

STATE OF OHIO  
DEPARTMENT OF TRANSPORTATION

NH-20(31)

WHERE THE FEDERAL FUNDING "IR" AND "F" APPEAR IN THESE PLANS SHALL BE CONSIDERED TO READ NH-20(31).

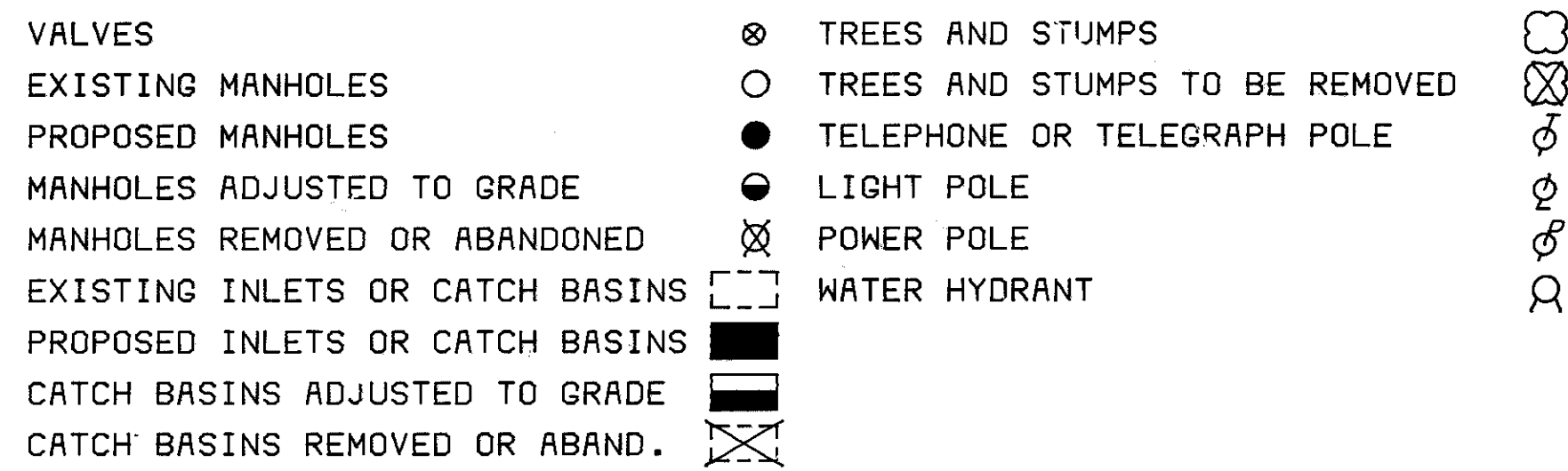
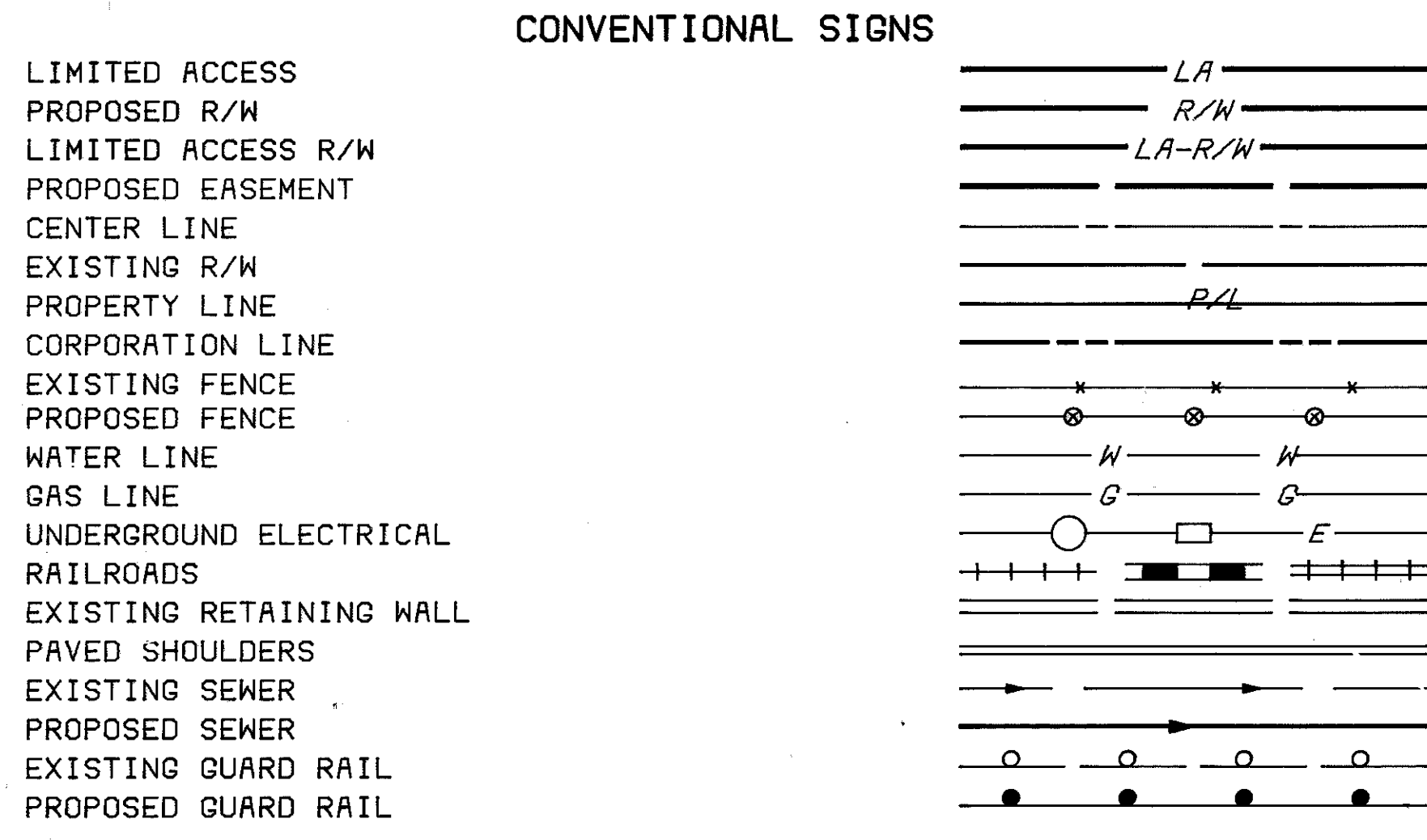
CALC. BY	FRANKLIN COUNTY	OHIO
DATE	FRA-670-125 (A-5)	FHWA REGION 5
CHKD. BY		
DATE		

NOTE: PROJECT DESIGNATION FRA-670/315-1.25/0.00 A-5 OR FRA-670-1.25 (A-5) SHALL BE CONSIDERED TO READ FRA-315-0.93.

**FRA-315-0.93**

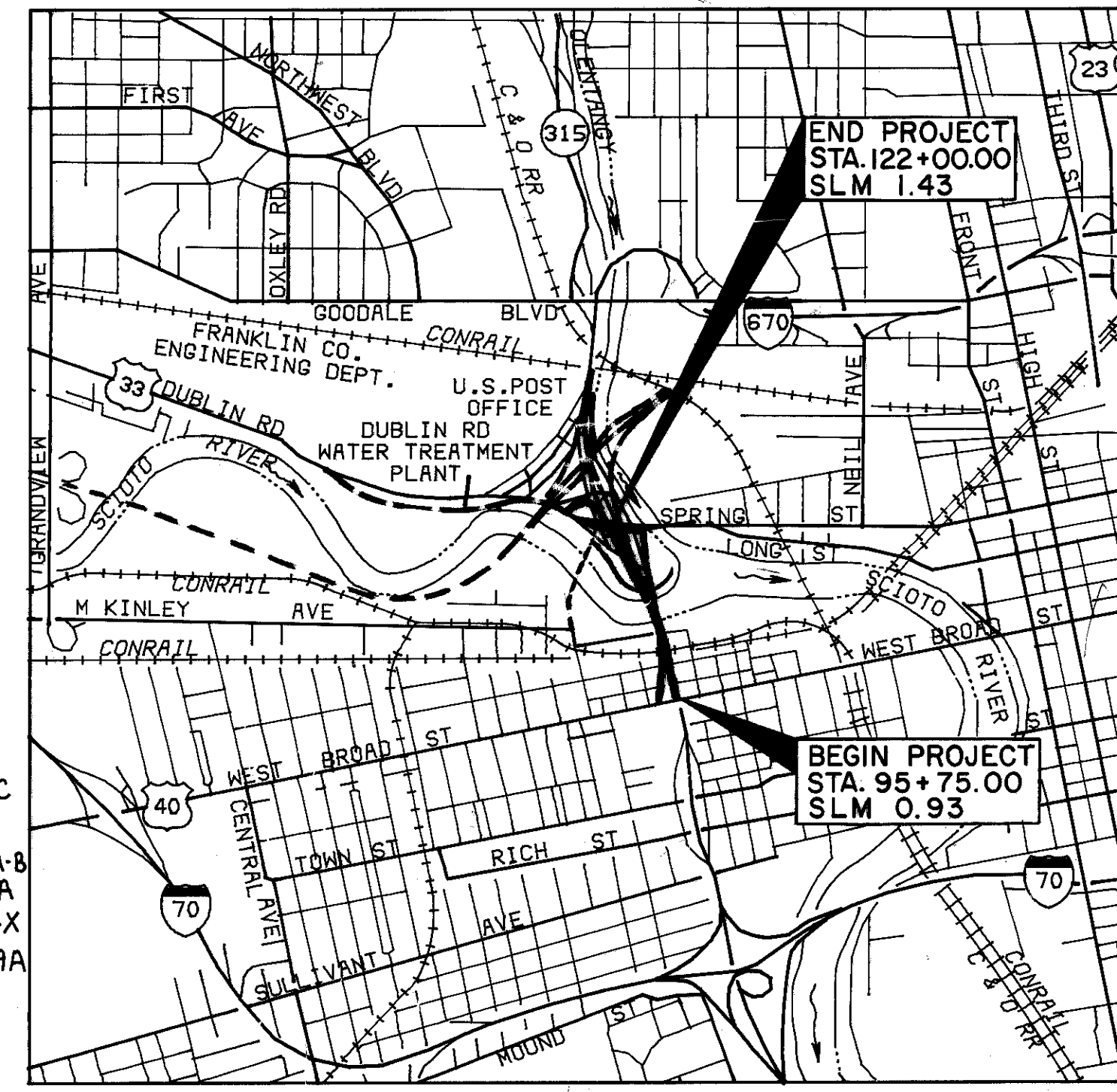
RECONSTRUCTION OF EXISTING SEPARATED CROSSING WITH THE CONSOLIDATED RAIL CORPORATION

CITY OF COLUMBUS  
FRANKLIN COUNTY  
SPRING/SANDUSKY INTERCHANGE

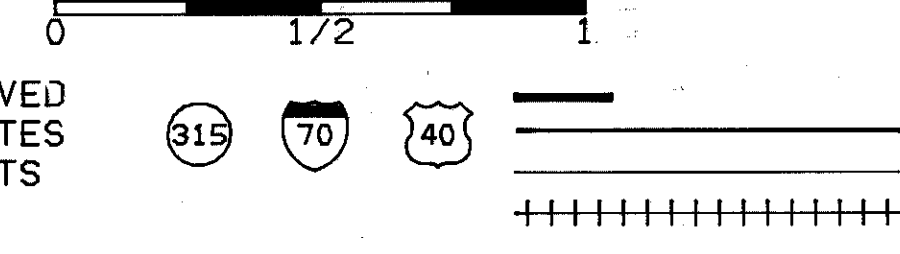


INDEX OF SHEETS

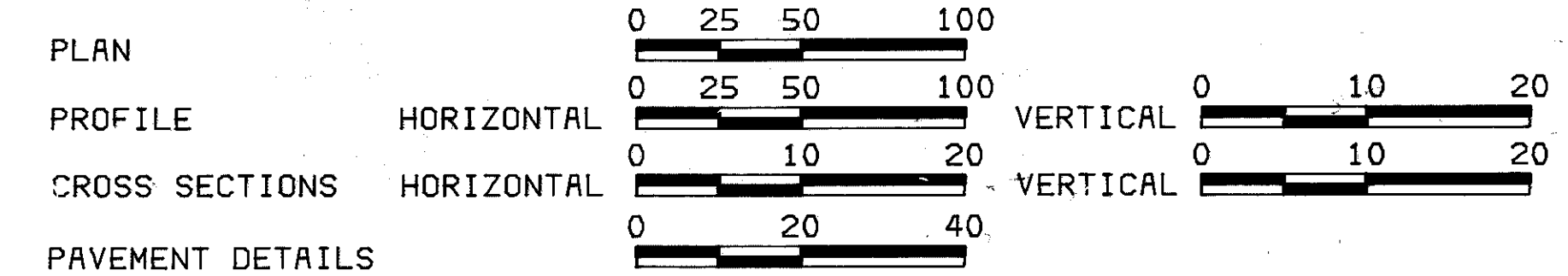
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SCALE IN MILES



SCALES



STANDARD CONSTRUCTION DRAWINGS

BP-1.1	2-21-92	F-1.1M	4-8-97	GR-4.3	2-21-92	MC-9.2	5-6-91	HL-20.14	5-01-87	HL-60.11	5-01-87
BP-2.1	10-28-94	F-3.2M	4-8-97	GR-4.4	2-21-92	MC-9.3	10-30-92	HL-20.15	5-01-87	HL-60.12	5-01-87
BP-2.2	10-28-94	F-3.4M	4-8-97	GR-5.1	10-30-92	MC-9.4	10-30-92	HL-20.21	5-01-87	HL-60.21	5-01-87
BP-2.3	2-21-92	F-5	5-1-76	GR-5.2	10-30-92	MC-10	5-01-76	HL-20.31	5-01-87	HL-60.31	5-01-87
BP-3.1	2-21-92	GR-1.1	5-6-91	GR-5.3	10-30-92	MC-11	8-01-78	HL-30.11	5-01-87	TC-7.65	3-01-79
BP-5.1	10-28-94	GR-1.2	10-30-92	GR-8.1	1-31-94	MH-1	12-18-84	HL-30.21	5-01-87	TC-12.30	1-20-84
BP-6.1	2-21-92	GR-1.3	2-21-92	HW-1	6-1-65	MH-3	12-18-84	HL-30.22	5-01-87	TC-15.115	3-01-79
BP-7.1	10-30-92	GR-2.1	5-6-91	HW-4A	4-1-80	HL-10.11	5-01-87	HL-30.31	5-01-87	TC-16.20	1-20-84
BP-8.1	10-28-94	GR-2.2	10-30-92	HW-4B	4-1-80	HL-10.12	5-01-87	HL-30.32	5-01-87		
AS-1.81	9-15-94	GR-2.3	5-6-91	1-3A & B	4-1-80	HL-10.13	5-01-87	HL-30.33	5-01-87	TC-21.10	9-01-92
CB-2-2A & B	5-1-79	GR-3.1	5-6-91	MC-1	6-13-69	HL-10.31	5-01-87	HL-40.10	5-01-87	TC-21.20	9-01-92
CB-3A	5-1-79	GR-3.2	5-6-91	MC-4	7-26-76	HL-20.11	5-01-87	HL-50.11	5-01-87		
CB-8	11-10-83	GR-4.2	5-6-91	MC-7	10-15-76	HL-20.13	5-01-87	HL-50.21	5-01-87	TC-21.40	9-01-92

LINE DATA

BEGIN PROJECT	STA. 95+75.00
END PROJECT	STA. 122+00.00
TOTAL LENGTH OF PROJECT	2625.00 L.F. OR 0.497 MILES
BEGIN WORK	STA. 95+75.00
END WORK	STA. 124+00.00
SUBTOTAL WORK	2825.00 L.F.
BEGIN WORK RICKENBACKER DR. STA.	0+57.00
END WORK RICKENBACKER DR. STA.	14+75.00
SUBTOTAL WORK	1418.00 L.F.
BEGIN WORK TEMPORARY R.R. STA.	46+69.54
END WORK TEMPORARY R.R. STA.	80+00.00
SUBTOTAL WORK	3330.46
TOTAL LENGTH OF WORK	7573.46 L.F. OR 1.431 MILES

REGISTERED PROFESSIONAL ENGINEER  
**William E. Bley** 5-30-97

**UNDERGROUND UTILITIES**  
2 WORKING DAYS  
**BEFORE YOU DIG**  
CALL 800-362-2764 (TOLL FREE)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY

PLANS PREPARED BY  
**STILSON & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
6121 HUNTLEY ROAD  
COLUMBUS, OHIO 43229

SEE SHEET NO.2 FOR DESIGN DESIGNATION

PROJECT FRA-315-0.93

DATE OF LETTING \_\_\_\_\_ CONTRACT NO. \_\_\_\_\_

**LIMITED ACCESS**  
THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THRU TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR OF HIGHWAYS, IN ACCORDANCE WITH THE PROVISIONS OF SEC. 5511.02 OF THE REVISED CODE OF OHIO.

**1995 SPECIFICATIONS**  
THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL, SHALL GOVERN THIS IMPROVEMENT.  
THE RIGHT-OF-WAY FOR THIS IMPROVEMENT SHALL BE PROVIDED BY THE STATE OF OHIO.  
I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL REQUIRE THE CLOSING OF THE HIGHWAY TO TRAFFIC, EXCEPT AS NOTED ON SHEET 15 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS IS SET FORTH ON THE PLANS AND ESTIMATES.

FOR THE CITY OF COLUMBUS

APPROVED Robert C. Smith / mm  
DATE 8/21/97 CITY ENGINEER

APPROVED Jason A. Stein  
DATE 8-27-97 STATE / FEDERAL PROJECTS ENGINEER

APPROVED Theresa M. Smith  
DATE 8/19/97 DIRECTOR OF PUBLIC SERVICE

APPROVED James R. Joyce  
DATE 9/3/97 DIRECTOR OF PUBLIC UTILITIES

FOR THE STATE OF OHIO

APPROVED Jack R. Magalhães / wc  
DATE 1/22/98 DISTRICT DEPUTY DIRECTOR

APPROVED Gregory J. King  
DATE 2-17-98 DIRECTOR DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATIONS

802	3-23-95
810	3-23-95
820	6-14-95
816	3-3-95
863	9-9-97
931	7-17-95
942	6-14-95
944	3-23-95

U.S. ARMY CORPS OF ENGINEERS  
SPECI  
FOR S.R. 315  
GATE CLOSURE  
WEST COLUMBUS  
OHIO  
DATE: MAY 1997  
SPECIAL PROVISIONS  
MELP SAG AND TENSION  
CALCS.: 10-24-97

PLANS CERTIFIED BY  
NAME: Michael A. Crotolo / ms  
DISTRICT 6  
OHIO DEPT. OF TRANSPORTATION

STANDARD CONSTRUCTION DRAWINGS

TC-22.10	9-01-92		TC-52.10	4-03-79	
TC-22.20	9-01-92		TC-52.20	4-03-79	
TC-31.21	9-01-92	TC-41.10	8-29-84	TC-72.20	2-26-82
TC-32.10	9-01-92	TC-41.20	6-21-94	TC-61.10	4-5-82
TC-32.11	9-01-92				
TC-35.10	8-29-84			TC-65.10	7-07-95
MT-95.32	8-25-89	TC-41.50	6-21-94	TC-65.11	7-07-95
MT-95.30	10-10-88	TC-42.10	8-19-77		
MT-95.31	10-10-88	TC-42.20	3-26-79	BR-1	12-15-74
				65D-76	2-12-97
MT-99.10	11-14-86	TC-51.11	9-30-94	VPE-1-92	3-24-92

DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION

APPROVED: \_\_\_\_\_

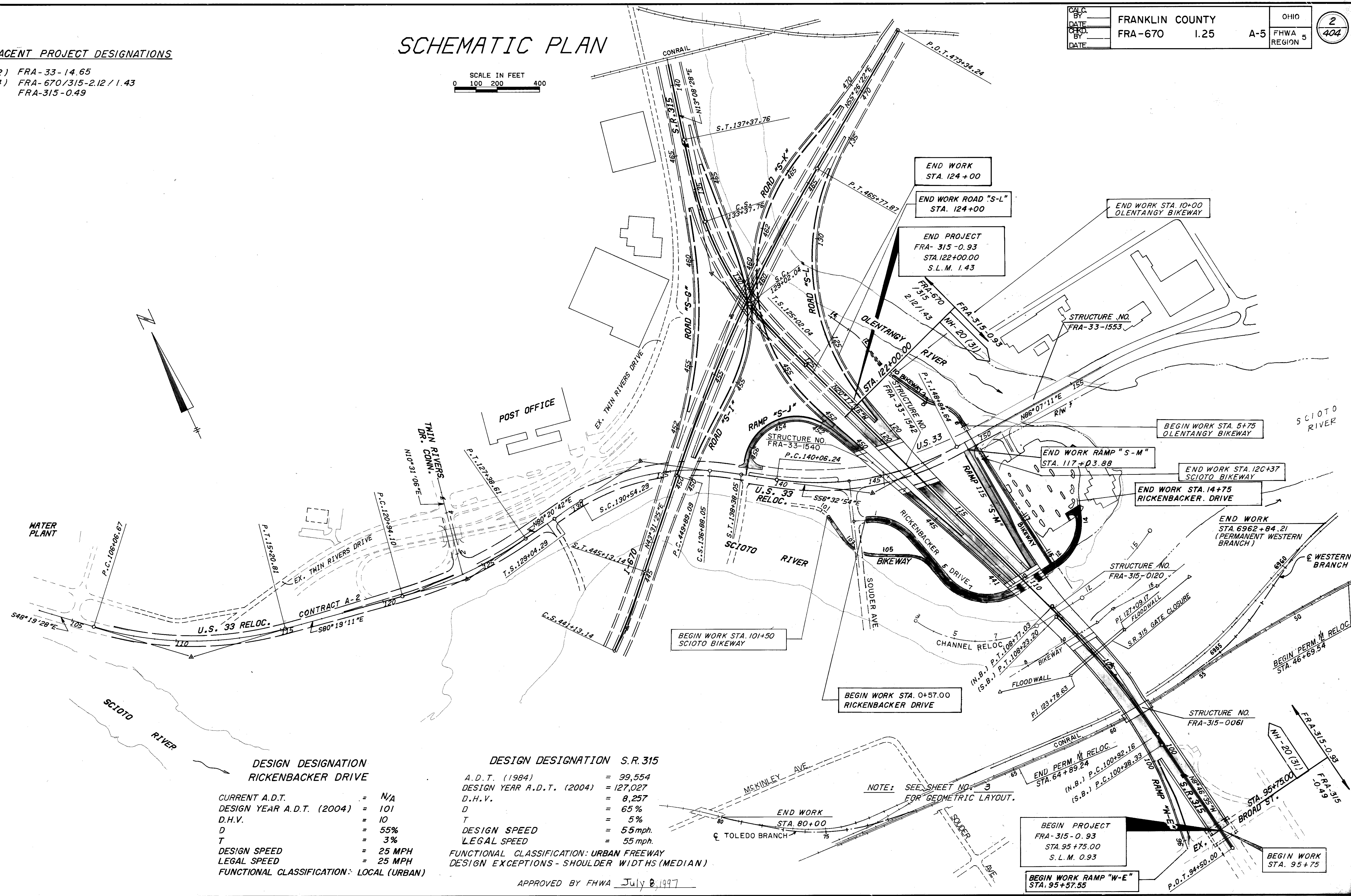
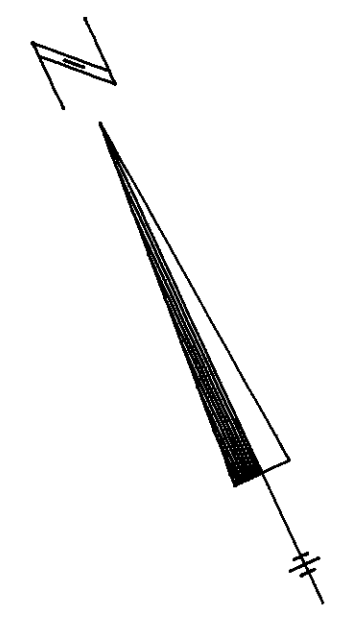
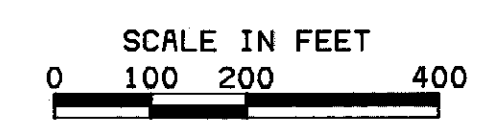
DIVISION ADMINISTRATOR \_\_\_\_\_ DATE \_\_\_\_\_

FRA-315-0.93  
980556  
404PGS  
08/05/98  
DIST. 06  
PID# 4668  
HS41017A

# SCHEMATIC PLAN

## ADJACENT PROJECT DESIGNATIONS

- (A-2) FRA-33-14.65
- (A-4) FRA-670/315-2.12/1.43
- (D) FRA-315-0.49



**DESIGN DESIGNATION RICKENBACKER DRIVE**

CURRENT A.D.T.	=	N/A
DESIGN YEAR A.D.T. (2004)	=	101
D.H.V.	=	10
D	=	55%
T	=	3%
DESIGN SPEED	=	25 MPH
LEGAL SPEED	=	25 MPH
FUNCTIONAL CLASSIFICATION:	=	LOCAL (URBAN)

**DESIGN DESIGNATION S.R.315**

A.D.T. (1984)	=	99,554
DESIGN YEAR A.D.T. (2004)	=	127,027
D.H.V.	=	8,257
D	=	65%
T	=	5%
DESIGN SPEED	=	55 mph.
LEGAL SPEED	=	55 mph.
FUNCTIONAL CLASSIFICATION:	=	URBAN FREEWAY
DESIGN EXCEPTIONS - SHOULDER WIDTHS (MEDIAN)	=	

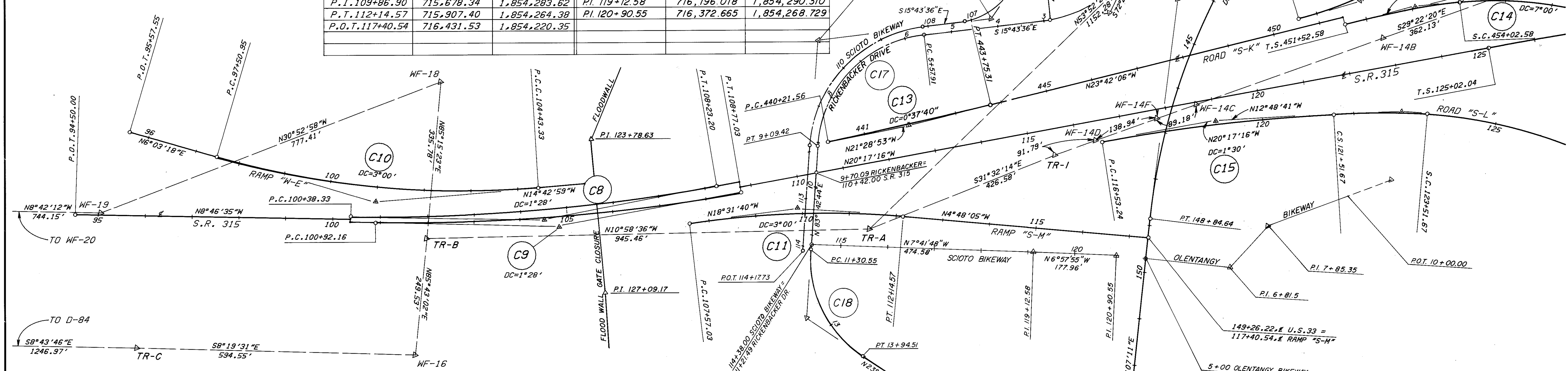
APPROVED BY FHWA July 8, 1997

NOTE: SEE SHEET NO. 3 FOR GEOMETRIC LAYOUT.



TRAVERSE POINT COORDINATES		
LOCATION	COORDINATES	
	N	E
WF-14	717,322.56	1,853,445.47
WF-14A	717,169.22	1,853,537.40
WF-14B	716,853.64	1,853,715.02
WF-14C	716,484.63	1,853,922.71
WF-14F	716,406.91	1,853,966.45
WF-14D	716,285.83	1,854,034.60
TR-1	716,205.84	1,854,079.62
TR-A	715,842.27	1,854,302.74
WF-15A	716,521.62	1,853,372.03
WF-29	716,815.47	1,852,984.05
TR-B	714,914.10	1,854,482.77
WF-16	714,932.74	1,854,731.60
WF-18	714,886.33	1,854,148.14
WF-19	714,219.14	1,854,547.17
TR-C	714,334.46	1,854,817.69

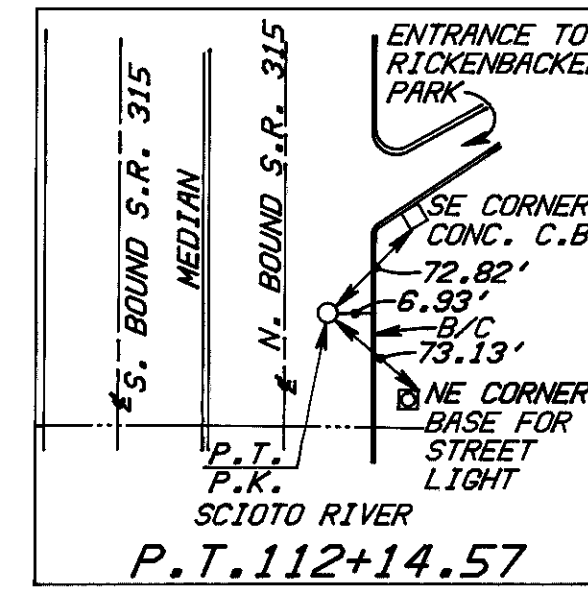
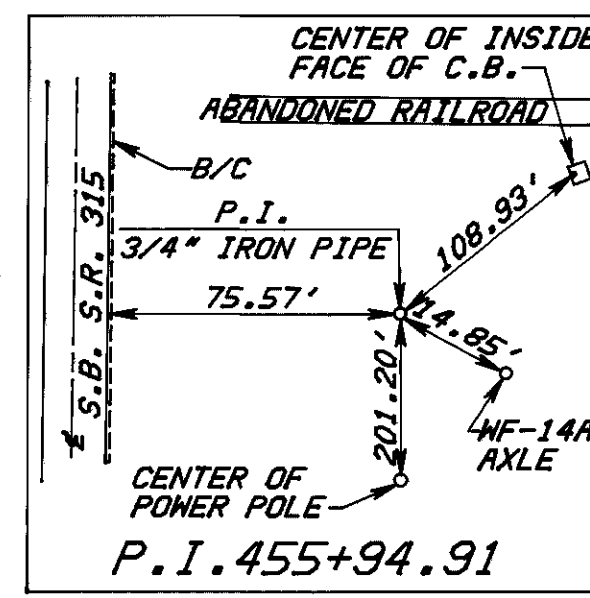
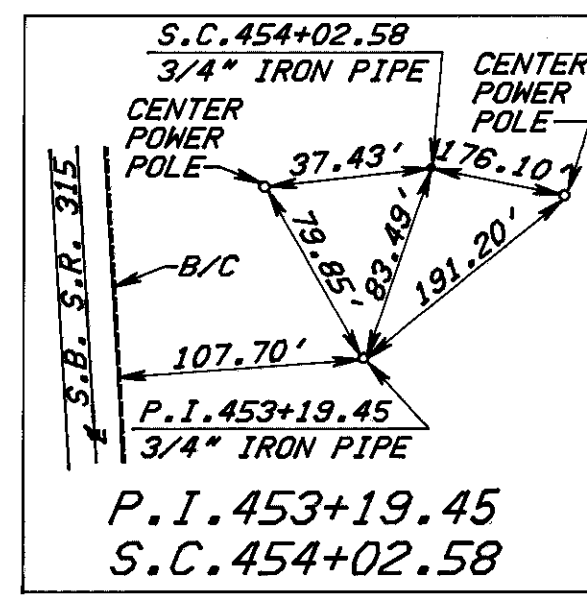
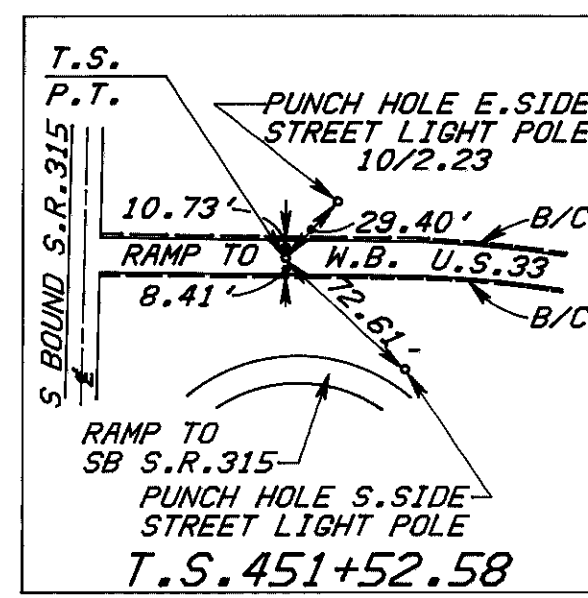
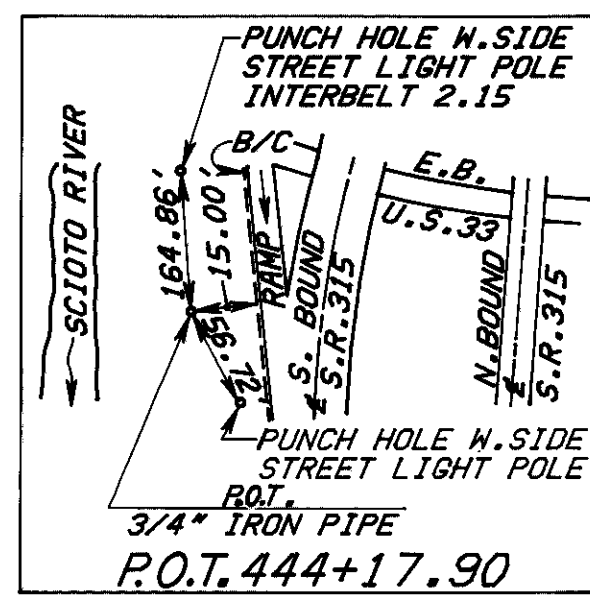
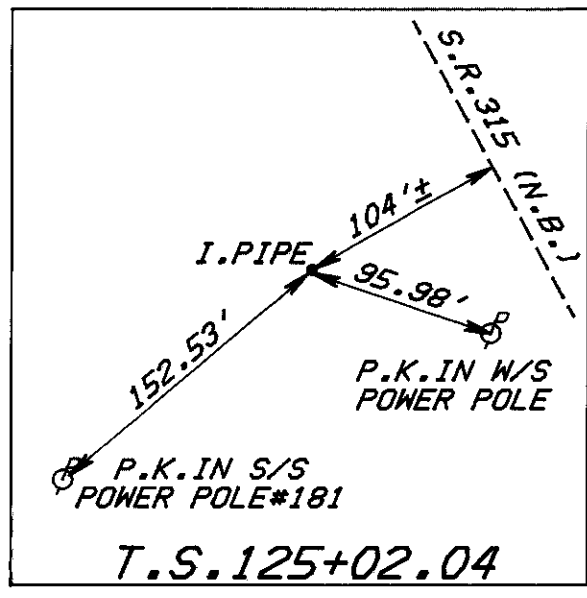
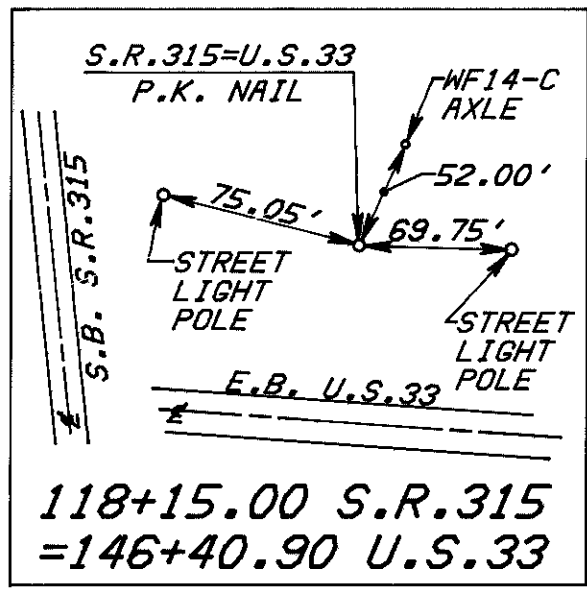
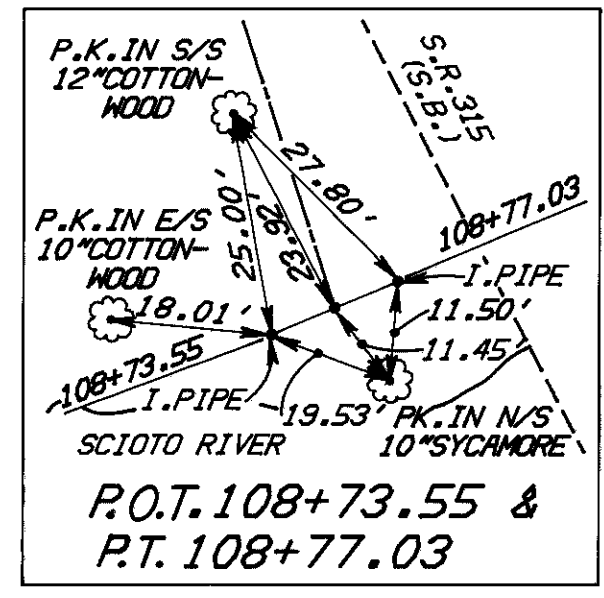
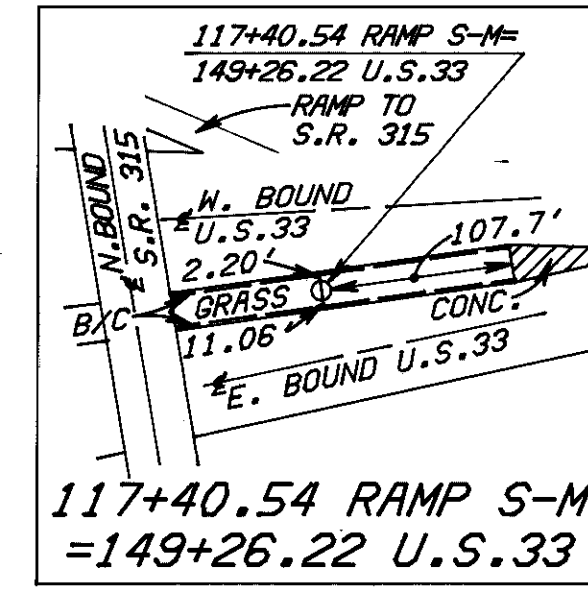
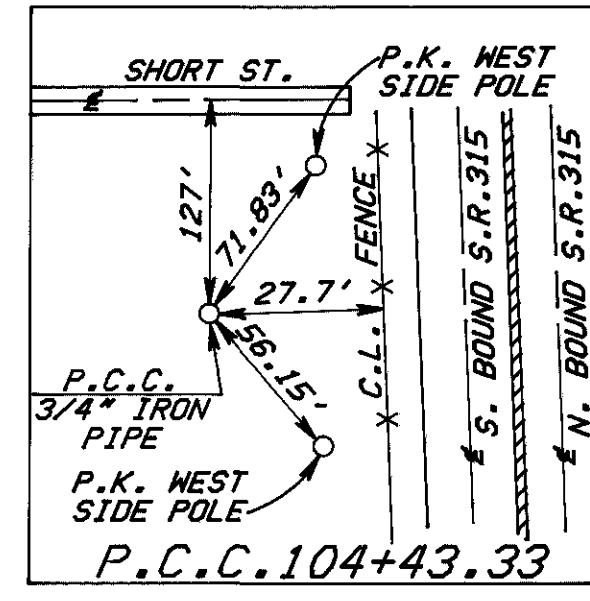
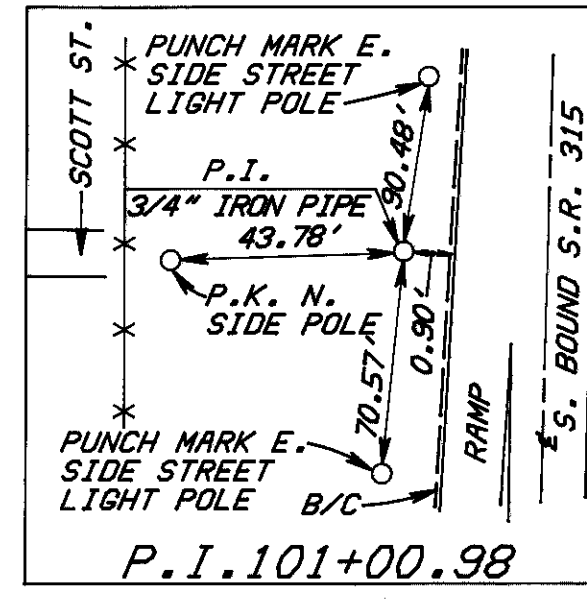
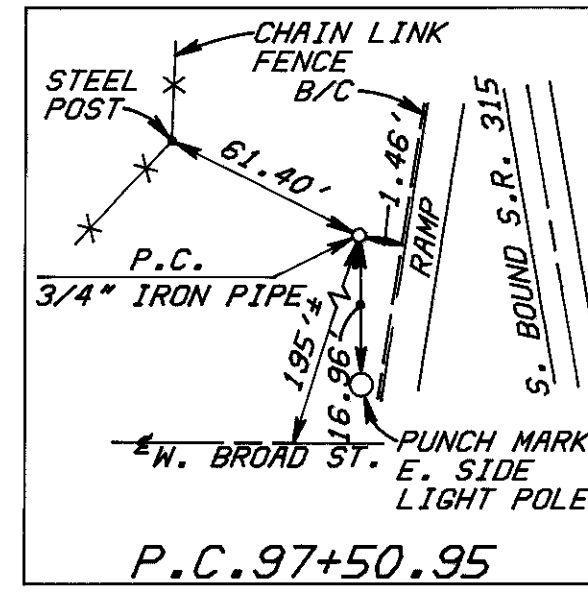
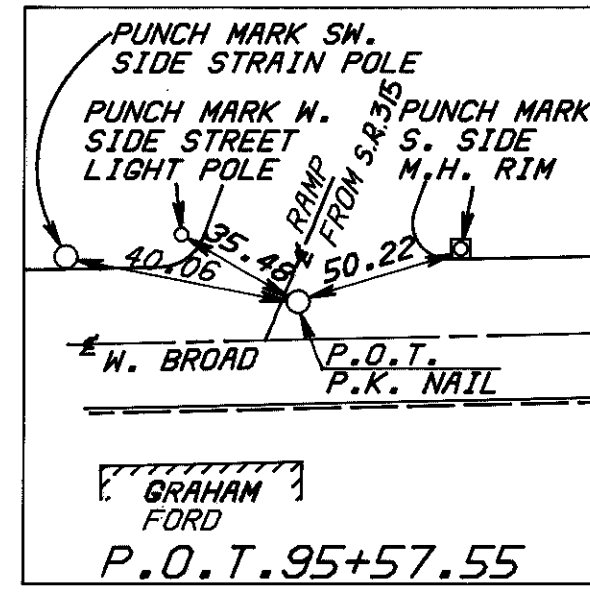
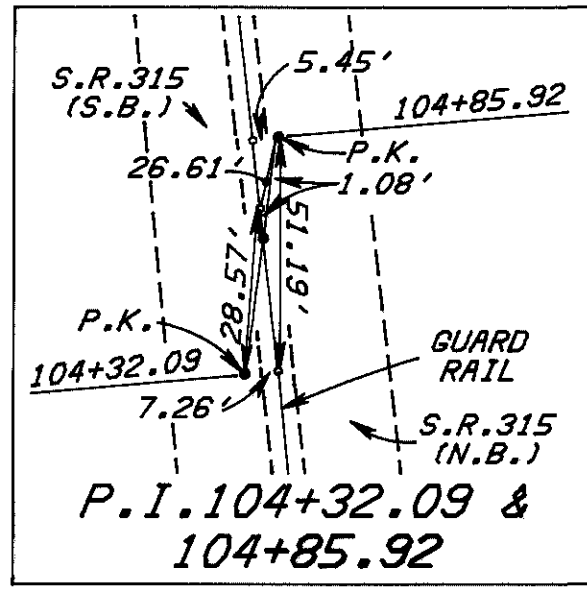
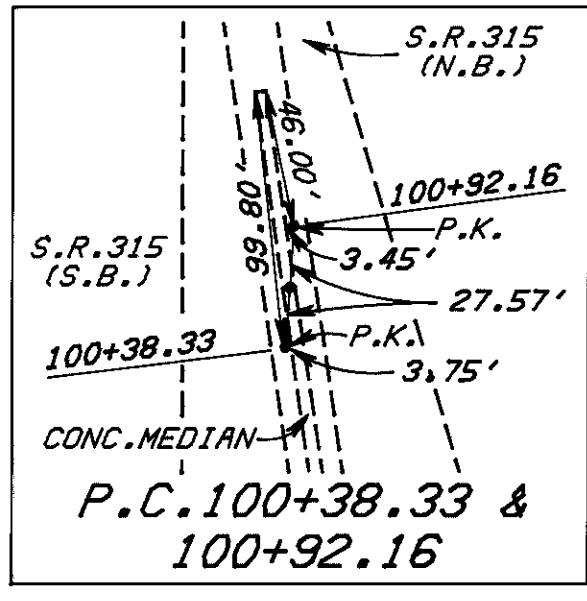
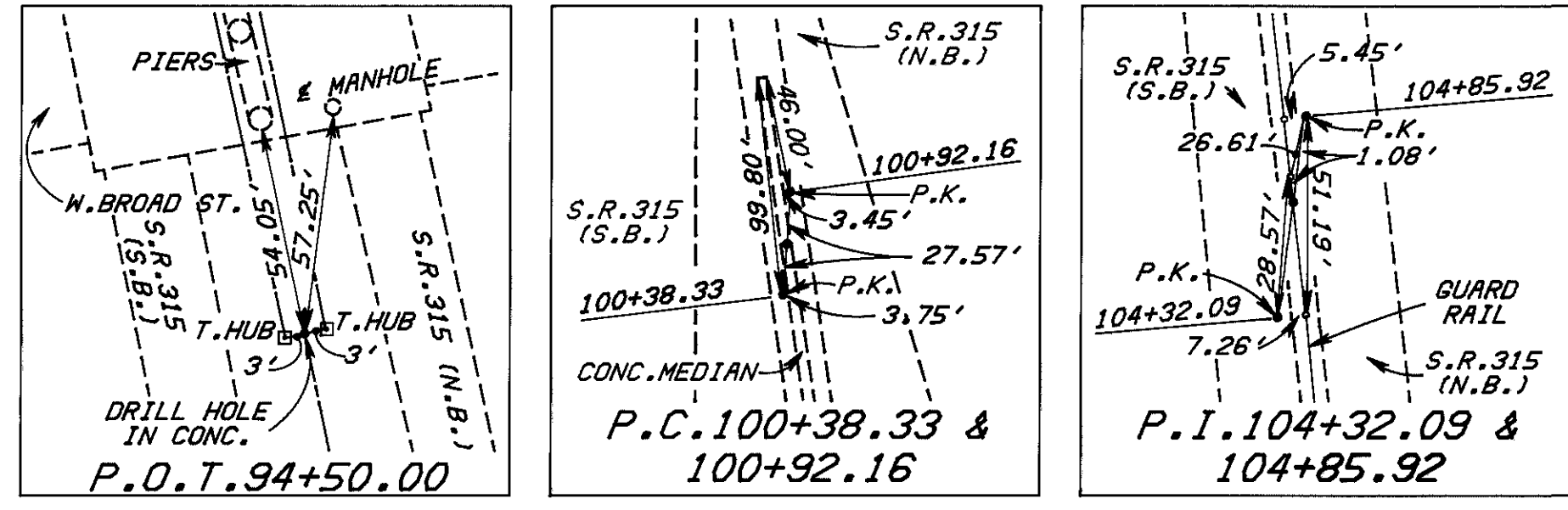
CONTROL POINT COORDINATES					
LOCATION	COORDINATES		LOCATION	COORDINATES	
	N	E		N	E
S.R.315 (N.B.A.S.B.)			RAMP S-J		
P.O.T. 94+50.00	714,164.27	1,854,559.94	T.S. 450+59.08	716,667.15	1,853,705.29
P.O.T. 100+38.33	714,745.72	1,854,470.17	P.I. 451+93.77	716,789.09	1,853,648.09
S.R.315 (S.B.)			S.C. 452+59.08	716,832.61	1,853,595.97
P.C. 100+38.33	714,744.80	1,854,464.24	P.I. 455+15.47	716,996.96	1,853,339.18
P.I. 104+32.09	715,133.95	1,854,404.16	P.T. 456+44.74	716,783.04	1,853,257.84
P.T. 108+23.20	715,503.28	1,854,267.63	P.O.T. 457+08.86	716,729.54	1,853,222.50
P.O.T. 108+73.55	715,550.50	1,854,250.17			
S.R.315 (N.B.)			ROAD S-L		
P.C. 116+53.24	716,298.84	1,854,035.91	SR-315 GATE CLOSURE		
P.I. 119+02.81	716,532.93	1,853,949.37	P.I. 123+78.63	715,219.862	1,854,213.219
C.S. 121+51.67	716,776.29	1,853,894.03	P.I. 127+09.17	715,311.967	1,854,530.674
P.I. 104+85.92	715,188.97	1,854,407.81			
P.T. 108+77.03	715,558.31	1,854,271.28			
S.C. 123+51.67	716,973.15	1,853,859.40			
S.R.315 (N.B.A.S.B.)			ROAD S-K		
P.C. 440+21.56	715,722.51	1,854,134.35			
P.I. 441+98.46	715,887.12	1,854,069.57			
P.T. 443+75.31	716,049.10	1,853,998.46			
P.O.T. 451+52.58	716,760.81	1,853,686.02			
RAMP W-E			SCIOTO BIKEWAY		
P.O.T. 95+57.55	714,250.00	1,854,367.00	P.C. 107+57.03	715,460.38	1,854,356.66
P.C. 97+50.95	714,442.32	1,854,387.40	P.O.T. 114+38.00	715,725.710	1,854,353.870
P.I. 101+00.98	714,790.40	1,854,424.32	P.I. 119+12.58	716,196.018	1,854,290.310
P.C.C. 104+43.33	715,128.95	1,854,335.40	P.T. 120+90.55	716,372.665	1,854,268.729
RAMP S-M					
P.C. 107+57.03	715,460.38	1,854,356.66			
P.I. 109+86.90	715,678.34	1,854,283.62			
P.T. 112+14.57	715,907.40	1,854,264.38			
P.O.T. 117+40.54	716,431.53	1,854,220.35			



CURVE DATA												
	S.R.315 (S.B.)	S.R.315 (N.B.)	RAMP "W-E"	RAMP "S-M"	RAMP "S-J"	ROAD "S-K"		ROAD "S-L"		RICKENBACKER DRIVE		
	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	
P.I.	104+32.09	104+85.92	101+00.98	109+86.90	455+71.38	441+98.46	455+94.91	119+02.81	122+70.85	1+76.00	7+69.78	12+76.33
Δ	11°30'41"	11°30'41"	20°46'17"	13°43'35"	121°24'53"	2°13'13"	42°48'40"	7°28'35"	2°13'13"	56°44'17"	80°33'40"	60°29'41"
Dc	1°28'00"	1°28'00"	3°00'00"	3°00'00"	25°00'00"	0°37'40"	7°00'00"	1°30'00"	1°30'00"	22°55'06"	22°55'06"	22°55'06"
R	3906.53'	3906.53'	1909.86'	1909.86'	229.18'	9128.76'	818.51'	3819.72'	250.00'	250.00'	250.00'	250.00'
Lc	784.87'	784.87'	692.38'	457.54'	385.66'	353.75'	486.59'	498.43'	247.57'	351.51'	263.96'	263.96'
T	393.76'	393.76'	350.03'	229.87'	256.39'	176.90'	250.72'	249.57'	135.00'	211.87'	145.78'	145.78'
E	19.79'	19.79'	31.81'	13.78'		1.71'		8.14'	34.12'	77.70'	39.40'	39.40'
Ls					200.00'		250.00'		200.00'			
θs					25°00'00"		8°45'00"		7°00'00"			
L.T.					134.69'		166.87'		119.18'			
S.T.					67.90'		83.52'		81.07'			
Ts					512.30'		442.33'					
Se	.036	.036	.032	.032	.083	.0156	.083	.023				

LOCATION	COORDINATES	
	N	E
RICKENBACKER		
P.C. 0+41.00	716,313.112	1,853,636.875
P.I. 1+76.00	716,272.437	1,853,765.602
P.T. 2+88.57	716,142.492	1,853,802.200
P.C. 5+57.91	715,883.238	1,853,875.217
P.I. 7+69.78	715,679.302	1,853,932.654
P.T. 9+09.42	715,702.506	1,854,143.249
P.C. 11+30.55	715,726.725	1,854,363.049
P.I. 12+76.33	715,742.691	1,854,507.952
P.T. 13+94.51	715,876.665	1,854,565.422
SCIOTO BIKEWAY		
P.I. 101+02.82	716,428.500	1,853,483.000
P.I. 102+83.32	716,248.410	1,853,520.014
P.I. 104+22.15	716,133.282	1,853,599.036
P.I. 106+57.07	716,031.955	1,853,813.061
P.I. 110+37.07	715,658.099	1,853,918.335
P.O.T. 114+17.73	715,708.318	1,854,374.106

CENTERLINE CONTROLS



RAMP "W-E"

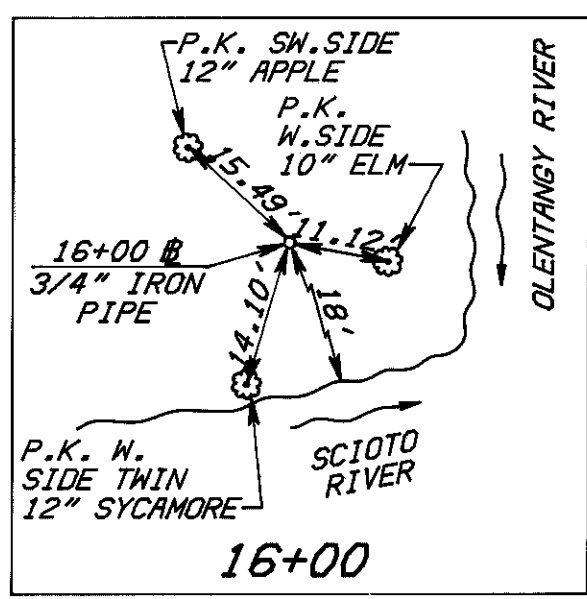
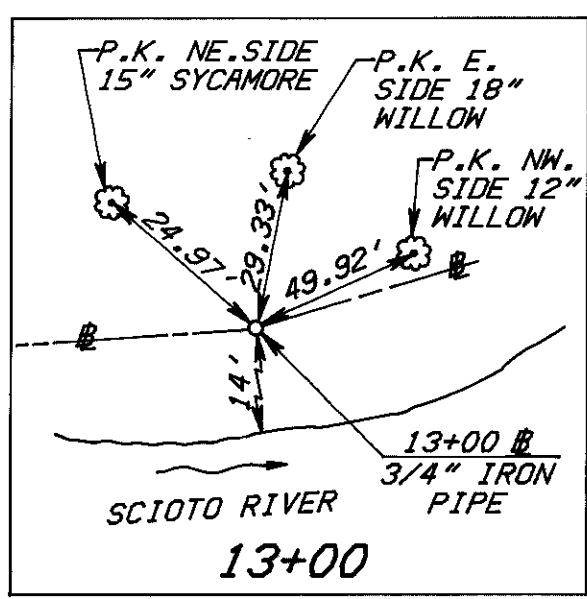
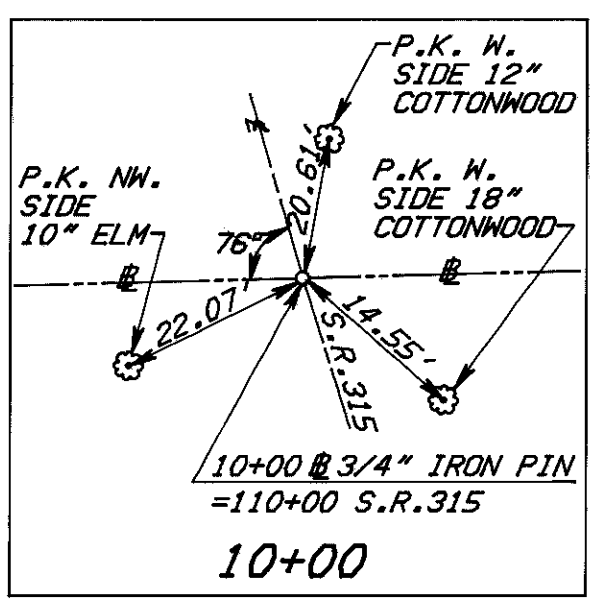
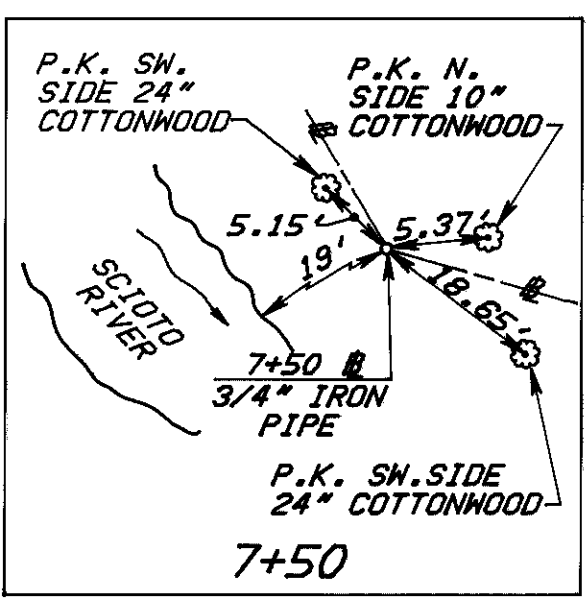
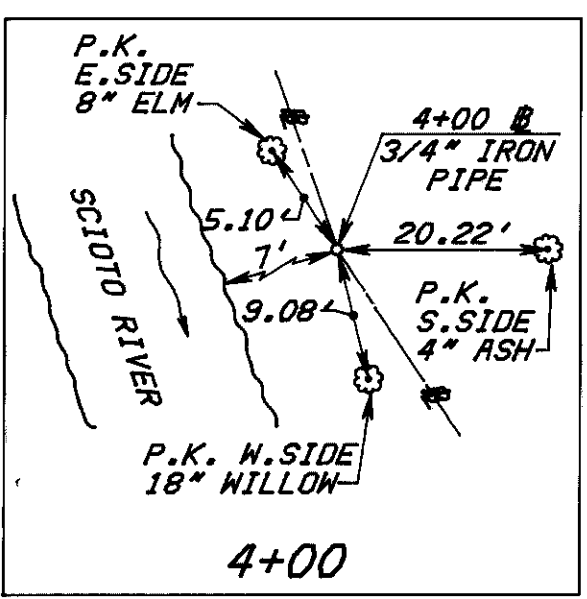
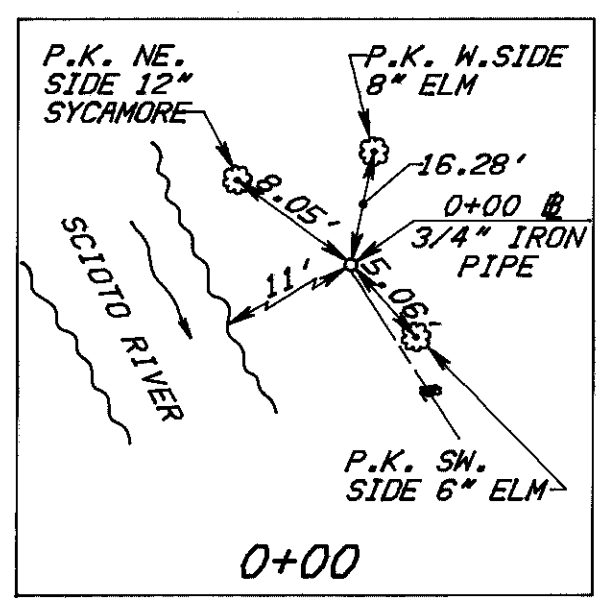
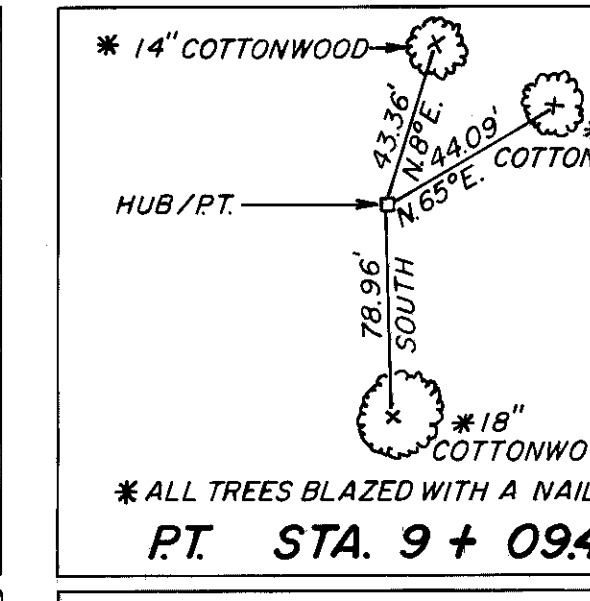
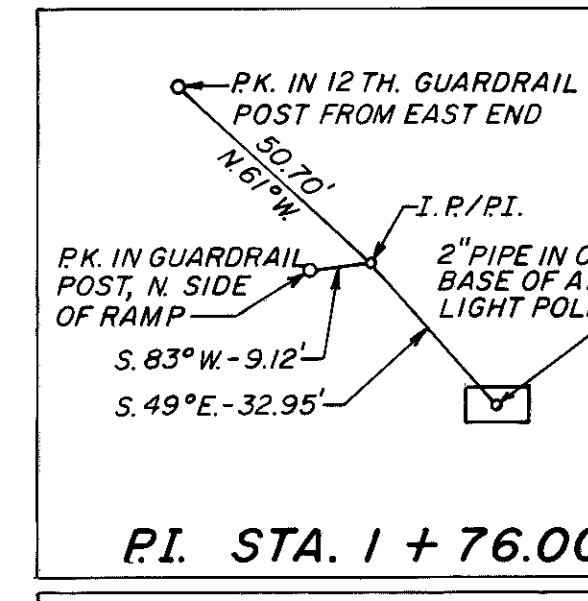
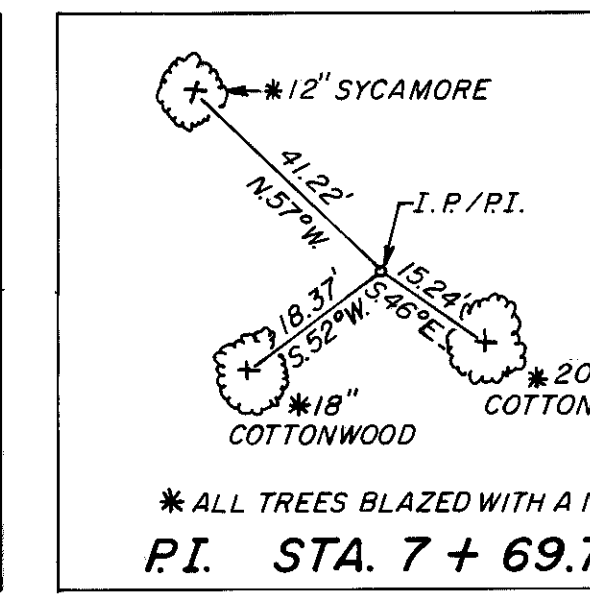
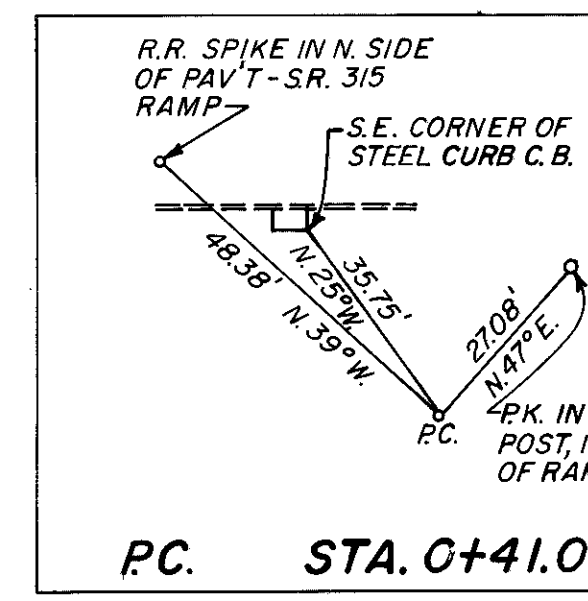
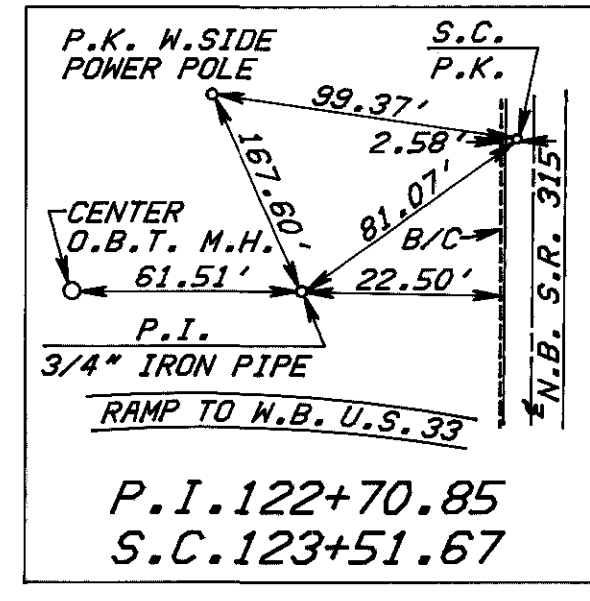
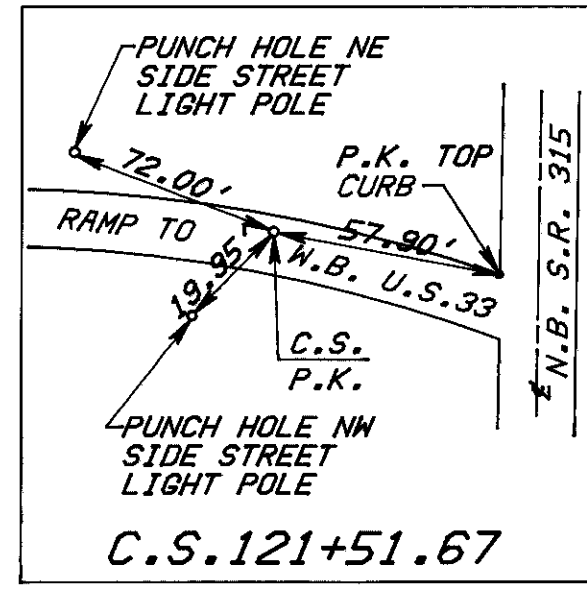
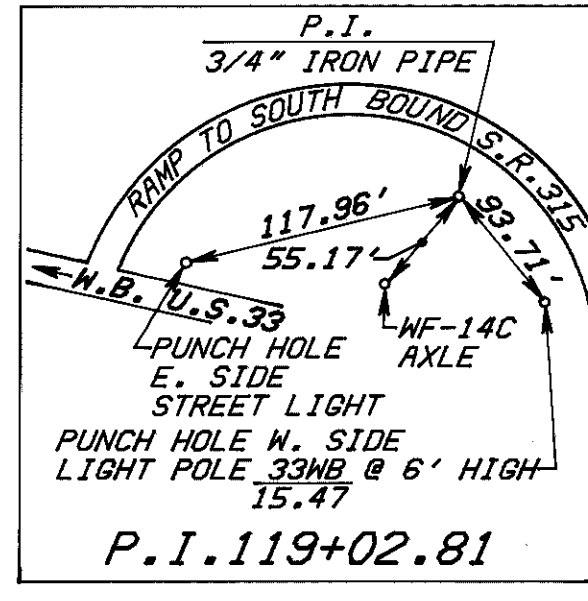
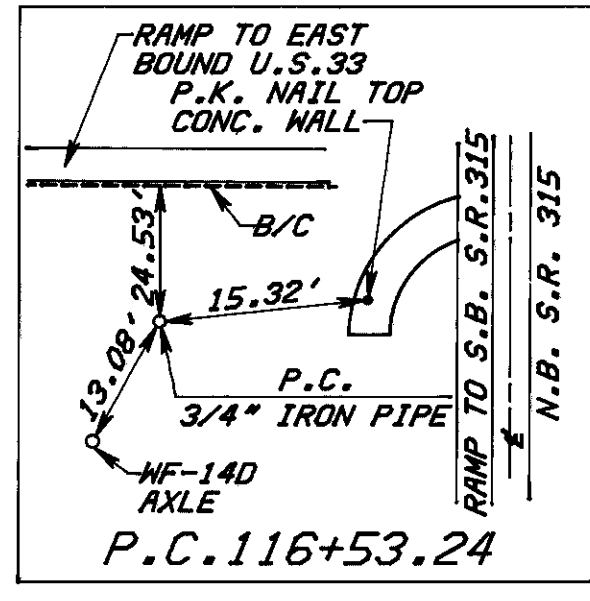
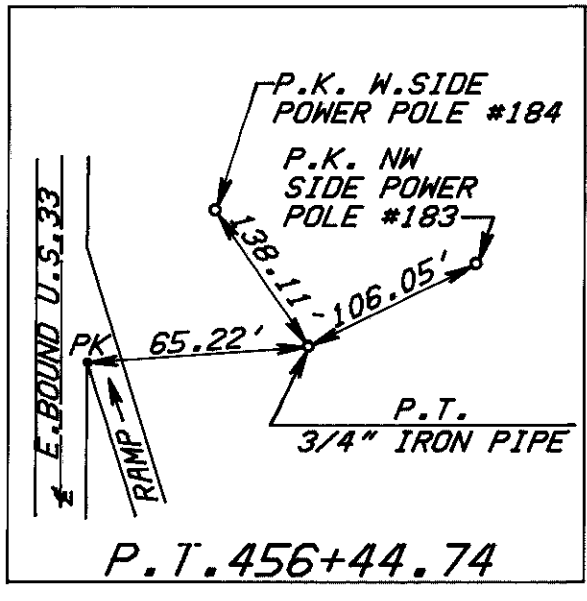
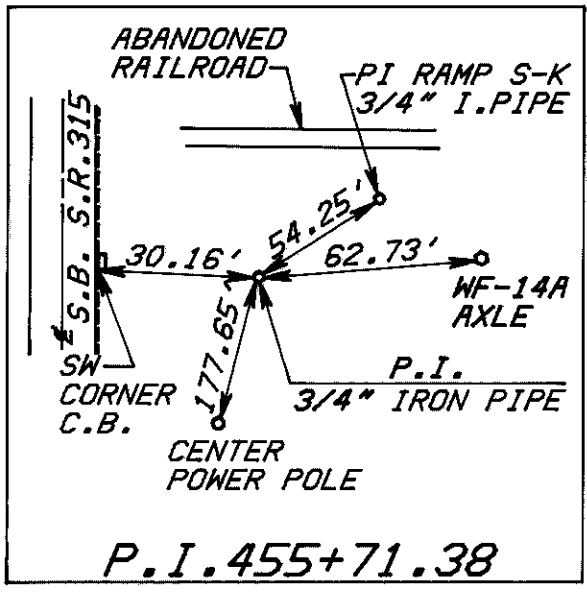
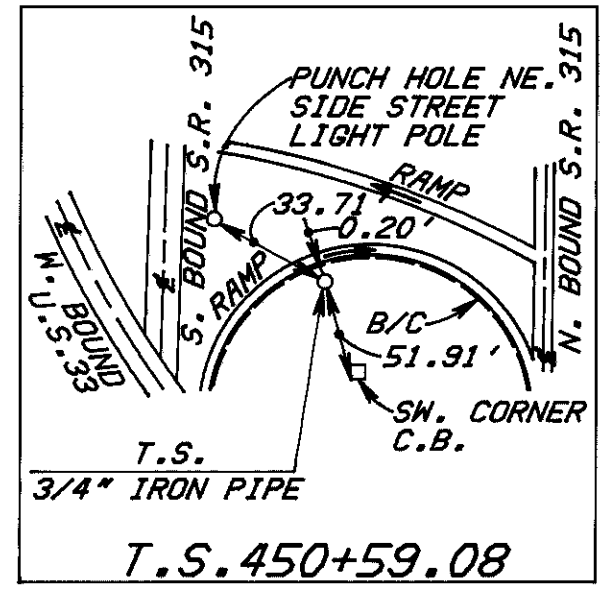
ROAD "S-K"

S.R. 315

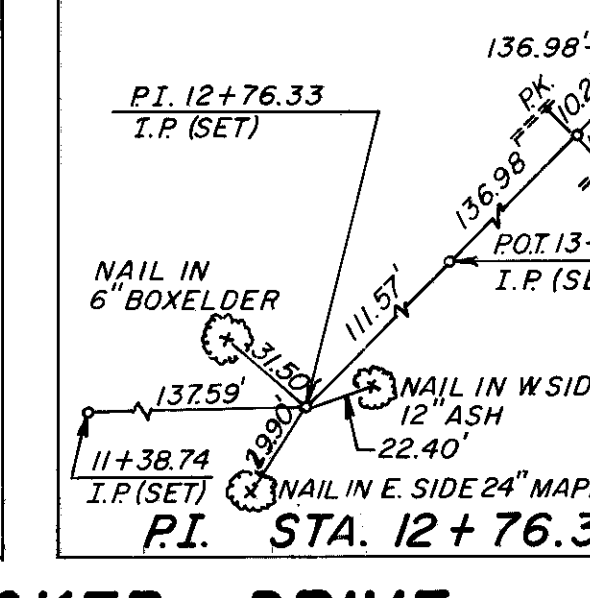
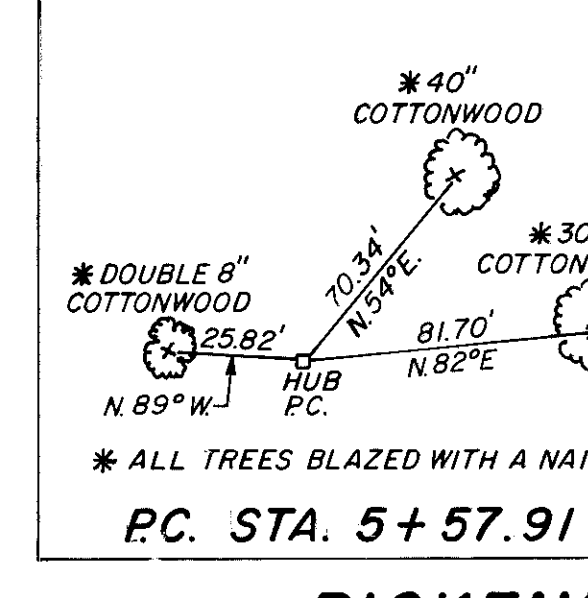
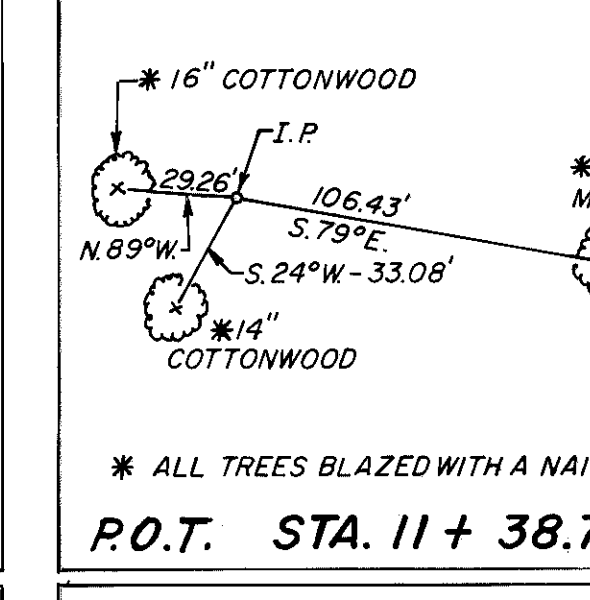
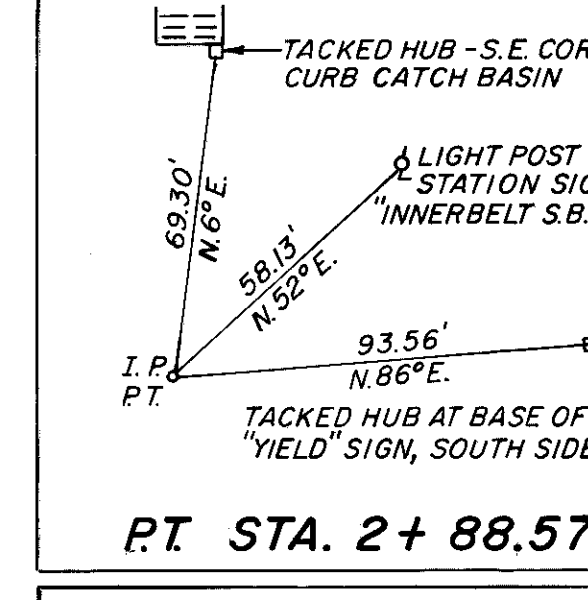
RAMP "S-J"

ROAD "S-L"

BASELINE CONTROLS



SCIOTO RIVER CHANNEL



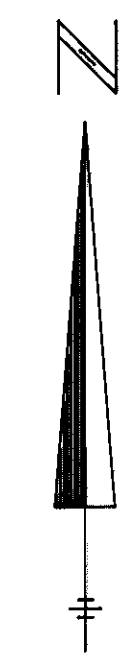
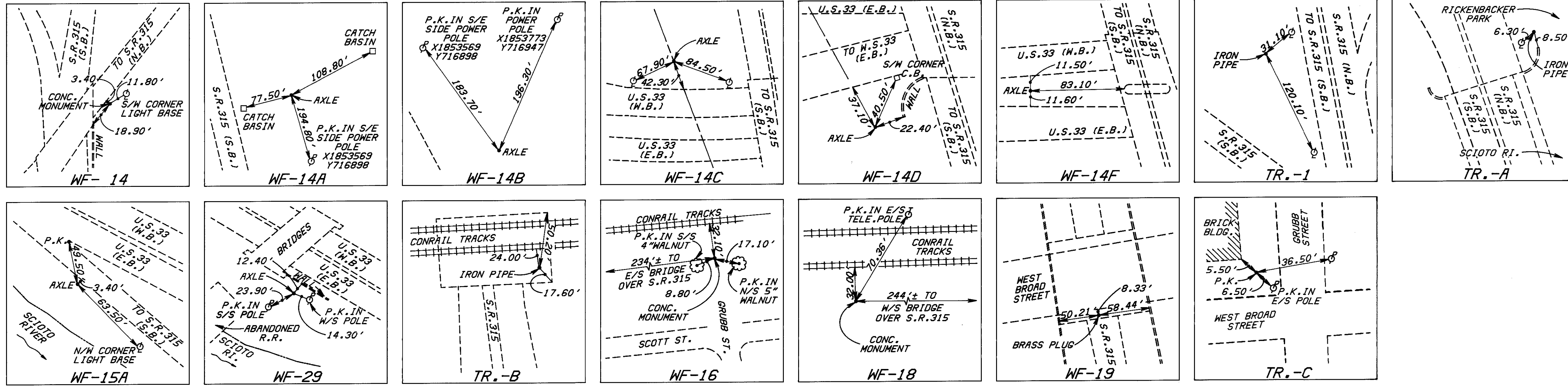
RICKENBACKER DRIVE

CONSTRUCTION LAYOUT REF. POINTS

1841061A



TRAVERSE CONTROLS

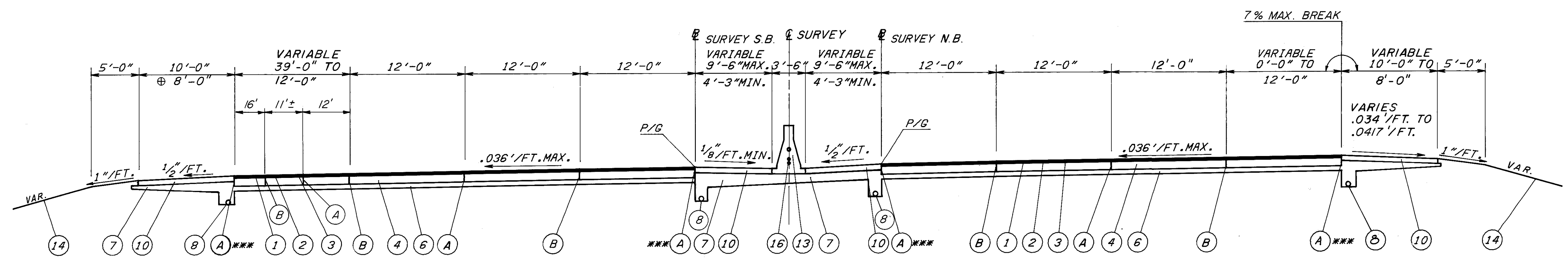


BENCH MARKS

BENCH MARK NO.	ELEVATION	DESCRIPTION
1	722.33	TOP OF EAST BOLT ON BELL OF FIRE HYD. @ W. SIDE OF W. GAY ST., 186' LT. STA.98+37, ± S.R.315.
2	728.53	CHISLED SQUARE ON S.W. CORNER OF EX. S.R.315 BRIDGE OVER SCIOTO RIVER. 10' LT. STA.106+56, ± S.R.315.
3	729.76	R.R. SPIKE IN WEST SIDE OF AN 18" TREE LOCATED 198' RT., STA.106+46, ± S.R.315.
4	735.97	CHISLED SQUARE ON N.E. CORNER OF EX. S.R.315 BRIDGE OVER SCIOTO RIVER, 138' RT. STA.111+24, ± S.R.315.
5	730.28	CUT "X" ON TOP OF W. BOLT IN BASE OF A STEEL ELECT. POLE, 261' RT. STA.114+00, ± S.R.315.
6	726.82	CUT "X" ON TOP OF W. BOLT IN BASE OF A STEEL ELECT. POLE @ N.E. CORNER OF S.R.315 & U.S.33, 57' LT. STA.150+32, ± U.S.33.
7	723.10	R.R. SPIKE IN W. SIDE OF 12" BOXWOOD ON W. BANK OF OLENTANGY RIVER, 310' RT. STA.122+05, ± S.R.315.
14	733.95	CHISLED SQUARE ON S.W. CORNER OF LIGHT BASE LOCATED 115'± RT. STA.141+55 ±, ± U.S.33 RELOC.
15	721.76	R.R. SPIKE IN N. SIDE OF AN 8" BOX ELDER LOCATED APPROX. 500'± N.W. OF NORTH END OF EX. S.R.315 BRIDGE OVER SCIOTO RIVER ON TOP OF E. BANK.
16	734.91	CHISLED SQUARE ON N.W. CORNER OF EX. S.R.315 BRIDGE OVER SCIOTO RIVER, 47' RT. STA.111+32, ± S.R.315.
28	714.81	CHISLED SQUARE ON N.W. CORNER OF CONC. WALL @ OLD SCHOOL HOUSE, 67' RT. STA.90+66, ± S.R.315.

HS41020A

# TYPICAL SECTIONS TYPE 446 ON 305



**S.R. 315  
TRANSITION-NORMAL SECTION "A"**

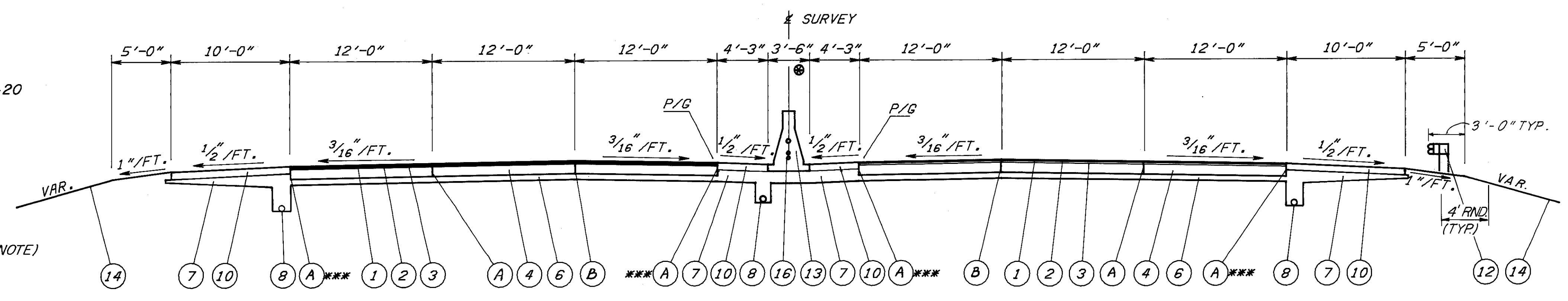
STA. 99+88.15 TO STA. 100+38.33 @ = STA. 100+38.33 @ N.B. @  
 STA. 100+38.33 TO STA. 106+42.18 @ N.B. APPROACH SLAB @  
 STA. 106+67.18 TO STA. 108+77.03 @ N.B. STR. = 108+77.03 @ } STRUCTURE LIMITS  
 STA. 108+77.03 TO STA. 110+64.32 @ STR. APPROACH SLAB  
 STA. 110+89.32 TO STA. 111+19.13 @

\* SAME SLOPE AS PAVEMENT (1/2"/FT. MIN.)  
 \*\*\* TIE BARS OR HOOK BOLTS SHOULD BE SPACED AT 30" INTERVALS. THE TIE BARS OR HOOK BOLTS ALONG THE JOINT BETWEEN THE MAINLINE AND THE 452 SHOULDERS SHOULD BE PLACED SO THAT THEY WILL SPLIT THE VERTICAL INTERVAL WHERE THEY BOTH ABUT. FOR TIE BAR DETAIL SEE SHEET NO. 10

NOTE: FOR SHOULDER AND MEDIAN DETAILS, SEE SHEET NO. 9, 10 & 12  
 FOR APPROACH SLAB TYPICAL SECTION SEE SHEET NO. 11

**LEGEND**

- ① ITEM 446 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, AC-20
- ② ITEM 446 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, AC-20
- ③ ITEM 407 TACK COAT (SEE GENERAL NOTE)
- ④ ITEM 305 10" CONCRETE BASE, AS PER PLAN (SEE GENERAL NOTE)
- ⑤ ITEM 305 8" CONCRETE BASE, AS PER PLAN (SEE GENERAL NOTE)
- ⑥ ITEM 304 6" AGGREGATE BASE, AS PER PLAN (SEE GENERAL NOTE)
- ⑦ ITEM 304 AGGREGATE BASE, DIMENSION AS SHOWN, AS PER PLAN (SEE GEN. NOTE)
- ⑧ ITEM 605 6" PIPE UNDERDRAINS
- ⑨ ITEM 605 4" SHALLOW PIPE UNDERDRAINS
- ⑩ ITEM 452 PLAIN CONCRETE PAVEMENT, AS PER PLAN, (SEE GENERAL NOTE)
- 
- ⑫ ITEM 606 GUARDRAIL, TYPE 5
- ⑬ ITEM 622 CONCRETE BARRIER, TYPE B-50
- ⑭ ITEM 659 SEEDING & MULCHING
- ⑮ ITEM 408 BITUMINOUS PRIME COAT @ 0.40 GAL. PER SQ. YARD
- ⑯ ITEM 625 4" CONDUIT, 713.07, SEE TRAFFIC CONTROL PLANS
- ⑰ ITEM 609 CURB TYPE 6, AS PER PLAN (SEE DETAIL SHEET NO. 95 )
- ⑱ ITEM 605 4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN (SEE DETAIL, SHEET NO. 95 )



**S.R. 315  
NORMAL SECTION "B"**

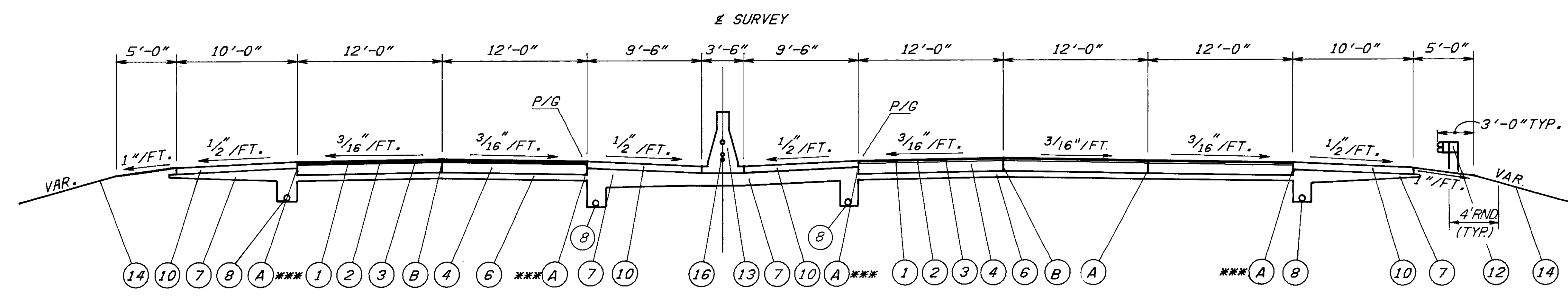
⑳ 301-3" BITUMINOUS AGGREGATE BASE, AC-20  
 ㉑ 304-8" AGGREGATE BASE, AS PER PLAN (SEE GEN. NOTE)  
 ㉒ ITEM 413 SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS, 705.04 (SEE DETAIL SHEET NO. 7 )  
 A LONGITUDINAL JOINT PER STD. DWG. BP-2.1  
 B STANDARD LONGITUDINAL JOINT WITHOUT TIE BARS

STA. 96+42.54 TO STA. 99+88.15 @  
 STA. 95+92.54 TO STA. 96+42.54 @ B BARRIER TRANSITION, 4'-0" TO 3'-6"  
 STA. 95+75 TO STA. 95+92.54 - CONCRETE PIER WALL (SEE SHEET NO. 12 )

HB41022R

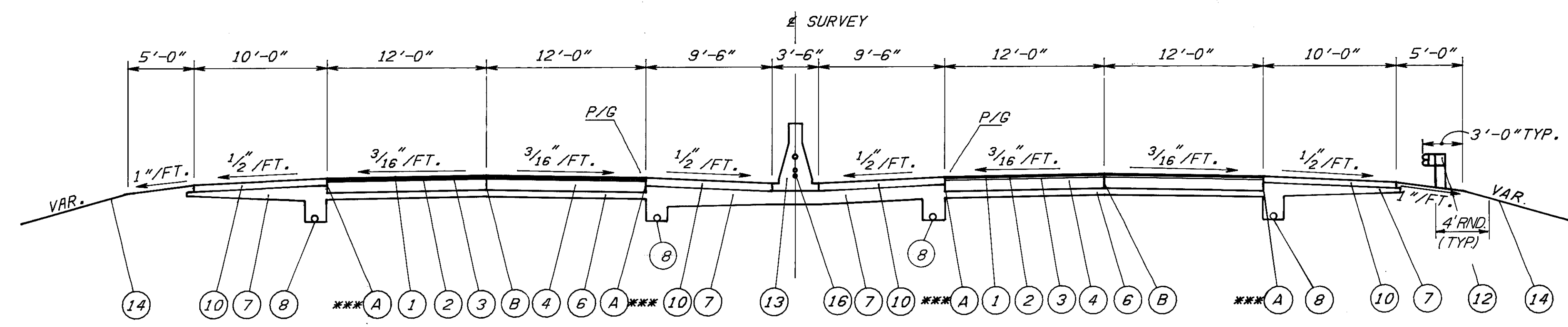


# TYPICAL SECTION TYPE 446 ON 305



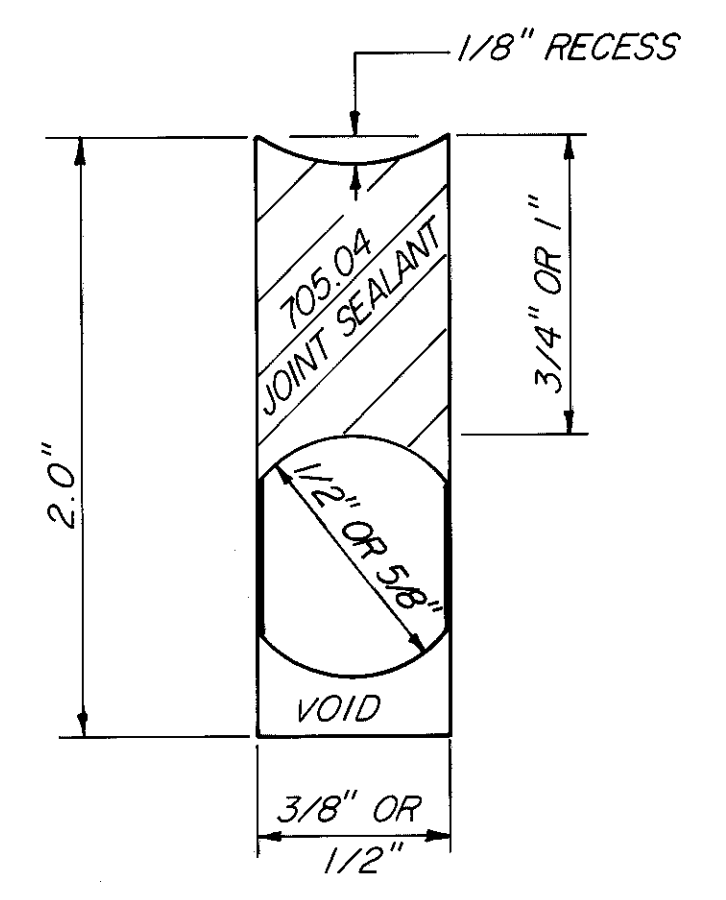
**NORMAL SECTION SR-315 "C"**  
STA. 111 + 19.13 TO STA. 116 + 94.11

STA. 116 + 94.11 TO STA. 117 + 19.11 @ APPROACH SLAB (SEE SHT. NO. 11)  
 STA. 117 + 19.11 TO STA. 119 + 52.65 @ BRIDGE LIMITS  
 STA. 119 + 52.65 TO STA. 119 + 77.65 @ APPROACH SLAB (SEE SHT. NO. 11)  
 STA. 119 + 77.65 TO STA. 120 + 82 @



**NORMAL SECTION SR-315 "D"**

STA. 120 + 82 TO STA. 122 + 00



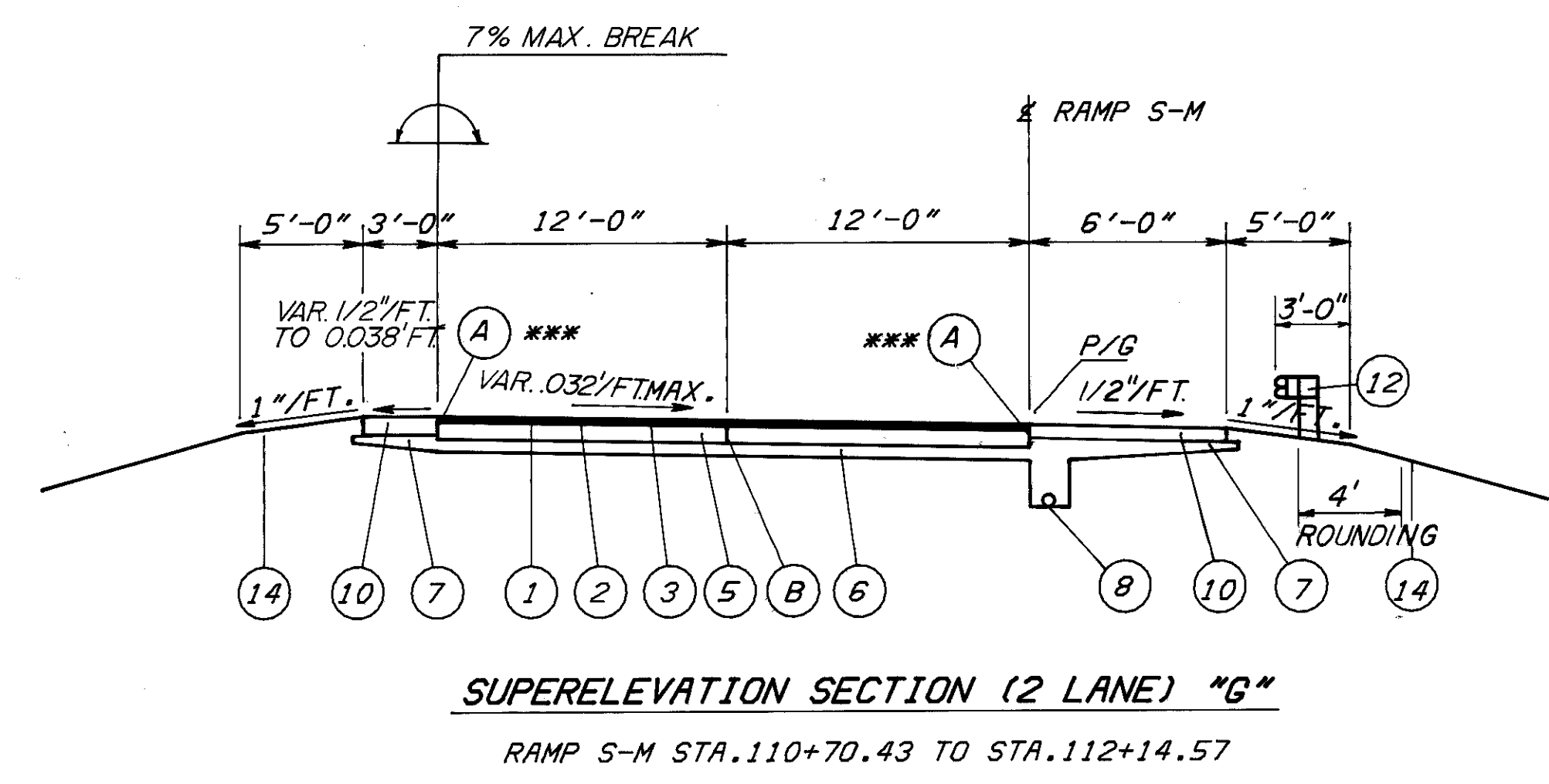
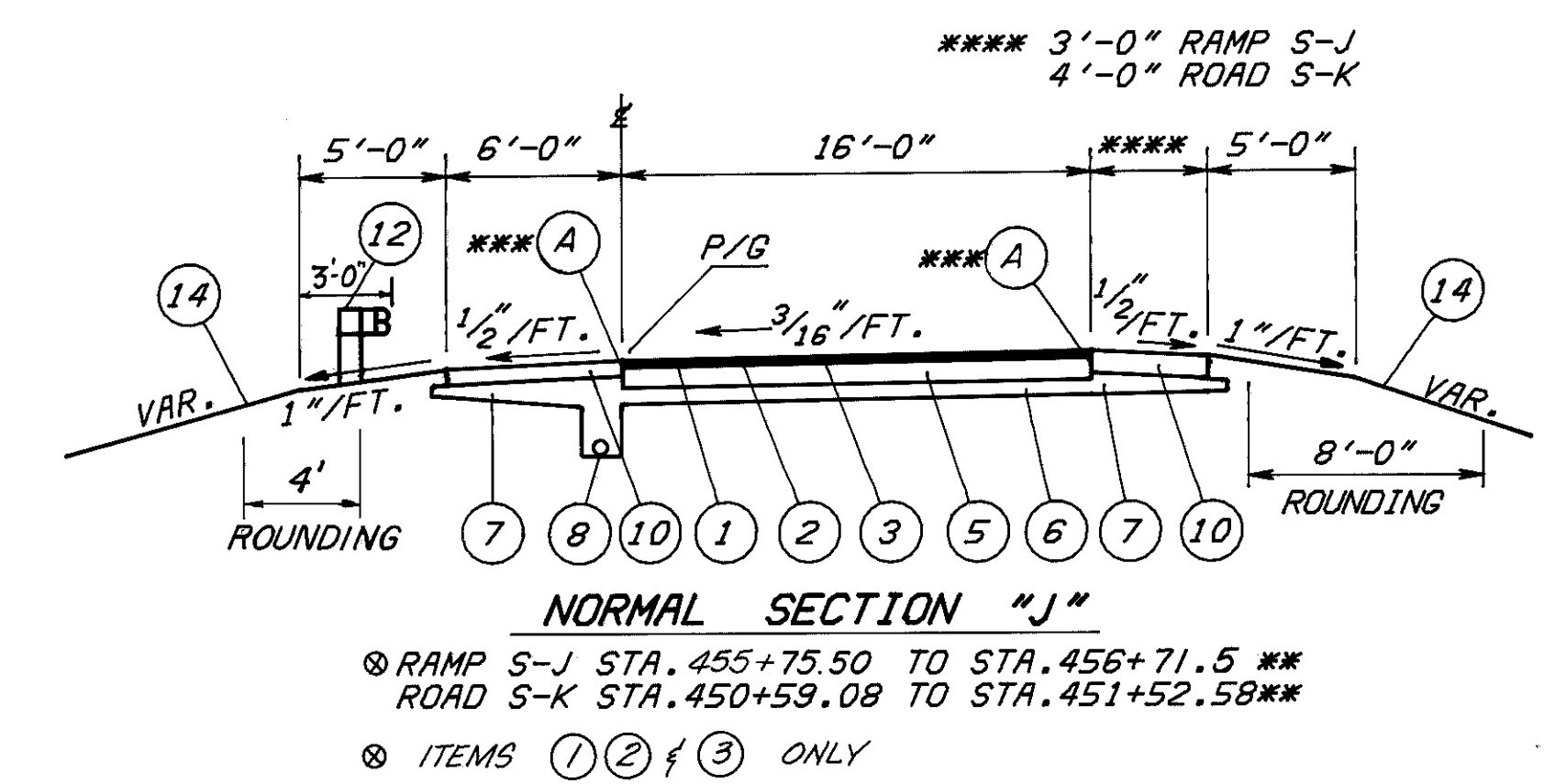
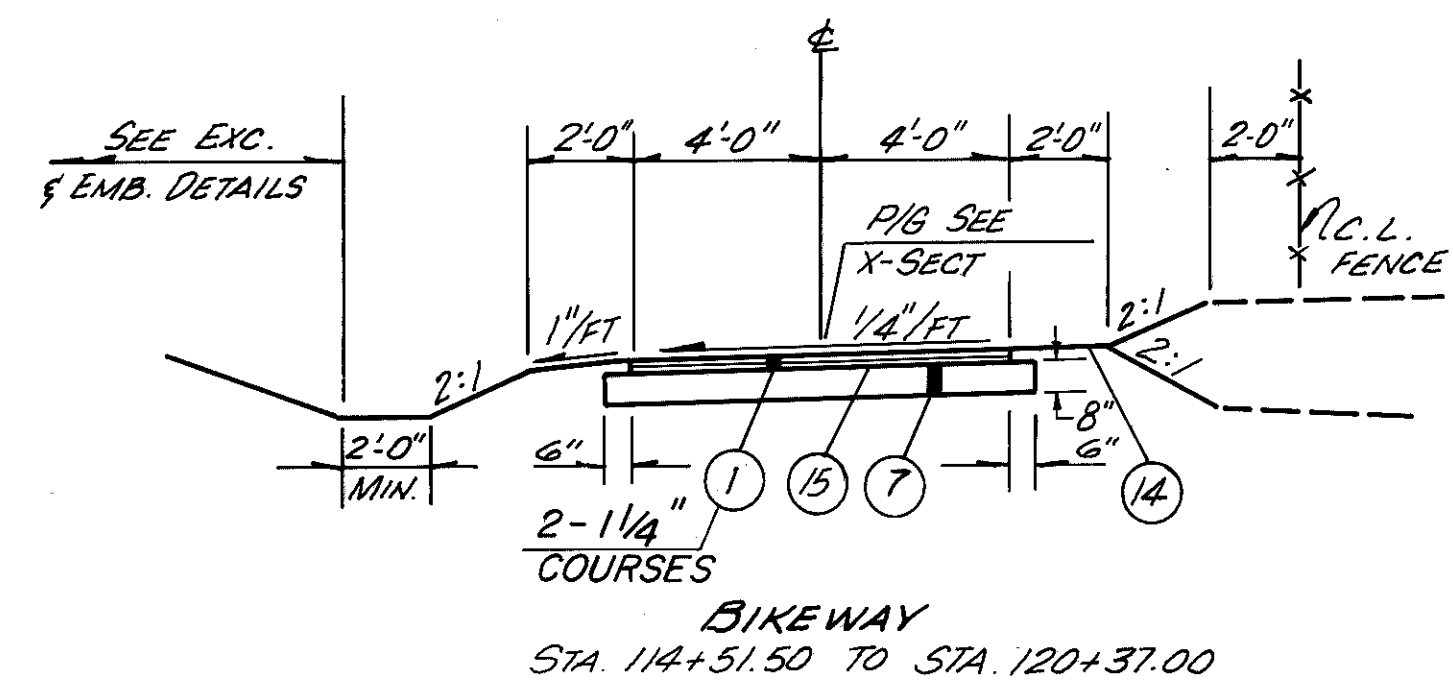
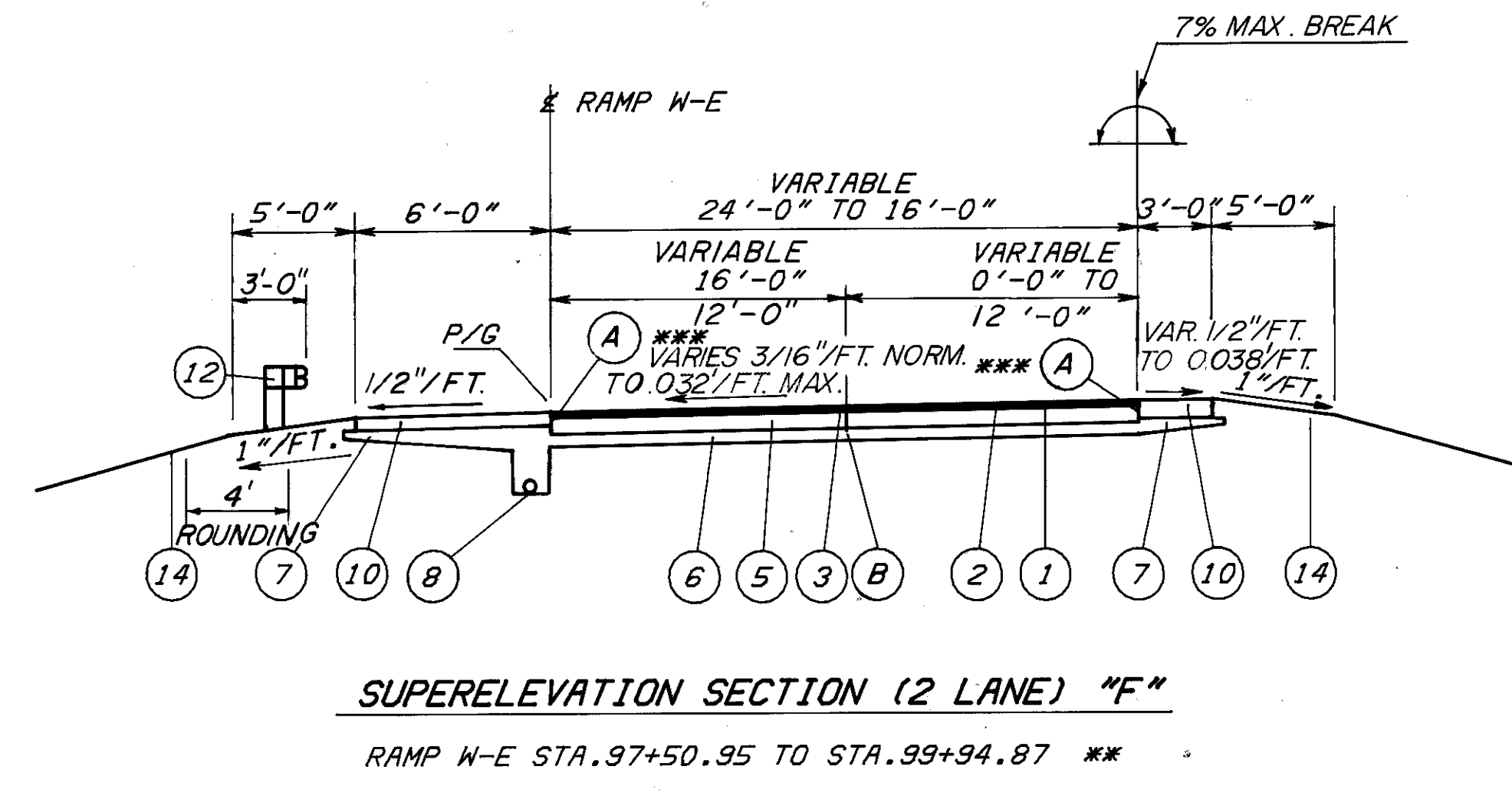
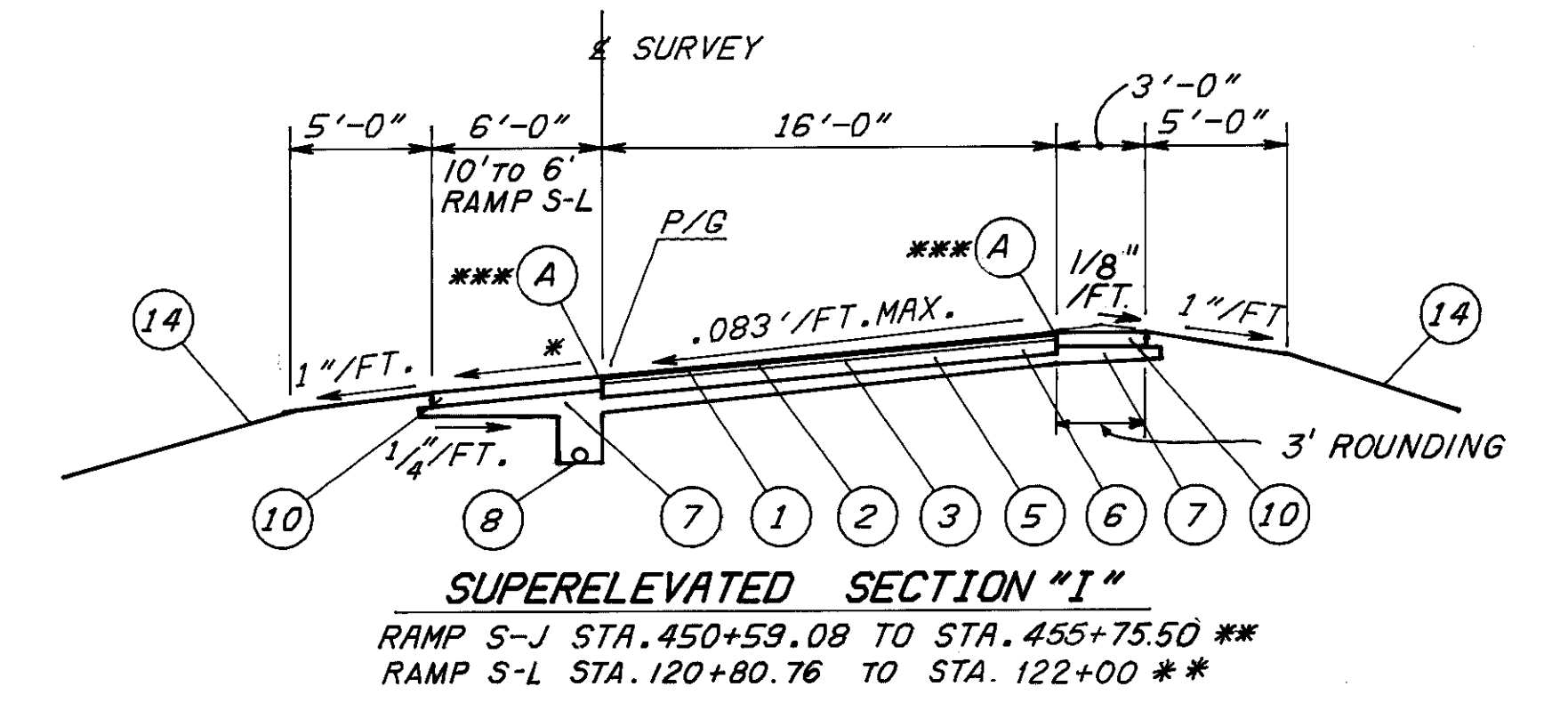
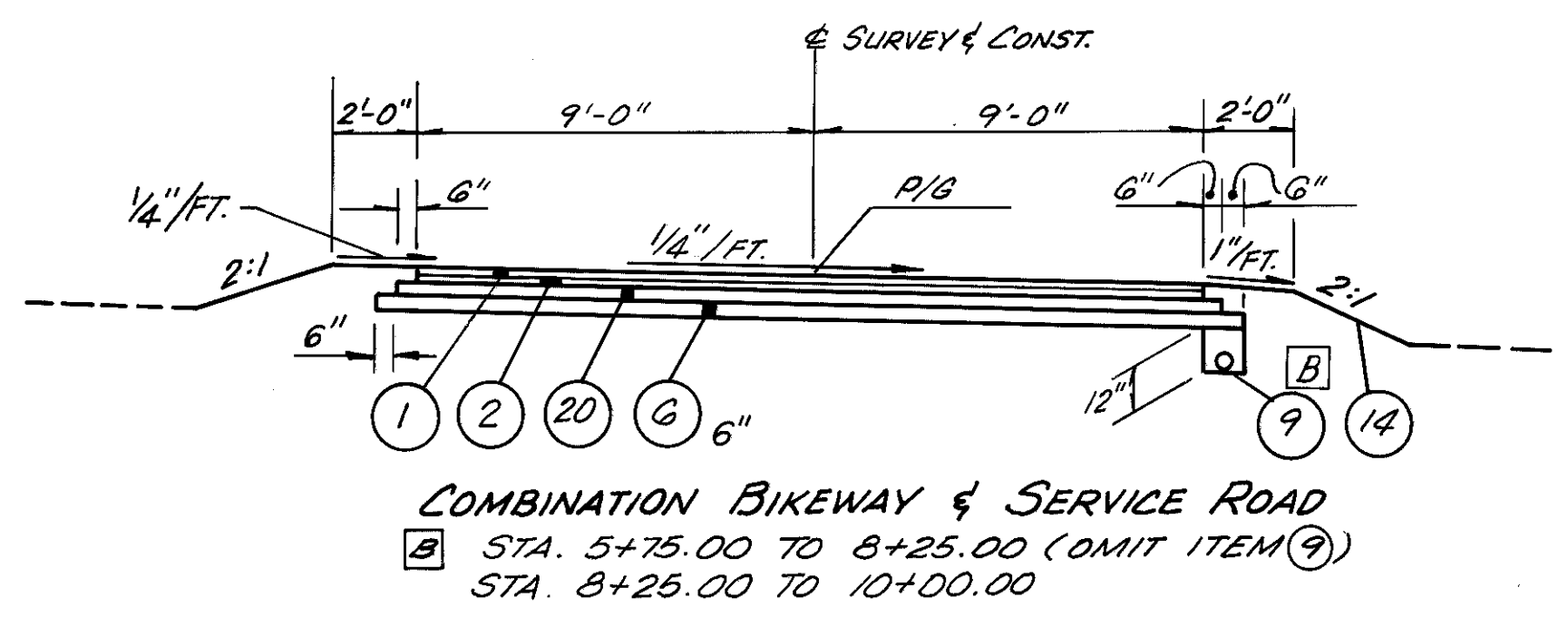
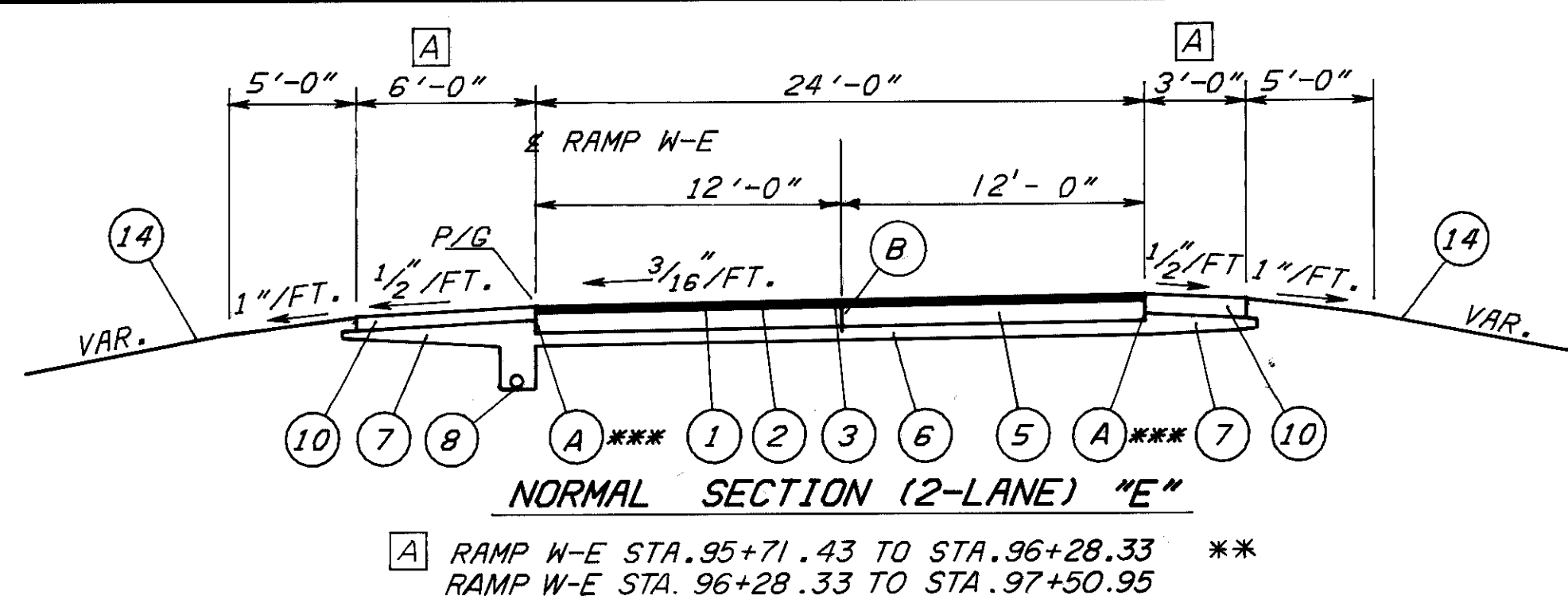
② ITEM 413 - SAWING AND SEALING ASPHALT CONCRETE PAVEMENT JOINTS, 705.04

FOR LEGEND SEE SHEET NO. 6

HB41023R

# TYPICAL SECTIONS

## TYPE 446 ON 305



\*\*\* TIE BARS OF HOOK BOLTS SHOULD BE SPACED AT 30" INTERVALS. THE TIE BARS OR HOOK BOLTS ALONG THE JOINT BETWEEN THE MAINLINE AND THE 452 SHOULDERS SHOULD BE PLACED SO THAT THEY WILL SPLIT THE VERTICAL INTERVAL WHERE THEY BOTH ABUT. FOR TIE BAR DETAIL SEE SHEET NO. 10 SEE RAMP INTERSECTION DETAIL

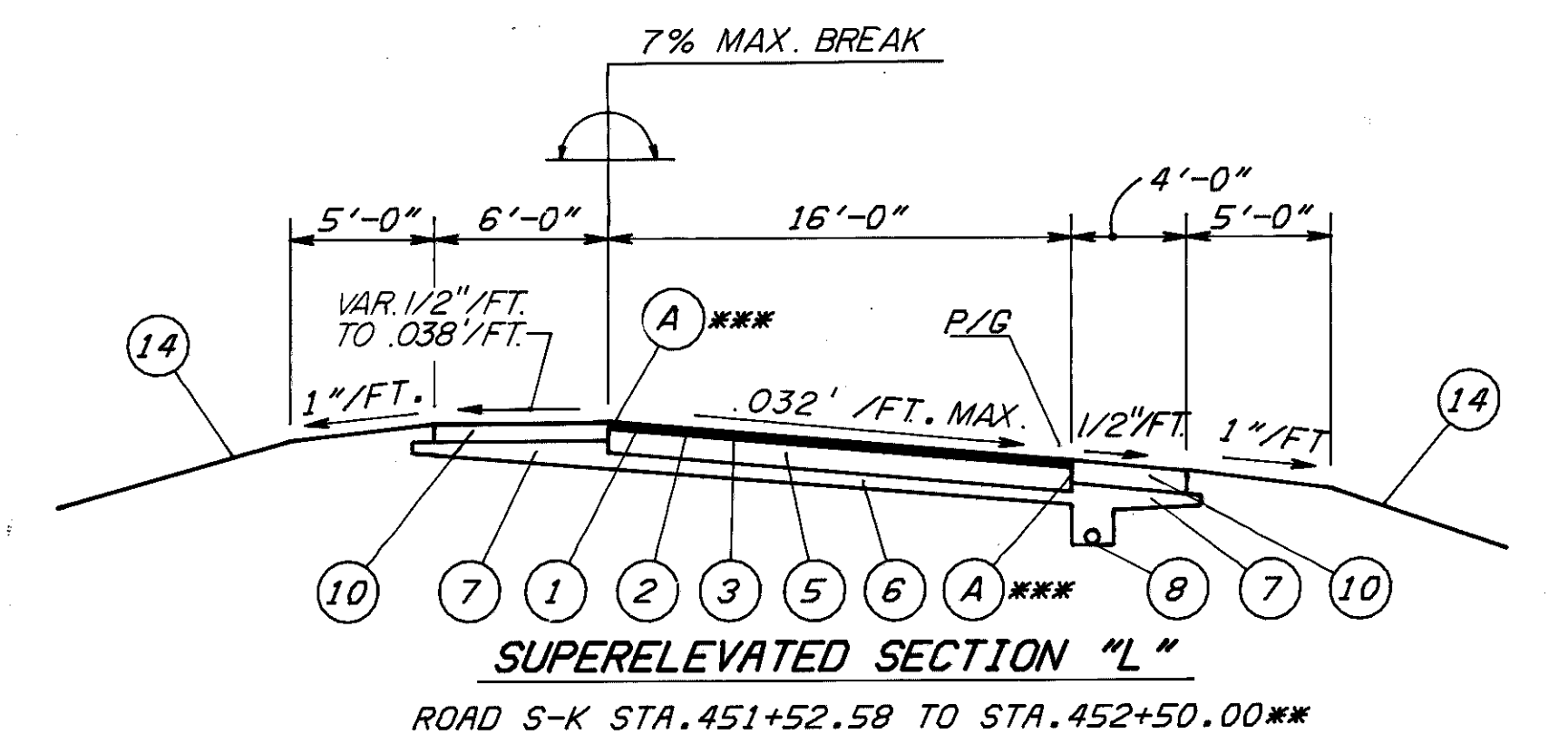
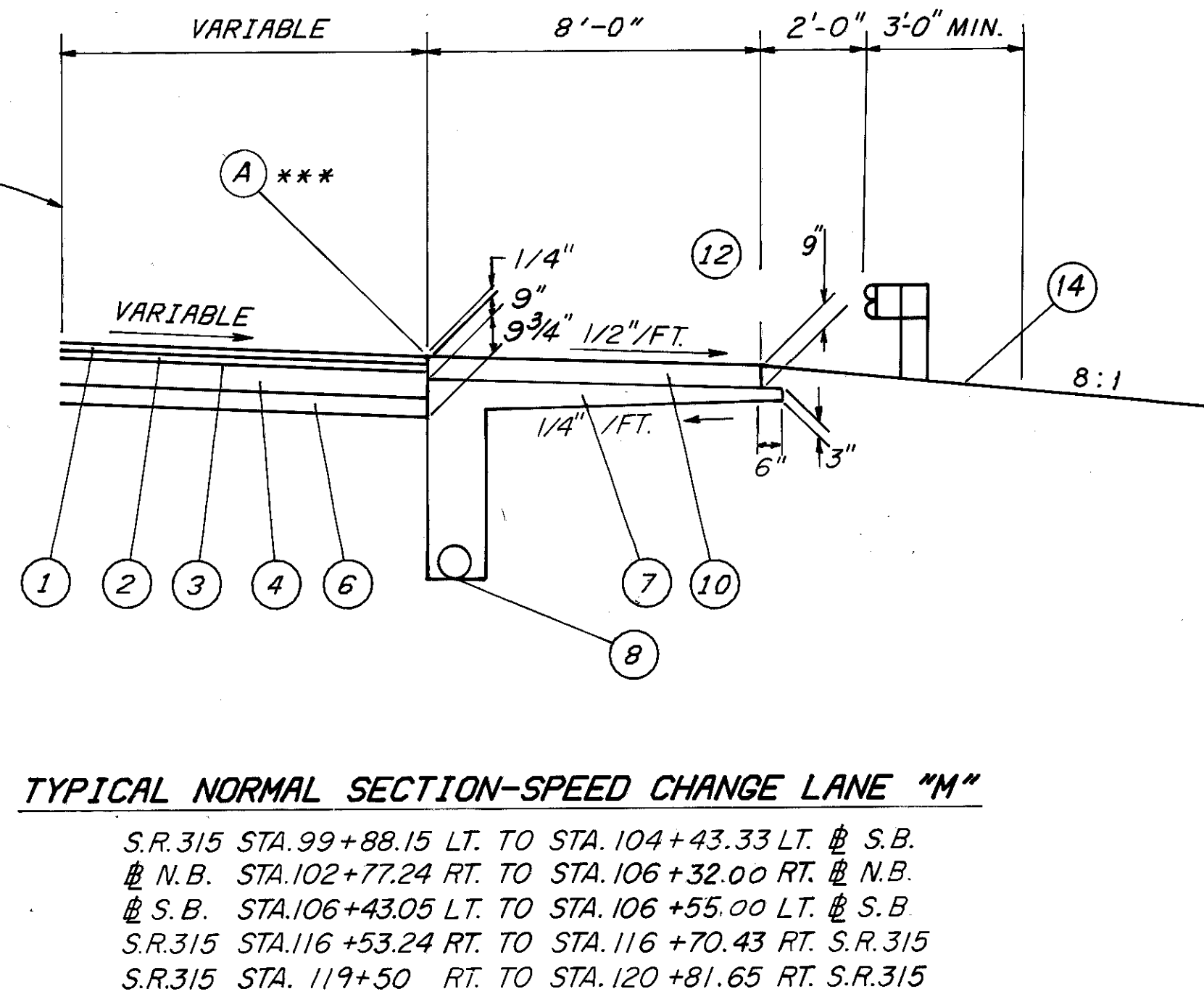
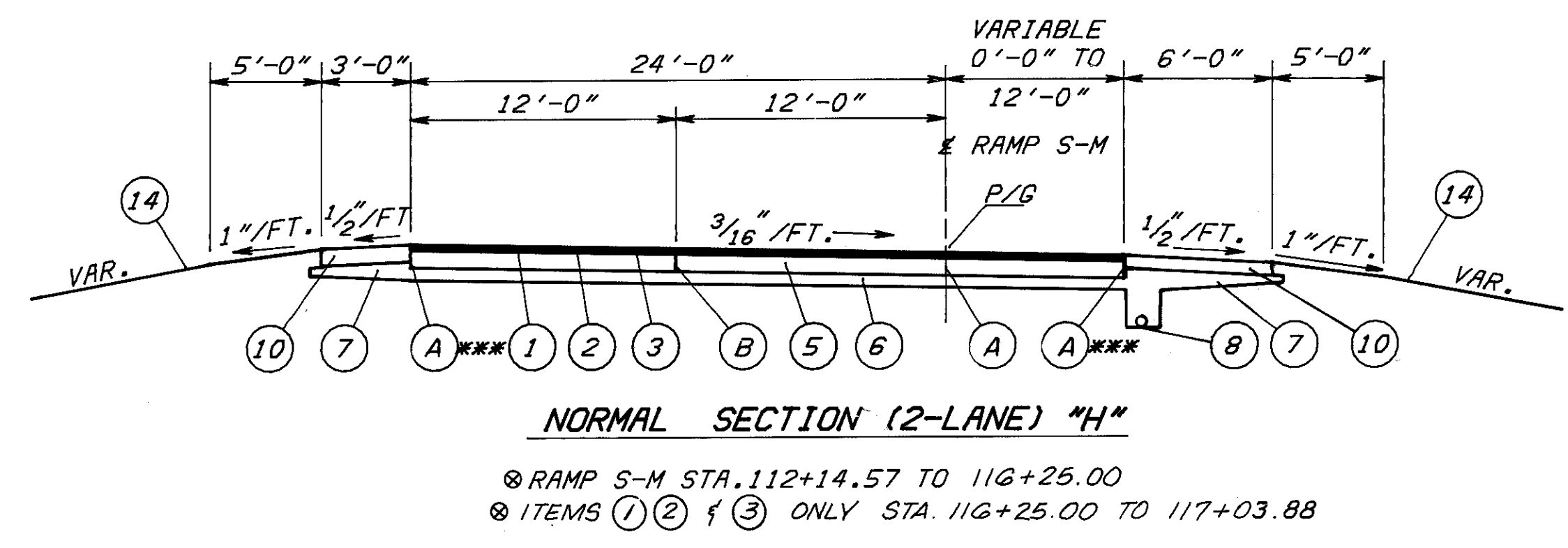
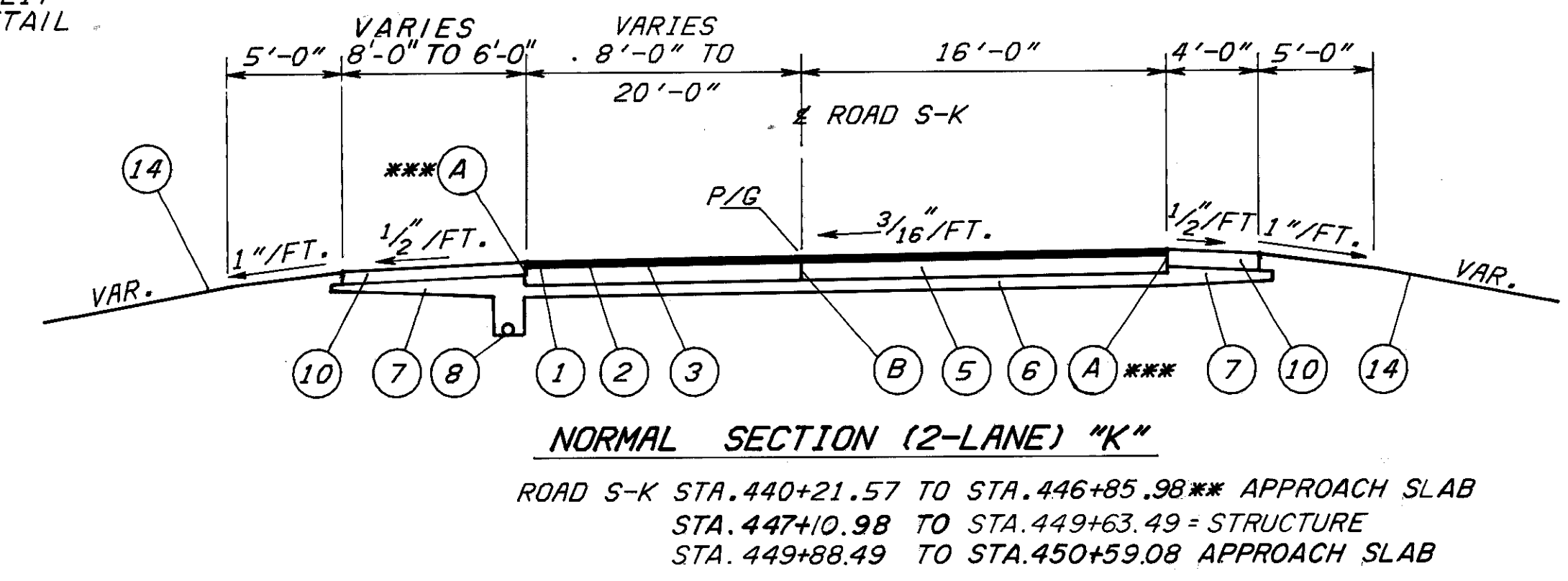
NOTE: FOR SHOULDER DETAILS, SEE SHEET NO'S 9, 10

TYPICAL SECTIONS ARE INTENDED TO SHOW GENERAL ROADWAY AND PAVEMENT FEATURES ONLY, FOR DETAIL SEE PLAN SHEETS.

\* SAME SLOPE AS PAVEMENT (1/2" / FT. MIN.)

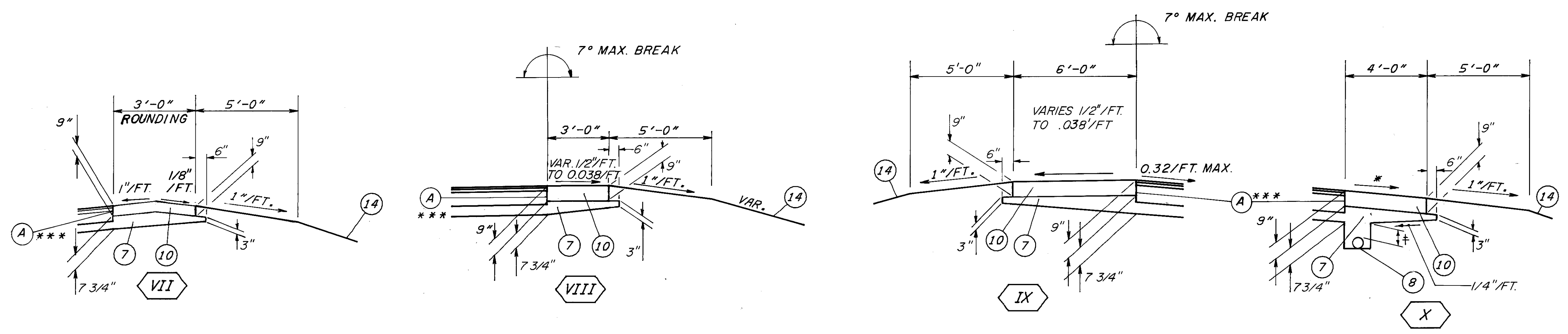
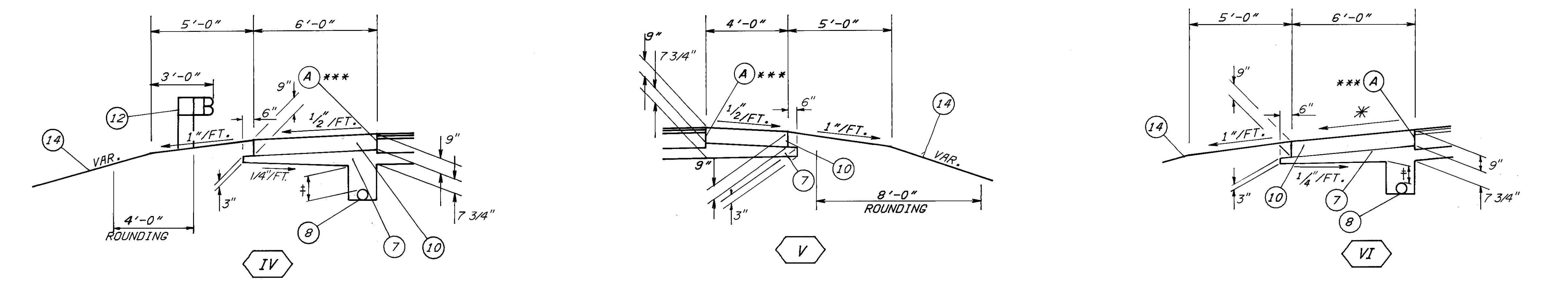
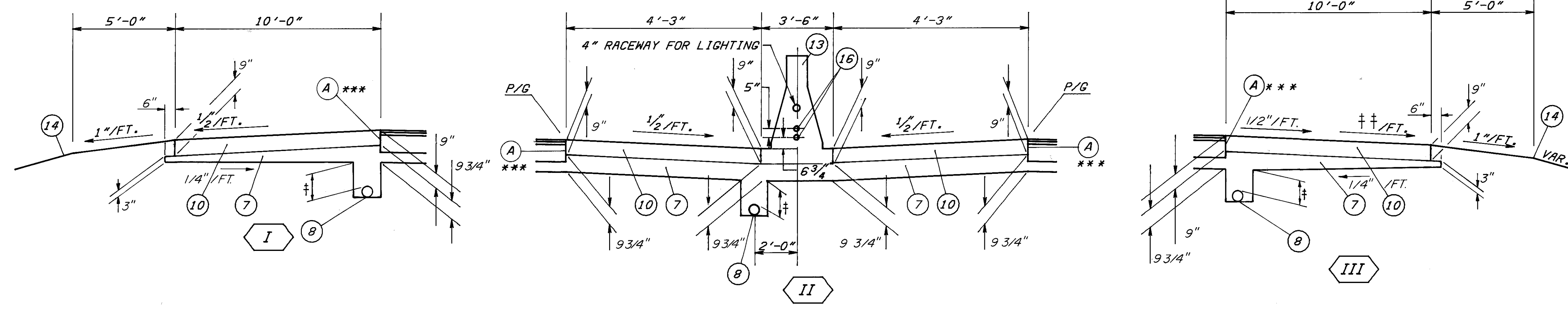
\*\* TRAFFIC REVERSED FROM STATIONING.

FOR LEGEND SEE SHEET NO. 6



H841021A





FOR LEGEND SEE SHEET NO. 6

\* SAME SLOPE AS PAVEMENT (1/2"/FT. MIN.)

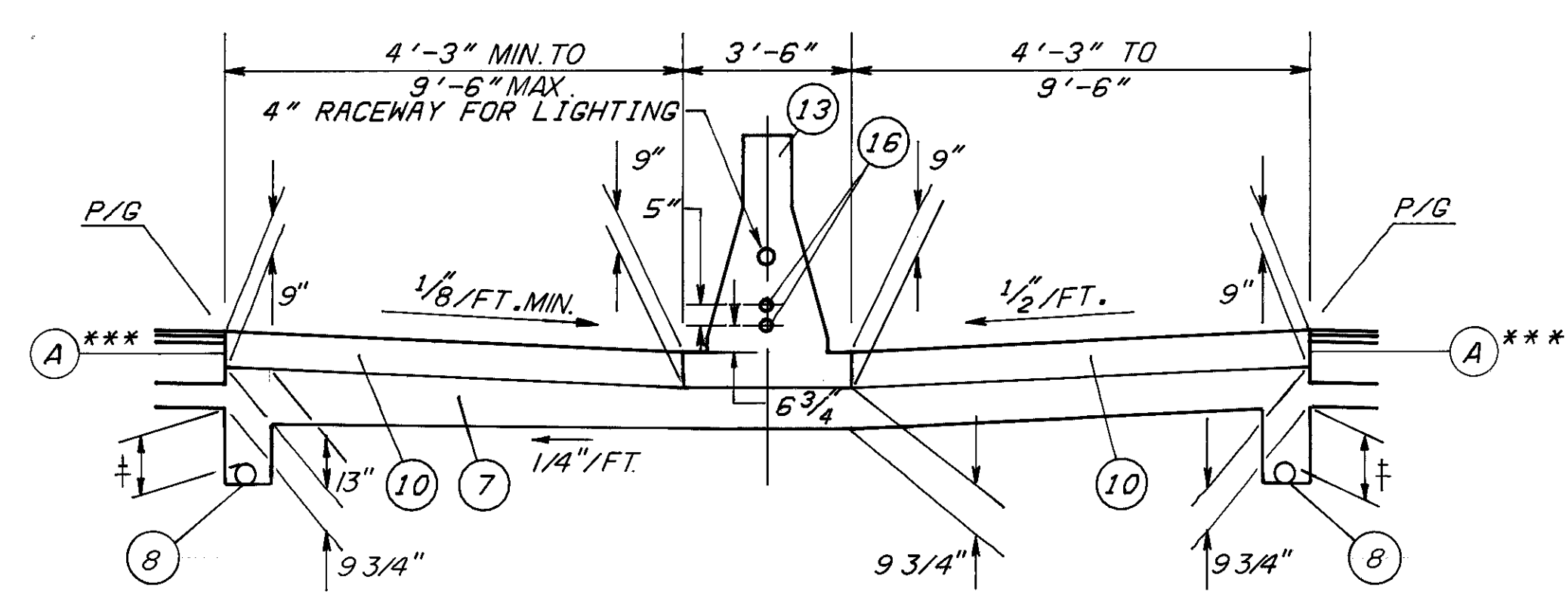
\*\*\* FOR TIE BAR @ EDGE OF PAVEMENT DETAIL SEE SHEET NO. 10

† PLACE UNDERDRAINS 50" DEEP IN CUTS, 30" IN FILLS.

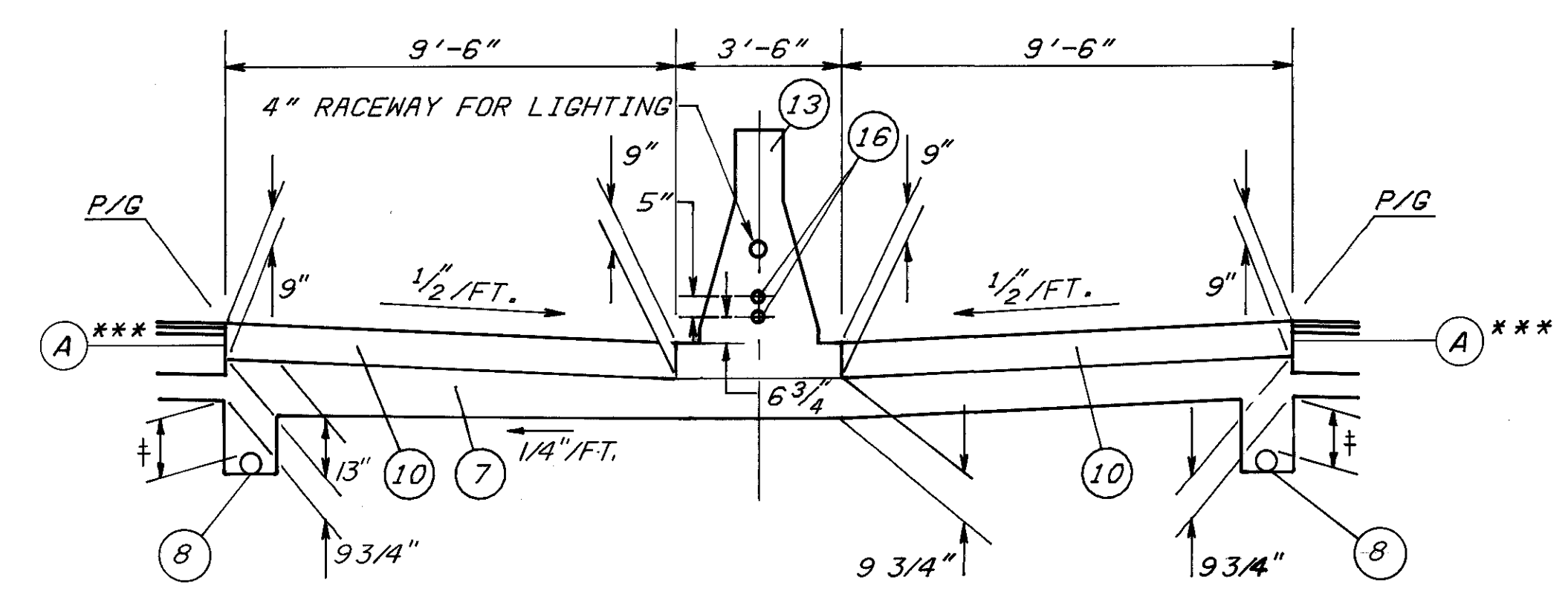
‡ 1/2"/FT. TYPICAL "B" .034"/FT. TYPICAL "A"

TYPICAL SECTION	APPLICABLE SHOULDER DETAIL		APPLICABLE MEDIAN SECTION DETAIL
	LT.	RT.	
A	I	III	XI
B	I	III	II
C	I	III	XII
D	I	III	XII
E	IV	XIV	N/A
F	VI	VIII	N/A
G	VIII	VI	N/A
H	XIV	IV	N/A
I	VI	VII	N/A
J	IV	V	N/A
K	IV	V	N/A
L	IX	X	N/A
M	N/A	XIII	N/A

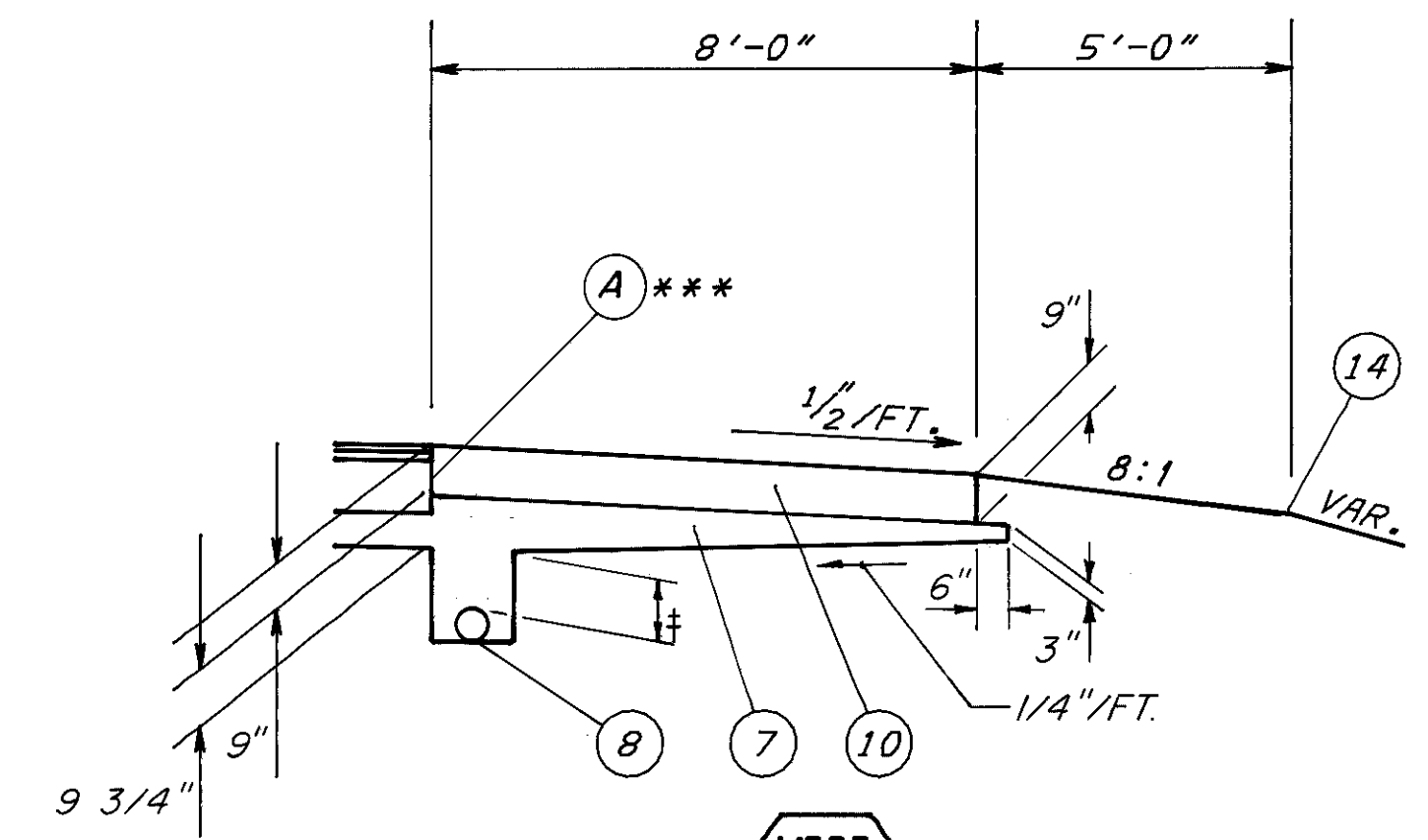
H941024R



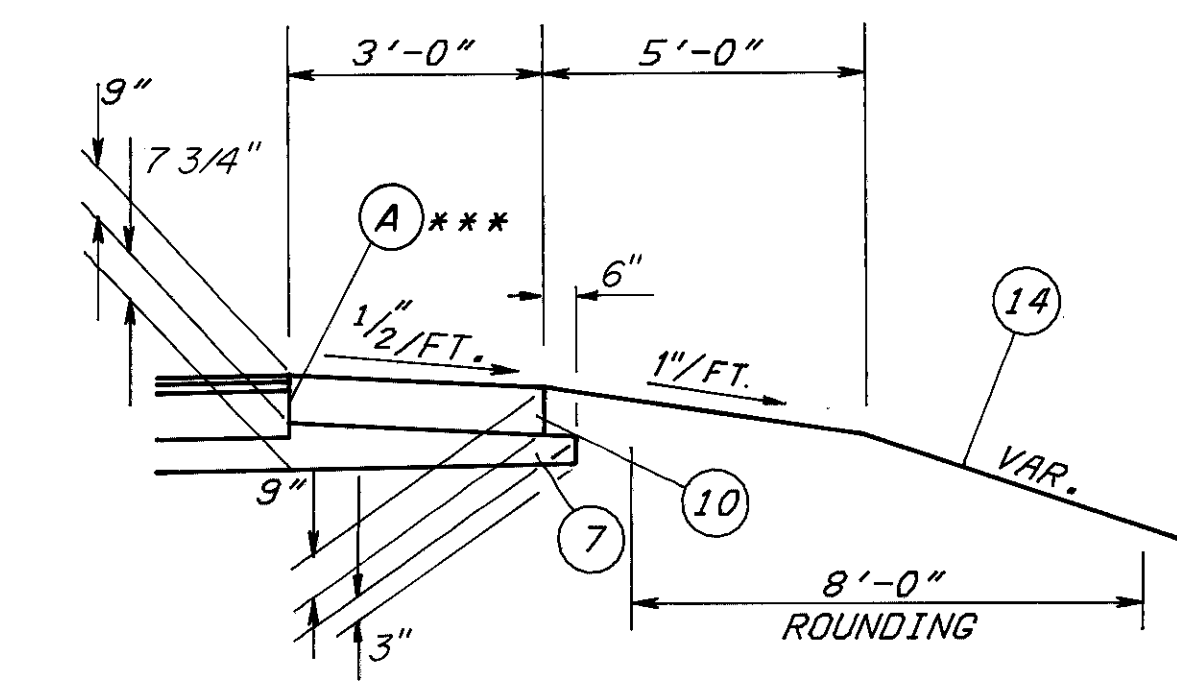
XI



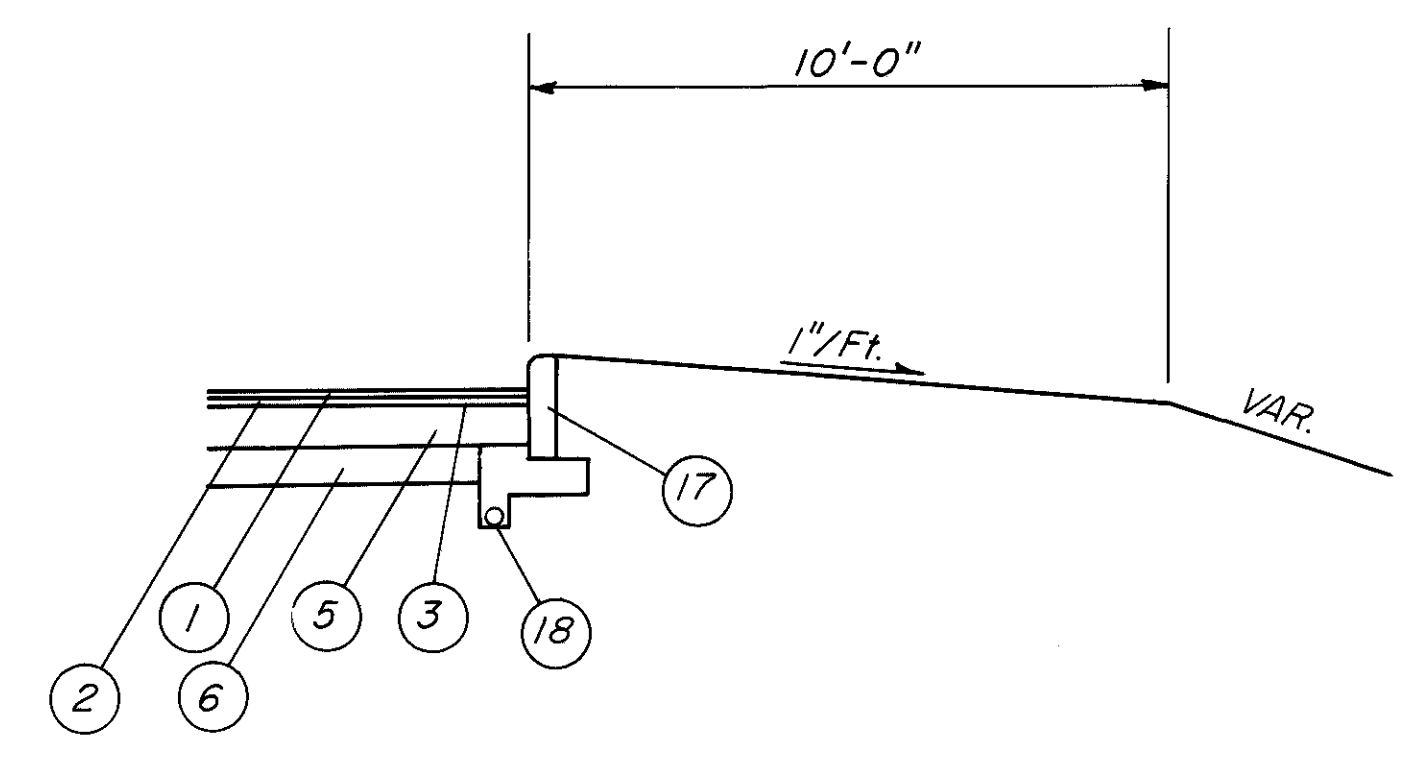
XII



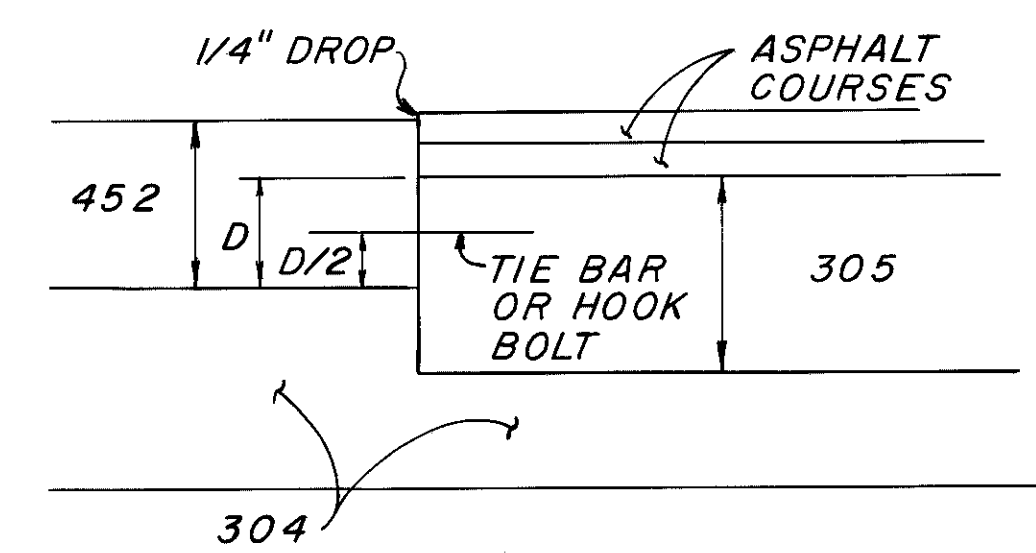
XIII



XIV



RAMP INTERSECTION DETAIL



TIE BAR DETAIL

NOTE: (A)\*\*\*  
TIE BARS OR HOOK BOLTS SHOULD BE SPACED AT 30" INTERVALS. ALONG THE LONGITUDINAL JOINT BETWEEN THE MAINLINE CONCRETE BASE (ITEM 305) AND THE CONCRETE SHOULDERS (ITEM 452), THE TIE BARS OR HOOK BOLTS SHOULD BE PLACED SO THAT THE BARS OR BOLTS SPLIT THE VERTICAL INTERVAL WHERE THE BASE AND SHOULDER ABUT. A 1/4" DROP WILL BE PROVIDED FROM THE MAINLINE PAVEMENT SURFACE TO THE CONCRETE SHOULDER SURFACE.

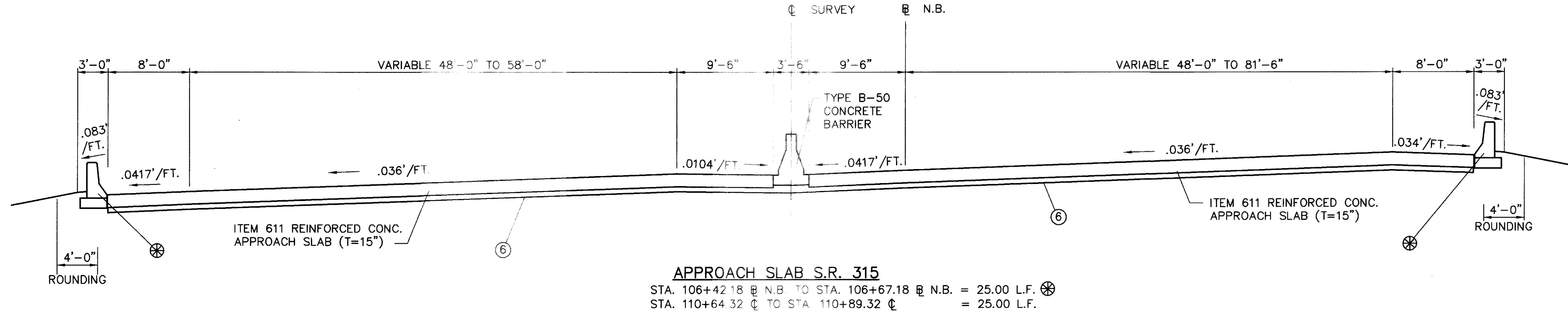
FOR LEGEND SEE SHEET NO. G  
‡ PLACE UNDERDRAINS 50" DEEP IN CUTS, 30" IN FILLS.

TYPICAL SECTION	APPLICABLE SHOULDER DETAIL		APPLICABLE MEDIAN SECTION DETAIL
	LT.	RT.	
A	I	III	XI
B	I	III	II
C	I	III	XII
D	I	III	XII
E	IV	XIV	N/A
F	VI	VIII	N/A
G	VIII	VI	N/A
H	XIV	IV	N/A
I	VI	VII	N/A
J	IV	V	N/A
K	IV	V	N/A
L	IX	X	N/A
M	N/A	XIII	

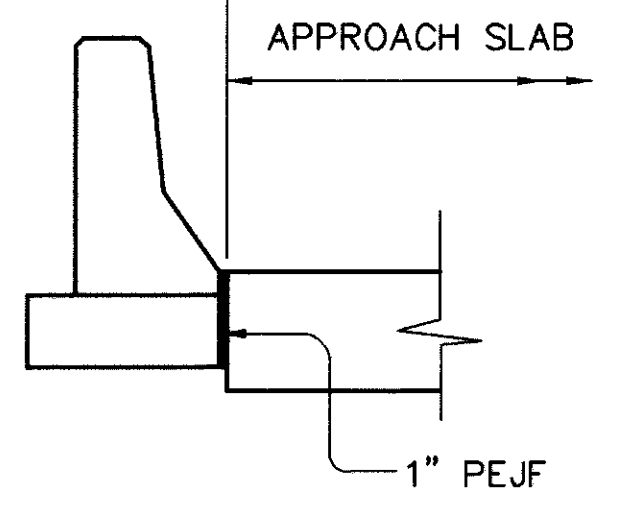
HR410258



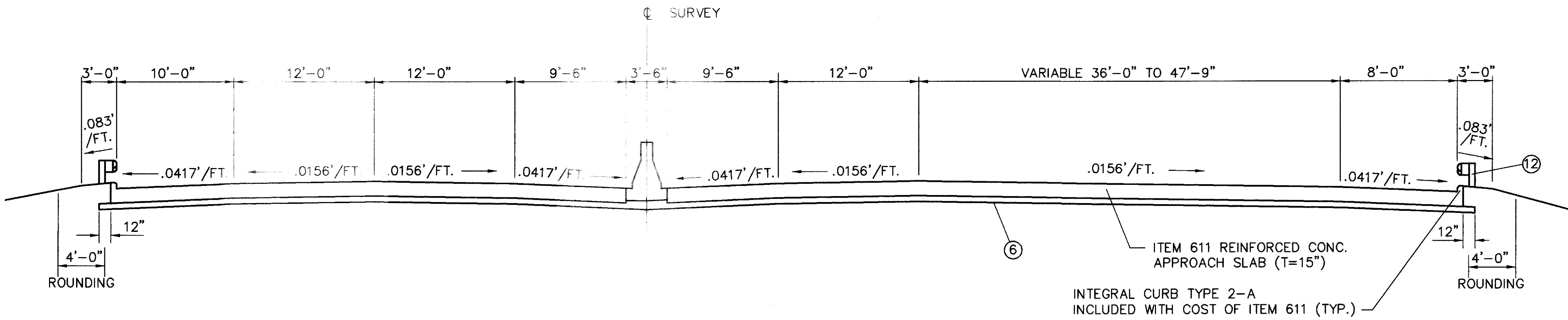
# TYPICAL SECTION TYPE 611 ON 304



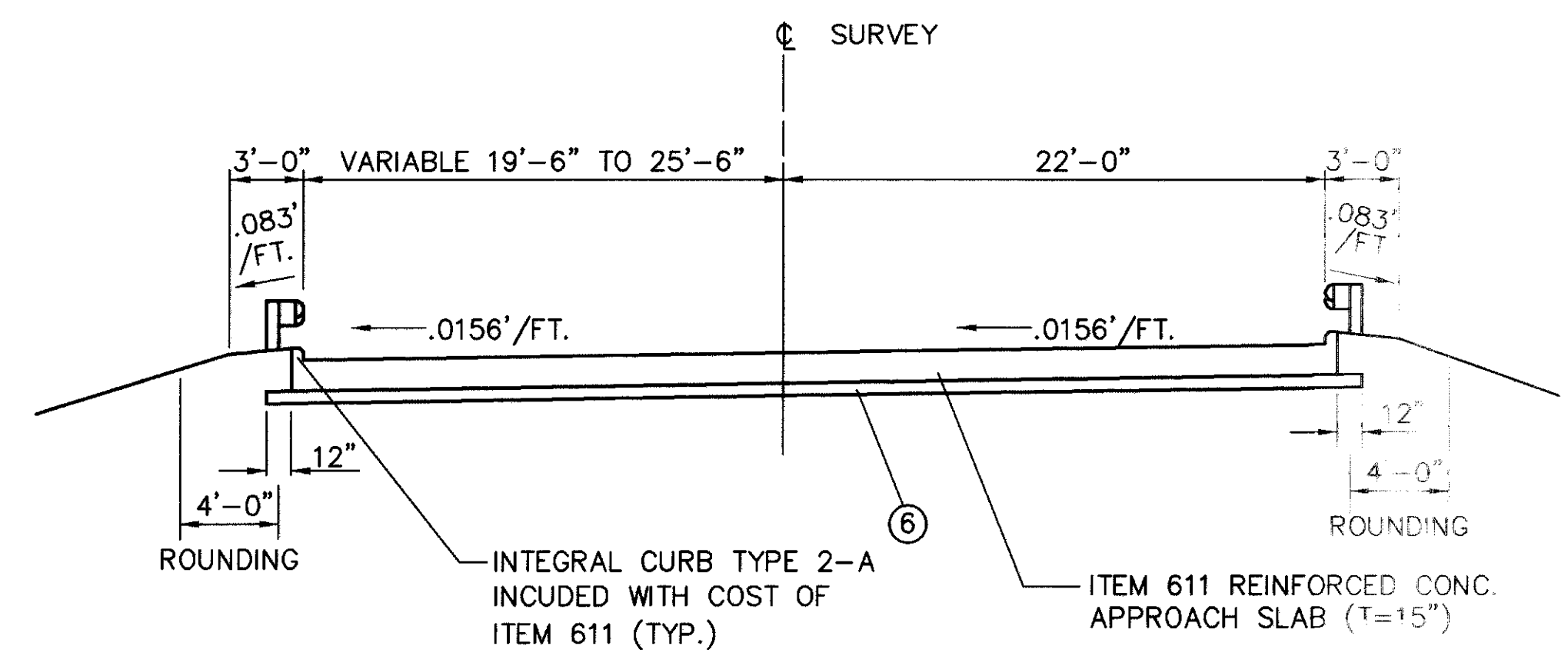
**APPROACH SLAB S.R. 315**  
 STA. 106+42.18 @ N.B. TO STA. 106+67.18 @ N.B. = 25.00 L.F.  
 STA. 110+64.32 @ CL TO STA. 110+89.32 @ CL = 25.00 L.F.



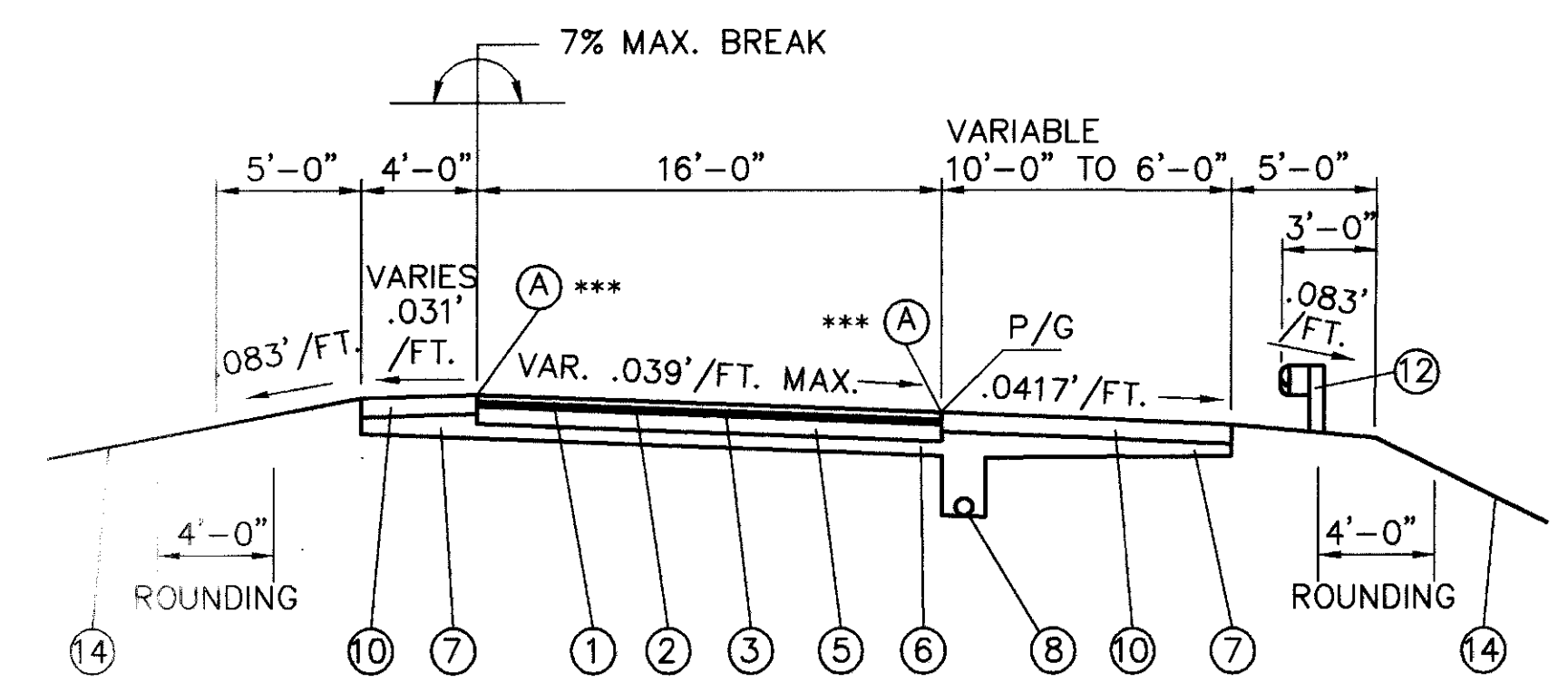
⊗ **CONCRETE BARRIER TYPE D  
IN PLACE OF INTEGRAL CURB  
OR PARAPET**



**APPROACH SLAB S.R. 315**  
 STA. 116+94.11 TO STA. 117+19.11 = 25.00 L.F.  
 STA. 119+52.65 TO STA. 119+77.65 = 25.00 L.F.



**APPROACH SLAB ROAD S-K**  
 STA. 446+85.98 TO STA. 447+10.98 = 25.00 L.F.  
 STA. 449+63.49 TO STA. 449+88.49 = 25.00 L.F.  
 (TRAFFIC REVERSED FROM STATIONING)



**SUPERELEVATION SECTION "N"**  
 ROAD "S-L" STA. 120+80.76 TO STA. 122+00

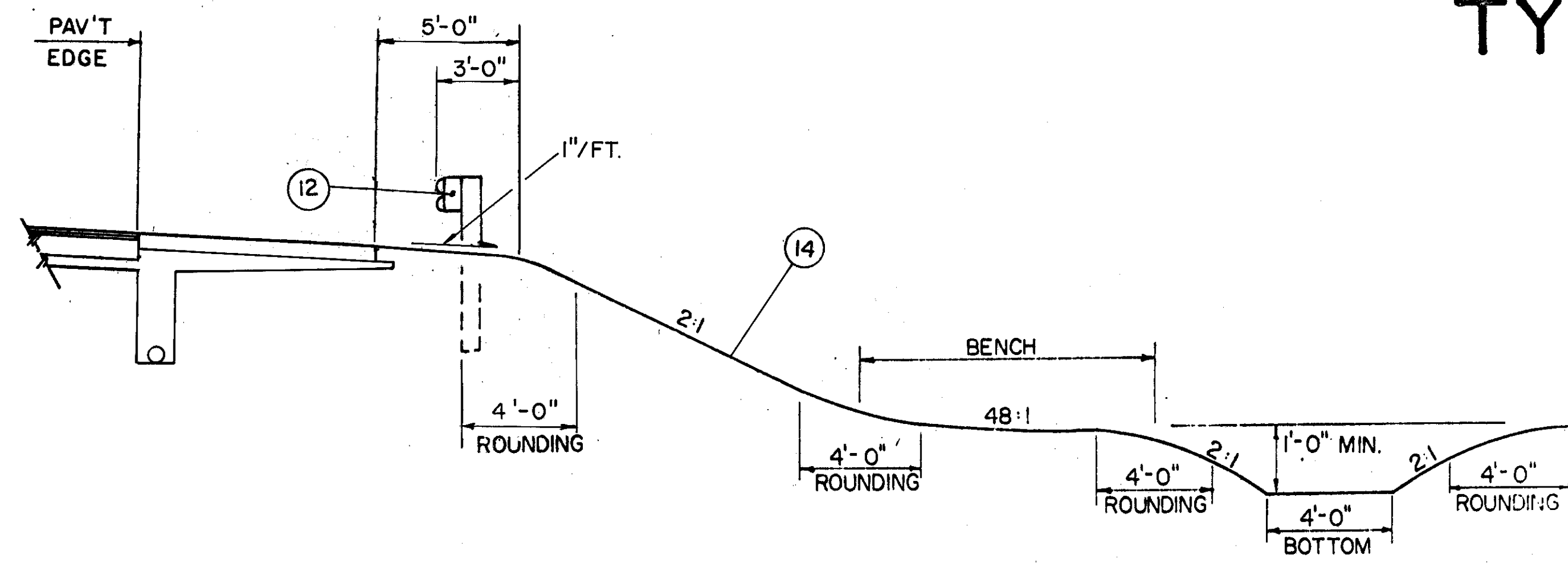
**NOTES:**  
 FOR SHOULDER DETAILS SEE SHEET NOS. 9 & 10  
 FOR LEGEND SEE SHEET NO. 6  
 \*\*\* TIE BAR AND EDGE OF PAVEMENT DETAIL SEE SHEET NO. 10

[E-60] - EXTERNALSHEET-AS-APP-TYPING - APR 24, 1987 - 09:31:05 - SCALE = 81:36

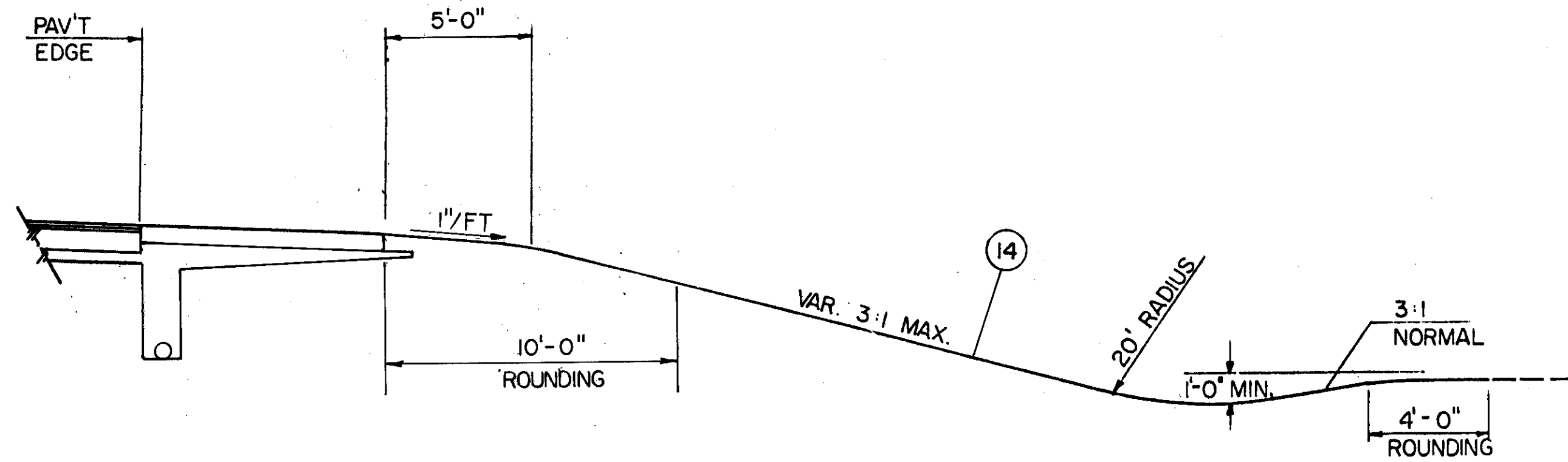
# TYPICAL SECTIONS

CALC. BY	FRANKLIN COUNTY	OHIO
DATE	FRA-670 - 1.25/A-5	FHWA REGION 5
CHKD. BY		
DATE		

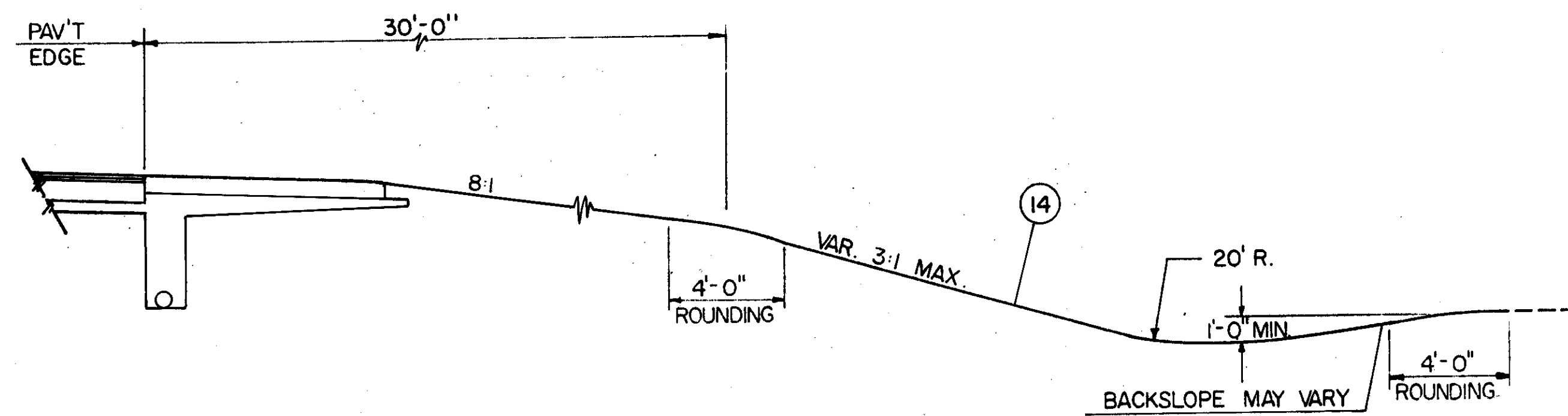
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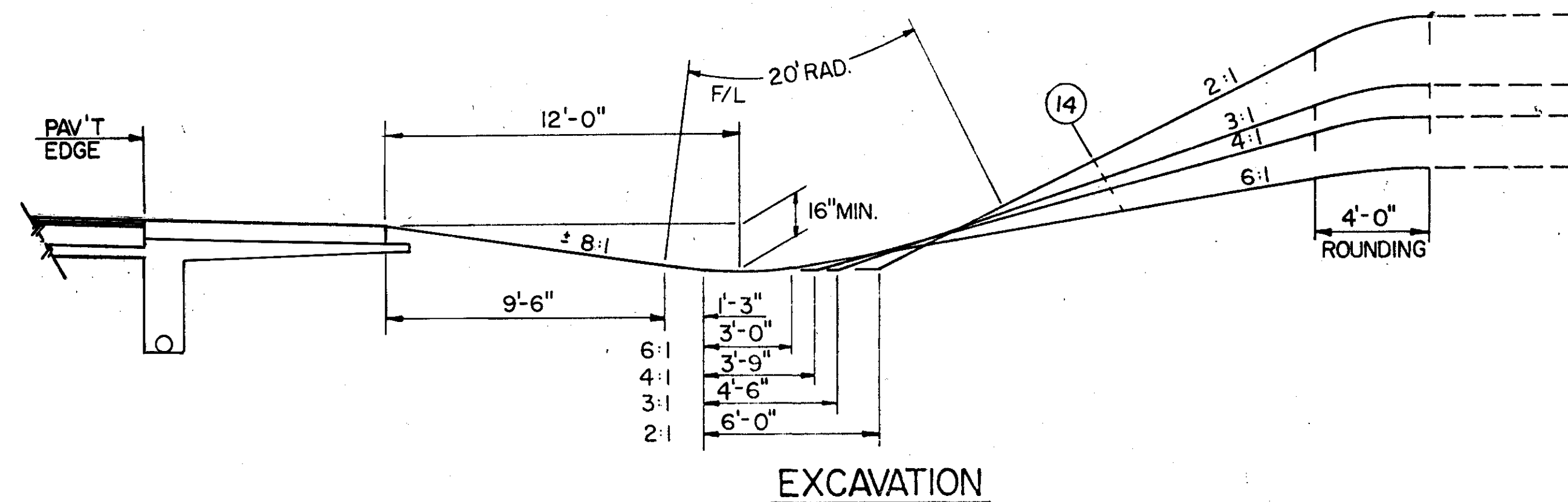
EMBANKMENT



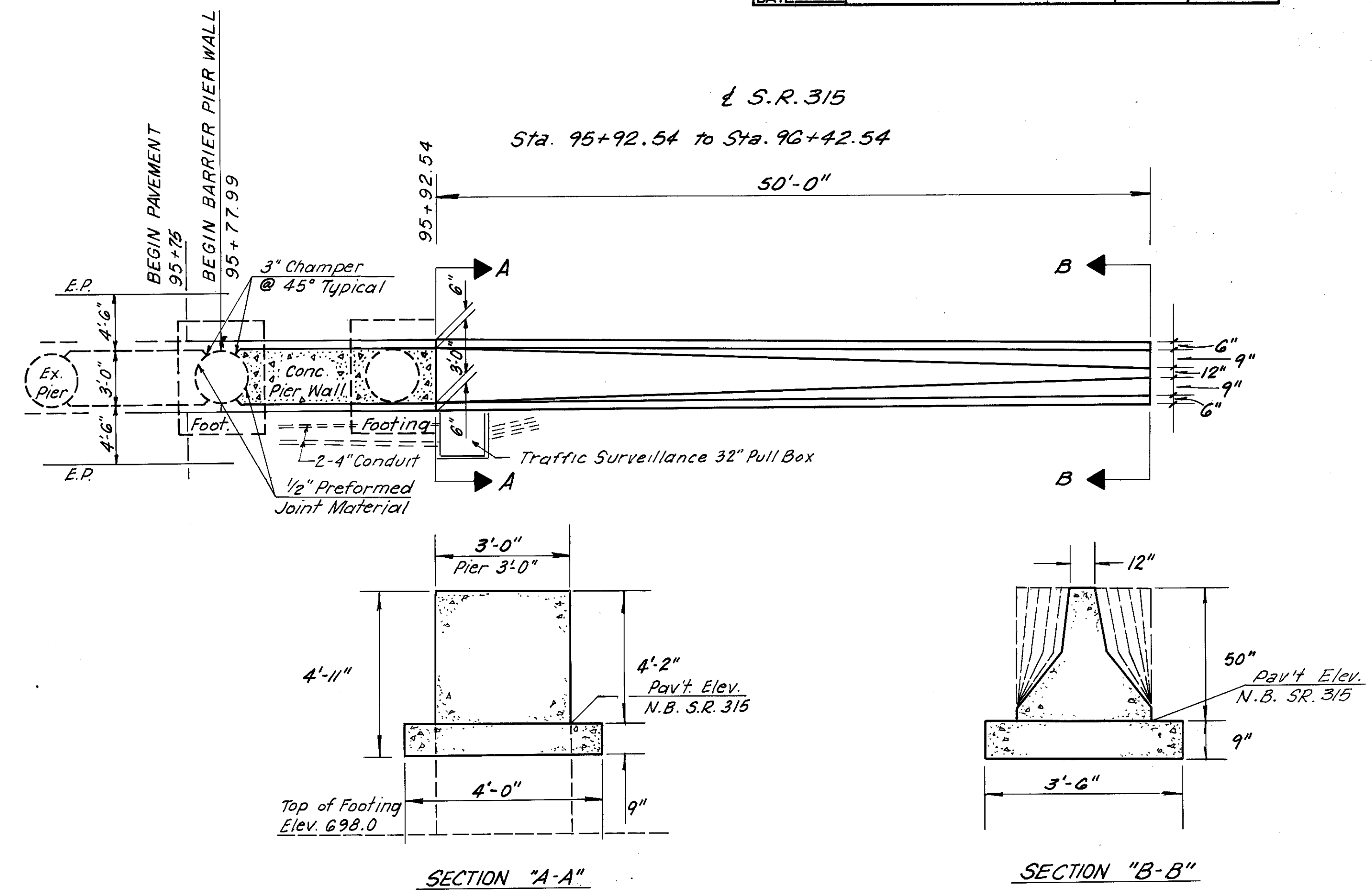
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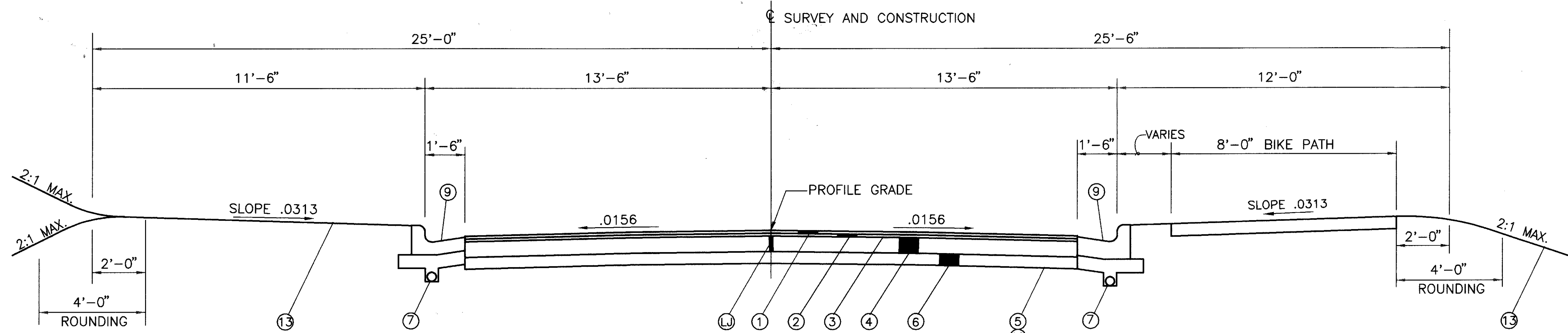
EXCAVATION



SPECIAL - BRIDGE PIER  
CONCRETE BARRIER TRANSITION  
TYPE II

NOTE: See Std. Dwg. MC-93 for Additional Notes and Details.

FOR LEGEND SEE SHEET NO. G

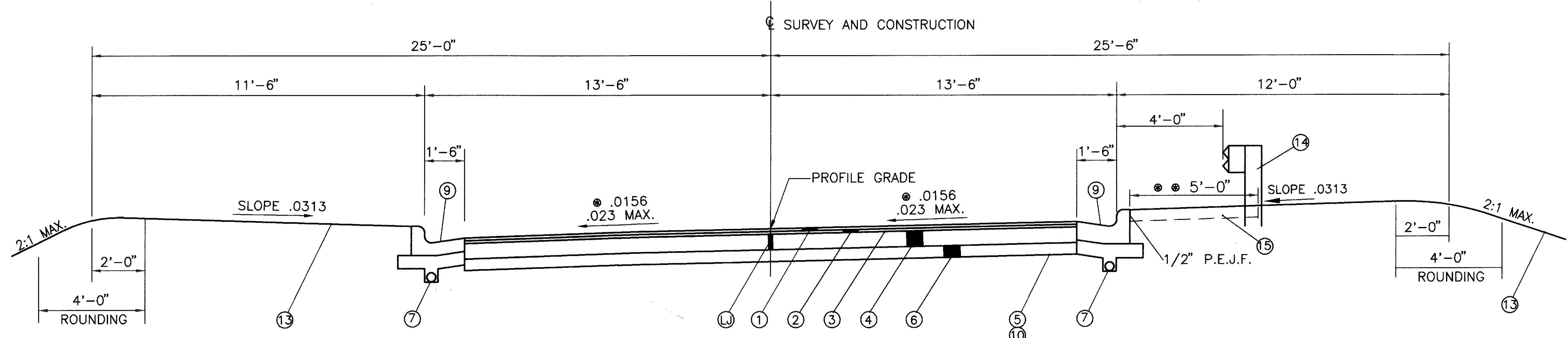


**RICKENBACKER PARK DRIVE (NORMAL SECTION)**

STA. 3+70 TO STA. 4+80  
 STA. 9+90 TO STA. 10+75

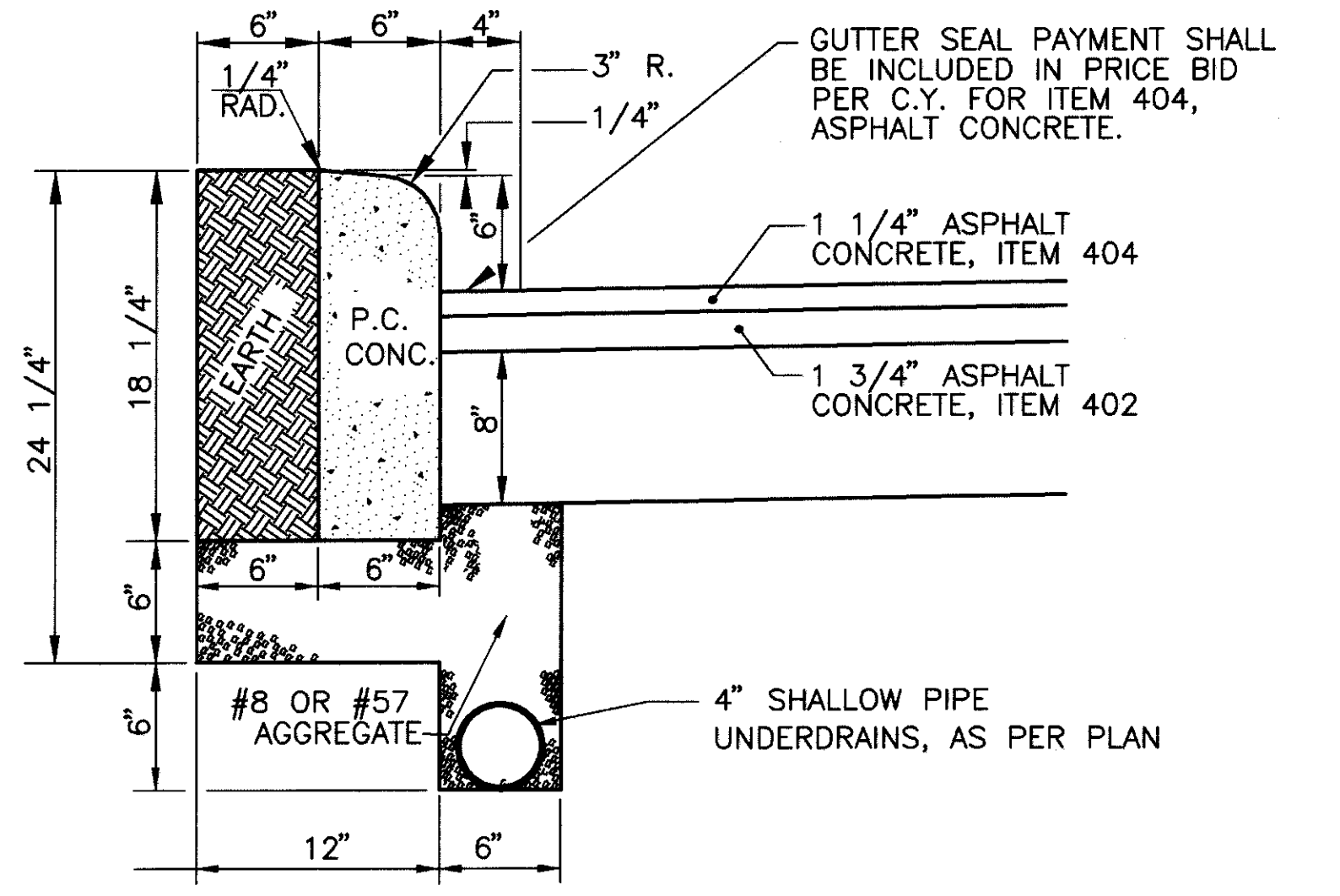
**LEGEND**

①	ITEM 404	1 1/4" ASPHALT CONCRETE AC-20
②	ITEM 402	1 3/4" ASPHALT CONCRETE AC-20
③	ITEM 407	TACK COAT
④	ITEM 305	8" CONCRETE BASE, AS PER PLAN (SEE GENERAL NOTES)
⑤	ITEM 203	PROOF ROLLING
⑥	ITEM 304	6" AGGREGATE BASE, GRADING "A" (SEE PROPOSAL NOTE)
⑦	ITEM 605	4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN (SEE DETAIL)
⑧	ITEM 609	TYPE 6 CURB, AS PER PLAN (SEE DETAIL)
⑨	ITEM 609	COMBINATION CURB AND GUTTER TYPE 2, AS PER PLAN (SEE DETAIL THIS SHEET)
⑩	ITEM 203	SUBGRADE COMPACTION
⑪	ITEM 659	SEEDING AND MULCHING (SEE GENERAL NOTES)
⑫	ITEM 606	GUARDRAIL, TYPE 5
⑬	ITEM 608	4" CONCRETE WALK
⑭		LONGITUDINAL JOINT

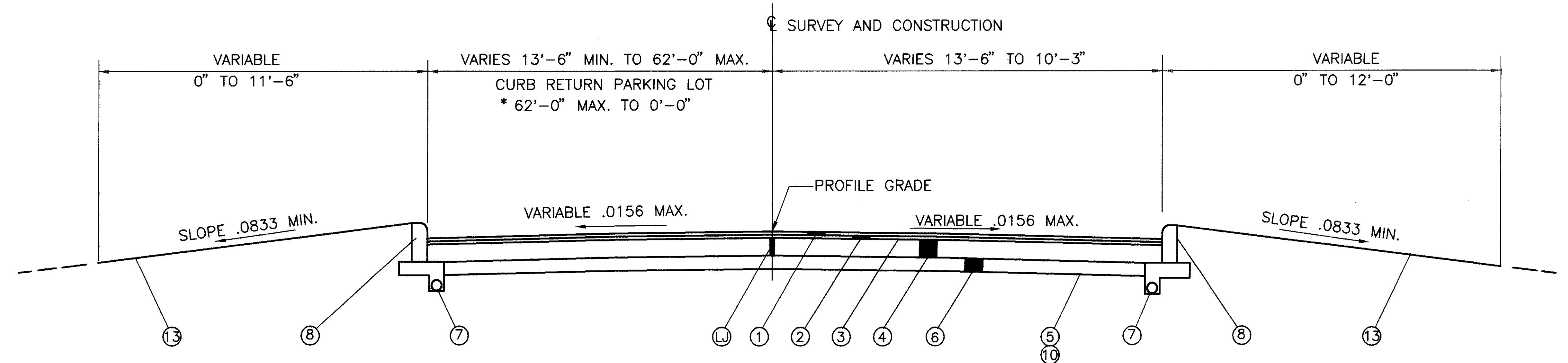


**RICKENBACKER PARK DRIVE (SUPERELEVATION SECTION)**

STA. 4+80 TO STA. 9+90  
 STA. 10+75 TO STA. 13+71.5  
 ● STA. 0+57 TO STA. 3+70 (CROSS-SLOPE REVERSED)  
 ●● STA. 0+57 TO STA. 0+86

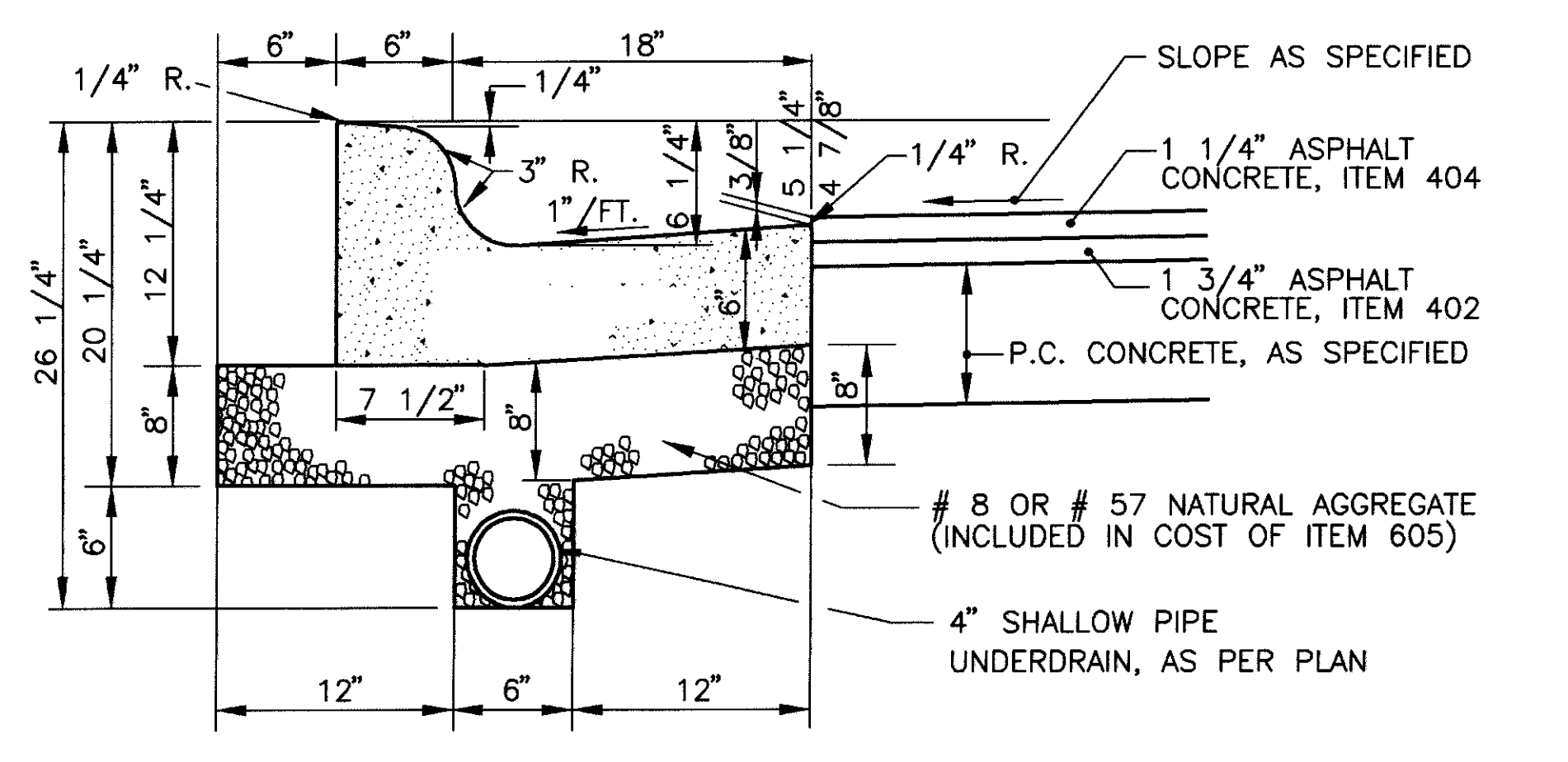


**TYPE 6 CURB, AS PER PLAN AND 4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN**



**RICKENBACKER PARK DRIVE (TRANSITION SECTION)**

STA. 13+71.5 TO STA. 14+75.00  
 \* STA. 13+92 TO STA. 14+30



**COMBINATION CURB & GUTTER, TYPE 2, AS PER PLAN & 4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN**

[RUG] - I:\TRANS\SR315-AS\TRICK-TYP.DWG - APR 24, 1997 - 09:37:45 - SCALE = 1:30



# GENERAL NOTES

CALC. BY	FRANKLIN COUNTY	OHIO	14 404
DATE	FRA-670-1.25 (A-5)	FHWA REGION 5	
CHKD. BY			
DATE			

## UTILITY OWNERSHIP

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

### TELEPHONE:

AMERITECH  
150 EAST GAY STREET, RM. 6-C  
COLUMBUS, OHIO 43215  
TELE 223-8535

MCI TELECOMMUNICATIONS CORPORATION  
485 METRO PLACE-SOUTH, SUITE 201  
DUBLIN, OHIO 43017  
TELE 793-8091

SPRINT COMMUNICATIONS COMPANY  
901 EAST 104TH STREET  
KANSAS CITY, MISSOURI 64131  
TELE (913) 534-5670

AMERICAN TELEPHONE AND TELEGRAPH CO.  
10 S. CANAL STREET, 24TH FLOOR  
CHICAGO, ILLINOIS 60606  
TELE (312) 559-7779

### ELECTRIC:

AMERICAN ELECTRIC POWER  
215 NORTH FRONT STREET  
COLUMBUS, OHIO 43215  
TELE 464-7911

CITY OF COLUMBUS  
DIVISION OF ELECTRICITY  
910 DUBLIN ROAD  
COLUMBUS, OHIO 43215  
TELE 645-7294

### GAS:

COLUMBIA GAS OF OHIO, INC.  
939 WEST GOODALE BLVD.  
COLUMBUS, OHIO 43212  
TELE 460-2241

### SANITARY SEWERS & STORM SEWERS:

CITY OF COLUMBUS  
DIVISION OF SEWERAGE & DRAINAGE  
910 DUBLIN ROAD  
COLUMBUS, OHIO 43215  
TELE 645-8156

### WATER:

CITY OF COLUMBUS  
DIVISION OF WATER  
910 DUBLIN ROAD  
COLUMBUS, OHIO 43215  
TELE 645-7677

### TELEGRAPH:

WESTERN UNION TELEGRAPH CO.  
400 INTERNATIONAL PARKWAY  
RICHARDSON, TEXAS 75081  
TELE (214) 470-6640

### CABLE:

LITEL TELECOMMUNICATION CORP.  
4650 LAKEHURST COURT  
DUBLIN, OHIO 43017  
TELE (614) 433-9200

### 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 ORC.

### COOPERATION BETWEEN CONTRACTORS

THE CONTRACTOR IS ADVISED OF THE PRESENCE OF OTHER CONSTRUCTION CONTRACTS WITHIN THE WORK LIMITS OR THE VICINITY OF THIS PROJECT. THESE CONTRACTS MAY BE GOING ON CONCURRENTLY WITH THIS PROJECT AND CLOSE COOPERATION BETWEEN CONTRACTORS IS REQUIRED TO ENSURE THAT THE TRAFFIC MAINTENANCE OPERATIONS FOR EACH PROJECT ARE AT ALL TIMES COMPATIBLE. ANY CONFLICTS SHALL BE RESOLVED BY THE ENGINEER.

