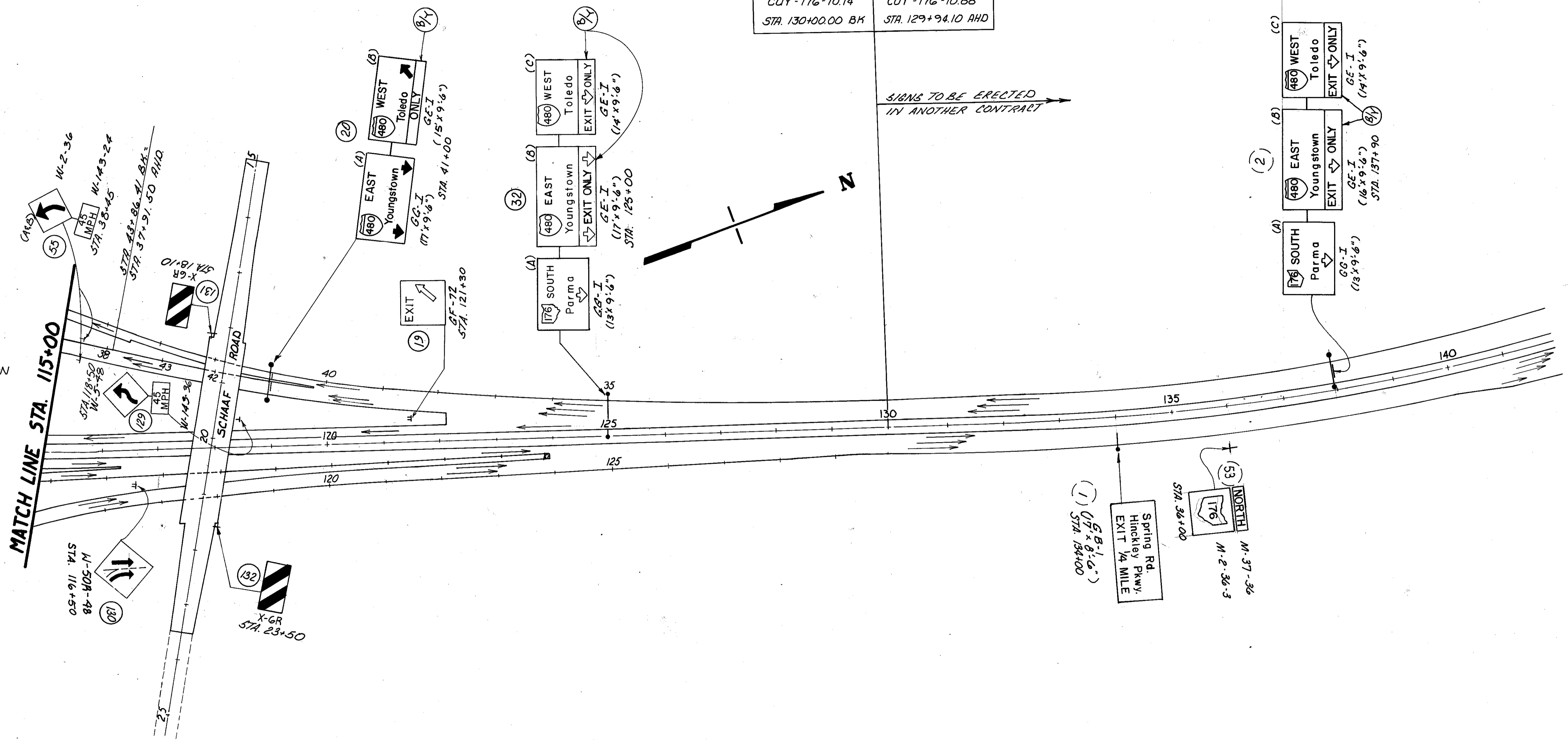
MATCH LINE STA. 938+00



REFERENCES
 GROUND MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 220-221.
 OVERHEAD MOUNTED SIGNING SUB-SUMMARY
 SEE SHEETS 222-224.
 FOR LEGEND SEE SHEET 230.

END PROJECT	BEGIN PROJECT
CUY - 176 - 10.14	CUY - 176 - 10.88
STA. 130+00.00 BK	STA. 129+94.10 AHD

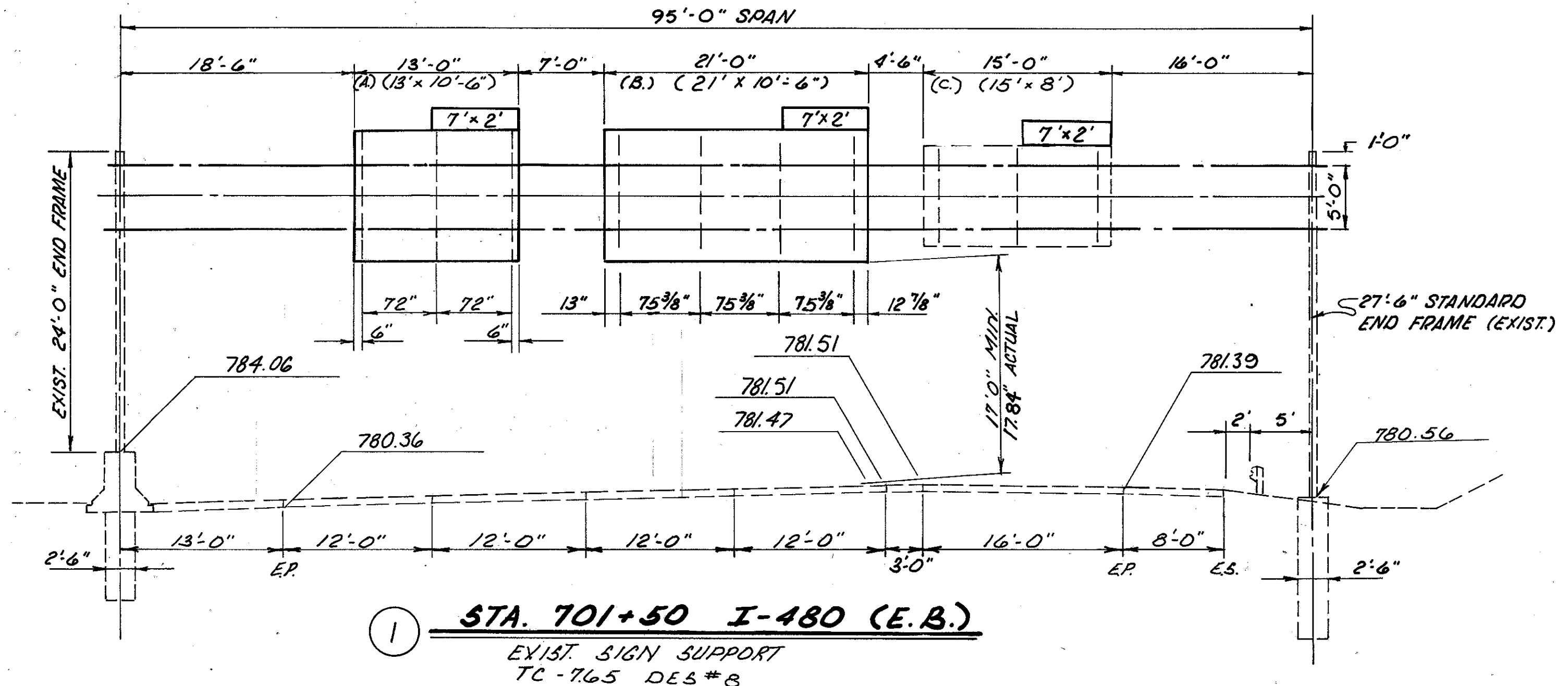
SIGNS TO BE ERECTED
IN ANOTHER CONTRACT



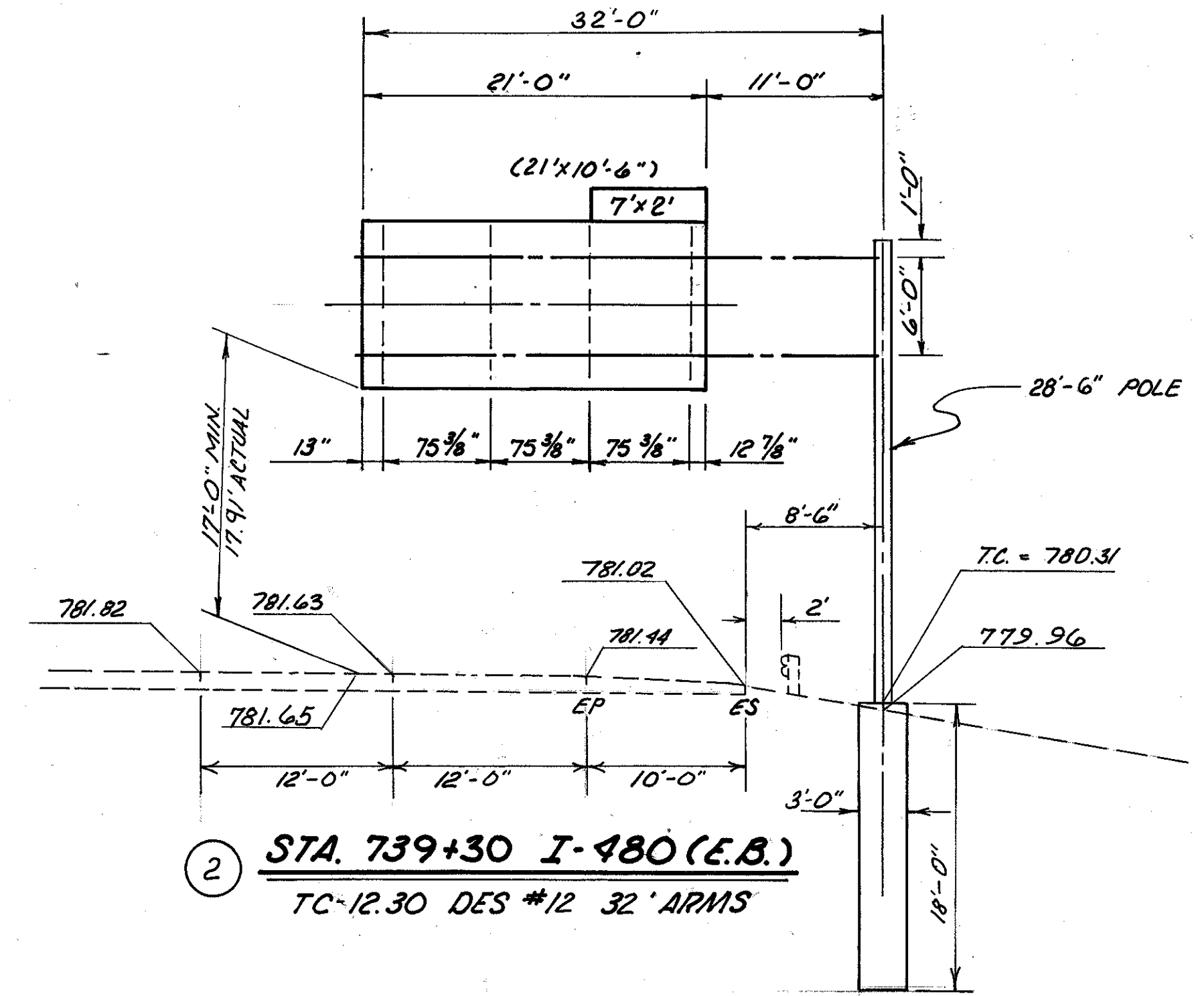
FOR CONTINUATION
SEE SHEET 308.

MATCH LINE STA. 115+00

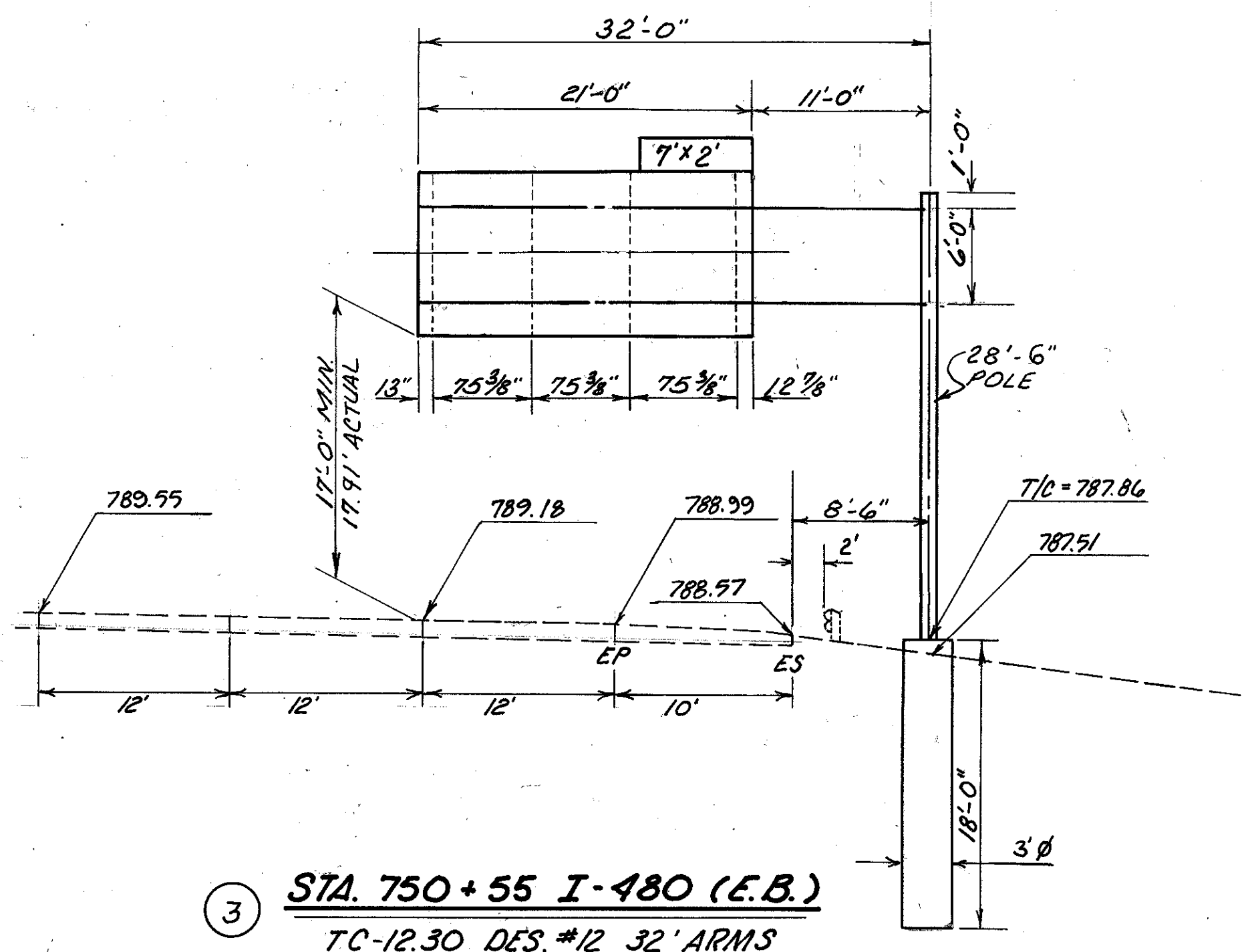
REFERENCES
GROUND MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 220-221.
OVERHEAD MOUNTED SIGNING SUB-SUMMARY
SEE SHEETS 222-224.
FOR LEGEND SEE SHEET 230.



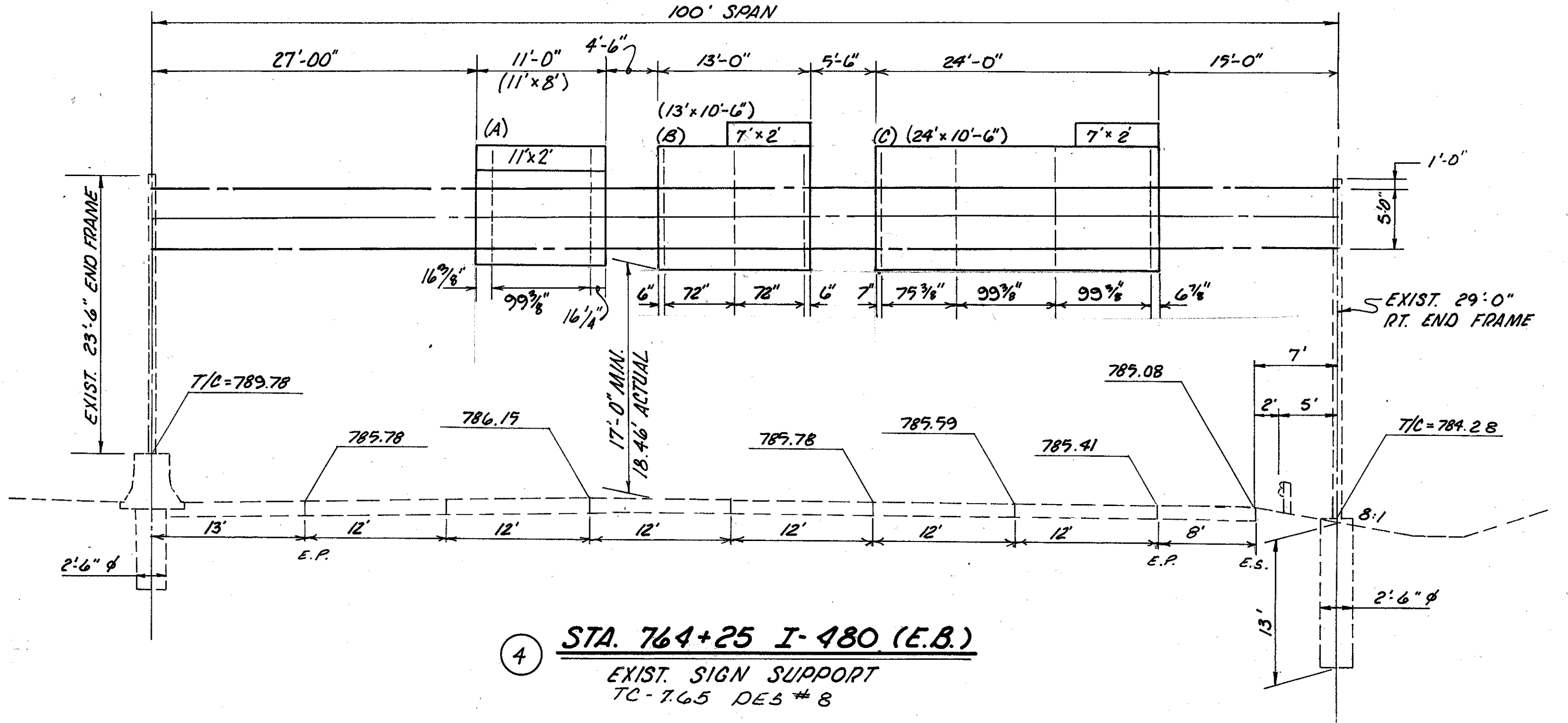
1 **STA. 701+50 I-480 (E.B.)**
 EXIST. SIGN SUPPORT
 TC-765 DES #8



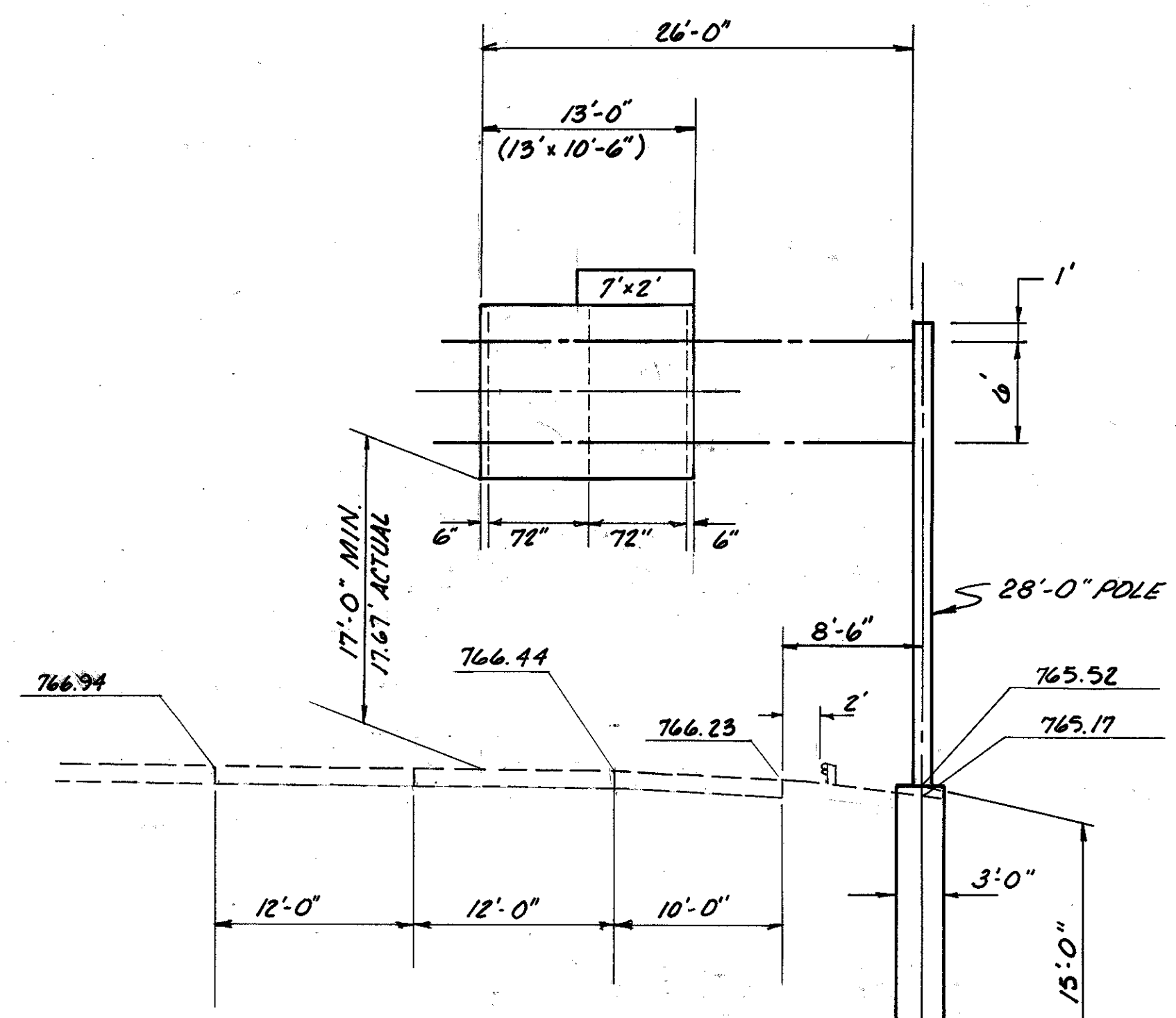
2 **STA. 739+30 I-480 (E.B.)**
 TC-12.30 DES #12 32' ARMS



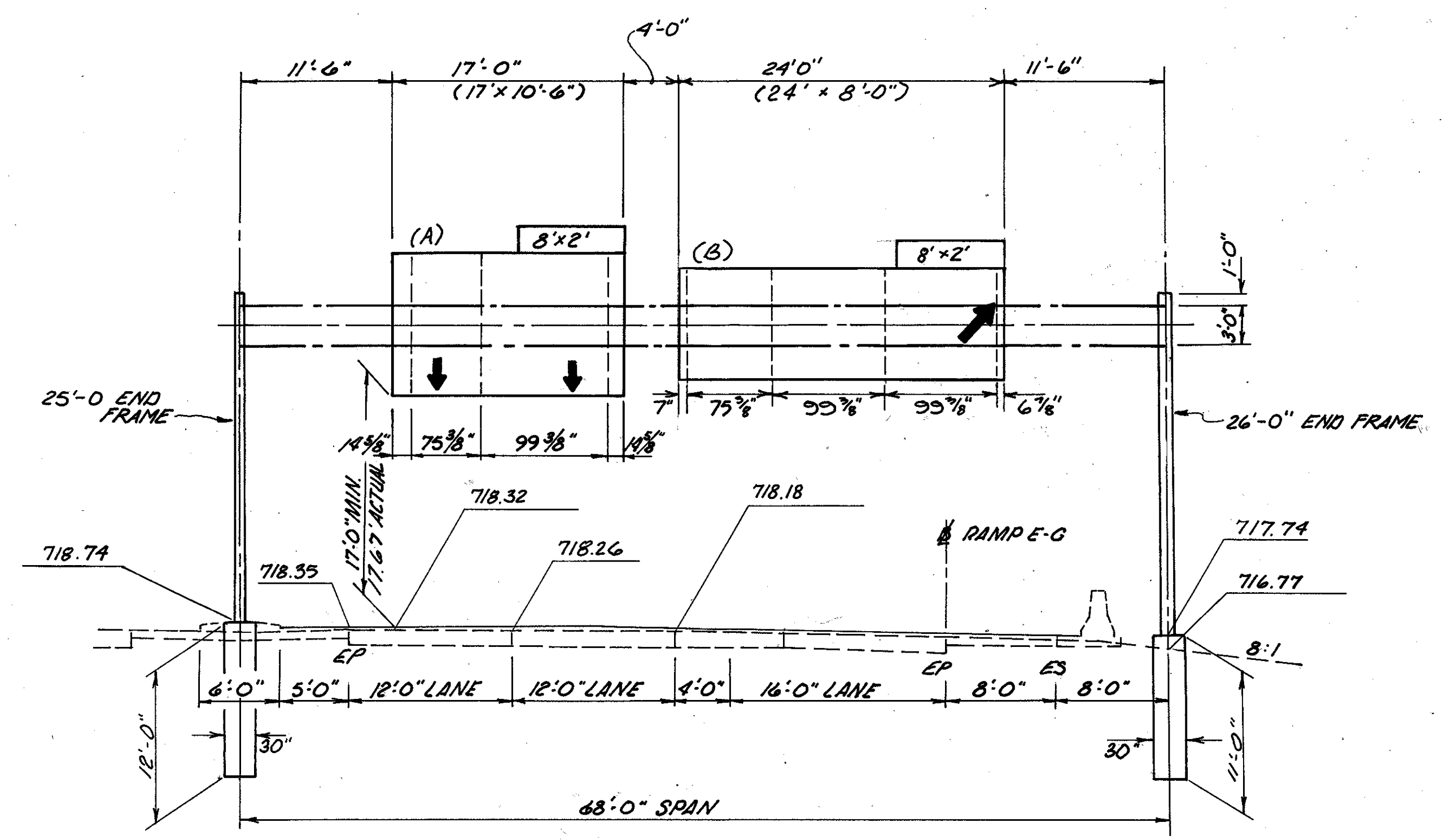
3 **STA. 750+55 I-480 (E.B.)**
 TC-12.30 DES. #12 32' ARMS



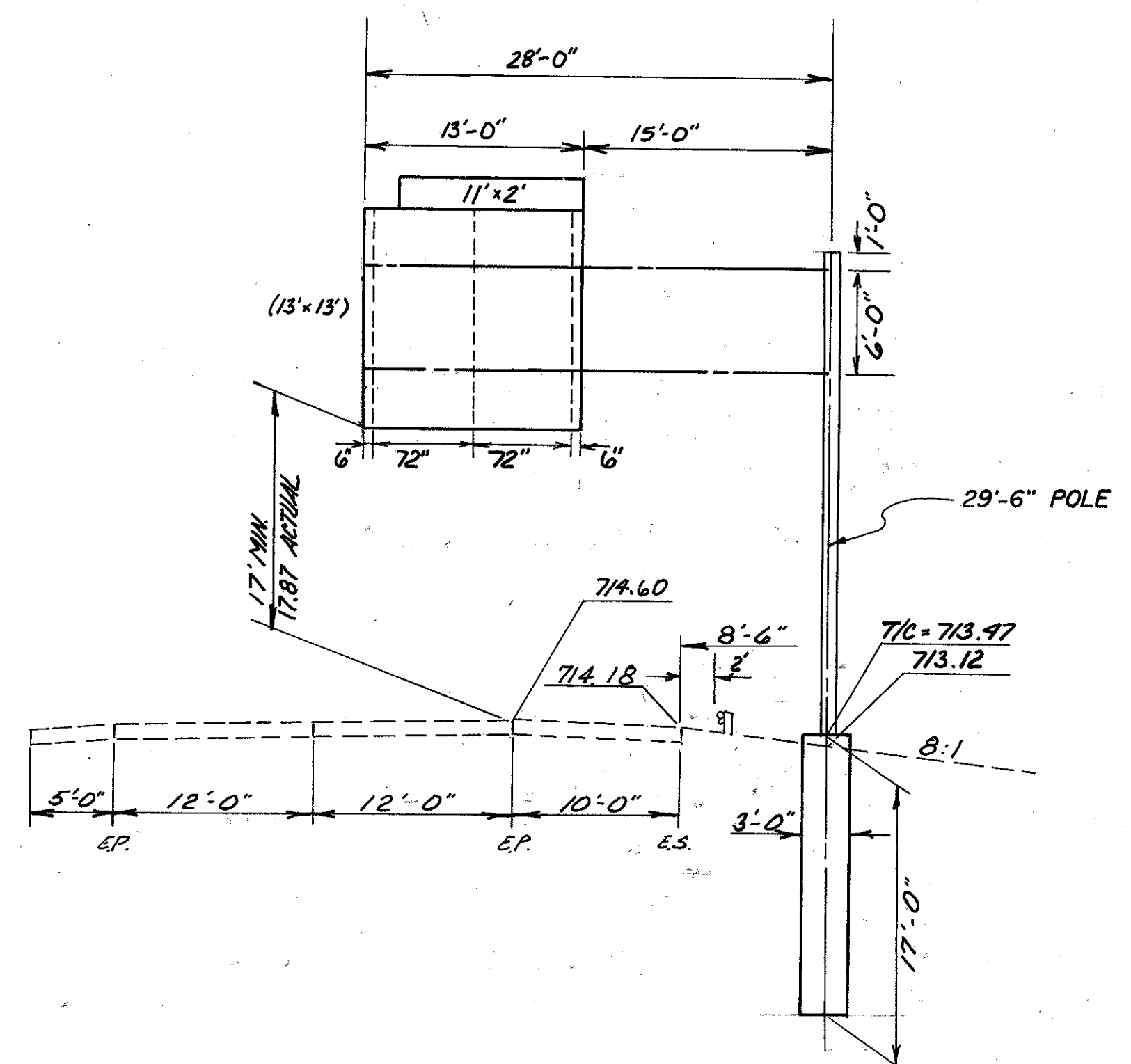
4 **STA. 764+25 I-480 (E.B.)**
 EXIST. SIGN SUPPORT
 TC-765 DES #8



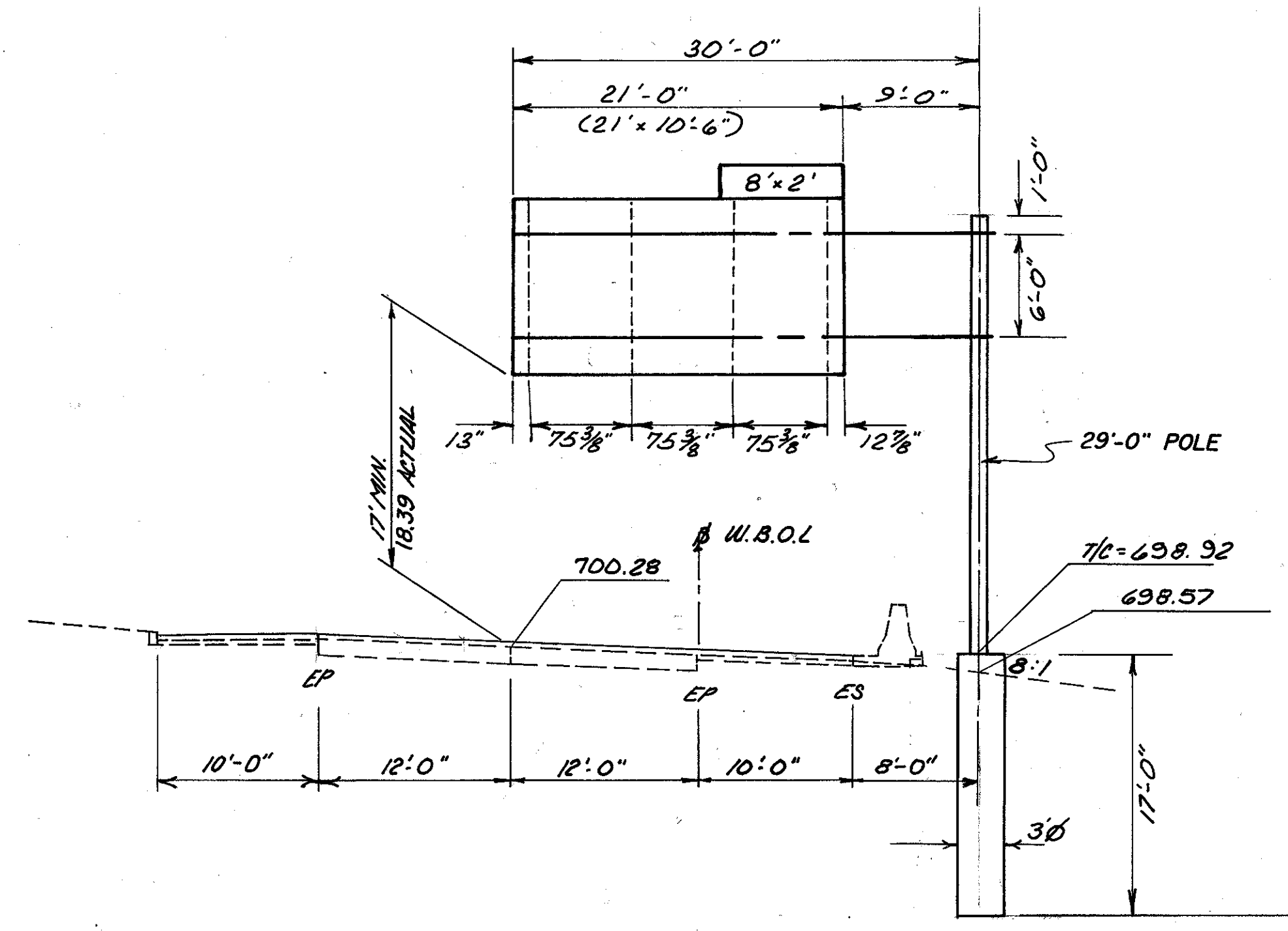
5 STA. 804+00 I-480 (E.B.)
T.C. 12.30 DES. #8 26' ARMS



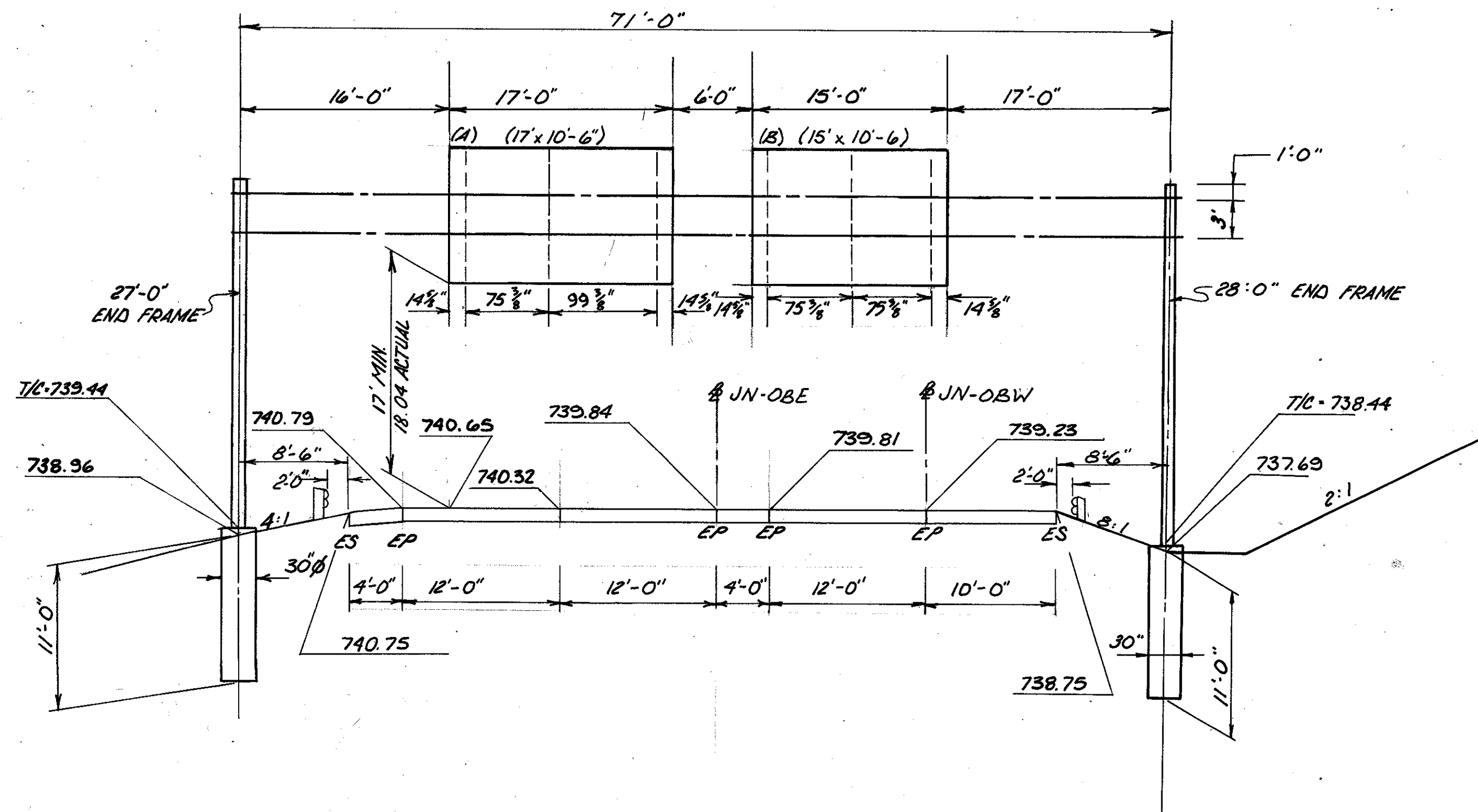
9 STA. 889+55 W.B.O.L. (I-480)
T.C. 765 DESIGN #6 68' SPAN



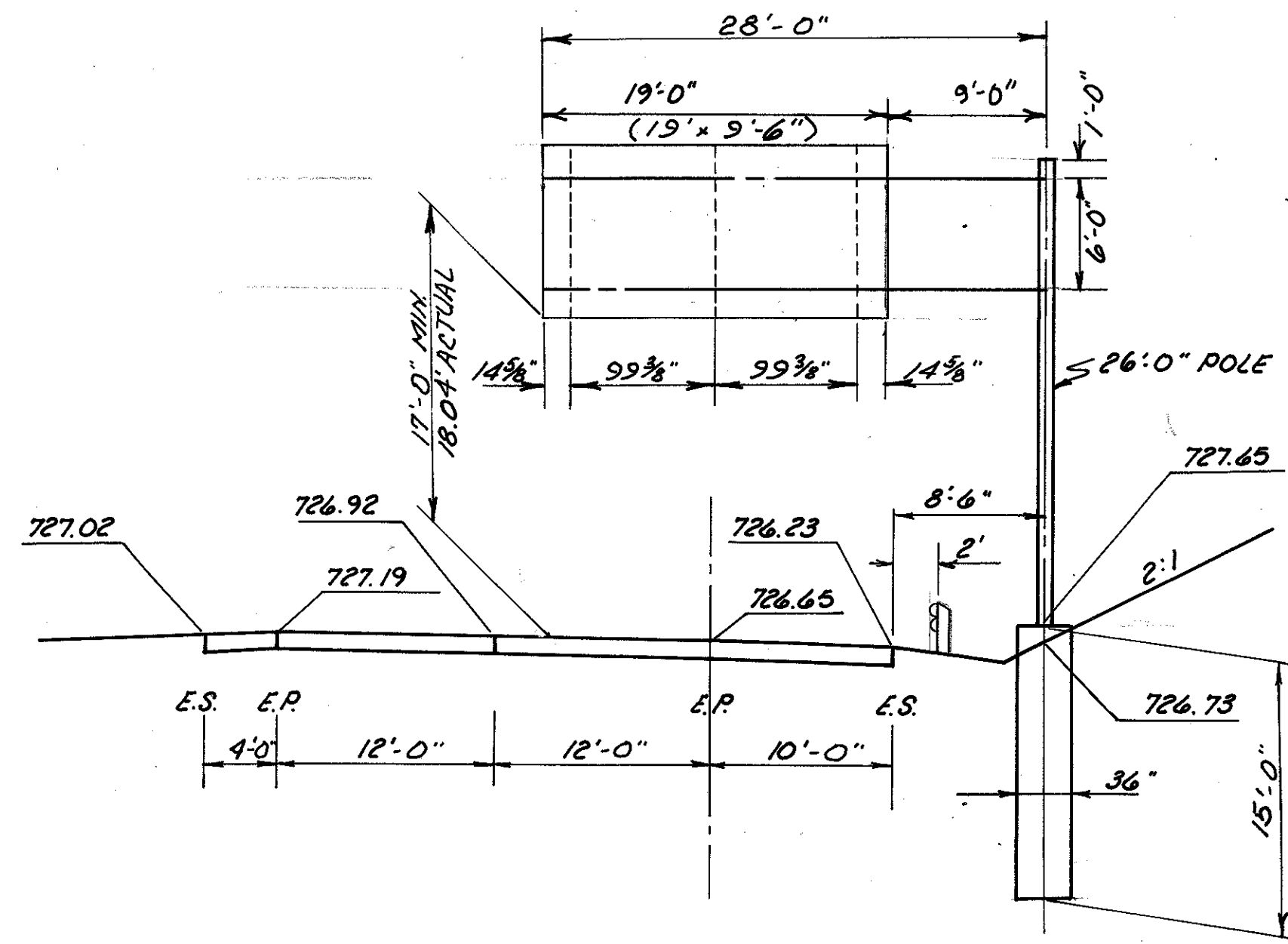
8 STA. 894+00 I-480 (E.B.O.L.)
T.C. 12.30 DESIGN #10 28' ARMS



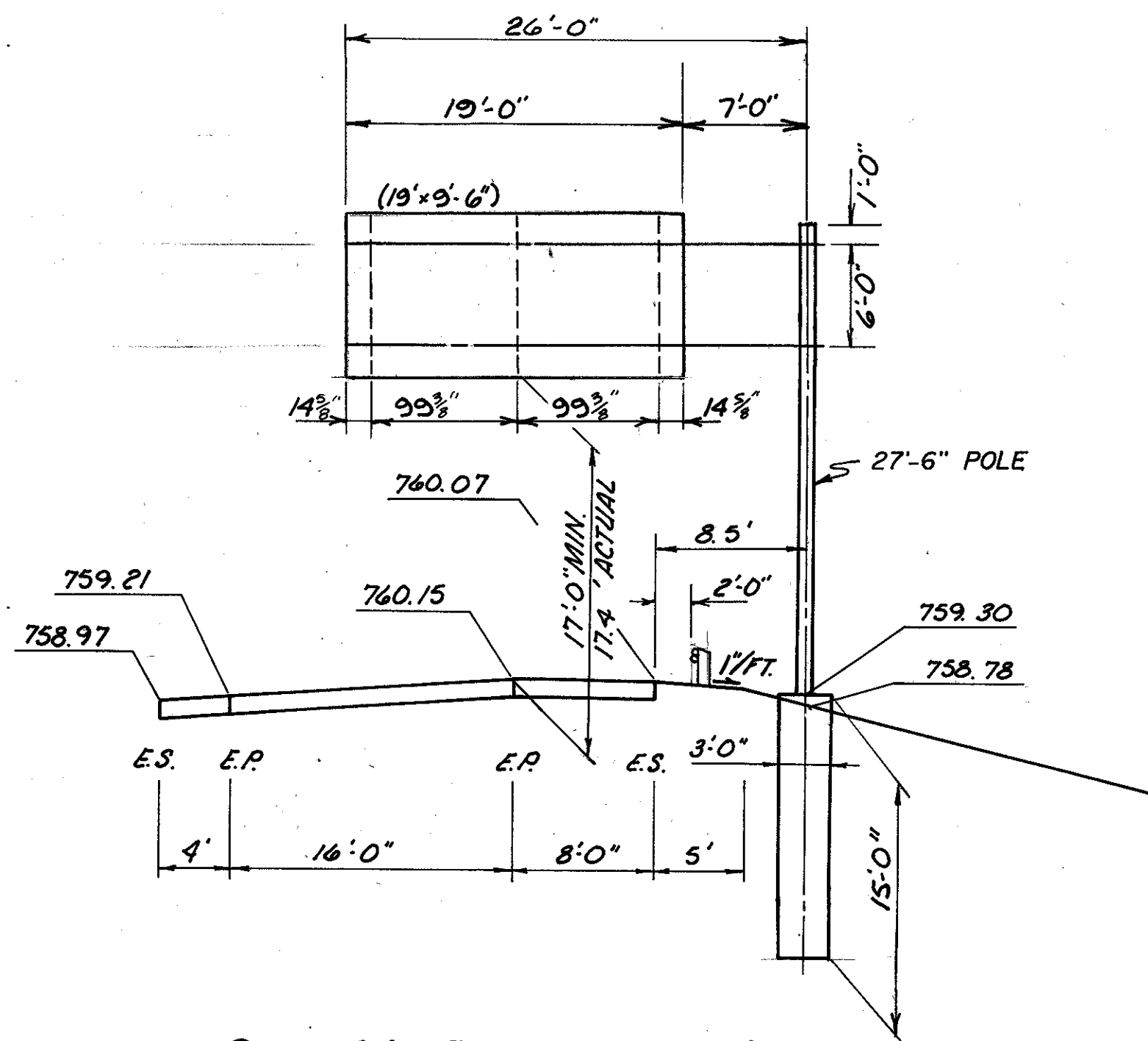
11 STA. 901+80 W.B.O.L. (I-480)
T.C. 12.30 DESIGN #10 WITH 30' ARMS



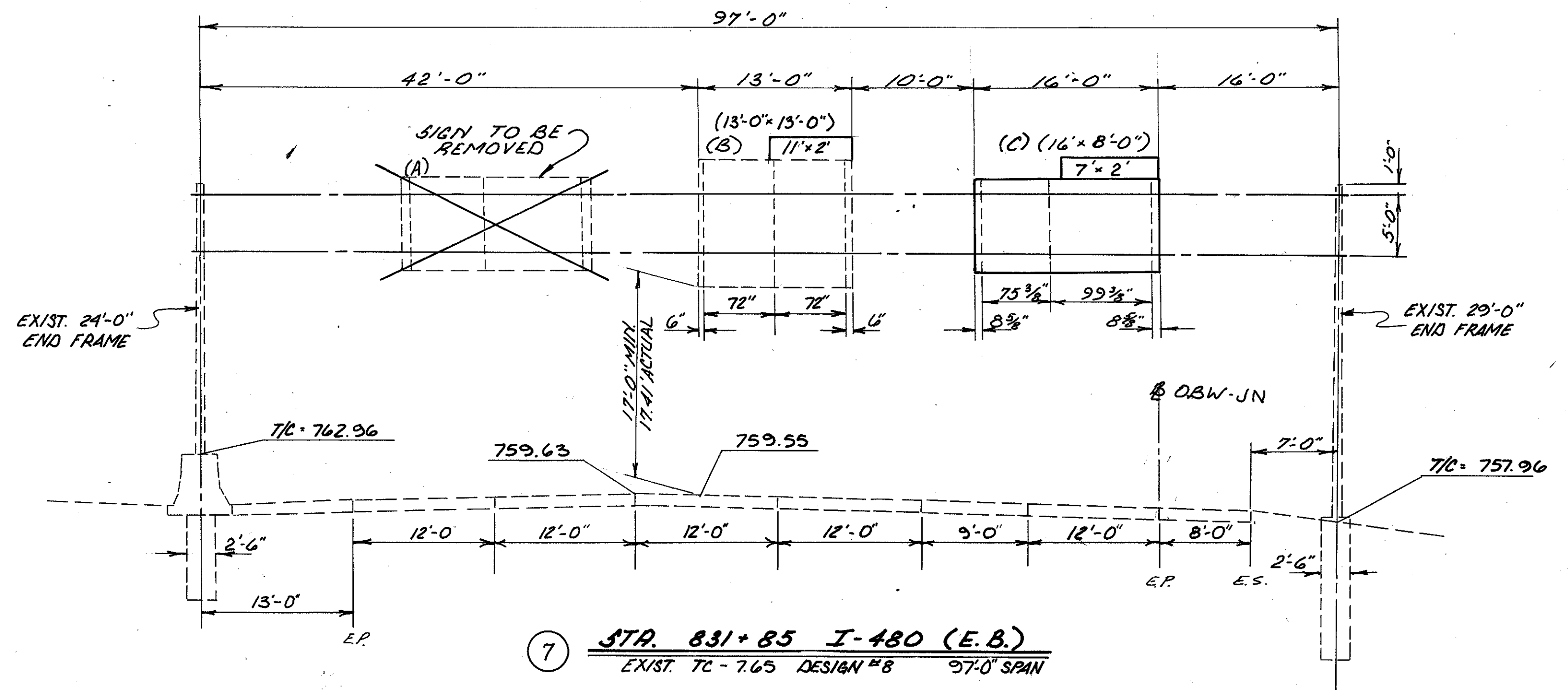
20 STA. 41+00 JN-OBE
TC-7.65 DESIGN #6 71' SPAN



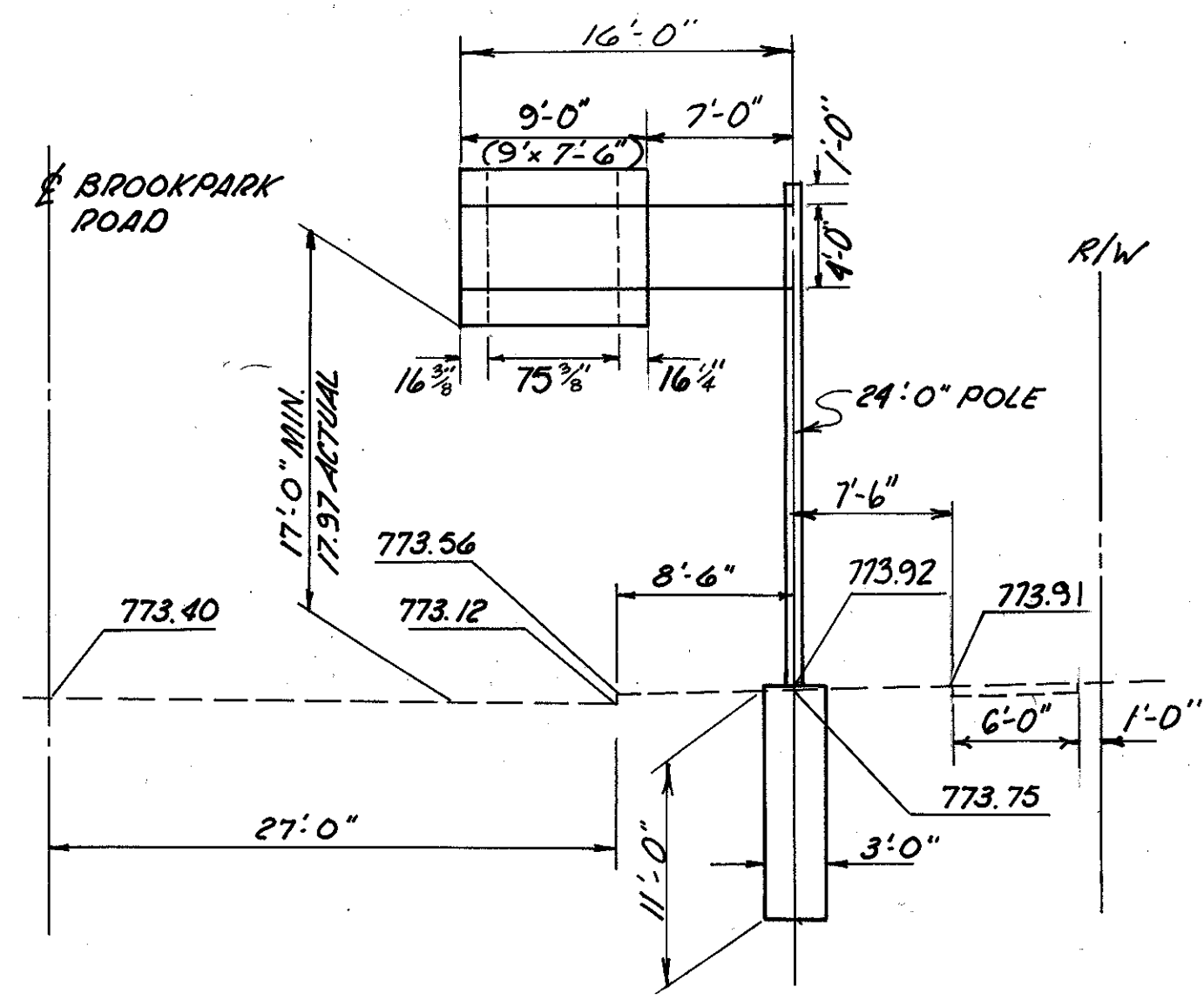
22 STA. 106+00 OBE-JN
TC-12.30 DESIGN #8 28' ARMS



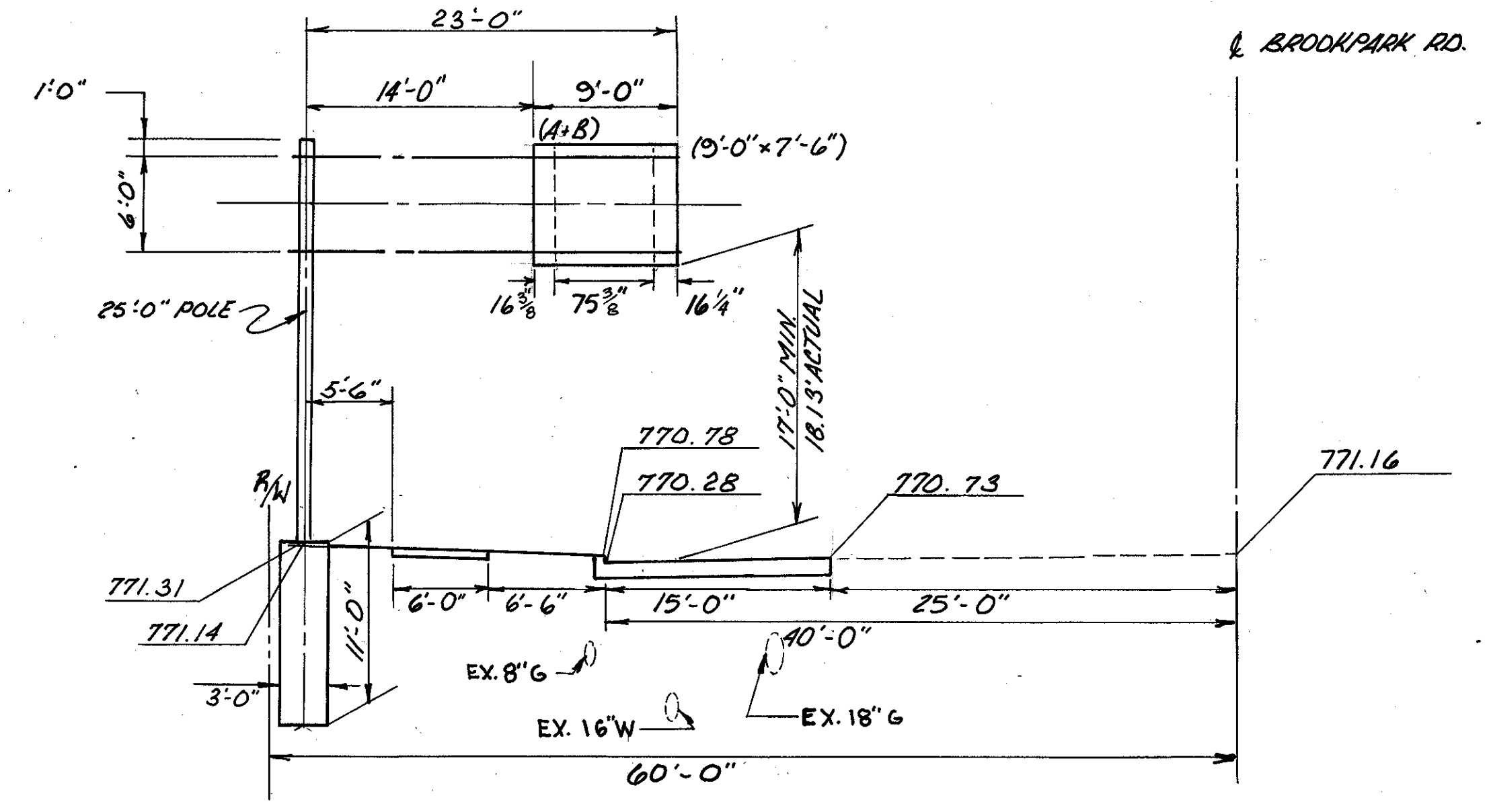
24 STA. 44+50 OBW-JN
TC-12.30 DESIGN #8, 26' ARMS



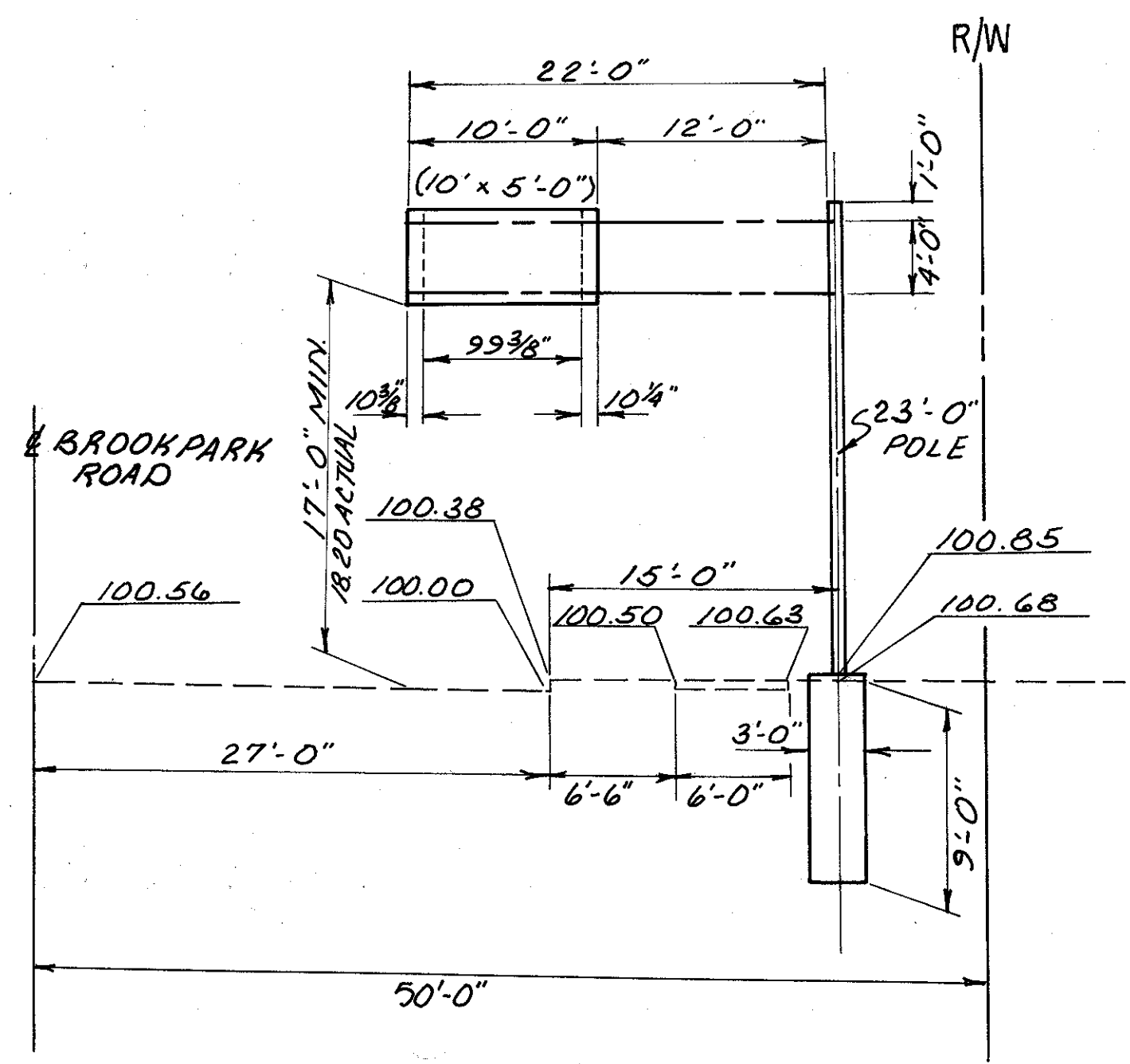
7 STA. 831+85 I-480 (E.B.)
EXIST. TC-7.65 DESIGN #8 97' SPAN



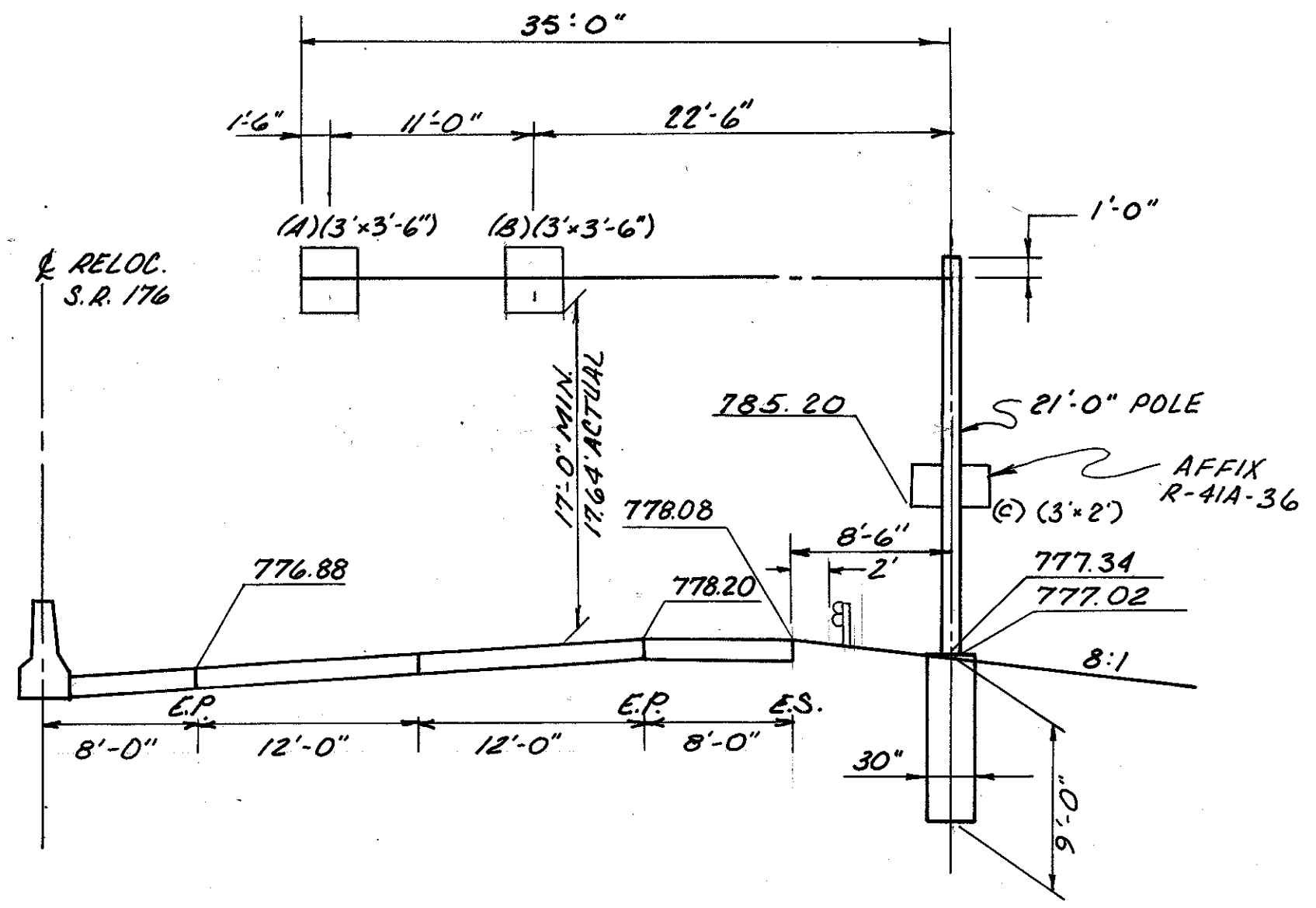
27 **STA. 96+00 BROOKPARK RD. (E.B.)**
T.C. - 12.30 DESIGN #3, 16'-0" ARMS



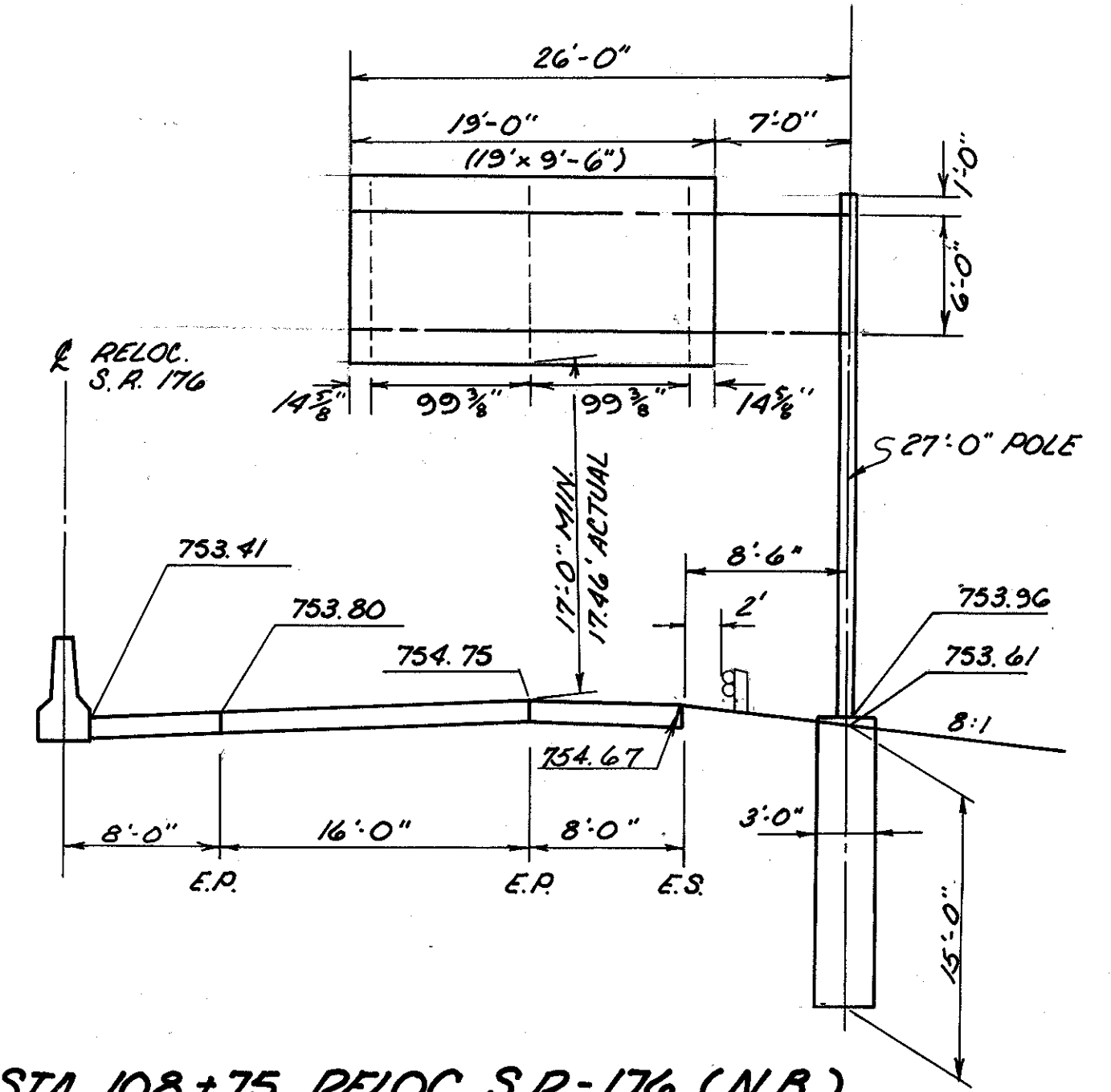
28 **STA. 104+25 BROOKPARK ROAD (E. & W.B.)**
T.C. - 12.30 DESIGN #6, 23'-0" ARMS
NOTE: SIGN MOUNTED EAST & WEST BOUND



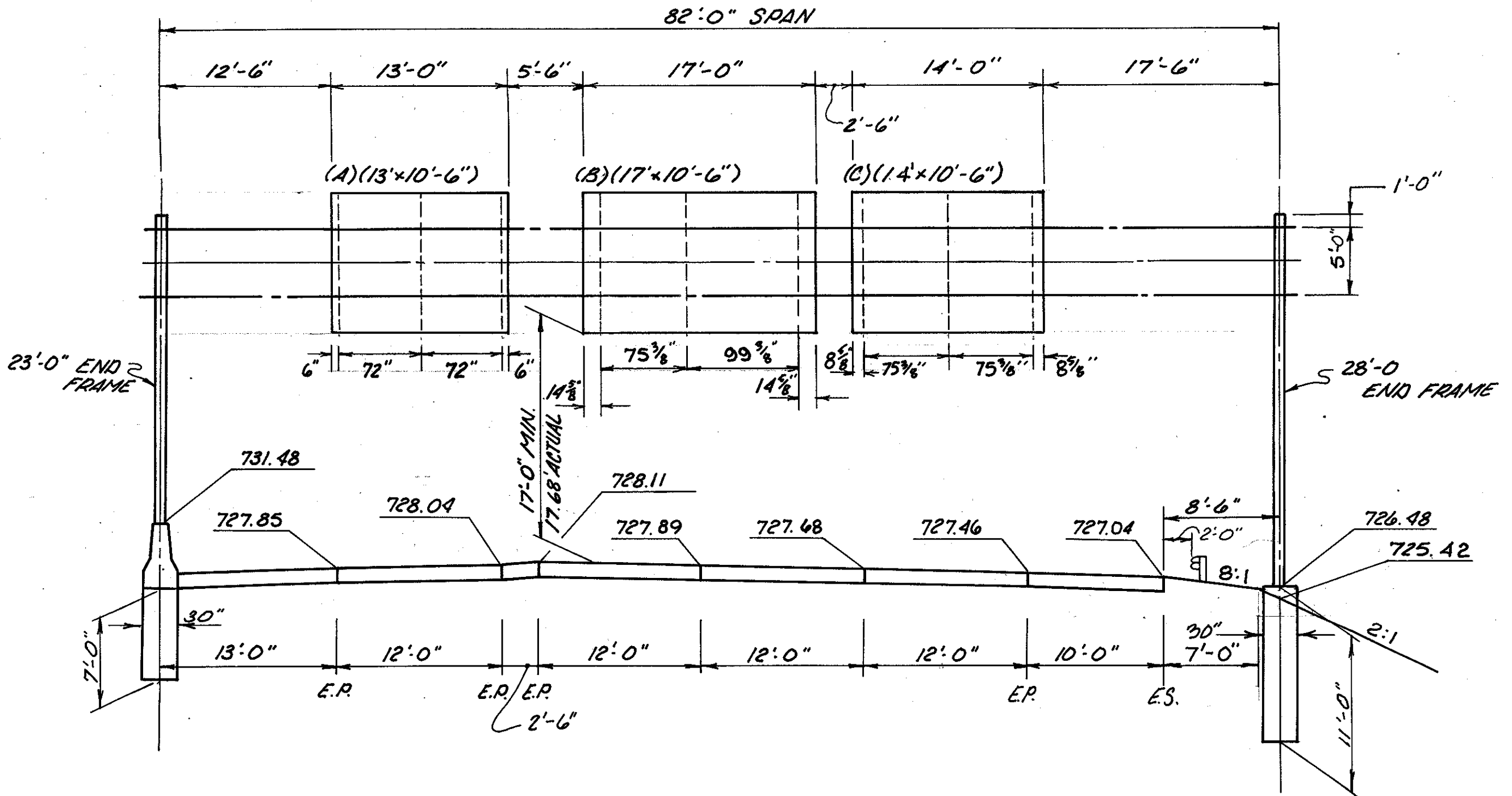
29 **STA. 113+50 BROOKPARK ROAD (W.B.)**
T.C. - 12.30 DESIGN #2 22'-0" ARMS
NOTE: THE ELEVATIONS SHOWN ARE NOT THE ACTUAL ELEVATIONS ABOVE SEA LEVEL, BUT ARE REFERENCED TO THE ELEVATION SET FOR THE FLOW LINE.



30 STA. 93+00 RELOC. S.R.-176 (S.B.)
T.C.-16.20 DES. #3, 35' ARM

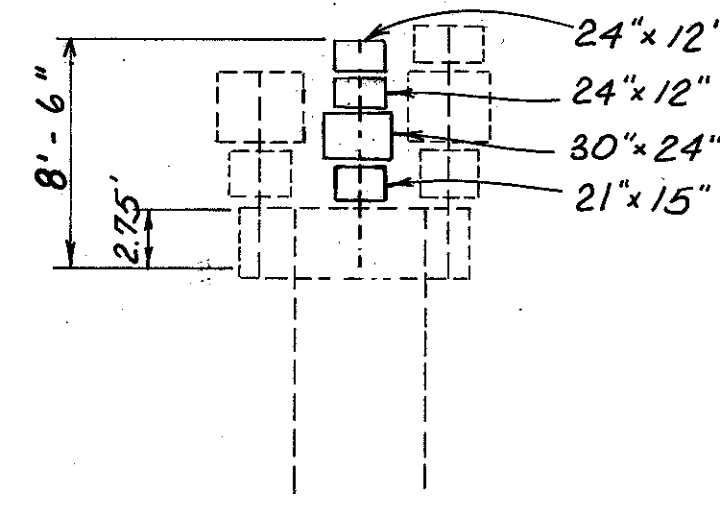


31 STA. 108+75 RELOC. S.R.-176 (N.B.)
T.C.-12.30 DES. #8, 26' ARMS

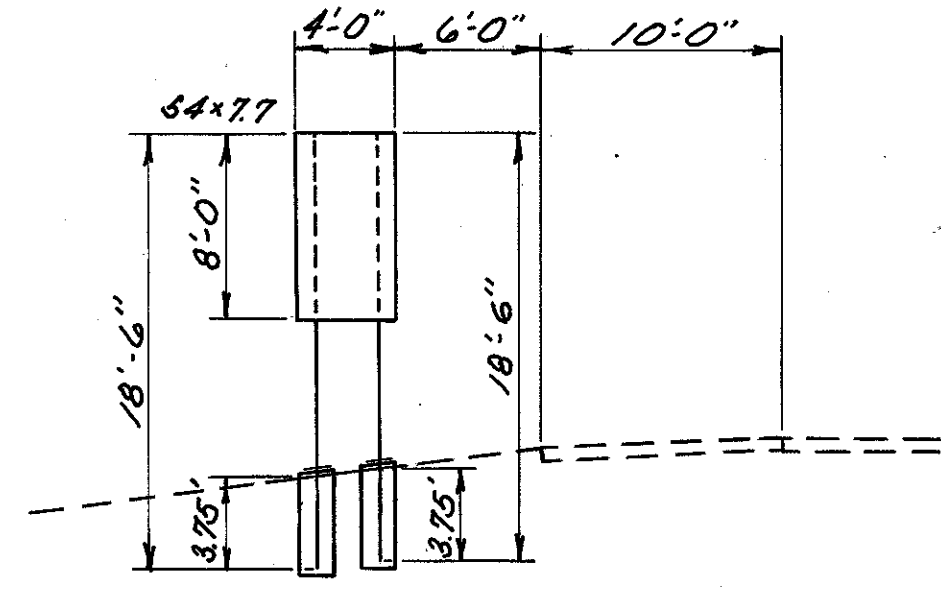


32 STA. 125+00 RELOC. S.R.-176 (S.B.)
T.C.-7.65 DESIGN #8, 82'-0" SPAN

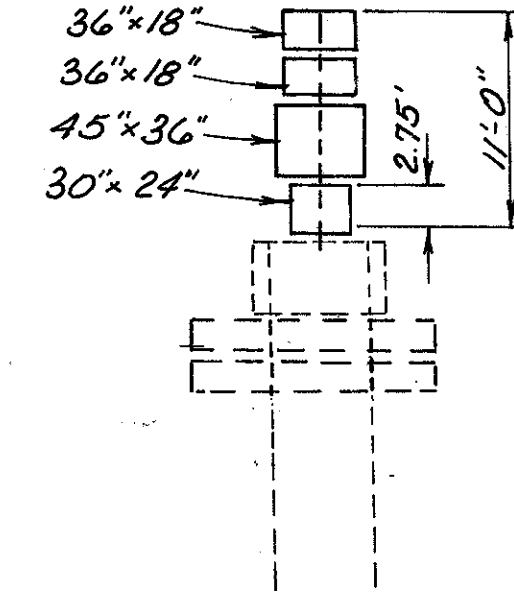
RELOC. S.R. 176



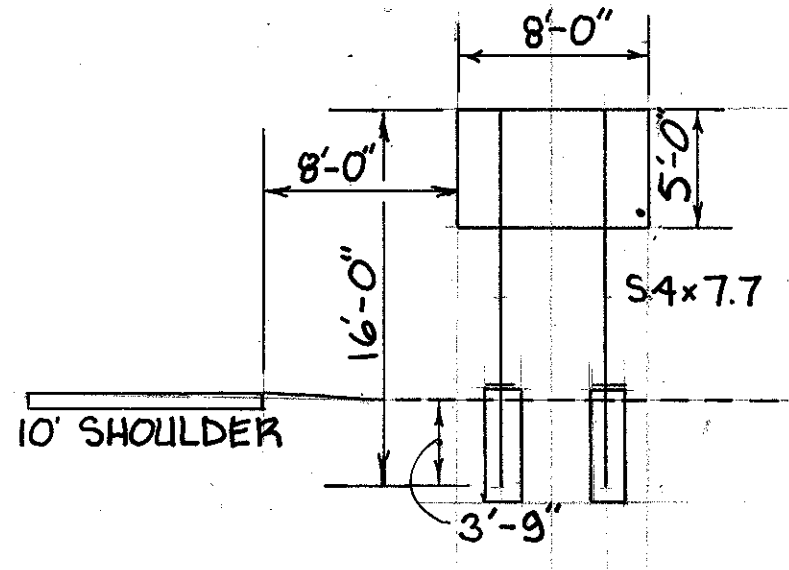
26 STA. 775+00 RT. RAMP 3-2



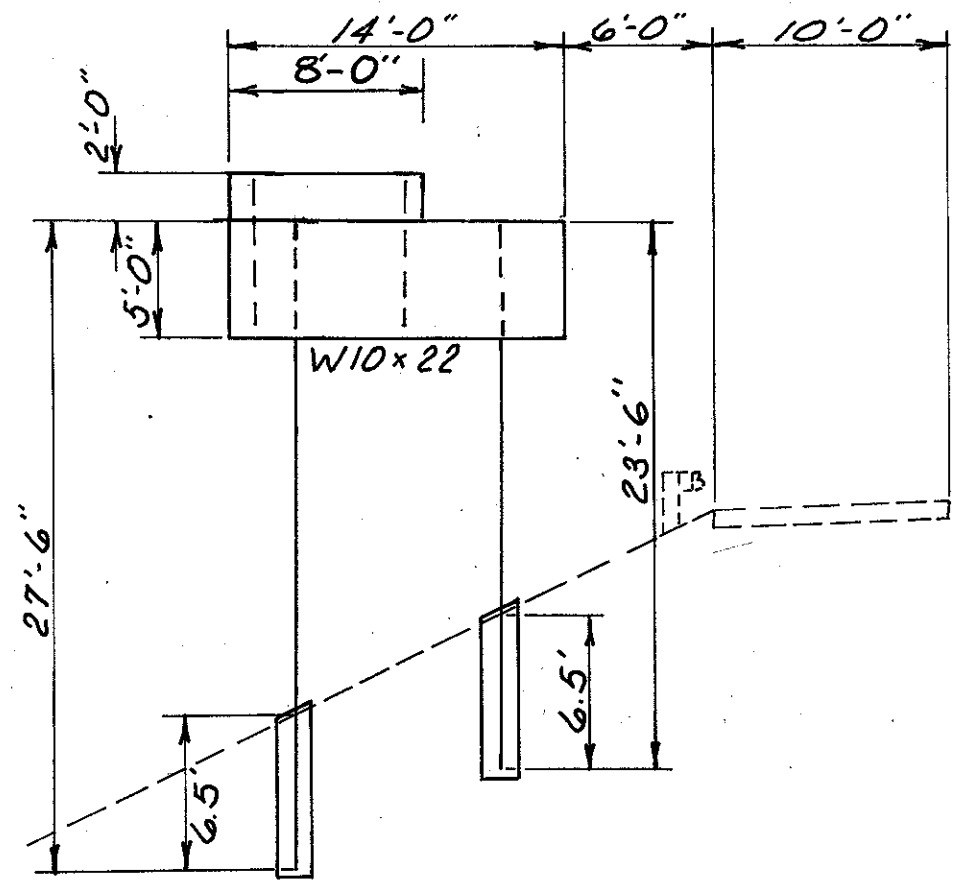
6 STA. 806+50 LT. I-480
BREAKAWAY BEAM CONNECTIONS



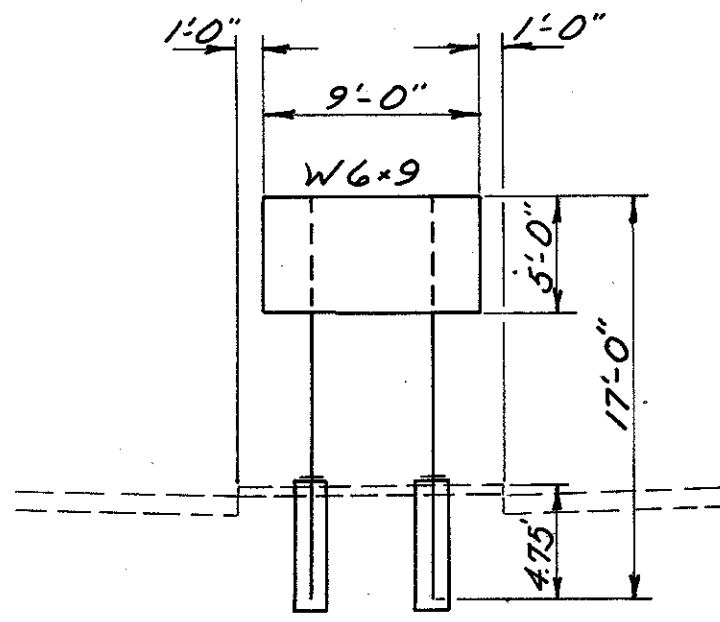
33 STA. 882+65 RT. I-480 WB. RAMP



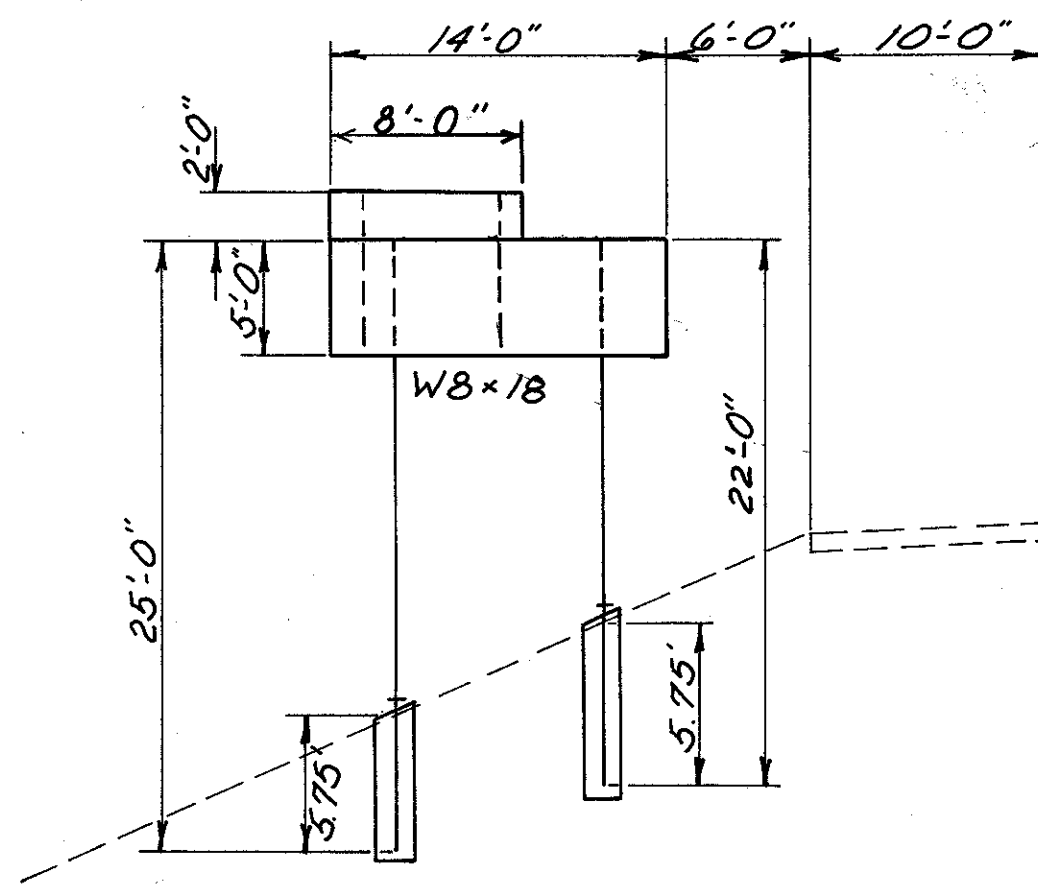
18 STA. 884+60 LT. I-480 W.B. RAMP
BREAKAWAY BEAM CONNECTIONS



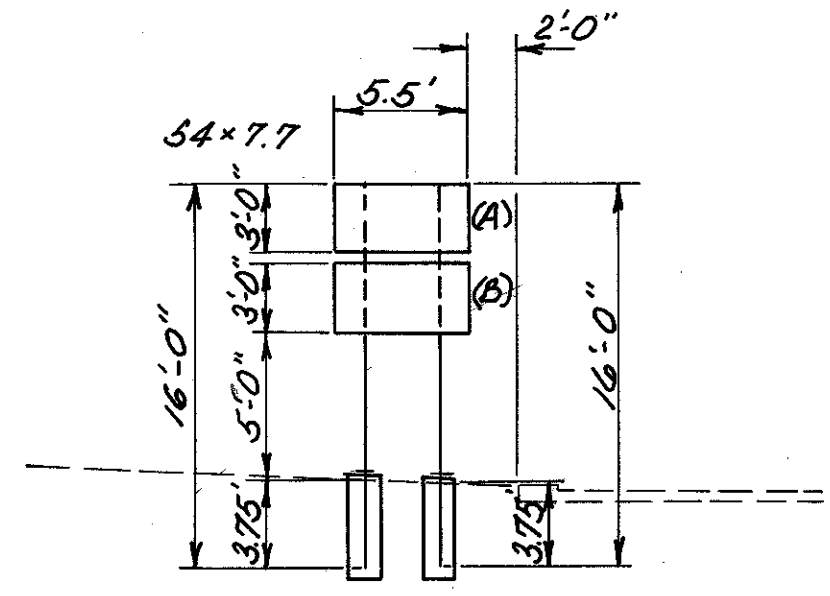
10 STA. 896+00 LT. I-480



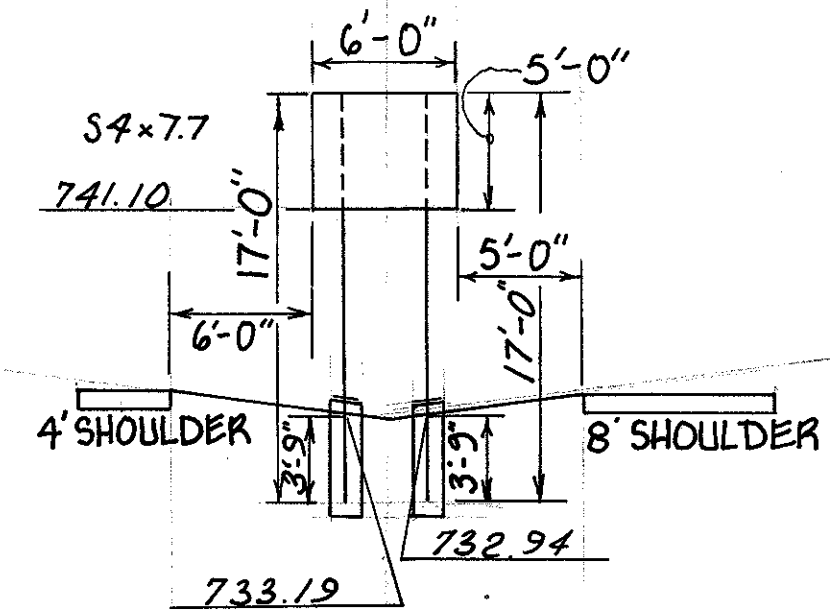
12 STA. 910+50 I-480 LT.
BREAKAWAY BEAM CONNECTION



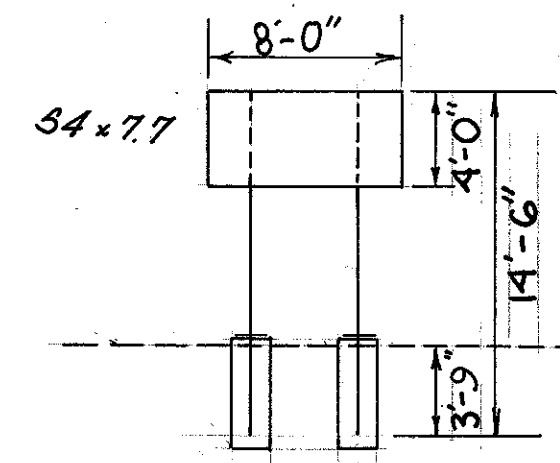
15 STA. 930+50 LT. I-480
BREAKAWAY BEAM CONNECTIONS



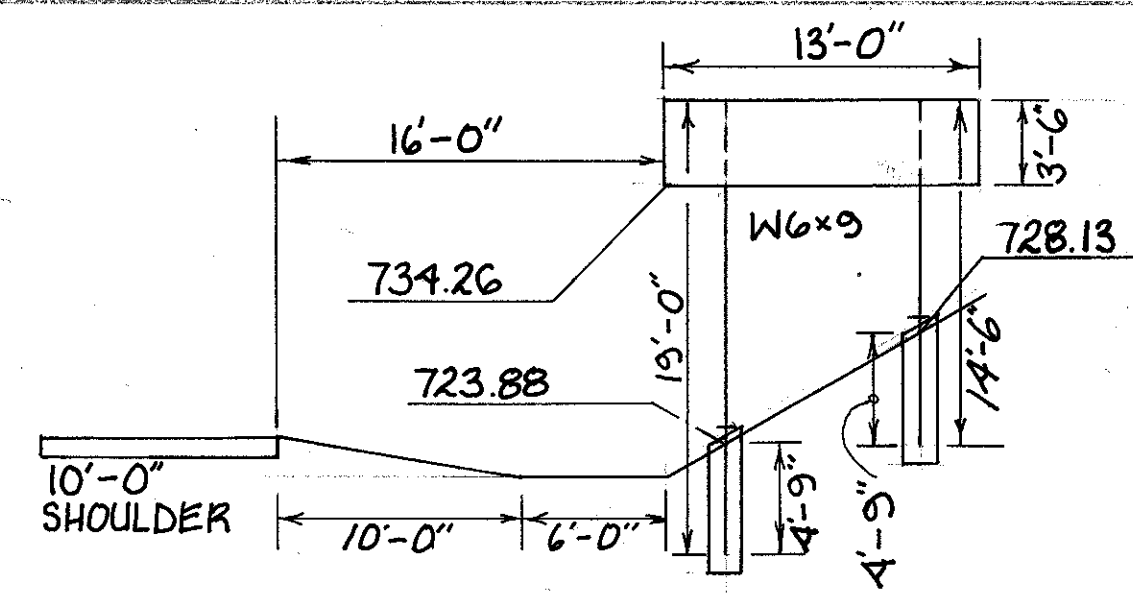
25 STA. 19+50 LT. BROADVIEW RD.
BREAKAWAY BEAM CONNECTIONS



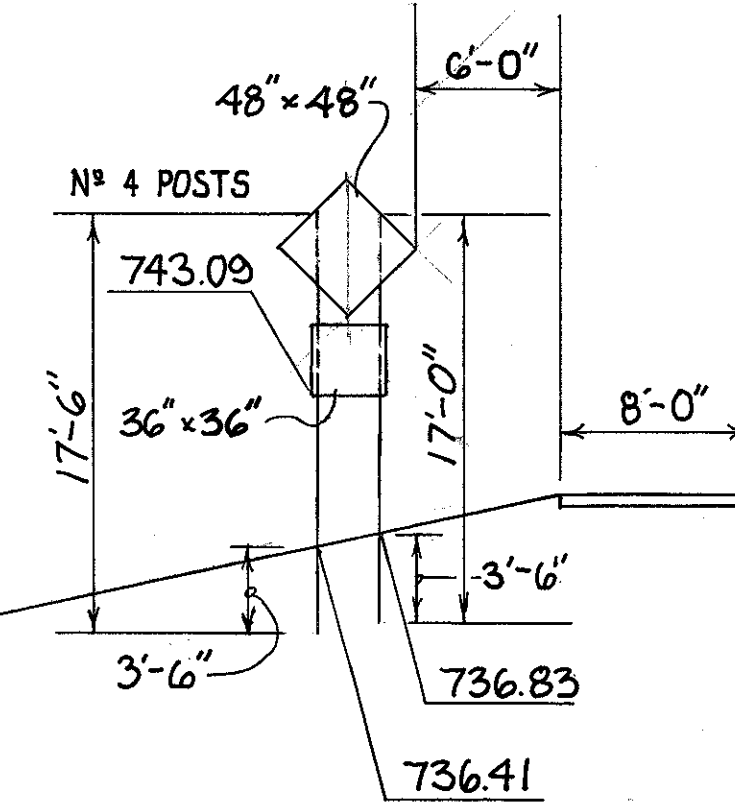
19 STA. 121+30 LT. RELOC. SR. 176
BREAKAWAY BEAM CONNECTIONS



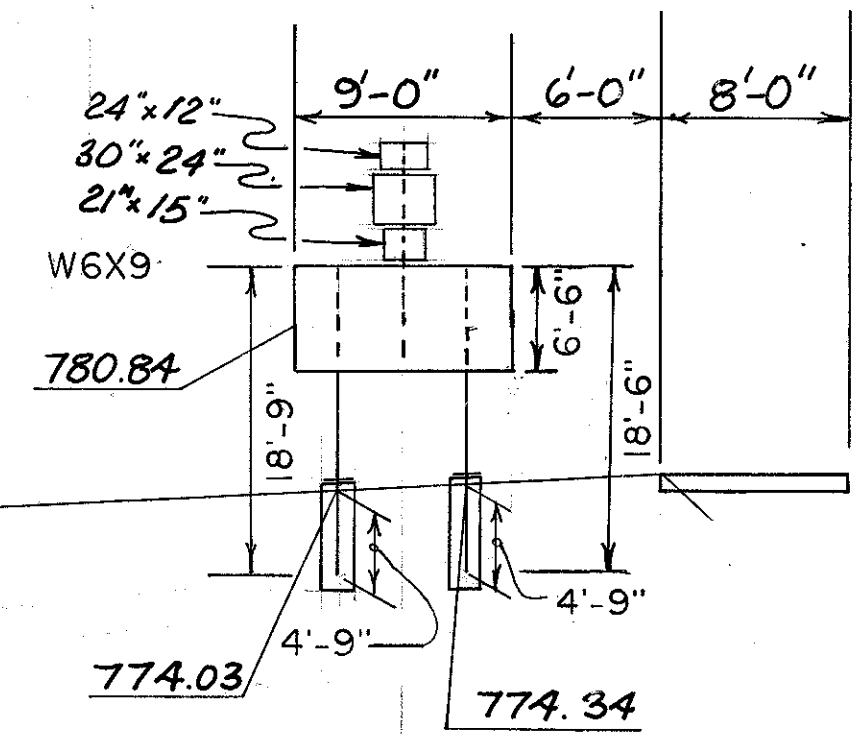
100 STA. 103+30 RT. BROOKPARK RD.
BREAKAWAY BEAM CONNECTIONS



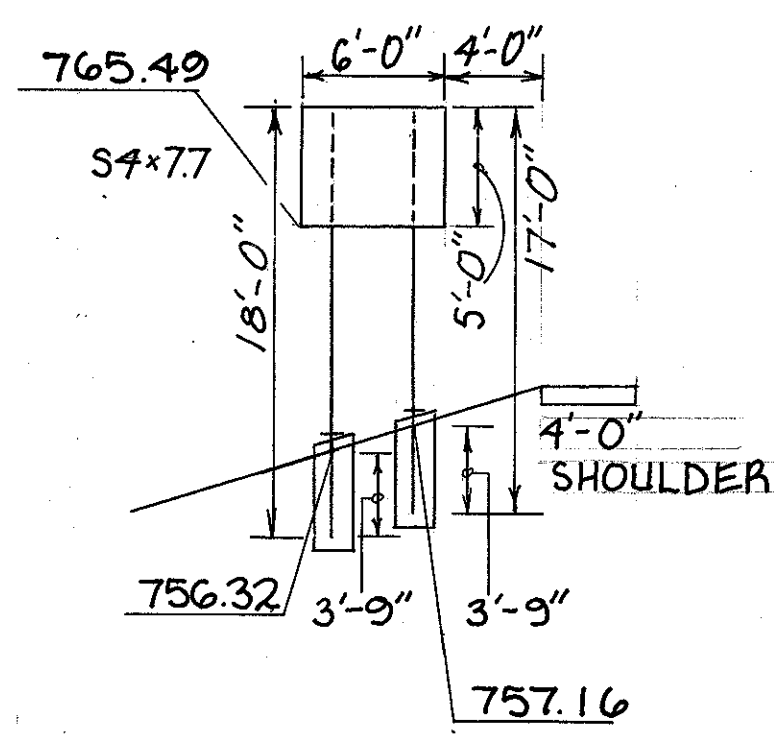
76 STA. 102+00 RT. OBE - JN
BREAKAWAY BEAM CONNECTIONS



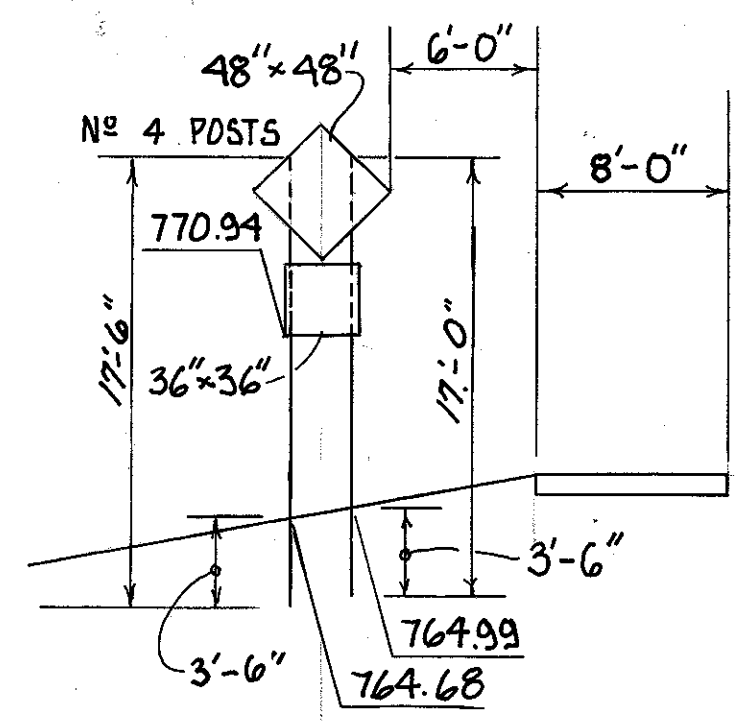
129 STA. 118+50 LT. RELOC. S.R. 176



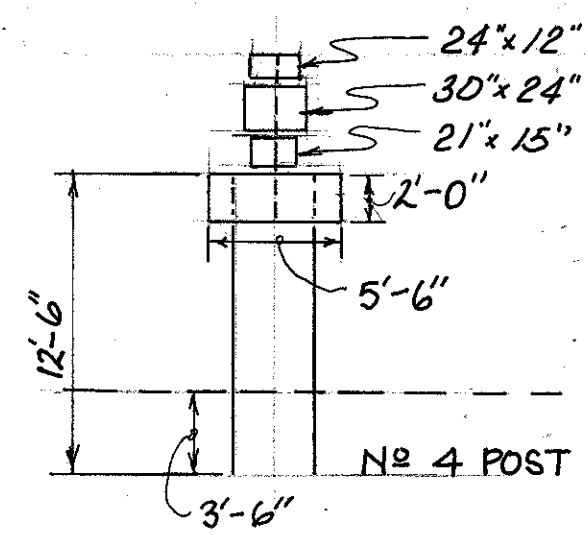
133 STA. 92+50 LT. RELOC. S.R. 176
BREAKAWAY BEAM CONNECTIONS



23 STA. 35+50 LT. RAMP OBW - JN
BREAKAWAY BEAM CONNECTIONS

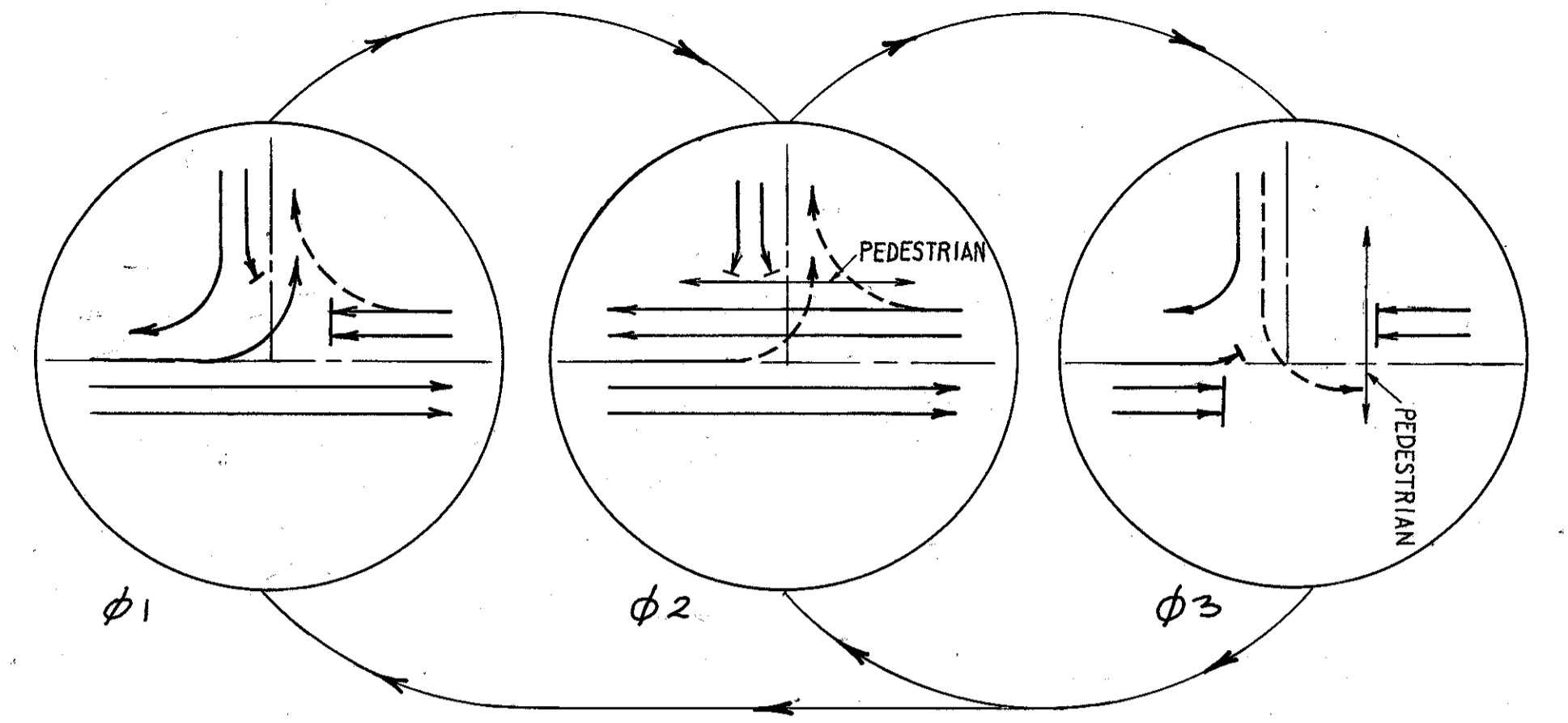
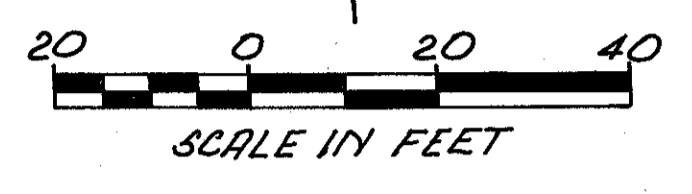
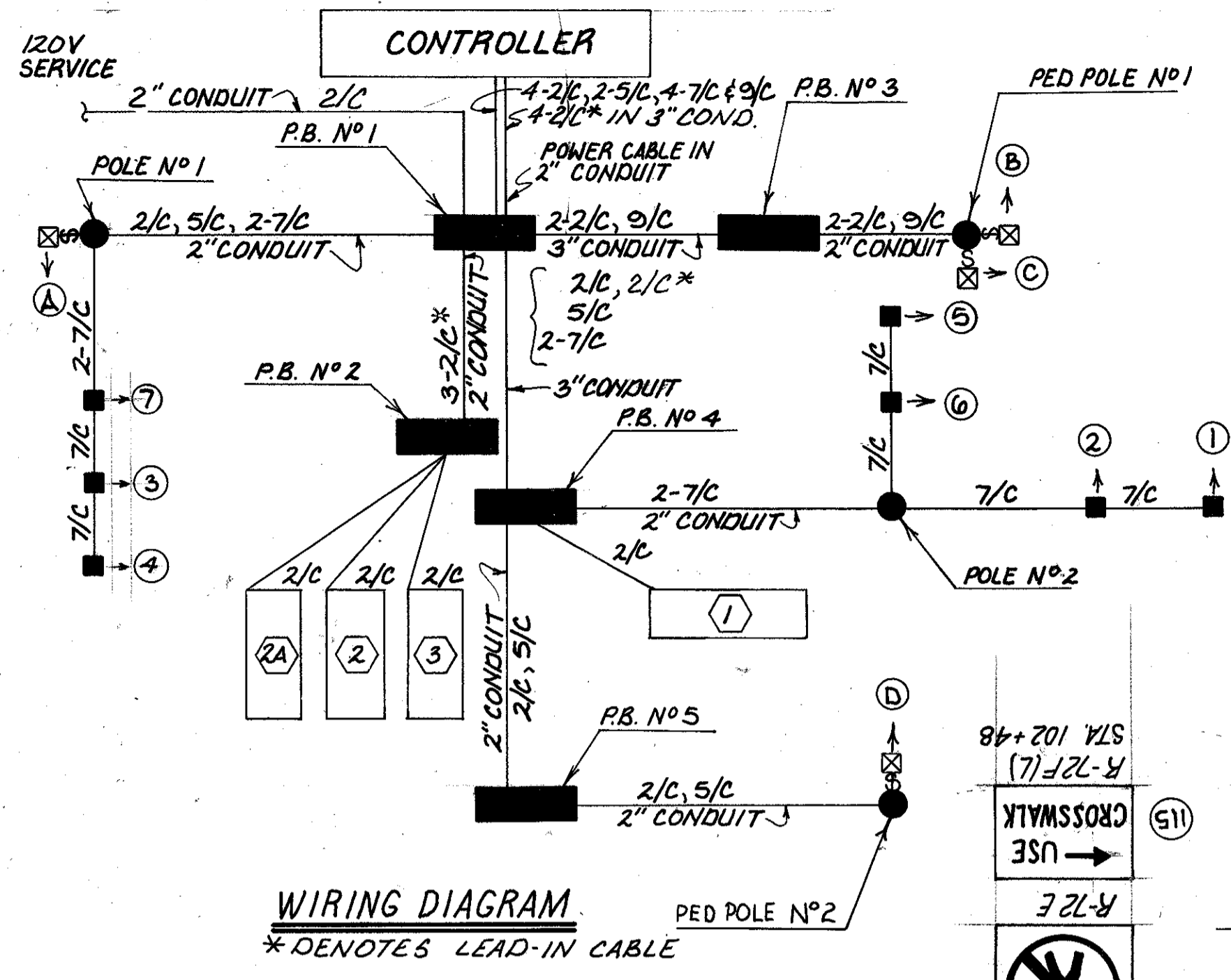


56 STA. 105+00 LT. RELOC. S.R. 176

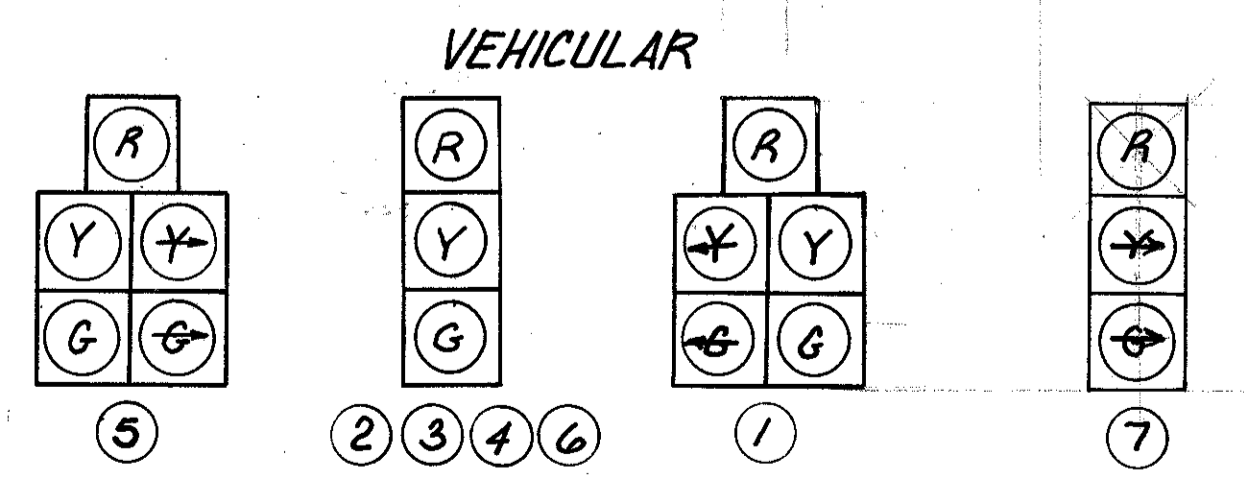
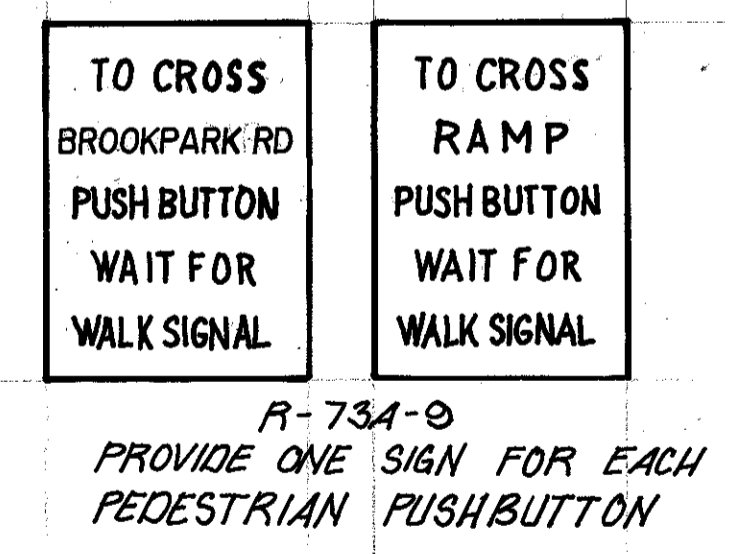
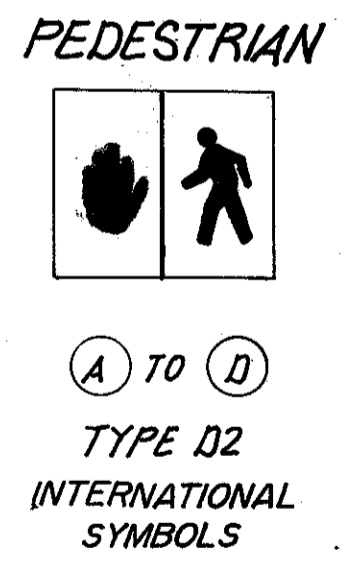
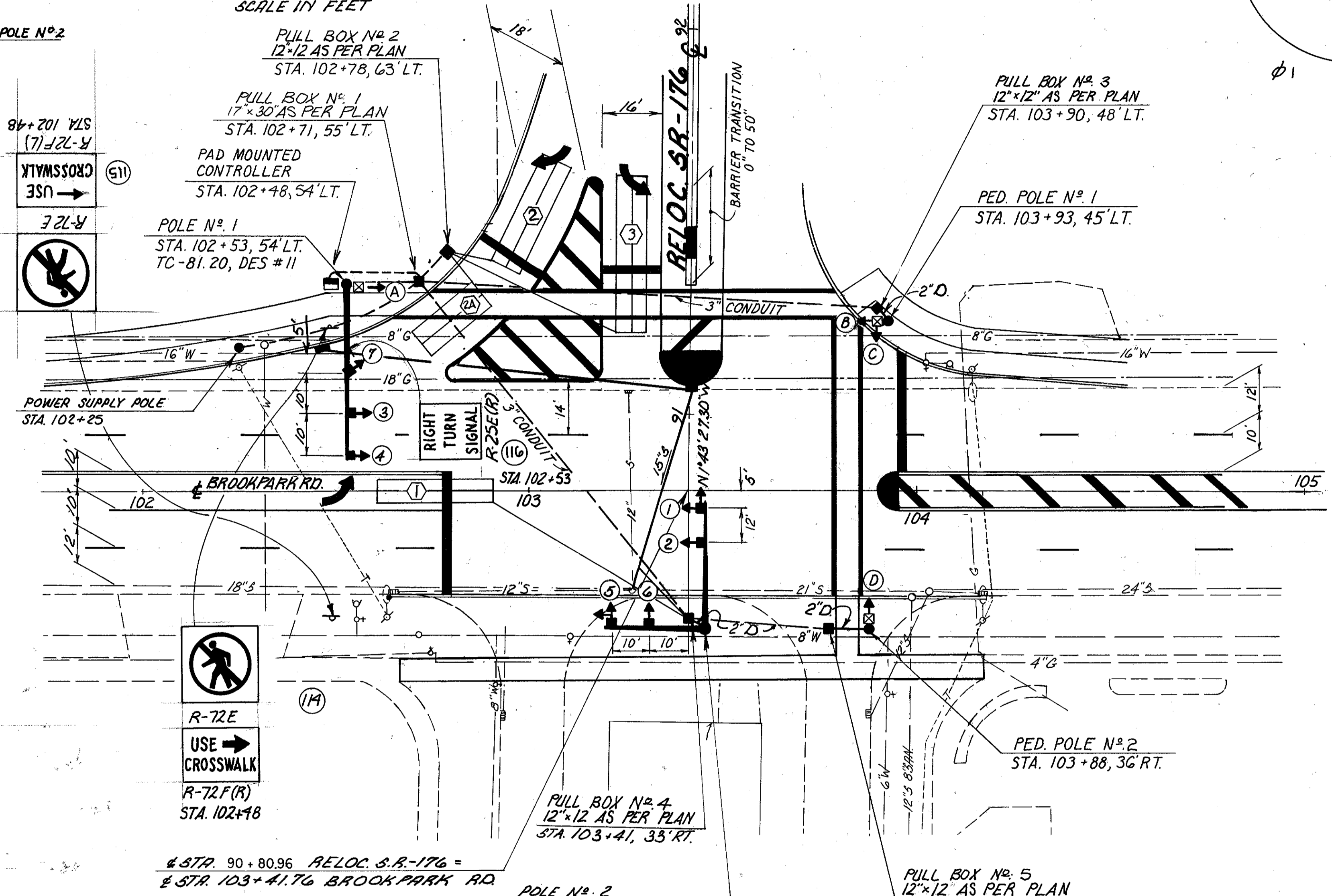


44 STA. 91+00 LT. BROOKPARK RD.

RELOC. S.R. - 176



- LEGEND**
- - PROP. PULLBOX
 - ⬆ - PROP. TRAFFIC SIGNAL HEAD
 - ⬆⊗ - PROP. PEDESTRIAN SIGNAL HEAD
 - - PROP. SIGNAL POLE
 - - PROP. LOOP DETECTOR
 - ⊗ - EXIST. ROADWAY LUMINAIRE
 - ⬆ - PROP. ROADWAY LUMINAIRE
 - - PROP. TRAFFIC CABLE
 - ▭ - PROP. CONTROLLER



SIGNAL HEAD CONFIGURATION

NOTE: ALL LENSES ARE 12"
 PROVIDE SIGNAL HEADS 3, 4, 8, 7 WITH TUNNEL VISORS

SIGNAL DETECTOR TABLE

#	SIZE	Nº OF TURNS	DELAY (SEC)	TYPE	AMPLIFIER	ASSOCIATED CONTROLLER PHASE	INHIBIT DELAY
1	6'x30'	2	10	PRESENCE	1	1	NO
2	8'x30'	2-4-2	10	PRESENCE	2	3	YES
2A	8'x20'	2-4-2	10	PRESENCE	2	3	YES
3	8'x40'	2-4-2	-	PRESENCE	3	3	NO

SIGNAL TIMING CHART

	PHASE		
	φ 1	φ 2	φ 3
MINIMUM GREEN		30	
INITIAL GREEN	10		10
VEHICLE INTERVAL	2		2
MAXIMUM GREEN	24		24
CLEARANCE INTERVAL	3	3	3
ALL RED		1	1
PEDESTRIAN WALK		7	7
PEDESTRIAN CLEARANCE		23	12
RECALL	OFF	ON	OFF

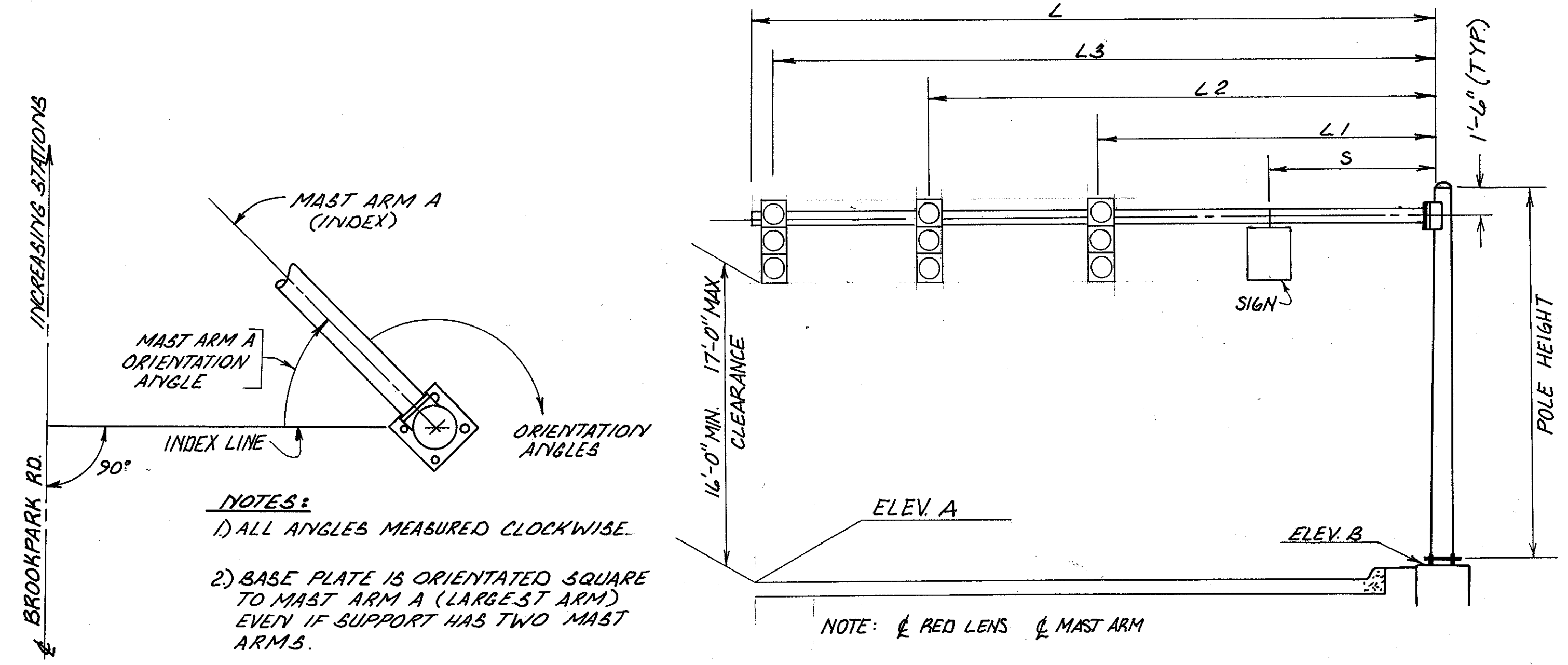
PHASE DISPLAY CHART

PHASE	HEAD LYT.											FLASH
	1	2	3	4	5	6	7	8	9	10	11	
1	-G/G	+Y/G	G	G	G	Y	R	R	R	R	R	Y
2	G	G	G	G	Y	R	R	R	R	R	R	Y
3	R	R	R	G	G	Y	R	R	R	R	R	Y
4	R	R	R	G	G	Y	R	R	R	R	R	Y
5	R/R	R/R	R/R	R/R	R/R	R/R	G/G	G/G	Y/Y	R/R	R/R	R
6	R	R	R	R	R	R	R	R	G	G	Y	R
7	-	Y	R	R	R	R	R	R	G	G	Y	R
A	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW
B	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW
C	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW
D	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW

- ① Y/Y IF φ 1 IS SKIPPED
- ② R IF φ 1 IS SKIPPED
- ③ * IF φ 1 IS SKIPPED
- ④ R IF φ 1 IS SKIPPED

RELOC. S.R.-176

TYPE T.C.-81.20 SIGNAL SUPPORT



- NOTES:**
- 1) ALL ANGLES MEASURED CLOCKWISE.
 - 2) BASE PLATE IS ORIENTATED SQUARE TO MAST ARM A (LARGEST ARM) EVEN IF SUPPORT HAS TWO MAST ARMS.

NOTE: ☒ RED LENS ☒ MAST ARM

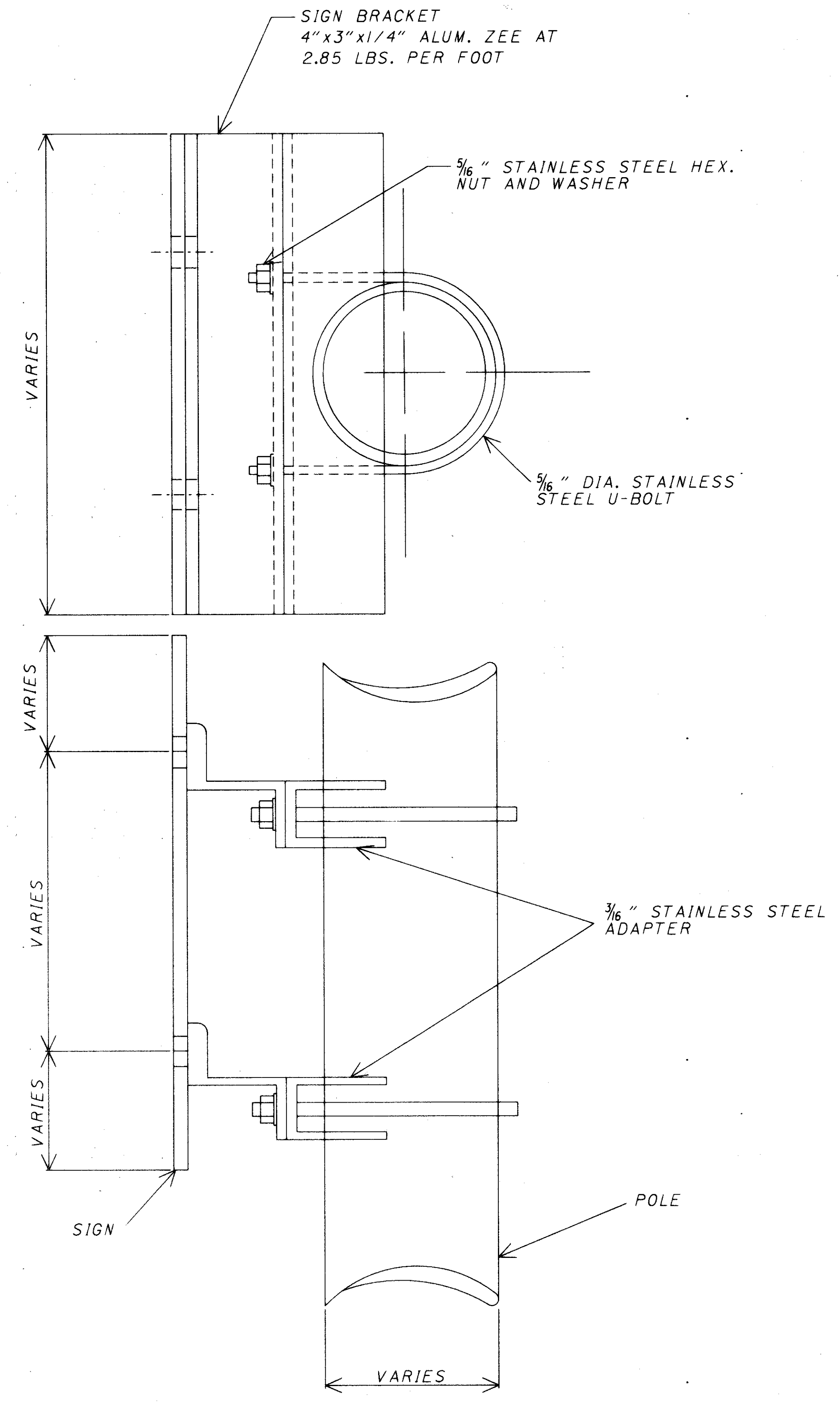
SHEET No.	POLE No.	STATION	OFFSET	SIGNAL SUPPORT TYPE T.C.-81.20						ELEVATION		ORIENTATION ANGLES (DEG.) FROM MAST ARM A							
				DESIGN No.	POLE HEIGHT (FT)	L (FT)	L1 (FT)	L2 (FT)	L3 (FT)	S (FT)	A	B	MAST ARM A ANGLE (DEG.)	MAST ARM B	PED HEAD	PEDESTRIAN SIGNAL	PEDESTRIAN PUSH BUTTON	HAND HOLE	
320	1	102+53	54' LT.	11	20.5	15	24	34	44	19'	770.44	771.00	0°		A	0°	0°	180°	
320	2	103+46	36' RT.	3	20.5	32	19	31			770.44	770.60	0°					180°	
						25	24	14											
PED POLES																			
320	1	103+93	45' LT.												B	270°*	90°*		
															C	180°*	180°*		
320	2	103+88	36' RT.												D	0°*	270°*		

NOTE: AN "*" DENOTES ORIENTATION FROM INDEX LINE

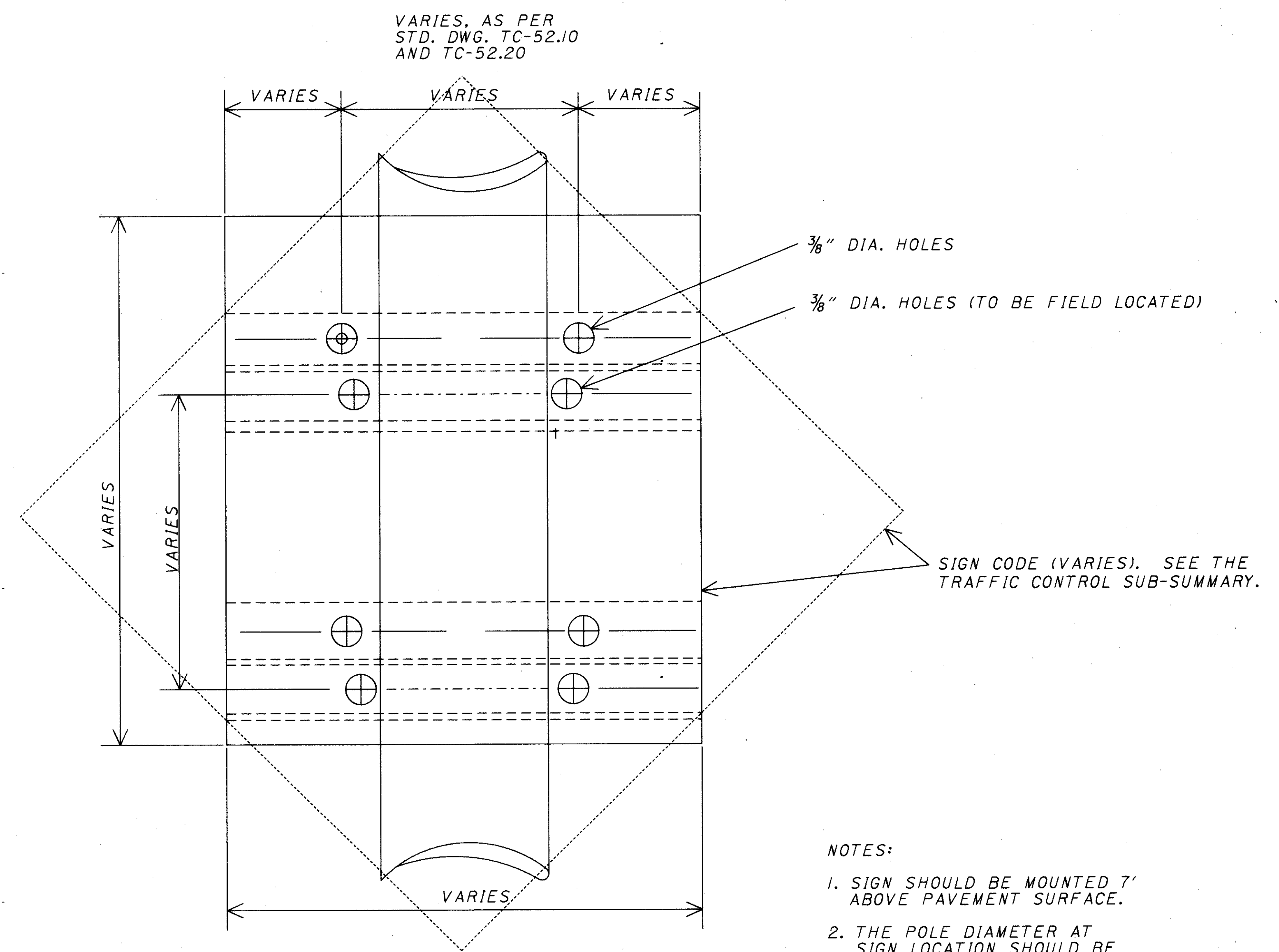
TRAFFIC CONTROL MISCELLANEOUS DETAILS

CUYAHOGA COUNTY CUY-176-10.14	OHIO
	FHWA REGION 5
	FEDERAL PROJECT

250
395



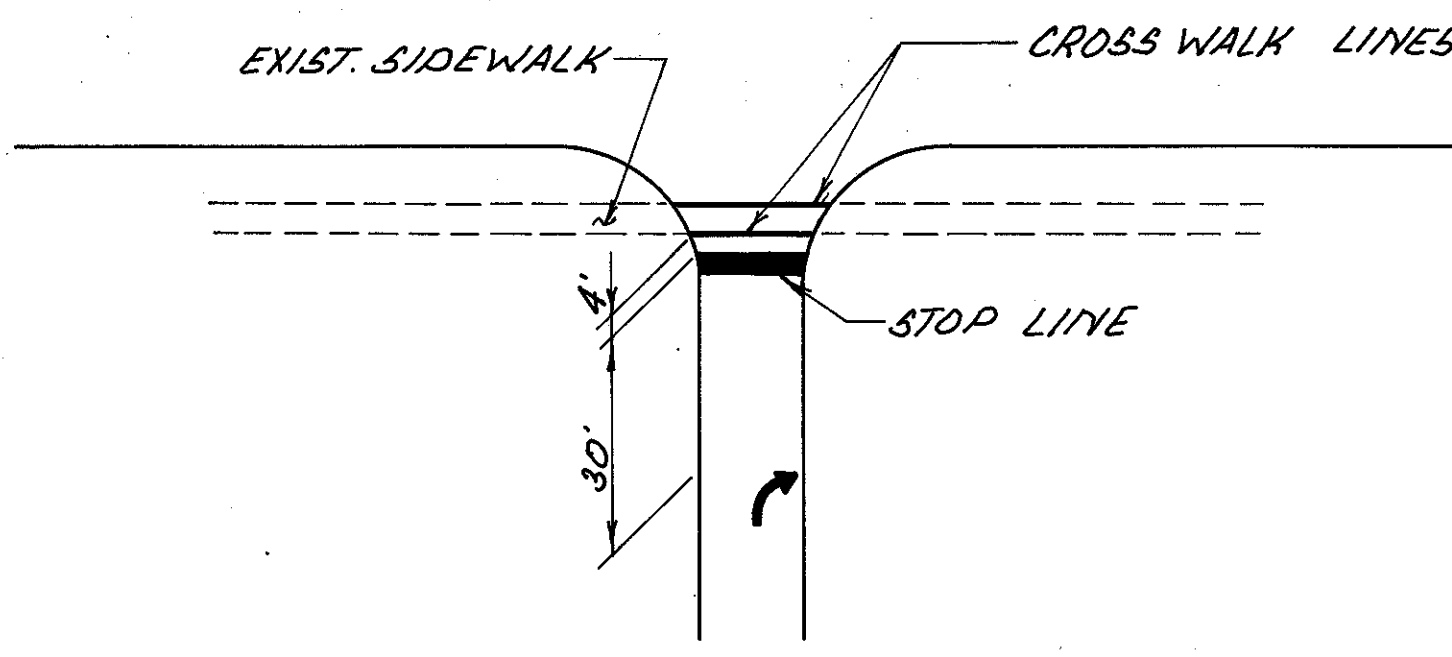
ITEM 630 - SIGN SUPPORT ASSEMBLY,
POLE MOUNTED, AS PER PLAN



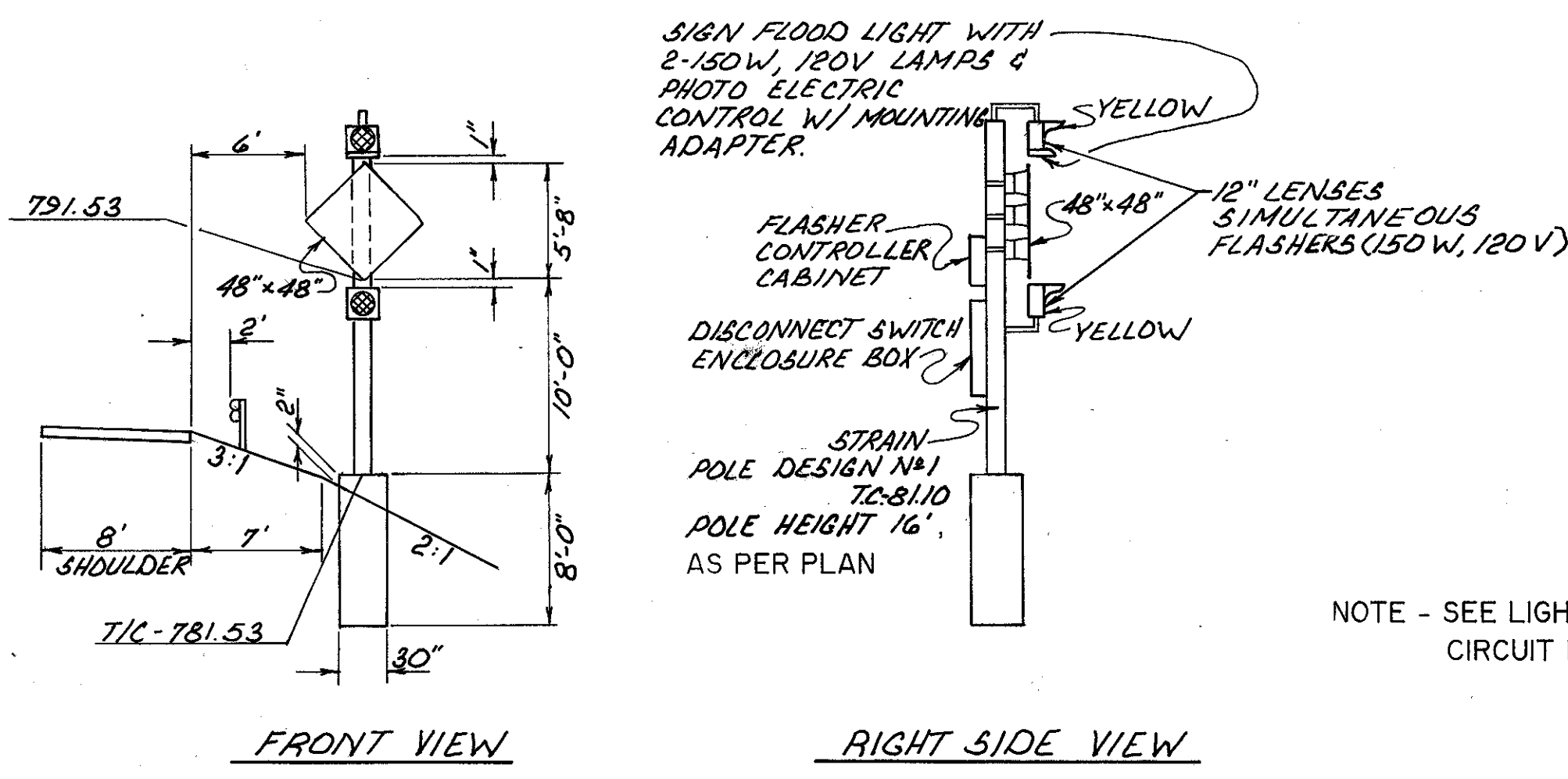
- NOTES:
1. SIGN SHOULD BE MOUNTED 7' ABOVE PAVEMENT SURFACE.
 2. THE POLE DIAMETER AT SIGN LOCATION SHOULD BE APPROXIMATELY 8.5"
 3. FOR DETAILS NOT SHOWN, SEE STD. CONST. DWG. TC-22.20
 4. WHERE SIGN ATTACHES TO ZEE BAR, BOLT HOLE LOCATIONS SHALL BE IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TC-52.10 AND TC-52.20

PLOT SUBMITTED BY: J. J. ...
 PLOT SUBMITTED: 23-JUN-1993 14:22
 FILE: J:\mimi\sc\B000001.dwg

RELOC. S.R. -176

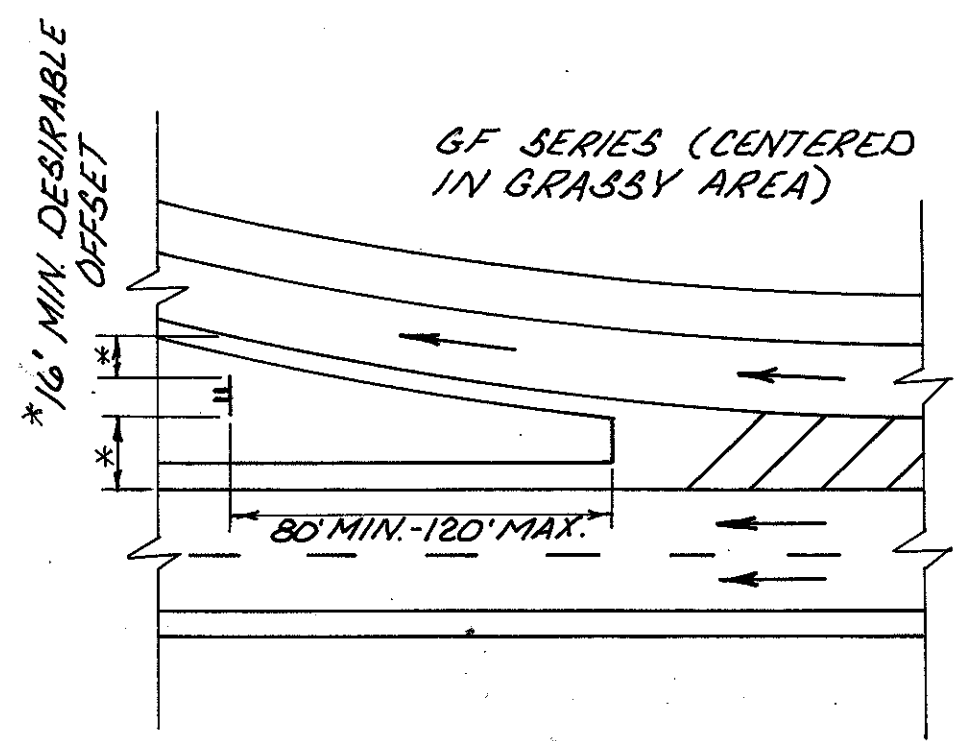


TYPICAL PLACEMENT OF STOP LINES (WITH SIDEWALKS)

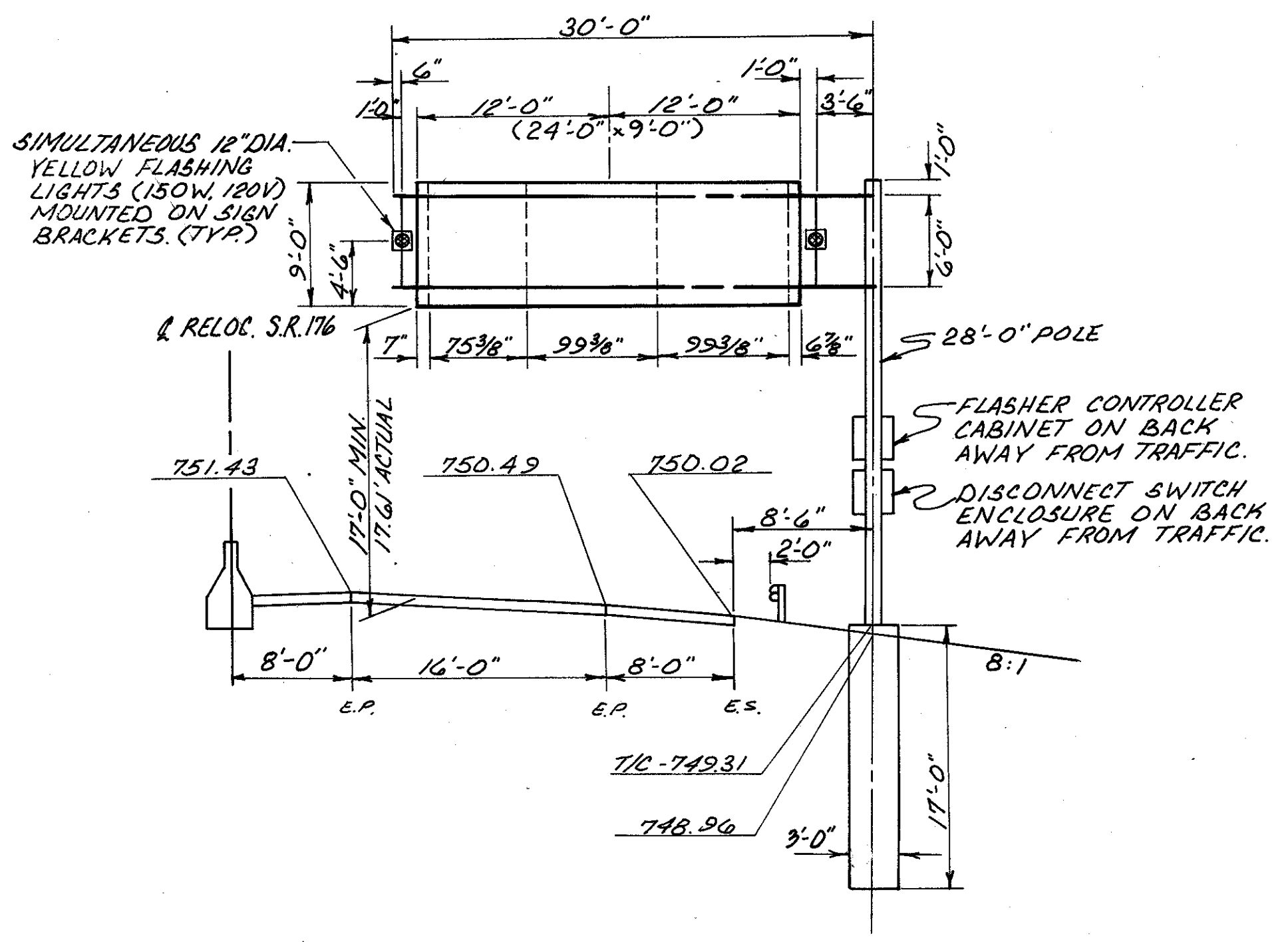


NOTE - SEE LIGHTING PLANS FOR CIRCUIT LAYOUT

118 STA. 101+00 RELOC. S.R.-176 (S.B.)

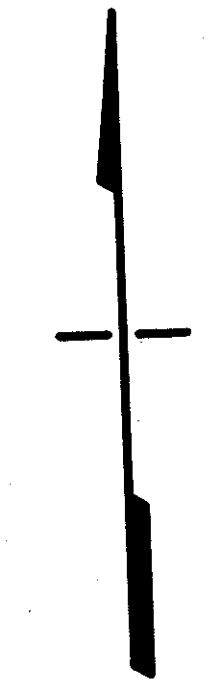
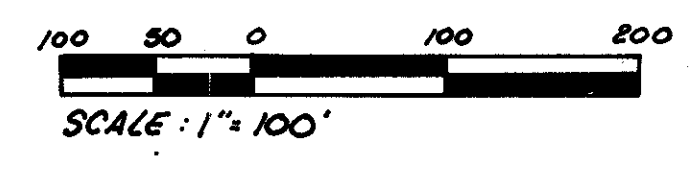


TYPICAL PLACEMENT OF GF SERIES SIGNS



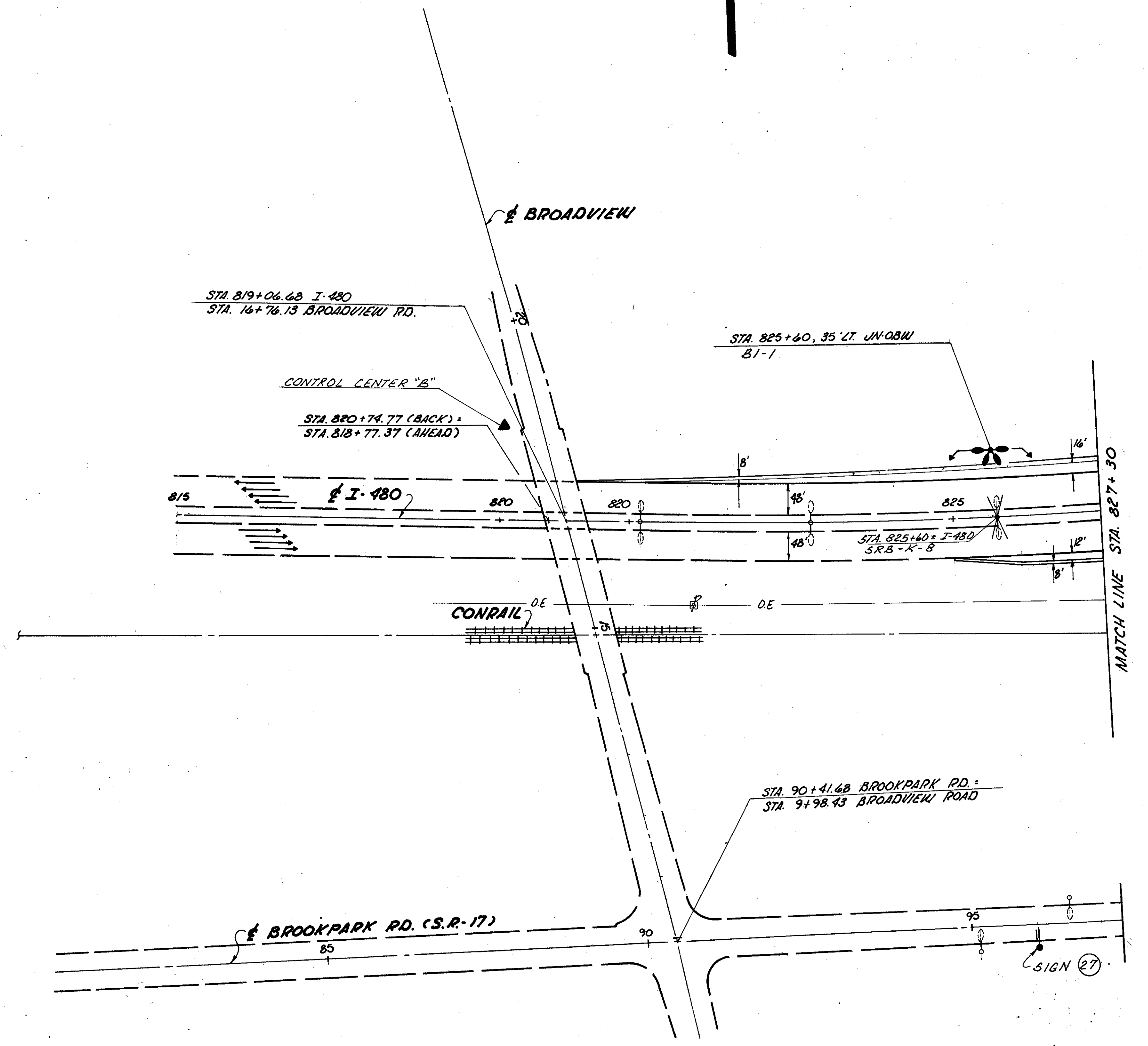
NOTE - SEE LIGHTING PLANS FOR CIRCUIT LAYOUT

21 STA. 110+50 RELOC. S.R.-176 (S.B.)
T.C.-12.30 DES. #10, 30' ARMS



LEGEND

- CIRCUIT AND POLE NUMBER
STATION & OFFSET
- Al-1
STA. 111+80, 120' LT. OBE - JN
- PROPOSED HIGHTOWER LIGHTING
 - EXISTING LIGHTING TO REMAIN
 - EXISTING LIGHTING TO BE REMOVED
 - PROPOSED LIGHTED SIGN'S
 - EXISTING LIGHTED SIGN
 - FUTURE LIGHTING CUY-176-10.88
 - PROPOSED CONTROL CENTER
 - UNDERPASS LIGHTING UNIT 100 WATT, 480 VOLT



LIGHTING LAYOUT PLAN STA. 801+00 TO STA. 827+30

RELOC. S. R. 176

- I. JN-OBE BRIDGE**
- (A.) BEGIN APPROACH SLAB STA. 42+23.14
 - (B.) END APPROACH SLAB STA. 43+23.14
 - (C.) BEGIN APPROACH SLAB STA. 49+97.85
 - (D.) END APPROACH SLAB STA. 50+27.85

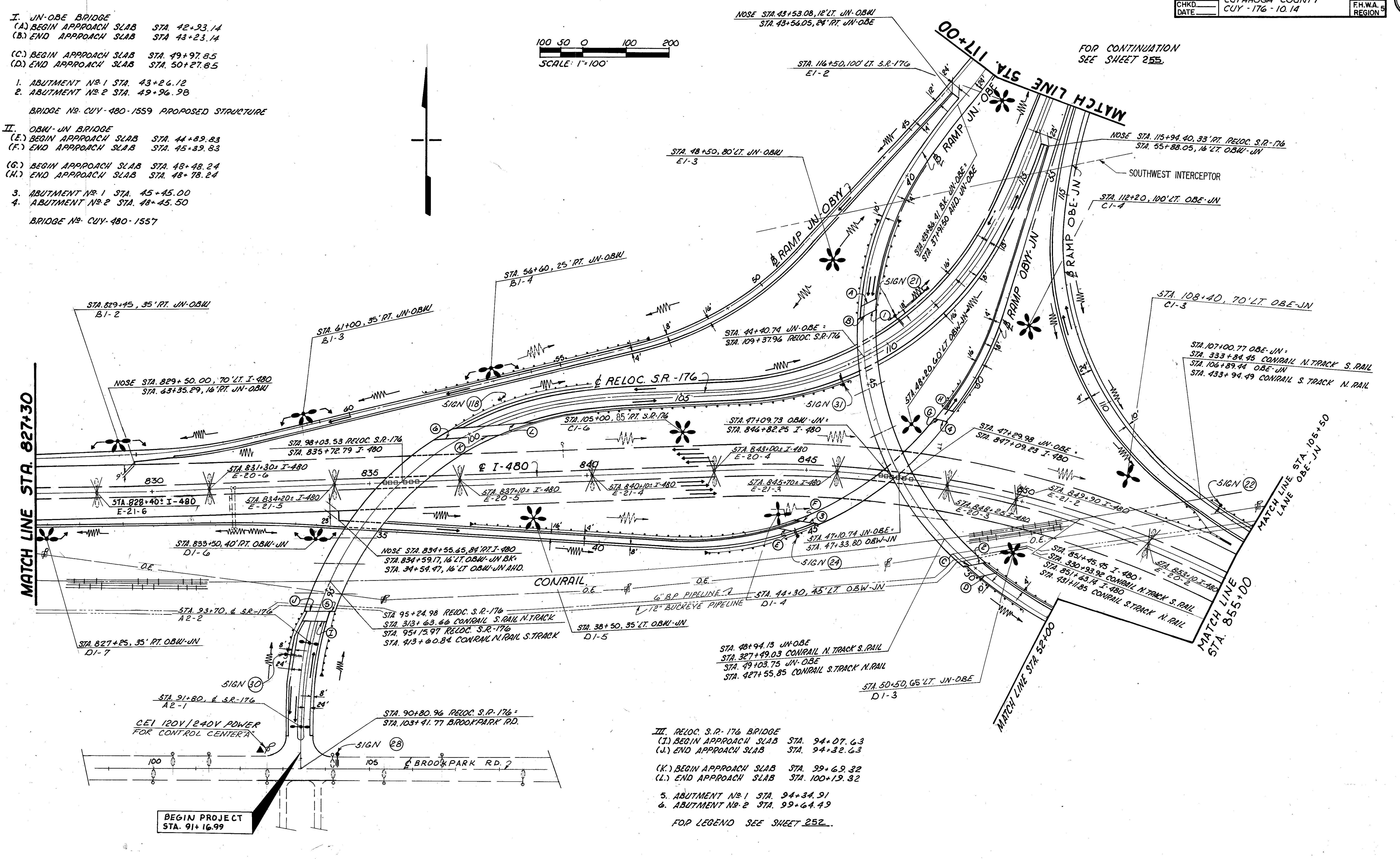
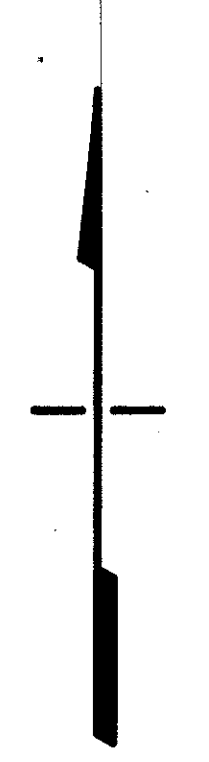
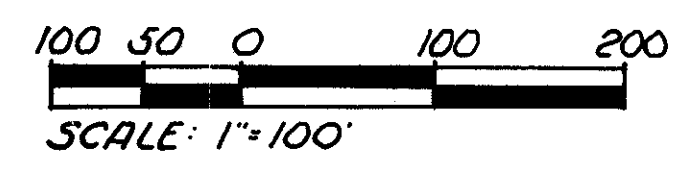
- 1. ABUTMENT NO. 1 STA. 43+26.12
- 2. ABUTMENT NO. 2 STA. 49+96.98

BRIDGE NO. CUY-480-1559 PROPOSED STRUCTURE

- II. OBU-JN BRIDGE**
- (E.) BEGIN APPROACH SLAB STA. 44+89.83
 - (F.) END APPROACH SLAB STA. 45+39.83
 - (G.) BEGIN APPROACH SLAB STA. 48+48.24
 - (H.) END APPROACH SLAB STA. 48+78.24

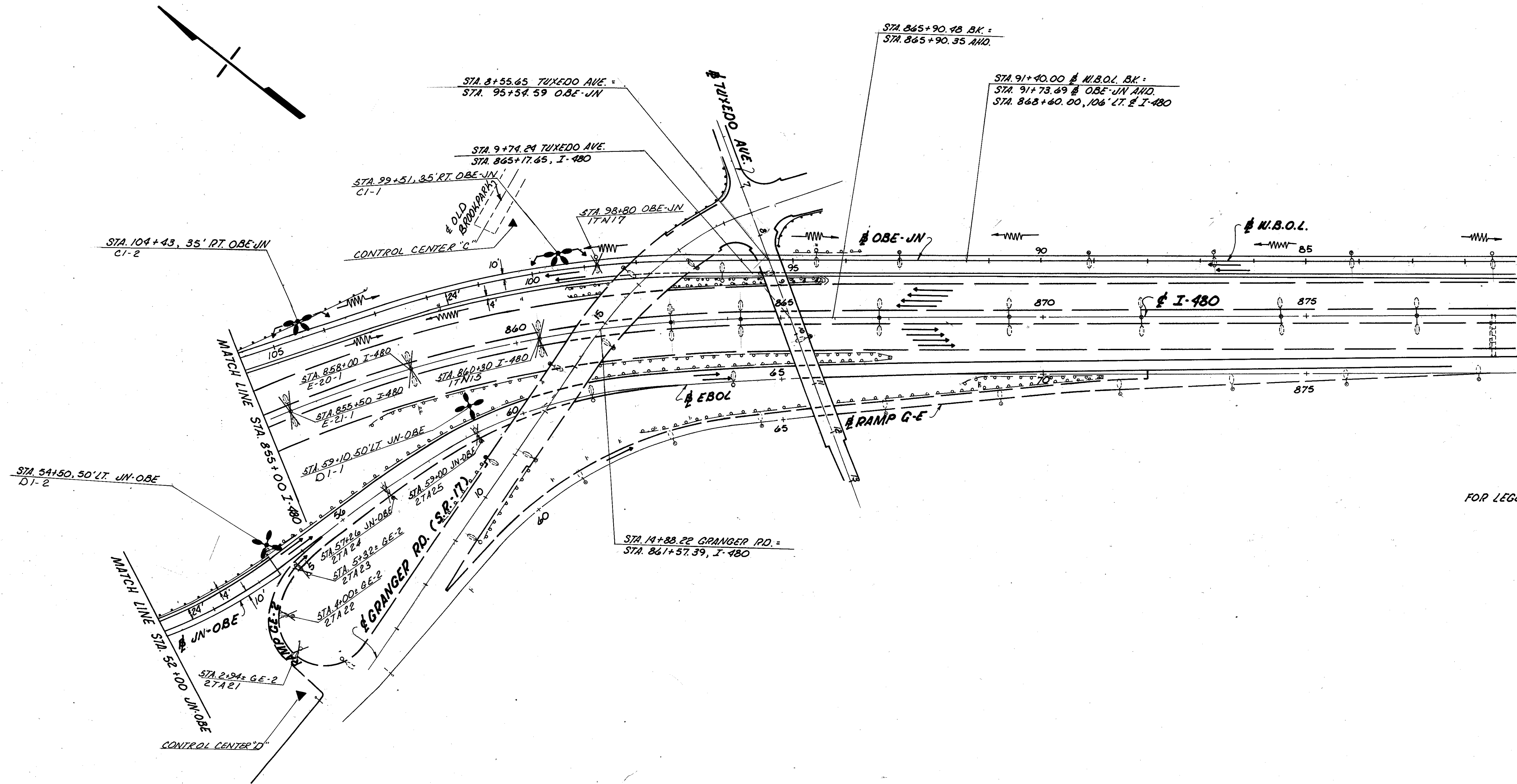
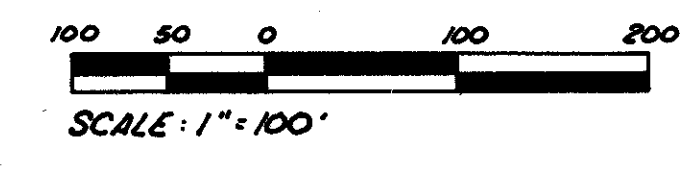
- 3. ABUTMENT NO. 1 STA. 45+45.00
- 4. ABUTMENT NO. 2 STA. 48+45.50

BRIDGE NO. CUY-480-1557

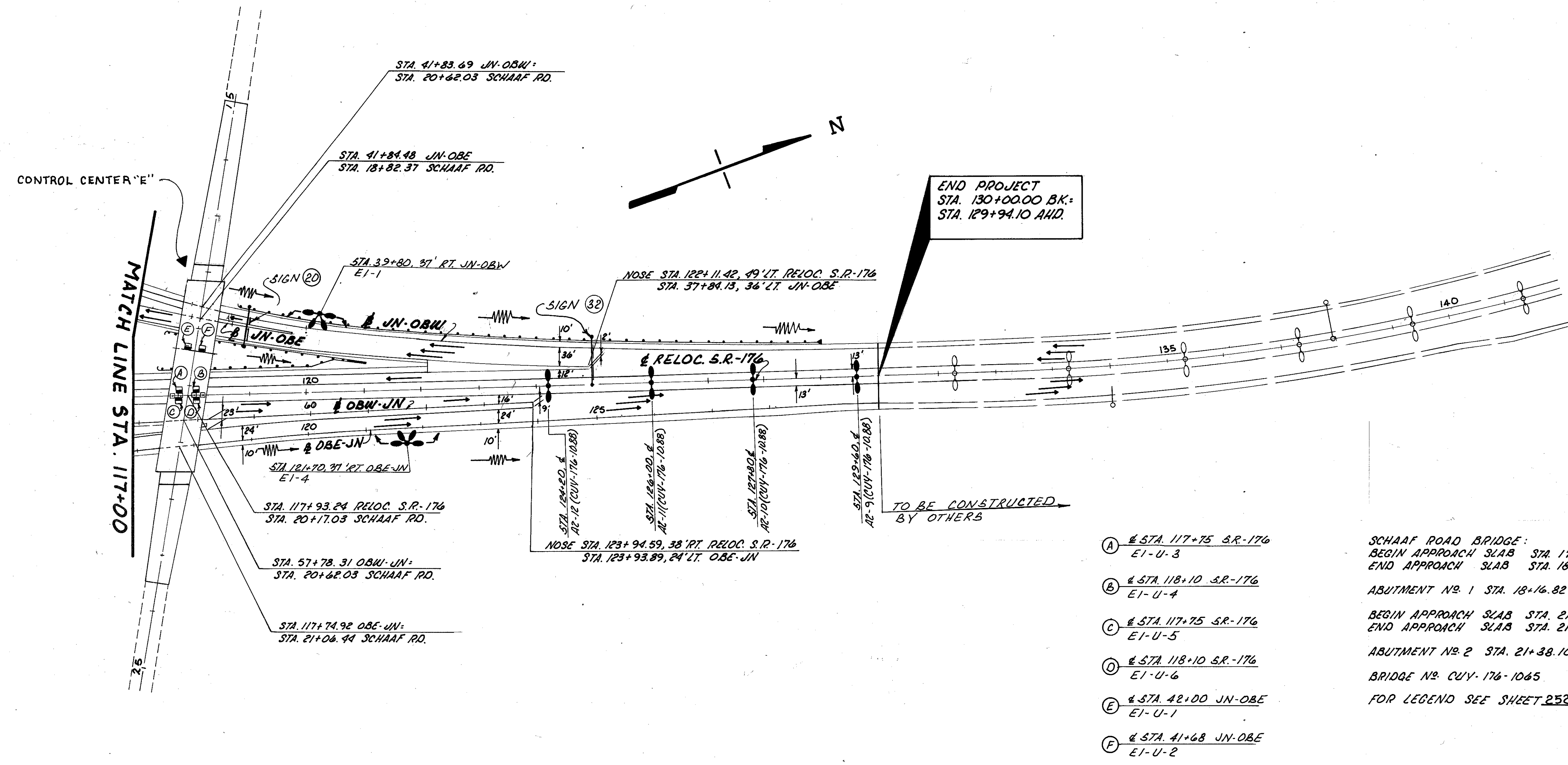
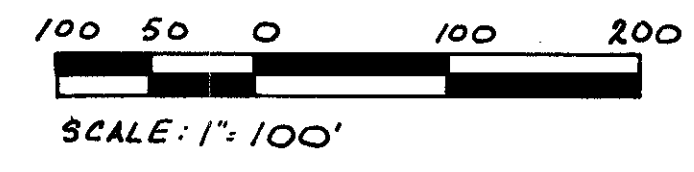


- III. RELOC. S.R.-176 BRIDGE**
- (I.) BEGIN APPROACH SLAB STA. 94+07.63
 - (J.) END APPROACH SLAB STA. 94+32.63
 - (K.) BEGIN APPROACH SLAB STA. 99+69.32
 - (L.) END APPROACH SLAB STA. 100+19.32
- 5. ABUTMENT NO. 1 STA. 94+34.91
 - 6. ABUTMENT NO. 2 STA. 99+64.49
- FOR LEGEND SEE SHEET 252.

RELOC. S.R.-176



FOR LEGEND SEE SHEET 252.



LIGHTING LAYOUT PLAN STA. 117+00 TO STA. 130+00

RELOC. S.R.-176

LIGHTING NOTES

POWER SERVICE

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS:

CLEVELAND ELECTRIC ILLUMINATING CO.
 55 PUBLIC SQUARE
 P.O. BOX 5000
 CLEVELAND, OHIO 44101

ELECTRICAL ENERGY FROM EXISTING POWER SERVICES SHALL CONTINUE TO BE CHARGED TO THE MAINTAINING AGENCY. THE CONTRACTOR SHALL PAY ELECTRICAL ENERGY CHARGES FOR NEW POWER SERVICES ESTABLISHED BY THIS PROJECT. AFTER ACCEPTANCE OF THIS PROJECT, POWER SERVICE ELECTRICAL ENERGY ACCOUNTS SHALL BE TRANSFERRED TO THE MAINTAINING AGENCIES NOTED IN THE PLANS. THIS SHALL INCLUDE NEW POWER SERVICE ESTABLISHED BY THIS PROJECT AS WELL AS REASSIGNMENT OF EXISTING SERVICE DUE TO WORK PERFORMED BY THIS PROJECT.

ITEM 202 - LIGHT POLE REMOVED FOR STORAGE, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING LIGHT POLE BRACKET ARM AND TRANSFORMER BASE, AND STORING THEM ON THE PROJECT SITE FOR PICKUP BY STATE FORCES.

REMOVAL OF LUMINAIRES FOR STORAGE IS A SEPARATE BID ITEM.

PAYMENT WILL BE MADE AT THE UNIT PRICE THAT HAS BEEN BID FOR EACH ITEM 202 "LIGHT POLE REMOVED FOR STORAGE, AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED FOR SATISFACTORY PERFORMANCE OF THIS WORK.

ITEM 202 - LUMINAIRE REMOVED FOR STORAGE, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING LUMINAIRE AND STORING IT ON THE PROJECT SITE FOR PICKUP BY STATE FORCES.

PAYMENT WILL BE MADE FOR EACH ITEM 202 "LUMINAIRE REMOVED FOR STORAGE, AS PER PLAN" AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK SATISFACTORYLY.

ITEM 202 - LIGHT POLE FOUNDATION REMOVED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REMOVING A LIGHT POLE FOUNDATION EITHER COMPLETELY OR TO A MINIMUM OF ONE FOOT BELOW FINISHED GRADE.

THE RESULTANT DEPRESSION SHALL BE BACKFILLED WITH COMPACTED SOIL AND THE DISTURBED AREA SHALL BE RESTORED TO NORMAL CONDITIONS TO THE SATISFACTION OF THE ENGINEER.

PAYMENT WILL BE MADE AT THE UNIT PRICE THAT HAS BEEN BID FOR EACH ITEM 202 "LIGHT POLE FOUNDATION REMOVED AS PER PLAN" WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE REMOVAL OF THE FOUNDATION SATISFACTORYLY.

ITEM 625.07, 713.11 - LUMINAIRES (240 VOLT, 200 WATT)

STYLE B LUMINAIRES SHALL HAVE SINGLE RATED 240 VOLT, 200 WATT, INTEGRAL REGULATOR BALLASTS FOR USE WITH HIGH PRESSURE SODIUM LAMPS AND SHALL BE GENERAL ELECTRIC M400, CROUSE-HINDS DVM, AMERICAN 25/26, OR EQUAL APPROVED BY THE ENGINEER.

ITEM 625.07, 713.13 - UNDERPASS LUMINAIRES

UNDERPASS LUMINAIRES SHALL BE HOLOPANE "UNDERPASS WALLPACK", AMERICAN SERIES 681, OR GENERAL ELECTRIC WL-401 UNDERPASS UNIT, OR EQUAL APPROVED BY THE ENGINEER, AND SHALL BE FURNISHED WITH AN INTEGRAL FUSE HOLDER AND 10-AMPERE FUSE. THE INTEGRAL HIGH PRESSURE SODIUM BALLAST SHALL BE OF A REGULATOR TYPE RATED FOR 480 VOLTS, 100 WATTS.

ITEM 713.14 - LAMPS

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX", PHILIPS "CERAMALUX", SYLVANIA "LUMALUX", OR EQUAL APPROVED BY THE ENGINEER.

UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO STANDARD DRAWINGS FOR DETAILS OF DRAINING PULL BOXES. UNDERDRAINS FOR PULL BOXES SHALL BE USED AS DIRECTED BY THE ENGINEER AND SHALL BE PROVIDED WHERE THE LENGTH REQUIRED FOR A SATISFACTORY OUTLET DOES NOT EXCEED APPROXIMATELY TWENTY FEET (20') AN ESTIMATED QUANTITY OF 600 LINEAR FEET OF ITEM 603, 4" CONDUIT, TYPE E IS INCLUDED IN THE LIGHTING GENERAL SUMMARY FOR THIS PURPOSE.

CONDUIT ON STRUCTURE

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX-4, CROUSE HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER, FOR BRIDGE NO. CUY-176-1020.

EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

ELECTRICAL SERVICE FOR ILLUMINATED SIGNS

THE PAY ITEMS IN THE LIGHTING GENERAL SUMMARY INCLUDE THE PULL BOX OR JUNCTION BOX ADJACENT TO EACH LIGHTED SIGN AND THE ELECTRICAL SERVICE CONNECTIONS LEADING INTO THE BOX, INCLUDING SPLICES OR CONNECTOR KITS IN THE PULL BOX OR JUNCTION BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTION IN THE PULL BOX OR JUNCTION BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY.

PADLOCKS AND KEYS

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 48KA OR WILSON BOHANNAN 660A, AND SHALL BE KEYED IN ACCORDANCE WITH SPECIFICATION 631.08, PARAGRAPH 3. PAYMENT SHALL BE INCLUDED IN THE BID FOR THE ITEM(S) BEING LOCKED.

ITEM SPECIAL - SERVICE TO UNDERPASS LIGHTING

THIS ITEM SHALL CONSIST OF PROVIDING COMPLETE ELECTRICAL SERVICE, EXCEPT FOR LUMINAIRES AND STRUCTURE GROUNDING, FOR AN UNDERPASS LIGHTING SYSTEM ON BRIDGE NO. CUY-176-1065 OVER S.R. 176. THE INSTALLATION WORK SHALL INCLUDE CONDUITS, CONDUIT GROUNDING, MOUNTINGS, FITTINGS, JUNCTION BOXES, CABLES, AND ALL INCIDENTALS NECESSARY TO COMPLETE, READY FOR USE, THE SERVICE AS DETAILED. THE UNIT PRICE BID FOR "ITEM 625 - SERVICE TO UNDERPASS LIGHTING" SHALL INCLUDE PAYMENT FOR ALL EQUIPMENT, LABOR AND MATERIALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED. COMPONENT PARTS NOT SPECIFICALLY MENTIONED BUT REQUIRED FOR SATISFACTORY OPERATION OF THIS ITEM SHALL BE FURNISHED AND CONSIDERED PAID FOR AS PART OF THE ITEM.

LIGHT TOWER FOUNDATIONS

THE PAY ITEM "LIGHT TOWER FOUNDATION 36" X 25" DEEP" IS INCLUDED IN THE GENERAL SUMMARY. AN ANALYSIS OF SOIL BORINGS TAKEN FROM THE PROJECT SITE SHOWS THAT BEDROCK MAY BE ENCOUNTERED. IF SOLID ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH OF 25', THE REMAINING FOUNDATION DEPTH MAY BE DECREASED BY 50% AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH NOTE 3 ON STANDARD DRAWING HL-20.21.

MAINTAIN EXISTING LIGHTING

THE EXISTING LIGHTS MARKED FOR REMOVAL ON THE PLANS SHALL REMAIN OPERATIONAL UNTIL THE PROPOSED LIGHTING HAS BEEN ACCEPTED AND IS OPERATIONAL.

THE LUMP SUM PRICE BID FOR ITEM SPECIAL "MAINTAIN EXISTING LIGHTING" SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, AND MATERIALS AND INCIDENTALS NECESSARY TO MAINTAIN THE EXISTING LIGHTING AS SPECIFIED HEREIN.

HIGH MAST LUMINAIRES

THE LUMINAIRE ARRAYS AND ASSOCIATED ILLUMINATION TEST AREAS SPECIFIED IN SECTION 713.21 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS ARE HEREBY WAIVED FOR THIS PROJECT. INSTEAD, THE LUMINAIRES FOR TOWER LIGHTING SHALL MEET THE FOLLOWING REQUIREMENTS.

ASYMMETRIC, TYPE II OR III, LUMINAIRES FOR TOWER LIGHTING MAY BE HOLOPANE "HMST" TEST #36648, OR GENERAL ELECTRIC "HM" TEST #7349, OR COOPER "HMC" TEST #764130.

SYMMETRIC, TYPE V, LUMINAIRE FOR TOWER LIGHTING MAY BE HOLOPANE "HMST" TEST #36648, OR GENERAL ELECTRIC "HM" TEST #6312, OR COOPER "HAL" TEST #48381.

IN ADDITION, OTHER LUMINAIRES WILL BE CONSIDERED IF THE DESIGNED INTENSITY AND UNIFORMITY ARE PROVIDED USING THE DESIGNED POLE LOCATIONS AND THE DESIGNED NUMBER AND TYPE OF FIXTURES PER POLE.

POWER SERVICE REMOVED, AS PER PLAN

THIS ITEM OF WORK INCLUDES THE REMOVAL OF THOSE PORTIONS OF THE EXISTING POWER SERVICE NOT BEING REUSED. EXISTING UNDERGROUND CONDUIT AND WIRING MAY BE ABANDONED IN PLACE EXCEPT WHEN NEW WIRING IS TO BE PLACED IN EXISTING CONDUITS OR PULL BOXES. IN THIS LATTER CASE, THE OLD WIRES SHALL BE REMOVED. REMOVED MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE. ALL DISTURBED AREAS SHALL BE RESTORED AS TO MATCH THE SURROUNDING AREA.

THIS ITEM WILL ALSO COMPENSATE THE CONTRACTOR FOR COORDINATING WITH THE POWER COMPANY TO INSURE THAT THEY DISCONNECT AND REMOVE ANY OF THEIR ITEMS THAT ARE A PART OF THE POWER SERVICE. IT ALSO INCLUDES RETURNING TO THE POWER COMPANY ANY ITEMS BELONGING TO THEM THAT WERE REMOVED BY THE CONTRACTOR, SUCH AS THE METER BASE.

PAYMENT WILL BE MADE FOR EACH ITEM "POWER SERVICE REMOVED, AS PER PLAN" AND SHALL BE FULL COMPENSATION INCLUDING ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE INSTALLATION IN A SATISFACTORY WORKMAN-LIKE MANNER.

ITEM SPECIAL - CAP MEDIAN FOUNDATION

PROVIDE AND INSTALL A NEW 1/2" THICK PLATE, HOT DIPPED GALVANIZED AFTER FABRICATION TO COVER THE OPENING WHERE THE POLE PLATE WAS REMOVED. FASTEN THE COVER IN PLACE BY REUSING THE ANCHOR BOLTS, NUTS, AND WASHERS WHICH ANCHORED THE POLE.

RELOCATED STATE ROUTE 176

LIGHTING NOTES

HIGH MAST LIGHT TOWERS

THE MANUFACTURER SHALL SUBMIT A REPORT FROM AN INDEPENDENT TESTING LABORATORY TO SHOW THAT THE LUMINAIRES DO NOT RECEIVE MORE THAN THE SPECIFIED ACCELERATION LOAD. THE TESTING LABORATORY'S REPORT SHALL SPECIFY IN DETAIL THE MOUNTING LOCATIONS OF THE ACCELEROMETERS AND THE TEST PROCEDURES USED. IN ADDITION TO THIS REPORT D.D.D.T. RESERVES THE RIGHT TO CONDUCT FIELD MEASUREMENTS OF THOSE ACCELERATION LOADS AND TO ACCEPT ONLY THOSE DESIGNS IN WHICH THE TESTED INSTALLATIONS MEET THE SPECIFICATIONS.

THE TERMINAL BLOCK SHOWN ON THE STANDARD CONSTRUCTION DRAWINGS SHALL BE INCLUDED IN THE PRICE OF THE TOWER.

ITEM SPECIAL - DISCONNECT EXISTING CIRCUIT

THIS ITEM OF WORK SHALL CONSIST OF THE DISCONNECTION OF AN EXISTING LIGHT CIRCUIT AT A PULL BOX OR AT A LIGHT POLE.

DISCONNECTION AT A PULL BOX SHALL INVOLVE CUTTING THE EXISTING CIRCUIT AND REMOVING ALL SPLICE KITS. ANY CABLE THAT IS TO BE ABANDONED SHALL BE TERMINATED IN A MANNER SUCH THAT NO CABLE IS LEFT REMAINING IN THE PULL BOX.

DISCONNECTION AT A LIGHT POLE SHALL INVOLVE THE REMOVAL OF THAT PART OF CABLE THAT IS TO BE ABANDONED FROM THE POLE. THE ENDS OF THE CONNECTOR KITS FROM WHICH THE ABANDONED CABLE IS REMOVED SHALL BE PLUGGED AND TAPED.

ANY CABLE THAT IS TO BE REUSED IN A PULL BOX OR LIGHT POLE SHALL BE CUT IN A MANNER SO THAT THERE IS SUFFICIENT LENGTH OF CABLE LEFT FOR RECONNECTION. CABLE SPLICE KITS AND CONNECTOR KITS WILL BE PAID FOR RESPECTIVELY UNDER EACH ITEM 625.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH ITEM SPECIAL "DISCONNECT EXISTING CIRCUIT" AND SHALL BE FULL COMPENSATION INCLUDING ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK.

HIGH VOLTAGE TEST

A LUMP SUM FOR PERFORMING THE HIGH VOLTAGE TEST REQUIRED BY THE DDDT CONSTRUCTION AND MATERIALS SPECIFICATIONS HAS BEEN INCLUDED IN THE GENERAL SUMMARY.

ITEM 625 LUMINAIRE MISC.: STYLE B, TYPE II, 200 WATT, H.P.S., PHOTO ELECTRIC CONTROLLED, A.P.P.

STYLE B LUMINAIRES SHALL HAVE SINGLE RATED 240 VOLT, 200 WATT, INTEGRAL REGULATOR BALLASTS FOR USE WITH HIGH PRESSURE SODIUM LAMPS AND SHALL BE GENERAL ELECTRIC M400, CROUSE HINDS OVM, AMERICAN 25/26, OR EQUAL APPROVED BY THE ENGINEER. A PHOTO ELECTRIC CELL SHALL BE PROVIDED FOR EACH STYLE B LUMINAIRE, 240 VOLT, 200 WATT.

ITEM SPECIAL - TEMPORARY LIGHTING

ON TEMPORARY SCHAAF ROAD BETWEEN STATION 2+00 AND 11+00 AROUND BRIDGE NO. CUY-176-1065 TEMPORARY LIGHTING PROVIDING AN AVERAGE INITIAL INTENSITY OF 1.0-1.2 FOOTCANDLES AND UNIFORMITIES OF 4:1 AVERAGE/MINIMUM AND 10:1 MAXIMUM/MINIMUM SHALL BE INSTALLED BEFORE OPENING OF THE TEMPORARY ROADWAY TO TRAFFIC.

EXISTING LIGHTING ON EXISTING SCHAAF ROAD WILL BE REMOVED OR RELOCATED BY THE UTILITY COMPANY (CEI).

A DETAILED LAYOUT OF THE TEMPORARY LIGHTING IS NOT SHOWN IN THESE PLANS. THE CONTRACTOR SHALL SUBMIT FOUR (4) SETS OF THE PROPOSED DETAILED PLANS TO THE ENGINEER FOR REVIEW AND APPROVAL. THESE PLANS SHALL SHOW LOCATION OF POLES, LENGTH OF BRACKET ARMS, STYLE OF LUMINAIRES, MOUNTING HEIGHT, AND OTHER PERTINENT INFORMATION.

WOOD POLES WITH OVERHEAD WIRING MAY BE USED. ALL MATERIALS NECESSARY TO COMPLETE THE TEMPORARY LIGHTING SHALL BE FURNISHED BY THE CONTRACTOR AND TEMPORARY LIGHTING INSTALLATIONS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR WHEN NO LONGER NEEDED.

RECONDITIONED OR APPROVED USED MATERIALS MAY BE FURNISHED FOR TEMPORARY LIGHTING. TEMPORARY OVERHEAD CONSTRUCTION SHALL NOT BE LESS THAN GRADE A FOR STRENGTH REQUIREMENT AS DEFINED BY THE NATIONAL ELECTRIC SAFETY CODE. MOUNTING HEIGHT FOR TEMPORARY LUMINAIRES SHALL NOT BE LESS THAN TWENTY-SEVEN FEET (27') AND MINIMUM OVERHEAD CONDUCTOR CLEARANCE SHALL BE TWENTY FEET (20').

THE CITY OF CLEVELAND WILL PAY FOR ELECTRICAL ENERGY AND MAINTENANCE FOR UNDISTURBED LIGHTING ON EXISTING ROADWAYS AND FOR PERMANENT LIGHTING PLACED IN OPERATION. THE CONTRACTOR WILL PAY FOR ELECTRICAL ENERGY, INSTALLATION, REMOVAL, AND MAINTENANCE OF ANY TEMPORARY LIGHTING REQUIRED.

THE LUMP SUM BID PRICE FOR 'ITEM SPECIAL - TEMPORARY LIGHTING' SHALL INCLUDE PAYMENT FOR ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY TO PROVIDE THE TEMPORARY LIGHTING AS SPECIFIED.

ITEM 625 - LIGHT TOWER FOUNDATIONS

LIGHT TOWER FOUNDATIONS SHALL EXTEND 6 INCHES ABOVE GROUND RATHER THAN FLUSH AS SHOWN ON HL-20.21. THE CONTRACTOR SHALL ACCURATELY LOCATE ALL UNDERGROUND CONDUITS PRIOR TO DRILLING FOR FOUNDATIONS. FOUNDATION LOCATIONS MAY BE SHIFTED AS NECESSARY TO AVOID ANY UNDERGROUND UTILITIES OR CONDUITS BY AT LEAST 10 FEET, AS DIRECTED BY THE ENGINEER. ALL FOUNDATION RELOCATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO DRILLING. THE SPECIFIED FOUNDATION DEPTH SHALL BE MEASURED FROM THE TOP OF THE ABOVE GROUND EXTENSION. ALL COSTS OF REMOVAL OF EXCAVATED MATERIAL, GRADING AND RESTORATION OF ALL DISTURBED AREAS IN ACCORDANCE WITH ITEM 659 SHALL BE CONSIDERED AS INCIDENTAL TO THE LIGHT TOWER FOUNDATION ITEM. REGARDING AS SHOWN IN HL-20.21 SHALL NOT BE REQUIRED. THE MINIMUM NUMBER OF NO. II REINFORCING BARS AS SHOWN IN HL-20.21 SHALL BE TWELVE.

LIGHTING GENERAL SUMMARY

* FOR GROUNDING OF FENCE

ITEM	S H E E T																ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	FOR AS PER PLAN SEE SHT NO.
	83 *	85 *	87 *	138 *	256	259	260	261	262	263	264	275	276									
202						20											202	75403	20	EACH	LIGHT POLE REMOVED FOR STORAGE, AS PER PLAN	256
202						6											202	75501	6	EACH	LIGHT POLE FOUNDATION REMOVED, AS PER PLAN	256
202						34											202	75505	34	EACH	LUMINAIRE REMOVED FOR STORAGE, AS PER PLAN	256
202							1										202	75511	1	EACH	POWER SERVICE REMOVED, AS PER PLAN	256
603					600												603	00400	600	LIN FT	4" CONDUIT, TYPE E	
625						4							4				625	00500	16	EACH	CONNECTOR KIT, TYPE II	
625						2											625	01000	4	EACH	CONNECTOR KIT, TYPE VII A	
625												2					625	01004	4	EACH	CONNECTOR KIT, TYPE VII B	
625						31	6	8		8			4	6			625	01500	77	EACH	CABLE SPLICING KIT	
625							2										625	10500	6	EACH	LIGHT POLE, MISC.: DESIGN A12BB45	
625							3			3							625	13200	11	EACH	LIGHT TOWER, BBBB100	
625																	625	13204	2	EACH	LIGHT TOWER, BBBB110	
625										1							625	13208	2	EACH	LIGHT TOWER, BBBB120	
625										1							625	13400	4	EACH	LIGHT TOWER, BBBBBB100	
625										1							625	13406	2	EACH	LIGHT TOWER, BBBBBB120	
625							2										625	14306	6	EACH	MEDIAN LIGHT POLE FOUNDATION, 10' DEEP	
625																	625	15200	21	EACH	LIGHT TOWER FOUNDATION, 36" X 25' DEEP	
625										2							625	21200	10	EACH	LIGHT TOWER MAINTENANCE PLATFORM, TYPE C	
625																	625	22910	1740	LIN FT	NO. 2/0 AWG 5000 VOLT DISTRIBUTION CABLE	
625						3470	790						180				625	23200	5230	LIN FT	NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	
625																	625	23300	3225	LIN FT	NO. 2 AWG 5000 VOLT DISTRIBUTION CABLE	
625																	625	23400	972	LIN FT	NO. 10 AWG POLE AND BRACKET CABLE	
625																	625	24100	9665	LIN FT	1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 5000 VOLT CABLES	
625																	625	24300	1400	LIN FT	1-1/2" DUCT CABLE WITH TWO NO. 2 AWG 5000 VOLT CABLES	
625																	625	25400	4675	LIN FT	CONDUIT, 2", 713.04	
625						2120	95										625	25500	1195	LIN FT	CONDUIT, 3", 713.04	
625						80	90			40		150					625	25500	8	EACH	LUMINAIRE STYLE B, TYPE II, 200 WATT HIGH PRESSURE SODIUM 713.11, 240 VOLTS	
625																	625	26202	8	EACH	LUMINAIRE MISC.: STYLE B, TYPE II, 200 WATT HIGH PRESSURE SODIUM, 713.11, 240 VOLT, PHOTO ELECTRIC CONTROLLED, AS PER PLAN	257
625							4										625	27600	4	EACH	LUMINAIRE, ASYMMETRIC, 400 WATT HIGH PRESSURE SODIUM, 713.21, 480 VOLT	256
625							16			8		8					625	27000	40	EACH	LUMINAIRE, SYMMETRIC, 400 WATT HIGH PRESSURE SODIUM, 713.21, 480 VOLT	
625										20		24					625	27200	56	EACH	LUMINAIRE, UNDERPASS, HIGH PRESSURE SODIUM, 713.13 100 WATT	
625																	625	27500	6	EACH		
625																	625	29002	13235	LIN FT	TRENCH 24" DEEP	
625						1590	2290			2875		3820					625	29910	4	EACH	TRANSITION JUNCTION BOX	
625																	625	29920	2	EACH	STRUCTURE JUNCTION BOX	
625																	625	30700	32	EACH	PULL BOX, 713.08, 18"	
625																	625	31500	4	EACH	MEDIAN PULL BOX	
625																	625	31506	2	EACH	PULL BOX REMOVED AND REPLACED	
625	3	3	2	4			10			12		14					625	32000	60	EACH	GROUND ROD	
625																	625	33000	4	EACH	STRUCTURE GROUNDING SYSTEM	
625																	625	34001	5	EACH	POWER SERVICE, AS PER PLAN	277, 277A
625																	625	37100	2	EACH	SERVICE TO UNDERPASS LIGHTING	
625																	625	38000	LUMP	LUMP	HIGH VOLTAGE TEST	
625																	625	39000	LUMP	LUMP	TEMPORARY LIGHTING	257
SPECIAL																	SPECIAL	62540000	LUMP	LUMP	MAINTAIN EXISTING LIGHTING	
SPECIAL							3										SPECIAL	62540020	5	EACH	DISCONNECT EXISTING CIRCUIT	
625																	625	98000	2	EACH	LIGHTING MISC.: CLEAN EXISTING PULL BOX	
625																	625	98000	14	EACH	LIGHTING MISC.: CAP MEDIAN FOUNDATION	
																	625	98000	11	EACH	LIGHTING MISC.: SURVEILLANCE JUNCTION BOX	

RELOCATED STATE ROUTE 176

LIGHTING SUB-SUMMARY

CIRCUIT REF. NO.	SHEET NO.	STATION TO STATION	ITEM DESCRIPTION	625	625	625	625	625	625	625	625	625	625	625	625	625	625	625	625	625	625	
				EXTENSION	00500 CONNECTOR KIT, TYPE II	01500 CABLE SPLICING KIT	10500 LIGHT POLE, MISC. DESIGN A12BB45	13200 LIGHT TOWER, BBBB100	13204 LIGHT TOWER, BBBB110	14306 MEDIAN LIGHT POLE FOUNDATION, 10' DEEP	15200 LIGHT TOWER FOUNDATION, 36' X 25' DEEP	21200 LIGHT TOWER MAINTENANCE PLATFORM, TYPE C	23200 NO. 4 AWG 5000 VOLT DISTRIBUTION CABLE	23400 NO. 10 AWG POLE AND BRACKET CABLE	24100 1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 5000 VOLT CABLES	25400 CONDUIT, 2', 713.04	25500 CONDUIT, 3', 713.04	27000 LUMINAIRE, MISC. STYLE B TYPE II, 200 WATT HPS, 713.11, 240 VOLT WITH PHOTO CONTROL	27000 LUMINAIRE, ASYMMETRIC, 400 WATT HIGH PRESSURE SODIUM, 713.21, 480 VOLT	29002 TRENCH, 24' DEEP	30700 PULL BOX, 713.08, 18'	32000 GROUND ROD
				EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	LIN FT	LIN FT	EACH	EACH	LIN FT	EACH	EACH	EACH
CIRCUIT A1																						
	265	91 + 80	LT									120			50			50				
A1-1		91 + 80	C/L	2		1		1					162			2				1		
		91 + 80	LT									100			40			40				
PB-A1-11		91 + 80	LT		2														1			
		91 + 80 93 + 70	C/L									400										
A1-2		93 + 70	C/L	2		1		1					162			2				1		
		91 + 80 104 + 25 \$	RT/ L									170			75			75				
PB-A1-12		104 + 25 \$	LT		2														1			
CIRCUIT B1																						
	265	18 + 50 ^	LT		2									60	20			20	1		1	
		18 + 50 ^ 825 + 60 #	LT/RT											840				830				
B1-1		825 + 60 #	RT				1		1	1							4			2		
		825 + 60 # 829 + 45 #	RT											395				385				
B1-2		829 + 45 #	RT			1		1	1								4			2		
		829 + 45 # 61 + 00 #	RT											460				450				
B1-3		61 + 00 #	RT			1		1									4			2		
	266	61 + 00 # 56 + 60 #	RT											450				440				
B1-4		56 + 60 #	RT				1	1	1								4			2		
SUBTOTALS				4	6	2	3	1	2	4	3	790	324	2205	95	90	4	16	2290	3	10	1

LIGHTING SUB-SUMMARY

CIRCUIT REF. NO.	SHEET NO.	STATION TO STATION	ITEM EXTENSION DESCRIPTION	01500 CABLE SPLICING KIT	13200 LIGHT TOWER, BBBB100	13204 LIGHT TOWER, BBBB110	13208 LIGHT TOWER, BBBB120	13400 LIGHT TOWER, BBBB100	13406 LIGHT TOWER, BBBB120	15200 LIGHT TOWER FOUNDATION, 36' X 25' DEEP	21200 LIGHT TOWER MAINTENANCE PLATFORM, TYPE C	24100 1-1/2" DUCT CABLE WITH TWO NO. 4 AWG 5000 VOLT CABLES	625		25500 CONDUIT, 3", 713.04	27000 LUMINAIRE, ASYMMETRIC, 400 WATT HIGH PRESSURE SODIUM, 713.21, 480 VOLT	27200 LUMINAIRE, SYMMETRIC, 400 WATT HIGH PRESSURE SODIUM, 713.21, 480 VOLT	29002 TRENCH, 24" DEEP	30700 PULL BOX, 713.08, 18'	31506 PULL BOX REMOVED AND REPLACED	32000 GROUND ROD	34001 POWER SERVICE, AS PER PLAN	33000 STRUCTURE GROUNDING SYSTEM
													24300 1-1/2" DUCT CABLE WITH TWO NO. 2 AWG 5000 VOLT CABLES	25500 CONDUIT, 3", 713.04									
				EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	LIN FT	LIN FT	LIN FT	EACH	EACH	LIN FT	EACH	EACH	EACH	EACH	EACH	
CIRCUIT D1																							
PB-D1-1	268	53 + 80 #	RT	2																		1	
		53 + 80 # 53 + 50 #	RT / LT											280	50			270				1	
PB-D1-3		53 + 50 #	LT	2																		1	
		53 + 50 # 54 + 50 #	LT									110						100					
D1-2		54 + 50 #	LT		1					1												2	
		54 + 50 # 59 + 10 #	LT							1		490						480				2	
D1-1		59 + 10 #	LT				1				1											2	
		53 + 50 # 50 + 50 #	LT											330				320					
D1-3	267	50 + 50 #	LT							1	1											2	
		50 + 50 # 44 + 30 #	LT / LT											790				780				2	
D1-4	266	44 + 30 #	LT					1			1											2	
		44 + 30 # 44 + 60 #	LT / RT									100			50			90					
PB-D1-5		44 + 60 #	RT	2																		1	
		44 + 30 # 38 + 50 #	LT									590						580					
D1-5		38 + 50 #	LT						1													2	
		38 + 50 # 833 + 50 #	LT / RT									570		50				6	560			2	
D1-6	265	833 + 50 #	RT				1															2	
		833 + 50 # 831 + 95 #	RT																				
PB-D1-4		831 + 95 #	RT	2																		1	
		831 + 95 # 827 + 25 #	RT									490											
D1-7		827 + 25 #	RT				1				1											2	
BR. CUY-176-1020																							1
BR. CUY-176-1065																							1
BR. CUY-480-1557																							1
BR. CUY-480-1559																							1
SUBTOTALS					8	3	1	1	1	1	7	3	2520	1400	150	8	24	3820	3	1	14	1	4

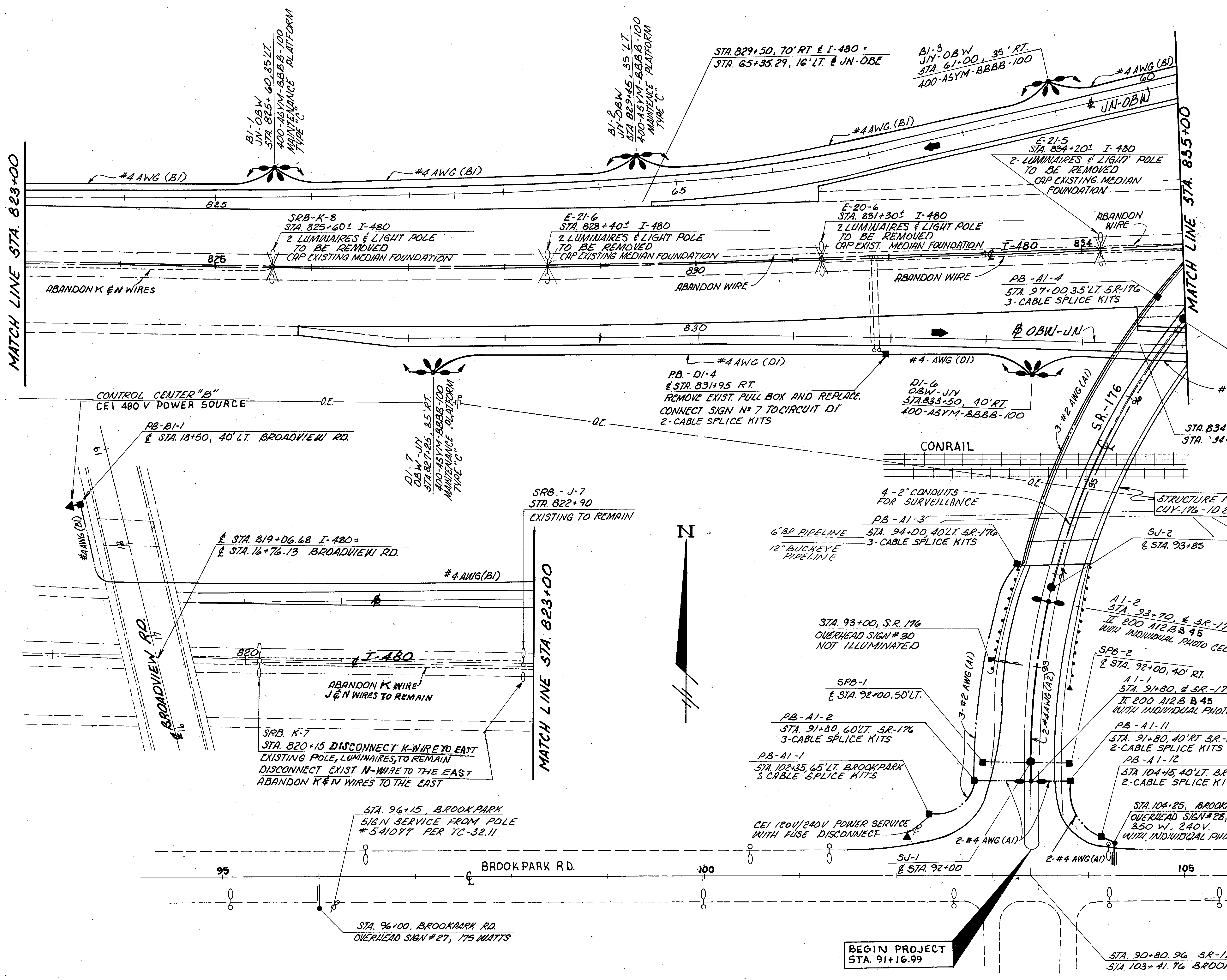
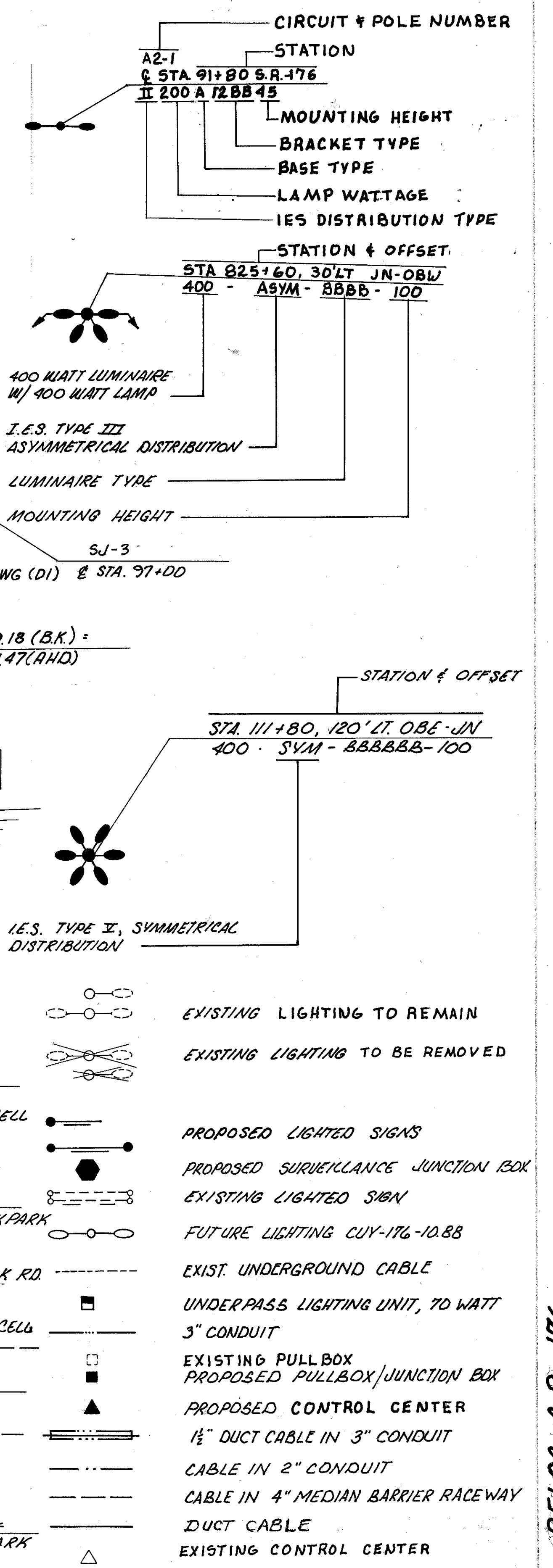
RELOCATED STATE ROUTE 176

SURVEILLANCE SUB-SUMMARY

REF. NO.	SHEET NO.	STATION	TO	STATION	SIDE	ITEM										
						EXTENSION	25400	25500	29002	625	30700	29910	29920	98000		
						DESCRIPTION	CONDUIT, 2' 713.04	CONDUIT, 3' 713.04	TRENCH, 24' DEEP	PULL BOX, 18' 713.08	TRANSITION JUNCTION BOX	STRUCTURE JUNCTION BOX	LIGHTING MISC. SURVEILLANCE JUNCTION BOX			
						LIN FT	LIN FT	LIN FT	EACH	EACH	EACH	EACH				
	265			92 + 00	CL								1			
				92 + 00	LT			50	50	1						
				92 + 00	RT			40	40	1						
				93 + 85	CL						1					
				97 + 00	CL							1				
	266			97 + 00	CL	1260										
				100 + 00	CL						1					
				103 + 15	CL								1			
				103 + 15	LT			50	50	1						
				103 + 15	RT			40	40	1						
				106 + 00	CL								1			
	267			109 + 00	CL								1			
				112 + 00	CL								1			
				115 + 00	CL								1			
				115 + 00	LT			45	45	1						
				115 + 00	RT			65	65	1						
				117 + 50	CL								1			
	269			120 + 00	CL								1			
				122 + 50	CL								1			
				125 + 25	CL								1			
				127 + 50	CL								1			
SUBTOTALS						2460	290	290	6	2	1	11				

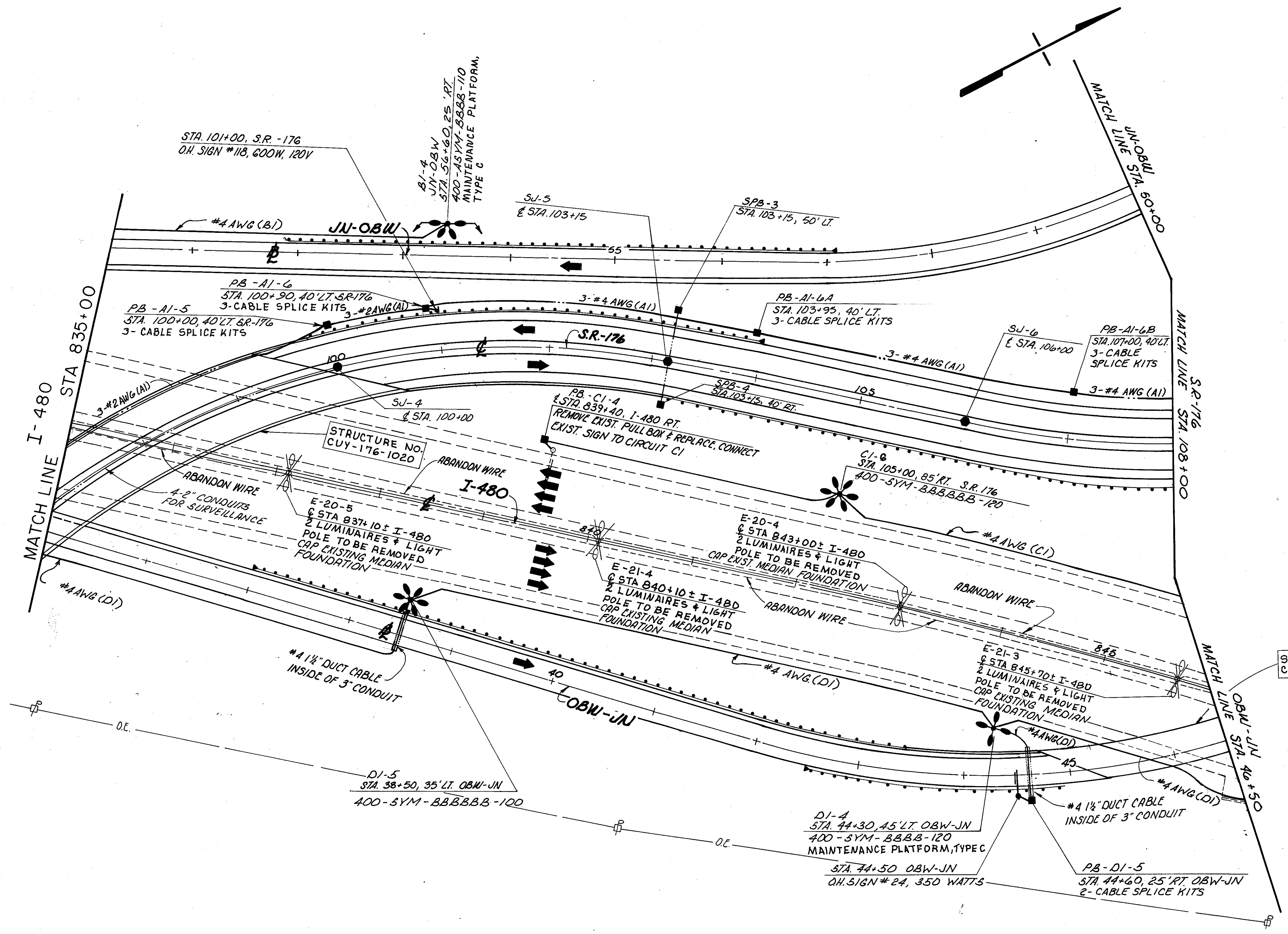
RELOCATED STATE ROUTE 176

LEGEND



LIGHTING PLAN STA. 819+00 TO STA. 835+00 I-480

RELOC. S.R.-176

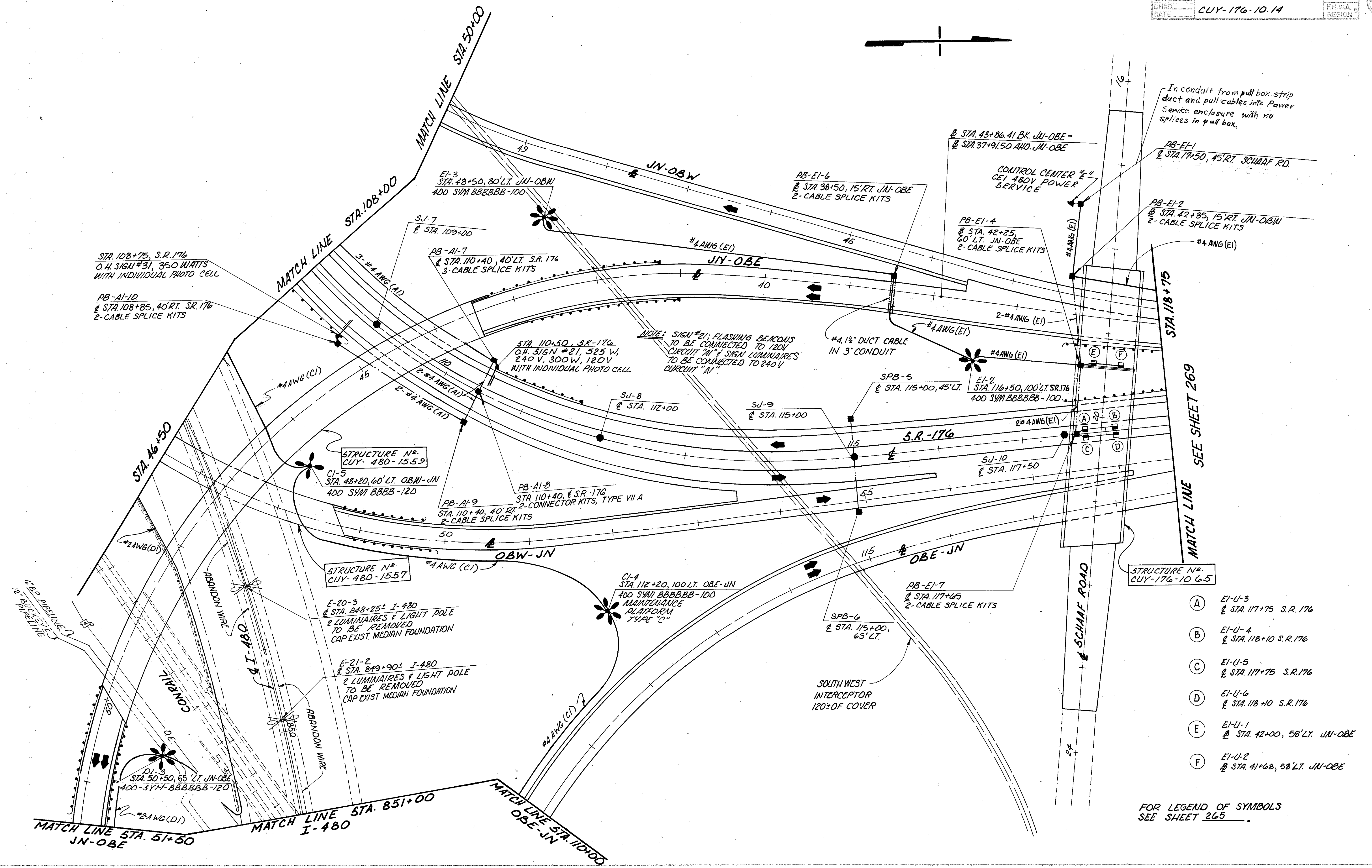


STRUCTURE NO. CUY-480-1557

FOR LEGEND SEE SHEET 265.

LIGHTING PLAN STA. 835+00 I-480 TO STA. 108+00 S.R.-176

RELOC. S.R.-176

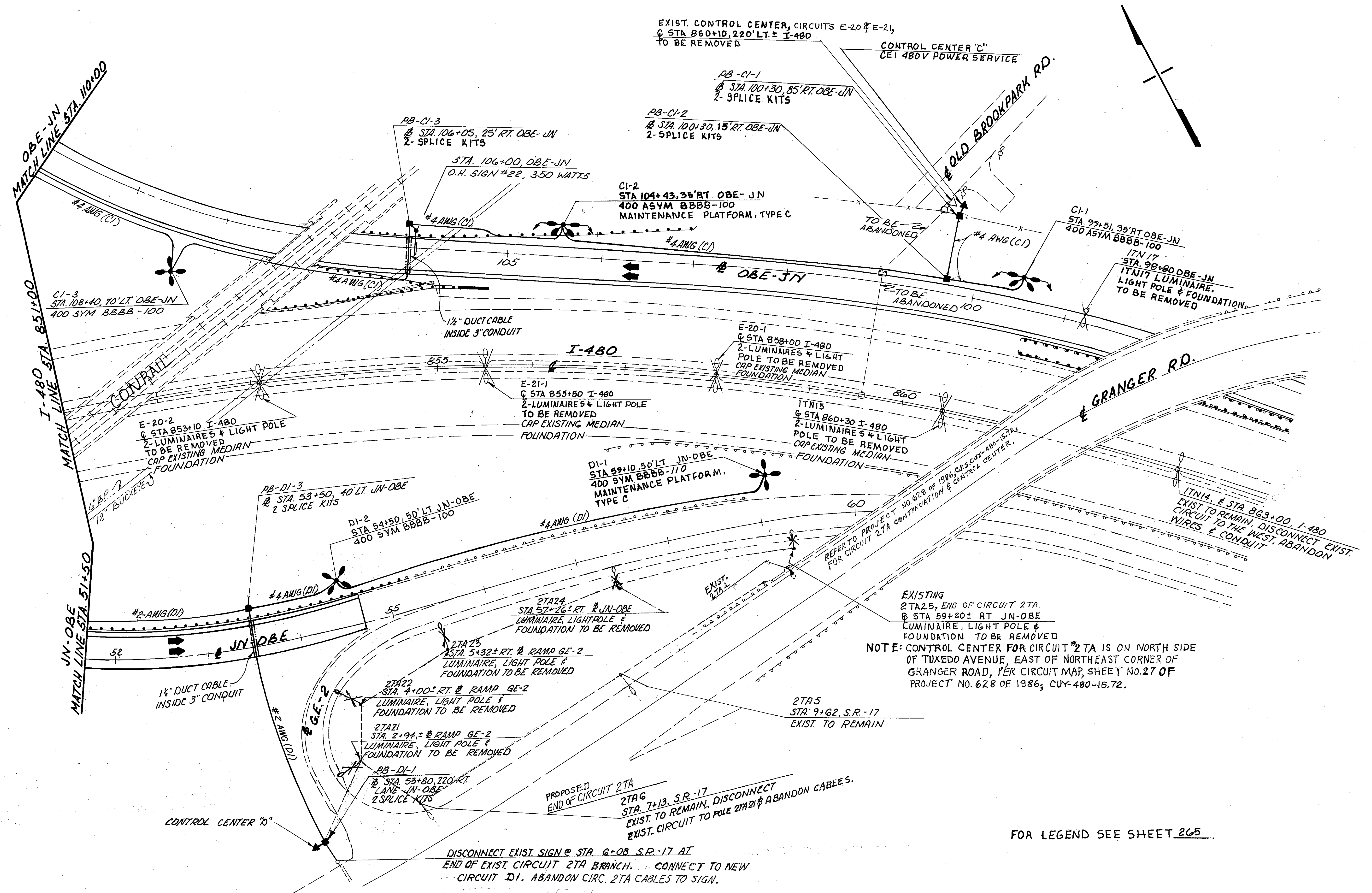


- (A) E1-U-3 @ STA. 117+75 S.R.176
- (B) E1-U-4 @ STA. 118+10 S.R.176
- (C) E1-U-5 @ STA. 117+75 S.R.176
- (D) E1-U-6 @ STA. 118+10 S.R.176
- (E) E1-U-1 @ STA. 42+00, 58' LT. JN-OBE
- (F) E1-U-2 @ STA. 41+68, 58' LT. JN-OBE

FOR LEGEND OF SYMBOLS SEE SHEET 265

LIGHTING PLAN STA. 108+00 TO STA. 118+75 S.R.-176

RELOC. S.R.-176

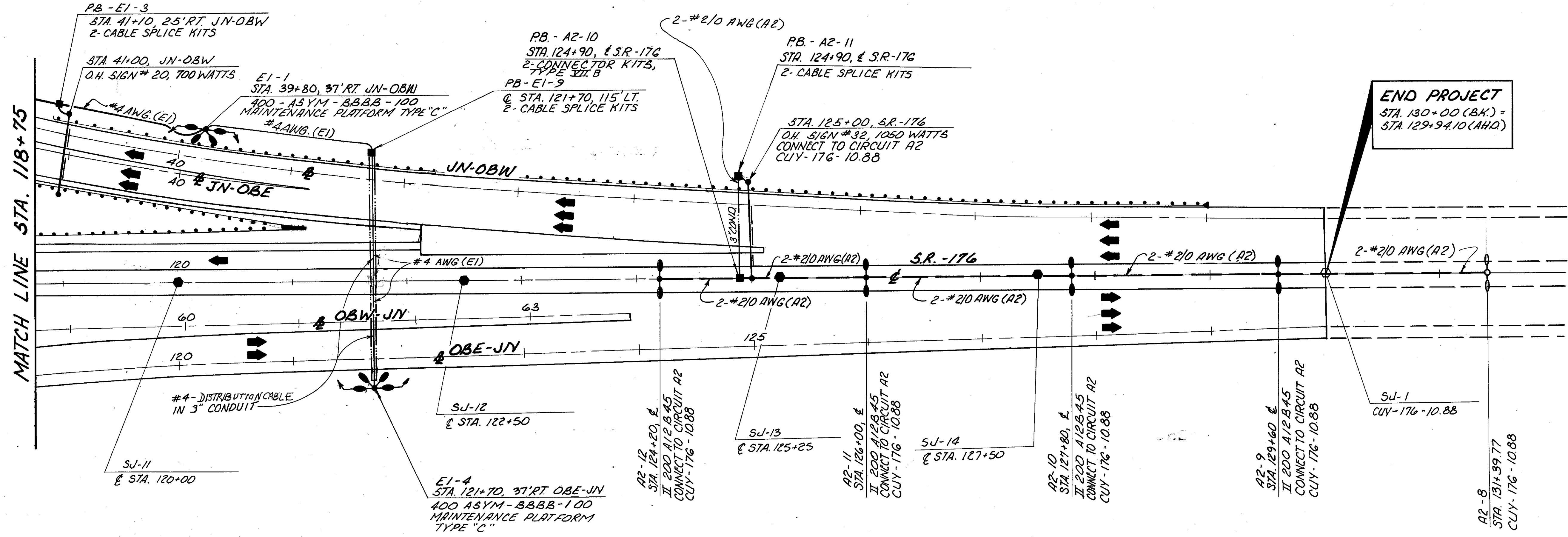
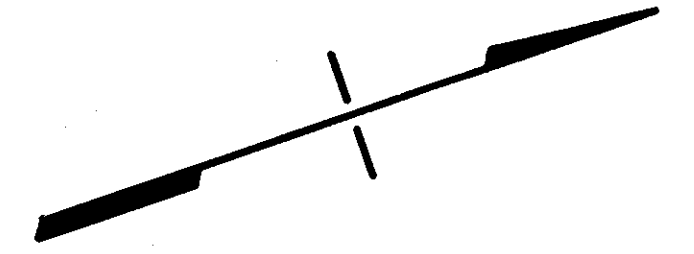


NOTE: CONTROL CENTER FOR CIRCUIT #2 TA IS ON NORTH SIDE OF TUXEDO AVENUE, EAST OF NORTHEAST CORNER OF GRANGER ROAD, PER CIRCUIT MAP, SHEET NO.27 OF PROJECT NO. 628 OF 1986; CUY-480-15.72.

DISCONNECT EXIST. SIGN @ STA 6+08 S.R.-17 AT END OF EXIST. CIRCUIT 2TA BRANCH. CONNECT TO NEW CIRCUIT D1. ABANDON CIRC. 2TA CABLES TO SIGN.

FOR LEGEND SEE SHEET 265.

RELOC. S.R.-176

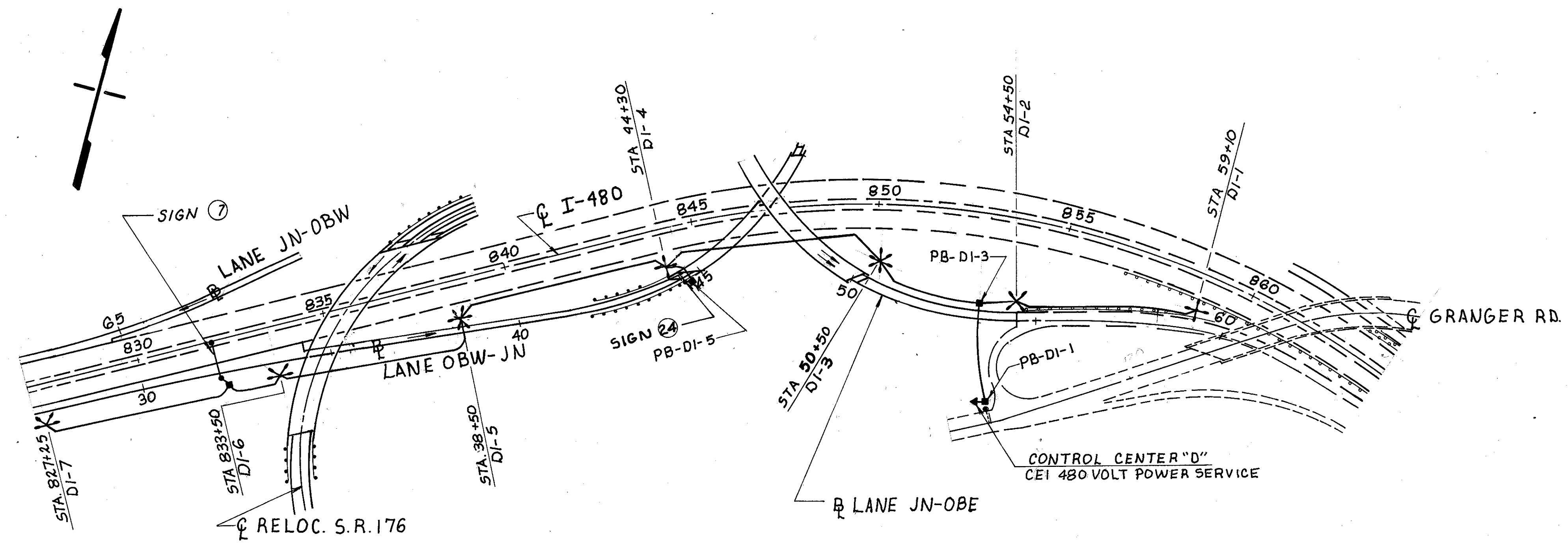


FOR LEGEND SEE SHEET 265.

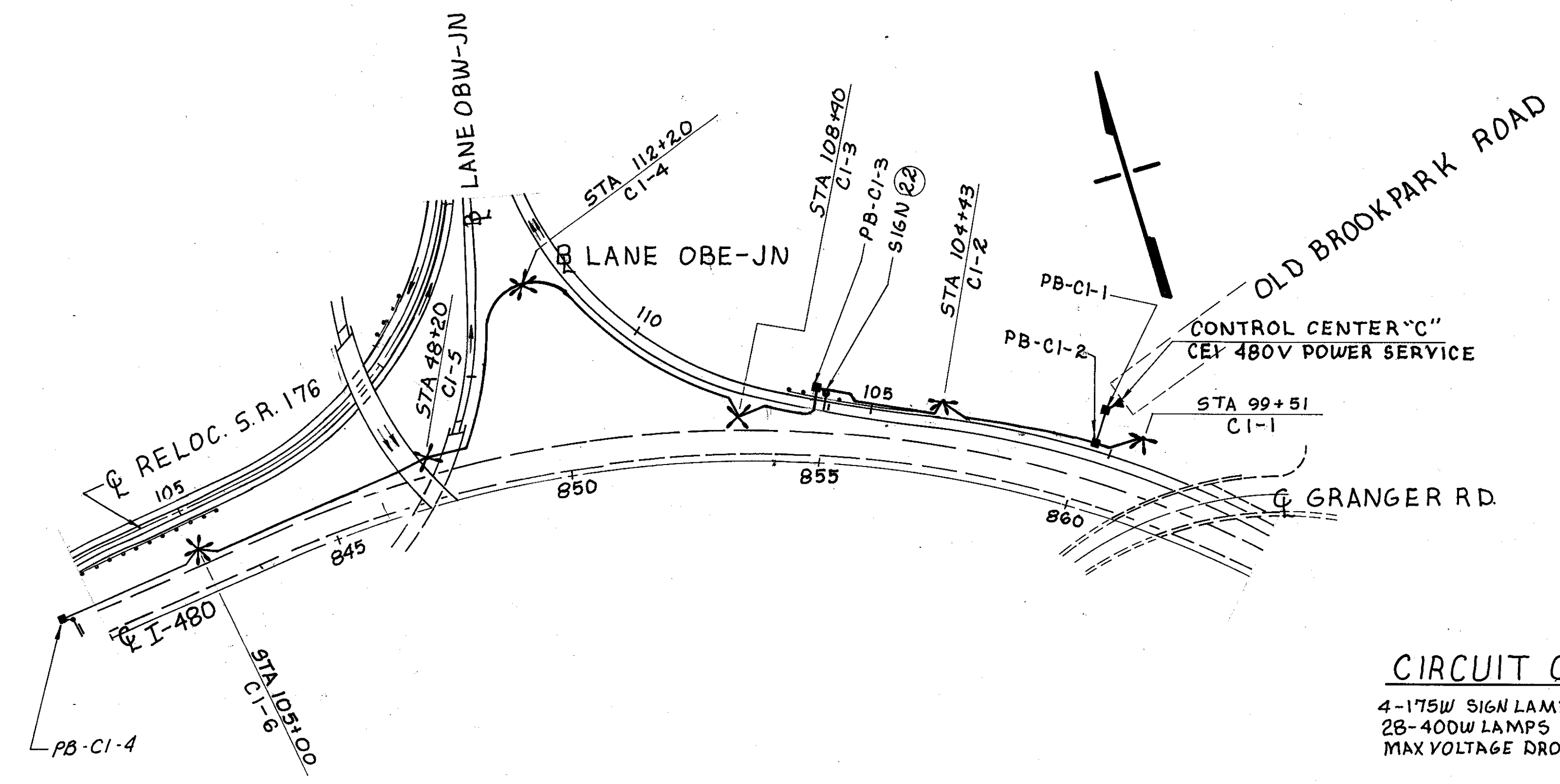
LIGHTING CIRCUIT MAPS

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUY-176-10.14	F.H.W.A.
CHKD.		REGION
DATE		

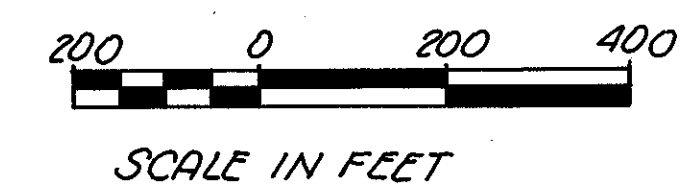
270
395



CIRCUIT DI
 6-175W SIGN LAMPS
 32-400W LAMPS
 MAX VOLTAGE DROP=4.49 %

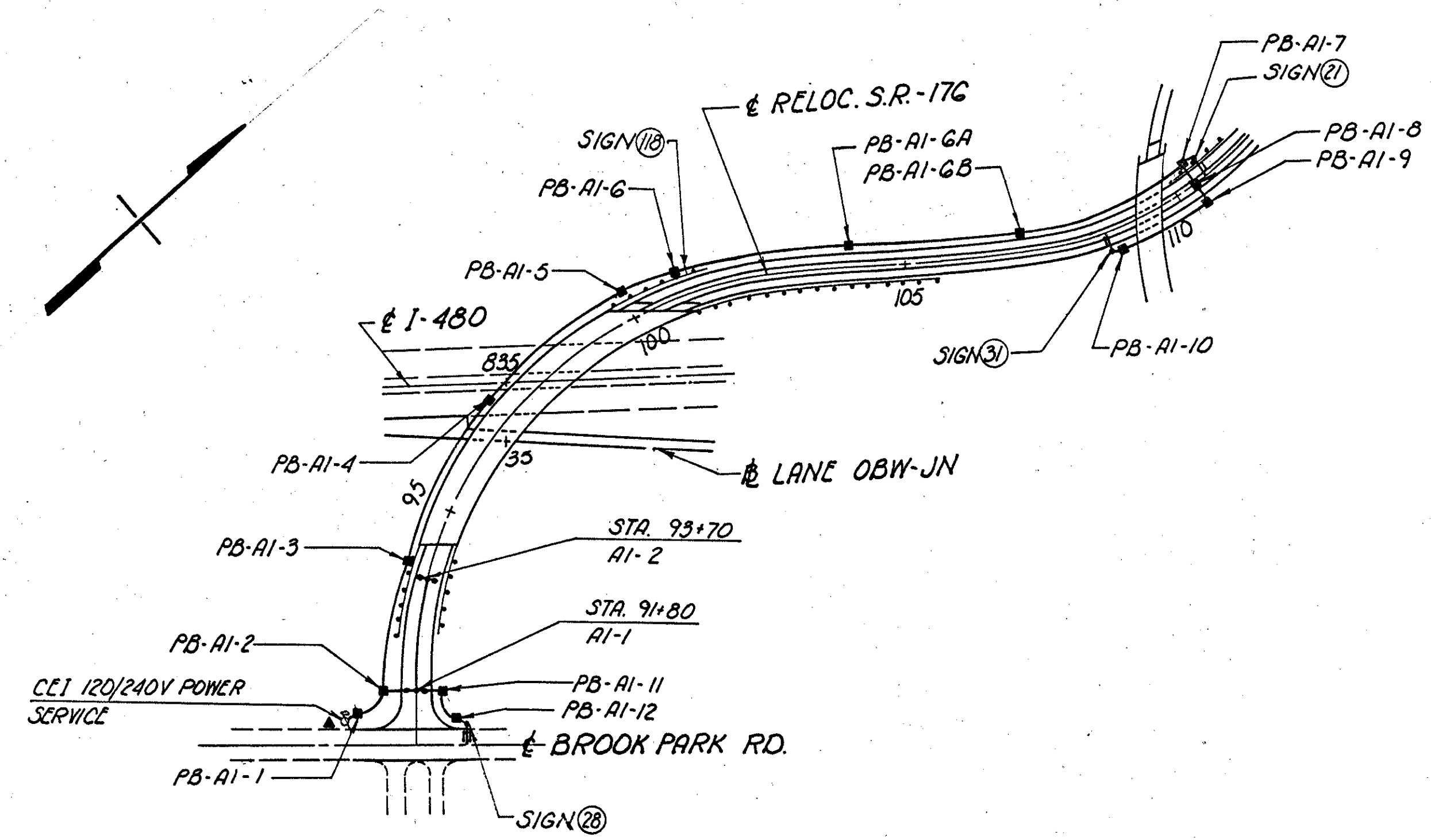
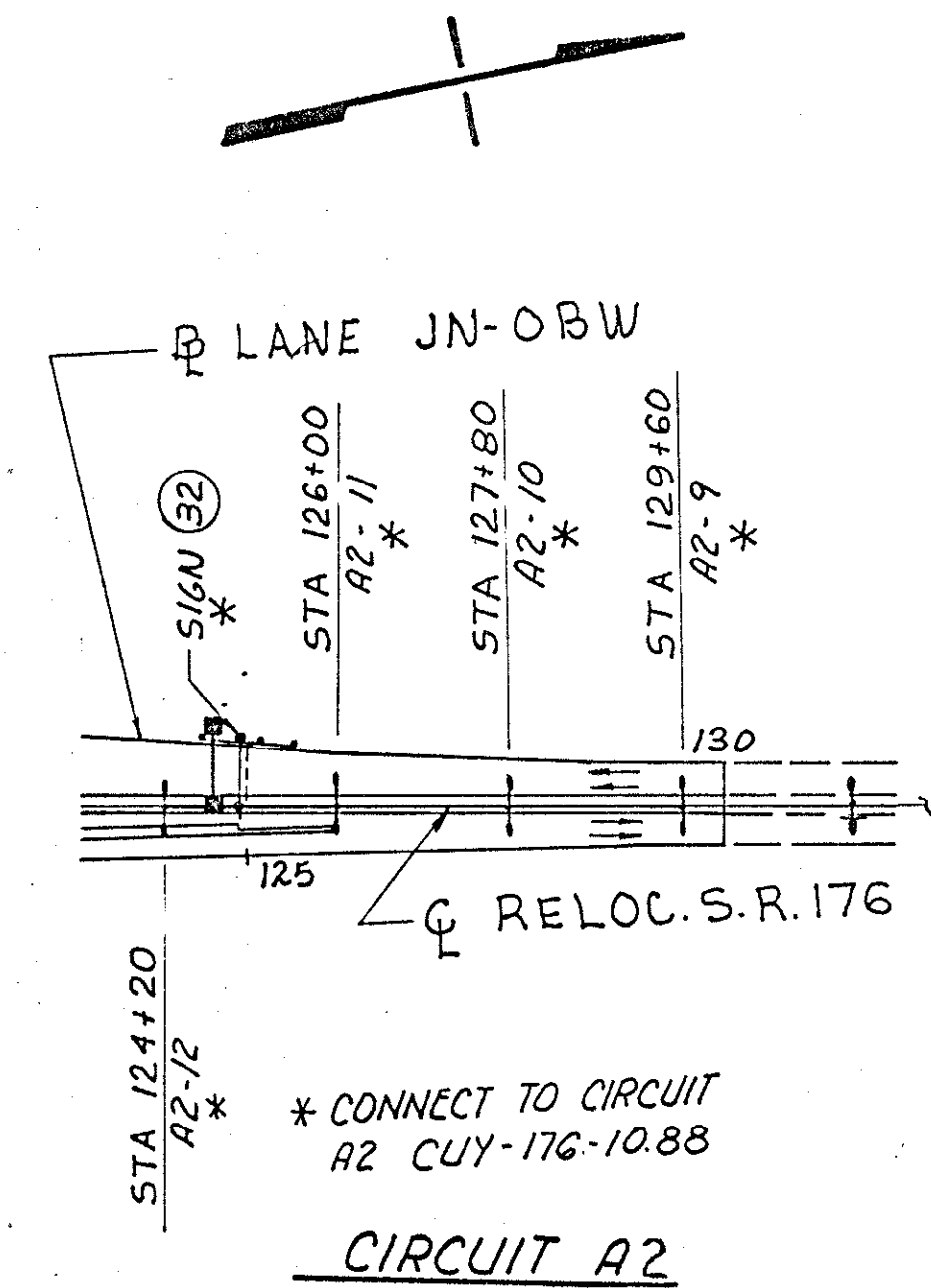
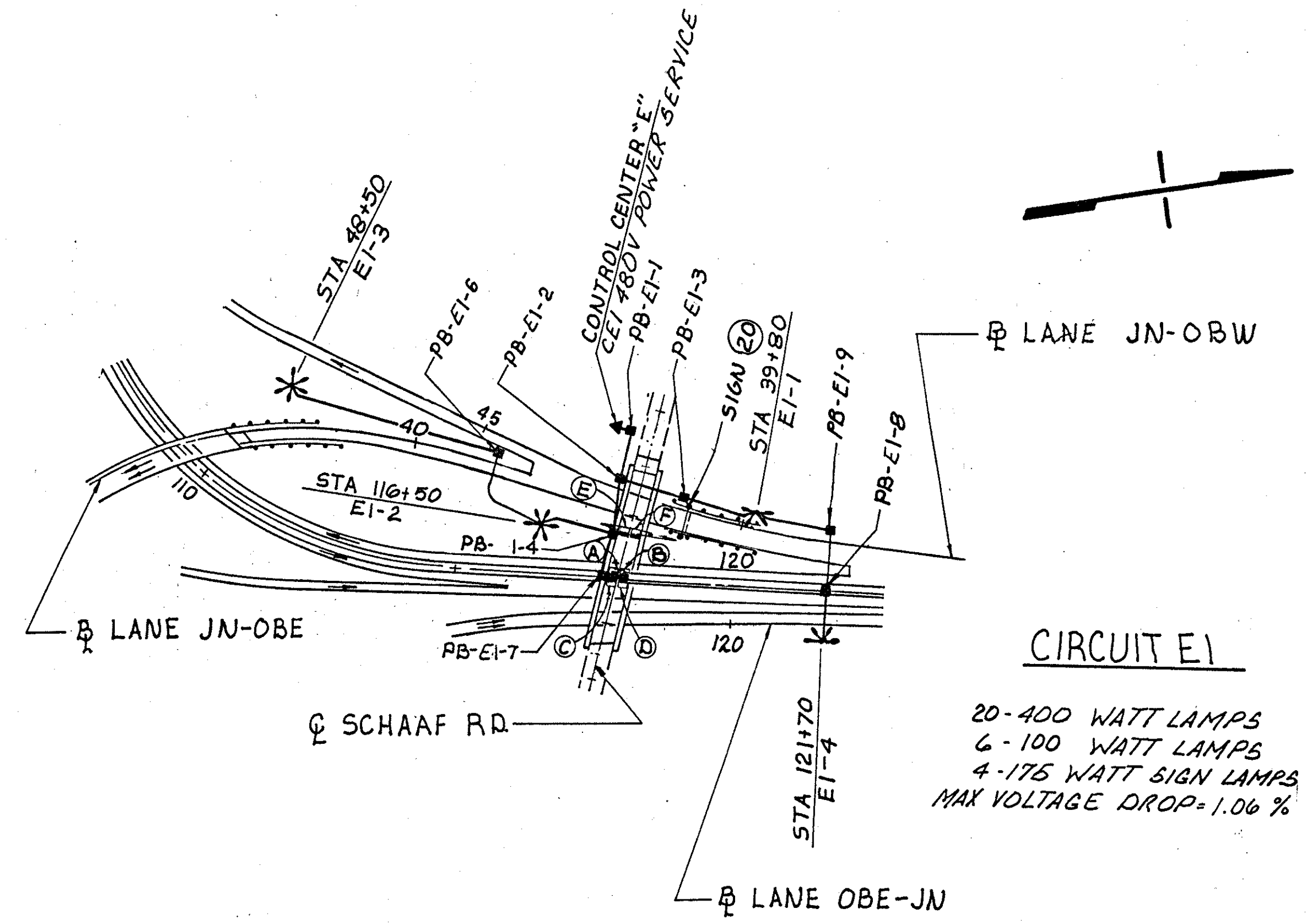
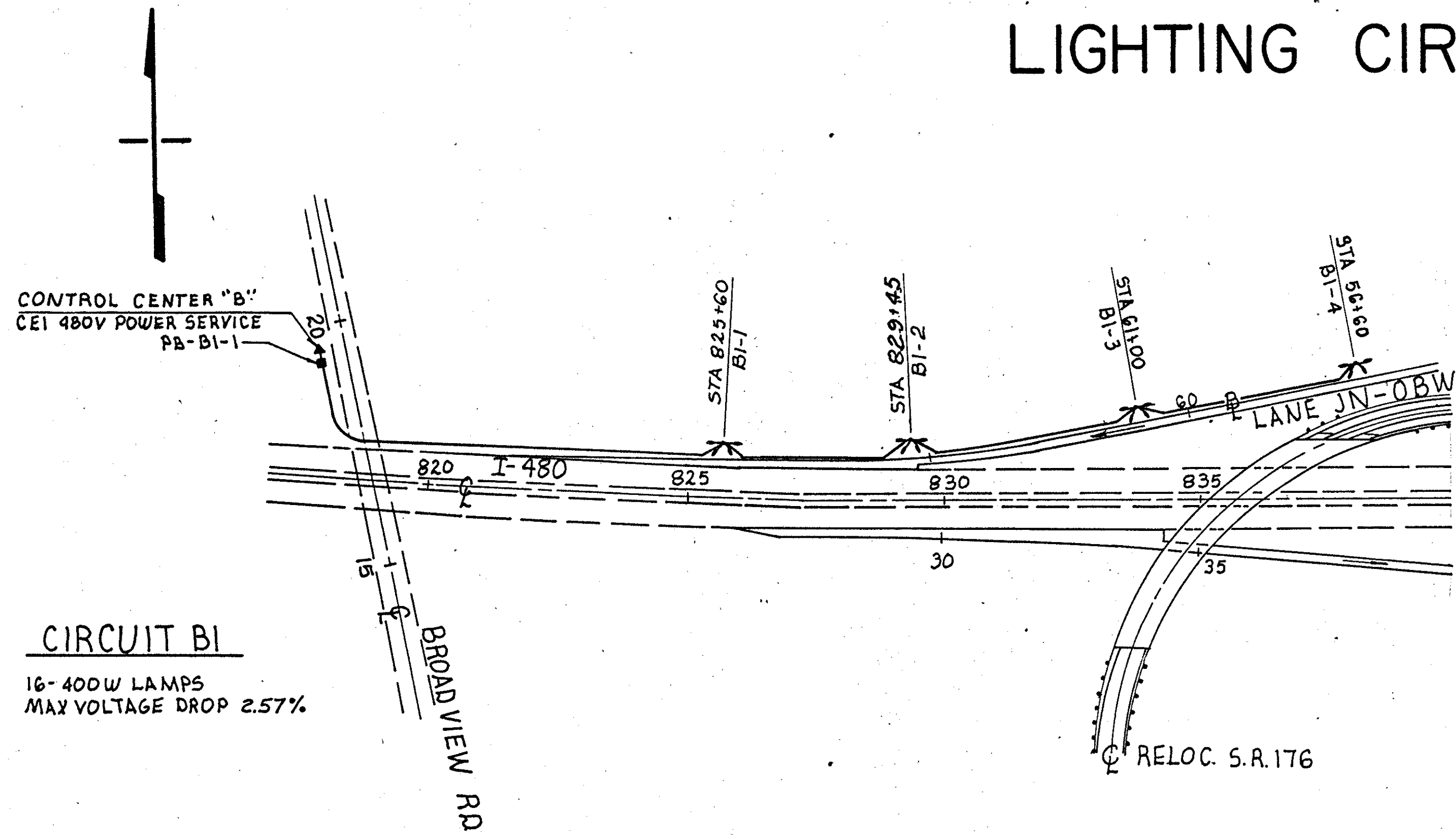


CIRCUIT CI
 4-175W SIGN LAMPS
 28-400W LAMPS
 MAX VOLTAGE DROP=4.69 %



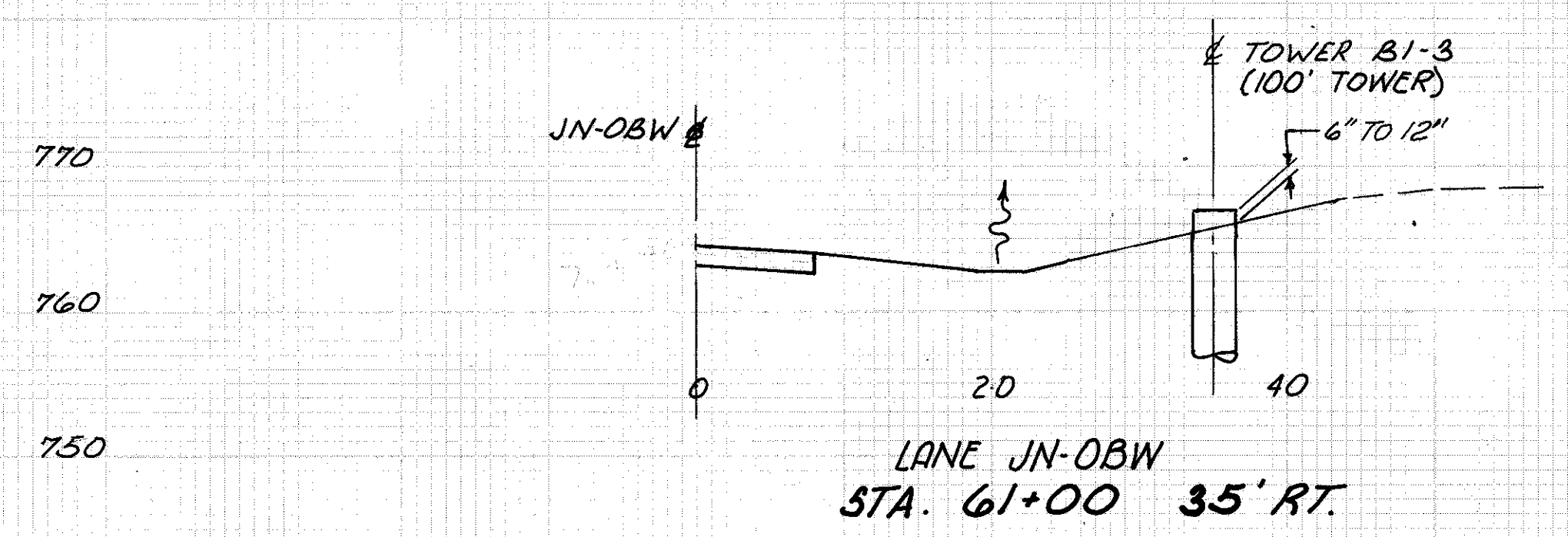
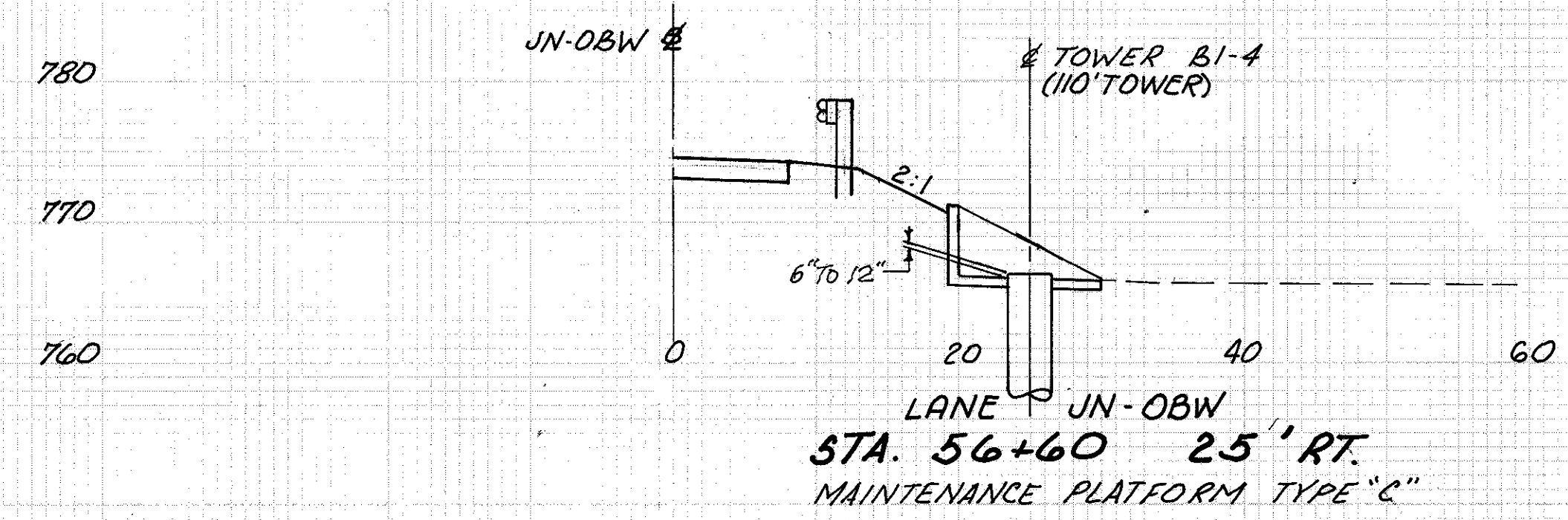
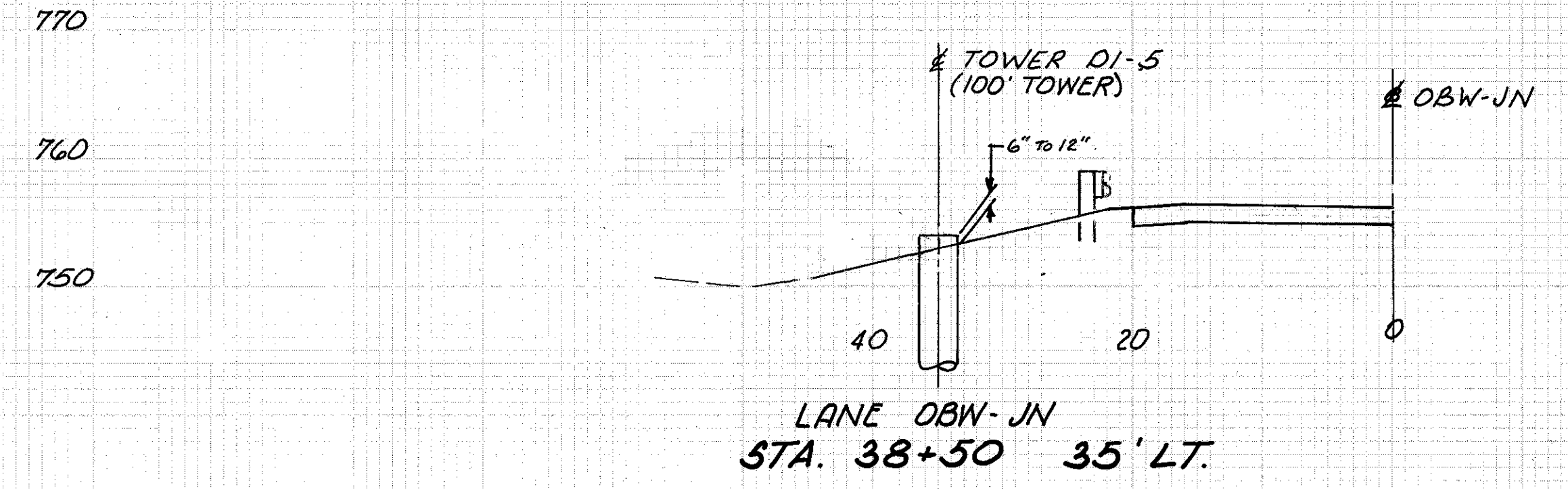
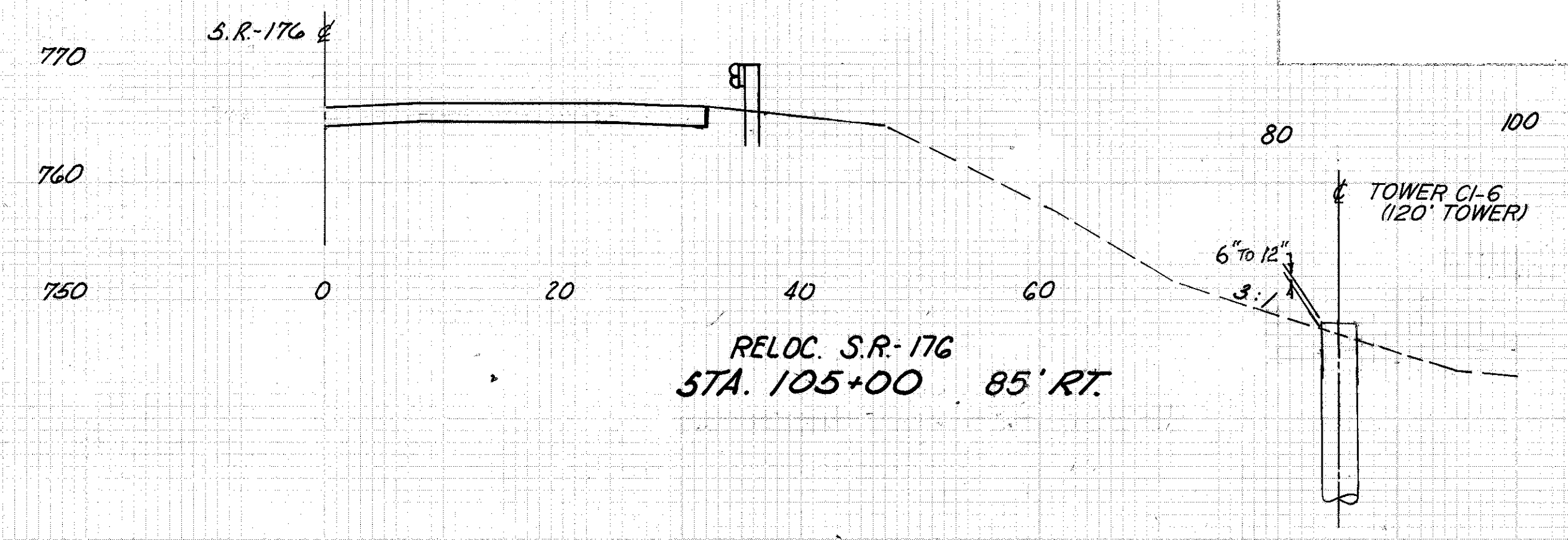
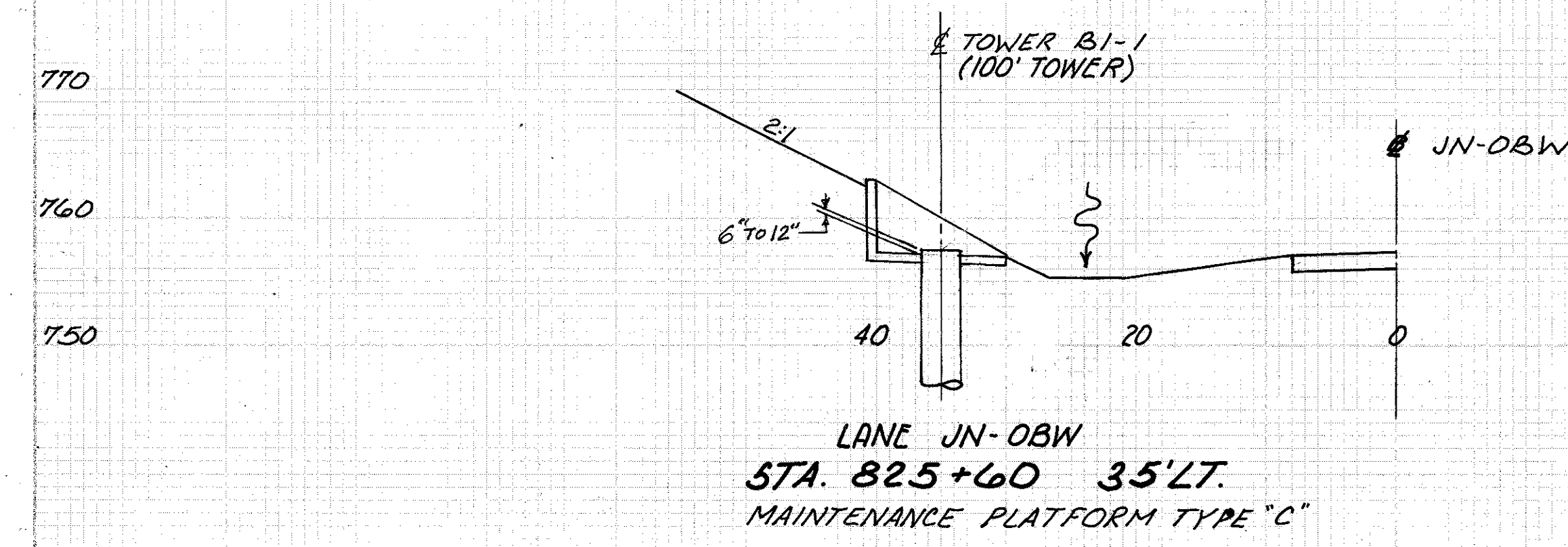
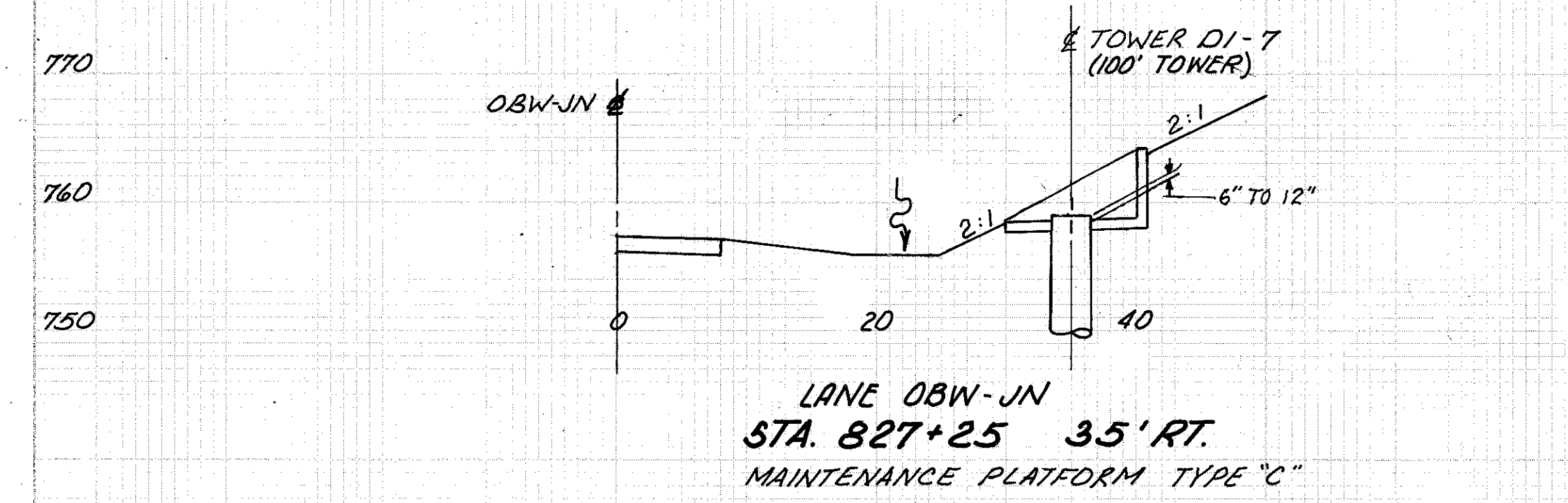
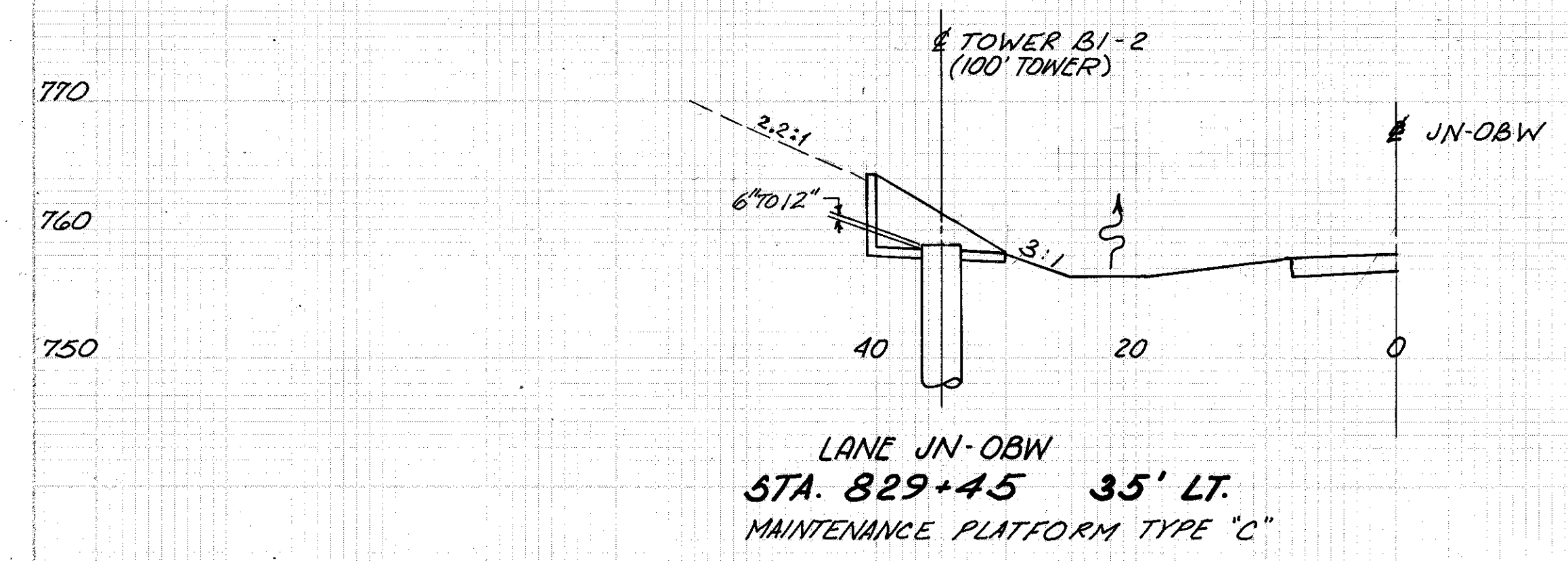
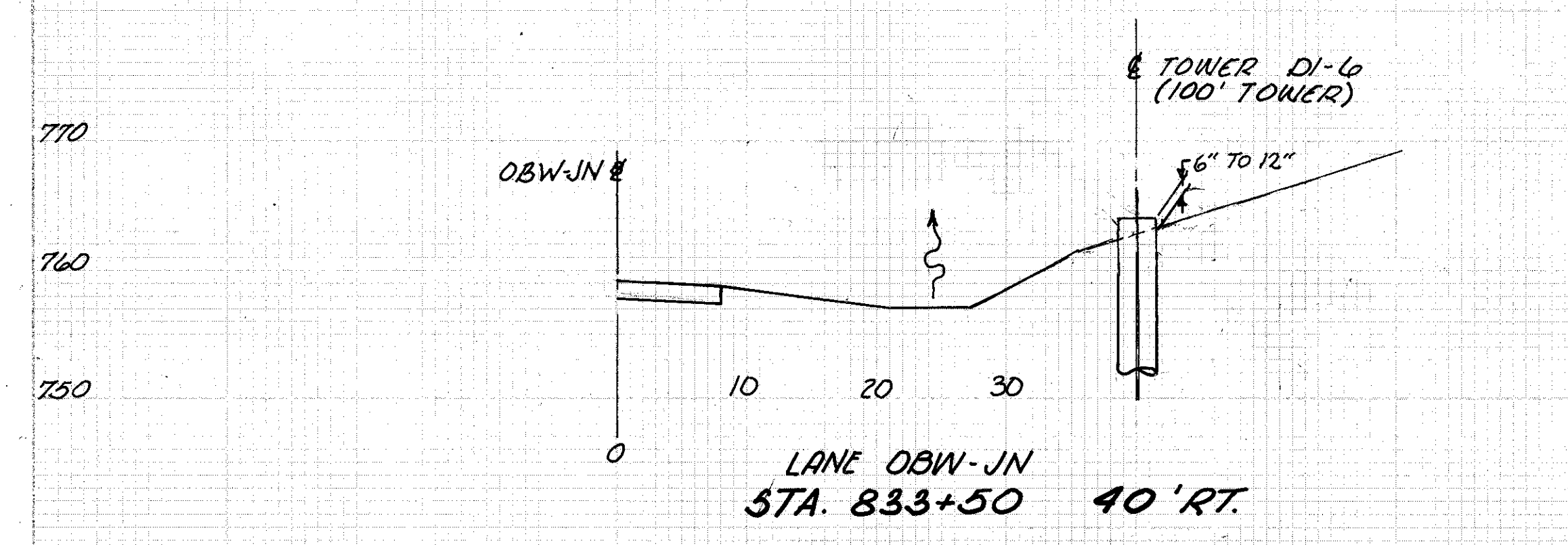
RELOC. S.R. - 176

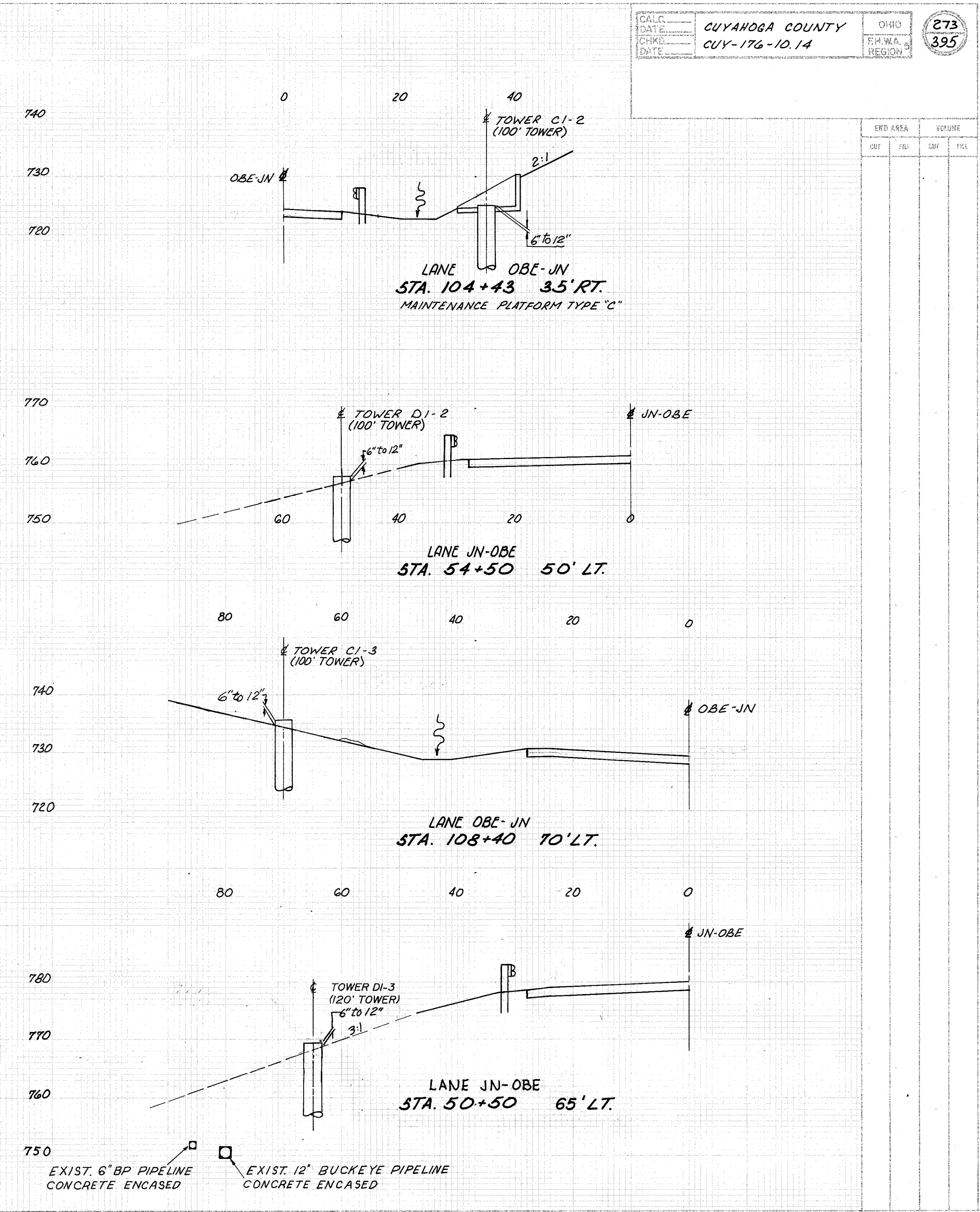
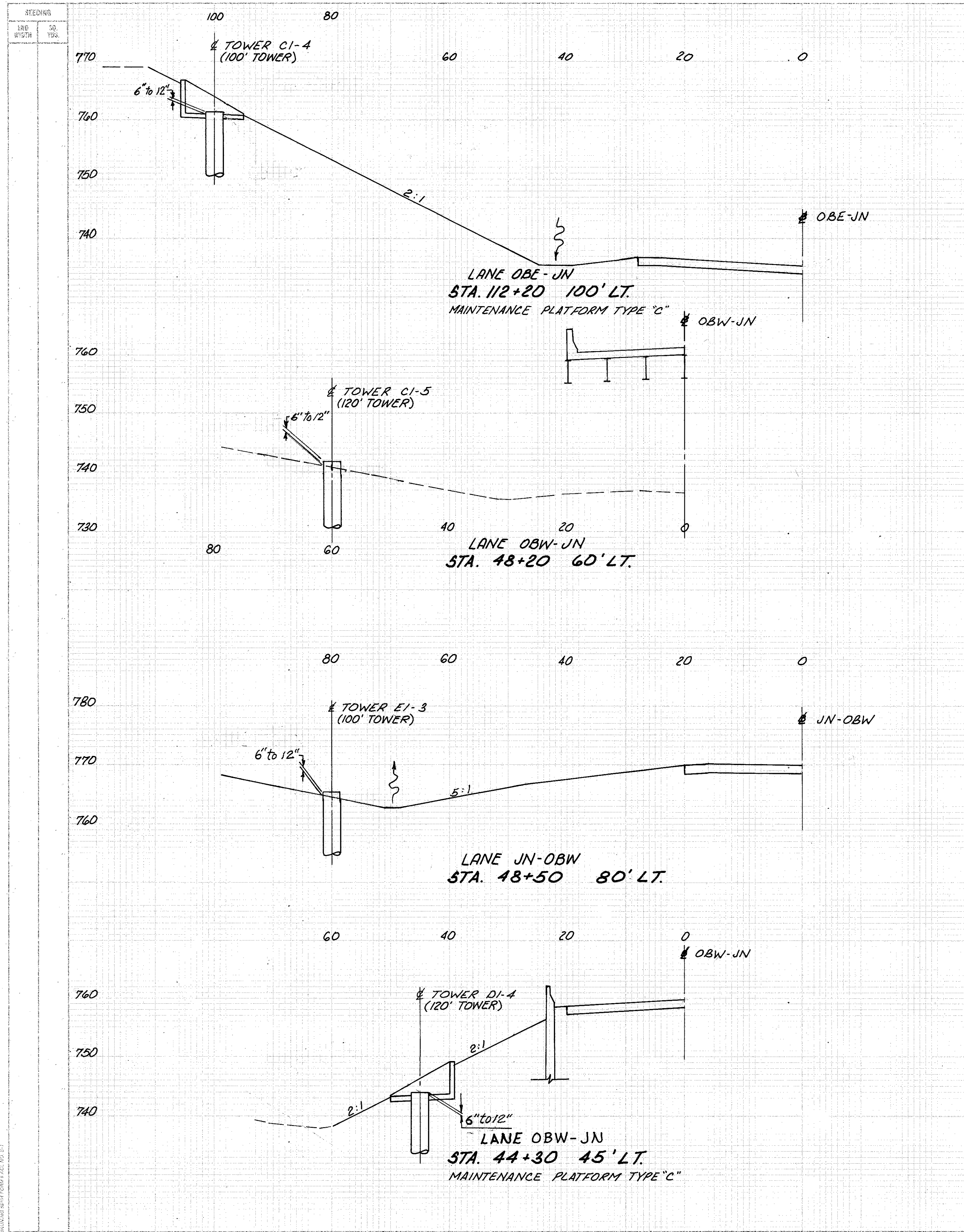
LIGHTING CIRCUIT MAPS



- (A) STA 117+75, E1-U-3
- (B) STA 118+10, E1-U-4
- (C) STA 117+75, E1-U-5
- (D) STA 118+10, E1-U-6
- (E) STA 42+00, E1-U-1
- (F) STA 41+68, E1-U-2

END AREA		VOLUME	
CUY	FEL	CUY	FEL





END AREA		VOLUME	
CUT	FILL	CUT	FILL

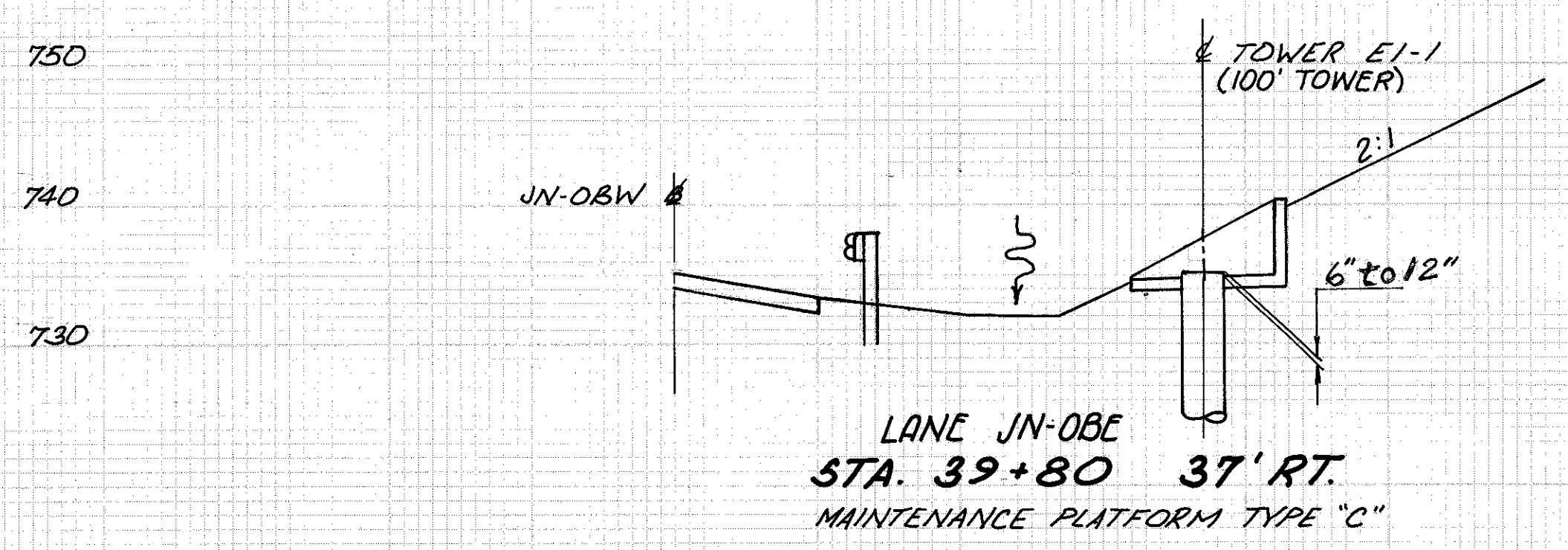
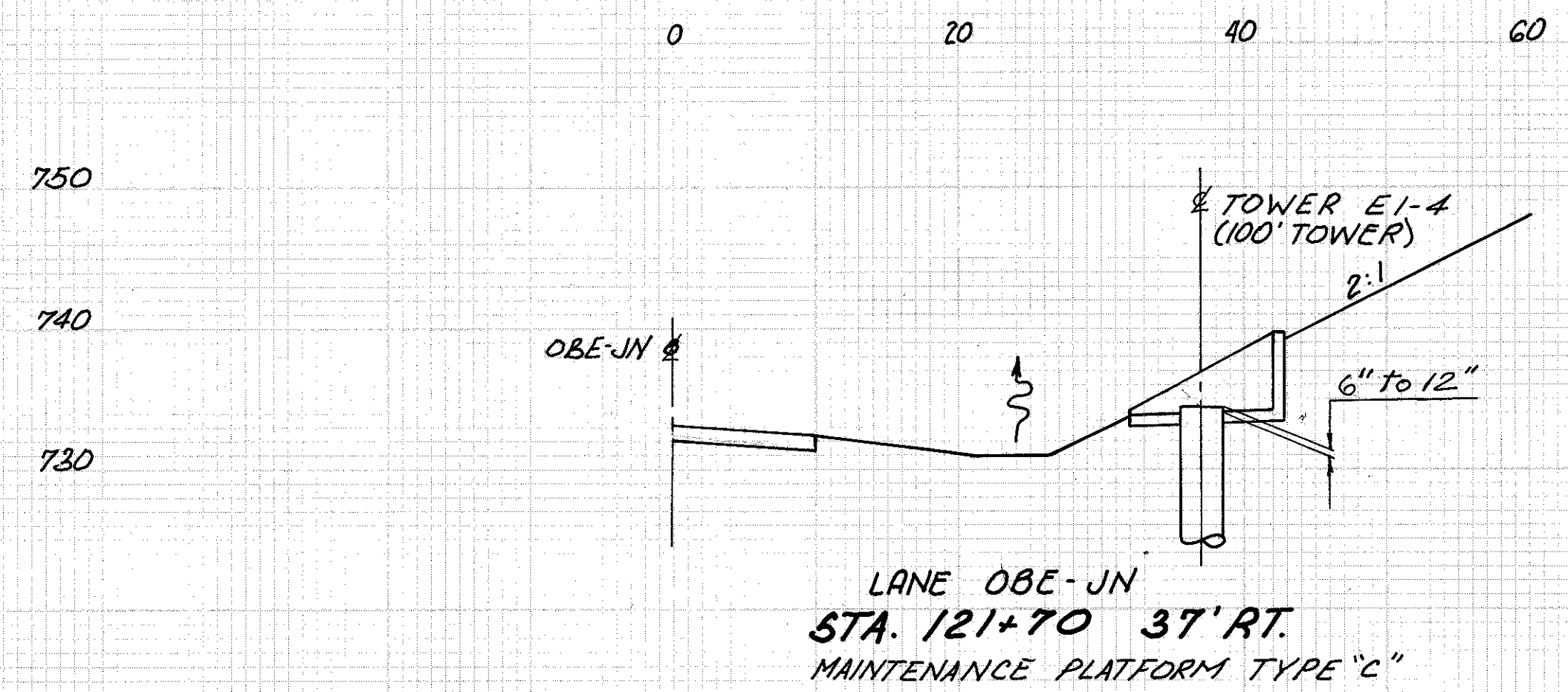
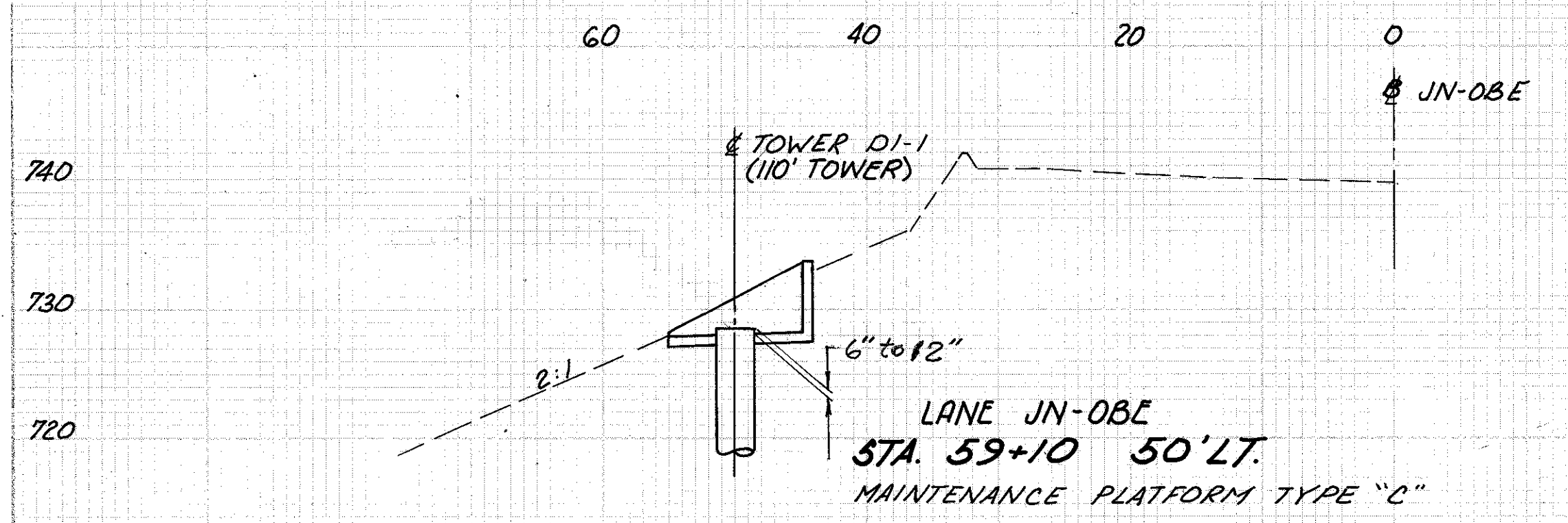
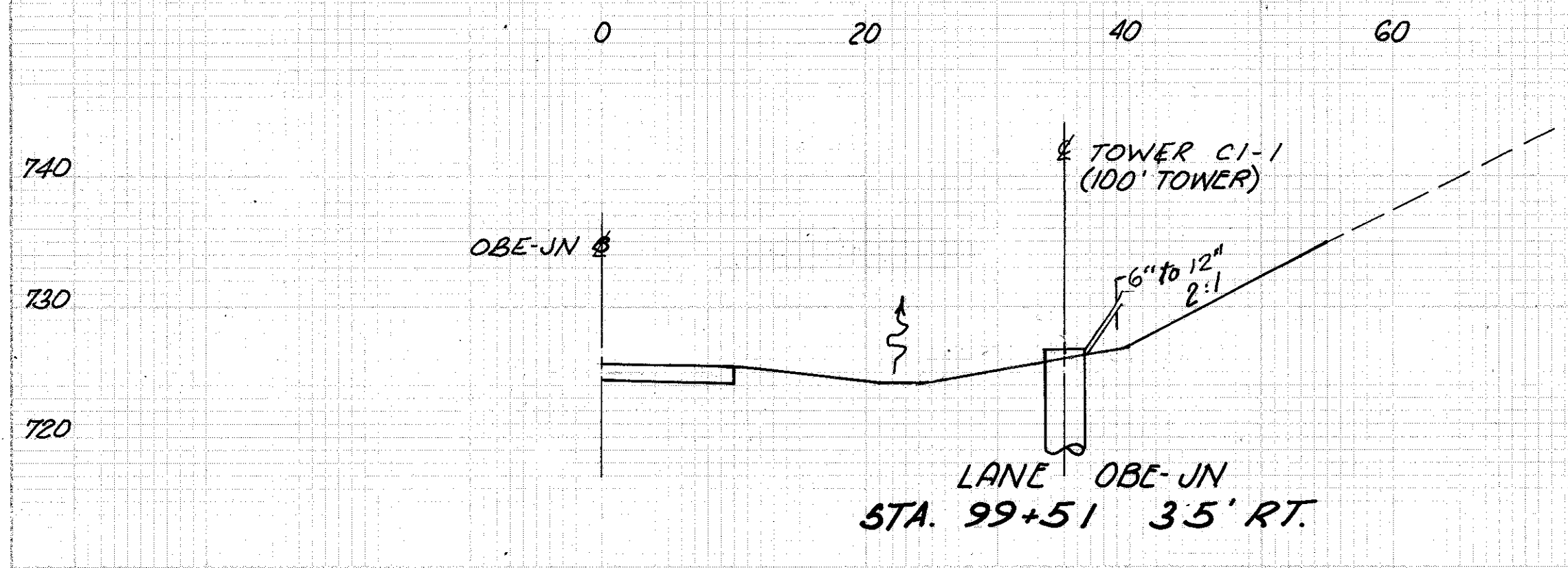
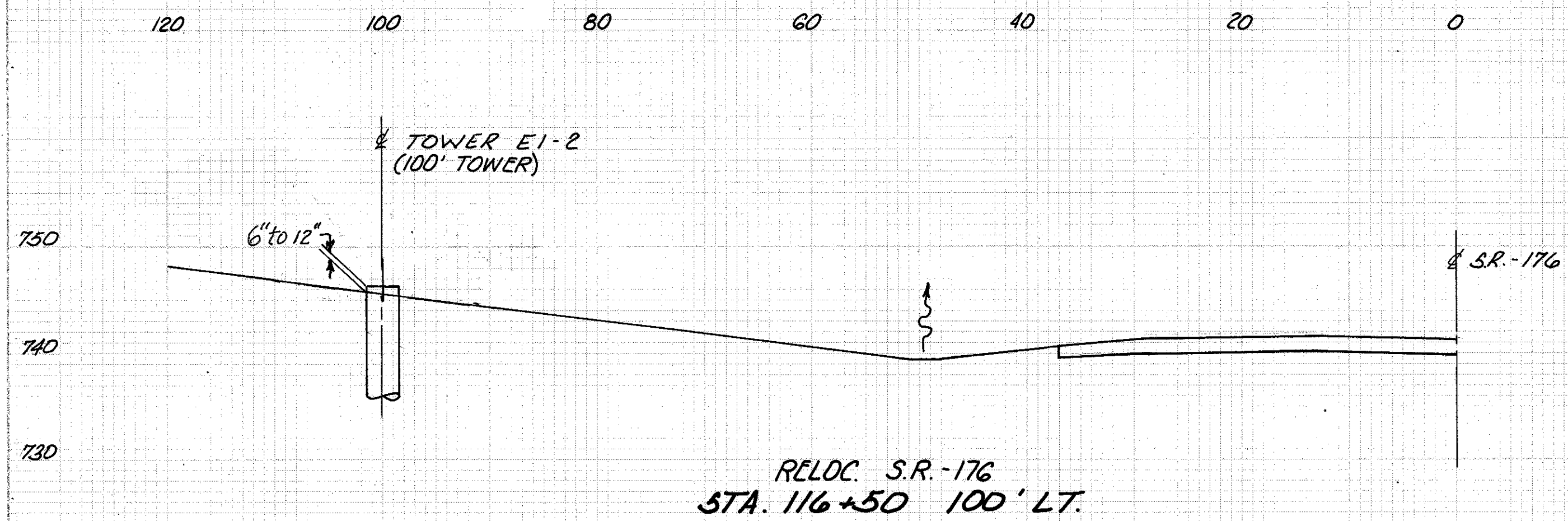
TOWER ELEVATIONS

RELOC. S.R.-176

SPEEDWAY
750
700

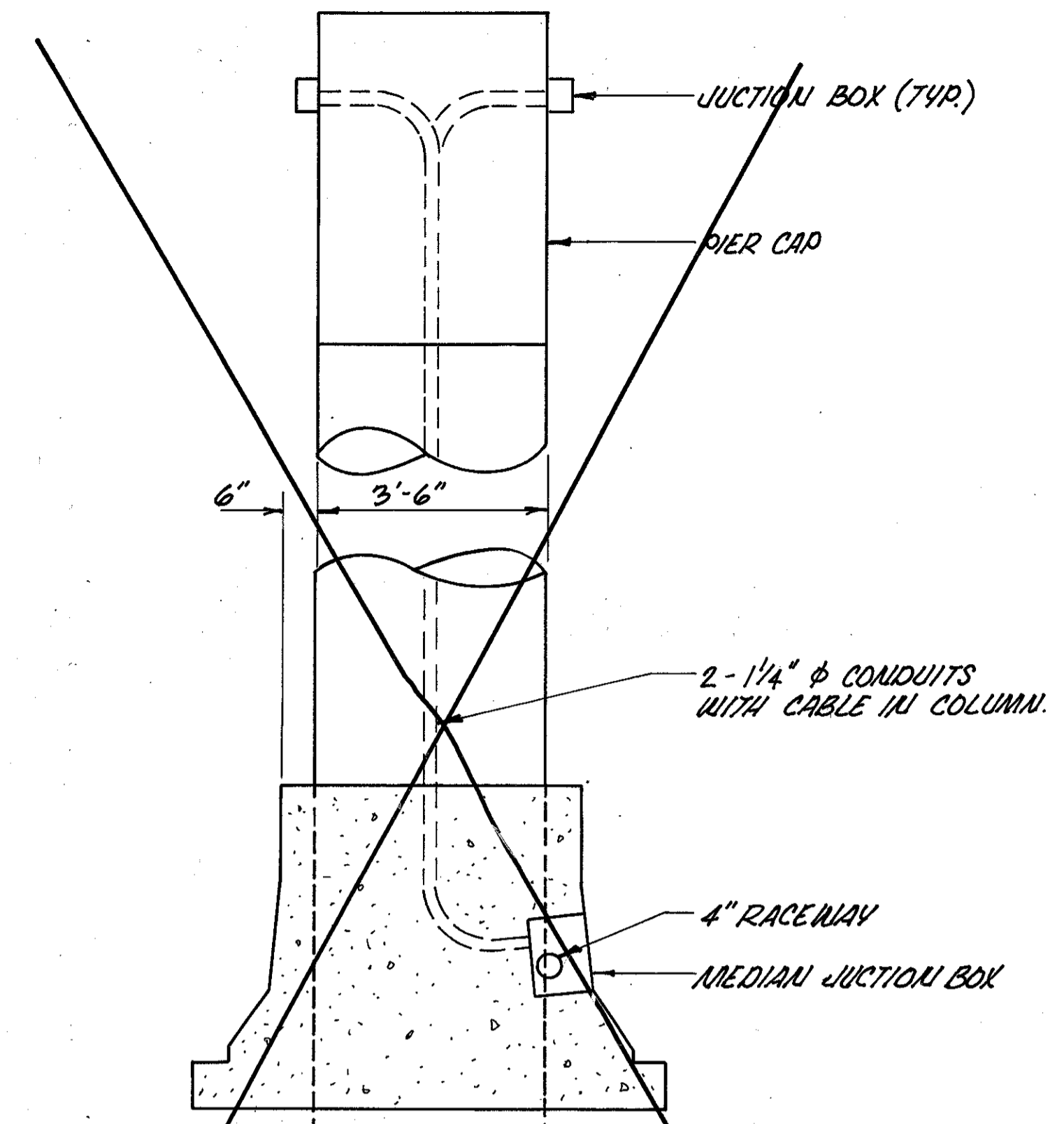
CALC. DATE: CUYAHOGA COUNTY OHIO
CHKD. DATE: CUY-176-10.14 F.H.W.A. REGION 3
DATE: 274
395

END AREA		VOLUME	
CUT	FILL	CUT	FILL

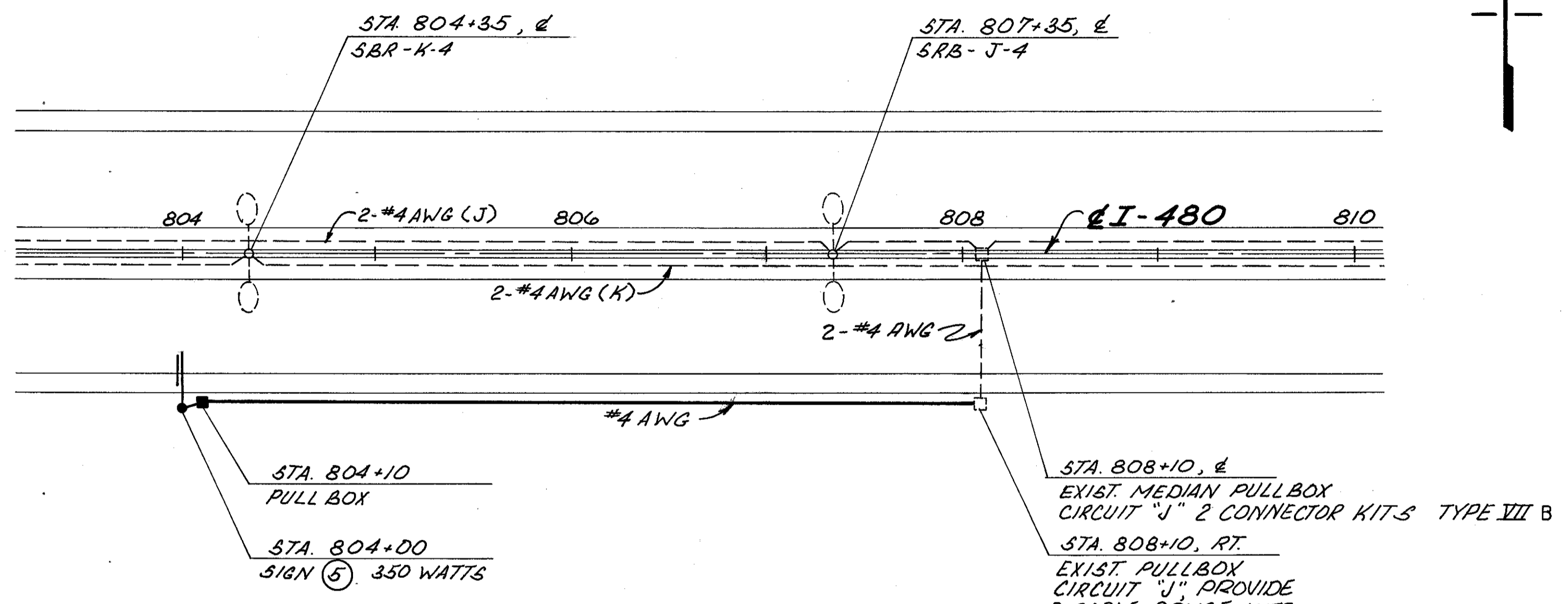


TOWER ELEVATIONS

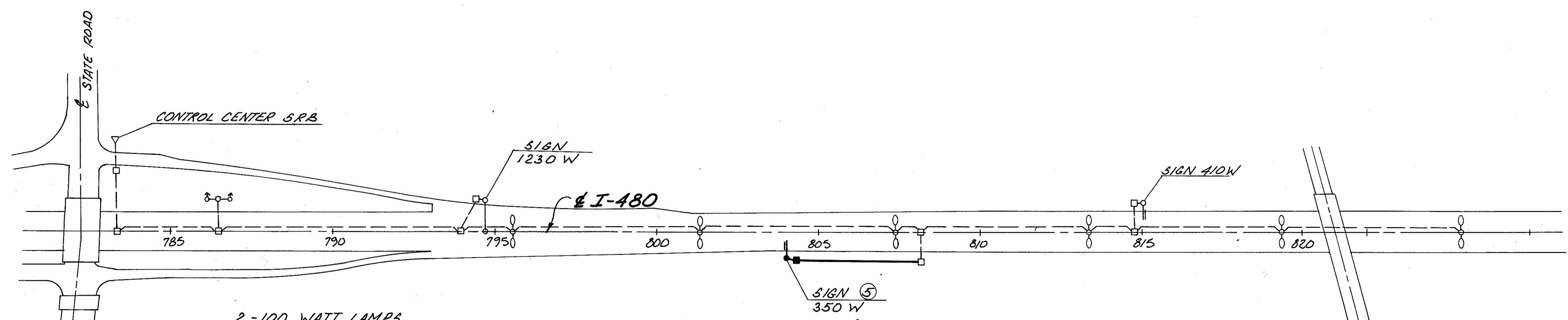
RELOC. S.R.-176



UNDERPASS CONDUIT DETAIL
 NOTE: FOR DETAILS NOT SHOWN SEE STANDARD CONSTRUCTION DRAWINGS HL-20.13, HL-20.31, MC-9.3 & 9.4
 SCALE: 1/2" = 1'-0"



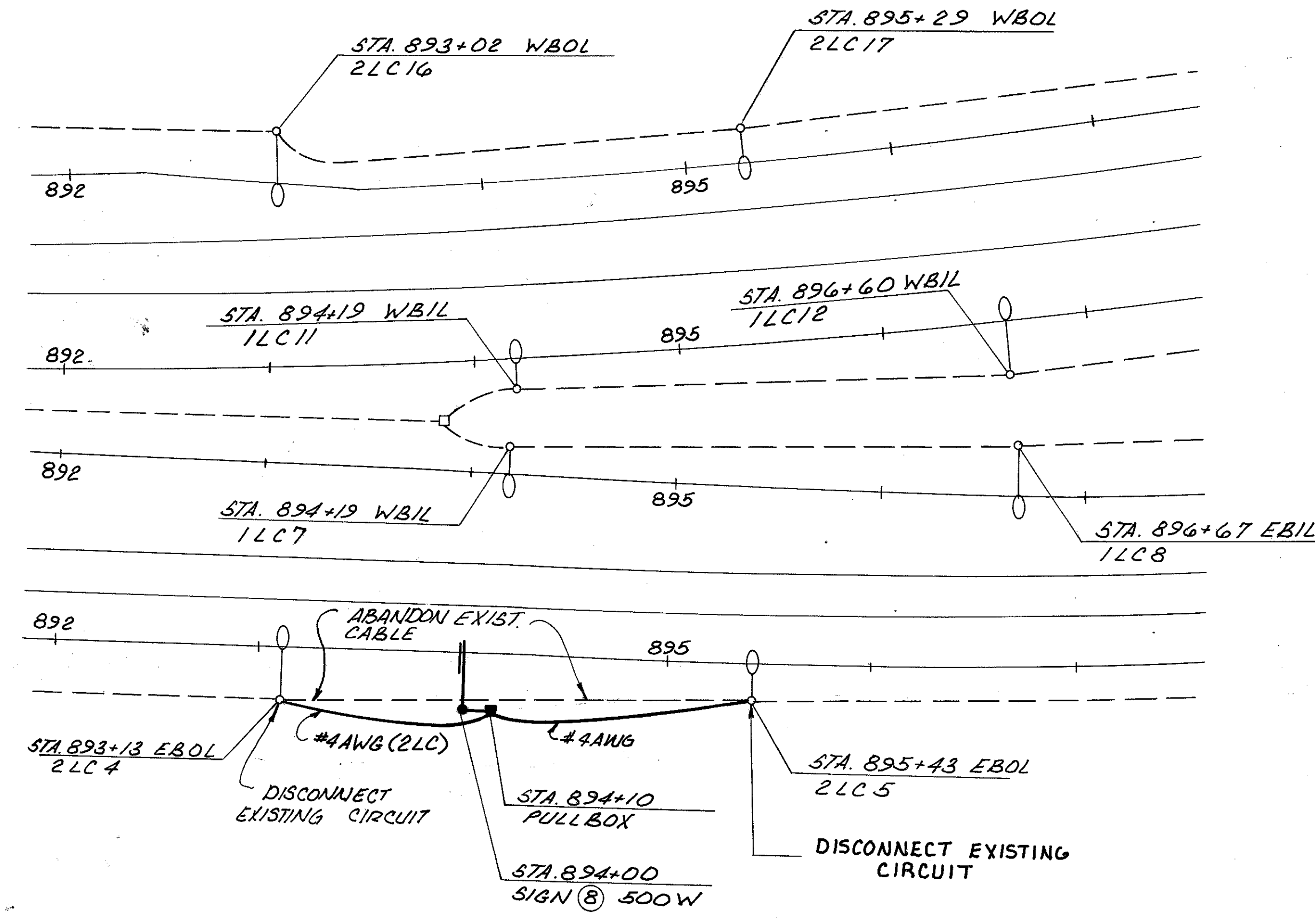
CIRCUIT J (CUY-480-12.75)
 SIGN 5 WIRING DETAIL
 FOR ADDITIONAL INFORMATION SEE CIRCUIT MAP.



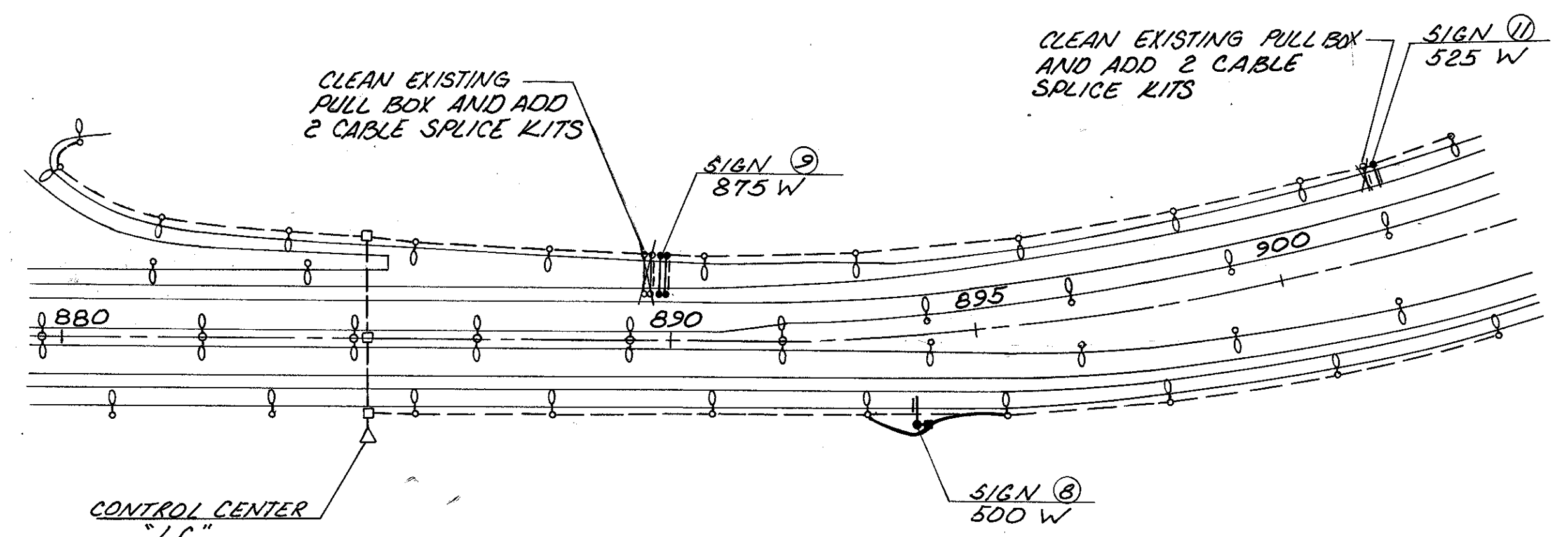
2 - 100 WATT LAMPS
 12 - 400 WATT LAMPS
 1 - 410 WATT SIGN
 1 - 1230 WATT SIGN
 2 - 175 WATT SIGN LAMPS
 MAX. VOLTAGE DROP = 4.68%

CIRCUIT J (CUY-480-12.75)
 NOTES: 1) PROVIDE PULL BOX AT STA. 804+10 WITH 2 CABLE SPLICE KITS.
 2) PLACE NEW DIRECT BURIED CABLE FROM STA. 804+10 TO STA. 808+10 (EX. PULLBOX) AND PROVIDE CABLE SPLICING KITS AT EXIST. PULL BOX

3) PROVIDE NEW DISTRIBUTION CABLE IN EXIST. 3" CONDUIT AT STA. 808+10 AND PROVIDE TYPE VII B CONNECTOR KITS AT EXIST. MEDIAN PULL BOX.



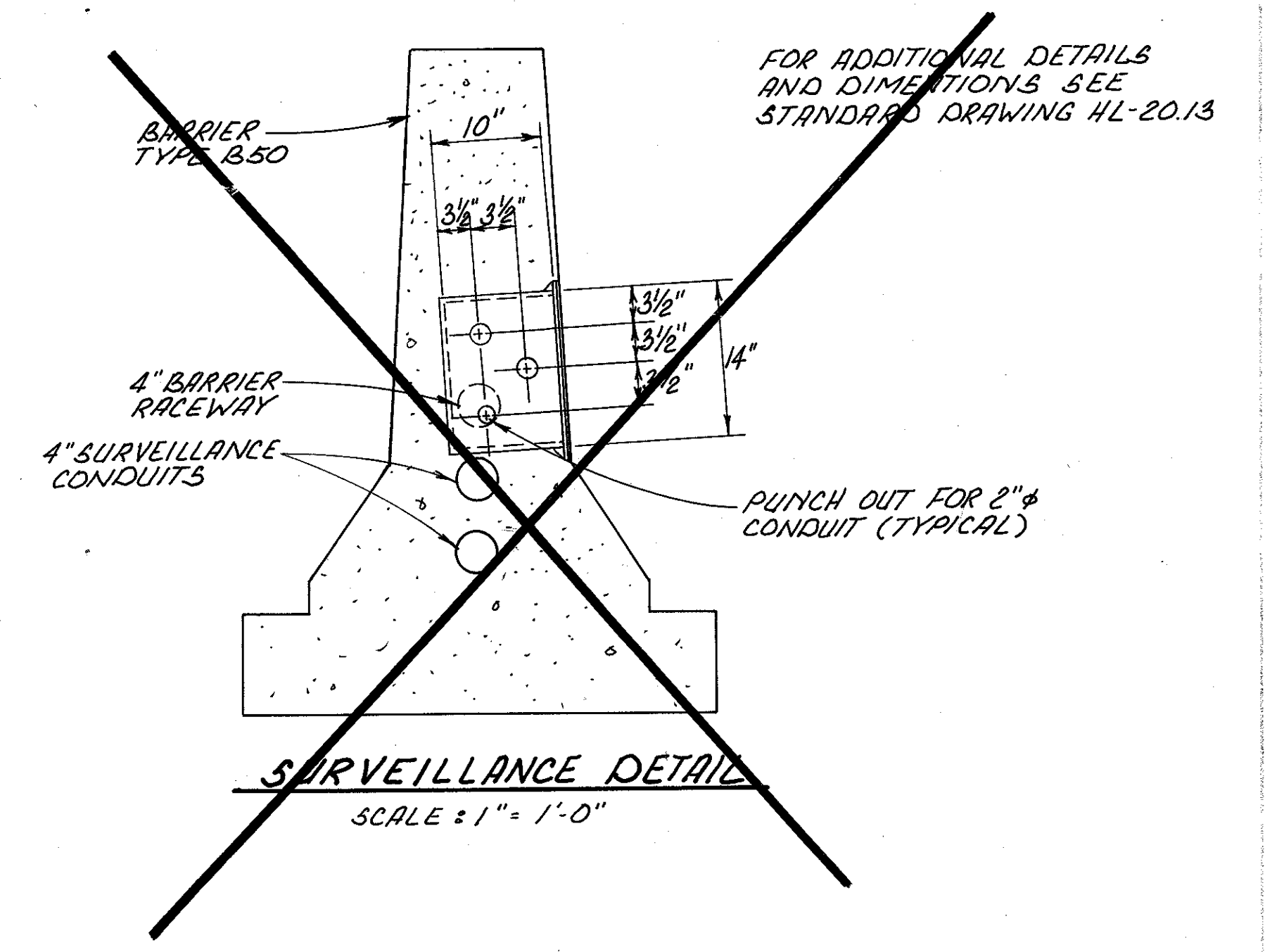
CIRCUIT 2 LC (CUY-480-15.81)
SIGN 8 WIRING DETAIL
 FOR MORE INFORMATION SEE CIRCUIT MAP



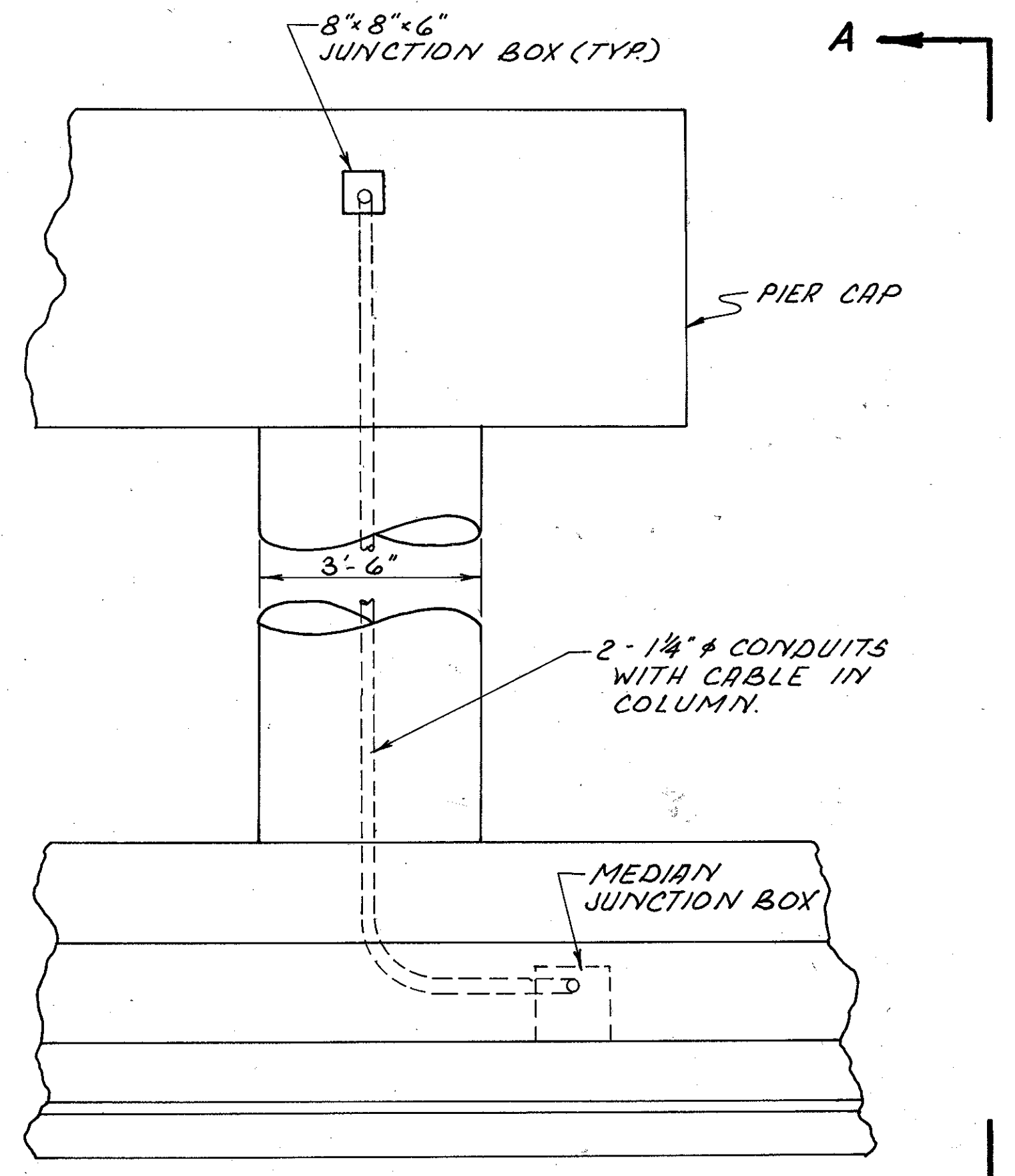
CIRCUIT (CUY-480-15.81)

- NOTES:
- DISCONNECT EXISTING CIRCUIT AT STA. 893+13 EBOL (LIGHT 2LC-4) AND STA. 895+43 (LIGHT 2LC-5)
 - PROVIDE PULL BOX AT STA. 894+10 WITH 2 CABLE SPLICE KITS
 - ABANDON EXISTING CABLE STA. 893+13 (LIGHT 2LC-4) TO STA. 895+43 (LIGHT 2LC-5)
 - INSTALL NEW DUCT CABLE BETWEEN LIGHT 2LC-5 AND PULL BOX AT STA. 894+10
 - PLACE NEW DIRECT BURIED CABLE FROM LIGHT 2LC-4 TO PULLBOX AT STA. 894+10 AND REPLACE CONNECTOR KITS AT LIGHTS 2LC-4 AND 2LC-5

17 - 700 WATT UNITS
 3 - 400 WATT UNITS
 2 - 250 WATT SIGN LAMPS
 8 - 175 WATT SIGN LAMPS
 MAX. VOLTAGE DROP = 2.68%

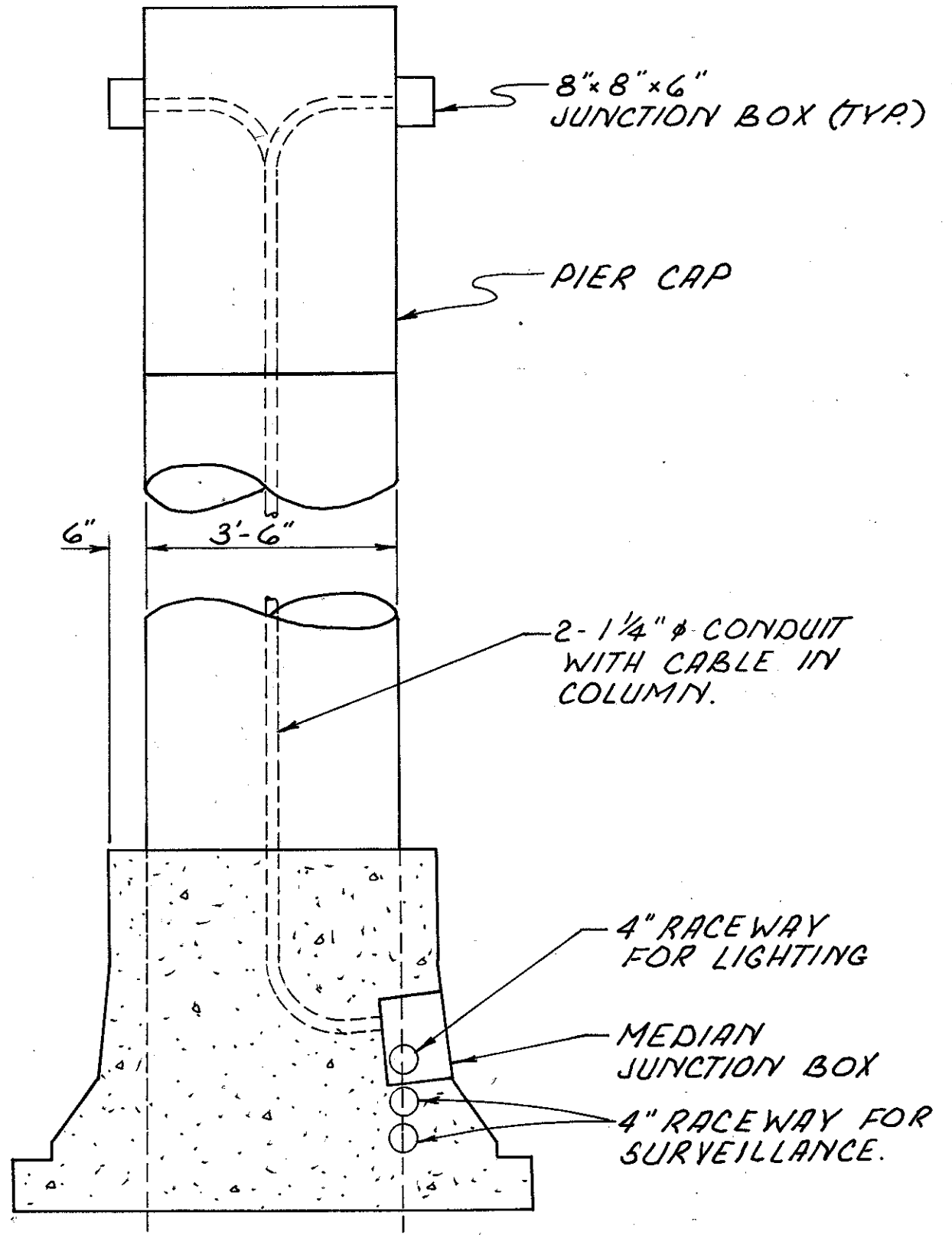


SURVEILLANCE DETAIL
 SCALE: 1" = 1'-0"

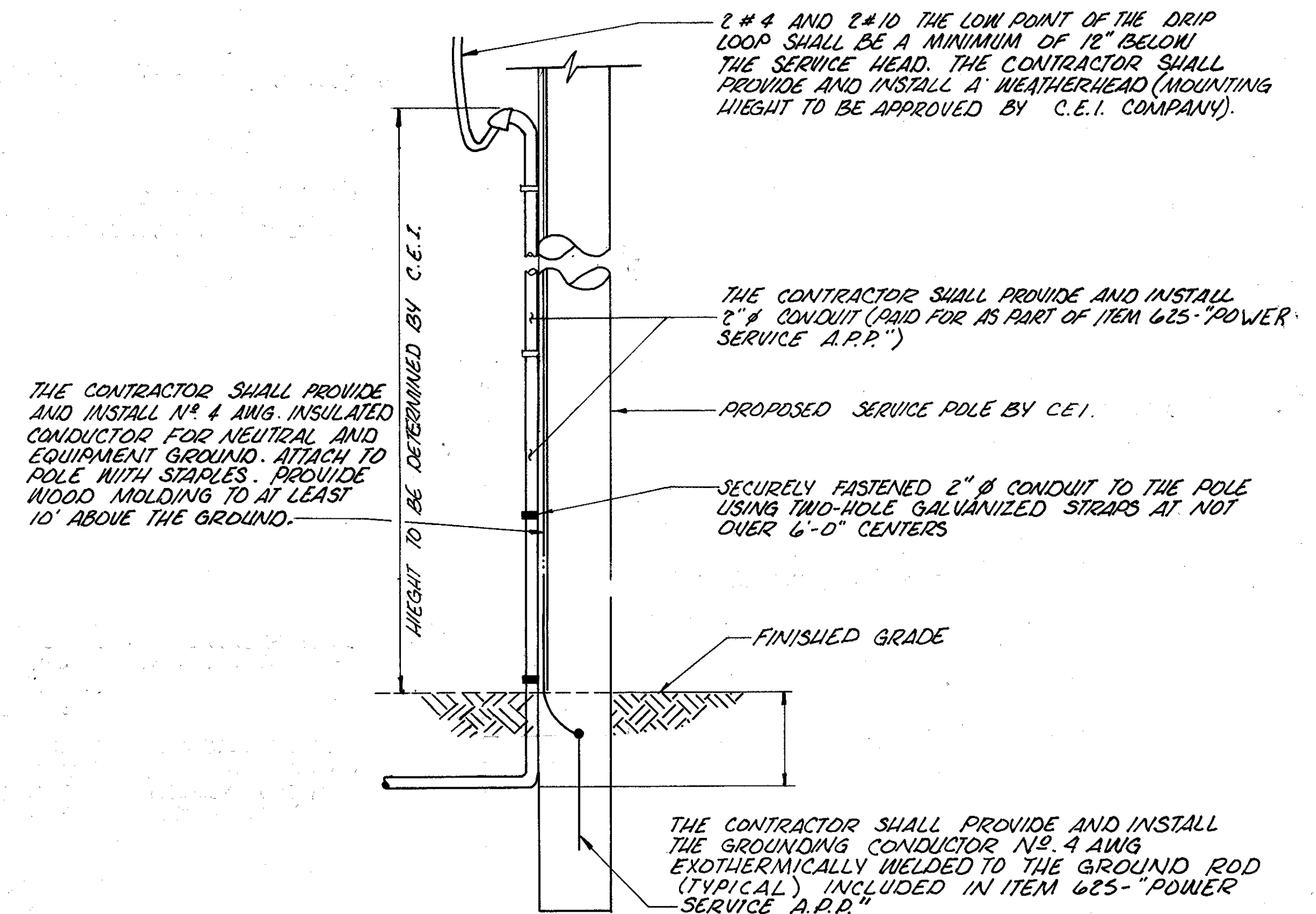


UNDERPASS CONDUIT ELEVATION DETAIL

NOTE: FOR DETAILS NOT SHOWN SEE STANDARD CONSTRUCTION DRAWINGS HL-20.13, HL-20.31, MC-9349.4
SCALE: 1/2" = 1'-0"



SECTION A-A



THE CONTRACTOR SHALL PROVIDE AND INSTALL N# 4 AWG. INSULATED CONDUCTOR FOR NEUTRAL AND EQUIPMENT GROUND. ATTACH TO POLE WITH STAPLES. PROVIDE WOOD MOLDING TO AT LEAST 10' ABOVE THE GROUND.

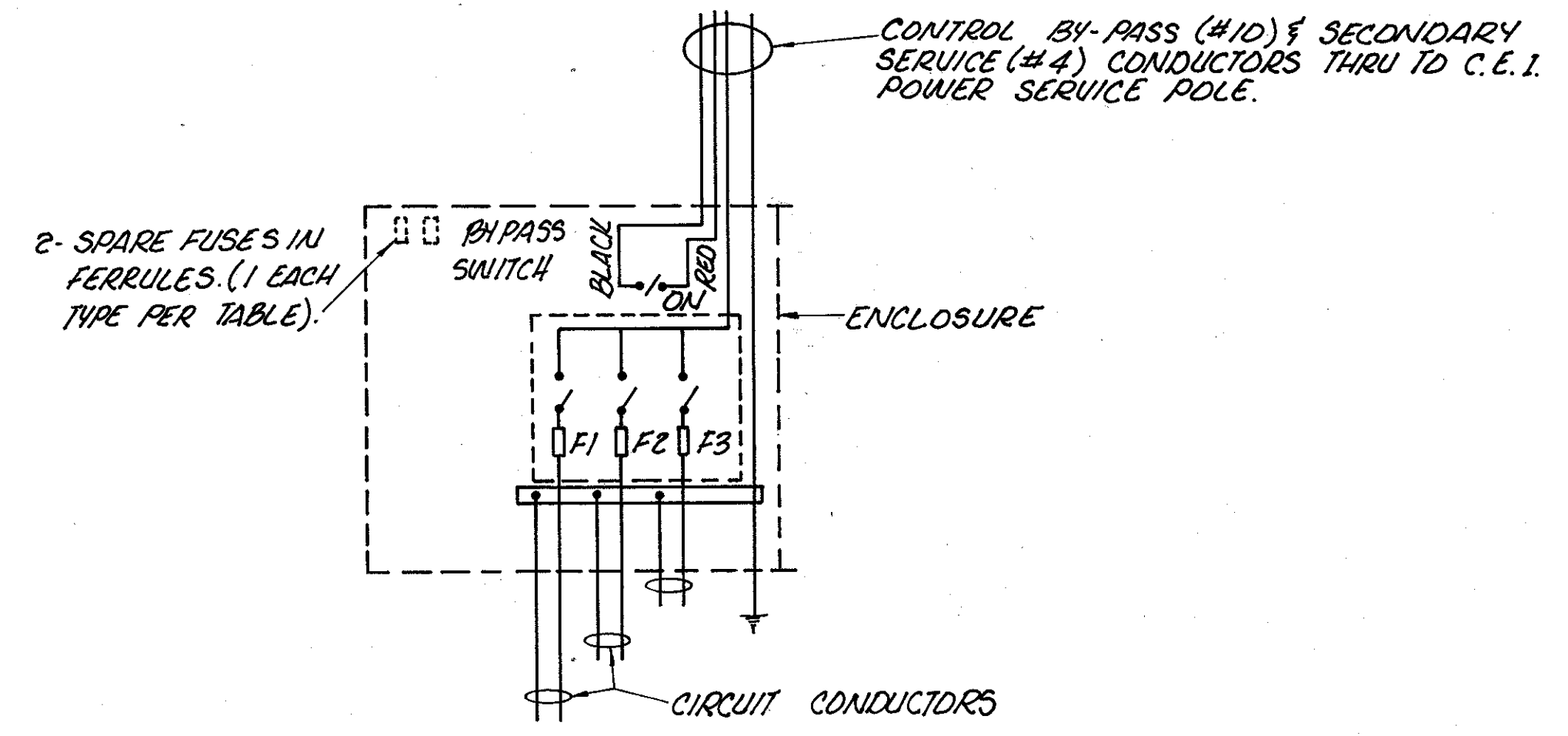
AN AMPERE BY-PASS SWITCH RATED AT 480 VOLTS. COMPLETE WITH N# 10 WIRE AND CONDUIT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THE CLEVELAND ELECTRIC ILLUMINATING CO. WILL MAKE THE FINAL CONNECTION TO THE SWITCH FOR MANUAL BY-PASS CONTROL OF THEIR LIGHTING CONTROLLER. THE BY-PASS SWITCH WILL BE LOCATED INSIDE OF THE GROUND MOUNTED ENCLOSURE (SEE SHT. 27TA) BY-PASS SWITCH INCLUDED IN ITEM 625-"POWER SERVICE A.P.P."

NOTE:
THE CONTRACTOR SHALL BOND THE WEATHERED CONDUIT TO THE N# 4 AWG GROUND CONDUCTOR. PAYMENT INCLUDED IN ITEM 625-"POWER SERVICE A.P.P."
THE CONTRACTOR SHALL ARRANGE WITH THE UTILITY COMPANY FOR A FIELD INSPECTION OF EACH SERVICE LOCATION PRIOR TO HIS INSTALLATION OF SERVICE EQUIPMENT.

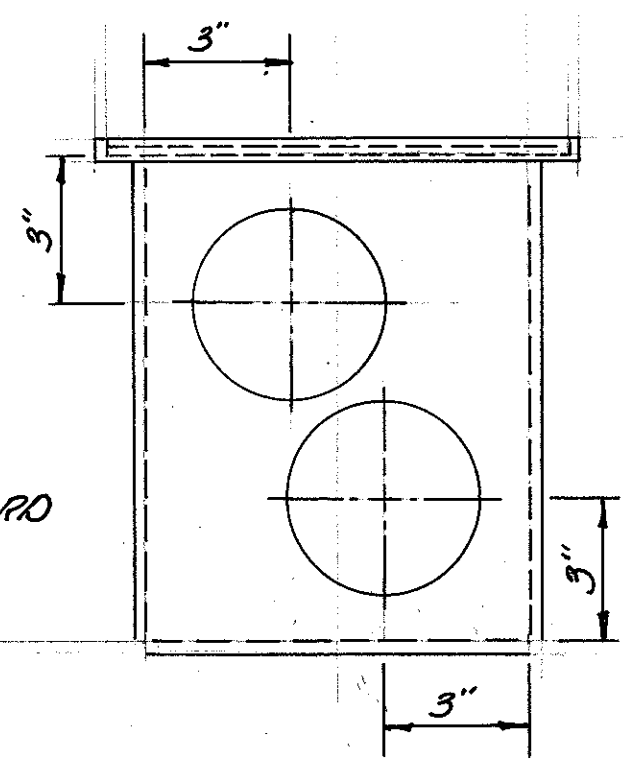
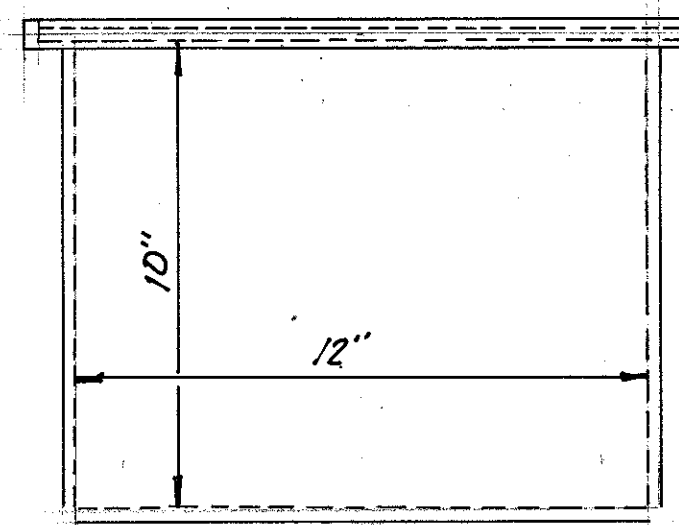
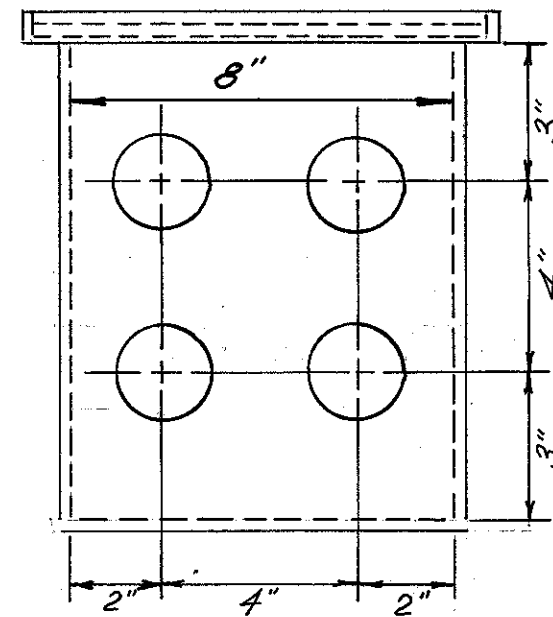
POWER SERVICE DATA TABLE

CIRCUIT N°	POWER SOURCE	MAINTAINING AGENCY	CONNECTED LOAD (KVA)	CIRCUIT LOAD (AMPS)	VOLTAGE	ENCLOSURE TYPE	CIRCUIT FUSE (AMPS)
A1	"A"	CITY OF CLEV.	4	20	120/240	NEMA TYPE 4	30
B1	"B"	ODOT	8	16	480	NEMA TYPE 4	30
C1	"C"	ODOT	15	31	480	NEMA TYPE 4	40
D1	"D"	ODOT	17	36	480	NEMA TYPE 4	50
E1	"E"	ODOT	12	24	480	NEMA TYPE 4	30
2LC	"LC"	ODOT	EXISTING	EXISTING	480	EXISTING	EXISTING
J	"SRB"	ODOT	EXISTING	EXISTING	480	EXISTING	EXISTING

• CUY-480-15.81
▲ CUY-480-12.75



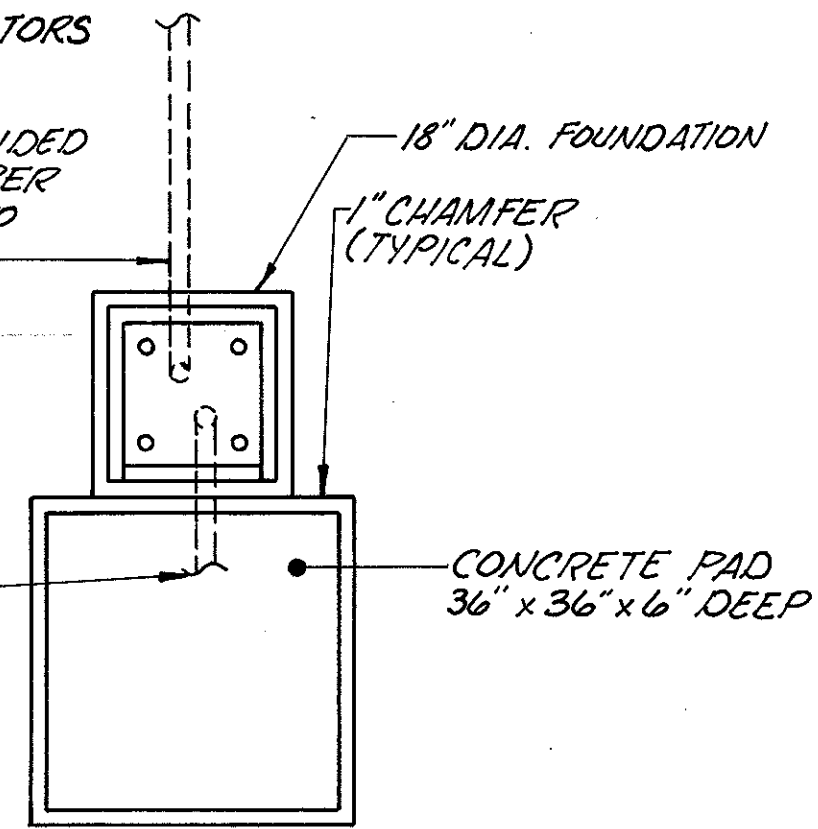
TYPICAL WIRING DIAGRAM
480 VOLT POWER SUPPLY



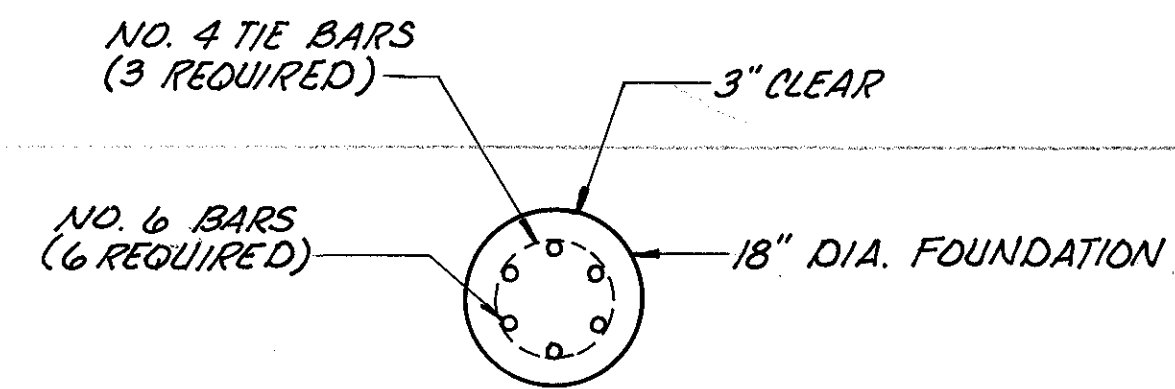
NOTE: FOR DETAILS NOT SHOWN, SEE STANDARD DRAWING HL-30.33

SURVEILLANCE STRUCTURE TRANSITION JUNCTION BOX DETAILS

CONTROL BY-PASS CIRCUIT CONDUCTORS (2 1/2" DIA. NO. 10) & SECONDARY SERVICE CONDUCTOR IN 2" DIA. CONDUIT TO CONTROLLED SERVICE. PAYMENT INCLUDED IN ITEM 625- POWER SERVICE, AS PER PLAN. CONTROL BY-PASS SWITCH TO BE MOUNTED INSIDE ENCLOSURE



PLAN



SECTION THROUGH FOUNDATION

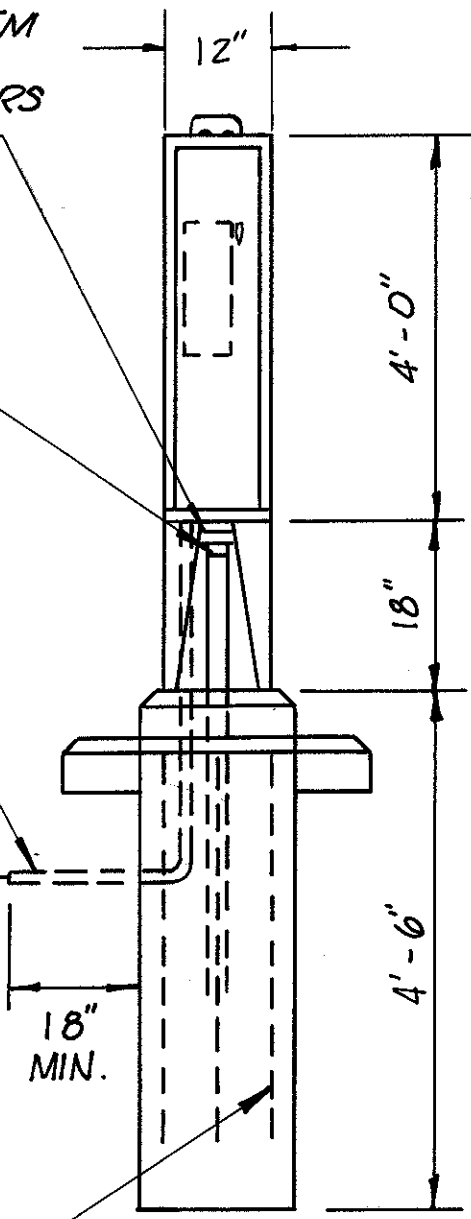
STAINLESS STEEL ENCLOSURE SHALL CONFORM WITH REQUIREMENTS OF ITEM 713.21 WITH EXCEPTION THAT BOTTOM SHALL BE REINFORCED WITH TWO LAYERS OF 14 GA. MATERIAL.

CONDUITS SHALL ENTER THE ENCLOSURE BODY BY MEANS OF WATER TIGHT, RIGID, CONDUIT HUBS

3/4" DIA. EMT CONDUIT FOR GROUND WIRE ENTRANCE INTO ENCLOSURE

GROUND ROD, ITEM 713.16

6 - NO. 6 HOOKED REINFORCING BARS, EQUALLY SPACED TO MISS CONDUITS. BARS TO BE 6" CLEAR FROM TOP AND BOTTOM OF FOUNDATION.



FRONT VIEW

SINGLE DOOR ENCLOSURE OF NEMA TYPE 4 WATER TIGHT CONSTRUCTION WITH NEMA 3 RAINSHIELD OF D.078 (14) GAGE, ASTM A302-304 STAINLESS STEEL. ALL SEAMS SHALL BE CONTINUOUSLY WELDED AND GRIND SMOOTH AND POLISHED. BODY AND DOOR STIFFENERS SHALL BE PROVIDED. THE DOOR SHALL HAVE A CONTINUOUS HINGE ON ONE SIDE AND BE GASKETED. 3-POINT LATCHING SHALL BE PROVIDED AND THE HANDLE SHALL BE ARRANGED FOR PAD LOCKING.

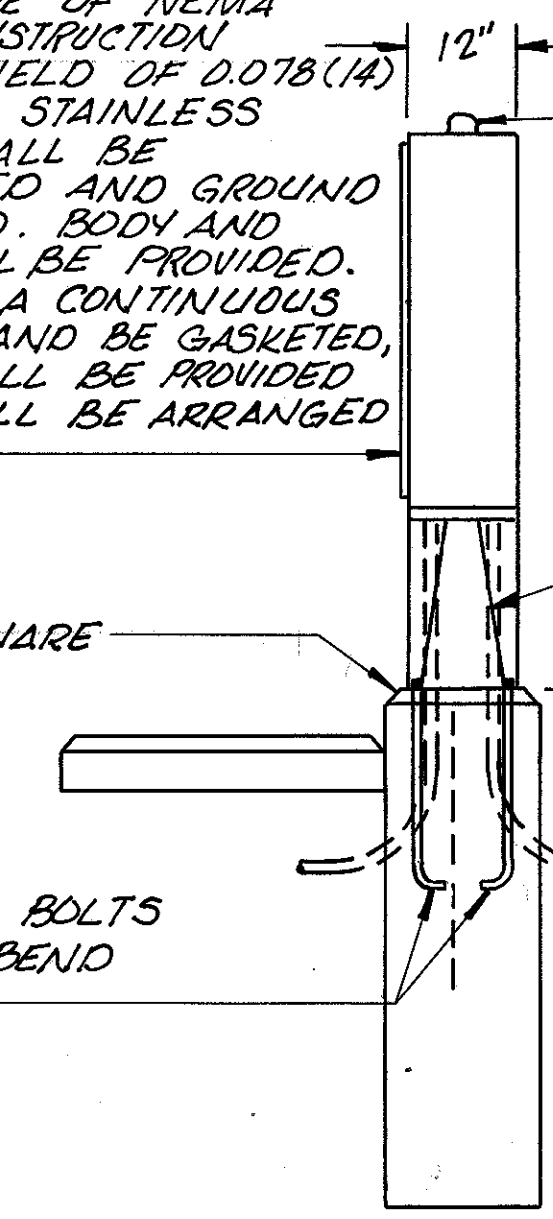
SCREENED BREATHER FITTING

SUPPORT LEGS OF SAME CONSTRUCTION AS ENCLOSURE BODY, CONNECT TO ENCLOSURE WITH 1/2" DIA. STAINLESS STEEL BOLTS, NUTS, AND WASHERS (MINIMUM 4 REQUIRED)

FORM UPPER 12" SQUARE

1/2" DIA. x 24" ANCHOR BOLTS WITH MINIMUM OF 4" BEND (4 REQUIRED)

1-2" DIA. CONDUIT ITEM 713.04 TO POWER COMPANY'S POLE.



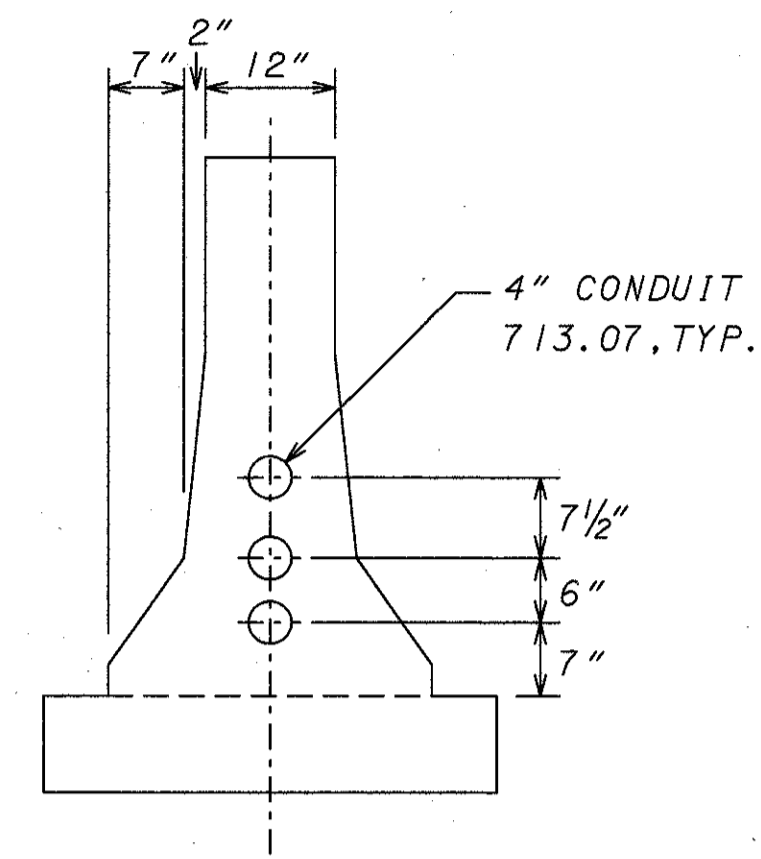
SIDE VIEW

GROUND MOUNTED POWER SERVICE DETAILS

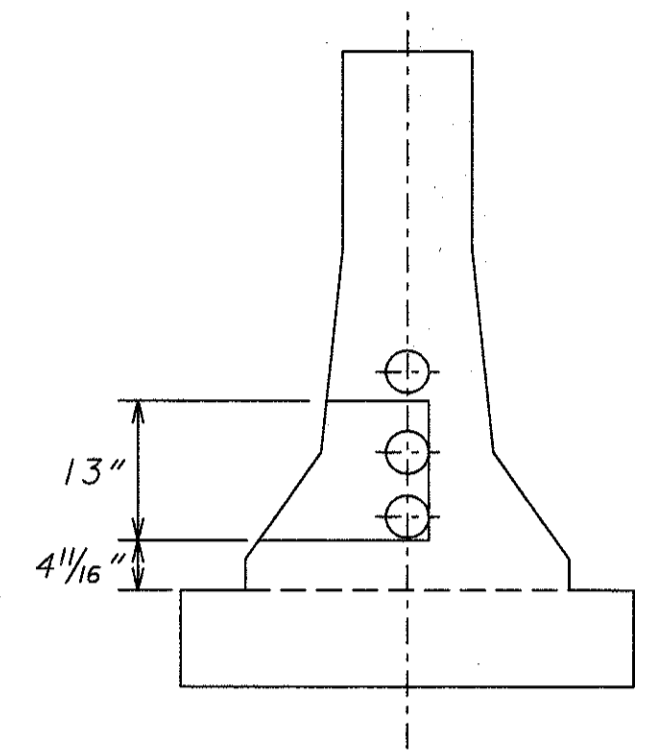
480 VOLT SERVICE

MISCELLANEOUS LIGHTING DETAILS

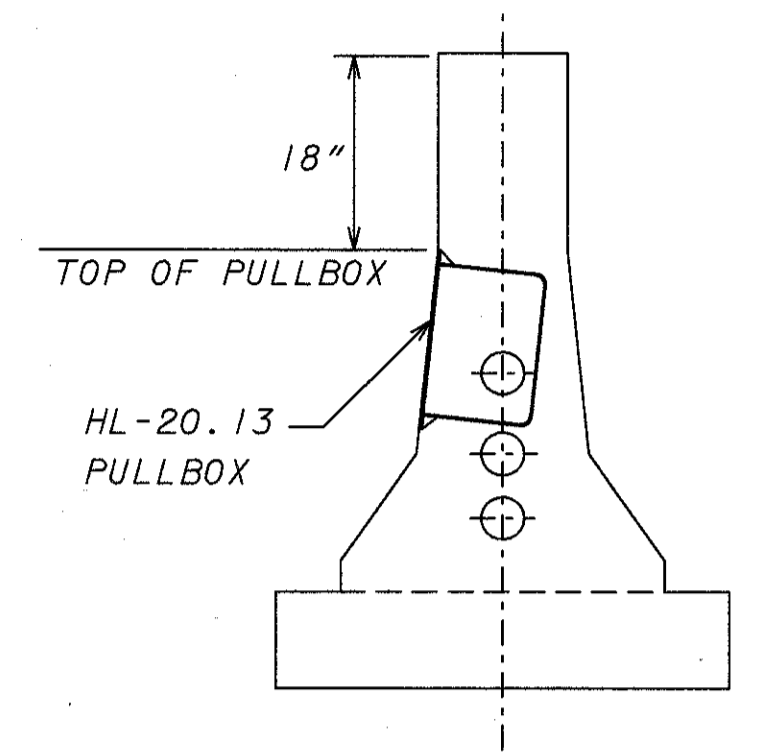
RELOC. S.R.-176



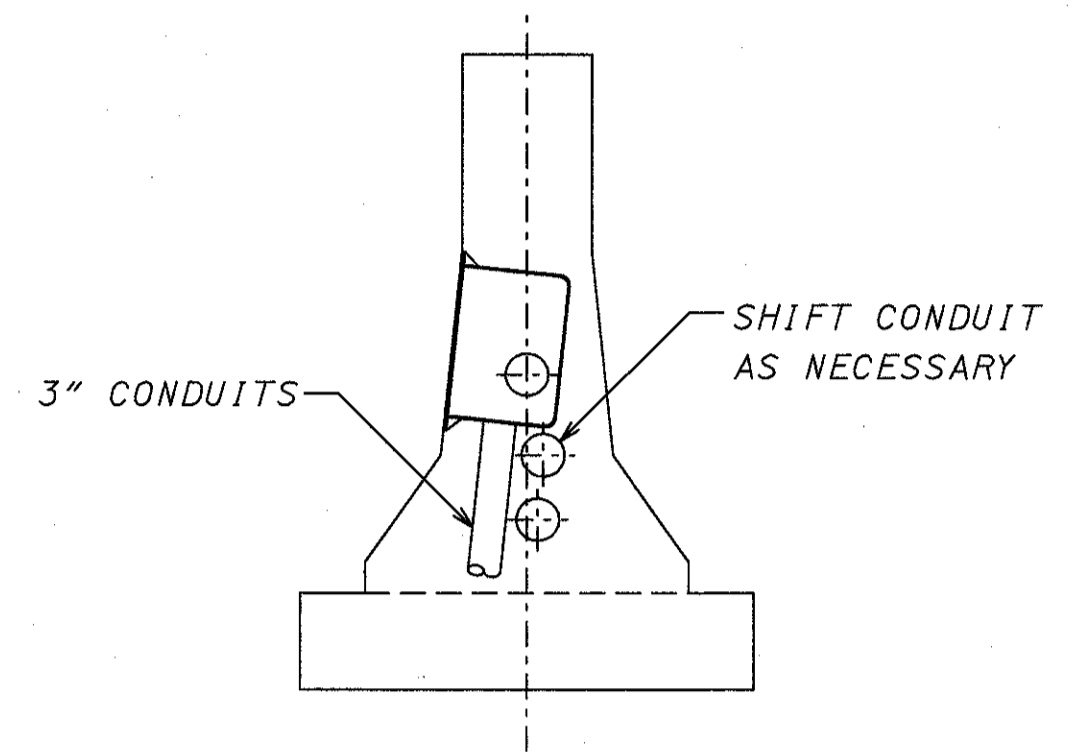
50" BARRIER,
 VERTICAL TOP



SURVEILLANCE
 JUNCTION BOX



LIGHTING PULLBOX
 LOCATION
 (NOTE: 4" CONDUIT
 LOCATION IN PULLBOX
 VARIES FROM HL-20.13)

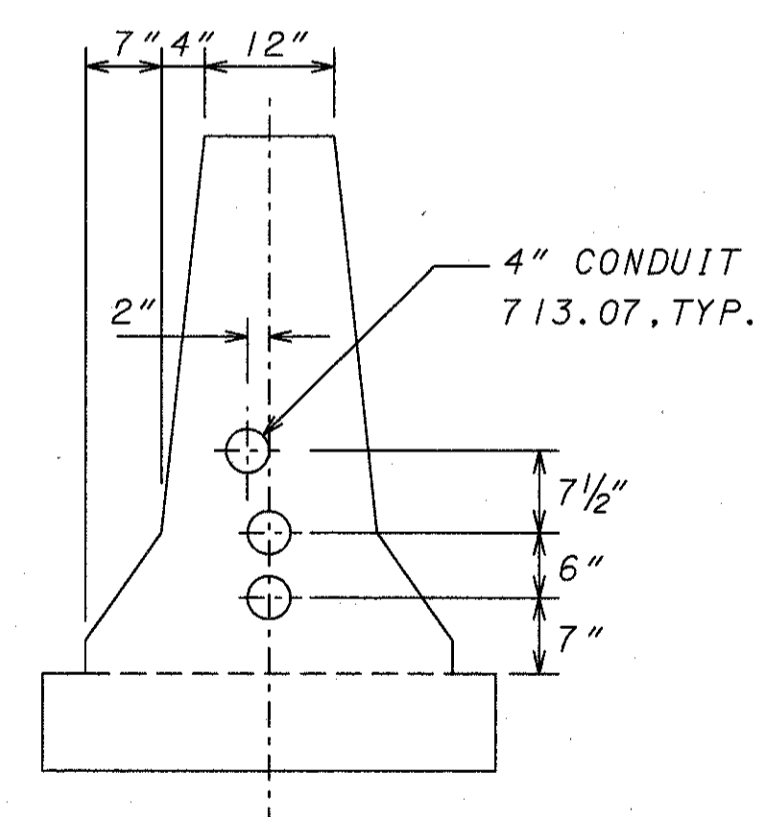


SURVEILLANCE CONDUIT
 SHIFTS AT LIGHTING
 LATERAL CROSSINGS

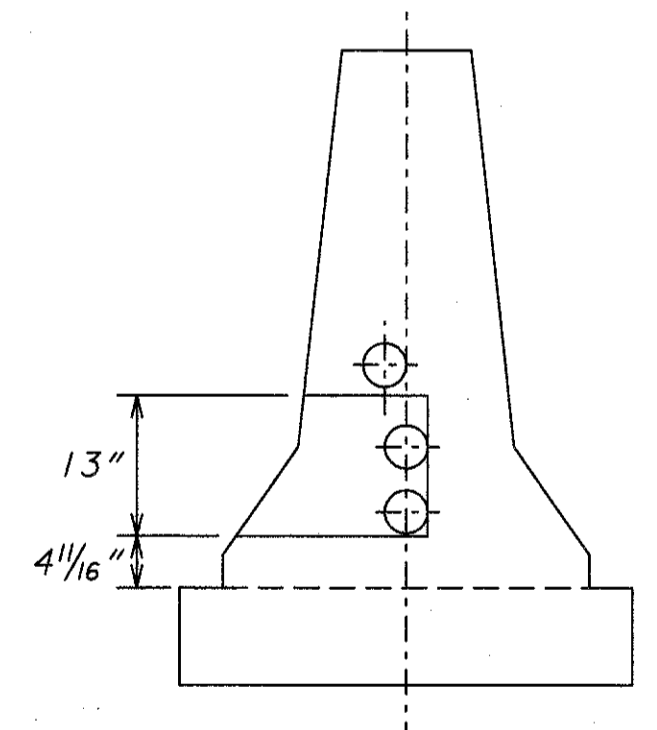
ITEM 622 - CONCRETE BARRIER, TYPE B-50,
 AS PER PLAN

ITEM 622 - CONCRETE BARRIER, TYPE C-50,
 AS PER PLAN

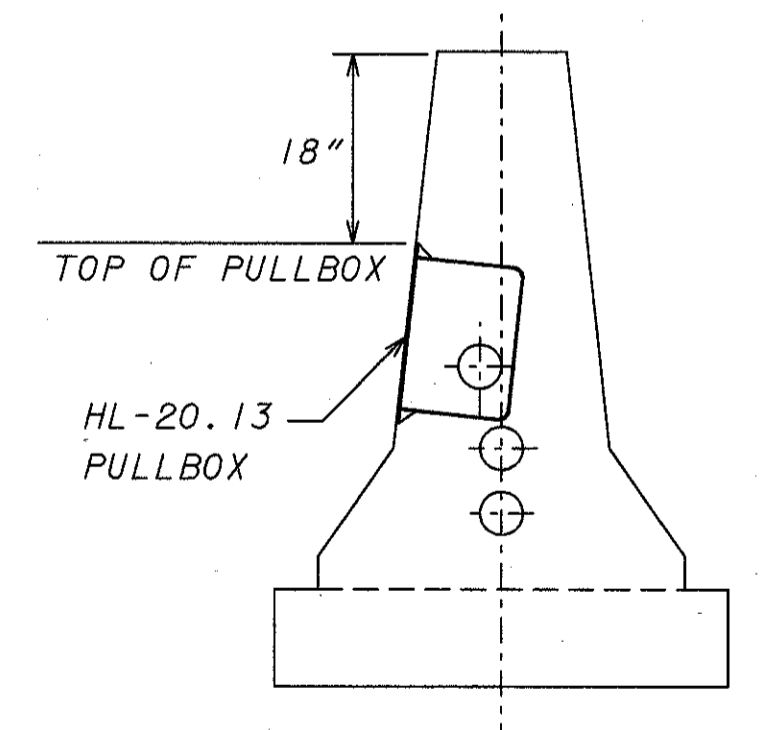
THE COST FOR THE TWO ADDITIONAL 4" RACEWAYS
 SHALL BE INCLUDED IN THE UNIT PRICE FOR
 THE ABOVE ITEMS



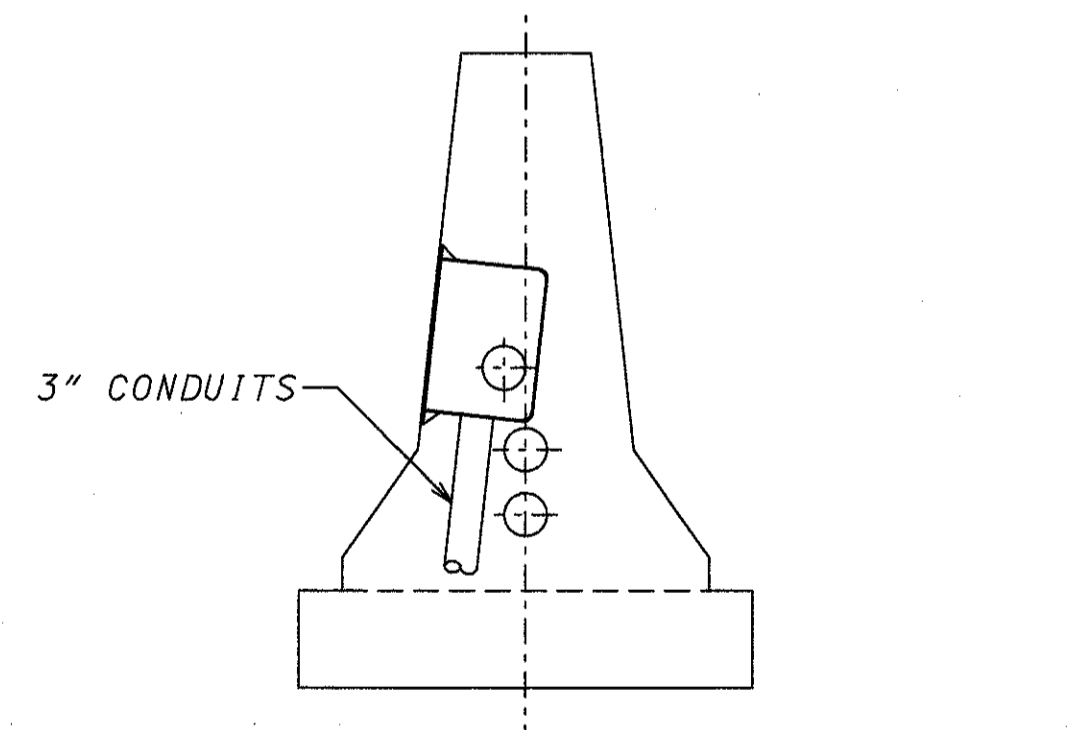
50" BARRIER
 WITH BATTERED TOP



SURVEILLANCE
 JUNCTION BOX

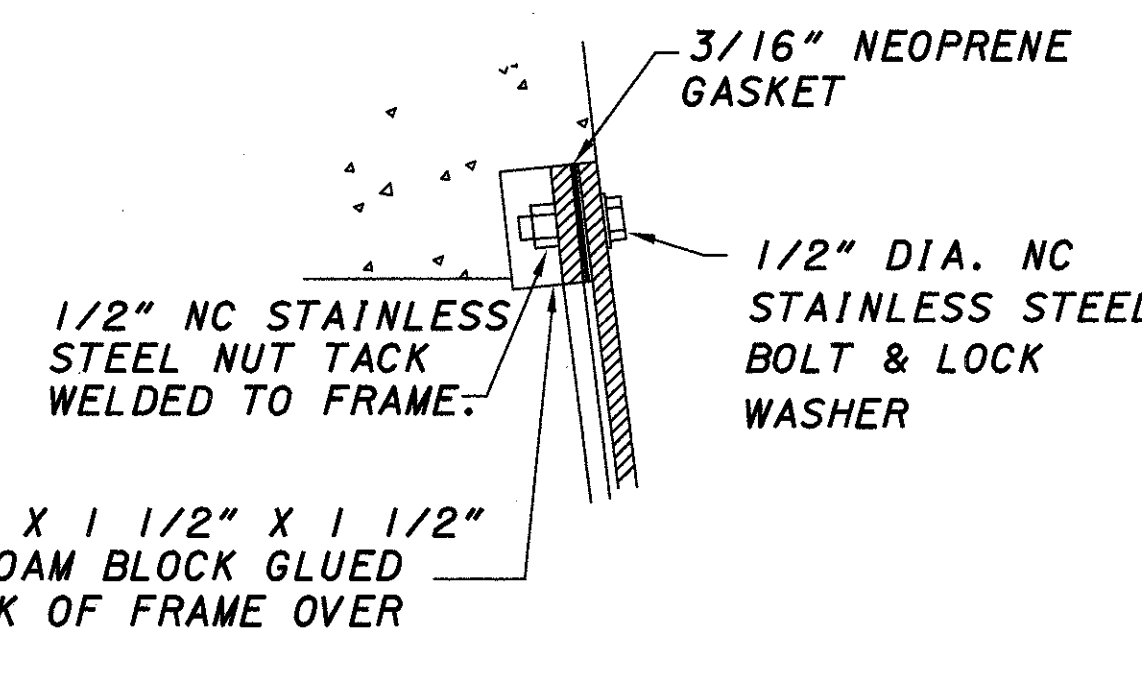
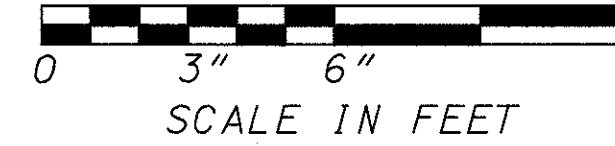


LIGHTING PULLBOX
 LOCATION
 (NOTE: 4" CONDUIT
 LOCATION IN PULLBOX
 VARIES FROM HL-20.13)

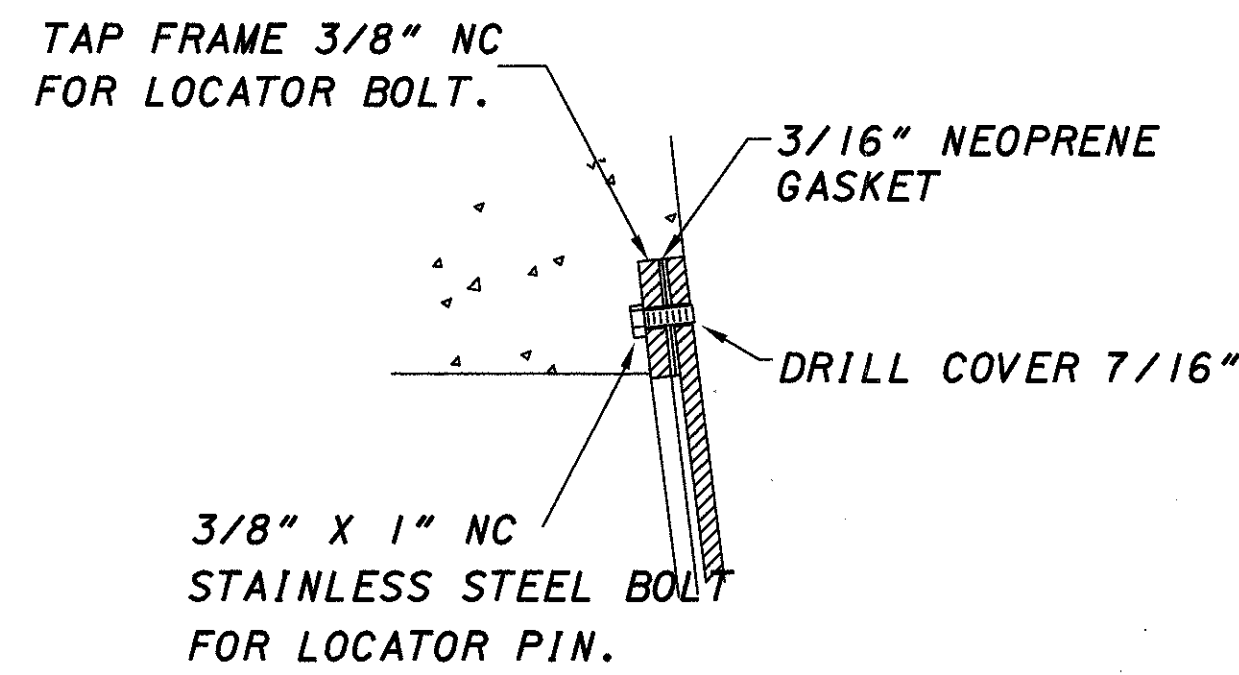


LATERAL LIGHTING
 CROSSING

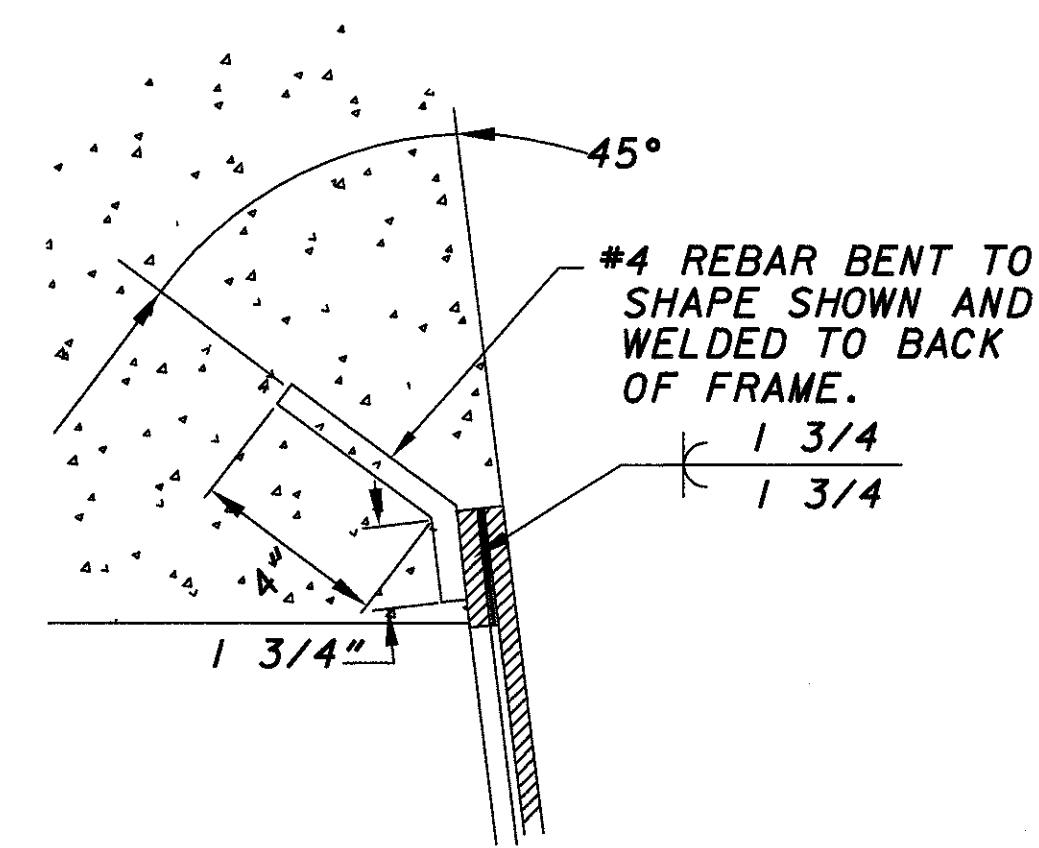
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 PLOT SUBMITTED BY: jennon
 PLOT SUBMITTED: 12-APR-1994 10:26
 08448LDA.dgn



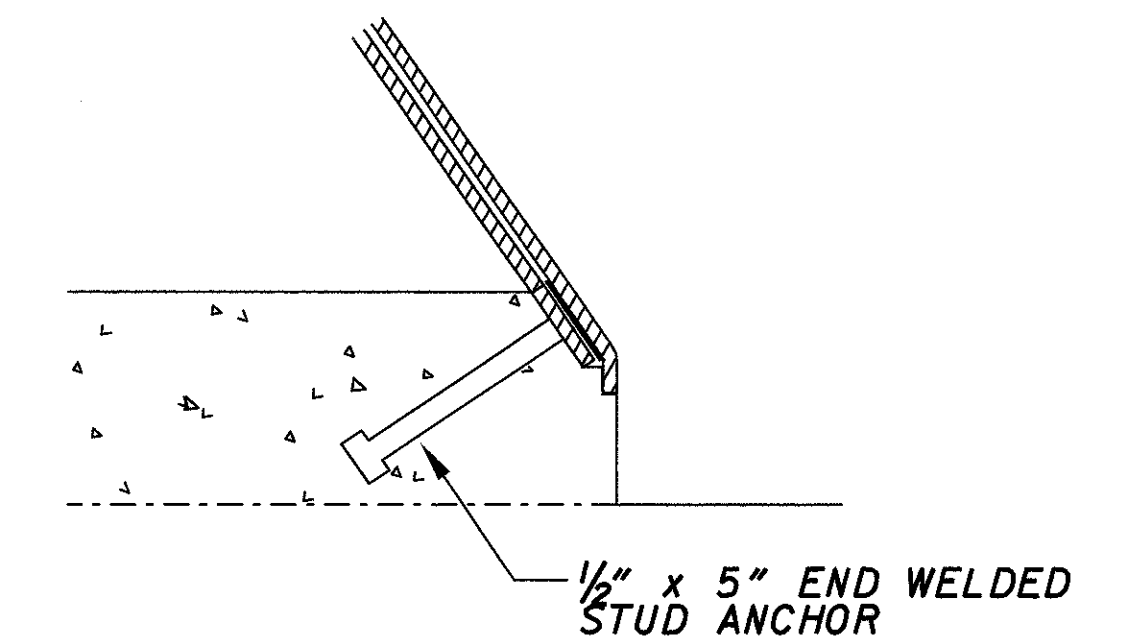
COVER BOLT DETAIL



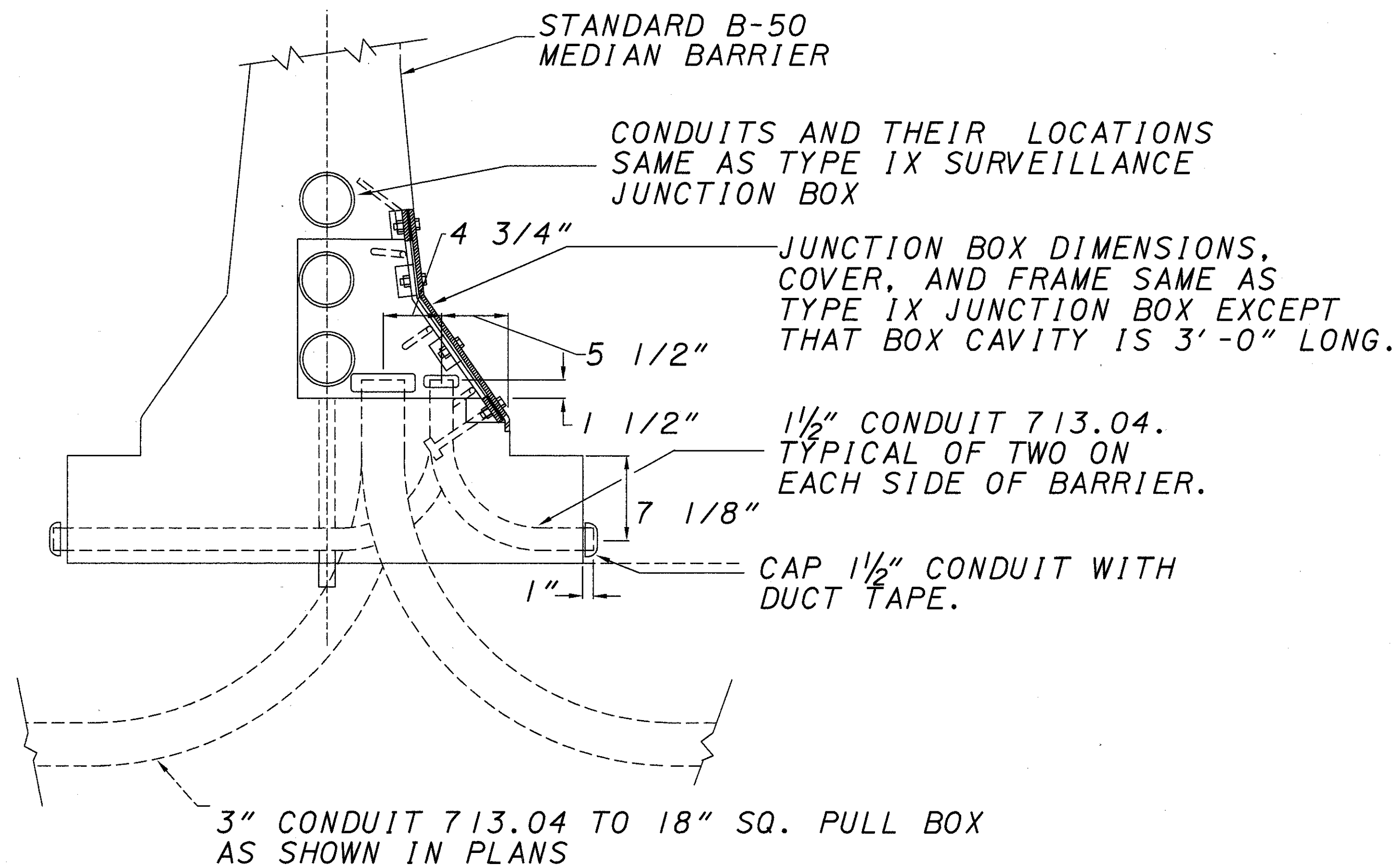
LOCATOR PIN DETAIL



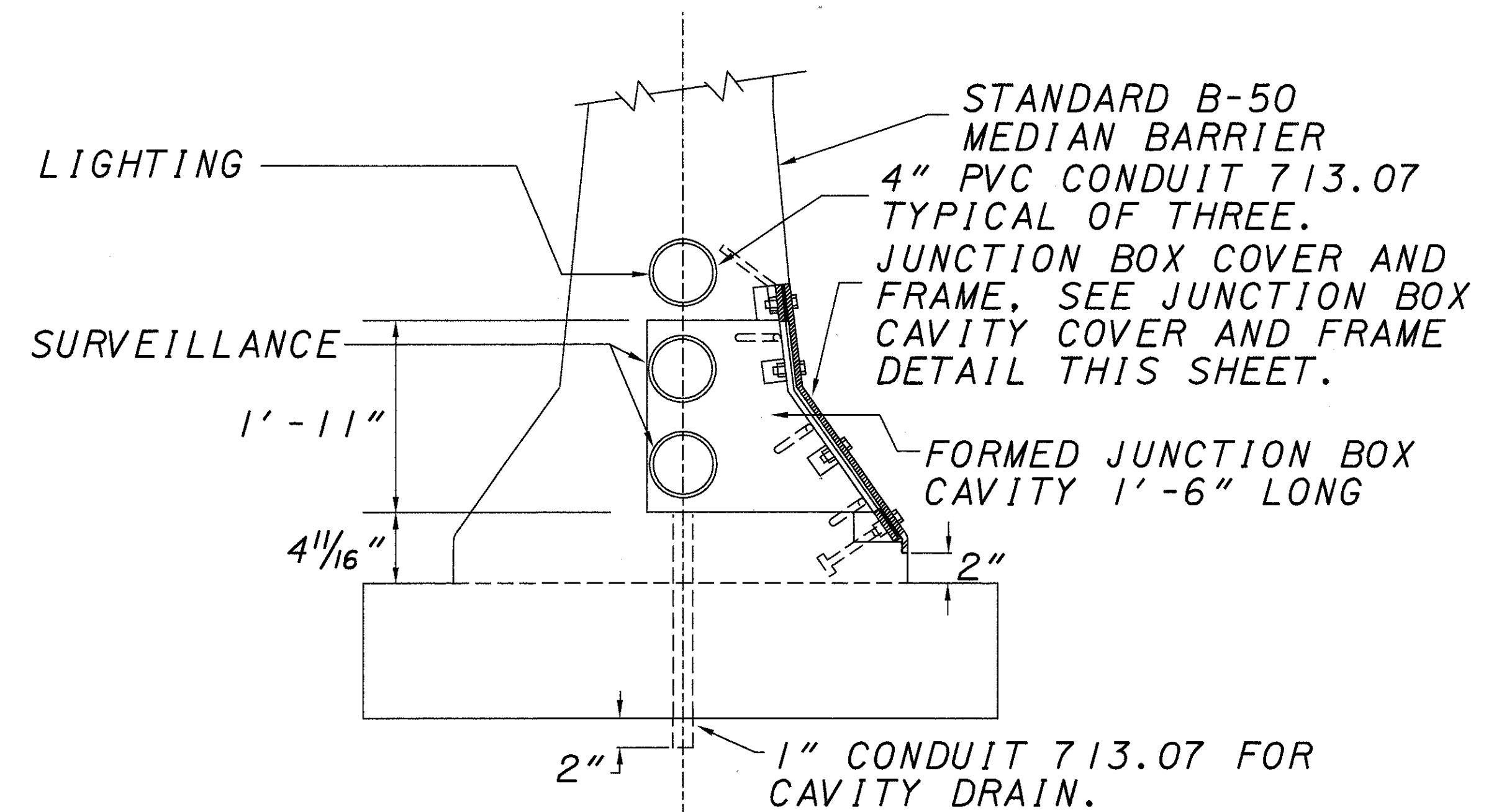
FRAME ANCHOR DETAIL



BOTTOM FRAME ANCHOR DETAIL



SURVEILLANCE JUNCTION BOX, (CROSSOVER)



SURVEILLANCE JUNCTION BOX, (PULL THROUGH)

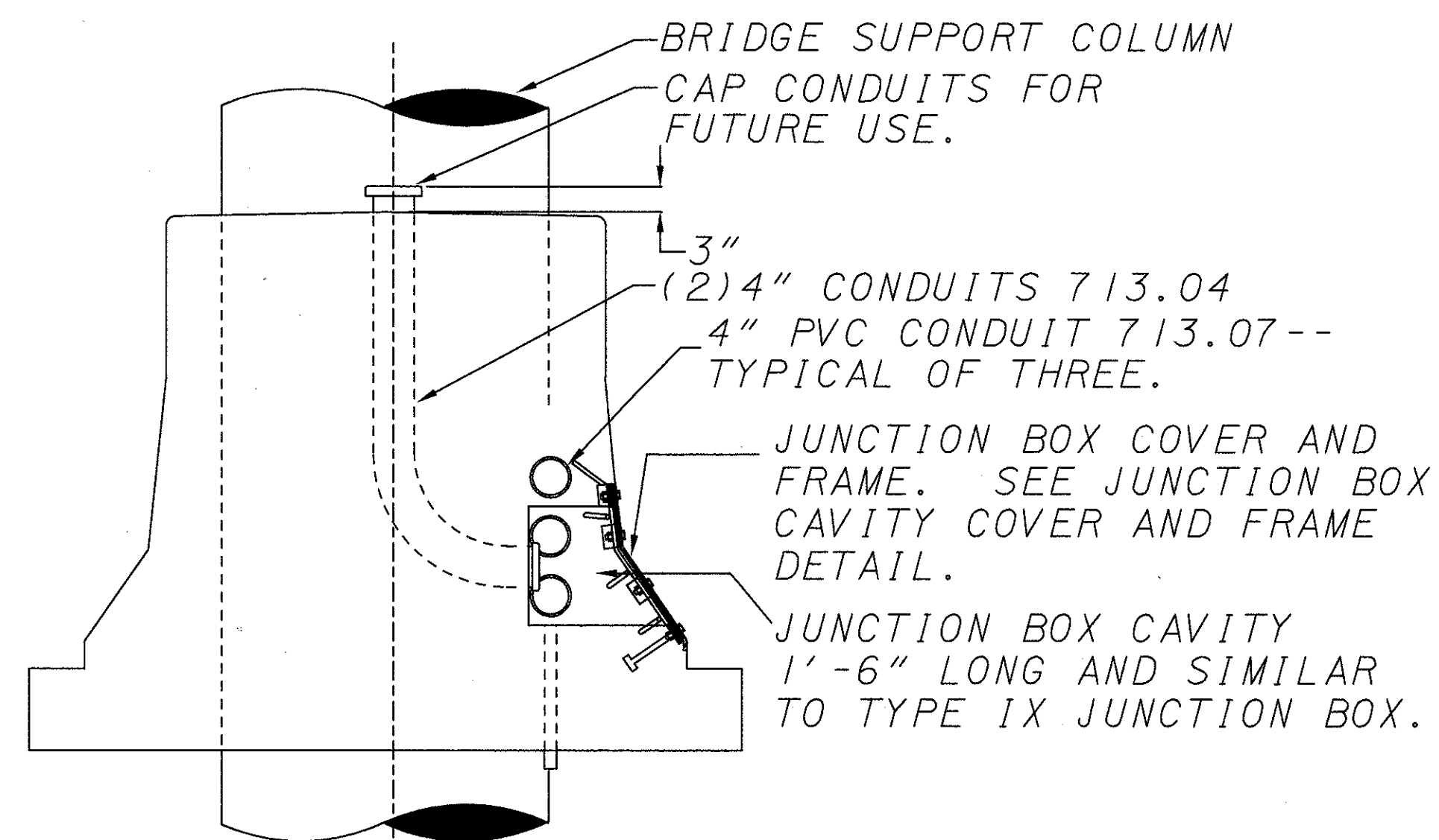


PLOT SUBMITTED: 12-APR-1994 10:46

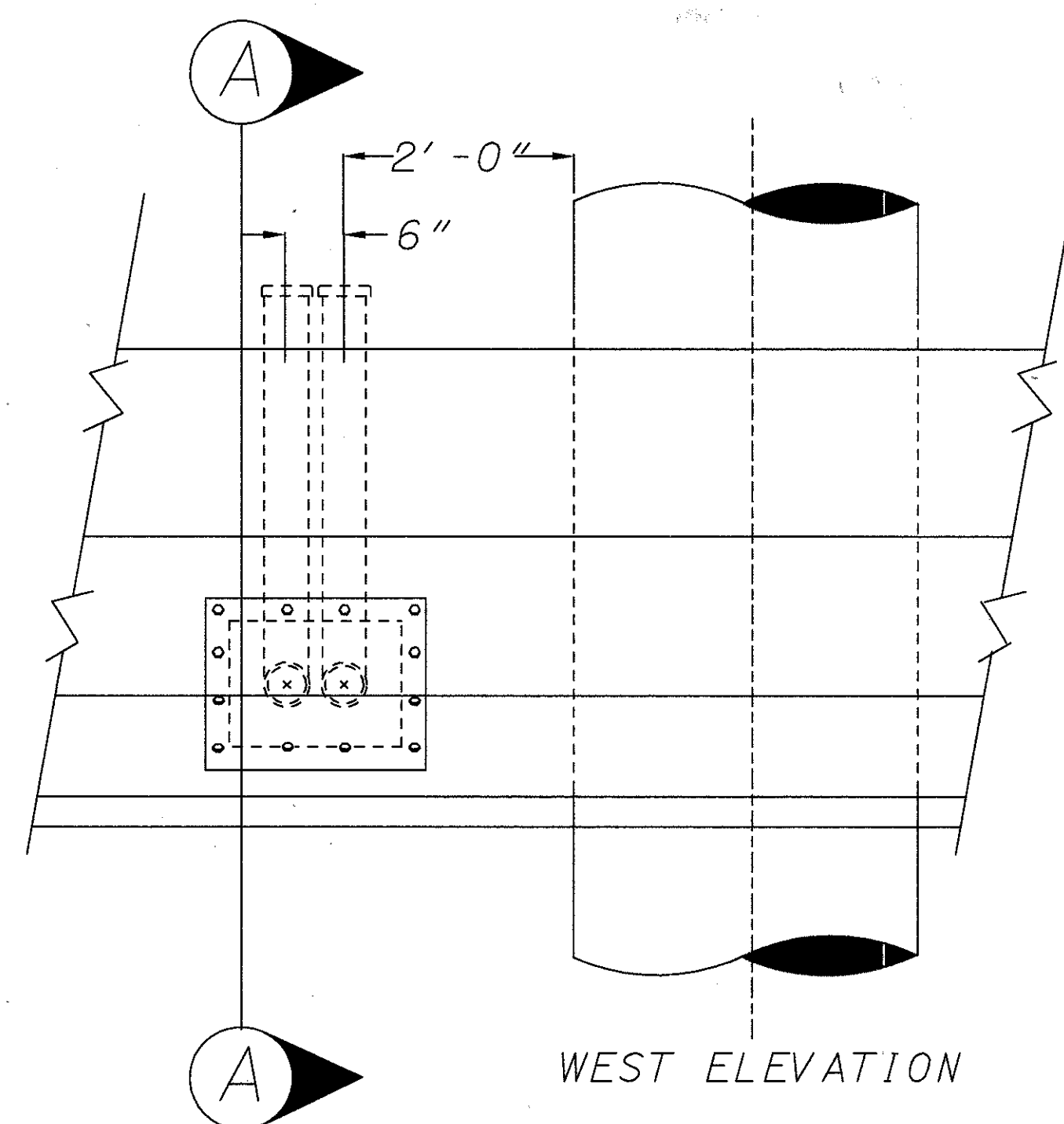
08448LDB.dgn

PLOT SUBMITTED BY: jennon

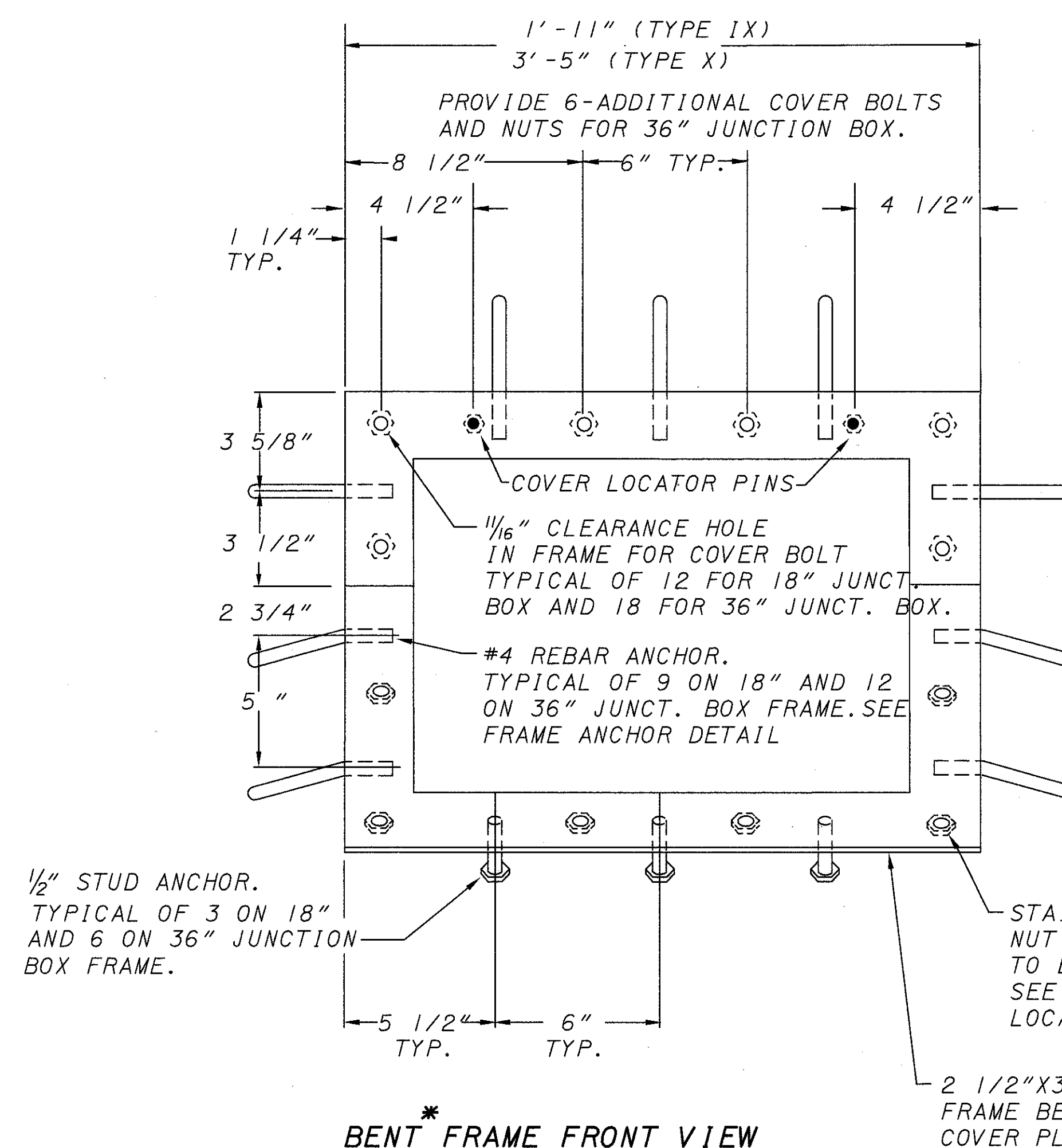
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SECTION A-A



BRIDGE PIER RISER



BENT FRAME FRONT VIEW

NOTES:

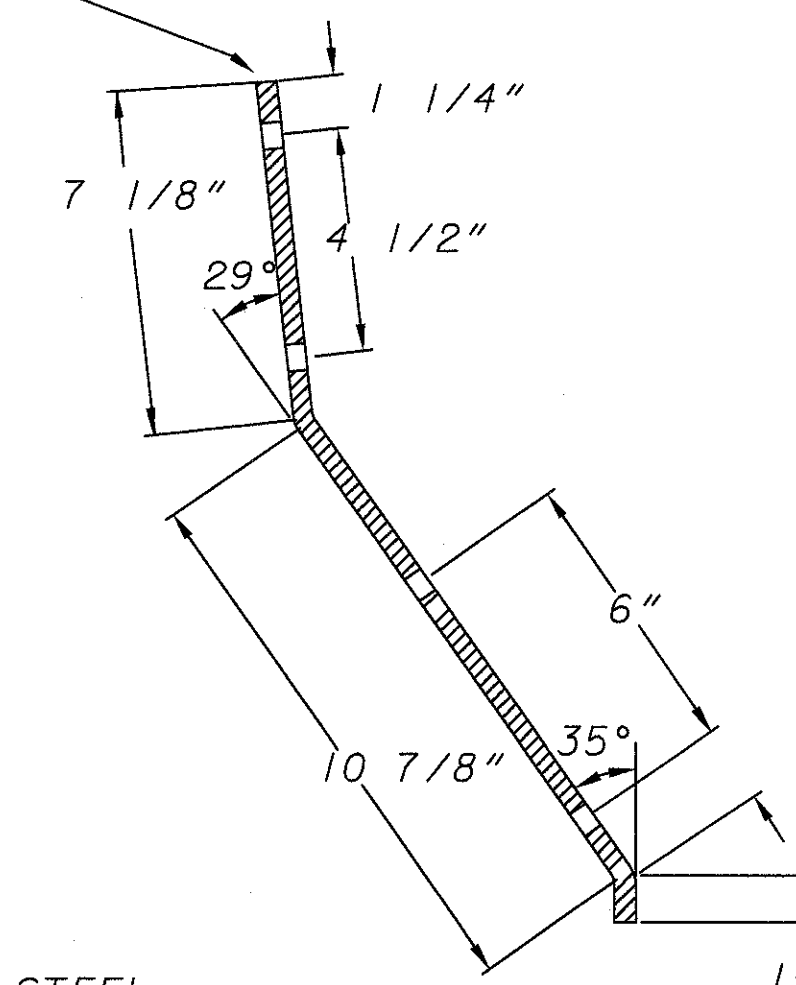
THE JUNCTION BOX COVER PLATE AND FRAME SHALL BE HOT DIP GALVANIZED AFTER ALL FABRICATION IS COMPLETE, IN ACCORDANCE WITH ASTM A-123.

COVER SHALL BE ORIENTED WITH THE LOCATOR PINS BEFORE DRILLING COVER PLATE HOLES.

DETAIL OF JUNCTION BOX CAVITY COVER PLATE AND FRAME

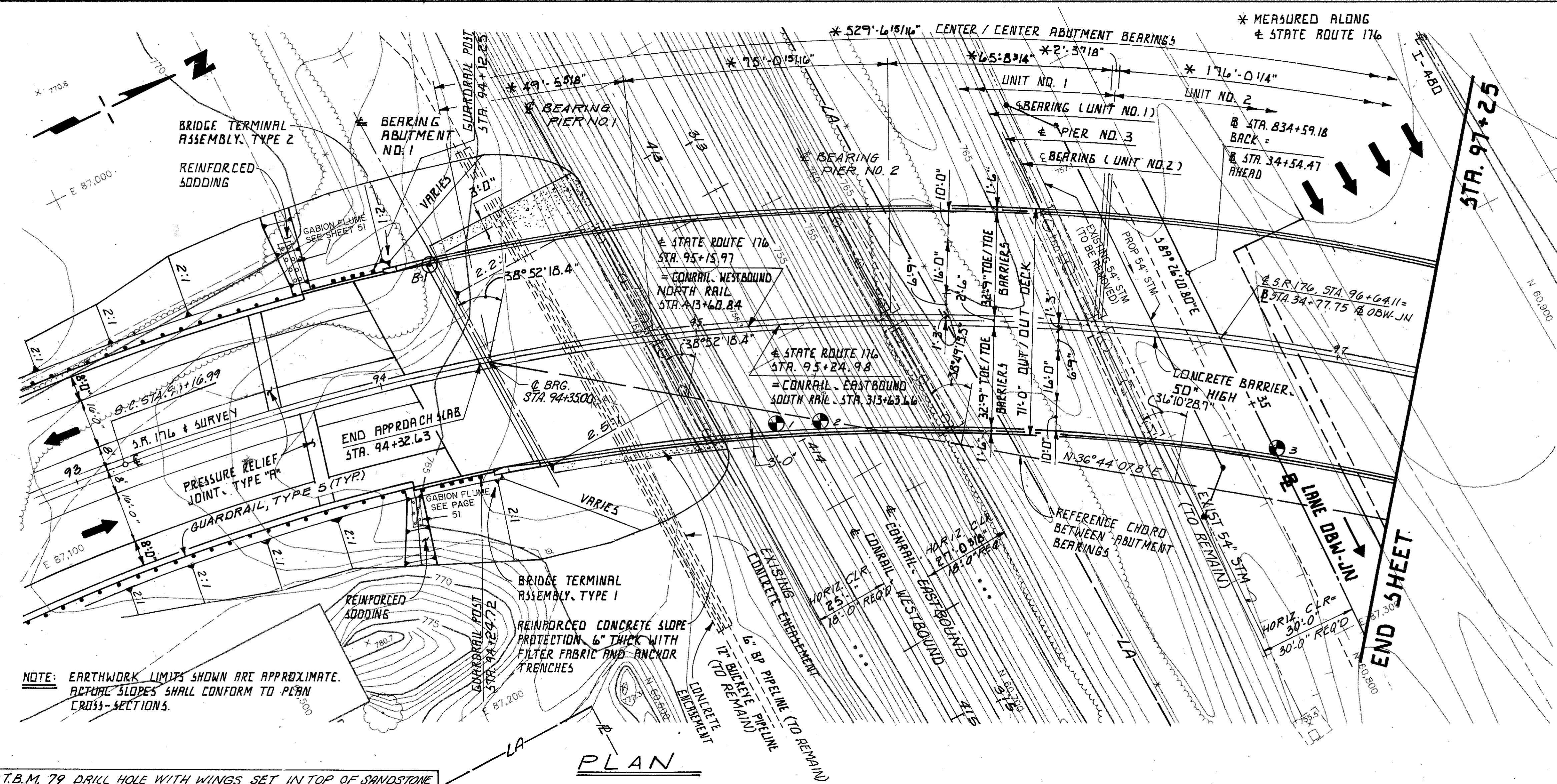


COVER PLATE SHALL BE 3/8" THICK STEEL 19" HIGH BY 23" OR 41" WIDE TO FIT 18" OR 36" JUNCT. BOX, BENT TO THE SHAPE SHOWN TO FIT CONCRETE BARRIER.



BENT COVER PLATE LEFT SIDE VIEW

* - FOR SURVEILLANCE JUNCTION BOX IN SINGLE SLOPE BARRIERS OMIT BENDS.



NOTE: EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.

PROPOSED STRUCTURE

TYPE: CONTINUOUS COMPOSITE A-572 PAINTED CURVED STEEL BEAM (UNIT NO.1) AND CURVED WELDED PLATE GIRDER (UNIT NO.2) WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.

SPANS: UNIT NO.1, 49'-5.518, 75'-0.1516, 65'-8.314" CENTER TO CENTER. BEARINGS ALONG STATE ROUTE 176. UNIT NO.2, 176'-0.114" CENTER TO CENTER BEARINGS ALONG STATE ROUTE 176.

WIDTH: TWO @ 32'-9" TOE/TOE OF BARRIERS. 71'-0" OUT/OUT OF DECK.

LOADING: HS 20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING.

WEARING SURFACE: MONOLITHIC CONCRETE

SKEW: VARIES RIGHT FORWARD (TO REFERENCE CHORD)

APPROACH SLABS: AS-1-B1, AS PER PLAN (25'-0" LONG, ABUTMENT NO. 1) AS PER PLAN (50'-0" LONG, ABUTMENT NO. 2)

ALIGNMENT: CURVE RIGHT (Dc = 7° 57' 58")

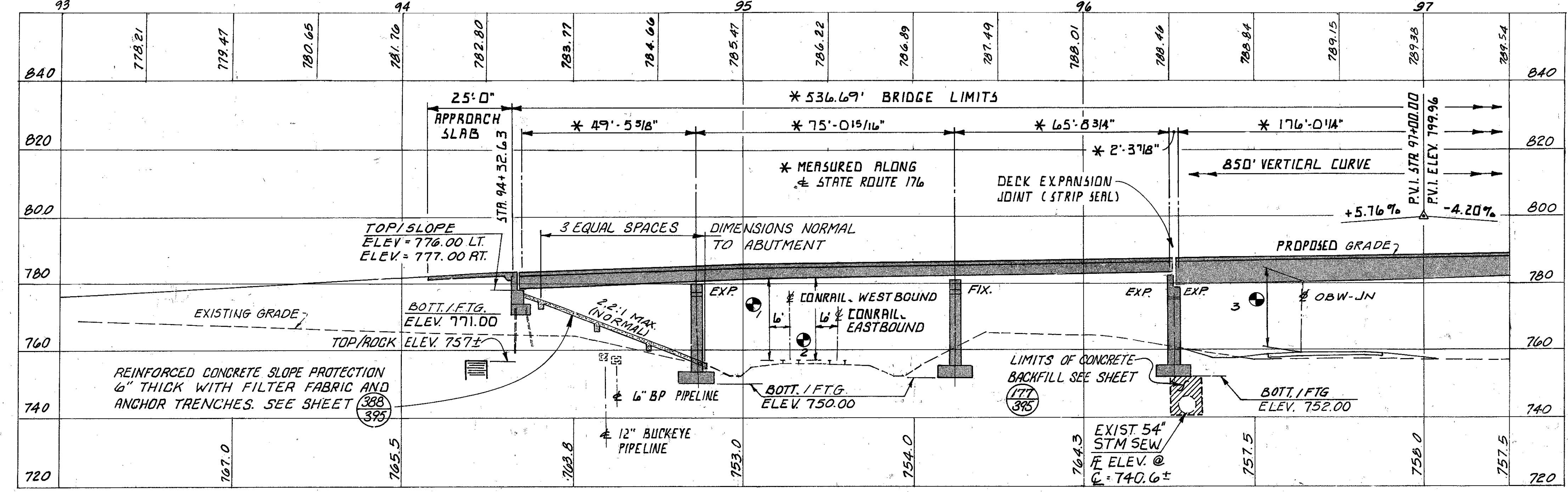
SUPERELEVATION: 0.059 FT./FT.

SLOPE PROTECTION: REINFORCED CONCRETE SLOPE PROTECTION, 6" THICK WITH FILTER FABRIC AND ANCHOR TRENCHES.

FOUNDATION DATA

ABUTMENT NO.1 FOOTING SHALL BE SUPPORTED BY HP 12x53 STEEL PILES, AVERAGE ESTIMATED PILE LENGTH IS 15 LINEAL FT. ABUTMENT NO.2 AND PIER FOOTINGS SHALL BE SPREAD FOOTINGS FOUNDED ON BEDROCK.

T.B.M. 79 DRILL HOLE WITH WINGS SET IN TOP OF SANDSTONE SIGN BASE TO SOUTHWEST BIBLE CHURCH, N. SIDE BROOKPARK ± 50 FEET W. OF W. EDGE BLDG. N. 1600 ELEV = 772.11



HORIZONTAL CURVE DATA

STATE ROUTE 176
P.I. STA. = 98+22.05
S.C. STA. = 93+16.99
C.S. STA. = 101+97.65
Δ = 70° 09' 11.9" RT.
Dc = 7° 57' 58"
R = 719.253'
T = 505.062'
L = 880.658'
O = 826.649'
E = 159.617'

VERTICAL CURVE DATA

G1 = +5.76%
G2 = -4.20%
L = 850'
P.V.I. ELEV. = 799.96
P.V.I. STA. = 97+00.00
P.V.C. STA. = 92+75.00
P.V.T. STA. = 101+25.00

POINTS OF MINIMUM VERTICAL CLEARANCE

1) ACTUAL = 23'-6" REQUIRED 23'-0"
2) ACTUAL = 24'-0" REQUIRED 23'-0"
3) ACTUAL = 20'-5 1/4" REQUIRED 16'-6"

TRAFFIC:

AVERAGE DAILY TRAFFIC (2013) = 16,540
AVERAGE DAILY TRUCK TRAFFIC (2013) = 1,654

⊙ INDICATES SOIL BORING LOCATIONS. SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS FOR ADDITIONAL DETAILS.

ABBREVIATIONS:
FIX = FIXED
EXP = EXPANSION

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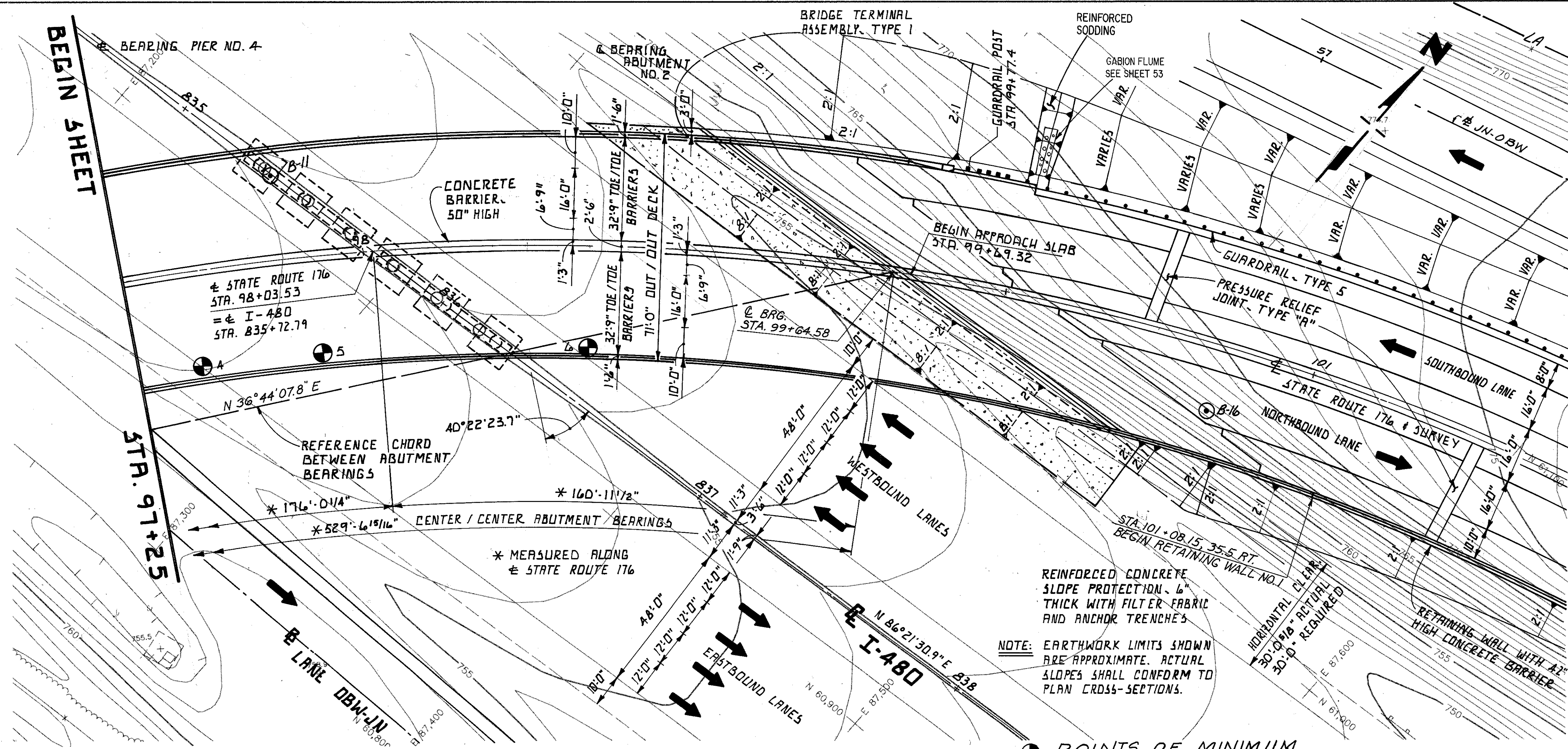
SITE PLAN

JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BRIDGE NO CUY-176-1020
STA. 94+32.63 TO STA. 99+07.32
CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.R.N.	T.J.W.	L.E.D.	7-16-92	

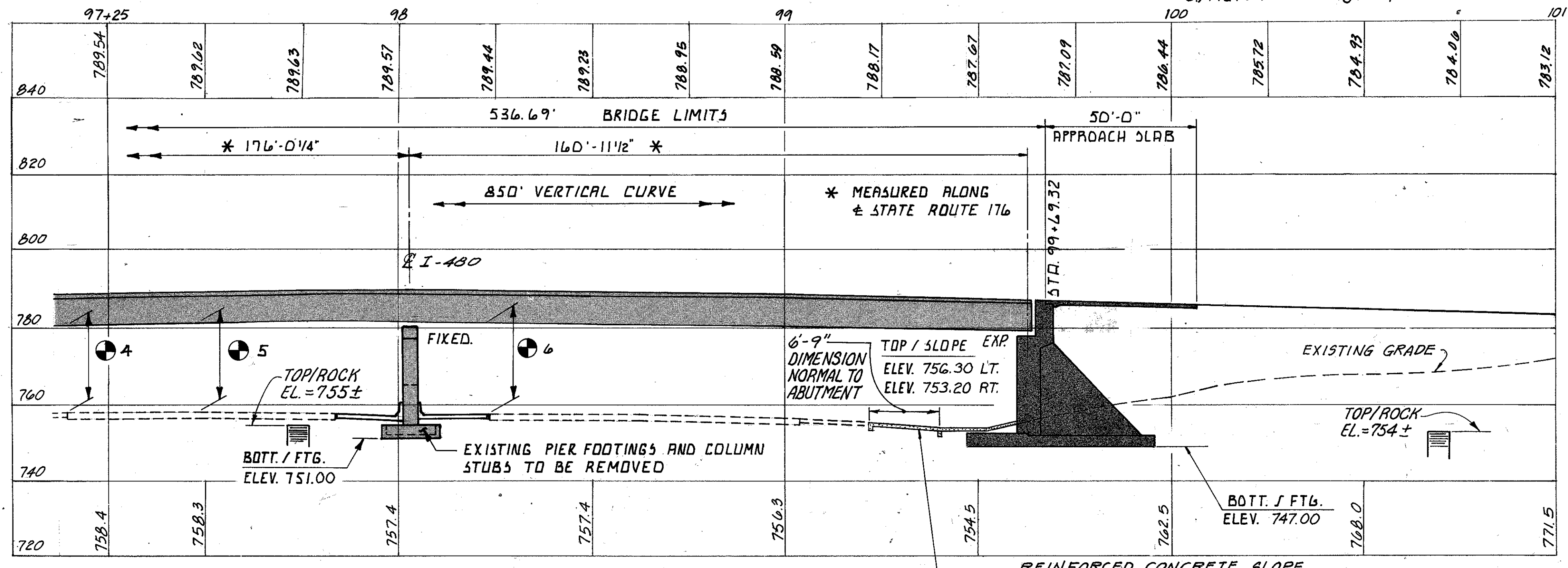
PROFILE
ALONG STATE ROUTE 176

BENCH MARK
 S.E. CORNER INLET
 APRON I-480
 STA. 830+00, 110' LT.
 ELEV. 755.04



PLAN

POINTS OF MINIMUM VERTICAL CLEARANCE
 4) ACTUAL = 21'-2 3/8" REQUIRED = 16'-0"
 5) ACTUAL = 21'-2 5/8" REQUIRED = 16'-0"
 6) ACTUAL = 22'-2 5/8" REQUIRED = 16'-0"



PROFILE
ALONG STATE ROUTE 176

NOTE:
 FOR PROPOSED STRUCTURE BLOCK-CURVE DATA AND NOTES, SEE SHEET 1/36.

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SITE PLAN
JENNINGS FREEWAY
STATE ROUTE 176
 OVER
 CONRAIL, LANE OBW-JN AND I-480
 BRIDGE NO. CUY-176-1020
 STA. 94+32.63 TO STA. 99+69.32
 CUYAHOGA COUNTY OHIO
 DESIGNED DRAWN CHECKED REVIEWED DATE REVISED
 T.A.B. EPW. T.J.W. L.E.D. 7-16-92

STRUCTURAL GENERAL NOTES

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

280
395

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:
AS-1-81 DATED 11-27-81
SD-1-69 REVISED 6-12-69
EXJ-4-87 DATED 1-5-89

AND TO SUPPLEMENTAL SPECIFICATION(S)
910 DATED 6-1-91
944 DATED 5-13-91

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:

DESIGN LOADING:

DESIGN LOADING - HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE = 30 LBS. PER SQUARE FOOT

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI
SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
STRUCTURAL STEEL ASTM A572 - YIELD STRENGTH 50,000 PSI

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL, 2 1/2" CONCRETE COVER AND SEALING OF CONCRETE SURFACES

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES TO BE 1" THICK

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

FOOTINGS:

ABUTMENT NO.2 AND PIER FOOTINGS SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN, WHICHEVER IS LOWER.

PILE DRIVEN TO BEDROCK

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES WITH A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR REFUSAL SHALL BE CONSIDERED AS OBTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

THE DESIGN LOAD FOR THE ABUTMENT NO.1 PILES IS 50 TONS PER PILE.
SEE PILING PLAN ON SHEET 4/36.

ITEM 203 EMBANKMENT, AS PER PLAN:

ALL FILL MATERIAL FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT BETWEEN STATIONS 92+00 TO 102+00 SHALL BE 203 GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED A THICKNESS OF MORE THAN SIX (6) INCHES. SEE ROADWAY PLANS FOR QUANTITIES.

CONSTRUCTION CONSTRAINTS:

PRIOR TO DRIVING PILES AT THE REAR ABUTMENT, THE BRIDGE APPROACH EMBANKMENT BEHIND THE REAR ABUTMENT SHALL BE CONSTRUCTED UP TO THE LEVEL OF THE SUBGRADE ELEVATION FOR A MINIMUM DISTANCE OF 200 FEET BEHIND THE ABUTMENT. THE EXCAVATION FOR THE ABUTMENT FOOTINGS AND THE INSTALLATION OF THE ABUTMENT PILES SHALL NOT BEGIN UNTILL THE ABOVE REQUIRED EMBANKMENT HAS BEEN CONSTRUCTED.

CONSTRUCTION CONSTRAINTS:

THE BRIDGE APPROACH EMBANKMENT BEHIND THE FORWARD ABUTMENT SHALL BE CONSTRUCTED UP AT A 1 TO 1 SLOPE FROM ELEVATION 749± AT THE HEEL OF THE FOOTING TO THE SUBGRADE ELEVATION AND FOR A MINIMUM DISTANCE OF 200 FEET BEHIND THE ABUTMENT. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED THE EMBANKMENT IMMEDIATELY BEHIND THE FORWARD ABUTMENT SHALL BE CONSTRUCTED UP TO THE BEAM SEAT ELEVATION AND ON A 1:1 SLOPE UP TO THE SUBGRADE ELEVATION PRIOR TO SETTING THE BEAMS OR GIRDERS ON THE ABUTMENT.

ITEM 507, STEEL POINTS, AS PER PLAN:

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED STEEL "H" PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BLVD., CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688, FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL INC., 3601 N.W. YEDON AVE. P.O. BOX 10559, PORTLAND, OREGON 97210 OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EDGE OF DECK SLAB AS SHOWN ON THE TRANSVERSE SECTION ON SHEET 28/36, TO THE ABUTMENTS AS SHOWN ON SHEET 13/36 & 16/36, EXPOSED SURFACES OF THE PIER. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, AND ALL APPLICATION ARATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOUNDATION BEARING PRESSURE:

ABUTMENT NO. 2 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 3.5 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.
PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 4.5 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

MECHANICAL CONNECTORS:

AN APPROVED TYPE MECHANICAL CONNECTOR FOR REINFORCING BARS SHALL BE PROVIDED WHERE REQUIRED. INSTALLATION OF THE CONNECTORS SHALL CONFORM WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES. CONNECTORS SHALL BE EPOXY COATED AND THE COATING SHALL CONFORM TO THE SAME SPECIFICATIONS AS THE REINFORCING STEEL. COATINGS WHICH HAVE BEEN DAMAGED SHALL BE REPAIRED ACCORDING TO 709.00 OF THE CMS. CONNECTORS SHALL CONFORM WITH AND BE INCLUDED FOR PAYMENT WITH ITEM 509.