PLEASE NOTE THE FOLLOWING LIST OF ANTICIPATED CONCURRENT CONTRACTS:

### PROJECT DESIGNATION

FRA-33-14.65 (A-2)  
FRA-315-0.49 (D)  
FRA-670-1.02 (A-1)  
FRA-670/315-2.12/1.43 (A-4)

### 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.

### CONTINGENCY QUANTITIES

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR PLAN ITEMS LISTED IN THE GENERAL SUMMARY FOR ITEMS DESIGNATED BY PLAN NOTE 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.

### CONTROL SURVEY NOTE

THE CITY OF COLUMBUS CONTROL MONUMENTS AS REFERENCED ON THESE PLANS ARE AS SET BY THOMAS ENGINEERING AND SURVEYING COMPANY'S REPORT ON CONTROL SURVEY FOR INTERSTATE 670 DATED NOVEMBER 1982. COPIES OF WHICH ARE AVAILABLE AT THE CITY OF COLUMBUS DIVISION OF ENGINEERING AND CONSTRUCTION LOCATED AT 109 NORTH FRONT STREET.

### OPEN BURNING

NO OPEN BURNING OF DEBRIS WILL BE PERMITTED IN CONNECTION WITH THE PROJECT WITHIN PERMANENT OR TEMPORARY RIGHT-OF-WAY.

### CONSTRUCTION HOURS

CONSTRUCTION HOURS TO BE LIMITED WITH NO CONSTRUCTION PERMITTED BETWEEN THE HOURS OF 11:00 P.M. AND 6:00 A.M.

### SPILL MANAGEMENT

THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT POLLUTION TO ANY STREAMS OR WATERWAYS AS PER CMS 108.04. THE CONTRACTOR SHALL HAVE A PROGRAM OF IMMEDIATE DEBRIS REMOVAL TO BE IMPLEMENTED DURING CONSTRUCTION ACTIVITIES TO PREVENT THE ACCUMULATION OF UNSIGHTLY, DELETERIOUS AND POTENTIALLY POLLUTED DEBRIS FROM ENTERING THE RIVER. ALSO, SPECIAL CARE SHALL BE TAKEN TO REMOVE SPILLAGE OF OILS, FUELS, OR ANY POTENTIALLY POLLUTED MATERIAL WHILE WORKING ALONG OR WITHIN THE WATER COURSE.

### USE OF FIRE HYDRANTS

THE CONTRACTOR SHALL MAKE THE PROPER ARRANGEMENTS WITH THE FIRE CHIEF, CITY OF COLUMBUS FIRE DEPARTMENT AND THE CITY OF COLUMBUS, DIVISION OF WATER FOR THE USE OF FIRE HYDRANTS WHEN USED FOR WORK PERFORMED UNDER THIS CONTRACT. BEFORE THE FINAL ESTIMATE IS PAID, THE CONTRACTOR SHALL SUBMIT EVIDENCE TO THE CITY OF COLUMBUS, DIVISION OF WATER STATING THAT HE AND HIS SUBCONTRACTORS HAVE PAID ALL COSTS ARISING FROM THE USE OF THE FIRE HYDRANTS.

### SUPPLEMENTAL SPEC 824

ALL REFERENCES TO SS 824 APPEARING ON THE PROPOSAL NOTES, STANDARD DRAWINGS OR ON THE PLANS, SHALL BE CONSIDERED TO READ CMS 509.10.

### 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.

### REMOVAL OF TREES AND STUMPS

ALL TREES AND STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE CONSTRUCTION LIMITS OF THIS PROJECT SHALL BE REMOVED UNDER THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING, EXCEPT THAT THOSE TREES FOR WHICH PROTECTION AND PRESERVATION WORK IS INDICATED ELSEWHERE IN THESE PLANS SHALL NOT BE REMOVED.

THE FOLLOWING IS AN APPROXIMATE ESTIMATE OF THE NUMBER OF TREES AND STUMPS TO BE REMOVED:

SIZES	NO. TREES	NO. STUMPS
18"	32	0
30"	4	0
48"	0	0
60"	0	0

THE ABOVE ESTIMATE IS APPROXIMATE AND THE STATE OF OHIO RESERVES THE RIGHT TO ORDER THE REMOVAL OF ADDITIONAL TREES OR STUMPS OUTSIDE OF THE LIMITS OF CONSTRUCTION BUT WITHIN THE RIGHT-OF-WAY AND/OR EASEMENT LINES. PAYMENT FOR THE REMOVAL OF THESE ADDITIONAL TREES OR STUMPS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201 CLEARING AND GRUBBING.

### LOCATION OF GUARDRAIL

THE LOCATIONS OF GUARDRAIL RUNS, AS SHOWN IN THESE PLANS, ARE SUBJECT TO ADJUSTMENT PRIOR TO FINAL ACCEPTANCE. THE ENGINEER SHALL BE SATISFIED THAT ALL INSTALLATIONS WILL AFFORD MAXIMUM PROTECTION FOR TRAFFIC.

### ITEM 305, CONCRETE BASE, AS PER PLAN

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

### ITEM 305, CONCRETE BASE JOINT SPACING

THE MAXIMUM JOINT SPACING SHALL BE 15'. JOINTS IN THE MAINLINE PAVEMENT SHALL MATCH THE JOINTS IN THE ITEM 452, PLAIN CONCRETE SHOULDERS.

### ITEM 452, PLAIN CONCRETE PAVEMENT, AS PER PLAN

PLAIN CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS OF ITEM 452 AND THE STANDARD DRAWINGS BP-2.1 AND BP-2.2 WITH THE FOLLOWING EXCEPTIONS:

THE MAXIMUM SPACING BETWEEN CONTRACTION/EXPANSION JOINTS SHALL BE FIFTEEN (15) FEET AND SHALL BE NORMAL TO THE CENTERLINE OF PAVEMENT.

JOINTS IN MAINLINE SHALL MATCH THE ONES IN SHOULDER AS ONE CONTINUOUS JOINT (TRANSVERSE).

TRANSVERSE CONTRACTION/EXPANSION JOINTS SHALL BE CONSTRUCTED SUCH THAT THEY WILL FORM ONE CONTINUOUS JOINT WITH THE MAINLINE PAVEMENT.

ALL SHOULDER TRANSVERSE CONTRACTION/EXPANSION JOINTS SHALL BE DOWELLED AS PER 451.08(B).

PAVEMENT SURFACE VARIATION SHALL NOT EXCEED 1/4" IN A 10' LENGTH OF PAVEMENT. ALL OTHER PROVISIONS OF 451.12 AS CALLED FOR IN 452.01 SHALL APPLY.

### ITEM 407, TACK COAT

THE RATE OF APPLICATION OF 407 TACK COAT SHALL BE SUBJECT TO ADJUSTMENT, AS DIRECTED BY THE ENGINEER. PLAN QUANTITIES INDICATE AVERAGE APPLICATION RATES OF .075 GALLONS PER SQUARE YARD OF TACK COAT FOR ESTIMATING PURPOSES ONLY.

### ITEM 304, AGGREGATE BASE, AS PER PLAN

MATERIALS FURNISHED FOR THIS ITEM SHALL EXCLUDE ALL SLAG EXCEPT GRANULATED SLAG OR CRUSHED AIR-COOLED BLAST FURNACE SLAG. [THE MAXIMUM TOTAL PERCENT PASSING THE NO. 200 SIEVE FOR 304 SHALL BE 8 PERCENT AS OPPOSED TO THE 13 PERCENT SHOWN IN 304.02.]

### 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 659, SEEDING AND MULCHING

ALL SLOPES STEEPER THAN 3:1 SHALL BE SEEDED WITH CROWN VETCH (CORONILLA VARIA) AT THE RATE SPECIFIED UNDER 659.09. THE COST OF THE CROWN VETCH SHALL BE INCLUDED IN THE COST PER SQUARE YARD FOR ITEM 659 SEEDING AND MULCHING.

### ITEM 659, AGRICULTURAL LIMING, AS PER PLAN

THE LOCATION AND NEED FOR AGRICULTURAL LIMING WILL BE DETERMINED BY LABORATORY TESTS, AFTER ROUGH GRADING OPERATIONS HAVE BEEN PERFORMED. QUANTITIES OF AGRICULTURAL LIMING, AS SHOWN ON THE PLANS, ARE SUFFICIENT FOR THE ENTIRE PROJECT, BUT WILL BE NON-PERFORMED FOR THE AREAS WHERE TESTS SHOWN THAT THE LIMING IS NOT REQUIRED.

### CHANNEL EMBANKMENTS

PORTIONS OF THE EXISTING CHANNEL SHALL BE FILLED AND SLOPED TO DRAIN AS SHOWN IN THESE PLANS. IN CHANNEL EMBANKMENT AREAS WHICH WILL NOT SUPPORT ANY PORTION OF THE NEW ROAD BED OR STRUCTURAL EMBANKMENTS, THE CONTRACTOR MAY UTILIZE EMBANKMENT METHODS MEETING THE FOLLOWING REQUIREMENTS:

AREAS WHERE CHANNEL EMBANKMENTS ARE TO BE PLACED SHALL BE CLEARED OF WEEDS AND BRUSH. THE REQUIREMENTS FOR MOISTURE, DENSITY CONTROL, BENCHING AND SUITABLE MATERIALS SHALL BE WAIVED. IN LIEU OF THE REQUIREMENTS OF ITEM 203, THE DEPTH OF LAYERS IN WHICH THE EMBANKMENTS ARE TO BE PLACED, AND THEIR COMPACTION, SHALL CONFORM WITH ACCEPTABLE CONSTRUCTION PRACTICES AS DETERMINED BY THE ENGINEER.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 203, EMBANKMENT.

### ITEM SPECIAL - SOIL STERILANT

HERBICIDE SHALL BE TREFLAN 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 LABEL 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 SPECIAL - SOIL STERILANT PER SQUARE YARD.

# GENERAL NOTES

### 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.

	(F)	(IR)
207 TEMPORARY SEEDING AND MULCHING	1560 S.Y.	8282 S.Y.
207 STRAW OR HAY BALES	104 EA.	24 EA.
207 TEMPORARY SLOPES DRAINS	50 L.F.	100 L.F.
207 TEMPORARY BENCHES, DAMS & SEDIMENT BASINS	250 C.Y.	500 C.Y.
207 FILTER FABRIC FENCE	0 L.F.	700 L.F.
207 TEMPORARY DIKES	700 L.F.	1300 L.F.
601 TYPE C ROCK CHANNEL PROTECTION (WITHOUT FILTER)	2 C.Y.	4 C.Y.
659 MOWING	18 M S.F.	93 M S.F.
659 COMMERCIAL FERTILIZER	0.7 TONS	1.8 TONS
659 REPAIR SEEDING AND MULCHING	309 S.Y.	2071 S.Y.
659 WATER	4 M GAL.	18 M GAL.

THE CONTRACTOR IS DIRECTED TO DEVOTE SPECIAL ATTENTION TO KEEPING ALL WATER DRAINING INTO THE PUMP STATION CLEAN OF DEBRIS.

### ITEM 207, FILTER FABRIC FENCE

MATERIALS  
FILTER FABRIC SHALL MEET THE REQUIREMENT OF ITEM 207.02

CONSTRUCTION  
THE BOTTOM OF THE FENCE SHALL BE BURIED 6" BELOW THE GROUND. THE FENCE SHALL BE HIGH ENOUGH TO RETAIN SEDIMENT LADEN WATER AND ADEQUATELY SUPPORTED TO PREVENT COLLAPSE OR BURSTING. THE GROUND ELEVATION OF THE FENCE SHALL BE HELD CONSTANT EXCEPT THAT THE END ELEVATIONS SHALL BE RAISED TO PREVENT FLOW AROUND THE END OF THE FENCE.

MAINTENANCE  
THE FILTER FABRIC FENCE SHALL, AT THE DIRECTION OF THE ENGINEER, BE MAINTAINED TO BE FUNCTIONAL. THIS SHALL INCLUDE REMOVAL OF TRAPPED SEDIMENT AND REQUIRED CLEANING, REPAIR, AND/OR REPLACEMENT OF THE FILTER FABRIC.

PAYMENT  
THE COST OF ALL MATERIALS, CONSTRUCTION, MAINTENANCE AND REMOVAL REQUIRED SHALL BE PAID FOR UNDER ITEM 207, LIN. FT., FILTER FABRIC FENCE.

### 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.

	(F)	(IR)
659 WATER	9 M GAL	45 M GAL
659 MOWING	18 M SQ. FT.	93 M SQ. FT.

### ITEM 616, DUST CONTROL

THE FOLLOWING ESTIMATED QUANTITIES ARE TO BE USED AT THE DIRECTION AND IN THE AMOUNTS REQUESTED BY THE ENGINEER FOR DUST CONTROL WITHIN THE LIMITS OF THE PROJECT.

	(F)	(IR)
616 WATER	25 M GAL	75 M GAL
616 CALCIUM CHLORIDE	5 TON	5 TON

### ITEM 203, PROOF ROLLING

AN ESTIMATED QUANTITY FOR THIS ITEM HAS BEEN PROVIDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER. SEE CALCULATIONS ON SHEET NO. 20.

### PRE-MARKING INSPECTION

THE CONTRACTOR SHALL NOTIFY THE CITY OF COLUMBUS, DIVISION OF TRAFFIC ENGINEERING, AT LEAST TWO (2) WORKING DAYS PRIOR TO THE PLACEMENT OF THE PRE-MARKING FOR PERMANENT PAVEMENT MARKING SO THAT A REPRESENTATIVE OF THE DIVISION CAN BE PRESENT TO INSPECT THE WORK AND INSURE ACCURACY (PHONE 614-645-7790, OPERATIONS SECTION).

### CONTRACTOR'S MAINTAINING TRAFFIC RESPONSIBILITY

ON THIS PROJECT, THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF THE EXISTING U.S. 33 PAVEMENT (TWO-WAY TRAFFIC MAINTAINED) AS PER ITEM 614, SHALL BE LIMITED TO THOSE PORTIONS OF THE EXISTING ROADWAY LYING WITHIN THE PROPOSED WORK LIMITS. NECESSARY UPKEEP OF THE ADJOINING PAVEMENTS WHICH ARE USED FOR TRAFFIC MAINTENANCE BUT ARE OUTSIDE OF THE WORK LIMITS FOR THE PROPOSED HIGHWAY RELOCATION WILL BE PROVIDED WITH CONTRACT FRA-33-14.65. CLOSING TO TRAFFIC OF S.R. 315 WILL BE WITH CONTRACT FRA-315-2.39 AND CONTRACT FRA-315-0.49.

THE CONTRACTOR SHALL PROVIDE A SAFETY NET OR PLATFORM OF SUITABLE STRENGTH AT THE UNDERSIDE OF THE BRIDGE DECK TO PROTECT THE WORKER AND TRAVELING PUBLIC DURING BRIDGE CONSTRUCTION OVER TRAFFIC MAINTAINED ON THE U.S. 33 ROADWAY. THE DESIGN OF THE NET OR PLATFORM SHALL CONFORM WITH O.S.H.A. REQUIREMENTS AND SHALL REMAIN IN PLACE UNTIL THE WORK HAS BEEN COMPLETED AND ACCEPTED, OR AS DIRECTED BY THE ENGINEER. THE FURNISHING, INSTALLING, MAINTAINING AND REMOVING OF THE SAFETY NET OR PLATFORM SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "ITEM 614 - MAINTAINING TRAFFIC".

### STREET CLOSURE PERMIT

PRIOR TO THE CLOSURE OF ANY PORTION OF A STREET, THE CONTRACTOR SHALL APPLY FOR A PERMIT AT THE DIVISION OF ENGINEERING AND CONSTRUCTION (PHONE 614-645-7348). A COPY OF THESE PLANS AND A PLAN OF OPERATIONS MUST BE PRESENTED AT THE TIME OF APPLICATION. THE PERMIT WILL THEN BE REVIEWED BY THE DIVISION OF TRAFFIC AND THE DIVISION OF POLICE AND ISSUED BY THE DIVISION OF ENGINEERING AND CONSTRUCTION. A COPY OF THIS PERMIT SHALL BE RETAINED AT THE JOB AT ALL TIMES.

### COORDINATION WITH THE TRAFFIC MANAGEMENT PROGRAM

THE CONTRACTOR SHALL NOTIFY THE TRAFFIC MANAGEMENT PROGRAM (TMP) OF THE EXPECTED MAINTENANCE OF TRAFFIC ON THIS PROJECT ON A WEEKLY BASIS. UPDATES ON THE ANTICIPATED MAINTENANCE OF TRAFFIC FOR THE FOLLOWING WEEK SHOULD BE PROVIDED TO THE TMP COORDINATOR AT 614-645-7395 EACH FRIDAY MORNING.

### CROSSING AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE THE PLANS PROVIDE FOR PROPOSED CONDUIT TO BE CONNECTED TO, OR TO CROSS EITHER OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE HE STARTS TO LAY THE PROPOSED CONDUIT. IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT OR EXISTING APPURTENANCE TO BE CONNECTED TO DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE PROJECT ENGINEER SHALL BE NOTIFIED BEFORE THE 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 PROJECT ENGINEER SHALL BE NOTIFIED BEFORE THE CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

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

### EROSION CONTROL

ITEM 601, 660 AND 670 ARE PROVIDED IN THESE PLANS FOR EROSION CONTROL. ROCK OR TURF OF A STABLE NATURE WILL NOT BE REMOVED IN ORDER TO PLACE ANY OF THESE ITEMS. THE ENGINEER SHALL CHECK AND NON-PERFORM QUANTITIES OR ADJUST LOCATIONS AND QUANTITIES FOR THESE ITEMS WHERE INDICATED BY FIELD CONDITIONS DURING CONSTRUCTION.

### SANITARY FLOW INTO HIGHWAY DRAINAGE SYSTEMS

THIS PLAN MAKES NO PROVISION FOR CONNECTING, NOR SHALL THE ENGINEER OR CONTRACTOR CONNECT, ANY EXISTING OR NEW DRAINAGE INTO THE HIGHWAY DRAINAGE SYSTEM WHEN SUCH DRAINS CARRY FLOW FROM ANY PLUMBING FIXTURES INCLUDING FLOOR DRAINS AND SINK DRAINS.

EXISTING PIPE CARRYING FLOW WHICH COMES WITHIN THE CATEGORY OUTLINED ABOVE SHALL BE PLUGGED WITH CLASS C CONCRETE AT THE RIGHT-OF-WAY LINE. PAYMENT FOR SAID PLUGGING SHALL BE INCLUDED IN THE UNIT PRICE BID 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.

### CONDUIT STRENGTH REQUIREMENTS

THE DESIGN PROCEDURE USED THROUGHOUT THIS PLAN FOR STRUCTURAL DESIGN OF CONDUIT IS THE WIDE TRENCH INSTALLATION SHOWN IN THE CONCRETE PIPE DESIGN MANUAL AVAILABLE FROM THE AMERICAN CONCRETE PIPE ASSOCIATION. ANY REVISIONS TO THE CONDUIT PROVIDED IN THIS PLAN MUST BE SELECTED BY USING THIS PROCEDURE.

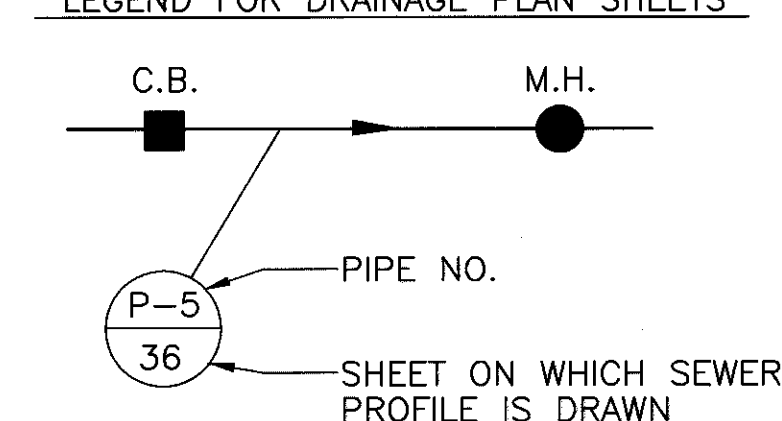
### ITEM 604, INLET NO. 3B-50, AS PER PLAN

ALL REINFORCING STEEL LISTED IN THE STEEL LIST ON THE STANDARD CONSTRUCTION DRAWING SHALL BE EPOXY-COATED IN ACCORDANCE WITH 509.02 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. ALL COSTS OF THIS COATING SHALL BE INCLUDED IN THE COST OF THIS ITEM.

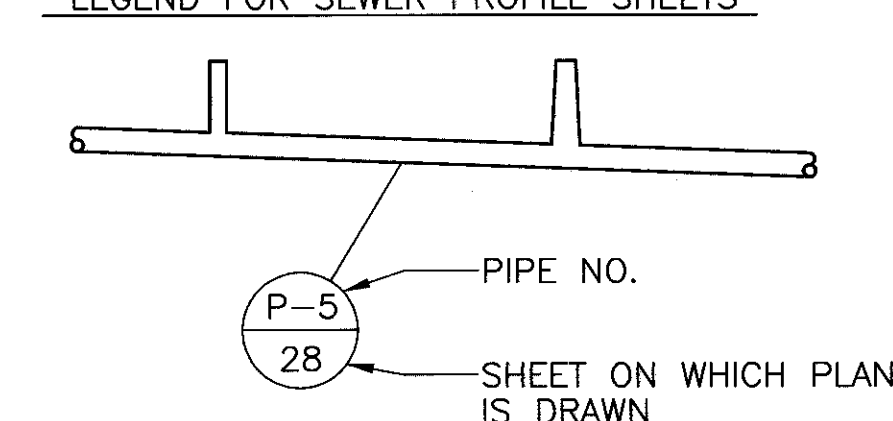
### SEALING OF PIPE JOINTS

WHERE CONNECTIONS ARE MADE BETWEEN RIGID AND FLEXIBLE PIPE SECTIONS OR BETWEEN PIPE SECTIONS OF DIFFERENT KIND OR TYPE OF FABRICATION, WHETHER REQUIRED BY THE PLANS ARISING FROM PERMISSIBLE USE OF OPTIONAL MATERIALS, OR ENCOUNTERED IN CONNECTION TO EXISTING FACILITIES, THE JOINT SHALL BE SEALED, IF SEALING IS REQUIRED BY THE SPECIFICATION, BY MEANS OF A MASONRY COLLAR AS PER STANDARD DRAWING MC-4. PAYMENT FOR SEALING AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT PIPE ITEM.

### LEGEND FOR DRAINAGE PLAN SHEETS



### LEGEND FOR SEWER PROFILE SHEETS



### ITEM 604, FLAP GATE WALL MOUNTED

THE 36" FLAP GATE IS TO BE WALL MOUNTED ARMCO MODEL 10C, NEENAH TYPE SF, BROWN AND BROWN TYPE M-4, OR APPROVED EQUAL. THE GATE SHALL BE FITTED WITH BRASS HINGE BOLTS, NUTS, AND BUSHINGS.

PAYMENT FOR ITEM 604, 36" FLAP GATE WALL MOUNTED SHALL INCLUDE FURNISHING AND INSTALLING BOLTS, NUTS, BUSHINGS, HINGE BARS, AND GATE, COMPLETE IN PLACE ON THE PROPOSED WALL.

### ITEM 638, 36" PRESTRESSED CONCRETE CYLINDER PIPE, AWWA C301, AS PER PLAN

THE WORK CONSISTS OF FURNISHING AND LAYING A NEW FORCE MAIN IN REASONABLY CLOSE CONFORMITY WITH THE LINES AND GRADES SHOWN ON THE PLANS OR ESTABLISHED BY THE ENGINEER. THE 36" PRESTRESSED CONCRETE CYLINDER PIPE SHALL CONFORM TO AWWA C-301-(CURRENT) FOR A 100 PSI WORKING PRESSURE. EXCAVATION, LAYING PIPE, HYDROSTATIC TESTING, AND BACKFILLING SHALL BE PROVIDED IN CMS 638.04, 638.06, 638.08 AND 638.09. PAYMENT FOR THE ABOVE INCLUDING THE 90° BEND, THRUST BLOCK AND DISCHARGE PIPE FITTINGS AS SHOWN ON THE PLANS FOR PUMP STATION NO. 2 REVISIONS, SHALL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT FOR ITEM 638, 36" PRESTRESSED CONCRETE CYLINDER PIPE, AWWA C301, AS PER PLAN. THE 36" PIPE OUTLET HEADWALL AND ROCK CHANNEL PROTECTION ARE PAID FOR AS SEPARATE ITEMS.

ROOF DRAINS AND FOUNDATION DRAINS  
ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

### SANITARY MANHOLE LOCATIONS AND CONCRETE PIPE ENCASEMENT

THE STATION AND OFFSET OF THE SANITARY MANHOLES SHOWN ON THE PLANS IS TO THE CENTER OF THE MANHOLE BASE. HOWEVER IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPES AS TO LINE AND GRADE BEFORE HE BEGINS TO CONSTRUCT THE MANHOLES OR ENCASEMENT PIPE.

### SANITARY MANHOLE RECONSTRUCTED WITH PRESSURE TIGHT COVER, AS PER PLAN

RECONSTRUCT MANHOLE AND FURNISH AND INSTALL A PRESSURE TIGHT FRAME AND COVER. THE FRAME AND COVER IS TO BE NEENAH R-1915-H2, EAST JORDAN 1047 PT, OR APPROVED EQUAL.

PAYMENT FOR THE PRESSURE TIGHT FRAME AND COVER SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 604 MANHOLE RECONSTRUCTED TO GRADE WITH PRESSURE TIGHT COVER, AS PER PLAN.

### ITEM SPECIAL IMPACT ATTENUATOR, TYPE 1

THIS WORK SHALL CONSIST OF FURNISHING AND INSTALLING AN IMPACT ATTENUATOR SYSTEM.

THE IMPACT ATTENUATOR SYSTEM SHALL BE ONE OF THE FOLLOWING:

1. THE BRAKEMASTER IMPACT ATTENUATING SYSTEM MANUFACTURED BY ENERGY-ABSORPTION SYSTEMS, INC., ONE EAST WACKER DRIVE, CHICAGO, ILLINOIS 60601 (TELEPHONE 312-467-6750).
2. 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 UNIT BID 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.



# GENERAL NOTES

## SPECIFICATIONS

THE STATE OF OHIO, CONSTRUCTION AND MATERIAL SPECIFICATIONS, INCLUDING SPECIAL PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND STANDARD DETAILS AND CONSOLIDATED RAIL CORPORATION SPECIFICATIONS CE-8 AND CE-6 SHALL GOVERN THE INSTALLATION OF THE FORCE MAIN RELOCATION.

### ITEM 638 - 36" PRESTRESSED CONCRETE CYLINDER PIPE, AWWA C 301, UNDER RAILROAD, AS PER PLAN

- DESCRIPTION. THIS WORK SHALL CONSIST OF THE CONSTRUCTION OF A TUNNEL AND 36" FORCE MAIN. THE WORK SHALL INCLUDE THE EXCAVATION, REMOVAL OF WATER, FURNISHING AND INSTALLING A TUNNEL LINER OF SUFFICIENT SIZE TO ACCOMMODATE THE PLACEMENT OF THE FORCE MAIN AND FILL MATERIAL, THE PLACEMENT OF A PAVED TUNNEL LINER INVERT OR PIPE SUPPORT STRUCTURE, THE LAYING OF THE PIPE AND THE CONSTRUCTION OF THE TUNNEL END BULKHEADS AS SHOWN ON THE PLANS AND SPECIFIED HEREIN.
- MATERIALS. MATERIALS SHALL BE AS FOLLOWS:
 

A. TUNNEL LINER	707
B. CEMENT FOR GROUT	701
C. SAND FOR GROUT	703.03
D. CONCRETE, CLASS C	499
E. PRESTRESSED CONCRETE CYLINDER PIPE, AWWA C 301 (CURRENT) AS PER PLAN	638
F. LOW STRENGTH MORTAR BACKFILL MATERIAL (SEE PROPOSAL NOTE NO. 220)	
- GENERAL. TUNNELING WITHIN THE RIGHT-OF-WAY OF CONSOLIDATED RAIL CORPORATION SHALL CONFORM TO THE REQUIREMENTS AND REGULATIONS SPECIFICATIONS CE-6 AND CE-8. THE CITY WILL SECURE THE NECESSARY PERMITS AND CROSSING RIGHTS FROM THE RESPECTIVE AUTHORITIES INVOLVED BEFORE PROCEEDING WITH THE TUNNELING WORK, THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR HIS APPROVAL, THE NECESSARY WORKING SCHEDULE, SHOP DRAWINGS, A DESCRIPTION OF THE TYPE OF MATERIALS TO BE USED AND THE METHODS OF CONSTRUCTION TO BE UTILIZED. THIS INFORMATION SHALL BE FURNISHED IN TRIPLICATE AND ALL COPIES WILL BE FORWARDED BY THE ENGINEER TO THE AUTHORITY INVOLVED FOR ITS APPROVAL. ONE APPROVED COPY WILL BE RETURNED TO THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAYMENT OF ANY COSTS WHICH MAY RESULT DUE TO THE AUTHORITY'S REQUIREMENTS, OF WHATEVER NATURE, INCLUDING THE FURNISHING OF WATCHMEN AND SUPERVISION BY ITS FORCES.

WHERE WORK UNDER THIS ITEM INVOLVES THE TUNNELING UNDER OF RAILROAD TRACKS, ALL OPERATIONS OF THE CONTRACTOR OR HIS AGENTS AND EMPLOYEES MUST BE SUBORDINATE TO THE FREE AND UNOBSTRUCTED USE AND CONDUCT OF THE RAILROAD COMPANY'S BUSINESS WITHOUT DELAY OR DANGER TO LIFE, EQUIPMENT OR PROPERTY, THE CONTRACTOR SHALL SAVE HARMLESS THE RAILROAD COMPANY AGAINST ALL CLAIMS, SUITS OR JUDGEMENTS ARISING BECAUSE OF OR RESULTING FROM THE OPERATIONS, ACTIONS OR OMISSIONS OF THE CONTRACTOR OR HIS AGENTS AND EMPLOYEES. THE CONTRACTOR SHALL AT ALL TIMES COOPERATE WITH THE RAILROAD AND PROVIDE RAILROAD LIABILITY INSURANCE (SEE PROPOSAL NOTE NO. 327)

- EXCAVATION. THE CONTRACTOR SHALL EXCAVATE ALL MATERIAL OF WHATEVER NATURE ENCOUNTERED, INCLUDING ROCK, NECESSARY FOR THE CONSTRUCTION OF THE WORK. ALL EXCAVATED MATERIAL SHALL BE CONSIDERED UNCLASSIFIED MATERIAL.
- TUNNEL LINING. A MINIMUM WALL THICKNESS OF 0.109 INCH (12 GA.) SHALL PROVIDE STRENGTH COMMENSURATE WITH THE TUNNEL DIAMETER AND DEPTH OF COVER AND IN ACCORDANCE WITH THE REQUIREMENTS OF 707. MATERIAL FURNISHED FOR THE LINER PLATES SHALL BE AS MANUFACTURED BY ARMCO DRAINAGE AND METAL PRODUCTS, INC. OR REPUBLIC STEEL CORP. OR AN APPROVED EQUAL.

### ITEM 638-CONTINUED

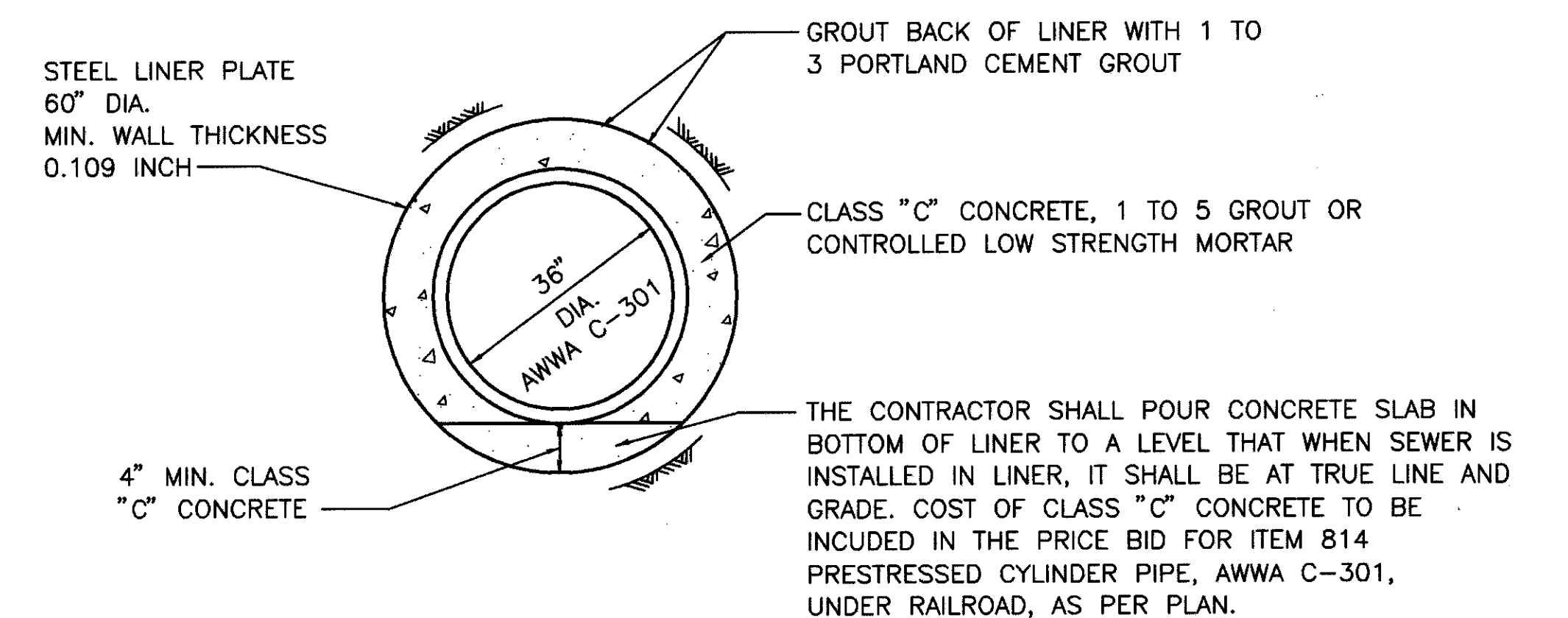
- GROUTING. GROUT HOLES SHALL BE PROVIDED IN THE TUNNEL LINING WITH A SPACING NOT TO EXCEED FOUR AND ONE-HALF (4.5) FEET MEASURED LONGITUDINALLY. THE LOCATION OF HOLES SHALL BE VARIED AROUND THE PERIPHERY OF THE TUNNEL LINING TO SUIT FIELD CONDITIONS WHICH WILL PERMIT THE PROPER GROUTING SEQUENCE TO INSURE COMPLETE FILLING OF VOID SPACES OUTSIDE THE TUNNEL LINING. THE CONTRACTOR SHALL FILL ALL THE VOID SPACE OUTSIDE THE TUNNEL LINING WITH 1 TO 3 PORTLAND CEMENT GROUT. GROUTING SHALL BE PERFORMED WHEN ORDERED BY THE ENGINEER. THE MACHINE USED FOR GROUTING SHALL PERMIT THE APPLICATION OF A PRESSURE UP TO SEVENTY-FIVE (75) POUNDS PER QUARE INCH IN EXCESS OF ANY EXTERNAL WATER PRESSURE. A GAUGE SHALL BE PROVIDED WHICH WILL ACCURATELY INDICATE WORKING PRESSURE AND THIS GAUGE SHALL BE CAREFULLY WATCHED DURING GROUTING OPERATIONS. THE PRESSURE SHALL AT NO TIME BE ALLOWED TO EXCEED THAT CONSIDERED SAFE OR WHICH WOULD DISTORT THE TUNNEL LINING. GROUT PIPES SHALL BE ONE AND ONE-HALF (1-1/2) INCHES INSIDE DIAMETER. IN FREEZING TEMPERATURES, MEANS SHALL BE EMPLOYED TO HEAT MIXING WATER FOR GROUT AND PROPER INSULATION SHALL BE PROVIDED TO PREVENT FREEZING GROUT IN GROUT TUBES FROM POINT OF INITIAL DISCHARGE TO FINAL POSITION OF GROUT IN PLACE.
- FILL MATERIAL. AFTER INSTALLATION OF THE SEWER IN THE TUNNEL LINING, THE CONTRACTOR SHALL COMPLETELY FILL THE SPACE BETWEEN THE TUNNEL LINER AND THE FORCE MAIN WITH 1 TO 5 PORTLAND CEMENT GROUT, CLASS C CONCRETE, OR CONTROLLED LOW STRENGTH MORTAR BACKFILL (SEE PROPOSAL NOTE NO. 220).
- METHOD OF MEASUREMENT. THE LENGTH OF TUNNEL AND FORCE MAIN TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF LINEAR FEET ACCEPTED, AS MEASURED ALONG THE CENTERLINE OF THE PIPE COMPLETE IN PLACE.
- BASIS OF PAYMENT. THE ACCEPTED NUMBER OF LINEAR FEET OF TUNNEL AND FORCE MAIN PIPE SIZES WILL BE PAID FOR AT THE CONTRACT UNIT PRICES PER LINEAR FOOT COMPLETE IN PLACE. PAYMENT WILL BE MADE UNDER ITEM 638-36" PRESTRESSED CONCRETE CYLINDER PIPE, AWWA, C 301, UNDER RAILROAD, AS PER PLAN.

### ITEM SPECIAL - TUNNEL ACCESS SHAFT

- DESCRIPTION. THIS WORK SHALL CONSIST OF THE EXCAVATION, REMOVAL OF WATER, SHAFT SUPPORTS WHERE NECESSARY AND BACKFILL OF THE SHAFT AT THE LOCATIONS SHOWN ON THE PLANS AND AS SPECIFIED HEREIN, AND SHALL INCLUDE REFERENCE MONUMENTS, TRACK MONITORING, SETTLEMENT AND SLOPE PROTECTION, ETC.
- MATERIALS. THE CONTRACTOR SHALL USE SUCH MATERIALS AS ARE REQUIRED FOR HIS METHOD OF CONSTRUCTION OPERATIONS AND TO MAINTAIN THE VERTICAL FACE OF THE SHAFT EXCAVATION. SUCH MATERIALS SHALL ASSURE THE PROTECTION OF THE WORK AND SAFETY OF THE PERSONNEL.
- GENERAL. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR HIS APPROVAL, PRIOR TO COMMENCEMENT OF OPERATIONS, HIS PLAN OF OPERATION AND CONSTRUCTION SCHEDULE, THE DESIGN OF THE SHAFT SUPPORTS, A DESCRIPTION OF THE TYPE OF MATERIALS TO BE USED AND THE MATERIALS HANDLING EQUIPMENT. THE LOCATION OF THE TUNNEL SHAFT FOR THE TUNNEL AND PIPE SEWER SIZE SPECIFIED SHALL BE AS INDICATED ON THE PLANS AND ACCORDING TO CONTRACT DOCUMENTS. THIS INFORMATION SHALL BE FURNISHED IN TRIPLICATE AND ALL COPIES WILL BE FORWARDED BY THE ENGINEER TO ANY AUTHORITY INVOLVED FOR ITS APPROVAL. ONE APPROVED COPY WILL BE RETURNED TO THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PAYMENT OF ANY COST WHICH MAY RESULT DUE TO THE AUTHORITY'S REQUIREMENTS, OF WHATEVER NATURE, INCLUDING THE FURNISHING OF WATCHMEN AND SUPERVISION BY ITS FORCES. APPROVAL OF THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR FROM HIS OBLIGATIONS TO ASSURE THE SAFE CONDUCT AND QUALITY OF THE WORK SPECIFIED.

### ITEM SPECIAL - TUNNEL ACCESS SHAFT -CONTINUED

- REFERENCE MONUMENT. THE CONTRACTOR SHALL MAKE PROVISIONS AT ALL SHAFT LOCATIONS SO THAT SURVEY PLUMBLINES SUSPENDED ON THE CENTERLINE OF THE SEWER AT EACH SIDE OF THE SHAFT WILL HANG FREELY FROM THE GROUND SURFACE SUSPENSION POINTS TO THE SHAFT BOTTOM SURFACE. HE SHALL CONSTRUCT A PERMANENT SET OF CONCRETE REFERENCE MONUMENTS ACCORDING TO THE STANDARD DRAWING MC-1 AT THE LOCATIONS AND TIME AS DIRECTED BY THE ENGINEER. COST OF MONUMENTS INCLUDED WITH TUNNEL SHAFT.
- EXCAVATION. THE CONTRACTOR SHALL EXCAVATE ALL MATERIAL OF WHATEVER NATURE ENCOUNTERED, INCLUDING ROCK, NECESSARY FOR THE CONSTRUCTION OF THE WORK. ALL EXCAVATED MATERIAL SHALL BE CONSIDERED UNCLASSIFIED MATERIAL.
- BACKFILLING. THE WORK SHALL BE DONE ACCORDING TO 603.08.
- DURING TUNNELING OPERATIONS UNDER THE EXISTING CONRAIL TRACKS THE FOLLOWING THREE REQUIREMENTS SHALL BE ADHERED TO BY THE CONTRACTOR.
  - THE TRACK SHALL BE MONITORED FOR MOVEMENT WHILE TUNNELING WITHIN THE INFLUENCE LINES OF THE TRACK.
  - BALLAST WILL BE KEPT ON HAND TO PLACE AS DIRECTED BY THE ENGINEER FOR ANY SETTLEMENT OR LOSS THAT MAY OCCUR DURING TUNNELING OPERATIONS.
  - THE CONTRACTOR SHALL PROVIDE PROTECTION AGAINST SLOPE FAILURE AND BE PREPARED TO PLACE A BULKHEAD IN THE EVENT OF RAVELLING OR SETTLEMENT.
- METHOD OF MEASUREMENT. THE NUMBER OF TUNNEL ACCESS SHAFTS AT THE LOCATIONS SPECIFIED SHALL BE THE ACTUAL NUMBER OF EACH ACCEPTED AND SHALL INCLUDE THE COST FOR ALL WORK INVOLVED AND BE PAID FOR UNDER ITEM SPECIAL - TUNNEL ACCESS SHAFT.



TUNNEL DETAIL

NO SCALE



WORK RESTRICTION

THE CONTRACTOR IS PROHIBITED TO WORK WITHIN THE SCIOTO RIVER UNTIL SUCH TIME AS THE APPROVAL OF THE DEPARTMENT OF THE ARMY PERMIT UNDER SECTION 404 OF THE CLEAN WATER ACT HAS BEEN GRANTED. IT IS ANTICIPATED THAT THE PERMIT WILL BE ISSUED BY AUGUST 1, 1998.

TEMPORARY STREAM CROSSING FORDS

WHERE STREAM CROSSING FORDS ARE REQUIRED FOR EQUIPMENT CROSSING, THE CROSSING SHALL CONSIST OF CLEAN NONTOXIC GRANULAR OR ROCK MATERIAL, PROPERLY MAINTAINED TO PREVENT EROSION, WITH PROVISIONS FOR CONVEYANCE OF ANTICIPATED HIGH FLOWS, AND SHALL NOT IMPEDE THE MOVEMENT OF AQUATIC LIFE. FURTHER, ANY TEMPORARY STREAM CROSSING FORD SHALL NOT EXTEND COMPLETELY ACROSS THE RIVER. A MINIMUM OPENING OF 20 FEET SHALL BE MAINTAINED AT ALL TIMES. ROCK OR GRANULAR MATERIAL SHALL BE ROCK AS PER 203.02 OR DUMP ROCK FILL TYPE A, B, C OR D AS PER 601.07, EXCEPT ALL MATERIALS SHALL BE RETAINED ON THE 1/2" SIEVE. THIS TEMPORARILY PLACED MATERIAL SHALL BE REMOVED AND THE STREAM BOTTOM RESTORED TO NEAR NATURAL CONDITIONS WHEN THE WORK IS COMPLETED. CONSTRUCTION SHALL BE IN ACCORDANCE WITH PART 330, APPENDIX A, SPECIAL CATEGORIES OF DISCHARGES - NATIONALLY PERMITTED, PARAGRAPH (A14), ROAD CROSSINGS - THE FEDERAL REGISTER - U.S. CORPS OF ENGINEERS FINAL REGULATIONS, CURRENT EDITION.

DEMOLITION DEBRIS

THE CONTRACTOR SHALL TAKE PRECAUTIONS TO AVOID AND/OR LIMIT DEMOLITION DEBRIS FROM ENTERING THE STREAM. ANY MATERIAL THAT DOES FALL INTO THE STREAM SHALL BE REMOVED AS SOON AS POSSIBLE.

INSTREAM BLASTING

NO INSTREAM BLASTING WILL BE PERMITTED WITHOUT WRITTEN PERMISSION OF THE CHIEF OF THE DIVISION OF WILDLIFE, OHIO DEPARTMENT OF NATURAL RESOURCES, IN ACCORDANCE WITH OHIO REVISED CODE SECTION 1533.58.

CONTAINMENT OF RIVERBED SEDIMENTS

THE CONTRACTOR SHALL BE REQUIRED TO DESIGN AND CONSTRUCT A SEDIMENT CONTAINMENT SYSTEM THAT WILL CONTAIN RIVERBED SEDIMENTS THAT ARE DISTURBED DURING INSTREAM CONSTRUCTION ACTIVITIES. THE SYSTEM SHALL BE IN PLACE AND MAINTAINED AT ALL TIMES DURING ANY INSTREAM OPERATIONS. THE PROPOSED DESIGN OF THIS SYSTEM SHALL BE SUBMITTED TO THE ENGINEER AT THE PRE-CONSTRUCTION MEETING. THE ENGINEER SHALL COORDINATE WITH THE ODOT OFFICE OF ENVIRONMENTAL SERVICES FOR REVIEW AND APPROVAL. NO INSTREAM WORK SHALL BE PERMITTED UNTIL WRITTEN APROVAL HAS BEEN GRANTED BY THE ENGINEER. A WRITTEN RESPONSE EITHER APPROVING OR REJECTING THE CONTRACTOR'S PROPOSED DESIGN SHALL BE PROVIDED TO THE CONTRACTOR BY THE ENGINEER WITHIN 30 CALENDAR DAYS OF THE SUBMISSION OF THE PROPOSAL.

ALL WORK ASSOCIATED WITH THE DESIGN, CONSTRUCTION AND MAINTENANCE OF THIS SYSTEM WILL BE PAID FOR UNDER THE FOLLOWING LUMP SUM ITEM:

ITEM SPECIAL - ENVIRONMENTAL, MISC.: CONTAINMENT OF RIVERBED SEDIMENTS

ENVIRONMENTAL WORK

THE CONTRACTOR SHALL ENSURE THAT ALL THE WORK ACTIVITIES ASSOCIATED WITH THIS NOTE SATISFY THE SEDIMENT CONTROL REQUIREMENTS STATED HEREIN.

RECENT ENVIRONMENTAL STUDIES SHOW THAT THE NEAR SURFACE SOILS, UNDER THE EXISTING SR 315 STRUCTURE THAT SPANS THE SCIOTO RIVER, CONTAIN LEAD AT CONCENTRATIONS THAT REQUIRE REMOVAL, SPECIAL MANAGEMENT AND DISPOSAL. THEREFORE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO MANAGE THE SOILS FROM APPROXIMATELY STA 106+70 TO STA 107+50 AND STA 108+50 TO STA 110+60 AND FROM APPROXIMATELY 15 FEET ON EITHER SIDE OF THE EXISTING STRUCTURE ACCORDING TO THIS NOTE. THE REGION BETWEEN STA 107+50 TO STA 108+50 WILL NOT BE REMOVED SINCE THIS IS THE AREA WHICH IS OCCUPIED BY THE SCIOTO RIVER.

AT LEAST TEN (10) WORKING DAYS PRIOR TO THE COMMENCEMENT OF THE ON-SITE ACTIVITIES, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER A DETAILED PLAN ADDRESSING AT A MINIMUM ALL ASPECTS OF THE SITE MOBILIZATION AND PLANNED REMOVAL OPERATIONS INCLUDING: THE EXCAVATION, STORAGE, HANDLING AND TRANSPORTATION OF CONTAMINATED MATERIALS, AND SITE DEMOBILIZATION. THE PLAN SHALL INCLUDE AN ANTICIPATED SCHEDULE OF THE WORK AND HOW THIS SCHEDULE WILL COORDINATE WITH THE PROPOSED ROADWAY CONSTRUCTION ACTIVITIES. THE ENGINEER WILL REVIEW THE PLAN AND PROVIDE COMMENTS WITHIN TEN (10) WORKING DAYS OF RECEIPT. AUTHORIZATION TO PROCEED WITH THE SOIL REMOVAL SHALL NOT BE PROVIDED WITHOUT AN ACCEPTABLE PLAN.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS FOR THE WORK TO BE COMPLETED INCLUDING BUT NOT LIMITED TO: 29 CFR 1910.120, 40 CFR, AND 49 CFR. DISPOSAL CHARACTERIZATION AND CONFIRMATORY SAMPLES WILL BE COLLECTED BY THE ENGINEER TO ENSURE THAT THE PROJECT OBJECTIVES HAVE BEEN MET. UPON REMOVAL OR DEPARTURE FROM ANY OF THE REMOVAL AREAS, ALL EQUIPMENT SHALL BE PROPERLY DECONTAMINATED (BY SUCH MEANS AS A HIGH PRESSURE WASHER WITH SUBSEQUENT WASHWATER CONTAINMENT) BY THE CONTRACTOR.

HEALTH AND SAFETY PLAN

THE CONTRACTOR SHALL ENSURE THAT ALL PROJECT PERSONNEL UNDER HIS EMPLOYMENT AND INVOLVED WITH THE REMOVAL OPERATIONS HAVE AT A MINIMUM 40 HOUR SAFETY TRAINING AS DETAILED IN 29 CFR 1910.120. PRIOR TO THE COMMENCEMENT OF ON-SITE ACTIVITIES, THE CONTRACTOR SHALL PROVIDE A SITE SPECIFIC HEALTH AND SAFETY PLAN THAT MEETS THE REQUIREMENTS OF 29 CFR 1910.120 (L). THIS HEALTH AND SAFETY PLAN SHALL BE MAINTAINED IN A CONSPICUOUS LOCATION WITHIN THE PROJECT LIMITS AND SHALL BE PRESENTED FOR REVIEW UPON REQUEST. THIS WORK SHALL BE PAID FOR UNDER THE FOLLOWING PAY ITEM.

ITEM SPECIAL - HEALTH AND SAFETY PLAN LUMP SUM

TEMPORARY STORAGE, STAGING AND TRANSPORTATION OF POTENTIALLY CONTAMINATED MATERIALS

ALL EXCAVATED MATERIALS MUST BE STORED IN LEAKPROOF, COVERED CONTAINERS NEAR THE EXCAVATION WITHIN THE RIGHT-OF-WAY AT A LOCATION APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING SUFFICIENT

NUMBERS OF DUMP TRAILERS, ROLL-OFF BOXES, OR OTHER CONTAINERS TO ALLOW REMOVAL ACTIVITIES TO PROCEED UNINTERRUPTED. THE ENGINEER WILL BE RESPONSIBLE FOR THE SAMPLING AND ANALYSES OF ALL EXCAVATED MATERIALS TO DETERMINE THEIR REGULATORY STATUS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASPECTS OF WASTE DISPOSAL, INCLUDING BUT NOT LIMITED TO: EXCAVATION AND HANDLING OF MATERIALS, TRANSPORTATION, DEMURRAGE, DISPOSAL/TIPPING FEES, AND PERMITS. MANIFESTS FOR THE WASTE MATERIALS SHALL BE COMPLETED BY THE CONTRACTOR AND SIGNED BY THE ENGINEER AS THE GENERATOR. THIS WORK SHALL BE INCIDENTAL TO, AND PAID FOR ON A PER UNIT BASIS INCLUDED WITH THE APPROPRIATE ITEM(S) LISTED BELOW.

WORK INVOLVING NONREGULATED MATERIALS

THE EXCAVATED MATERIALS WILL BE TESTED BY THE ENGINEER TO DETERMINE IT'S REGULATORY STATUS. IF IT IS DETERMINED TO BE NONREGULATED MATERIAL IT MAY BE USED FOR EMBANKMENT PROVIDED IT MEETS THE REQUIREMENTS OF CMS 203.

ITEM SPECIAL - WORK INVOLVING NONREGULATED MATERIALS ESTIMATED QUANTITY - 1,000 TON

WORK INVOLVING SOLID WASTE

IF THE ENGINEER DETERMINES THAT THE EXCAVATED MATERIAL IS A SOLID WASTE, THEN THE CONTRACTOR SHALL PROPERLY TRANSPORT AND DISPOSE OF THE MATERIAL IN A LICENSED (BY THE LOCAL HEALTH DEPARTMENT) AND PERMITTED (IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS) SOLID WASTE FACILITY. ANY COSTS AS REQUIRED BY THE DISPOSAL FACILITY SHALL BE INCIDENTAL TO THE UNIT COST BID FOR THE ABOVE ITEM.

ITEM SPECIAL - WORK INVOLVING SOLID WASTE ESTIMATED QUANTITY - 500 TON

WORK INVOLVING HAZARDOUS WASTE

IF THE ENGINEER DETERMINES THAT THE EXCAVATED MATERIAL IS A HAZARDOUS WASTE, THEN THE CONTRACTOR SHALL PROPERLY TRANSPORT AND DISPOSE OF THE MATERIAL IN PERMITTED (IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS) HAZARDOUS WASTE FACILITY. ANY COSTS AS REQUIRED BY THE DISPOSAL FACILITY SHALL BE INCIDENTAL TO THE UNIT COST FOR THE ABOVE ITEM.

ITEM SPECIAL - WORK INVOLVING HAZARDOUS WASTE ESTIMATED QUANTITY - 500 TON

WORK INVOLVING REGULATED WATER

ALL WATER RESULTING FROM DEWATERING OF EXCAVATED MATERIALS AND/OR RESULTING FROM THE DECONTAMINATING OF EQUIPMENT (BY SUCH MEANS AS A HIGH PRESSURE WASHER WITH SUBSEQUENT WASHWATER CONTAINMENT) SHALL BE PROPERLY STORED. IF THE ENGINEER DETERMINES THAT THE WATER IS REGULATED, THEN THE CONTRACTOR SHALL PROPERLY TRANSPORT THE WATER TO PERMITTED (IN ACCORDANCE WITH APPLICABLE STATE REGULATIONS) DISPOSAL FACILITY.

ANY COSTS AS REQUIRED BY THE DISPOSAL FACILITY SHALL BE INCIDENTAL TO THE UNIT BID COST FOR THE FOLLOWING ITEM.

ITEM SPECIAL - WORK INVOLVING REGULATED WATER ESTIMATED QUANTITY - 1,000 GAL

CALCULATED

CHECKED

GENERAL NOTES

FRA - 315 - 0.93

16A

404

**ITEM 607 - FENCE, TYPE CLT, AS PER PLAN**

THIS ITEM OF WORK SHALL CONSIST OF PROVIDING, INSTALLING, MAINTAINING AND SUBSEQUENTLY REMOVING A TEMPORARY FENCE, TYPE CLT FOR THE PURPOSE OF DELINEATING ENVIRONMENTALLY SENSITIVE AREAS FROM THE WORK LIMITS AND/OR TO PROTECT EXISTING VEGETATION WHICH IS NOT TO BE DISTURBED. THE TEMPORARY FENCE SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER IN A MINIMUM OF 100 FOOT SEGMENTS.

THE FENCE SHALL BE IN ACCORDANCE WITH ITEM 607 WITH THE FOLLOWING EXCEPTIONS AND ADDITIONS:

- 1) THE CHAIN LINK FENCE FABRIC, POSTS, TENSION WIRES AND ATTACHMENT HARDWARE ARE NOT REQUIRED TO BE NEW MATERIAL.
- 2) THE CHAIN LINK FENCE FABRIC SHALL BE 60-INCH MINIMUM.
- 3) THE CONTRACTOR SHALL MAINTAIN THE FENCE THROUGHOUT THE DURATION OF THE PROJECT.
- 4) THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL FENCE MATERIAL UPON COMPLETION OF THE PROJECT. POST FOUNDATIONS SHALL BE REMOVED TO AT LEAST ONE (1) FOOT BELOW GROUND LINE.
- 5) UPON REMOVAL OF ALL FENCE MATERIALS, BACKFILLING, RESTORATION OF SURFACES AND DISPOSAL OF SURPLUS MATERIALS SHALL BE IN ACCORDANCE WITH 603.09.

FOR ADDITIONAL DETAILS, SEE ODOT STANDARD CONSTRUCTION DRAWINGS, F-1.1M, F-3, F-3.2M, F-5 AND F-3.4M.

PAYMENT FOR THIS ITEM OF WORK WILL BE MADE AT THE CONTRACT UNIT PRICE PER LINEAR FOOT OF ITEM 607 - FENCE, TYPE CLT, AS PER PLAN INCLUDING ALL LABOR, EQUIPMENT, MATERIAL AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM OF WORK. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM 607 FENCE, TYPE CLT, AS PER PLAN 1,500 L.F.

**COOPERATION WITH ADJACENT FLOODWALL CONTRACTOR**

THE CONTRACTOR IS ADVISED THAT THE U.S. ARMY CORPS OF ENGINEERS MAY BE CONSTRUCTING PHASE IIC OF THE WEST COLUMBUS LOCAL PROTECTION PROJECT DURING THE COURSE OF THIS PROJECT. IN THOSE AREAS WHERE THE WORK LIMITS OVERLAP, THE CONTRACTOR SHALL CLOSELY COORDINATE ITS OPERATIONS INCLUDING THE PARKING OF EQUIPMENT AND STORAGE OF MATERIALS WITH THE OTHER CONTRACTORS. IN THE EVENT OF A CONFLICT BETWEEN THE PROJECTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR WORKING OUT AN AGREEMENT TO THE SATISFACTION OF ALL CONCERNED PARTIES. THERE WILL BE NO COMPENSATION OR GROUNDS FOR CLAIMS RESULTING FROM ANY SUCH AGREEMENT. THE CONTRACTOR CONSTRUCTING PHASE IIC FOR THE U.S. ARMY CORPS OF ENGINEERS IS KOKOSING CONSTRUCTION COMPANY, INC., 886 MCKINLEY AVENUE, COLUMBUS, OHIO, 43222. THE TELEPHONE NUMBER IS 614-228-1029.

PLANS FOR THE FLOODWALL PROJECT MAY BE REVIEWED AT THE U.S. ARMY CORPS OF ENGINEERS COLUMBUS RESIDENT OFFICE, 1596 WEST BROAD STREET, COLUMBUS, OHIO 43223. THE TELEPHONE NUMBER IS 614-279-5054.

**CONVERSION OF METRIC STANDARD DRAWINGS**

THE METRIC STANDARD DRAWINGS REFERENCED IN THIS PLAN SHALL BE CONVERTED TO ENGLISH UNITS USING THE SI (METRIC) TO ENGLISH CONVERSION FACTORS PROVIDED BELOW. THE APPENDIX OF ASTM E 380 SHALL BE UTILIZED FOR ANY ADDITIONAL CONVERSION FACTORS REQUIRED. CONVERSIONS SHALL BE APPROPRIATELY PRECISE AND SHALL REFLECT STANDARD INDUSTRY ENGLISH VALUES WHERE SUITABLE.

SI (Metric) to English Conversion Factors

Symbol	When You Know	Multiply By	To Find	Symbol
Length				
$\mu\text{m}$	micrometers	0.03937	mils	mil
mm	millimeters	0.03937	inches	in
m	meters	3.28084	feet	ft
m	meters	1.093613	yards	yd
km	kilometers	0.62137	miles	mi
Area				
$\text{mm}^2$	square millimeters	0.00155	square inches	$\text{in}^2$
$\text{m}^2$	square meters	10.76391	square feet	$\text{ft}^2$
$\text{m}^2$	square meters	1.19599	square yards	$\text{yd}^2$
$\text{m}^2$	square meters	1.19599	square yards	$\text{yd}^2$
ha	hectares	2.4710437	acres	ac
$\text{m}^2$	square meters	0.000247	acres	ac
$\text{km}^2$	square kilometers	0.3861	square miles	$\text{mi}^2$
Volume				
mL	milliliters	0.033814	fluid ounces	fl oz
L	liters	0.264172	gallons	gal
$\text{m}^3$	cubic meters	35.31466	cubic feet	$\text{ft}^3$
$\text{m}^3$	cubic meters	1.30795	cubic yards	$\text{yd}^3$
Mass				
g	grams	0.035274	ounces	oz
kg	kilograms	2.204622	pounds	lb
t	metric ton	1.1023114	2000 pounds	T
Temperature				
$^{\circ}\text{C}$	Celsius	$1.8\text{C} + 32$	Fahrenheit	$^{\circ}\text{F}$
Illumination				
lx	lux	0.09290304	foot-candles	fc
$\text{cd}/\text{m}^2$	candela/sq meter	0.29186352	foot-lamberts	fl
Force and Pressure or Stress				
N m	newton-meter	0.7375621	foot-pound force	ft.lbf
N	newtons	0.22480892	pound force	lbf
Pa	pascals	0.02088543	pound force per square foot	$\text{lbf}/\text{ft}^2$ (psf)
MPa	megapascals	145.03774	pound force per square inch	$\text{lbf}/\text{in}^2$ (psi)

CALCULATED  
CHECKED

GENERAL NOTES

FRA-315-0.93

16B  
404



# GENERAL SUMMARY

\* (F) = PRIMARY  
 \*\* (IR) = INTERSTATE RECONSTRUCTION  
 (C.O.E.) = CORPS OF ENGINEERS - 100% CITY

CALC. BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 CHKD. BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

FRANKLIN COUNTY  
 FRA-670-1.25 (A-5)

OHIO  
 FHWA REGION 5

17  
 404

SHEET NUMBERS																	PARTICIPATION			ITEM	ITEM EXT.	TOTALS	UNIT	DESCRIPTION ⊙ FOR ADDITIONAL ROADWAY ITEMS SEE "ROADWAY (CONT'D)" ON SHT. 18	SHT. No.				
R/W	28	15	20	29	30	31	32	33	34	35	36	37	38	39	40	41	42-43	75&96	134							*(F)	** (IR)		
(F)	(IR)	(F)	(IR)	(F)	(IR)	(IR)	(F)	(IR)	(IR)	(IR)	(F)	(F)	(IR)	(IR)	(IR)	(IR)	(IR)	(IR)	(C.O.E.)										
		LUMP	LUMP																LUMP	LUMP	LUMP	LUMP	201	11000	LUMP		CLEARING AND GRUBBING		
						LUMP						LUMP	LUMP						LUMP	LUMP	LUMP	LUMP	202	11000	LUMP		STRUCTURE REMOVED		
											3524	3772	488	796	861	1349	2700	2714					202	23000	16204	SQ YD	PAVEMENT REMOVED		
											319	1067											202	30000	1386	SQ YD	WALK REMOVED		
											18	24	45	91	131	44	250						202	30600	603	SQ YD	CONCRETE MEDIAN REMOVED		
											1805	846			276	795	2150	1153	152				202	32000	7177	LIN FT	CURB REMOVED		
																											ENVIRONMENTAL, MISC.: RIVER MITIGATION MEASURES	100A	
												309	405	752									202	32500	1466	LIN FT	CURB AND GUTTER REMOVED		
						1326	192	312															202	35100	2306	LIN FT	PIPE REMOVED, 24" AND UNDER		
						675																	202	35200	675	LIN FT	PIPE REMOVED, OVER 24"		
						100																	202	38000	100	LIN FT	GUARDRAIL REMOVED		
																							202	58000	12	EACH	MANHOLE REMOVED		
																							202	58300	20	EACH	CATCH BASIN OR INLET REMOVED		
																							202	58600	17	EACH	CATCH BASIN OR INLET ABANDONED		
																							202	58700	5	EACH	MANHOLE ABANDONED		
																							202	75500	3	EACH	LIGHT POLE FOUNDATION REMOVED		
																							SPEC	20301890	1466	SQ YD	SPECIAL - SOIL STERILANT	14	
																							203	12000	140761	CU YD	EXCAVATION NOT INCLUDING EMBANKMENT CONSTRUCTION		
																							203	20000	151529	CU YD	EMBANKMENT		
																							203	45000	13	HR	PROOF ROLLING		
																							203	50000	39692	SQ YD	SUBGRADE COMPACTION		
																							SPECIAL	61065010	500	TON	SPECIAL - WORK INVOLVING SOLID WASTE	16A	
																							604	40500	8	EACH	REFERENCE MONUMENT		
																							606	12500	75	LIN FT	GUARDRAIL, TYPE 4		
																							606	13000	2580	LIN FT	GUARDRAIL, TYPE 5		
																							606	98100	6	EACH	GUARDRAIL, MISC. THRIE BEAM TERMINAL CONNECTOR	183	
																							606	15500	50	LIN FT	GUARDRAIL, BARRIER DESIGN, TYPE 5		
																							606	25000	2	EACH	ANCHOR ASSEMBLY, TYPE A		
																							606	26000	6	EACH	ANCHOR ASSEMBLY, TYPE B		
																							606	98100	3	EACH	GUARDRAIL, MISC. BRIDGE TERMINAL ASSEMBLY, TYPE 1, A.P.P.	183	
																							606	26500	6	EACH	ANCHOR ASSEMBLY, TYPE T		
																							606	35000	9	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 1		
																							606	35100	5	EACH	BRIDGE TERMINAL ASSEMBLY, TYPE 2		
																							2	SPEC	60698100	22	EACH	GUARDRAIL, MISC.: BIKEWAY BOLLARDS, AS PER PLAN	199
																							1	SPEC	60698100	1	EACH	GUARDRAIL, MISC.: REMOVABLE BIKEWAY BOLLARDS, AS PER PLAN	199
																							2	606	26100	2	EACH	ANCHOR ASSEMBLY, TYPE E	
																							607	23000	3576	LIN. FT.	FENCE, TYPE CLT		
																							607	61200	2	EACH	14' GATE, TYPE CLT		
																							608	10000	512	SQ FT	4" CONCRETE WALK		
																							608	41000	154	LIN FT	CONCRETE STEPS, TYPE B		
																							608	50001	3	EACH	CURB RAMP, TYPE 1, AS PER PLAN	76	
																							616	10000	100	M GAL	WATER		
																							616	20000	10	TON	CALCIUM CHLORIDE		
																							625	31600	2	EACH	PULL BOX, MISC.; 713.08, 32", AS PER PLAN	185	
																							625	31600	2	EACH	PULL BOX, MISC.: MEDIAN TRAFFIC SURVEILLANCE, AS PER PLAN	186	
																							653	10000	2450	CU YD	TOPSOIL FURNISHED AND PLACED		
																							SPEC	69010360	1	EACH	IMPACT ATTENUATOR, TYPE 1 (BI-DIRECTIONAL)		
																											EROSION CONTROL		
																							207	10000	9842	SQ YD	TEMPORARY SEEDING AND MULCHING		
																							207	30000	2400	LIN FT	FILTER FABRIC FENCE		
																							207	40000	400	LIN FT	TEMPORARY SLOPE DRAIN		
																							207	50000	1820	CU YD	TEMPORARY BENCHES, DAMS AND SEDIMENT BASINS		
																							207	55000	4200	LIN FT	TEMPORARY DIKES		
																							207	70000	692	EACH	STRAW OR HAY BALES		
																							601	11000	7	SQ YD	RIPRAP USING 6" REINFORCED CONCRETE SLAB		
																							601	32200	5	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITH FILTER		
																							601	34100	5441	CU YD	ROCK CHANNEL PROTECTION, TYPE B WITHOUT FILTER		
																							601	34200	36	CU YD	ROCK CHANNEL PROTECTION, TYPE C WITHOUT FILTER		
																							659	10001	77935	SQ YD	SEEDING AND MULCHING, AS PER PLAN	14	
																							659	14000	2380	SQ YD	REPAIR SEEDING AND MULCHING		
																							659	20000	8.6	TON	COMMERCIAL FERTILIZER		
																							659	30001	29.1	TON	AGRICULTURAL LIMING, AS PER PLAN	14	
																							659	35000	108	M GAL	WATER		
																							659	40000	354	M SQ FT	MOWING		
																							660	20000	283	SQ YD	REINFORCED SODDING		
																							670	40000	1311	SQ YD	DITCH EROSION PROTECTION		
																							670	41000	808	SQ YD	SLOPE EROSION PROTECTION		
																							SPEC	69098300	7070	SQ YD	SPECIAL- MISC.: FILTER CLOTH (C.O.E.)		
																							SPEC	69098700	18014	CU YD	SPECIAL, MISC.: STONE SLOPE PROTECTION AND ROCKFILL (C.O.E.)		

[FRG] - \TRANS\SR315-45-AS-GS-12.DWG - APR 24, 1997 - 134143 - SCALE = 1:30



# GENERAL SUMMARY

\* (F) = PRIMARY  
 \*\* (IR) = INTERSTATE RECONSTRUCTION  
 (C.O.E.) = CORPS OF ENGINEERS - 100% CITY

CALC. BY: _____	FRANKLIN COUNTY FRA-670-1.25 (A-5)	OHIO
DATE: _____		FHWA REGION 5
CHKD. BY: _____		
DATE: _____		

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404

SHEET NUMBERS													PARTICIPATION			ITEM	ITEM EXT.	TOTALS	UNIT	DESCRIPTION	SHT. No.
29 (F)	30 (IR)	31 (IR)	32 (F)	33 (IR)	34 (IR)	35 (IR)	75 (IR)	16A	16B	100C	134 (C.O.E.)	* (F)	** (IR)	Δ TYPE III							
		7.0	0.3				3.8						11.1	602	20000	11.1	CU YD	CONCRETE MASONRY			
		115	86			63							264	603	00900	264	LIN FT	6" CONDUIT, TYPE B			
	150	60	50	20		61						170	171	603	01500	341	LIN FT	6" CONDUIT, TYPE F, 707.17 NON-PERFORATED, ASTM 3034, SDR 35 OR SS931 OR SS944			
	56						166					56	166	603	04400	222	LIN FT	12" CONDUIT, TYPE B, 706.01, 706.02, OR 706.08			
	334						70					334	70	603	04600	404	LIN FT	12" CONDUIT, TYPE C, 706.01, 706.02 OR 706.08			
	318						164					318	164	603	05200	482	LIN FT	12" CONDUIT, TYPE F, 707.05, TYPE C			
	271	118	130				81					271	329	603	05900	600	LIN FT	15" CONDUIT, TYPE B, 706.01, 706.02 OR 706.08			
	121		28				448					121	476	603	06100	597	LIN FT	15" CONDUIT, TYPE C, 706.01, 706.02 OR 706.08			
		83	63										146	603	06700	146	LIN FT	15" CONDUIT, TYPE F, 707.05, TYPE C			
	558											558		603	07400	558	LIN FT	18" CONDUIT, TYPE B, 706.01, 706.02 OR 706.08			
	140											140		603	07600	140	LIN FT	18" CONDUIT, TYPE C, 706.01, 706.02 OR 706.08			
											225			603	10400	225	LIN FT	24" CONDUIT, TYPE B, 706.02, D-LOAD 3250			
	8											8		603	13400	8	LIN FT	30" CONDUIT, TYPE B, 706.02			
	88											88		603	16400	88	LIN FT	36" CONDUIT, TYPE B, 706.02			
		120											120	603	16400	120	LIN FT	36" CONDUIT, TYPE B, 706.02, D-LOAD 1750			
	188											188		603	16600	188	LIN FT	36" CONDUIT, TYPE C, 706.02			
							10						10	604	00400	10	EACH	CATCH BASIN, NO. 3			
	4											4		604	00800	4	EACH	CATCH BASIN, NO. 3A			
	6	1	1									6	2	604	02800	8	EACH	CATCH BASIN, NO. 8			
	3				1		2					3	3	604	04500	6	EACH	CATCH BASIN, NO. 2-2B			
							2					2	2	604	04900	4	EACH	CATCH BASIN, NO. 2-3			
												3		604	14501	3	EACH	INLET, NO. 3A, AS PER PLAN (SEE DETAIL) (C.O.E.)	142		
	2	1	1									2	2	604	14603	4	EACH	INLET, NO. 3B-50, AS PER PLAN (SEE GEN. NOTES)	15		
	6						2					6	2	604	31500	8	EACH	MANHOLE, NO. 3			
											1			604	32500	1	EACH	MANHOLE, MISC. : SPECIAL 72-INCH MANHOLE (C.O.E.)	143		
											1			604	22500	1	EACH	INLET, MISC. : GUTTER INLET WITH OUTLET DRAIN (C.O.E.)	142		
			175										175	605	05100	175	LIN FT	4" SHALLOW PIPE UNDERDRAIN			
				90			2753					90	2753	605	05101	2843	LIN FT	4" SHALLOW PIPE UNDERDRAIN, AS PER PLAN	95		
	1184	1122	1448		450	675	570					1184	4265	605	11100	5449	LIN FT	6" SHALLOW PIPE UNDERDRAIN			
	952	1219		370								1322	1219	605	12200	2541	LIN FT	6" DEEP PIPE UNDERDRAIN			
	280	225	38		25							280	288	605	13300	568	LIN FT	6" UNCLASSIFIED PIPE UNDERDRAIN			
		249	194			30	40						513	605	13400	513	LIN FT	6" UNCLASSIFIED PIPE UNDERDRAIN, 707.01 OR 707.21			
											300			SPEC	69098100	300	LIN FT	SPECIAL, MISC. : TOE DRAIN (C.O.E.)	142		
											2			SPEC	69098000	2	EACH	SPECIAL, MISC. : CLEANOUT (C.O.E.)	142		
																		<b>STORM FORCE MAIN</b>			
	338	202										338	202	638	98600	540	LIN FT	WATER WORK MISC.: 36" PRESTRESSED CONCRETE CYLINDER PIPE WITH FITTINGS, AWWA C301, AS PER PLAN	15		
	140											140		638	98600	140	LIN FT	WATER WORK MISC.: 36" PRESTRESSED CONCRETE CYLINDER PIPE WITH FITTINGS, AWWA C301 UNDER RAILROAD, AS PER PLAN	16		
												2		638	98000	2	EACH	WATER WORK MISC.: SPECIAL - TUNNEL ACCESS SHAFT	16		
																		<b>SANITARY SEWER</b>			
												323		603	13400	323	LIN FT	30" CONDUIT, TYPE B, 706.02 D-LOAD 1750 W/706.11 JOINTS			
												5		604	31500	5	EACH	MANHOLE, NO. 3, W/ 706.11 JOINTS			
																		<b>ROADWAY (CONT'D) (FROM SHT. 17)</b>			
											LUMP			SPECIAL	69070000	LUMP		ENVIRONMENTAL, MISC.: CONTAINMENT OF RIVERBED SEDIMENTS		16A	
														607	23001	1500	LIN FT	FENCE, TYPE CLT, AS PER PLAN		16B	
											LUMP			SPECIAL	69098400	LUMP		MISC.: STREAMBANK PLANTING		100C	
											1000			SPECIAL	69065000	1000	TON	WORK INVOLVING NONREGULATED MATERIALS		16A	
											500			SPECIAL	69065014	500	TON	WORK INVOLVING HAZARDOUS WASTE		16A	
											1000			SPECIAL	69065024	1000	GALLON	WORK INVOLVING REGULATED WATER		16A	
											LUMP			SPECIAL	69098400	LUMP		HEALTH AND SAFETY PLAN		16A	

[R160] - LA TRANS, SCS15-4545-GS-13.DWG - APR 24, 1997 - 140748 - SCALE = 1:30



**203-EARTHWORK & 659-SEEDING & MULCHING**

PARTICIPATION	SHEET NO.	203		659	
		EXCAVATION NOT INCLUDING EMBANKMENT	EMBANKMENT	SEEDING & MULCHING	
		C.Y.	C.Y.	C.Y.	
"F"	29	35,867	299	3,193	
"F"	32	9,220	3	4,592	
"F"	TOTAL	45,087	302	7,785	
"IR"	30	11,059	4,216	11,016	
"IR"	31	20,896	20,066	9,317	
"IR"	33	9,594	1,697	4,932	
"IR"	34	3,792	22,382	5,288	
"IR"	35	462	31,799	7,152	
"IR"	96	45,746		3,412	CHANNEL RELOC.
"IR"	TOTAL	91,539	119,160	41,097	

TOTAL 203 EXCAVATION "F"	45,087
TOTAL 203 EXCAVATION "IR"	91,539
TOTAL 203 EMBANKMENT "F"	302
TOTAL 203 EMBANKMENT "IR"	119,160

**203-PROOF ROLLING**

SHEET NO.	203 SUBGRADE COMPACTION	SHEET NO.	203 SUBGRADE COMPACTION
36	4,933 S.Y.	37	1,435 S.Y.
37	7,121 S.Y.	38	2,348 S.Y.
		39	7,475 S.Y.
		40	4,180 S.Y.
		41	4,192 S.Y.
		42	1,808 S.Y.
		43	918 S.Y.
TOTAL	12,054 S.Y.	TOTAL	22,356 S.Y.

TOTAL 203 - PROOF ROLLING = 12,054 S.Y. ÷ 3,000 S.Y./HRS. =  
 TOTAL 4.00 HRS. "F" TO GENERAL SUMMARY  
 TOTAL 203 - PROOF ROLLING = 22,356 S.Y. ÷ 3,000 S.Y./HRS. =  
 TOTAL 7.5 HRS. "IR" TO GENERAL SUMMARY

**659-SEEDING AND MULCHING**

PARTICIPATION	"F"	"IR"
SEEDING AND MULCHING	7,785 S.Y.	41,097 S.Y.
DEDUCT FOR ROCK CHANNEL	0	7
659 SUB-TOTAL	7,785 S.Y.	41,090 S.Y.
DEDUCT FOR DITCH EROSION PROTECTION	660	250
DEDUCT FOR REINFORCED SODDING	0	283
TOTAL 659 - SEEDING AND MULCHING	7,125 S.Y.	40,564 S.Y.

**659-COMMERCIAL FERTILIZER**

	"F"	"IR"
SUB-TOTAL 659 - SEEDING AND MULCHING	7,785 S.Y.	41,090 S.Y.
SUB-TOTAL 659 - SEEDING AND MULCHING	7,785 S.Y.	41,090 S.Y.
ADD FOR SLOPE EROSION PROTECTION	0	808
TOTAL =	7,785 S.Y.	41,898 S.Y.

$7,785 \text{ S.Y.} \times \frac{20 \text{ LB.}}{1,000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2,000 \text{ LB.}} = 0.70 \text{ TONS}$   
 $41,898 \text{ S.Y.} \times \frac{20 \text{ LB.}}{1,000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2,000 \text{ LB.}} = 3.77 \text{ TONS}$   
 TOTAL 659 - COMMERCIAL FERTILIZER ("F") 0.70 TONS  
 TO GENERAL SUMMARY ("IR") 3.77 TONS

**659-AGRICULTURAL LIMING, AS PER PLAN**

$7,785 \text{ S.Y.} \times \frac{100 \text{ LB.}}{1,000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2,000 \text{ LB.}} = 3.50 \text{ TONS}$ $41,898 \text{ S.Y.} \times \frac{100 \text{ LB.}}{1,000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2,000 \text{ LB.}} = 18.85 \text{ TONS}$
TOTAL 659 - AGRICULTURAL LIMING, AS PER PLAN ("F") 3.50 TONS TO GENERAL SUMMARY ("IR") 18.85 TONS

SHEET NO.	SIDE	LOCATION	ITEM 607 ESTIMATED QUANTITIES			
			(F)	(IR)	(F)	(IR)
			FENCE TYPE C.L.T.		14' GATE TYPE C.L.	
			L.F.	L.F.	EACH	EACH
29	RT.	95+90 TO 96+33 S.R. 315 GATE @ 96+12	56		1	
	RT.	100+42 TO 101+82 S.R. 315	185			
	LT.	102+83 TO 104+00 S.R. 315		167		
30	LT.	102+83 TO 104+00 S.R. 315		173		
	LT.	104+00 TO 106+75 S.R. 315		335		
31	RT.	104+00 TO 106+23 S.R. 315 GATE @ 104+50		266		1
	RT.	116+42 TO 116+85 S.R. 315		128		
32	RT.	119+12 TO 122+00 S.R. 315		365		
32	LT.	96+74 TO 101+96 RAMP "W-E"	600			
33	RT.	114+82 TO 116+00 RAMP "S-M"		565		
34	LT.	440+56 TO 447+22 ROAD "S-K"		736		
(F) TOTALS TO GENERAL SUMMARY			841		1	
(IR) TOTALS TO GENERAL SUMMARY				2735		1



# CALCULATIONS

## SHEET NO. 36, PAVEMENT CALCULATIONS

### NORTHBOUND S.R.315 STATION 95+75 TO 99+00

1-P		
ITEM 203	$(12 + 12 + 12 + 10) \times 325 / 9$	= 1661.11 S.Y.
ITEM 304	$.5 \times (12 + 12 + 12) \times 325 = 5850$ $(9.75'' / 12) \times 1.5 \times 325 = 396$ $(3.0'' + 5.25'' / 2 / 12) \times 9 \times 325 = 1005$ $\frac{7251}{27}$	= 268.56 C.Y.
ITEM 305 (10'')	$(12 + 12 + 12) \times 325 / 9$	= 1300.00 S.Y.
ITEM 407	$(12 + 12 + 12) \times 325 / 9 \times 0.075$	= 97.5 GAL
ITEM 452	$10 \times 325 / 9$	= 361.11 S.Y.
ITEM 446	TYPE 1: $36 \times 325 \times (1.25/12) / 27 = 45.14$ C.Y. TYPE 2: $36 \times 325 \times (1.75/12) / 27 = 63.19$ C.Y.	
ITEM 413 - SAWING & SEALING ASPHALT CONC. PAVEMENT JOINTS	$325 / 17 \times 36$	= 688 L.F.

### MEDIAN S.R.315 STATION 95+75 TO 99+00

2-P		
ITEM 203	$(4.25 + 3.5 + 4.25) \times 325 / 9$	= 433.33 S.Y.
ITEM 304	$(9.75 / 12) \times 4.25 \times 2 \times 325 = 2245$ $9.75 / 12 \times 3.5 \times 325 = 924$ $\frac{3169}{27}$	= 117.37 C.Y.
ITEM 452	$(4.25 + 4.25) \times 325 / 9$	= 306.94 S.Y.
ITEM 622	STATION 95+77.79 TO 99+00	= 325 L.F.

### SOUTHBOUND S.R.315 STATION 95+75 TO 99+00

3-P		
ITEM 203	$(12 + 12 + 12 + 10) \times 325 / 9$	= 1661.11 S.Y.
ITEM 304	$.5 \times (12 + 12 + 12) \times 325 = 5850$ $(9.75'' / 12) \times 1.5 \times 325 = 396$ $(3.0'' + 5.25'' / 2 / 12) \times 9 \times 325 = 1005$ $\frac{7251}{27}$	= 268.56 C.Y.
ITEM 305 (10'')	$(12 + 12 + 12) \times 325 / 9$	= 1300.00 S.Y.
ITEM 407	$(12 + 12 + 12) \times 325 / 9 \times 0.075$	= 97.5 GAL
ITEM 452	$10 \times 325 / 9$	= 361.11 S.Y.
ITEM 446	TYPE 1: $36 \times 325 \times (1.25/12) / 27 = 45.14$ C.Y. TYPE 2: $36 \times 325 \times (1.75/12) / 27 = 63.19$ C.Y.	
ITEM 413 - SAWING & SEALING ASPHALT CONC. PAVEMENT JOINTS	$325 / 17 \times 36$	= 688 L.F.

### RAMP W-E STATION 95+71.43 TO 99+00

4-P		
ITEM 203	$(5.11 \times 400) + (171.67 \times 24) + (24 + 16 / 2 \times 100) + (6 + 3 \times 271.67) / 9$	= 1178.79 S.Y.
ITEM 304	$(5.11 \times 400 \times 6 / 12) = 1022$ $(7.75 / 12 \times 1.5) + (4.25 + 3.0 / 2 / 12 \times 5) \times 122.62 = 304$ $(7.75 / 12 \times 1.5) + (4.25 + 3.0 / 2 / 12 \times 5) \times 149.05 = 370$ $(7.75 + 3.0 / 2 / 12 \times 3.5) \times 271.67 = 426$ $(24 \times .5 \times 171.67) + (24 + 16 / 2 \times .5 \times 100) = 3060.04$ $\frac{5182.04}{27}$	= 191.93 C.Y.
ITEM 305	$(5.11 \times 400) + (24 \times 171.67) + (24 + 16 / 2 \times 100) / 9$	= 907.11 S.Y.
ITEM 407	$(5.11 \times 400) + (24 \times 171.67) + (24 + 16 / 2 \times 100) / 9 \times 0.075$	= 68.03 GAL
ITEM 446	TYPE 1 $(5.11 \times 400) + (24 \times 171.67) + (24 + 16 / 2 \times 100) \times (1.25 / 12) / 27 = 31.50$ C.Y. TYPE 2 $(5.11 \times 400) + (24 \times 171.67) + (24 + 16 / 2 \times 100) \times (1.75 / 12) / 27 = 44.10$ C.Y.	
ITEM 452	$\frac{6 \times 271.67}{9} = 181.11$ S.Y. $\frac{(9'') \times 3 \times 271.67}{9} = 90.56$ S.Y.	
ITEM 413 - SAWING & SEALING ASPHALT CONC. PAVEMENT JOINTS	$171.67 / 17 \times 24 + 100 / 17 \times 20$	= 360 L.F.

### PUMP STATION DRIVE

5-P		
ITEM 446	TYPE 1 $(16 \times 222) + (0 + 23 / 2 \times 23) + (23 \times 50) \times (2.5 / 12) / 27$	= 38.31 C.Y.
ITEM 408	$(16 \times 222) + (0 + 23 / 2 \times 23) + (23 \times 50) / 9 \times 0.40$	= 220.73 GAL
ITEM 304	$(17 \times 222) + (0 + 23 / 2 \times 23) + (23 \times 50) \times 6 / 12 / 27$	= 96.08 C.Y.
ITEM 411	$(6 / 12 \times 1.5) + (2.5 / 12 \times 0.5) \times 2 \times 222 / 27$	= 13.97 C.Y.

1-C		
ITEM 609	STATION 95+82 RT TO 96+28.33 RT. RAMP W-E	= 52 L.F.

2-C		
ITEM 609	STATION 95+62.95 LT TO 96+28.33 RT. RAMP W-E	= 83 L.F.

### REMOVAL CALCULATIONS

1PR	STATION 96+75 TO 99+00 RT S.R.315 RT $(150 \times 16) + (24 + 17 / 2 \times 90) / 9$	= 471.67 S.Y.
2PR	STATION 96+75 TO 99+00 S.R.315 RT $325 \times 24 / 9$	= 866.67 S.Y.
3PR	STATION 96+75 TO 99+00 S.R.315 LT $(225 \times 24) + (100 \times 34) / 9$	= 977.78 S.Y.
4PR	STATION 96+75 TO 99+00 RT S.R.315 RT $(4.27 \times 400) + (107 \times 24) + (24 + 17 / 2 \times 180) + (14 + 11 / 2 \times 9) / 9$	= 897.61 S.Y.

5PR WEST GAY STREET	$6.95 \times 400 / 9$	= 308.88 S.Y.
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1CR STATION 95+71.43 TO 99+00 RAMP W-E	$333 \text{ RT} + 360 \text{ LT}$	= 693 L.F.
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2CR STATION 95+91 TO 99+00 LT S.R.315		= 309 L.F.
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3CR STATION 95+91 TO 99+00 RT S.R.315		= 309 L.F.
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4CR STATION 96+75 TO 99+00 RT S.R.315	$155 \text{ LT} + 230 \text{ RT}$	= 385 L.F.
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5CR WEST GAY STREET	$69 + 40$	= 109 L.F.
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1SR WEST GAY STREET	$71 \times 4.5$	= 319 L.F.
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1MR STATION 98+77 TO 99+00	$7 \times 23 / 9$	= 18 S.Y.
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# CALCULATIONS

## SHEET NO. 37, PAVEMENT CALCULATIONS

### NORTHBOUND S.R.315 STATION 99+00 TO 105+00

1-P  
ITEM 203  
"F"  $(12 + 12 + 12 + 10 \times 377.24) + (46 + 56 / 2 \times 100) + (56 \times 22.76) / 9 = 2636.4$  S.Y.  
"IR"  $56 \times 100 / 9 = 622.2$  S.Y.

ITEM 304  
"F"  $(0.5 \times 36 \times 500) + (0 + 12 / 2 \times 100) = 9600$   
 $9.75 / 12 \times 1.5 \times 262.5 = 320$   
 $9.75 / 12 + 3 / 12 / 2 \times 9 \times 262.5 = 1255$   
 $9.75 / 12 + 3 / 12 / 2 \times 10.5 \times 114.74 = 640$   
 $9.75 / 12 + 3 / 12 / 2 \times (10.5 + 8.5 / 2) \times 100 = 504$   
 $9.75 / 12 + 3 / 12 / 2 \times 8.5 \times 22.76 = 103$   
 $12422 / 27 = 460.07$  C.Y.

"IR"  $0.5 \times 48 \times 100 = 2400$   
 $9.75 / 12 \times 8 \times 100 = 650$   
 $3050 / 27 = 112.96$  C.Y.

ITEM 305  
"F"  $(12 + 12 + 12) \times 377.24 = 13580.64$   
 $36 + 48 / 2 \times 100 = 4200.00$   
 $48 \times 22.76 = 1092.48$   
 $18873.12 / 9 = 2097.01$  S.Y.  
"IR"  $48 \times 100 / 9 = 533.33$  S.Y.

ITEM 407  
"F"  $(36 \times 377.24) + (36 + 48 / 2 \times 100) + (48 \times 22.76) / 9 \times 0.075 = 157.28$  GAL  
"IR"  $48 \times 100 / 9 \times 0.075 = 39.99$  GAL

ITEM 452  
"F"  $(10 \times 377.24) + (10 + 8 / 2 \times 100) + (8 \times 22.76) / 9 = 539.39$  S.Y.  
"IR"  $8 \times 10 / 9 = 88.89$  S.Y.

ITEM 446 TYPE 1  
"F"  $(36 \times 377.24) + (36 + 48 / 2 \times 100) + (48 \times 22.76) \times (1.25 / 12) / 27 = 72.81$  C.Y.  
"IR"  $48 \times 100 \times (1.25 / 12) / 27 = 18.52$  C.Y.

ITEM 446 TYPE 2  
"F"  $(36 \times 377.24) + (36 + 48 / 2 \times 100) + (48 \times 22.76) \times (1.75 / 12) / 27 = 101.94$  C.Y.  
"IR"  $48 \times 100 \times (1.75 / 12) / 27 = 25.93$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
"F"  $(24 \times 36) + (6 \times 38) = 1092$  L.F.  
"IR"  $6 \times 48 = 288$  L.F.

### MEDIAN S.R.315 STATION 99+00 TO 105+00

2-P  
ITEM 203  
"F"  $(6 \times 138.33) + (6 + 8.22 / 2 \times 361.67) = 3401.45$   
 $(6 \times 192.16) + (6 + 8.22 / 2 \times 307.84) = 3341.70$   
 $6743.15 / 9 = 749.24$  S.Y.  
"IR"  $(8.22 + 8.95 / 2 \times 100) \times 2 / 9 = 190.78$  S.Y.

ITEM 304  
"F"  $(9.75 / 12 \times 4.25 \times 138.33) = 477.67$   
 $(9.75 / 12 \times (4.25 + 6.47 / 2) \times 361.67) = 1575.07$   
 $(9.75 / 12 \times 4.25 \times 192.16) = 663.55$   
 $(9.75 / 12 \times (4.25 + 6.47 / 2) \times 307.84) = 1340.64$   
 $9.75 / 12 \times 3.5 \times 500 = 1421.88$   
 $5478.81 / 27 = 202.92$  C.Y.

"IR"  $(9.75 / 12 + 9.75 / 12 / 2) \times (6.47 + 7.20 / 2) \times 100 \times 2 = 1110.68$   
 $9.75 / 12 \times 3.5 \times 100 = 284.38$   
 $1395.06 / 27 = 51.67$  C.Y.

ITEM 452  
"F"  $(4.25 \times 138.33) + (4.25 + 6.47 / 2 \times 361.67) = 2526.45$   
 $(4.25 \times 192.16) + (4.25 + 6.47 / 2 \times 307.84) = 2466.70$   
 $4993.15 / 9 = 554.79$  S.Y.

### SOUTHBOUND S.R.315 STATION 99+00 TO 105+00

"IR"  $(6.47 + 7.20 / 2 \times 100 \times 2) / 9 = 151.89$  S.Y.

ITEM 622  
"F"  $10400 - 9900 = 500$  L.F.  
"IR"  $10500 - 10400 = 100$  L.F.

3-P  
ITEM 203  
"F"  $(12 + 12 + 12 \times 499) + (10 \times 88.15) / 9 = 2093.94$  S.Y.  
"IR"  $(12 + 12 + 12) \times 100 / 9 = 400.00$  S.Y.

ITEM 304  
"F"  $0.5 \times 36 \times 499 = 8982.00$   
 $9.75 / 12 \times 1.5 \times 88.15 = 107.43$   
 $9.75 / 12 + 3 / 12 / 2 \times 9 \times 88.15 = 421.47$   
 $9510.90 / 27 = 352.26$  C.Y.  
"IR"  $0.5 \times 36 \times 100 / 27 = 66.67$  C.Y.

ITEM 305  
"F"  $499 \times 36 / 9 = 1996.00$  S.Y.  
"IR"  $100 \times 36 / 9 = 400.00$  S.Y.

ITEM 407  
"F"  $499 \times 36 / 9 \times 0.075 = 149.7$  GAL  
"IR"  $100 \times 36 / 9 \times 0.075 = 30.00$  GAL

ITEM 452  
"F"  $10 \times 88.15 / 9 = 97.94$  S.Y.  
"IR" 0

ITEM 446 TYPE 1  
"F"  $499 \times 36 \times (1.25 / 12) / 27 = 69.31$  C.Y.  
"IR"  $100 \times 36 \times (1.25 / 12) / 27 = 13.89$  C.Y.

ITEM 446 TYPE 2  
"F"  $499 \times 36 \times (1.75 / 12) / 27 = 97.03$  C.Y.  
"IR"  $100 \times 36 \times (1.75 / 12) / 27 = 19.44$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
"F"  $29 \times 36 = 1044$  L.F.  
"IR"  $6 \times 36 = 216$  L.F.

### RAMP W-E STATION 99+00 TO 99+94.87

4-P  
ITEM 203  
"F"  $(3 + 16 + 6 \times 44.87) + (25 + 27 / 2 \times 50) / 9 = 269.08$  S.Y.

ITEM 304  
"F"  $7.75 / 12 + 3 / 12 / 2 \times 3 \times 94.87 = 127.48$   
 $6 / 12 \times 16 \times 94.87 = 758.96$   
 $(3 / 12 + 7.75 / 12 / 2 \times 6.5) \times 44.87 = 130.63$   
 $(3 / 12 + 9.75 / 12 / 2) \times (6.5 + 8.5 / 2) \times 50 = 199.22$   
 $1216.29 / 27 = 45.05$  C.Y.

ITEM 305 (8")  
"F"  $16 \times 94.87 / 9 = 168.67$  S.Y.

ITEM 407  
"F"  $16 \times 94.87 / 9 \times 0.075 = 12.65$  GAL

ITEM 452  
"F"  $(6 \times 44.87) + (6 + 8 / 2 \times 50) / 9 = 68.80$  S.Y.  
(9")  $3 \times 94.87 / 9 = 31.62$  S.Y.

ITEM 446 TYPE 1  
"F"  $16 \times 94.87 \times (1.25 / 12) / 27 = 5.86$  C.Y.

### RAMP W-E STATION 99+94.87 TO 105+00

ITEM 446 TYPE 2  
"F"  $16 \times 94.87 \times (1.75 / 12) / 27 = 8.20$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
"F"  $6 \times 16 = 96$  L.F.

5-P  
ITEM 203  
"F"  $(16 + 8 \times 242) + (12 \times 86.85) = 6850.20$   
 $(11 + 2 / 2 \times 86.85) + (14 + 2 / 2 \times 161) = 1852.52$   
 $(2 + 16 + 8) + (12.5 + 8) / 2 \times 158 = 3650.25$   
 $12352.97 / 9 = 1372.55$  S.Y.  
"IR"  $12.5 + 8 + 12 + 8 / 2 \times 98.5 / 9 = 221.63$  S.Y.

ITEM 304  
"F"  $(16 \times 242) + (12 \times 86.85) + (6.5 \times 86.85) \times 6 / 12 = 2739.36$   
 $(8 \times 161) + (15.25 \times 158) \times 6 / 12 = 1848.75$   
 $3 / 12 + 9.75 / 12 / 2 \times 8.5 \times 405 = 1828.83$   
 $6416.94 / 27 = 237.66$  C.Y.  
"IR"  $12.5 + 12 / 2 \times 98.5 \times 6 / 12 = 603.31$   
 $3 / 12 + 9.75 / 12 / 2 \times 8.5 \times 98.5 = 444.79$   
 $1048.10 / 27 = 38.82$  C.Y.

ITEM 305 (10")  
"F"  $(16 \times 242) + (12 \times 86.85) + (6.5 \times 86.85) = 5478.72$   
 $(8 \times 161) + (15.25 \times 158) = 3697.50$   
 $9176.22 / 9 = 1019.58$  S.Y.  
"IR"  $12.5 + 12 / 2 \times 98.5 / 9 = 134.07$  S.Y.

ITEM 407  
"F" FROM ITEM 305 -  $9176.22 / 9 \times 0.075 = 76.47$  GAL  
"IR"  $12.5 + 12 / 2 \times 98.5 / 9 \times 0.075 = 10.06$  GAL

ITEM 452  
"F"  $405 \times 8 / 9 = 360.00$  S.Y.  
"IR"  $98.5 \times 8 / 9 = 87.56$  S.Y.

ITEM 446 TYPE 1  
"F"  $(16 \times 242) + (12 \times 86.85) + (6.5 \times 86.85) = 5478.72$   
 $(8 \times 161) + (15.25 \times 158) = 3697.50$   
 $9176.22$   
 $9176.22 \times (1.25 / 12) / 27 = 35.40$  C.Y.  
"IR"  $12.5 + 12 / 2 \times 98.5 \times (1.25 / 12) / 27 = 4.66$  C.Y.

ITEM 446 TYPE 2  
"F"  $(16 \times 242) + (12 \times 86.85) + (6.5 \times 86.85) = 5478.72$   
 $(8 \times 161) + (15.25 \times 158) = 3697.50$   
 $9176.22$   
 $9176.22 \times (1.75 / 12) / 27 = 49.56$  C.Y.  
"IR"  $12.5 + 12 / 2 \times 98.5 \times (1.75 / 12) / 27 = 6.52$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
"F"  $39 + 12.5 / 2 \times 24 = 618$  L.F.  
"IR"  $12.5 + 12 / 2 \times 6 = 74$  L.F.

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# CALCULATIONS

## SHEET NO. 37, PAVEMENT CALCULATIONS CONTINUED

<b>6-P</b>		
ITEM 446 (2.5")	TYPE 1 (14 x 66) + (27 x 25.5) x (2.5 / 12) / 27	= 12.44 C.Y.
ITEM 408	(14 x 66) + (27 x 25.5) / 9 x 0.40	= 71.67 GAL
ITEM 304	(14.5 x 66) + (27 x 26) + (17 x 0.5) x 6 / 12 / 27	= 30.88 C.Y.
ITEM 411	(6 / 12 x 1.5) + (2.5 / 12 x 0.5) x 2 x 109 / 27	= 6.86 C.Y.
<b>REMOVAL CALCULATIONS</b>		
<b>1PR</b>		
"F" STATION 99+00 TO 104+00 LT. S.R.315	(3 + 5 / 2 x 8) + (25 x 187 / 2) = 2369.5	
	34 + 24 / 2 x 200 = 5800	
	(24 + 22 / 2 x 246) + (22 x 54) = 6846	
	15015.5 / 9	= 1668 S.Y.
"IR" STATION 104+00 TO 105+00 LT. S.R.315	22 x 100 / 9	= 244 S.Y.
<b>2PR</b>		
"F" STATION 99+00 TO 104+00 RT. S.R.315	(17 x 263 / 2) + (24 x 300) + (24 + 22 / 2 x 146) + (22 x 55) / 9	= 1556 S.Y.
"IR" STATION 104+00 TO 105+00 RT. S.R.315	22 x 100 / 9	= 244 S.Y.
<b>3PR</b>		
"F" STATION 99+00 TO 100+82 LT. S.R.315 (SCOTT ST.)	(18 x 149) + (26 x 84) + (0.215 x 12 x 12 x 2) / 9	= 548 S.Y.
<b>1CR</b>		
"F" STATION 99+00 TO 103+00 LT. S.R.315		= 412 L.F.
<b>2CR</b>		
"F" STATION 99+00 TO 103+00 RT. S.R.315	32 + 402	= 434 L.F.
<b>1CGR</b>		
"F" STATION 103+00 TO 104+00 LT. & RT. S.R.315	98 LT. + 54 RT.	= 152 L.F.
"IR" STATION 104+00 TO 105+00 LT. & RT. S.R.315	101 LT. + 101 RT.	= 202 L.F.
<b>2CGR</b>		
"F" STATION 103+00 TO 104+00 RT. S.R.315	55 + 102	= 157 L.F.
"IR" STATION 104+00 TO 105+00 RT. S.R.315	101 + 102	= 203 L.F.
<b>1SR</b>		
"F" STATION 99+00 TO 100+59 LT. RAMP W-E	144.5 x 5	= 723 S.F.
<b>2SR</b>		
"F" STATION 100+90 LT. RAMP W-E (SCOTT ST.)	(47.5 x 4) + (22 x 7)	= 344 S.F.
<b>1MR</b>		
"F" STATION 103+45 TO 104+00 RT. S.R.315	4 x 55 / 9	= 24 S.Y.

<b>1MR</b>		
"F" STATION 104+00 TO 105+00	4 x 101 / 9	= 45 S.Y.

## SHEET NO. 38, PAVEMENT CALCULATIONS

### NORTHBOUND S.R.315 STATION 105+00 TO 110+00 (STRUCTURE 106+67.18 N.B.)

<b>1-P</b>		
ITEM 203	(56 x 139) + (63.75 x 25) / 9	= 1041.97 S.Y.
ITEM 304	(9.75 / 12 + 9.2 / 12) / 2 x 1.5 x 134 = 158.71	
	(9.2 / 12 + 3.0 / 12) / 2 x 5.0 x 134 = 340.58	
	48 x 139 x 6 / 12 = 3336.00	
	63.75 x 25 x 6 / 12 = 796.87	
	4632.16 / 27	= 171.56 C.Y.
ITEM 305	48 x 139 / 9	= 741.33 S.Y.
ITEM 407	48 x 139 / 9 x 0.075	= 55.60 GAL
ITEM 452	8 x 134 / 9	= 119.11 S.Y.
ITEM 446 TYPE 1	48 x 139 x 1.25 / 12 / 27	= 25.74 C.Y.
ITEM 446 TYPE 2	48 x 139 x 1.75 / 12 / 27	= 36.04 C.Y.
ITEM 611	63.75 x 25 / 9	= 177.08 S.Y.
ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	8 x 48	= 384 L.F.
<b>MEDIAN S.R.315 STATION 105+00 TO 106+42.5 N.B.</b>		
<b>2-P</b>		
ITEM 203	(7.2 + 8.1 / 2 x 145) + (3.5 x 169) + (7.2 + 8.1 / 2 x 143) / 9	= 310.52 S.Y.
ITEM 304	(9.75 / 12 + 9.75 / 12 / 2 x 7.65) x 2 x 144 + (9.75 / 12 x 3.5 x 169) / 27 = 84.10 C.Y.	
ITEM 452	(7.2 + 8.1 / 2 x 145) + (7.2 + 8.1 / 2 x 143) / 9	= 244.80 S.Y.
<b>SOUTHBOUND S.R.315 STATION 105+00 TO 106+67.18 N.B.</b>		
<b>3-P</b>		
ITEM 203	(56 x 150) + (63.75 x 25) / 9	= 1110.42 S.Y.

ITEM 304	(9.75 / 12 + 9.2 / 12 / 2 x 1.5) x 154 = 182.39	
	(9.2 / 12 + 3 / 12 / 2 x 5) x 154 = 391.42	
	(48 x 150 x 6 / 12) + (63.75 x 25 x 6 / 12) = 4396.87	
	4970.68 / 27	= 184.10 C.Y.
ITEM 305	48 x 150 / 9	= 800.00 S.Y.
ITEM 407	48 x 150 / 9 x 0.075	= 60.00 GAL
ITEM 452	8 x 154 / 9	= 136.89 S.Y.
ITEM 446 TYPE 1	48 x 150 x 1.25 / 12 / 27	= 27.78 C.Y.
ITEM 446 TYPE 2	48 x 150 x 1.75 / 12 / 27	= 38.89 C.Y.
ITEM 611	63.75 x 25 / 9	= 177.08 S.Y.
ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	9 x 48	= 432 L.F.

### REMOVAL CALCULATIONS

<b>1PR</b>		
STATION 105+00 TO 106+60 RT. N.B. S.R.315 (PAV'T)	163 x 22 / 9	= 398 S.Y.
<b>2PR</b>		
STATION 105+00 TO 106+62 RT. N.B. S.R.315 (PAV'T)	163 x 22 / 9	= 398 S.Y.
<b>1CGR</b>		
STATION 105+00 TO 106+62 RT. N.B. S.R.315 (CURB & GUTTER)	163 + 163	= 326 L.F.
<b>2CGR</b>		
STATION 105+00 TO 106+62 RT. N.B. S.R.315 (CURB & GUTTER)	163 + 163	= 326 L.F.
<b>1MR</b>		
STATION 105+00 TO 106+62 RT. N.B. S.R.315 (MEDIAN PAV'T)	163 x 5 / 9	= 91 S.Y.



# CALCULATIONS

## SHEET NO. 39, PAVEMENT CALCULATIONS

RAMP 5-M STATION 110+70.5 TO 112+50  
APPROACH SLAB N.B. S.R.315

1-P		
ITEM 203	$(35 \times 54.5) + (35 + 33 / 2 \times 50) + (33 \times 75) + (99 \times 25) / 9$	= 950.83 S.Y.
ITEM 304	$(99 \times 25) + (24 \times 179.5) \times 6 / 12 = 3391.5$ $7.25 / 12 + 3 / 12 / 2 \times 3 \times 180 = 230.63$ $(9.75 / 12 + 9.2 / 12 / 2 \times 1.5) + (9.2 / 12 + 3 / 12 / 2 \times 7) \times 54.5 = 258.48$ $(9.75 / 12 + 9.2 / 12 / 2 \times 1.5) + (9.2 / 12 + 3 / 12 / 2 \times 7) \times 50 = 237.14$ $(9.75 / 12 + 7.25 / 12 / 2 \times 1.5) + (7.25 / 12 + 3 / 12 / 2 \times 5) \times 75 = 239.84$ $4357.59 / 27 = 161.39$	= 161.39 C.Y.
ITEM 611	$96.5 \times 25 / 9$	= 268 S.Y.
ITEM 305 (8")	$24 \times 180 / 9$	= 480.00 S.Y.
ITEM 407	$24 \times 180 / 9 \times 0.075$	= 36 GAL
ITEM 452	$(8 \times 54.5) + (7 \times 50) + (6 \times 75) / 9 = 137.33$ S.Y. $(9") 3 \times 180 / 9 = 60.00$ S.Y.	
ITEM 446	TYPE 1 $24 \times 180 \times 1.25 / 12 / 27 = 16.67$ C.Y. TYPE 2 $24 \times 180 \times 1.75 / 12 / 27 = 23.33$ C.Y.	
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS $11 \times 24$	= 264 L.F.

NORTHBOUND S.R.315  
STATION 110+89.32 TO 115+00

2-P		
ITEM 203	$(12 + 12 + 12 + 10) \times 419.3 / 9$	= 2143.08 S.Y.
ITEM 304	$36 \times 418 \times 6 / 12 = 7524.0$ $(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 423 = 2538$ $10062 / 27 = 372.67$	= 372.67 C.Y.
ITEM 305 (10")	$36 \times 418 / 9$	= 1672.0 S.Y.
ITEM 407	$36 \times 418 / 9 \times 0.075$	= 125.40 GAL
ITEM 452	$10 \times 423.7 / 9$	= 470.77 S.Y.
ITEM 446	TYPE 1 $36 \times 418 \times 1.25 / 12 / 27 = 58.05$ C.Y. TYPE 2 $36 \times 418 \times 1.75 / 12 / 27 = 81.28$ C.Y.	
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS $24 \times 36$	= 864 L.F.

MEDIAN S.R.315 & APPROACH SLAB  
STATION 110+64.32 TO 115+00

3-P		
ITEM 203	$(81 \times 25) + (22.5 \times 410.7) / 9$	= 1251.75 S.Y.
ITEM 304	$(9.75 / 12 + 9.75 / 12 / 2 \times 9.5) \times 2 + (9.75 / 12 \times 3.5) \times 410.7 = 7508.11$ $81 \times 25 \times 6 / 12 = 1012.50$ $8520.61 / 27 = 315.58$	= 315.58 C.Y.

ITEM 611	$81 \times 25 / 9$	= 225 S.Y.
ITEM 452	$19 \times 410.7 / 9$	= 867.03 S.Y.
ITEM 611	$11500 - 11089.32$	= 411 L.F.

SOUTHBOUND S.R.315  
STATION 110+89.32 TO 115+00

4-P		
ITEM 203	$(24 \times 405) + (10 \times 87) + (12.24 \times 400) / 9$	= 1720.67 S.Y.
ITEM 304	$24 \times 405 \times 6 / 12 = 4860$ $(12.24 \times 400 \times 8.25 / 12) = 3366$ $(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 87 = 522$ $8748 / 27 = 324.00$	= 324.00 C.Y.
ITEM 305	$24 \times 405 / 9$	= 1080.00 S.Y.
ITEM 407	$24 \times 405 / 9 \times 0.075$	= 81 GAL
ITEM 452	$(12.24 \times 400) + (10 \times 87) / 9$	= 640.67 S.Y.
ITEM 446	TYPE 1 $24 \times 405 \times 1.25 / 12 / 27 = 37.5$ C.Y. TYPE 2 $24 \times 405 \times 1.75 / 12 / 27 = 52.5$ C.Y.	
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS $24 \times 24$	= 576 L.F.

ROAD S-K  
STATION 440+47 TO 444+50

5-P		
ITEM 203	$(8 \times 74.5) + (7 \times 50) + (6 \times 275) + (24 \times 404) + (4 \times 95) / 9$	= 1408 S.Y.
ITEM 304	$7.25 / 12 + 3 / 12 / 2 \times 4 \times 95 = 162.29$ $(9.75 / 12 + 9.2 / 12 / 2 \times 1.5) + (9.2 / 12 + 3 / 12 / 2 \times 7) \times 74.5 = 353.33$ $(9.75 / 12 + 9.2 / 12 / 2 \times 1.5) + (9.2 / 12 + 3 / 12 / 2 \times 7) \times 50 = 237.14$ $(7.75 / 12 + 7.75 / 12 / 2 \times 1.5) + (7.75 / 12 + 3 / 12 / 2 \times 5) \times 275 = 882.29$ $24 \times 404 \times 6 / 12 = 4848.00$ $6483.05 / 27 = 240.11$	= 240.11 C.Y.
ITEM 305 (8")	$24 \times 404 / 9$	= 1077.33 S.Y.
ITEM 407	$24 \times 404 / 9 \times 0.075$	= 80.80 GAL
ITEM 452	$(8 \times 74.5) + (7 \times 50) + (6 \times 275) / 9 = 288.44$ S.Y. $(9") 4 \times 95 / 9 = 42.22$ S.Y.	
ITEM 446	TYPE 1 $24 \times 404 \times 1.25 / 12 / 27 = 37.41$ C.Y. TYPE 2 $24 \times 404 \times 1.75 / 12 / 27 = 52.37$ C.Y.	
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS $24 \times 24$	= 576 L.F.

SOUTHBOUND S.R.315 STATION 110+89.32 TO 115+00	
1PR STA. 111+25 TO 112+50 RAMP "S-M" (PAV'T) $22 + 36 / 2 \times 128 / 9$	= 412 S.Y.
2PR STA. 111+20 TO 112+78 RT. S.R.315 (PAV'T) $10.10 \times 400 / 9$	= 449 S.Y.
1CR STA. 111+22 TO 112+70 RT. S.R.315 (CURB)	= 150 L.F.
2CR STA. 111+25 TO 112+70 RT. RAMP "S-M" (CURB)	= 126 L.F.
1MR STA. 111+20 TO 112+78 RT. S.R.315 (MEDIAN) $157 \times 7.5 / 9$	= 131 S.Y.

# CALCULATIONS

## SHEET NO. 40, PAVEMENT CALCULATIONS

NORTHBOUND S.R. 315  
STATION 115+00 TO 117+19.11

1-P		
ITEM 203	$(46 \times 177) + (2.5 \times 17) + (63.5 \times 22.5) / 9$	= 1068.14 S.Y.
ITEM 304	$(63.5 \times 22.5) + (36 \times 179) \times 6 / 12$	= 3936.38
	$(9.75 / 12 + 9.758 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 147.5 = 885.00$	
	$(9.75 / 12 + 9.758 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 10.5) \times 18.5 = 125.74$	
	$4947.12/27 = 183.23$	C.Y.
ITEM 611	$63.5 \times 22.5 / 9$	= 158.75 S.Y.
ITEM 305 (10")	$36 \times 179 / 9$	= 716.0 S.Y.
ITEM 407	$36 \times 179 / 9 \times 0.075$	= 53.7 GAL
ITEM 452	$(147.5 \times 10) + (18.5 \times 12) / 9$	= 188.56 S.Y.
ITEM 446	TYPE 1 $36 \times 179 \times 1.25 / 12 / 27$	= 24.86 C.Y.
	TYPE 1 $36 \times 179 \times 1.75 / 12 / 27$	= 34.80 C.Y.

MEDIAN S.R.315 & S.B. APPROACH SLAB  
STATION 115+00 TO 117+19.11

2-P		
ITEM 203	$(22.5 \times 195) + (3.5 \times 25) + (50 \times 22.5) / 9$	= 622.22 S.Y.
ITEM 304	$(9.75 / 12 + 9.75 / 12 / 2 \times 9.5) \times 2 + (9.75 / 12 \times 3.5) \times 195 = 3564.84$	
	$22.5 \times 50 \times 6 / 12 = 562.50$	
	$4127.34/27 = 152.86$	C.Y.
ITEM 611	$22.5 \times 50 / 9$	= 125 S.Y.
ITEM 622	$11694 - 11500$	= 194 L.F.
ITEM 452	$(9.5 \times 197) + (9.5 \times 190) / 9$	= 408.50 S.Y.

SOUTHBOUND S.R. 315  
STATION 115+00 TO 117+17.5

3-P		
ITEM 203	$(34 \times 208) + (2.5 \times 15) / 9$	= 789.94 S.Y.
ITEM 304	$(24 \times 205.5 \times 6 / 12)$	= 2466.00
	$(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 214.5 = 1287.00$	
	$(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 10.5) \times 15 = 101.95$	
	$3854.95/27 = 142.78$	C.Y.
ITEM 305	$24 \times 205.5 / 9$	= 548 S.Y.
ITEM 407	$24 \times 205.5 / 9 \times 0.075$	= 41.1 GAL
ITEM 452	$(10 \times 214.5) + (2 \times 15) / 9$	= 241.67 S.Y.

ITEM 446	TYPE 1 $24 \times 205.5 \times 1.25 / 12 / 27$	= 19.02 C.Y.
	TYPE 2 $24 \times 205.5 \times 1.75 / 12 / 27$	= 26.63 C.Y.
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	= 288 L.F.
	$12 \times 24$	

ROAD "S-K"  
STATION 444+50 TO 447+10.98

4-P		
ITEM 203	$(34 \times 234) + (2.5 \times 15) + (2 \times 19) = 8032$	
	$21 \times 48 = 1008$	
	$9040/9 = 1004.44$	S.Y.

ITEM 304	TYPE 1 $(24 \times 234 \times 6 / 12) + (21 \times 48 \times 6 / 12)$	= 3312.00
	$(7.75 / 12 + 7.75 / 12 / 2 \times 1.5) + (7.75 / 12 + 3 / 12 / 2 \times 5) \times 246.5 = 790.85$	
	$(7.25 / 12 + 3 / 12 / 2 \times 4.5) \times 224 = 430.50$	
	$(3 / 12 \times 2) \times (16 + 19) = 17.50$	
	$45508/27 = 168.55$	C.Y.

ITEM 305	$(24 \times 234) + (2.5 \times 119 / 2) / 9$	= 640.53 S.Y.
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ITEM 407	$(24 \times 234) + (2.5 \times 119 \times 0.10 / 2) / 9 \times 0.075$	= 46.92 GAL
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ITEM 452	$(6 \times 246.5) + (16 + 19 \times 2) / 9$	= 172.11 S.Y.
	$4 \times 224 / 9 = 99.56$	S.Y.

ITEM 446	TYPE 1 $(24 \times 234) + (2.5 \times 119 / 2) \times 1.25 / 12 / 27$	= 22.24 C.Y.
	TYPE 2 $(24 \times 234) + (2.5 \times 119 / 2) \times 1.75 / 12 / 27$	= 31.14 C.Y.

ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	= 336 L.F.
	$14 \times 24 = 336$	

ITEM 611	$51 \times 20.5/9$	= 116.00 S.Y.
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NORTHBOUND S.R.315  
STATION 119+52.65 TO 120+00

5-P		
ITEM 203	$28 + 56 / 2 \times 61 / 9$	= 284.67 S.Y.

ITEM 304	TYPE 1 $28 + 56 / 2 \times 50 \times 6 / 12$	= 1000.00
	$(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 53.5 = 321.00$	
	$3 / 12 \times 2 \times 15.5 = 7.75$	
	$1328.75/27 = 49.21$	C.Y.

ITEM 305	$28 + 56 / 2 \times 50 / 9$	= 222.2 S.Y.
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ITEM 407	$28 + 56 / 2 \times 50 / 9 \times 0.075$	= 16.67 GAL
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ITEM 452	$(10 \times 53) + (2 \times 15.5) / 9$	= 62.33 S.Y.
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ITEM 446	TYPE 1 $28 + 56 / 2 \times 50 \times 1.25 / 12 / 27$	= 7.71 C.Y.
	TYPE 2 $28 + 56 / 2 \times 50 \times 1.75 / 12 / 27$	= 10.80 C.Y.

ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	= 118 L.F.
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MEDIAN S.R.315 & N.B. APPROACH SLAB  
STATION 119+52.65 TO 120+00

6-P		
ITEM 203	$(22.5 \times 77) + (22.5 \times 22.5) / 9$	= 248.75 S.Y.
ITEM 304	$(22.5 \times 77) + (22.5 \times 22.5) \times 6 / 12 = 1119.38$	
	$(9.75 / 12 + 9.75 / 12 / 2 \times 9.5) \times 2 + (9.75 / 12 \times 3.5) \times 22.5 = 411.33$	
	$1530.71/27 = 56.69$	C.Y.

ITEM 452	$(9.5 \times 19.5) + (9.5 \times 25.5) / 9$	= 47.50 C.Y.
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ITEM 622	$12000 - 11977.5$	= 22 L.F.
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ITEM 611	$73.5 \times 22.5/9$	= 184 S.Y.
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SOUTHBOUND S.R.315  
STATION 119+52.65 TO 120+00

7-P		
ITEM 203	$(22.5 \times 52) + (17 \times 34 / 2) / 9$	= 162.11 S.Y.

ITEM 304	$(22.5 \times 52) + (17 \times 34 / 2) \times 6 / 12 / 27$	= 27.02 C.Y.
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ITEM 305 (10")	$24 \times 11.5 / 9$	= 30.67 S.Y.
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ITEM 407	$24 \times 11.5 / 9 \times 0.075$	= 2.30 GAL
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ITEM 452	$5 \times 10 / 2 / 9$	= 2.78 S.Y.
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ITEM 446	TYPE 1 $24 \times 11.5 \times 1.25 / 12 / 27$	= 1.06 C.Y.
	TYPE 2 $24 \times 11.5 \times 1.75 / 12 / 27$	= 1.49 C.Y.

ITEM 413	- SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	= 24 L.F.
	$1 \times 24 = 24$	

ITEM 611	$50 \times 22.50/9$	= 125 S.Y.
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### REMOVAL CALCULATIONS

1PR STATION 119+13 TO 120+00 RT. ROAD "S-L"	$76 \times 18 / 9$	= 152 S.Y.
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2PR STATION 118+85 TO 120+00 RT. ROAD "S-L"	$106 \times 26 / 9$	= 306 S.Y.
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3PR STATION 119+02 TO 120+00 RT. ROAD "S-L"	$93 \times 20 / 9$	= 207 S.Y.
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4PR STATION 445+35 TO 446+66 LT. ROAD "S-K"	$(29 + 35 / 2 \times 115) + (35 + 19 / 2 \times 32) / 9$	= 505 S.Y.
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5PR STATION 445+10 TO 446+01 LT. ROAD "S-K"	$(78 \times 18) + (23 \times 18 / 2) / 9$	= 179 S.Y.
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1CR STATION 445+10 TO 446+01 LT. ROAD "S-K"	$79 + 102$	= 181 L.F.
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2CR STATION 445+19 TO 446+66 LT. ROAD "S-K"	$115 + 146$	= 261 L.F.
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3CR STATION 118+85 TO 120+00 RT. ROAD "S-L"	$88 + 112$	= 200 L.F.
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4CR STATION 119+13 TO 120+00 RT. ROAD "S-L"	$77 + 76$	= 153 L.F.
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1MR STATION 119+13 TO 120+00 RT. ROAD "S-L"	$99 \times 4 / 9$	= 44 S.Y.
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# CALCULATIONS

## SHEET NO. 41, PAVEMENT CALCULATIONS

NORTHBOUND S.R. 315  
STATION 120+00 TO 122+00

SOUTHBOUND S.R. 315  
STATION 120+00 TO 122+00

1-P  
ITEM 203  $(24 \times 200) + (38 + 46 / 2 \times 81.6) + (10 \times 118) / 9 = 1045.24$  S.Y.

ITEM 304  $(24 \times 200) + (28 + 36 / 2 \times 81.6) \times 6 / 12 = 3705.60$   
 $(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times (118.4 + 80.8) = 1195.20$   
 $4900.80 / 27 = 181.51$  C.Y.

ITEM 305  $(24 \times 200) + (28 + 36 / 2 \times 81.6) / 9 = 823.47$  S.Y.

ITEM 407  $(24 \times 200) + (28 + 36 / 2 \times 81.6) / 9 \times 0.075 = 61.8$  GAL

ITEM 452  $(10 \times 80.8) + (10 \times 118.4) / 9 = 221.33$  S.Y.

ITEM 446  
TYPE 1  $(24 \times 200) + (28 + 36 / 2 \times 81.6) \times 1.25 / 12 / 27 = 28.59$  C.Y.  
TYPE 2  $(24 \times 200) + (28 + 36 / 2 \times 81.6) \times 1.75 / 12 / 27 = 40.02$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
 $42 + 44 + 45 + 47 + (7 \times 24) = 346$  L.F.

4-P  
ITEM 203  $(34 \times 200) + (2 \times 16) / 9 = 759.11$  S.Y.

ITEM 304  $24 \times 200 \times 6 / 12 = 2400.0$   
 $(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 9) \times 200 = 1200.0$   
 $3 / 12 \times 2 \times 16 = 8.00$   
 $3608 / 27 = 133.63$  C.Y.

ITEM 305  $24 \times 200 / 9 = 533.33$  S.Y.

ITEM 407  $24 \times 200 / 9 \times 0.075 = 40.00$  GAL

ITEM 452  $(10 \times 200) + (2 \times 16) / 9 = 225.78$  S.Y.

ITEM 446  
TYPE 1  $24 \times 200 \times 1.25 / 12 / 27 = 18.52$  C.Y.  
TYPE 2  $24 \times 200 \times 1.75 / 12 / 27 = 25.92$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
 $12 \times 24 = 288$  L.F.

ITEM 304  $(22 \times 256.5) + (2 \times 20.5) + (3 \times 53) \times 6 / 12 = 2921.5$   
 $(7.75 / 12 + 7.25 / 12 / 2 \times 1.5) + (7.25 / 12 + 3 / 12 / 2 \times 5) \times 245 = 752.86$   
 $(7.25 / 12 + 3 / 12 / 2 \times 3) \times 52 = 66.62$   
 $3740.98 / 27 = 138.55$  C.Y.

ITEM 305  $16 \times 258 / 9 = 458.67$  S.Y.

ITEM 407  $16 \times 258 / 9 \times 0.075 = 34.40$  GAL

ITEM 452  $(6 \times 245) + (2 \times 20.5) / 9 = 167.89$  S.Y.  
 $(9") \ 3 \times 53 / 9 = 17.67$  S.Y.

ITEM 446  
TYPE 1  $16 \times 258 \times 1.25 / 12 / 27 = 15.92$  C.Y.  
TYPE 2  $16 \times 258 \times 1.75 / 12 / 27 = 22.30$  C.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
 $15 \times 16 = 240$  L.F.

ROAD "S-L"  
STATION 120+80.76 TO 122+00

ROAD "S-K"  
STATION 449+63.49 TO 452+50.00

### REMOVAL CALCULATIONS

2-P  
ITEM 203  $(30 + 26 / 2 \times 100) + (26 \times 19.24) / 9 = 366.69$  S.Y.

ITEM 304  $16 \times 119.24 \times 6 / 12 = 953.92$   
 $(9.75 / 12 + 9.75 / 12 / 2 \times 1.5) + (9.75 / 12 + 3 / 12 / 2 \times 7) \times 100 = 493.75$   
 $(7.75 / 12 + 7.75 / 12 / 2 \times 1.5) + (7.25 / 12 + 3 / 12 / 2 \times 5) \times 19.24 = 59.72$   
 $7.25 / 12 + 3 / 12 / 2 \times 4.5 \times 119.24 = 229.16$   
 $1736.55 / 27 = 64.32$  C.Y.

ITEM 305  $16 \times 119.24 / 9 = 211.98$  S.Y.

ITEM 407  $16 \times 119.24 / 9 \times 0.075 = 15.90$  GAL

ITEM 452  $(10 + 6 / 2 \times 100) + (6 \times 19.24) / 9 = 101.71$  S.Y.  
 $(9") \ 4 \times 119.24 / 9 = 53.00$  S.Y.

ITEM 446  
TYPE 1  $16 \times 119.24 \times 1.25 / 12 / 27 = 7.36$  C.Y.  
TYPE 2  $16 \times 119.24 \times 1.75 / 12 / 27 = 10.30$  C.Y.

ITEM 413  $7 \times 16 = 112$  L.F.

MEDIAN S.R.315  
STATION 120+00 TO 122+00

5-P  
ITEM 203  $20.5 \times 58.4 = 1197.2$   
 $22.5 + 24 / 2 \times 78.5 = 1844.8$   
 $(20 \times 144) + (26 \times 45) + (2.73 \times 400) = 5142.0$   
 $8184.0 / 9 = 909.33$  S.Y.

ITEM 304  $(16 \times 267.5) + (3 \times 71) \times 6 / 12 = 2246.5$   
 $(7.25 / 12 + 7.75 / 12 / 2 \times 2) + (7.75 / 12 + 3 / 12 / 2 \times 2) \times 273.5 = 598.28$   
 $(2.73 \times 400 \times 7.25 / 12) + (3 / 12 \times 2 \times 17) = 668.25$   
 $(7.75 / 12 + 7.25 / 12 / 2 \times 1.5) + (7.25 / 12 + 3 / 12 / 2 \times 5) \times 46 = 142.79$   
 $3655.82 / 27 = 135.40$  C.Y.

ITEM 305  $(16 \times 267.5) + (3 \times 71) / 9 = 499.22$  S.Y.

ITEM 407  $(16 \times 267.5) + (3 \times 71) / 9 \times 0.075 = 37.4$  GAL

ITEM 452  $(2.73 \times 400) + (46 \times 6) / 9 = 152.00$  S.Y.  
 $(9") \ (4 \times 273.5) + (2 \times 17) / 9 = 125.33$  S.Y.

ITEM 446  
TYPE 1  $(16 \times 267.5) + (3 \times 71) \times 1.25 / 12 / 27 = 17.33$  C.Y.  
TYPE 2  $24 \times 200 \times 1.75 / 12 / 27 = 24.26$  C.Y.

ITEM 611  $20.5 \times 58.4 / 9 = 133$  S.Y.

ITEM 413 - SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS  
 $16 \times 16 + 2 + 3 + 5 = 266$  L.F.

1PR STATION 120+00 TO 122+16 RT. ROAD "S-L"  
 $212 \times 18 / 9 = 424$  S.Y.

2PR STATION 120+00 RT. ROAD "S-L" TO 451+50 RT. ROAD "S-K"  
 $(24 + 32 / 2 \times 116) + (32 + 27 / 2 \times 91) = 5933$   
 $(18 \times 69 / 2) + (18 \times 235) = 4851$   
 $10784 / 9 = 1198$  S.Y.

3PR STATION 120+00 RT. ROAD "S-L" TO 450+00 LT. RAMP "S-J"  
 $23 \times 422 / 9 = 1078$  S.Y.

1CR STATION 120+00 RT. ROAD "S-L" TO 450+00 LT. RAMP "S-J"  
 $428 + 422 = 850$  L.F.

2CR STATION 120+00 RT. ROAD "S-L" TO 451+50 RT. ROAD "S-K"  
 $90 + 240 + 338 = 668$  L.F.

3CR STATION 120+00 RT. ROAD "S-L" TO 122+11 RT. ROAD "S-L"  
 $208 + 211 = 419$  L.F.

4CR STATION 120+00 RT. ROAD "S-L" TO 122+16 RT. ROAD "S-L"  
 $213 = 213$  L.F.

ROAD "S-J"  
STATION 450+01 TO 452+50

3-P  
ITEM 203  $22.5 \times 200 / 9 = 500.0$  S.Y.

ITEM 304  $(9.75 / 12 + 9.75 / 12 / 2 \times 9.5 \times 2) + (9.75 / 12 \times 3.5) \times 200 / 27 = 135.42$  C.Y.

ITEM 622  $12200 - 12000 = 200$  L.F.

ITEM 452  $9.5 \times 2 \times 200 / 9 = 422.22$  S.Y.

6-P  
ITEM 203  $(22 \times 256.5) + (2 \times 20.5) + (3 \times 53) / 9 = 649.22$  S.Y.

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# CALCULATIONS

## SHEET NO. 42, PAVEMENT CALCULATIONS

RAMP "S-M"  
STATION 112+50 TO 116+25

1-P		
ITEM 203	$(33 + 45 / 2 \times 100) + (45 \times 275) / 9$	= 1808.33 S.Y.
ITEM 304	$(24 + 36 / 2 \times 100) + (36 \times 275) \times 6 / 12$ $(7.25 / 12 + 3 / 12 / 2 \times 3) \times 375$ $(7.75 / 12 + 7.75 / 12 / 2 \times 1.5) + (7.75 / 12 + 3 / 12 / 2 \times 5) \times 375 = \frac{1203.12}{8133.59/27}$	= 6450.00 = 480.47 = 301.24 C.Y.
ITEM 305	$(24 + 36 / 2 \times 100) + (36 \times 275) / 9$	= 1433.33 S.Y.
ITEM 407	$(24 + 36 / 2 \times 100) + (36 \times 275) / 9 \times 0.075$	= 107.50 GAL
ITEM 452	$6 \times 375 / 9$ (9") $3 \times 375 / 9$	= 250 S.Y. = 125 S.Y.
ITEM 446	TYPE 1 $(24 + 36 / 2 \times 100) + (36 \times 275) \times 1.25 / 12 / 27$ TYPE 2 $(24 + 36 / 2 \times 100) + (36 \times 275) \times 1.75 / 12 / 27$	= 49.77 C.Y. = 69.67 C.Y.
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE JOINTS $(6 \times 30) + (16 \times 36)$	= 756 L.F.

RAMP "S-M"  
STATION 116+25 TO 117+02

2-P		
ITEM 407	$(77 \times 36) + (3.21 \times 400) / 9 \times 0.075$	= 33.80 GAL
ITEM 446	TYPE 1 $(77 \times 36) + 3.21 \times 400 \times 1.25 / 12 / 27$	= 15.64 C.Y.

### REMOVAL CALCULATIONS

1PR	STATION 112+76 TO 116+47 LT. RAMP "S-M" (EX. S.B.315) $(13 \times 75) + (13 + 17 / 2 \times 313) / 9$	= 630 S.Y.
2PR	STATION 112+76 TO 116+47 LT. RAMP "S-M" (EX. N.B.315) $(35 + 36 / 2 \times 102) + (36 + 37 / 2 \times 70) = 6176$ $(37 + 24 / 2 \times 124) + (24 + 27 / 2 \times 114) = \frac{6689}{12865/9}$	= 1429 S.Y.
3PR	STATION 112+50 TO 113+54 RT. RAMP "S-M" (DRIVE) $5.24 \times 400 / 9$	= 233 S.Y.
4PR	STATION 114+21 TO 116+64 LT. & RT. RAMP "S-M" (RAMP) $211 \times 18 / 9$	= 422 S.Y.
1CR	EX. W. CURB S.B. S.R.315 381	= 381 L.F.
2CR	EX. E. CURB N.B.315 & N. CURB EX. RAMP 140 + 202	= 342 L.F.
3CR	EX. E. CURB N.B.315 & S. CURB EX. RAMP & DRIVE 430	= 430 L.F.
1MR	MEDIAN EX. S.R.315 $409 \times 5.5 / 9$	= 250 S.Y.

## SHEET NO. 43, PAVEMENT CALCULATIONS

RAMP "S-J"  
STATION 452+50 TO 455+77.56

1-P		
ITEM 203	$25 \times 330 / 9$	= 917 S.Y.
ITEM 304	$16 \times 340 \times 6 / 12$ $(7.25 / 12 + 3 / 12 / 2 \times 3) \times 352$ $(7.75 / 12 + 7.75 / 12 / 2 \times 1.5) + (7.75 / 12 + 3 / 12 / 2 \times 5) \times 328 = \frac{1052.33}{4223.33/27}$	= 2720.0 = 451.00 = 156.42 C.Y.
ITEM 305	$16 \times 340 / 9$	= 604.44 S.Y.
ITEM 407	$16 \times 340 / 9 \times 0.075$	= 45.33 GAL
ITEM 452	$6 \times 327 / 9$ (9") $3 \times 352 / 9$	= 218.00 S.Y. = 117.33 S.Y.
ITEM 446	TYPE 1 $16 \times 340 \times 1.25 / 12 / 27$ TYPE 2 $16 \times 340 \times 1.75 / 12 / 27$	= 20.99 C.Y. = 29.38 C.Y.
ITEM 413	- SAWING & SEALING ASPHALT CONCRETE JOINTS $19 \times 16$	= 304 L.F.

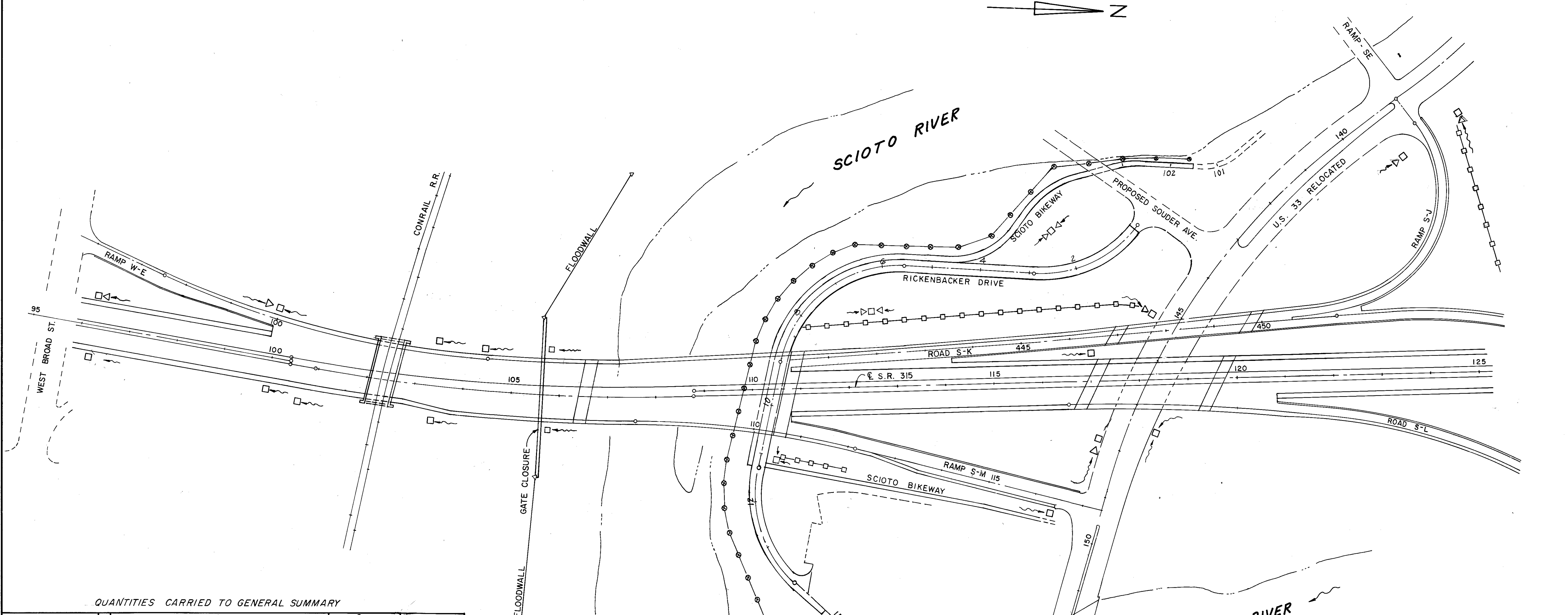
RAMP "S-J"  
STATION 455+77.56 TO 456+67.86

2-P		
ITEM 407	$8.45 \times 400 / 9 \times 0.075$	= 28.17 GAL
ITEM 446	TYPE 1 $8.45 \times 400 \times 1.25 / 12 / 27$	= 13.04 C.Y.

## SHEET NO. 33, BIKEWAY PAVEMENT CALCULATIONS

BIKEWAY STATION 114+51.50 TO 120+37.00

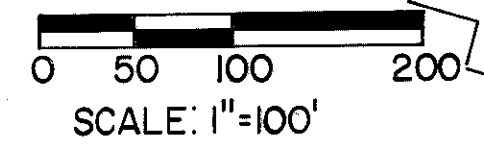
ITEM 304	$585.5 \times 9 \times 8 / 12 / 27$	= 130 C.Y.
ITEM 446	$585.5 \times 8 / 12 / 27 \times 2.5$	= 36 C.Y.
ITEM 408	$585.5 \times 8 / 9 \times 0.4$ GAL	= 208 GAL



QUANTITIES CARRIED TO GENERAL SUMMARY

STATION	SIDE	207		601		207	
		TEMP. BENCHES, DAMS AND SEDIMENT BASINS	TEMP. DIKES	STRAW OR HAY BALES	TEMPORARY SLOPE DRAINS	TYPE "C" ROCK CHANNEL PROTECTION	FILTER FABRIC FENCE
		C.Y.	LIN. FT.	EA.	LIN. FT.	C.Y.	LIN. FT.
96+25	LT	100		18	50	6	
96+25	RT			18			
100+00 (W-E)	LT	150	200	18	50	6	
100+00	RT		300	8			
100+65	RT			8	80	5	
103+40	LT	100		8	80	5	
103+40	RT		100	18			
104+40	LT			13			
117+00	LT			8			
110+50 to 116+37 (S-M)	RT		200	55			
137+83 U.S. 33 RELOC.	LT			18			
139+25 "	LT	200		18		2	
145+25 "	RT			18			
147+37 "	LT		200	18			
147+92 "	RT	100		18		1	
ROAD S-K							
440+50 TO 447+50	LT	210	700	200			
RAMP S-J							
454+00 TO 458+00	RT	80	200	80			
105+87 (N.B.)	LT			8			
105+87 (N.B.)	RT			8			
RICKENBACKER							1700
142+50, 33 to 14+00 RIC.	RT	100		8			
2+50	RT		200	18			
6+55	LT	150					
<b>TOTAL</b>		<b>1070</b>	<b>2200</b>	<b>564</b>	<b>250</b>	<b>30</b>	<b>1700</b>

- LEGEND
- CATCH BASIN
  - ▷ SEDIMENT BASIN
  - BALE FILTER DIKE
  - FILTER FABRIC FENCE

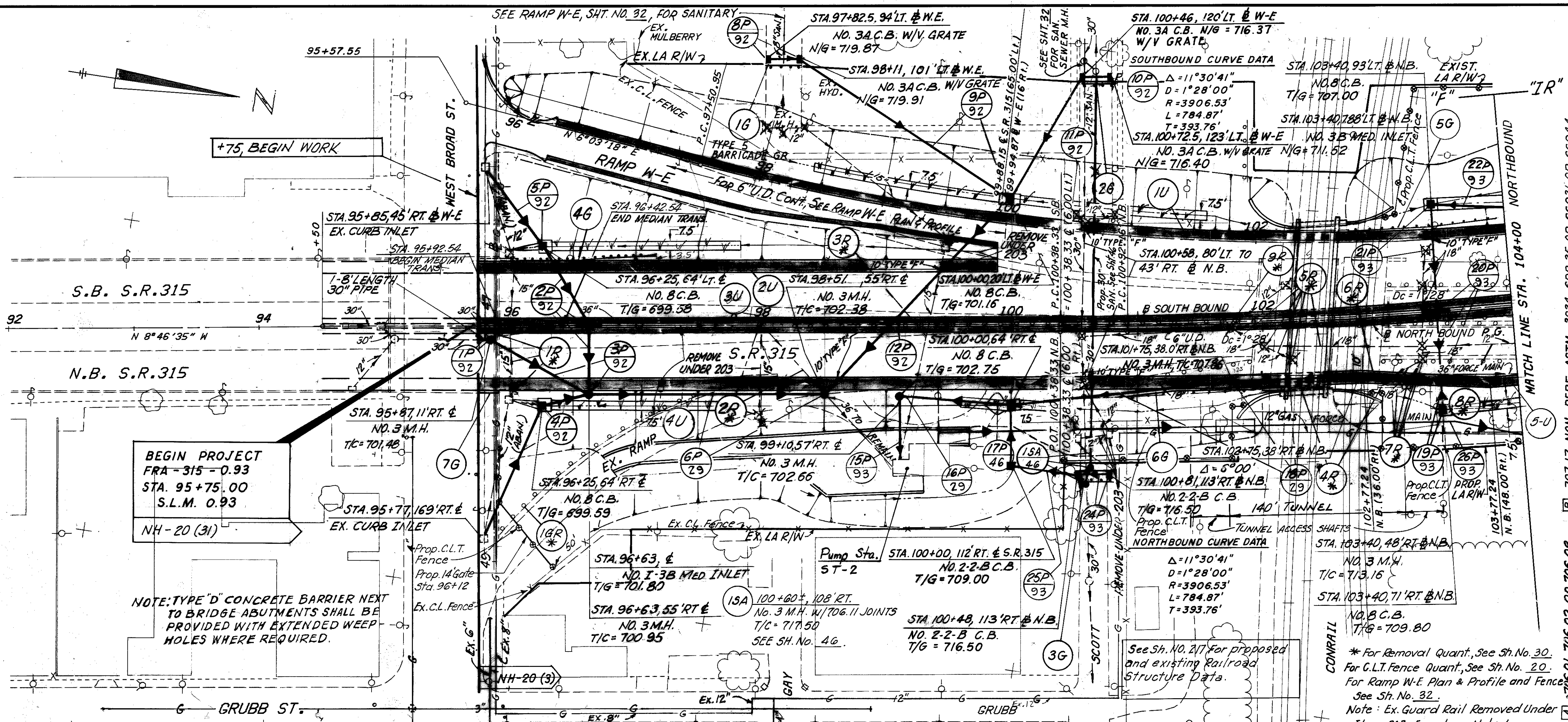


PROJECT DATA	
TOTAL AREA (RIGHT-OF-WAY)	30 ACRES
AREA TO UNDERGO EXCAVATION FILLING OR GRADING	26 ACRES
RUNOFF COEFFICIENT FOR PRE-CONSTRUCTION SITE	0.5-0.7
RUNOFF COEFFICIENT FOR POST CONSTRUCTION SITE	0.7
SOIL DATA	SEE SOIL PROFILE
IMMEDIATE RECEIVING WATERS	SCIOTO RIVER
SUBSEQUENT RECEIVING WATERS	SCIOTO RIVER

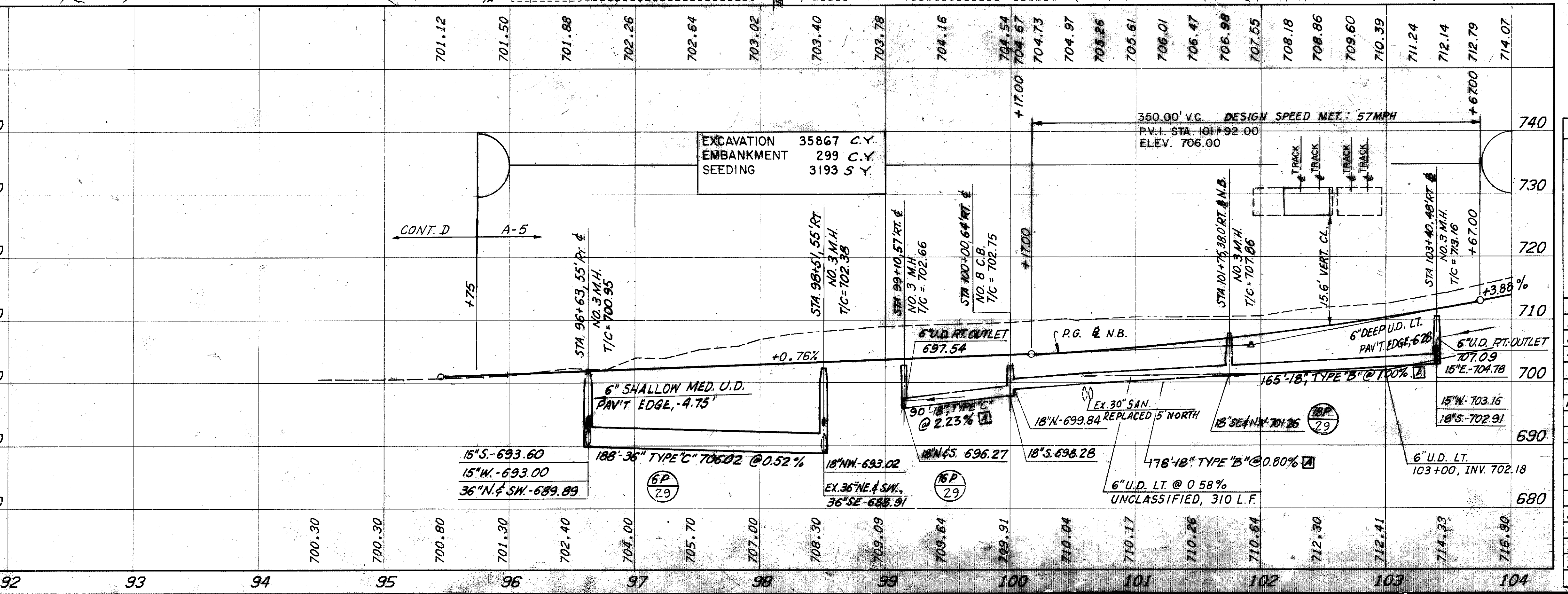
U.S.G.S QUADRANT No. N3952.5-W8300/7.5  
 SOUTHWEST COLUMBUS, OHIO  
 LONGITUDE: 83° 01' 15"  
 LATITUDE: 39° 58' 00"

LONGITUDE AND LATITUDE TO APPROXIMATE CENTER OF EXISTING INTERCHANGE





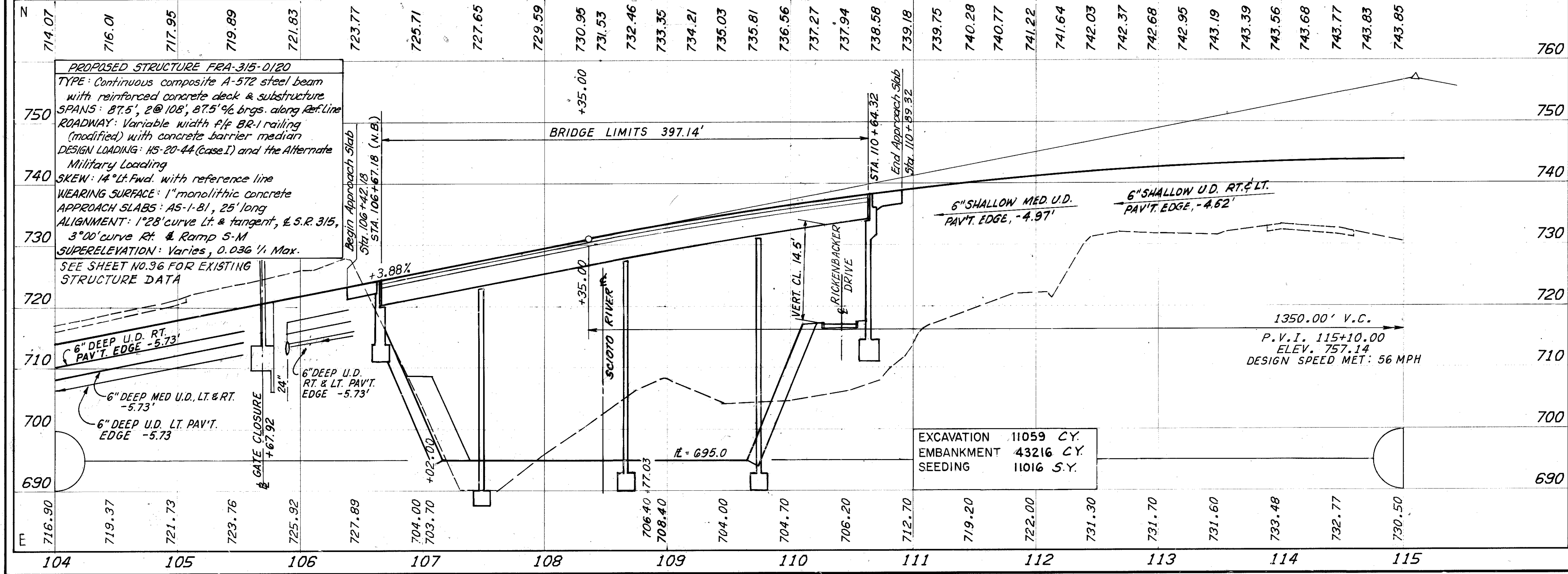
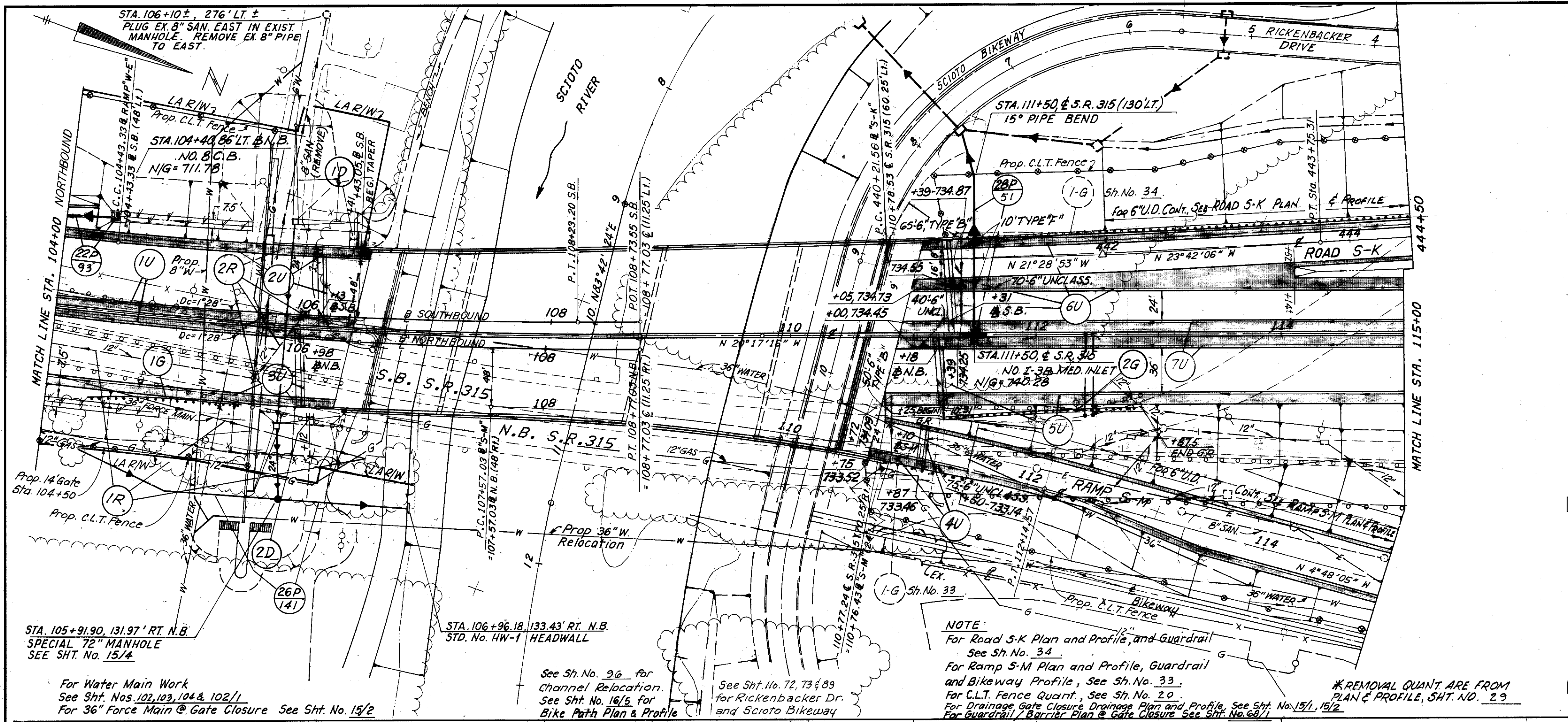
ITEM NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
622	DITCH EROSION PROTECTION	35	L.F.		35
623	CONCRETE BARRIER TYPE D	16	L.F.		16
624	BRIDGE TERMINAL ASSEMBLY TYPE 1	1			1
625	ANCHOR ASSEMBLY	1			1
626	GUARDRAIL TYPE 4 BARRICADES	100	L.F.		100
627	GUARDRAIL TYPE 5	100	L.F.		100
628	UNCLAS. UNDERDRAIN	16	L.F.		16
629	DEEP UNDERDRAIN	1	L.F.		1
630	SHALLOW UNDERDRAIN	25	L.F.		25
631	TUNNEL ACCESS SHAFT	2	EA		2
632	No. 3 M.H.	1	EA		1
633	No. 2-2 B.C.B.	1	EA		1
634	No. I-3B MED. INLET	1	EA		1
635	No. 3 M.H. WITH JOINTS	2	EA		2
636	PRESTRESSED CONCRETE PIPE, 30" DIA., 15' LONG	140	L.F.		140
637	PRESTRESSED CONC. PIPE, 36" DIA., 15' LONG	338	L.F.		338
638	PRESTRESSED CONC. PIPE, 36" DIA., 15' LONG	313	L.F.		313
639	TYPE "B"	56	L.F.		56
640	TYPE "F" 707.05(C)	28	L.F.		28
641	TYPE "C"	33	L.F.		33
642	TYPE "F" 707.17	6	L.F.		6



REF. NO.	DESCRIPTION	QTY	UNIT	PRICE	TOTAL	
1P	RT 95+87					
2P	RT 96+25 TO 96+63	130			130	
3P	RT 95+87 TO 96+63					
4P	RT 95+77 TO 96+63	65		39	125	
5P	RT 95+85 (W-E) TO 96+25	22		61	125	
6P	RT 96+63 TO 98+51			188	188	
19P	RT 103+40			1	125	
8P	LT 97+82.5 (W-E) TO 98+11 (W-E)	30			2	
9P	LT 98+11 (W-E) TO 100+00 (W-E)	108		97	250	
10P	LT 100+46 (W-E) TO 100+72.5 (W-E)	26			2	
11P	LT 100+00 (W-E) TO 100+46 (W-E)	61		52		
12P	RT 98+51 TO 100+00 (W-E)			25		
21P	LT 103+40 TO 93' LT.	85		1	34	
22P	LT 103+40 TO 104+00	60				
15P	RT 99+10 TO PUMP STATION			50		
16P	RT 99+10 TO 100+00			90		
17P	RT 100+00, 64' RT. TO 112' RT.	20		28	1	
TOTALS TO GEN. SUMMARY		56	276	215	121	215

S.R. 315 - STA. 92+00 TO STA. 104



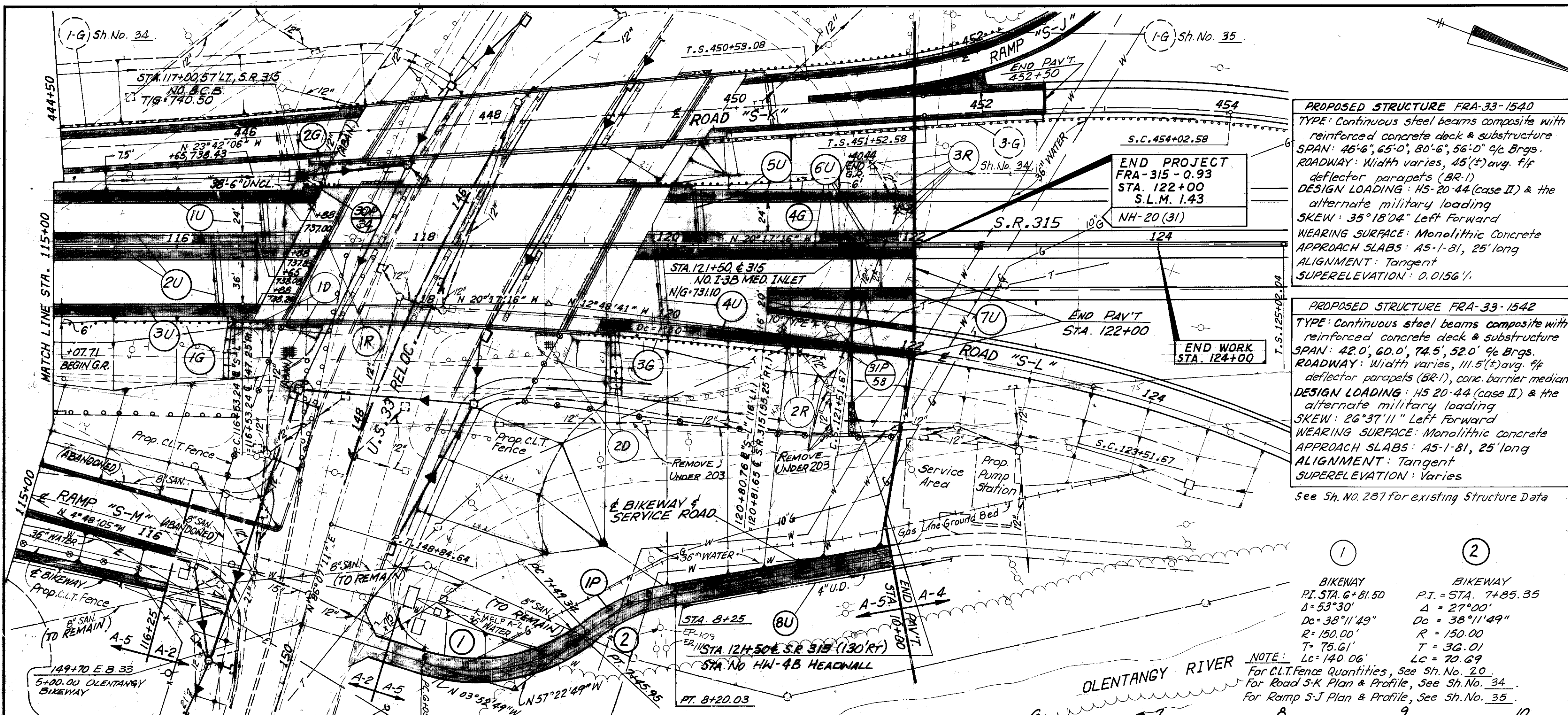


ITEM	QUANTITY	UNIT	STATION
IMPACT ATTENUATOR TYPE 1		EA	
BRIDGE TERMINAL ASSEMBLY TYPE 1		EA	
GUARDRAIL BARRIER DESIGN TYPE 3		L.F.	
TYPE "B" 706.02 D-LOAD 1750		L.F.	
DITCH EROSION PROTECTION TYPE "B"		L.F.	
ANCHOR ASSEMBLY TYPE "T"		L.F.	
GUARDRAIL TYPE 5		L.F.	
SHALLOW UNDERDRAIN 107.01 OR 107.21 (UNCL.)		L.F.	
UNCLASS. UNDERDRAIN DEEP UNDERDRAIN SHALLOW UNDERDRAIN		L.F.	
RIPPAP 6" REINFORCED CONC. SLAB NO. B.C.B.		S.Y.	
NO. I-3B MED. INLET		EA	
CONC. MASONRY		C.Y.	
PRESTRESSED CONCRETE CYLINDER PIPE ANWMA C-301, AS PER PLAN		L.F.	
TYPE "F" 107.05(C)		L.F.	
TYPE "B"		L.F.	
TYPE "F"		L.F.	
TYPE "B"		L.F.	
STATION TO STATION			
REF. NO.			
TOTALS TO GEN. SUMMARY			

REF. NO.	STATION	PIPE REMOVED 24" & UNDER	PIPE REMOVED OVER 24"	C.B. REMOVED	M.H. REMOVED	STRUCTURE REMOVED	C.B. ABANDONED	GUARDRAIL REMOVED	REINFORCED SODDING
1R	104+00 To 106+58	170	268	1					
2R	105+67 To 106+10	365							
1D	106+41								10
2D	106+12								10
1GR	96+00 To 96+67								100
9R	100+58, 43' RT. 80' LT.	120	128	1					
1R	95+99 To 96+04	50	18	2					
2R	98+00 To 98+41.5		61	1					2
3R	99+25 To 99+48	65							
4R	100+58 To 102+95	240							
5R	101+77 To 103+25	181							
6R	102+00 To 104+00		200						
7R	102+95 To 103+26	60		2					
8R	103+25 To 104+00	75							
TOTALS	To GEN. SUMMARY	1326	675	6	5	LUMP	2	100	20

S.R. 315 - STA. 104+00 TO STA. 115+00

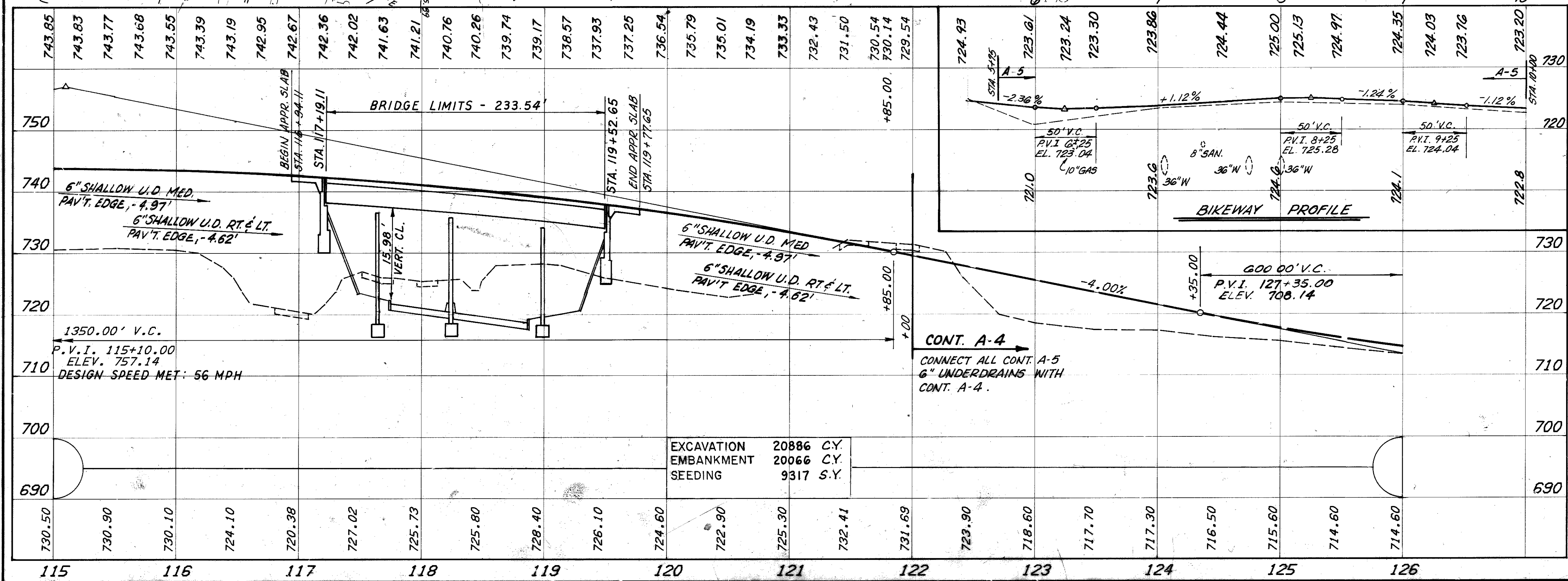




**PROPOSED STRUCTURE FRA-33-1540**  
 TYPE: Continuous steel beams composite with reinforced concrete deck & substructure  
 SPAN: 46'-6", 65'-0", 80'-6", 56'-0" 4/8 Brgs.  
 ROADWAY: Width varies, 45'(±) avg. f/f deflector parapets (BR-1)  
 DESIGN LOADING: HS-20-44 (case II) & the alternate military loading  
 SKEW: 35°18'04" Left Forward  
 WEARING SURFACE: Monolithic Concrete  
 APPROACH SLABS: A5-1-81, 25' long  
 ALIGNMENT: Tangent  
 SUPERELEVATION: 0.0156/1

**PROPOSED STRUCTURE FRA-33-1542**  
 TYPE: Continuous steel beams composite with reinforced concrete deck & substructure  
 SPAN: 42.0, 60.0, 74.5, 52.0' 4/8 Brgs.  
 ROADWAY: Width varies, 111.5(±) avg. f/f deflector parapets (BR-1), conc barrier median  
 DESIGN LOADING: HS-20-44 (case II) & the alternate military loading  
 SKEW: 26°37'11" Left Forward  
 WEARING SURFACE: Monolithic concrete  
 APPROACH SLABS: A5-1-81, 25' long  
 ALIGNMENT: Tangent  
 SUPERELEVATION: Varies  
 See Sh. No. 287 for existing Structure Data

**BIKEWAY**  
 P.I. STA. 6+81.50  
 Δ = 53°30'  
 Dc = 38°11'49"  
 R = 150.00'  
 T = 75.61'  
 Lc = 140.06'  
**BIKEWAY**  
 P.I. = STA. 7+85.35  
 Δ = 27°00'  
 Dc = 38°11'49"  
 R = 150.00'  
 T = 36.01'  
 Lc = 70.69'  
 NOTE: For C.L.T. Fence Quantities, See Sh. No. 20.  
 For Road S-K Plan & Profile, See Sh. No. 34.  
 For Ramp S-J Plan & Profile, See Sh. No. 35.



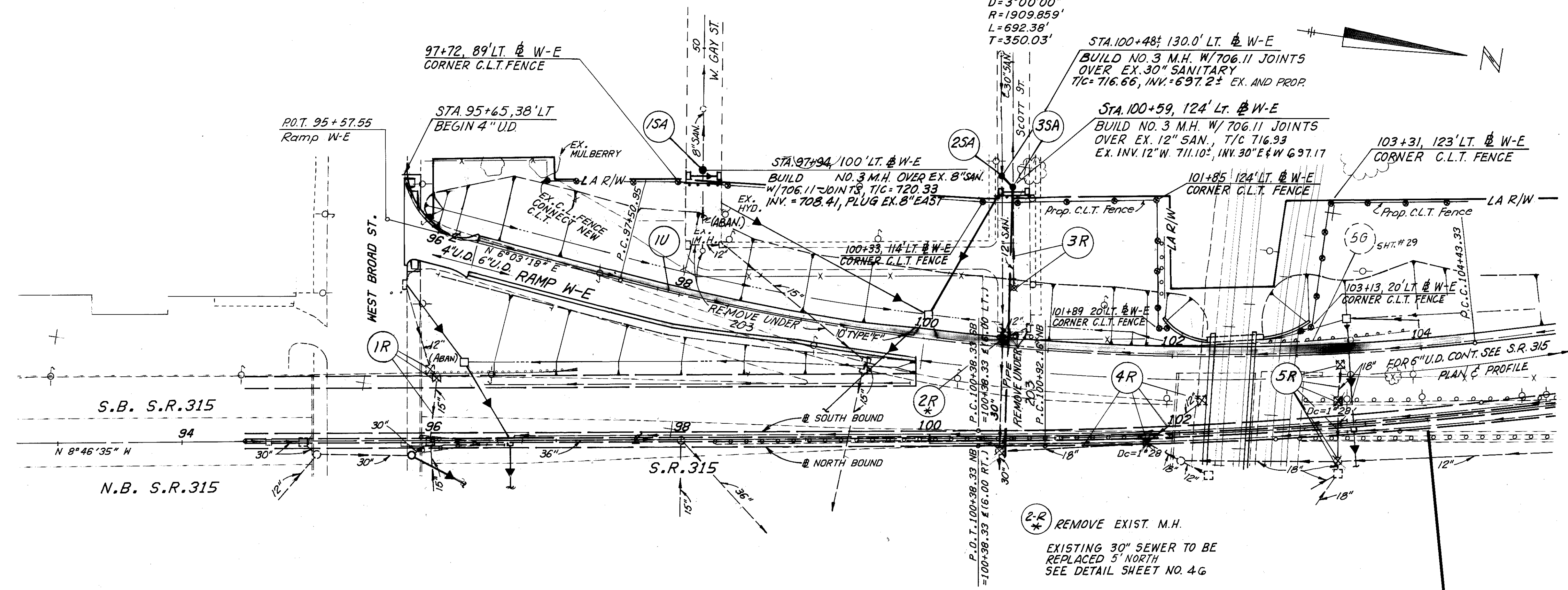
ESTIMATED QUANTITIES	601	602	603	604	605	606	301	304	446
DITCH EROSION PROTECTION									
SLOPE EROSION PROTECTION									
REINFORCED SODDING									
SHALLOW U.D. 707.01 TYPE III OR 707.21 TYPE III									
SHALLOW UNDERDRAIN UNCLASS. UNDERDRAIN									
SHALLOW UNDERDRAIN									
No. 8 C.B.									
No. 13B MED. INLET									
TYPE "C"									
TYPE "B" A									
TYPE "F" 707.05(C)									
TYPE "B"									
TYPE "F" B									
CONCRETE MASONRY									
ROCK CHANNEL PROTECTION TYPE "C" WITH FILTER									
C.B. ABANDONED									
C.B. REMOVED									
M.H. REMOVED									
PIPE REMOVED 24" AND UNDER									
STATION TO STATION									
REF. NO.									

ESTIMATED QUANTITIES		606	301	304	446
REF. NO.	SIDE				
	ANCHOR ASSEMBLY, TYPE "T"				
	GUARDRAIL, TYPE 5				
	BRIDGE TERMINAL ASSEMBLY, TYPE "1"				
	BRIDGE TERMINAL ASSEMBLY, TYPE "2"				
	ANCHOR ASSEMBLY, TYPE "B"				
	BITUMINOUS AGGREGATE BASE				
	AGGREGATE BASE				
	ASPHALT CONCRETE SURFACE COURSE, TYPE 1				
1G	Rt. 115+07.71 To 116+75.21	150	1	1	
2G	Lt. 117+02.62 To 117+27.62	1	12.5		
3G	Rt. 119+33.50(315) To 121+30(S-L)	1	187.6	1	
4G	Lt. 119+90.44 To 121+40.44	137.5	1	1	
1P	Rt. 5+75.00 To 10+00.00				74.7 157.4 70.8
TOTALS TO GENERAL SUMMARY		2	487.5	2 2 2	74.7 157.4 70.8



**RAMP "W-E" CURVE DATA**

$\Delta = 20^\circ 46' 17''$   
 $D = 3^\circ 00' 00''$   
 $R = 1909.859'$   
 $L = 692.38'$   
 $T = 350.03'$



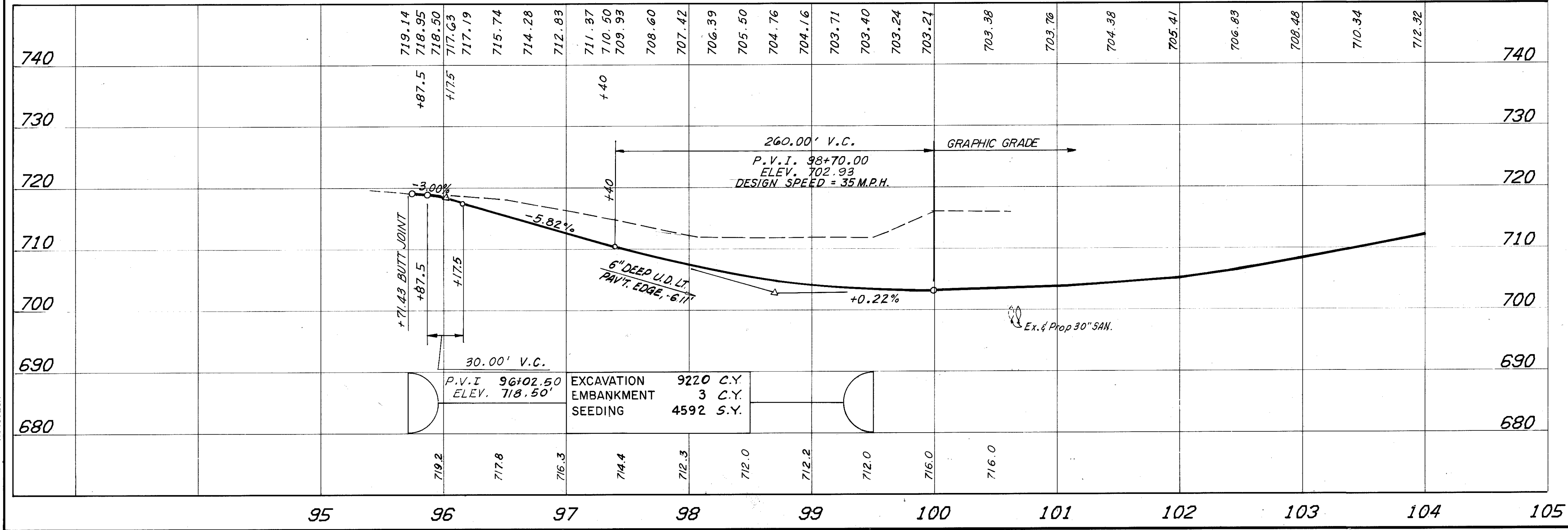
(2-R) REMOVE EXIST. M.H.  
 EXISTING 30" SEWER TO BE REPLACED 5' NORTH SEE DETAIL SHEET NO. 4G

"F" ← → "IR"

NOTE: For C.L.T. Fence Quantities See Sh. No. 20  
 For proposed and existing Structure Data see Sh. No. 217

707.17 NON-PERFORATED, ASTM 3034, SDR 35 OR 55.931 OR 55.944

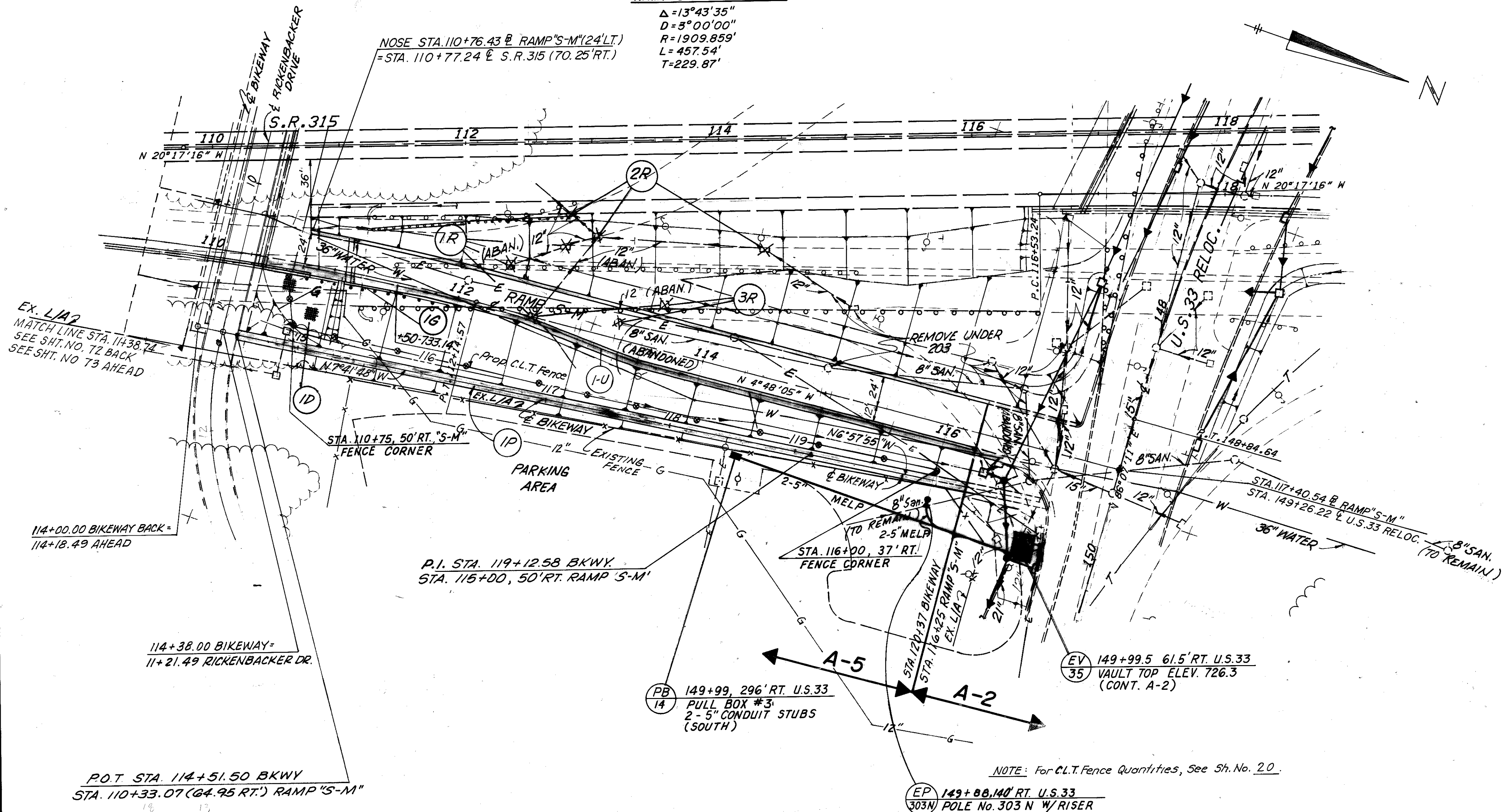
STATION TO STATION	ESTIMATED QUANTITIES		STATION TO STATION	ESTIMATED QUANTITIES	TOTALS TO GEN. SUMMARY
	602	603			
IR Lt 96+00 To 96+04	EA	2	EA	2	EA
2R Lt 100+63 (W-E) To 100+57	L.F.	50	L.F.	175	L.F.
3R Lt 100+68 (W-E)	L.F.	1	L.F.	87	L.F.
4R Lt 100+57 To 102+20	EA	1	EA	1	EA
5R Lt 103+25 To 103+34	EA	2	EA	2	EA
1U Lt 95+65 To 100+00 (W-E)	L.F.	20	L.F.	90	L.F.
1SA Lt 97+84, 100 Lt W-E	EA	1	EA	1	EA
2SA Lt 100+48, 130 Lt W-E	EA	1	EA	1	EA
3SA Lt 100+59, 124 Lt W-E	EA	1	EA	1	EA
M.H. REMOVED		5	M.H. REMOVED		5
C.B. REMOVED		5	C.B. REMOVED		5
PIPE REMOVED 24" & UNDER		312	PIPE REMOVED 24" & UNDER		312
DEEP UNDERDRAIN		370	DEEP UNDERDRAIN		370
SHALLOW UNDERDRAIN AS PER PLAN		90	SHALLOW UNDERDRAIN AS PER PLAN		90
No. 3 M.H. W/706.11 JOINTS		3	No. 3 M.H. W/706.11 JOINTS		3
TYPE "B" 706.02 1750-D LOAD W/JOINT AS PER 706.11, 706.12		10	TYPE "B" 706.02 1750-D LOAD W/JOINT AS PER 706.11, 706.12		10
TYPE "F" 6" L.F.		20	TYPE "F" 6" L.F.		20



RAMP "W-E" - STA. 95+00 TO STA. 105+00

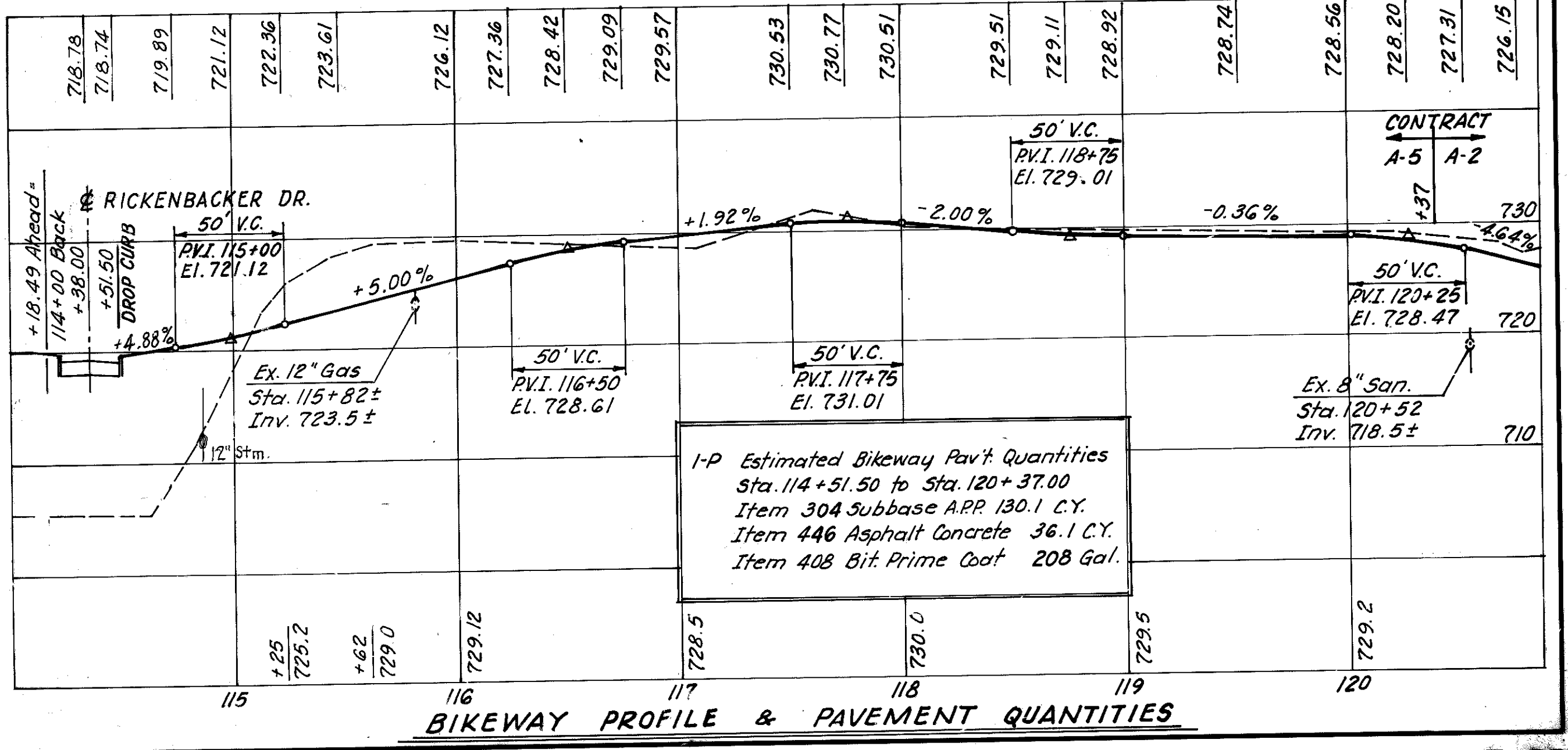
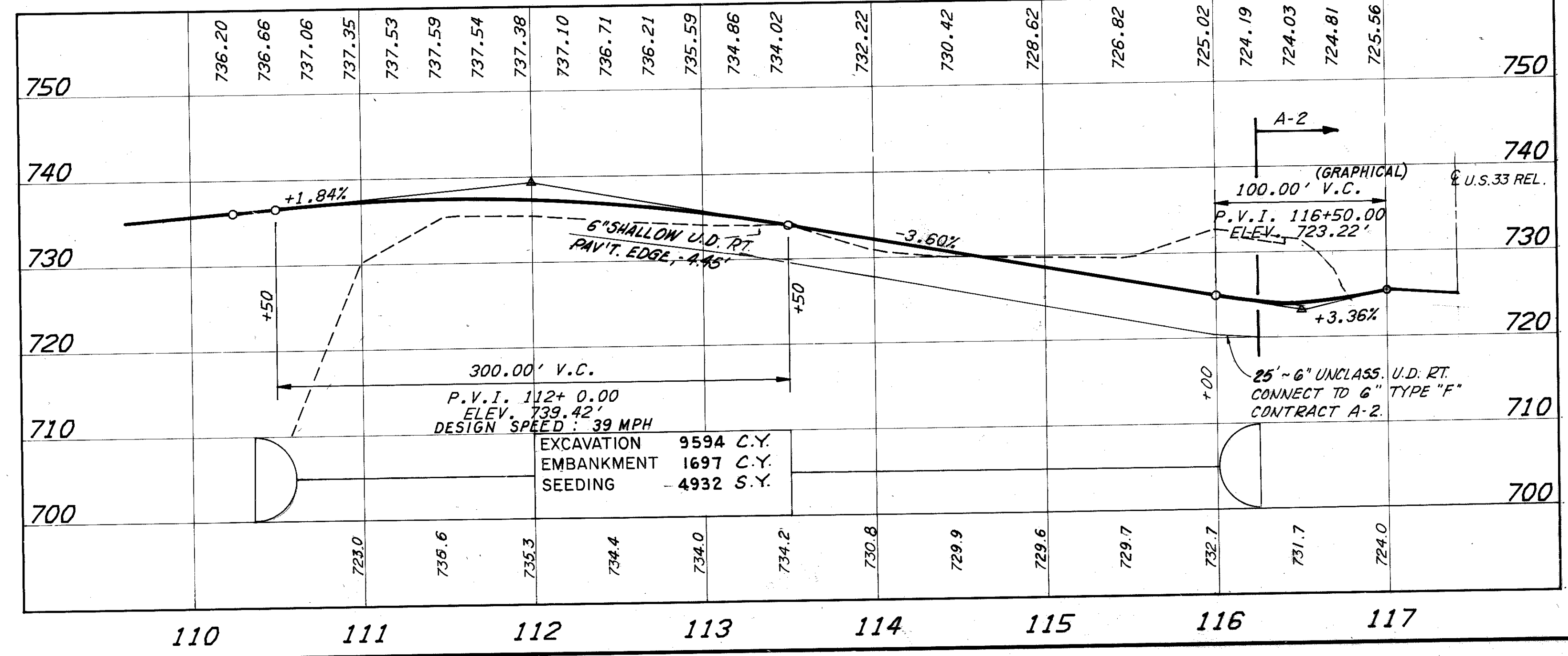


**RAMP "S-M" CURVE DATA**  
 $\Delta = 13^{\circ}43'35''$   
 $D = 5^{\circ}00'00''$   
 $R = 1909.859'$   
 $L = 457.54'$   
 $T = 229.87'$



ESTIMATED QUANTITIES	ITEM	UNIT	QUANTITY	TOTALS TO GEN. SUMMARY
G70	SLOPE EROSION PROTECTION	S.Y.		254
G60	REINFORCED SODDING	S.Y.		55
G06	GUARDRAIL TYPE 5	L.F.	100	100
G04	No. 2-2B C.B.	EACH	1	1
G05	UNCLASSIFIED UNDERDRAINS	L.F.	450	450
	SHALLOW UNDERDRAINS	L.F.	450	450
G06	BRIDGE TERMINAL ASSEMBLY TYPE 2 ANCHOR ASSEMBLY TYPE 1	EA	1	1
202	M.H. REMOVED	EA	1	1
	M.H. ABANDONED	EA	1	1
	C.B. REMOVED	EA	2	2
	C.B. ABANDONED	EA	2	2
	STATION TO STATION			
	REF. NO.			

NOTE: For C.L.T. Fence Quantities, See Sh. No. 20.

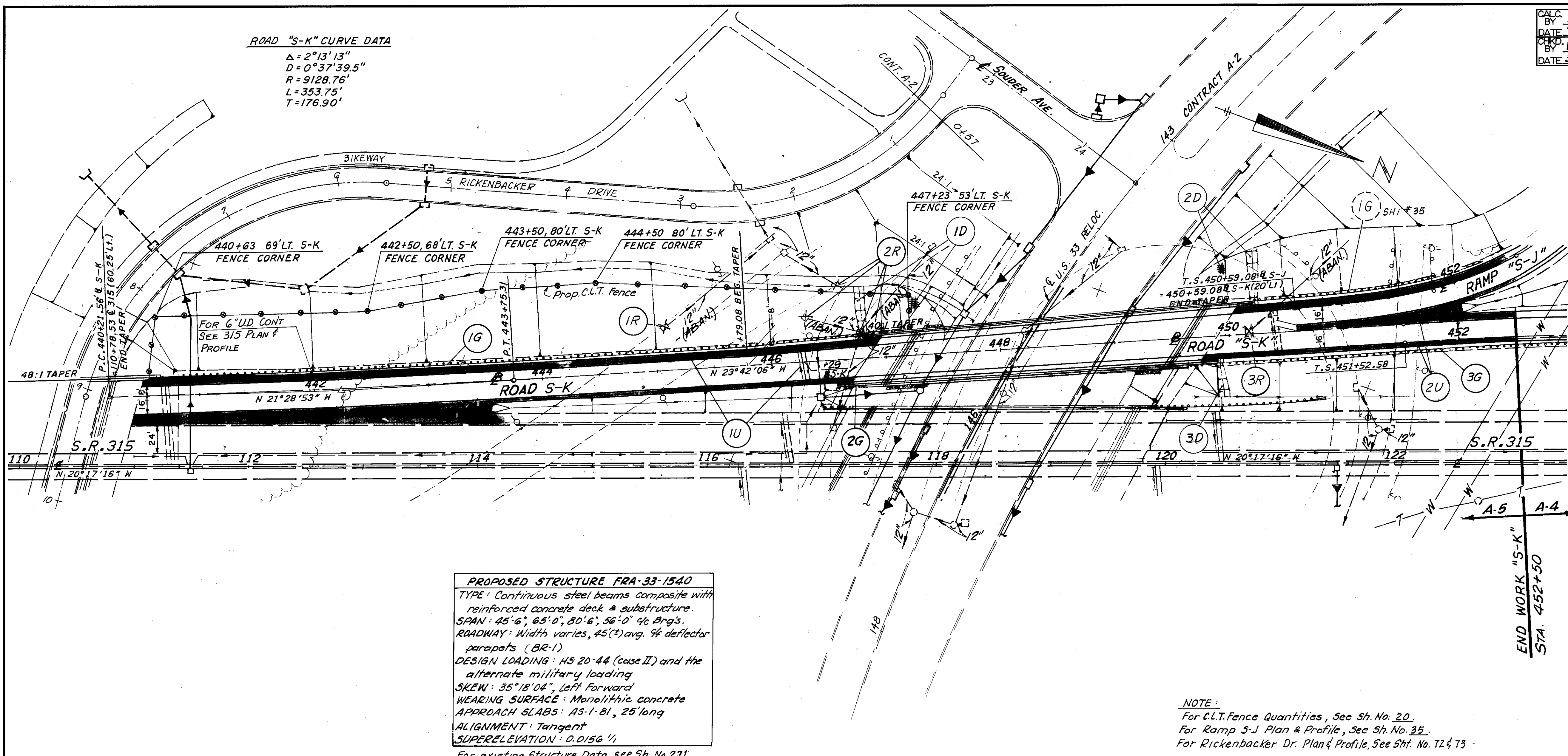


I-P Estimated Bikeway Pav't Quantities  
 Sta. 114+51.50 to Sta. 120+37.00  
 Item 304 Subbase APP 130.1 C.Y.  
 Item 446 Asphalt Concrete 36.1 C.Y.  
 Item 408 Bit. Prime Coat 208 Gal.

RAMP "S-M" - STA. 110+00 TO STA. 117+00

**ROAD "S-K" CURVE DATA**

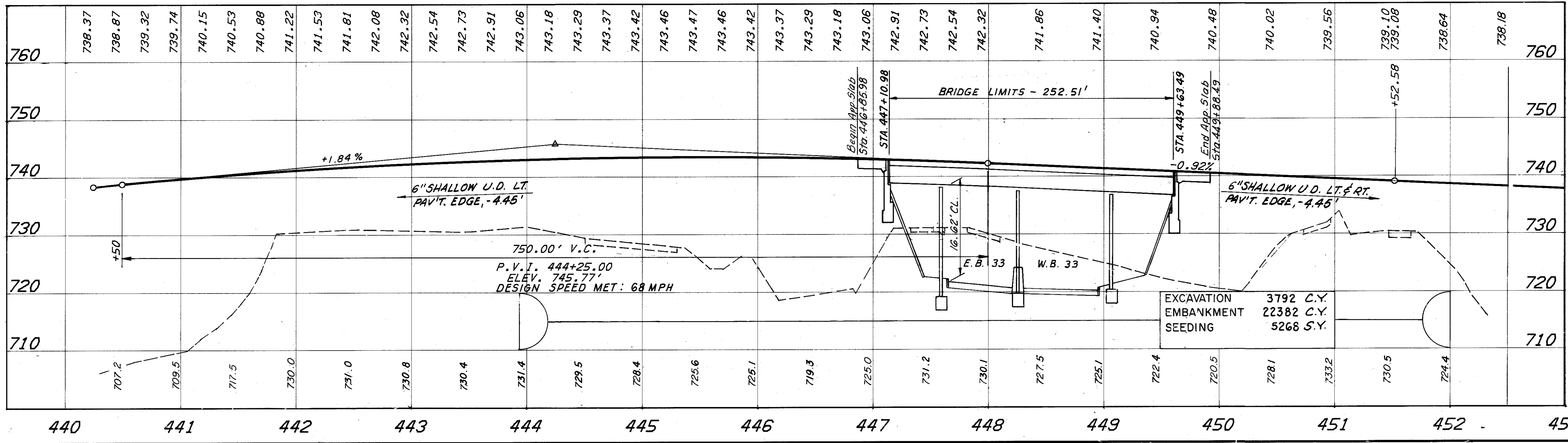
$\Delta = 2^{\circ}13'13''$   
 $D = 0^{\circ}37'39.5''$   
 $R = 9128.76'$   
 $L = 353.75'$   
 $T = 176.90'$



**PROPOSED STRUCTURE FRA-33/1540**  
 TYPE: Continuous steel beams composite with reinforced concrete deck & substructure.  
 SPAN: 45'-6", 65'-0", 80'-6", 56'-0" c/c Brgs.  
 ROADWAY: Width varies, 45' (avg.) w/ deflector parapets (BR-1)  
 DESIGN LOADING: HS 20-44 (case II) and the alternate military loading  
 SKEW: 35°18'04", left forward  
 WEARING SURFACE: Monolithic concrete  
 APPROACH SLABS: AS-1-01, 25' long  
 ALIGNMENT: Tangent  
 SUPERELEVATION: 0.0156 1/4  
 For existing Structure Data see Sh. No. 271

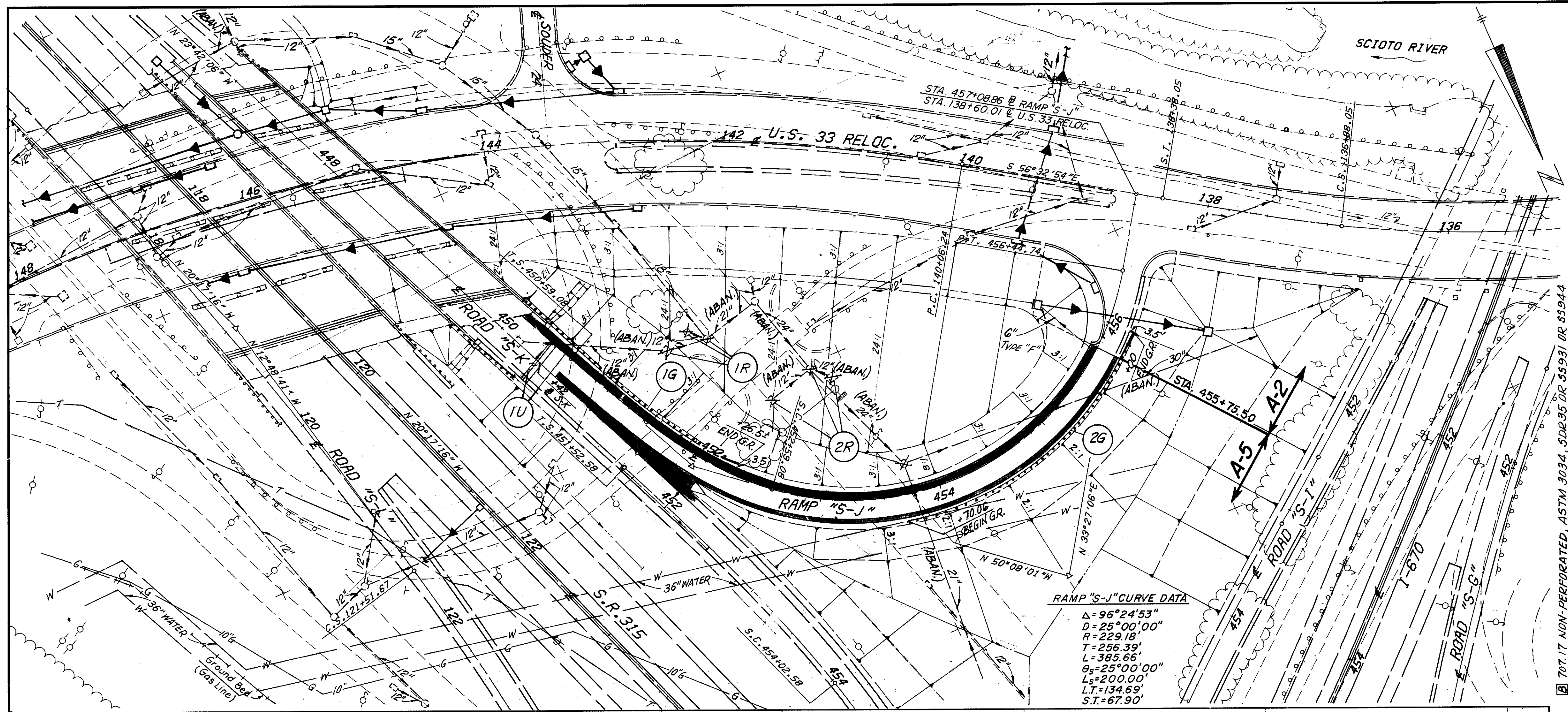
**NOTE:**  
 For C.L.T. Fence Quantities, See Sh. No. 20.  
 For Ramp S-J Plan & Profile, See Sh. No. 35.  
 For Rickenbacker Dr. Plan & Profile, See Sh. No. 12 & 73.