ITEM SPECIAL, PAINTING OF NEW STEEL, SYSTEM IZEU:

THE URETHANE FINISH COAT SHALL BE GRAY, FEDERAL STANDARD NO. FS-595A-16440

ESTIMATED QUANTITIES										CALC. DATE	T.A.B. DATE	
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPERSTRUCTURE		GENERAL	AS BUILT	DATE	DATE
							UNIT NO. 1	UNIT NO. 2				
503	21100	200	CU.YD.	UNCLASSIFIED EXCAVATION	200							
503	21102	3993	CU.YD.	UNCLASSIFIED EXCAVATION INCLUDING SHALE	2780	1213						
505	11100	LUMP	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION					LUMP			
507	14400	330	LIN.FT.	STEEL PILES, HP 12 X 53	330							
507	93301	22	EACH	STEEL POINTS, AS PER PLAN	22							
509	15840	762.038	POUND	EPOXY COATED REINFORCING STEEL GRADE 60	264,811	151,511	123,189	222,527				
SPEC.	51149010	LUMP	LUMP	HIGH PERFORMANCE CONCRETE TESTING					LUMP			
SPEC.	51148000	1165	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (DECK) *			402	763				
SPEC.	51148020	249	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (PARAPET) *			89	160				
SPEC.	51148040	2679	CU.YD.	HIGH PERFORMANCE CONCRETE (SUBSTRUCTURE) *	1879	800						
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE (TRIAL MIX)					LUMP			
SPEC.	51267504	4519	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *	1085	1142	817	1475				
513	11600	403,500	POUND	STRUCTURAL STEEL, A572-50 AISC CATEGORY III *			403,500					
513	12400	1,570,000	POUND	STRUCTURAL STEEL, A572-50 AISC CATEGORY III *				1,570,000				
513	20000	7950	EACH	WELDED STUD SHEAR CONNECTORS			4344	3606				
514	00610	1,973,500	POUND	PAINTING OF NEW STEEL, SYSTEM IZEU *			403,500	1,570,000				
516	11210	306.6	LIN.FT.	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL *	224.9	81.7						
516	13600	315	SQ.FT.	1" PREFORMED EXPANSION JOINT FILLER	315							
516	30500	140	LIN.FT.	PVC WATERSTOP	140							
516	45000	56	EACH	STEEL POT BEARINGS *	16	40						
518	21200	621	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC	621							
518	40001	308	LIN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN	308							
518	40011	170	LIN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS AS PER PLAN	170							
601	21001	967	SQ.YD.	CONCRETE SLOPE PROTECTION, AS PER PLAN	967							

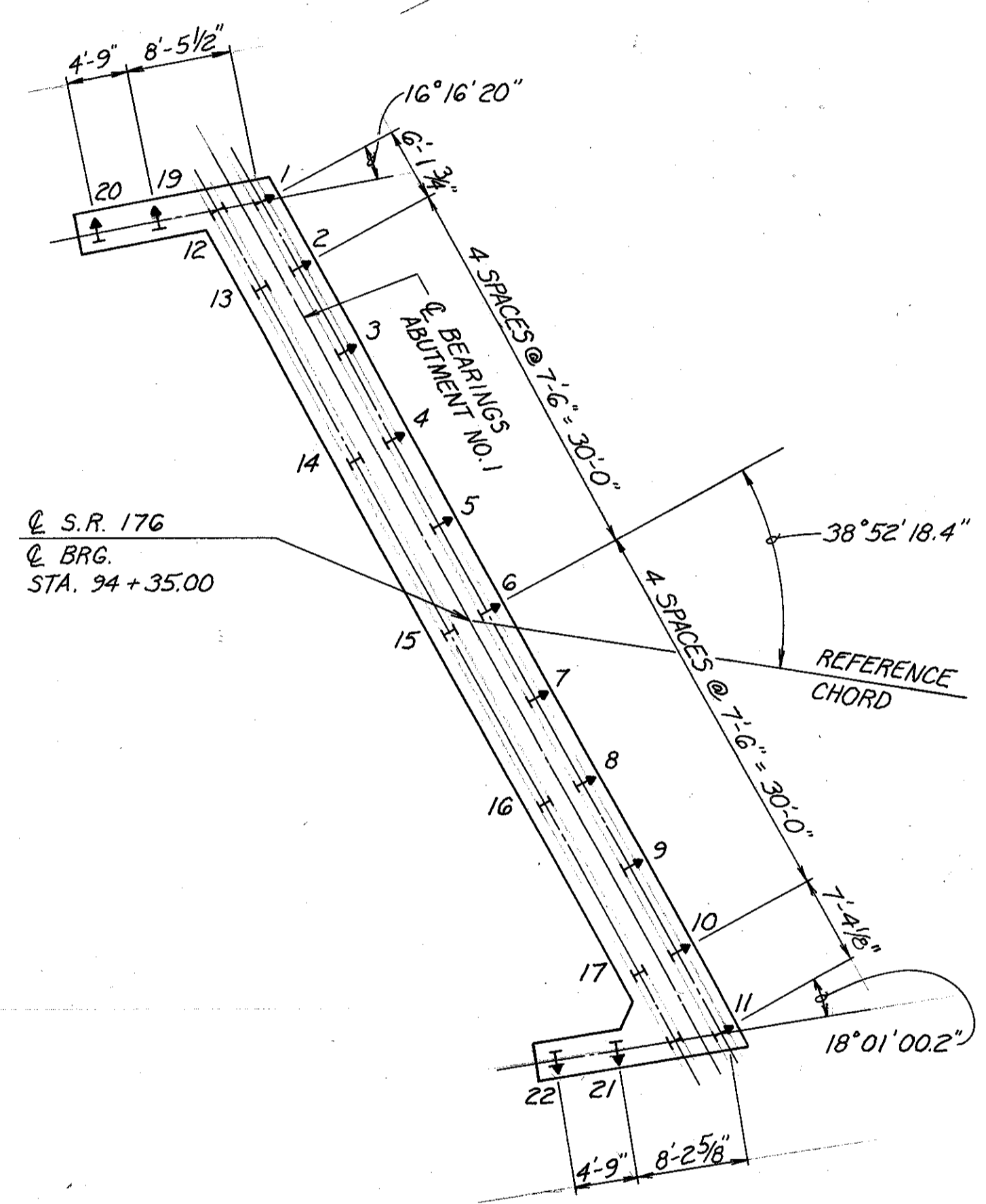
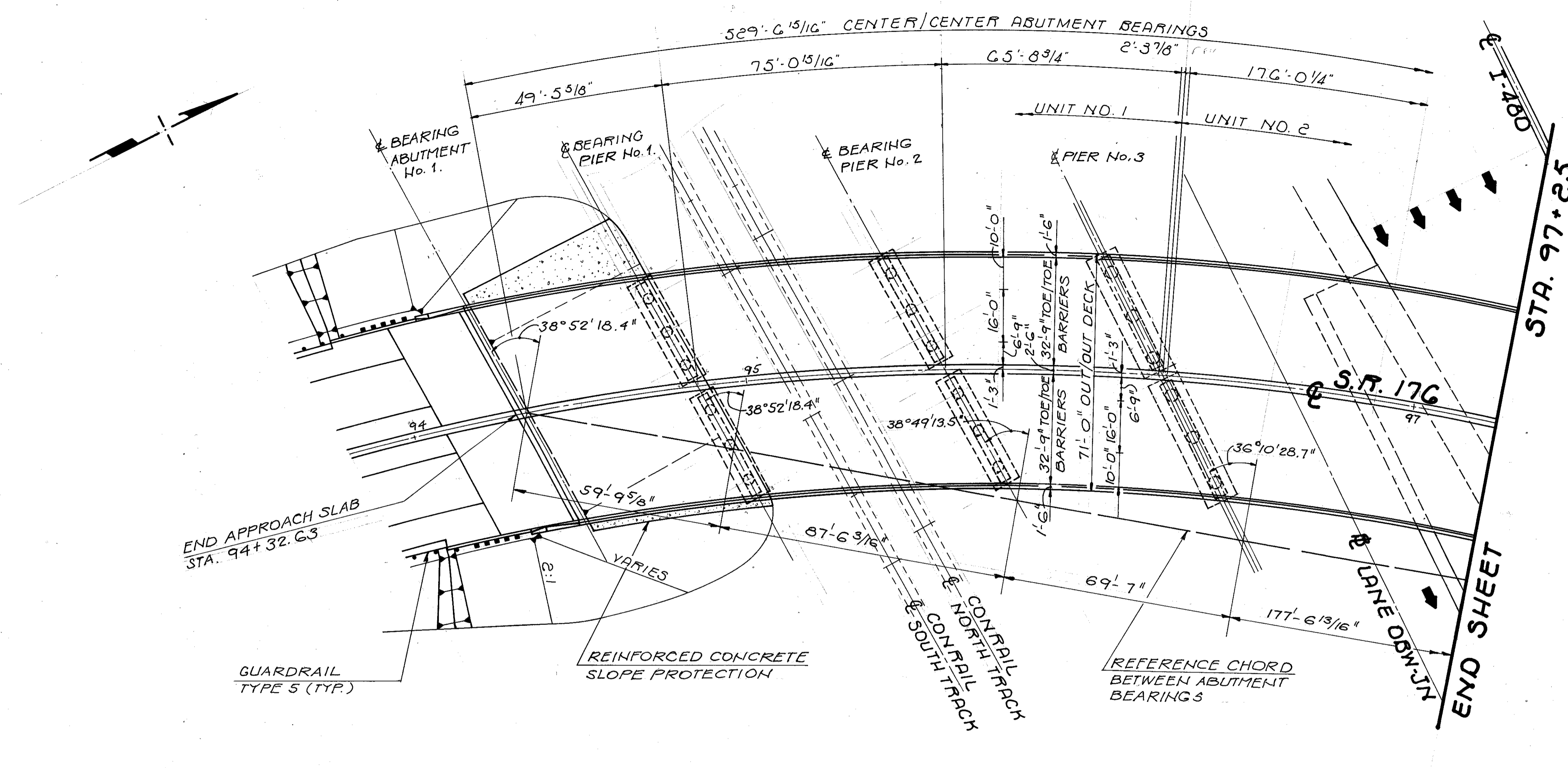
* SEE PROPOSAL NOTE

REVISED 8-14-94

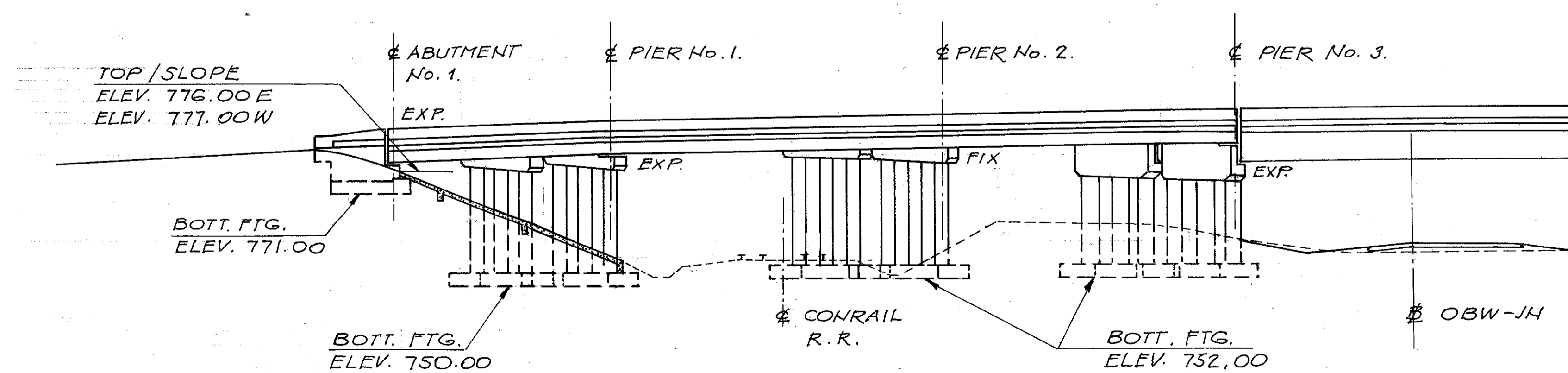
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STRUCTURAL GENERAL NOTES
AND ESTIMATED QUANTITIES
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M	C.T.	A.J.M.	1/94	



PLAN



ELEVATION

ABUTMENT NO. 1
PILE LOCATION PLAN
→ INDICATES 3:1 BATTER

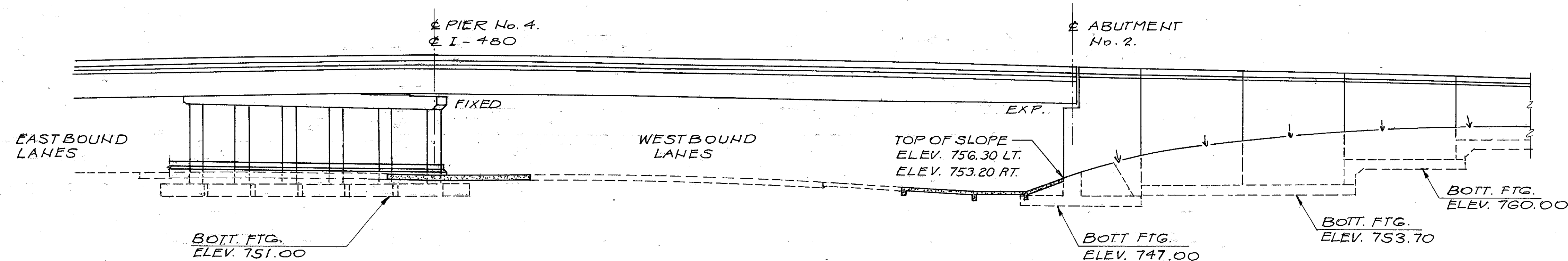
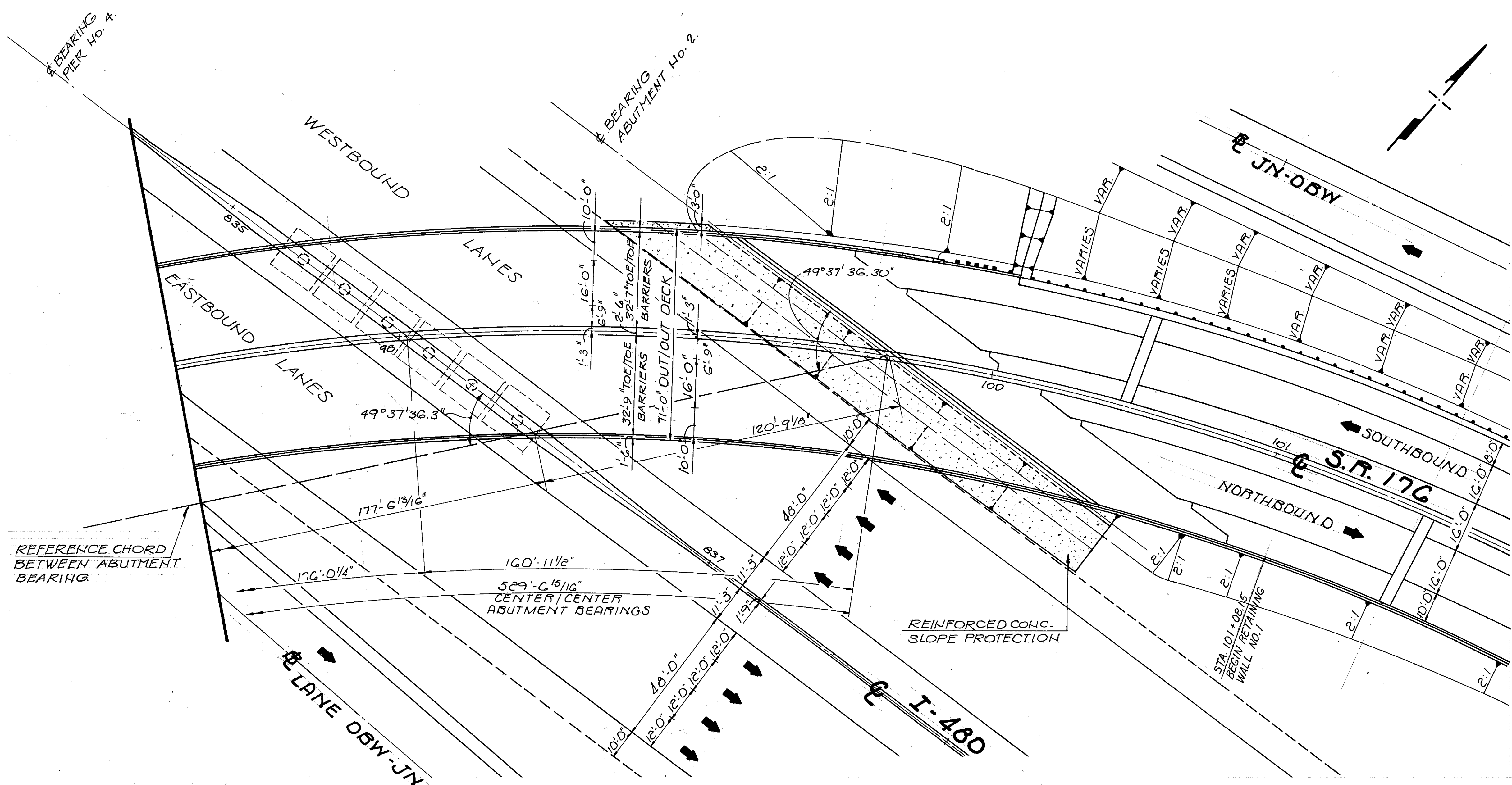
4/36

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GENERAL PLAN & ELEVATION

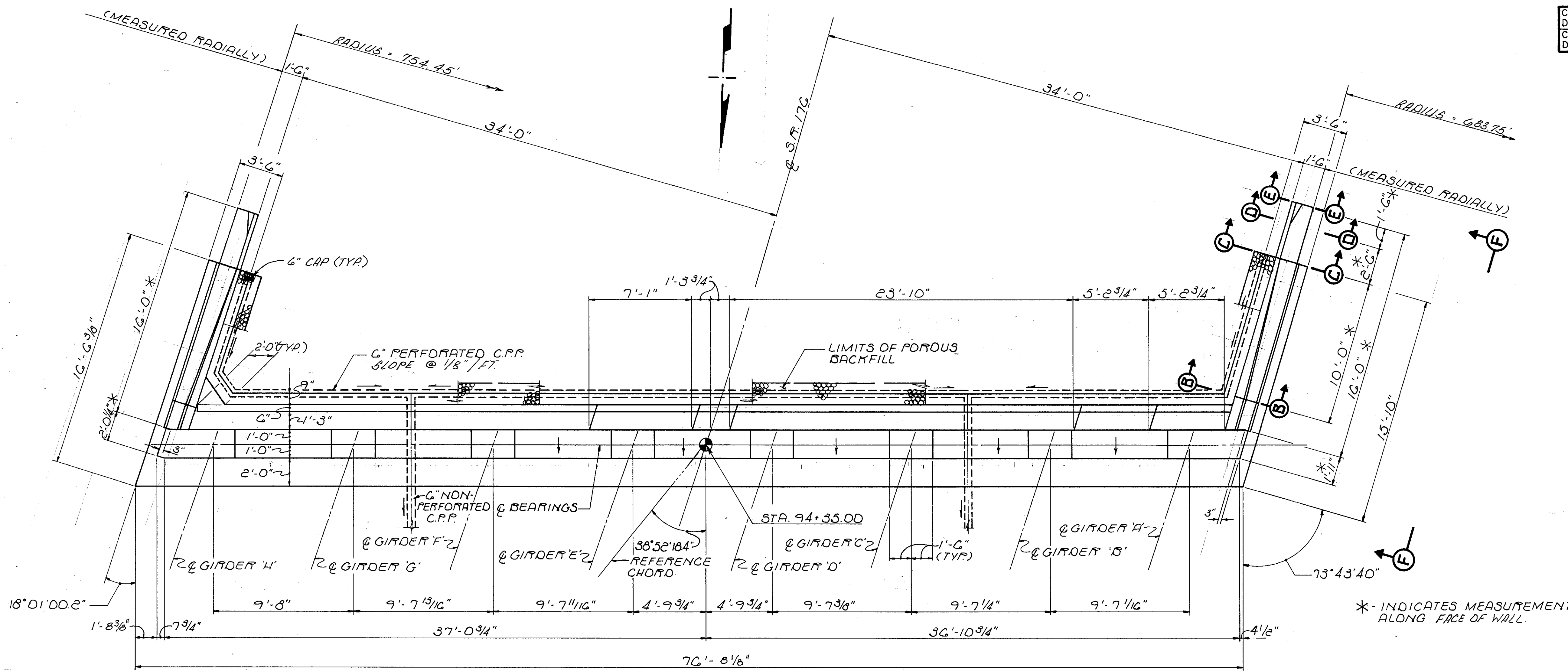
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BRIDGE No. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	C.T.	A.J.M.	1/94	

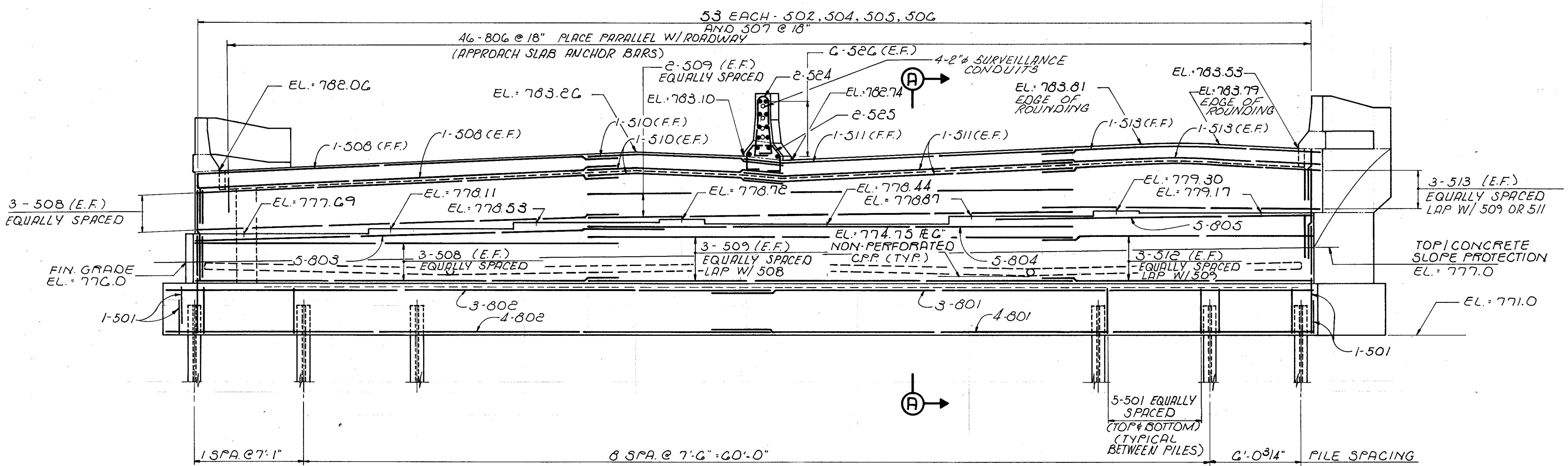


adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
GENERAL PLAN & ELEVATION					
JENNINGS FREEWAY STATE ROUTE 176 OVER CONRAIL, LANE OBW-JN AND I-480 BRIDGE No. CUY-176-1020					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	C.T.	A.J.M.	1/94	

BRUNING 44-239-07195



PLAN



ELEVATION

NOTES:

- 1) THE PREFIX "IA" SHALL BE ADDED TO ALL BAR MARKS IN ABUTMENT NO. 1.
- 2) BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.
- 3) BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.06, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
- 4) CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET [25/36].
- 5) ABBREVIATIONS:
 N.F. - NEAR FACE
 F.F. - FAR FACE
 E.F. - EACH FACE
 P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
 C.P.P. - CORRUGATED PLASTIC PIPE
- 6) FOR LOCATION OF BEARING ANCHOR BOLTS SEE SHEET [25/36].
- 7) MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:
 #5 - 2'-11"
 #8 - 5'-9"
 UNLESS NOTED OTHERWISE.
- 8) FOR SECTIONS AA, B-B, C-C, DD, E-E, F-F SEE SHEET [7/36].

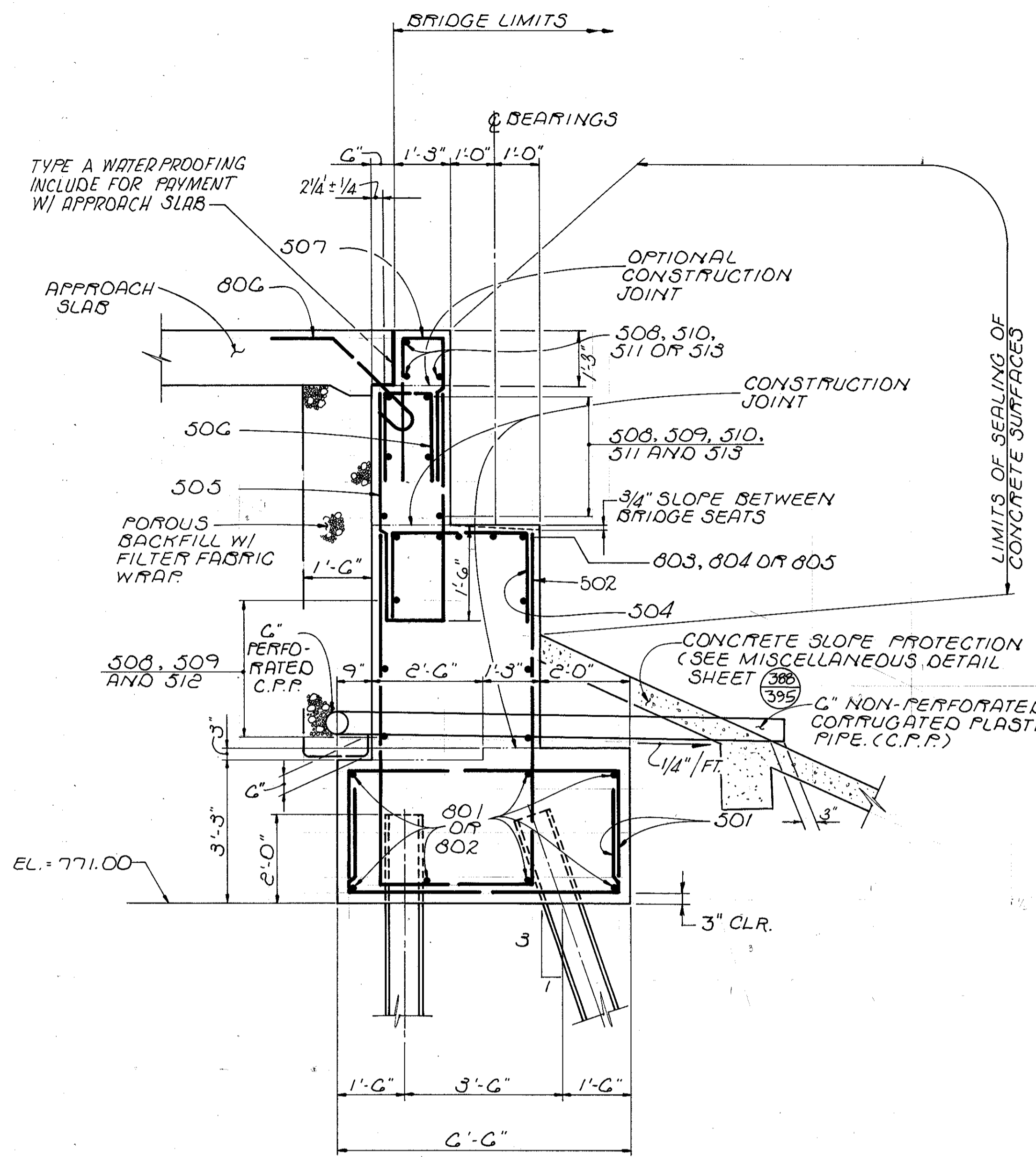
* - INDICATES MEASUREMENT ALONG FACE OF WALL.

C/36

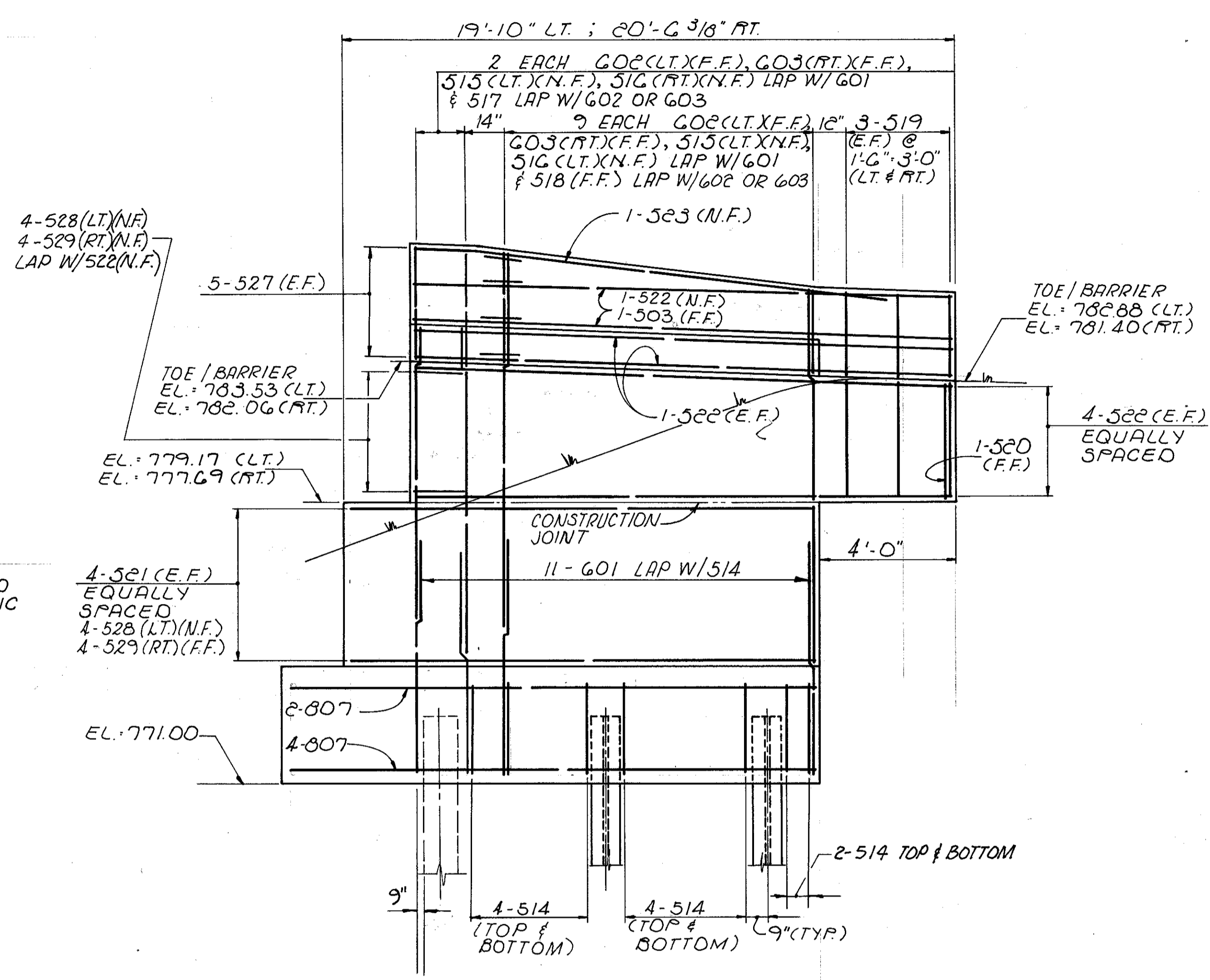
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**ABUTMENT NO. 1
 PLAN AND ELEVATION
 JENNINGS FREEWAY
 STATE ROUTE 17C
 OVER CONRAIL,
 LANE ODW-JN AND I-480
 BRIDGE NO. CUY-17C-1020**

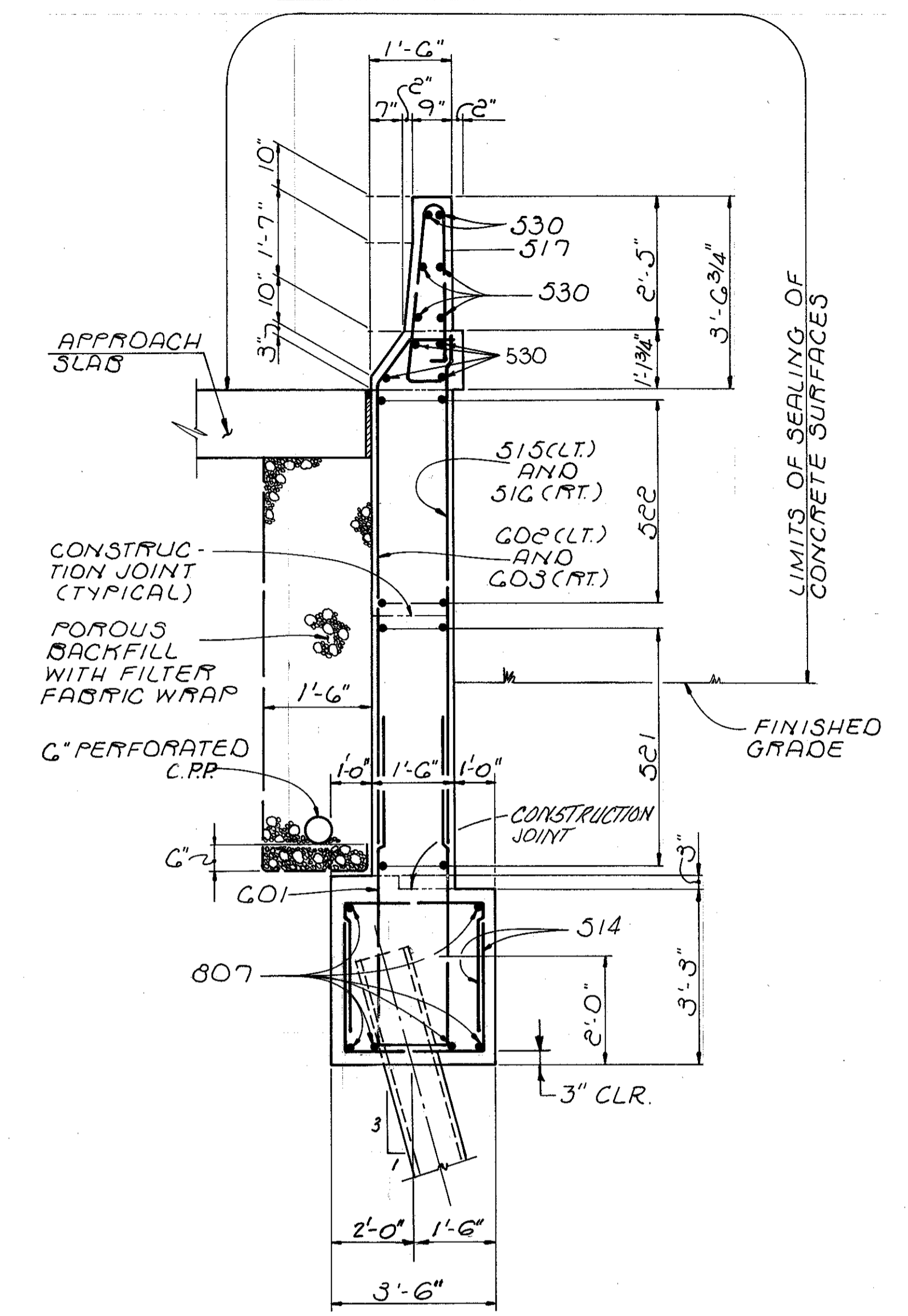
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T.A.B.	T.E.S.	C.T.	AJM	1/94	



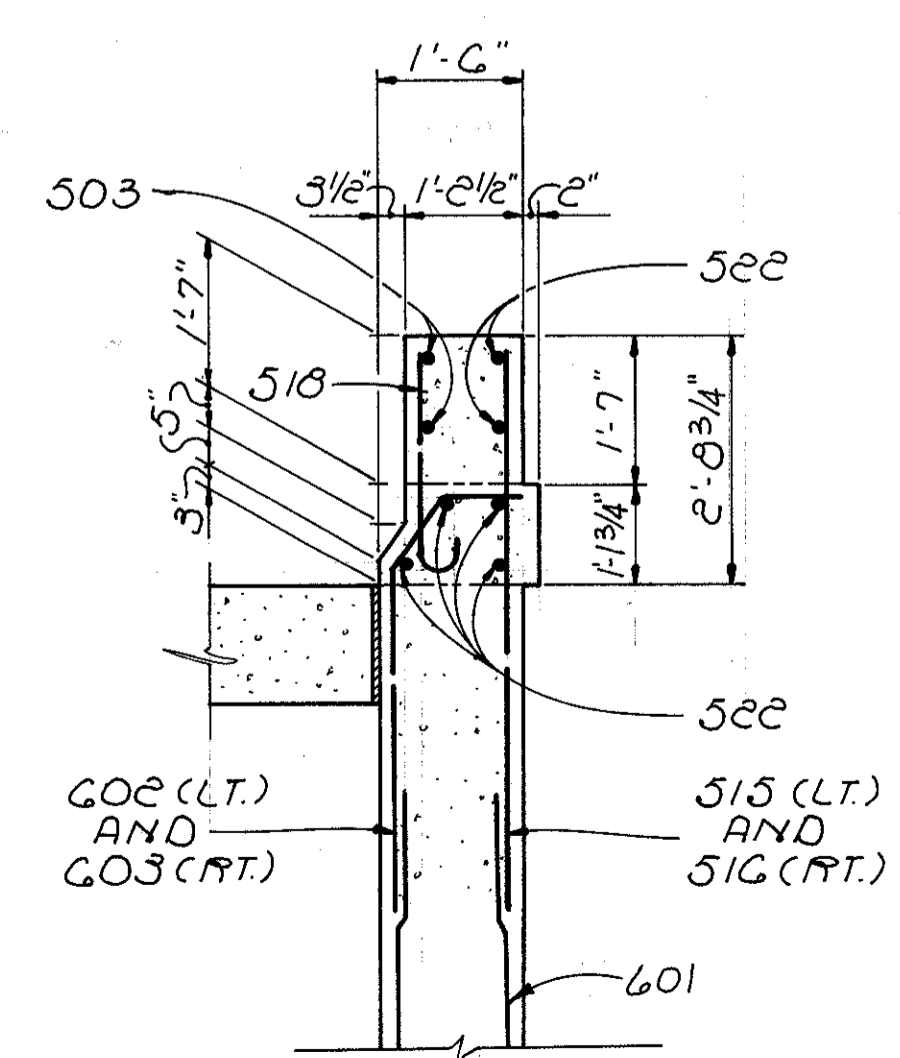
SECTION A-A



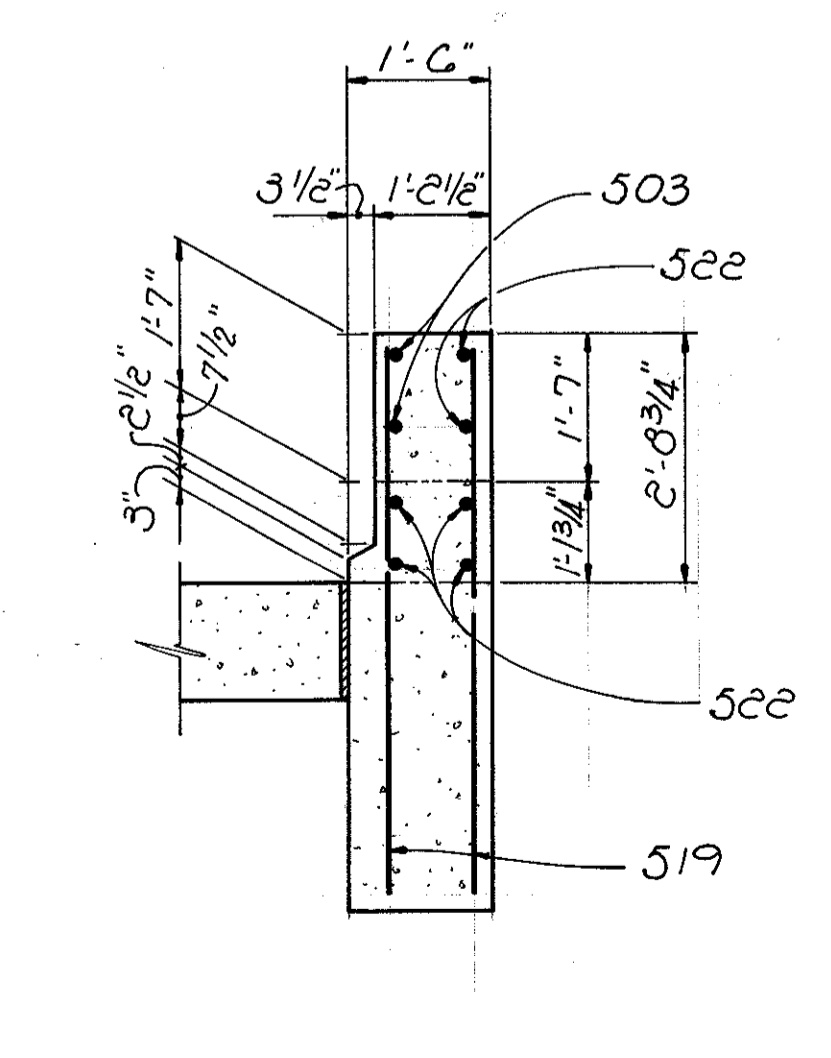
VIEW F-F
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)



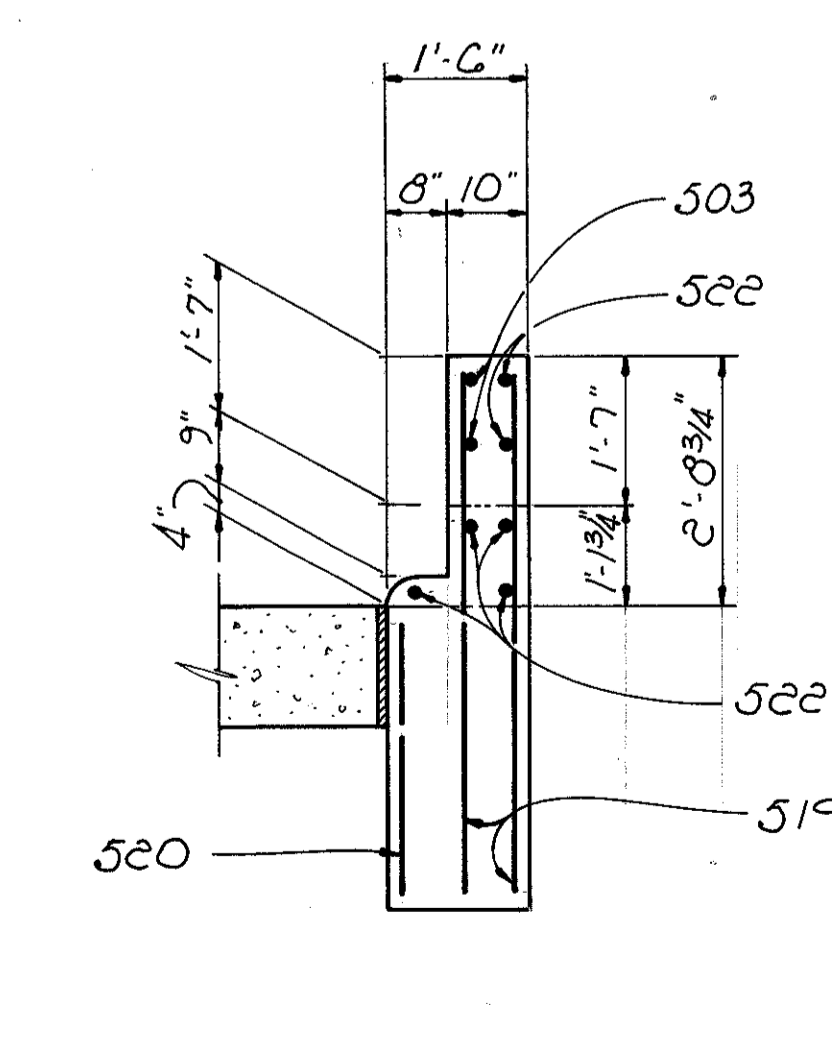
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

- NOTES:**
- FOR LOCATIONS OF SECTIONS B-B THRU E-E SEE SHEET 6/36.
 - ADDITIONAL ABBREVIATIONS
LT = LEFT SIDE OF STRUCTURE WHEN FACING UP STATION
RT = RIGHT SIDE OF STRUCTURE WHEN FACING UP STATION
 - FOR ADDITIONAL NOTES SEE SHEET 6/36

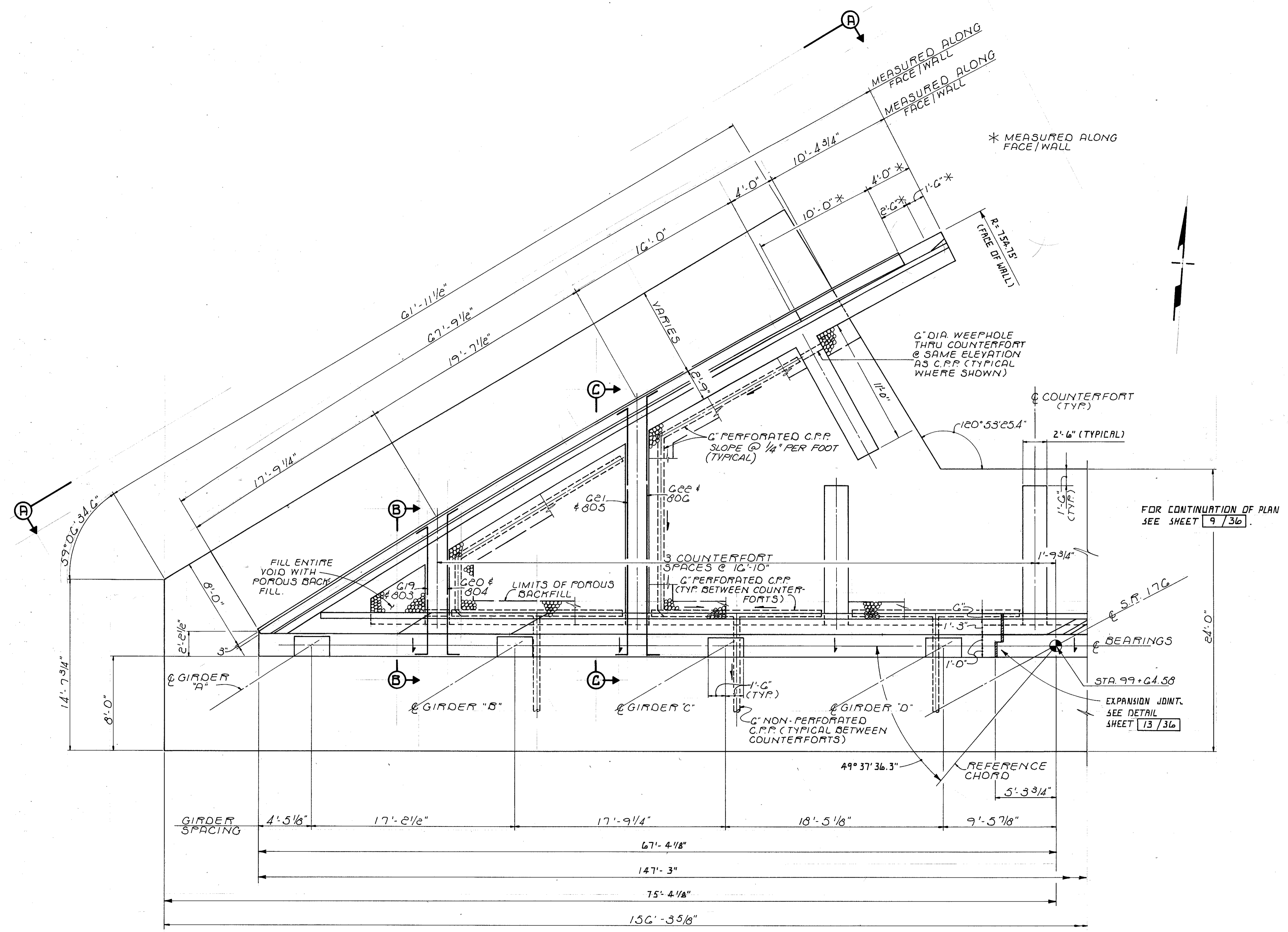
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**ABUTMENT NO. 1
DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
OVER CONRAIL,
LANE 05W-JN AND I-480
BRIDGE NO. CUY-17G-1020**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	C.T.	A.J.M.	1/94	

NOTES:

- 1) THE PREFIX 2A SHALL BE ADDED TO ALL BAR MARKS IN ABUTMENT NO. 2.
- 2) FOR VIEW A-A SEE SHEET 14/36.
- 3) FOR ELEVATION VIEW SEE SHEET 11/36.
- 4) FOR BEARING ANCHOR BOLT LOCATIONS SEE SHEET 25/36.
- 5) FOR ADDITIONAL NOTES AND ABBREVIATIONS SEE SHEET 6/36.
- 6) FOR VIEWS B-B AND G-C SEE SHEET 14/36.



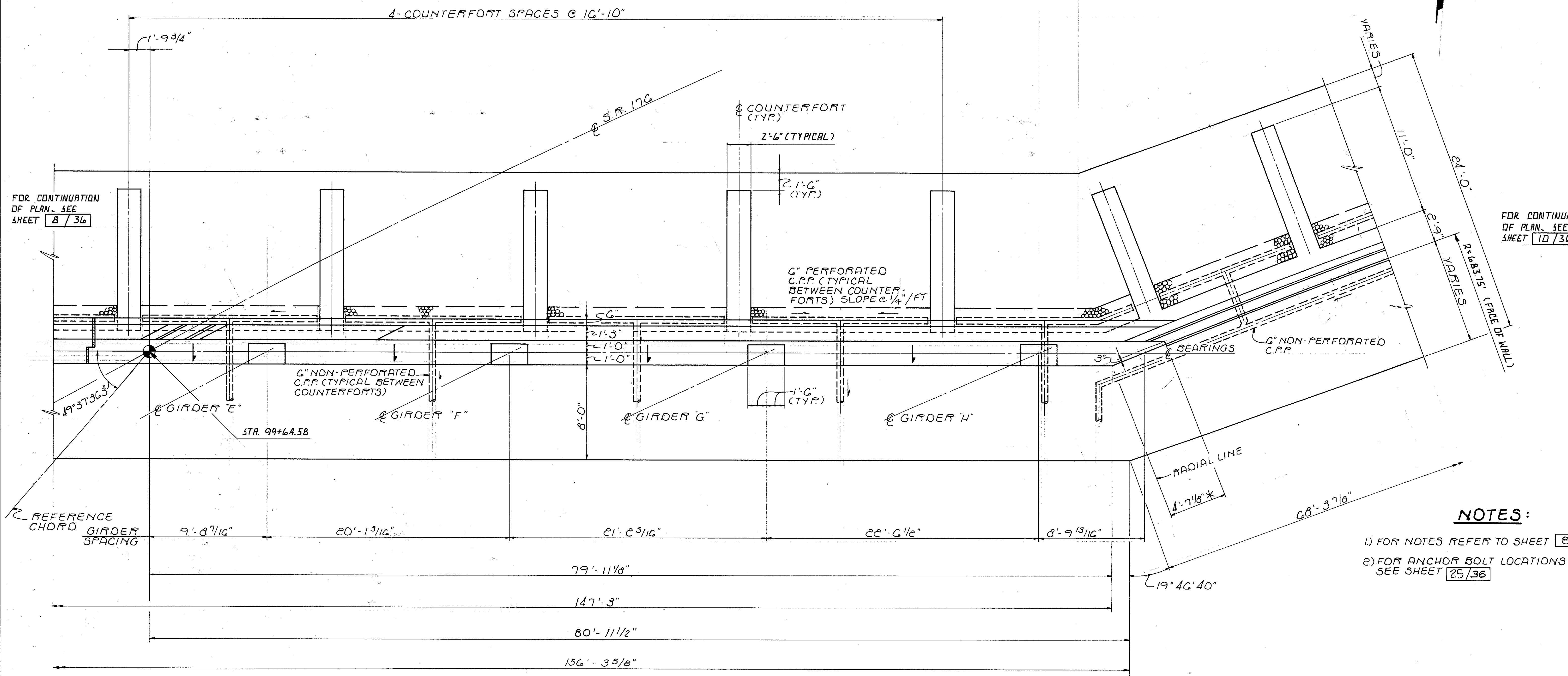
PLAN

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**ABUTMENT NO. 2
PLAN**
JENNINGS FREEWAY
STATE ROUTE 176
OVER CONRAIL,
LANE OBW-JN AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.S.	T.E.S.	T.J.W.	A.J.M.	1/94	

BRUNING 44-232 67195



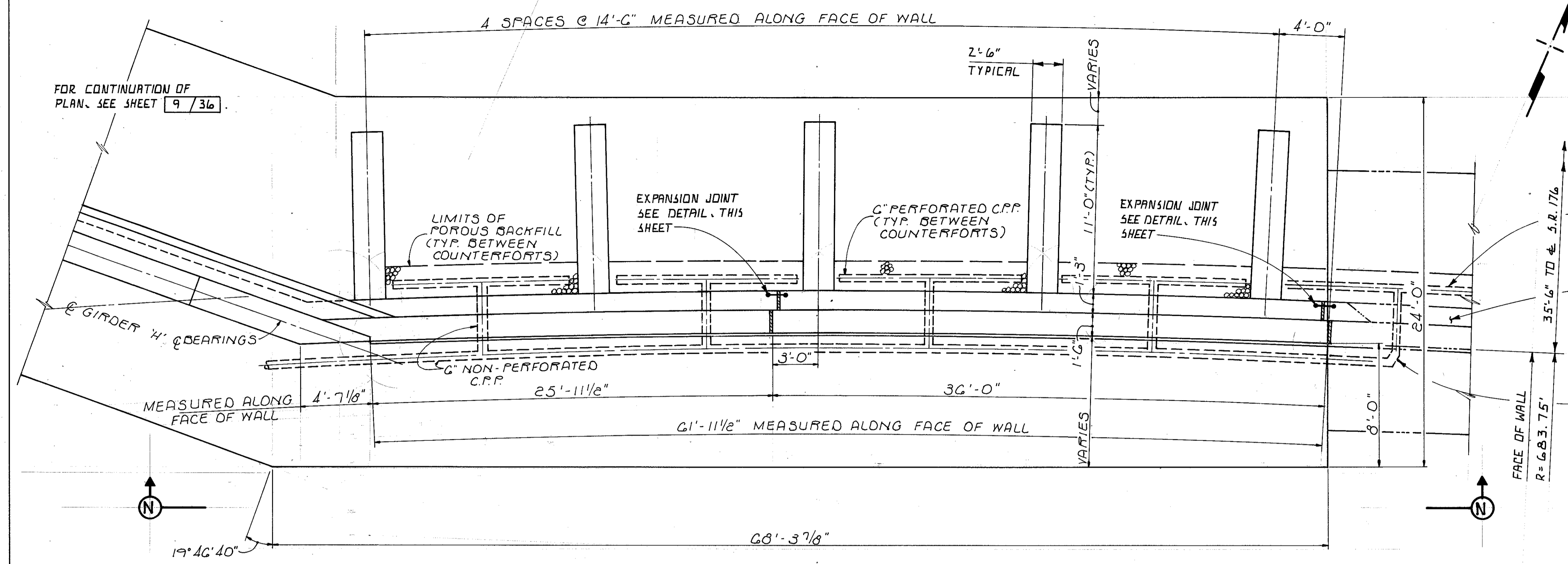
NOTES:

- 1) FOR NOTES REFER TO SHEET 8/36.
- 2) FOR ANCHOR BOLT LOCATIONS SEE SHEET 25/36.

PLAN

adache - ciuni - lynn associates					
CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
ABUTMENT NO. 2					
PLAN					
JENNINGS FREEWAY					
STATE ROUTE 176					
OVER CONRAIL,					
LANE OBW-JN AND I-480					
BRIDGE NO. CUY-176-1020					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	AJM	1/94	

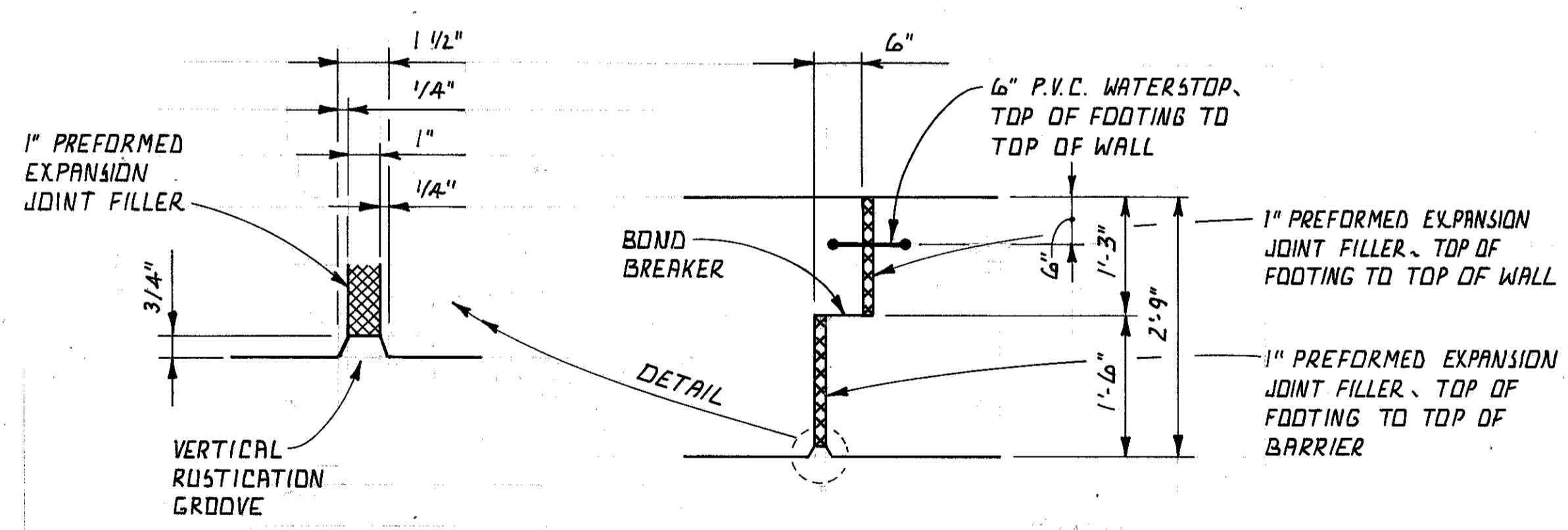
BRUNING 44-238 6/7/95
A-C-L form no. B-1



NOTES:

- 1) FOR VIEW N-N SEE SHEET **15/36**.
- 2) FOR ADDITIONAL ABUTMENT NO. 2 DETAILS SEE SHEET **13/36**.

PLAN
(NORTHEAST WINGWALL)



EXPANSION JOINT DETAIL

10/36

adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
OVER CONRAIL,
LANE OSW-JN AND I-480
BRIDGE NO. CUY-176-1020

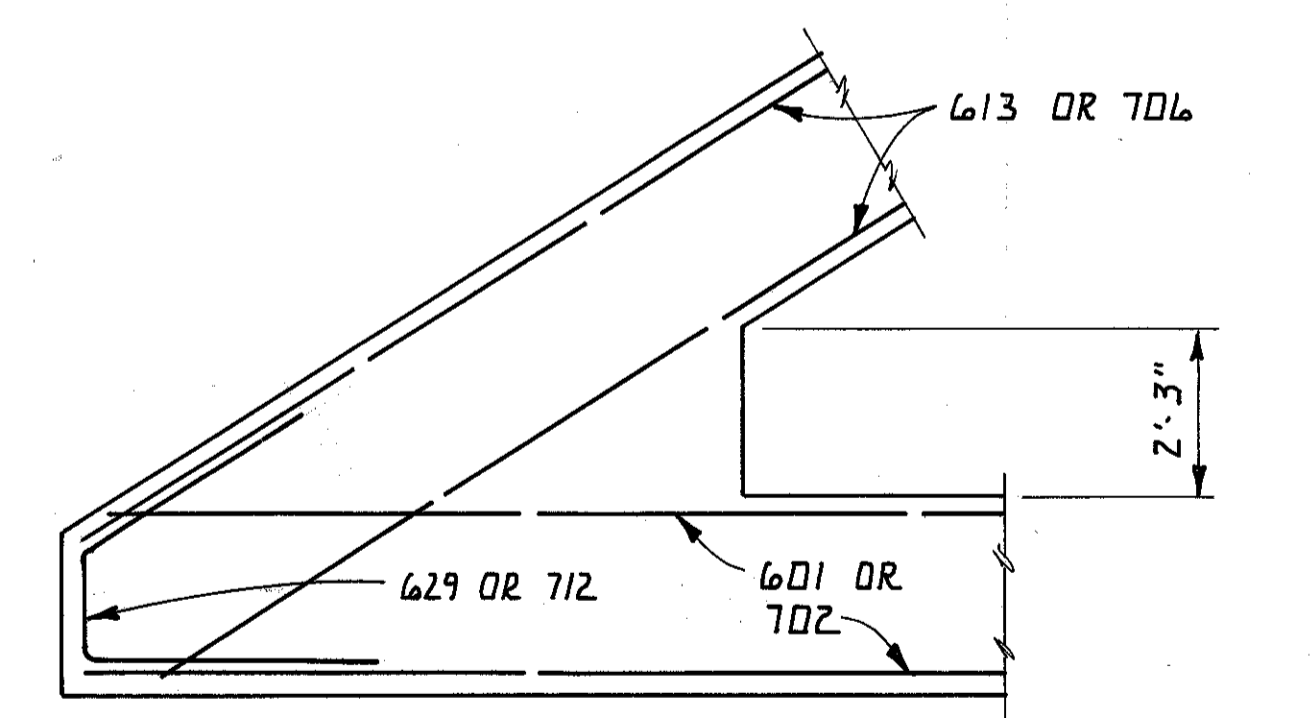
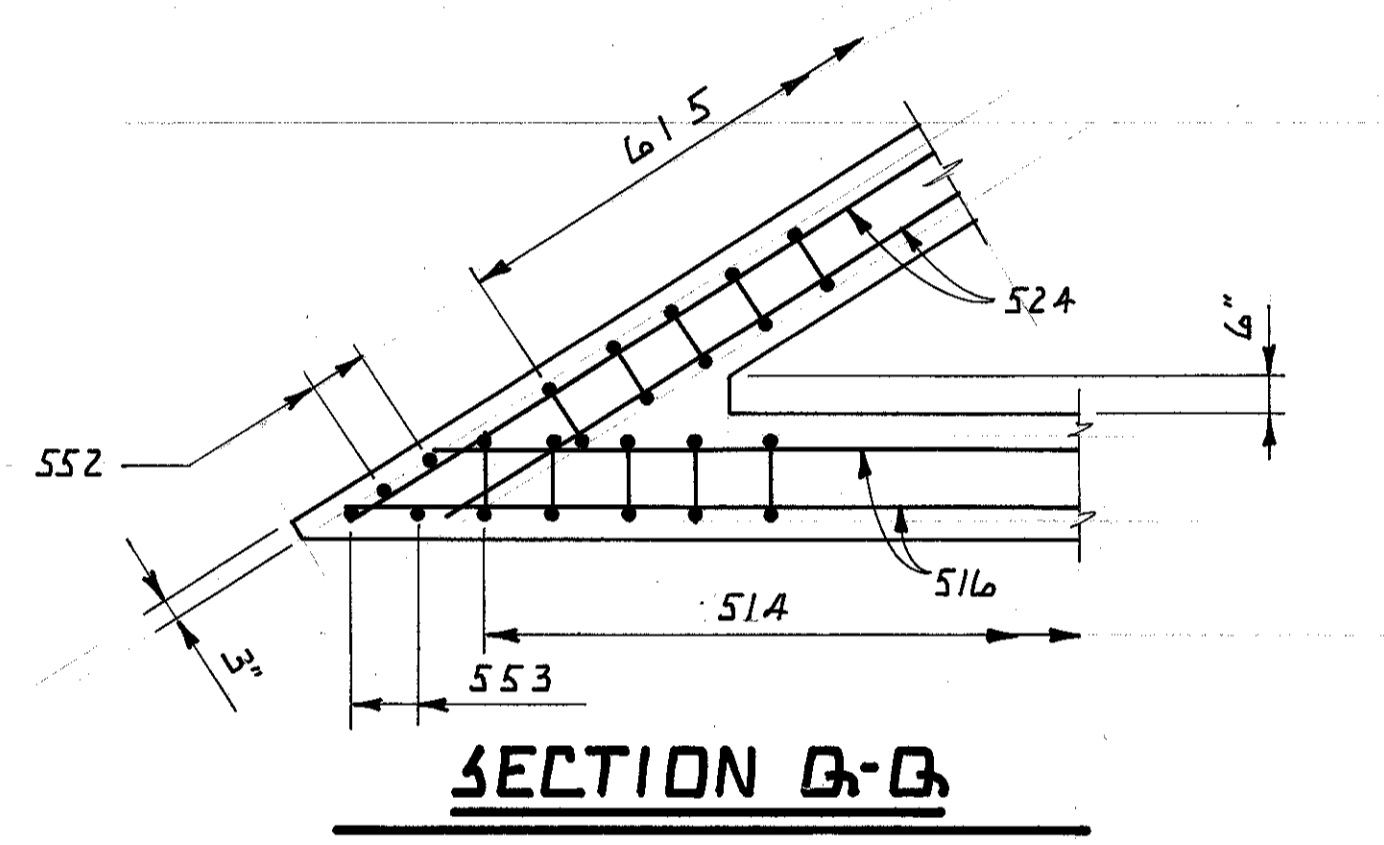
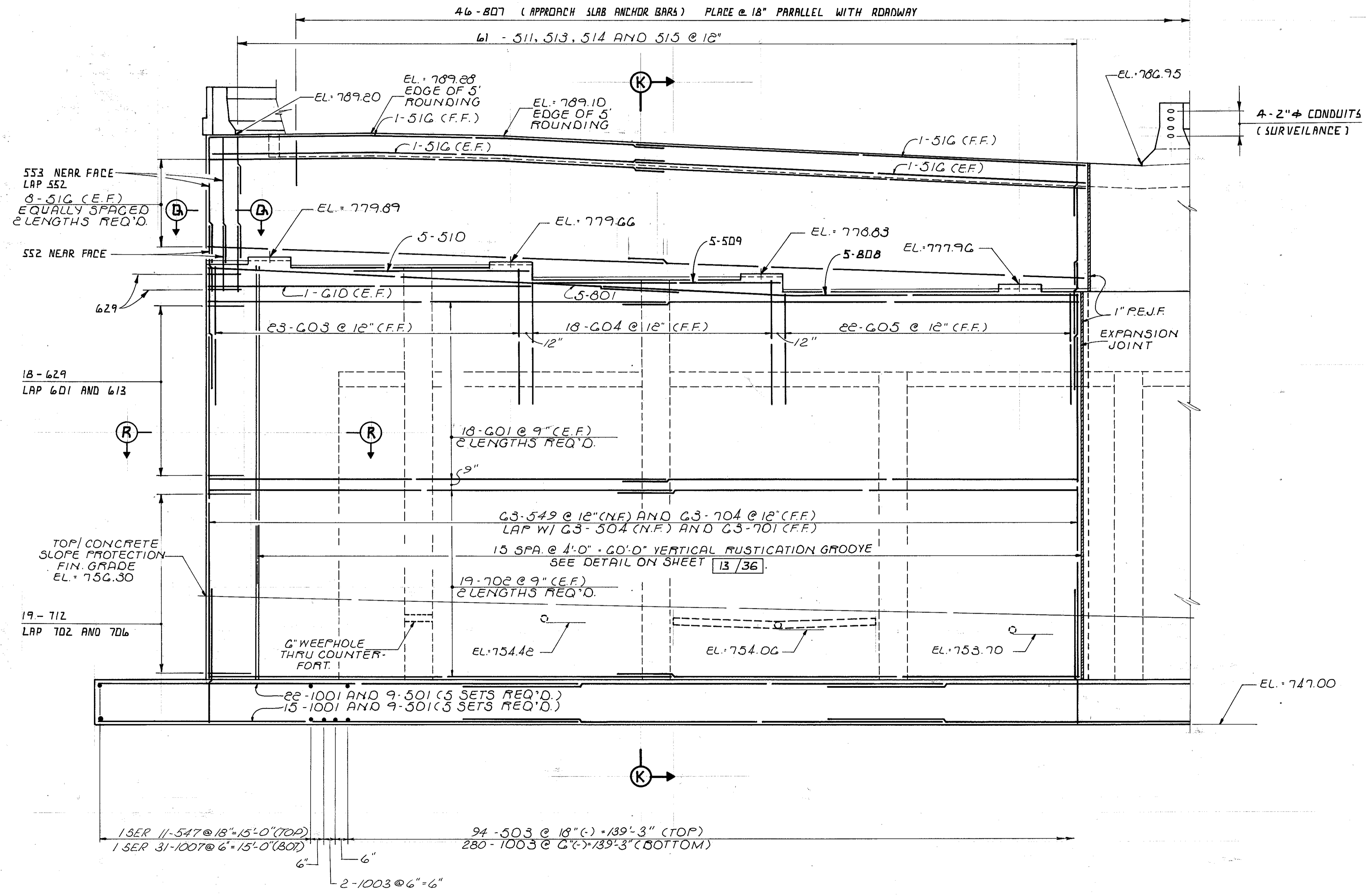
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	

NOTES:

- 1) FOR EXPANSION JOINT DETAIL SEE SHEET 10/36.
- 2) CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET 25/36.
- 3) MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:

- #5 - 2'-11"
- #6 - 3'-6"
- #7 - 4'-5"
- #8 - 5'-9"
- #10 - 9'-3"

UNLESS NOTED OTHERWISE



ELEVATION

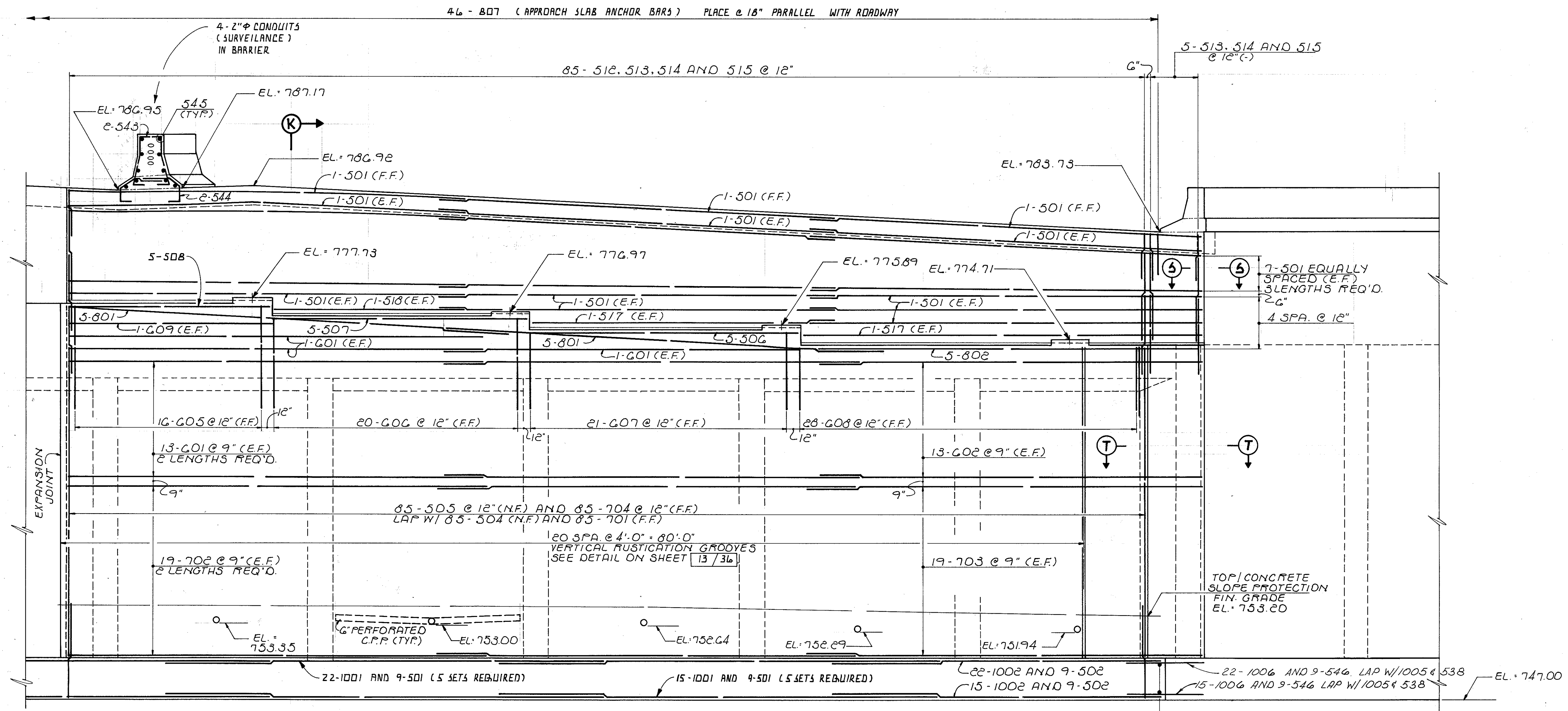
SECTION R-R

VERTICAL REINFORCING NOT SHOWN

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

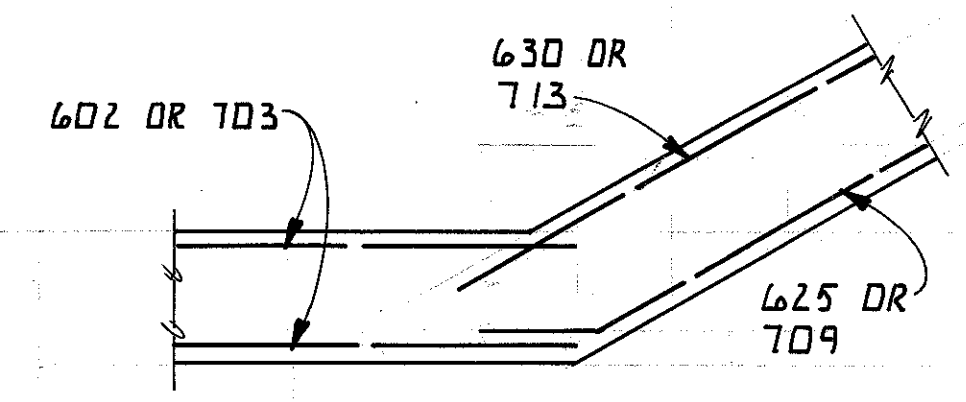
**ABUTMENT NO. 2
ELEVATION
JENNINGS FREEWAY
STATE ROUTE 176
OVER CONRAIL,
LANE O&W-JN AND I-480
BRIDGE NO. CUY-176-1020**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	



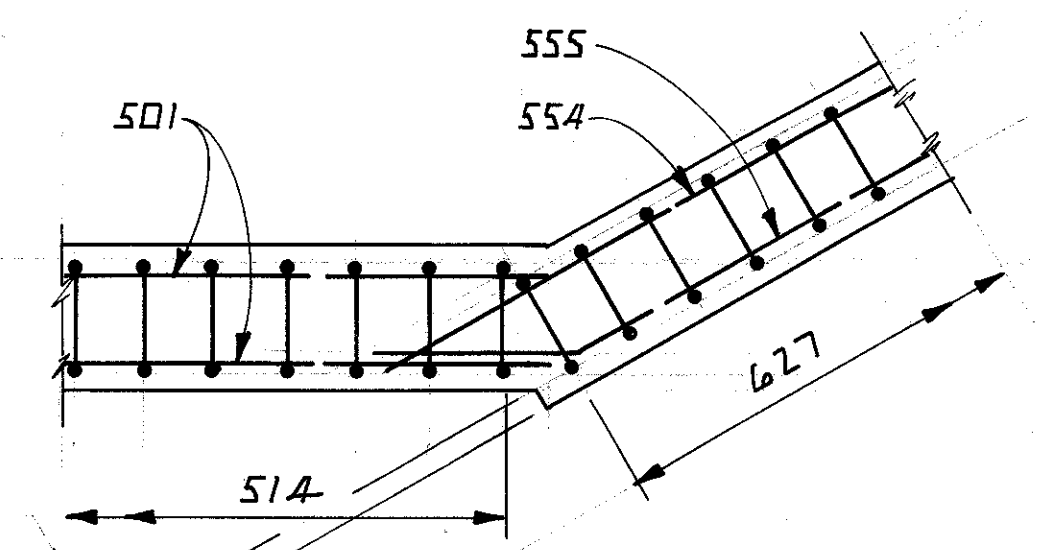
94- 503 @ 18" (-) = 139'-3" (TOP)
280- 1003 @ 6" (-) = 139'-3" (BOTTOM)

ELEVATION



SECTION T-T

VERTICAL REINFORCING NOT SHOWN.



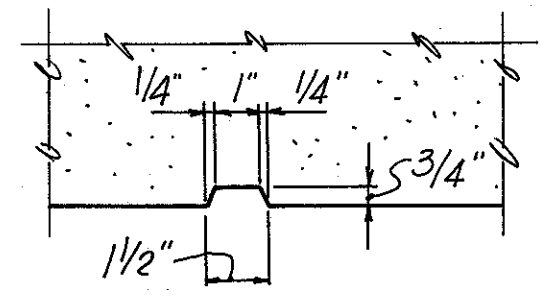
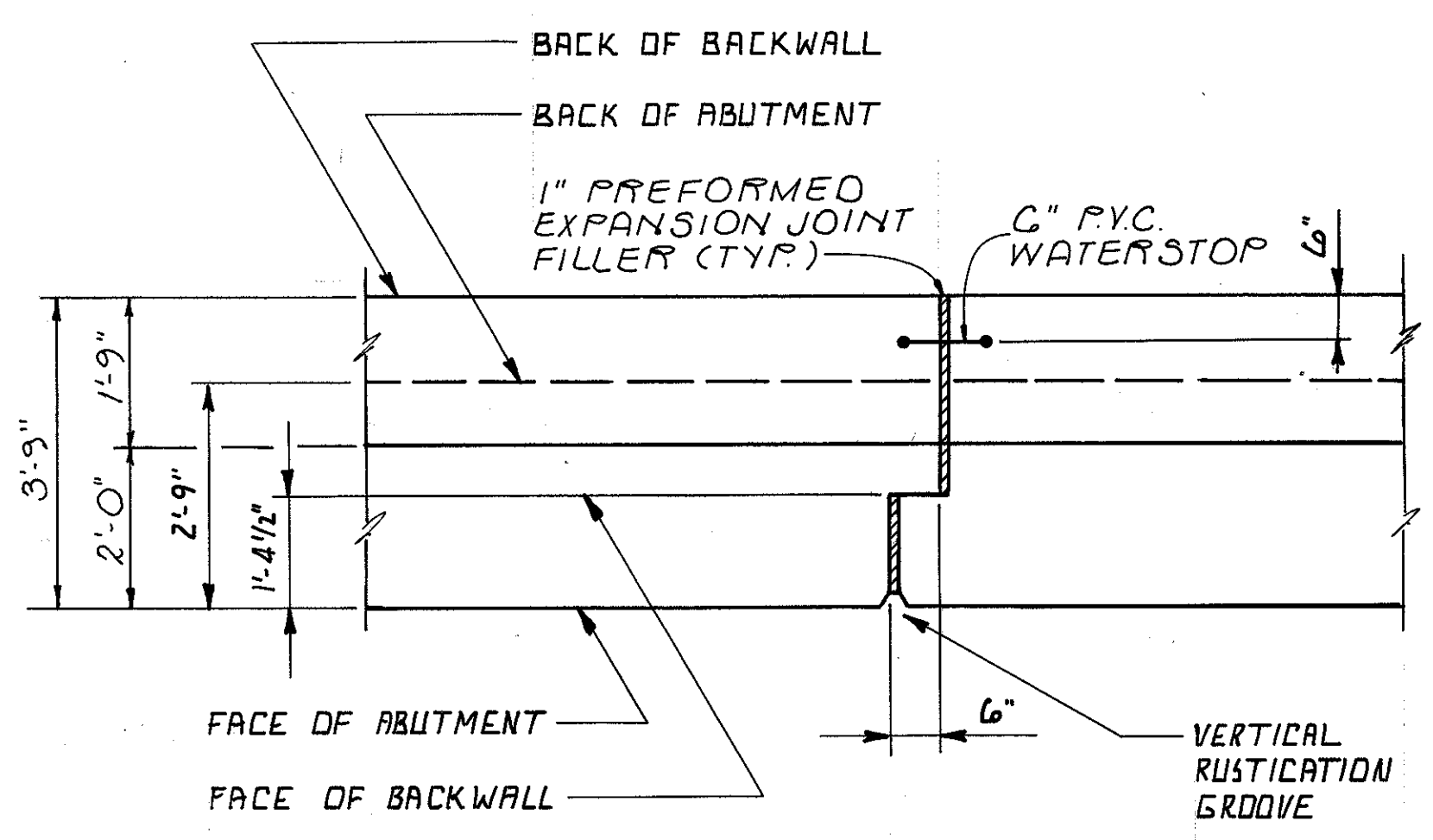
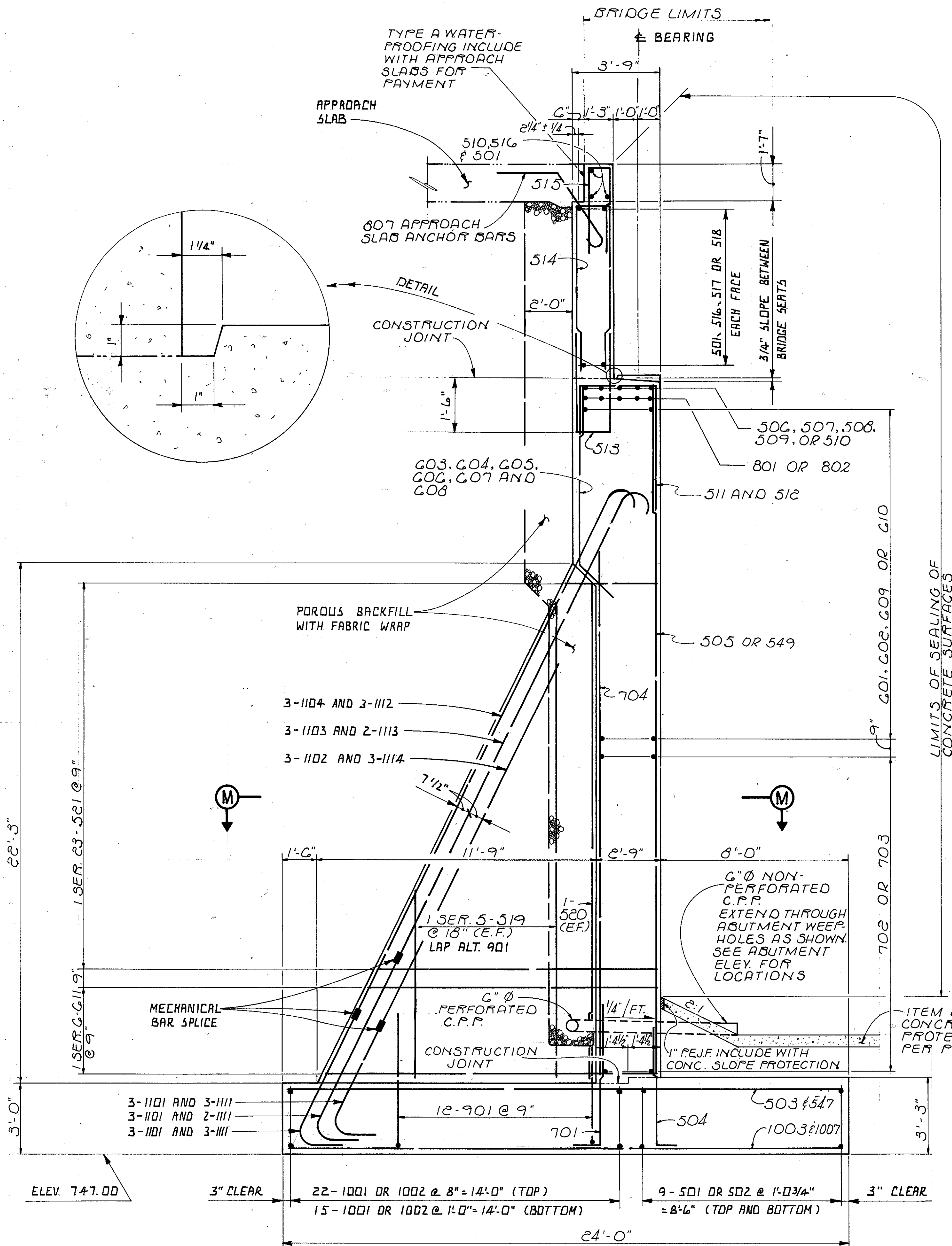
SECTION 5-5

12/36

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

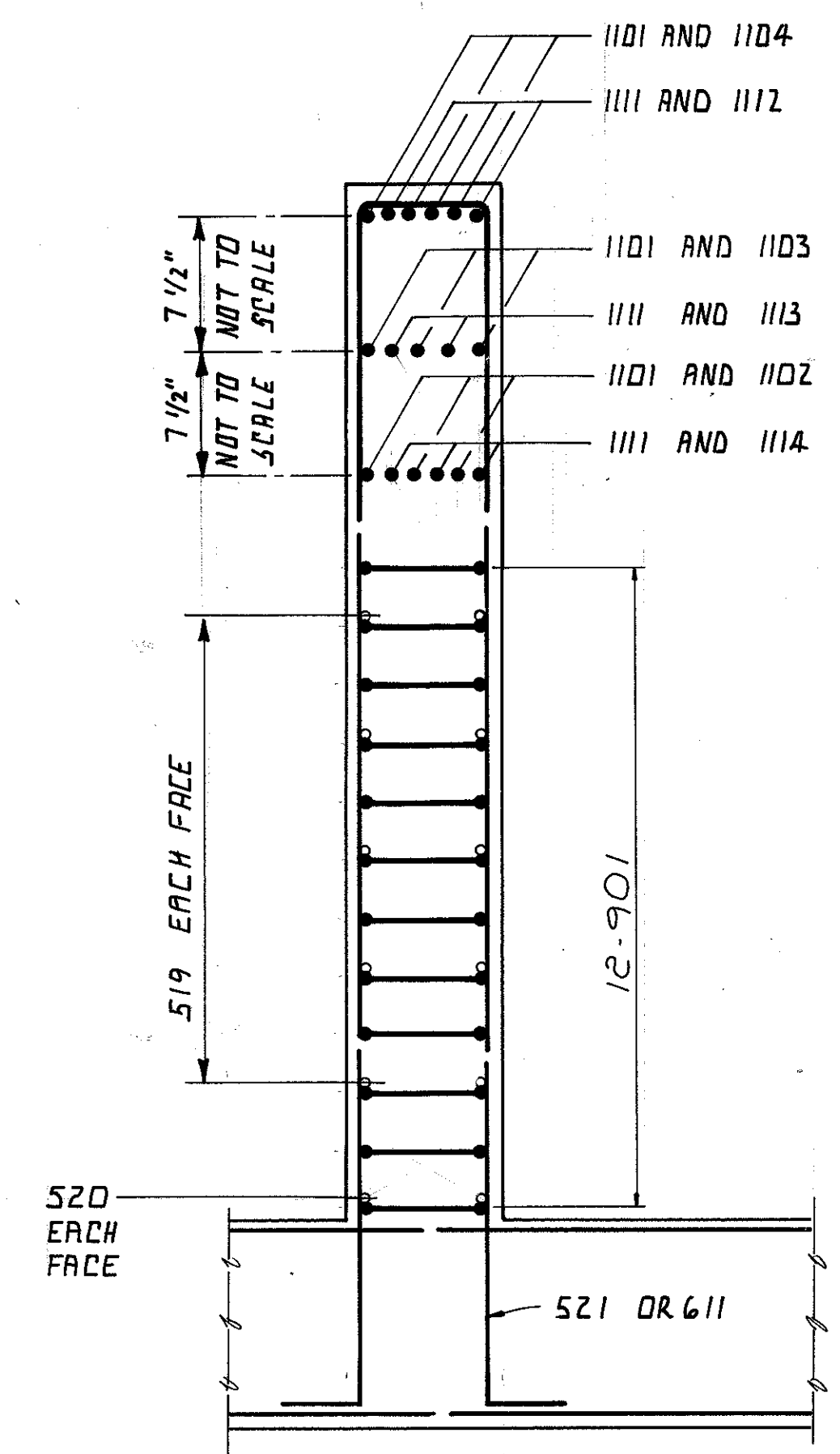
**ABUTMENT NO. 2
ELEVATION
JENNINGS FREEWAY**
STATE ROUTE 17G
OVER CONRAIL,
LANE OSW-JN AND I-480
BRIDGE NO. CUY-17G-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.I.W.	A.M.	1/94	



EXPANSION JOINT DETAIL THROUGH ABUTMENT

VERTICAL RUSTICATION GROOVE DETAIL



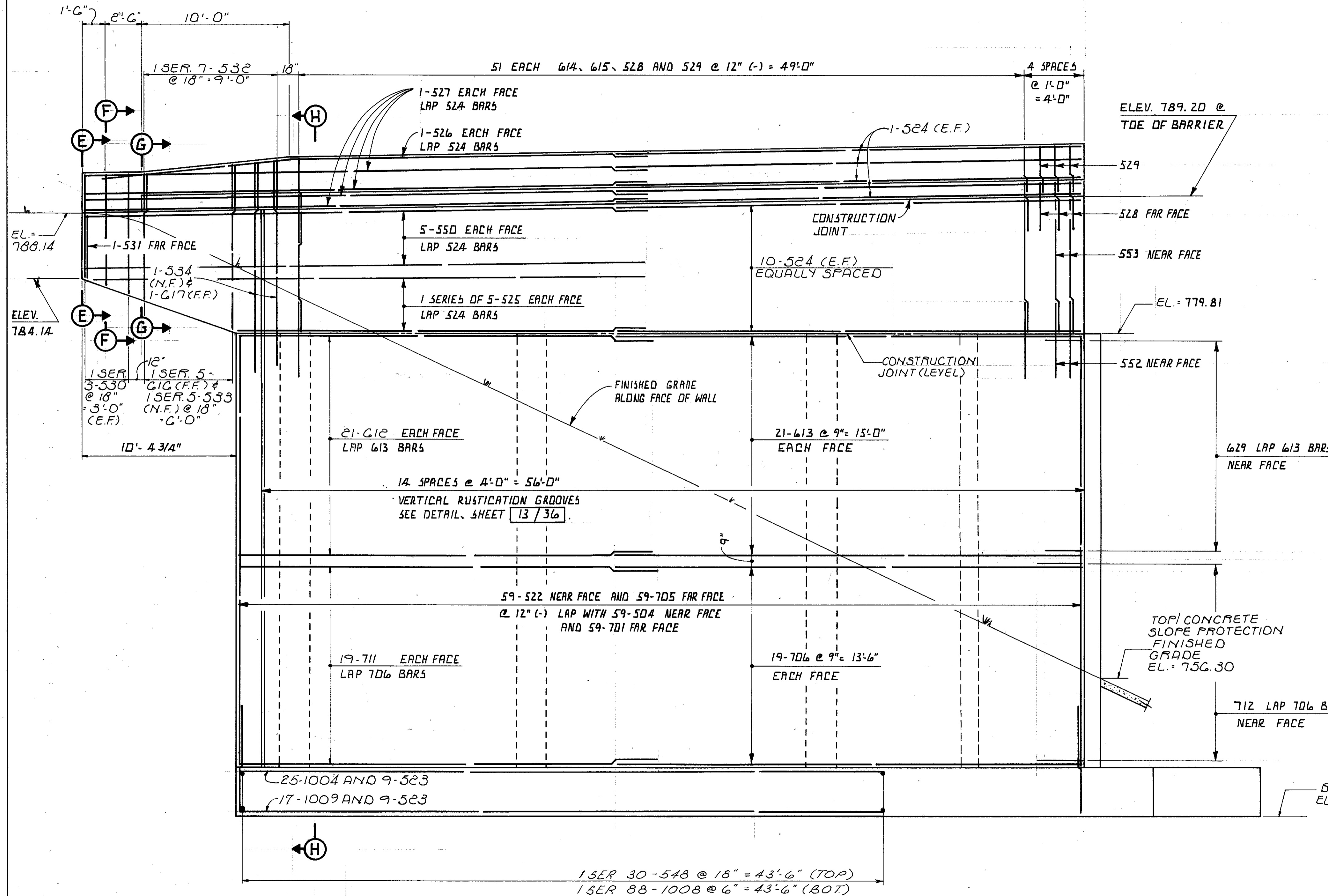
SECTION M-M

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

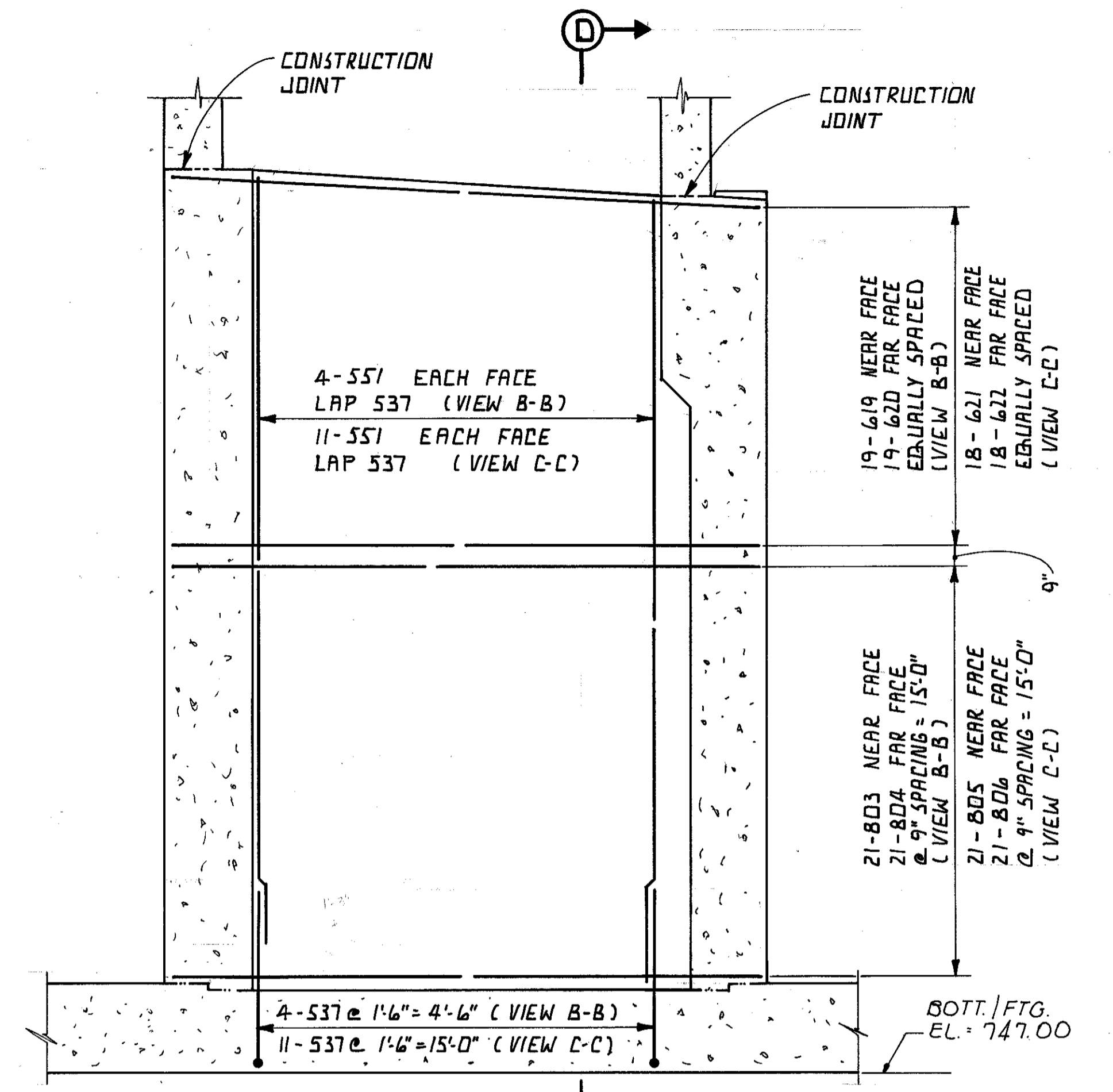
ABUTMENT NO. 2 DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
OVER CONRAIL,
LANE OSW-JN AND I-480
BRIDGE NO. CUY-17G-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.I.M.	1/94	

13 / 36



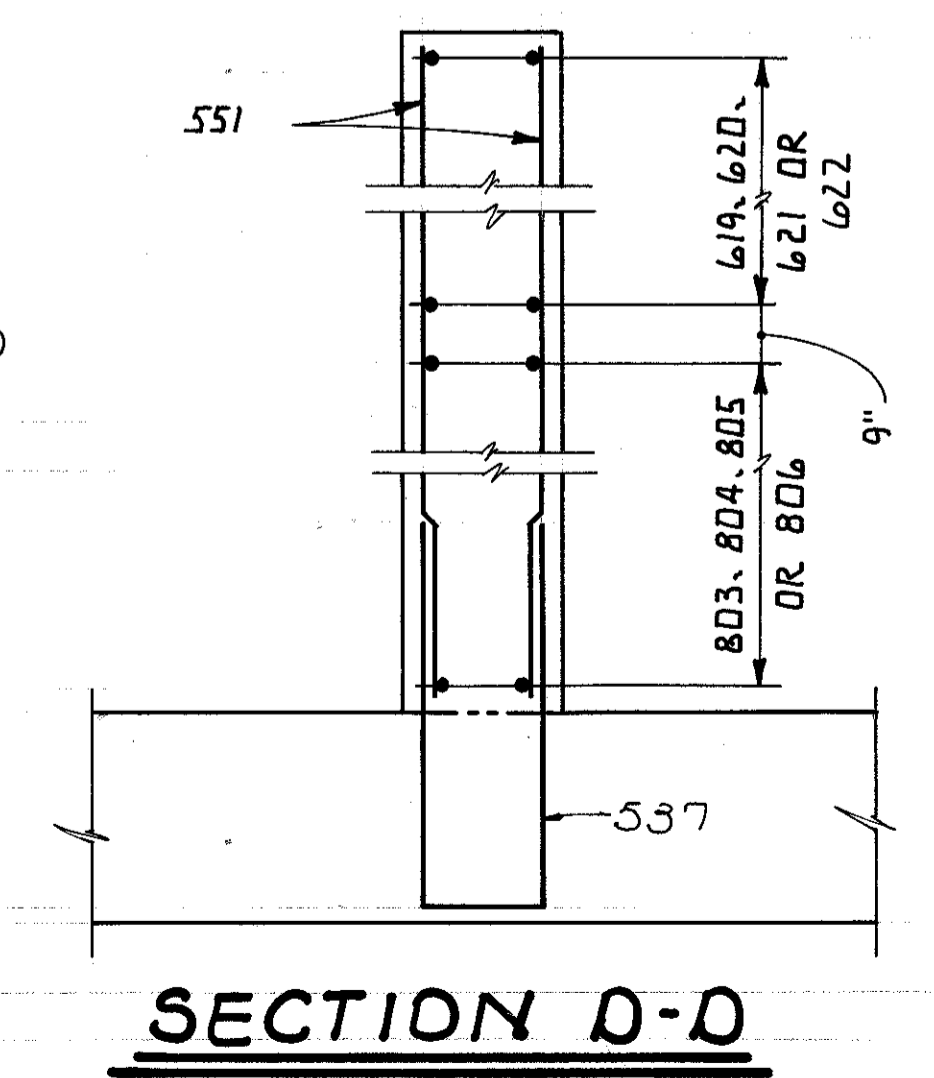
VIEW A-A
(NORTHWEST WINGWALL)



VIEWS B-B AND C-C

NOTES:

1) FOR SECTIONS E-E THRU H-H
SEE SHEET 16/36.



SECTION D-D

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

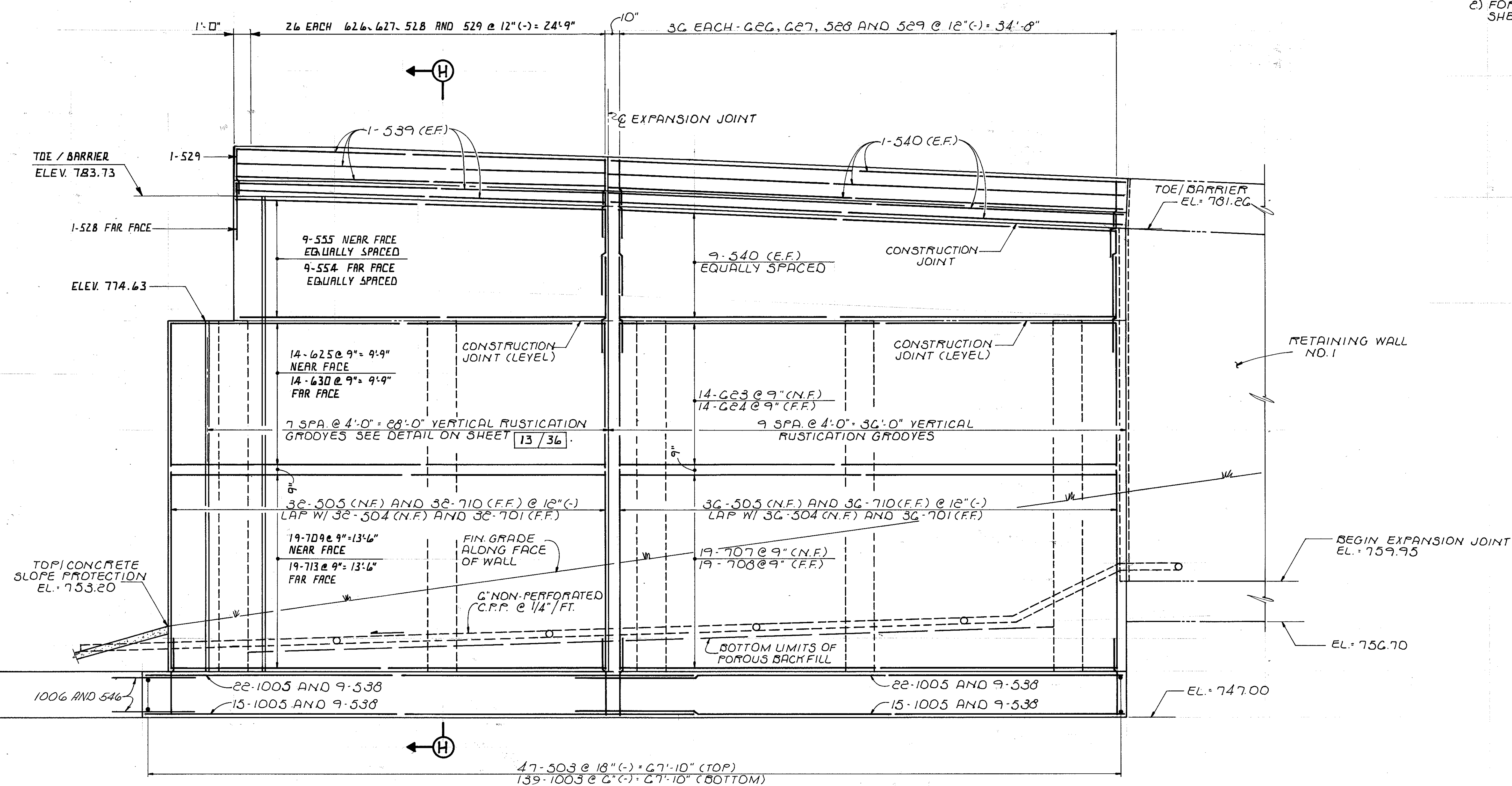
ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
OVER CONRAIL,
LANE OBW-JM AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	

NOTES:

1) THE PREFIX 2A SHALL BE ADDED TO ALL REINFORCING BAR MARKS IN WINGWALLS AT ABUTMENT NO. 2.

2) FOR ADDITIONAL NOTES SEE SHEET NO. **8/36**.



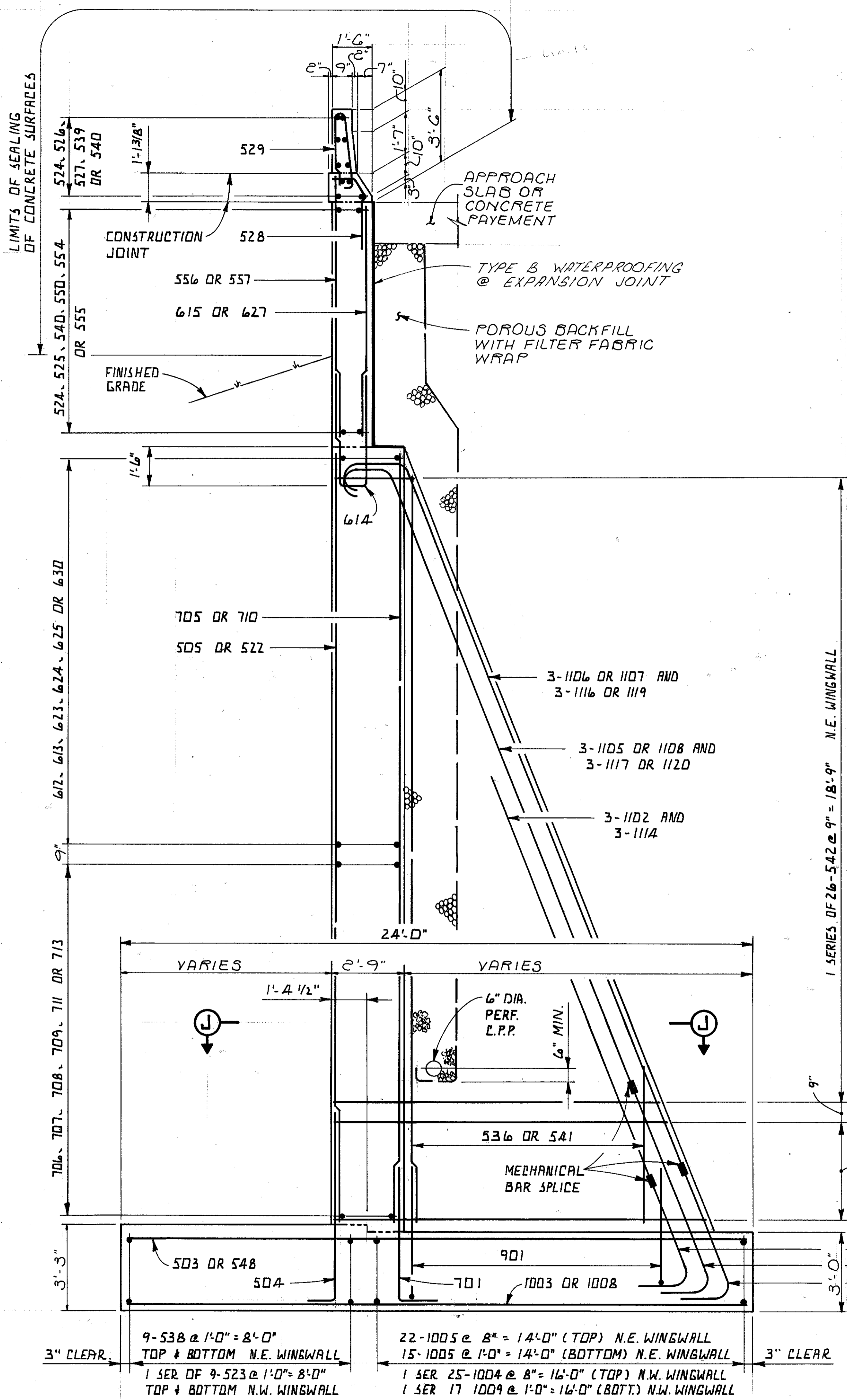
VIEW N-N
(NORTHEAST WINGWALL)

15/36

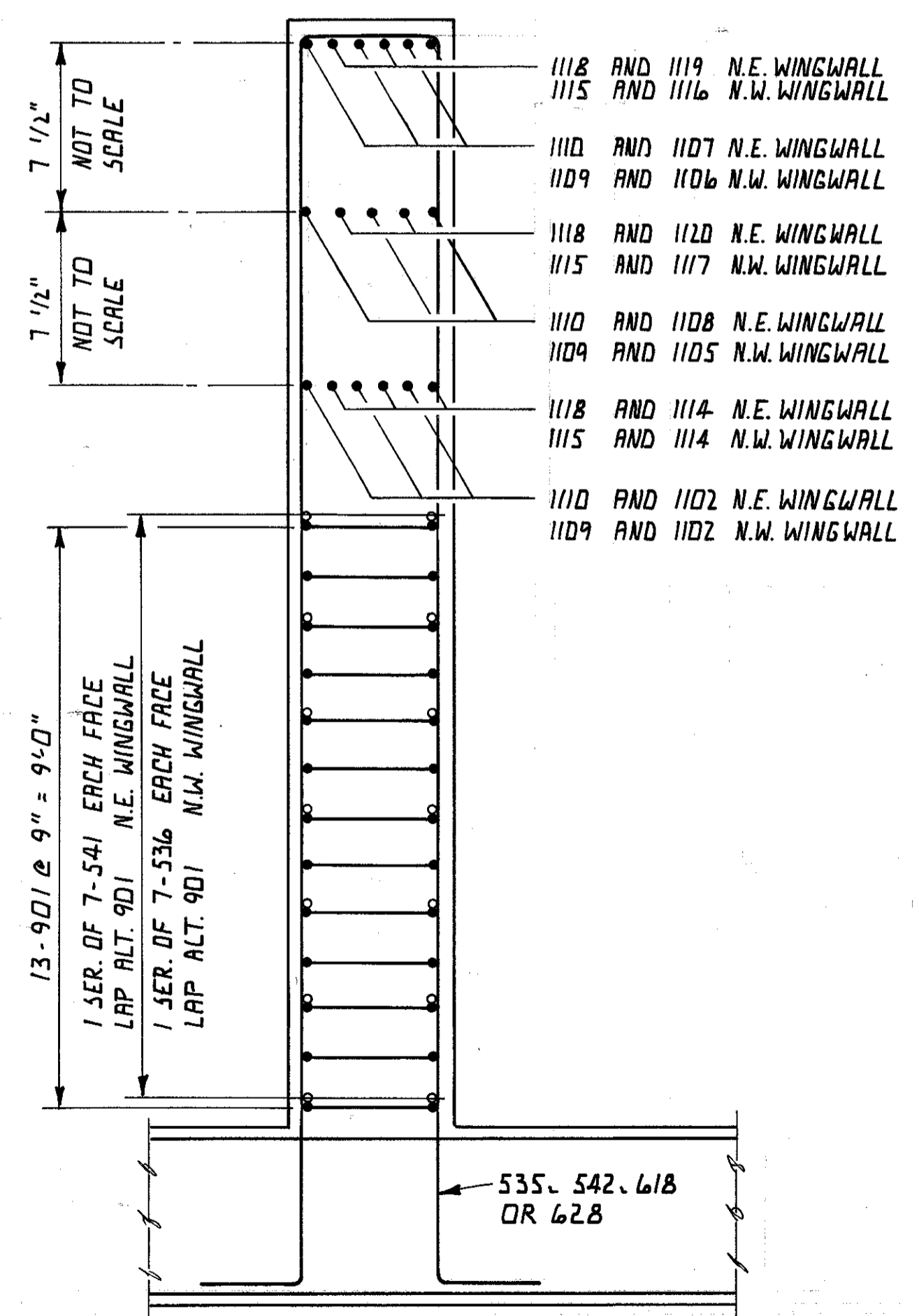
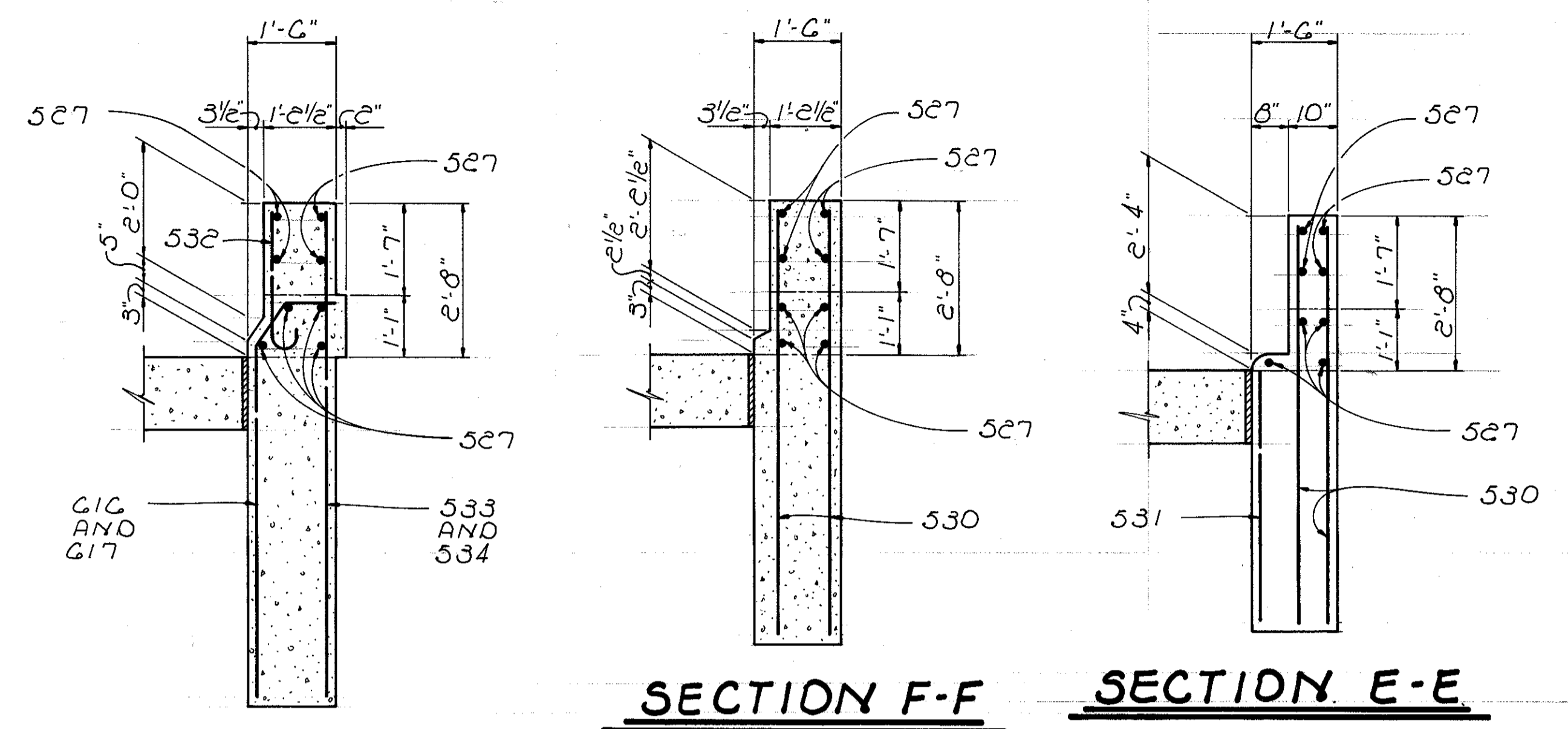
adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
OVER CONRAIL,
LANE OSW-JN AND I-480
BRIDGE NO. CUY-17C-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	



SECTION H-H



SECTION J-J

3-1109 OR 1110 AND 3-1115 OR 1118
3-1109 OR 1110 AND 2-1115 OR 1118
3-1109 OR 1110 AND 3-1115 OR 1118

9-538 @ 1'-0" = 8'-0"
TOP & BOTTOM N.E. WINGWALL
1 SER. OF 9-523 @ 1'-0" = 8'-0"
TOP & BOTTOM N.W. WINGWALL

22-1005 @ 8" = 14'-0" (TOP) N.E. WINGWALL
15-1005 @ 1'-0" = 14'-0" (BOTTOM) N.E. WINGWALL

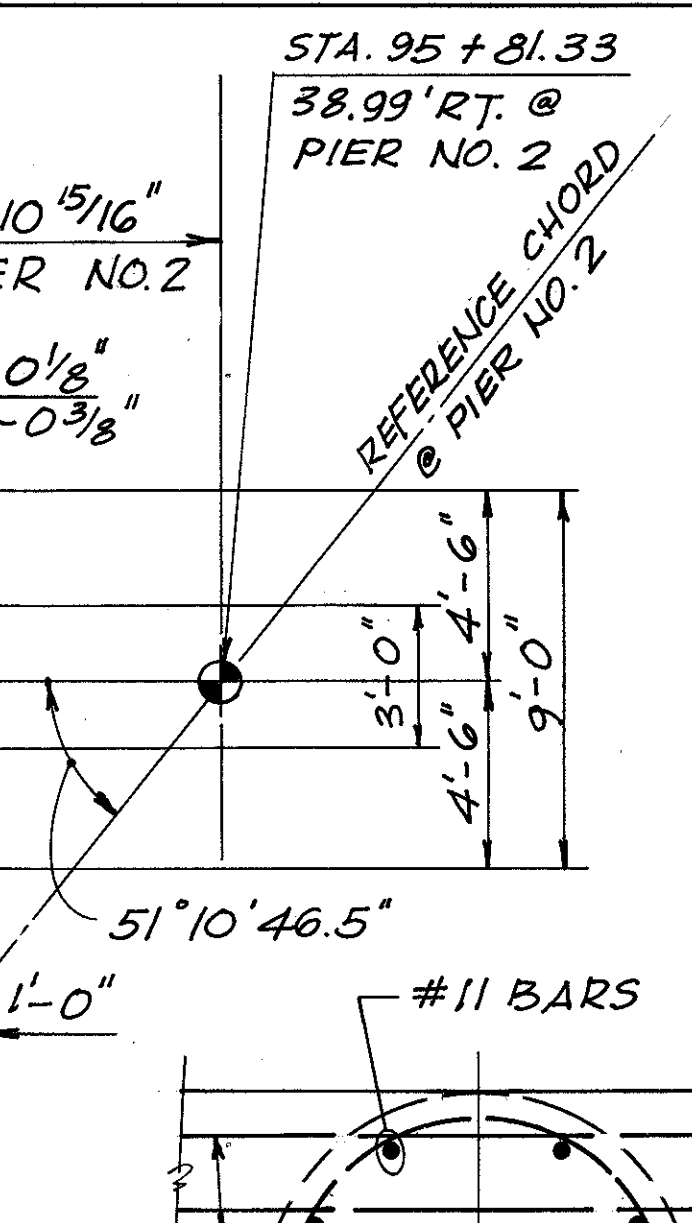
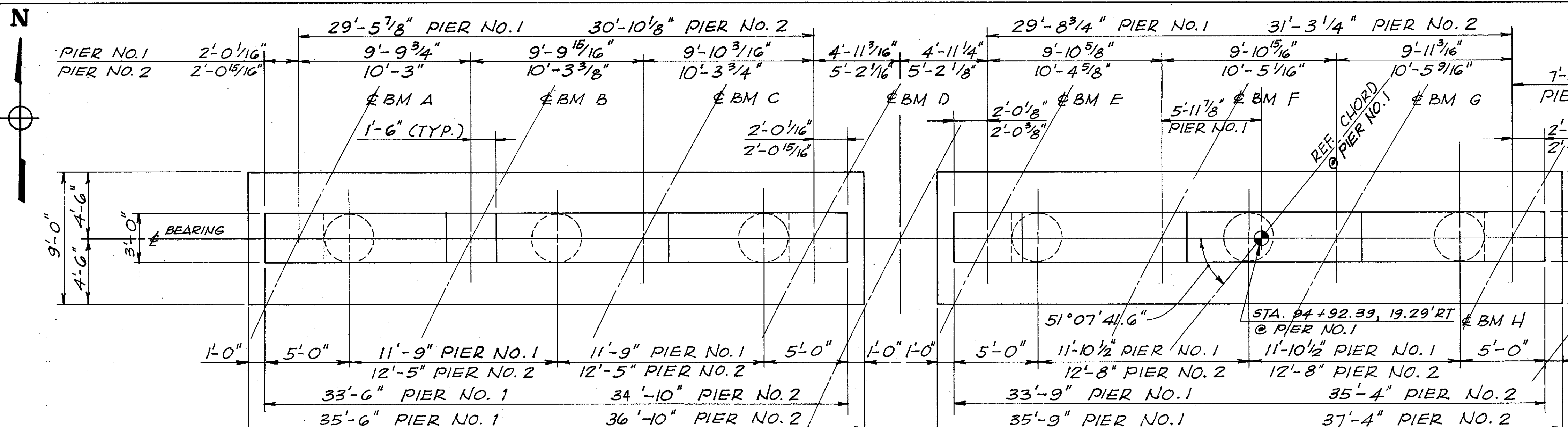
1 SER. 25-1004 @ 8" = 16'-0" (TOP) N.W. WINGWALL
1 SER. 17-1009 @ 1'-0" = 16'-0" (BOTTOM) N.W. WINGWALL

16/36

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**ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 17G
OVER CONRAIL,
LANE OOB-W/JN AND I-480
BRIDGE NO. CUY-17G-1020**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	



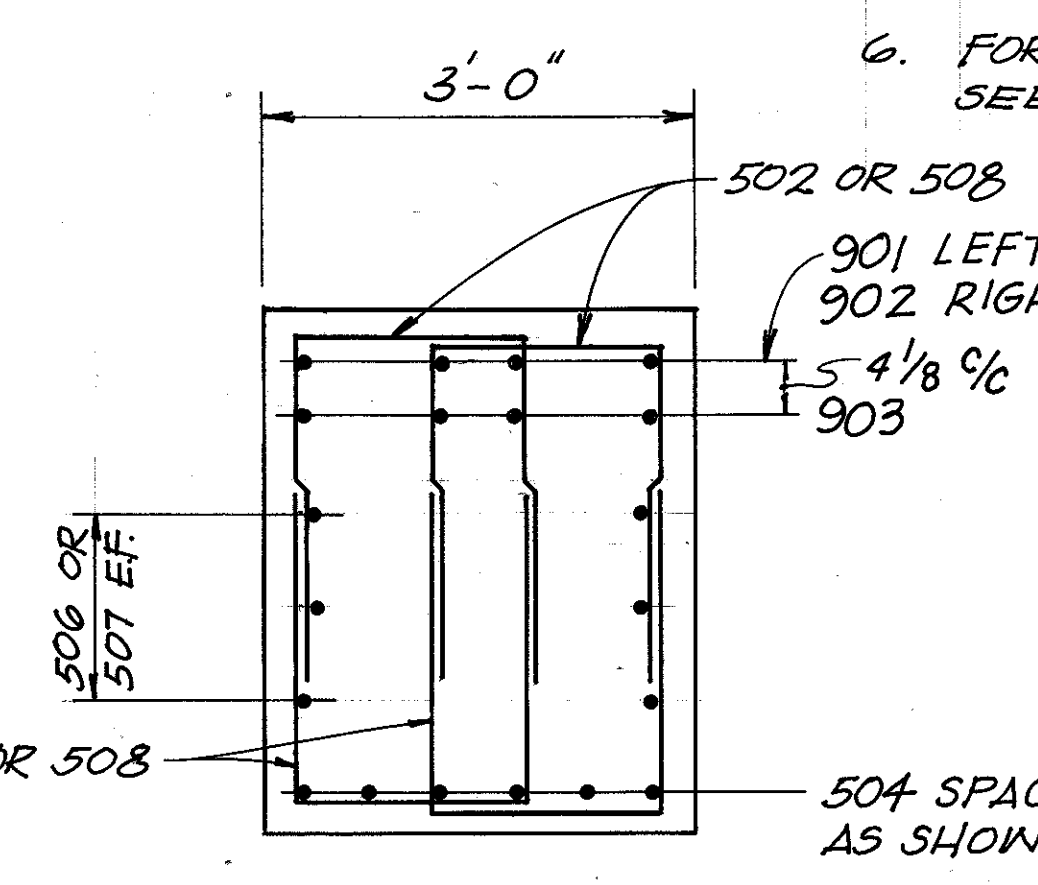
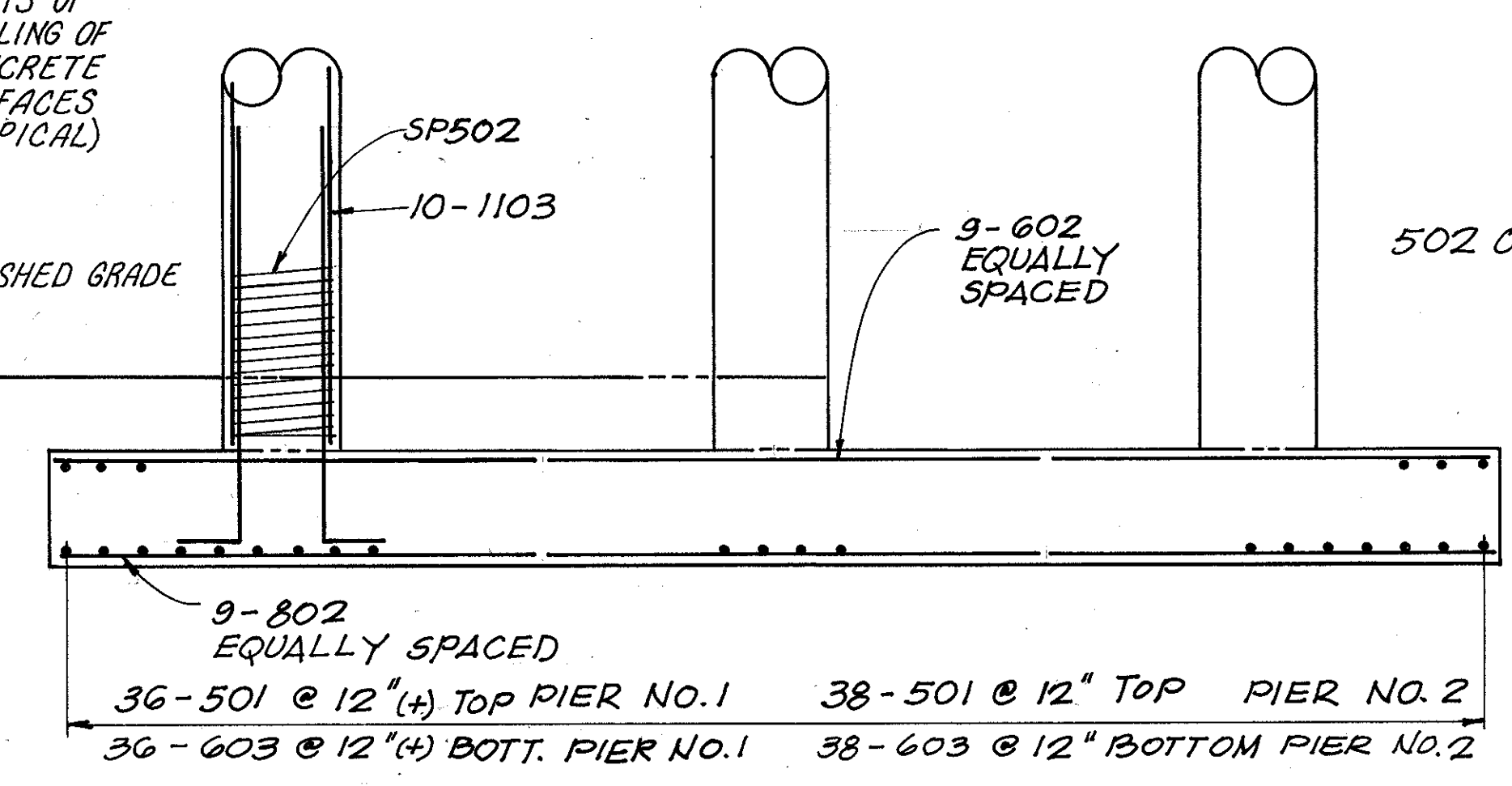
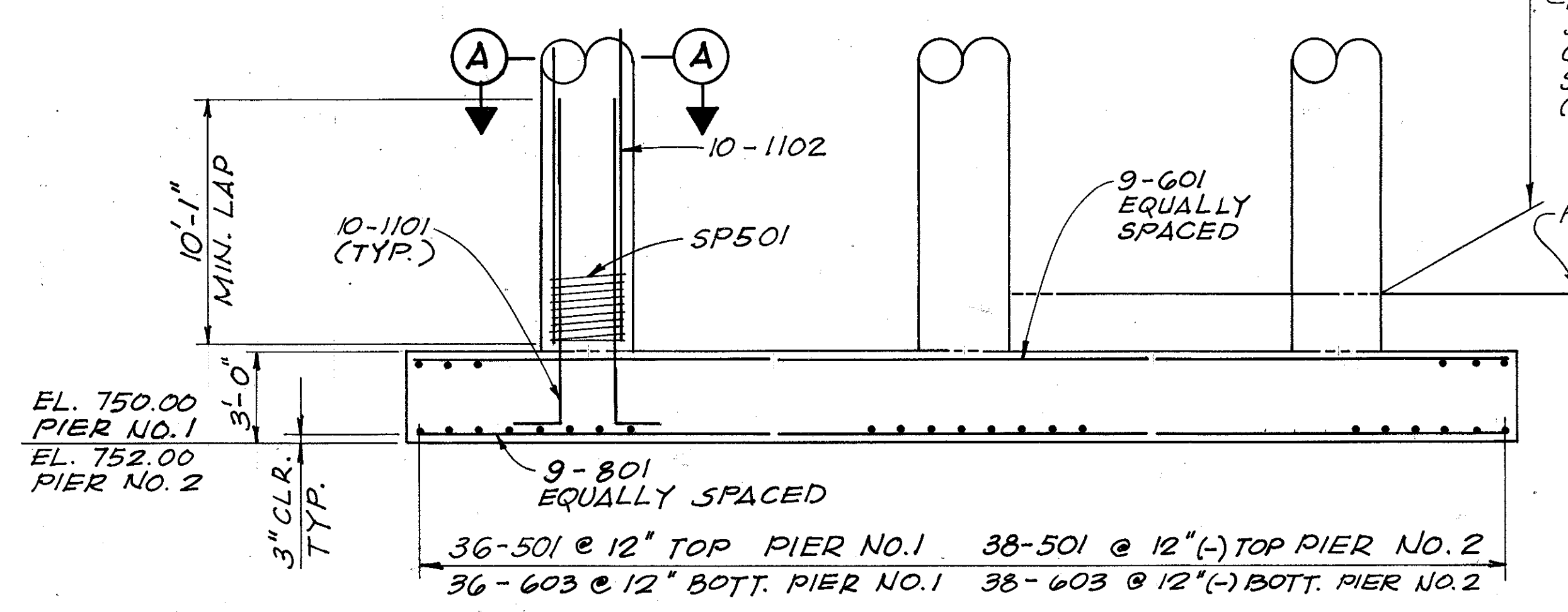
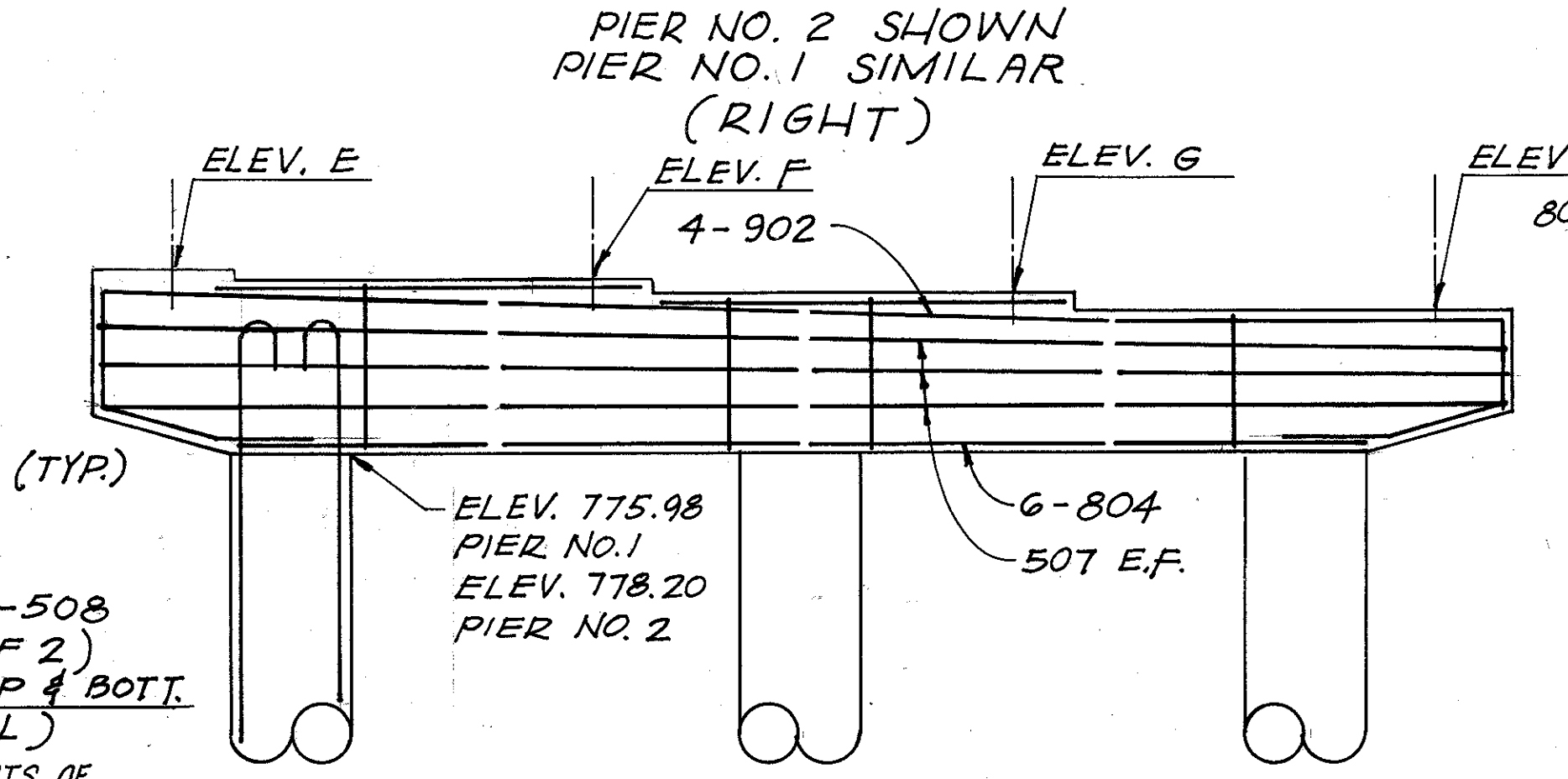
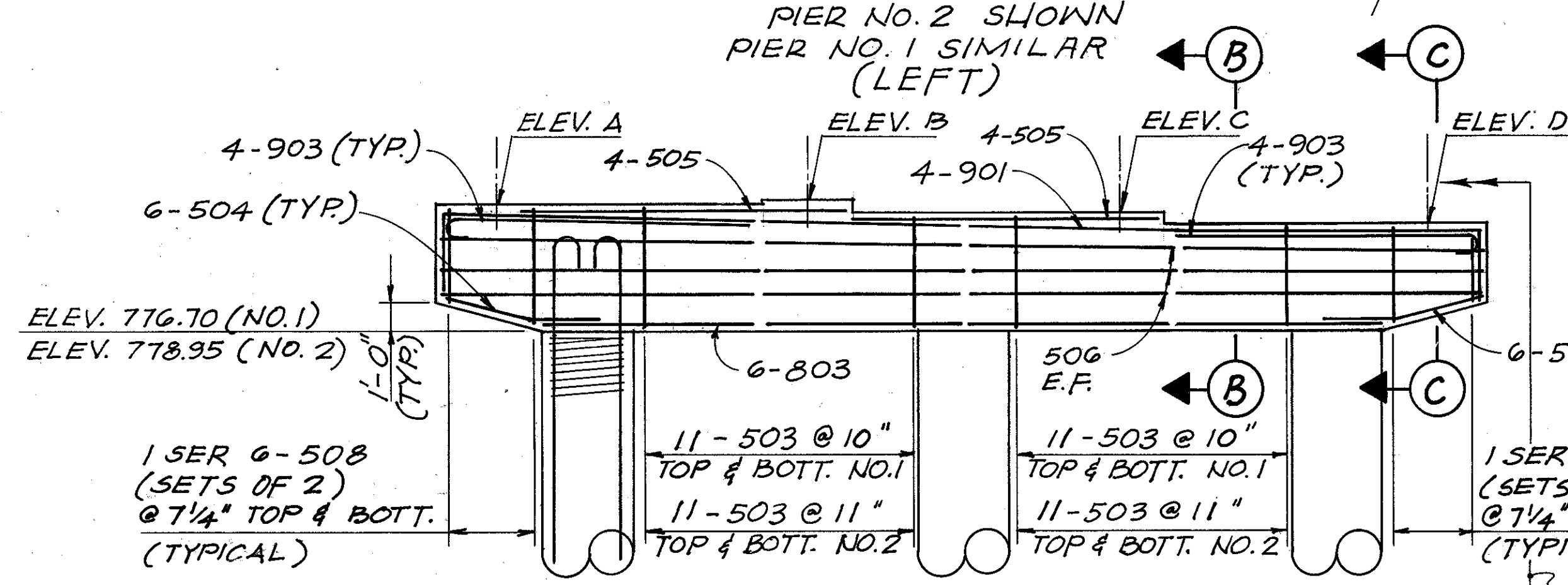
CALC.	CUYAHOGA COUNTY	OHIO	294 395
DATE	CUY-176-10.14	FHWA REGION 5	
CHKD.	JENNINGS FREEWAY		
DATE			

- NOTES:**
1. THE PREFIX "1P" & "2P" SHALL BE ADDED TO ALL BAR MARKS IN PIER NO.1 & PIER NO.2 RESPECTIVELY.
 2. REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.
 3. AT THE OPTION OF THE CONTRACTOR, BEARING ANCHORS (OR FORMED HOLES), LOCATED AND SUPPORTED BY 1/4" MIN. STEEL TEMPLATES, MAY BE CAST IN PLACE.
 4. A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE PIER.
 5. CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET 25/36
 6. FOR LOCATION OF ANCHOR BOLTS SEE SHEET 25/36

PLAN

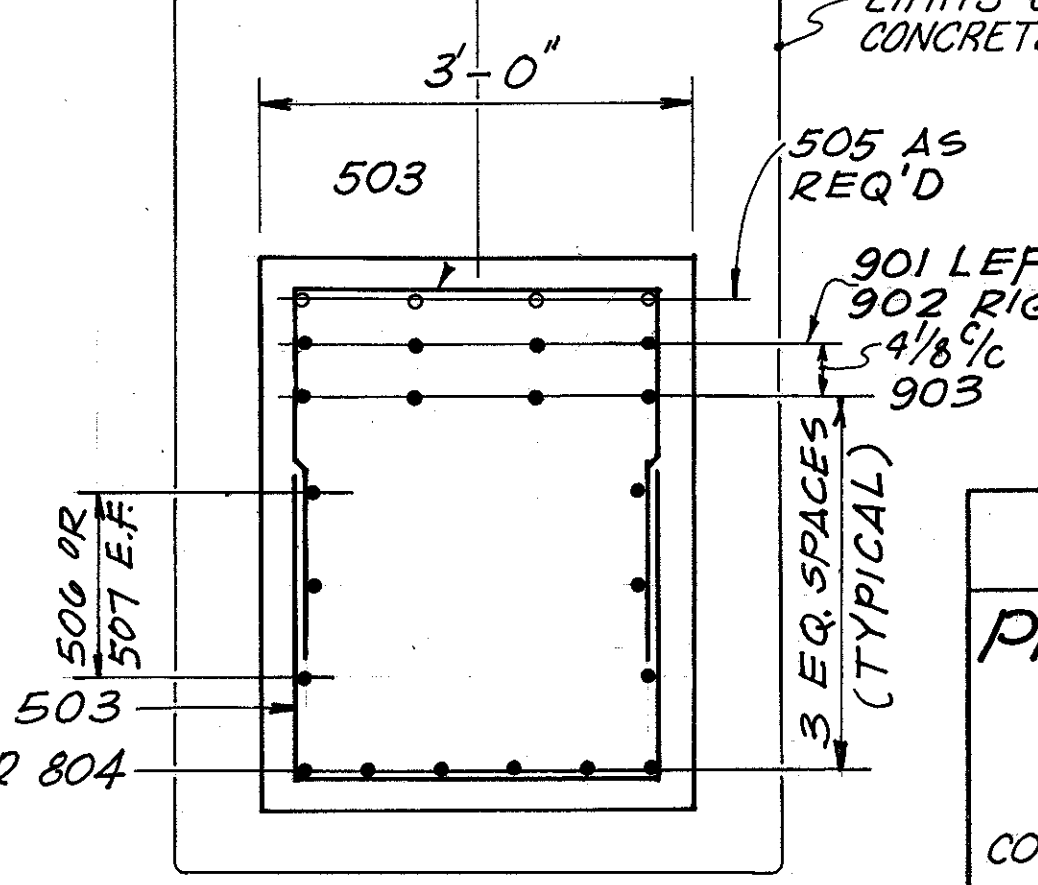
PLAN

BOTTOM CAP & COLUMN REINFORCING DETAIL



SECTION C-C

FOR LIMITS OF CONCRETE SEALING SEE SECTION B-B

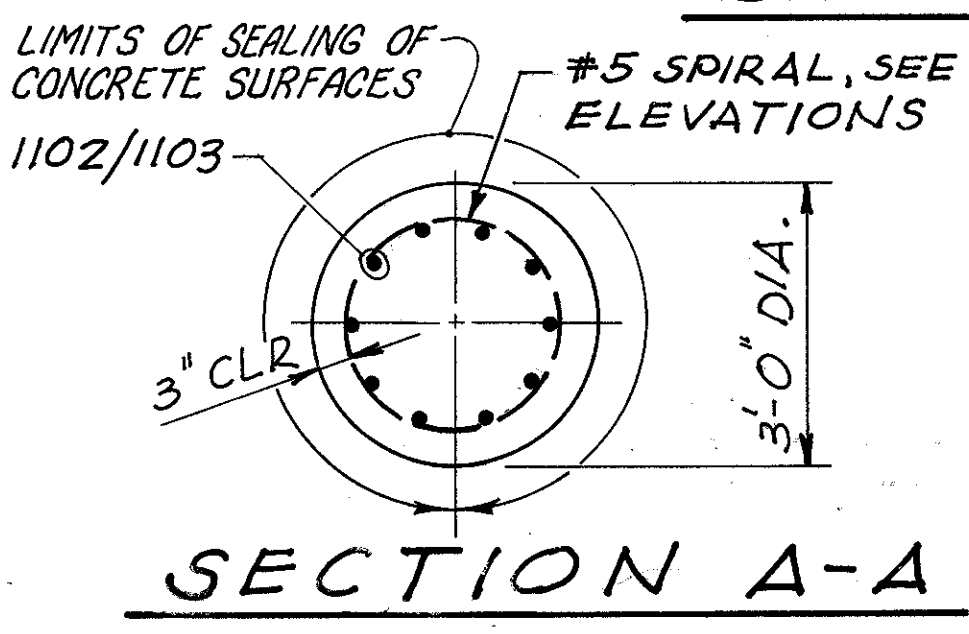


SECTION B-B

ELEVATION

ELEVATION

PIER	BEAM SEAT ELEVATIONS							
	A	B	C	D	E	F	G	H
PIER NO.1 (LEFT)	780.91	781.05	780.63	780.20	—	—	—	—
PIER NO.1 (RIGHT)	—	—	—	—	780.49	780.31	779.89	779.48
PIER NO.2 (LEFT)	783.16	783.30	782.87	782.45	—	—	—	—
PIER NO.2 (RIGHT)	—	—	—	—	782.73	782.54	782.12	781.70

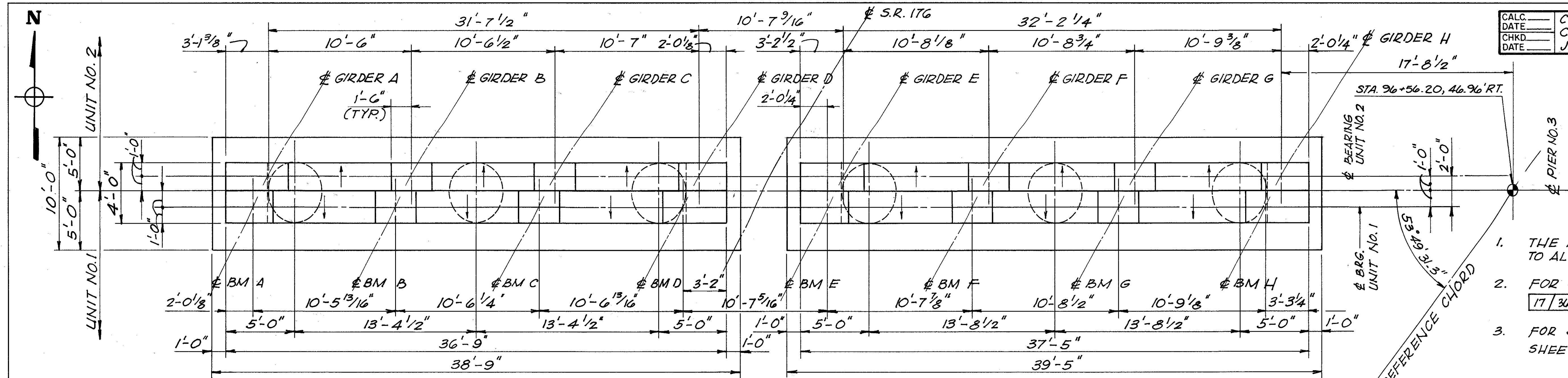


SECTION A-A

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

PIER NO.1 & NO.2 DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW - JN AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	M	C.T.	A.J.M.	1/94	

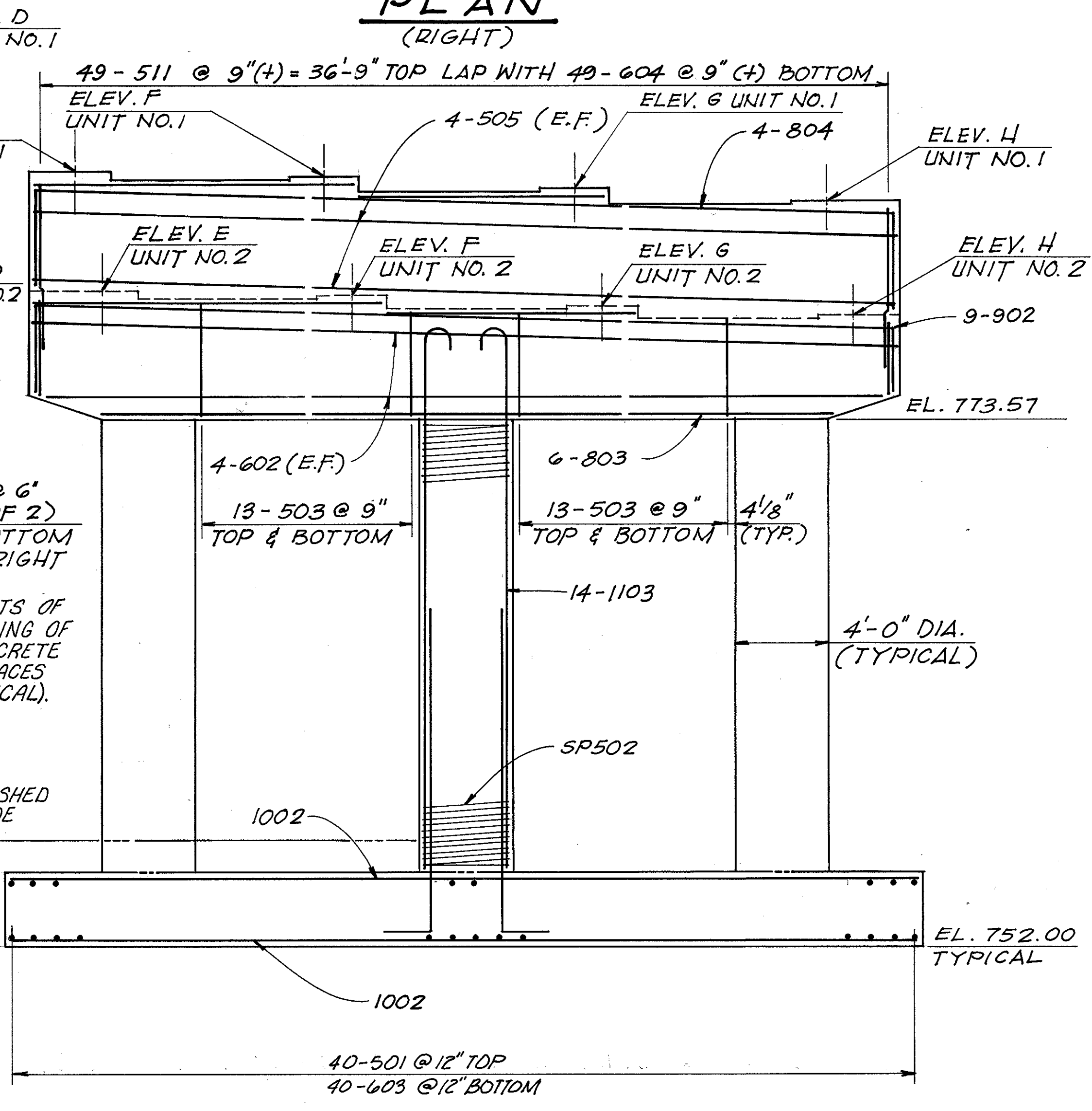
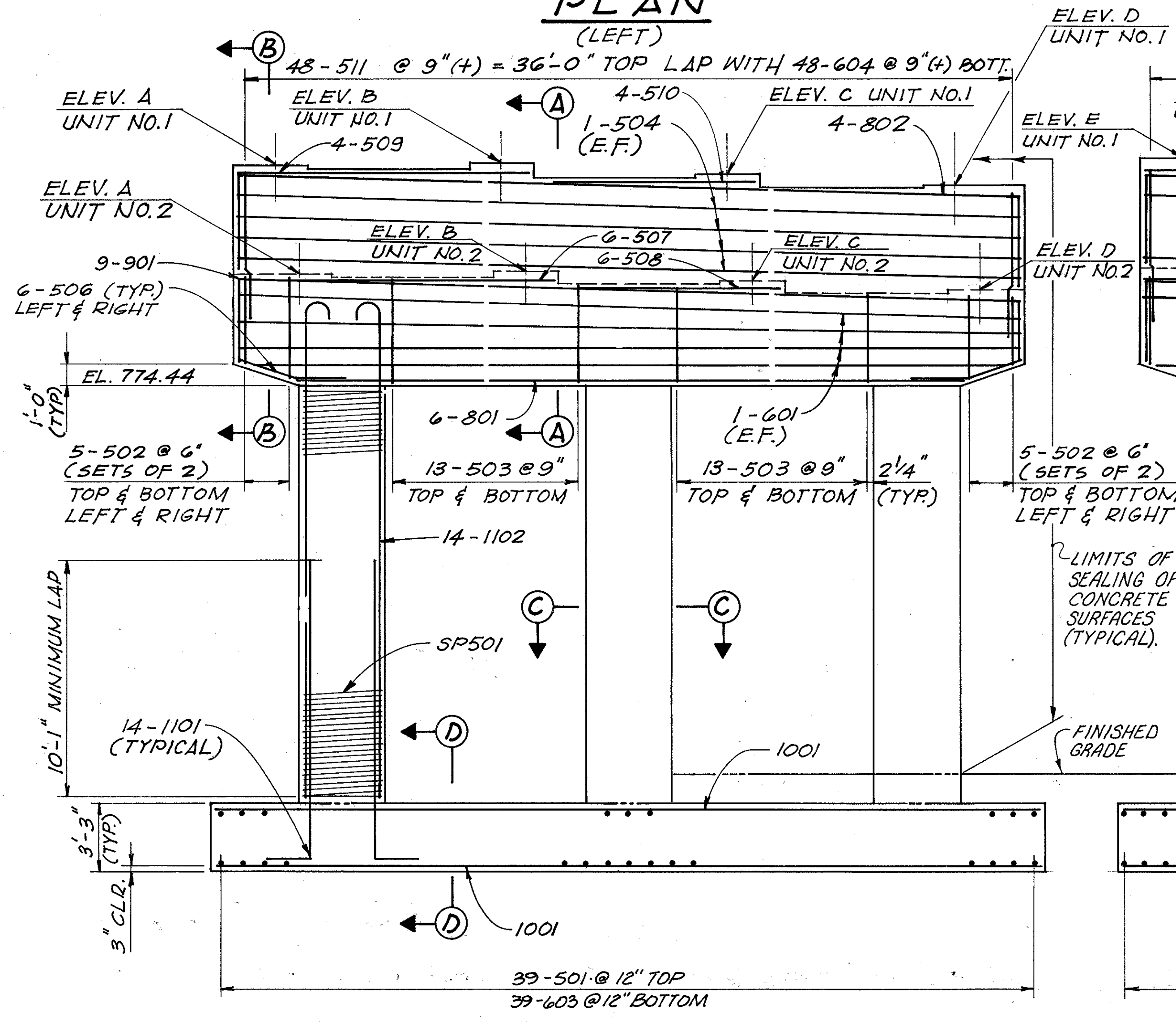


NOTES:

1. THE PREFIX "3P" SHALL BE ADDED TO ALL BAR MARKS IN PIER NO.3
2. FOR OTHER PIER NOTES SEE SHEET 17/36
3. FOR SECTIONS AND DETAILS SEE SHEET 19/36

PLAN (LEFT)

PLAN (RIGHT)



ELEVATION (LEFT)

ELEVATION (RIGHT)

TABLE OF ELEVATIONS

BEAM OR GIRDER	SEAT ELEVATION	
	UNIT NO.1	UNIT NO.2
A	784.58	779.73
B	784.69	779.84
C	784.24	779.39
D	783.79	778.94
E	784.05	779.19
F	783.83	778.98
G	783.38	778.52
H	782.92	778.07

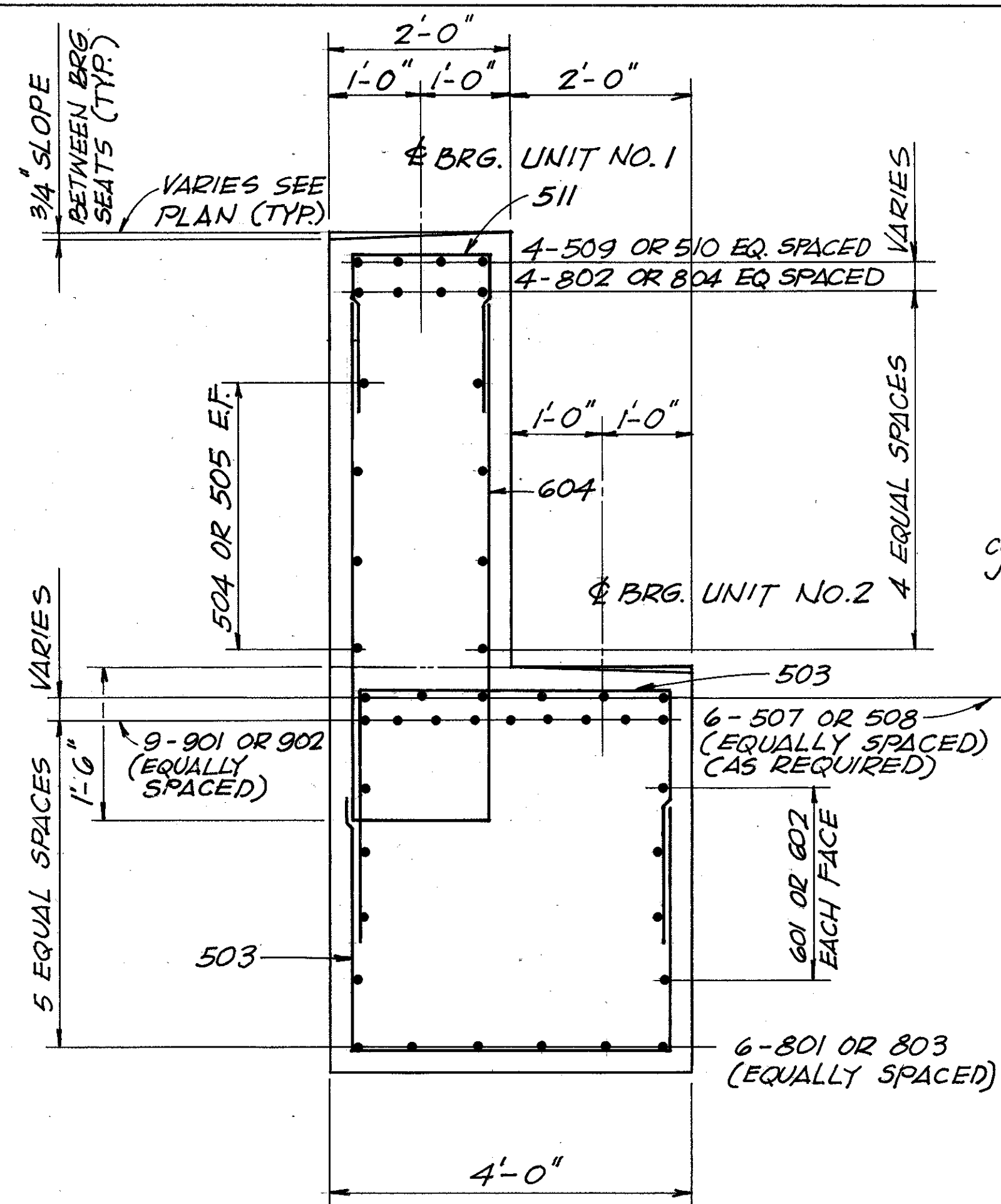
adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131

PIER NO.3 PLAN
 JENNINGS FREEWAY
 STATE ROUTE 176
 OVER
 CONRAIL, LANE OBW - JN AND I-480
 BRIDGE NO. CUY-176-1020

DESIGNED: T.A.B. DRAWN: M.A. CHECKED: C.T. REVIEWED: A.J.M. DATE: 1/94

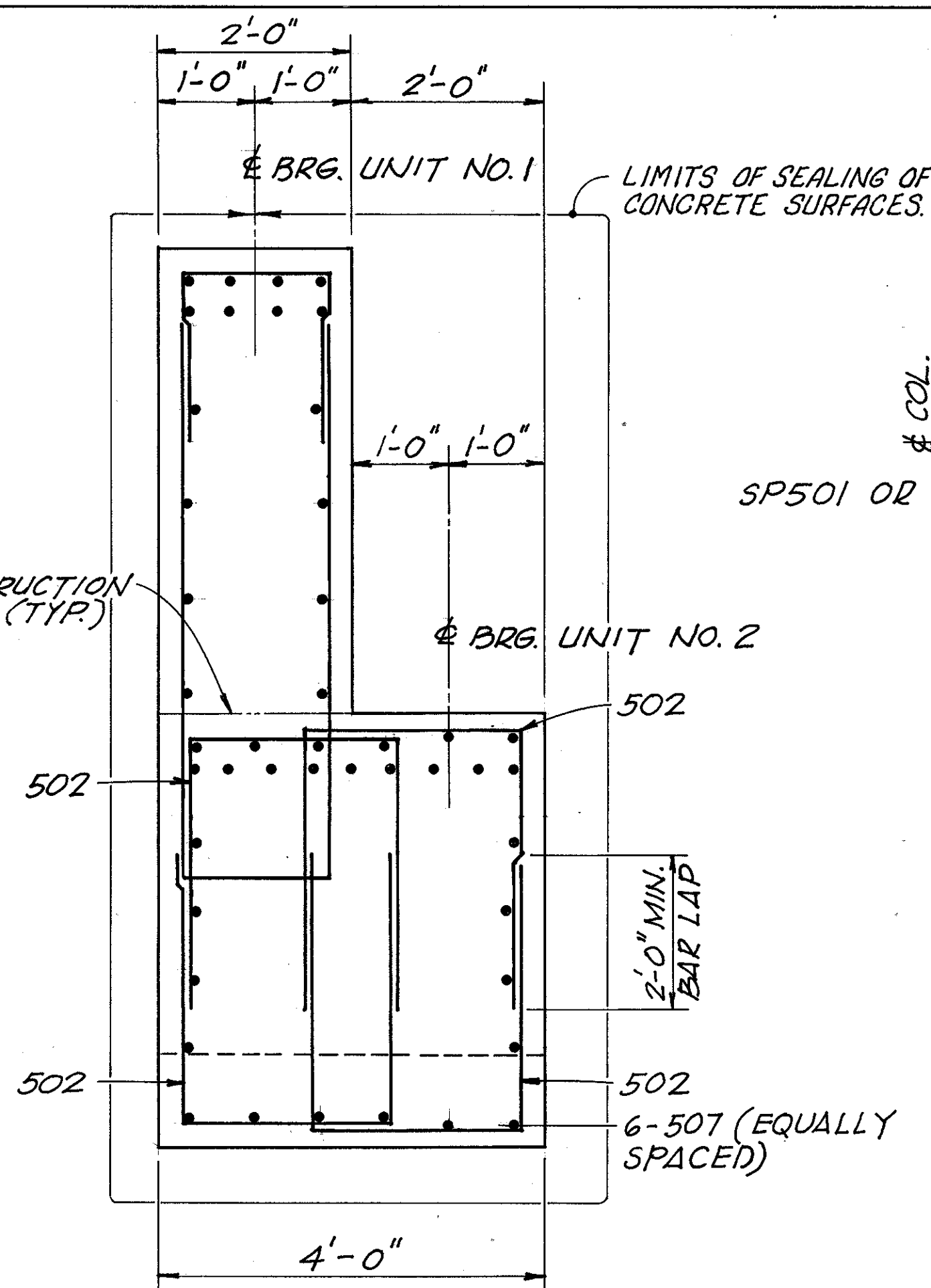
NOTES:

- FOR PLAN AND ELEVATION, SEE SHEET 18/36.
- FOR ADDITIONAL NOTES, SEE SHEET 17/36.



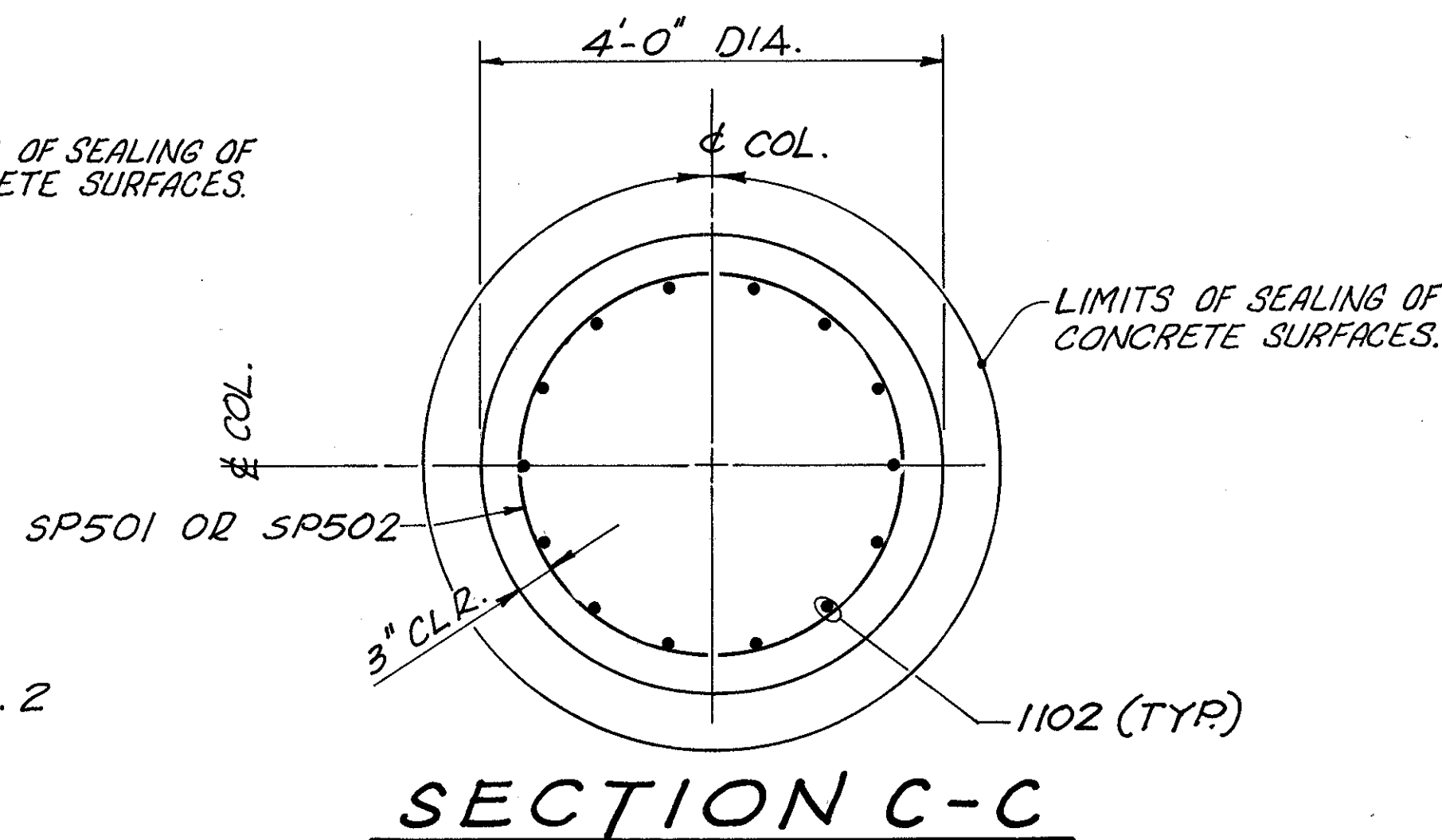
SECTION A-A

FOR LIMITS OF CONCRETE SEALING SEE SECTION B-B

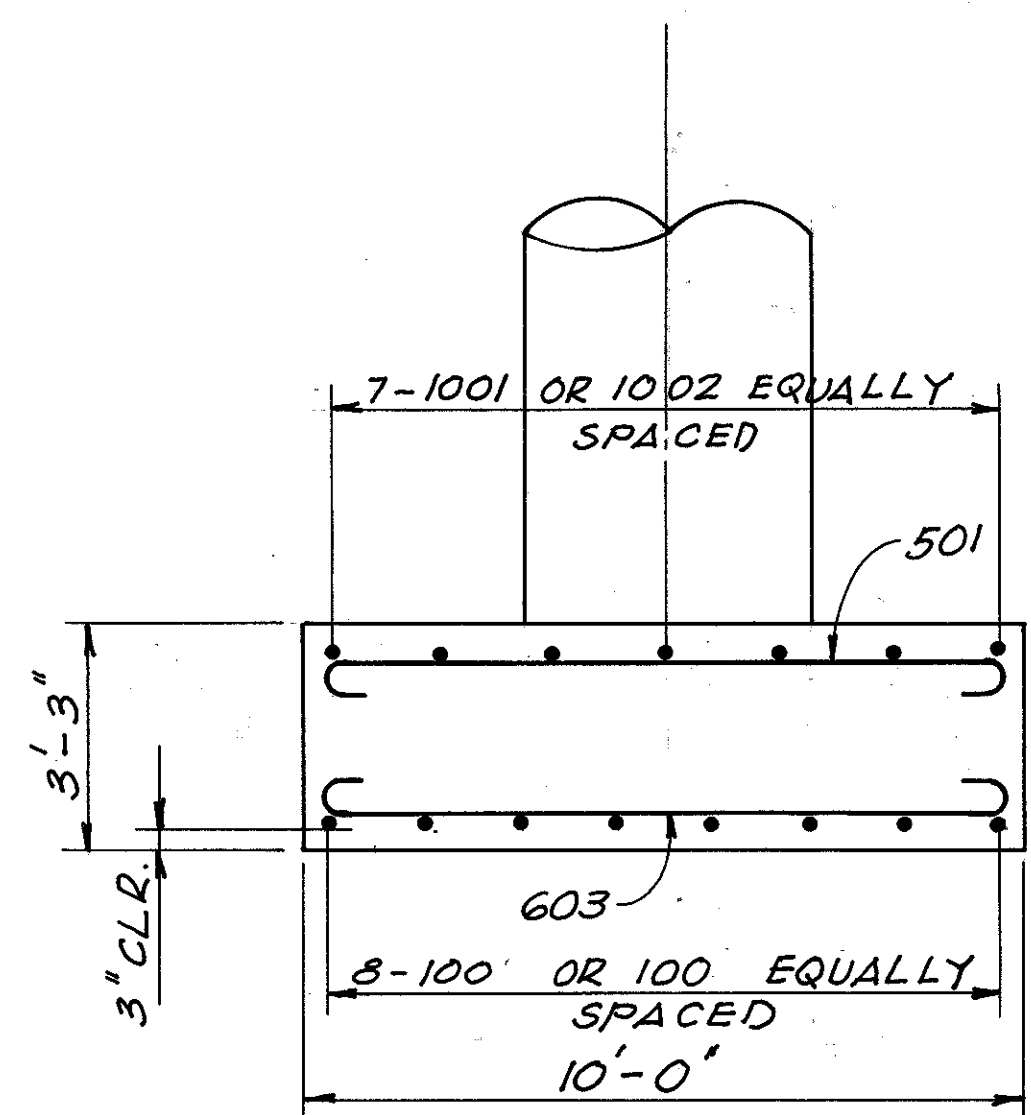


SECTION B-B

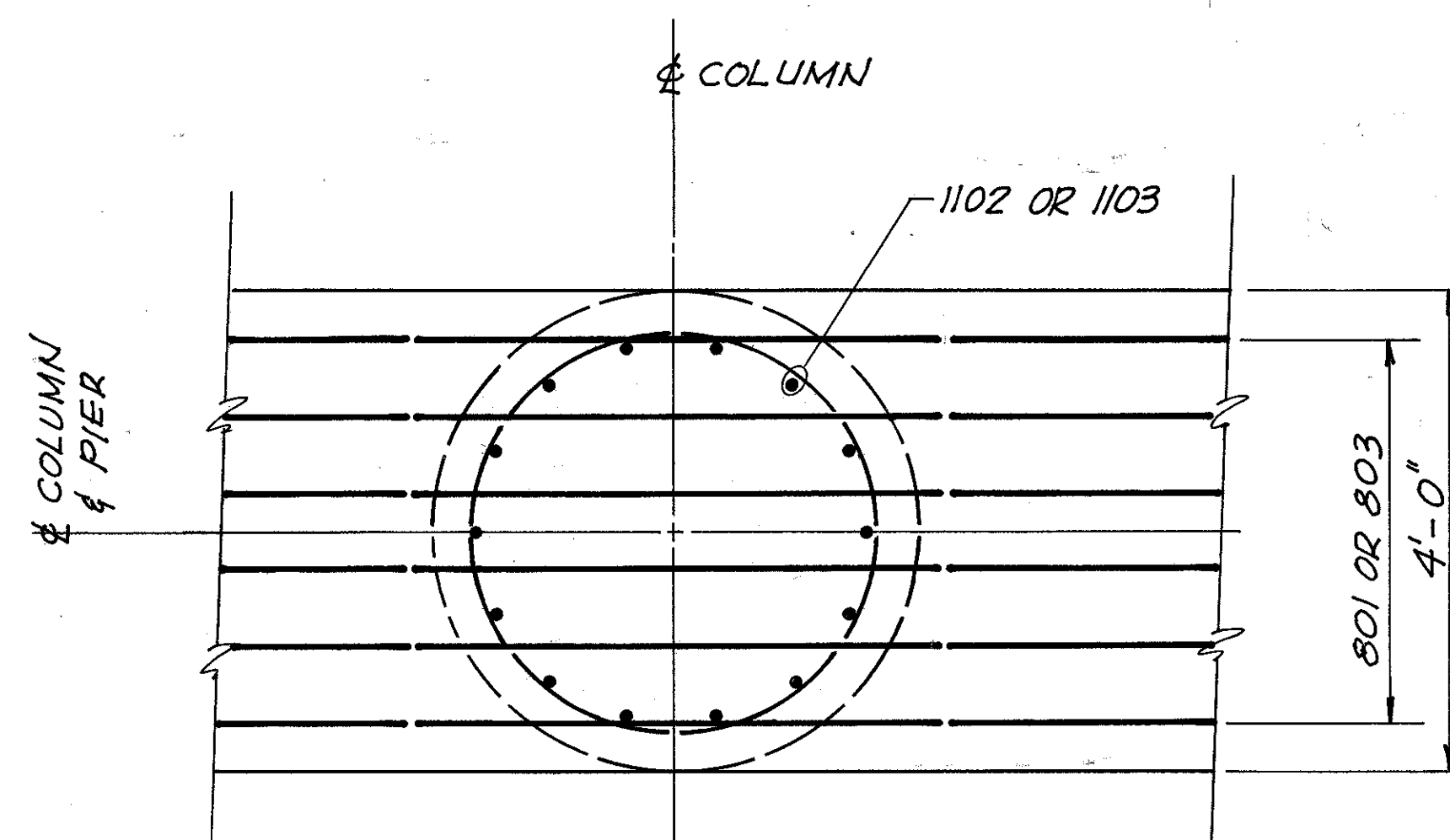
FOR ADDITIONAL REINFORCEMENT SEE SECTION A-A



SECTION C-C

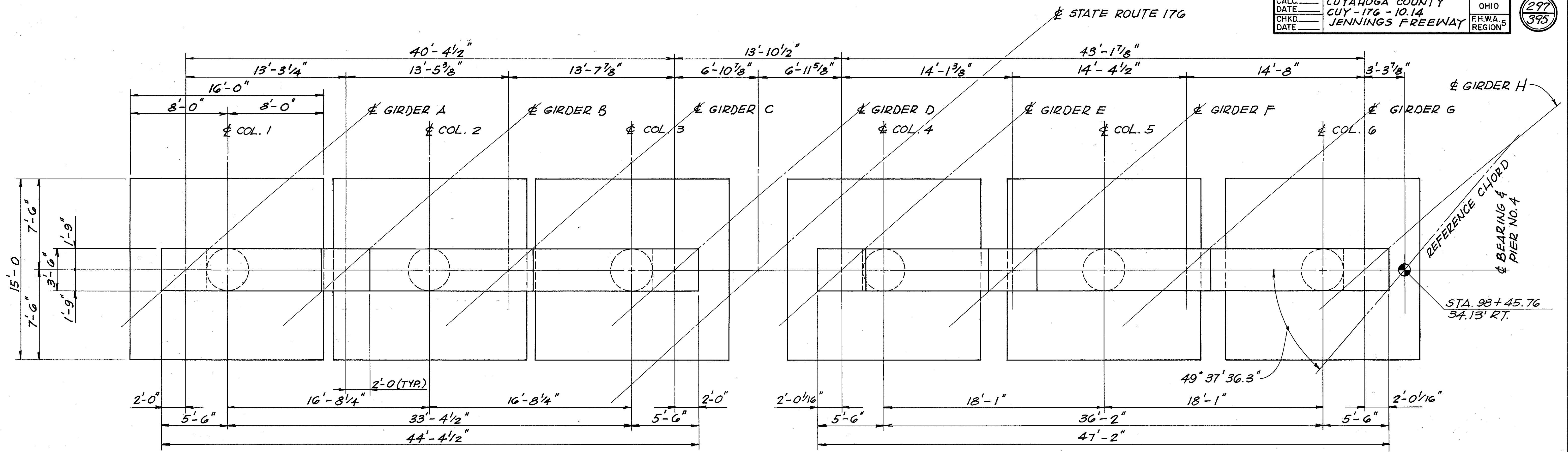
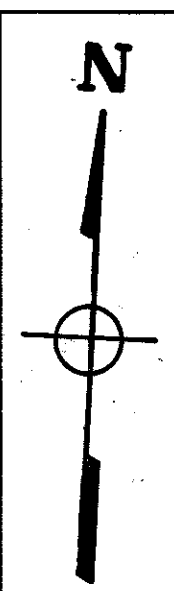


SECTION D-D



BOTTOM CAP & COLUMN REINFORCING DETAIL

adache - ciuni - lynn associates					
CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
PIER NO. 3 DETAILS					
JENNINGS FREEWAY					
STATE ROUTE 176					
OVER					
CONRAIL, LANE OBW-JN AND I-480					
BRIDGE NO. CUY-176-1020					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	[Signature]	C.T.	A.J.M.	1/94	

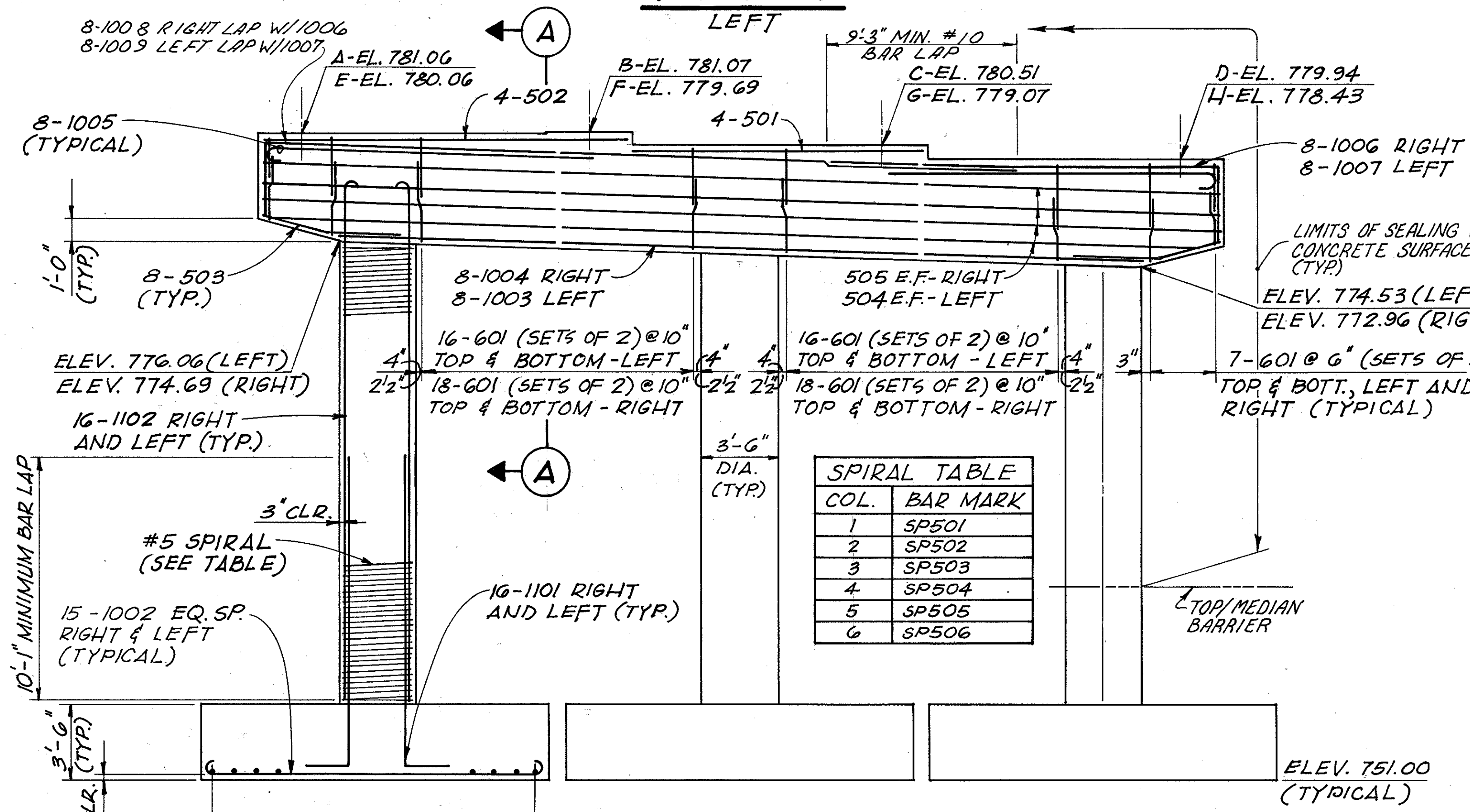


PLAN

PLAN

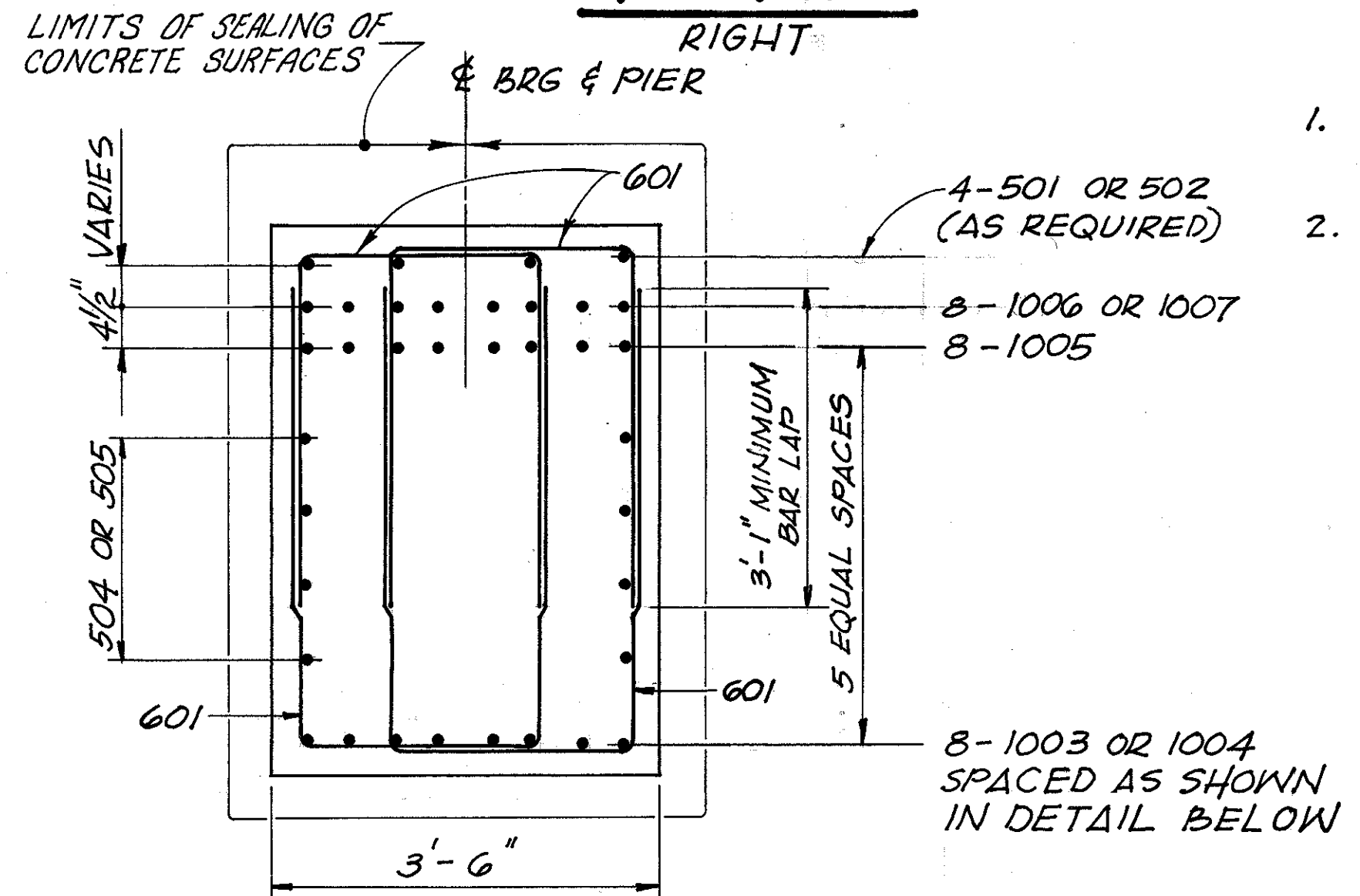
NOTES:

1. THE PREFIX "4P" SHALL BE ADDED TO ALL BAR MARKS IN PIER NO. 4.
2. FOR ADDITIONAL PIER NOTES SEE SHEET 17/36

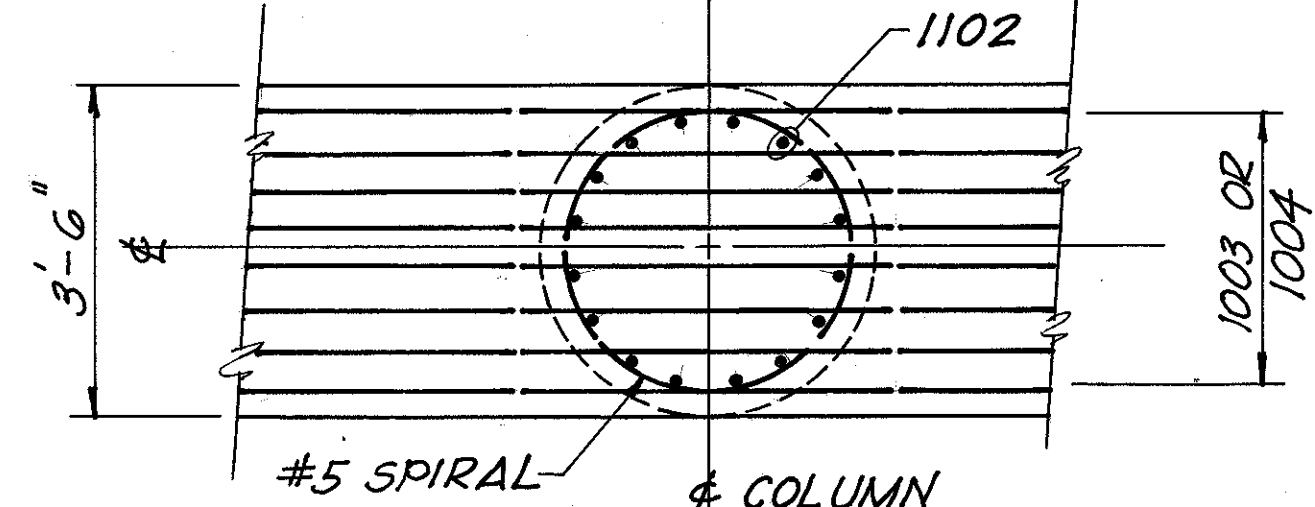


ELEVATION

LEFT SHOWN, RIGHT SIMILAR



SECTION A-A

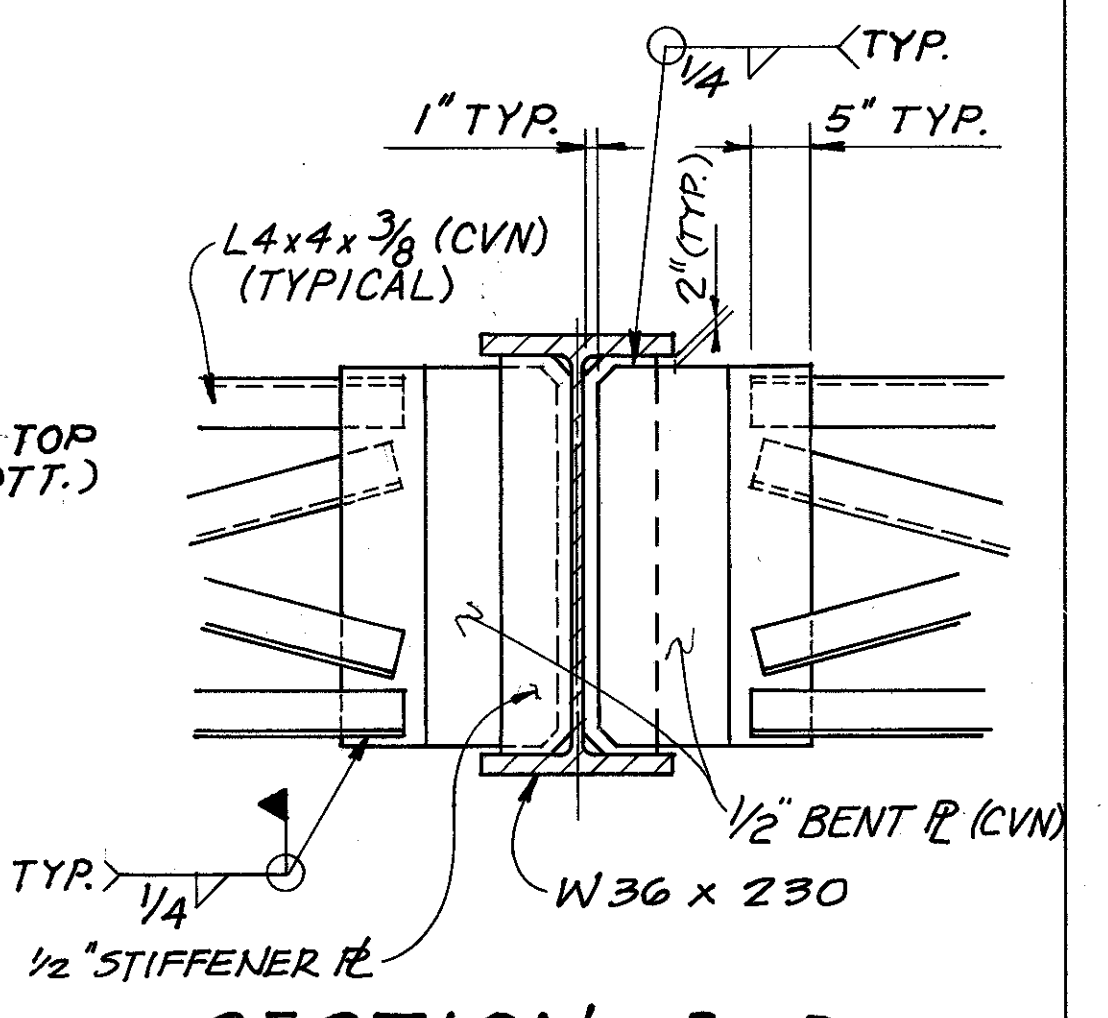
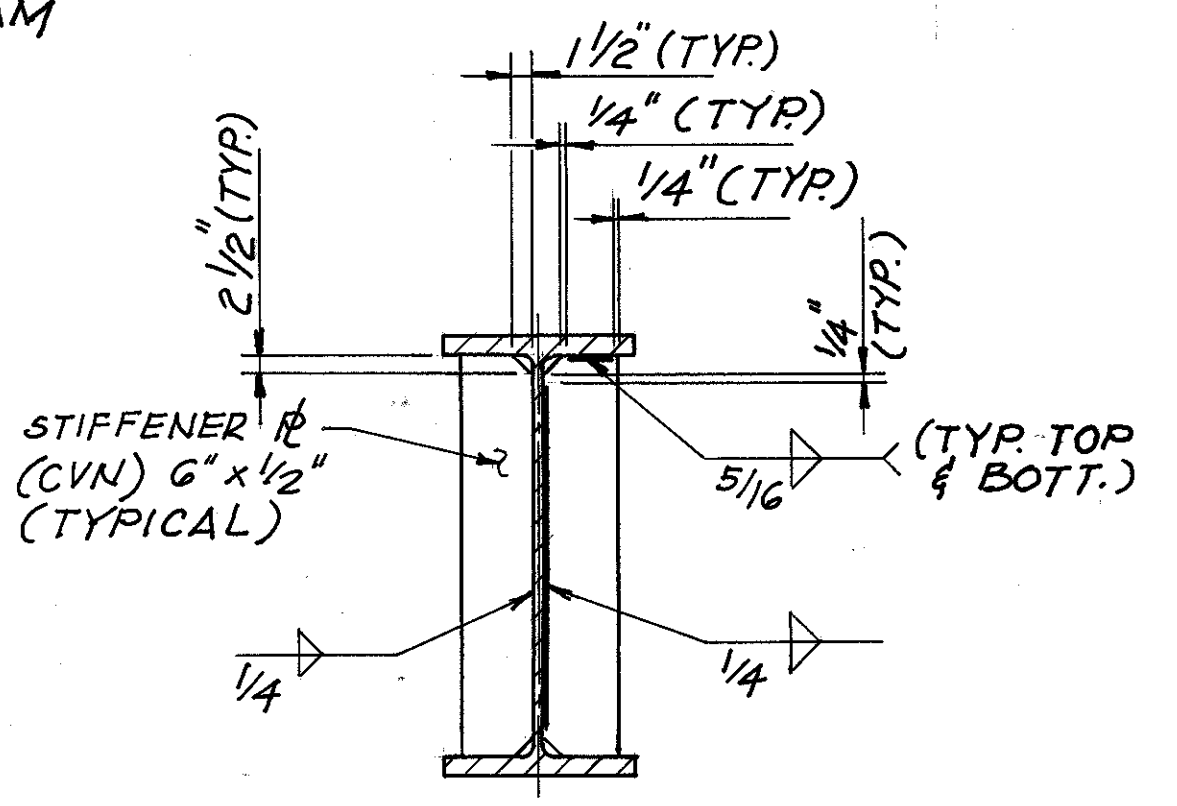
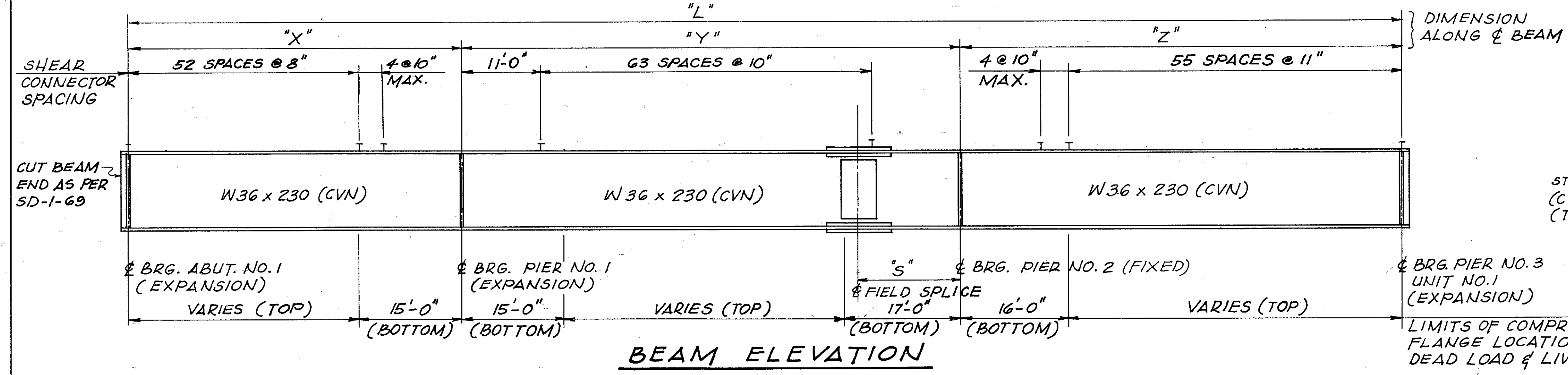
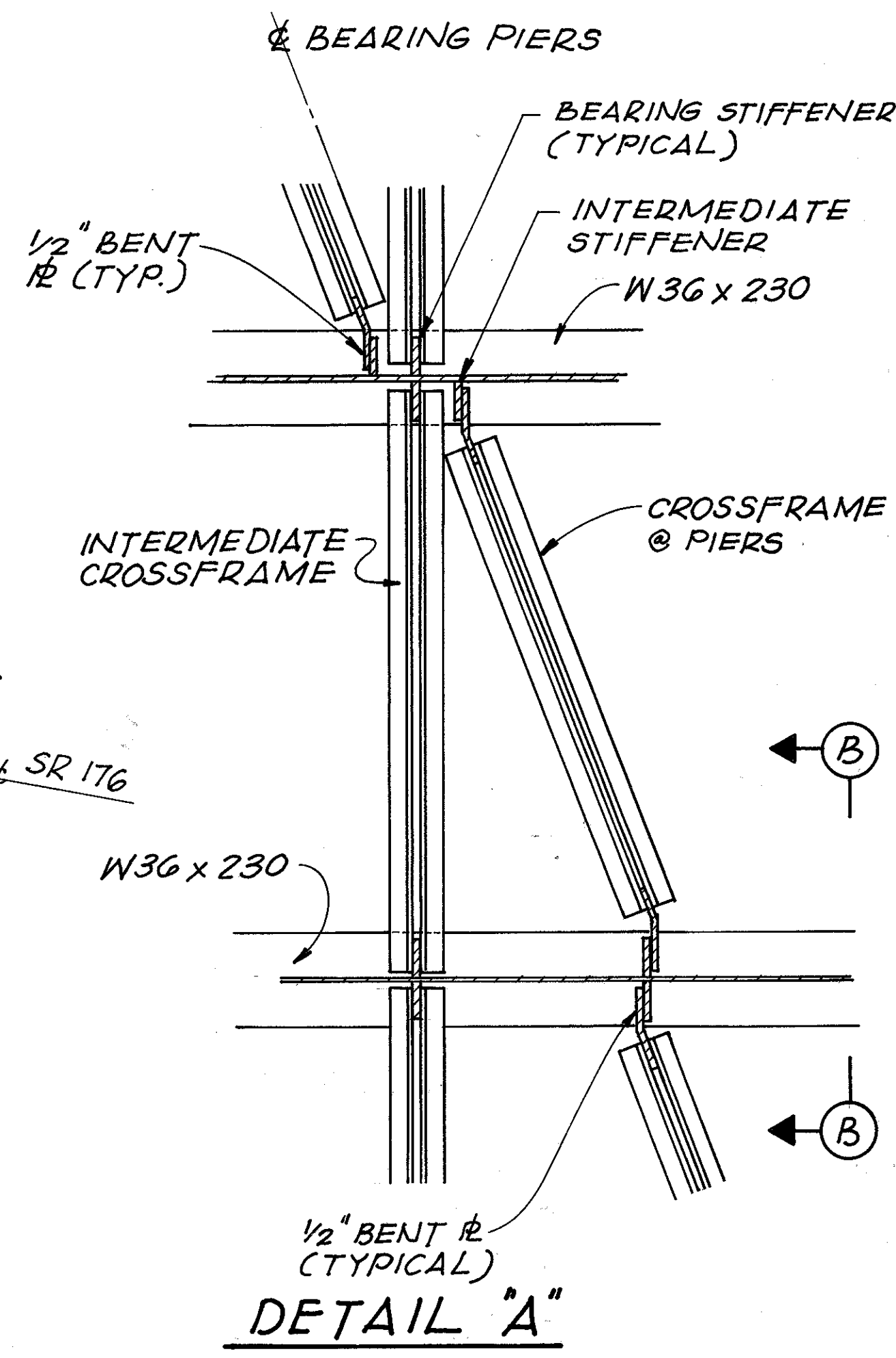
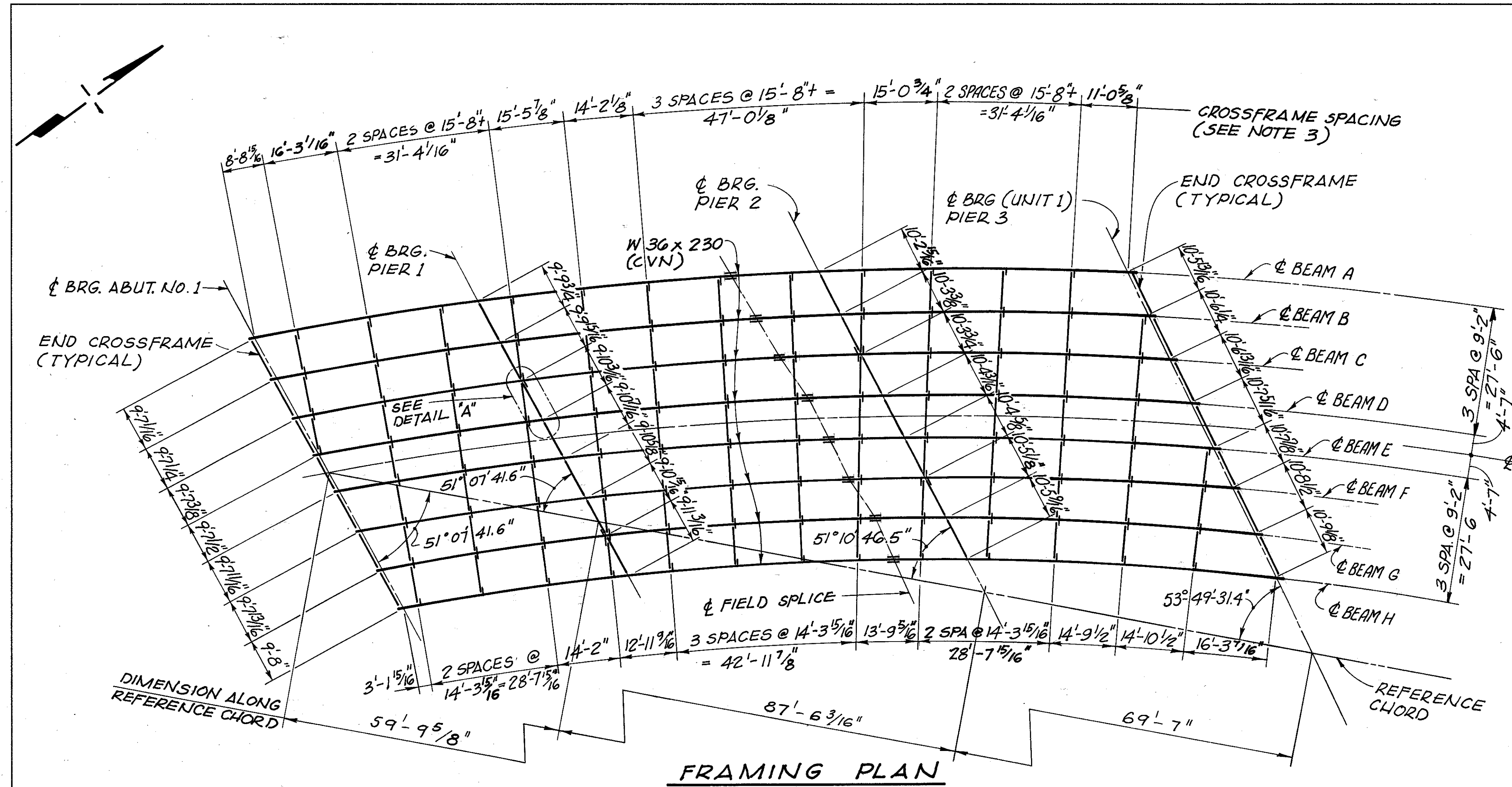


BOTTOM CAP & COLUMN REINFORCING DETAIL

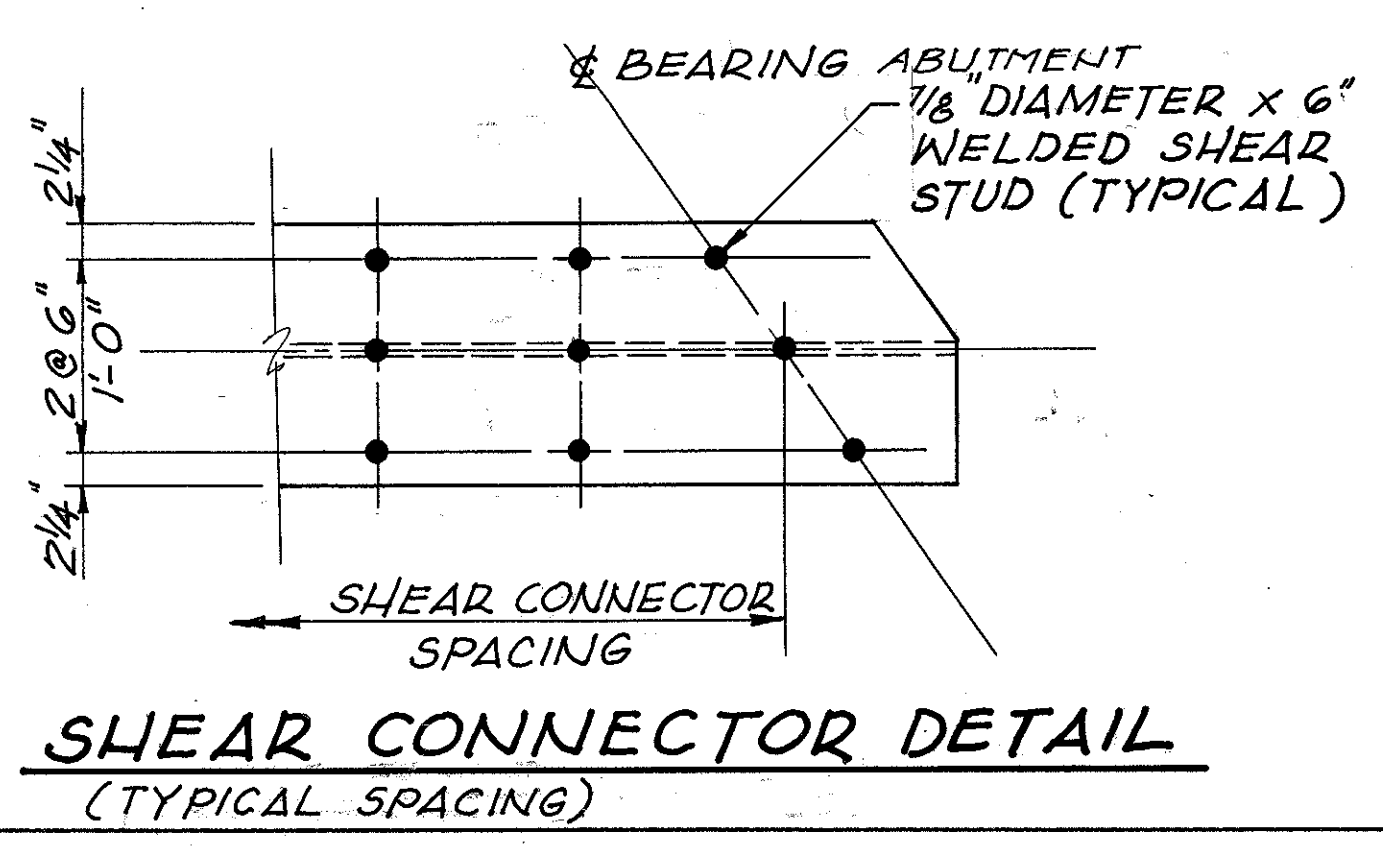
adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
PIER NO. 4 DETAILS					
JENNINGS FREEWAY STATE ROUTE 176 OVER CONRAIL, LANE OBW - JN AND I-480					
BRIDGE NO. CUY-176-1020					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M.F.	C.T.	RUM.	1/94	

NOTES:

- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
- ALL INTERMEDIATE CROSSFRAMES ARE ALONG RADIAL LINES. FOR INTERMEDIATE CROSSFRAME DETAILS SEE TRANSVERSE SECTION ON SHEET [29/36].
- FOR END CROSSFRAME DETAILS SEE STD. DWG. EXJ-4-87, SD-1-69 AND EXP. JT. DETAIL SHT. [28/36]. END CROSS-FRAME ANGLE MEMBERS SHALL BE L4x4x1/2 (CVN) TYPICAL.
- FOR BEARING DETAILS SEE SHEET [25/36].
- FOR BEAM FIELD SPLICE DETAILS SEE SHEET [23/36].



BEAM	BEAM DIMENSIONS					RADIUS (ft)
	L	X	Y	Z	S	
A	190'-5 5/8"	49'-2 1/2"	74'-5 1/2"	66'-9 5/8"	19'-0"	751.34
B	190'-4 3/4"	49'-3 3/8"	74'-7 1/2"	66'-5 5/8"	18'-6 1/2"	742.17
C	190'-4 1/16"	49'-4 3/8"	74'-9 5/8"	66'-2 1/8"	18'-3 3/8"	733.00
D	190'-3 3/16"	49'-5 3/16"	74'-11 7/8"	65'-10 1/2"	16'-9 1/2"	723.84
E	190'-3 5/16"	49'-6 3/16"	75'-2 3/16"	65'-6 15/16"	16'-10 3/8"	714.67
F	190'-3 7/16"	49'-7 3/16"	75'-4 5/8"	65'-3 1/2"	17'-1 3/8"	705.50
G	190'-3 1/2"	49'-8 3/16"	75'-7 3/16"	65'-0 1/16"	15'-10 3/8"	696.34
H	190'-4 1/4"	49'-9 1/16"	75'-9 7/8"	64'-8 3/4"	16'-9 1/8"	687.17



STIFFENER DETAIL

SECTION B-B

21/36

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

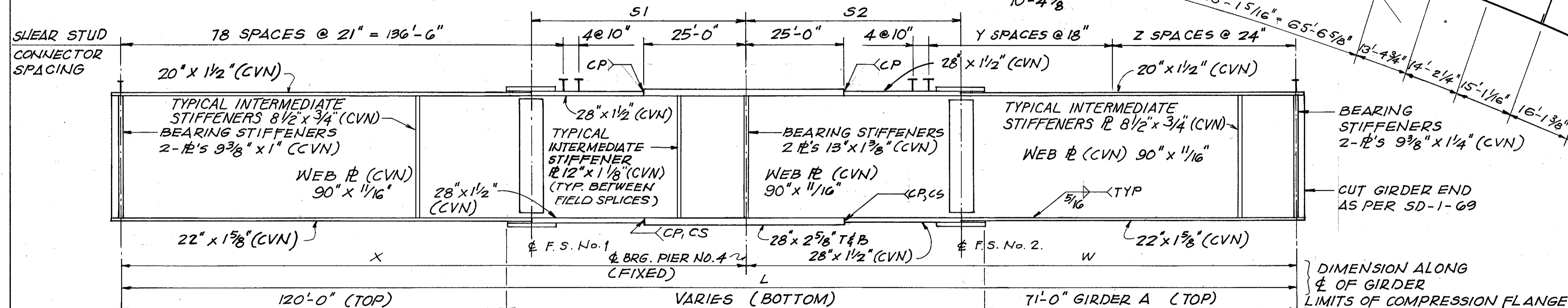
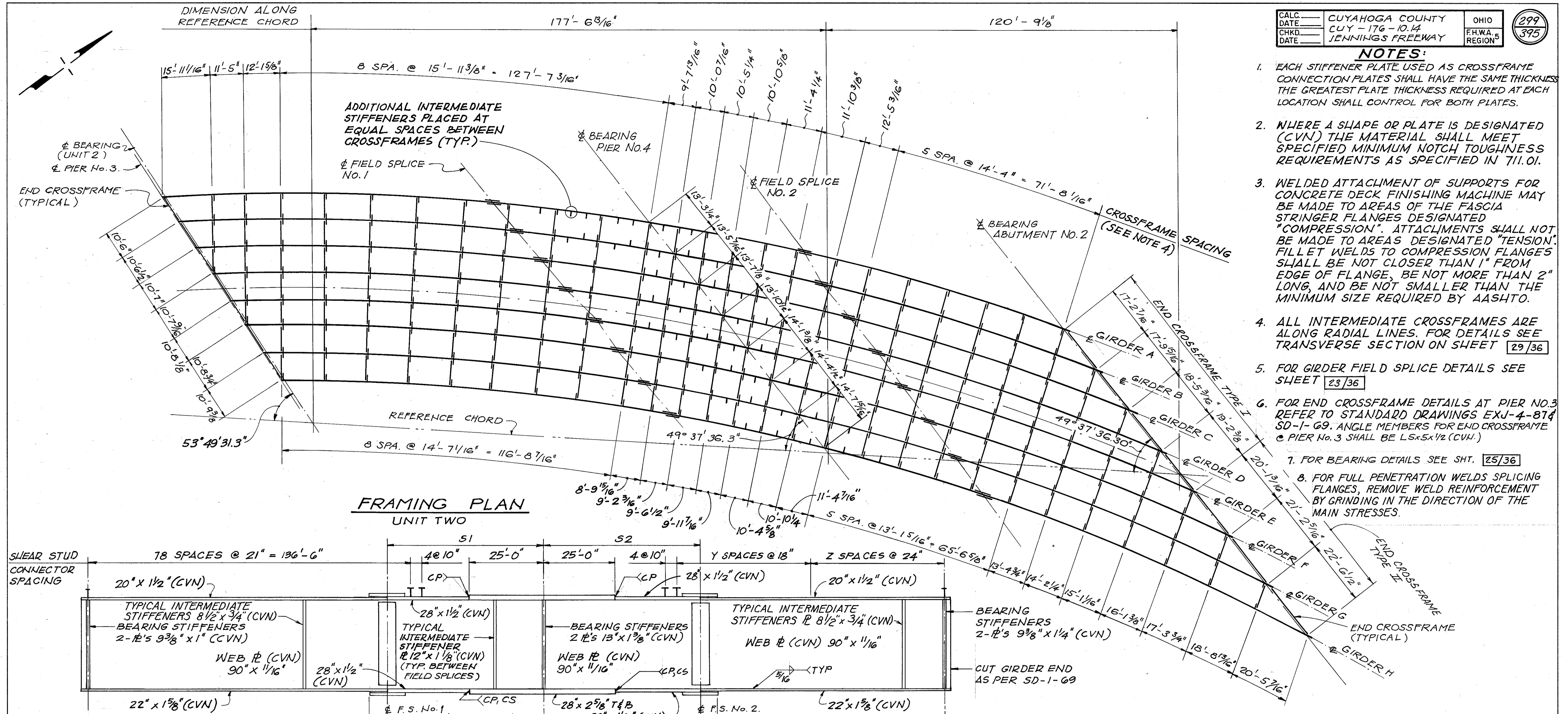
**FRAMING PLAN UNIT ONE
AND BEAM DETAILS**

JENNINGS FREEWAY
STATE ROUTE 176 OVER CONRAIL
LANE OBW - JN & I - 480
BRIDGE NO. CUY - 176 - 1020

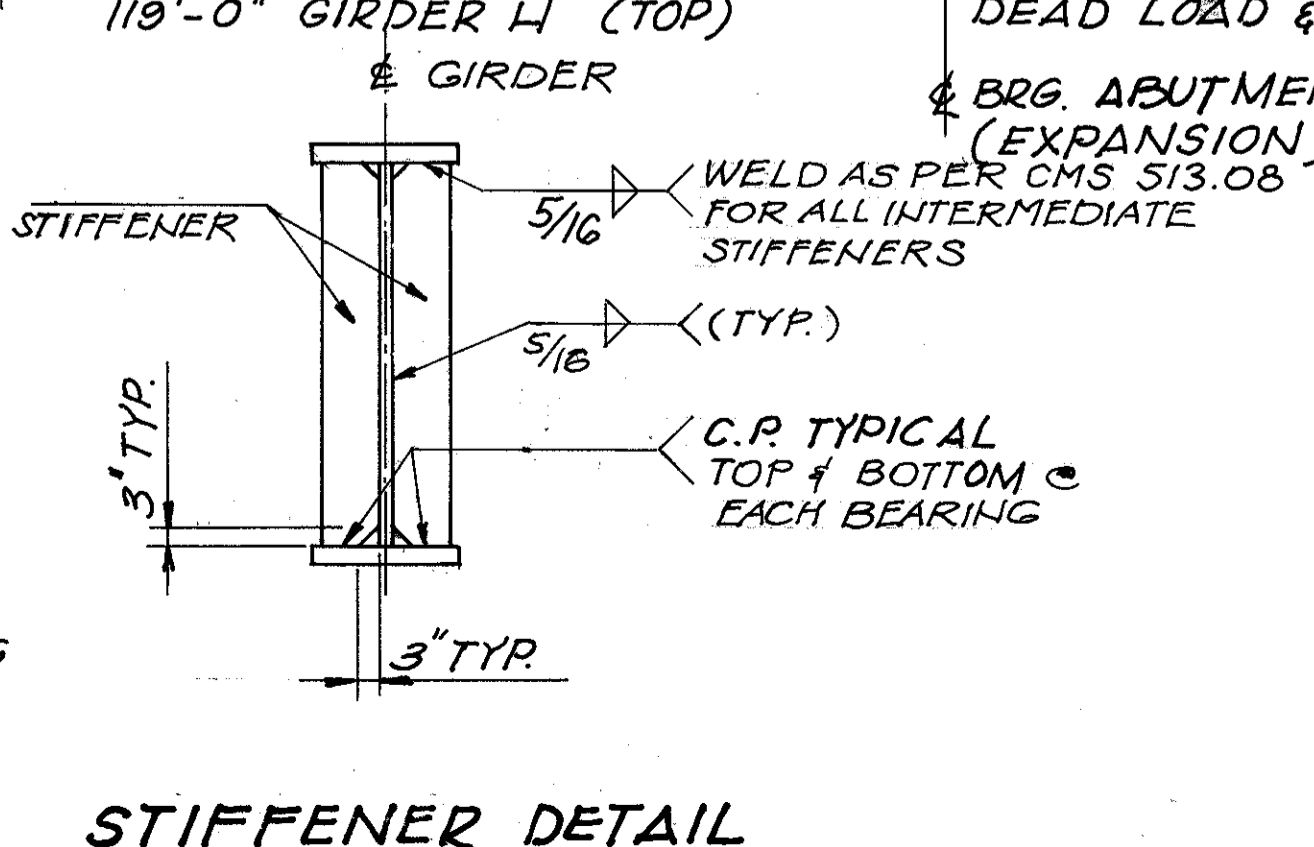
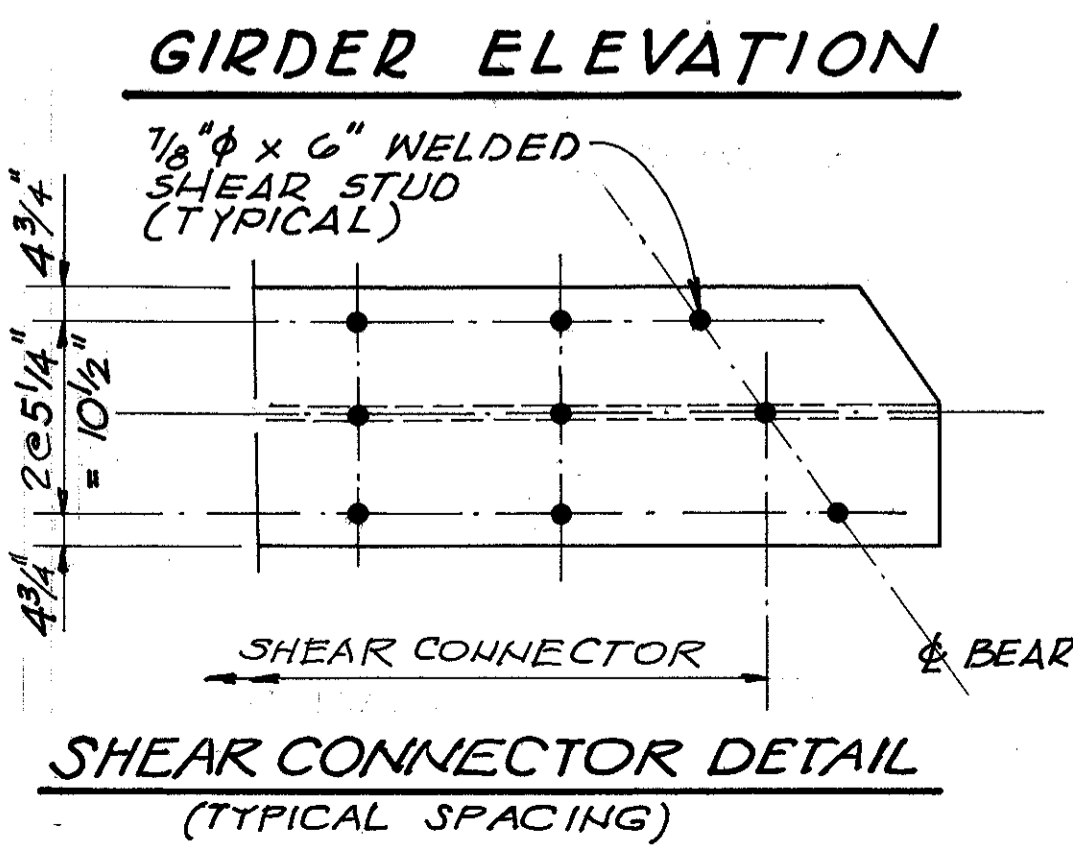
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	1/1	D.P.	A.J.M.	1/93	

NOTES:

1. EACH STIFFENER PLATE USED AS CROSSFRAME CONNECTION PLATES SHALL HAVE THE SAME THICKNESS THE GREATEST PLATE THICKNESS REQUIRED AT EACH LOCATION SHALL CONTROL FOR BOTH PLATES.
2. WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
3. WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILL T WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
4. ALL INTERMEDIATE CROSSFRAMES ARE ALONG RADIAL LINES. FOR DETAILS SEE TRANSVERSE SECTION ON SHEET 29/36
5. FOR GIRDER FIELD SPLICE DETAILS SEE SHEET 23/36
6. FOR END CROSSFRAME DETAILS AT PIER NO. 3 REFER TO STANDARD DRAWINGS EXJ-4-87 & SD-1-G9. ANGLE MEMBERS FOR END CROSSFRAME @ PIER NO. 3 SHALL BE L5x5x1/2 (CVN).
 7. FOR BEARING DETAILS SEE SHT. 25/36
 8. FOR FULL PENETRATION WELDS SPlicing FLANGES, REMOVE WELD REINFORCEMENT BY GRINDING IN THE DIRECTION OF THE MAIN STRESSES.



GIRDER	GIRDER DIMENSIONS						SHEAR STUD SPACING	
	L	X	W	S ₁	S ₂	RADIUS (R)	Y	Z
A	315'-4 ⁷ / ₈ "	167'-0 ⁷ / ₈ "	148'-4"	55'-0"	55'-0"	751.35	27	25
B	320'-11 ¹ / ₄ "	169'-5 ³ / ₈ "	151'-5 ¹ / ₂ "	53'-6"	57'-0"	742.17	28	26
C	326'-11 ³ / ₁₆ "	172'-0"	154'-11 ³ / ₁₆ "	55'-0"	52'-6"	733.01	28	28
D	333'-5 ¹ / ₁₆ "	174'-7 ³ / ₁₆ "	158'-9 ⁷ / ₈ "	55'-0"	55'-0"	723.84	29	30
E	340'-7 ¹⁵ / ₁₆ "	177'-5 ¹ / ₄ "	163'-2 ¹ / ₁₆ "	51'-0"	55'-0"	714.67	31	31
F	348'-7 ¹ / ₂ "	180'-4 ⁷ / ₁₆ "	168'-2 ¹⁵ / ₁₆ "	55'-0"	55'-0"	705.50	32	33
G	357'-6 ¹ / ₂ "	183'-6"	174'-0 ¹ / ₂ "	55'-0"	55'-0"	696.33	34	35
H	367'-7 ³ / ₁₆ "	186'-9 ³ / ₄ "	180'-10 ¹ / ₁₆ "	55'-0"	55'-0"	687.16	44	37



- LEGEND**
- CP - COMPLETE PENETRATION WELD
 - CS - BUTT WELD SUBJECT TO COMPRESSIVE STRESS ONLY

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FRAMING PLAN UNIT TWO AND GIRDER DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JH AND I-480

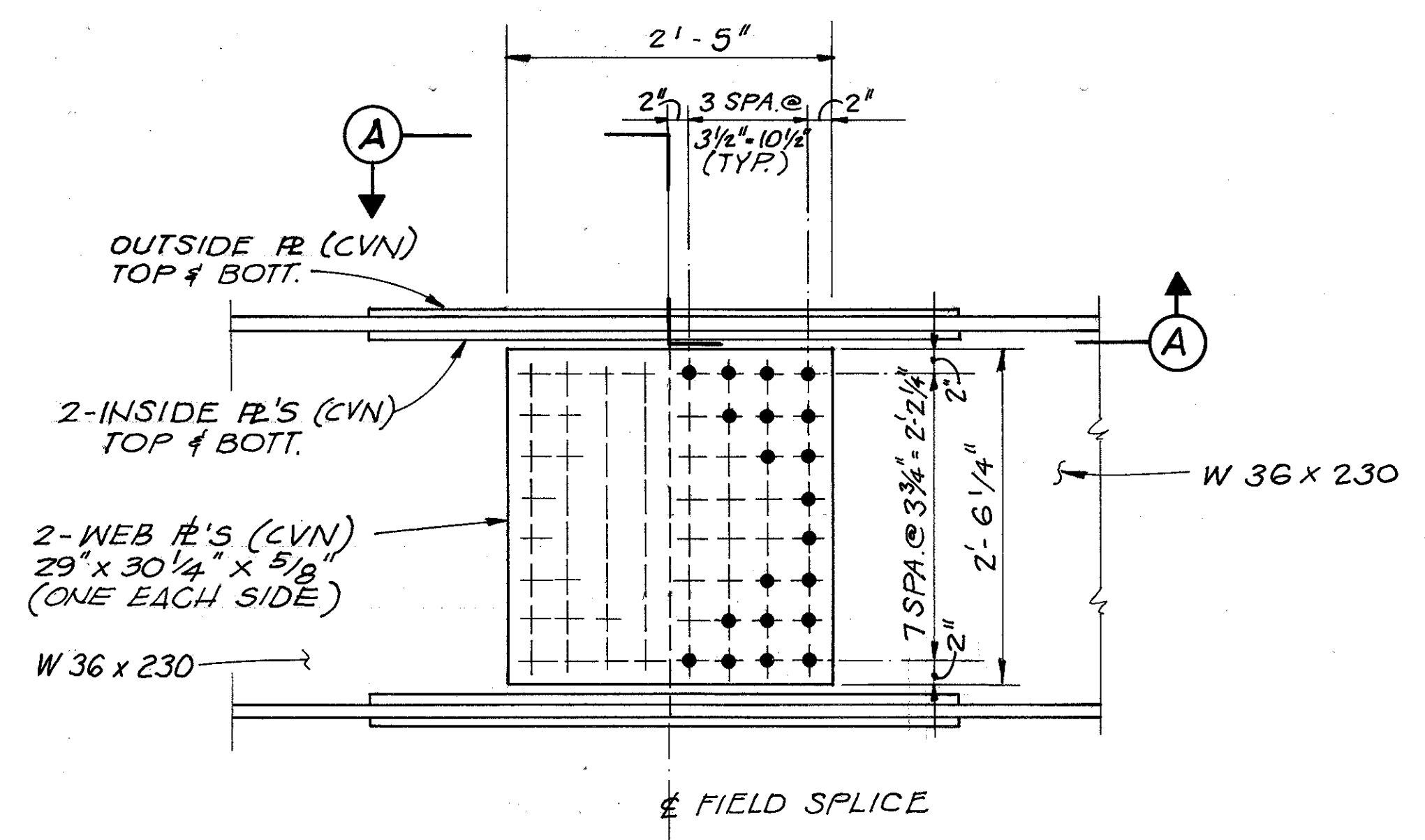
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	D.P.	A.J.M.	1/94	

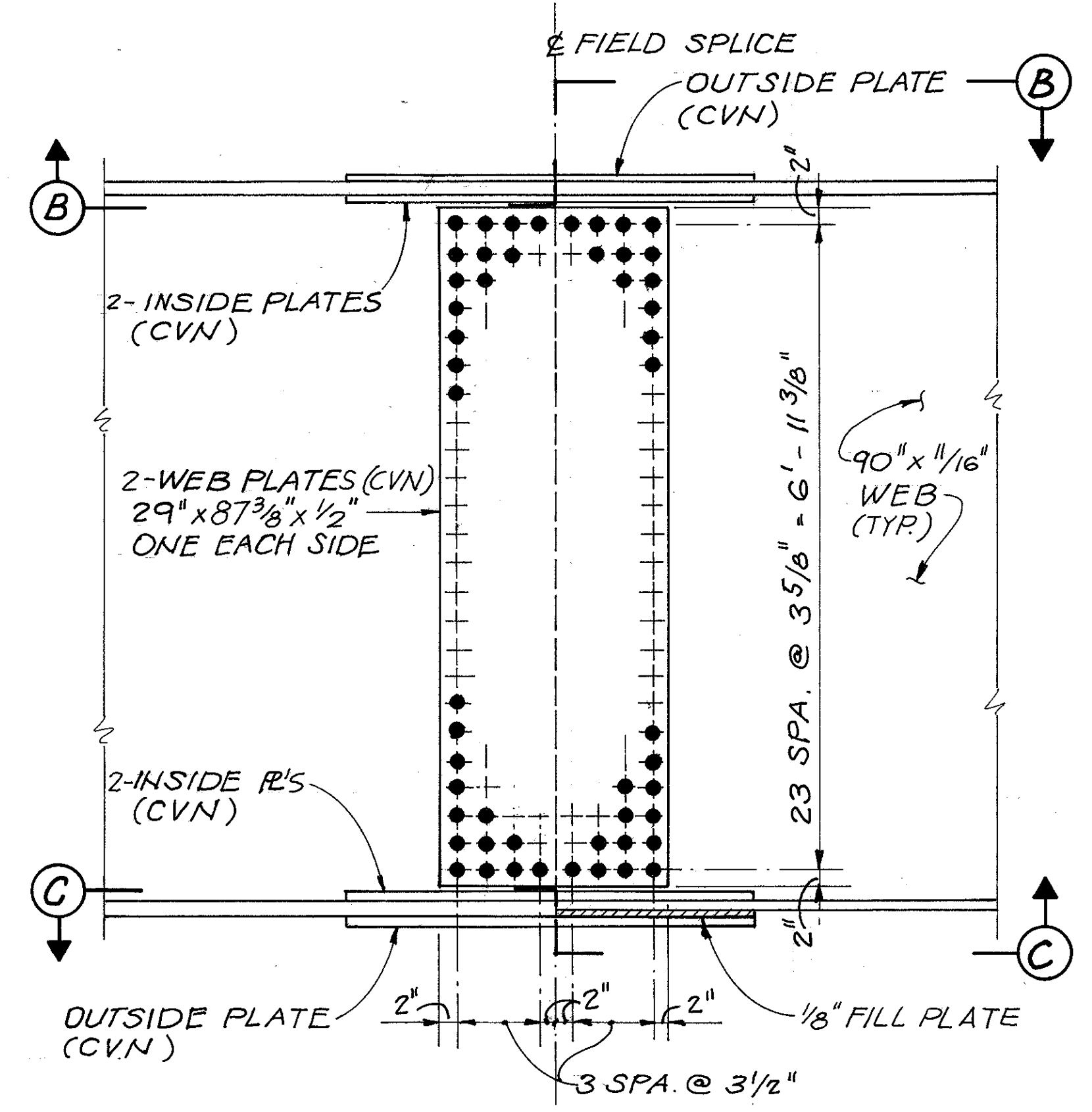
BRUNING 44-232 67195

NOTES:

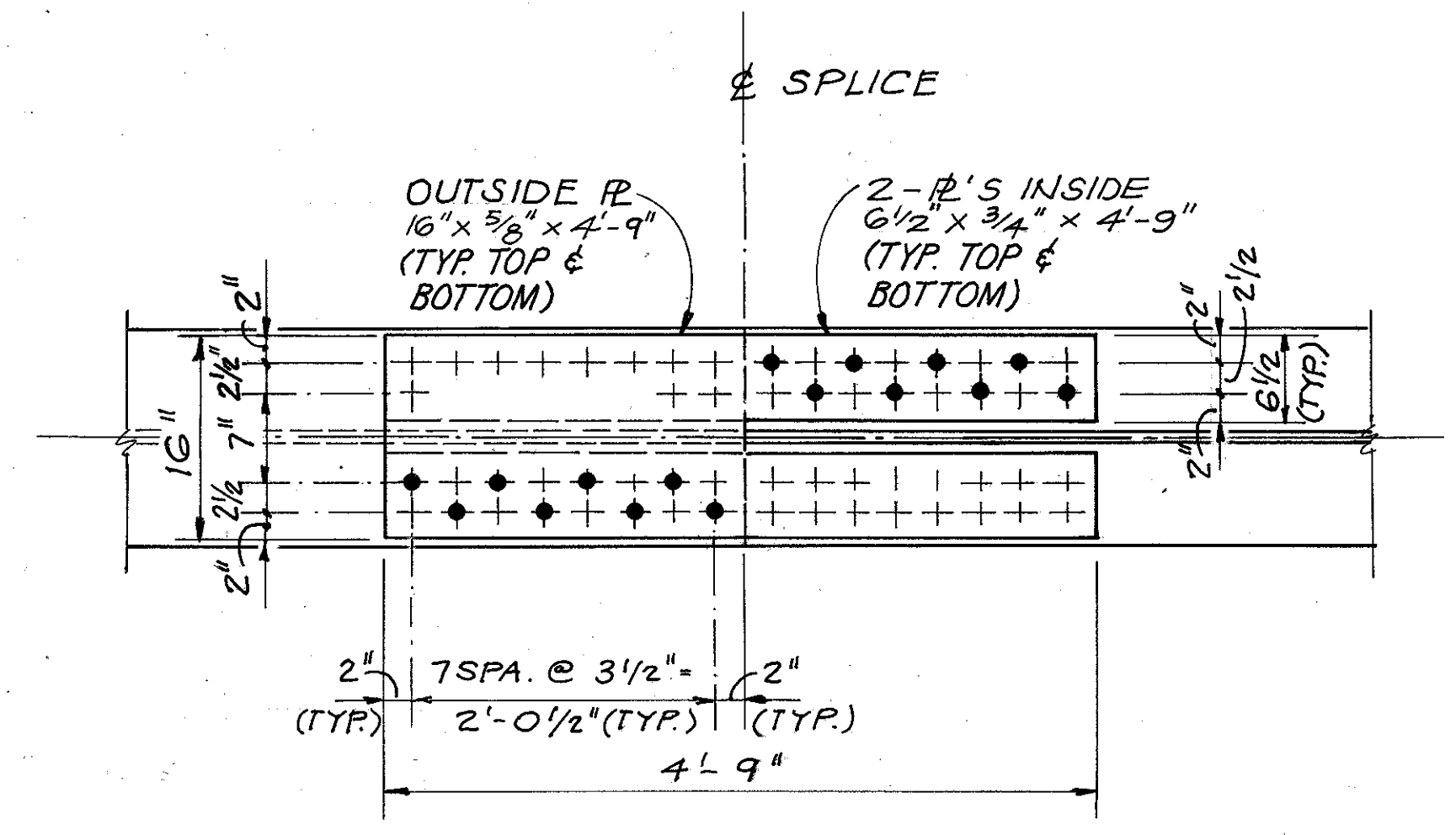
1. HIGH STRENGTH BOLTS SHALL BE 1" DIA A325, GALVANIZED, UNLESS OTHERWISE NOTED.
2. FOR ADDITIONAL DETAILS SEE STD. DWG. SD-1-69.



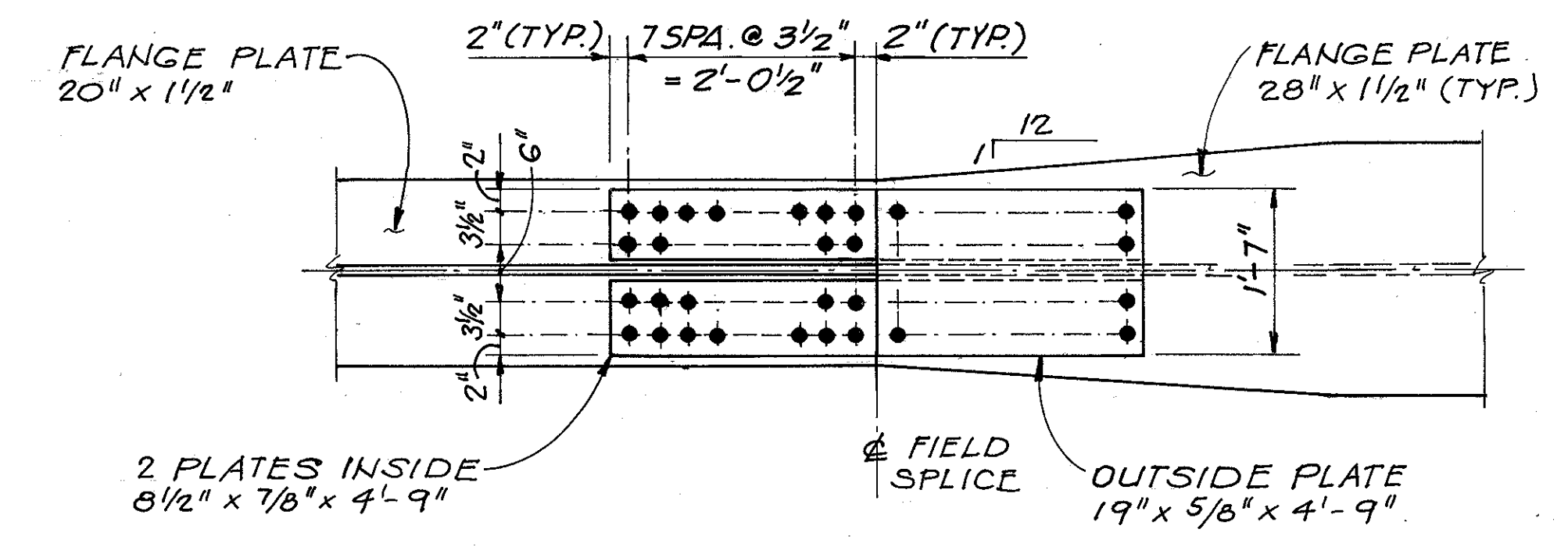
WEB SPLICE ELEVATION
TYPICAL FOR UNIT NO. 1 FIELD SPLICE



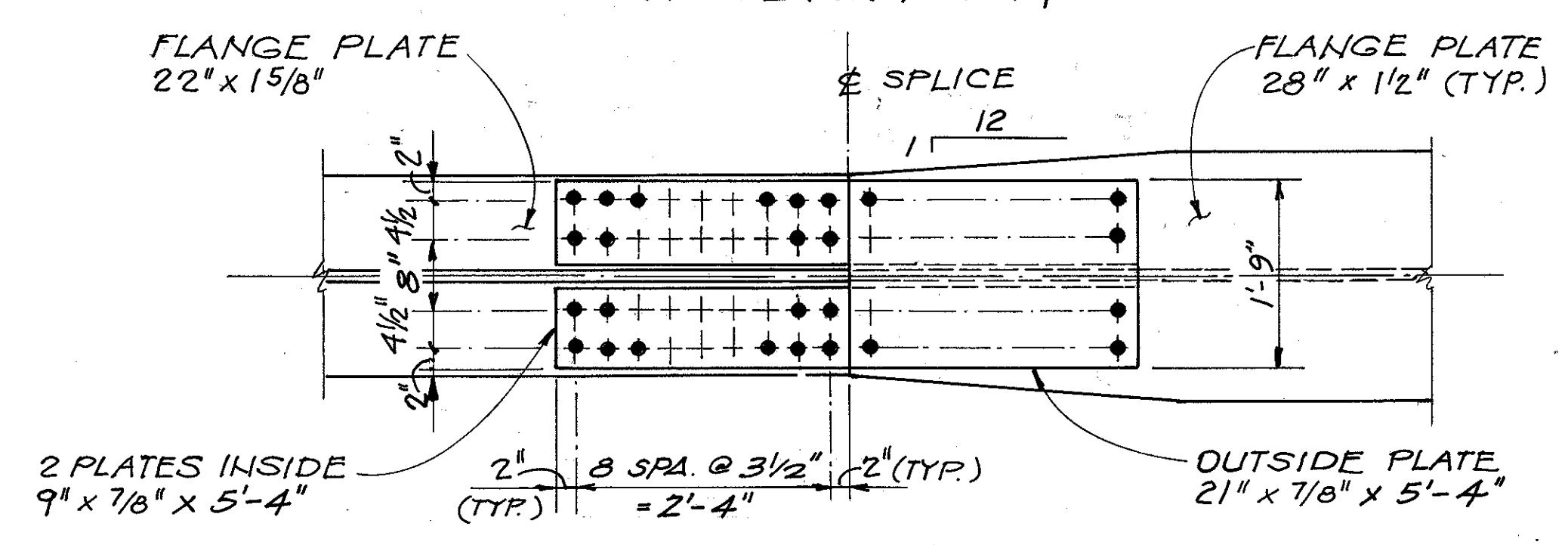
WEB SPLICE ELEVATION
TYPICAL FOR UNIT #2 F.S. #1 & #2



SECTION A-A
TOP FLANGE SPLICE SHOWN
BOTTOM FLANGE SPLICE SIMILAR



SECTION B-B
TYPICAL FOR F.S. #1 & #2



SECTION C-C
TYPICAL FOR F.S. #1 & #2

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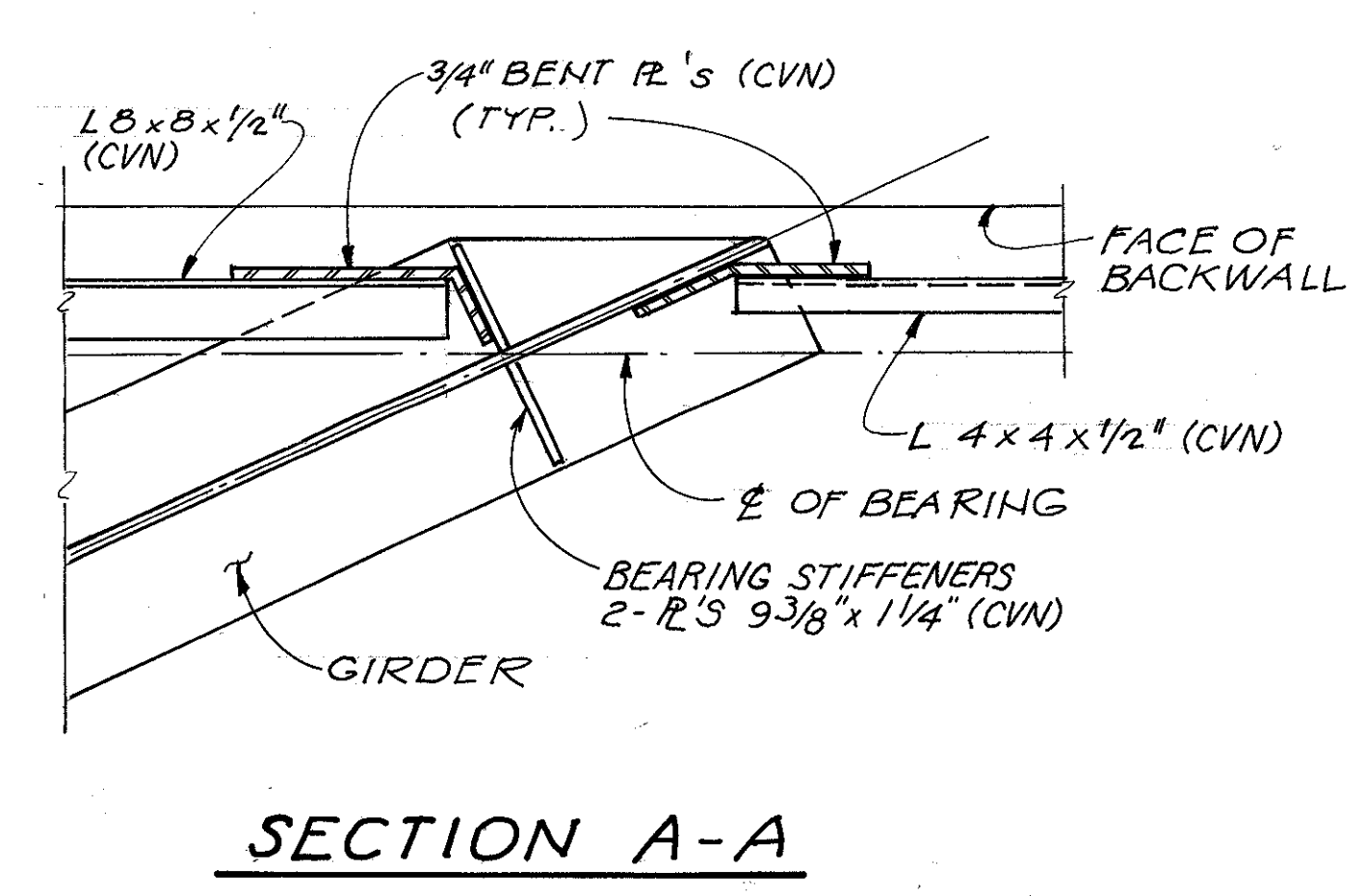
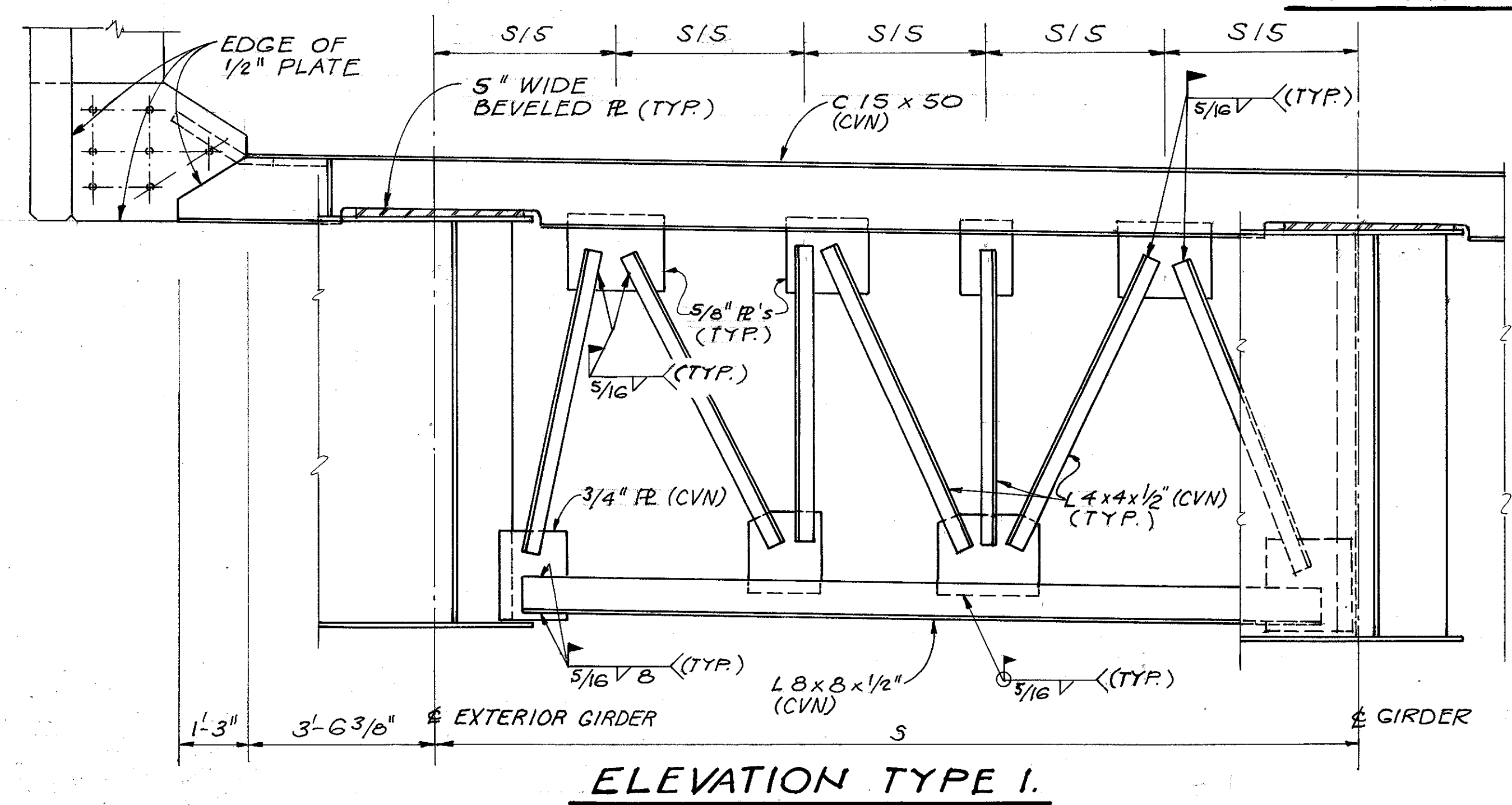
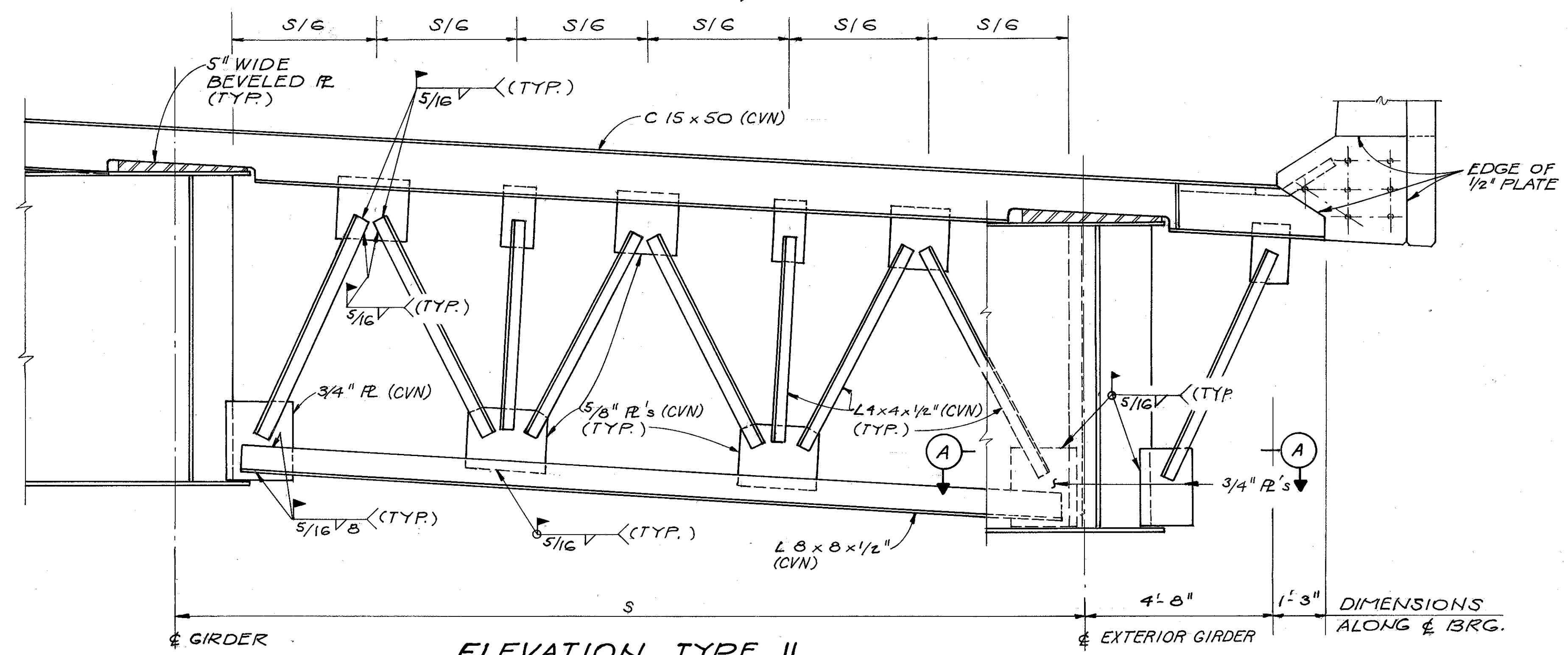
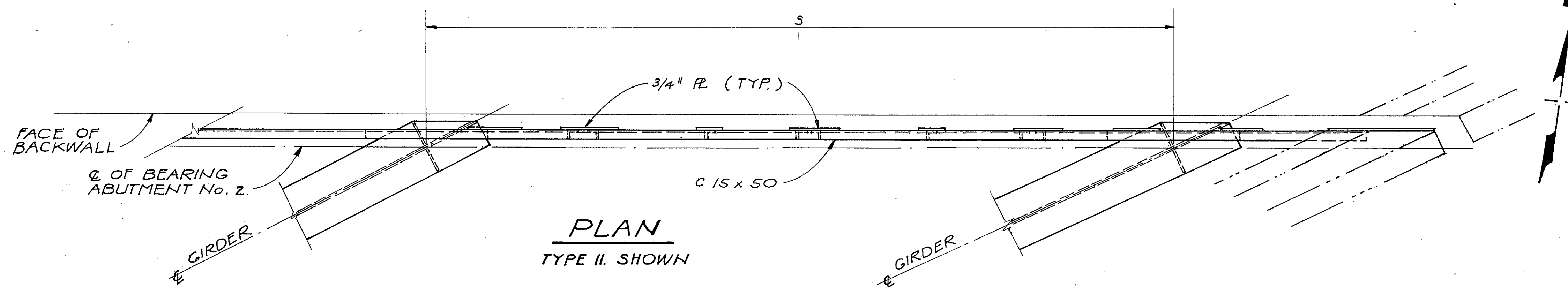
FIELD SPLICE DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW- JH AND I-480
BRIDGE No. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	D.P.	A.J.M.	1/99	



NOTES:

- WHERE SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- FOR DIMENSION "S", SEE SHT. 22/36



BRUNING 44-232 67195

24/36

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**END CROSSFRAME DETAILS
ABUTMENT No. 2.
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW - JH AND I-480
BRIDGE No. CUY-176-1020**

DESIGNED	D.P.	DRAWN	E.K.	CHECKED	D.P.	REVIEWED	A.J.M.	DATE	1/94	REVISED	
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NOTES:

- 1.) THE BEARING DEVICES SUPPLIED SHALL BE CAPABLE OF TRANSMITTING THE LOADS AND MOVEMENTS SHOWN ON THESE PLANS.
- 2.) THE MASONRY & SOLE PLATES SHOWN HAVE BEEN DESIGNED TO SUIT TYPICAL BEARINGS FOR THE DESIGN LOADS AND MOVEMENTS SHOWN. THE CONTRACTOR SHALL CHECK THE ADEQUACY OF THESE MASONRY PLATES FOR USE WITH ACTUAL BEARINGS SUPPLIED. THE ALLOWABLE CONCRETE BEARING STRESS SHALL BE:

WHERE f_b = BEARING STRESS ON THE LOADED CONCRETE AREA.

$$f_b \leq 30 f'_c \sqrt{\frac{A_2}{A_1}}$$

A_2 = PLAN AREA OF BEAM SEAT PER AASHTO (FT²)
 A_1 = PLAN AREA OF STEEL MASONRY PLATE (FT²)

THE MAXIMUM CONCRETE BEARING STRESS SHALL BE 1200 P.S.I. IF THE PLAN AREA OF ANY MASONRY PLATE IS REVISED (INCREASED), IT SHALL FIT WITHIN THE PLAN DIMENSIONS SHOWN FOR THE BEAM SEAT. THE MINIMUM CONCRETE EDGE DISTANCE SHALL BE 3" UNLESS NOTED OTHERWISE AND THE MINIMUM ANCHOR BOLT COVER SHALL BE 4".

- 3.) THE BEARING DEVICE, MASONRY PLATE, SOLE PLATE, ANCHOR BOLTS, NUTS, WASHERS AND BEARING PAD SHALL BE INCLUDED FOR PAYMENT IN THE CONTRACT PRICE FOR ITEM 516 STEEL POT BEARINGS.

- * 4.) ALL UNI & FIXED BEARINGS SHALL BE CAPABLE OF RESISTING A MINIMUM LATERAL FORCE OF 10% OF THE VERTICAL DEAD LOAD + LIVE LOAD + IMPACT OR 20% OF THE VERTICAL DEAD LOAD WHICHEVER IS GREATER APPLIED HORIZONTALLY IN ANY DIRECTION UNLESS OTHERWISE SHOWN.

- 5.) ALL EXPANSION BEARINGS SHALL HAVE A MAXIMUM FRICTION COEFFICIENT OF 3%.

- 6.) IF THE ANCHOR BOLTS ARE SET UNDER THE SOLE PLATE, A MINIMUM CLEARANCE EQUAL TO TWO TIMES THE THICKNESS OF ANCHOR NUT PLUS 1/2 INCH SHALL BE MAINTAINED BETWEEN THE TOP OF MASONRY PLATE AND THE BOTTOM OF THE SOLE PLATE.

- 7.) THE STEEL SHALL CONFORM TO ASTM A 572.

- 8.) ALL METAL COMPONENTS OF THE BEARING SYSTEM WHICH ARE LIABLE TO COME INTO CONTACT DURING THE TRANSLATION SHALL HAVE A TEFLON SLIDING SURFACE FINISH.

- 9.) ALL STEEL FABRICATION SHALL CONFORM TO THE PROVISIONS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS.

- 10.) THE DIMENSION "H" IN THE BEARING TABLE REPRESENTS THE ASSUMED TOTAL HEIGHT OF BEARING MECHANISM BETWEEN THE SOLE PLATE AND MASONRY PLATE USED BY THE DESIGNER TO ESTABLISH CONCRETE DIMENSIONS. THE CONTRACTOR SHALL RECOMPUTE ALL BEAM SEAT ELEVATIONS TO ACCURATELY REFLECT THE HEIGHT OF BEARINGS SUPPLIED. NO OTHER CONCRETE ELEVATION SHALL BE CHANGED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.

- 11.) ABBREVIATIONS:

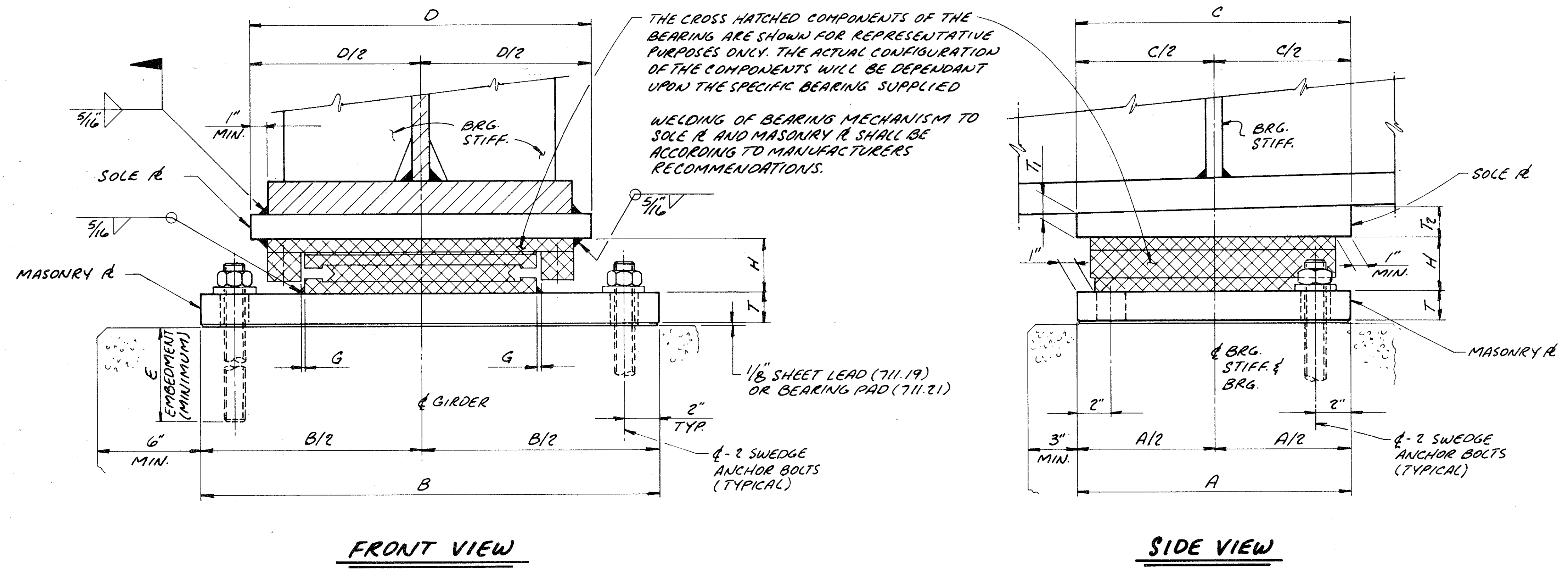
MULTI - MULTI DIRECTIONAL BEARING DIA. - DIAMETER
 UNI - UNI-DIRECTIONAL BEARING
 SELF ALIGNING SIDE OR CENTER GUIDED.

- 12.) THE HOLE DIAMETERS IN THE MASONRY PLATE SHALL BE 3/8" LARGER THAN THE REQUIRED ANCHOR BOLT DIAMETER.

- 13.) ALL STEEL POT BEARINGS SHALL BE DESIGNED TO MEET THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO 1992 AND THE 1993 INTERIM TO THESE SPECIFICATIONS.

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 CONSULTING ENGINEERS CLEVELAND, OH 44115
STEEL POT BEARING DETAILS
JENNINGS FREEWAY
 STATE ROUTE 176
 OVER
 CONRAIL, LAKE OBW-JN AND I-480
BRIDGE No. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
D.P.	D.S.C.	S.F.M.	T.A.B.	1/94	



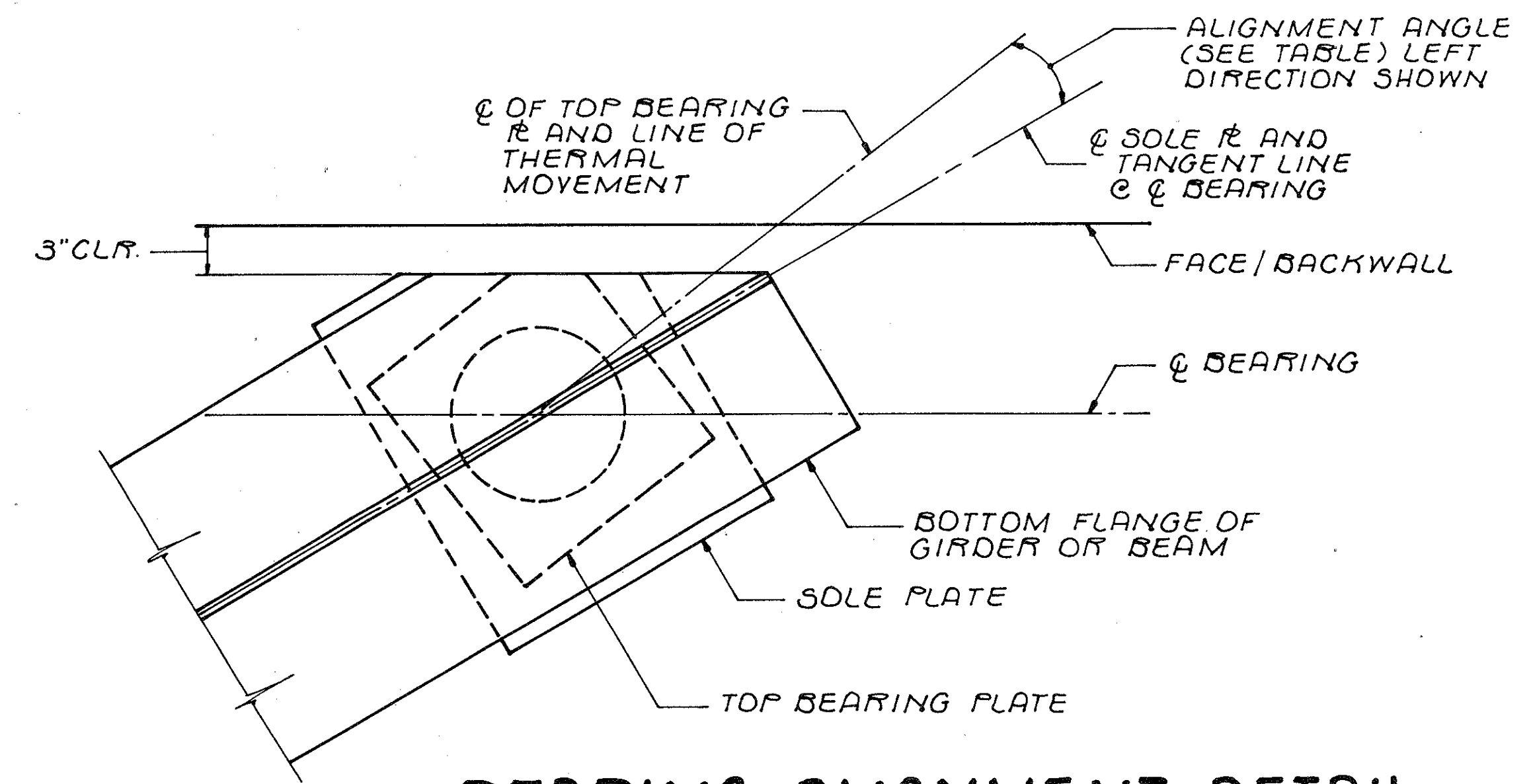
FRONT VIEW

SIDE VIEW

BEARING DATA

(ALL DIMENSIONS IN INCHES)

LOCATION	BEARING TYPE	DEAD LOAD (KIPS)		LIVE LOAD + IMPACT (KIPS)		ONE WAY LONGITUDINAL MOVEMENT	MAX. ROTATION (RADIAN)	"G" GUIDE CLEARANCE	MASONRY PLATE			SOLE PLATE		BEARING	ANCHOR BOLTS / BEARING					
		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL				A	B	T	C	D		T ₁	T ₂	H	QTY	DIA.	LENGTH
ABUT. No. 1.	UNI	42		79		7/8	0.0002	1/8"	12	22	2	17	18 1/2	2	2 1/16	2 7/8	2	1 1/4	20	15
PIER No. 1.	UNI	137		101		9/16	0.002	1/8"	14	24	2	18 3/4	18 1/2	2	2 5/16	3 1/8	2	1 1/4	20	15
PIER No. 2.	FIXED	155		106		0	0.002	0	14	20	2	14	18 1/2	2	2 5/16	2 3/4	2	1 1/4	20	15
PIER No. 3. UNIT No. 1.	UNI	65		84		1/2	0.002	1/8"	12	22	2	17	18 1/2	2	2 1/4	2 7/8	2	1 1/4	20	15
PIER No. 3. UNIT No. 2.	UNI	146		100		1 5/16	0.002	1/4"	14	24	2	18 3/4	24	2	2 5/16	3 1/8	2	1 1/4	20	15
PIER No. 4	FIXED	526		220		0	0.002	0	24	30	2	24	30	2 3/4	2 7/8	4 1/16	4	1 1/4	27	22
ABUT. No. 2.	UNI	145		119		1 5/16	0.002	1/4"	14	24	2	18 3/4	24	2	2 1/2	3 1/8	2	1 1/4	20	15



BEARING ALIGNMENT DETAIL

DETAIL @ ABUTMENT SHOWN, PIER BEARINGS SIMILAR
 ALIGN MASONRY PLATE PARALLEL WITH & BEARINGS

BEARING ALIGNMENT

LOCATION	ANGLE (DEGREES)
ABUT. No. 1.	5° RT.
PIER No. 1.	3° RT.
PIER No. 2.	0°
PIER No. 3. UNIT 1.	2.5° LT
PIER No. 3. UNIT 2.	7° RT
PIER No. 4	0°
ABUT. No. 2.	6.5° LT

D E F L E C T I O N A N D C A M B E R (I N C H E S)

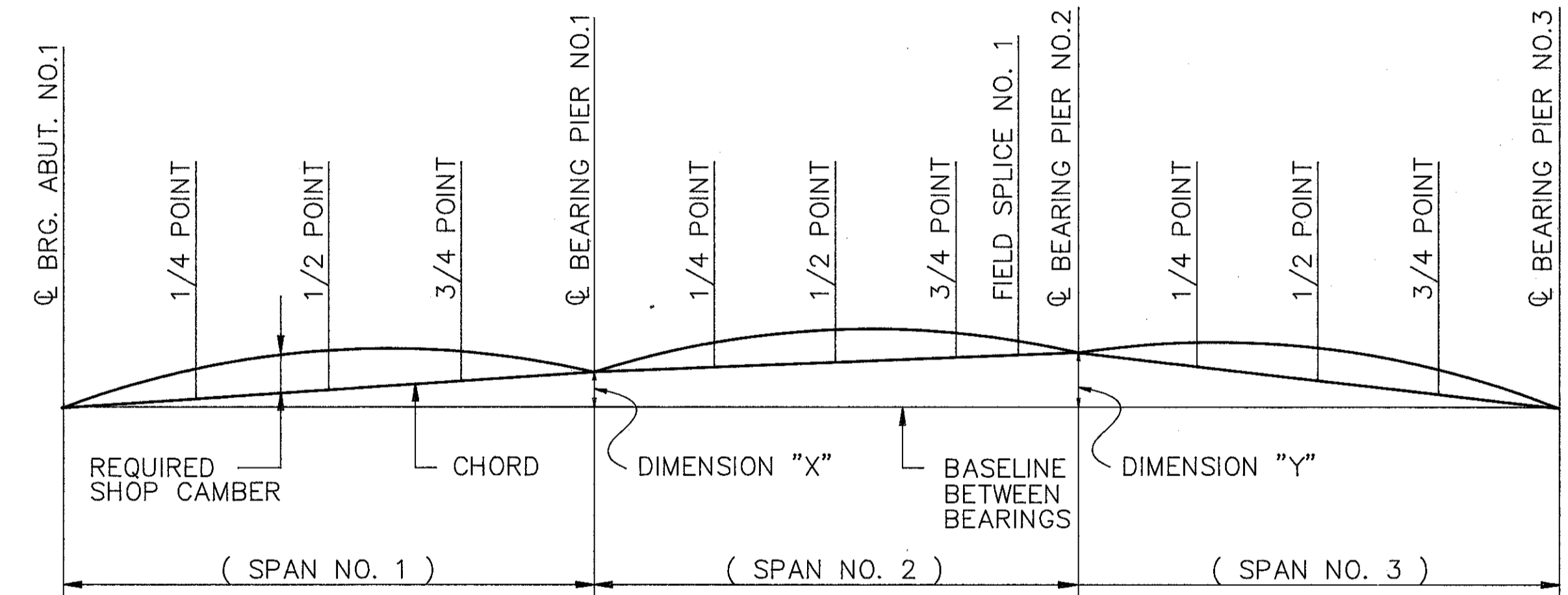
CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

303
395

NOTES:

1. NEGATIVE VALUES OF CAMBER INDICATE THE DIMENSION IS BELOW THE CHORD BETWEEN ADJACENT BEARINGS.
2. FOR ACTUAL FIELD SPLICE LOCATION SEE BEAM ELEVATION ON SHEET 21/36.

	POINT	SPAN NO. 1			SPAN NO. 2				SPAN NO. 3		
		1/4	1/2	3/4	1/4	1/2	3/4	FS	1/4	1/2	3/4
GIRDER A	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/8	1/8	1/16	3/8	1/2	3/16	3/16	5/16	5/8	1/2
	VERTICAL CURVE ADJUSTMENT	1/4	3/8	3/8	3/4	15/16	3/4	3/4	1/2	3/4	5/8
	HEAT CURVATURE ADJUSTMENT	1/16	1/16	1/16	1/16	3/16	1/16	1/16	1/16	3/16	1/8
	REQUIRED SHOP CAMBER	7/16	9/16	1/2	1 1/4	1 3/4	1 1/16	1 1/16	15/16	1 11/16	1 5/16
GIRDER B	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/16	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	5/16	7/16	3/16	3/16	1/4	1/2	7/16
	VERTICAL CURVE ADJUSTMENT	1/4	3/8	1/4	3/4	13/16	3/4	3/4	1/2	3/4	5/8
	HEAT CURVATURE ADJUSTMENT	1/16	1/16	0	1/8	1/8	1/16	1/16	1/16	3/16	3/16
	REQUIRED SHOP CAMBER	3/8	1/2	1/4	1 1/4	1 7/16	1 1/16	1 1/16	7/8	1 9/16	1 5/16
GIRDER C	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	1/4	3/8	3/16	3/16	1/4	7/16	3/8
	VERTICAL CURVE ADJUSTMENT	1/4	1/4	1/4	5/8	13/16	3/4	3/4	1/2	3/4	1/2
	HEAT CURVATURE ADJUSTMENT	1/8	1/8	0	1/16	1/16	1/16	1/16	1/16	3/16	1/8
	REQUIRED SHOP CAMBER	7/16	7/16	1/4	1	1 3/8	1 1/16	1 1/16	7/8	1 1/2	1 1/16
GIRDER D	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	1/4	7/16	1/4	3/16	1/4	7/16	3/8
	VERTICAL CURVE ADJUSTMENT	3/8	3/8	3/8	3/4	15/16	3/4	3/4	1/2	3/4	5/8
	HEAT CURVATURE ADJUSTMENT	1/16	1/16	0	1/16	3/16	1/16	1/16	1/16	1/8	1/8
	REQUIRED SHOP CAMBER	1/2	1/2	3/8	1 1/8	1 11/16	1 1/8	1 1/16	7/8	1 7/16	1 3/16
GIRDER E	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	5/16	7/16	1/4	3/16	3/16	7/16	3/8
	VERTICAL CURVE ADJUSTMENT	1/4	1/2	1/4	3/4	15/16	3/4	3/4	5/8	3/4	1/2
	HEAT CURVATURE ADJUSTMENT	1/8	1/8	0	1/16	3/16	1/16	1/16	1/16	1/8	1/8
	REQUIRED SHOP CAMBER	7/16	11/16	1/4	1 3/16	1 11/16	1 1/8	1 1/16	15/16	1 7/16	1 1/16
GIRDER F	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	1/4	3/8	1/4	3/16	3/16	7/16	3/8
	VERTICAL CURVE ADJUSTMENT	3/8	3/8	3/8	3/4	1 1/16	3/4	13/16	5/8	13/16	1/2
	HEAT CURVATURE ADJUSTMENT	1/8	1/8	0	1/16	1/8	1/16	1/16	1/16	1/8	1/8
	REQUIRED SHOP CAMBER	9/16	9/16	3/8	1 1/8	1 11/16	1 1/8	1 1/8	15/16	1 1/2	1 1/16
GIRDER G	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/16	0	5/16	7/16	1/4	3/16	3/16	7/16	3/8
	VERTICAL CURVE ADJUSTMENT	3/8	3/8	3/8	3/4	1 1/16	3/4	15/16	5/8	3/4	5/8
	HEAT CURVATURE ADJUSTMENT	1/8	1/8	0	1/16	3/16	1/16	1/16	1/16	1/8	1/8
	REQUIRED SHOP CAMBER	9/16	9/16	3/8	1 3/16	1 13/16	1 1/8	1 1/4	15/16	1 7/16	1 3/16
GIRDER H	DEFLECTION DUE TO WEIGHT OF STEEL	0	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1/16	1/8	0	5/16	9/16	5/16	1/4	1/4	1/2	7/16
	VERTICAL CURVE ADJUSTMENT	3/8	1/2	3/8	13/16	15/16	3/4	3/4	5/8	3/4	5/8
	HEAT CURVATURE ADJUSTMENT	1/16	1/16	0	1/16	3/16	1/16	1/16	1/16	1/8	1/8
	REQUIRED SHOP CAMBER	1/2	11/16	3/8	1 1/4	1 13/16	1 3/16	1 1/8	1	1 1/2	1 1/4



D I M E N S I O N T A B L E								
DIMENSION	B E A M S							
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
"X"	4 7/16"	4 9/16"	4 13/16"	4 13/16"	4 15/16"	5 3/16"	5 3/16"	5 3/8"
"Y"	5 1/4"	5 1/2"	5 1/2"	5 3/4"	5 7/8"	5 7/8"	6 1/8"	6 3/8"

26/36

adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131
CAMBER AND DEFLECTION
UNIT NO.1
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

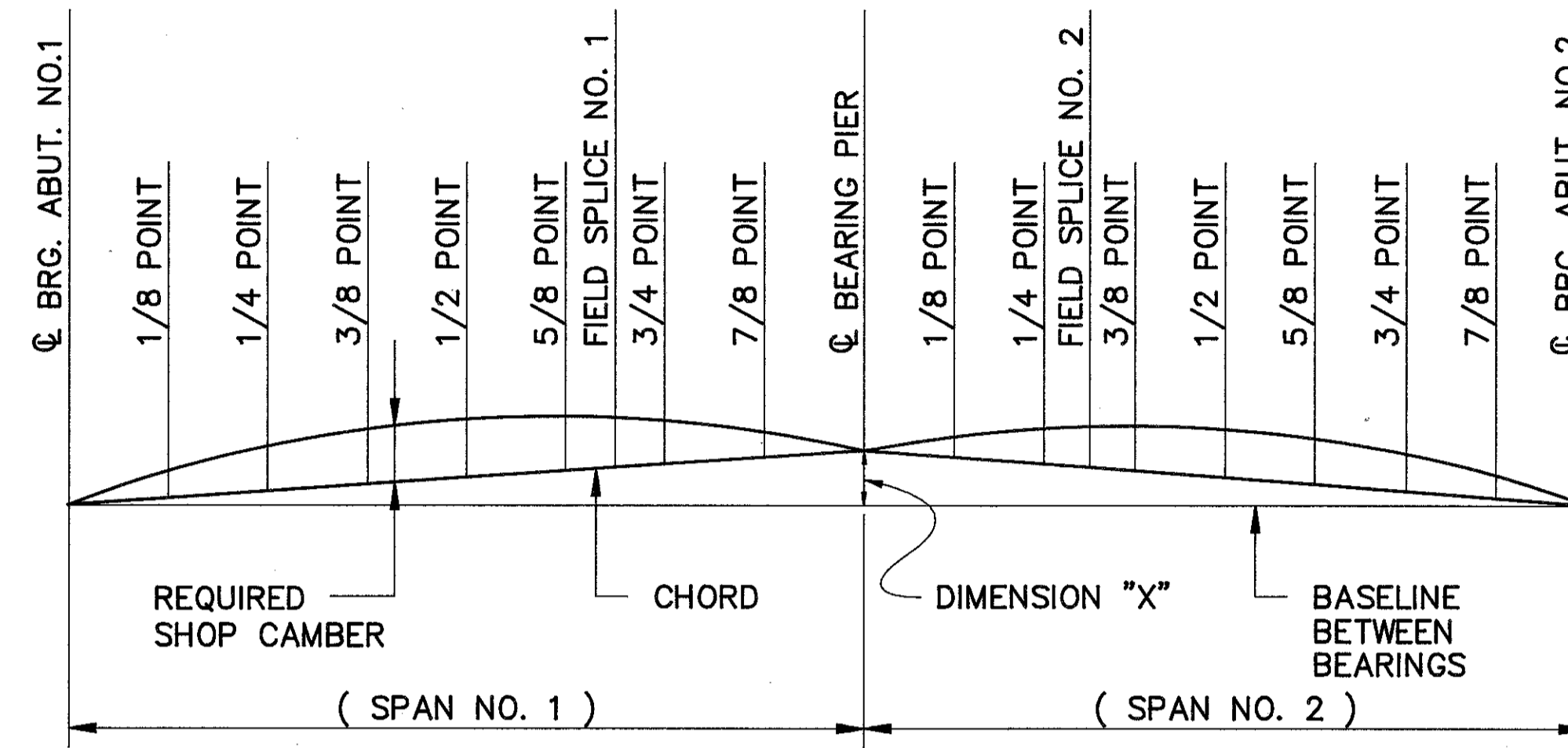
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B	M	D.P.	A.J.M.	1/94	

D E F L E C T I O N A N D C A M B E R (I N C H E S)

NOTES:

1. NEGATIVE VALUES OF CAMBER INDICATE THE DIMENSION IS BELOW THE CHORD BETWEEN ADJACENT BEARINGS.
2. FOR ACTUAL FIELD SPLICE LOCATIONS SEE GIRDER ELEVATION ON SHEET 22/36.

	POINT	SPAN NO. 1								SPAN NO. 2								
		1/8	1/4	3/8	1/2	5/8	FS 1	3/4	7/8	1/8	1/4	FS 2	3/8	1/2	5/8	3/4	7/8	
G I R D E R A	DEFLECTION DUE TO WEIGHT OF STEEL	1/2	7/8	1	1	7/8	3/4	9/16	3/16	-1/16	-1/16	1/16	1/16	3/16	1/4	1/4	1/8	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 3/16	2 1/16	2 1/2	2 1/2	2 1/16	1 13/16	1 5/16	1/2	-3/16	-1/16	3/16	3/16	7/16	5/8	9/16	3/8	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/16	3 1/2	4 5/16	4 9/16	4 3/16	3 15/16	3 3/8	1 15/16		1 7/16	2 5/8	3 1/4	3 1/4	3 1/2	3 1/4	2 5/8	1 9/16
	REQUIRED SHOP CAMBER	3 3/4	6 7/16	7 13/16	8 1/16	7 1/8	6 1/2	5 1/4	2 5/8		1 3/16	2 1/2	3 1/2	3 1/2	4 1/8	4 1/8	3 7/16	2 1/16
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	3/16	5/16	3/8	3/8	5/16	1/4	0	0		0	0	1/16	1/16	3/16	1/4	1/4	1/8
G I R D E R B	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	13/16	1	15/16	13/16	11/16	1/2	3/16	-1/16	0	1/16	1/16	3/16	1/4	1/4	1/8	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/8	1 7/8	2 5/16	2 5/16	1 7/8	1 9/16	1 3/16	7/16	-1/8	0	1/4	1/4	7/16	9/16	1/2	5/16	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 3/16	3 5/8	4 7/16	4 11/16	4 7/16	4 3/16	3 5/8	2 1/16	1 9/16	2 7/8	3 5/8	3 5/8	3 13/16	3 5/8	2 7/8	1 11/16	
	REQUIRED SHOP CAMBER	3 3/4	6 5/16	7 3/4	7 15/16	7 1/8	6 7/16	5 5/16	2 11/16		1 3/8	2 7/8	3 15/16	3 15/16	4 7/16	4 7/16	3 5/8	2 1/8
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	3/16	5/16	3/8	3/8	5/16	1/4	0	0		0	0	1/8	0	3/16	1/4	1/4	1/8
G I R D E R C	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	3/4	15/16	15/16	3/4	5/8	1/2	3/16	-1/16	0	1/16	1/8	1/4	1/4	1/4	1/8	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/16	1 13/16	2 3/16	2 1/8	1 3/4	1 1/2	1 1/16	7/16	-1/8	0	3/16	1/4	1/2	5/8	9/16	5/16	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/4	3 3/4	4 11/16	5 1/16	4 11/16	4 7/16	3 3/4	2 3/16	1 13/16	3 1/8	3 5/8	3 13/16	4 1/16	3 13/16	3	1 13/16	
	REQUIRED SHOP CAMBER	3 3/4	6 5/16	7 13/16	8 1/8	7 3/16	6 9/16	5 5/16	2 13/16	1 5/8	3 1/8	3 7/8	4 3/16	4 13/16	4 11/16	3 13/16	2 1/4	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	3/16	3/8	7/16	7/16	3/8	5/16	0	0		0	0	1/8	1/8	1/4	5/16	5/16	3/16
G I R D E R D	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	3/4	15/16	15/16	3/4	5/8	7/16	3/16	0	1/16	1/8	3/16	1/4	5/16	1/4	3/16	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1	1 3/4	2 1/8	2 1/8	1 11/16	1 3/8	1/16	3/8	0	1/16	1/4	5/16	9/16	11/16	5/8	3/8	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/4	3 15/16	4 15/16	5 1/4	4 15/16	4 9/16	3 15/16	2 1/4	1 15/16	3 1/4	3 15/16	4 1/16	4 5/16	4 1/16	3 1/4	1 13/16	
	REQUIRED SHOP CAMBER	3 11/16	6 7/16	8	8 5/16	7 3/8	6 9/16	5 7/16	2 13/16	1 15/16	3 3/8	4 5/16	4 9/16	5 1/8	5 1/16	4 1/8	2 3/8	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	1/4	3/8	7/16	7/16	3/8	5/16	0	0		0	0	1/8	3/16	5/16	3/8	5/16	3/16
G I R D E R E	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	3/4	15/16	15/16	3/4	9/16	7/16	3/16	0	1/16	3/16	1/4	5/16	3/8	5/16	3/16	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1	1 3/4	2/18	2/18	1 11/16	1 1/4	1	3/8	0	1/8	3/8	7/16	11/16	13/16	3/4	7/16	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/2	4 3/16	5 1/4	5 1/2	5 1/4	4 9/16	4 3/16	2 3/8	2 1/16	2 3/4	4 3/16	4 7/16	4 11/16	4 7/16	3 5/8	2 1/16	
	REQUIRED SHOP CAMBER	3 15/16	6 11/16	8 5/16	8 9/16	7 11/16	6 3/8	5 5/8	2 15/16	2 1/16	2 15/16	4 3/4	5 1/8	5 11/16	5 5/8	4 11/16	2 11/16	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	1/4	7/16	9/16	9/16	7/16	5/16	0	0		0	0	3/16	1/4	5/16	3/8	5/16	3/16
G I R D E R F	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	3/4	15/16	15/16	3/4	9/16	7/16	3/16	0	1/8	1/4	1/4	3/8	7/16	3/8	1/4	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1	1 3/4	2 3/16	2 1/8	1 11/16	1 5/16	1 1/16	3/8	0	1/4	1/2	5/8	15/16	1 1/16	7/8	9/16	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 5/8	4 7/16	5 3/8	5 7/8	5 1/2	5 1/16	4 7/16	2 1/2	2 1/4	3 15/16	4 9/16	4 15/16	5 3/16	4 13/16	3 13/16	2 1/4	
	REQUIRED SHOP CAMBER	4 1/16	6 15/16	8 1/2	8 15/16	7 15/16	6 15/16	5 15/16	3 1/16	2 1/4	4 5/16	5 5/16	5 13/16	6 1/2	6 5/16	5 1/16	3 1/16	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	1/4	7/16	9/16	9/16	7/16	5/16	0	0		0	0	3/16	1/4	3/8	7/16	3/8	3/16
G I R D E R G	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	13/16	15/16	15/16	11/16	9/16	7/16	1/8	1/16	3/16	5/16	3/8	1/2	9/16	7/16	1/4	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/16	1 7/8	2 1/4	2 3/16	1 11/16	1 1/4	1	5/16	1/16	7/16	11/16	7/8	1 3/16	1 5/16	1 1/8	5/8	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 7/8	4 11/16	6	6 1/4	5 7/8	5 1/4	4 13/16	2 3/4	2 1/2	4 3/16	4 15/16	5 3/8	5 5/8	5 1/4	4 5/16	2 3/8	
	REQUIRED SHOP CAMBER	4 3/8	7 3/8	9 3/16	9 3/8	8 1/4	7 1/16	6 1/4	3 3/16	2 5/8	4 13/16	5 15/16	6 5/8	7 5/16	7 1/8	5 7/8	3 1/4	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	1/4	1/2	9/16	9/16	7/16	7/16	0	0		0	0	1/4	5/16	1/2	1/2	7/16	1/4
G I R D E R H	DEFLECTION DUE TO WEIGHT OF STEEL	7/16	13/16	1	15/16	11/16	1/2	3/8	1/8	1/8	5/16	3/8	1/2	11/16	11/16	1/2	5/16	
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/8	2	2 3/8	2 5/16	1 11/16	1 3/16	15/16	1/4	3/16	11/16	15/16	1 1/4	1 5/8	1 5/8	1 5/16	3/4	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 7/8	5 1/6	6 1/4	6 3/4	6 3/8	5 5/8	5 1/16	3	2 3/4	4 13/16	5 1/4	5 7/8	6 1/4	5 7/8	4 11/16	2 3/4	
	REQUIRED SHOP CAMBER	4 7/16	7 7/8	9 5/8	10	8 3/4	7 5/16	6 3/8	3 3/8	3 1/16	5 13/16	6 9/16	7 5/8	8 9/16	8 3/16	6 1/2	3 13/16	
	HEAT CURVATURE ADJUSTMENT (OF REQUIRED)	5/16	1/2	5/8	5/8	7/16	5/16	0	0		0	0	5/16	7/16	9/16	7/16	1/4	



LAYOUT DIAGRAM

D I M E N S I O N T A B L E								
DIMENSION	G I R D E R S							
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
"X"	1'-4 1/16"	1'-5 1/16"	1'-6 1/8"	1'-7 5/16"	1'-8 11/16"	1'-10 1/8"	1'-11 15/16"	2'-1 15/16"

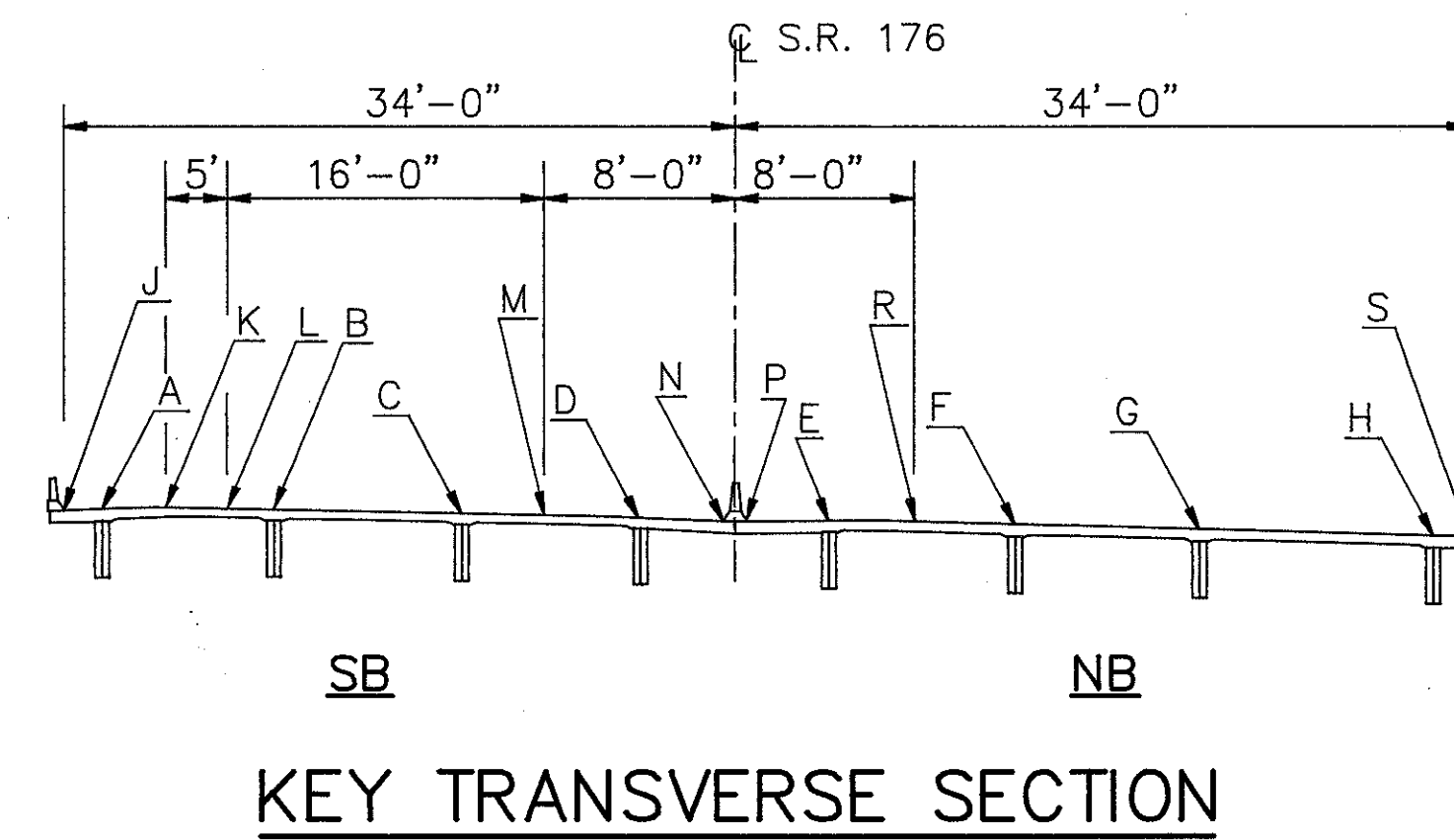
adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

**CAMBER AND DEFLECTION
UNIT NO.2
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
D.P.	M	T.A.B.	A.J.M.	1/94	

SCREED ELEVATION TABLE (UNIT NO.1)

POINT	SPAN NO. 1				SPAN NO. 2				FS	SPAN NO. 3				
	CL BRG A1	1/4	1/2	3/4	CL BRG P1	1/4	1/2	3/4		CL BRG P2	1/4	1/2	3/4	CL BRG P3
A	783.67	784.14	784.59	785.02	785.42	786.05	786.63	787.12	787.11	787.58	788.00	788.41	788.74	789.01
B	783.80	784.27	784.72	785.14	785.56	786.19	786.76	787.26	787.26	787.72	788.13	788.53	788.86	789.12
C	783.37	783.84	784.29	784.72	785.14	785.76	786.34	786.83	786.84	787.29	787.70	788.09	788.41	788.67
D	782.94	783.42	783.87	784.30	784.71	785.34	785.92	786.41	786.46	786.87	787.27	787.66	787.97	788.22
E	783.22	783.70	784.16	784.58	785.00	785.63	786.21	786.69	786.75	787.15	787.55	787.93	788.23	788.48
F	783.03	783.52	783.97	784.40	784.82	785.45	786.03	786.51	786.56	786.96	787.36	787.73	788.03	788.26
G	782.61	783.10	783.55	783.98	784.40	785.03	785.61	786.09	786.17	786.54	786.93	787.29	787.58	787.81
H	782.19	782.68	783.14	783.57	783.99	784.62	785.19	786.67	785.73	786.12	786.50	786.85	787.13	787.35
J	783.57	784.04	784.48	784.90	785.32	785.94	786.52	787.01	-	787.48	787.90	788.31	788.64	788.92
K	783.83	784.31	784.75	785.17	785.59	786.22	786.62	786.95	-	787.75	788.17	788.57	788.90	789.17
L	783.85	784.32	784.77	785.19	785.61	786.24	786.81	787.31	-	787.77	788.19	788.58	788.91	789.18
M	783.10	783.58	784.03	784.45	784.87	785.50	786.08	786.57	-	787.03	787.43	787.82	788.14	788.39
N	782.78	783.26	783.72	784.14	784.56	785.19	785.77	786.26	-	786.71	787.12	787.50	787.81	788.06
P	783.14	783.62	784.08	784.50	784.92	785.55	786.13	786.62	-	787.07	787.47	787.85	788.17	788.41
R	783.30	783.78	784.24	784.66	785.08	785.71	786.29	786.78	-	787.23	787.63	788.00	788.30	788.54
S	782.10	782.59	783.05	783.48	783.90	784.53	785.11	785.59	-	786.03	786.41	786.76	787.04	787.26



CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. 5 REGION



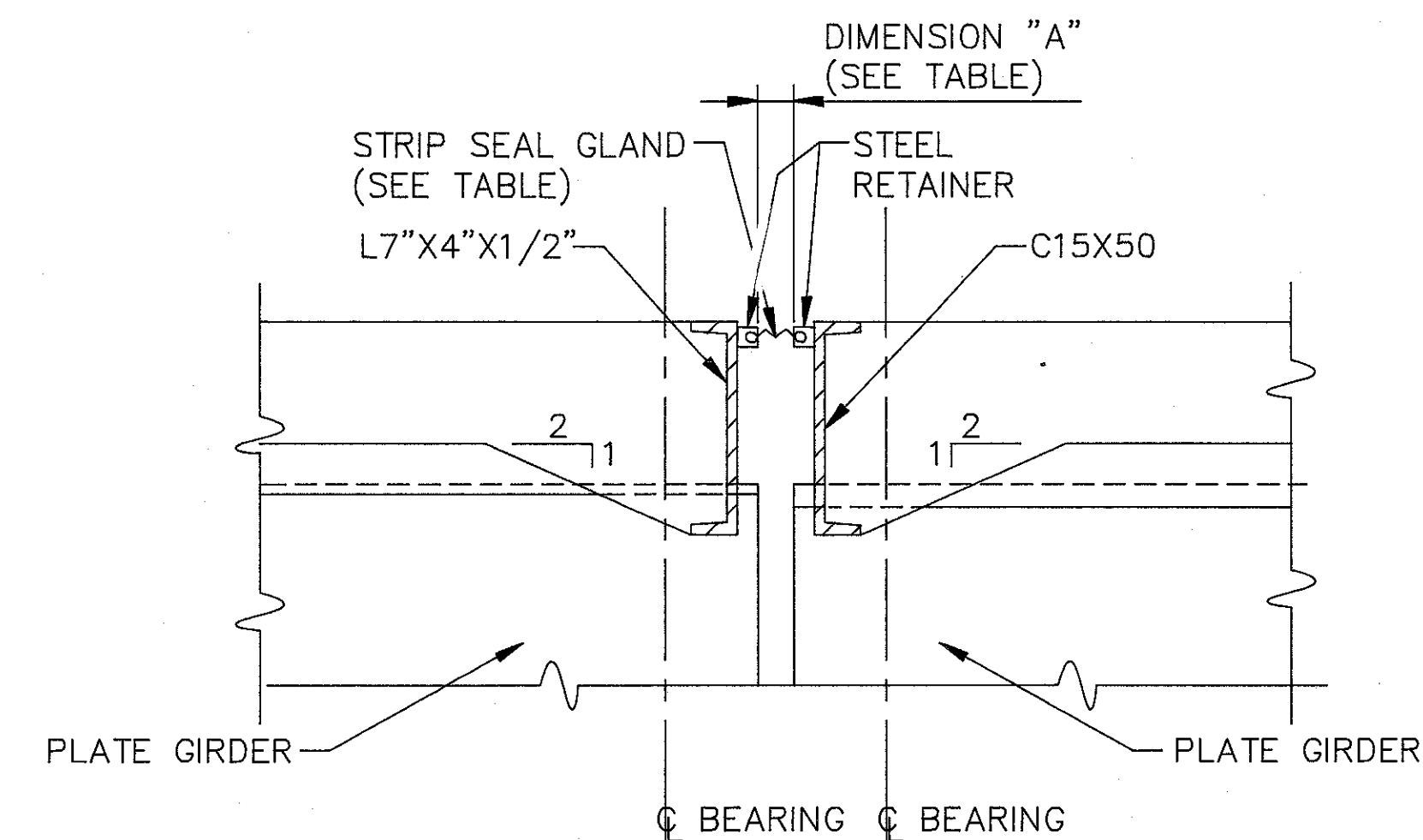
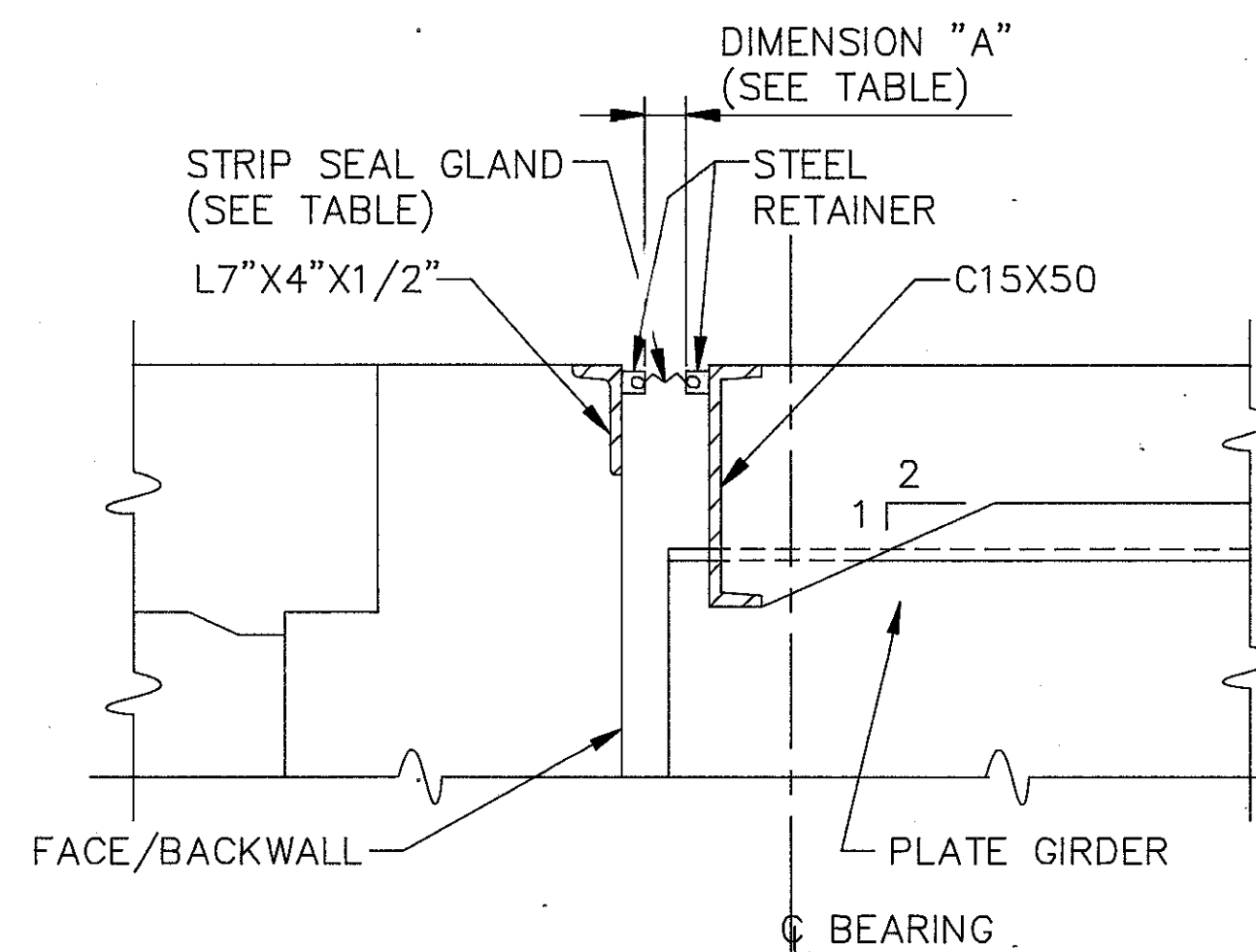
NOTES:

- THE SCREED ELEVATIONS ARE TO THE TOP OF THE CONCRETE DECK AND ARE THOSE WHICH ARE REQUIRED BEFORE THE CONCRETE IS PLACED. PROPER ALLOWANCE HAS BEEN MADE FOR THE DEAD LOAD DEFLECTIONS CAUSED BY THE WEIGHT OF THE CONCRETE DECK.

UNIT NO.1:
ALLOWANCE HAS ALSO BEEN MADE FOR THE EFFECTS OF HEAT CURVATURE OF THE STEEL BEAMS.
- INSTALLATION OF SEAL:
DURING INSTALLATION OF THE SUPPORT/ARMOR FOR THE SUPERSTRUCTURE SIDE OF THE EXPANSION JOINT SEAL, THE SEATING OF BEAMS ON BEARINGS SHALL BE CAREFULLY OBSERVED TO ASSURE THAT POSITIVE BEARING IS MAINTAINED. PROPER VERTICAL FIT OF THE SUPPORT/ARMOR ON THE BEAMS SHALL BE ACHIEVED BY POSITIONING OF THE BEVEL FILL PLATES RATHER THAN BY CLAMPING FORCE.
- FOR ADDITIONAL DETAILS & NOTES FOR THE EXPANSION JOINT DETAILS SEE STANDARD DRAWING EXJ-4-87.

SCREED ELEVATION TABLE (UNIT NO.2)

POINT	SPAN NO. 1									SPAN NO. 2									
	CL BRG P3	1/8	1/4	3/8	1/2	5/8	F.S.1	3/4	7/8	CL BRG P4	1/8	1/4	F.S. 2	3/8	1/2	5/8	3/4	7/8	CL BRG A2
A	789.05	789.50	789.87	790.16	790.36	790.49	790.50	790.52	790.53	790.50	790.45	790.40	790.33	790.33	790.21	790.05	789.84	789.58	789.26
B	789.16	789.60	789.96	790.23	790.42	790.53	780.56	790.56	790.55	790.51	790.45	790.38	790.27	790.27	790.13	789.93	789.68	789.38	789.03
C	788.71	789.14	789.49	789.75	789.93	790.03	790.05	790.04	790.02	789.95	789.87	789.77	789.68	789.63	789.45	789.23	788.93	788.58	788.20
D	788.26	788.67	789.01	789.27	789.44	789.51	789.53	789.52	789.46	789.38	789.27	789.15	789.02	788.98	788.77	788.50	788.16	787.77	787.33
E	788.51	788.92	789.26	789.50	789.64	789.71	789.70	789.68	789.62	789.50	789.38	789.21	789.07	789.01	788.75	788.44	788.06	787.61	787.10
F	788.30	788.70	789.03	789.25	789.39	789.42	789.41	789.37	789.27	789.13	788.98	788.79	788.64	788.54	788.25	787.87	787.43	786.93	786.34
G	787.84	788.25	788.56	788.79	788.88	788.89	788.86	788.81	788.69	788.51	788.32	788.09	787.94	787.81	787.46	787.02	786.52	785.93	785.26
H	787.39	787.78	788.10	788.29	788.38	788.36	788.30	788.25	788.08	787.87	787.65	787.38	787.24	787.04	786.64	786.13	785.52	784.84	784.08
J	788.96	789.40	789.77	790.06	790.27	790.40	-	790.43	790.45	790.42	789.24	789.53	-	789.79	790.01	790.18	790.31	790.38	789.23
K	789.21	789.66	790.01	790.30	790.50	790.62	-	790.66	790.66	790.62	790.58	790.52	-	790.43	790.31	790.14	789.92	789.63	789.31
L	789.22	789.65	790.01	790.28	790.48	790.59	-	790.62	790.62	790.57	790.52	790.45	-	790.35	790.20	790.01	789.77	789.47	789.13
M	788.43	788.85	789.19	789.45	789.62	789.70	-	789.71	789.66	789.59	789.50	789.37	-	789.23	789.02	788.78	788.45	788.09	787.66
N	788.10	788.51	788.84	789.10	789.26	789.33	-	789.32	789.27	789.16	789.05	785.91	-	788.73	788.50	788.22	787.87	787.46	786.99
P	788.45	788.86	789.18	789.44	789.60	789.66	-	789.65	789.59	789.48	789.37	789.21	-	789.02	788.85	788.48	788.13	787.70	787.22
R	788.58	788.99	789.33	789.56	789.70	789.75	-	789.73	789.63	789.51	788.38	789.20	-	788.98	788.72	788.40	787.98	787.51	786.97
S	787.29	787.68	788.00	788.19	788.27	788.24	-	788.13	787.95	787.74	787.50	787.22	-	786.87	786.45	785.93	785.30	784.60	783.82



DIMENSION	"A" (SEE NOTE BELOW)							STRIP SEAL SIZE
TEMPERATURE °F	30°	40°	50°	60°	70°	80°	90°	
ABUTMENT NO. 1	1 1/8"	1 3/4"	1 3/4"	1 5/8"	1 1/2"	1 3/8"	1 3/8"	3"
ABUTMENT NO. 2	2 7/8"	2 3/4"	2 3/4"	2 5/8"	2 1/2"	2 3/8"	2 3/8"	4"
PIER NO. 3	2 1/2"	2 3/8"	2 1/8"	2"	1 7/8"	1 3/4"	1 5/8"	4"

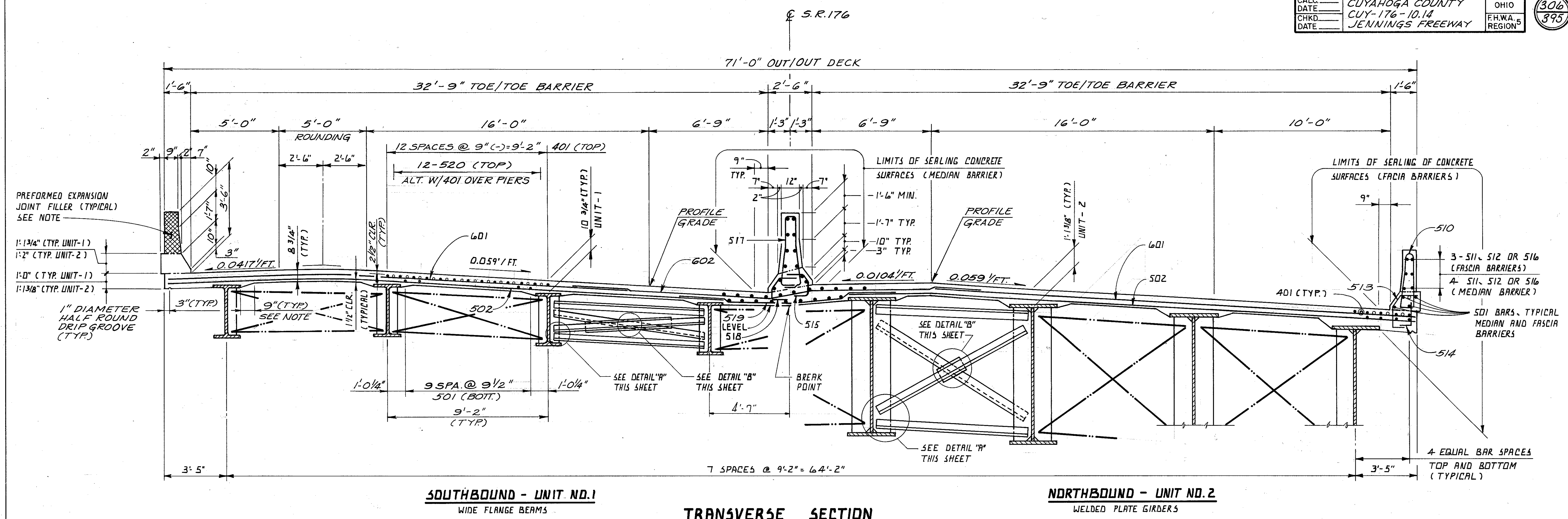
MINIMUM INSTALLATION DIMENSION "A" EQUALS 1 1/2"

EXPANSION JOINT DETAIL

28/36

adache-ciuni-lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
SCREED ELEVATIONS & EXPANSION JOINT DETAIL
 JENNINGS FREEWAY
 STATE ROUTE 176
 OVER
 CONRAIL, LANE OBW-JN AND I-480
 BR. NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M	D.P.	A.J.M.	1/94	



TRANSVERSE SECTION

NOTES:

DECK SLAB DEPTH: UNIT-1, THE DISTANCE SHOWN FROM THE TOP OF DECK SLAB TO TOP OF STEEL BEAM IS THE THEORETICAL DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE.

UNIT-2, THE DISTANCE SHOWN FROM THE TOP OF DECK SLAB TO THE BOTTOM OF THE TOP FLANGE IS THE THEORETICAL DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO FINISH GRADE. DEDUCTION SHALL BE MADE FOR VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

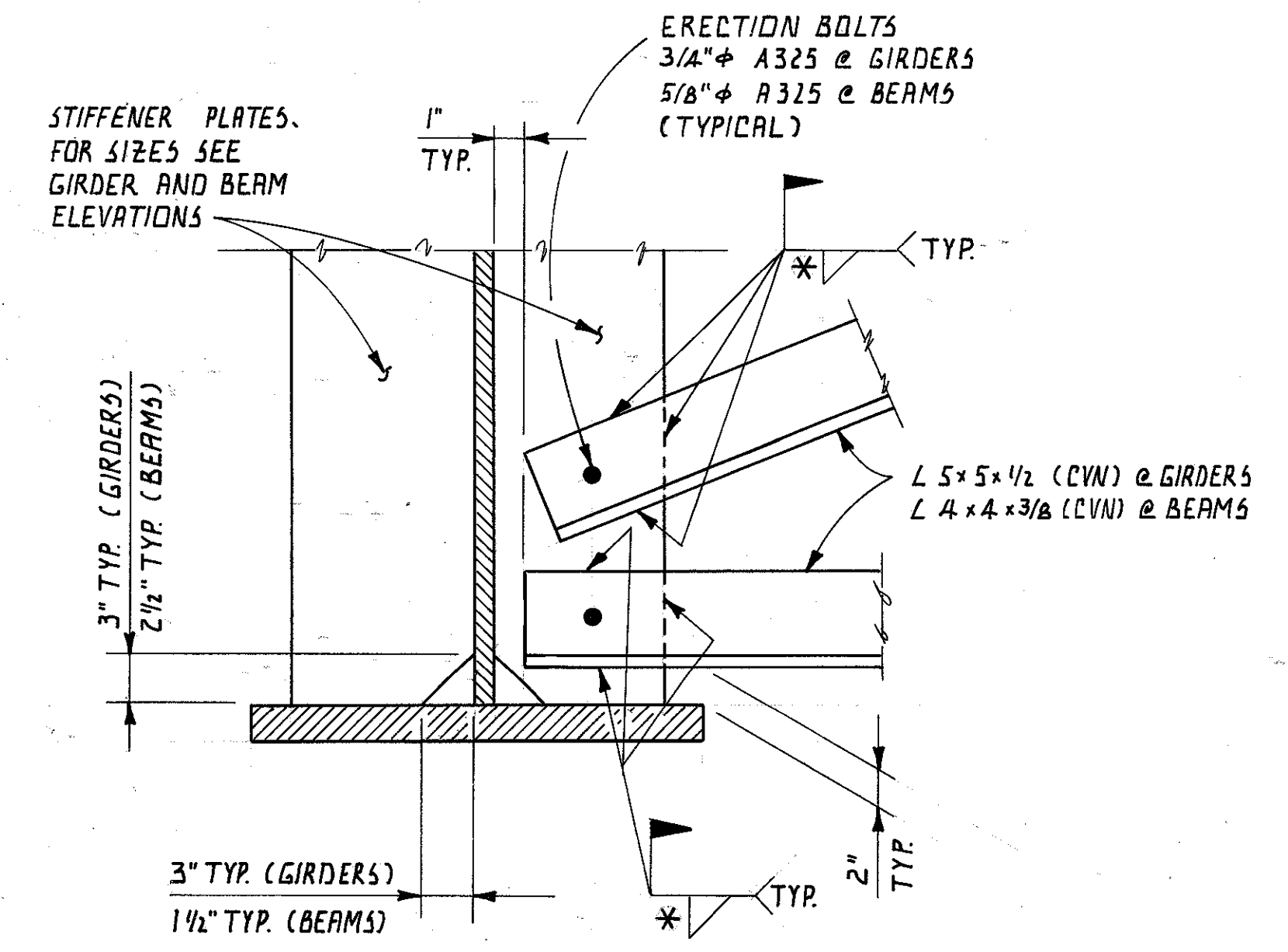
A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING THE QUANTITY OF CONCRETE. HOWEVER THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 4:1 FOR A HAUNCH LESS THAN 9" WIDE.

ERECTION BOLTS AND CROSS FRAME FIELD WELDING: THE HOLE DIAMETER IN THE STIFFENER SHALL BE 3/16" LARGER THAN THE DIAMETER OF THE ERECTION BOLTS. THE CROSS FRAME MEMBERS SHALL HAVE SLOTTED HOLES 1/4" LONG, PARALLEL TO THE CROSS FRAME MEMBER, AND 1/16" WIDER THAN THE ERECTION BOLTS. UNLESS REPLACED BY PERMANENT HIGH STRENGTH BOLTS, ERECTION BOLTS SHALL REMAIN IN PLACE. LOCK WASHERS SHALL BE FURNISHED FOR OTHER THAN FULLY TORQUED HIGH STRENGTH ERECTION BOLTS. HIGH STRENGTH BOLTS SHALL NOT BE FULLY TORQUED UNTIL THE CONCRETE DECK HAS BEEN PLACED. BOLTS SHALL BE FURNISHED AS PART OF ITEM 513. NO WELDING OF THE CROSS FRAME MEMBERS TO THE STIFFENERS SHALL BE DONE UNTIL THE CONCRETE DECK HAS BEEN PLACED. IN LIEU OF ERECTION BOLTS AND AT THE OPTION OF THE CONTRACTOR, ALTERNATIVE MEANS OF TEMPORARY BRACING MAY BE USED, SUBJECT TO THE APPROVAL OF THE DIRECTOR (501.06).

NOTES CONTINUED

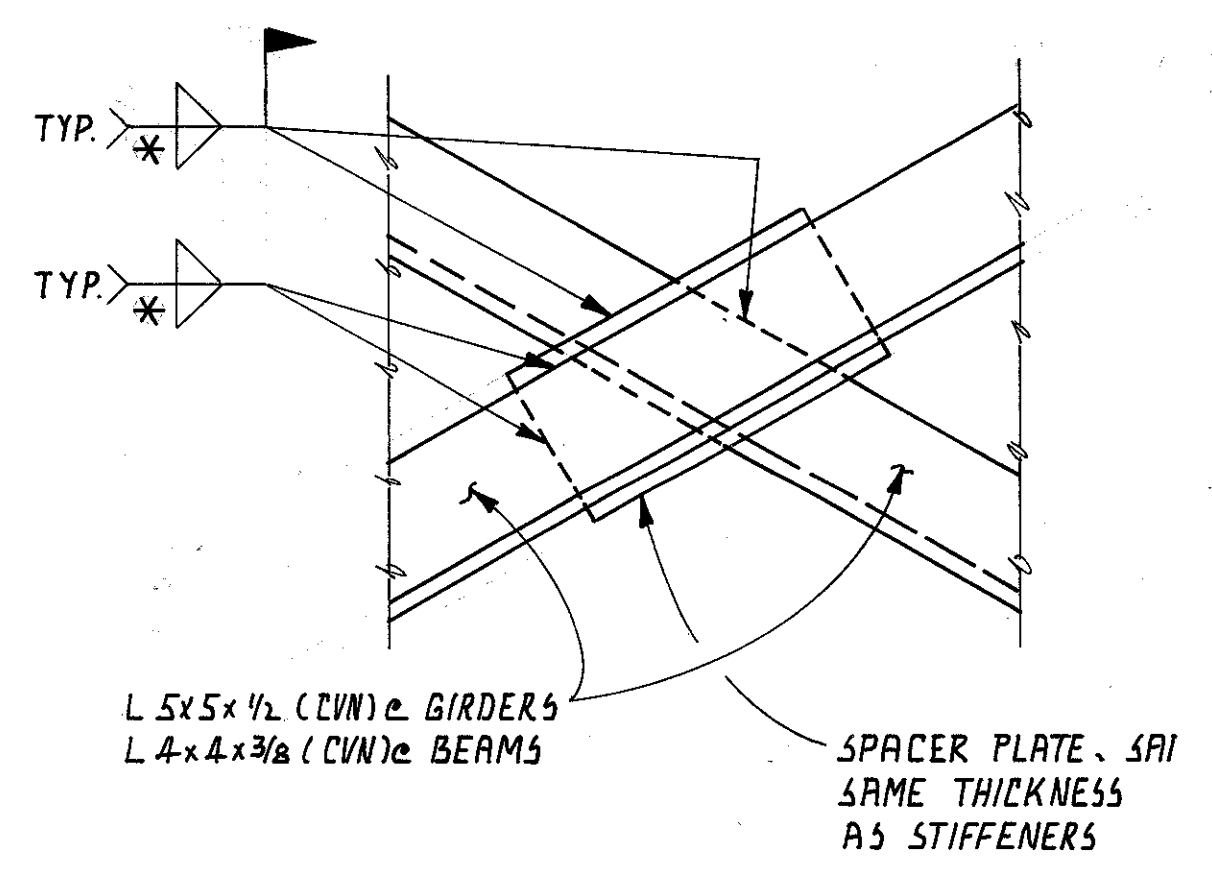
PREFORMED EXPANSION JOINT FILLER IN THE BARRIER DEFLECTION JOINTS MAY BE EITHER 1/4" GRAY SPONGE RUBBER OR 1/4" GRAY CELLULAR POLYVINYL CHLORIDE (PVC) SPONGE. SPONGE RUBBER FILLER SHALL CONFORM TO ASTM M-153, TYPE-1. DENSITY OF PVC SPONGE SHALL NOT BE LESS THAN 20 POUNDS PER CUBIC FOOT. PAYMENT FOR THIS ITEM SHALL BE INCLUDED WITH ITEM SPECIAL-"HIGH PERFORMANCE CONCRETE- SUPERSTRUCTURE".

1" DIAMETER, HALF ROUND, DRIP GROOVES SHALL TERMINATE 2'-0" FROM THE FACE OF ABUTMENT.



DETAIL "A"

* 1/4" FILLET WELD @ BEAMS
* 5/16" FILLET WELD @ GIRDERS



DETAIL "B"

* 1/4" FILLET WELD @ BEAMS
* 5/16" FILLET WELD @ GIRDERS

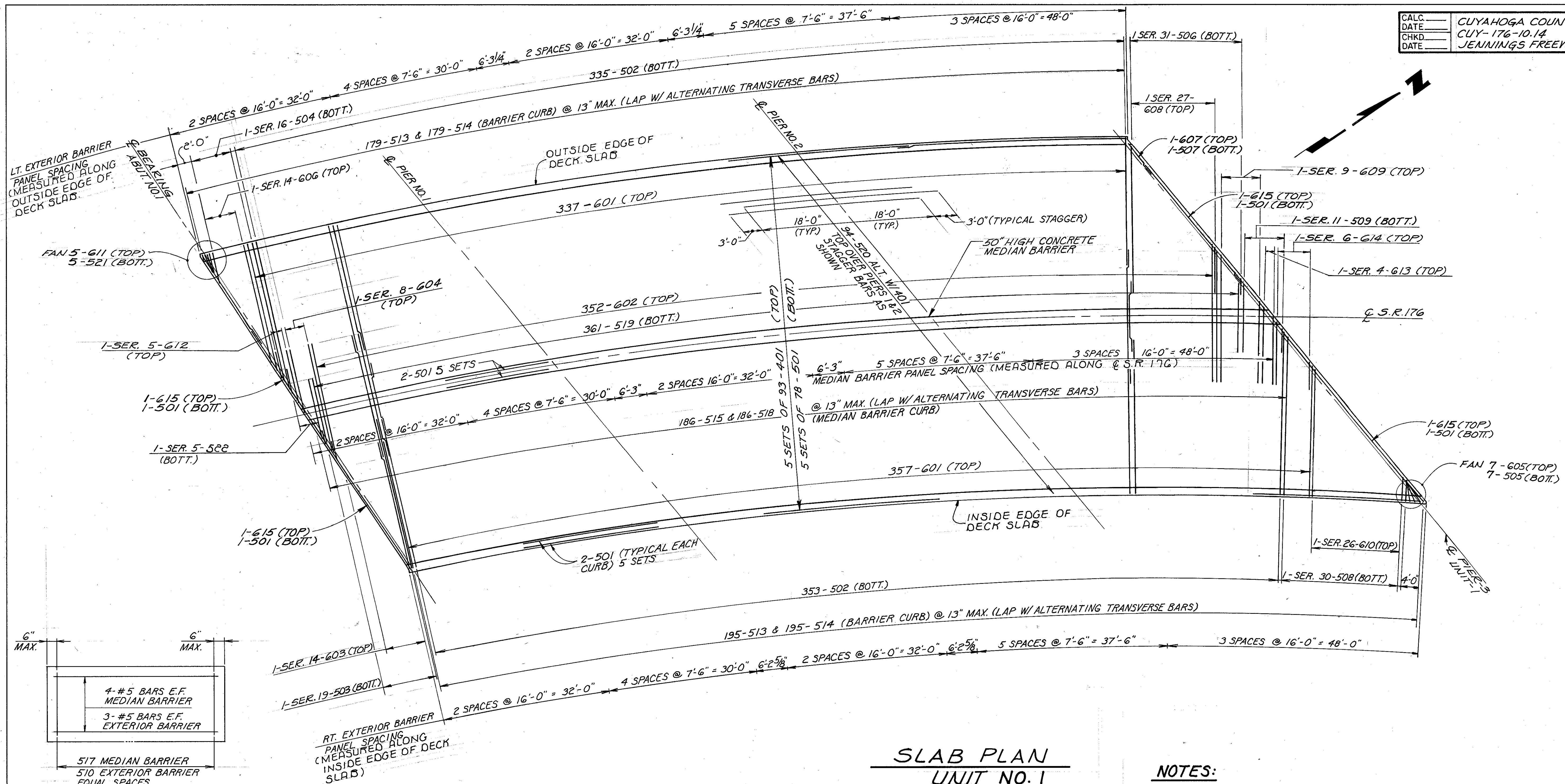
BRUNING 44232 67195

29/36

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TRANSVERSE SECTION
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-IN AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
M.J.L.	H.B.M.	T.A.B.	A.J.M.	1/94	

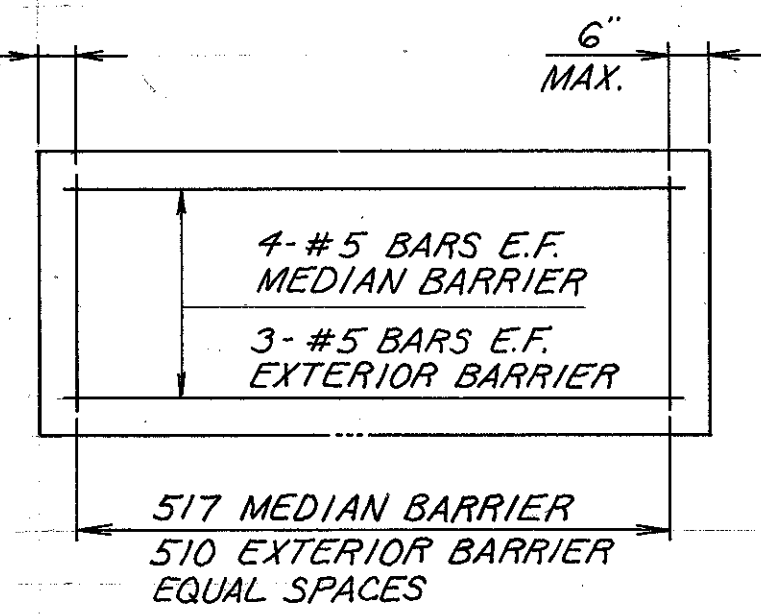


**SLAB PLAN
UNIT NO. 1**

NOTES:

- ALL TRANSVERSE BARS ARE SPACED @ 6 1/2", MEASURED ALONG OUTSIDE EDGE OF DECK SLAB AND PLACED RADIALLY TO C.S.R. 176.
- FIELD BEND LONGITUDINAL BARS TO FIT CURVATURE OF ROADWAY AND TRANSVERSE BARS TO FIT CROWN; BENDING SHALL BE INCLUDED WITH ITEM 509 FOR PAYMENT. EPOXY COATED BARS DAMAGED BY FIELD BENDING SHALL BE REPAIRED AS PER APPROVED MANUFACTURER'S RECOMMENDATION.
- THE FOLLOWING MINIMUM BAR SPLICE LAP LENGTHS SHALL BE PROVIDED UNLESS SHOWN OTHERWISE:
 NO. 4 BARS: 1'-7"
 NO. 5 BARS: 2'-1" (LONG) 2'-7" (TRANS)
 NO. 6 BARS: 3'-1"
- ALL REINFORCING BAR MARKS IN THE SUPER-STRUCTURE SHALL BE PREFIXED AS FOLLOWS:
 UNIT NO. 1: "1S"
 UNIT NO. 2: "2S"

TYPICAL BARRIER PANEL

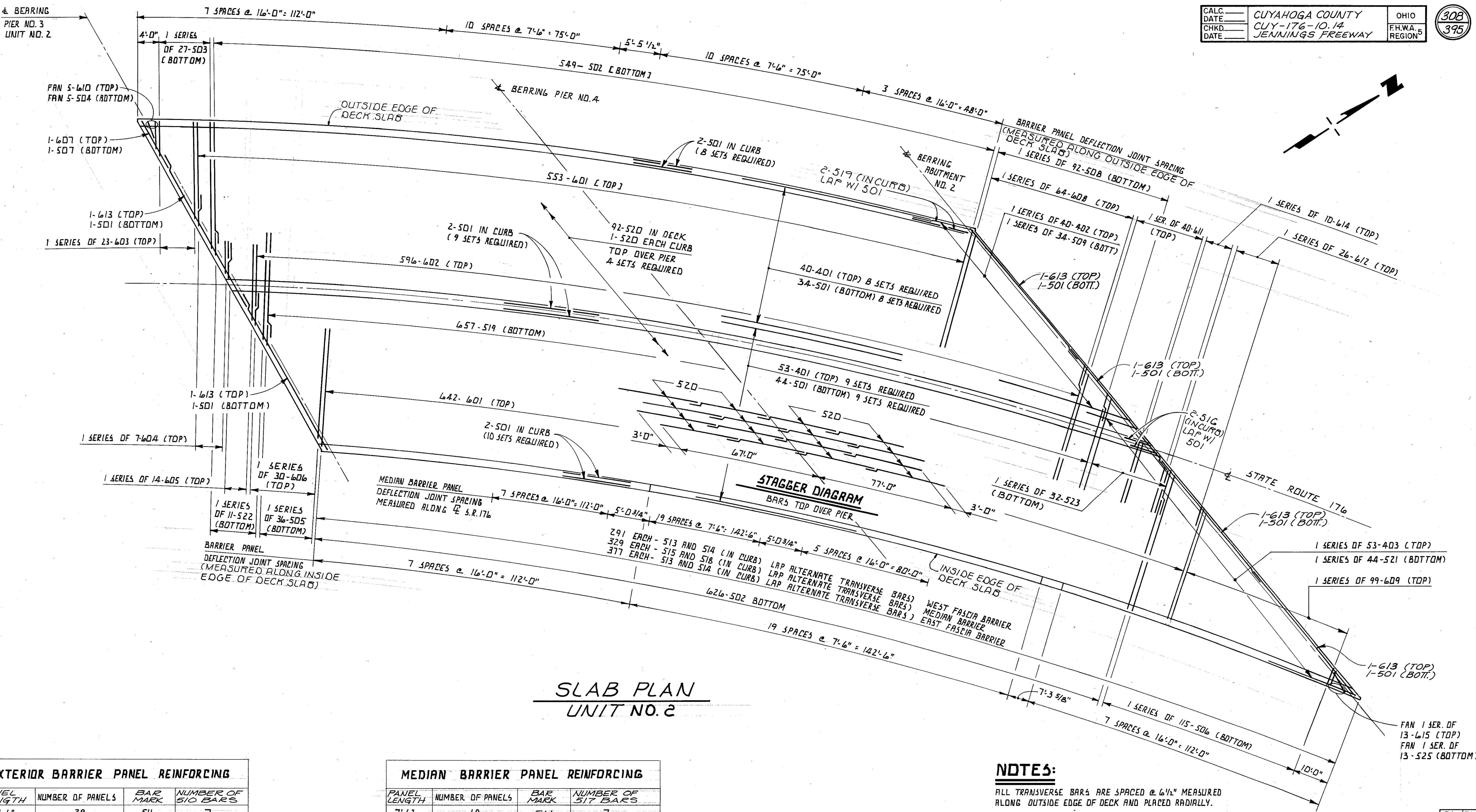


EXTERIOR BARRIER PANEL REINFORCING			
PANEL LENGTH	NUMBER OF BARRIER PANELS	BAR MARK	NUMBER OF 510 BARS
6'-3 1/4"	2	516	6
7'-6"	18	511	7
16'-0"	14	512	15
6'-2 5/8"	2	516	6

MEDIAN BARRIER PANEL REINFORCING			
PANEL LENGTH	NUMBER OF MEDIAN PANELS	BAR MARK	NUMBER OF 517 BARS
7'-6"	9	511	7
16'-0"	7	512	15
6'-3"	2	516	6

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SLAB PLAN-UNIT-1
 JENNINGS FREEWAY
 STATE ROUTE 176
 OVER
 CONRAIL, LANE OBM-JN AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
HBM	HBM	TAB	A.J.M.	1/94	



**SLAB PLAN
UNIT NO. 2**

EXTERIOR BARRIER PANEL REINFORCING

PANEL LENGTH	NUMBER OF PANELS	BAR MARK	NUMBER OF 510 BARS
7'-6"	39	511	7
5'-5 1/2"	1	504	6
7'-3 5/8"	1	524	7
16'-0"	24	512	15

MEDIAN BARRIER PANEL REINFORCING

PANEL LENGTH	NUMBER OF PANELS	BAR MARK	NUMBER OF 517 BARS
7'-6"	19	511	7
16'-0"	12	512	15
5'-0 3/4"	2	516	5

NOTES:
 ALL TRANSVERSE BARS ARE SPACED @ 6 1/2" MEASURED ALONG OUTSIDE EDGE OF DECK AND PLACED RADIALLY.
 FOR BARRIER PANEL DETAIL, SEE SHEET 30/36.
 FOR ADDITIONAL NOTES, SEE SHEET 30/36.

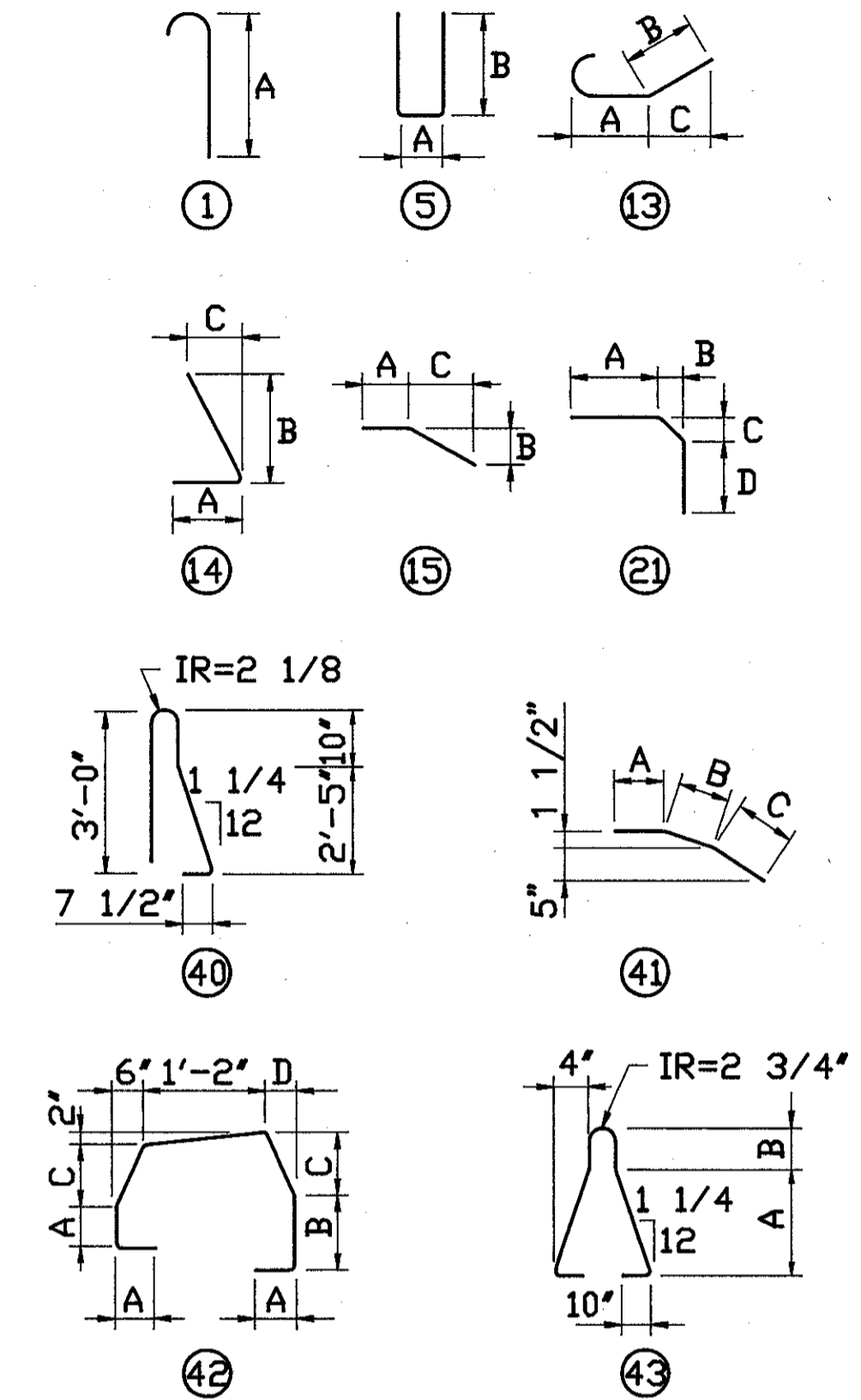
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SLAB PLAN-UNIT-2
 JENNINGS FREEWAY
 STATE ROUTE 176
 OVER
 CONRAIL, LANE OBW-JN AND I-480
BRIDGE NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
H.B.M.	HBM	T.R.B.	R.J.M.	1-94	

ABUTMENT NO. 1

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in	ft	in	
1A 501	104	10	7	5	6	0	2	5							1148
1A 502	53	15	8	5	3	5	6	3							866
1A 503	8	13	8	41	1	5	2	4	9	11					114
1A 504	53	10	6	5	3	5	3	8							580
1A 505	53	11	2	5	1	5	5	0							617
1A 506	53	7	8	5	1	5	3	3							424
1A 507	53	7	2	5	0	11	3	3							396
1A 508	15	28	5	STR.											445
1A 509	10	31	10	STR.											332
1A 510	5	12	3	15	9	9	0	3	2	7					64
1A 511	5	21	11	15	19	7	0	5	2	4					114
1A 512	6	17	9	STR.											111
1A 513	9	18	3	STR.											171
1A 514	44	7	9	5	3	2	2	5							356
1A 515	11	10	6	STR.											120
1A 516	11	9	0	STR.											103
1A 517	4	6	11	40											29
1A 518	2 SER. 9 BARS	3	10	1	3	3						0	1	1/4	64
		3	0		2	5									
1A 519	12	5	10	STR.											73
1A 520	2	3	3	STR.											7
1A 521	16	13	5	STR.											224
1A 522	28	15	2	STR.											443
1A 523	4	12	0	STR.											50
1A 524	2	9	6	43	2	6	1	4							20
1A 525	2	5	11	42	0	10	1	1	0	8	0	5			12
1A 526	12	0	11	STR.											11
1A 527	20	4	6	STR.											94
1A 528	8	4	11	15	2	6	0	8	2	5					41
1A 529	8	4	10	14	2	6	2	5	0	8					40
1A 601	22	13	6	5	1	2	6	4							446
1A 602	11	9	11	21	8	6	0	9	0	6	0	8			164
1A 603	11	8	5	21	7	0	0	9	0	6	0	8			139
1A 801	7	41	3	STR.											771
1A 802	7	40	0	STR.											748
1A 803	5	31	6	STR.											421
1A 804	5	31	10	STR.											425
1A 805	5	21	6	STR.											287
1A 806	46	4	10	13	2	7	1	5	1	0					594
1A 807	12	14	6	STR.											465
TOTAL WEIGHT														11529	

BENDING DIAGRAMS



NOTES:

1. ALL REINFORCING STEEL TO BE EPOXY COATED.
2. BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.E.S.	M	T.A.B.	A.J.M.	1/94	

ABUTMENT NO. 2

ABUTMENT NO. 2 - CONTINUED

CALC. DATE: CUYAHOGA COUNTY CUY - 176 - 10.14 OHIO
 CHKD. DATE: JENNINGS FREEWAY F.H.W.A. REGION 5
 DATE: 1/94

310
395

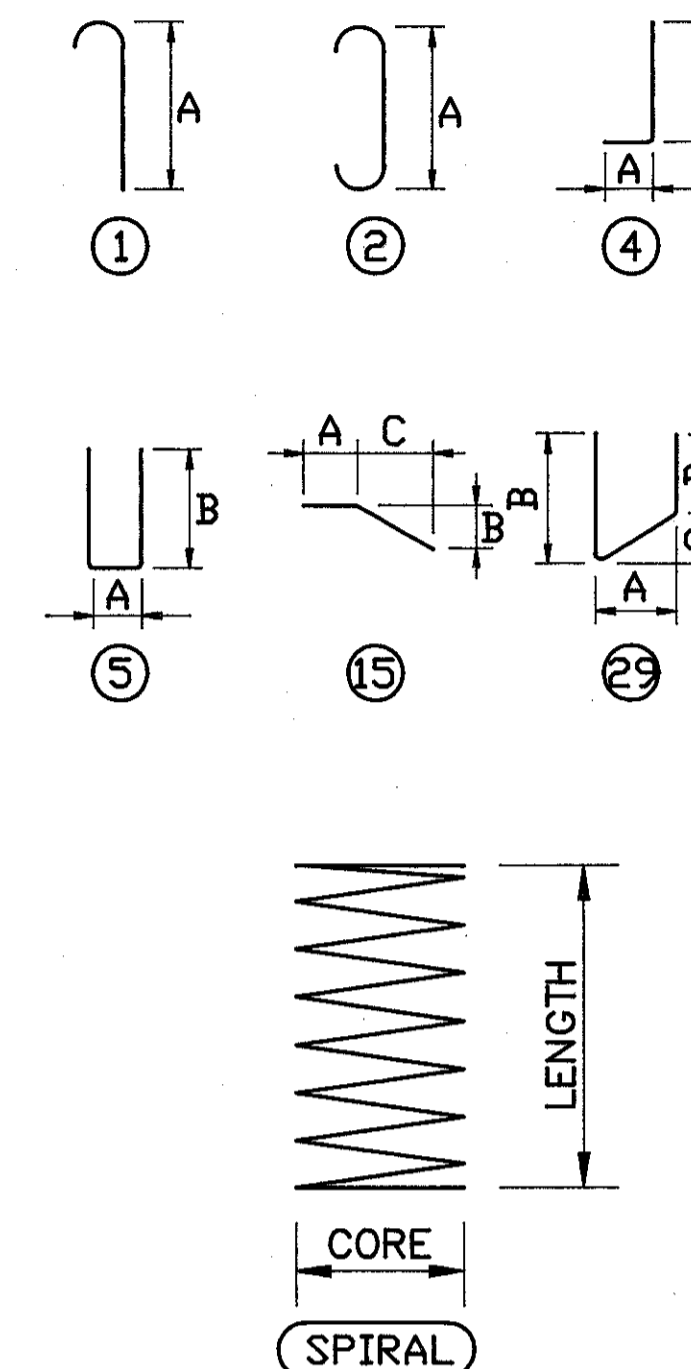
MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in	ft	in	
2A 501	153	32	9	STR.											5226
2A 502	18	6	10	STR.											128
2A 503	152	23	6	STR.											3726
2A 504	275	6	11		0	10		6	2						1984
2A 505	153	24	2	STR.											3856
2A 506	5	22	6	STR.											117
2A 507	5	21	10	STR.											114
2A 508	5	15	6	STR.											81
2A 509	5	20	0	STR.											104
2A 510	5	16	0	STR.											83
2A 511	61	10	3		12	3	5	5	1		2	0			652
2A 512	85	11	4		12	3	5	6	2		2	0			1005
2A 513	151	13	2		5	1	5	6	0						2074
2A 514	151	15	10		5	1	5	7	4						2494
2A 515	151	7	10		5	0	11	3	7						1234
2A 516	38	32	6	STR.											1288
2A 517	4	31	5	STR.											131
2A 518	2	16	8	STR.											35
2A 519	12 SER.	7	10	STR.									3'- 1 1/4"		879
	5 BARS	20	3												
2A 520	1	21	0	STR.											22
2A 521	6 SER.	12	8		1	8	3	9	2	0			0'- 8 3/4"		2975
	23 BARS	28	8			1	8	11	9	2	0				
2A 522	5	29	4	STR.											153
2A 523	2 SER.	31	4	STR.									1'- 9 1/4"		721
	9 BARS	45	6												
2A 524	30	35	0	STR.											1095
2A 525	2 SER.	25	0	STR.									2'- 7 1/4"		315
	5 BARS	35	5												
2A 526	2	33	6		15	21	6	1	0		12	0			70
2A 527	8	35	5	STR.											296
2A 528	117	3	10		21	0	9	0	6	0	9	2	4		468
2A 529	117	6	11		40										844
2A 530	2 SER.	6	6	STR.									0'- 7"		44
	3 BARS	7	8												
2A 531	1	3	8	STR.											4
2A 532	1 SER.	2	11		1	2	4						1'- 11 3/4"		24
	7 BARS	3	9			3	2								
2A 533	1 SER.	8	2	STR.									0'- 8 1/2"		50
	5 BARS	11	0												
2A 534	2	14	0	STR.											29
2A 535	1 SER.	11	0		20	2	2	2	8	2	0		0'- 6 5/8"		683
	33 BARS	28	8			2	2	11	6	2	0				
2A 536	2 SER.	4	0	STR.									4'- 0 3/4"		237
	7 BARS	28	5												
2A 537	15	15	7		5	1	8	7	1						244
2A 538	36	35	5	STR.											1330
2A 539	10	25	7	STR.											267
2A 540	28	35	8	STR.											1042
2A 541	10 SER.	3	3	STR.									3'- 4 1/2"		977
	7 BARS	23	6												
2A 542	5 SER.	11	4		20	2	2	2	10	2	0		0'- 8"		2667
	26 BARS	28	0			2	2	11	2	2	0				
2A 543	2	9	10		50										21
2A 544	4	5	0		24	2	0	1	1	0	9	1	0		21
2A 545	10	1	9	STR.											18
2A 546	18	5	9		15	2	11	1	0	2	9				108
2A 547	1 SER.	14	3	STR.									0'- 10 3/4"		215
	11 BARS	23	3												
2A 548	1 SER.	3	0	STR.									0'- 10 5/8"		493
	30 BARS	28	6												
2A 549	63	27	6	STR.											1807
2A 550	10	35	5	STR.											369
2A 551	30	28	7	STR.											894
2A 552	4	4	6	STR.											19
2A 553	4	9	2	STR.											38
2A 554	9	27	7	STR.											259
2A 555	9	29	0		15	25	7	1	4	3	3				272
2A 556	51	9	0	STR.											479
2A 557	62	8	6	STR.											550
2A 601	130	32	8	STR.											6378
2A 602	26	31	0	STR.											1211
2A 603	23	10	4		15	7	3	2	3	2	3				357
2A 604	18	9	4		15	6	3	2	3	2	3				252
2A 605	38	8	2		15	5	1	2	3	2	3				466
2A 606	20	7	5		15	4	4	2	3	2	3				223
2A 607	21	6	4		15	3	3	2	3	2	3				200
2A 608	28	5	3		15	2	2	2	3	2	3				221
2A 609	2	16	0	STR.											48
2A 610	2	23	0	STR.											69

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in	ft	in	
2A 611	6 SER.	29	8		20	2	2	12	1	2	0			0- 8 3/4"	1703
	6 BARS	33	4			2	2	13	11	2	0				
2A 612	42	29	0	STR.											1829
2A 613	42	31	7	STR.											1992
2A 614	51	13	2		5	1	2	6	2						1009
2A 615	51	8	0	STR.											613
2A 616	1 SER.	7	2		21	5	9	0	9	0	6	0	8	0'- 7"	63
	5 BARS	9	6			8	1	0	9	0	6	0	8		
2A 617	2	12	2		21	10	9	0	9	0	6	0	8		37
2A 618	1 SER.	29	2		20	2	2	11	10	2	0			0'- 6 3/4"	276
	6 BARS	32	0			2	2	13	3	2	0				
2A 619	19	12	5		31	10	7	1	0	0	8	1	0		354
2A 620	19	13	7		30	11	8	1	0	0	8	1	0		388
2A 621	18	22	8		31	20	10	1	0	0	8	1	0		613
2A 622	18	23	9		30	21	10	1	0	0	8	1	0		642
2A 623	14	35	8	STR.											750
2A 624	14	34	8	STR.											729
2A 625	14	34	1		15	30	2	1	6	3	9				717
2A 626	62	7	6	STR.											698
2A 627	62	13	6		5	1	2	6	4						1257
2A 628	5 SER.	28	6		20	2	2	11	6	2	0			0'- 8"	1359
	6 BARS	31	10			2	2	13	2	2	0				
2A 629	20	8	7		30	1	10	3	6	1	10	3	0		258
2A 630	14	35	2	STR.											739
2A 701	275	8	8		4	1	2	7	8						4872
2A 702	152	33	1	STR.											10279
2A 703	38	32	0	STR.											2486
2A 704	148	24	6	STR.											7412
2A 705	59	29	7	STR.											3568
2A 706	38	31	7	STR.											2453
2A 707	19	35	8	STR.											1385
2A 708	19	34	8	STR.											1346
2A 709	19	35	1		15	30	2	1	10	4	8				1362
2A 710	68	24	2	STR.											3359
2A 711	38	29	11	STR.											2324
2A 801	15	33	9	STR.											1352
2A 802	5	36	6	STR.											487
2A 803	21	13	1		31	10	7	1	4	0	10	1	4		734
2A 804	21	14	3		30	11	8	1	4	0	10	1	4		799
2A 805	21	23	4		31	20	10	1	4	0	10	1	4		1308
2A 806	21	24	5		30	21	10	1	4	0	10	1	4		1369
2A 807	46	5	1		13	2	10	1	5	1	0				624
2A 808	5	33	11		15	21	0								

PIER NO.1													
MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)		
		ft	in						ft	in			
1P 501	72	9	8	2	8	6					726		
1P 502	4 SER.	5	9	5	1	8	2	2		0	4	165	
	6 BARS	7	5				3	10					
1P 503	88	9	1	5	2	8	3	4				834	
1P 504	24	6	1	15	2	6	1	0	3	6		152	
1P 505	16	11	0	ISTRJ								184	
1P 506	6	13	2	ISTRJ								208	
1P 507	6	13	5	ISTRJ								209	
1P 508	4 SER.	7	1	5	1	8	2	10			13/16	181	
	6 BARS	7	5				3	10					
1P 601	9	35	0	ISTRJ								473	
1P 602	9	35	3	ISTRJ								477	
1P 603	72	9	10	2	8	6						1063	
1P 801	9	35	0	ISTRJ								841	
1P 802	9	35	3	ISTRJ								847	
1P 803	6	26	2	ISTRJ								419	
1P 804	6	26	5	ISTRJ								423	
1P 901	4	37	5	29	33	2	2	10	0	11	2	0	509
1P 902	4	37	10	29	33	5	3	0	0	11	2	0	515
1P 903	16	12	3	1	11	0							666
1P 1101	60	14	8	4	2	0	13	0					4675
1P 1102	30	27	10	1	26	3							4436
1P 1103	30	27	0	1	25	5							4304
TOTAL WEIGHT											22307		

PIER NO.2													
MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)		
		ft	in						ft	in			
2P 501	76	9	8	2	8	6					766		
2P 502	4 SER.	5	9	5	1	8	2	2			13/16	148	
	6 BARS	6	1				3	2					
2P 503	88	9	1	5	2	8	3	4				834	
2P 504	24	6	1	15	2	6	1	0	3	6		152	
2P 505	16	11	0	ISTRJ								184	
2P 506	6	13	8	ISTRJ								217	
2P 507	6	13	0	ISTRJ								219	
2P 508	4 SER.	7	1	5	1	8	2	10			13/16	181	
	6 BARS	7	5				3	10					
2P 601	9	36	6	ISTRJ								493	
2P 602	9	36	10	ISTRJ								498	
2P 603	76	9	10	2	8	6						1122	
2P 801	9	36	6	ISTRJ								877	
2P 802	9	36	10	ISTRJ								885	
2P 803	6	27	6	ISTRJ								441	
2P 804	6	28	0	ISTRJ								449	
2P 901	4	38	11	29	34	8	2	10	1	0	2	0	529
2P 902	4	39	5	29	35	0	3	0	1	0	2	0	536
2P 903	16	12	3	1	11	0							666
2P 1101	60	14	8	4	2	0	13	0					4675
2P 1102	30	28	0	1	26	5							4463
2P 1103	30	27	3	1	25	8							4343
TOTAL WEIGHT											22678		

BENDING DIAGRAMS



SPIRAL REINFORCEMENT							
PIER NO. 1							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	NO.	SPACERS ANGLE SIZE
SP 501	3	23 4	2552	30	3	4	1 1/4 x 1 1/4 x 1/8
SP 502	3	22 8	2481	30	3	4	1 1/4 x 1 1/4 x 1/8
PIER NO. 2							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	NO.	SPACERS ANGLE SIZE
SP 501	3	23 7	2579	30	3	4	1 1/4 x 1 1/4 x 1/8
SP 502	3	23 10	2605	30	3	4	1 1/4 x 1 1/4 x 1/8
TOTAL WEIGHT			10,217				

NOTES

- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE SHOWN.

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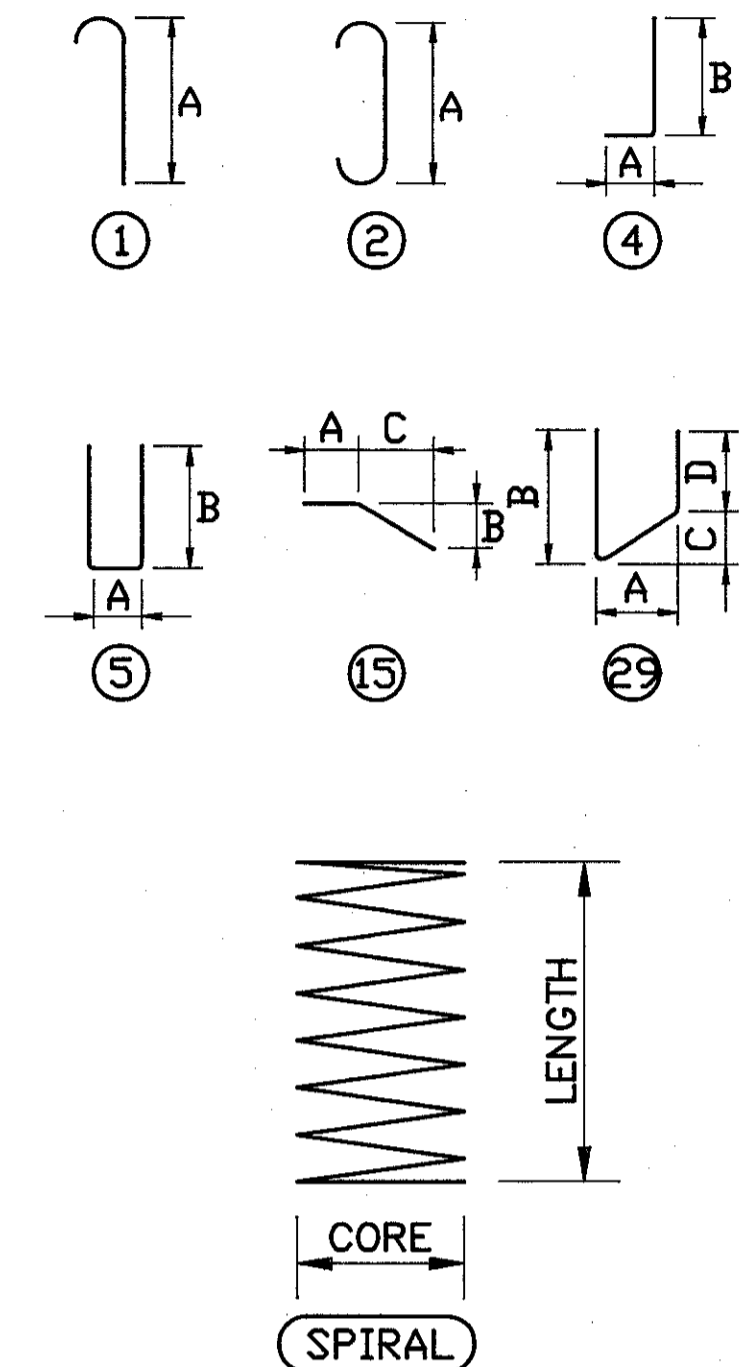
REINFORCING SCHEDULE
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
M	M	T.E.S.	T.A.B.	1/94	

PIER NO.3													
MARK	NUMBER	REQUIRED	LENGTH	ITYPE	DIM A		DIM B		DIM C		DIM D	INCREMENT	WEIGHT
					ft	in	ft	in	ft	in			
3P 501	79	10	8	2	9	6							879
3P 502	40	9	10	5	2	3	3	11					410
3P 503	104	11	3	5	3	8	3	11					1220
3P 504	8	36	5	ISTRJ									304
3P 505	8	37	1	ISTRJ									309
3P 506	24	5	6	15	2	6	1	0	2	11			138
3P 507	12	12	0	ISTRJ									150
3P 508	12	10	0	ISTRJ									125
3P 509	8	13	6	ISTRJ									113
3P 510	8	10	3	ISTRJ									86
3P 511	97	7	5	5	1	8	3	0					750
3P 601	8	36	5	ISTRJ									438
3P 602	8	37	1	ISTRJ									446
3P 603	79	10	10	2	9	6							1285
3P 604	97	14	4	5	1	8	6	6					2088
3P 801	6	30	9	ISTRJ									493
3P 802	4	44	6	29	36	5	4	6	1	6	4	0	475
3P 803	6	31	5	ISTRJ									503
3P 804	4	45	2	29	37	1	4	6	1	6	4	0	482
3P 901	9	42	6	29	36	5	3	10	1	0	2	10	1301
3P 902	9	43	2	29	37	1	3	10	1	0	2	10	1321
3P 1001	15	38	3	ISTRJ									2469
3P 1002	15	38	11	ISTRJ									2512
3P 1101	84	15	2	4	2	0	13	6					6769
3P 1102	42	20	9	1	19	2							4630
3P 1103	42	19	11	1	18	4							4444
TOTAL WEIGHT												34,140	

PIER NO.4													
MARK	NUMBER	REQUIRED	LENGTH	ITYPE	DIM A		DIM B		DIM C		DIM D	INCREMENT	WEIGHT
					ft	in	ft	in	ft	in			
4P 501	8	14	0	ISTRJ									117
4P 502	8	16	0	ISTRJ									134
4P 503	32	6	1	15	2	6	1	0	3	6			203
4P 504	8	44	0	ISTRJ									367
4P 505	8	46	10	ISTRJ									391
4P 601	384	9	11	5	2	3	4	0					5720
4P 1001	96	17	4	2	14	6							7160
4P 1002	90	18	4	2	15	6							7100
4P 1003	8	36	10	ISTRJ									1268
4P 1004	8	39	8	ISTRJ									1365
4P 1005	32	16	5	1	15	0							2261
4P 1006	8	22	9	4	3	11	19	2					783
4P 1007	8	22	1	4	3	11	18	6					760
4P 1008	8	40	5	4	3	6	37	3	1	7	3	1	1391
4P 1009	8	38	5	4	3	6	35	3	1	7	3	0	1323
4P 1101	96	16	2	4	2	0	14	6					8246
4P 1102	96	24	7	1	23	0							12539
TOTAL WEIGHT												51,128	

BENDING DIAGRAMS



SPIRAL REINFORCEMENT							
PIER NO. 3							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft	lbs	in	in	NO.	ANGLE SIZE
SP 501	3	19	2	2932	42	3	4 1 1/4 x 1 1/4 x 1/8
SP 502	3	18	4	2809	42	3	4 1 1/4 x 1 1/4 x 1/8
PIER NO. 4							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft	lbs	in	in	NO.	ANGLE SIZE
SP 501	1	21	5	943	36	3	4 1 1/4 x 1 1/4 x 1/8
SP 502	1	20	9	915	36	3	4 1 1/4 x 1 1/4 x 1/8
SP 503	1	20	1	886	36	3	4 1 1/4 x 1 1/4 x 1/8
SP 504	1	20	1	886	36	3	4 1 1/4 x 1 1/4 x 1/8
SP 505	1	19	3	851	36	3	4 1 1/4 x 1 1/4 x 1/8
SP 506	1	18	6	819	36	3	4 1 1/4 x 1 1/4 x 1/8
TOTAL WEIGHT			11,041				

NOTES

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- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE SHOWN.

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

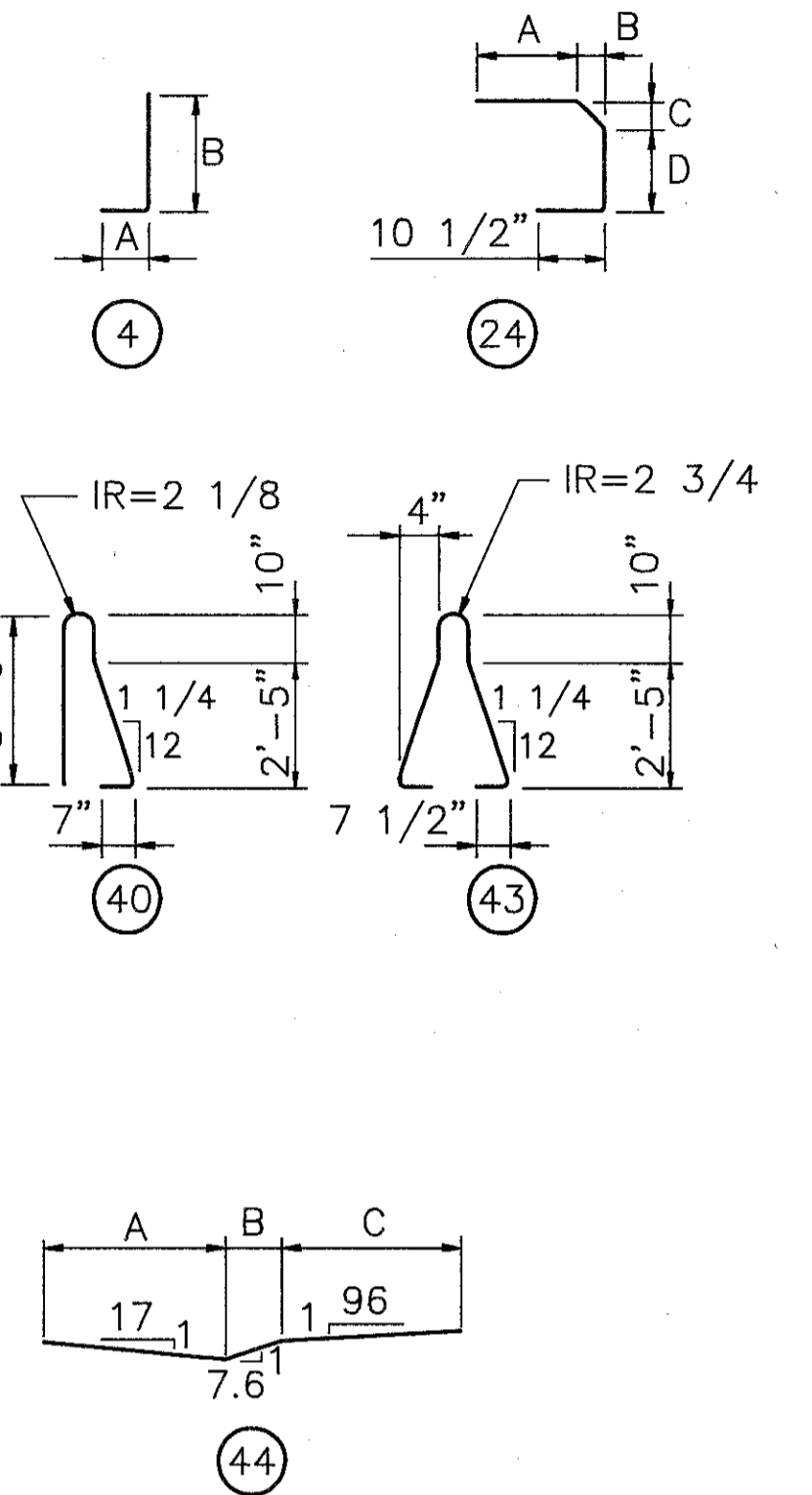
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
M	M	T.E.S.	T.A.B.	1/94	

SUPERSTRUCTURE - UNIT NO. 1

SUPERSTRUCTURE - UNIT NO. 2

CALC. DATE CHKD. DATE CUYAHOGA COUNTY CUY - 176 - 10.14 JENNINGS FREEWAY OHIO F.H.W.A. REGION 5 313 395

BENDING DIAGRAMS



MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT	WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in		
1S 401	465	40	0	STR.									12425	
1S 501	454	40	0	STR.									18941	
1S 502	688	32	0	STR.									22963	
1S 503	1 SER. 19 BARS	4	0	STR.								1'- 5 3/4"	343	
1S 504	1 SER. 16 BARS	6	0	ISTR.								1'- 7 3/16"	300	
1S 505	7	5	0	ISTR.									37	
1S 506	1 SER. 31 BARS	4	0	ISTR.								0'- 10 3/8"	550	
1S 507	1	7	6	ISTR.									8	
1S 508	1 SER. 30 BARS	6	0	ISTR.								0'- 9 15/16"	563	
1S 509	1 SER. 11 BARS	4	0	ISTR.								0'- 9"	89	
1S 510	360	6	11	40									2598	
1S 511	180	7	0	ISTR.									1314	
1S 512	140	15	6	ISTR.									2263	
1S 513	374	3	4	24	0	9	0	6	0	8.5	1	0	1300	
1S 514	374	2	6	4	0	10	1	9					975	
1S 515	186	3	8	24	1	0	0	6	0	9	1	2	712	
1S 516	40	5	9	ISTR.									240	
1S 517	180	7	10	43									1470	
1S 518	186	3	7	24	1	0	0	6	0	9	1	0	695	
1S 519	361	12	0	ISTR.									4518	
1S 520	188	39	0	ISTR.									7647	
1S 521	5	4	0	ISTR.									21	
1S 522	1 SER. 5 BARS	4	0	ISTR.								1'- 6"	37	
1S 601	694	27	6	ISTR.									28666	
1S 602	352	21	6	44	9	6	2	6	9	6			11367	
1S 603	1 SER. 14 BARS	4	0	ISTR.								1'- 8 5/16"	315	
1S 604	1 SER. 8 BARS	20	3	44	9	6	2	6	8	3			194	
1S 605	7	5	0	ISTR.									53	
1S 606	1 SER. 14 BARS	6	6	ISTR.								1'- 6 7/16"	347	
1S 607	1	7	6	ISTR.									11	
1S 608	1 SER. 27 BARS	4	0	ISTR.								0'- 10 3/8"	618	
1S 609	1 SER. 9 BARS	21	6	44	9	6	2	6	9	6			233	
1S 610	1 SER. 26 BARS	6	6	ISTR.								0'- 10 1/16"	664	
1S 611	5	4	0	ISTR.									30	
1S 612	1 SER. 5 BARS	4	0	ISTR.								1'- 10 1/2"	58	
1S 613	1 SER. 4 BARS	12	0	44	0	0	2	6	9	6			65	
1S 614	1 SER. 6 BARS	4	0	ISTR.								1'- 0"	59	
1S 615	4	40	0	ISTR.									240	
UNIT NO.1 SUB-TOTAL														123,189

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT	WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in				
2S 401	797	40	0	ISTR.									21296	
2S 402	1 SER. 40 BARS	8	0	ISTR.								0'- 9 1/4"	615	
2S 403	1 SER. 53 BARS	4	0	ISTR.								0'- 5 3/4"	584	
2S 501	782	40	0	ISTR.									32625	
2S 502	1175	32	0	ISTR.									39217	
2S 503	1 SER. 27 BARS	7	0	ISTR.								0'- 11 1/16"	535	
2S 504	11	5	0	ISTR.									57	
2S 505	1 SER. 36 BARS	4	0	ISTR.								0'- 9 7/16"	666	
2S 506	1 SER. 115 BARS	4	0	ISTR.								0'- 2 13/16"	2099	
2S 507	1	7	6	ISTR.									8	
2S 508	1 SER. 92 BARS	4	0	ISTR.								0'- 3 5/8"	1703	
2S 509	1 SER. 34 BARS	12	0	ISTR.								0'- 10 7/8"	957	
2S 510	646	6	11	40									4663	
2S 511	386	7	0	ISTR.									2818	
2S 512	240	15	6	ISTR.									3880	
2S 513	668	3	6	24	0	9	0	6	0	8.5	1	1	2439	
2S 514	668	2	6	4	0	10	1	9					1742	
2S 515	329	3	7	24	1	0	0	6	0	9	1	4	1230	
2S 516	20	4	7	ISTR.									94	
2S 517	323	7	10	43									2638	
2S 518	329	3	9	24	1	0	0	6	0	9	1	2	1287	
2S 519	661	12	0	ISTR.									8273	
2S 520	376	39	0	ISTR.									15295	
2S 521	1 SER. 44 BARS	4	0	ISTR.								0'- 8 1/16"	849	
2S 522	1 SER. 11 BARS	4	0	ISTR.								0'- 8 3/8"	86	
2S 523	1 SER. 32 BARS	7	0	ISTR.								0'- 1 9/16"	300	
2S 524	6	6	10	ISTR.									43	
2S 525	1 SER. 13 BARS	4	0	ISTR.								0'- 5"	88	
2S 601	1195	27	6	ISTR.									49808	
2S 602	596	21	6	44	9	6	2	6	9	6			19247	
2S 603	1 SER. 23 BARS	7	0	ISTR.								0'- 11 1/16"	593	
2S 604	1 SER. 7 BARS	4	0	ISTR.								1'- 0"	74	
2S 605	1 SER. 14 BARS	21	6	44	9	6	2	6	9	6			352	
2S 606	1 SER. 30 BARS	4	0	ISTR.								0'- 9 1/8"	676	
2S 607	1	9	6	ISTR.									14	
2S 608	1 SER. 64 BARS	4	0	ISTR.								0'- 4 3/8"	1490	
2S 609	1 SER. 99 BARS	4	0	ISTR.								0'- 2 11/16"	2230	
2S 610	5	5	0	ISTR.									38	
2S 611	1 SER. 40 BARS	21	6	44	9	6	2	6	9	6			1006	
2S 612	1 SER. 26 BARS	4	0	ISTR.								0'- 2 5/8"	264	
2S 613	6	40	0	ISTR.									360	
2S 614	1 SER. 10 BARS	12	0	44	0	0	2	6	9	6			161	
2S 615	1 SER. 13 BARS	4	0	ISTR.								0'- 5"	127	
UNIT NO.2 SUB-TOTAL														222,527
UNIT NO.1 SUB-TOTAL														123,189
TOTAL WEIGHT														345,716

NOTES:

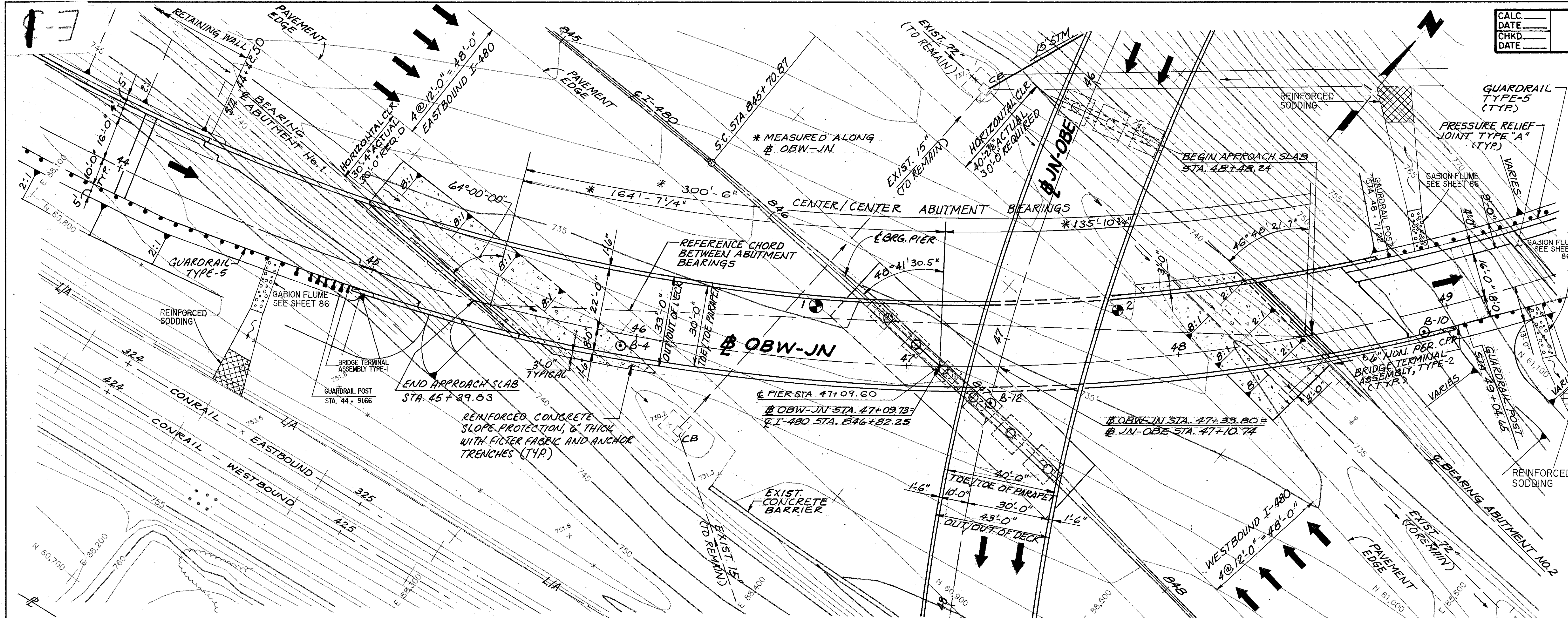
ALL REINFORCING STEEL TO BE EPOXY COATED.
BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

36 / 36

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REINFORCING SCHEDULE
JENNINGS FREEWAY
STATE ROUTE 176
OVER
CONRAIL, LANE OBW-JN AND I-480
BR. NO. CUY-176-1020

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
H.B.M.	T.M.J.	T.A.B.	C.T.	1/94	



PLAN

PROPOSED STRUCTURE

TYPE: CONTINUOUS COMPOSITE A-572 PAINTED CURVED WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 164'-7 1/4", 135'-10 3/4" C/C BEARINGS ALONG # OBW-JN

WIDTH: 30'-0" TOE/TOE OF BARRIER 33'-0" OUT/OUT OF DECK

LOADING: HS 20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING.

WEARING: MONOLITHIC CONCRETE SURFACE

SKEW: VARIES, R/F

APPROACH: AS-1-81, AS PER PLAN SLAB 50' LONG @ ABUTMENT #1 30' LONG @ ABUTMENT #2

ALIGNMENT: CURVE LEFT (Dc = 7° 51' 27")

SUPERELEVATION: 0.059 FT/FT.

SLOPE PROTECTION: REINFORCED CONCRETE SLOPE PROTECTION, 6" THICK WITH FILTER FABRIC AND ANCHOR TRENCHES.

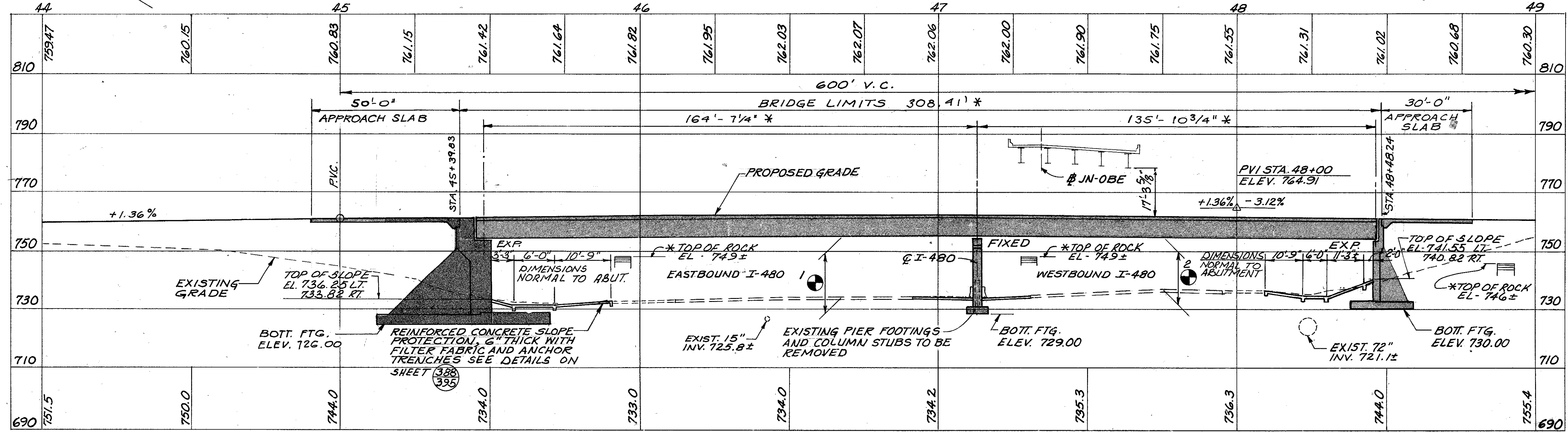
FOUNDATION DATA

ABUTMENTS AND PIER FOOTINGS SHALL BE SPREAD FOOTINGS FOUNDED ON BEDROCK.

⊙ INDICATES SOIL BORING LOCATION. REFER TO STRUCTURE FOUNDATION INVESTIGATION SHEETS FOR ADDITIONAL INFORMATION. * ESTIMATED TOP OF ROCK FOR THE YEAR 1972.

NOTE: EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.

BENCHMARK: TBM 71 CHISELED SQ.
N.W. CORNER INLET I-480 STA. 8+6+20, 80± RT.
ELEV. 730.30



PROFILE

1 POINT OF MINIMUM VERTICAL CLEARANCE MINIMUM 16'-6" ACTUAL 18'-11"

2 POINT OF MINIMUM VERTICAL CLEARANCE MINIMUM 16'-6" ACTUAL 16'-11 3/8"

OBW-JN HORIZONTAL CURVE DATA

P.I. STA. 47+07.26
S.C. STA. 43+39.67
C.S. STA. 50+20.81
Δc = 53° 32' 42.2 LT
Dc = 7° 51' 27"
R = 729.178'
T = 367.895'
L = 681.444
C = 656.915'
E = 87.552'

VERTICAL CURVE DATA

G1 = +1.36%
G2 = -3.12%
L = 600'
P.V.I. ELEV. 764.91
P.V.I. STA. 48+00.00
P.V.C. STA. 45+00.00
P.V.T. STA. 51+00.00

TRAFFIC DATA

AVERAGE DAILY TRAFFIC (2013) = 9000
AVERAGE DAILY TRUCK TRAFFIC (2013) = 900

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SITE PLAN
JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN

BRIDGE NO. CUY-480-1557
STA. 45+39.85 TO STA. 48+48.24
CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	TJW	LED	7-30-92	

STRUCTURAL GENERAL NOTES

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

315
395

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81 DATED 11-27-81
SD-1-69 REVISED 6-12-69
EXJ-4-87 DATED 1-5-89

AND TO SUPPLEMENTAL SPECIFICATION(S)

910 DATED 6-1-91
944 DATED 3-8-92

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:

DESIGN LOADING:

DESIGN LOADING - HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE = 30 LBS PER SQUARE FOOT

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI
SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
STRUCTURAL STEEL ASTM A572 - YIELD STRENGTH 50,000 PSI

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL, 2 1/2" CONCRETE COVER AND SEALING OF CONCRETE SURFACES

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES TO BE 1" THICK

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

FOOTINGS:

FOOTINGS SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN, WHICHEVER IS LOWER.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

ITEM 203 EMBANKMENT, AS PER PLAN:

ALL FILL MATERIAL FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT BETWEEN STATIONS 44+00 TO 49+50 SHALL BE 203 GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED A THICKNESS OF MORE THAN SIX (6) INCHES. SEE ROADWAY PLANS FOR QUANTITIES.

CONSTRUCTION CONSTRAINTS:

THE BRIDGE APPROACH EMBANKMENT BEHIND BOTH ABUTMENTS SHALL BE CONSTRUCTED UP AT A 1:1 SLOPE FROM ELEVATION 730± AT THE HEEL OF THE FOOTING UP TO THE SUBGRADE ELEVATION AND FOR A MINIMUM DISTANCE OF 250 FEET BEHIND THE ABUTMENTS. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, THE EMBANKMENT IMMEDIATELY BEHIND THE ABUTMENTS SHALL BE CONSTRUCTED UP TO THE BEAM SEAT ELEVATION AND ON A 1:1 SLOPE UP TO THE SUBGRADE ELEVATION PRIOR TO SETTING THE GIRDERS ON THE ABUTMENTS.

ITEM 503 UNCLASSIFIED EXCAVATION, INCLUDING SHALE, AS PER PLAN:

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE 203 GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED A THICKNESS OF MORE THAN SIX (6) INCHES.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EDGE OF DECK SLAB AS SHOWN ON THE TRANSVERSE SECTION ON SHEET [20/23], TO THE ABUTMENTS AS SHOWN ON SHEET [7/23], AND ALL EXPOSED SURFACES OF THE PIER. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOUNDATION BEARING PRESSURE:

ABUTMENT NO.1 FOOTING, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 2.7 TONS PER SQUARE FEET, AND ABUTMENT NO.2 FOOTING, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 3.5 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.
PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 4.8 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.

ITEM SPECIAL - PAINTING OF NEW STEEL, SYSTEM IZEU

THE URETHANE FINISH COAT SHALL BE GRAY, FEDERAL STANDARD NO. FS-595A-16440

MECHANICAL CONNECTORS

AN APPROVED TYPE OF MECHANICAL CONNECTOR FOR REINFORCING BARS SHALL BE PROVIDED WHERE REQUIRED. INSTALLATION OF THE CONNECTORS SHALL CONFORM WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES. CONNECTORS SHALL BE EPOXY COATED AND THE COATING SHALL CONFORM TO THE SAME SPECIFICATIONS AS THE REINFORCING STEEL. COATINGS WHICH HAVE BEEN DAMAGED SHALL BE REPAIRED ACCORDING TO 709.00 OF THE CMS. CONNECTORS SHALL CONFORM WITH AND BE INCLUDED FOR PAYMENT WITH ITEM 509.

ESTIMATED QUANTITIES

CALC. DATE: C.T. 1/94
CHKD. DATE: T.A.B. 3/94

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPERSTRUCTURE	GENERAL	AS BUILT
202	11000	LUMP	LUMP	STRUCTURE REMOVED (EXISTING PIER FOUNDATIONS)		LUMP			
503	21103	2,742	CU.YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE AS PER PLAN	2,661	81			
509	15840	300,302	POUND	EPOXY COATED REINFORCING STEEL GRADE 60	195,688	14,591	90,023		
SPEC.	51148000	315	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (DECK) *			315		
SPEC.	51148020	83	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (PARAPET) *			83		
SPEC.	51148040	1,685	CU.YD.	HIGH PERFORMANCE CONCRETE SUBSTRUCTURE *	1,606	79			
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE TRIAL MIX *				LUMP	
512	44400	8	SQ.YD.	TYPE B WATERPROOFING	8				
SPEC.	51267504	1,758	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *	752	124	882		
513	12400	591,000	POUND	STRUCTURAL STEEL, A572-50 AISC CATEGORY III *			591,000		
513	20000	1,605	EACH	WELDED STUD SHEAR CONNECTOR			1,605		
514	00610	591,000	POUND	PAINTING OF NEW STEEL, SYSTEM IZEU *			591,000		
516	11210	121	LIN.FT.	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL *			121		
516	13600	247	SQ.FT.	1" PREFORMED EXPANSION JOINT FILLER	247				
516	30500	89	LIN.FT.	PVC WATERSTOP	89				
516	45000	12	EACH	STEEL PdT BEARINGS *			12		
518	21200	507	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC	507				
518	40001	206	LIN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN	206				
518	40011	200	LIN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN	200				
601	21001	433	SQ.YD.	CONCRETE SLOPE PROTECTION, AS PER PLAN	433				

* SEE PROPOSAL NOTE

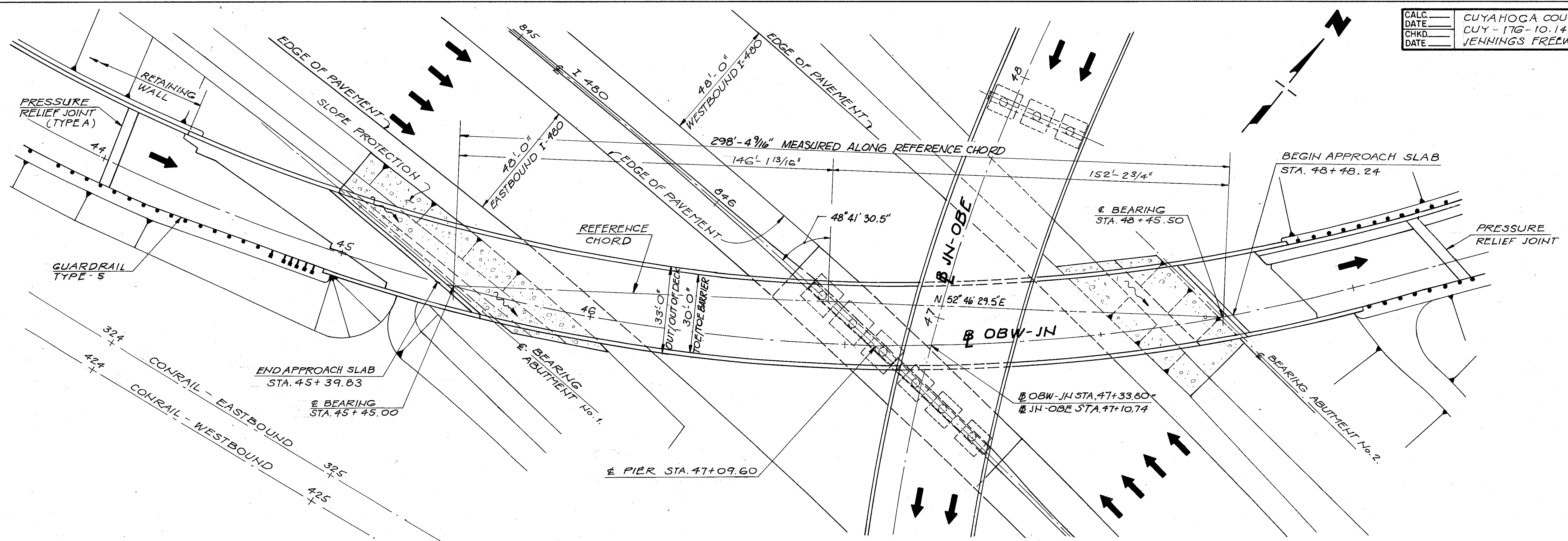
2 / 23

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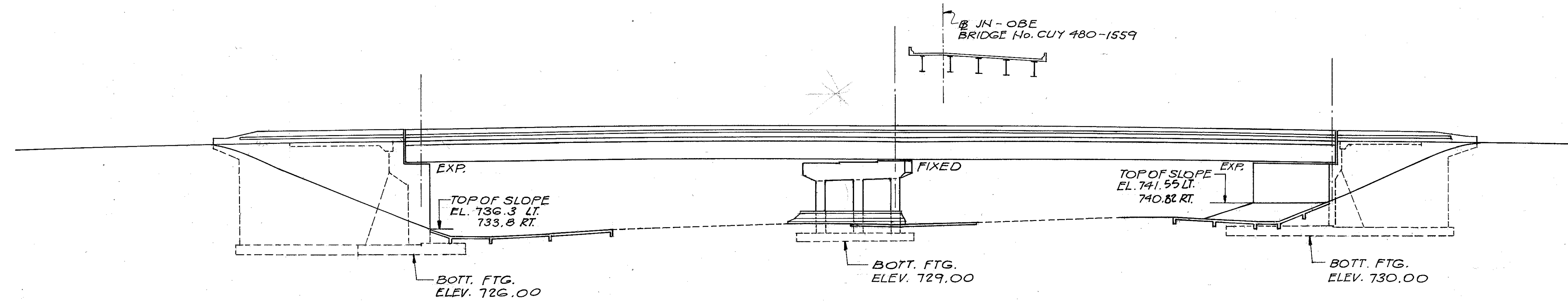
**STRUCTURAL GENERAL NOTES
AND ESTIMATED QUANTITIES**

JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN
BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M	C.T.	A.J.M.	1/94	



PLAN



ELEVATION

adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131

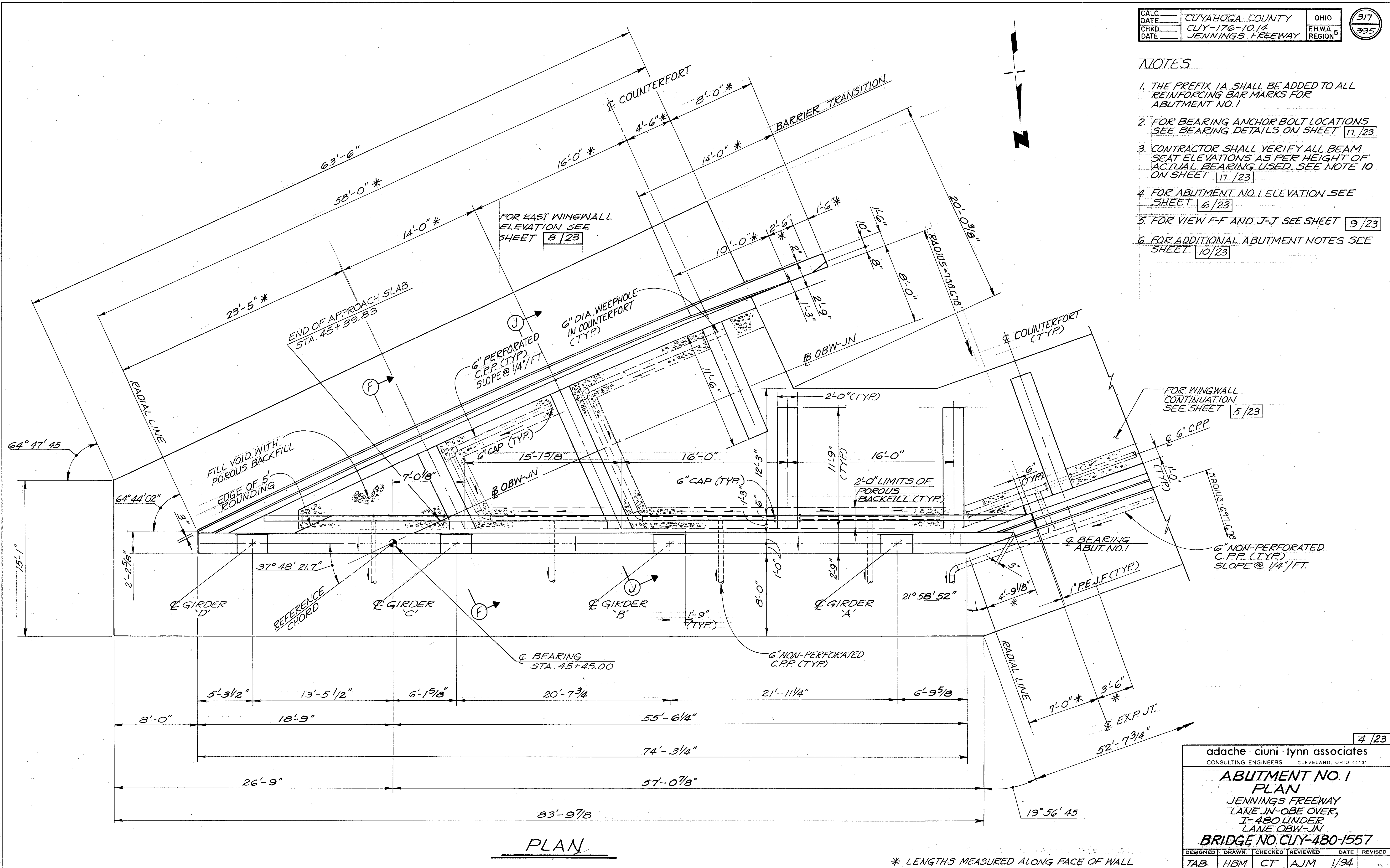
GENERAL PLAN & ELEVATION
 JENNINGS FREEWAY
 LAKE JN-OBE OVER,
 I-480 UNDER
 LAKE OBW-JN

BRIDGE NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	C.T.	A.J.M.	1/94	

NOTES

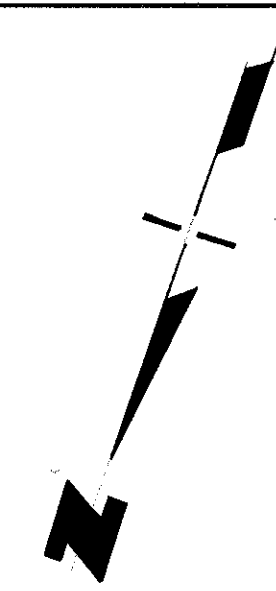
1. THE PREFIX 1A SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR ABUTMENT NO. 1
2. FOR BEARING ANCHOR BOLT LOCATIONS SEE BEARING DETAILS ON SHEET 17/23
3. CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE 10 ON SHEET 17/23
4. FOR ABUTMENT NO. 1 ELEVATION SEE SHEET 6/23
5. FOR VIEW F-F AND J-J SEE SHEET 9/23
6. FOR ADDITIONAL ABUTMENT NOTES SEE SHEET 10/23



PLAN

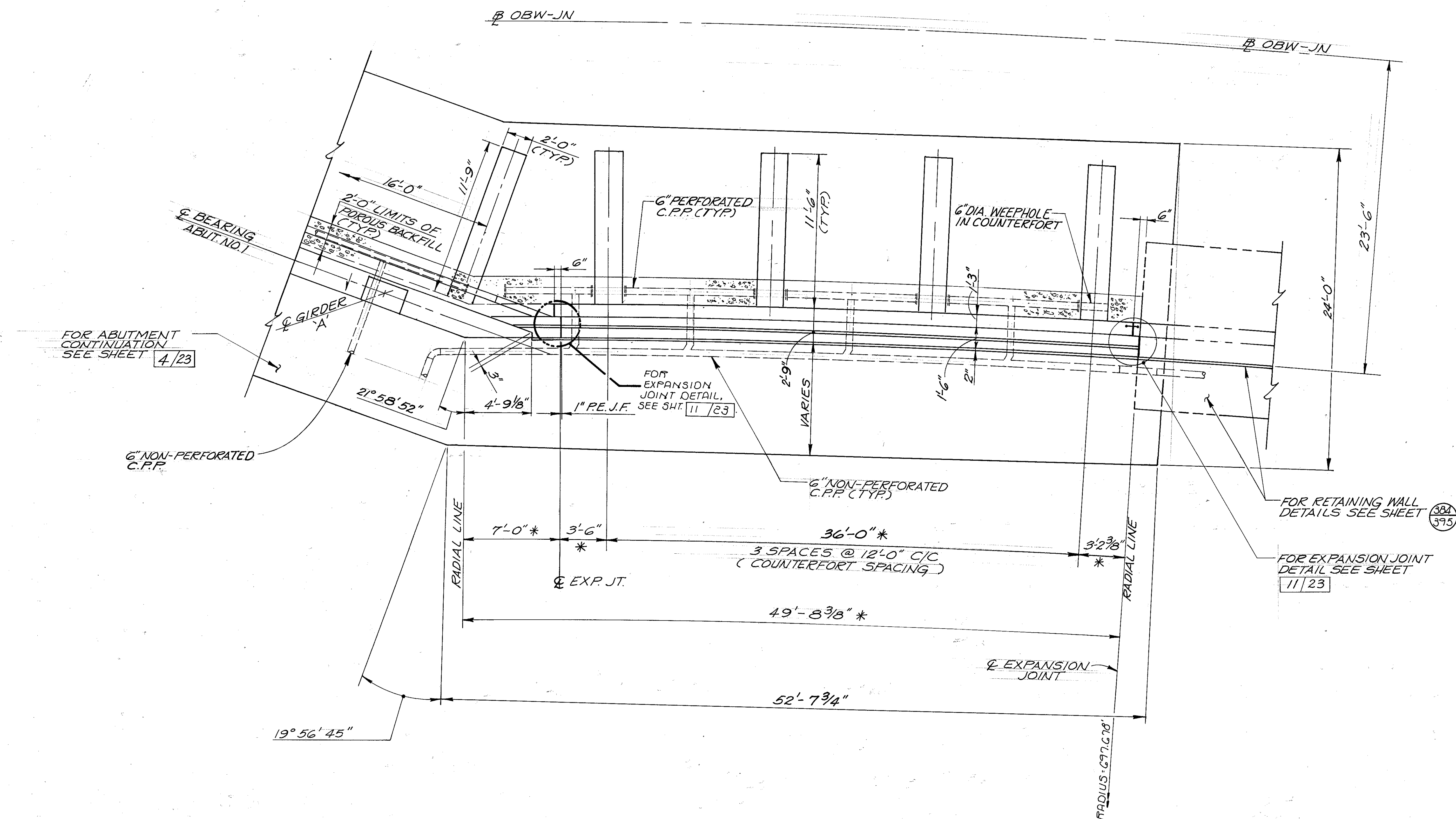
* LENGTHS MEASURED ALONG FACE OF WALL

adache - ciuni - lynn associates					
CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
ABUTMENT NO. 1					
PLAN					
JENNINGS FREEWAY					
LANE JN-OBE OVER,					
I-480 UNDER					
LANE OBW-JN					
BRIDGE NO. CLY-480-1557					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	



NOTES

1. FOR WEST WINGWALL ELEVATION SEE SHEET 9/23
2. FOR ADDITIONAL NOTES SEE SHEET 4/23



PLAN
WEST WINGWALL

* LENGTHS MEASURED ALONG FACE OF WALL

5/23

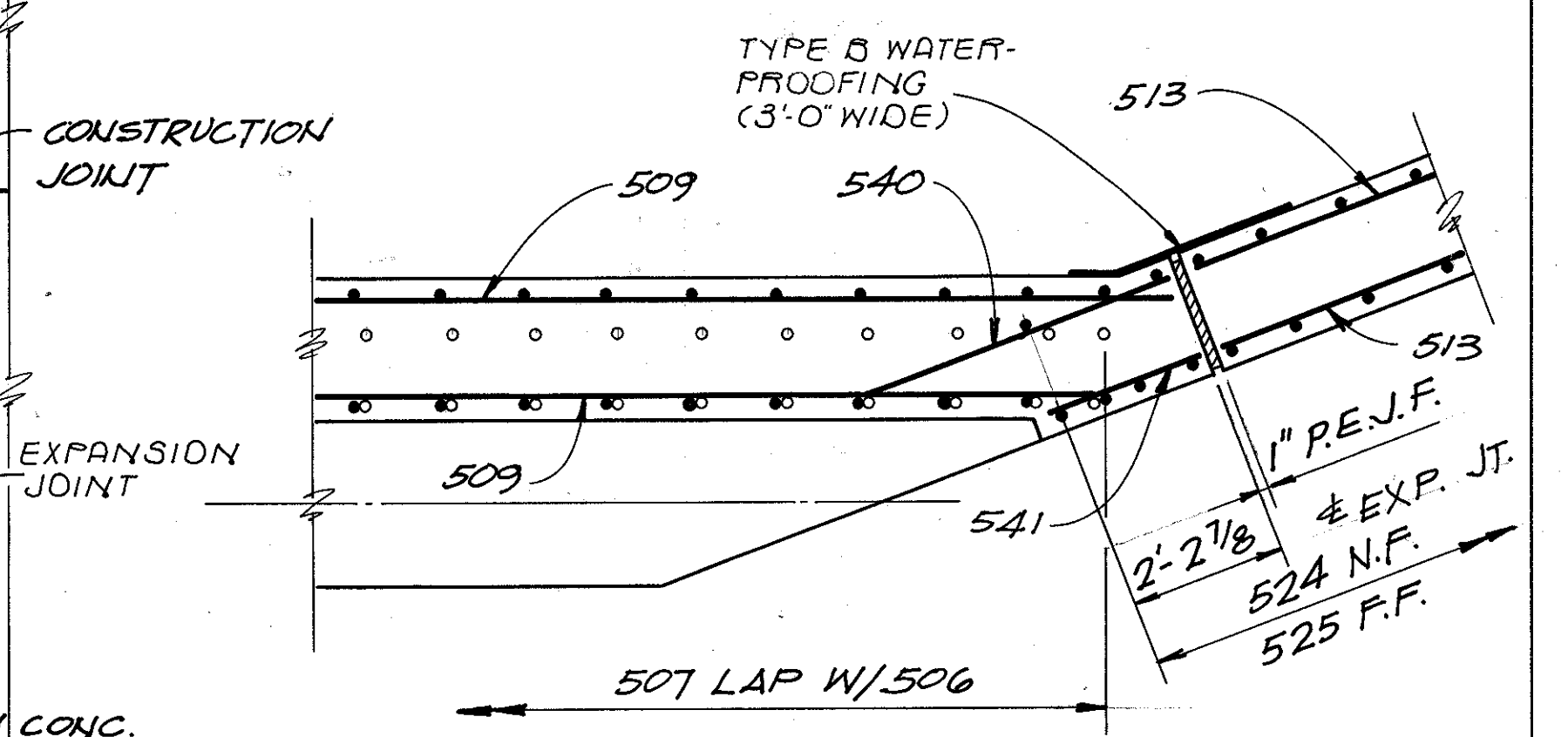
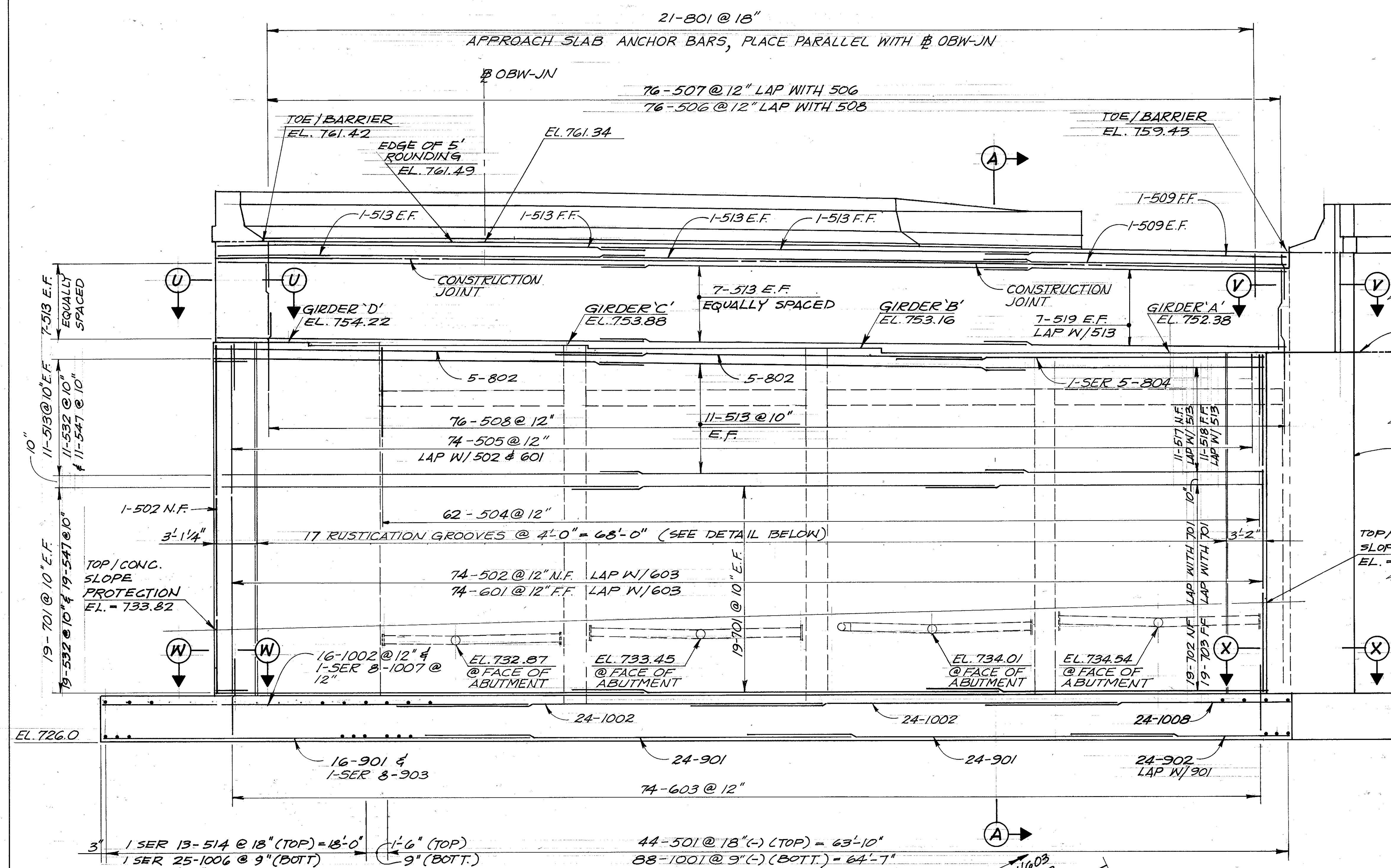
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**ABUTMENT NO. 1
WEST WINGWALL PLAN**
JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN
BRIDGE NO. CUY-480-1557

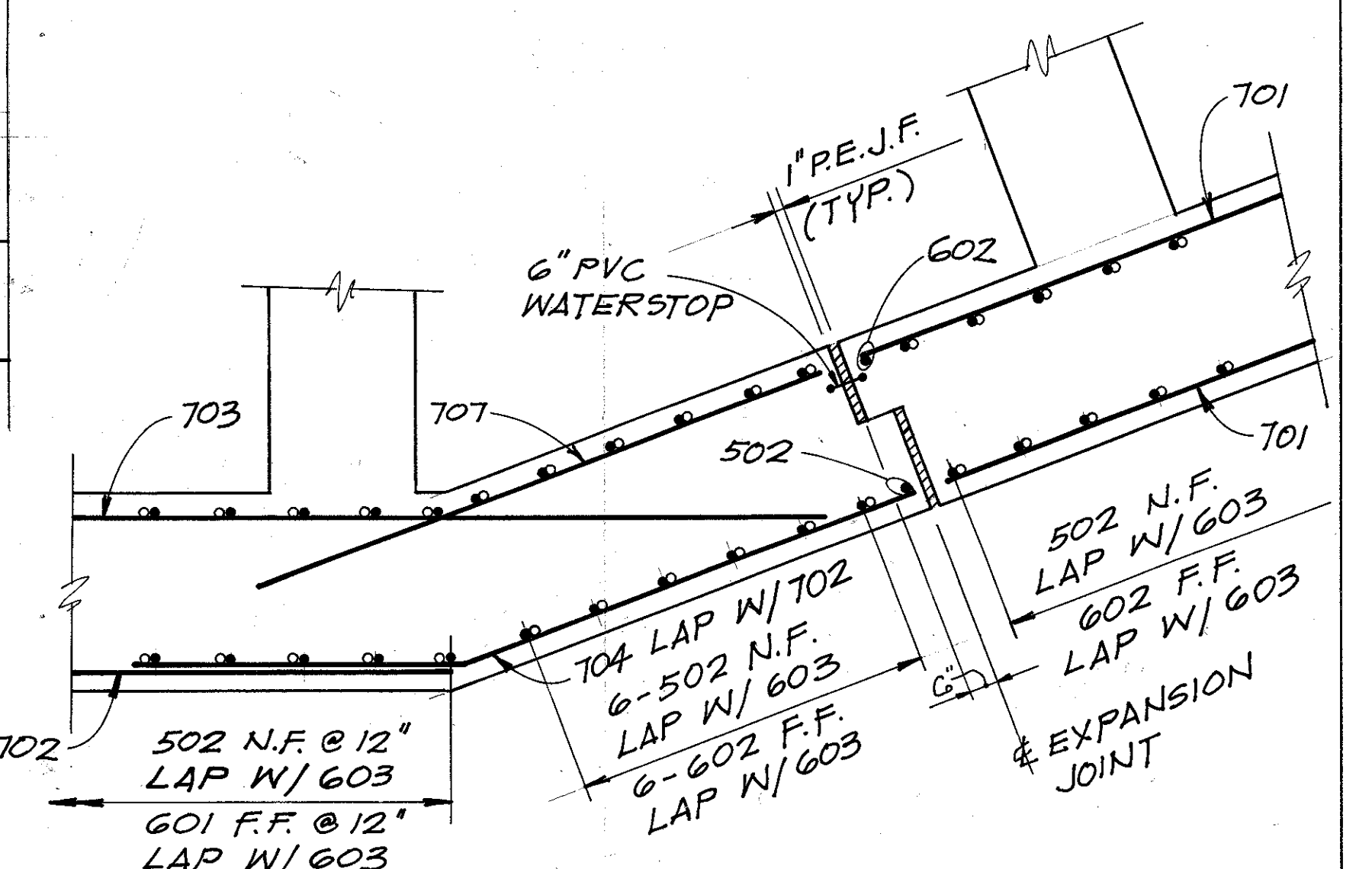
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	

NOTES

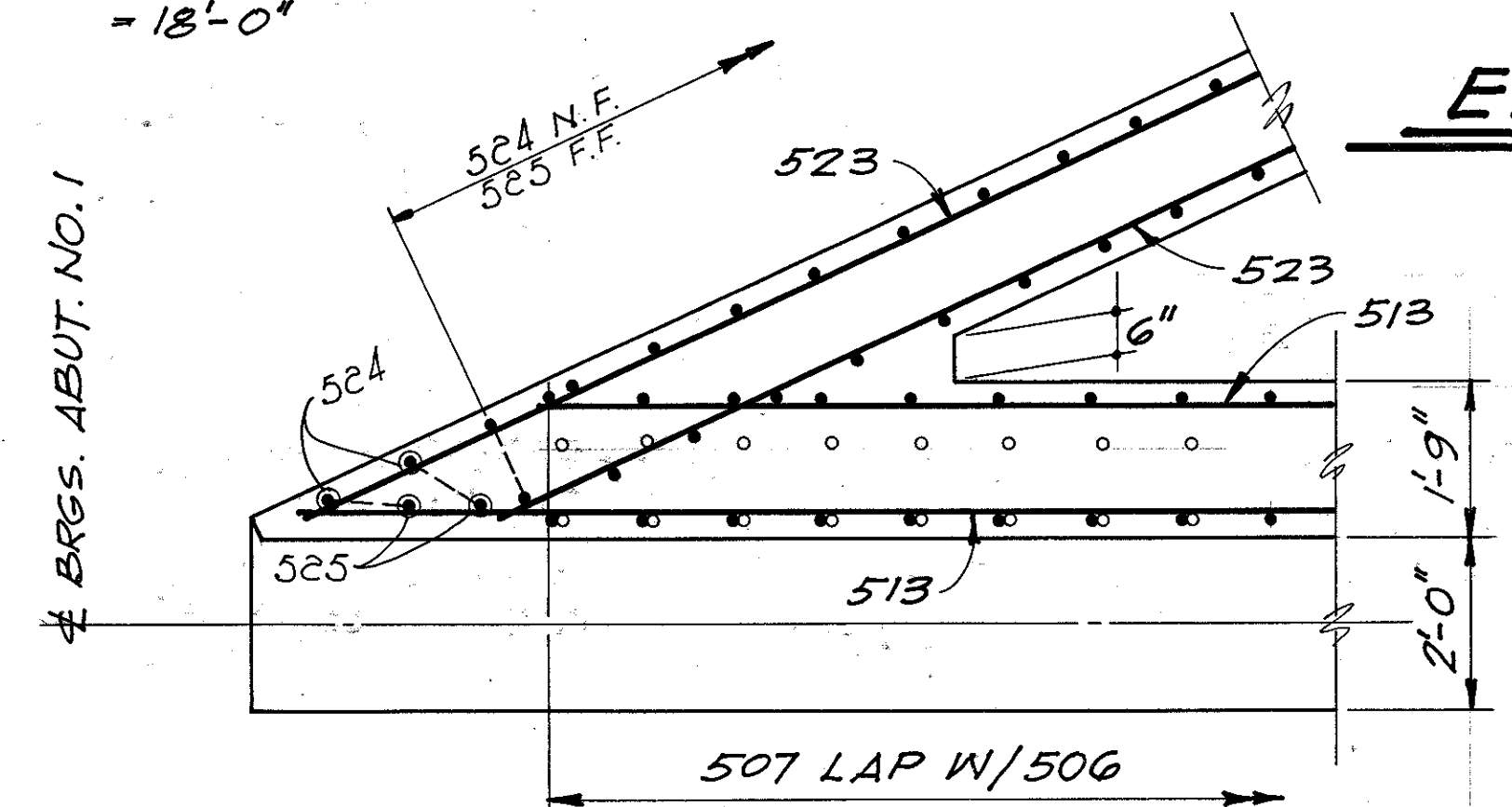
- FOR NOTES SEE SHEET 4/23
- FOR SECTION A-A SEE SHEET 7/23



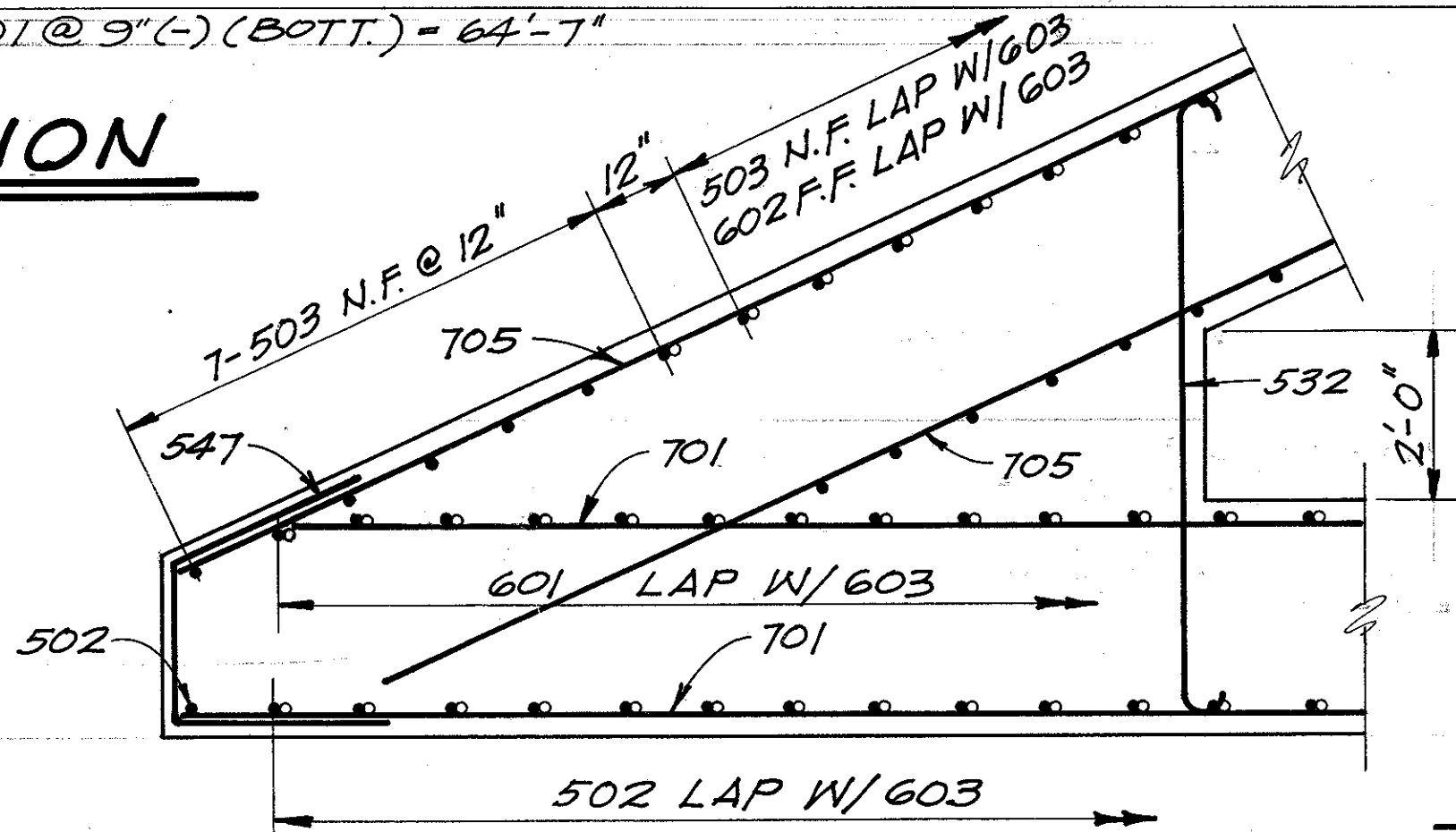
SECTION V-V



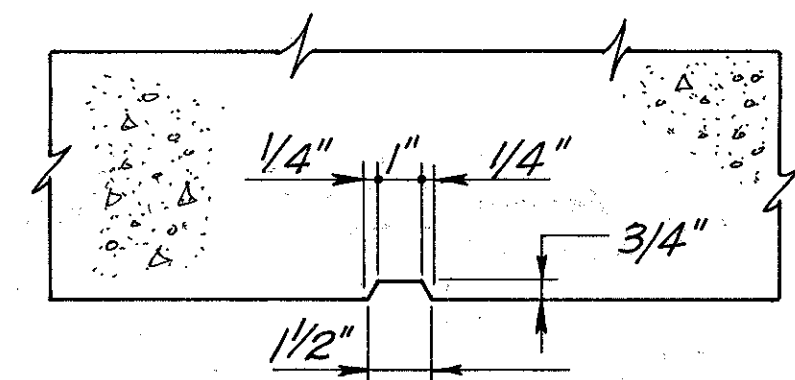
SECTION X-X



SECTION U-U



SECTION W-W



VERTICAL RUSTICATION GROOVE DETAIL

6/23

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

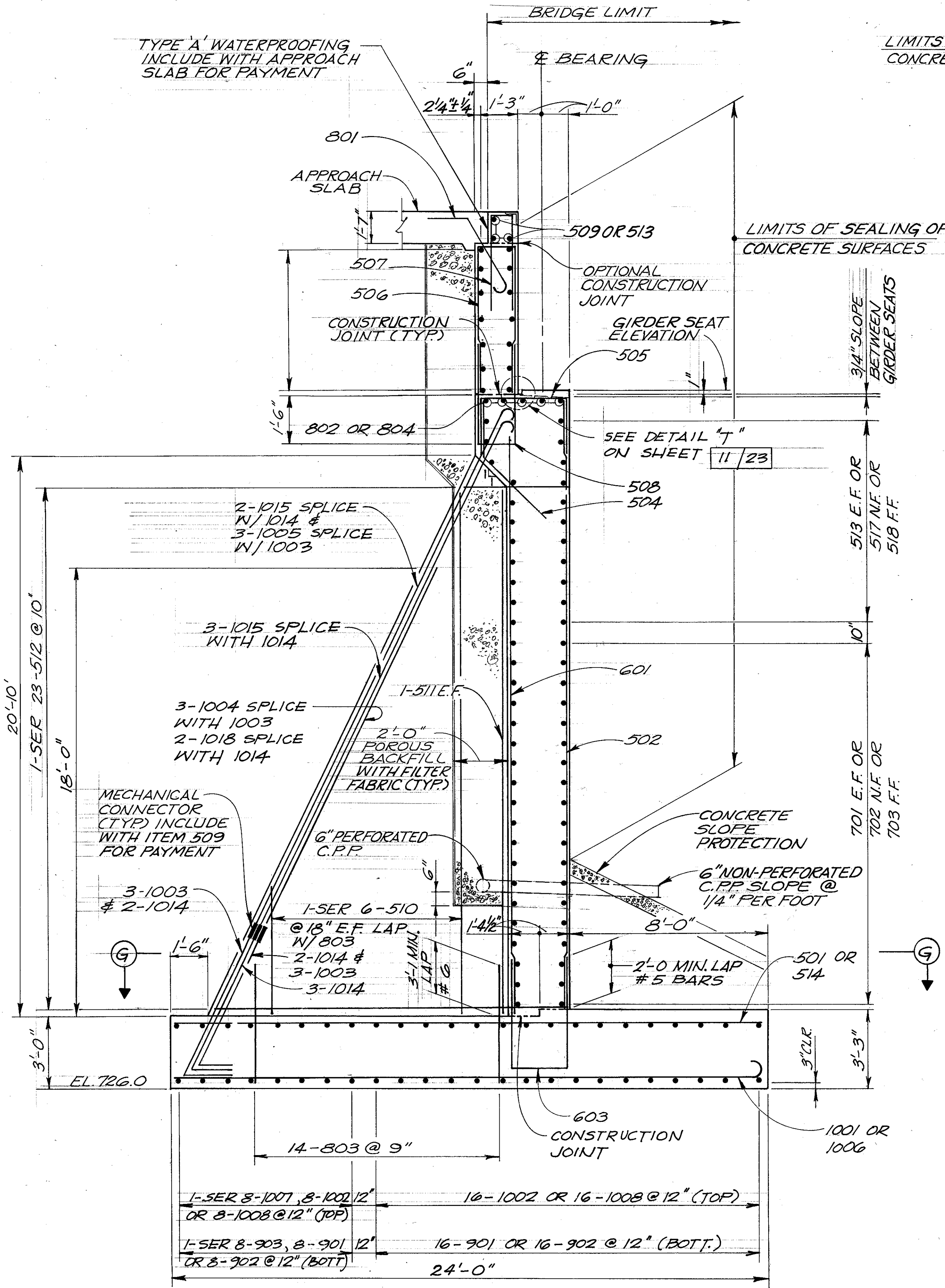
ABUTMENT NO. 1
ELEVATION
JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN

BRIDGE NO. CLY-480-1557

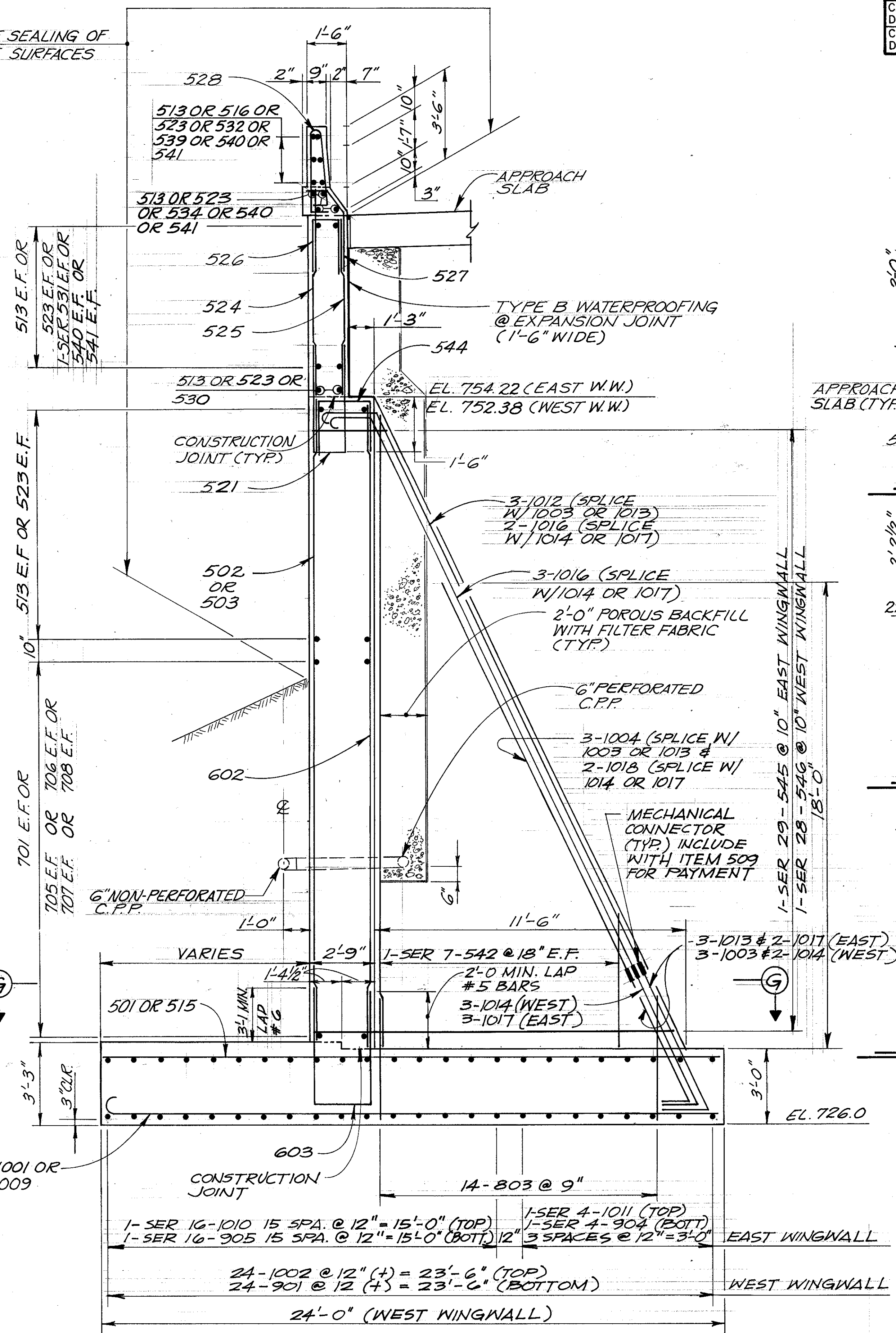
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	