STATION TO STATION	ITEM	UNIT	QUANTITY	TOTALS TO GEN. SUMMARY
670	SLOPE EROSION PROTECTION	S.Y.		204
660	REINFORCED SODDING	S.Y.		21
606	BRIDGE TERMINAL ASSEMBLY, TYPE "2"	EA.		2
606	BRIDGE TERMINAL ASSEMBLY, TYPE "1"	EA.		2
606	GUARDRAIL, TYPE 5	L.F.	543	842.5
606	ANCHOR ASSEMBLY, TYPE "T"	EA.		2
605	Uncl. UNDERDRAINS 107.01 OR 107.21	L.F.		30
605	SHALLOW UNDERDRAINS	L.F.	440	235
603	TYPE "B"	L.F.	43	20
202	M.H. ABANDONED	EA.	1	1
202	C.B. ABANDONED	EA.	3	5
IR LT	445+08			
2R LT	446+31 TO 446+88			
3R LT	450+17			
1G LT	441+66 TO 447+03.70			
2G RT	446+55 TO 446+80.70			
3G RT	449+64.10 TO 452+51.60			
1U LT	442+00 TO 446+42			
2U LT	450+65 TO 452+50			
1D LT	446+85 TO 447+51.20			
2D LT	449+55 TO 450+26.1			
3D RT	449+93.6			
<b>TOTALS TO GEN. SUMMARY</b>				



ROAD "S-K" - STA. 440+00 TO STA. 453+00

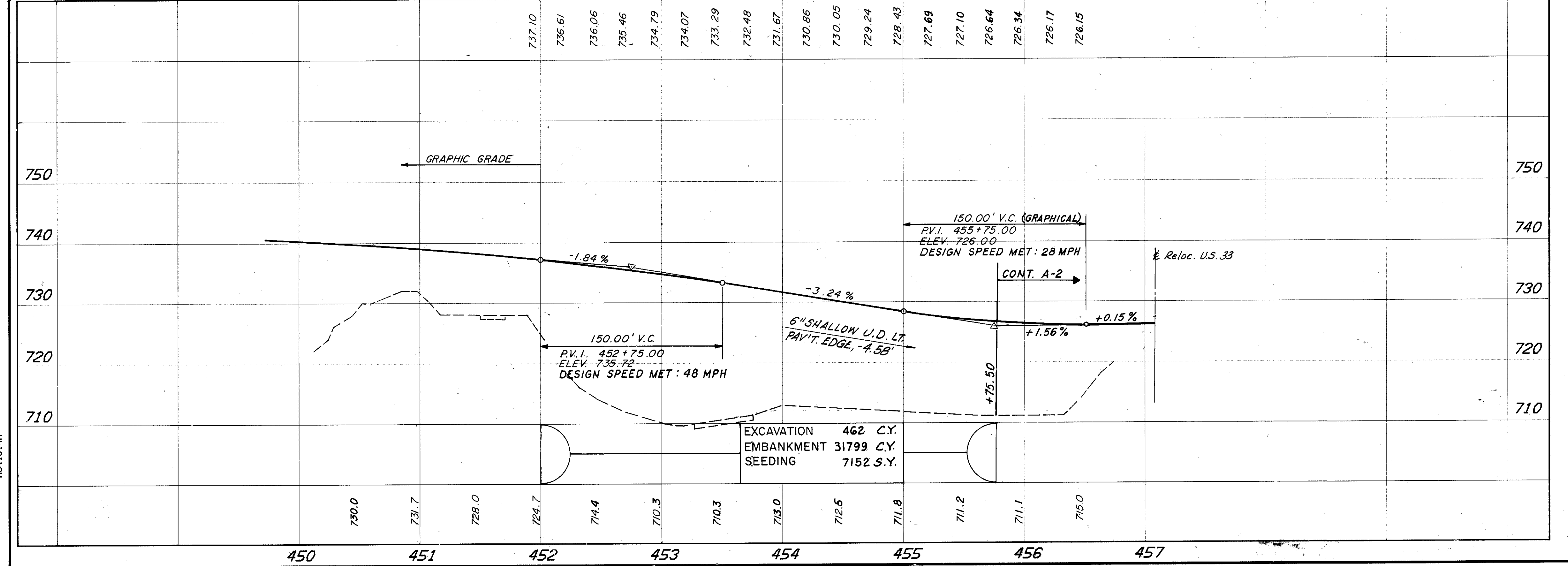




**RAMP "S-J" CURVE DATA**  
 $\Delta = 96^{\circ}24'53''$   
 $D = 25^{\circ}00'00''$   
 $R = 229.18'$   
 $T = 256.39'$   
 $L = 385.66'$   
 $\theta_s = 25^{\circ}00'00''$   
 $L_s = 200.00'$   
 $L.T. = 134.69'$   
 $S.T. = 67.90'$

TOTAL 17 NON-PERFORATED, ASTM 3034, SDR35 OR S5931 OR S5944

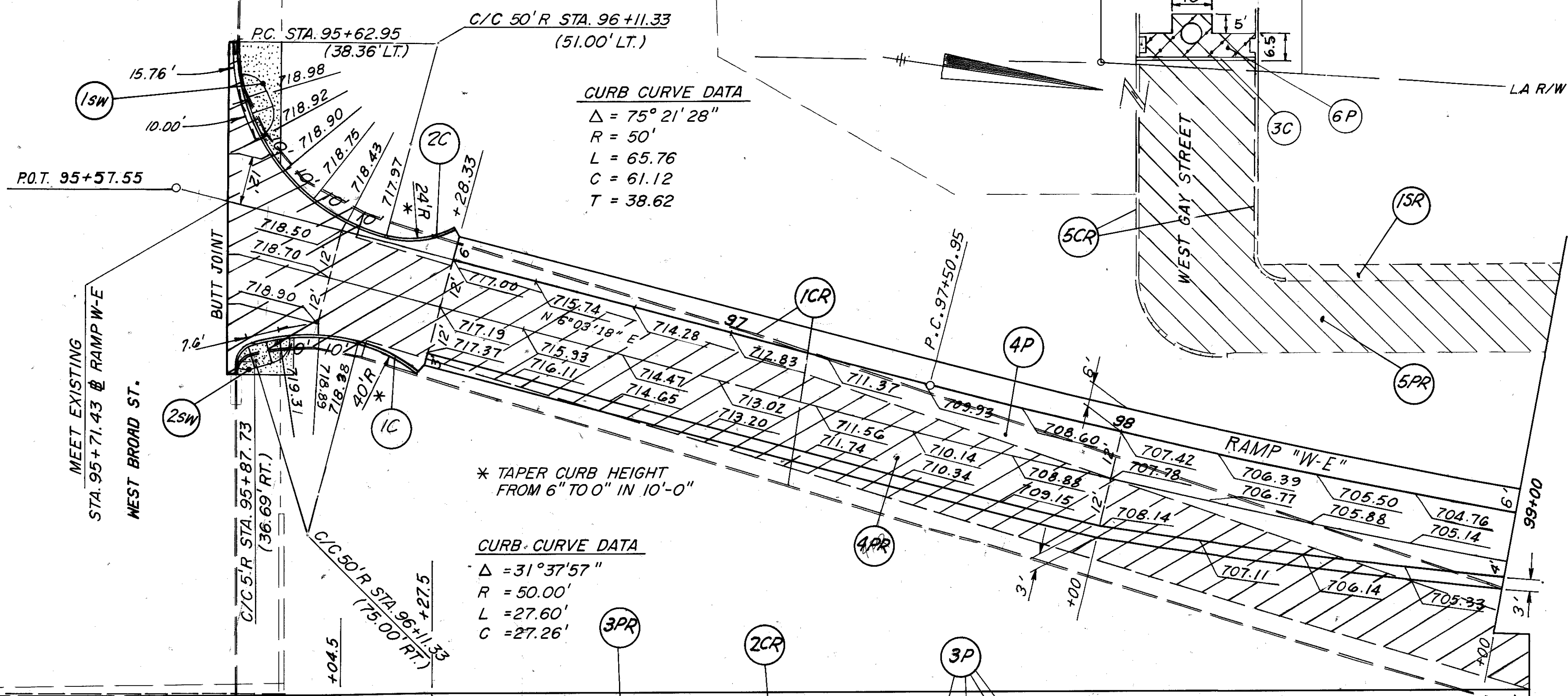
ESTIMATED QUANTITIES									
605	ANCHOR ASSEMBLY, TYPE "E"	EA.							
	BRIDGE TERMINAL ASSEMBLY, TYPE "1"	EA.							
	GUARDRAIL, TYPE 5	L.F.	212.5	1	1				
	ANCHOR ASSEMBLY, TYPE "T"	EA.							
605	UNCL. UNDERDRAINS 707.01 OR 707.21	L.F.							
	SHALLOW UNDERDRAIN	L.F.		570	40				
603	TYPE "F" $\square$	L.F.							
202	M.H. ABANDONED	EA.		1	2				
	C.B. ABANDONED	EA.		2	2				
STATION TO STATION									
SIDE									
REF. NO.									
	IR	LT	451+16	TO	451+38				
	2R	LT	452+30	TO	453+75				
	1G	LT	449+96.6	TO	452+26.51				
	2G	RT	453+70.06	TO	456+00				
	1U	LT	450+12	TO	455+89				
TOTALS TO GEN. SUMMARY									



EXCAVATION 462 C.Y.  
 EMBANKMENT 31799 C.Y.  
 SEEDING 7152 S.Y.

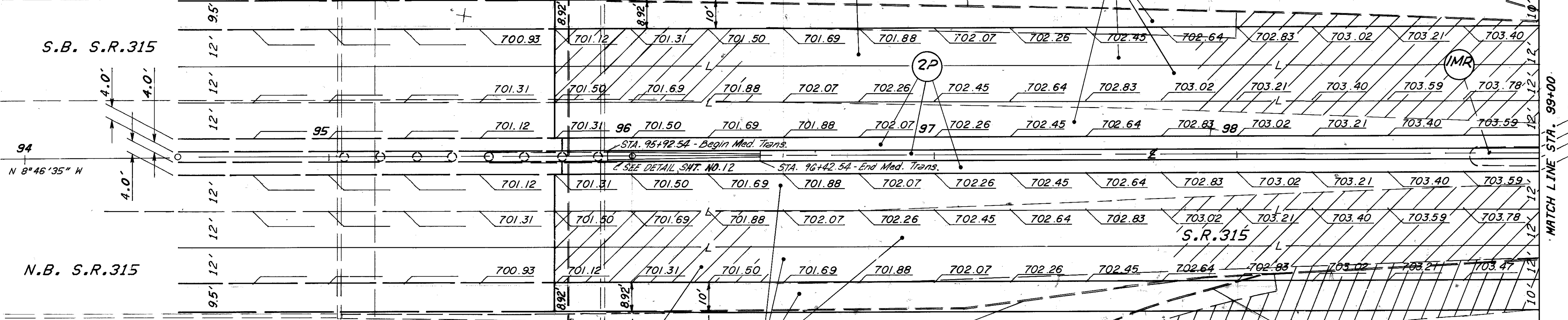
RAMP "S-J" - STA. 450+00 TO STA. 457+00



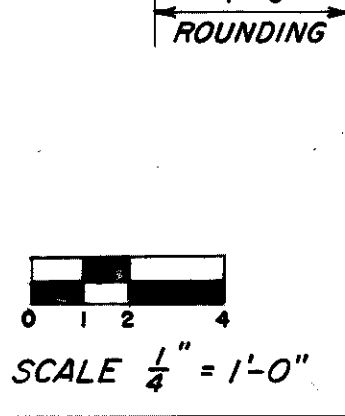
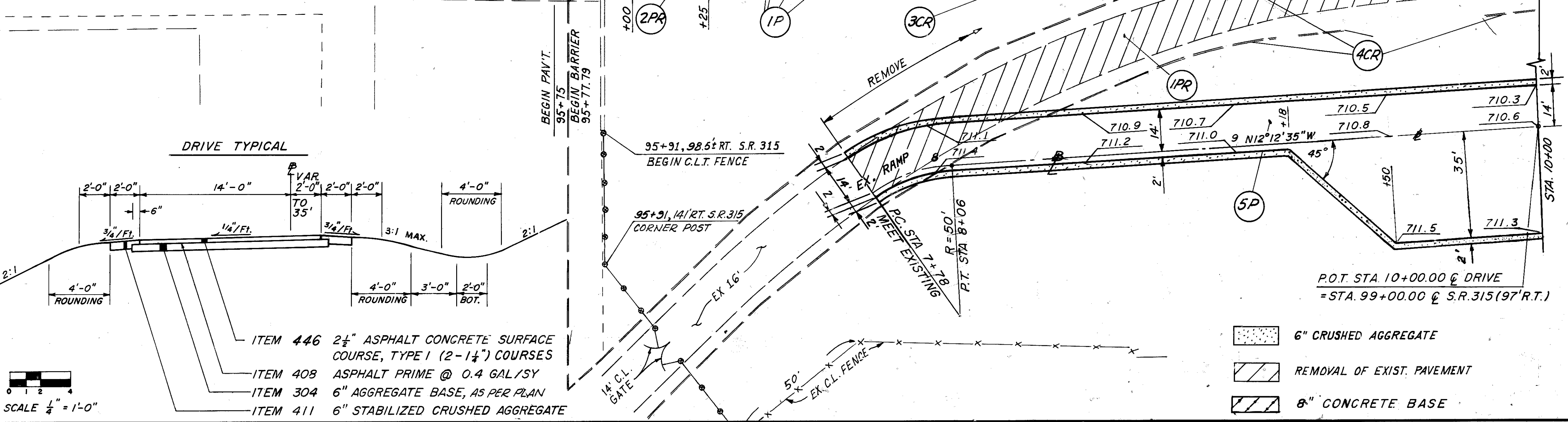


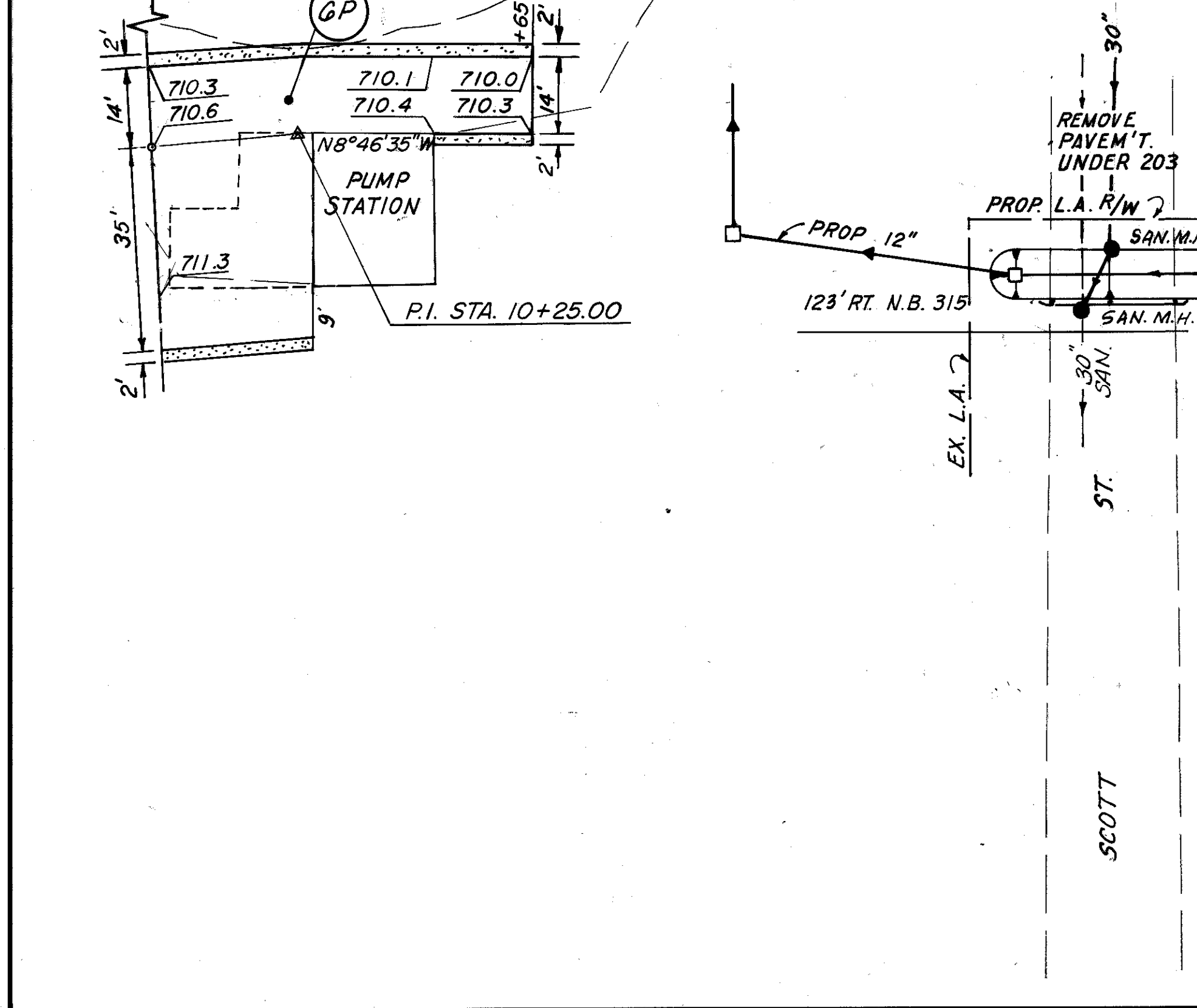
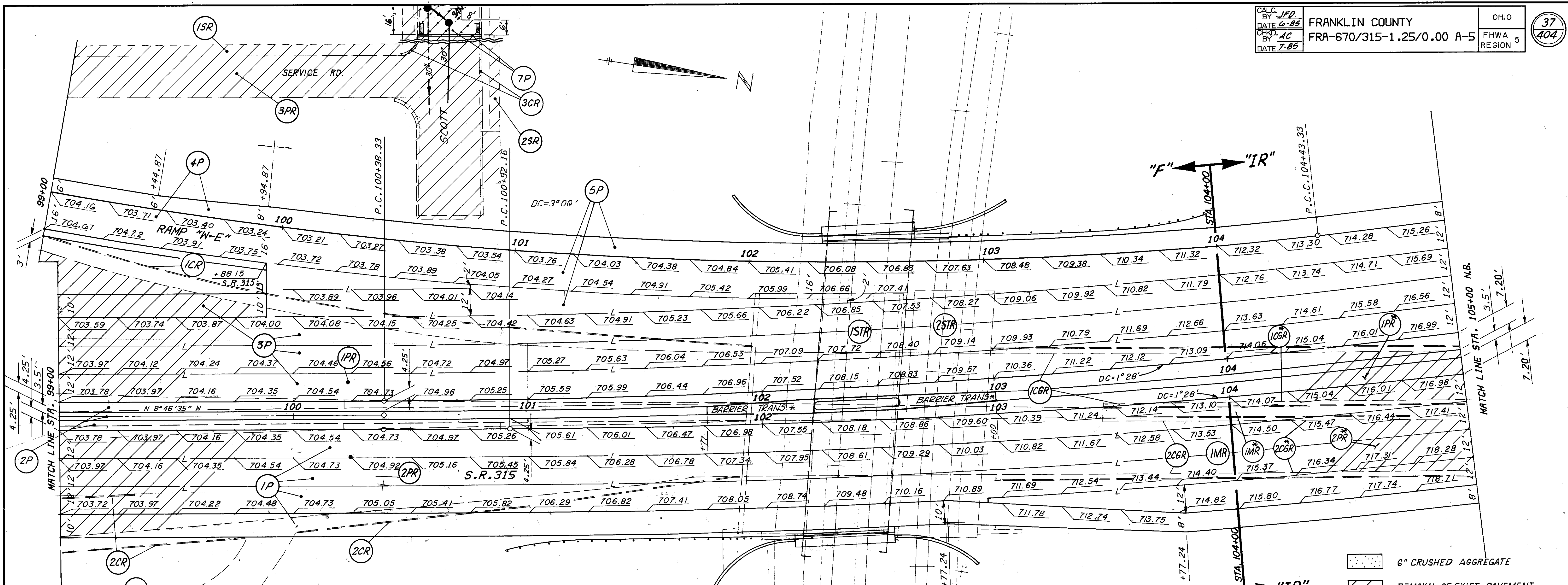
REF. No.	ESTIMATED QUANTITIES	
	608	608
4" CONC. WALK		
CURB RAMP TYPE 1		
	S.F.	EACH
1SW	244	1
2SW	135	1

REF. No.	ESTIMATED QUANTITIES						
	202	202	202	202	413	408	411
	PAVEMENT REMOVED	CURB REMOVED	MEDIAN REMOVED	SIDEWALK REMOVED	SAWING AND SEALING ASPHALT CONCRETE PAVT JOINTS 705.04	PRIME COAT	STABILIZED CRUSHED AGGREGATE
	S.Y.	L.F.	S.Y.	S.F.	L.F.	GAL.	C.Y.
1PR	472						
2PR	867						
3PR	978						
4PR	898						
5PR	309						
1CR		693					
2CR		309					
3CR		309					
4CR		385					
5CR		109					
1SR				319			
1MR			18				
1P					688		
3P					688		
4P					360		
5P						221	14
TOTAL	3524	1805	18	319	1736	221	14



REF. No.	ESTIMATED QUANTITIES								
	203	305	304	407	452	609	622	446	
	SUBGRADE COMPACTION	6" CONCRETE BASE AS PER PLAN	10" CONCRETE BASE AS PER PLAN	AGGREGATE BASE AS PER PLAN	PLAIN CONCRETE PAVEMENT AS PER PLAN	CURB, TYPE 6 AS PER PLAN	CONCRETE BARRIER STANDARD TYPE B-50	ASPHALT CONC SURFACE COURSE TYPE 1	ASPHALT CONC INTERMEDIATE COURSE, TYPE 2
	S.Y.	S.Y.	C.Y.	GAL.	S.Y.	L.F.	L.F.	C.Y.	C.Y.
1P	1661	1300	269	98	361			45	63
2P	433		117		307		325		
3P	1661	1300	269	98	361			45	63
4P	1179	907	192	68	272			32	44
5P			96					38	
6P		27							
1C						52			
2C						83			
3C						31			
TOTAL	4934	934	2600	943	264	1301	166	325	160





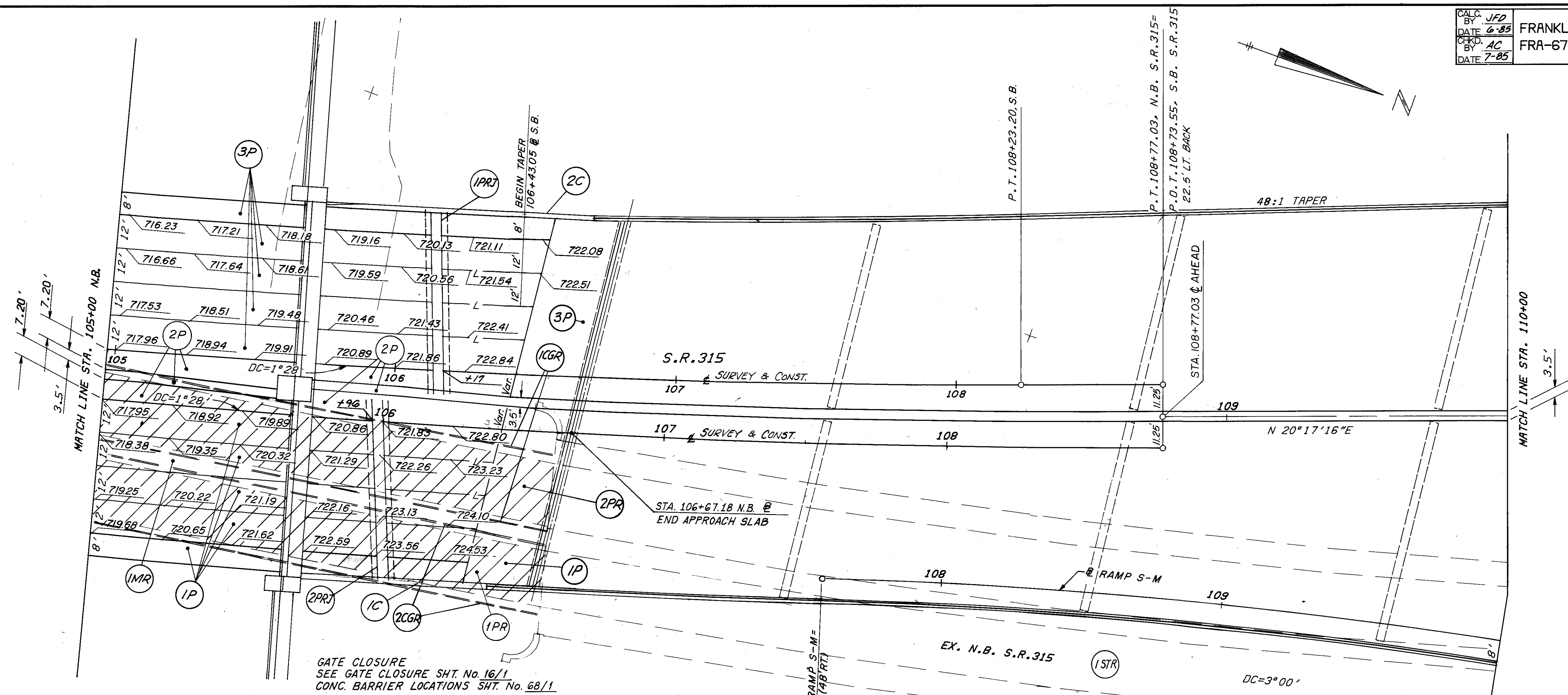
PARTICIPATION	REF. NO.	ESTIMATED QUANTITIES					
		202	202	202	202	202	202
		PAVEMENT REMOVED	CURB REMOVED	CURB & GUTTER REMOVED	MEDIAN REMOVED	SIDEWALK REMOVED	STRUCTURE REMOVED
		S.Y.	L.F.	L.F.	S.Y.	L.F.	LUMP
"IR" 1PR*	244						
"IR" 2PR*	244						
"IR" 1CGR*			202				
"IR" 2CGR*			203				
"IR" 1MR*				45			
"IR" TOTAL*	488		405	45			
"F" 1STR	1668						LUMP
"F" 2PR	1556						
"F" 3PR	548						
"F" 1CR		412					
"F" 2CR		434					
"F" 1CGR			152				
"F" 2CGR			157				
"F" 1SR					723		
"F" 2SR					344		
"F" 1MR				24			
"F" 2STR							LUMP
"F" TOTAL	3772	846	309	24	1067		LUMP
GRAND TOTAL	4260	846	714	69	1067		LUMP

\* Barrier Bridge Pier Transition as per SCD MC-9.4.

- 6" CRUSHED AGGREGATE
- REMOVAL OF EXIST. PAVEMENT
- 8" CONCRETE BASE

REF. NO.	PARTICIPATION	ESTIMATED QUANTITIES													
		452	203	446	446	407	408	305	305	411	304	609	452	622	413
		9" PLAIN CONCRETE PAVEMENT	SUBGRADE COMPACTION	ASPHALT CONC. SURFACE COURSE TYPE 1	ASPHALT CONC. INTERMEDIATE COURSE TYPE 2	TACK COAT	ASPHALT PRIME COAT	10" CONCRETE BASE AS PER PLAN	6" CONCRETE BASE AS PER PLAN	STABILIZED CRUSHED AGGREGATE	AGGREGATE BASE AS PER PLAN	CURB, TYPE 6 AS PER PLAN	PLAIN CONCRETE PAVEMENT AS PER PLAN	CONCRETE BARRIER STANDARD TYPE B-50	SAWING AND SEALING ASPHALT CONCRETE JOINTS 705.04
		S.Y.	S.Y.	C.Y.	C.Y.	GAL.	GAL.	S.Y.	S.Y.	C.Y.	L.F.	S.Y.	L.F.	L.F.	
1P	"F"		2636	73	102	157		2097			460	539		1092	
2P	"F"		749								203	555	500		
3P	"F"		2094	69	97	150		1996			352	98		1044	
4P	"F"	32	269	6	8	13				169	45	69		96	
5P	"F"		1373	35	50	76		1020			238	360		618	
6P	"F"				12			72			7	31			
7P	"F"										27		31		
TOTAL	"F"	32	7121	195	257	396	72	5113	196	7	1329	31	1621	500	2850
1P	"IR"		622	19	26	40		533			113	89		288	
2P	"IR"		191								52	152	100		
3P	"IR"		400	14	19	30		400			67	0		216	
5P	"IR"		222	5	7	10		134			39	88		74	
TOTAL	"IR"		1435	38	52	80		1067			271	329	100	578	
SUB TOTAL		32	8556	233	309	476	72	6180	196	7	1600	31	1950	600	3428



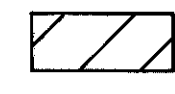


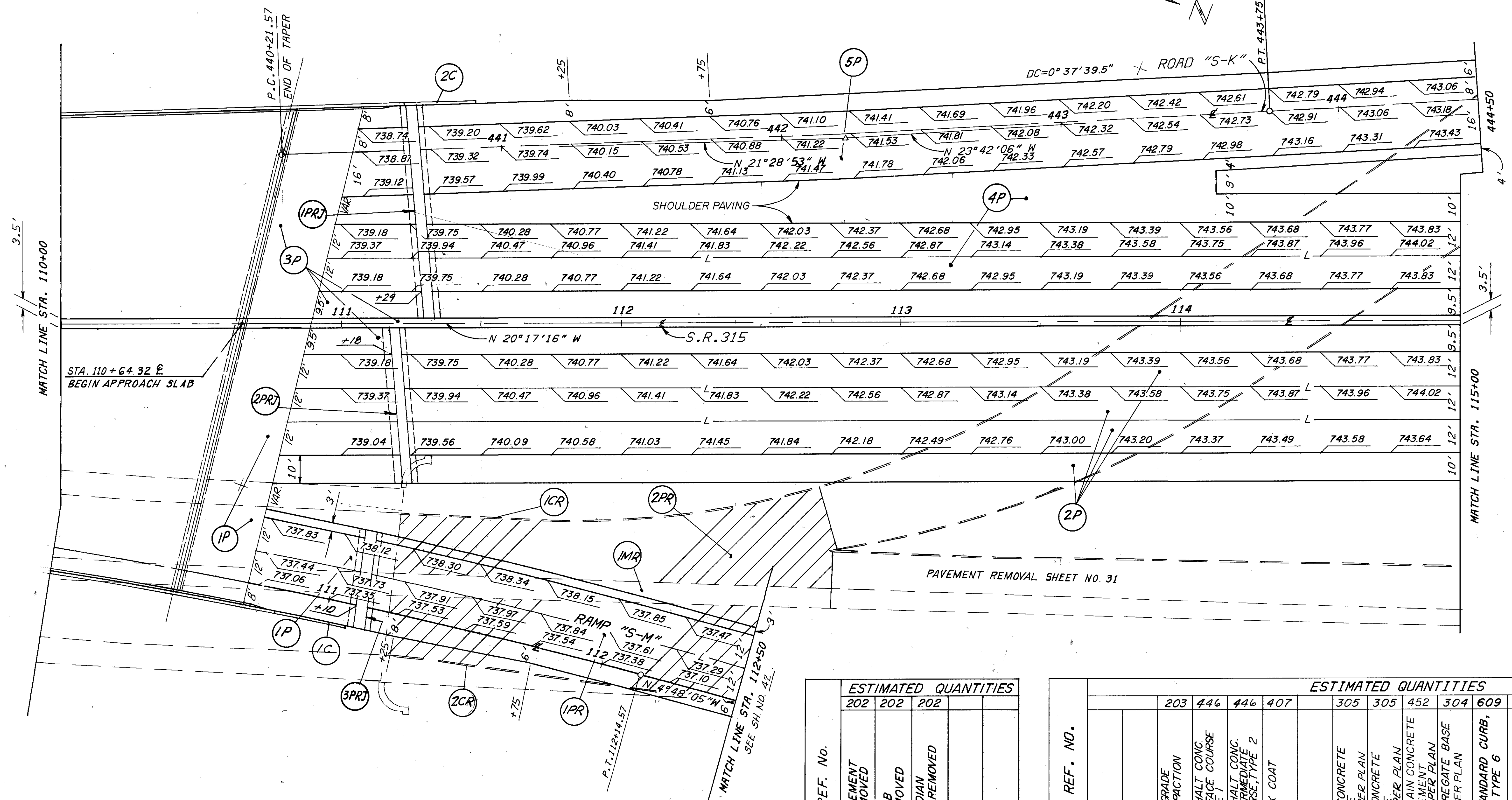
GATE CLOSURE  
 SEE GATE CLOSURE SHT. No. 16/1  
 CONC. BARRIER LOCATIONS SHT. No. 68/1

ESTIMATED QUANTITIES

REF. NO.	203				446		407		305		622		611		304		452		622		SPEC.		413	
	S.Y.	C.Y.	C.Y.	GAL.	S.Y.	L.F.	S.Y.	C.Y.	S.Y.	L.F.	S.Y.	C.Y.	S.Y.	L.F.	S.Y.	L.F.	S.Y.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	
1P	1042	26	36	56	74																			384
2P	311																							
3P	1110	28	39	60	800																			432
1C										66														
2C										95														
1PRT																					64			
2PRT																					64			
TOTAL	2463	54	75	116	1541	161	354	440	501	131	128	816												

REF. No	ESTIMATED QUANTITIES			
	202	202	202	202
	S.Y.	L.F.	S.Y.	LUMP
1PR	398			
2PR	398			
1CGR		326		
2CGR		326		
1MR			91	
1STR				LUMP
TOTAL	796	752	91	LUMP

 REMOVAL OF EXIST. PAVEMENT

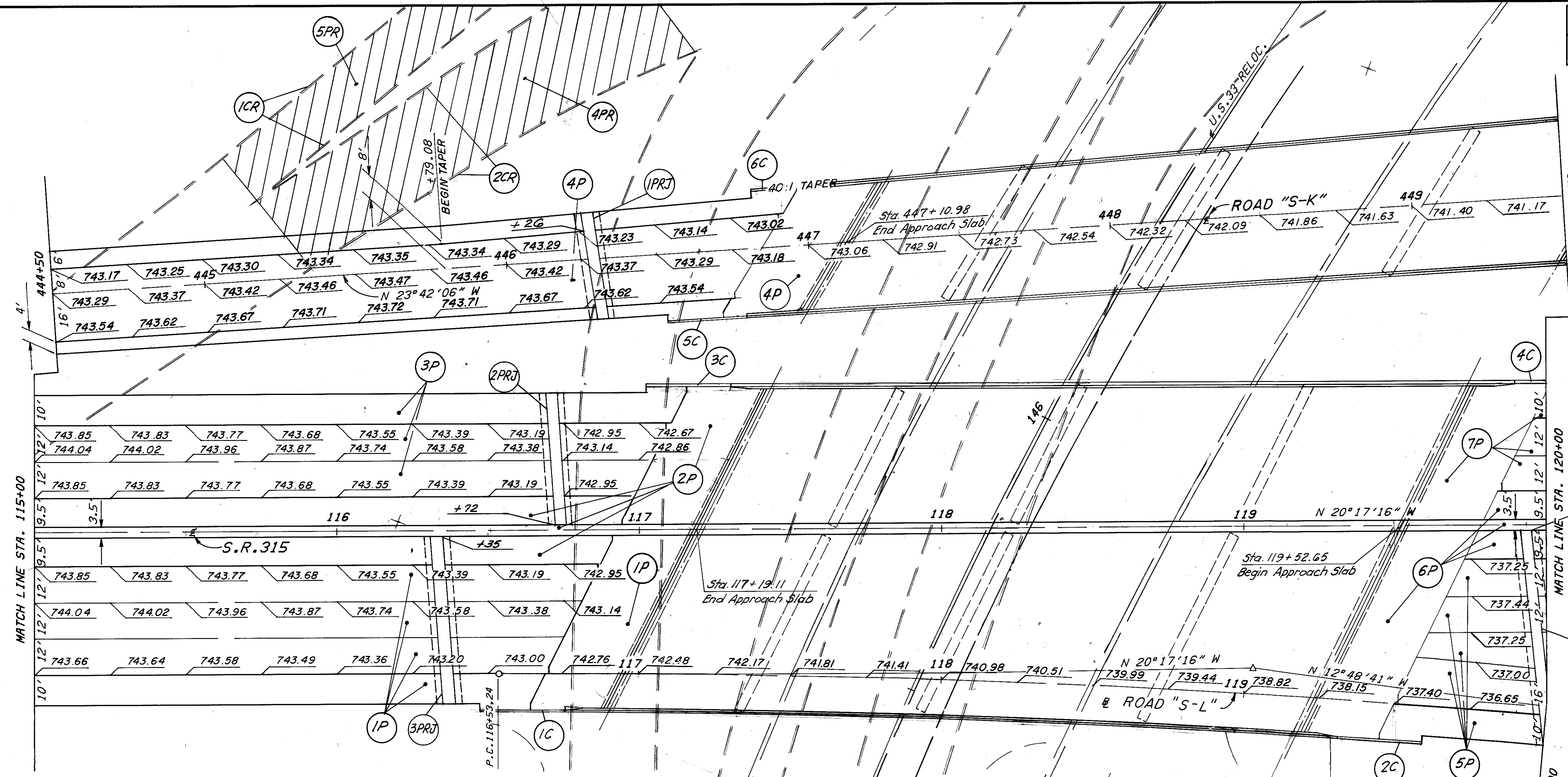


REF. NO.	ESTIMATED QUANTITIES		
	202	202	202
1PR	4/2		
2PR	449		
1CR		150	
2CR		126	
IMR			131
TOTAL	861	276	131

REF. NO.	ESTIMATED QUANTITIES												
	203	446	446	407	305	305	452	304	609	611	622	SPEC.	4-13
1P	951	17	23	36									
2P	2143	58	81	125	1672								264
3P	1252							867	316				864
4P	1721	38	53	81	1080			641	324				576
5P	1408	37	52	81		1077		331	240				576
1C													26
2C													26
1PRJ													76
2PRJ													56
3PRJ													35
TOTAL	7475	150	209	323	2752	1557	2507	1414	52	493	411	167	2280

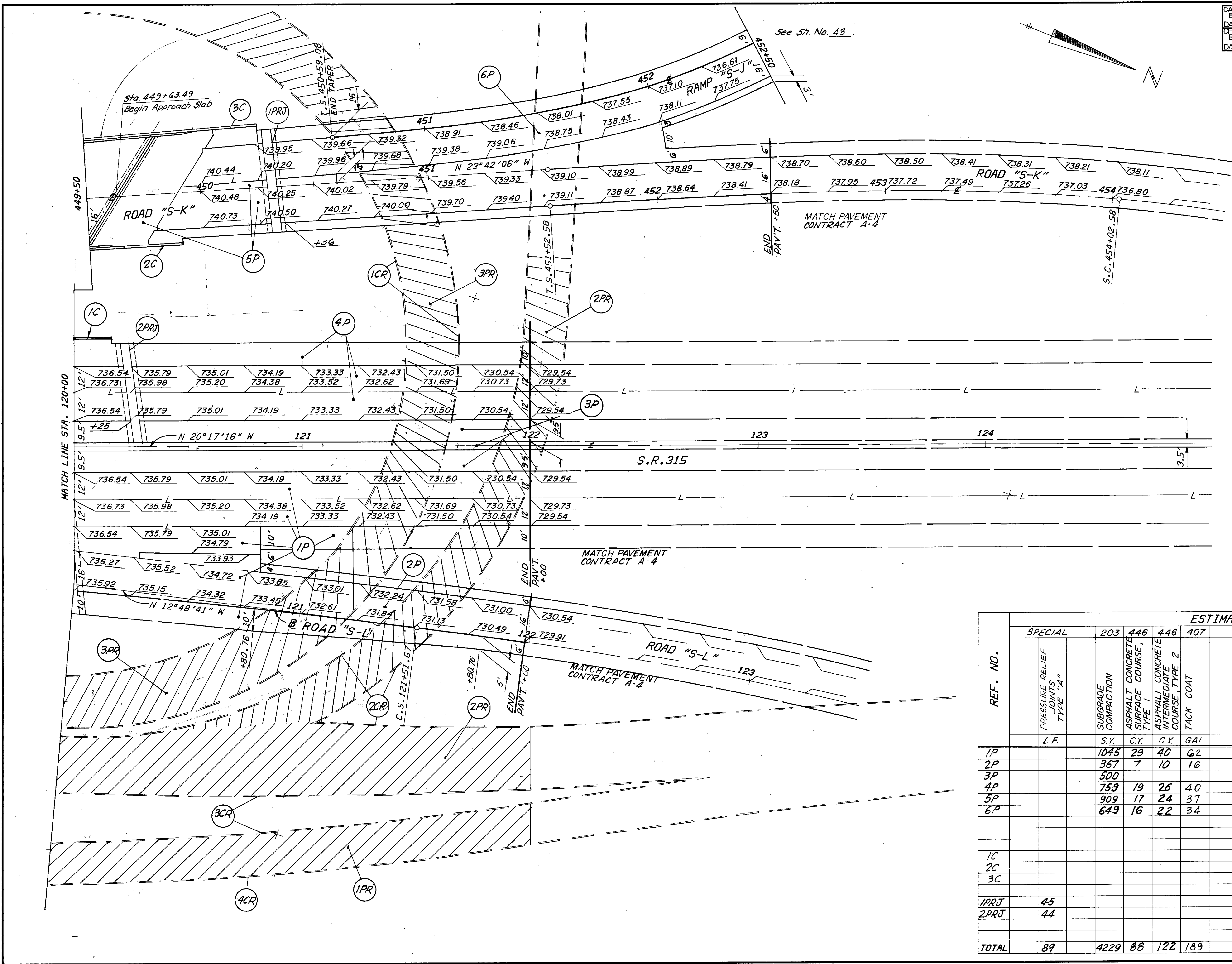
H84101LR





REF. NO.	SPEC.	ESTIMATED QUANTITIES											
		203	446	446	407	305	305	304	609	452	611	622	413
	PRESSURE RELIEF JOINTS TYPE 'A'	SUBGRADE COMPACTION	ASPHALT CONCRETE SURFACE COURSE, TYPE 1	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2	TACK COAT	10" CONCRETE BASE AS PER PLAN	8" CONCRETE BASE AS PER PLAN	AGGREGATE BASE AS PER PLAN	STANDARD CURB, TYPE 6	PLAIN CONCRETE PAVEMENT AS PER PLAN	REINFORCED CONC. APPROACH SLAB AS PER PLAN	CONCRETE BARRIER, STANDARD TYPE B-50	SAWING AND SEALING ASPHALT CONCRETE PAV'T. JOINTS 705.04
	L.F.	S.Y.	C.Y.	C.Y.	GAL.	S.Y.	S.Y.	C.Y.	L.F.	S.Y.	S.Y.	L.F.	L.F.
1P		1068	25	35	54	716		183		189	159		360
2P		622						153		409	125	194	
3P		790	19	27	41	548		143		242			288
4P		1004	22	31	47		641	169		272	116		336
5P		285	8	11	17	222		49		62			118
6P		249						57		47	184	22	
7P		162	1	1	2	31		27		3	125		24
1PRJ	26												
2PRJ	43												
1C									26				
2C									26				
3C									26				
4C									10				
5C									26				
6C									26				
3PRJ	55												
4PRJ	71												
TOTAL	195	4180	75	105	161	1517	641	781	140	1224	709	216	1126

REF. No.	ESTIMATED QUANTITIES		
	PAVEMENT REMOVED	CURB REMOVED	MEDIAN REMOVED
	S.Y.	L.F.	S.Y.
1PR	152		
2PR	306		
3PR	207		
4PR	505		
5PR	179		
1CR		181	
2CR		261	
3CR		200	
4CR		153	
1MR			44
TOTAL	1349	795	44



REF. No.	ESTIMATED QUANTITIES	
	202	202
	PAVEMENT REMOVED	CURB REMOVED
S.Y.	L.F.	
1PR	424	
2PR	1198	
3PR	1078	
1CR		850
2CR		668
3CR		419
4CR		213
<b>TOTAL</b>	<b>2700</b>	<b>2150</b>

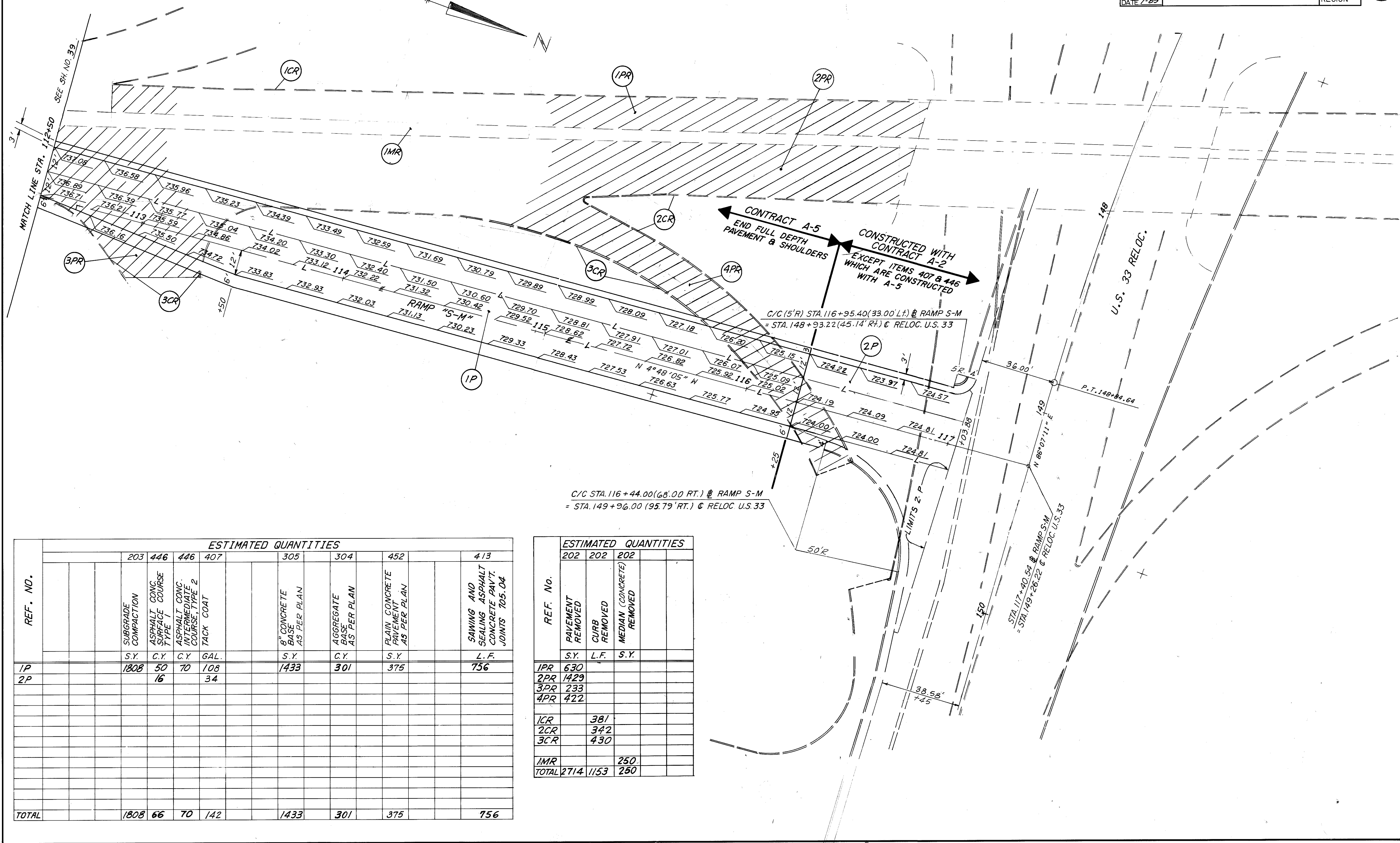
Removal of Exist. Pavement

REF. NO.	ESTIMATED QUANTITIES												
	SPECIAL	203	446	446	407	305	305	304	609	452	611	622	413
	PRESSURE RELIEF JOINTS TYPE 'A'	SUBGRADE COMPACTION	ASPHALT CONCRETE SURFACE COURSE, TYPE 1	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2	TACK COAT	10" CONCRETE BASE AS PER PLAN	8" CONCRETE BASE AS PER PLAN	AGGREGATE BASE AS PER PLAN	STANDARD CURB, TYPE 6	PLAIN CONCRETE PAVEMENT AS PER PLAN	REINFORCED CONC. APPROACH SLAB AS PER PLAN	CONCRETE BARRIER, STANDARD TYPE B-50	SAWING AND SEALING ASPHALT CONCRETE PAVT. JOINTS 705.04
L.F.	S.Y.	C.Y.	C.Y.	GAL.	S.Y.	S.Y.	C.Y.	L.F.	S.Y.	S.Y.	L.F.	L.F.	
1P		1045	29	40	62	823		182		221			346
2P		367	7	10	16		212	64		155			112
3P		500						135		422		200	
4P		759	19	26	40	533		134		226			288
5P		909	17	24	37		499	135		277	133		266
6P		649	16	22	34		459	139		186			240
1C									16				
2C									26				
3C									26				
1PRJ	45												
2PRJ	44												
<b>TOTAL</b>	<b>89</b>	<b>4229</b>	<b>88</b>	<b>122</b>	<b>189</b>	<b>1356</b>	<b>1170</b>	<b>789</b>	<b>68</b>	<b>1487</b>	<b>133</b>	<b>200</b>	<b>1252</b>

STA. 120+00 TO STA. 122+00 S.R. 315 PAVEMENT DETAILS

1841013R

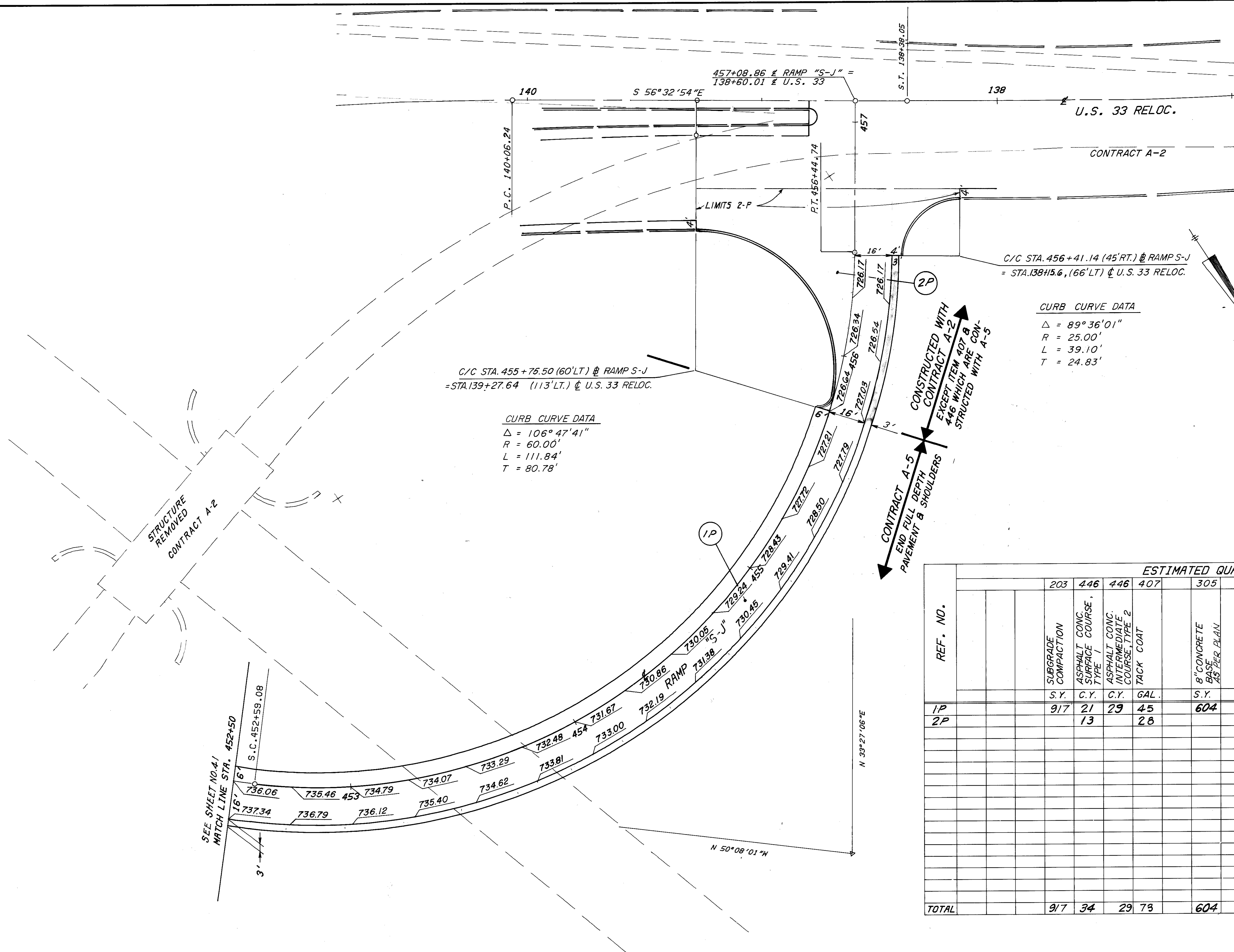




C/C STA. 116+44.00 (68.00 RT.) @ RAMP S-M  
 = STA. 149+96.00 (95.79 RT.) @ RELOC U.S.33

REF. NO.	ESTIMATED QUANTITIES							
	203	446	446	407	305	304	452	413
	SUBGRADE COMPACTION	ASPHALT CONC. SURFACE COURSE TYPE 1	ASPHALT CONC. INTERMEDIATE COURSE, TYPE 2	TACK COAT	8" CONCRETE BASE AS PER PLAN	AGGREGATE BASE AS PER PLAN	PLAIN CONCRETE PAVEMENT AS PER PLAN	SAWING AND SEALING ASPHALT CONCRETE PAV'T. JOINTS 705.04
	S.Y.	C.Y.	C.Y.	GAL.	S.Y.	C.Y.	S.Y.	L.F.
1P	1808	50	70	108	1433	301	375	756
2P		16		34				
TOTAL	1808	66	70	142	1433	301	375	756

REF. No.	ESTIMATED QUANTITIES		
	202	202	202
	PAVEMENT REMOVED	CURB REMOVED	MEDIAN (CONCRETE) REMOVED
	S.Y.	L.F.	S.Y.
1PR	630		
2PR	1429		
3PR	233		
4PR	422		
1CR		381	
2CR		342	
3CR		430	
1MR			250
TOTAL	2714	1153	250



C/C STA. 455 + 75.50 (60' LT) @ RAMP S-J  
 = STA. 139 + 27.64 (113' LT.) @ U.S. 33 RELOC.

**CURB CURVE DATA**  
 $\Delta = 106^{\circ} 47' 41''$   
 $R = 60.00'$   
 $L = 111.84'$   
 $T = 80.78'$

C/C STA. 456 + 41.14 (45' RT.) @ RAMP S-J  
 = STA. 138 + 15.6, (66' LT) @ U.S. 33 RELOC.

**CURB CURVE DATA**  
 $\Delta = 89^{\circ} 36' 01''$   
 $R = 25.00'$   
 $L = 39.10'$   
 $T = 24.83'$

STRUCTURE  
 REMOVED  
 CONTRACT A-2

CONSTRUCTED WITH  
 CONTRACT A-2  
 EXCEPT ITEM #07 &  
 #46 WHICH ARE CON-  
 STRUCTED WITH A-5

CONTRACT A-5  
 END FULL DEPTH  
 PAVEMENT & SHOULDERS

**ESTIMATED QUANTITIES**

REF. NO.	ESTIMATED QUANTITIES							
	203	446	446	407	305	304	452	413
	SUBGRADE COMPACTION	ASPHALT CONC. SURFACE COURSE, TYPE 1	ASPHALT CONC. INTERMEDIATE COURSE, TYPE 2	TACK COAT	8" CONCRETE BASE AS PER PLAN	AGGREGATE BASE AS PER PLAN	PLAIN CONCRETE PAVEMENT AS PER PLAN	PLAIN CONCRETE PAVEMENT AS PER PLAN
	S.Y.	C.Y.	C.Y.	GAL.	S.Y.	C.Y.	S.Y.	L.F.
1P	917	21	29	45	604	156	335	304
2P		13		28				
TOTAL	917	34	29	73	604	156	335	304

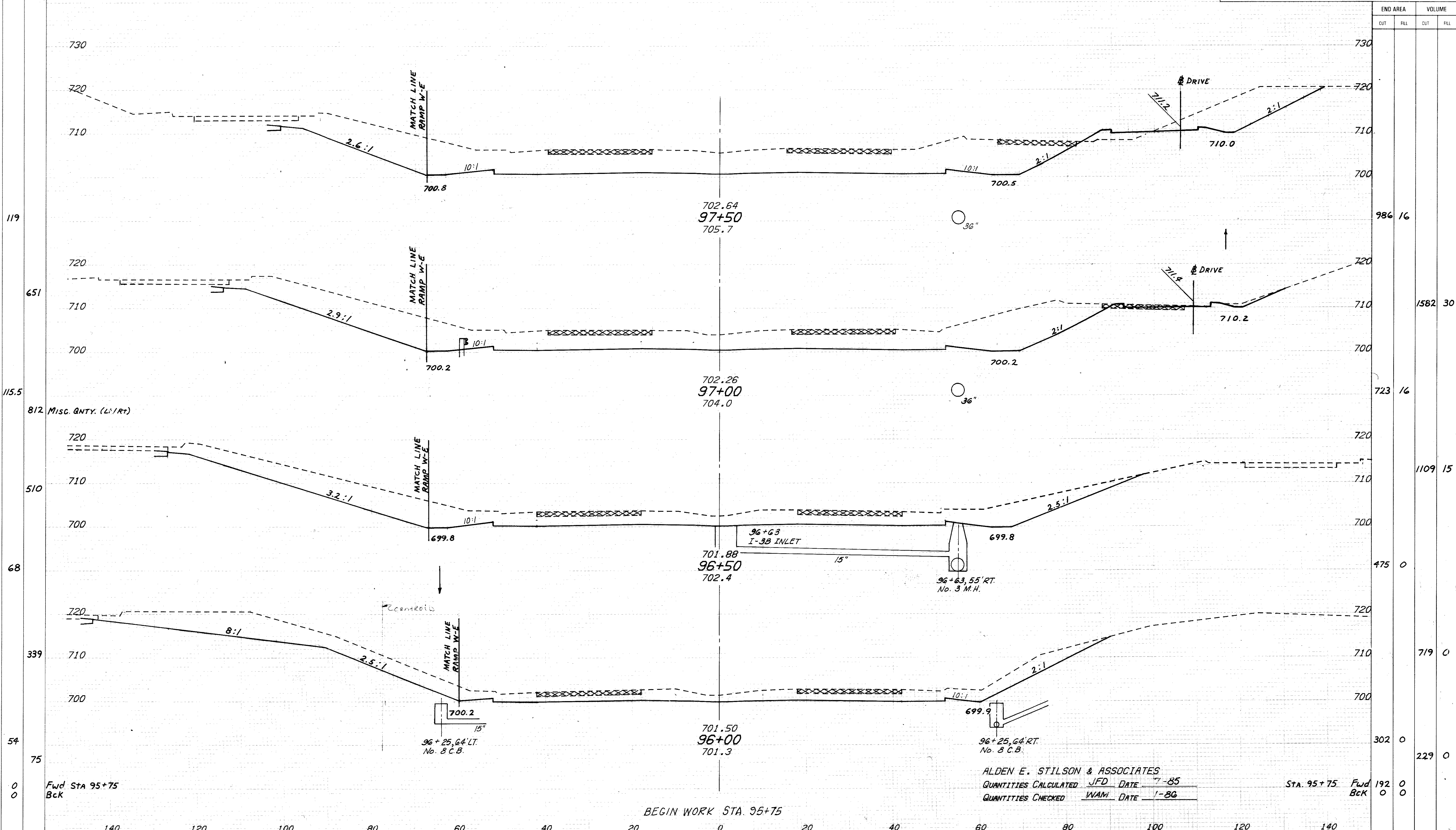
H341015R



SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

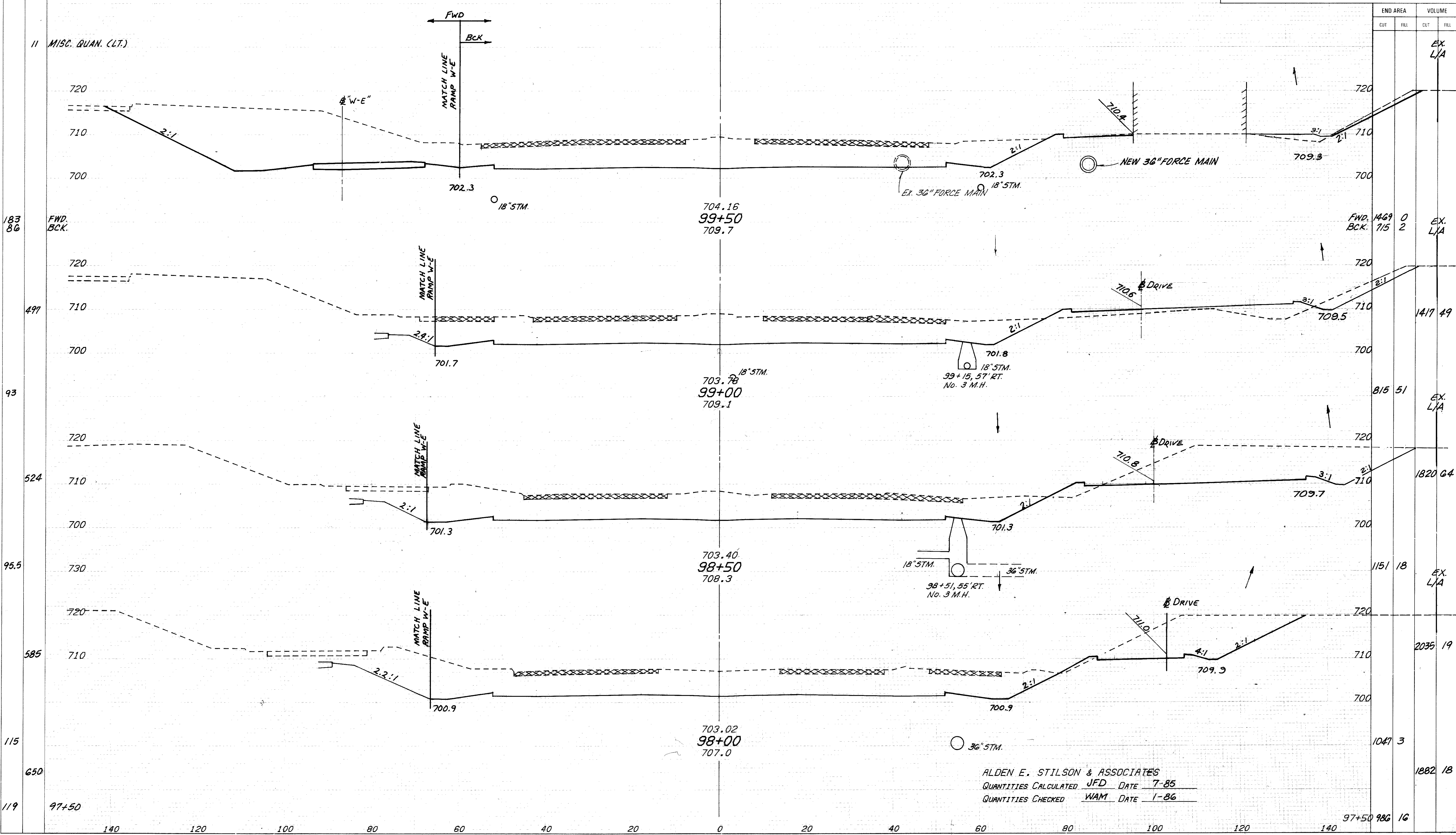
F.H.W.A. REGION	STATE	PROJECT	44 404
5	OHIO		

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



END AREA	VOLUME	
	CUT	FILL
986	16	
1582	30	
723	16	
1109	15	
475	0	
719	0	
302	0	
	229	0

Fwd Sta 95+75 BcK  
 BEGIN WORK STA. 95+75  
 ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED JFD DATE 7-85  
 QUANTITIES CHECKED WAM DATE 1-86  
 STA. 95+75 Fwd 192 0 BcK 0 0  
 STA. 96+00 TO STA. 97+50 SR 315



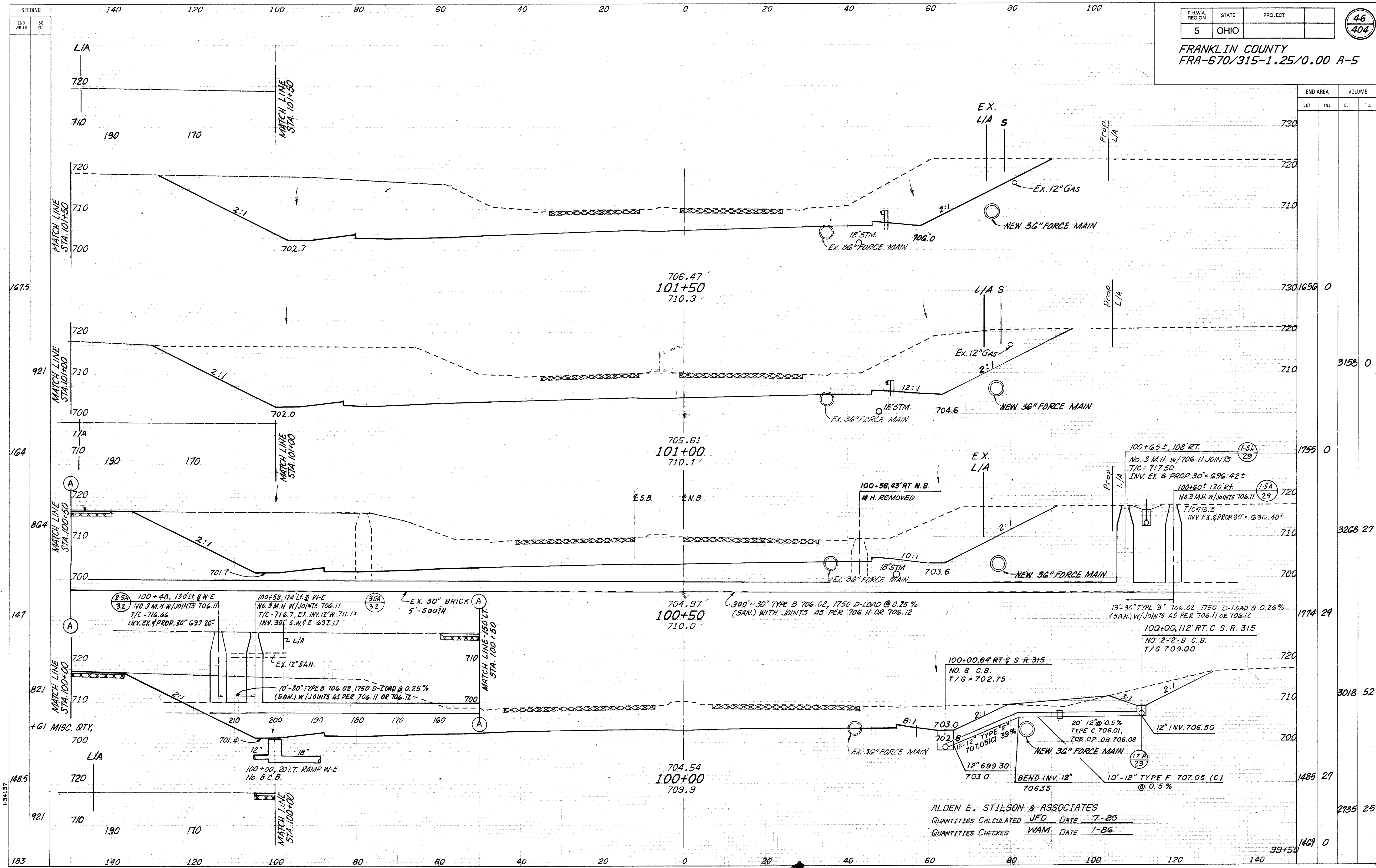
END AREA	VOLUME		EX. L/A
	CUT	FILL	
			EX. L/A
FWD. 1469 BCK. 715	0	2	EX. L/A
	1417	49	EX. L/A
	815	51	EX. L/A
	1820	64	EX. L/A
	1151	18	EX. L/A
	2035	19	EX. L/A
	1047	3	EX. L/A
	1882	18	EX. L/A
97+50 986	16		

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED JFD DATE 7-85  
 QUANTITIES CHECKED WAM DATE 1-86

STA. 98+00 TO STA. 99+50 SR 315

H34136

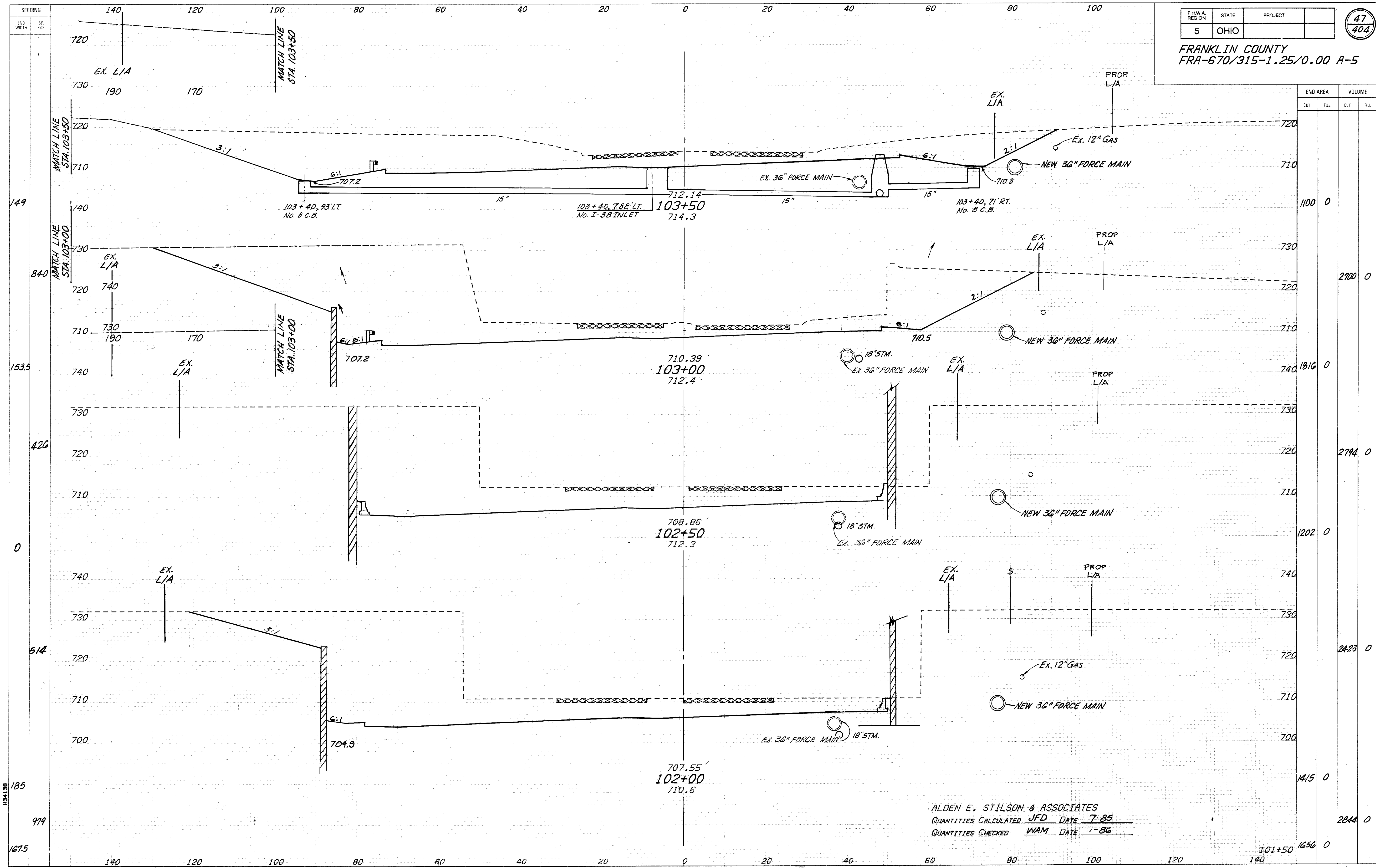




END AREA	VOLUME	
	CUT	FILL
730		
720		
710		
700		
730	1656	0
720		
710		
700		
730	3158	0
720		
710		
700		
730	1755	0
720		
710		
700		
730	3268	27
720		
710		
700		
730	1774	29
720		
710		
700		
730	3018	52
720		
710		
700		
730	1485	27
720		
710		
700		
730	2735	25
720		
710		
700		
730	1469	0

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED JFD DATE 7-85  
 QUANTITIES CHECKED WAM DATE 1-86

STA. 100+00 TO STA. 101+50 SR 315

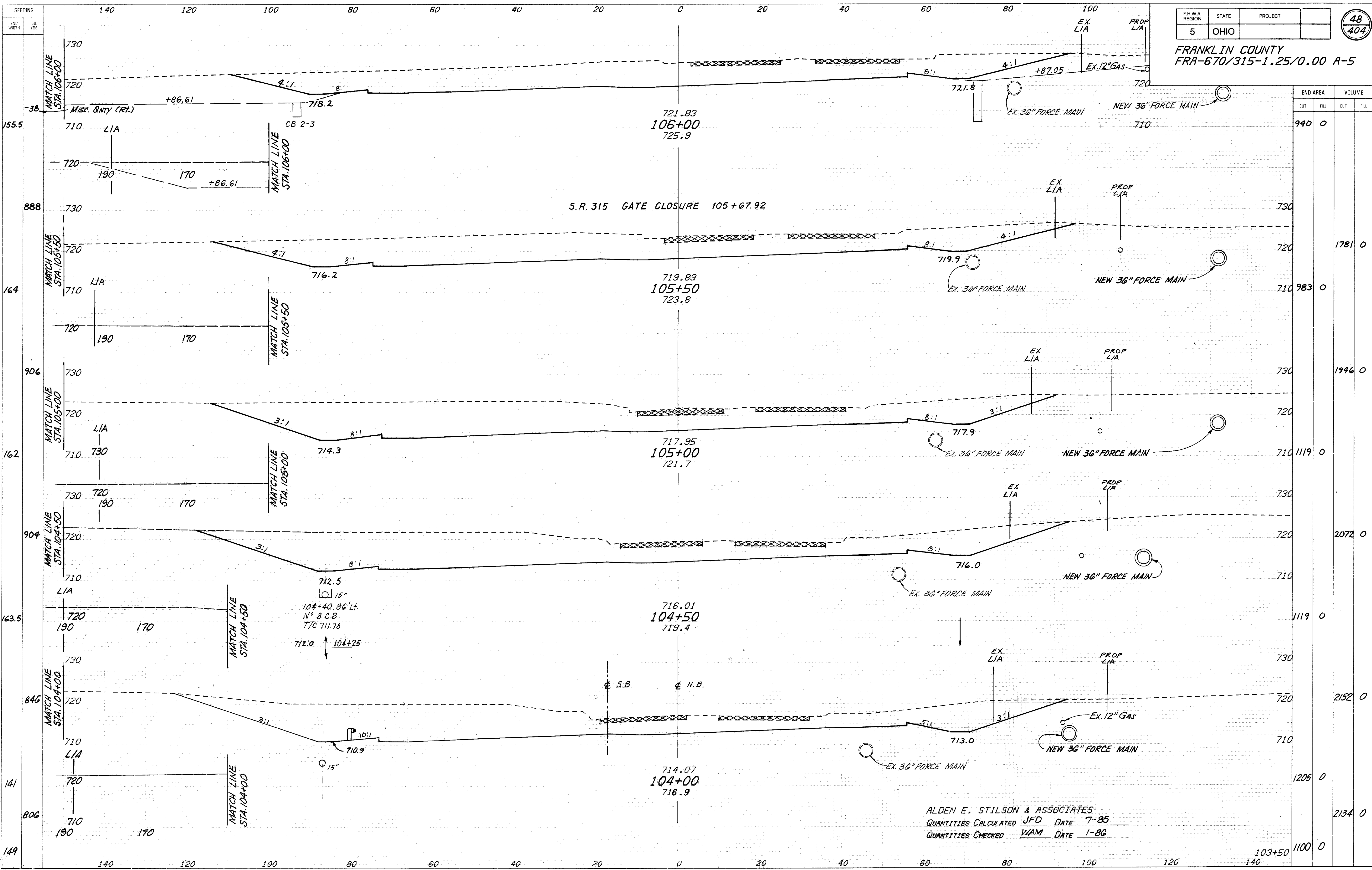


END AREA	VOLUME	
	CUT	FILL
1100	0	
2700	0	
1816	0	
2794	0	
1202	0	
2423	0	
1415	0	
2844	0	
1656	0	

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED JFD DATE 7-85  
 QUANTITIES CHECKED WAM DATE 1-86

STA. 102+00 TO STA. 103+50 SR 315





END AREA	VOLUME	
	CUT	FILL
940	0	
1781	0	
983	0	
1946	0	
1119	0	
2072	0	
1119	0	
730		
2152	0	
1205	0	
2134	0	
1100	0	

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED JFD DATE 7-85  
 QUANTITIES CHECKED WAM DATE 1-86

STA. 104+00 TO STA. 106+00 SR 315

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

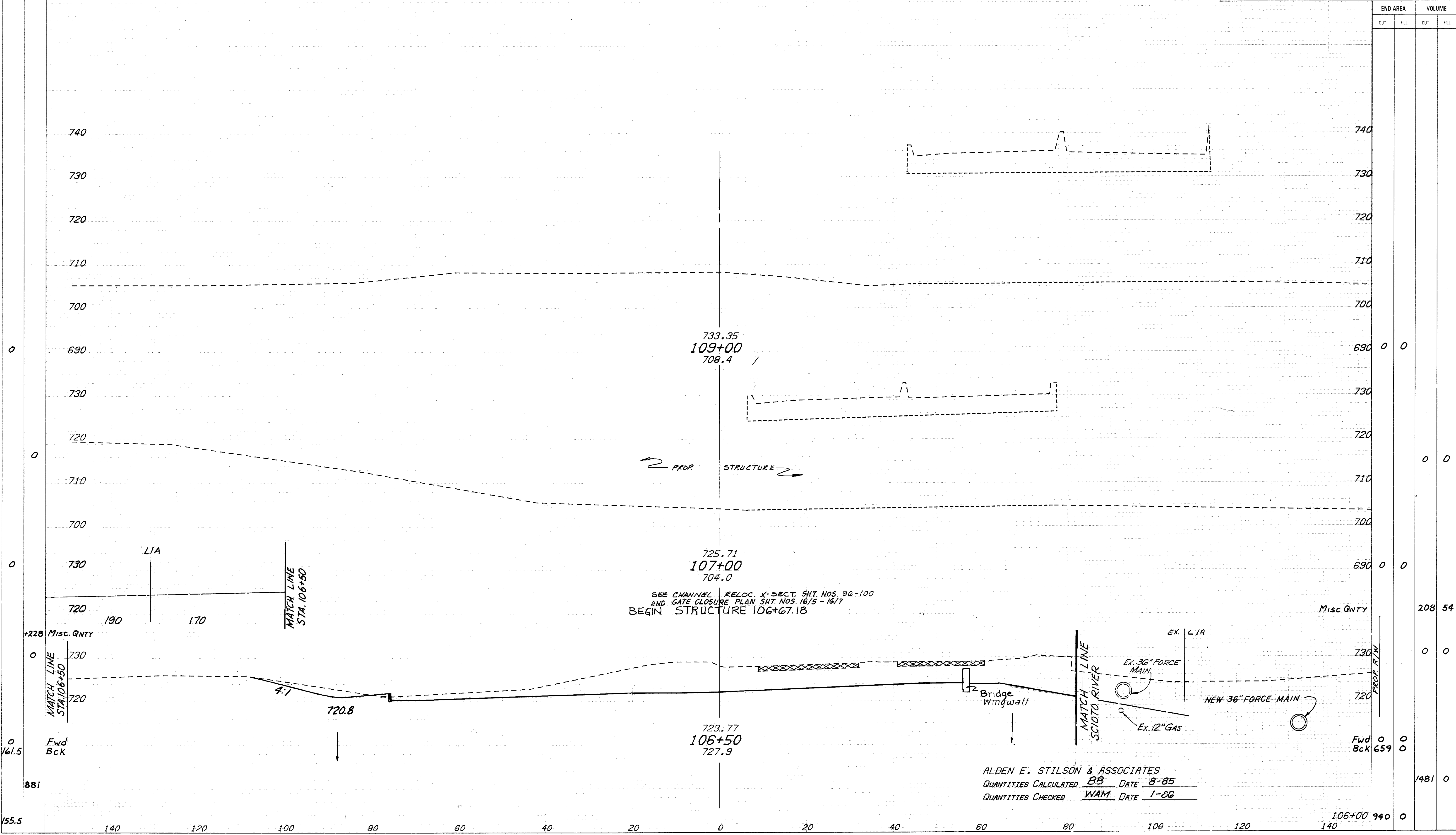
END WIDTH SQ. YDS.

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

49  
404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5

END AREA		VOLUME	
CUT	FILL	CUT	FILL



SEE CHANNEL RELOC. X-SECT. SHT. NOS. 96-100  
AND GATE CLOSURE PLAN SHT. NOS. 16/5-16/7  
BEGIN STRUCTURE 106+67.18

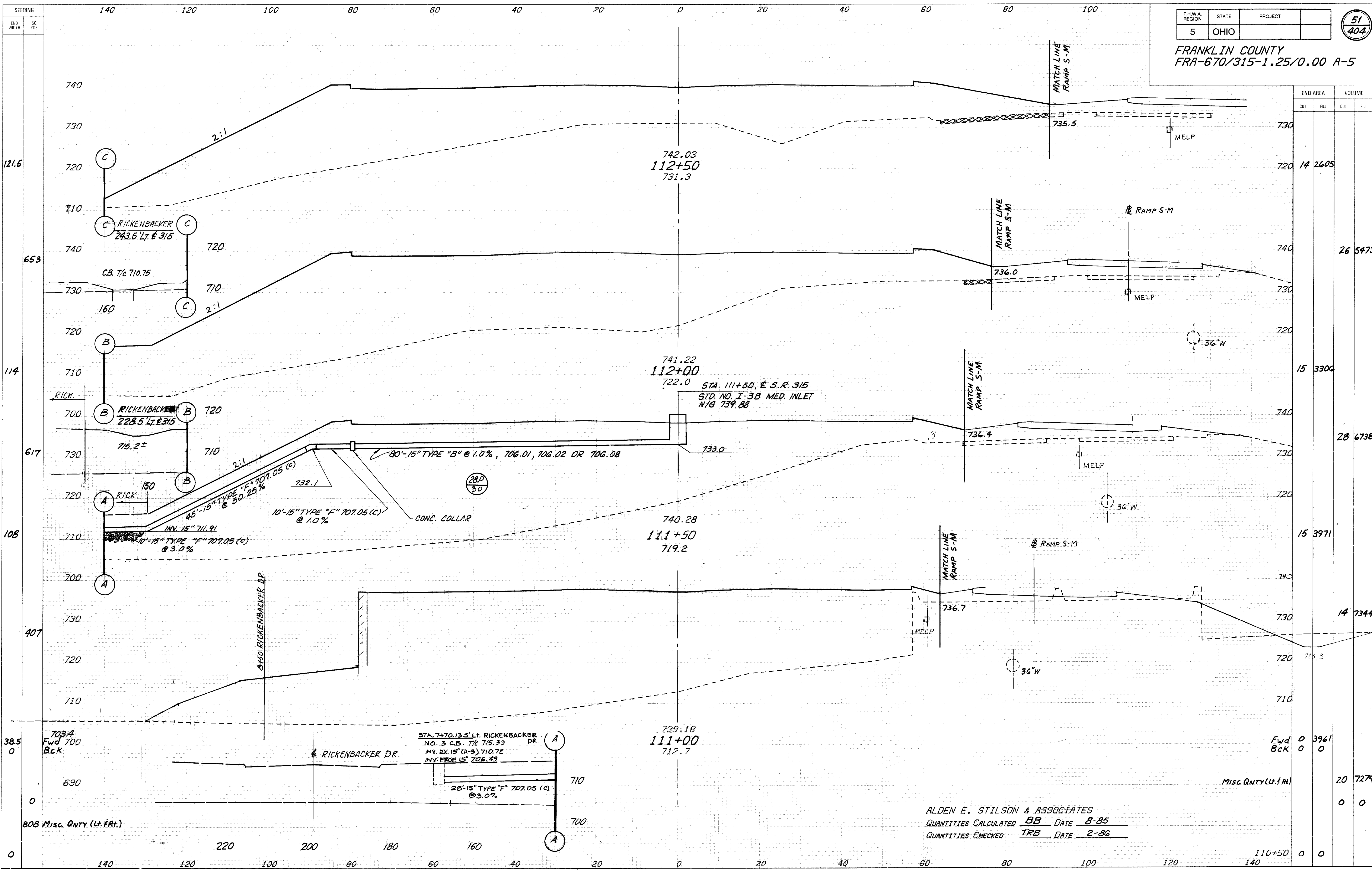
ALDEN E. STILSON & ASSOCIATES  
QUANTITIES CALCULATED BB DATE 8-85  
QUANTITIES CHECKED WAM DATE 1-86

Misc QNTY	208	54
Fwd Bck	0	0
Fwd Bck	659	0
	1481	0
	106+00	940

STA. 106+50 TO STA. 109+00 SR 315





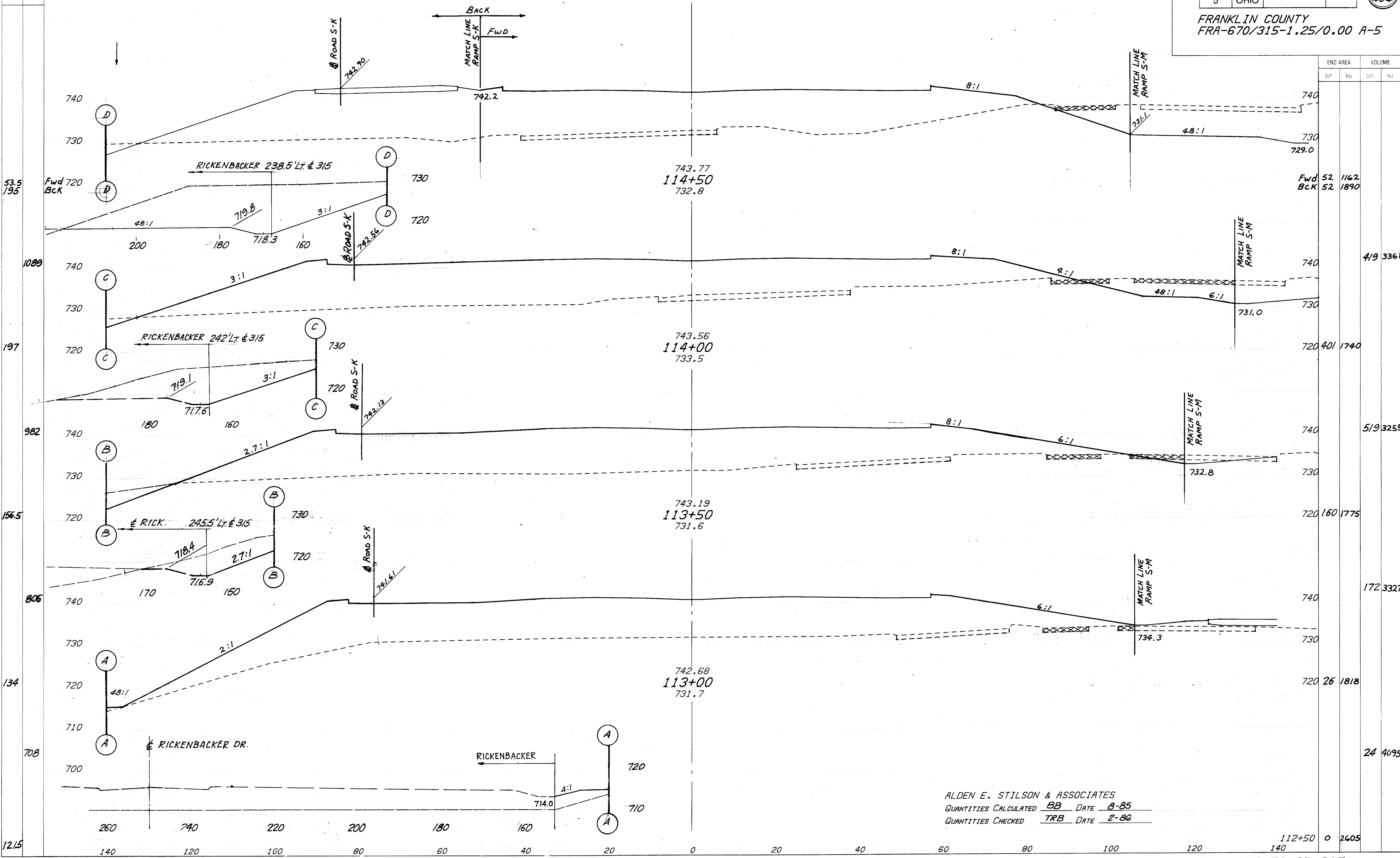


END AREA	VOLUME	
	CUT	FILL
14	2605	
26	5473	
15	3306	
28	6738	
15	3971	
14	7344	
128	3	
Fwd	0	3961
Bck	0	0
Misc Qnty (Lt. & Rt.)	20	7274
	0	0
110+50	0	0

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED BB DATE 8-85  
 QUANTITIES CHECKED TRB DATE 2-86

STA. 111+00 TO STA. 112+50 SR 315





ALDEN E. STILSON & ASSOCIATES  
QUANTITIES CALCULATED BB DATE 8-85  
QUANTITIES CHECKED TRB DATE 2-86

STA. 113+00 TO STA. 114+50 SR 315

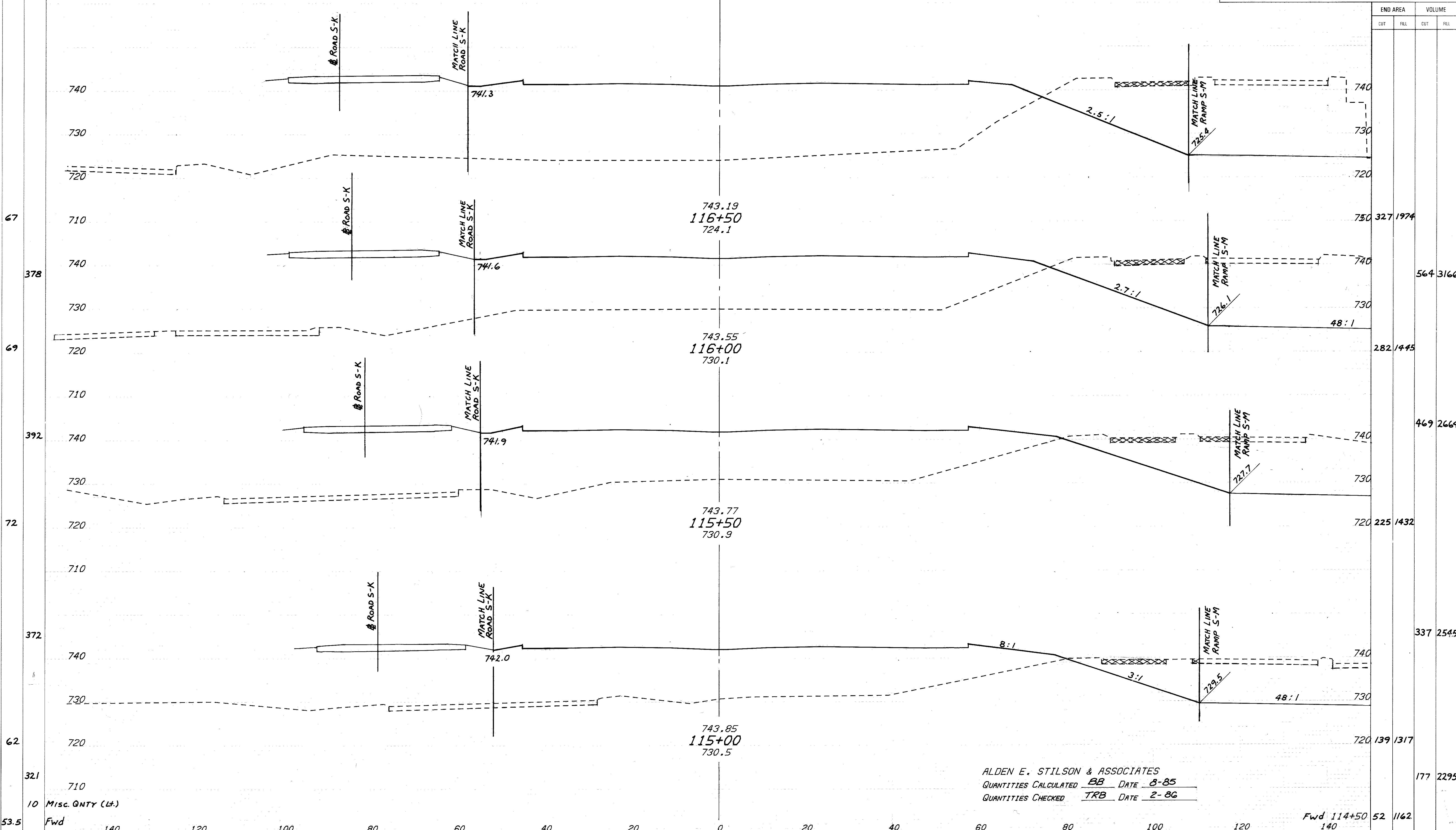
SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

END WIDTH SQ. YDS

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



10 Misc. QNTY (L#)  
Fwd

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED BB DATE 8-85  
 QUANTITIES CHECKED TRB DATE 2-86

STA. 115+00 TO STA. 116+50 SR 315



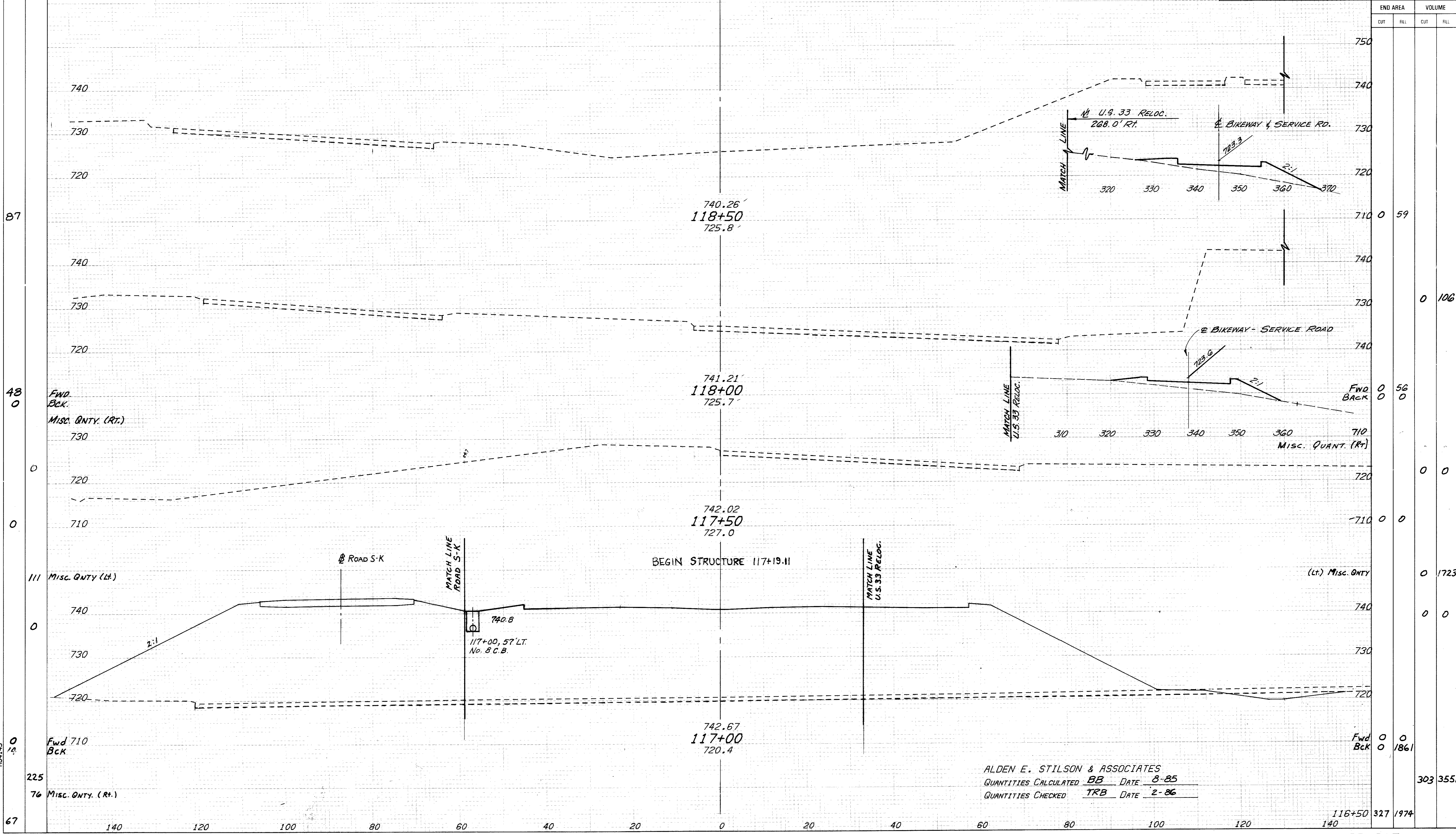
SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

END WIDTH SQ. YDS

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



END AREA	VOLUME	
	CUT	FILL
750		
740		
730		
720		
710	0	59
740		
730		
740	0	106
730		
740		
710	0	56
720	0	0
710	0	0
740		
730		
720		
710	0	1723
740	0	0
730		
720		
710	0	0
740	0	1861
730		
720		
710	0	303
740	0	3551
730		
720		
710	0	327
740	0	1974

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED BB DATE 8-85  
 QUANTITIES CHECKED TRB DATE 2-86

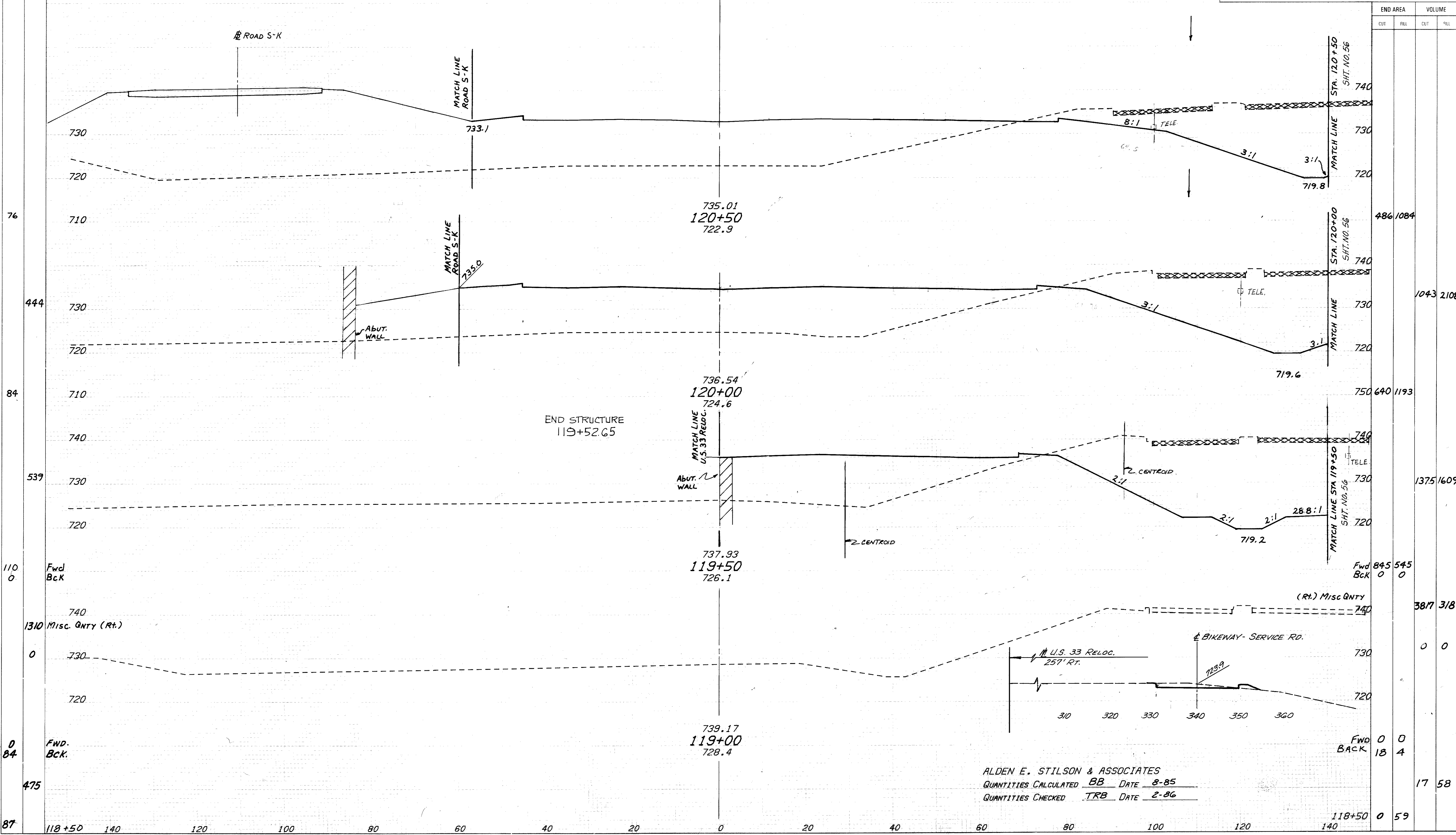
STA. 117+00 TO STA. 118+50 SR 315

SEEDING  
 SQ. YDS.  
 END WIDTH  
 140 120 100 80 60 40 20 0 20 40 60 80 100

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

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404

FRANKLIN COUNTY  
 FRA-670/315-1.25/0.00 A-5



END AREA		VOLUME	
CUT	FILL	CUT	FILL
		486	1084
		1043	2108
		750	640
		1375	1609
Fwd	Bck	845	545
		0	0
		387	318
		0	0
Fwd	BACK	0	0
		18	4
		17	58
		0	59

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED BB DATE 8-85  
 QUANTITIES CHECKED TRB DATE 2-86

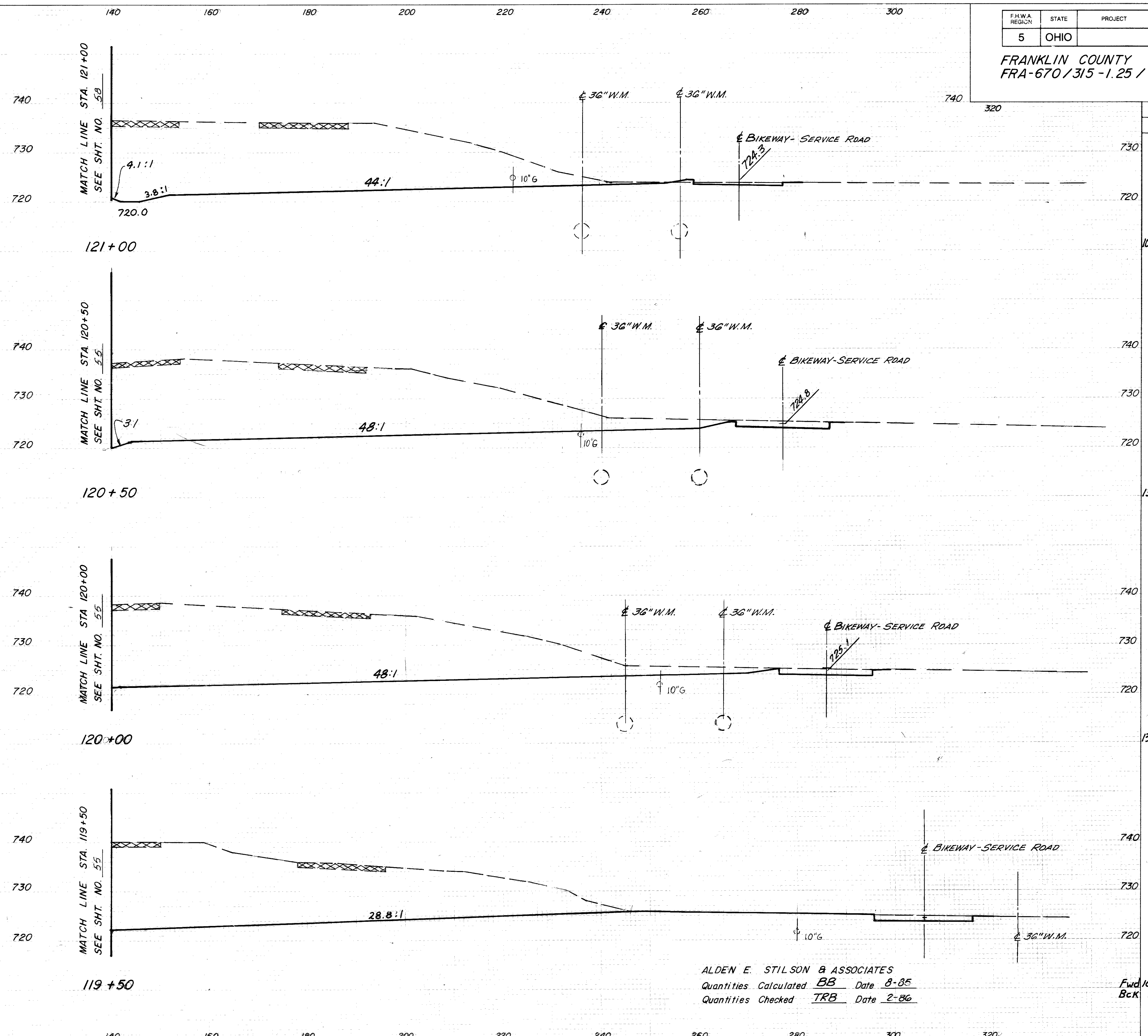
STA. 119+00 TO STA. 120+50 SR 315

SEEDING	
END WIDTH	SQ. YDS.
124	
700	
128	
744	
140	
886	
179	

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



END AREA	VOLUME	
	CUT	FILL
1052	0	
2178	0	
1300	0	
2419	0	
1312	0	
2230	0	
1096	0	
0	0	

ALDEN E. STILSON & ASSOCIATES  
Quantities Calculated BB Date 8-85  
Quantities Checked TRB Date 2-86

Fwd 1096 0  
Bck 0 0

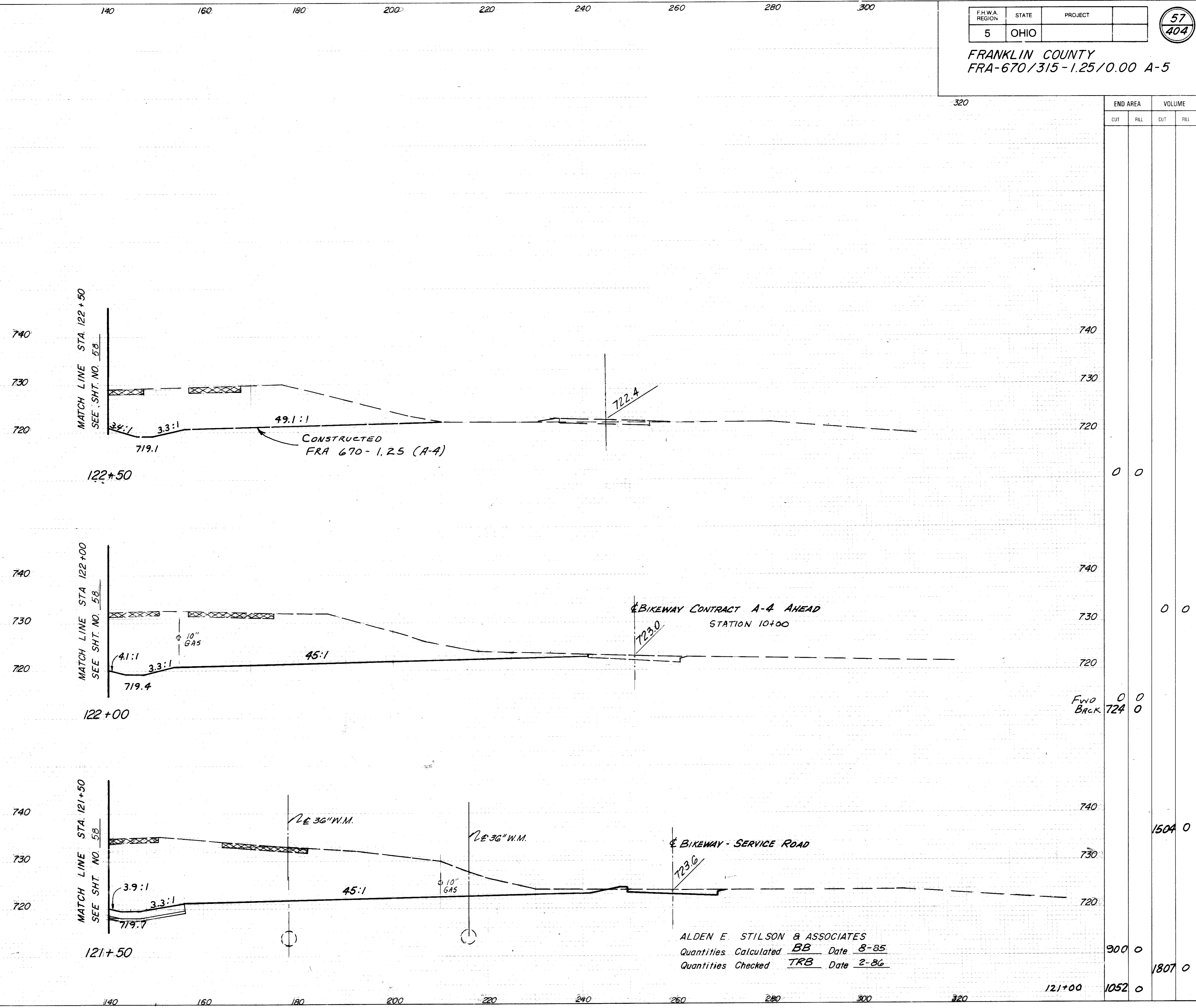
STA 119+50 TO STA. 121+00 (RT.) S.R. 315



SEEDING	
END WIDTH	SQ. YDS.
0	
111	
637	
118	
673	
124	

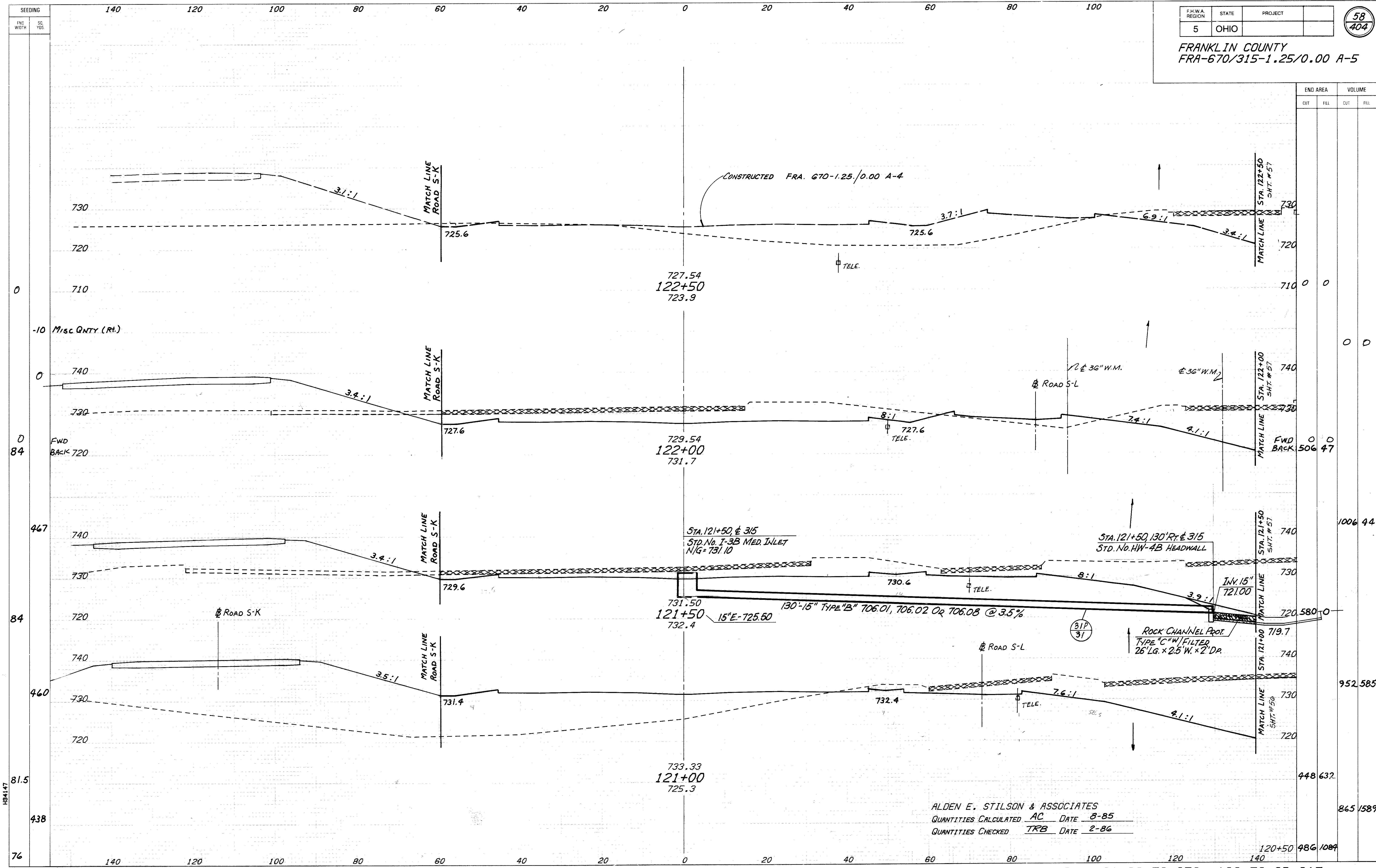
F.H.W.A. REGION	STATE	PROJECT	57 404
5	OHIO		

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



ALDEN E. STILSON & ASSOCIATES  
 Quantities Calculated BB Date 8-85  
 Quantities Checked TRB Date 2-86

STA. 121+50 TO STA. 122+50 (RT.) S.R. 315



END AREA	VOLUME	
	CUT	FILL
710 0 0	0	0
740 0 0	0	0
740 1006 44	0	0
720 580 0	0	0
740 952 585	0	0
720 448 632	0	0
720 865 1589	0	0
120+50 486 1087	0	0

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 8-85  
 QUANTITIES CHECKED TRB DATE 2-86

STA. 121+00 TO STA. 122+50 SR 315

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

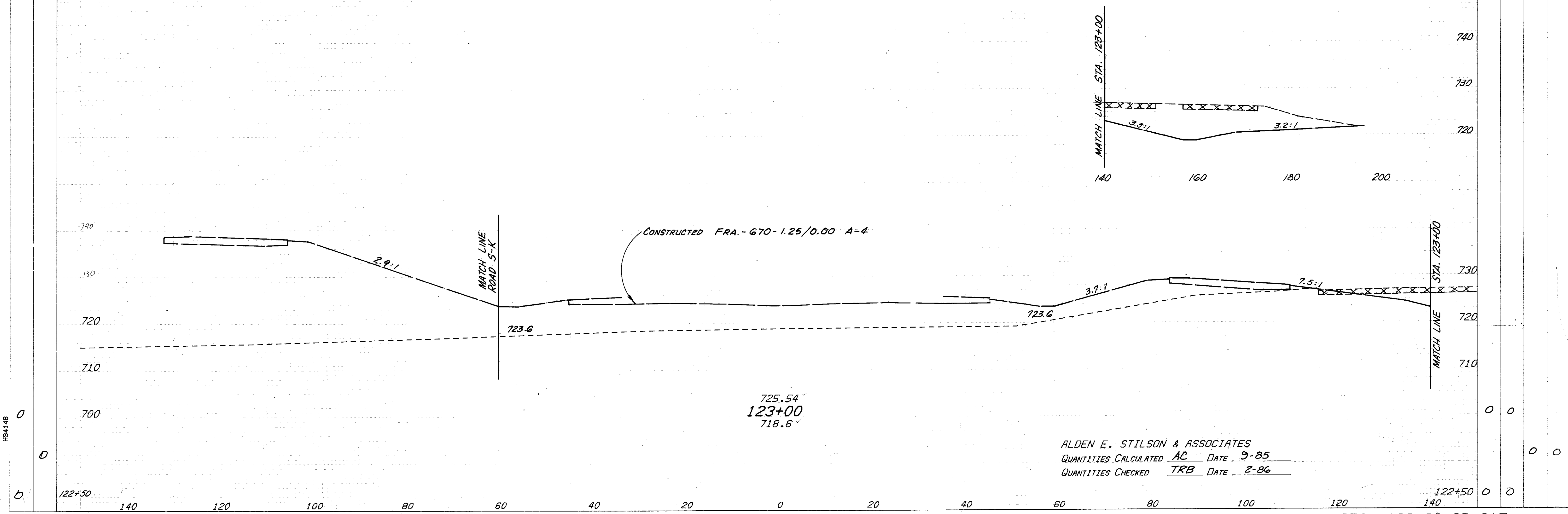
END WIDTH SQ. YDS

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5

END AREA		VOLUME	
CUT	FILL	CUT	FILL

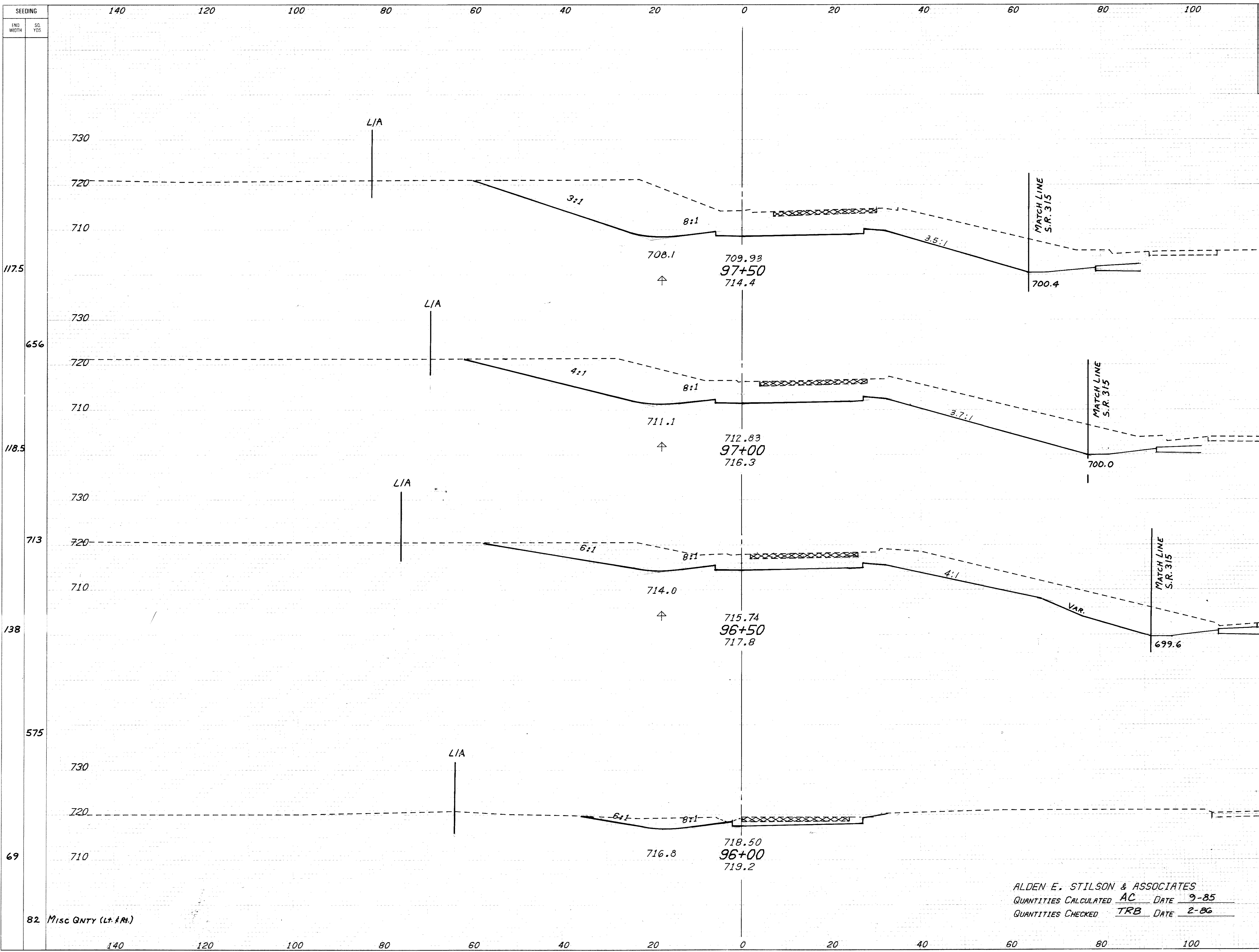


725.54  
123+00  
718.6

ALDEN E. STILSON & ASSOCIATES  
QUANTITIES CALCULATED AC DATE 9-85  
QUANTITIES CHECKED TRB DATE 2-86

STA. 123+00 TO STA. 123+00 SR 315





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

FRANKLIN COUNTY  
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END AREA	VOLUME	
	CUT	FILL
802	0	0
1412	0	0
700	723	0
1217	0	0
700	592	0
Misc. Qty (Rt.)	-196	0
	614	0
710	71	0
Misc. Qty (Lft.)	+74	3

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED TRB DATE 2-86

STA. 96+00 TO STA. 97+50 RAMP W-E

HS41049R

82 Misc Qty (Lft. & Rt.)

Misc Qty (Lft.)

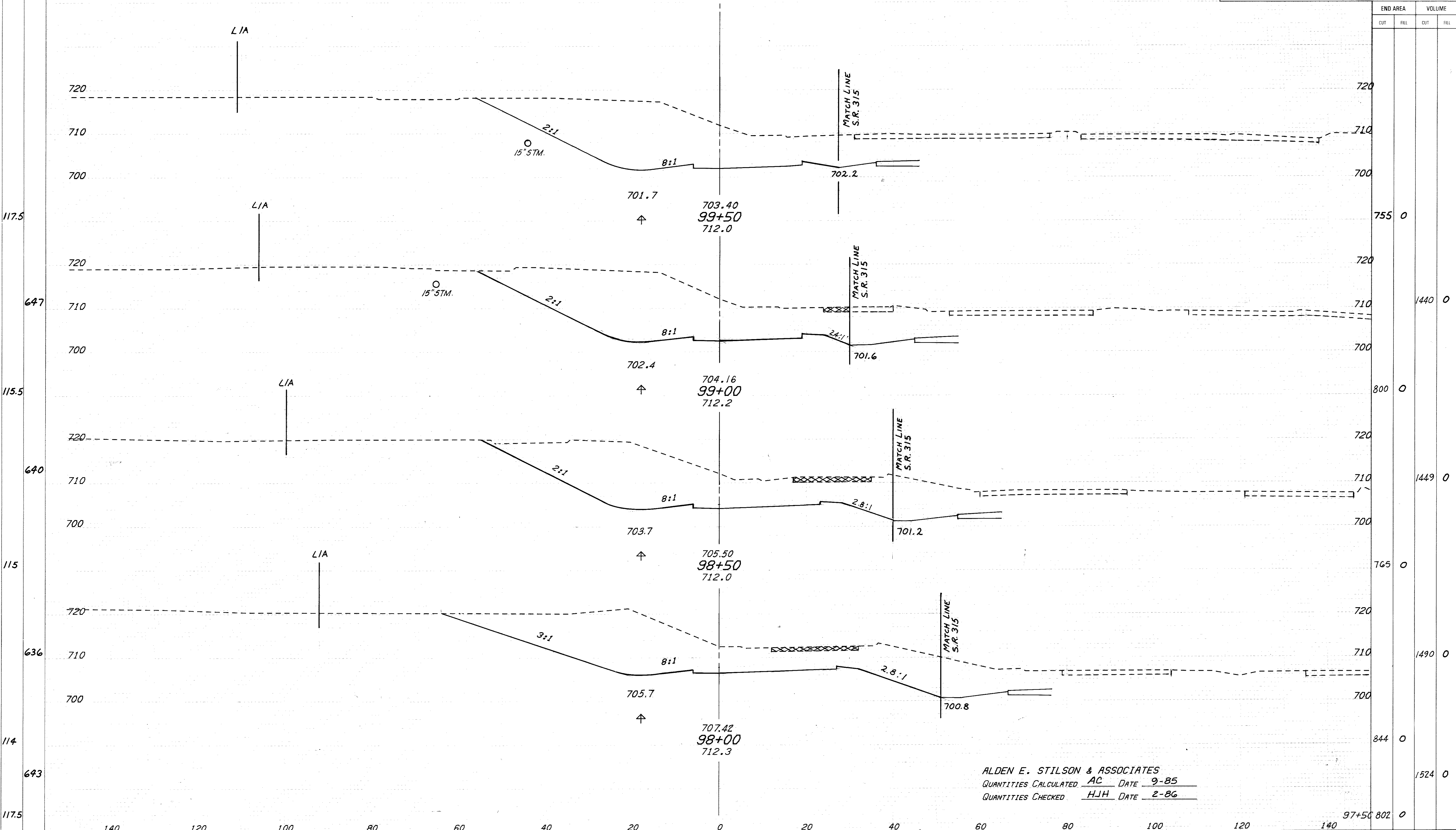
SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

END WIDTH SQ. YDS.

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

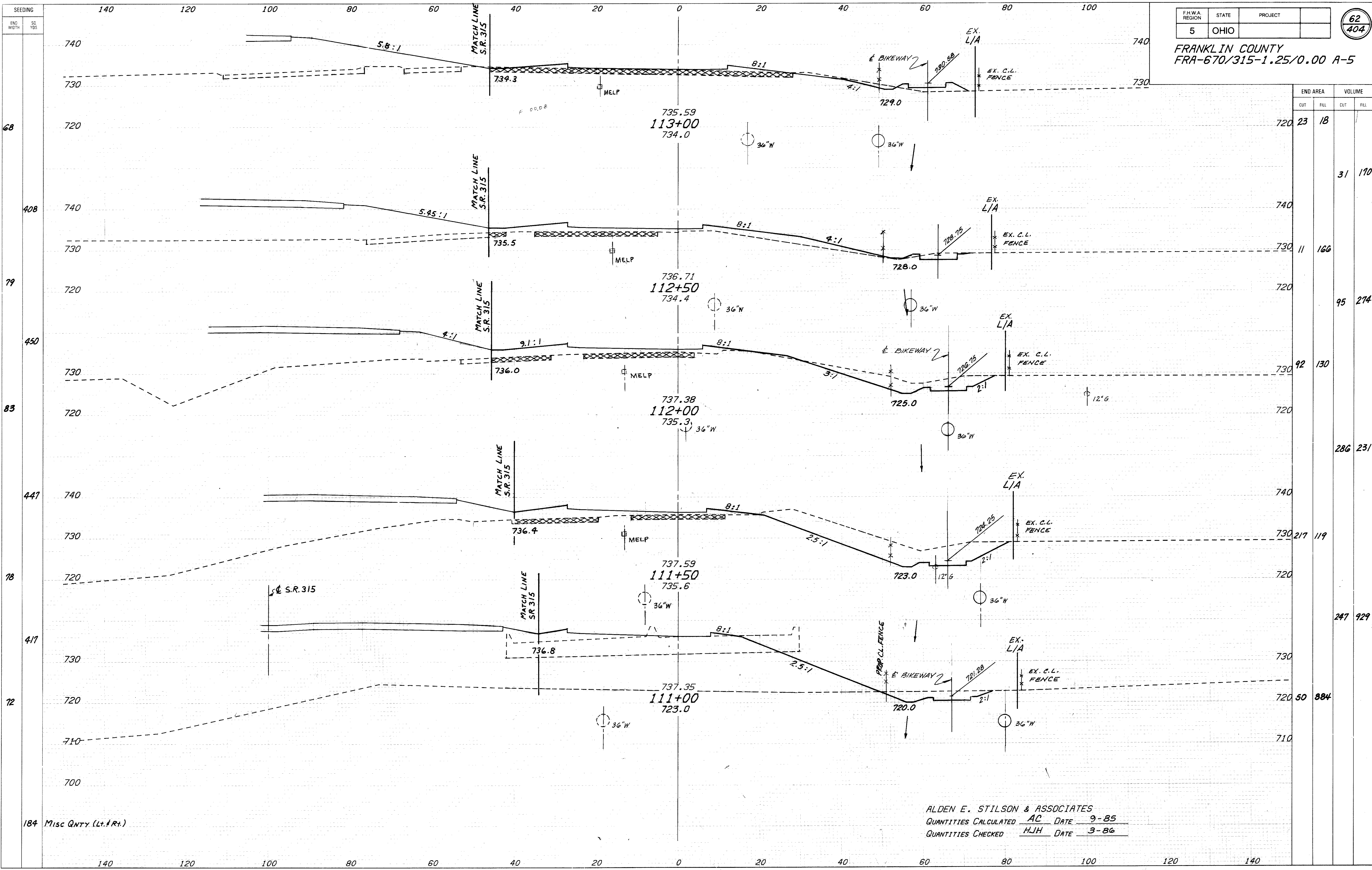
61  
404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED HJH DATE 2-86

STA. 98+00 TO STA. 99+50 RAMP W-E



END AREA	VOLUME	
	CUT	FILL
720	23	18
740		31
730	11	166
720		95
730	92	130
720		286
740		217
730		119
720		247
730		247
720	50	884
710		

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED HJH DATE 3-86

STA. 111+00 TO STA. 113+00 RAMP S-M

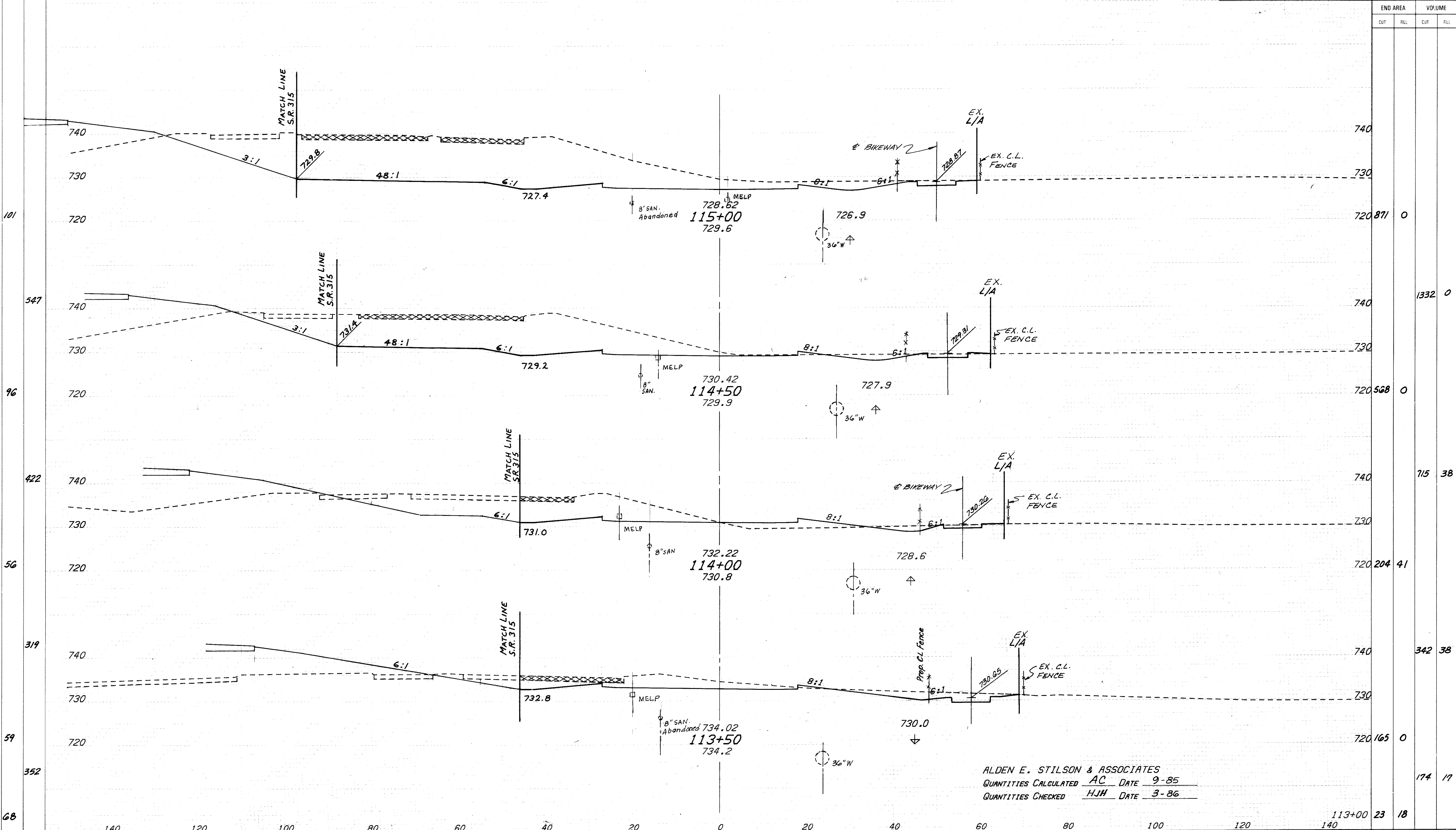


SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



END AREA	VOLUME	
	CUT	FILL
720 871	0	0
740 1332	0	0
720 568	0	0
740 715	38	0
720 204	41	0
740 342	38	0
720 165	0	0
740 174	17	0
113+00 23	18	0

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED HJH DATE 3-86

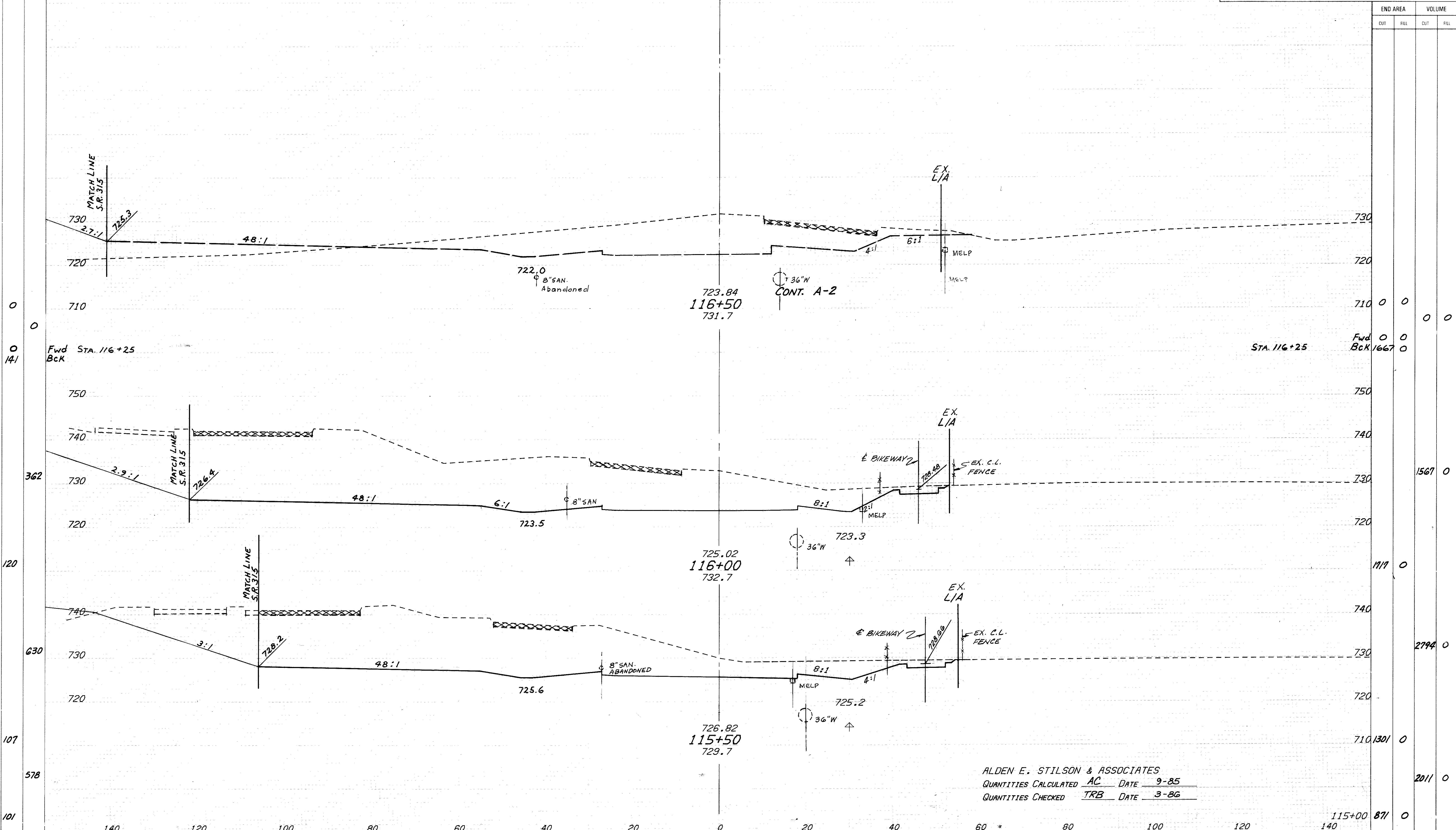
STA. 113+50 TO STA. 115+00 RAMP S-M

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



END AREA	VOLUME	
	CUT	FILL
710	0	0
720	0	0
730	0	0
740	0	0
750	0	0
760	0	0
770	0	0
780	0	0
790	0	0
800	0	0
810	0	0
820	0	0
830	0	0
840	0	0
850	0	0
860	0	0
870	0	0
880	0	0
890	0	0
900	0	0
910	0	0
920	0	0
930	0	0
940	0	0
950	0	0
960	0	0
970	0	0
980	0	0
990	0	0
1000	0	0

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED TRB DATE 3-86

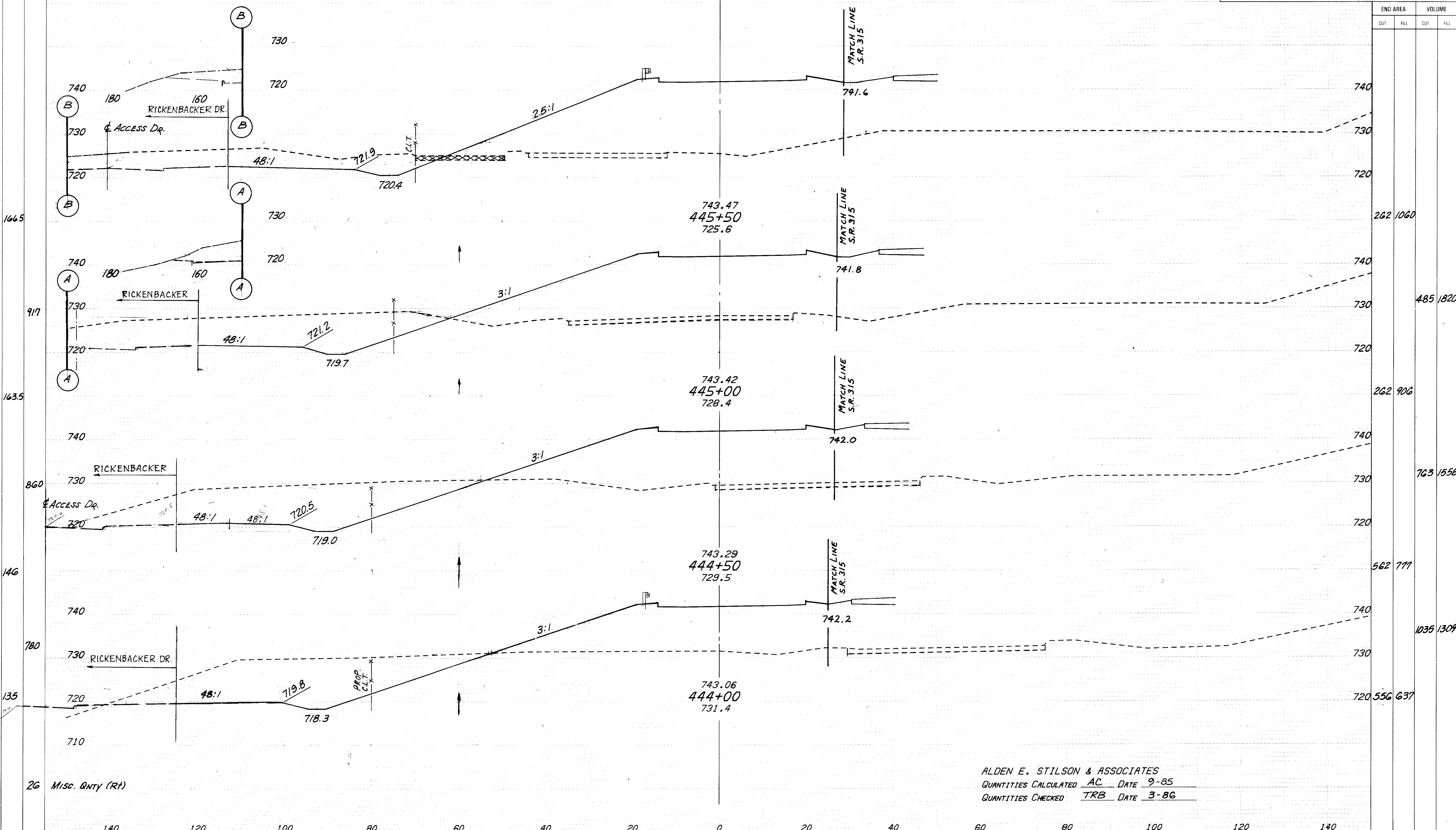
STA. 115+50 TO STA. 116+50 RAMP S-M

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

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

65  
404

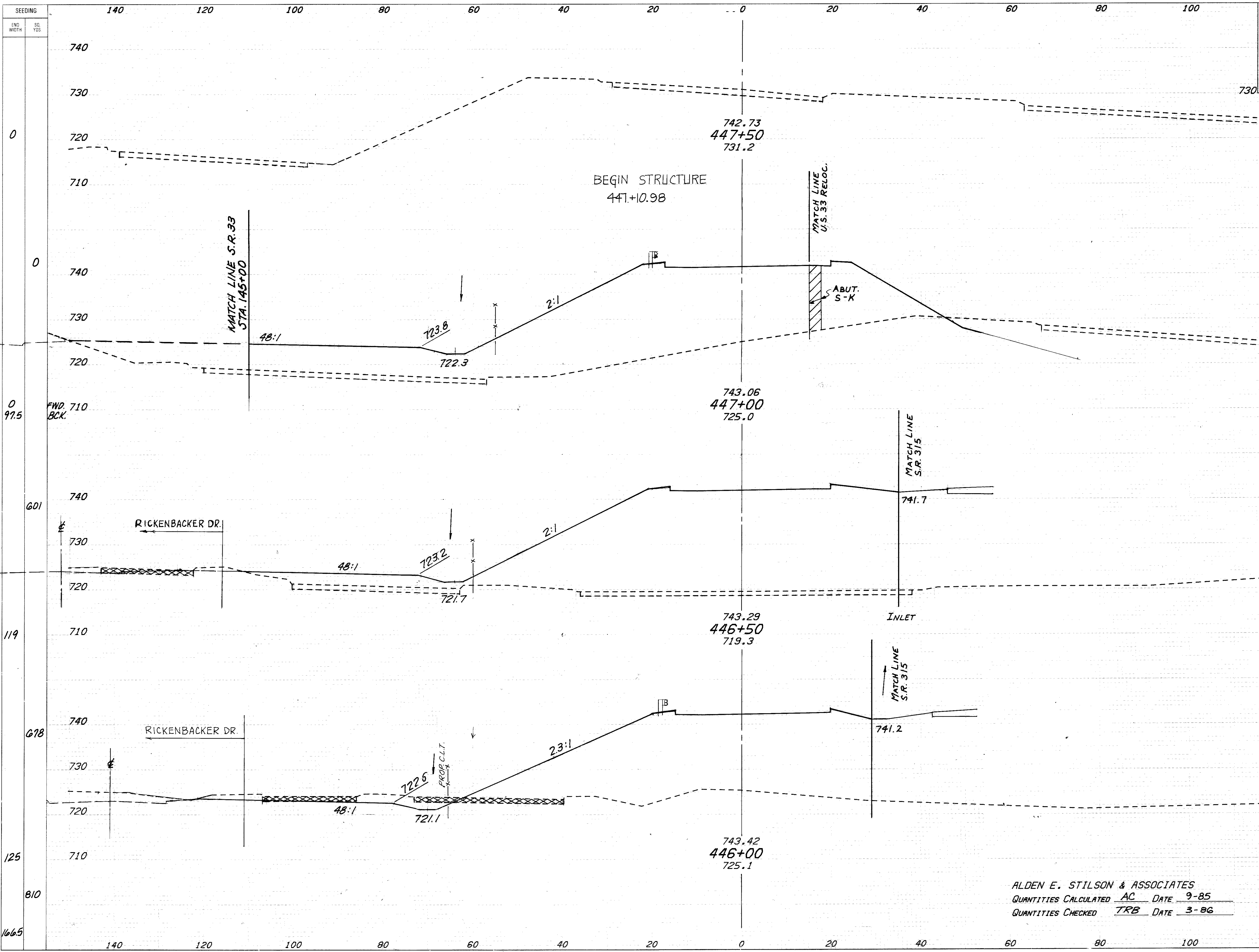
FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED TRB DATE 3-86

STA. 444+00 TO STA. 445+50 ROAD S-K





END AREA	VOLUME	
	CUT	FILL
0	0	0
0	0	1500
0	0	3710
0	0	1751
0	0	2755
83	1224	2115
262	1060	

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED TRB DATE 3-86

STA. 446+00 TO STA. 447+50 ROAD S-K

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

END WIDTH SQ YDS

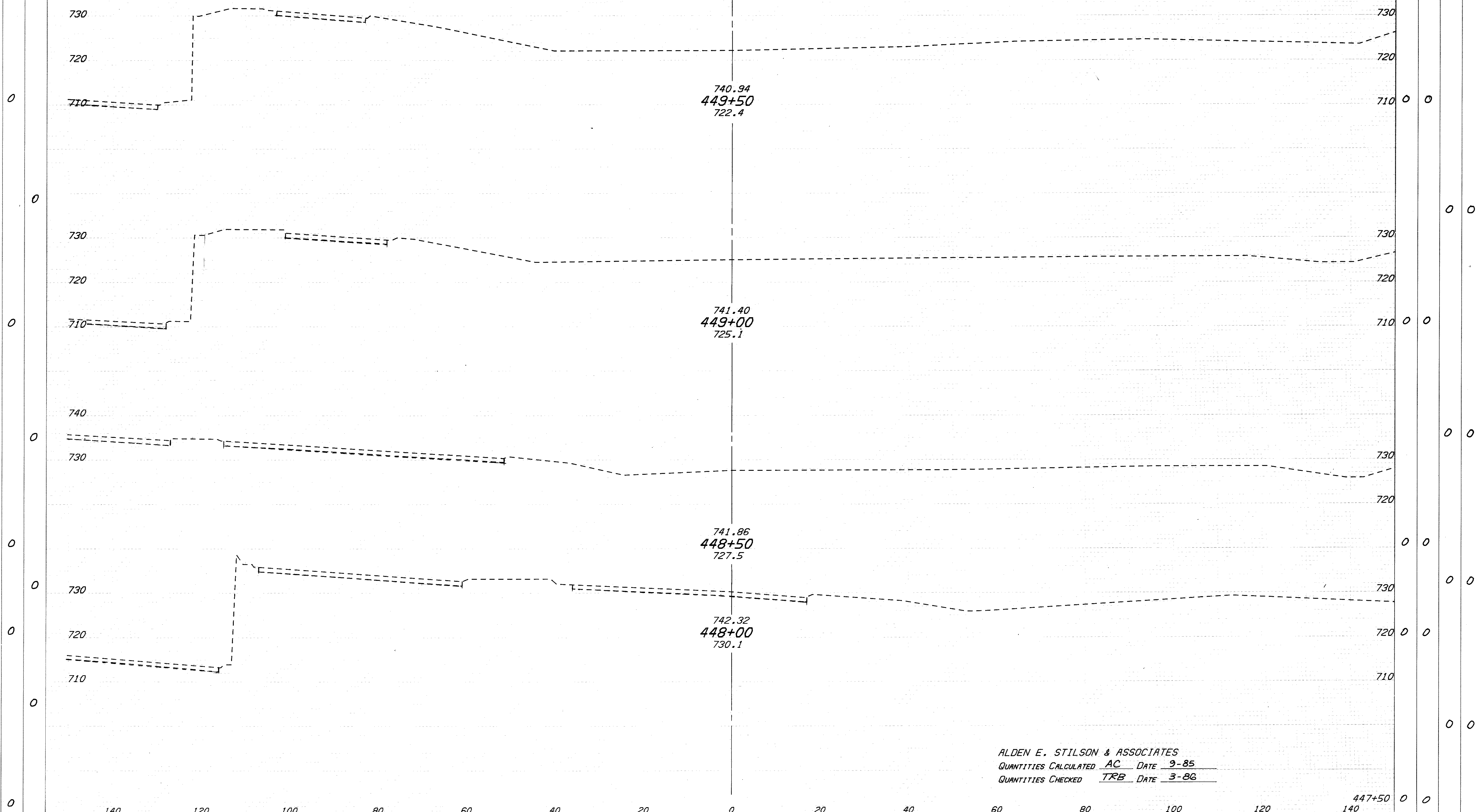
F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		

67  
404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5

END STRUCTURE 449+63.49

END AREA		VOLUME	
CUT	FILL	CUT	FILL



ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED TRB DATE 3-86

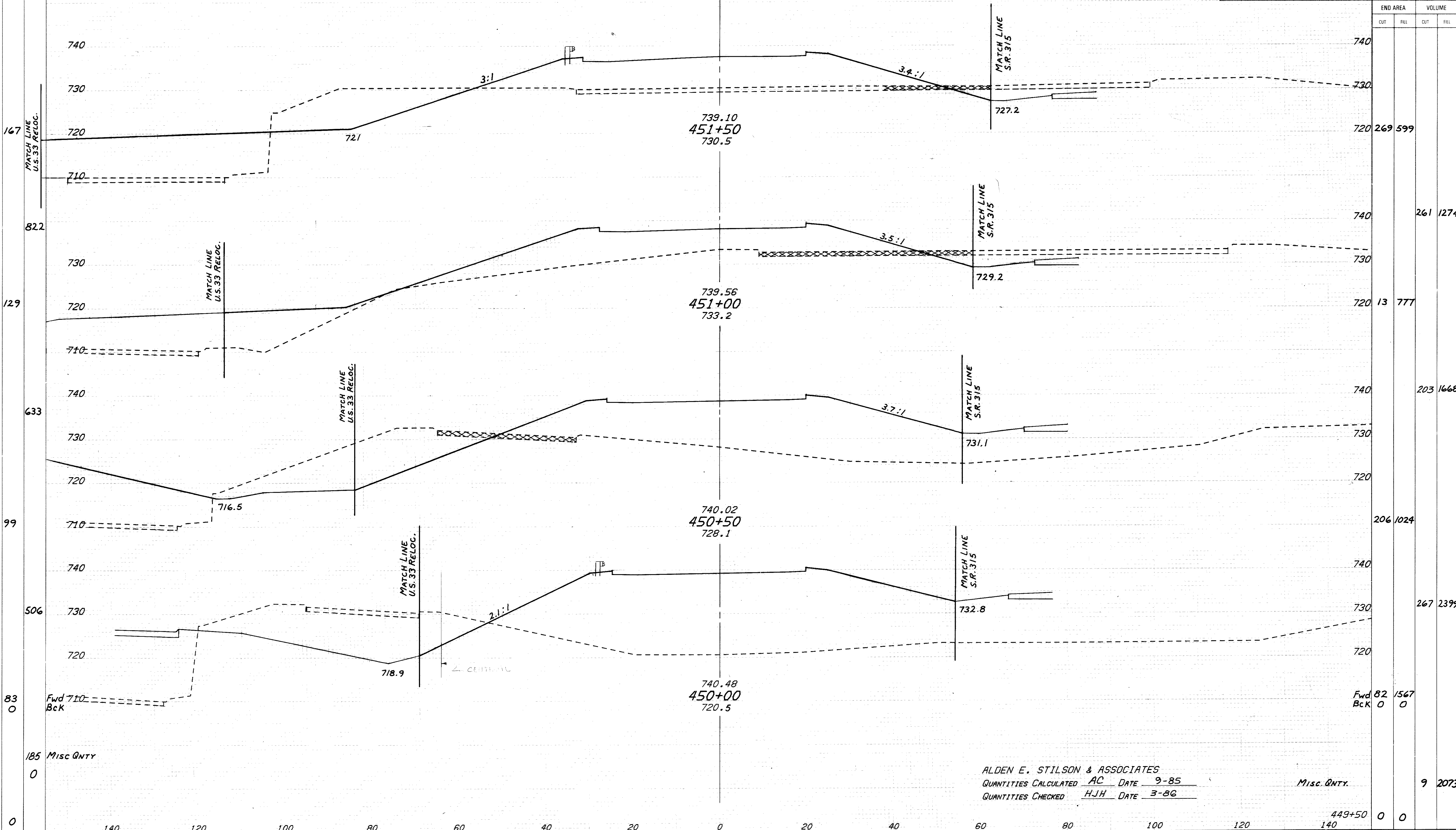
STA. 448+00 TO STA. 449+50 ROAD S-K

184156

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

F.H.W.A. REGION	STATE	PROJECT	68 404
5	OHIO		

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5



ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 9-85  
 QUANTITIES CHECKED HJH DATE 3-86

STA. 450+00 TO STA. 451+50 ROAD S-K



SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

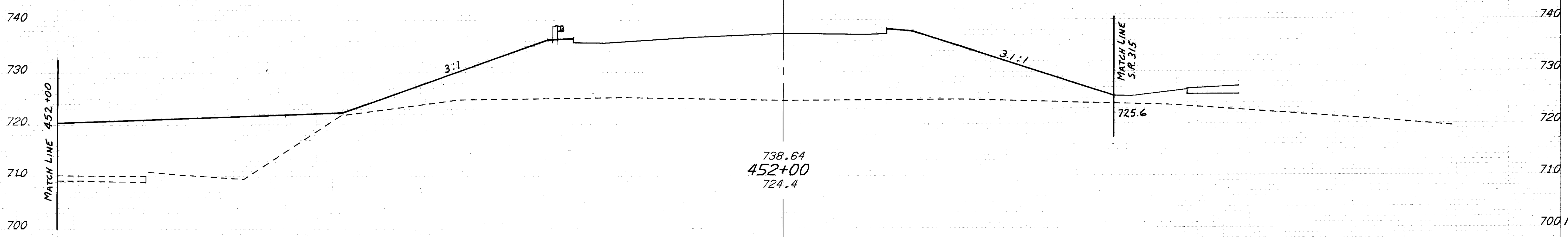
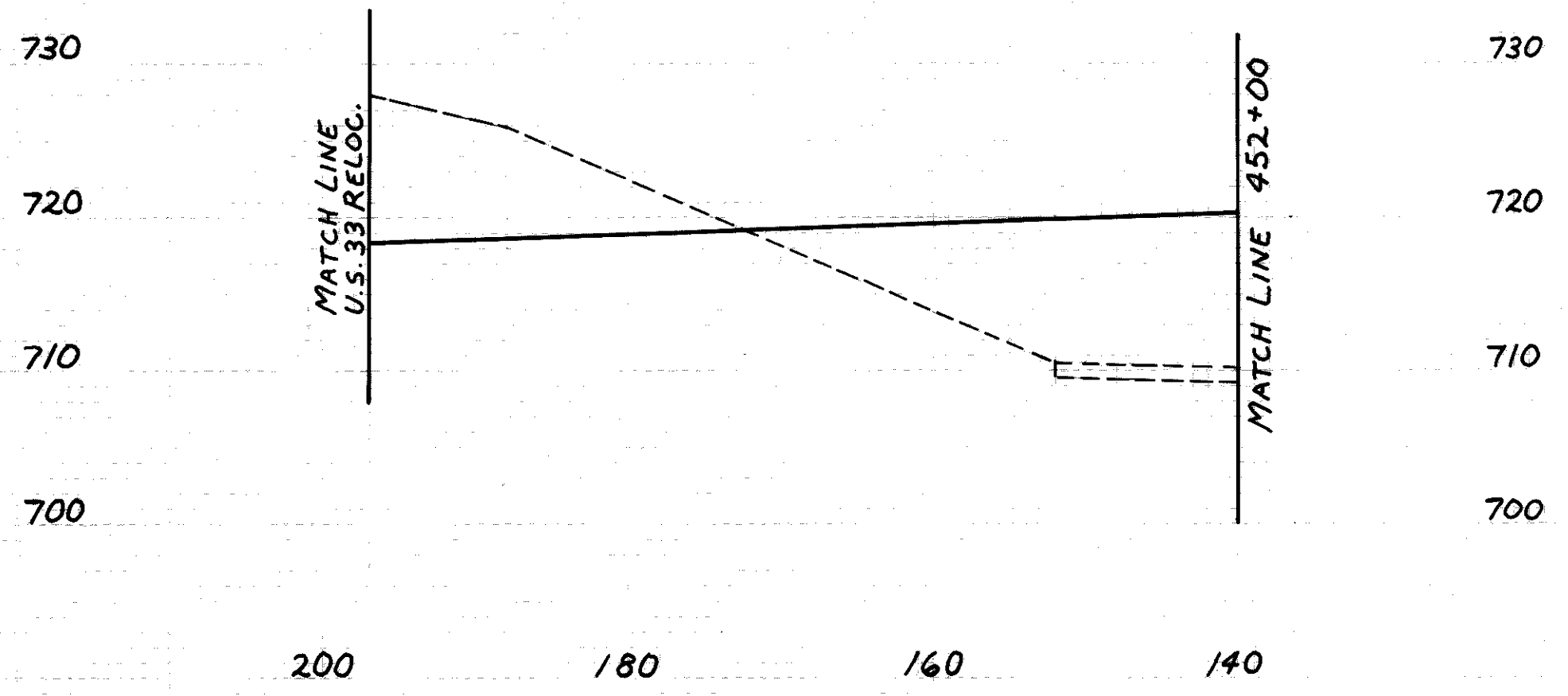
END WIDTH SQ YDS

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

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404

FRANKLIN COUNTY  
FRA-670/315-1.25/0.00 A-5

END AREA VOLUME  
CUT FILL CUT FILL



738.64  
452+00  
724.4

ALDEN E. STILSON & ASSOCIATES  
QUANTITIES CALCULATED AC DATE 9-85  
QUANTITIES CHECKED H-JH DATE 3-86

134	1994	373	2401
451+50	269	599	

STA. 452+00 ROAD S-K

HR41060R  
1033  
167

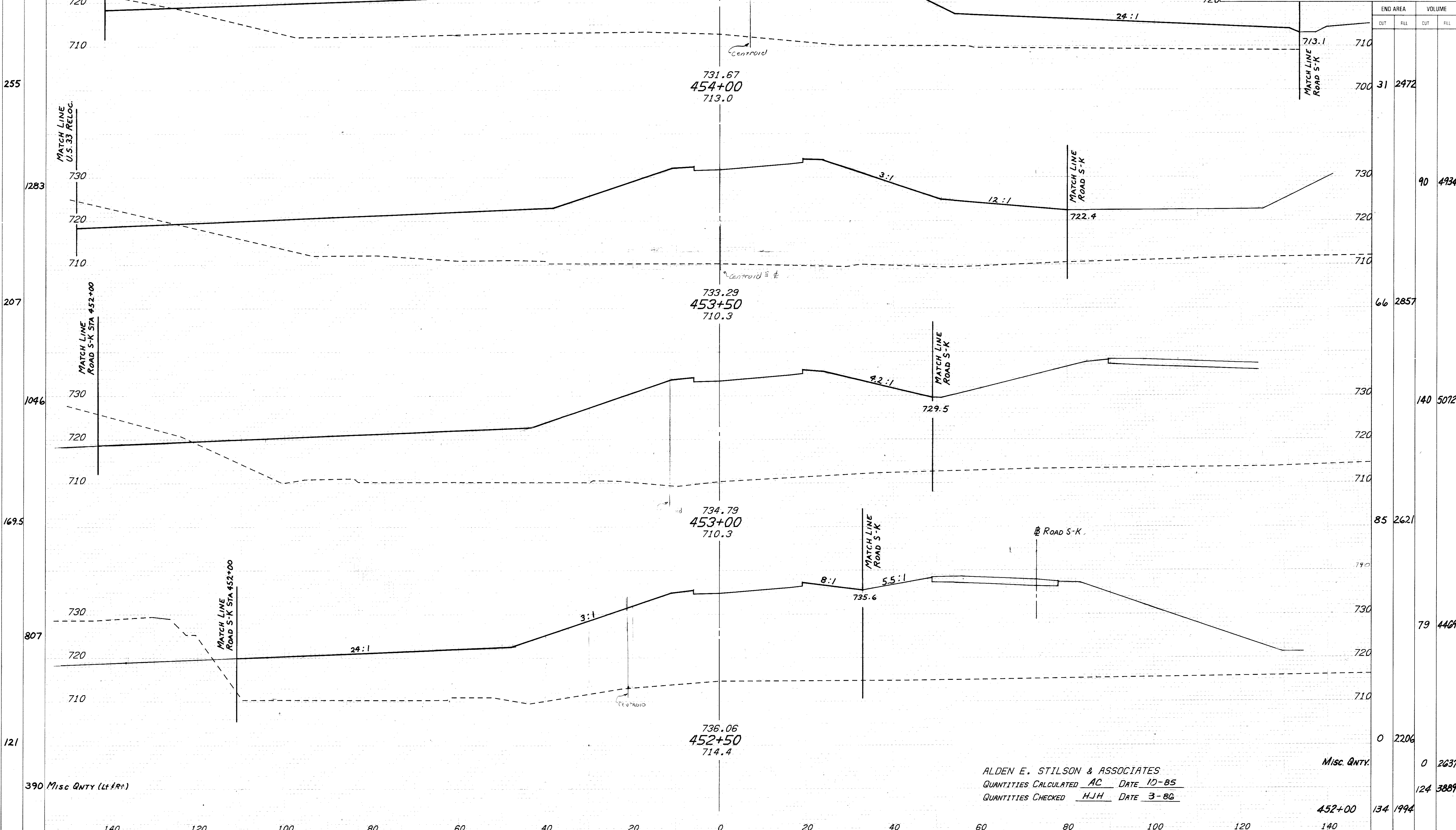
SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

END WIDTH SQ YDS

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

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404

FRANKLIN COUNTY  
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ALDEN E. STILSON & ASSOCIATES  
QUANTITIES CALCULATED AC DATE 10-85  
QUANTITIES CHECKED H-JH DATE 3-86

STA. 452+50 TO STA. 454+00 RAMP S-J

1841054R

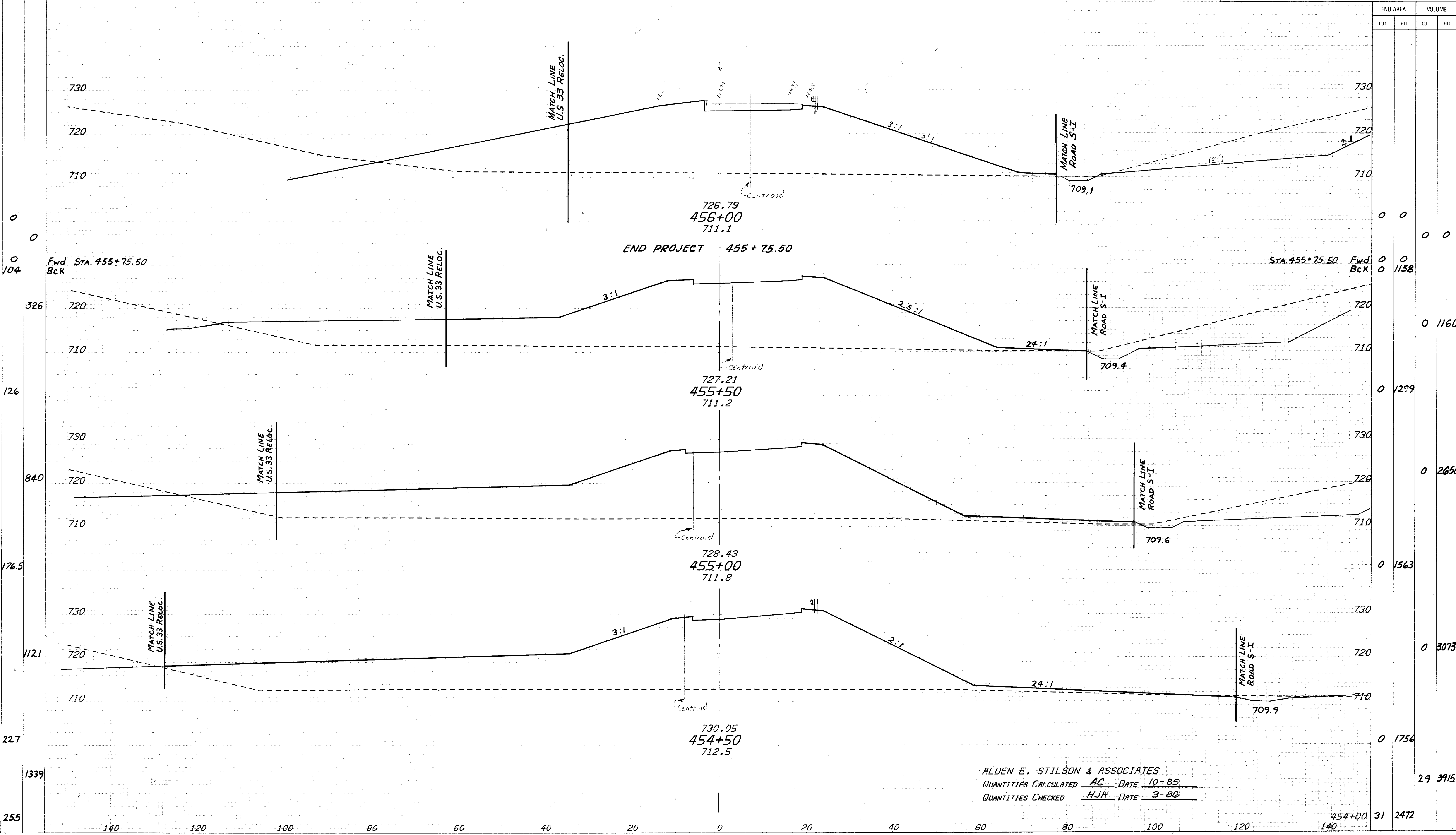
390 Misc QNTY (Ltr)

SEEDING 140 120 100 80 60 40 20 0 20 40 60 80 100

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

171  
404

FRANKLIN COUNTY  
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END AREA		VOLUME	
CUT	FILL	CUT	FILL

0	0	0	0
0	0	0	0
0	1158	0	0
0	1160	0	0
0	1299	0	0
0	2650	0	0
0	1563	0	0
0	3073	0	0
0	1756	0	0
29	3915	31	2472

ALDEN E. STILSON & ASSOCIATES  
 QUANTITIES CALCULATED AC DATE 10-85  
 QUANTITIES CHECKED HJH DATE 3-86

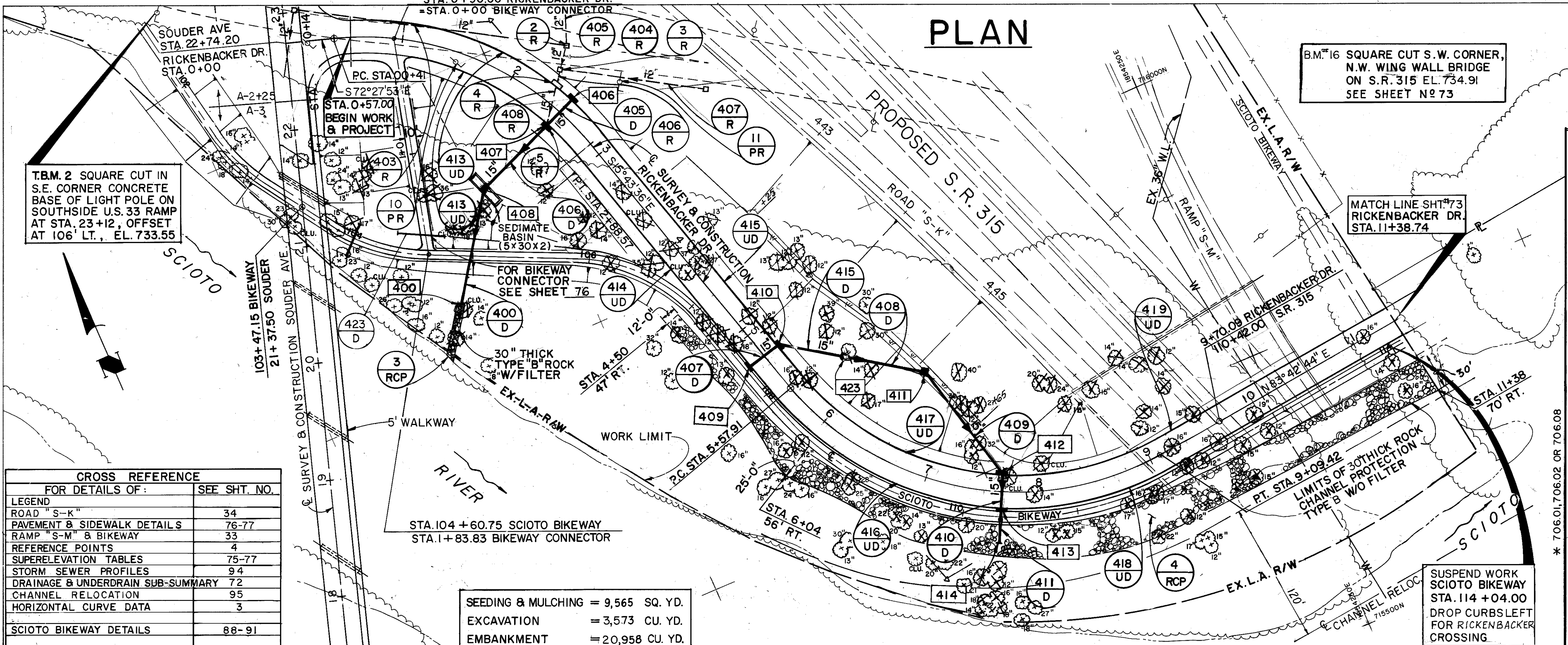
STA. 454+50 TO STA. 456+00 RAMP S-J

1841059A

140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 154+00 31 2472



# PLAN



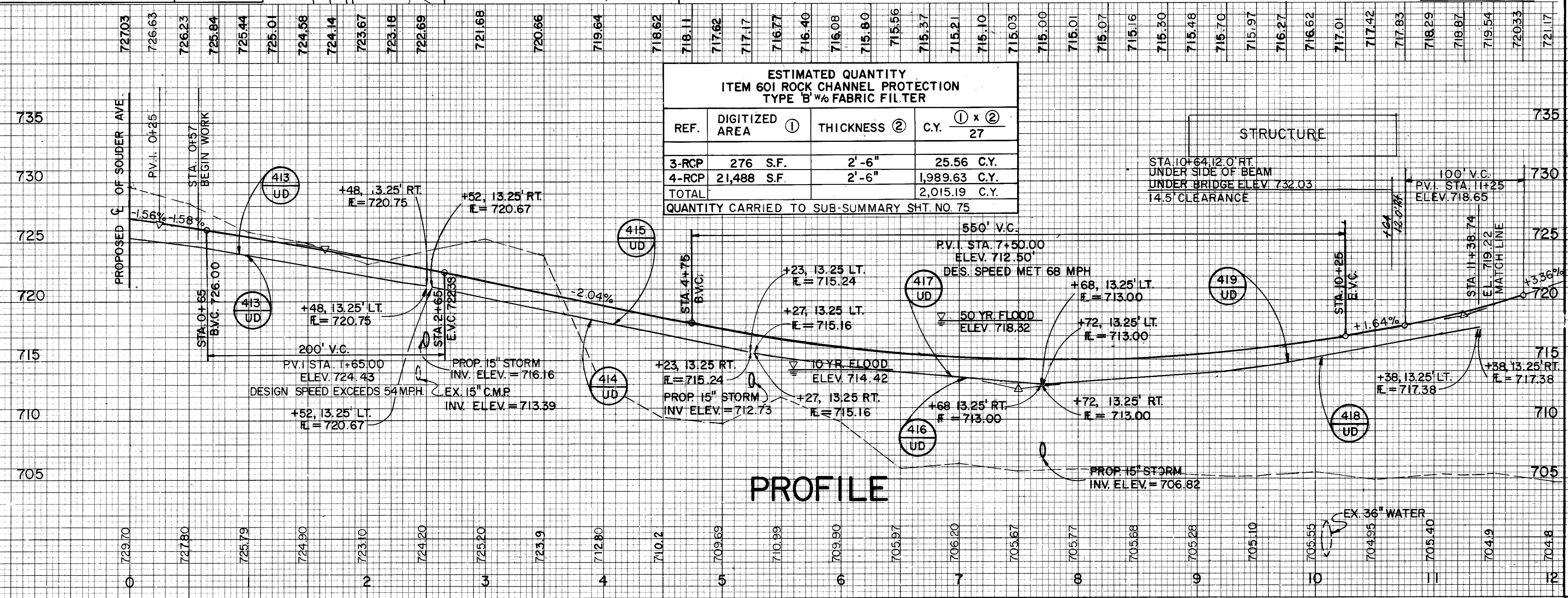
CROSS REFERENCE	
FOR DETAILS OF:	SEE SHT. NO.
LEGEND	
ROAD "S-K"	34
PAVEMENT & SIDEWALK DETAILS	76-77
RAMP "S-M" & BIKEWAY	33
REFERENCE POINTS	4
SUPERELEVATION TABLES	75-77
STORM SEWER PROFILES	94
DRAINAGE & UNDERDRAIN SUB-SUMMARY	72
CHANNEL RELOCATION	95
HORIZONTAL CURVE DATA	3
SCIOTO BIKEWAY DETAILS	88-91

SEEDING & MULCHING = 9,565 SQ. YD.  
 EXCAVATION = 3,573 CU. YD.  
 EMBANKMENT = 20,958 CU. YD.

\* 706.01, 706.02 OR 706.08

ESTIMATED QUANTITY ITEM 601 ROCK CHANNEL PROTECTION TYPE 'B' W/6 FABRIC FILTER			
REF.	DIGITIZED AREA ①	THICKNESS ②	C.Y. ① x ② / 27
3-RCP	276 S.F.	2'-6"	25.56 C.Y.
4-RCP	21,488 S.F.	2'-6"	1,989.63 C.Y.
TOTAL			2,015.19 C.Y.

QUANTITY CARRIED TO SUB-SUMMARY SHT. NO. 75



# PROFILE

\* 706.01, 706.02 OR 706.08

REF. NO.	STATION TO STATION	SIDE	ESTIMATED QUANTITIES		TOTAL TO SUB-SUMMARY SHT. 75
			LINE FT.	EACH	
2-R	2+30	LT			
3-R	2+35	LT			
403R	0+50 TO 2+22	LT	165		
404R	2+00 TO 2+25	LT	56		
405R	2+25 TO 2+30	LT	20		
406R	2+30 TO 2+33	LT	125		
407R	2+30 TO 3+15	LT	36		
408R	2+33 TO 2+50	LT/RT			
5-R	2+50	RT			
408	2+50	RT			
409R	1+50, 8' RT.	RT			
411	2+68, 54' LT.	LT			
411	6+55	LT			
400	3+25	RT			
414	7+70	RT			
413UD	0+57 TO 2+48	L7/RT			
414UD	2+52 TO 5+23	RT			
415UD	2+52 TO 5+23	LT			
416UD	5+27 TO 7+68	RT			
417UD	5+27 TO 7+68	LT			
418UD	7+72 TO 11+38	RT			
419UD	7+72 TO 11+38	LT			
TOTAL					

(RICKENBACKER DR.) PLAN & PROFILE STA. 0+14 TO STA. 11+38.74





# CALCULATIONS

CALC. BY	FRANKLIN COUNTY	OHIO	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <span style="font-size: 8px;">74</span>  <span style="font-size: 10px;">404</span> </div>
CHKD. BY	FRA-315-0.93	FHWA REGION 5	
DATE			

SHEETS No. 76 & 77 PAVEMENT CALCULATIONS

ITEM 304

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2) \times 6) / (12 \times 27 \times 360')$	102.9
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24 \times 6) / (12 \times 27)$	119.7
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2) \times 6) / (12 \times 27 \times 360')$	156.2
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24 \times 6) / (12 \times 27)$	101.9
TOTAL 6" AGGREGATE BASE	480.7 C.Y.

ITEM 305

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2)) / (9 \times 360')$	617.5
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24) / (9)$	718.2
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2)) / (9 \times 360')$	937.4
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24) / (9)$	611.5
TOTAL 8" CONCRETE BASE, AS PER PLAN	2884.6

ITEM 203 PROOF ROLLING

RICKENBACKER DRIVE STATION 0+57 TO STATION 11+38.74 $1081.74 / 5280 \times 2.5$	0.512
BIKEWAY CONNECTOR STATION 0+14 TO STATION 1+79.83 $165.83 / 5280 \times 2.5$	0.078
SCIOTO BIKEWAY STATION 101+50 TO STATION 114+04 $1254 / 5280 \times 2.5$	0.594
TOTAL PROOF ROLLING	1.184 HOUR

ITEM 203 SUBGRADE COMPACTION

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2)) / (9 \times 360')$	617.5
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24) / (9)$	718.2
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2)) / (9 \times 360')$	937.4
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24) / (9)$	611.5
BIKEWAY CONNECTOR STATION 0+14 TO STATION 1+79.93 $(165.83 \times 10) / (9)$	184.3
SCIOTO BIKEWAY STATION 101+50 TO STATION 114+04 $(1254 \times 8) / (9)$	1114.7
TOTAL SUBGRADE COMPACTION	4183.6 S.Y.

ITEM 404

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2) \times 1.25) / (12 \times 27 \times 360')$	21.4
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24 \times 1.25) / (12 \times 27)$	24.9
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2) \times 1.25) / (12 \times 27 \times 360')$	32.6
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24 \times 1.25) / (12 \times 27)$	21.2
TOTAL 1 1/4" ASPHALT CONCRETE, AC-20	100.1 C.Y.

ITEM 402

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2) \times 1.75) / (12 \times 27 \times 360')$	30.0
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24 \times 1.75) / (12 \times 27)$	34.9
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2) \times 1.75) / (12 \times 27 \times 360')$	45.6
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24 \times 1.75) / (12 \times 27)$	29.7
TOTAL 1 3/4" ASPHALT CONCRETE, AC-20	140.2 C.Y.

ITEM 407

STATION 0+57 TO STATION 2+88.57 $(53'04'19'' \times \pi \times (262^2 - 238^2) \times .075) / (9 \times 360')$	46.31
STATION 2+88.57 TO STATION 5+57.91 $(269.34 \times 24 \times .075) / (9)$	53.87
STATION 5+57.91 TO STATION 9+09.42 $(80'33'40'' \times \pi \times (262^2 - 238^2) \times .075) / (9 \times 360')$	70.30
STATION 9+09.42 TO STATION 11+38.74 $(229.32 \times 24 \times .075) / (9)$	45.86
TOTAL TACK COAT	216.34 GAL.

ITEM 659 COMMERCIAL FERTILIZER

SHEET NO.'S 72 & 89 TOTAL SEEDING AND MULCHING	= 11388 S.Y.
$11388 \text{ S.Y.} \times \frac{20 \text{ LB}}{1000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2000 \text{ LB.}}$	= 1.02 TONS

ITEM 659 AGRICULTURAL LIMING, AS PER PLAN

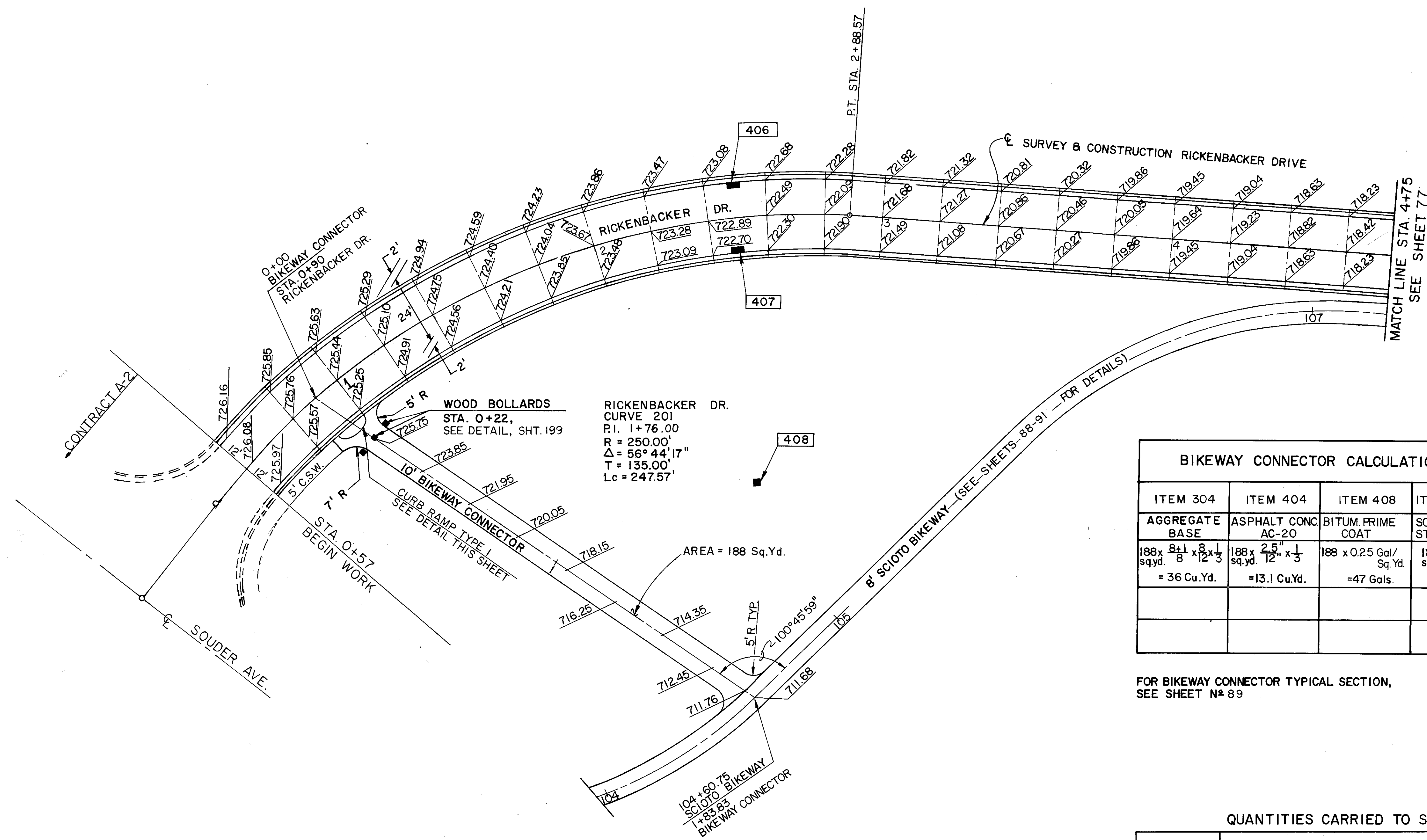
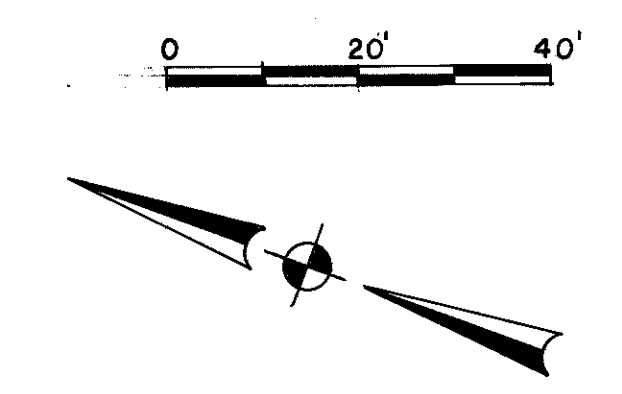
SHEET NO.'S 72 & 89 TOTAL SEEDING AND MULCHING	= 11388 S.Y.
$11388 \text{ S.Y.} \times \frac{100 \text{ LB}}{1000 \text{ S.F.}} \times \frac{9 \text{ S.F.}}{\text{S.Y.}} \times \frac{1 \text{ TON}}{2000 \text{ LB.}}$	= 5.12 TONS

QUANTITIES TAKEN TO SHEET No. 75

[Title] - RICKENBACKER DR.—CALCULATIONS - APR 24, 1997 - 10:41:51 - SCALE = 1:50

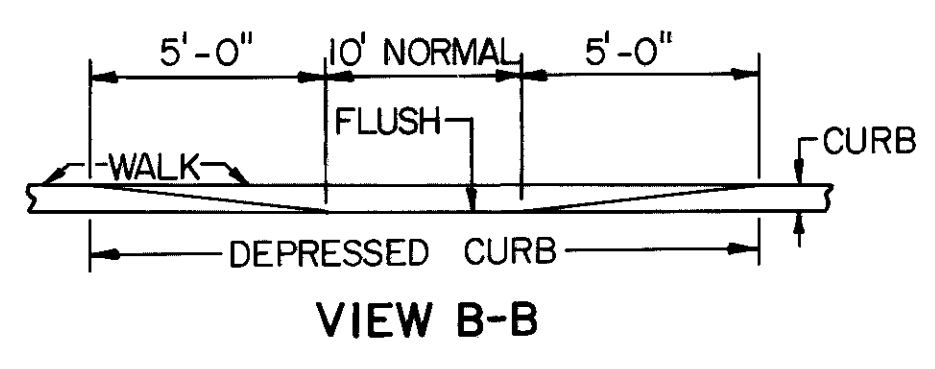
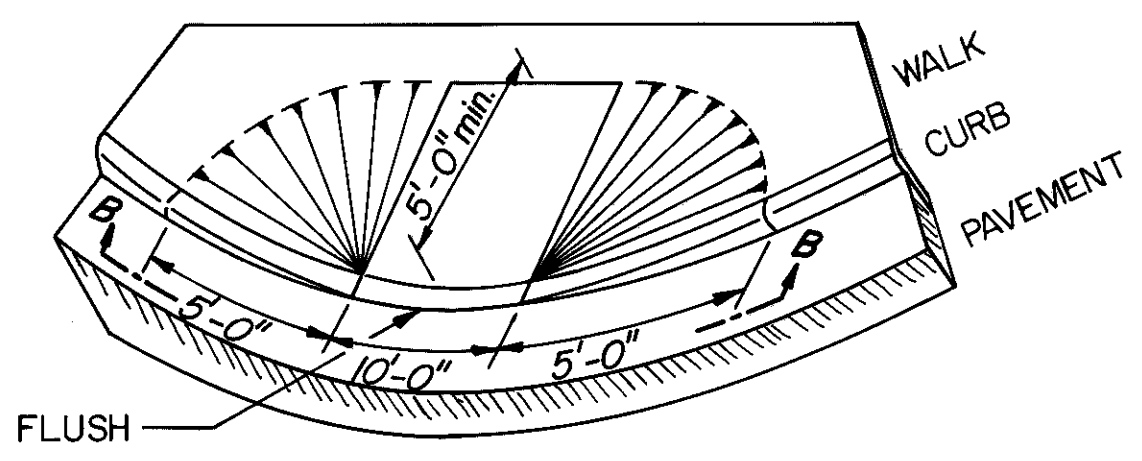






BIKEWAY CONNECTOR CALCULATION			
ITEM 304	ITEM 404	ITEM 408	ITEM SPECIAL
AGGREGATE BASE	ASPHALT CONC. AC-20	BITUM. PRIME COAT	SOIL STERILANT
$188 \times \frac{8+1}{8} \times \frac{8+1}{12} \times \frac{1}{3}$ = 36 Cu. Yd.	$188 \times \frac{2.5}{12} \times \frac{1}{3}$ = 13.1 Cu. Yd.	$188 \times 0.25 \text{ Gal/Sq. Yd.}$ = 47 Gals.	$188 \times \frac{8+1}{8}$ = 212 Sq. Yd.

FOR BIKEWAY CONNECTOR TYPICAL SECTION, SEE SHEET N<sup>o</sup> 89



**O.D.O.T. CURB RAMP TYPE-1 (BP-7.1)**  
 NOTES & SECTIONS SHALL APPLY EXCEPT AS NOTED IN DETAIL ABOVE (NOT TO SCALE)

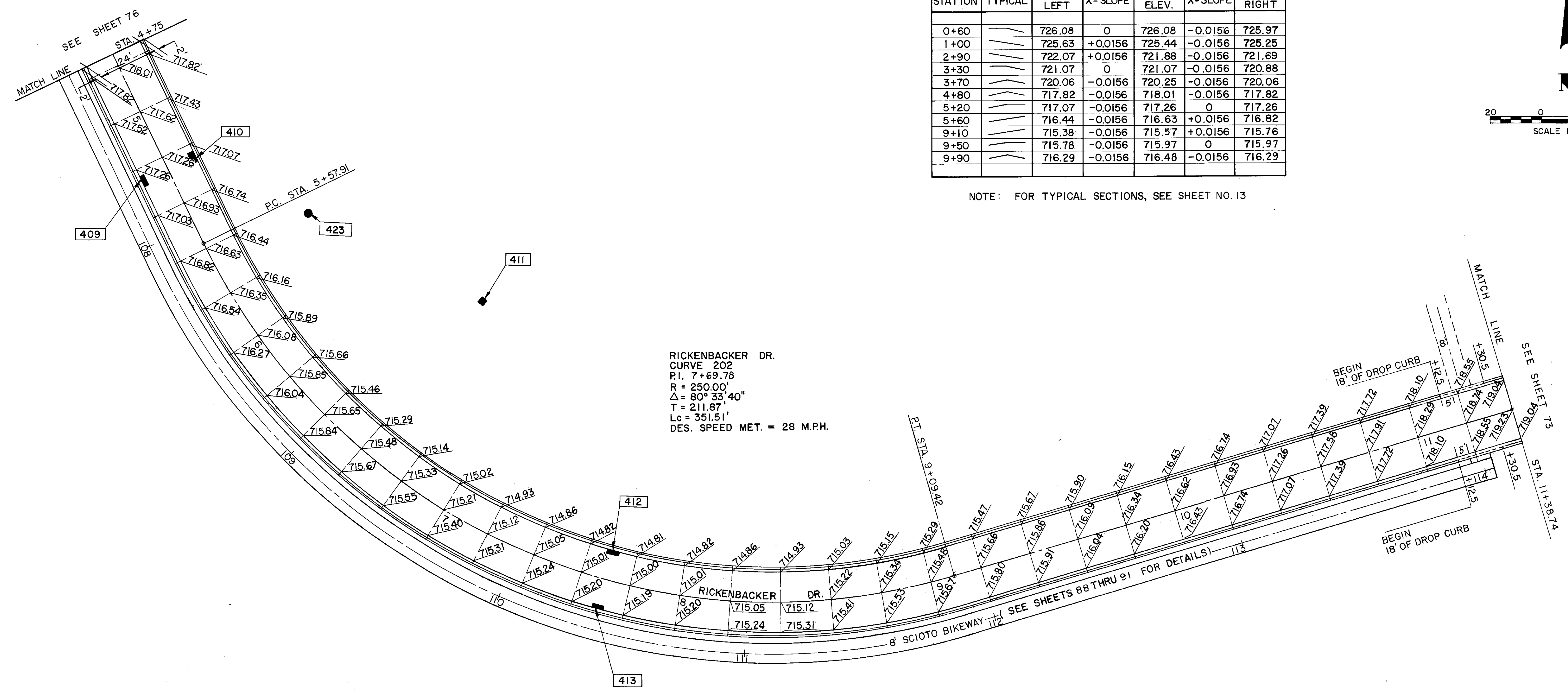
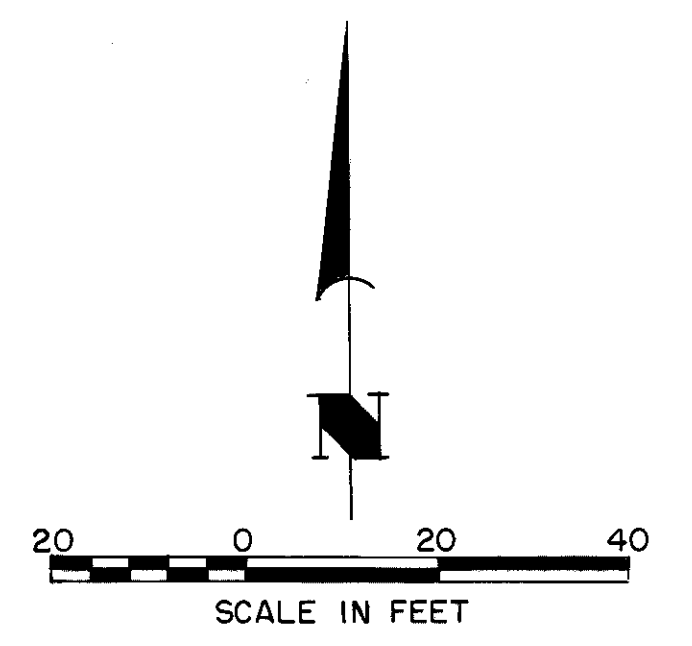
QUANTITIES CARRIED TO SUB-SUMMARY SHEET 75

ITEM	DESCRIPTION	QUANTITIES	UNIT
SPECIAL	SOIL STERILANT	212	SQ. YD.
304	AGGREGATE BASE	36	CU. YD.
413	SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	560	LIN. FT.
608	4" CONC. WALK	133	SQ. FT.
609	COMBINATION CURB & GUTTER, TYPE 2 A.R.P.	836	LIN. FT.
SPECIAL	MISC.: BIKEWAY BOLLARDS, AS PER PLAN	3	EACH
404	ASPHALT CONCRETE, AC-20	13	CU. YD.
408	BITUMINOUS PRIME COAT	47	GALS.
608	CURB RAMP TYPE I, AS PER PLAN, SEE DETAIL THIS SHEET	1	EACH

RICKENBACKER DRIVE PAVEMENT DETAILS STA. 0+57 TO 4+75

STATION	TYPICAL	ELEV LEFT	X-SLOPE	C ELEV.	X-SLOPE	ELEV RIGHT
0+60		726.08	0	726.08	-0.0156	725.97
1+00		725.63	+0.0156	725.44	-0.0156	725.25
2+90		722.07	+0.0156	721.88	-0.0156	721.69
3+30		721.07	0	721.07	-0.0156	720.88
3+70		720.06	-0.0156	720.25	-0.0156	720.06
4+80		717.82	-0.0156	718.01	-0.0156	717.82
5+20		717.07	-0.0156	717.26	0	717.26
5+60		716.44	-0.0156	716.63	+0.0156	716.82
9+10		715.38	-0.0156	715.57	+0.0156	715.76
9+50		715.78	-0.0156	715.97	0	715.97
9+90		716.29	-0.0156	716.48	-0.0156	716.29

NOTE: FOR TYPICAL SECTIONS, SEE SHEET NO. 13



QUANTITIES CARRIED TO SUB-SUMMARY SHEET NO. 75

ITEM	DESCRIPTION		UNIT
609	COMBINATION CURB & GUTTER, TYPE 2 APP.	1328	LIN. FT.
413	SAWING & SEALING ASPHALT CONCRETE PAVEMENT JOINTS	924	LIN. FT.

RICKENBACKER DRIVE PAVEMENT DETAILS STA. 4+75 TO STA. 11+38.74



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

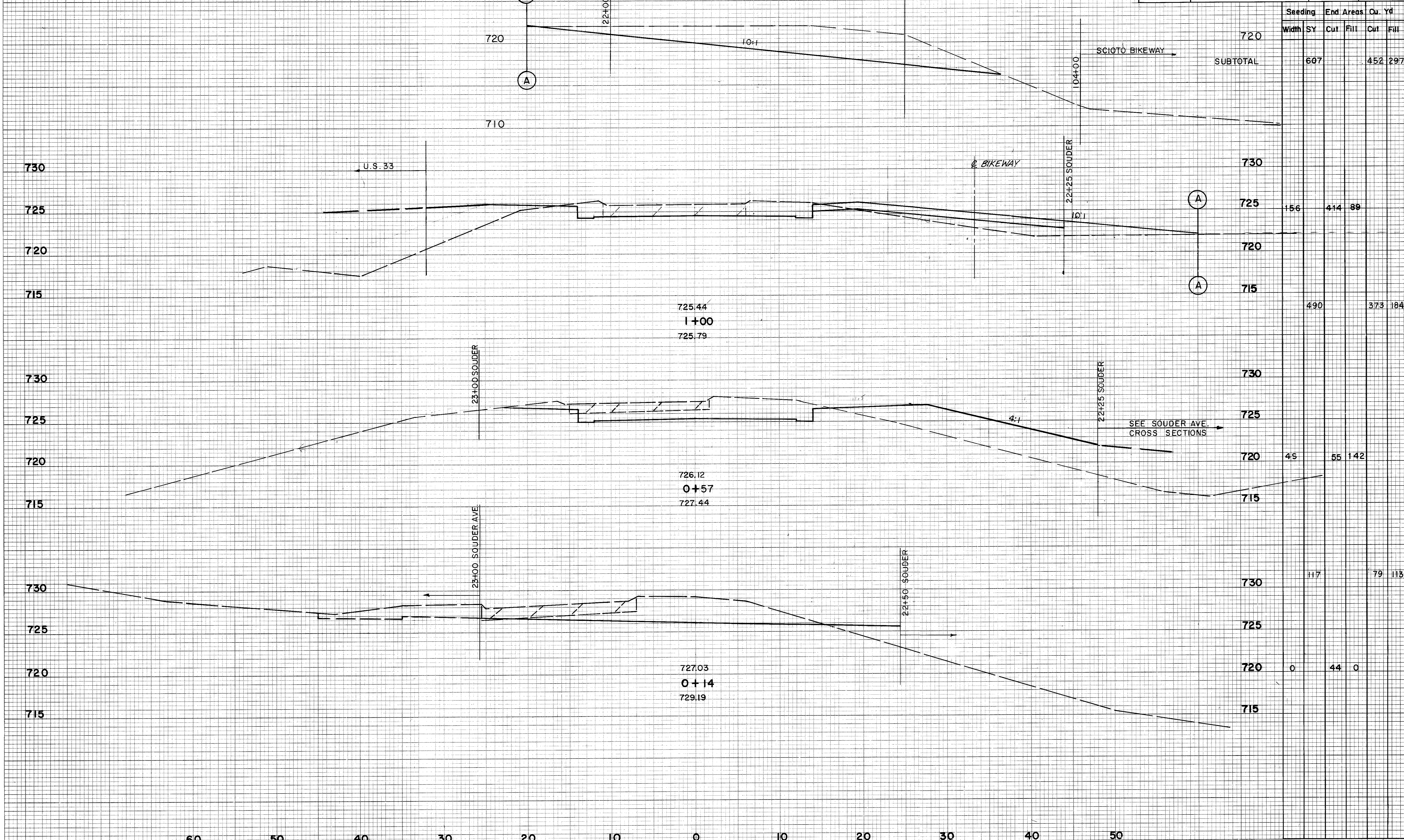
CALC. M.G.  
BY DATE 7/26/86  
CHKD. P.C.  
BY DATE 7/26/86

FRA - 670 - 1.25, A-5

OHIO  
FHWA REGION 5  
78  
404

FINAL SURVEY  
SURVEYED  
PLOTTED  
NOTE BOOK NO.  
AREAS CHECKED

ORIGINAL SURVEY  
SURVEYED  
PLOTTED  
NOTE BOOK NO.  
AREAS CHECKED



Elevation	Seeding		End Areas		Cu. Yd.	
	Width	SY	Cut	Fill	Cut	Fill
720						
720						
725	156		414	89		
720						
715						
715			490		373	184
730						
725						
720	49		55	142		
715						
730			117		79	113
725						
720	0		44	0		
715						
<b>SUBTOTAL</b>			<b>607</b>		<b>452</b>	<b>297</b>



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

CALC. M.Q.  
BY DATE 9/28/86  
CHKD. P.C.  
BY DATE 7/28/86

FRA.-670-1.25,A-5

OHIO  
FHWA REGION 5  
79  
404

SEE SCIOTO BIKEWAY CONTRACT A-5

Width	SY	End Areas		Cu. Yds.	
		Cut	Fill	Cut	Fill
	2,757			2,426	449
SUBTOTAL					

FINAL SURVEY  
SURVEYED, PLOTTED, CHECKED, AREA CHECKED

ORIGINAL SURVEY  
SURVEYED, PLOTTED, CHECKED, AREA CHECKED

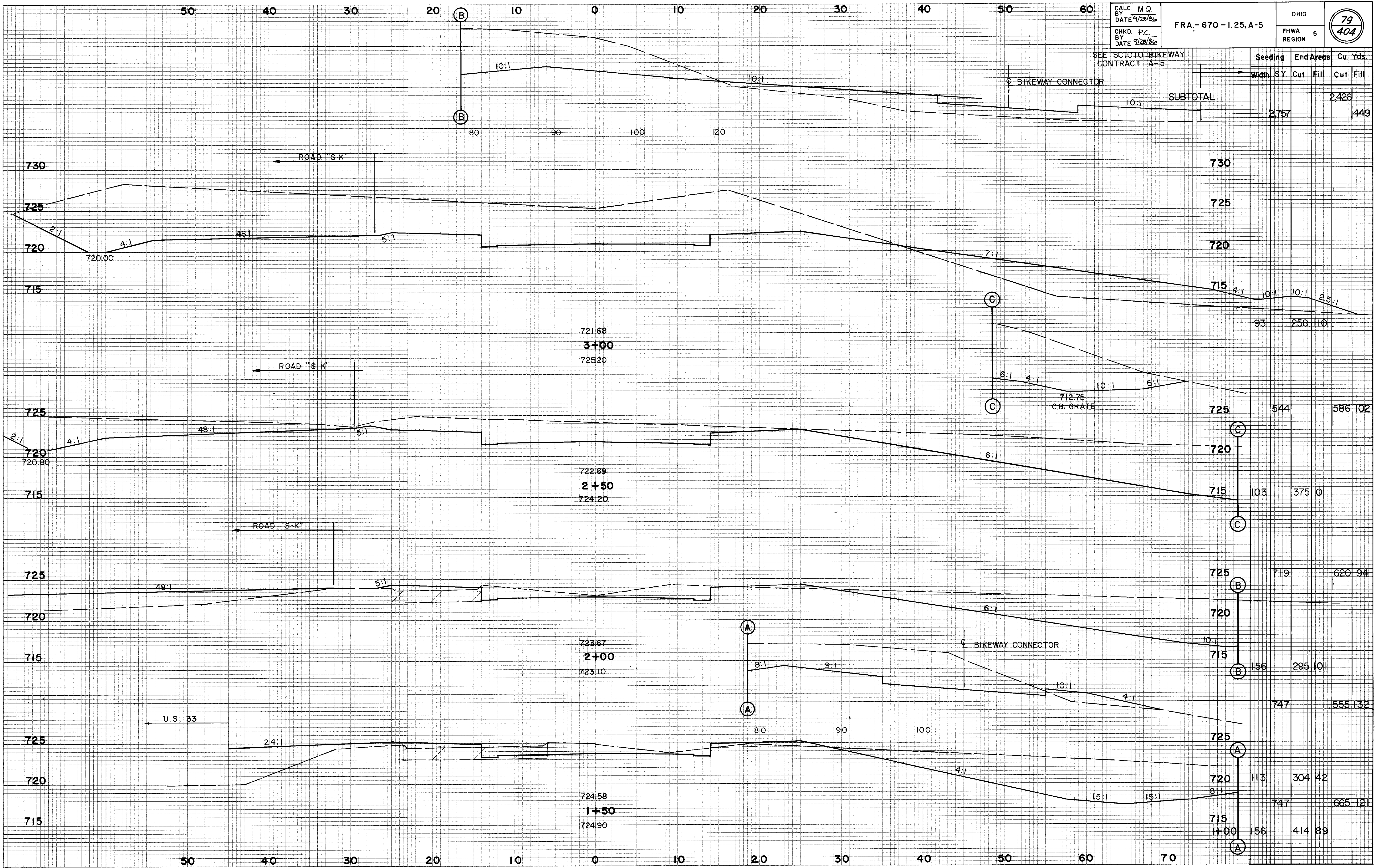


PLATE 3-FULL CROSS SECTION-FULL LINE  
PRINTED IN U.S.A.