TYPE 'A' WATERPROOFING INCLUDE WITH APPROACH SLAB FOR PAYMENT

LIMITS OF SEALING OF CONCRETE SURFACES

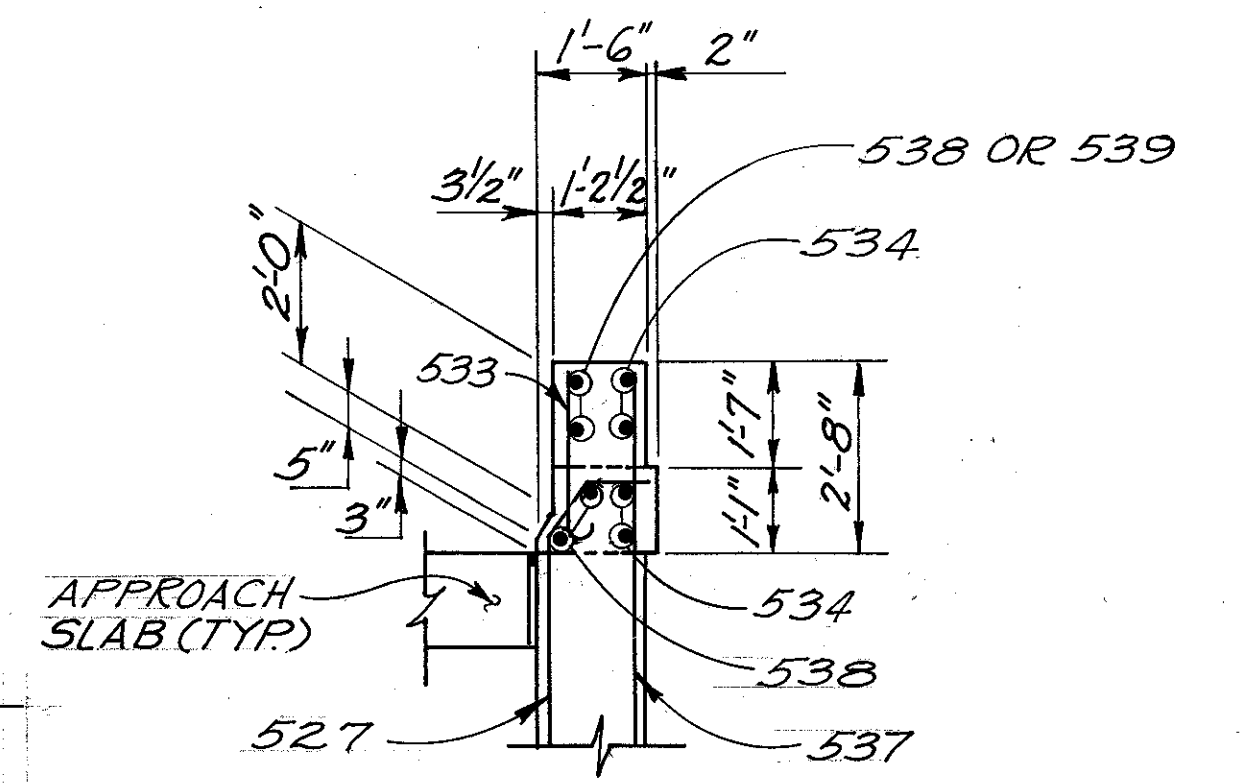


SECTION A-A

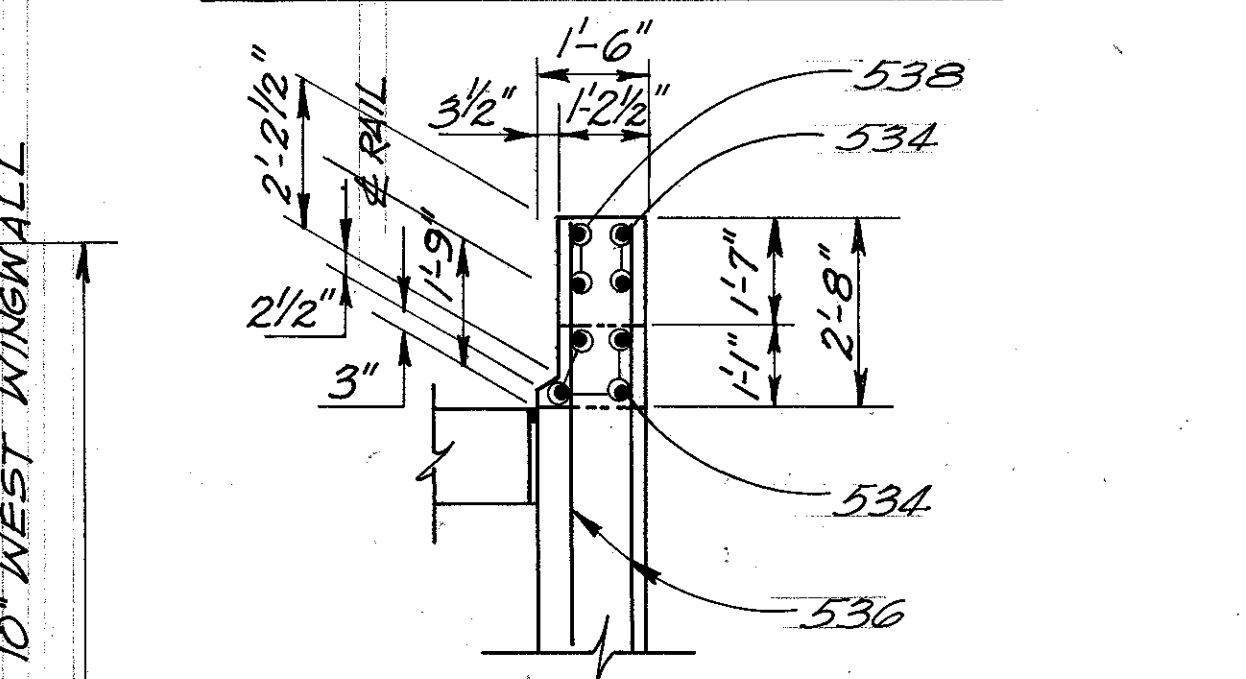


SECTION B-B

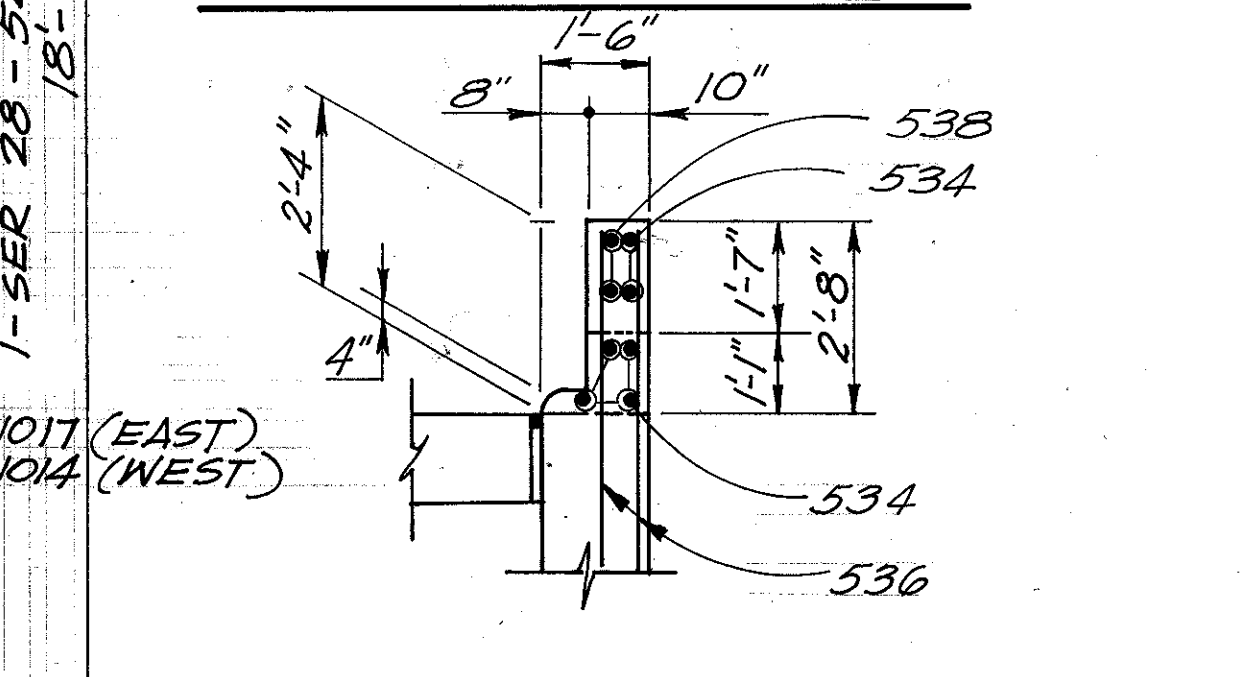
SECTION THRU WEST WINGWALL SHOWN, EAST WINGWALL SIMILAR



SECTION C-C



SECTION D-D



SECTION E-E

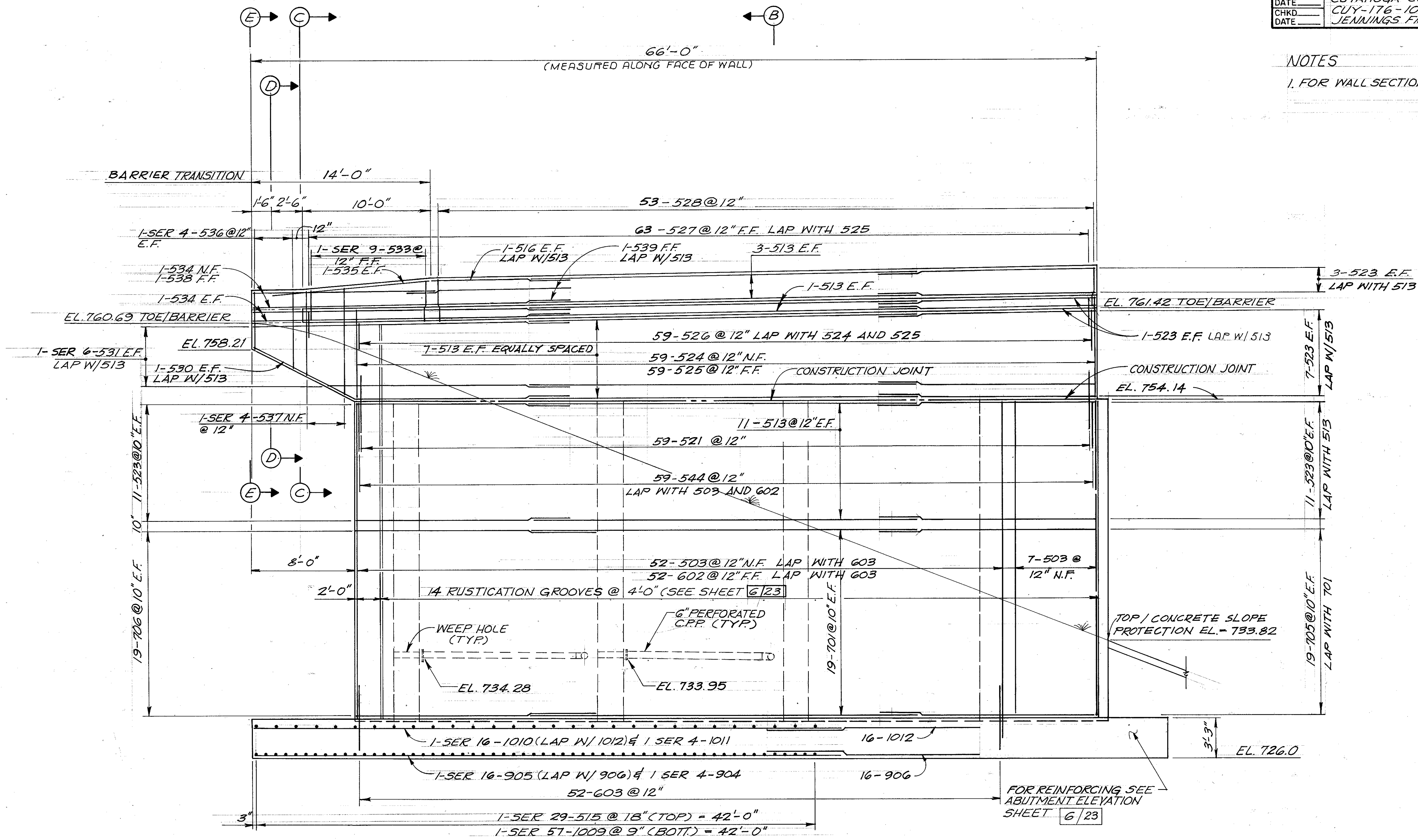
- NOTES
- FOR SECTION G-G SEE SHEET 9/23
 - FOR ADDITIONAL NOTES SEE SHEET 4/23

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ABUTMENT NO. 1
DETAILS
JENNINGS FREEWAY
LANE JN-OBE OVER
I-480 UNDER
LANE OBW-JN
BRIDGE NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	

NOTES
 1. FOR WALL SECTIONS SEE SHEET 7/23



FOR REINFORCING SEE ABUTMENT ELEVATION SHEET 6/23

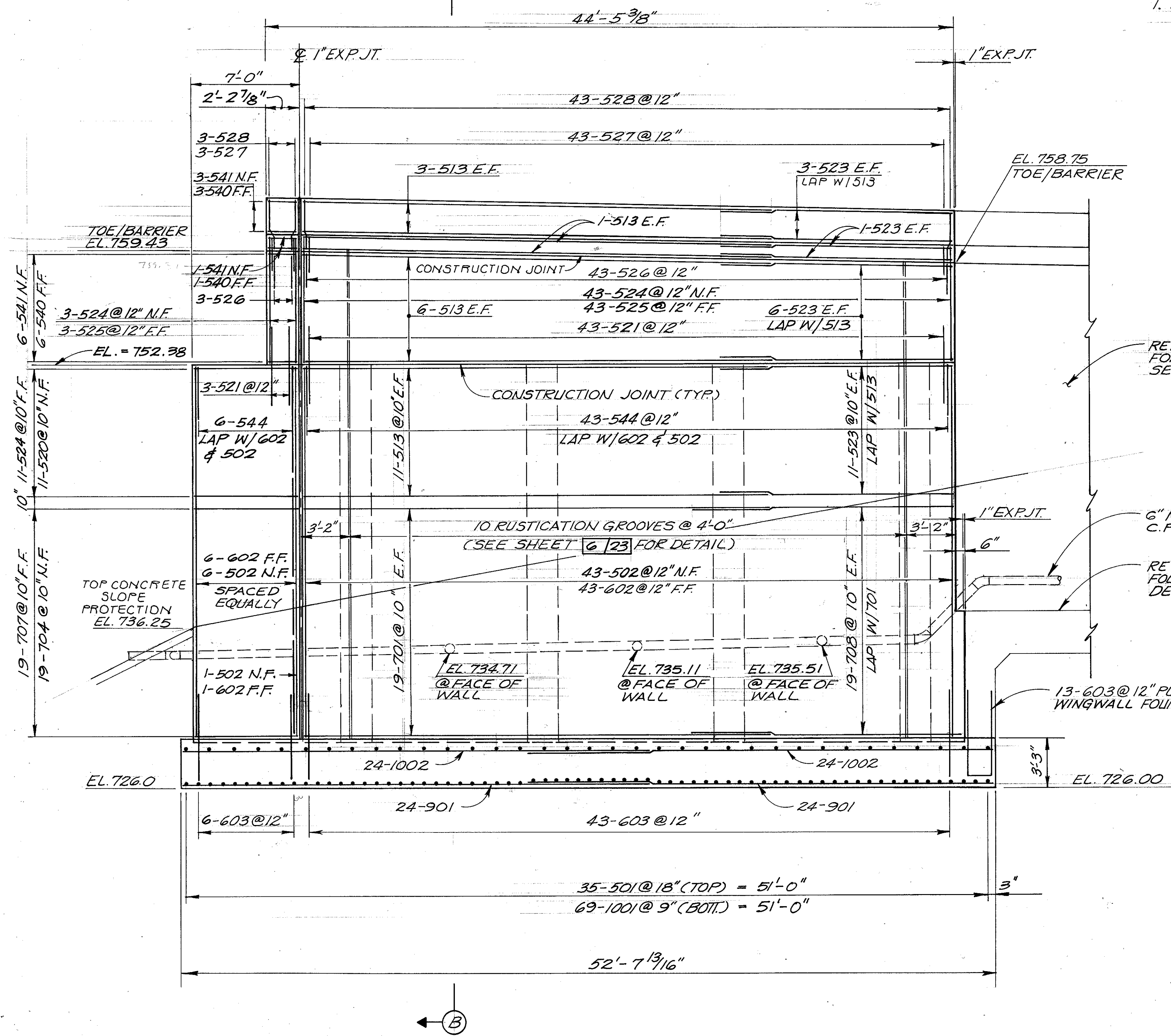
EAST WINGWALL ELEVATION

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 CONSULTING ENGINEERS CLEVELAND, OHIO 44131

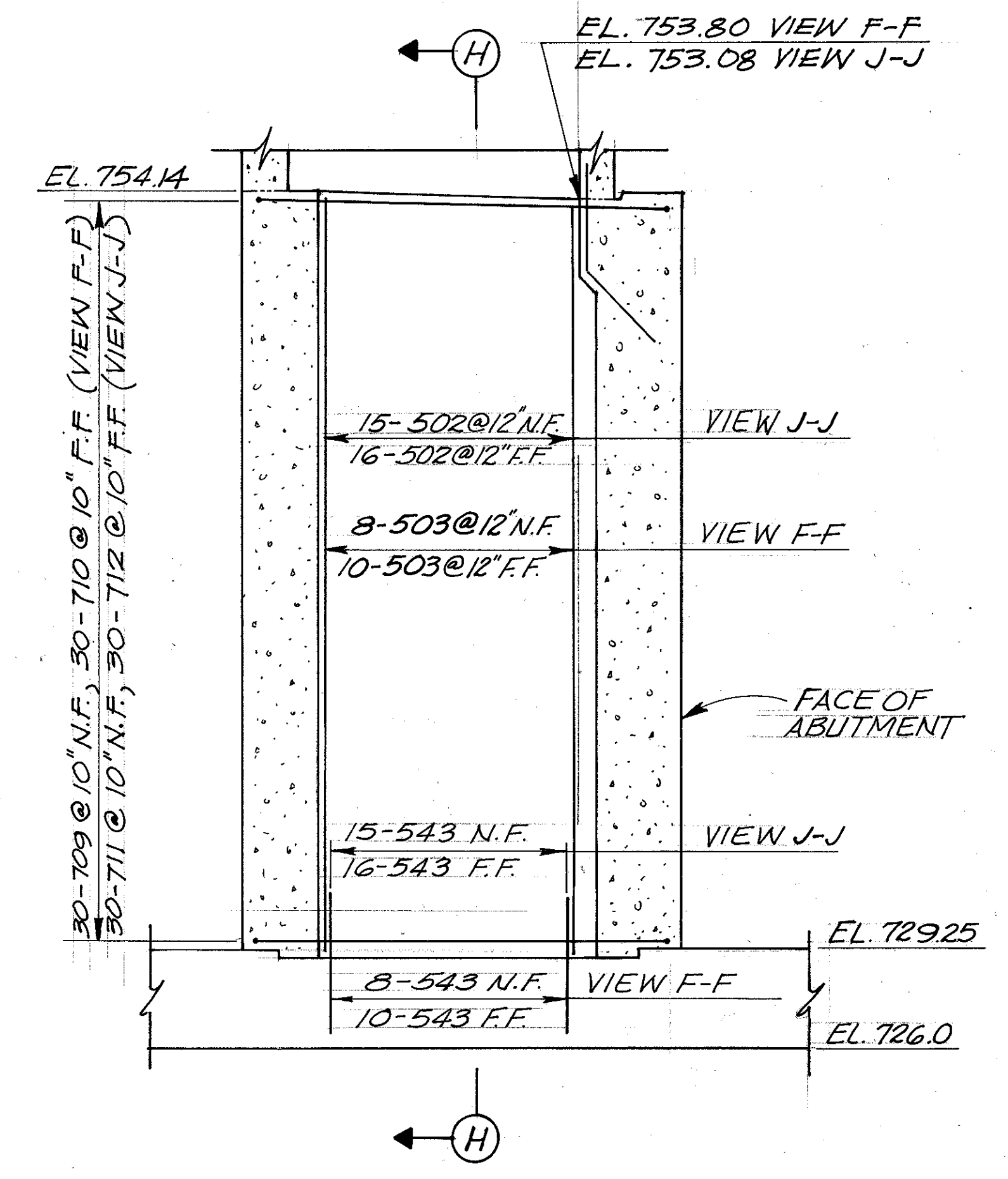
**ABUTMENT NO. 1
 WINGWALL ELEVATION**
 JENNINGS FREEWAY
 LANE IN-OBE OVER,
 I-480 UNDER
 LANE OBW-JN
BRIDGE NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	

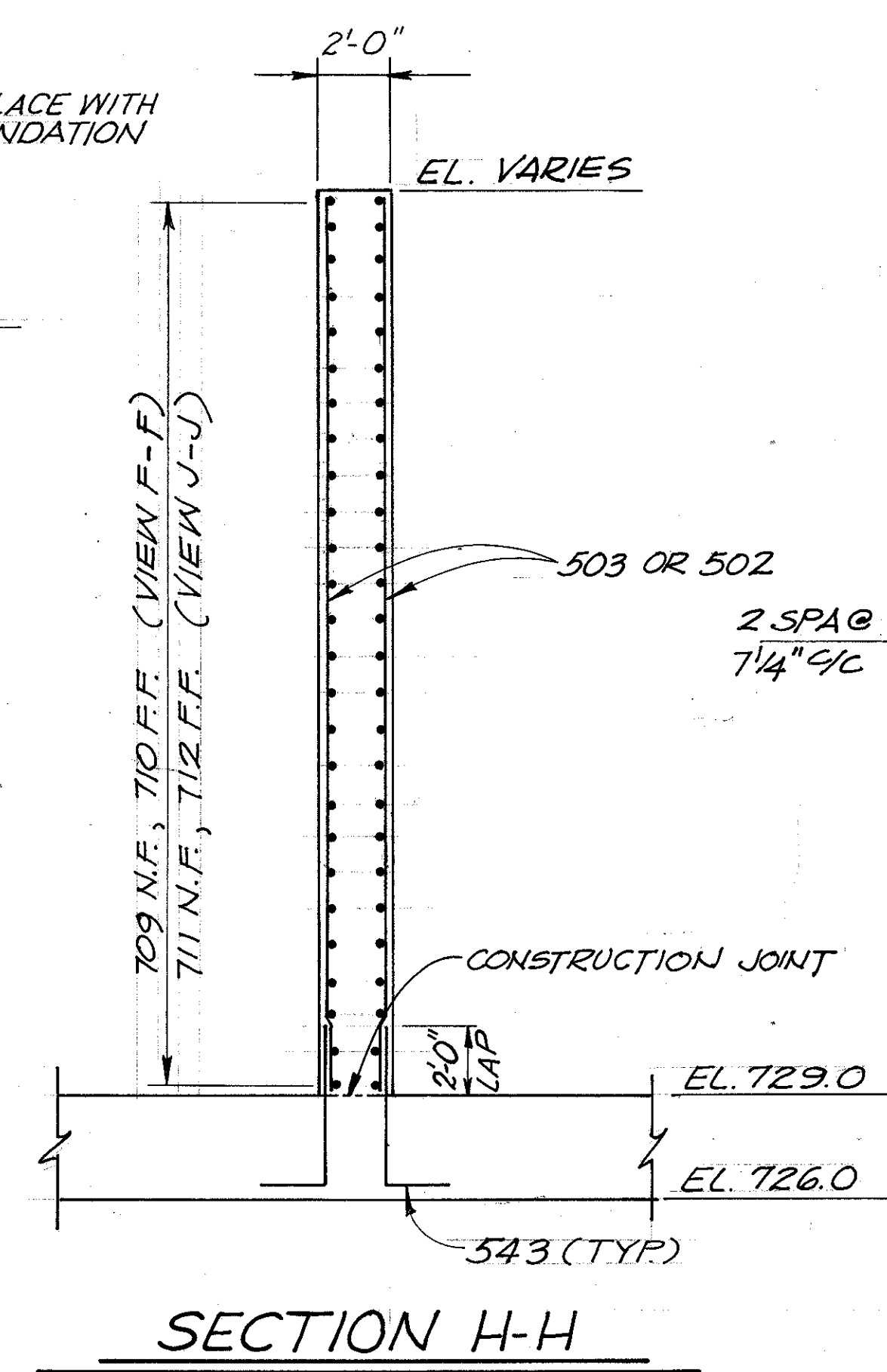
NOTES
1. FOR SECTION B-B SEE SHEET 7/23



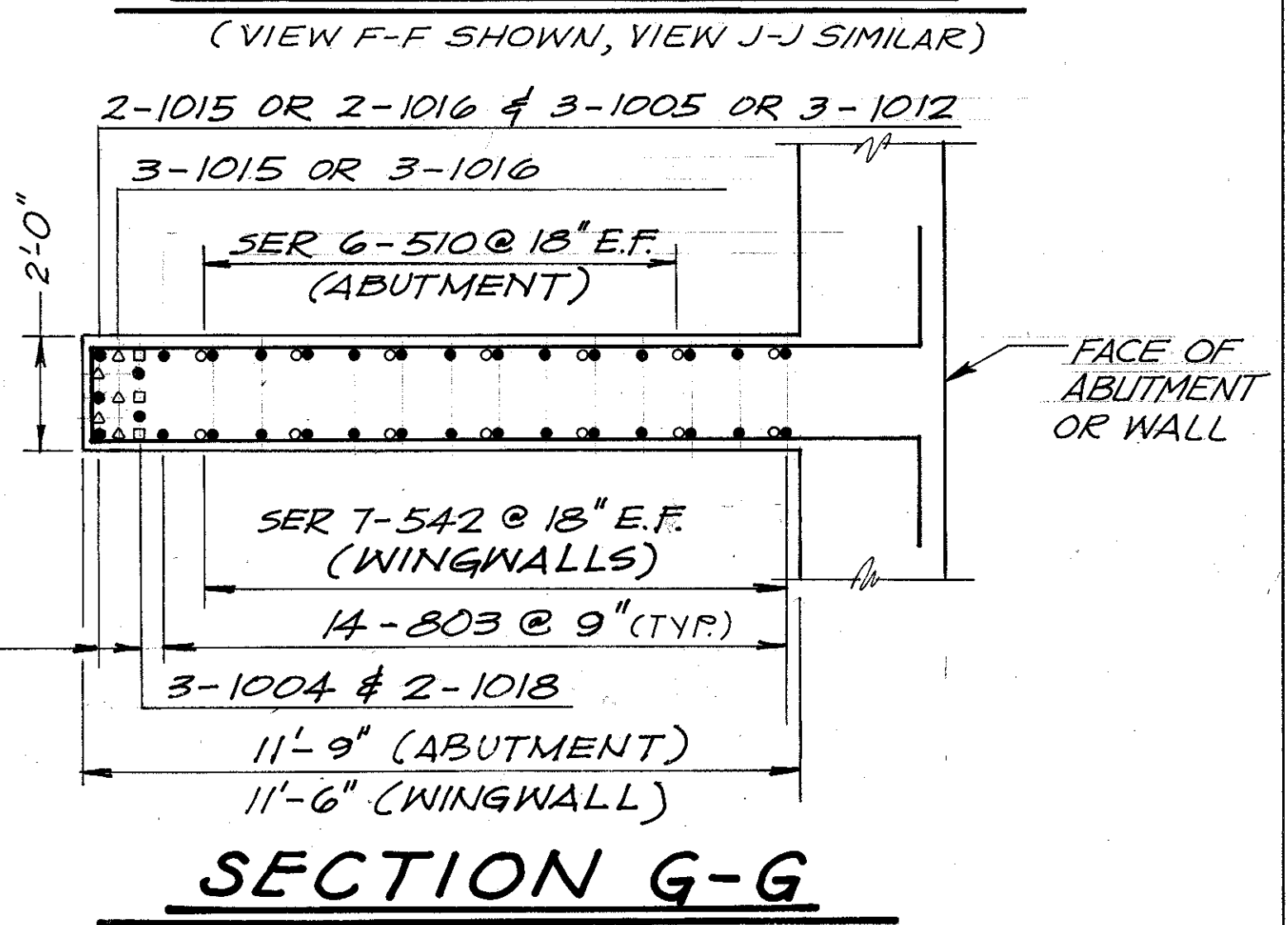
WEST WINGWALL ELEVATION



VIEW F-F & VIEW J-J



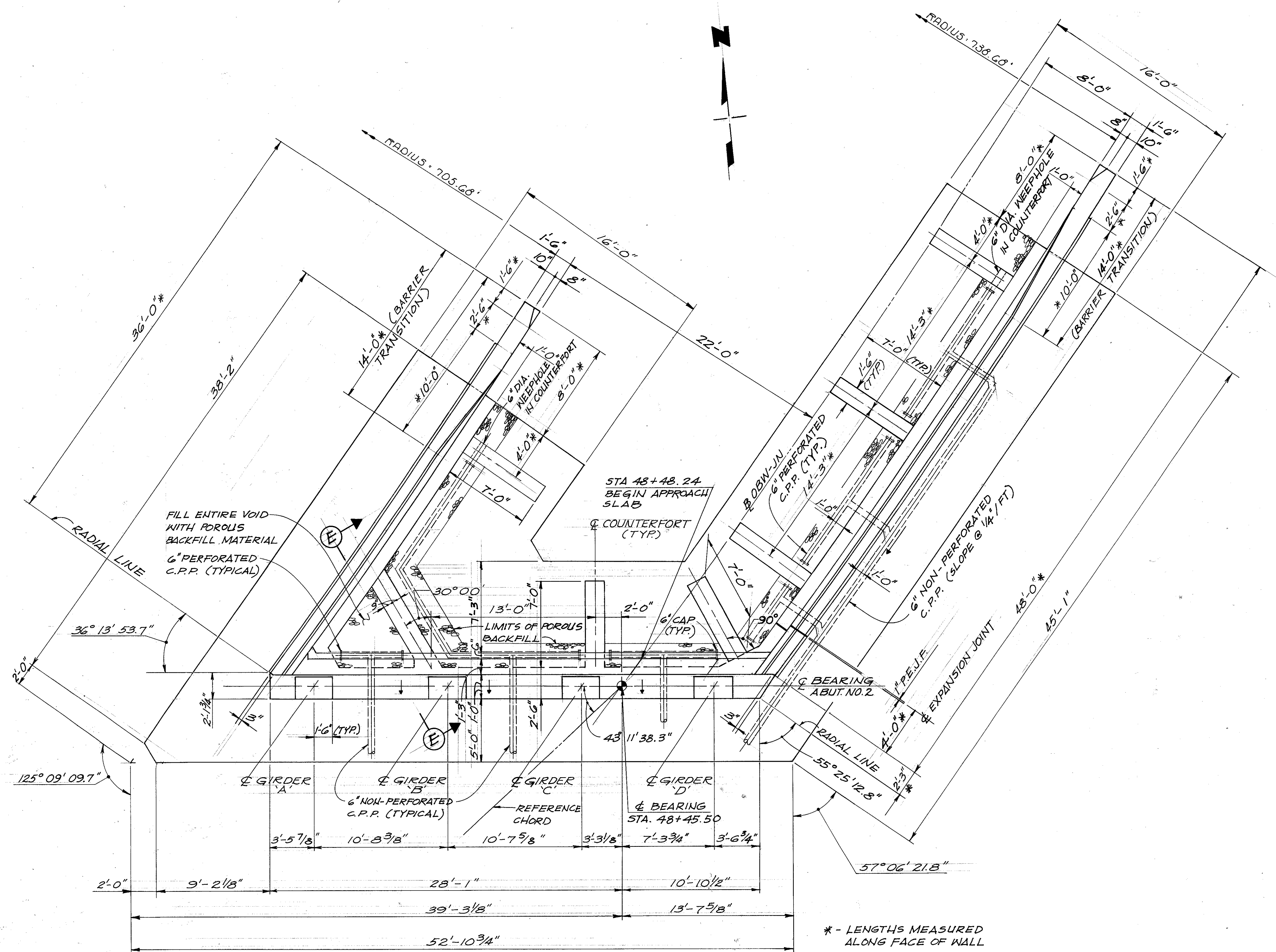
SECTION H-H



SECTION G-G

- LEGEND**
- 1005 OR 1012
 - △ 1015 OR 1016
 - 1004
 - 1018 OR AS SHOWN

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ABUTMENT NO. 1 WEST WINGWALL JENNINGS FREEWAY LANE JN-OBE OVER, I-480 UNDER LANE OBW-JN					
BRIDGE NO. CLY-480-1557					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT.	AJM	1/94	



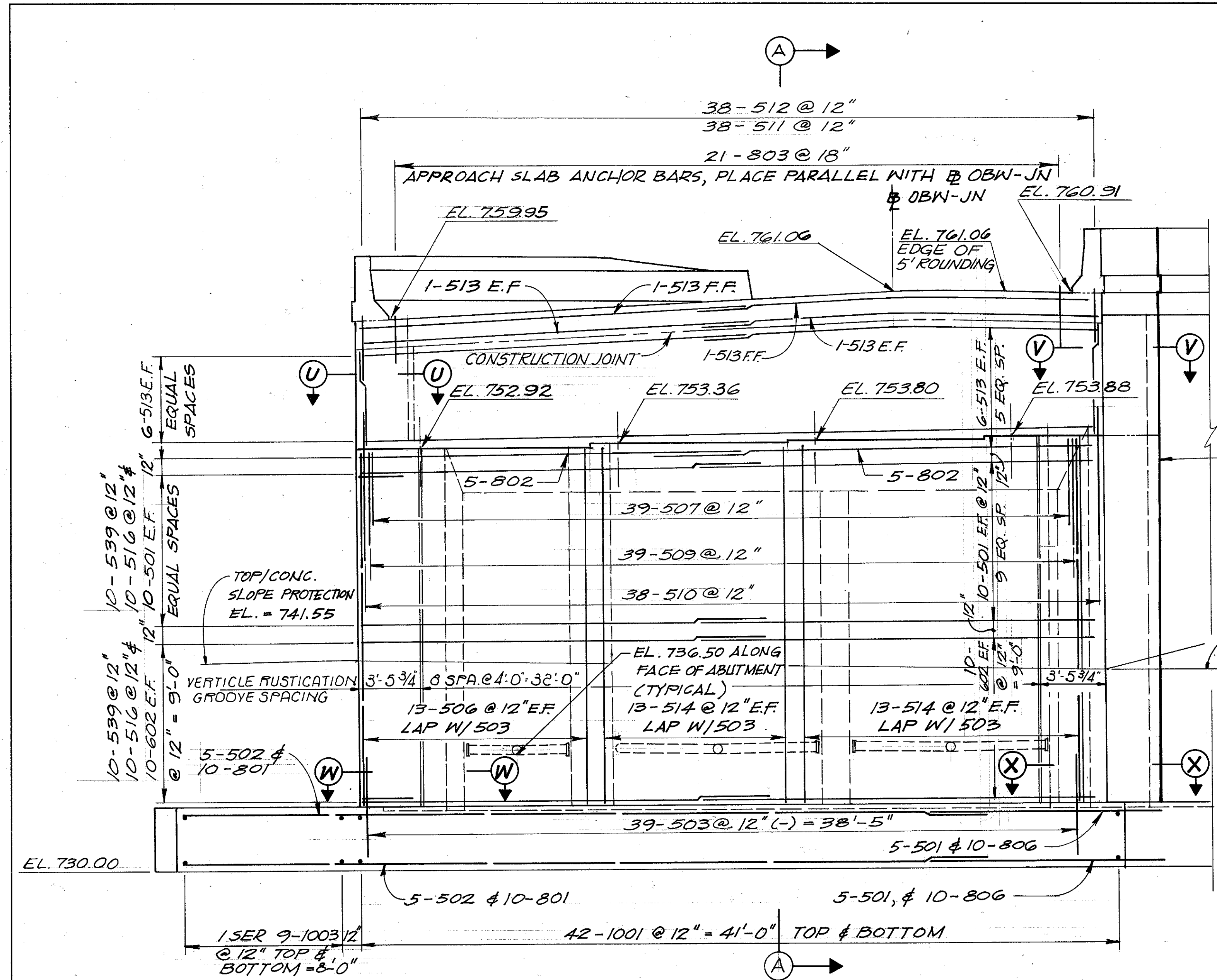
NOTES:

- 1) THE PREFIX CA SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR ABUTMENT NO. 2.
- 2) BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS
- 3) FOR BEARING ANCHOR BOLT LOCATIONS SEE BEARING DETAILS ON SHEET 17/23.
- 4) CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET 17/23.
- 5) BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTILL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
- 6) ABBREVIATIONS:
 N.F. - NEAR FACE
 F.F. - FAR FACE
 E.F. - EACH FACE
 P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
 C.P.P. - CORRUGATED PLASTIC PIPE
- 7) FOR ABUTMENT NO. 2 ELEVATIONS SEE SHEET 11/23.
- 8) FOR VIEW E-E SEE SHEET 13/23.
- 9) FOR WINGWALL ELEVATIONS, SEE SHT. 12/23.

* - LENGTHS MEASURED ALONG FACE OF WALL

PLAN

adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
ABUTMENT NO. 2 PLAN JENNINGS FREEWAY LANE JN - OBE OVER I-480 UNDER LANE OBW - JN BRIDGE NO. CUY-480-1557					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	C.T.	A.J.M.	1/94	

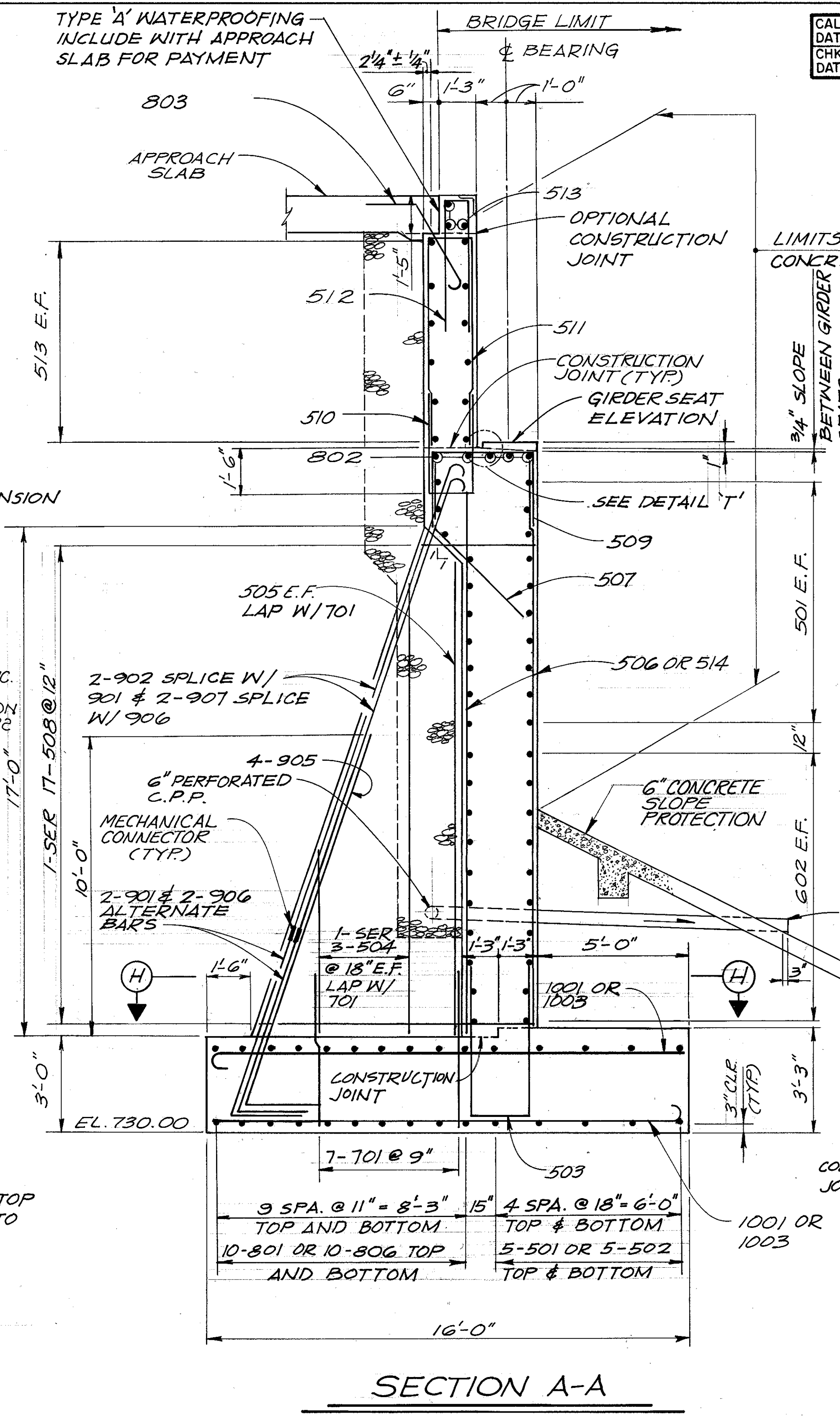


ELEVATION

LEGEND

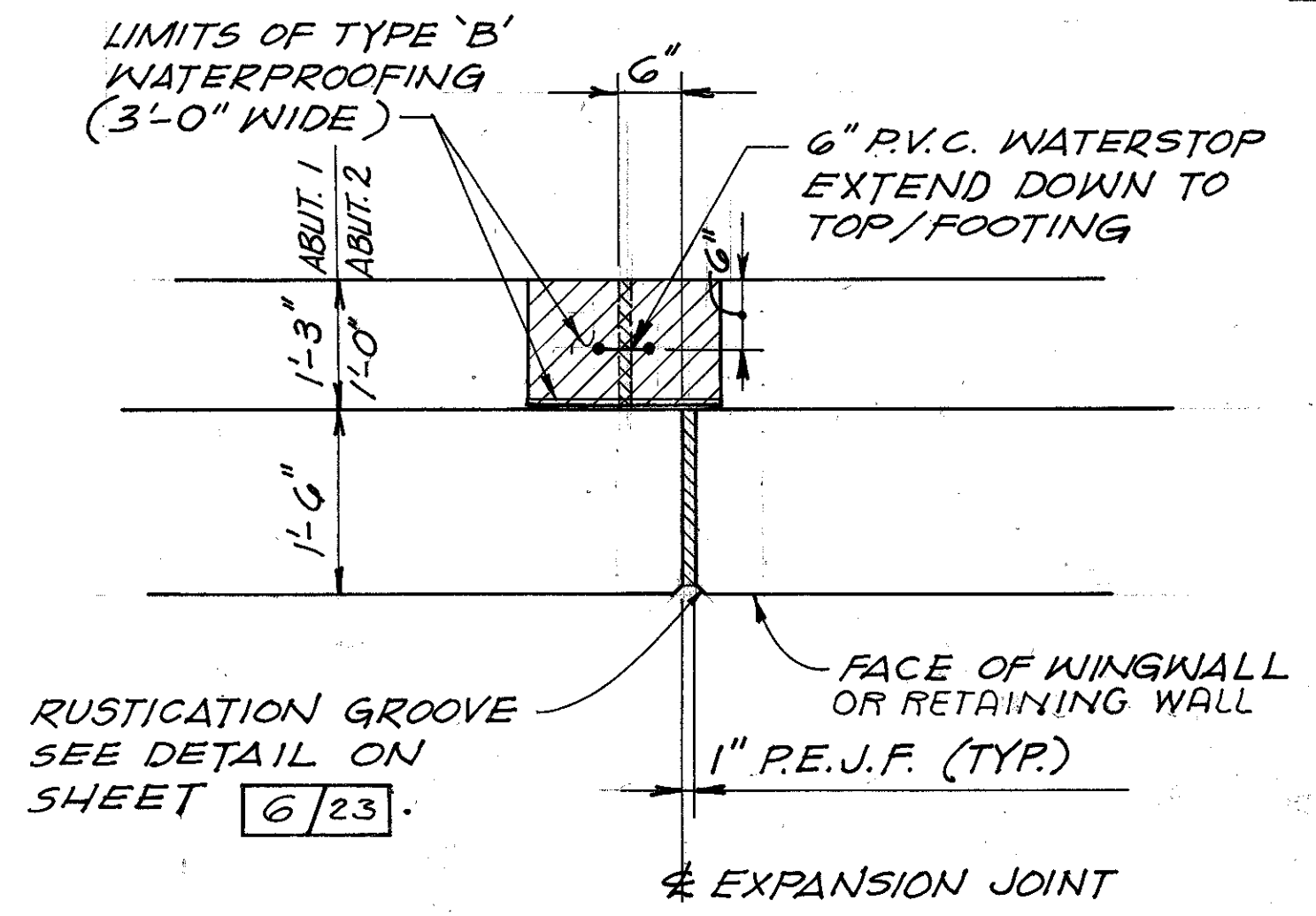
- 902, 903 OR 904
- △ 907, 908 OR 909
- BAR MARK AS SHOWN

SECTION H-H & SECTION J-J
(SECTION H-H SHOWN, SECTION J-J OPPOSITE HAND)

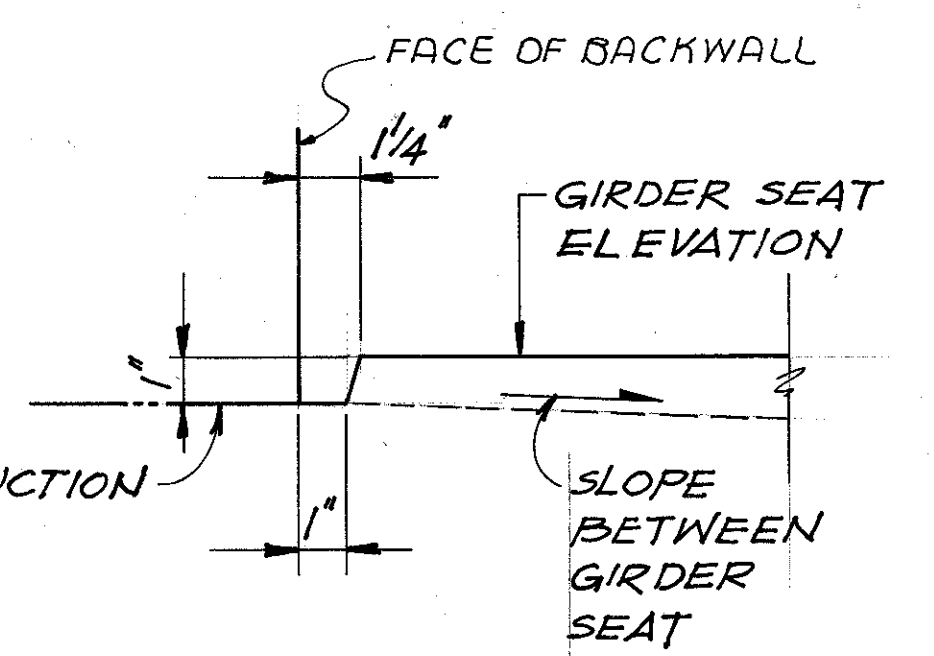


SECTION A-A

- NOTES:**
- FOR CONCRETE SLOPE PROTECTION DETAILS, SEE MISCELLANEOUS DETAIL SHEET 324/395
 - MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:
 #5 BAR = 35"
 #6 BAR = 42"
 #8 BAR = 69"
 #10 BAR = 98"
 UNLESS NOTED OTHERWISE
 - FOR SECTIONS U-U & W-W SEE SHEET 12/23.
 FOR SECTIONS V-V & X-X SEE SHEET 13/23.

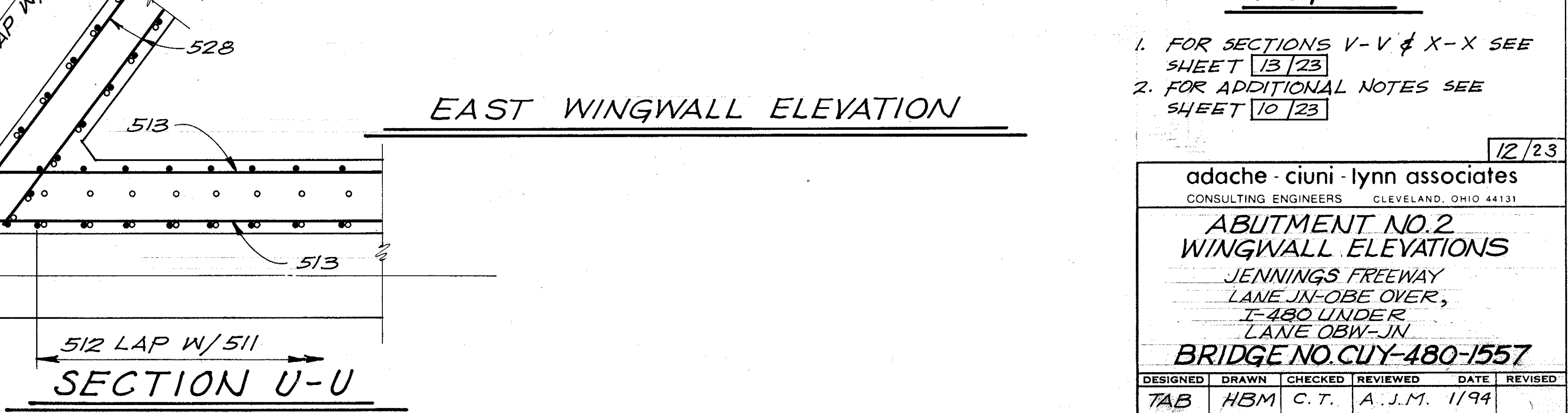
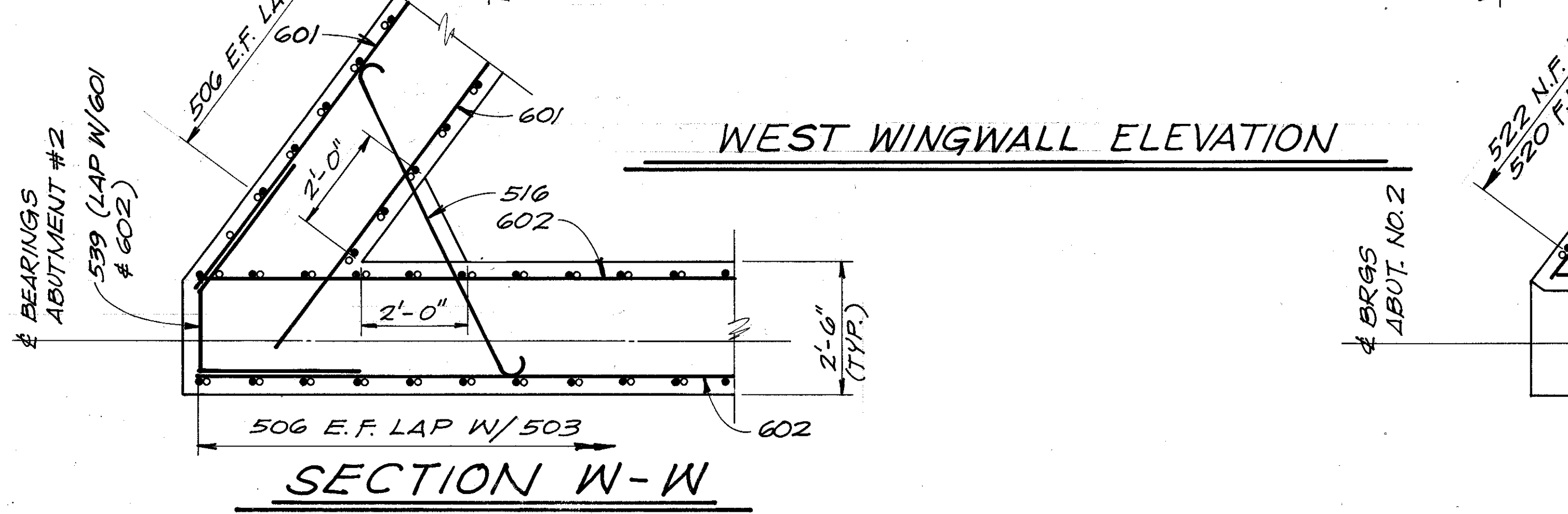
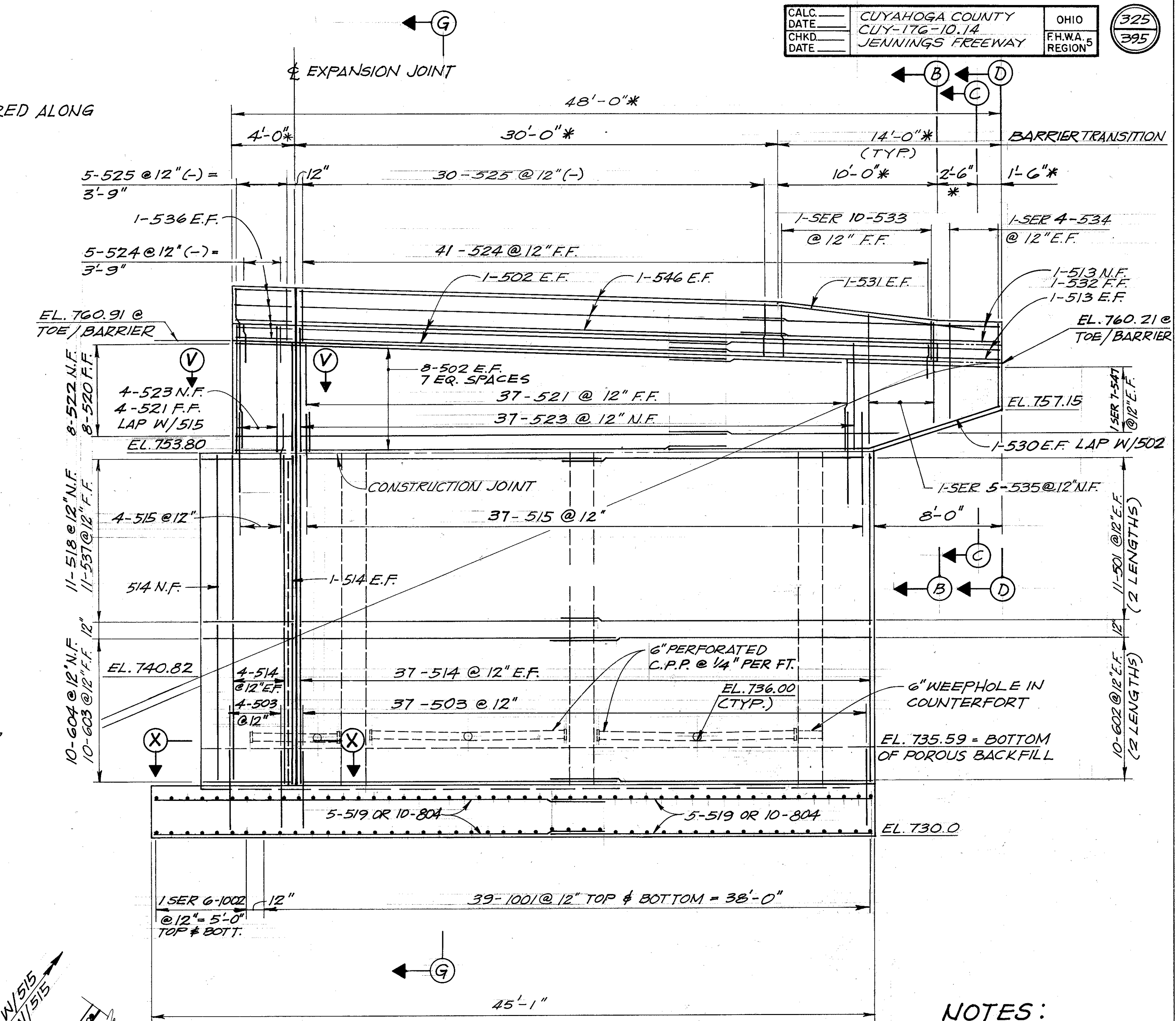
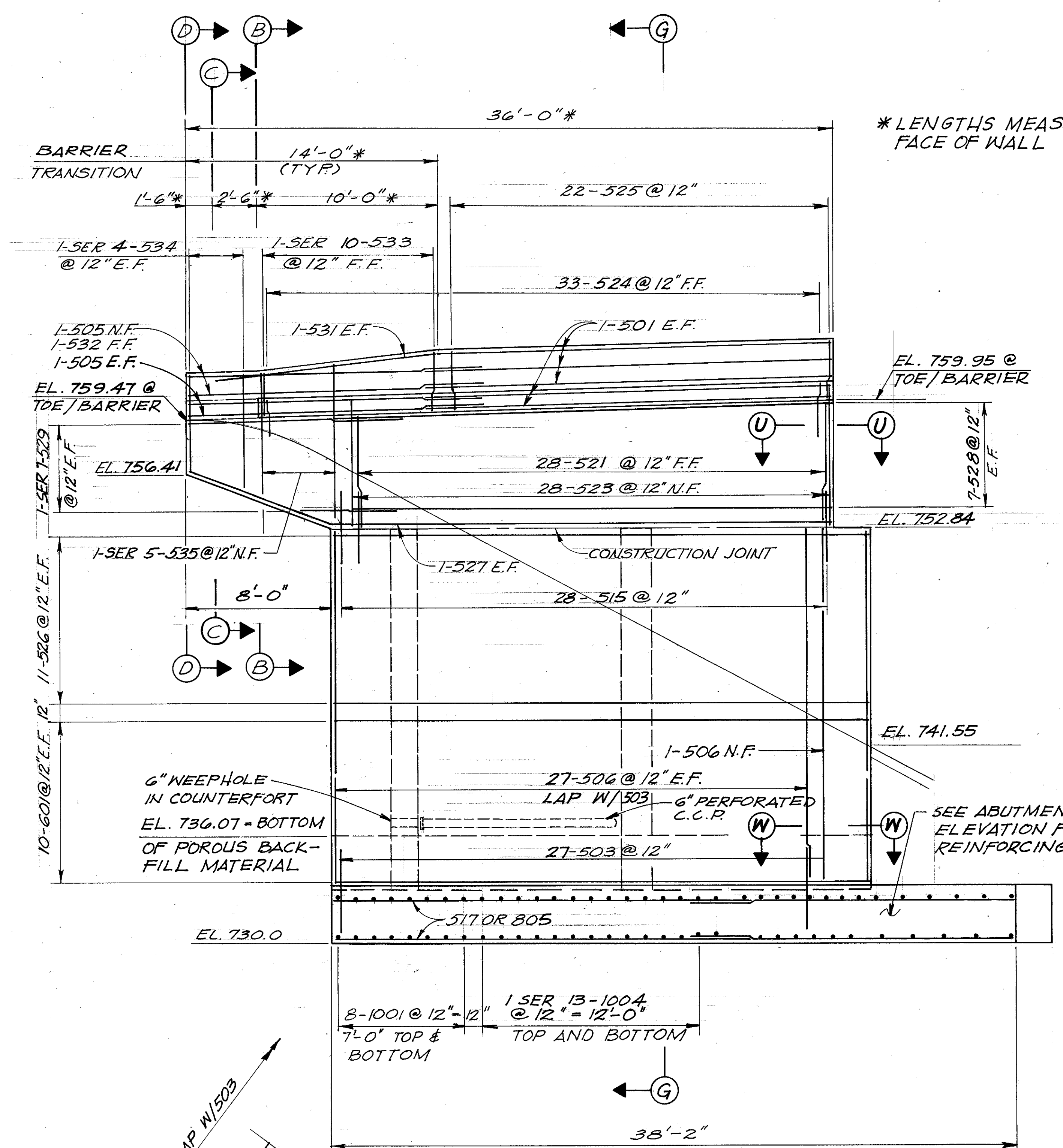


EXPANSION JOINT DETAIL



DETAIL T'
TYPICAL AT EACH GIRDER SEAT

adache - ciuni - lynn associates					
CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
ABUTMENT NO. 2					
ELEVATION & SECTION					
JENNINGS FREEWAY					
LANE JN - OBE OVER,					
I-480 UNDER					
LANE OBW - JN					
BRIDGE NO. CUY-480-1557					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	CT	AJM	1/94	



NOTES:

1. FOR SECTIONS V-V & X-X SEE SHEET 13/23
2. FOR ADDITIONAL NOTES SEE SHEET 10/23

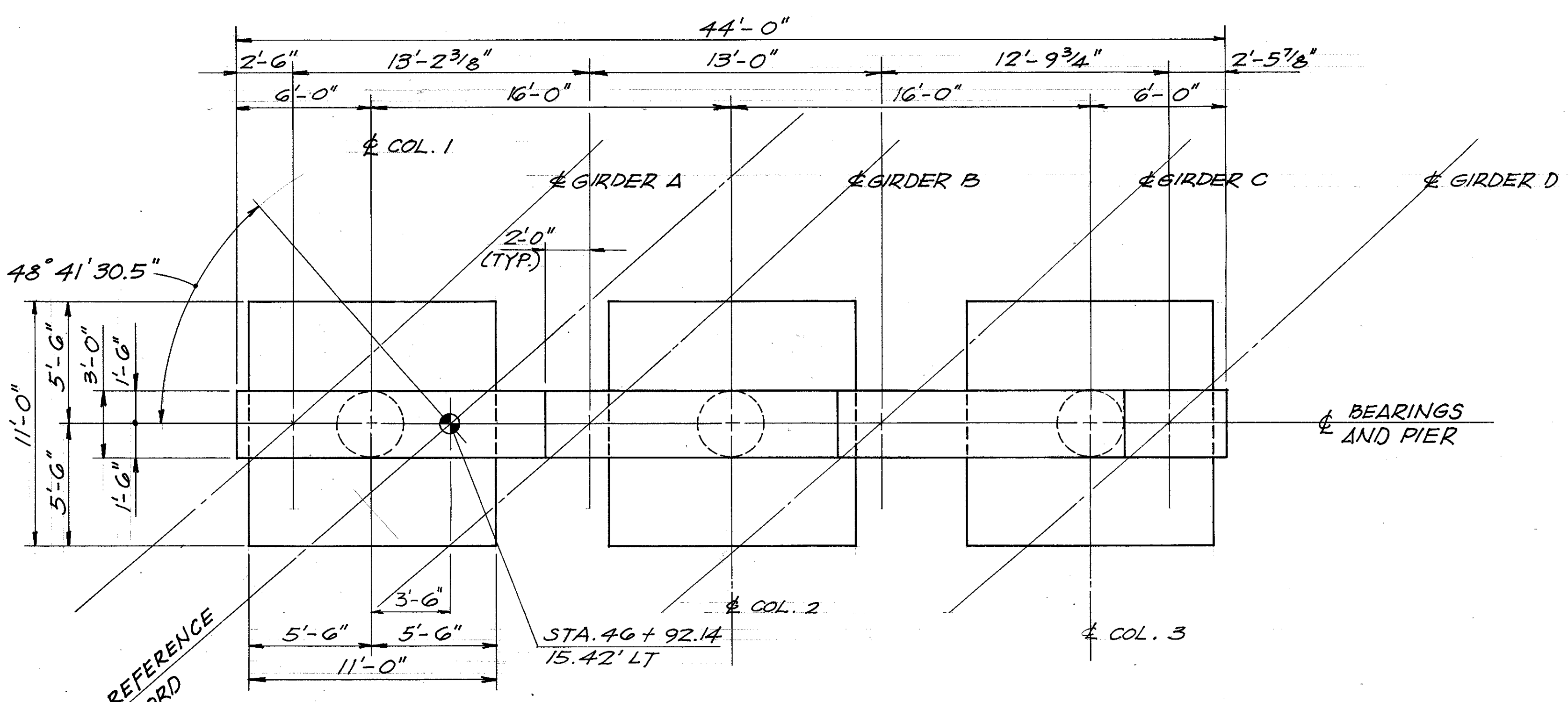
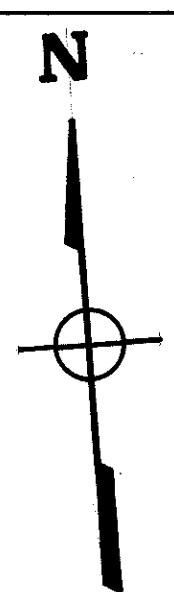
12/23

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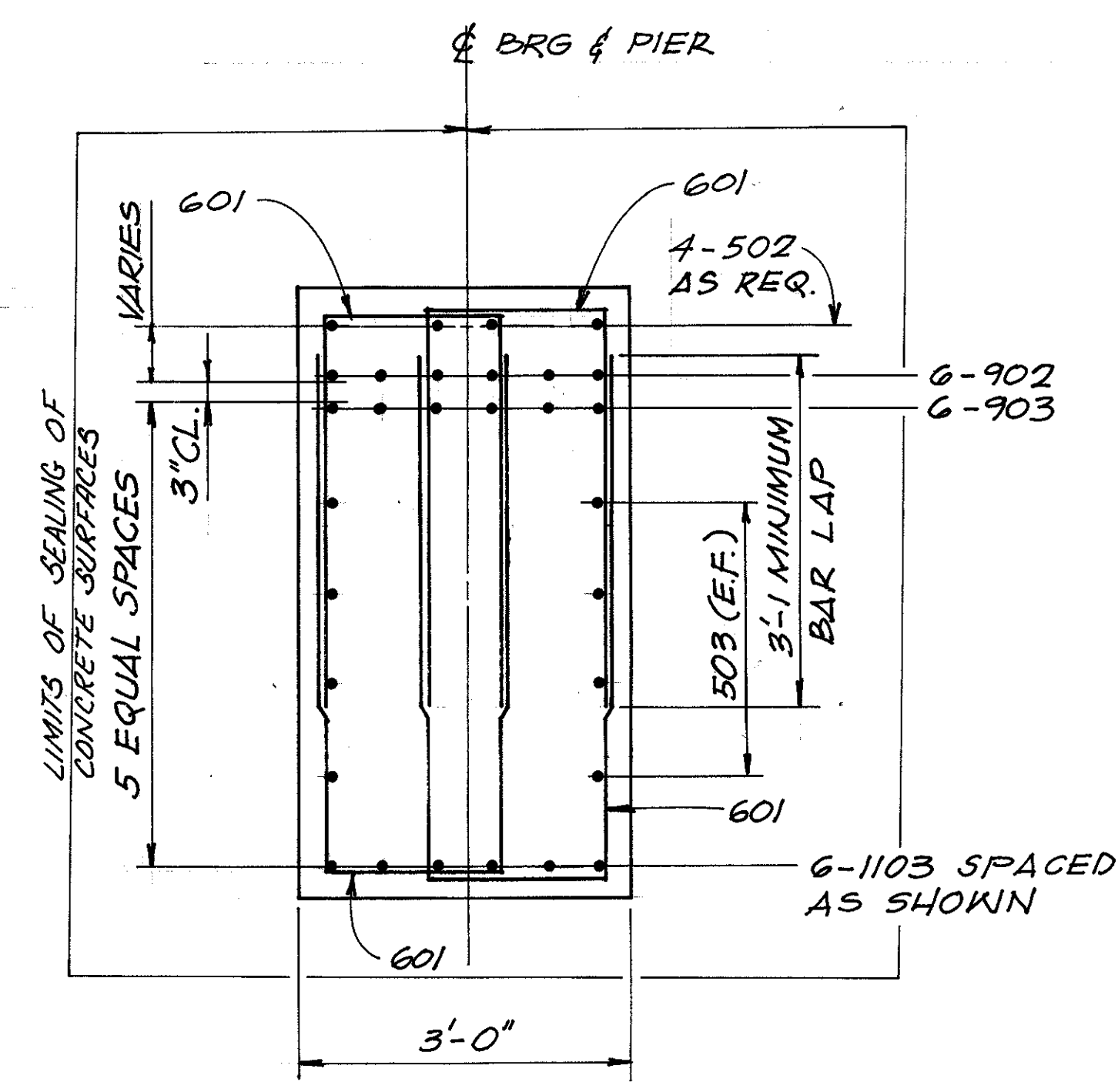
ABUTMENT NO. 2
WINGWALL ELEVATIONS
JENNINGS FREEWAY
LANE IN-OBE OVER,
T-480 UNDER
LANE OBE-IN

BRIDGE NO. CUY-480-1557

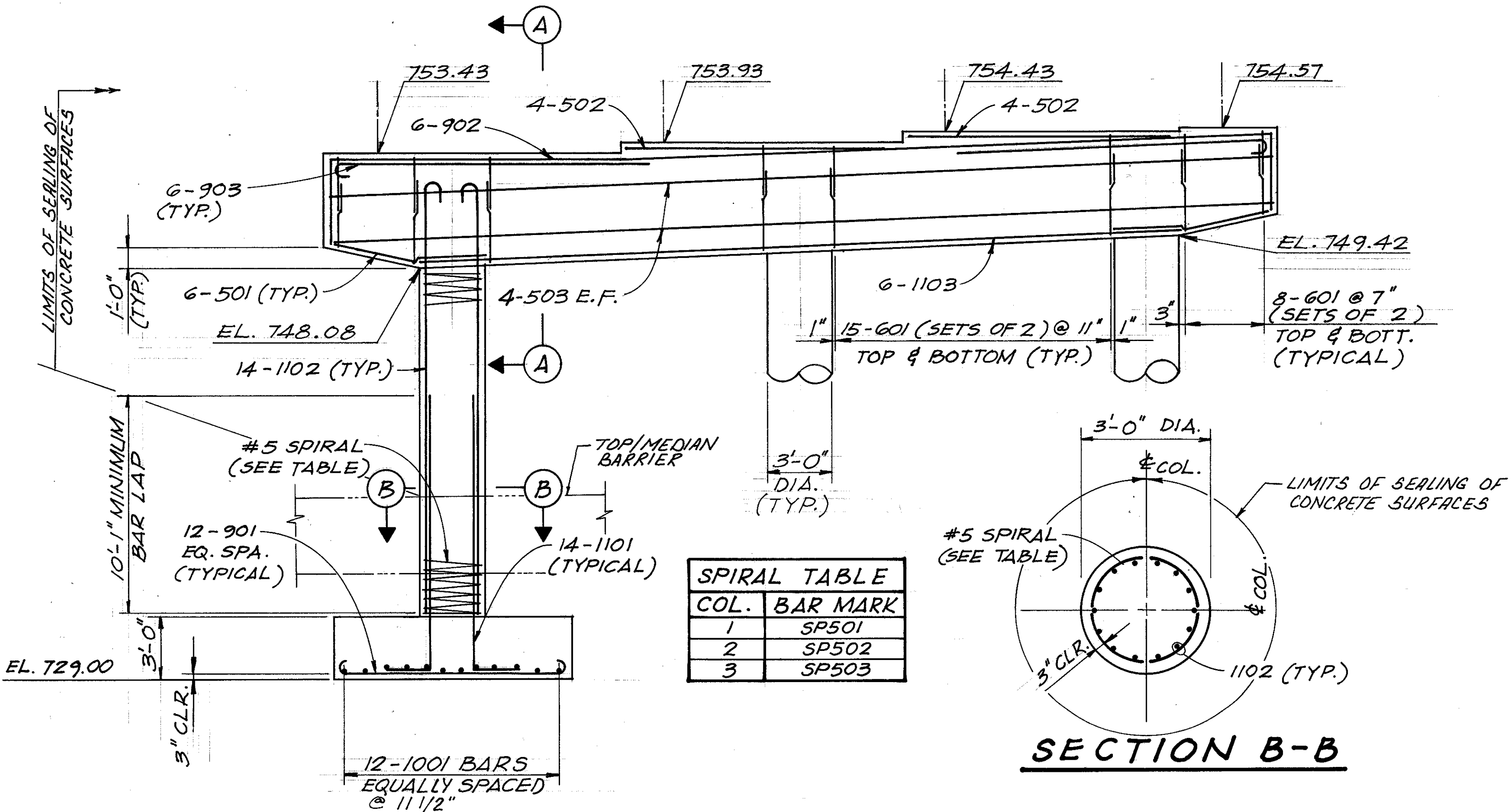
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	C.T.	A. J. M.	11/94	



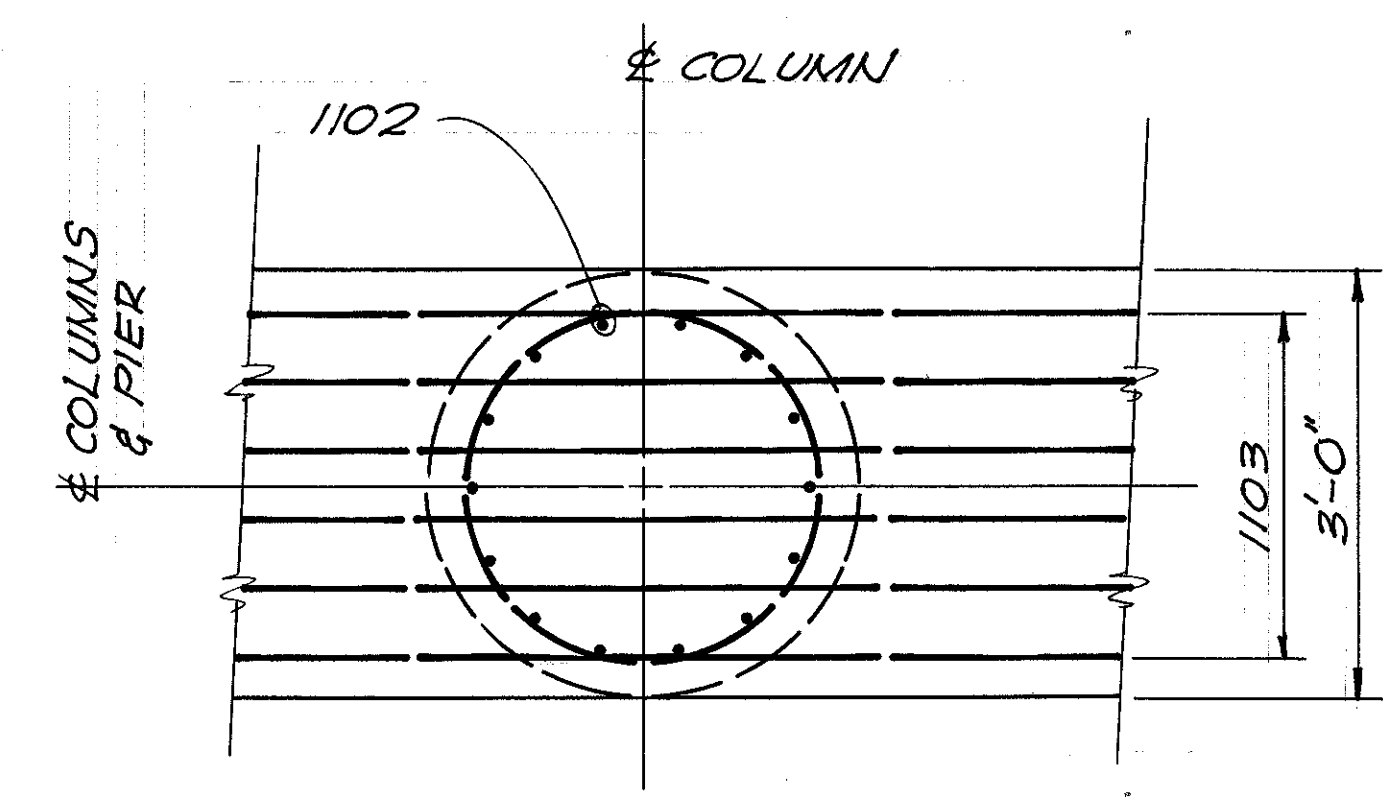
PLAN



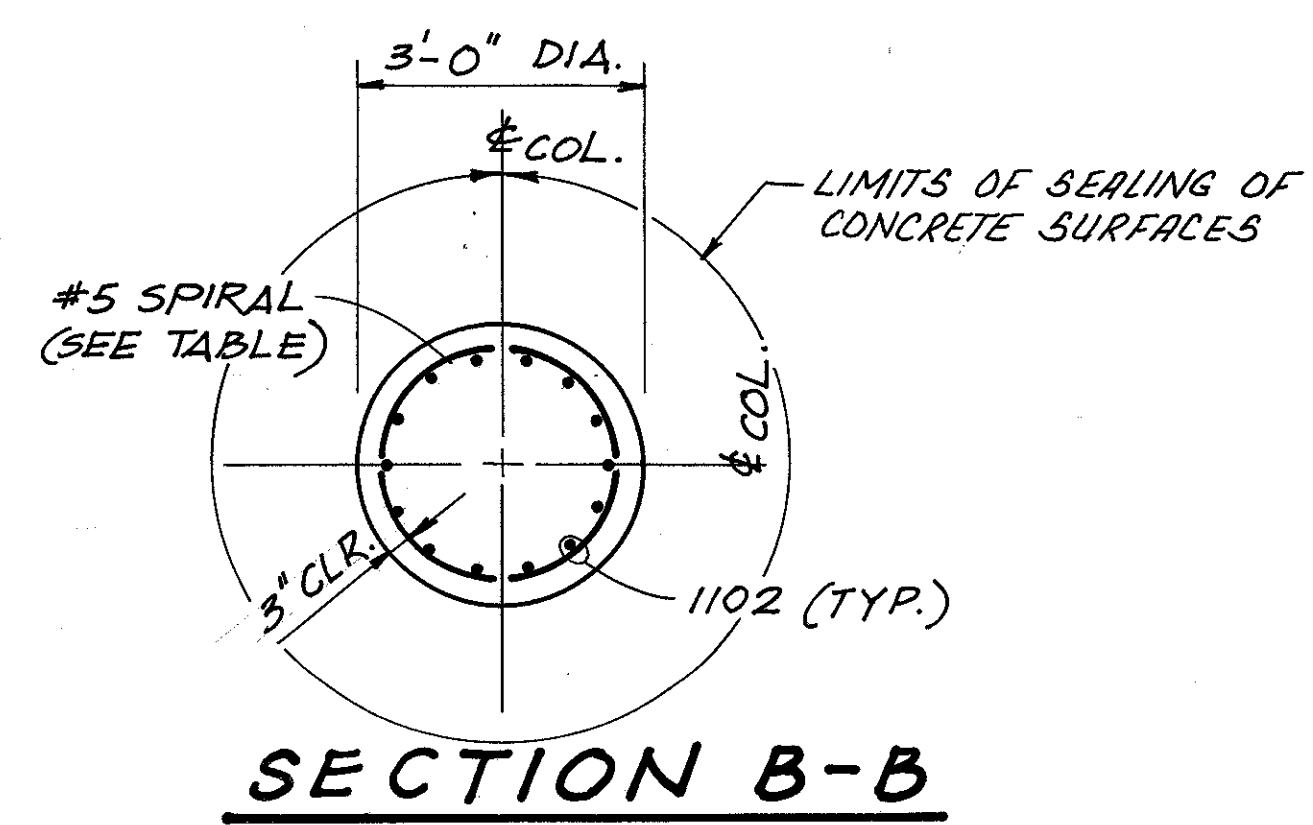
SECTION A-A



ELEVATION



BOTTOM CAP & COLUMN REINFORCING DETAIL



SECTION B-B

CALC.	CUYAHOGA COUNTY	OHIO	(327 395)
DATE	CUY-176-10.14	E.H.W.A. REGION 5	
CHKD.	JENNINGS FREEWAY		
DATE			

NOTES:

1. THE PREFIX "P" SHALL BE ADDED TO ALL BAR MARKS IN PIER.
2. REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.
3. AT THE OPTION OF THE CONTRACTOR, BEARING ANCHORS (OR FORMED HOLES), LOCATED AND SUPPORTED BY TEMPLATES MAY BE CAST IN PLACE.
4. A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE PIER.
5. CONTRACTOR SHALL VERIFY ALL GIRDER ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET 17/23.
6. FOR LOCATION OF ANCHOR BOLTS, SEE SHEET 17/23.

14/23

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PIER DETAILS
JENNINGS FREEWAY
LANE JN - OBE OVER,
I - 480 UNDER
LANE OBW - JN

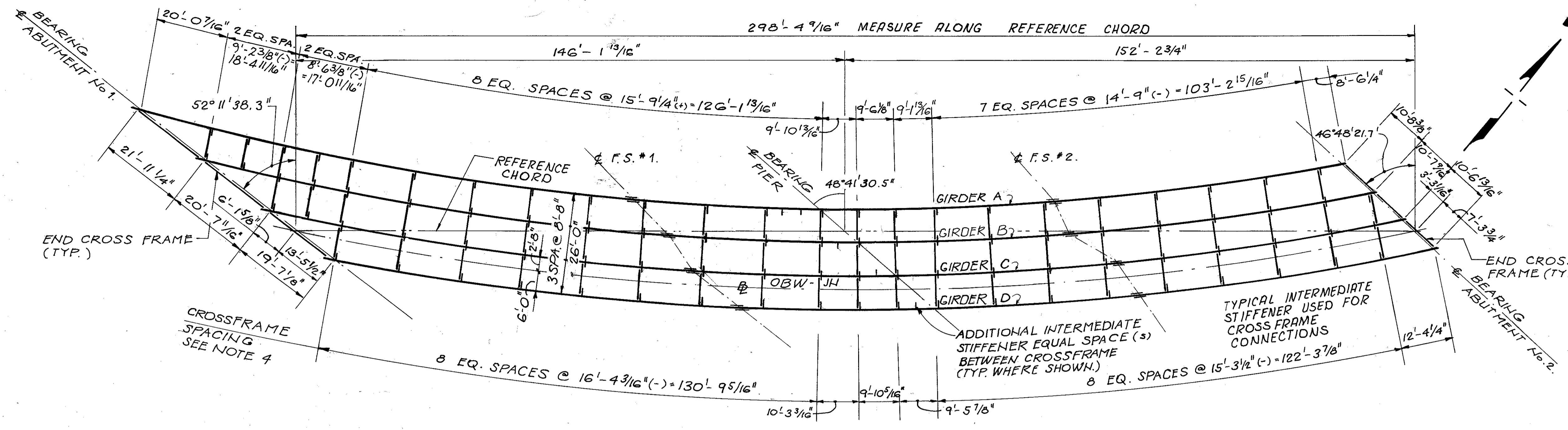
BRIDGE NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
S.F.M.	M	C.T.	A.J.M.	1/94	

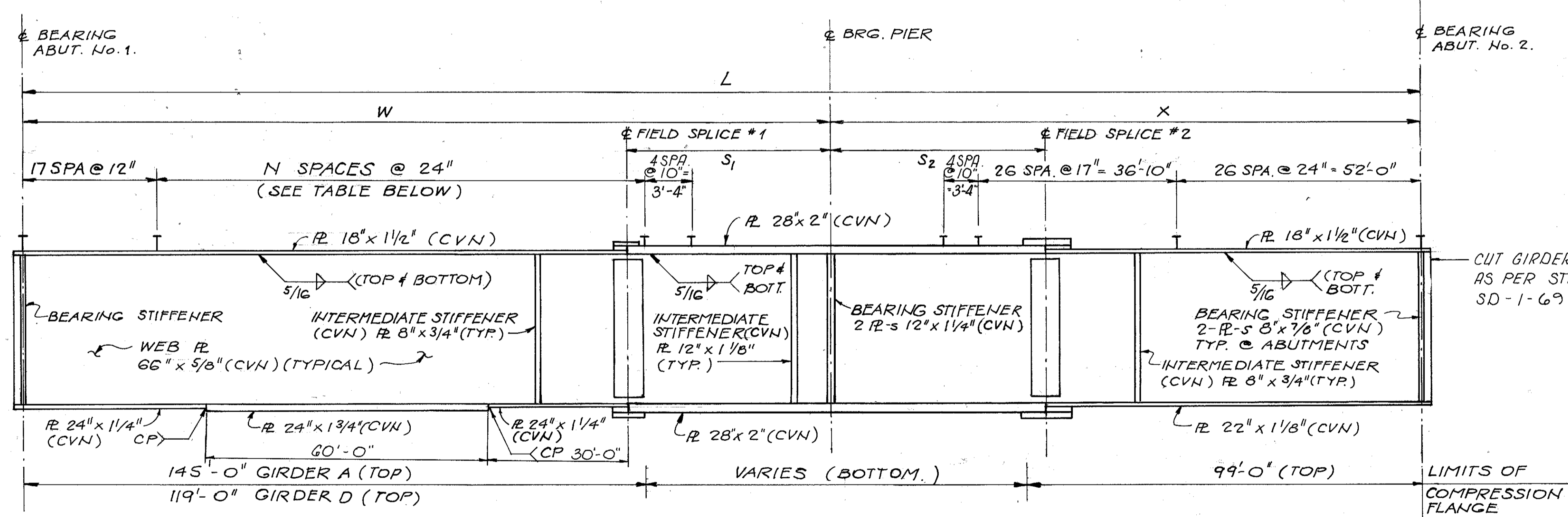
BRUNING 44-232 67195

NOTES:

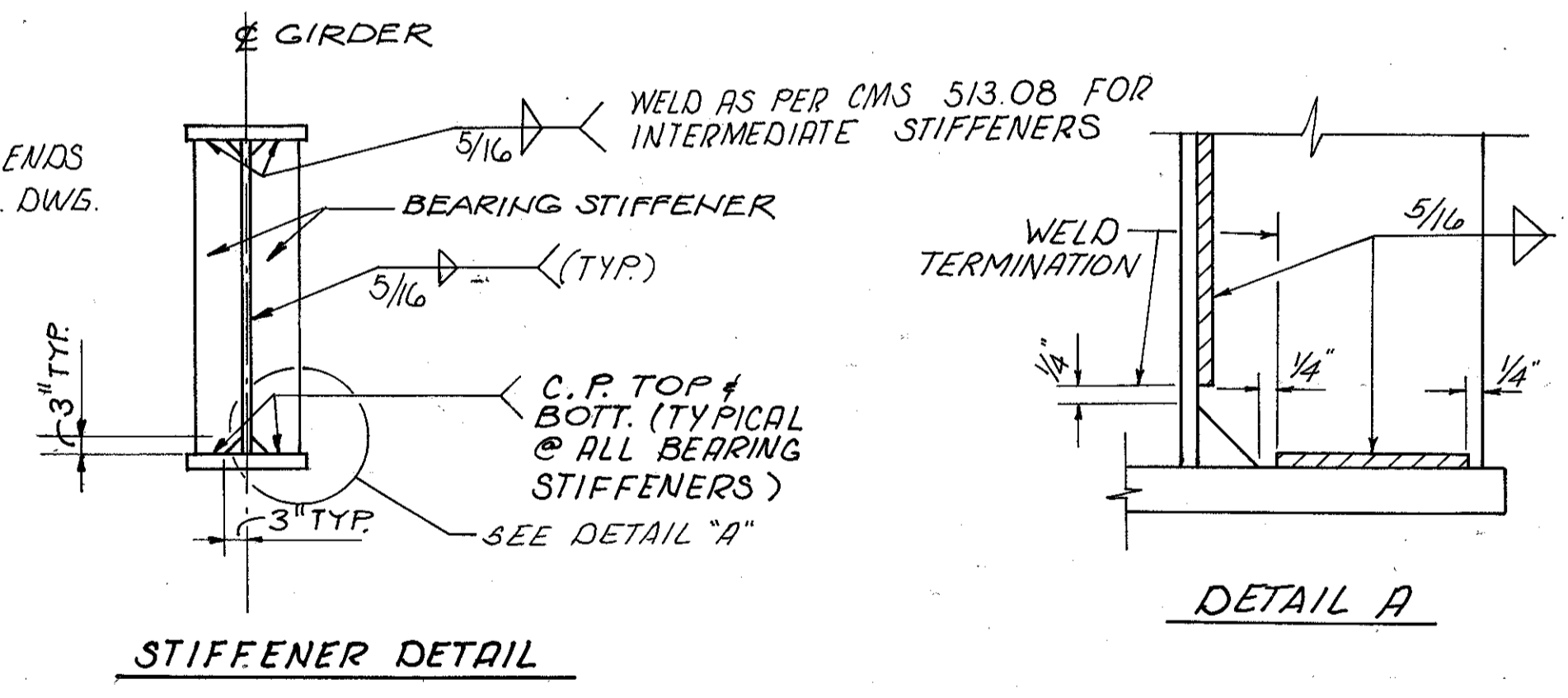
- EACH STIFFENER PLATE USED AS CROSSFRAME CONNECTION PLATES SHALL HAVE THE SAME THICKNESS IN A PARTICULAR BAY. THE GREATEST PLATE THICKNESS REQUIRED AT EACH LOCATION SHALL CONTROL FOR BOTH PLATES IN THE SAME BAY.
- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
- ALL INTERMEDIATE CROSSFRAMES ARE ALONG RADIAL LINES. FOR DETAILS SEE TRANSVERSE SECTION ON SHEET 20/23
- FOR GIRDER FIELD SPLICE DETAILS SEE SHEET 16/23
- FOR END CROSSFRAME DETAILS AT ABUTMENT 2 REFER TO STANDARD DRAWINGS EXJ-4-7 & SD-1-69. ANGLE MEMBERS FOR END CROSSFRAMES AT ABUTMENT NO. 2 SHALL BE L5x5x1/2 (CVN) TYPICAL. FOR END CROSSFRAME DETAILS AT ABUTMENT NO. 1 SEE SHEET 16/23
- FOR BEARING DETAILS SEE SHEET 17/23



FRAMING PLAN

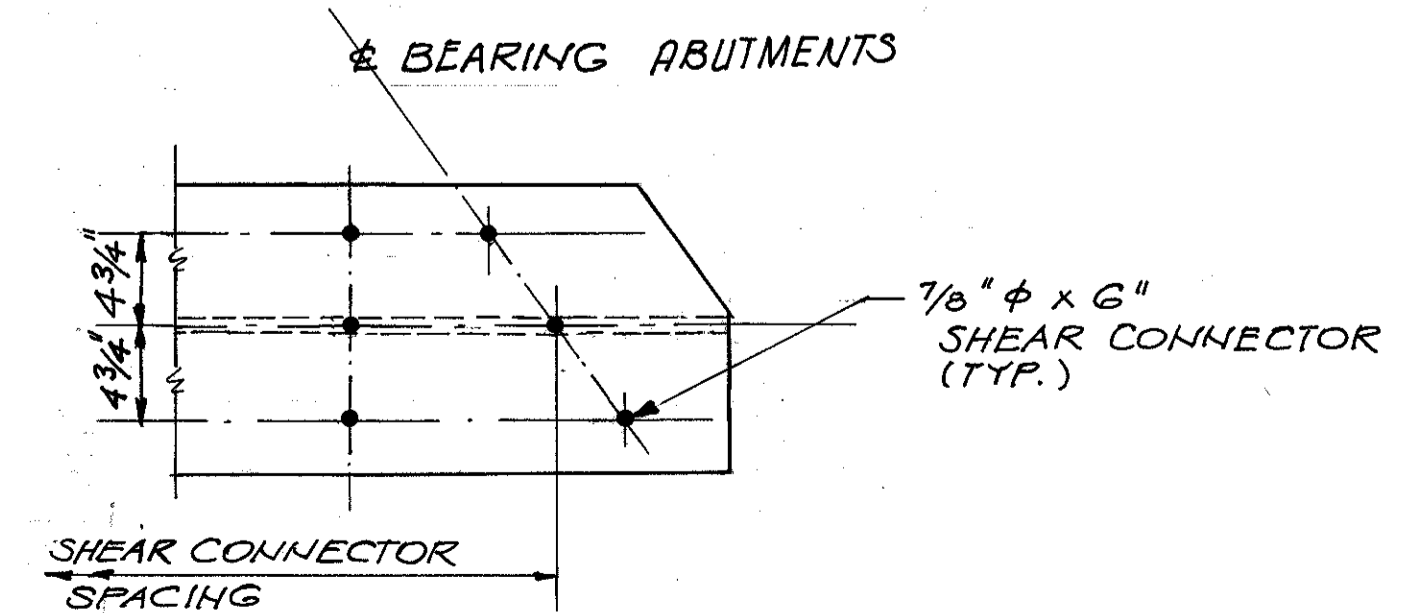


GIRDER ELEVATION



GIRDER DIMENSIONS ALONG & GIRDER

GIRDER	L	W	X	S1	S2	RADIUS	SHEAR STUD SPACING N
A	321'-11 3/16"	181'-7 5/8"	140'-3 15/16"	50'-4"	61'-1"	709.178'	61
B	311'-11 3/16"	173'-7 3/16"	138'-4"	49'-11"	56'-2"	717.845'	57
C	303'-0 1/2"	166'-7 1/16"	136'-5 7/16"	55'-3"	57'-8"	726.511'	53
D	295'-0 13/16"	160'-4 1/16"	134'-8 1/8"	54'-2"	53'-5"	735.178'	48



TYPICAL SHEAR CONNECTOR SPACING

LEGEND
C.P. COMPLETE PENETRATION WELD.

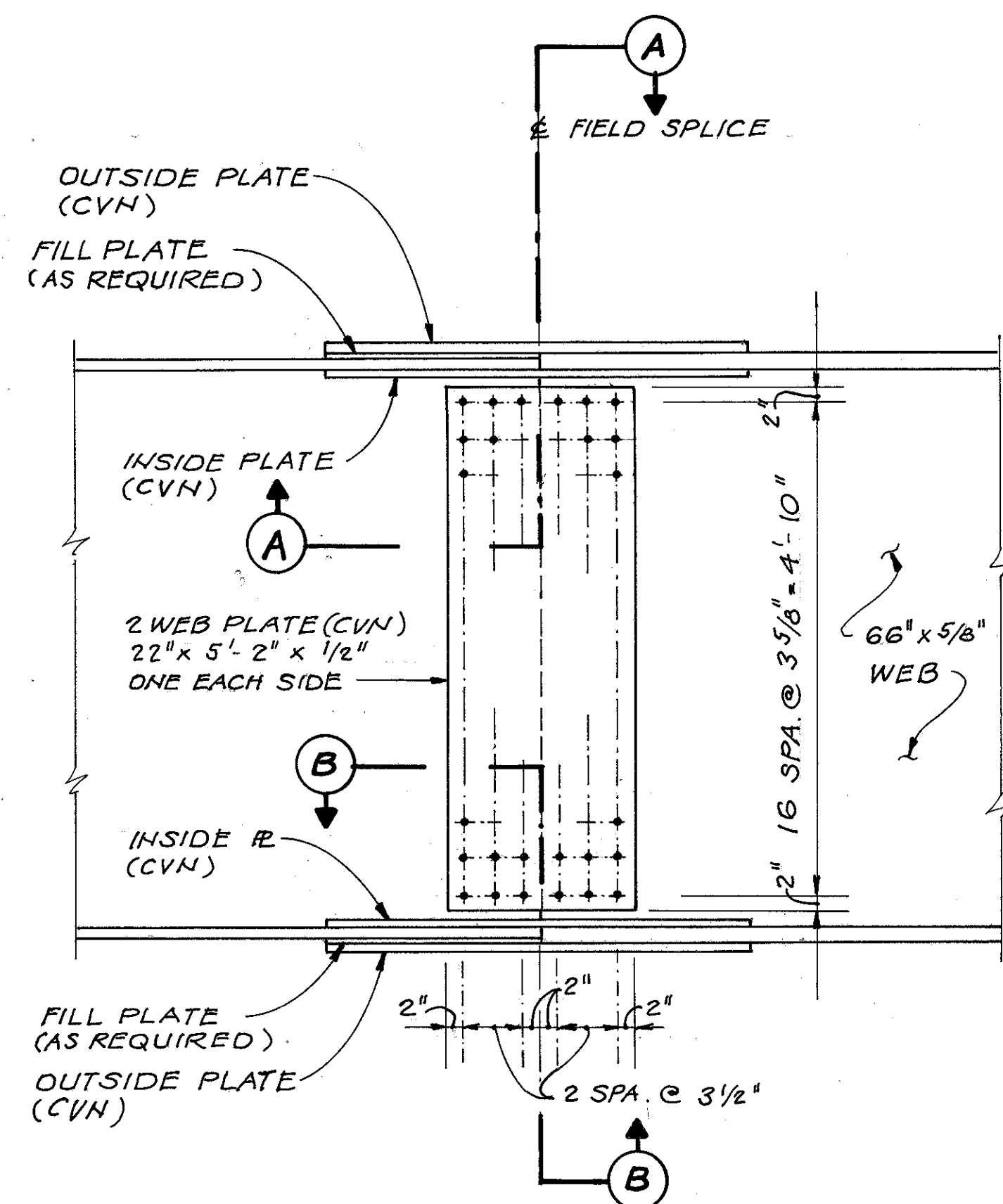
15/23

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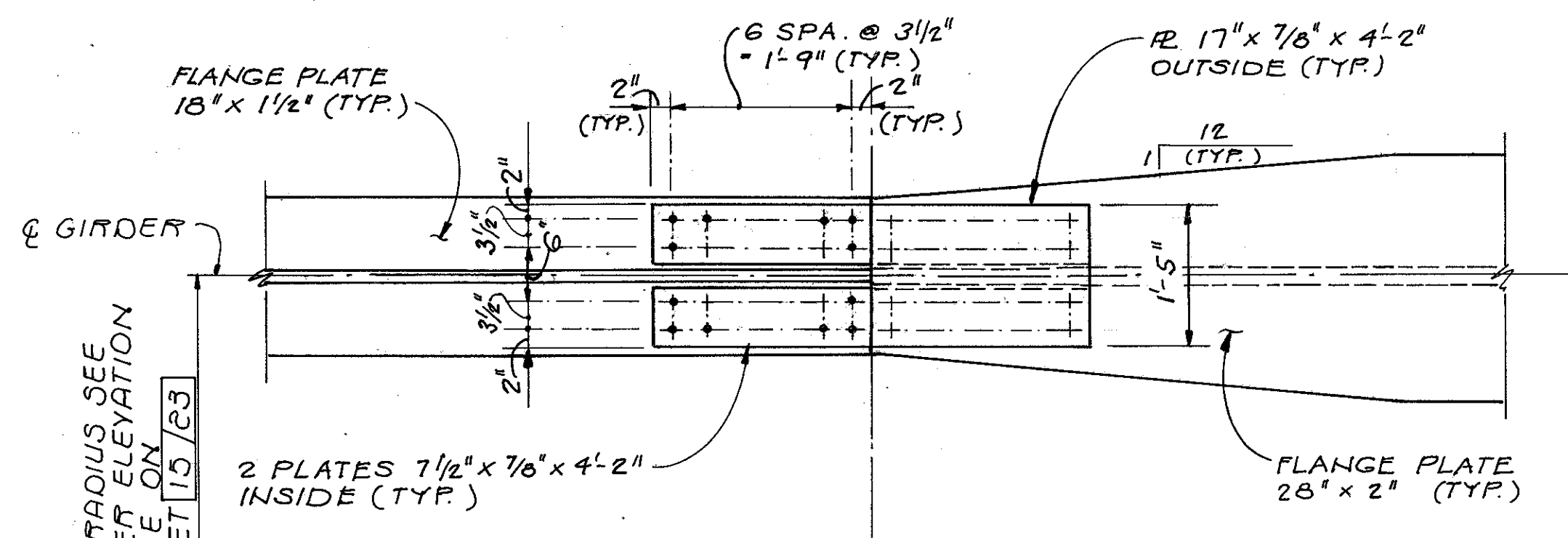
FRAMING PLAN AND GIRDER DETAILS
JENNINGS FREEWAY
LANE JH - OBE OVER
I - 480 UNDER
LANE OBW - JH

BRIDGE No. CUY-180-1557

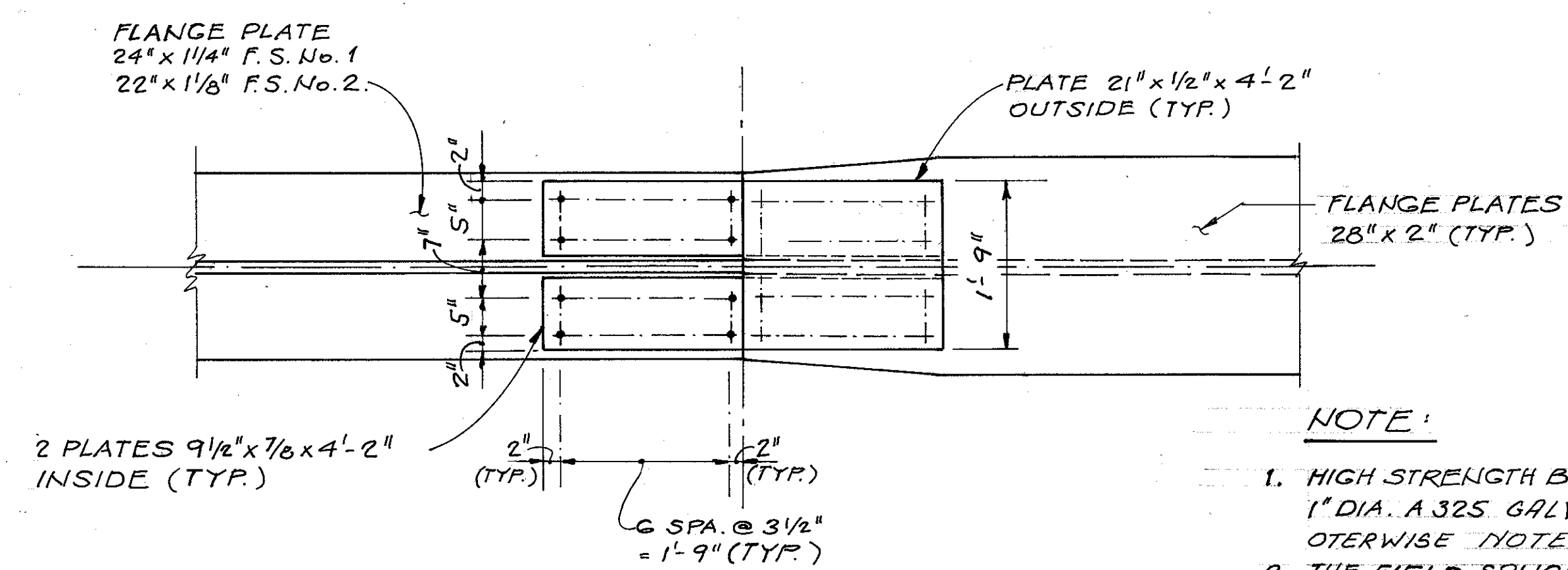
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	D.P.	RJM	1/94	



WEB SPLICE ELEVATION
(TYPICAL FOR FIELD SPLICES No.1 & No.2)

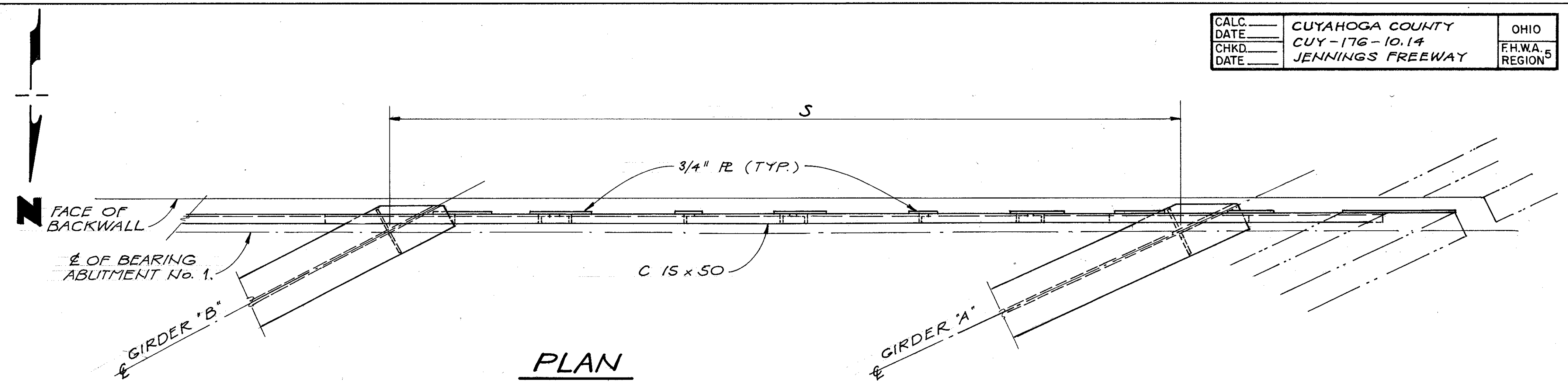


SECTION A-A

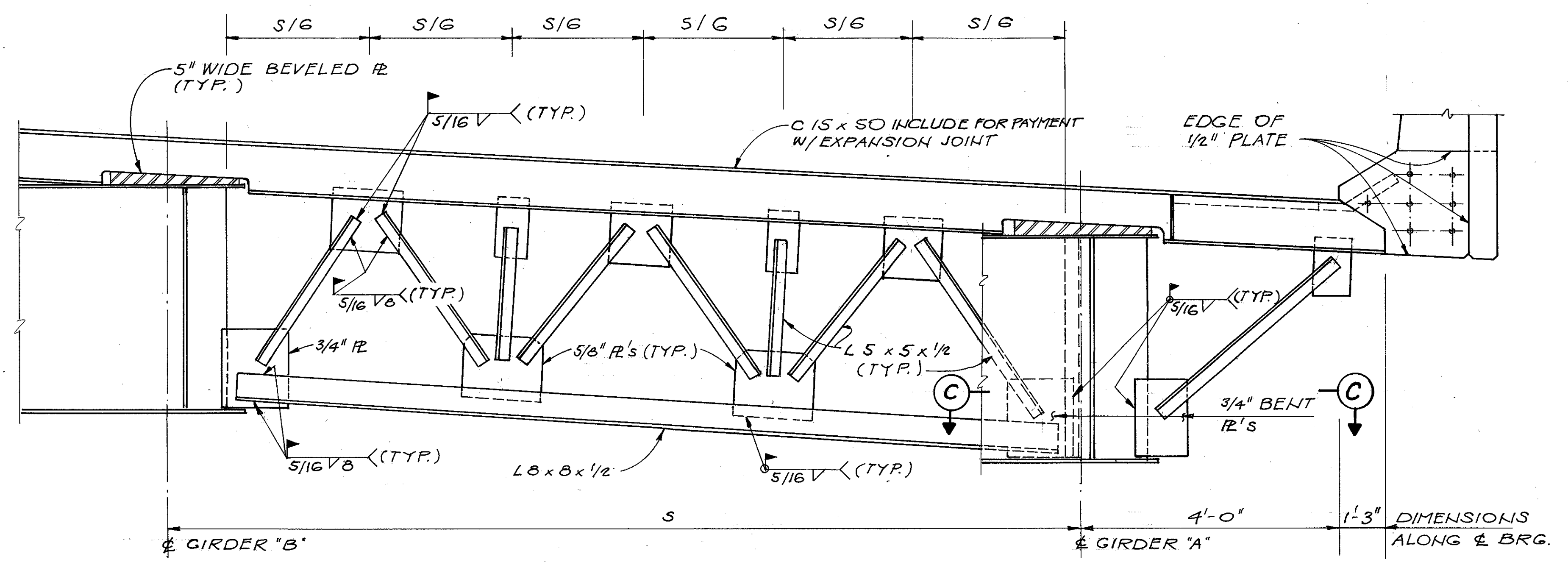


SECTION B-B

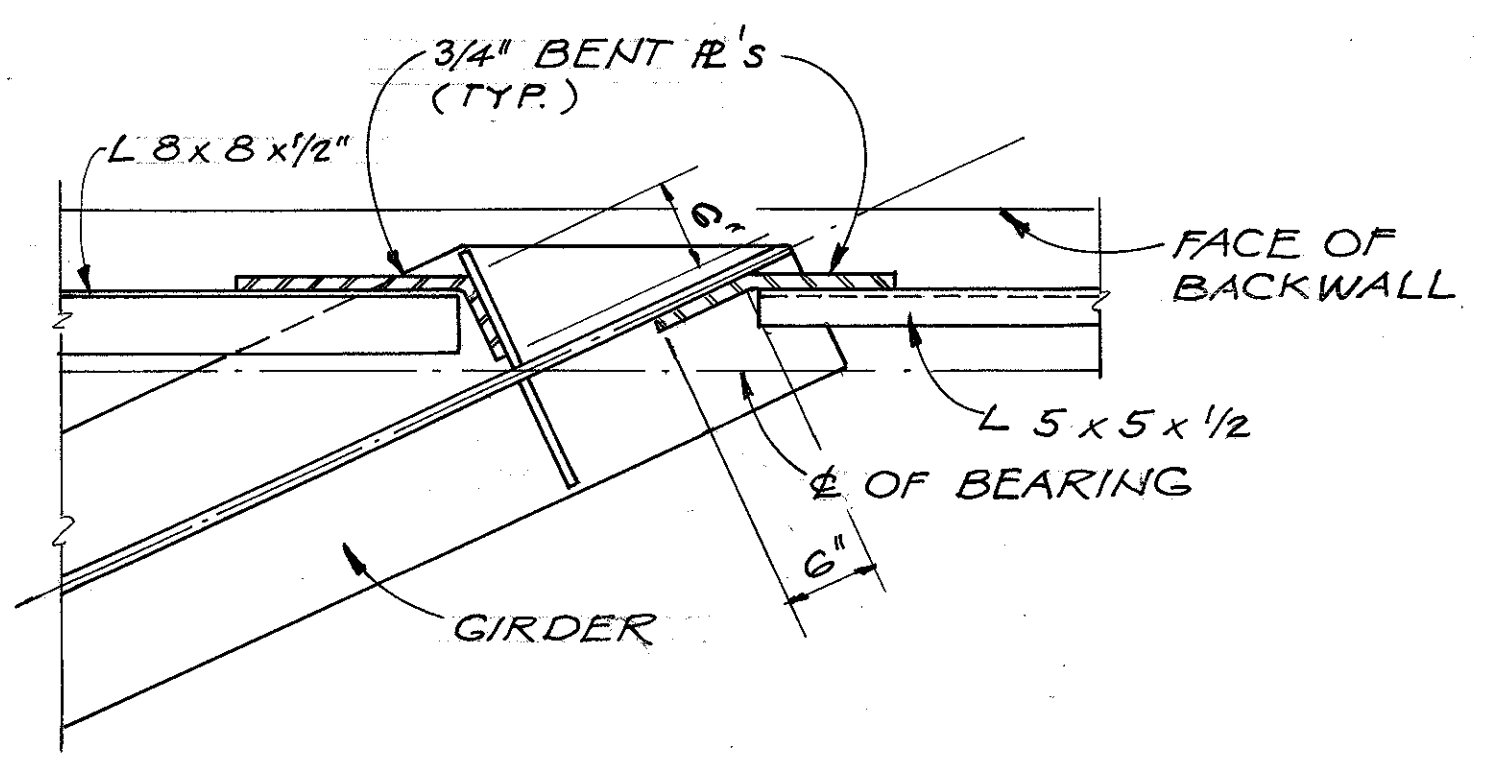
- NOTE:**
- HIGH STRENGTH BOLTS SHALL BE 1" DIA. A 325 GALVANIZED UNLESS OTHERWISE NOTED.
 - THE FIELD SPLICE PLATES SHALL FOLLOW THE CURVATURE OF THE GIRDERS
 - FOR ADDITIONAL NOTES SEE SHEET 15/23



PLAN



END CROSSFRAME ELEVATION
ABUTMENT No. 1



SECTION C-C

- NOTES:**
- THE END CROSSFRAME DETAILS AT THE OTHER BAYS FOR ABUTMENT No. 1 WILL BE SIMILAR.
 - FOR DETAILS NOT SHOWN, SEE STD. DWGS EXJ.-4-87 AND SD-1-69.
 - FOR DIMENSION 'S' SEE FRAMING PLAN, SHT. 15/23

16/23

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GIRDER DETAILS
JENNINGS FREEWAY
LANE JH - OBE OVER
I-480 UNDER
LANE OBW - JH

BRIDGE No. CUY-480-1557

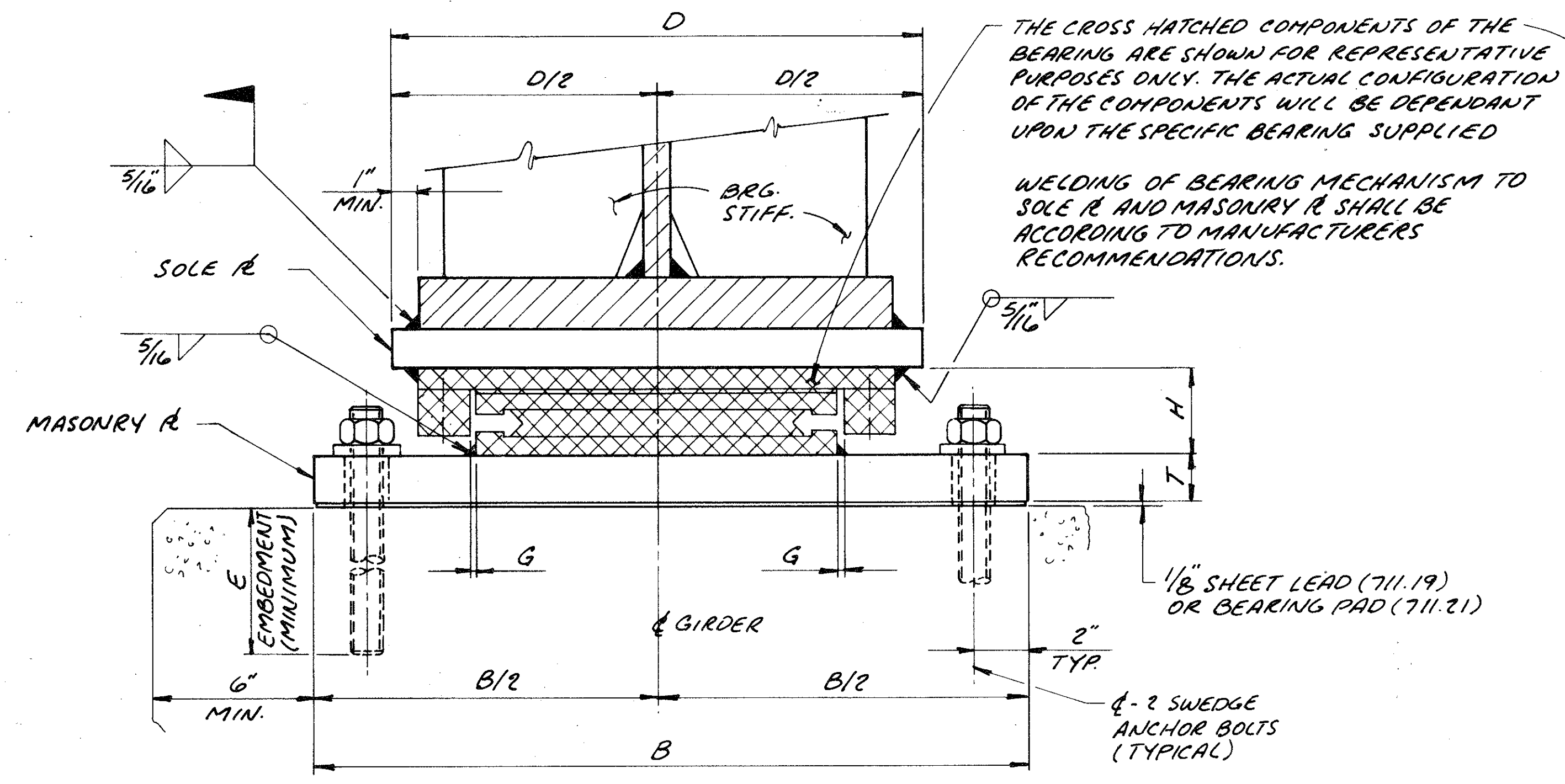
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
D.P.	E.K.	T.A.B.	A.J.M.	1/94	

NOTES:

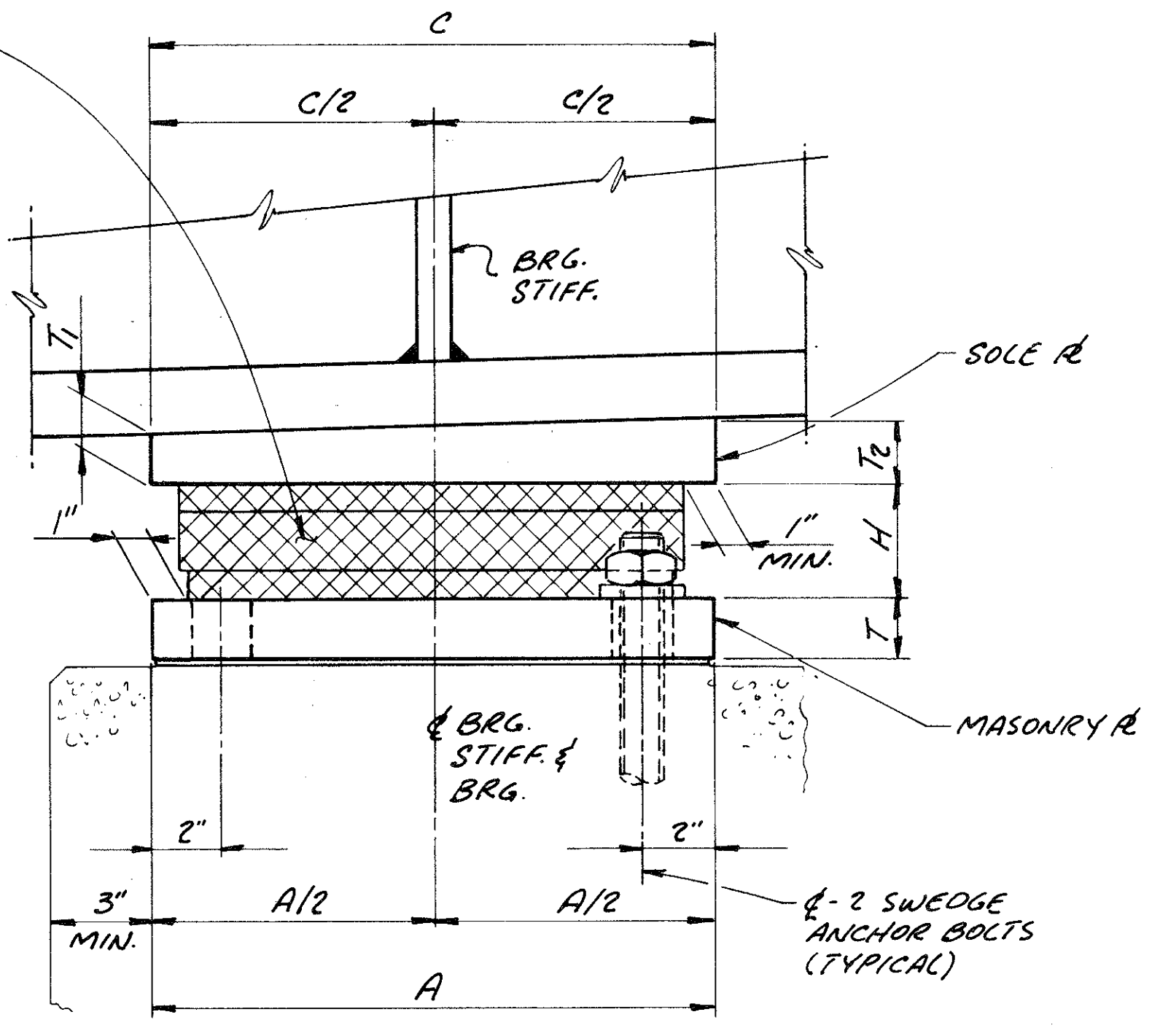
- 1.) THE BEARING DEVICES SUPPLIED SHALL BE CAPABLE OF TRANSMITTING THE LOADS AND MOVEMENTS SHOWN ON THESE PLANS.
- 2.) THE MASONRY & SOLE PLATES SHOWN HAVE BEEN DESIGNED TO SUIT TYPICAL BEARINGS FOR THE DESIGN LOADS AND MOVEMENTS SHOWN. THE CONTRACTOR SHALL CHECK THE ADEQUACY OF THESE MASONRY PLATES FOR USE WITH ACTUAL BEARINGS SUPPLIED. THE ALLOWABLE CONCRETE BEARING STRESS SHALL BE:

WHERE f_b = BEARING STRESS ON THE LOADED CONCRETE AREA.
 A_2 = PLAN AREA OF BEAM SEAT PER AASHTO (FT²)
 A_1 = PLAN AREA OF STEEL MASONRY PLATE (FT²)
 $f_b \leq 30 f'_c \sqrt{\frac{A_2}{A_1}}$

THE MAXIMUM CONCRETE BEARING STRESS SHALL BE 1200 P.S.I. IF THE PLAN AREA OF ANY MASONRY PLATE IS REVISED (INCREASED), IT SHALL FIT WITHIN THE PLAN DIMENSIONS SHOWN FOR THE BEAM SEAT. THE MINIMUM CONCRETE EDGE DISTANCE SHALL BE 3" UNLESS NOTED OTHERWISE AND THE MINIMUM ANCHOR BOLT COVER SHALL BE 4".
- 3.) THE BEARING DEVICE, MASONRY PLATE, SOLE PLATE, ANCHOR BOLTS, NUTS, WASHERS AND BEARING PAD SHALL BE INCLUDED FOR PAYMENT IN THE CONTRACT PRICE FOR ITEM 516 STEEL POT BEARINGS.
- * 4.) ALL UNI & FIXED BEARINGS SHALL BE CAPABLE OF RESISTING A MINIMUM LATERAL FORCE OF 10% OF THE VERTICAL DEAD LOAD + LIVE LOAD + IMPACT OR 20% OF THE VERTICAL DEAD LOAD WHICHEVER IS GREATER APPLIED HORIZONTALLY IN ANY DIRECTION UNLESS OTHERWISE SHOWN.
- 5.) ALL EXPANSION BEARINGS SHALL HAVE A MAXIMUM FRICTION COEFFICIENT OF 3%.
- 6.) IF THE ANCHOR BOLTS ARE SET UNDER THE SOLE PLATE, A MINIMUM CLEARANCE EQUAL TO TWO TIMES THE THICKNESS OF ANCHOR NUT PLUS 1/2 INCH SHALL BE MAINTAINED BETWEEN THE TOP OF MASONRY PLATE AND THE BOTTOM OF THE SOLE PLATE.
- 7.) THE STEEL SHALL CONFORM TO ASTM A 572.
- 8.) ALL METAL COMPONENTS OF THE BEARING SYSTEM WHICH ARE LIABLE TO COME INTO CONTACT DURING THE TRANSLATION SHALL HAVE A TEFLON SLIDING SURFACE FINISH.
- 9.) ALL STEEL FABRICATION SHALL CONFORM TO THE PROVISIONS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS.
- 10.) THE DIMENSION "H" IN THE BEARING TABLE REPRESENTS THE ASSUMED TOTAL HEIGHT OF BEARING MECHANISM BETWEEN THE SOLE PLATE AND MASONRY PLATE USED BY THE DESIGNER TO ESTABLISH CONCRETE DIMENSIONS. THE CONTRACTOR SHALL RECOMPUTE ALL BEAM SEAT ELEVATIONS TO ACCURATELY REFLECT THE HEIGHT OF BEARINGS SUPPLIED. NO OTHER CONCRETE ELEVATION SHALL BE CHANGED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
- 11.) ABBREVIATIONS:
MULTI - MULTI DIRECTIONAL BEARING DIA. - DIAMETER
UNI - UNI-DIRECTIONAL BEARING
SELF ALIGNING SIDE OR CENTER GUIDED.
- 12.) THE HOLE DIAMETERS IN THE MASONRY PLATE SHALL BE 3/8" LARGER THAN THE REQUIRED ANCHOR BOLT DIAMETER.
- 13.) ALL STEEL POT BEARINGS SHALL BE DESIGNED TO MEET THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO 1992 AND THE 1993 INTERIM TO THESE SPECIFICATIONS.

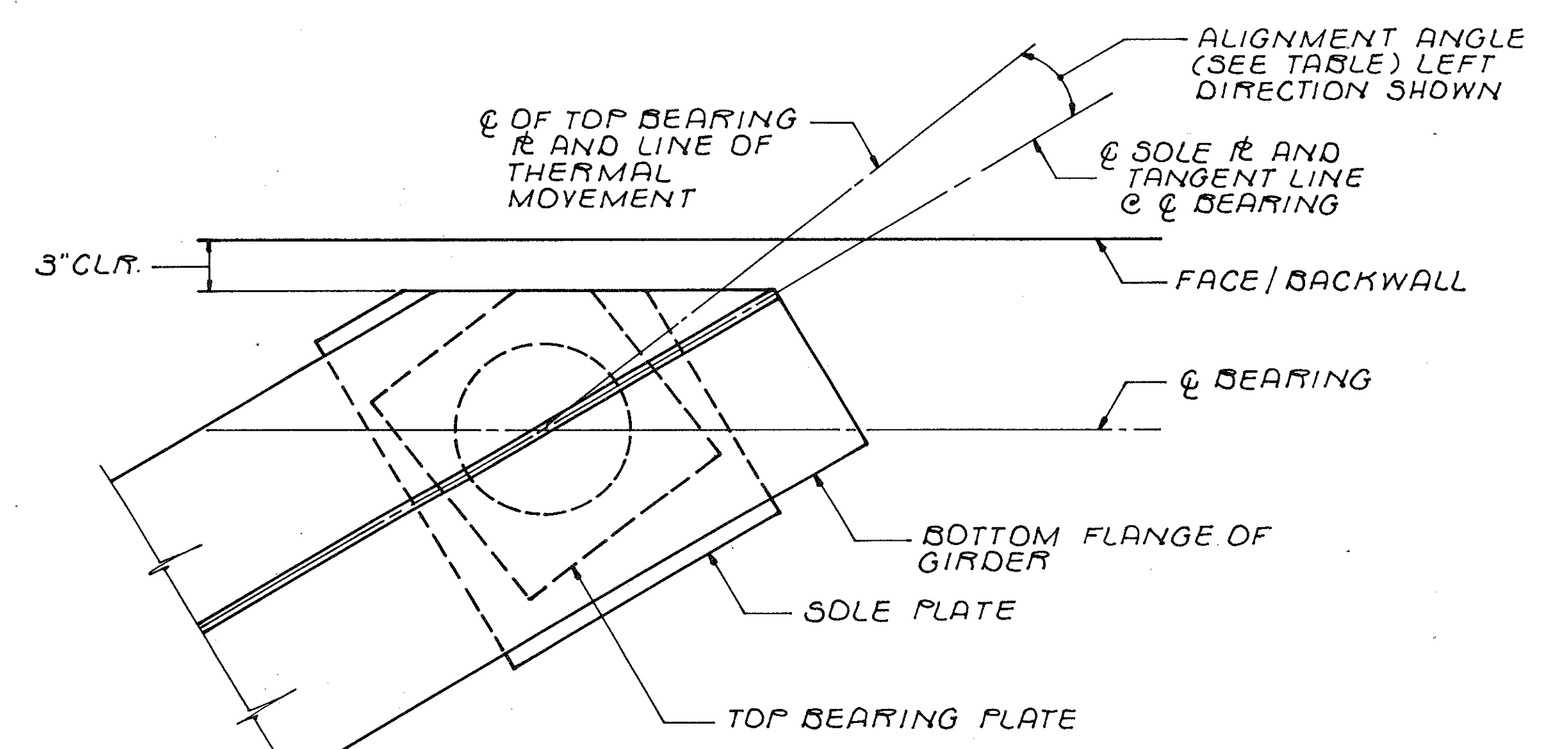


FRONT VIEW



SIDE VIEW

BEARING DATA (ALL DIMENSIONS IN INCHES)																				
LOCATION	BEARING TYPE	DEAD LOAD (KIPS)		LIVE LOAD + IMPACT (KIPS)		ONE WAY LONGITUDINAL MOVEMENT	MAX. ROTATION (RADIAN)	"G" GUIDE CLEARANCE	MASONRY PLATE			SOLE PLATE		BEARING	ANCHOR BOLTS / BEARING					
		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL				A	B	T	C	D		T ₁	T ₂	H	QTY.	DIA.	LENGTH
ABUT. No. 1.	UNI	170		127		2 3/8	0.015	1/8"	16	26	2	20	26	2	2	3 3/8	4	1 1/4	20	15
PIER	FIXED	481		237		0	0.002	0	24	30	2	24	30	3	3	4	4	1 1/2	27	22
ABUT. No. 2	UNI	95		79		2	0.015	1/8"	12	22	2	16	24	1 1/2	1 1/2	2 3/8	4	1 1/4	20	15



BEARING ALIGNMENT DETAIL
DETAIL @ ABUTMENT SHOWN, PIER BEARINGS SIMILAR
ALIGN MASONRY PLATE PARALLEL WITH Q BEARINGS

BEARING ALIGNMENT	
LOCATION	ANGLE (DEGREES)
ABUT. No. 1.	7° 00' 00" LT.
PIER	0° 00' 00"
ABUT. No. 2.	5° 30' 00" RT.

17/23

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CONSULTING ENGINEERS

STEEL POT BEARING DETAILS
JENNINGS FREEWAY
LANE JH-OBE OVER,
I-480 UNDER
LANE OBW-JH

BRIDGE No. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
S.F.M.	D.S.C.	C.T.	T.A.B.	1/94	

D E F L E C T I O N A N D C A M B E R (I N C H E S)

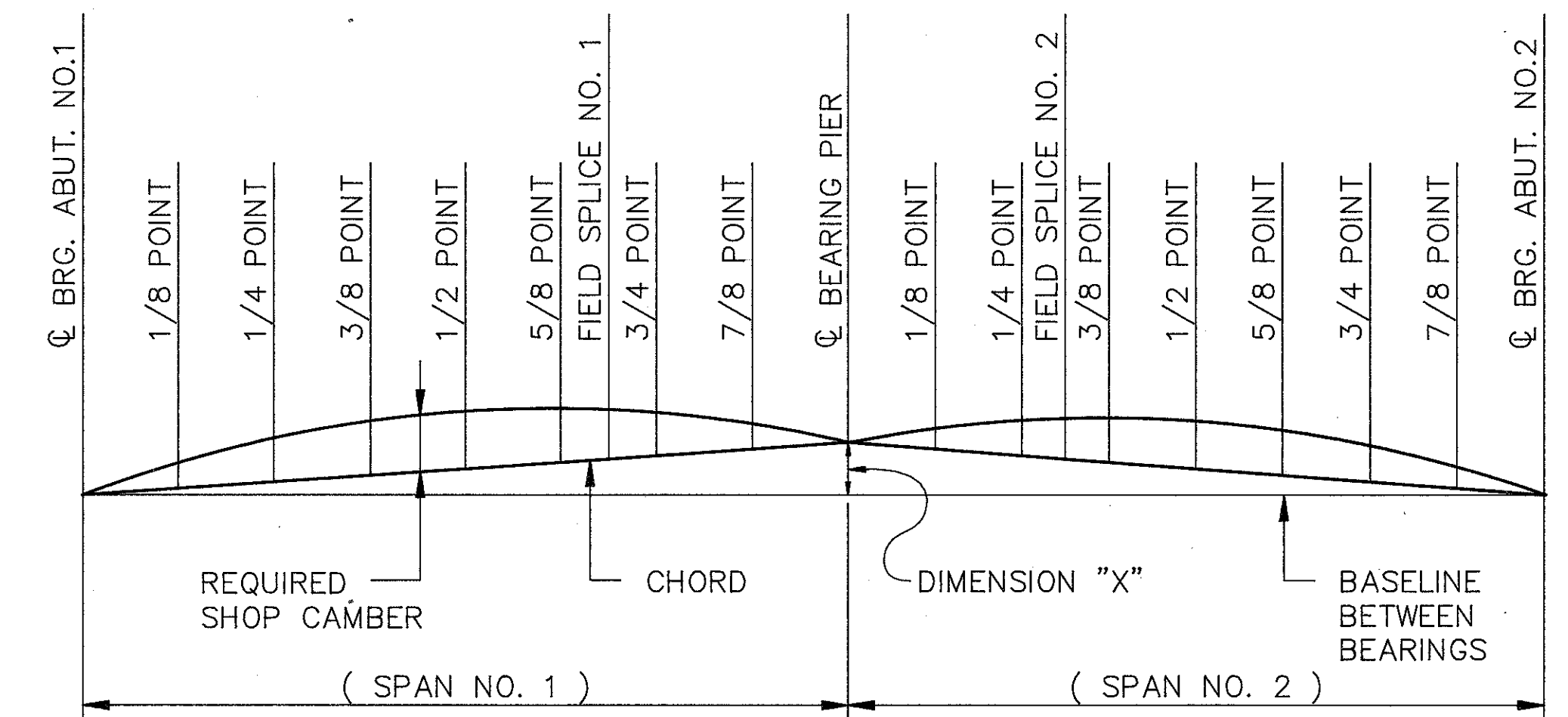
CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. 5 REGION



NOTES:

1. NEGATIVE VALUES OF CAMBER INDICATE THE DIMENSION IS BELOW THE CHORD BETWEEN ADJACENT BEARINGS.
2. FOR ACTUAL FIELD SPLICE LOCATIONS SEE GIRDER ELEVATION ON SHEET 15/23.

		SPAN NO. 1								SPAN NO. 2							
POINT		1/8	1/4	3/8	1/2	5/8	FS 1	3/4	7/8	1/8	1/4	3/8	FS 2	1/2	5/8	3/4	7/8
GIRDER A	DEFLECTION DUE TO WEIGHT OF STEEL	5/8	1 1/8	1 3/8	1 7/16	1 3/16	7/8	13/16	5/16	- 1/16	0	1/8	3/16	1/4	5/16	5/16	3/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 13/16	3 1/4	4 1/16	4 1/8	3 7/16	2 9/16	2 1/4	15/16	- 1/8	1/16	3/8	5/8	13/16	1	7/8	1/2
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 11/16	2 7/8	3 5/8	3 13/16	3 5/8	3 1/8	2 7/8	1 11/16	15/16	1 13/16	2 3/16	2 1/4	2 1/4	2 3/16	1 11/16	1 1/16
	REQUIRED SHOP CAMBER	4 1/8	7 1/4	9 1/16	9 3/8	8 1/4	6 9/16	5 15/16	2 15/16	3/4	1 7/8	2 11/16	3 1/16	3 5/16	3 1/2	2 7/8	1 3/4
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	5/16	5/8	11/16	11/16	5/8	7/16	0	0	0	0	0	1/4	5/16	1/4	3/16	1/8
REQUIRED SHOP CHAMBER WITH HEAT CURVATURE ADJUSTMENTS	4 7/16	7 7/8	9 3/4	10 1/16	8 7/8	7	5 15/16	2 15/16	3/4	1 7/8	2 11/16	3 5/16	3 5/8	3 3/4	3 1/16	1 7/8	
GIRDER B	DEFLECTION DUE TO WEIGHT OF STEEL	9/16	1	1 1/4	1 1/4	1 1/16	13/16	11/16	5/16	- 1/16	1/16	3/16	3/16	5/16	5/16	5/16	3/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 5/8	2 7/8	3 9/16	3 5/8	3 1/16	2 5/16	1 15/16	13/16	- 1/8	1/8	1/2	9/16	7/8	1	15/16	9/16
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 7/16	2 1/2	3 1/4	3 1/2	3 1/4	2 7/8	2 5/8	1 9/16	15/16	1 11/16	2 1/16	2 3/16	2 3/16	2 3/16	1 11/16	15/16
	REQUIRED SHOP CAMBER	3 5/8	6 3/8	8 1/16	8 3/8	7 3/8	6	5 1/4	2 11/16	3/4	1 7/8	2 3/4	2 15/16	3 3/8	3 1/2	2 15/16	1 11/16
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	5/16	1/2	5/8	11/16	9/16	7/16	0	0	0	0	0	3/16	3/16	5/16	1/4	3/16
REQUIRED SHOP CHAMBER WITH HEAT CURVATURE ADJUSTMENTS	3 15/16	6 7/8	8 11/16	9 1/16	7 15/16	6 7/16	5 1/4	2 11/16	3/4	1 7/8	2 3/4	3 1/8	3 9/16	3 13/16	3 3/16	1 7/8	
GIRDER C	DEFLECTION DUE TO WEIGHT OF STEEL	1/2	15/16	1 3/16	1 1/4	1	7/8	5/8	1/4	0	1/16	3/16	1/4	5/16	3/8	5/16	3/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/2	2 3/4	3 7/16	3 1/2	2 7/8	2 9/16	1 13/16	11/16	- 1/16	3/16	5/8	3/4	15/16	1 1/8	1	5/8
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 7/16	2 1/4	2 7/8	3 1/8	3	2 7/8	2 1/4	1 5/16	15/16	1 9/16	2 1/16	2 1/16	2 1/16	1 15/16	1 9/16	13/16
	REQUIRED SHOP CAMBER	3 17/16	5 15/16	7 1/2	7 7/8	6 7/8	6 5/16	4 3/4	2 1/4	7/8	1 13/16	2 7/8	3 1/16	3 5/16	3 7/16	2 7/8	1 5/8
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	1/4	3/8	1/2	7/16	7/16	5/16	0	0	0	0	0	3/16	1/4	1/4	1/4	1/8
REQUIRED SHOP CHAMBER WITH HEAT CURVATURE ADJUSTMENTS	3 11/16	6 5/16	8	8 5/16	7 15/16	6 5/8	4 3/4	2 1/4	7/8	1 13/16	2 7/8	3 1/4	3 9/16	3 11/16	3 1/8	1 3/4	
GIRDER D	DEFLECTION DUE TO WEIGHT OF STEEL	9/16	1	1 1/4	1 1/4	1	7/8	9/16	1/4	0	1/8	1/4	1/4	3/8	7/16	3/8	3/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 11/16	2 15/16	3 5/8	3 9/16	2 13/16	2 1/2	1 11/16	5/8	0	5/16	3/4	13/16	1 1/8	1 1/4	1 1/8	11/16
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 3/16	2 1/16	2 5/8	2 3/4	2 5/8	2 1/2	2 1/16	1 3/16	13/16	1 7/16	1 15/16	1 15/16	1 15/16	1 15/16	1 7/16	13/16
	REQUIRED SHOP CAMBER	3 7/16	6	7 1/2	7 9/16	6 7/16	5 7/8	4 5/16	2 1/16	13/16	1 13/16	2 7/8	3	3 7/16	3 5/8	2 15/16	1 11/16
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	3/16	3/8	1/2	7/16	5/16	5/16	0	0	0	0	0	3/16	3/16	1/4	3/16	3/16
REQUIRED SHOP CHAMBER WITH HEAT CURVATURE ADJUSTMENTS	3 5/8	6 3/8	8	8	6 3/4	6 3/16	4 5/16	2 1/16	13/16	1 13/16	2 7/8	3 3/16	3 5/8	3 7/8	3 1/8	1 7/8	



LAYOUT DIAGRAM

DIMENSION TABLE				
DIMENSION	G I R D E R S			
	"A"	"B"	"C"	"D"
"X"	12 1/8"	11 1/16"	10 1/4"	9 9/16"

18/23

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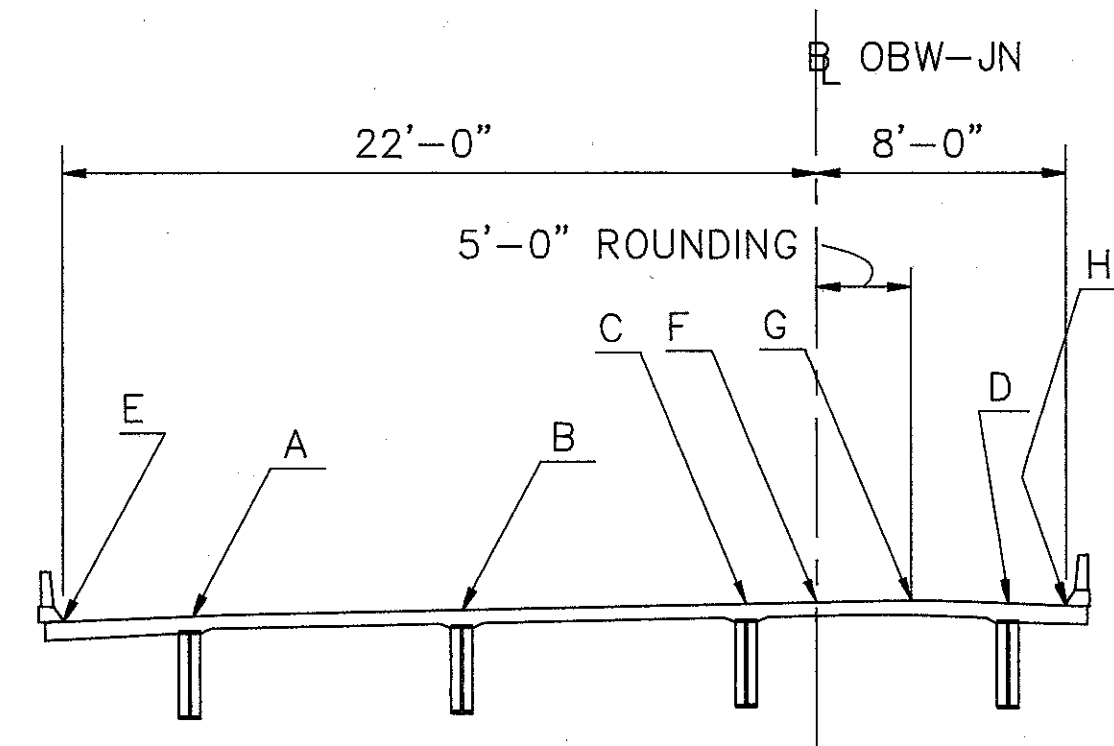
CAMBER AND DEFLECTION

JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN
BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B	M	T.J.W.	A.J.M.	1/94	

NOTES:

1. THE SCREED ELEVATIONS ARE TO THE TOP OF THE CONCRETE DECK AND ARE THOSE WHICH ARE REQUIRED BEFORE THE CONCRETE IS PLACED. PROPER ALLOWANCE HAS BEEN MADE FOR THE DEAD LOAD DEFLECTIONS CAUSED BY THE WEIGHT OF THE CONCRETE DECK. ADJUSTMENTS FOR THE EFFECTS OF HEAT CURVATURE OF THE GIRDERS, IF USED, MUST BE ADDED TO THE SCREED ELEVATIONS, AS PER AASHTO.
2. INSTALLATION OF SEAL:
DURING INSTALLATION OF THE SUPPORT/ARMOR FOR THE SUPERSTRUCTURE SIDE OF THE EXPANSION JOINT SEAL, THE SEATING OF BEAMS ON BEARINGS SHALL BE CAREFULLY OBSERVED TO ASSURE THAT POSITIVE BEARING IS MAINTAINED. PROPER VERTICAL FIT OF THE SUPPORT/ARMOR ON THE BEAMS SHALL BE ACHIEVED BY POSITIONING OF THE BEVEL FILL PLATES RATHER THAN BY CLAMPING FORCE.
3. FOR ADDITIONAL EXPANSION JOINT DETAILS SEE STANDARD DRAWING EXJ-4-87.
4. FOR SLAB PLAN SEE SHEET **20/23**

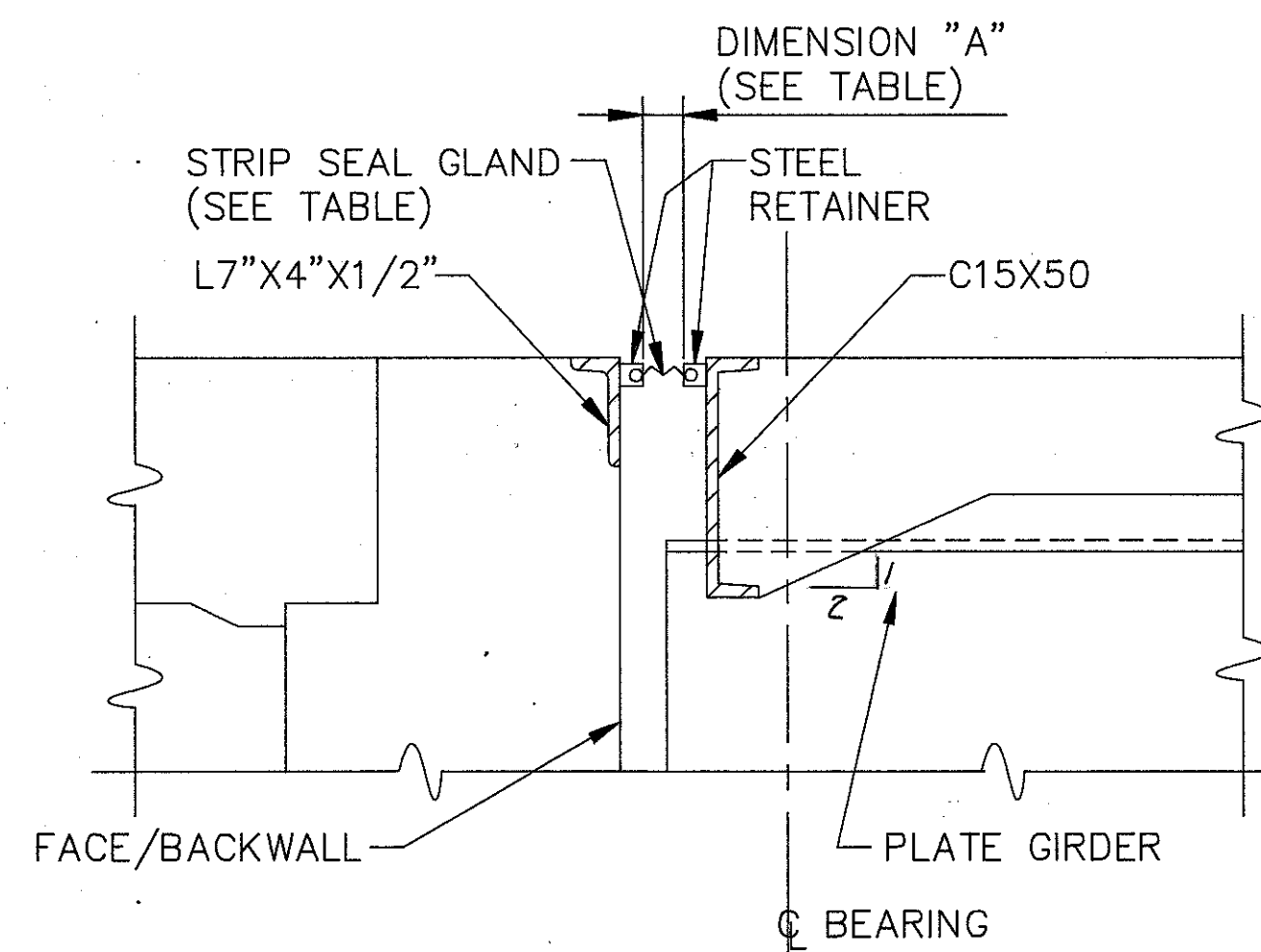


KEY TRANSVERSE SECTION

SEE NOTE NO.1

SCREED ELEVATION TABLE

POINT	CL BRG ABUT. NO.1	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG PIER	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG ABUT. NO.2
A	759.65	760.10	760.47	760.76	760.93	761.01	761.01	760.96	760.89	760.86	760.83	760.79	760.74	760.63	760.48	760.29	760.06
B	760.43	760.81	761.12	761.36	761.50	761.55	761.47	761.39	761.39	761.35	761.32	761.27	761.20	761.09	760.94	760.74	760.50
C	761.15	761.49	761.76	761.96	762.07	762.10	762.05	761.97	761.89	761.84	761.80	761.75	761.67	761.55	761.39	761.18	760.94
D	761.48	761.80	762.05	762.21	762.29	762.28	762.21	762.11	762.03	761.97	761.93	761.87	761.78	761.67	761.49	761.28	761.02
E	759.46	759.93	760.31	760.61	760.79	760.87	760.88	760.84	760.77	760.75	760.72	760.68	760.63	760.53	760.38	760.19	759.96
F	761.37	761.69	761.95	762.15	762.25	762.26	762.21	762.13	762.04	761.97	761.95	761.89	761.81	761.69	761.52	761.32	761.07
G	761.51	761.82	762.08	762.24	762.32	762.31	762.25	762.16	762.07	762.02	761.98	761.91	761.83	761.71	761.54	761.33	761.07
H	761.44	761.74	761.99	762.14	762.22	762.20	762.13	762.03	761.94	761.88	761.84	761.77	761.68	761.57	761.39	761.18	760.92



SECTION THRU ABUTMENTS

EXPANSION JOINT DETAIL

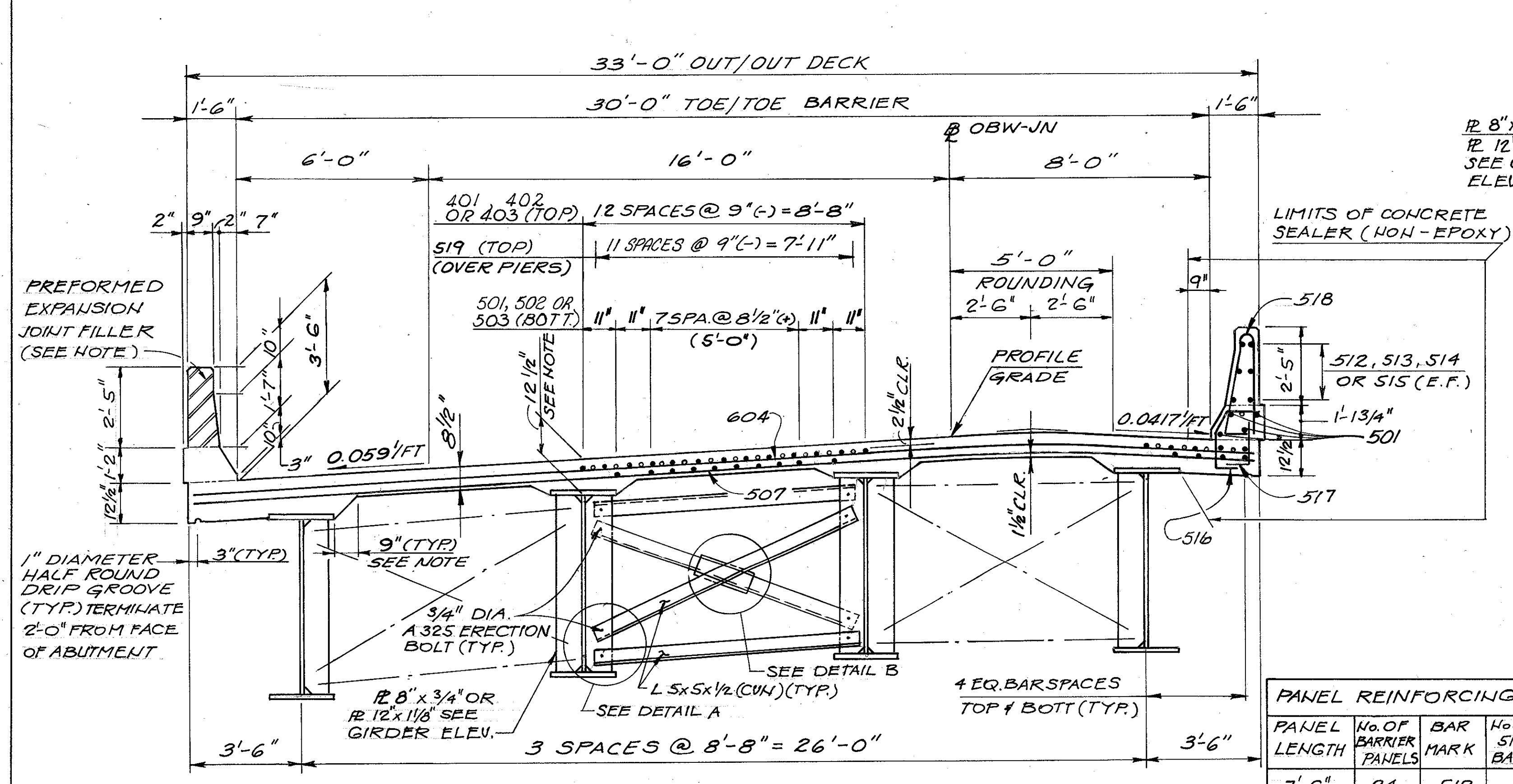
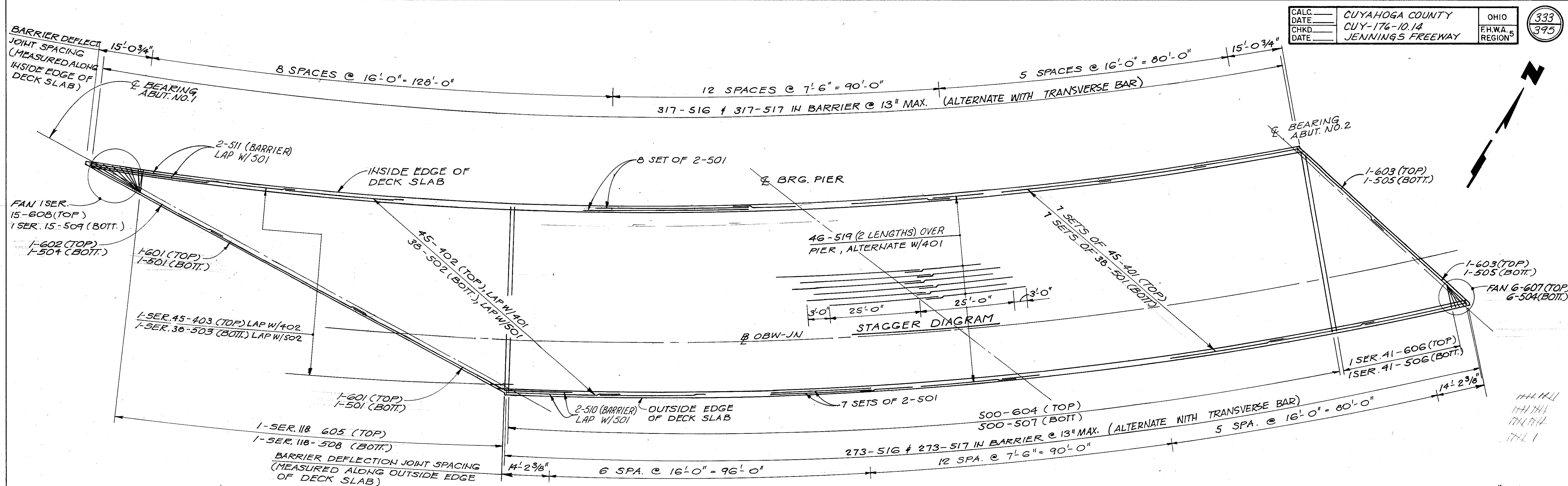
DIMENSION "A"								
TEMPERATURE °F	30°	40°	50°	60°	70°	80°	90°	STRIP SEAL SIZE
ABUTMENT NO. 1	2 7/8"	2 3/4"	2 5/8"	2 1/2"	2 1/2"	2 3/8"	2 1/4"	4"
ABUTMENT NO. 2	2 3/8"	2 1/4"	2 1/4"	2 1/8"	2"	2"	1 7/8"	3"

19/23

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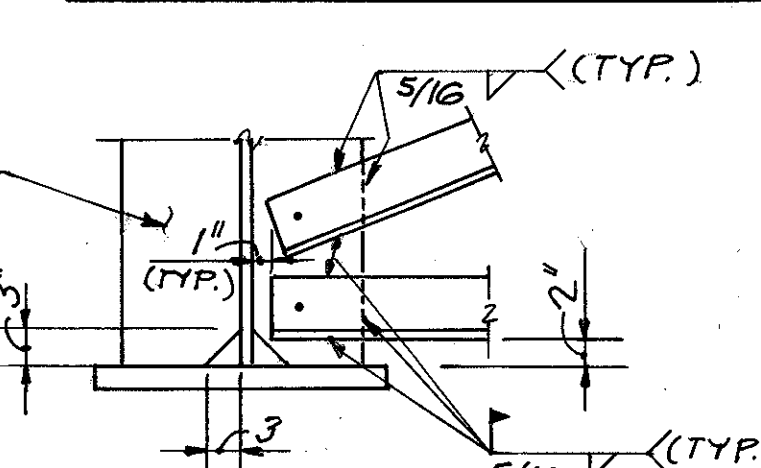
SCREED ELEVATIONS & EXPANSION JOINT DETAIL
JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN
BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M.C.M.	T.J.W.	A.J.M.	1/94	

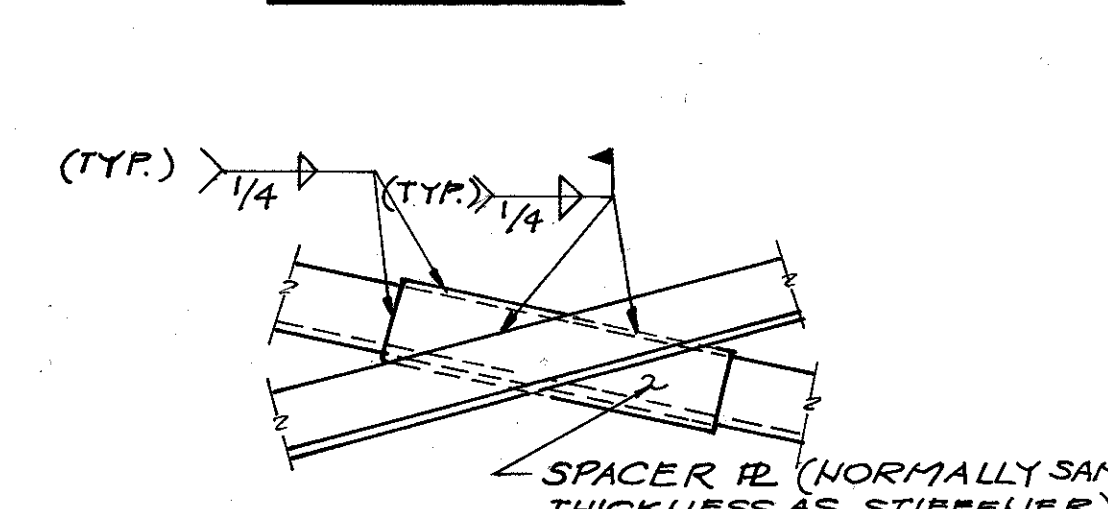


TRANSVERSE SECTION

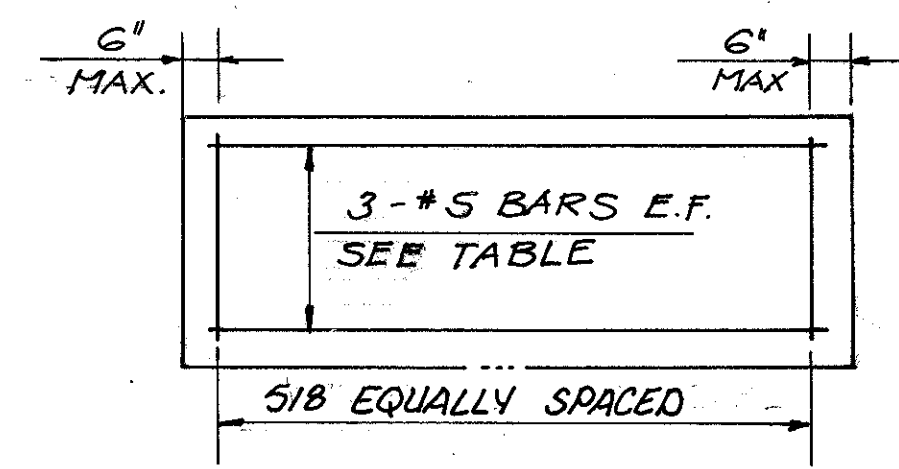
SLAB PLAN



DETAIL A



DETAIL B



TYPICAL BARRIER PANEL

PANEL REINFORCING			
PANEL LENGTH	No. OF BARRIER PANELS	BAR MARK	No. OF 5/8 BARS
7'-6"	24	512	8
16'-0"	24	513	16
14'-2 3/8"	2	514	14
15'-0 3/4"	2	515	15

NOTES:

- ALL TRANSVERSE BARS ARE SPACED @ 6 1/2", MEASURED ALONG OUTSIDE EDGE OF DECK SLAB AND PLACED RADIALLY TO OBW-JN.
- FIELD BEND LONGITUDINAL BARS TO FIT CURVATURE OF ROADWAY AND TRANSVERSE BARS TO FIT CROWN; BENDING SHALL BE INCLUDED WITH ITEM 509 FOR PAYMENT. EPOXY COATED BARS DAMAGED BY FIELD BENDING SHALL BE REPAIRED AS PER APPROVED MANUFACTURER'S RECOMMENDATION.
- DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF DECK SLAB TO THE BOTTOM OF THE TOP FLANGE OF GIRDER IS THE DESIGN DIMENSION. THE QUANTITY OF CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT, PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR THE VOLUME OF ENCASED STEEL PLATES AS PER 511.18
- THE FOLLOWING MIN. BAR SPLICE LAP LENGTHS SHALL BE PROVIDED UNLESS SHOWN OTHERWISE:
 No. 4 BARS = 1'-7"
 No. 5 BARS = 2'-1"
 No. 6 BARS = 3'-1"
- A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING THE QUANTITY OF CONCRETE. HOWEVER THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 4:1 FOR A HAUNCH LESS THAN 9" WIDE.
- PREFORMED EXPANSION JOINT FILLER IN THE BARRIER DEFLECTION JOINTS MAY BE EITHER 1/4" GREY SPONGE RUBBER OR 1/4" GREY CELLULAR POLYVINYL CHLORIDE (PVC) SPONGE. SPONGE RUBBER FILLER SHALL CONFORM TO AASHTO M-153, TYPE-1. DENSITY OF PVC SPONGE SHALL NOT BE LESS THAN 20 LBS. PER CU. FT. PAYMENT FOR THIS ITEM SHALL BE INCLUDED WITH ITEM SPECIAL-HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE.
- ALL REINFORCING BAR MARKS IN THE SUPERSTRUCTURE SHALL BE PREFIXED 'S'.

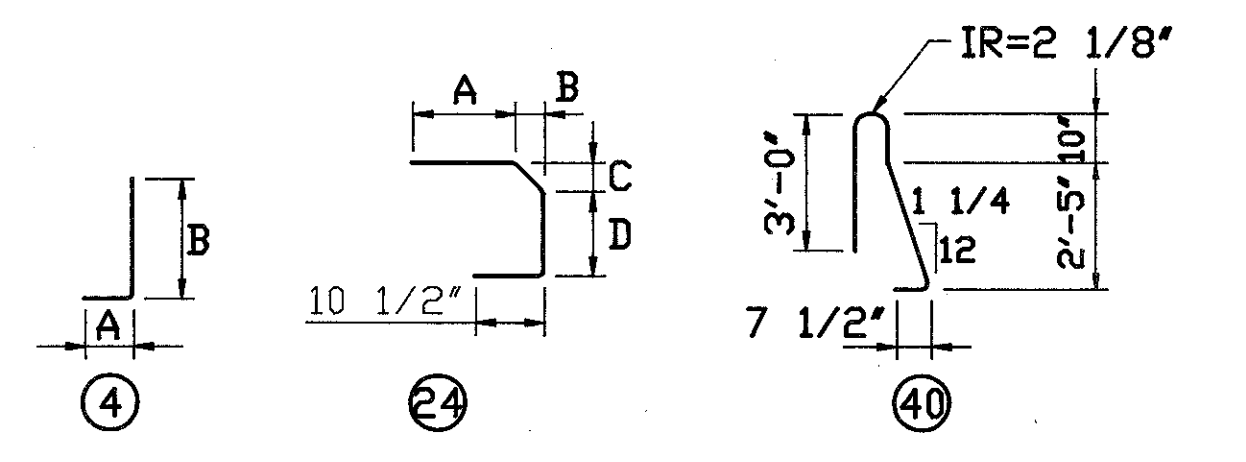
20/23
 adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
SLAB PLAN & TRANSVERSE SECTION
 JENNINGS FREEWAY
 LANE JN-OBE OVER I-480 UNDER LANE OBW-JN
BRIDGE NO. CUY-480-1557
 DESIGNED: MJL DRAWN: HBM CHECKED: TAB REVIEWED: A.J.M. DATE: 1/94

BRUNING 44-232 07195

ABUTMENT NO. 1										
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
				ft in	ft in	ft in	ft in	ft in	ft in	
1A 501	79	23 8	STR.							1950
1A 502	156	22 11	STR.							3729
1A 503	77	24 5	STR.							1961
1A 504	62	5 2	15	2 1	2 3		2 3			334
1A 505	74	7 10	5	3 5	2 4					605
1A 506	76	12 0	5	1 5	5 5					951
1A 507	76	7 4	5	0 11	3 4					581
1A 508	76	9 2	5	1 5	4 0					727
1A 509	3	25 4	STR.							79
1A 510	4 SER. 6 BARS	4 5 19 0	STR.					2	11	293
1A 511	4	19 8	STR.							82
1A 512	2 SER. 23 BARS	11 2 30 10	20	1 8	4 0	1 0		0	10 3/4	1008
1A 513	146	30 0	STR.							4568
1A 514	1 SER. 13 BARS	14 9 23 0	STR.					0	8 1/4	256
1A 515	1 SER. 29 BARS	7 0 26 0	STR.					0	8 1/8	499
1A 516	2	11 0	STR.							23
1A 517	11	20 3	STR.							232
1A 518	11	24 6	STR.							281
1A 519	7	19 6	STR.							142
1A 520	11	9 4	15	3 0	2 3	6 0				107
1A 521	105	8 11	5	1 2	4 0					977
1A 522	4	3 11	4	2 0	2 0					16
1A 523	82	17 0	STR.							1454
1A 524	116	7 3	STR.							877
1A 525	105	6 4	STR.							694
1A 526	105	6 11	5	1 2	3 0					757
1A 527	109	3 6	21	0 8	0 6	0 8.5	2 1			398
1A 528	99	6 11	40							714
1A 529										
1A 530	2	25 11	15	17 0	4 0	8 0				54
1A 531	2 SER. 6 BARS	20 6 26 6	STR.					1	2 3/8	294
1A 532	30	8 5	2	7 3						263
1A 533	1 SER. 10 BARS	3 0 3 10	1	2 5	3 3				1 1/8	36
1A 534	6	25 0	STR.							156
1A 535	2	15 0	15	3 0	1 0	12 0				31
1A 536	2 SER. 4 BARS	4 8 6 2	STR.					0	6	45
1A 537	1 SER. 4 BARS	6 8 8 4	STR.					0	6 11/16	31
1A 538	2	13 8	41	9 11	2 4	1 5	0 6.5			29
1A 539	2	14 5	STR.							30
1A 540	10	4 0	STR.							42
1A 541	10	1 8	STR.							17
1A 542	10 SER. 7 BARS	4 2 22 6	STR.					3	0 11/16	973
1A 543	49	6 8	4	1 0	5 9					341
1A 544	108	6 2	5	2 5	2 0					695
1A 545	1 SER. 29 BARS	9 2 30 6	20	1 8	3 0	1 0			9 1/8	600
1A 546	4 SER. 28 BARS	8 2 30 6	20	1 8	2 6	1 0			9 15/16	2258
1A 547	30	7 8	30	1 10	3 0	1 3	2 9			240
1A 601	74	23 3	STR.							2584
1A 602	102	22 11	STR.							3511
1A 603	174	17 9	5	2 3	7 11					4639

ABUTMENT NO. 1 (Continued)										
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
				ft in	ft in	ft in	ft in	ft in	ft in	
1A 701	152	30 0	STR.							9321
1A 702	19	23 0	STR.							893
1A 703	19	28 0	STR.							1087
1A 704	19	11 1	15	4 6	2 3	6 3				430
1A 705	38	19 0	STR.							1476
1A 706	38	18 0	STR.							1398
1A 707	19	8 6	STR.							330
1A 708	38	16 6	STR.							1282
1A 709	30	21 7	31	12 10	4 6	1 9	4 3			1323
1A 710	30	22 4	30	13 6	4 6	1 9	4 3			1369
1A 711	30	27 9	31	19 0	4 6	1 9	4 3			1702
1A 712	30	28 4	30	19 6	4 6	1 9	4 3			1737
1A 801	21	5 4	13	3 1	1 5	1 0				299
1A 802	20	30 0	STR.							1602
1A 803	98	10 8	5	1 7	4 9					2791
1A 804	1 SER. 5 BARS	20 0 26 0	STR.						1 6	307
1A 901	112	30 0	STR.							11424
1A 902	24	15 10	STR.							1292
1A 903	1 SER. 8 BARS	10 8 28 0	STR.					2	5 11/16	526
1A 904	1 SER. 4 BARS	15 0 22 0	STR.					2	4	252
1A 905	1 SER. 16 BARS	6 0 40 0	STR.					2	3 3/16	1251
1A 906	16	24 0	STR.							1306
1A 1001	157	24 11	1	23 6						16833
1A 1002	112	30 0	STR.							14458
1A 1003	36	5 8	14	2 0	3 9	1 9				878
1A 1004	21	19 0	STR.							1717
1A 1005	6	26 5	1	25 0						682
1A 1006	1 SER. 25 BARS	16 2 24 5	1	14 9	23 0				4 1/8	2183
1A 1007	1 SER. 8 BARS	10 8 28 0	STR.					2	5 11/16	666
1A 1008	24	23 6	STR.							2427
1A 1009	1 SER. 57 BARS	7 5 27 5	1	6 0	26 0				4 5/16	4272
1A 1010	1 SER. 16 BARS	6 0 40 0	STR.					2	3 3/16	1584
1A 1011	1 SER. 4 BARS	15 0 22 0	STR.					2	4	318
1A 1012	15	27 3	13	2 0	24 0	21 8				1759
1A 1013	6	7 6	14	2 0	5 7	2 3				194
1A 1014	42	8 11	14	2 0	6 9	3 2				1611
1A 1015	10	23 2	1	21 9						997
1A 1016	25	24 1	13	2 0	20 10	18 8				2591
1A 1017	7	10 9	14	2 0	8 7	3 6				324
1A 1018	14	15 6	STR.							934
TOTAL WEIGHT										138990

BENDING DIAGRAMS



NOTES:

- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
LANE JN-OBE OVER,
1-480 UNDER
LANE OBW-JN
BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
H.B.M.	M	T.A.B.	C.T.	1/94	

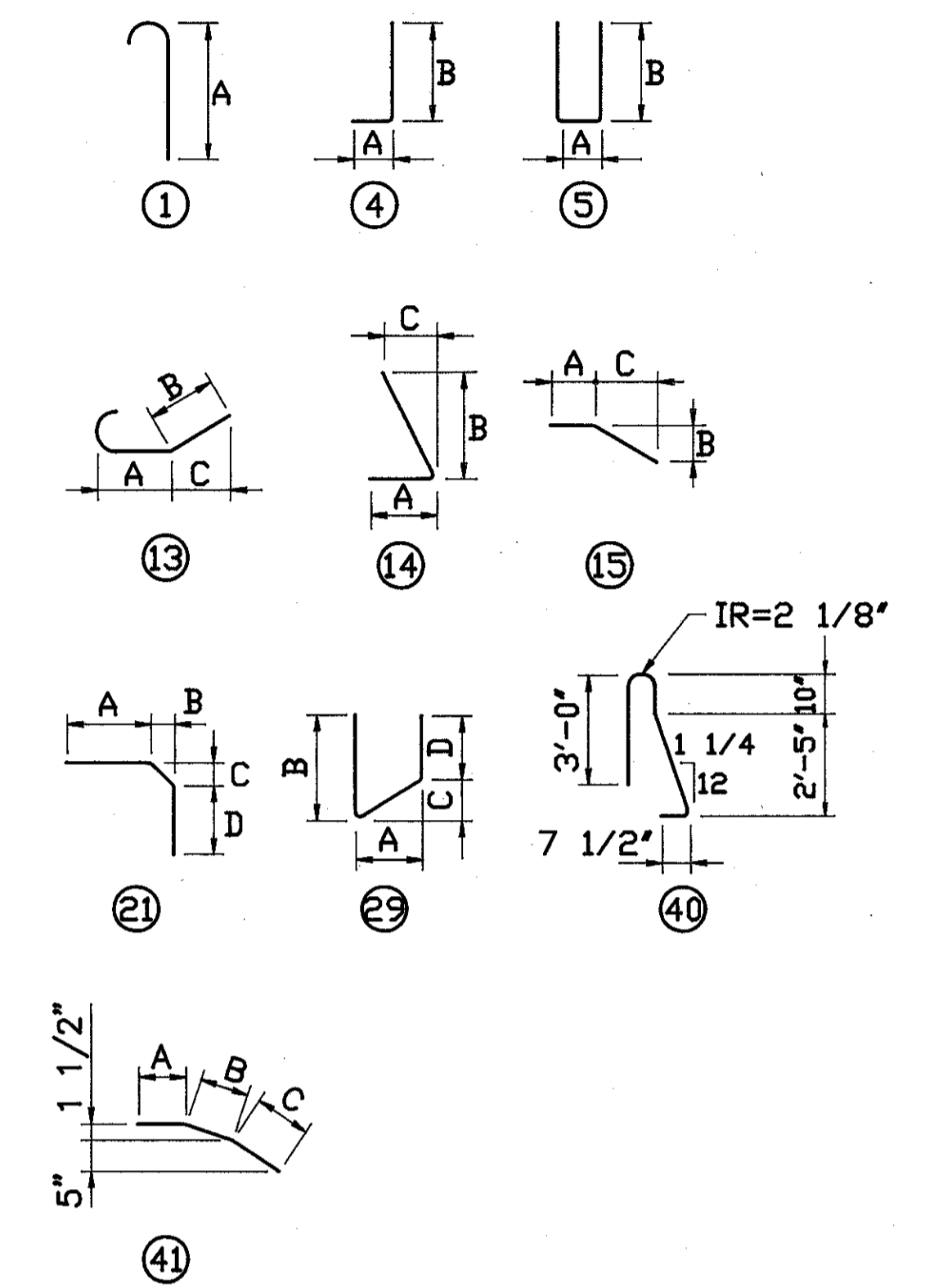
ABUTMENT NO. 2

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in	ft	in	
2A 501	84	23	0	STR.											2015
2A 502	42	33	0	STR.											1446
2A 503	107	14	11	5	2	2	6	6							1665
2A 504	4 SER. 3 BARS	6	0	STR.								4	6		131
2A 505	10	15	6	STR.											162
2A 506	81	19	4	STR.											1633
2A 507	39	5	7	15	2	6	2	3	2	3					227
2A 508	4 SER. 17 BARS	8	0	20	1	2	2	8	1	0			8		946
2A 509	39	8	2	5	3	5	2	6							332
2A 510	38	9	2	5	1	5	4	0							363
2A 511	38	11	10	5	1	5	5	4							469
2A 512	38	7	8	5	0	11	3	6							304
2A 513	36	21	0	STR.											789
2A 514	137	19	9	STR.											2822
2A 515	69	9	5	5	1	2	4	3							678
2A 516	20	8	0	2	6	10									167
2A 517	2 SER. 5 BARS	22	0	STR.								1	0		250
2A 518	11	9	7	15	3	0	5	10	3	3					110
2A 519	20	20	0	STR.											417
2A 520	8	4	0	STR.											33
2A 521	41	6	3	STR.											267
2A 522	8	6	5	15	3	0	2	10	2	0					54
2A 523	69	7	4	STR.											528
2A 524	79	3	6	21	0	8	0	6	0	8.5	2	1			288
2A 525	57	6	11	40											411
2A 526	20	27	8	STR.											577
2A 527	2	36	8	15	27	8	3	6	8	0					76
2A 528	14	27	0	STR.											394
2A 529	2 SER. 7 BARS	7	0	STR.									10		139
2A 530	2	16	7	15	8	0	3	4	8	0					35
2A 531	4	15	0	15	2	0	1	1	13	0					63
2A 532	4	13	8	41	9	11	2	4	1	5	0	6.5			57
2A 533	2 SER. 10 BARS	3	0	1	2	5							1		70
2A 534	4 SER. 4 BARS	5	4	STR.									4 11/16		99
2A 535	2 SER. 5 BARS	6	11	STR.									3		77
2A 536	10	3	6	STR.											37
2A 537	11	6	0	STR.											69
2A 538	18	6	2	4	1	0	5	3							116
2A 539	20	7	8	30	1	10	3	0	2	5	1	9			160
2A 540	14	19	7	STR.											286
2A 541	2	16	9	STR.											35
2A 542	2	15	6	STR.											32
2A 543	2 SER. 4 BARS	6	6	STR.									4	4 11/16	109
2A 544	6 SER. 4 BARS	7	3	STR.									4	5 11/16	349
2A 545	4 SER. 18 BARS	10	2	20	1	2	2	9	2	0			8 13/16		1233
2A 546	6	29	6	STR.											185
2A 547	2 SER. 7 BARS	8	9	STR.									10 1/2		166

ABUTMENT NO. 2 (continued)

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A		DIM B		DIM C		DIM D		INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	ft	in	ft	in	
2A 601	20	27	8	STR.											831
2A 602	80	23	0	STR.											2764
2A 603	10	6	0	STR.											90
2A 604	10	10	7	15	4	0	5	10	3	3					159
2A 701	42	12	4	5	1	2	5	9							1059
2A 702	21	18	1	23	0	0	2	7	1	6	12	9			776
2A 703	21	19	7	22	0	0	2	7	1	6	14	3			841
2A 801	20	30	0	STR.											1602
2A 802	10	28	0	STR.											748
2A 803	21	5	1	13	2	10	1	5	1	0					285
2A 804	40	24	0	STR.											2563
2A 805	2 SER. 10 BARS	15	0	STR.									8		961
2A 806	20	28	0	STR.											1495
2A 901	24	5	4	14	1	10	1	3	3	9					435
2A 902	8	20	8	1	19	5									562
2A 903	4	22	1	13	1	6	19	6	18	5					300
2A 904	12	23	1	13	1	6	20	6	19	3					942
2A 905	24	14	10	14	1	10	4	4	12	9					1210
2A 906	24	8	6	14	1	10	2	3	6	9					694
2A 907	8	17	8	1	16	5									481
2A 908	4	19	1	13	1	6	16	6	15	5					260
2A 909	12	20	1	13	1	6	17	6	16	3					819
2A 1001	178	17	1	1	15	8									13085
2A 1002	2 SER. 6 BARS	8	5	1	7	0							7 3/16		512
2A 1003	2 SER. 9 BARS	5	5	1	4	0							1	2 5/8	797
2A 1004	2 SER. 13 BARS	9	5	1	8	0							9		1557
TOTAL WEIGHT															56698

BENDING DIAGRAMS



NOTES:

1. ALL REINFORCING STEEL TO BE EPOXY COATED.
2. BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

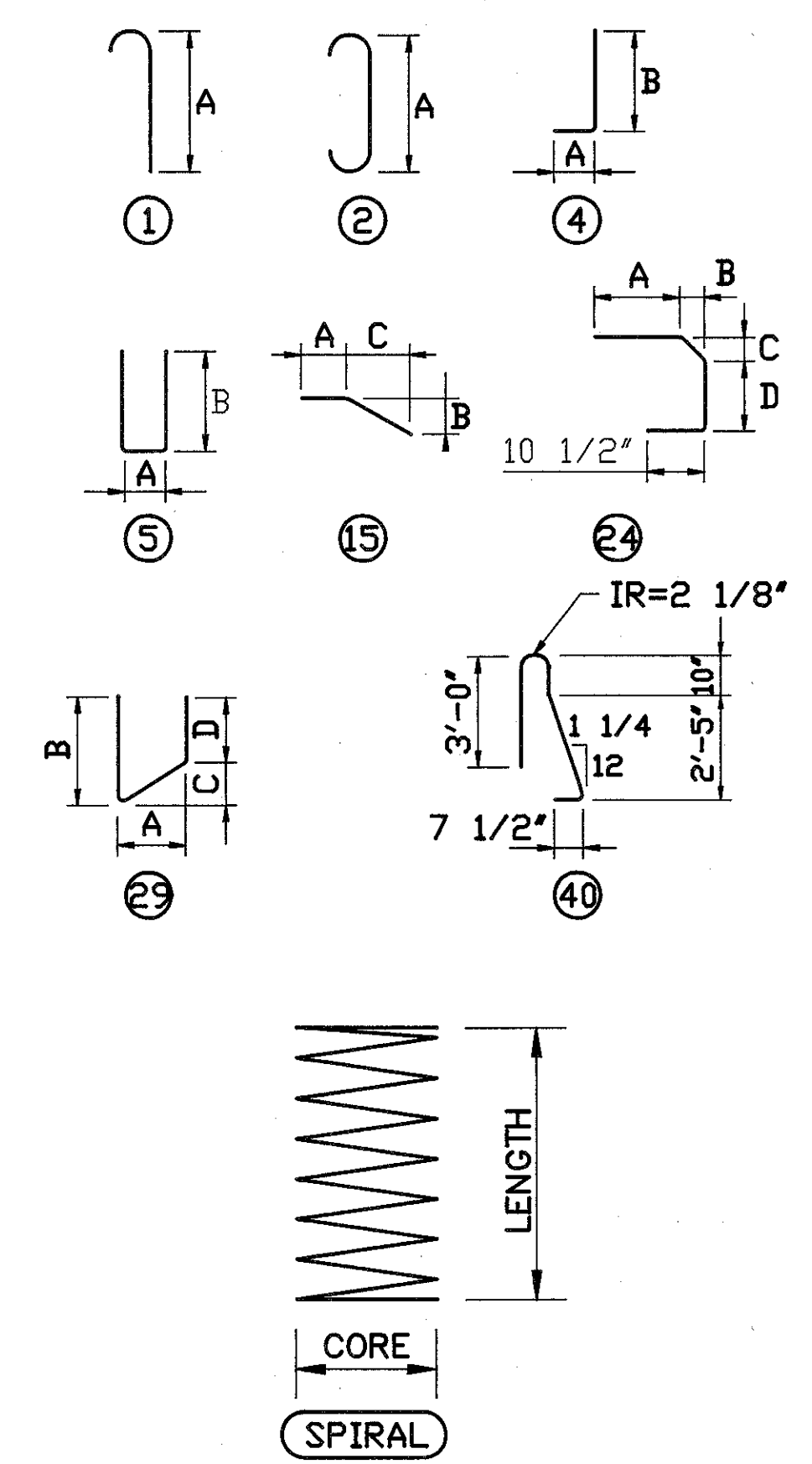
22/23

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REINFORCING SCHEDULE
JENNINGS FREEWAY
LANE JN-OBE OVER,
I-480 UNDER
LANE OBW-JN
BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
H.B.M.	M	T.A.B.	C.T.	1/94	

BENDING DIAGRAMS



- NOTES:
- ALL REINFORCING STEEL TO BE EPOXY COATED.
 - BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

PIER

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft in	ft in	ft in	ft in	ft	in	
IP 501	12	7	1	15	2 6	1 0	4 6				89
IP 502	8	12	0	STR							100
IP 503	8	43	6	STR							363
IP 601	184	9	5	5	1 9	4 0					2602
IP 901	36	13	0	2	10 6						1591
IP 902	6	50	4	29	43 6	3 10	1 5	3 7			1027
IP 903	12	15	9	1	14 6						643
IP 1001	36	13	4	2	10 6						2065
IP 1101	42	16	1	4	2 0	14 5					2907
IP 1102	42	20	0	1	18 7						3615
IP 1103	6	34	8	STR							895
TOTAL WEIGHT											12743

SUPERSTRUCTURE

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft in	ft in	ft in	ft in	ft	in	
S 401	315	40	0	STR.							8417
S 402	45	29	0	STR.							872
S 403	1 SER.	3	0	STR.					9		586
	45 BARS	36	0								
S 501	328	40	0	STR.							13684
S 502	38	32	6	STR.							1288
S 503	1 SER.	3	6	STR.					11		811
	38 BARS	37	5								
S 504	7	5	0	STR.							37
S 505	2	22	0	STR.							46
S 506	1 SER.	3	4	STR.					8 1/2		750
	41 BARS	31	9								
S 507	500	32	8	STR.							17036
S 508	1 SER.	3	3	STR.					3		2200
	118 BARS	32	6								
S 509	1 SER.	3	0	STR.					4 3/8		87
	15 BARS	8	1								
S 510	4	29	0	STR.							121
S 511	4	28	9	STR.							120
S 512	144	7	2	STR.							1076
S 513	144	15	8	STR.							2353
S 514	12	13	10	STR.							174
S 515	12	14	8	STR.							185
S 516	590	3	4	24	0 9	0 6	8 1/2	1 0			2051
S 517	590	2	6	4	0 10	1 9					1538
S 518	634	6	11	40							4574
S 519	92	30	0	STR.							2878
S 601	2	40	0	STR.							120
S 602	1	7	0	STR.							11
S 603	2	22	0	STR.							66
S 604	500	32	8	STR.							24533
S 605	1 SER.	3	3	STR.					3		3168
	118 BARS	32	6								
S 606	1 SER.	3	4	STR.					8 1/2		1080
	41 BARS	31	9								
S 607	6	4	0	STR.							36
S 608	1 SER.	3	0	STR.					4 3/8		125
	15 BARS	8	1								
TOTAL WEIGHT											90023

SPIRALS

MARK	NUMBER REQ'D	LENGTH		WEIGHT lbs	CORE in	PITCH in	SPACERS		
		ft	in				NO.	ANGLE SIZE	
SP 501	1	15	9	593	30	3	4	1 1/4 x 1 1/4 x 1/8	
SP 502	1	16	5	617	30	3	4	1 1/4 x 1 1/4 x 1/8	
SP 503	1	17	0	638	30	3	4	1 1/4 x 1 1/4 x 1/8	
TOTAL				WEIGHT	1848				

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REINFORCING SCHEDULE
 JENNINGS FREEWAY
 LANE JN-OBE OVER,
 I-480 UNDER
 LANE OBW-JN
 BR. NO. CUY-480-1557

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
H.B.M.	M	T.A.B.	C.T.	1/94	

PROPOSED STRUCTURE

TYPE : CONTINUOUS COMPOSITE A-572 PAINTED CURVED WELDED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS : 175'-9⁷/₈" , 110'-2¹/₈" , 118'-1¹/₄" , 109'-10³/₄" , 155'-0"
C/C BEARINGS ALONG B JN-OBE

WIDTH : 40'-0" TOE TO TOE BARRIER
43'-0" OUT TO OUT DECK

LOADING : HS-20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING

WEARING : MONOLITHIC CONCRETE SURFACE

SKEW : VARIES, AS SHOWN TO REFERENCE CHORD

APPROACH : AS-1-81, AS PER PLAN SLAB 30' LONG

ALIGNMENT : CURVE LEFT (D_c = 8° 01' 07")

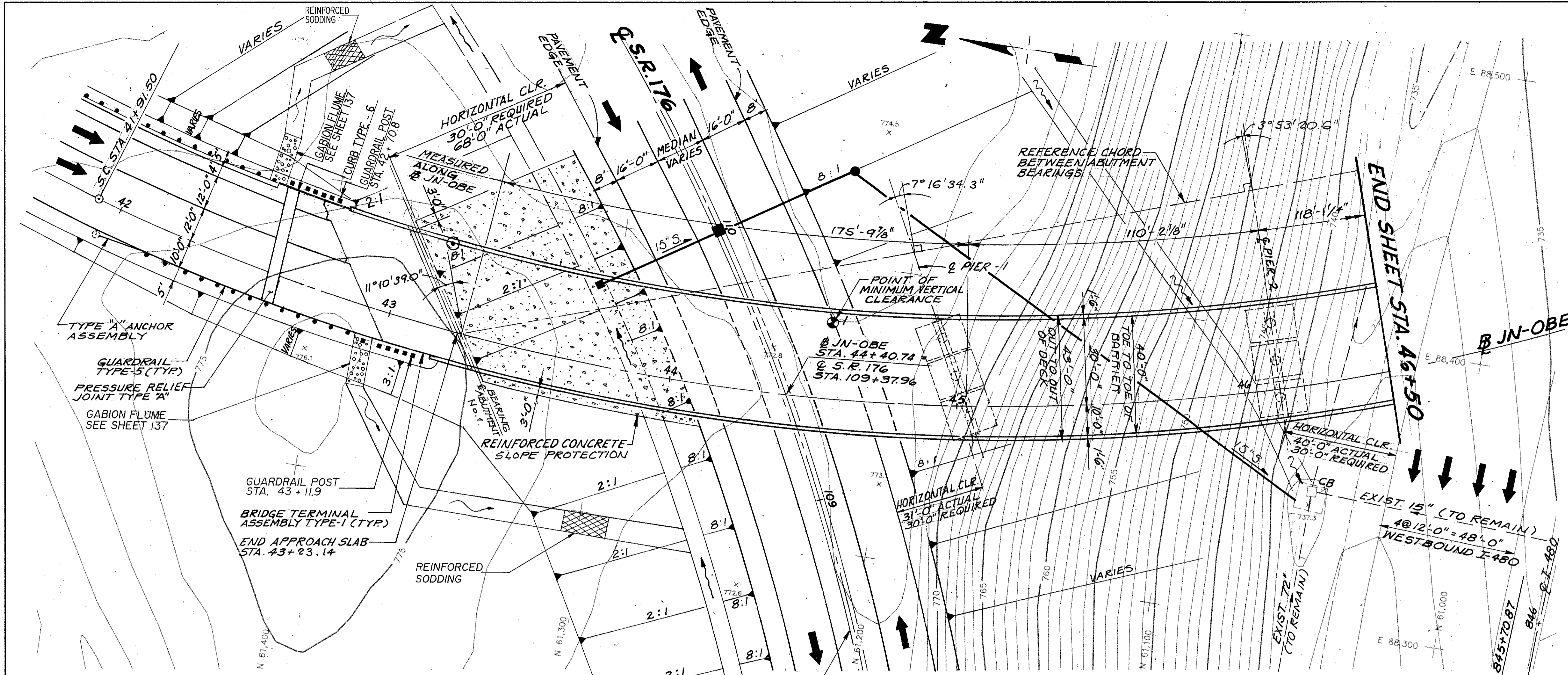
SUPERELEVATION : 0.059 FT/FT.

SLOPE PROTECTION : REINFORCED CONCRETE SLOPE PROTECTION, 6" THICK WITH FILTER FABRIC AND ANCHOR TRENCHES

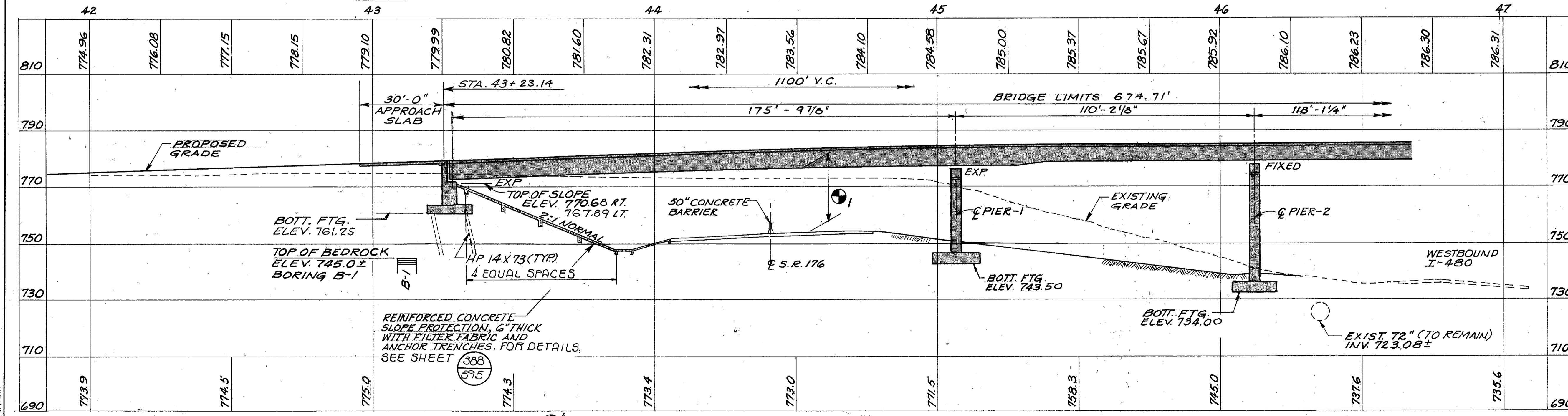
FOUNDATION DATA

ALL PIER FOOTINGS SHALL BE SPREAD FOOTINGS FOUNDED ON BEDROCK. ABUTMENTS SHALL BE SUPPORTED BY HP 14 X 73 STEEL PILES, AVERAGE ESTIMATED PILE LENGTH IS 20 LINEAL FEET FOR EACH ABUTMENT.

⊙ INDICATES SOIL BORING LOCATION. SEE STRUCTURAL FOUNDATION INVESTIGATION SHEETS FOR ADDITIONAL INFORMATION.



NOTES : EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS. FOR BENCHMARK ELEVATION SEE SHEET 2 / 21



B JN-OBE HORIZONTAL CURVE DATA

P.I. STA. 47+87.18
S.C. STA. 41+91.50
C.S. STA. 51+84.60
Δ = 79° 38' 00" LT
D_c = 8° 01' 07"
R = 714.529'
T = 595.675'
L = 993.097'
C = 915.073'
E = 215.729'

VERTICAL CURVE DATA

G₁ = +5.32%
G₂ = -5.00%
L = 1100'
P.V.I. ELEV. 800.49
P.V.I. STA. 46+75
P.V.C. STA. 41+25
P.V.T. STA. 52+25

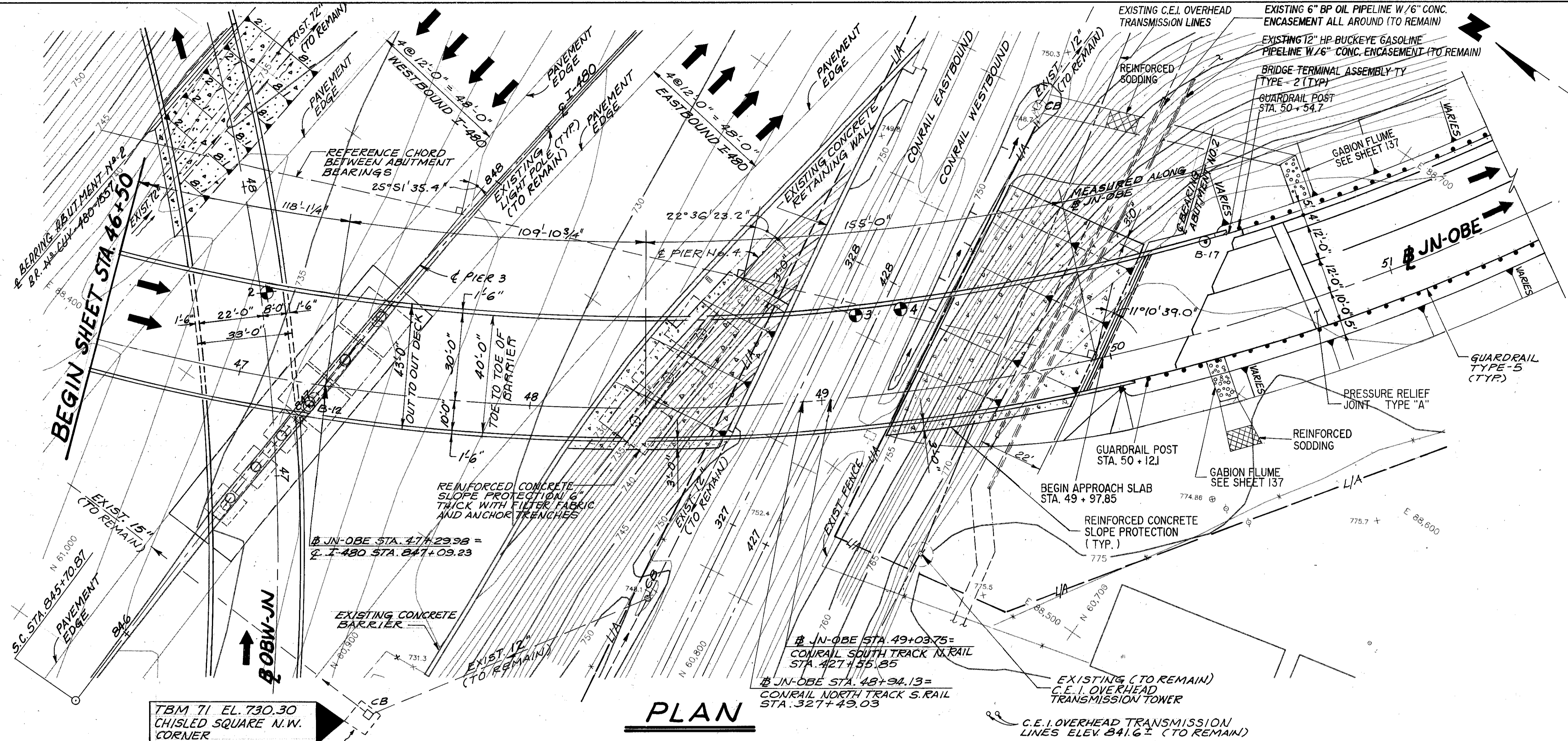
TRAFFIC DATA

AVERAGE DAILY TRAFFIC (2013) = 10,380
AVERAGE DAILY TRUCK TRAFFIC (2013) = 1038

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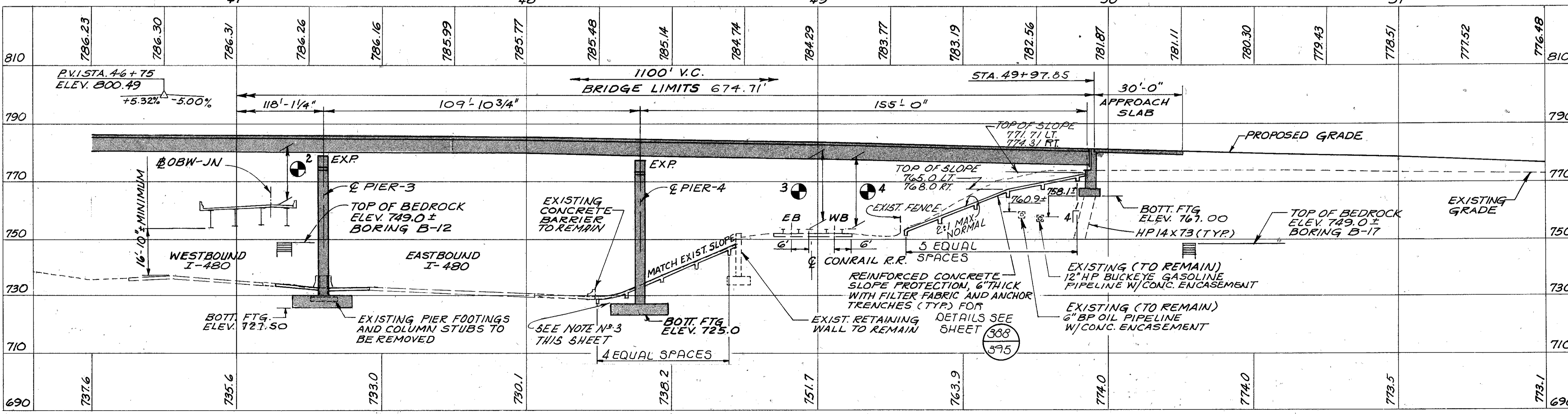
SITE PLAN
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OSW-JN UNDER
LANE JN-OBE
BRIDGE NO. CUY-480-1559
STA. 43+23.14 TO STA. 49+97.85
CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	TJW	LED	7-30-92	



PLAN

- NOTES**
- FOR PROPOSED STRUCTURE BLOCK SEE SHEET 1/21
 - EARTHWORK LIMITS SHOWN ARE APPROXIMATE, ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
 - AT PIER No. 4 SLOPE, REGRADE THE SURFACE TO MAINTAIN MINIMUM OF 1 FOOT COVER OVER THE PIER FOOTING, MATCH EXISTING SLOPE ELSEWHERE. ALL COST TO REGRADE SHALL BE INCLUDED WITH ITEM 503 FOR PAYMENT



PROFILE
ALONG JN-OBE

- POINT OF MINIMUM VERTICAL CLEARANCE REQUIRED 16'-6" ACTUAL 17'-3 3/4"
- POINT OF MINIMUM VERTICAL CLEARANCE REQUIRED 23'-0" ACTUAL 23'-5 3/4"
- POINT OF MINIMUM VERTICAL CLEARANCE REQUIRED 23'-0" ACTUAL 23'-0 1/2"

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SITE PLAN
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN
UNDER
LANE JN-OBE
BRIDGE NO. CUY-480-1559
STA. 49+23.14 TO STA. 49+97.85

CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
TAB	HBM	TJW	LEO	7-30-92	

BRUNING 44-232-67195-01

STRUCTURAL GENERAL NOTES

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

339
395

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:
 AS-1-81 DATED 11-27-81
 SD-1-69 REVISED 6-12-69
 EXJ-4-87 DATED 1-5-89

AND TO SUPPLEMENTAL SPECIFICATION(S)
 910 DATED 6-1-91
 944 DATED 5-13-91

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO 'STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:

DESIGN LOADING:

DESIGN LOADING - HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING
 FUTURE WEARING SURFACE = 30 LBS. PER SQUARE FT.

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
 REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI
 SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
 STRUCTURAL STEEL ASTM A572 - YIELD STRENGTH 50,000 PSI

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL, 2 1/2" CONCRETE COVER AND SEALING OF CONCRETE SURFACES

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES TO BE 1" THICK

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

FOOTINGS:

FOOTINGS SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN, WHICHEVER IS LOWER.

PILE DRIVEN TO BEDROCK

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES WITH A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR REFUSAL SHALL BE CONSIDERED AS OBTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

THE DESIGN LOAD FOR THE ABUTMENT PILES IS 76 TONS PER PILE.
 SEE PILING PLAN ON SHEET 4/21

ITEM 203 EMBANKMENT, AS PER PLAN:

ALL FILL MATERIAL FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT BETWEEN STATIONS 42+00 TO 51+00 SHALL BE 203 GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED A THICKNESS OF MORE THAN SIX (6) INCHES. (SEE ROADWAY PLANS FOR QUANTITIES)

ITEM 507 HP 14 X 73 STEEL PILES, AS PER PLAN:

PILE HAMMER:
 THE PILE HAMMER USED TO INSTALL THE HP 14X73 PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 18,000 FOOT-POUNDS. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.5 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE WORK. REFER TO 'ODOT'S MANUAL OF PROCEDURES FOR STRUCTURES' TO OBTAIN THE STATE'S ENERGY RATING.

ITEM 507, STEEL POINTS, AS PER PLAN:

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED STEEL 'H' PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BLVD., CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 301 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, INC., P.O. BOX 688, FRANKLIN LAKES, NEW JERSEY 07417; VERSA STEEL INC., 3601 N.W. YEON AVE. P.O. BOX 10559, PORTLAND, OREGON 97210 OR BY A MANUFACTURER THAT CAN FURNISH A STEEL POINT THAT IS ACCEPTABLE TO THE DIRECTOR.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EDGE OF DECK SLAB AS SHOWN ON THE TRANSVERSE SECTION ON SHEET 15/21, TO THE ABUTMENTS AS SHOWN ON SHEET 6/21, AND ALL EXPOSED SURFACES OF THE PIER. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOUNDATION BEARING PRESSURE:

PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 3.2 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

MECHANICAL CONNECTORS:

AN APPROVED TYPE MECHANICAL CONNECTOR FOR REINFORCING BARS SHALL BE PROVIDED WHERE REQUIRED. INSTALLATION OF THE CONNECTORS SHALL CONFORM WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES. CONNECTORS SHALL BE EPOXY COATED AND THE COATING SHALL CONFORM TO THE SAME SPECIFICATIONS AS THE REINFORCING STEEL. COATINGS WHICH HAVE BEEN DAMAGED SHALL BE REPAIRED ACCORDING TO 709.00 OF THE CMS. CONNECTORS SHALL CONFORM WITH AND BE INCLUDED FOR PAYMENT WITH ITEM 509.

ITEM SPECIAL, PAINTING OF NEW STEEL, SYSTEM IZEU:

THE URETHANE FINISH COAT SHALL BE GRAY, FEDERAL STANDARD NO. FS-595A-16440

ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPERSTRUCTURE	GENERAL	CALC. DATE		
									T.J.W.	1/94	
										CHKD. DATE	C.T.
											3/94
										AS BUILT	
202	11000	LUMP	LUMP	STRUCTURE REMOVED (EXISTING PIER FOOTINGS)			LUMP				
503	21102	1,527	CU.YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE	653	874					
505	11100	LUMP	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION			LUMP				
507	15501	1,200	LTN.FT.	STEEL PILES, HP 14 X 73, AS PER PLAN	1,200						
507	93301	60	EACH	STEEL POINT, AS PER PLAN	60						
509	15840	468,699	POUND	EPOXY COATED REINFORCING STEEL, GRADE 60	37,320	170,973	260,406				
SPEC.	51148000	903	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (DECK) *			903				
SPEC.	51148020	180	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (PARAPET) *			180				
SPEC.	51148040	1,186	CU.YD.	HIGH PERFORMANCE CONCRETE (SUBSTRUCTURE) *	387	799					
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE (TRIAL MIX)	LUMP	LUMP	LUMP				
SPEC.	51267504	3,122	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *	253	934	1,935				
513	12400	1,603,000	POUND	STRUCTURAL STEEL, A572-50 AISC CATEGORY III			1,603,000				
513	20000	3,399	EACH	WELDED STUD SHEAR CONNECTOR			3,399				
514	00610	1,603,000	POUND	PAINTING OF NEW STEEL, SYSTEM IZEU *			1,603,000				
516	11210	106	LTN.FT.	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL *			106				
516	45000	30	EACH	STEEL PNT BEARING	10	20					
518	21200	91	CU.YD.	PORDUS BACKFILL WITH FILTER FABRIC	91						
518	40001	145	LTN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, 707.17, AS PER PLAN	145						
518	40011	72	LTN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS 707.17, AS PER PLAN	72						
601	21001	1,474	SQ.YD.	CONCRETE SLOPE PROTECTION, AS PER PLAN	1,141	333					

* SEE PROPOSAL NOTE

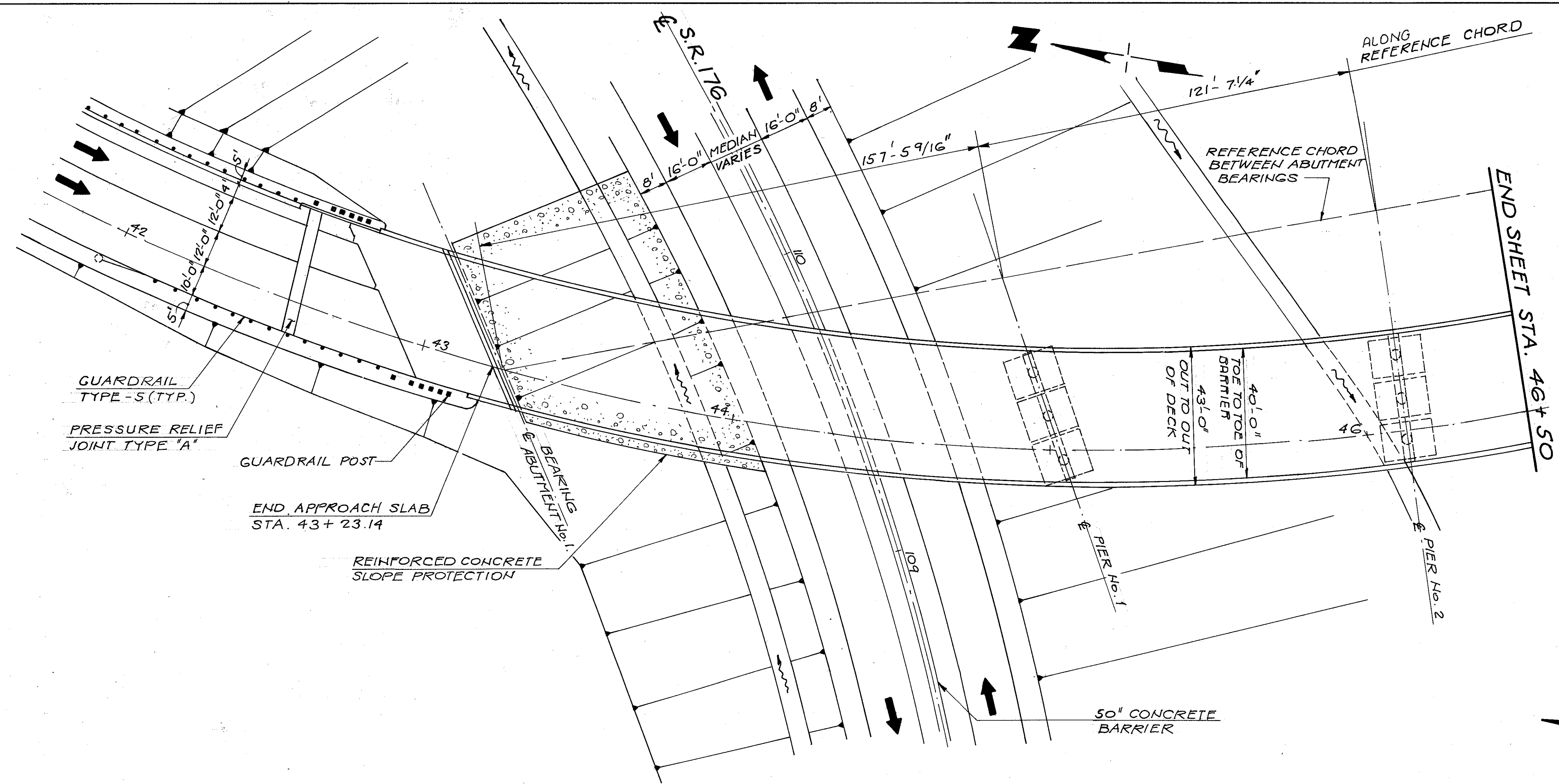
3/21

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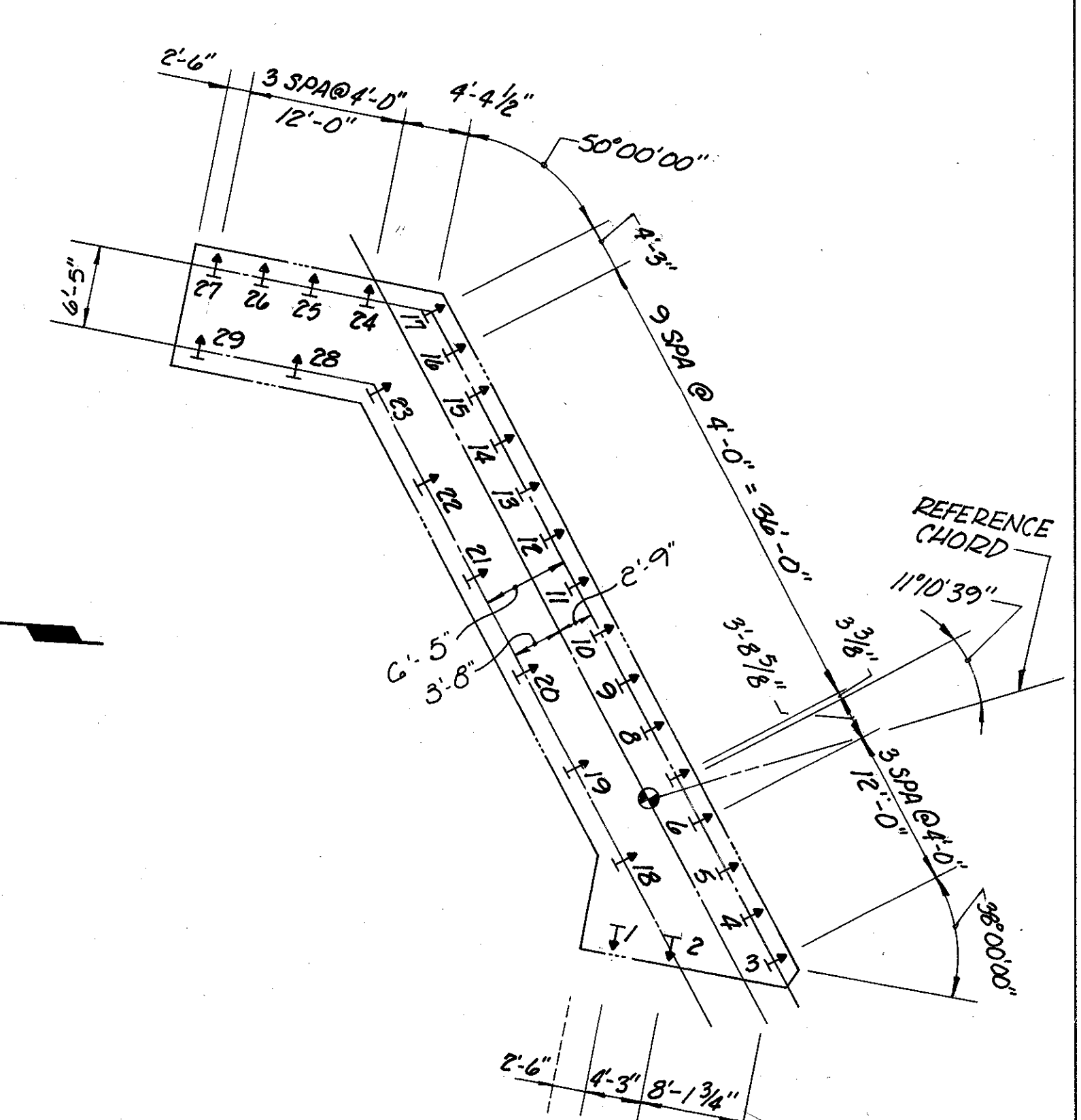
STRUCTURAL GENERAL NOTES
 AND ESTIMATED QUANTITIES
 JENNINGS FREEWAY
 I-480, CONRAIL, STATE ROUTE 176
 & LANE OBW-JN UNDER
 LANE JN-OBE
 BR. NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.J.W.	MM	T.A.B.	A.J.M.	1/94	

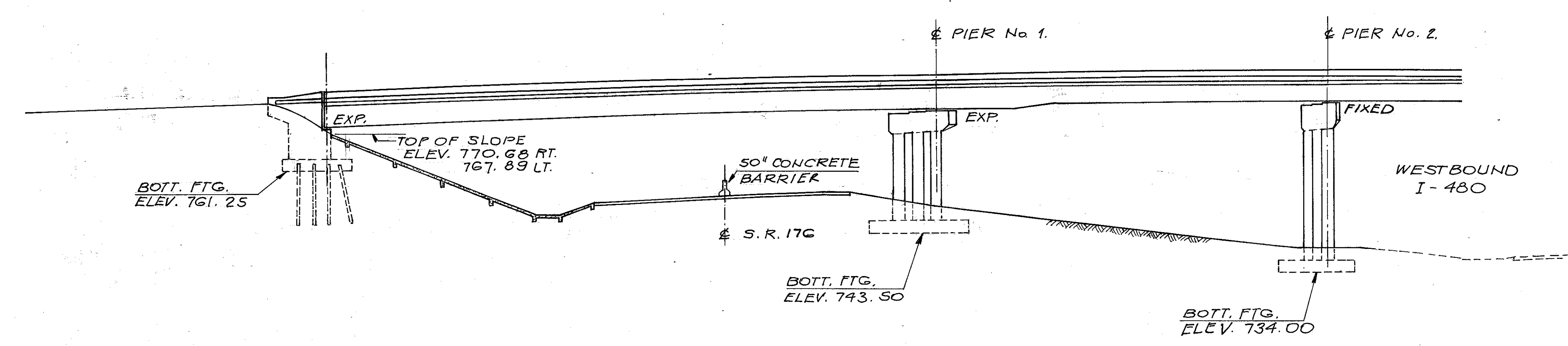
CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUY-176-10.14	FHWA REGION 5
CHKD.	JENNINGS FREEWAY	340
DATE		595



PLAN

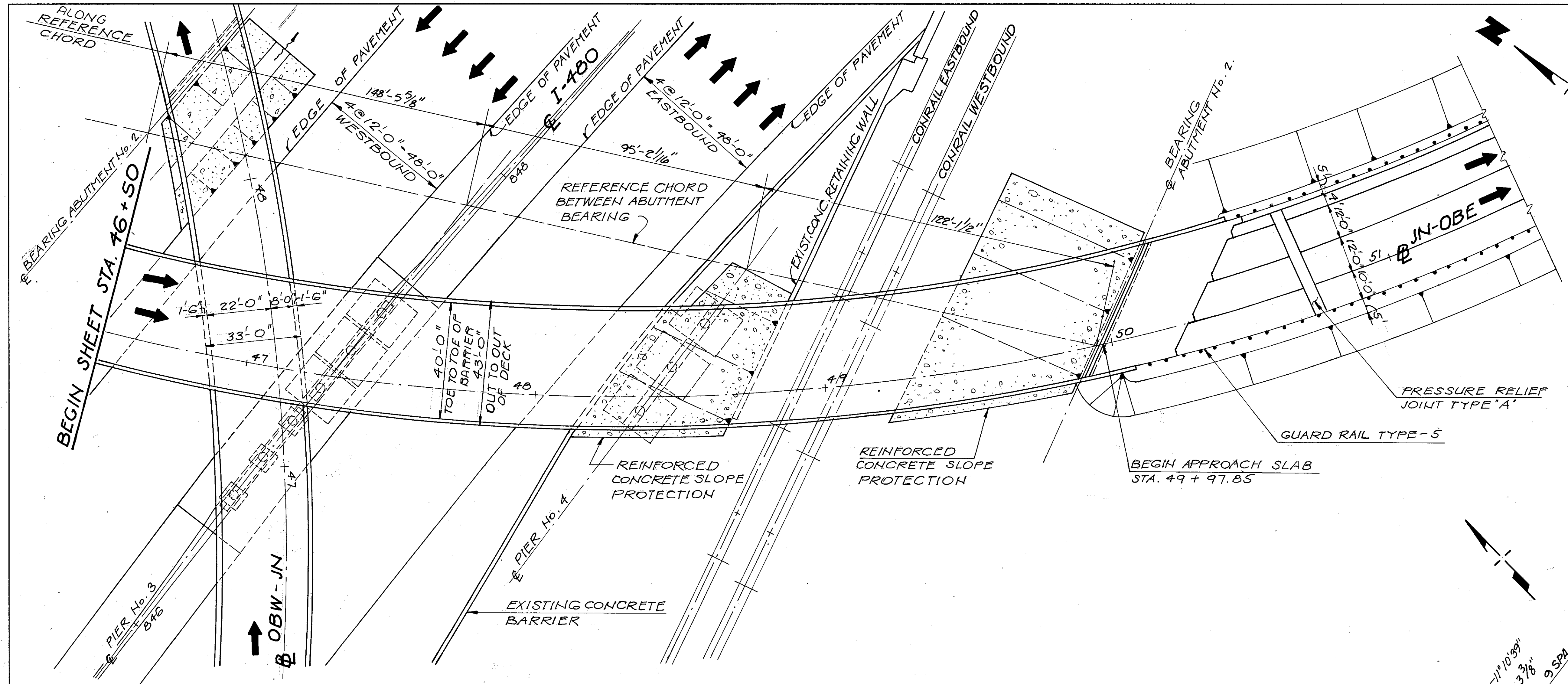


**ABUTMENT NO. 1
PILE LOCATION PLAN**
→ - INDICATES 4:1 BATTER



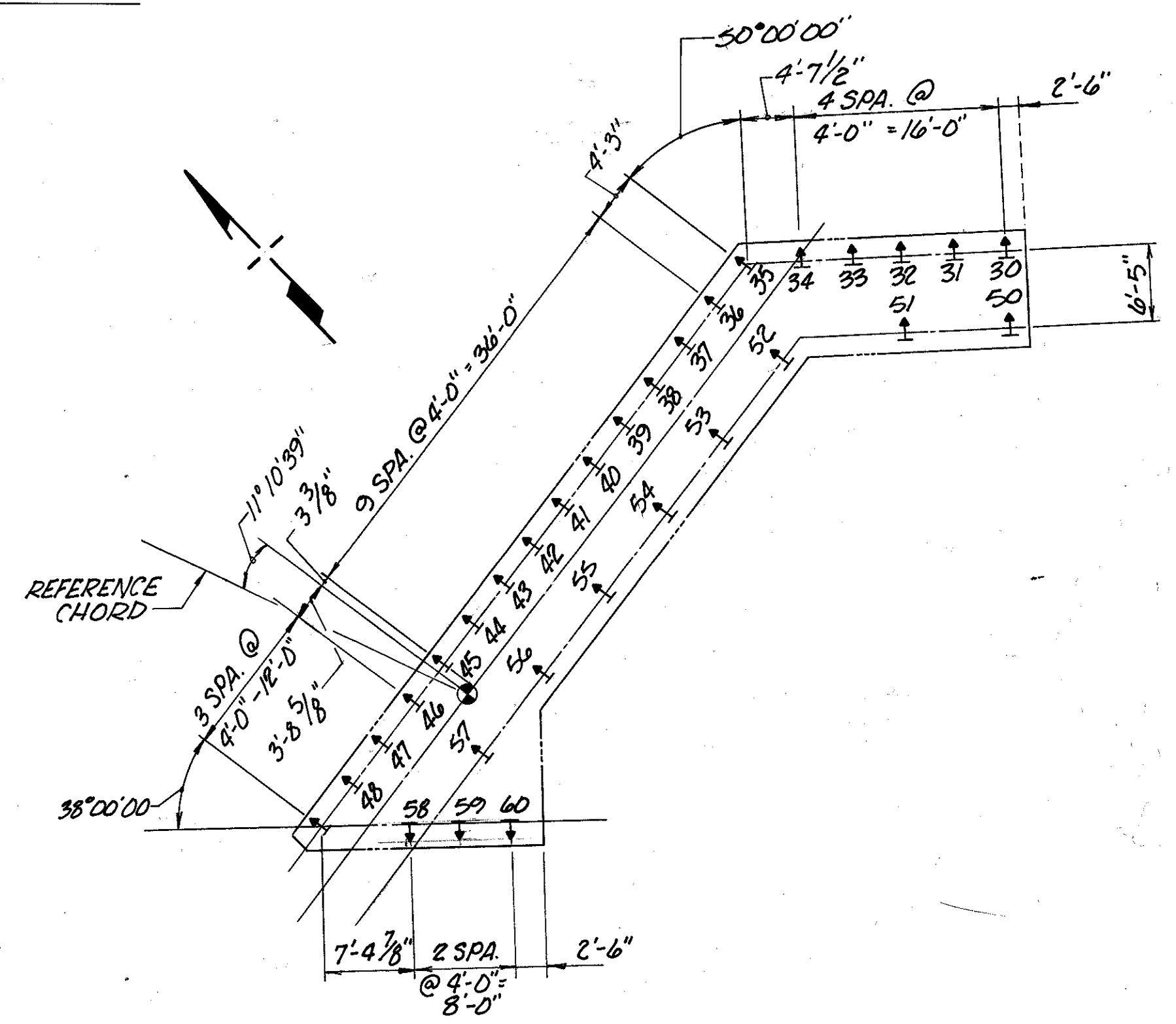
ELEVATION

adache - ciuni - lynn associates					
CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
GENERAL PLAN & ELEVATION					
JENNINGS FREEWAY					
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN					
UNDER					
LANE JN-OBE					
BRIDGE NO. CUY-480-1559					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	T.J.W.	A.J.M.	1/94	

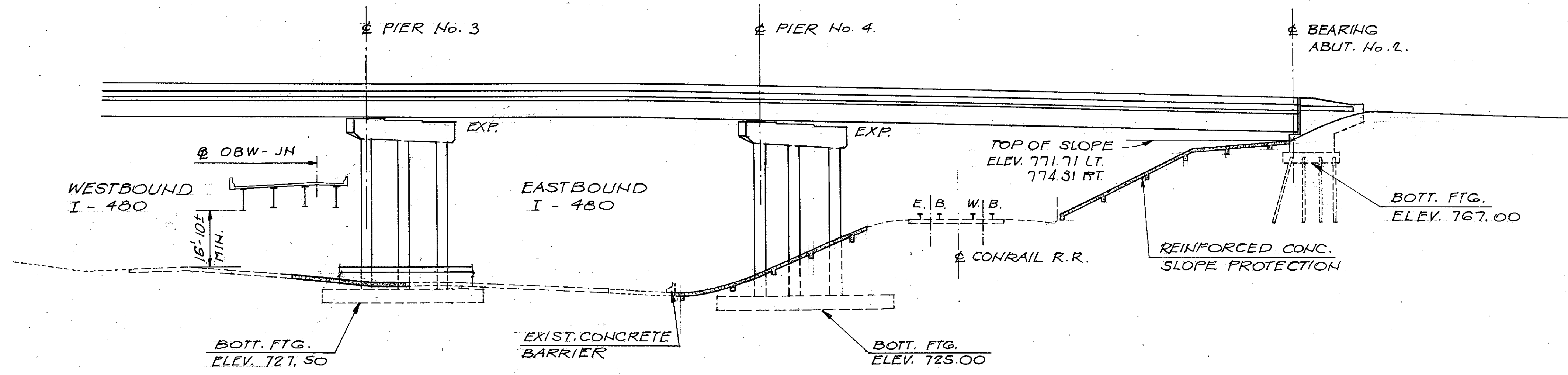


PLAN

- NOTES**
- FOR SLOPE PROTECTION DETAILS SEE MISCELLANEOUS DETAILS SHIT. 3/21
 - FOR STRUCTURAL GENERAL NOTES SEE SHIT. 3/21
 - FOR PARAPET PANEL SPACING SEE SHIT. 16/21



**ABUTMENT NO. 2
PILE LOCATION PLAN**
→ INDICATES 4:1 BATTER



ELEVATION

5/21

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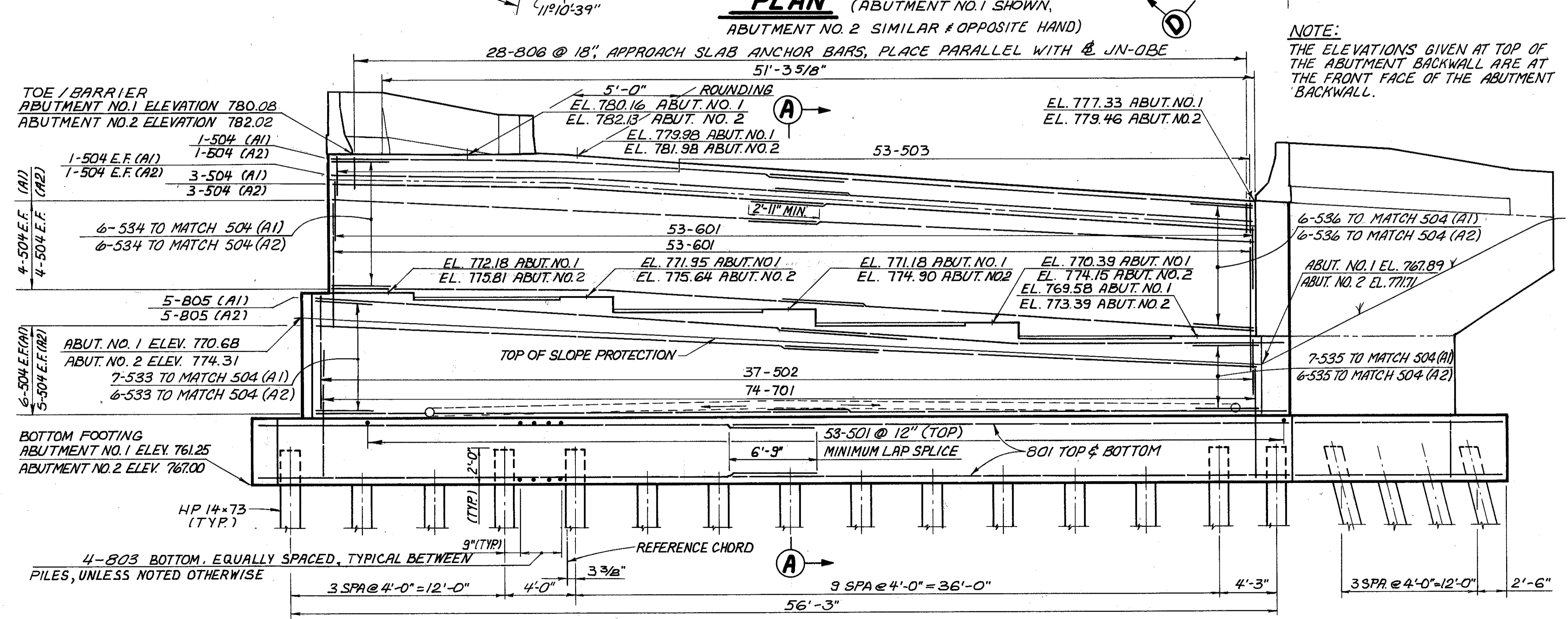
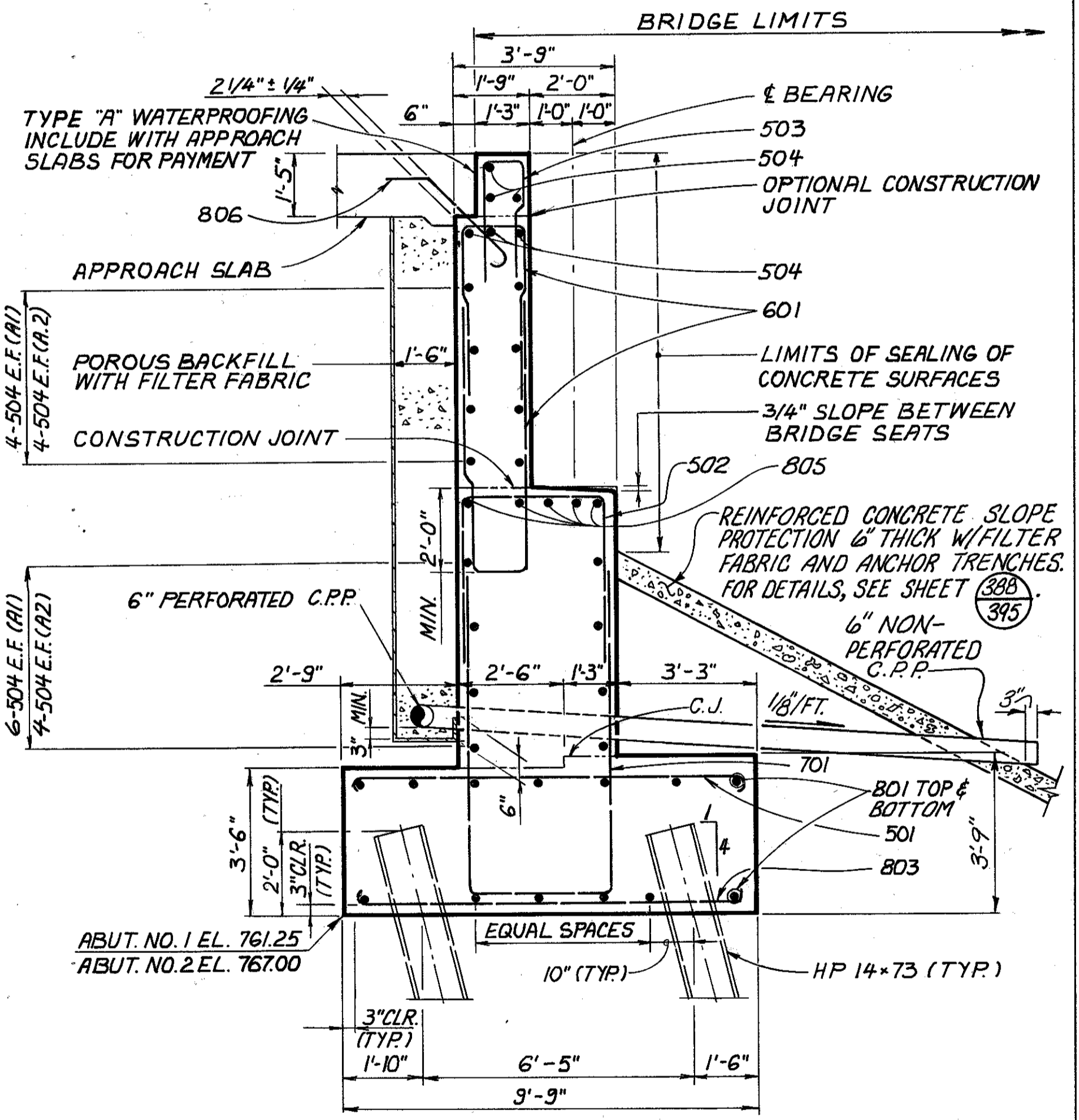
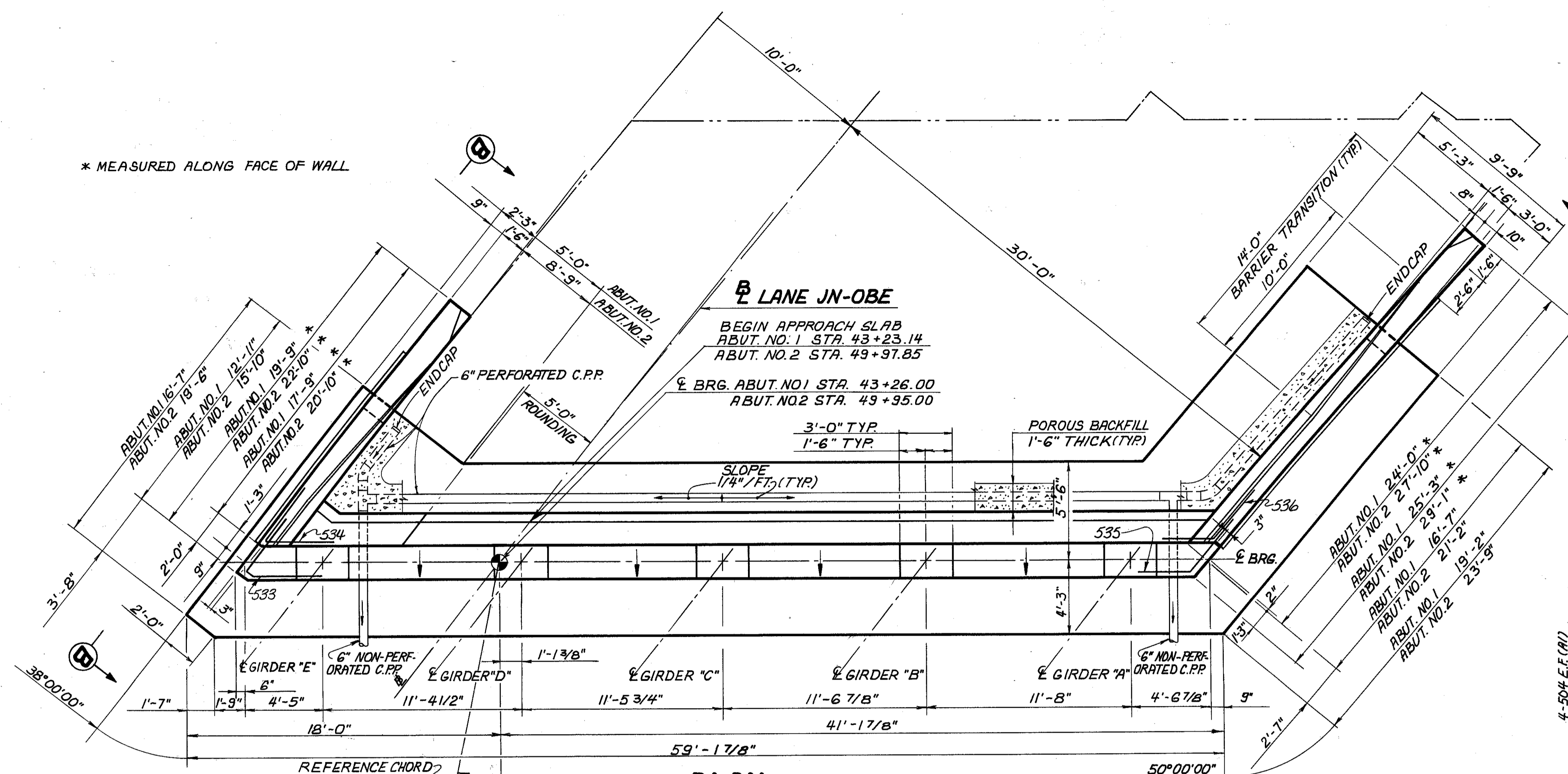
GENERAL PLAN & ELEVATION
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN
UNDER
LANE JN-OBE
BRIDGE NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E. K.	T.J.W.	A.J.M.	1/94	

BRUNING 44-232 07195

NOTES:

1. THE PREFIX 1A AND 2A SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR ABUTMENT NO.1 AND ABUTMENT NO.2 RESPECTIVELY.
2. BRIDGE SEAT REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.
3. FOR BEARING ANCHOR BOLT LOCATIONS SEE BEARING DETAILS ON SHEET 12 | 21
4. CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO.10 ON SHEET 12 | 21
5. BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
6. FOR ADDITIONAL NOTES SEE SHEET 7 | 21



ABBREVIATIONS:

- N.F. - NEAR FACE
- F.F. - FAR FACE
- E.F. - EACH FACE
- C.P.P. - CORRUGATED PLASTIC PIPE
- PE.J.F. - PREFORMED EXPANSION JOINT FILLER
- (A1) - ABUTMENT NO. 1
- (A2) - ABUTMENT NO. 2
- C.J. - CONSTRUCTION JOINT

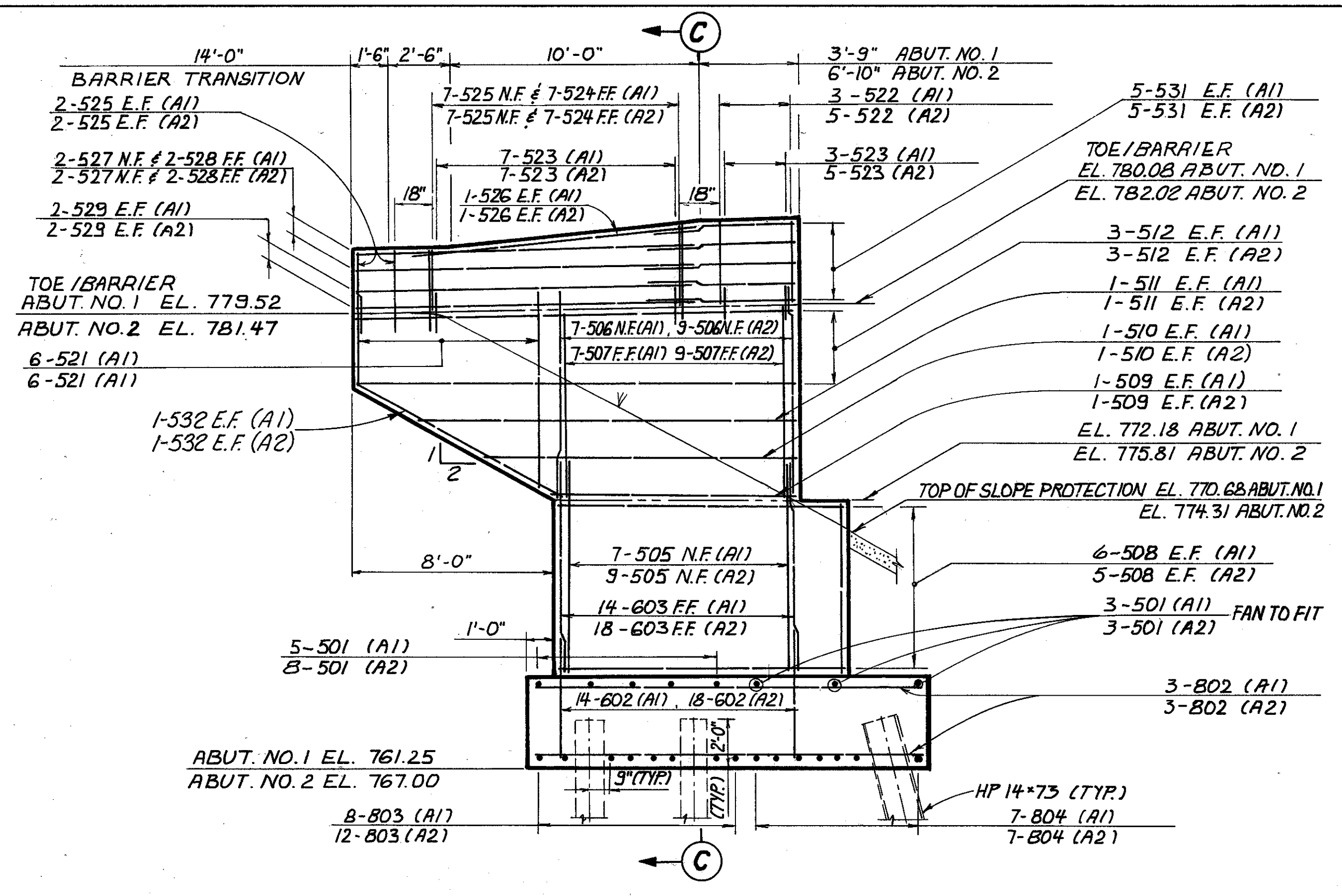
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**ABUTMENT NO.1 & 2
 PLAN & ELEVATION**

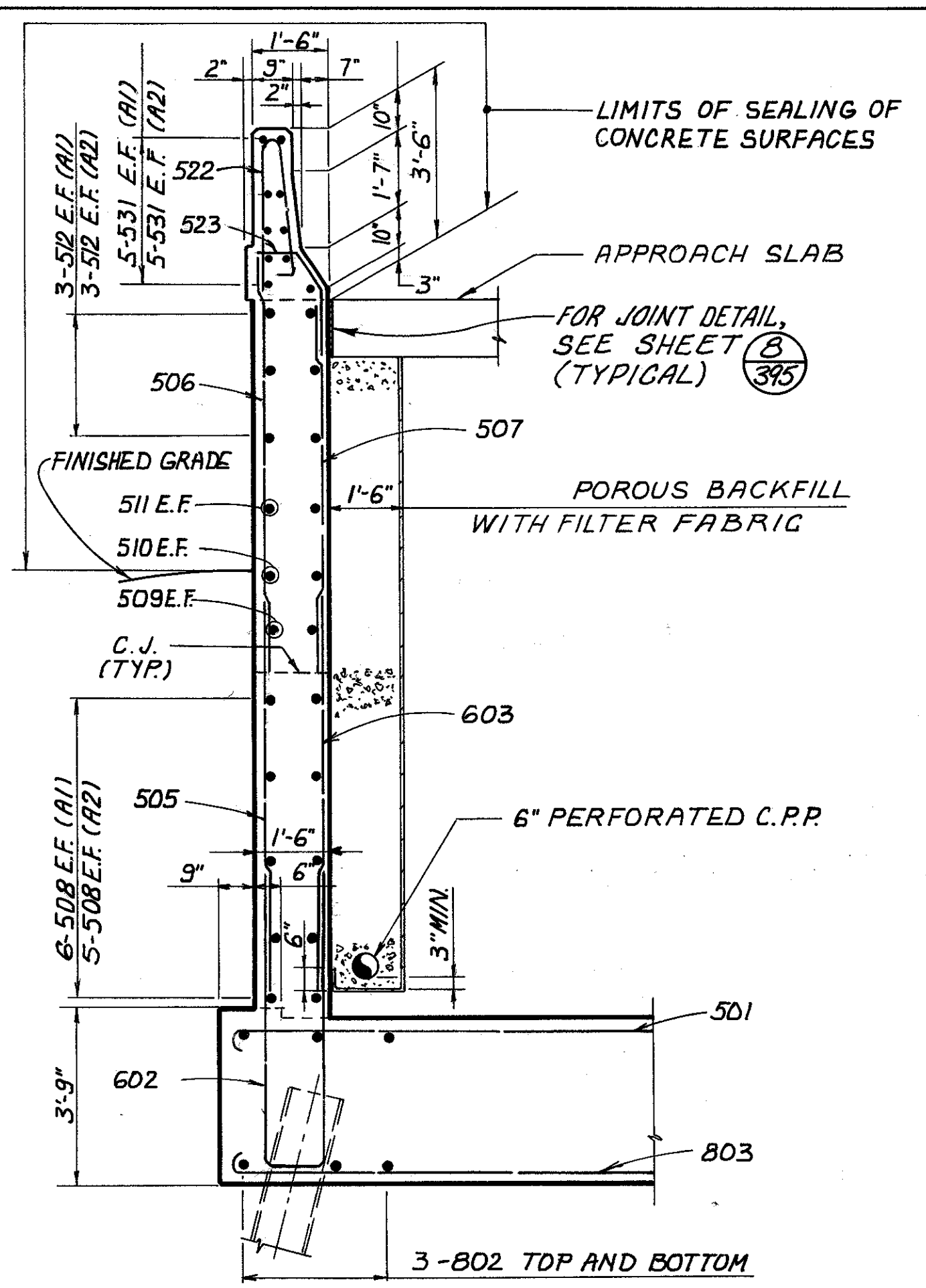
JENNINGS FREEWAY
 I-480 CONRAIL, STATE ROUTE 176
 & LANE OBW-JN UNDER LANE JN-OBE
 BRIDGE NO.: CUY-480-1559

DESIGNED	D.P.	DRAWN	D.P.	CHECKED	T.A.B.	REVIEWED	A.J.M.	DATE	1/194	REVISED	
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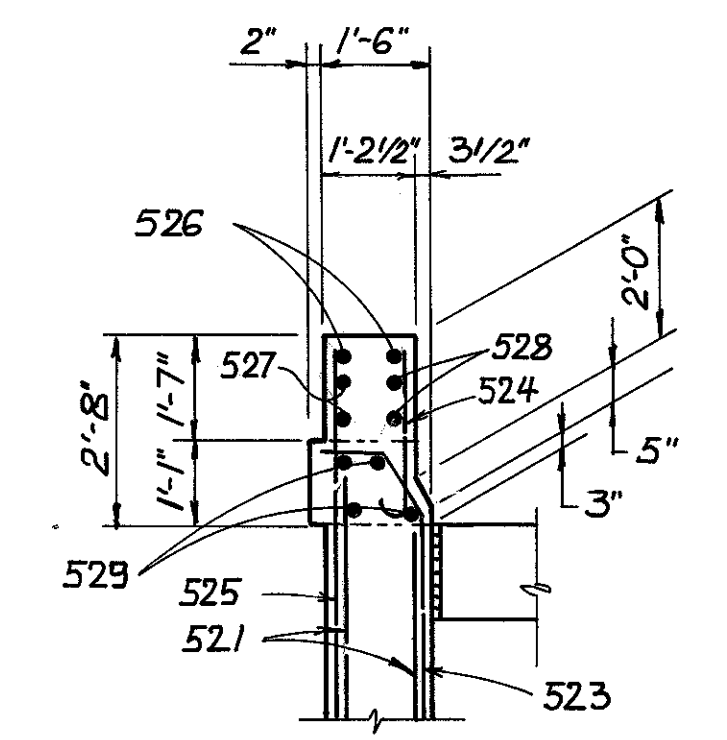
NOTES:
 1) THE FOLLOWING MINIMUM BAR SPLICE LAP LENGTHS SHALL BE PROVIDED UNLESS OTHERWISE:
 NO. 5 BARS = 2'-0"
 NO. 6 BARS = 3'-1"
 2) FIELD BEND HORIZONTAL BARS IN THE WINGWALLS TO FIT CURVATURE OF ROADWAY; BENDING SHALL BE INCLUDED WITH ITEM 509 FOR PAYMENT. EPOXY COATED BARS DAMAGED BY FIELD BENDING SHALL BE REPAIRED AS PER APPROVED MANUFACTURER'S RECOMMENDATION.



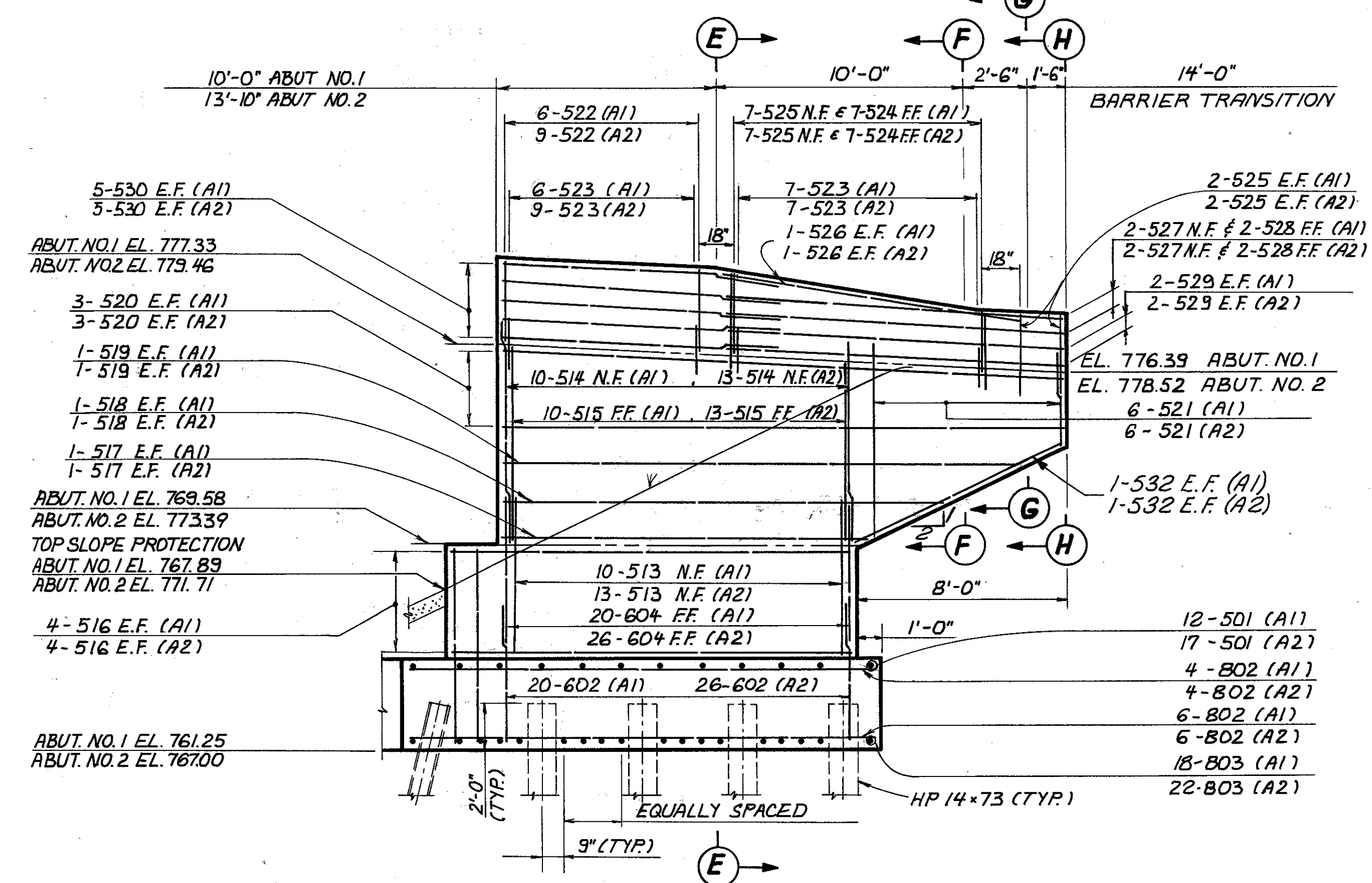
ELEVATION B-B
 (ABUT. NO. 1 SHOWN, ABUT. NO. 2 SIMILAR & OPPOSITE HAND)



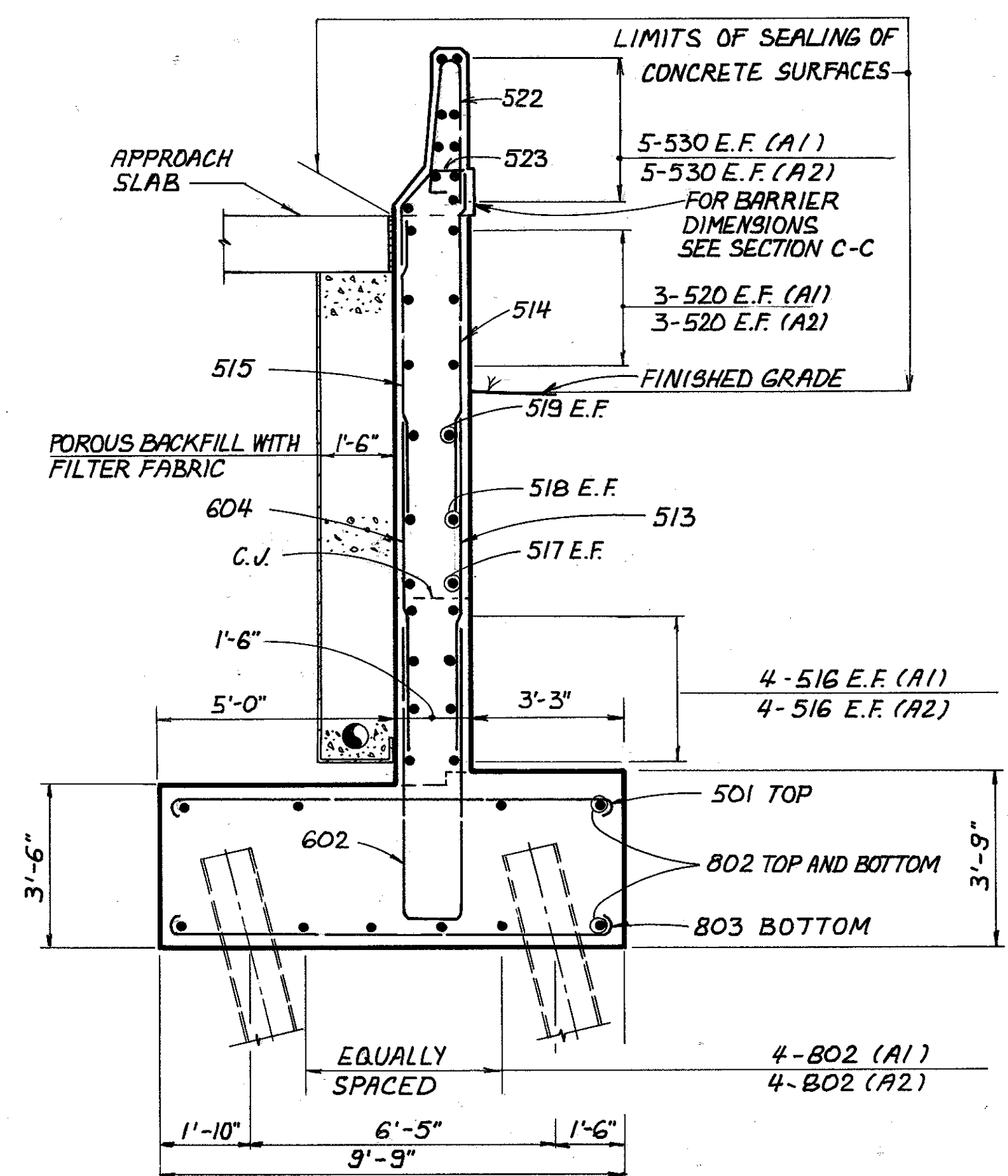
SECTION C-C



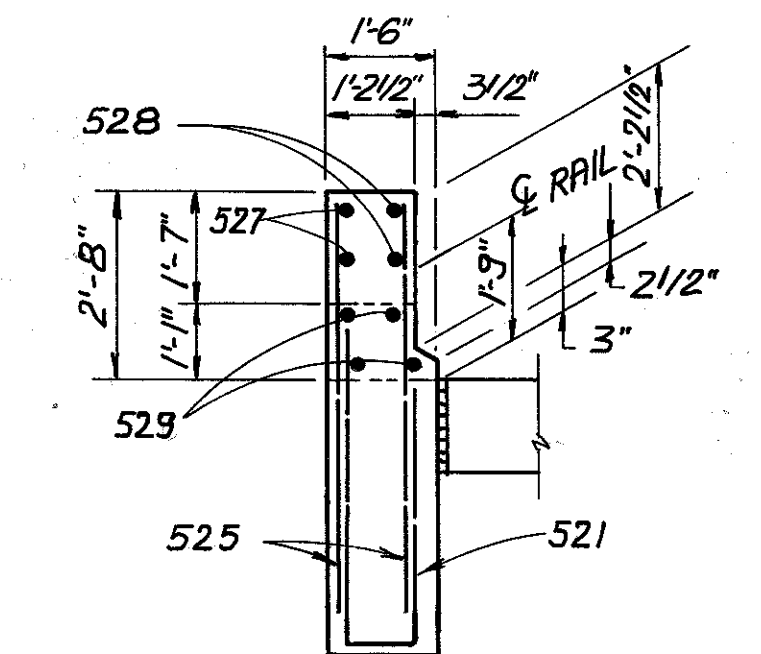
SECTION F-F



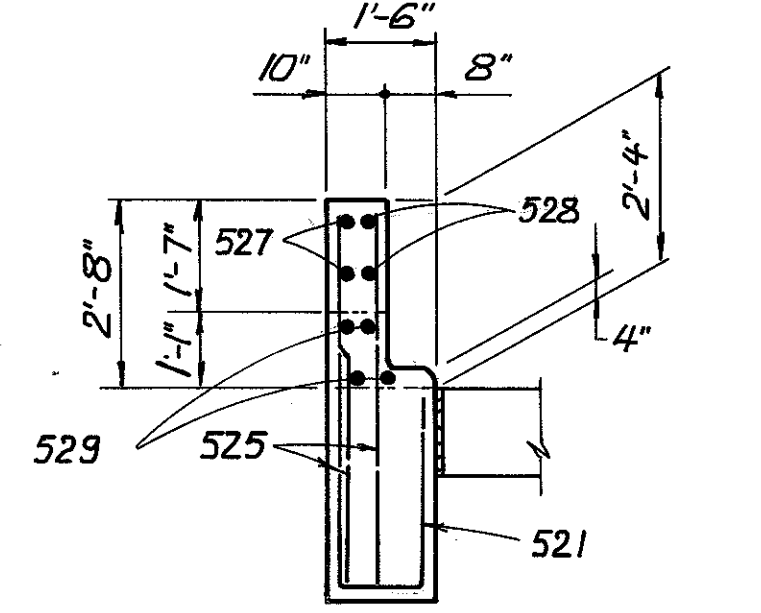
ELEVATION D-D
 (ABUT. NO. 1 SHOWN, ABUT. NO. 2 SIMILAR & OPPOSITE HAND)



SECTION E-E



SECTION G-G

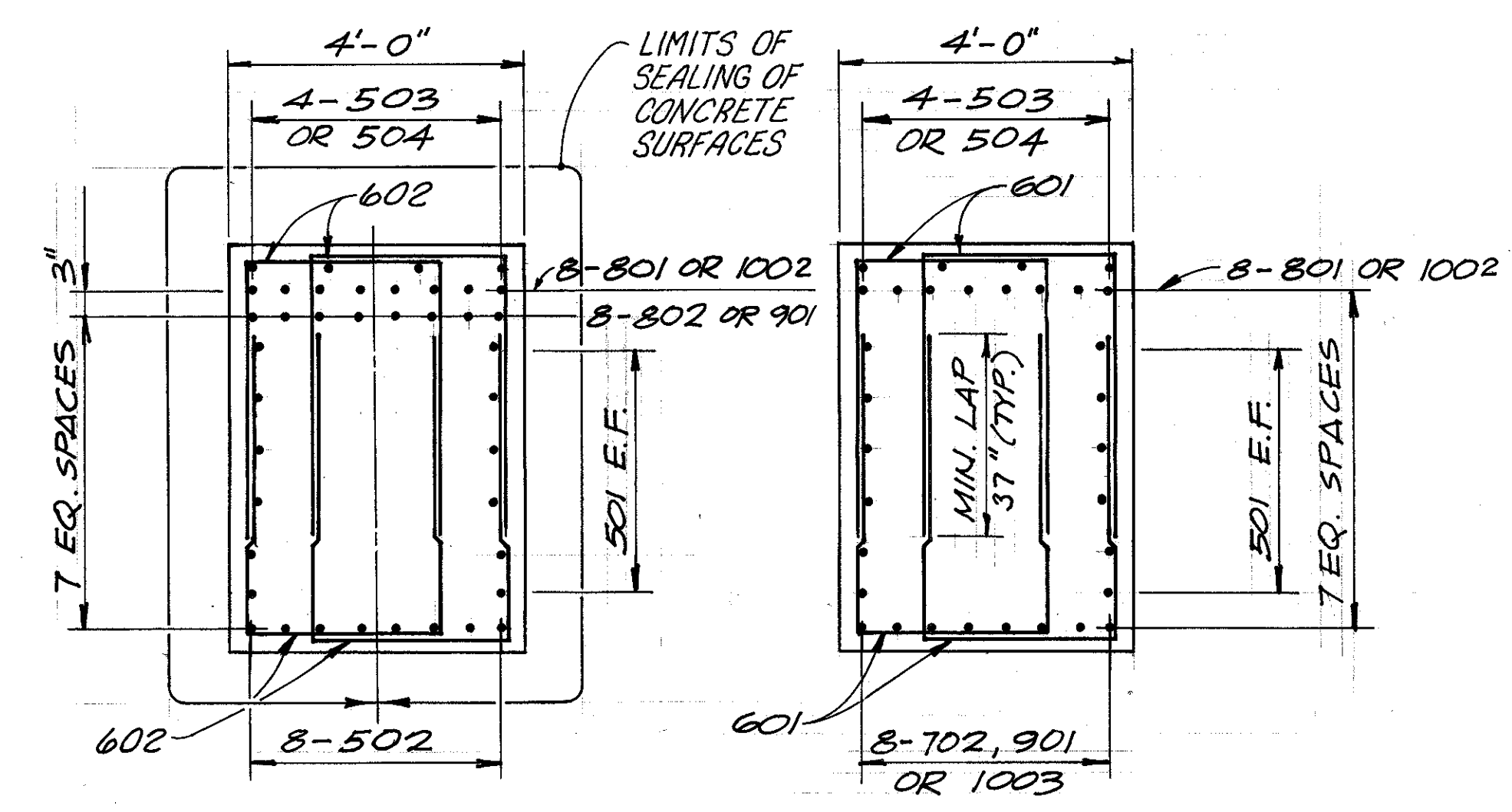
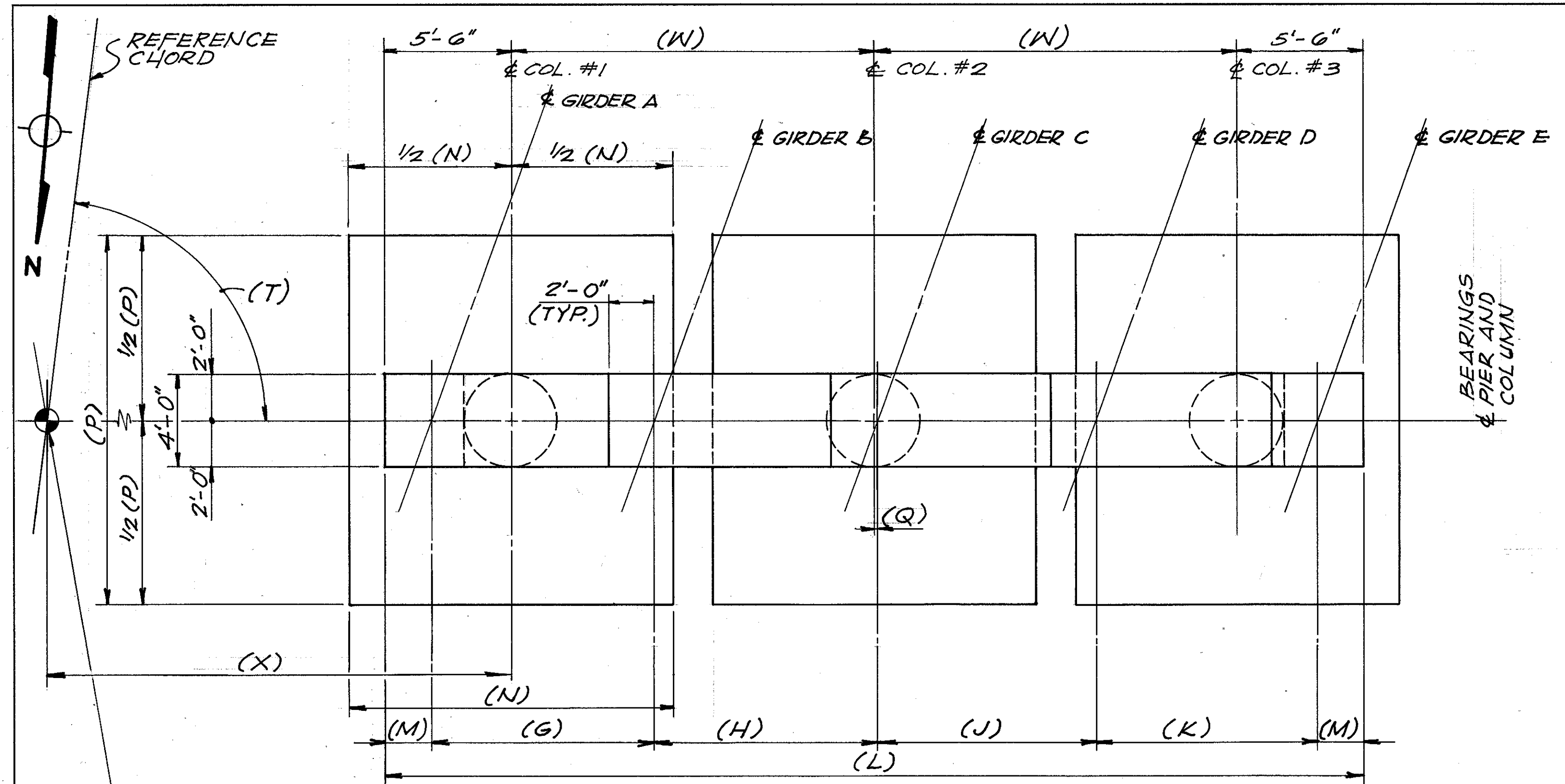


SECTION H-H

adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131				
ABUTMENT DETAILS				
JENNINGS FREEWAY I-480 CONRAIL STATE ROUTE 176 # LANE OBW-JN UNDER LANE JN-OBE BRIDGE NO.: CUY-480-1559				
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE
D.P.	D.P.	T.A.B.	A.J.M.	1/94

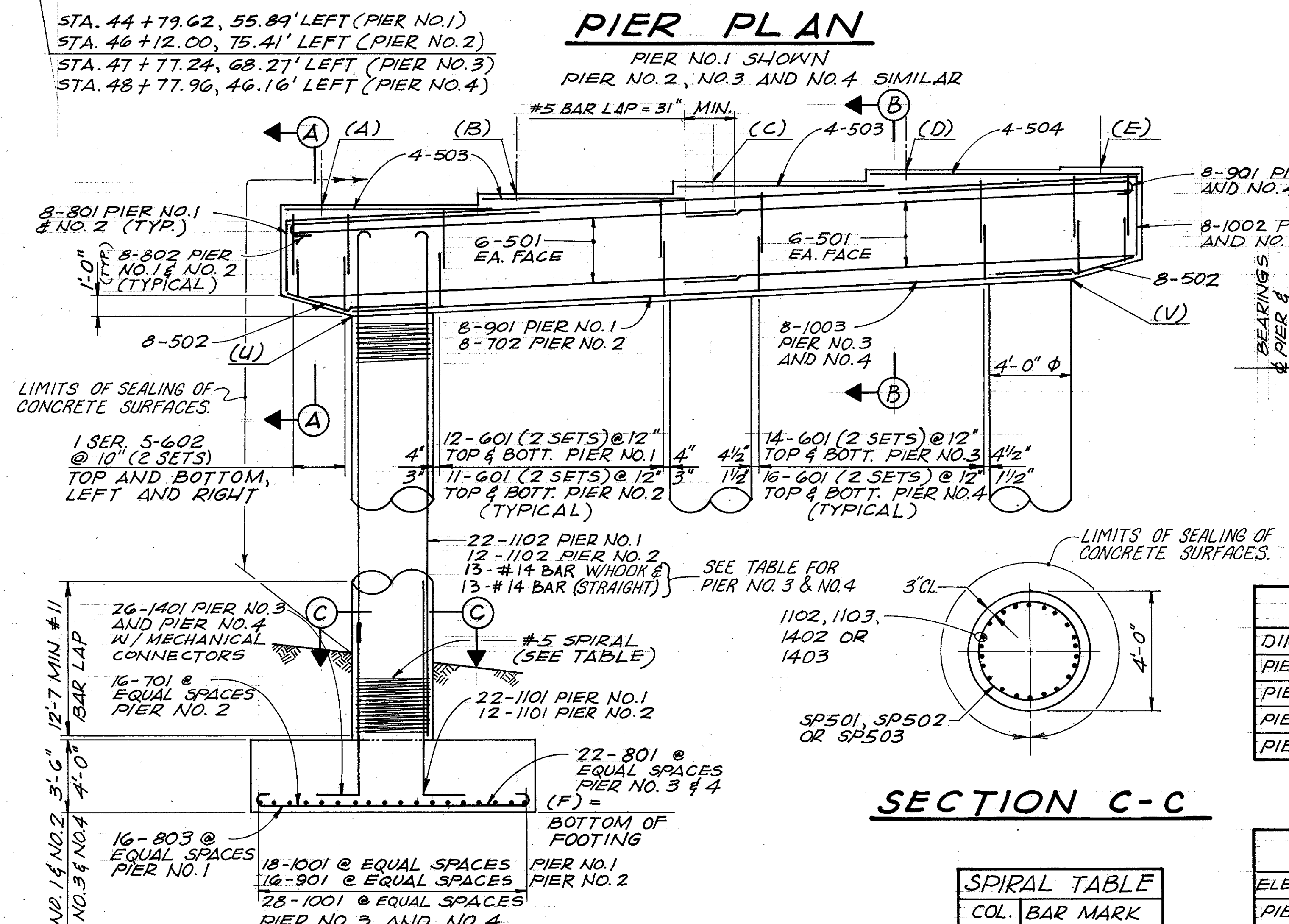
NOTES:

1. THE PREFIX "1P", "2P", "3P" AND "4P" SHALL BE ADDED TO ALL BAR MARKS IN PIER NO.1 THROUGH NO.4 RESPECTIVELY.
2. REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BOLT HOLES.
3. AT THE OPTION OF THE CONTRACTOR, BEARING ANCHORS (OR FORMED HOLES), LOCATED AND SUPPORTED BY 1/4" THK. MIN. STEEL TEMPLATES, MAY BE CAST IN PLACE.
4. A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE PIER.
5. THE CONTRACTOR SHALL VERIFY ALL BEAM SEAT ELEVATIONS AS PER THE HEIGHT OF ACTUAL BEARING USED. SEE NOTE NO. 10 ON SHEET 12/21
6. FOR ANCHOR BOLT LOCATIONS, SEE SHEET 12/21



COLUMN REINFORCEMENT TABLE
 (FOR PIER NO.3 & NO.4.)

COL.	BAR MARK	
	HOOK BAR	STRAIGHT BAR
1.	1402	1403
2.	1404	1405
3.	1406	1407



SPIRAL TABLE

COL.	BAR MARK
1.	SP501
2.	SP502
3.	SP503

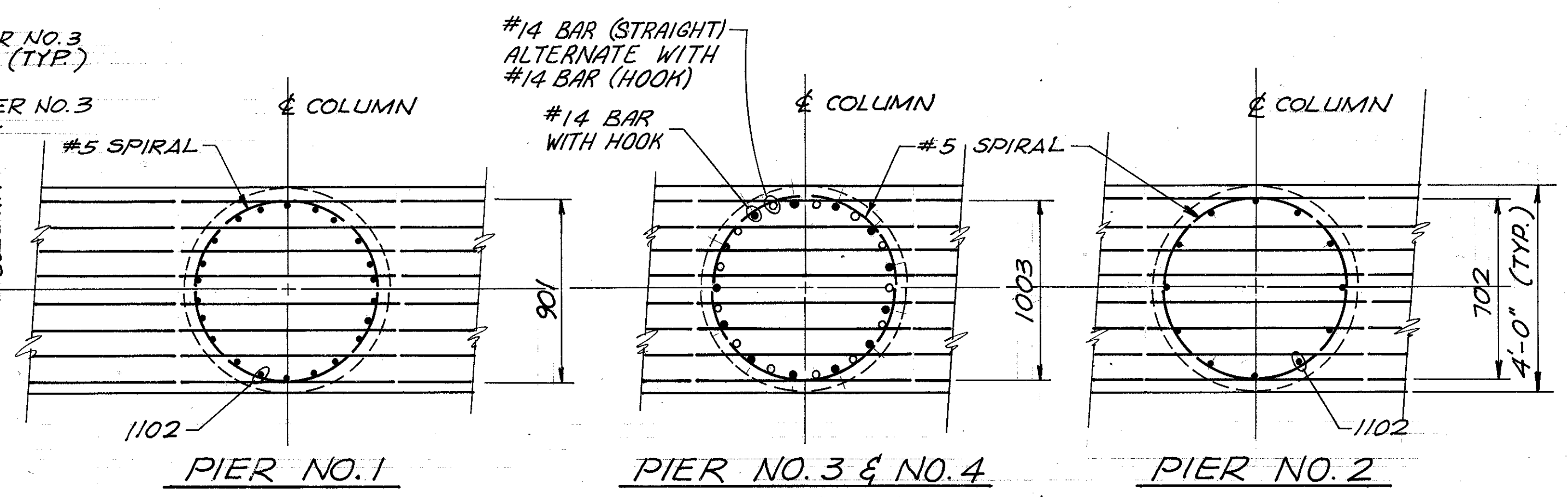


TABLE OF DIMENSIONS

DIMENSION	G	H	J	K	L	M	N	P	Q	R	S	T	W	X
PIER NO.1	9'-7 1/16"	9'-7 1/4"	9'-7 1/16"	9'-6 7/8"	42'-4"	1'-11 1/16"	14'-0"	16'-0"	0'-0 3/8"			82°43'25.7"	15'-8"	33'-5 1/2"
PIER NO.2	9'-0"	9'-0"	9'-0"	9'-0"	40'-0"	2'-0"	12'-0"	16'-0"	0'-0"			93°53'20.6"	14'-6"	50'-10 7/8"
PIER NO.3	10'-8 1/4"	10'-7 9/16"	10'-6 1/16"	10'-6 3/8"	46'-6"	2'-0 1/16"	16'-0"	20'-0"	0'-1 1/4"			115°51'35.4"	17'-9"	52'-0 1/16"
PIER NO.4	11'-6"	11'-4 1/8"	11'-3 3/8"	11'-2 7/8"	49'-6"	2'-0 3/16"	16'-0"	20'-0"	0'-2 1/16"			112°36'23.3"	19'-3"	26'-1 7/8"

TABLE OF ELEVATIONS

ELEVATION	A	B	C	D	E	F	U	V
PIER NO.1	774.69	775.29	775.88	776.47	776.51	743.50		768.81 771.01
PIER NO.2	778.19	778.72	779.25	779.78	779.76	734.00		772.38 774.26
PIER NO.3	778.28	778.85	779.40	779.95	779.95	727.50		772.41 774.45
PIER NO.4	776.90	777.55	778.19	778.82	778.89	725.00		770.94 773.39

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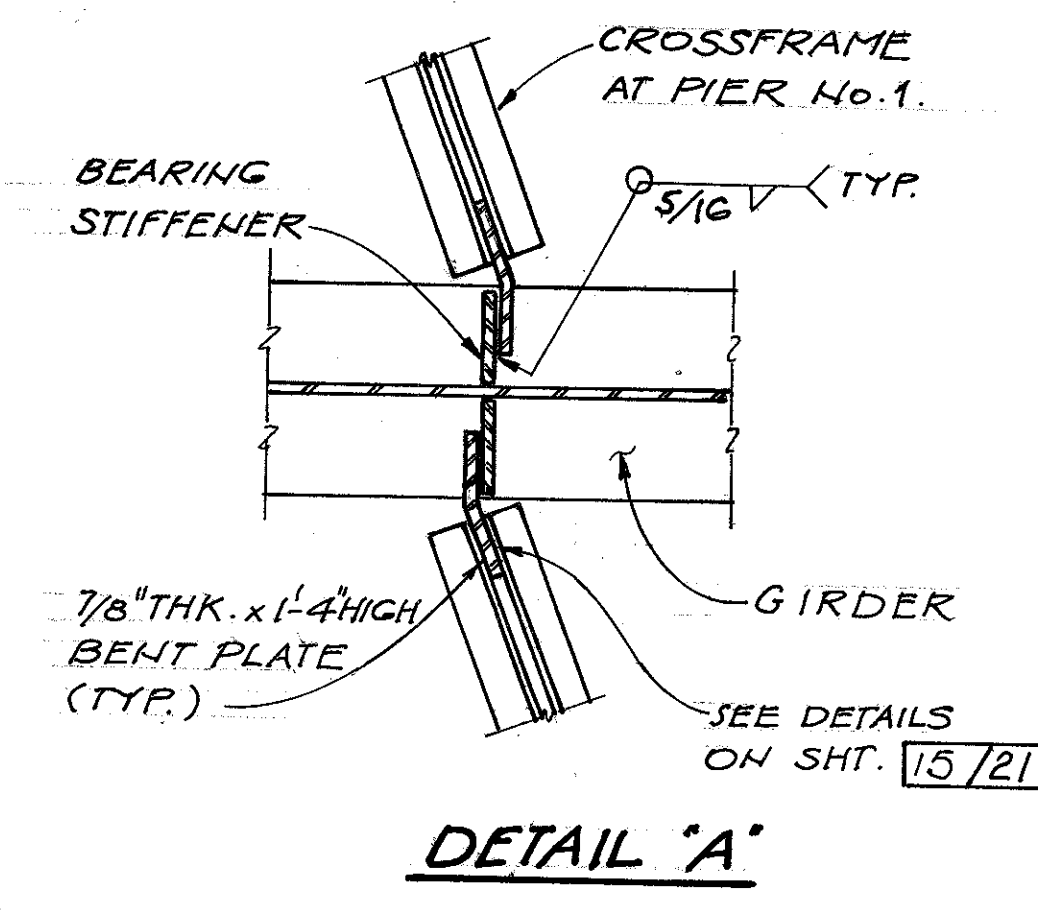
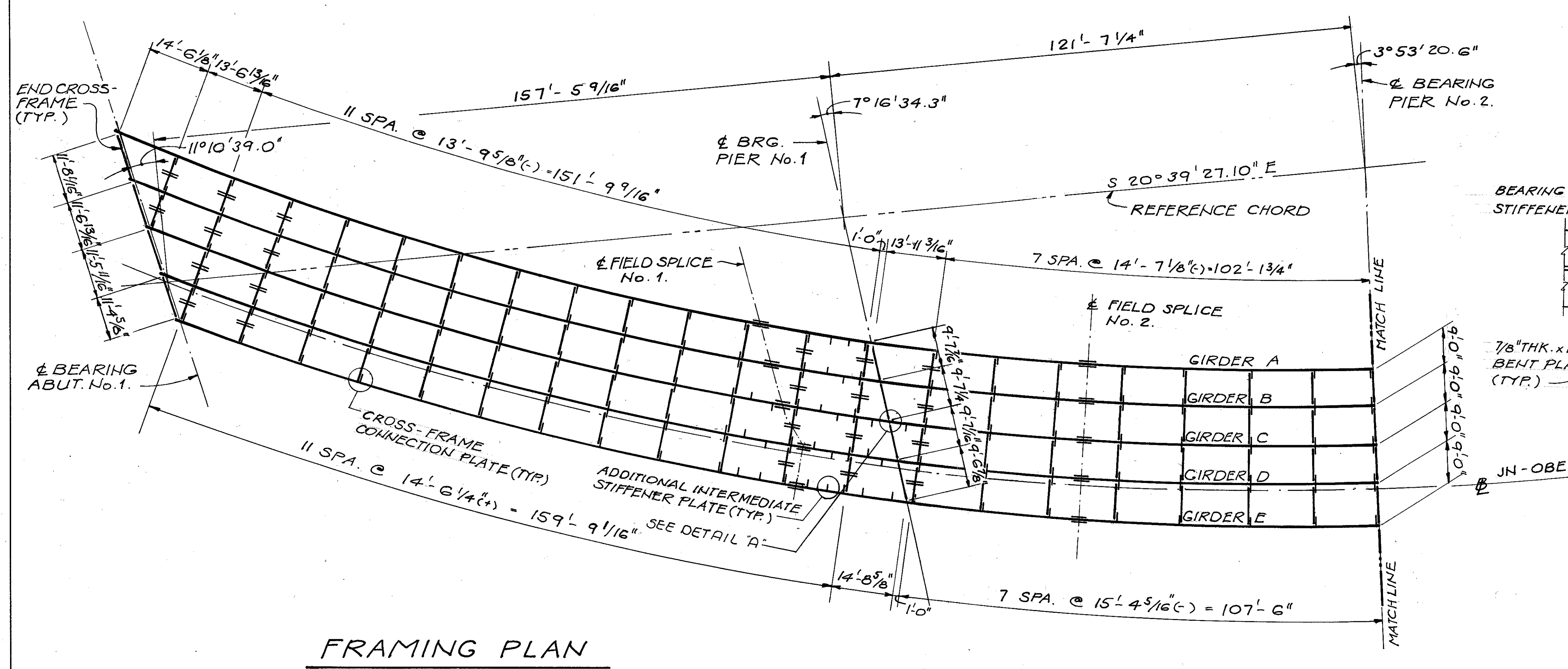
PIER PLAN
 PIERS NO.1 THROUGH NO.4
 JENNINGS FREEWAY
 I-480, CONRAIL, STATE ROUTE 176
 & LANE OBW - JN UNDER
 LANE JN - OBE

BRIDGE NO. CUY-480-1559

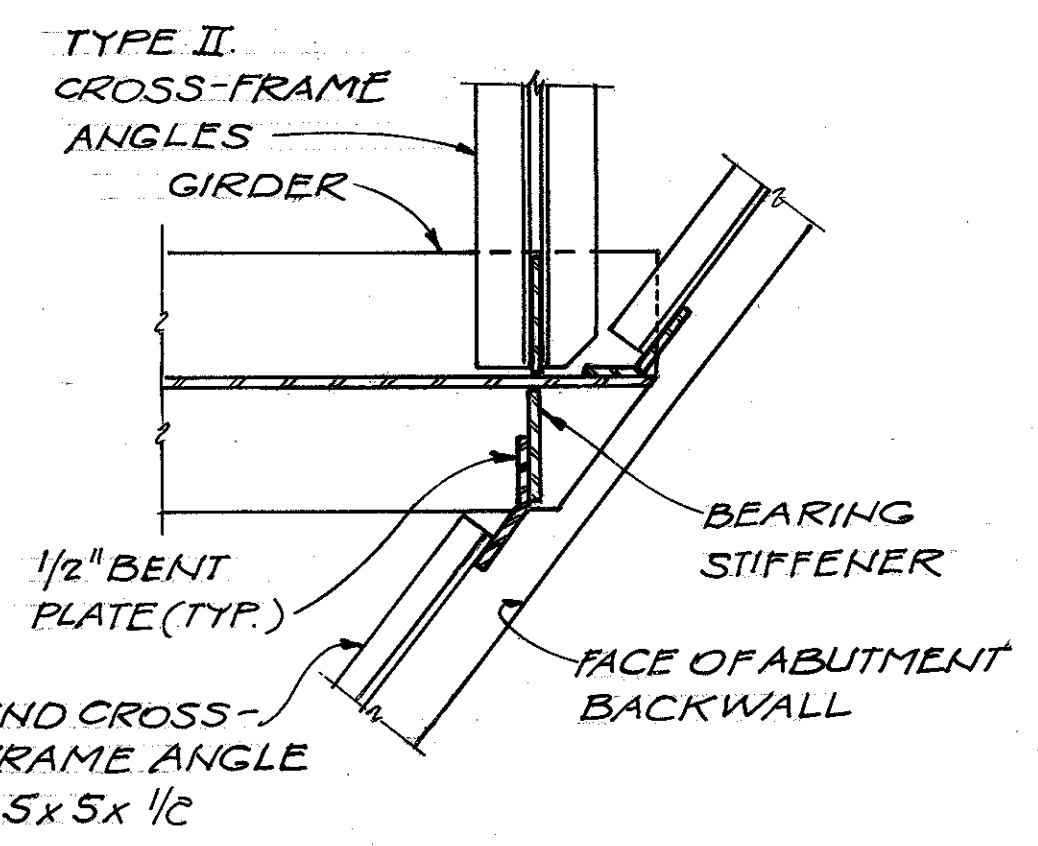
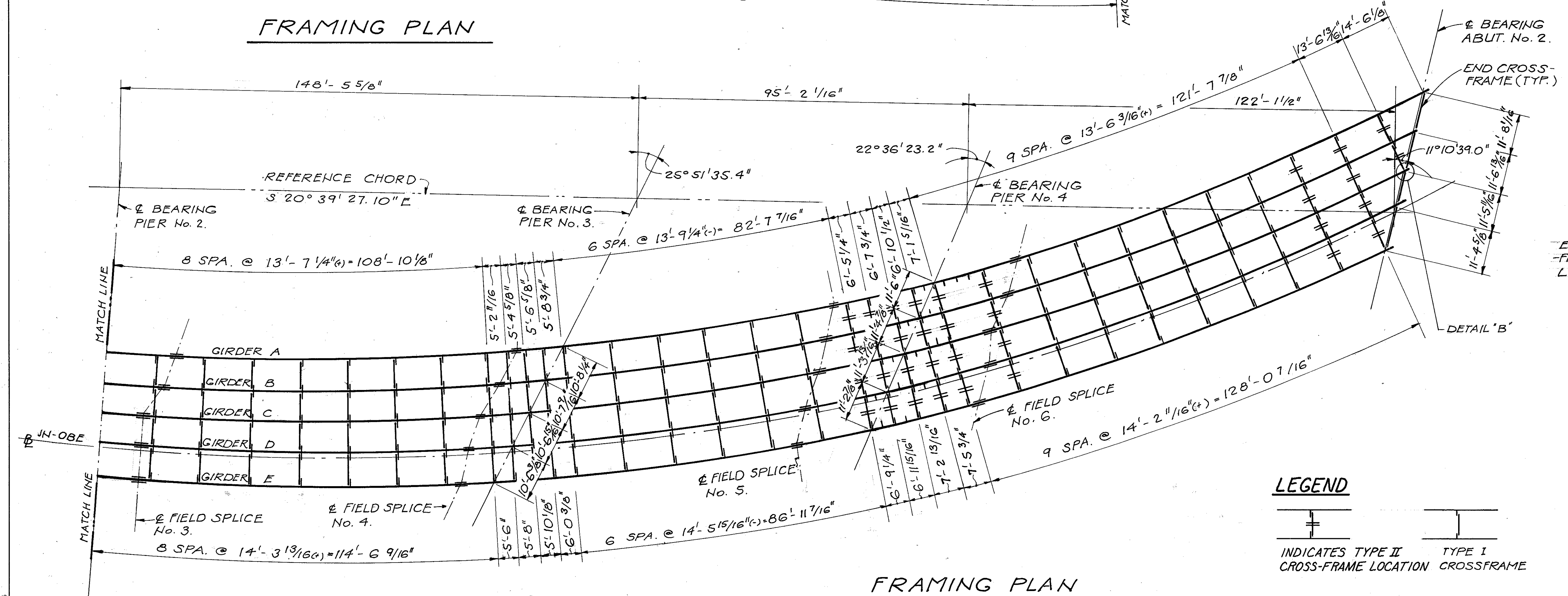
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M.T.	C.T.	A.J.M.	1/94	

NOTES:

- EACH STIFFENER PLATE USED AS CROSSFRAME CONNECTION PLATES SHALL HAVE THE SAME THICKNESS IN A PARTICULAR BAY. THE GREATEST PLATE THICKNESS REQUIRED AT EACH LOCATION SHALL CONTROL FOR BOTH PLATES, IN THE SAME BAY.
- ALL INTERMEDIATE CROSSFRAMES ARE ALONG RADIAL LINES. FOR DETAILS SEE TRANSVERSE SECTION ON SHEET 15/21.
- FOR END CROSSFRAME DETAILS AT ABUTMENTS REFER TO STANDARD DRAWINGS EXJ-4-87 & SD-1-69. END CROSSFRAME ANGLE MEMBERS SHALL BE L5x5x1/2 (CVK) TYPICAL.
- ADDITIONAL INTERMEDIATE STIFFENERS, WHERE SHOWN, SHALL BE EQUALLY SPACED BETWEEN CROSSFRAMES, EXCEPT WHERE INTERFERENCE OCCURS WITH FLANGE FIELD SPLICE MATERIAL. THE INTERMEDIATE STIFFENER LOCATION MAY BE ADJUSTED TO CLEAR SPLICE MATERIAL BY 3".



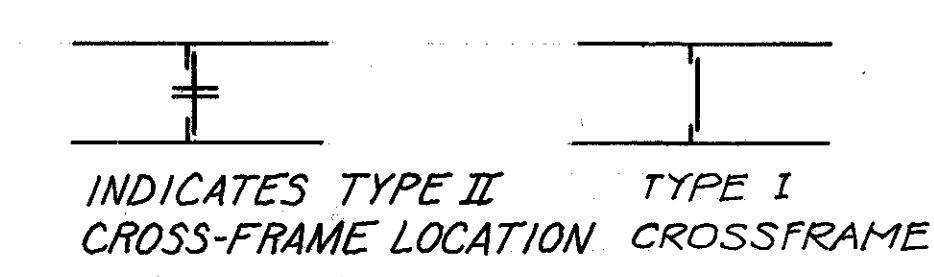
FRAMING PLAN



DETAIL 'B'

ABUTMENT No. 2 SHOWN
ABUTMENT No. 1 SIMILAR

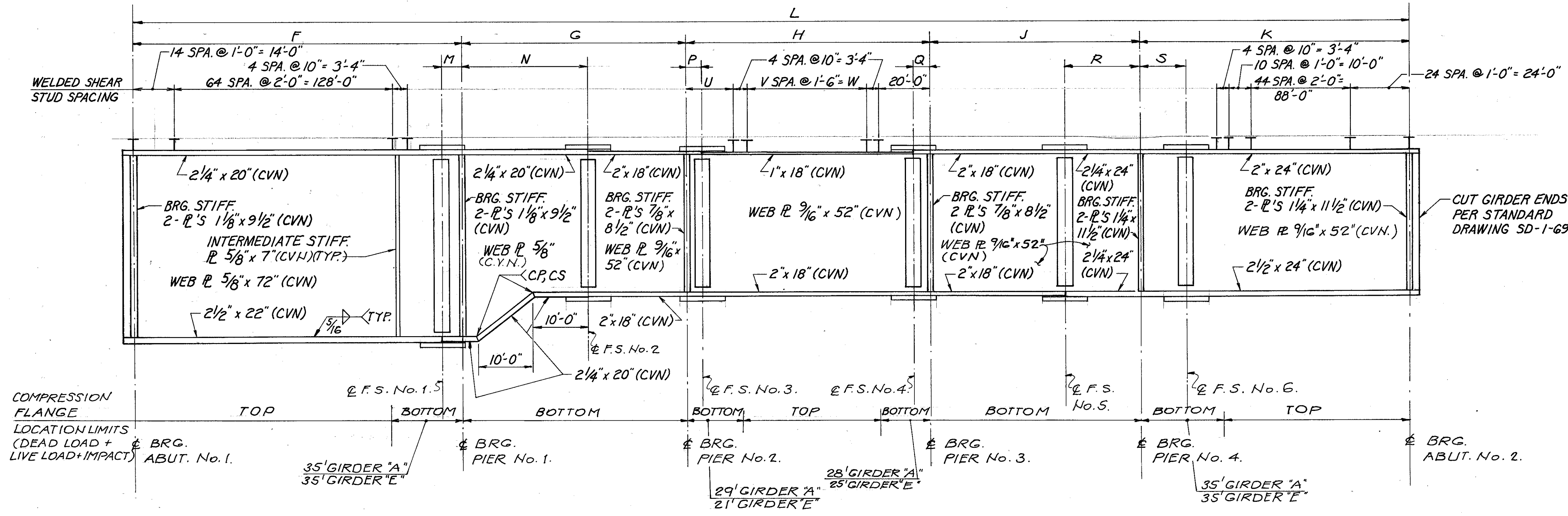
LEGEND



FRAMING PLAN

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
FRAMING PLAN					
JENNINGS FREEWAY					
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN UNDER					
LANE JN-OBE					
BRIDGE NO. CUY-480-1559					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.J.W.	F.K.	T.A.B.	A.J.M.	1/99	

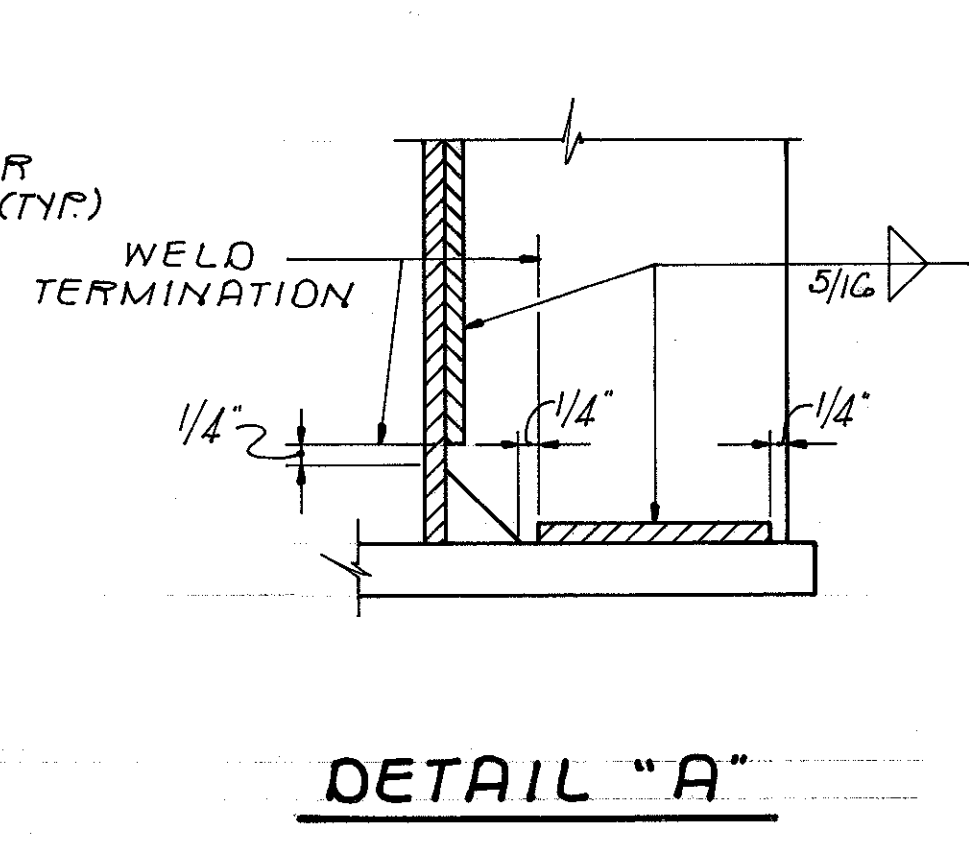
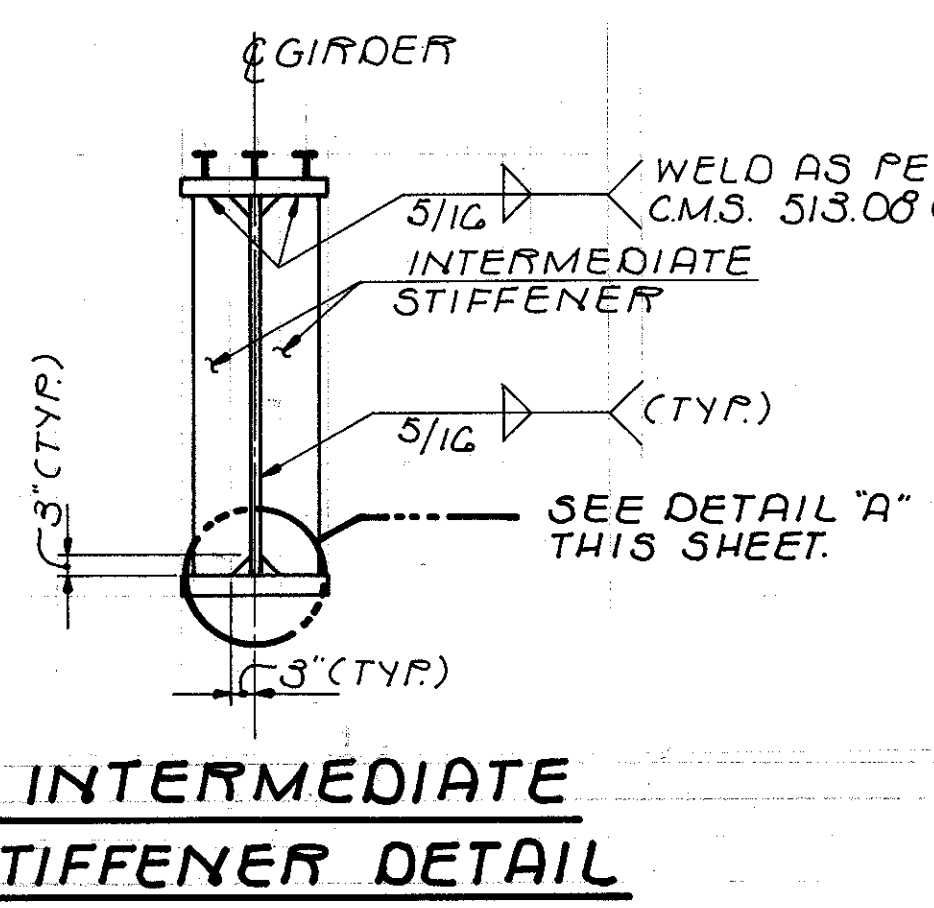
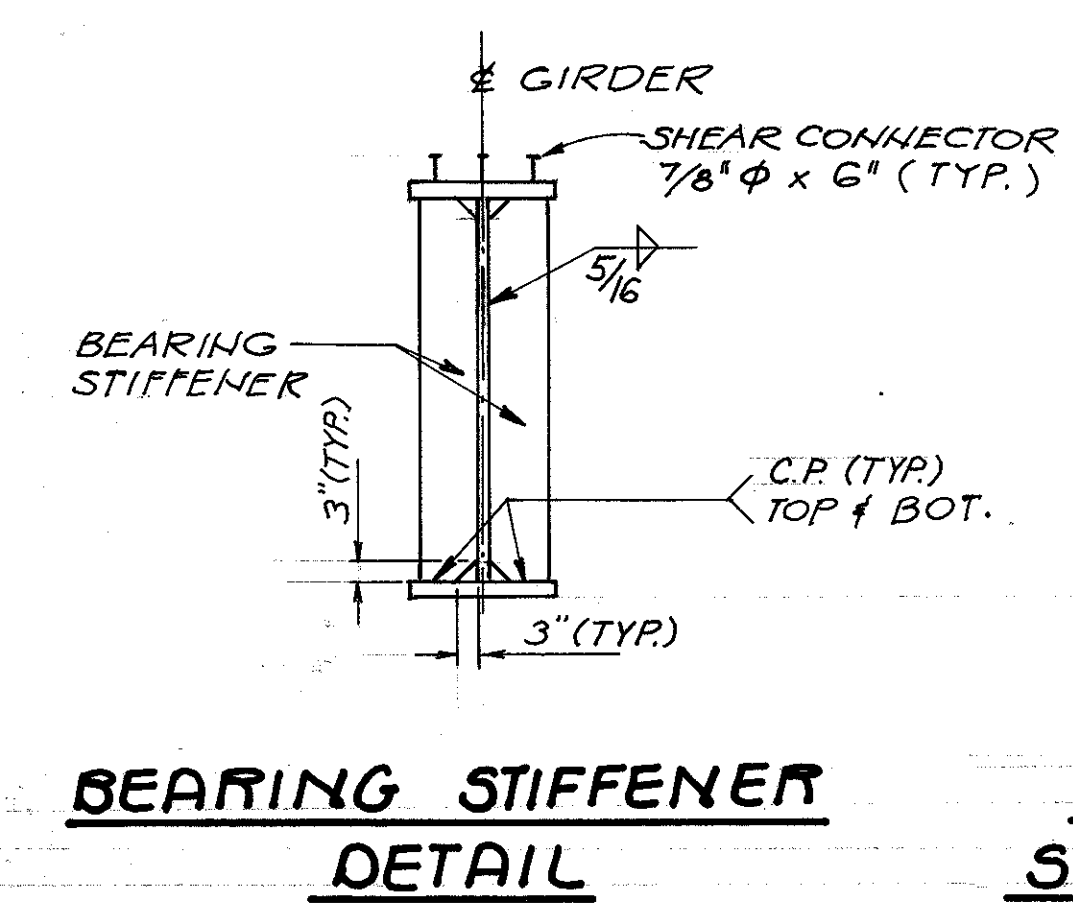
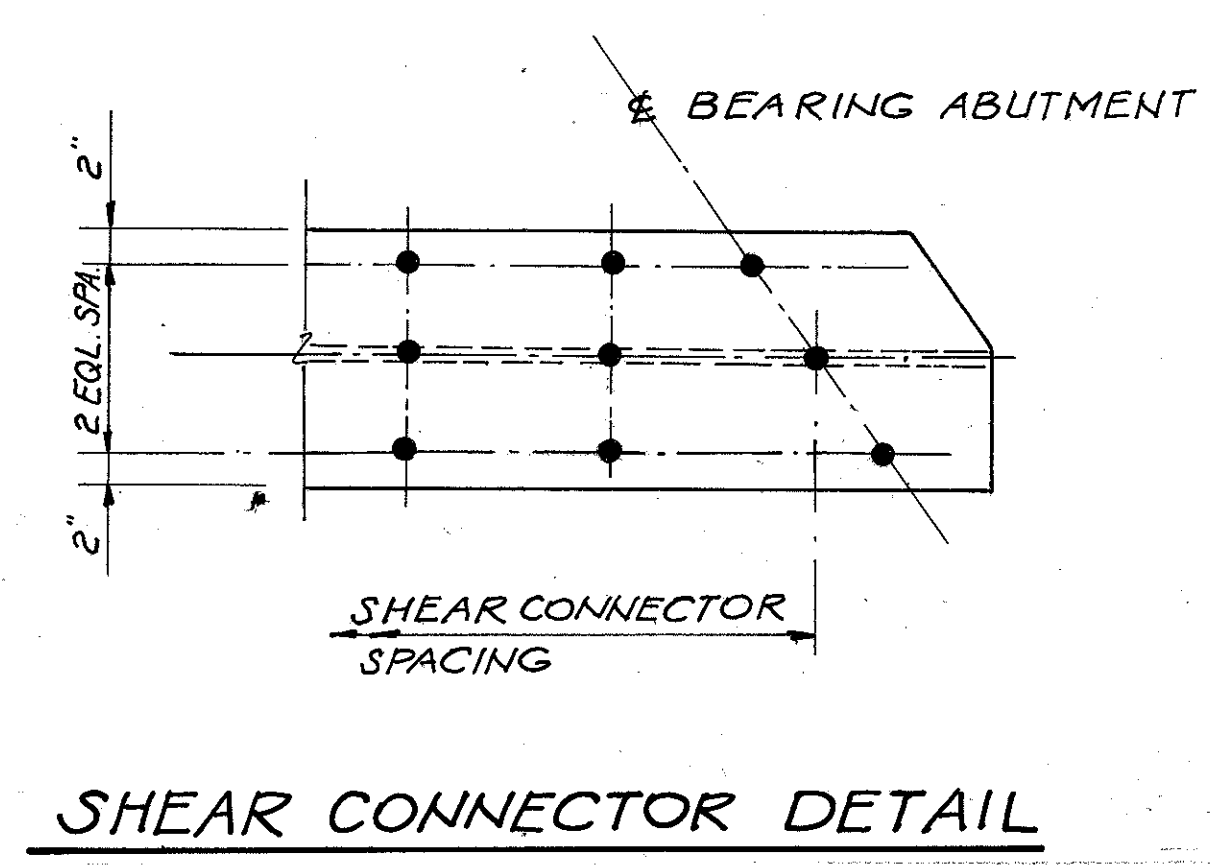
BRUNING 44-236 07195



GIRDER ELEVATION

- NOTES:**
- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
 - WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
 - FOR GIRDER FIELD SPLICE DETAILS SEE SHEET 11/21.
 - FOR BEARING DETAILS SEE SHEET 12/21.
 - FOR FULL PENETRATION WELDS SPLICING FLANGES, REMOVE WELD REINFORCEMENT BY GRINDING IN THE DIRECTION OF THE MAIN STRESSES.
 - FOR CROSS-FRAME CONNECTION PLATE DETAILS, SEE TRANSVERSE SECTION SHEET 15/21.

GIRDER	DIMENSION (MEASURED ALONG ϵ OF GIRDER)													HORIZONTAL RADIUS	SHEAR STUD DATA		
	L	F	G	H	J	K	M	N	P	Q	R	S	U		V	W	
A	687'-1 5/16"	180'-10 1/2"	116'-0 15/16"	130'-8 13/16"	109'-8 1/4"	149'-8 13/16"	25'-7 1/2"	50'-4 15/16"	18'-7 1/4"	13'-11 1/16"	30'-1"	23'-8 13/16"	686.529'	23'-0 13/16"	54	81'-0"	
B	681'-1 7/8"	179'-2 5/16"	114'-2 1/8"	126'-7 3/4"	109'-8 1/16"	151'-5"	25'-5 5/16"	47'-7 13/16"	16'-9 3/8"	13'-8 3/4"	27'-3"	24'-2"	695.529'	20'-5 3/4"	53	79'-6"	
C	675'-3 5/16"	177'-6 11/16"	112'-3 5/16"	122'-7"	109'-9 1/2"	153'-1 5/16"	25'-0 9/16"	44'-10 11/16"	11'-0 7/16"	13'-10 11/16"	24'-6"	24'-11 5/16"	704.529'	17'-11"	52	78'-0"	
D	669'-7 1/2"	175'-11 15/16"	110'-4 5/8"	118'-6 5/8"	109'-10 9/16"	154'-9 3/4"	22'-7 15/16"	42'-1 11/16"	11'-2 1/8"	12'-5 3/16"	24'-0"	28'-5 3/4"	713.529'	16'-10 5/8"	50	75'-0"	
E	664'-0 3/8"	174'-5 11/16"	108'-6"	114'-6 9/16"	109'-11 15/16"	156'-6 3/16"	26'-2 1/16"	39'-4 11/16"	11'-3 13/16"	11'-3 13/16"	21'-3"	31'-9 3/16"	722.529'	14'-4 9/16"	49	73'-6"	



- LEGEND**
- CP COMPLETE PENETRATION WELD
 - CS BUTT WELD SUBJECT TO COMPRESSIVE STRESS ONLY

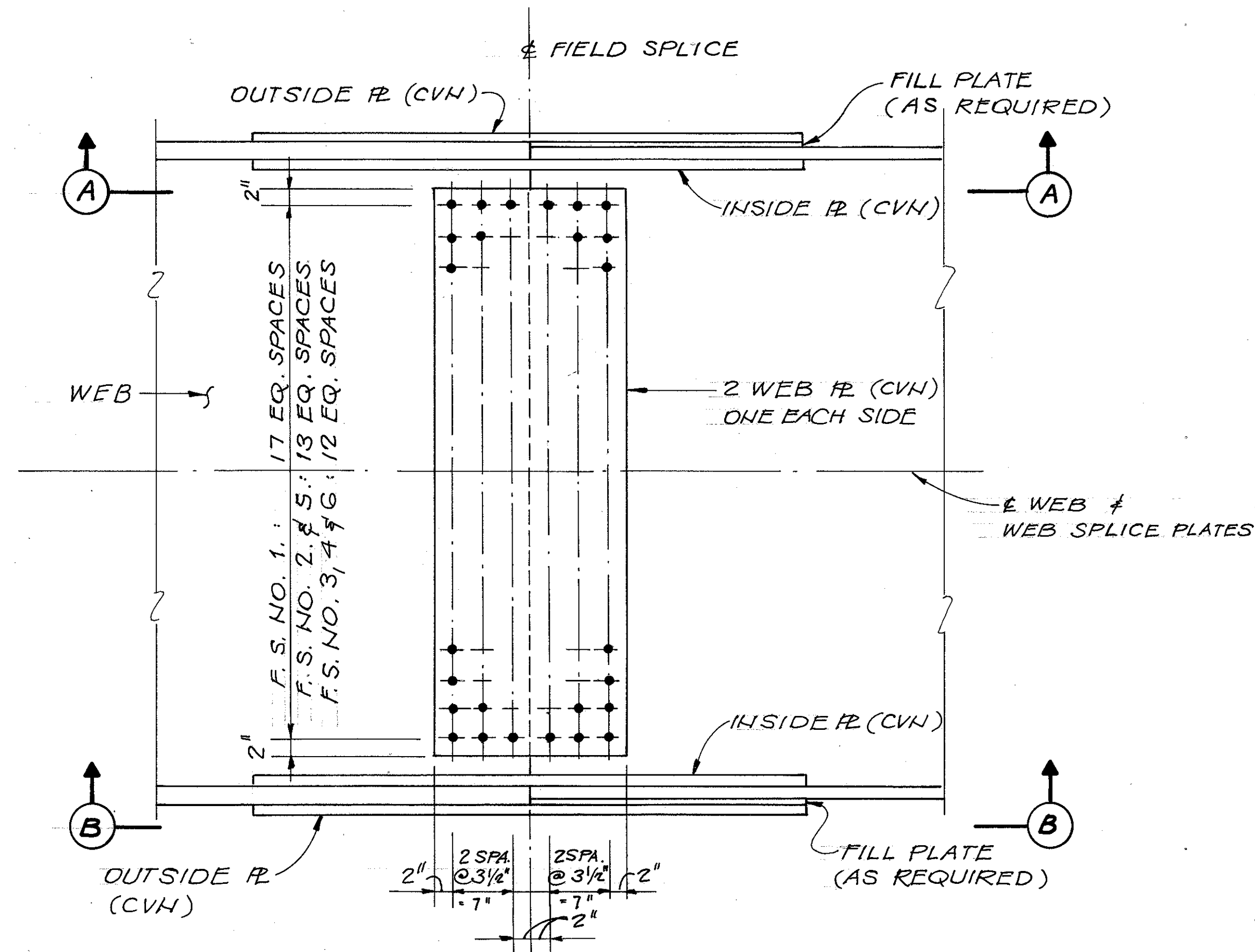
10/21

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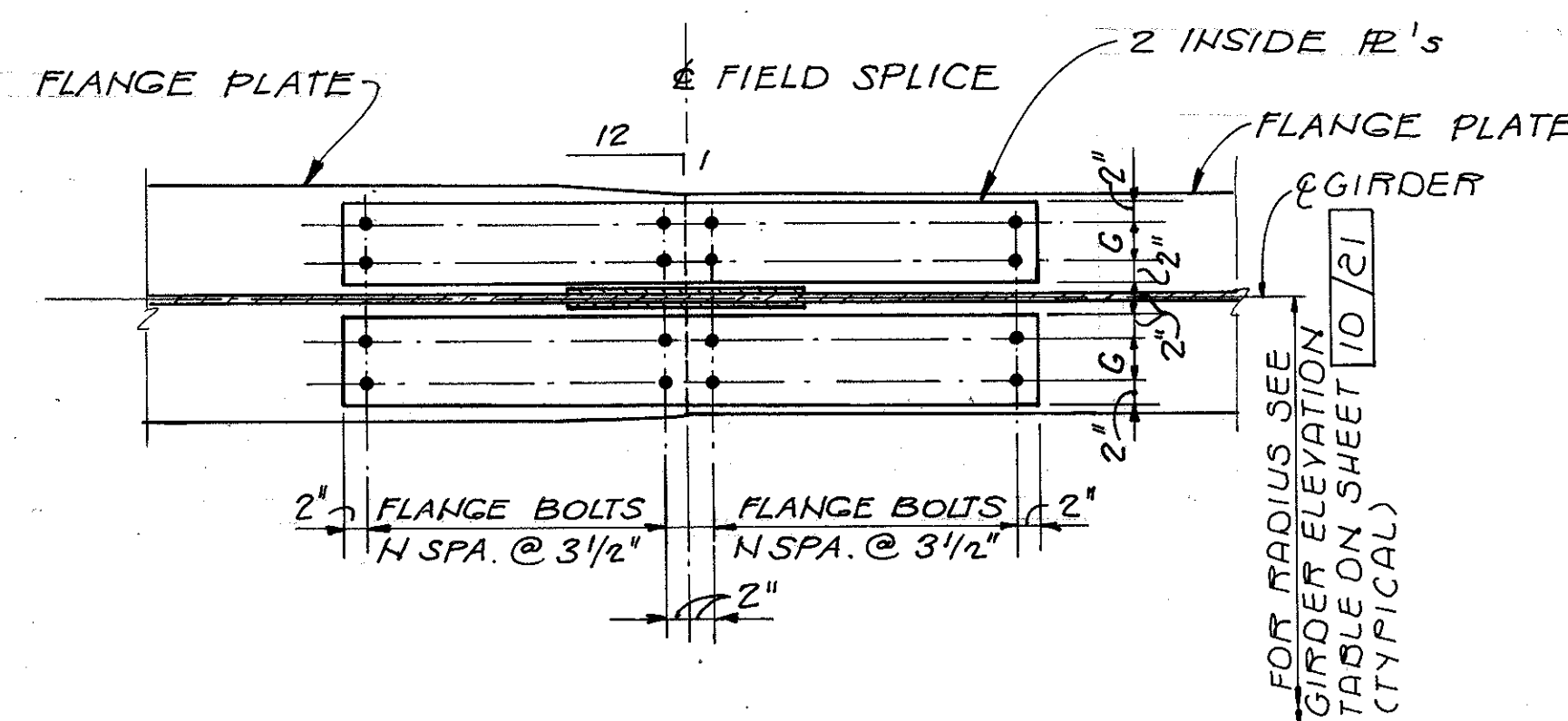
GIRDER ELEVATION
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OBNWJH
UNDER
LANE JN-OBE

BRIDGE No. CUY-480-1559

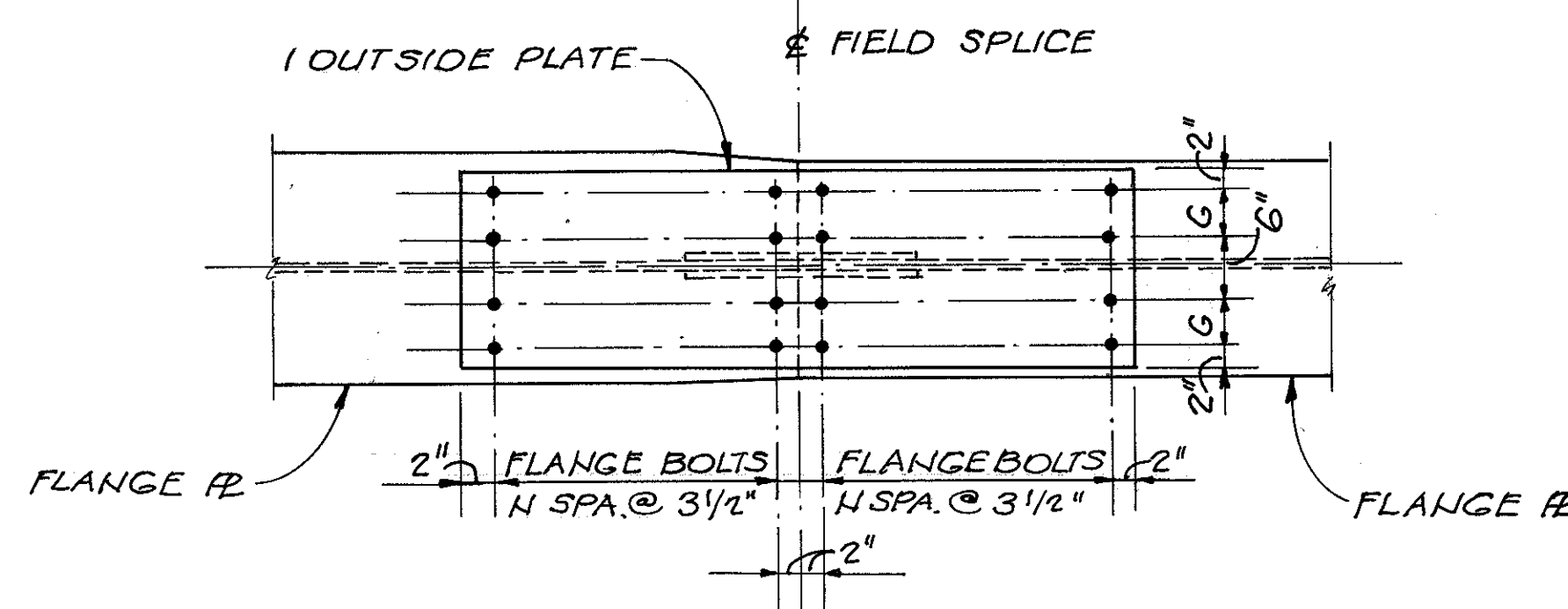
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.J.W.	E.K.	T.A.B.	A.J.M.	1/94	



WEB SPICE ELEVATION



SECTION A-A



SECTION B-B

GIRDER SPICE DATA

SPICE NO.	WEB PLATES 2 REQ.	WEB BOLTS	TOP FLANGE					BOTTOM FLANGE						
			OUTSIDE R 1 REQ'D	INSIDE R 2 REQ'D	FILL R	FLANGE BOLTS	H	G	OUTSIDE R 1 REQ'D	INSIDE R 2 REQ'D	FILL R	FLANGE BOLTS	H	G
1	7/16" x 22" x 5'-8"	108	1" x 19 1/2" x 5'-4"	1/4" x 8 3/4" x 5'-4"	—	72	8	4 3/4"	1" x 19 1/2" x 5'-4"	1/4" x 8 3/4" x 5'-4"	1/4" x 19 1/2" x 2'-8"	72	8	4 3/4"
2	1/2" x 22" x 4'-11/2"	84	1/4" x 17 1/2" x 4'-9"	1/4" x 7 3/4" x 4'-9"	1/4" x 17 1/2" x 2'-4 1/2"	64	7	3 3/4"	1/4" x 17 1/2" x 4'-9"	1/4" x 7 3/4" x 4'-9"	1/4" x 17 1/2" x 2'-4 1/2"	64	7	3 3/4"
3	7/16" x 22" x 4'-0"	78	5/8" x 17 1/2" x 3'-0"	3/4" x 7 3/4" x 3'-0"	1" x 17 1/2" x 1'-6"	40	4	3 3/4"	5/8" x 17 1/2" x 3'-0"	3/4" x 7 3/4" x 3'-0"	—	40	4	3 3/4"
4	7/16" x 22" x 4'-0"	78	5/8" x 17 1/2" x 3'-0"	3/4" x 7 3/4" x 3'-0"	1" x 17 1/2" x 1'-6"	40	4	3 3/4"	5/8" x 17 1/2" x 3'-0"	3/4" x 7 3/4" x 3'-0"	—	40	4	3 3/4"
5	1/2" x 22" x 4'-11/2"	84	1/4" x 17 1/2" x 5'-4"	1/4" x 7 3/4" x 5'-4"	1/4" x 17 1/2" x 2'-8"	72	8	3 3/4"	1/4" x 17 1/2" x 5'-4"	1/4" x 7 3/4" x 5'-4"	1/4" x 17 1/2" x 2'-8"	72	8	3 3/4"
6	7/16" x 22" x 4'-0"	78	1" x 23 1/2" x 5'-11"	1" x 10 3/4" x 5'-11"	1/4" x 23 1/2" x 2'-11 1/2"	80	9	6 3/4"	1" x 23 1/2" x 5'-11"	1" x 10 3/4" x 5'-11"	1/4" x 23 1/2" x 2'-11 1/2"	80	9	6 3/4"

NOTES

1. ALL GIRDER FIELD SPLICES SHALL BE MADE WITH 1" DIAMETER GALVANIZED HIGH STRENGTH BOLTS, ASTM-A 325. THE BOLTS SHALL BE PLACED WITH THEIR HEADS ON THE OUTSIDE FACE OF THE EXTERIOR GIRDER, ON THE BOTTOM OF THE BOTTOM FLANGE PLATES, AND THE TOP OF THE TOP FLANGE PLATES.
2. ALL SPLICE PLATES, EXCEPT FILL PLATES, SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01 OF CMS.
3. FOR ADDITIONAL DETAILS SEE STD. DWG. SD-1-69
4. THE FIELD SPICE PLATES SHALL FOLLOW THE CURVATURE OF THE GIRDERS.

11 / 21

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GIRDER SPICE DETAILS
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JH
UNDER
LANE JH-OBE
BRIDGE No. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.J.W.	E.K.	S.F.M.	A.J.M.	1/94	

BRUNING 44-232-67195

NOTES:

- 1.) THE BEARING DEVICES SUPPLIED SHALL BE CAPABLE OF TRANSMITTING THE LOADS AND MOVEMENTS SHOWN ON THESE PLANS.
- 2.) THE MASONRY & SOLE PLATES SHOWN HAVE BEEN DESIGNED TO SUIT TYPICAL BEARINGS FOR THE DESIGN LOADS AND MOVEMENTS SHOWN. THE CONTRACTOR SHALL CHECK THE ADEQUACY OF THESE MASONRY PLATES FOR USE WITH ACTUAL BEARINGS SUPPLIED. THE ALLOWABLE CONCRETE BEARING STRESS SHALL BE:

WHERE f_b = BEARING STRESS ON THE LOADED CONCRETE AREA.

$$f_b \leq 30 f'_c \sqrt{\frac{A_2}{A_1}}$$

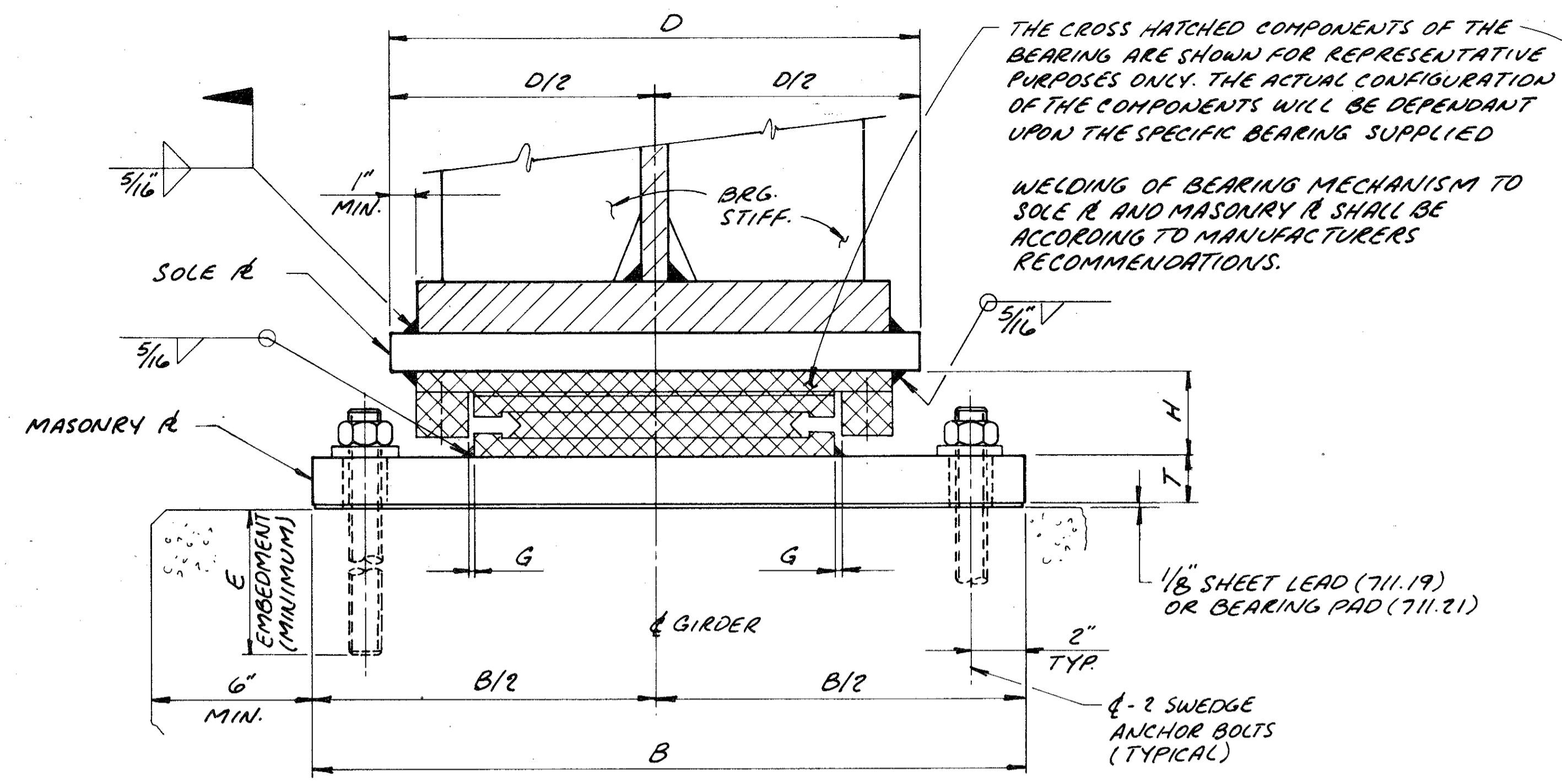
A_2 = PLAN AREA OF BEAM SEAT PER HASHTO (FT²)

A_1 = PLAN AREA OF STEEL MASONRY PLATE (FT²)

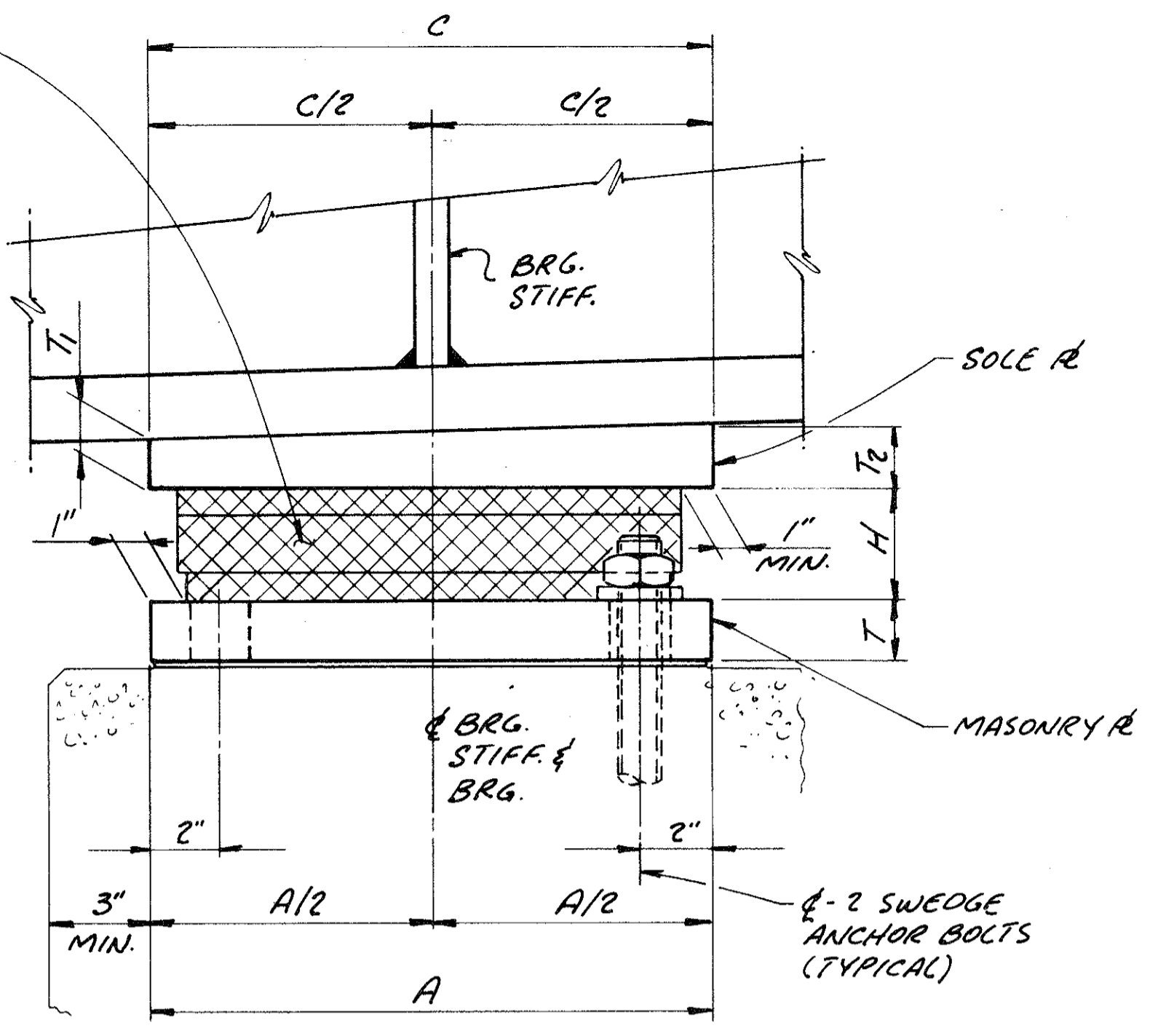
- THE MAXIMUM CONCRETE BEARING STRESS SHALL BE 1200 P.S.I. IF THE PLAN AREA OF ANY MASONRY PLATE IS REVISED (INCREASED), IT SHALL FIT WITHIN THE PLAN DIMENSIONS SHOWN FOR THE BEAM SEAT. THE MINIMUM CONCRETE EDGE DISTANCE SHALL BE 3" UNLESS NOTED OTHERWISE AND THE MINIMUM ANCHOR BOLT COVER SHALL BE 4".
- 3.) THE BEARING DEVICE, MASONRY PLATE, SOLE PLATE, ANCHOR BOLTS, NUTS, WASHERS AND BEARING PAD SHALL BE INCLUDED FOR PAYMENT IN THE CONTRACT PRICE FOR ITEM 516 STEEL POT BEARINGS.
 - * 4.) ALL UNI & FIXED BEARINGS SHALL BE CAPABLE OF RESISTING A MINIMUM LATERAL FORCE OF 10% OF THE VERTICAL DEAD LOAD + LIVE LOAD + IMPACT OR 20% OF THE VERTICAL DEAD LOAD WHICHEVER IS GREATER APPLIED HORIZONTALLY IN ANY DIRECTION UNLESS OTHERWISE SHOWN.

- 5.) ALL EXPANSION BEARINGS SHALL HAVE A MAXIMUM FRICTION COEFFICIENT OF 3%.
- 6.) IF THE ANCHOR BOLTS ARE SET UNDER THE SOLE PLATE, A MINIMUM CLEARANCE EQUAL TO TWO TIMES THE THICKNESS OF ANCHOR NUT PLUS 1/2 INCH SHALL BE MAINTAINED BETWEEN THE TOP OF MASONRY PLATE AND THE BOTTOM OF THE SOLE PLATE.
- 7.) THE STEEL SHALL CONFORM TO ASTM A 572.
- 8.) ALL METAL COMPONENTS OF THE BEARING SYSTEM WHICH ARE LIABLE TO COME INTO CONTACT DURING THE TRANSLATION SHALL HAVE A TEFLON SLIDING SURFACE FINISH.
- 9.) ALL STEEL FABRICATION SHALL CONFORM TO THE PROVISIONS OF ODOT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS.
- 10.) THE DIMENSION "H" IN THE BEARING TABLE REPRESENTS THE ASSUMED TOTAL HEIGHT OF BEARING MECHANISM BETWEEN THE SOLE PLATE AND MASONRY PLATE USED BY THE DESIGNER TO ESTABLISH CONCRETE DIMENSIONS. THE CONTRACTOR SHALL RECOMPUTE ALL BEAM SEAT ELEVATIONS TO ACCURATELY REFLECT THE HEIGHT OF BEARINGS SUPPLIED. NO OTHER CONCRETE ELEVATION SHALL BE CHANGED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.

- 11.) ABBREVIATIONS:
 MULTI - MULTI DIRECTIONAL BEARING DIA. - DIAMETER
 UNI - UNI-DIRECTIONAL BEARING
 SELF ALIGNING SIDE OR CENTER GUIDED.
- 12.) THE HOLE DIAMETERS IN THE MASONRY PLATE SHALL BE 3/8" LARGER THAN THE REQUIRED ANCHOR BOLT DIAMETER.
- 13.) ALL STEEL POT BEARINGS SHALL BE DESIGNED TO MEET THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY AASHTO 1992 AND THE 1993 INTERIM TO THESE SPECIFICATIONS.



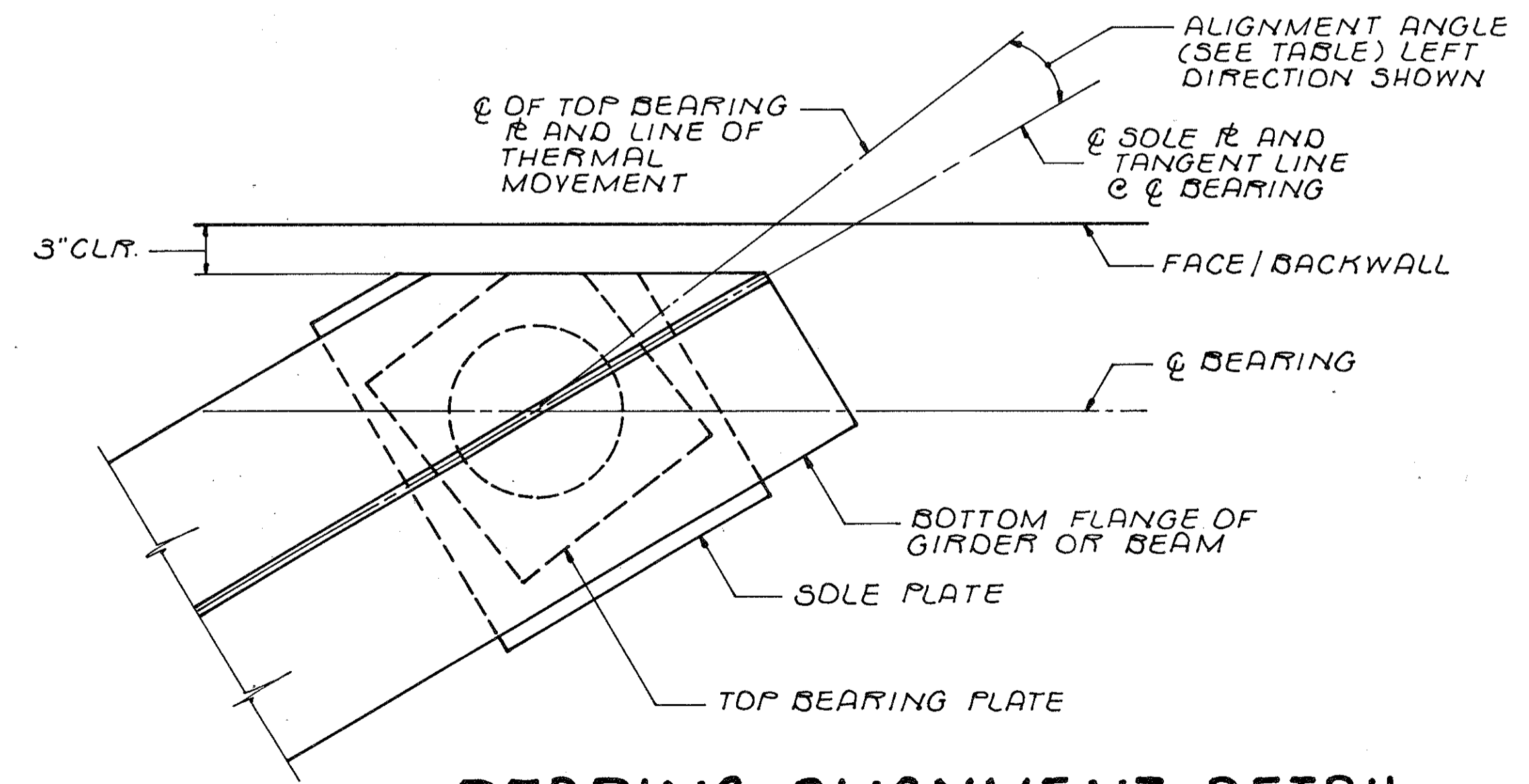
FRONT VIEW



SIDE VIEW

BEARING DATA (ALL DIMENSIONS IN INCHES)

LOCATION	BEARING TYPE	DEAD LOAD (KIPS)		LIVE LOAD + IMPACT (KIPS)		ONE WAY LONGITUDINAL MOVEMENT	MAX. ROTATION (RADIAN)	"G" GUIDE CLEARANCE	MASONRY PLATE			SOLE PLATE		BEARING	ANCHOR BOLTS / BEARING					
		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL				A	B	T	C	D		T ₁	T ₂	H	QTY.	DIA.	LENGTH
ABUT. No. 1.	UNI	253		144		3 1/8	0.003	1/8	17	28	2	23	24	2	2 3/4	3 3/4	4	1 1/4	20	15
PIER No. 1.	UNI	407		174		1 7/8	0.003	1/8	21	32	2	24	22	2 7/8	3 1/4	4 1/2	4	1 3/8	24	19
PIER No. 2.	FIXED	235		120		0	0.003	0	17	23	2	17	20	1 7/8	1 7/8	3 1/4	4	1 1/4	20	15
PIER No. 3.	UNI	222		137		2	0.008	1/8	17	28	2	21	20	2 1/8	2 1/8	3 3/4	4	1 1/4	20	15
PIER No. 4.	UNI	400		176		2 3/4	0.003	1/8	21	32	2	26	26	2 3/4	3 1/4	4 1/2	4	1 3/8	24	19
ABUT. No. 2.	UNI	197		119		3 3/4	0.003	1/8	17	28	2	25	26	1 3/4	2 1/2	3 3/4	4	1 1/4	20	15



BEARING ALIGNMENT DETAIL
 DETAIL @ ABUTMENT SHOWN, PIER BEARINGS SIMILAR
 ALIGN MASONRY PLATE PARALLEL WITH BEARINGS

BEARING ALIGNMENT

LOCATION	ANGLE (DEGREES)
ABUT. No. 1.	12° LT
PIER No. 1.	4° 30' LT
PIER No. 2.	0°
PIER No. 3.	5° RT
PIER No. 4.	9° 30' RT
ABUT. No. 2.	15° 30' RT

12/21

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STEEL POT BEARING DETAILS
JENNINGS FREEWAY
 I-480, CONRAIL, STATE ROUTE 176, LANE OBWJN UNDER
 LANE JH-OBE

BRIDGE No. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
S.F.M.	E.K.	C.T.	T.A.B.	1/94	

D E F L E C T I O N A N D C A M B E R (I N C H E S)

G I R D E R	POINT	S P A N N O. 1								S P A N N O. 2								S P A N N O. 3								S P A N N O. 4								S P A N N O. 5								
		1/8	1/4	3/8	1/2	5/8	3/4	FS 1	7/8	1/8	1/4	3/8	FS 2	1/2	5/8	3/4	7/8	1/8	FS 3	1/4	3/8	1/2	5/8	3/4	7/8	FS 4	1/8	1/4	3/8	1/2	5/8	3/4	FS 5	7/8	1/8	FS 6	1/4	3/8	1/2	5/8	3/4	7/8
A	DEFLECTION DUE TO WEIGHT OF STEEL	5/8	1 1/16	1 3/8	1 3/8	1 3/16	13/16	7/16	3/8	-1/8	-3/16	-3/16	-3/16	-3/16	-3/16	-1/8	-1/16	3/16	3/16	3/8	1/2	9/16	1/2	3/8	3/16	1/8	-1/16	-1/8	-3/16	-3/16	-1/4	-1/4	-1/4	-1/8	3/8	7/16	3/4	1 1/8	1 1/4	1 1/4	1	9/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 7/16	2 9/16	3 3/16	3 3/16	2 3/4	1 7/8	1	7/8	-1/4	-3/8	-3/8	-3/8	-3/8	-5/16	-5/16	-1/4	5/8	11/16	1 5/16	1 13/16	2 1/16	1 7/8	1 5/16	5/8	1/2	-1/4	-5/16	-3/8	-7/16	-7/16	-7/16	-5/16	13/16	1 1/8	1 13/16	2 5/8	3 1/16	3	2 3/8	1 3/8	
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/8	3 11/16	4 5/8	5	4 5/8	3 3/4	2 3/8	2 3/16	7/8	1 9/16	1 15/16	2 1/16	2 1/8	1 7/8	1 1/2	15/16	1 3/16	1 5/16	1 15/16	2 7/16	2 9/16	2 1/2	2	1 3/16	1 1/16	7/8	1 7/16	1 3/4	1 7/8	1 3/4	1 3/8	1 9/16	13/16	1 7/16	1 7/8	2 9/16	3 3/16	3 3/8	3 1/8	2 9/16	1 3/8
	REQUIRED SHOP CAMBER	4 3/16	7 5/16	9 3/16	9 9/16	8 9/16	6 7/16	3 13/16	3 7/16	1/2	1	1 3/8	1 1/2	1 9/16	1 3/8	1 1/16	5/8	2	2 3/16	3 5/8	4 3/4	5 3/16	4 7/8	3 11/16	2	1 11/16	9/16	1	1 3/16	1 1/4	1 1/16	11/16	7/8	3/8	2 5/8	3 7/16	5 1/8	6 15/16	7 5/8	7 3/8	5 15/16	3 5/16
B	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	3/8	3/4	15/16	15/16	13/16	9/16	0	0	0	-1/4	-1/4	-1/4	-1/4	-3/16	-3/16	0	0	1/8	1/4	3/8	7/16	3/8	1/4	0	0	0	-3/16	-1/4	-1/4	-5/16	-1/4	-1/4	0	0	0	9/16	13/16	7/8	7/8	11/16	7/16
	REQUIRED SHOP CAMBER WITH HEAT CURVATURE ADJUSTMENTS	4 9/16	8 1/16	10 1/8	10 1/2	9 3/8	7	3 13/16	3 7/16	1/2	3/4	1 1/8	1 1/4	1 5/16	13/16	7/8	5/8	2	2 5/16	3 7/8	5 1/8	5 5/8	5 1/4	3 15/16	2	1 11/16	9/16	13/16	15/16	1	3/4	7/16	5/8	3/8	2 5/8	3 7/16	5 11/16	7 3/4	8 1/2	8 1/4	6 5/8	3 3/4
	DEFLECTION DUE TO WEIGHT OF STEEL	-11/16	1 3/16	1 1/2	1 9/16	1 3/8	1	1/2	7/16	-3/16	-1/4	-5/16	-5/16	-1/4	-1/4	-3/16	-1/8	3/16	3/16	3/8	1/2	9/16	1/2	3/8	3/16	1/8	-1/8	-3/16	-3/16	-1/4	-1/4	-1/4	-1/4	-3/16	7/16	9/16	7/8	1 1/4	1 7/16	1 3/8	1 1/16	5/8
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 1/2	2 3/4	3 7/16	3 5/8	3 1/8	2 3/16	1 3/16	1	-3/8	-9/16	-5/8	-5/8	-9/16	-1/2	-7/16	-5/16	9/16	5/8	1 1/4	1 3/4	1 15/16	1 3/4	1 1/4	9/16	1/2	-1/4	-3/8	-1/2	-1/2	-9/16	-1/2	-1/2	-3/8	15/16	1 1/4	2 1/16	2 15/16	3 7/16	3 1/4	2 9/16	1 7/16
C	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/8	3 5/8	4 3/8	4 11/16	4 3/8	3 1/2	2 1/4	2	13/16	1 7/16	1 13/16	1 7/8	1 15/16	1 13/16	1 7/16	13/16	1 1/16	1 1/8	1 13/16	2 1/4	2 5/16	2 3/16	1 3/4	1	7/8	3/4	1 3/8	1 5/8	1 3/4	1 5/8	1 5/16	1 5/16	13/16	1 9/16	1 13/16	2 5/8	3 3/16	3 7/16	3 3/16	2 9/16	1 7/16
	REQUIRED SHOP CAMBER	4 5/16	7 9/16	9 5/16	9 7/8	8 7/8	6 11/16	3 15/16	3 7/16	1/4	5/8	7/8	15/16	1 1/8	1 1/16	13/16	3/8	1 13/16	1 15/16	3 7/16	4 1/2	4 13/16	4 7/16	3 3/8	1 3/4	1 1/2	3/8	13/16	15/16	1	13/16	9/16	9/16	1/4	2 15/16	3 5/8	5 9/16	7 3/8	8 5/16	7 13/16	6 3/16	3 1/2
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	3/8	3/4	15/16	1	7/8	5/8	0	0	0	-1/4	-5/16	-5/16	-5/16	-1/4	-3/16	0	0	0	1/4	3/8	3/8	3/8	1/4	0	0	0	-3/16	-1/4	-1/4	-5/16	-1/4	-1/4	0	0	0	9/16	13/16	15/16	7/8	11/16	3/8
	REQUIRED SHOP CAMBER WITH HEAT CURVATURE ADJUSTMENTS	4 11/16	8 5/16	10 1/4	10 7/8	9 3/4	7 5/16	3 15/16	3 7/16	1/4	3/8	9/16	5/8	13/16	13/16	5/8	3/8	1 13/16	1 15/16	3 11/16	4 7/8	5 3/16	4 13/16	3 5/8	1 3/4	1 1/2	3/8	5/8	11/16	3/4	1/2	5/16	5/16	1/4	2 15/16	3 5/8	6 1/8	8 3/16	9 1/4	8 11/16	6 7/8	3/8
D	DEFLECTION DUE TO WEIGHT OF STEEL	3/4	1 5/16	1 11/16	1 3/4	1 9/16	1 1/8	5/8	9/16	-3/16	-5/16	-3/8	-3/8	-3/8	-5/16	-1/4	-1/8	3/16	1/8	3/8	1/2	9/16	1/2	3/8	3/16	3/16	-1/8	-3/16	-1/4	-5/16	-5/16	-5/16	-1/4	-3/16	1/2	5/8	1	1 7/16	1 5/8	1 9/16	1 1/4	11/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 5/8	3	3 7/8	4 1/16	3 9/16	2 1/2	1 3/8	1 3/16	-7/16	-11/16	-13/16	-13/16	-13/16	-11/16	-9/16	-3/8	5/8	7/16	1 1/4	1 11/16	1 7/8	1 11/16	1 3/16	9/16	1/2	-5/16	-7/16	-9/16	-5/8	-11/16	-5/8	-5/8	-7/16	1 1/8	1 1/2	2 3/8	3 3/8	3 13/16	3 11/16	2 7/8	1 9/16
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	2 1/16	3 1/2	4 5/16	4 9/16	4 5/16	3 1/2	2 1/4	2 1/16	13/16	1 3/8	1 11/16	1 3/4	1 13/16	1 3/4	1 3/8	7/8	1	3/4	1 5/8	2 1/16	2 1/4	2	1 11/16	15/16	7/8	3/4	1 5/16	1 11/16	1 13/16	1 11/16	1 5/16	1 3/16	3/4	1 1/2	1 7/8	2 1/2	3 3/16	3 3/8	3 3/16	2 1/2	1 1/2
	REQUIRED SHOP CAMBER	4 7/16	7 13/16	9 7/8	10 3/8	9 7/16	7 1/8	4 1/4	3 13/16	3/16	3/8	1/2	9/16	5/8	3/4	9/16	3/8	1 13/16	1 5/16	3 1/4	4 1/4	4 11/16	4 3/16	3 1/4	1 11/16	1 9/16	5/16	11/16	7/8	7/8	11/16	3/8	5/16	1/8	3 1/8	4	5 7/8	8	8 3/16	8 7/16	6 5/8	3 3/4
E	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	5/16	3/4	15/16	1	7/8	5/8	0	0	0	-5/16	-5/16	-5/16	-5/16	-1/4	-3/16	0	0	0	1/4	3/8	3/8	3/8	1/4	0	0	0	-3/16	-1/4	-5/16	-5/16	-5/16	-1/4	0	0	0	9/16	3/4	7/8	13/16	11/16	3/8
	REQUIRED SHOP CAMBER WITH HEAT CURVATURE ADJUSTMENTS	4 3/4	8 9/16	10 13/16	11 3/8	10 5/16	7 3/4	4 1/4	3 13/16	3/16	1/16	3/16	1/4	5/16	1/2	3/8	3/8	1 13/16	1 5/16	3 1/2	4 5/8	5 1/16	4 9/16	3 1/2	1 11/16	1 9/16	5/16	1/2	5/8	9/16	3/8	1/16	1/16	1/8	3 1/8	4	6 7/16	8 3/4	9 1/16	9 1/4	7 5/16	4 1/8
	DEFLECTION DUE TO WEIGHT OF STEEL	13/16	1 1/2	1 15/16	2	1 3/4	1 1/4	5/8	5/8	-1/4	-3/8	-7/16	-1/2	-7/16	-3/8	-1/4	-1/8	3/16	1/8	3/8	9/16	9/16	1/2	3/8	3/16	1/8	-1/8	-3/16	-1/4	-5/16	-3/8	-5/16	-5/16	-3/16	9/16	13/16	1 1/8	1 5/8	1 7/8	1 13/16	1 3/8	3/4
	DEFLECTION DUE TO REMAINING DEAD LOAD	1 7/8	3 7/16	4 3/8	4 9/16	4	2 13/16	1 3/8	1 3/8	-1/2	-7/8	-1	-1	-15/16	-7/8	-5/8	-3/8	5/8	7/16	1 1/4	1 11/16	1 7/8	1 5/8	1 3/16	9/16	7/16	-5/16	-1/2	-5/8	-11/16	-3/4	-11/16	-11/16	-7/16	1 1/4	1 15/16	2 11/16	3 13/16	4 7/16	4 1/4	3 5/16	1 13/16
F	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 15/16	3 5/16	4 1/16	4 3/8	4 1/16	3 1/4	1 15/16	1 7/8	3/4	1 5/16	1 5/8	1 5/8	1 13/16	1 5/8	1 5/16	3/4	1	11/16	1 9/16	1 15/16	2	1 7/8	1 1/2	15/16	3/4	13/16	1 5/16	1 9/16	1 11/16	1 9/16	1 5/16	1 3/16	3/4	1 7/16	2	2 9/16	3 3/16	3 5/16	3 3/16	2 1/2	1 7/16
	REQUIRED SHOP CAMBER	4 5/8	8 1/4	10 3/8	10 15/16	1 13/16	7 5/16	3 15/16	3 7/8	0	1/16	3/16	1/8	7/16	3/8	7/16	1/4	1 13/16	1 1/4	3 3/16	4 3/16	4 7/16	4	3 1/16	1 11/16	1 5/16	3/8	5/8	11/16	11/16	7/16	5/16	3/16	1/8	3 1/4	4 3/4	6 3/8	8 5/8	9 5/8	9 1/4	7 3/16	4
	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	5/16	9/16	3/4	13/16	11/16	1/2	0	0	0	-1/4	-5/16	-5/16	-1/4	-1/4	-3/16	0	0	0	1/4	5/16	3/8	5/16	1/4	0	0	0	-3/16	-1/4	-1/4	-1/4	-1/4	-1/4	0	0	0	9/16	3/4	7/8	7/8	11/16	3/4
	REQUIRED SHOP CAMBER WITH HEAT CURVATURE ADJUSTMENTS	4 15/16	8 13/16	11 1/8	11 3/4	10 1/2	7 13/16	3 15/16	3 7/8	0	-3/16	-1/8	3/16	3/16	1/8	1/4	1/4	1 13/16	1 1/4	3 7/16	4 1/2	4 13/16	4 5/16	3 5/16	1 11/16	1 5/16	3/8	7/16	7/16	7/16	3/16	1/16	-1/16	1/8	3 1/4	4 3/4	6 15/16	9 3/8	10 1/2	10 1/8	7 7/8	4 3/4
G	DEFLECTION DUE TO WEIGHT OF STEEL	15/16	1 3/4	2 3/16	2 1/4	1 15/16	1 3/8	13/16	11/16	-1/4	-1/2	-9/16	-9/16	-9/16	-7/16	-5/16	-3/16	1/4	3/16	7/16	9/16	5/8	9/16	3/8	3/16	1/8	-1/8	-1/4	-5/16	-3/8	-7/16	-3/8	-5/16	-1/4	9/16	1	1 1/4	1 13/16	2 1/8	2 1/16	1 11/16	15/16
	DEFLECTION DUE TO REMAINING DEAD LOAD	2 3/16	4 1/16	5	5 1/4	4 1/2	3 3/16	1 13/16	1 1/2	-5/8	-1	-1 3/16	-1 3/16	-1 1/8	-1	-3/4	-7/16	5/8	1/2	1 1/4	1 3/4	1 7/8	1 11/16	1 3/16	9/16	7/16	-5/16	-1/2	-5/8	-3/4	-13/16	-13/16	-11/16	-9/16	1 3/8	2 3/8	3	4 3/8	5 1/8	5 1/16	4	2 1/4
	ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 3/4	3 1/8	3 13/16	4 1/8	3 7/8	3 1/16	2 1/8	1 3/4	5/8	1 1/8	1 1/2	1 1/2	1 9/16	1 7/16	1 1/4	11/16	13/16	11/16	1 3/8	1 3/4	1 7/8	1 3/4	1 3/8	3/4	11/16	3/4	1 1/4	1 1/2	1 5/8	1 1/2	1 3/16	1 1/16	11/16	1 7/16	2 1/8	2 1/2	3 1/16	3 5/16	3 3/16	2 9/16	1 7/16
	REQUIRED SHOP CAMBER	4 7/8	8 15/16	11	11 5/8	10 5/16	7 5/8	4 3/4	3 15/16	-1/4	-3/8	-1/4	-1/4	-1/8	0	3/16	1/16	1 11/16	1 3/8	3 1/16	4 1/16	4 3/8	4	2 15/16	1 1/2	1 1/4	5/16	1/2	9/16	1/2	1/4	0	1/16	-1/8	3 3/8	5 1/2	6 3/4	9 1/4	10 9/16	10 5/16	8 1/4	4 5/8
H	HEAT CURVATURE ADJUSTMENT (IF REQUIRED)	5/16																																								

S C R E E D E L E V A T I O N T A B L E

POINT	S P A N N O. 1								S P A N N O. 2								S P A N N O. 3							
	CL BRG A1	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG P1	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG P2	1/8	1/4	3/8	1/2	5/8	3/4	7/8
A	777.56	778.51	779.38	780.16	780.85	781.43	781.94	782.37	782.77	783.02	783.27	783.50	783.71	783.89	784.06	784.22	784.36	784.53	784.67	784.77	784.82	784.82	784.75	784.64
B	778.37	779.30	780.15	780.90	781.56	782.12	782.59	783.00	783.37	783.60	783.82	784.04	784.24	784.43	784.59	784.75	784.89	785.05	785.19	785.30	785.34	785.34	785.28	785.19
C	779.16	780.07	780.90	781.64	782.28	782.82	783.26	783.63	783.96	784.17	784.38	784.58	784.77	784.96	785.12	785.28	785.42	785.58	785.71	785.81	785.87	785.86	785.82	785.73
D	779.94	780.84	781.65	782.38	782.99	783.50	783.91	784.24	784.55	784.75	784.94	785.13	785.32	785.49	785.66	785.81	785.95	786.11	786.24	786.34	786.38	786.39	786.35	786.28
E	780.16	781.04	781.87	782.56	783.16	783.62	784.00	784.31	784.59	784.76	784.94	785.12	785.30	785.47	785.64	785.79	785.93	786.08	786.22	786.32	786.37	786.37	786.33	786.26
F	777.38	778.34	779.22	780.00	780.70	781.29	781.80	782.23	782.64	782.89	783.14	783.37	783.58	783.77	783.94	784.10	784.24	784.41	784.51	784.62	784.71	784.70	784.63	784.52
G	780.03	780.92	781.73	782.46	783.06	783.58	783.98	784.31	784.62	784.81	785.00	785.19	785.38	785.55	785.72	785.87	786.01	786.16	786.29	786.39	786.44	786.45	786.41	786.34
H	780.20	781.09	781.91	782.62	783.22	783.70	784.10	784.41	784.69	784.87	785.06	785.24	785.42	785.59	785.76	785.92	786.06	786.20	786.34	786.43	786.49	786.49	786.46	786.39
J	780.12	781.00	781.82	782.51	783.11	783.56	783.94	784.25	784.51	784.69	784.87	785.04	785.22	785.39	785.55	785.71	785.85	785.99	786.13	786.23	786.28	786.28	786.25	786.18

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5



NOTES:

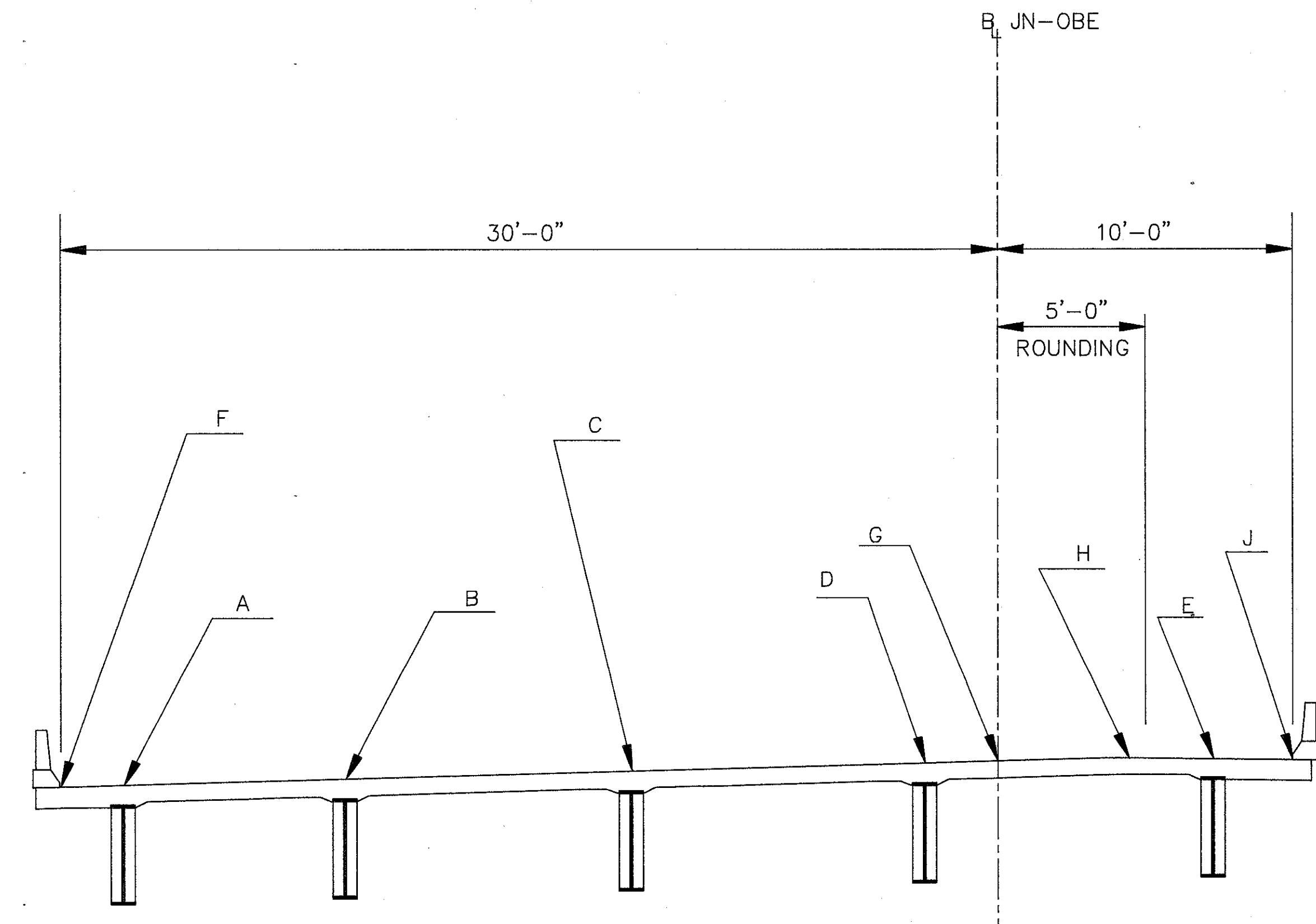
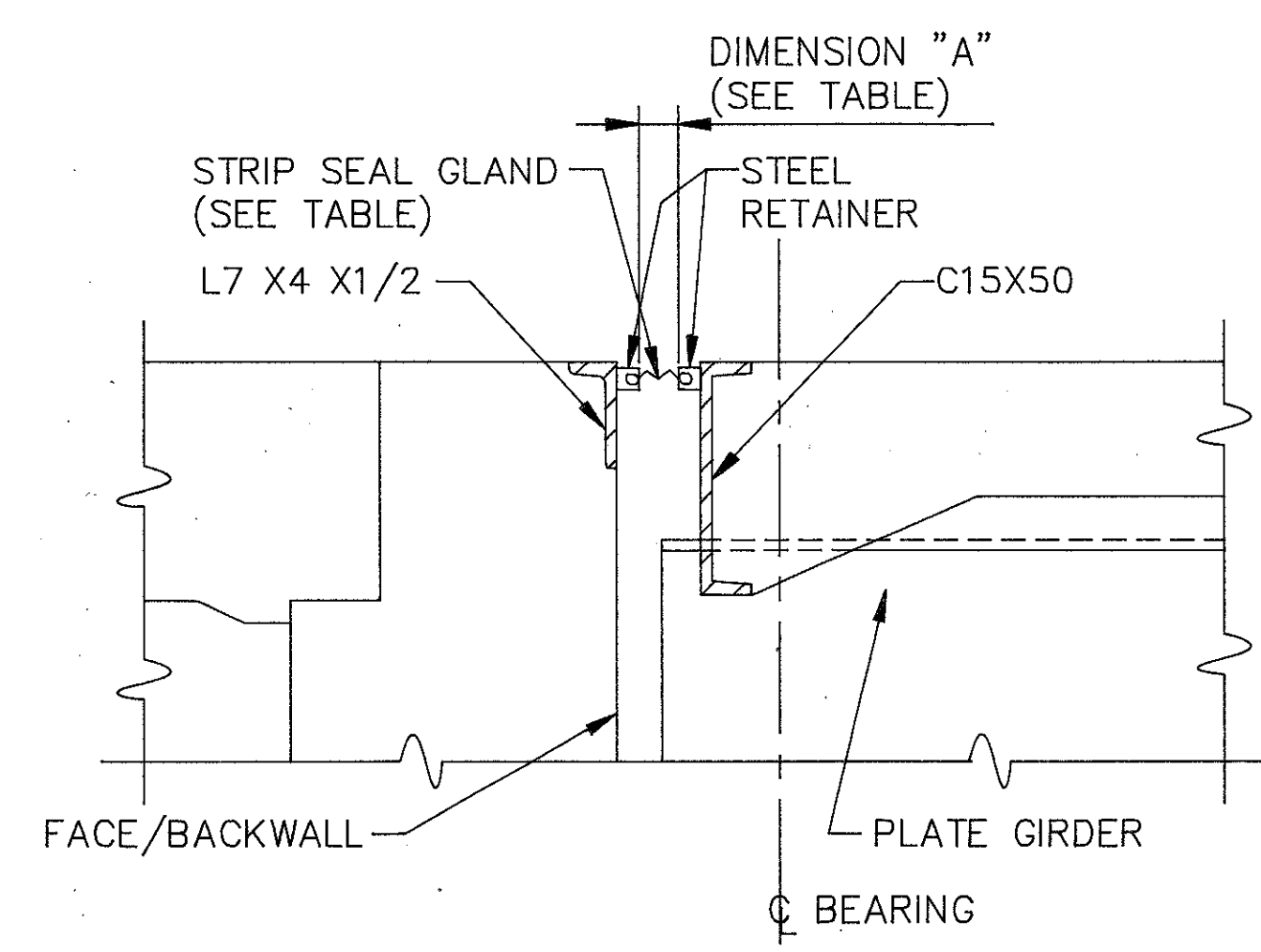
1. THE SCREED ELEVATIONS ARE TO THE TOP OF THE CONCRETE DECK AND ARE THOSE WHICH ARE REQUIRED BEFORE THE CONCRETE IS PLACED. PROPER ALLOWANCE HAS BEEN MADE FOR THE DEAD LOAD DEFLECTIONS CAUSED BY THE WEIGHT OF THE CONCRETE DECK. ADJUSTMENTS FOR THE EFFECTS OF HEAT CURVATURE OF THE GIRDERS, IF USED, MUST BE ADDED TO THE SCREED ELEVATIONS, AS PER AASHTO.
2. INSTALLATION OF SEAL:
DURING INSTALLATION OF THE SUPPORT/ARMOR FOR THE SUPERSTRUCTURE SIDE OF THE EXPANSION JOINT SEAL, THE SEATING OF BEAMS ON BEARINGS SHALL BE CAREFULLY OBSERVED TO ASSURE THAT POSITIVE BEARING IS MAINTAINED. PROPER VERTICAL FIT OF THE SUPPORT/ARMOR ON THE BEAMS SHALL BE ACHIEVED BY POSITIONING OF THE BEVEL FILL PLATES RATHER THAN BY CLAMPING FORCE.
3. FOR EXPANSION JOINT DETAILS NOT SHOWN, SEE STANDARD DRAWING EXJ-4-87.

S C R E E D E L E V A T I O N T A B L E

POINT	S P A N N O. 4								S P A N N O. 5								
	CL BRG P3	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG P4	1/8	1/4	3/8	1/2	5/8	3/4	7/8	CL BRG A2
A	784.51	784.41	784.30	784.17	784.03	783.86	783.68	783.49	783.30	783.04	782.76	782.43	782.02	781.55	781.00	780.36	779.68
B	785.08	784.98	784.88	784.75	784.62	784.46	784.30	784.13	783.95	783.72	783.46	783.15	782.77	782.29	781.75	781.12	780.44
C	785.63	785.54	785.44	785.33	785.21	785.06	784.91	784.74	784.59	784.38	784.15	783.86	783.49	783.04	782.49	781.87	781.19
D	786.18	786.10	786.01	785.90	785.78	785.65	785.51	785.36	785.22	785.03	784.83	784.57	784.22	783.78	783.24	782.61	781.93
E	786.18	786.10	786.02	785.92	785.81	785.68	785.54	785.41	785.29	785.12	784.95	784.71	784.40	783.98	783.44	782.81	782.10
F	784.39	784.28	784.17	784.04	783.90	783.72	783.54	783.35	783.16	782.90	782.61	782.28	781.87	781.39	780.83	780.20	779.50
G	786.25	786.16	786.07	785.97	785.85	785.72	785.57	785.43	785.29	785.10	784.90	784.64	784.30	783.85	783.32	782.70	782.01
H	786.30	786.22	786.13	786.04	785.92	785.79	785.66	785.52	785.38	785.21	785.03	784.79	784.46	784.03	783.50	782.86	782.16
J	786.10	786.02	785.94	785.85	785.74	785.61	785.48	785.34	785.22	785.06	784.89	784.66	784.35	783.93	783.39	782.77	782.06

DIMENSION "A" (SEE NOTE BELOW)	
TEMPERATURE °F	STRIP SEAL SIZE
30°	4"
40°	4"
50°	4"
60°	4"
70°	4"
80°	4"
90°	5"
ABUTMENT NO. 1	4"
ABUTMENT NO. 2	5"

* MINIMUM INSTALLATION WIDTH (DIMENSION "A") MUST BE GREATER THAN OR EQUAL TO 1 1/2". THEREFORE DO NOT INSTALL SEAL AT THESE MARKED TEMPERATURES.



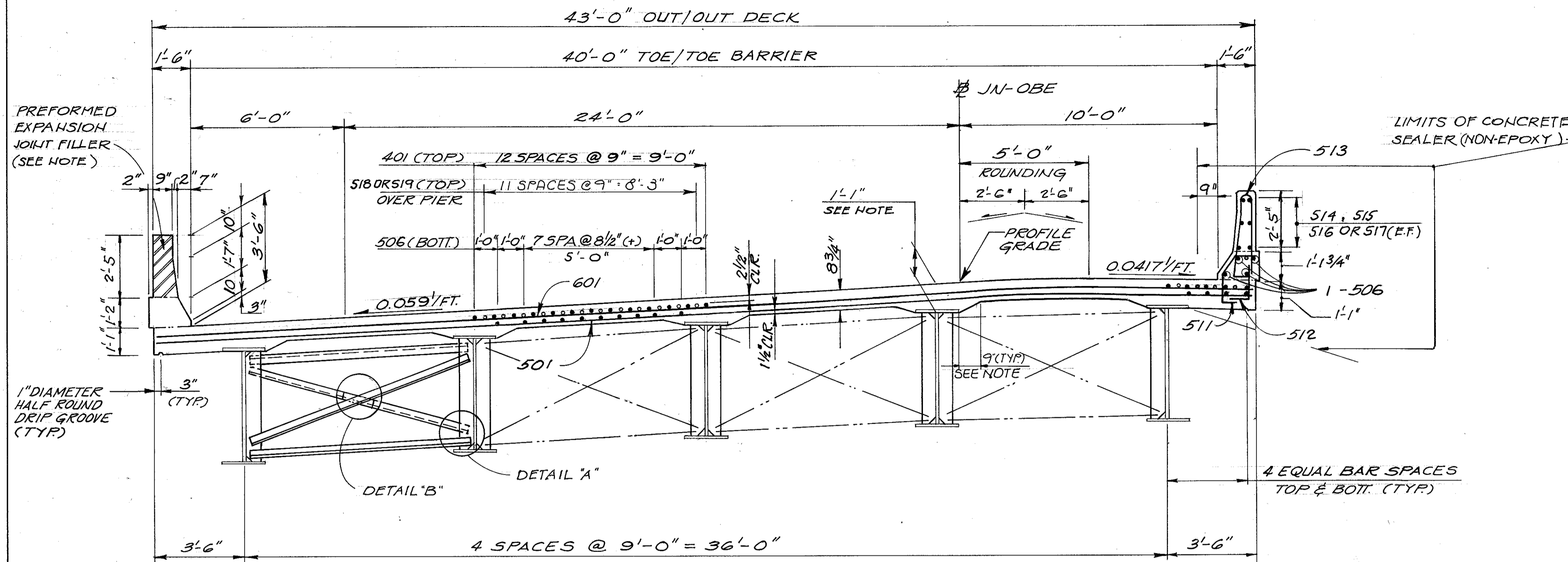
14/21

adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131
SCREED ELEVATIONS & EXPANSION JOINT DETAIL
 JENNINGS FREEWAY
 I-480, CONRAIL, STATE ROUTE 176 &
 LANE OBW-JN UNDER
 LANE JN-OBE
BR. NO. CUY-480-1559

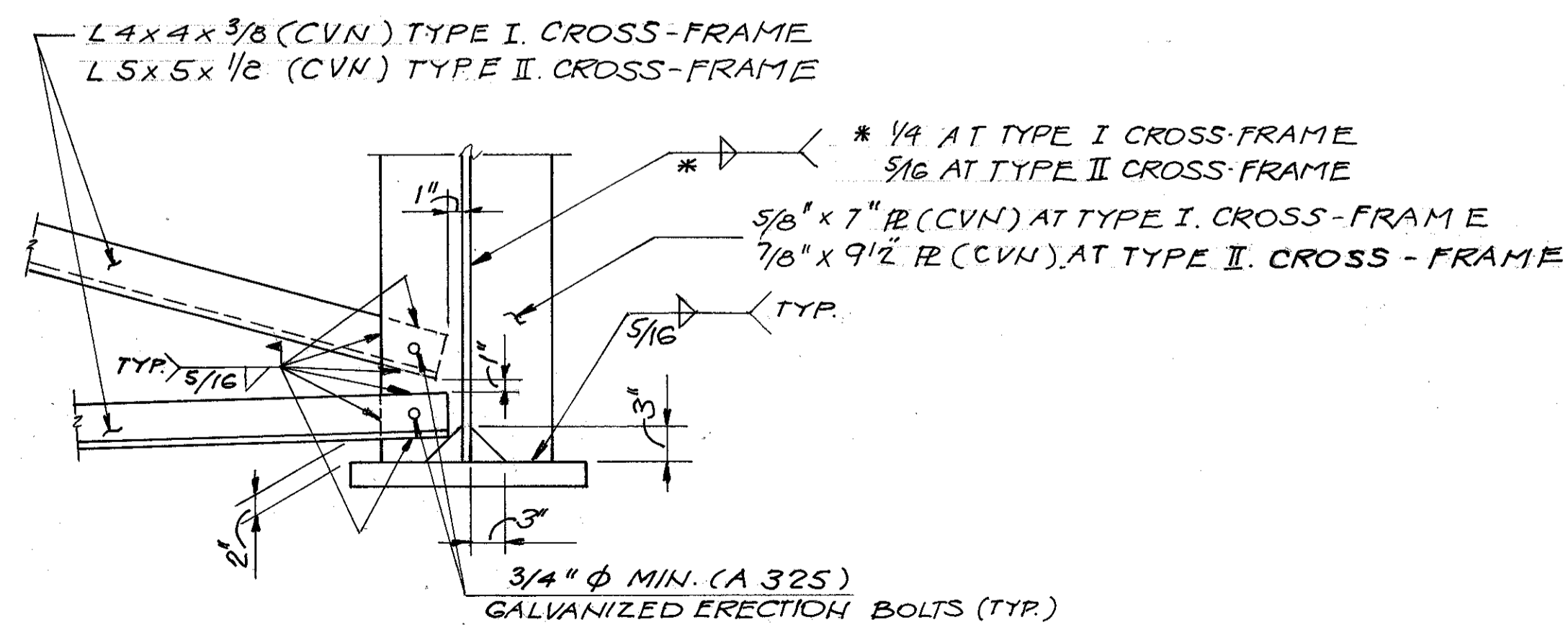
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.J.W.	M	T.A.B.	A.J.M.	1/94	

NOTES

- FOR SLAB PLANS, SEE SHEETS 16/21 & 17/21
- DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF DECK SLAB TO THE BOTTOM OF THE TOP FLANGE OF GIRDER IS THE DESIGN DIMENSION. THE QUANTITY OF CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR THE VOLUME OF ENCASED STEEL PLATES AS PER. 511.18
- A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING THE QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 4:1 FOR A HAUNCH LESS THAN 9" WIDE.
- DRIP GROOVES SHALL TERMINATE 2'-0" FROM FACE OF ABUTMENT.
- PREFORMED EXPANSION JOINT FILLER IN THE PARAPET DEFLECTION JOINTS MAY BE EITHER 1/4" GREY SPONGE RUBBER OR 1/4" GREY CELLULAR POLYVINYL CHLORIDE (PVC) SPONGE. SPONGE RUBBER FILLER SHALL CONFORM TO AASHTO M-153, TYPE-I. DENSITY OF PVC SPONGE SHALL NOT BE LESS THAN 20 LBS. PER CU. FT. PAYMENT FOR THIS ITEM SHALL BE INCLUDED WITH ITEM SPECIAL-HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE.
- ERECTION BOLTS: THE HOLE DIAMETER IN THE CROSS-FRAMES AND GIRDER STIFFENERS SHALL BE 3/16" LARGER THAN THE DIAMETER OF THE ERECTION BOLTS. ERECTION BOLTS SHALL REMAIN IN PLACE AND BE FURNISHED AS PART OF ITEM 513.
IN LIEU OF ERECTION BOLTS AND AT THE OPTION OF THE CONTRACTOR, ALTERNATIVE MEANS OF TEMPORARY BRACING MAY BE USED SUBJECT TO THE APPROVAL OF THE DIRECTOR.

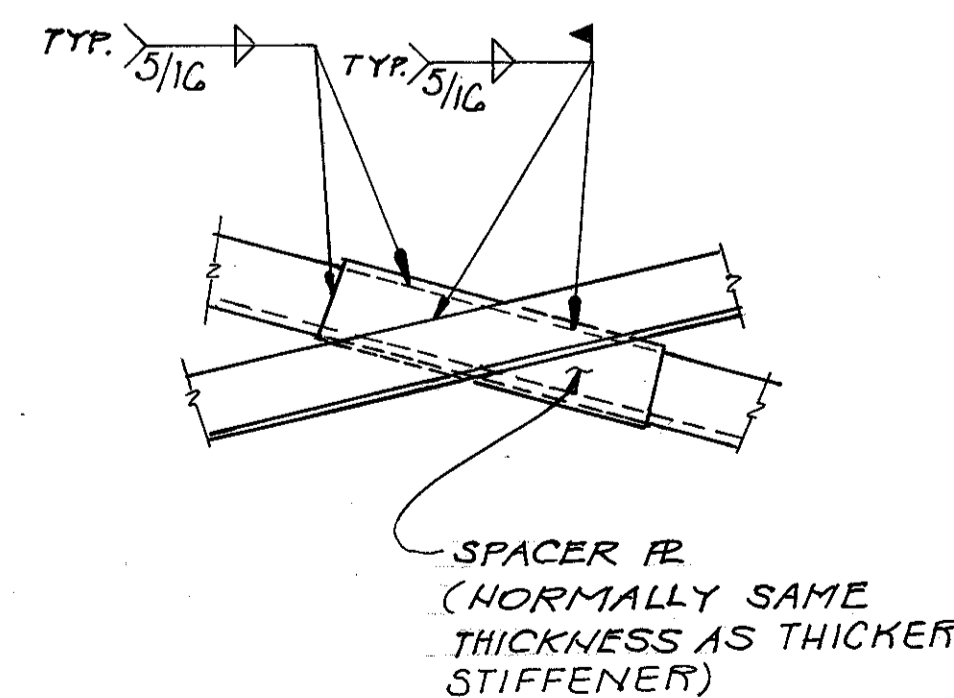


TRANSVERSE SECTION



DETAIL "A"

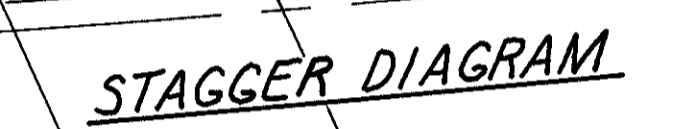
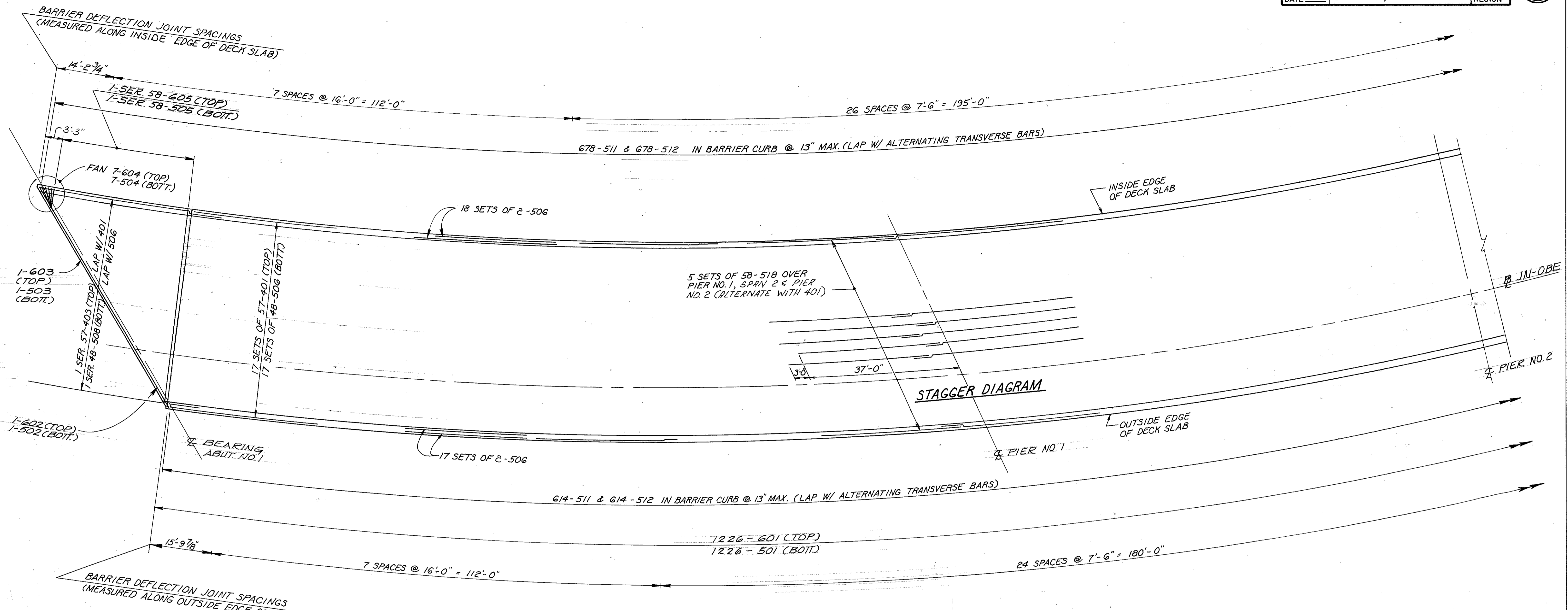
NOTE: THE DETAIL "A" SHOWN ABOVE APPLIES AT OTHER LOCATIONS ALSO.



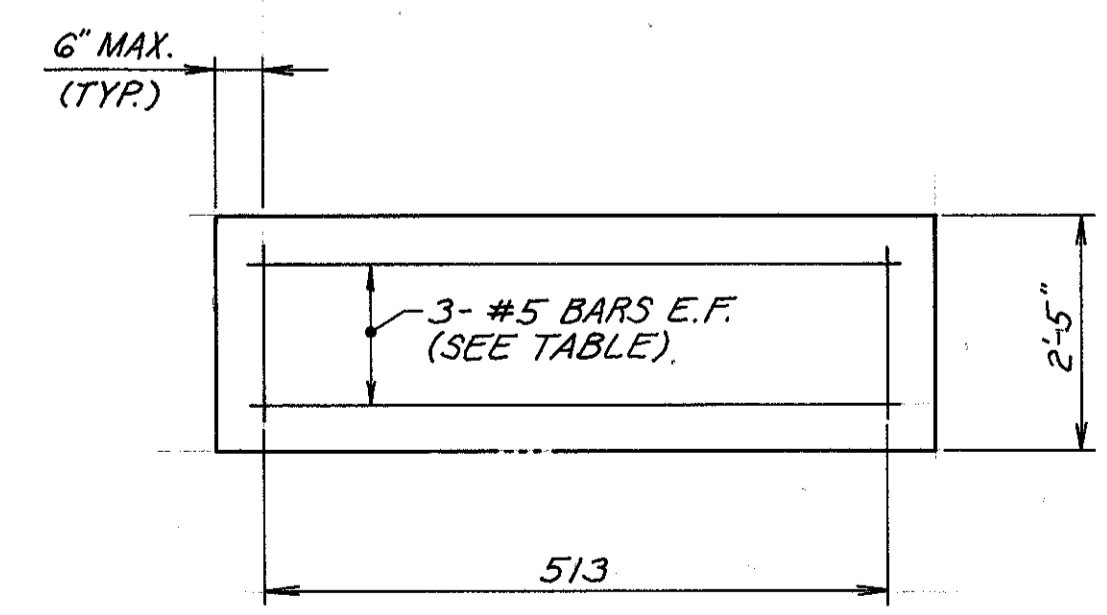
DETAIL "B"

adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131				
TRANSVERSE SECTION				
JENNINGS FREEWAY				
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-IN UNDER LANE JN-OBE				
BRIDGE No. CUY-480-1559				
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE
MJL	HBM	C.T	A.J.M.	1/94

TRANSVERSE 1559



PANEL REINFORCING			
PANEL LENGTH	NUMBER OF BARRIER PANELS	BAR MARK	NUMBER OF 513 BARS
7'-6"	100	514	8
16'-0"	34	515	16
14'-2 3/4"	2	516	14
15'-9 7/8"	2	517	16



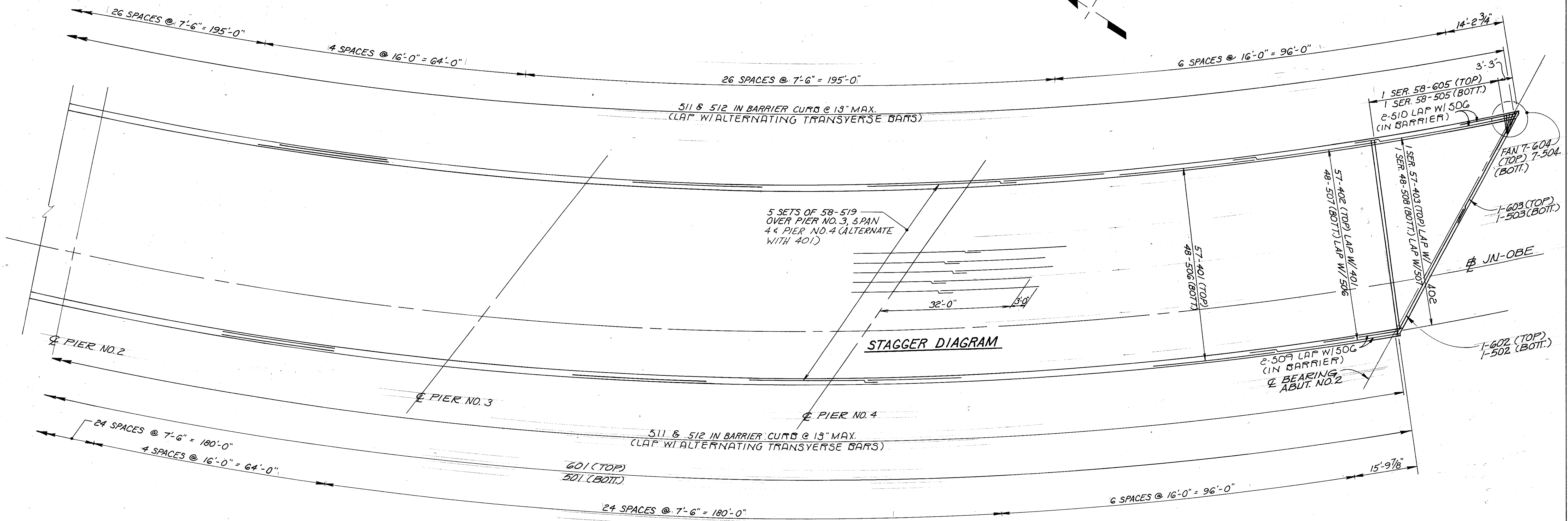
TYPICAL BARRIER PANEL

NOTES:

- ALL TRANSVERSE BARS ARE SPACED @ 6 1/2", MEASURED ALONG OUTSIDE EDGE OF DECK SLAB AND PLACED RADIALLY TO JN-OBE.
- FIELD BEND LONGITUDINAL BARS TO FIT CURVATURE OF ROADWAY AND TRANSVERSE BARS TO FIT CROWN; BENDING SHALL BE INCLUDED WITH ITEM 509 FOR PAYMENT. EPOXY COATED BARS DAMAGED BY FIELD BENDING SHALL BE REPAIRED AS PER APPROVED MANUFACTURER'S RECOMMENDATION.
- FOR SPACING OF THE LONGITUDINAL BARS AT TOP AND BOTTOM OF DECK SLAB, SEE TRANSVERSE SECTION OF THE DECK SLAB ON SHEET 15/21.
- THE FOLLOWING MINIMUM BAR SPLICE LAP LENGTHS SHALL BE PROVIDED UNLESS SHOWN OTHERWISE:
NO. 4 BARS: 1'-7"
NO. 5 BARS: 2'-1"
NO. 6 BARS: 3'-1"
- FOR TYPICAL SECTION OF DECK SLAB AND ADDITIONAL NOTES, SEE SHEET 15/21.
- THE PREFIX 'S' SHALL BE ADDED TO ALL BAR MARKS IN THE SUPERSTRUCTURE.

16/21				
adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131				
SLAB PLAN JENNINGS FREEWAY				
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN UNDER LANE JN-OBE BRIDGE NO. CUY-480-1559				
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE
MJL	HBM	C.T.	A.J.M.	1/94
REVISD				

BRUNING 44-232 67195



NOTES:
SEE SHEET 16/21 FOR NOTES.

17/21

adache - ciuni - lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

SLAB PLAN
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176 & LANE OBW-JN
UNDER
LANE JN-OBE
BRIDGE NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
MJL	HBM	C.T.	A.J.M.	1/94	

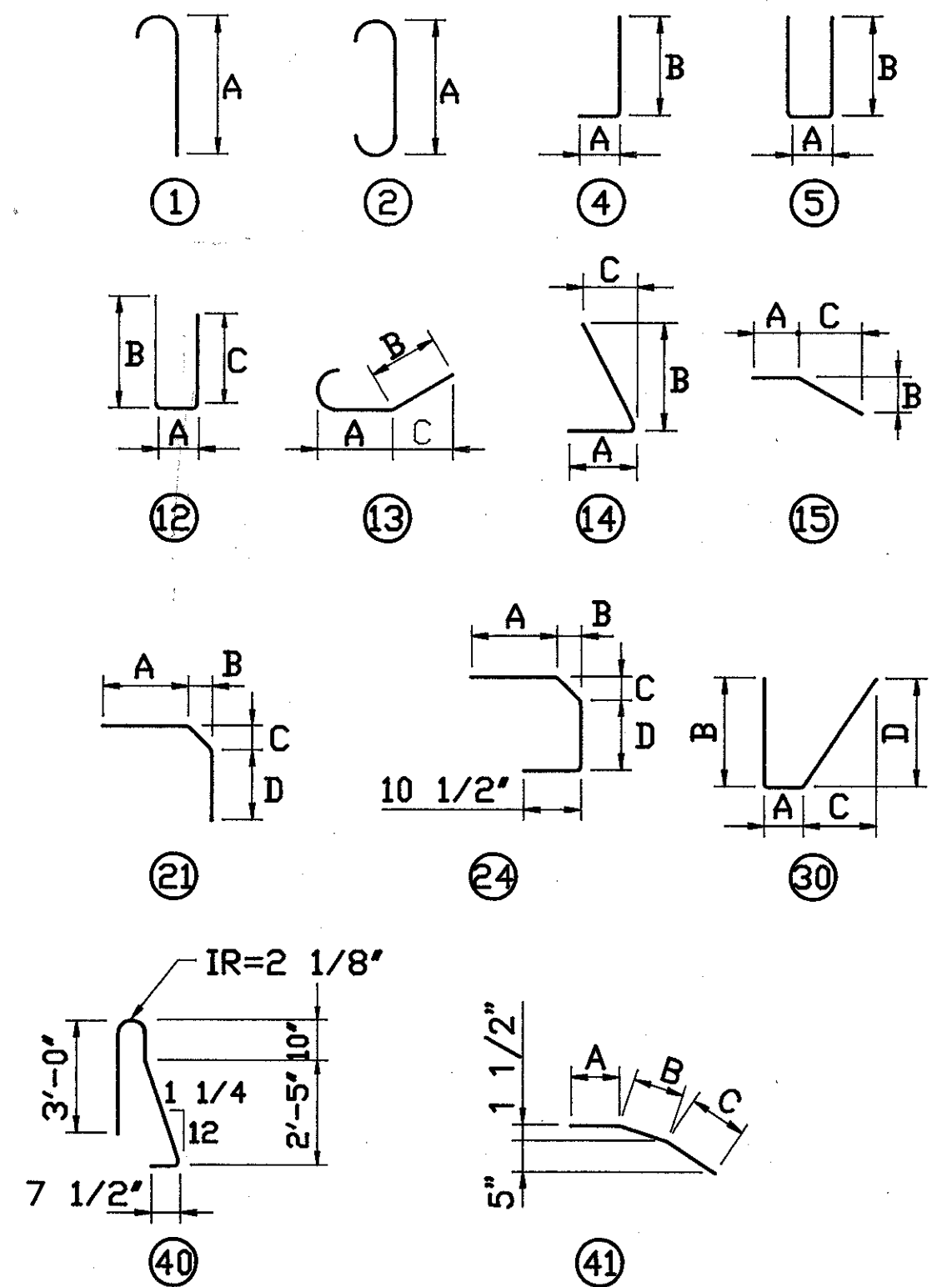
ABUTMENT NO. 1

MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT ft in	WEIGHT (lbs.)
				ft in	ft in	ft in	ft in		
1A 501	73	10 5	2	9 3					793
1A 502	1 SER. 37 BARS	10 1 12 7	5	3 4 3 4	3 6 4 9			13/16	437
1A 503	53	6 11	5	0 10	3 2				382
1A 504	52	30 0	STR.						1627
1A 505	7	10 0	STR.						73
1A 506	7	9 6	STR.						69
1A 507	7	7 6	STR.						55
1A 508	12	11 6	STR.						144
1A 509	2	9 5	STR.						20
1A 510	2	12 1	STR.						25
1A 511	2	14 9	STR.						31
1A 512	6	17 5	STR.						109
1A 513	10	7 7	STR.						79
1A 514	10	9 3	STR.						96
1A 515	10	7 3	STR.						76
1A 516	8	17 9	STR.						148
1A 517	2	15 8	STR.						33
1A 518	2	18 4	STR.						38
1A 519	2	21 0	STR.						44
1A 520	6	23 8	STR.						148
1A 521	2 SER. 6 BARS	7 5 14 11	12	1 1 1 1	3 10 7 7	2 9 6 6		1 6	140
1A 522	9	6 11	40						65
1A 523	23	3 8	21	0 8	0 6	0 8.5	2 3		88
1A 524	14	3 0	1	2 5					44
1A 525	22	4 8	STR.						107
1A 526	4	11 6	STR.						48
1A 527	4	13 8	STR.						57
1A 528	4	13 8	41	9 11	2 4	1 5			57
1A 529	8	13 8	STR.						114
1A 530	10	12 0	STR.						125
1A 531	10	6 0	STR.						63
1A 532	4	8 7	STR.						36
1A 533	7	4 4	30	0 6	2 0	1 7	1 3		32
1A 534	6	3 10	14	2 0	1 7	1 3			24
1A 535	7	4 0	15	2 0	1 7	1 4			29
1A 536	6	4 0	15	2 0	1 7	1 4			25
1A 601	106	14 0	5	1 4	6 6				2229
1A 602	34	13 11	5	1 1	6 7				711
1A 603	14	10 3	STR.						216
1A 604	20	7 8	STR.						230
1A 701	74	17 0	5	3 4	7 0				2571
1A 801	26	34 0	STR.						2360
1A 802	16	15 0	STR.						641
1A 803	82	11 1	2	9 3					2427
1A 804	17	5 0	STR.						227
1A 805	10	30 9	STR.						821
1A 806	28	5 1	13	2 10	1 5	1 0			380
SUB-TOTAL ABUT. 1									18294

ABUTMENT NO. 2

MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT ft in	WEIGHT (lbs.)
				ft in	ft in	ft in	ft in		
2A 501	81	10 5	2	9 3					880
2A 502	1 SER. 37 BARS	8 1 10 7	5	3 4 3 4	2 6 3 9			13/16	360
2A 503	53	6 11	5	0 10	3 2				382
2A 504	48	30 0	STR.						1502
2A 505	9	6 10	STR.						64
2A 506	9	7 10	STR.						74
2A 507	9	5 10	STR.						55
2A 508	10	14 5	STR.						150
2A 509	2	12 6	STR.						26
2A 510	2	15 3	STR.						32
2A 511	2	17 10	STR.						37
2A 512	6	20 6	STR.						128
2A 513	13	10 8	STR.						145
2A 514	13	7 9	STR.						105
2A 515	13	5 9	STR.						78
2A 516	12	21 6	STR.						269
2A 517	2	19 5	STR.						41
2A 518	2	22 1	STR.						46
2A 519	2	24 9	STR.						52
2A 520	6	27 5	STR.						172
2A 521	2 SER. 6 BARS	7 5 14 11	12	1 1 1 1	3 10 7 7	2 9 6 6		1 6	140
2A 522	14	6 11	40						101
2A 523	28	3 8	21	0 8	0 6	0 8.5	2 3		107
2A 524	14	3 0	1	2 5					44
2A 525	22	4 8	STR.						107
2A 526	4	11 6	STR.						48
2A 527	4	13 8	STR.						57
2A 528	4	13 8	41	9 11	2 4	1 5			57
2A 529	8	13 8	STR.						114
2A 530	10	15 10	STR.						165
2A 531	10	8 10	STR.						92
2A 532	4	8 7	STR.						36
2A 533	6	4 4	30	0 6	2 0	1 7	1 3		27
2A 534	6	3 10	14	2 0	1 7	1 3			24
2A 535	6	4 0	15	2 0	1 7	1 4			25
2A 536	6	4 0	15	2 0	1 7	1 4			25
2A 601	106	12 6	5	1 4	5 9				1990
2A 602	44	13 11	5	1 1	6 7				920
2A 603	18	8 6	STR.						230
2A 604	26	11 8	STR.						456
2A 701	74	17 0	5	3 4	7 0				2571
2A 801	26	34 0	STR.						2360
2A 802	16	15 0	STR.						641
2A 803	90	11 1	2	9 3					2663
2A 804	17	5 0	STR.						227
2A 805	10	30 9	STR.						821
2A 806	28	5 1	13	2 10	1 5	1 0			380
SUB-TOTAL ABUT. 2									19026
TOTAL WEIGHT									37320

BENDING DIAGRAMS



NOTES:

1. ALL REINFORCING STEEL TO BE EPOXY COATED.
2. BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

18/21

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176
& LANE OBW-JN UNDER
LANE JN-OBE
BR. NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.E.S.	M	C.T.	T.A.B.	1/94	

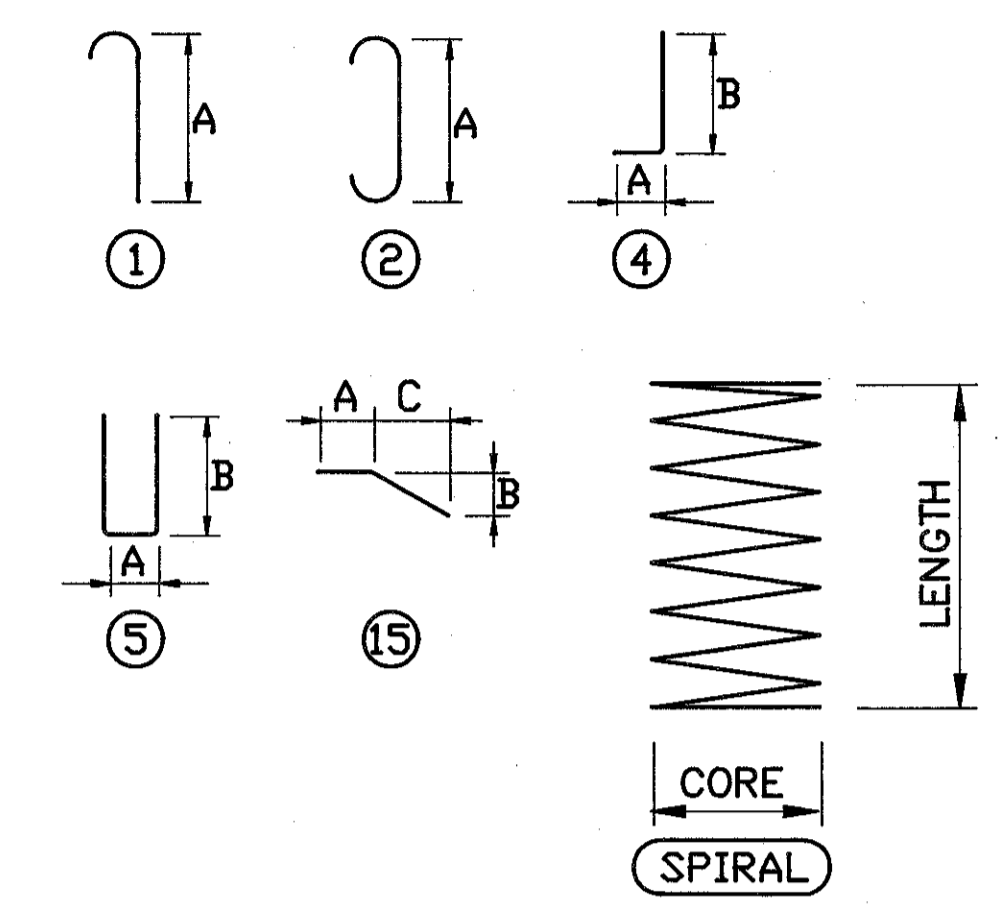
PIER NO. 1

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	
1P 501	24	22	4	STR							559
1P 502	16	7	5	15	4 0	1 0	3 4				124
1P 503	12	10	6	STR							131
1P 504	4	13	3	STR							55
1P 601	96	11	3	5	2 9	4 5					1622
1P 602	8 SER. 5 BARS	9 9		5	2 9	3 8			0 4		630
		11 3			2 9	4 5					
1P 801	8	49	11	5	42 0	4 2					1066
1P 802	16	15	1	1	14 0						644
1P 803	48	15	4	2	13 6						1965
1P 901	8	35	0	STR							952
1P 1001	54	18	4	2	15 6						4260
1P 1101	66	19	8	4	2 0	18 0					6896
1P 1102	66	28	4	1	26 9						9935
TOTAL WEIGHT											28839

PIER NO. 2

MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft	in	ft	in	ft	in	
2P 501	24	21	2	STR							530
2P 502	16	7	5	15	4 0	1 0	3 4				124
2P 503	12	10	0	STR							125
2P 504	4	12	8	STR							53
2P 601	88	11	3	5	2 9	4 5					1487
2P 602	8 SER. 5 BARS	9 9		5	2 9	3 8			0 4		630
		11 3			2 9	4 5					
2P 701	48	13	2	2	11 6						1292
2P 702	8	32	8	STR							534
2P 801	8	47	7	5	39 8	4 2					1016
2P 802	16	15	1	1	14 0						644
2P 901	48	18	0	2	15 6						2938
2P 1101	36	19	5	4	2 0	17 9					3714
2P 1102	36	41	4	1	39 9						7906
TOTAL WEIGHT											20993

BENDING DIAGRAMS



PIER NO. 1 SPIRAL

MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft	lbs	in	in	NO.	ANGLE SIZE
SP 501	1	21 9	1105	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 502	1	22 10	1158	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 503	1	24 0	1215	42	3	4	L 1 1/4 X 1 1/4 X 1/8
TOTAL WEIGHT			3478				

PIER NO. 2 SPIRAL

MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft	lbs	in	in	NO.	ANGLE SIZE
SP 501	1	34 10	1749	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 502	1	35 9	1794	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 503	1	36 9	1843	42	3	4	L 1 1/4 X 1 1/4 X 1/8
TOTAL WEIGHT			5386				

NOTES:

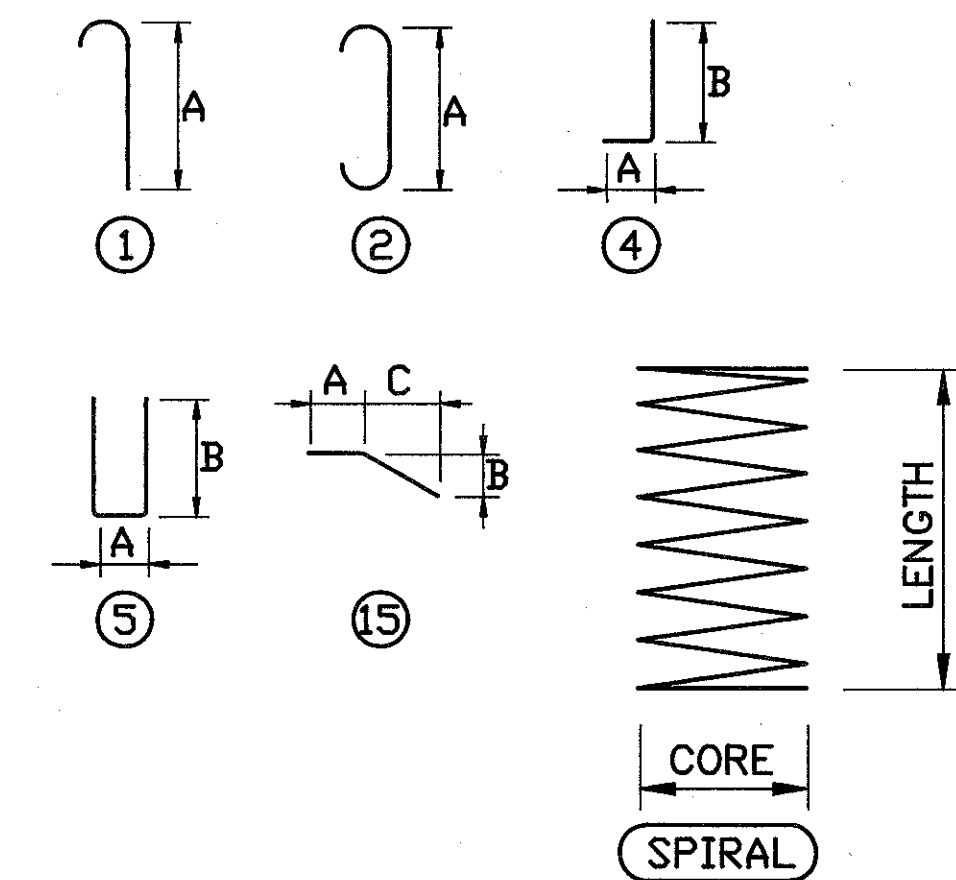
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- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176
& LANE OBW-JN UNDER
LANE JN-OBE
BR. NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
C.T.	M	M.J.L.	T.A.B.	1/94	

BENDING DIAGRAMS



PIER NO. 3											
MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft in	ft in	ft in	ft in	ft	in	
3P 501	24	24	5	STR							611
3P 502	16	7	5	15	4 0	1 0	3 4				124
3P 503	12	11	6	STR							144
3P 504	4	14	3	STR							59
3P 601	112	11	3	5	2 9	4 5					1893
3P 602	8 SER.	9	9	5	2 9	3 8			0	4	630
	5 BARS	11	3		2 9	4 5					
3P 801	66	17	4	2	15 6						3054
3P 901	16	16	3	1	15 0						884
3P 1001	84	22	4	2	19 6						8072
3P 1002	8	53	10	5	46 2	4 2					1853
3P 1003	8	39	2	STR							1348
3P 1401	78	19	0	4	3 6	16 0					11337
3P 1402	13	33	8	1	31 5						3348
3P 1403	13	28	5	STR							2826
3P 1404	13	34	8	1	32 5						3448
3P 1405	13	29	5	STR							2925
3P 1406	13	35	8	1	33 5						3547
3P 1407	13	30	5	STR							3025
TOTAL WEIGHT											49128

PIER NO. 4											
MARK	NUMBER REQUIRED	LENGTH		TYPE	DIM A	DIM B	DIM C	DIM D	INCREMENT		WEIGHT (lbs.)
		ft	in		ft in	ft in	ft in	ft in	ft	in	
4P 501	24	25	11	STR							649
4P 502	16	7	5	15	4 0	1 0	3 4				124
4P 503	12	12	3	STR							153
4P 504	4	14	11	STR							62
4P 601	128	11	3	5	2 9	4 5					2163
4P 602	8 SER.	9	9	5	2 9	3 8			0	4	630
	5 BARS	11	3		2 9	4 5					
4P 801	66	17	4	2	15 6						3054
4P 901	16	16	3	1	15 0						884
4P 1001	84	22	4	2	19 6						8072
4P 1002	8	56	10	5	49 2	4 2					1956
4P 1003	8	42	2	STR							1452
4P 1401	78	19	0	4	3 6	16 0					11337
4P 1402	13	34	8	1	32 5						3448
4P 1403	13	29	5	STR							2925
4P 1404	13	35	11	1	33 8						3572
4P 1405	13	30	8	STR							3050
4P 1406	13	37	1	1	34 10						3688
4P 1407	13	31	10	STR							3166
TOTAL WEIGHT											50385

PIER NO. 3 SPIRAL							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft in	lbs	in	in	NO.	ANGLE SIZE
SP 501	1	40 11	2048	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 502	1	41 11	2097	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 503	1	42 11	2147	42	3	4	L 1 1/4 X 1 1/4 X 1/8
TOTAL	WEIGHT		6292				

PIER NO. 4 SPIRAL							
MARK	NUMBER REQ'D	LENGTH	WEIGHT	CORE	PITCH	SPACERS	
		ft in	lbs	in	in	NO.	ANGLE SIZE
SP 501	1	41 11	2097	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 502	1	43 2	2159	42	3	4	L 1 1/4 X 1 1/4 X 1/8
SP 503	1	44 4	2216	42	3	4	L 1 1/4 X 1 1/4 X 1/8
TOTAL	WEIGHT		6472				

NOTES:

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

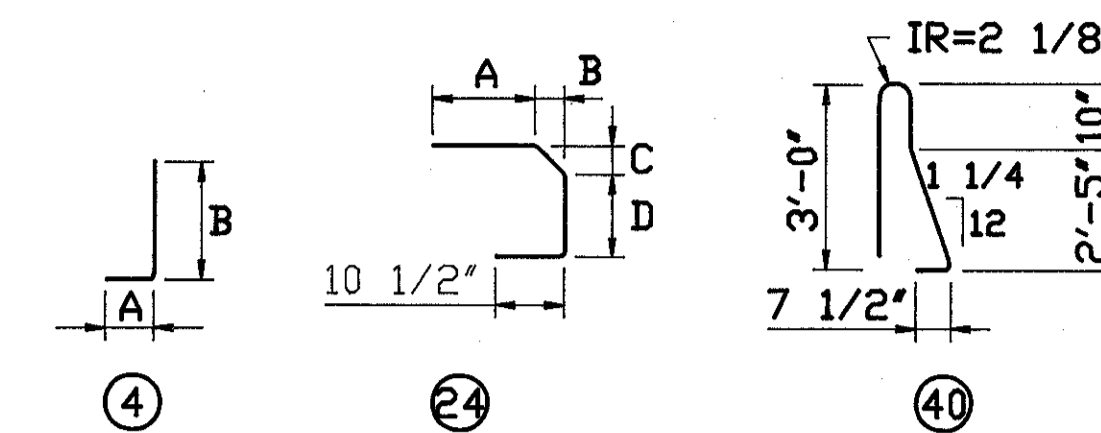
REINFORCING SCHEDULE
JENNINGS FREEWAY
I-480, CONRAIL, STATE ROUTE 176
& LANE OBW-JN UNDER
LANE JN-OBE
BR. NO. CUY-480-1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
C.T.	M	M.J.L.	T.A.B.	1/94	

SUPERSTRUCTURE

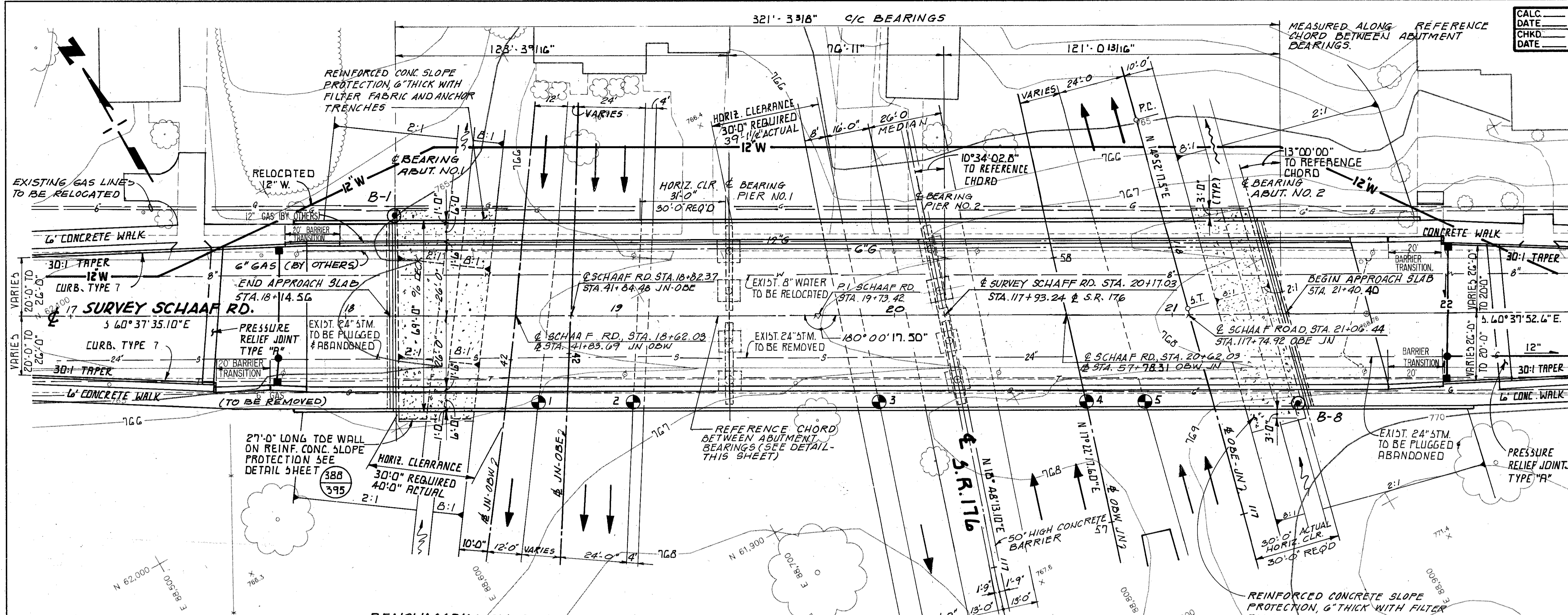
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
S 401	969	40 0	STR.						25892
S 402	57	19 0	STR.						723
S 403	2 SER. 57 BARS	3 0 35 8	STR.					7	1472
S 501	1226	42 8	STR.						54559
S 502	2	30 0	STR.						63
S 503	2	27 6	STR.						57
S 504	14	4 0	STR.						58
S 505	2 SER. 58 BARS	4 0 42 0	STR.					8	2783
S 506	956	40 0	STR.						39884
S 507	48	27 6	STR.						1377
S 508	2 SER. 48 BARS	3 5 35 9	STR.					8 1/4	1961
S 509	4	27 3	STR.						114
S 510	4	16 9	STR.						70
S 511	1292	3 4	24	0 9	0 6	0 8 1/2	1 0		4492
S 512	1292	2 6	4	0 10	1 9				3369
S 513	1404	6 11	40						10129
S 514	600	7 2	STR.						4485
S 515	204	15 8	STR.						3333
S 516	12	13 11	STR.						174
S 517	12	15 6	STR.						194
S 518	290	38 0	STR.						11494
S 519	290	36 0	STR.						10889
S 601	1226	42 8	STR.						78569
S 602	2	40 0	STR.						120
S 603	2	18 0	STR.						54
S 604	14	4 0	STR.						84
S 605	2 SER. 58 BARS	4 0 42 0	STR.					8	4007
TOTAL WEIGHT									260406

BENDING DIAGRAMS



NOTES:

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- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.



PROPOSED STRUCTURE

TYPE: CONTINUOUS COMPOSITE R-572 PAINTED PLATE GIRDER WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE

SPANS: 123'-3.316" 76'-11" 121'-0.1316" C/C BEARINGS MEASURED ALONG REFERENCE CHORD

WIDTH: 52'-0" T&E/TOE BARRIERS WITH TWO (2) 6' FT. SIDEWALKS

LOADING: HS-20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING

SKEW: VARIES

WEARING SURFACE: MONOLITHIC CONCRETE

APPROACH SLABS: AS-1.81 AS PER PLAN (30'-0" LONG)

ALIGNMENT: TANGENT

SUPERELEVATION: NONE (NORMAL CROWN)

SLOPE PROTECTION: REINFORCED CONCRETE 6" THICK, WITH FILTER FABRIC AND ANCHOR TRENCHES.

TRAFFIC (SCHAAF RD)

AVERAGE DAILY TRAFFIC (2013) = 11432

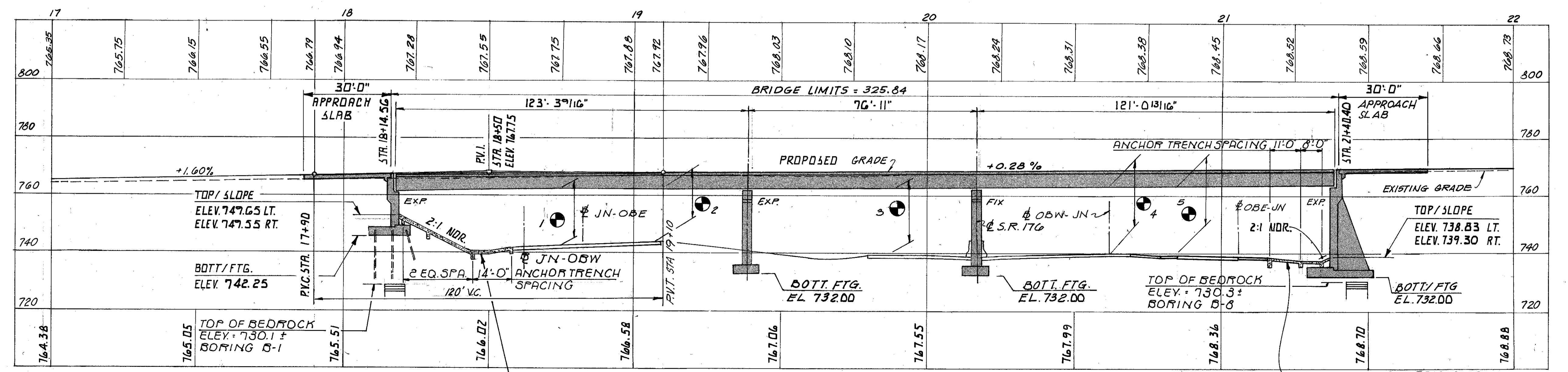
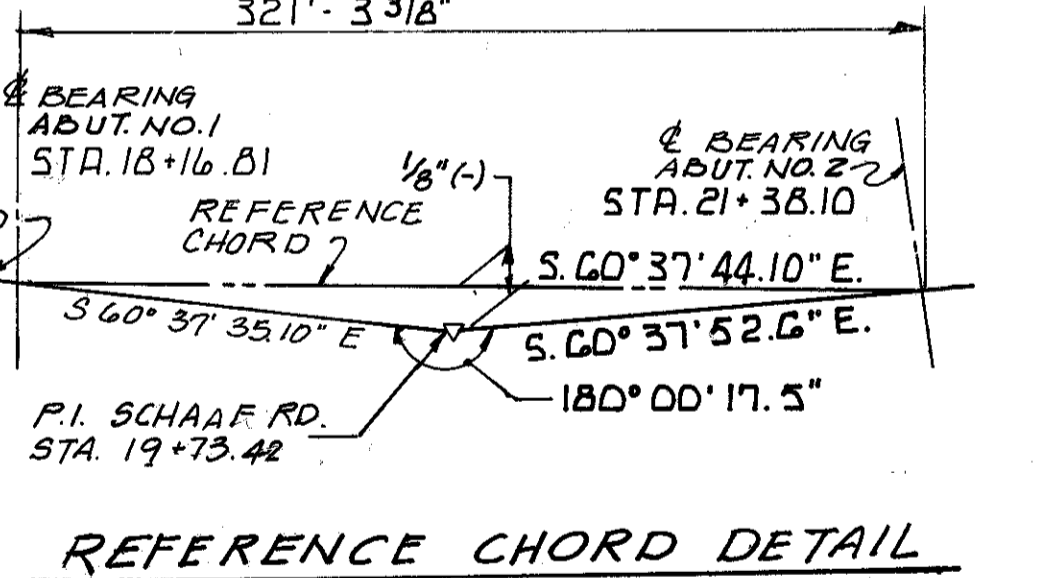
AVERAGE DAILY TRUCK TRAFFIC (2013) = 457

FOUNDATION DATA

ABUTMENT NO.1 SHALL BE SUPPORTED ON H.P. 12 X 53 BEARING PILES. THE AVERAGE ESTIMATED PILE LENGTH IS 15 LINEAL FEET. ABUTMENT NO.2 AND PIER FOOTINGS SHALL BE FOUNDED ON BEDROCK. TURN-BACK WALLS SHALL BE SUPPORTED ON PEDESTAL FOOTINGS WITH H.P. 12 X 53 BEARING PILES DRIVEN TO BEDROCK.