CROSS SECTIONS RICKENBACKER DRIVE STA. 1+50 to STA. 3+00



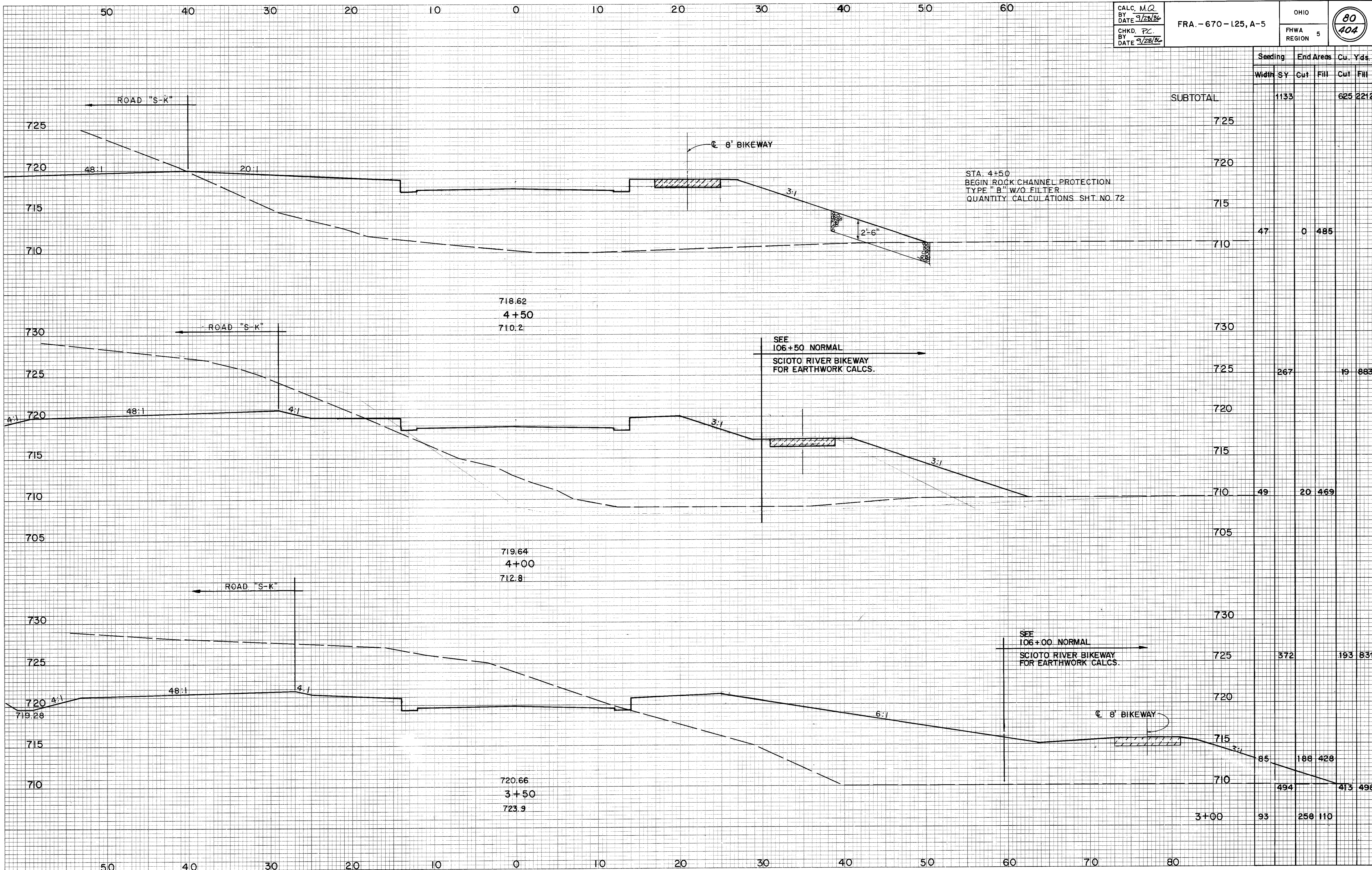
CALC. M.Q.  
BY DATE 3/28/86  
CHKD. P.C.  
BY DATE 3/28/86

FRA.-670-125, A-5

OHIO  
FHWA REGION 5  
80  
404

FINAL SURVEY SURVEYED PLOTTED NOTE BOOK NO. AREAS CHECKED

ORIGINAL SURVEY SURVEYED PLOTTED NOTE BOOK NO. AREAS CHECKED



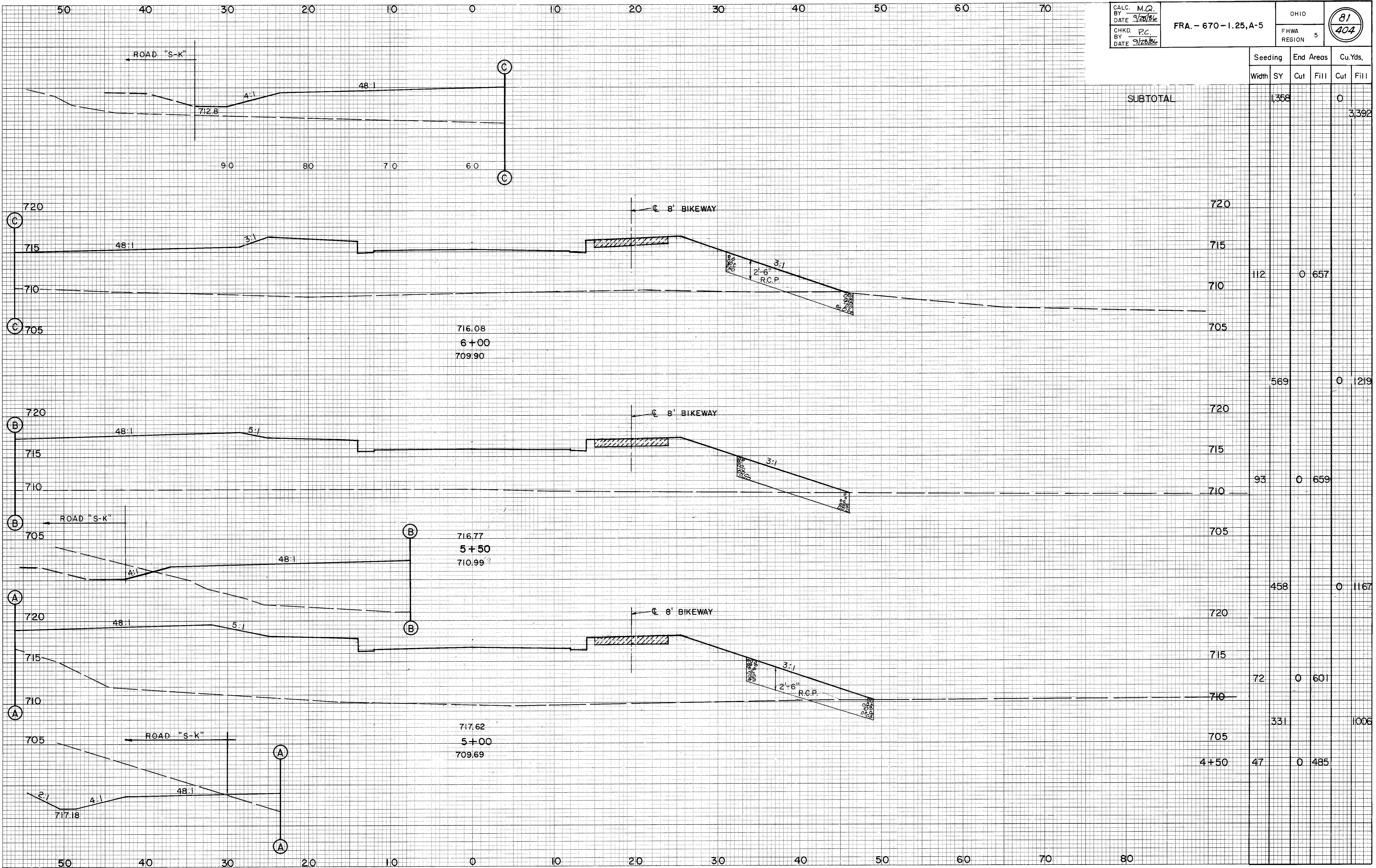
HIGHWAY FEDERAL AID SHEET  
PLATE 3-FULL CROSS SECTION-FULL LINE  
PRINTED IN U.S.A.

CROSS SECTIONS RICKENBACKER DRIVE STA. 3+50 to STA. 4+50



ORIGINAL SURVEY PLOTTED DATE \_\_\_\_\_ BY \_\_\_\_\_ DATE \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 PLOTTED \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_  
 AREAS CHECKED \_\_\_\_\_

ORIGINAL SURVEY PLOTTED DATE \_\_\_\_\_ BY \_\_\_\_\_ DATE \_\_\_\_\_  
 SURVEYED \_\_\_\_\_  
 PLOTTED \_\_\_\_\_  
 NOTE BOOK NO. \_\_\_\_\_  
 AREAS CHECKED \_\_\_\_\_



SUBTOTAL	Seeding		End Areas		Cu.Yds.	
	Width	SY	Cut	Fill	Cut	Fill
		1,358			0	3,392

720						
715						
710	112		0	657		
705						
		569	0	1219		

720						
715						
710	93		0	659		
705						
		458	0	1167		

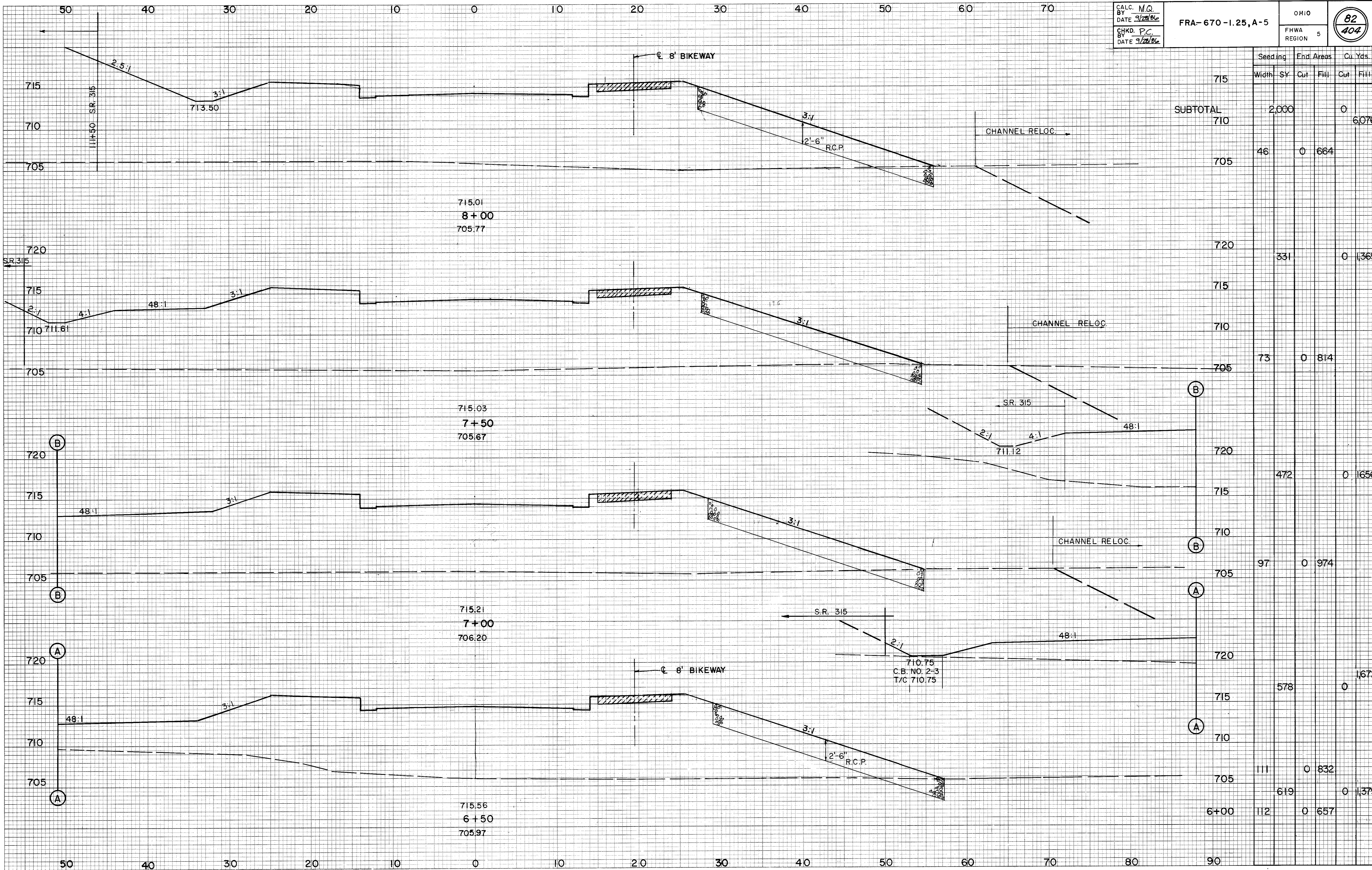
720						
715						
710	72		0	601		
705						
		331		1006		

705						
4+50	47		0	485		



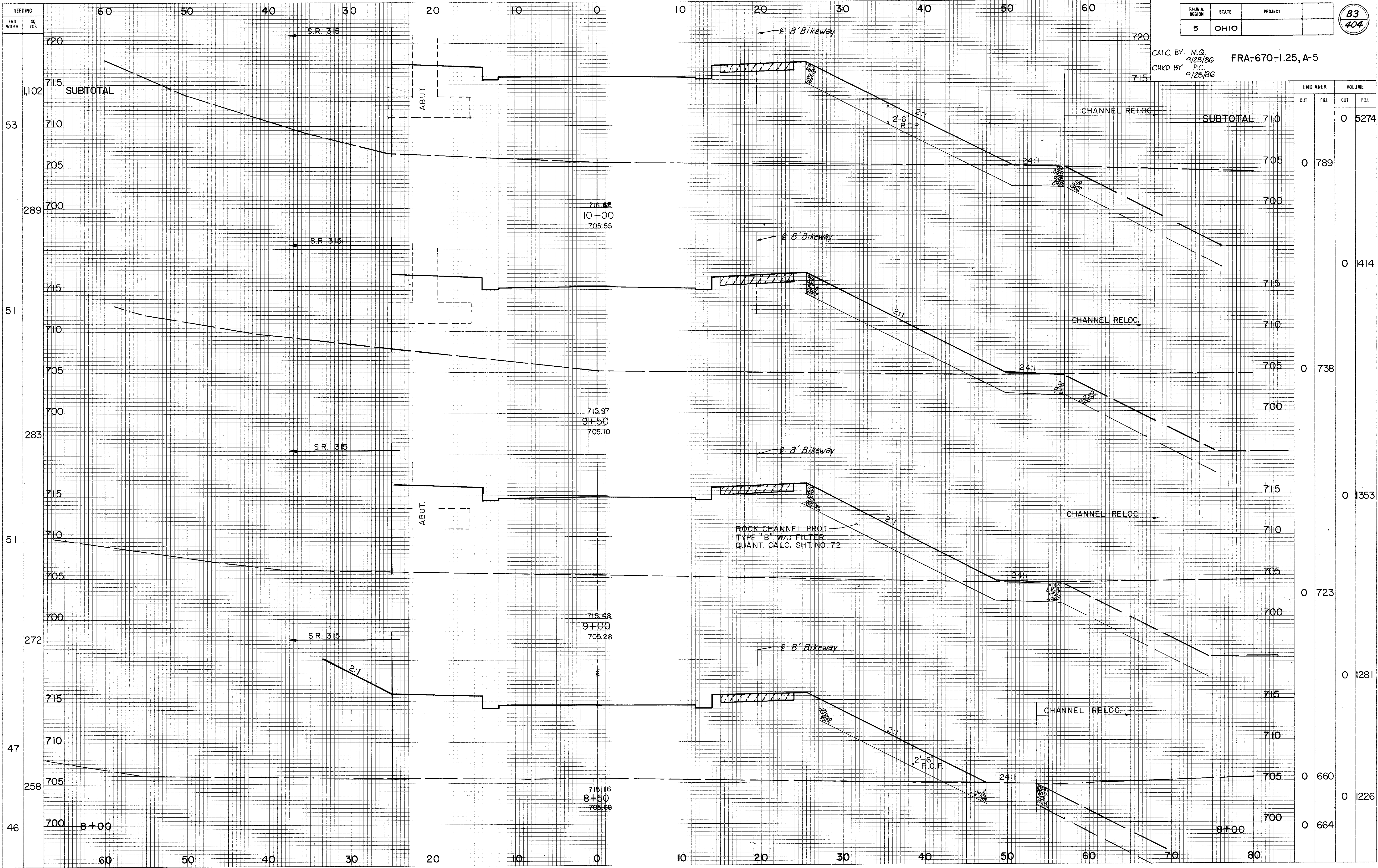
FINAL SURVEY SURVEYED, PLOTTED, NOTE BOOK, AREA, NO. AREAS CHECKED.

ORIGINAL SURVEY SURVEYED, PLOTTED, NOTE BOOK, AREA, NO. AREAS CHECKED.



Station	Seedling		End Areas		Cu. Yds.	
	Width	SY	Cut	Fill	Cut	Fill
715						
SUBTOTAL		2,000			0	6,076
710						
705	46		0	664		
720		331			0	1,369
715						
710						
705	73		0	814		
720		472			0	1,656
715						
710						
705	97		0	974		
720		578			0	1,672
715						
710						
705	111		0	832		
6+00	112		0	657		





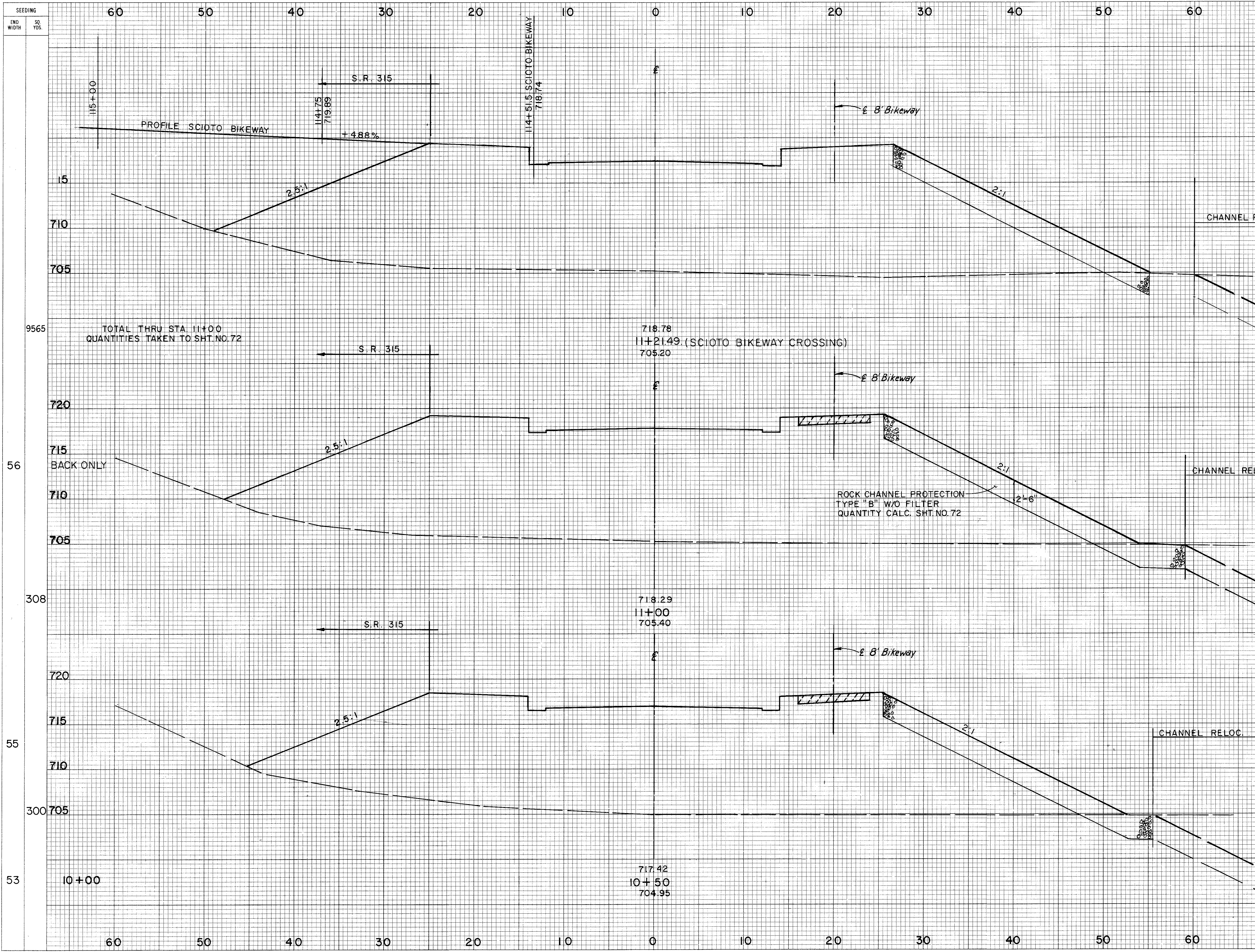
F.H.W.A. REGION	STATE	PROJECT	83 404
5	OHIO		

CALC. BY: M.Q. 9/28/86  
 CHKD BY: P.C. 9/28/86  
 FRA-670-1.25, A-5

END AREA	VOLUME	
	CUT	FILL
0 710	0	5274
0 789	0	
0 1414	0	
0 738	0	
0 1353	0	
0 723	0	
0 1281	0	
0 660	0	1226
0 664	0	

CROSS SECTIONS RICKENBACKER DRIVE STA. 8+50 TO STA. 10+00





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

84  
404

CALC. BY: M.G.  
9/28/86  
CHKD. BY: P.C.  
9/28/86

FRA-670-1.25, A-5

END AREA	VOLUME	
	CUT	FILL
720		
715		
710		
705		
9565		
720		
715		
710		
705		
56		
956		
720		
715		
710		
705		
308		
720		
715		
710		
705		
55		
887		
300		
705		
53		
10+00		
789		

CROSS SECTIONS RICKENBACKER DRIVE STA. 10+50 TO STA. 11+00

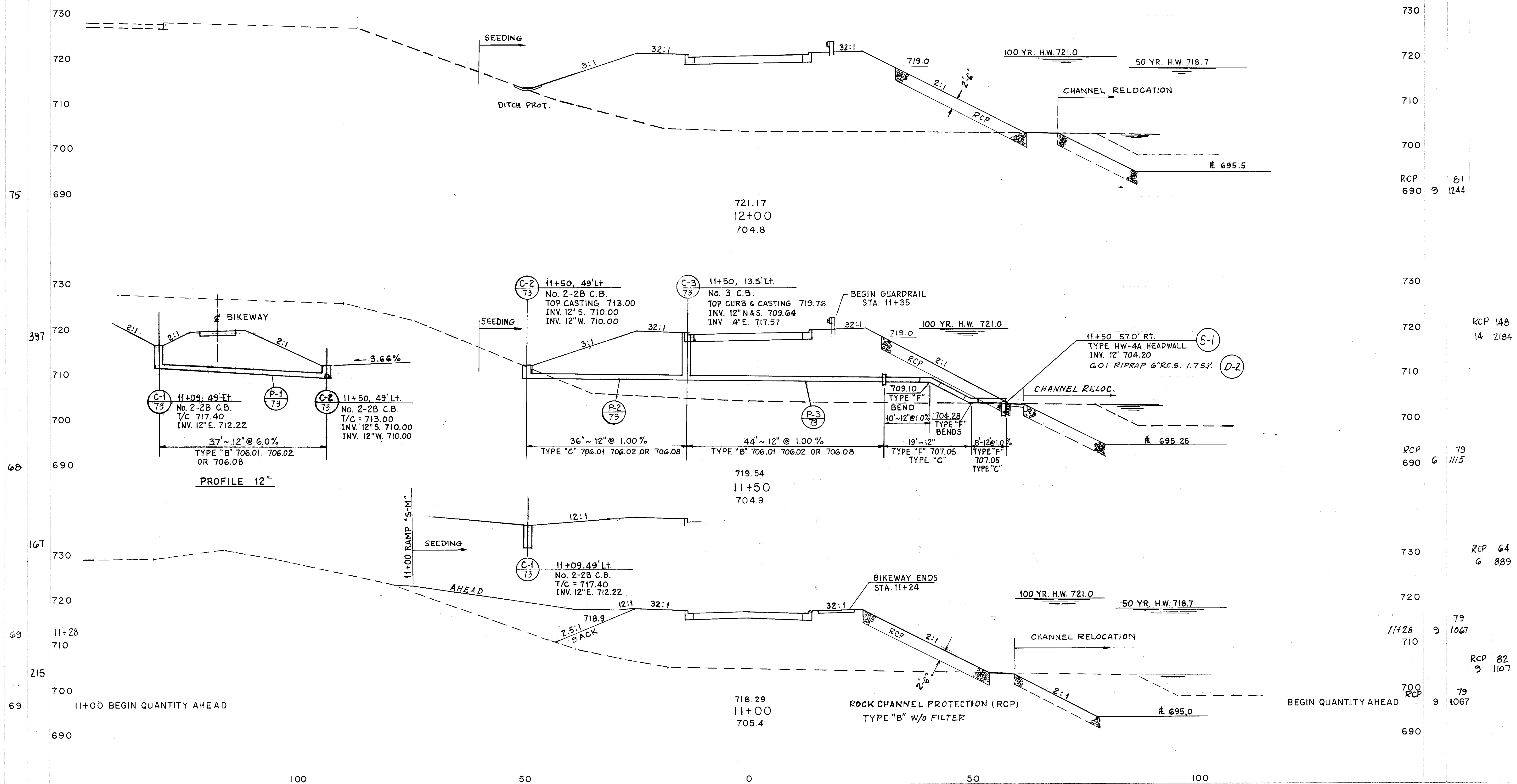


SEEDING 100 50 0 50 100

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

85  
404

FRANKLIN COUNTY  
FRA-315-0.93



75

68

167

69

215

69

690

730

720

710

700

690

730

720

710

700

690

730

720

710

700

690

RCP 81  
690 9 1244

RCP 148  
14 2184

RCP 79  
690 6 1115

RCP 64  
6 889

79  
11428 9 1067

RCP 82  
9 1107

79  
RCP 9 1067

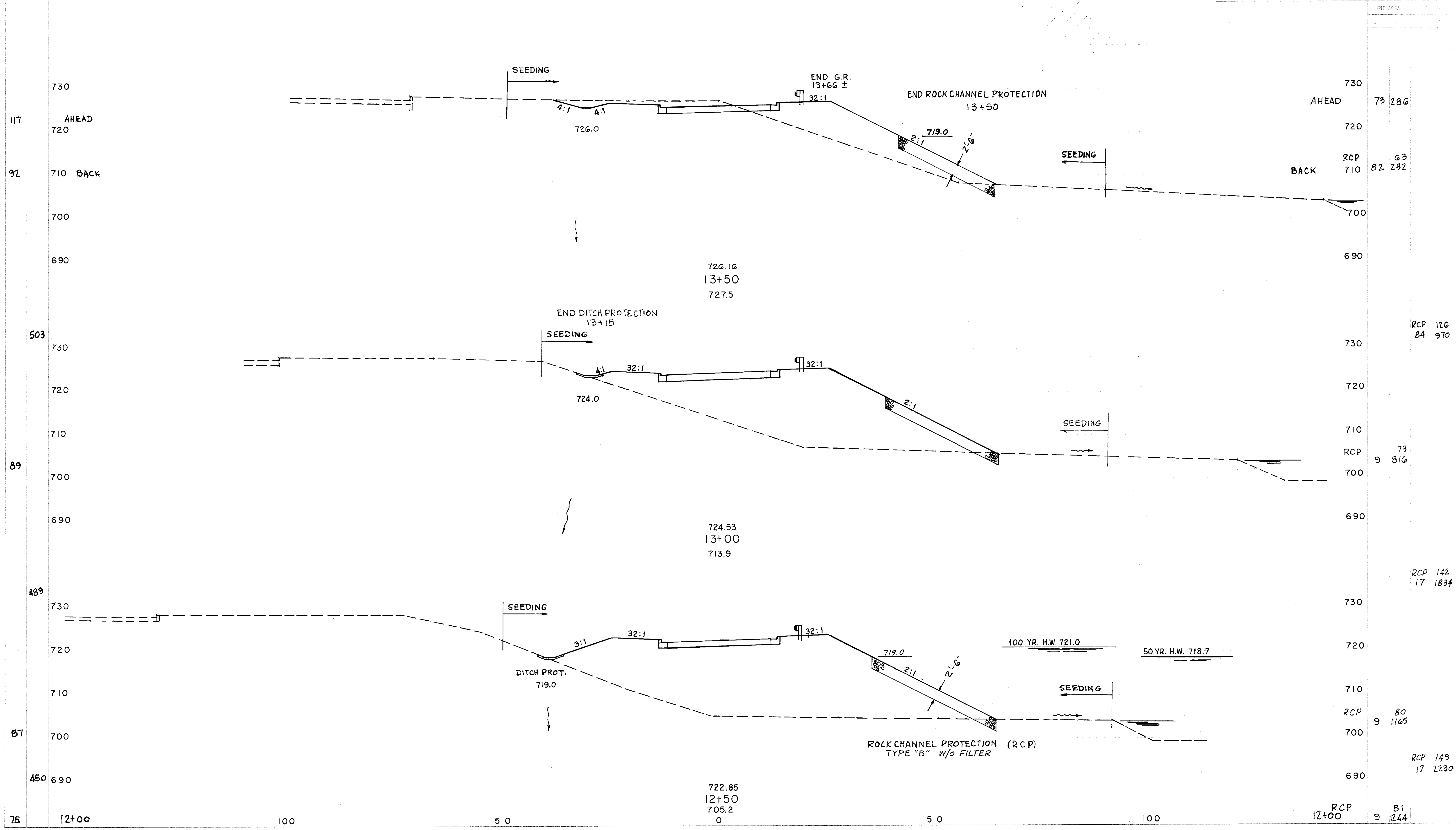
STA. 11+00 to STA. 12+00 RICKENBACKER DRIVE

SEEDING 100 50 0 50 100

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

86  
404

FRANKLIN COUNTY  
FRA-315-0.93



117  
730  
AHEAD  
720

92  
710  
BACK

503

89

489

87

450  
690

75  
12+00

100

50

722.85  
12+50  
705.2  
0

50

100

RCP  
12+00  
9

81  
1244

730  
AHEAD  
73 286

720

RCP  
82 63  
710  
82 232

700

690

RCP 126  
84 970  
730

720

RCP 73  
9 816  
710

690

RCP 142  
17 1834  
730

720

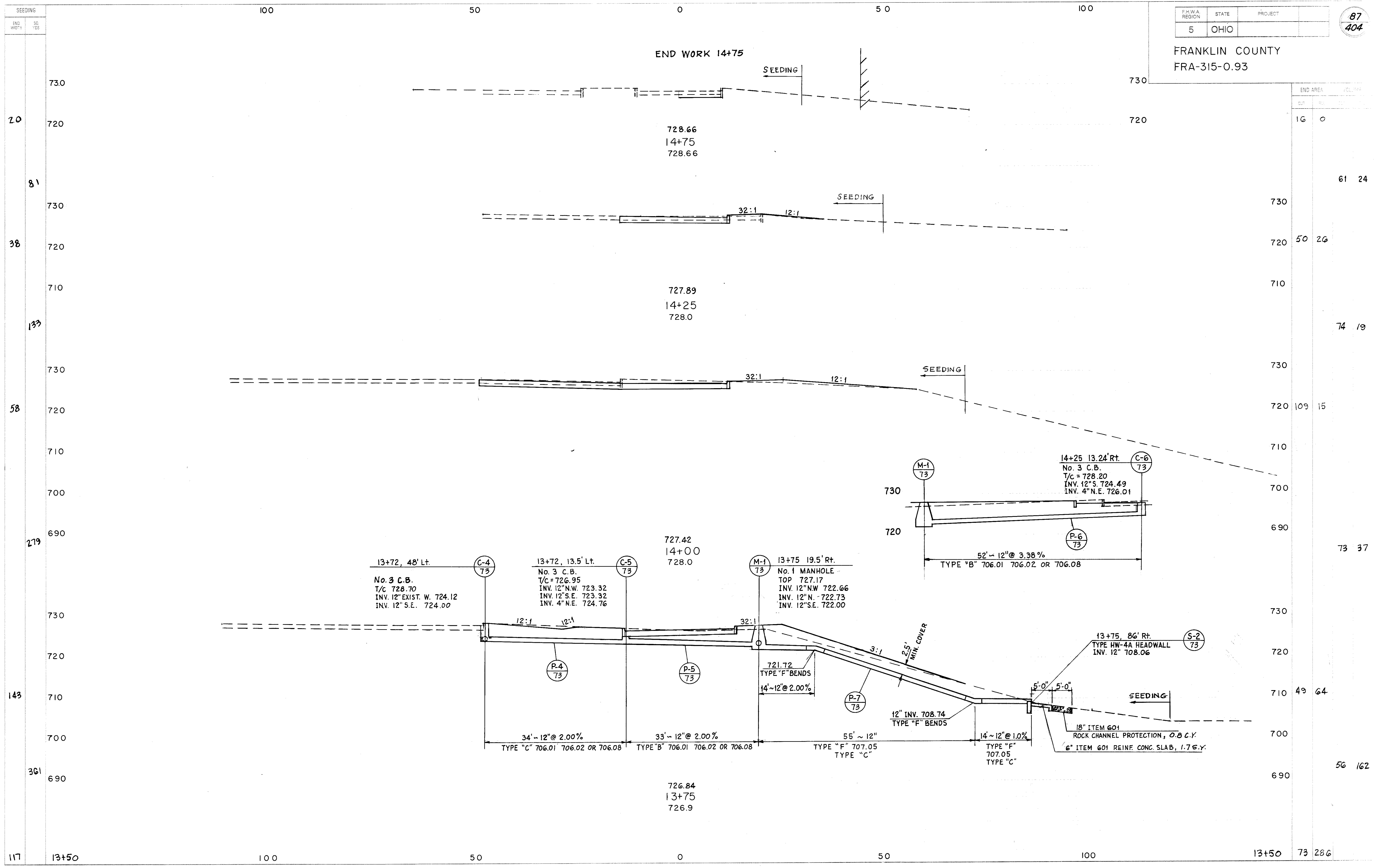
RCP 80  
9 1165  
710

700

RCP 149  
17 2230  
690

STA. 12+50 to STA. 13+50 RICKENBACKER DRIVE





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

87  
404

END AREA	CUT		VOL. (CY)
	CU	CR	
16	0		
61	24		
50	26		
74	19		
109	15		
73	37		
49	64		
56	162		
73	286		

728.66  
14+75  
728.66

727.89  
14+25  
728.0

727.42  
14+00  
728.0

726.84  
13+75  
726.9

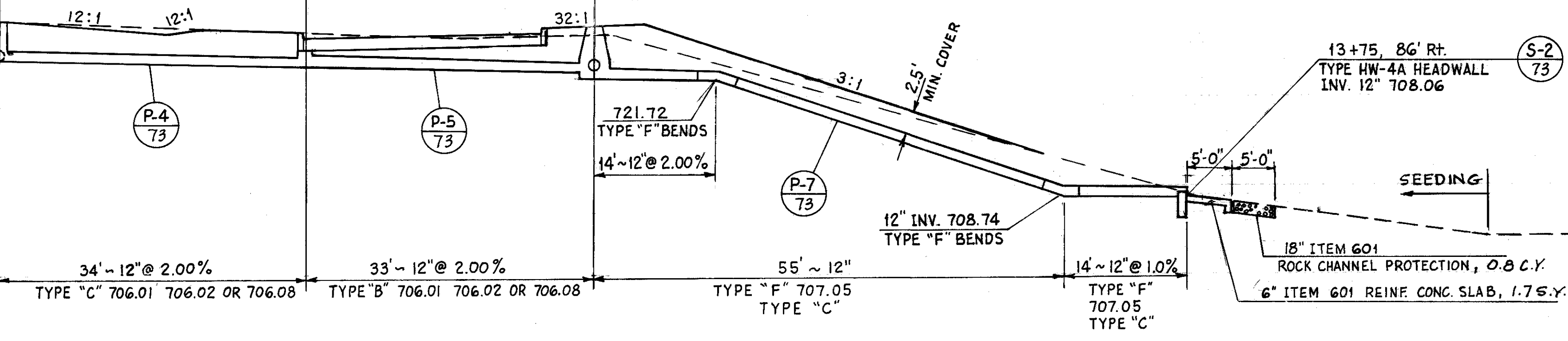
14+25 13.24' Rt.  
No. 3 C.B.  
T/C = 728.20  
INV. 12" S. 724.49  
INV. 4" N.E. 726.01

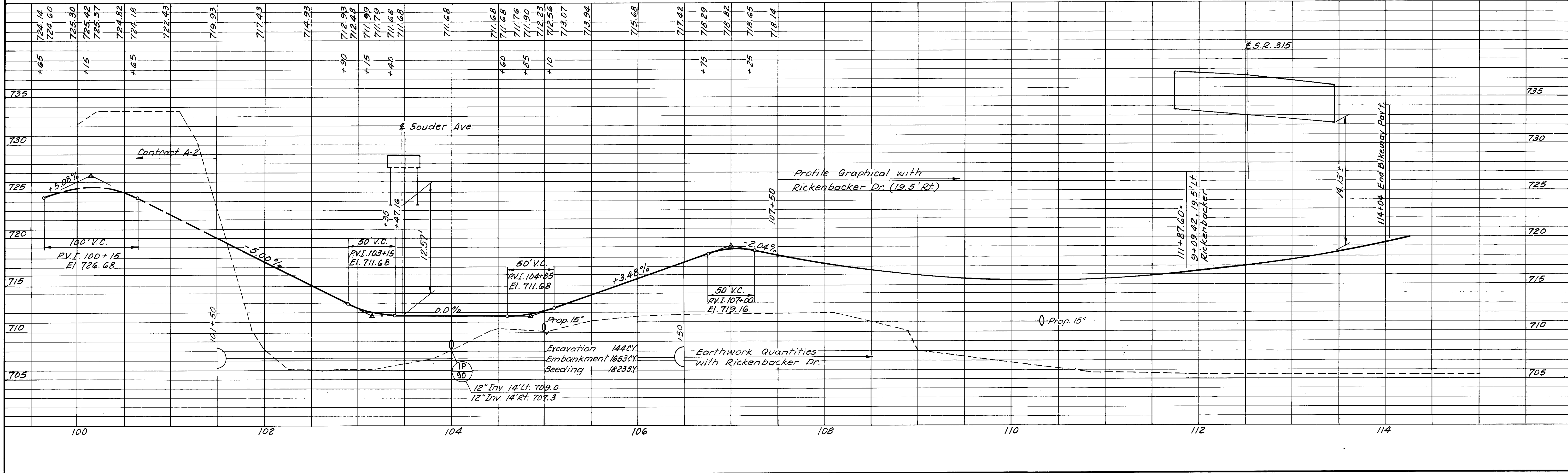
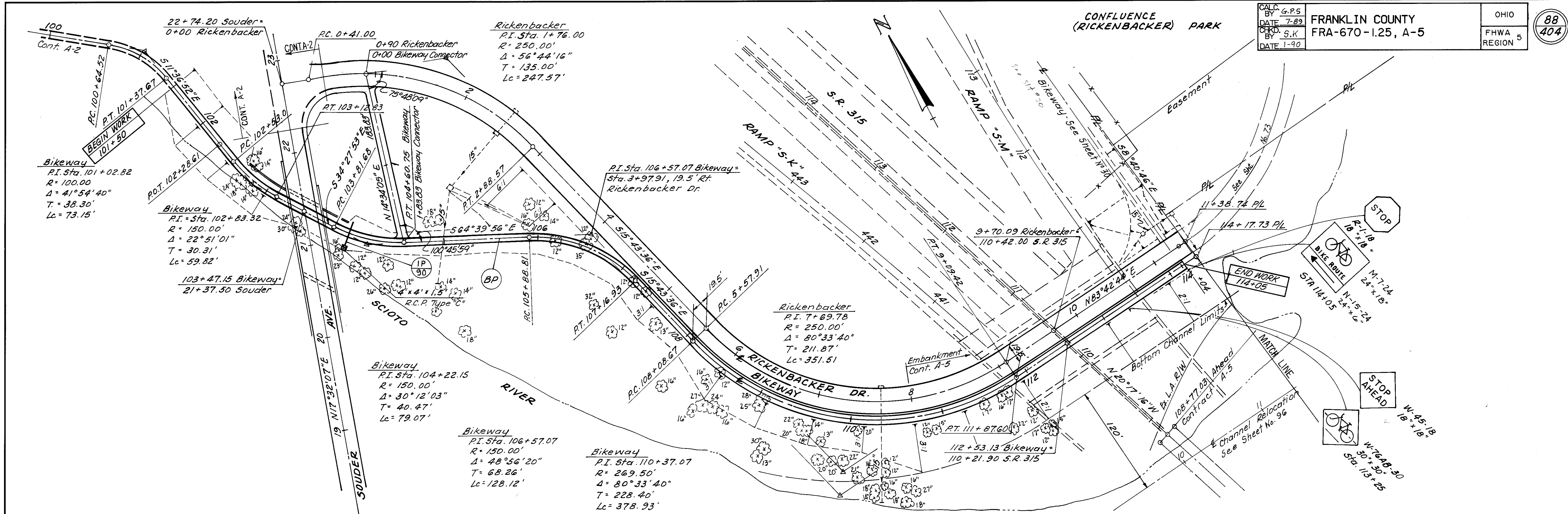
13+72, 48' Lt.  
No. 3 C.B.  
T/C 728.70  
INV. 12" EXIST. W. 724.12  
INV. 12" S.E. 724.00

13+72, 13.5' Lt.  
No. 3 C.B.  
T/C = 726.95  
INV. 12" N.W. 723.32  
INV. 12" S.E. 723.32  
INV. 4" N.E. 724.76

13+75 19.5' Rt.  
No. 1 MANHOLE  
TOP 727.17  
INV. 12" N.W. 722.66  
INV. 12" N. 722.73  
INV. 12" S.E. 722.00

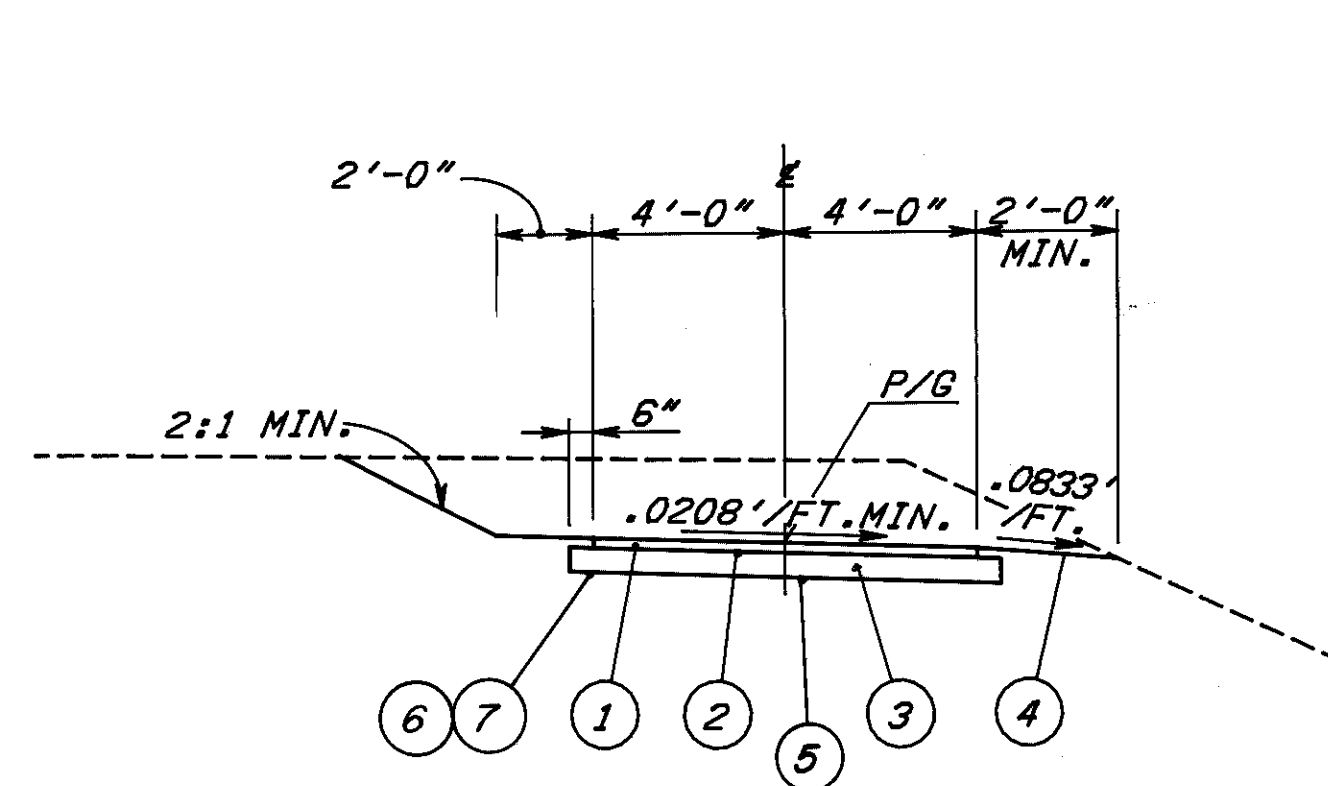
13+75, 86' Rt.  
TYPE HW-4A HEADWALL  
INV. 12" 708.06



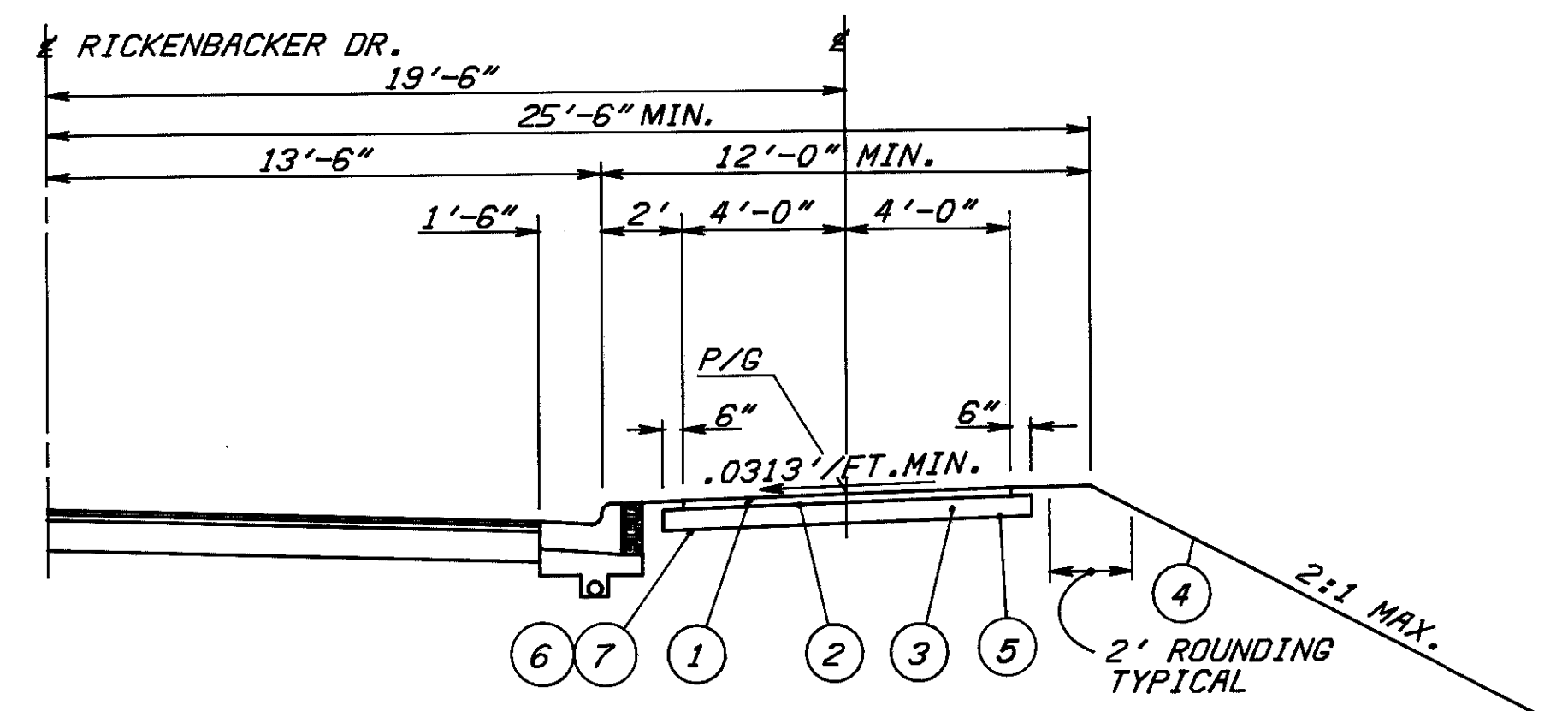


SCIOTO BIKEWAY STA. 101+50 TO STA. 114+04

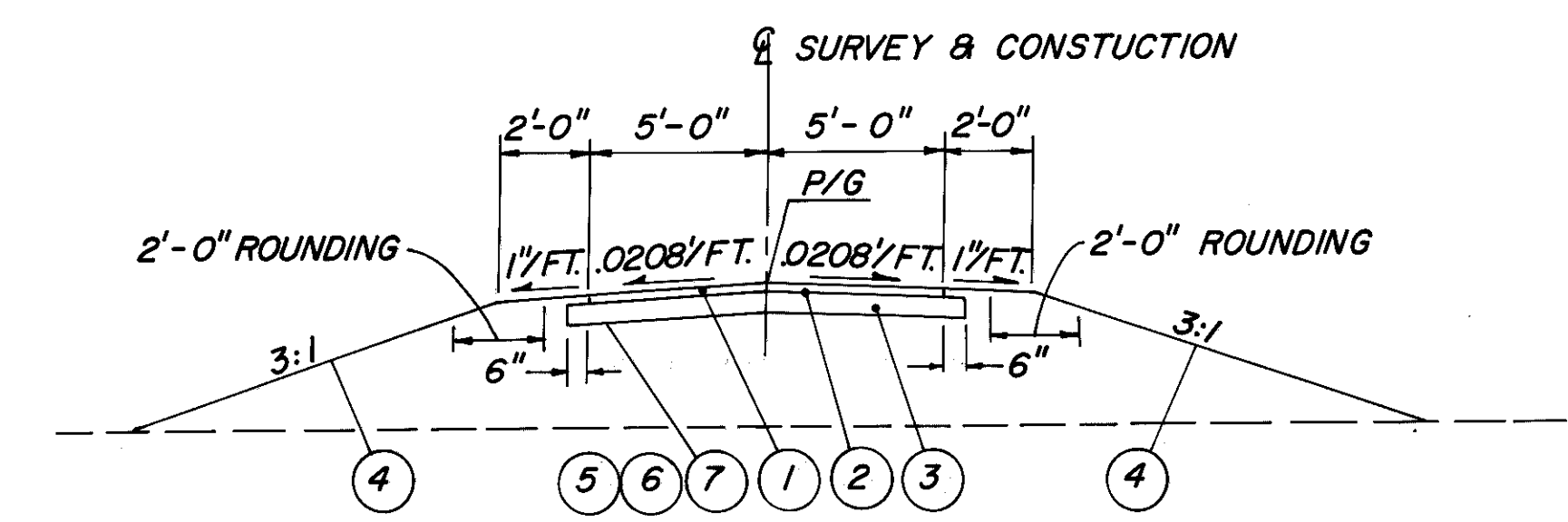




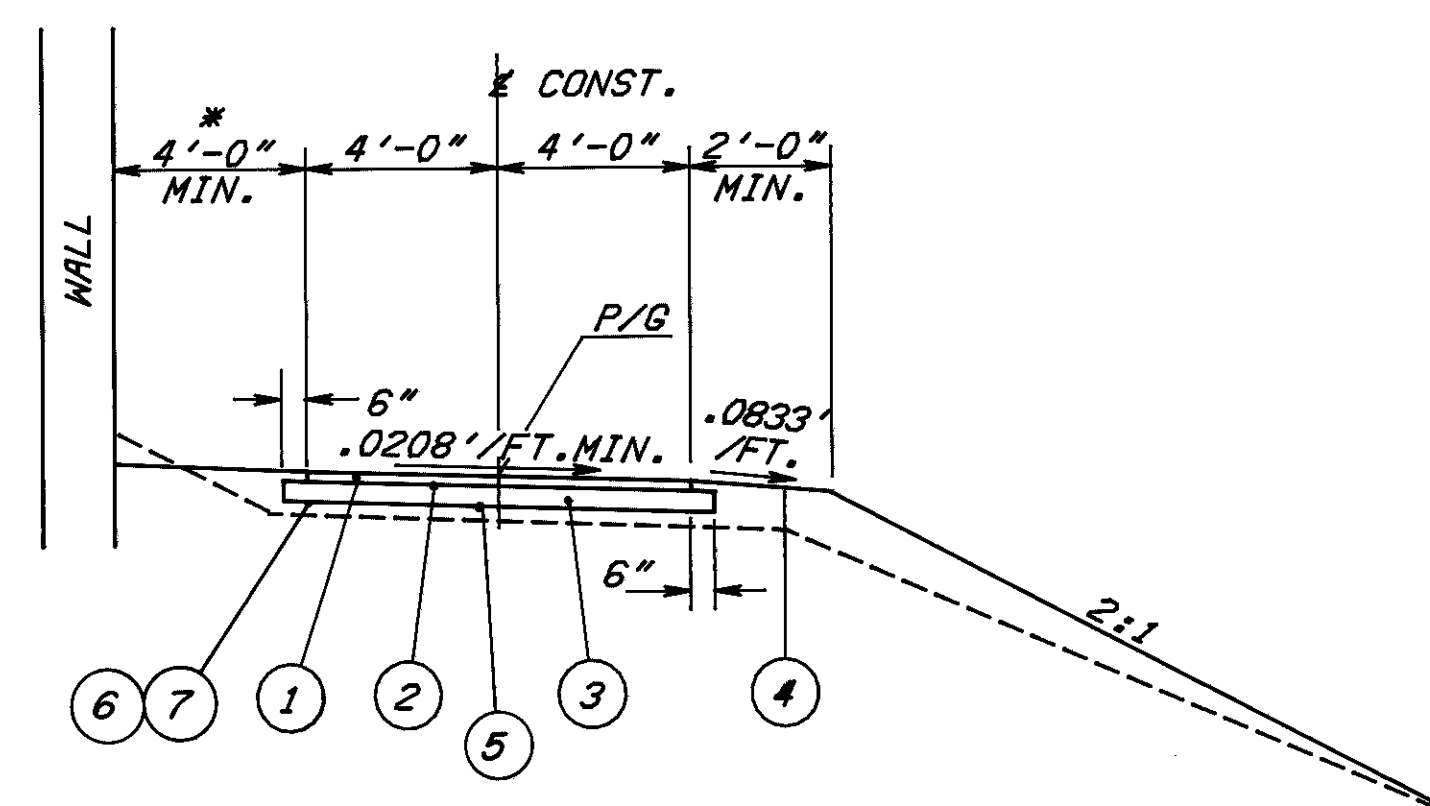
**BIKEWAY SECTION - BENCH TYPE CUT IN STEEP SLOPE BANKS**  
 STA. 101+50 TO STA. 102+00



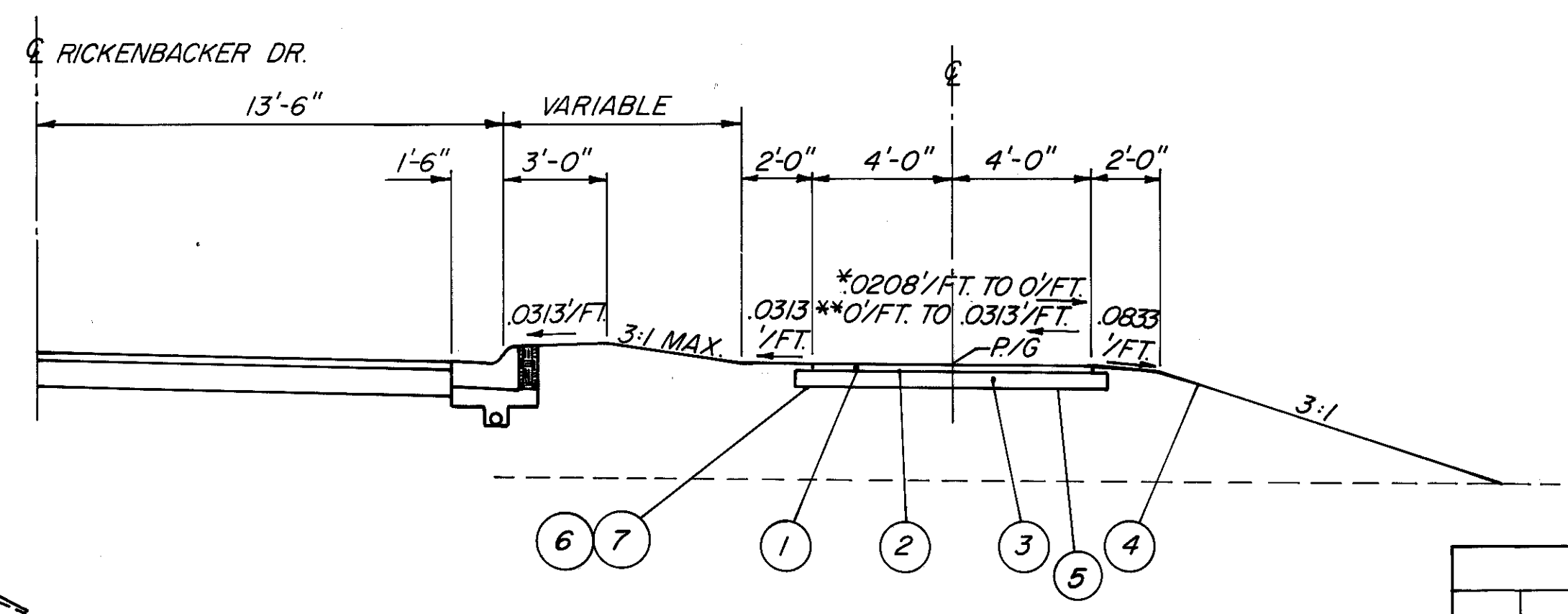
**BIKEWAY SECTION ADJACENT TO ROADWAY**  
 STA. 107+25 TO STA. 114+04



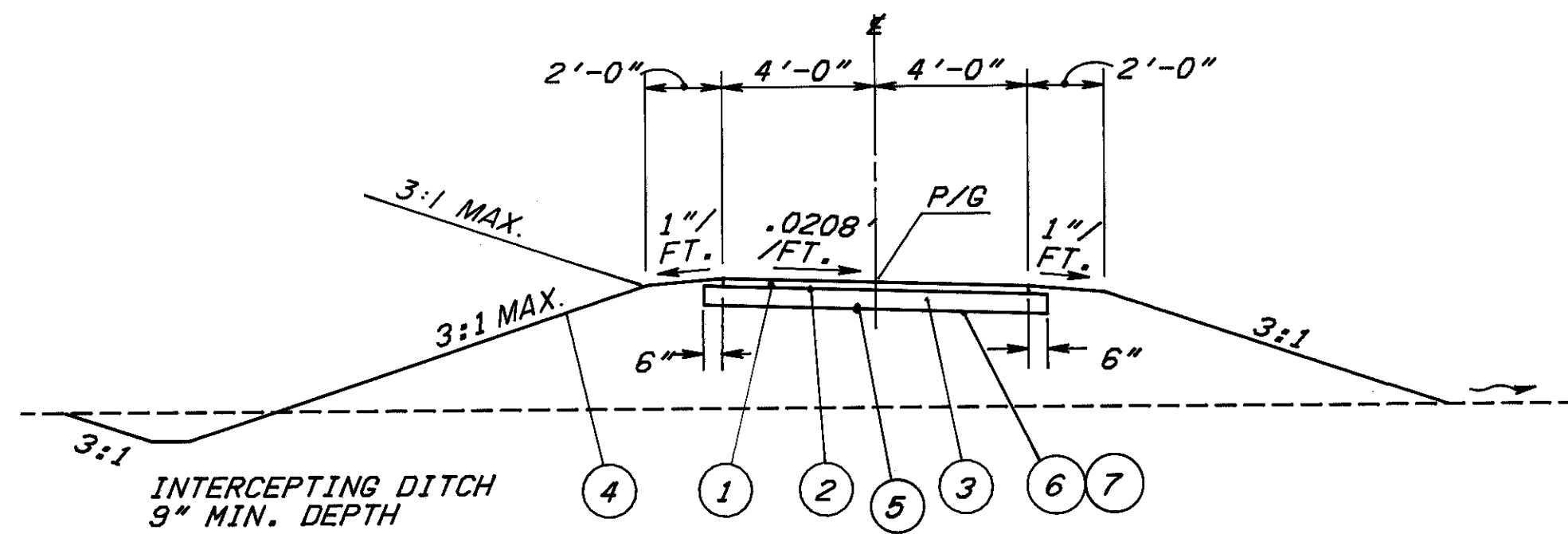
**BIKEWAY CONNECTOR TYPICAL SECTION**  
 STA. 0+14 TO STA. 1+79.83



**BIKEWAY SECTION BENCH TYPE FILL**  
 STA. 102+00 TO STA. 102+68  
 \* STA. 102+68 TO STA. 103+97



**BIKEWAY SECTION TRANSITION**  
 \* STA. 106+50 TO STA. 106+75  
 \*\* STA. 106+75 TO STA. 107+25



**BIKEWAY TYPICAL SECTION SHALLOW EMBANKMENT**  
 STA. 103+97 TO STA. 106+50

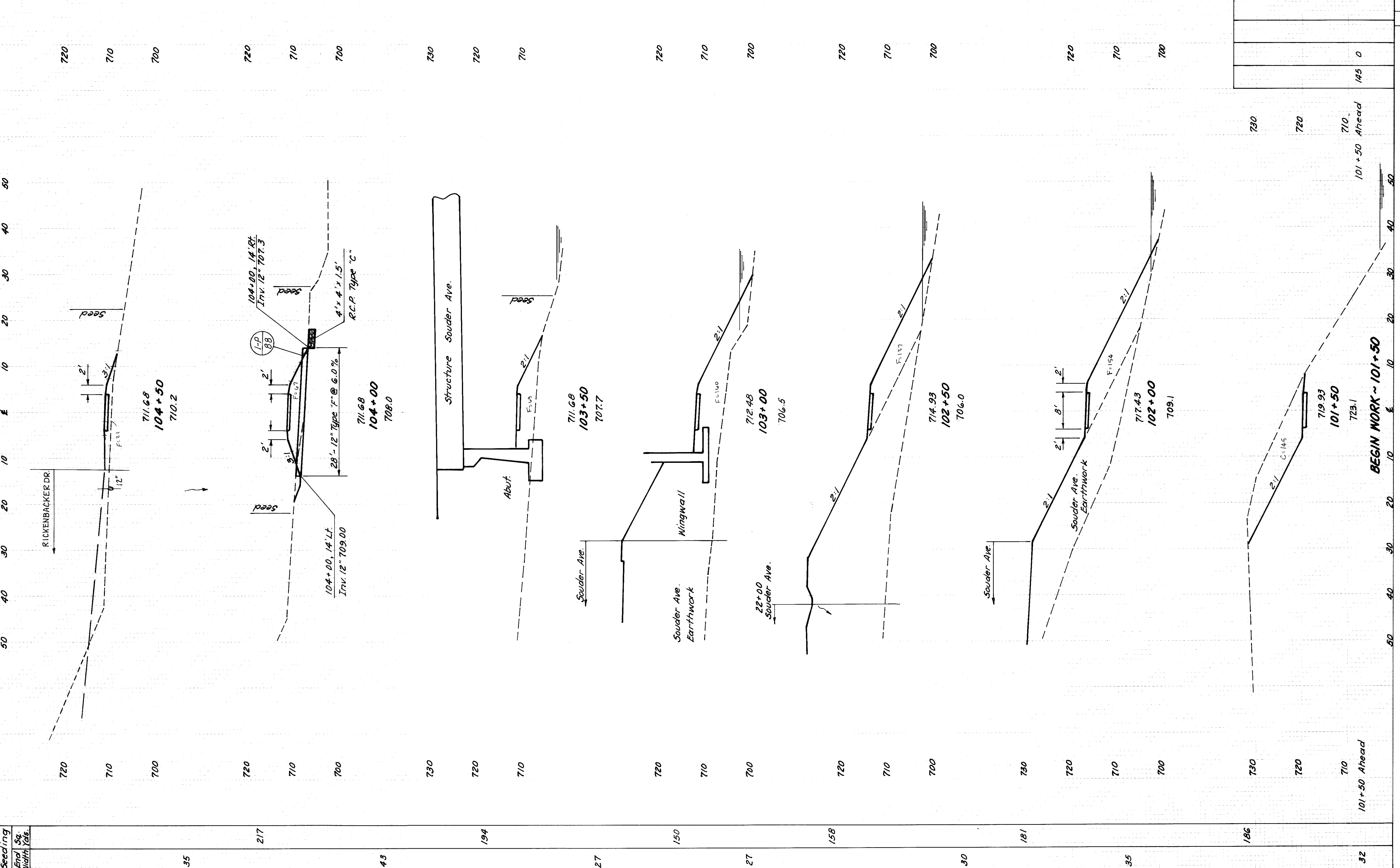
- LEGEND**
- ① 404 2 1/2" ASPHALT CONCRETE
  - ② 408 BITUMINOUS PRIMECOAT (.40 GAL./S.Y.)
  - ③ 304 8" AGGREGATE BASE
  - ④ 653 SEEDING & MULCHING
  - ⑤ SPECIAL SOIL STERILANT
  - ⑥ 203 SUBGRADE COMPACTION
  - ⑦ 203 PROOF ROLLING
- FOR CALCULATION, SEE SHT. NO. 74

		ESTIMATED QUANTITIES											
REF. NO.	SIDE	STATION TO STATION											
		EXCAVATION NOT INCLUDING EMBANKMENT	EMBANKMENT	8" AGGREGATE BASE	ASPHALT CONCRETE AC-20	BITUMINOUS PRIME COAT	ROCK CHANNEL PROTECTION, TYPE B, W/O FILTER	12" CONDUIT, TYPE "F"	SEEDING AND MULCHING	SIGNS FLAT SHEET	SUPPORT NO. 3 POST	SUPPORT NO. 4 POST	SOIL STERILANT
		C.Y.	C.Y.	C.Y.	C.Y.	GAL.	C.Y.	L.F.	S.Y.	S.F.	L.F.	L.F.	S.Y.
SHT. 88	101+50 TO 106+50	144	1653						1823				
BP	101+50 TO 114+04			281	77	279							1254
I-P	104+00, 14' LT. TO 18' RT.						1	28					
	RT. 113+25									8.50		13	
	RT. 114+04									8.0	13		
TOTALS TO SUB-SUMMARY SHT. NO. 75		144	1653	281	77	279	1	28	1823				1254
TOTALS TO SUB-SUMMARY SHT. NO. 192										16.5	13	13	

SEEDING	END WIDTH	SQ. YDS.	Volume	
			Cut	Fill
			0	21
		5	5	81
		5	5	126
		0	0	212
		0	0	275
		0	0	269

CALC. BY: G.P.S.	F.H.W.A. REGION: 5	STATE: OHIO	PROJECT:
DATE: 7-89			
CHKD. BY: S.K.			
DATE: 1-90			

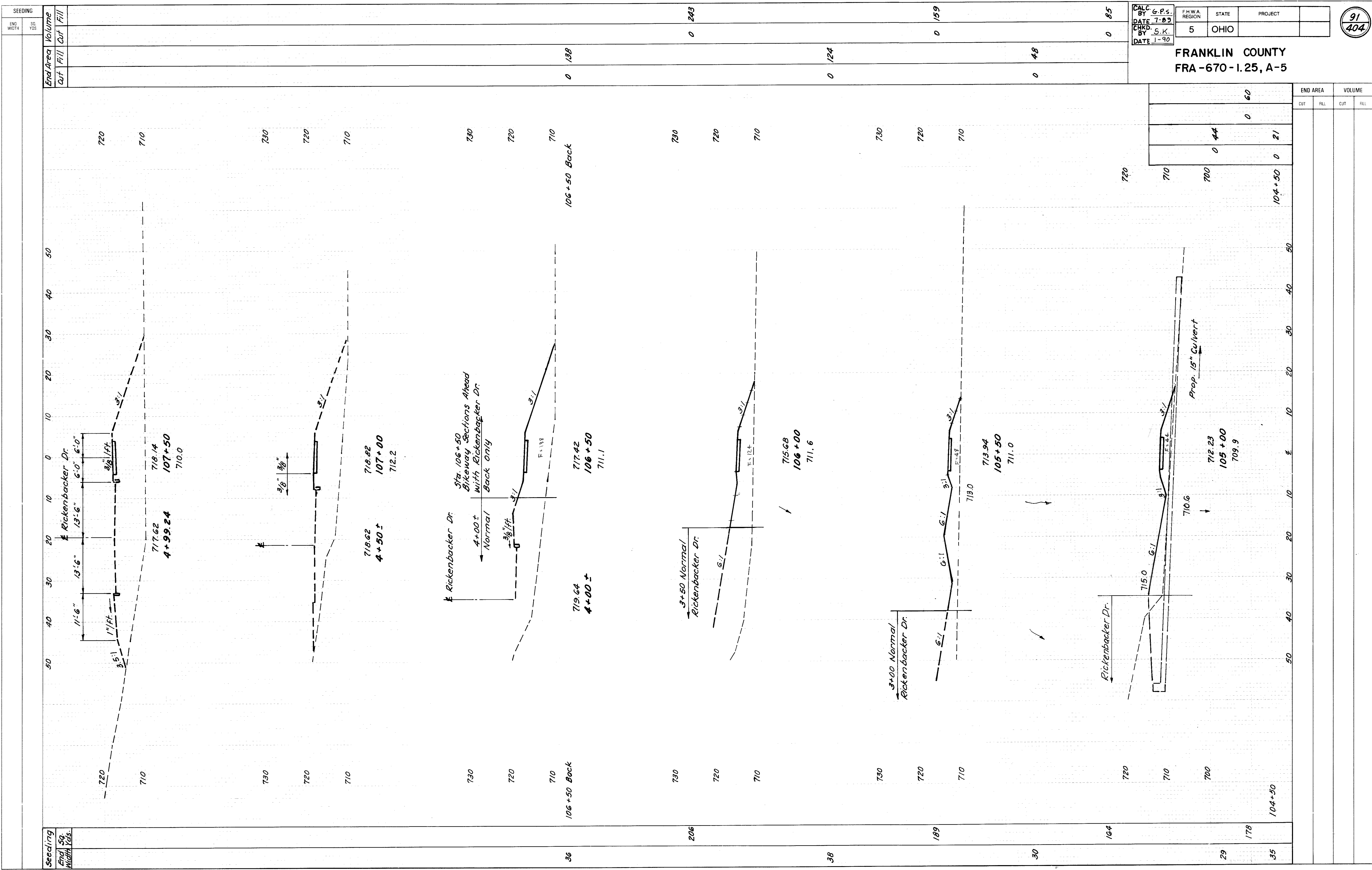
FRANKLIN COUNTY  
FRA-670-1.25, A-3



Seeding	End Sq. Width	End Area	Volume
35	217	720	0
43	194	720	5
27	150	720	0
27	158	720	0
30	181	720	0
35	186	720	0
32	194	710	0

SCIOTO RIVER BIKEWAY CROSS SECTIONS STA. 101+50 TO STA. 104+50



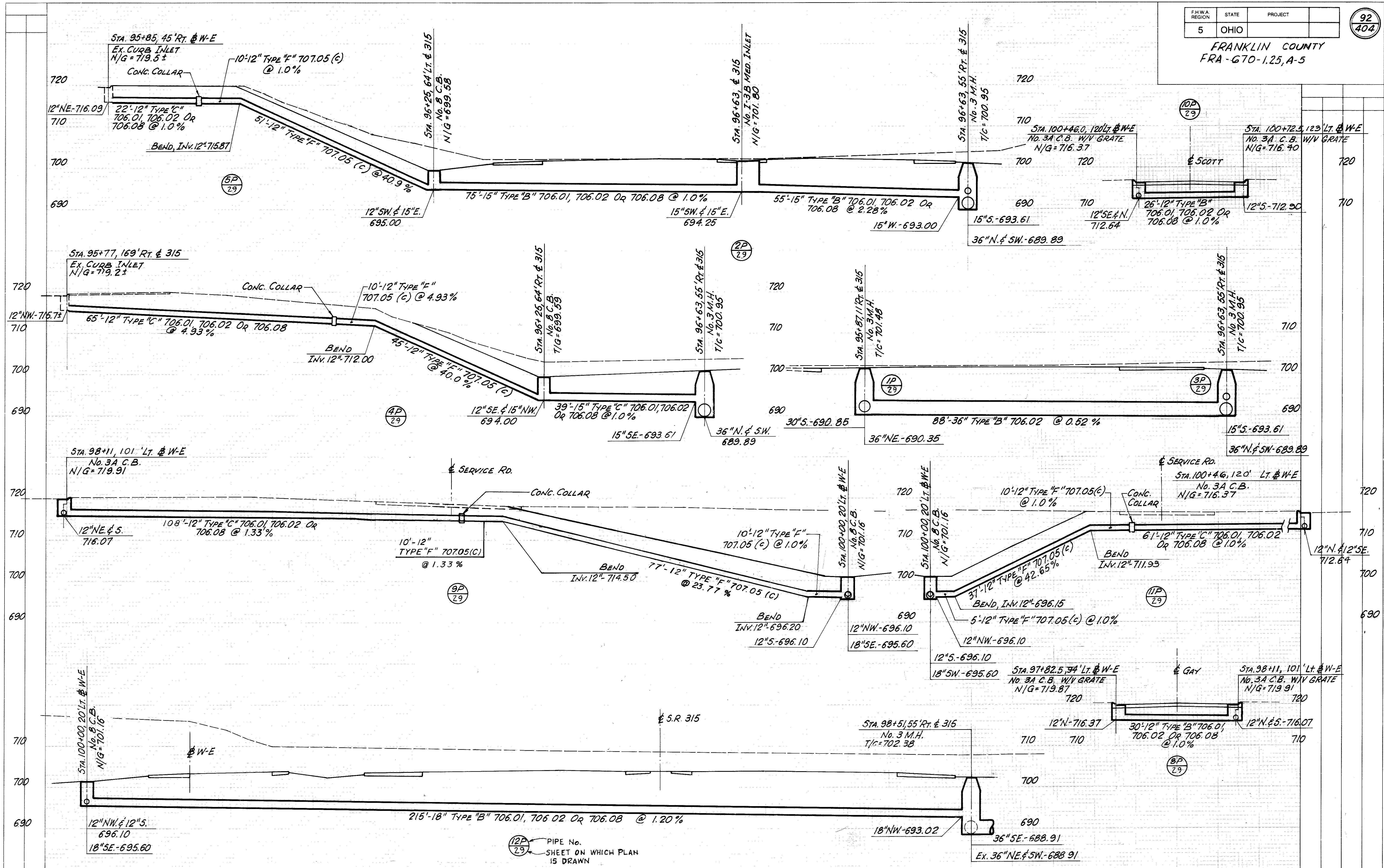


SEEDING	END WIDTH	END AREA	VOLUME	END AREA	VOLUME
36	36	0	243	0	159
38	38	0	124	0	48
189	189	0	48	0	85
30	30	0	48	0	85
104	104	0	48	0	85
29	29	0	48	0	85
35	35	0	48	0	85

FRANKLIN COUNTY  
 FRA-670-1.25, A-5

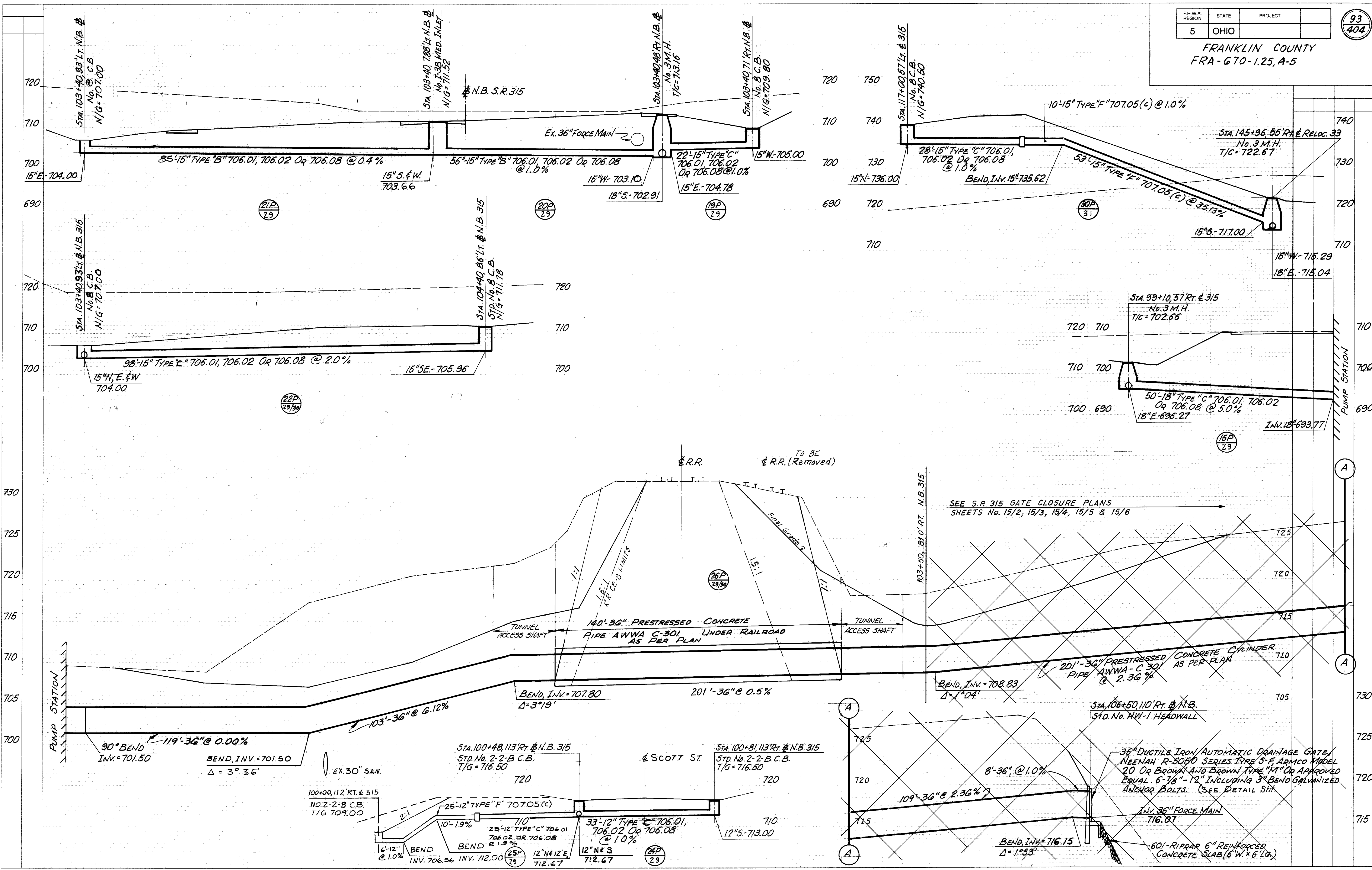
CALC BY	G.P.S.	F.H.W.A. REGION	STATE	PROJECT
DATE	7-89	5	OHIO	
CHKD BY	S.K.			
DATE	1-90			

SCIOTO RIVER BIKEWAY CROSS SECTIONS STA. 105+00 TO STA. 107+50

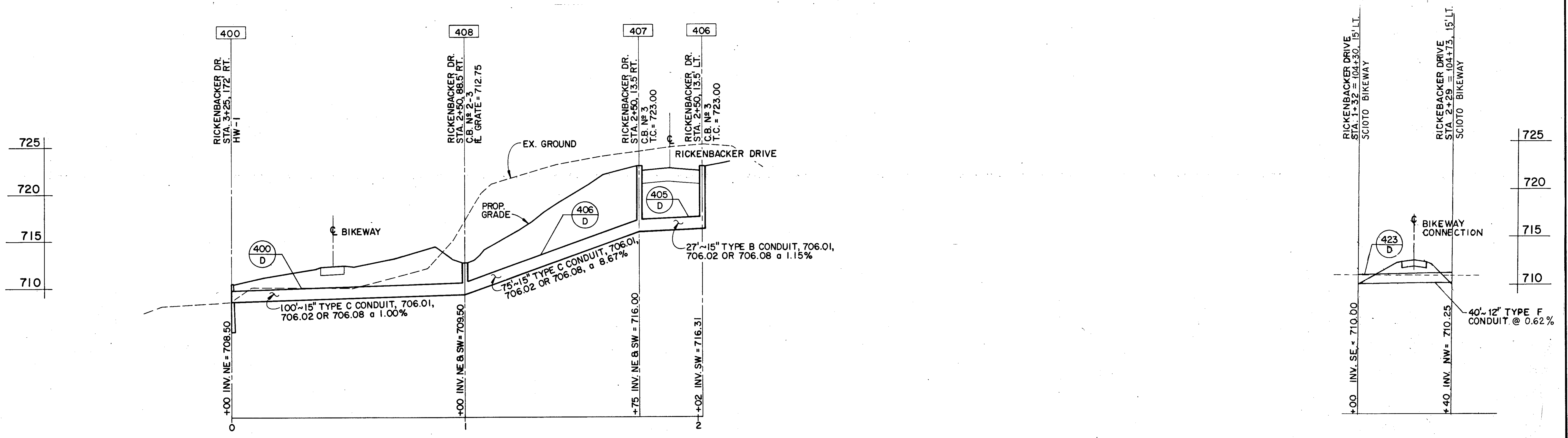
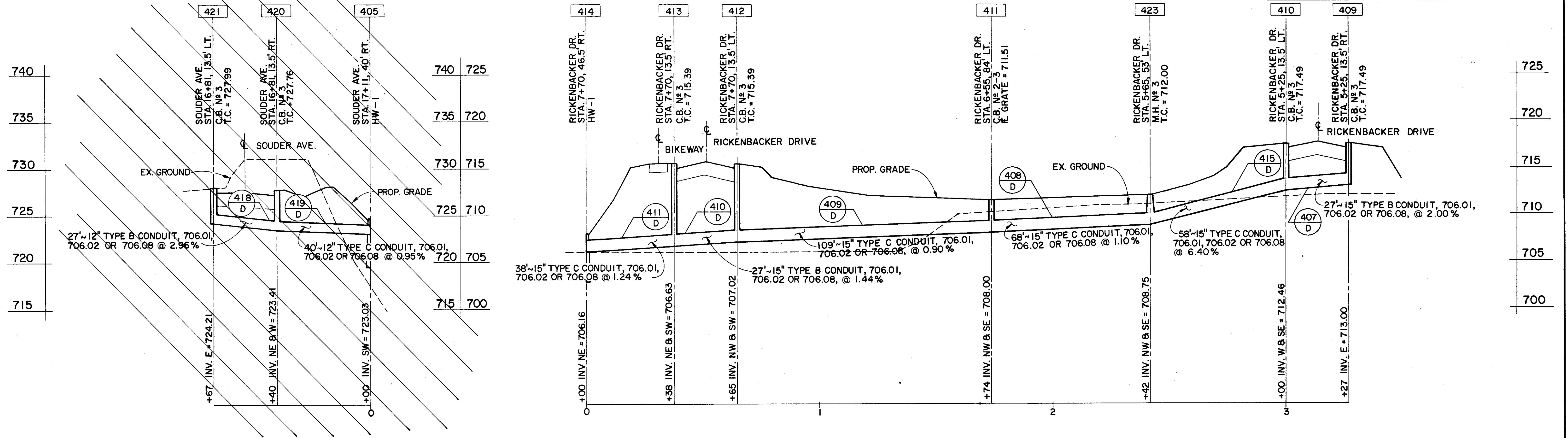


STORM SEWER PROFILES



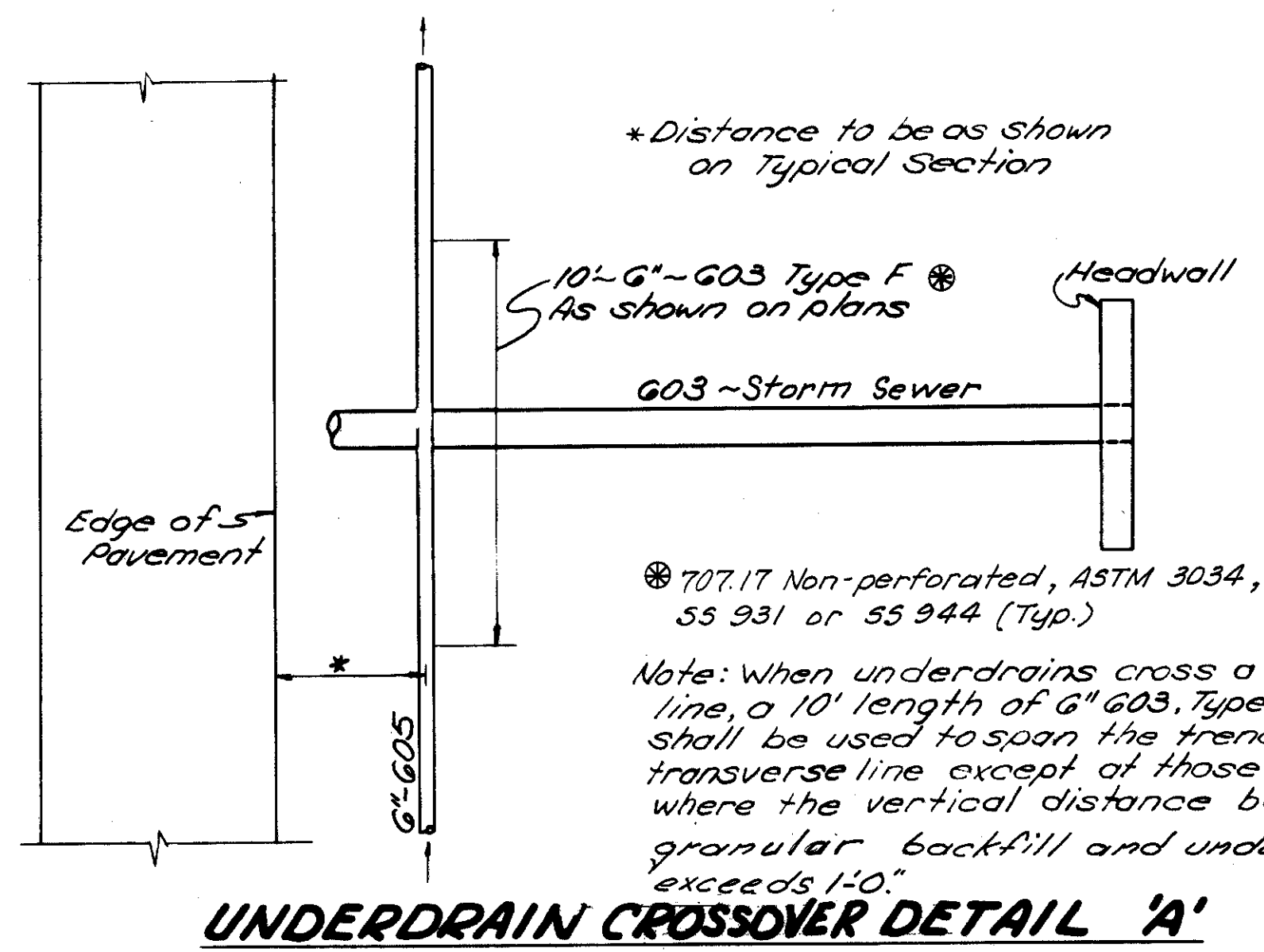


STORM SEWER PROFILES

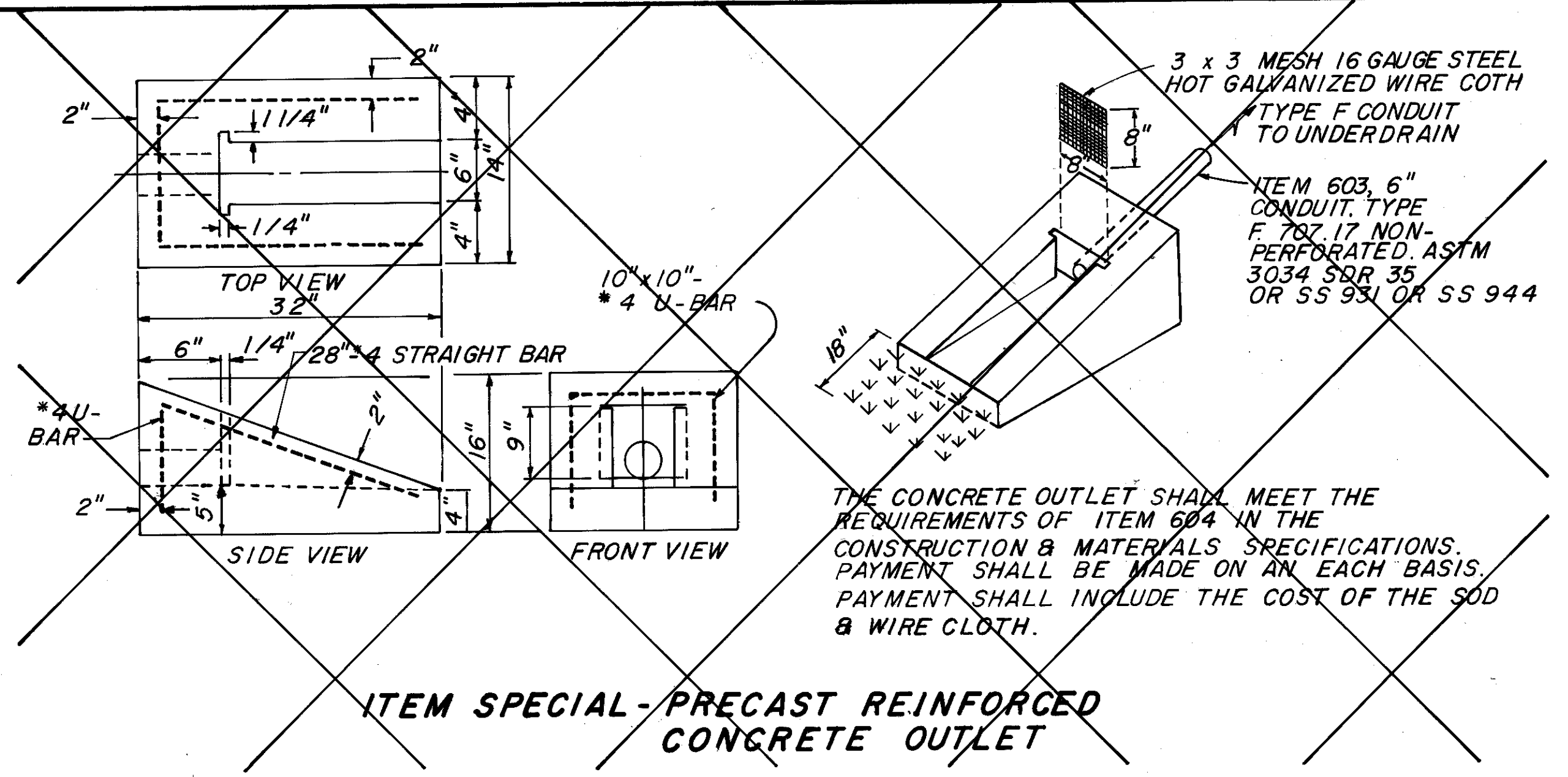


STORM SEWER PROFILES

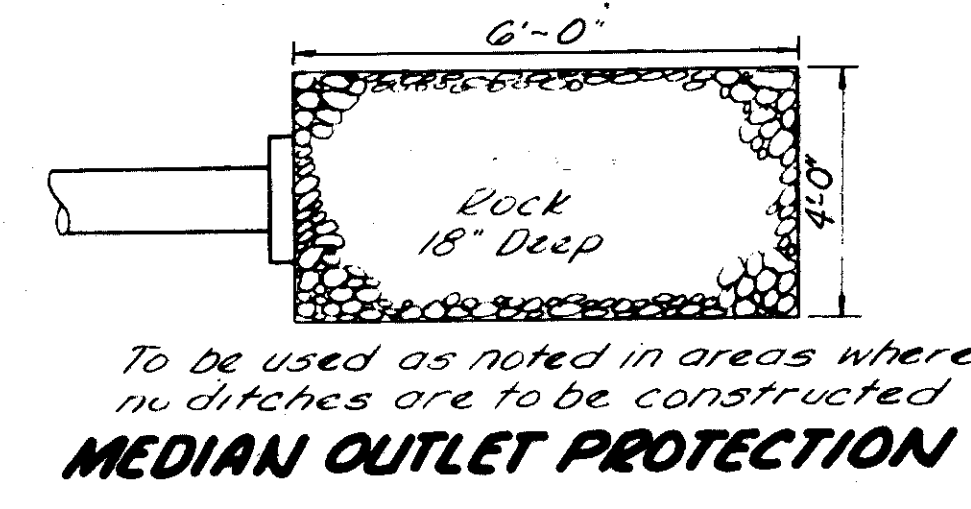




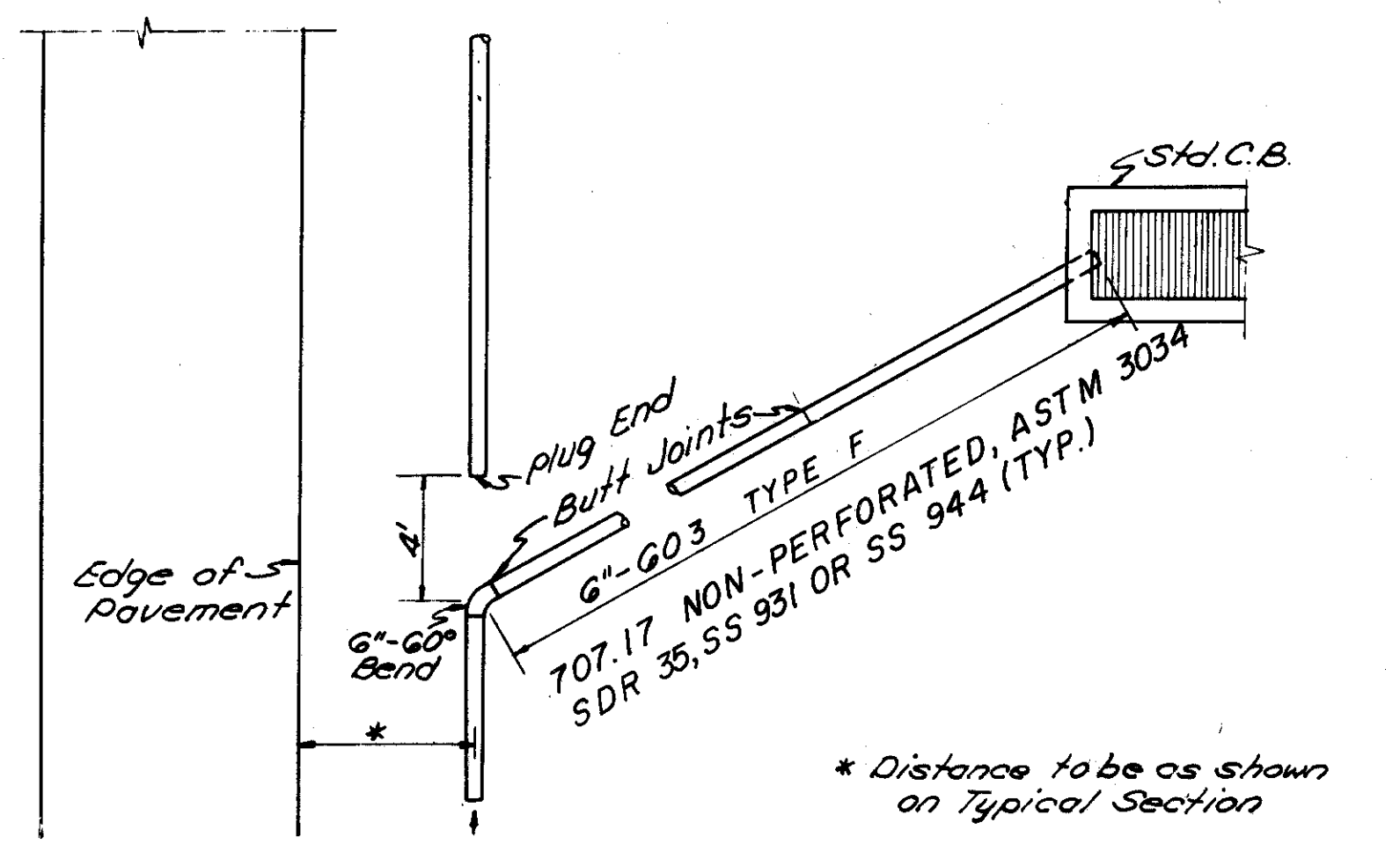
**UNDERDRAIN CROSSOVER DETAIL 'A'**



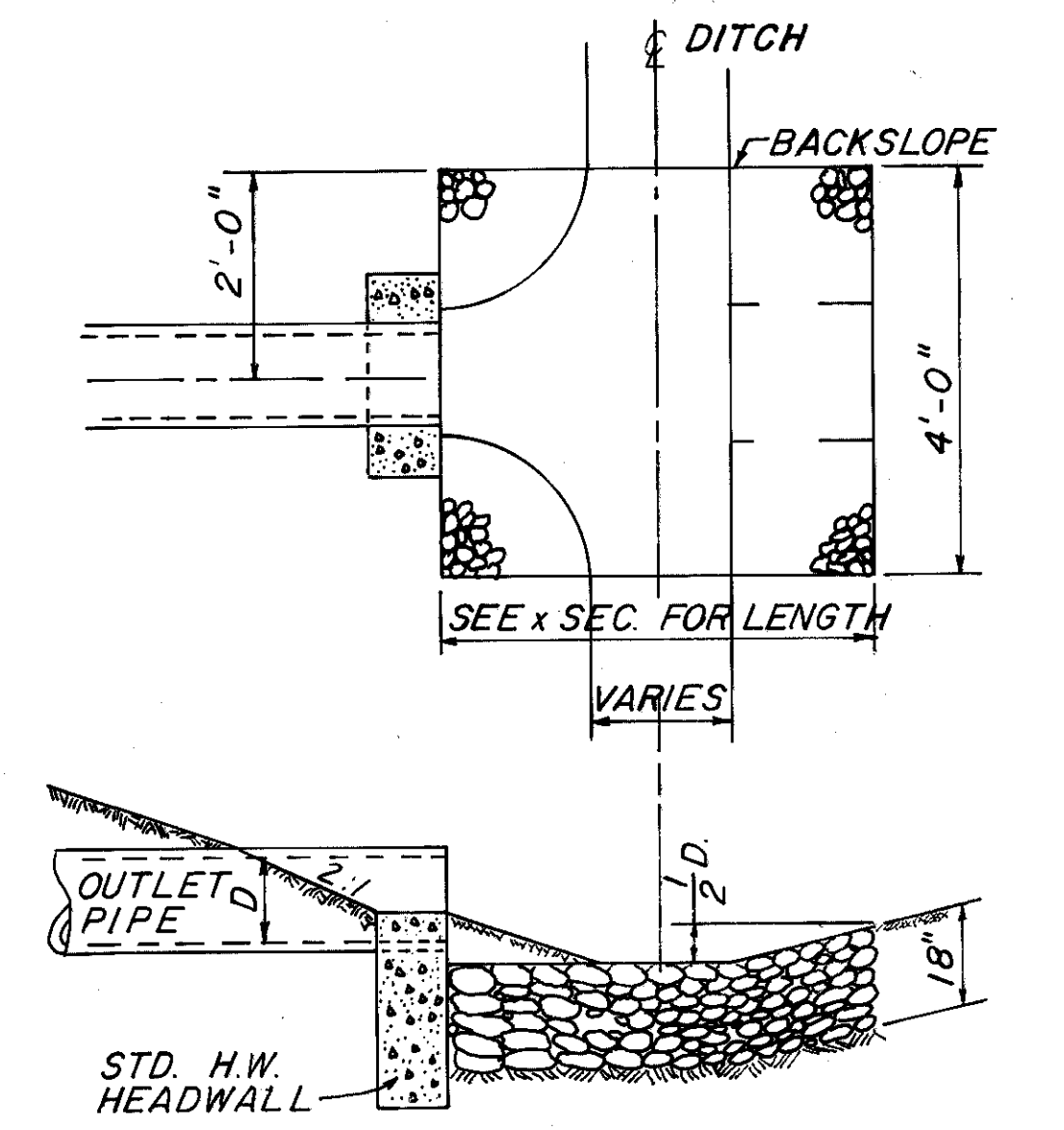
**ITEM SPECIAL-PRECAST REINFORCED CONCRETE OUTLET**



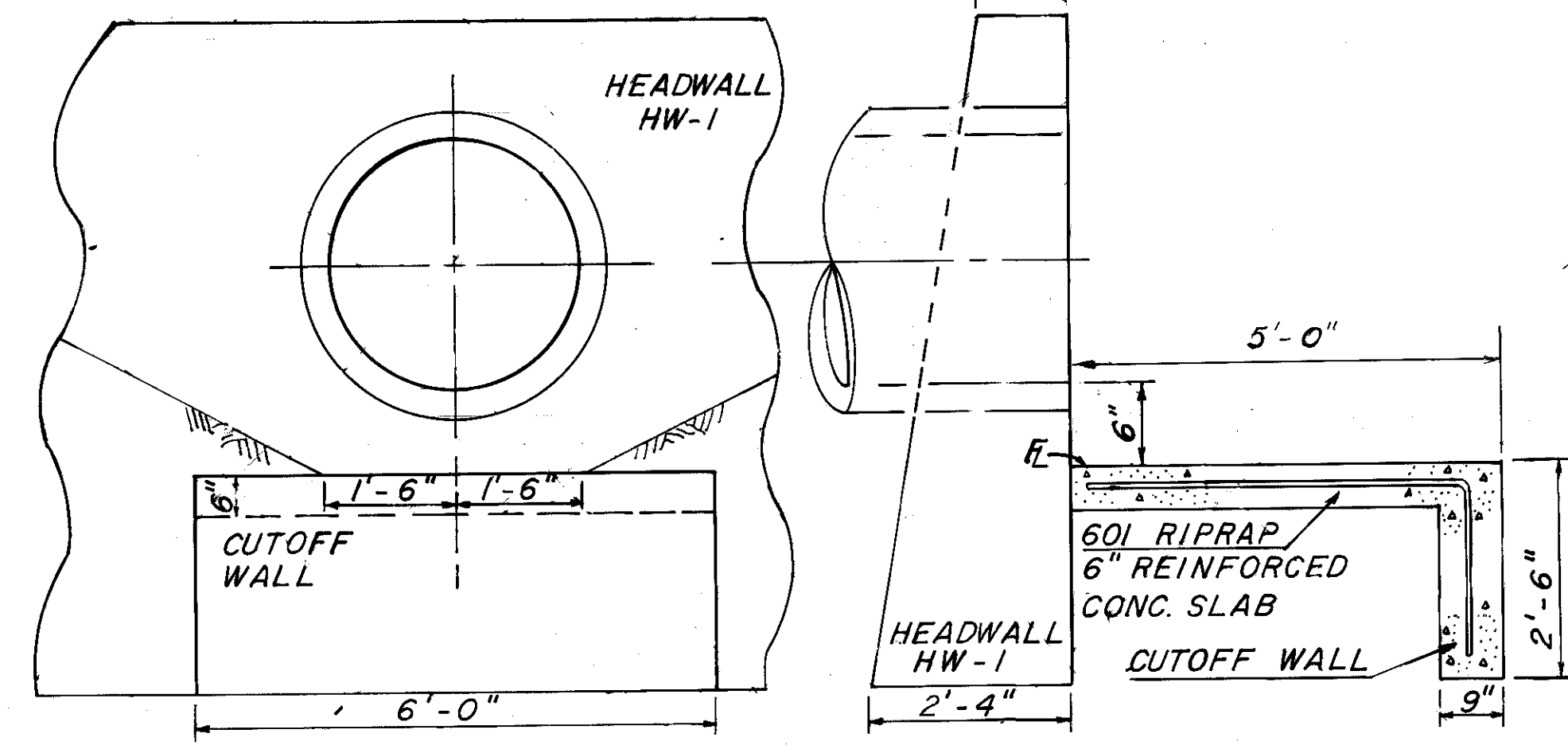
**MEDIAN OUTLET PROTECTION**



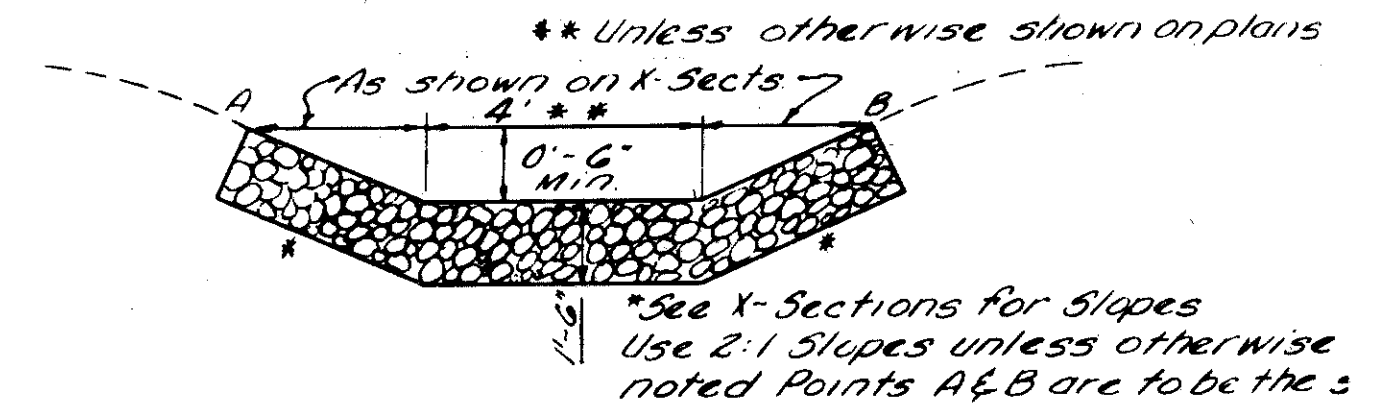
**UNDERDRAIN OUTLET DETAIL 'B'**



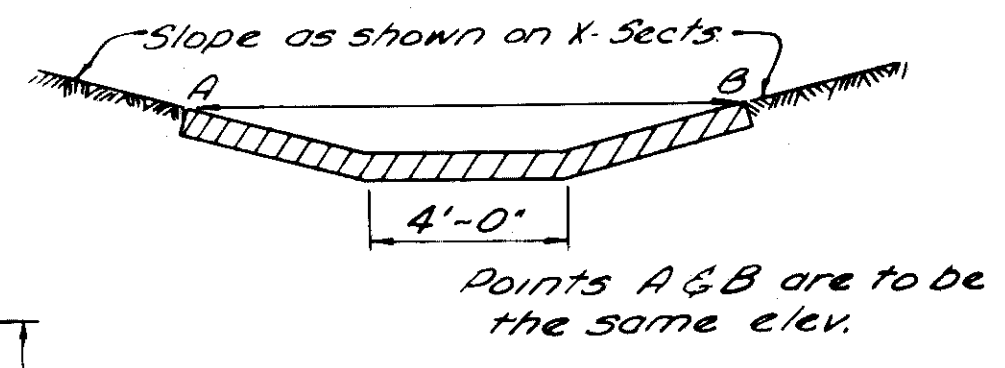
**ROCK CHANNEL PROTECTION FOR OUTLETS INTO SIDE DITCH**



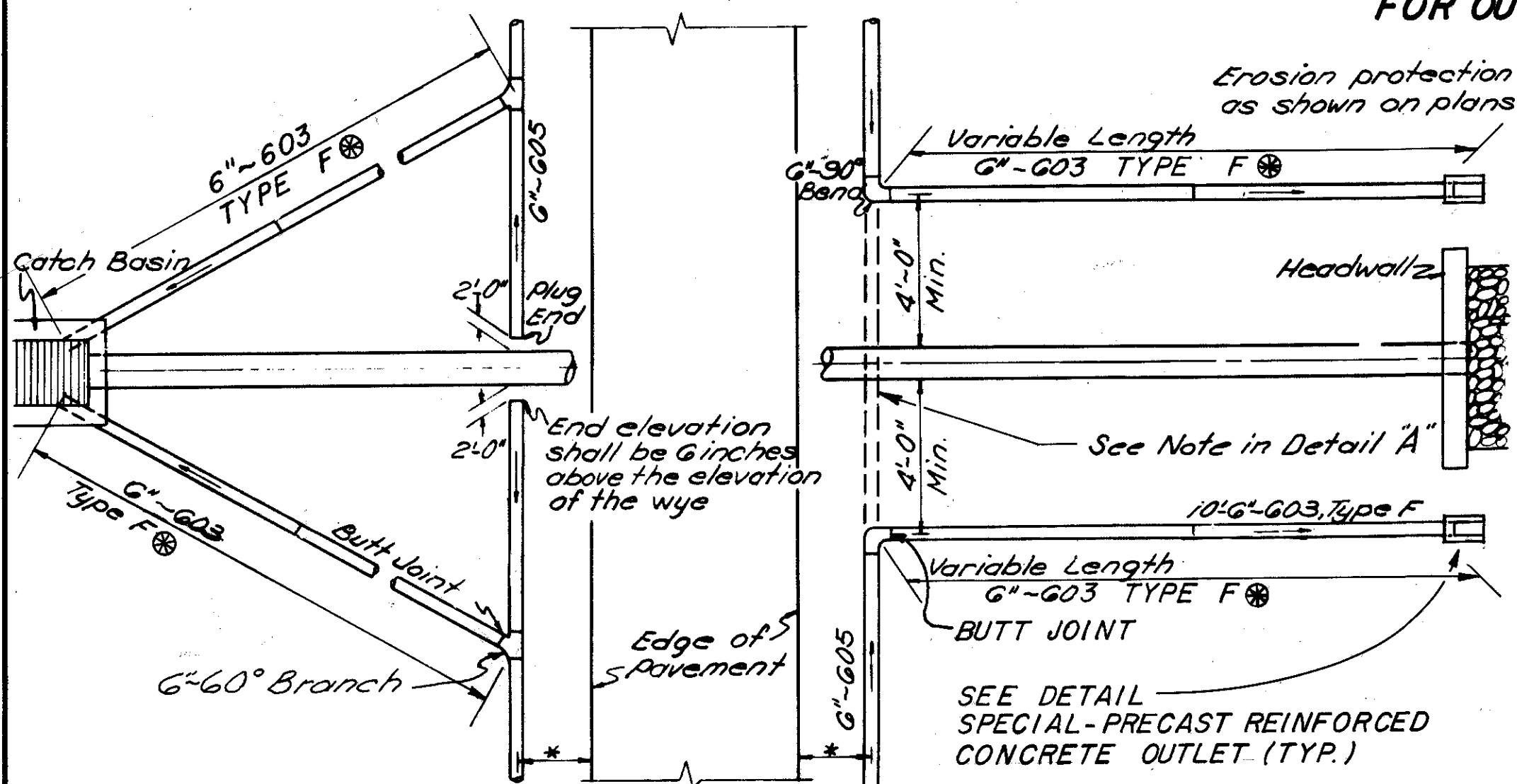
**36"-TYPE HW-1 HEADWALL WITH OUTLET PROTECTION**



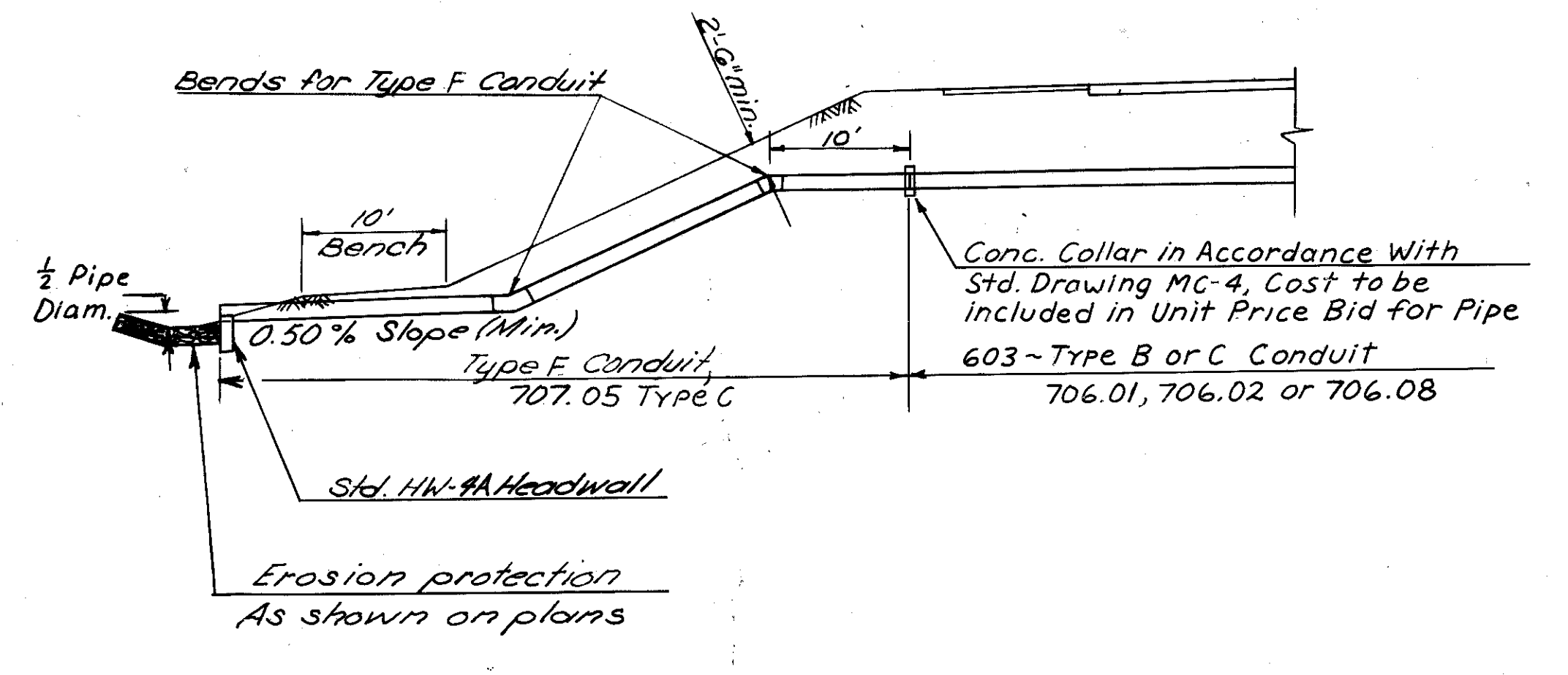
**CHANNEL PROTECTION**



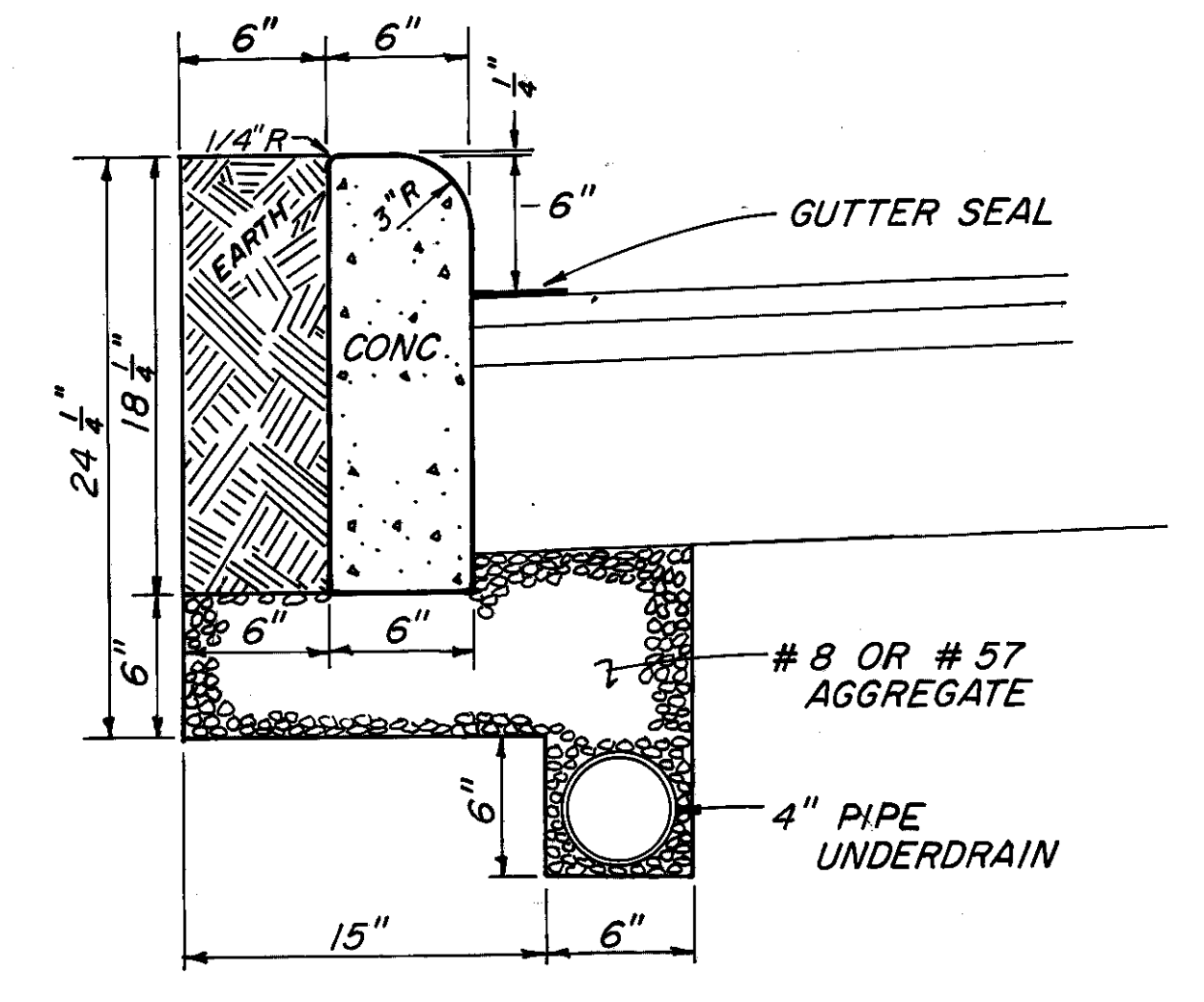
**ROADWAY DITCH EROSION PROTECTION**



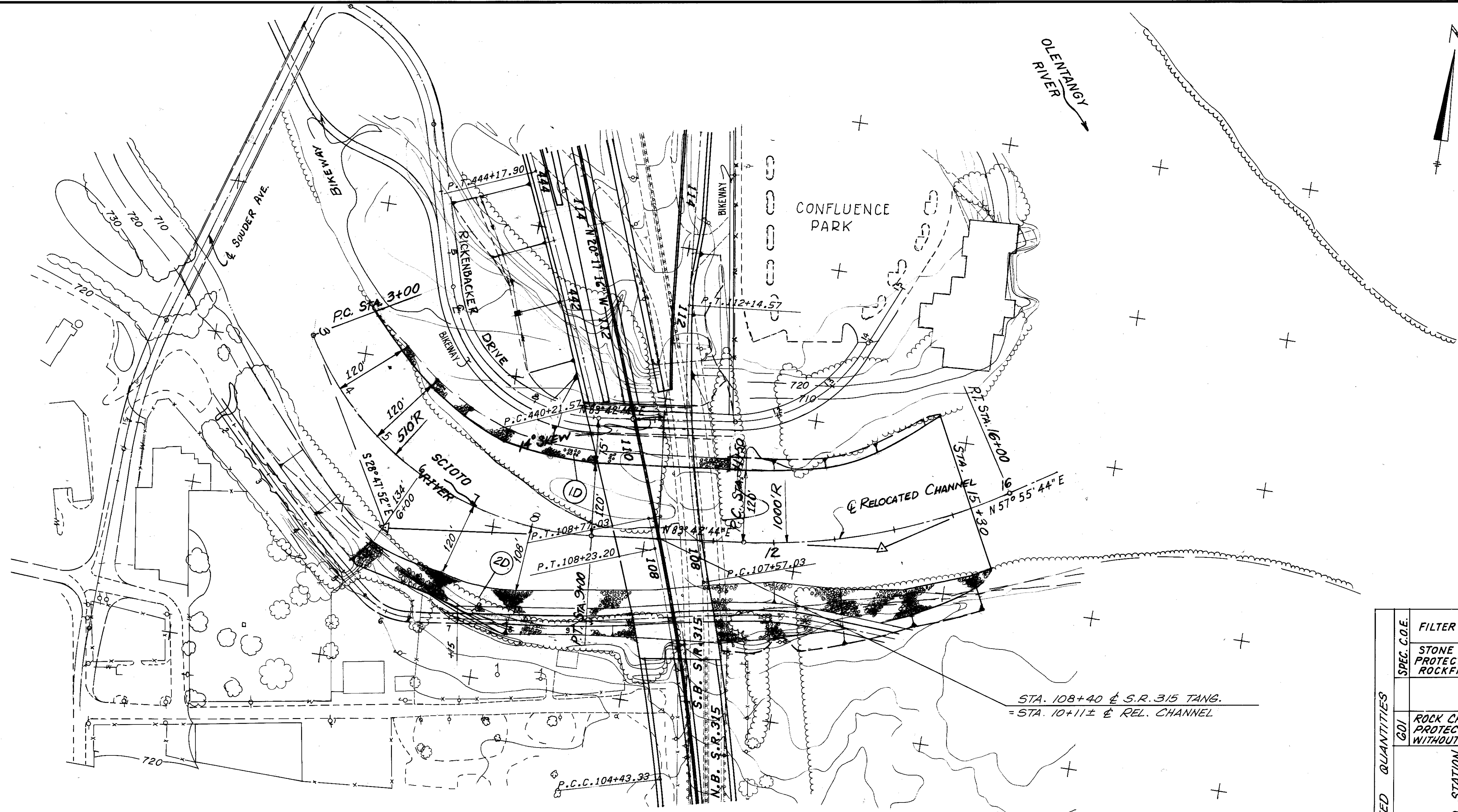
**UNDERDRAIN OUTLET DETAIL 'C'**



**STORM SEWER OUTLET DETAIL IN HIGH FILL**



**ITEM 609 CURB, TYPE 6 AS PER PLAN AND ITEM 605 4" SHALLOW PIPE UNDERDRAIN AS PER PLAN**



CHANNEL RELOCATION

P.C. 3+00	N 715,768.120	E 1,853,660.808
C.R. 510	N 716,014.447	E 1,854,107.376
P.T. 9+00	N 715,507.515	E 1,854,163.233
P.O.T. 10+11	N 715,519.672	E 1,854,273.564
P.C. 11+50	N 715,534.900	E 1,854,411.700
C.R. 1000	N 716,528.886	E 1,854,302.197
P.T. 16+00	N 715,681.500	E 1,854,833.200

PLAN  
SCALE 1" = 100'

CHANNEL RELOCATION  
CURVE DATA

PI = STA 6+40.71	PI = STA. 13+78.88
Dc = 11° 14' 04"	Dc = 5° 43' 46"
Δ = 67° 29' 24"	Δ = 25° 47' 00"
R = 510.00'	R = 1000.00'
Lc = 600'00'	Lc = 450.00'
T = 340.71'	T = 228.88'

STA. 108+40 & S.R. 3/15 TANG.  
= STA. 10+11 ± & REL. CHANNEL

ESTIMATED QUANTITIES	SPEC. C.O.E.	ITEM	C.Y.	S.Y.	TOTALS TO GEN. SUMMARY	
					18014	18014 7070
		FILTER CLOTH				
		STONE SLOPE PROTECTION AND ROCKFILL				
		ROCK CHANNEL PROTECTION TYPE "B" WITHOUT FILTER				
		STATION TO STATION				
		SIDE				
		REF. NO.				
			1D	LT. STA. 4+00 TO STA. 11+30	27194	
			2D	RT. STA. 4+00 TO STA. 15+00		2714
				TOTALS TO GEN. SUMMARY		

HYDRAULIC DATA

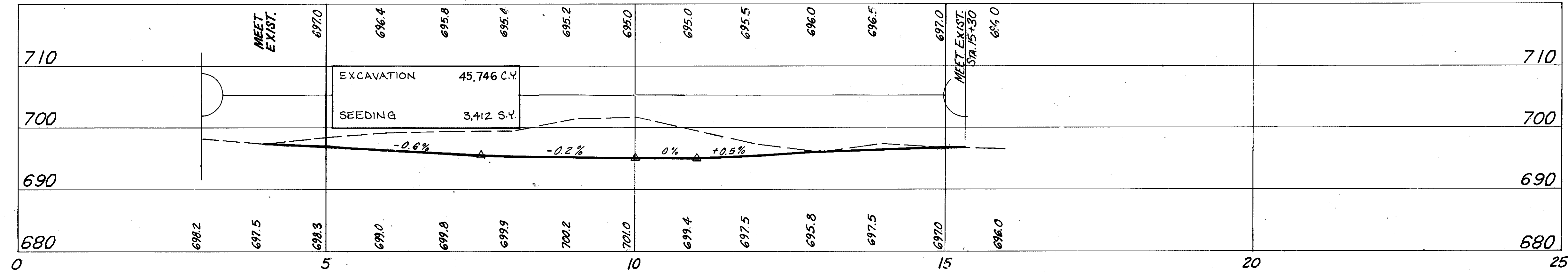
DRAINAGE AREA: 1076 Sq. Mi.  
 $Q_{100}$  : 58,300 cfs  
 $V_{100}$  : 7.4 ft./Sec.  
 $HW_{100}$  : 721.65  
 WATERWAY OPENING BELOW  
 ELEV. 718.7, 6925 Sq. Ft.  
 $Q_{50}$  : 48,500 cfs  
 $V_{50}$  : 7.1 Ft./Sec.  
 $HW_{50}$  : 718.7

EXISTING STRUCTURE DATA

TYPE: Continuous steel girder with concrete deck & substructure  
 SPAN: 80'-0", 3 @ 100'-0", 80'-0" c/c brgs.  
 ROADWAY: 2 @ 26' with 4' median and 2'-6" sidewalks.  
 SKEW: None  
 DESIGN LOADING: S-20-46  
 DATE BUILT:  
 STRUCTURE FILE NO.:  
 CONDITION:

PROPOSED STRUCTURE

TYPE: Continuous composite steel beam with reinforced concrete deck and sub-structure.  
 SPAN: 87.5'(+), 2 @ 108'(+), 87.5'(+)/c/c brgs  
 ROADWAY: Variable width f/f BR-1 railing (modified) with concrete barrier median.  
 DESIGN LOADING: HS-20-44(case I) and the Alternate Military Loading  
 SKEW: 14° Lt. fwd. with reference chord  
 WEARING SURFACE: Monolithic concrete  
 APPROACH SLABS: AS -1-81, 25' long  
 ALIGNMENT: 1° 28' curve Lt. & tangent, & S.R. 315; 3° 00' curve Rt. @ Ramp S-M  
 SUPERELEVATION: Varies, 0.036', Max.





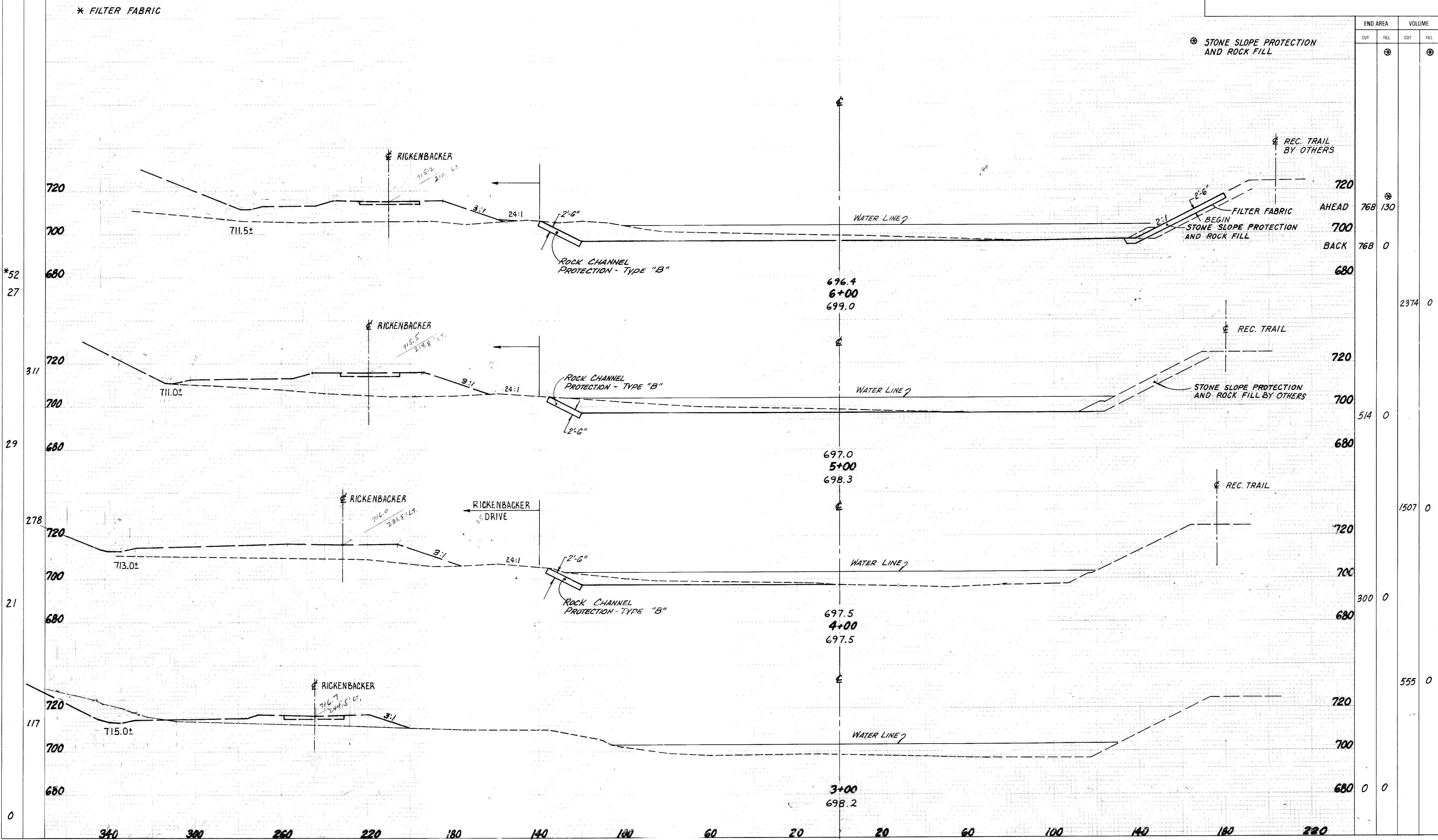
SEEDING	
END WIDTH	SQ YDS

CALCULATED AC DATE 11-85  
 CHECKED HJH DATE 3-86

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

97  
404

FRANKLIN COUNTY  
 FRA-670-1.25 A-5



SCIOTO RIVER RELOC. STA. 3+00 TO STA. 6+00

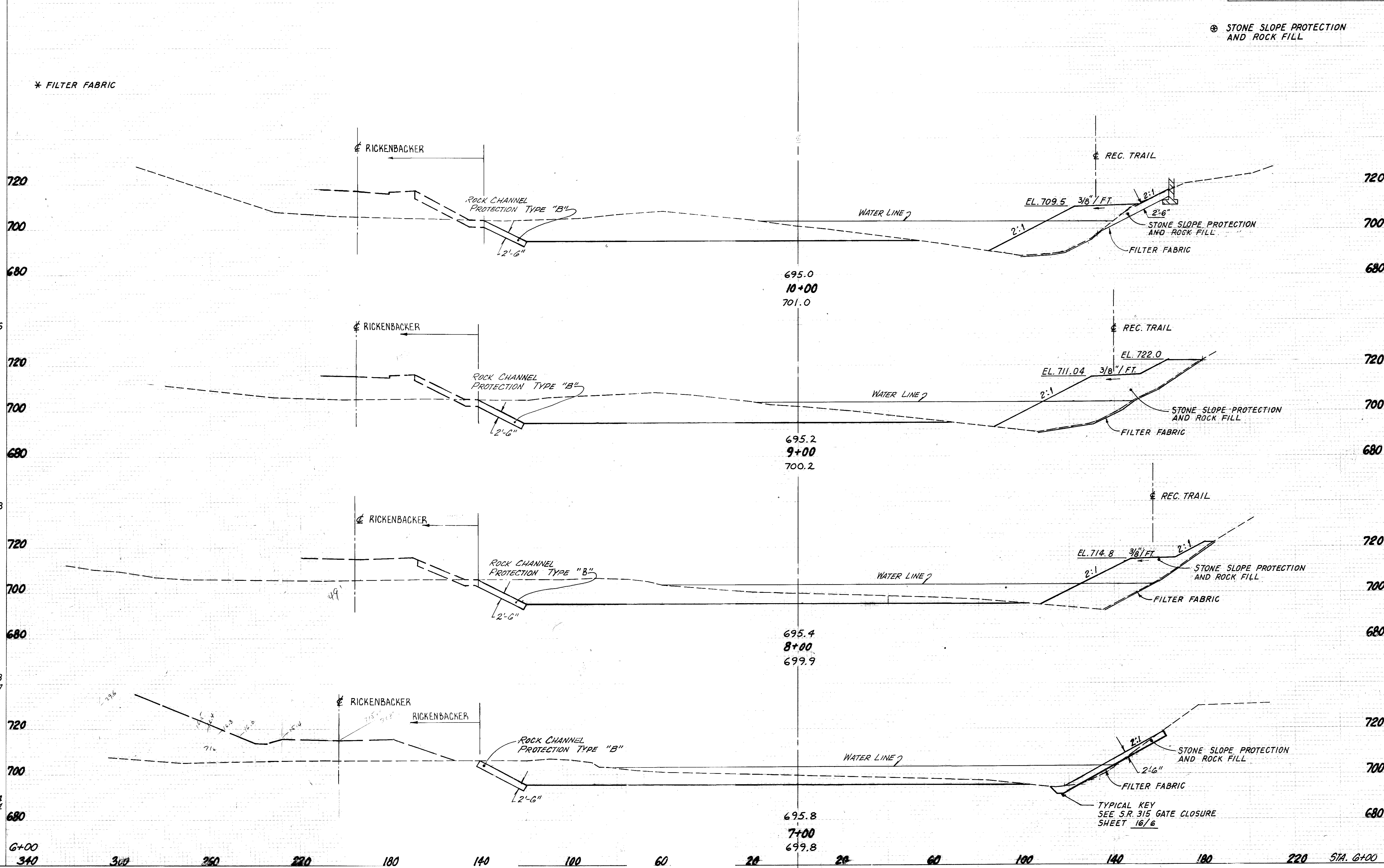
SEEDING	
END WIDTH	SQ YDS
* 72 0	
* 856 89	
* 82 16	
* 778 211	
* 58 22	
* 628 167	
* 55 8	
* 594 194	
* 52 27	

CALCULATED AC DATE 11-85  
CHECKED HJH DATE 3-80

F.H.W.A. REGION	STATE	PROJECT	
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FRANKLIN COUNTY  
FRA-670-1.25 A-5

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404



⊕ STONE SLOPE PROTECTION AND ROCK FILL

END AREA	VOLUME	
	CUT	FILL
1512	704	
5866	3237	
1044		1656
5968	4785	
1567	1540	
5080	3110	
1176	140	
130	500	
3600		

SCIOTO RIVER RELOC. STA. 7+00 TO STA. 10+00

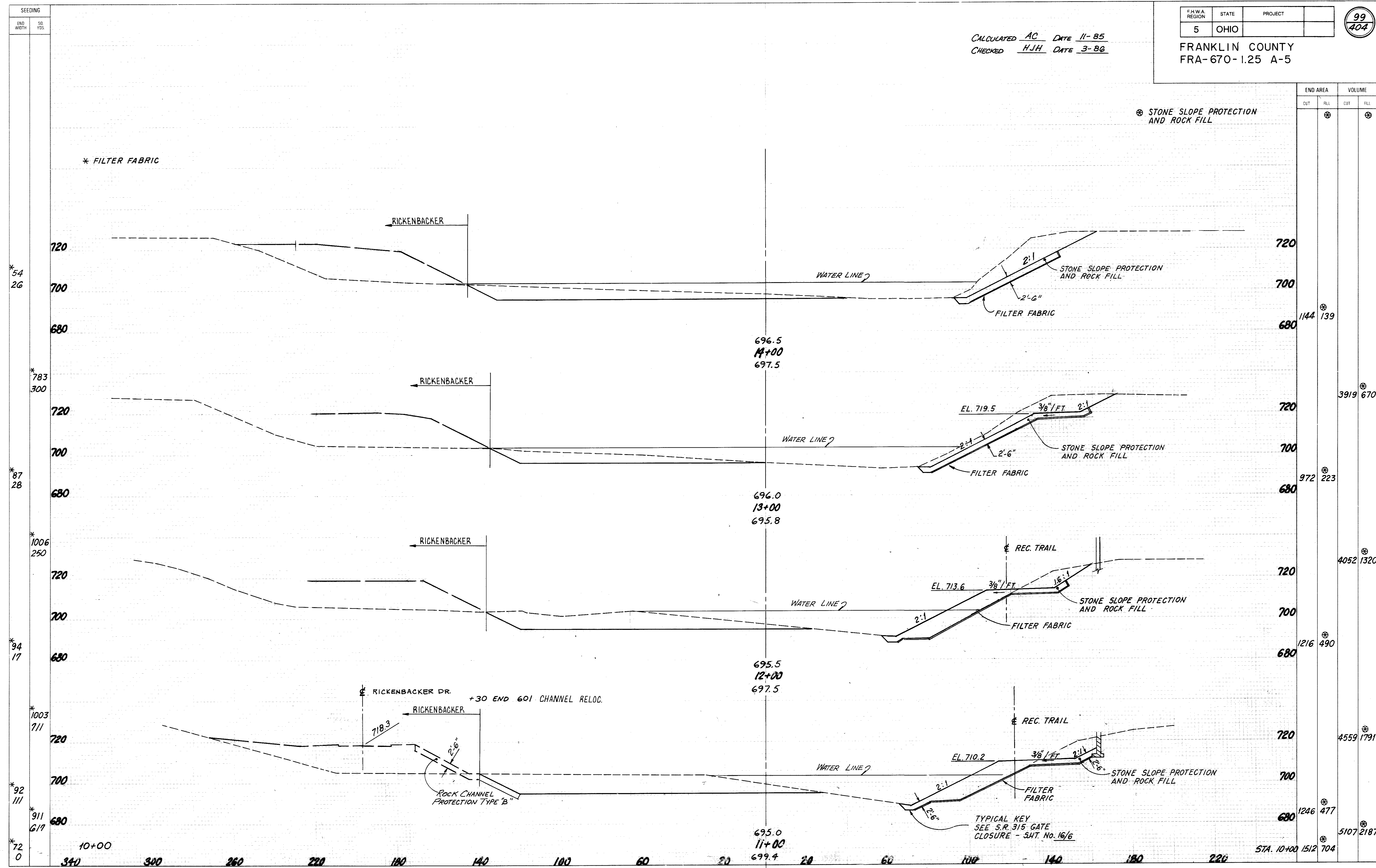


F.H.W.A. REGION	STATE	PROJECT
5	OHIO	

99  
404

CALCULATED AC DATE 11-85  
CHECKED HJH DATE 3-86

FRANKLIN COUNTY  
FRA-670-1.25 A-5



END AREA		VOLUME	
CUT	FILL	CUT	FILL

⊗ STONE SLOPE PROTECTION AND ROCK FILL

\* FILTER FABRIC

← RICKENBACKER

WATER LINE ?

STONE SLOPE PROTECTION AND ROCK FILL

FILTER FABRIC

← RICKENBACKER

WATER LINE ?

STONE SLOPE PROTECTION AND ROCK FILL

FILTER FABRIC

← RICKENBACKER

WATER LINE ?

STONE SLOPE PROTECTION AND ROCK FILL

FILTER FABRIC

RICKENBACKER DR. +30 END 60' CHANNEL RELOC.

← RICKENBACKER

REC. TRAIL

STONE SLOPE PROTECTION AND ROCK FILL

FILTER FABRIC

Rock Channel Protection Type "B"

TYPICAL KEY  
SEE S.R. 315 GATE  
CLOSURE - SHT. No. 16/6

SCIOTO RIVER RELOC. STA. 11+00 TO STA. 14+00

\* 54  
26

\* 783  
300

\* 87  
28

\* 1006  
250

\* 94  
17

\* 1003  
711

\* 92  
111

\* 911  
617

\* 72  
0

1144 139

3919 670

972 223

4052 1320

1216 490

4559 1791

1246 477

5107 2187

STA. 10+00 1512 704

10+00

340

300

260

220

180

140

100

60

20

20

60

100

140

180

220

STA. 10+00

1512

704

SEEDING	
END WIDTH	SQ. YDS.
*0	0
*42	7
*25	4
*54	26
	*439
	167

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

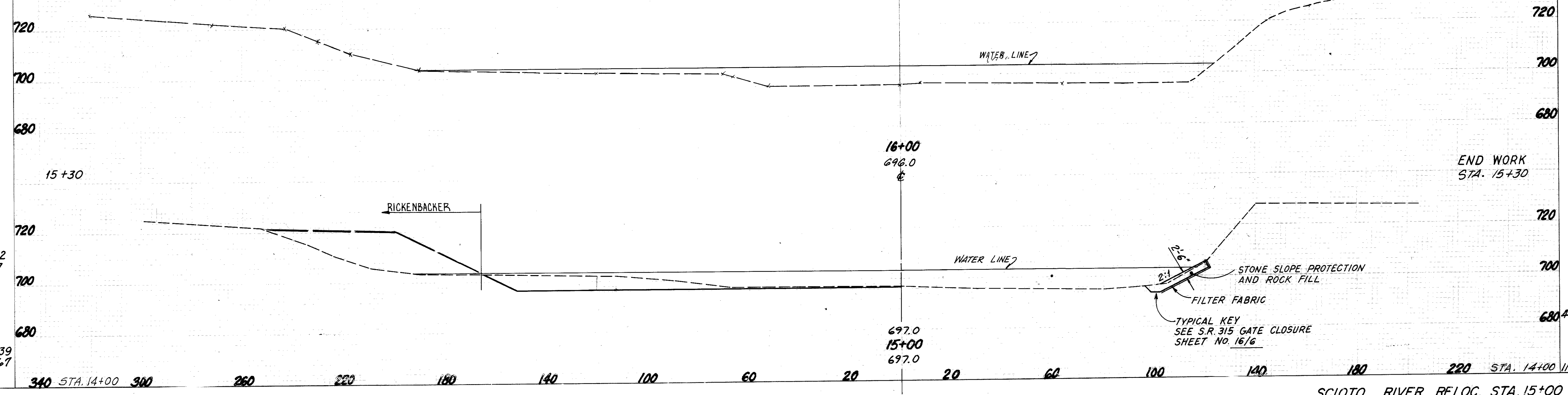
100  
404

CALCULATED AC DATE 11-85  
CHECKED HJH DATE 3-86

FRANKLIN COUNTY  
FRA-670-1.25 A-5

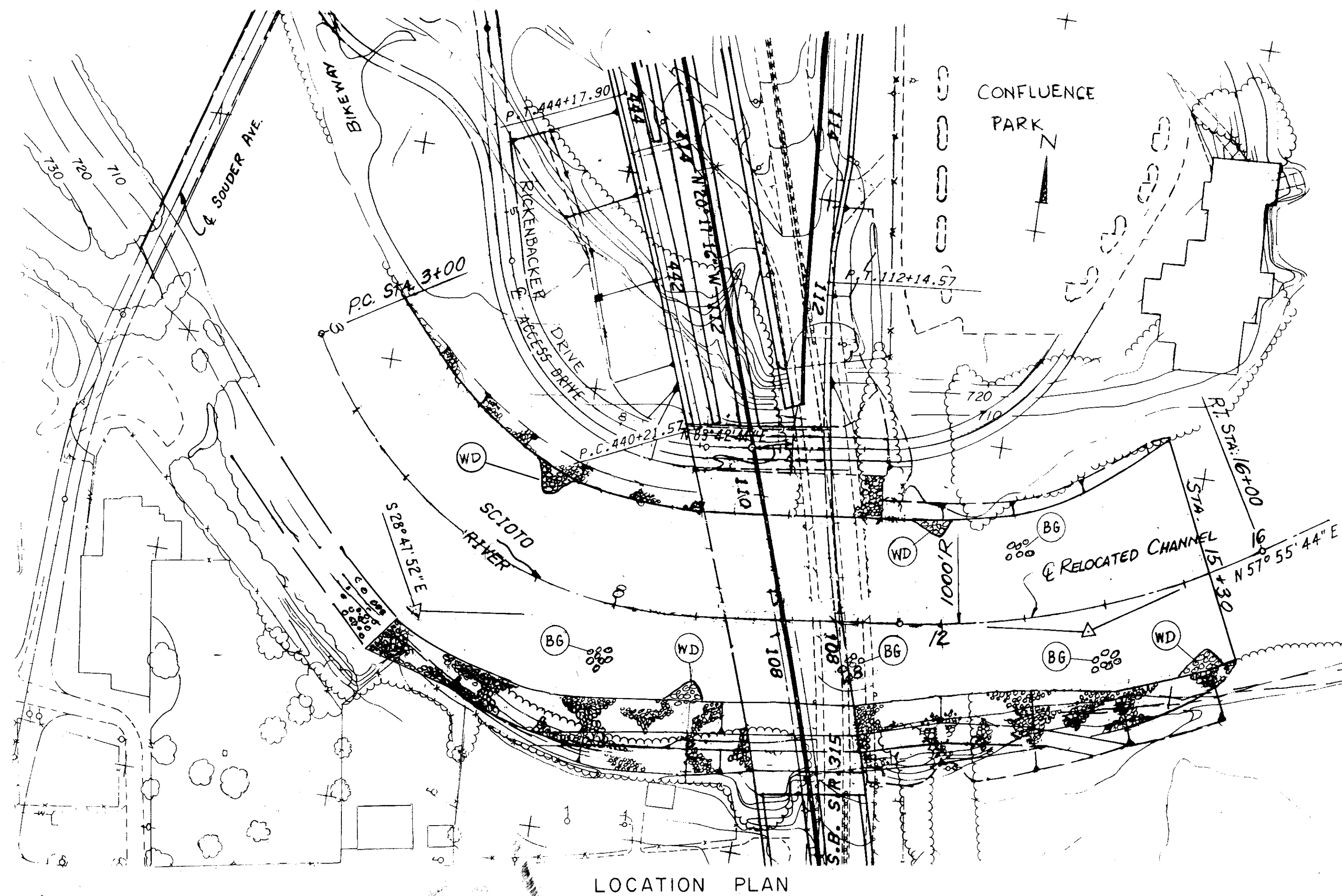
⊗ STONE SLOPE PROTECTION AND ROCK FILL

END AREA		VOLUME	
CUT	FILL	CUT	FILL
	⊗		⊗
0	0	0	0
		240	36
680	432	65	
		2919	378
		1144	139

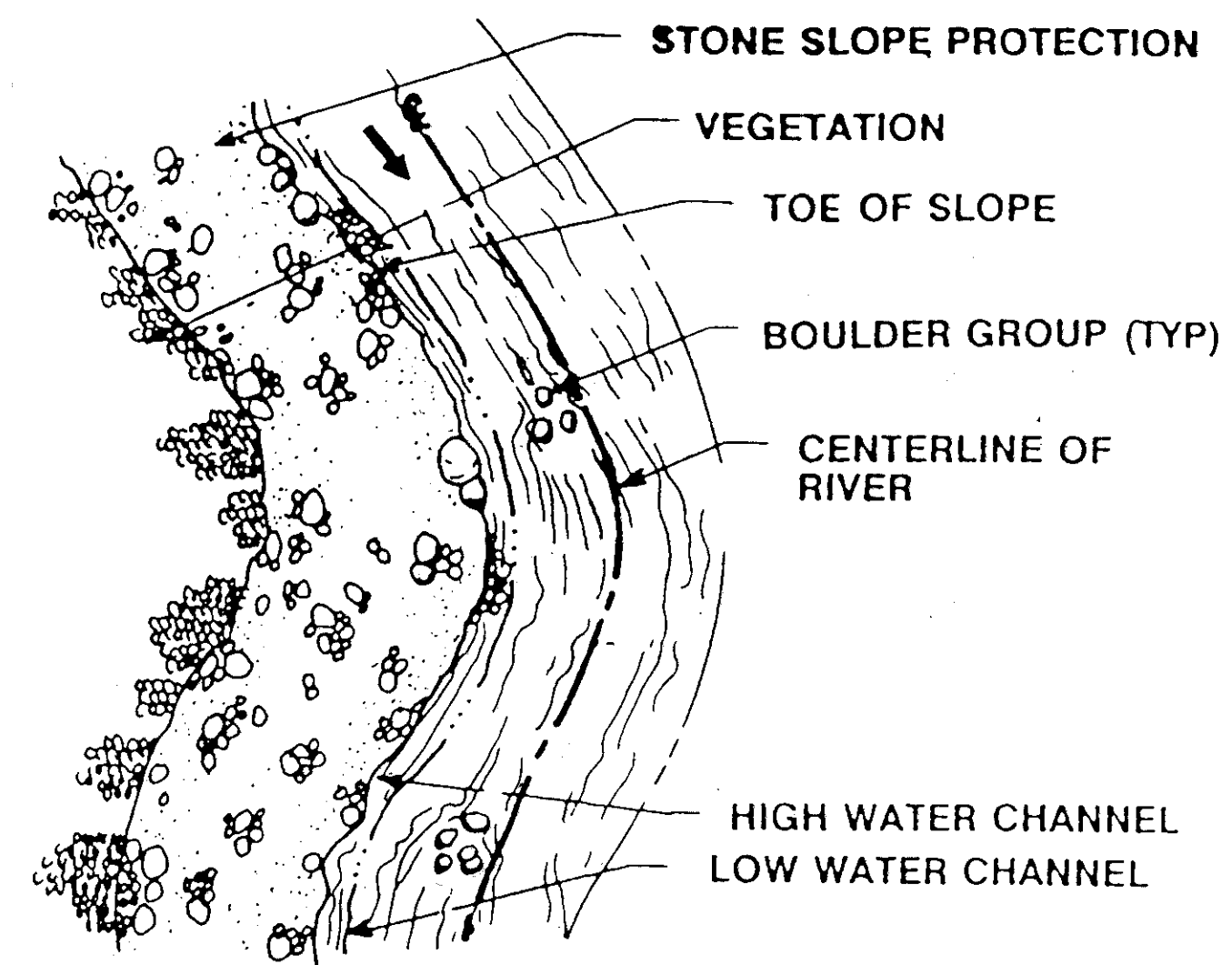


SCIOTO RIVER RELOC. STA. 15+00 TO STA. 16+00





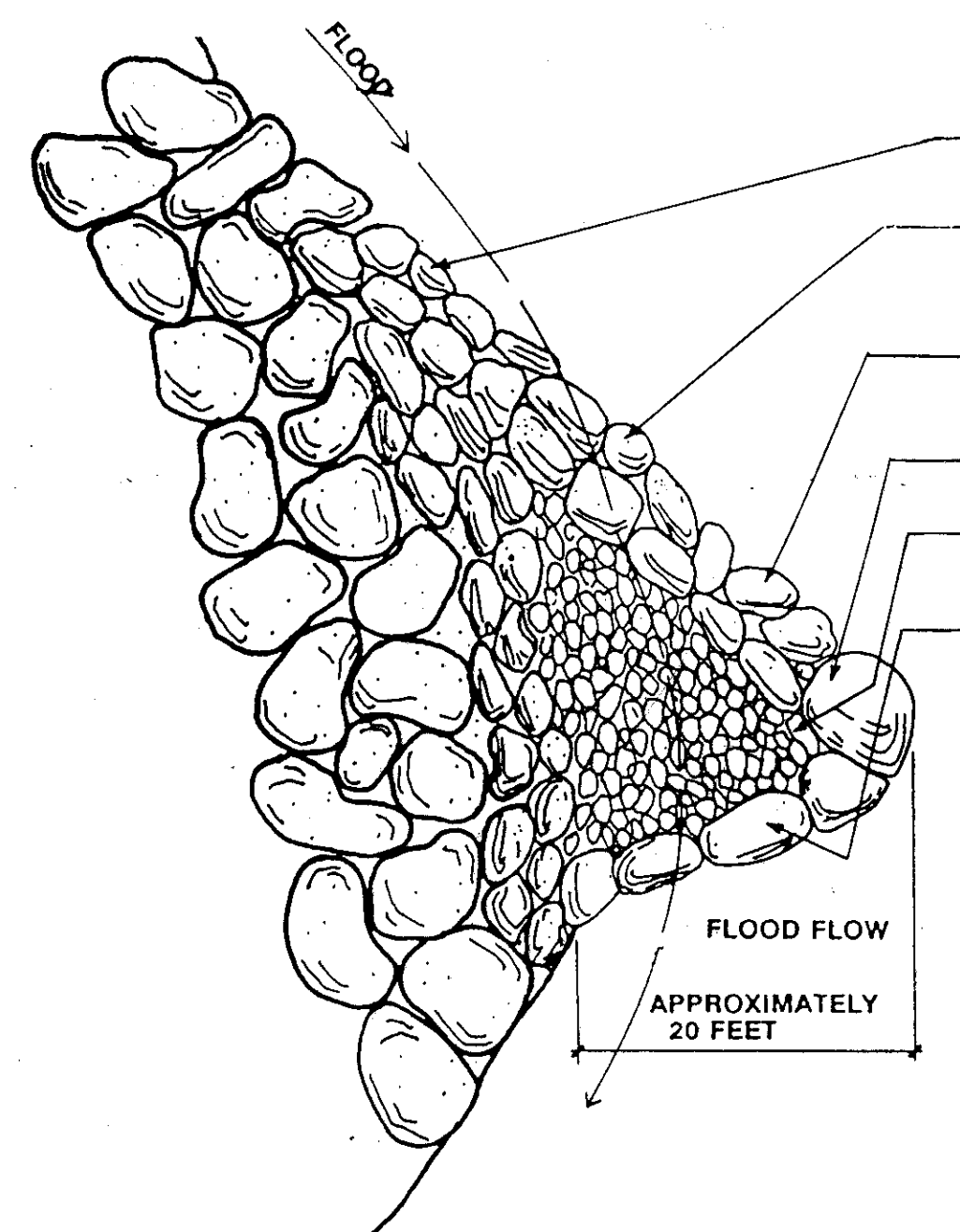
LOCATION PLAN



BOULDER GROUPINGS TO INCLUDE 3-5 BOULDERS SIZED 2-1/2 TO 3-1/2 FEET DIAMETER (2/3 TO 1 CUBIC YARD) AND SPACED 6-10 FEET APART WITHIN GROUP.

TYPICAL BOULDER GROUPINGS IN THE RIVERBED  
NOT TO SCALE

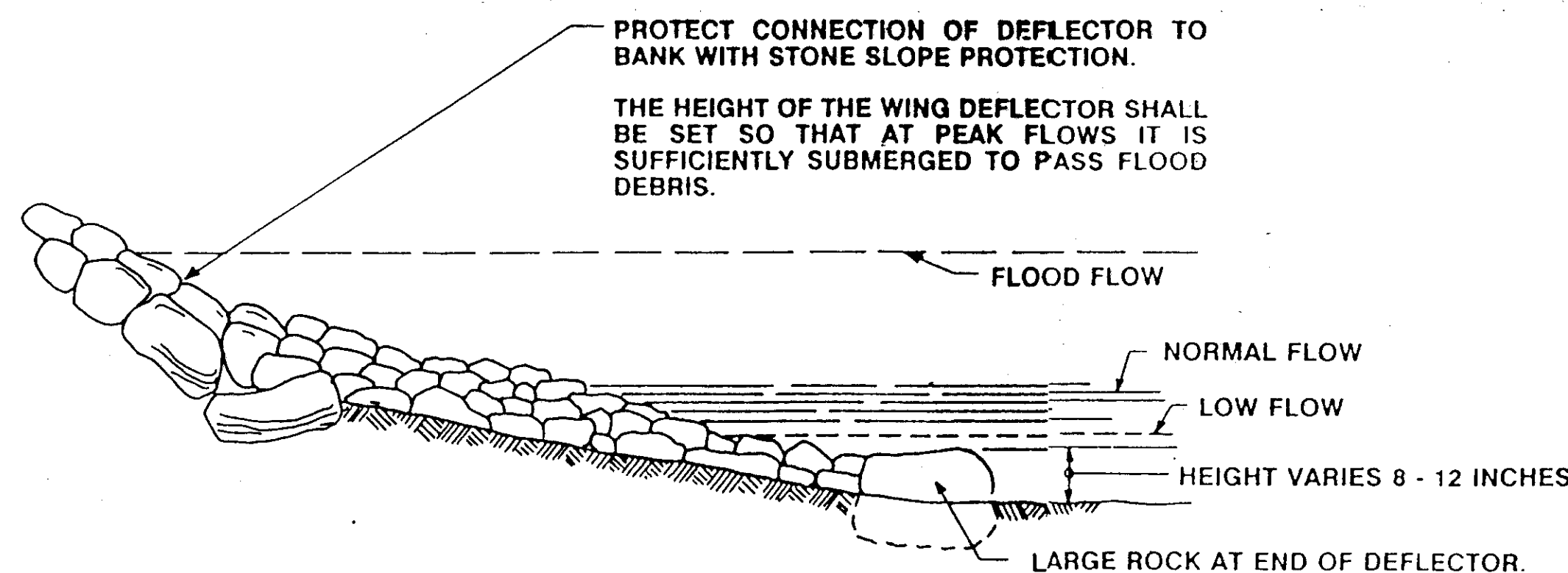
(B6)



DEFLECTOR SHALL FORM AN ANGLE WITH STREAM BANK OF 45 DEGREES OR LESS.  
MINIMUM TWO ROWS OF FOUNDATION ROCK WITH JOINTS STAGGERED TO MINIMIZE SCOUR.  
PROVIDE EDGE WITH NO PROTRUSIONS WHICH WOULD ACCUMULATE DEBRIS.  
LARGE ROCK AT END OF WING.  
FILL WITH COBBLES AND WHERE FLOOD FLOWS, OVERLAP DEFLECTOR.  
RIP RAP TO BE APPROXIMATELY TWO TO THREE CU.FT. IN SIZE.

TYPICAL WING DEFLECTOR CONSTRUCTED OF ROCK  
NOT TO SCALE

(WD)



TYPICAL WING DEFLECTOR SECTION  
NOT TO SCALE

(WD)

NOTES:

WING DEFLECTORS TO BE PLACED ON LOCATIONS AS SHOWN ON PLAN AT APPROXIMATELY 300 FT. APART OR AS SPECIFIED BY THE PROJECT ENGINEER.

AVOID AREAS HAVING SOFT SUBSTRATE.

PLACE DEFLECTORS ON ALTERNATE SIDES OF CHANNEL SPACED APPROXIMATELY 300 FEET APART AS SHOWN ON PLAN.

DO NOT PLACE DEFLECTORS WITHIN 100 FEET OF HEAD OF RIFFLES.

EXTEND DEFLECTORS APPROXIMATELY 20 FEET INTO CHANNEL.

5 BOULDER GROUPS TO BE PLACED IN LOCATIONS AS SHOWN ON THE PLAN, AT APPROXIMATELY 300 FEET APART OR AS SPECIFIED BY THE PROJECT ENGINEER ON THE SITE.

PLACEMENT OF BOULDERS SHALL OCCUR DURING LOW FLOW TO ASSURE PROPER LOCATION AND FACILITATE MOVEMENT OF HEAVY EQUIPMENT IN THE CHANNEL. HEAVY EQUIPMENT SHALL HAVE RUBBER TIRES TO AVOID EXCESSIVE DAMAGE TO THE STREAMBED.

ACCESS POINTS FOR THE EQUIPMENT SHALL BE CHOSEN CAREFULLY TO MINIMIZE DAMAGE TO THE STREAM AND BANK.

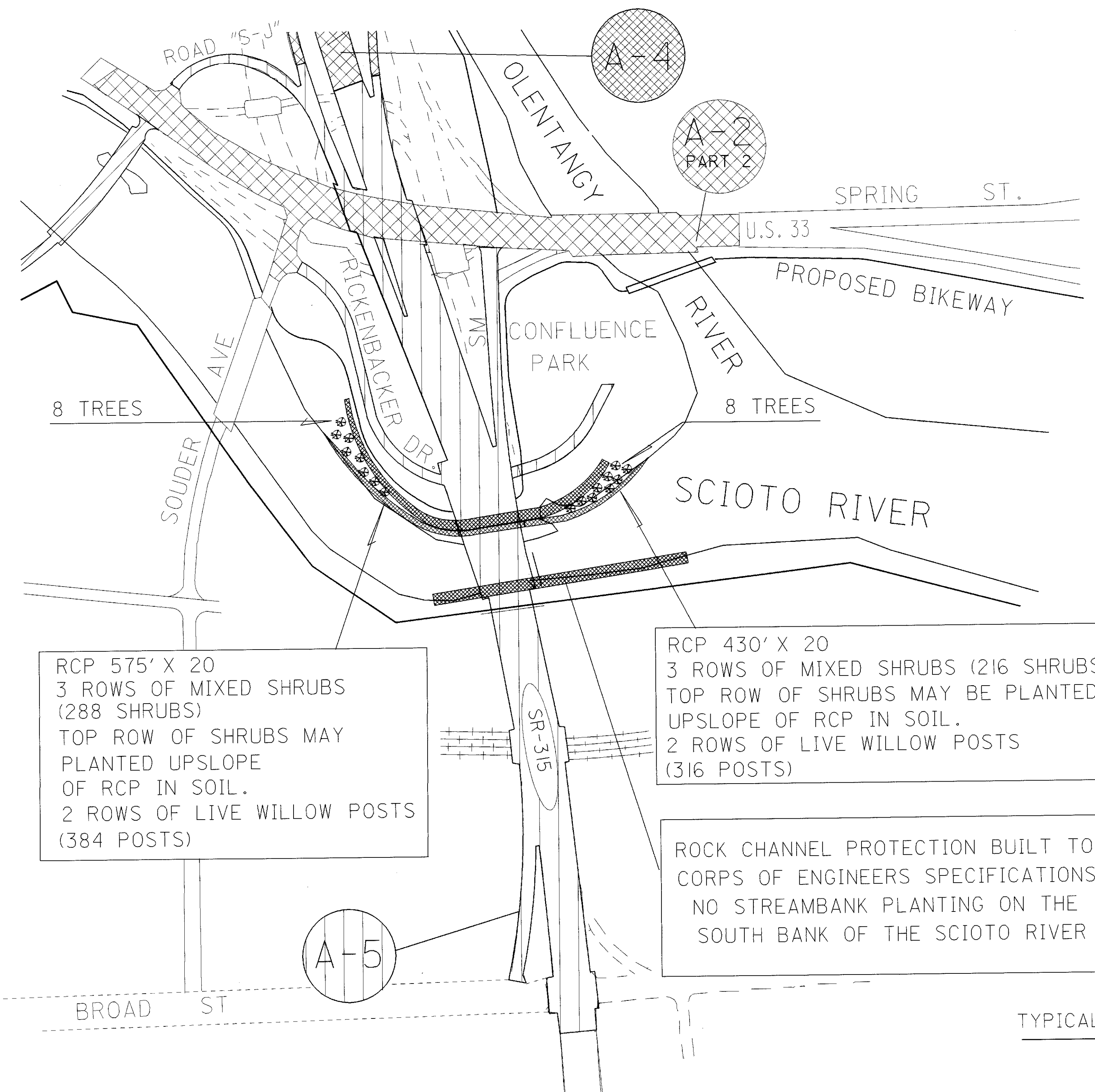
DESIREABLE LOCATIONS INCLUDE THE UPSTREAM END OF A SHALLOW POOL OR RUN AREA, THE OUTSIDE OF A CURVE AND THE MIDDLE AND DOWNSTREAM PORTIONS OF A RIFFLE.

EMBED 1/3 OF BOULDERS INTO THE RIVERBED.

NATURAL MATERIALS AVAILABLE AT THE SITE ARE PREFERRED. HARDER ROCK, SUCH AS LIMESTONE IS PREFERRED OVER SOFTER ROCK, SUCH AS SANDSTONE. FINAL ROCK TO BE APPROVED BY THE PROJECT ENGINEER. BOATING POSSIBILITIES SHOULD BE CONSIDERED WHEN LOCATING BOULDERS.

BASIS OF PAYMENT:  
WING DEFLECTORS AND BOULDER GROUPINGS SHALL BE PAID FOR UNDER ITEM, SPECIAL-LUMP SUM-ENVIRONMENTAL, MISC.: RIVER MITIGATION MEASURES.

# SITE PLAN:



RCP 575' X 20  
 3 ROWS OF MIXED SHRUBS  
 (288 SHRUBS)  
 TOP ROW OF SHRUBS MAY  
 PLANTED UPSLOPE  
 OF RCP IN SOIL.  
 2 ROWS OF LIVE WILLOW POSTS  
 (384 POSTS)

RCP 430' X 20  
 3 ROWS OF MIXED SHRUBS (216 SHRUBS)  
 TOP ROW OF SHRUBS MAY BE PLANTED  
 UPSLOPE OF RCP IN SOIL.  
 2 ROWS OF LIVE WILLOW POSTS  
 (316 POSTS)

ROCK CHANNEL PROTECTION BUILT TO  
 CORPS OF ENGINEERS SPECIFICATIONS.  
 NO STREAMBANK PLANTING ON THE  
 SOUTH BANK OF THE SCIOTO RIVER

A-4 FRA - 670/315 - 2.12/1.43

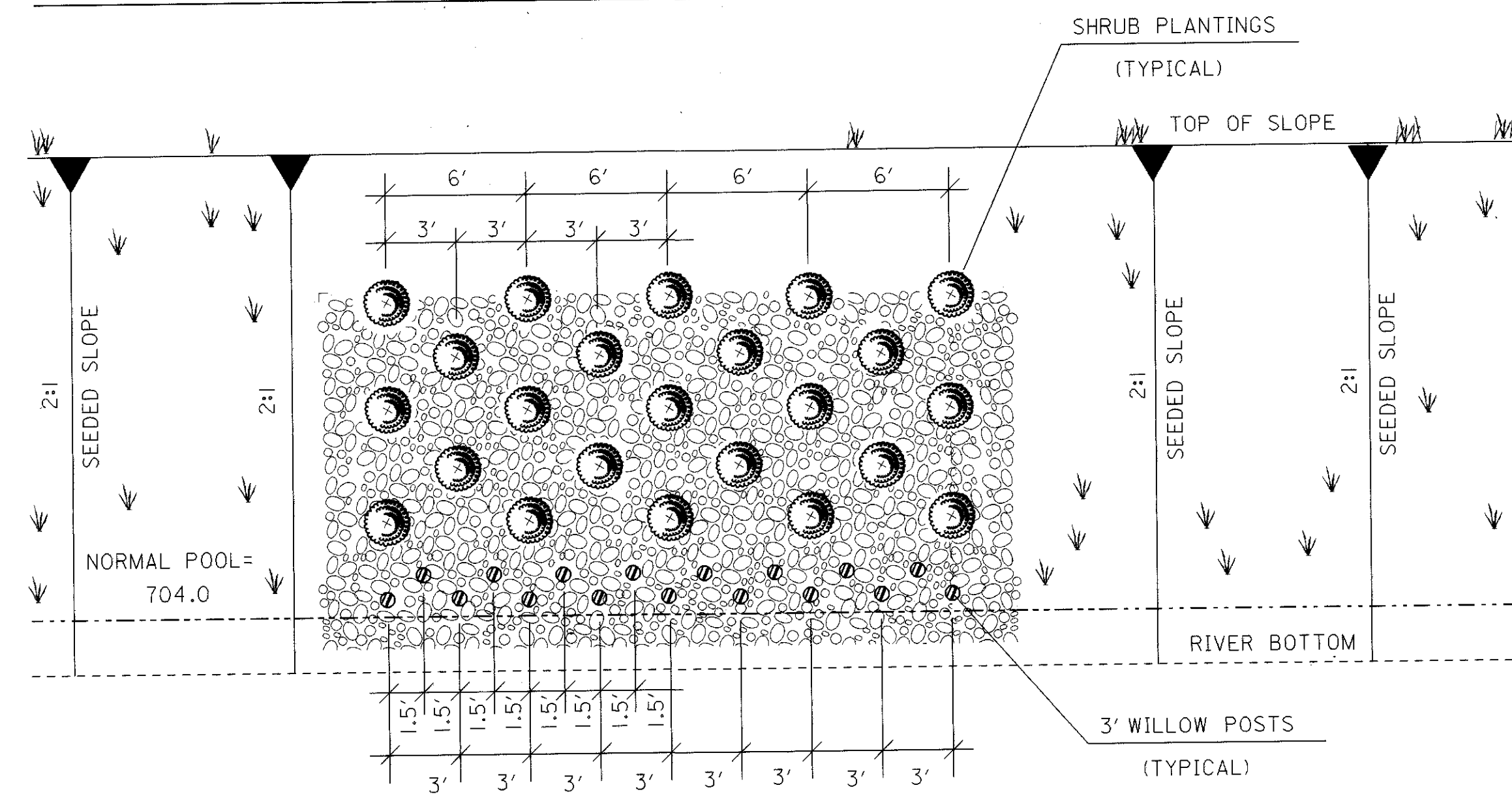
A-5 FRA - 315 - 0.93

## NOTES:

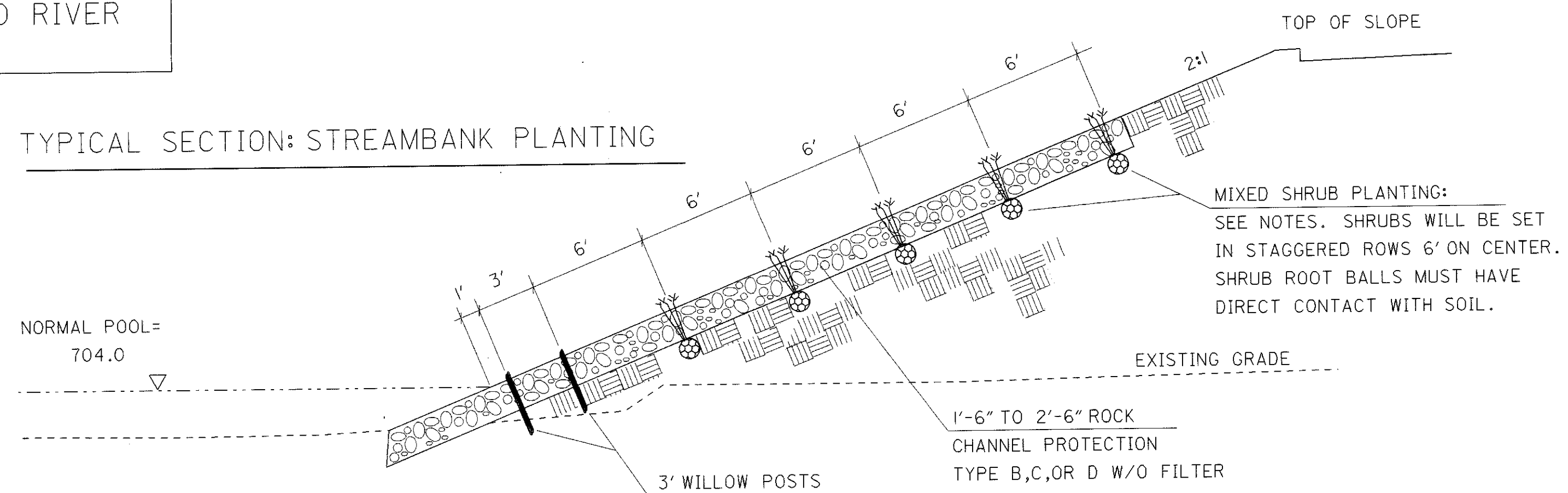
I. FOR PLANTING NOTES AND BID ITEM DETAILS SEE LANDSCAPE GENERAL NOTES (2/2).

DESCRIPTION:	SIZE	QUANTITY
CORNUS RACEMOSA - GRAY DOGWOOD	3'	126 EACH
CORNUS SERRICEA - REDTWIG DOGWOOD	3'	126 EACH
RHUS TYPHINA - STAGHORN SUMAC	3'	126 EACH
VIBURNUM PRUNIFOLIUM - BLACKHAW	3'	126 EACH
FRAXINUS PENNSYLVANICA - GREEN ASH	1.5" B&B	8 EACH
PLATANUS OCCIDENTALIS - SYCAMORE	1.5" B&B	8 EACH
LIVE WILLOW POSTS	2" X 36"	700 EACH
BACKFILL MIXTURE		130 CU. YD

## TYPICAL ELEVATION: STREAMBANK PLANTING

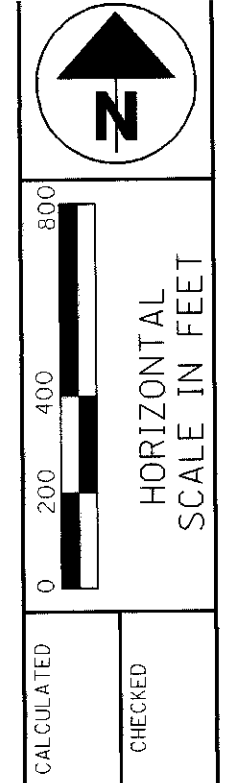


## TYPICAL SECTION: STREAMBANK PLANTING



MIXED SHRUB PLANTING:  
 SEE NOTES. SHRUBS WILL BE SET  
 IN STAGGERED ROWS 6' ON CENTER.  
 SHRUB ROOT BALLS MUST HAVE  
 DIRECT CONTACT WITH SOIL.

1'-6" TO 2'-6" ROCK  
 CHANNEL PROTECTION  
 TYPE B,C,OR D W/O FILTER



STREAMBANK PLANTING

FRA - 315 - 0.93 (A-5)

100B  
404



# LANDSCAPE GENERAL NOTES

ITEM SPECIAL: MISC, STREAMBANK PLANTING

## GENERAL REQUIREMENTS

PLANTINGS TO AID IN STREAM STABILIZATION IN AREAS OF PROPOSED ROCK CHANNEL PROTECTION AT THE LOCATIONS AND QUANTITIES SHOWN ON THE PLANTING PLAN. NO SHRUBS OR WILLOW POSTS WILL BE PLANTED UNDER THE PROPOSED BRIDGES OR WITHIN TEN FEET OF THE BRIDGE PIERS.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DEVISE A METHOD OF PLACEMENT FOR THE SHRUBS AND WILLOW POSTS IN CONJUNCTION WITH THE ROCK CHANNEL PROTECTION. CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO THE PLANTINGS DURING THE PLACEMENT OF THE ROCK CHANNEL PROTECTION.

ALL COSTS FOR THE ROCK CHANNEL PROTECTION WILL BE MADE AS OUTLINED ELSEWHERE IN THE PLANS.

## PLANTING BACKFILL MIXTURE

BACKFILL MIXTURE IS TO BE MIXED ON SITE & APPROVED BY THE ENGINEER.

THE BACKFILL MIXTURE USED TO FILL AROUND THE SHRUBS AND WILLOW STAKES SHALL CONSIST BY VOLUME OF 1 PART \*SOIL CONDITIONER, 1 PART COMPRESSED SPAGNUM PEAT OR OR 1 PART COM-TIL, OR APPROVED EQUAL, AND 2 PARTS SOIL.

## SOIL CONDITIONER

A SOIL CONDITIONER SUCH AS "HAYDITE", "PERLITE" OR AN APPROVED EQUAL SHALL BE USED. THE PARTICLE SIZE GRADATION OF THE SOIL CONDITIONER SHALL BE AT LEAST 80% PASSING A NO. 6 SIEVE AND NOT MORE THAN 5% PASSING A NO. 50 SIEVE.

## WATERING

WATER SHALL BE FURNISHED BY THE CONTRACTOR. ALL PLANT MATERIAL SHALL BE WATERED THOROUGHLY AT THE TIME OF PLANTING AND WEEKLY FOR THE FIRST GROWING SEASON. SUSPENSION OF WATERING OPERATION BECAUSE OF RAINFALL WILL BE DETERMINED BY THE ENGINEER. AN AVERAGE OF ONE INCH OF RAINFALL PER WEEK SHALL BE CONSIDERED ADEQUATE.

THE METHOD OF MEASUREMENT FOR WATERING SHALL BE BY APPROVED METERING FROM TANKS OR BY INDIVIDUALLY MEASURED CONTAINERS TO EACH PLANT IN THE QUANTITY LISTED IN THE WATERING TABLE.

### WATERING TABLE

WILLOW POSTS 2"X36"	2 GAL. PER STAKE
SHRUBS 3- 4" SIZE	4 GAL. PER PLANT

PAYMENT FOR THE WATERING WILL BE INCLUDED IN THE LUMP PRICE BID FOR ITEM SPECIAL - MISC: STREAMBANK PLANTING.

## LIVE WILLOW POST PLANTING:

THE LIVE WILLOW POSTS WILL BE APPROXIMATELY 2 INCHES IN DIAMETER AND 36 INCHES LONG. PLANTING WILL COMMENCE ONE FOOT ABOVE THE NORMAL RIVER ELEVATION (704) AND CONTINUE UP SLOPE AS DETAILED ON THE TYPICAL SHRUB AND POST PLANTING DETAILS. THE LIVE WILLOW POSTS WILL BE PLACED APPROXIMATELY THREE FEET ON CENTER IN STAGGERED ROWS THREE FEET APART. THE LIVE WILLOW POST WILL BE PLACED PERPENDICULAR TO THE SLOPE WITH THE BOTTOM END IN DIRECT CONTACT WITH THE SOIL SUBGRADE. ALL LEAVES AND STEMS WILL BE REMOVED FROM THE LIVE WILLOW POSTS PRIOR TO PLANTING. LIVE WILLOW POSTS ARE BEST PLANTED WITHIN 24 HOURS OF HARVESTING. THE LIVE WILLOW SHOULD BE KEPT MOIST IN BUCKETS OR WATER OF WRAPPED IN BURLAP SACKS AND STORED IN THE SHADE PRIOR TO PLANTING.

APPROXIMATELY 0.5 CUBIC FOOT OF BACKFILL MIXTURE WILL THEN PACKED AROUND THE BOTTOM END OF THE POSTS. THE REMAINDER OF THE POSTS WILL BE COVERED BY THE ROCK CHANNEL PROTECTION.

## SHRUB PLANTING:

THE FOLLOWING SHRUBS WILL BE PLANTED APPROXIMATELY SIX FEET ON CENTER IN STAGGERED ROWS SPACED SIX FEET APART.

SIZE	DESCRIPTION	COND.
3'	CORNUS RACEMOSA - GRAY DOGWOOD	12" B&B
3'	CORNUS SERRICEA - REDTIG DOGWOOD	12" B&B
3'	RHUS TYPHINA - STAGHORN SUMAC	12" B&B
3'	VIBURNUM PRUNIFOLIUM - BLACKHAW	12" B&B

THE SHRUBS SPECIES WILL BE PLANTED RANDOMLY MIXED WITHIN THE ROWS. THE SHRUBS WILL BE PLACED PERPENDICULAR TO THE SLOPE WITH THE BALL IN DIRECT CONTACT WITH THE SOIL SUBGRADE. AFTER PLACING THE SHRUB THE BURLAP SHALL BE LOOSENEED AND THE TOP HALF CUT OFF AND REMOVED ALONG WITH ANY ROPE OR TWINE. APPROXIMATELY 6 CUBIC FEET OF BACKFILL MIXTURE WILL BE PACKED AROUND EACH SHRUB ROOTBALL. THE REMAINDER OF THE SHRUB WILL THEN BE COVERED WITH THE ROCK CHANNEL PROTECTION. CARE SHOULD BE EXERCISED TO MINIMIZE DAMAGE TO THE SHRUBS DURING THE PLACEMENT OF THE ROCK CHANNEL PROTECTION.

## TREE PLANTING:

THE FOLLOWING TREES WILL BE PLANTED AS SHOWN ON THE PLANS. THE TWO TREE SPECIES WILL BE RANDOMLY MIXED.

SIZE	DESCRIPTION	COND.
1.5" CAL.	FRAXINUS PENNSYLVANICA - GREEN ASH	20" B&B
1.5" CAL.	PLATANUS OCCIDENTALIS - SYCAMORE	20" B&B

THE TREES WILL BE PLANTED AS PER 1995 ODOT CMS ITEM 663. APPROXIMATELY 8.5 CUBIC FEET OF BACKFILL MIXTURE WILL BE PLACED AROUND EACH ROOTBALL.

## STORAGE AREAS

THE CONTRACTOR MAY STORE PLANT MATERIALS AND EQUIPMENT 30 FEET FROM PAVEMENT, BEHIND GUARDRAIL AND WITHIN OR ADJACENT TO THE PROJECT LIMITS BY OBTAINING OFFICIAL PERMISSION OF THE ENGINEER. NO PEDESTRIAN OR VEHICULAR TRAFFIC MAY BE IMPEDED NOR HAZARDOUS CONDITION CREATED AS A RESULT OF SUCH STORAGE.

THE STORAGE OF ALL DUG PLANTS SHALL CONFORM TO 661.14 WHETHER WITHIN THE PROJECT LIMITS, ADJACENT THERETO, OR AT SOME OTHER LOCATION. THESE AREAS SHALL BE DESIGNATED PRIOR TO ACTUAL PLANT STORAGE AND SHALL BE OPEN TO INSPECTION UPON REQUEST OF THE ENGINEER.

## SCHEDULING

ALL DIGGING AND PLANTING OF DECIDUOUS PLANTS SHALL BE DONE BETWEEN OCTOBER 1 AND DECEMBER 1 AND/OR APRIL 1 AND JUNE 1. EVERGREENS SHALL BE DUG AND PLANTED AFTER MARCH 15 AND BEFORE JUNE 1.

## NURSERY STOCK

ALL SHRUBS SHALL MEET THE STANDARDS SET FORTH IN ANSI Z 60.1.

ALL SHRUBS SHALL BE SPECIMEN (NO. 1 GRADE) PLANTS WITH GROWTH AND BRANCHING HABIT TYPICAL OF THE SPECIES SPECIFIED. NO PARK GRADE (NO. 2 OR 3 GRADE) PLANTS WILL BE ACCEPTED.

## BASIS OF PAYMENT

ALL COSTS FOR THE MATERIALS AND LABOR FOR THE INSTALLATION OF THE SHRUBS, TREES AND LIVE WILLOW POSTS WILL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL, MISC: STREAMBANK PLANTING. (690 98400)

CALCULATED

CHECKED

LANDSCAPE GENERAL NOTES

FRA - 315 - 0.93 (A-5)

1000  
404

# WATERLINE GENERAL NOTES

**WATER LINE NOTES**

**SPECIFICATIONS**

THE CITY OF COLUMBUS, OHIO CONSTRUCTION AND MATERIAL SPECIFICATIONS (COLS), DATED 1996 INCLUDING SPECIAL PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND STANDARD DETAILS SHALL GOVERN THE INSTALLATION OF WATER LINE RELOCATIONS. SPECIFICATIONS CAN BE PURCHASED AT THE OFFICE OF THE DIRECTOR OF PUBLIC SERVICE, CITY HALL, 90 WEST BROAD STREET, COLUMBUS, OHIO.

**MATERIALS**

ALL WATER LINE MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE CURRENT RULES AND REGULATIONS OF THE CITY OF COLUMBUS, DIVISION OF WATER.

**NOTIFICATION**

THE CITY OF COLUMBUS, DIVISION OF WATER SHALL BE NOTIFIED AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO CONSTRUCTION OF WATER FACILITIES, WEEKENDS AND HOLIDAYS EXCLUDED. TELEPHONE : (614) 645-7788

**CONSTRUCTION PROCEDURE**

THE TIME OF ALL WATER MAIN SHUT DOWNS SHALL BE DETERMINED BY THE CITY OF COLUMBUS ADMINISTRATOR, DIVISION OF WATER. THE RELOCATED LINES SHALL BE LAID TO THE NEW LINE AND GRADE, TESTED AND DISINFECTED PRIOR TO SHUTTING DOWN ANY EXISTING WATER MAINS. THE CONNECTIONS OF THE RELOCATED LINES TO THE EXISTING MAINS SHALL BE DONE AT A TIME AS APPROVED BY THE CITY OF COLUMBUS ADMINISTRATOR, DIVISION OF WATER. ALL OPERATION OF EXISTING WATER MAIN VALVES SHALL BE DONE BY CITY OF COLUMBUS PERSONNEL AND NOT BY THE CONTRACTOR.

**DEPTH OF COVER**

WATER LINES SHALL BE LAID WITH A MINIMUM DEPTH OF 4'- 0" FROM THE TOP OF FINISHED GRADE TO THE TOP OF THE WATER LINE. IN CASE OF CONFLICT IN GRADE BETWEEN WATER LINES AND SEWER LINES, THE WATER LINES SHALL BE LOWERED DURING CONSTRUCTION TO PROVIDE 1'-0" MIN. CLEARANCE (0/0) BETWEEN WATER LINES AND SEWER LINES.

**UTILITY CROSSING**

AT ALL POINTS OF CROSSING OF WATER LINES AND/OR SEWERS, THE BACKFILL SHALL BE COMPACTED GRANULAR MATERIAL BETWEEN THE DEEPER AND SHALLOWER PIPE AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE COMPACTED GRANULAR MATERIAL INSTALLED DURING THE INSTALLATION OF THE WATER LINES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PARTICULAR WATER LINE.

**CONNECTIONS TO EXISTING WATER LINES**

WHERE THE PLANS PROVIDE FOR PROPOSED WATER LINES TO BE CONNECTED TO EXISTING WATER LINES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE THE EXISTING PIPE BOTH AS TO LINE AND GRADE BEFORE HE STARTS TO LAY THE PROPOSED WATER LINE. PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PERTINENT 801 PIPE ITEMS.

**CONCRETE BLOCKING**

CONCRETE BLOCKING SHALL BE PROVIDED AT ALL BENDS IN ACCORDANCE WITH DETAILS INCLUDED IN THE PLANS. PAYMENT FOR CONCRETE BLOCKING WILL BE MADE IN ACCORDANCE WITH THE PROVISIONS OF CLASS "C" CONCRETE, COLS. ITEM 801.08.

**HYDROSTATIC TESTING**

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE PRESENCE OF CONTIGUOUS WORK WHICH MAY REQUIRE SPECIAL PREPARATION AND LIMITS FOR HYDROSTATIC TESTING. TEMPORARY RESTRAINTS MUST BE MADE WITH FRICTION CLAMPS UNLESS ALTERNATE METHODS ARE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL THE METHOD AND LIMITS OF TESTING. IN GENERAL, ALL VALVED SECTIONS SHALL BE TESTED. THE METHOD OF TESTING SHALL BE AS DESIGNATED UNDER COLS. ITEM 801.11. WATER MAIN CLEANING AND FLUSHING SHALL BE IN ACCORDANCE WITH COLS. ITEM 801.11.

ALL COSTS CONNECTED WITH HYDROSTATIC TESTING SHALL BE INCLUDED IN THE UNIT PRICE BID PER LINEAR FOOT OF PIPE.

**CHLORINATION OF COMPLETED WATER LINES**

ALL WATER LINES SHALL BE DISINFECTED IN ACCORDANCE WITH COLS. ITEM 801.13. SPECIAL ATTENTION IS DIRECTED TO APPLICABLE SECTIONS OF A.W.W.A. C-651, PARTICULARLY FOR FLUSHING (SECTION 5). THE CONTRACTOR SHALL NOTIFY THE DIVISION OF WATER, CITY OF COLUMBUS, FOR CHLORINATION OF THE WATER LINES AND LEND ALL ASSISTANCE NECESSARY.

**HAND SWABBING**

THE CONTRACTOR SHALL HAND SWAB ALL PIPE AND FITTINGS THAT ARE NOT OTHERWISE DISINFECTED. THE AMOUNT OF CHLORINE TO BE USED DURING HAND SWABBING OPERATIONS WILL BE DETERMINED BY THE CITY OF COLUMBUS, DIVISION OF WATER.

**CHLORINATION TAPS AND BLOW-OFFS**

THE CONTRACTOR SHALL FURNISH A 3/4 INCH CHLORINATION TAP AND A 2 INCH BLOW-OFF ON EACH RELOCATED WATER LINE OR SECTION OF WATER LINE TO BE DISINFECTED AS PER COLS 801.13. THE CHLORINATION TAPS AND BLOW-OFFS SHALL BE REMOVED BY THE CONTRACTOR WHEN ORDERED BY THE ENGINEER. THE COST SHALL BE INCLUDED IN THE VARIOUS COLS. 801 ITEMS.

**FITTINGS, INCREASE OR DECREASE**

DURING THE COURSE OF THE WORK, UNFORSEEN CONDITIONS MAY ARISE REQUIRING A CHANGE IN THE HORIZONTAL OR VERTICAL ALIGNMENT, NECESSITATING THE USE OF ADDITIONAL FITTINGS. THE CONTRACTOR SHALL PROVIDE SUCH FITTINGS AND LABOR AND EQUIPMENT FOR THEIR INSTALLATION AT THE DIRECTION OF THE ENGINEER UNDER COLS ITEM 801.

THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THIS WORK:  
 COLS. ITEM 801 - FITTINGS, INCREASE OR DECREASE 2000 POUNDS

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

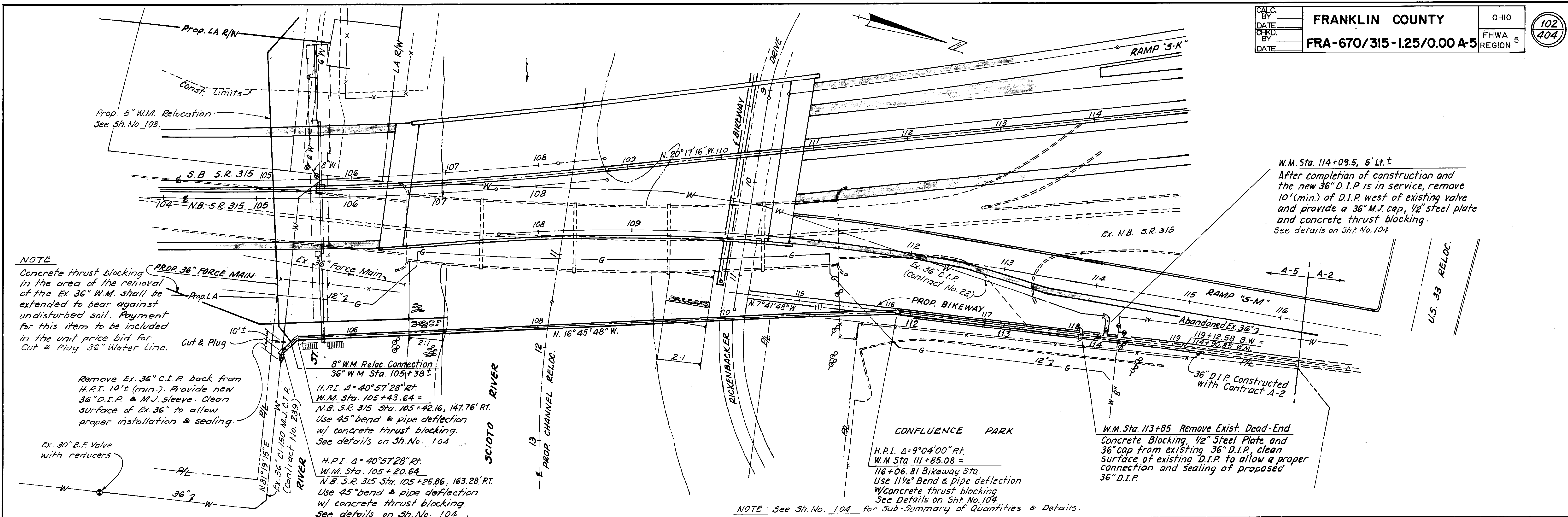
GENERAL SUMMARY

SHEET NUMBERS	ITEM	ITEM EXTENSION	TOTALS	UNIT	DESCRIPTION
103					** WATER WORK, MISC. :
104					
18	SPECIAL	63860100	18	LIN. FT.	SPECIAL-6" DUCTILE IRON WATER PIPE AND FITTINGS (COLS. 801) CL-53
399	SPECIAL	63860200	399	LIN. FT.	SPECIAL-8" DUCTILE IRON WATER PIPE AND FITTINGS (COLS. 801) CL-53
335	SPECIAL	63860600	335	LIN. FT.	**SPECIAL-36" DUCTILE IRON WATER PIPE AND FITTINGS (COLS. 801) CL-54, OR 36" PRESTRESSED CONCRETE WATER PIPE AND FITTINGS (COL. 801)
293	SPECIAL	63860600	293 *	LIN. FT.	**SPECIAL-36" DUCTILE IRON WATER PIPE WITH RESTRAINED JOINT AND FITTINGS, CLASS 54 (COLS. 801), OR 36" PRESTRESSED CONCRETE WATER PIPE AND FITTINGS (COL. 801)
260	SPECIAL	63860600	260	LIN. FT.	**SPECIAL-36" DUCTILE IRON WATER PIPE WITH FLEXIBLE JOINT AND FITTINGS, CLASS 57 (COLS. 801), OR 36" PRESTRESSED CONCRETE WATER PIPE AND FITTINGS (COL. 801)
0.91	SPECIAL	63861500	23.38 A	CU. YD.	SPECIAL-CONCRETE BLOCKING, CLASS C (COLS. 801)
2000	SPECIAL	63861600	2000	POUND	SPECIAL-FITTINGS, INCREASE OR DECREASE (COLS. 801) SEE GEN. NOTE 101
1	SPECIAL	63862000	1	EACH	SPECIAL-8" VALVES AND APPURTENANCES (COLS. 802)
154	SPECIAL	63864502	154	LIN. FT.	SPECIAL-18" CASING OPEN CUT PIPE (COLS. 806)
2	SPECIAL	63864602	2	EACH	**SPECIAL-CUT AND PLUG (CAP) 36" WATER LINE (COLS. 808)
1	SPECIAL	63866810	1	EACH	SPECIAL-FIRE HYDRANT, REMOVED AND DISPOSED OF (COLS. 809)
2	SPECIAL	63867600	2	EACH	SPECIAL-1/2" AIR RELEASE OUTLET (COLS. 812)

\* 40 Lin. Ft. at 100% City of Columbus  
 A 10.02 cu. Yd. at 100% City of Columbus

[PLG] - I:\TRANS\SR315-45\45-H2O.DWG - APR. 24, 1997 - 11:12:10 - SCALE = 1:30





**NOTE**  
 Concrete thrust blocking in the area of the removal of the Ex. 36" W.M. shall be extended to bear against undisturbed soil. Payment for this item to be included in the unit price bid for Cut & Plug 36" Water Line.

Remove Ex. 36" C.I.P. back from H.P.I. 10'± (min.). Provide new 36" D.I.P. & M.J. sleeve. Clean surface of Ex. 36" to allow proper installation & sealing.

8" W.M. Reloc. Connection  
 36" W.M. Sta. 105+38 ±  
 H.P.I. Δ = 40° 57' 28" Rt.  
 W.M. Sta. 105+43.64 =  
 N.B. S.R. 315 Sta. 105+42.16, 147.76' RT.  
 Use 45° bend & pipe deflection w/ concrete thrust blocking.  
 See details on Sht. No. 104.

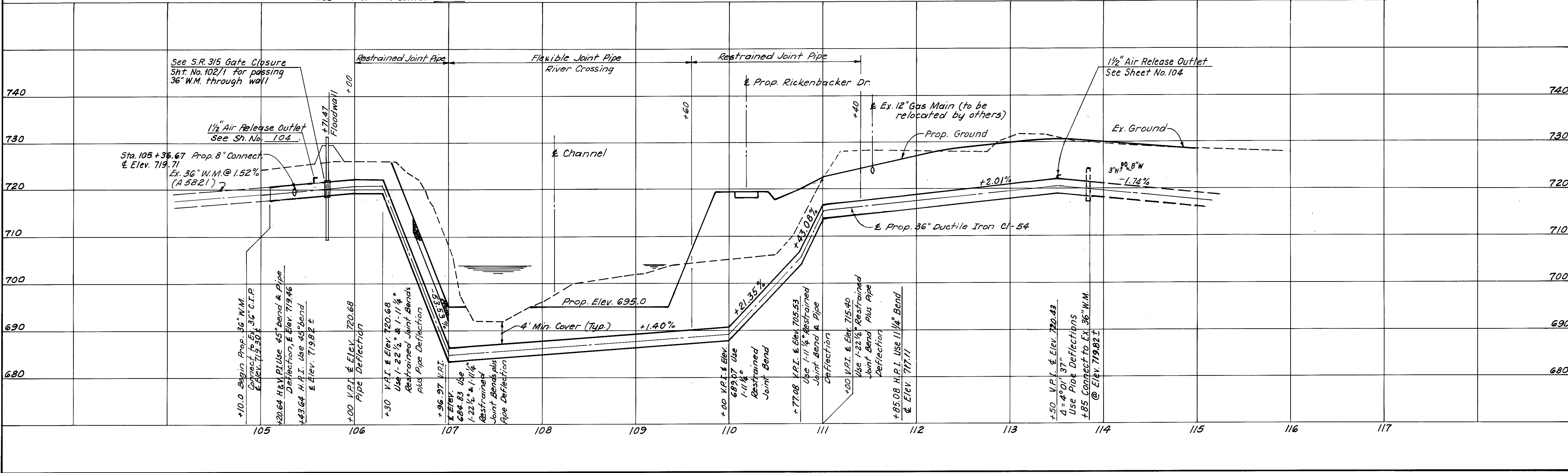
H.P.I. Δ = 40° 57' 28" Rt.  
 W.M. Sta. 105+20.64  
 N.B. S.R. 315 Sta. 105+25.86, 163.28' RT.  
 Use 45° bend & pipe deflection w/ concrete thrust blocking.  
 See details on Sht. No. 104.

**CONFLUENCE PARK**  
 H.P.I. Δ = 9° 04' 00" Rt.  
 W.M. Sta. 111+85.08 =  
 116+06.81 Bikeway Sta.  
 Use 11 1/4" Bend & pipe deflection w/ concrete thrust blocking.  
 See Details on Sht. No. 104.

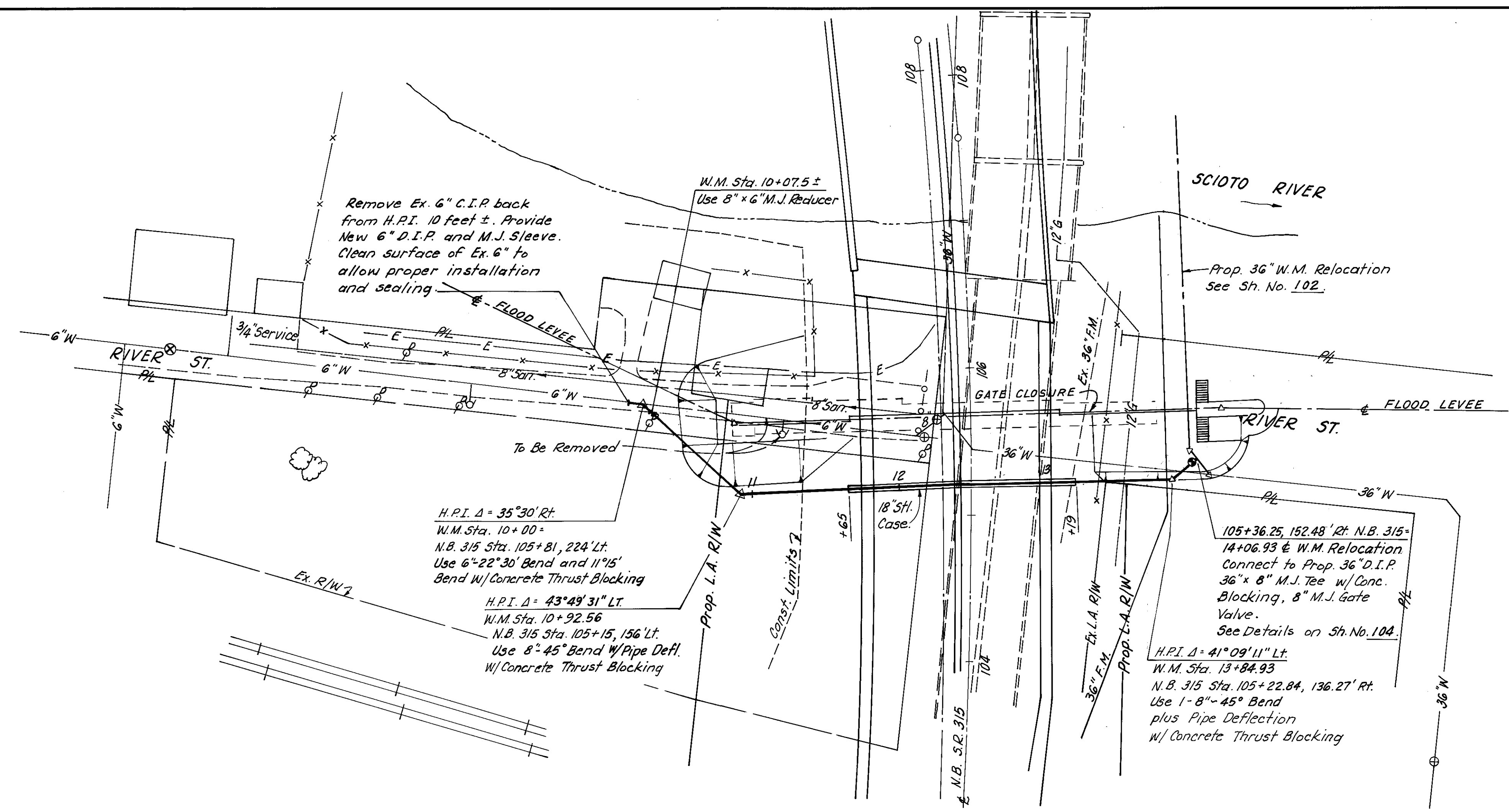
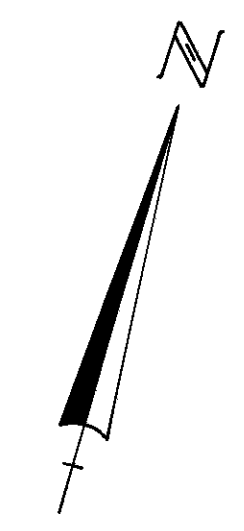
W.M. Sta. 113+85 Remove Exist. Dead-End Concrete Blocking, 1/2" Steel Plate and 36" cap from existing 36" D.I.P. clean surface of existing D.I.P. to allow a proper connection and sealing of proposed 36" D.I.P.

W.M. Sta. 114+09.5, 6' Lt. ±  
 After completion of construction and the new 36" D.I.P. is in service, remove 10' (min.) of D.I.P. west of existing valve and provide a 36" M.J. cap, 1/2" steel plate and concrete thrust blocking.  
 See details on Sht. No. 104.

NOTE: See Sht. No. 104 for Sub-Summary of Quantities & Details.

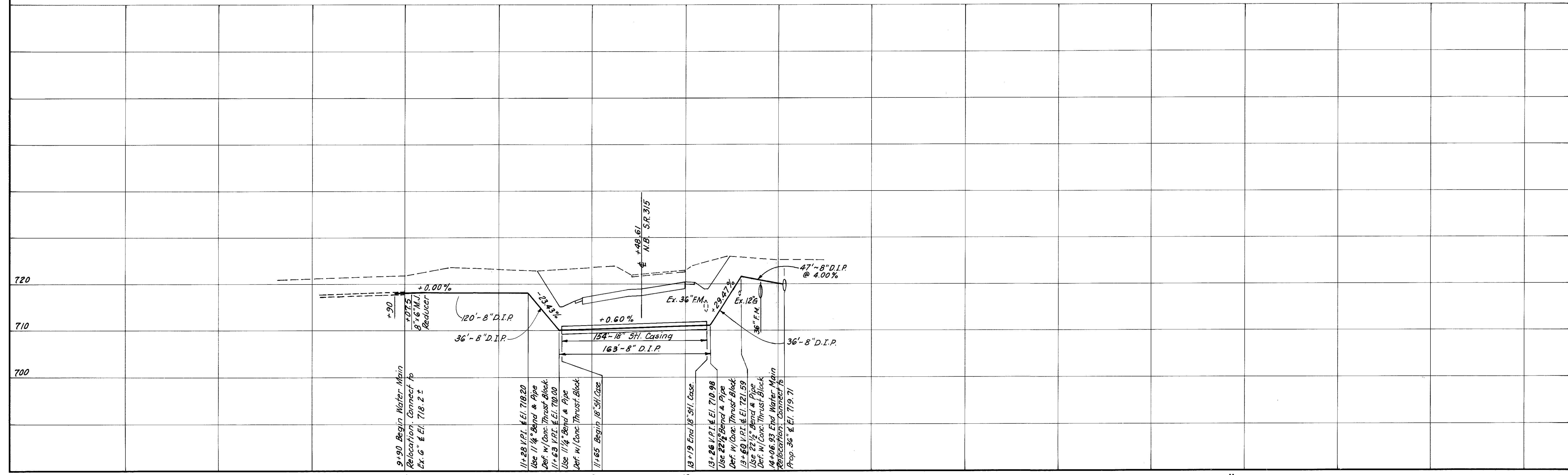


**36" WATER MAIN RELOCATION, SCIOTO RIVER CROSSING, S. R. 315**



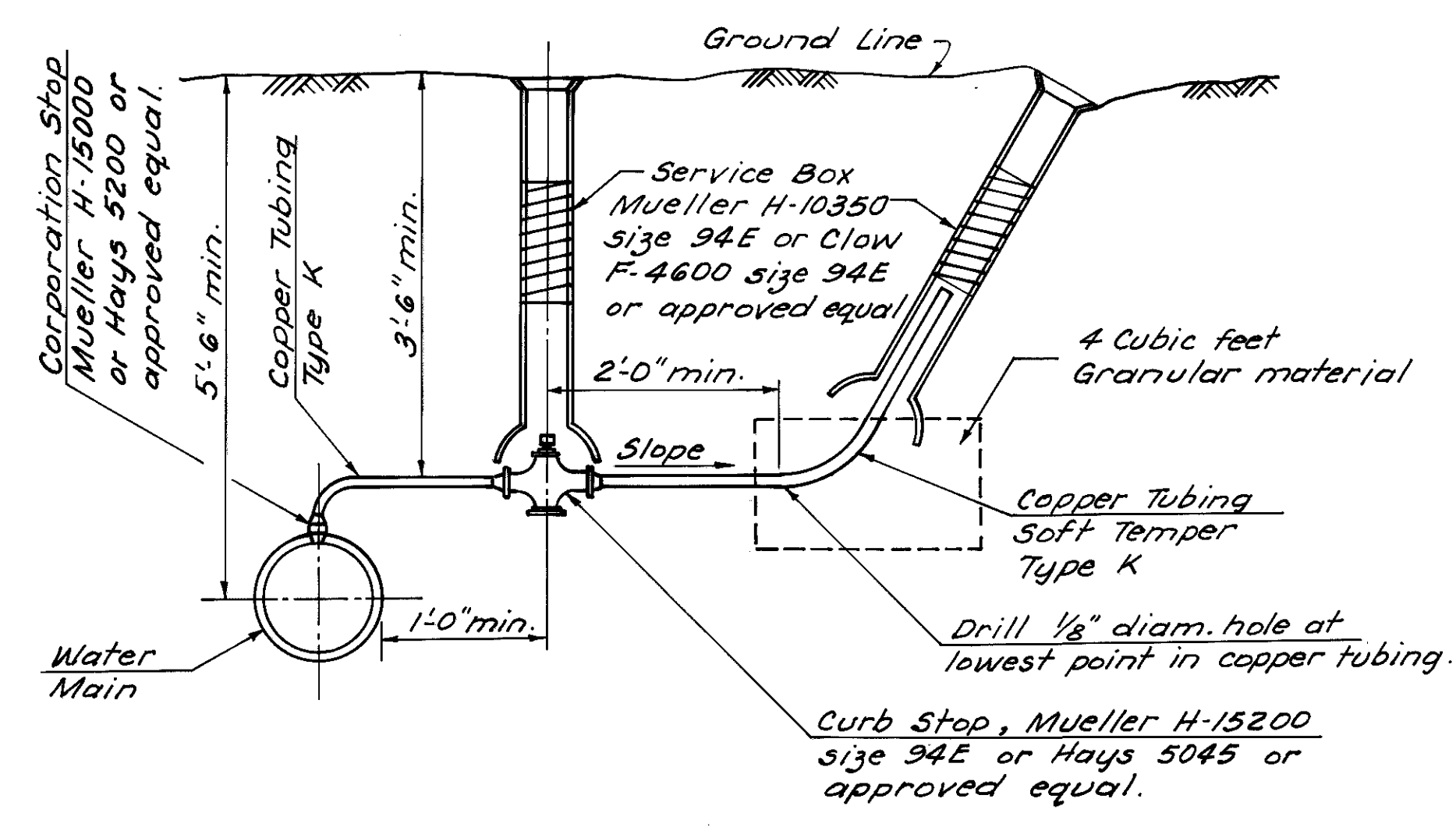
8" WATER MAIN RELOCATION SUB-SUMMARY \* CITY OF COLUMBUS SPEC.

STATION & LOCATION	* 801				* 806	* 809
	Concrete Blocking Class "C"	8" Ductile Iron & Water Pipe & Fittings	6" Ductile Iron Water Pipe & Fittings	8" Valves & Appurtenances		
9+90 to 10+07.5	C.Y. 0.04	L.F. 85	L.F. 18	Each 1	L.F. 154	Each 1
10+07.5 to 10+93	0.10	85				
10+93 to 13+85	0.51	292				
11+65 to 13+19					154	
13+85 to 14+07	0.26	22		1		1
10+98 Rt. Ex.						
Totals to Sh. No. 101	0.91	399	18	1	154	1

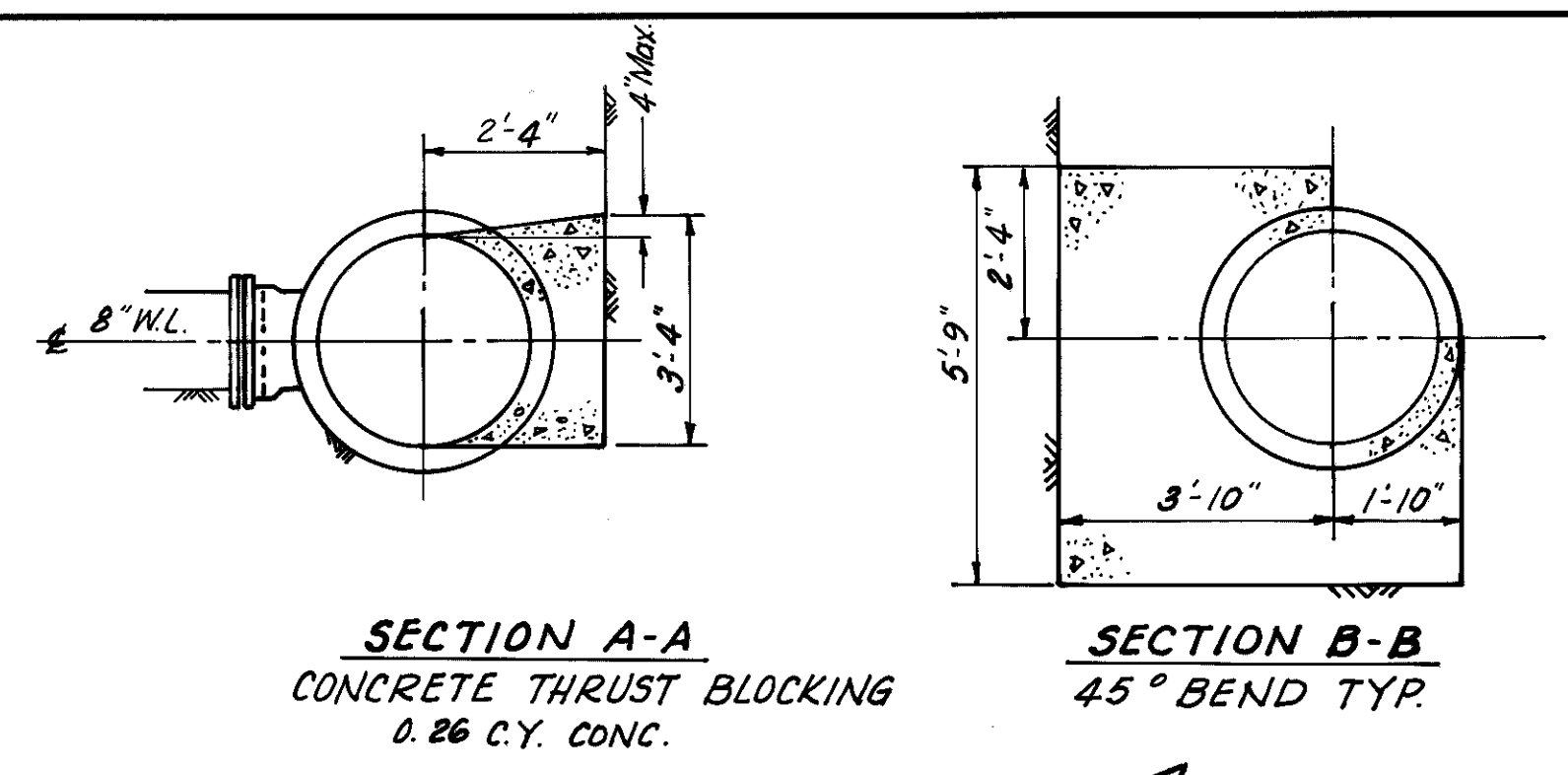


8" WATER LINE RELOCATION - CROSSING S.R. 315

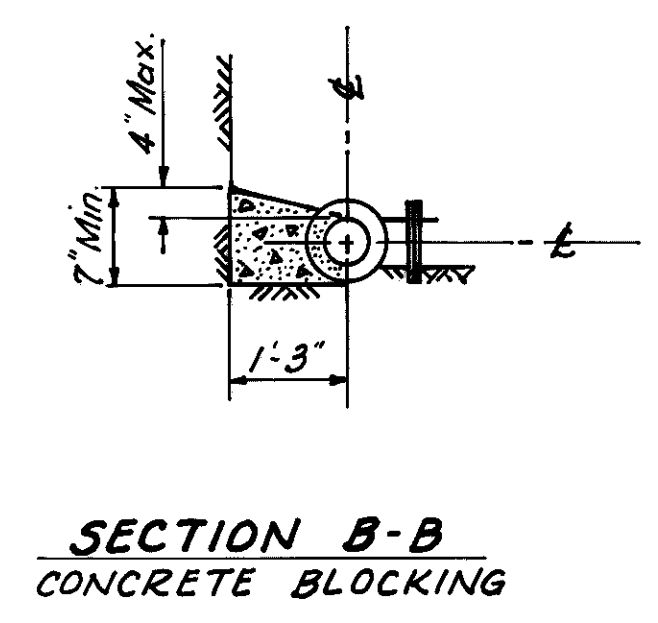




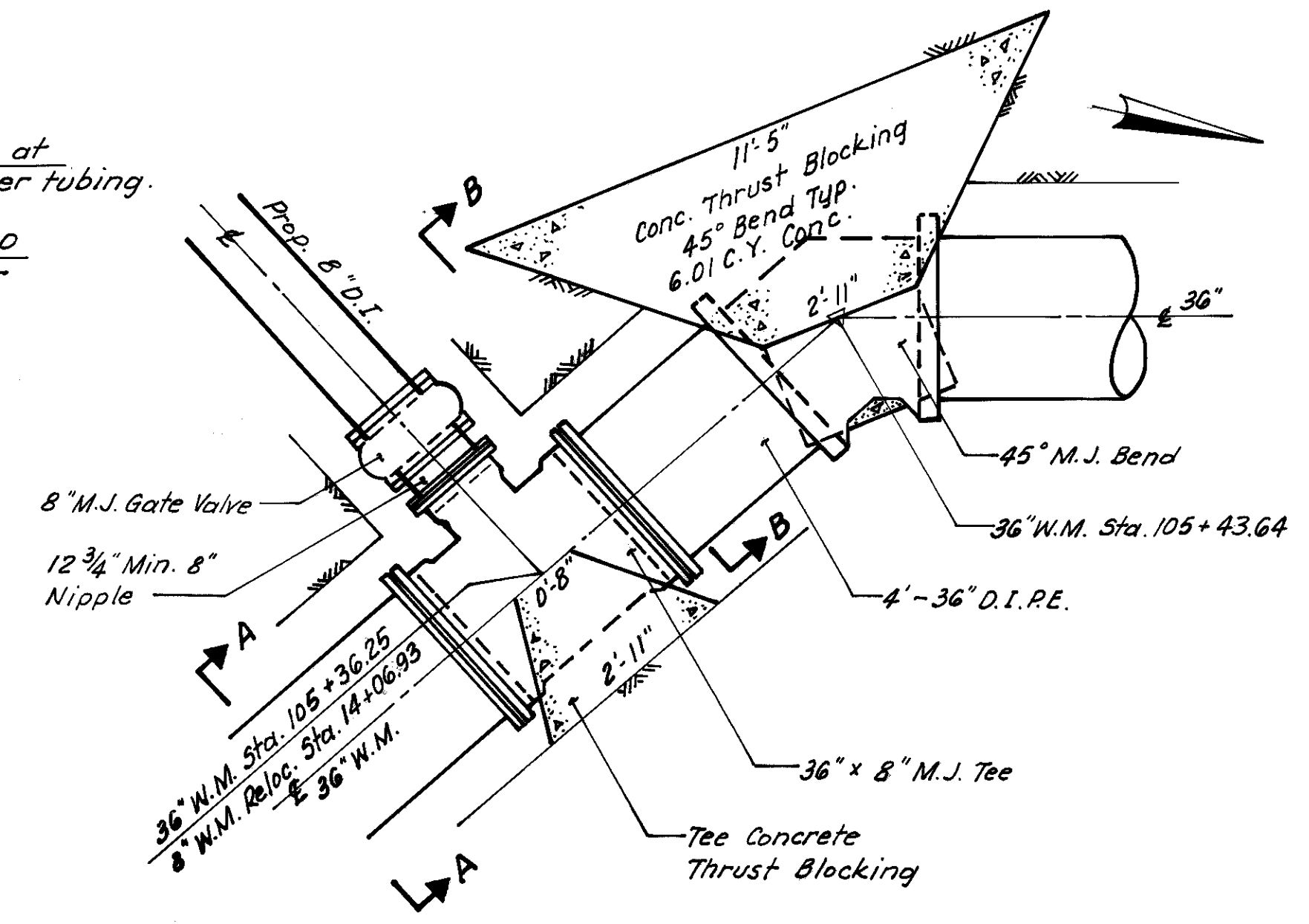
**1 1/2" AIR RELEASE DETAIL**



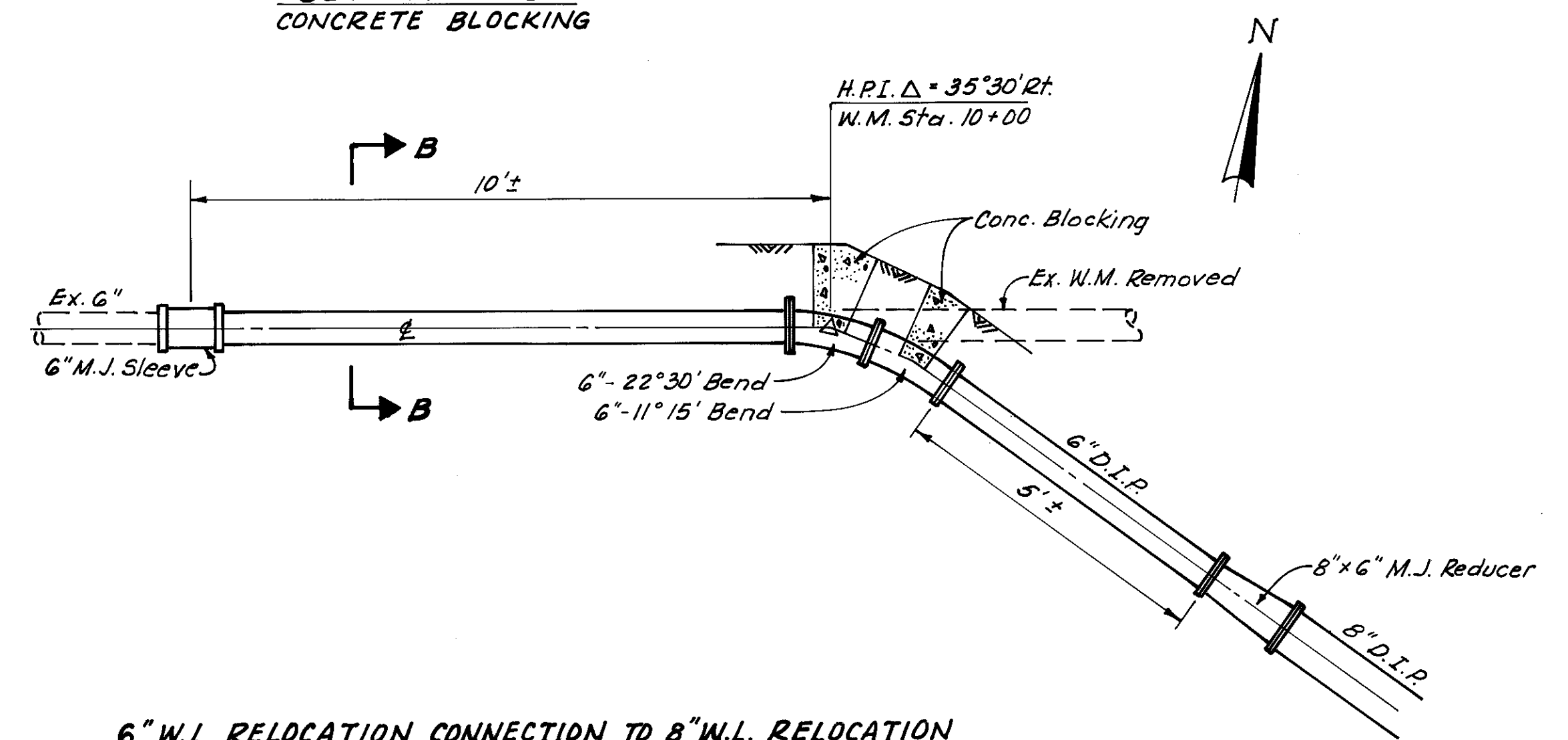
**SECTION A-A CONCRETE THRUST BLOCKING 0.26 C.Y. CONC.**  
**SECTION B-B 45 DEGREE BEND TYP.**



**SECTION B-B CONCRETE BLOCKING**



**8" W.L. RELOCATION CONNECTION TO 36" W.L. RELOCATION THRUST BLOCKING FOR 36", 45° BEND, TYP.**



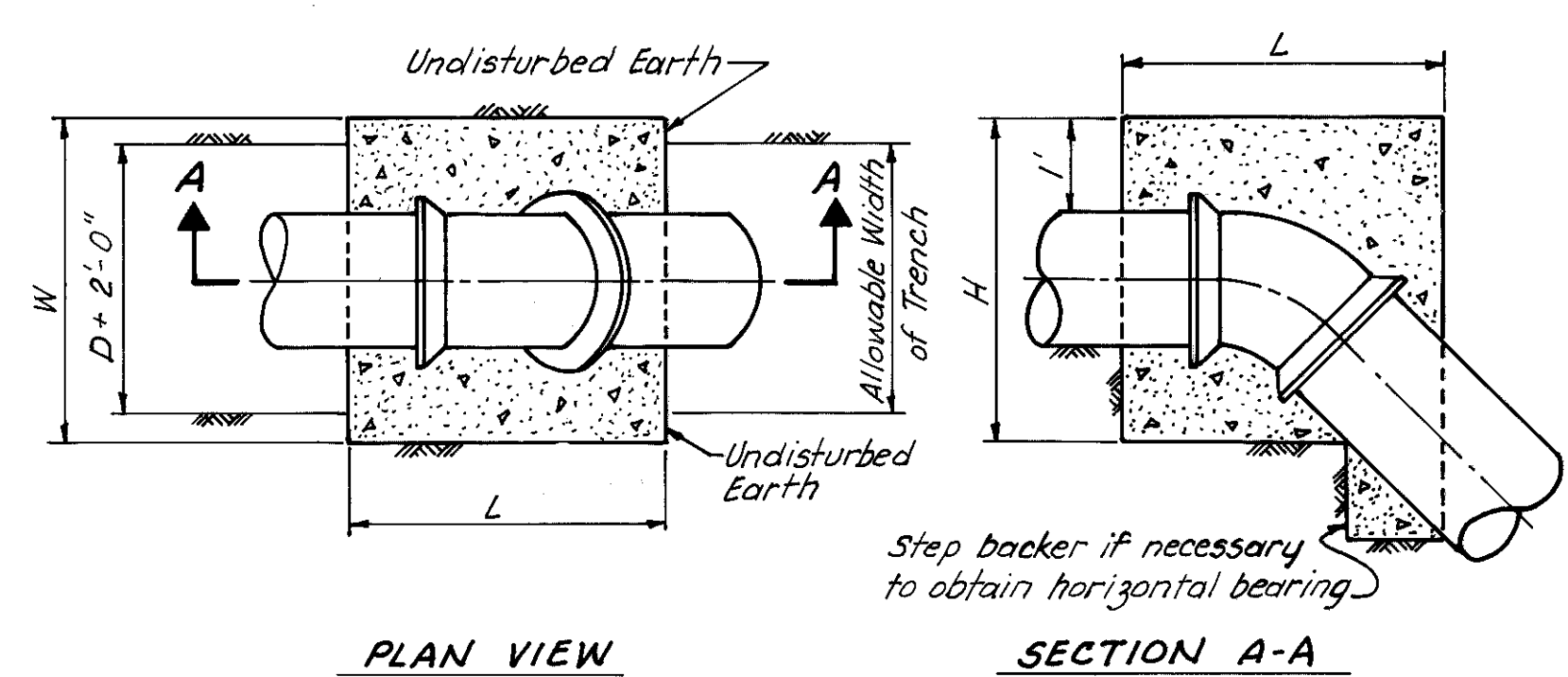
**6" W.L. RELOCATION CONNECTION TO 8" W.L. RELOCATION**

SIZE OF PIPE	DEGREE OF BEND											
	11.25°				22.5°				45°			
	L"	W"	H"	Vol.	L"	W"	H"	Vol.	L"	W"	H"	Vol.
6"	12	48	18	6.0	15	43	36	13.4	30	55	24	22.9
8"	12	63	24	10.5	18	57	34	20.2	36	57	33	39.2

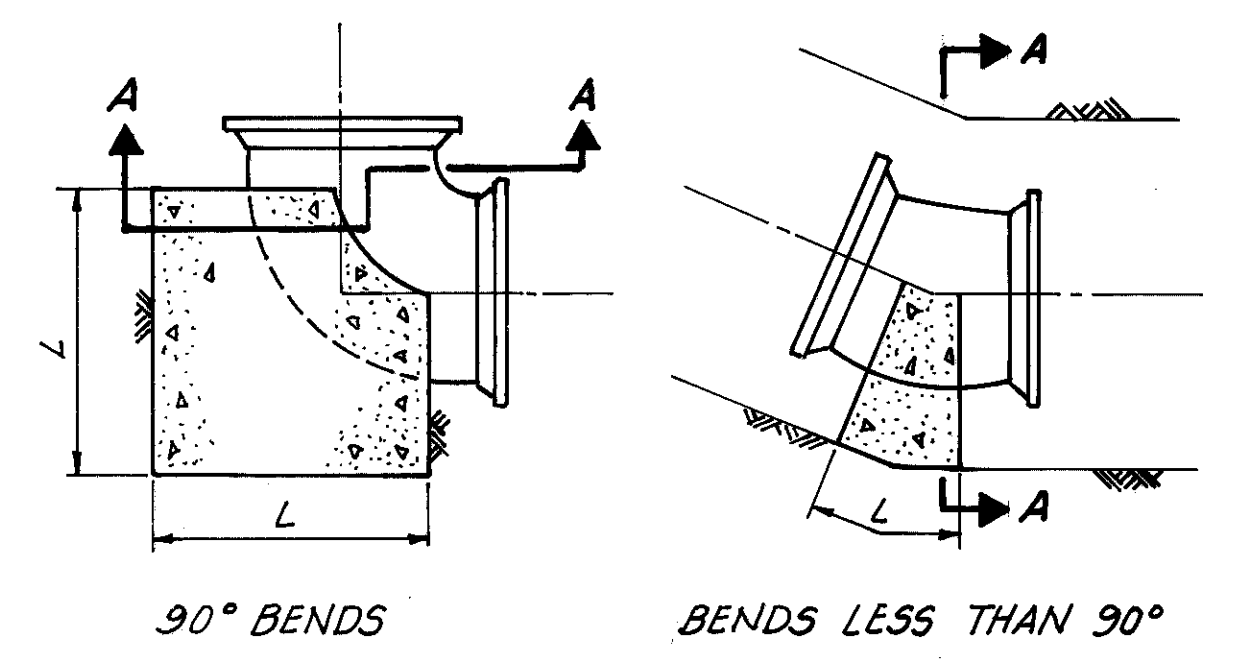
SIZE OF PIPE	DEGREE OF BEND														
	11 1/2°			22 1/2°			45°			90°			DEAD-END		
	L"	D"	V.c.f.	L"	D"	V.c.f.	L"	D"	V.c.f.	L"	D"	V.c.f.	L"	D"	V.c.f.
6"	8	6	0.5	12	7	0.7	20	8	1.4	18	9	1.7			
8"	9	8	0.7	16	9	1.4	24	12	2.7	25	11	4.0			
36"				67	49	76.7							42	79	193.9

**NOTES:**  
 1. Volumes given in Cubic Feet.  
 2. Backer to be centered horizontally on bend.  
 3. Steel will be used as required by the engineer.

**NOTES:**  
 1. Backer designed for 3000 PSF Soil Bearing.  
 2. Concrete to be placed against undisturbed earth.



**PLAN VIEW**  
**SECTION A-A**  
**BLOCKING FOR VERTICAL BENDS OVER BENDS ONLY**



**90° BENDS**  
**BENDS LESS THAN 90°**  
**BLOCKING FOR BENDS HORIZONTAL AND VERTICAL SAG**

\* CITY OF COLUMBUS SPECIFICATIONS

Station & Location	* B01	* B01	* B01	* B01	* B01	* B08	* B12
Sheet No. 102.	36" Ductile Iron Water Pipe & Fittings	36" Ductile Iron Water Pipe & Fittings Restrained Joint, AWWA C154	36" Ductile Iron Water Pipe & Fittings-Flowable Joint, AWWA C157	Fittings, Increase or Decrease	Concrete Blocking Class "C"	cut & Plug (cap) 36" Water Line	1/2 inch Air Release Outlet
	L.F.	L.F.	L.F.	Lbs.	C.Y.	Each	Each
105 + 10 to 106 + 00	90						
106 + 00 to 107 + 00		109					
107 + 00 to 109 + 60			260				
109 + 60 to 111 + 40		184					
111 + 40 to 113 + 85	245				10.02		
105 + 20.64					6.01		
105 + 43.64					6.01		
105 + 57 & 113 + 70 W.M.							2
105 + 30 ± & 113 + 80 ±						2	
105 + 36.25					0.43		
Sheet No. 101				2000			
Totals to Sh. No. 101	335	293	260	2000	22.47	2	2

**36" WATER MAIN RELOCATION SUB-SUMMARY**

# GENERAL NOTES – PUMP STATION ST-2

## PUMP STATION ST-2 REHABILITATION

### SCOPE

#### GENERAL

- THIS SECTION APPLIES TO THE PUMP STATION ST-2 REHABILITATION ONLY.
- THE EXISTING PUMP STATION CONTAINS THREE (3) VERTICAL ANGLE-FLOW PUMPS RATED AT APPROXIMATELY 23,000 GPM WITH ONE (1) 60 HP AND TWO (2) 150 HP MOTORS. THESE PUMPS MUST BE REPLACED TO ADEQUATELY SERVE THE NEW FACILITY.
- ALSO INCLUDED ARE ELECTRICAL, INSTRUMENTATION AND CONTROLS, VENTILATION, AND STRUCTURAL MODIFICATIONS AS SHOWN AND SPECIFIED.

EXISTING EQUIPMENT: THE PUMPS WERE FURNISHED BY FAIRBANKS-MORSE CO., VERTICAL ANGLEFLOW FIGURE 5710, ONE (1) 12" DIAMETER SUCTION AND DISCHARGE AND TWO (2) 20" DIAMETER SUCTION AND DISCHARGE. THE MOTORS ARE VERTICAL HOLLOW SHAFT WITH EXTENDED COLUMNS.

SPECIFIC REQUIREMENTS: REHABILITATE PUMP STATION AS SHOWN IN THE PLANS AND SPECIFICATIONS.

REMOVALS: CONTRACTOR SHALL CAREFULLY REMOVE EXISTING EQUIPMENT WHICH IS TO BE REPLACED OR NOT USED IN THIS CONTRACT. ALL REMOVED MATERIALS BECOME THE PROPERTY OF THE CONTRACTOR.

#### GENERAL REQUIREMENTS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF EXISTING STATION AND STORM FLOWS. BEGINNING AT SUCH TIME AS THE CONTRACTOR HAS A VALID CONTRACT UNTIL PROJECT COMPLETION, INCLUDING UTILITY COSTS. COST OF THIS WORK TO BE INCLUDED IN THE UNIT PRICE BID FOR PUMP STATION. **UTILITY COST RECORDS ARE AVAILABLE UPON REQUEST AT THE DISTRICT 6 OFFICE (PHONE: 740-363-1251, EXT. 679).**

#### CUTTING AND PATCHING:

- EACH CONTRACTOR SHALL DO ALL CUTTING AND PATCHING OF BUILDING MATERIALS, PIPING ETC., AS REQUIRED FOR THE INSTALLATION OF THIS WORK, BUT NO STRUCTURAL MEMBERS SHALL BE CUT WITHOUT THE APPROVAL OF THE ENGINEER AND ANY SUCH CUTTING SHALL BE DONE IN A MANNER DIRECTED BY THE ENGINEER.
- ALL PATCHING AND/OR REPAIR OF DAMAGES TO WORK IN PLACE, SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER, MEETING WITH THE APPROVAL OF THE ENGINEER. CONTRACTOR WHOSE OPERATION REQUIRE CUTTING OF WORK IN PLACE, OR WHO CAUSES DAMAGE WHICH REQUIRED REPAIRS OF SUCH WORK, SHALL EMPLOY MECHANICS OF THE PARTICULAR TRADE WHOSE WORK MUST BE CUT OR WHICH IS DAMAGED, AND SHALL PAY ALL COSTS OF SUCH PATCHING AND/OR REPAIR.

#### RECORD DRAWINGS:

- EACH CONTRACTOR OR SUBCONTRACTOR FOR ALL WORK, SHALL KEEP ON THE JOB, ONE (1) COMPLETE SET OF CONTRACT WORKING DRAWINGS ON WHICH HE SHALL RECORD ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION. RECORD SHALL SHOW CHANGES IN:
  - SIZE, TYPE, CAPACITY, ETC., OF ANY MATERIAL, DEVICE OR PIECE OF EQUIPMENT.
  - LOCATION OF ANY DEVICE OR EQUIPMENT.
  - LOCATION OF ANY OUTLET OR SOURCE OF BUILDING SERVICE SYSTEMS.
  - ROUTING OF ANY PIPING, CONDUIT, DUCTS, SEWERS OR OTHER BUILDING SERVICES.
- THESE DRAWINGS SHALL ALSO RECORD THE LOCATION OF ALL CONCEALED WATER AND ELECTRIC SERVICES, WATER PIPING, SEWERS, WASTES, VENT, DUCTS, CONDUITS AND OTHER PIPING, BY INDICATION OF MEASURED DIMENSIONS TO EACH LINE FROM READILY IDENTIFIABLE AND ACCESSIBLE WALLS OR CORNERS OF THE BUILDING. DRAWINGS ALSO SHALL SHOW INVERT ELEVATIONS OF SEWERS AND CENTERLINE OR TOP OF WATER LINES.

- THESE DRAWINGS SHALL BE KEPT CLEAN AND UNDAMAGED, AND SHALL NOT BE USED FOR ANY PURPOSE OTHER THAN RECORDING DEVIATIONS FROM THE CONTRACT DRAWINGS AND EXACT LOCATION OF WORK.
- AFTER THE WORK IS COMPLETED, THESE SETS OF DRAWINGS SHALL BE DELIVERED TO ODOT (FOR FORWARDING TO CITY) IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS ACTUALLY CONSTRUCTED.

#### SUBMITTALS:

- SHOP DRAWINGS:
  - ORIGINAL DRAWINGS, PREPARED BY CONTRACTOR, SUBCONTRACTOR, SUPPLIER OR DISTRIBUTORS, WHICH ILLUSTRATE SOME PORTION OF THE CONSTRUCTION; SHOWING FABRICATION, LAYOUT, SETTING OR ERECTION DETAILS. TOTAL OF SIX (6) EACH, OR AS REQUIRED BY CONTRACTOR.
  - PREPARED BY A QUALIFIED DETAILER.
  - IDENTIFY DETAILS BY REFERENCE TO SHEET AND DETAIL NUMBERS SHOWN ON CONTRACT DRAWINGS.
  - 24 IN. X 36 IN. MINIMUM SHEET SIZE.
- PRODUCT DATA
  - MANUFACTURER'S STANDARD SCHEMATIC DRAWINGS:
    - MODIFY DRAWINGS BY DELETING INFORMATION WHICH IS NOT APPLICABLE TO PROJECT.
    - SUPPLEMENT STANDARD INFORMATION BY PROVIDING ADDITIONAL INFORMATION APPLICABLE TO PROJECT.
  - MANUFACTURER'S CATALOG SHEETS, BROCHURES, DIAGRAMS, SCHEDULES, PERFORMANCE CHARTS, ILLUSTRATIONS, AND OTHER STANDARD DESCRIPTIVE DATA.
    - CLEARLY MARK EACH COPY TO IDENTIFY PERTINENT MATERIALS, PRODUCTS OR MODELS.
    - SHOW DIMENSIONS AND CLEARANCES REQUIRED.
    - SHOW PERFORMANCE CHARACTERISTICS AND CAPACITIES.
    - SHOW WIRING DIAGRAMS AND CONTROLS.
- DESIGN CALCULATIONS AND PROCEDURES
  - DESIGN CALCULATIONS MADE BY A REGISTERED ENGINEER IN THE STATE OF OHIO WHO IS REGISTERED IN THE APPROPRIATE DISCIPLINE SHOWING ALL ASSUMPTIONS AND CALCULATIONS, AS REQUIRED BY THE CONTRACT DOCUMENTS.
  - PROCEDURES INCLUDES ALTERNATE CONSTRUCTION AND/OR INSTALLATION PROCEDURES THE CONTRACTOR PROPOSES TO USE OR SUCH PROCEDURES AS REQUIRED BY THE CONTRACT DOCUMENTS.
  - IDENTIFY TOTAL SUBMITTAL WITH COVER PAGE AND EACH SHEET.
- SAMPLES: CONCRETE AGGREGATES, CUT STONE, COMMON BRICK, FACE BRICK, HARDWARE, WATERPROOFING, CAULKING, AND ANY OTHER MATERIALS WHEN SUCH ARE CALLED FOR BY THE SPECIFICATIONS.
- CONTRACTOR RESPONSIBILITIES
  - REVIEW ALL ITEMS PRIOR TO SUBMISSION.
  - VERIFY:
    - FIELD MEASUREMENTS
    - FIELD CONSTRUCTION CRITERIA.
    - CATALOG NUMBERS AND SIMILAR DATA.
  - COORDINATE EACH SUBMITTAL WITH THE REQUIREMENTS SPECIFIED IN INDIVIDUAL SECTIONS AND THE CONTRACT DOCUMENTS.
  - CONTRACTOR'S RESPONSIBILITY FOR ERRORS AND OMISSIONS IN SUBMITTALS IS NOT RELIEVED BY ENGINEER'S REVIEW OF SUBMITTALS.
  - CONTRACTOR'S RESPONSIBILITY FOR DEVIATIONS IN SUBMITTALS FROM REQUIREMENTS OF CONTRACT DOCUMENTS IS NOT RELIEVED BY ENGINEER'S REVIEW OF SUBMITTALS, UNLESS ENGINEER GIVES WRITTEN ACCEPTANCE OF SPECIFIC DEVIATIONS.
  - NOTIFY ENGINEER, IN WRITING AT TIME OF SUBMISSION, OF DEVIATIONS IN SUBMITTALS FROM REQUIREMENTS OF CONTRACT DOCUMENTS.
  - BEGIN NO WORK WHICH REQUIRES SUBMITTALS UNTIL RETURN OF SUBMITTALS WITH ENGINEER'S STAMP AND INITIALS OR SIGNATURE INDICATING APPROVAL.
  - AFTER ENGINEER'S REVIEW, DISTRIBUTE COPIES.

#### 6. SUBMISSION REQUIREMENTS

- SCHEDULE SUBMISSIONS AT LEAST 28 DAYS BEFORE DATES REVIEWED SUBMITTALS WILL BE NEEDED.
- SUBMIT NUMBER OF COPIES OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WHICH CONTRACTOR REQUIRES FOR DISTRIBUTION, PLUS THREE COPIES TO DIVISION OF SEWERAGE AND DRAINAGE FOR CONCURRENT REVIEW PLUS THREE COPIES WHICH WILL BE DISTRIBUTED BY THE ENGINEER TO OTHER PARTIES.
- SUBMIT NUMBER OF SAMPLES SPECIFIED IN EACH INDIVIDUAL SPECIFICATION SECTION.
- ACCOMPANY SUBMITTALS WITH TRANSMITTAL LETTER, IN TRIPLICATE, CONTAINING:
  - DATE.
  - PROJECT TITLE AND NUMBER.
  - CONTRACTOR'S NAME AND ADDRESS.
  - THE NUMBER OF EACH SHOP DRAWING, PRODUCT DATA AND SAMPLE SUBMITTED.
  - NOTIFICATION OF DEVIATIONS FROM CONTRACT DOCUMENTS.
  - OTHER PERTINENT DATA.
- SUBMITTALS SHALL INCLUDE:
  - DATE AND REVISIONS DATES.
  - PROJECT TITLE AND NUMBER.
  - THE NAMES OF ENGINEER, CONTRACTOR, SUBCONTRACTOR, MANUFACTURER, SEPARATE DETAILER WHEN PERTINENT. CLEAR IDENTIFICATION OF PRODUCT OR MATERIAL.
  - RELATION TO ADJACENT STRUCTURE OR MATERIALS.
  - FIELD DIMENSIONS; CLEARLY IDENTIFIED AS SUCH.
  - SPECIFICATION SECTION NUMBER.
  - APPLICABLE STANDARDS, SUCH AS ASTM NUMBER OR FEDERAL SPECIFICATION.
  - A BLANK SPACE, 4 IN. X 4 IN., FOR THE ENGINEER'S STAMP.
  - IDENTIFICATION OF DEVIATIONS FROM CONTRACT DOCUMENTS.
  - CONTRACTOR'S STAMP, INITIALED OR SIGNED, CERTIFYING TO REVIEW OF SUBMITTAL, VERIFICATION OF FIELD MEASUREMENTS AND COMPLIANCE WITH CONTRACT DOCUMENTS.

#### 7. RESUBMISSION REQUIREMENTS

- REVISE INITIAL DRAWINGS AS REQUIRED AND RESUBMIT AS SPECIFIED FOR INITIAL SUBMITTAL.
- INDICATE ANY CHANGES WHICH HAVE BEEN MADE OTHER THAN THOSE REQUESTED BY ENGINEER.

#### 8. ARCHITECT/ENGINEER'S DUTIES

- REVIEW SUBMITTALS WITH REASONABLE PROMPTNESS.
- REVIEW FOR:
  - DESIGN CONCEPT OF PROJECT.
  - INFORMATION GIVEN IN CONTRACT DOCUMENTS.
  - CALCULATIONS WILL ONLY BE REVIEWED FOR DESIGN CONCEPT AND ASSUMPTIONS.
- REVIEW OF SEPARATE ITEM DOES NOT CONSTITUTE REVIEW OF AN ASSEMBLY IN WHICH ITEM FUNCTIONS.
- AFFIX STAMP AND INITIALS OR SIGNATURE CERTIFYING TO REVIEW OF SUBMITTAL.
- RETURN SUBMITTALS TO CONTRACTOR FOR DISTRIBUTION.

#### 9. ITEMS REQUIRING SUBMISSION: SPECIFIC REQUIREMENTS ARE LISTED IN THE TECHNICAL SECTIONS OF THE DOCUMENTS. THE ENGINEER RESERVES THE RIGHT TO REQUIRE ADDITIONAL SUBMITTALS ON INDIVIDUAL ITEMS AT HIS DISCRETION.

#### 10. OPERATION AND MAINTENANCE MANUALS

- MANUFACTURERS OF EQUIPMENT APPROVED AND INSTALLED SHALL SUBMIT OPERATION AND MAINTENANCE MANUAL OF THEIR RESPECTIVE EQUIPMENT LISTED BELOW AND IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS.
- PUMPS
  - ALL MECHANICAL EQUIPMENT
  - ALL ELECTRICAL EQUIPMENT
  - ALL EQUIPMENT USE FOR CONTROLS AND INSTRUMENTATION



# GENERAL NOTES – PUMP STATION ST-2

CALC. BY: _____	<b>FRANKLIN COUNTY</b> <b>FRA-670-1.25 (A-5)</b>	OHIO	<b>106</b> <b>404</b>
DATE: _____		FHWA REGION 5	
CHKD. BY: _____			
DATE: _____			

- C. SUBMIT SIX COPIES EACH OF COMPLETE INSTALLATION, OPERATING AND MAINTENANCE MANUALS WITH THE FOLLOWING MINIMUM INFORMATION:
- 1) REQUIRED OPERATION DATA:
    - A) COMPLETE, DETAILED OPERATING INSTRUCTIONS FOR EACH PIECE OF EQUIPMENT.
    - B) EXPLANATIONS OF ALL SAFETY CONSIDERATIONS RELATING TO OPERATION.
  - 2) REQUIRED MAINTENANCE DATA:
    - A) MAINTENANCE DATA SHALL INCLUDE ALL INFORMATION AND INSTRUCTIONS REQUIRED BY PLANT PERSONNEL TO KEEP EQUIPMENT PROPERLY LUBRICATED AND ADJUSTED SO THAT IT FUNCTIONS ECONOMICALLY THROUGHOUT ITS FULL DESIGN LIFE.
    - B) EXPLANATION WITH ILLUSTRATIONS AS NECESSARY FOR EACH MAINTENANCE TASK.
    - C) RECOMMENDED SPARE PARTS LISTS.
    - D) RECOMMENDED SCHEDULE OF MAINTENANCE TASKS.
    - E) LUBRICATION CHARTS AND TABLE OF ALTERNATE LUBRICANTS.
    - F) TROUBLESHOOTING INSTRUCTIONS.
    - G) LIST OF MAINTENANCE TOOLS AND EQUIPMENT.
    - H) NAME, ADDRESS, AND PHONE NUMBER OF MANUFACTURER'S LOCAL SERVICE REPRESENTATIVE.
    - I) INCLUDE COPIES OF ALL SHOP DRAWINGS.
    - J) CERTIFIED PUMP TEST CURVES.
  - D. ALL OPERATION AND MAINTENANCE MANUALS SHALL BE APPROVED BY CITY OF COLUMBUS, DIVISION SEWERAGE AND DRAINAGE PRIOR TO FINAL ACCEPTANCE OF PUMP STATION.
  - E. OPERATION AND MAINTENANCE TRAINING SHALL BE PROVIDED FOR ALL MAJOR EQUIPMENT COMPONENTS, INCLUDING THE SLUICE GATES AND PUMPS. TRAINING SHALL BE PROVIDED BY A QUALIFIED MANUFACTURERS REPRESENTATIVE. TRAINING SHALL INCLUDE SUCH TOPICS AS SAFE OPERATION, MAINTENANCE AND ADJUSTMENTS.

## REMOVAL, SALVAGE AND DISPOSAL

1. JOB CONDITIONS
  - A. PROTECT PERSONNEL IN THE AREA AND AVOID DAMAGE TO SURROUNDING FACILITIES.
  - B. TITLE TO REMOVED PROPERTY: ALL REMOVAL ITEMS WILL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE.
2. REMOVAL ITEMS
  - A. GENERAL: ITEMS SPECIFIED ON DRAWINGS, WITHIN THE DESIGNATED WORK LIMITS.
  - B. MISCELLANEOUS ITEMS: MATERIAL OR EQUIPMENT ENCOUNTERED DURING CONSTRUCTION, WHICH MUST BE REMOVED TO AID IN CONSTRUCTION OPERATIONS, OR THAT WHICH WILL NOT BE USED IN THE COMPLETED FACILITIES.
3. REMOVAL
  - A. CONCRETE: WHERE CUT LINE WILL BE EXPOSED IN THE FINISHED WORK AND WHERE PHYSICALLY FEASIBLE, MAKE EDGE BY SAW CUTTING.
  - B. ABANDONMENT OF BURIED LINES
    - 1) METHOD: PLUG BOTH ENDS.
    - 2) PLUGS: USE MINIMUM 8 IN. THICK BRICK MASONRY COATED WITH 1/2 IN. CEMENT MORTAR, OR 8 IN. THICK CONCRETE.
4. DISPOSAL
  - A. REMOVE ALL CONTRACTOR OWNED ITEMS FROM THE SITE.
  - B. STORE OR RELOCATE OTHER ITEMS AS INDICATED OR SPECIFIED.

## EPOXY INJECTION GROUTING

1. SCOPE
  - A. PRESSURE EPOXY INJECTION GROUTING OF CRACKS IN THE EXISTING CONCRETE WALLS AS INDICATED ON THE DRAWINGS.
2. SHOP DRAWINGS
  - A. SUBMIT FOR MATERIAL TO BE USED.
3. QUALITY ASSURANCE
  - A. PRIOR TO STARTING WORK, SUBMIT A DETAILED CONSTRUCTION PROCEDURE FOR APPROVAL.
4. EPOXY INJECTION GROUTING
  - A. GENERAL: 2-COMPONENT, 100% SOLIDS, EPOXY RESIN SPECIFICALLY FORMULATED AND MANUFACTURED FOR PRESSURE INJECTION GROUTING.
  - B. MANUFACTURER: SIKA'S SIKADUR 35, HI-MOD LV, OR EQUAL.
  - C. ACCESSORIES AND EQUIPMENT: PUMPING EQUIPMENT, HOSES, PORTS, AND ALL OTHER EQUIPMENT AS REQUIRED FOR PROPER INSTALLATION OF THE GROUT.
5. INSTALLATION
  - A. CLEAN JOINT FOR ALL LOOSE MATERIAL AND DIRT.
  - B. DRILL HOLES FOR PORTS AT SPACING DETERMINED BY CONTRACTOR TO PROVIDE FOR COMPLETE FILLING OF CRACK.
  - C. INSTALL AND SEAL PORTS FOR INJECTION AND VENTING.
  - D. PRESSURE INJECT GROUT TO COMPLETELY FILL AND SEAL CRACKS. GRAVITY FLOW IS NOT PERMITTED.
  - E. UPON COMPLETION CUT OFF PORTS FLUSH WITH SURFACE AND PATCH TO NEAT FINISH.

## NON-SHRINK GROUT

1. QUALITY ASSURANCE
  - A. REFERENCED STANDARDS: WHEREVER THE FOLLOWING ABBREVIATIONS ARE USED HEREIN, THEY SHALL REFER TO THE STANDARDS REFERENCED.  
  
ASTM – AMERICAN SOCIETY FOR TESTING AND MATERIALS  
CRD – CORPS OF ENGINEER SPECIFICATIONS
2. NON-SHRINK GROUT
  - A. TYPE: PREMIXED, NON-METALLIC, NON-CATALYZED, NATURAL AGGREGATE GROUT.
  - B. CONSISTENCY: CONFORM TO CRD C-621-83 FOR THE FOLLOWING DEFINITION
    - 1) UNDER BASE PLATES: FLUID
    - 2) OTHER AREAS: PLASTIC
  - C. SHRINKAGE: NEITHER VERTICAL NOR HORIZONTAL, PER CRD 588-78.
  - D. COMPRESSIVE STRENGTH: MINIMUM 6,500 PSI AT 28 DAYS.
  - E. COLOR BLEEDING: NOT PERMITTED.
  - F. MANUFACTURER: MASTER BUILDERS, L & M CONSTRUCTION CHEMICALS, SIKA CHEMICAL, UPCON; SAUERREISEN; OR EQUAL.
3. GENERAL
  - A. PROVIDE THE GROUT TYPE INDICATED ON THE DRAWINGS OR SPECIFIED HEREIN FOR THE PARTICULAR APPLICATION.
  - B. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PLACEMENT OF ALL PREMIXED GROUTS.

## METAL FABRICATIONS

1. WORK SPECIFIED ELSEWHERE
  - A. FLOOR PLATING.
  - B. HOT DIP GALVANIZING.
  - C. PAINTING.
2. QUALITY ASSURANCE
  - A. REFERENCE STANDARDS
    - 1) STEEL CONSTRUCTION MANUAL: AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), NINTH EDITION.
    - 2) ALUMINUM CONSTRUCTION MANUAL: THE ALUMINUM ASSOCIATION, EDITION 1971.
    - 3) AMERICAN WELDING SOCIETY (AWS)
    - 4) METAL BAR GRATING MANUAL: THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS, 1974 EDITION.
  - B. FABRICATOR QUALIFICATIONS: MINIMUM 5 YEARS CONTINUOUS EXPERIENCE IN FABRICATING ITEMS FOR PROJECTS OF SIMILAR QUALITY AND SCOPE.
  - C. ERECTORS QUALIFICATIONS: MINIMUM 5 YEARS CONTINUOUS EXPERIENCE WITH SIMILAR ERECTIONS.
  - D. WELDERS QUALIFICATIONS: PROCEDURES AND PERSONNEL SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D1.1.
3. STORAGE AND HANDLING
  - A. PROTECT FROM CORROSION.
  - B. STORE MATERIALS IN A WEATHERTIGHT AND DRY PLACE UNTIL READY FOR USE IN THE WORK.
  - C. STORE PACKAGED MATERIALS IN THEIR ORIGINAL UNBROKEN PACKAGE OR CONTAINER.
4. SHOP DRAWINGS
  - A. SUBMIT SIX (6) COPIES FOR ALL ITEMS LISTED HEREIN.
5. MATERIALS
  - A. STEEL SHAPES, BARS AND PLATES: ASTM A 36/A36M-93A.
  - B. ALUMINUM (PER ALUMINUM CONSTRUCTION MANUAL)
    - 1) STRUCTURAL SHAPES, PLATES, AND BARS: 6061-T6.
  - C. STEEL PIPE: ASTM A 53-93A TYPE E OR S, GRADE B, BLACK, STANDARD WEIGHT.
  - D. STANDARD THREADED FASTENERS
    - 1) BOLTS AND NUTS: ASTM A 307-93A, GRADE A, MINIMUM 3/4 IN. DIAMETER FOR STRUCTURAL APPLICATION, UNLESS SPECIFIED OTHERWISE.
    - 2) PLAIN WASHERS: ANSI B 27.2 2-65.
    - 3) BEVELED WASHERS: ANSI B 27.4 4-67.
  - E. ANCHOR BOLTS: ASTM A 307-93A, GRADE A.
  - F. STEEL WELDING ELECTRODES: AWS SERIES E70XX.
  - G. EXPANSION ANCHORS
    - 1) TYPE: SELECT AN ANCHOR WHICH IS SUITABLE FOR THE INTENDED USE WITH REGARD TO THE LOADING REQUIREMENT AND THE SURFACE TO WHICH IT WILL BE ATTACHED.
    - 2) MATERIAL: SELECT A MATERIAL WHICH WILL NOT CORRODE OR PROMOTE GALVANIC ACTION WHEN IN CONTACT WITH THE ITEM BEING ANCHORED. LEAD ANCHOR SHIELDS ARE PROHIBITED. USE STAINLESS STEEL BOLTS FOR ALUMINUM ITEMS.
    - 3) MANUFACTURER: THE MOLLEY CO., WEJ-IT, HILTI, STAR OR EQUAL.
    - 4) APPROVAL: ALL ANCHOR TYPES MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

[IMAGE] - IN TRANSIT, SB115-AS, ST-02, STZ-CH2, DWG - APR. 16, 1996 - 11:38:60

# GENERAL NOTES – PUMP STATION ST-2

**6. FABRICATION**

- A. GENERAL: CONSTRUCT ALL ITEMS IN THE BEST PRACTICES OF THE TRADE TO INSURE EASE OF INSTALLATION AND MINIMAL FIELD ADJUSTMENT.
- B. REFERENCE: MEET THE REQUIREMENTS OF THE AISC "STEEL CONSTRUCTION MANUAL", THE ALUMINUM ASSOCIATION, "ALUMINUM CONSTRUCTION MANUAL" AND THE METAL BAR GRATING MANUAL AS SUPPLEMENTED AND MODIFIED HEREIN.
- C. FIELD MEASURING: FIELD MEASURE ALL ITEMS AS REQUIRED TO OBTAIN PROPER FIT.
- D. LADDER
  - 1) MATERIAL: ALUMINUM AS INDICATED.
  - 2) RUNGS: CENTERED ON STRINGS.
  - 3) FINISH: CLEAR
  - 4) LADDER SAFETY DEVICE:
    - A) DESCRIPTION: RUNG MOUNTED, CENTER RAIL TYPE WITH LOCKING SLEEVE AND SAFETY BELT.
    - B) QUANTITIES: PROVIDE ONE RAIL WITH HARDWARE AND ONE LOCKING SLEEVE AT EACH OF THE LOCATIONS SPECIFIED. PROVIDE ONE SAFETY BELT.
    - C) MANUFACTURER: SAF-T-CLIMB (NORTH CONSUMER PRODUCTS, INC.) OR APPROVED EQUAL. EQUIPMENT TO MATCH CITY OF COLUMBUS EXISTING EQUIPMENT.
- E. GRATINGS AND FRAMES
  - 1) ALUMINUM: PRESSURE LOCKED CLOSE MESH RECTANGULAR DESIGN, TYPE CM-3, AS MANUFACTURED BY IKG INDUSTRIES, OR OHIO GRATINGS, INC., MAIN BEARING BARS 1-3/4 X 3/16 SPACED 5/8 INCHES CENTER TO CENTER, OR APPROVED EQUAL. GRATING IS TO SAFELY SUSTAIN A UNIFORMLY DISTRIBUTED LOAD OF 150 POUNDS PER SQUARE FOOT ON A 36 INCH SPAN AND DEFLECT LESS THAN 0.125 INCHES.
  - 2) GALVANIZED STEEL: WELDFORGED WELDED RECTANGULAR DESIGN, TYPE W/B AS MANUFACTURED BY IKG INDUSTRIES, OR MCNICHOLS CO., MAIN BEARING BARS 1-1/2 X 3/16 INCHES SPACED 1-3/16 INCHES CENTER-TO-CENTER, OR APPROVED EQUAL. GRATING IS TO SAFELY SUSTAIN A UNIFORMLY DISTRIBUTED LOAD OF 300 POUNDS PER SQUARE FOOT ON A 60 INCH SPAN AND DEFLECT LESS THAN 0.25 INCHES.
  - 3) SIZE OF BEARING BARS: AS SHOWN ON THE DRAWING.
  - 4) ADJACENT SECTIONS: ALIGN BARS SO THEY ARE CONTINUOUS.
  - 5) CLIPS: MANUFACTURERS STANDARD SADDLE TYPE CLIP USED TO SECURE EACH SECTION OF GRATING TO SUPPORTING MEMBERS.
- F. HANDRAIL
  - 1) MATERIAL: STEEL PIPE MEETING THE REQUIREMENTS SPECIFIED HEREIN FOR BLACK STEEL PIPE.
  - 2) FABRICATION
    - A) GENERAL: MEET ALL REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), INCLUDING THE 200 POUND STRESS REQUIREMENTS.
    - B) TOE PLATE: PROVIDE WHERE SHOWN ON THE DRAWINGS.

G. BAR SCREEN: GALVANIZED STEEL.

**7. FINISHES**

- A. PREPARATION: GRIND ALL EXPOSED CUT SURFACES AS REQUIRED TO REMOVE BURRS AND SHARP EDGES.
- B. GALVANIZING: WHERE SPECIFIED, HOT DIP GALVANIZE AFTER FABRICATION IN ACCORDANCE WITH THE REQUIREMENTS OF "HOT DIP GALVANIZING".

**C. SHOP PAINTING (NON-GALVANIZED FERROUS METAL)**

- 1) CLEANING: AFTER FABRICATION, CLEAN ALL ITEMS OF LOOSE SCALE RUST, OIL, DIRT OR OTHER FOREIGN MATTER.
- 2) MINIMUM SURFACE PREPARATION: HAND TOOL CLEANING (SSPC SPEC. NO. SP-2).
- 3) SOLVENT CLEANING (SSPC SPEC. NO. SP-1): PERFORM WHERE NECESSARY.
- 4) PAINT: ONE SHOP COAT OF PAINT COMPATIBLE WITH THE FINISH PAINT SYSTEM.

**8. INSTALLATION**

- A. GENERAL:
    - 1) ERECT AND INSTALL ACCORDING TO THE DETAILS INDICATED ON THE DRAWINGS AND APPROVED SHOP DRAWINGS.
    - 2) INCLUDE ALL ANCHORS, BOLTS, HANGERS, SUPPORTS, AND OTHER ACCESSORIES NEEDED FOR A COMPLETE ASSEMBLY AND INSTALLATION.
    - 3) USE NON-SHRINK GROUT WHERE INDICATED OR REQUIRED.
  - B. REFERENCE: AISC "STEEL CONSTRUCTION MANUAL", AS SUPPLEMENTED AND MODIFIED HEREIN.
  - C. PROTECTION FROM DISSIMILAR MATERIALS: COAT ALL ALUMINUM SURFACES IN CONTACT WITH STEEL, CONCRETE OR MASONRY WITH ONE COAT OF HEAVY BODIED BITUMINOUS PAINT. WHERE ALUMINUM CONTACTS STEEL SURFACES, AND ONLY WHERE SPECIFICALLY APPROVED, THE PAINTING REQUIRED ON THE STEEL SURFACE MAY BE SUBSTITUTED FOR THE BITUMINOUS PAINT.
  - D. CUT SURFACES: GRIND ALL EXPOSED CUT SURFACES AS REQUIRED TO REMOVE BURRS AND SHARP EDGES.
  - E. GRATINGS AND FRAMES
    - 1) FIELD CUTTING: ALLOWED ONLY WITH PERMISSION OF THE ENGINEER.
    - 2) BEARING BARS AT SUPPORTS: NOTCHING TO MAINTAIN ELEVATIONS NOT PERMITTED.
    - 3) REJECTION: BENT OR WARPED GRATING IN EXCESS OF THOSE SPECIFIED IN THE METAL BAR GRATING MANUAL WILL BE REJECTED.
    - 4) CLEARANCE BETWEEN PANELS
      - A) GENERAL: ALLOW APPROXIMATELY 1/8 INCH CLEARANCE BETWEEN ADJACENT PANELS (OR PANEL AND FRAME) AT 70°, EXCEPT THAT THE TOTAL ACCUMULATED CLEARANCE BETWEEN ANY NUMBER OF PANELS IN A SINGLE FRAME SHALL FALL WITHIN THE FOLLOWING RANGES:
- | FRAME DIMENSION (FEET) | ACCUMULATED CLEARANCE (INCHES) |         |
|------------------------|--------------------------------|---------|
|                        | MINIMUM                        | MAXIMUM |
| 0-10                   | 1/8                            | 3/8     |
- B) SPACERS: SPACERS WELDED TO THE EDGE OF THE INTERMEDIATE PANELS MAY BE USED TO REDUCE AN EXCESSIVE CLEARANCE.
  - 5) CLIPS: PROVIDE TWO AT EACH END SUPPORT AND ONE AT EACH INTERMEDIATE SUPPORT.
- G. HANDRAIL
  - 1) ANCHOR TO STEEL: REFER TO DETAIL ON DRAWINGS.
  - 2) TOE PLATES: PROVIDE ONLY WHERE INDICATED.

**FLOOR PLATING**

- 1. SCOPE
  - A. FURNISH AND INSTALL ALUMINUM FLOOR PLATING AND FRAMING AS SHOWN ON THE DRAWINGS.
- 2. QUALITY ASSURANCE
  - A. REFERENCE STANDARD
    - 1) ALUMINUM CONSTRUCTION MANUAL: THE ALUMINUM ASSOCIATION, LATEST EDITION.
    - 2) AMERICAN WELDING SOCIETY (AWS).

**3. SHOP DRAWINGS**

- A. SUBMIT SIX (6) COPIES FOR ALL ITEMS LISTED HEREIN.

**4. MATERIALS**

- A. ALUMINUM (PER ALUMINUM CONSTRUCTION MANUAL)
  - 1) STRUCTURAL SHAPES, PLATES, BARS: ALLOY 6061-T6.

**5. FABRICATION**

- A. MEET THE REQUIREMENTS OF THE ALUMINUM ASSOCIATION "ALUMINUM CONSTRUCTION MANUAL" AS SUPPLEMENTED AND MODIFIED HEREIN.
- B. FIELD MEASURE ALL ITEMS AS REQUIRED TO OBTAIN PROPER FIT OF SHOP FABRICATED FRAMING, HINGED DOORS AND REMOVABLE FLOOR PLATING.

**6. INSTALLATION**

- A. ERECT AND INSTALL ACCORDING TO THE DETAILS INDICATED ON THE DRAWINGS AND APPROVED SHOP DRAWINGS.
- B. INCLUDE ALL ANCHORS, FRAMING, WELDING AND OTHER ACCESSORIES NEEDED FOR A COMPLETE ASSEMBLY AND INSTALLATION.
- C. PROTECTION FROM DISSIMILAR MATERIALS: COAT ALL ALUMINUM SURFACES IN CONTACT WITH STEEL, CONCRETE, OR MASONRY WITH ONE COAT OF HEAVY BODIED BITUMINOUS PAINT.
- D. CUT SURFACES: GRIND ALL EXPOSED CUT SURFACES AS REQUIRED TO REMOVE BURRS AND SHARP EDGES.

**LIFTING HOOKS**

**1. SCOPE**

- A. FURNISH AND INSTALL DOUBLE SWIVEL LIFTING HOOK AND ACCESSORIES AS SHOWN ON THE DRAWINGS.

**2. SHOP DRAWINGS**

- A. SUBMIT SIX (6) COPIES FOR ALL ITEMS LISTED BELOW.

**3. INSTALLATION**

- A. ERECT AND INSTALL ACCORDING TO THE DETAILS INDICATED ON THE DRAWINGS AND APPROVED SHOP DRAWINGS.
- B. INCLUDE ALL DRILLED HOLES, COIL ROD, EPOXY ADHESIVE, SWIVEL LIFTING PLATE, HEAVY COIL NUT OR STANDARD COIL NUTS (2 REQUIRED).

**4. MANUFACTURER LISTINGS**

- A. 1" Ø COIL THREADED ROD – HIGH TENSILE DESIGNATION.
  - 1) BY DAYTON SUPERIOR – DESIGNATION B-12.
  - 2) BY RICHMOND ANCHOR AND SCREW – DESIGNATION 2/25.
- B. EPOXY ADHESIVE
  - 1) J-50 SURE – ANCHOR EPOXY, HIGH MOD EPOXY GEL ADHESIVE BY DAYTON SUPERIOR.
  - 2) SIKADUR 31 HI-MOD GEL BY SIKADUR.
- C. DOUBLE SWIVEL LIFTING PLATE (PRIMED AND PAINTED BY MANUFACTURER)
  - 1) T-26 DOUBLE SWIVEL LIFTING PLATE FOR 1" BOLT BY DAYTON SUPERIOR.
  - 2) 8-70 LDLP DUO-SWIVEL LIFT PLATE FOR 1" BOLT SIZE BY RICHMOND ANCHOR AND SCREW.

[ENC] - LA TRANS, SR115-45, ST-02, STZ-SHLD, DWG - APR 16, 1996 - 11:41:36



# GENERAL NOTES – PUMP STATION ST-2

D. HEAVY COIL NUT

- 1) B-25 HEAVY COIL NUT OR 2 STANDARD B-13 COIL UNITS BY DAYTON SUPERIOR.
- 2) 2/45 LAG STUD NUT STANDARD, .2 REQUIRED, BY RICHMOND ANCHOR AND SCREW.

**HOT DIP GALVANIZING**

1. SCOPE

- A. HOT DIP GALVANIZING AFTER FABRICATION FOR GENERAL STEEL, STRUCTURAL STEEL, FABRICATED STEEL ASSEMBLIES, AND THREADED FASTENERS.
- B. THIS SECTION DOES NOT APPLY TO GALVANIZED COATING ON SEMI-FINISHED PRODUCTS SUCH AS WIRE, TUBE OR SHEET GALVANIZED IN SPECIALIZED OR AUTOMATED PLANTS.

2. QUALITY ASSURANCE

- A. RELEVANT STANDARDS
  - 1) ASTM A 53-93A PIPE, STEEL, BLACK AND HOT-DIPPED ZINC-COATED (GALVANIZED) WELDED AND SEAMLESS, FOR ORDINARY USES.
  - 2) ASTM A 123-89A ZINC (HOT-GALVANIZED) COATINGS ON PRODUCTS FABRICATED FROM ROLLED, PRESSED, AND FORGED STEEL SHAPES, PLATES, BARS, AND STRIP.
  - 3) ASTM A 143-74 (1989) SAFEGUARDING AGAINST EMBRITTELEMENT OF HOT DIP GALVANIZED STRUCTURAL STEEL PRODUCTS AND PROCEDURE FOR DETECTING EMBRITTELEMENT.
  - 4) ASTM A 153-82 (1987) ZINC COATING (HOT DIP) ON IRON AND STEEL HARDWARE.
  - 5) ASTM A 325-93 HIGH STRENGTH BOLTS FOR STRUCTURAL STEEL JOINTS.
  - 6) ASTM A 385-80 (1991) PROVIDING HIGH QUALITY ZINC COATINGS (HOT DIP).
  - 7) ASTM A 563-93 CARBON AND ALLOY STEEL NUTS.
  - 8) ASTM A 780-93A REPAIR OF DAMAGED HOT DIP GALVANIZED COATINGS.
  - 9) ASTM B 6-87 (1992) ZINC (SLAB ZINC).
- B. CERTIFICATION: A CERTIFICATE OF COMPLIANCE SHALL BE PROVIDED STATING THAT THE GALVANIZING COMPLIES WITH ASTM SPECIFICATIONS AND STANDARDS AND ALL OTHER APPLICABLE REQUIREMENTS SPECIFIED HEREIN.
- C. INSPECTION AND TESTS
  - 1) INSPECTIONS, TESTS AND SAMPLES SHALL CONFORM WITH ASTM SPECIFICATIONS AND STANDARDS.
  - 2) INSPECTION MAY BE CARRIED OUT AT THE GALVANIZERS PLANT BY AN INDEPENDENT TESTING LABORATORY HIRED BY THE CONTRACTOR.
  - 3) INSPECTION RIGHTS AND PRIVILEGES, PROCEDURES, AND ACCEPTANCE OR REJECTION OF GALVANIZED STEEL MATERIAL SHALL CONFORM WITH ASTM A 123 OR A 153 AS APPLICABLE.
  - 4) INSPECTIONS AND TESTS SHALL INCLUDE THE FOLLOWING:
    - A) VISUAL EXAMINATION OF SAMPLES AND FINISHED PRODUCTS.
    - B) TESTS TO DETERMINE WEIGHT OR MASS OF ZINC COATING PER SQUARE FOOT OF METAL SURFACE.

3. HANDLING, TRANSPORT AND STORAGE

- A. STACK OR BUNDLE TO ALLOW AIR BETWEEN THE GALVANIZED SURFACES DURING TRANSPORT FROM THE SUPPLIER. LOAD IN SUCH A MANNER THAT CONTINUOUS DRAINAGE COULD OCCUR.

- B. STORE RAISED FROM THE GROUND AND SEPARATED WITH STRIP SPACERS TO PROVIDE FREE ACCESS OF AIR TO MOST PARTS OF THE SURFACE. INCLINE IN A MANNER WHICH WILL GIVE CONTINUOUS DRAINAGE. UNDER NO CIRCUMSTANCES SHALL GALVANIZED STEEL BE ALLOWED TO REST ON CINDERS OR CLINKERS; NEITHER SHALL IT BE STORED ON WET SOIL OR DECAYING VEGETATION.

4. STEEL MATERIALS

- A. CONFORM TO THE REQUIREMENTS OF THE RELATED SPECIFICATIONS WITH THE FOLLOWING ADDITIONAL REQUIREMENTS:

- 1) STRUCTURAL SHAPES, PLATES AND BARS: MANUFACTURE FROM FULLY KILLED OR SEMI-KILLED STEEL CONFORMING TO ASTM A 36-81A EXCEPT THAT THE SILICON CONTENT SHALL BE IN THE RANGE OF 0 TO 0.04% OR 0.15 TO 0.25% ONLY. FURNISH MILL CERTIFICATES.
- 2) FASTENERS: CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS.

GENERAL CATEGORY	BOLT MATERIAL	NUT MATERIAL
CARBON STEEL	A 307 GR A OR B	A 563 GR A
HIGH STRENGTH	A 325 TYPE 1 OR 2	A 563 GR DH OR A 194 GR 2H

- 3) SHEET METAL ARTICLES: CONFORM TO ASTM A 569/ A 569M-91A(1979) OR A 570/ A 570M-93.

5. ZINC FOR GALVANIZING

- A. CONFORM TO ASTM B 6-87 (1992).

6. FABRICATION

- A. FABRICATE STRUCTURAL SHAPES GENERALLY IN ACCORDANCE WITH CLASS (I, II OR III) GUIDELINES AS SHOWN IN RECOMMENDED DETAILS FOR GALVANIZED STRUCTURES AS PUBLISHED BY THE AMERICAN HOT DIP GALVANIZERS ASSOCIATION, INC.
- B. FABRICATION PRACTICES SHALL BE IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF ASTM A 143-74 (1989) AND A 385-80 (1991), EXCEPT AS SPECIFIED HEREIN.
- C. TAKE CARE TO AVOID FABRICATION TECHNIQUES WHICH COULD CAUSE DISTORTION OR EMBRITTELEMENT OF THE STEEL.
- D. BEFORE FABRICATION PROCEEDS, NOTIFY THE ENGINEER OF POTENTIAL WARPAGE PROBLEMS WHICH MAY REQUIRE MODIFICATION IN DESIGN.
- E. HOLES AND/OR LIFTING LUGS TO FACILITATE HANDLING DURING THE GALVANIZING PROCESS SHALL BE PROVIDED AT POSITIONS AS AGREED BETWEEN THE DESIGNER, FABRICATOR AND GALVANIZER.

7. SURFACE PREPARATION

- A. REMOVE ALL WELDING SLAG AND BURRS.
- B. REMOVE UNSUITABLE MARKING PAINTS, GREASE, OIL, PAINT AND OTHER DELETERIOUS MATERIAL.
- C. PRE-CLEAN UTILIZING A CAUSTIC BATH, ACID PICKLE AND FLUX. ALTERNATIVELY, THE STEEL MAY BE BLAST CLEANED AND FLUXED.

8. GALVANIZING

- A. STEEL MEMBERS, FABRICATIONS, AND ASSEMBLIES: ASTM A 123-89A.
- B. BOLTS, NUTS AND WASHERS AND IRON AND STEEL HARDWARE COMPONENTS: ASTM A 153-82 (1987).
- C. NUTS AND BOLTS: SUPPLIED IN ACCORDANCE WITH ASTM A 307-93A, A 325-93C AND A 563-93A, AS APPLICABLE.
- D. SAFEGUARD AGAINST EMBRITTELEMENT: ASTM A 143-74 (1989).

9. COATING REQUIREMENTS

- A. WEIGHT: CONFORM WITH PARAGRAPH 6.1 OF ASTM A 123-89A OR TABLE 1 OF ASTM A 153-82 (1987), AS APPROPRIATE.
- B. SURFACE FINISH
  - 1) CONTINUOUS, ADHERENT, AS SMOOTH AND EVENLY DISTRIBUTED AS POSSIBLE AND FREE FROM ANY DEFECT THAT IS DETRIMENTAL TO THE STATED END USE OF THE COATED ARTICLE.
  - 2) WHERE SLIP FACTORS ARE REQUIRED TO ENABLE FRICTION GRIP BOLTING, THESE SHALL BE OBTAINED AFTER GALVANIZING BY SUITABLE TREATMENT OF THE FAYING SURFACES IN ACCORDANCE WITH THE LATEST EDITION OF THE SPECIFICATION FOR STRUCTURAL JOINTS, USING ASTM A 325-93 OR A 490-93 BOLTS AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
- C. ADHESION: THE GALVANIZED COATING SHALL BE SUFFICIENTLY ADHERENT TO WITHSTAND NORMAL HANDLING DURING TRANSPORT AND ERECTION.

10. WELDING

- A. WHERE GALVANIZED STEEL IS TO BE WELDED, PROVIDE ADEQUATE VENTILATION. IF ADEQUATE VENTILATION IS NOT AVAILABLE, PROVIDE SUPPLEMENTARY AIR CIRCULATION. IN CONFINED SPACES USE A RESPIRATOR.
- B. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE AWS D19.0-92, WELDING ZINC COATED STEEL.
- C. TOUCH UP ALL UNCOATED WELD AREAS.

11. TOUCH UP AND REPAIR

- A. MECHANICAL DAMAGE: AREAS DAMAGED BY WELDING, FLAME CUTTING, OR DURING HANDLING, TRANSPORT OR ERECTION SHALL BE REPAIRED BY THE FOLLOWING METHOD WHENEVER THE DAMAGE EXCEEDS 3/16" IN WIDTH:
  - 1) ZINC BASED SOLDER
    - A) SURFACE SHALL BE CLEAN, DRY AND FREE OF OIL, GREASE AND CORROSION PRODUCTS.
    - B) WIRE BRUSH AREAS TO BE REPAIRED.
    - C) APPLY HEAT SLOWLY AND BROADLY CLOSE TO, BUT NOT DIRECTLY ONTO THE AREA TO BE REPAIRED.
    - D) RUB THE ZINC-BASED SOLDER ROD ONTO THE HEATED METAL UNTIL THE ROD BEGINS TO MELT.
    - E) USE A FLEXIBLE BLADE OR WIRE BRUSH TO SPREAD THE MELT OVER THE AREA TO BE COVERED.
    - F) APPLY IN A MINIMUM THICKNESS OF 2 MILS.
- B. WET STORAGE STAIN
  - 1) REMOVE WET STORAGE STAIN BEFORE INSTALLATION SO THAT PREMATURE FAILURE OF THE COATING WILL NOT OCCUR.
  - 2) REMOVE AS FOLLOWS:
    - A) ARRANGE OBJECTS SO THAT THEIR SURFACES DRY RAPIDLY.
    - B) REMOVE LIGHT DEPOSITS BY MEANS OF A STIFF BRISTLE (NOT WIRE) BRUSH.
    - C) REMOVE HEAVIER DEPOSITS BY BRUSHING WITH A 5% SOLUTION OF SODIUM OR POTASSIUM DICHROMATE WITH THE ADDITION OF 0.1% BY VOLUME OF CONCENTRATED SULFURIC ACID. APPLY WITH A STIFF BRISTLE BRUSH AND LEAVE FOR ABOUT 30 SECONDS BEFORE THOROUGHLY RINSING AND DRYING. ALTERNATIVELY A PROPRIETARY PRODUCT SUCH AS OAKITE HIGHLIGHT, OR EQUAL, WHICH IS INTENDED FOR THIS PURPOSE MAY BE USED ACCORDING TO MANUFACTURERS RECOMMENDATIONS.
- C. EXISTING METALS IN PLACE TO BE CLEANED AND PAINTED
  - 1) CLEAN ALL EXPOSED SURFACES BY SAND BLASTING, GRINDING OR STIFF WIRE BRUSH DOWN TO A WHITE COLOR.

[108] - (A) TRANS(S) 58115-4515-ST-02-S12-GH4.DWG - APR 16, 1998 - 11:45:08

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- 2) APPLY ZINC RICH PAINT WITH BRUSH OR SPRAY TO DAMAGED SURFACES. THICKNESS OR COATING OVER REPAIR AREA SHALL BE AT LEAST 1.5 TIMES THE SURROUNDING AREA MEASURED COATING OR 4 MILS, WHICHEVER IS GREATER.
  - A) BRUSH ON APPLICATION PROVIDES 2.0 MILS PER PASS. TWO PASSES MINIMUM ARE REQUIRED.
  - B) SPRAY ON APPLICATION PROVIDES 0.5 MILS PER PASS. EIGHT PASSES MINIMUM ARE REQUIRED.
  - C) PAINT SHALL BE LET TO DRY AT LEAST TWO MINUTES BETWEEN APPLICATIONS/PASSES.
  - D) ZINC RICH PAINT SHALL CONTAIN 93-95% ZINC DUST IN DRY FILM.
- 3) AFTER PAINT IS THOROUGHLY DRY AND COATING THICKNESSES HAVE BEEN VERIFIED, CLEAN UP ALL ADJACENT CONCRETE SURFACES DISTURBED DURING THIS WORK.

## SEALANTS

1. SCOPE
  - A. SEALING OF JOINTS IN CONCRETE CONSTRUCTION WHERE INDICATED.
2. STORAGE AND HANDLING
  - A. PREVENT INCLUSION OF FOREIGN MATTER OR THE DAMAGE OF MATERIALS BY WATER OR BREAKAGE.
  - B. PROCURE AND STORE IN ORIGINAL CONTAINERS UNTIL READY FOR USE.
  - C. MATERIALS SHOWING EVIDENCE OF DAMAGE SHALL BE REJECTED.
3. SEALANT
  - A. JOINTS SUBMERGED OR INTERMITTENTLY SUBMERGED IN WATER
    - 1) GENERAL: "SIKAFLEX 2C" BY SIKA CHEMICAL CO., "DAP FLEXISEAL" BY DOW-CORNING CORP., OR EQUAL.
    - 2) HORIZONTAL SURFACES: SELF-LEVELING.
    - 3) VERTICAL: NON-SAG.
    - 4) COLOR: AS CLOSE AS POSSIBLE TO ADJACENT SURFACE COLOR.
    - 5) PRIMER: "SIKAFLEX 429 PRIMER" OR "DAP FLEXISEAL PRIMER" OR EQUAL, FOR CONCRETE.
  - B. OTHER JOINTS
    - 1) LOCATIONS
      - A) OPENINGS: AROUND OPENINGS BETWEEN DOOR FRAME AND STRUCTURES.
    - 2) SEALANT TYPE: FIRST QUALITY, ELASTIC COMPOUND FOR GUN APPLICATION, CONFORMING TO FED. SPEC. TT-S-00230C (2), TYPE II, CLASS A.
    - 3) MANUFACTURER: SIKAFLEX-1A, ONE-COMPONENT POLYURETHANE BY SIKA CHEMICAL CO.; DAP ONE-COMPONENT ACRYLIC SEALANT BY DOW-CORNING CORP.; SILICONE SEALANT 1600 BY GENERAL ELECTRIC, OR EQUAL.
    - 4) COLOR: WHITE OR GRAY; OTHER COLORS AS APPROVED.
    - 5) PRIMER: FERROUS AND NON-FERROUS METALS SHALL RECEIVE SIKAFLEX PRIMER.
4. JOINT BACKING MATERIAL
  - A. TYPES
    - 1) SEMI-RIGID: POLYETHYLENE ROD, CLOSED CELL URETHANE, NEOPRENE ROD.
5. PREPARATION
  - A. ALL SURFACES MUST BE CLEAN AND DRY.
  - B. BLOW OUT OR VACUUM LOOSE MATERIAL FROM JOINTS.

- C. CLEAN DUSTY OR DIRTY SURFACES WITH SUITABLE SOLVENT SUCH AS TOLUENE OR XYLENE.
  - D. JOINTS SHALL BE FULLY CURED.
  - E. GIVE POROUS SURFACES, SUCH AS MORTAR OR CONCRETE, A BRUSH COAT OF PRIMER PRIOR TO SEALING, AS RECOMMENDED BY THE MANUFACTURER.
  - F. PROTECT ADJACENT SURFACES.
6. JOINT BACKING
    - A. WHERE RECOMMENDED BY THE SEALANT MANUFACTURER, BUILD UP JOINTS DEEPER THAN 1/2 IN. WITH JOINT BACKING TO A DEPTH OF 3/8 IN. PRIOR TO CLEANING AND PRIMING.
    - B. SIZE TO REQUIRE 20% TO 50% COMPRESSION UPON INSERTING.
    - C. INSTALL BOND BREAKING TAPE ON JOINTS NOT DEEP ENOUGH TO ALLOW BACKING AND WHERE INCAPABILITY EXISTS BETWEEN THE SEALANT AND SURFACE SUCH AS WITH A BITUMINOUS PREMOLDED JOINT MATERIAL.
  7. APPLICATION
    - A. GENERAL
      - 1) PREPARE AND MIX AS RECOMMENDED BY MANUFACTURER.
      - 2) DO NOT USE MATERIAL WHICH HAS EXCEEDED THE MANUFACTURER'S RECOMMENDED POT LIFE.
    - B. VERTICAL AND OVERHEAD SURFACES
      - 1) APPLY COMPOUNDS WITH HAND OPERATED OR PRESSURE OPERATED GUN USING APPROPRIATE TOP FOR SIZE OF JOINT BEING FILLED.
      - 2) FILL ALL JOINTS COMPLETELY WITH NO AIR POCKETS OR VOIDS.
      - 3) LIGHTLY TOOL ALL EXPOSED JOINTS TO SECURE SLIGHTLY CONCAVE AND UNIFORM APPEARANCE. USE SOLVENT RECOMMENDED BY MANUFACTURER.
    - C. FLOOR SURFACES
      - 1) GENERAL
        - A) IF JOINT IS SUBJECT TO MOVEMENT, USE BOND BREAKER TO AVOID BONDING AT THE JOINT BOTTOM.
        - B) APPLY MASKING TAPE ALONG JOINT EDGES.
        - C) NEATLY POUR SEALANT INTO JOINT AND TROWEL SMOOTH.
        - D) REMOVE TAPE AFTER POURING AND BEFORE SEALANT DRIES.
  8. CLEANING UP
    - A. CLEAN ALL ADJACENT SURFACE WHICH HAVE BEEN SOILED WITH SOLVENT OR CLEANING AGENT AS RECOMMENDED BY MANUFACTURER.
    - B. LEAVE FINISHED WORK IN NEAT, CLEAN CONDITION.

## PUMPS

1. CERTIFIED TEST CURVES
  - A. TESTS: TEST PUMPS AT MINIMUM OF FOUR (4) HEAD CONDITIONS, INCLUDING SHUT-OFF, WHEN OPERATING AT FULL SPEED. STANDARDS OF HYDRAULIC INSTITUTE SHALL GOVERN TESTING PROCEDURE AND CALCULATIONS.
  - B. CURVES: CERTIFIED; SUBMIT TO ENGINEER WITH COPIES TO CITY INCLUDED WITH OPERATION AND MAINTENANCE MANUALS.
  - C. RESULTS OF TESTING
    - 1) CAPACITY OF EACH UNIT AT HEAD CONDITIONS TESTED SHALL EQUAL OR EXCEED CAPACITY SHOWN ON CHARACTERISTIC PERFORMANCE CURVE.
    - 2) EQUIPMENT FAILING TO MEET THESE CONDITIONS SHALL BE REJECTED.

2. SUBMITTALS: SUBMIT SIX (6) COPIES FOR ALL ITEM LISTED HEREIN.
3. MANUFACTURER'S REPRESENTATIVE
  - A. A QUALIFIED REPRESENTATIVE MUST SUPERVISE INSTALLATION OF THE UNITS AND BE PRESENT DURING START-UP OF EACH UNIT.
4. GENERAL
  - A. TYPE: VERTICAL, MIXED FLOW, ANGLEFLOW, SINGLE STAGE, ELECTRIC-MOTOR DRIVE WITH FLEXIBLE EXTEND SHAFT.
  - B. NUMBER OF UNITS: THREE (3).
  - C. FLUID TO BE PUMPED: STORMWATER.
5. MANUFACTURER
  - A. GENERAL: FAIRBANKS MORSE, PATTERSON, WORTHINGTON, OR APPROVED EQUAL.
    - 1) ALL PUMPS AND OTHER EQUIPMENT OF SAME TYPES SHALL BE BY SAME MANUFACTURER.
  - B. BASIS OF DESIGN: FAIRBANKS MORSE, MODEL 5711.
6. PERFORMANCE CHARACTERISTICS
  - A. CAPACITY
    - 1) 16,000 GPM AT 28.5 TDH.
    - 2) 12,600 GPM AT 38' TDH.
    - 3) 9,000 GPM AT 45' TDH.
  - B. MINIMUM ACCEPTABLE PUMP EFFICIENCY: 80% AT 12,600 GPM.
  - C. MAXIMUM PUMP SPEED: 585 RPM.

## PUMP CONSTRUCTION

7. CASINGS
  - A. MATERIAL: CAST IRON.
  - B. DESIGN: ONE PIECE VOLUTE TYPE WITH INTEGRAL DISCHARGE FLANGE, VERTICAL, SIDE DISCHARGE, BOTTOM SUCTION, REMOVABLE SUCTION COVER AND STUFFING BOX COVER; THE ROTATING ASSEMBLY MUST BE REMOVABLE WITHOUT DISTURBING THE SUCTION OR DISCHARGE CONNECTIONS. EACH CASING SHALL BE HYDROSTATICALLY TESTED AT ONE AND ONE-QUARTER TIMES THE MAXIMUM SHUT-OFF HEAD. PROVIDE THREE (3) LIFTING EYES; CLEAN-OUT HANDHOLE WITH REMOVABLE BOLTED COVER AND CONTOURED TO MATCH THE INNER CONTOUR OF THE CASING; BACKING-OFF SCREWS FOR BREAKING JOINT; ALL WETTED SURFACES TO BE CERAMIC COATED.
8. CASING CONNECTIONS
  - A. TYPE: ANSI CLASS 125 FLANGES, FLAT FACED.
  - B. GAUGE CONNECTIONS: PROVIDE 1/2 INCH IPS TAP IN SUCTION AND DISCHARGE NOZZLES.
  - C. POSITION OF SUCTION AND DISCHARGE NOZZLES AS INDICATED ON THE DRAWINGS.
  - D. SUCTION SIZE: 20 INCH DIAMETER.
  - E. DISCHARGE SIZE: 20 INCH DIAMETER.
  - F. VOLUTE CONNECTIONS: PROVIDE TAPPED AND PLUGGED CONNECTIONS AT ALL HIGH POINTS FOR AIR RELEASE OR TO BREAK VACUUM AND AT ALL LOW POINTS FOR DRAINAGE.
9. SUCTION COVER WEAR PLATE: REPLACEABLE BRONZE, MINIMUM 1/4 INCH WEAR SURFACE PARALLEL TO END OF IMPELLER.

[100] - 1. TRANS. SRB15-4451 ST-02 ST2-ONE-DWG - APR. 16, 1996 - 11:47:58



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## 10. IMPELLER:

- A. TYPE: SINGLE STAGE END SUCTION MIXED FLOW ENCLOSED TYPE WITH A MINIMUM NUMBER OF VANES.
- B. MATERIAL: CAST IRON, CERAMIC COATED.
- C. DESIGN: SMOOTH PASSAGES TO PREVENT CLOGGING, PASS 3 INCH MAXIMUM SPHERE SIZE SOLIDS, READILY REMOVABLE FROM SHAFT WITHOUT SPECIAL TOOL IMPELLER SHALL BE STATICALLY AND HYDRAULICALLY BALANCED. IMPELLER SHALL BE SECURED TO THE SHAFT WITH A KEY AND LOCKING NUT WHICH IN TURN IS SECURED BY A LOCKING SCREW. THE ARRANGEMENT SHALL BE SUCH THAT THE IMPELLER CANNOT BE LOOSENEED BY TORQUE FROM EITHER FORWARD OR REVERSE ROTATION.

## 11. WEARING RINGS:

- A. REMOVABLE WEARING RINGS SHALL BE FURNISHED ON THE IMPELLER AND SUCTION HEAD AND ARRANGED WITH THE WEARING SURFACES NORMAL TO THE AXIS OF ROTATION. THEY SHALL BE SECURELY FASTENED TO PREVENT ANY RELATIVE ROTATION, AND DESIGNED TO COMPENSATE FOR A MINIMUM OF ONE-QUARTER INCH WEAR. THE IMPELLER RING SHALL BE APPROXIMATELY 50 BRINELL SOFTER THAN THE SUCTION HEAD RING.

## 12. SHAFT:

- A. HIGH STRENGTH CARBON STEEL, AISI 4140 H.T. ACCURATELY MACHINED AND OF SUFFICIENT SIZE TO TRANSMIT FULL DRIVER OUTPUT WITH LIBERAL SAFETY FACTOR.
- B. PROTECT FROM PUMPED LIQUIDS BY SHAFT SLEEVES IN THE STUFFING BOX AREA.

## 13. SHAFT SLEEVE:

- A. RENEWABLE, EXTENDING FROM IMPELLER HUB THROUGH THE STUFFING BOX AND UNDER THE GLAND.
- B. MATERIAL: CORROSION RESISTANT, 500 BRINELL HARDNESS.
- C. POSITIVELY LOCKED IN PLACE BY THREADED BRONZE SHAFT NUTS WITH NO LEAKAGE BETWEEN SHAFT AND SLEEVE.

## 14. STUFFING BOX:

- A. THE STUFFING BOX SHALL BE CAST INTEGRALLY WITH THE STUFFING BOX HEAD, DESIGNED FOR A MINIMUM OF FIVE (5) RINGS OF PACKING IN ADDITION TO A TEFLON SEAL CAGE AND SUITABLE FOR CLEAR WATER OR GREASE SEALING. THE STUFFING BOX SHALL BE READILY ACCESSIBLE AND PROVIDED WITH A REMOVABLE BRONZE GLAND TO FACILITATE PACKING REPLACEMENT. THE STUFFING BOX HEAD SHALL BE TAPPED FOR A THREE-QUARTER INCH DRAIN CONNECTION. NO ASBESTOS MATERIALS SHALL BE USED.

## 15. BEARINGS:

- A. PUMP BEARINGS SHALL BE MOUNTED IN A REMOVABLE CAST IRON BEARING FRAME. RADIAL INBOARD BEARING SHALL BE BALL OR ROLLER TYPE SUITABLE FOR ALL LOADS IN TWO DIRECTIONS. THE BEARINGS SHALL BE ARRANGED TO ELIMINATE ALL RADIAL PLAY AND DESIGNED FOR A MINIMUM B-10 LIFE OF 100,000 HOURS IN ACCORDANCE WITH AFBMA. THE BEARINGS SHALL BE GREASE LUBRICATED AND PROVIDED WITH TAPPED OPENINGS FOR ADDITIONAL LUBRICANT AND DRAINAGE. SUITABLE SEALS SHALL BE PROVIDED IN THE BEARING COVERS TO PREVENT THE ENTRANCE OF CONTAMINANTS. THE BEARING FRAME SHALL BE ARRANGED TO PROVIDE FOR THE AISLE ADJUSTMENT OF THE WEARING RINGS BY THE USE OF JACKING SCREWS AND ADJUSTMENT SHIMS BETWEEN THE BEARING FRAME AND STUFFING BOX HEAD.

16. SHAFT EXTENSION: MINIMUM OF THREE (3) SECTIONS SHALL BE USED FOR SHAFT EXTENSIONS, INCLUDING MOTOR AND PUMP COUPLINGS, GUIDE BEARINGS AND UNIVERSAL JOINTS AND SIZED TO BE SUITABLE TO TRANSMIT FULL DRIVER OUTPUT WITH LIBERAL SAFETY FACTOR AND DYNAMICALLY BALANCED. SHAFT GUARDS SHALL BE PROVIDED AT MOTOR COUPLING AND PUMP COUPLING. GUIDE BEARINGS SHALL BE BALL OR ROLLER TYPE SUITABLE FOR ALL LOADS ENCOUNTERED IN SERVICE CONDITION, GUIDE BEARINGS SHALL BE GREASE LUBRICATED AND PROVIDED WITH TAPPED OPENINGS FOR ADDITIONAL LUBRICANT AND DRAINAGE AND DESIGNED FOR A MINIMUM B-10 LIFE OF 8,000 HOURS IN ACCORDANCE WITH AFBMA. THE BEARINGS SHALL BE ARRANGED TO PROVIDE RADIAL SUPPORT FOR PUMP SHAFTING TO ELIMINATE ALL VIBRATIONS.

17. ROTATION: ARRANGE TO ROTATE COUNTERCLOCKWISE WHEN LOOKED AT THE PUMP FROM THE DRIVER.

## 18. MISCELLANEOUS:

- A. DATA PLATES: STAINLESS STEEL WITH THE MANUFACTURER'S NAME, PUMP SIZE AND TYPE, SERIAL NUMBER, SPEED, IMPELLER DIAMETER, CAPACITY AND HEAD RATING, FRAME NUMBER, BEARING NUMBERS AND OTHER PERTINENT DATA.
- B. HARDWARE: ALL MACHINE BOLTS, NUTS AND CAP SCREWS SHALL BE OF THE HEX HEAD TYPE. HARDWARE (OR PARTS) REQUIRING SPECIAL TOOLS OR WRENCHES SHALL NOT BE USED.
- C. ANCHOR BOLTS: 316 STAINLESS STEEL.

19. DOCUMENTATION: THE MANUFACTURER SHALL SUPPLY 6 (SIX) SETS OF OPERATING AND MAINTENANCE INSTRUCTION MANUALS AND PARTS LIST.

## 20. INSTALLATION

- A. ALL PUMPS SHALL BE SET AND ANCHORED AS INDICATED ON THE DRAWINGS OR REQUIRED BY THE MANUFACTURER. ANCHOR BOLTS SHALL BE 316 STAINLESS STEEL. ALL PUMP BASES SHALL BE GROUTED WITH NON-SHRINK, NON-METALLIC GROUT.
- B. PUMPS SHALL BE SET PLUMB AND LEVEL AND IMPROPER STRESSES SHALL NOT BE IMPOSED THEREON BY THE CONNECTING PIPING.
- C. CHECK ALIGNMENT OF PUMP AND MOTOR ROTATING PARTS.
- D. CHECK CONDITION AND LUBRICATION OF ALL BEARINGS IN PUMPS AND MOTORS.

## 21. TESTS

- A. UPON COMPLETION OF THE INSTALLATION OF ALL PUMPING EQUIPMENT FURNISHED UNDER THIS SECTION, SHOULD THE ENGINEER HAVE REASON TO BELIEVE THAT THE EQUIPMENT IS NOT PERFORMING IN ACCORDANCE WITH THE SPECIFICATIONS AND THE APPROVED PERFORMANCE CURVES, FIELD TESTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE AND FAILURE OF THE EQUIPMENT TO MEET THE REQUIREMENTS AS SPECIFIED SHALL BE CAUSE FOR REJECTION OF SAID EQUIPMENT.

## MOTORS

1. STANDARDS: MOTORS SHALL BE BUILT IN ACCORDANCE WITH THE LATEST STANDARDS OF NEMA AND TO THE REQUIREMENTS SPECIFIED HEREIN.
2. TYPE: THE PUMP MOTORS SHALL BE HIGH THRUST, VERTICAL, HOLLOW SHAFT, SQUIRREL CAGE, INDUCTION TYPE AND DESIGNED FOR OPERATION ON 460 VOLT, 3-PHASE, 60 HZ, ALTERNATING CURRENT. THE MOTOR HORSEPOWER AND MOTOR NOMINAL SPEED SHALL BE SUITABLE FOR PUMP OPERATION. THE MOTOR SHALL BE EQUIPPED WITH ANTI-FRICTION BEARINGS REGREASABLE AND SHALL BE INITIALLY WITH GREASE FOR AMBIENT TEMPERATURES TO 50 DEGREES CENTIGRADE. CORROSION RESISTANT PIPE PLUGS SHALL BE FURNISHED FOR GREASE INLETS AND OUTLETS. THE BEARINGS SHALL BE CAPABLE OF HANDLING ALL THRUSTS AND LOADINGS. MOTORS SHALL BE EQUIPPED WITH A 150 WATTS, 120 VOLTS UNIT SPACE HEATER. THE PUMP MOTORS SHALL BE MANUFACTURED BY SIEMANS, U.S. ELECTRIC MOTORS OR APPROVED EQUAL.

3. RATING: EACH MOTOR SHALL DEVELOP AMPLE TORQUE FOR ITS REQUIRED SERVICE THROUGHOUT ITS ACCELERATION RANGE. THE MOTOR SHALL NOT BE REQUIRED TO DELIVER MORE THAN ITS RATED DATAPLATE HORSEPOWER UNDER ANY CONDITION OF SPECIFIED LOADING. WHERE MOTOR HORSEPOWERS ARE SPECIFIED IN CONNECTION WITH EQUIPMENT DRIVE THEY SHALL BE CONSIDERED MINIMUM. ALL MOTORS SHALL HAVE 1.15 SERVICE FACTOR. STARTING KVA/HP SHALL NOT EXCEED THE VALUES GIVEN IN NEMA MG1-12.34, 1975, OR NEC 1993 ART. 430-110, LOCKED-ROTOR CURRENT TABULATION FOR MOTOR CODE.

4. INSULATION: THE MOTORS SHALL HAVE NEMA CLASS F INSULATION WITH A NEMA CLASS B INSULATION TEMPERATURE RISE. THE INSULATION SHALL BE RESISTANT TO ATTACK BY MOISTURE, ACID, ALKALINE MECHANICAL AND THERMAL SHOCK. LEADS SHALL BE SEALED WITH NONWICKING NONHYGROSCOPIC INSULATING MATERIAL.

5. ENCLOSURES: MOTOR SHALL HAVE CAST IRON FRAME AND CONDUIT BOX. SYNTHETIC RUBBER-LIKE GASKETS SHALL BE LOCATED BETWEEN THE FRAME AND THE CONDUIT BOX AND BETWEEN THE CONDUIT BOX AND ITS COVER. A GROUNDING LUG SHALL BE PROVIDED INSIDE THE CONDUIT BOX. EACH MOTOR SHALL HAVE A MINIMUM OF TWO (2) LIFTING LUGS DESIGNED FOR THE WEIGHT OF THE MOTOR. ALL HARDWARE SHALL BE CORROSION RESISTANT. MOTOR SHALL BE DELIVERED WITH TWO (2) COATS FACTORY STANDARD PRIMER COMPATIBLE WITH THE PAINTING SECTION OF THESE SPECIFICATIONS.

6. DATAPLATES: THE MOTOR MANUFACTURER'S DATAPLATE SHALL BE ENGRAVED OR STAMPED ON STAINLESS STEEL AND FASTENED TO THE MOTOR FRAME WITH NONREMOVABLE SCREWS OR DRIVE PINS. THE DATAPLATE SHALL BE POSITIONED SO AS TO BE READILY VISIBLE FOR INSPECTION IN THE COMPLETED MACHINE. DATAPLATES SHALL CLEARLY INDICATE ALL THE ITEMS OF INFORMATION ENUMERATED IN NEMA STANDARDS.

7. SUBMITTAL DATA: SUBMITTAL OF MOTOR DATA FOR ACCEPTANCE SHALL INCLUDE, AS A MINIMUM, THE FOLLOWING:

- A. MANUFACTURER'S TYPE AND FRAME DESIGN.
- B. HORSEPOWER RATING.
- C. TIME RATING (NEMA MG1-10.36).
- D. AMBIENT TEMPERATURE RATING.
- E. INSULATION SYSTEM DESIGNATION AND DESCRIPTION.
- F. RPM AT RATED LOAD
- G. FREQUENCY
- H. NUMBER OF PHASES
- I. RATED-LOAD AMPERES
- J. VOLTAGE
- K. CODE LETTER (STARTING KVA PER HORSEPOWER)
- L. SERVICE FACTOR
- M. TEMPERATURE RISE AT FULL LOAD AND AT SERVICE FACTOR LOAD.
- N. EFFICIENCY AT 1/4, 1/2, 3/4 AND 4/4 LOAD.
- O. POWER FACTOR AT 1/4, 1/2, 3/4, AND 4/4 LOAD.
- P. MOTOR OUTLINE, DIMENSIONS AND WEIGHT.

## PRE-CONSTRUCTION PHOTOGRAPHS

### GENERAL

1. SCOPE
  - A. PHOTOGRAPHS OF THE ENTIRE PUMP STATION AREA OF CONSTRUCTION TO INDICATE THE EXISTING CONDITIONS PRIOR TO ANY CONSTRUCTION WORK PROCEEDING.

[INCB - IA TRANS SR315-AS ST-02-S12-GN6.DWG - APR 16, 1996 - 12:51:18]

# GENERAL NOTES — PUMP STATION ST-2

CALC. BY	FRANKLIN COUNTY FRA-670-1.25 (A-5)	OHIO	111 404
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## 2. SUBMITTALS

- A. SUBMIT ONE COPY OF ALL PHOTOGRAPHS AND INDEXES TO THE ENGINEER FOR APPROVAL AND TRANSMITTAL TO THE OWNER UPON COMPLETION OF THE PROJECT.

## 3. QUALITY ASSURANCE

- A. PHOTOGRAPHER: A PROFESSIONAL PHOTOGRAPHER, REGULARLY ENGAGED IN THIS TYPE OF WORK AND APPROVED BY THE ENGINEER.

## 4. PAYMENT

- A. NO SEPARATE PAYMENT WILL BE MADE FOR THE WORK INCLUDED HEREIN AND ALL COSTS IN CONNECTION THEREWITH SHALL BE INCLUDED IN THE COST OF THE STRUCTURE OR ITEM TO WHICH IT PERTAINS.

## PRODUCTS

### 1. PHOTOGRAPHS

- A. TYPE: 8" X 10".
- B. GENERAL DESCRIPTION: SHARP, CLEARLY SHOWING DETAILS AND EXCLUDING OBJECTS HAVING NO BEARING ON, OR NOT BELONGING IN THE PROJECT.
- C. FINISH: 100% COLOR.
- D. IDENTIFICATION: IDENTIFY EACH PRINT WITH DATE TAKEN, PROJECT NAME AND LOCATION, AND DESCRIPTION OF VIEW. THIS MAY BE ACCOMPLISHED BY NUMBERING THE PRINTS AND PROVIDING A SEPARATE INDEXED DESCRIPTION.

## EXECUTION

### 1. NUMBER AND LOCATION

- A. THE PURPOSE OF THIS WORK IS TO SHOW THE CONDITION OF THE EXISTING SURFACE CONDITIONS PRIOR TO ANY CONSTRUCTION WORK PROCEEDING.
- B. THE NUMBER OF PICTURES TAKEN AND THE LOCATION WILL DEPEND ON THE SPECIFIC AREA BEING PHOTOGRAPHED.
- C. THE NUMBER AND CONTENT OF THE PICTURES MUST BE ADEQUATE TO INDICATE ALL EXISTING SURFACE CONDITIONS AND FEATURES THAT MAY BE AFFECTED BY CONSTRUCTION.

## CLEANING

### GENERAL

#### 1. WORK SPECIFIED ELSEWHERE

- A. CUTTING AND PATCHING
- B. CLEANING FOR SPECIFIC PRODUCTS, EQUIPMENT AND WORK: SPECIFICATION SECTION PERTAINING TO THAT WORK.

#### 2. DESCRIPTION

- A. MAINTAIN PREMISES AND PUBLIC PROPERTIES FREE FROM ACCUMULATIONS OF WASTE, DEBRIS, AND RUBBISH, CAUSED BY OPERATIONS.
- B. AT COMPLETION OF WORK, REMOVE WASTE MATERIALS, RUBBISH, TOOLS, EQUIPMENT, MACHINERY AND SURPLUS MATERIALS, AND CLEAN ALL SIGHT-EXPOSED SURFACES; LEAVE PROJECT CLEAN AND READY FOR OCCUPANCY.

#### 3. SAFETY REQUIREMENTS

- A. STANDARDS: MAINTAIN OPERATIONS AND PREMISES IN ACCORDANCE WITH THE FOLLOWING SAFETY AND INSURANCE STANDARDS:
- 1) APPLICABLE FEDERAL AND STATE REQUIREMENTS.
  - 2) NATIONAL FIRE PROTECTION ASSOCIATION.

## B. HAZARDS CONTROL

- 1) STORE VOLATILE WASTES IN APPROVED SEALABLE CONTAINERS, OUTSIDE AND AWAY FROM STRUCTURES IN CONTRACTOR FURNISHED STORAGE FACILITIES AND REMOVE FROM SITE WHEN NO LONGER REQUIRED.
- 2) PREVENT ACCUMULATION OF WASTES WHICH CREATE HAZARDOUS CONDITIONS.
- 3) PROVIDE ADEQUATE VENTILATION DURING USE OF VOLATILE OR NOXIOUS SUBSTANCES.

## C. CLEANING AND DISPOSAL: CONDUCT OPERATIONS IN COMPLIANCE WITH LOCAL ORDINANCES AND ANTI-POLLUTION LAWS.

- 1) DO NOT BURN OR BURY RUBBISH AND WASTE MATERIALS ON PROJECT SITE.
- 2) DO NOT DISPOSE OF ANY VOLATILE WASTES IN STORM OR SANITARY SEWER SYSTEMS.
- 3) DO NOT DISPOSE OF WASTES INTO STREAMS OR WATERWAYS.

## PRODUCTS

### 1. MATERIALS

- A. SELECT AND USE CLEANING MATERIALS AND EQUIPMENT WITH CARE TO AVOID SCRATCHING, MARRING, DEFACING, STAINING OR DISCOLORING SURFACES CLEANED.
- B. USE ONLY CLEANING MATERIALS RECOMMENDED BY MANUFACTURER OF PRODUCT TO BE CLEANED.
- C. USE CLEANING SUBSTANCES ONLY ON MATERIALS RECOMMENDED BY CLEANING SUBSTANCE MANUFACTURER.

## EXECUTION

### 1. DURING CONSTRUCTION

- A. CONTINUOUS CLEANING TO ENSURE THAT BUILDING, GROUNDS, AND PUBLIC PROPERTIES ARE MAINTAINED FREE FROM ACCUMULATIONS OF WASTE MATERIALS AND RUBBISH.
- B. WET DOWN DRY WASTE MATERIALS AND RUBBISH TO LAY DUST AND PREVENT AIRBORNE PARTICULATE.
- C. AT REASONABLE INTERVALS DURING PROGRESS OF OPERATIONS, CLEAN SITE AND PUBLIC PROPERTIES, AND DISPOSE OF WASTE MATERIALS, DEBRIS AND RUBBISH.
- D. PROVIDE ON-SITE DUMPSTER CONTAINERS FOR COLLECTION OF WASTE MATERIALS, DEBRIS AND RUBBISH.
- E. REMOVE WASTE MATERIALS, DEBRIS AND RUBBISH FROM PREMISES AND LEGALLY DISPOSE OF AT PUBLIC OR PRIVATE DUMPING AREAS.
- F. VACUUM CLEAN INTERIOR BUILDING AREAS WHEN READY TO RECEIVE FINISH PAINTING AND CONTINUE VACUUM CLEANING ON AN AS-NEEDED BASIS UNTIL BUILDING IS READY FOR SUBSTANTIAL COMPLETION OR OCCUPANCY.
- G. HANDLE MATERIALS IN A CONTROLLED MANNER WITH AS FEW HANDLINGS AS POSSIBLE. DO NOT DROP OR THROW MATERIALS FROM HEIGHTS.
- H. SCHEDULE CLEANING OPERATIONS SO THAT DUST AND OTHER CONTAMINANTS RESULTING FROM CLEANING PROCESS WILL NOT FALL ON WET, NEWLY PAINTED SURFACES.

### 2. FINAL CLEANING

- A. EMPLOY EXPERIENCED WORKMEN, OR PROFESSIONAL CLEANERS, FOR FINAL CLEANING.
- B. IN PREPARATION FOR SUBSTANTIAL COMPLETION OR OCCUPANCY, CONDUCT FINAL INSPECTION OF EXPOSED-TO-SIGHT INTERIOR AND EXTERIOR SURFACES, AND OF CONCEALED SPACES.
- C. REMOVE GREASE, DUST, DIRT, STAINS, LABELS, FINGERPRINTS, AND OTHER FOREIGN MATERIALS, FROM EXPOSED-TO-SIGHT INTERIOR AND EXTERIOR FINISHED SURFACES. POLISH SURFACES SO DESIGNATED TO SHINE FINISH.

- D. REPAIR, PATCH AND TOUCH UP MARRED SURFACES TO SPECIFIED FINISH, TO MATCH ADJACENT SURFACES.

- E. BROOM CLEAN PAVED SURFACES AND RAKE CLEAN OTHER SURFACES OF GROUNDS.

- F. INSTALL NEW FILTERS IN ALL SYSTEMS INCLUDING BAGS IN DUST COLLECTION EQUIPMENT.

- G. CLEAN DUCTS, BLOWERS AND COILS, IF AIR CONDITIONING UNITS WERE OPERATED WITHOUT FILTERS DURING CONSTRUCTION.

- H. MAINTAIN CLEANING UNTIL PROJECT, OR PORTION THEREOF, IS OCCUPIED BY OWNER.

## PIPING

### 1. PIPING MATERIALS

#### A. DUCTILE IRON PIPE AND FITTINGS

- 1) PIPE
  - A) REFERENCE: ANSI A 21.51-91.
  - B) THICKNESS: CLASS 54 MINIMUM, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
  - C) CEMENT LINING: ANSI A 21.4-95, STANDARD THICKNESS.
  - D) COATING
    - 1) UNEXPOSED PIPE: INSIDE AND OUTSIDE, APPROVED BITUMASTIC OR COAL TAR ENAMEL.
    - 2) PIPE TO BE PAINTED: INSIDE ONLY COATED WITH APPROVED BITUMASTIC OR COAL TAR ENAMEL. OUTSIDE OF PIPE SHALL RECEIVE FACTORY PRIME COAT COMPATIBLE WITH FINISH PAINT SYSTEM.
- 2) FLANGES: DUCTILE IRON FLANGES MEETING ANSI 21.15-94 WITH BOLT CIRCLES AND BOLT HOLES MEETING ANSI B16.1, CLASS 125 AND BOLTS MEETING ANSI 18.2.
- 3) FITTINGS
  - A) TYPES: FLANGED.
  - B) REFERENCE: ANSI A 21.10-93.
  - C) MATERIAL
    - 1) 3 IN. THROUGH 12 IN.: GRAY CAST IRON OR DUCTILE.
    - 2) 14 IN. AND LARGER: DUCTILE IRON.
  - D) PRESSURE RATING: 250 PSI MINIMUM.
  - E) CEMENT LINING: ANSI 21.4-95, STANDARD THICKNESS.
  - F) COATING: CONFORM TO THAT FOR DUCTILE PIPE, PARAGRAPH 1.2A.1.d.
  - G) BASE TEES AND BENDS: DRILL AND FURNISH WITH ANCHOR BOLTS. MACHINE WHEN USED AS PIPE KICKER.
- 4) POLYVINYL CHLORIDE (PVC)
  - A) TYPE: RIGID, UNPLASTICIZED.
  - B) REFERENCE: ASTM D-1785-93, PVC 1120.
  - C) THICKNESS: SCHEDULE 80.
  - D) JOINTS: SOCKET TYPE, SOLVENT WELDED UNLESS OTHERWISE NOTED.

## INSTALLATION OF PIPING

### 1. SCOPE

- A. INSTALLATION OF ALL PIPING SYSTEMS.

### 2. TECHNICAL SUBMITTALS

- A. PROVIDE THE TECHNICAL SUBMITTALS FOR ALL ITEMS LISTED HEREIN.

### 3. MATERIALS

- A. SOLDER: 95 PERCENT TIN AND 5 PERCENT ANTIMONY.



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- B. GASKETS AND GASKET COMPOUNDS: NON-ASBESTOS MATERIALS SUITABLE FOR PRESSURE AND TEMPERATURE AT DESIGN CONDITIONS AND IMPERVIOUS TO STREAM CONDUCTED.
  - 1) FLAT FACED CAST IRON, BRASS AND BRONZE FLANGED JOINTS: FULL FACE TYPE, 1/16 INCH THICK PREFORMED SYNTHETIC.
  - 2) RAISED FACE FLANGED JOINTS: RING GASKET WITH OUTSIDE DIAMETER EQUAL TO ONE BOLT HOLE DIAMETER LESS THAN THE RING DIAMETER OF BOLT HOLE CENTERS.
  - 3) ACCEPTABLE MANUFACTURERS: GARLOCK, ROGERS "NOBESTOS", JM OR EQUAL.
- 4. UNIONS AND COUPLINGS
  - A. FOR COPPER PIPING: BRONZE 150 PSI GROUND JOINT, SOLDER END TYPE BY CHASE, MUELLER, NIBCO, OR EQUAL. NIBCO FLANGED ADAPTORS FOR CONNECTION TO FLANGED VALVES.
- 5. INSTALLATION
  - A. INSTALL ALL ITEMS AS SHOWN ON THE DRAWINGS, AS SPECIFIED HEREIN AND AS RECOMMENDED BY THE MANUFACTURER.
  - B. REQUEST INSTRUCTIONS FROM ENGINEER WHEN THERE IS A CONFLICT BETWEEN THE MANUFACTURER'S RECOMMENDATIONS AND THE DRAWINGS OR SPECIFICATIONS.
  - C. INSTALL PIPE WITHOUT FORCING OR SPRINGING.
  - D. INSTALL STRAIGHT RUNS TRUE TO LINES AND ELEVATION.
  - E. INSTALL VERTICAL PIPE TRULY PLUMB IN ALL DIRECTIONS.
  - F. INSTALL PIPING PARALLEL OR PERPENDICULAR TO BUILDING WALLS. PIPING AT ODD ANGLES AND 45° RUNS ACROSS CORNERS WILL NOT BE ACCEPTED UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS. USE FITTINGS FOR ALL CHANGES IN DIRECTION.
  - G. MAKE JOINTS IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE RESPECTIVE INDUSTRY STANDARDS.

## GATES AND ACCESSORIES

- 1. SCOPE
  - A. THIS SECTION CONTAINS SPECIFICATIONS FOR THE GATES AND ACCESSORIES.
- 2. WORK SPECIFIED IN OTHER SECTIONS
  - A. INSTALLATION OF PIPING.
- 3. SUBMITTALS
  - A. SHOP DRAWINGS: SUBMIT SIX (6) COPIES FOR ALL ITEMS LISTED HEREIN.
  - B. OPERATION AND MAINTENANCE MANUALS: SUBMIT FOR ALL ITEMS SPECIFIED HEREIN.
- 4. QUALITY ASSURANCE
  - A. MANUFACTURER'S REPRESENTATIVE: A COMPETENT AND EXPERIENCED MANUFACTURER'S REPRESENTATIVE SHALL CHECK THE INSTALLATION OF THE EQUIPMENT LISTED BELOW, SUPERVISE ITS INITIAL OPERATION, AND INSTRUCT OPERATING PERSONNEL IN ITS OPERATION AND MAINTENANCE.
- 5. GENERAL
  - A. THE SPECIFICATIONS HEREINBELOW GENERALLY LIST ACCEPTABLE MANUFACTURERS AND DESCRIBE STANDARDS OF CONSTRUCTION AS WELL AS TESTING AND START-UP SERVICE REQUIREMENTS. CONFORM TO THE REFERENCED STANDARDS UNLESS OTHERWISE SPECIFIED.

- 6. SLUICE GATE
  - A. GENERAL
    - 1) CONSTRUCTION: CAST IRON, CONVENTIONAL BRONZE MOUNTED TOP, FULL WEDGED, ROUND OPENING, NRS AND OPERATING NUT.
    - 2) SIZE AND TYPE OF OPENING: AS SHOWN ON THE DRAWINGS.
  - B. MANUFACTURERS
    - 1) GENERAL: WATERMAN, RODNEY HUNT, ARMCO, OR EQUAL.
  - C. GATE CONSTRUCTION
    - 1) DESIGN CONDITIONS: SUITABLE FOR 5 FEET SEATING HEAD AND 20 FEET UNSEATING HEAD WITH AMPLE SAFETY FACTOR.
    - 2) GATE SEATS: BRONZE, DRIVEN INTO DOVETAILED MACHINES GROOVES WITHOUT PINS OR RIVETS.
    - 3) STEMS: 18-8 STAINLESS STEEL DESIGNED TO WITHSTAND IN COMPRESSION 2-1/2 TIMES THE OUTPUT OF THE OPERATOR WITH A 40 LB. PULL ON THE CRANK.
    - 4) STEM COUPLINGS: STAINLESS STEEL, PINNED TO THE STEMS.
    - 5) STEM GUIDES: CAST IRON, BRONZE BRUSHED, ADJUSTABLE, MAXIMUM SPACING OF 10 FT.
    - 6) STUDS, ANCHOR BOLTS AND NUTS: 18-8 STAINLESS STEEL.
  - D. OPERATOR:
    - 1) TYPE: NUT, NON-RISING STEM.
    - 2) OPERATING NUT: SOLID BRONZE, ACCURATELY MACHINED AND INTERNALLY THREADED, 2 INCH SQUARE.
    - 3) EFFORT: MINIMUM 40 FT./LBS.
    - 4) SHAFT DIAMETER: AS RECOMMENDED BY MANUFACTURER.
  - E. FLOOR BOX: CAST IRON, BRONZE BUSHED.
- 7. PLUG VALVES
  - A. MANUFACTURER
    - 1) GENERAL: DEZURIK CORPORATION, PRATT VALVE OR APPROVED EQUAL.
    - 2) BASIS OF DESIGN: DEZURIK.
  - B. VALVE CONSTRUCTION
    - 1) GENERAL: NON-LUBRICATED ECCENTRIC PLUG TYPE WITH RESILIENT PLUG FACES AND HIGH NICKEL ALLOY SEATS.
    - 2) BODY AND PLUG MATERIAL: SEMI-STEEL, ASTM A 126-93, CLASS B.
    - 3) BUSHING MATERIAL: STAINLESS STEEL PERMANENTLY LUBRICATED UPPER AND LOWER.
    - 4) STEM SEALS: BUNA-N ADJUSTABLE VEE.
    - 5) PLUG FACING: HYPAC.
  - C. OPERATORS – MANUAL
    - 1) PROVIDE HANDWHEEL OR CHAINWHEEL AND POSITION INDICATORS AS INDICATED ON THE DRAWINGS.
    - 2) PROVIDE 2" SQUARE OPERATING NUT FOR ALL VALVES BELOW FINISHED FLOOR GRADE.
    - 3) THERE SHALL BE NO EXTERNAL MOVING PARTS ON VALVE OR OPERATOR EXCEPT INPUT SHAFT.
    - 4) PROVIDE CHAINWHEELS WITH CHAIN FOR ALL MANUALLY OPERATED VALVES, WHICH ARE INACCESSIBLE FROM FLOOR POSITION.
    - 5) LEFTHAND OPENING.
- 8. SWING CHECK VALVE
  - A. MANUFACTURER: GOLDEN ANDERSON, CLOW OR APPROVED EQUAL.
  - B. MATERIALS
    - 1) BODY, COVER, DISC, LEVER, DISC ARM: CAST IRON OR CAST STEEL.
    - 2) SEAT RING: BRONZE.
    - 3) CUSHION CHAMBER: BRONZE.
    - 4) SHAFT: NON-CORROSIVE MATERIAL.
  - C. CUSHION CHAMBER: EXTERNALLY MOUNTED, DESIGNED TO PERMIT VALVE OPERATION WITHOUT HAMMERING ACTION. ADJUSTABLE CLOSING SPEED.

- 9. GATE VALVE
  - A. MANUFACTURER: NIBCO, CRANE OR APPROVED EQUAL.
  - B. MATERIALS:
    - 1) BODY, WEDGE, BONNET, STEM, PACKING NUT, GLAND: BRONZE, CLASS 125, 1" DIA.
    - 2) HANDWHEEL: ALUMINUM.
    - 3) JOINT: THREADED.
    - 4) RISING STEM, SCREW-IN BONNET, SOLID WEDGE.
- 10. AIR-RELEASE VALVE
  - A. MANUFACTURER
    - 1) GENERAL: APCO MODEL 200A, VAL-MATIC OR APPROVED EQUAL.
    - 2) TYPE: COMPOUND LEVER, 1" DIAMETER INLET, 1" DIAMETER OUTLET.
    - 3) MATERIALS: CAST IRON BODY COVER, STAINLESS STEEL TRIM.
- 11. PRESSURE GAUGES
  - A. MANUFACTURER
    - 1) GENERAL: AMETEK (U.S. GAUGE DIVISION); DRESSED VALVE AND INSTRUMENT CO., (ASHCROFT GAUGES), OR APPROVED EQUAL.
    - 2) BASIS OF DESIGN: U.S. GAUGE (FIGURE NO. 1901T).
  - B. MATERIAL
    - 1) CASE: CAST ALUMINUM.
    - 2) BOURDON TUBE: PHOSPHOR BRONZE.
  - C. ACCURACY: NOT LESS THAN 1/2 OF 1% OF SCALE RANGE.
  - D. SCALE: ACTUAL OPERATING CONDITIONS ARE INDICATED ON THE DRAWINGS. THE SCALE RANGE PROVIDED SHALL ALLOW FOR MIDSCALE READING AT NORMAL OPERATING CONDITIONS.
  - E. SCALE GRADUATIONS: MANUFACTURER'S STANDARD OR AS INDICATED ON THE DRAWINGS.
  - F. DIAL SIZE: 4-1/2 INCHES.
  - G. CONNECTION: 1/2 INCH NPT MALE CONNECTION.
  - H. ISOLATION AND/OR DAMPENING: PROVIDE GAUGE COCK AS A MINIMUM. WHERE POINTER FLUCTUATIONS ARE EXCESSIVE PROVIDE ISOLATION VALVE AND PULSATION DAMPENER.
- 12. FLANGED COUPLING ADAPTORS
  - A. MANUFACTURER
    - 1) GENERAL: ROCKWELL, DRESSER INDUSTRIES, OR APPROVED EQUAL.
    - 2) BASIS OF DESIGN: ROCKWELL INTERNATIONAL.
  - B. MATERIAL
    - 1) BODY AND FLANGE: STEEL CONFORMING TO ASTM A 283 / A 283M-93, GRADE C.
    - 2) FOLLOWER: DUCTILE IRON, ASTM A 536-84 (1993) THROUGH 12 IN. AND STEEL AS SPECIFIED ABOVE FOR SIZES OVER 12 IN.
    - 3) BOLTS AND NUTS: ALLOY STEEL CONFORMING TO ANSI A 21.11. CADMIUM PLATE AS SPECIFIED HEREIN.
    - 4) GASKET: ROCKWELL GRADE 30, OR EQUAL.
  - C. SIZE AND TYPE: AS INDICATED ON THE DRAWINGS AND TO SUIT TYPE, CLASS, AND SIZE OF PIPE.
  - D. FLANGES: AWWA CLASS D OR CLASS E. USE CLASS E WHEN TEST PRESSURE SPECIFIED IS ABOVE 200 PSI.
  - E. PAINTING
    - 1) INTERIOR: VINYL OR COAL TAR EPOXY COATING.
    - 2) EXTERIOR: ONE COAT OF PRIMER COMPATIBLE WITH FINISH PAINT SYSTEM.

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- F. TIE BOLTS, AND CLAMPS
- 1) GENERAL: PROVIDE RESTRAINING SYSTEM FOR VARIOUS PIPE LINES AS INDICATED ON DRAWINGS. SEE DETAILS INDICATED ON DRAWINGS.
  - 2) DUCTILE IRON PIPING: DRAWINGS INDICATE NUMBER AND SIZE OF TIE BOLTS REQUIRED FOR EACH APPLICATION.
  - 3) STEEL PIPING: REFER TO AWWA MANUAL 11 FOR RESTRAINING SYSTEM DESIGN.
13. FLEXIBLE COUPLINGS
- A. MANUFACTURER
- 1) GENERAL: ROCKWELL, DRESSER INDUSTRIES, OR APPROVED EQUAL.
  - 2) BASIS OF DESIGN: ROCKWELL, INC.
- B. MATERIAL
- 1) TYPE 411 COUPLING
    - A) SLEEVES: STEEL FOR ALL SIZES OF DUCTILE AND STEEL PIPE.
    - B) FLANGES: MALLEABLE OR DUCTILE IRON FOR STEEL PIPE SIZES 12 IN. AND UNDER. STEEL FOR STEEL AND DUCTILE IRON PIPE SIZES 14 IN. AND ABOVE.
  - 2) TYPE 431 COUPLING
    - A) SLEEVES: GRAY IRON FOR DUCTILE IRON PIPE SIZES UP TO AND INCLUDING 30 IN.
    - B) FLANGES: MALLEABLE OR DUCTILE IRON THROUGH DUCTILE IRON PIPE SIZES 17.80 IN. O.D. HIGH STRENGTH STEEL FOR DUCTILE IRON PIPE SIZES ABOVE 17.80 IN. O.D.
  - 3) BOLTS AND NUTS: ALLOY STEEL CADMIUM PLATED AS SPECIFIED HEREIN. NUMBER OF BOLTS AS RECOMMENDED BY THE MANUFACTURER TO SUIT THE SPECIFIED PRESSURE RATING AND CONFORM TO ANSI 21.11.
  - 4) GASKETS: ROCKWELL, GRADE 30, OR EQUAL.
- C. SIZE AND TYPE: TO SUIT SIZE AND TYPE OF PIPE INDICATED ON THE DRAWINGS, AND SPECIFIED HEREIN. MINIMUM SLEEVE LENGTH UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- D. TIE BOLTS, LUGS AND CLAMPS
- 1) GENERAL: PROVIDE RESTRAINING SYSTEM FOR VARIOUS PIPE LINES AS INDICATED ON DRAWINGS OR IN THE SCHEDULES.
  - 2) DUCTILE IRON PIPING: DRAWINGS INDICATE NUMBER AND SIZE OF TIE BOLTS REQUIRED FOR EACH APPLICATION.
  - 3) STEEL PIPING: REFER TO AWWA MANUAL 11 FOR RESTRAINING SYSTEM DESIGN.
- E. PAINTING
- 1) INTERIOR: VINYL OR COAL TAR EPOXY COATING.
  - 2) EXTERIOR: ONE COAT OF PRIMER COMPATIBLE WITH FINISH PAINT SYSTEM.

14. VACUUM CLEANING TUBE AND FITTINGS

- A. PVC PIPE \*
- B. FITTINGS \*
- C. SUPPORTS \*
- \* (TO BE FURNISHED BY THE CITY)

15. FERROUS FASTENERS

- A. ALL BOLTS, NUTS AND OTHER FERROUS FASTENERS USED IN THE INSTALLATION OF VALVES AND ACCESSORIES IN THE PIPING SYSTEMS SHALL BE CADMIUM PLATED IN ACCORDANCE WITH FED. SPEC. QQ-P-416A, CLASS 3, TYPE II, EXCEPT "T" BOLTS USED WITH MECHANICAL JOINT PIPE.

**HOISTS**

1. SCOPE

- A. HOISTS, TROLLEYS AND TRACK SYSTEM FOR MATERIAL HANDLING AND EQUIPMENT MAINTENANCE.

- B. PROVIDE ONE MOTOR OPERATOR HOIST AND TROLLEY SYSTEM AND ONE PORTABLE SYSTEM.
2. SUBMITTALS
- A. SHOP DRAWINGS: SUBMIT SIX (6) COPIES FOR ALL ITEMS IN ACCORDANCE WITH THE PROCEDURES PREVIOUSLY OUTLINED.
- B. OPERATION AND MAINTENANCE MANUALS: SUBMIT FOR ALL ITEMS SPECIFIED.
3. QUALITY ASSURANCE
- A. REFERENCE STANDARDS
- 1) MONORAIL MANUFACTURERS ASSOCIATION (MMA): SPECIFICATIONS FOR UNDERHUNG CRANES AND MONORAIL SYSTEMS.
  - 2) HOIST MANUFACTURERS INSTITUTE (HMI)
    - A) STANDARD SPECIFICATIONS FOR ELECTRIC WIRE ROPE HOISTS, HMI 100-74.
    - B) STANDARD SPECIFICATIONS FOR HAND OPERATED CHAIN HOISTS, HMI 200-74.
- B. OPERATION AND MAINTENANCE MANUALS: INCLUDE THE FOLLOWING:
- 1) ASSEMBLY DRAWINGS AND DESCRIPTIVE LITERATURE.
  - 2) BILL OF MATERIALS.
  - 3) PARTS LISTS.
  - 4) WIRING SCHEMATICS.
  - 5) LUBRICATION INSTRUCTIONS (INCLUDING LUBRICANT TYPES).
  - 6) CHECK POINTS FOR WEAR: DAILY, MONTHLY, YEARLY.
  - 7) MAINTENANCE SUMMARY.
  - 8) EQUIPMENT OPERATING INSTRUCTIONS.
- C. MANUFACTURERS REPRESENTATIVE: A QUALIFIED REPRESENTATIVE MUST SUPERVISE INSTALLATION OF THE UNITS AND BE PRESENT FOR START-UP OF EACH UNIT.
4. MANUFACTURER
- A. GENERAL: COFFING BY DUFF-NORTON CO.; ROBINS & MYERS; AMERICAN CHAIN AND CABLE CO., LOUNDEEN DIVISION; ABELLHOWE; DRESSER INDUSTRIES, INC.; P&H; CLEVELAND TRAMRAIL, OR APPROVED EQUAL.
- B. BASIS OF DESIGN: AS SPECIFIED WITH EACH INDIVIDUAL SYSTEM.
5. MOTOR OPERATED CHAIN HOIST AND TROLLEY SYSTEM
- A. COMPONENTS: HOIST AND TROLLEY.
- B. MANUFACTURER: COFFING BY DUFF-NORTON CO.
- C. SERVICE CLASSIFICATION
- 1) HOIST AND TROLLEY: HMI CLASS H2.
- D. TROLLEY
- 1) TYPE: MOTOR GEARED, 2-SPEED.
  - 2) BASIS OF DESIGN: DUFF-NORTON MODEL MT-60075.
  - 3) TRAVEL: ONE SPEED TRAVEL OF 35 FPM.
  - 4) CAPACITY: CONSISTENT WITH HOIST CAPACITY.
  - 5) FRAME: STRUCTURAL PLATE STEEL.
  - 6) WHEELS: FORGED STEEL WITH FINISH-MACHINED TREADS AND DOUBLE-ROW BALL BEARINGS, SUITABLE FOR EXISTING RAIL SYSTEM.
- E. HOIST
- 1) TYPE: ELECTRIC CHAIN.
  - 2) BASIS OF DESIGN: DUFF-NORTON MODEL ECMT-6005.
  - 3) CAPACITY: 6,000 LBS. (3 TON).
  - 4) LIFTING SPEEDS: 5 AND 15 FPM.
  - 5) GEAR DRIVE
    - A) TYPE: HELICAL.
    - B) MATERIAL: FORGED HIGH CARBON STEEL.
  - 6) LOWER LIMIT SWITCH: ADJUSTABLE GEARED CONTROLLING UPPER AND LOWER STOPS.
  - 7) MECHANICAL LOAD BREAK: MULTIPLE DISC.
  - 8) MOTOR BRAKE: DIRECT ACTING, MULTIPLE DISC.
  - 9) LIFT: 35 FEET
  - 10) OVERLOAD PROTECTION: OVERLOAD CLUTCH DEVICE.

F. MOTORS

- 1) HORSEPOWER: AS REQUIRED, 230/460 V, 3 PHASE, 60 HZ.
- 2) HOIST MOTOR: TOTALLY ENCLOSED, WOUND WITH CLASS 'B' INSULATION RATED 30 MINUTES CONTINUOUS OPERATION WITH FULL LOAD AT 75°C AMBIENT TEMPERATURE.
- 3) OVERLOAD: THERMAL OVERLOAD RELAY PROTECTION.
- 4) ENCLOSURE: NEMA 3, DUST-TIGHT.

G. ELECTRIFICATION AND CONTROLS

- 1) ELECTRIFICATION IS SPECIFIED UNDER ELECTRICAL.
- 2) MECHANICAL INTERLOCKED CONTACTORS.
- 3) 24 V. CONTROL CIRCUITRY AND WEIGHT OPERATED PLUGGING TYPE LIMIT SWITCH.
- 4) PENDANT FOUR PUSH-BUTTON CONTROL WITH ELEVATION NOT TO EXCEED 3' FROM OPERATING FLOOR.

6. PORTABLE CABLE HOIST

- A. MANUFACTURER: THERN, VULCAN INDUSTRIES, INC. OR APPROVED EQUAL.
- B. BASIS OF DESIGN: THERN MODEL 5334 WASTEWATER PUMP HOIST.
- C. TYPE: HAND WINCH.
- D. CAPACITY: 1,000 LBS. (1/2 TON MIN.)
- E. CABLE: 1/4" Ø STAINLESS STEEL.
- F. LIFT: 30 FEET.
- G. ACCESSORIES: MODEL T4 BASE.

7. INSTALLATION

- A. INSTALL AS INDICATED ON THE DRAWINGS AND AS RECOMMENDED BY THE MANUFACTURER.
- B. LUBRICATE, ADJUST AND LEAVE IN PROPER WORKING CONDITION.
- C. HOISTS AND ASSOCIATED EQUIPMENT SHALL NOT BE USED IN ANY CONSTRUCTION OPERATIONS CONDUCTED BY THE CONTRACTOR.

**AIR DEVICES**

1. SCOPE

- A. FURNISH AND INSTALL THE FOLLOWING AIR DEVICES AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN:
- B. REMOVE EXISTING ELECTRIC MOTOR ON EXISTING VENTILATION BLOWER, REPLACE WITH NEW MOTOR, ADJUSTABLE DRIVE SHEAVE AND V-BELT AS INDICATED ON THE DRAWINGS.

2. TECHNICAL SUBMITTALS

- A. SUBMIT SIX (6) COPIES LISTED HEREIN.

3. PRODUCTS

- A. LOUVERS
- 1) LOUVERS BASED ON AMERICAN WARMING AND VENTILATING, INC. APPROVED EQUAL BY AIROLITE OR RUSKIN ARE OPTIONAL.
  - 2) STATIONARY LOUVERS: MODEL LE-21, WITH 45° FIXED DRAINABLE BLADE DESIGN.
    - A) FRAME: 4 INCH DEEP CHANNEL .081 INCH THICK 6063-T5 EXTRUDED ALUMINUM ALLOY. PROVIDE EXTENDED SILL.
    - B) DIMENSION: 24 INCH WIDTH AND 24 INCH HEIGHT ARE OPENING SIZES. LOUVERS ARE MADE 1/4 INCH UNDERSIZE.
    - C) BLADES: .081 INCH THICK 6063-T5 EXTRUDED ALUMINUM ALLOY.
    - D) SCREEN: ALUMINUM BIRD SCREEN, LOCATED ON INTERIOR, OF L-1 & L-2 ASSEMBLY, AS INDICATED ON DRAWING.
    - E) FINISH: STANDARD MILL FINISH, ETCHED, AND ONE PROTECTIVE COAT OF METHACRYLATE LACQUER.

[MCCB - IN TRANSIT, SB315-AS] ST-02 ST2-CHG.DWG - APR. 16, 1998 - 13.000.37



# GENERAL NOTES – PUMP STATION ST-2

- 3) GRAVITY DAMPER: MODEL BD-10, BACKDRAFT DAMPER.
- A) FRAME: 1 1/2 INCH DEEP, 6063-T5 EXTRUDED ALUMINUM ALLOY, .050 THICKNESS.
  - B) DIMENSION: NOMINAL 24 X 24 INCHES, FABRICATED 1/8" UNDERSIZE.
  - C) BLADES: 26 GAUGE ALUMINUM WITH 3/16" DIAM. PLATED STEEL AXLES SUPPORTED IN SELF-LUBRICATING HEAVY DUTY NYLON BEARINGS. FELT BLADE SEALS.
  - D) FINISH: STANDARD MILL.

- 4) LOUVERS SHALL HAVE AMCA CERTIFIED RATING SEAL FOR AIR PERFORMANCE, WATER PENETRATION AND AIR LEAKAGE RATINGS.

**B. AIR FILTER**

- 1) AIR FILTERS BASED ON AMERICAN AIR FILTER CO. INC. (AAF); FARR, CAMBRIDGE, OR APPROVED EQUAL.
- 2) AIR FILTER: TYPE 5700 INDUSTRIAL FILTER.
  - A) FRAME: 16 GAUGE, 2 INCH GALVANIZED STEEL ANGLE HOLDING FRAME FURNISHED BY AAF.
  - B) DIMENSION: NOMINAL: 24 INCH WIDTH AND 24 INCH HEIGHT, FRAMES ARE MADE 1/2 INCH UNDER-SIZE.
  - C) MEDIA: GLASS FIBER COATED WITH VISCOSENE, A NON-VOLATILE FLUID-JELL, PLACED IN A FIBER-BOARD CASING BETWEEN PERFORATED METAL GRIDS. NOTE: USE ONE (1) 1 INCH CELL IN EACH APPLICATION.
  - D) LATCHES: RETAINING LATCHES FOR SECURING THE FILTER ARE FURNISHED WITH EACH FRAME BY AAF.

**4. EXECUTION**

**A. INSTALLATION**

- 1) LOUVERS AND AIR FILTERS SHALL BE ATTACHED, FRAMED, SUPPORTED AND SEALED AS INDICATED ON THE DRAWINGS.
- 2) PROVIDE 1/2 INCH MESH, 16 GAUGE ALUMINUM SCREEN ON EXISTING 12 INCH DIAMETER EXHAUST AIR DUCT INLET.
- 3) RE-ADJUST EXISTING BLOWER PERFORMANCE TO CAPACITY AS INDICATED ON THE DRAWING.

**PLUMBING EQUIPMENT**

**1. SCOPE**

- A. PROVIDE ALL PLUMBING EQUIPMENT, AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.

**2. TECHNICAL SUBMITTALS**

- A. SUBMIT SIX (6) COPIES FOR ALL ITEMS LISTED HEREIN.

**3. QUALITY ASSURANCE**

- A. CONFORM TO ASSE AND NSF STANDARDS.

**4. PRODUCTS**

**A. SUMP PUMP**

- 1) GENERAL: AUTOMATIC SUBMERSIBLE TYPE, HIGH HEAD PUMP, CAST IRON CONSTRUCTION, OPEN TYPE THREE BLADE DUCTILE IRON IMPELLER, STAINLESS STEEL SHAFT, HEAVY DUTY BALL BEARINGS, FLOAT SWITCH, FLOAT AND ROD LEVEL CONTROL, 3450 RPM, 115V, 60 HZ, SINGLE PHASE, OIL FILLED AND COMPLETELY SEALED 1/2 HP MOTOR WITH 10 FT. – 6 IN. POWER CORD.
- 2) MANUFACTURER: ENPO SPRINT II, AURORA MODEL NUMBER NSS 2541-5; HYDR-O-MATIC, OR APPROVED EQUAL.
- 3) CAPACITY, SHALL BE 40 GPM AT 26 FT. OF HEAD WITH A 2 IN. NPT DISCHARGE CONNECTION.

**5. EXECUTION**

**A. SUMP PUMP**

- 1) SUMP PUMP TO BE SET IN SUMP AS INDICATED ON DRAWING, AFTER THE EXISTING SUMP PUMP IS REMOVED. PROVIDE NECESSARY PIPE AND FITTINGS, SIMILAR TO THAT WHICH EXISTS, TO CONNECT NEW SUMP PUMP WITH THE EXISTING DISCHARGE PIPING.

**UNIT HEATER**

**1. SCOPE**

- A. FURNISH AND INSTALL UNIT HEATER AS INDICATED ON THE DRAWING AND AS SPECIFIED HEREIN.

**2. TECHNICAL SUBMITTALS**

- A. SUBMIT SIX (6) COPIES LISTED HEREIN.

**3. PRODUCTS**

- A. UNIT HEATER, FURNISH AND INSTALL U.L. LISTED UNIT HEATER AS MANUFACTURED BY CHROMALOX TYPE HDH, INDEECO OR APPROVED EQUAL. UNIT HEATER SHALL BE CAPABLE OF DELIVERING 51,180 BTUH, 1330 CFM WITH 32 DEG. F TEMPERATURE RISE. UNIT HEATER SHALL BE RATED FOR 15.0 KW, 480 VOLT, 3 PHASE, 1 STAGE 18.1 AMPS.
- B. UNIT HEATER SHALL BE PROVIDED WITH A CORROSION RESISTANT ADJUSTABLE LOUVERED OUTLET AND REAR WIRE GRILLE. ANODIZED ALUMINUM CASE, MONEL FINITUBE ELEMENTS, NEMA 4X MOLDED FIBERGLASS JUNCTION BOX, STAINLESS STEEL SWIVEL WALL MOUNTING BRACKET AND HARDWARE BUILT-IN OVERTEMPERATURE PROTECTION, INTERNAL THERMOSTAT EPOXY SEALED THERMAL FAN DELAY, ENCLOSED FAN MOTOR, PERMANENTLY LUBRICATED BALL BEARINGS ALUMINUM FAN.

**4. EXECUTION**

- A. UNIT HEATER SHALL BE SUPPORTED FROM THE WALL AND MANUFACTURER SHALL WARRANT EQUIPMENT FOR ONE YEAR.

**BLOWER MOTOR REPLACEMENT**

**1. SCOPE**

- A. FURNISH AND INSTALL ELECTRIC MOTOR TO REPLACE EXISTING BLOWER MOTOR. WIRING BY ELECTRICAL CONTRACTOR.

**2. TECHNICAL SUBMITTALS**

- A. SUBMIT SIX (6) COPIES LISTED HEREIN.

**3. PRODUCTS**

- A. FURNISH AND INSTALL A 1/3 HP, SINGLE PHASE, 120V, 1725 RPM, DRIPPROOF NEMA 56 FRAME, BALL BEARINGS, THERMAL PROTECTION AND 1.15 SERVICE FACTOR.
- B. PROVIDE SHEAVE PER DRAWING.

**4. EXECUTION**

- A. REMOVE EXISTING BLOWER MOTOR. ALIGN AND INSTALL REPLACEMENT MOTOR.

**ELECTRICAL**

GENERAL: ALL PUMP STATION ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE PORTIONS OF ITEM 625. THIS SPECIFICATION IS MODIFIED BY THE FOLLOWING SPECIAL PROVISIONS WHICH CONSIST OF THESE NOTES. IN ALL CASES OF CONFLICT WITH SPECIFICATION 625 THESE NOTES SHALL GOVERN.

- 1. REMOVAL: THE CONTRACTOR SHALL REMOVE THE TRANSFORMER FOUNDATION, A STREET LIGHTING CONTROL AND ASSOCIATED EQUIPMENT AS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL REMOVE ALL THE EXISTING PUMP STATION ELECTRICAL EQUIPMENT INCLUDING A MOTOR CONTROL CENTER, LIGHTING FIXTURES AND ASSOCIATED CONDUIT. THE EXISTING EQUIPMENT AND MATERIAL REMOVED SHALL BE TURNED OVER TO THE OWNER OR REMOVED FROM THE PREMISES AS DIRECTED BY THE ENGINEER.

- 2. POWER SERVICE: POWER SERVICE SHALL BE 480V, 3 PHASE, 3 WIRE. THE SERVICE METER AND METERING TRANSFORMERS WILL BE SUPPLIED BY MELP TO BE INSTALLED BY THE CONTRACTOR.

**3. SUBMITTALS**

**A. SHOP DRAWINGS:**

- 1) SUBMIT FOR REVIEW SIX COPIES OF SHOP DRAWINGS SHOWING THE FOLLOWING:
  - A) COMPLETE DESCRIPTION IN SUFFICIENT DETAIL TO PERMIT ITEM BY ITEM COMPARISON WITH THE SPECIFICATIONS.
  - B) DIMENSIONS AND REQUIRED CLEARANCES.
  - C) WEIGHTS.
  - D) PERFORMANCE CHARACTERISTICS.
  - E) LAYOUT DRAWING FOR ALL EQUIPMENT SHOWING INSTALLATION DETAILS.
  - F) WIRING DIAGRAMS.
  - G) DEVIATIONS FROM DRAWINGS AND SPECIFICATIONS.
  - H) MANUFACTURER'S INSTALLATION AND TESTING INSTRUCTIONS. AFFIDAVITS OF COMPLIANCE WITH REFERENCED STANDARDS AND CODES.
  - I) MANUFACTURER'S STANDARD GUARANTEE.

- 4. THE PARTY PERFORMING THE WORK UNDER THIS SECTION HEREINAFTER REFERRED TO AS THE CONTRACTOR, SHALL FURNISH ALL LABOR, MATERIAL, TOOLS, EQUIPMENT, SERVICES, AND RELATED ACCESSORIES FOR A COMPLETE INSTALLATION OF ALL ELECTRICAL WORK AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS. ITEMS OMITTED FROM EITHER THE SPECIFICATIONS OR THE DRAWINGS, BUT SHOWN OR DESCRIBED IN THE OTHER, AND ALL ITEMS NECESSARY TO MAKE THE ELECTRICAL SYSTEM COMPLETE AND WORKABLE SHALL FORM A PART OF THE WORK. NO "EXTRAS" WILL BE ALLOWED.

- 5. ALL WORK, MATERIAL, AND EQUIPMENT SHALL COMPLY WITH ALL REQUIREMENTS OF THE LATEST EDITIONS AND INTERIM AMENDMENTS OF THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, NATIONAL FIRE PROTECTION ASSOCIATION, OSHA, AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES. ALL ELECTRICAL EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL BE NEW AND SHALL COMPLY WITH THE REQUIREMENTS OF THE UNDERWRITERS' LABORATORIES (UL) AND BEAR THE UL LABEL.

- 6. ANY DISCREPANCIES WITHIN DRAWINGS AND SPECIFICATIONS SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION DURING THE BIDDING PERIOD. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE TO THE CONTRACTOR BY REASON OF HIS FAILURE TO HAVE BROUGHT SAID DISCREPANCIES TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PERIOD OR OF ANY ERROR ON THE CONTRACTOR'S PART.

- 7. THE CONTRACTOR SHALL CHECK ALL OTHER DRAWINGS FOR POSSIBLE INTERFERENCE CAUSED BY CONDITIONS IN THE FIELD BEFORE BID IS MADE. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE TO THE CONTRACTOR BY REASON OF HIS FAILURE TO HAVE MADE SUCH EXAMINATIONS OR OF ANY ERROR ON HIS PART.

- 8. SHOULD ANY CHANGES IN THE DRAWINGS AND SPECIFICATIONS BE REQUIRED TO CONFORM TO THE ABOVE REGULATIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT THE TIME OF SUBMITTING HIS BID. AFTER ENTERING INTO THE ENGINEER-CONTRACTOR AGREEMENT. THE CONTRACTOR SHALL BE HELD TO COMPLETE ALL WORK NECESSARY TO MEET THESE REQUIREMENTS WITHOUT ADDITIONAL EXPENSE TO THE ENGINEER.

[MCE] - TRANS. SB315-AS-ST-02-CH10.DWG - APR 16, 1998 - 1302558

# GENERAL NOTES – PUMP STATION ST-2

CALC. BY _____	FRANKLIN COUNTY	OHIO	115 404
DATE _____		FRA-670-1.25 (A-5)	
CHKD. BY _____			
DATE _____			

9. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED FOR THE WORK.
10. THE CONTRACTOR SHALL NOT ALLOW OR CAUSE ANY OF THE WORK TO BE COVERED UP OR ENCLOSED UNTIL IT HAS BEEN INSPECTED.
11. LOCATIONS OF SWITCHES, RECEPTACLES, LIGHTS, MOTORS, ETC., OUTLETS SHOWN ON DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL USE GOOD JUDGEMENT IN PLACING THE PRECEDING TO ELIMINATE ALL INTERFERENCE WITH DUCTS, PIPING, DOOR SWINGS, ETC.
12. THE CONTRACTOR SHALL TURN OVER ALL CERTIFICATES OF APPROVAL FOR INSPECTIONS OF ELECTRICAL WORK TO THE ENGINEER PROMPTLY WHEN RECEIVED. THESE CERTIFICATES MUST BE RECEIVED BEFORE PAYMENT WILL BE MADE FOR THE WORK INVOLVED.
13. THE CONTRACTOR SHALL KEEP AN UP-TO-DATE RECORD OF ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS. AT COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL DELIVER A SET OF AS-BUILT DRAWINGS AND SPECIFICATIONS SHOWING THESE DEVIATIONS TO THE ENGINEER.
14. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, IN A NEAT AND WORKMANLIKE MANNER CONSISTENT WITH RECOGNIZED GOOD PRACTICE, AND SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
15. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY LIGHTING FOR ALL TRADES DURING CONSTRUCTION AND REMOVE IT AT COMPLETION OF WORK.
16. IF THE CONTRACTOR FAILS TO DO ANY REQUIRED PATCHING OR REPAIR ANY DAMAGE RESULTING FROM THE INSTALLATION OF THE ELECTRICAL WORK, SUCH PATCHING OR REPAIRING SHALL BE DONE BY THE OWNER AND THE COST SHALL BE PAID BY THE CONTRACTOR.
17. ALL EQUIPMENT FURNISHED WITH FINISHED SURFACES FROM MANUFACTURER ARE NOT TO BE DEFACED IN ANY WAY AND SHALL BE CLEANED TO ORIGINAL FINISH AT TIME OF COMPLETION OF WORK EXCEPT WHERE OTHERWISE NOTED.
18. THE CONTRACTOR SHALL CONDUCT SUCH TESTS AND ADJUSTMENTS OF EQUIPMENT AS REQUIRED TO VERIFY EQUIPMENT PERFORMANCE. SUCH TESTS SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER.
19. THE CONTRACTOR SHALL REMOVE ALL DEBRIS RESULTING FROM THE WORK, AS WELL AS ALL TOOLS, EQUIPMENT, ETC., FROM THE SITE UPON COMPLETION OF THIS CONTRACT. ALL EQUIPMENT, INCLUDING LIGHTING FIXTURES AND LENSES SHALL BE CLEAN AND FREE FROM DIRT, GREASE, FINGER MARKS, ETC., BEFORE FINAL ACCEPTANCE.
20. ALL EQUIPMENT FURNISHED AND WORK PERFORMED UNDER THE CONTRACT DOCUMENTS SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE. ANY FAILURE OF EQUIPMENT OR WORK DUE TO DEFECTS IN MATERIALS OR WORKMANSHIP SHALL BE CORRECTED BY THE CONTRACTOR AT NO COST TO THE ENGINEER.
21. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OPINION, ARE NOT IN COMPLIANCE WITH THESE SPECIFICATIONS, EITHER BEFORE OR AFTER INSTALLATION AT NO EXPENSE TO THE OWNER AND EQUIPMENT SHALL BE REPLACED WITH APPROVED EQUIPMENT BY THE CONTRACTOR AT NO COST TO THE ENGINEER.
22. ALL EXPOSED CONDUIT SHALL BE THREADED RIGID GALVANIZED STEEL. THE POWER DUCT BANK CONDUIT MAY BE PVC.
23. ALL CONDUIT SHALL BE 3/4" MINIMUM EXCEPT WHERE OTHERWISE NOTED.
24. THE SAME TYPE OF CONDUIT SHALL BE USED FOR ALL COMMUNICATION AND LOW VOLTAGE SYSTEMS AS FOR POWER AND LIGHTING. WHERE CABLES FOR COMMUNICATIONS AND LOW-VOLTAGE SYSTEMS ARE RUN EXPOSED (NOT IN CONDUIT). CONDUIT SLEEVES SHALL BE INSTALLED IN ALL FLOORS AND WALLS FOR THE PASSAGE OF SAID CABLES THROUGH THE FLOORS AND WALLS. SEAL WATER TIGHT ALL CONDUIT SLEEVES WITH APPROVED TYPE FITTINGS.
25. ALL CONDUITS AND FITTINGS SHALL BE RUN IN STRAIGHT LINES PARALLEL WITH OR AT RIGHT ANGLES TO BUILDING WALLS, PARTITIONS, FLOORS AND CEILINGS. WHEN THE LOCATION ON THE PLANS INTERFERES WITH OTHER WORK IN PLACE OR SUBSEQUENTLY TO BE PLACED, THE CONTRACTOR SHALL WORK OUT A SATISFACTORY LOCATION, FREE FROM INTERFERENCES.
26. INDIVIDUAL CONDUITS SHALL BE RIGIDLY SUPPORTED AND CLAMPED WITH ONE-HOLE MALLEABLE IRON CONDUIT CLAMPS, CONDUIT BEAM CLAMPS, CONDUIT HANGERS, OR WALL BRACKETS, AS REQUIRED FOR THE TYPE OF CONSTRUCTION AND/OR AS INDICATED ON THE DRAWINGS. THE USE OF PERFORATED FLAT STEEL STRAPS FOR SUPPORTING CONDUITS WILL NOT BE PERMITTED. CONDUITS SHALL BE SECURED SO THAT THEY CANNOT BE MOVED WITHOUT THE USE OF TOOLS.
27. WHERE A GROUP OF CONDUITS RUN TOGETHER, SUPPORT THE CONDUITS ON HANGERS FABRICATED FROM LIGHT STEEL FRAMING UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
28. ALL CONDUIT CONNECTIONS TO MOTORS, FLOW METERS, AND SIMILAR DEVICES SHALL BE MADE OF INTERLOCKED GALVANIZED STEEL WITH A COPPER BONDING CONDUCTOR WOUND SPIRALLY IN THE SPACE BETWEEN EACH CONVOLUTION ON THE INSIDE OF THE CONDUIT, AND SHALL HAVE AN EXTRUDED POLYVINYL CHLORIDE COVER TO PROTECT THE WIRING AGAINST MOISTURE, OIL, CHEMICALS, AND CORROSIVE FUMES. THE CONDUIT SHALL BE:
  - A. ANACONDA AMERICAN BRASS "SEALTITE" TYPE UA.
  - B. ELECTRI-FLEX CO. "LIQUIDTITE" TYPE L.A./L.O.R.
  - C. OR APPROVED EQUAL.
29. PROVIDE PULL BOXES, JUNCTION BOXES, SPLICE BOXES AND FITTINGS WHERE SHOWN AND AT OTHER LOCATIONS AS NECESSARY.
30. ALL SINGLE CONDUCTOR WIRE SHALL BE 600 VOLT, TYPE XHHW, THWN, OR THHN WITH COPPER CONDUCTORS, EXCEPT WHERE OTHERWISE NOTED.
31. ALL CONDUCTORS SHOWN ON THE DRAWINGS ARE COPPER, STRANDED. ALUMINUM CONDUCTORS SHALL NOT BE SUBSTITUTED FOR COPPER CONDUCTORS.
32. MINIMUM WIRE SIZE SHALL BE NO. 12 AWG, FOR POWER, NO. 14 AWG FOR CONTROLS.
33. CONDUCTORS FOR POWER AND LIGHTING FEEDERS AND BRANCH CIRCUITS SHALL HAVE CONDUCTOR IDENTIFICATION. CONDUCTOR IDENTIFICATION SHALL BE AS CALLED FOR IN THE NATIONAL ELECTRIC CODE.
34. CONDUCTORS FOR CONTROL, SIGNAL, AND COMMUNICATIONS WIRING SHALL BE IDENTIFIED AT ALL TERMINAL AND SPLICE POINTS WITH PERMANENT SELF-ADHESIVE WIRE IDENTIFICATION MARKERS. WIRE MARKERS SHALL BE MADE OF VINYL IMPREGNATED CLOTH, VINYL PLASTIC, OR OTHER PERMANENT MATERIALS. WIRE MARKERS MADE OF PAPER TAPE SHALL NOT BE USED.
35. WIRING DEVICES SHALL BE SPECIFICATION GRADE NEMA STANDARD WD-1, HUBBELL, LEVITON OR APPROVED EQUAL, AS FOLLOWS:
 

SPST TOGGLE SWITCH	HUBBELL NO. 1221
20A DUPLEX RECEPTACLE	HUBBELL NO. 5362
36. ALL SWITCHES, AND RECEPTACLES SHALL BE SURFACE MOUNTED WITH FD BOXES AND METAL PLATES.
37. ALL SPST SWITCHES SHALL BE "OFF" IN THE DOWN POSITION.
38. PROVIDE ALL SUPPORTS, OR HANGERS REQUIRED TO INSTALL ANY ELECTRICAL EQUIPMENT CALLED FOR BY THE CONTRACT DOCUMENTS.
39. GROUND ALL CONDUITS, FIXTURES, MOTORS, PANELS AND OTHER EXPOSED NONCURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ALL PROVISIONS OF THE LATEST NATIONAL ELECTRICAL CODE.
40. PROVIDE A GROUND WIRE IN ALL CONDUITS.
41. WHERE GROUNDING CONDUCTORS ARE SUBJECT TO MECHANICAL INJURY. THEY SHALL BE INSTALLED IN A RIGID METALLIC RACEWAY.
42. AT THE CONCLUSION OF THE WORK, EACH FIXTURE MUST BE EQUIPPED WITH THE PROPER NUMBER OF NEW LAMPS OF THE CORRECT SIZE, ALL IN GOOD OPERATING CONDITION.
43. ELEVATIONS FOR OUTLETS FROM FINISHED FLOOR TO CENTER OF OUTLET SHALL BE AS FOLLOWS, EXCEPT WHERE OTHERWISE NOTED.
  - A. SWITCHES 4'-0"
  - B. RECEPTACLES IN MOTOR ROOM 1'-6"
  - C. RECEPTACLES IN PUMP ROOM 3'-0"
44. CONDUCTORS FOR GROUNDING SYSTEM SHALL BE SOFT OR MEDIUM HARD DRAWN, STRANDED, BARE COPPER, EXCEPT WHERE OTHERWISE NOTED. ALL CONDUCTORS NO. 8 AWG AND SMALLER SHALL BE INSULATED.
45. CONNECTION OF GROUND CONDUCTORS GENERALLY SHALL BE EXOTHERMIC WELD OR COMPRESSION TYPE. BOLTED TYPE CONNECTION OF GROUND CONDUCTORS MAY ONLY BE MADE WHERE TERMINAL LUGS OR BLOCKS HAVE BEEN FURNISHED AND INSTALLED IN EQUIPMENT BY THE MANUFACTURER. EXOTHERMIC WELDS SHALL BE CADWELD OR THERM-O-WELD.
46. MOTOR CONTROL CENTER
  - A. GENERAL: MOTOR CONTROL CENTER LINEUP SHALL BE PROVIDED AS SHOWN ON THE DRAWINGS. SERVICE: 480 VOLTS, 3-PHASE, 3 WIRE. WIRING: NEMA CLASS 1, TYPE B. ENCLOSURE: NEMA 1.
  - B. CONSTRUCTION: TOTALLY ENCLOSED STRUCTURE, DEAD FRONT, CONSISTING OF 21-INCH DEEP (NOMINAL), 20-INCH WIDE 90-INCH HIGH VERTICAL SECTIONS BOLTED TOGETHER TO FORM A UNIT ASSEMBLY. REMOVABLE LIFTING ANGLES FOR EACH SHIPPING SECTION. TWO REMOVABLE FLOOR SILLS FOR MOUNTING. HORIZONTAL WIREWAYS TOP AND BOTTOM, ISOLATED FROM HORIZONTAL BUS AND READILY ACCESSIBLE. ISOLATED VERTICAL WIREWAYS WITH CABLE SUPPORTS, ACCESSIBLE THROUGH HINGED DOORS, FOR EACH CONTROLLER SECTION. ALL METAL NONCONDUCTING PARTS ELECTRICALLY CONTINUOUS. PROVIDE A 100 WATT HEATER IN EACH SECTION FOR CONDENSATION PROTECTION.
  - C. BUS SYSTEM: RATING: BUS BRACING AND HORIZONTAL, VERTICAL, AND FULL SIZE NEUTRAL BUS CURRENT CAPACITIES SHALL BE AS INDICATED ON THE DRAWINGS. ALL BUS BARS TIN OR SILVER PLATED COPPER. MAIN HORIZONTAL BUS: CONTINUOUS, EDGE MOUNTED, AND ISOLATED FROM WIREWAYS AND WORKING AREAS. 1200 AMPERE CONTINUOUS MINIMUM RATING. VERTICAL BUS: CONTINUOUS AND ISOLATED BY A GLASS POLYESTER BARRIER, 300 AMPERE CONTINUOUS MINIMUM RATING. GROUNDING BUS: FULL LENGTH MOUNTED ACROSS THE BOTTOM, DRILLED WITH LUGS OF APPROPRIATE CAPACITY AS REQUIRED. BUS BAR CONNECTIONS EASILY ACCESSIBLE WITH SIMPLE TOOLS.
  - D. UNIT COMPARTMENTS: INDIVIDUAL FRONT DOOR FOR EACH UNIT COMPARTMENT WITH BLACK LETTERS ON WHITE BACKGROUND ENGRAVED NAMEPLATE IDENTIFYING EQUIPMENT. STARTER AND FEEDER-UNIT DOORS INTERLOCKED MECHANICALLY WITH THE UNIT DISCONNECT DEVICE TO PREVENT UNINTENTIONAL OPENING OF THE DOOR WHILE ENERGIZED AND UNINTENTIONAL APPLICATION OF POWER WHILE DOOR IS OPEN, WITH PROVISIONS FOR RELEASING THE INTERLOCK FOR INTENTIONALLY ACCESS AND/OR APPLICATION OF POWER BY AUTHORIZED PERSONNEL. PADLOCKING ARRANGEMENT PERMITTING LOCKING THE DISCONNECT DEVICE IN THE OFF POSITION WITH AT LEAST THREE PADLOCKS WITH THE DOOR CLOSED OR OPEN. MINIMUM MOTOR STARTER SIZE: NEMA SIZE 1. STARTER UNITS COMPLETELY DRAWOUT TYPE IN SIZE 1.

FWCE - TRANS-50315-45151-001-DWG - APR 16, 1986 - 130715



# GENERAL NOTES – PUMP STATION ST-2

OVERLOAD RELAYS:  
THREE B1-METALLIC OR EUTECTIC TYPE, MANUALLY RESET FROM OUTSIDE THE ENCLOSURE BY MEANS OF AN INSULATED BUTTON. CONTRACTOR SHALL SIZE OVERLOADS BASED ON ACTUAL MOTOR NAMEPLATE.

CONVERTIBLE ISOLATED AUXILIARY CONTACT FOR REMOTE ALARM PURPOSES.

INDIVIDUAL CONTROL POWER TRANSFORMERS FOR ALL STARTERS. PROVIDE TWO PRIMARY LEG FUSES, CAPACITY AS REQUIRED. 100 VA MINIMUM, 120 VOLT SECONDARY WITH ONE SECONDARY LEG FUSED AND THE OTHER SECONDARY LEG GROUNDED. SIZE-UP CAPACITY FOR CONNECTED AUXILIARY RELAYS, TIMERS, AND ACCESSORIES.

MOTOR HORSEPOWERS SHOWN ARE PRELIMINARY. CIRCUIT BREAKER TRIPS, FUSING, WIRING, AND STARTER OVERLOAD HEATERS TO BE COORDINATED WITH THE ACTUAL EQUIPMENT INSTALLED.

AUXILIARY CONTACTS, RELAYS AND TIMERS REQUIRED FOR THE CONTROL FUNCTIONS SHOWN ON THE DRAWINGS AND/OR SPECIFIED.

ALL STARTER DEVICES, INCLUDING SPARE CONTACTS WIRED TO NUMBERED TERMINAL BLOCKS. IDENTIFY ALL CONTROL WIRES AT EACH END IN MOTOR STARTERS.

CONTROL DEVICES 600 VOLT HEAVY DUTY.

E. FEEDER FUSIBLE SWITCHES:

65000A INTERRUPTING CAPACITY.

F. TRANSFORMER TR-2: PROVIDE A DRY TYPE 10 KVA, 480-240/120V, 1 PHASE TFMR WITH 2-2 1/2 % TAPS ABOVE AND 2-2 1/2 % TAPS BELOW RATED PRIMARY VOLTAGE, INSULATION RATING 185°C, TEMP. RISE 115°C, AND SOUND LEVEL OF 40dB.

G. LIGHTING PANEL LP-1: PROVIDE A CIRCUIT BREAKER PANEL BOARD, 240 VAC, 2 POLE WITH 50A MAIN BREAKER, 24 SPACES WITH 18-20A, 1P, CIRCUIT BREAKERS INSTALLED.

H. PRODUCTS AND MANUFACTURERS: CENTERLINE BY ALLEN-BRADLEY. SERIES 2100 BY WESTINGHOUSE ELECTRIC CORPORATION. MODEL 5 BY SQUARE D COMPANY

47. PUMP CONTROL PANEL

A. GENERAL:

- 1) PROVIDE CONTROL PANEL WITH ELECTRICAL CONTACT OUTPUTS TO CONTROL THREE PUMPS. CONFORM TO APPLICABLE ELECTRICAL CODES AND ORDINANCES. THE MEANS OF CONTROL SHALL BE A PNEUMATIC BUBBLER LEVEL TRANSMITTER WITH A 4-20 MA ANALOG OUTPUT SIGNAL TO A MICROPROCESSOR BASED REMOTE TERMINAL UNIT (RTU).
- 2) INCORPORATE IN THE CONTROL PANEL A RADIO TRANSMITTER. TO BE SPECIFIED BY THE OWNER FOR TRANSMISSION OF REMOTE ALARMS. THE RADIO SHALL HAVE RE-CHARGEABLE BATTERY WITH CHARGER.

B. LEVEL TRANSMITTER (LT-1)

- 1) THE DIFFERENTIAL PRESSURE TRANSMITTER WILL MONITOR THE PNEUMATIC BUBBLER PRESSURE AND TRANSMIT A PROPORTIONAL 4 TO 20 MA SIGNAL TO THE RTU. THE SIGNAL ACCURACY SHALL BE +.2% OF SPAN WITH REPEATABILITY OF BETTER THAN .05% OF SPAN. FOXBORO MODEL 823 DP-1-3K-1-2-M, FISHER, OR APPROVED EQUAL.

C. REMOTE TERMINAL UNIT (RTU)

- 1) GENERAL: THE RTU SHALL BE USER PROGRAMMABLE AND ALLOW MANUAL AND/OR AUTOMATIC CONTROL OF EQUIPMENT BASED ON A VARIETY OF CONTROL PARAMETERS.

A DEDICATED MICROPROCESSOR SHALL OPERATE AND EXECUTE, ACCORDING TO PROGRAM AND USER REQUIREMENTS ALL INPUT FUNCTIONS, COMPUTATIONAL REQUIREMENTS AND OUTPUT FUNCTIONS.

THE FRONT PANEL SHALL CONTAIN A SEALED MEMBRANE KEYPAD WITH INDIVIDUAL LED INDICATION ALONG WITH A 20-CHARACTER FLUORESCENT ALPHANUMERIC DISPLAY.

A MINIMUM UNIT SHALL CONSIST OF BASE CARD, INPUT/OUTPUT CARDS, POWER SUPPLY, KEYPAD AND DISPLAY PANEL, MODEM, AND BATTERY.

ALL INTEGRATED CIRCUITS SHALL USE CMOS COMPONENTS. TOTAL MEMORY COMPLEMENT SHALL BE A MINIMUM OF 16K RAM AND 64K EPROM. RAM AND TIME OF DAY CLOCK SHALL HAVE LITHIUM BATTERY BACKUP SO NO INFORMATION IS LOST DURING POWER FAILURE.

THE KEYPAD AND DISPLAY ASSEMBLY SHALL BE MOUNTED IN THE PUMP CONTROL PANEL DOOR AND SHALL CONTAIN THE FOLLOWING OPERATOR INTERFACE COMPONENTS:

- 20-CHARACTER FLOURESCENT DISPLAY
  - 5X7 DOT MATRIX
  - HI-VISIBILITY BLUE-GREEN
  - CHARACTER HEIGHT 3/8"
- 40 POSITION LAMINATED MEMBRANE KEYPAD
  - INDIVIDUAL LED INDICATION
  - 5/8" X 5/8" TOUCH-SENSITIVE KEYS
  - 12 POSITION NUMERIC CLUSTER

- 2) CONFIGURATION: ALL SYSTEM FIRMWARE SHALL BE CONTAINED IN EPROM MEMORY.

THE CONFIGURATION OF THE PARTICULAR CONTROL ROUTINE SHALL BE DONE THROUGH A FILL-IN-THE BLANKS APPROACH. ROUTINES SHALL BE ORIENTED TO FIT NORMAL WATER/WASTEWATER APPLICATIONS SO THAT EASIER CONFIGURATION IS ALLOWED. ALL PROGRAM ENTRIES SHALL BE CAPABLE OF REVIEW, CHANGE, DELETION OR OTHER ALTERATIONS BY USER, AT ANY TIME.

STANDARD ROUTINES SHALL BE AVAILABLE FOR:

- INDIVIDUAL PUMP CONTROL OF UP TO 4 PUMPS
- PUMP ALTERNATION OF ALL PUMPS, 2, 3, OR 4 PUMPS PER ALTERNATION
- EQUIPMENT INTERLOCKING
- START/STOP SETPOINTS
- START/STOP FAIL DELAYS
- RUN TIME ACCUMULATION ON ALL PUMPS
- TOTALIZING ON ALL FLOW RATES
- LOAD CYCLING (MIN, MAX, ON/OFF TIMES)
- TIME OF DAY CONTROL WITH LOCKOUT (AND LEVEL OVERRIDE)
- HIGH/LOW ALARMING OF ALL ANALOG INPUTS
- CHANGE OF STATE ALARMING ON ALL DIGITAL INPUTS
- DELAYS

IN ADDITION, PUMP CONTROL SHALL ALLOW START/STOP CONTROL BASED ON AN ANALOG INPUT, SWITCH SIGNALS, OR SIGNALS FROM A LOCAL CONTROLLER.

PROVIDE AN ISOLATED CONTACT FOR CONTROL OF EACH PUMP. CONTACT RATING 5 AMPERE CONTINUOUS AND BREAK 30 AMPERE MAKE, AT 120 VOLTS 60 HZ.

- 3) RTU OPERATION: COMPLETE OPERATION SHALL BE POSSIBLE FROM THE KEYPAD AND DISPLAY. THE KEYPAD WILL ALLOW AN OPERATOR TO ENTER SETPOINTS, ALARM LIMITS AND ANY OTHER CONTROL PARAMETERS. THE INTEGRAL 20-CHARACTER DISPLAY WILL BE USED FOR PRESENTING FLOW RATES, LEVELS, ALARMS AND STATUSES IN A MULTIPLEX FASHION. THE USE OF EXTERNAL PROGRAMMING DEVICE, TEST SET PERSONAL COMPUTER, ETC. WILL BE UNACCEPTABLE.

ANY DIGITAL OUTPUT SHALL BE CONTROLLABLE FROM THE KEYPAD. THE KEYPAD SHALL PROVIDE TRADITIONAL HAND/OFF/AUTOMATIC (HOA) CAPABILITY.

THE 20 CHARACTER DISPLAY SHALL BE USED FOR INDICATION OF FLOW RATES, LEVELS, PRESSURES, ALARMS AND ANY OTHER INFORMATION. THERE SHALL BE SPECIFIC KEYS FOR:

- LEVEL
- FLOW RATE
- FLOW TOTALIZATION
- PUMP CONTROL
- PUMP ALTERNATION

ANALOG POINTS SHALL BE DESCRIBED WITH APPROPRIATE ENGINEERING UNITS AND DIGITAL POINTS SHALL BE DESCRIBED BY APPROPRIATE STATUSES (RUN/STOP, OPEN/CLOSED, ETC.).

A PAGE OR ROTATE FUNCTION SHALL BE AVAILABLE SO THAT ALL PARAMETERS OF A GIVEN TYPE WILL BE SHOWN SEQUENTIALLY AUTOMATICALLY.

DEDICATED LED ALARM DISPLAY SHALL ALSO BE PROVIDED WITH CUSTOMIZABLE NAME LEGENDS.

PROVIDE LED INDICATIONS FOR THE FOLLOWING:

- A) POWER FAILURE
- B) HIGH WETWELL LEVEL
- C) LOSS OF AIR

WET WELL LEVEL SHALL BE MONITORED AND CONTROLLED AS FOLLOWS:

- LEVEL 7 EL 698.25 – HIGH LEVEL – RISING LEVEL
- LEVEL 6 EL 696.00 – START 2ND LAG PUMP – RISING LEVEL
- LEVEL 5 EL 694.00 – START 1ST LAG PUMP – RISING LEVEL
- LEVEL 4 EL 693.00 – STOP 2ND LAG PUMP – FALLING LEVEL
- LEVEL 3 EL 692.00 – START LEAD PUMP – RISING LEVEL
- LEVEL 2 EL 691.00 – STOP 1ST LAG PUMP – FALLING LEVEL
- LEVEL 1 EL 685.00 – STOP LEAD PUMP – FALLING LEVEL

ALARM LOGGING

THE RTU SHALL PERFORM THE ADDITIONAL FUNCTIONS OF ALARM DETECTION, ANNUNCIATION, AND RECORDING. THE OPERATOR SHALL BE ABLE TO SET UP CONDITIONS AS ALARMS; HIGH/LOW ALARMS ON ANALOG VALUES, AS WELL AS SETTING OF THE STATUS-INPUT ALARMS. ALL ALARMS SHALL BE INDIVIDUALLY DISABLED. ALL ALARMS SHALL BE LOGGED IN MEMORY, ALONG WITH AVAILABLE AUDIBLE AND VISUAL (LED) ANNUNCIATION. IN ADDITION, PUMP START/STOPS AND CERTAIN OPERATOR ACTIVITIES SUCH AS SET POINT CHANGES OR MANUAL CONTROL ACTIONS WILL ALSO BE LOGGED.

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# GENERAL NOTES - PUMP STATION ST-2

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IT SHALL ALSO PERFORM THE FOLLOWING FUNCTIONS FOR ALL DIGITAL AND ANALOG POINTS:

- CURRENT ALARMS: DISPLAY OF ALL POINTS THAT ARE ACKNOWLEDGED BUT STILL IN THEIR ABNORMAL STATE.
- UNACKNOWLEDGED ALARMS: DISPLAY OF ALL POINTS IN AN ABNORMAL STATE
- COMMON ALARM CONTACT OUTPUTS FOR AUTO DIALERS, PLANT HORNS, ETC.

## DIAGNOSTICS AND SECURITY

THE RTU SHALL PROVIDE LED INDICATION OF COMMUNICATION AND POWER LOSS ALONG WITH CONFIGURATION FAILURES.

INTERNALLY MOUNTED LED'S SHALL BE USED FOR INDICATION OF:

- POWER ON
- CPU RUN
- CARRIER DETECT
- RECEIVE DATA
- REQUEST TO SEND
- TRANSMIT DATA

ALL FIRMWARE SHALL BE NON-VOLATILE WITH AUTOMATIC RESTART AFTER POWER FAILURE. A WATCHDOG TIMER SHALL BE PROVIDED TO RESET UPON A PROCESSOR FAULT.

THE CONFIGURATION TABLE FOR THE CONTROLLER SHALL BE PROVIDED INTEGRAL TO THE RTU.

- 4) RTU MANUFACTURER: DESIGN BASIS MODEL 9507 SMART RTU WITH 9532 BATTERY, 9513 MODEM, AND THE FOLLOWING I/O MODULES: 9542 8-DIGITAL INPUT, 9545 8-DIGITAL OUTPUT, 9312 KEYPAD/DISPLAY, AND 9541 4-ANALOG INPUT MANUFACTURED BY AUTOCON INDUSTRIES, VALMET, OR APPROVED EQUAL.

## D. PNEUMATIC SYSTEM

- 1) PRIMARY AND SECONDARY AIR COMPRESSORS: RECIPROCATING PISTON TYPE, RATED MINIMUM 0.5 SCFM AT 50 PSIG WITH A MAXIMUM OPERATING PRESSURE OF 80 PSIG AND DRIVEN BY A MINIMUM 1/7 HP, 120 VOLT, 60 HERTZ, 1 PHASE, DRIP-PROOF MOTOR. TANK MOUNTED ON A TWO-GALLON RECEIVER TANK AND FURNISHED COMPLETE WITH INTAKE FILTERS, CHECK VALVES, PRESSURE GAUGE, AUTOMATIC PRESSURE SWITCH, TANK DRAIN, SHUTOFF VALVE ON TANK OUTLET, TANK LEGS AND THERMAL MOTOR PROTECTION. THE AIR COMPRESSOR SHALL BE SUPPLIED WITH A PLUG FOR PLUGGING INTO AN AVAILABLE PANEL-MOUNTED OUTLET. COMPRESSOR SHALL BE SECURELY MOUNTED ON VIBRATION DAMPENING PADS. COMPRESSOR SHALL BE MOUNTED SO THAT TANK DRAIN IS EASILY ACCESSIBLE. THOMAS INDUSTRIES, INC. MODEL NO. 607FA32, BELL & GOSSETT, OR EQUAL.
- 2) DIFFERENTIAL PRESSURE REGULATOR: 0-15 PSI RANGE, CONOFLOW MODEL H-21F-4, WILKERSON OR APPROVED EQUAL.
- 3) FILTER REGULATOR: PROVIDES CONSTANT SUPPLY PRESSURE WITH OUTPUT ADJUSTABLE 1-30 PSIG, CONTINUOUS SERVICE, 1/4 IN. NPT, PANEL MOUNTED HAND WHEEL ADJUSTMENT, WITH 0-40 PSIG, 2 IN. DIAM. OUTLET PRESSURE GAGE. W-K-M VALVE GROUP (ACF INDUSTRIES, INC.) MODEL NO. 73-68-1, WILKERSON OR APPROVED EQUAL.
- 4) ADJUSTABLE SIGHT FLOWMETER: ROTOMETER TYPE, STAINLESS STEEL NEEDLE VALVE, 1/8 IN. NPT, RATED FOR 100 PSIG MAXIMUM PRESSURE WITH PANEL MOUNTING BRACKET; 2 IN. SCALE WITH 0.2 TO 2 SCFH RANGE. DWYER MODEL NO. RMA-3-SSV, KOBOLD OR APPROVED EQUAL.
- 5) SHUTOFF VALVES/BLEED VALVES: NUPRO P6T SERIES PLUG VALVES, WKM OR APPROVED EQUAL.

- 6) COMPRESSION FITTINGS: SWAGelok TUBE FITTINGS, TECHNICAL PRODUCTS AND PRECISION MFG. CO. OR APPROVED EQUAL SUSTAINING INTERNAL PRESSURES OF 100 PSI.
- 7) PRESSURE GAGES: AMETEK FIG. P500, STEM CONNECTED, 1/4 IN. ANPT, ASHCROFT OR EQUAL.
- 8) PRESSURE RELIEF VALVE: NUPRO CAT. NO. SS-4CA-3 (RELIEVING RATE 3-50 PSI), KUNKLE OR APPROVED EQUAL.
- 9) SOLENOID VALVES (V1 & V2): MAC 100 SERIES, BY MAC VALVES, INC., ASCO OR EQUAL.

## 10) WET WELL PIPING AND FITTINGS:

- A) STAINLESS STEEL BUBBLER PIPE: 1/2" O.D., 0.065 IN WALL TUBE THICKNESS (NOMINAL PIPE I.D. - .375 IN.) FULLY ANNEALED TYPE 304 SEAMLESS STAINLESS STEEL HYDRAULIC TUBING ASTM A269-88A, OR EQUAL.
- B) BUBBLER PIPE WALL CLAMPS: EXTENSION SPLIT PIPE CLAMP, ROD THREADED, ITT GRINNEL FIG. 138R; WITH WALL FLANGE, ROD THREADED, ITT GRINNEL FIG. 128R; WITH CONTINUOUS 3/8 IN. THREADED ROD, ITT GRINNEL FIG. 146; OR EQUAL.

## E. COMPONENTS AND WIRING

- 1) INTERIOR TUBING SHALL BE SOFT COPPER: FITTINGS SHALL BE BRASS OR STAINLESS STEEL. WIRE FOR 120 VOLT PORTION OF CONTROLS SHALL BE MTW 600 VOLT.
- 2) TERMINAL BOARD SHALL BE 30 AMPERE 300 VOLT, CAPACITY FOR TWO NO. 14 AWG. BOX TYPE WITH PRESSURE PLATE. WIRE GUIDE TO PREVENT WIRE FROM ENTERING ON TOP OF PRESSURE PLATE.
- 3) CONTROL VOLTAGE SUPPLY 120 VOLTS, 60 HZ.

## F. CONTROL PANEL

- 1) SHALL BE A NEMA 4 TYPE ENCLOSURE.
- 2) PAINT TWO COATS ENAMEL TO MATCH POWER PANELS OVER PHOSPHATIZED AND PRIMED SURFACE. ALL UNPAINTED PARTS SHALL BE CADMIUM PLATED OR GALVANIZED.
- 3) PANEL FRONT SHALL BE A HINGED DOOR FOR FRONT ACCESS TO THE INTERIOR. MINIMUM NUMBER OF HINGE POINTS: 4.

## G. RADIO TRANSMITTER

- 1) PROVIDE A RADIO TRANSMISSION SYSTEM WITH TONE MODULATION EQUIPMENT AS REQUIRED FOR THE SPECIFIED FUNCTIONS. IN ACCORDANCE WITH CITY OF COLUMBUS DIVISION OF SEWERAGE AND DRAINAGE SPECIFICATIONS. RECEIVING EQUIPMENT WILL BE PROVIDED BY THE CITY. AREA STUDIES, FREQUENCY SEARCH, AND FCC LICENSE APPLICATION WILL BE PROVIDED BY THE CITY.

## 2) TELEMETERED ALARMS:

- A) WETWELL HIGH
- B) PUMP 1 MOTOR O.T./POWER LOSS
- C) PUMP 2 MOTOR O.T./POWER LOSS
- D) PUMP 3 MOTOR O.T./POWER LOSS

## H. WARRANTY

- 1) THE MANUFACTURER SHALL WARRANT ALL COMPONENTS OF THE CONTROL PANEL FOR A PERIOD OF FIVE YEARS AFTER DELIVERY. THIS WARRANTY IS FOR MATERIAL AND SERVICE COSTS. EXCEPT FOR SERVICE WHICH MAY BE PERFORMED BY THE OWNER, SUCH AS REPLACEMENT OF PLUG-IN RELAYS.

## FLOW METERS

### 1. SCOPE

- A. THIS SECTION CONTAINS SPECIFICATIONS FOR THE FLOW METERS AND ACCESSORIES FOR THE METERING OF STORM WATER PUMPAGE.

## 2. WORK SPECIFIED IN OTHER SECTIONS

- A. INSTALLATION OF PIPING.

## 3. SUBMITTALS

- A. SHOP DRAWINGS: SUBMIT SIX COPIES EACH FOR ALL ITEMS LISTED HEREIN.
- B. OPERATION AND MAINTENANCE MANUALS: SUBMIT FOR ALL ITEMS LISTED HEREIN.

## 4. QUALITY ASSURANCE

- A. MANUFACTURER'S REPRESENTATIVE: A COMPETENT AND EXPERIENCED MANUFACTURER'S REPRESENTATIVE SHALL CHECK THE INSTALLATION OF THE EQUIPMENT LISTED BELOW, SUPERVISE ITS INITIAL OPERATION, AND INSTRUCT OPERATING PERSONNEL IN ITS OPERATION AND MAINTENANCE.

## 5. GENERAL - FLOW METER

- A. THE SPECIFICATIONS HEREIN BELOW GENERALLY LIST ACCEPTABLE MANUFACTURERS AND DESCRIBE STANDARDS OF CONSTRUCTION AS WELL AS TESTING AND START UP SERVICE REQUIREMENTS. CONFORM TO THE REFERENCED STANDARDS UNLESS OTHERWISE SPECIFIED.
- B. TYPE: ULTRASONIC, DEDICATED DIGITAL DOPPLER FLOW METER WITH NON-INTRUSIVE TRANSDUCERS. ALL UNITS AND ACCESSORIES TO BE BY SAME MANUFACTURER.
- C. NUMBER UNITS: THREE (3)
- D. FLUID TO BE MONITORED: HIGHWAY STORM WATER DRAINAGE.

## 6. MANUFACTURER

- A. GENERAL: PEEK MEASUREMENT, INC., CONTROLOTRON, OR APPROVED EQUAL.
- B. BASIS OF DESIGN: PEEK MEASUREMENT, INC., POLYSONICS MODEL DDF4088.

## 7. PERFORMANCE SPECIFICATIONS:

- A. FLOW RANGE: 0.05 TO 32 FPS
- B. ACCURACY: ± 2% OF VELOCITY OR BETTER
- C. REPEATABILITY: ± 0.05% FULL SCALE

- D. LINEARITY: ± 0.3% FULL SCALE
- E. PIPE SIZE: 20 INCH

## 8. FUNCTIONAL SPECIFICATIONS:

- A. OUTPUTS: 4-20 MA (INTO 1,000 OHMS), 12 BIT, 5KV OPTO-ISOLATED, LOOP OR SELF-POWERED. RS232 SERIAL INTERFACE.
- B. POWER SUPPLY: 115 VAC, 60 HZ
- C. KEYPAD: 19 KEY WITH TACTILE ACTION
- D. SCREEN: 40 CHARACTER, 2 LINE ALPHANUMERIC. BACKLIT LCD. DISPLAYS INCLUDE PRESENT AND TOTAL FLOW RATES, FLOW VELOCITY, SIGNAL STRENGTH (BARGRAPH AND NUMERIC) AND % OF SPAN OUTPUT.
- E. DATA LOGGER: GREATER THAN 10,000 DATA POINTS. PROGRAMMABLE IN 1 SECOND INTERVALS. DATA IS TIME-STAMPED.
- F. ALARM RELAYS: 5 AMP, SPDT, FULLY PROGRAMMABLE. ONE (STANDARD), UP TO FOUR (OPTIONAL).
- G. TEMPERATURE RANGE:  
TRANSDUCER: -40° TO + 300° F.  
TRANSMITTER: -40° TO + 140° F.
- H. HUMIDITY LIMITS: 0-100% RELATIVE HUMIDITY.
- I. OPTIONAL CERTIFICATION: INTRINSICALLY SAFE TRANSDUCER FOR CLASS I, II, III, DIV. 1, GROUPS C, D, E, F AND G; NON-INCENTIVE FOR CLASS 1, DIV. 2, GROUPS A, B, C AND D.

## 9. PHYSICAL SPECIFICATIONS:

- A. TRANSMITTER: NEMA 4X (1P65), FLAME RETARDANT FIBERGLASS, REINFORCED POLYESTER.
- B. TRANSDUCER(S): DUAL HEAD DESIGN SUITABLE FOR SUBMERSIBLE/UNDERGROUND SERVICE. CABLE LENGTH AS REQUIRED.

## 10. INSTALLATION

- A. TRANSDUCERS TO BE PERMANENTLY MOUNTED TO DISCHARGE PIPE OF EACH PUMP AT LOCATION SHOWN ON THE PLAN OR AS RECOMMENDED BY EQUIPMENT MANUFACTURER.
- B. TRANSMITTER(S) TO BE WALL MOUNTED AT A LOCATION AS DIRECTED BY THE CITY.

## 11. ACCESSORIES: ALL ACCESSORIES FOR INSTALLATION AND OPERATION TO BE SUPPLIED BY THE EQUIPMENT MANUFACTURER.

## 12. TESTS: THE EQUIPMENT MANUFACTURER'S REPRESENTATIVE SHALL PERFORM ANY AND ALL TESTS REQUIRED TO INSURE THAT THE EQUIPMENT IS OPERATIONAL AND OPERATING WITHIN THE LIMITS SPECIFIED.

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# GENERAL NOTES – PUMP STATION ST-2

## PAINTING

### 1. SCOPE

#### A. WORK INCLUDED

- 1) SURFACE PREPARATION AND PAINTING OF ALL NEW WORK EXCEPT AS OTHERWISE SPECIFIED.
- 2) SURFACE PREPARATION AND PAINTING OF ALL EXISTING ITEMS SPECIFIED IN THE SURFACE SCHEDULE.

### 2. QUALITY ASSURANCE

A. APPROVALS: THE ENGINEER SHALL APPROVE ALL BRANDS OF PAINT AND WILL SELECT COLORS AND GLOSS FOR THE VARIOUS SURFACES, UNLESS SPECIFIED IN THE SURFACE SCHEDULE.

#### B. DEFINITION

- 1) PAINT: INCLUDES ENAMEL, PAINTS, SEALERS, FILLERS, EMULSIONS, AND OTHER COATINGS, WHETHER USED AS PRIME, INTERMEDIATE, OR FINISH COATS.
- 2) EXTERIOR: THIS TERM APPLIES TO THAT PORTION OF A STRUCTURE OR ITEM EXPOSED TO THE WEATHER.
- 3) INTERIOR: THIS TERM APPLIES TO THAT PORTION OF A STRUCTURE OR ITEM COMPLETELY PROTECTED FROM THE WEATHER BY AN ENCLOSURE.
- 4) OUTSIDE: THIS TERM APPLIES TO THAT PORTION OF A STRUCTURE, VESSEL OR ITEM ENVELOPING THE MOST DISTANT SURFACE FROM THE CENTER OF THE ITEM.
- 5) INSIDE: THIS TERM APPLIES TO THAT PORTION OF A STRUCTURE, VESSEL OR ITEM ENVELOPING THE LEAST DISTANT SURFACE FROM THE CENTER OF THE ITEM.

### 3. DELIVERY AND STORAGE

- A. DELIVER ALL PAINT TO THE JOB IN SEALED CANS BEARING THE MANUFACTURER'S LABEL AND TRADEMARK. SHOW LOT OR BATCH NUMBER, AND ANY INSTRUCTIONS FOR MIXING AND/OR THINNING.
- B. KEEP CONTAINERS CLOSED UNTIL USED AND STORE IN AREAS WITH TEMPERATURE BETWEEN 50° AND 90° F.

### 4. GENERAL

- A. BRANDS OF PAINTS AND MANUFACTURERS ARE SPECIFIED ONLY TO ESTABLISH A STANDARD OF QUALITY. OTHER BRANDS AND MANUFACTURERS SUCH AS KOP COAT, INC., DETROIT GRAPHITE, TNE MEC, PORTER, OR EQUAL, ARE ACCEPTABLE UPON PROOF OF SATISFACTORY EXPERIENCE RECORDS FOR THE INTENDED USE.
- B. ALL PRIME AND FINISH COATS MUST BE COMPATIBLE.
- C. WHEN MATERIALS AND EQUIPMENT ARE PRIMED AT THE FACTORY, THE CONTRACTOR SHALL COORDINATE THE PAINTING TO MAINTAIN COMPATIBILITY WITH THE FIELD PRIME AND/OR FINISH COAT LISTED FOR THAT ITEM IN THE SURFACE SCHEDULE.

### 5. COLOR

- A. MATCH THE RESPECTIVE COLOR CHIPS SELECTED BY THE ENGINEER.

### 6. SURFACE PREPARATION

#### A. MASONRY AND CONCRETE

- 1) REMOVE SPLATTERS, DUST AND DEBRIS BY BRUSHING OR WHERE REQUIRED; WASH DOWN WITH CLEAR WATER.
- 2) REMOVE GREASE AND OIL BY SCRUBBING, FOLLOWED BY A CLEAR WATER RINSE.
- 3) IN EXTREME CASES, AND ONLY WITH WRITTEN PERMISSION OF THE ENGINEER, REMOVE EFFLORESCENCE WITH 5% SOLUTION OF MURIATIC ACID FOLLOWED BY COPIOUS BATHS OF FRESH CLEAR WATER.

### 7. SURFACE PREPARATION (EXISTING WORK)

#### A. GENERAL

- 1) REMOVE ALL DIRT, OIL, GREASE AND FOREIGN MATERIAL BY SCRUBBING WITH WATER, OR APPROPRIATE SOLVENT AS REQUIRED.
- 2) REMOVE ALL LOOSE AND DETERIORATED PAINT BY HAND OR POWER TOOL CLEANING, UNLESS OTHERWISE SPECIFIED.
- 3) WHERE PAINT IS REMOVED, SAND EDGES SO AS TO PROVIDE A UNIFORM NEAT APPEARANCE.

### 8. APPLICATION

#### A. GENERAL

- 1) APPLY ALL PAINT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- 2) APPLY THE FOLLOWING WORKMANSHIP REQUIREMENTS:
  - A) NEAT APPEARANCE OF FINISHED SURFACES.
  - B) ABSENCE OF RIDGES, SAGS, RUNS, DROPS, LAPS, AND UNNECESSARY BRUSH MARKS.
  - C) THOROUGH MIXING OF PAINT AND LIMITED USE OF THINNERS.
  - D) UNIFORMITY OF FILL THICKNESS.
  - E) PROPER DRYING TIME BETWEEN COATS.
  - F) PROTECTION OF UNPAINTED AND FINISH PAINTED SURFACES.

#### B. FACTORY PRIMED OR FINISHED ITEMS

- 1) FACTORY PRIMED ITEMS: TOUCH-UP ANY MARRED, DAMAGED OR RUSTED AREAS PRIOR TO APPLYING FINISH COATS.
- 2) FACTORY FINISHED ITEMS
  - A) FIELD TOUCH-UP OF ANY ITEMS MAY BE MADE ONLY WITH THE PERMISSION OF THE ENGINEER.
  - B) IF PERMITTED, MAKE REPAIRS AS RECOMMENDED BY THE MANUFACTURER SO AS TO PROVIDE A NEAT, SMOOTH FINISH WITH COLOR MATCHED AS CLOSELY AS POSSIBLE.
  - C) IF FIELD REPAIR IS NOT ACCEPTABLE, THE ENTIRE UNIT MAY BE REQUIRED TO BE REPAINTED. IF COLOR OF FIELD PAINTING DOES NOT MATCH ADJACENT UNITS, WHICH ARE INTENDED TO MATCH, THE ADJACENT UNITS MAY ALSO BE REQUIRED TO BE REPAINTED.