INDICATES LOCATION OF SOIL BORING FOR ADDITIONAL DETAILS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS.

- 1) 17'-0.11" ACTUAL, 10'-6" REQUIRED
- 2) 16'-6.718" ACTUAL, 10'-6" REQUIRED
- 3) 22'-5.718" ACTUAL, 10'-6" REQUIRED
- 4) 22'-1.12" ACTUAL, 10'-6" REQUIRED
- 5) 23'-0.918" ACTUAL, 10'-6" REQUIRED



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 CONSULTING ENGINEERS CLEVELAND, OHIO 44131

SITE PLAN
JENNINGS FREEWAY
 STATE ROUTE 176
 UNDER
 SCHAAF ROAD
 BRIDGE NO. CUY-176-10.15
 STA. 18+14.56 TO STA. 21+40.40

CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.P.N.	M.J.L.	L.E.D.	7-31-92	

STRUCTURAL GENERAL NOTES

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

359
395

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO STANDARD DRAWINGS:

AS-1-81 DATED 11-27-81
SD-1-69 REVISED 6-12-69
EXJ-4-87 DATED 1-5-89
VPF-1-90 DATED 2-1-92

AND TO SUPPLEMENTAL SPECIFICATION(S)

910 DATED 6-1-91
944 DATED 5-13-91

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN DATA:

DESIGN LOADING:

DESIGN LOADING - HS20-44 (CASE II) AND THE ALTERNATE MILITARY LOADING
FUTURE WEARING SURFACE = 30 LBS PER SQUARE FT.

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI
SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615
STRUCTURAL STEEL ASTM A572 - YIELD STRENGTH 50,000 PSI

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL, 2 1/2" CONCRETE COVER AND SEALING OF CONCRETE SURFACES

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES TO BE 1" THICK

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN ABUTMENT DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

CONSTRUCTION CONSTRAINTS:

ALL EMBANKMENT MATERIAL FOR FILLING THE VOID CREATED BY EXCAVATING FOR THE REAR ABUTMENT SHALL BE 203 GRANULAR EMBANKMENT MATERIAL. AFTER THE PILES HAVE BEEN DRIVEN AND THE FOOTING AND THE BREAKWALL HAVE BEEN CONSTRUCTED, THE VOID BEHIND THE REAR ABUTMENT SHALL BE FILLED UP TO THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACKWALL AND SETTING THE BEAMS ON THE ABUTMENT.

CONSTRUCTION CONSTRAINTS:

ALL EMBANKMENT MATERIAL FOR FILLING THE VOID CREATED BY EXCAVATING FOR THE FORWARD ABUTMENT FOOTING SHALL BE 203 GRANULAR EMBANKMENT MATERIAL. AFTER THE FOOTING AND THE BREASTWALL HAVE BEEN CONSTRUCTED, THE VOID BEHIND THE FORWARD ABUTMENT SHALL BE FILLED UP TO THE BEAM SEAT UP ON A 1:1 SLOPE TO THE SUBGRADE ELEVATION PRIOR TO CONSTRUCTING THE BACKWALL AND SETTING THE BEAMS ON THE ABUTMENT.

ITEM 503 UNCLASSIFIED EXCAVATION, AS PER PLAN:

UNCLASSIFIED EXCAVATION SHALL BE IN ACCORDANCE WITH 503 EXCEPT THAT THE BACKFILL MATERIAL BEHIND THE ABUTMENTS SHALL BE 203 GRANULAR MATERIAL PLACED IN LIFTS NOT TO EXCEED A THICKNESS OF MORE THAN SIX (6) INCHES.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EDGE OF DECK SLAB AS SHOWN ON THE TRANSVERSE SECTION ON SHEET 18/22, TO THE ABUTMENTS AS SHOWN ON SHEET 6/22, & 10/22 AND ALL EXPOSED SURFACES OF THE PIER. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOUNDATION BEARING PRESSURE:

ABUTMENT NO. 2 FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 2.7 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.
PIER FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 3.0 TONS PER SQUARE FEET. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.

FOOTINGS:

FOOTINGS SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN, WHICHEVER IS LOWER.

PILE DRIVEN TO BEDROCK

PILES SHALL BE DRIVEN TO REFUSAL ON BEDROCK. REFUSAL SHALL BE CONSIDERED AS OBTAINED BY PENETRATING SOFT BEDROCK FOR SEVERAL INCHES WITH A MINIMUM RESISTANCE OF 20 BLOWS PER INCH OR REFUSAL SHALL BE CONSIDERED AS OBTAINED AFTER THE PILE HAS CONTACTED HARD BEDROCK AND THE PILE HAS THEN RECEIVED AT LEAST 20 BLOWS.

FOR PILE DESIGN LOADS AND ESTIMATED PAY LENGTH SEE PILING PLAN ON SHEET 4/22.

ITEM SPECIAL - PAINTING OF NEW STEEL, SYSTEM IZEU

THE URETHANE FINISH COAT SHALL BE GRAY, FEDERAL STANDARD NO. FS-595A-16440.

ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPERSTRUCTURE	GENERAL	AS BUILT	CALC. S.M. & C.T.	
										DATE	DATE
503	21103	2211	CU.YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE, AS PER PLAN	1,844	367					
505	11100	LUMP	LUMP	PILE DRIVING EQUIPMENT MOBILIZATION	LUMP						
507	14400	1520	LIN.FT.	STEEL PILES HP 12 X 53	1,520						
509	15840	433,274	POUND	EPOXY COATED REINFORCING STEEL, GRADE 60	156,326	66,476	210,472				
SPEC.	51148000	649	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (DECK) *			649				
SPEC.	51148020	250	CU.YD.	HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (SIDEWALK & PARAPET) *			250				
SPEC.	51148040	1,465	CU.YD.	HIGH PERFORMANCE CONCRETE SUBSTRUCTURE *	1,242	223					
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE TRIAL MIX *				LUMP			
SPEC.	51267504	2,714	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *	814	239	1,661				
512	44400	5	SQ.YD.	TYPE B WATERPROOFING	5						
513	00100	50,000	POUND	STRUCTURAL STEEL, (AISC CERTIFICATION NOT REQUIRED)			50,000				
513	12400	693,000	POUND	STRUCTURAL STEEL, A572-50 AISC CATEGORY III *			693,000				
513	20000	3,072	EACH	WELDED STUD SHEAR CONNECTOR			3,072				
514	00610	743,000	POUND	PAINTING OF NEW STEEL, SYSTEM IZEU *			743,000				
516	11210	136	LIN.FT.	STRUCTURAL EXPANSION JOINT INCLUDING ELASTOMERIC STRIP SEAL *			136				
516	13600	238	SQ.FT.	1" PREFORMED EXPANSION JOINT FILLER	238						
516	30500	93	LIN.FT.	PVC WATERSTOP	93						
516	44201	16	EACH	LAMINATED ELASTOMERIC BEARING (12' X 18" X 3 5/8" LAMINATED ELASTOMERIC PAD W/ 13' X 21' X 2" STEEL LOAD PLATE), AS PER PLAN	16						
516	44001	8	EACH	LAMINATED ELASTOMERIC BEARING (16' X 22" X 1 5/8" LAMINATED ELASTOMERIC PAD W/ 17' X 23' X 2" STEEL LOAD PLATE), AS PER PLAN		8					
516	44001	8	EACH	LAMINATED ELASTOMERIC BEARING (16' X 22" X 4" LAMINATED ELASTOMERIC PAD W/ 17' X 23' X 2" STEEL LOAD PLATE), AS PER PLAN		8					
518	21200	443	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC	443						
518	40001	162	LIN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN	162						
518	40011	54	LIN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS, AS PER PLAN	54						
601	21001	487	SQ.YD.	CONCRETE SLOPE PROTECTION, AS PER PLAN	487						
SPEC.	60739930	840	LIN.FT.	VANDAL PROTECTION FENCE, 12' CURVED, COATED FABRIC			840				

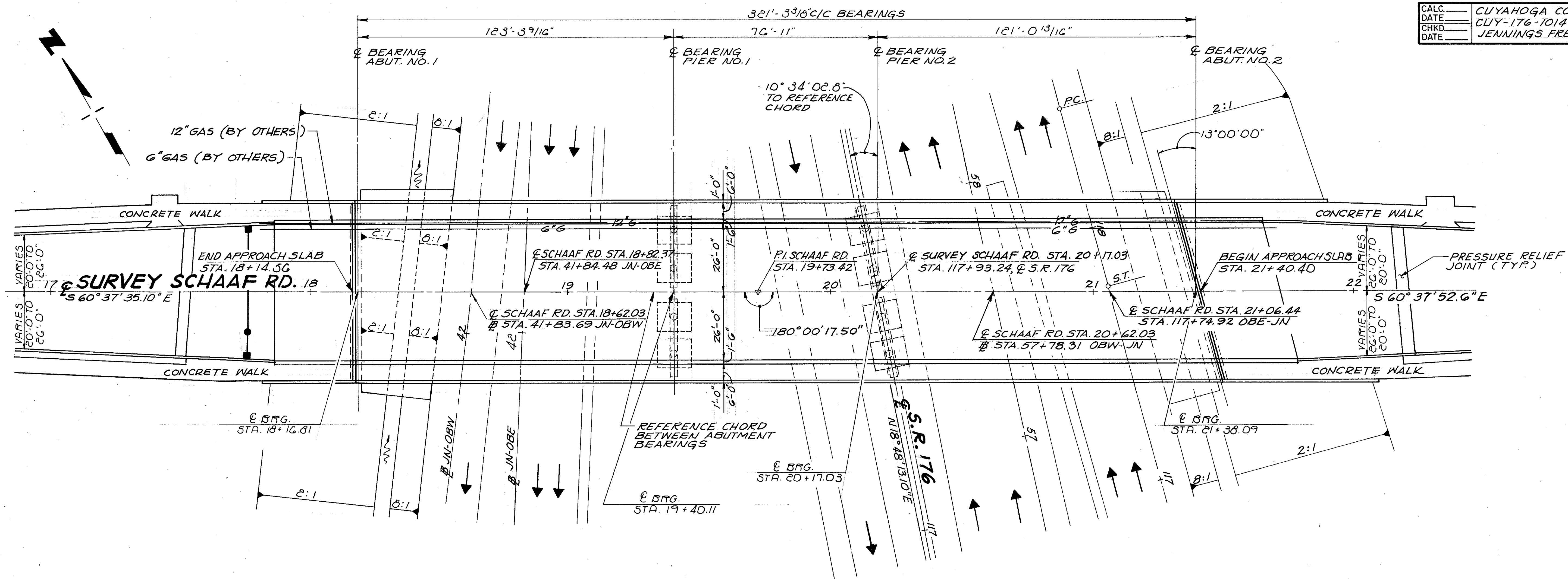
* SEE PROPOSAL NOTE

2 / 22

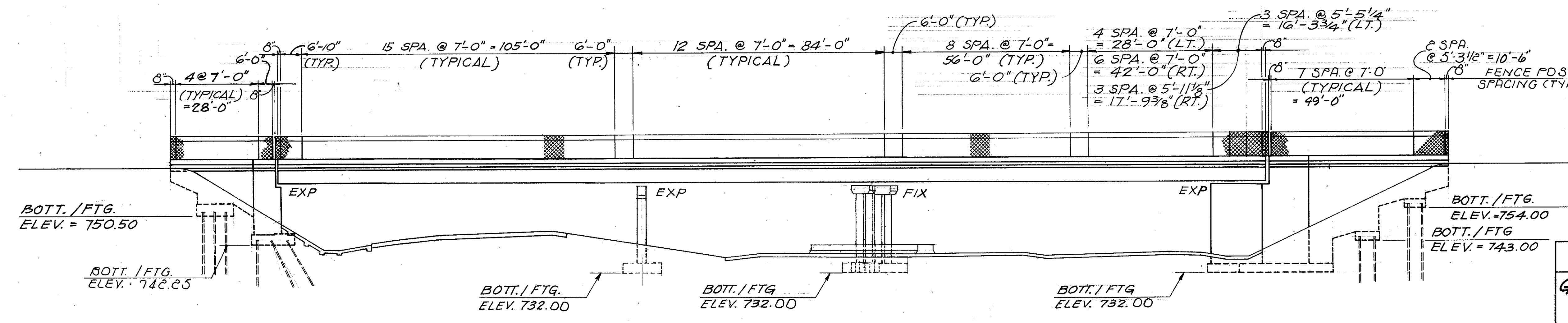
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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

**STRUCTURAL GENERAL NOTES
AND ESTIMATED QUANTITIES**
JENNINGS FREEWAY
STATE ROUTE 176
UNDER
SCHAAF ROAD
BR. NO. CUY-176-1065

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M	C.T.	A.J.M.	1/94	



GENERAL PLAN



ELEVATION

NOTES
 1. FOR PARAPET PANEL SPACING SEE SHT. 20/22
 2. FOR FENCE DETAILS, SEE MISCELLANEOUS DETAILS SHEET 366/395

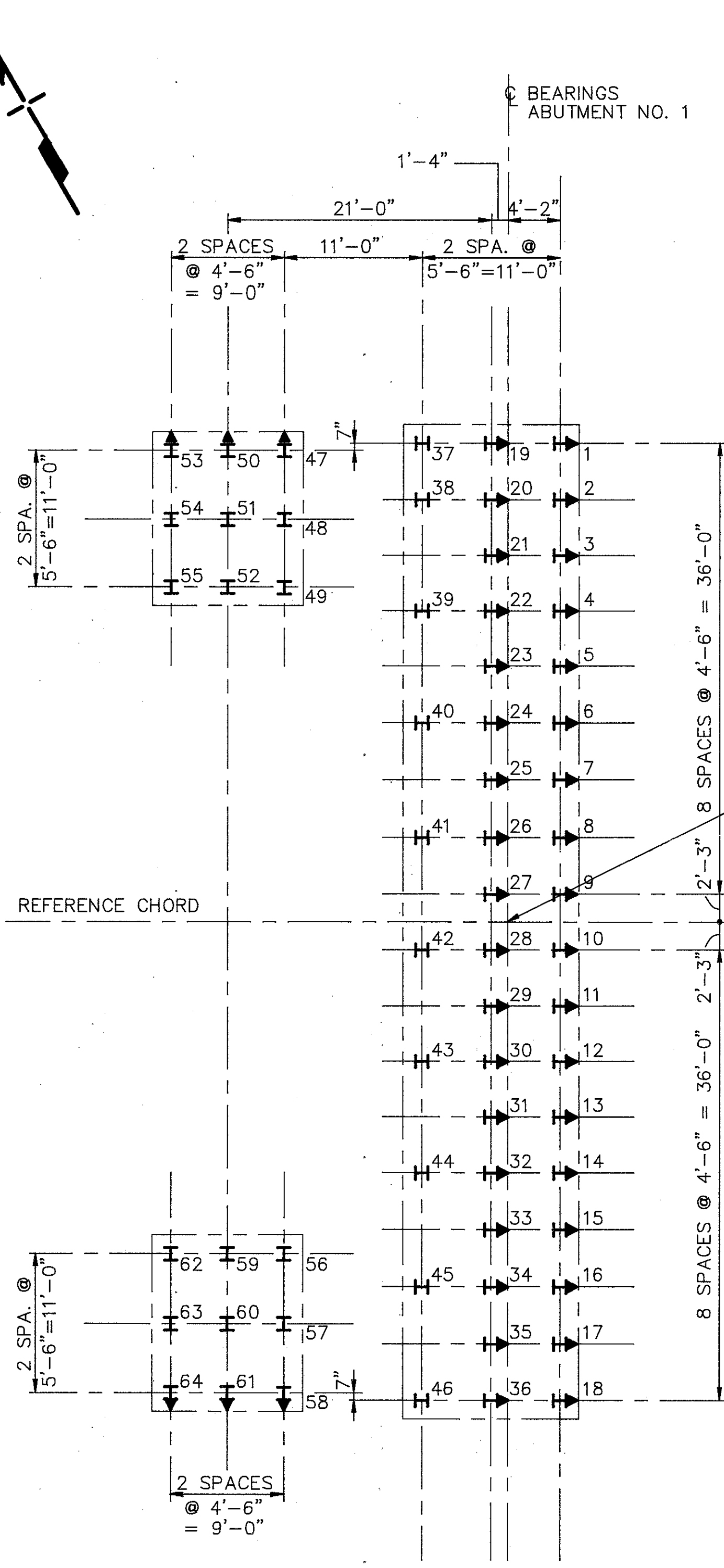
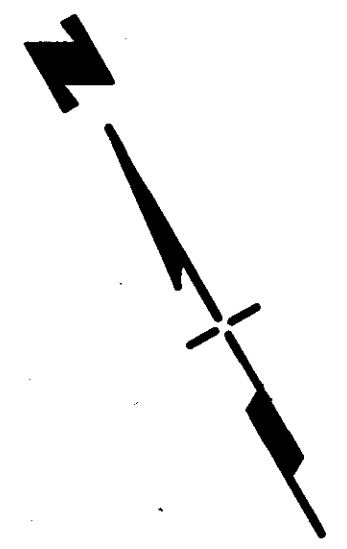
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 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
GENERAL PLAN & ELEVATION
 JENNINGS FREEWAY
 STATE ROUTE 176
 UNDER
 SCHAAF ROAD
BRIDGE NO. CUY-176-1065

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	HBM	C.T.	A.J.M.	1/94	

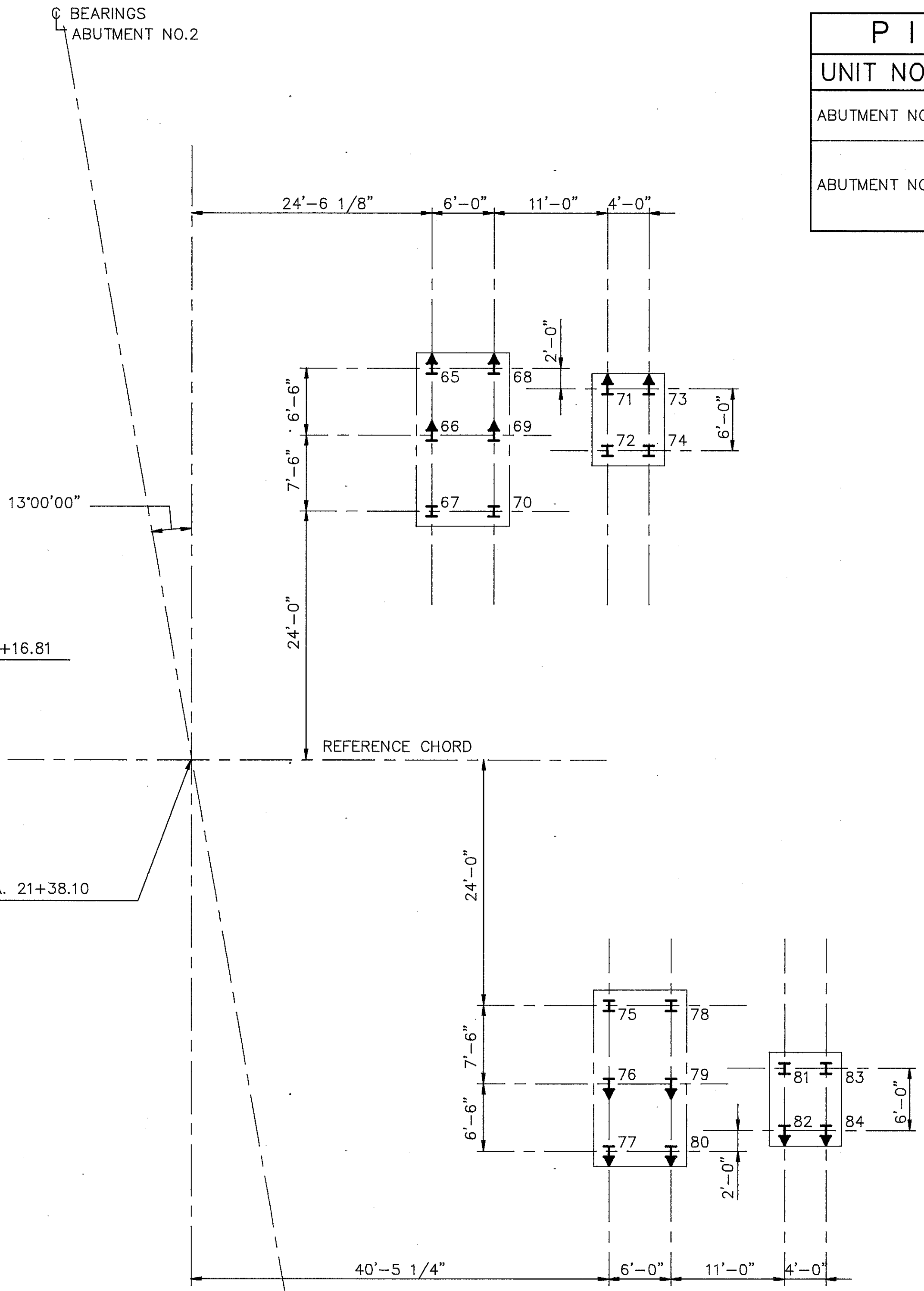
BRUNING 44-232-67195

PILE TABLE			
UNIT NO.	PILE NO.	DESIGN LOAD	ESTIMATED PILE LENGTH
ABUTMENT NO.1	1 - 46	55 TONS	15 L.F.
	47 - 64	40 TONS	25 L.F.
ABUTMENT NO.2	65 - 70	65 TONS	15 L.F.
	71 - 74	35 TONS	25 L.F.
	75 - 80	65 TONS	15 L.F.
	81 - 84	35 TONS	25 L.F.

- NOTES:**
- ▶ - INDICATES 3:1 BATTER
 - ALL PILES SHALL BE STEEL HP12 X 53



PILE LOCATION PLAN
ABUTMENT NO. 1



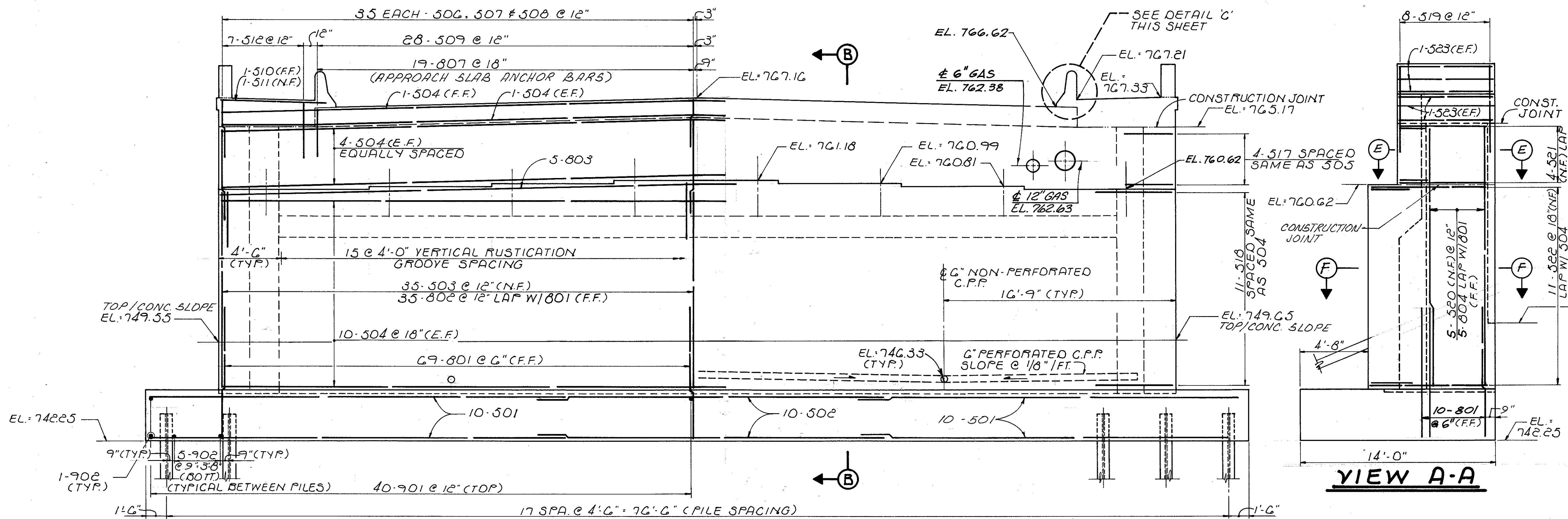
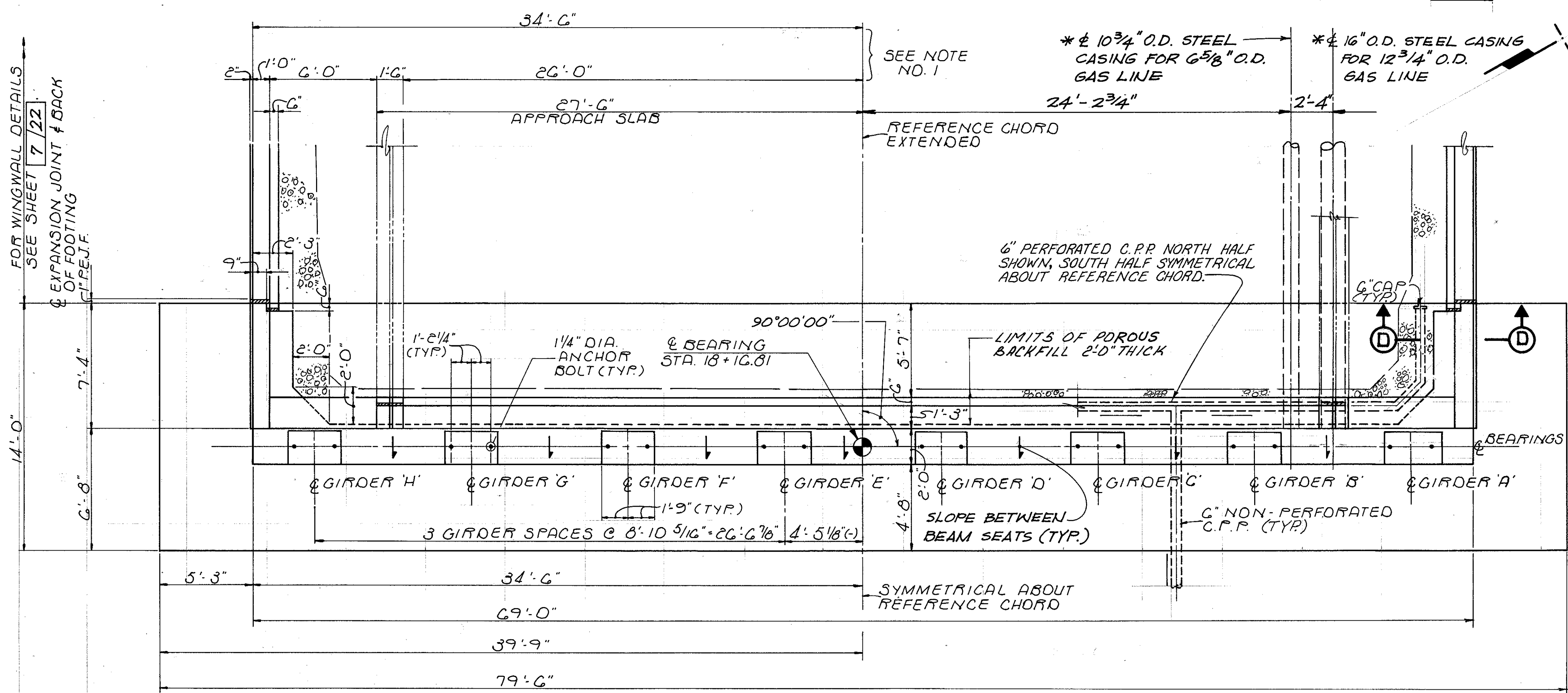
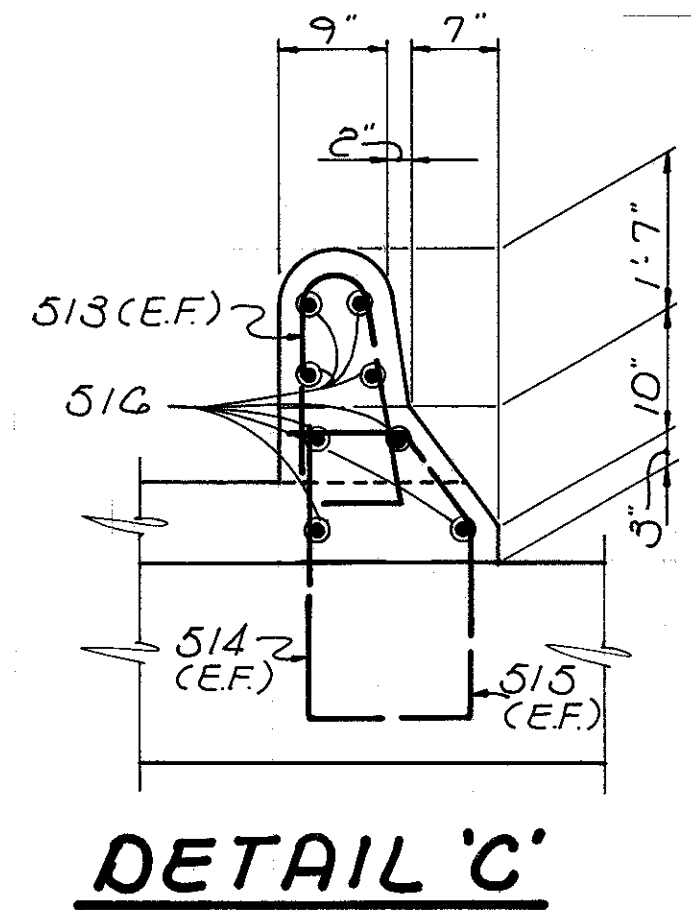
PILE LOCATION PLAN
ABUTMENT NO. 2

* FOR NOTES REFER TO SHEET 6/22

CALC.	CUYAHOGA COUNTY	OHIO
DATE	CUY-176-10.14	FHWA REGION 5
CHKD.	JENNINGS FREEWAY	362
DATE		395

NOTES:

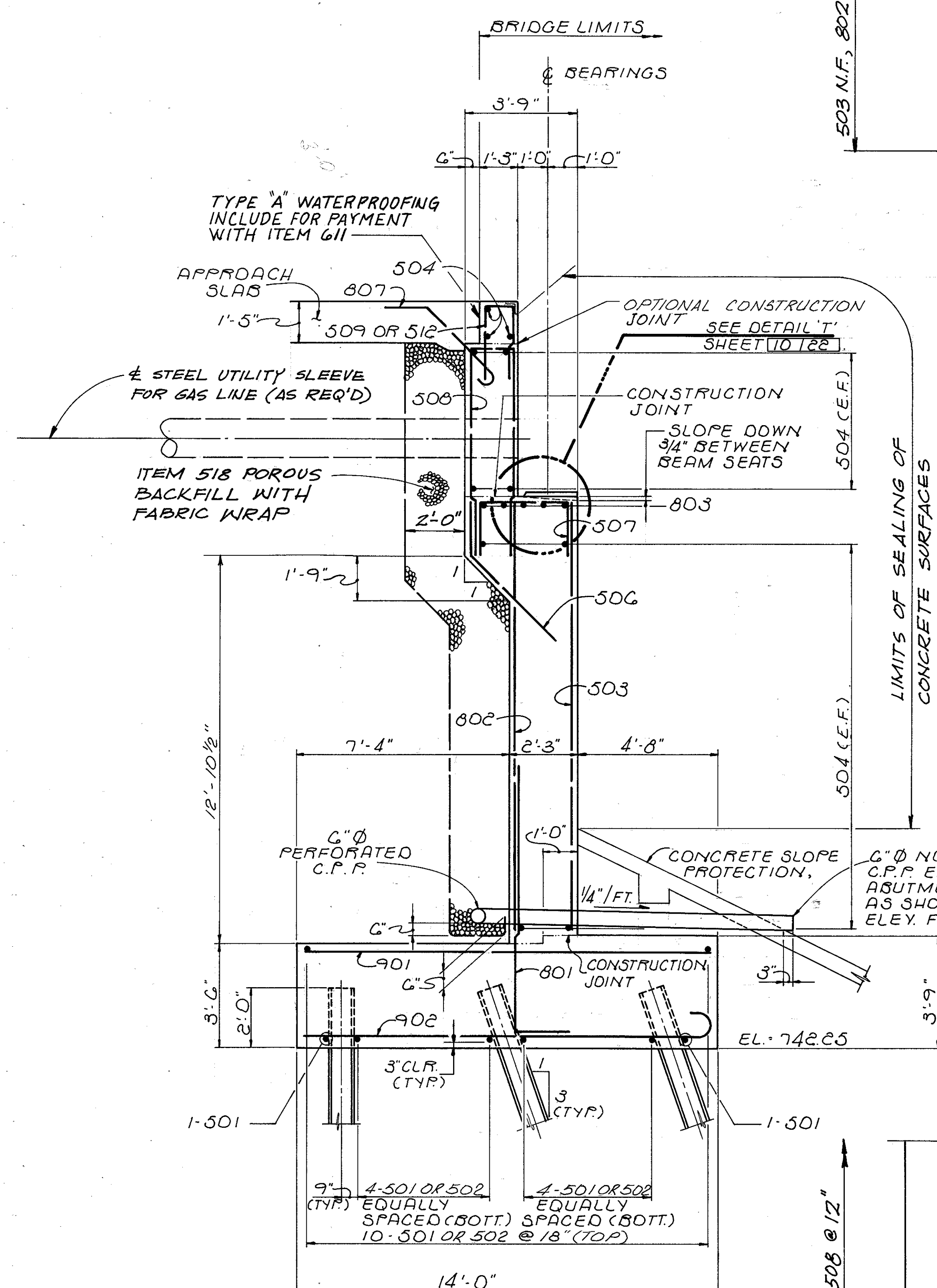
- 1) DIMENSIONS ARE GIVEN IN RESPECT TO THE REFERENCE CHORD EXTENDED BEYOND THE & BEARING.
- 2) THE PREFIX "IA" SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR ABUTMENT NO. 1.
- 3) BRIDGE SEAT REINFORCING: REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF BEARING ANCHOR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.
- 4) MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:
 #5 = 2'-11"
 #8 = 5'-9"
 UNLESS NOTED OTHERWISE.
- 5) SEE SHEET 6/22 FOR SECTIONS B-B, C-C, D-D, E-E & F-F.
- 6) BACKWALL CONCRETE: IN ADDITION TO THE PROVISIONS OF 511.08, BACKWALL CONCRETE ABOVE THE OPTIONAL CONSTRUCTION JOINT AT THE APPROACH SLAB SEAT SHALL NOT BE PLACED UNTIL AFTER THE DECK CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
- 7) ABBREVIATIONS:
 P.E.J.F. - PREFORMED EXPANSION JOINT FILLER
 N.F. - NEAR FACE
 F.F. - FAR FACE
 E.F. - EACH FACE
 C.P.P. - CORRUGATED PLASTIC PIPE



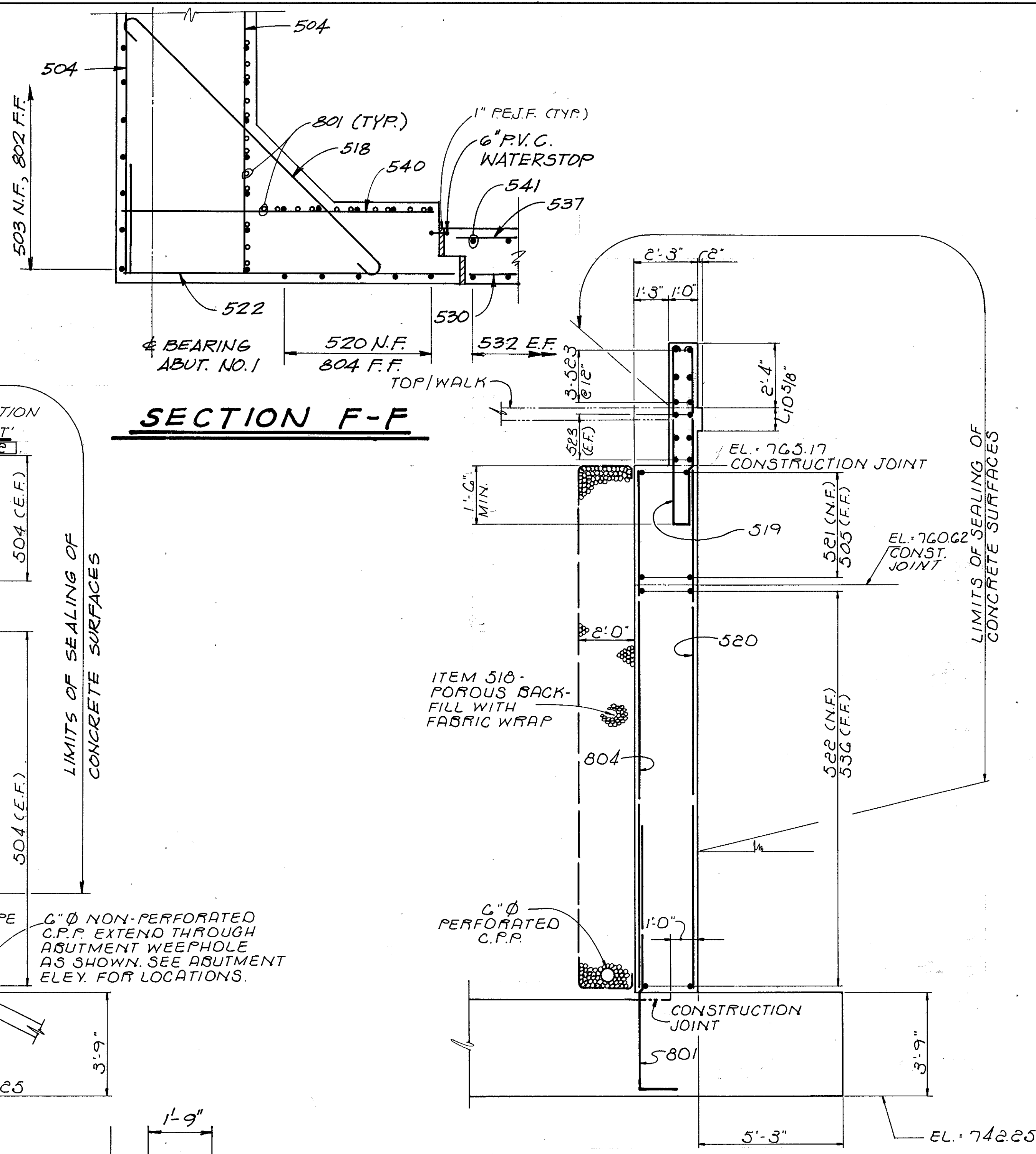
VIEW A-A

adache-ciuni-lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
ABUTMENT NO. 1 PLAN & ELEVATION JENNINGS FREEWAY STATE ROUTE 176 UNDER SCHAFF ROAD BRIDGE NO. CUY-176-106.5					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	C.T.	A.J.M.	1/94	

BRUNING 44-232 07195

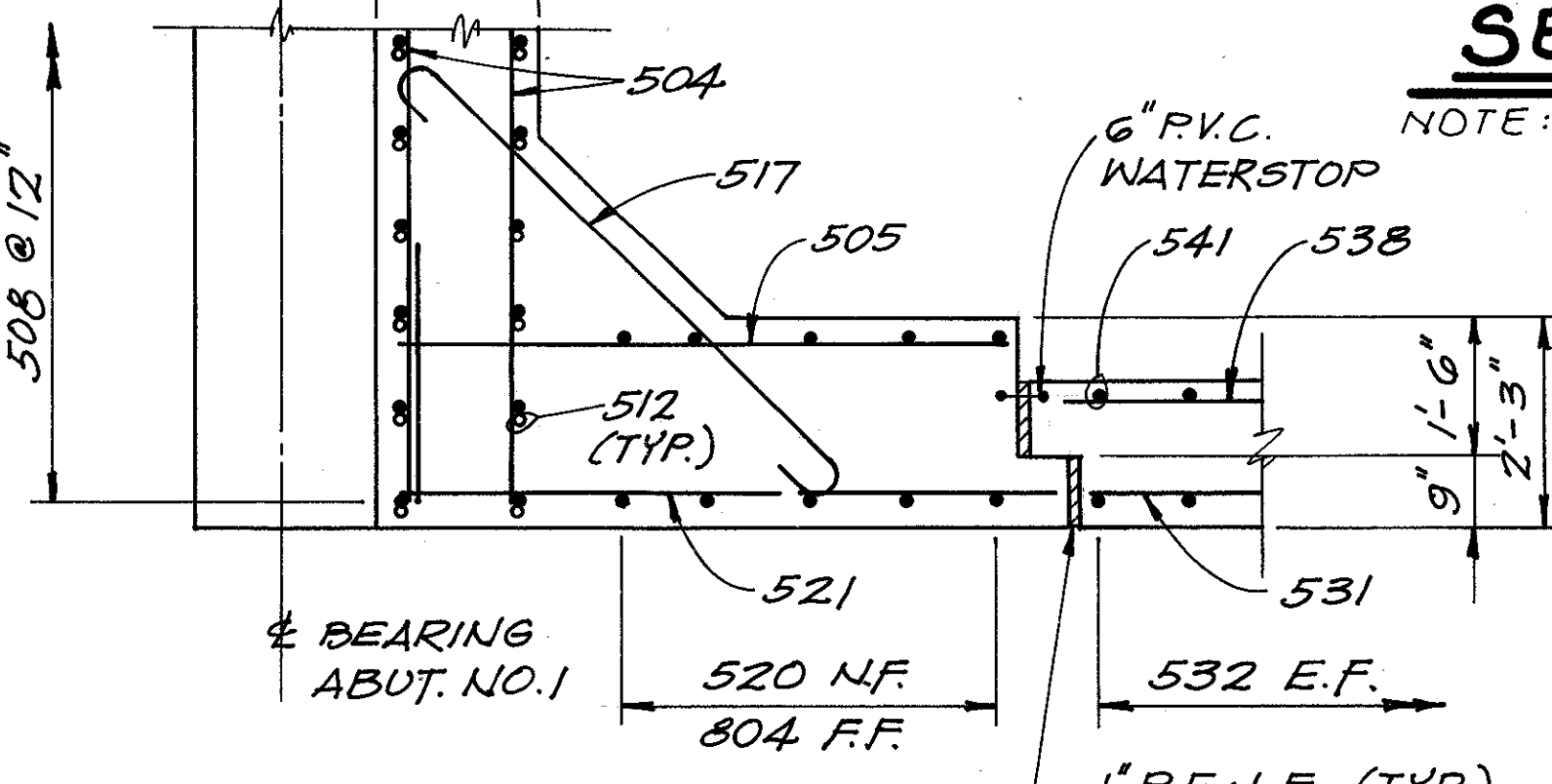


SECTION B-B

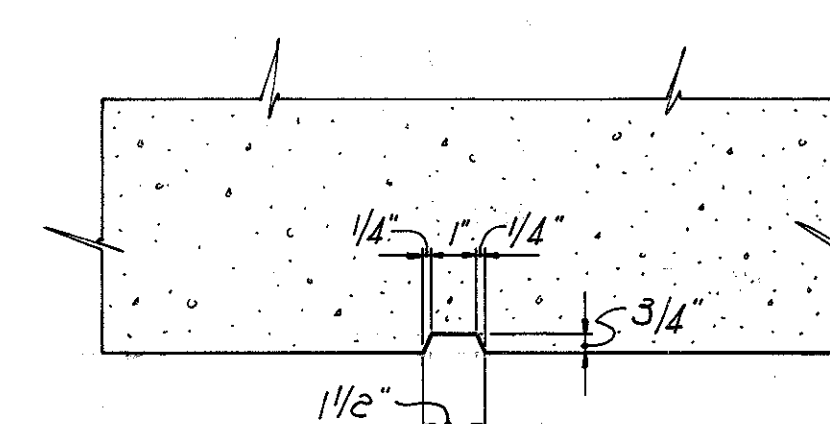


SECTION F-F

SECTION D-D



SECTION E-E



VERTICAL RUSTICATION GROOYE DETAIL

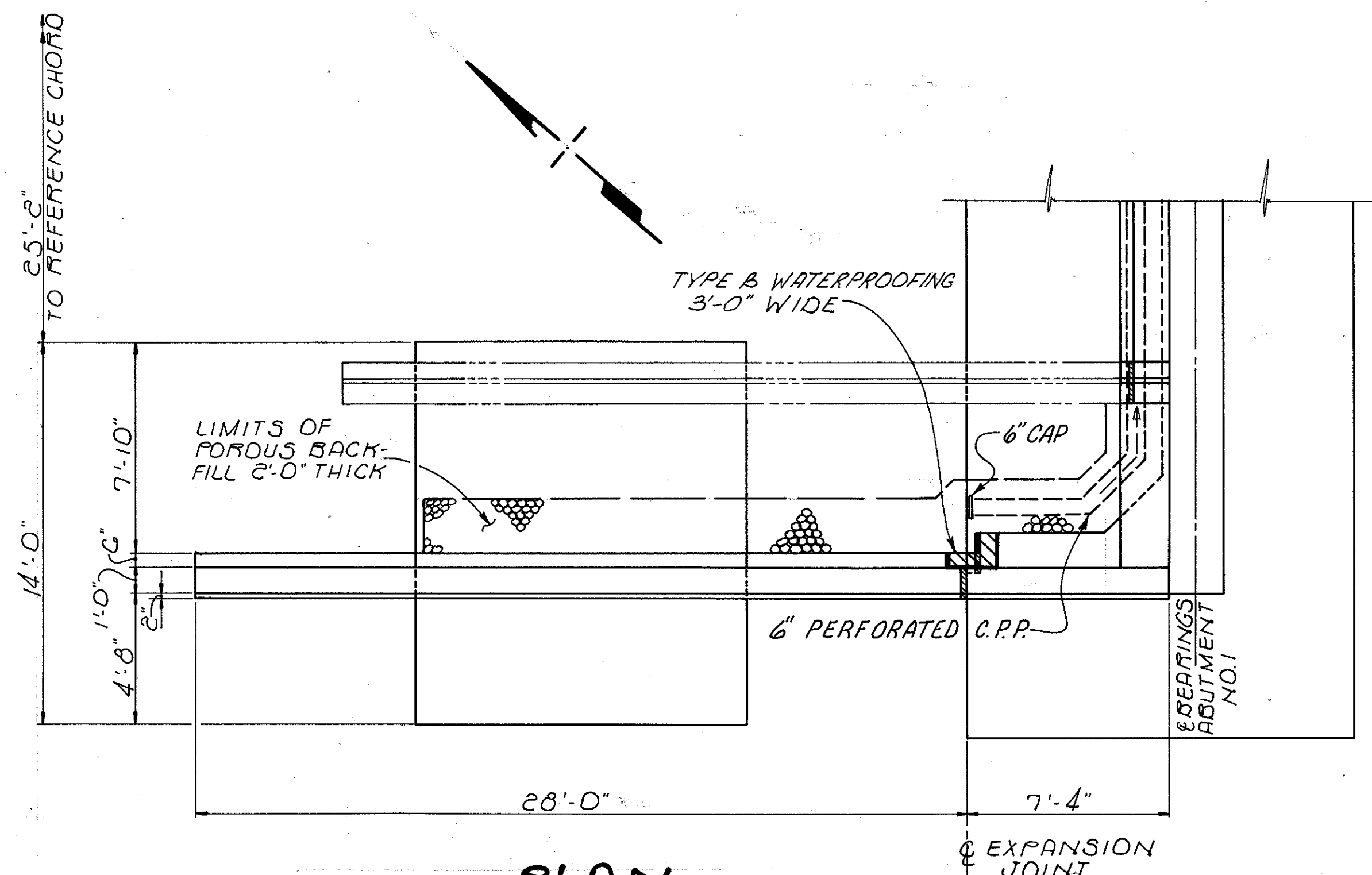
- NOTES:**
- 1) FOR CONCRETE SLOPE PROTECTION DETAILS, SEE MISCELLANEOUS DETAIL SHEET **388** **395**
 - 2) FOR ADDITIONAL NOTES SEE SHEET **5/22**
 - 3) THE UTILITY SLEEVES FOR THE GAS LINES SHALL BE FURNISHED BY THE EAST OHIO GAS COMPANY AND INSTALLED BY THE CONTRACTOR. THE SLEEVES SHALL EXTEND 2 FEET BEYOND THE APPROACH SLAB. COST OF THE PIPE SLEEVE INSTALLATION SHALL BE INCLUDED FOR PAYMENT WITH ITEM SPECIAL HIGH PERFORMANCE CONCRETE (SUBSTRUCTURE).
 - 4) MOVE OR CUT REINFORCING TO ACCOMMODATE PIPE SLEEVES IN BACKWALL COST OF MODIFYING THE REINFORCING SHALL BE INCLUDED WITH ITEM 509 FOR PAYMENT.
 - 5) ELEVATIONS FOR THE PIPE SLEEVES ARE SHOWN AT THE EXPOSED FACE OF THE BACKWALL. SEE SHEET **5/22**

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ABUTMENT NO. 1 DETAILS
JENNINGS FREEWAY
STATE ROUTE 17G
UNDER
SCHAFF ROAD
BRIDGE NO. CUY-17G-10G.5

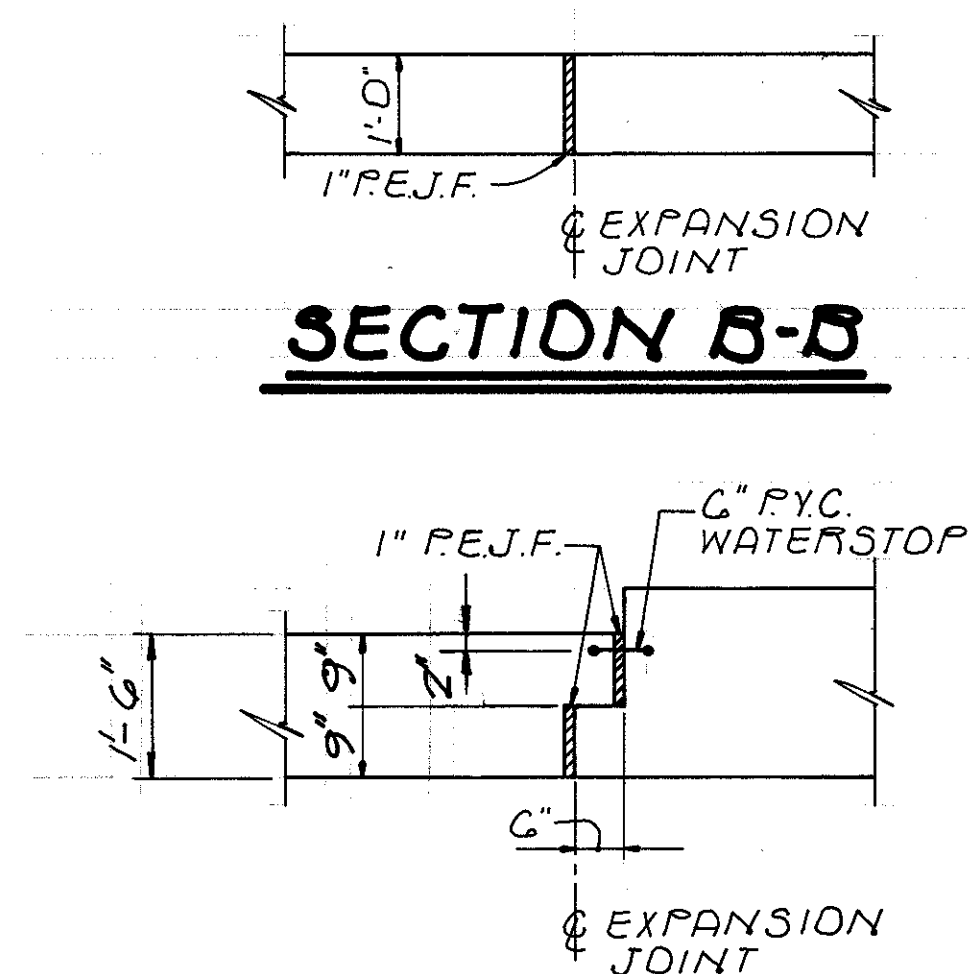
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.S.	T.E.S.	C.T.	A.J.M.	1/94	

NOTES:
1) FOR NOTES SEE SHEET 5/22



PLAN

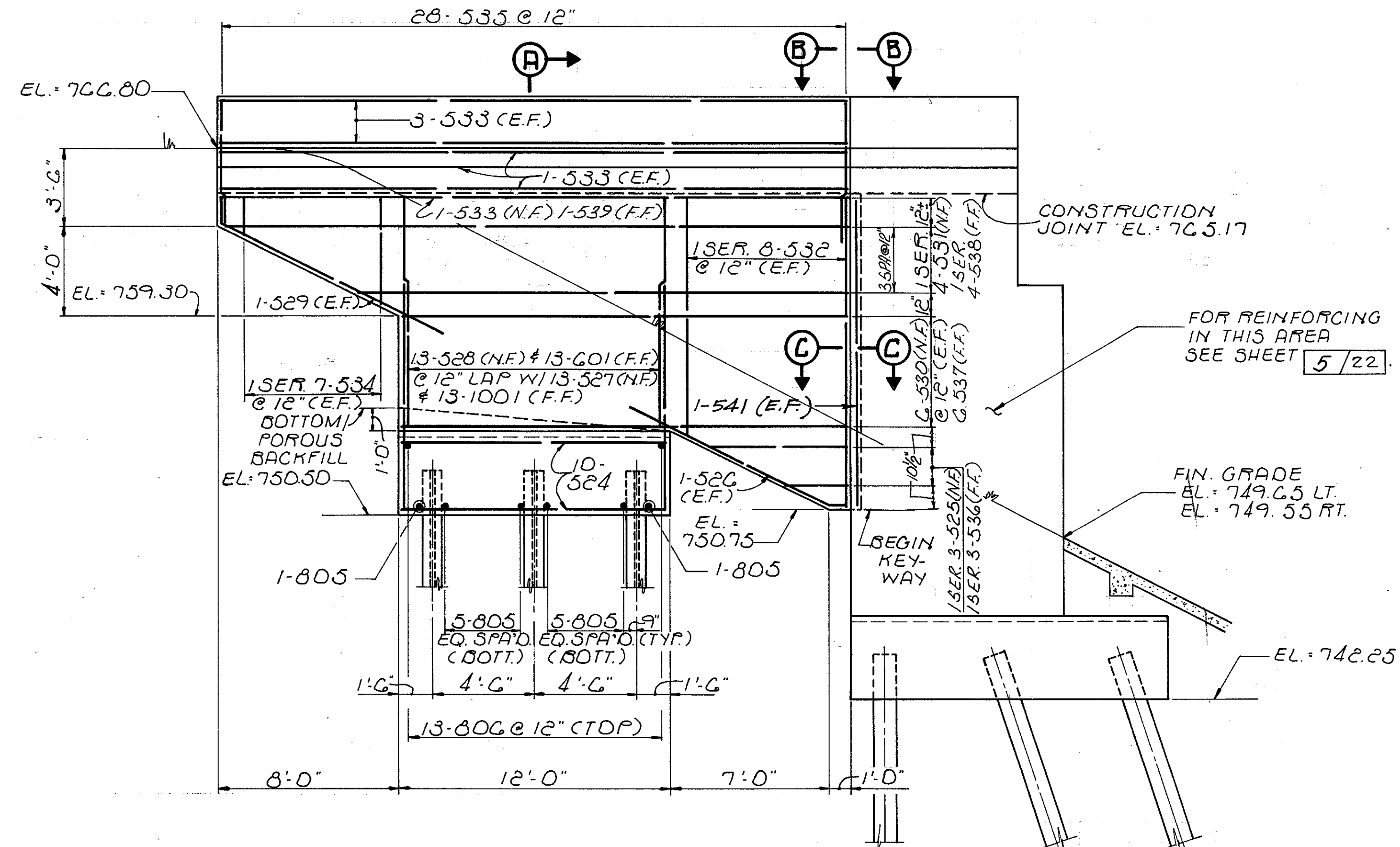
(SOUTH WINGWALL SHOWN; NORTH WINGWALL SIMILAR)



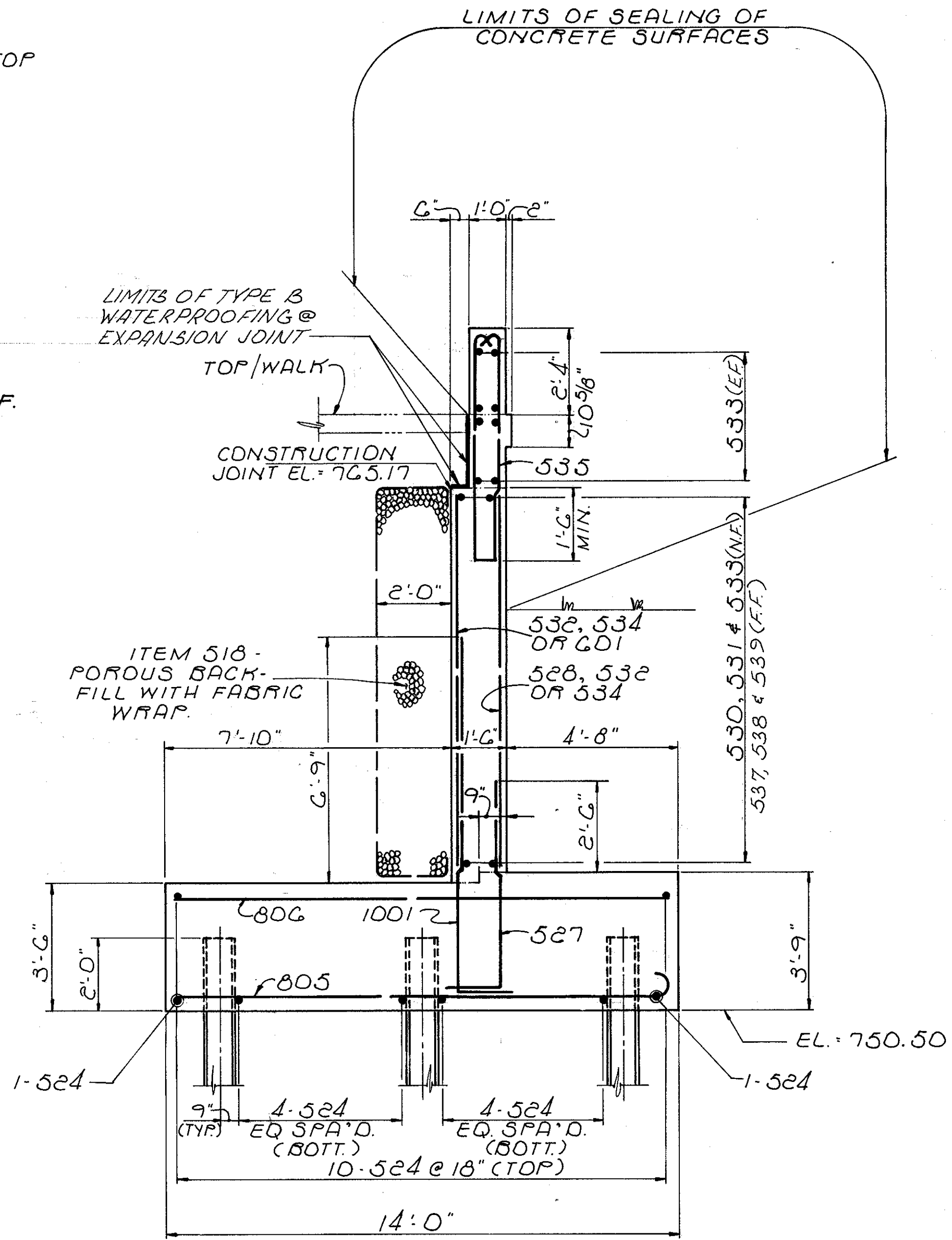
SECTION B-B

SECTION C-C

FOR REINFORCING @ JOINT SEE SECTIONS E-E & F-F ON SHEET 6/22



ELEVATION



SECTION A-A

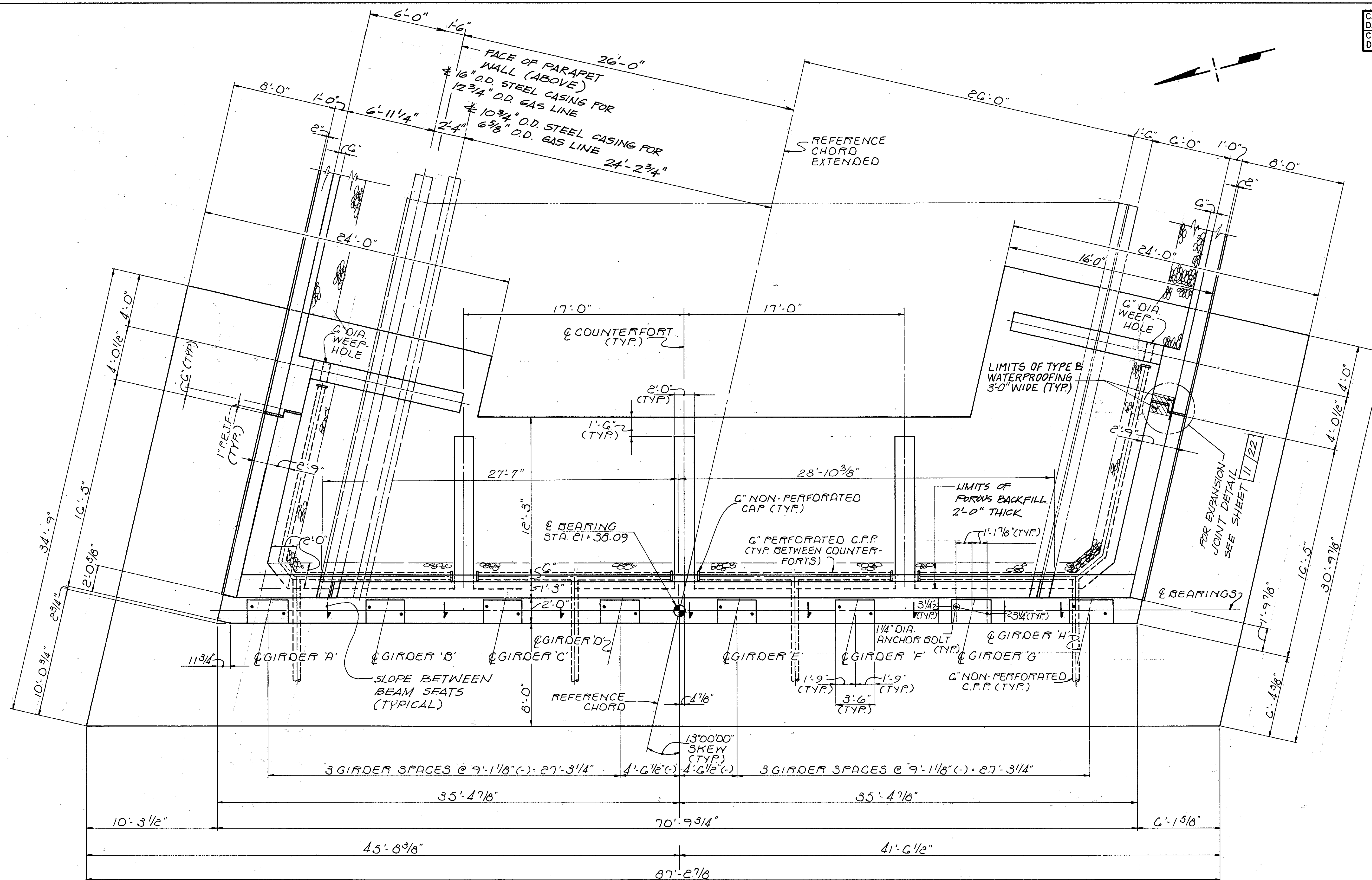
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**ABUTMENT NO. 1
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 17G
UNDER
SCHARF ROAD
BRIDGE NO. CUY-17G-10G.5**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	CT	AJM	1/94	

NOTES:

- 1) FOR ELEVATION OF ABUTMENT NO. 2 SEE SHEET 9/22.
- 2) FOR DETAILS OF WINGWALLS SEE SHEET 11/22.
- 3) FOR ADDITIONAL NOTES SEE SHEET 5/22 & 9/22.



PLAN

8/22

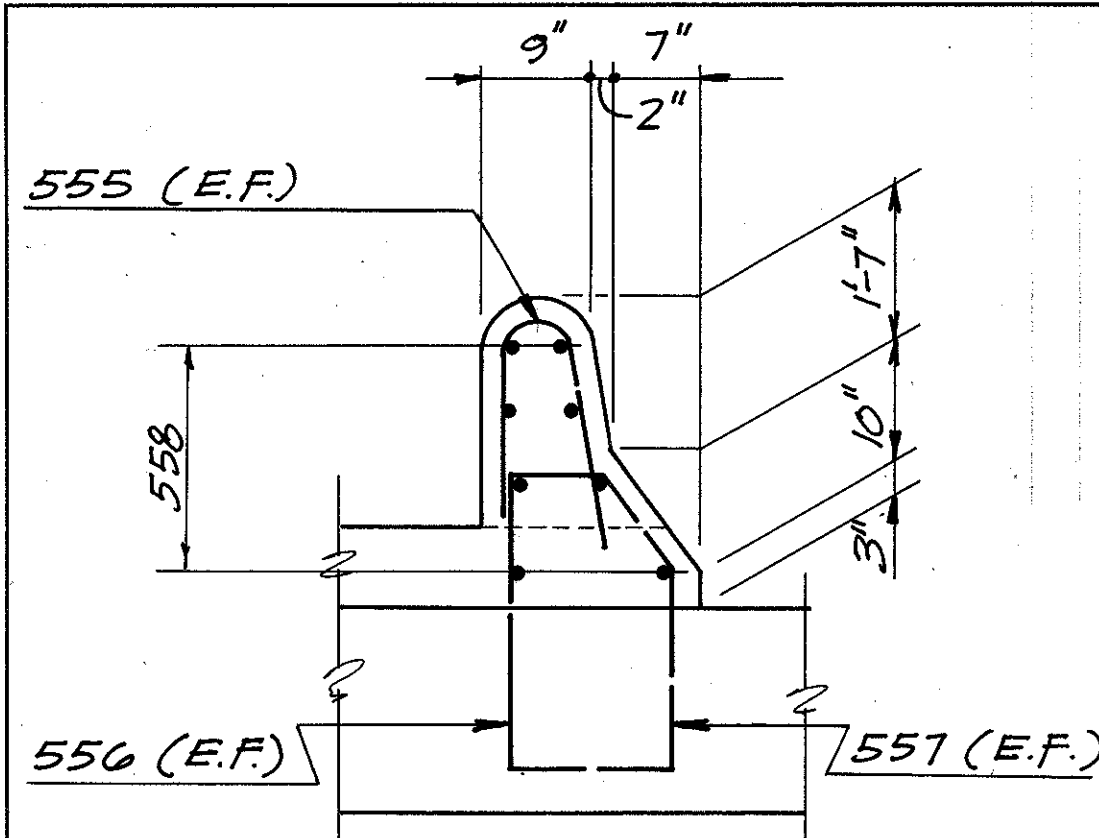
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**ABUTMENT NO. 2
PLAN
JENNINGS FREEWAY
STATE ROUTE 17G
UNDER
SCHAFF ROAD
BRIDGE NO. CUY-17G-10G.5**

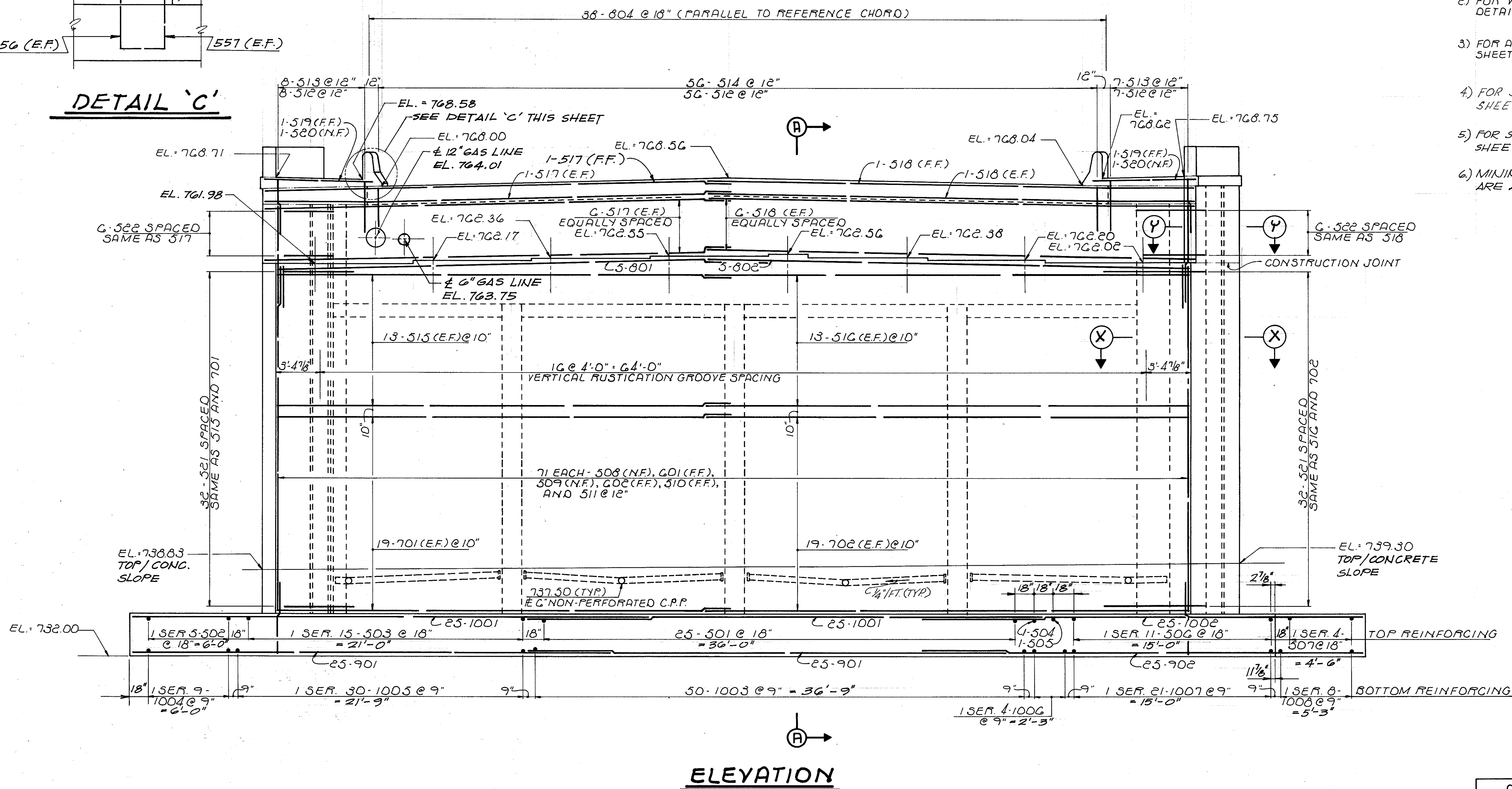
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	CT/MJL	A.J.M.	1/94	

NOTES:

- 1) THE PREFIX "2A" SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR ABUTMENT NO. 2.
- 2) FOR VERTICAL RUSTICATION GROOVE DETAIL SEE SHEET 6/22.
- 3) FOR ADDITIONAL NOTES SEE SHEET 5/22 & 6/22.
- 4) FOR SECTION A-A SEE SHEET 10/22.
- 5) FOR SECTION X-X & Y-Y SEE SHEET 11/22.
- 6) MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:
 #5 - 2'-11"
 #6 - 3'-6"
 #8 - 5'-9"
 #9 - 7'-4"
 #10 - 9'-3"
 UNLESS NOTED OTHERWISE



DETAIL 'C'



ELEVATION

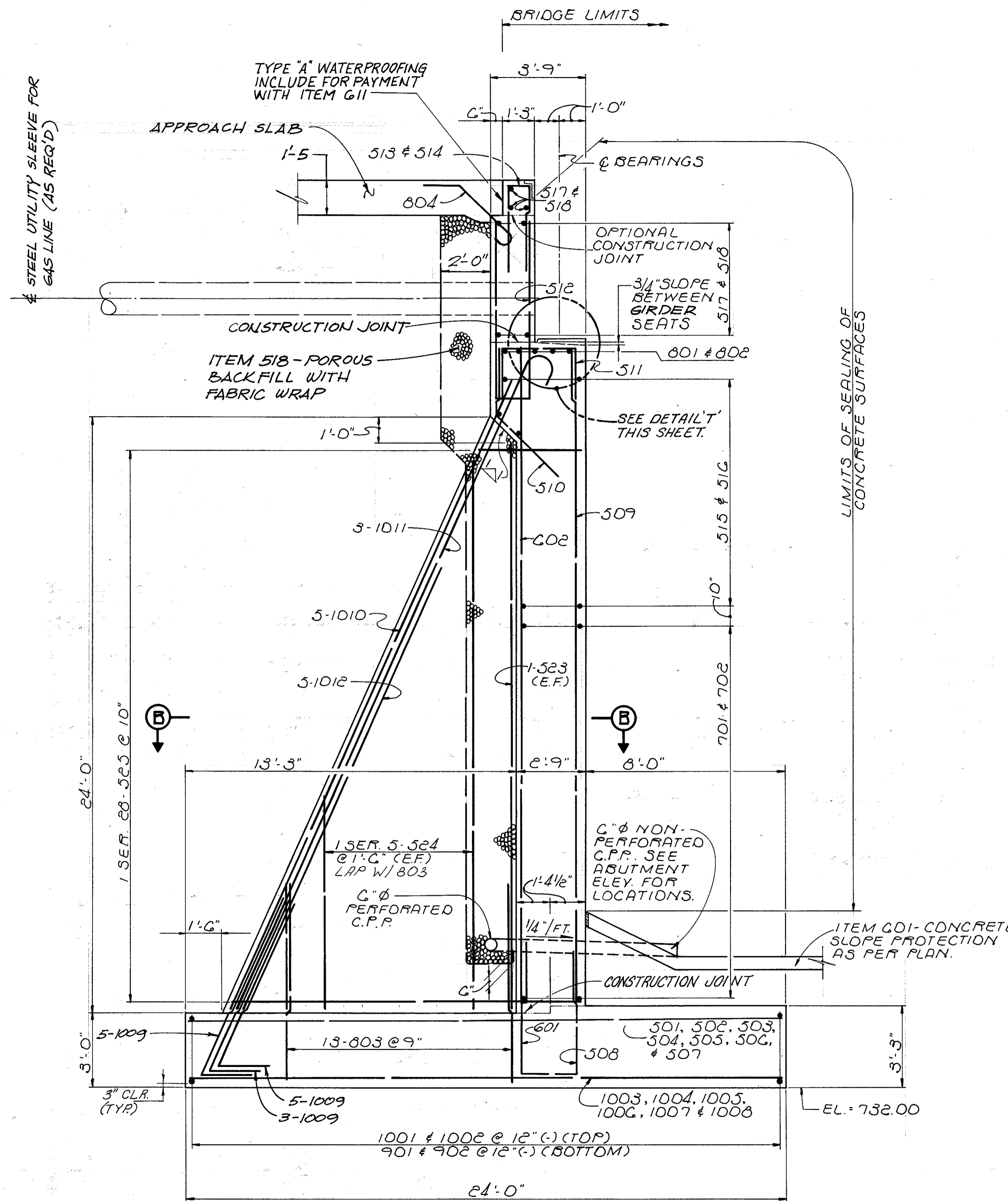
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**ABUTMENT NO. 2
 ELEVATION
 JENNINGS FREEWAY
 STATE ROUTE 17C
 UNDER
 SCHAAP ROAD
 BRIDGE NO. CUY-17C-106.5**

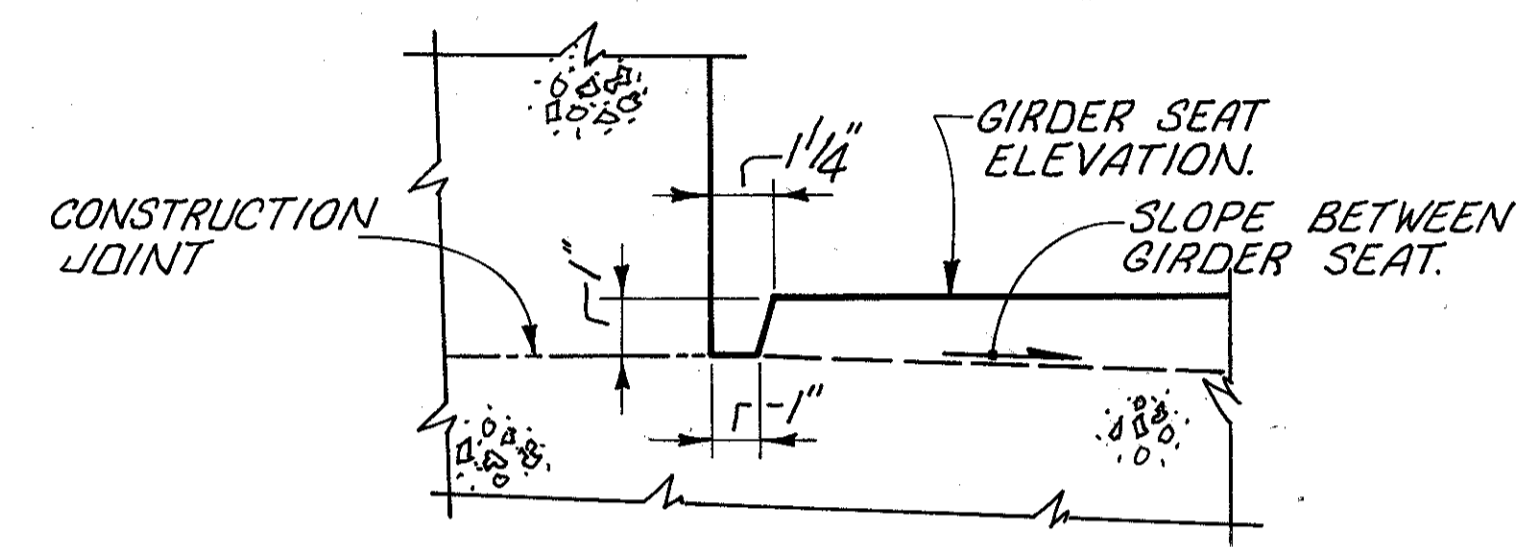
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T.A.S.	T.E.S.	P.T./M.J.L.	A.M.	1/94	

NOTES:

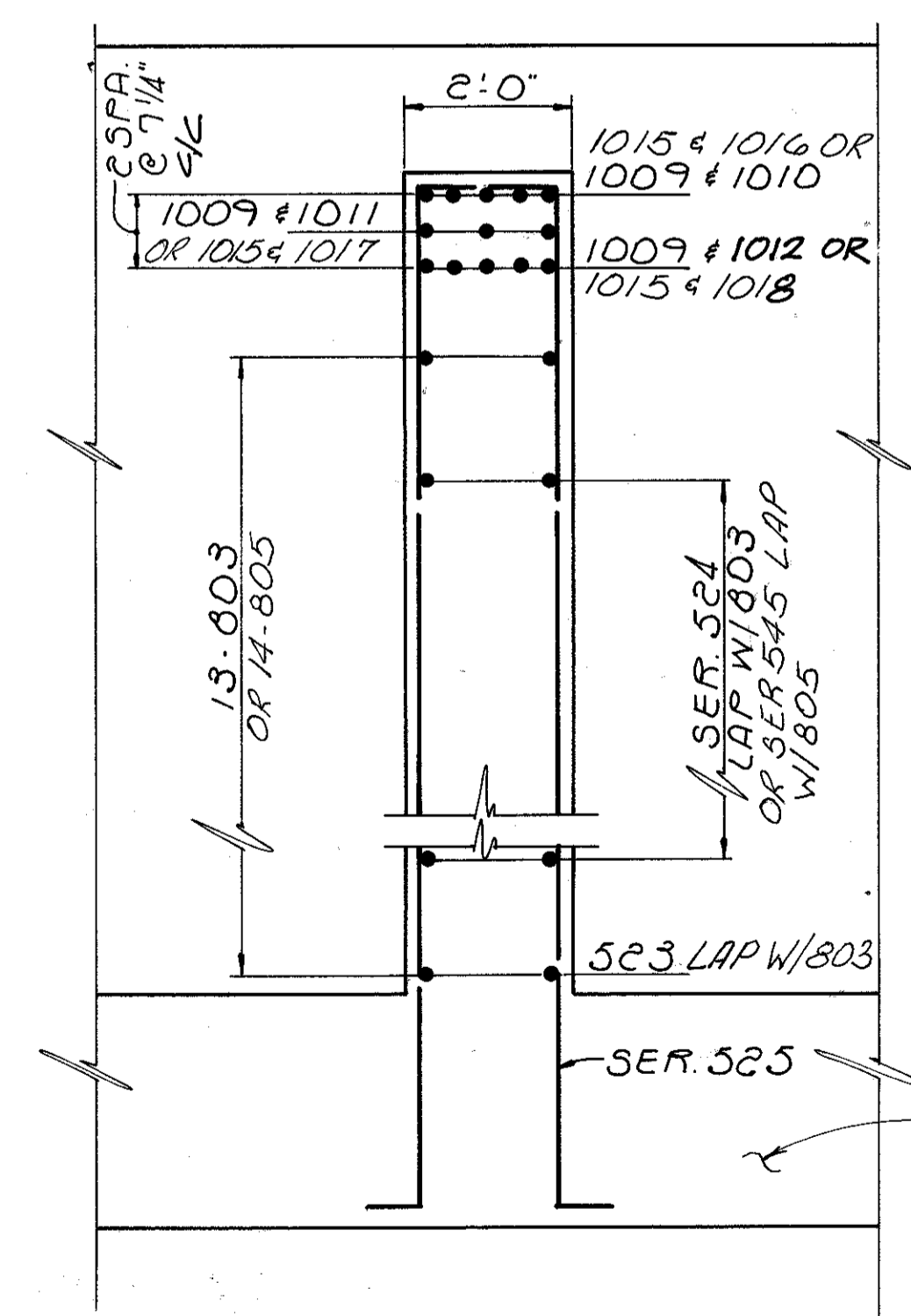
- 1) FOR CONCRETE SLOPE PROTECTION DETAILS SEE MISCELLANEOUS DETAIL SHEET.
- 2) FOR ABUTMENT ELEVATION SEE SHEET 10/22



SECTION A-A



DETAIL 'T'
TYPICAL AT EACH GIRDER SEAT.



SECTION B-B

10/22

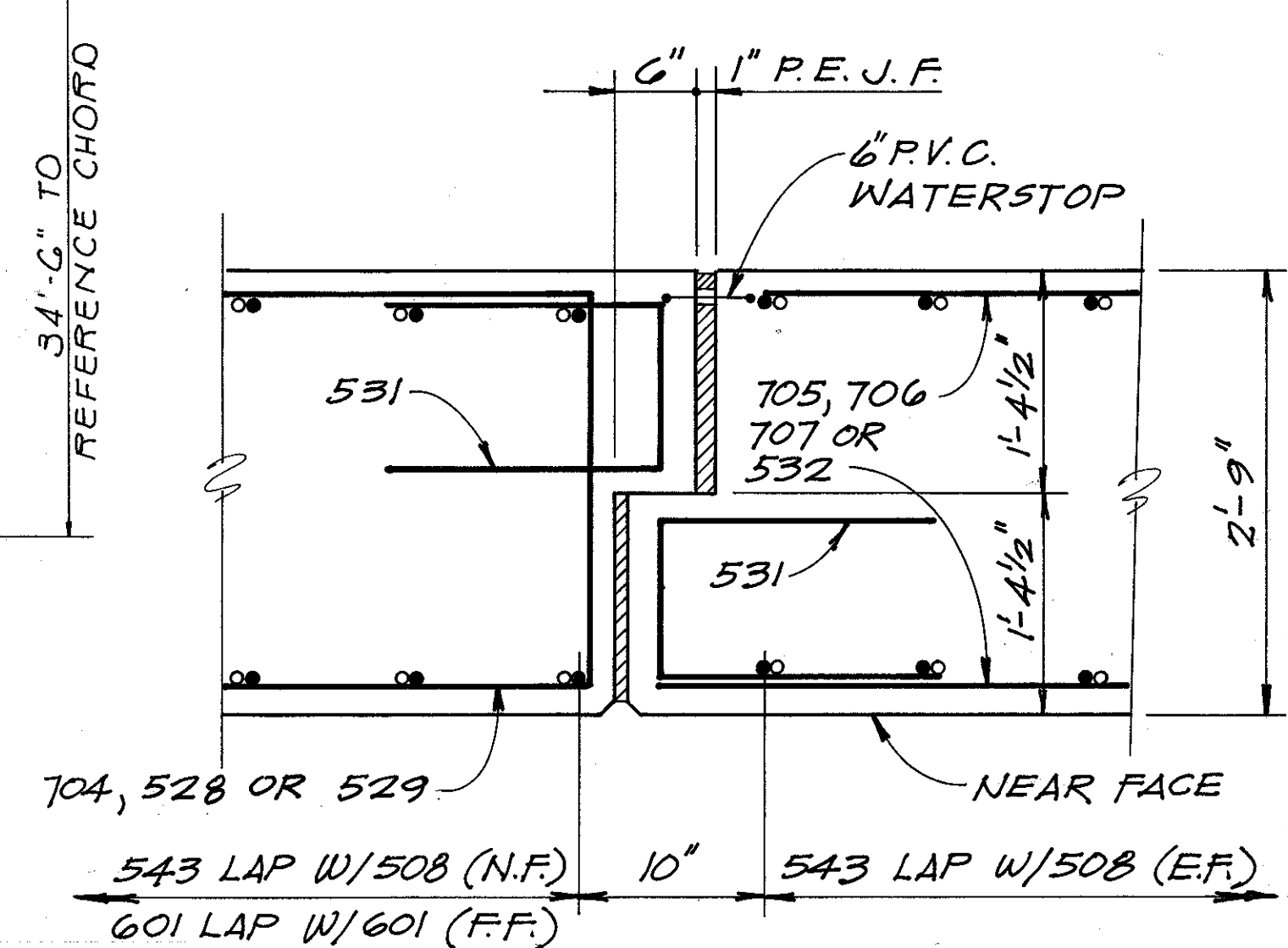
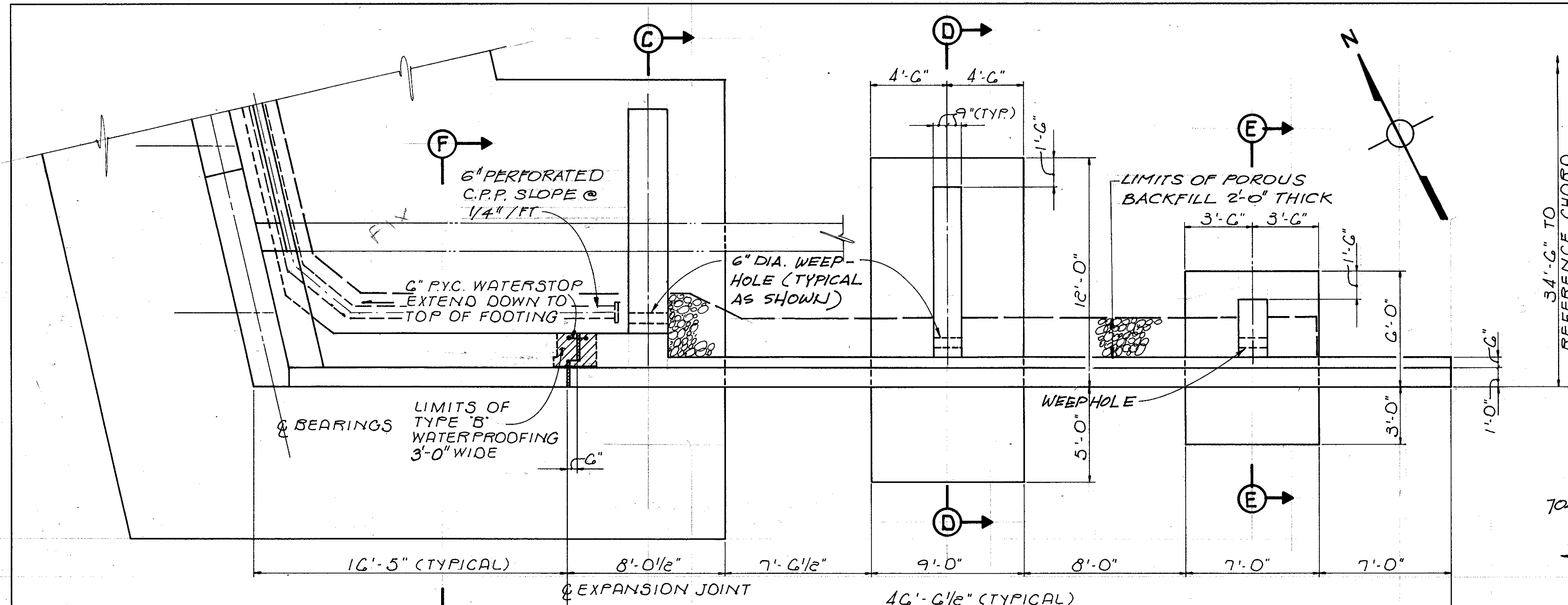
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**ABUTMENT NO. 2
DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
UNDER
SCHAFF ROAD
BRIDGE NO. CUY-17G-10G5**

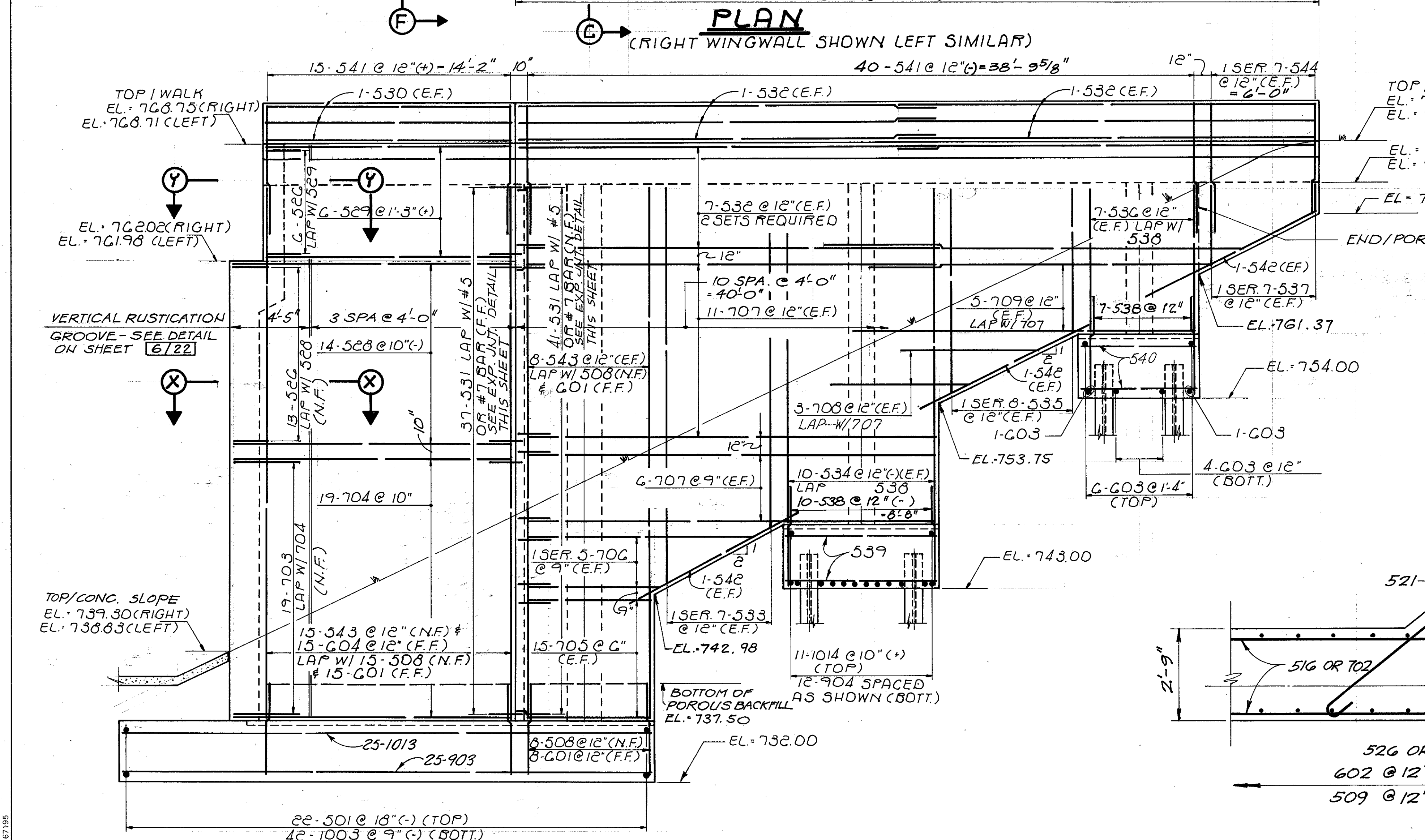
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T.A.B.	T.E.S.	GT/MJL	AJM.	1/94	

NOTES:

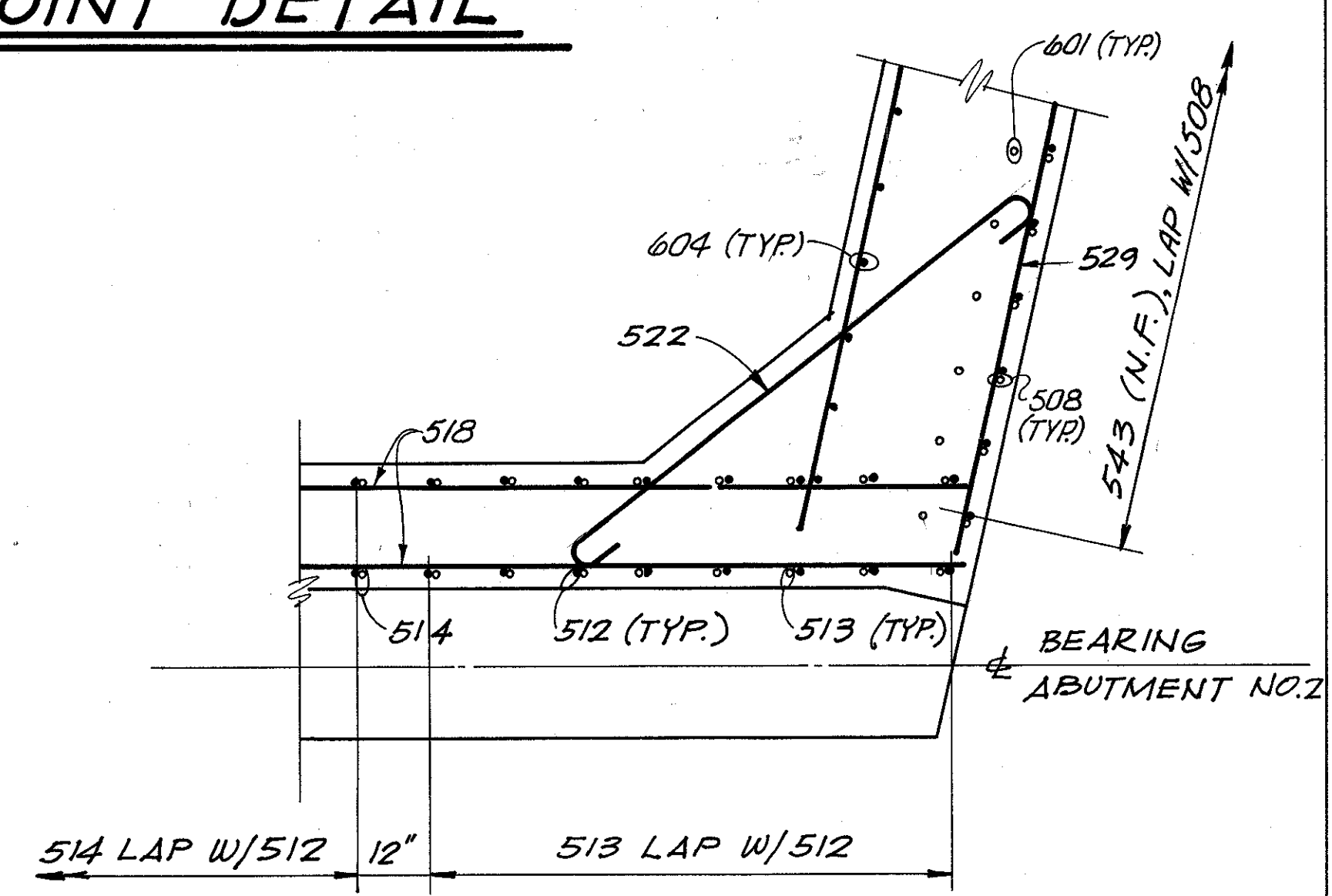
- 1.) THE PREFIX "2A" SHALL BE ADDED TO ALL REINFORCING BAR MARKS IN ABUTMENT NO. 2 WINGWALLS.
2. FOR SECTION C-C, D-D, E-E AND F-F SEE SHT. 12/22



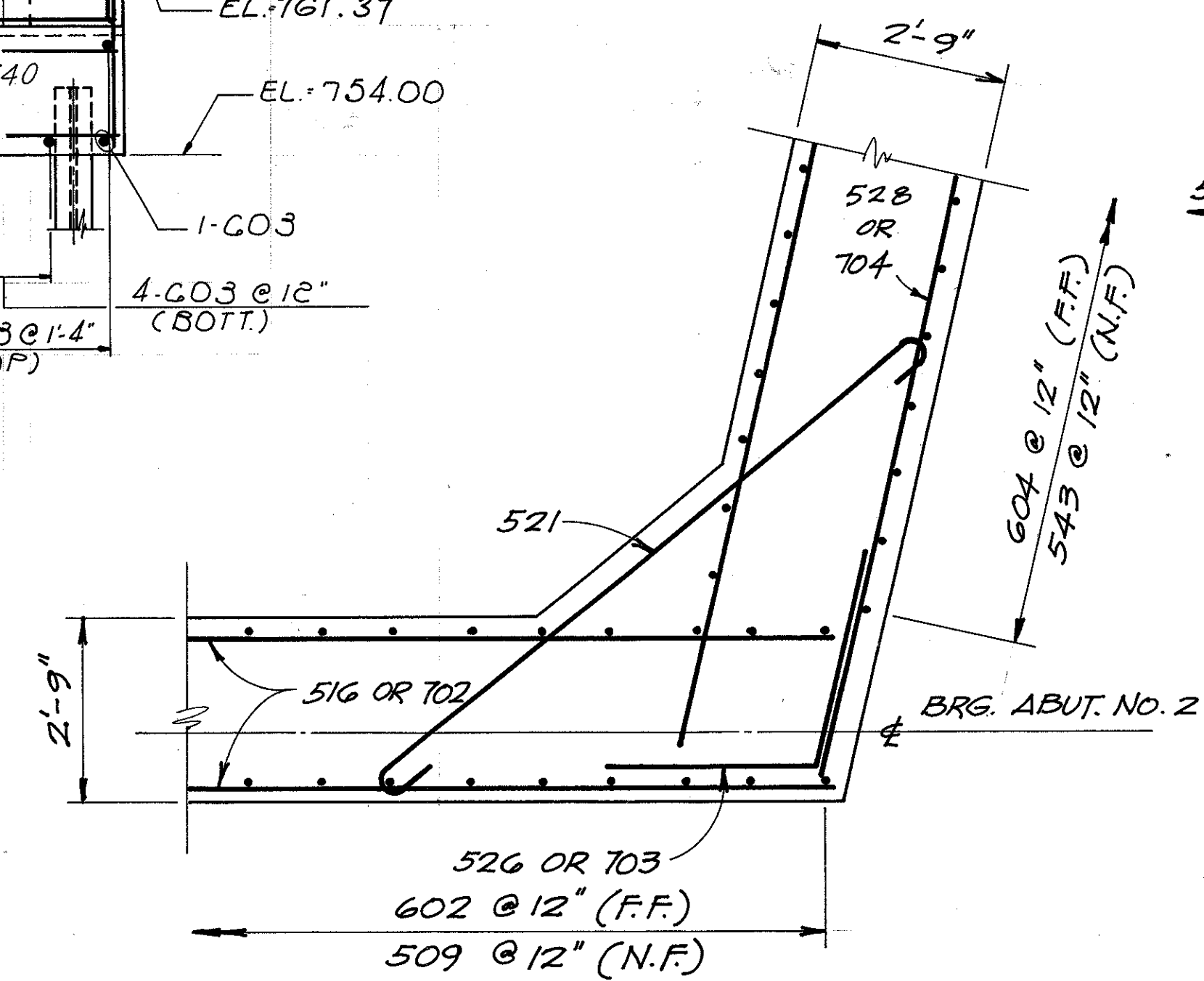
EXPANSION JOINT DETAIL



ELEVATION



SECTION Y-Y
(SOUTH ABUTMENT CORNER SHOWN)
(NORTH ABUTMENT CORNER SIMILAR)



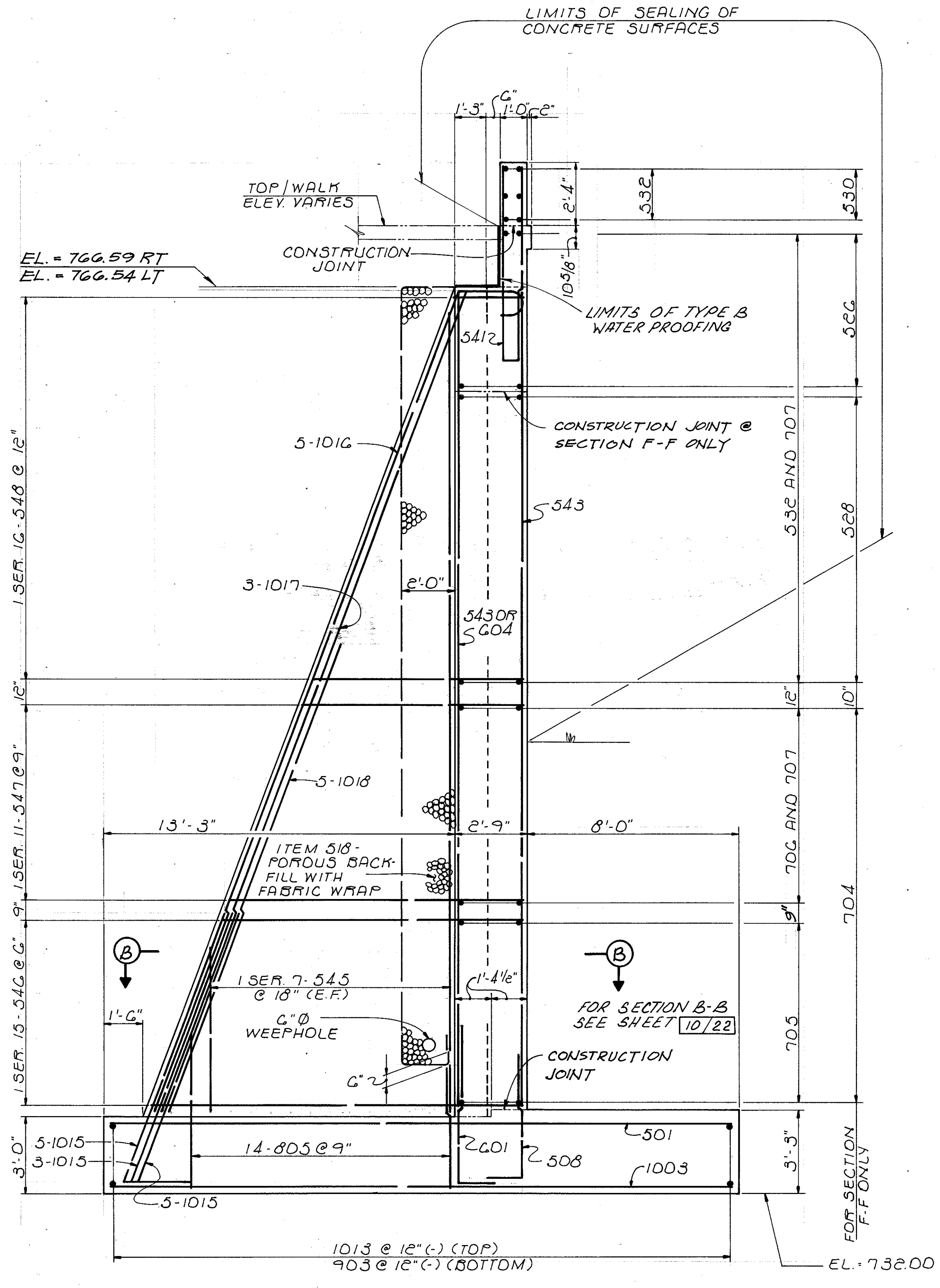
SECTION X-X
(SOUTH ABUT. CORNER SHOWN, NORTH ABUT. CORNER SIMILAR)

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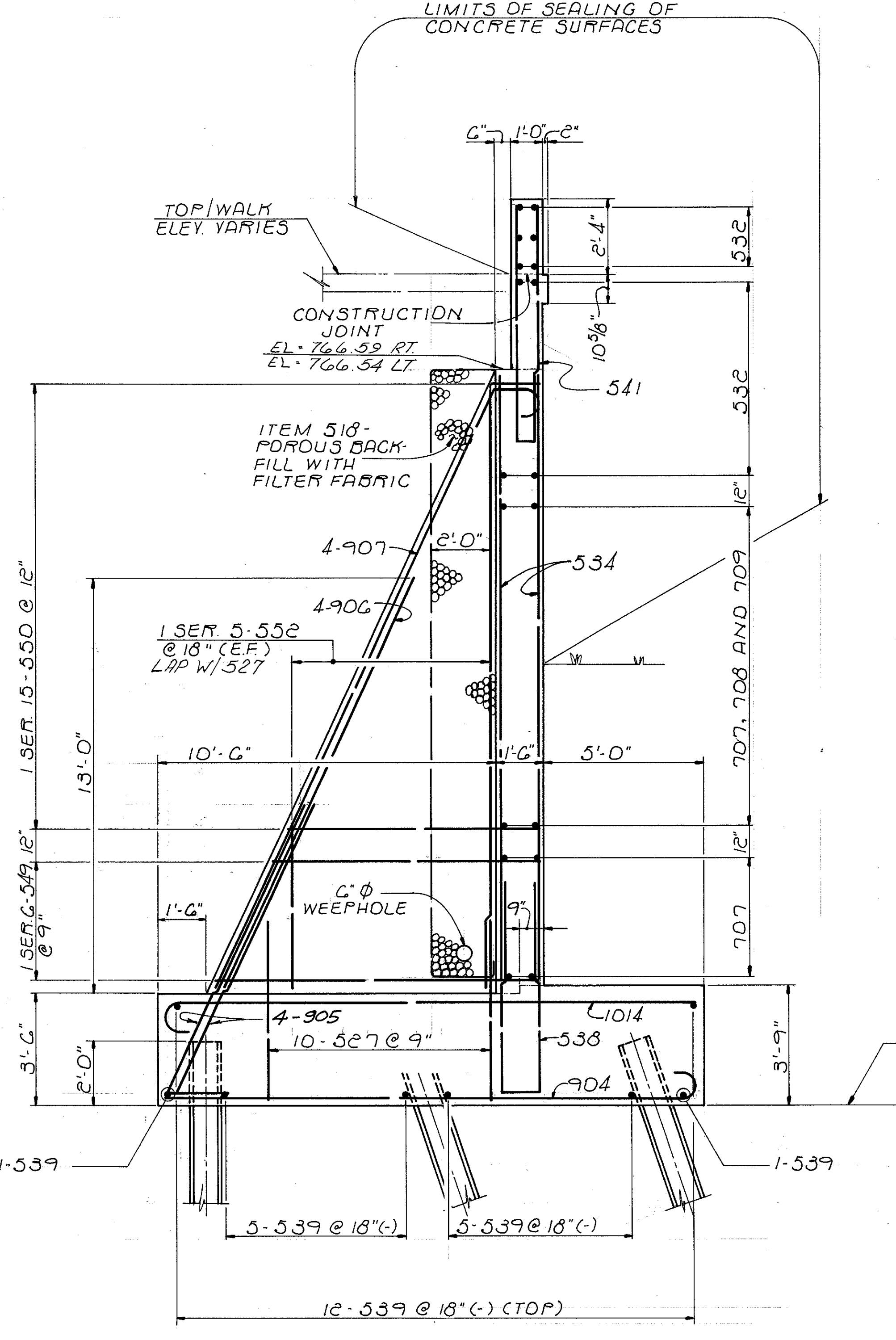
**ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
UNDER
SCHARF ROAD
BRIDGE NO. CUY-176-10C5**

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.P.B.	T.E.S.	CT/MJL	A.J.M.	1/94	

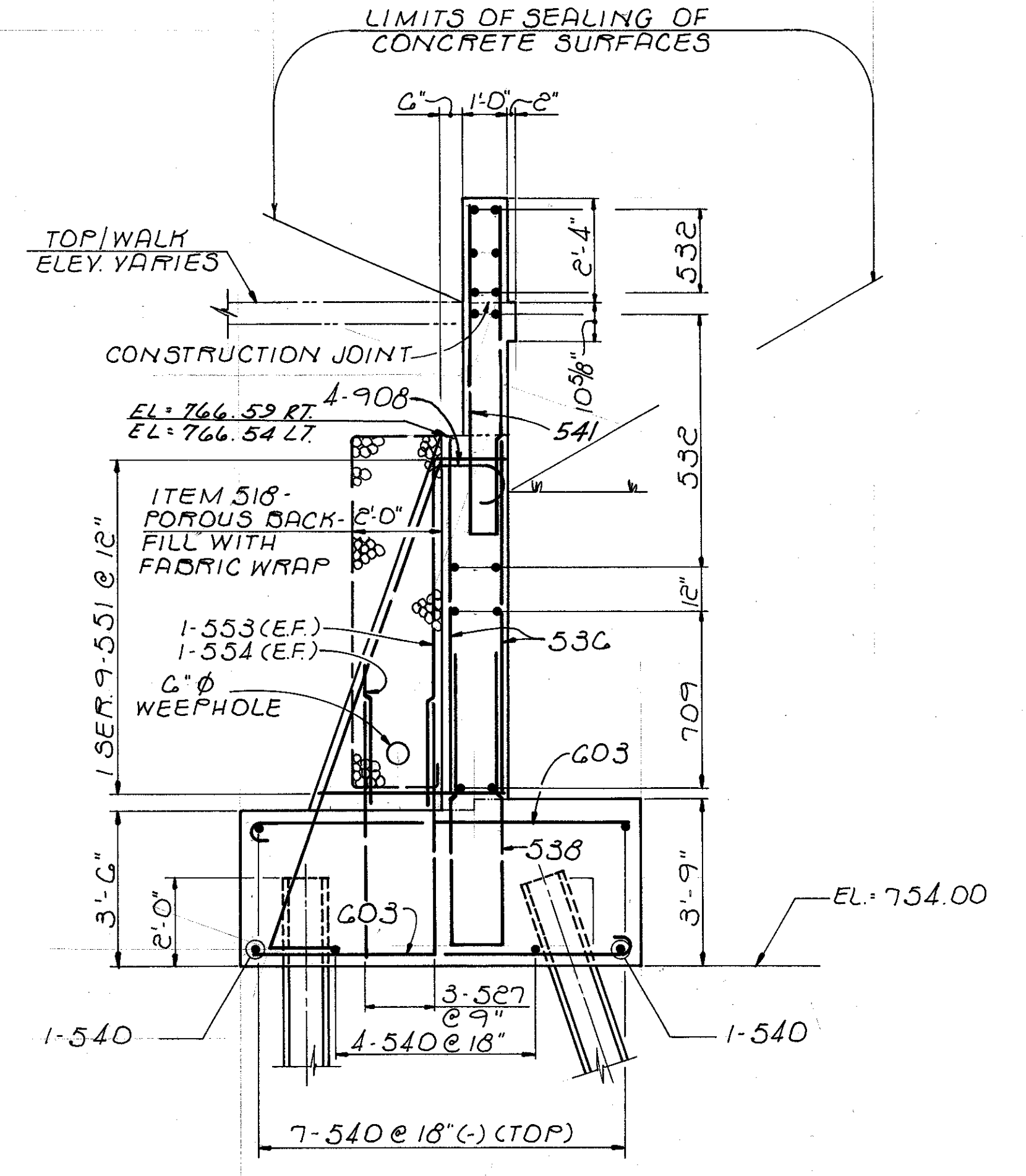
BRUNING 44-232 67195



SECTION C-C
(SECTION F-F SIMILAR)



SECTION D-D

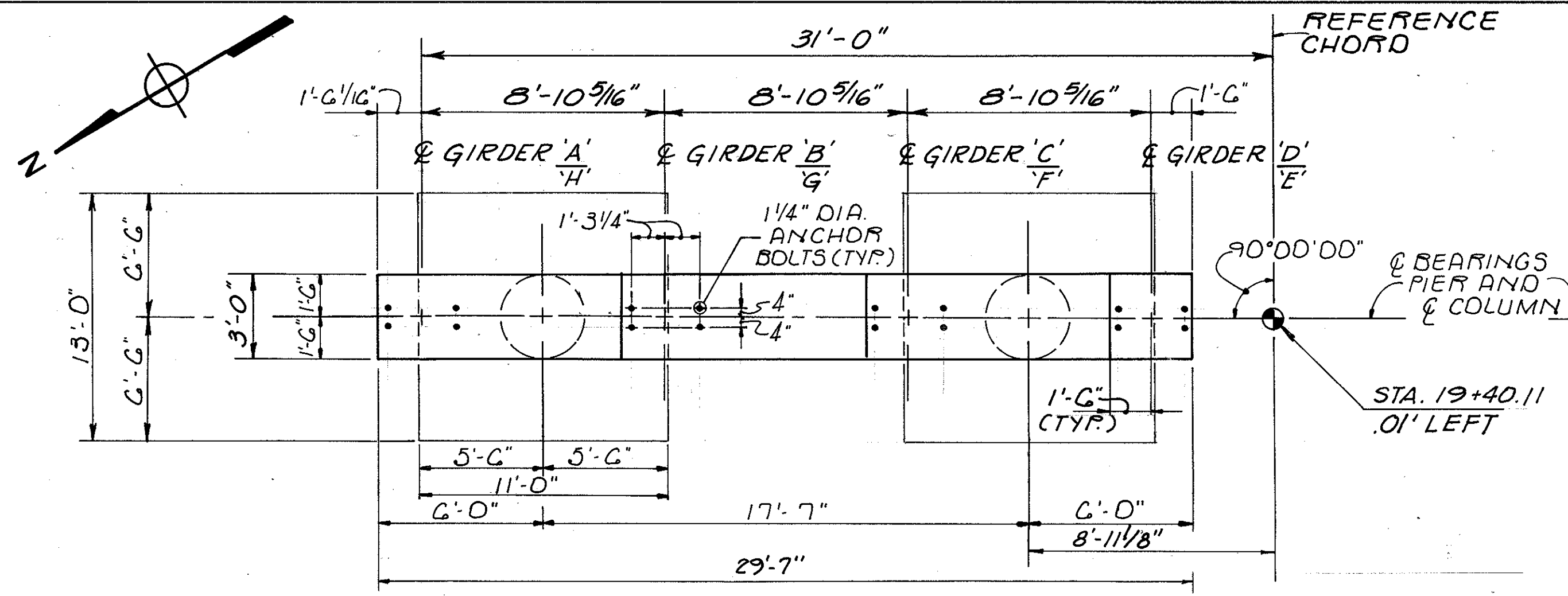


SECTION E-E

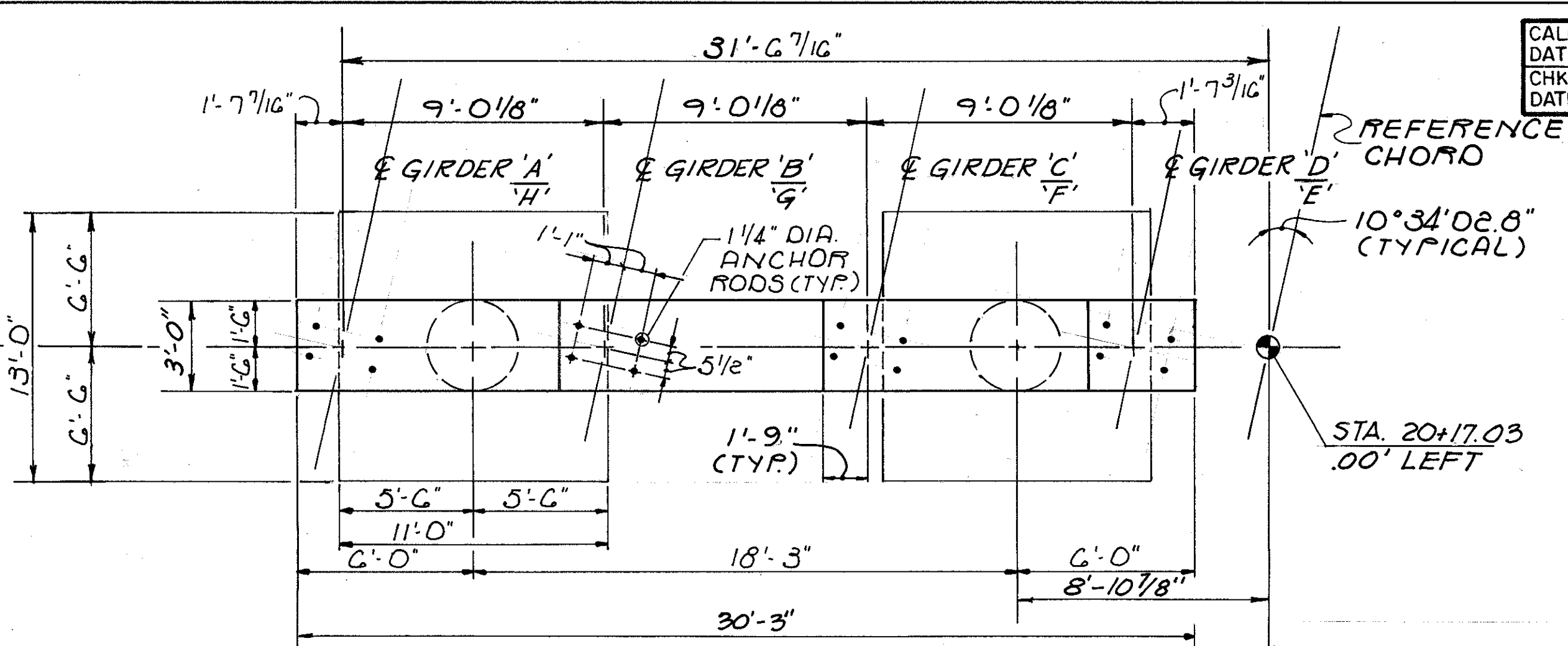
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ABUTMENT NO. 2
WINGWALL DETAILS
JENNINGS FREEWAY
STATE ROUTE 17C
UNDER
SCHARF ROAD
BRIDGE NO. CUY-17C-10G.5

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	G.T./M.J.L.	R.J.M.	1/94	



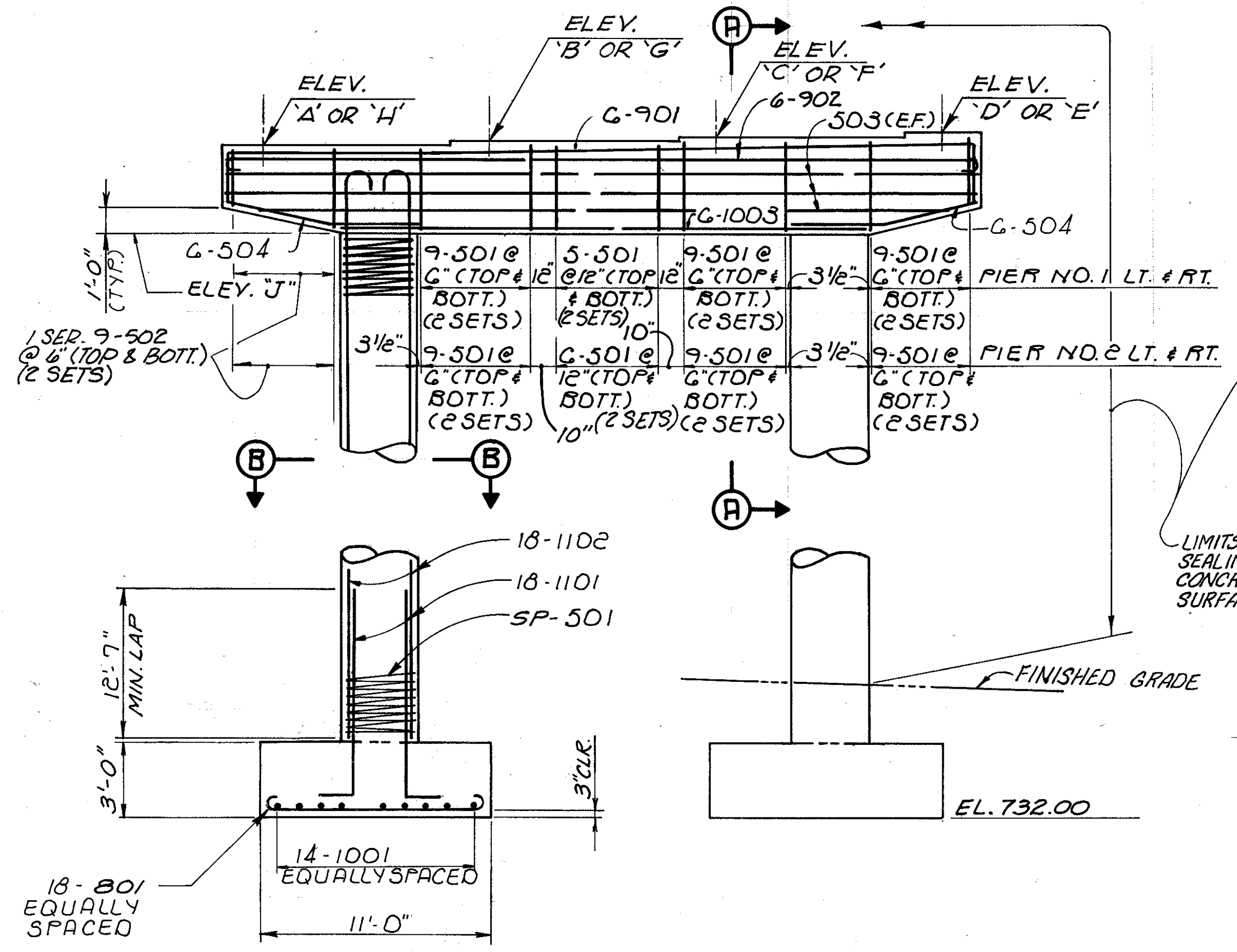
PLAN
PIER NO. 1 LEFT SHOWN
RIGHT SYMMETRICAL ABOUT REF. CHORD



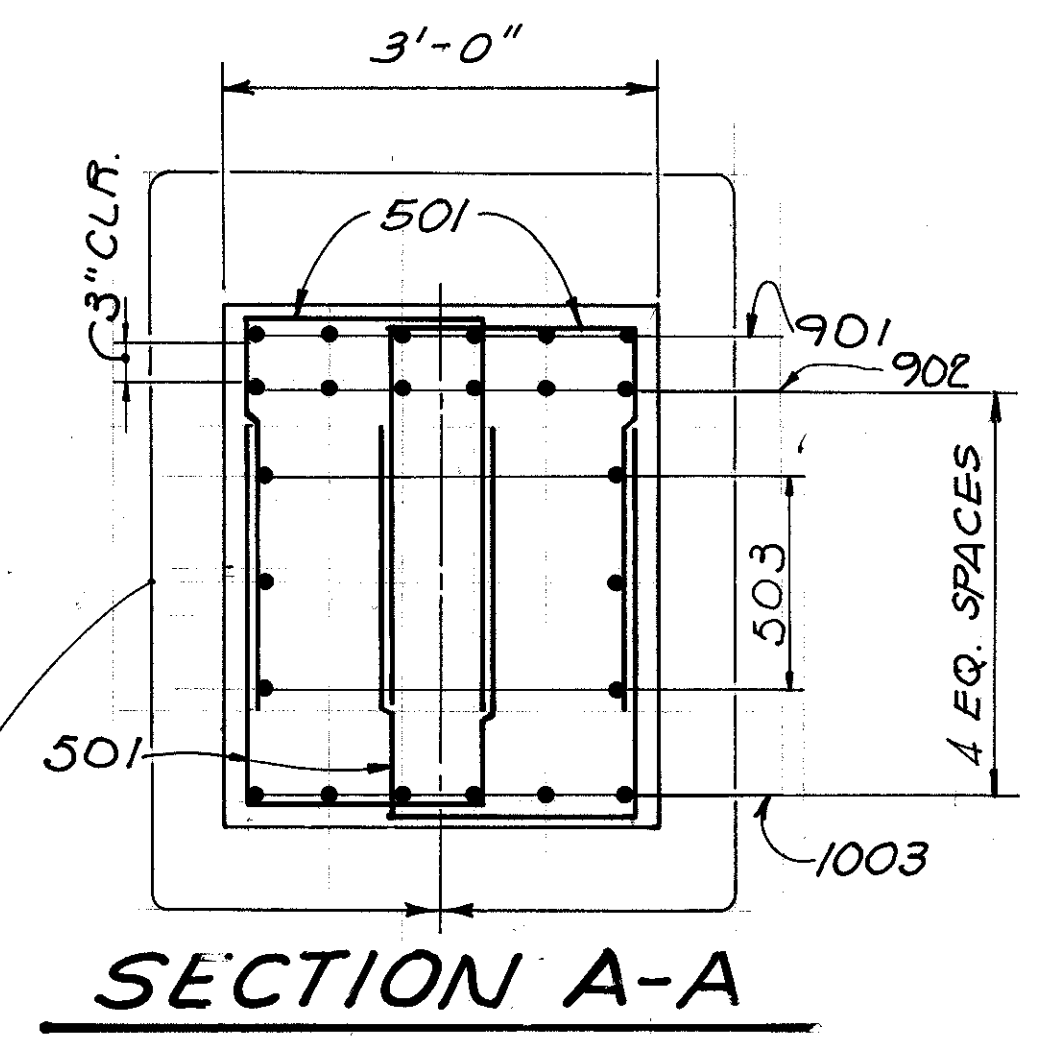
PLAN
PIER NO. 2 LEFT SHOWN
PIER NO. 2 RIGHT SIMILAR
AND OPPOSITE

NOTES

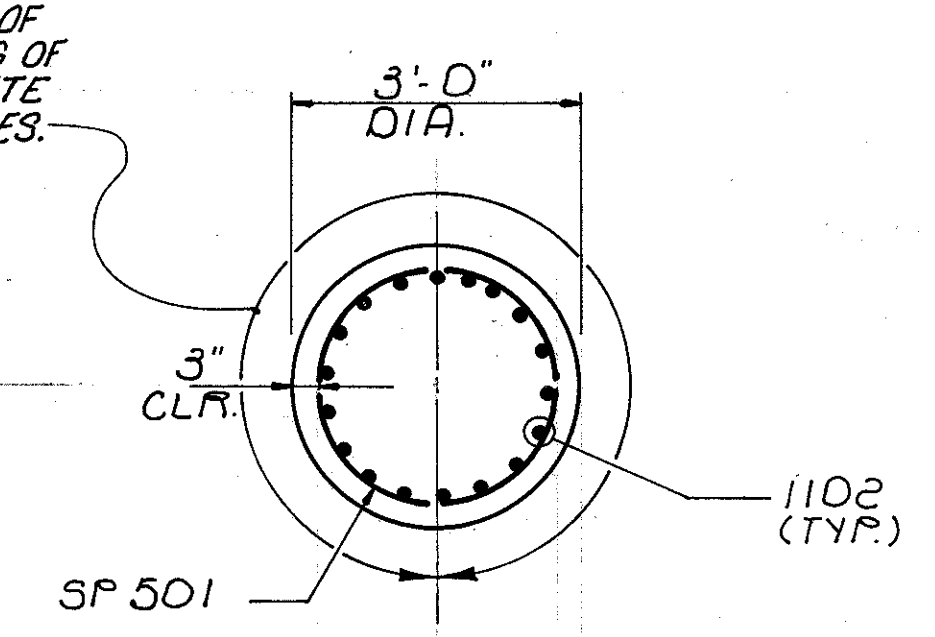
- 1) THE PREFIX "1P" & "2P" SHALL BE ADDED TO ALL BAR MARKS IN PIER NO. 1 AND PIER NO. 2 RESPECTIVELY.
- 2) REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT SHALL BE ACCURATELY PLACED TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES.
- 3) AT THE OPTION OF THE CONTRACTOR, BEARING ANCHORS (OR FORMED HOLES), LOCATED AND SUPPORTED BY TEMPLATES, MAY BE CAST IN PLACE.
- 4) NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO ALL EXPOSED SURFACES.



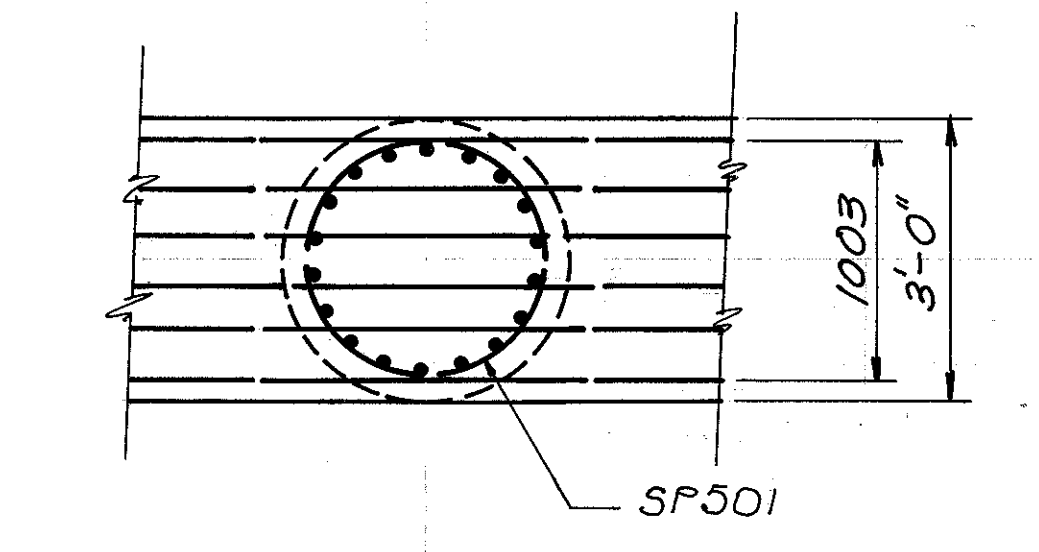
ELEVATION



SECTION A-A



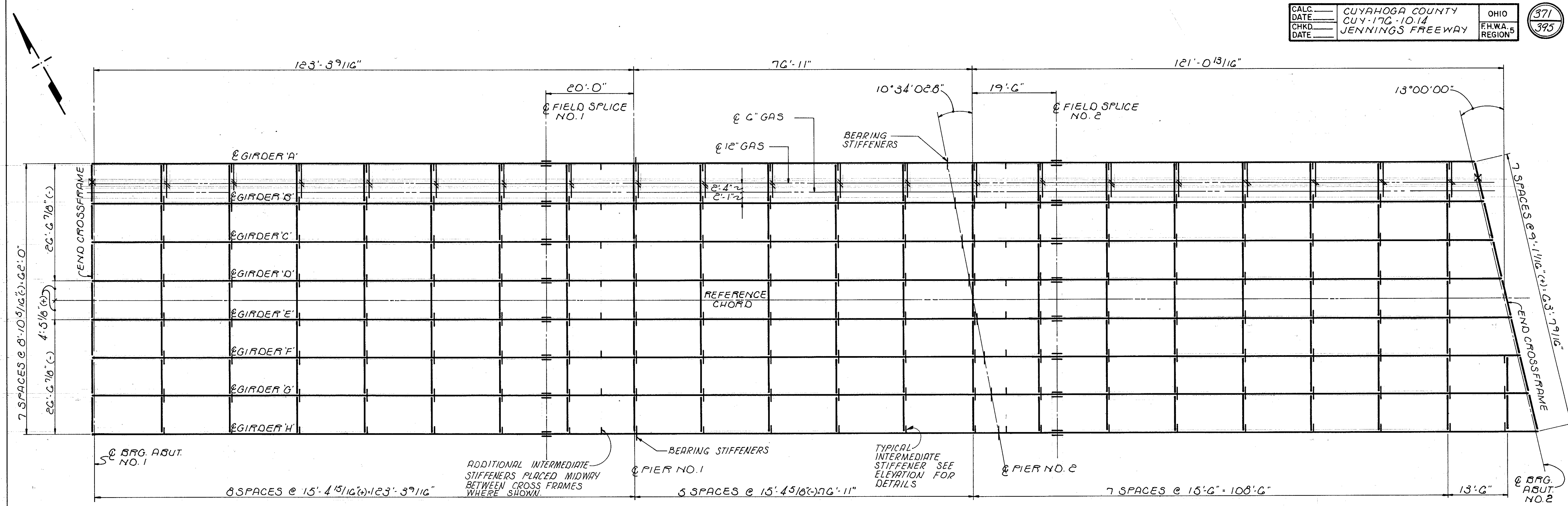
SECTION B-B



BOTTOM CAP & COLUMN REINFORCING DETAIL

PIER	GIRDER SEAT ELEVATIONS								
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'
PIER NO. 1 (LEFT)	761.41	761.59	761.78	761.96					757.91
PIER NO. 1 (RIGHT)					761.96	761.78	761.59	761.41	757.91
PIER NO. 2 (LEFT)	761.95	762.13	762.32	762.51					758.45
PIER NO. 2 (RIGHT)					762.52	762.34	762.16	761.98	758.45

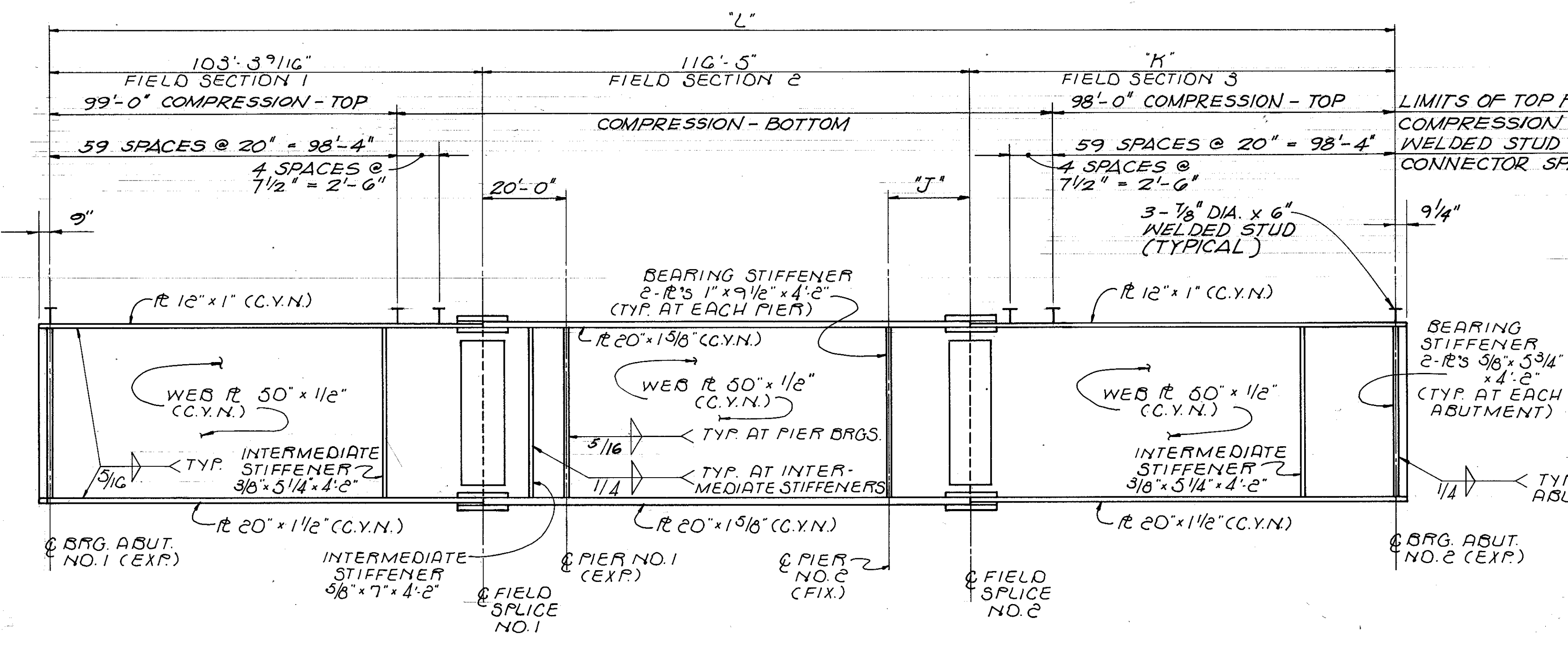
BRUNING 44-232 87195



FRAMING PLAN

NOTES:

- WHERE A SHAPE OR PLATE IS DESIGNATED (CVN) THE MATERIAL SHALL MEET SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- FOR END-CROSSFRAME DETAILS SEE STANDARD DRAWING EXJ-4-87 AND SD-1-69 AND EXPANSION JOINT DETAIL [20/22] & [15/22]
- FOR BEARING DETAILS SEE SHEET [17/22]
- WELDED ATTACHMENT OF SUPPORTS FOR CONCRETE DECK FINISHING MACHINE MAY BE MADE TO AREAS OF THE FASCIA STRINGER FLANGES DESIGNATED "COMPRESSION". ATTACHMENTS SHALL NOT BE MADE TO AREAS DESIGNATED "TENSION". FILLET WELDS TO COMPRESSION FLANGES SHALL BE NOT CLOSER THAN 1" FROM EDGE OF FLANGE, BE NOT MORE THAN 2" LONG, AND BE NOT SMALLER THAN THE MINIMUM SIZE REQUIRED BY AASHTO.
- FOR STIFFENER AND SPLICE DETAILS SEE SHEET. [15/22]



GIRDER ELEVATION

DIMENSION	GIRDER							
	A	B	C	D	E	F	G	H
"J"	25'-3 3/8"	23'-7 9/16"	21'-11 3/4"	20'-3 7/8"	18'-8 1/16"	17'-0 1/4"	15'-4 7/16"	13'-8 9/16"
"K"	94'-4 7/8"	96'-5 1/2"	98'-6"	100'-6 9/16"	102'-7 1/8"	104'-7 5/8"	106'-8 1/8"	108'-8 3/4"
"L"	314'-17 1/16"	316'-2 1/16"	318'-2 9/16"	320'-3 1/8"	322'-3 1/16"	324'-4 3/16"	326'-4 11/16"	328'-5 5/16"

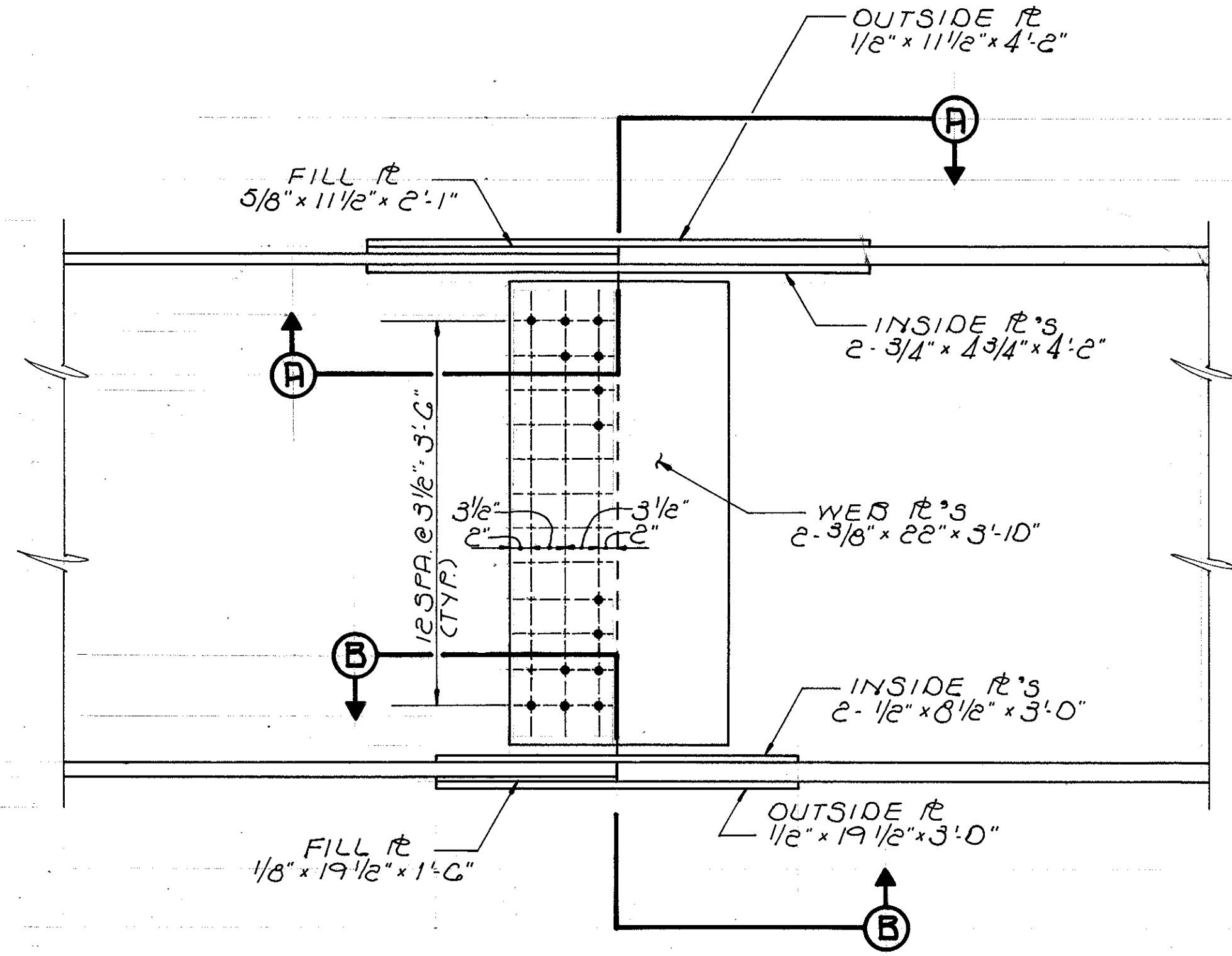
LEGEND

- ADDITION 2x4x3/8 FOR GAS LINE SUPPORT. SEE SHEET [15/22]
- STANDARD INTERMEDIATE CROSSFRAME (SHT [18/22]) OR STANDARD END CROSSFRAME.
- MODIFIED END CROSSFRAME SEE SHEET [15/22]

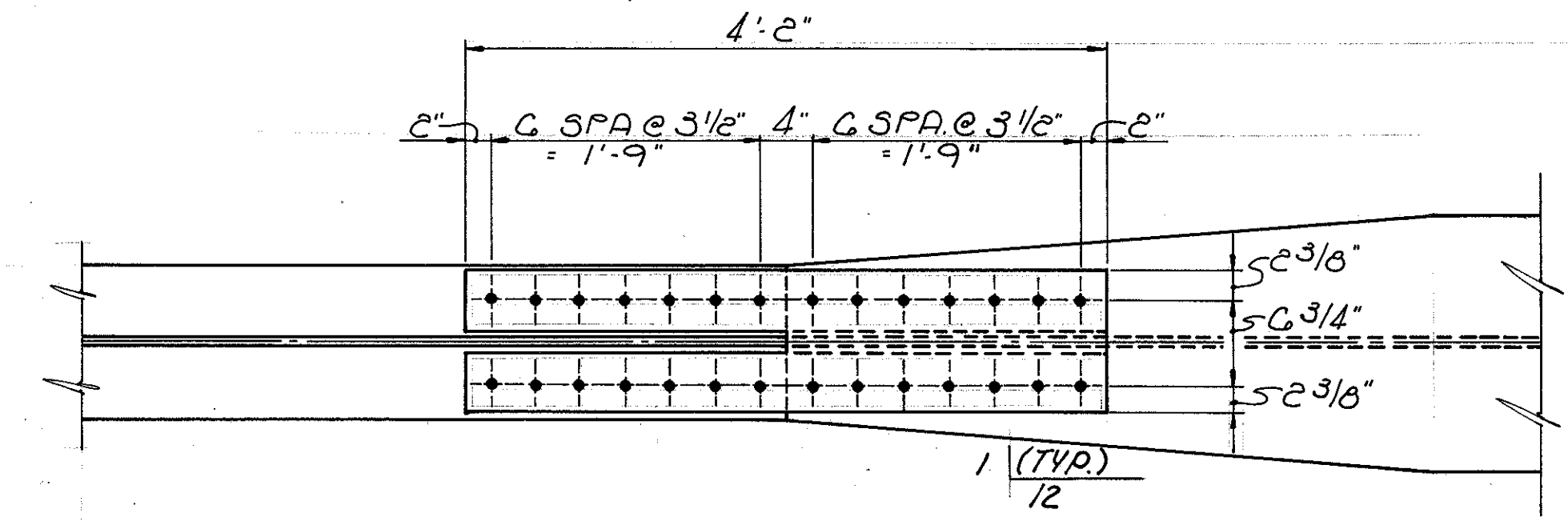
adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
FRAMING PLAN
JENNINGS FREEWAY
 STATE ROUTE 17G
 UNDER
 SCHAAF ROAD
BRIDGE NO. CUY-17G-1065
 DESIGNED T.A.B. DRAWN T.E.S. CHECKED T.J.W. REVIEWED A.J.M. DATE 1/94

NOTES:

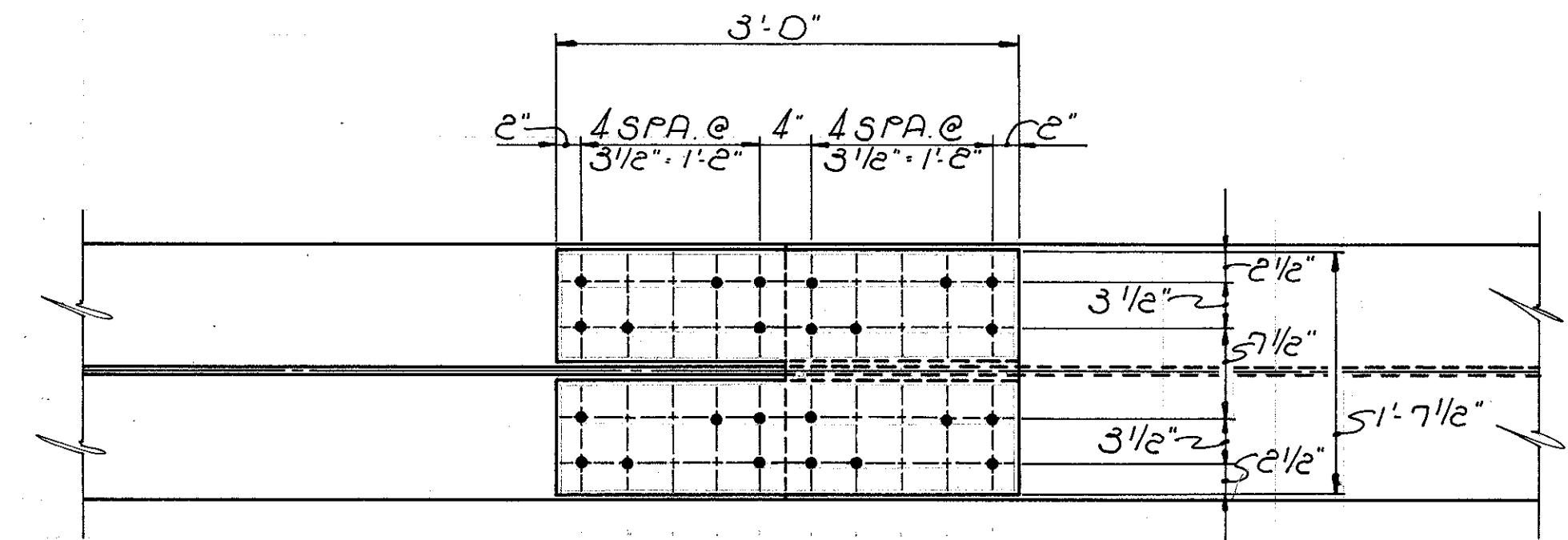
- HIGH STRENGTH BOLTS SHALL BE 1" DIA. A325 GALVANIZED UNLESS OTHERWISE NOTED
- FOR ADDITIONAL NOTES SEE SHEET 14/22
- ABBREVIATION
C.P. = COMPLETE PENETRATION WELD.
- THE CONTRACTOR SHALL FURNISH & INSTALL THE GAS LINE SUPPORT ANGLE WITH SLOTTED HOLES AND INCLUDE THIS FOR PAYMENT WITH ITEM 513 STRUCTURAL STEEL (AISC CERTIFICATION NOT REQUIRED) ALL STEEL GAS LINE PIPE AND INCIDENTALS SHALL BE FURNISHED AND INSTALLED BY THE EAST OHIO GAS COMPANY.



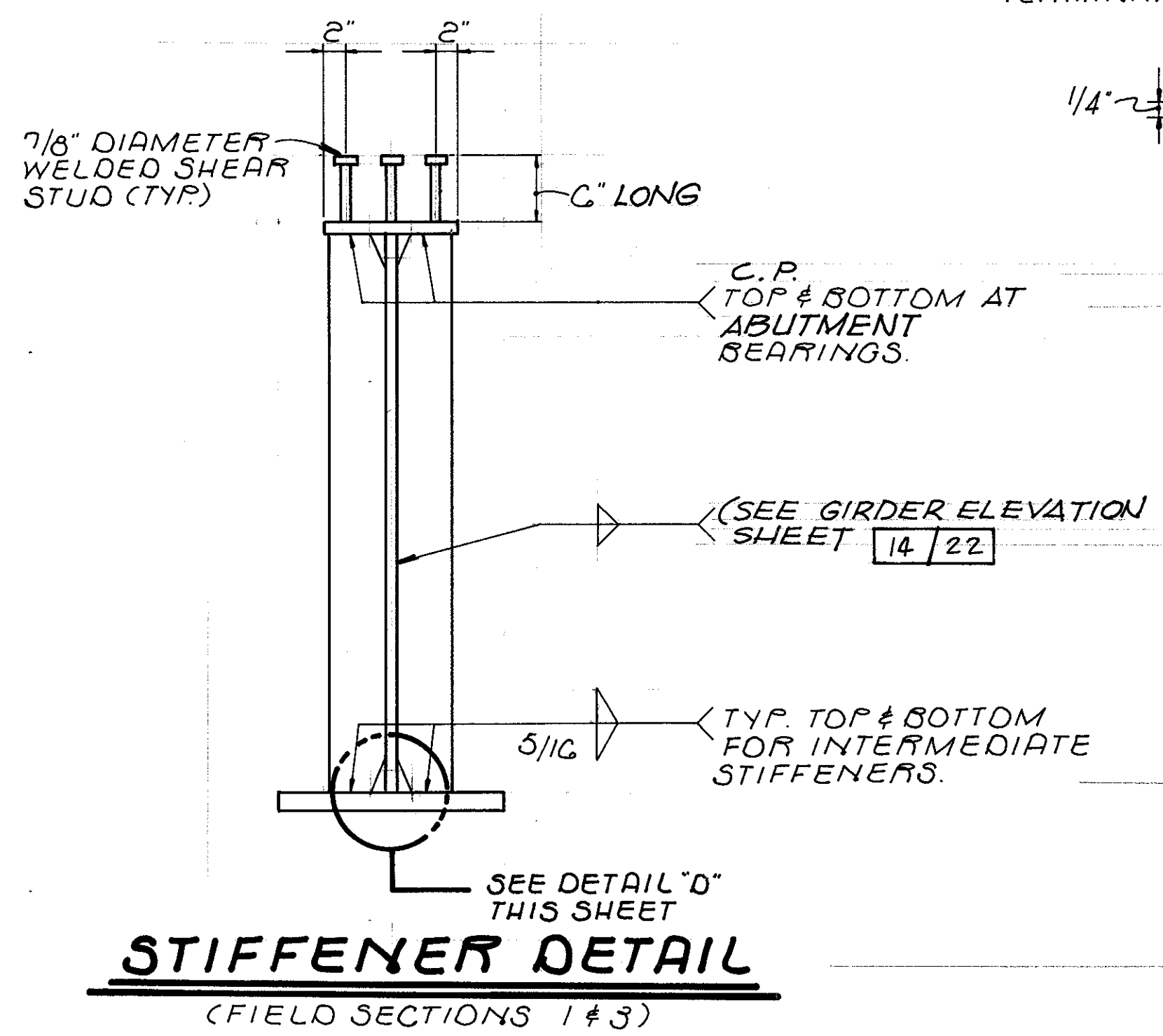
WEB SPICE ELEVATION



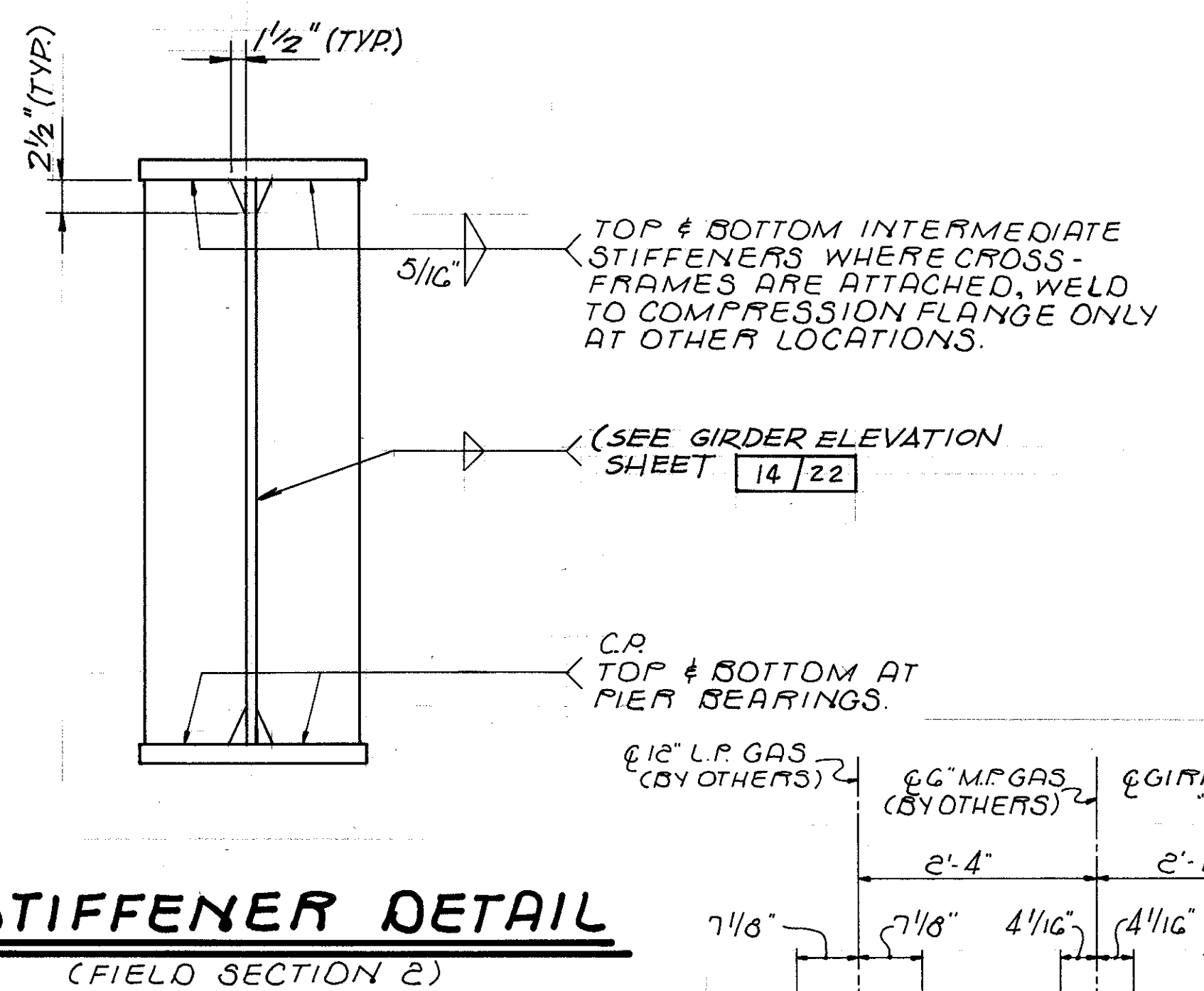
SECTION A-A
(TOP FLANGE SPICE)



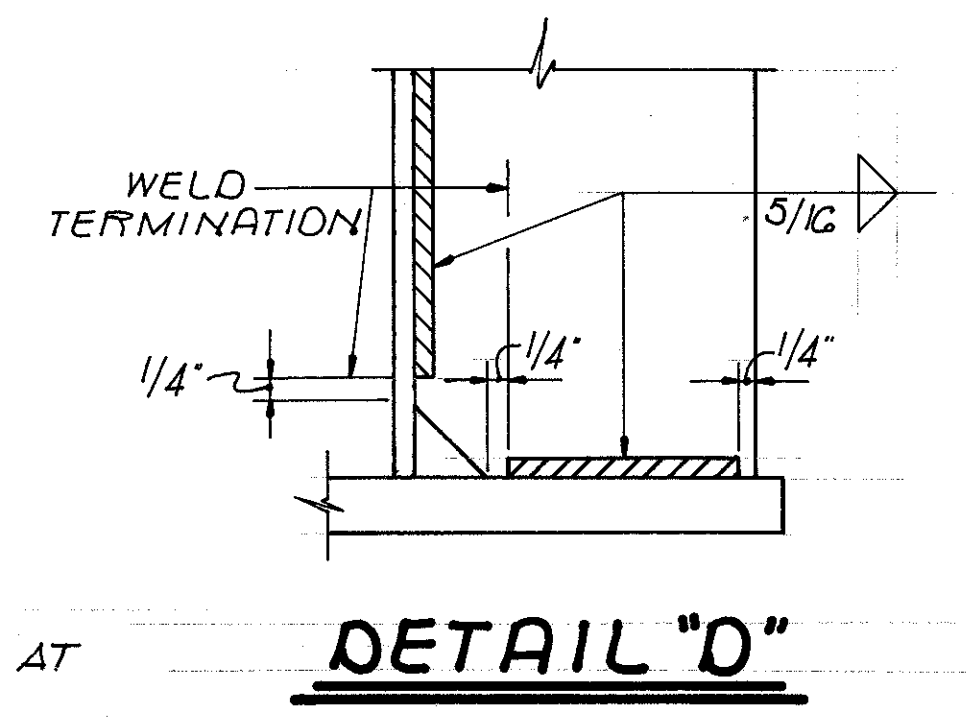
SECTION B-B
(BOTTOM FLANGE SPICE)



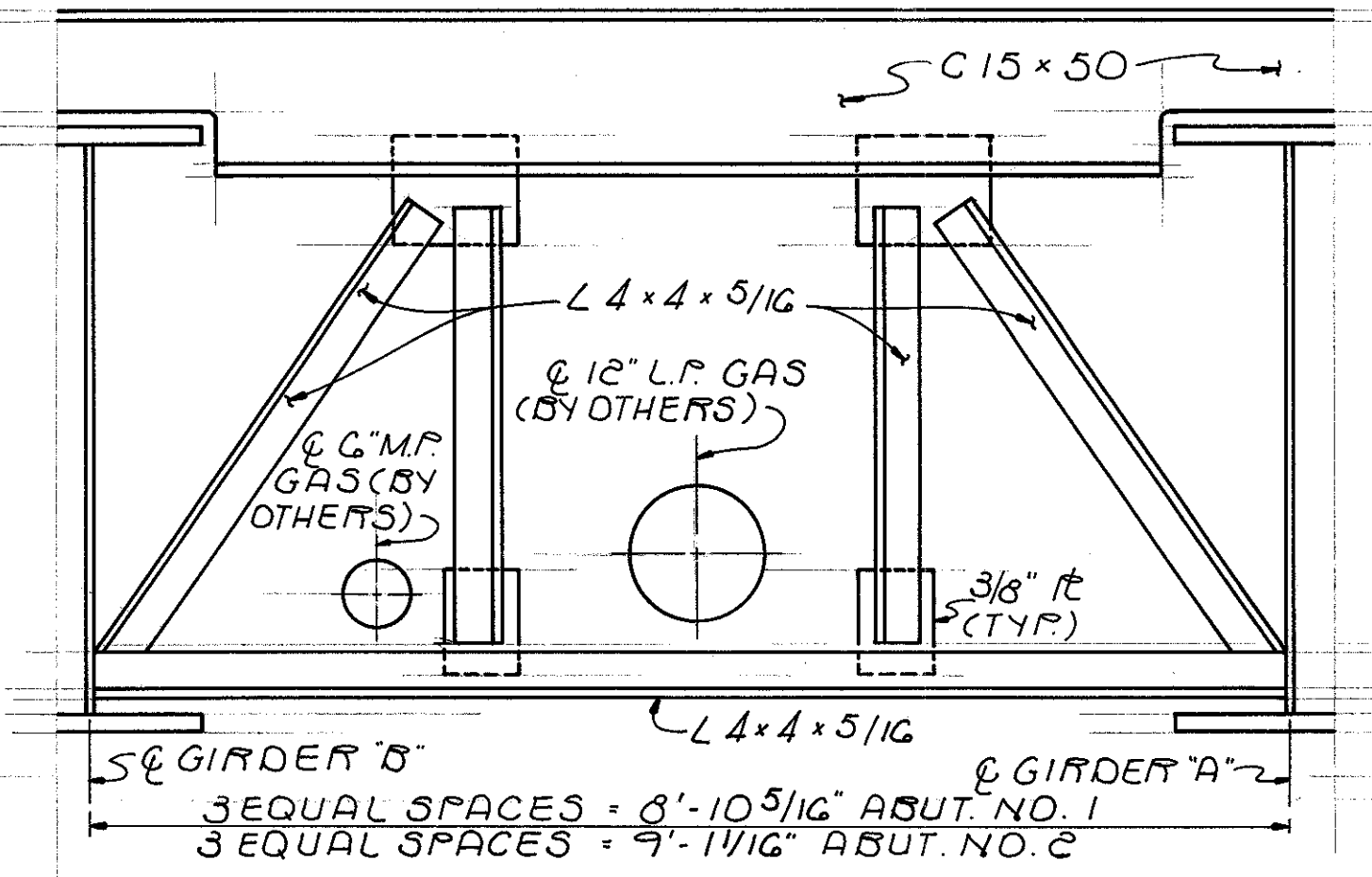
STIFFENER DETAIL
(FIELD SECTIONS 1 & 3)



STIFFENER DETAIL
(FIELD SECTION 2)

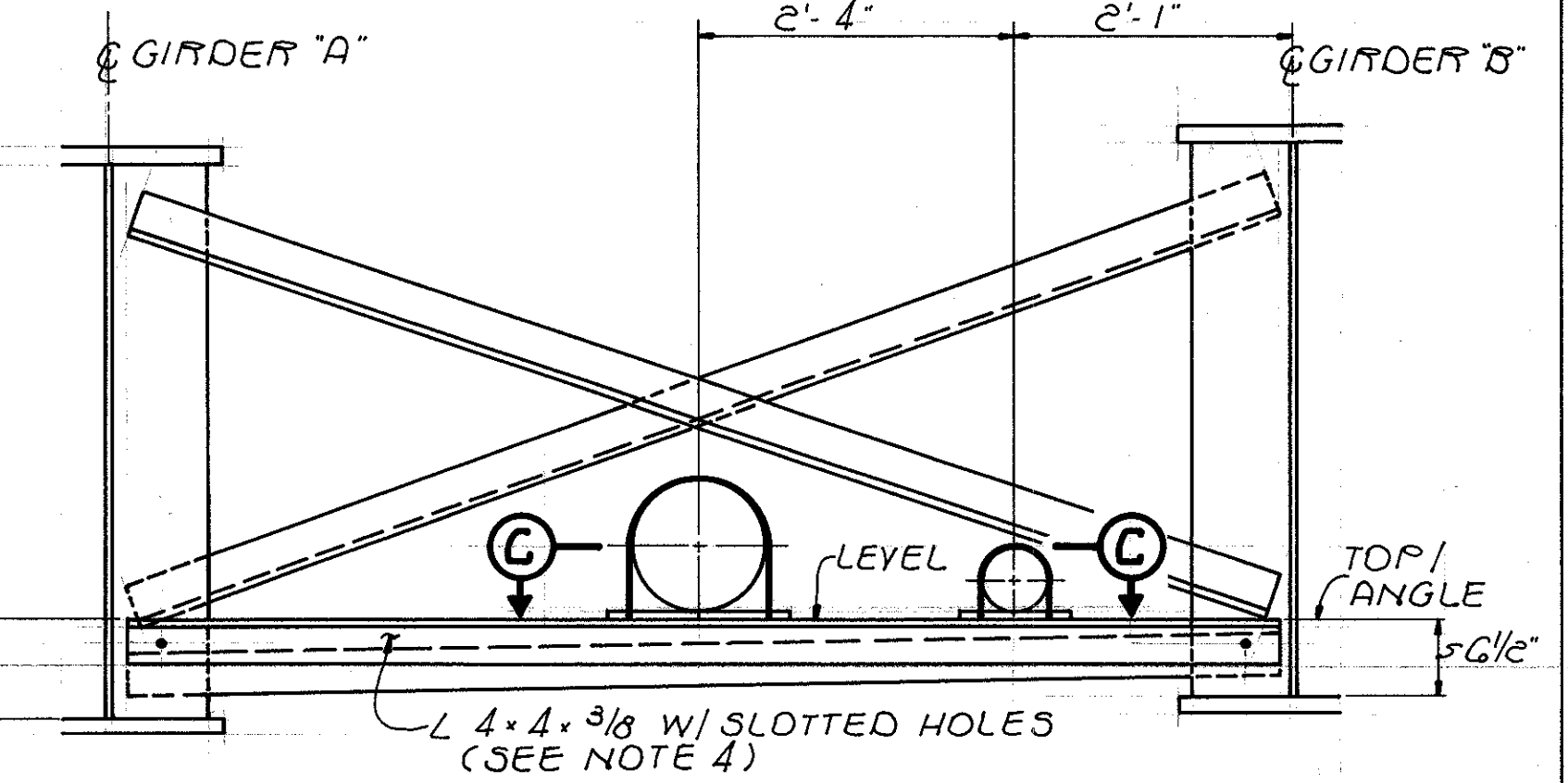


DETAIL "D"

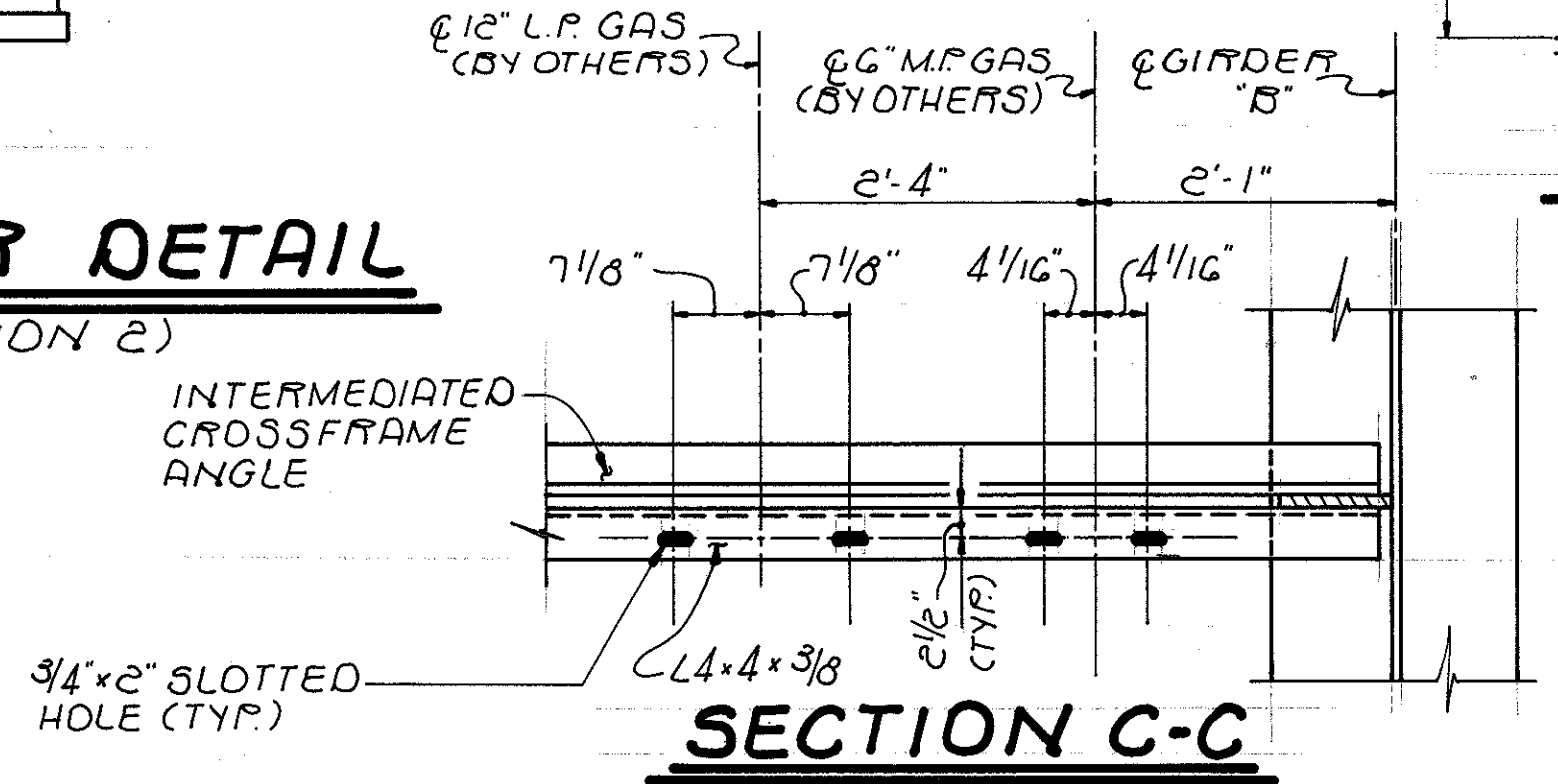


MODIFIED END CROSSFRAME

ABUT. NO. 1 SHOWN, ABUT. NO. 2 SIMILAR FOR ADDITIONAL DETAILS SEE STD. DWG. EXJ-4-87 SHEET 1/3 & 50-1-C9 SHEET 1/4.



GAS LINE SUPPORT DETAIL



SECTION C-C

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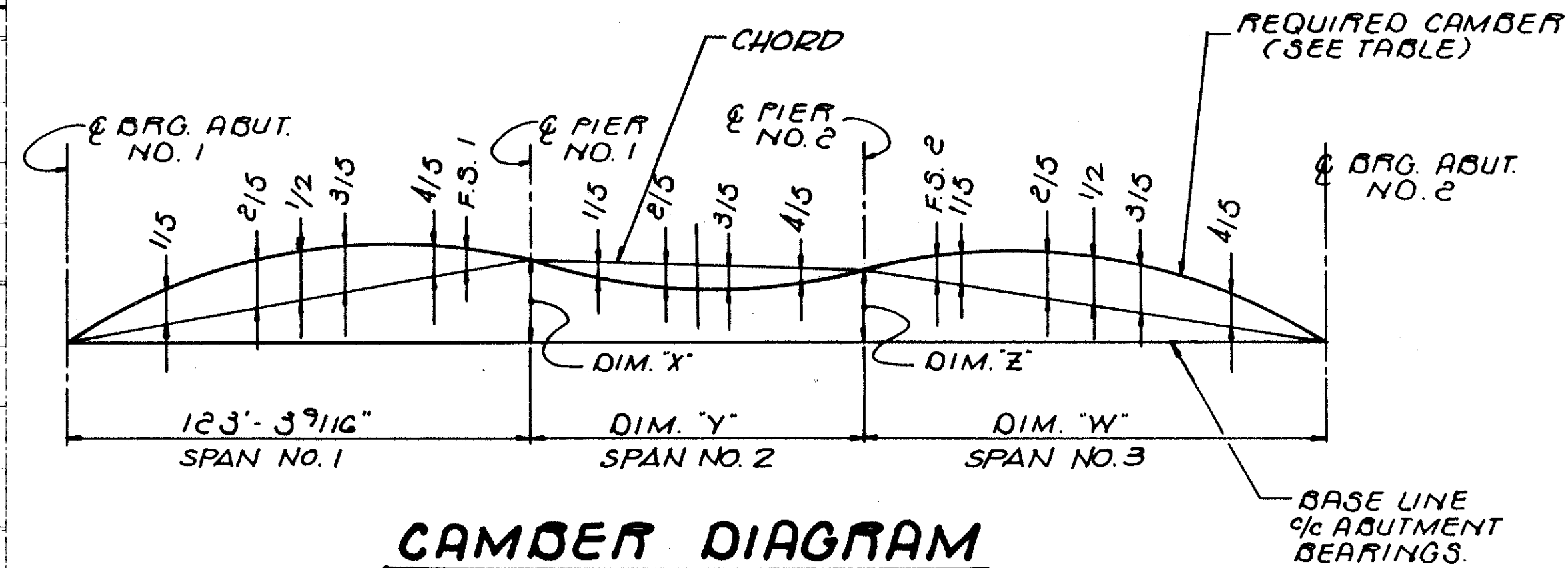
STRUCTURAL DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
UNDER
SCHARF ROAD
BRIDGE NO. CUY-176-1065

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	

CUY-176-1065

DEFLECTION AND CAMBER (INCHES)

POINT	SPAN NO. 1						SPAN NO. 2					SPAN NO. 3					
	1/5	2/5	1/2	3/5	4/5	SPL	1/5	2/5	1/2	3/5	4/5	SPL	1/5	2/5	1/2	3/5	4/5
G DEFLECTION DUE TO WEIGHT OF STEEL	9/16	7/8	7/8	3/4	3/8	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	3/8	3/8	11/16	3/4	3/4	1/2
R DEFLECTION DUE TO REMAINING DL	2 11/16	4 1/16	4 1/8	3 11/16	1 7/8	1 1/2	- 5/8	- 7/8	- 15/16	- 7/8	- 5/8	1 3/4	1 13/16	3 5/16	3 3/4	3 11/16	2 7/16
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	0
A REQUIRED SHOP CAMBER	4 3/4	7 1/8	7 1/8	6 1/2	3 3/8	2 3/4	- 3/4	- 1 1/16	- 1 1/8	- 1 1/16	- 3/4	2 1/8	2 3/16	4	4 1/2	4 7/16	2 15/16
G DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	7/8	13/16	7/16	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	3/8	3/8	3/4	13/16	13/16	9/16
R DEFLECTION DUE TO REMAINING DL	2 5/8	3 15/16	4	3 9/16	1 13/16	1 7/16	- 5/8	- 7/8	- 7/8	- 9/16	1 11/16	1 11/16	3 1/4	3 5/8	3 5/8	2 3/8	
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
B REQUIRED SHOP CAMBER	4 3/4	7	7	6 7/16	3 3/8	2 11/16	- 3/4	- 1 1/16	- 1 1/16	- 1 1/16	- 11/16	2 1/16	2 1/16	4	4 7/16	4 7/16	2 15/16
G DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	7/8	13/16	3/8	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	5/16	3/8	3/4	13/16	13/16	9/16
R DEFLECTION DUE TO REMAINING DL	2 5/8	4	4	3 9/16	1 13/16	1 1/2	- 5/8	- 7/8	- 15/16	- 7/8	- 5/8	1 9/16	1 3/4	3 5/16	3 11/16	3 11/16	2 7/16
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
C REQUIRED SHOP CAMBER	4 3/4	7 1/16	7	6 7/16	3 5/16	2 3/4	- 3/4	- 1 1/16	- 1 1/8	- 1 1/16	- 3/4	1 7/8	2 1/8	4 1/16	4 1/2	4 1/2	3
G DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	7/8	13/16	7/16	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	5/16	3/8	3/4	13/16	13/16	9/16
R DEFLECTION DUE TO REMAINING DL	2 5/8	3 15/16	4	3 9/16	1 13/16	1 1/2	- 5/8	- 7/8	- 15/16	- 7/8	- 5/8	1 7/16	1 11/16	3 5/16	3 3/4	3 11/16	2 7/16
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
D REQUIRED SHOP CAMBER	4 3/4	7	7	6 7/16	3 3/8	2 3/4	- 3/4	- 1 1/16	- 1 1/8	- 1 1/16	- 3/4	1 3/4	2 1/16	4 1/16	4 9/16	4 1/2	3
G DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	7/8	13/16	7/16	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	1/4	3/8	3/4	13/16	13/16	9/16
R DEFLECTION DUE TO REMAINING DL	2 5/8	4	4	3 9/16	1 7/8	1 1/2	- 5/8	- 15/16	- 15/16	- 7/8	- 5/8	1 5/16	1 3/4	3 3/8	3 3/4	3 3/4	2 1/12
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
E REQUIRED SHOP CAMBER	4 3/4	7 1/16	7	6 7/16	3 7/16	2 3/4	- 3/4	- 1 1/8	- 1 1/8	- 1 1/8	- 3/4	1 7/16	2 1/8	4 3/16	4 5/8	4 5/8	3 1/16
G DEFLECTION DUE TO WEIGHT OF STEEL	5/8	7/8	7/8	13/16	7/16	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	3/16	3/8	3/4	7/8	7/8	9/16
R DEFLECTION DUE TO REMAINING DL	2 5/8	4	4 1/16	3 5/8	1 7/8	1 1/2	- 11/16	- 15/16	- 1	- 15/16	- 11/16	1 1/16	1 13/16	3 1/2	3 15/16	3 7/8	2 9/16
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
G REQUIRED SHOP CAMBER	4 3/4	7 1/16	7 1/16	6 1/2	3 7/16	2 3/4	- 13/16	- 1 1/8	- 1 3/16	- 1 1/8	- 13/16	1 1/4	2 3/16	4 1/4	4 13/16	4 3/4	3 1/8
G DEFLECTION DUE TO WEIGHT OF STEEL	9/16	13/16	13/16	3/4	3/8	5/16	- 1/8	- 3/16	- 3/16	- 3/16	- 1/8	3/16	3/8	3/4	13/16	13/16	9/16
R DEFLECTION DUE TO REMAINING DL	2 11/16	4 1/8	4 1/8	3 11/16	1 7/8	1 1/2	- 11/16	- 15/16	- 1	- 15/16	- 11/16	15/16	1 7/8	3 5/8	4 1/16	4	2 11/16
E ADJUSTMENT REQUIRED FOR VERTICAL CURVE	1 1/2	2 3/16	2 1/8	2 1/16	1 1/8	15/16	0	0	0	0	0	0	0	0	0	0	
H REQUIRED SHOP CAMBER	4 3/4	7 1/8	7 1/16	6 1/2	3 3/8	2 3/4	- 13/16	- 1 1/8	- 1 3/16	- 1 1/8	- 13/16	1 1/8	2 1/4	4 3/8	4 7/8	4 13/16	3 1/4



CAMBER DIAGRAM

DIMENSION TABLE

DIMENSION	GIRDER							
	A	B	C	D	E	F	G	H
"Y"	71'-15/8"	72'-9 7/16"	74'-5 1/4"	76'-1 1/8"	77'-8 13/16"	79'-4 3/4"	81'-0 9/16"	82'-0 7/16"
"W"	119'-8 1/4"	120'-1 1/16"	120'-5 3/4"	120'-10 7/16"	121'-3 3/16"	121'-7 7/8"	122'-0 9/16"	122'-5 3/16"
"X"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/16"	3 1/16"	3 1/16"	3 1/16"
"Z"	2 3/16"	2 3/16"	2 3/16"	2 3/16"	2 1/8"	2 1/8"	2 1/8"	2 1/8"

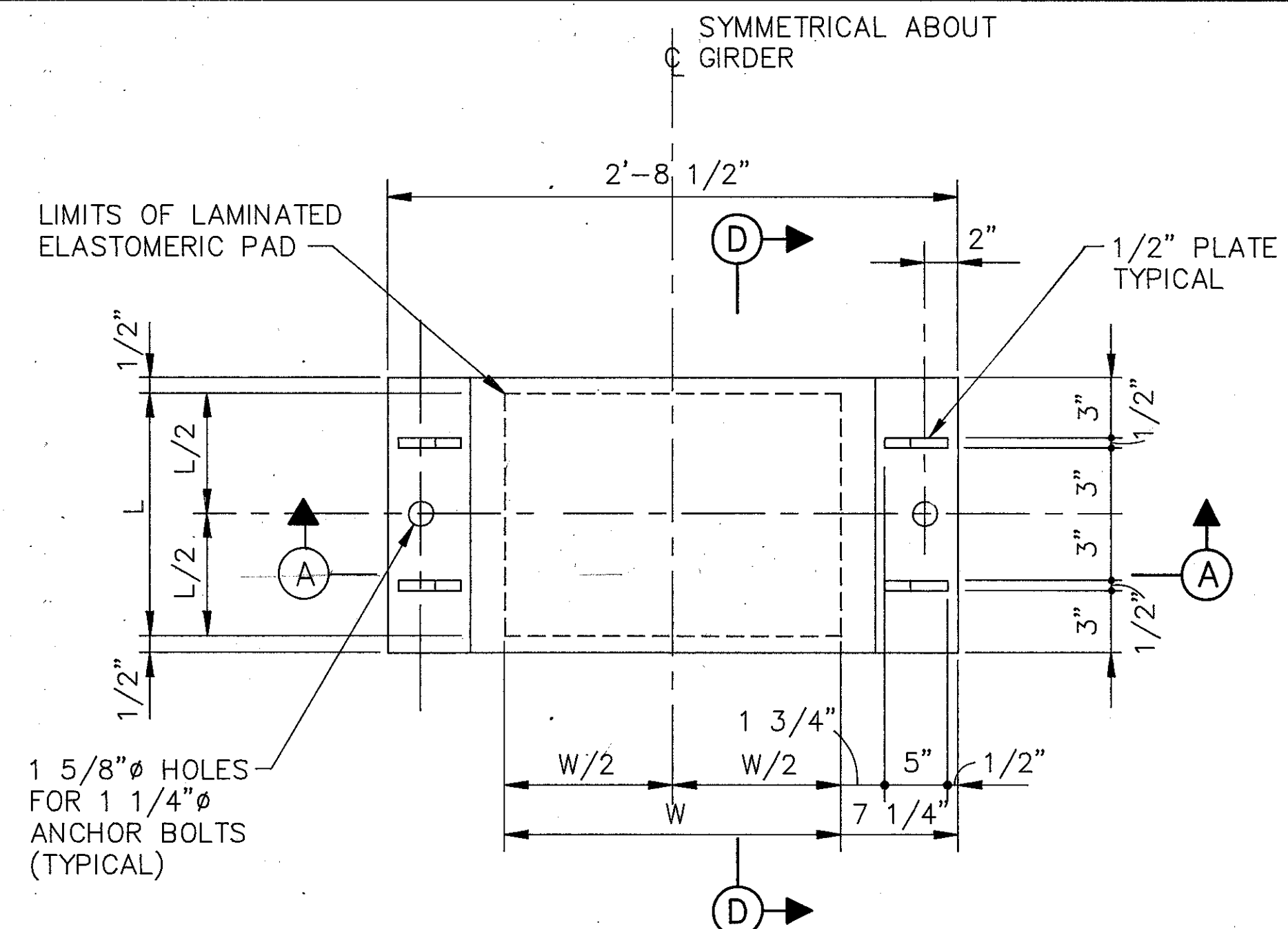
BRUNING 44-332 67/95

ACL Form No. B-1

16/22

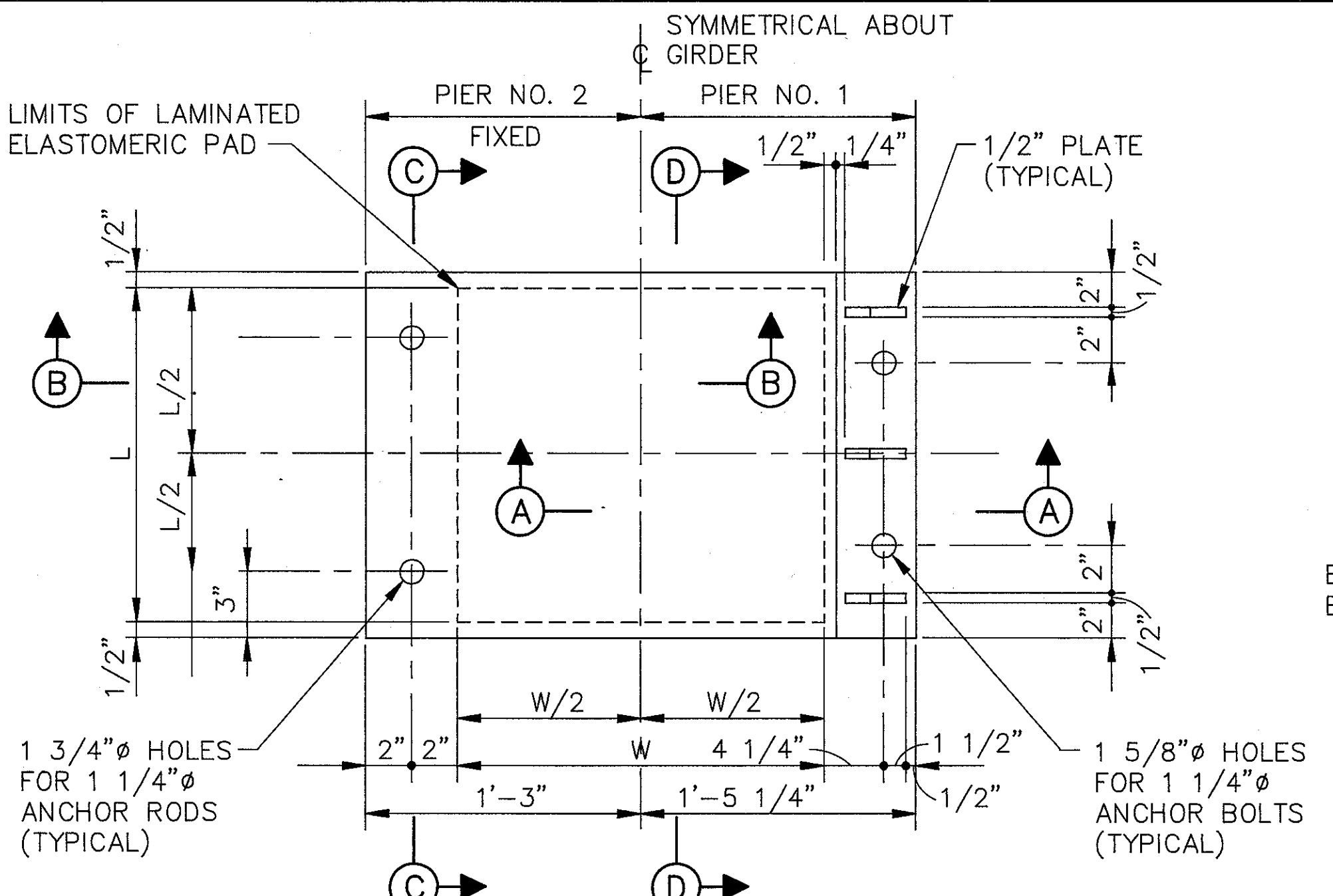
adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
DEFLECTION & CAMBER TABLE
 JENNINGS FREEWAY
 STATE ROUTE 17C
 UNDER
 SCHARF ROAD
 BRIDGE NO. CUY-176-1065

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	

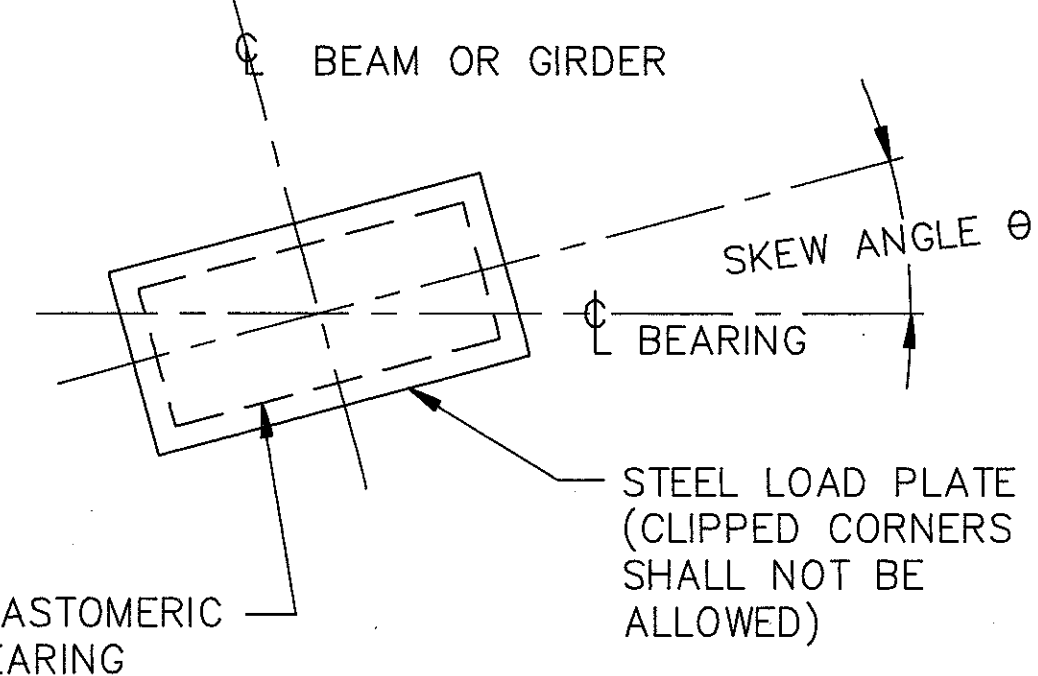


ABUTMENT PLAN

TYPICAL ABUTMENT NO. 1 & NO. 2

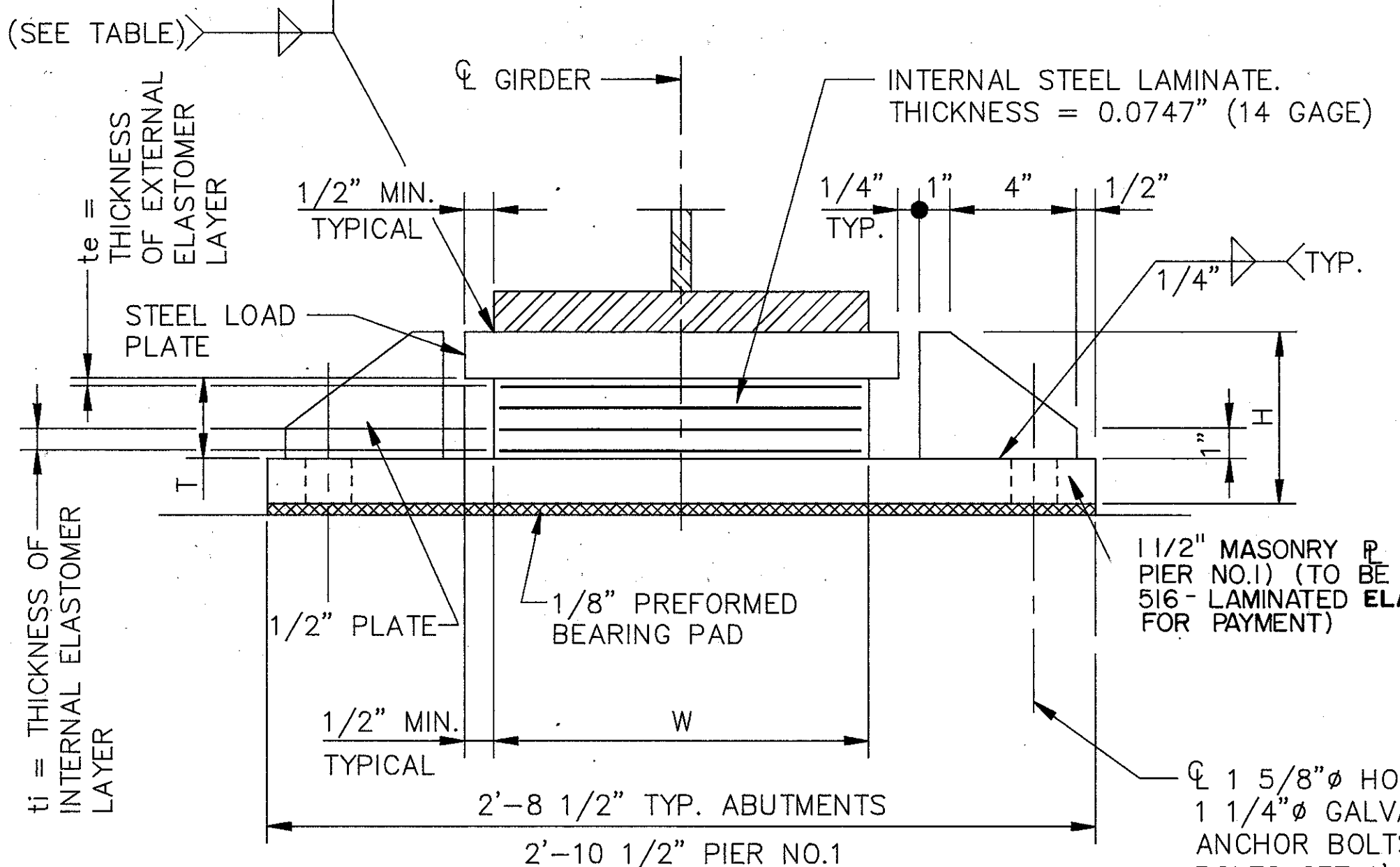


PIER PLAN

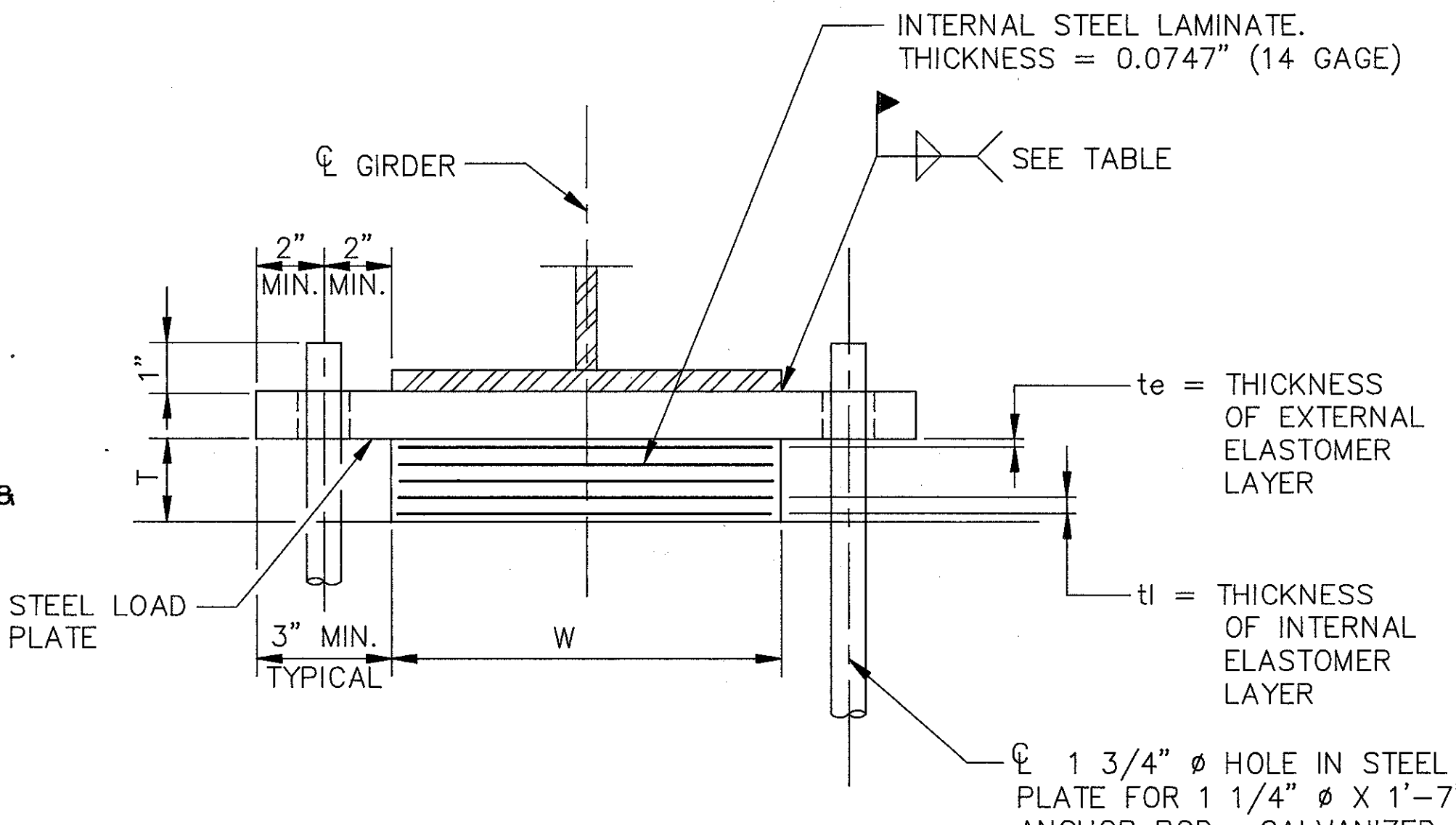


BEARING ORIENTATION

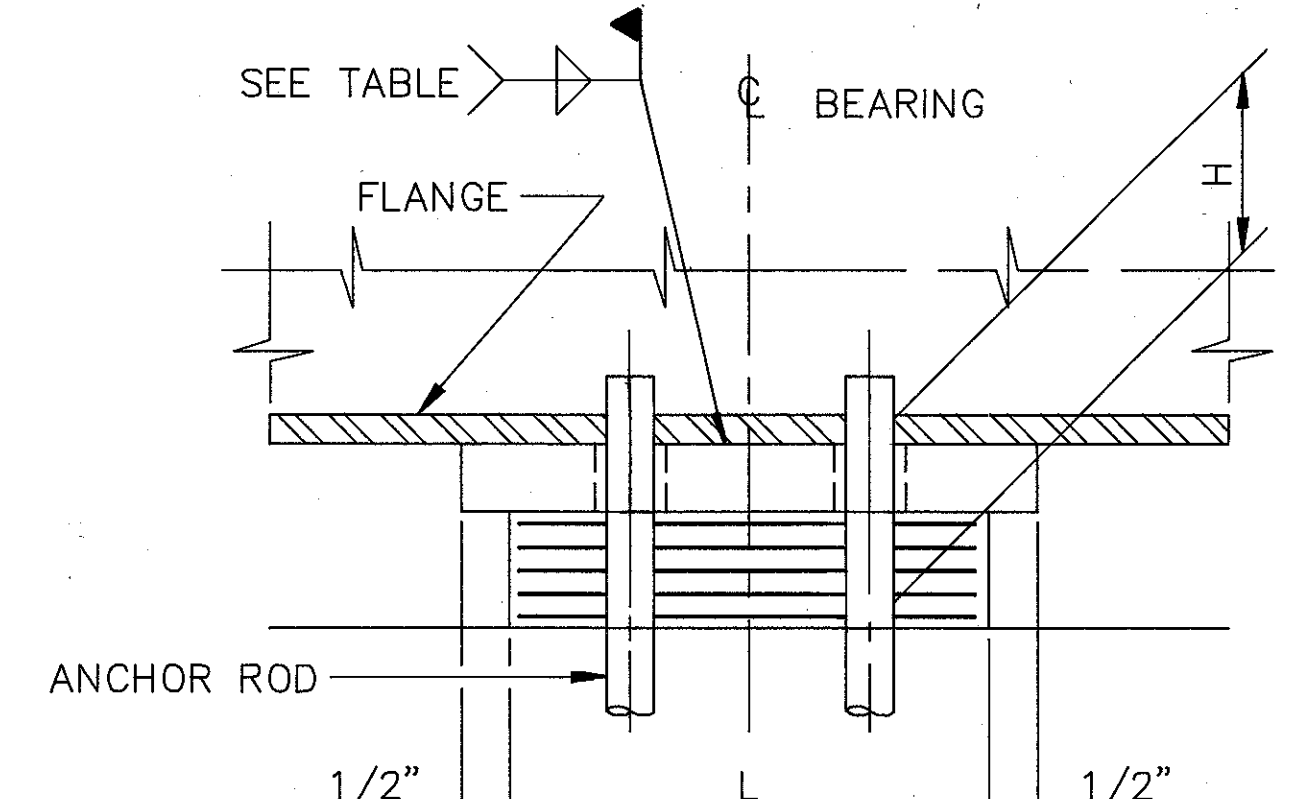
NOTES:
LOAD PLATE AND MASONRY PLATE: THE STEEL LOAD OR MASONRY PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS. WELDING OF THE LOAD PLATE TO THE SUPERSTRUCTURE SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE SHALL NOT EXCEED 300° F AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.
BEARING ANCHOR RODS OR BOLTS: AT THE OPTION OF THE CONTRACTOR, THE BEARING RODS, BEARING BOLTS (OR FORMED HOLES), LOCATED AND SUPPORTED BY TEMPLATES, MAY BE CAST-IN-PLACE.
BEARING REPOSITIONING: IF PLACEMENT OF THE DECK CONCRETE IS DONE AT AN AMBIENT TEMPERATURE HIGHER THAN 80° F OR LOWER THAN 40° F, THE BEAMS OR GIRDERS SHALL BE RAISED WHEN THE AMBIENT TEMPERATURE IS 60° F, ± 10° F TO ALLOW THE BEARINGS TO RETURN TO THEIR UNDEFORMED SHAPE.
BASIS OF PAYMENT: THE UNIT BID PRICE SHALL INCLUDE ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO FURNISH AND INSTALL LAMINATED ELASTOMERIC BEARINGS EITHER FIXED OR EXPANSION. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516, EACH, LAMINATED ELASTOMERIC BEARINGS (___ X ___ X ___ LAMINATED ELASTOMERIC PAD WITH ___ X ___ X ___ STEEL LOAD PLATE). AS PER PLAN.
ALL STEEL SHALL CONFORM TO ASTM A572.