### 9. PAINTING SCHEDULE

LOCATION OF ITEM	NO. OF PRIME COATS	NO. OF FINISH COATS	TYPE OR BRAND	MFR.
<b>EXTERIOR SURFACE</b>				
EXPOSED CONCRETE & CONCRETE BLOCK MASONRY (1)		2	CARBOLINE 890 EPOXY, GLOSS	KOP-COAT
H.M. DOORS AND FRAMES	1 (SHOP) 1 (FIELD TOUCH-UP)	2	RUST PENETRATING PRIMER NO. 622 LCF RUSTARMOR 500 SPEED ENAMEL	BY DOOR MFR. KOP-COAT KOP-COAT
NON-SUBMERGED FERROUS METALS, INCLUDING PIPING VALVES, FLOOR STRANDS, GEAR BOXES, AND MECHANICAL EQUIPMENT	1 (FIELD)	2	RUST PENETRATING PRIMER NO. 622 LCF RUSTARMOR 500 SPEED ENAMEL	BY MFR. KOP-COAT KOP-COAT

LOCATION OF ITEM	NO. OF PRIME COATS	NO. OF FINISH COATS	TYPE OR BRAND	MFR.
SUBMERGED FERROUS METALS INCLUDING STRUCTURAL STEEL, MISC. IRON AND MECHANICAL EQUIPMENT	1 (FIELD TOUCH-UP)	2	BITUMASTIC NO. 300-M BITUMASTIC NO. 300-M	KOP-COAT KOP-COAT
NON-SUBMERGED PIPING TAR-DIPPED, INCLUDING FITTINGS	2 (FIELD)	2	HI-GARD RUSTARMOR 500 SPEED ENAMEL	KOP-COAT KOP-COAT
SUBMERGED PIPING, TAR-DIPPED, INCLUDING FITTINGS	2 (FIELD)	2	BITUMASTIC NO. 300-M	KOP-COAT
<b>INTERIOR SURFACES</b>				
H.M. DOORS AND FRAMES	1 (SHOP) 1 (FIELD TOUCH-UP)	2	RUST PENETRATING PRIMER NO. 622 LCF RUSTARMOR 500 SPEED ENAMEL	BY DOOR MFG. KOP-COAT
STRUCTURAL STEEL	1 (FIELD TOUCH-UP)	2	RUST PENETRATING PRIMER NO. 622 LCF RUSTARMOR 500 SPEED ENAMEL	KOP-COAT KOP-COAT
NON-SUBMERGED FERROUS METALS, INCLUDING PIPING VALVES, FLOOR STANDS, GEAR BOXES, MOTORS AND MECHANICAL EQUIPMENT	1 (FIELD TOUCH-UP)	2	RUST PENETRATING PRIMER NO. 622 LCF RUSTARMOR 500 SPEED ENAMEL	KOP-COAT KOP-COAT
SUBMERGED FERROUS METALS INCLUDING STRUCTURAL STEEL, ETC.	1 (FIELD TOUCH-UP)	2	BITUMASTIC NO. 300-M BITUMASTIC NO. 300-M	KOP-COAT KOP-COAT
NON-SUBMERGED PIPING TAR-DIPPED, INCLUDING FITTINGS	2 (FIELD)	2	HI-GARD RUSTARMOR 500 SPEED ENAMEL	KOP-COAT KOP-COAT
SUBMERGED PIPING, TAR-DIPPED, INCLUDING FITTINGS		2	BITUMASTIC NO. 300-M	KOP-COAT
CONCRETE MASONRY WALLS, PRECAST CONCRETE CEILING		2	CARBOLINE 890 EPOXY, GLOSS	KOP-COAT
WOOD SURFACES	1	2	INTERIOR UNDRCOATER NO. 623 RUSTARMOR 500 SPEED ENAMEL	KOP-COAT KOP-COAT

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# GENERAL NOTES – PUMP STATION ST-2

## PAINTING SCHEDULE (CONT.)

DESCRIPTION	KOP-COAT COLOR NO.
1. PUMPS: SAFETY BLUE	S 150
2. MOTORS: SLATE GREY	5793
3. GUARDS OVER PUMPS/MOTORS COUPLINGS: SAFETY RED	S 525
4. ALL VALVES AND PIPING: SAFETY BLUE	S 150
5. WALLS: WHITE	S 800
6. FLOOR STANDS: SAFETY RED	S 525
7. STAIRS, HANDRAILS, DOORS, AND FRAMES: WALNUT BROWN	6256
8. PUMP BASES: SLATE GREY	5793
9. VALVE HANDWHEELS: BLACK	C 900
10. DRAIN LINES: SLATE GREY	5793

## PAYMENT

PAYMENT FOR THE PUMP STATION WILL BE MADE AT THE UNIT PRICE BID PER LUMP SUM, ITEM SPECIAL, PUMP STATION, AND SHALL CONSTITUTE FULL COMPENSATION FOR FURNISHING AND INSTALLING ALL MATERIALS AND EQUIPMENT NECESSARY TO CONSTRUCT THE PUMP STATION COMPLETE AND IN PLACE AS DESCRIBED HEREIN AND AS SHOWN ON THE PLANS.

10. FEDERAL STANDARDS FOR PIPING AND EQUIPMENT CODE COLORS  
REFERENCE FEDERAL STANDARD 595B, 1989

COLOR	FEDERAL STANDARD
RED	11350
ORANGE	12473
YELLOW	13591
BLUE	15092
ALUMINUM	17178
BROWN	20117
GREEN	24190
GRAY	26373
BLACK	27038
WHITE	37925

11. DEW POINTS F AT VARIOUS RELATIVE HUMIDITY  
RELATIVE HUMIDITY

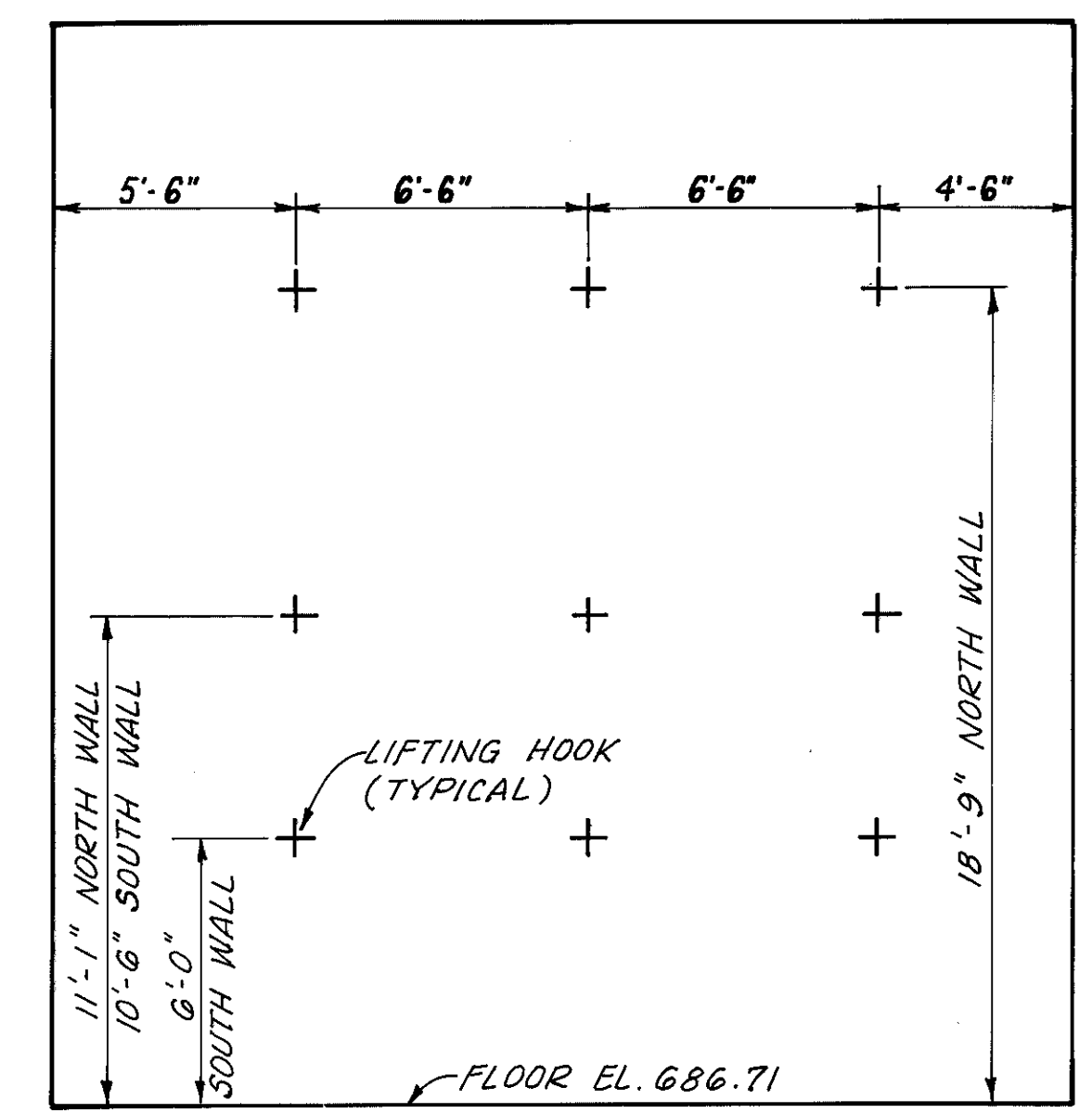
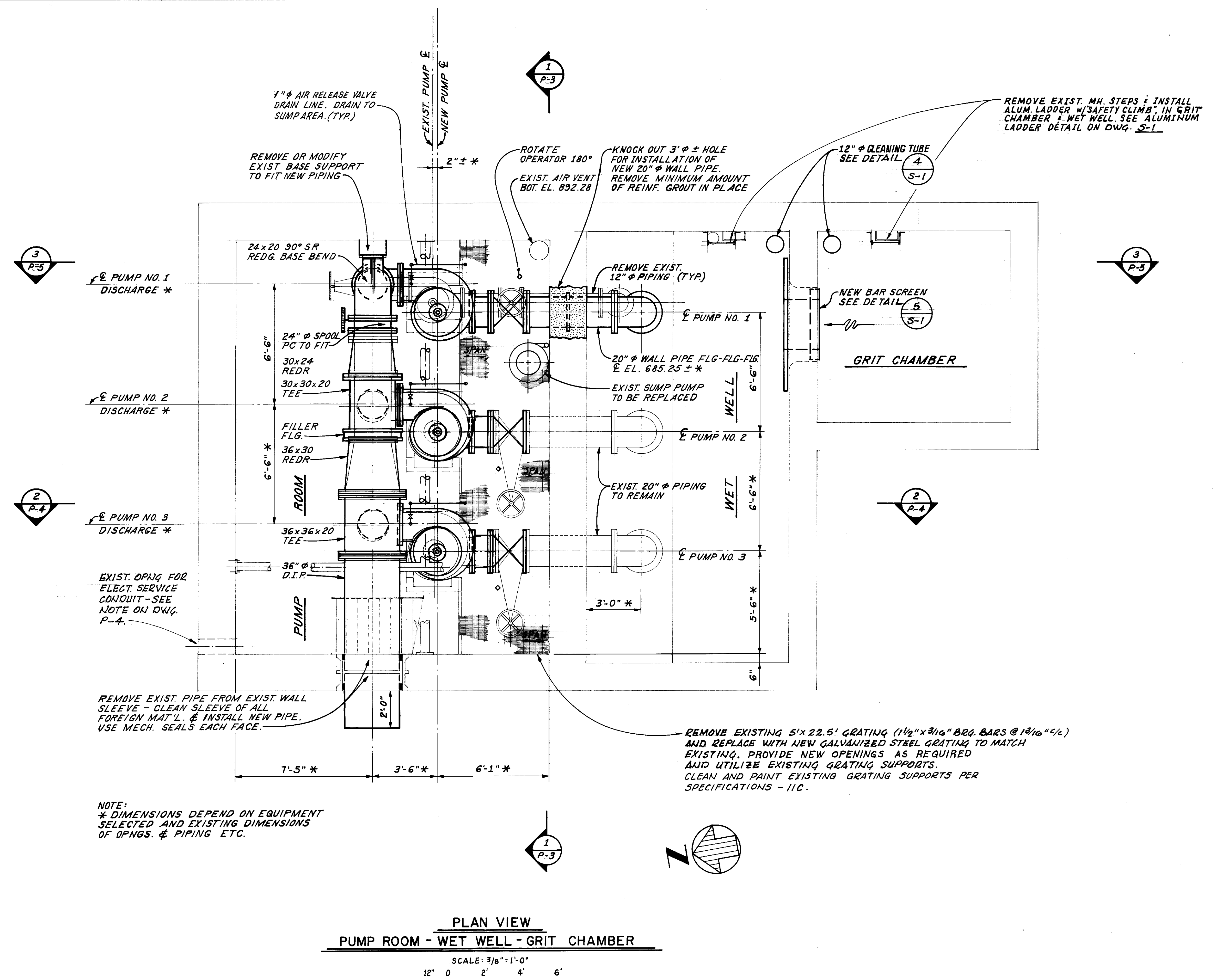
F	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100%
30.2	---	---	---	---	20.3	24.8	28.4	30.2
39.2	---	20.3	24.8	28.4	32.9	34.7	25.7	40.1
50.0	20.3	25.7	32.9	35.6	25.7	41.9	41.9	50
59.9	32	25.6	39.2	46.4	50	52.7	52.7	59.9
69.8	37.4	43.7	50	55.4	59	64.4	64.4	69.8
79.7	44.6	53.6	59.9	66.2	69.8	74.3	74.3	79.7
89.6	55.4	61.7	68.9	75.2	77.9	83.3	83.3	89.6
100.4	64.4	71.6	77.9	84.2	87.8	92.3	92.3	100.4

NOTE:

1. IT IS ESSENTIAL TO ENSURE THAT NO CONDENSATION OCCURS ON BLASTED STEEL OR BETWEEN COATS DURING PAINTING.
2. THE DEW POINT IS THE TEMPERATURE OF A GIVEN AIR-WATER VAPOR MIXTURE AT WHICH CONDENSATION STARTS. SINCE AT THAT TEMPERATURE ITS MAXIMUM WATER CONTENT (SATURATION) IS REACHED.
3. IN PAINTING PRACTICE, A SAFETY MARGIN MUST BE KEPT. WHEREBY THE SUBSTRATE TEMPERATURE IS AT LEAST 5 F ABOVE DEW POINT.

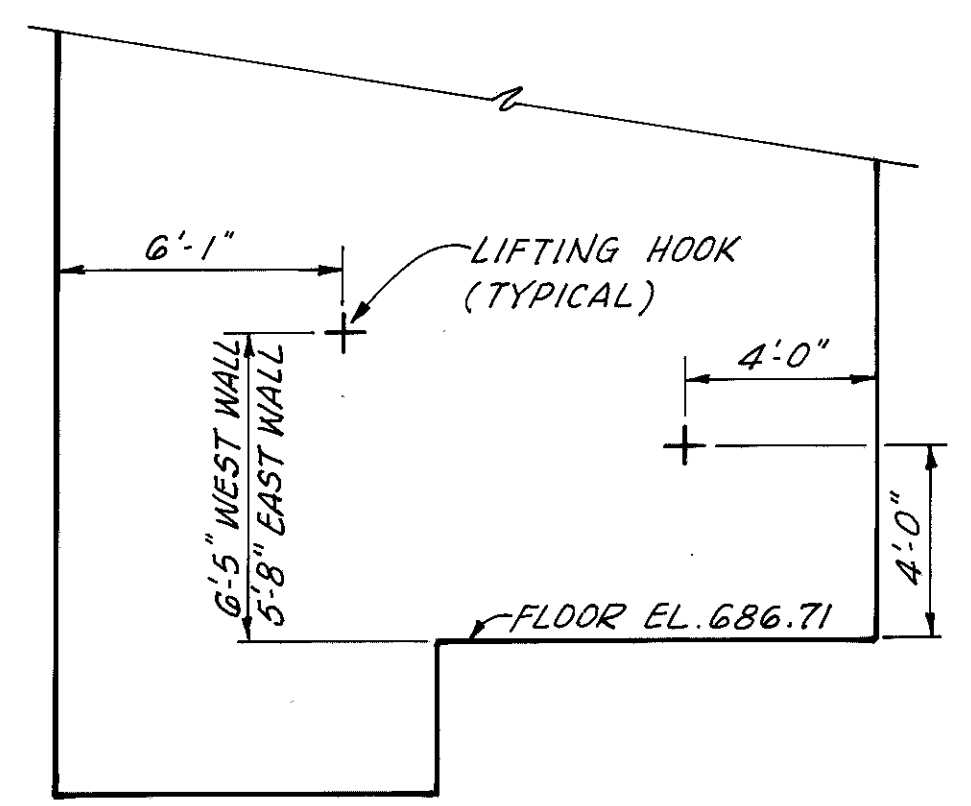
[XXXX] \TRANS\SR15-45\ST-02\STP-CONT.DWG - NOV 14, 1997 - 16:16:11 - PLOT 1-1





**NORTH AND SOUTH WALL ELEVATIONS**  
(LOOKING NORTH)  
TOTAL = 12

**NOTES:**  
1. ADJUST LOCATIONS SHOWN BY 2"± TO MISS HORIZONTAL AND VERTICAL REINFORCING.  
2. REFER TO DWG. 5-2 FOR LIFTING HOOK DETAIL.



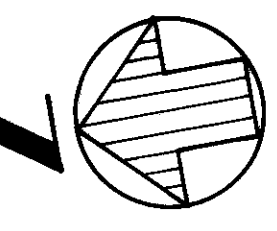
**WEST AND EAST WALL ELEVATIONS**  
(LOOKING WEST)  
TOTAL = 4

**LIFTING HOOK LOCATIONS**

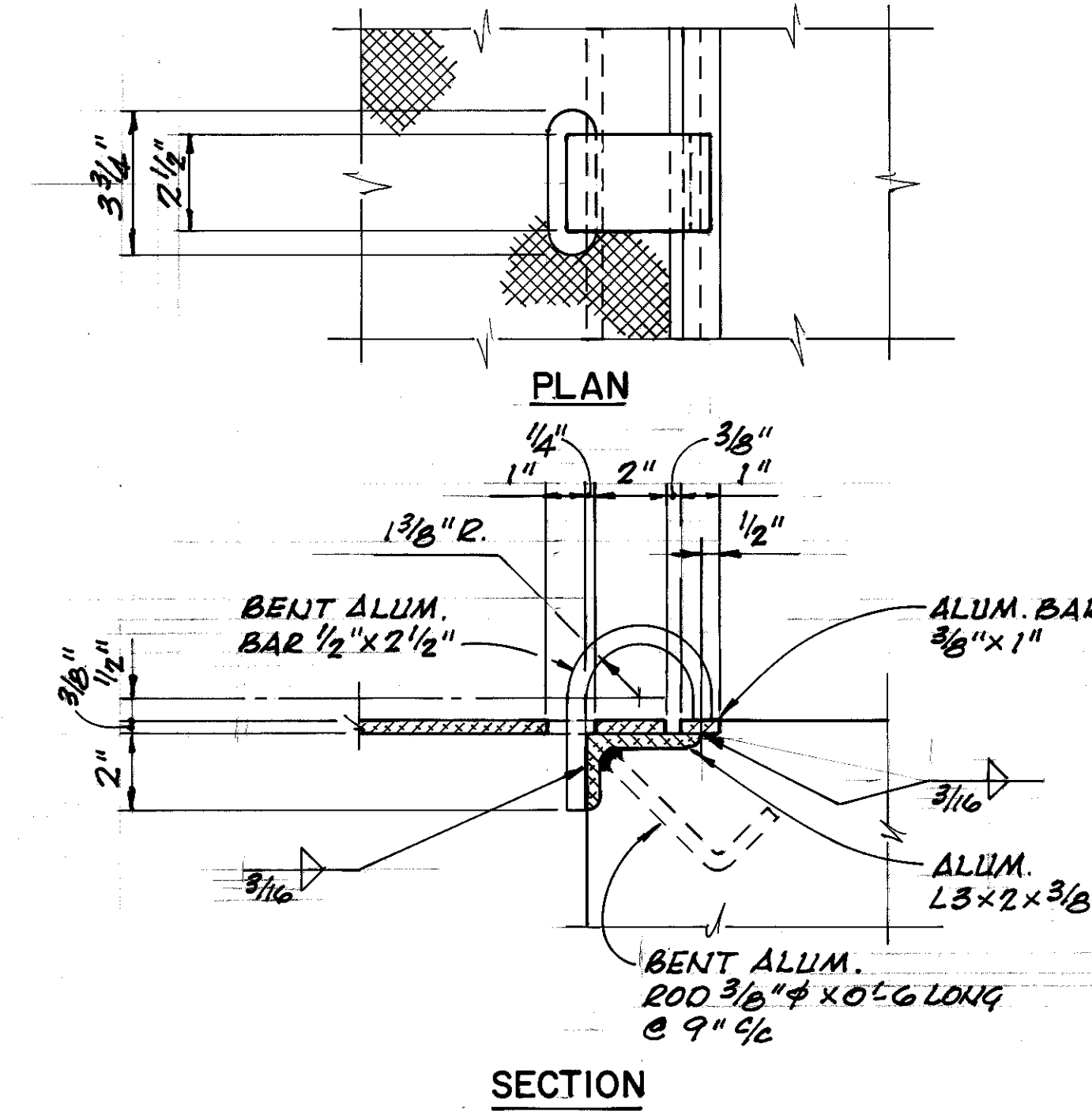
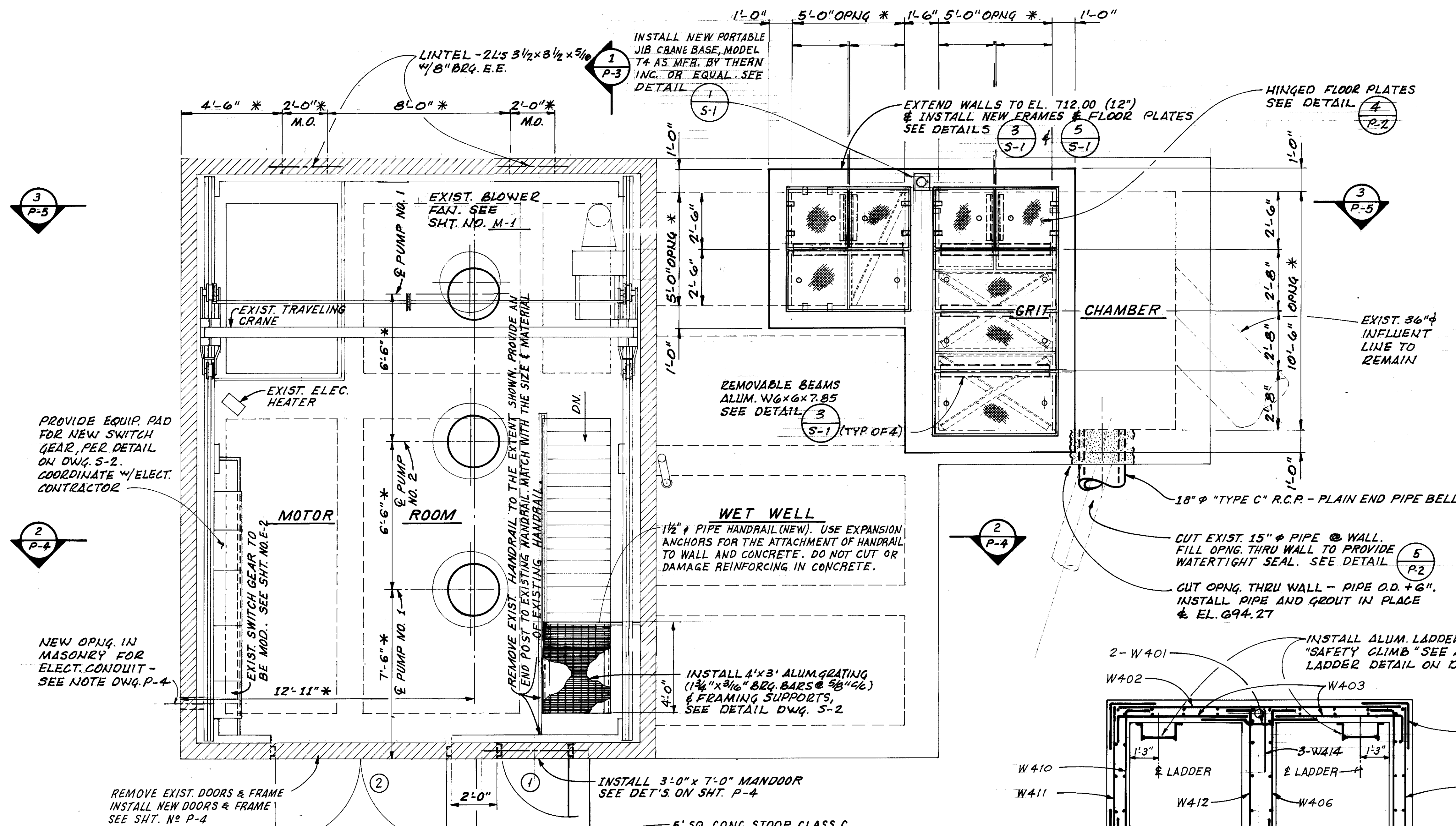
**NOTE:**  
\* DIMENSIONS DEPEND ON EQUIPMENT SELECTED AND EXISTING DIMENSIONS OF OPNGS. & PIPING ETC.

**PLAN VIEW**  
**PUMP ROOM - WET WELL - GRIT CHAMBER**

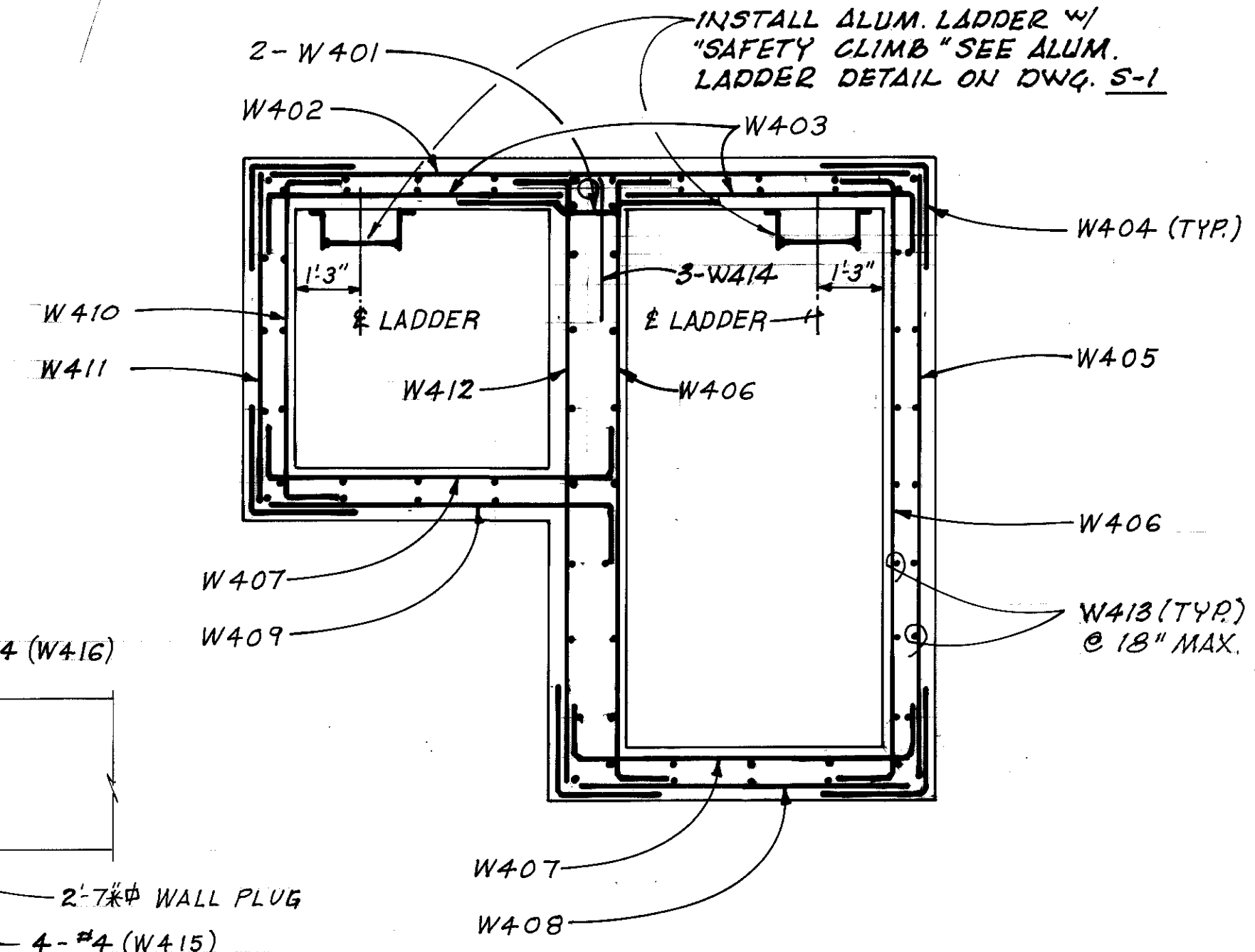
SCALE: 3/8" = 1'-0"  
12" 0 2' 4' 6'



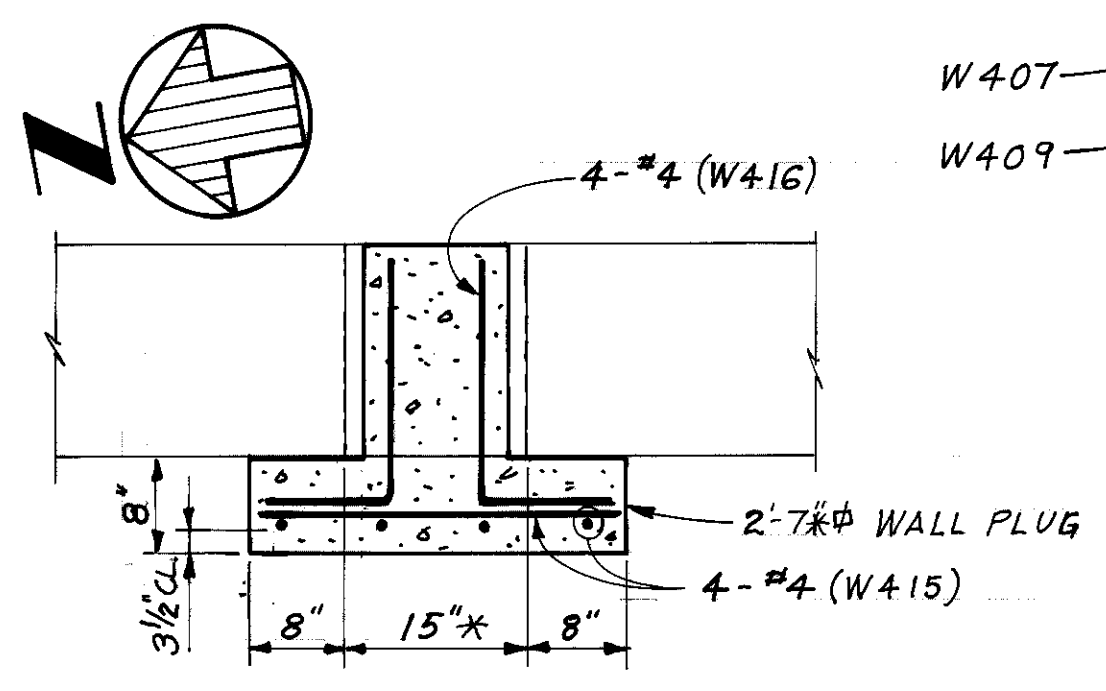
STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
PUMP STATION REHABILITATION EXISTING PUMP STATION ST-2 PLAN P-1						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.G.B.	E.G.B.	E.P.	E.P.	J.M.	8-96	



**FRAME & HINGE DETAIL**  
SCALE: NONE



**PLAN - ELEV. 711.50**  
SCALE: 3/8\"/>

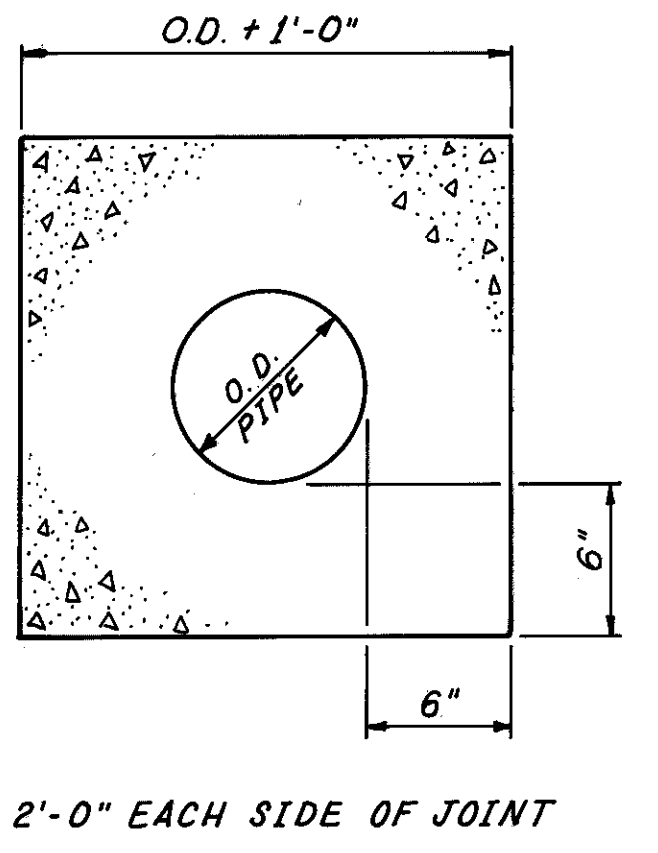
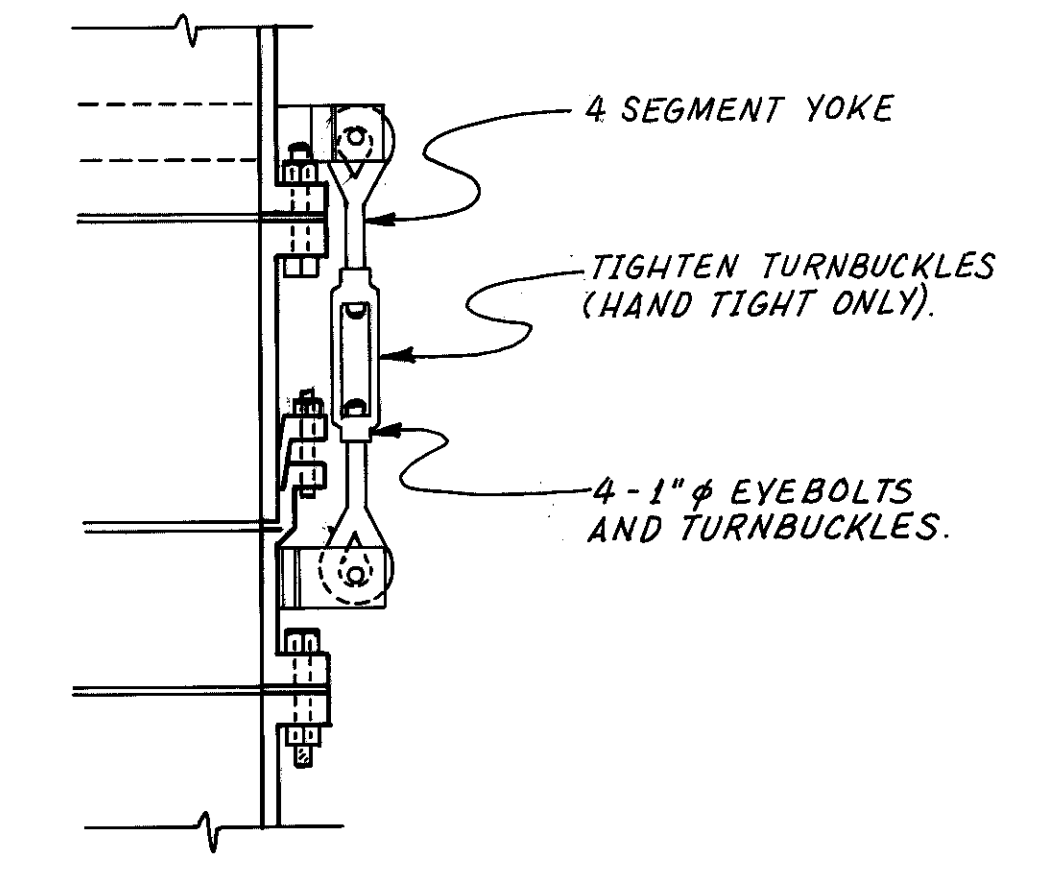
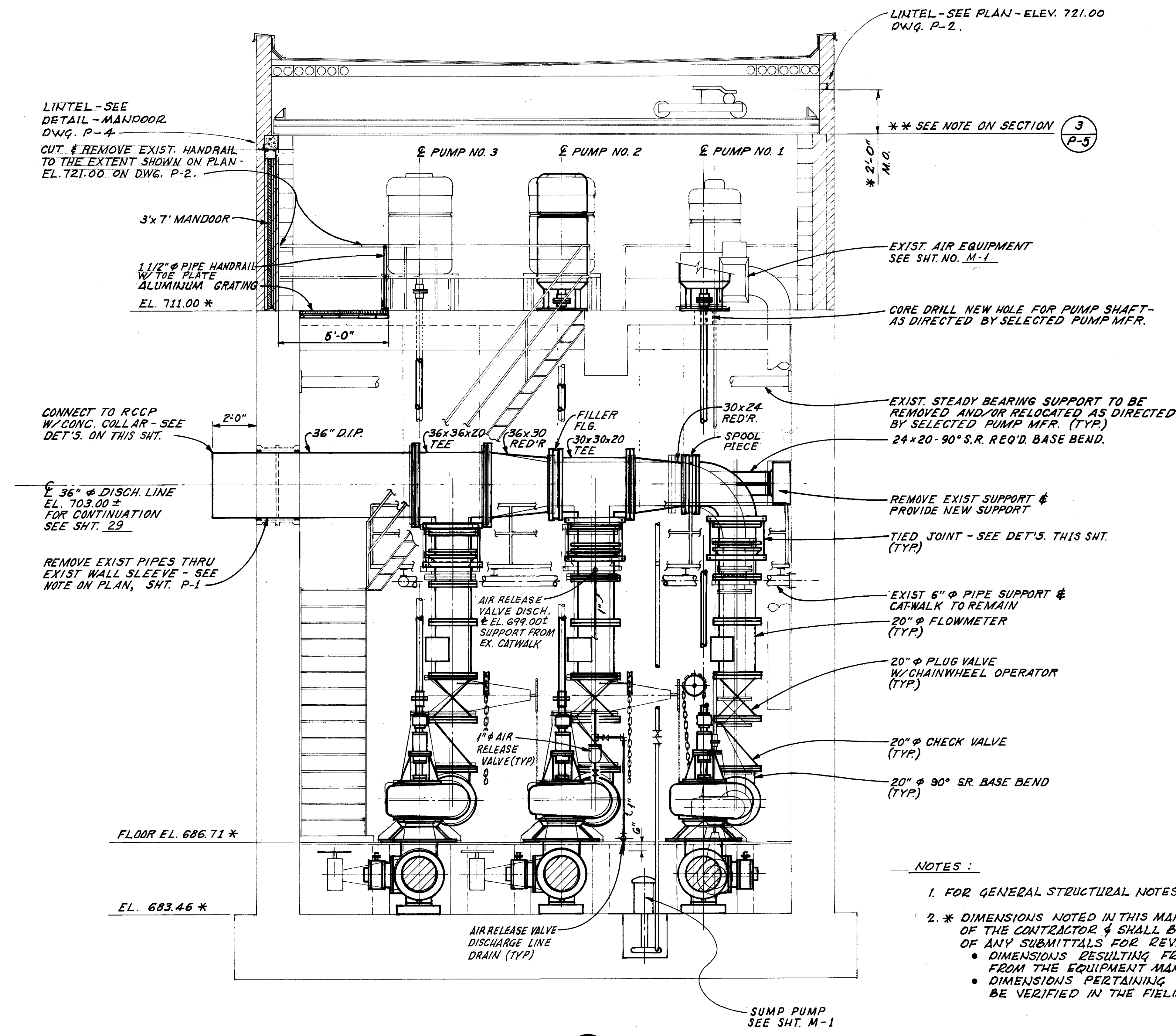


**DETAIL**  
SCALE: NONE

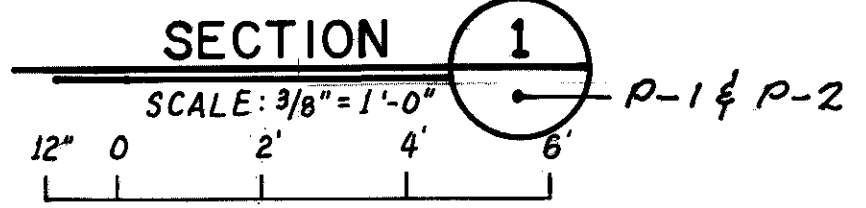
- NOTES:**
- FOR GENERAL STRUCTURAL NOTES & DETAILS SEE DWG. S-2
  - \* DIMENSIONS NOTED IN THIS MANNER ARE THE RESPONSIBILITY OF THE CONTRACTOR & SHALL BE OBTAINED PRIOR TO SUBMISSION OF ANY SUBMITTALS FOR REVIEW .....
    - DIMENSIONS RESULTING FROM EQUIPMENT SHALL BE OBTAINED FROM THE EQUIPMENT MANUFACTURER'S APPROVED DRAWINGS.
    - DIMENSIONS PERTAINING TO EXISTING CONSTRUCTION SHALL BE VERIFIED IN THE FIELD.
  - ALUM. GRATING INDICATED BY OR SPAN
  - ALUM. TREAD PLATE 3/8" INDICATED BY
  - REMOVE ABANDONED ELECTRICAL CONDUITS TO 1/2" BELOW FLOOR LEVEL. PLUG HOLES W/ NON SHRINK GROUT. COORDINATE W/ ELECT. CONTRACTOR. DO NOT DAMAGE FLOOR SLAB.

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>PUMP STATION REHABILITATION</b> <b>EXISTING PUMP STATION ST-2</b> <b>PLAN</b> <b>P-2</b>						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.G.B.	EGB		EGB	JMD	6/96	





- NOTES:
- FOR GENERAL STRUCTURAL NOTES & DETAILS SEE DWG. S-2
  - \* DIMENSIONS NOTED IN THIS MANNER ARE THE RESPONSIBILITY OF THE CONTRACTOR & SHALL BE OBTAINED PRIOR TO SUBMISSION OF ANY SUBMITTALS FOR REVIEW.....
    - DIMENSIONS RESULTING FROM EQUIPMENT SHALL BE OBTAINED FROM THE EQUIPMENT MANUFACTURER'S APPROVED DRAWINGS.
    - DIMENSIONS PERTAINING TO EXISTING CONSTRUCTION SHALL BE VERIFIED IN THE FIELD.

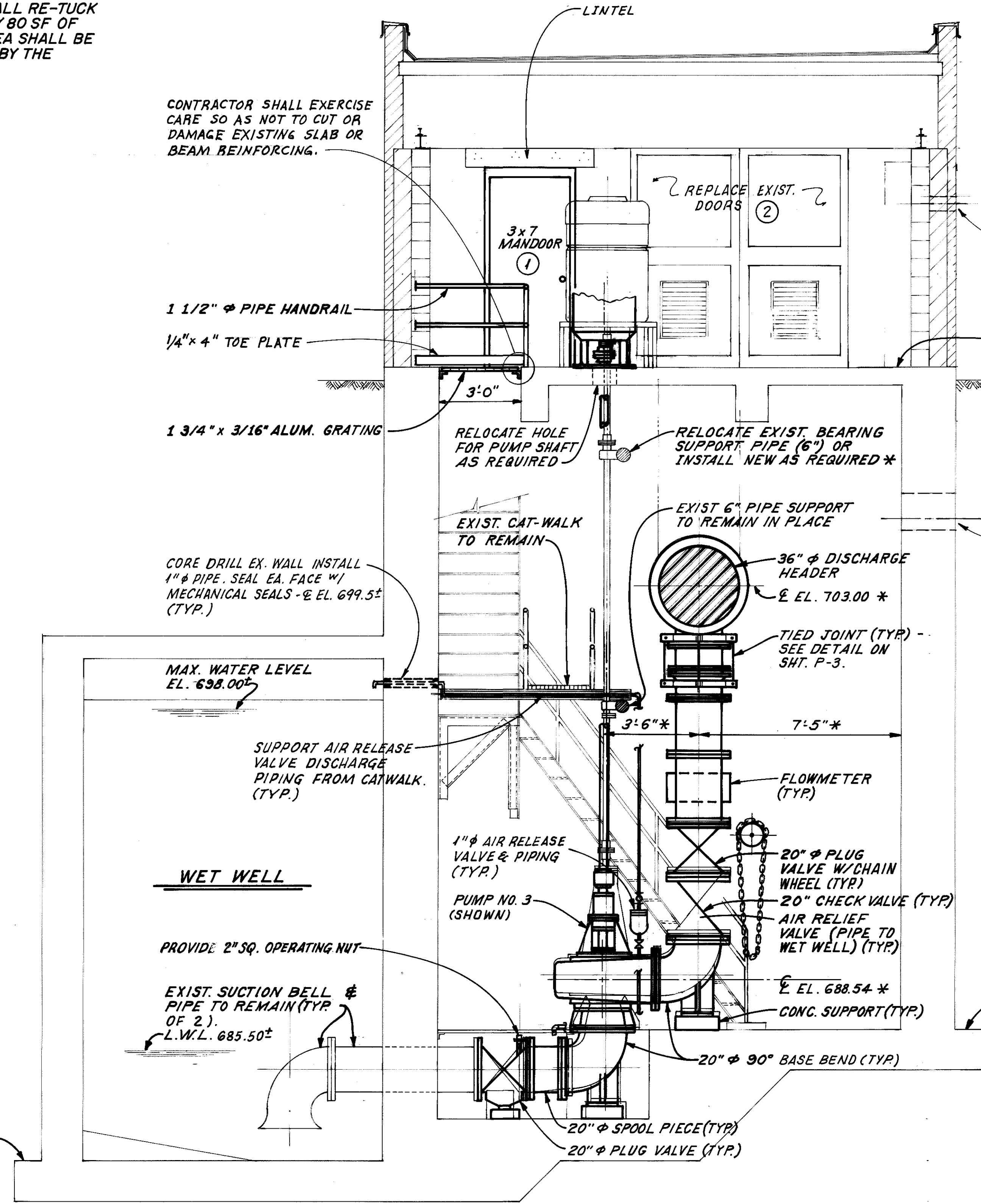


16 / 27						
STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
PUMP STATION REHABILITATION EXISTING PUMP STATION ST-2 SECTIONS & DETAILS P-3						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.G.B.	E.G.B.		E.G.B.	J.R.W.	4-96	

**GENERAL NOTE**

CONTRACTOR SHALL RE-TUCK APPROXIMATELY 80 SF OF BRICK FACE. AREA SHALL BE AS DETERMINED BY THE ENGINEER.

CONTRACTOR SHALL EXERCISE CARE SO AS NOT TO CUT OR DAMAGE EXISTING SLAB OR BEAM REINFORCING.



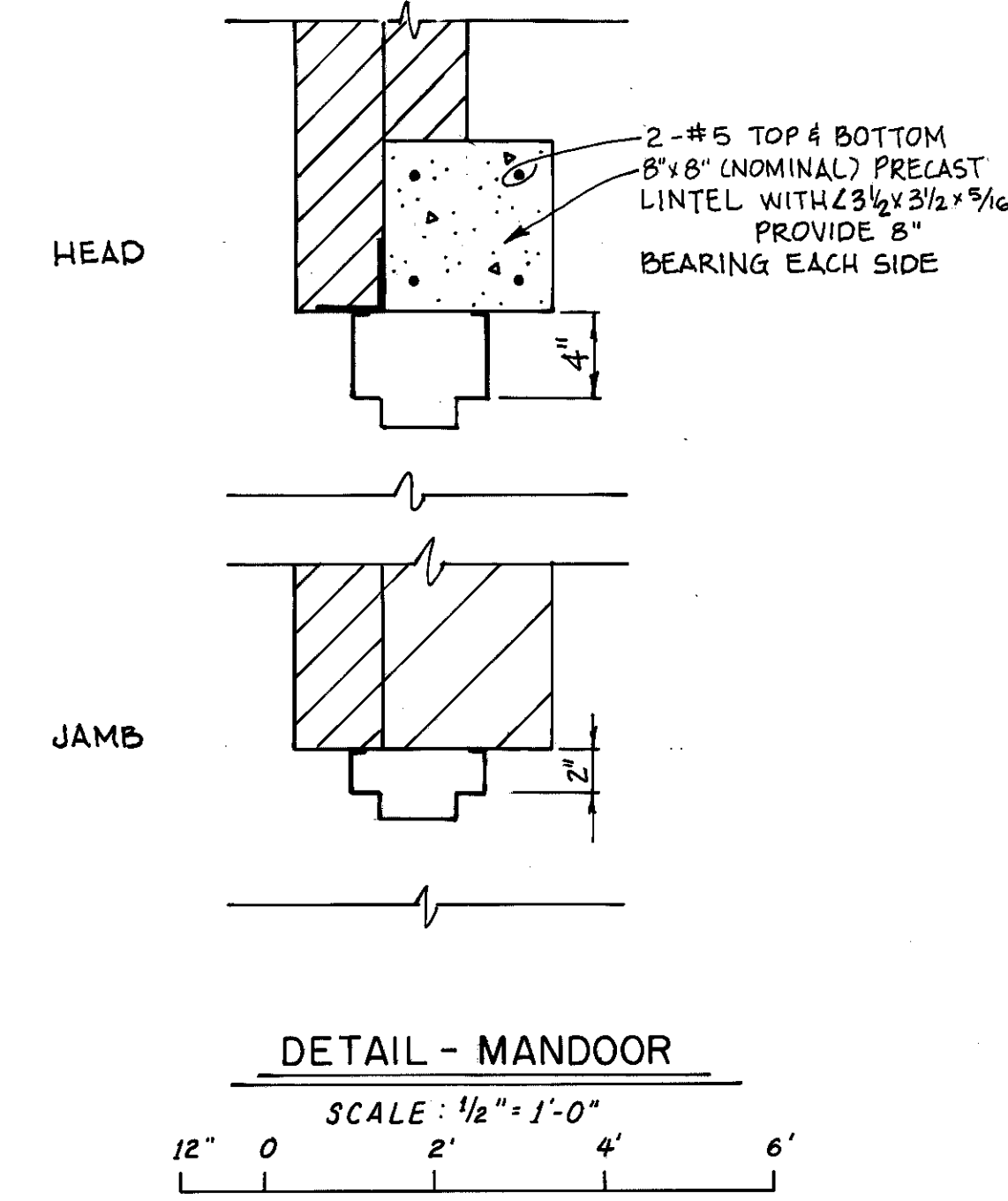
CORE DRILL 6"Ø HOLE IN MASONRY FOR 5"Ø ELECT. CONDUIT. FILL OPENING AROUND CONDUIT W/ NON SHRINK GROUT. COORDINATE LOCATION W/ ELECT. CONTRACTOR. DO NOT DAMAGE OR DRILL THROUGH PILASTER. EL. 711.00\*

REMOVE EXIST. ELECT. SERVICE CONDUIT IN WALL @ EL. 705.5 ± & FILL HOLE W/ NON SHRINK GROUT. COORDINATE W/ ELECT. CONTRACTOR.

DOOR NO. 1 TO BE 3'-0" x 7'-0" x 1 3/4" WITH 1 1/2 PR. HINGES

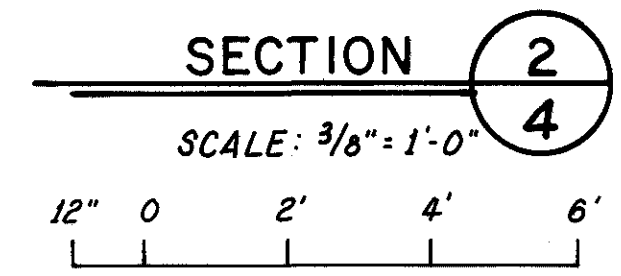
DOOR NO. 2 TO BE PR. 4'-0"± x 8'-0"± x 1 3/4" WITH 2 PR. HINGES PER LEAF. FIELD MEASURE SIZE OF EXISTING MASONRY OPENING. MODIFY DOOR & FRAME TO FIT.

DOOR TO BE HOLLOW METAL STEEL DOOR, TYPE II HEAVY DUTY, 18 GA., FULL FLUSH CONSTRUCTION. TOP & BOTTOM OF DOOR TO HAVE FLUSH END CLOSURE TREATMENT. THERE IS TO BE INSULATION FOR A MAXIMUM THERMAL TRANSMISSION OF U=0.35. FINISH TO BE PAINTED SMOOTH. OBTAIN TEMPLATES FOR DRILLING DOORS & FRAMES. PROVIDE KNOCK-DOWN, HOLLOW METAL STEEL FRAME, 18 GA., 5 3/4" DEEP FINISH TO BE BONDERIZED AND SHOP PRIMED, SMOOTH FINISH AND PAINTED. DOOR HARDWARE TO BE PROVIDED AS LISTED; HINGES TO BE FULL MORTISE, NRP 4 1/2" x 4 1/2", TWO BALL-BEARING TYPE; LOCKSET, HEAVY DUTY MORTISE TYPE, (DOOR NO. 1 AND ACTIVE LEAF DOOR NO. 2), PROVIDE 5 KEYS; KICKPLATE (INSIDE FACE EACH DOOR), 8" HIGH x 2'-10" WIDE (RUSSWIN NO. 116); THRESHOLD, 1/2" x 5" DP (FENESTRAL NO. 2325) WITH STAINLESS STEEL FASTENERS; CLOSER, (RUSSWIN 281 SERIES) WITH HOLD-OPEN (DOOR NO. 1 ONLY); WEATHERSTRIPPING, 1/4" x 3/4" SPONGE NEOPRENE WITH EXTRUDED ALUMINUM RESTRAINING STRIP. TOP & BOTTOM SURFACE MOUNTED FLUSH BOLTS (INACTIVE LEAF, DOOR NO. 2 ONLY)



**NOTE :**

1. FOR GENERAL STRUCTURAL NOTES & DETAILS SEE DWG. S-2



STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
PUMP STATION REHABILITATION EXISTING PUMP STATION ST-2 SECTIONS & DETAILS P-4						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.G.B.	E.G.B.		E.G.B.	J.M.L.	1-96	



**ROOFING MATERIALS:**  
 ROOFING TO BE COAL TAR PITCH ROOFING CONSISTING OF MOPPINGS OF HOT COAL TAR ALTERNATED WITH ONE PLY OF 43 LB. ASPHALT SATURATED AND COATED BASE SHEET; AND THREE PLYS OF 15 LB. TARRED FELTS WITH GRAVEL OR SLAG SURFACE. PROVIDE ALL FLASHING & OTHER MATERIALS AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF TO BE 20 YEAR BONDED TYPE (WITHOUT BOND). INSTALLATION MUST BE BY A QUALIFIED APPLICATOR. FOLLOWING MANUFACTURER'S PRINTED INSTRUCTIONS. NO ADDITIONAL COSTS ARE TO BE INCURRED WITH THIS WORK IN CONJUNCTION WITH RISING THE ROOF.

RAISE THE EXISTING TRAVELLING CRANE BEAM BY 6". PROVIDE A MINIMUM CLEARANCE OF 1" BETWEEN ANY PART OF THE CRANE SYSTEM & UNDERSIDE OF THE ROOF. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL NECESSARY MODIFICATIONS & FOR SAFE & PROPER OPERATION OF THE CRANE SYSTEM. MODIFICATIONS SHALL BE MADE AS PER RECOMMENDATION OF A REPUTABLE CRANE MANUFACTURER.

REPLACE EXIST. HOIST w/ NEW 3 TON ELECTRIC HOIST.

EXTEND WALLS TO EL. 712.00 (12") & INSTALL NEW FRAMES & FLOOR PLATES, SEE DETAILS

CITY OF COLUMBUS STANDARD HEAVY DUTY VALVE BOX.

RISER PIPE FOR GATE STEM EXT.

CORE DRILL HOLE FOR GATE STEM W/BUSHING AS REQ'D.

FILL IN EXIST. PIPE OPENING

54"x36" SLUICE GATE INSTALL FLG. FRAME, NRS SLUICE GATE. ANCHOR TO WALL W/EXP. ANCHORS. USE NEOPRENE GASKET BETWEEN WALL & FRAME. 20 FT. UNSEATING HEAD

21" φ (21x21) SLUICE GATE w/MOUNTING SAME AS 54"x36" GATE.

**GRIT CHAMBER**

REMOVE EXIST. BAR SCREEN & INSTALL NEW BAR SCREEN AS PER DETAIL

**WET WELL**

20" φ WALL PIPE FLG.-FLG.-FLG. & EL. 685.25 ±

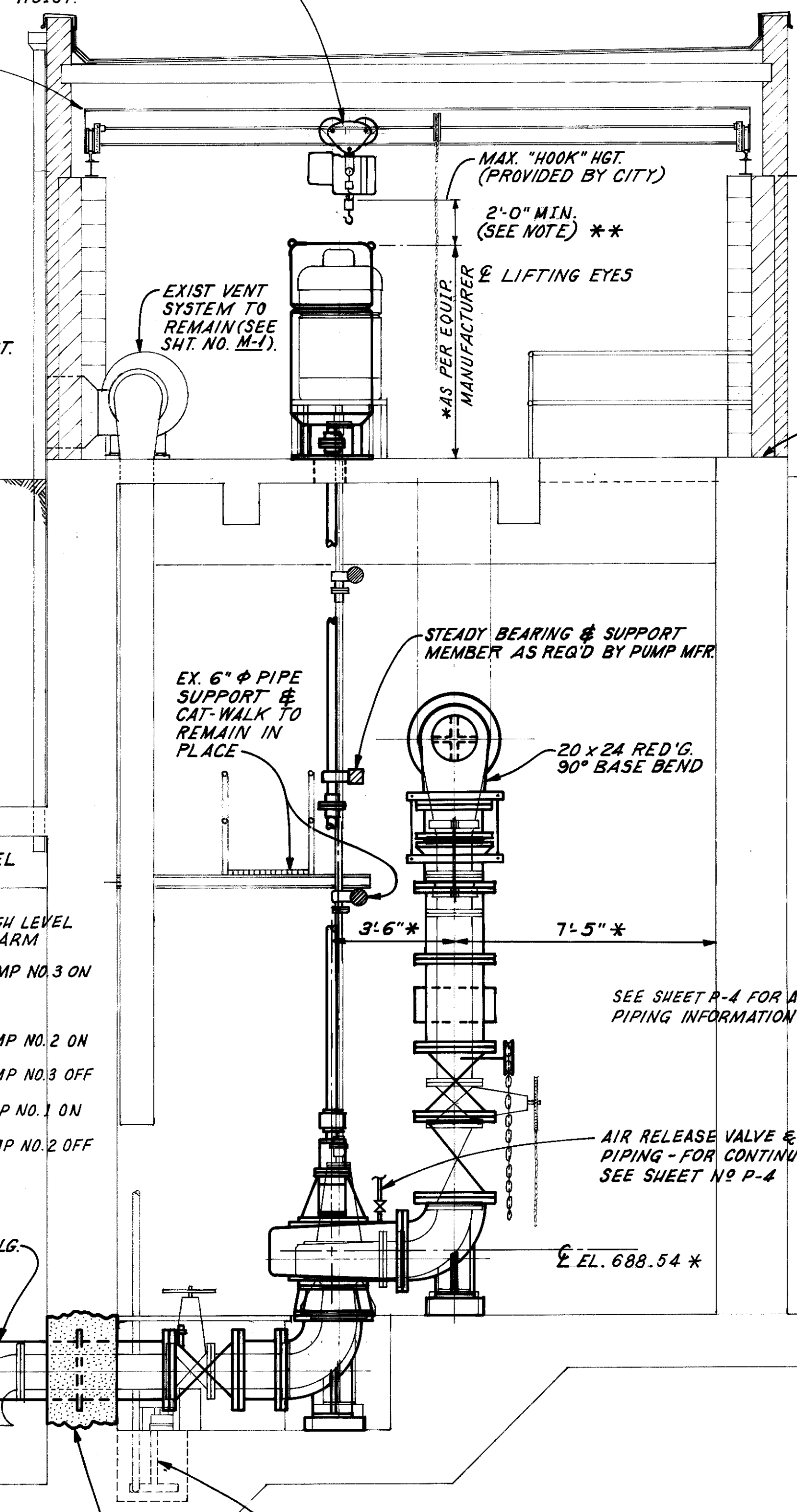
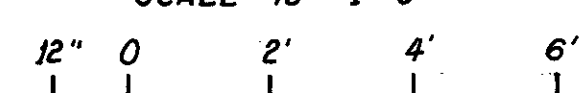
L WL-685.50 (ALL PUMPS OFF)

20"x27 1/2" 30° FLARE PIPE

PROVIDE 3" φ OP'G TO INSTALL NEW WALL PIPE. DO NOT REMOVE ANY EXIST. REINFORCEMENT - SAW CUT & BEND TO CLEAR PIPE. GROUT FILL ALL VOIDS AFTER PIPE INSTALLATION. (PROVIDE LEAK PROOF INSTALLATION)

SECTION 3

SCALE: 3/8" = 1'-0"



**\*\* NOTE**  
**HOIST & MOTOR CLEARANCE:**  
 THE MINIMUM CLEAR DISTANCE BETWEEN THE HOIST LIFTING HOOK & THE TOP OF THE MOTORS SHALL BE 2'-0". IF THIS CRITERIA IS NOT POSSIBLE WITH THE APPROVED SELECTED MOTORS, THE CONTRACTOR SHALL SUBMIT ENGINEERING DRAWINGS TO THE OWNER, SHOWING PROCEDURES IN RAISING THE BUILDING HEIGHT TO OBTAIN THE NECESSARY HOIST-TO-MOTOR CLEARANCE. ALL WORK TO INCLUDE: BUILDING STRUCTURE, HOISTING EQUIPMENT, AND ALL OTHER BUILDING APPURTENANCES INVOLVED WITH THE BUILDING MODIFICATIONS. NO ADDITIONAL COSTS ARE TO BE INCURRED FOR THIS MODIFICATION. FOR ROOFING MATERIALS SEE NOTE LEFT SIDE THIS SHT.

REPAIR CRACK BY USING PRESSURE INJECTION GROUTING

PARTIAL SOUTH ELEVATION PUMP ROOM

REPAIR CRACKS BY USING PRESSURE INJECTION GROUTING

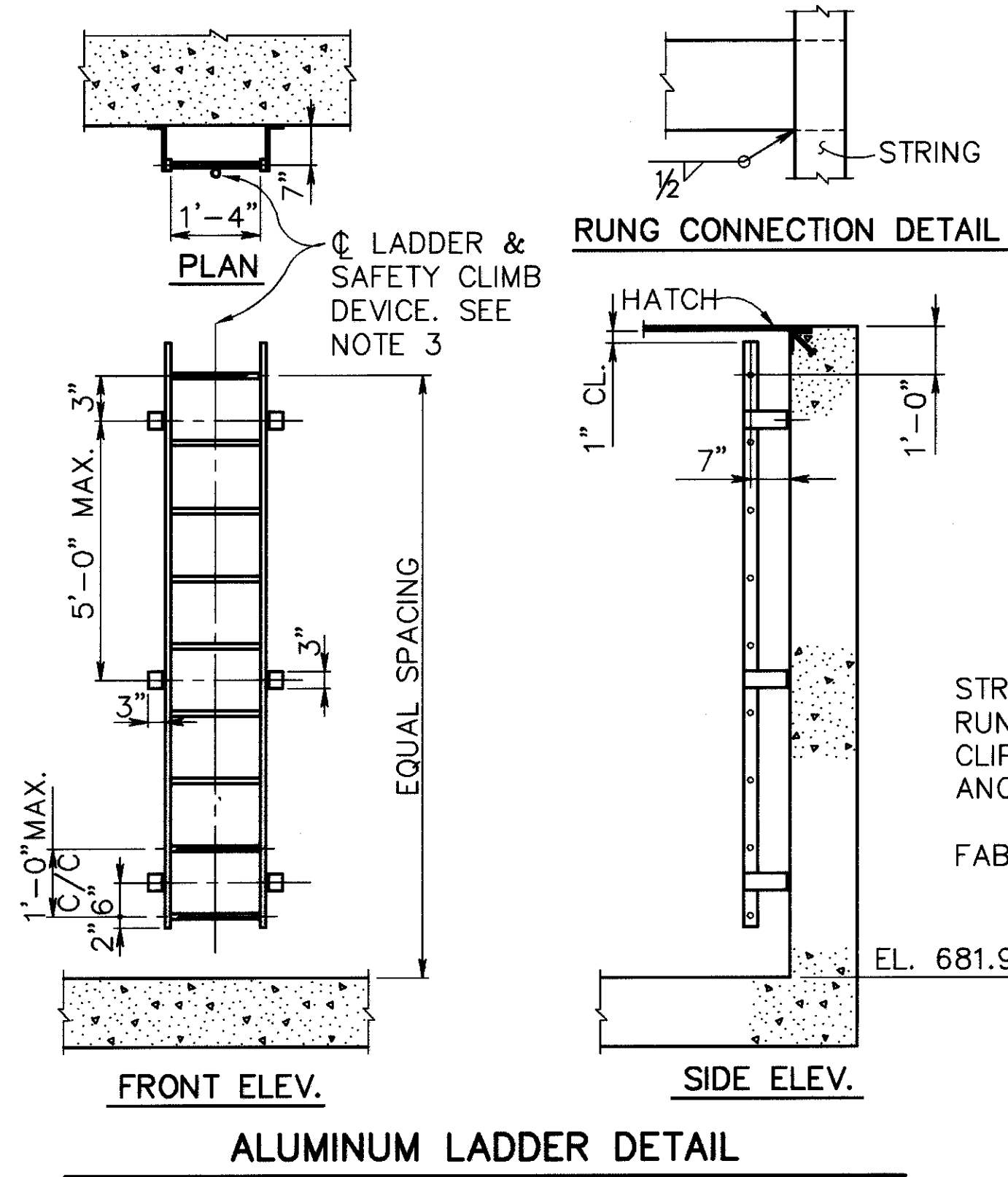
PARTIAL EAST ELEVATION PUMP ROOM

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STILSON & ASSOCIATES, INC.  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

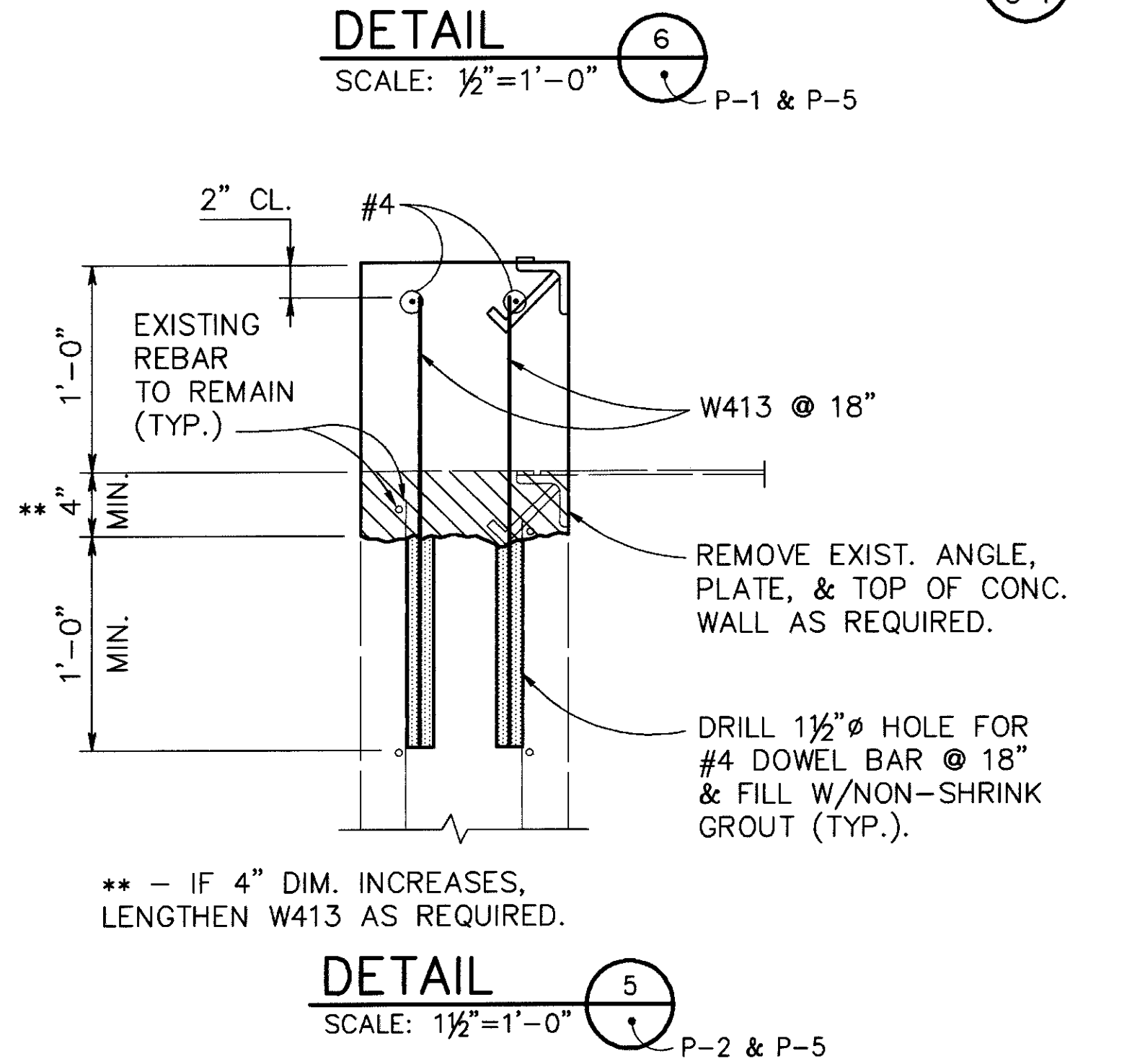
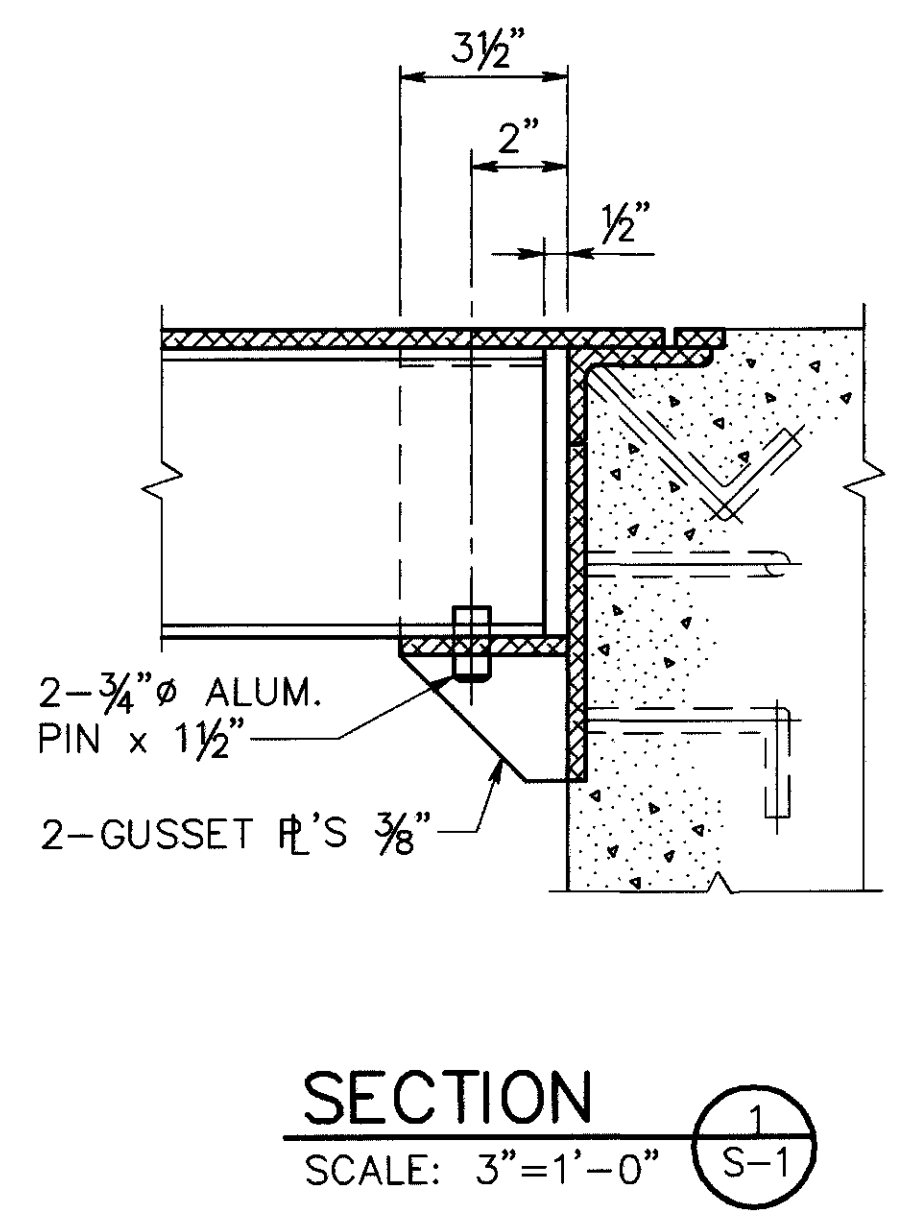
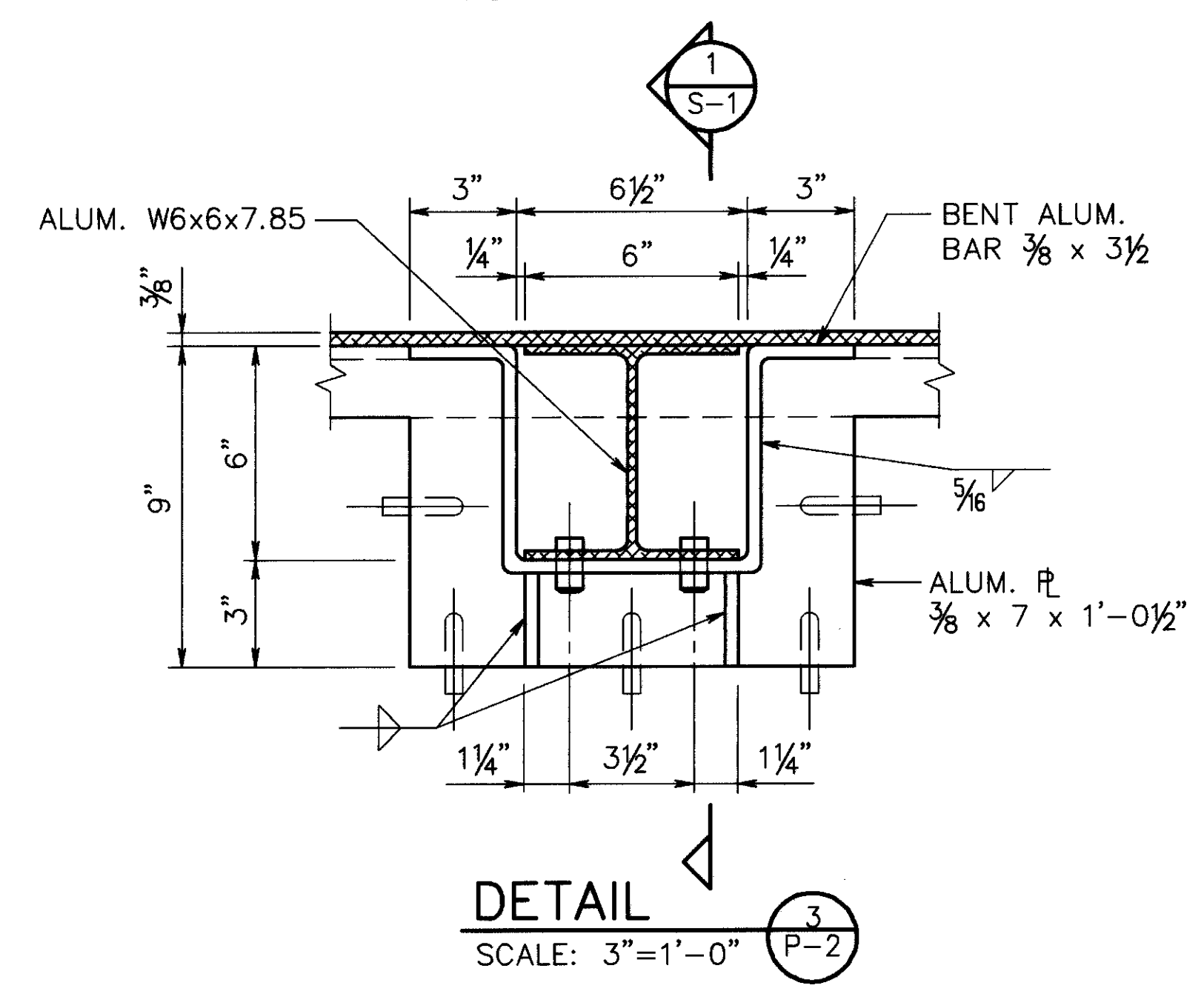
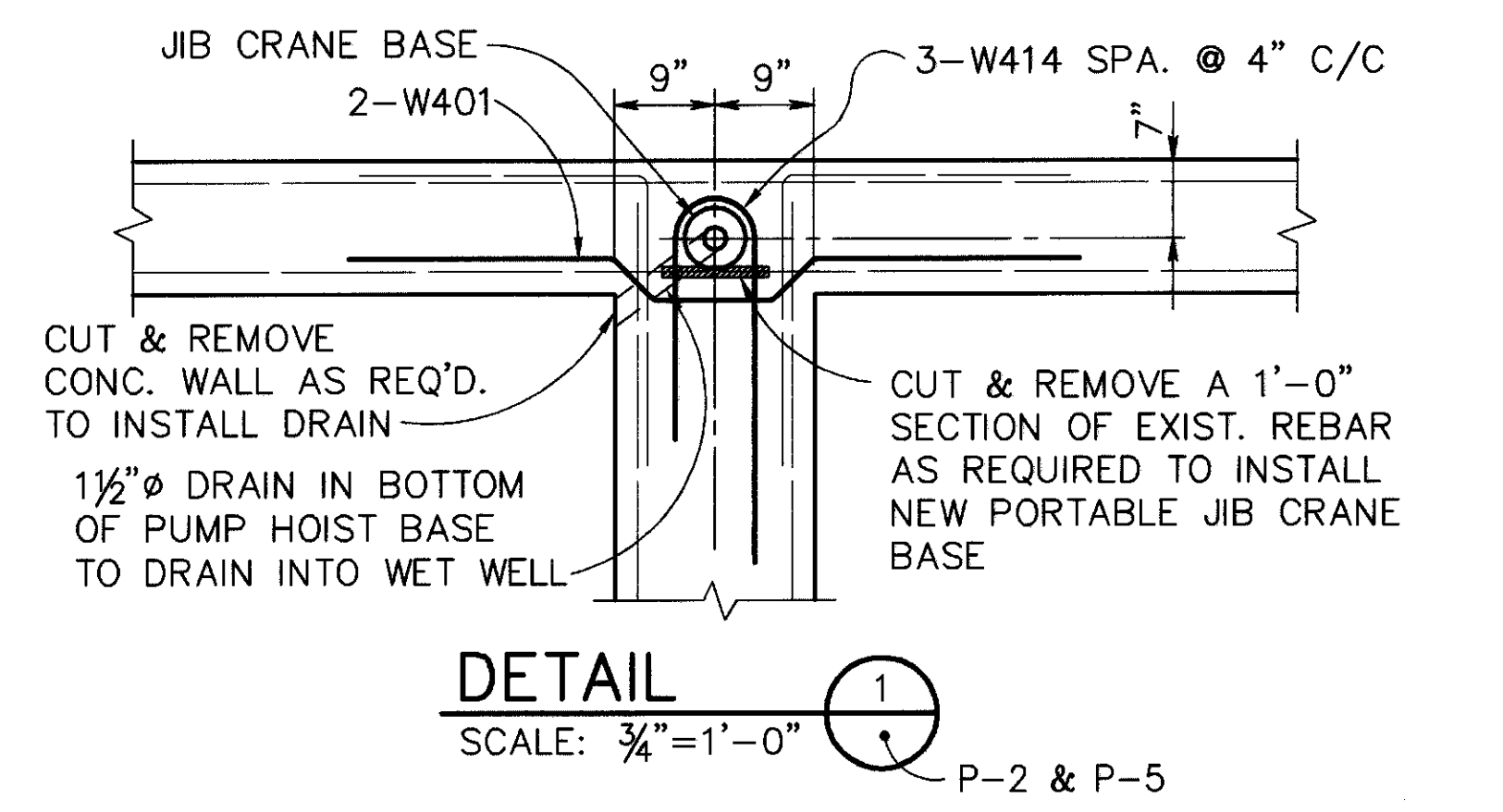
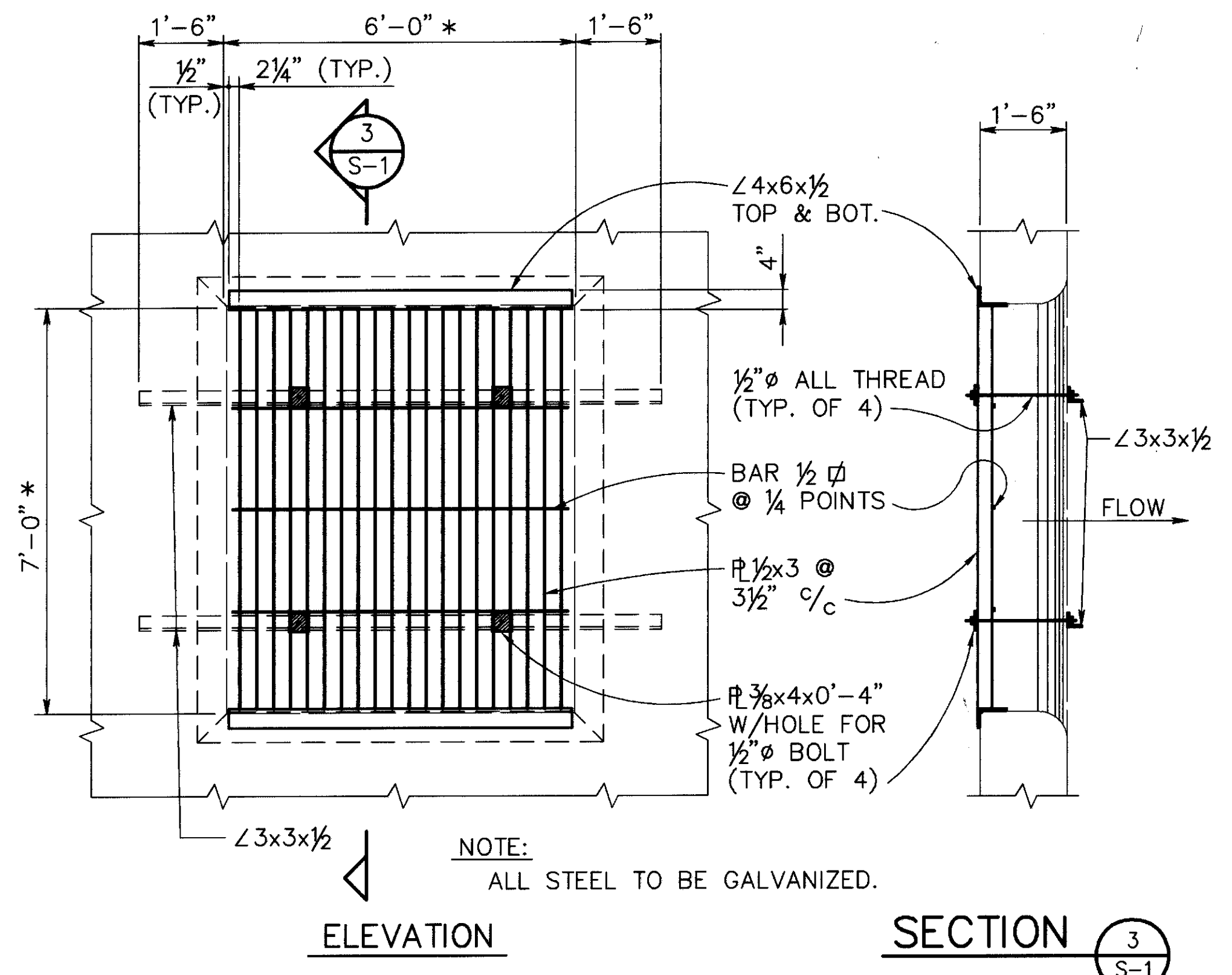
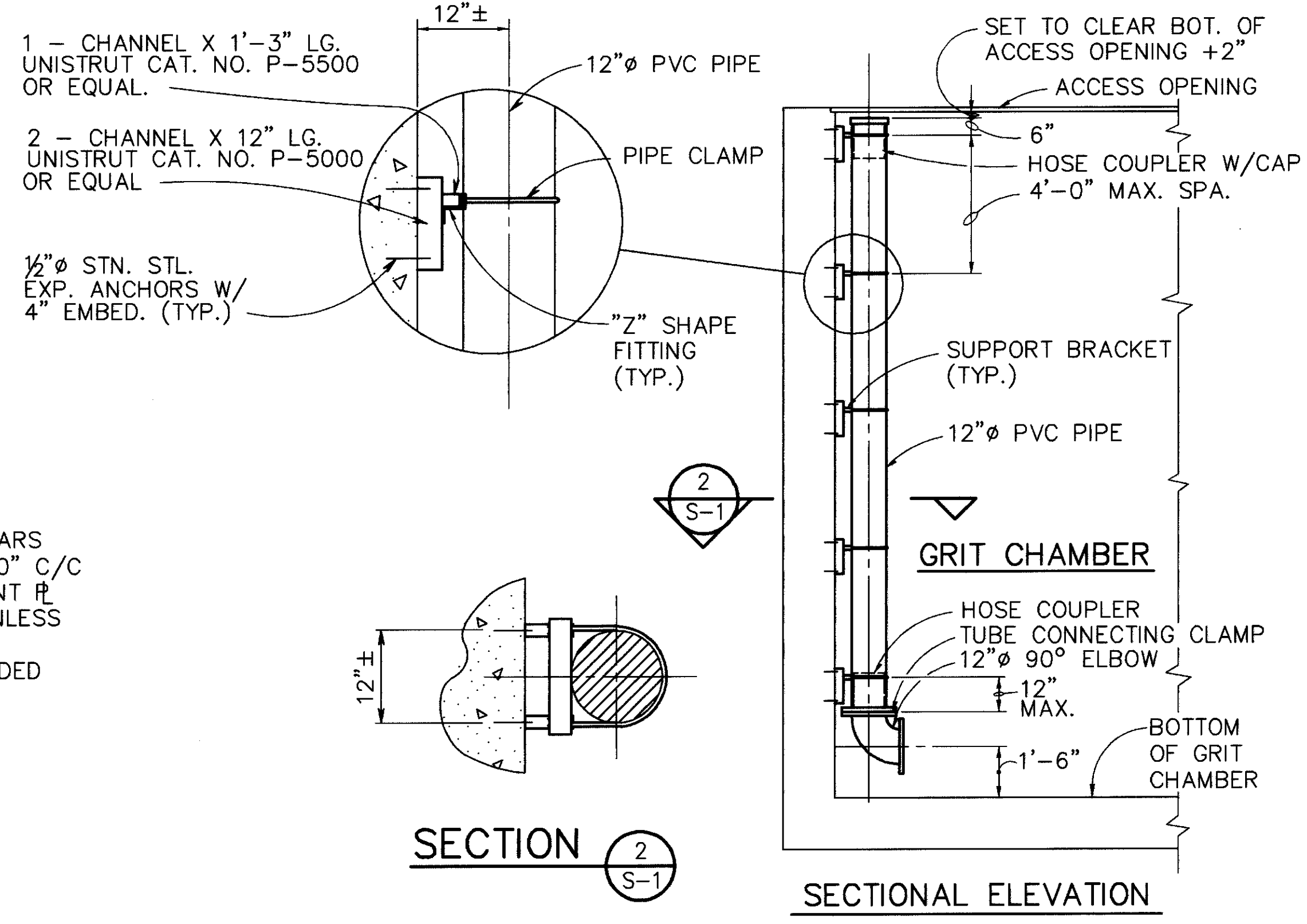
**PUMP STATION REHABILITATION**  
**EXISTING PUMP STATION ST 2**  
**SECTIONS & DETAILS**  
**P-5**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
E.G.B.	E.G.B.		E.G.B.	J.R.D.	4-96	



**CONSTRUCTION**

STRINGS: 2 1/2" x 1/2" BARS  
 RUNGS: 1" @ 1'-0" C/C  
 CLIP ANGLES: 1/2" x 3" BENT PL  
 ANCHOR BOLTS: 1/2" STAINLESS  
 FABRICATION: STEEL SHOP WELDED



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
GRIT CHAMBER										
W401	2	5-7	7	3	2-0	0-3	1-0	0-3		
W402	1	13-0	9	ST						
W403	2	6-5	9	1	0-8	5-10				
W404	5	3-11	13	1	2-0	2-0				
W405	1	12-0	8	ST						
W406	2	13-4	18	2	0-8	12-2				
W407	2	8-4	11	2	0-8	7-2				
W408	1	7-0	5	ST						
W409	1	7-8	5	1	0-8	7-1				
W410	1	7-10	5	2	0-8	6-8				
W411	1	6-6	4	ST						
W412	1	12-8	8	1	0-8	12-1				
W413	72	2-2	104	ST						
W414	3	6-3	13	4	0-6	3-0	3-0	0-3		
W415	8	2-1	11	ST						
W416	4	1-8	4	1	0-8	1-1				
TOTAL = 234 LBS.										

**STEEL LIST NOTES**

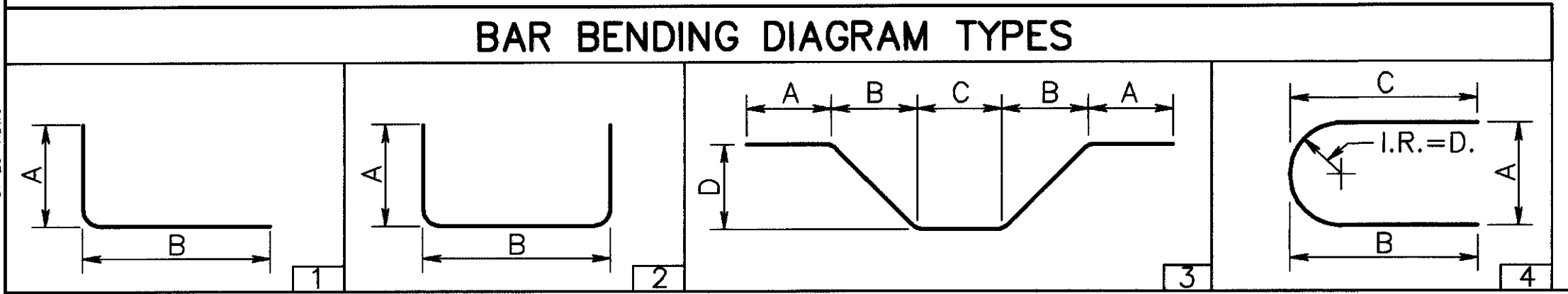
**BAR SIZE DESIGNATION**

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, W414 IS A NO.4 SIZE BAR.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05.

SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH SPLICE LENGTHS SHOWN ON DWG. S-2.

- NOTES:**
- FOR GENERAL STRUCTURAL NOTES AND DETAILS SEE DRAWING S-2.
  - \* DIMENSIONS NOTED IN THIS MANNER ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE OBTAINED PRIOR TO SUBMISSION OF ANY SUBMITTALS FOR REVIEW.....
    - DIMENSIONS RESULTING FROM EQUIPMENT SHALL BE OBTAINED FROM THE EQUIPMENT MANUFACTURER'S APPROVED DRAWINGS.
    - DIMENSIONS PERTAINING TO EXISTING CONSTRUCTION SHALL BE VERIFIED IN THE FIELD.
  - THE LADDER SAFETY CLIMB DEVICE(S) SHALL MEET THE REQUIREMENTS OF ANSI A14.3, LATEST EDITION, FOR FIXED LADDERS.



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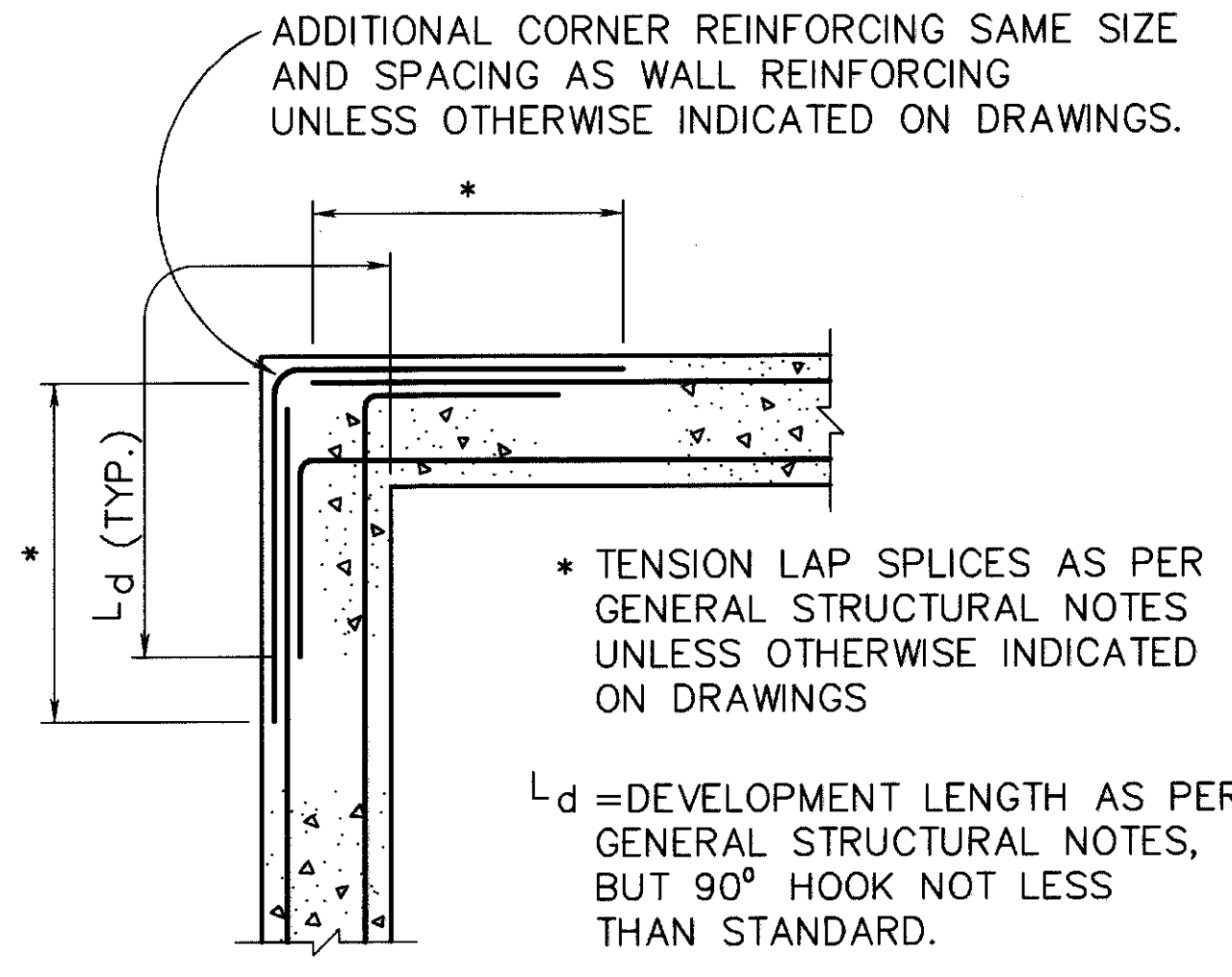
**STILSON & ASSOCIATES, INC.**  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**PUMP STATION REHABILITATION  
 EXISTING PUMP STATION ST-2  
 BAR LIST & DETAILS**

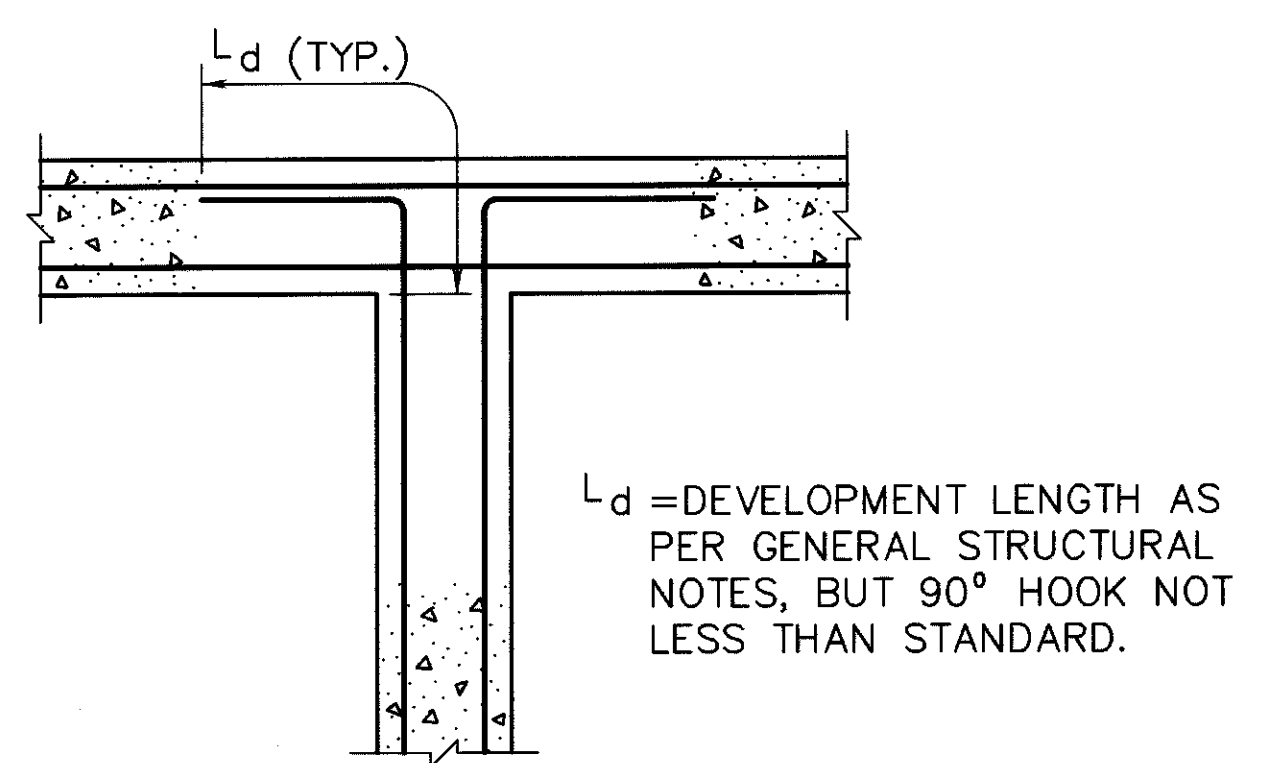
S-1

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
PHB	RTP		TEU	JMC	4-96	

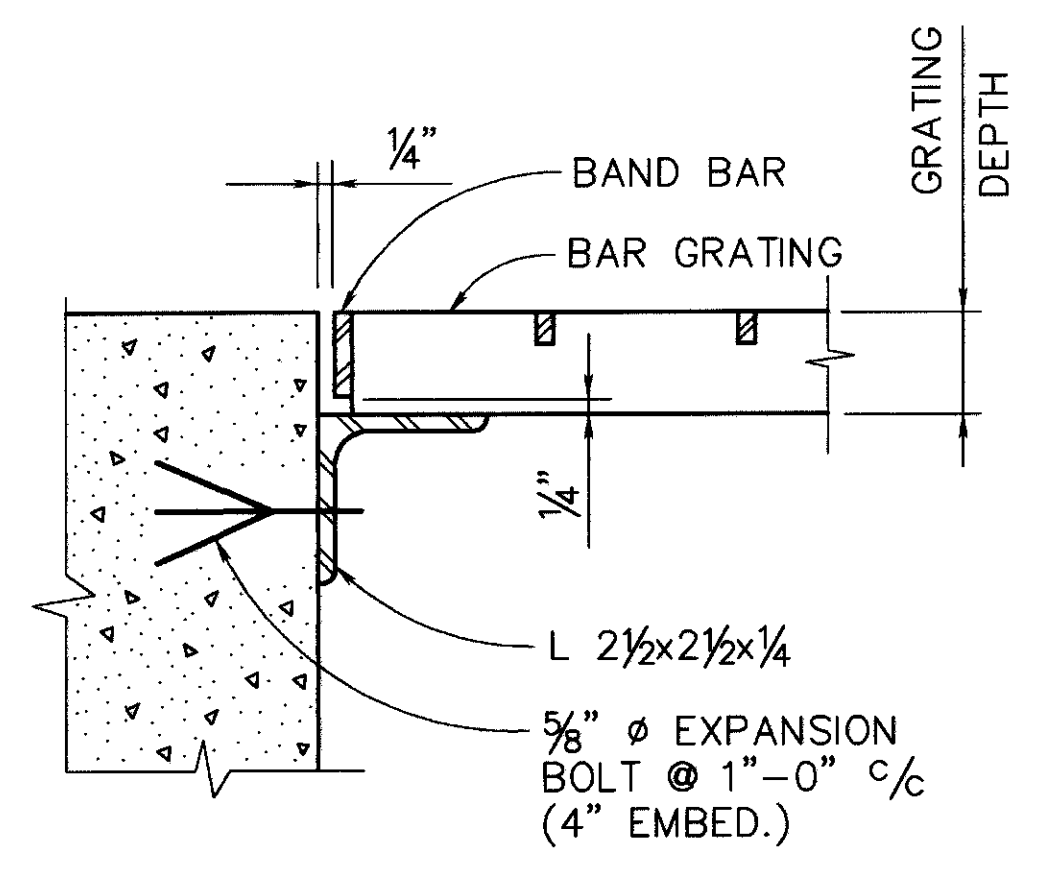




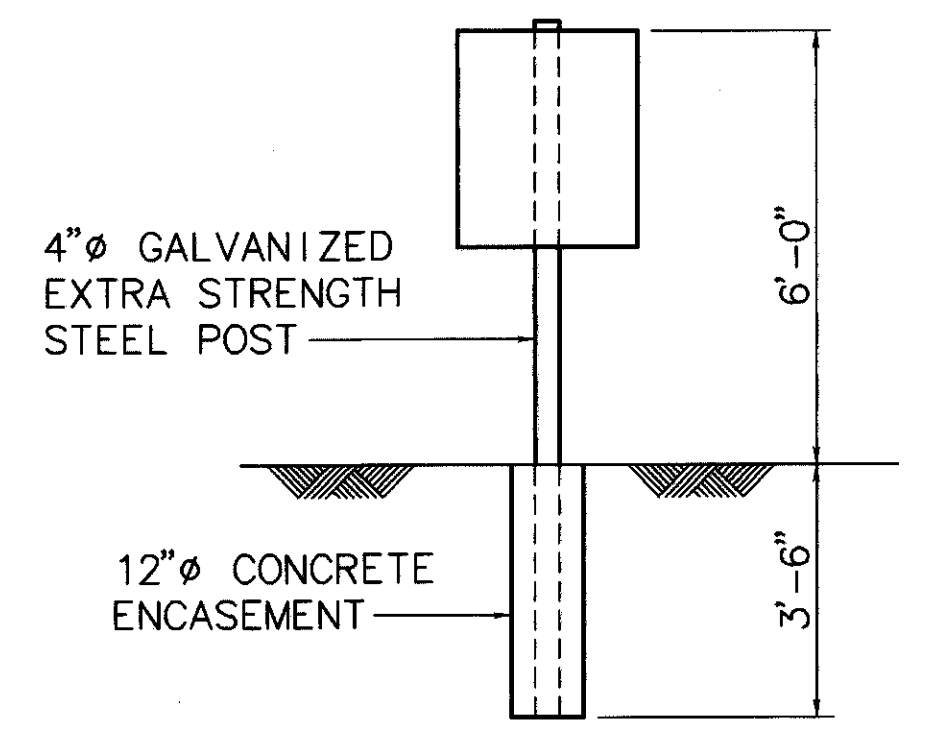
**DOUBLY REINFORCED WALL : L-CORNER**



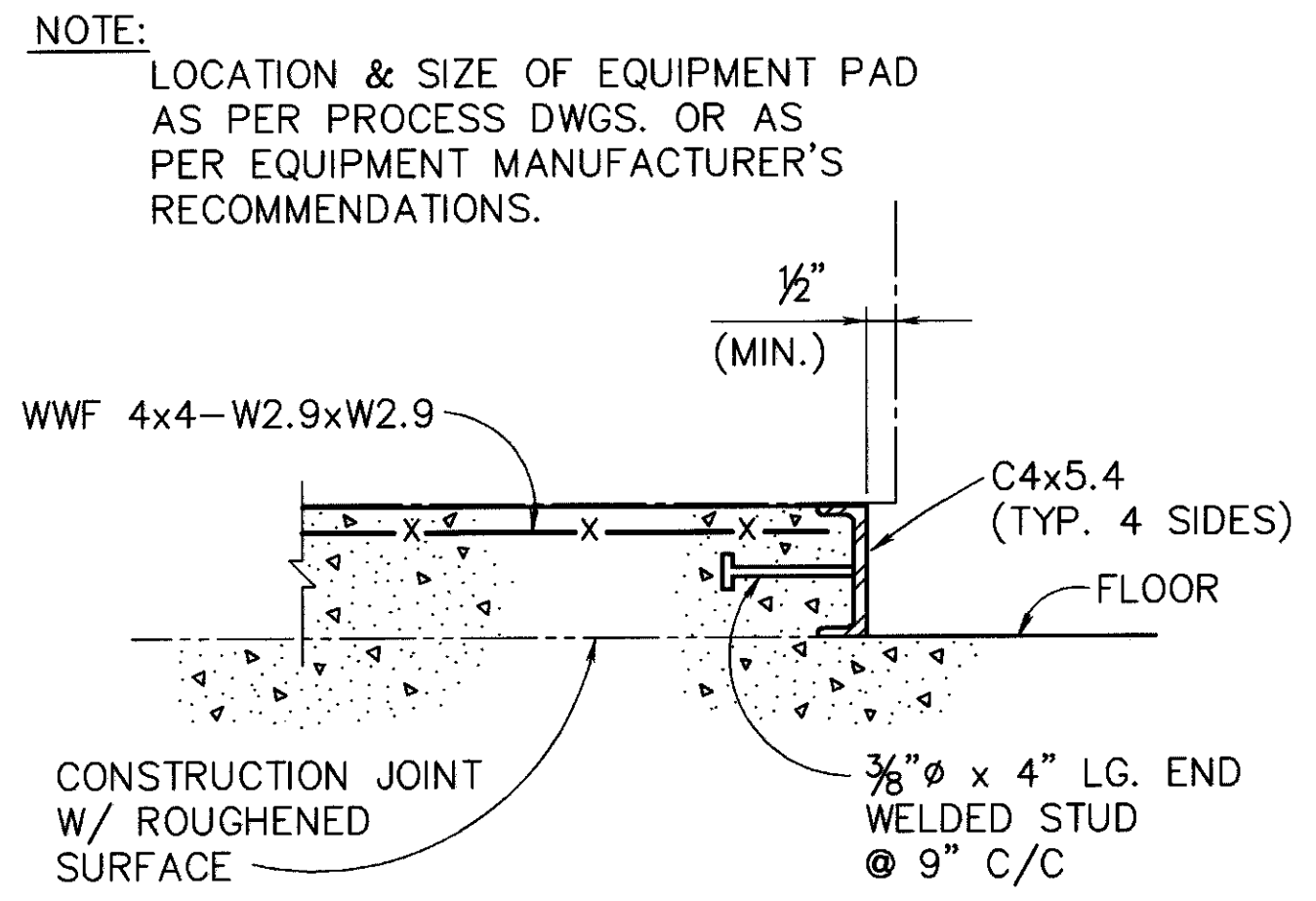
**DOUBLY REINFORCED WALL : T-CORNER**



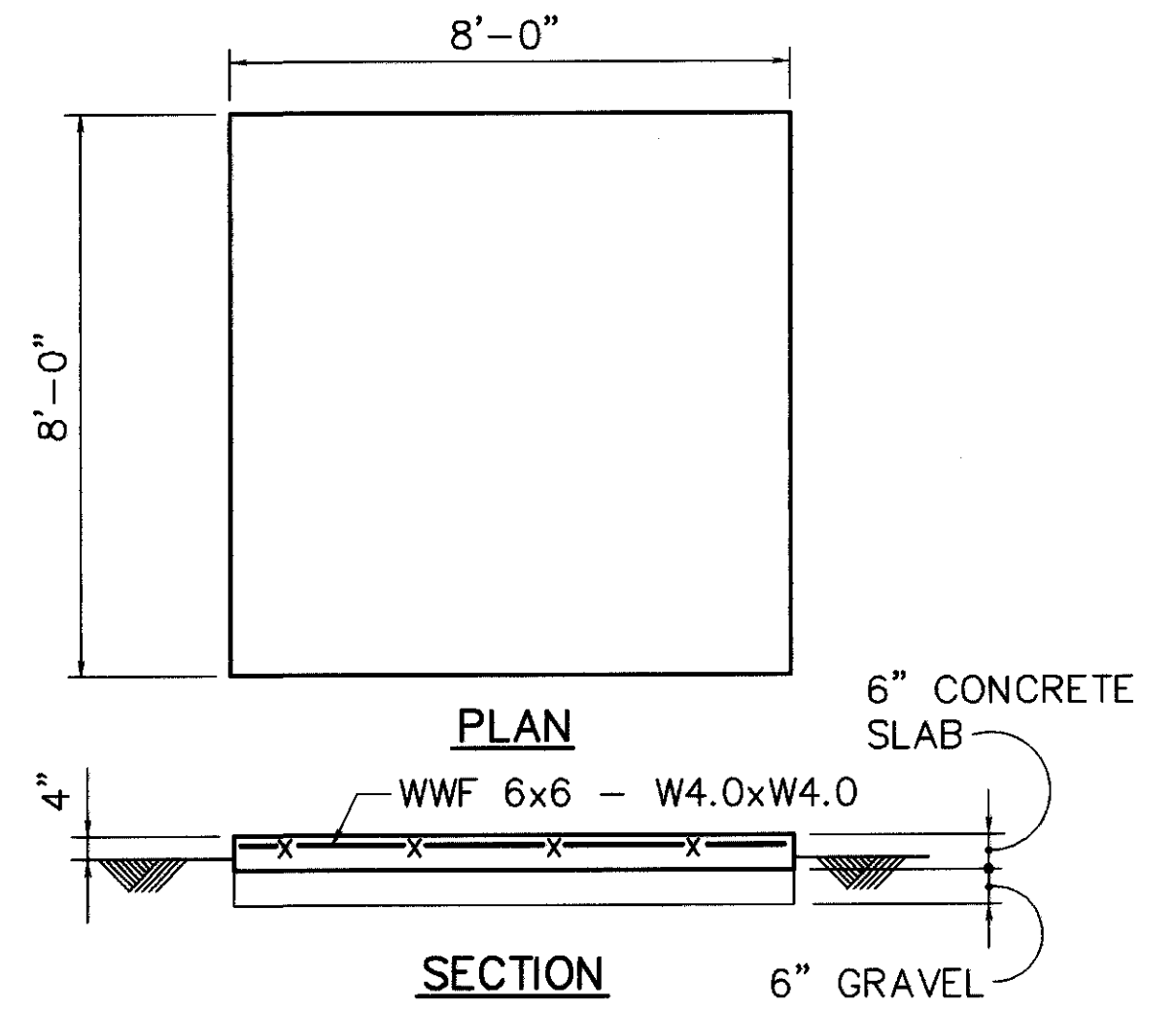
**GRATING DETAILS**



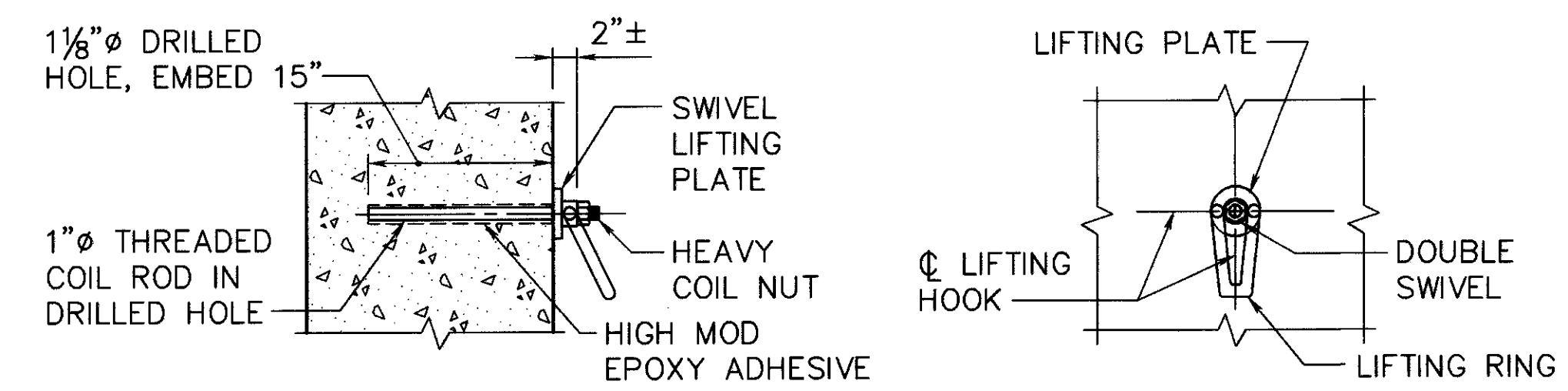
**LIGHTING CONTROL CENTER SUPPORT POST**



**EQUIPMENT PADS (MCC)**



**TRANSFORMER PAD**



**LIFTING HOOK DETAIL**

**GENERAL STRUCTURAL NOTES**  
GENERAL

**GOVERNING CODES**  
OHIO BASIC BUILDING CODE, 1989

**INTENT OF GENERAL STRUCTURAL NOTES**  
THE INTENT OF THESE GENERAL STRUCTURAL NOTES IS TO DEFINE DESIGN PARAMETERS (LOADS AND ALLOWABLE STRESSES) FOR ALL STRUCTURES AND MATERIALS USED. SPECIFICATIONS CONCERNING MATERIALS AND INSTALLATION ARE A PART OF THIS JOB AND ARE CONTAINED ELSEWHERE.

**DESIGN**  
THE STRUCTURE IS DESIGNED TO BE STABLE AND SELF-SUPPORTING WHEN ERECTED AND FULLY COMPLETED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE ERECTION PROCEDURE, INCLUDING SEQUENCE OF CONSTRUCTION, AND TO INSURE THE SAFETY OF THE STRUCTURES DURING THE CONSTRUCTION PHASE, INCLUDING THE DESIGN AND SAFETY OF ANY TEMPORARY BRACING OR OTHER MEASURES WHICH MAY BE NECESSARY TO FACILITATE AND COMPLETE CONSTRUCTION.

**LIVE LOADS**  
DESIGN LIVE LOADS FOR PUMP STATION ST-2 ARE AS FOLLOWS...

	LIVE LOAD CONCENTRATED (PSF)	(LBS)
GRATING @ EL. 711.00	300	-
GRATING @ EL. 686.71	150	-
FLOOR PLATING @ EL. 712.00	300	1000

**100 YEAR FLOOD ELEVATION**  
DESIGN 100 YEAR FLOOD AT EL. 721.50

**COORDINATION OF WORK**  
MECHANICAL FRAMING, OPENINGS AND SUPPORTS FOR EQUIPMENT OR OTHER PROCESS ITEMS ARE SHOWN FOR BIDDING PURPOSES ONLY. THE EXACT SIZE AND LOCATION OF SUCH ITEMS SHALL BE VERIFIED FROM MANUFACTURER'S APPROVED SHOP DRAWINGS AND BY COORDINATION OF SUCH WORK WITH THE PERTINENT TRADE.

**MISCELLANEOUS**  
FOR LOCATIONS AND DETAIL OF PIPES, CONDUITS, DUCTS, AND OTHER OPENINGS ON SLABS AND WALLS, SEE DRAWINGS 14/27 TO 18/27.

**CONCRETE**  
- ACI 318-89 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE  
- F'C = 4000 PSI, CLASS C  
- ASTM A615, GRADE 60  
- ASTM A616(S1), GRADE 60  
- ASTM A185

**DESIGN DATA**  
CODE  
- STRENGTH DESIGN METHOD FOR WATER-RETAINING STRUCTURES, ELEMENTS ARE DESIGNED USING A LOAD FACTOR OF 2.0 FOR FLEXURAL CONSIDERATIONS  
- ACI DETAILING MANUAL - 1988 (ACI PUBLICATION SP-66)

**REINFORCING**  
- STRENGTH DESIGN METHOD FOR WATER-RETAINING STRUCTURES, ELEMENTS ARE DESIGNED USING A LOAD FACTOR OF 2.0 FOR FLEXURAL CONSIDERATIONS  
- ACI DETAILING MANUAL - 1988 (ACI PUBLICATION SP-66)

**STANDARD HOOKS**  
UNLESS OTHERWISE SHOWN OR NOTED ALL 90-, 135-, AND 180- DEGREE HOOKS FOR REINFORCING SHALL BE IN ACCORDANCE WITH THE STANDARD HOOK DETAILS SHOWN IN ACI DETAILING MANUAL-1988.

**OPENINGS**  
OPENINGS IN FLOOR SLABS OR WALLS NOT EXCEEDING 12 IN. BY 12 IN. AND LOCATED NOT CLOSER TO A COLUMN OR PILASTER THAN 3 FEET MAY BE SLEEVED AS REQUIRED BY WORKING THE REINFORCING STEEL AROUND THEM.

**CONCRETE PROTECTION FOR REINFORCEMENT**  
UNLESS NOTED OTHERWISE, THE CONCRETE COVER FOR REINFORCING BARS PLACED IN SURFACES EXPOSED TO WATER SHALL BE 2 INCHES. ALL OTHER MINIMUM COVER REQUIREMENTS SHALL BE AS PER ACI 318-89.

**REINFORCING BAR DEVELOPMENT**  
UNLESS OTHERWISE INDICATED ON THE DRAWINGS, REINFORCING BARS SHALL BE DEVELOPED AND/OR SPLICED IN ACCORDANCE WITH THE FOLLOWING TABLE...

BAR SIZE	DEVELOPMENT LENGTH		TENSION LAP SPLICES	
	*TOP BARS FT - IN	OTHER BARS FT - IN	*TOP BARS FT - IN	OTHER BARS FT - IN
3	1 - 2	1 - 0	1 - 6	1 - 2
4	1 - 7	1 - 3	2 - 0	1 - 7
5	1 - 11	1 - 6	2 - 6	1 - 11
6	2 - 4	1 - 10	3 - 0	2 - 4
7	2 - 9	2 - 2	3 - 7	2 - 10
8	3 - 8	2 - 10	4 - 9	3 - 8

\* HORIZONTAL BARS SO PLACED THAT MORE THAN 12 IN. OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR

**STRUCTURAL STEEL**  
DESIGN DATA SPECIFICATIONS  
- AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, 1989.  
STRUCTURAL SHAPES WELDING BOLTS  
- ASTM A36 - STEEL  
- AWS E70 ELECTRODES  
EXPANSION ANCHORS DESIGN  
- ASTM A307, GRADE A  
- STAINLESS STEEL  
- ELASTIC, AISC TYPE 2 CONSTRUCTION

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**STILSON & ASSOCIATES, INC.**  
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COLUMBUS AND CLEVELAND

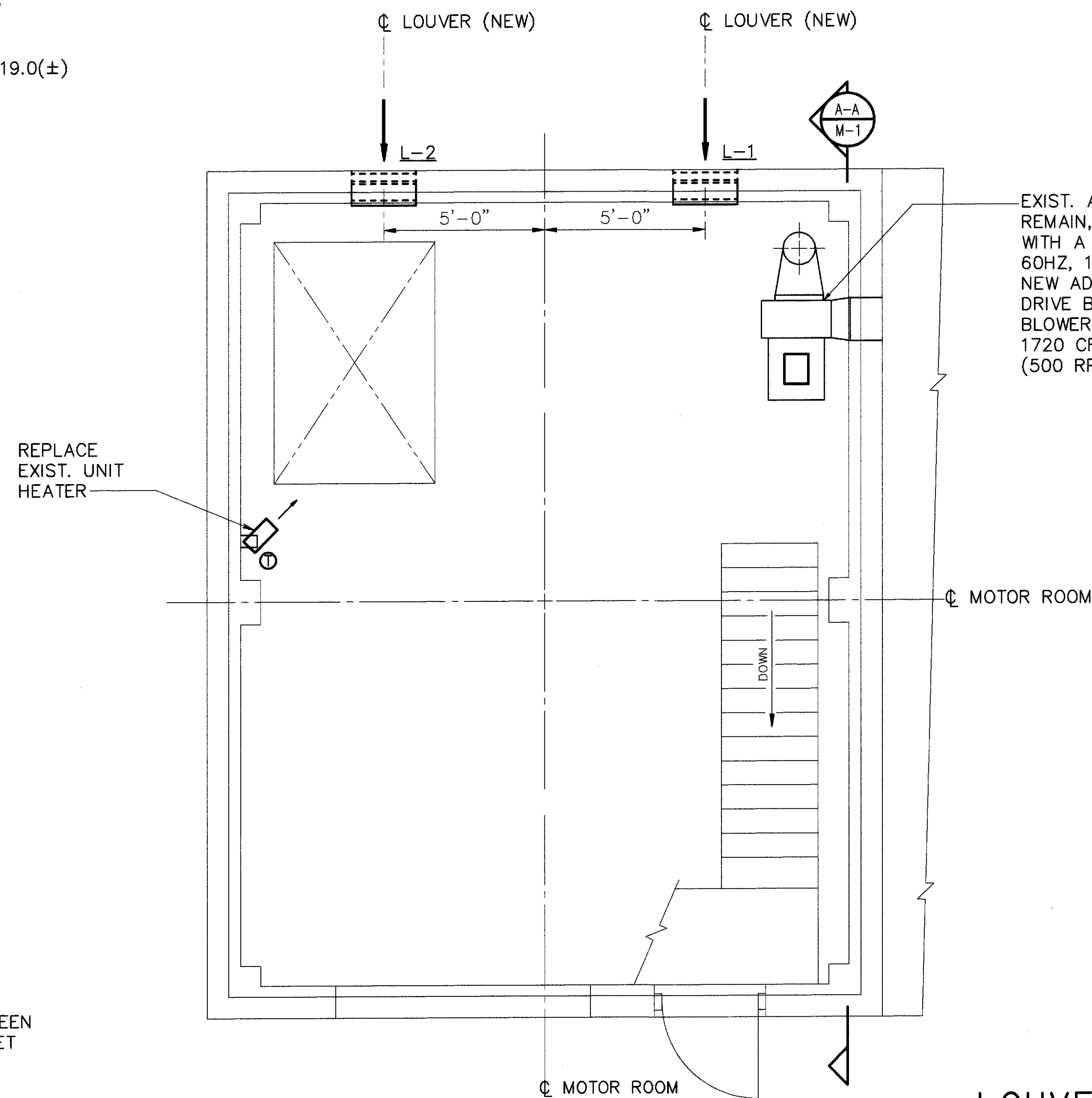
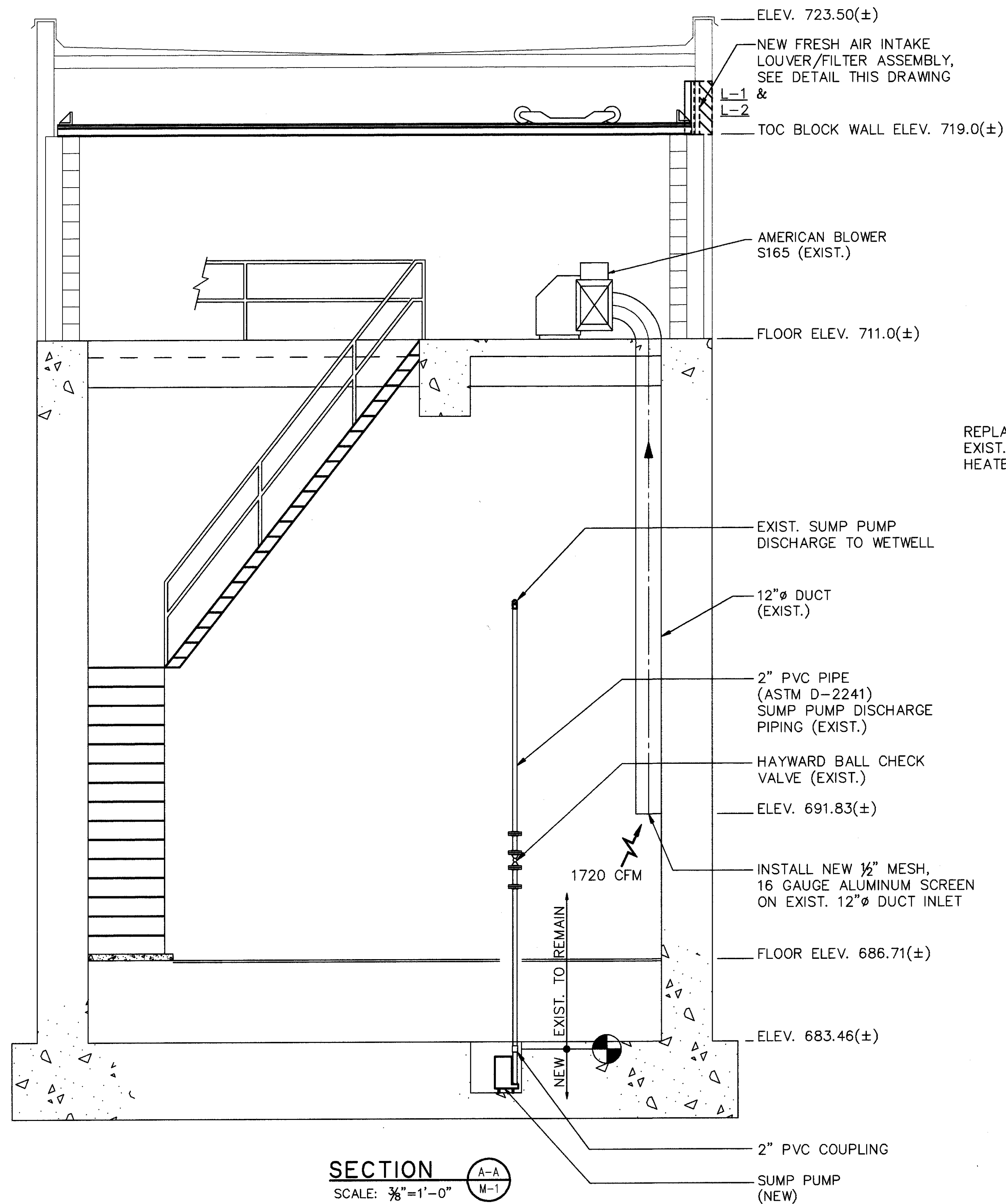
**PUMP STATION REHABILITATION  
EXISTING PUMP STATION ST-2  
GENERAL STRUCTURAL NOTES  
AND DETAILS**

S-2

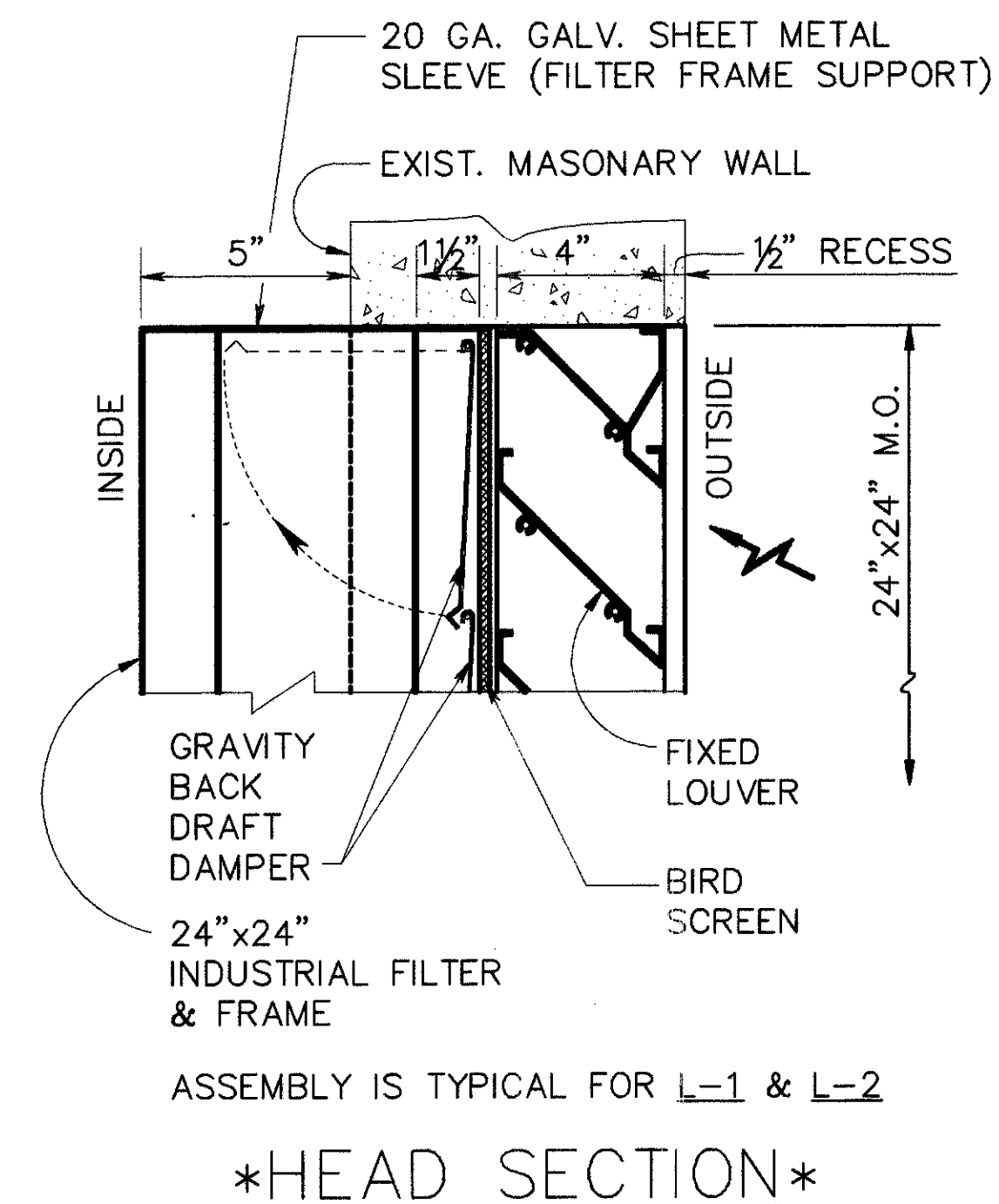
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
PHB	RTP		TEU	JMC	4-96	

### DRY-WELL VENTILATION

AMERICAN BLOWER S165 IS NORMALLY OPERATED AUTOMATICALLY BY A TIMER, OR CAN BE MANUALLY SWITCHED ON AS REQUIRED.

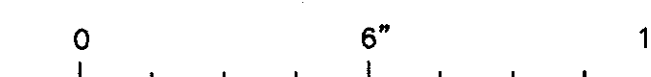


EXIST. AMERICAN BLOWER S165 TO REMAIN, REPLACE EXIST. MOTOR WITH A NEW 1/3 HP, 120V-1PH, 60HZ, 1750 RPM MOTOR. PROVIDE NEW ADJUSTABLE MOTOR SHEAVE AND DRIVE BELT. BALANCE EXIST. BLOWER PERFORMANCE TO DELIVER: 1720 CFM @ 3/8" STATIC PRESSURE (500 RPM APPROX.)



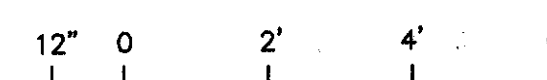
### LOUVER/FILTER ASSEMBLY DETAIL

SCALE: 3"=1'-0"



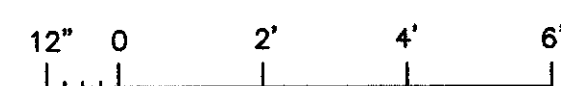
### PLAN - ELEV. 721.00

SCALE: 3/8"=1'-0"



### SECTION

SCALE: 3/8"=1'-0"



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 COLUMBUS AND CLEVELAND

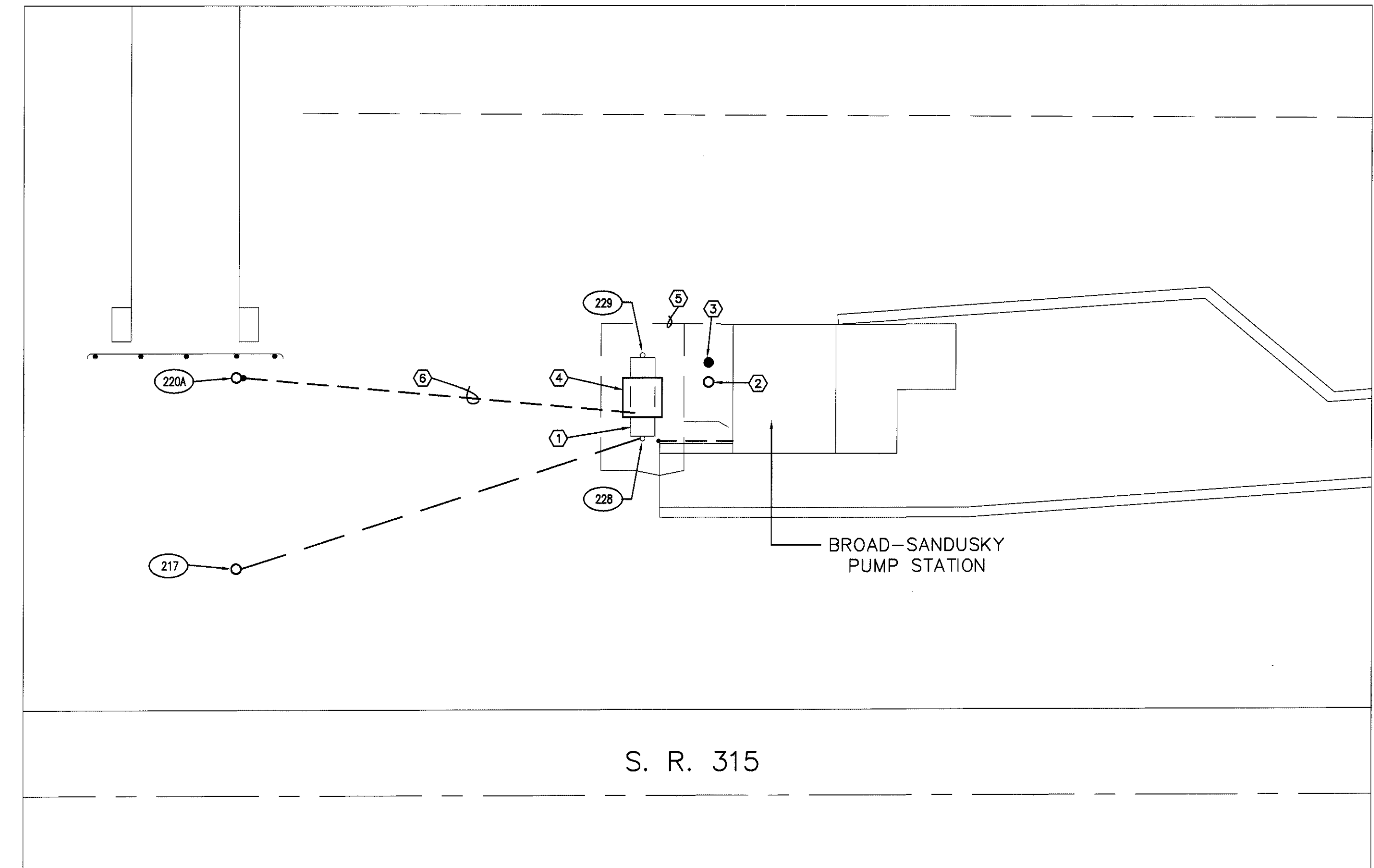
PUMP STATION REHABILITATION  
 EXIST. PUMP STATION ST-2  
 MECHANICAL  
 PLAN & SECTION  
 M1

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
SJG	BLM		WLT		08 JAN 93	



**CODED NOTES:** ○

1. REMOVE THE FOLLOWING SUBSTATION EQUIPMENT: THE TFMR FOUNDATION AND UNDERGROUND SERVICE ENTRANCE CONDUIT.
2. REMOVE THE EXISTING STREET LIGHT CONTROL CENTER.
3. NEW STREET LIGHT CONTROL CENTER. SEE DWG. E-4.
4. NEW PAD MOUNTED TFMR. LOCATION. SEE DWG. E-4.
5. REMOVE EXISTING SUBSTATION FENCE.
6. EXTENSION OF PRIMARY DUCTBANK AND PRIMARY CONDUCTORS FROM TRANSFORMER PAD TO BE PROVIDED UNDER PRIMARY RELOCATION WORK.



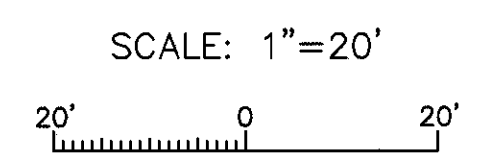
**SITE PLAN**  
SCALE: 1"=20'-0"

**SYMBOLS**

- |  |  |
|--|--|
| <p>○ A WALL MOUNTED, ROUND, INTERIOR OR EXTERIOR H.I.D. LUMINAIRE. A DESIGNATES LUMINAIRE TYPE.</p> <p>WP   K 20A, 120V, OR 277V SINGLE POLE TOGGLE SWITCH MOUNTED IN SINGLE GANG BOX WITH SINGLE GANG COVERPLATE. BOTTOM OF BOX AT 48" A.F.F. K INDICATES KEY OPERATED SWITCH. WP INDICATES WEATHERPROOF (CAST BACKBOX AND GASKETED COVERPLATE).</p> <p>WP   GFI 20A, 120V, DUPLEX RECEPTACLE MOUNTED IN SINGLE GANG BOX WITH SINGLE GANG COVERPLATE. BOTTOM OF BOX AT 16" A.F.F. WP INDICATES WEATHERPROOF (CAST BACKBOX AND GASKETED COVERPLATE WITH TWIN GASKETED LIFT COVERS). GFI INDICATES GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE.</p> <p>▲ SPECIAL PURPOSE WALL MOUNTED POWER OUTLET. REFER TO SPECIFIC NOTES ON PLAN.</p> <p>⊗ SINGLE PHASE MOTOR, "X" INDICATES HP.</p> <p>⊗ THREE PHASE MOTOR, "X" INDICATES HP.</p> <p>100A   3P   100A FUSIBLE DISCONNECT SWITCH. AMPERE RATING NUMBER OF POLES, AND FUSE SIZE AS INDICATED.</p> | <p>⎓ REDUCED VOLTAGE AUTO TRANSFORMER STARTER IN GROUPED MOTOR CONTROL CENTER.</p> <p>— AWG 2#12, #12 GND. IN 3/4" EXPOSED CONDUIT.</p> <p>— AWG 2#12 IN 3/4" CONDUIT ROUTED IN OR UNDER FLOOR SLAB.</p> <p>○ CONDUIT UP</p> <p>⊖ CONDUIT DOWN</p> <p>Ⓜ   M CURRENT TRANSFORMER AND KILOWAT-HOUR METER.</p> <p>Ⓧ METER - X INDICATES TYPE. M - KILOWATT HOUR METER, S - SOLID STATE METER WITH VOLT, AMP, AND KWH RANGES.</p> <p>Ⓣ INSTRUMENTATION SYSTEM TEMPERATURE SENSOR.</p> <p>⎓ LIQUID FILLED OR DRY-TYPE TRANSFORMER REFER TO SCHEDULE ON DRAWINGS FOR SIZE AND RATINGS.</p> |
|--|--|

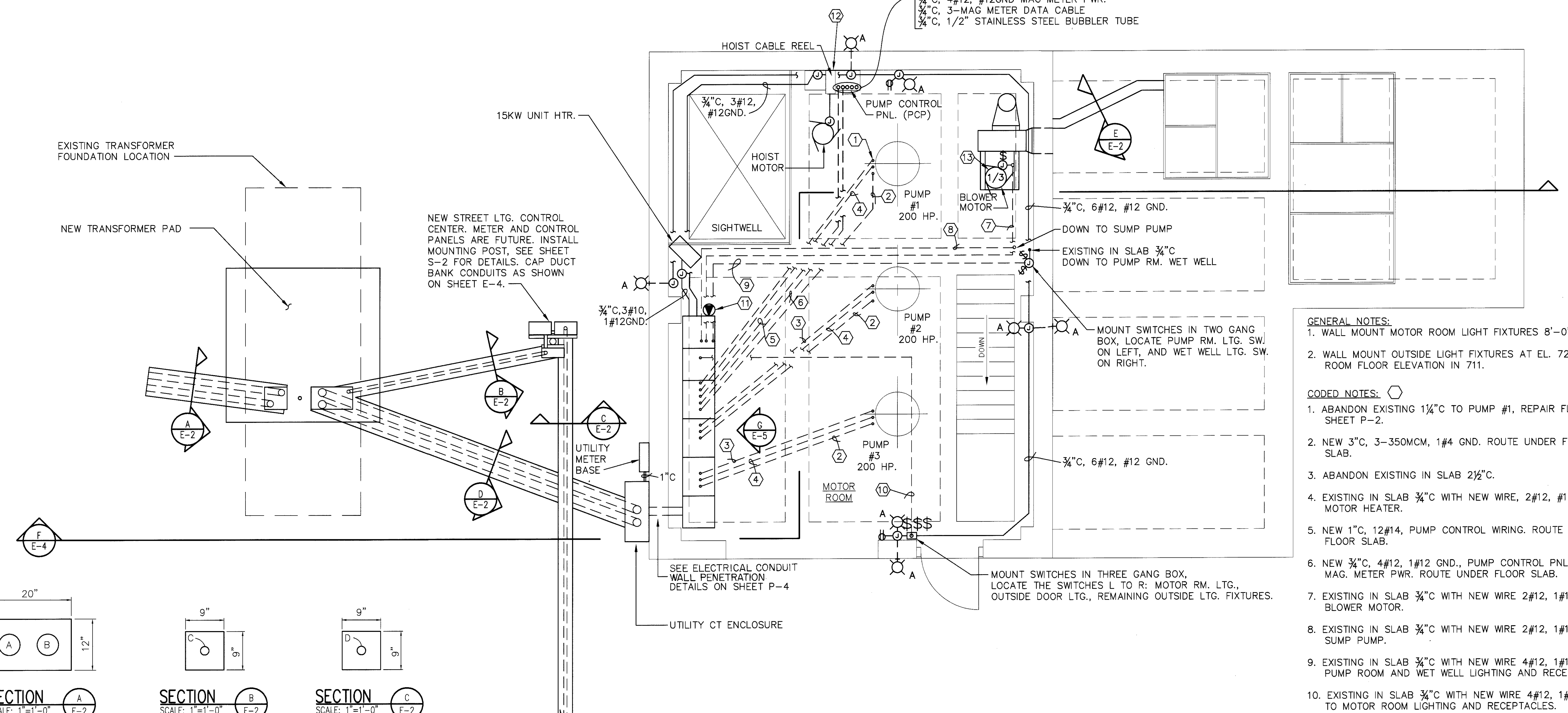
**ABBREVIATIONS**

- A AMPERE
- AC ALTERNATING CURRENT
- AFF ABOVE FINISHED FLOOR
- AFG ABOVE FINISHED GRADE
- C CONDUIT
- CB CIRCUIT BREAKER
- CKT CIRCUIT
- CR CONTROL RELAY
- CT CURRENT TRANSFORMER
- DC DIRECT CURRENT
- EL ELEVATION
- ETM ELAPSED TIME METER
- EX EXISTING
- FM FLOW METER
- GFI GROUND FAULT INTERRUPTER
- GRD GROUND
- HOA HAND-OFF-AUTOMATIC
- HP HORSEPOWER
- KVA KILOVOLT AMPERE
- LA LIGHTNING ARRESTOR
- LGT LIGHTING OR LIGHT
- MCC MOTOR CONTROL CENTER
- NC NORMALLY CLOSED
- NO NORMALLY OPEN
- OL OVERLOAD
- P POLE
- PB PULL BOX OR PUSH BUTTON
- PH PHASE
- PNL PANEL OR PANELBOARD
- PT POTENTIAL TRANSFORMER
- PTT PUSH TO TEST
- RCVR RECEIVER
- SMR SURFACE MOUNTED RACEWAY
- TR TIMING RELAY OR TIMER
- TYP TYPICAL
- V VOLT
- W WATT
- WH WATTHOUR
- WP WEATHERPROOF
- XFMR TRANSFORMER
- XFR TRANSFER
- XMTR TRANSMITTER
- XP EXPLOSION PROOF
- φ PHASE

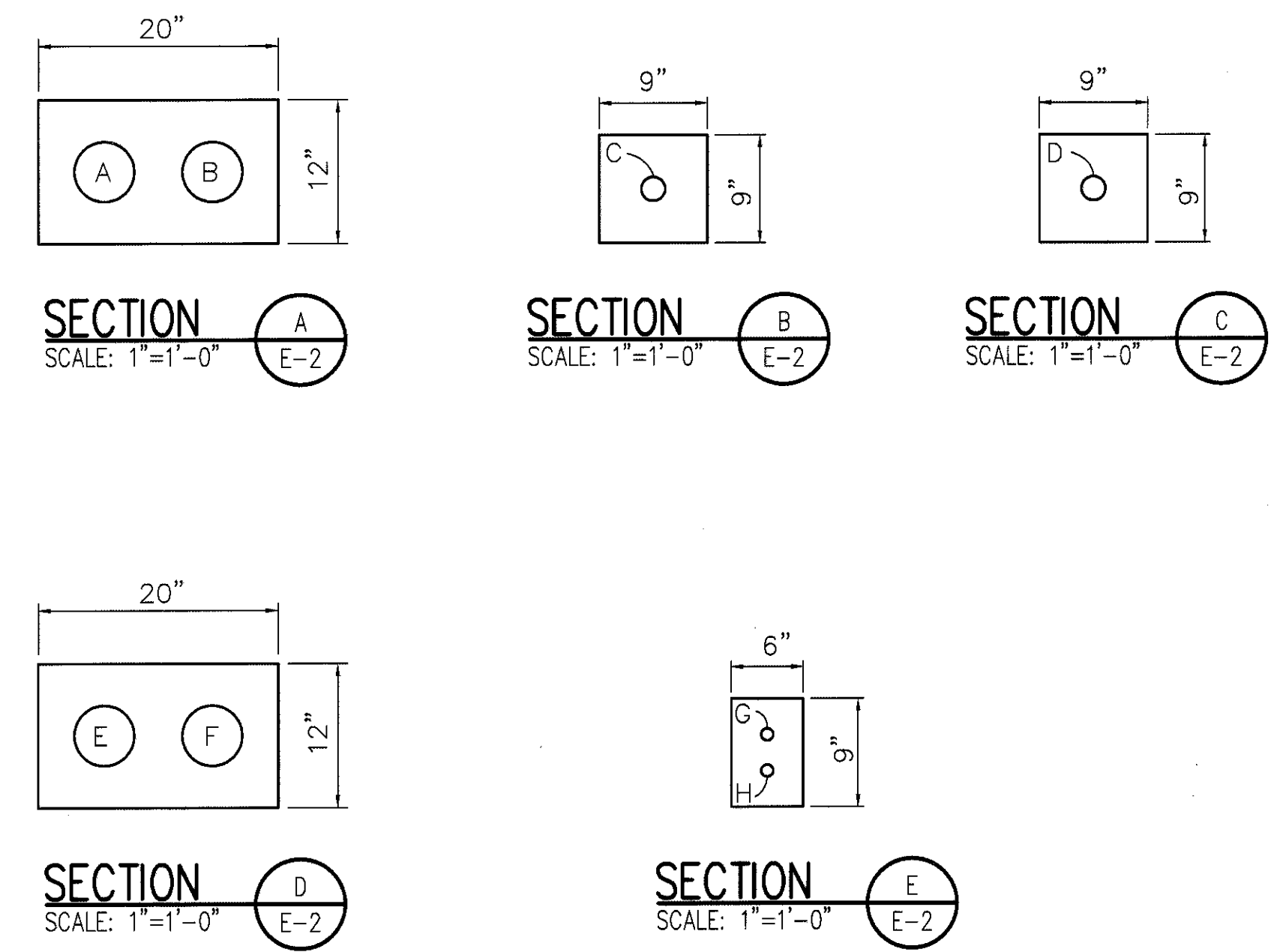


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<b>STILSON &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>PUMP STATION REHABILITATION</b> <b>EXISTING PUMP STATION ST-2</b> <b>SITE PLAN AND LEGEND</b> E-1						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
NDR	TES	TES	JPM	JPM	4-96	

NEW CONDUITS DOWN, LEFT TO RIGHT  
 1" C, 12#14 PUMP CONTROL WIRING  
 3/4" C, 4#12, #12GND, PCP, MAG METER PWR.  
 3/4" C, 4#12, #12GND MAG METER PWR.  
 3/4" C, 3-MAG METER DATA CABLE  
 3/4" C, 1/2" STAINLESS STEEL BUBBLER TUBE

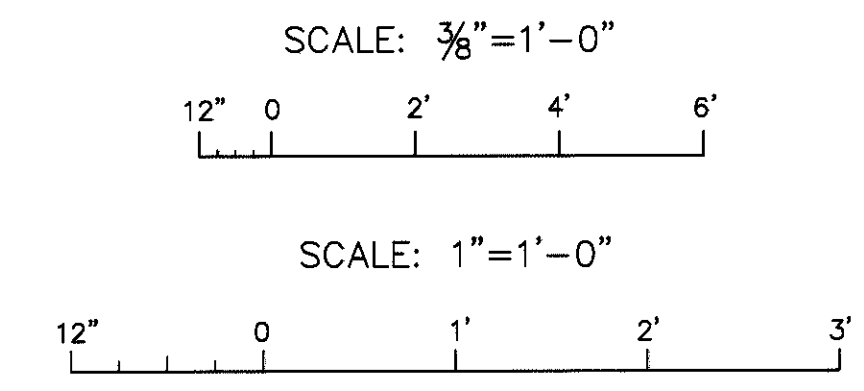


- GENERAL NOTES:**
1. WALL MOUNT MOTOR ROOM LIGHT FIXTURES 8'-0" A.F.F.
  2. WALL MOUNT OUTSIDE LIGHT FIXTURES AT EL. 721. MOTOR ROOM FLOOR ELEVATION IN 711.
- CODED NOTES:** ○
1. ABANDON EXISTING 1 1/4" C TO PUMP #1, REPAIR FLOOR SEE SHEET P-2.
  2. NEW 3" C, 3-350MCM, 1#4 GND. ROUTE UNDER FLOOR SLAB.
  3. ABANDON EXISTING IN SLAB 2 1/2" C.
  4. EXISTING IN SLAB 3/4" C WITH NEW WIRE, 2#12, #12 GND. MOTOR HEATER.
  5. NEW 1" C, 12#14, PUMP CONTROL WIRING. ROUTE UNDER FLOOR SLAB.
  6. NEW 3/4" C, 4#12, 1#12 GND., PUMP CONTROL PNL. PWR. MAG. METER PWR. ROUTE UNDER FLOOR SLAB.
  7. EXISTING IN SLAB 3/4" C WITH NEW WIRE 2#12, 1#12 GND. TO BLOWER MOTOR.
  8. EXISTING IN SLAB 3/4" C WITH NEW WIRE 2#12, 1#12 GND. TO SUMP PUMP.
  9. EXISTING IN SLAB 3/4" C WITH NEW WIRE 4#12, 1#12 GND. PUMP ROOM AND WET WELL LIGHTING AND RECEPTACLES.
  10. EXISTING IN SLAB 3/4" C WITH NEW WIRE 4#12, 1#12 GND. TO MOTOR ROOM LIGHTING AND RECEPTACLES.
  11. SURFACE MOUNT 18" A.F.F. A NEMA TYPE L16-30R RECEPTACLE ON THE MCC AS SHOWN.
  12. SURFACE MOUNT 9'-6" A.F.F. THE HOIST CABLE REEL WITH 40', TYPE SO CABLE, 4#12, 480V, AND PIVOT BASE. SHAW-BOX MODEL NO. 912657 OR EQUAL.
  13. INSTALL NEW 1/3 HP. BLOWER MOTOR.



**PLAN - ELEV. 721.00**  
 SCALE: 3/8"=1'-0"

DUCT BANK CONDUIT SCHEDULE			
TAG	SIZE	WIRE	REMARKS
A	5	PULL WIRE	PRIMARY CABLE, 3-1, 15KV, TO BE SUPPLIED UNDER PRIMARY RELOCATION WORK
B	5	PULL WIRE	SPARE
C	2	PULL WIRE	FUTURE ST. LTG. SERVICE
D	2	PULL WIRE	FUTURE ST. LTG. CKTS.
E	5	12-350MCM, 1-2/0 GND.	P.S. SERVICE
F	5	PULL WIRE	SPARE
G	1	2#12, 1#12 GND.	WET WELL LTG.
H	1	BUBBLER TUBE	3/8" COPPER



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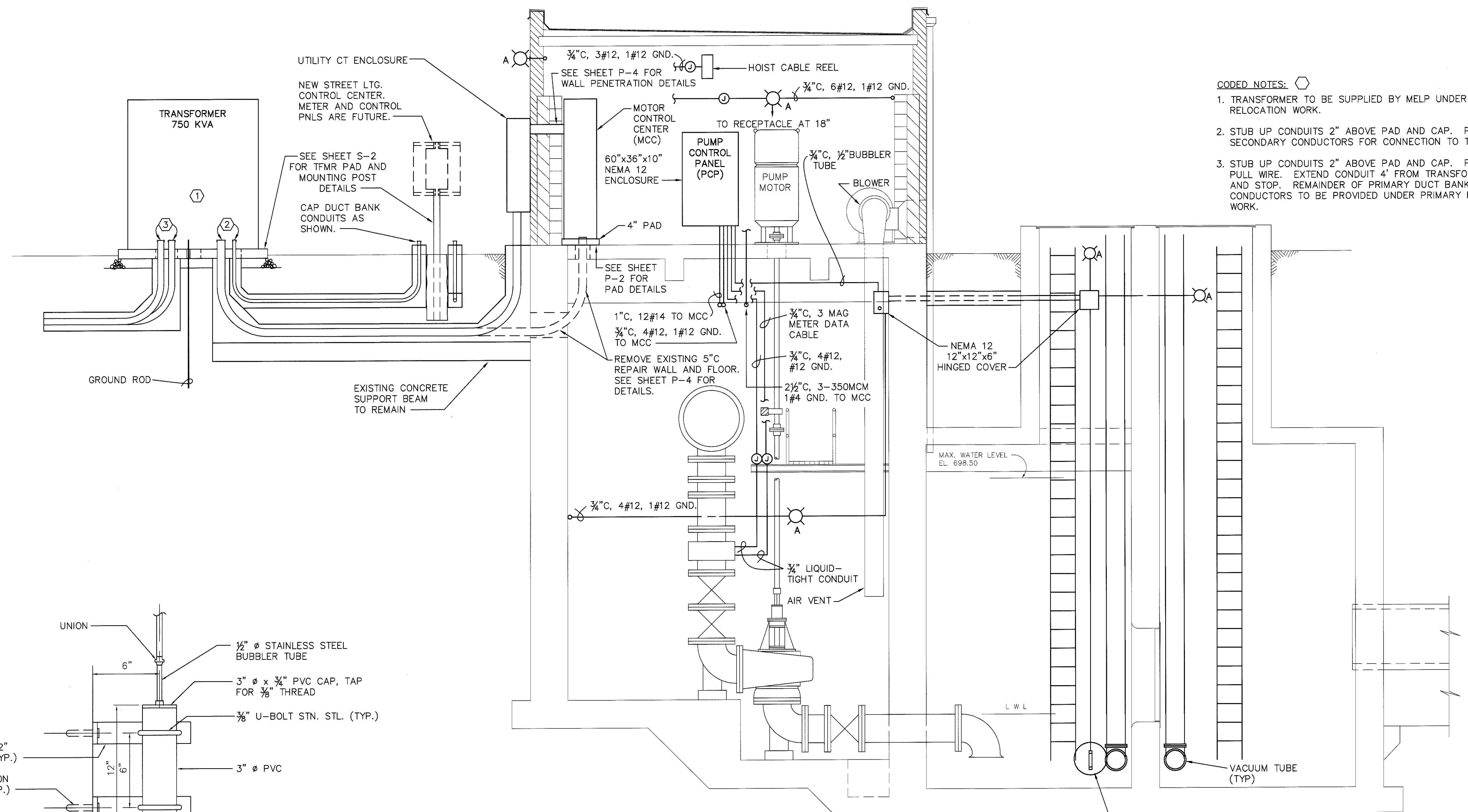
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 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**PUMP STATION REHABILITATION**  
 EXISTING PUMP STATION ST-2  
 PLAN - ELEV. 721.00  
 E-2

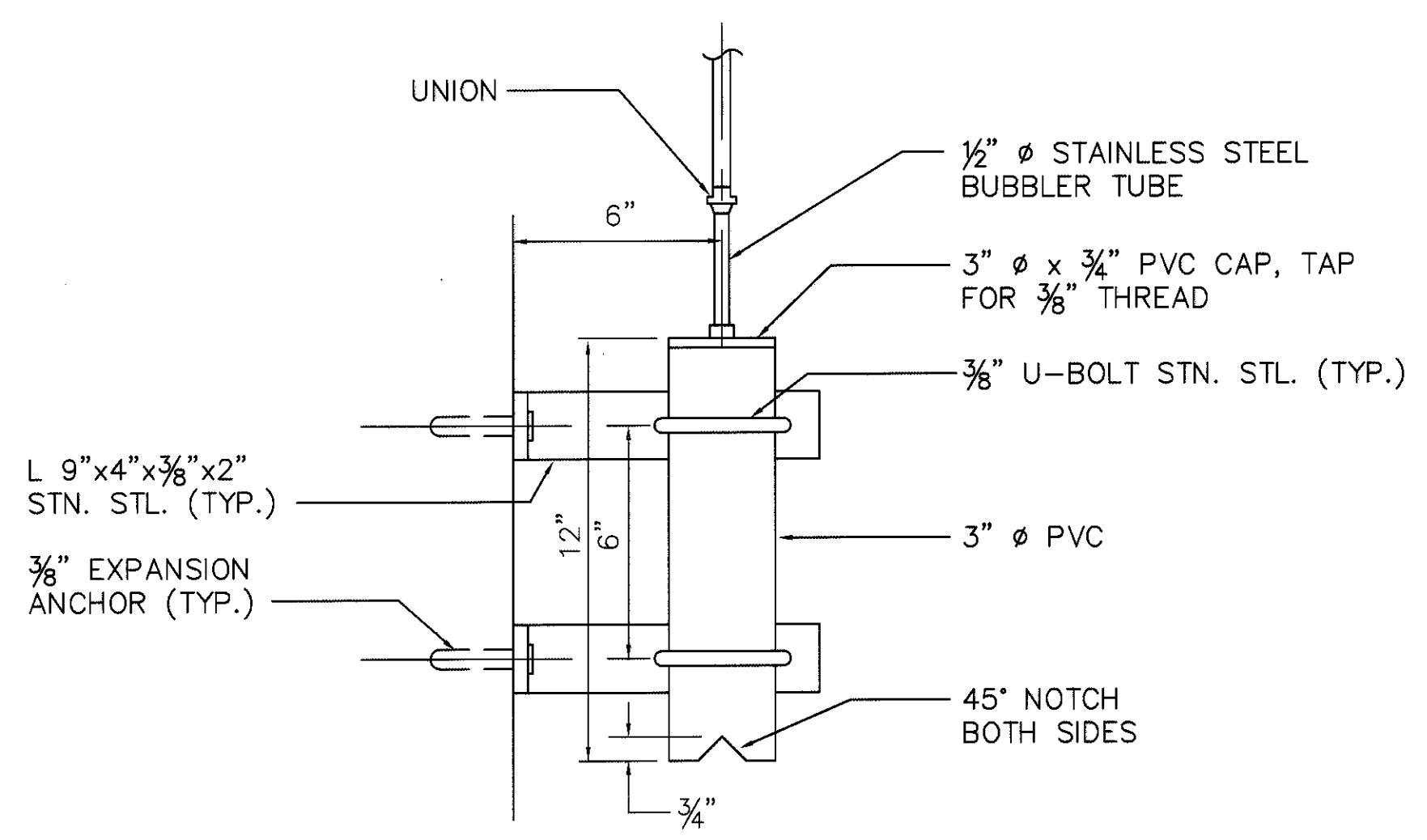
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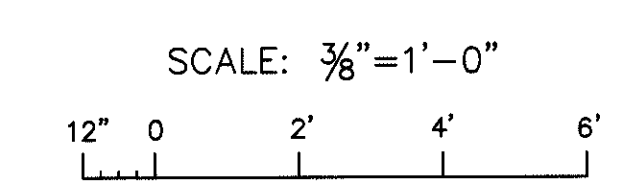


- CODED NOTES:** ○
1. TRANSFORMER TO BE SUPPLIED BY MELP UNDER PRIMARY RELOCATION WORK.
  2. STUB UP CONDUITS 2" ABOVE PAD AND CAP. PROVIDE SECONDARY CONDUCTORS FOR CONNECTION TO TRANSFORMER.
  3. STUB UP CONDUITS 2" ABOVE PAD AND CAP. PROVIDE PULL WIRE. EXTEND CONDUIT 4' FROM TRANSFORMER PAD AND STOP. REMAINDER OF PRIMARY DUCT BANK AND PRIMARY CONDUCTORS TO BE PROVIDED UNDER PRIMARY RELOCATION WORK.



**COMPRESSION BELL DETAIL**  
N.T.S.

**SECTION** F  
SCALE: 3/8" = 1'-0"  
E-2



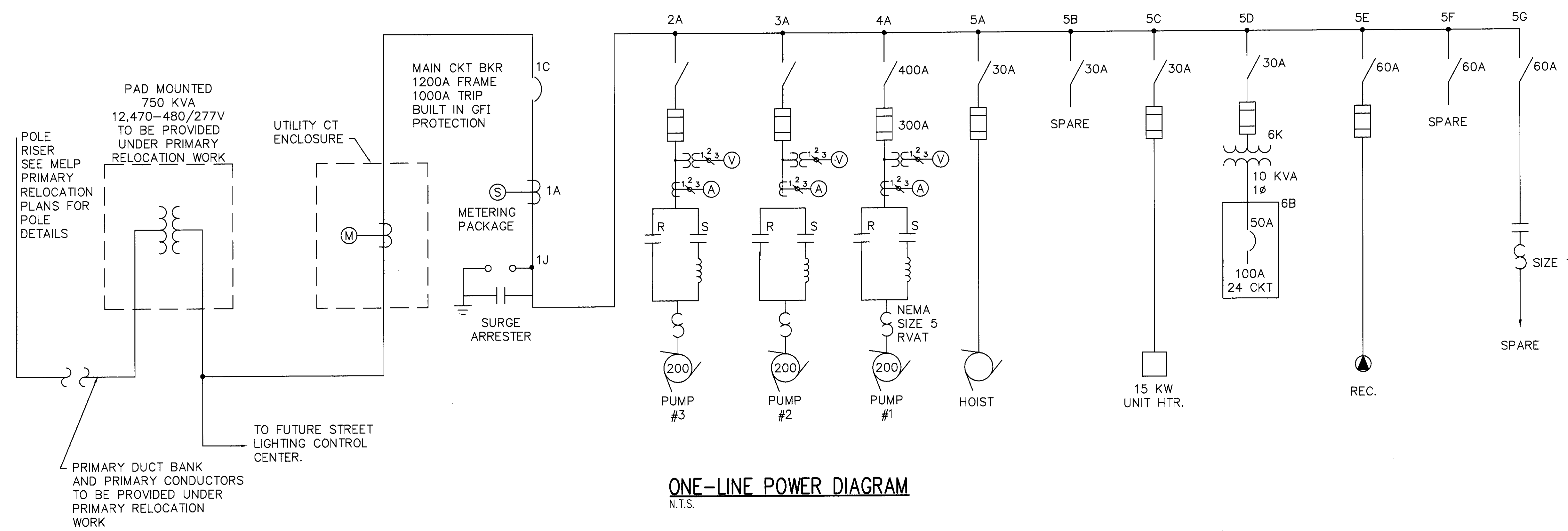
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CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**PUMP STATION REHABILITATION  
EXISTING PUMP STATION ST-2  
SECTION AND DETAIL  
E-4**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
NDR	TES	TES	JPM	JPM	4-96	





**ONE-LINE POWER DIAGRAM**  
 N.T.S.

MCC CLASS: 1-B										CONNECTED LOAD (VA): 668,525						
: VOLTAGE: 480 : MAIN: 1200A CKT. BKR. TYPE HNC										25% LAST MOTOR (VA): 49,890						
: PHASE: 3										TOTAL LOAD (VA): 718,415						
: WIRE: 3										TOTAL LOAD (A): 864						
ITEM	DESC.	HP	NEMA SIZE	TYPE	CPT VOLTS	PHASE	AMPS	LOAD (VA)	SWITCH AMPS/P FUSE AMPS	FEEDER	CONTROL AUXILIARIES					
											H-0-A	PILOT LGTS	AUX CONTACTS N.O. N.C.	MISC.		
1A	DIGITAL METERING PACKAGE															POWER MEASUREMENT LTD MOD. 3710 ACM
1C	MAIN CKT BKR				480	3										
1J	SURGE ARRESTER															
2A	PUMP #3	200	5	RVAT	120V 150VA	3	240	199,550	400/3 300	350 MCM #4 GND.	1	3	4	4		ELAPSE TIMER OPER. COUNTER VOLT & AMP METER
3A	PUMP #2	200	5	RVAT	120V 150VA	3	240	199,550	400/3 300	350 MCM #4 GND.	1	1-R 1-G 1-Y	4	4		ELAPSE TIMER OPER. COUNTER VOLT & AMP METER
4A	PUMP #1	200	5	RVAT	120V 150VA	3	240	199,550	400/3 300	350 MCM #4 GND.	1	3	4	4		ELAPSE TIMER OPER. COUNTER VOLT & AMP METER
5A	HOIST SW.	10				3	14	11620	30/3 20	3#10, 1#12 GND.						
5B	SPARE SW.								30/3							
5C	UNIT HTR. SW.					3	18	15,000	30/3 25	3#10, 1#12 GND.						
5D	XFMR TR-2 SW.					1	21	10,000	30/3 25	2#10, 1#12 GND.						
5E	REC. SW.					3	40	33,255	60/3 50	3#6 1#10 GND.						
5F	SPARE SW.								60/3							
5G	SPARE STR.		1	FWNR	120V 150VA	3			60/3		1	1-R 1-G	2	2		
6B	LTG PNL LP-1															24 HR. TIMER PARAGON EC11
6G	BLOWER CONTROLS										1					
6K	TFMR 10 KVA															

LIGHTING FIXTURE SCHEDULE					
TYPE	DESCRIPTION	VOLTS	MOUNT	MFG. CAT. NO.	REMARKS
A	175W METAL HALIDE, INTEGRAL BALLAST, ENCLOSED AND GASKETED GLASS GLOBE W/ GUARD AND QUARTZ AUX. LAMP. WET LOCATION.	120	CEILING SURFACE	CROUSE-HINDS VMVM-2C175 GP-QTZ	PROVIDE CAT. CUTS

PANEL ID: LP-1		VOLTAGE: 240/120		MAINS: 100 AMP PNL, 50A MAIN C.B.				
MOUNTING: IN MCC		PHASE: 1		CIRCUIT: 24				
		WIRE: 3						
CIRCUIT DESCRIPTION	WIRE SIZE	LOAD VA	BKR A/P	CIRCUIT NUMBER	BKR A/P	LOAD VA	WIRE SIZE	CIRCUIT DESCRIPTION
MOTOR RM./OUTSIDE LTG.	12	1225	20/1	1	2	20/1	360	MOTOR ROOM
PUMP RM./WET WELL LTG.	12	700	20/1	3	4	20/1	1200	SUMP PUMP
BLOWER FAN	12	900	20/1	5	6	20/1	540	PUMP ROOM
MCC SECTION HEATERS	12	600	20/1	7	8	20/1	600	PUMP CONTROL PNL. PWR.
PUMP HEATERS	12	600	20/1	9	10	20/1	200	MAG FLOW METER PWR.
SPARE	12		20/1	11	12	20/1		SPARE
SPARE	12		20/1	13	14	20/1		SPARE
SPARE	12		20/1	15	16	20/1		SPARE
SPARE	12		20/1	17	18	20/1		SPARE
SPACE				19	20			SPACE
SPACE				21	22			SPACE
SPACE				23	24			SPACE
PHASE "A" TOTAL:		3825	TOTAL CONNECTED (VA):		6925			
PHASE "B" TOTAL:		3100	TOTAL CONNECTED (A) :		29			

	1	2	3	4	5	6
A	1A	2A	3A	4A	5A	6A
B	METERING				HOIST	SPACE
C	1C				5C	6C
D		PUMP #3	PUMP #2	PUMP #1	UNIT HTR.	LTG. PNL. 240/120 24 CKT.
E					5E	
F	MAIN CB	SIZE 5 AUTO TFMR STR	SIZE 5 AUTO TFMR STR	SIZE 5 AUTO TFMR STR	5F	
G					RECEPT	6G
H					5G	BLOWER TIMER
I					SIZE 1 STR. SPARE	
J	1J				SPACE	6K
K	SURGE ARRESTER					TFMR 10 KVA
L						

4" PAD SEE SHEET P-2

SECTION G  
 SCALE: 3/4"=1'-0" E-2

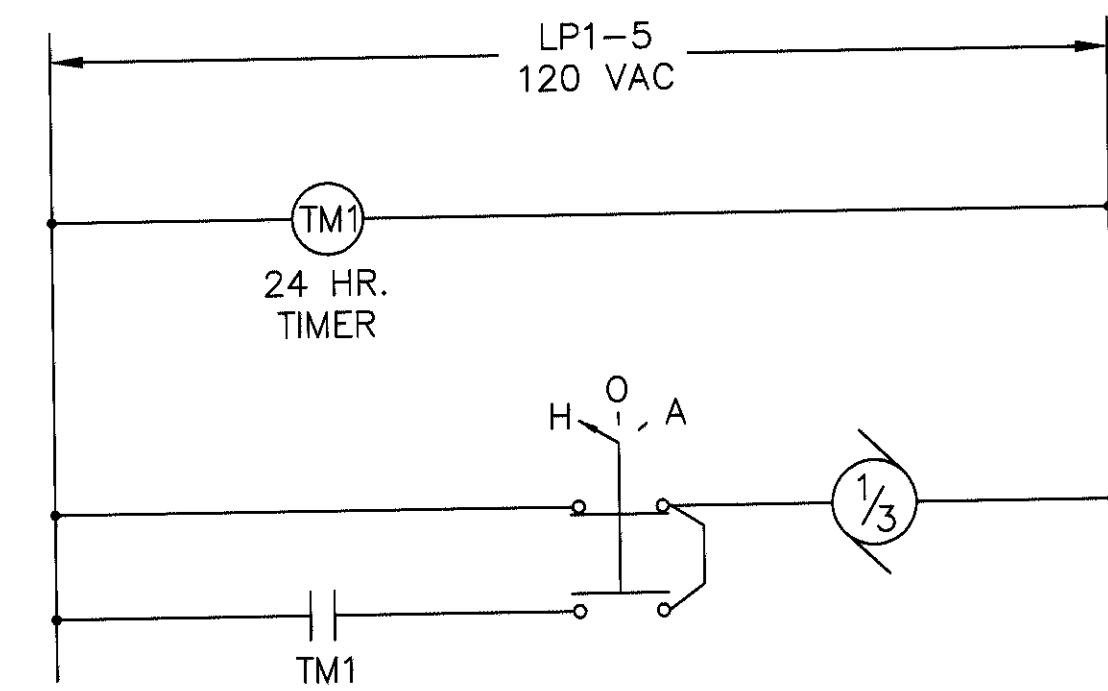
SCALE: 3/4"=1'-0"  
 12" 6" 0 1' 2"

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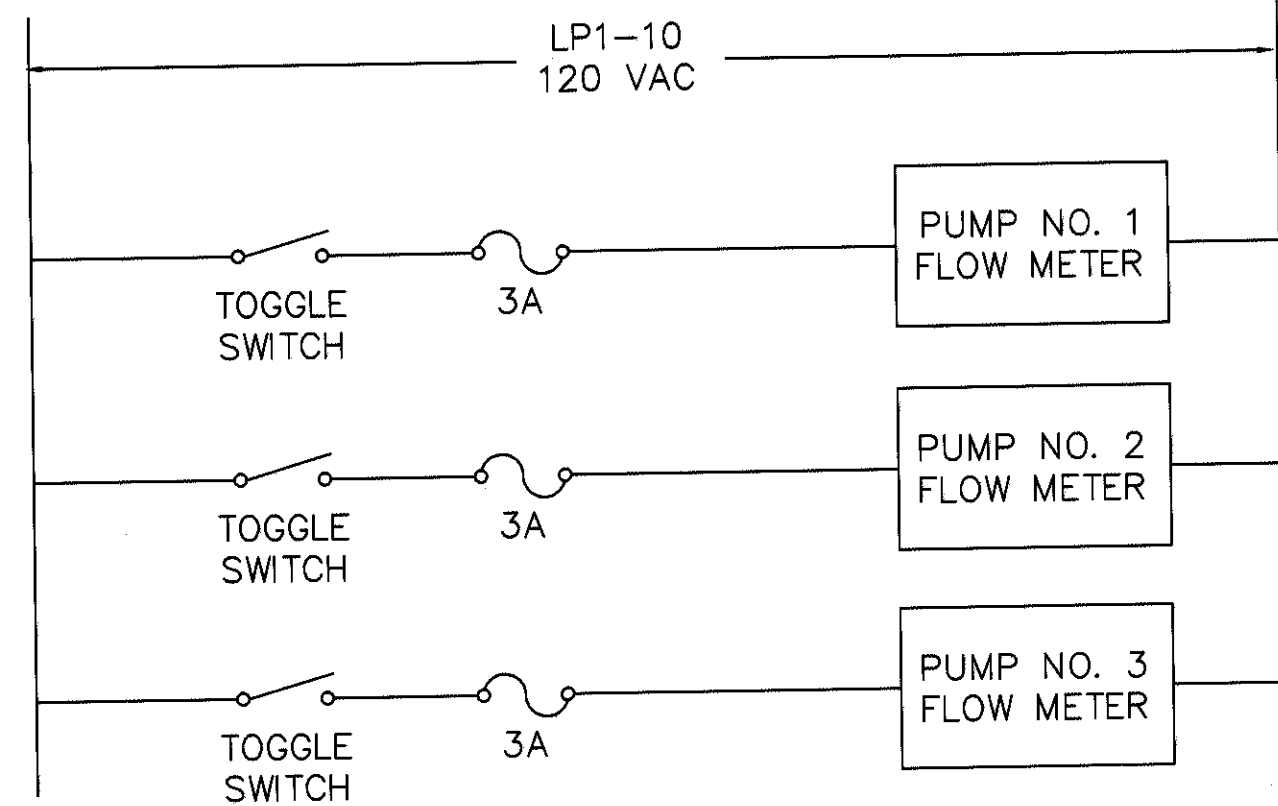
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 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

PUMP STATION REHABILITATION  
 EXISTING PUMP STATION ST-2  
 ONE-LINE, SCHEDULES  
 E-5

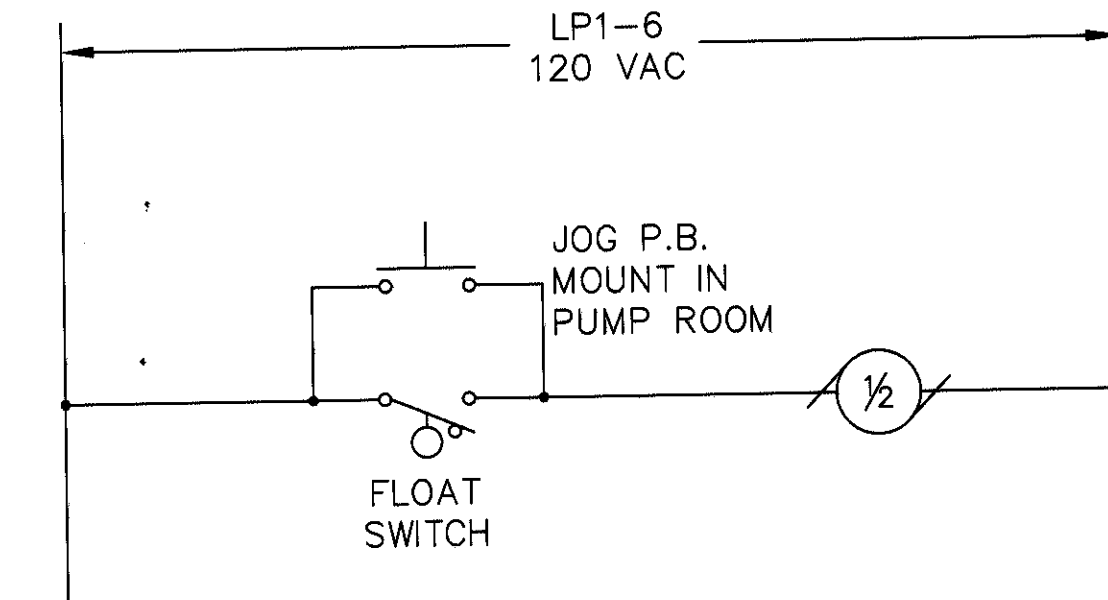
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
NDR	TES	TES	JPM	JPM	4-96	



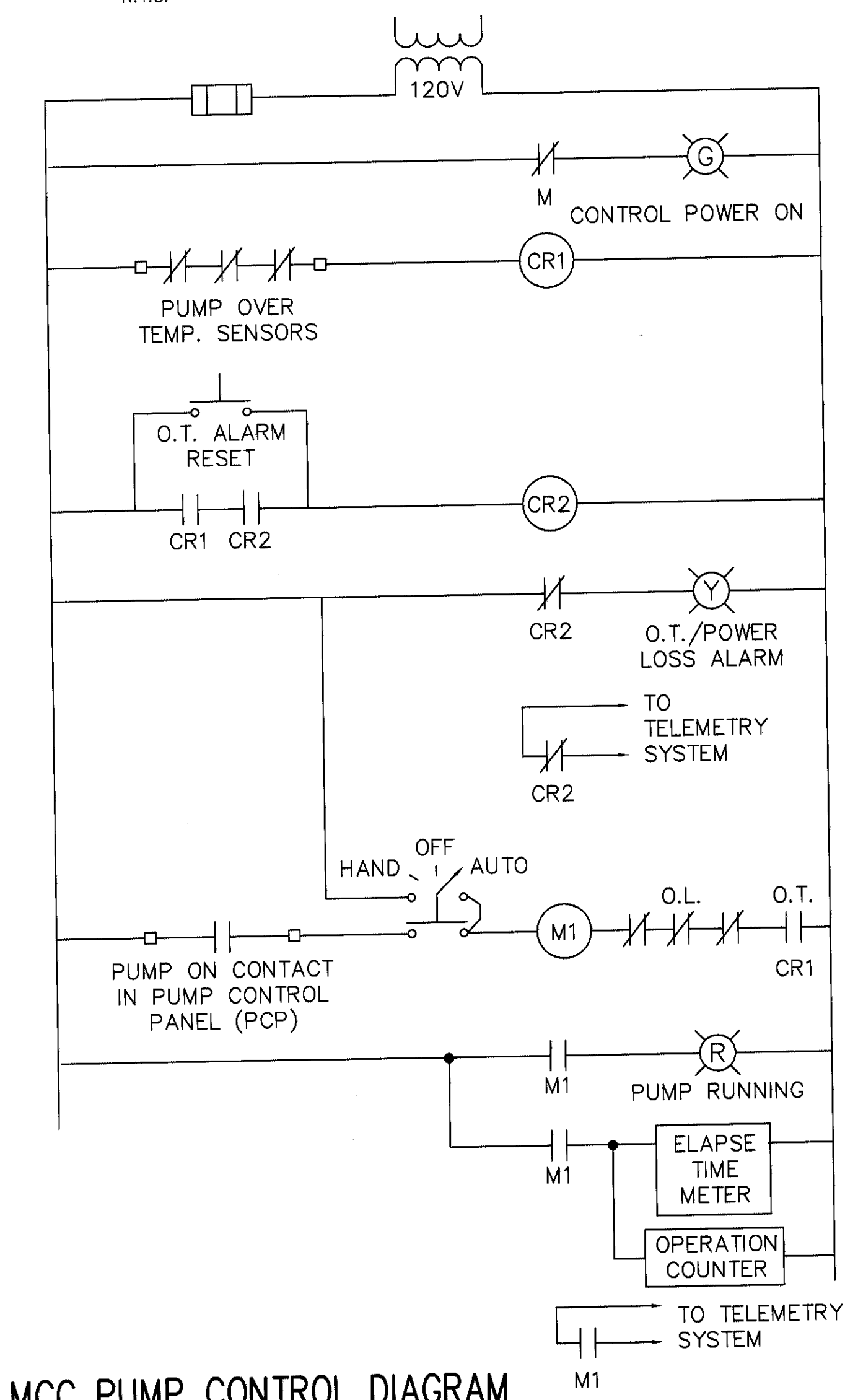
**BLOWER CONTROL DIAGRAM**  
 N.T.S.



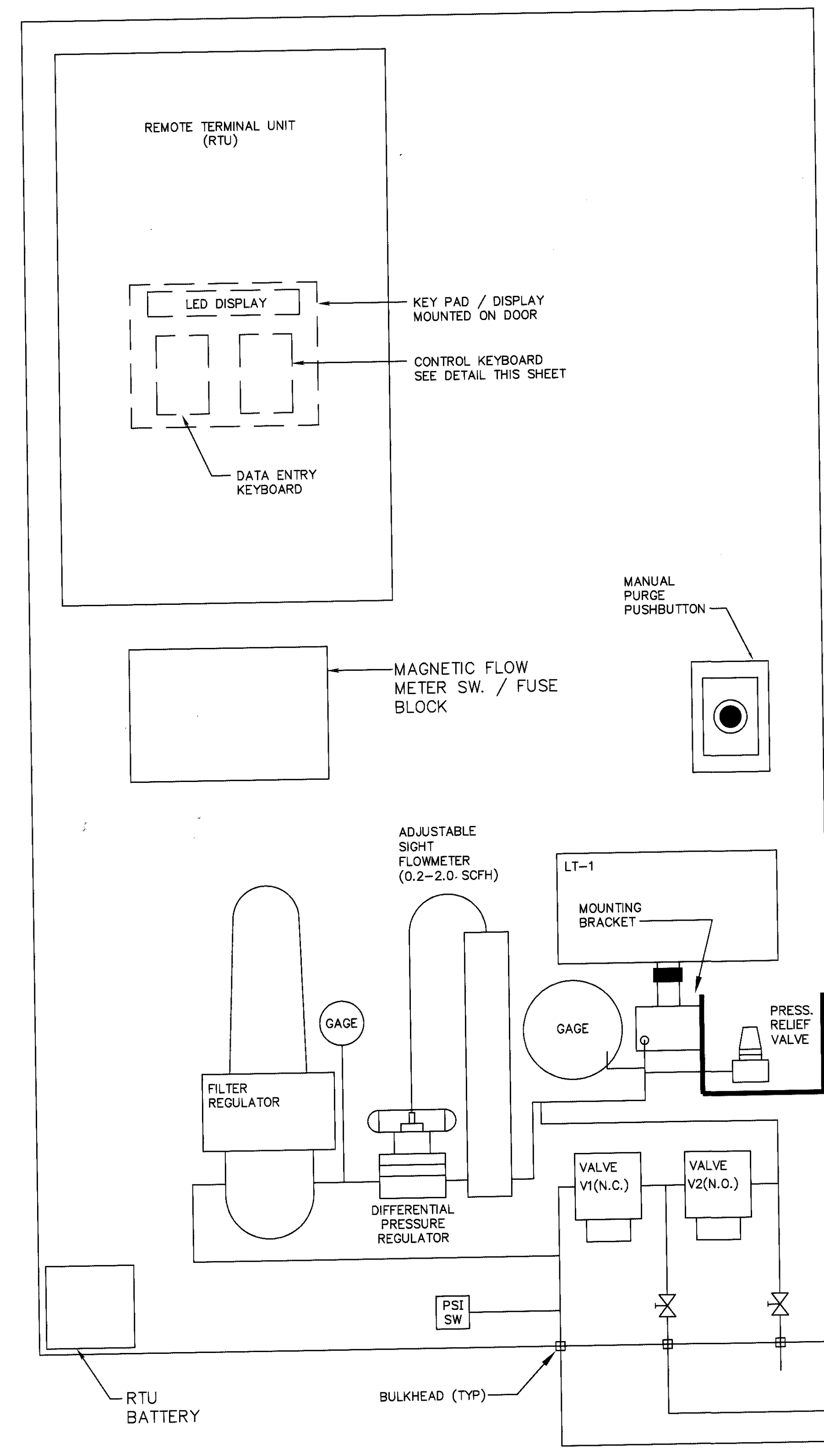
**MAGNETIC FLOW METER POWER WIRING DIAGRAM**  
 N.T.S. (IN PUMP CONTROL PANEL)



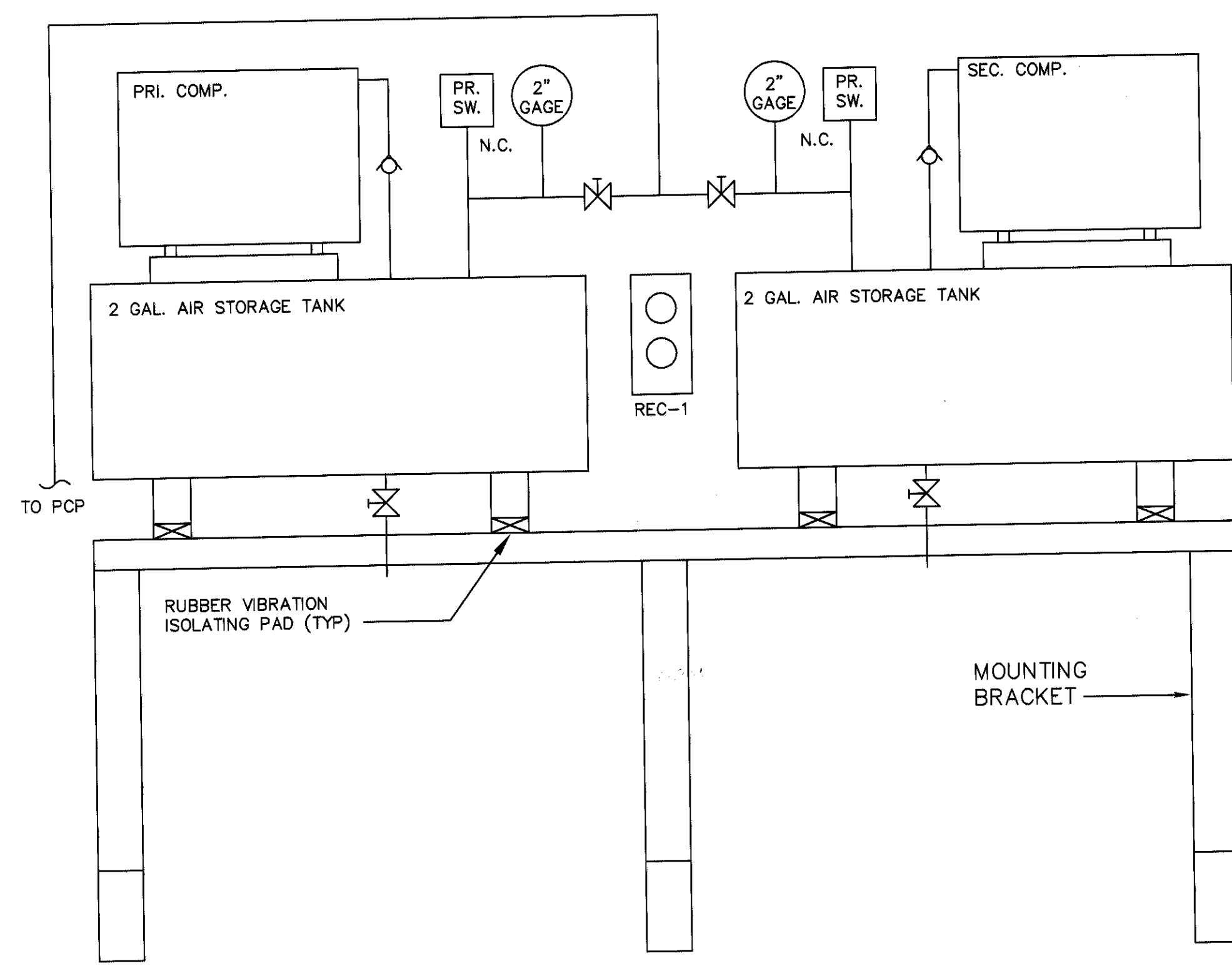
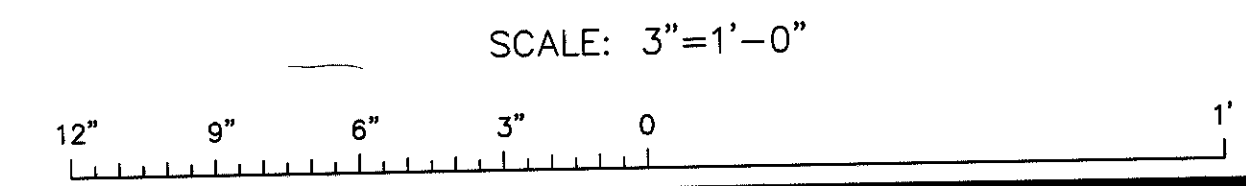
**SUMP PUMP CONTROL DIAGRAM**  
 N.T.S.



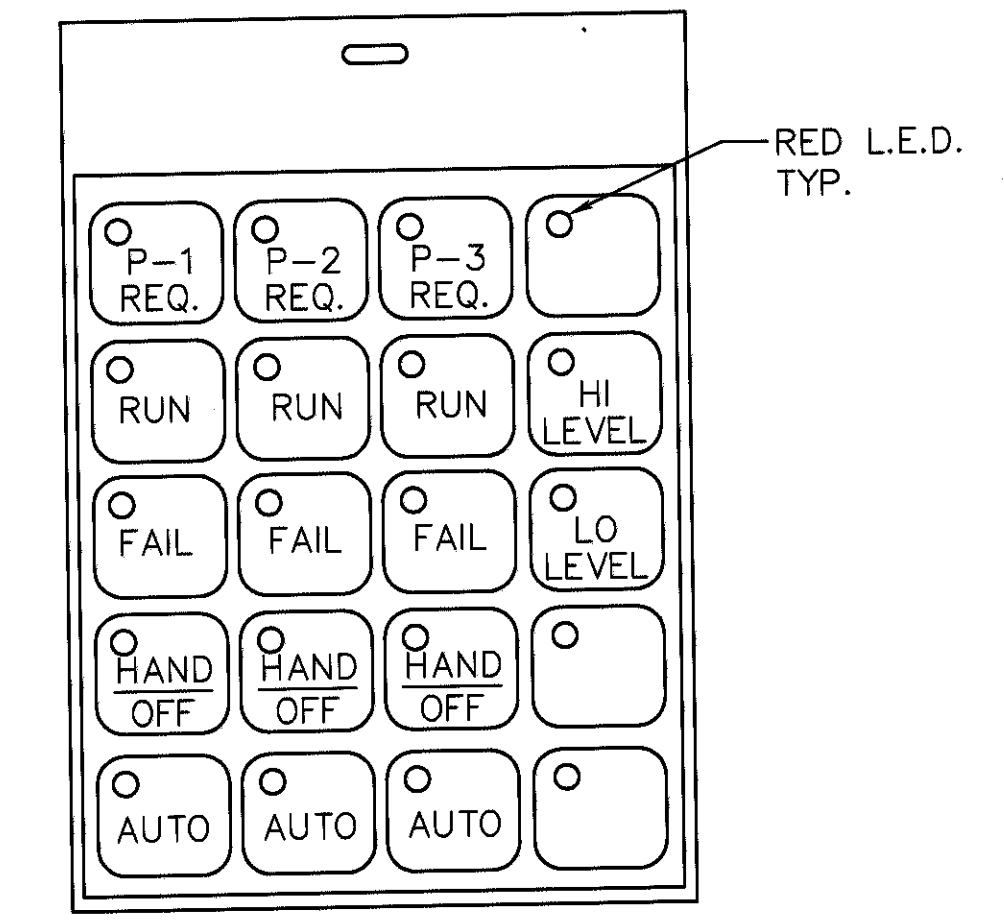
**MCC PUMP CONTROL DIAGRAM**  
 N.T.S. PUMP No.1 SHOWN (TYP. OF 3)



**PUMP CONTROL PANEL (PCP)**  
 SCALE: 3"=1'-0" INTERIOR LAYOUT



**BUBBLER AIR COMPRESSOR DETAIL**  
 N.T.S.



**PUMP CONTROL RTU KEYBOARD DETAIL**  
 N.T.S.

27/27

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 COLUMBUS AND CLEVELAND

PUMP STATION REHABILITATION  
 EXISTING PUMP STATION ST-2  
 ELECTRICAL PUMP CONTROL PANEL  
 WIRING DIAGRAMS & DETAILS  
 E-6

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
NDR	TES	TES	JPM	JPM	4-96	



# I N D E X

SCANNED

9/23/97 0604668

SHEET NO.	DRAWING NO.	TITLE	SHEET NO.	DRAWING NO.	TITLE	SHEET NO.	DRAWING NO.	TITLE
	016-PWC-2-	GENERAL DRAWINGS		016-PWC-2-	GATE CLOSURE DRAWINGS		016-PWC-2-	MECHANICAL/ELECTRICAL DRAWINGS
132	0/1	INDEX	154	20/1	NORTHBOUND PLAN AND ELEVATION	178	23/1	GATE ROLLER AND DETAILS, SHEET 1
133	0/2	LEGEND	155	20/2	SOUTHBOUND PLAN AND ELEVATION	179	23/2	GATE ROLLER BRACKET AND DETAILS, SHEET 2
134	0/3	SUMMARY OF QUANTITIES AND GENERAL NOTES	156	20/3	SOUTHBOUND FLATBASE WALL	180	23/3	GATE ROLLER ASSEMBLIES
135	0/4	SITE PLAN	156A	20/4	SOUTHBOUND I-WALL PLAN AND DETAILS	181	29/1	ELECTRICAL PLAN AND WIRING DIAGRAM
			157	20/5	WATERSTOP DETAILS, TRANSITIONS AT CHANGES IN WALL	182	29/2	ELECTRICAL DETAIL SHEET
			158	20/6	WATERSTOP DETAILS, CONNECTION TO SHEET PILE			HIGHWAYS
136	6/1	RIGHT OF WAY PLAN	159	20/7	SECTIONS AND REINFORCEMENT	183	68/1	GUARDRAIL / BARRIER PLAN AND DETAILS
137	6/2	CONTRACTORS WORK LIMITS	160	20/8	SECTIONS AND REINFORCEMENT			UTILITIES
138	6/3	CLEARING AND SEEDING	161	20/9	SECTIONS AND REINFORCEMENT			
			162	20/10	SECTIONS AND REINFORCEMENT	184	102/1	PLAN
139	11/1	FLOODWALL LAYOUT	163	20/11	SECTIONS AND REINFORCEMENT	185	102/2	SPECIAL 32" PULL BOX DETAILS
			164	20/12	SILL PLATE AND RAIL DETAILS	186	102/3	MEDIAN PULL BOX DETIAL
140	15/1	DRAINAGE PLAN AND PROFILE	165	20/13	VERTICAL SEAL DETAILS			LANDSCAPING
141	15/2	36 INCH FORCE MAIN PLAN AND PROFILE	166	20/14	CORNER PROTECTION AND WATERSTOP GUARD	186A	12/1	LANDSCAPING PLAN
142	15/3	DRAINAGE DETAILS	167	20/15	LATCHING BARS			INFORMATION SERIES
143	15/4	MANHOLE DETAILS	168	20/16	NORTHBOUND GATE ELEVATION AND DETAILS			
144	15/5	MANHOLE SECTIONS	169	20/17	NORTHBOUND GATE SECTIONS AND DETAILS	187	10/1	BORING LOCATION PLAN
145	15/6	MANHOLE LADDER DETAILS	170	20/18	SOUTHBOUND GATE ELEVATION AND DETAILS	188	10/2	GEOLOGY AND SOILS LEGEND
			171	20/19	SOUTHBOUND GATE SECTIONS AND DETAILS	189	10/3	GRAPHIC LOGS OF BORINGS
146	16/1	PLAN AND PROFILE	172	20/20	MISCELLANEOUS DETAILS			
147	16/2	CROSS SECTIONS 122+83 TO 123+65	173	20/21	SEAL DETAILS -SHEET 1			
148	16/3	CROSS SECTIONS 123+90 TO 125+25	174	20/22	SEAL DETAILS -SHEET 2			
149	16/4	CROSS SECTIONS 125+79 TO 126+80	175	20/23	SEAL DETAILS -SHEET 3			
150	16/5	CROSS SECTIONS 126+93 TO 127+48	176	20/24	LATCHING DEVICE DETAILS			
			177	20/25	LADDER DETAILS			
		CHANNEL RELOCATION & REC. TRAIL DRAWINGS	177A	20/26	WALL TEXTURE DETAILS			
151	16/6	RECREATION TRAIL PLAN AND PROFILE	177B	20/27	ARCHITECTURAL FEATURES			
152	16/7	CROSS SECTIONS 7+15 TO 13+60						
153	16/8	TYPICAL SECTION AND DETAILS						

REVISION	DATE	DESCRIPTION						BY	
COMPUTER	A	CADD COMPUTER INFORMATION							
DESIGN & DRAFTING	D	SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.x FILE SPEC: index.dgn							
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W. VA.									
DESIGNED BY:	J. VASSAR H. WEHRLE		<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS INDEX</b>						
DRAWN BY:	J. BOCK J. SIMPKINS								
CHECKED BY:	J. NOLEN P. FERGUSON								
SUBMITTED BY:									
CHIEF, DESIGN BRANCH			APPROVAL RECOMMENDED:		APPROVED:		DATE: <b>MAY 1997</b>		
CHIEF, ENG DIVISION			COL. C. E. DISTRICT ENGINEER						
APPROVED FOR:			SCALE: <b>NONE</b>		CONTR. NO:		DRAWING NUMBER		
DATE:							<b>016-PWC-2-01</b>		
			SHEET		OF				





**GENERAL NOTES**

1. CURVE DATA SHOWN IS BASED ON ARC DEFINITION.
2. WORKING AREA AVAILABLE TO THE CONTRACTOR IS INDICATED BY THE CONTRACTORS WORK LIMITS (CWL). ANY ADDITIONAL AREAS NEEDED BY THE CONTRACTOR SHALL BE ACQUIRED AT HIS EXPENSE.
3. EXISTING POWER, TELEPHONE, CABLE TV AND GAS PIPELINES, INTERFERING WITH CONSTRUCTION WILL BE REMOVED, ABANDONED OR RELOCATED BY THE OWNER AS NOTED. FACILITIES SHOWN AS ABANDONED MAY BE REMOVED AFTER CONFIRMING WITH THE OWNER THAT THE FACILITIES ARE ABANDONED.
4. ELEVATIONS ARE EXPRESSED IN FEET AND REFER TO NATIONAL GEODETIC VERTICAL DATUM OF 1929.
5. ALL EXPOSED EDGES, JOINTS, EXTERNAL CORNERS AND VERTICAL EXPANSION AND CONTRACTION JOINTS OF CONCRETE SURFACES SHALL BE CHAMFERED 1" UNLESS OTHERWISE SHOWN.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 3" UNLESS OTHERWISE NOTED.
7. ALL REINFORCING STEEL SHALL BE ASTM A615, GR. 60
8. ALL EPOXY-COATED REINFORCING STEEL SHALL CONFORM TO ASTM A775.
9. ALL REINFORCEMENT LAP SPLICES, BAR BENDS, HOOKS AND EMBEDMENT LENGTHS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318.
10. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (fc) OF 3,000 P.S.I. AT 28 DAYS, UNLESS OTHERWISE NOTED.
11. ALL STRUCTURAL STEEL SHALL BE ASTM A-36 UNLESS OTHERWISE NOTED.
12. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1.
13. UNLESS NOTED OTHERWISE, ALL ITEMS MARKED C.R.E.S. OR C.R.S. SHALL BE CORROSION-RESISTING STEEL.
14. COORDINATE SYSTEM IS OHIO STATE PLANE COORDINATE SYSTEM SOUTH ZONE, BASED ON NORTH AMERICAN DATUM OF 1927.
15. TOPOGRAPHIC MAPPING DOES NOT REFLECT RECENT BUILDING REMOVAL, CONSTRUCTION OR GRADING.
16. TO FACILITATE CONSTRUCTION, HORIZONTAL STEM REINFORCEMENT IN FLOODWALL MONOLITHS MAY BE PLACED ON EITHER SIDE OF VERTICAL REINFORCEMENT PROVIDED THE REQUIRED CONCRETE COVER ON THE VERTICAL REINFORCING BARS IS MAINTAINED.
17. CWL AND R/W ON DRAWING 6/1 AND 6/2 TAKE PRECEDENCE OVER ALL OTHER CWL AND R/W INFORMATION.
18. FOR SR 315 ROAD ALIGNMENT, SEE STATE OF OHIO, DEPT. OF TRANSPORTATION CONTRACT NO. FRA - 670 - 1.25 (A-5).
19. THE SR 315 GATE CLOSURE FEATURES HAVE BEEN HIGHLIGHTED FOR CONTRAST TO THE PROPOSED ODOT FEATURES.

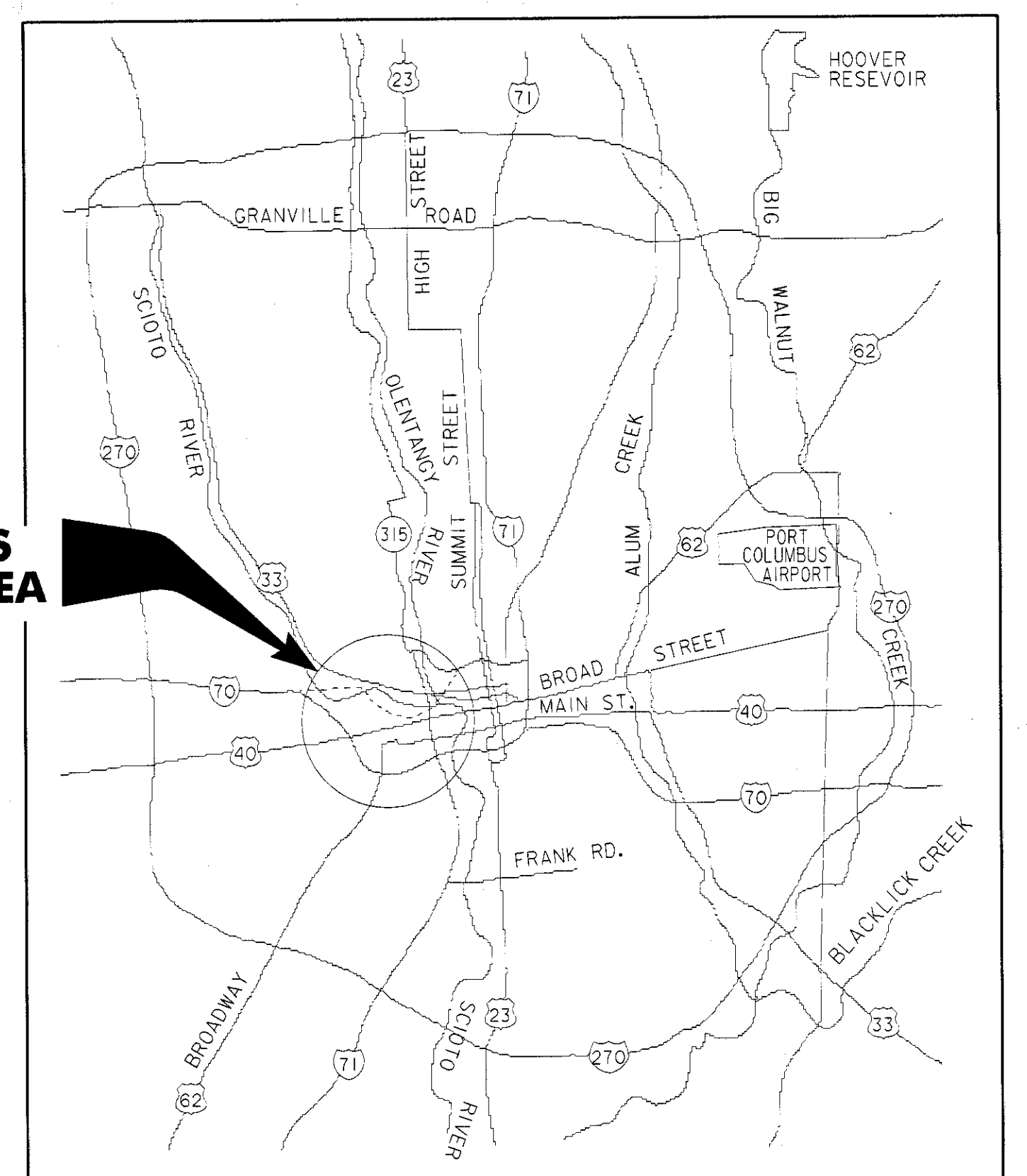
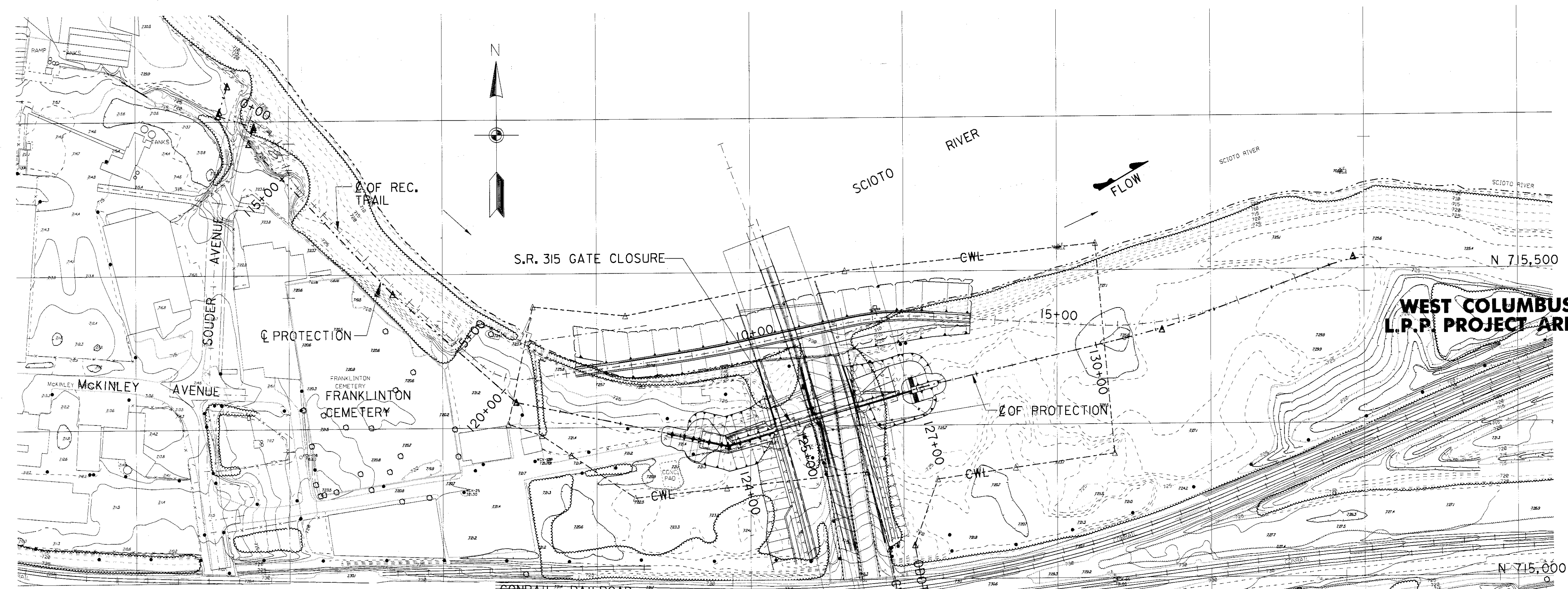
**SUMMARY OF QUANTITIES**

ITEM	ITEM EXT.	TOTALS	UNIT	DESCRIPTION	SHT. NO.
201	11000	LUMP	LUMP	CLEARING AND GRUBBING	
SPEC	69098300	725	SQ YD	ROADWAY MISC. : RECREATIONAL TRAIL	SPEC
SPEC		645	LIN FT	2" CONDUIT	
SPEC		1	EA	HAND HOLE	
SPEC	60998000	520	LF	CURB MISC. : CONC. CURB, AS PER PLAN	153
653	10000	2450	CU YD	TOPSOIL FURNISHED AND PLACED	
659	10000	14700	SQ YD	SEEDING AND MULCHING	
659	35000	32	M. GAL	WATER	
659	20000	0.1	TON	COMMERCIAL FERTILIZER	
659	40000	132	M. SQ FT	MOWING	
SPEC	69098700	18014	CU YD	ROADWAY, MISC. : STONE SLOPE PROTECTION AND ROCKFILL	
SPEC	69098300	7070	SQ YD	ROADWAY, MISC. : FILTER CLOTH	
503	21100	25220	CU YD	UNCLASSIFIED EXCAVATION	
SPEC	20398000	9120	CU YD	IMPERVIOUS FILL	
SPEC	69098200	3150	SQ FT	ROADWAY, MISC. : SHEET PILING, TYPE PZ22 OR SPZ-23.5	
SPEC	69098100	93	LIN FT	ROADWAY, MISC. : SHEET PILING, TYPE PSA23	
511	51100	1676	CU YD	CLASS C CONCRETE FOR GATE CLOSURE	
511	71100	110	CU YD	CLASS F CONCRETE FOR GATE CLOSURE	
509	15700	96300	LB	REINFORCING STEEL	
509	15820	12000	LB	EPOXY COATED REINFORCING STEEL	
SPEC	69098100	180	LIN FT	ROADWAY, MISC. : WATERSTOP, Y-TYPE	
SPEC	69098100	267	LIN FT	ROADWAY, MISC. : WATERSTOP, U-TYPE	
SPEC	69098100	300	LIN FT	ROADWAY, MISC. : TOE DRAIN	
SPEC	69098000	2	EACH	ROADWAY, MISC. : CLEANOUT	
SPEC	69098400	LUMP	LUMP	ROADWAY, MISC. : ROLLER GATES	
SPEC	60698100	20	EACH	GUARDRAIL, MISC. POSTS	SPEC.
SPEC	66340000	LUMP		PLANTING TREES, MISC. : LANDSCAPE PLANTING	186A
603	10401	225	LIN FT	24" CONDUIT, TYPE B, 706.02	
604	04900	2	EACH	CATCH BASIN. NO. 2-3	
604	14501	3	EACH	INLET, NO. 3A, AS PER PLAN (SEE DETAIL)	142
SPEC	60432500	1	EACH	MANHOLE, MISC. : SPECIAL 72-INCH MANHOLE, AS PER PLAN (SEE DETAIL)	143-145
SPEC	60422500	1	EACH	INLET, MISC. : GUTTER INLET WITH OUTLET DRAIN PIPE	
SPEC	69098200	983	SQ FT	SPECIAL, MISC.: SHEET PILING, TYPE PZ27(C.O.E.)	
608	41000	154	LIN FT	CONCRETE STEPS, TYPE B	
SPEC	60698100	6	EACH	GUARDRAIL, MISC.: THRIE BEAM TERMINAL CONNECTOR	183
SPEC	60698100	3	EACH	GUARDRAIL, MISC. : BRIDGE TERMINAL ASSEMBLY, TYPE I, AS PER PLAN	183
606		21	EACH	BOLLARDS AND CHAINS	
SPEC	69098400	LUMP	LUMP	ROADWAY, MISC. : UTILITY PIPE WALL SLEEVES	185
625	30707	2	EACH	PULL BOX, 713.08, 32". AS PER PLAN	
SPEC	69098100	20	LIN FT	ROADWAY, MISC. : PULLBOX DRAIN	186
625	31600	2	EACH	PULL BOX, MISC. : MEDIAN TRAFFIC SURVEILLANCE, AS PER PLAN	186

TOTALS TO GENERAL SUMMARY

THIS ITEM IS TO BE USED IN ALL LOCATIONS LABELED AS "2nd Pour Concrete" IN THE CORPS OF ENGINEERS GATE CLOSURE PLANS.

COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00gdgn00.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: J. VASSAR H. WEHRLE DRAWN BY: J. SIMPKINS J. BOCK CHECKED BY: J. NOLEN P. FERGUSON SUBMITTED BY:	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE SUMMARY OF QUANTITIES GENERAL NOTES</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: DATE: <b>MAY 1997</b>
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER
APPROVED FOR:	SCALE: NONE CONTR. NO:
DATE:	DRAWING NUMBER <b>016-PWC-2-03</b>
	SHEET 1 OF 1

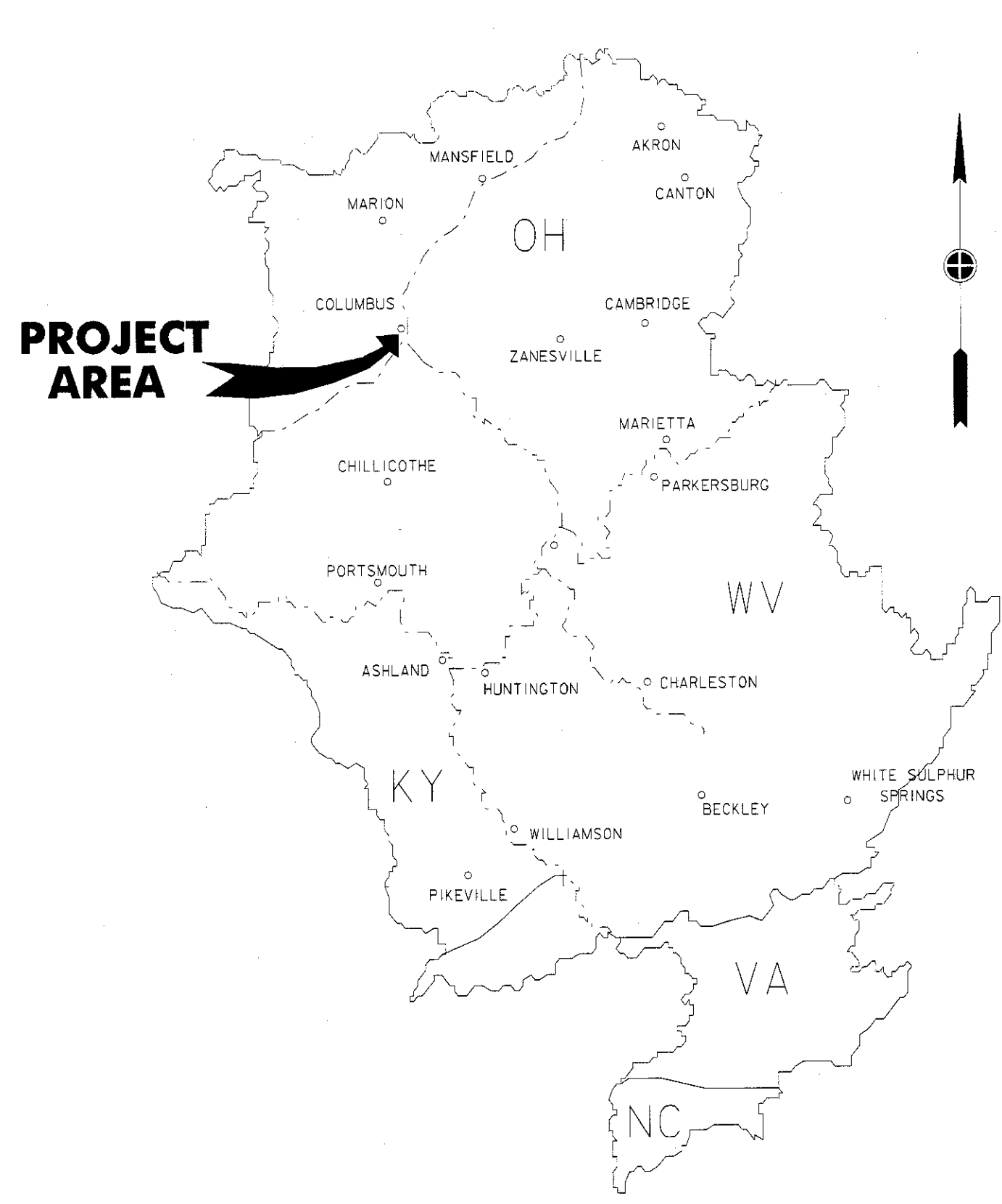


**VICINITY MAP**  
N.T.S.

**NOTES**

1. FOR LEGEND, QUANTITIES AND GENERAL NOTES SEE DWG. 0/2 THRU 0/4.
2. FOR R/W AND CWL SEE DWGS. 6/1 THRU 6/3.
3. FOR DRAINAGE AND MANHOLE DETAILS SEE DWGS. 15/1 THRU 15/6.
4. FOR PLAN & PROFILE AND CROSS-SECTIONS SEE DWGS. 16/1 THRU 16/6.
5. FOR RECREATION TRAIL SEE DWGS. 16/6 THRU 16/8.
6. FOR GATE CLOSURE SEE DWGS. 20/1 THRU 20/26, 23/3 AND DWGS. 29/1 THRU 29/2.
7. FOR MECHANICAL & ELECTRICAL DWGS. SEE 23/1 THRU
8. FOR GUARDRAIL AND BARRIERS SEE DWG. 68/1
9. FOR UTILITIES SEE DWGS. 102/1 THRU 102/3.
10. FOR LANDSCAPING SEE DWG. 12/1

**PROJECT LOCATION**  
N.T.S.

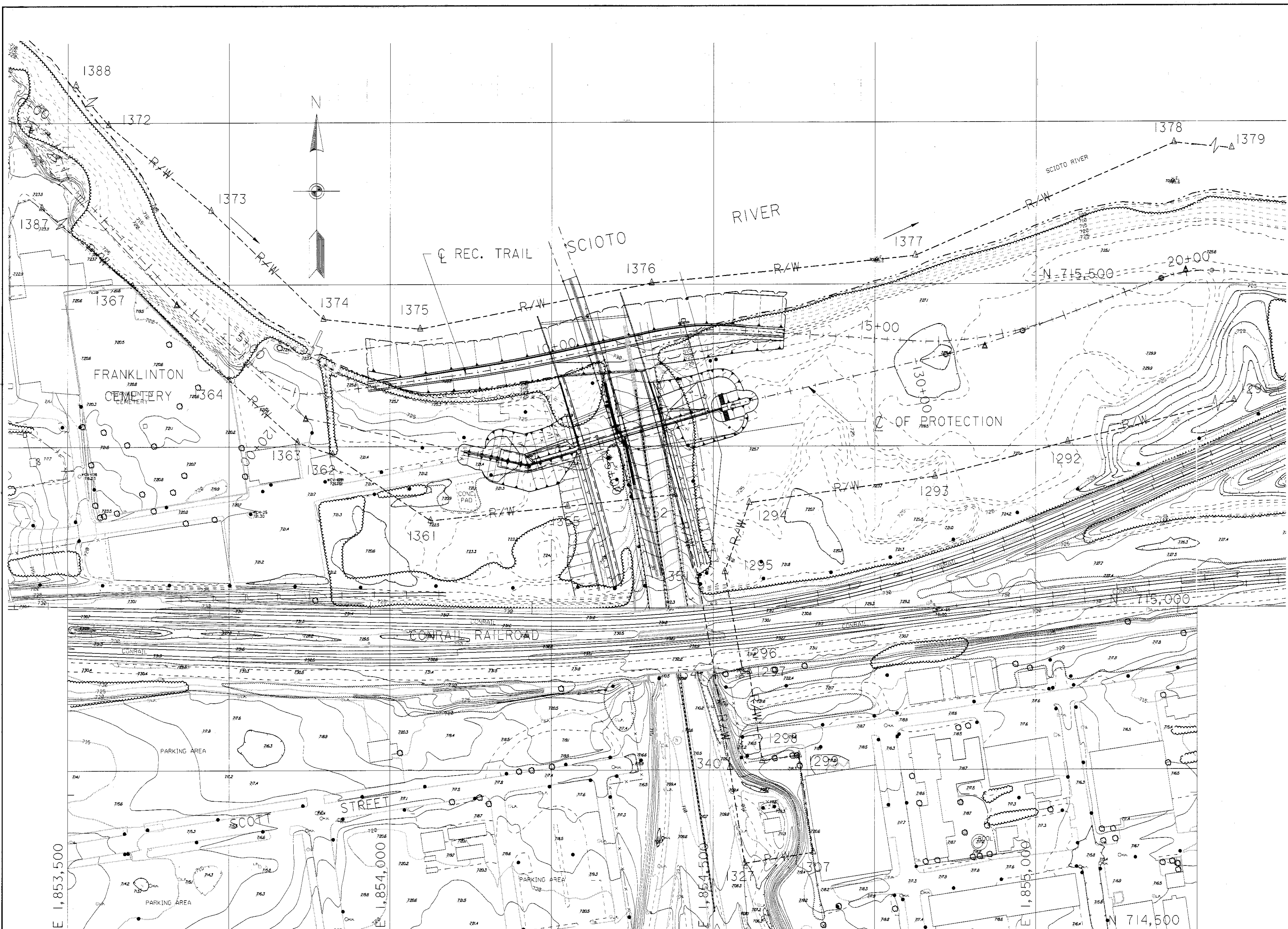


**SITE PLAN**

100' 50' 0 100' 200'  
SCALE: 1"=100'-0"

REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 315site.dgn	
DESIGNED BY: J. VASSAR H. WEHRLER		U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DRAWN BY: J. SIMPKINS J. BOCK		<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS SITE PLAN</b>	
CHECKED BY: J. NOLEN P. FERGUSON			
SUBMITTED BY:		APPROVED: COL. C. E. DISTRICT ENGINEER	DATE: MAY 1997
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:		SCALE: AS SHOWN	CONTR. NO.:
CHIEF ENGINEERING DIVISION APPROVED FOR:		DRAWING NUMBER	
DATE:		SHEET 1 OF 1 <b>016-PWC-2-04</b>	

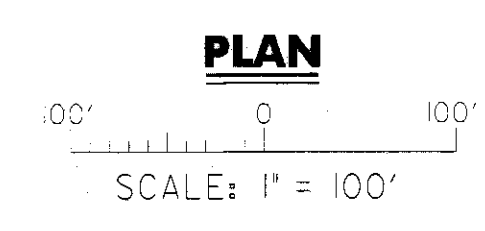




NAME	NORTHING	EASTING	BEARING	DISTANCE
1291	715338.512	1855392.006	S 76°26'20.70	351.86
1292	715256.008	1855049.953	S 75°33'20.51	212.76
1293	715202.936	1854843.916	S 82°03'42.86	290.83
1294	715162.772	1854555.875	S 19°30'16.03	113.71
1295	715055.585	1854517.909	S 10°24'05.51	156.18
1296	714901.975	1854546.106	N 89°45'02.93	9.89
1297	714902.018	1854555.993	S 8°15'16.76	139.48
1298	714763.980	1854576.019	N 81°06'42.82	57.47
1299	714772.860	1854632.803	S 8°27'09.05	151.66
1307	714622.848	1854655.095	S 81°00'36.01	107.44
1327	714606.059	1854548.975	N 8°48'47.12	149.74
1340	714754.032	1854526.033	N 9°11'10.39	145.99
1341	714898.149	1854502.727	N 9°49'22.46	153.31
1351	715049.216	1854476.571	N 15°46'16.75	130.74
1352	715175.038	1854441.035	S 83°58'09.27	166.62
1355	715157.533	1854275.339	S 83°57'29.59	213.47
1361	715135.064	1854063.054	N 55°53'03.68	183.26
1362	715237.846	1853911.336	N 71°06'02.00	57.45
1363	715256.456	1853856.979	N 47°58'48.25	143.55
1364	715352.544	1853750.337	N 45°46'53.56	209.08
1367	715498.357	1853600.490	N 49°31'39.32	207.54
1387	715633.066	1853442.612		
1388	715875.457	1853453.630	S 40°24'50.75	168.95
1372	715746.825	1853563.159	S 49°58'24.12	207.78
1373	715613.194	1853722.264	S 46°19'49.02	241.16
1374	715446.674	1853896.702	S 84°06'20.55	150.81
1375	715431.187	1854046.713	N 78°48'19.40	364.72
1376	715501.994	1854404.491	N 84°07'13.83	410.35
1377	715544.029	1854812.683	N 66°34'06.47	377.09
1378	715717.840	1855213.730	S 84°19'13.62	1093.67
1379	715609.605	1856302.032		

**NOTES**

- FOR LEGEND, SEE DRAWING 0/2.
- FOR GENERAL NOTES, SEE DRAWING 0/3.



REVISION		DATE	DESCRIPTION	BY
COMPUTER		CADD COMPUTER INFORMATION		
DESIGN & DRAFTING		SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srrw00.dgn		
DESIGNED BY: J. VASSAR H. WEHRLE		U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.		
DRAWN BY: J. SIMPKINS C. CAMPBELL		<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS RIGHT OF WAY PLAN</b>		
CHECKED BY: J. NOLEN P. FERGUSON				
SUBMITTED BY:		APPROVED: _____ DATE: MAY 1997		
CHIEF, DESIGN BRANCH		APPROVED FOR: _____		
CHIEF, ENG DIVISION		SCALE: AS SHOWN CONTR. NO. _____		
DATE: _____		DRAWING NUMBER <b>016-PWC-2-61</b>		

ADDITIONAL CONTRACTORS WORK LIMITS  
GEOMETRIC LAYOUT

Name	Northing	Easting	Bearing	Length
1291	715446.674	1853896.702	S 11°47'43.18	194.32
1292	715256.456	1853856.979	S 71°06'02.00	57.45
1293	715237.846	1853911.336	S 55°53'23.49	57.60
1294	715205.544	1853959.026	S 55°52'54.60	125.65
1295	715135.064	1854063.054	N 83°57'29.59	149.34
1296	715150.783	1854211.567		
1297	715055.585	1854517.909	N 19°30'16.03	113.71
1298	715162.772	1854555.875	N 82°02'50.40	127.95
1299	715180.474	1854682.591	N 82°04'24.07	162.88
1307	715202.936	1854843.916	N 5°13'54.25	342.52
1327	715544.029	1854812.683	S 84°07'13.83	410.35
1340	715501.994	1854404.491	S 78°48'19.40	364.72
1341	715431.187	1854046.713	N 84°06'20.55	150.81
1291	715446.674	1853896.702	S 11°47'43.18	194.32



**PLAN**

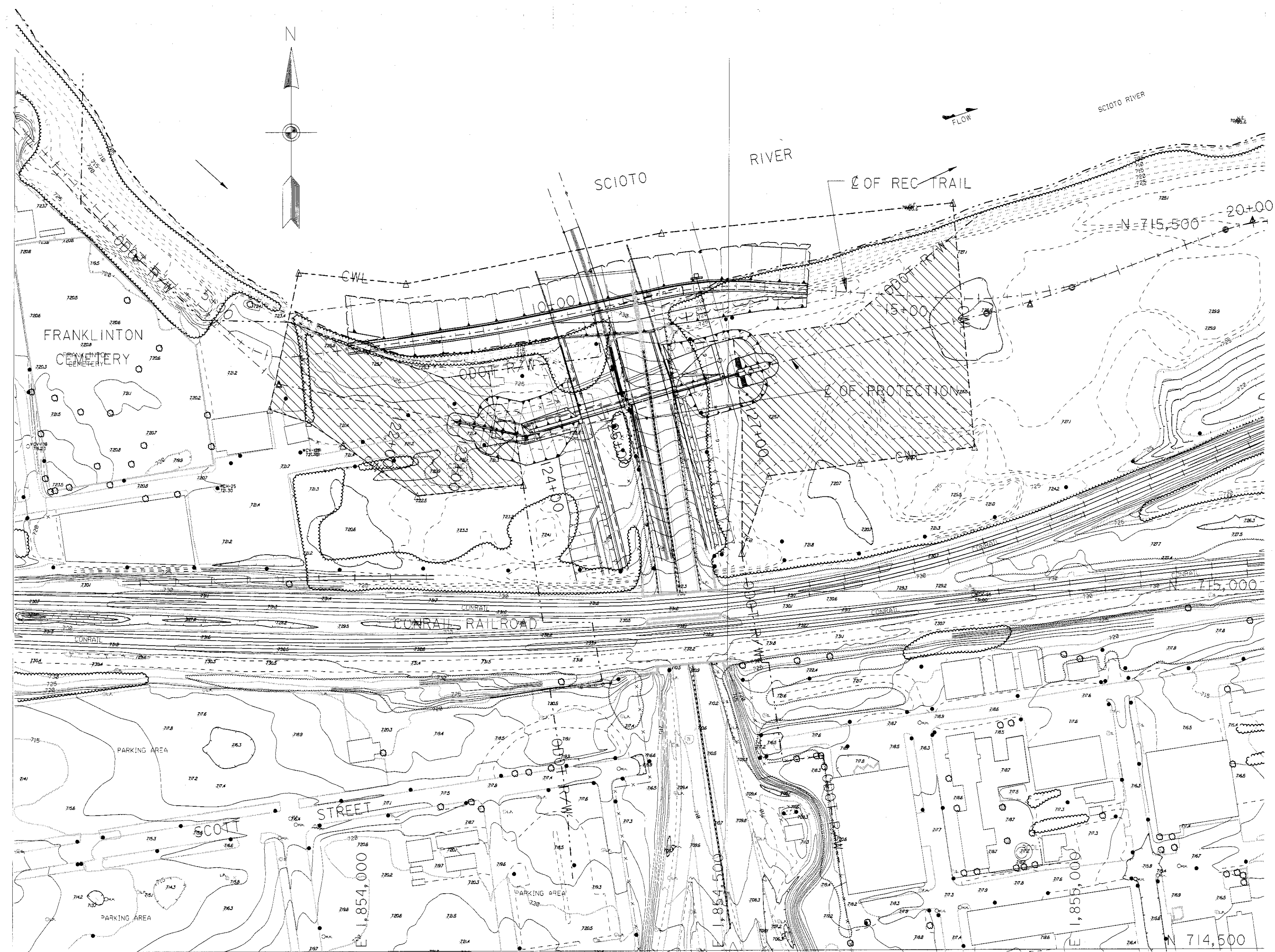
1" = 100'

**NOTES**

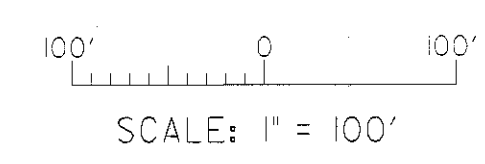
- FOR LEGEND, SEE DRAWING 0/2.
- FOR GENERAL NOTES, SEE DRAWING 0/3.

REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srcw00.dgn		
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: J. VASSAR H. WEHRLE	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS CONTRACTORS WORK LIMITS</b>		
DRAWN BY: J. SIMPKINS C. CAMPBELL			
CHECKED BY: J. NOLEN P. FERGUSON			
SUBMITTED BY:			
CHIEF, DESIGN BRANCH	APPROVED:	DATE: MAY 1997	
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER		
APPROVED FOR:	SCALE: AS SHOWN	CONTR. NO:	
DATE:	DRAWING NUMBER		
	SHEET 1 OF 1		016-PWC-2-62





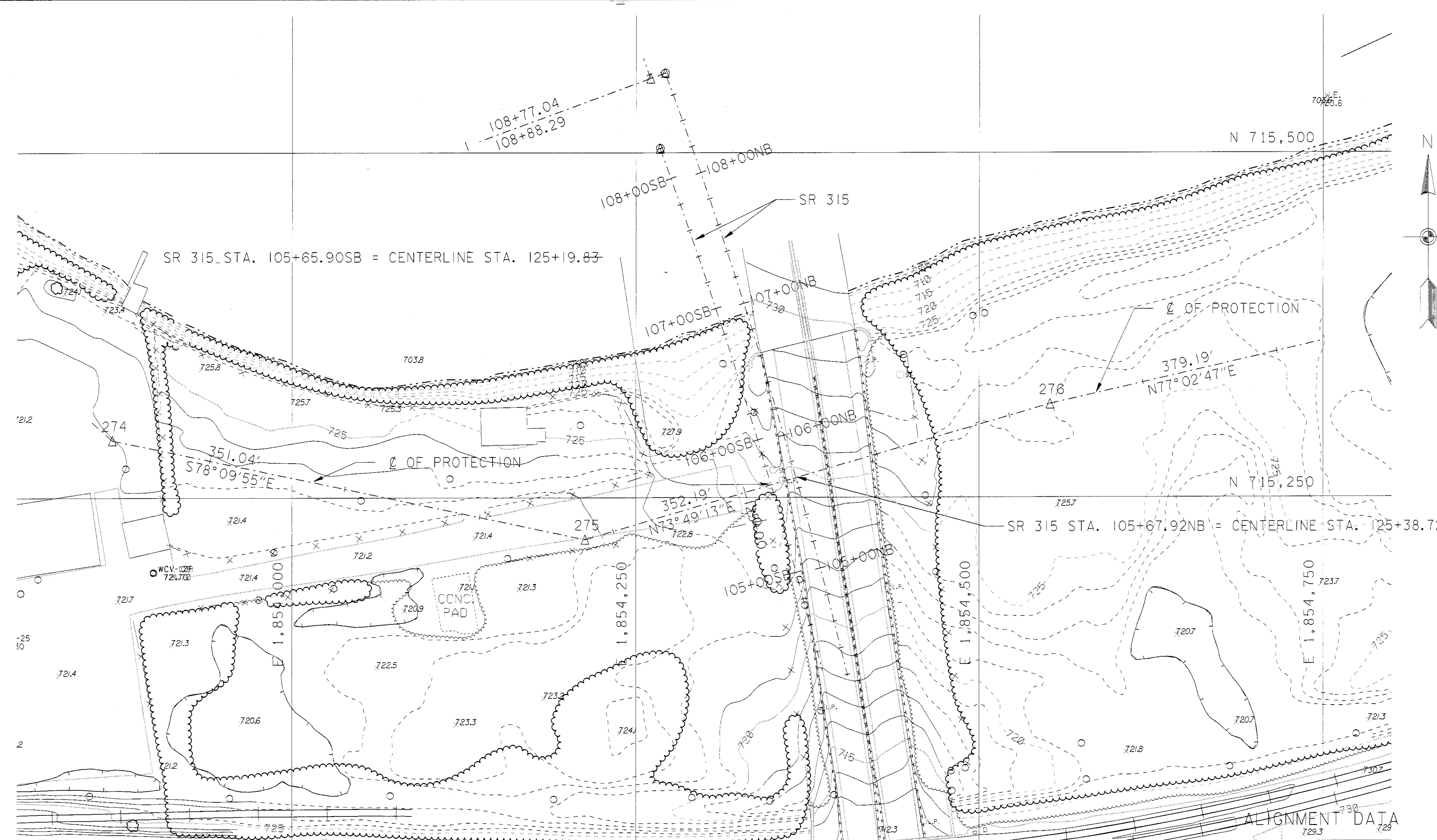
**PLAN**



**NOTES**

1. HATCHED AREAS REPRESENT PAY LIMITS FOR CLEARING & GRUBBING, SEEDING & MULCHING, WATERING AND MOWING.

COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srsc00.dgn	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: J. VASSAR H. WEHRLE	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS CLEARING AND SEEDING</b>		
DRAWN BY: J. SIMPKINS C. CAMPBELL			
CHECKED BY: J. NOLEN P. FERGUSON			
SUBMITTED BY:			
CHIEF DESIGN BRANCH	APPROVED:	DATE:	MAY 1997
CHIEF ENG DIVISION	COL. C. E. DISTRICT ENGINEER		
APPROVED FOR:	SCALE: AS SHOWN	CONTR. NO:	DRAWING NUMBER
			016-PWC-2-63
DATE:	SHEET 1 OF 1		

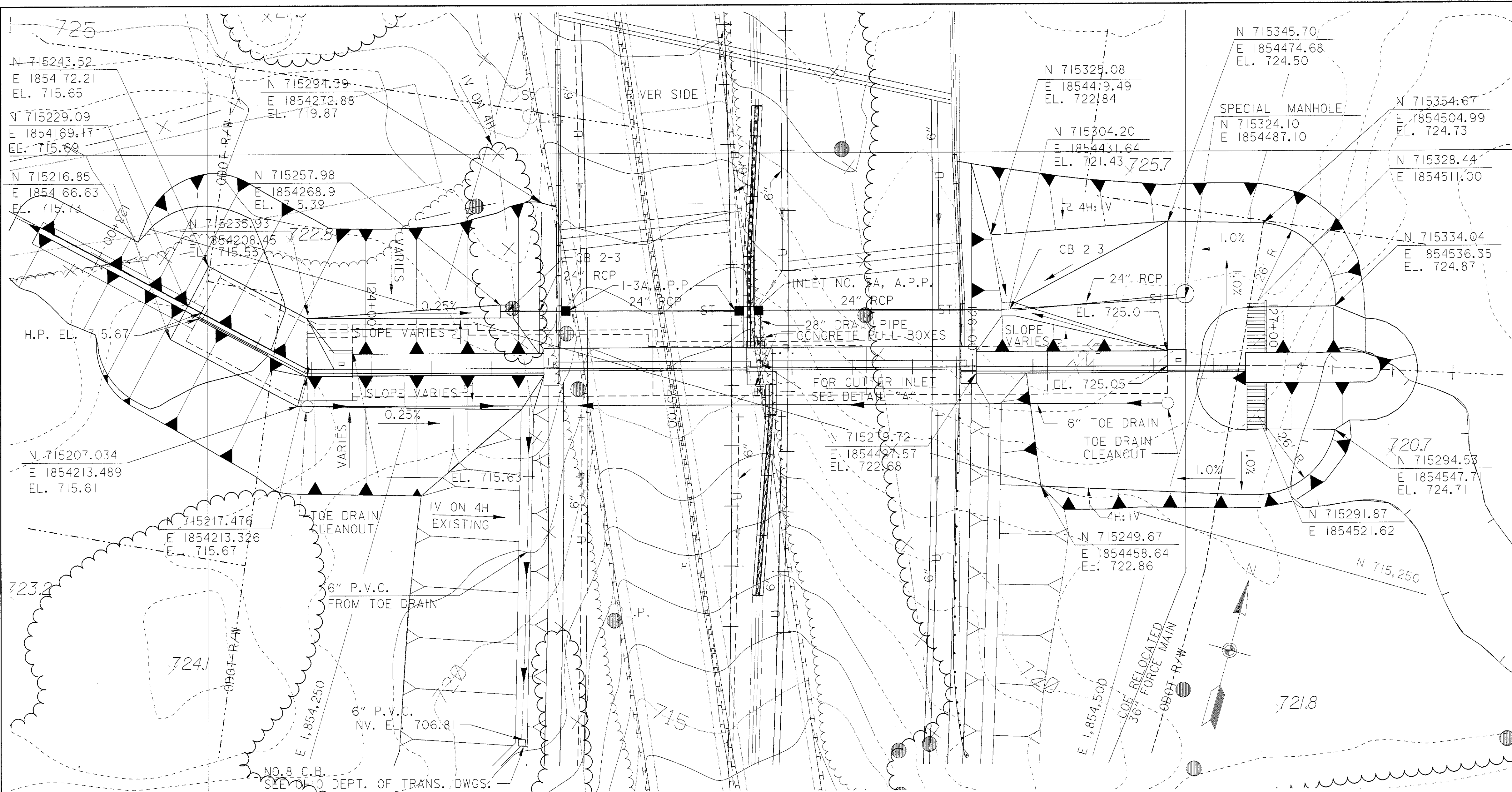


**PLAN**  
SCALE: 1" = 50'

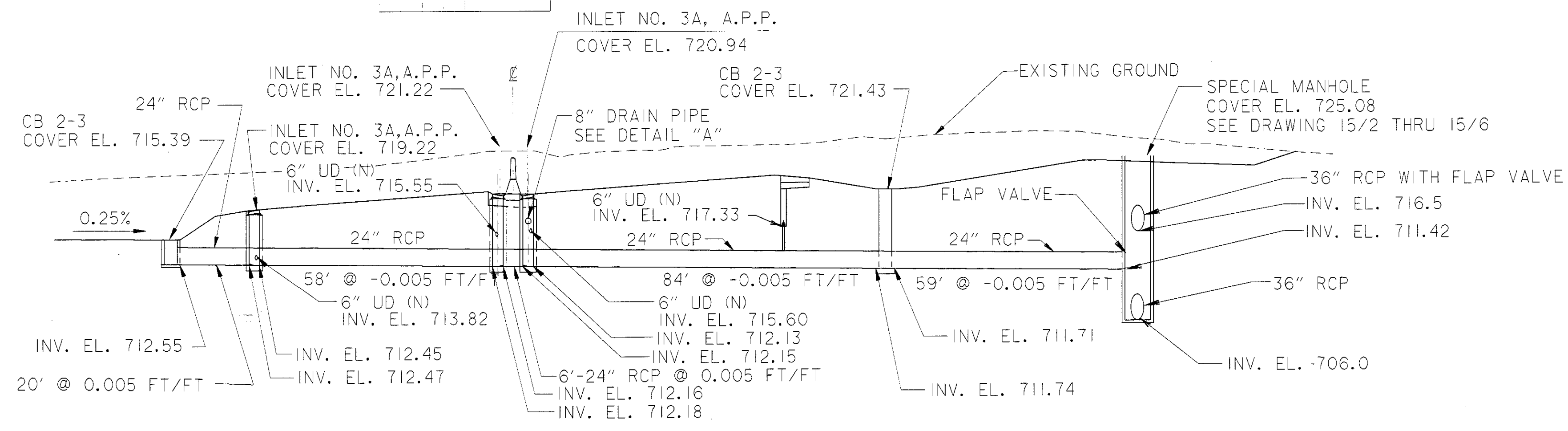
POINT TYPE	POINT NUMBER	NORTHING	EASTING	STATION
PI	274	715291.8569	1853869.6381	120+27.5828
PI	275	715219.8616	1854213.2192	123+78.6260
PI	276	715318.00	1854551.46	127+30.16
PC	287	715388.8060	1854860.1400	130+47.4801 N 76°52'18.8893" E
Radial direction from PC to CC is N 13°07'41.1107" W				
CC	286	716318.7783	1854643.2481	
		Radius	954.9297	Degree 6°00'00.0000"
		Length	124.8086	Delta 7°29'18.6482"L
		Tangent	62.4933	Back N 76°52'18.8893" E
		External	2.0427	Ahead N 69°23'00.2411" E
		Long Chord	124.7197	N 73°07'39.5652" E
		Mid. Ord.	2.0383	
PI	277	715403.0000	1854921.0000	
PT	288	715425.0047	1854979.4911	131+72.2887 N 69°23'00.2411" E

REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srfw01.dgn		
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: J. VASSAR H. WEHRLE	<b>SCIOTO RIVER COLUMBUS OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS FLOODWALL LAYOUT</b>		
DRAWN BY: J. SIMPKINS H. WEHRLE			
CHECKED BY: J. NOLEN P. FERGUSON	APPROVED: _____ DATE: <b>MAY 1997</b>		
CHIEF DESIGN BRANCH	COL. C. E. DISTRICT ENGINEER		
CHIEF ENG DIVISION	APPROVED FOR: _____		
DATE: _____	SCALE: AS SHOWN	CONTR. NO:	DRAWING NUMBER
			<b>016-PWC-2-111</b>
	SHEET 1 OF 1		

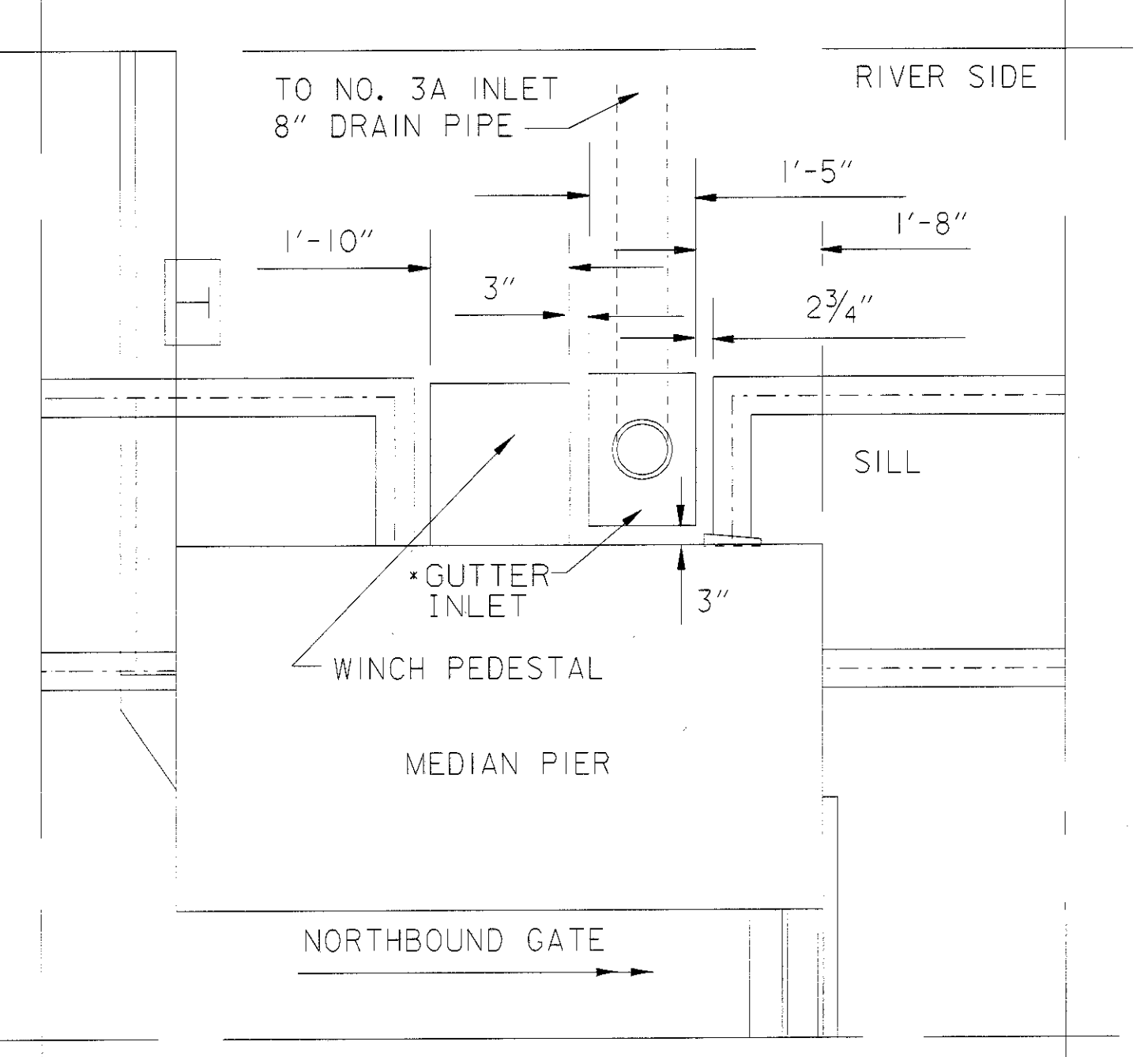




**PLAN**  
SCALE: 1" = 20'



**24" RCP PROFILE**  
SCALE IN FEET



**DETAIL A**

SCALE: 1" = 2'

**NOTES**

1. FOR SR 315 GATE CLOSURE AND LEVEE ALIGNMENT, SEE DWG. 11/1 AND DWG. 16/1.
2. FOR LEGEND, SEE DWG. 0/2.
3. FOR GENERAL NOTES, SEE DWG. 0/3.
4. FOR SR 315 GATE CLOSURE CROSS SECTIONS, SEE DWG. 16/2 THRU 16/5.
5. FOR TOE DRAIN AND CLEANOUT DETAILS, SEE DWG. 15/3.
6. FOR 36" FORCE MAIN PLAN AND PROFILE, SEE DWG. 15/2.
7. FOR SPECIAL MANHOLE DETAILS, SEE DWG. 15/4, 15/5, & 15/6.
8. FOR UTILITY PLAN, SEE DWG. 102/1.
9. FOR CONSTRUCTION OF CONCRETE PULL BOXES SEE ITEM SPECIAL 32" PULL BOX DETAIL ON DWG. 102/2. PULL BOXES SHALL BE DRAINED WITH 2" PVC TO THE DRAINAGE MATERIAL SURROUNDING THE 6" UNDERDRAIN.
10. FOR I-3A AS PER PLAN INLET SEE DWG 15/3.

REVISION	DATE	DESCRIPTION	BY

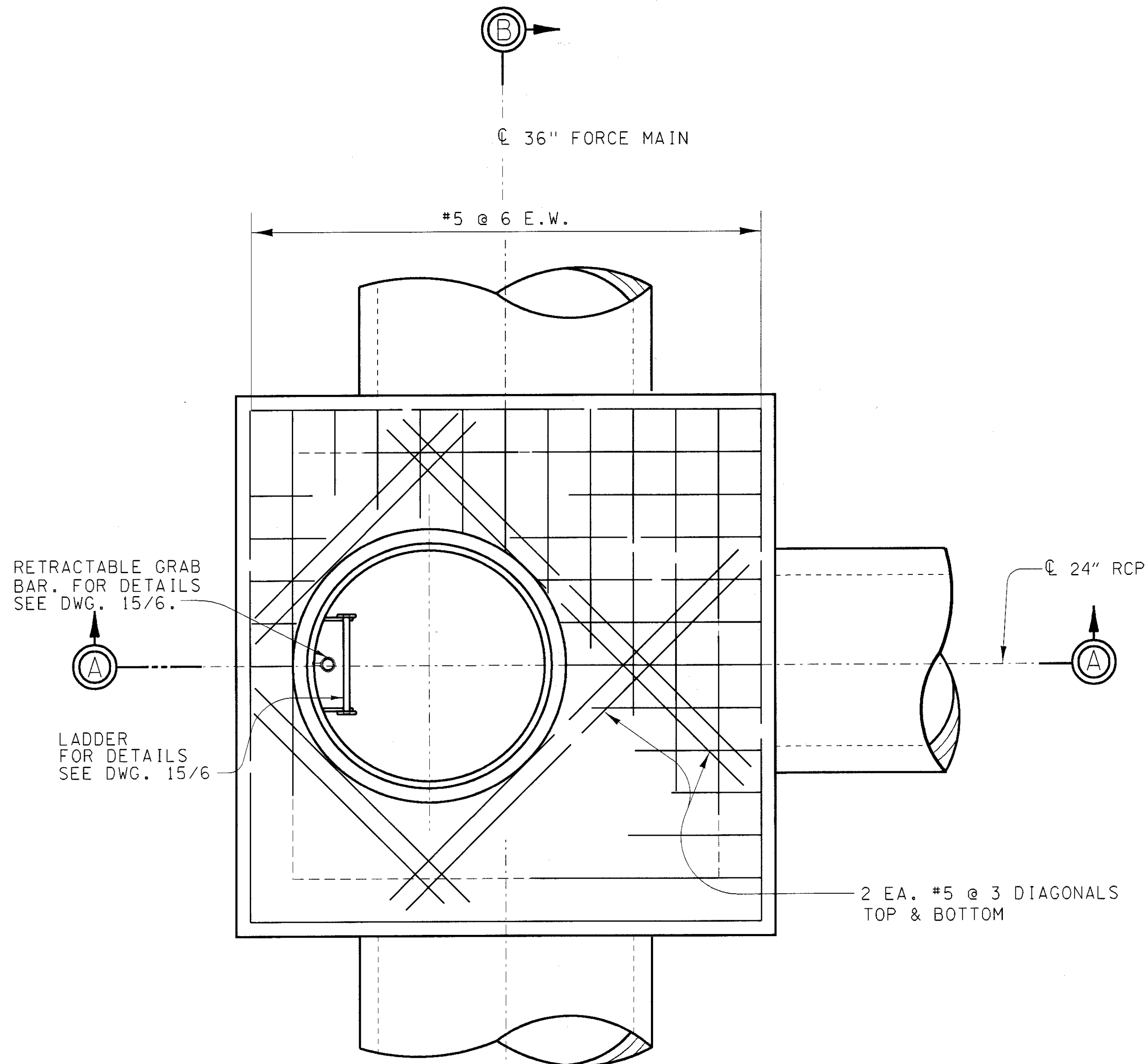
  

COMPUTER A IDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 315drpl.dgn
DESIGNED BY: <b>J. VASSAR</b> <b>H. WEHRLE</b> DRAWN BY: <b>J. SIMPKINS</b> <b>H. WEHRLE</b> CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b> SUBMITTED BY:	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.
CHIEF, DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____	SCALE: <b>AS SHOWN</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-151</b>
DATE: _____	SHEET <b>1</b> OF <b>1</b>



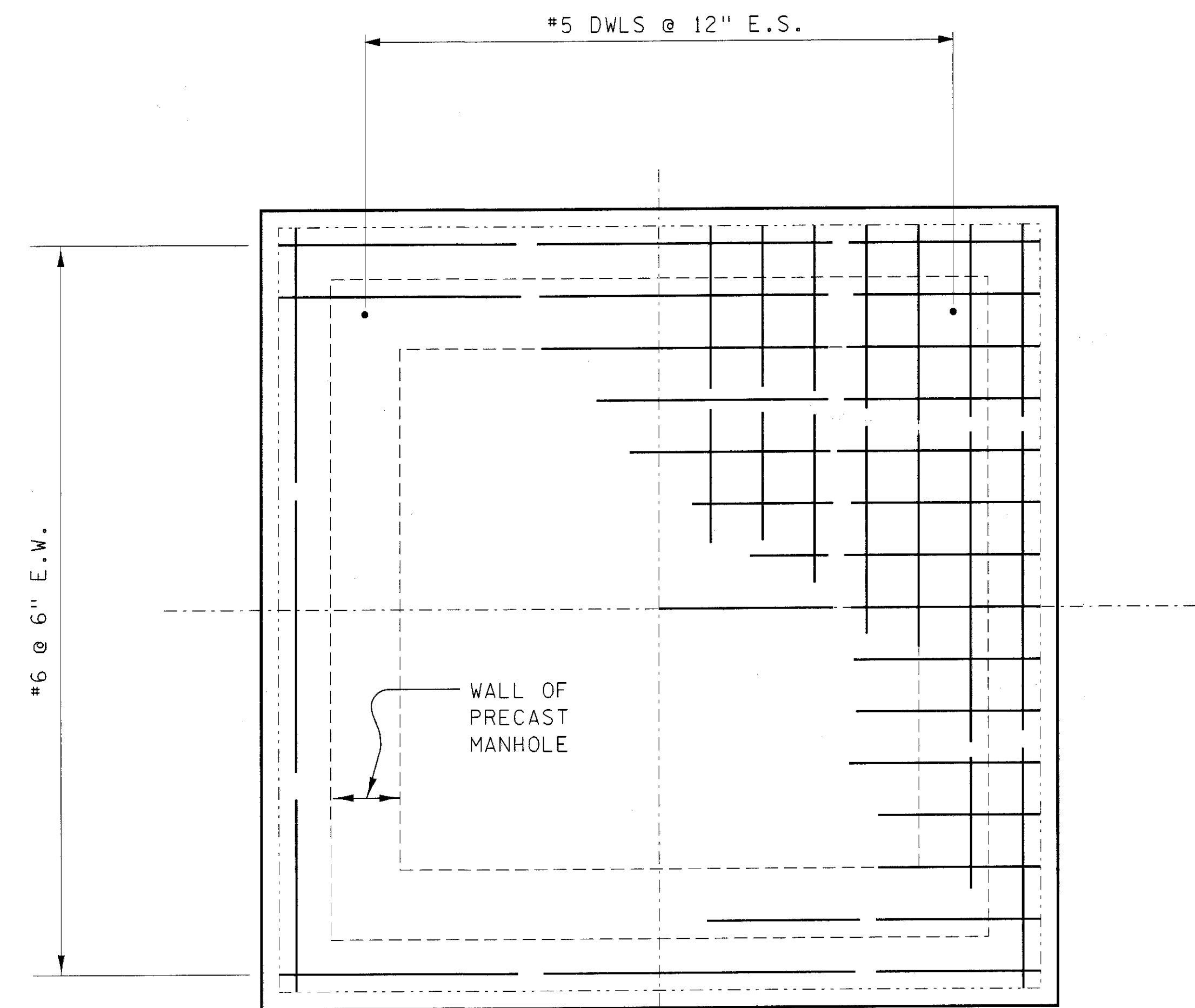






**TOP PLAN**

SCALE: 1" = 1'



**BASE PLAN**

SCALE: 1" = 1'

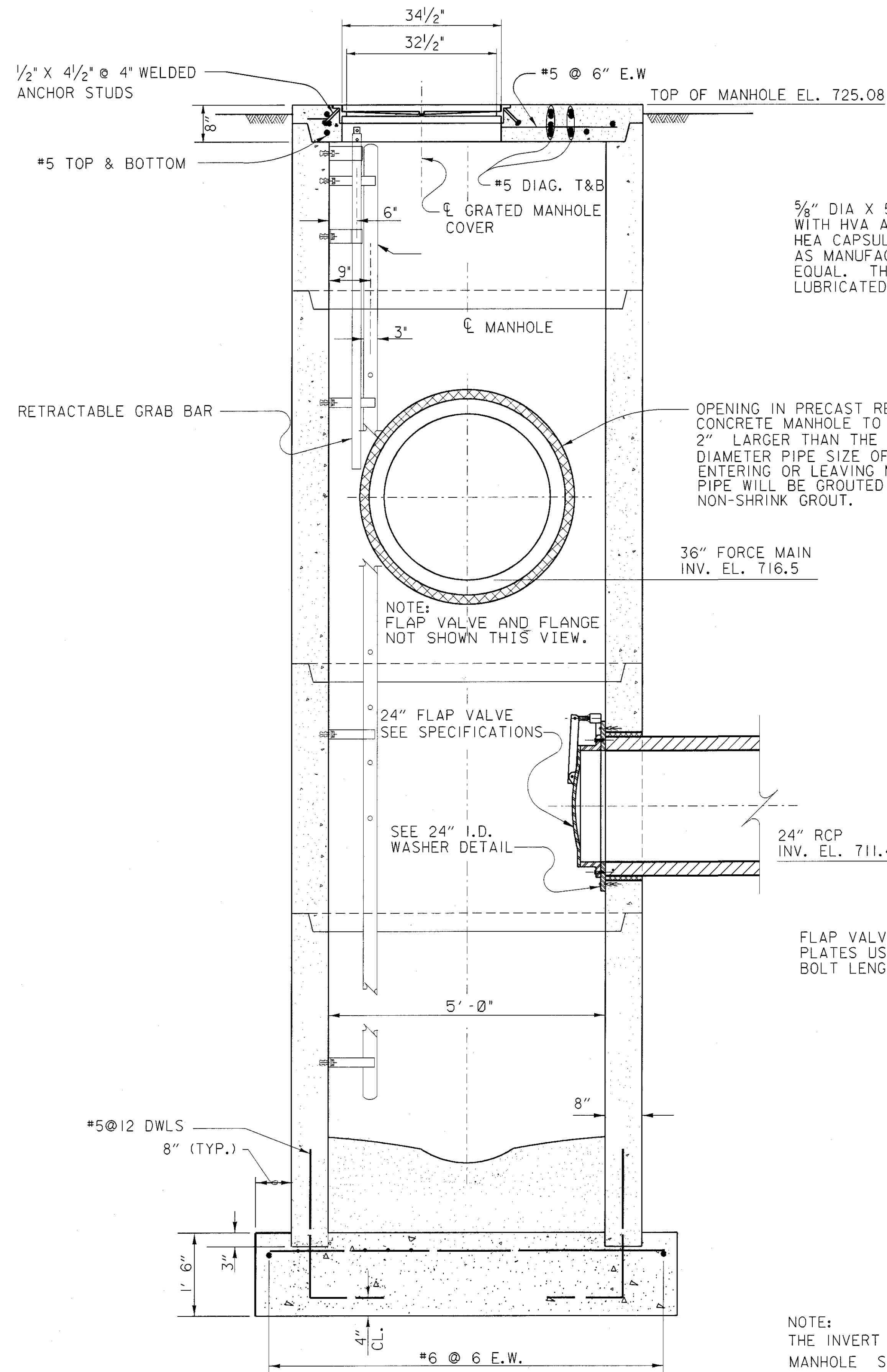
**NOTES**

1. FOR SECTIONS A-A AND B-B SEE DWG. 15/5.
2. FOR GENERAL MASONRY AND REINFORCING NOTES, SEE DWG. 20/5.
3. ALL PRECAST MANHOLE SECTIONS SHALL MEET REQUIREMENTS OF ASTM C-478.

REVISION	DATE	DESCRIPTION	BY

COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 15MHDTS.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>DAK PJI</b>	<b>SCIOTO RIVER SR 315 GATE CLOSURE WEST COLUMBUS, OHIO MANHOLE DETAILS</b>
DRAWN BY: <b>RDM JWS</b>	
CHECKED BY: <b>DAK PJI</b>	
SUBMITTED BY:	
CHIEF, DESIGN BRANCH	APPROVED: _____ DATE: <b>MAY 1997</b>
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER
APPROVED FOR:	SCALE: IN FEET    CONTR. NO.:
DATE:	DRAWING NUMBER <b>016-PWC-2-15/4</b>
SHEET 1 OF 2	





**SECTION A-A**  
SCALE: 3/4" = 1'-0"

NOTE:  
THE INVERT CHANNEL SECTION IN THE MANHOLE SHALL BE CONSTRUCTED BY FORMING A CHANNEL DIRECTLY IN THE CONCRETE OF THE SECOND POUR

5/8" DIA X 5 3/4" HEX. HEAD C.R.S. BOLT AND WASHER WITH HVA ANCHORING SYSTEM INCLUDING HEA CAPSULE AND MATCHING HFA INSERT AS MANUFACTURED BY HILTI CO., OR EQUAL. THREAD OF BOLTS SHOULD BE LUBRICATED WITH AN APPROVED LUBRICANT.

OPENING IN PRECAST REINFORCED CONCRETE MANHOLE TO BE APPROXIMATELY 2" LARGER THAN THE OUTSIDE DIAMETER PIPE SIZE OF SEWER LINES ENTERING OR LEAVING MANHOLE. PIPE WILL BE GROUTED IN PLACE WITH NON-SHRINK GROUT.

36" FORCE MAIN  
INV. EL. 716.5

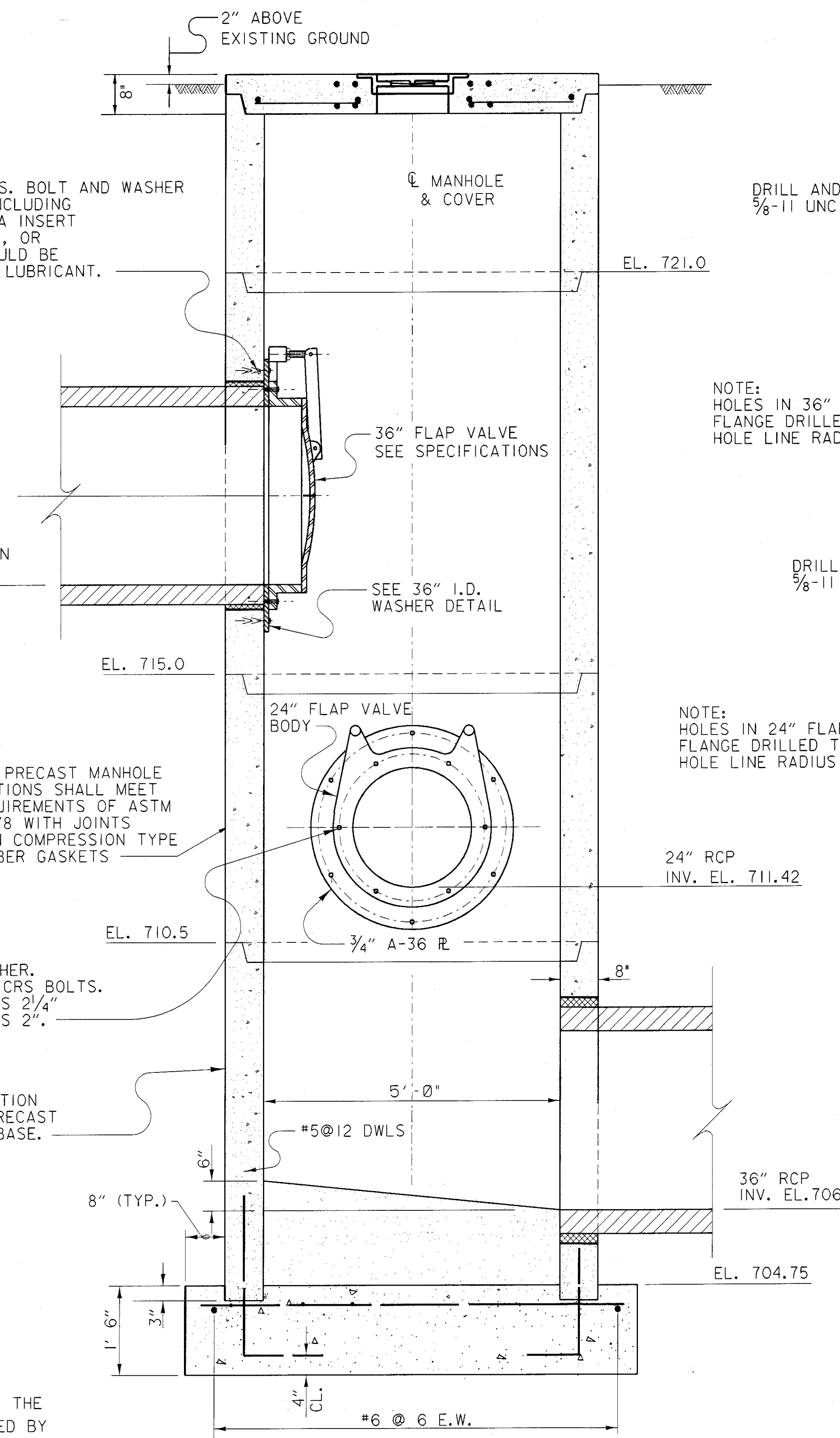
NOTE:  
FLAP VALVE AND FLANGE NOT SHOWN THIS VIEW.

24" FLAP VALVE  
SEE SPECIFICATIONS

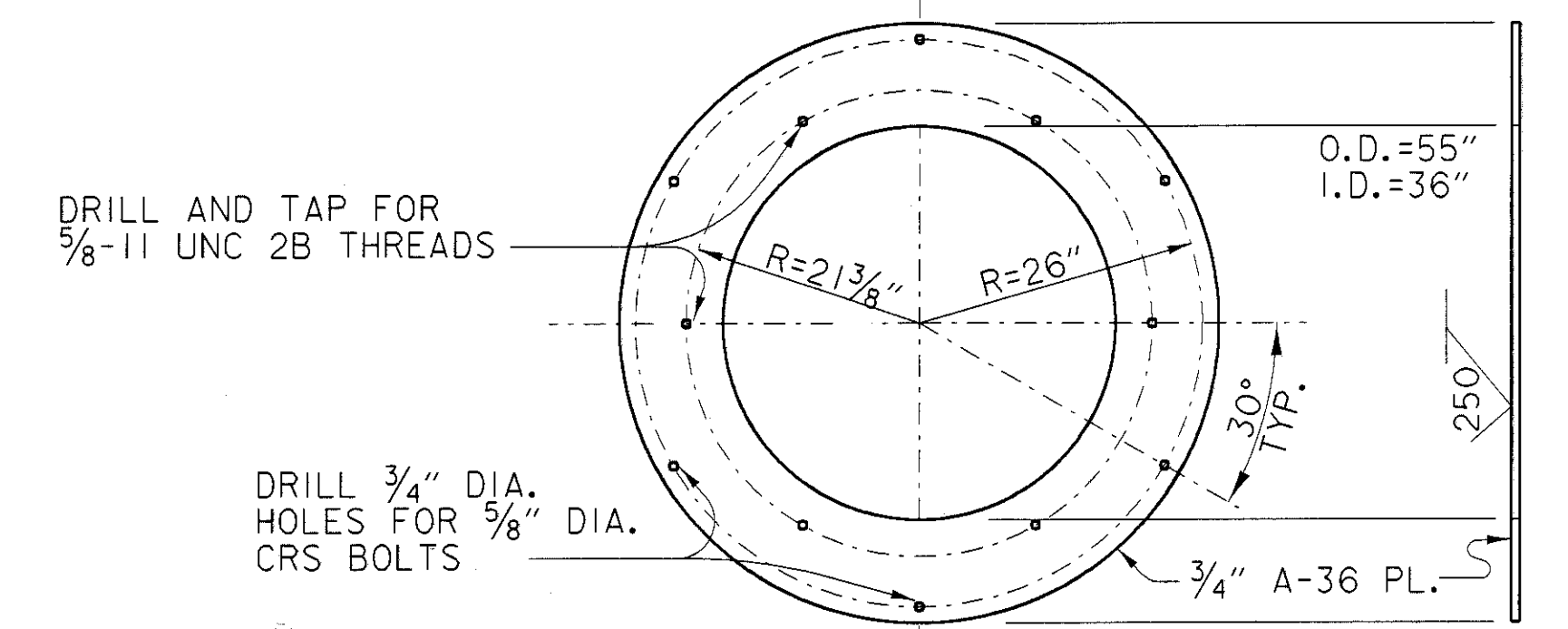
SEE 24" I.D. WASHER DETAIL

FLAP VALVE ATTACHED TO WASHER. PLATES USING 5/8" -11 UNC 2A CRS BOLTS. BOLT LENGTH FOR 36" VALVE IS 2 1/4" FOR 24" VALVE IS 2".

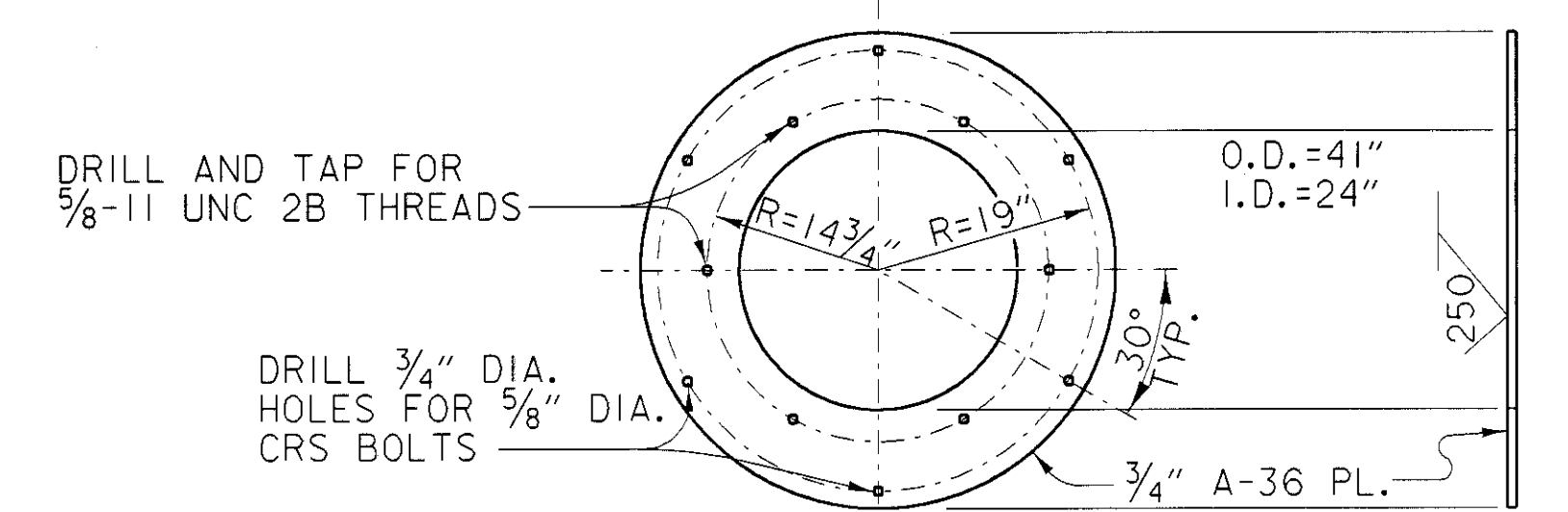
LOWER SECTION WILL BE PRECAST INTO THE BASE.



**SECTION B-B**  
SCALE: 3/4" = 1'-0"



**36" I.D. WASHER DETAIL**  
SCALE: 3/4" = 1'-0"



**24" I.D. WASHER DETAIL**  
SCALE: 3/4" = 1'-0"

NOTE:  
HOLES IN 36" FLAP VALVE FLANGE DRILLED TO MATCH HOLE LINE RADIUS OF 21 3/8".

NOTE:  
HOLES IN 24" FLAP VALVE FLANGE DRILLED TO MATCH HOLE LINE RADIUS OF 14 3/4".

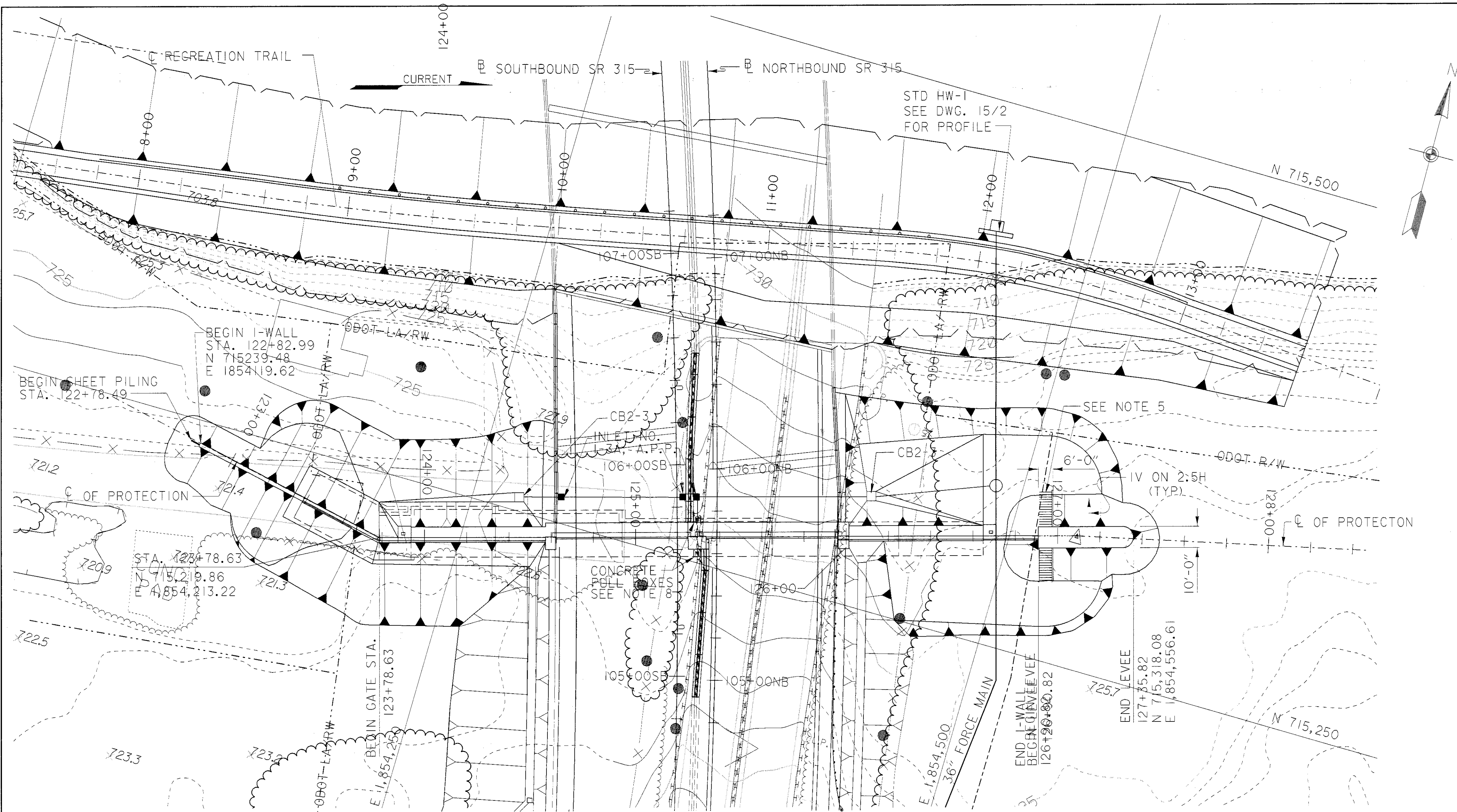
**NOTES**

1. FOR DETAIL OF MANHOLE TOP AND BASE, SEE DWG 15/4
2. FOR LOCATION OF MANHOLE, SEE DWG 15/2
3. APPLY BELZONA BETWEEN WASHER R AND CONCRETE TO INSURE FULL BEARING.
4. FOR LADDER DETAILS, SEE DWG 15/6.
5. FOR GENERAL MASONRY AND REINFORCEMENT NOTES, SEE DWG. 20/5.

REVISION	DATE	DESCRIPTION	BY
COMPUTER		CADD COMPUTER INFORMATION	
A IDEED		SYSTEM: INTERGRAPH CADD SYSTEM	
DESIGN & DRAFTING		SOFTWARE: IGDS VERSION 8.8	
		FILE SPEC: 15mhsdcds.dgn	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY:	DAK PJJ	<b>SCIOTO RIVER SR 315 GATE CLOSURE WEST COLUMBUS, OHIO MANHOLE SECTIONS</b>	
DRAWN BY:	RDM JWS		
CHECKED BY:	DAK PJJ		
SUBMITTED BY:			
CHIEF, DESIGN BRANCH			
APPROVAL RECOMMENDED:	APPROVED:	DATE:	MAY 1997
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER		
APPROVED FOR:	SCALE: AS SHOWN	CONTR. NO.:	
DATE:	DRAWING NUMBER	016-PWC-2-15/5	
	SHEET	2 OF 2	

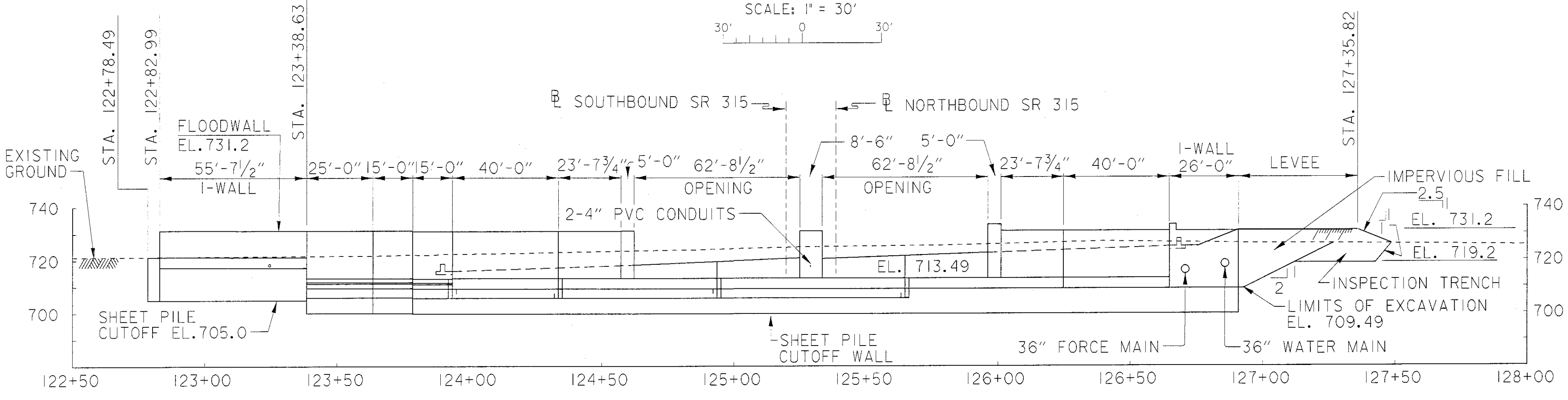






**PLAN**

SCALE: 1" = 30'



**PROFILE**

SCALE IN FEET

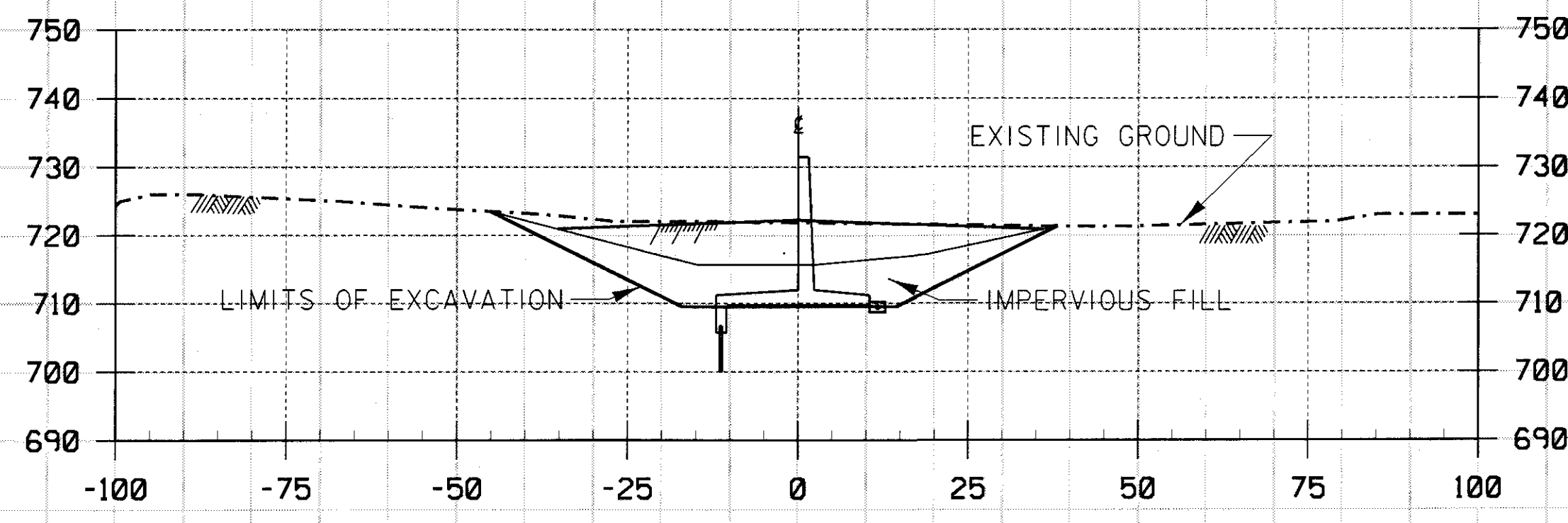
**NOTES**

1. FOR LEGEND SEE DWG. 0/2.
2. FOR DRAINAGE LAYOUT, SEE DWG. 15/1.
3. FOR 36" FORCE MAIN, PLAN AND PROFILE, SEE DWG 15/2.
4. FOR REC. TRAIL, SEE DWG. 16/6.
5. 6' WIDE CONCRETE STAIRS, WITHOUT HAND RAILING. FOR DETAILS, SEE ODOT STANDARD CONSTRUCTION DRAWING MC-2, TYPE B..
6. FOR GATE CLOSURE DETAILS, SEE DWGS. 20/1 THRU 20/26.
7. FOR UTILITY RELOCATIONS, SEE DWG. 102/1.
8. CONCRETE PULL BOXES SHALL BE CONSTRUCTED AS PER DETAILS SHOWN ON DWG. 102/2.

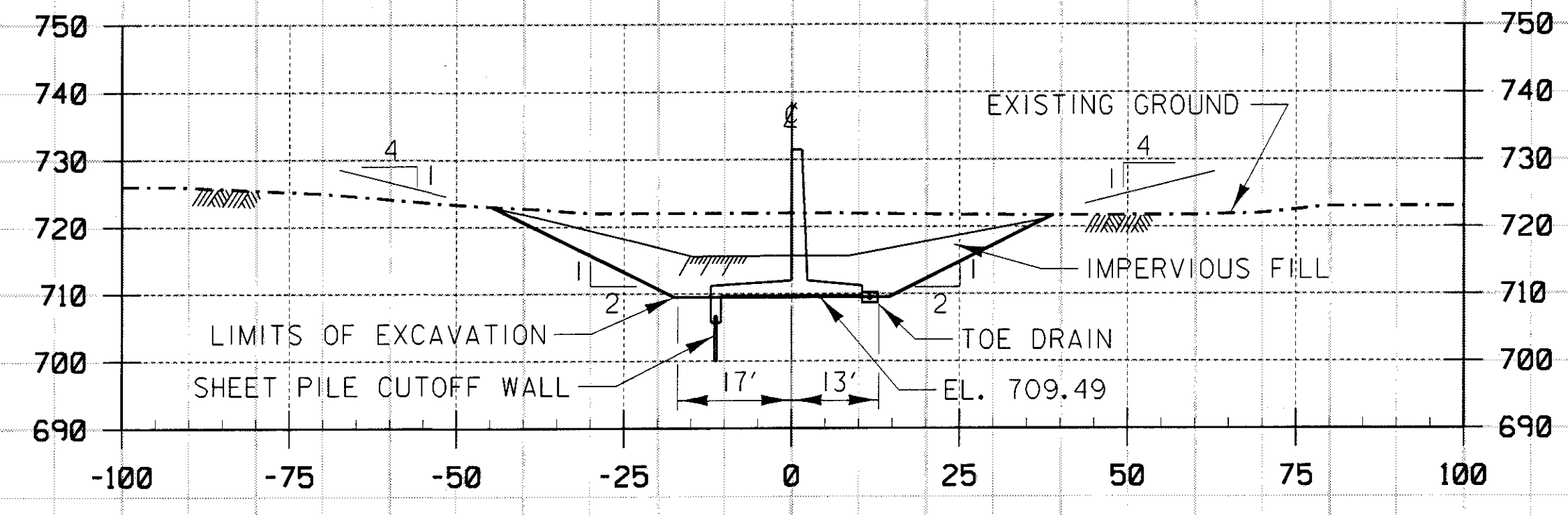
REVISION	DATE	DESCRIPTION	BY

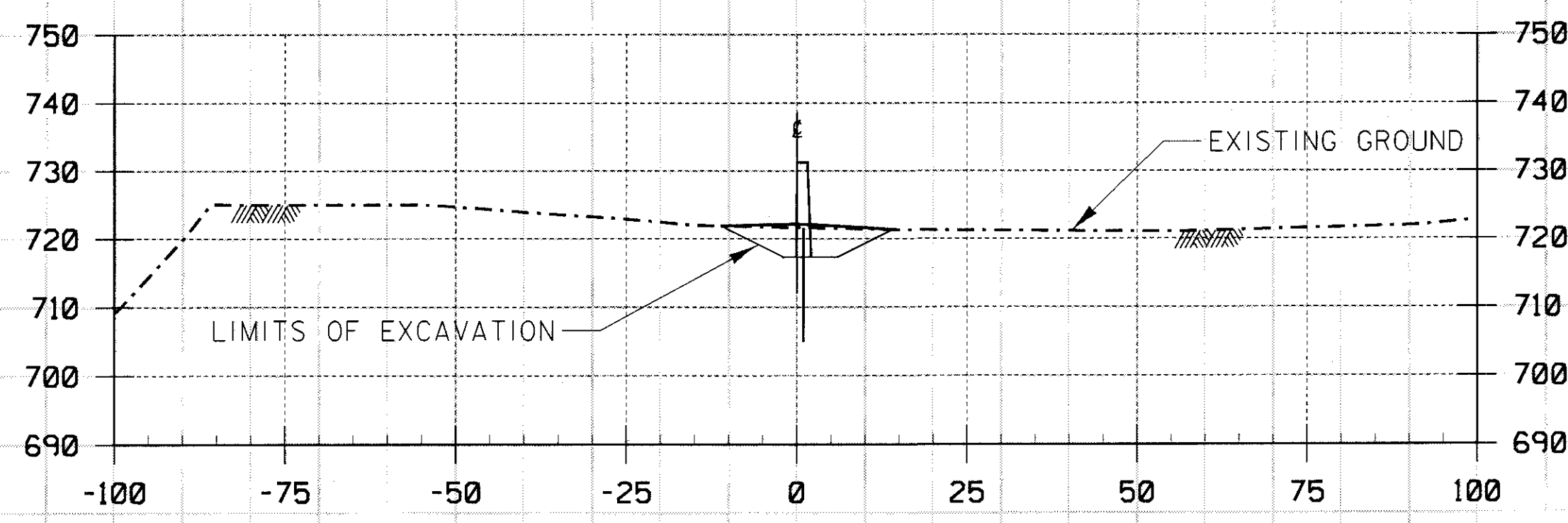
COMPUTER A IDEO DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 315plpr.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR</b> <b>H. WEHRLE</b>	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE GENERAL DRAWINGS PLAN AND PROFILE</b>
DRAWN BY: <b>J. SIMPKINS</b> <b>M. JENKINS</b>	
CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b>	
SUBMITTED BY:	
CHIEF, DESIGN BRANCH	APPROVED: _____ DATE: <b>MAY 1997</b>
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER
APPROVED FOR:	SCALE: <b>AS SHOWN</b> CONTR. NO. _____
DATE: _____	DRAWING NUMBER <b>016-PWC-2-161</b>
SHEET 1 OF 1	



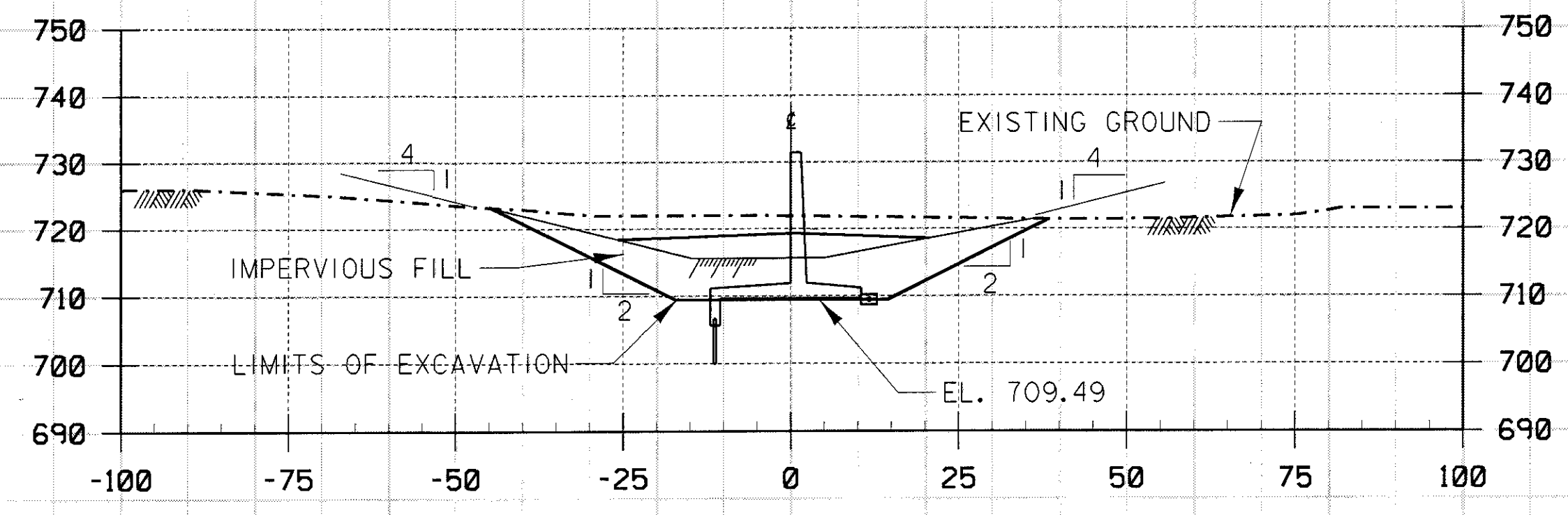
**123+39**



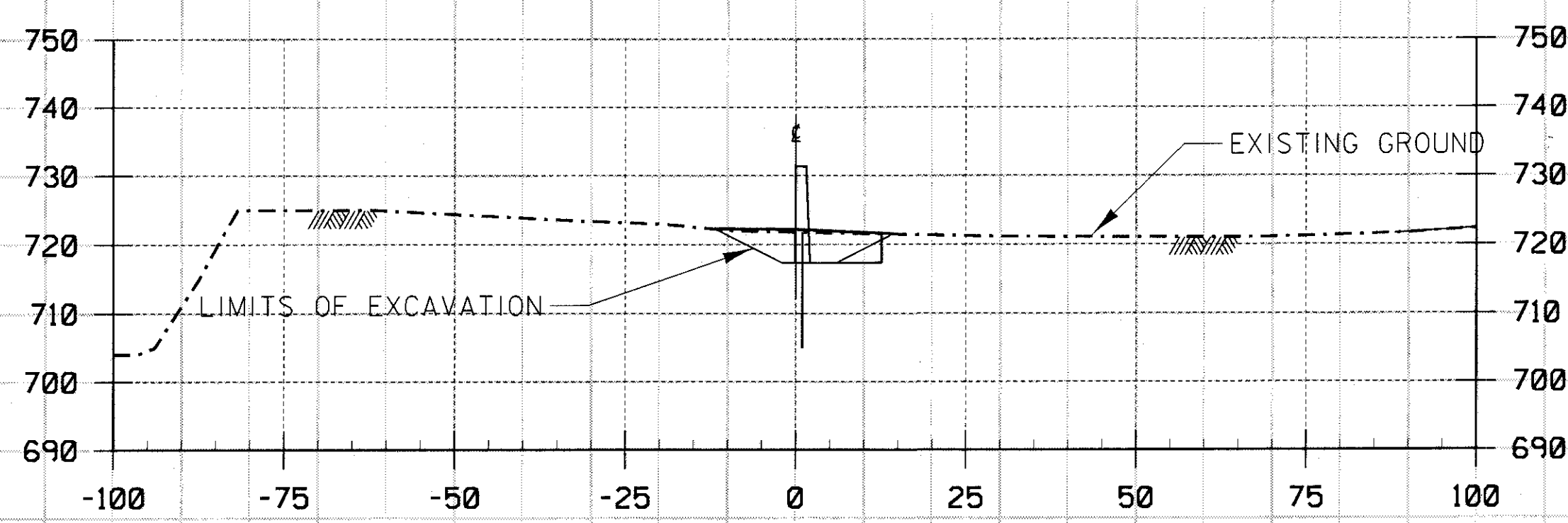
**123+65**



**123+00**



**123+50**



**122+83**

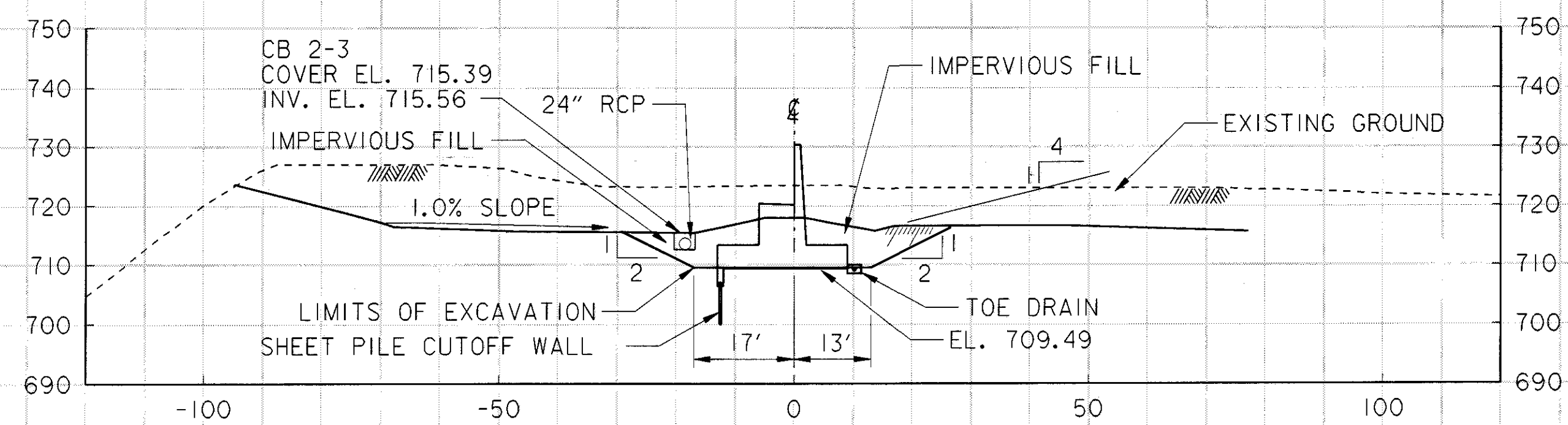
**NOTES**

1. FOR STATIONING AND SECTION LOCATIONS, SEE DWG. 16/1.
2. FOR GEOMETRIC LAYOUT OF DRAINAGE, SEE DWG. 15/1.
3. UTILITIES NOT SHOWN.

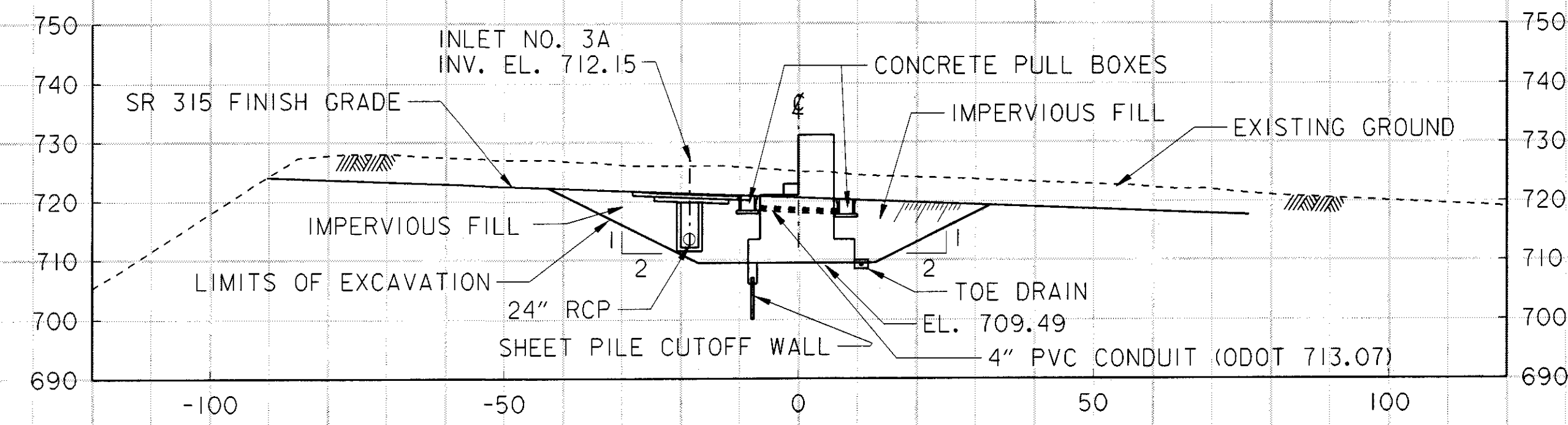
REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srxs01.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR</b> <b>H. WEHRLE</b> DRAWN BY: <b>J. SIMPKINS</b> <b>C. MOUNT</b> CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b> SUBMITTED BY:	<b>SCIOTO RIVER</b> <b>COLUMBUS, OHIO</b> <b>WEST COLUMBUS L.P.P.</b> <b>SR 315 GATE CLOSURE</b> <b>GENERAL DRAWINGS</b> <b>CROSS SECTIONS 122+83 TO 123+65</b>
CHIEF, DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> CHIEF, ENG DIVISION COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____ DATE: _____	SCALE: <b>IN FEET</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-162</b> SHEET <b>1</b> OF <b>5</b>

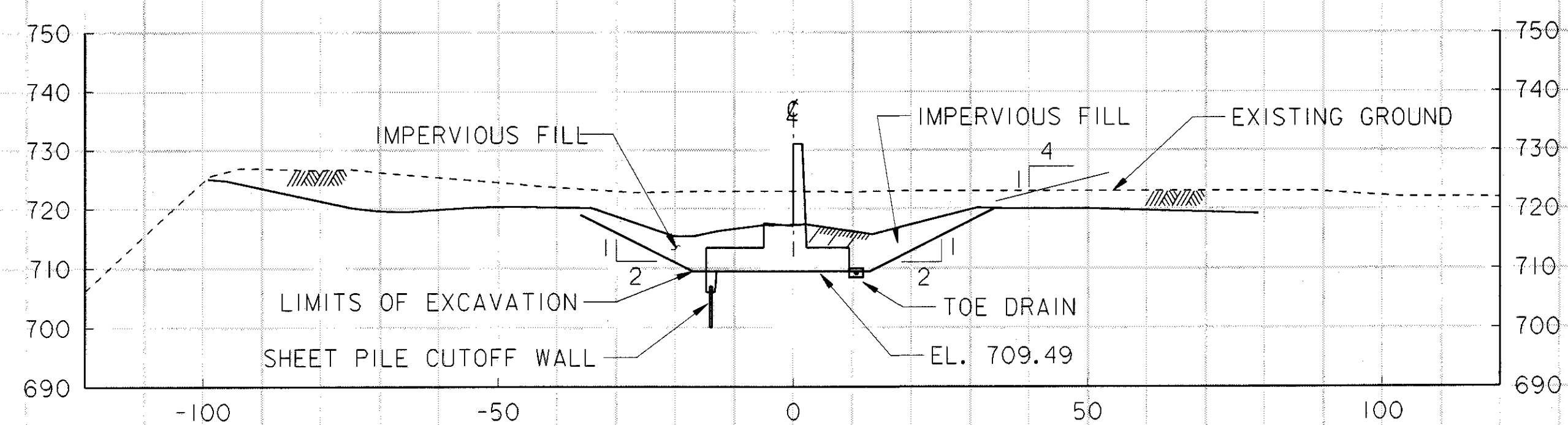




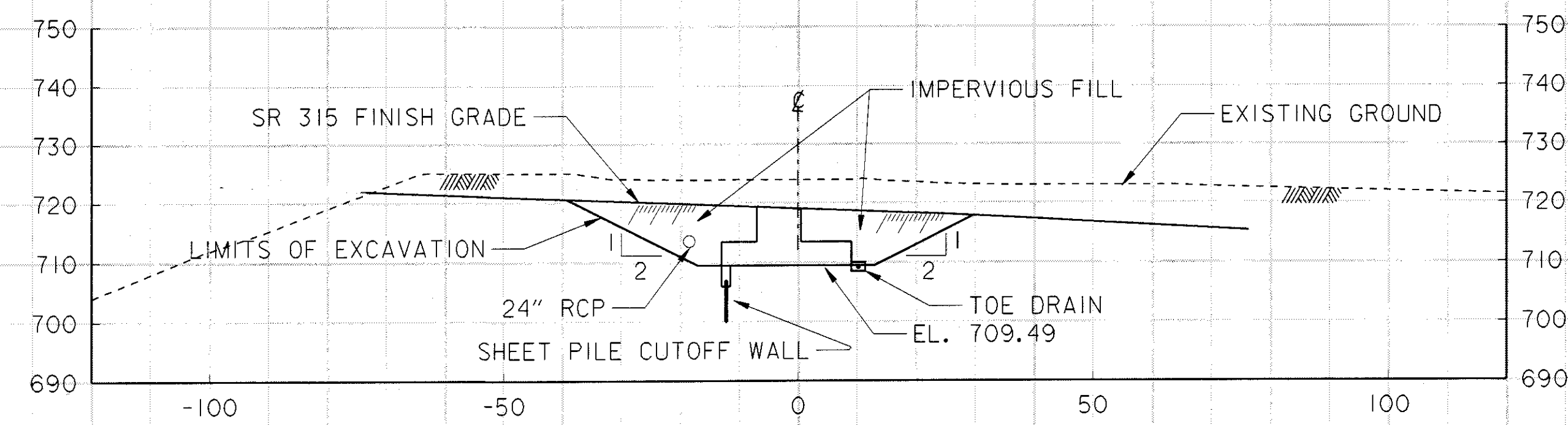
**124+45**



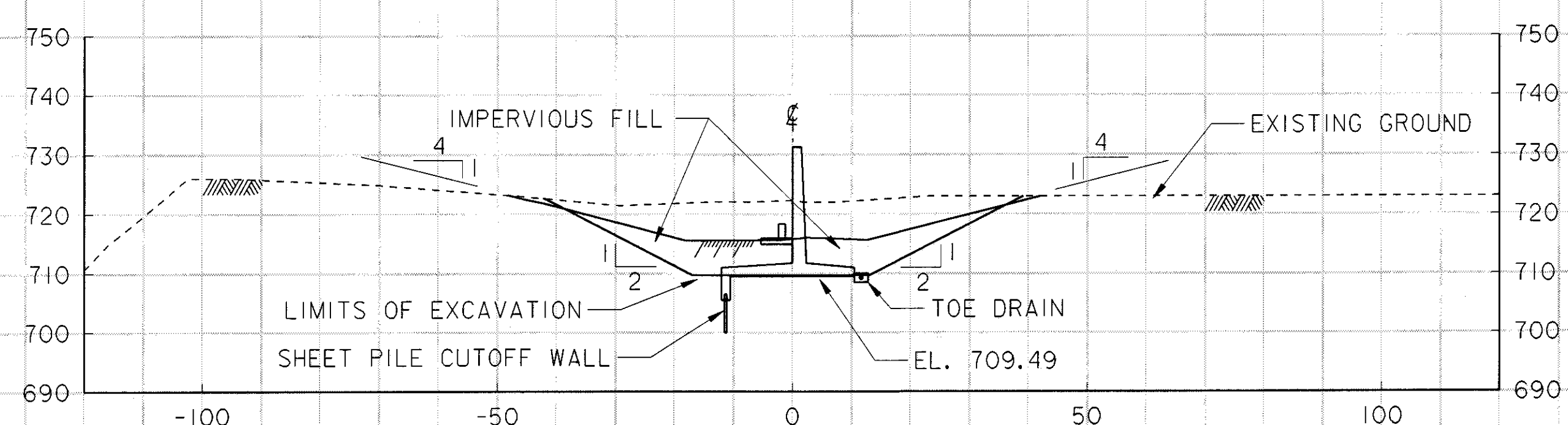
**125+25**



**124+29**



**124+79**



**123+90**

**NOTES**

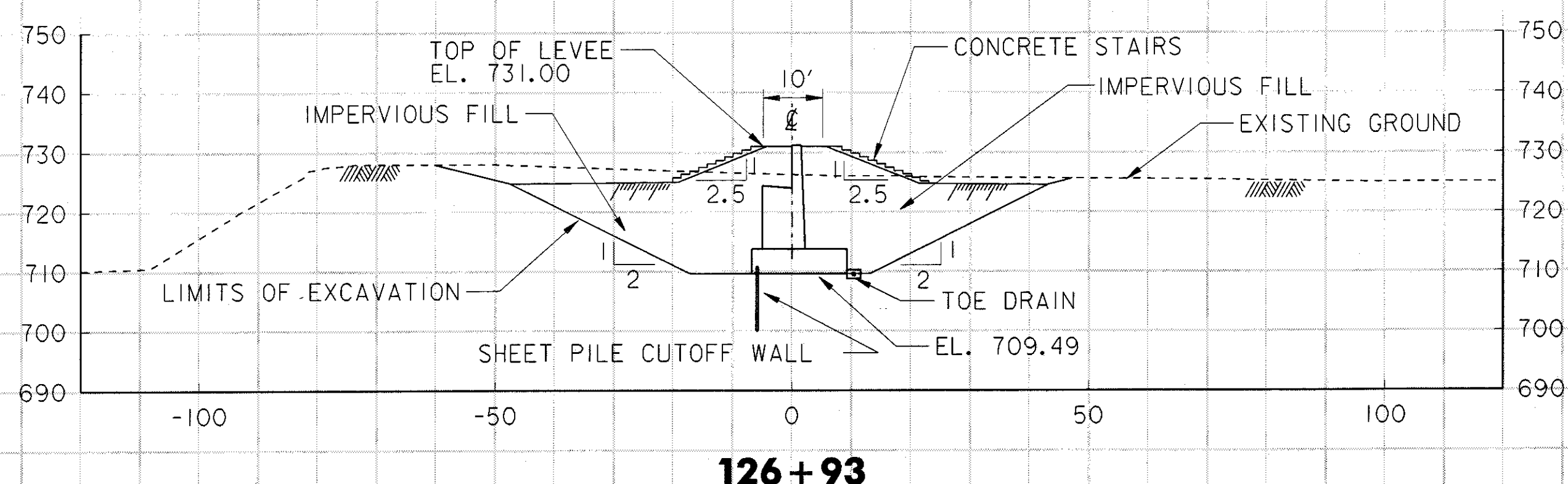
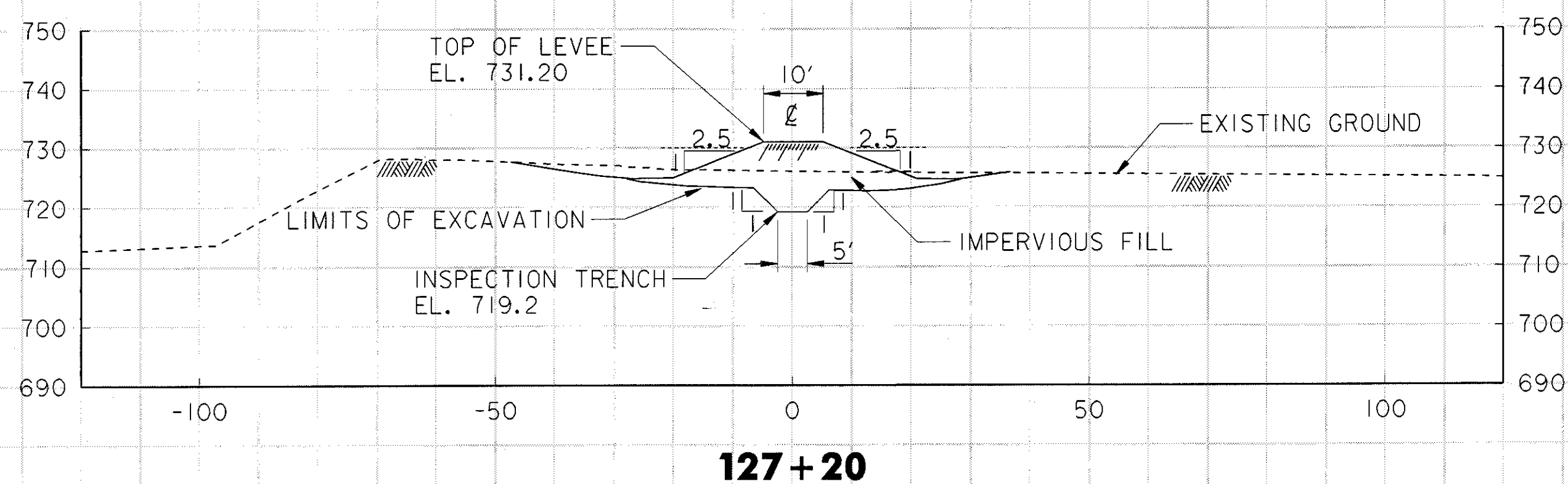
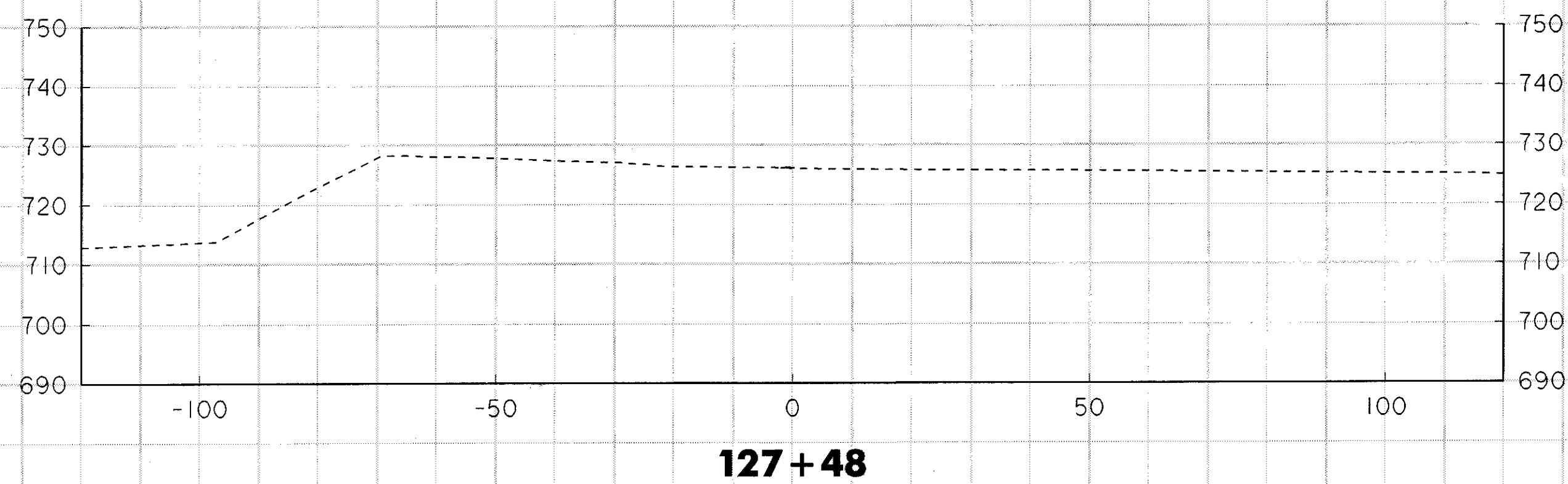
1. FOR STATIONING AND SECTION LOCATIONS, SEE DWG. 16/1.
2. FOR GEOMETRIC LAYOUT OF DRAINAGE, SEE DWG. 15/1.
3. FOR CONSTRUCTION OF PULL BOXES, SEE ODOT STANDARD DRAWING HL-30.11.

REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEAS DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srxs02.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR</b> <b>H. WEHRLE</b> DRAWN BY: <b>J. SIMPKINS</b> <b>C. MOUNT</b> CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b> SUBMITTED BY:	<b>SCIOTO RIVER          COLUMBUS OHIO          WEST COLUMBUS L.P.P.          SR 315 GATE CLOSURE          GENERAL DRAWINGS          CROSS SECTIONS 123+90 TO 125+25</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> CHIEF ENG DIVISION      COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____	SCALE: <b>IN FEET</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-163</b>
DATE: _____	SHEET <b>2</b> OF <b>5</b>







**NOTES**

1. FOR STATIONING AND SECTION LOCATIONS, SEE DWG. 16/1.
2. FOR GEOMETRIC LAYOUT OF DRAINAGE, SEE DWG. 15/1.

REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEO DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 00srxs04.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR</b> <b>H. WEHRLE</b> DRAWN BY: <b>J. SIMPKINS</b> <b>C. MOUNT</b> CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b> SUBMITTED BY:	<b>SCIOTO RIVER</b> <b>COLUMBUS, OHIO</b> <b>WEST COLUMBUS L.P.P.</b> <b>SR 315 GATE CLOSURE</b> <b>GENERAL DRAWINGS</b> <b>CROSS SECTIONS 126+93 TO 127+48</b>
CHIEF, DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> CHIEF, ENG DIVISION COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____ DATE: _____	SCALE: <b>IN FEET</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-165</b> SHEET <b>4</b> OF <b>5</b>

### RECREATION TRAIL ALIGNMENT

P.I. NO. 4	STATION	NORTHING	EASTING
Curve Set Type: CIRCULAR			
PI ( )	5+99.12	715323.86	1853845.39
PC ( )	5+53.76	715353.83	1853811.34
CC ( )		715428.88	1853871.43
PT ( )	6+38.93	715329.72	1853890.36

Total Central Angle:	48°47'42.94" Left
1st Subtangent Distance:	45.36
2nd Subtangent Distance:	45.36
External:	9.81
Radius:	100.00
Delta:	48°47'42.94"
Length:	85.16
Degree of Curvature(Arch):	57°17'44.81"
Tangent:	45.36
Chord:	82.61
Middle Ordinate:	8.93
External:	9.81

P.I. NO. 5	STATION	NORTHING	EASTING
Curve Set Type: CIRCULAR			
PI ( )	A 9+12.26	715365.94	1854168.01
PC ( )	A 8+32.85	715355.67	1854089.26
CC ( )		715338.87	1853830.58
PT ( )	A 9+91.59	715382.42	1854245.69

Total Central Angle:	4°32'51.21" Left
1st Subtangent Distance:	79.41
2nd Subtangent Distance:	79.41
External:	1.58
Radius:	2000.00
Delta:	4°32'51.21"
Length:	158.74
Degree of Curvature(Arch):	2°51'53.24"
Tangent:	79.41
Chord:	158.70
Middle Ordinate:	1.57
External:	1.58

P.I. NO. 6	STATION	NORTHING	EASTING
Curve Set Type: CIRCULAR			
PI ( )	A 12+25.22	715430.91	1854474.23
PC ( )	A 11+56.93	715416.74	1854407.43
CC ( )		714927.63	1854511.20
PT ( )	A 12+92.66	715426.65	1854542.38

Total Central Angle:	15°33'14.53" Right
1st Subtangent Distance:	68.29
2nd Subtangent Distance:	68.29
External:	4.64
Radius:	500.00
Delta:	15°33'14.53"
Length:	35.73
Degree of Curvature(Arch):	11°27'32.96"
Tangent:	68.29
Chord:	135.32
Middle Ordinate:	4.60
External:	4.64

P.I. NO. 7	STATION	NORTHING	EASTING
Curve Set Type: CIRCULAR			
PI ( )	A 16+72.02	715403.00	1854921.00
PC ( )	A 15+52.65	715410.44	1854801.87
CC ( )		715966.36	1854836.60
PT ( )	A 17+87.83	715445.03	1855032.72

Total Central Angle:	24°11'29.30" Left
1st Subtangent Distance:	119.37
2nd Subtangent Distance:	119.37
External:	12.65
Radius:	567.00
Delta:	24°11'29.30"
Length:	235.18
Degree of Curvature(Arch):	10°17'11.38"
Tangent:	119.37
Chord:	233.43
Middle Ordinate:	12.37
External:	12.65

### NOTES

- FOR CHANNEL CROSS SECTIONS, SEE DWG. 16/7.
- FOR BOLLARD AND CHAIN DETAILS, SEE SPECIFICATIONS.

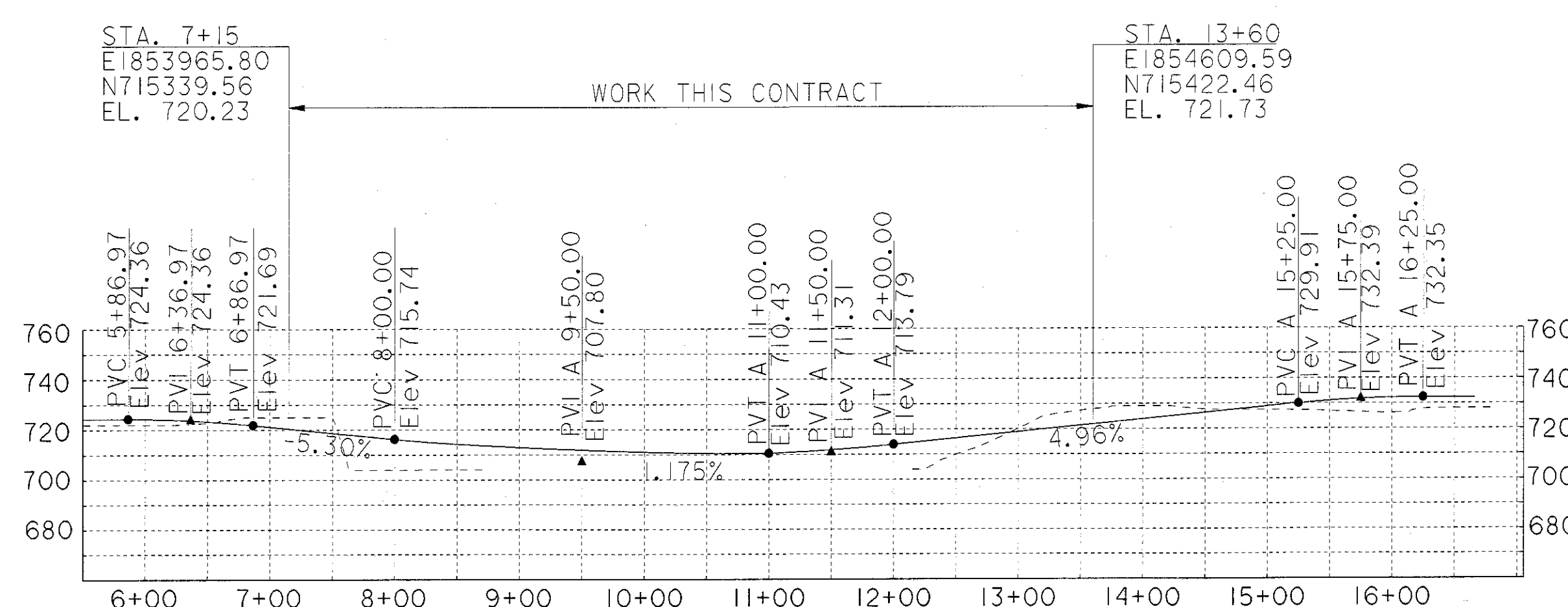


### PLAN

SCALE: 1" = 100'

### CURVE DATA SCIOTO RIVER RELOCATION ALIGNMENT

P.I. #2	P.I. #3
STA. 6+40.17	STA. 13+78.88
N 715,471.15	N 715,562.05
E 1,853,823.90	E 1,854,637.89
P.C. STA. 3+00.00	P.C. STA. 11+50.00
P.T. STA. 9+00.00	P.T. STA. 16+00.00
R = 510.00'	R = 1000.00'
L = 600.00'	L = 450.00'
D = 11°14'04"	D = 5°43'46"
Δ = 67°24'24"	Δ = 25°46'59"
T = 340.17'	T = 228.87'



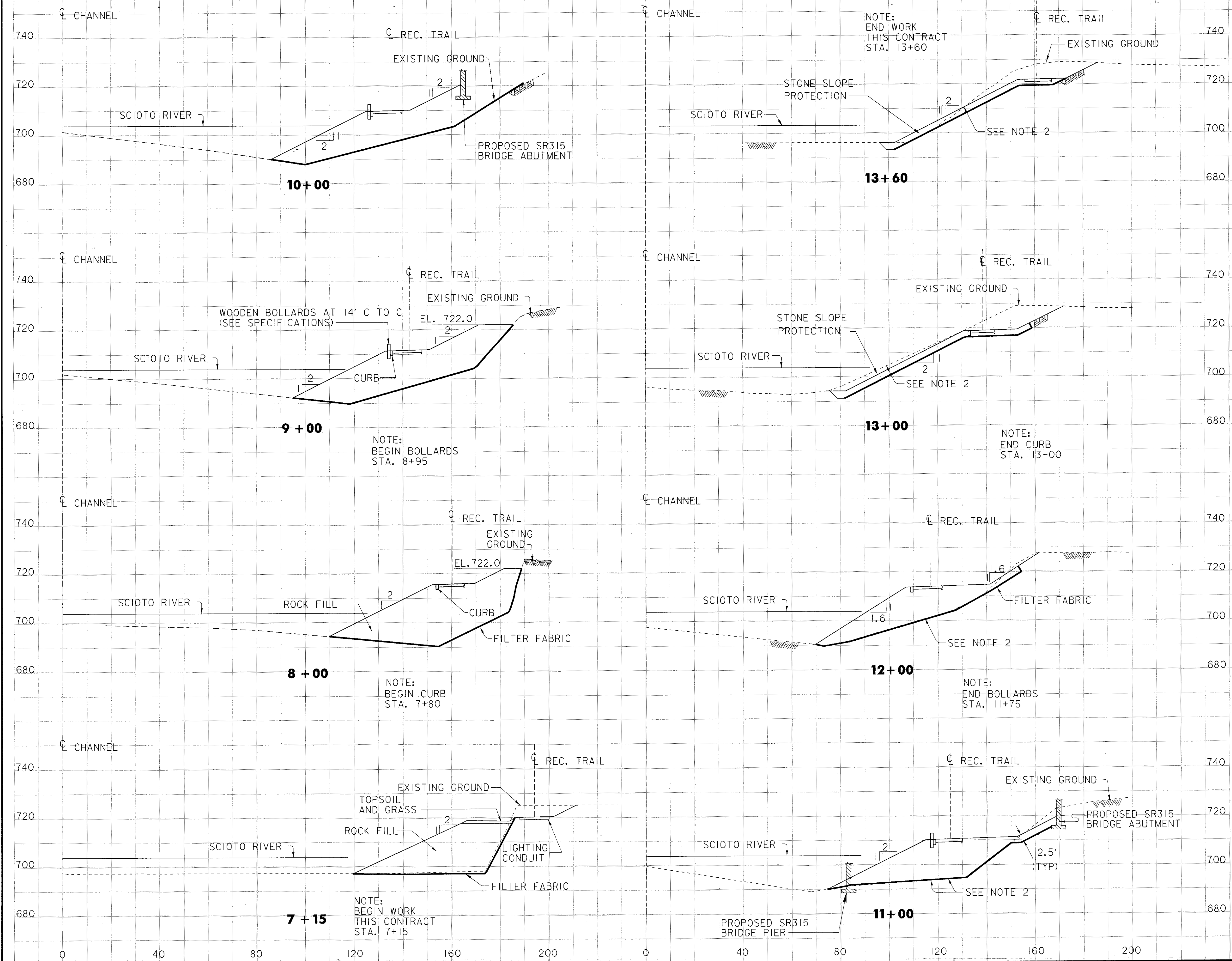
### PROFILE

SCALE IN FEET

REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEO DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: bkesite.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR</b> <b>R. RAKES</b>	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE CHANNEL RELOCATION DRAWINGS REC. TRAIL PLAN AND PROFILE</b>
DRAWN BY: <b>J. SIMPKINS</b> <b>R. RAKES</b>	
CHECKED BY: <b>J. NOLEN</b> <b>P. FERGUSON</b>	
SUBMITTED BY:	
CHIEF, DESIGN BRANCH	APPROVED: _____ DATE: _____
CHIEF, ENG. DIVISION	COL. C. E. DISTRICT ENGINEER <b>MAY 1997</b>
APPROVED FOR:	SCALE: <b>AS SHOWN</b> CONTR. NO. _____
DATE: _____	DRAWING NUMBER <b>016-PWC-2-16/6</b>

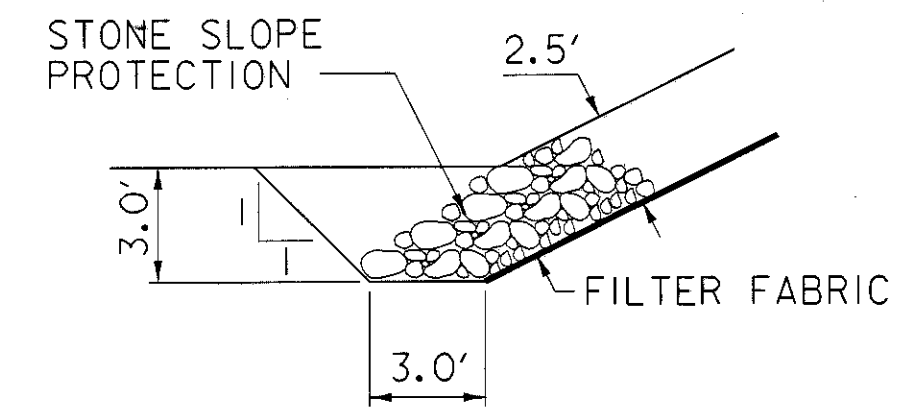




- NOTES**
- FOR HORIZONTAL ALIGNMENT AND LOCATION OF CROSS SECTIONS, SEE DWG. 16/6.
  - EXISTING GROUND LINE COMPILED FROM SCIOTO RIVER RELOCATION PLANS (FRA-670-1.25 A-5) AND TOPOGRAPHIC MAPPING PREPARED FOR THE U.S. ARMY CORPS OF ENGINEERS FROM AERIAL PHOTOGRAPHY FLOWN NOVEMBER 25, 1988.
  - EXISTING GROUND BENEATH PLACEMENT OF SSP AND ROCK FILL SHALL BE STRIPPED TO A SUITABLE SURFACE FOR PLACEMENT OF FILTER FABRIC.
  - ABUTMENT FOR PROPOSED SR315 BRIDGE, SHOWN ON SECTION 11+00, WAS COMPILED FROM CROSS SECTIONS INCLUDED IN THE SCIOTO RIVER RELOCATION PLANS (FRA-670-1.25 A-5)

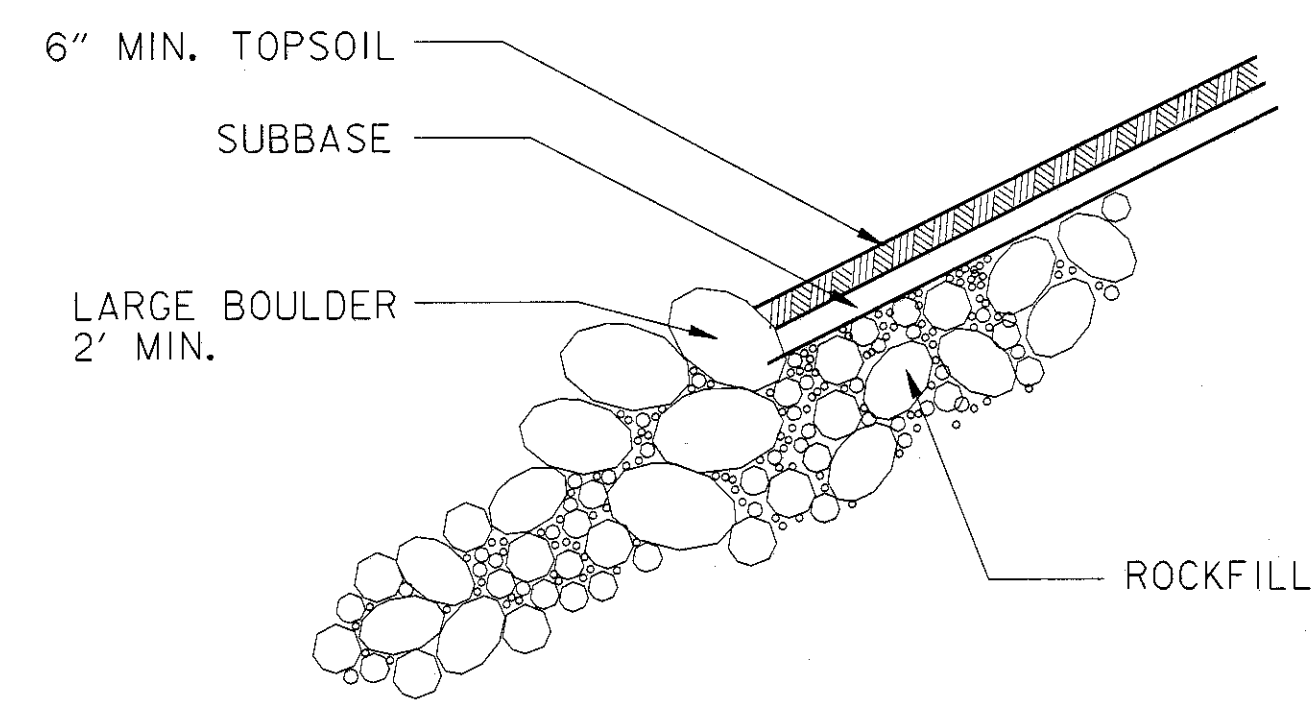
REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: Microstation Version 4.X FILE SPEC: <b>xs3 10.dgn</b>
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>J. VASSAR R. RAKES</b>	<p align="center"><b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE RECREATION TRAIL CROSS SECTIONS 7+15 TO 13+60</b></p>
DRAWN BY: <b>J. SIMPKINS R. RAKES</b>	
CHECKED BY: <b>J. NOLEN P. FERGUSON</b>	
SUBMITTED BY:	
CHIEF, DESIGN BRANCH	APPROVED: _____ DATE: <b>MAY 1997</b>
CHIEF, ENG. DIVISION	COL. C. E. DISTRICT ENGINEER:
APPROVED FOR:	SCALE: <b>AS SHOWN</b> CONTR. NO. _____
DATE: _____	DRAWING NUMBER <b>016-PWC-2-167</b>



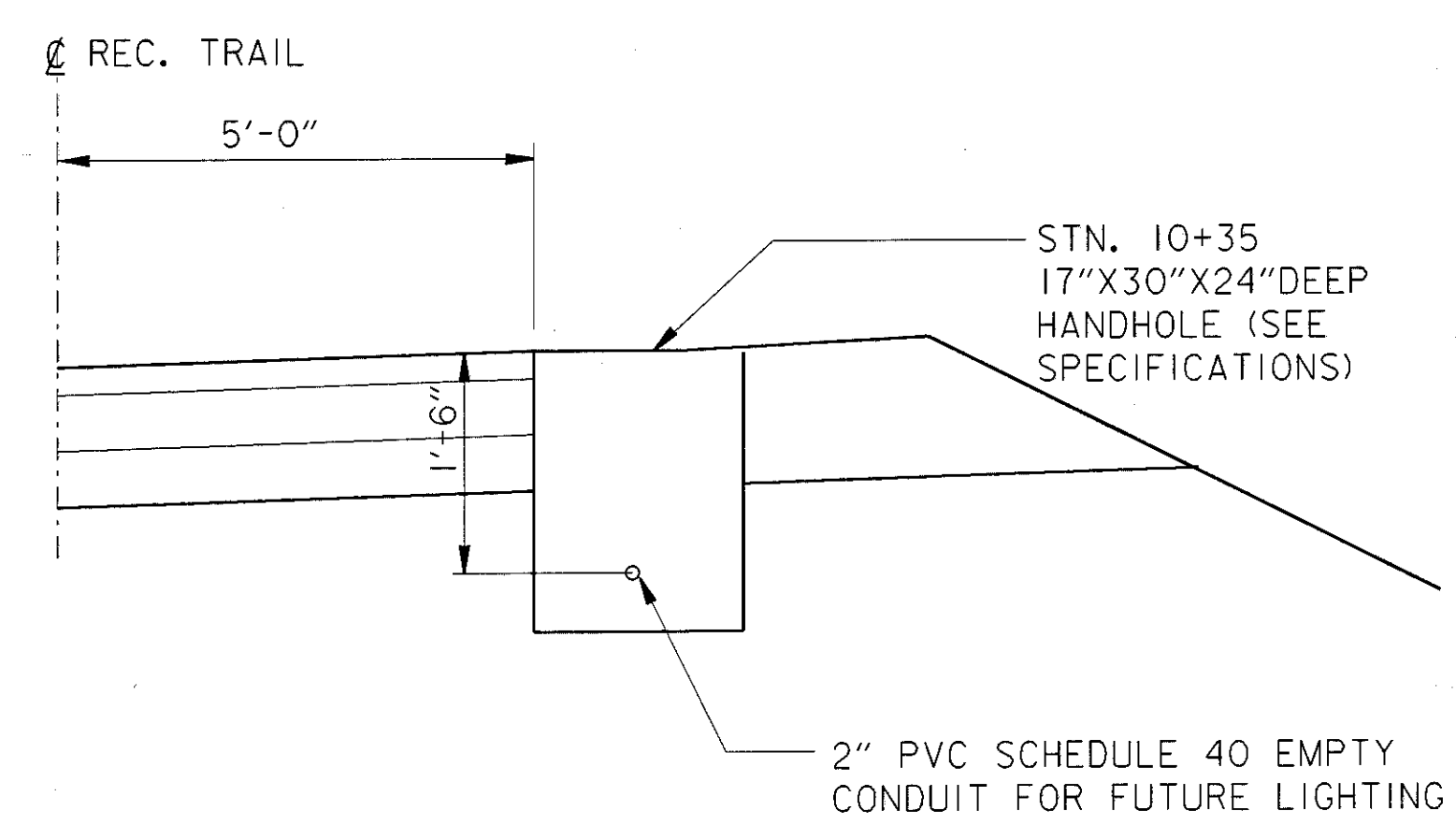
**TYPICAL STONE SLOPE PROTECTION DETAIL**

NTS



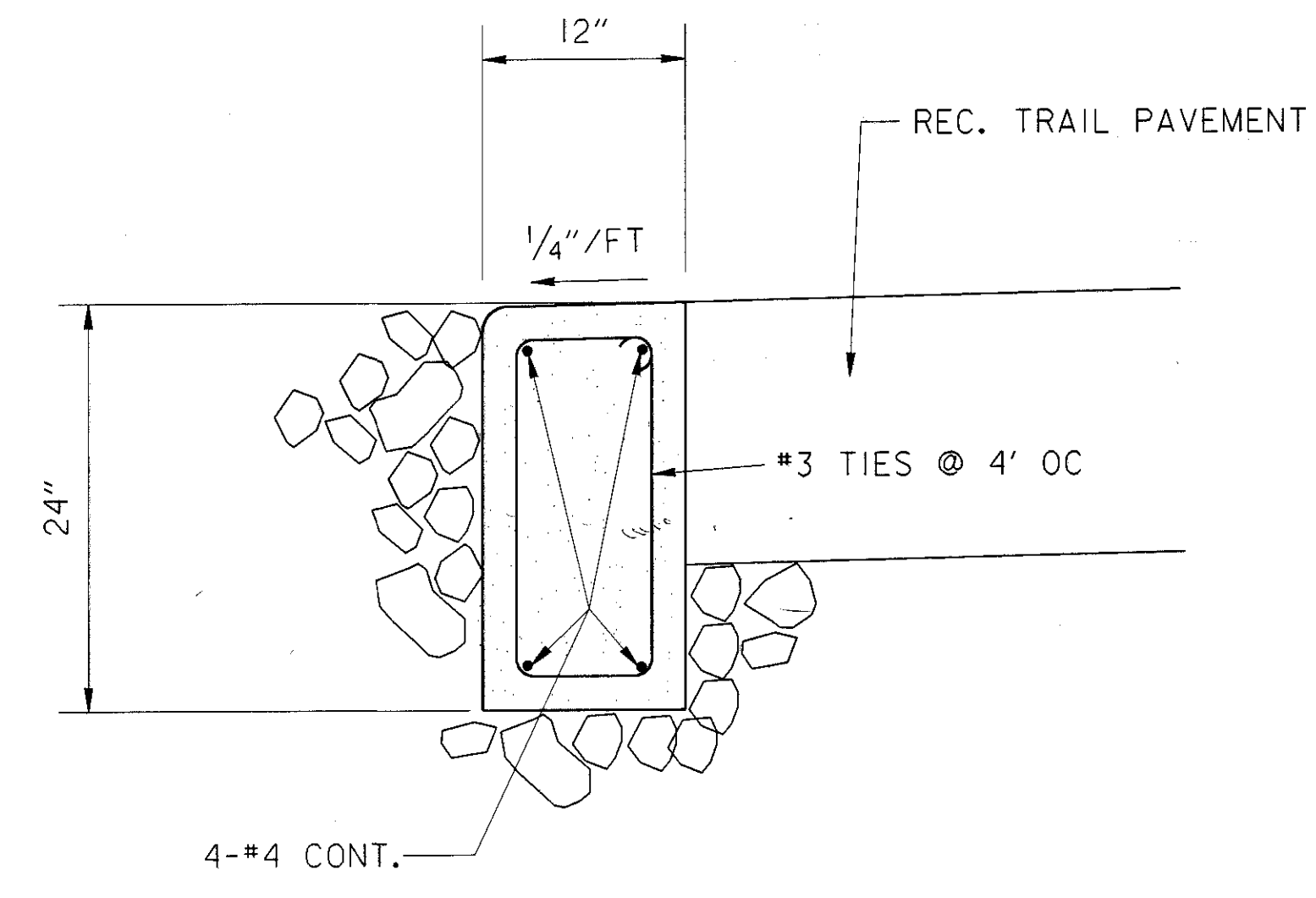
**TYPICAL SECTION TOPSOIL OVER ROCKFILL**

NTS



**HANDHOLE FOR FUTURE LIGHTING**

NTS



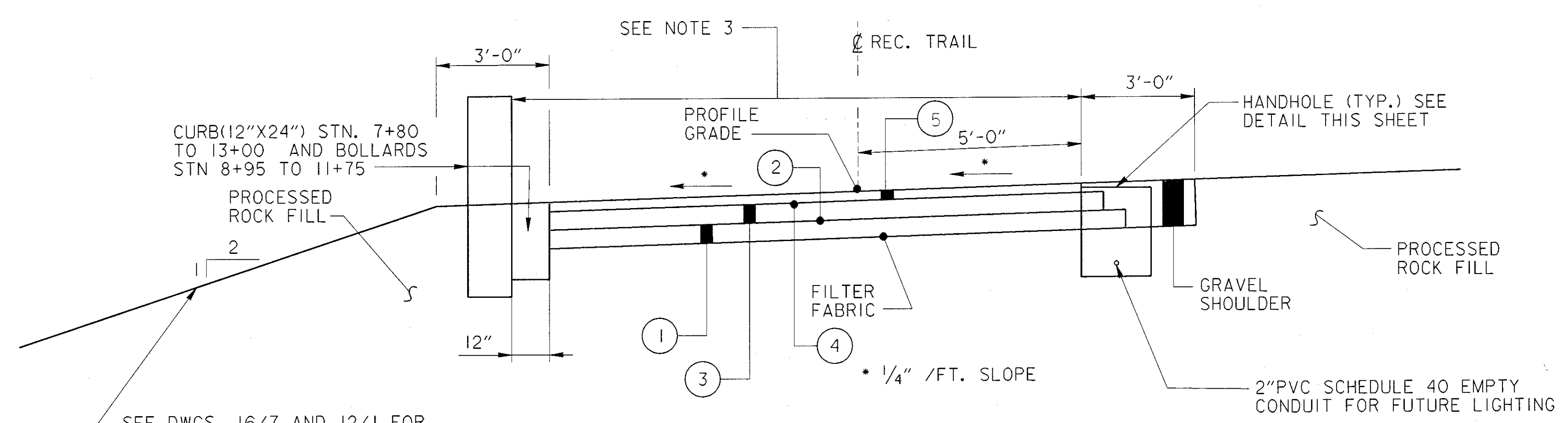
**CONCRETE CURB DETAIL**

NTS

	DESCRIPTION
①	12" AGGREGATE BASE
②	PRIME COAT
③	2" ASPHALT CONCRETE BASE COURSE
④	TACK COAT
⑤	1-1/2" ASPHALT CONCRETE SURFACE COURSE

**NOTES**

- FOR HORIZONTAL ALIGNMENT AND CROSS SECTIONS, SEE DWGS. 16/6 THRU 16/8.
- EXISTING GROUND BENEATH PLACEMENT OF SSP AND ROCK FILL SHALL BE STRIPPED TO A SUITABLE SURFACE FOR PLACEMENT OF FILTER FABRIC.
- BEGIN RECREATION TRAIL STA.7+15, 10' WIDE TO STA.7+80 TRANSITION FROM STA.7+80 TO STA.8+60 TO 12' WIDE, STA. 8+60 TO STA.12+20 12' WIDE, TRANSITION FROM 12' WIDE TO 10' WIDE FROM STA.12+20 TO STA.13+00, 10' TO END STA. 13+60.

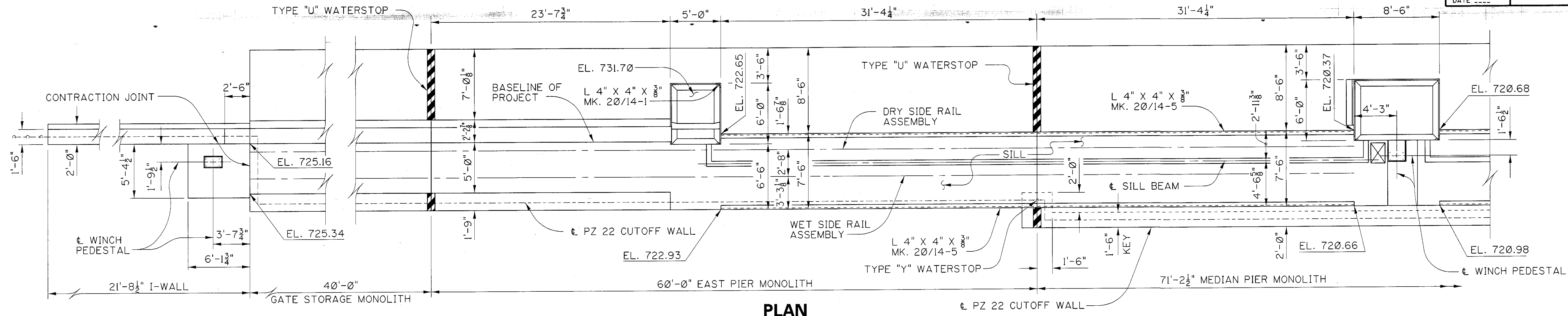


**TYPICAL REC. TRAIL SECTION**

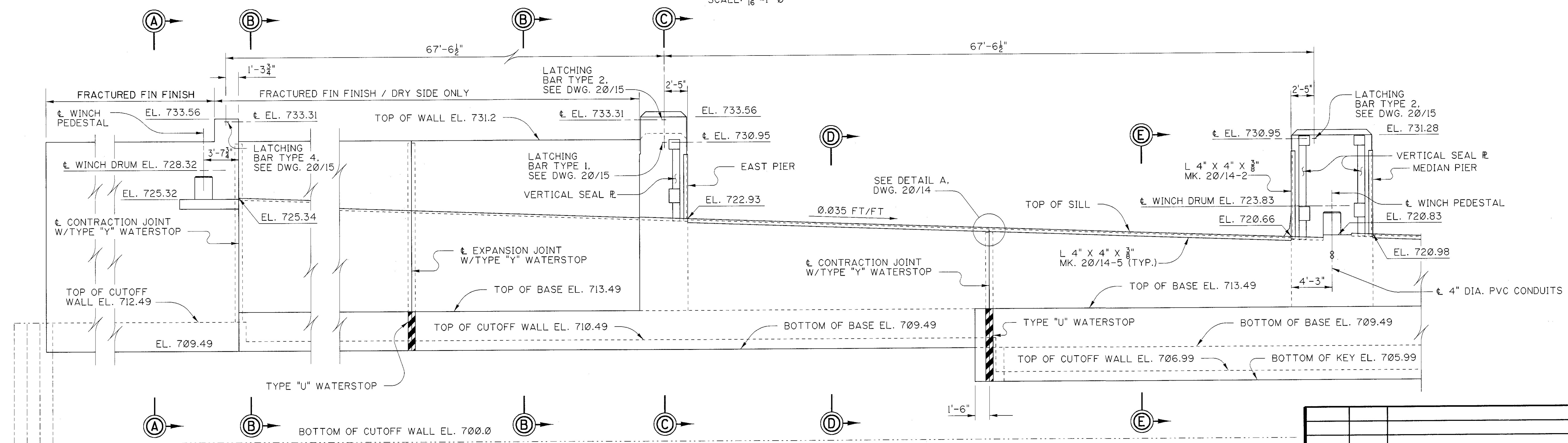
NTS

REVISION	DATE	DESCRIPTION	BY
COMPUTER A IDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: xs11 16.dgn	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: J. VASSAR R. RAKES	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE CHANNEL RELOCATION DRAWINGS TYPICAL SECTION AND DETAILS</b>		
DRAWN BY: R. RAKES J. SIMPKINS			
CHECKED BY: J. NOLEN P. FERGUSON	APPROVED:	DATE:	MAY 1997
SUBMITTED BY:	CHIEF, DESIGN BRANCH	COL. C. E. DISTRICT ENGINEER	
APPROVED FOR:	CHIEF, ENG DIVISION	SCALE: N.T.S.	CONTR. NO:
DATE:	DRAWING NUMBER	016-PWC-2-16/8	
SHEET 2 OF 2			

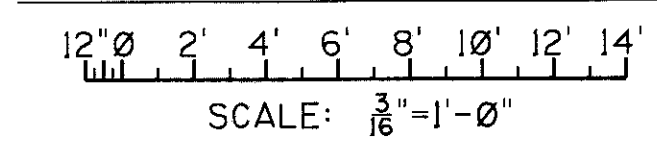




**PLAN**  
SCALE: 3/16"=1'-0"



**RIVERSIDE ELEVATION**

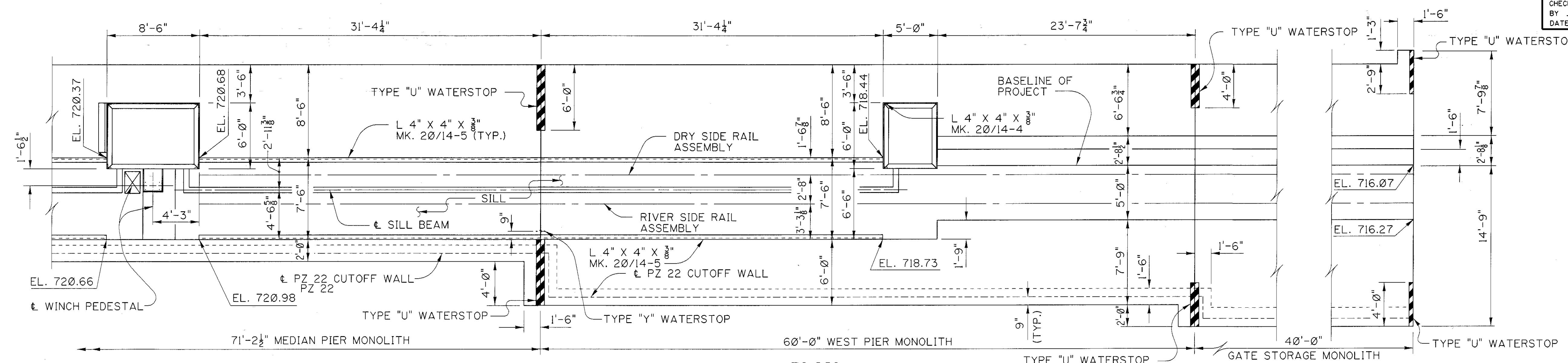


**NOTES**

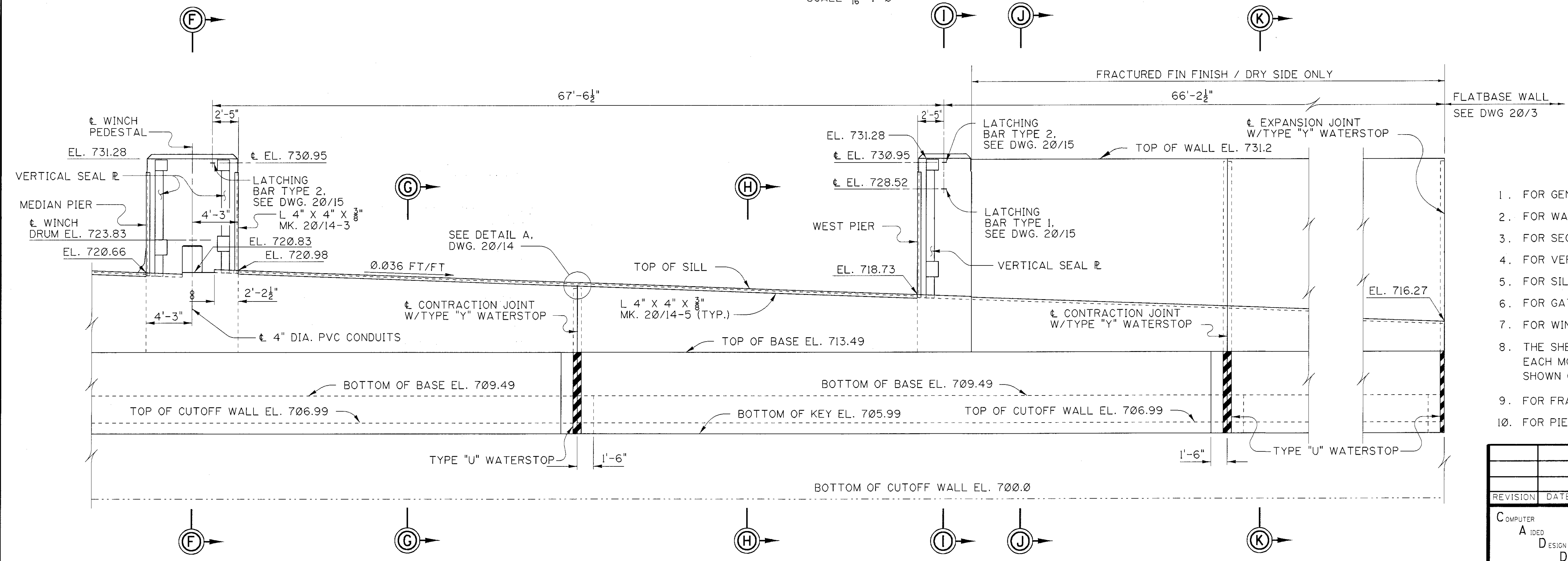
1. FOR GENERAL NOTES SEE DWG. 0/3.
2. FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
3. FOR SECTIONS SEE DWGS. 20/7 AND 20/8.
4. FOR VERTICAL SEAL DETAILS SEE DWG. 20/13.
5. FOR SILL BEAM AND RAIL ASSEMBLY DETAILS SEE DWG. 20/12.
6. FOR GATE WINCH AND ACCESSORIES SEE SPECIFICATIONS.
7. FOR WINCH PEDESTAL DETAILS SEE DWG. 20/9.
8. THE SHEET PILE CUTOFF WALL SHALL HAVE A PSA23 CENTERED ON EACH MONOLITH JOINT AS PER WATERSTOP CONNECTION DETAILS SHOWN ON DWG. 20/6.
9. FOR FRACTURED FIN FINISH DETAILS SEE DWG 20/26.
10. FOR PIER CAP DETAILS SEE DWG 20/27.

REVISION	DATE	DESCRIPTION	BY

COMPUTER A DESIGN & DRAFTING	<b>CADD COMPUTER INFORMATION</b> SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-1.DGN
DESIGNED BY: B.W.D. R.E.T. DRAWN BY: T.L.C. B.W.D. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA. <b>SCIOTO RIVER, OH</b> <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>NORTHBOUND</b> <b>PLAN AND ELEVATION</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED: _____ DATE: _____ CHIEF ENG DIVISION APPROVED: _____ COL. C.E. DISTRICT ENGINEER	SCALE: AS SHOWN CONTR.NO: _____ DRAWING NUMBER <b>016-PWC-2-20/1</b> SHEET OF
APPROVED FOR: _____ DATE: _____	DATE: _____



**PLAN**  
SCALE: 3/16"=1'-0"



**RIVERSIDE ELEVATION**  
SCALE: 3/16"=1'-0"

**NOTES**

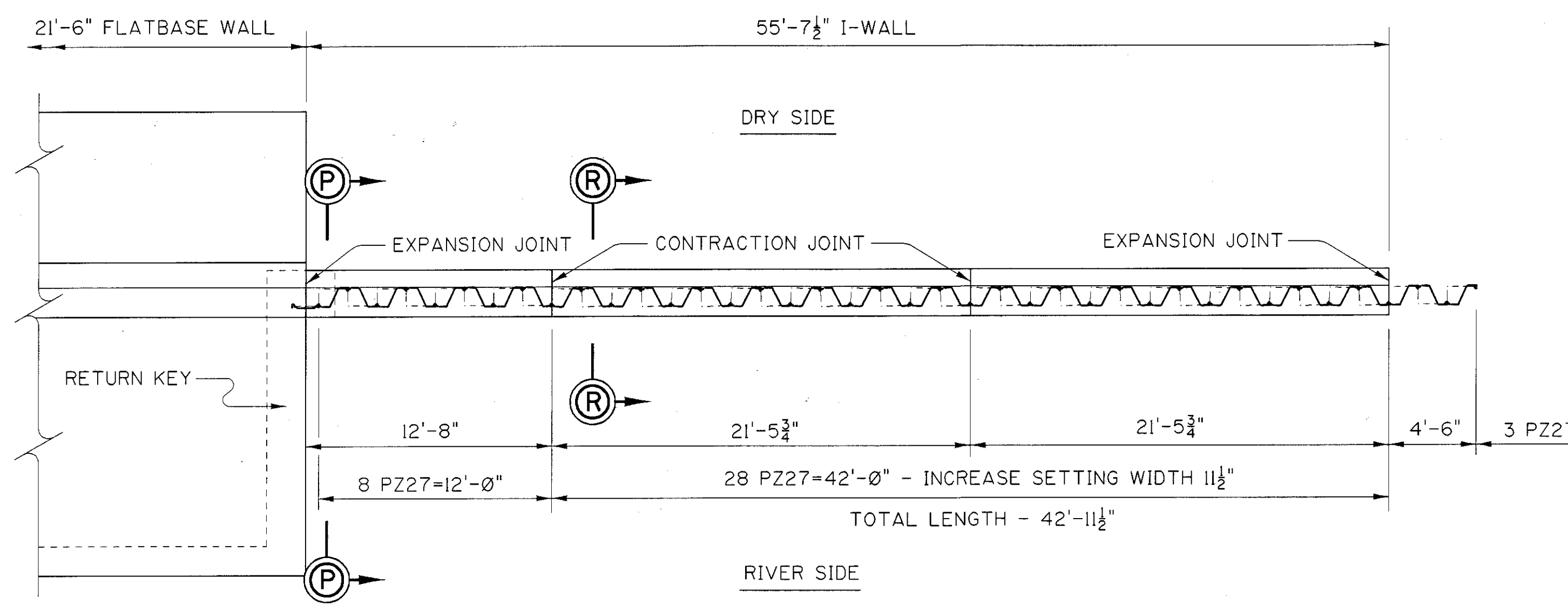
- FOR GENERAL NOTES SEE DWG. 0/3.
- FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
- FOR SECTIONS SEE DWGS. 20/8 THRU 20/10.
- FOR VERTICAL SEAL DETAILS SEE DWG. 20/13.
- FOR SILL BEAM AND RAIL ASSEMBLY DETAILS SEE DWG. 20/12.
- FOR GATE WINCH AND ACCESSORIES SEE SPECIFICATIONS.
- FOR WINCH PEDESTAL DETAILS SEE DWG. 20/9.
- THE SHEET PILE CUTOFF WALL SHALL HAVE A PSA23 CENTERED ON EACH MONOLITH JOINT AS PER WATERSTOP CONNECTION DETAILS SHOWN ON DWG. 20/6.
- FOR FRACTURED FIN FINISH DETAILS SEE DWG 20/26.
- FOR PIER CAP DETAILS SEE DWG 20/27.

REVISION	DATE	DESCRIPTION	BY

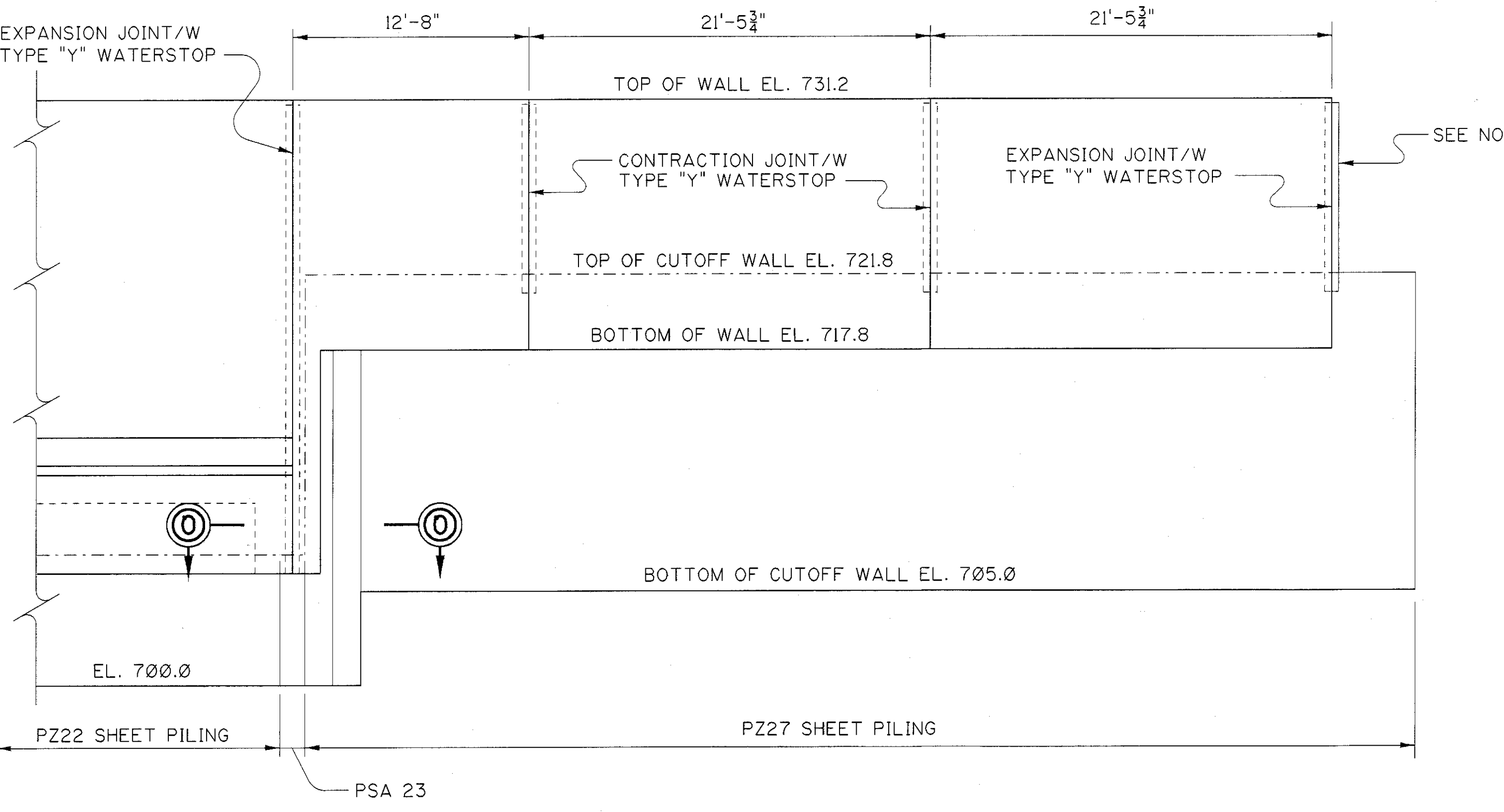
COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-2.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: B.W.D. R.E.T. DRAWN BY: R.J.R. B.W.D. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>SOUTHBOUND</b> <b>PLAN AND ELEVATION</b>
CHIEF DESIGN BRANCH APPROVED: _____ DATE: _____ CHIEF ENG DIVISION APPROVED: _____ DATE: _____	COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____	SCALE: AS SHOWN CONTR. NO.: _____
DATE: _____	DRAWING NUMBER <b>016-PWC-2-20/2</b> SHEET OF



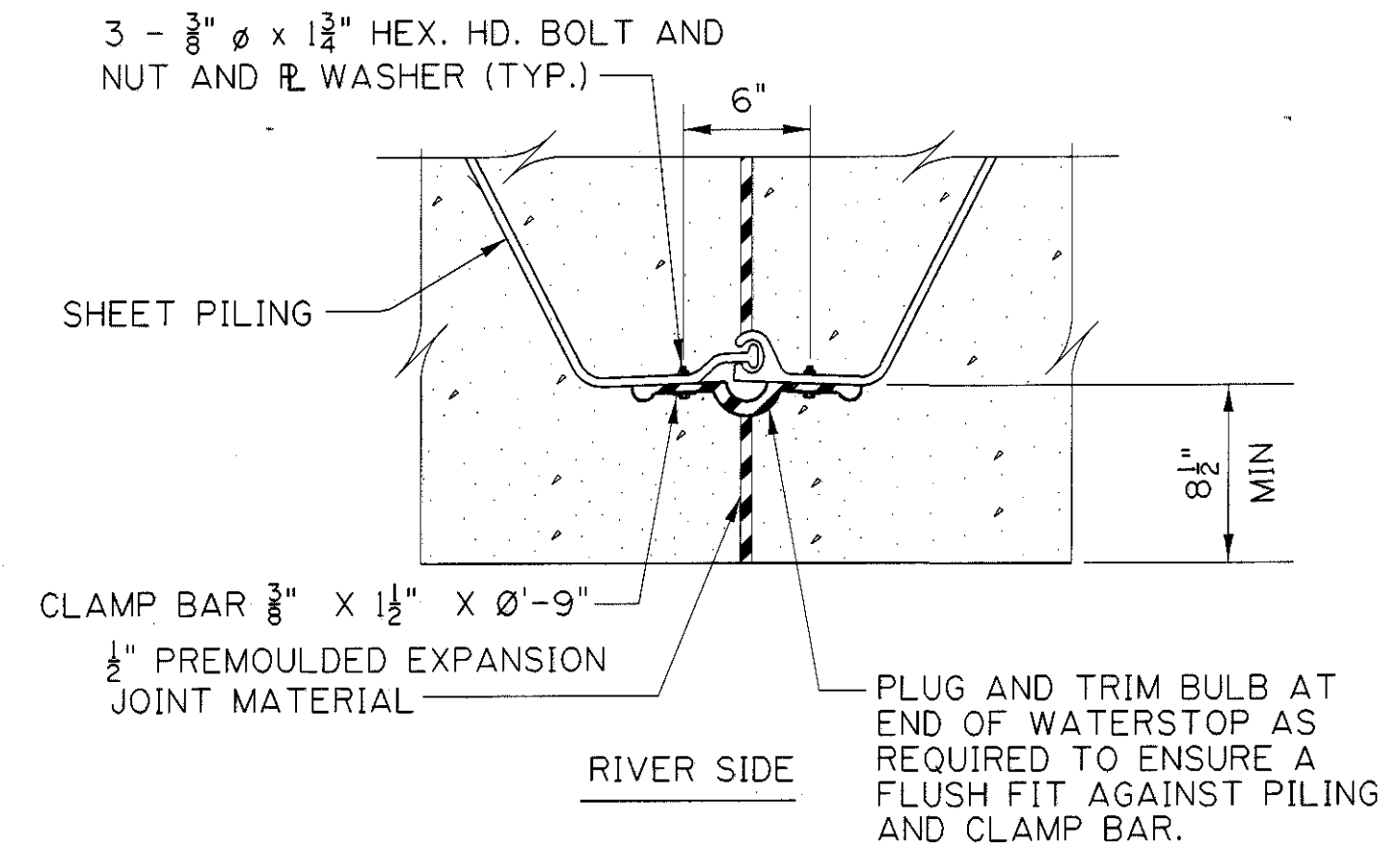




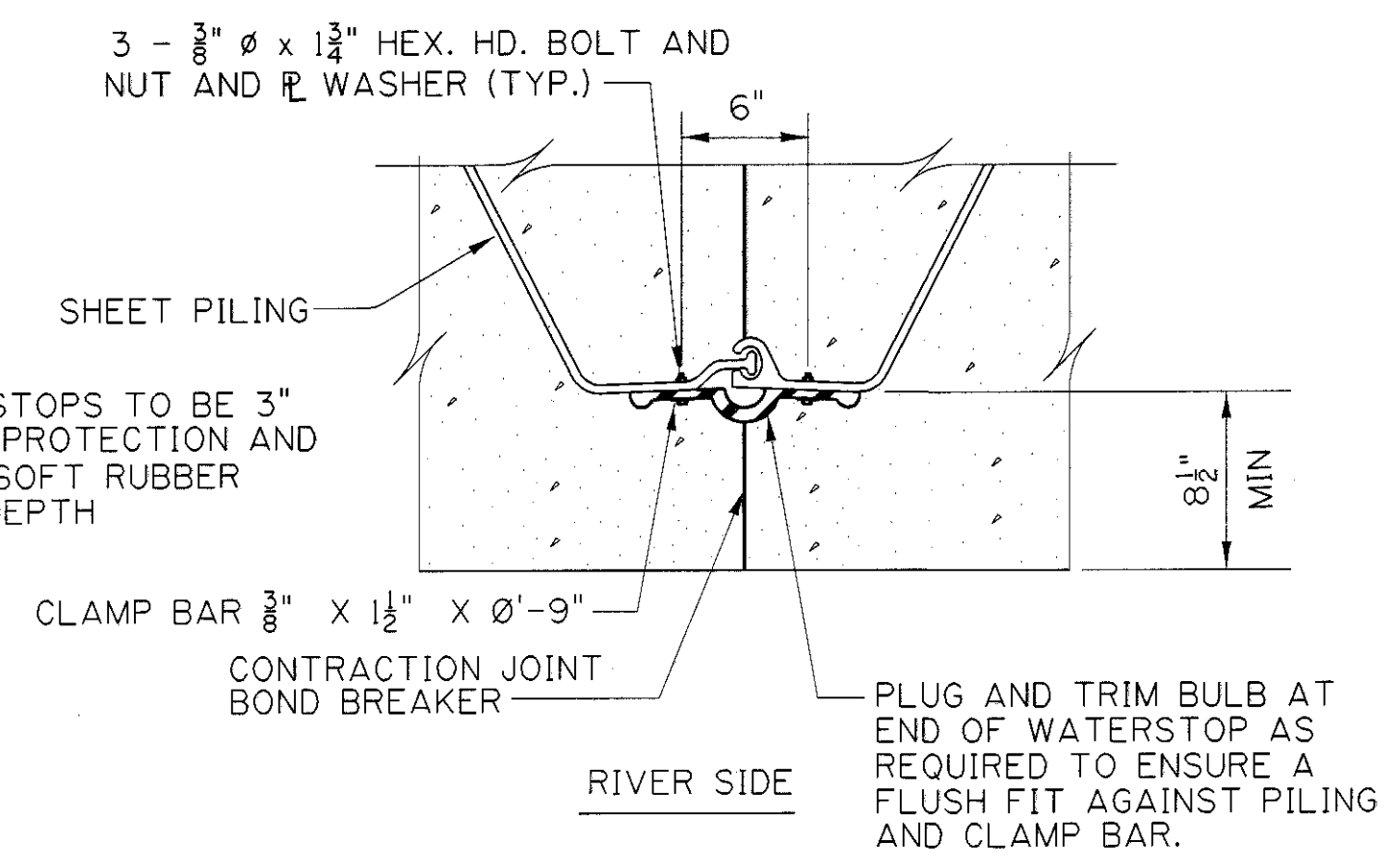
**PLAN**  
SCALE: 3/16"=1'-0"



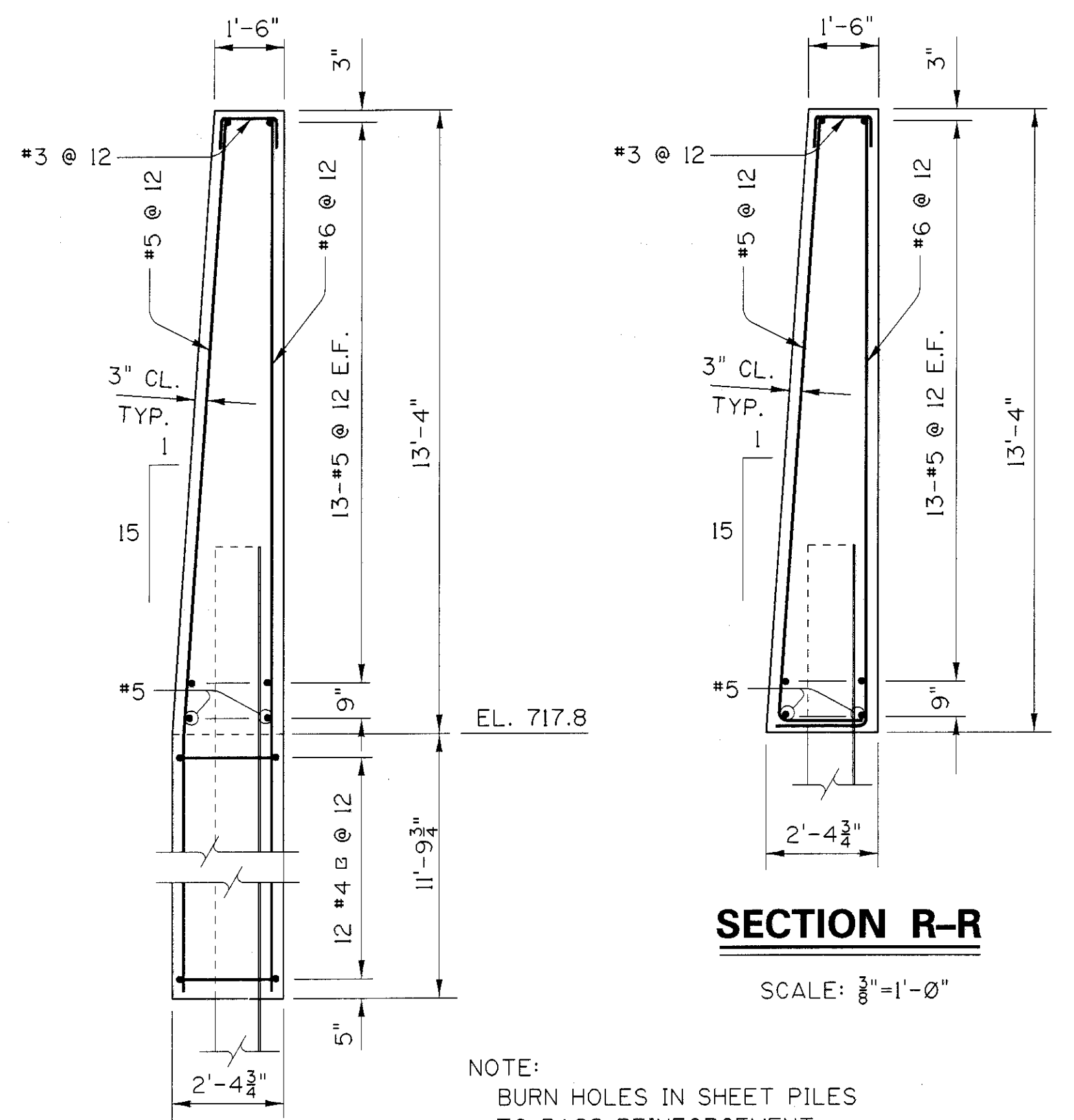
**RIVERSIDE ELEVATION**  
SCALE: 3/16"=1'-0"



**EXPANSION JOINT DETAIL**  
NOT TO SCALE



**CONTRACTION JOINT DETAIL**  
NOT TO SCALE

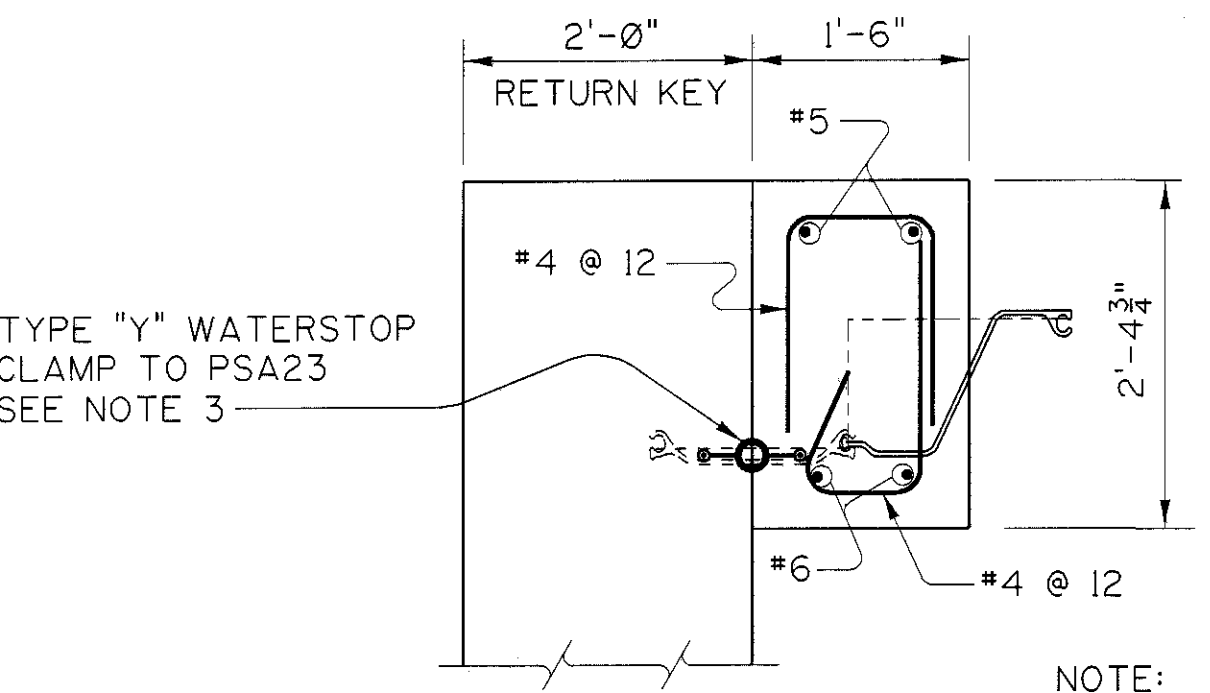


**SECTION P-P**  
SCALE: 3/8"=1'-0"

**SECTION R-R**  
SCALE: 3/8"=1'-0"

NOTE:  
TOP OF WATERSTOPS TO BE 3"  
BELOW TOP OF PROTECTION AND  
PLUGGED WITH SOFT RUBBER  
FOR A 2" MIN. DEPTH

NOTE:  
BURN HOLES IN SHEET PILES  
TO PASS REINFORCEMENT



**SECTION Q-Q**  
SCALE: 3/4"=1'-0"

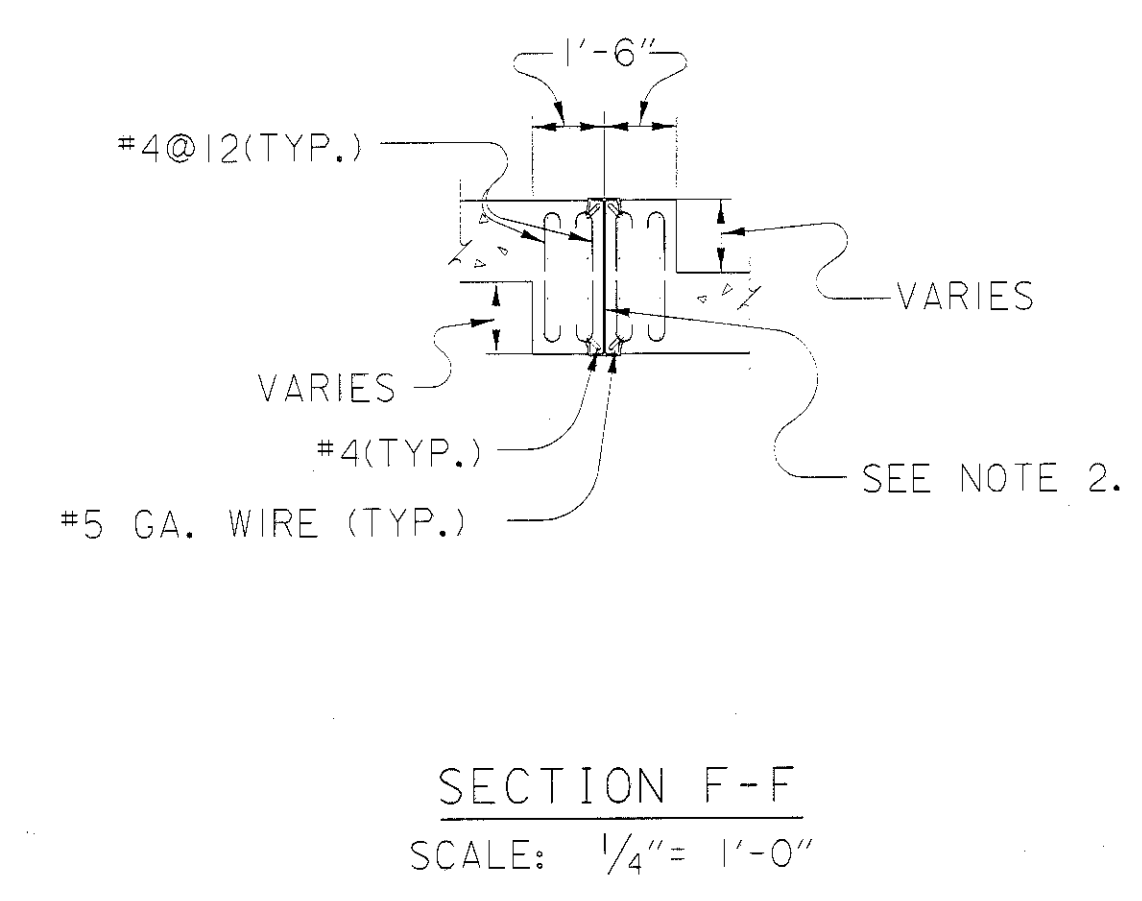
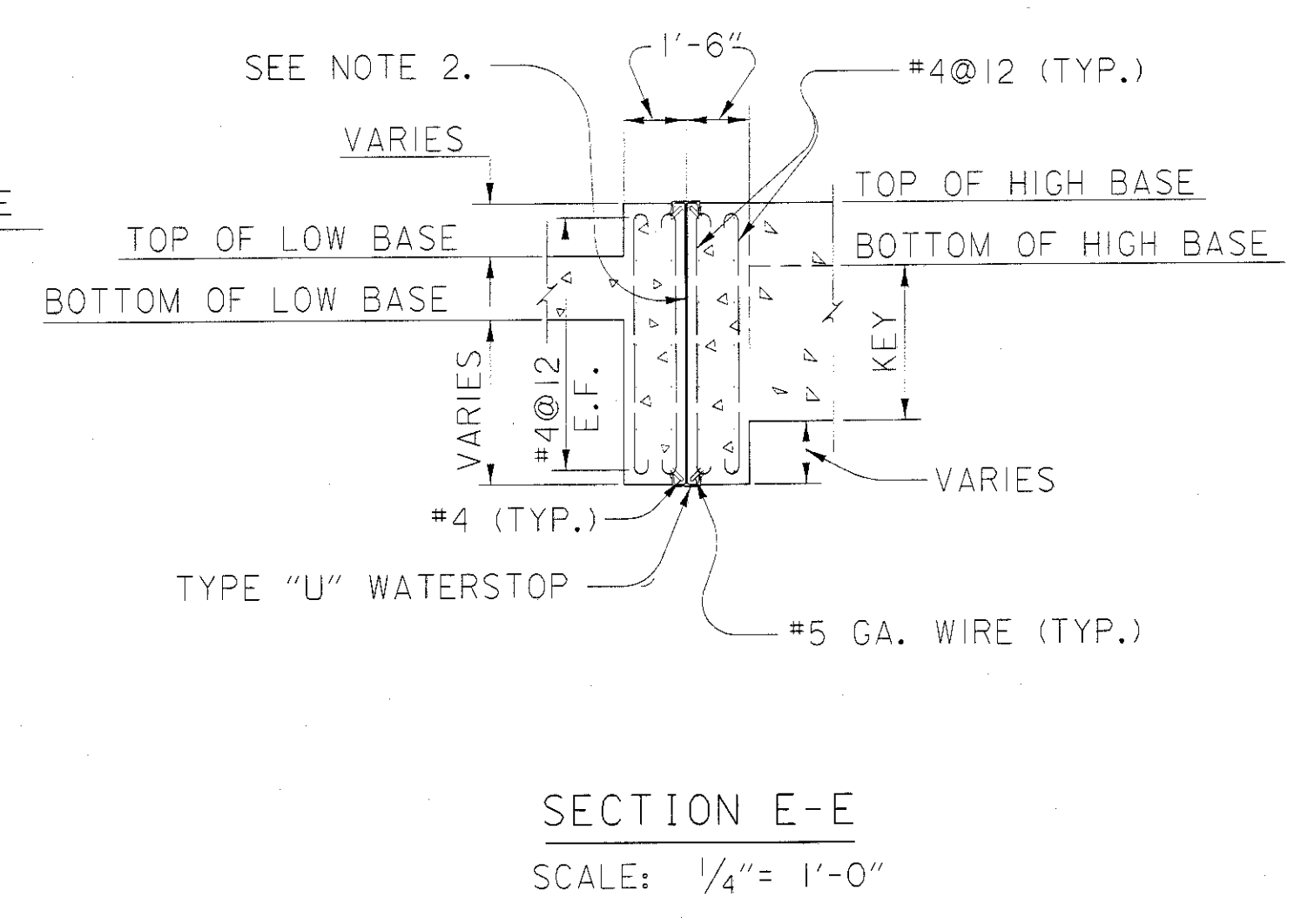
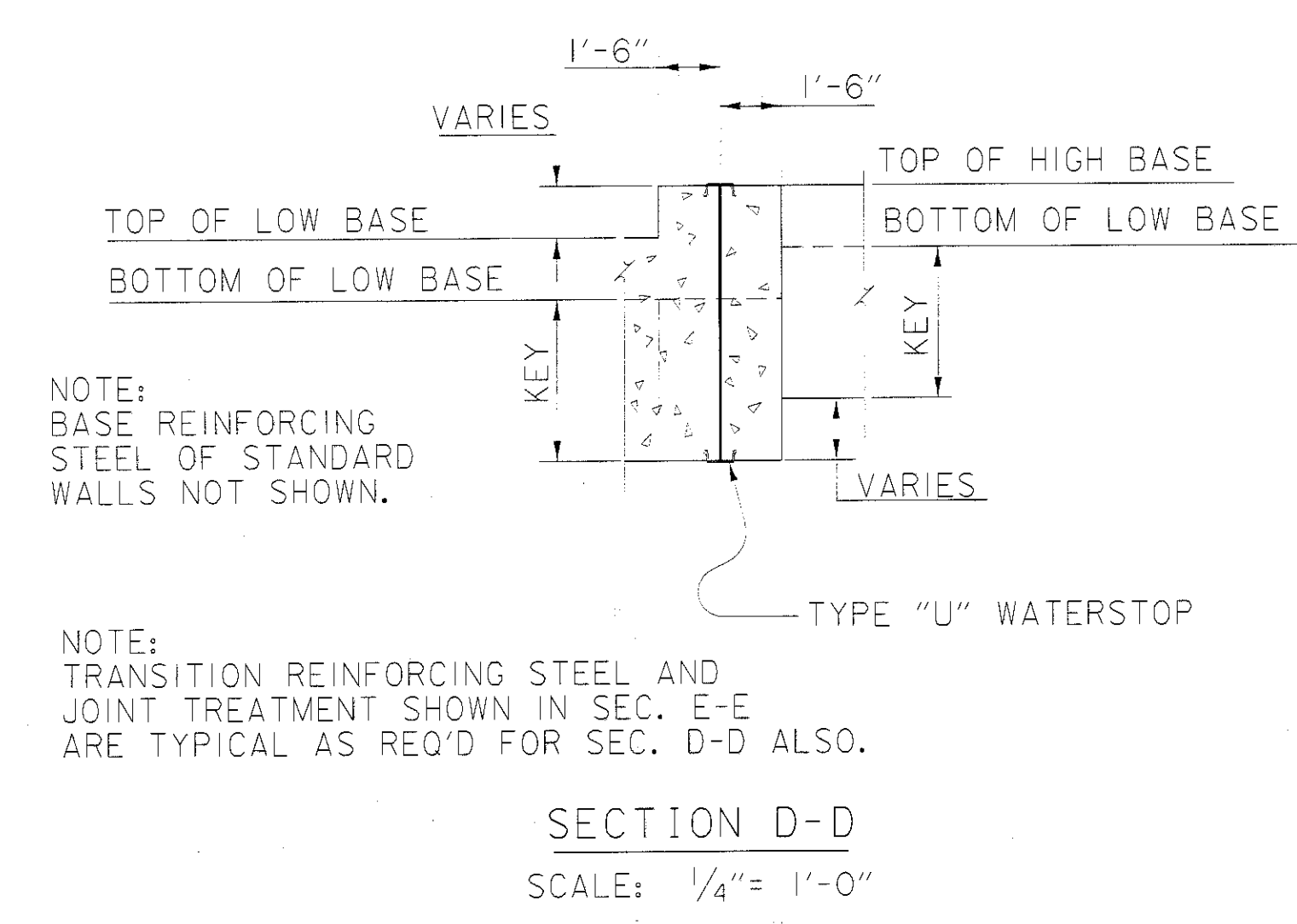
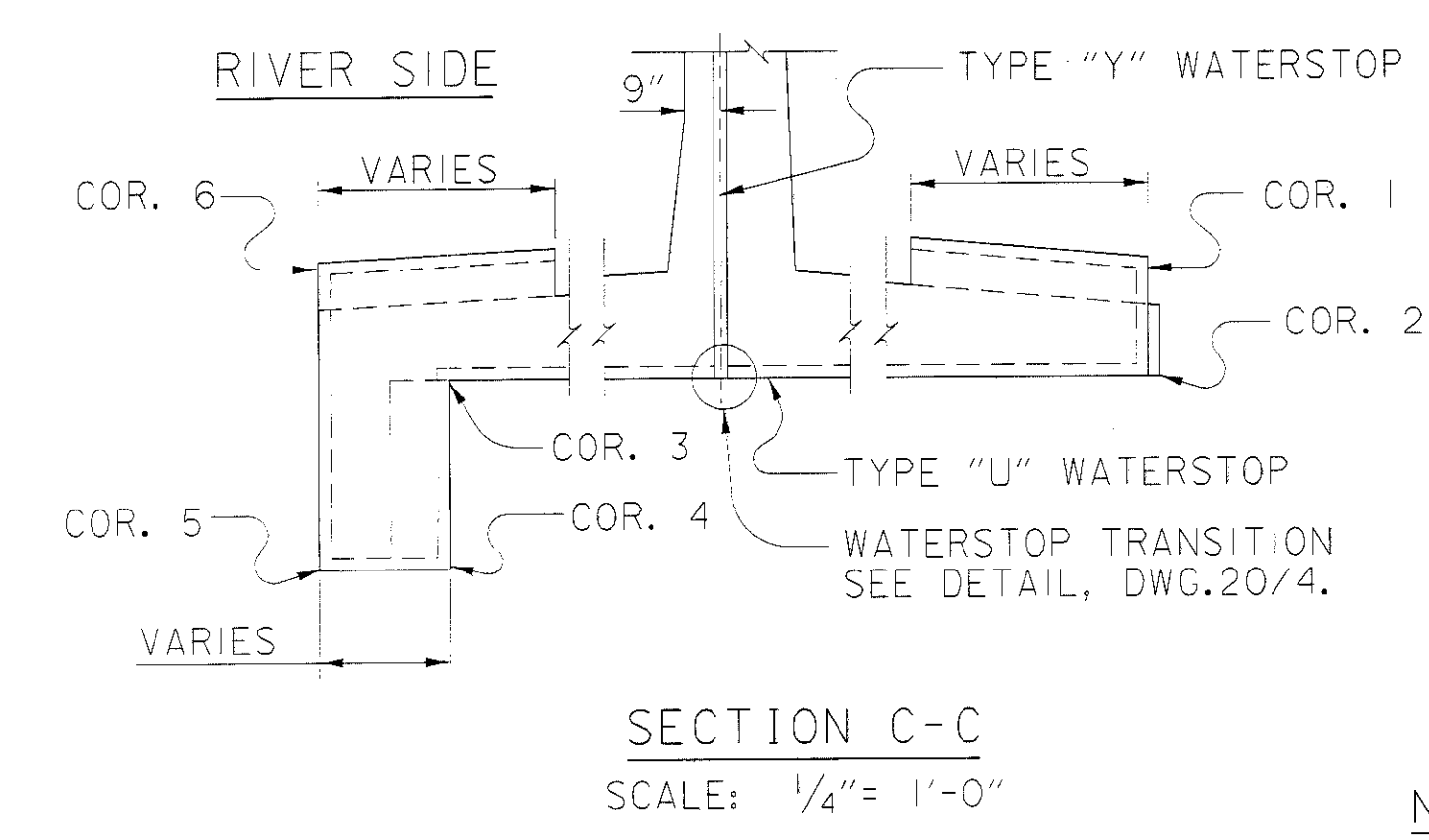
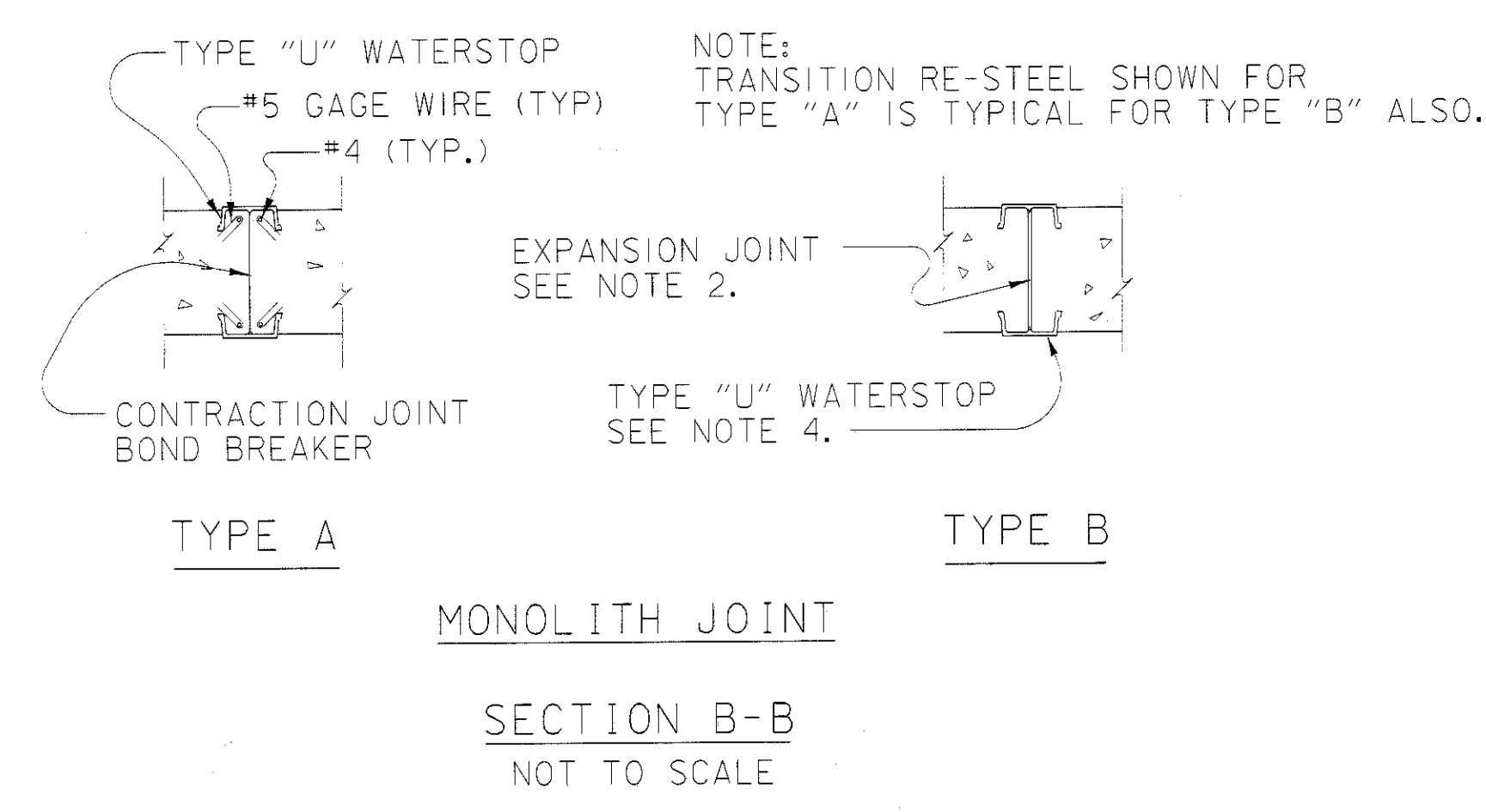
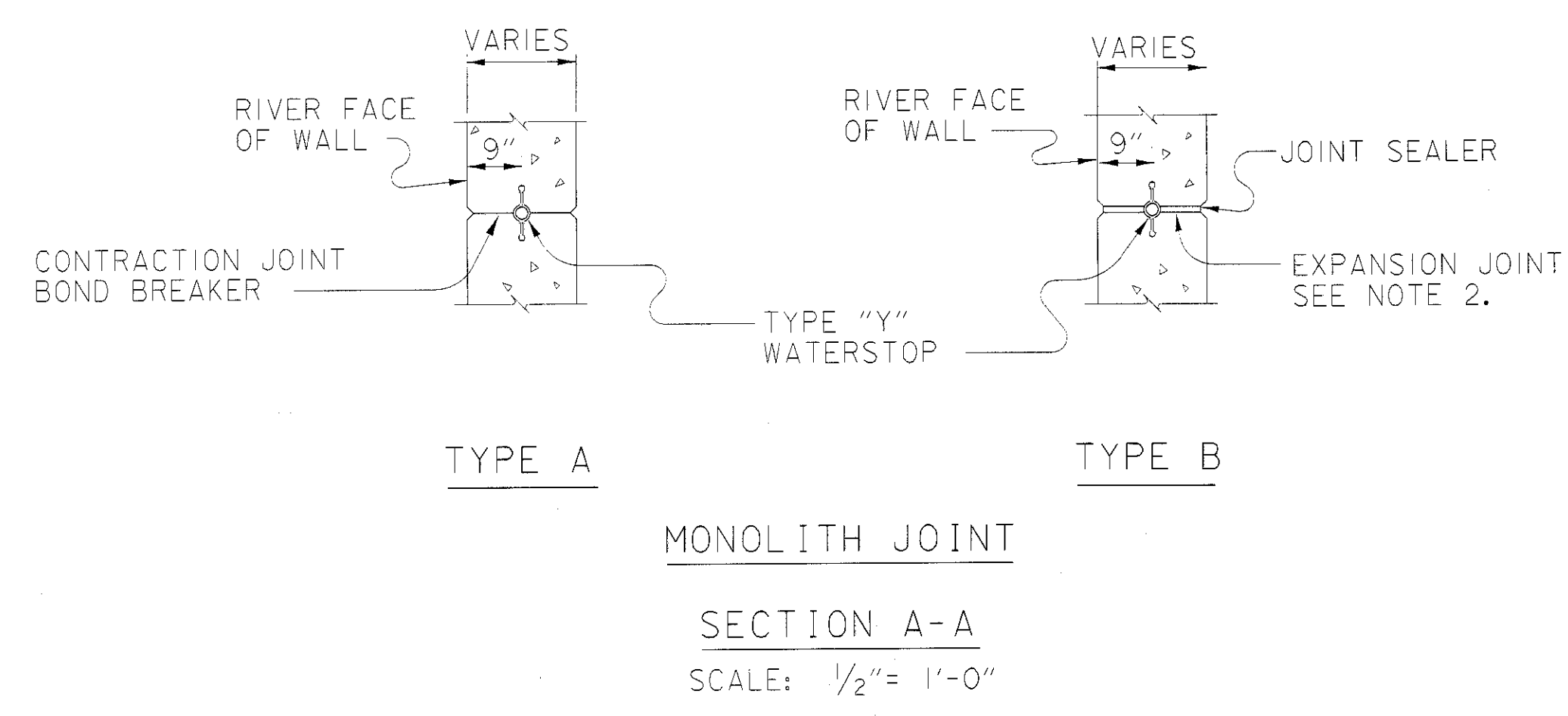
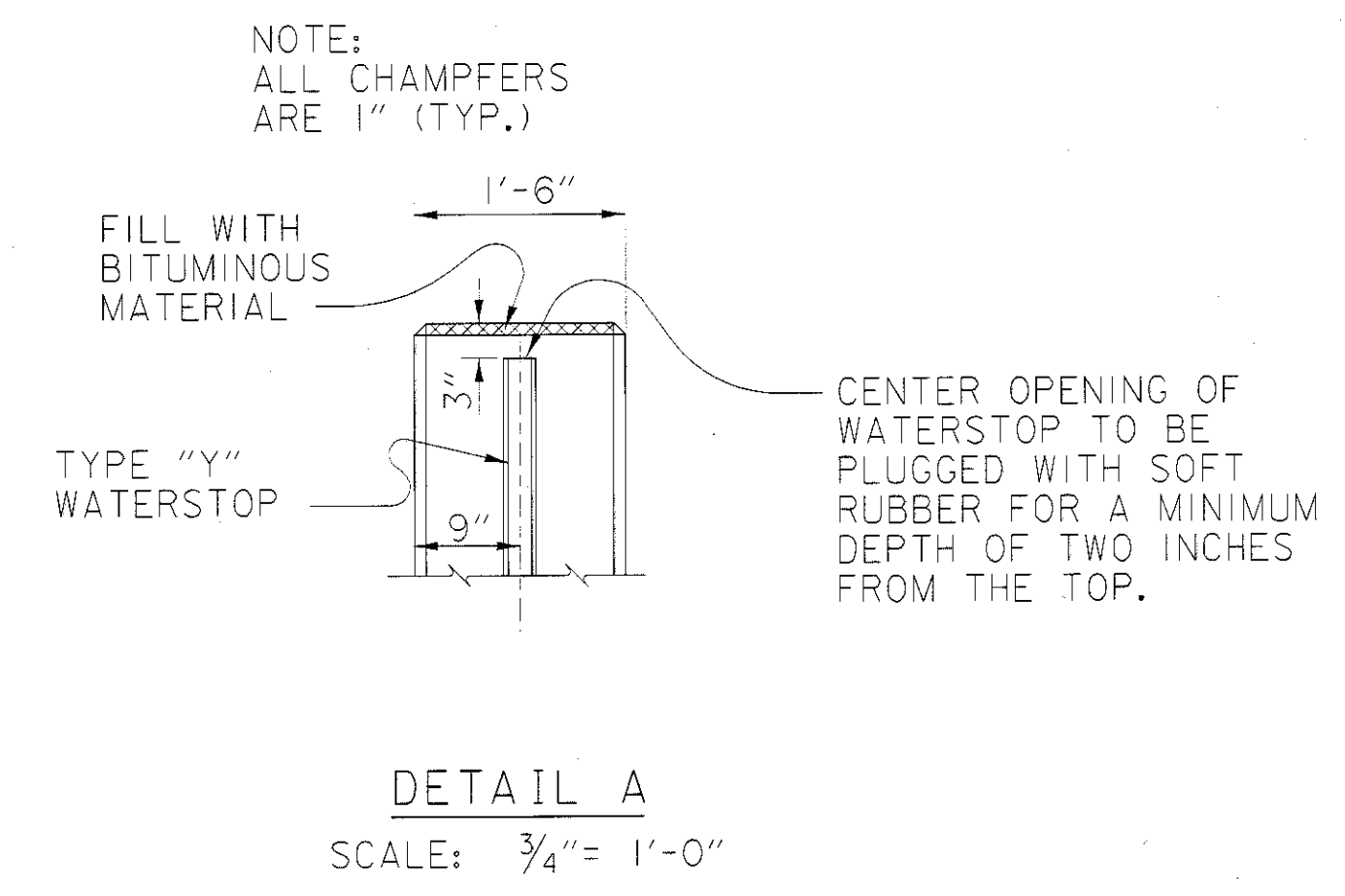
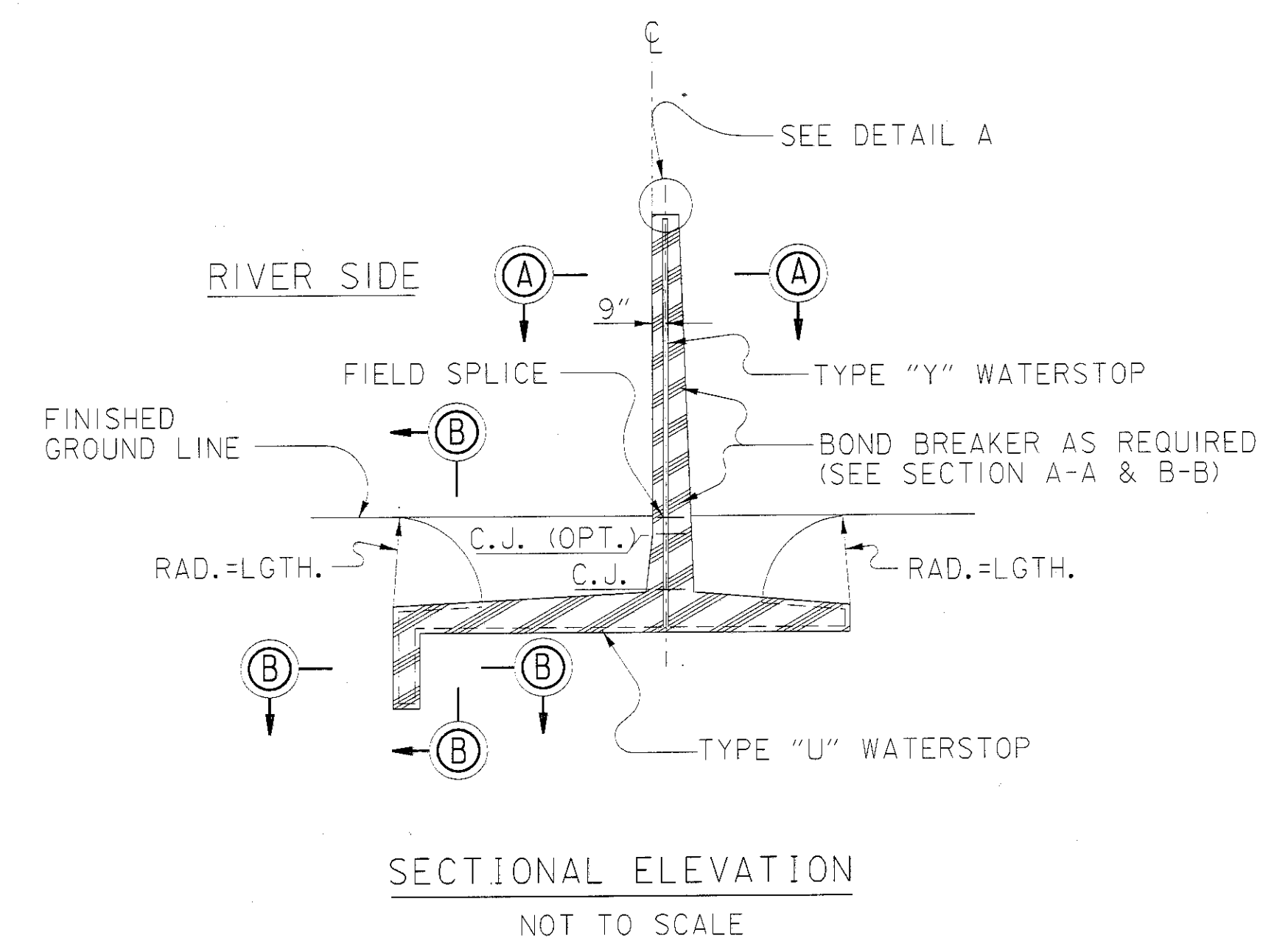
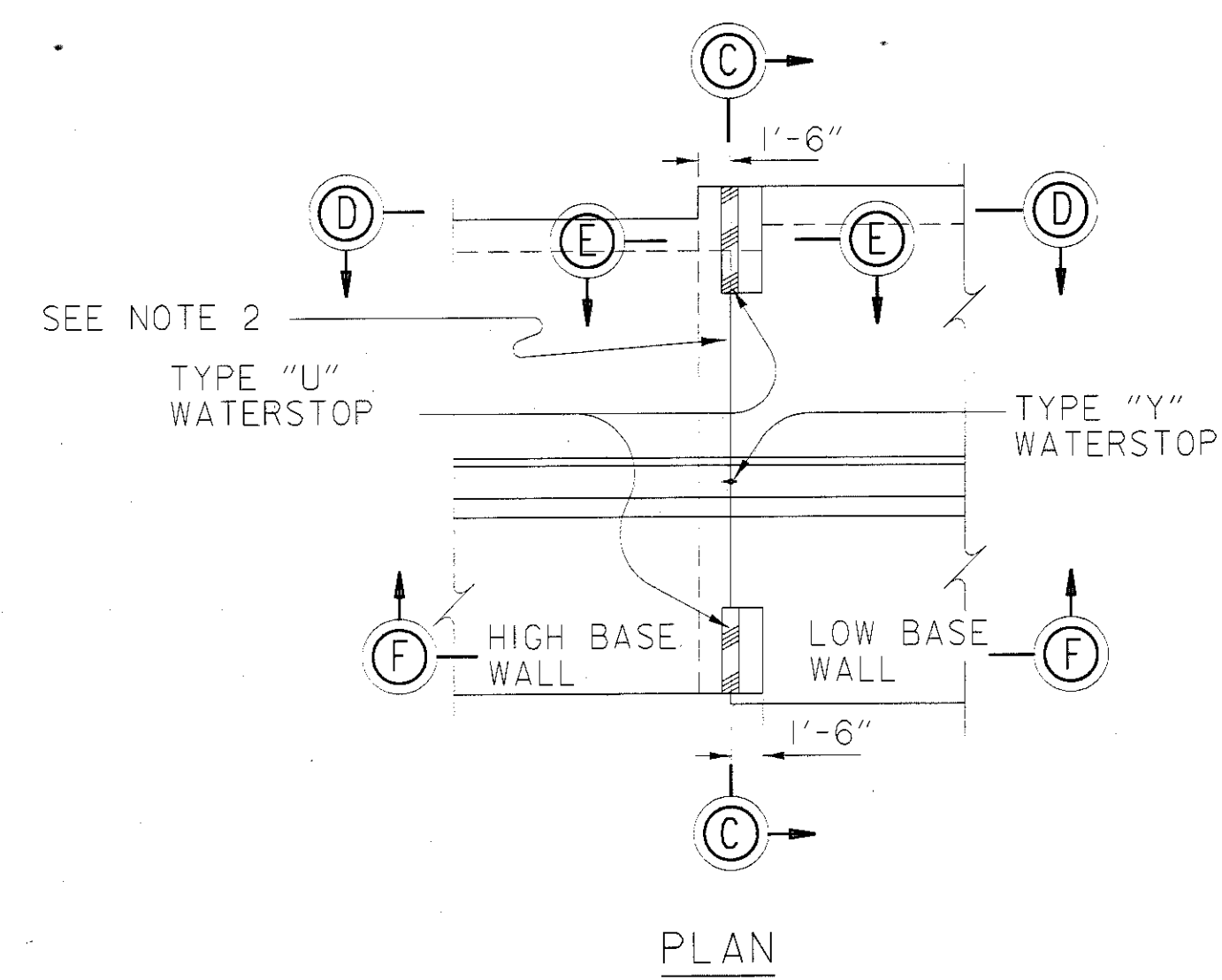
NOTE:  
BURN HOLES IN SHEET PILES  
TO PASS REINFORCEMENT

**NOTES**

1. FOR GENERAL NOTES SEE DWG. 0/3.
2. FOR GENERAL MASONRY AND REINFORCEMENT NOTES SEE DWG. 20/7.
3. FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
4. PROVIDE WATERSTOP GUARD. SEE DWG. 20/14.
5. REINFORCEMENT SHALL NOT PASS THROUGH I-WALL JOINTS.
6. PROVIDE FRACTURED FIN FINISH ON EACH SIDE OF I-WALL. SEE DWG. 20/26.