SECTION A-A



SECTION B-B

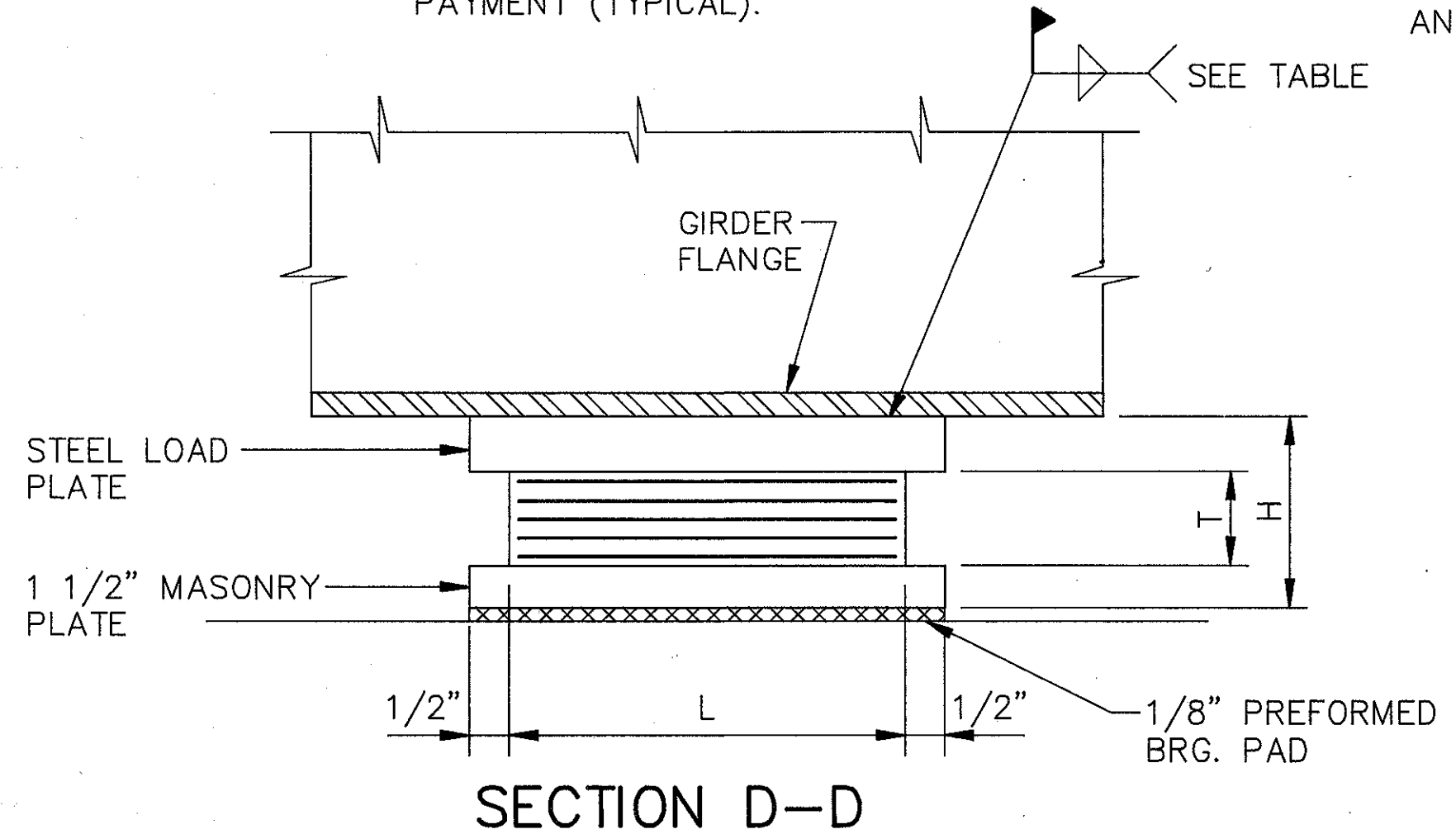


SECTION C-C

LAMINATED ELASTOMERIC BEARINGS

50 DUROMETER HARDNESS

BEARING LOCATION	BEARING TYPE	DEAD LOAD KIPS	LIVE LOAD KIPS	TOTAL LOAD (DL+LL) KIPS	L IN.	W IN.	t _i IN.	t _e IN.	NO. OF t _i 'S	NUMBER OF INTERNAL LAMINATES (14 GAGE)	T IN.	STEEL LOAD PLATE (L X W X t)	FILLET WELD SIZE	H (TOTAL BEARING HEIGHT)	SKEW ANGLE θ
ABUTMENT NO. 1	EXPANSION	95	74	169	12	18	.313	.223	8	9	3 5/8	13"x21"x2"	5/16"	7 1/8"	0°
ABUTMENT NO. 2	EXPANSION	95	74	169	12	18	.313	.223	8	9	3 5/8	13"x21"x2"	5/16"	7 1/8"	13°00'RF
PIER NO. 1	EXPANSION	210	97	317	16	22	0.40	0.29	7	8	4	17"x23"x2"	5/16"	7 1/2"	0°
PIER NO. 2	FIXED	210	97	317	16	22	0.40	0.29	2	3	1 5/8	17"x23"x2"	5/16"	3 5/8"	10°34'02.8"RF



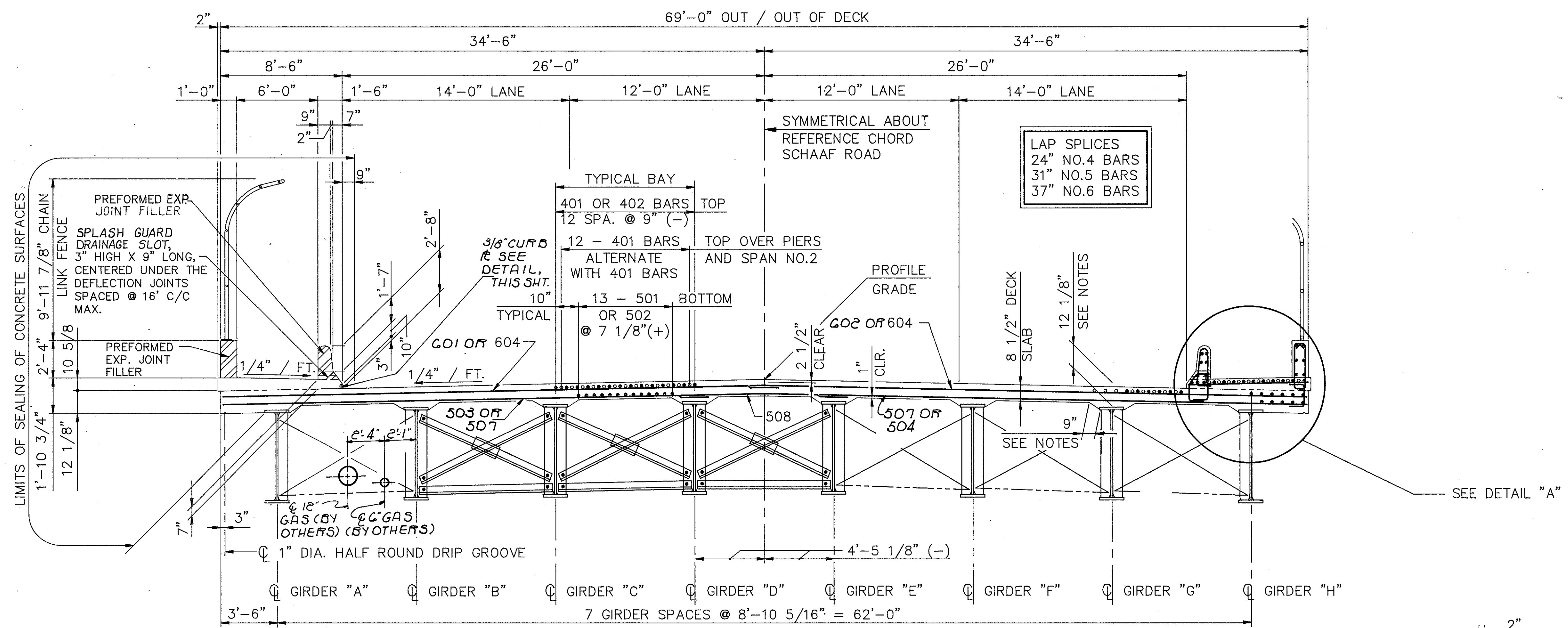
SECTION D-D

17/22

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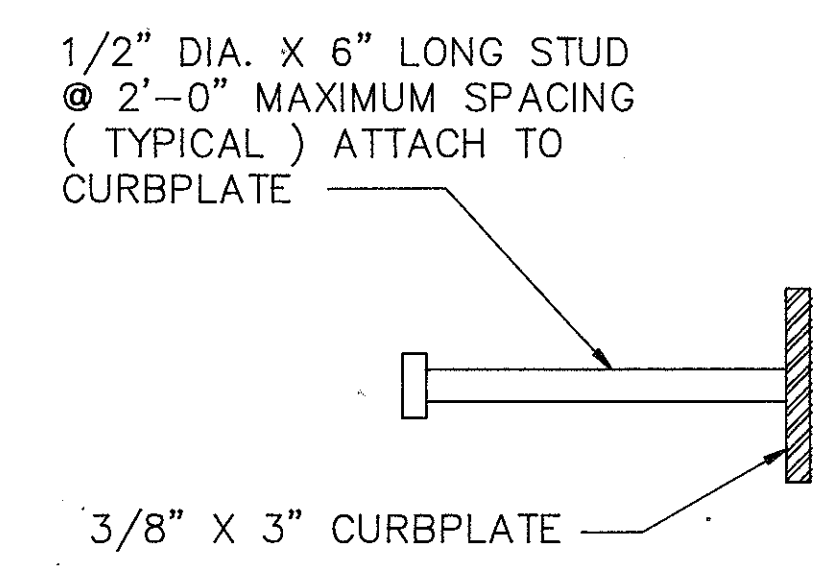
BEARING DETAILS
JENNINGS FREEWAY
STATE ROUTE 176
UNDER
SCHAAF ROAD
BR. NO. CUY-176-1065

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	M.C.M.	C.T.	A.J.M.	1/94	

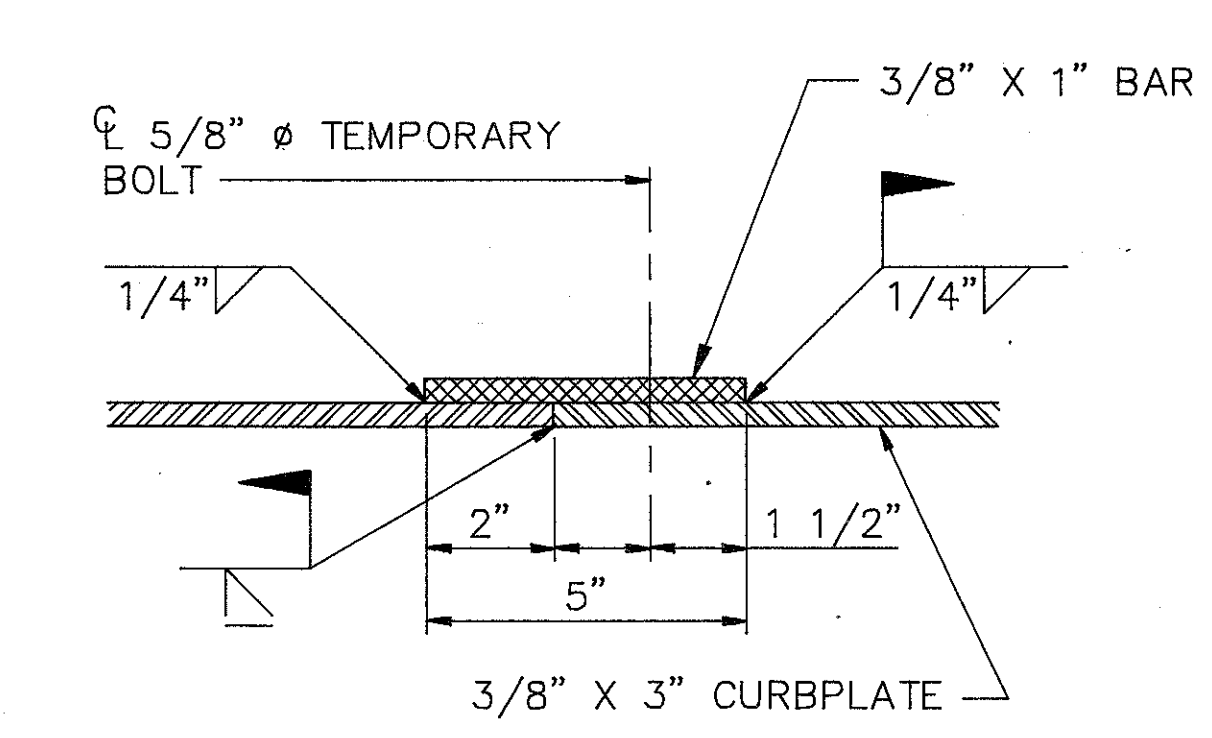


NOTE: FOR GAS LINE SUPPORT DETAILS SEE SHEET 15/22

TRANSVERSE SECTION

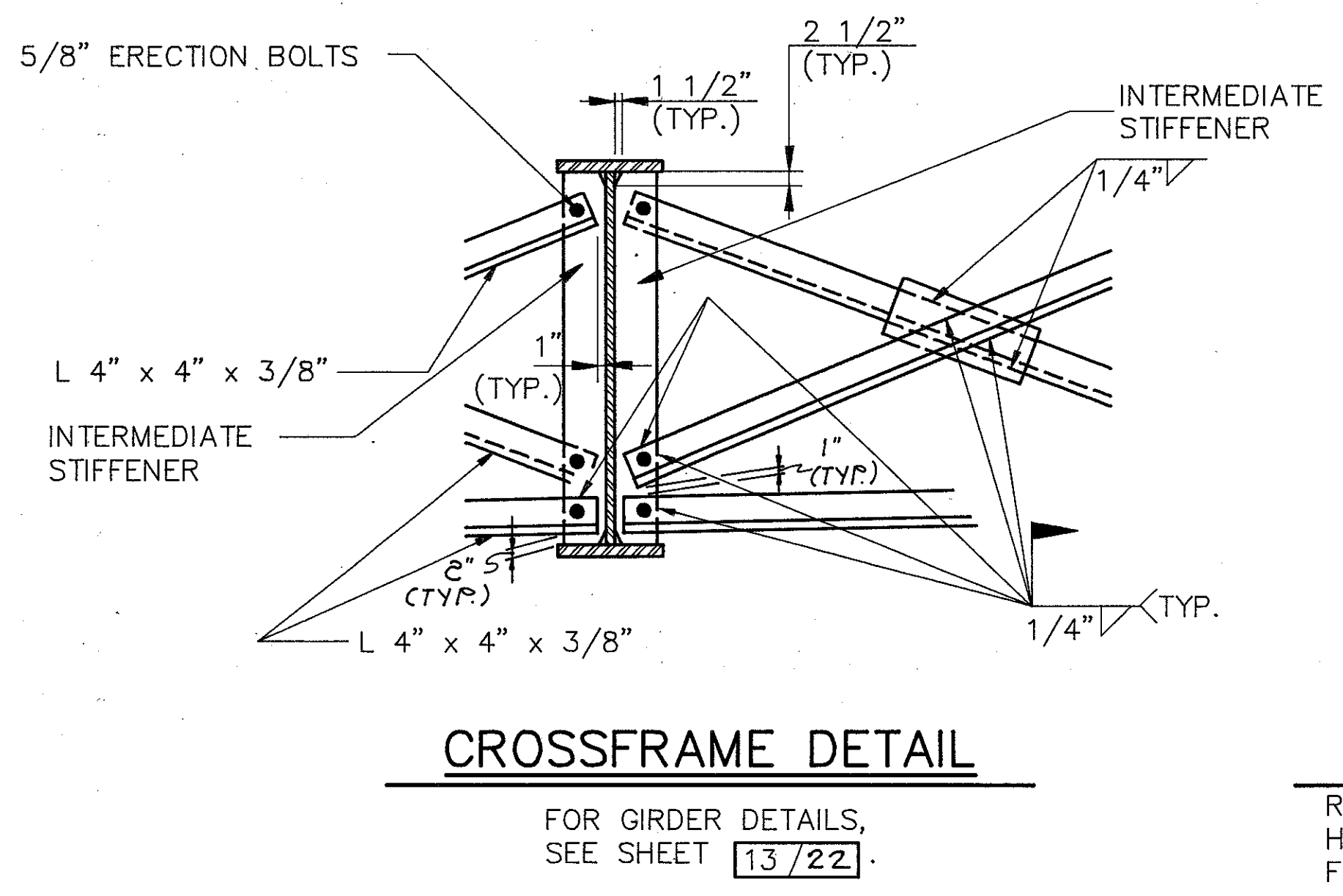
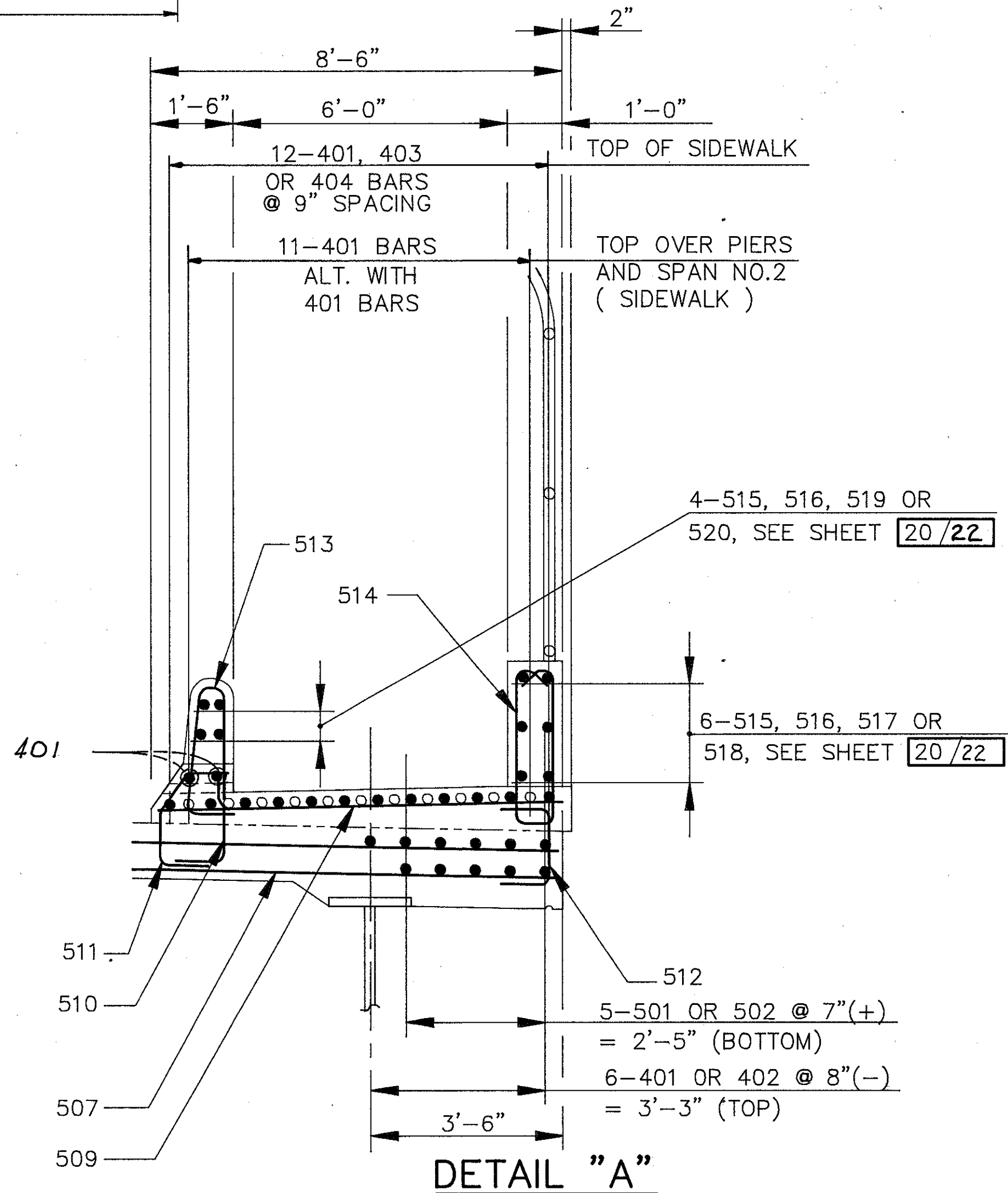


CURBPLATE DETAIL



CURBPLATE SPLICE DETAIL

REMOVE TEMPORARY BOLTS AFTER FIELD WELDS HAVE BEEN COMPLETED. PLUGWELD HOLES FLUSH WITH CURBPLATE.



CROSSFRAME DETAIL

FOR GIRDER DETAILS, SEE SHEET 13/22

NOTES:

ALL REINFORCING BAR MARKS IN THE SUPERSTRUCTURE SHALL BE PREFIXED WITH THE LETTER "S".

DECK SLAB DEPTH: THE DISTANCE SHOWN FROM THE TOP OF DECK SLAB TO THE BOTTOM OF THE TOP FLANGE IS THE DESIGN DIMENSION. THE QUANTITY OF CONCRETE TO BE PAID FOR SHALL BE BASED UPON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE GIRDER MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE. DEDUCTION SHALL BE MADE FOR THE VOLUME OF ENCASED STEEL PLATES AS PER 511.18.

A HAUNCH WIDTH OF 9" SHALL BE USED FOR COMPUTING THE QUANTITY OF CONCRETE. HOWEVER, THE HAUNCH WIDTH MAY VARY BETWEEN 6" AND 12" PROVIDED THAT THE SLOPE SHALL BE NOT MORE THAN 4:1 FOR A HAUNCH LESS THAN 9" WIDE.

FOR FENCE DETAILS, SEE STANDARD DRAWING VPF-1-90 AND MISCELLANEOUS DETAIL SHEET 388 OF 395.

ERECTION BOLTS: THE HOLE DIAMETER IN THE CROSS FRAMES AND GIRDER STIFFENERS SHALL BE 3/16" LARGER THAN THE DIAMETER OF THE ERECTION BOLTS. UNLESS REPLACED BY PERMANENT HIGH STRENGTH BOLTS, ERECTION BOLTS SHALL REMAIN IN PLACE. LOCK WASHERS SHALL BE FURNISHED FOR OTHER THAN FULLY TORQUED HIGH STRENGTH ERECTION BOLTS. BOLTS SHALL BE FURNISHED AS PART OF ITEM 513.

IN LIEU OF ERECTION BOLTS AND AT THE OPTION OF THE CONTRACTOR, ALTERNATIVE MEANS OF TEMPORARY BRACING MAY BE USED SUBJECT TO THE APPROVAL OF THE DIRECTOR (501.06).

FOR SCREED ELEVATIONS SEE SHEET 19/22

PAYMENT FOR CURB PLATES SHALL BE INCLUDED WITH ITEM 513 - "STRUCTURAL STEEL, CERTIFICATION NOT REQUIRED" CURB PLATES SHALL BE PAINTED IN ACCORDANCE WITH ITEM 514 - SYSTEM IZEU AND PAID FOR UNDER THAT ITEM.

DRIP GROOVES SHALL TERMINATE 2'-0" FROM FACE OF ABUTMENT.

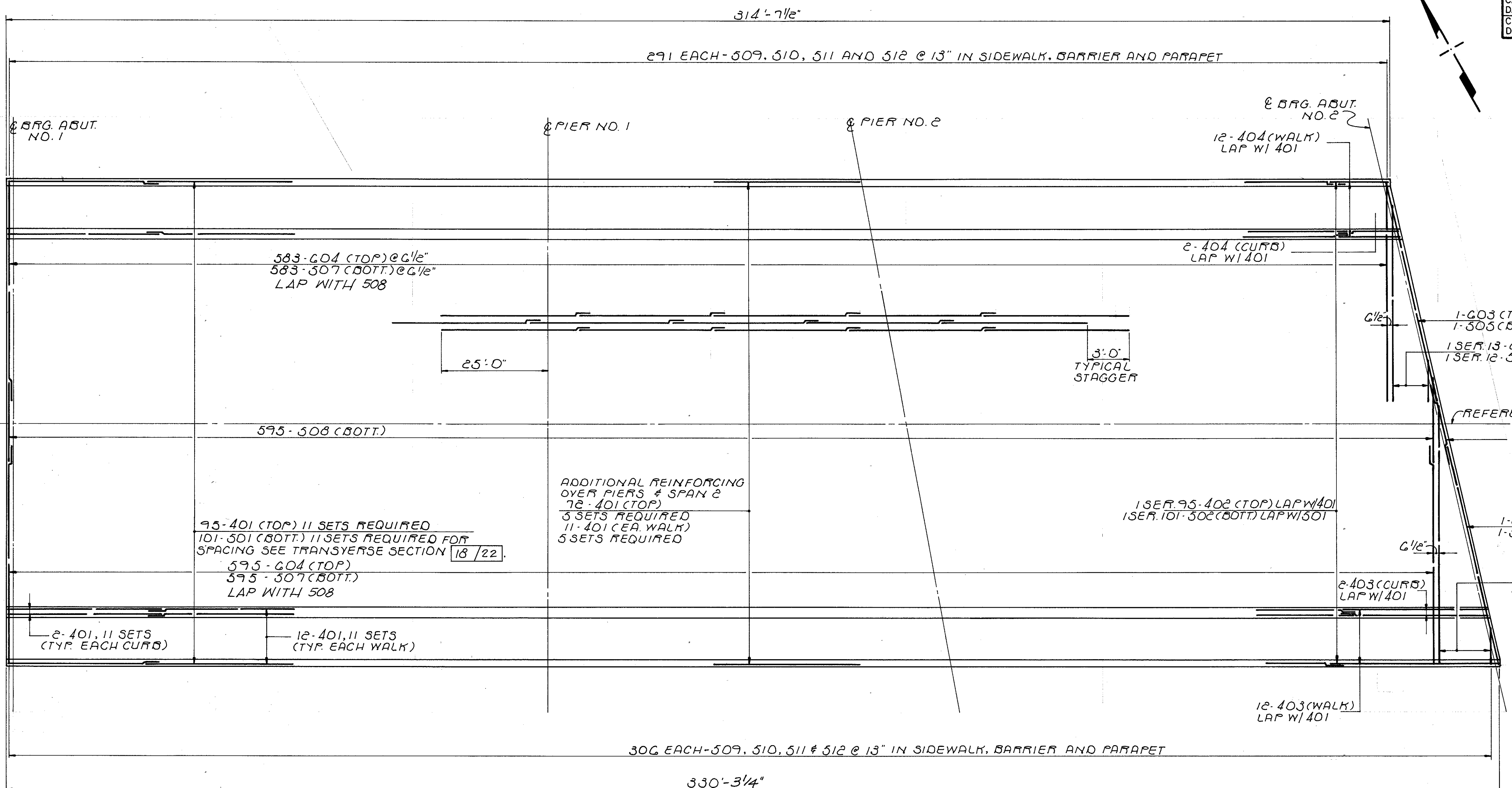
PREFORMED EXPANSION JOINT FILLER IN THE PARAPET AND BARRIER DEFLECTION JOINTS SHALL BE EITHER 1/4" GRAY SPONGE RUBBER OR 1/4" GRAY CELLULAR POLYVINYL CHLORIDE (PVC) SPONGE. IF RUBBER IS USED IT SHALL MEET THE REQUIREMENTS OF AASHTO M-153.

1/4" EXPANSION JOINT FILLER SHALL BE INCLUDED WITH HIGH PERFORMANCE CONCRETE SUPERSTRUCTURE (SIDEWALK & PARAPET) FOR PAYMENT.

adache-ciuni-lynn associates
CONSULTING ENGINEERS CLEVELAND, OHIO 44131

TRANSVERSE SECTION
JENNINGS FREEWAY
STATE ROUTE 176
UNDER
SCHAAF ROAD
BR. NO. CUY-176-1065

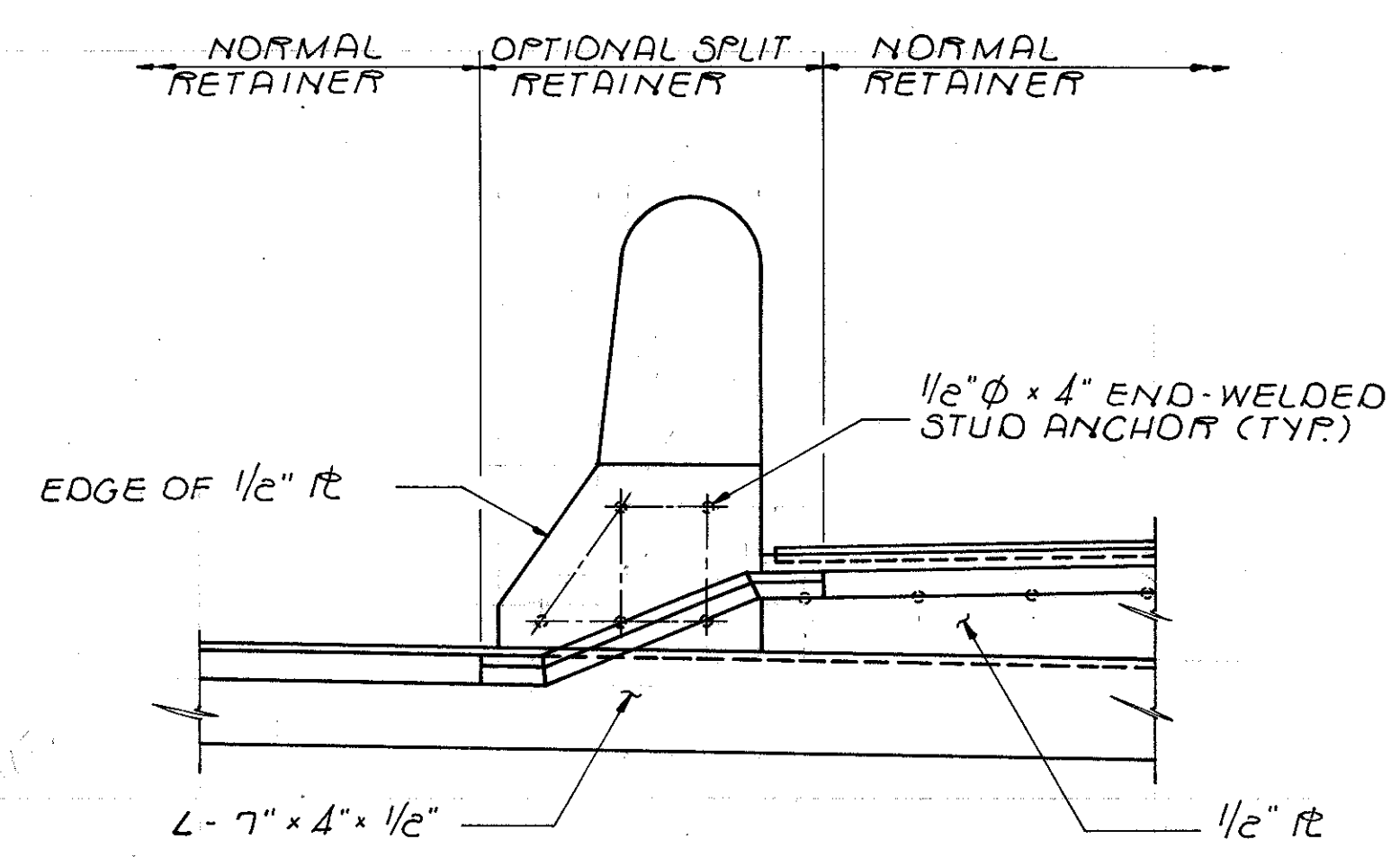
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.M.J.	C.T.	A.J.M.	1/94	



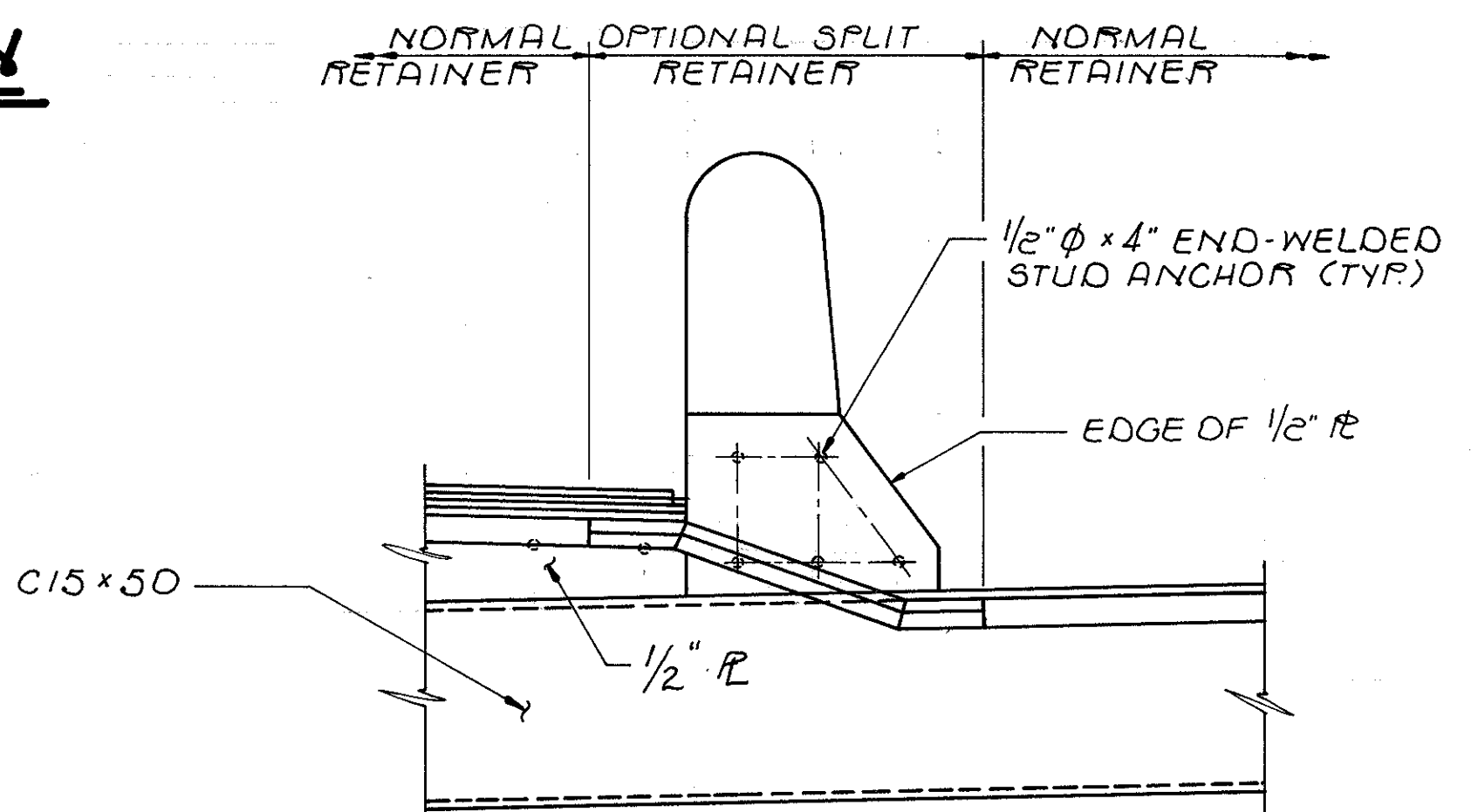
NOTES:

- 1.) FOR SCREED ELEVATIONS SEE SHEET 20/22.
- 2.) FOR PARAPET AND BARRIER PANEL SPACING SEE SHEET 20/22.
- 3.) FOR ADDITIONAL EXPANSION JOINT DETAILS SEE SHEET 20/22 AND STD. DWG. EXJ-4-87.

SLAB PLAN



EXPANSION JOINT DETAIL
(FOR ABUTMENT, SEE NOTE 3)



EXPANSION JOINT DETAIL
(FOR SUPERSTRUCTURE, SEE NOTE 3)

19/22

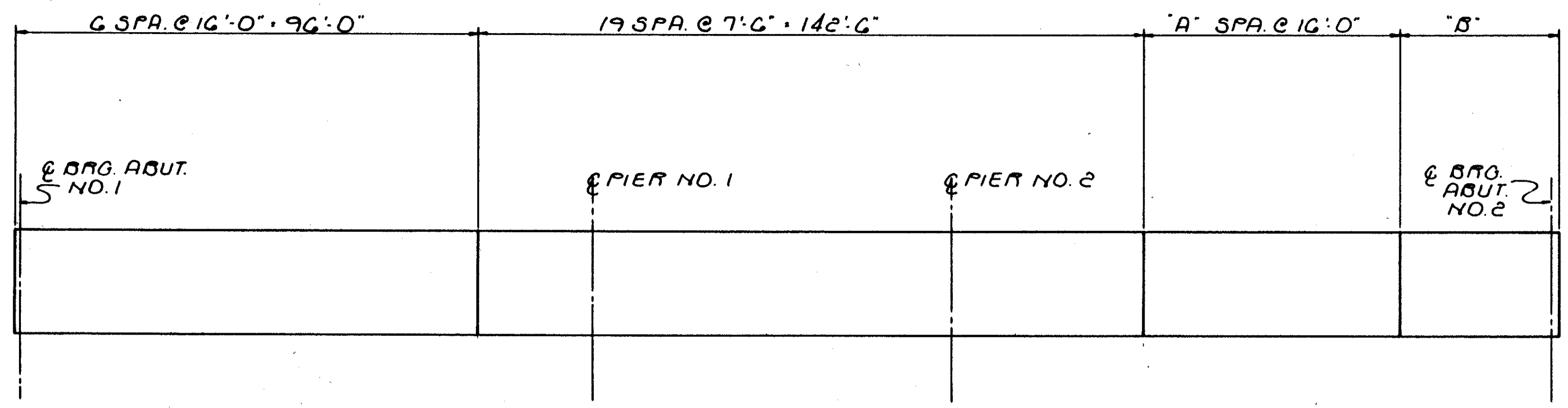
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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

SLAB PLAN
JENNINGS FREEWAY
STATE ROUTE 17C
UNDER
SCHAAR ROAD
BRIDGE NO. CUY-17C-10G5

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	C.T.	A.J.M.	1/94	

NOTES:

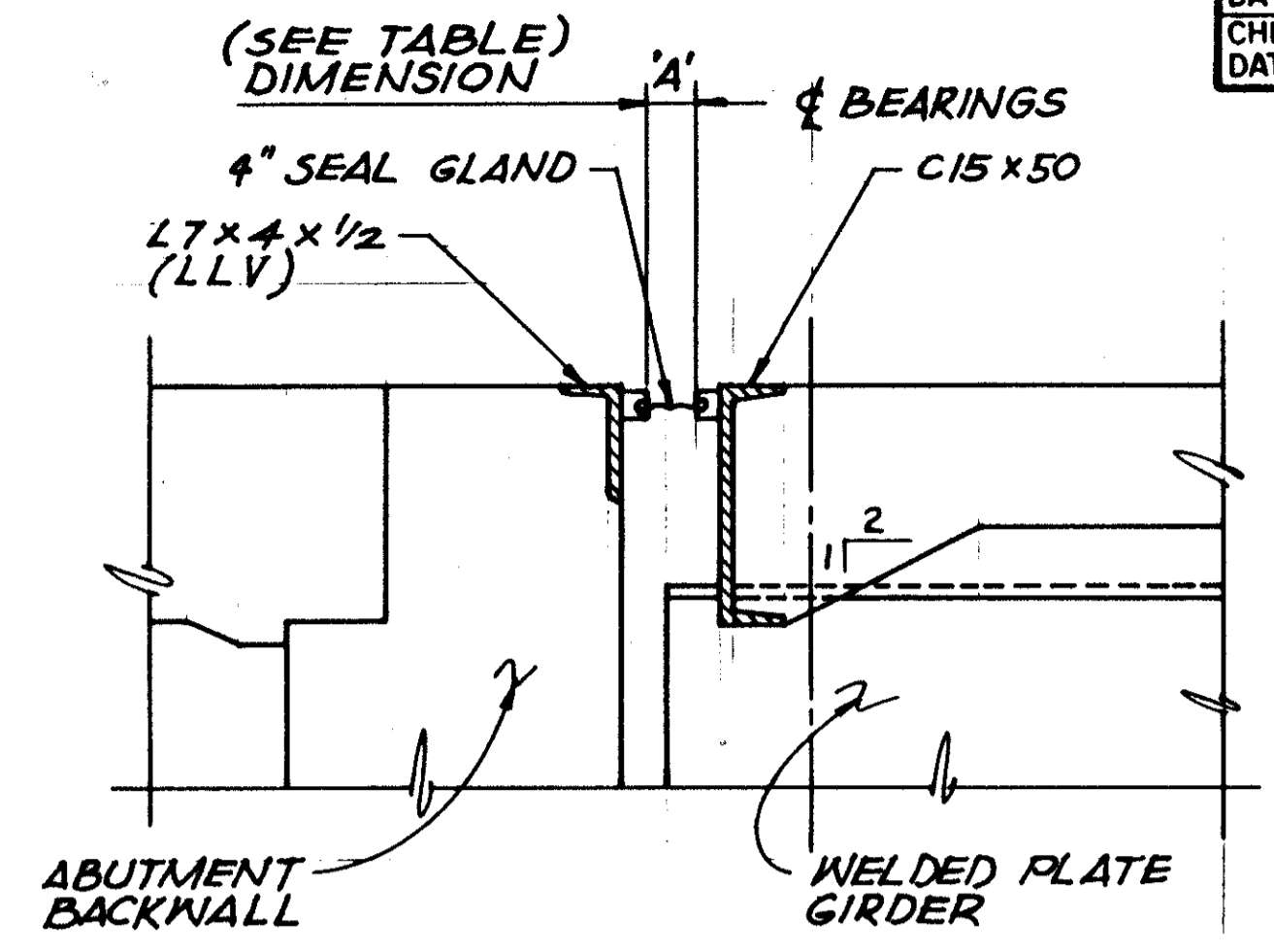
1. THE ELEVATIONS SHOWN ARE TO THE TOP OF PORTLAND CEMENT CONCRETE & ARE THOSE WHICH ARE REQUIRED BEFORE CONCRETE IS PLACED. PROPER ALLOWANCE HAS BEEN MADE FOR DEAD LOAD DEFLECTION CAUSED BY THE WEIGHT OF THE CONCRETE.
2. INSTALLATION OF SEAL: DURING INSTALLATION OF THE SUPPORT/ARMOR FOR THE SUPER-STRUCTURE SIDE OF THE EXPANSION JOINT SEAL, THE SEATING OF BEAMS OR BEARINGS SHALL BE CAREFULLY OBSERVED TO ASSURE THAT POSITIVE BEARING IS MAINTAINED. PROPER VERTICAL FIT OF THE SUPPORT/ARMOR ON THE BEAMS SHALL BE ACHIEVED BY POSITIONING OF THE BEVEL FILL PLATES RATHER THAN BY CLAMPING FORCE.



PARAPET AND BARRIER PANEL ELEVATION

DIMENSION TABLE

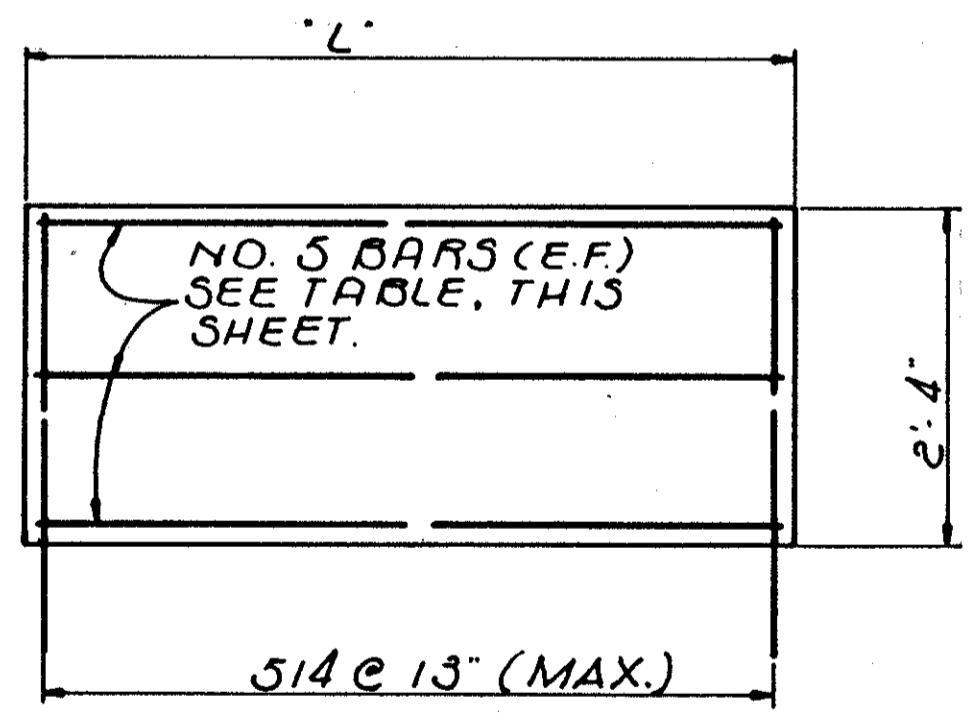
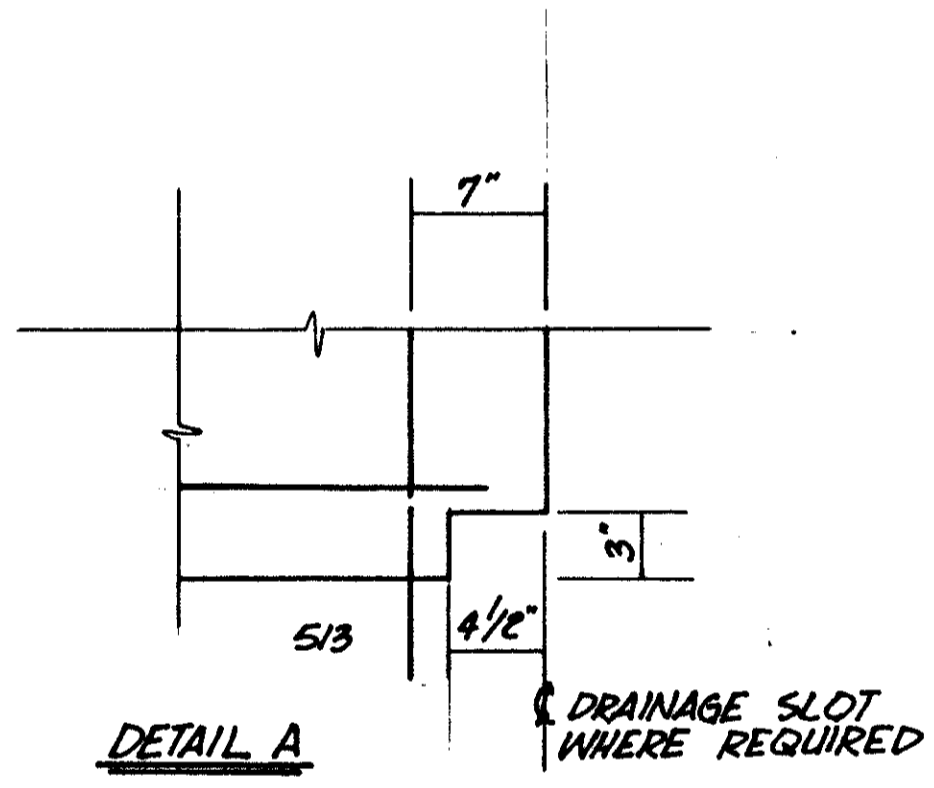
DIMENSION	LEFT		RIGHT	
	PARAPET	BARRIER	BARRIER	PARAPET
'A' SPACES	4	4	5	5
'B'	12'-1/2"	13'-6/8"	9'-10 3/8"	11'-7/8"



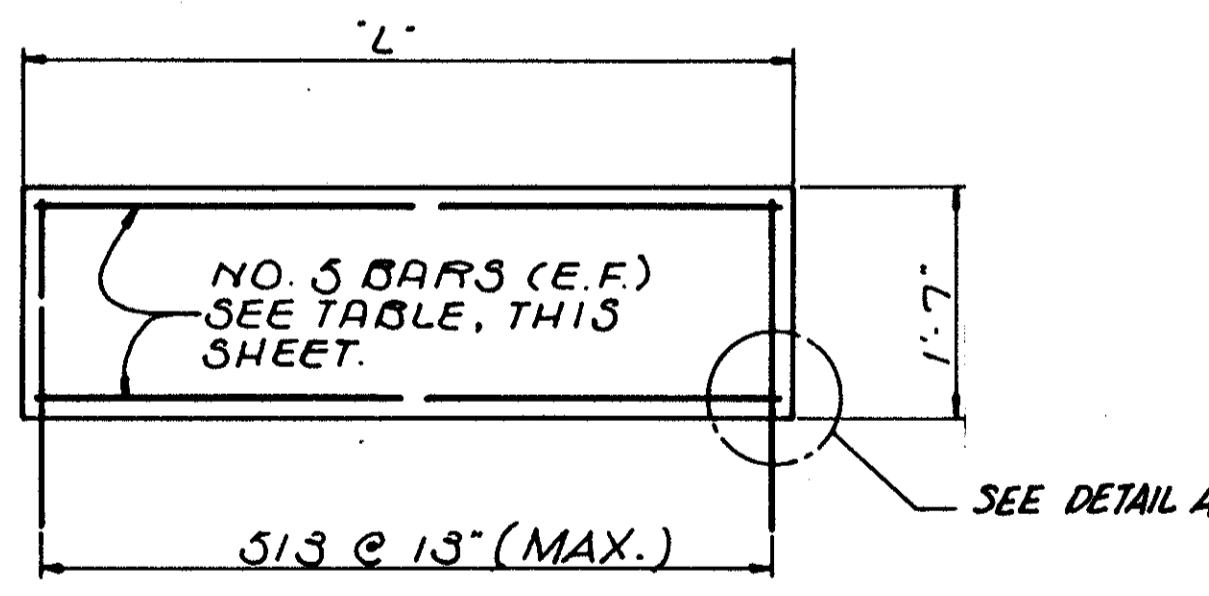
EXPANSION JOINT DETAIL

FOR ADDITIONAL DETAILS SEE SH. 19/22 AND STD. DWG. EXJ-4-87

DIMENSION 'A' (INCHES)		30°	40°	50°	60°	70°	80°	90°
LOCATION	TEMP. °F							
ABUTMENT NO.1		2 1/8	2 3/4	2 1/2	2 3/8	2 1/4	2	1 7/8
ABUTMENT NO.2		3 1/8	3	2 7/8	2 1/8	2 3/4	2 5/8	2 1/2



TYPICAL PARAPET PANEL



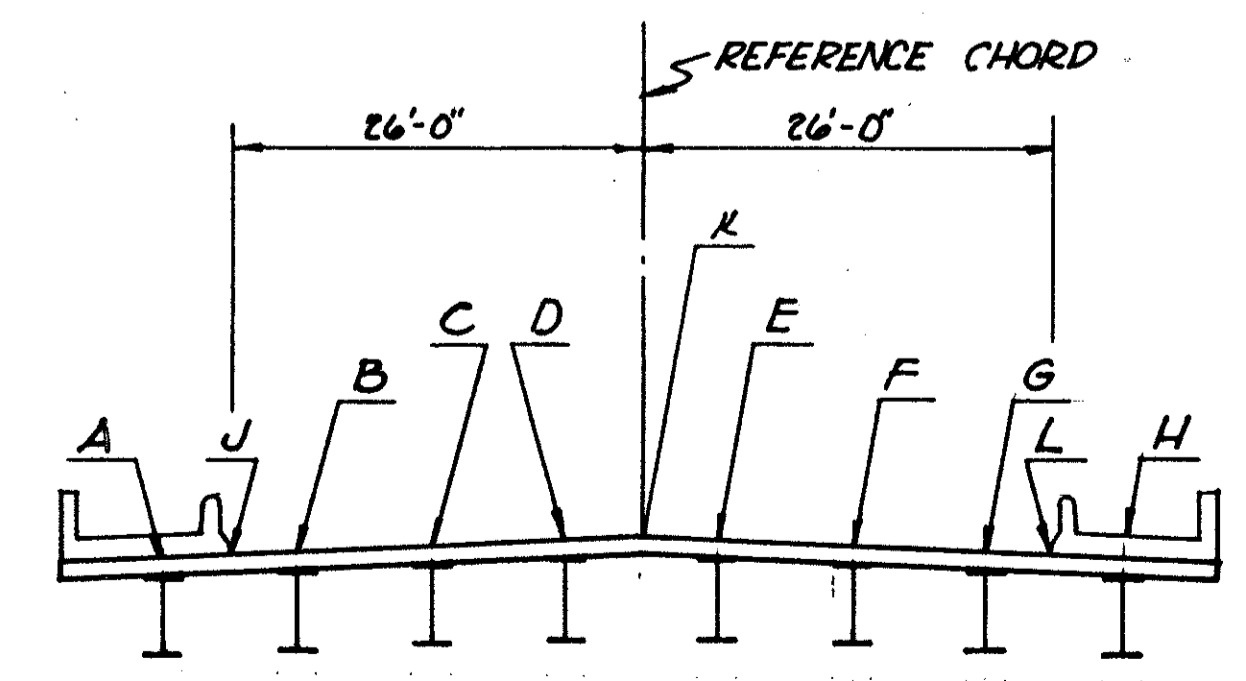
TYPICAL BARRIER PANEL

PARAPET PANEL			
NO. OF PARAPET PANELS	LENGTH "L"	BAR MARK	NO. OF 5/4 BARS PER PANEL
30	7'-6"	515	8
21	16'-0"	516	16
1	11'-7/8"	517	12
1	12'-1/2"	518	12

BARRIER PANEL			
NO. OF BARRIER PANELS	LENGTH "L"	BAR MARK	NO. OF 5/3 BARS PER PANEL
30	7'-6"	515	8
21	16'-0"	516	16
1	9'-10 3/8"	519	10
1	13'-6/8"	520	14

SCREED ELEVATION TABLE

POINT	SPAN NO. 1				SPAN NO. 2				SPAN NO. 3							
	CL BRG ABUT A1	1/5	2/5	3/5	4/5	CL BRG PIER 1	1/5	2/5	3/5	4/5	CL BRG PIER 2	1/5	2/5	3/5	4/5	CL BRG ABUT A2
A	766.53	767.05	767.38	767.51	767.45	767.36	767.35	767.37	767.41	767.47	767.56	767.78	767.97	768.07	768.02	767.89
B	766.72	767.23	767.55	767.68	767.62	767.54	767.53	767.55	767.59	767.65	767.74	767.95	768.15	768.24	768.21	768.08
C	766.90	767.41	767.74	767.87	767.82	767.73	767.72	767.74	767.78	767.84	767.93	768.15	768.35	768.44	768.40	768.27
D	767.09	767.60	767.93	768.05	767.99	767.91	767.90	767.92	767.97	768.03	768.12	768.33	768.54	768.62	768.59	768.46
E	767.09	767.60	767.93	768.05	768.00	767.91	767.90	767.92	767.97	768.04	768.13	768.35	768.55	768.64	768.61	768.47
F	766.90	767.41	767.74	767.87	767.82	767.73	767.72	767.74	767.78	767.86	767.95	768.17	768.38	768.47	768.43	768.29
G	766.72	767.23	767.55	767.68	767.63	767.54	767.53	767.55	767.60	767.66	767.77	767.99	768.20	768.29	768.25	768.11
H	766.53	767.05	767.38	767.51	767.45	767.36	767.35	767.37	767.42	767.48	767.59	767.82	768.03	768.12	768.08	767.93
J	766.64	767.15	767.48	767.60	767.54	767.46	767.45	767.47	767.51	767.57	767.66	767.87	768.07	768.16	768.13	768.00
K	767.17	767.69	768.01	768.14	768.08	768.00	767.99	768.01	768.06	768.12	768.22	768.44	768.63	768.73	768.70	768.56
L	766.64	767.15	767.48	767.60	767.55	767.46	767.45	767.47	767.52	767.58	767.69	767.91	768.12	768.21	768.17	768.03



KEY TRANSVERSE SECTION
(SEE NOTE NO. 1)

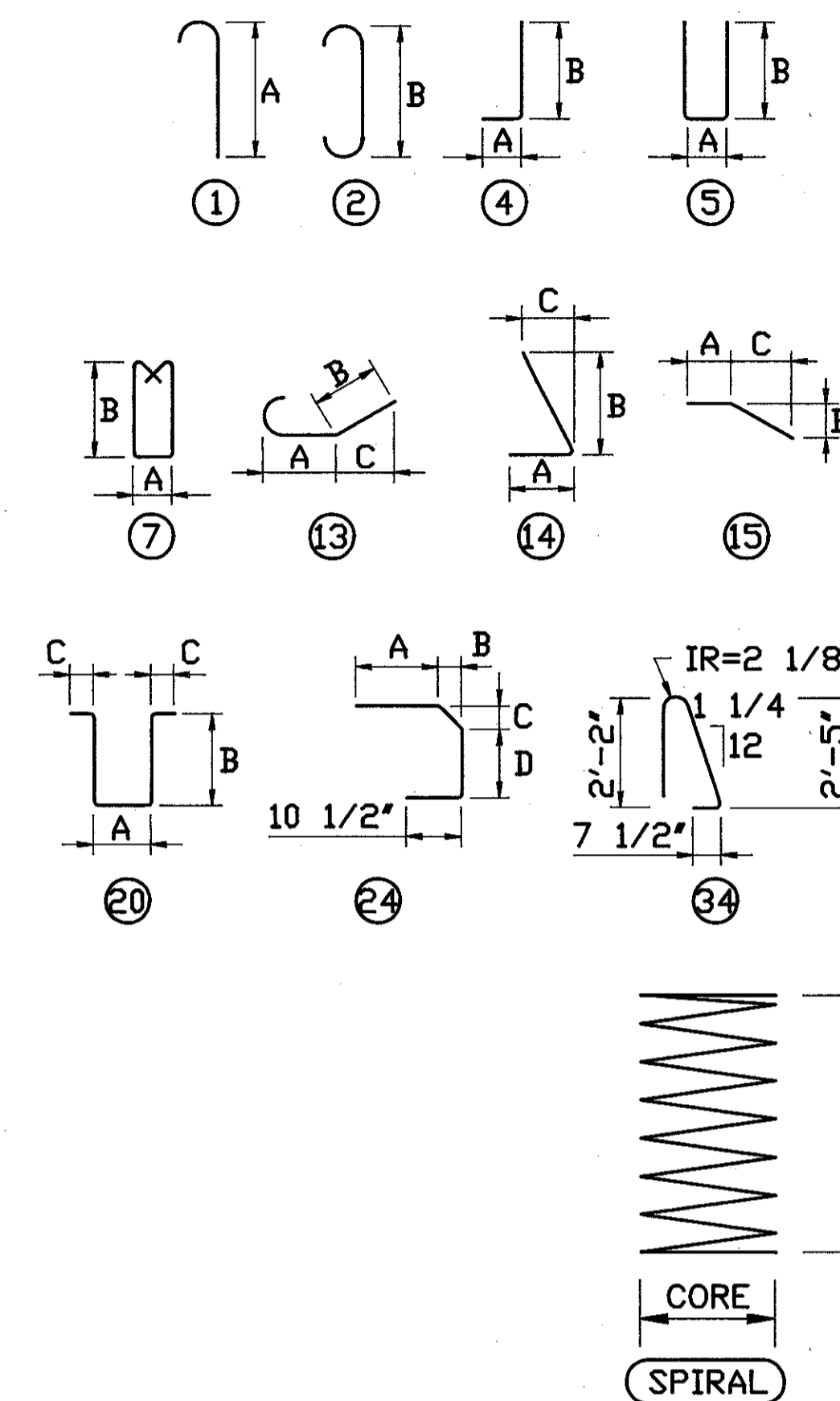
adache - ciuni - lynn associates
 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
SUPERSTRUCTURE DETAILS
 JENNINGS FREEWAY
 STATE ROUTE 17G
 UNDER
 SCHARF ROAD
 BRIDGE NO. CUY-17G-10G5

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.E.S.	T.J.W.	A.J.M.	1/94	

ABUTMENT NO. 1										
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)	
1A 501	40	30 0	STR.						1252	
1A 502	20	25 0	STR.						522	
1A 503	70	14 4	STR.						1046	
1A 504	62	35 10	STR.						2317	
1A 505	8	6 6	STR.						54	
1A 506	70	5 11	15	2 0	2 10	2 10			432	
1A 507	70	8 2	12	3 5	3 0	2 0			596	
1A 508	70	14 2	5	1 5	6 6				1034	
1A 509	56	7 6	5	0 11	3 5				438	
1A 510	2	6 8	STR.						14	
1A 511	2	7 8	STR.						16	
1A 512	14	9 6	5	1 5	4 2				139	
1A 513	4	5 3	34						22	
1A 514	4	3 8	4	0 11	2 10				15	
1A 515	4	3 1	24	0 8	0 6	0 9	0 10		13	
1A 516	16	0 11	STR.						15	
1A 517	8	5 8	2	4 6					47	
1A 518	22	8 5	2	7 3					193	
1A 519	16	13 10	7	0 8	6 3				231	
1A 520	10	18 10	STR.						196	
1A 521	8	9 10	4	3 0	6 11				82	
1A 522	22	11 11	4	3 0	9 0				273	
1A 523	24	6 6	STR.						163	
1A 524	40	11 8	STR.						487	
1A 525	2 SER. 3 BARS	5 11 2 6	STR.					1 8 1/2	26	
1A 526	4	11 9	15	0 10	9 10	4 11			49	
1A 527	26	6 9	4	0 10	6 0				183	
1A 528	26	10 9	STR.						292	
1A 529	4	12 7	15	1 8	9 10	4 11			52	
1A 530	12	19 7	STR.						245	
1A 531	2 SER. 4 BARS	27 5 21 5	STR.					2 0	204	
1A 532	2 SER. 8 BARS	10 4 13 9	STR.					0 5 7/8	201	
1A 533	26	27 7	STR.						748	
1A 534	2 SER. 7 BARS	1 9 4 9	STR.					0 6	47	
1A 535	28	14 6	7	0 8	6 7				423	
1A 536	2 SER. 3 BARS	6 5 3 0	STR.					1 8 1/2	29	
1A 537	12	20 1	STR.						251	
1A 538	2 SER. 4 BARS	27 11 21 11	STR.					2 0	208	
1A 539	2	28 1	STR.						59	
1A 540	22	8 6	STR.						195	
1A 541	2	13 9	STR.						29	
1A 601	13	10 2	STR.						199	
1A 801	158	10 7	4	1 4	9 5				4464	
1A 802	70	14 4	STR.						2679	
1A 803	10	36 8	STR.						979	
1A 804	10	18 10	STR.						503	
1A 805	12	14 7	1	13 8					467	
1A 806	13	13 8	STR.						474	
1A 807	38	5 2	13	2 10	1 6	2 0			524	
1A 901	80	13 8	STR.						3717	
1A 902	87	14 11	1	13 8					4412	
1A 1001	13	11 9	4	1 10	10 3				657	
TOTAL WEIGHT									31913	

ABUTMENT NO. 2										
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)	
2A 501	69	23 8	STR.						1703	
2A 502	1 SER. 5 BARS	5 0 31 6	STR.					6 7 1/2	95	
2A 503	1 SER. 15 BARS	28 9 32 6	STR.					0 3 3/16	479	
2A 504	1	26 9	STR.						28	
2A 505	47	34 3	STR.						1679	
2A 506	1 SER. 11 BARS	31 7 33 0	STR.					0 1 11/16	370	
2A 507	1 SER. 4 BARS	4 4 25 4	STR.					7 0	62	
2A 508	117	5 11	4	0 10	5 2				722	
2A 509	71	26 6	STR.						1962	
2A 510	71	6 1	15	2 9	2 4	2 5			450	
2A 511	71	8 4	5	3 5	2 7				617	
2A 512	71	15 8	5	1 5	7 3				1160	
2A 513	15	8 10	5	0 11	4 1				138	
2A 514	56	7 6	5	0 11	3 5				438	
2A 515	26	33 6	STR.						908	
2A 516	26	39 9	STR.						1078	
2A 517	15	35 0	STR.						548	
2A 518	15	37 11	STR.						593	
2A 519	2	6 10	STR.						14	
2A 520	2	7 10	STR.						16	
2A 521	64	9 5	2	8 3					629	
2A 522	12	6 11	2	5 9					87	
2A 523	6	22 9	STR.						141	
2A 524	6 SER. 5 BARS	8 6 21 9	STR.					3 3 3/4	474	
2A 525	3 SER. 28 BARS	11 4 28 6	20	1 8	4 3	0 10		0 7 5/8	1746	
2A 526	38	4 0	15	2 0	0 6	2 0			159	
2A 527	20	12 3	5	1 2	5 8				256	
2A 528	28	34 4	5	2 5	16 1				1003	
2A 529	12	30 4	5	2 5	14 1				380	
2A 530	12	14 1	STR.						176	
2A 531	156	4 9	5	1 0	2 0				773	
2A 532	80	24 1	STR.						2010	
2A 533	4 SER. 7 BARS	20 0 23 2	STR.					0 6 5/16	630	
2A 534	40	18 6	STR.						772	
2A 535	4 SER. 8 BARS	8 6 12 1	STR.					0 6 1/8	343	
2A 536	28	18 6	STR.						540	
2A 537	4 SER. 7 BARS	4 8 1 6	STR.					0 6 5/16	90	
2A 538	34	14 5	5	1 2	6 9				511	
2A 539	49	8 8	STR.						443	
2A 540	26	6 6	STR.						176	
2A 541	110	15 1	5	0 8	7 4				1731	
2A 542	12	11 0	STR.						138	
2A 543	62	30 8	STR.						1983	
2A 544	2 SER. 7 BARS	15 1 12 1	5	0 8	7 4			0 6	198	
2A 545	6 SER. 7 BARS	6 3 30 5	STR.					4 0 5/16	803	
2A 546	2 SER. 15 BARS	27 10 27 6	20	1 8	11 4	2 0		0 0 5/16	866	
2A 547	2 SER. 11 BARS	21 8 21 8	20	1 8	8 3	2 0			497	
2A 548	2 SER. 16 BARS	10 2 15 4	20	1 8	2 6	2 0		0 4 1/8	426	
SUB-TOTAL									31041	

BENDING DIAGRAMS



NOTES:

- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

ABUTMENT NO. 2 (Continued)									
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
2A 549	2 SER. 6 BARS	21 2 19 6	20	1 2	8 3 10 0	2 0		0 4	254
2A 550	2 SER. 15 BARS	7 8 15 0	20	1 2	1 6 7 9	2 0		0 6 5/16	355
2A 551	2 SER. 9 BARS	7 8 7 8	20	1 2	1 6 4 1	2 0			144
2A 552	4 SER. 5 BARS	5 3 18 6	STR.					3 3 3/4	248
2A 553	4	7 4	STR.						31
2A 554	4	3 0	STR.						13
2A 555	4	5 3	34						22
2A 556	4	3 8	4	0 11	2 10				15
2A 557	4	3 1	24	0 8	0 6	0 9	0 10		13
2A 558	16	0 11	STR.						15
2A 601	117	6 4	4	1 0	5 6				1113
2A 602	71	26 6	STR.						2826
2A 603	24	9 2	1	8 6					330
2A 604	30	30 8	STR.						1382
2A 701	38	37 8	STR.						2926
2A 702	38	37 2	STR.						2887
2A 703	38	7 7	15	3 10	0 10	3 9			589
2A 704	38	34 3	5	2 5	16 1				2660
2A 705	60	7 0	STR.						858
2A 706	4 SER. 5 BARS	13 0 7 9	STR.					1 3 3/4	424
2A 707	68	23 8	STR.						3289
2A 708	12	8 0	STR.						196
2A 709	20	20 0	STR.						818
2A 801	5	36 6	STR.						487
2A 802	5	39 8	STR.						530
2A 803	39	16 11	5	1 8	7 10				1761
2A 804	38	5 2	13	2 10	1 6	2 0			524
2A 805	28	13 7	5	1 8	6 2				1015
2A 901	50	36 5	STR.						6191
2A 902	25	28 8	STR.						2437
2A 903	50	29 0	STR.						4930
2A 904	24	17 11	1	16 8					1592
2A 905	16	11 8	14	2 0	9 2	4 2			635
2A 906	8	14 2	STR.						385
2A 907	8	25 0	13	1 4	22 7	11 6			680
2A 908	8	17 9	46	2 0	13 0	13 9	1 2		483
2A 1001	50	39 3	STR.						8445
2A 1002	25	26 11	STR.						2896
2A 1003	134	23 8	STR.						13646
2A 1004	1 SER. 9 BARS	5 0 31 6	STR.					3 3 3/4	707
2A 1005	1 SER. 30 BARS	28 9 32 8	STR.					0 1 5/8	3964
2A 1006	1 SER. 4 BARS	25 0 34 3	STR.					3 1	520
2A 1007	1 SER. 21 BARS	31 7 33 0	STR.					0 0 7/8	2918
2A 1008	1 SER. 8 BARS	4 4 28 9	STR.					3 5 7/8	569
2A 1009	39	12 9	14	2 0	10 3	4 7			2139
2A 1010	15	27 11	STR.						1803
2A 1011	9	32 3	13	2 5	29 0	11 6			1247
2A 1012	15	19 9	STR.						1275
2A 1013	50	29 0	STR.						6239
2A 1014	22	18 1	1	16 8					1878
2A 1015	26	12 6	14	2 0	10 4	3 10			1398
2A 1016	10	37 1	13	2 5	33 5	11 6			1596
2A 1017	6	33 5	STR.						863
2A 1018	10	19 0	STR.						818
TOTAL WEIGHT									124413

SUPERSTRUCTURE									
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
S 401	1823	30 0	STR.						36533
S 402	1 SER. 95 BARS	6 6 22 6	STR.					0 2 1/16	920
S 403	14	22 6	STR.						210
S 404	14	8 6	STR.						79
S 501	1111	30 0	STR.						34763
S 502	1 SER. 101 BARS	10 6 26 6	STR.					0 1 15/16	1949
S 503	1 SER. 12 BARS	3 0 28 8	STR.					2 4	198
S 504	1 SER. 16 BARS	3 0 37 8	STR.					2 3 3/4	339
S 505	2	32 2	STR.						67
S 506	1	11 9	STR.						12
S 507	1178	31 3	STR.						38395
S 508	595	11 5	STR.						7087
S 509	600	8 4	STR.						5215
S 510	600	2 5	4	0 11	1 7				1512
S 511	600	3 1	24	0 8	0 6	0 9	0 10		1930
S 512	600	3 0	5	1 3	1 0				1877
S 513	664	5 3	34						3636
S 514	664	7 0	7	0 8	2 10				4848
S 515	380	7 0	STR.						2774
S 516	210	15 6	STR.						3395
S 517	6	11 1	STR.						69
S 518	6	11 7	STR.						72
S 519	4	9 5	STR.						39
S 520	4	13 0	STR.						54
S 601	1 SER. 13 BARS	7 2 33 6	STR.					2 2 5/16	397
S 602	1 SER. 15 BARS	3 0 35 8	STR.					2 4	436
S 603	2	36 10	STR.						111
S 604	1178	35 11	STR.						63555
TOTAL WEIGHT									210472

PIER NO. 1									
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
IP 501	256	6 10	5	1 9	2 8				1825
IP 502	8 SER. 9 BARS	5 8 4 11	5	1 9	2 1 2 7			0 1 1/8	397
IP 503	12	29 3	STR.						366
IP 504	24	7 5	15	3 0	1 0	4 4			186
IP 801	72	12 4	2	10 6					2371
IP 901	12	33 0	5	29 3	2 2				1346
IP 902	12	31 9	2	29 3					1295
IP 1001	56	15 4	2	12 6					3695
IP 1002	12	20 3	STR.						1046
IP 1101	72	17 7	4	2 0	15 11				6726
IP 1102	72	27 0	1	25 5					10328
TOTAL WEIGHT									29581

PIER NO. 2									
MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
2P 501	256	6 10	5	1 9	2 8				1825
2P 502	8 SER. 9 BARS	5 8 4 11	5	1 9	2 1 2 7			0 1 1/8	397
2P 503	12	29 11	STR.						374
2P 504	24	7 5	15	3 0	1 0	4 4			186
2P 801	72	12 4	2	10 6					2371
2P 901	12	33 8	5	29 11	2 2				1374
2P 902	12	32 5	2	29 11					1323
2P 1001	56	15 4	2	12 6					3695
2P 1003	12	20 11	STR.						1080
2P 1101	72	17 7	4	2 0	15 11				6726
2P 1102	72	27 6	1	25 11					10520
TOTAL WEIGHT									29871

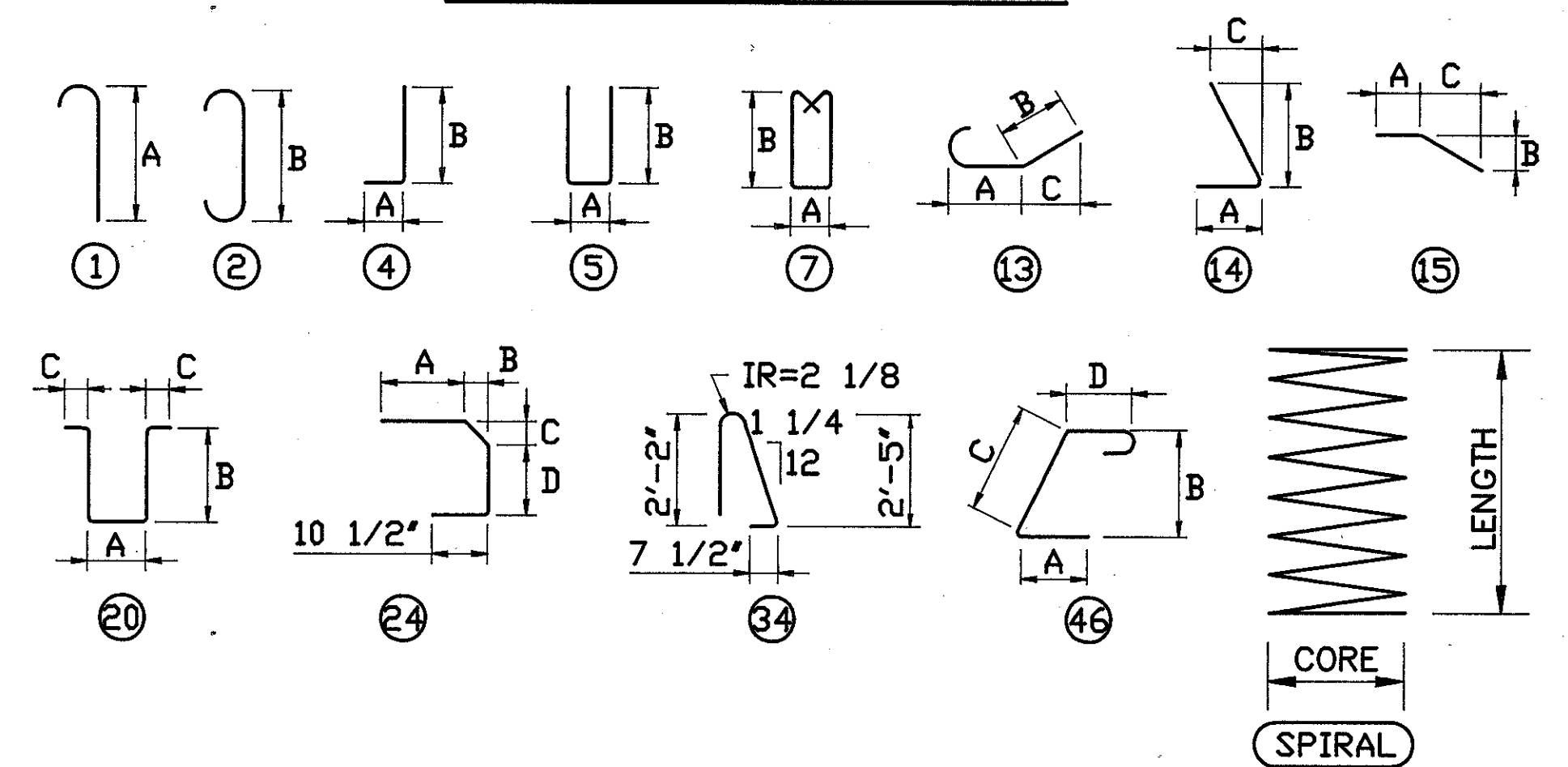
CALC. DATE
CHKD. DATE
DATE

CUYAHOGA COUNTY
CUY - 176 - 10.14
JENNINGS FREEWAY

OHIO
F.H.W.A. REGION 5

379
395

BENDING DIAGRAMS



NOTES:

- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

PIER NO. 1 SPIRAL						
MARK	NUMBER REQ'D	LENGTH ft in	WEIGHT lbs	CORE in	PITCH in	SPACERS NO. ANGLE SIZE
SP 501	4	22 9	3384	30	3	4-1 1/4X1 1/4X1/8
TOTAL			WEIGHT	3384		

PIER NO. 2 SPIRAL						
MARK	NUMBER REQ'D	LENGTH ft in	WEIGHT lbs	CORE in	PITCH in	SPACERS NO. ANGLE SIZE
SP 501	4	23 1	3640	32	3	4-1 1/4X1 1/4X1/8
TOTAL			WEIGHT	3640		

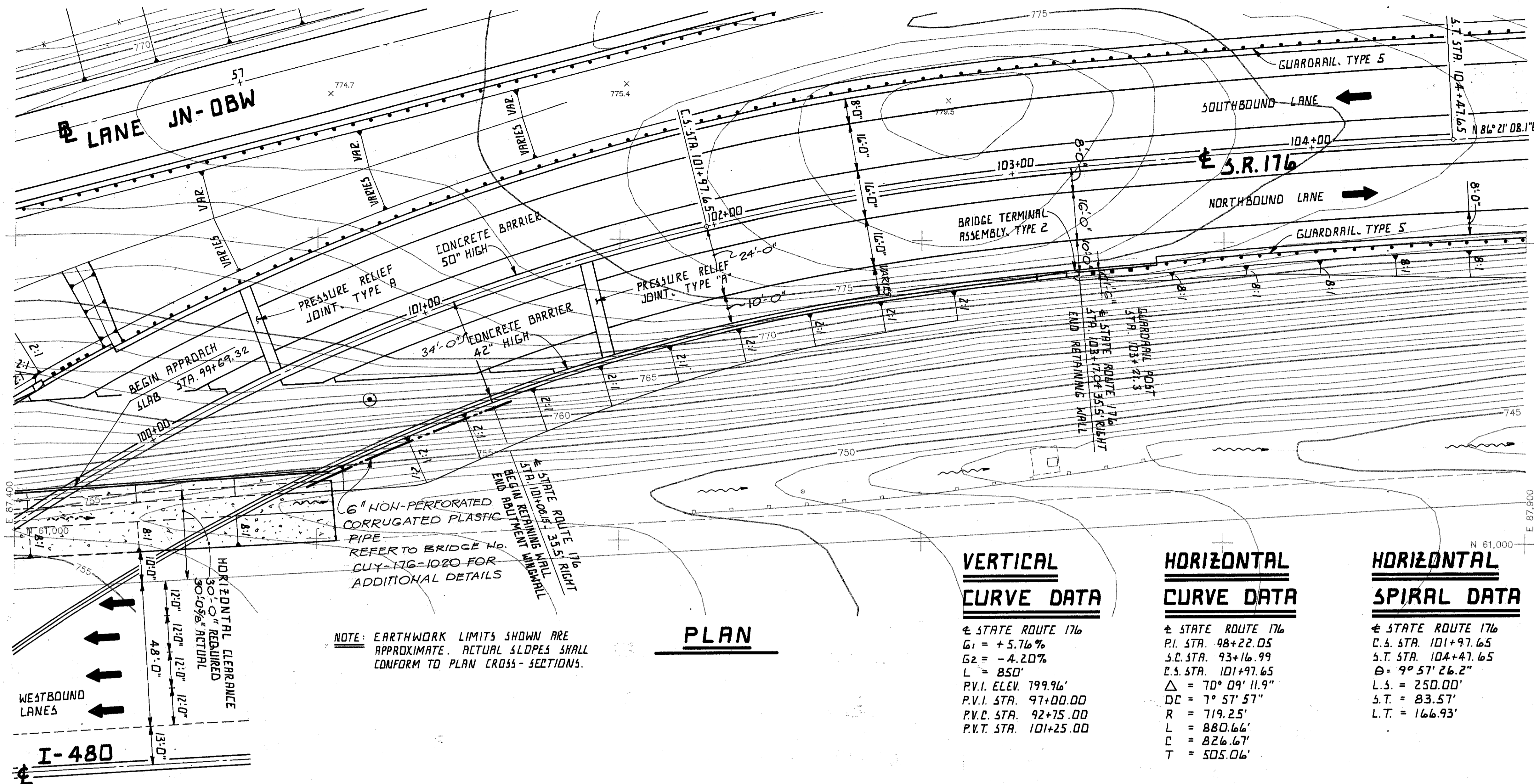
22/22

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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

REINFORCING SCHEDULE
JENNINGS FREEWAY
STATE ROUTE 176
UNDER
SCHAAF ROAD
BR. NO. CUY-176-1065

DESIGNED DRAWN CHECKED REVIEWED DATE REVISION
T.A.B. MM C.T. A.J.M. 1/94

BENCH MARK
S.E. CORNER INLET
APRON I-480
STA. 830+00 LT.
EL. 755.04



NOTES

1. FOR RETAINING WALL GEOMETRY SEE SHEET 2/4
2. FOR STRUCTURAL NOTES & QUANTITIES SEE SHEET 4/4
3. FOR DETAILS OF ABUTMENT NO. 2 BRIDGE No. CUY-176-1020 SEE SHEET 13/4

VERTICAL CURVE DATA

± STATE ROUTE 176
G₁ = +5.76%
G₂ = -4.20%
L = 850'
P.V.I. ELEV. 799.96'
P.V.I. STA. 97+00.00
P.V.C. STA. 92+75.00
P.V.T. STA. 101+25.00

HORIZONTAL CURVE DATA

± STATE ROUTE 176
P.I. STA. 98+22.05
S.C. STA. 93+16.99
Z.S. STA. 101+97.65
Δ = 70° 09' 11.9"
DC = 7° 57' 57"
R = 719.25'
L = 880.66'
C = 826.67'
T = 505.06'

HORIZONTAL SPIRAL DATA

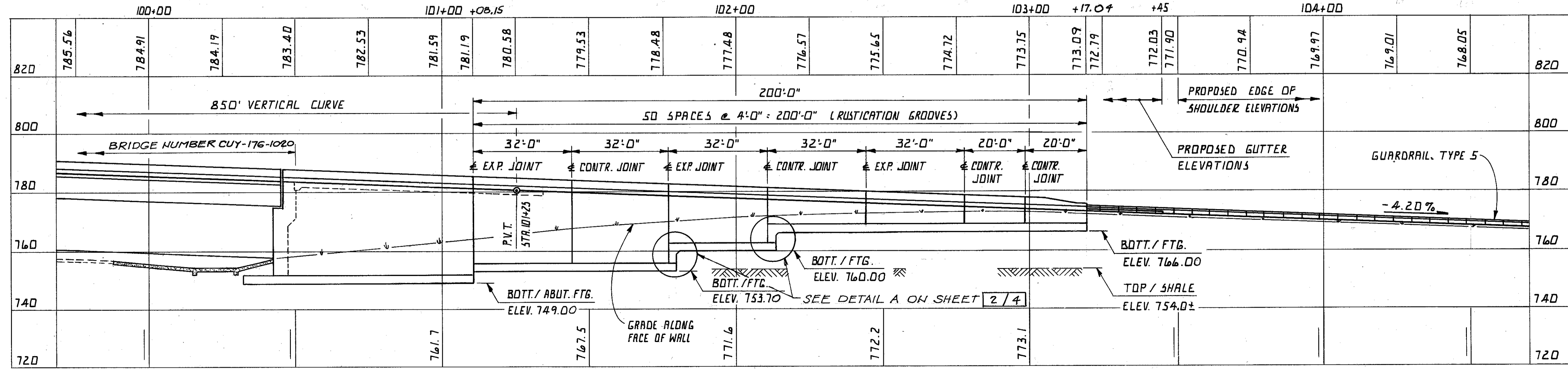
± STATE ROUTE 176
C.S. STA. 101+97.65
S.T. STA. 104+47.65
Δ = 9° 57' 26.2"
L.S. = 250.00'
S.T. = 83.57'
L.T. = 166.93'

PLAN

NOTE: EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.

LEGEND

⊙ INDICATES LOCATION OF SOIL BORING. FOR ADDITIONAL DETAILS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS.



PROFILE

ALONG FACE OF WALL

DESIGN DATA

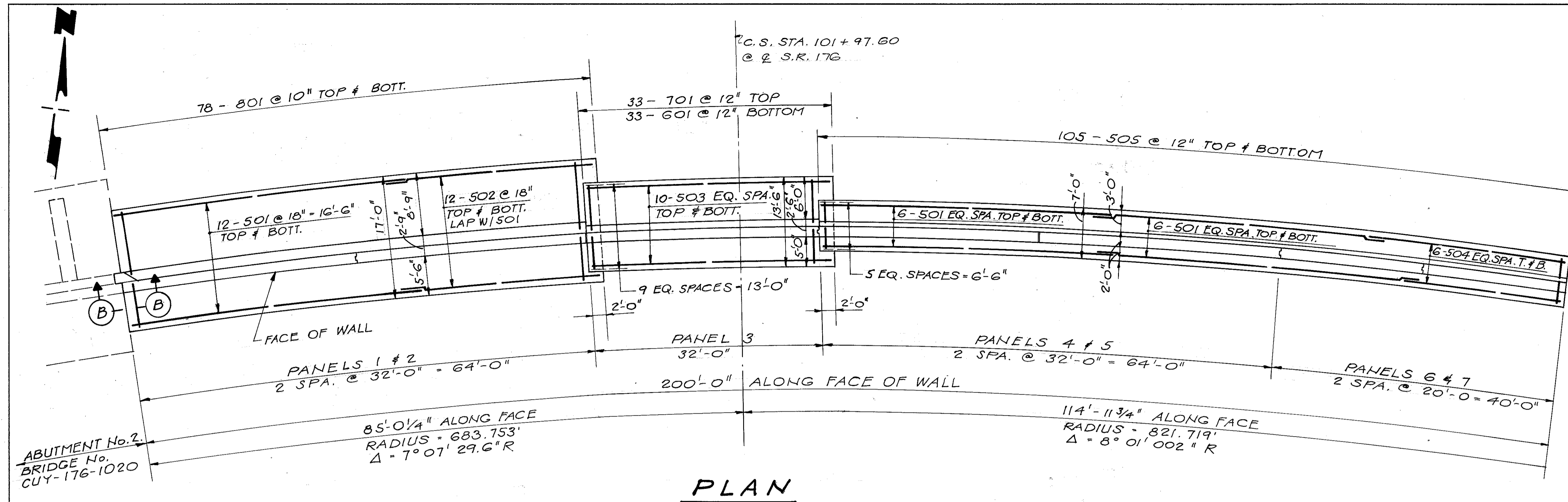
	IN SHALE	IN SOIL
EQUIVALENT PASSIVE FLUID WEIGHT (W _p)	360 LBS. / CU. FT.	360 LBS. / CU. FT.
COEFFICIENT OF FRICTION (f)	0.55	0.35
DESIGN BEARING PRESSURE	225 TONS / SQ. FT.	125 TONS / SQ. FT.

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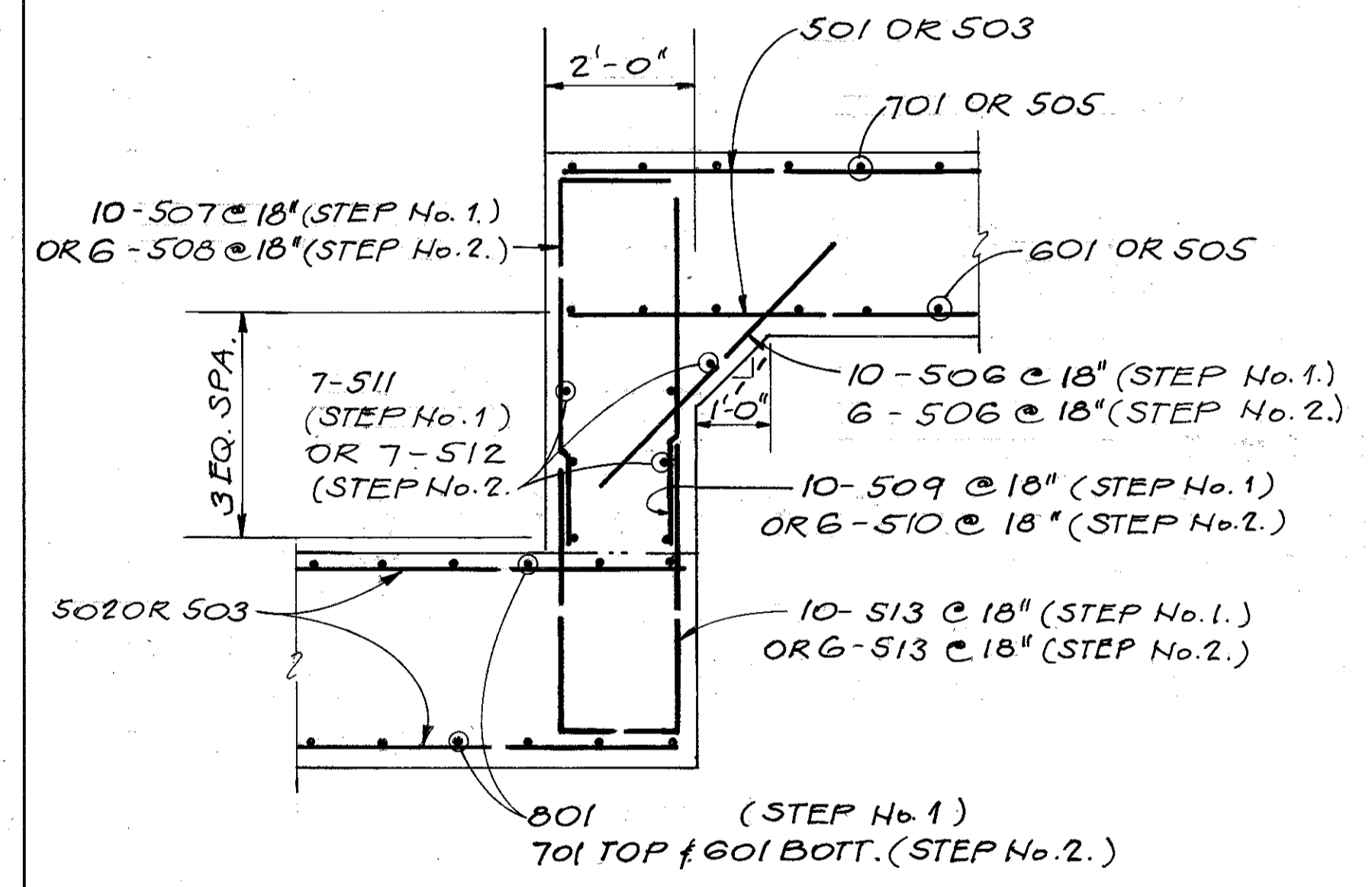
GENERAL PLAN AND ELEVATION
JENNINGS FREEWAY
RETAINING WALL NO. 1

± STATE ROUTE 176
STA. 101+08.15 TO STA. 103+17.04
CUYAHOGA COUNTY OHIO

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	T.M.J.	T.J.W.	L.E.D.	7-31-92	

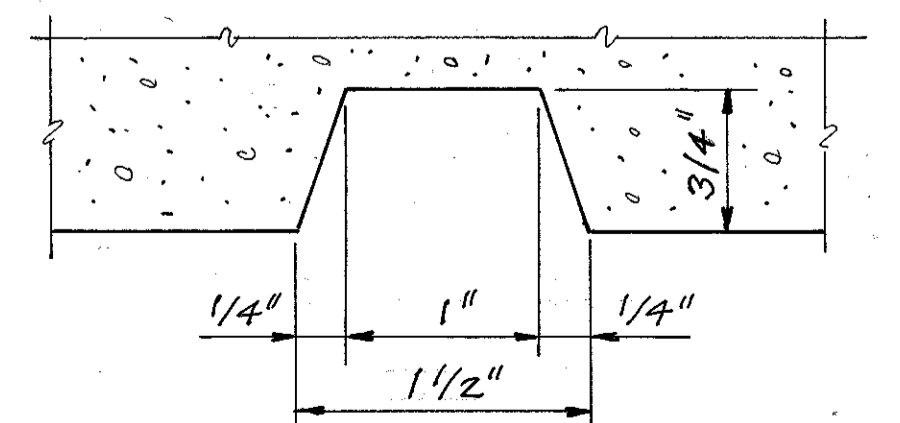


PLAN

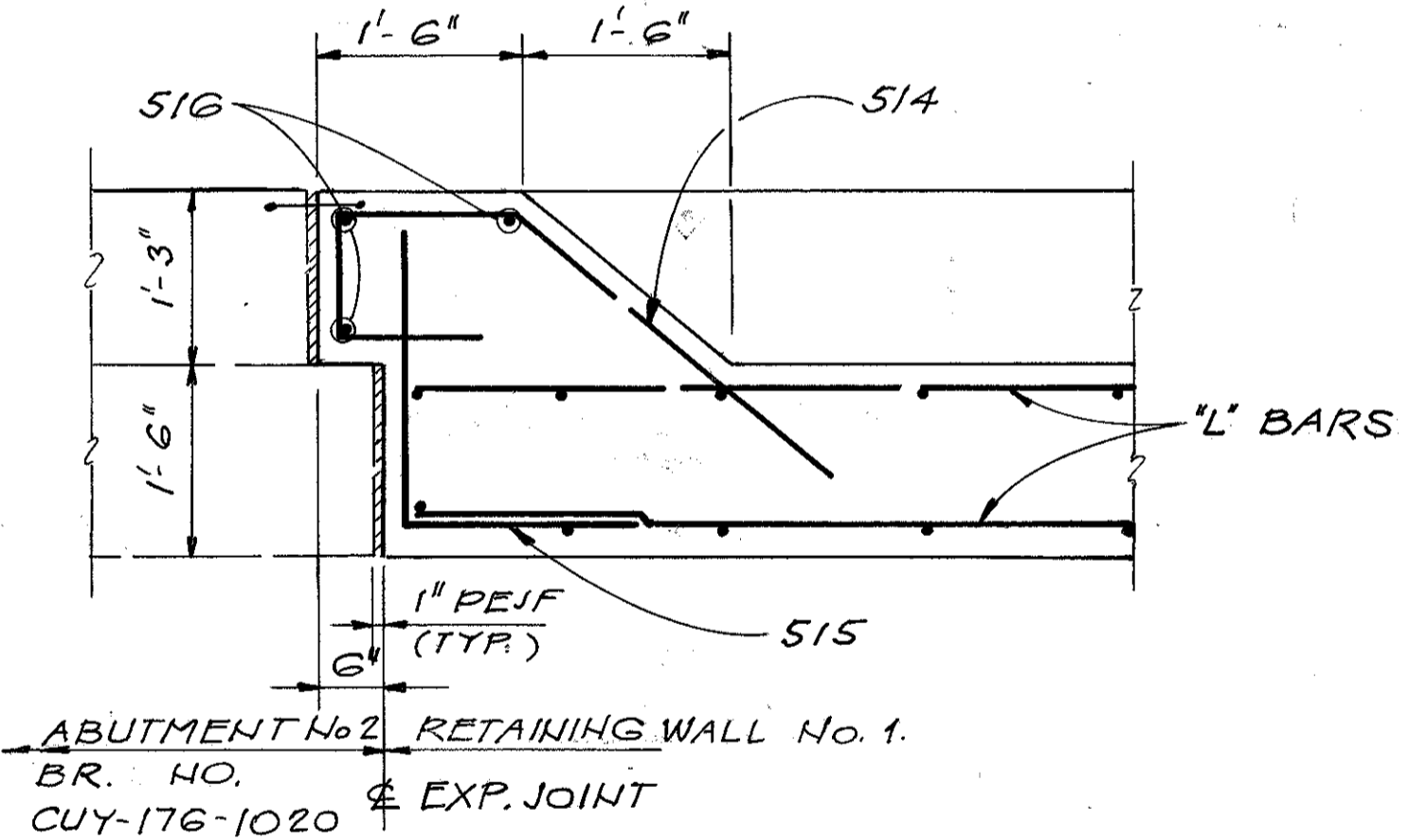


DETAIL A

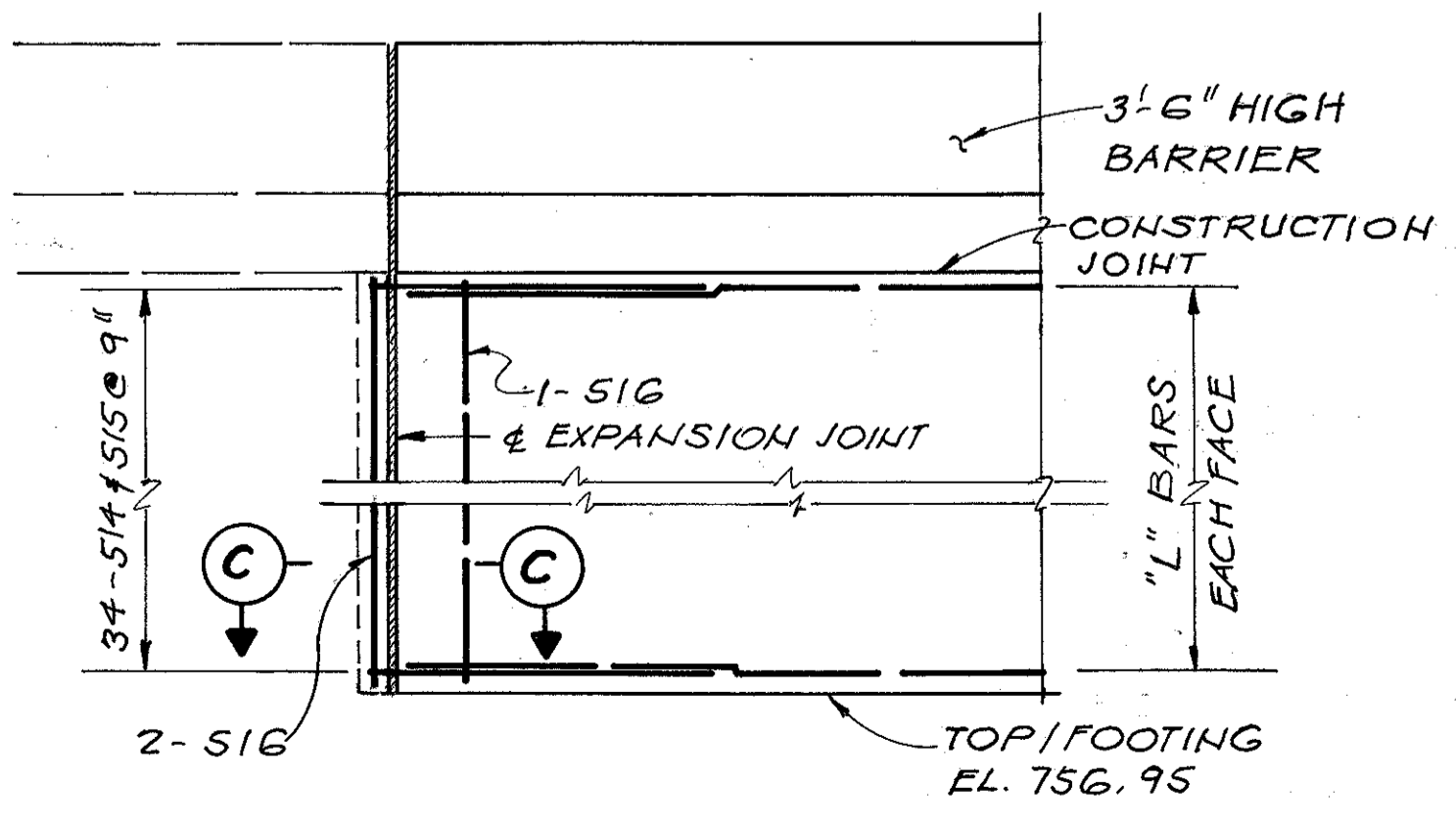
STEP No. 1. BETWEEN PANELS 2 & 3
STEP No. 2. BETWEEN PANELS 3 & 4



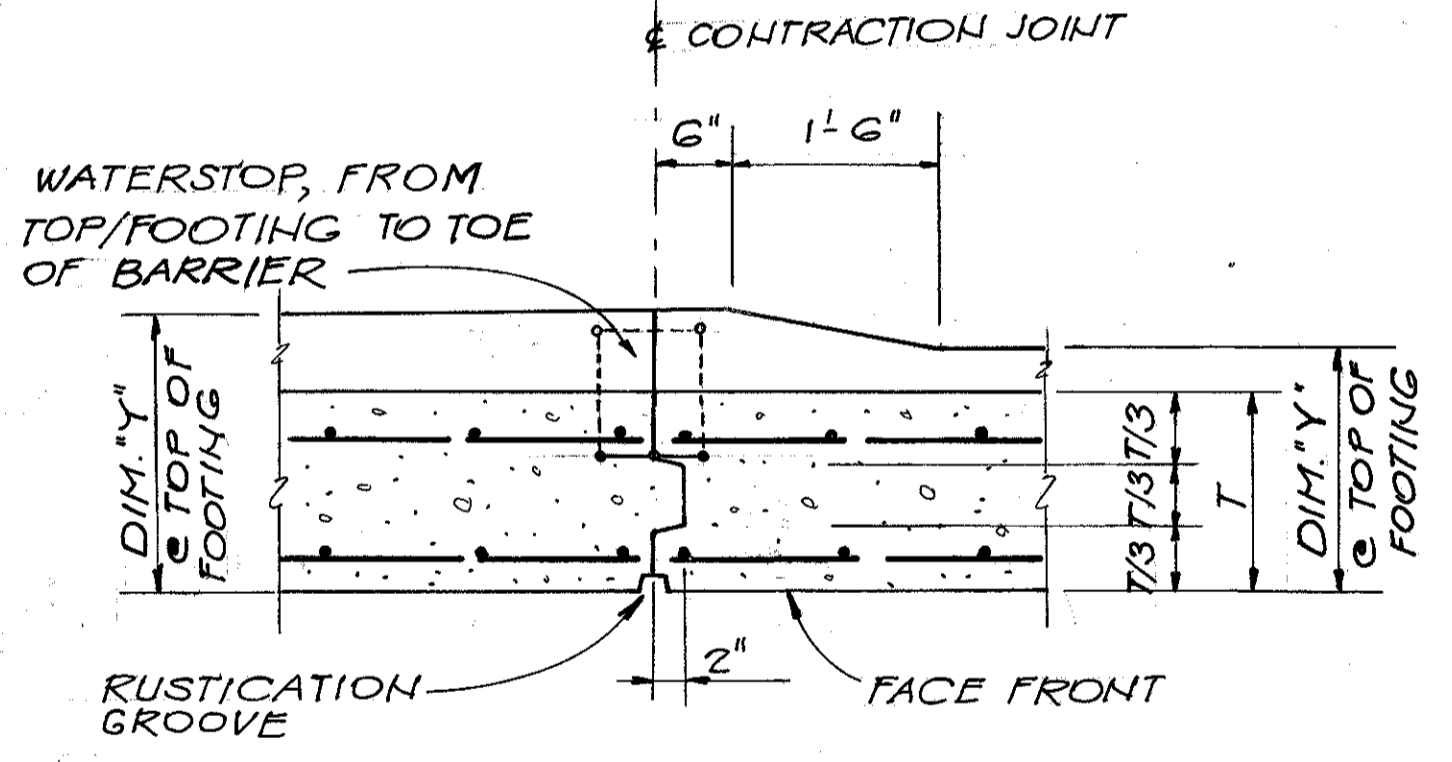
VERTICAL RUSTICATION GROOVE DETAIL



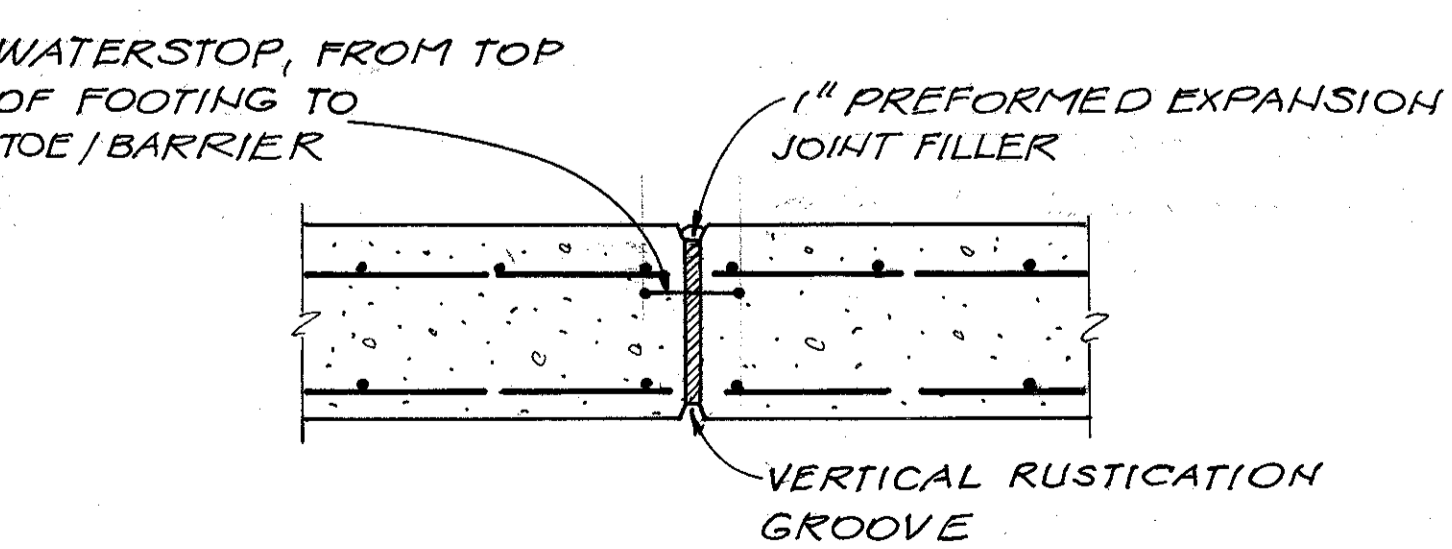
SECTION C-C



VIEW B-B



CONTRACTION JOINT DETAIL

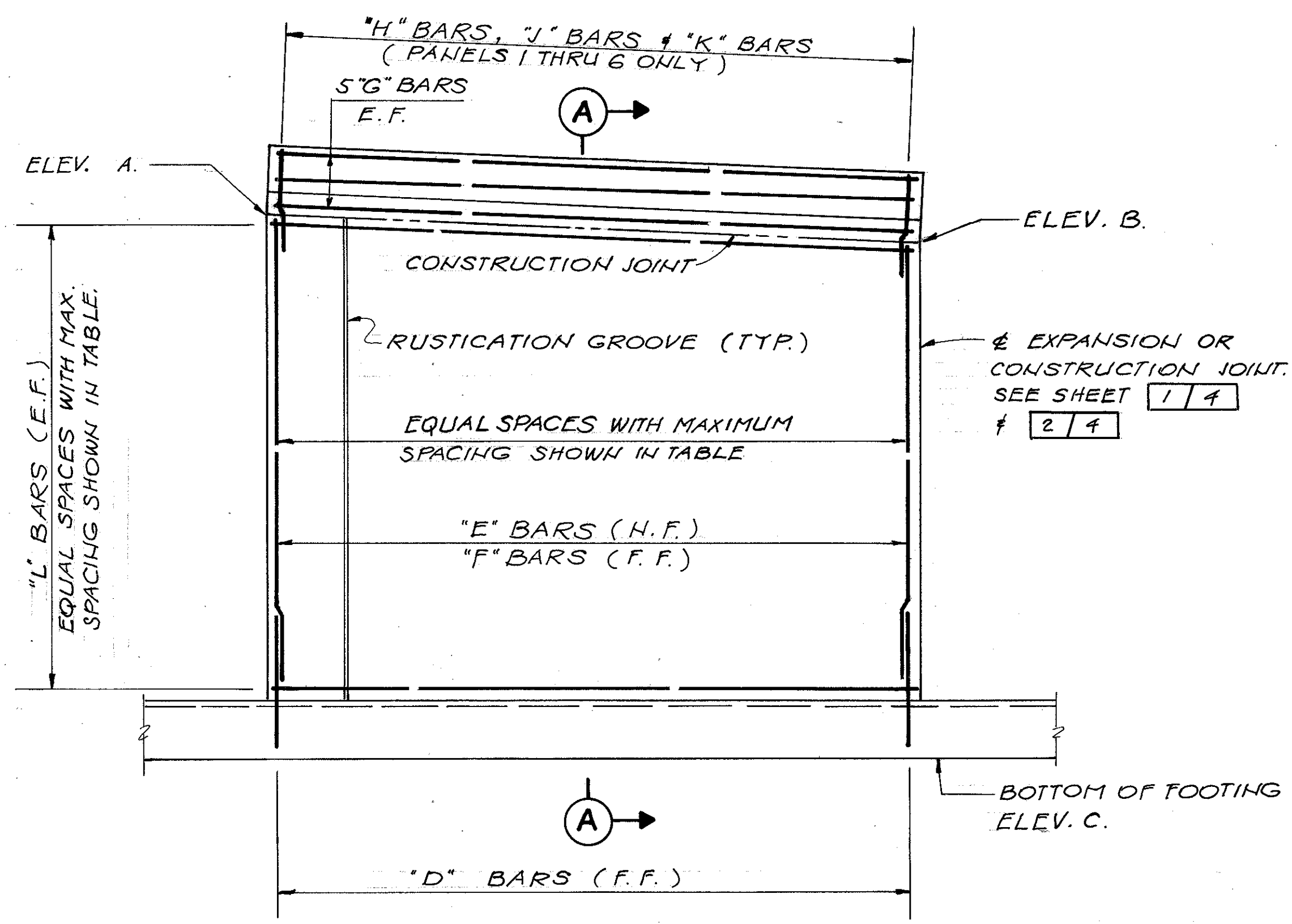


EXPANSION JOINT DETAIL

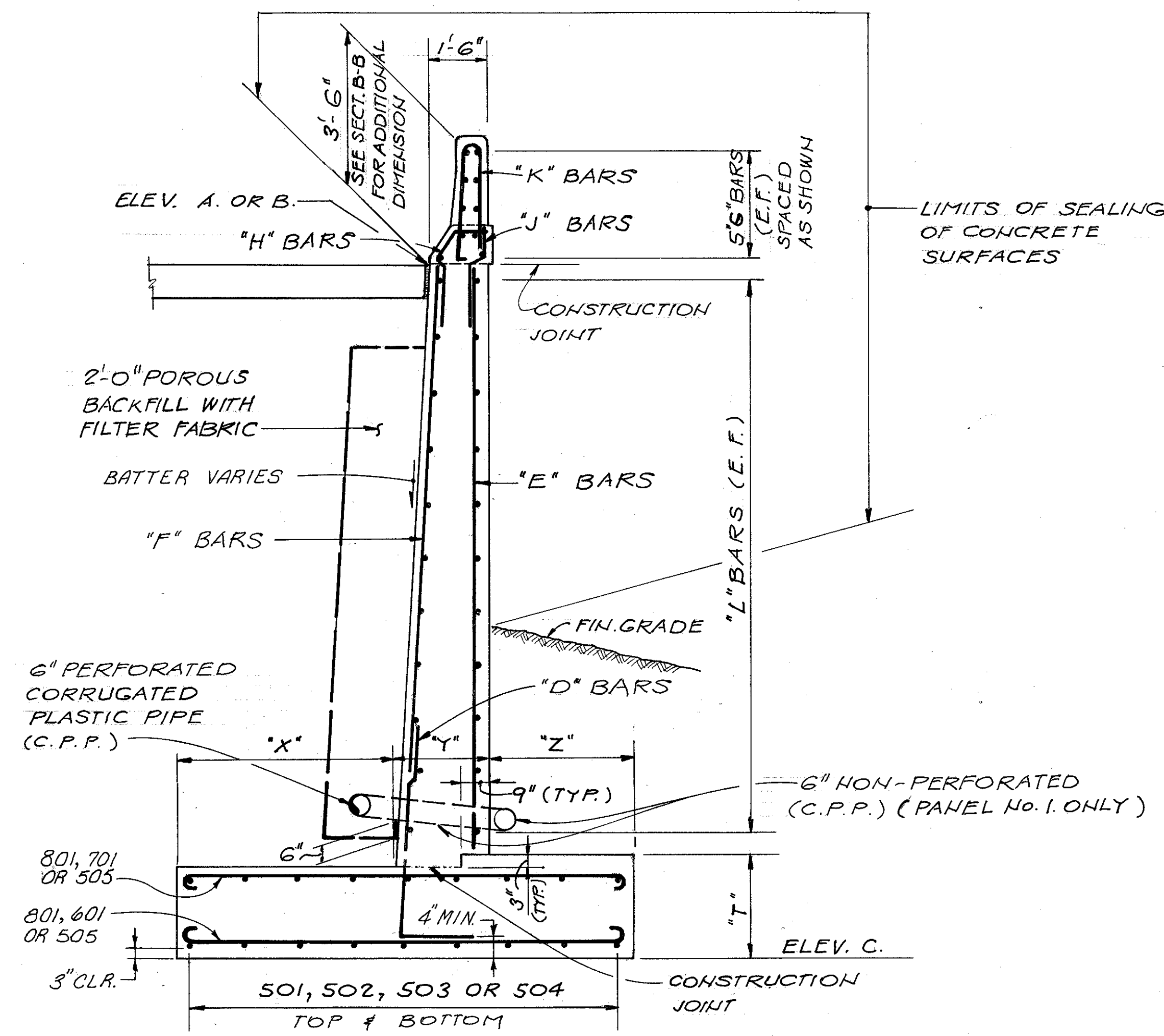
TYPICAL WHERE WALL THICKNESS @ BASE IS THE SAME. FOR VARYING WALL THICKNES REFER TO CONTRACTION JOINT DETAIL

NOTES
1. FOR NOTES SEE 3/4

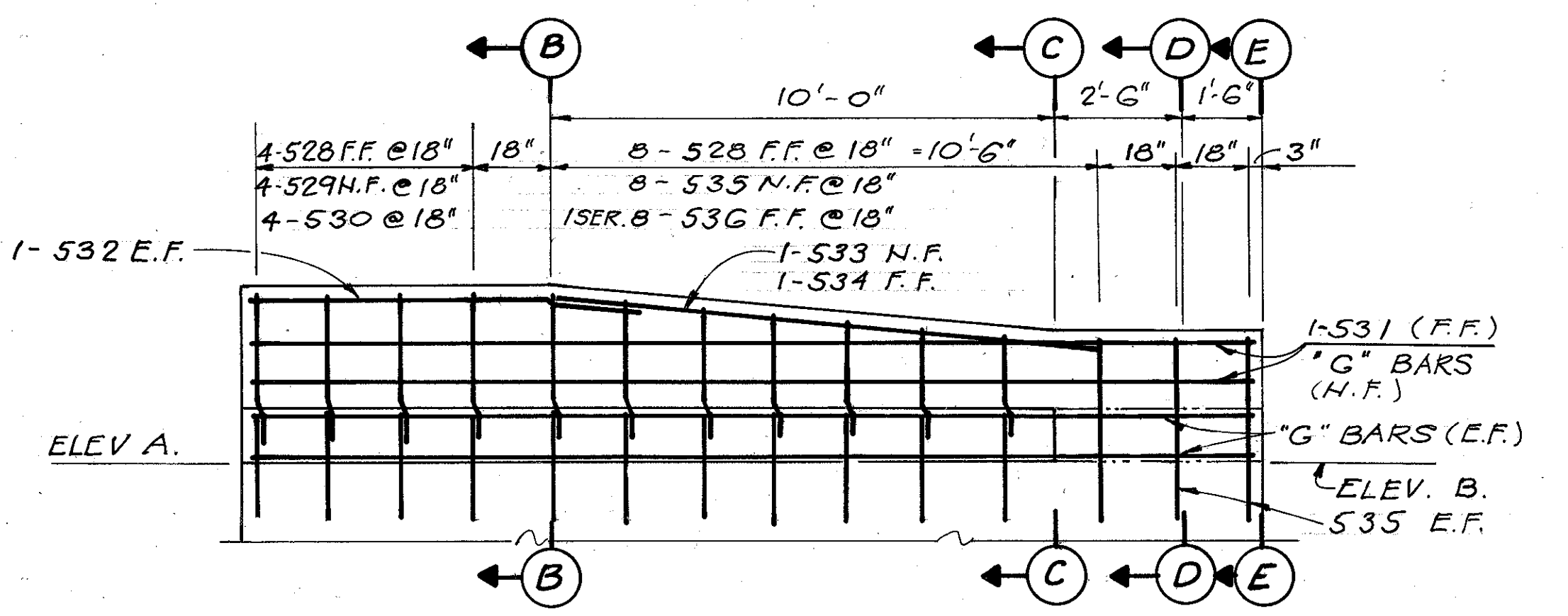
adache - ciuni - lynn associates CONSULTING ENGINEERS CLEVELAND, OHIO 44131					
FOUNDATION PLAN JENNINGS FREEWAY RETAINING WALL No. 1 STATE ROUTE 176 STA. 101+08.15 TO STA. 103+17.04					
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	S.F.M.	A.J.M.	1/94	



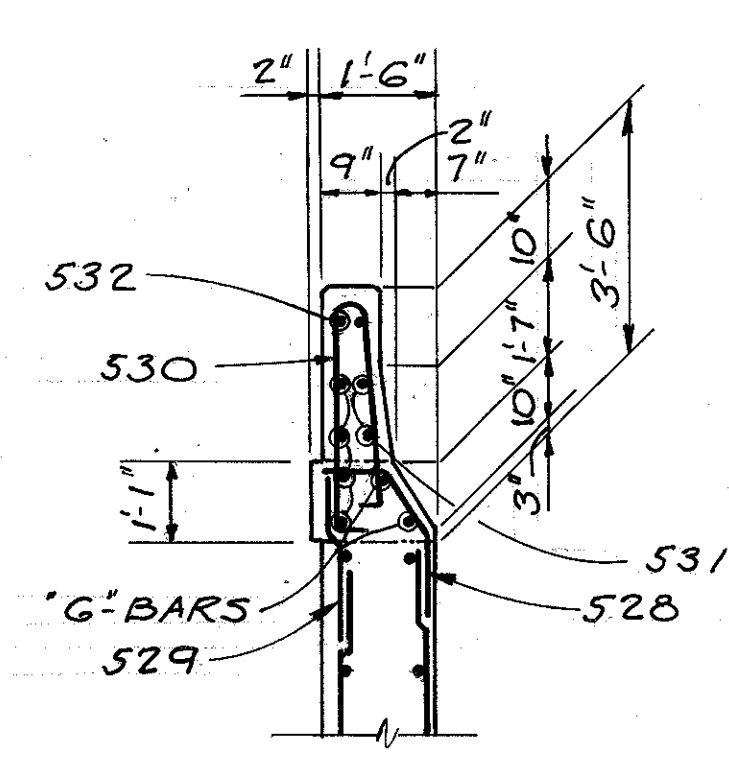
PANEL ELEVATION



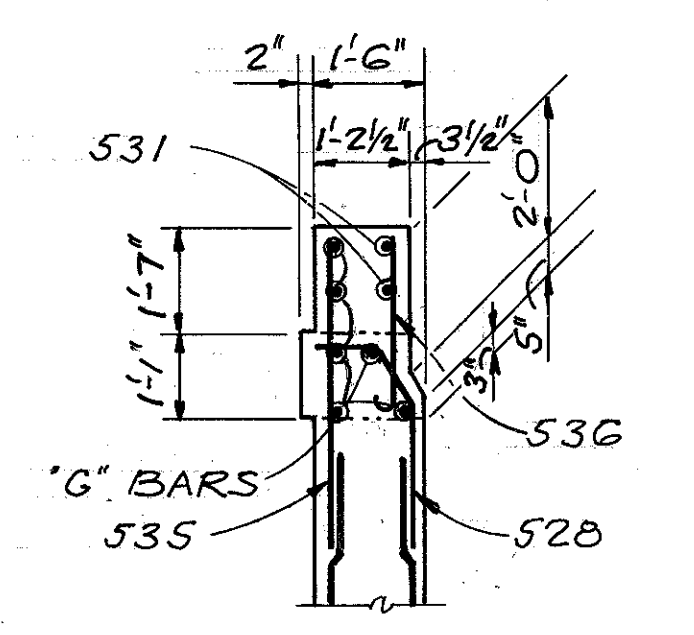
SECTION A-A



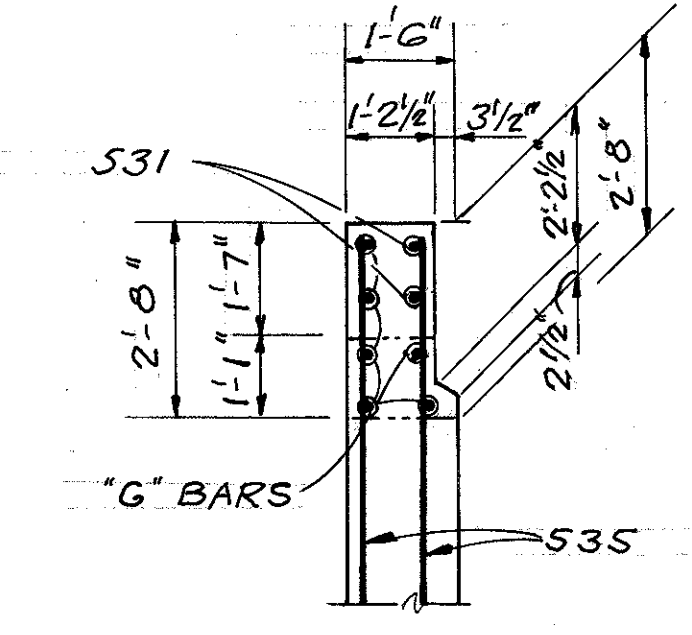
PARAPET TRANSITION DETAIL (PANEL 7 ONLY)



SECTION B-B

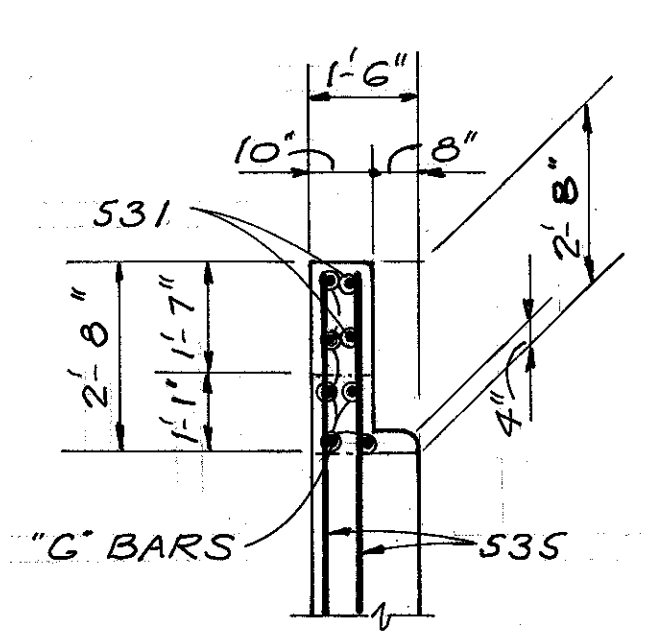


SECTION C-C



SECTION D-D

PANEL No.	ELEVATIONS			"D" BARS			"E" BARS			"F" BARS			"G" BARS			"H" BARS			"J" BARS			"K" BARS			"L" BARS			DIMENSION			
	A.	B.	C.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	"T"	"X"	"Y"	"Z"
1	781.27	779.87	753.70	1001	43	9"	518	22	18"	803	43	9"	526	528	22	18"	529	22	18"	530	22	18"	526	17 E.F.	18"	3'-3"	8'-9"	2'-9"	5'-6"		
2	779.87	778.16	753.70	1001	43	9"	519	22	18"	803	43	9"	526	528	22	18"	529	22	18"	530	22	18"	526	16 E.F.	18"	3'-3"	8'-9"	2'-9"	5'-6"		
3	778.16	777.11	760.00	802	33	12"	520	22	18"	802	33	12"	526	528	22	18"	529	22	18"	530	22	18"	526	11 E.F.	18"	2'-9"	6'-0"	2'-6"	5'-0"		
4	777.11	775.89	766.00	517	33	12"	521	22	18"	524	33	12"	526	528	22	18"	529	22	18"	530	22	18"	526	7 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"		
5	775.89	774.68	766.00	517	33	12"	522	22	18"	524	33	12"	526	528	22	18"	529	22	18"	530	22	18"	526	6 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"		
6	774.68	773.90	766.00	517	21	12"	523	14	18"	525	21	12"	527	528	14	18"	529	14	18"	530	14	18"	527	5 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"		
7	773.90	773.29	766.00	517	21	12"	523	14	18"	525	21	12"	527	SEE PARAPET TRANSITION DETAIL			527	5 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"								



SECTION E-E

- NOTES**
- THE PREFIX 1RW SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR RETAINING WALL No. 1.
 - MINIMUM REINFORCING BAR LAPS ARE AS FOLLOW:
 - # 5 = 2'-9"
 - # 6 = 3'-1"
 - # 8 = 5'-9"
- UNLESS NOTED OTHERWISE.

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PANEL DETAILS
JENNINGS FREEWAY
RETAINING WALL No. 1
STATE ROUTE 176
STA. 101+08.15 TO STA. 103+17.04

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	S.F.M.	A.J.M.	1/94	

STRUCTURAL GENERAL NOTES

CALC. DATE: CUYAHOGA COUNTY
 CHKD. DATE: CUY - 176 - 10.14
 DATE: JENNINGS FREEWAY OHIO
 F.H.W.A. REGION 5

383
395

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATIONS:

944 DATED 5-13-91

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
 REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EXPOSED SURFACES AS SHOWN ON SHEET 3/4. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOOTINGS:

FOOTINGS FOR WALL PANELS NO.1 & NO.2 SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN WHICHEVER IS LOWER.

FOUNDATION BEARING PRESSURE:

FOOTINGS FOR WALL PANELS NO.1 & NO.2, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 2.25 TONS PER SQUARE FOOT. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT. FOOTINGS FOR PANELS NO.3 THRU NO.7, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 1.25 TONS PER SQUARE FOOT. THE ALLOWABLE BEARING PRESSURE IS 1.25 TONS PER SQUARE FOOT.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN RETAINING WALL DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN RETAINING WALL DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

ESTIMATED QUANTITIES

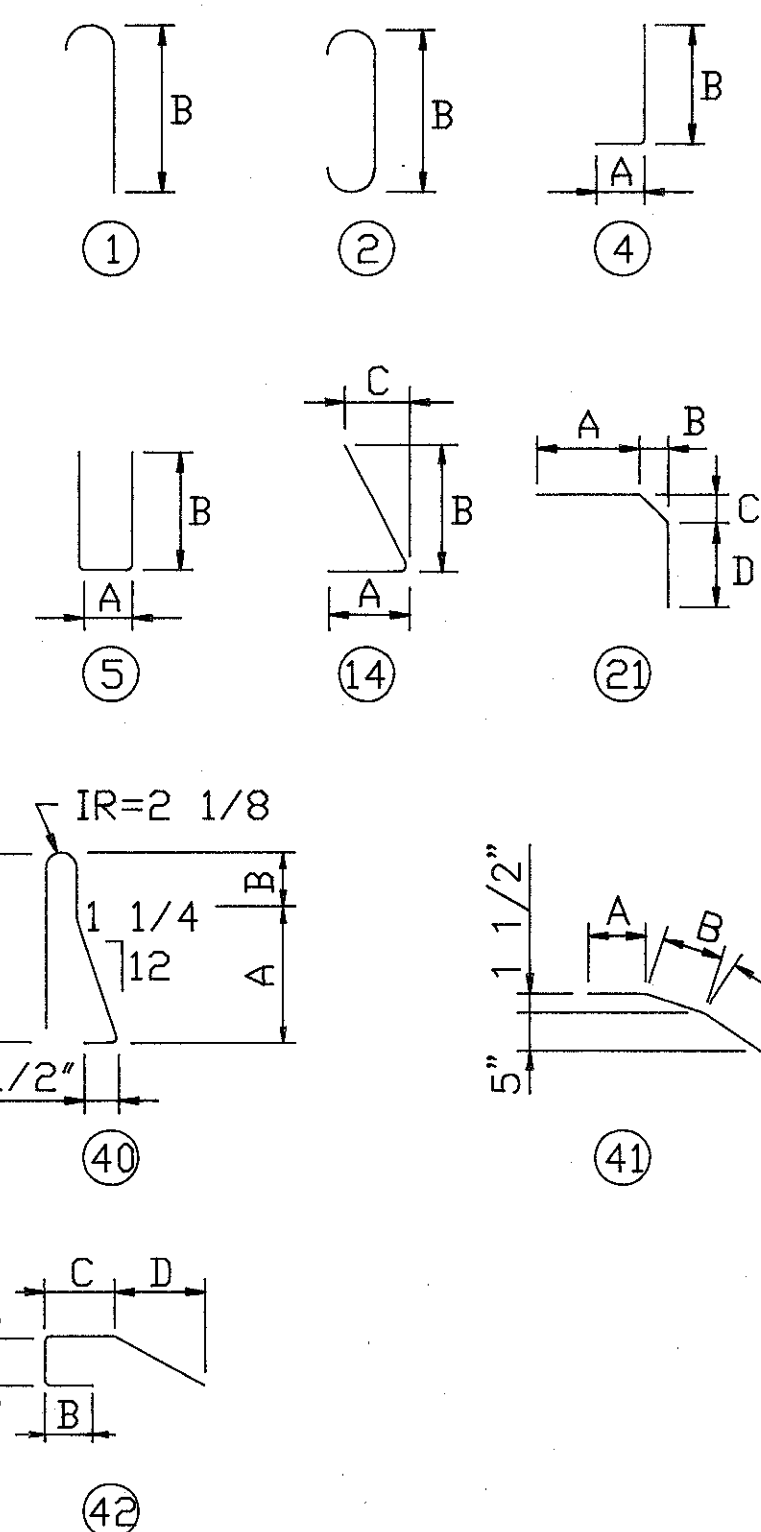
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	AS BUILT
503	21100	428	CU.YD.	UNCLASSIFIED EXCAVATION	
503	21102	600	CU.YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE	
509	15840	37877	POUND	EPOXY COATED REINFORCING STEEL GRADE 60	
SPEC.	51148040	458	CU.YD.	HIGH PERFORMANCE CONCRETE (SUBSTRUCTURE) *	
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE (TRIAL MIX)	
SPEC.	51267504	420	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *	
516	13600	131	SQ.FT.	1" PREFORMED EXPANSION JOINT FILLER	
516	30500	69	LIN.FT.	PVC WATERSTOP	
518	21200	170	CU.YD.	POROUS BACKFILL WITH FILTER FABRIC	
518	40001	200	LIN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN	
518	40011	10	LIN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS AS PER PLAN	

* SEE PROPOSAL NOTE

RETAINING WALL NO. 1

MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
1RW 501	48	40 0	STR.						2003
1RW 502	24	27 0	STR.						676
1RW 503	20	33 6	STR.						699
1RW 504	12	30 0	STR.						375
1RW 505	210	7 10	2	6 8					1716
1RW 506	16	5 0	STR.						83
1RW 507	10	7 2	4	2 0	5 3				75
1RW 508	6	6 11	4	2 0	5 0				43
1RW 509	10	5 3	STR.						55
1RW 510	6	5 0	STR.						31
1RW 511	7	13 2	STR.						96
1RW 512	7	6 8	STR.						49
1RW 513	16	12 5	5	1 8	5 6				207
1RW 514	34	6 0	42						213
1RW 515	34	4 3	4	2 2	2 2				151
1RW 516	3	24 3	STR.						76
1RW 517	108	7 7	14	1 6	6 3	0 5.5			854
1RW 518	22	22 9	STR.						522
1RW 519	22	21 4	STR.						490
1RW 520	22	14 2	STR.						325
1RW 521	22	7 6	STR.						172
1RW 522	22	6 3	STR.						143
1RW 523	28	4 10	STR.						141
1RW 524	66	6 6	STR.						447
1RW 525	42	5 2	STR.						226
1RW 526	164	31 6	STR.						5388
1RW 527	36	19 6	STR.						732
1RW 528	136	5 3	21	0 9	0 6	0 8.5	3 9		745
1RW 529	128	4 6	STR.						601
1RW 530	128	6 8	40	2 5	0 10	3 0			890
1RW 531	2	14 2	41	1 5	2 4	9 7			30
1RW 532	2	8 0	STR.						17
1RW 533	1	13 8	41	1 5	2 4	9 1			14
1RW 534	1	12 0	STR.						13
1RW 535	12	6 4	STR.						79
1RW 536	1 SER. 8 BARS	3 10 3 0	1		3 3 2 5			0 1 7 / 16	29
1RW 601	33	14 6	2	13 2					719
1RW 602	33	14 6	STR.						719
1RW 701	33	14 10	2	13 2					1001
1RW 801	156	18 6	2	16 8					7706
1RW 802	33	7 2	14	1 6	6 0	0 4.5			631
1RW 803	86	21 9	STR.						4994
1RW 1001	86	10 0	14	2 0	8 6	0 5.5			3701
TOTAL WEIGHT									37877

BENDING DIAGRAMS



NOTES:

- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

4 / 4

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 CONSULTING ENGINEERS CLEVELAND, OHIO 44131
STRUCTURAL NOTES, QUANTITIES & REINFORCING SCHEDULE
JENNINGS FREEWAY
RETAINING WALL NO.1
 STATE ROUTE 176
 STA. 101+08.15 TO STA. 103+17.04
 DESIGNED: T.A.B. DRAWN: D.L.L. CHECKED: C.T. REVIEWED: A.J.M. DATE: 1/94

BENCHMARK:
TBM 71 CHISELED
SQ. N.W. CORNER
INLET I-480
STA. 642+20.60 ± RT.
ELEV. = 730.30

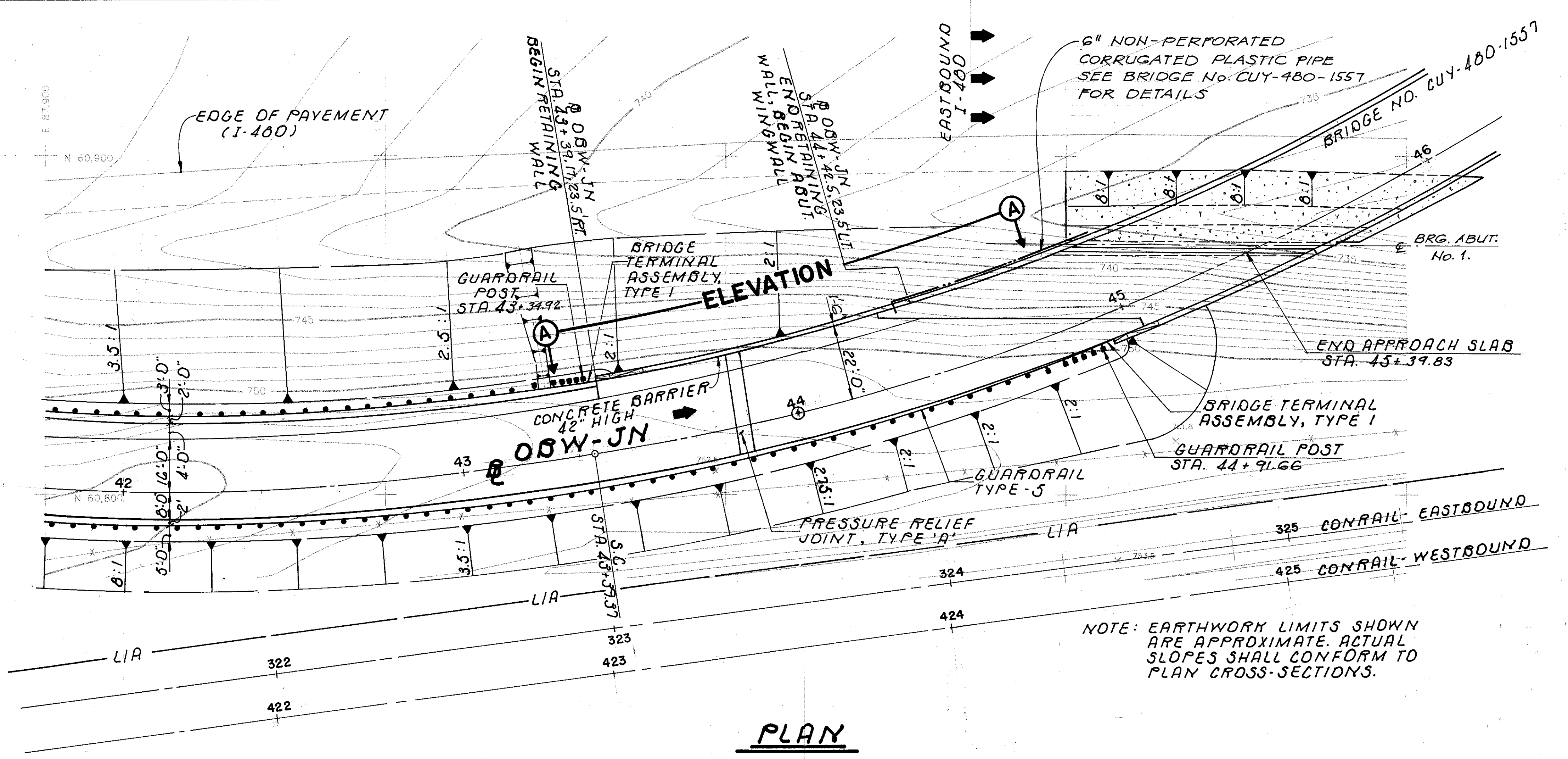
CALC.	CUYAHOGA COUNTY	OHIO	384
DATE	CUY-176-10-14	F.H.W.A. 5	395
CHKD.	JENNINGS FREEWAY	REGION 5	
DATE			

NOTES:

- FOR RETAINING WALL GEOMETRY SEE SHT. 2/4
- FOR STRUCTURAL NOTES & QUANTITIES SEE SHT. 4/4
- FOR DETAILS OF ABUTMENT No. 1. BRIDGE No. CUY-480-1557 SEE SHT. 360/395

LEGEND

⊙ INDICATES LOCATION OF SOIL BORING. FOR ADDITIONAL DETAILS SEE STRUCTURE FOUNDATION INVESTIGATION SHEETS.



PLAN

NOTE: EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS-SECTIONS.

HORIZONTAL CURVE DATA

⊕ OSW-JN
P.I. STA. 47+07.26
S.C. STA. 43+39.37
C.S. STA. 50+20.81
Δc = 53°32'42.2" LT.
Dc = 7°51'27"
R = 729.178'
T = 365.895'
L = 681.444'
C = 656.915'
E = 87.552'

VERTICAL CURVE DATA

⊕ OSW-JN
G1 = +1.36%
G2 = -3.12%
L = 600'
P.V.I. ELEV. = 764.91
P.V.C. STA. 48+00.00
P.V.T. STA. 51+00.00

DESIGN DATA

	IN SHALE
EQUIVALENT PASSIVE FLUID WEIGHT (WF)	360 LBS. PER CU. FT.
COEFFICIENT OF FRICTION (F)	0.55
DESIGN BEARING PRESSURE	1.75 TONS PER SQ. FT.

HORIZONTAL SPIRAL DATA

⊕ OSW-JN
T.S. STA. 40+89.37
S.C. STA. 43+39.37
θ = 9°49'18.8" LT.
L.S. = 250.00'
L.T. = 166.924'
S.T. = 83.567'

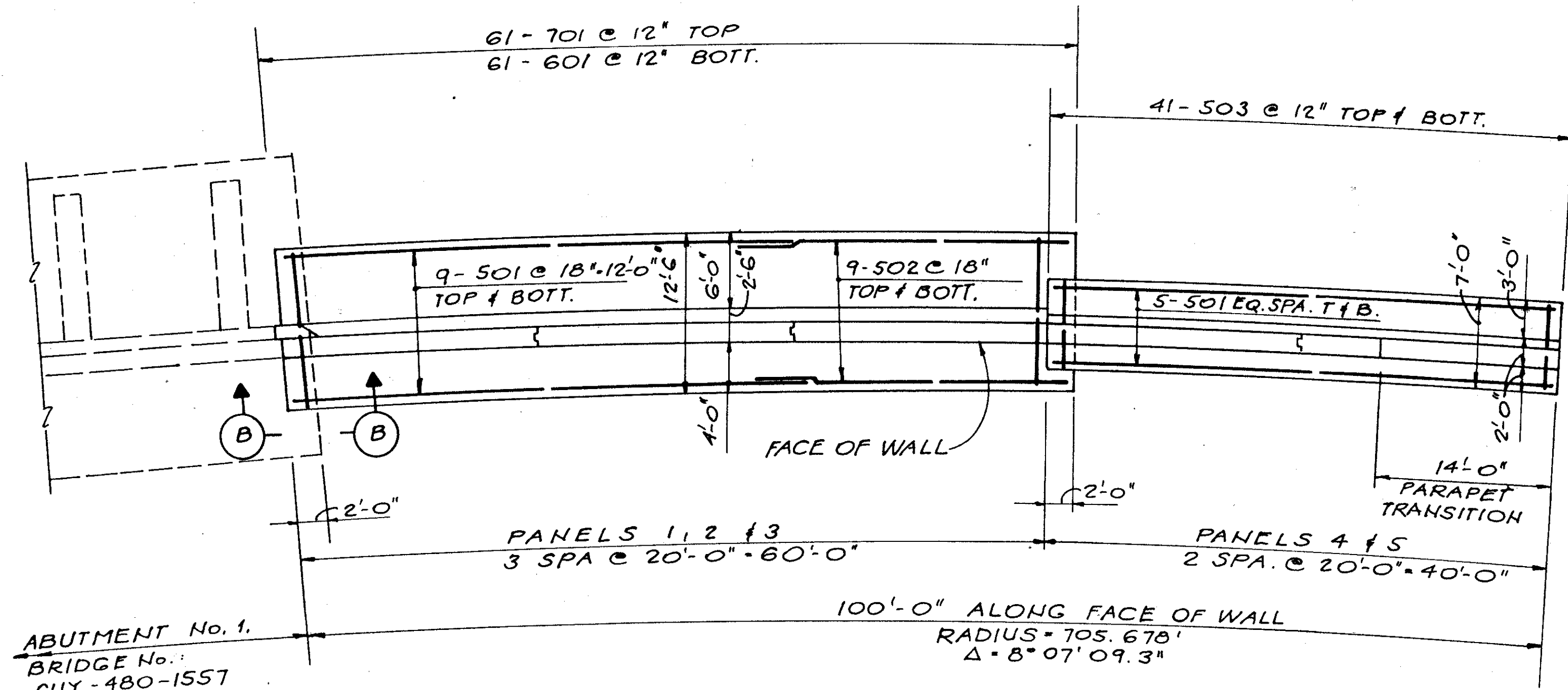
	45	+42.50	44	+39.17	43	
810	759.53	759.19	758.85	758.51	758.17	757.83
790	759.53	759.19	758.85	758.51	758.17	757.83
770	759.53	759.19	758.85	758.51	758.17	757.83
750	759.53	759.19	758.85	758.51	758.17	757.83
730	759.53	759.19	758.85	758.51	758.17	757.83
710	759.53	759.19	758.85	758.51	758.17	757.83
690	759.53	759.19	758.85	758.51	758.17	757.83

ELEVATION A-A
(ALONG FACE OF WALL)

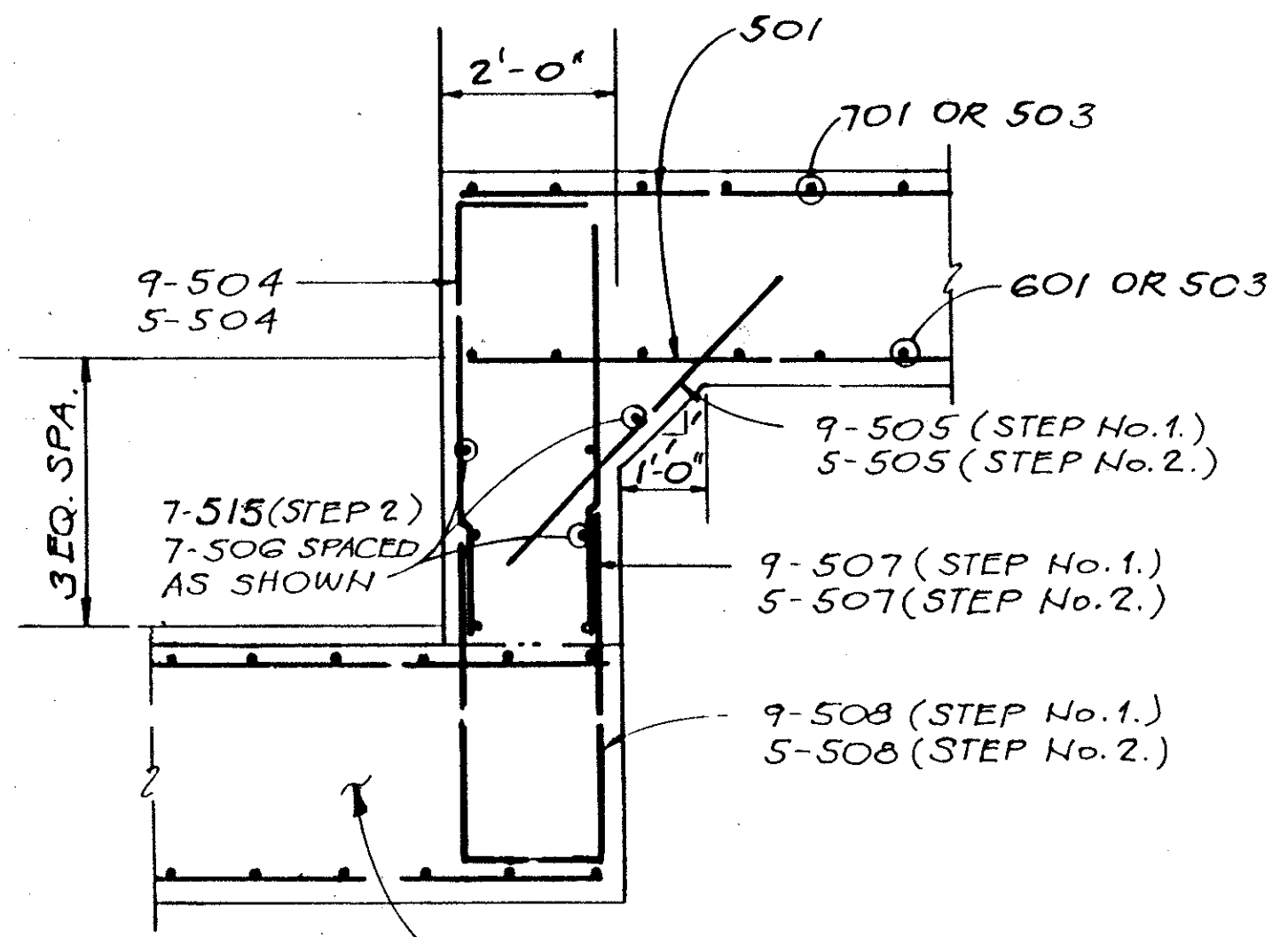
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CONSULTING ENGINEERS CLEVELAND, OHIO 44131

GENERAL PLAN AND ELEVATION
JENNINGS FREEWAY
RETAINING WALL NO. 2
⊕ OSW-JN
STA. 43+39.17 ± TO STA. 44+42.50

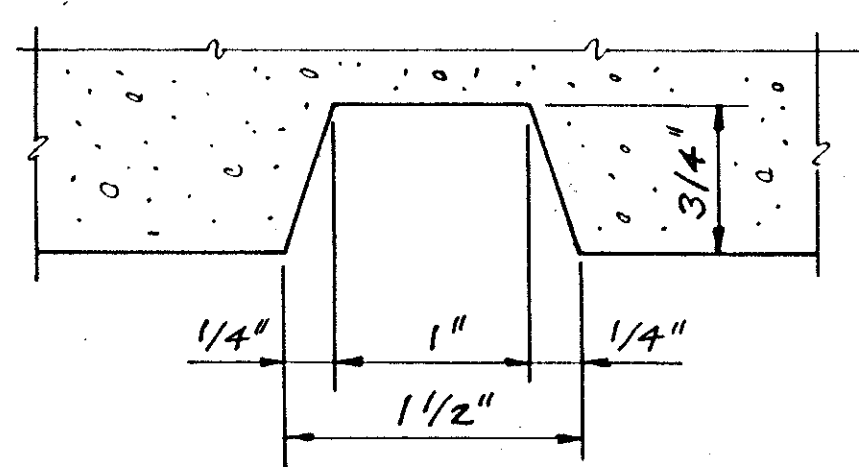
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.E.S.	T.E.S.	T.A.S.	L.E.O.	10-6-92	



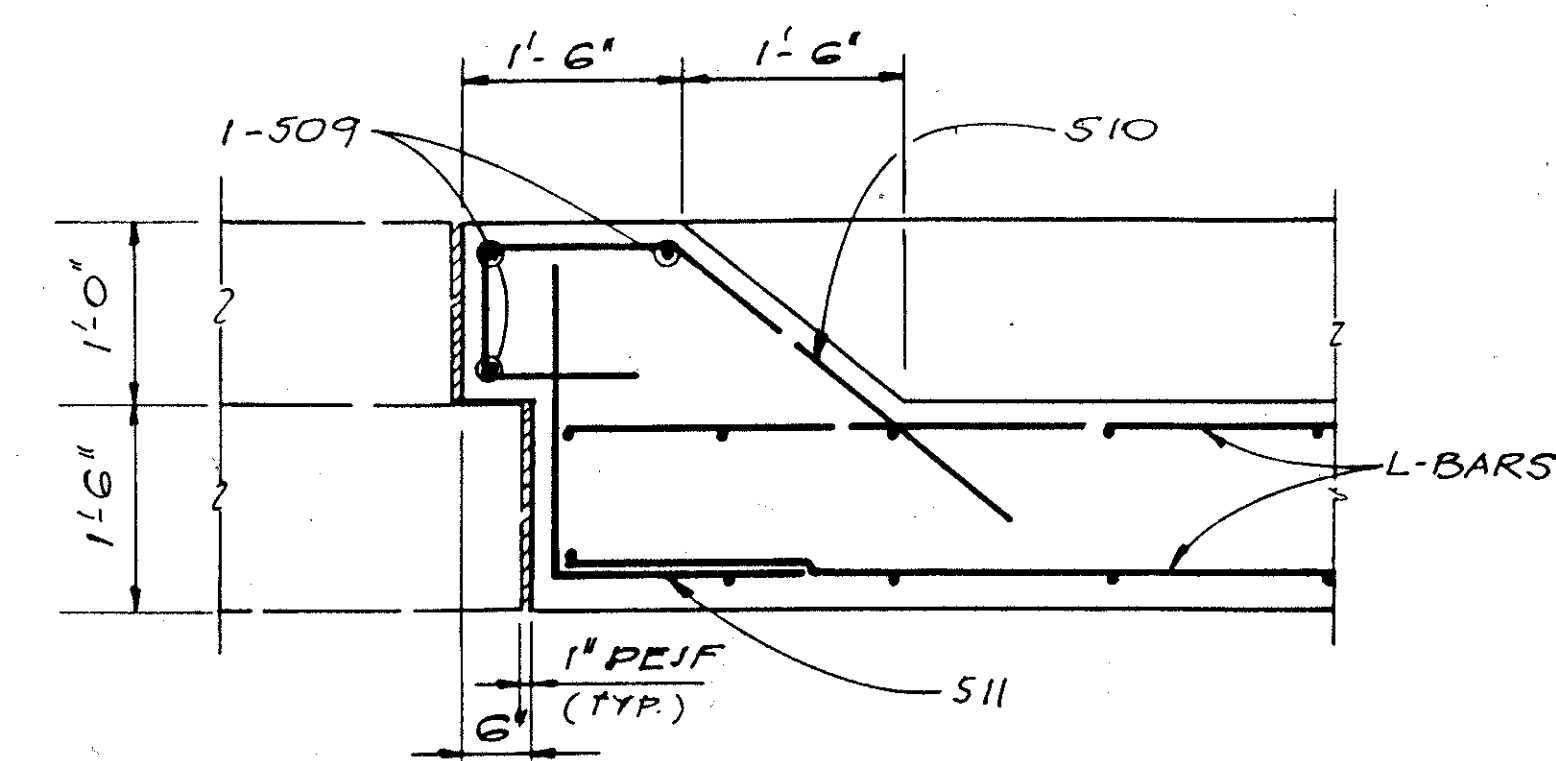
PLAN



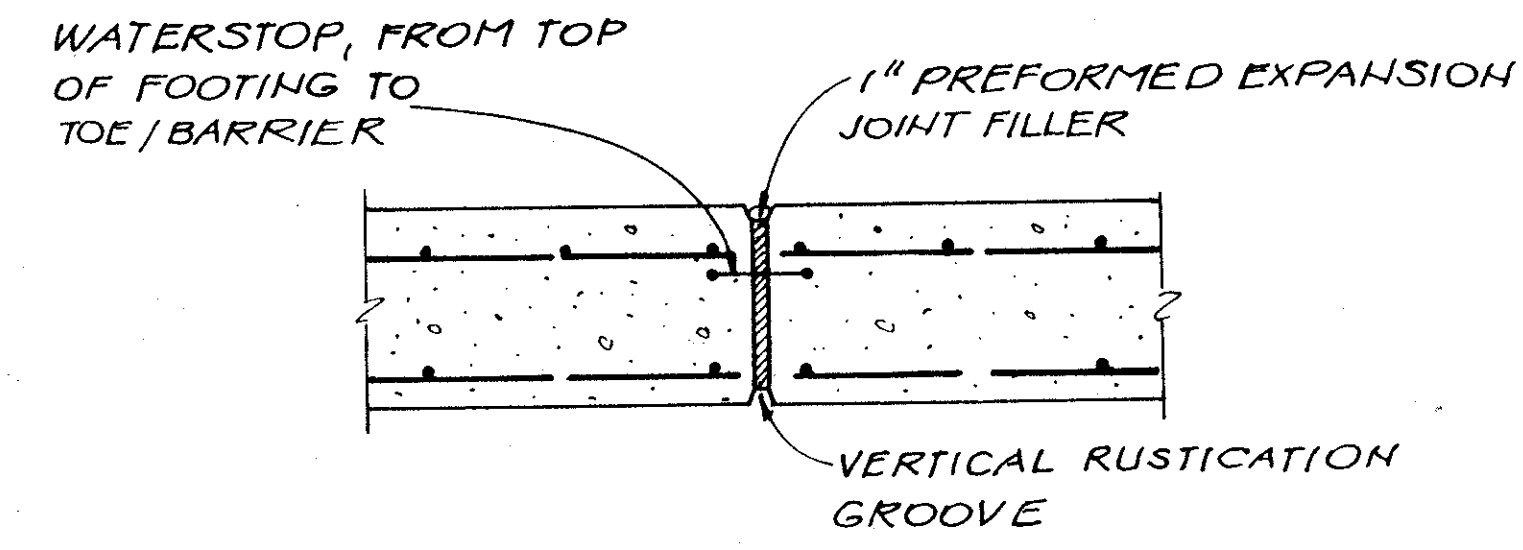
DETAIL A



VERTICAL RUSTICATION GROOVE DETAIL



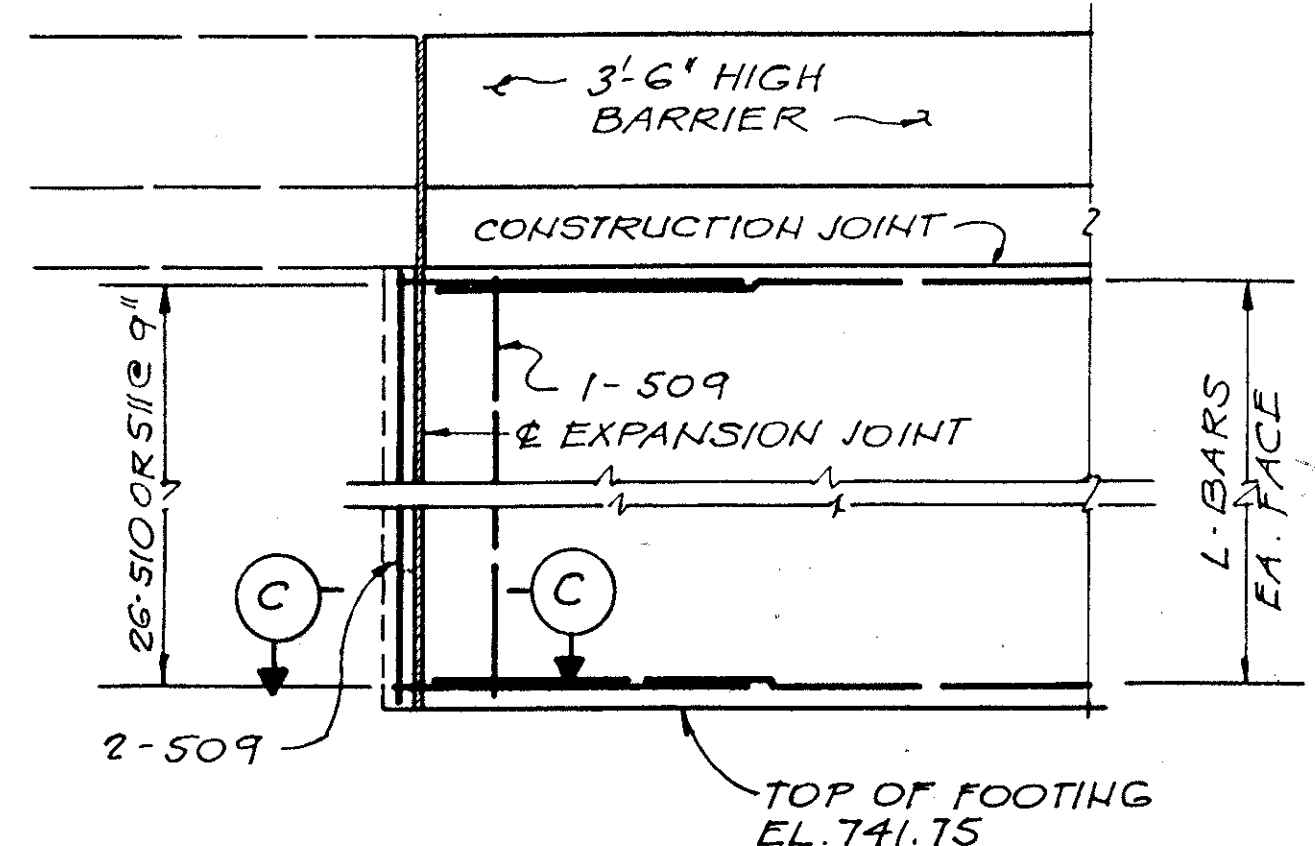
SECTION C-C



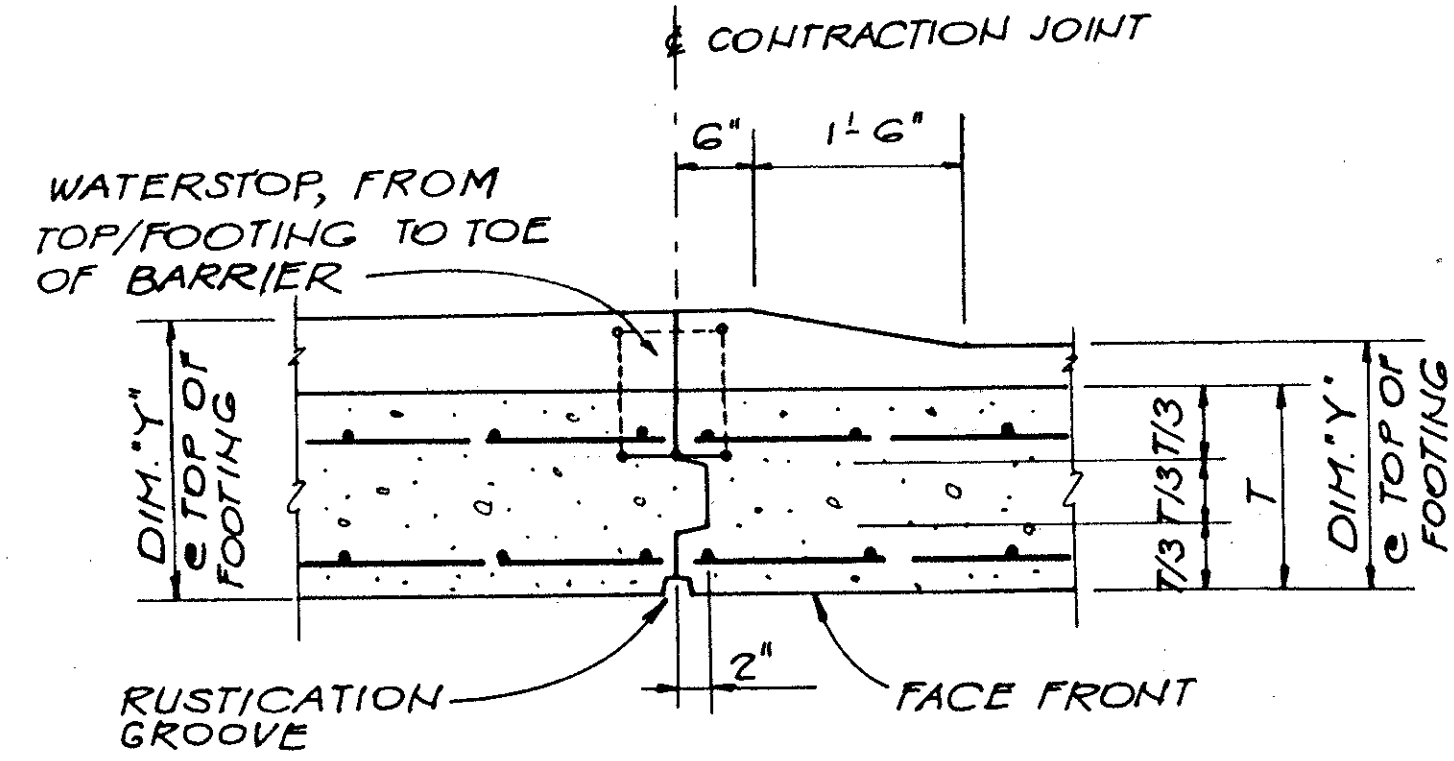
EXPANSION JOINT DETAIL

NOTES

REFER TO SHEET 3/4 FOR NOTES



VIEW B-B

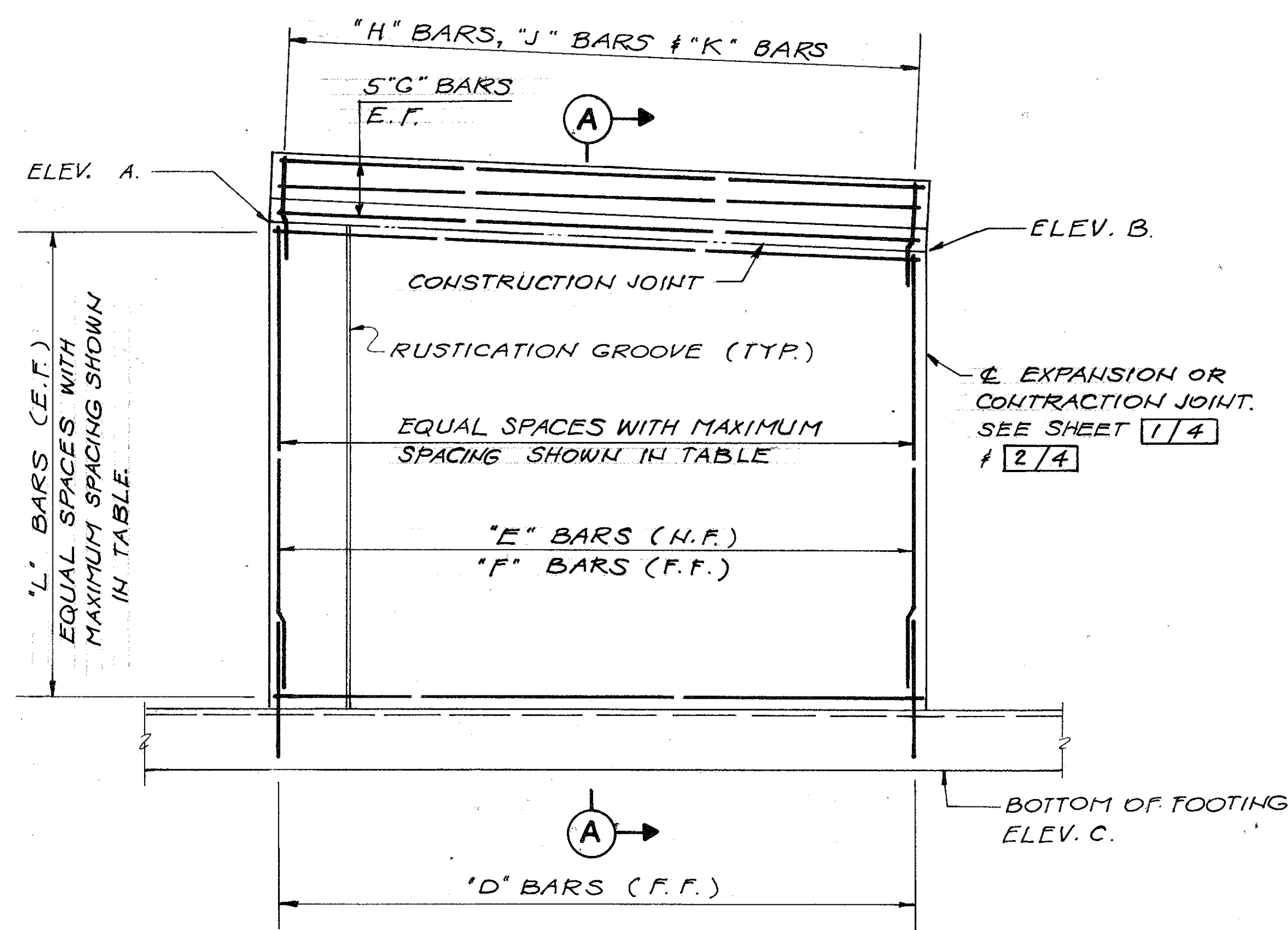


CONTRACTION JOINT DETAIL

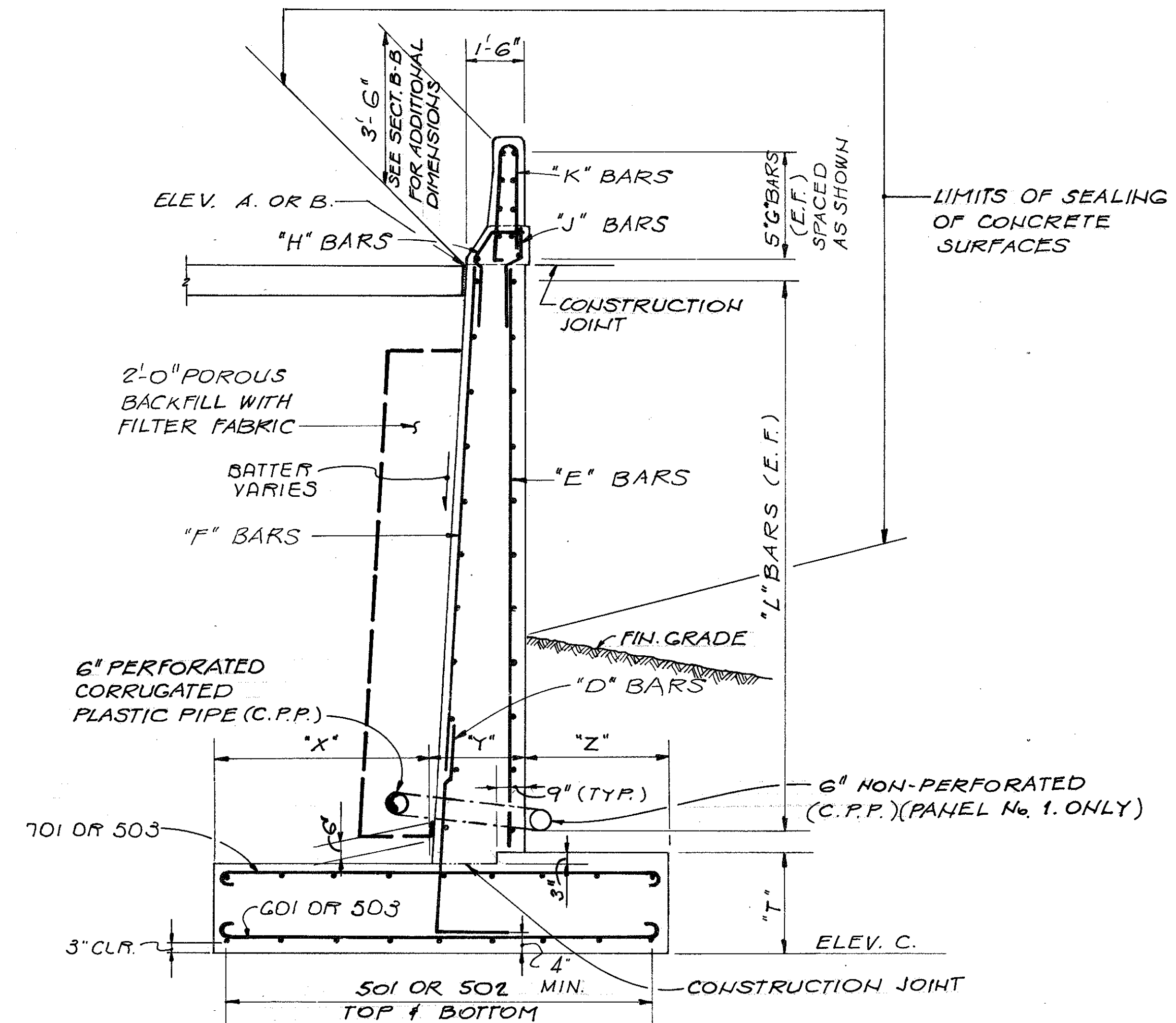
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FOUNDATION PLAN
JENNINGS FREEWAY
RETAINING WALL No. 2.
OBW - JK
STA. 43+39.17 TO STA. 44+42.50

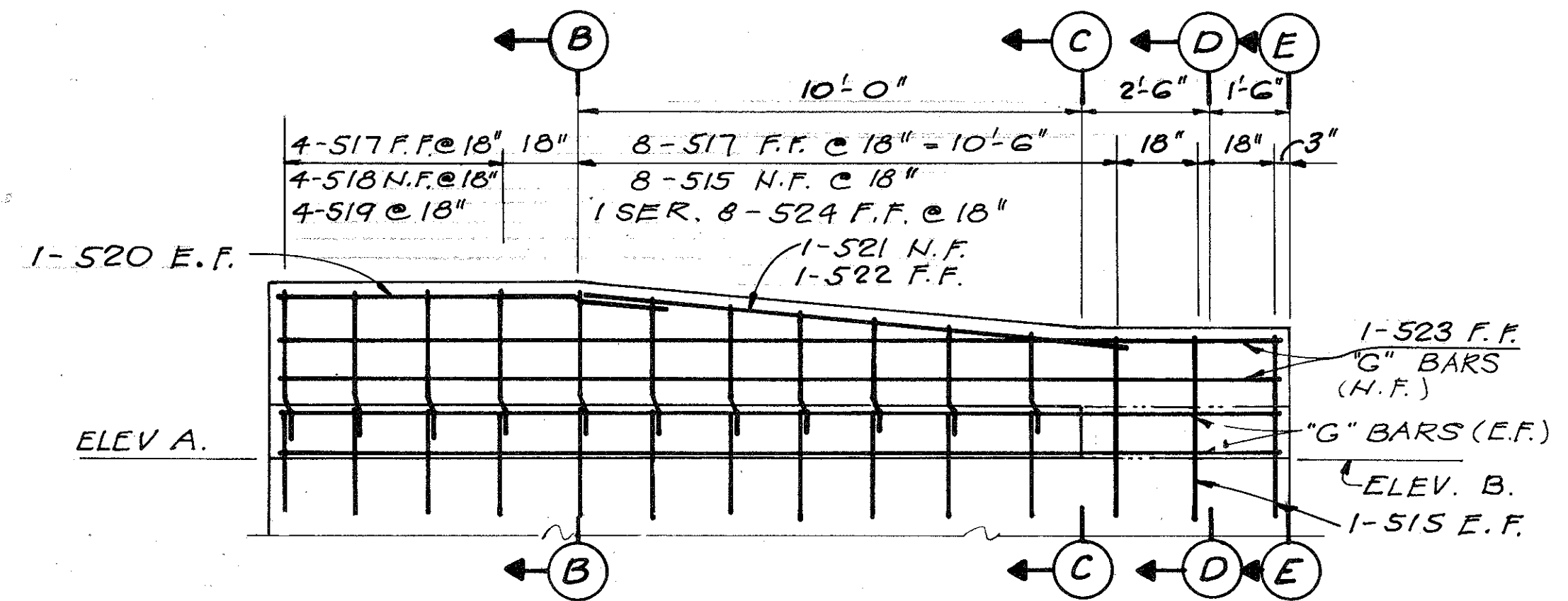
DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	S.F.M.	A.J.M.	1/94	



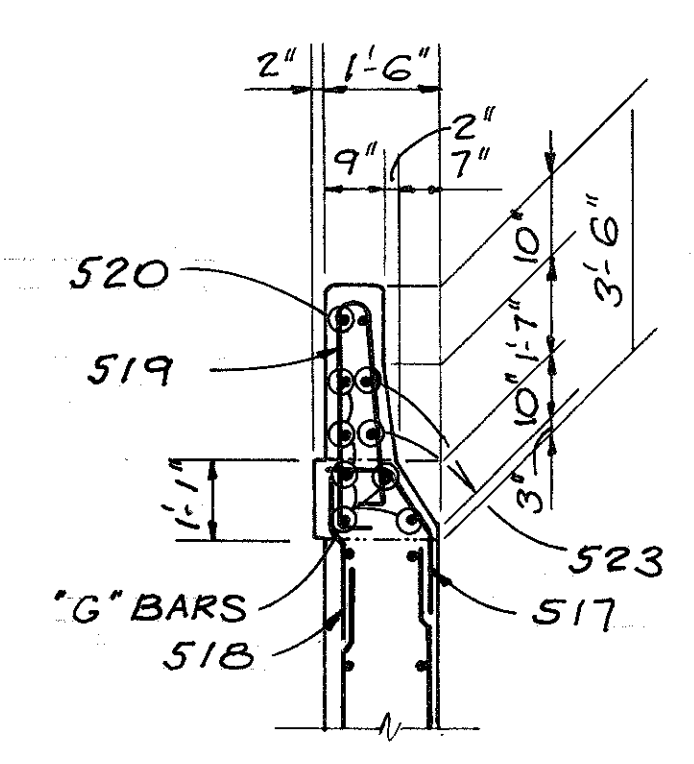
PANEL ELEVATION



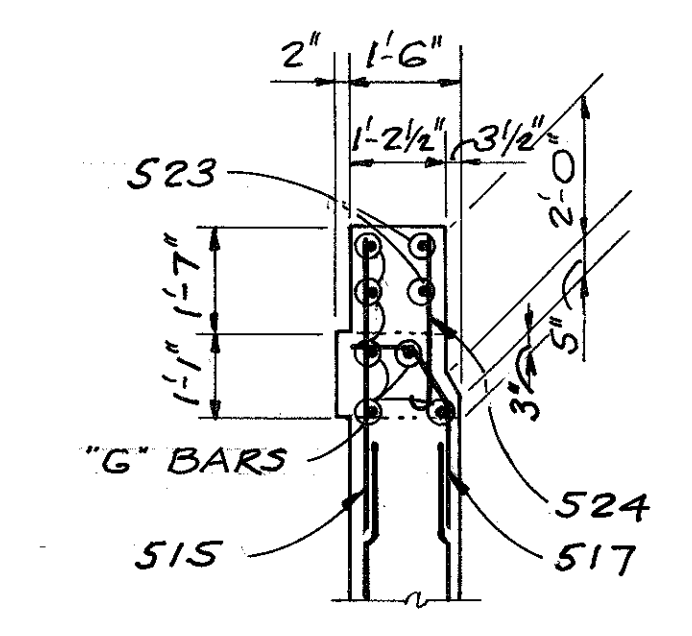
SECTION A-A



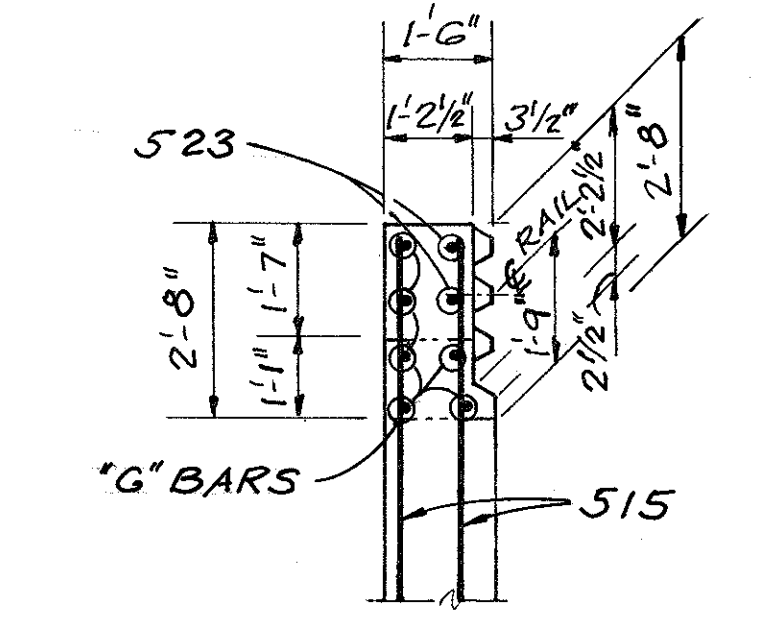
PARAPET TRANSITION DETAIL (PANELS ONLY)



SECTION B-B

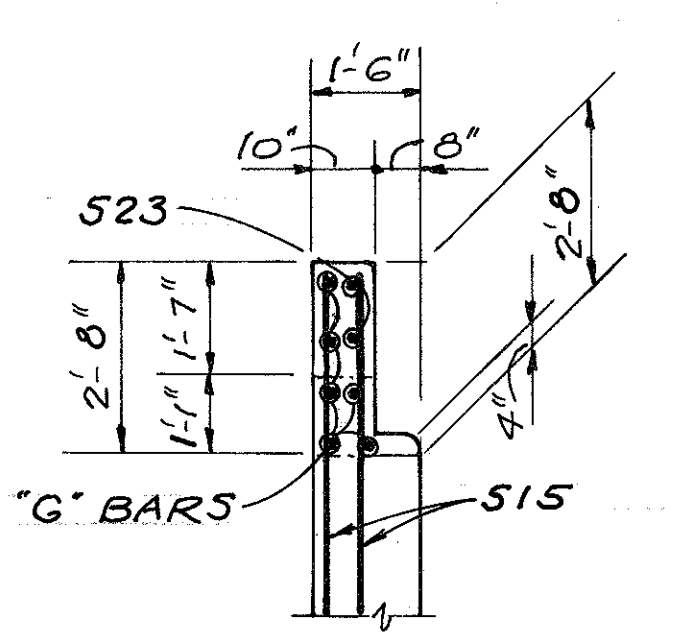


SECTION C-C



SECTION D-D

PANEL No.	ELEVATIONS			"D" BARS			"E" BARS			"F" BARS			"G" BARS			"H" BARS			"J" BARS			"K" BARS			"L" BARS			DIMENSION			
	A.	B.	C.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	MARK	No. REQ.	SPA.	"T"	"X"	"Y"	"Z"
1	758.15	758.47	738.50	801	25	10"	513	14	18"	602	25	10"	516	517	14	18"	518	14	18"	519	14	18"	516	13 E.F.	18"	2'-9"	6'-0"	2'-6"	4'-0"		
2	758.47	758.19	738.50	801	25	10"	513	14	18"	602	25	10"	516	517	14	18"	518	14	18"	519	14	18"	516	13 E.F.	18"	2'-9"	6'-0"	2'-6"	4'-0"		
3	758.19	757.90	738.50	801	25	10"	513	14	18"	602	25	10"	516	517	14	18"	518	14	18"	519	14	18"	516	13 E.F.	18"	2'-9"	6'-0"	2'-6"	4'-0"		
4	757.90	757.62	747.00	512	21	12"	514	14	18"	514	21	12"	516	517	14	18"	518	14	18"	519	14	18"	516	7 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"		
5	757.62	757.34	747.00	512	21	12"	514	14	18"	514	21	12"	516	SEE PARAPET TRANSITION DETAIL						516	7 E.F.	18"	2'-3"	3'-0"	2'-0"	2'-0"					



SECTION E-E

NOTE

1. THE PREFIX 2RW SHALL BE ADDED TO ALL REINFORCING BAR MARKS FOR RETAINING WALL No. 2.
2. MINIMUM REINFORCING BAR LAPS ARE AS FOLLOWS:
 # 5 = 2'-11"
 # 6 = 3'-1"
 UNLESS NOTED OTHERWISE

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PANEL DETAILS
 JENNINGS FREEWAY
 RETAINING WALL No. 2
 OBW-JN
 STA. 43+39.17 TO STA. 44+42.50

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	E.K.	S.F.M.	A.J.M.	1/99	

STRUCTURAL GENERAL NOTES

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFERENCE SHALL BE MADE TO SUPPLEMENTAL SPECIFICATIONS:

944 DATED 5-13-91

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO *STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1992 INCLUDING THE 1993 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL.

DESIGN STRESSES:

HIGH PERFORMANCE CONCRETE - COMPRESSIVE STRENGTH 4500 P.S.I.
REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 MINIMUM YIELD STRENGTH 60,000 PSI

UTILITY LINES:

ALL EXPENSE INVOLVED IN RELOCATING AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER. THE CONTRACTOR AND OWNER(S) ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WILL BE HELD TO A MINIMUM.

ITEM SPECIAL, SEALING OF CONCRETE SURFACE:

A NON-EPOXY CONCRETE SEALER SHALL BE APPLIED TO THE EXPOSED SURFACES AS SHOWN ON SHEET 3/4. SEE PROPOSAL NOTE FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

FOOTINGS:

RETAINING WALL NO.2 FOOTINGS SHALL EXTEND A MINIMUM OF 3 INCHES INTO BEDROCK OR TO THE ELEVATION SHOWN WHICHEVER IS LOWER.

FOUNDATION BEARING PRESSURE:

RETAINING WALL FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 1.75 TONS PER SQUARE FOOT. THE ALLOWABLE BEARING PRESSURE IS 5 TONS PER SQUARE FOOT.

ITEM 518, 6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN RETAINING WALL DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP.

ITEM 518, 6" NON-PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN:

CORRUGATED PIPE USED IN RETAINING WALL DRAINAGE SHALL BE 6 INCH DIAMETER, PLASTIC CORRUGATED AS PER SUPPLEMENTAL SPECIFICATION 944, AASHTO M294, TYPE SP. THIS ITEM SHALL INCLUDE ALL ELBOWS, TEES AND END CAPS REQUIRED TO COMPLETE THE ABUTMENT DRAINAGE SYSTEM.

ESTIMATED QUANTITIES					DATE: 1/94	DATE: 3/94
ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	AS BUILT	
503	21102	327	CU.YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE		
509	15840	15702	POUND	EPOXY COATED REINFORCING STEEL GRADE 60		
SPEC.	51148040	214	CU.YD.	HIGH PERFORMANCE CONCRETE (SUBSTRUCTURE) *		
SPEC.	51149000	LUMP	LUMP	HIGH PERFORMANCE CONCRETE (TRIAL MIX)		
SPEC.	51267504	189	SQ.YD.	SEALING OF CONCRETE SURFACES (NON-EPOXY) *		
516	13600	80	SQ.FT.	1" PREFORMED EXPANSION JOINT FILLER		
516	30500	52	LIN.FT.	PVC WATERSTOP		
518	21200	86	CU.YD.	PORDUS BACKFILL WITH FILTER FABRIC		
518	40001	100	LIN.FT.	6" PERFORATED CORRUGATED PLASTIC PIPE, AS PER PLAN		
518	40011	10	LIN.FT.	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS AS PER PLAN		

* SEE PROPOSAL NOTE

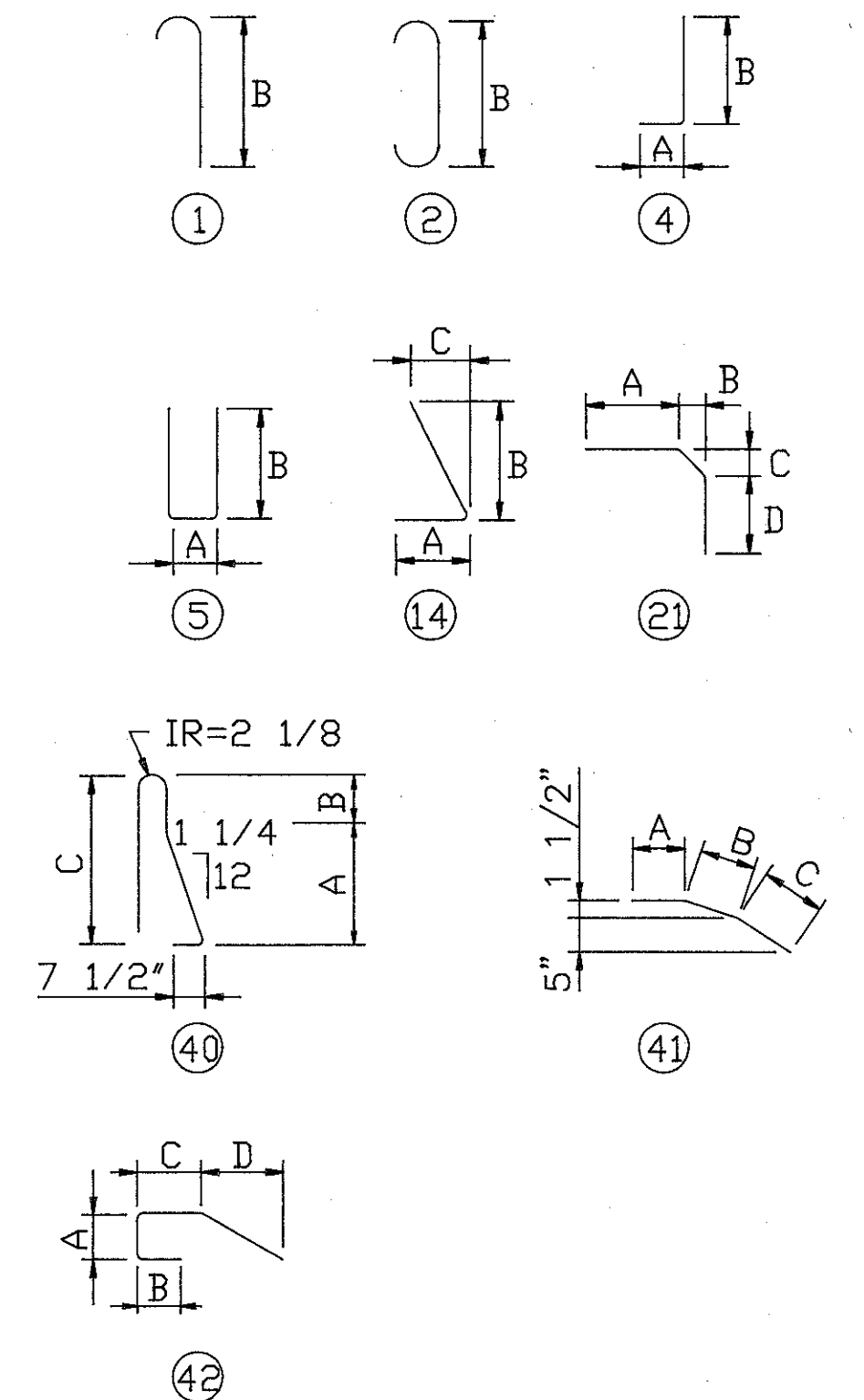
RETAINING WALL NO. 2

MARK	NUMBER REQUIRED	LENGTH ft in	TYPE	DIM A ft in	DIM B ft in	DIM C ft in	DIM D ft in	INCREMENT ft in	WEIGHT (lbs.)
2RW 501	28	39 6	STR.						1154
2RW 502	18	24 0	STR.						451
2RW 503	82	7 10	2	6 8					670
2RW 504	14	9 5	4	2 0	7 6				138
2RW 505	14	5 0	STR.						73
2RW 506	7	12 2	STR.						89
2RW 507	14	7 6	STR.						110
2RW 508	14	13 5	5	1 8	6 0				196
2RW 509	3	17 7	STR.						55
2RW 510	26	6 9	42						183
2RW 511	26	4 3	4	2 2	2 2				115
2RW 512	42	6 4	14	1 6	5 0	0 35			277
2RW 513	42	16 6	STR.						723
2RW 514	70	7 11	STR.						578
2RW 515	19	6 8	STR.						132
2RW 516	156	19 6	STR.						3173
2RW 517	68	4 8	21	0 9	0 6	0 85	3 2		331
2RW 518	60	4 0	STR.						250
2RW 519	60	6 8	40	0 9	0 6	0 85			417
2RW 520	2	8 0	STR.						17
2RW 521	1	12 0	STR.						13
2RW 522	1	14 2	40	1 5	2 4	9 7			15
2RW 523	2	13 8	40	1 5	2 4	9 1			29
2RW 524	1 SER. 8 BARS	3 10 3 0	1		3 3 2 5			0 1 7 / 16	29
2RW 601	61	13 6	2	12 2					1237
2RW 602	75	16 9	STR.						1887
2RW 701	61	13 10	2	12 2					1725
2RW 801	75	8 2	14	2 0	6 6	0 45			1635
TOTAL WEIGHT									15702

CALC. DATE	CUYAHOGA COUNTY CUY - 176 - 10.14	OHIO
CHKD. DATE	JENNINGS FREEWAY	F.H.W.A. REGION 5

367
373

BENDING DIAGRAMS



NOTES

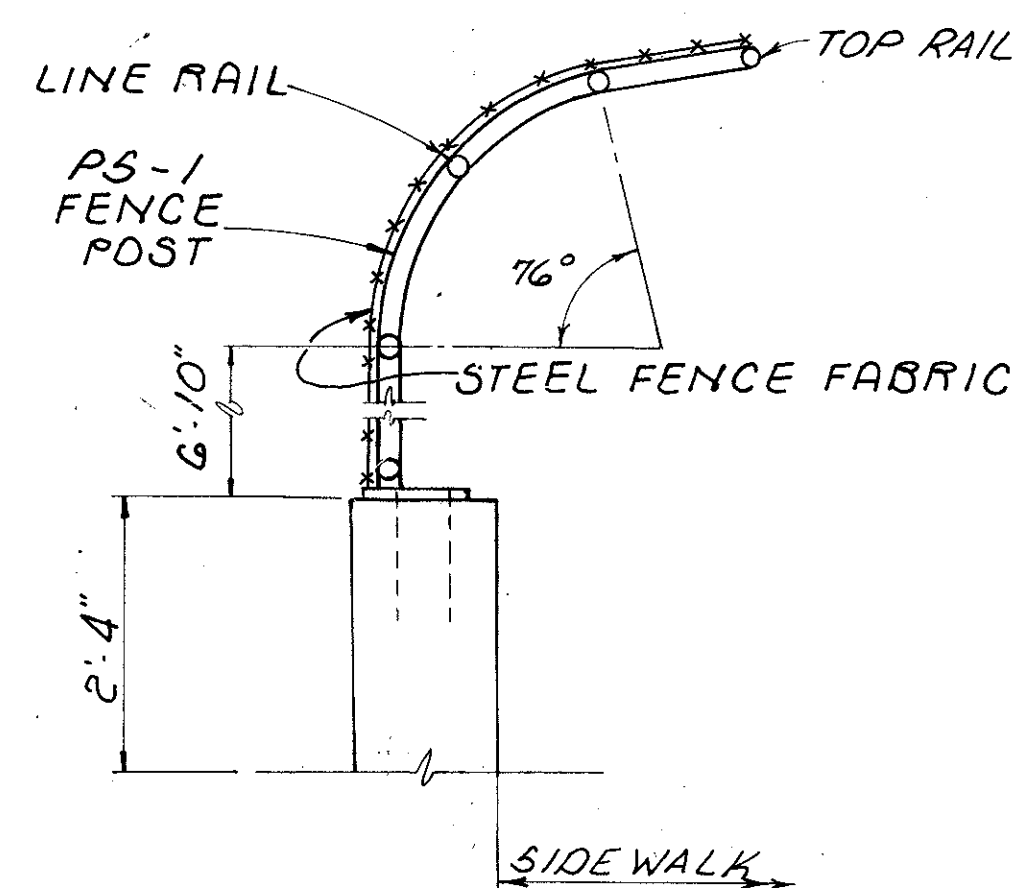
- ALL REINFORCING STEEL TO BE EPOXY COATED.
- BAR DIMENSIONS SHOWN ARE OUT-TO-OUT UNLESS OTHERWISE NOTED.

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STRUCTURAL NOTES, QUANTITIES
& REINFORCING SCHEDULE
JENNINGS FREEWAY
RETAINING WALL NO.2

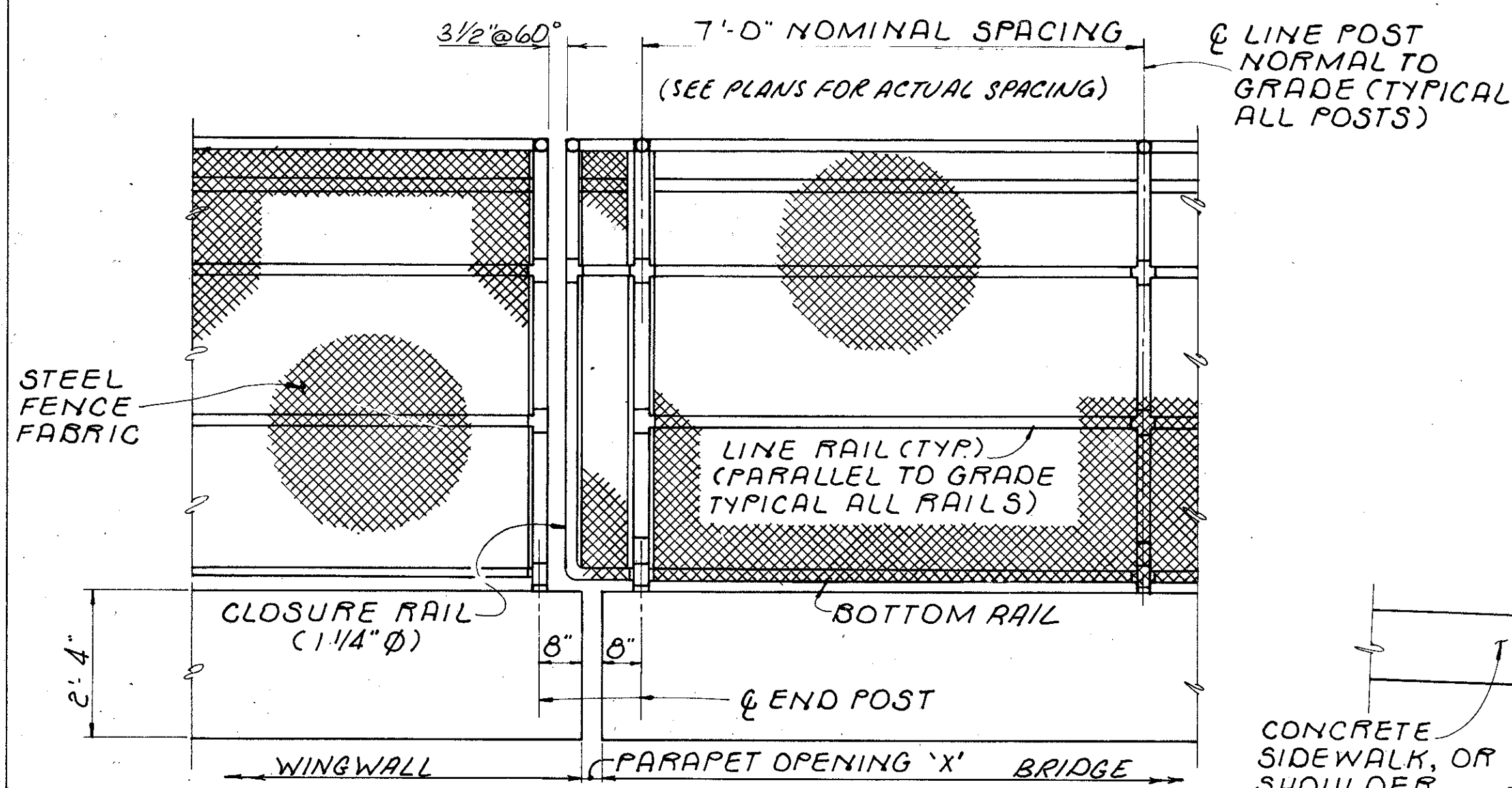
B OBW-JN
STA. 43+39.17 TO STA. 42+44.50

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
T.A.B.	D.L.L.	C.T.	A.J.M.	1/94	



TYPICAL SECTION

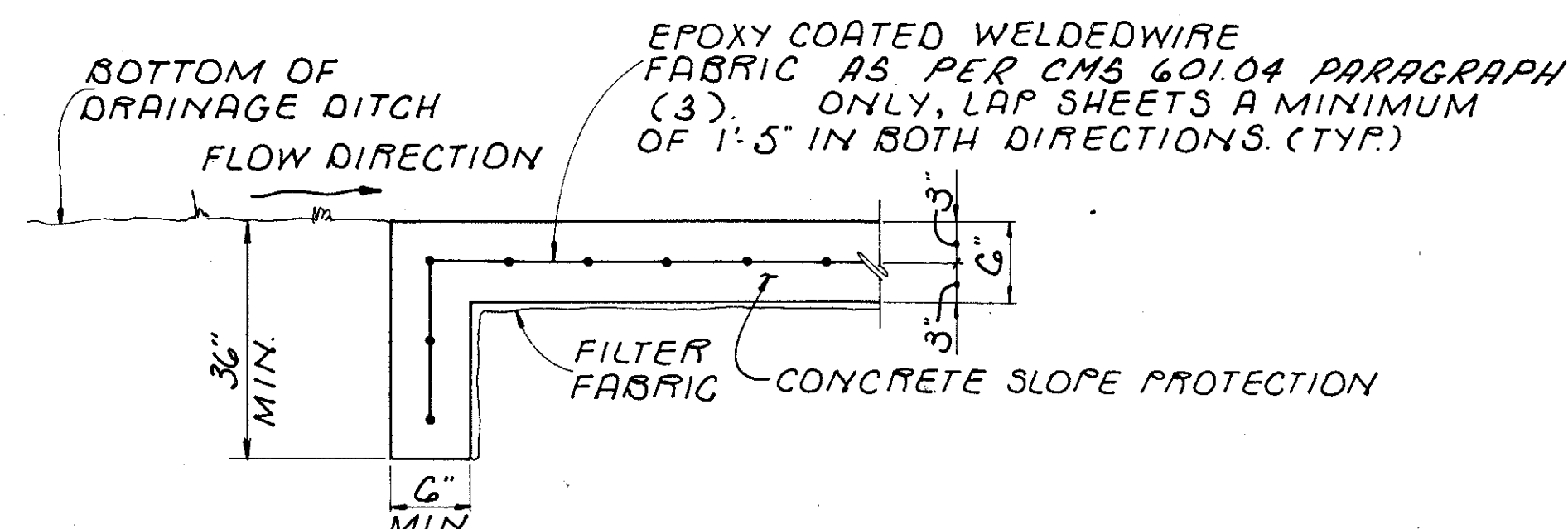
POST SECTION PS-1 AND BASE PLATE B.P-1 AS PER STD. DWG. VPF-1-90



FENCE DETAIL

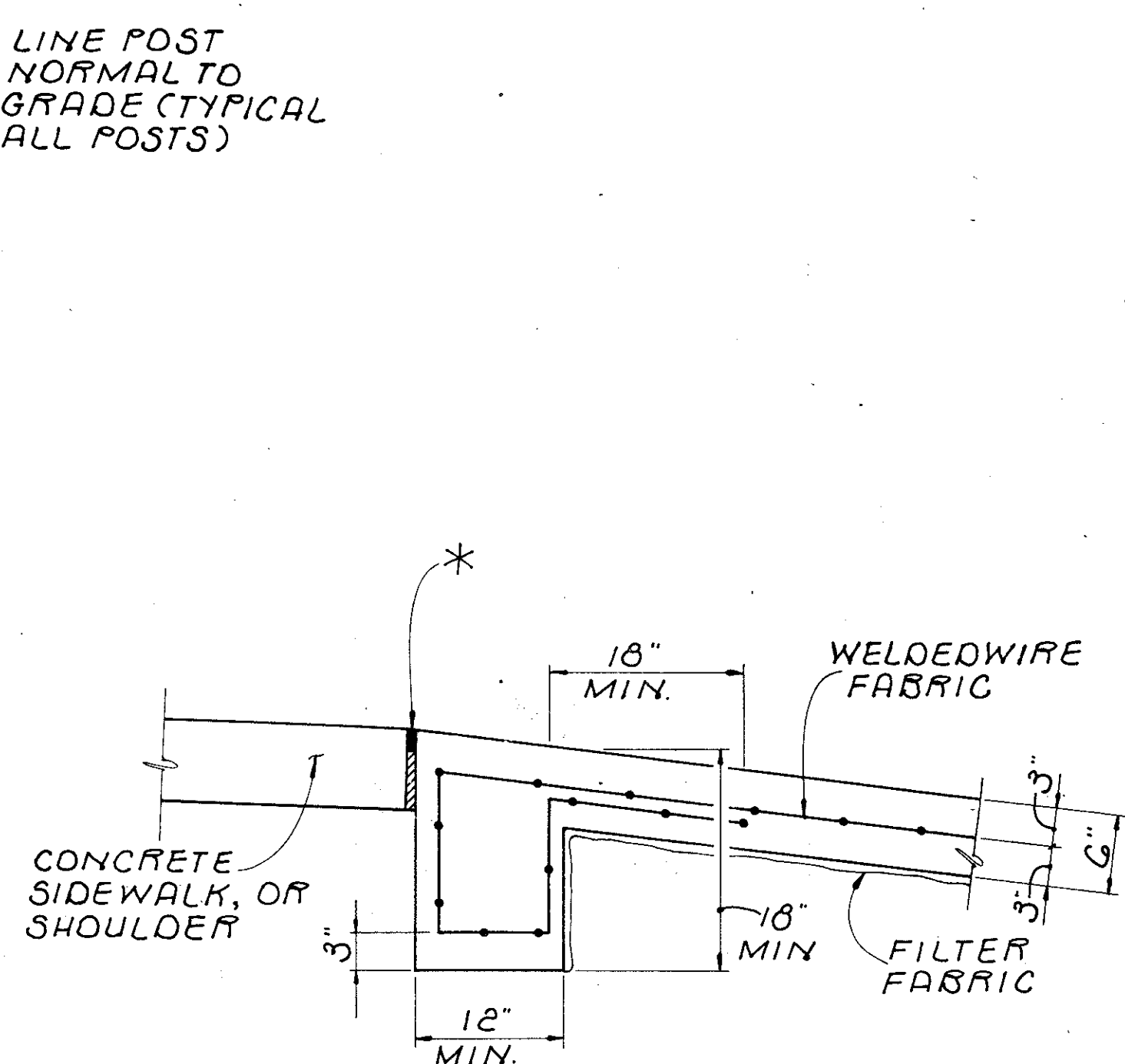
ITEM SPECIAL - VANDAL PROTECTION FENCE, 12' CURVED, COATED FABRIC

THIS ITEM INCLUDES THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE FENCING. ALL FENCE DETAILS SHALL BE IN ACCORDANCE WITH 710.03 OF C.M.S. AND STANDARD DRAWING VPF-1-90, SHEETS 1, 2, 4, 5 & 6, EXCEPT AS NOTED OR SHOWN OTHERWISE HEREIN. THE FABRIC AND RAILS SHALL BE FREE TO EXPAND OR CONTRACT ACROSS BRIDGE EXPANSION JOINTS. MATERIALS AND WORKMANSHIP SHALL MEET THE REQUIREMENTS OF ITEM 607 EXCEPT THAT ALUMINUM ALLOY POSTS AND BASE PLATES SHALL NOT BE USED. THE FENCE FABRIC SHALL BE GRAY POLYVINYL CHLORIDE CLASS 2B.

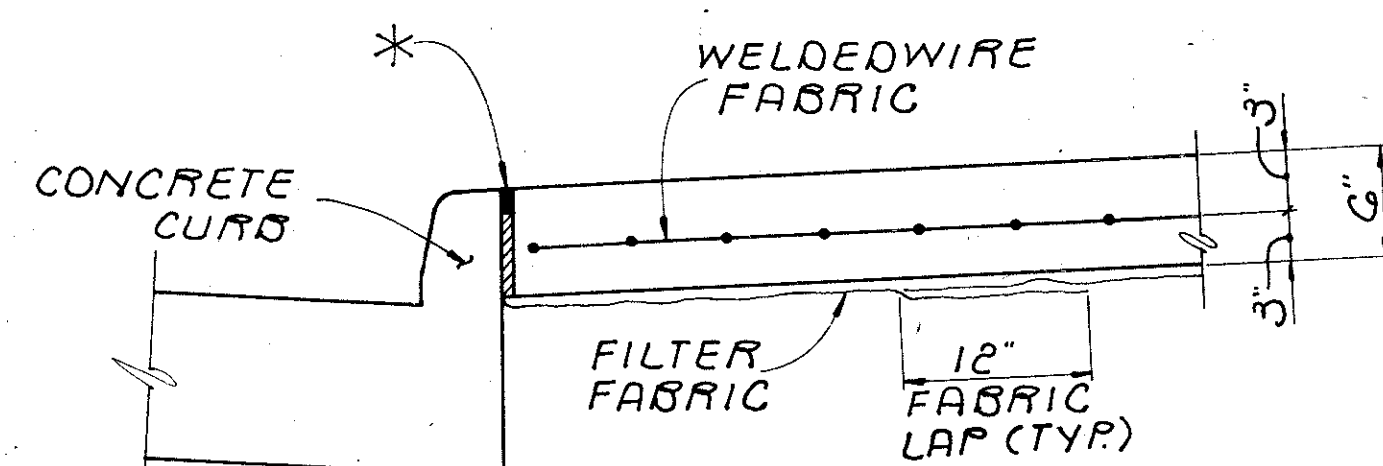


TOE WALL DETAIL

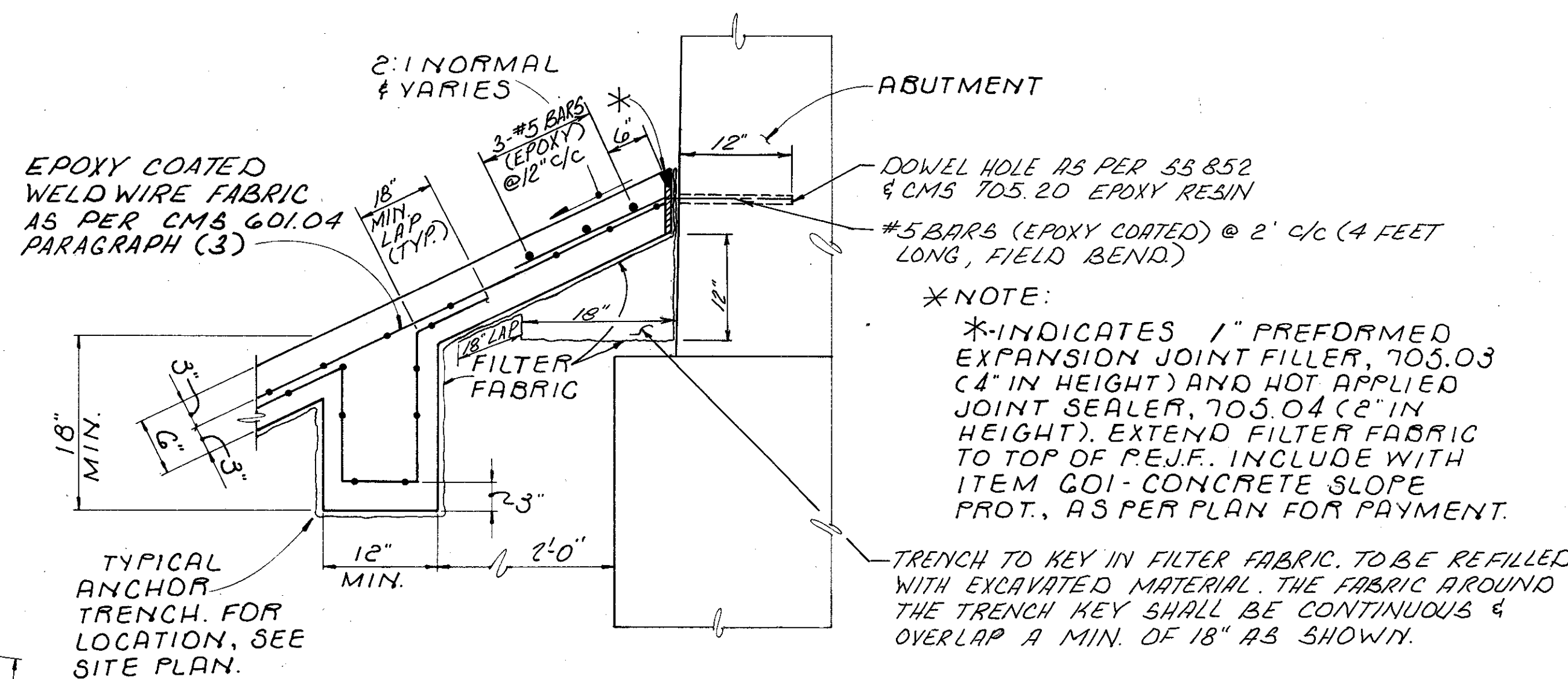
LOCATED ALONG UPSTREAM EDGE OF CONCRETE SLOPE PROTECTION IN DITCH AREA. SEE SITE PLAN FOR LENGTH.



CONC. SLOPE PROTECTION TERMINATION DETAIL



CONC. SLOPE PROTECTION TERMINATION DETAIL



DETAIL AT ABUTMENTS

*NOTE:
 *INDICATES 1" PREFORMED EXPANSION JOINT FILLER, 703.03 (4" IN HEIGHT) AND HOT APPLIED JOINT SEALER, 703.04 (2" IN HEIGHT). EXTEND FILTER FABRIC TO TOP OF PEJF. INCLUDE WITH ITEM 601 - CONCRETE SLOPE PROT., AS PER PLAN FOR PAYMENT.

TRENCH TO KEY IN FILTER FABRIC. TO BE REFILLED WITH EXCAVATED MATERIAL. THE FABRIC AROUND THE TRENCH KEY SHALL BE CONTINUOUS & OVERLAP A MIN. OF 18" AS SHOWN.

ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN

THIS ITEM INCLUDES THE FURNISHING OF ALL MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETELY INSTALL THE CONCRETE SLOPE PROTECTION AS SHOWN IN THE PLANS INCLUDING 4" DIA. P.V.C. PIPE EXTENDED THROUGH ABUTMENT WEEPHOLES AND SHALL BE INCLUDED IN THE UNIT PRICE BID PER SQUARE YARD FOR ITEM 601 - CONCRETE SLOPE PROTECTION, AS PER PLAN UNLESS SPECIFICALLY PROVIDED FOR ELSEWHERE IN THE PLAN.

SLOPE PROTECTION SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH ITEM 203.

IN LIEU OF THE PROVISION 601.02, THE FILTER FABRIC SHALL CONFORM TO 712.09, TYPE "B".

THE DEPRESSED GROOVES AS PROVIDED FOR UNDER 601.06 SHALL BE FILLED TO WITHIN 1/8" OF THE TOP OF THE GROOVE WITH A LIGHT GREY OR CLEAR SEALANT THAT IS COMMERCIALY AVAILABLE FOR THE INTENDED PURPOSE. THE GROOVES SHALL BE CLEANED PRIOR TO FILLING AND SHALL NOT BE OVERFILLED.

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 CONSULTING ENGINEERS - CLEVELAND, OHIO 44131
MISCELLANEOUS DETAILS
JENNINGS FREEWAY
 BRIDGE NO.'S
 CUY-176-1020 & 1065
 CUY-480-1557 & 1559

DESIGNED	DRAWN	CHECKED	REVIEWED	DATE	REVISED
M.J.L.	T.E.S.	T.A.S.	A.J.M.	8/93	

15 1210 282 302 301-071 100 280 709