DESIGNED BY:	B.W.D.	<b>SCIOTO RIVER, OH</b> <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>WEST I-WALL</b> <b>PLAN AND DETAILS</b>
DRAWN BY:	B.W.D.	
CHECKED BY:	D.A.K.	
SUBMITTED BY:		
CHIEF DESIGN BRANCH	APPROVED:	DATE:
CHIEF ENG DIVISION	COL. C. E. DISTRICT ENGINEER	
APPROVED FOR:	SCALE: AS SHOWN	CONTR. NO.:
DATE:	DRAWING NUMBER	
	<b>016-PWC-2-20/4</b>	





- NOTES
- FOR DETAILS OF "U" WATERSTOP CORNERS SEE DWG. 20/5.
  - USE 1/2" PREMOULDED JOINT MATERIAL AT EXPANSION JOINTS OR 1" THICK PREMOULDED EXPANSION JOINT MATERIAL AT ANGLES OR CHANGES IN DIRECTION OF STEM. USE BOND BREAKER AT CONTRACTION JOINTS.
  - SEE DWG. 20/1 THRU 20/3 FOR TYPE OF JOINT LOCATIONS.
  - TYPE "U" WATERSTOP WILL BE PLACED SO THAT FIRM CONTACT WITH THE PREPARED SUBGRADE THROUGHOUT ITS ENTIRE CONTACT AREA IS INSURED.
  - ALL CHAMFFERS ARE 1" UNLESS OTHERWISE NOTED.

REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDED DESIGN & DRAFTING

CADD COMPUTER INFORMATION  
SYSTEM: INTERGRAPH CADD SYSTEM  
SOFTWARE: MICROSTATION VERSION 4.X  
FILE SPEC: wstop1.dgn

U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.

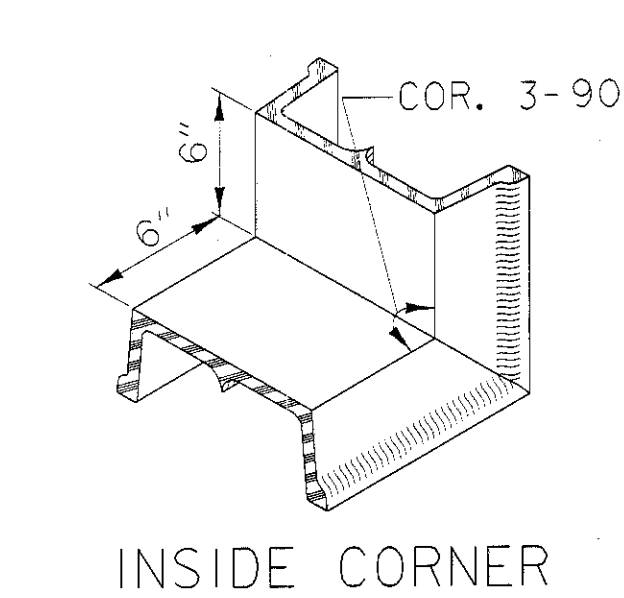
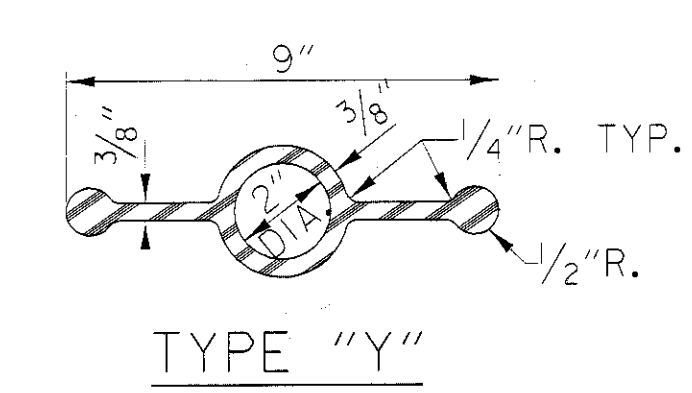
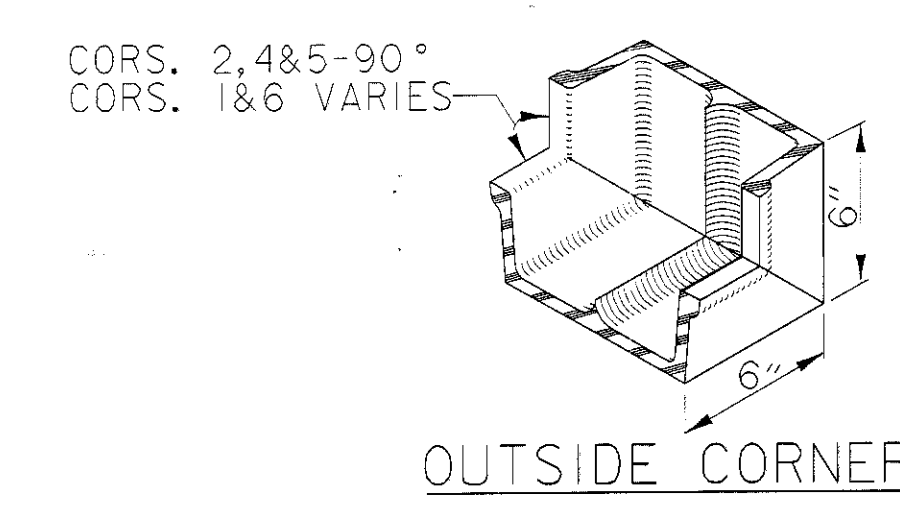
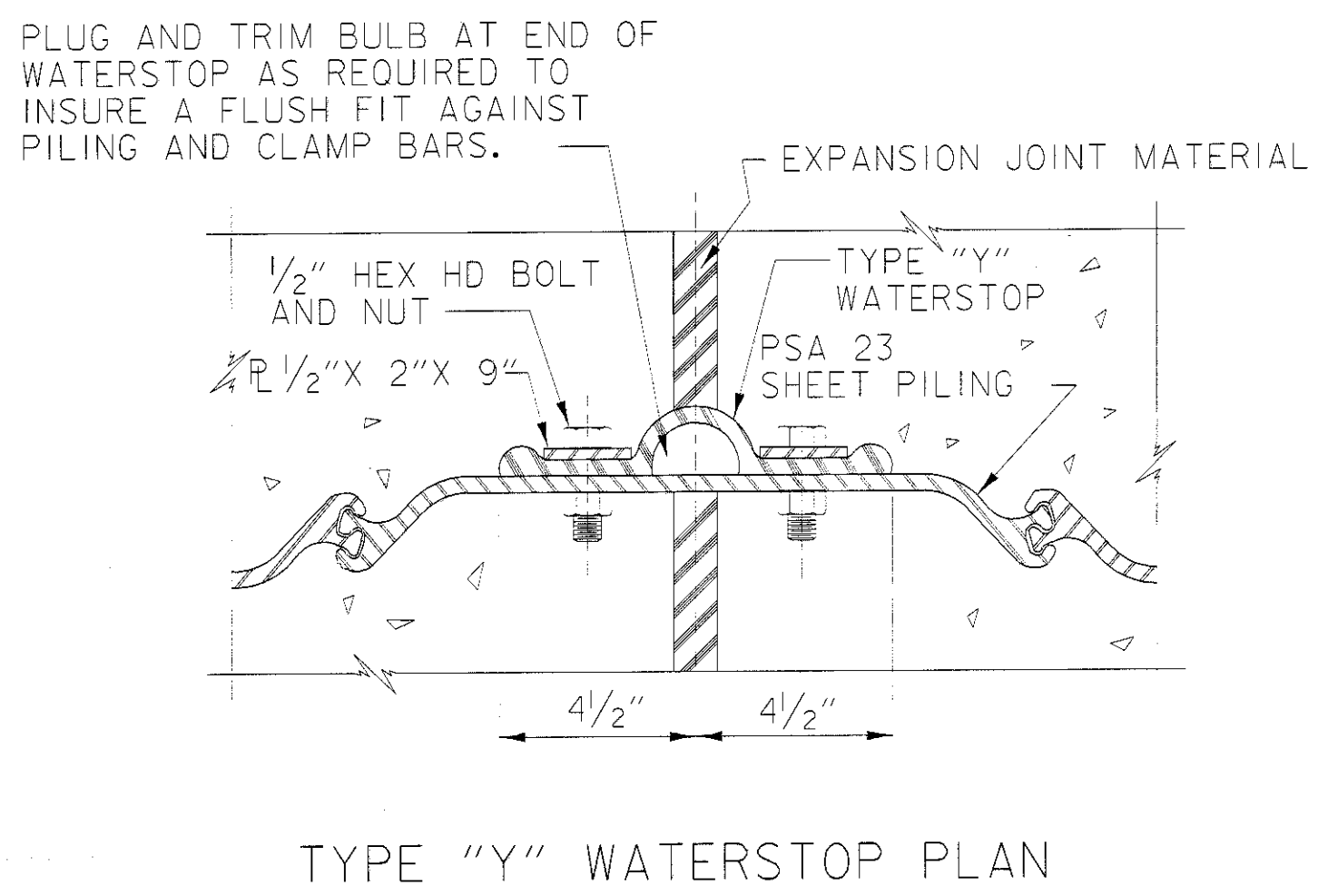
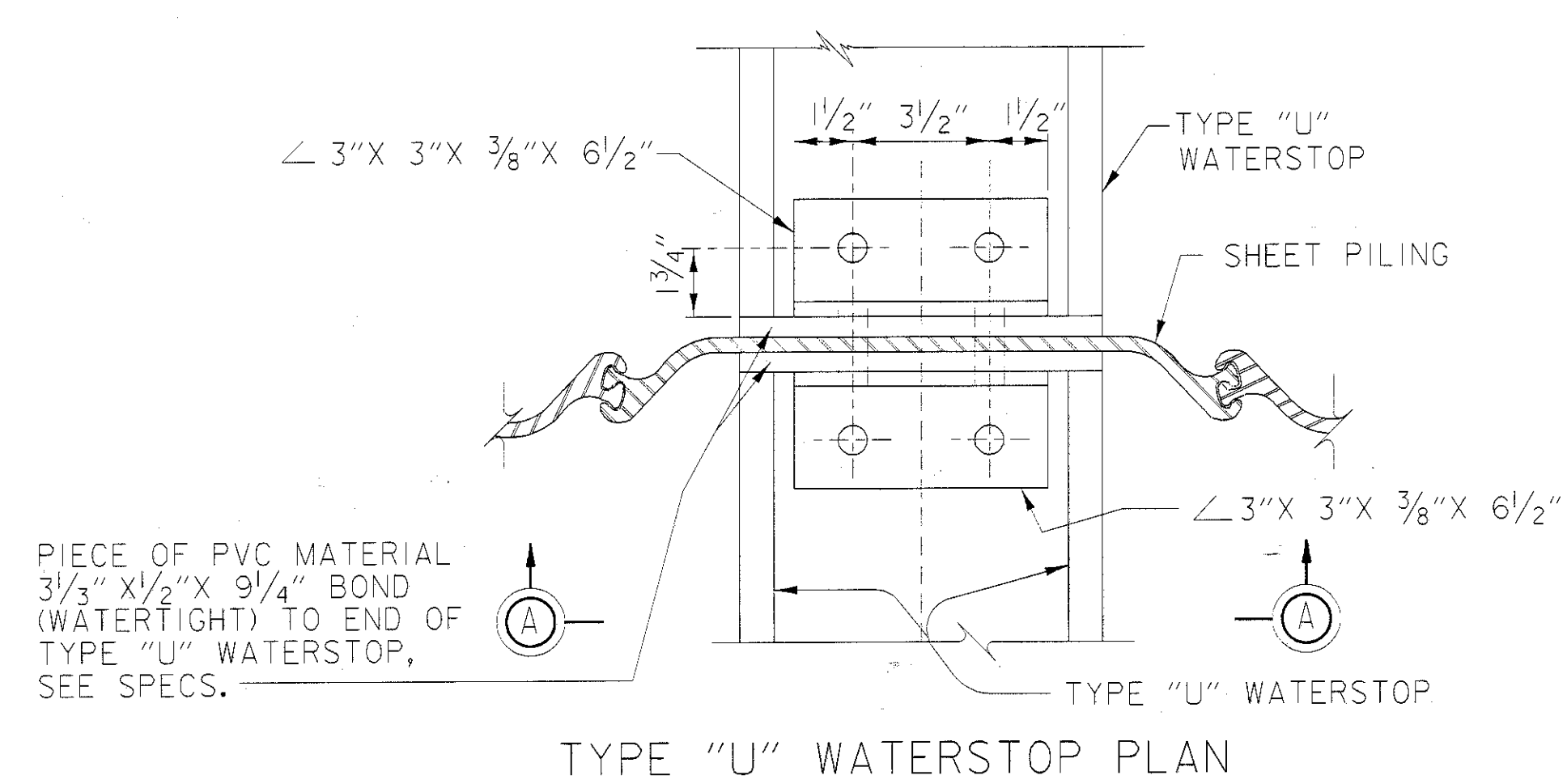
DESIGNED BY: J. VASSAR, H. MARTIN  
DRAWN BY: M. JENKINS, J. SIMPKINS  
CHECKED BY: J. NOLEN, P. FERGUSON  
SUBMITTED BY: P. FERGUSON

CHIEF, DESIGN BRANCH APPROVED: DATE: MAY 1997  
CHIEF, ENG DIVISION COL. C. E. DISTRICT ENGINEER

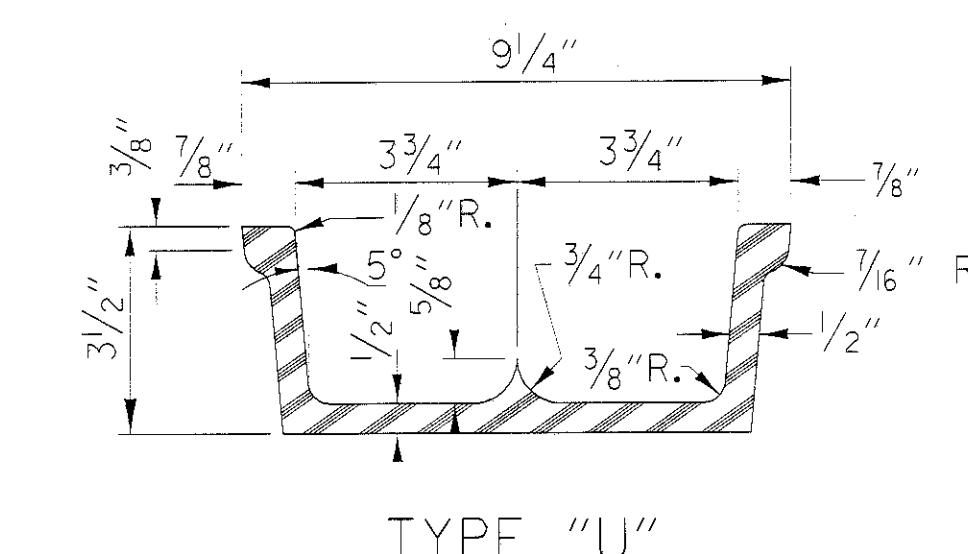
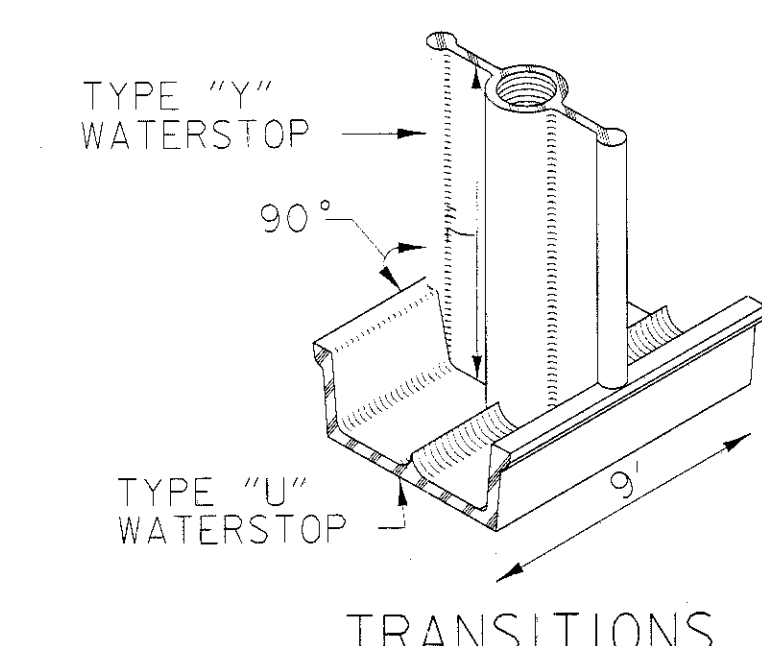
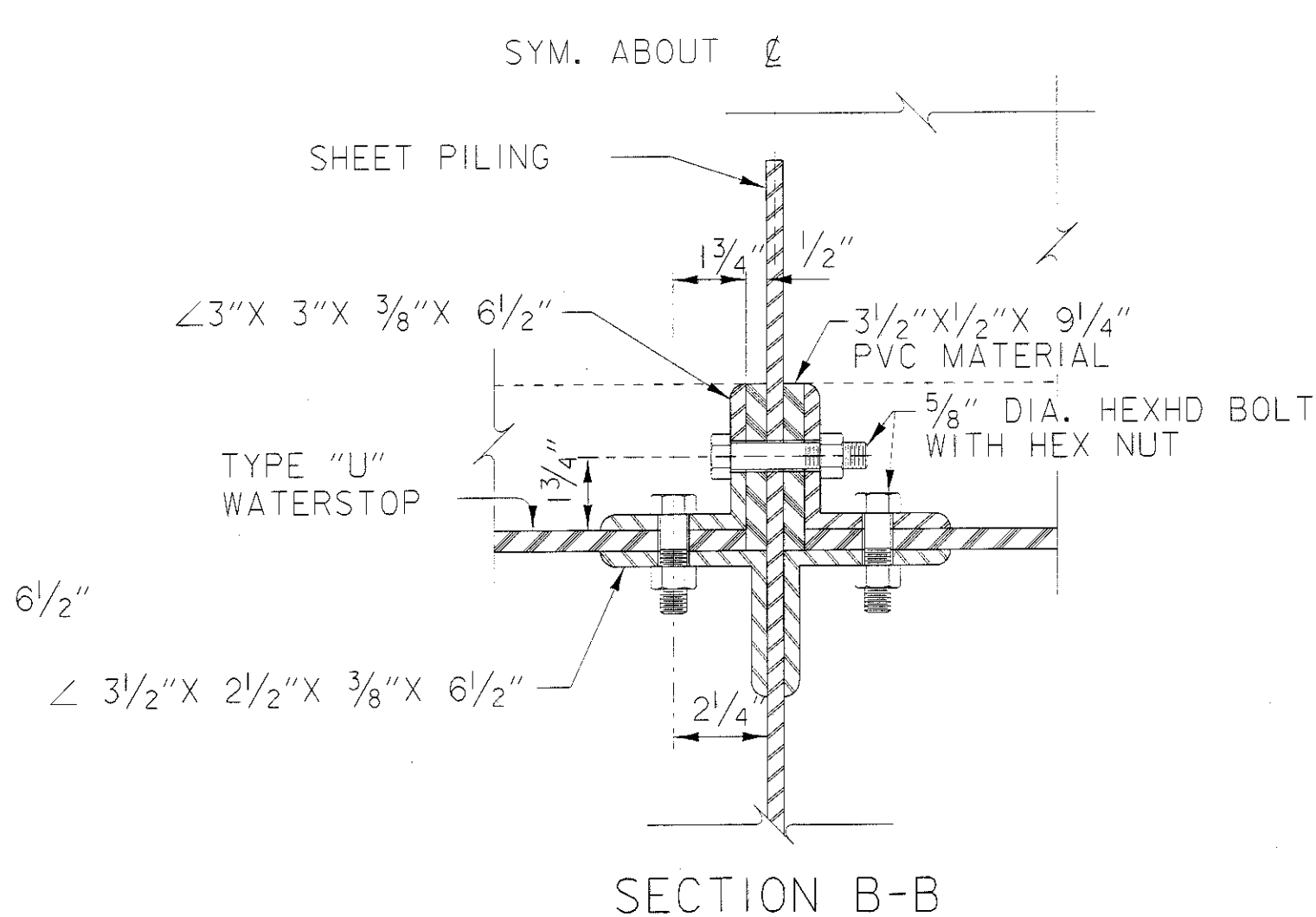
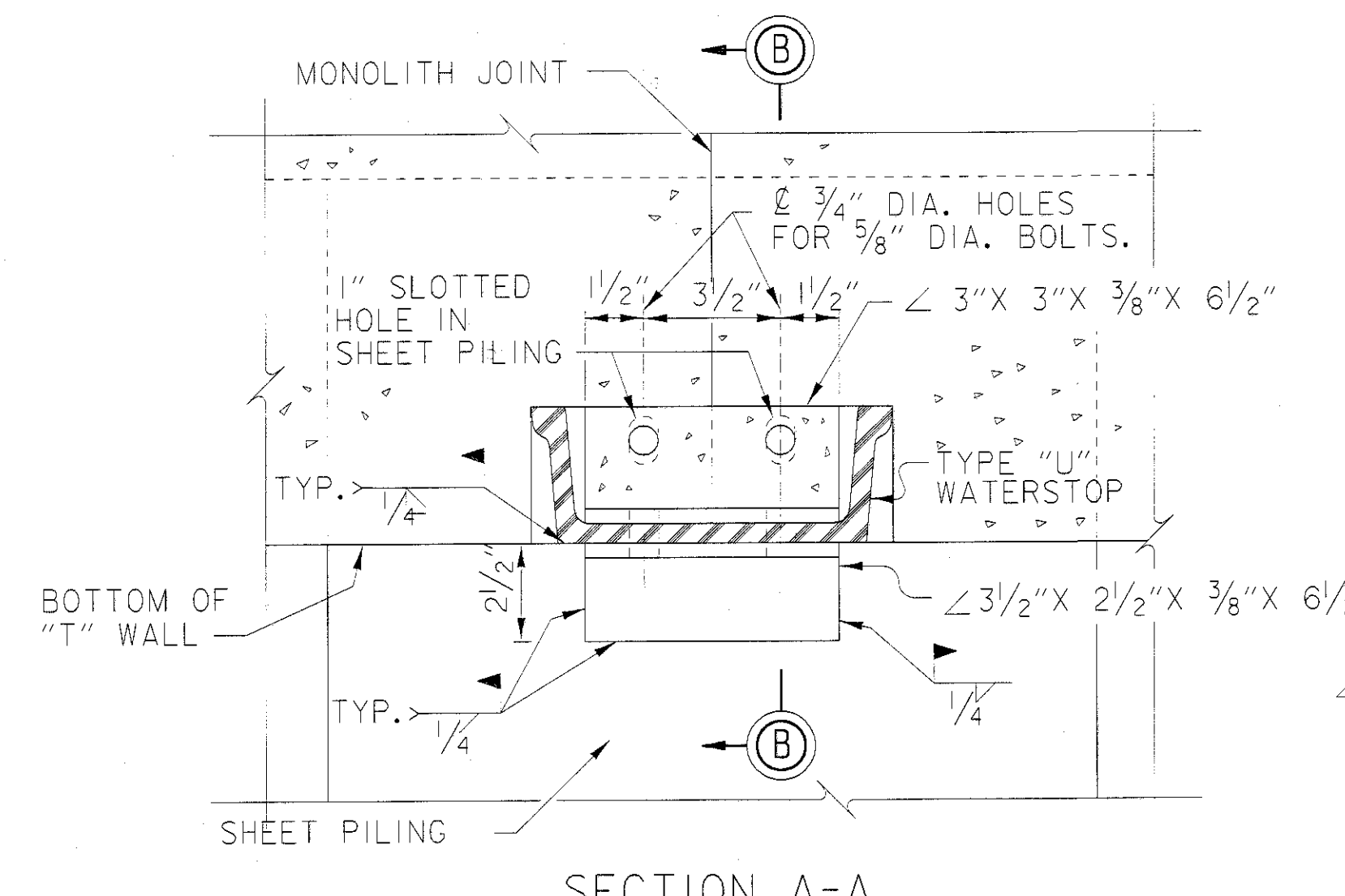
APPROVED FOR: SCALE: AS SHOWN CONTR. NO.:  
DRAWING NUMBER: 016-PWC-2-205

DATE: SHEET 1 OF 1

TRANSITIONS AT CHANGES IN WALL HEIGHT

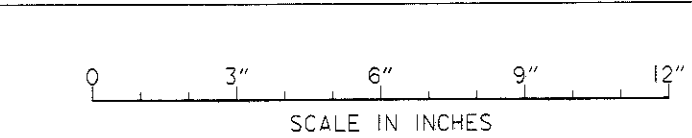


NOTE: REFER TO SECT. C-C, DWG. 20/3 FOR CORNER LOCATIONS



**WATERSTOP DETAILS**  
NOT TO SCALE

**WATERSTOP CONNECTION TO SHEET PILE**



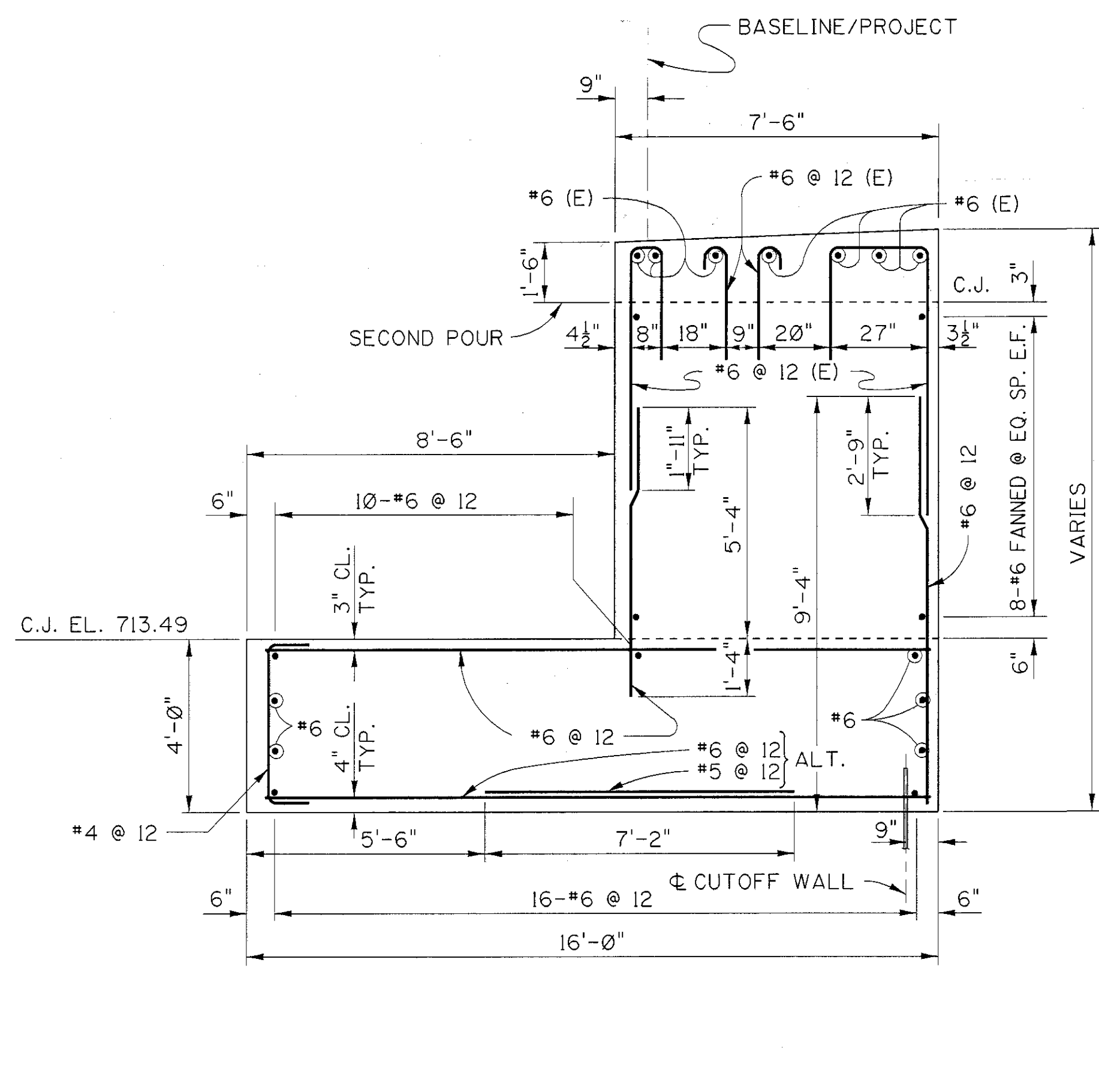
REVISION	DATE	DESCRIPTION	BY

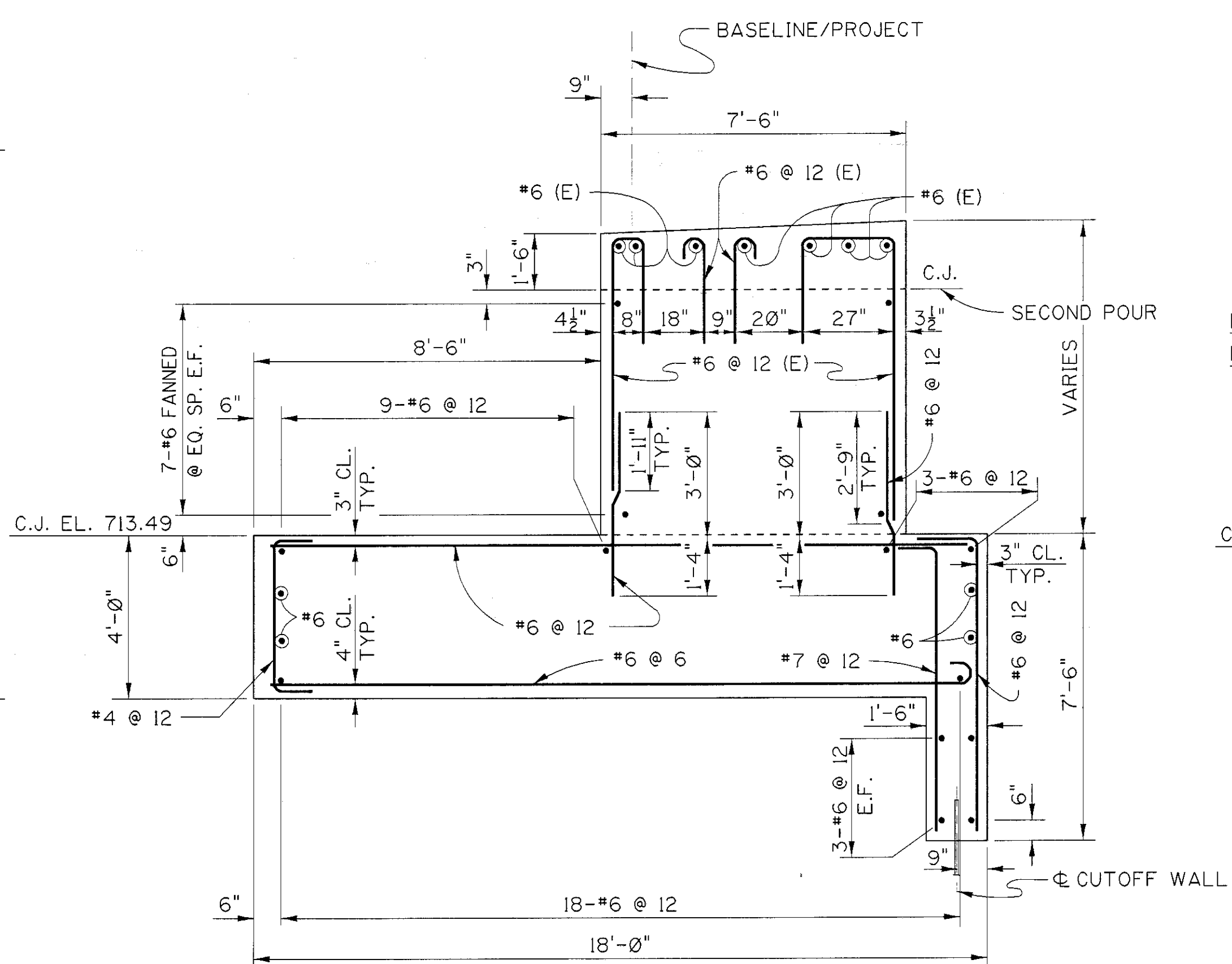
COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MICROSTATION VERSION 4.X FILE SPEC: wstop2.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: J. VASSAR H. MARTIN DRAWN BY: M. JENKINS J. SIMPKINS CHECKED BY: J. NOLEN P. FERGUSON SUBMITTED BY:	<b>SCIOTO RIVER          COLUMBUS, OHIO          WEST COLUMBUS L.P.P.          SR 315 GATE CLOSURE          WATERSTOP DETAILS          CONNECTION TO SHEET PILE</b>
CHIEF, DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b>
CHIEF, ENG DIVISION APPROVED FOR:	COL. C. E. DISTRICT ENGINEER
DATE:	SCALE: AS SHOWN    CONTR. NO.: DRAWING NUMBER <b>016-PWC-2-206</b> SHEET 1 OF 1



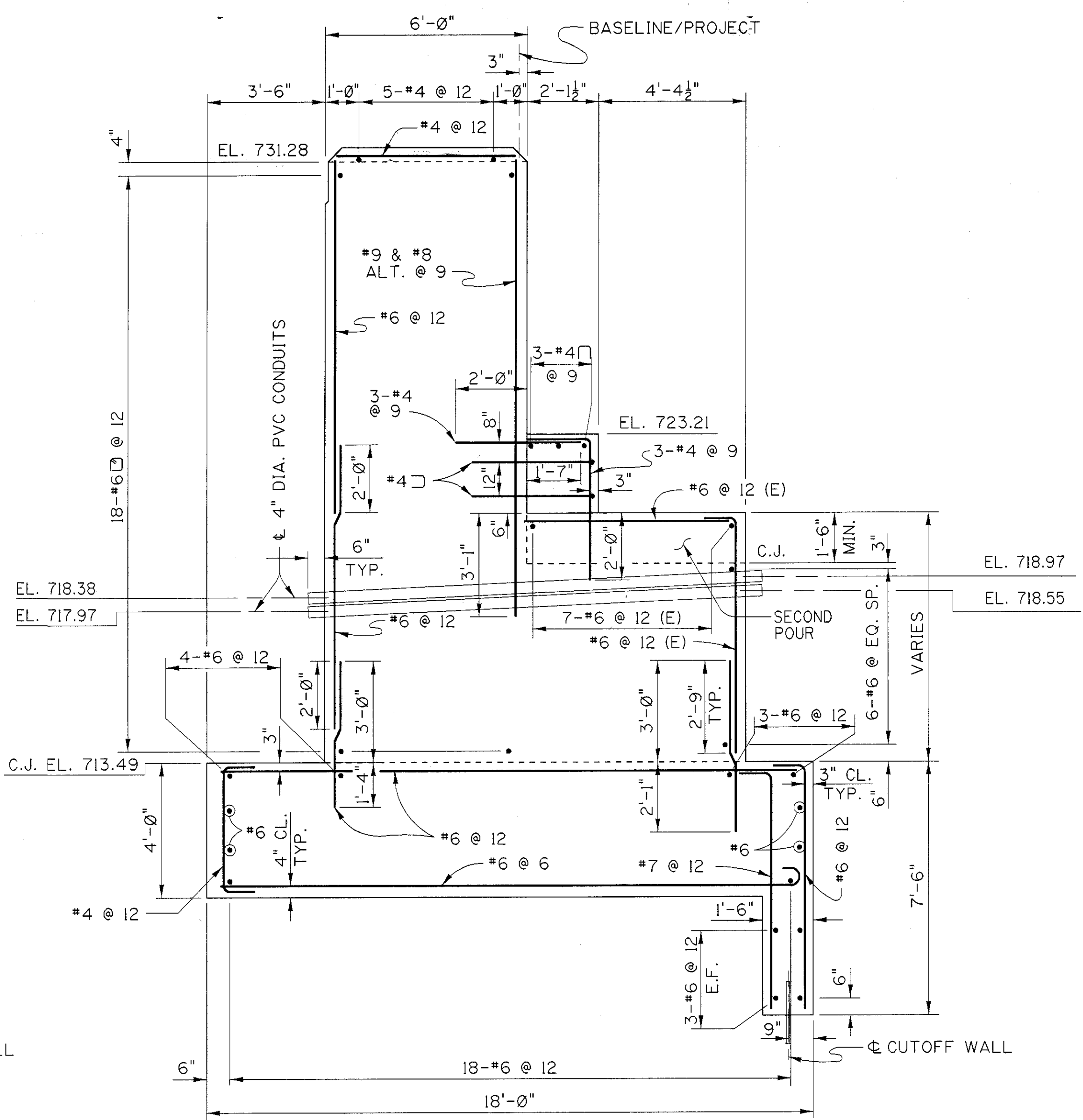




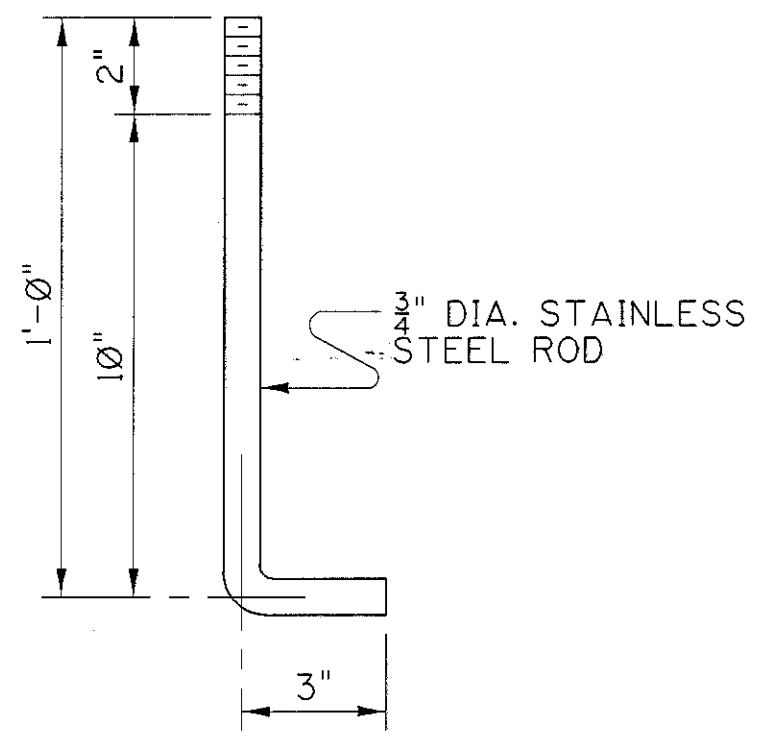
**SECTION D-D**  
SCALE: 3/8" = 1'-0"



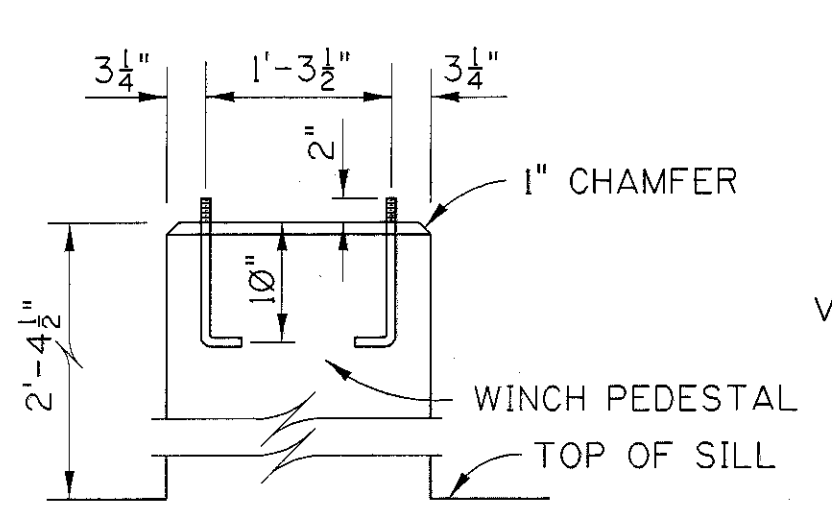
**SECTION E-E**  
SCALE: 3/8" = 1'-0"



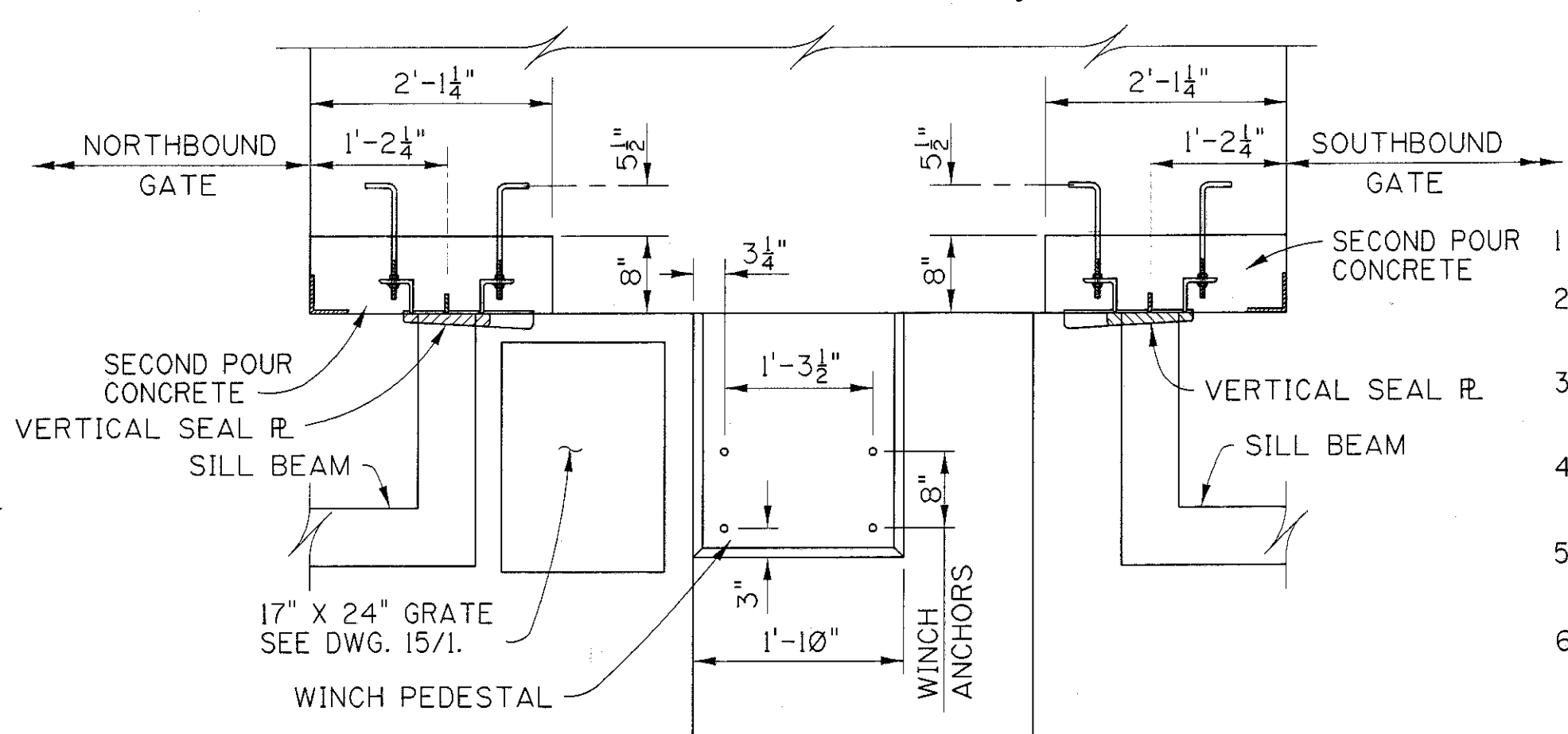
**SECTION F-F**  
SCALE: 3/8" = 1'-0"



PROVIDE HEX. HD. NUTS  
W/WASHERS FOR EACH BOLT  
**WINCH ANCHOR**  
MAKE 12  
SCALE: 3" = 1'-0"



**WINCH ANCHORAGE**  
SCALE: 3/4" = 1'-0"



**MEDIAN PIER DETAILS**  
SCALE: 3/4" = 1'-0"

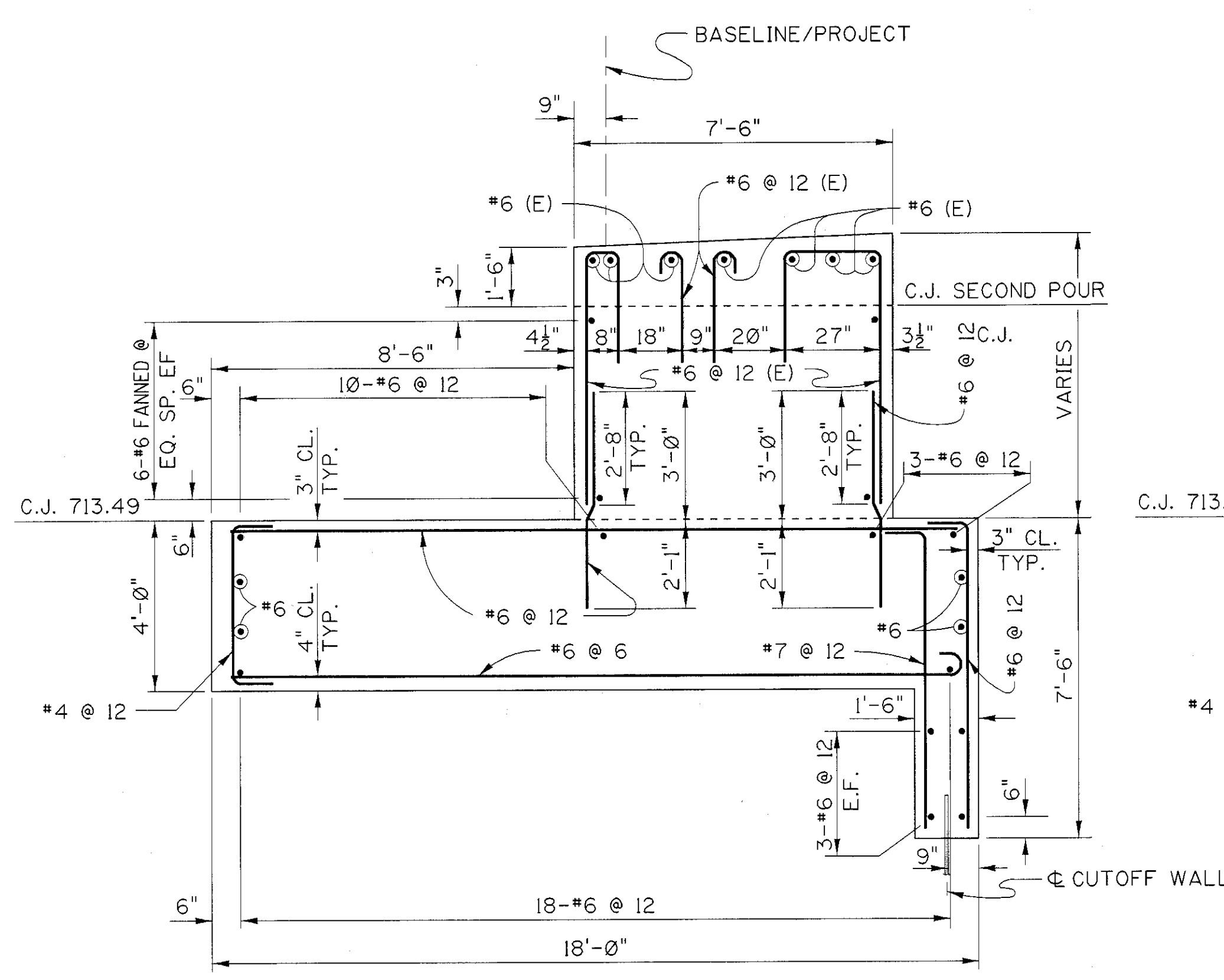
**NOTES**

- FOR GENERAL NOTES SEE DWG. 20/3.
- FOR GENERAL MASONRY AND REINFORCEMENT NOTES SEE DWG. 20/7.
- FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
- FOR LOCATIONS OF SECTIONS SEE DWGS. 20/1 AND 20/2.
- FOR VERTICAL SEAL PLATE DETAILS SEE DWG. 20/13.
- FOR PIER CAP DETAILS SEE DWG. 20/27.

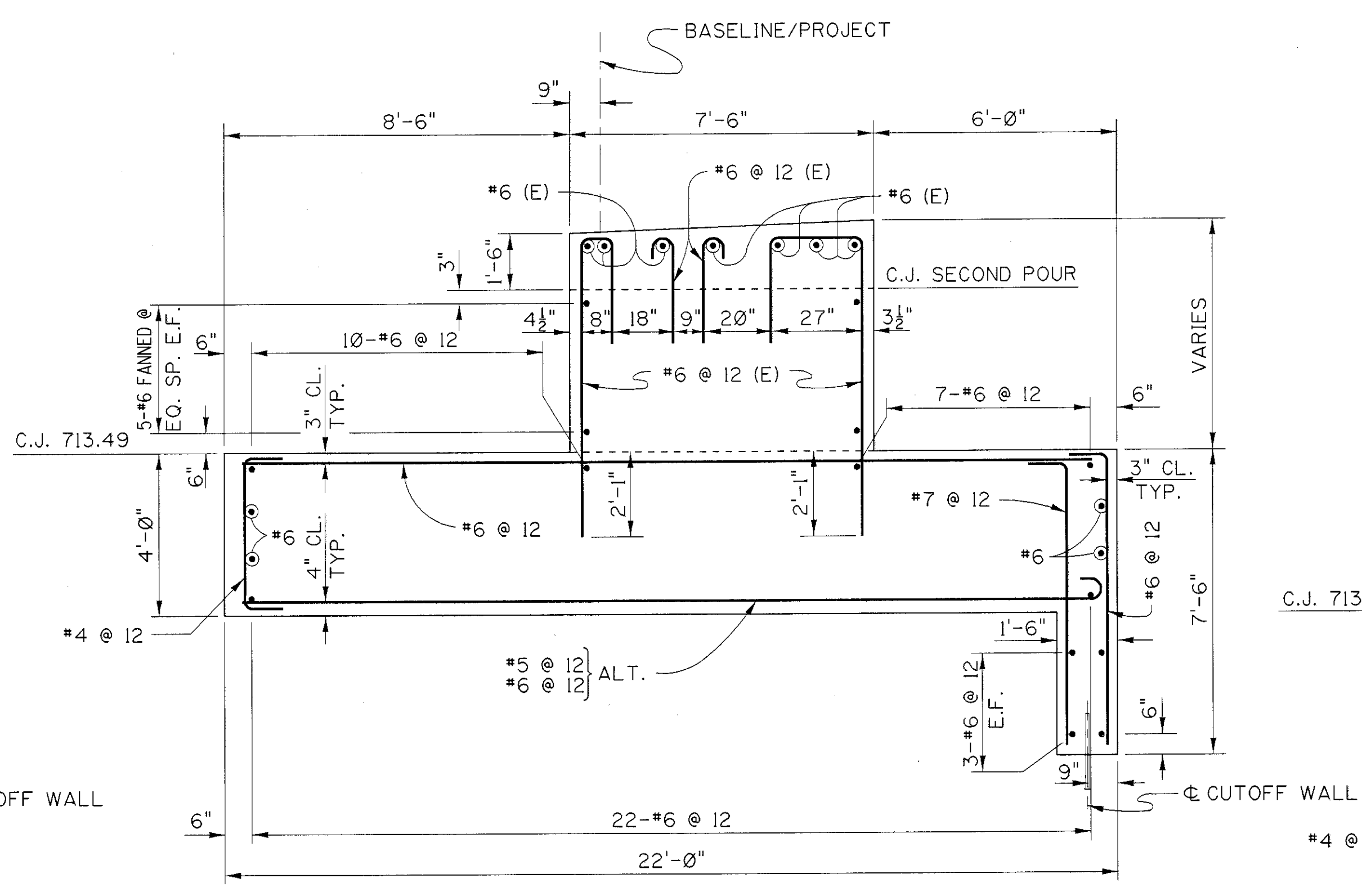
REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEO DESIGN & D RAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-8.DGN
DESIGNED BY: D.A.K. R.E.T. DRAWN BY: R.K.R. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>SECTIONS AND REINFORCEMENT</b>
CHIEF ENGINEER DIVISION APPROVED FOR:	COL. C. E. DISTRICT ENGINEER
DATE:	SCALE: AS SHOWN CONTR. NO: DRAWING NUMBER <b>016-PWC-2-20/8</b> SHEET OF

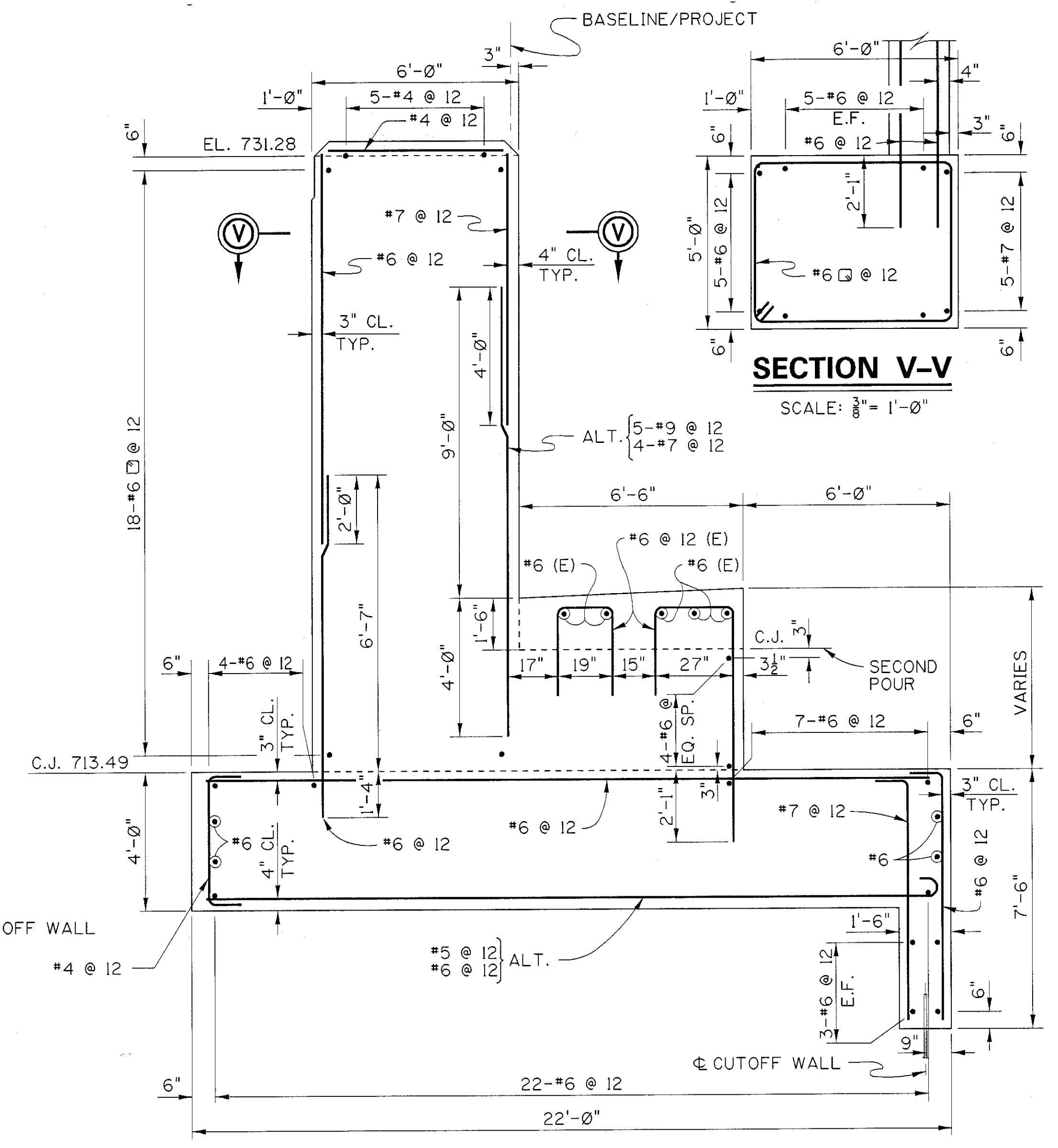




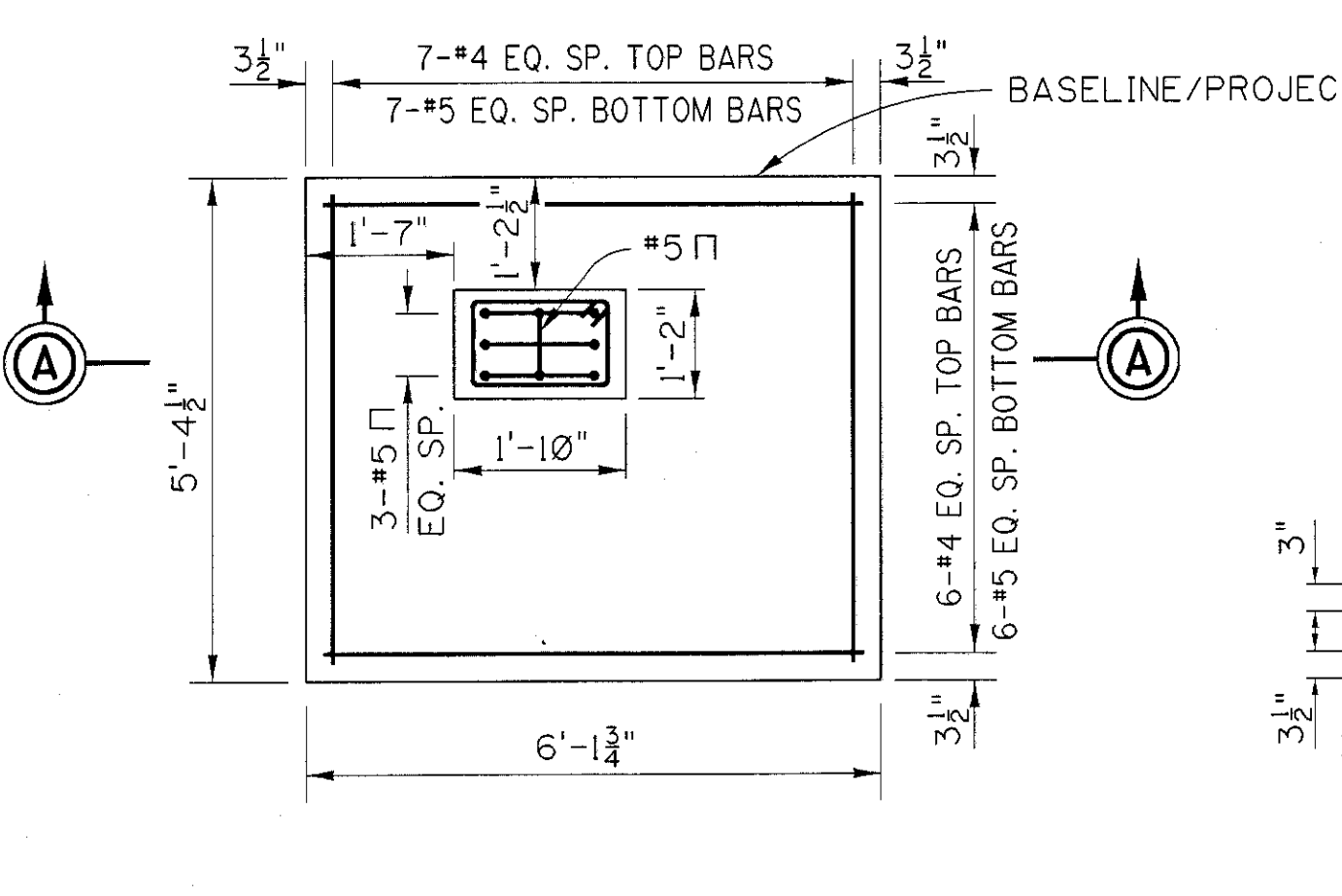
**SECTION G-G**  
SCALE: 3/8" = 1'-0"



**SECTION H-H**  
SCALE: 3/8" = 1'-0"

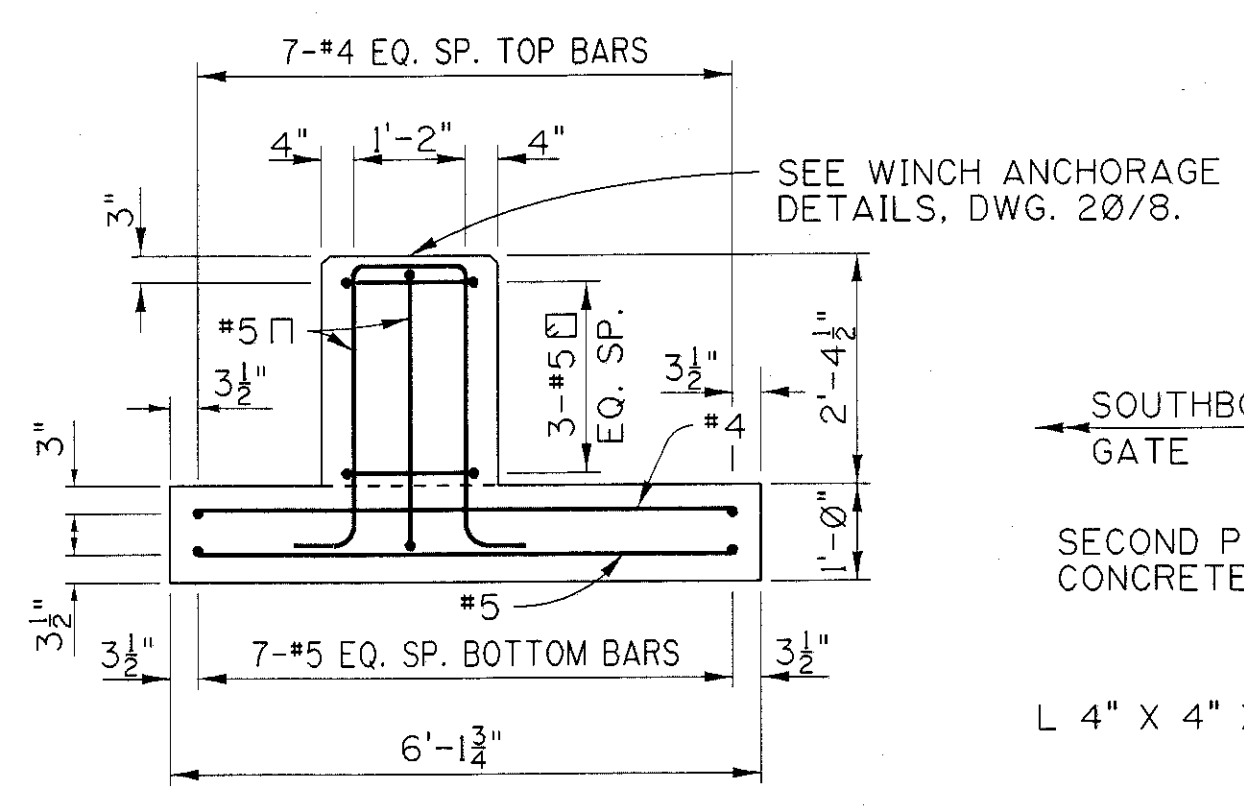


**SECTION I-I**  
SCALE: 3/8" = 1'-0"

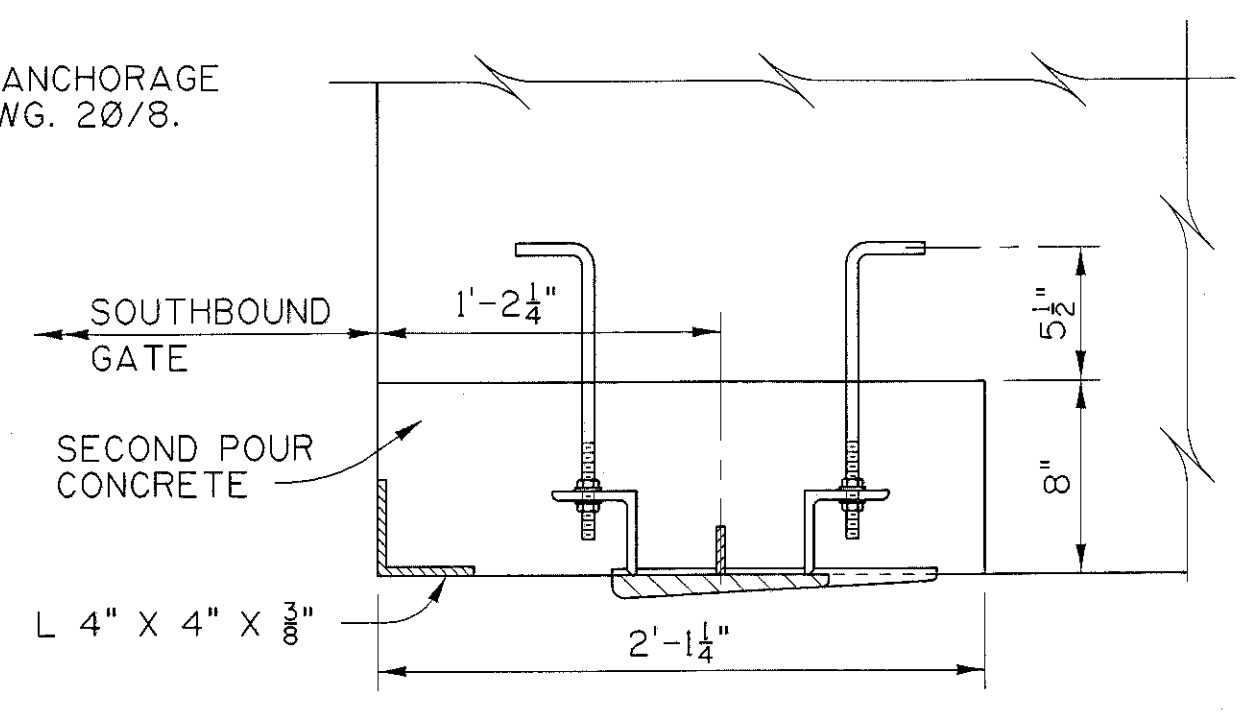


**PLAN**

**WINCH PEDESTAL**  
NORTHBOUND PEDESTAL SHOWN  
(SOUTHBOUND OPPOSITE HAND)  
SCALE: 1/2" = 1'-0"



**SECTION A-A**



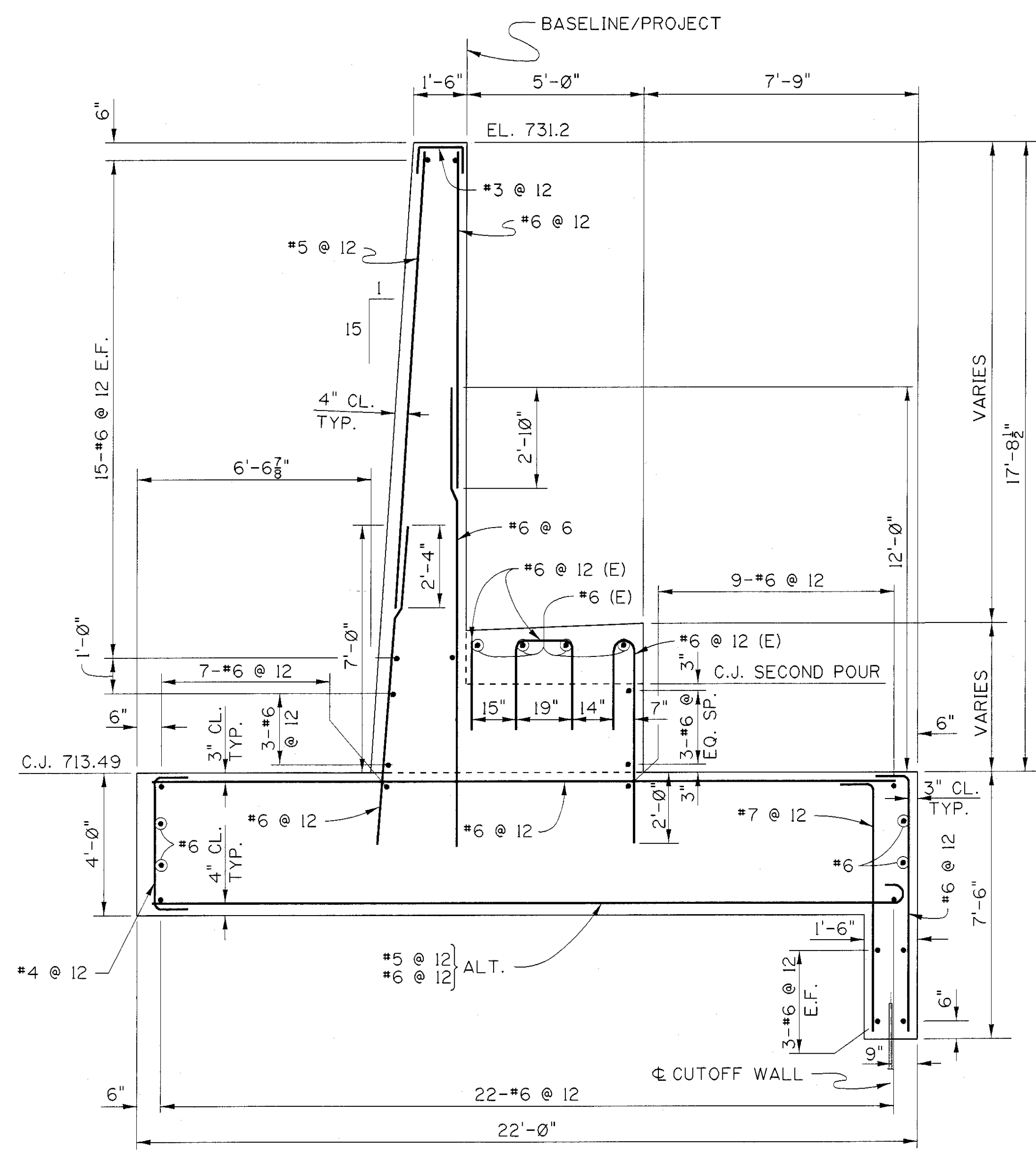
**WEST PIER VERTICAL SEAL PLATE DETAIL**  
SCALE: 1/2" = 1'-0"

**NOTES**

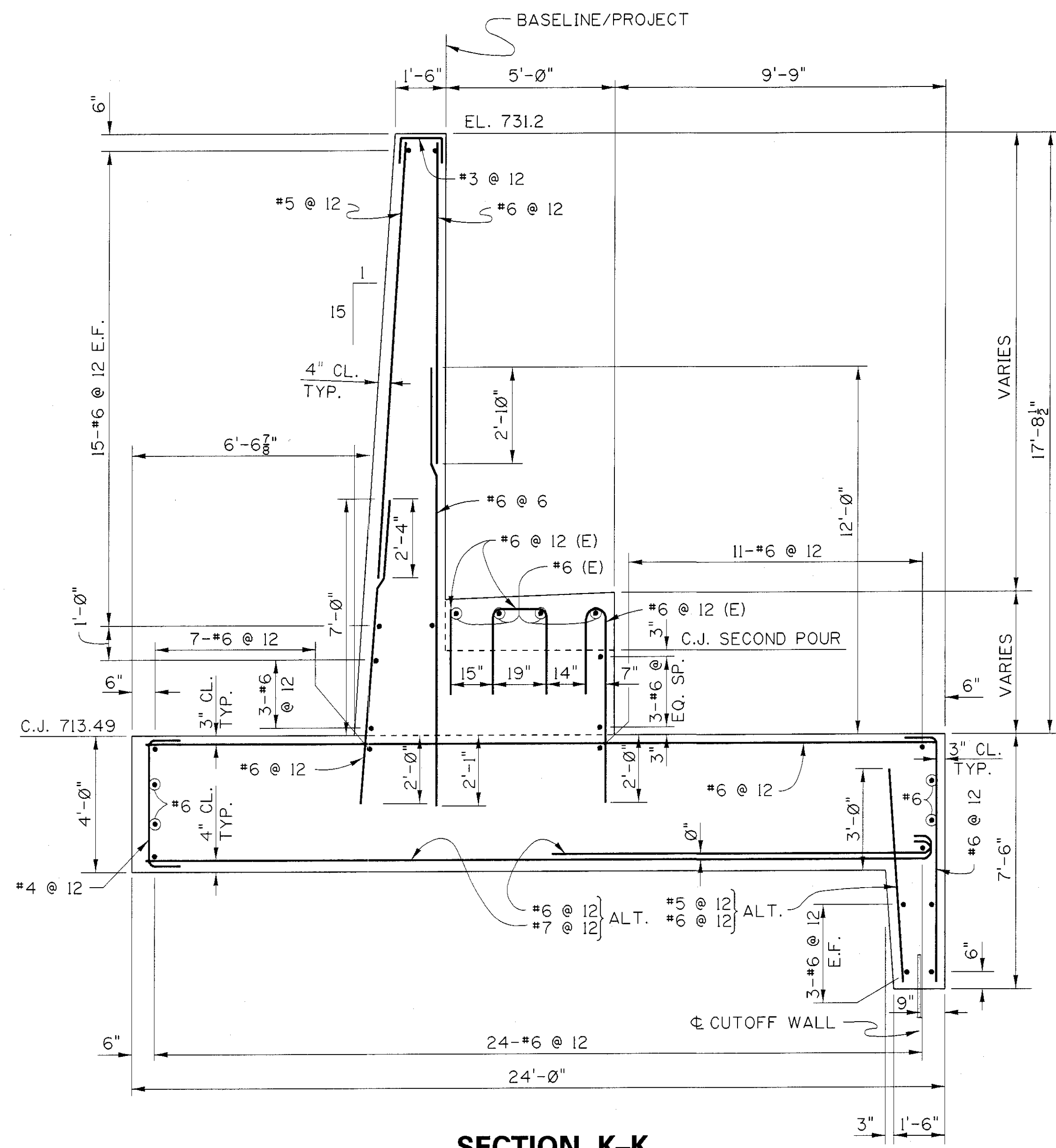
1. FOR GENERAL NOTES SEE DWG. 20/3.
2. FOR GENERAL MASONRY AND REINFORCEMENT NOTES SEE DWG. 20/7.
3. FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
4. FOR LOCATIONS OF SECTIONS SEE DWG. 20/2.
5. FOR ADDITIONAL DETAILS OF THE VERTICAL SEAL PLATE SEE DWG. 20/13.
6. FOR LOCATIONS OF WINCH PEDESTALS SEE DWGS. 20/1 AND 20/2.
7. FOR PIER CAP DETAILS SEE DWG. 20/27.

REVISION	DATE	DESCRIPTION	BY

COMPUTER AIDED DESIGN & DRAFTING DESIGNED BY: D.A.K. R.E.T. DRAWN BY: R.K.R. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-9.DGN U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.
WEST COLUMBUS, L.P.P. COLUMBUS, OHIO S.R. 315 GATE CLOSURE SECTIONS AND REINFORCEMENT	SCIOTO RIVER, OH COL. C. E. DISTRICT ENGINEER
APPROVAL RECOMMENDED: _____ CHIEF, ENG. DIVISION	APPROVED: _____ DATE: _____
APPROVED FOR: _____ DATE: _____	SCALE: AS SHOWN CONTR. NO.: _____ DRAWING NUMBER: 016-PWC-2-20/9 SHEET OF



**SECTION J-J**  
SCALE: 3/8" = 1'-0"



**SECTION K-K**  
SCALE: 3/8" = 1'-0"

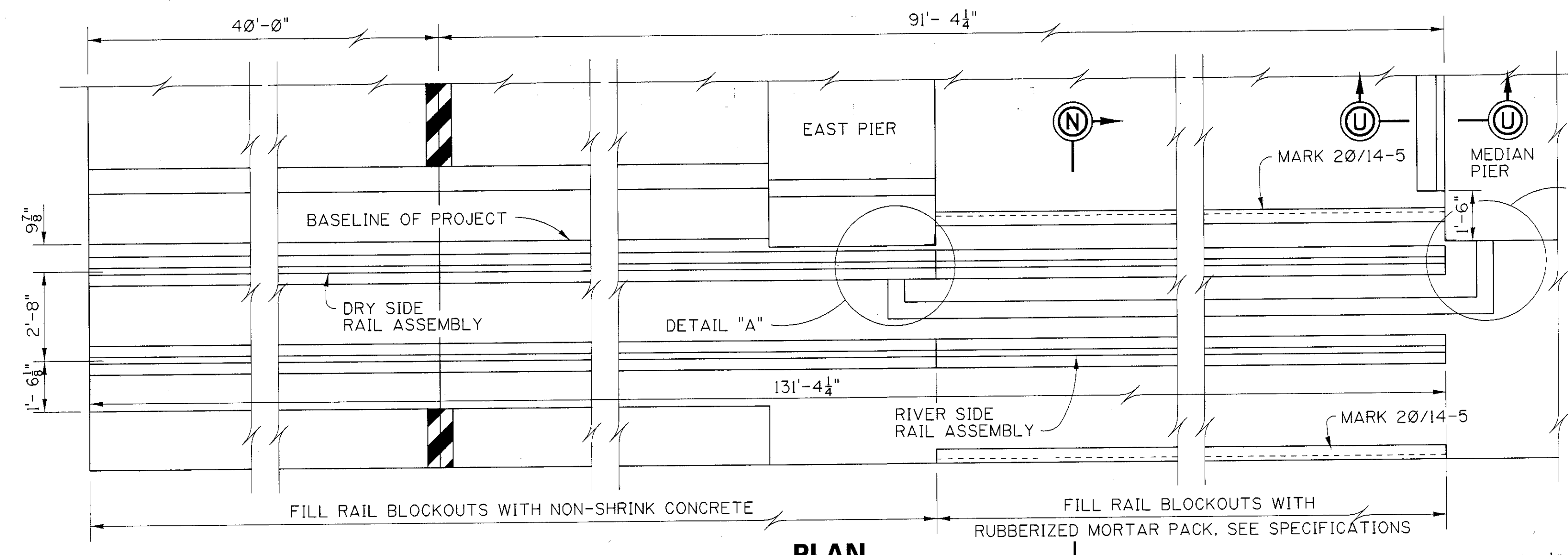
**NOTES**

1. FOR GENERAL NOTES SEE DWG. Ø/3.
2. FOR GENERAL MASONRY AND REINFORCEMENT NOTES SEE DWG. 2Ø/7.
3. FOR WALL AND WATERSTOP DETAILS SEE DWGS. 2Ø/5 AND 2Ø/6.
4. FOR LOCATION OF SECTIONS SEE DWG. 2Ø/2.

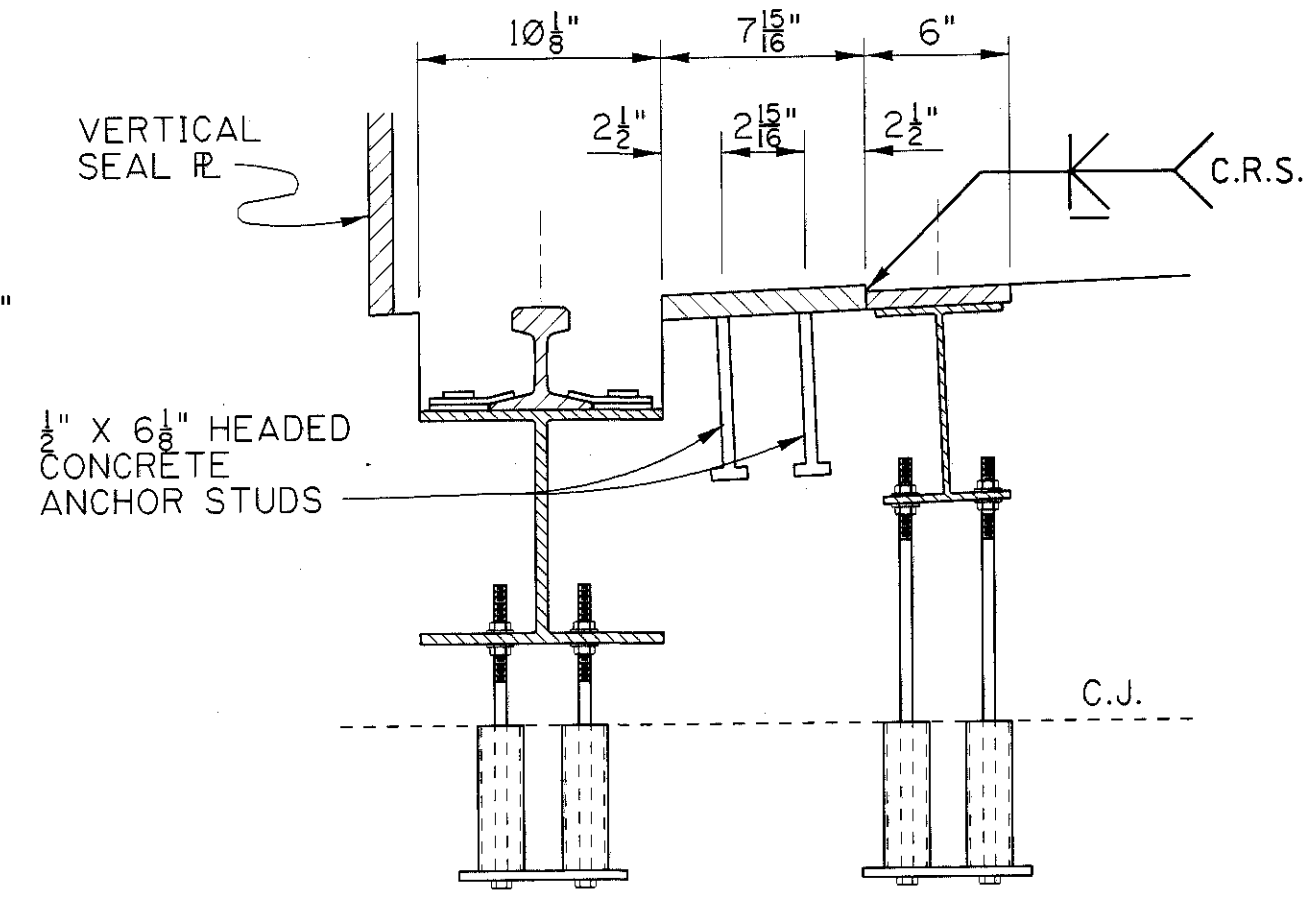
DESIGNED BY: D.A.K. R.E.T.	<b>SCIOTO RIVER, OH</b> <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>SECTIONS AND REINFORCEMENT</b>
DRAWN BY: R.K.R.	
CHECKED BY: B.W.D. R.E.T.	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.
SUBMITTED BY:	APPROVED: _____ DATE: _____ COL. C. E. DISTRICT ENGINEER
CHIEF DESIGN BRANCH	SCALE: AS SHOWN CONTR. NO: _____ DRAWING NUMBER <b>016-PWC-2-2Ø/1Ø</b>
CHIEF ENG DIVISION	SHEET _____ OF _____



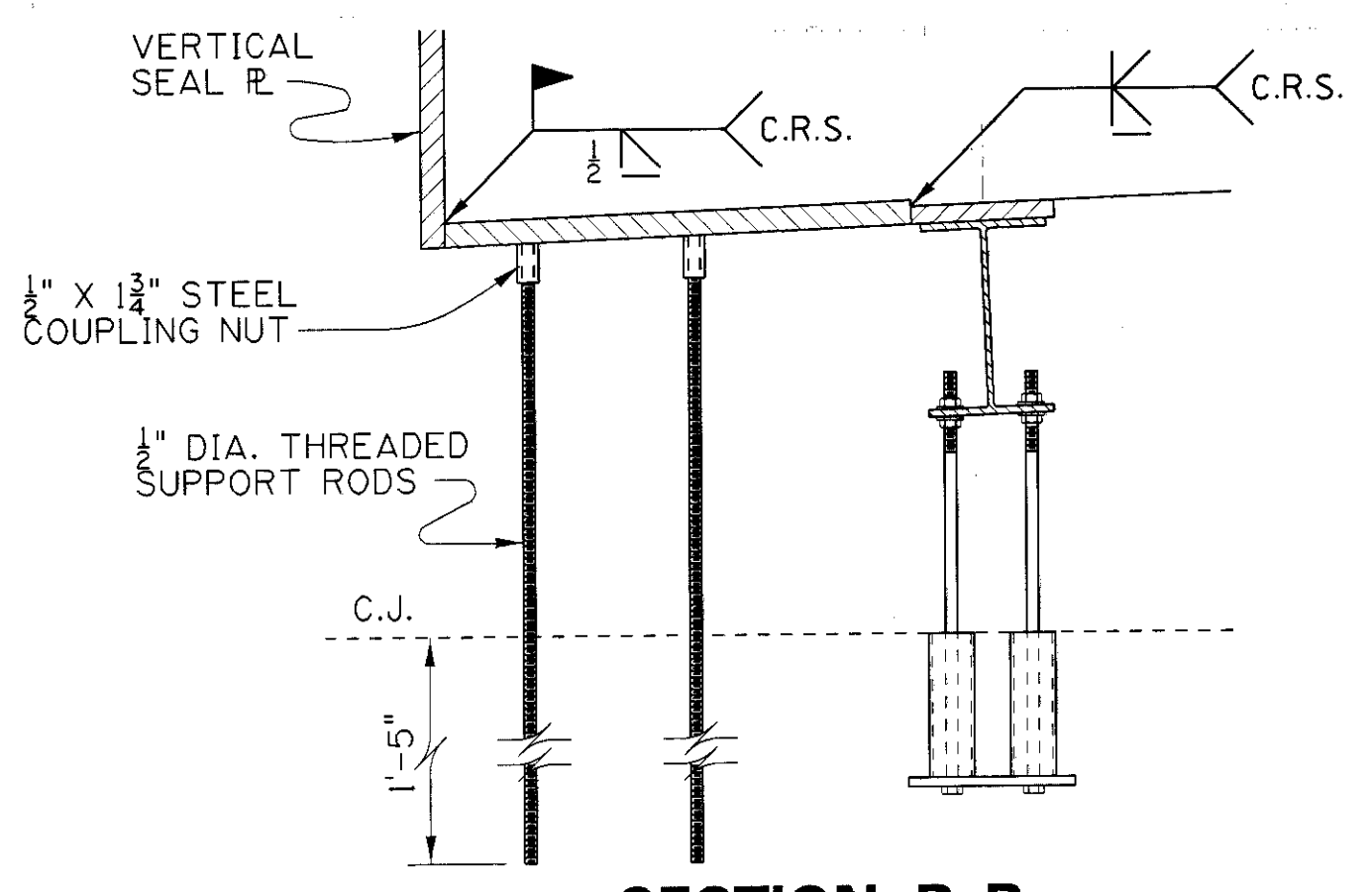




**PLAN**  
SCALE: 3/8"=1'-0"



**SECTION P-P**  
SCALE: 1 1/2"=1'-0"

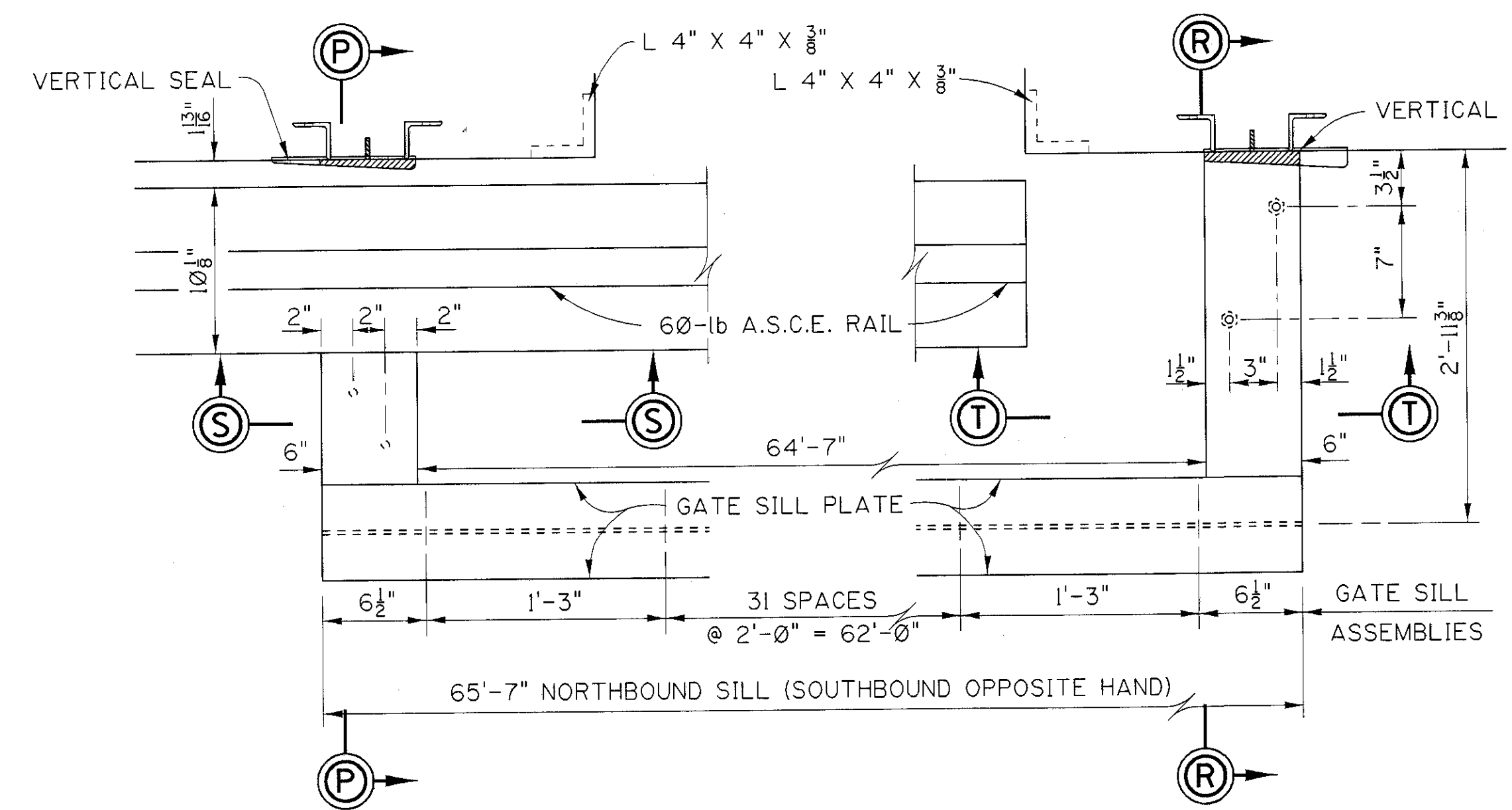


**SECTION R-R**  
SCALE: 1 1/2"=1'-0"

NOTE:  
TOP OF THREADED RODS 1 INCH ±  
BELOW FINISHED EL. OF SILL.

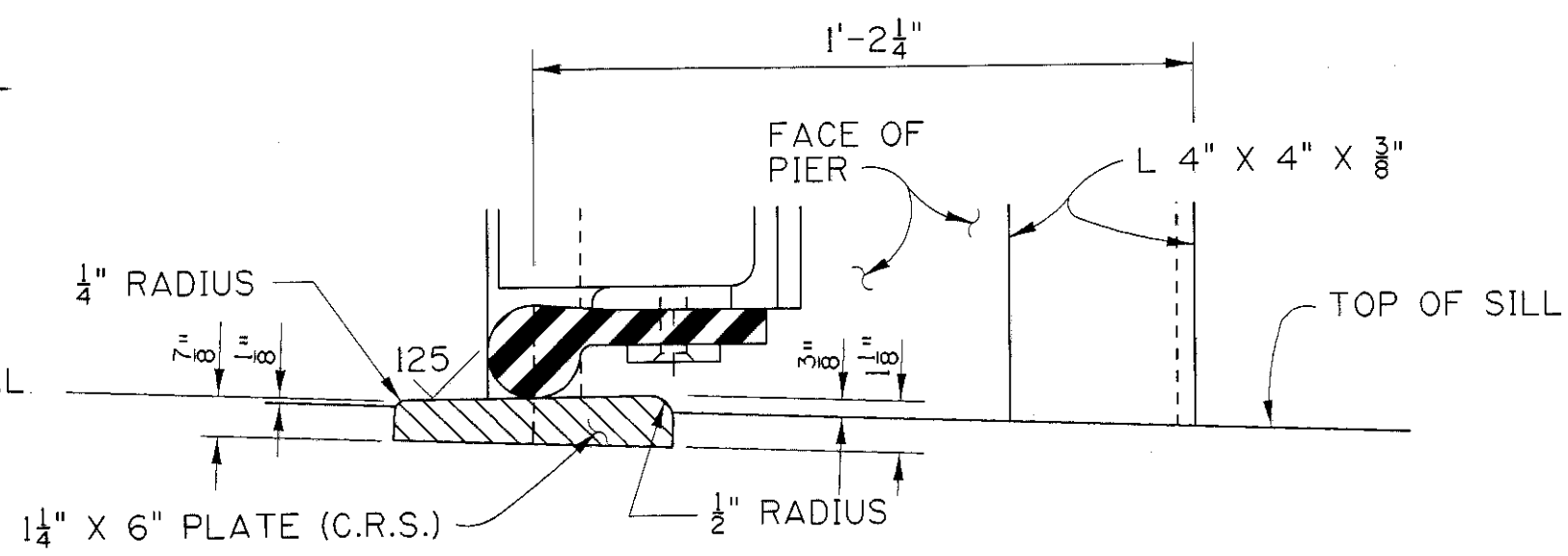
**NOTES**

- FOR GENERAL NOTES SEE DWG. 0/3.
- FOR WALL AND WATERSTOP DETAILS SEE DWGS. 20/5 AND 20/6.
- DIMENSIONS SHOWN ARE FINISHED DIMENSIONS. ALLOWANCES MUST BE MADE FOR MACHINING.
- HEX HEAD BOLTS SHALL BE ASTM A325. NUTS SHALL BE ASTM A563. WASHERS FOR GATE RAIL ASSEMBLY SHALL BE (TYPE B) REGULAR PLAIN WASHERS AND CONFORM TO ASTM F436. BEVEL WASHERS (TYPE B) SHALL CONFORM TO ASTM A325.
- THE 60-LB A.S.C.E. RAILS SHALL BE IN ACCORDANCE WITH ASTM A1.
- RAILS SHALL BE SPLICED AT MONOLITH JOINTS WITH A 1/2" GAP @ 70°F. STEEL JOINT BARS SHALL BE IN ACCORDANCE WITH ASTM A3 AND MANUFACTURER'S SPECIFICATIONS AND TOLERANCES. ADDITIONAL SPLICES ARE SUBJECT TO APPROVAL BY THE CONTRACTING OFFICER.

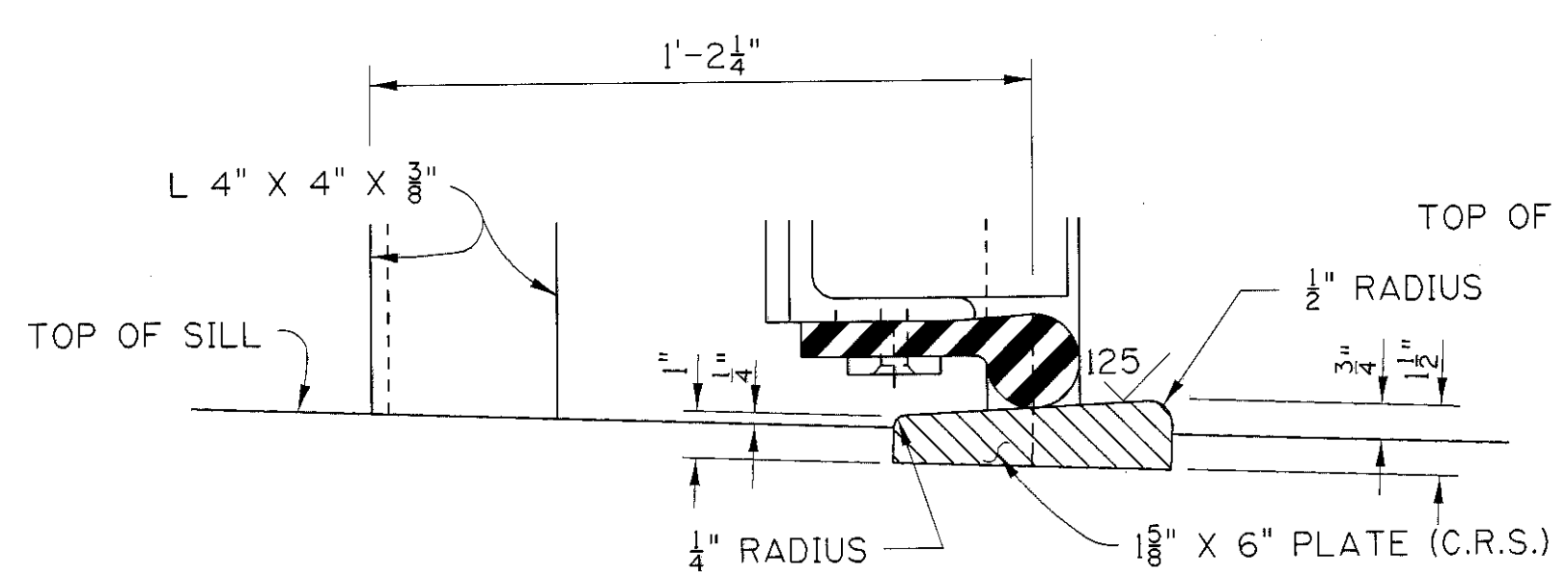


**DETAIL "A"**  
SCALE: 1 1/2"=1'-0"

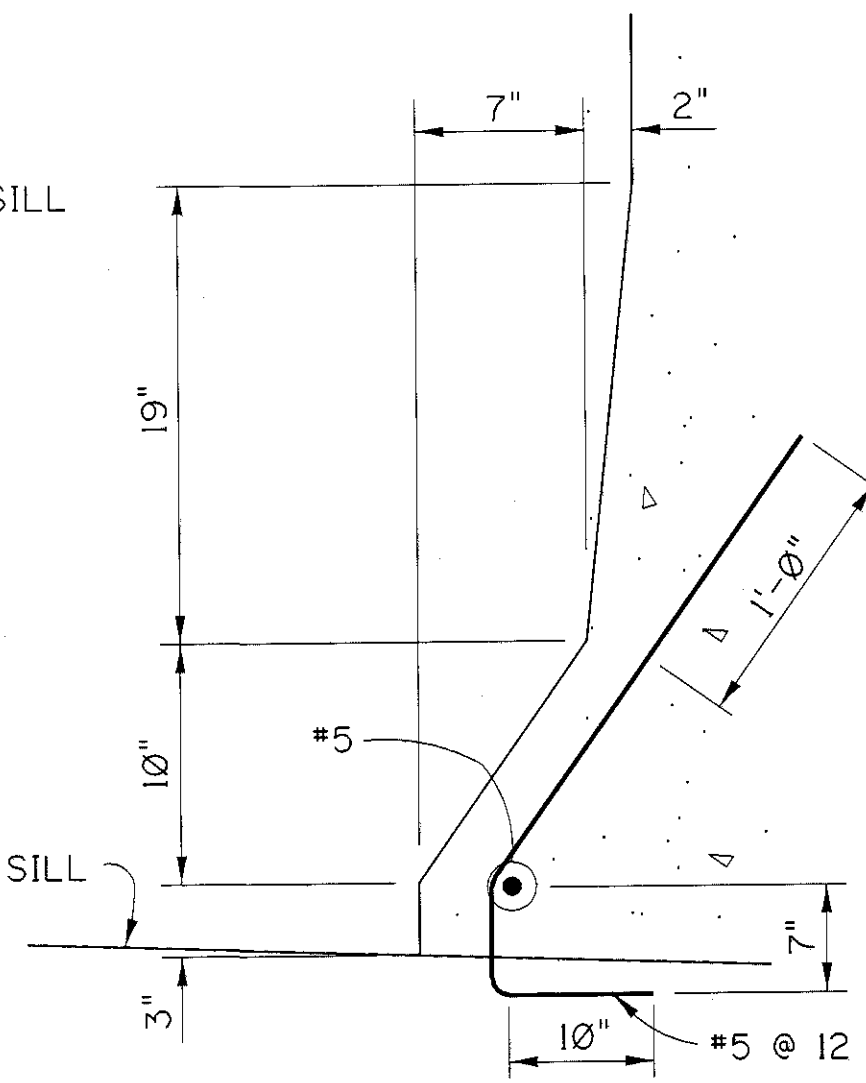
**DETAIL "B"**  
SCALE: 1 1/2"=1'-0"



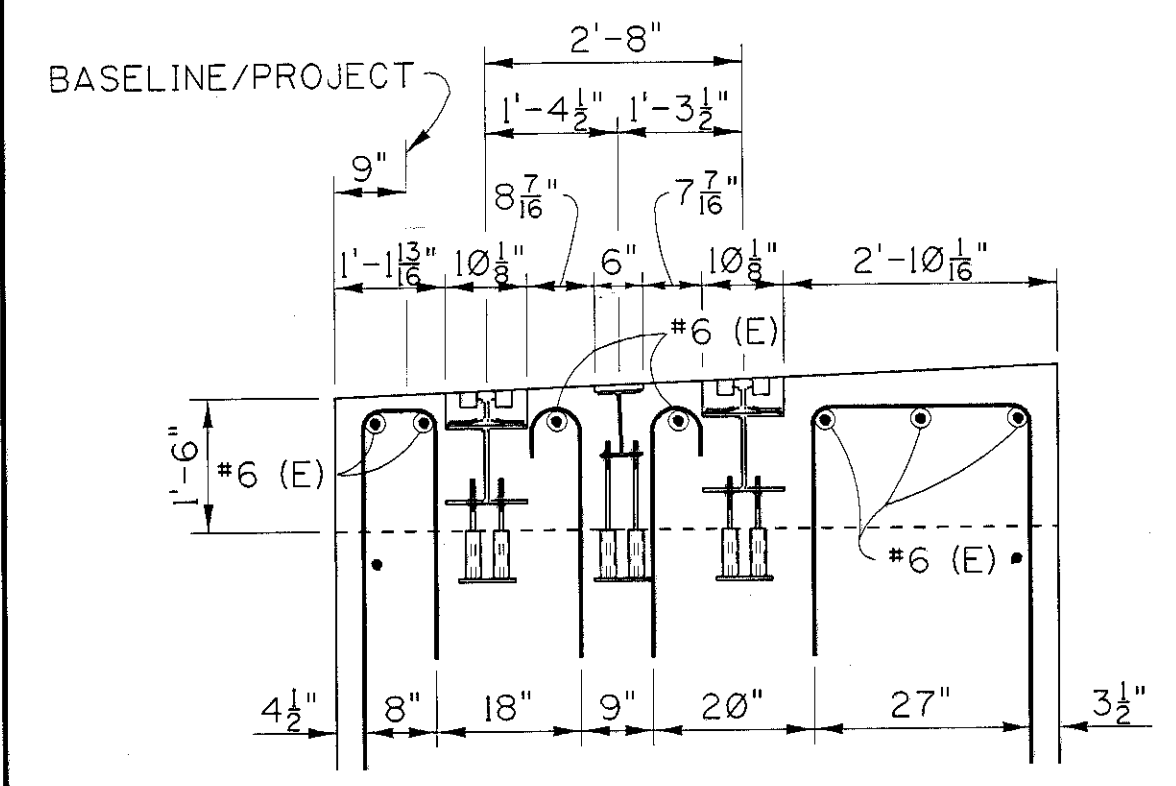
**SECTION S-S**  
SCALE: 3"=1'-0"



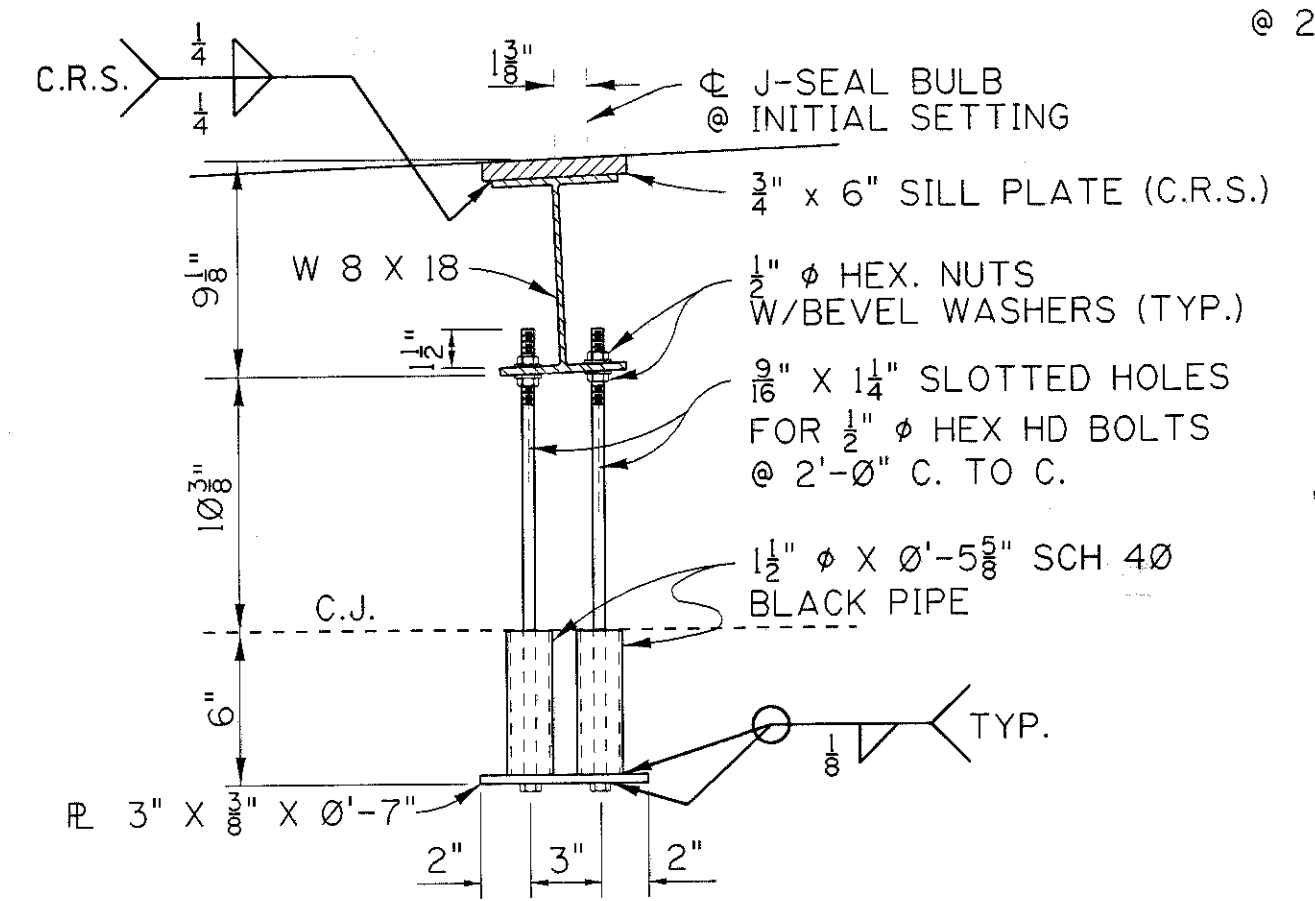
**SECTION T-T**  
SCALE: 3"=1'-0"



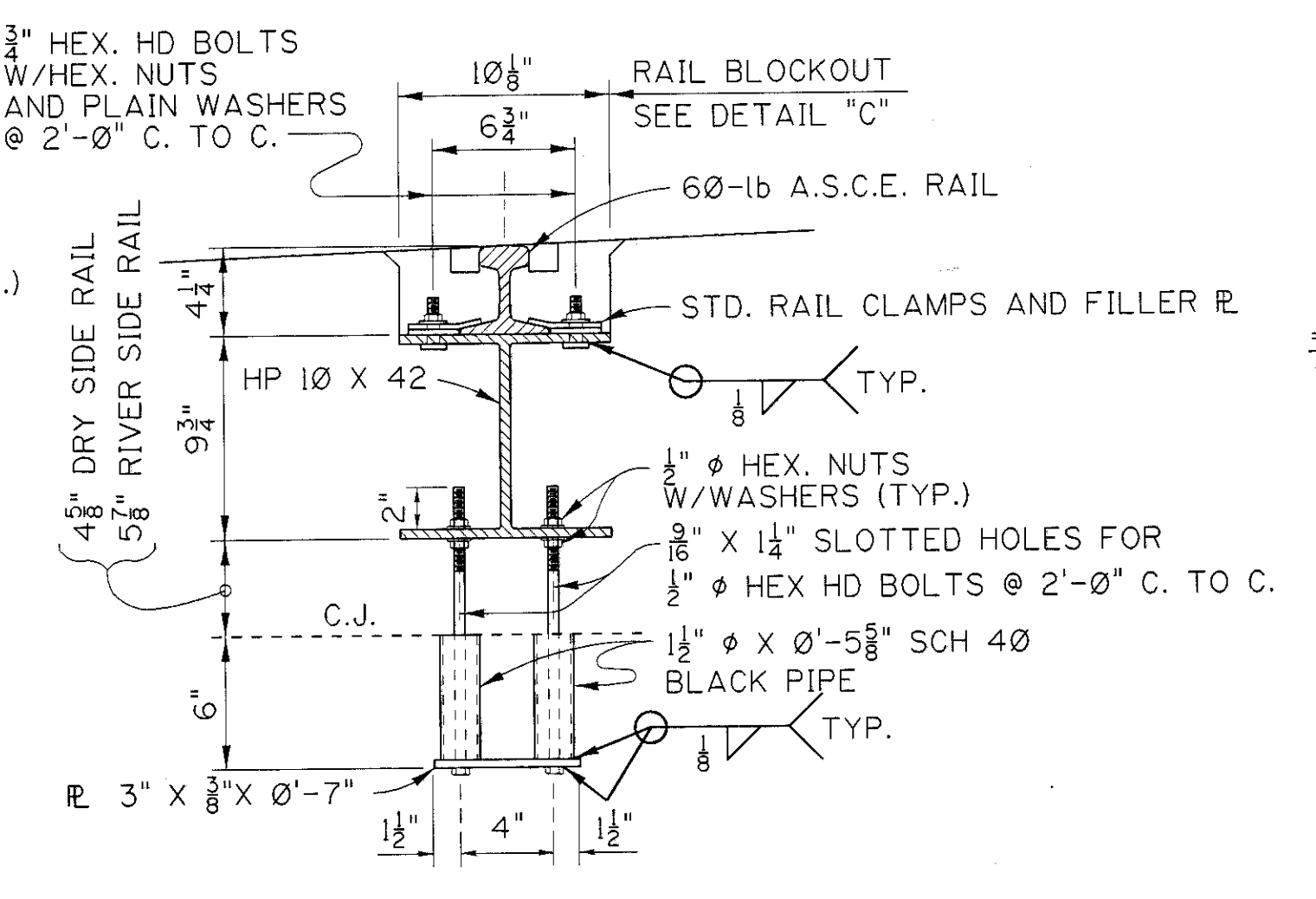
**SECTION U-U**  
SCALE: 1 1/2"=1'-0"



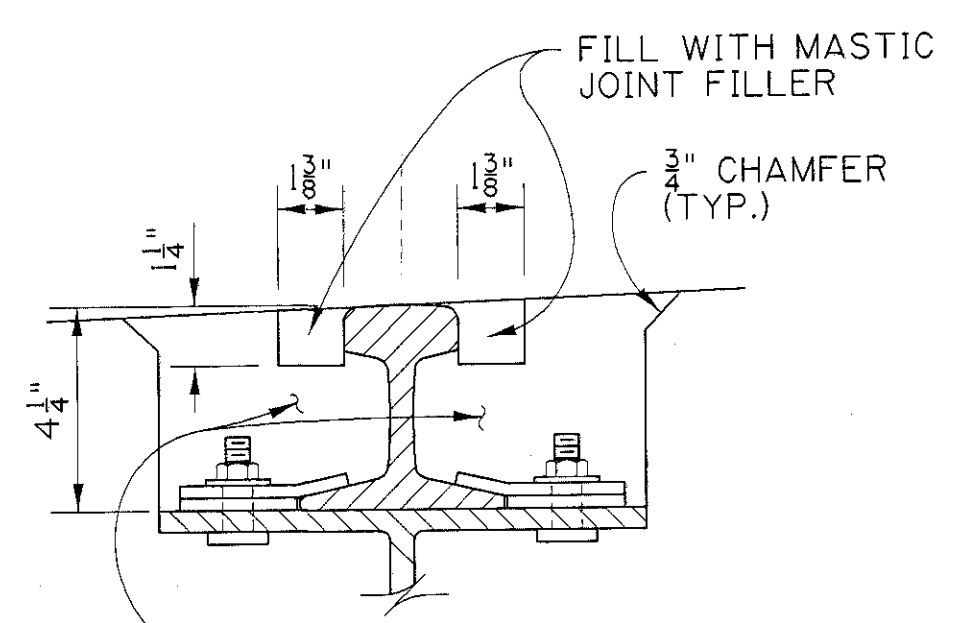
**SECTION N-N**  
SCALE: 1/2"=1'-0"



**GATE SILL ASSEMBLY**  
SCALE: 1 1/2"=1'-0"



**GATE RAIL ASSEMBLY**  
SCALE: 1 1/2"=1'-0"

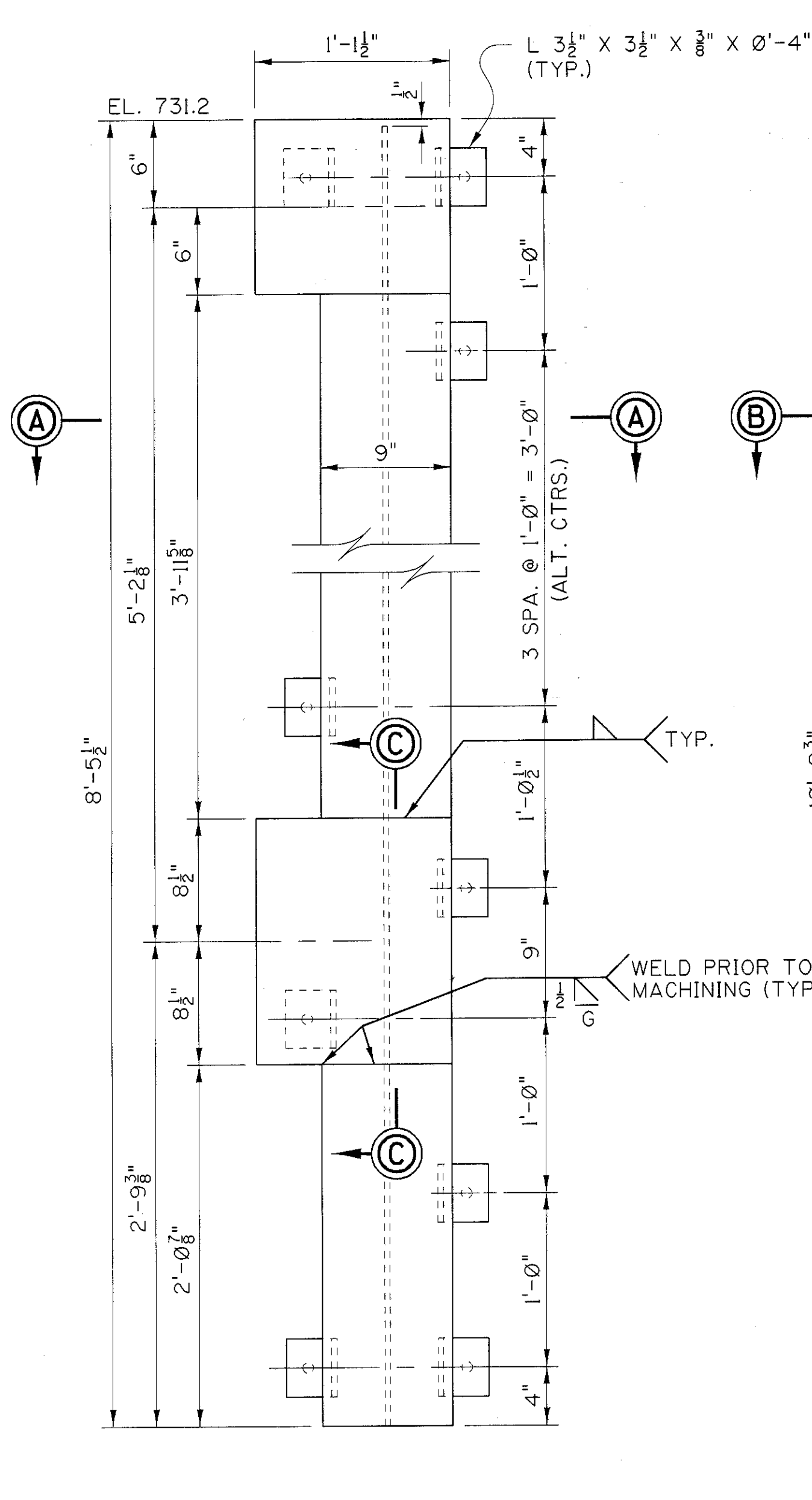


**DETAIL "C"**  
SCALE: 3"=1'-0"

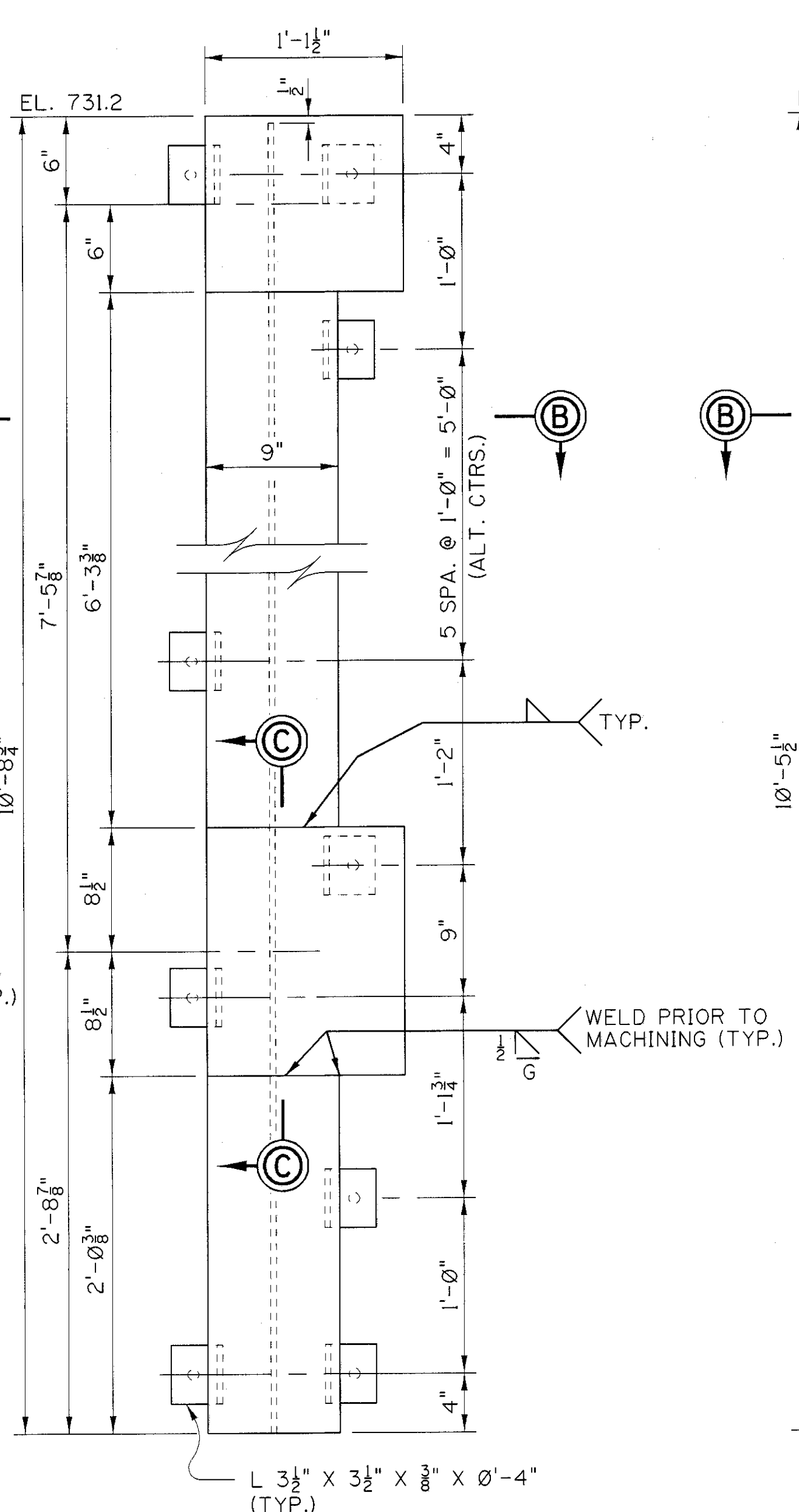
REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-12.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: B.W.D. R.E.T. DRAWN BY: R.K.R. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> SILL PLATE AND RAIL DETAILS
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: DATE:
CHIEF ENG DIVISION APPROVED FOR:	COL. C. E. DISTRICT ENGINEER
DATE:	SCALE: AS SHOWN CONTR. NO.: DRAWING NUMBER: 016-PWC-2-20/12 SHEET OF

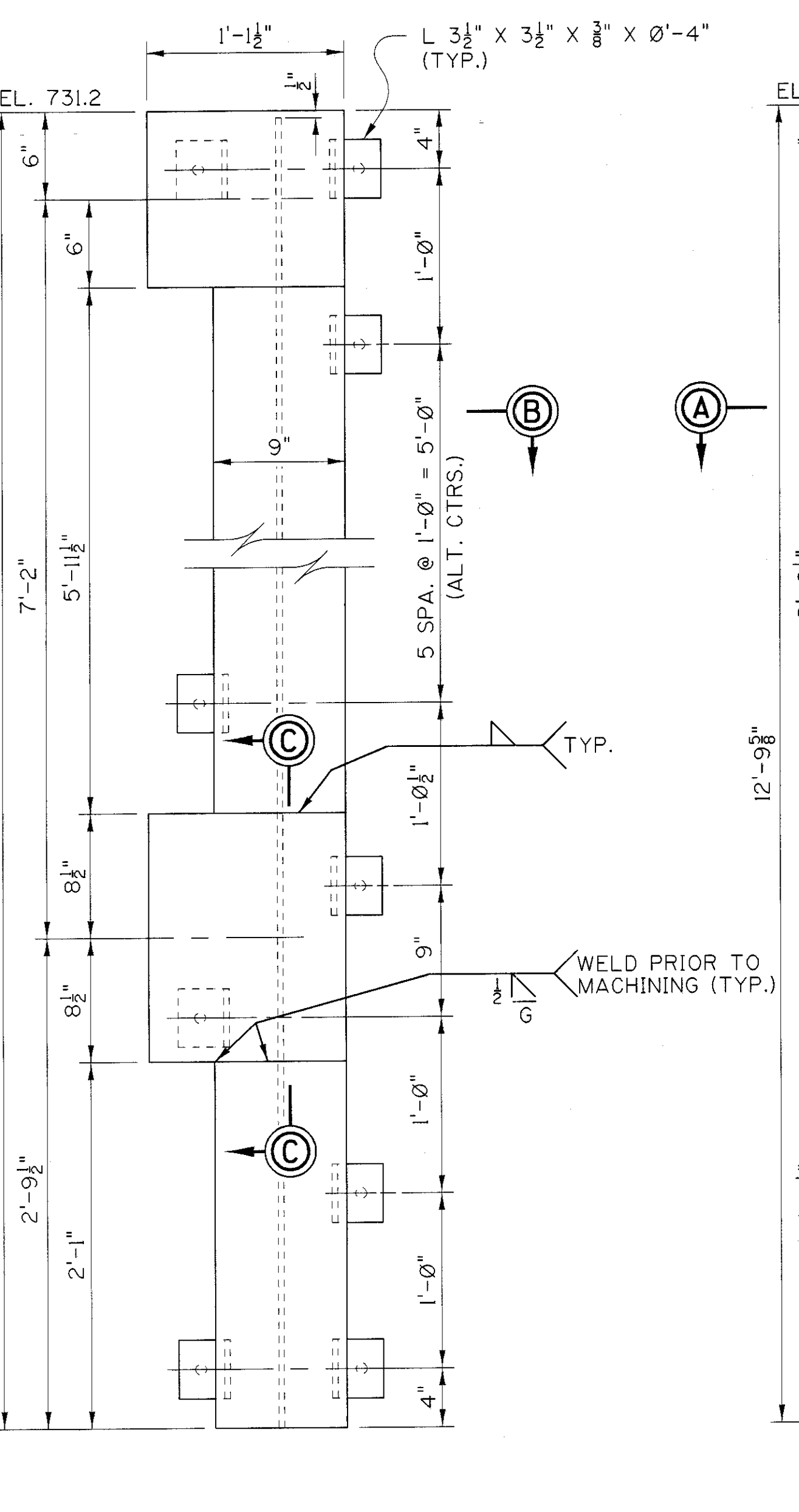




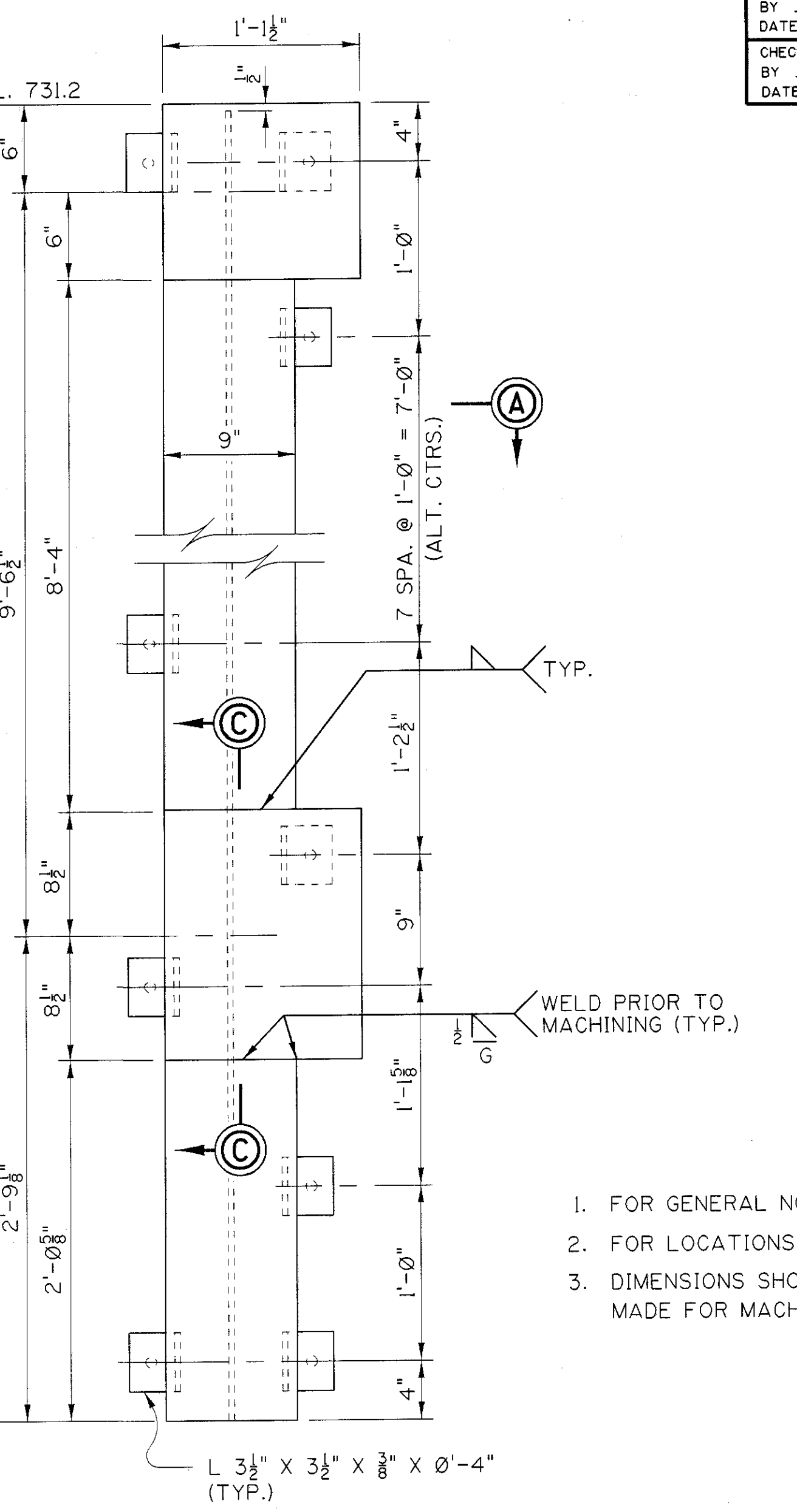
**EAST PIER  
NORTHBOUND GATE**



**MEDIAN PIER  
NORTHBOUND GATE**

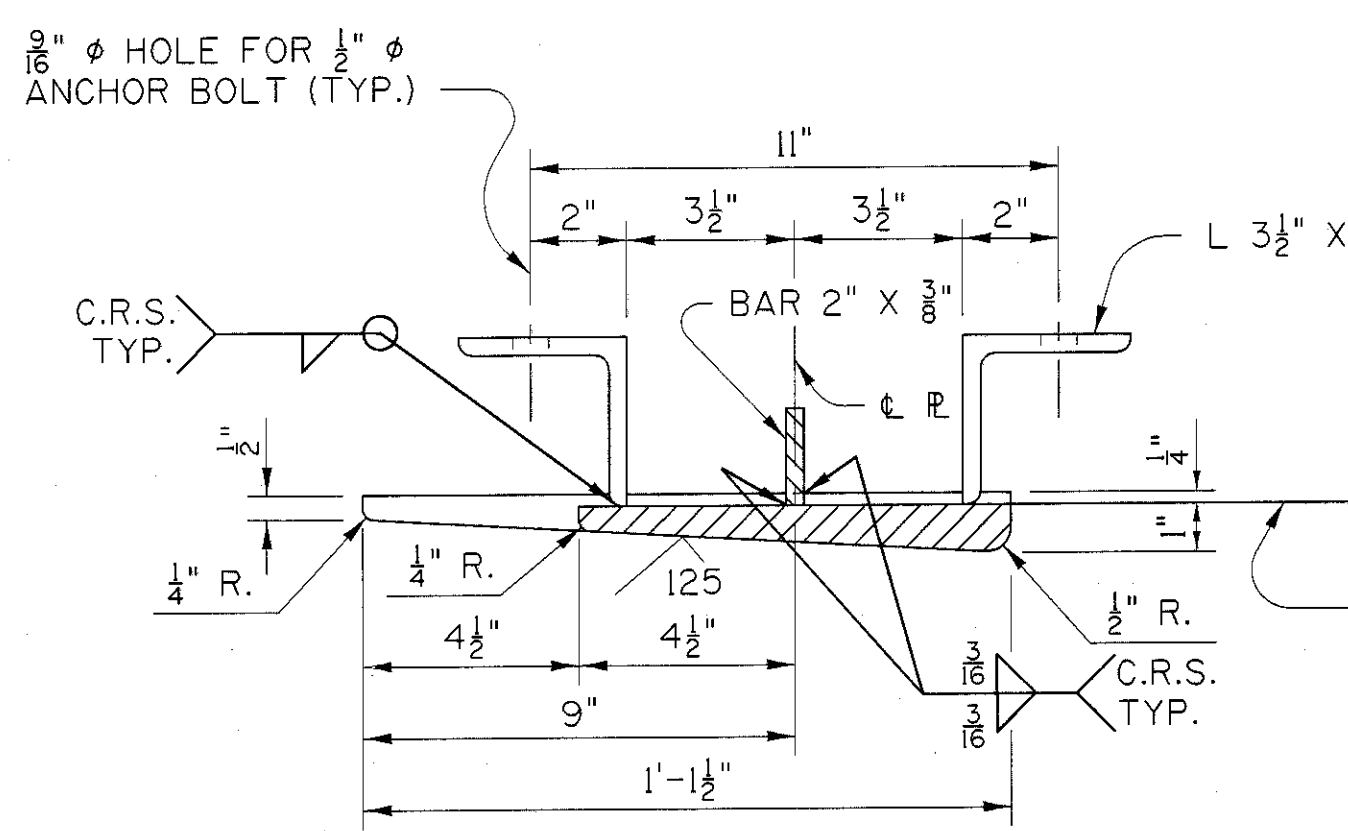
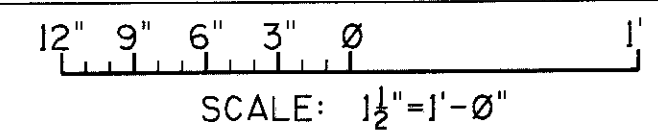


**MEDIAN PIER  
SOUTHBOUND GATE**

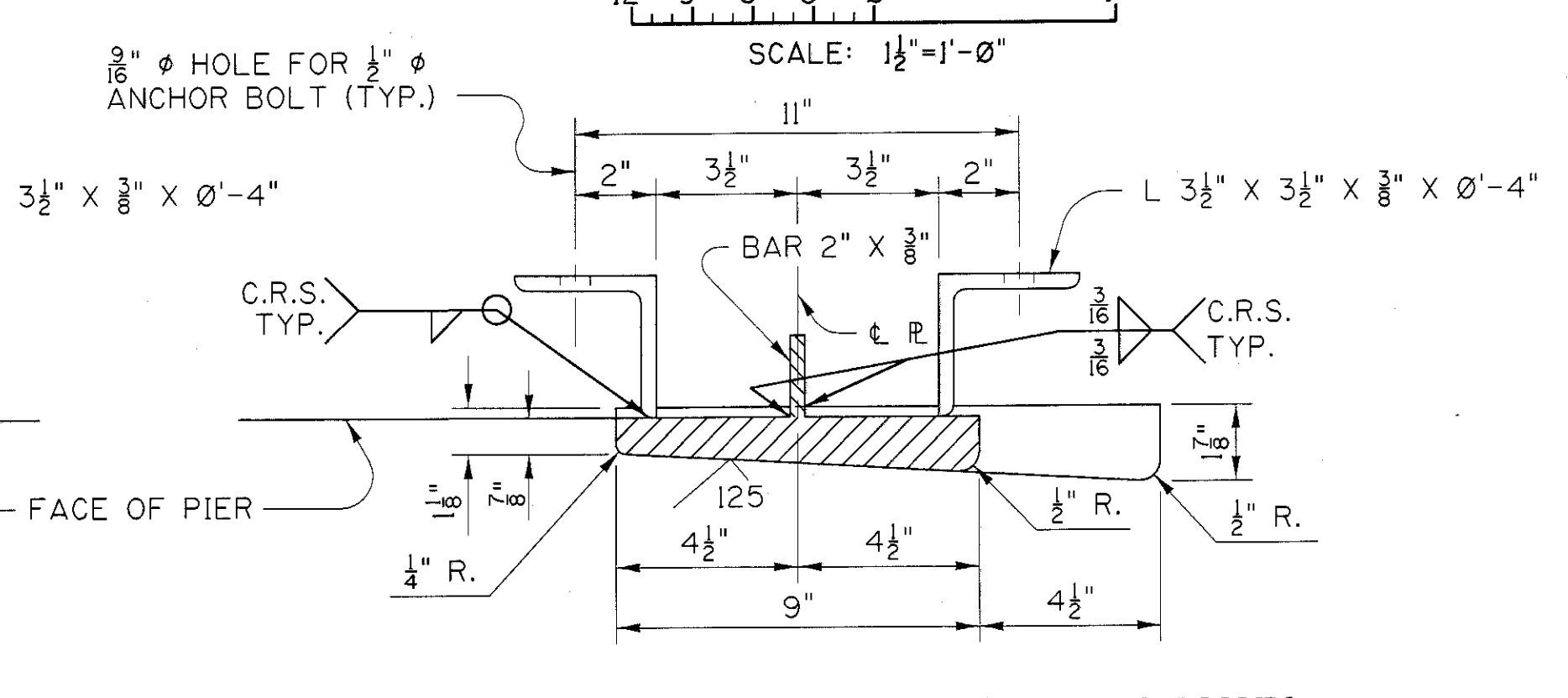


**WEST PIER  
SOUTHBOUND GATE**

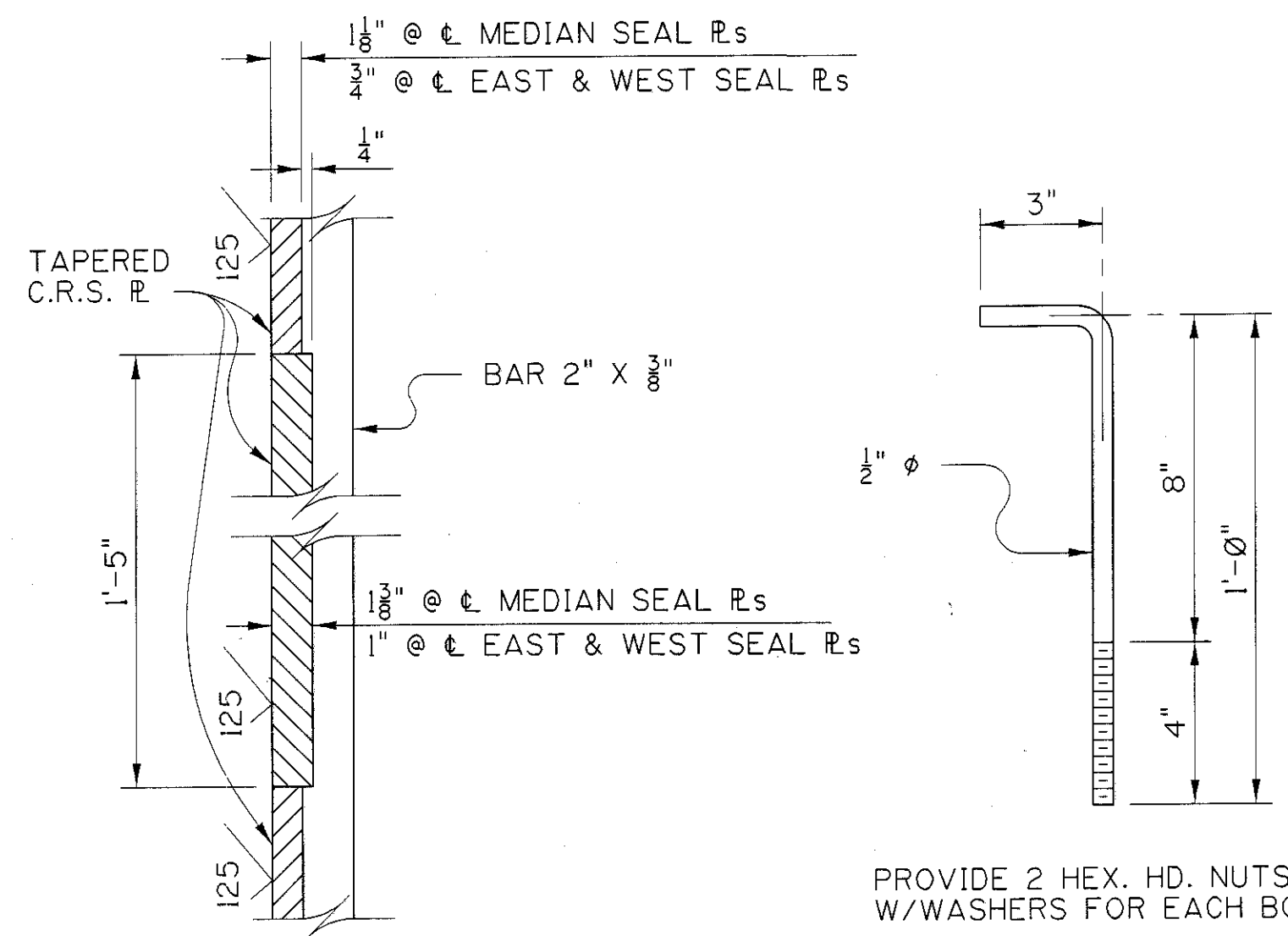
**VERTICAL SEAL PLATES**



**EAST PIER SHOWN  
PIER OPP. HAND  
SECTION A-A  
SCALE: 3\"/>**



**MEDIAN PIER - NORTHBOUND SHOWN  
SOUTHBOUND OPP. HAND  
SECTION B-B  
SCALE: 3\"/>**



**SECTION C-C  
SCALE: 3\"/>**

PROVIDE 2 HEX. HD. NUTS  
W/WASHERS FOR EACH BOLT

**ANCHOR BOLT  
MAKE 52  
SCALE: 3\"/>**

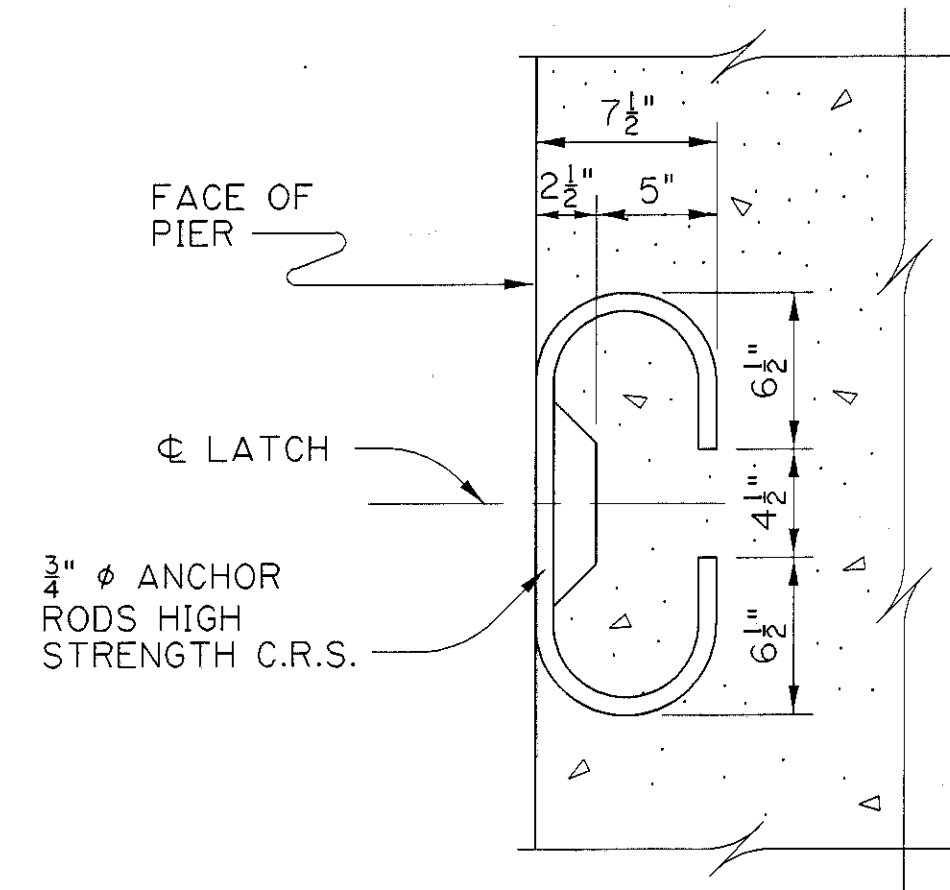
**NOTES**

1. FOR GENERAL NOTES SEE DWG. 0/3.
2. FOR LOCATIONS OF VERTICAL SEAL PLATES SEE DWGS. 20/7 THRU 20/9.
3. DIMENSIONS SHOWN ARE FINISHED DIMENSIONS. ALLOWANCES MUST BE MADE FOR MACHINING.

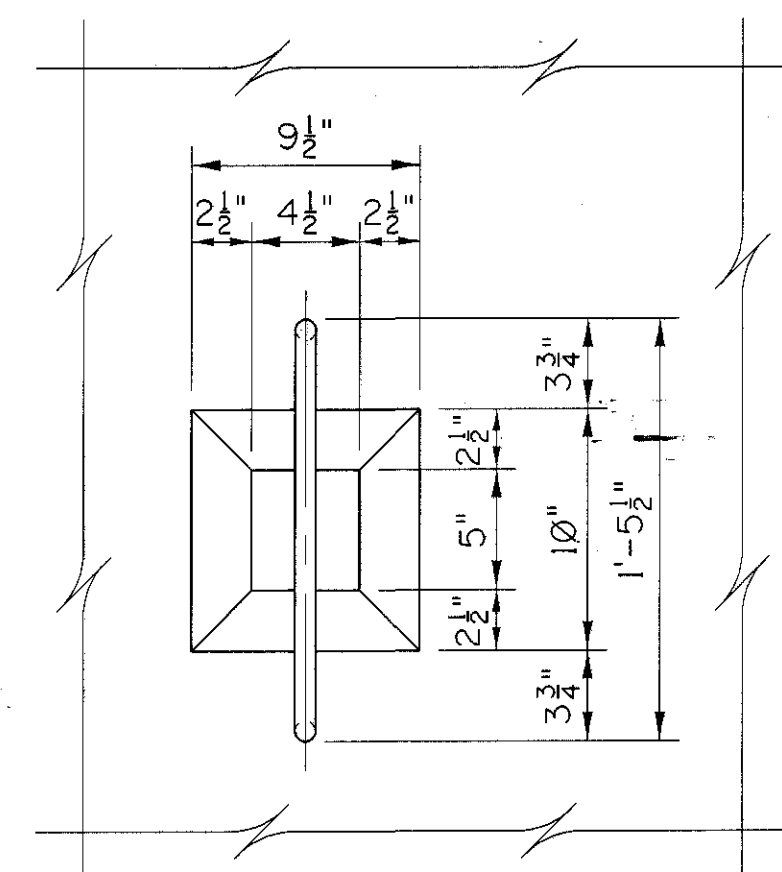
REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION	
SYSTEM: INTERGRAPH CADD SYSTEM		SOFTWARE: IGDS VERSION 8.8	
FILE SPEC: 20-13.DGN		X	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: B.W.D. R.E.T.	<b>SCIOTO RIVER, OH WEST COLUMBUS, L.P.P. COLUMBUS, OHIO</b>		
DRAWN BY: T.L.C.	<b>S.R. 315 GATE CLOSURE VERTICAL SEAL DETAILS</b>		
CHECKED BY: B.W.D. R.E.T.	APPROVED:	DATE:	
SUBMITTED BY:	CHIEF DESIGN BRANCH	APPROVED FOR:	CONTR. NO:
APPROVAL RECOMMENDED:	CHIEF ENGINEER DIVISION	COL. C.E. DISTRICT ENGINEER	016-PWC-2-20/13
DATE:	SCALE: AS SHOWN	DRAWING NUMBER	SHEET OF







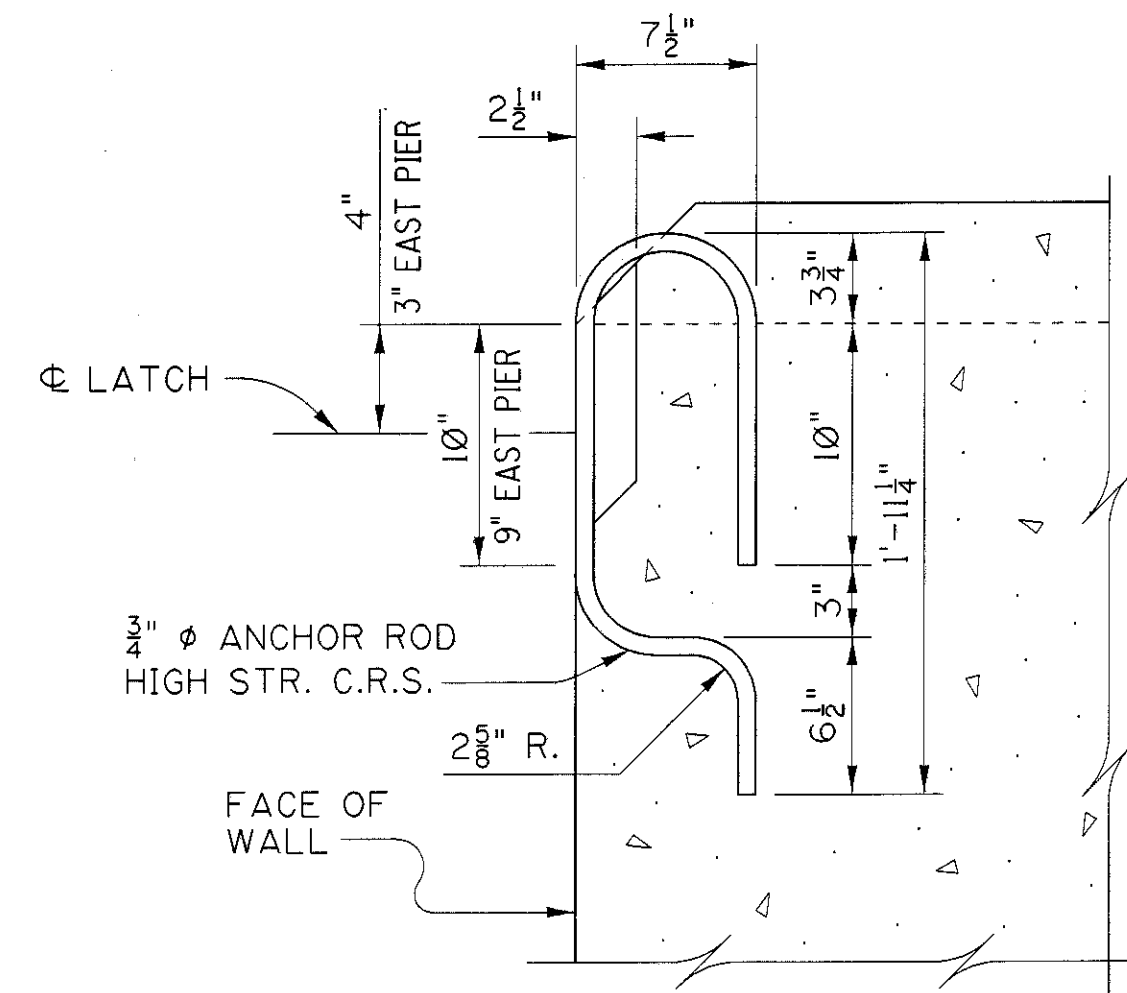
**SECTION**



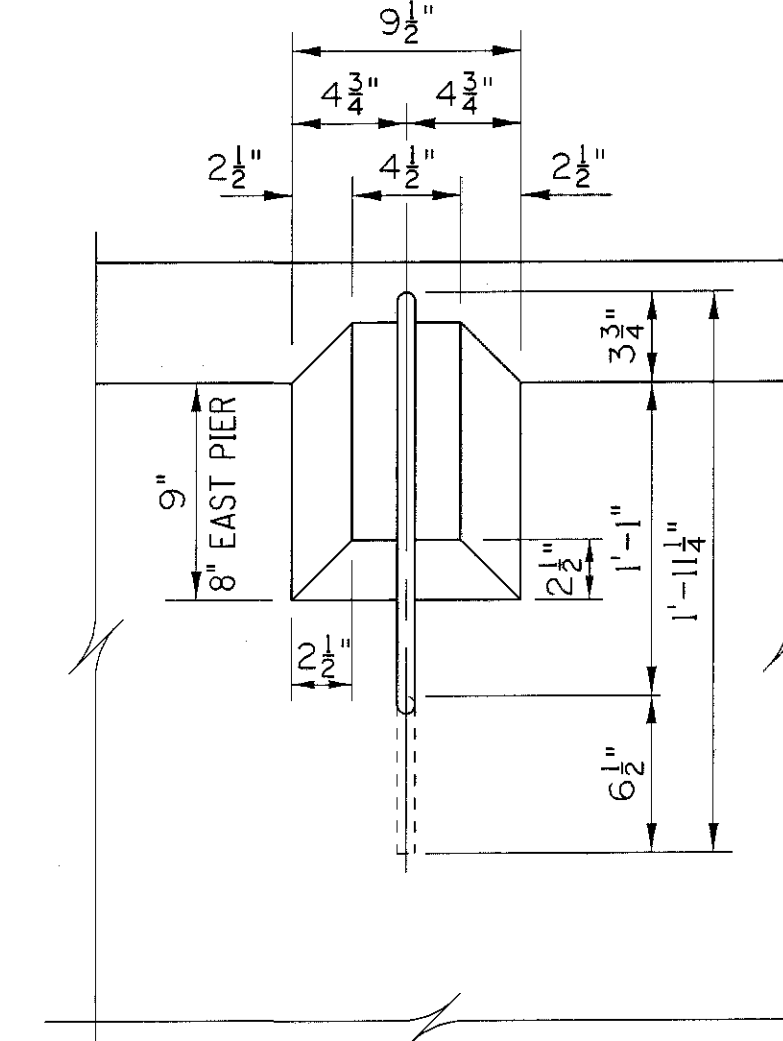
**ELEVATION**

**TYPE 1 LATCHING BAR**

SCALE: 1 1/2"=1'-0"  
MAKE 2



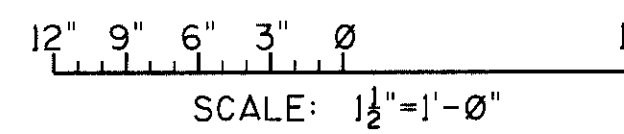
**SECTION**



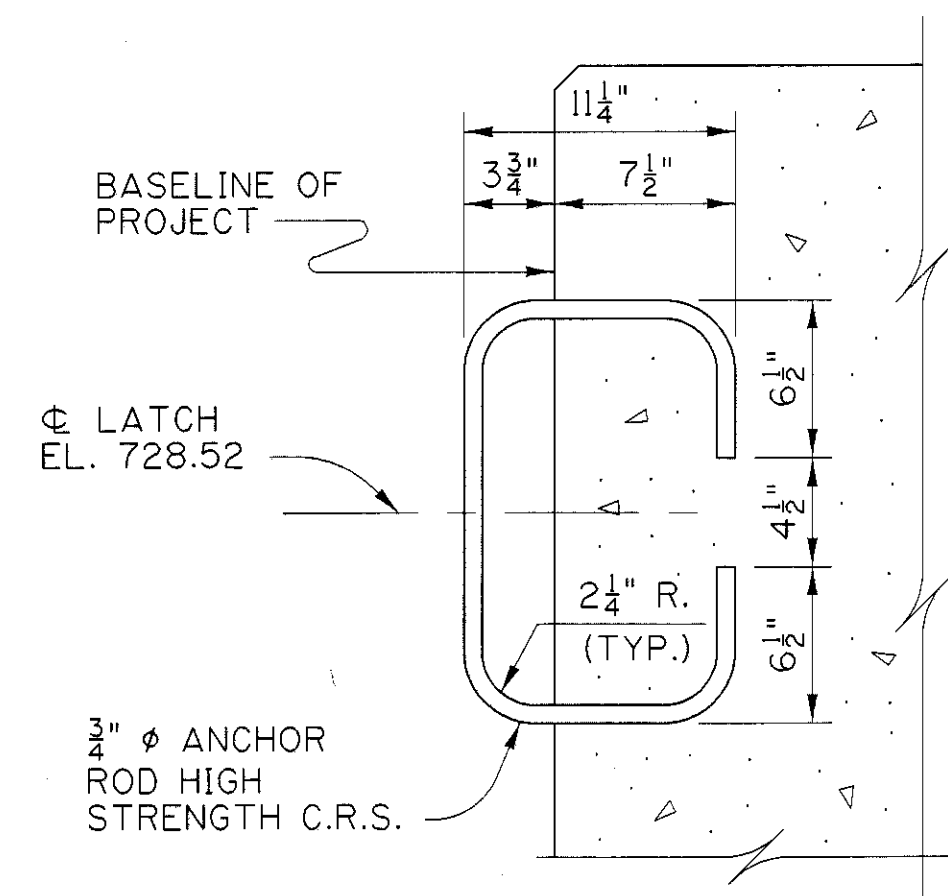
**ELEVATION**

**TYPE 2 LATCHING BAR**

SCALE: 1 1/2"=1'-0"  
MAKE 4

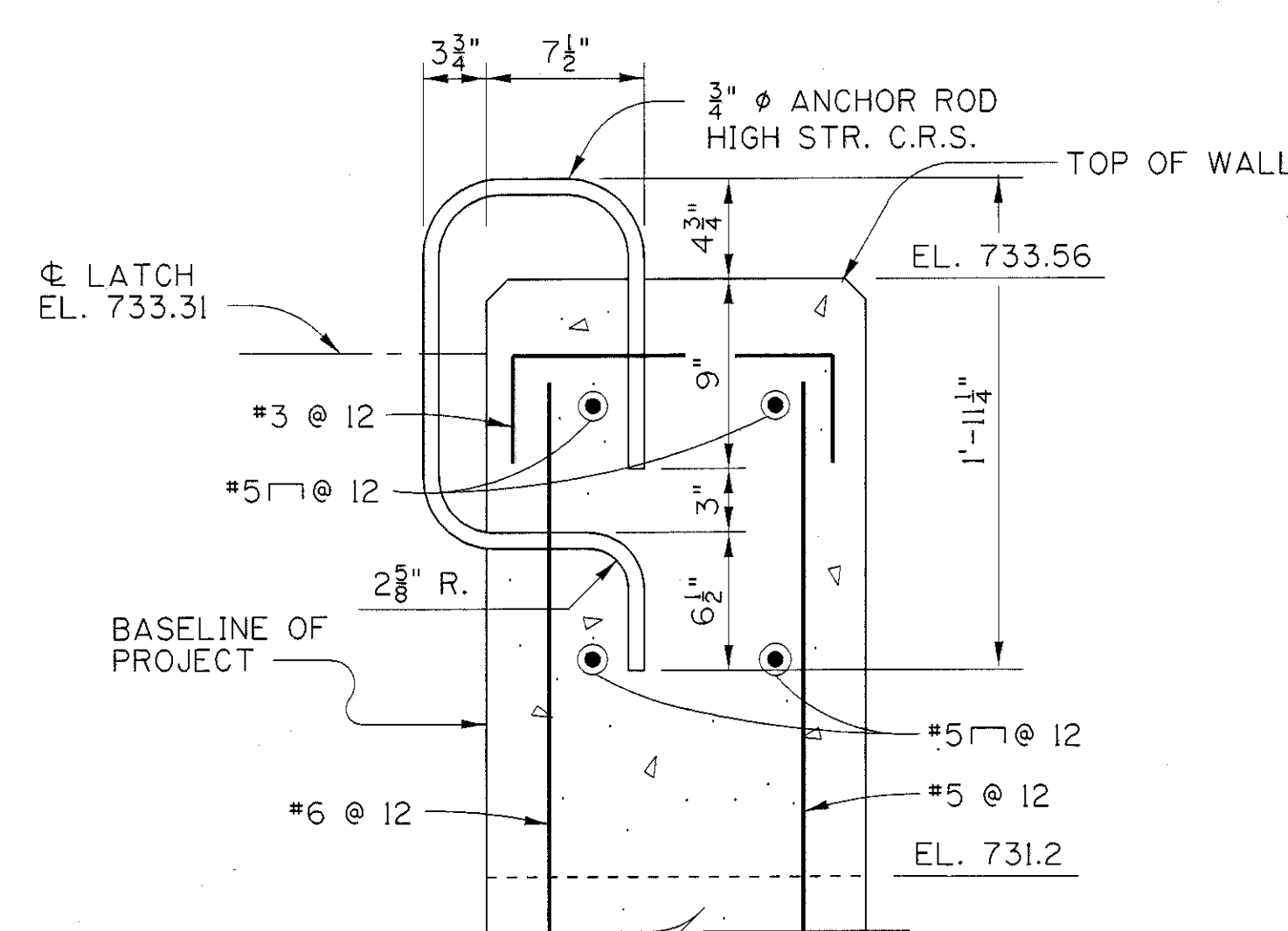


SCALE: 1 1/2"=1'-0"



**TYPE 3 LATCHING BAR**

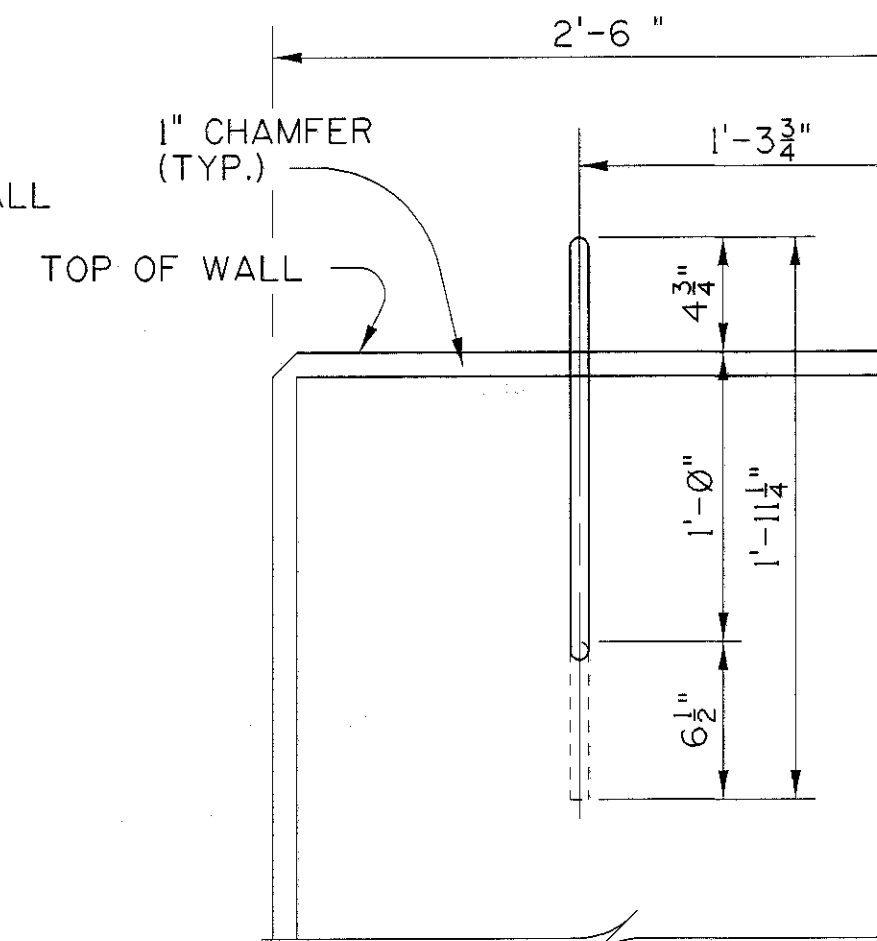
SCALE: 1 1/2"=1'-0"  
MAKE 1



**SECTION**

**TYPE 4 LATCHING BAR**

SCALE: 1 1/2"=1'-0"  
MAKE 1



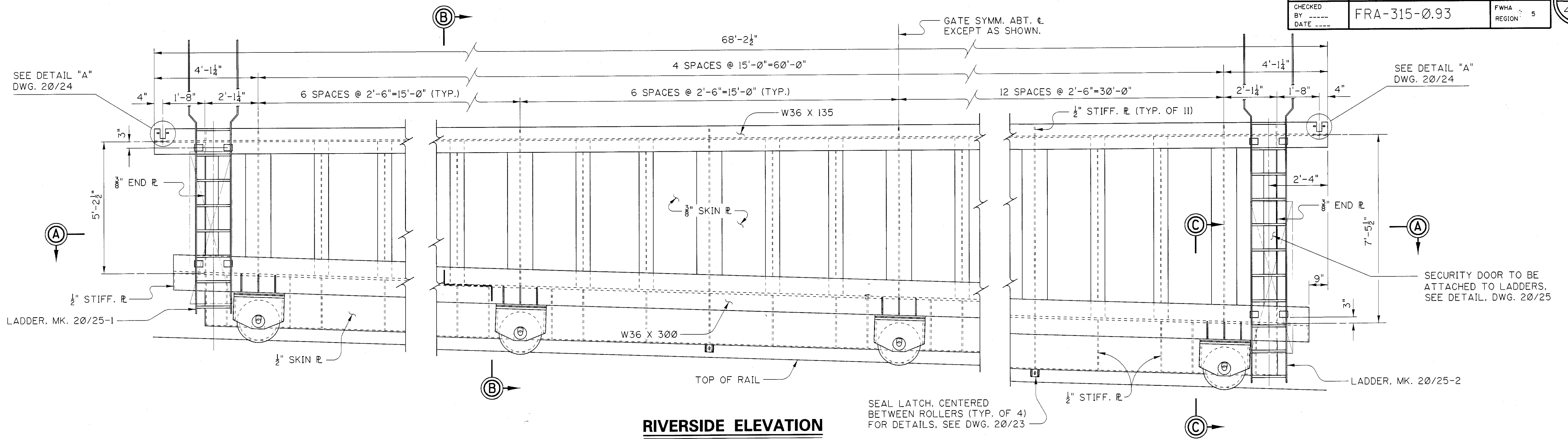
**ELEVATION**

**NOTES**

- FOR GENERAL NOTES SEE DWG. 0/3.
- FOR LOCATION OF LATCHES SEE DWG. 20/1 THRU 20/3.

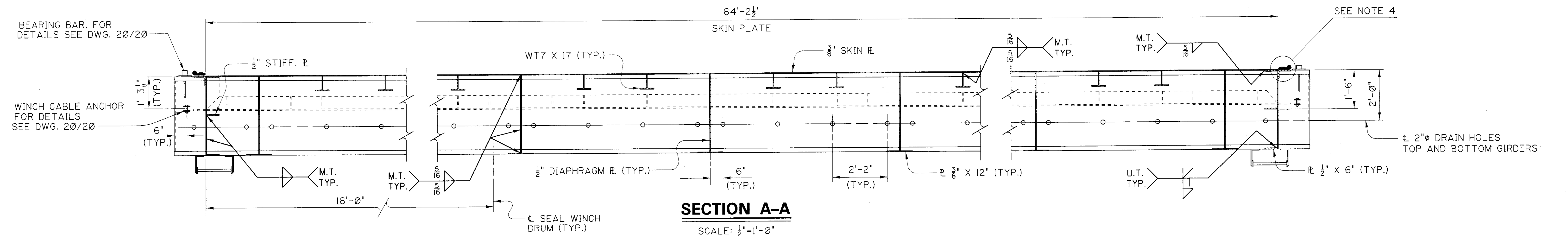
REVISION	DATE	DESCRIPTION	BY

<b>COMPUTER</b> A IDEO DESIGN & DRAFTING	<b>CADD COMPUTER INFORMATION</b> SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-15.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: B.W.D. R.E.T. DRAWN BY: R.K.R. CHECKED BY: B.W.D. R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>LATCHING BARS</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: _____ COL. C. E. DISTRICT ENGINEER
CHIEF ENG DIVISION APPROVED FOR:	SCALE: AS SHOWN CONTR. NO: _____ DRAWING NUMBER <b>016-PWC-2-20/15</b> SHEET OF



**RIVERSIDE ELEVATION**

SCALE: 1/2" = 1'-0"



**SECTION A-A**

SCALE: 1/2" = 1'-0"

**NOTES**

1. FOR GENERAL NOTES SEE DWG. 0/3.
2. ALL GATE STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.
3. GATE MUST BE BUILT SQUARE AND TRUE WITH NO CAMBER OR BENDS SUBJECT TO THE FOLLOWING LIMITS: THE SKIN PLATE SURFACE SHALL NOT VARY MORE THAN 1/8 INCH TOWARD THE DRY SIDE OR RIVER SIDE FROM THE TRUE PLANE FOR THE ENTIRE LENGTH OF THE GATE. ALSO, THIS 1/8 INCH VARIATION SHALL NOT OCCUR IN A DISTANCE LESS THAN 15 FEET MEASURED IN ANY DIRECTION FROM ANY POINT OF THE SKIN PLATE SURFACE.
4. FOR GATE SEAL DETAILS SEE DWGS. 20/21 THRU 20/23.
5. LOCKS FOR LATCHING DEVICES AND SECURITY DOORS SHALL BE KEYED ALIKE.
6. EACH 1/4" LAYER OF FILLET WELDS TO BE NONDESTRUCTIVELY TESTED SHALL BE SUBJECT TO MAGNETIC PARTICAL INSPECTION IN ACCORDANCE WITH ASTM E709. SEE SPECIFICATIONS FOR THE PERCENTAGE OF WELDS TO UNDERGO NONDESTRUCTIVE TESTING.
7. SIZE OF FILLET WELDS NOT DIMENSIONED SHALL BE 1/4".
8. SECURITY DOORS SHALL SWING TOWARD CENTERLINE OF GATE.
9. FOR SECTIONS B-B AND C-C SEE DWG. 20/17.

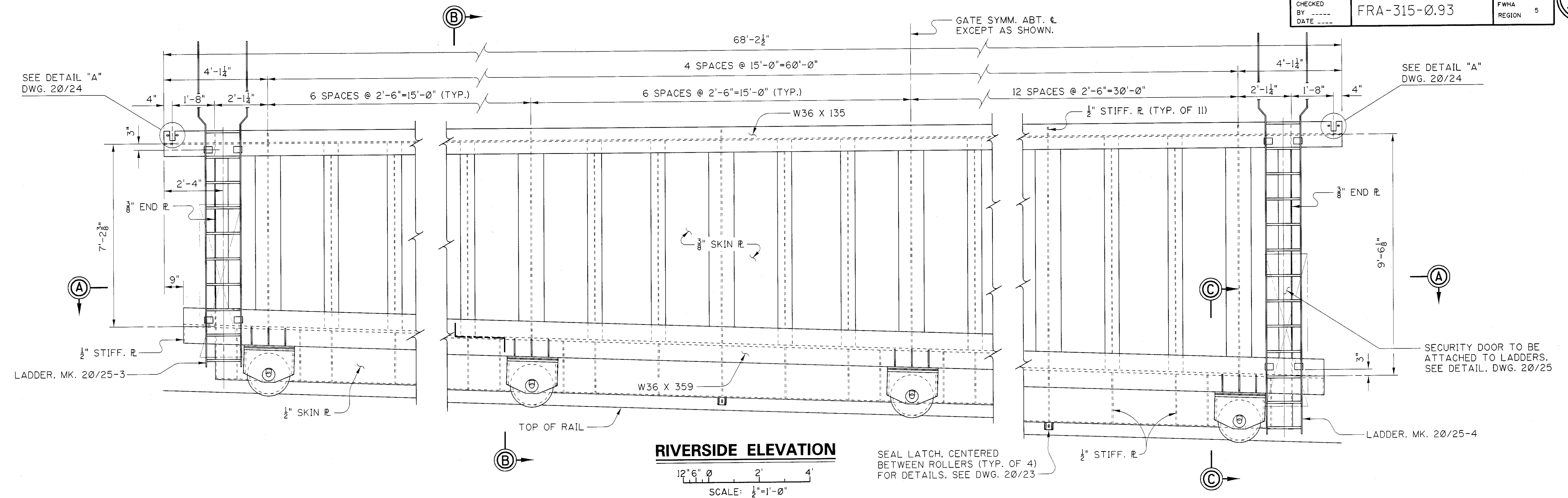
REVISION	DATE	DESCRIPTION	BY

COMPUTER AIDED DESIGN & DRAFTING U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-16.DGN
DESIGNED BY: R.E.T. DRAWN BY: B.W.D. CHECKED BY: R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> NORTHBOUND GATE ELEVATION AND DETAILS
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED: _____ DATE: _____ CHIEF ENG DIVISION APPROVED: COL. C. E. DISTRICT ENGINEER	APPROVAL FOR: _____ SCALE: AS SHOWN CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-20/16</b> SHEET OF



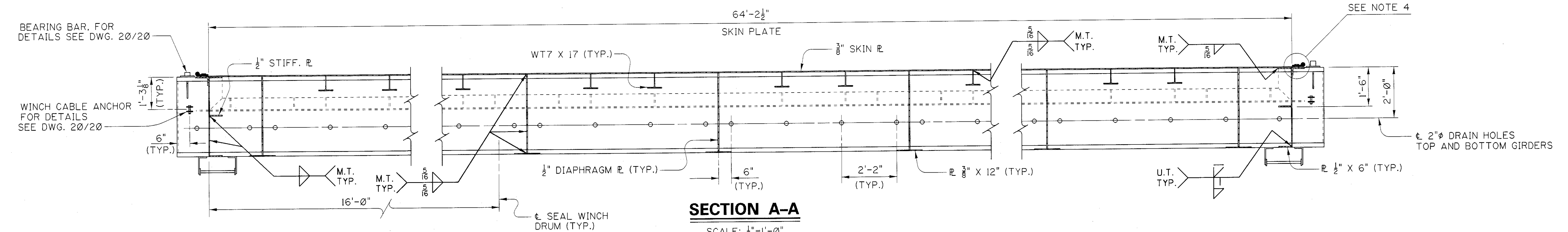




**RIVERSIDE ELEVATION**

SCALE: 1/2" = 1'-0"

SEAL LATCH, CENTERED BETWEEN ROLLERS (TYP. OF 4) FOR DETAILS, SEE DWG. 20/23



**SECTION A-A**

SCALE: 1/2" = 1'-0"

**NOTES**

- FOR GENERAL NOTES SEE DWG. 0/3.
- ALL GATE STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.
- GATE MUST BE BUILT SQUARE AND TRUE WITH NO CAMBER OR BENDS SUBJECT TO THE FOLLOWING LIMITS: THE SKIN PLATE SURFACE SHALL NOT VARY MORE THAN 1/8 INCH TOWARD THE DRY SIDE OR RIVER SIDE FROM THE TRUE PLANE FOR THE ENTIRE LENGTH OF THE GATE. ALSO, THIS 1/8 INCH VARIATION SHALL NOT OCCUR IN A DISTANCE LESS THAN 15 FEET MEASURED IN ANY DIRECTION FROM ANY POINT OF THE SKIN PLATE SURFACE.
- FOR GATE SEAL DETAILS SEE DWGS. 20/21 THRU 20/23.
- LOCKS FOR LATCHING DEVICES AND SECURITY DOORS SHALL BE KEYPED ALIKE.
- EACH 1/4" LAYER OF FILLET WELDS TO BE NONDESTRUCTIVELY TESTED SHALL BE SUBJECTED TO MAGNETIC PARTIAL INSPECTION IN ACCORDANCE WITH ASTM E709. SEE SPECIFICATIONS FOR THE PERCENTAGE OF WELDS TO UNDERGO NONDESTRUCTIVE TESTING.
- SIZE OF FILLET WELDS NOT DIMENSIONED SHALL BE 1/4".
- SECURITY DOORS SHALL SWING TOWARD CENTERLINE OF GATE.
- FOR SECTIONS B-B AND C-C SEE DWG. 20/19.

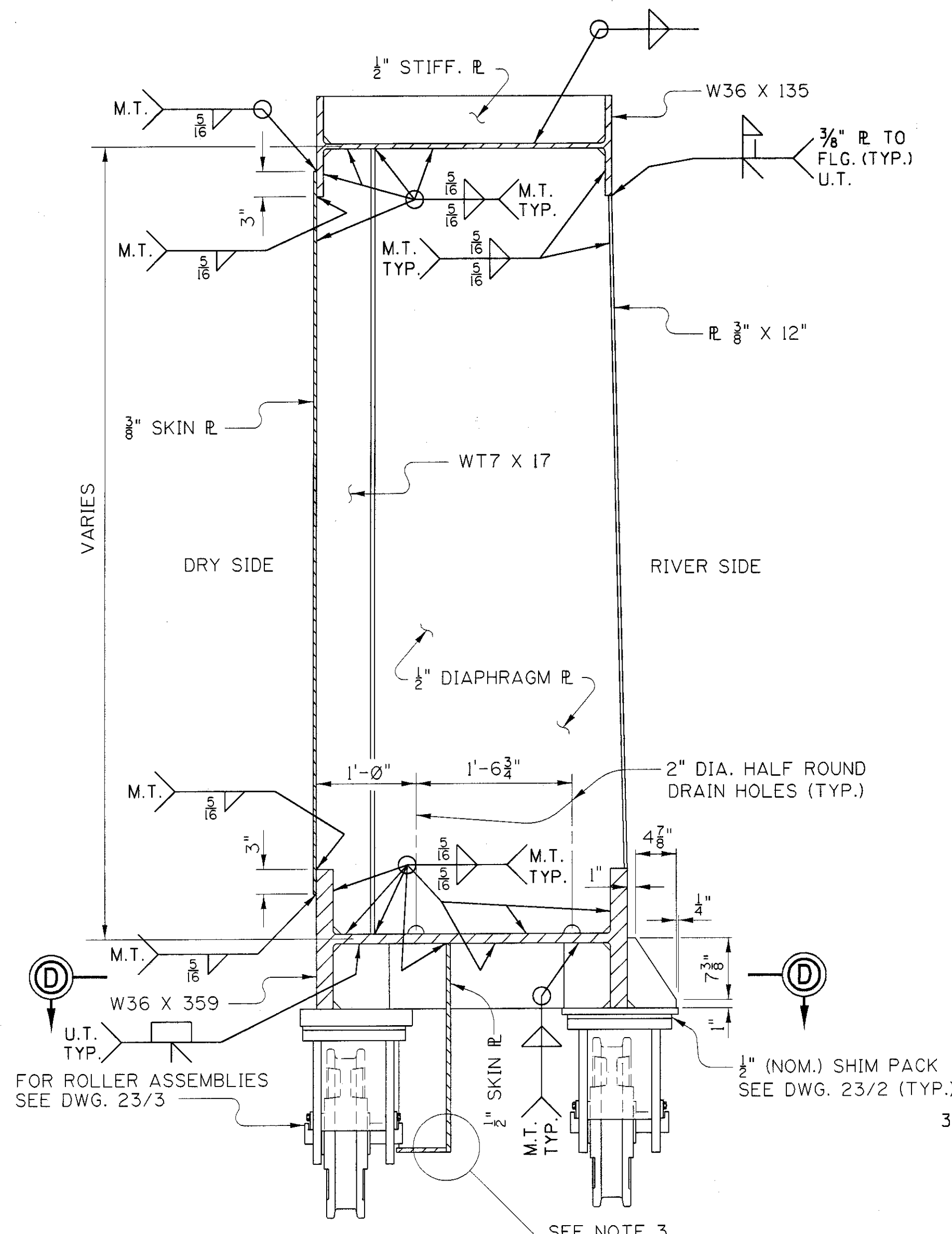
REVISION	DATE	DESCRIPTION	BY

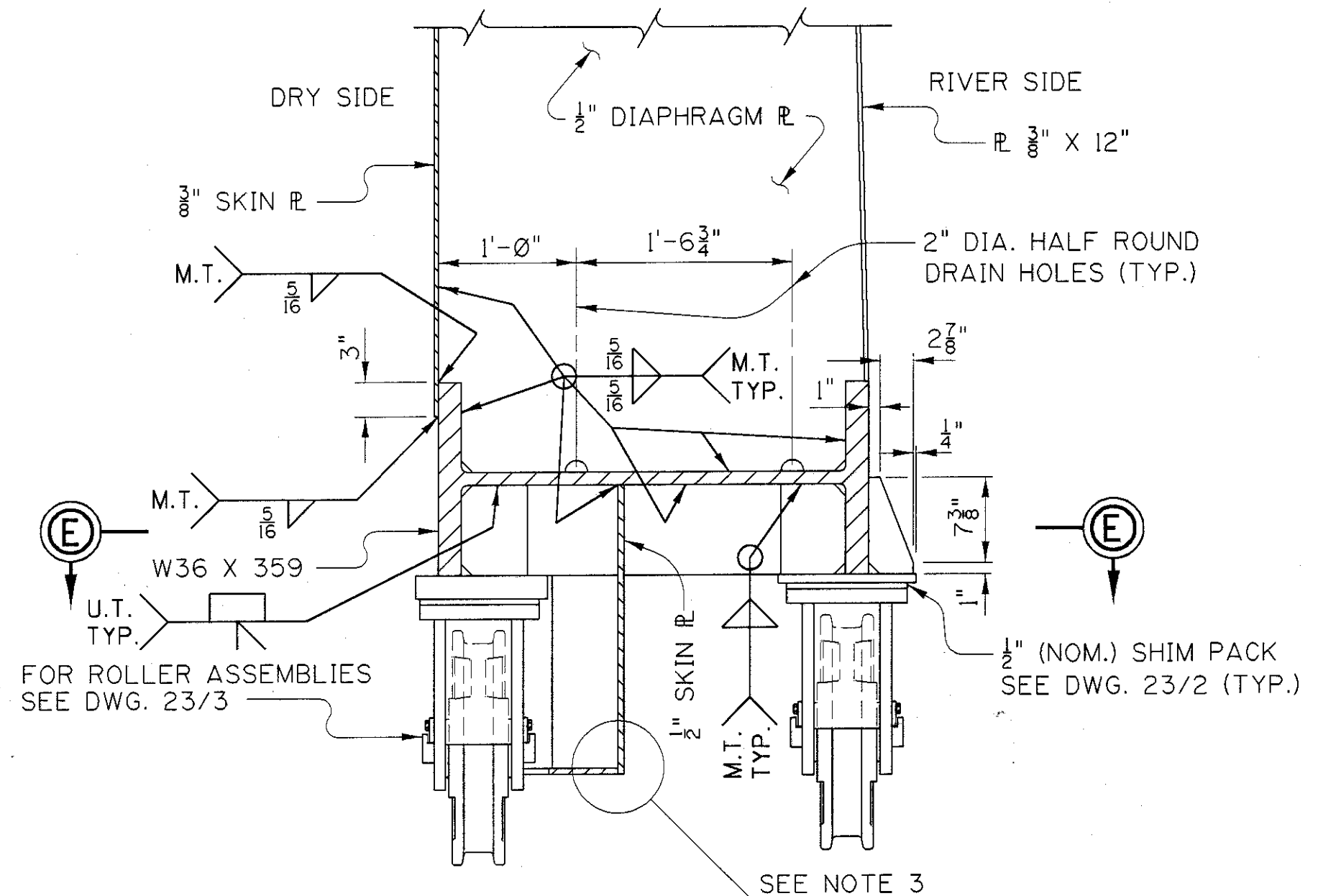
COMPUTER AIDED DESIGN & DRAFTING SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-18.DGN	CADD COMPUTER INFORMATION
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: R.E.T. DRAWN BY: B.W.D. CHECKED BY: R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> SOUTHBOUND GATE ELEVATION AND DETAILS
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED: CHIEF ENG DIVISION APPROVED FOR:	APPROVED: _____ DATE: _____ COL. C.E. DISTRICT ENGINEER
SCALE: AS SHOWN CONTR. NO.: _____ DRAWING NUMBER: 016-PWC-2-20/18 SHEET OF	DATE: _____



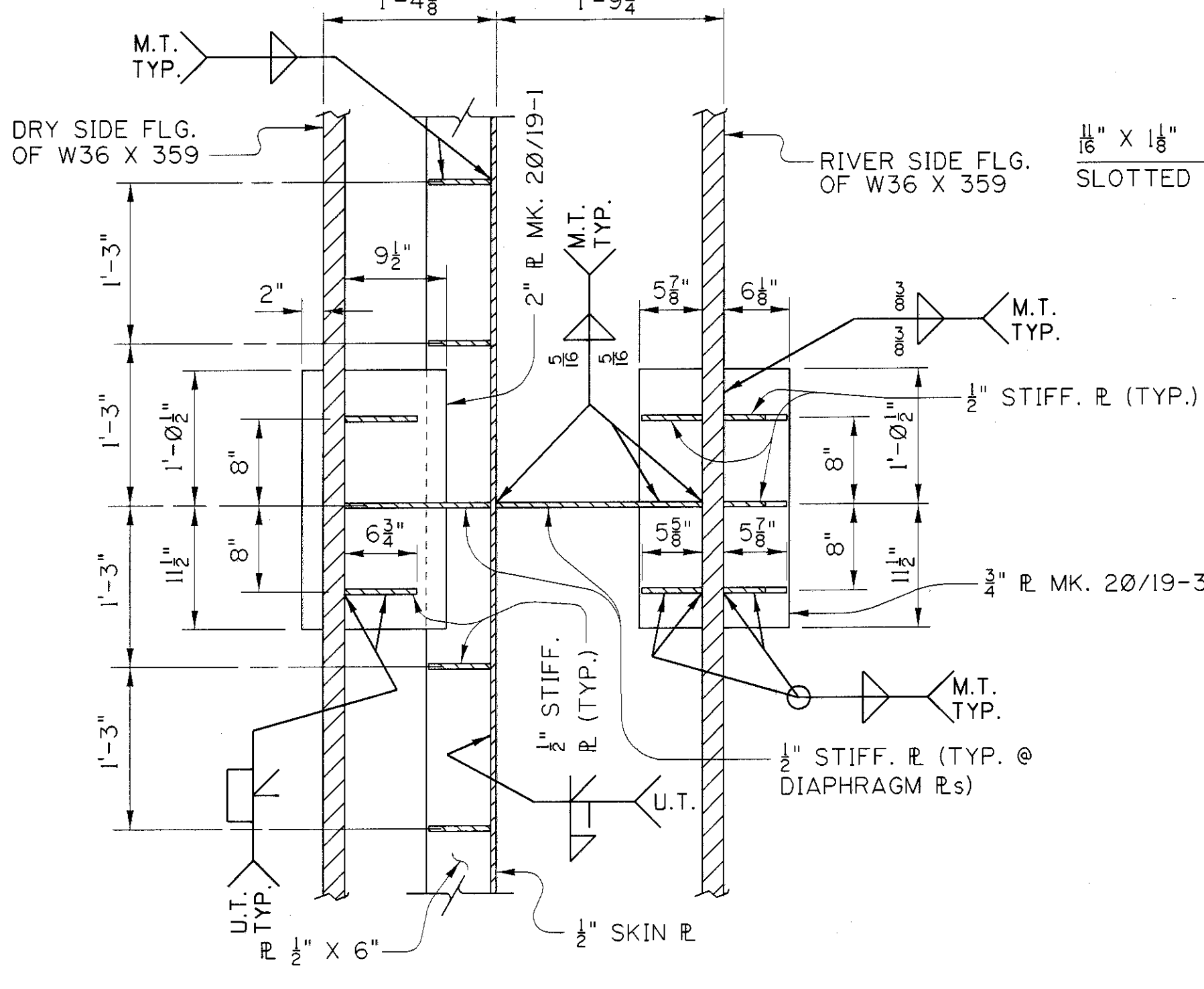
NOTE:  
 PROVIDE A 250 MACHINE FINISH ON MOUNTING SURFACE AFTER PLATES ARE COMPLETELY WELDED IN PLACE



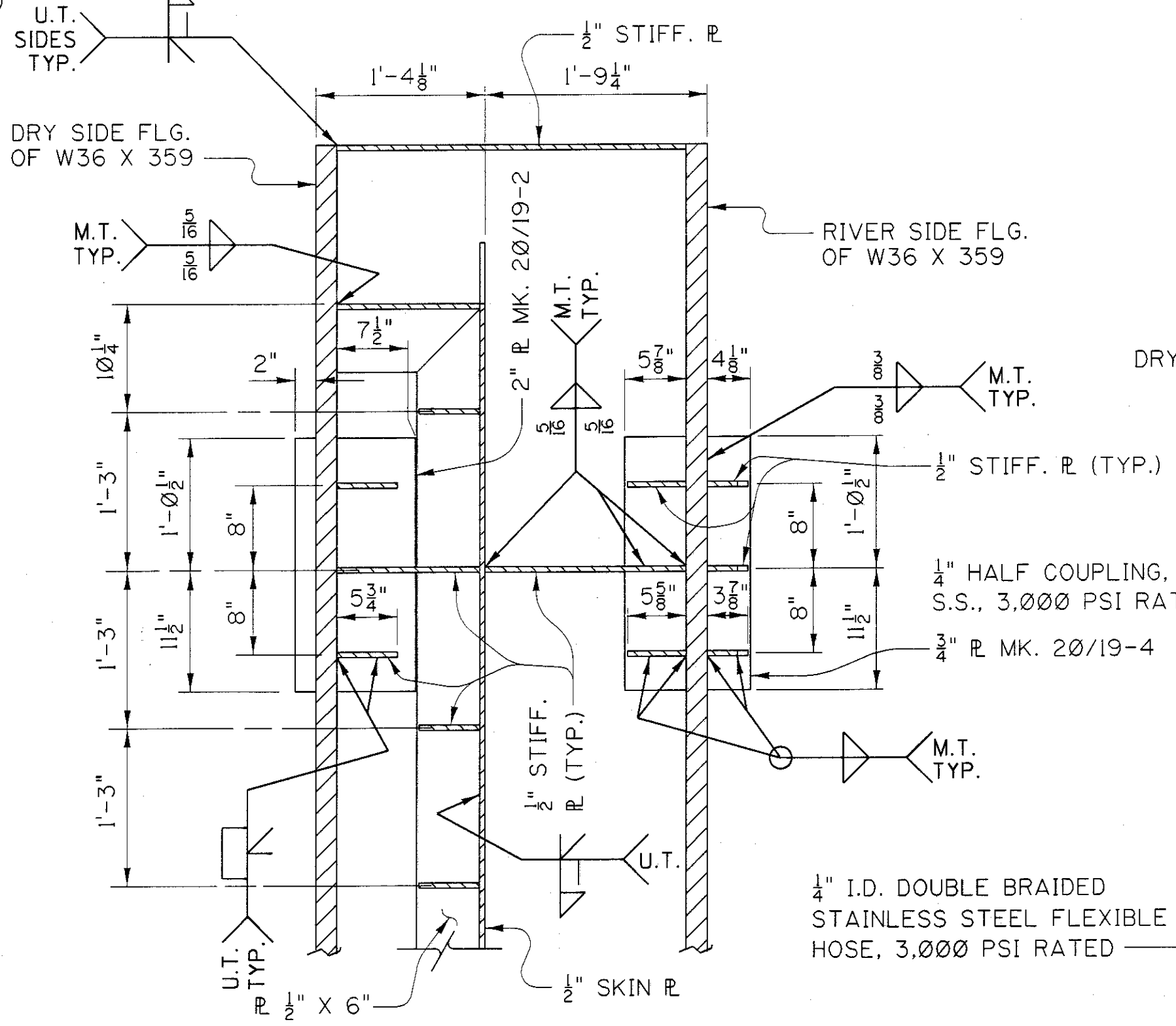
**SECTION B-B**  
 SCALE: 1"=1'-0"



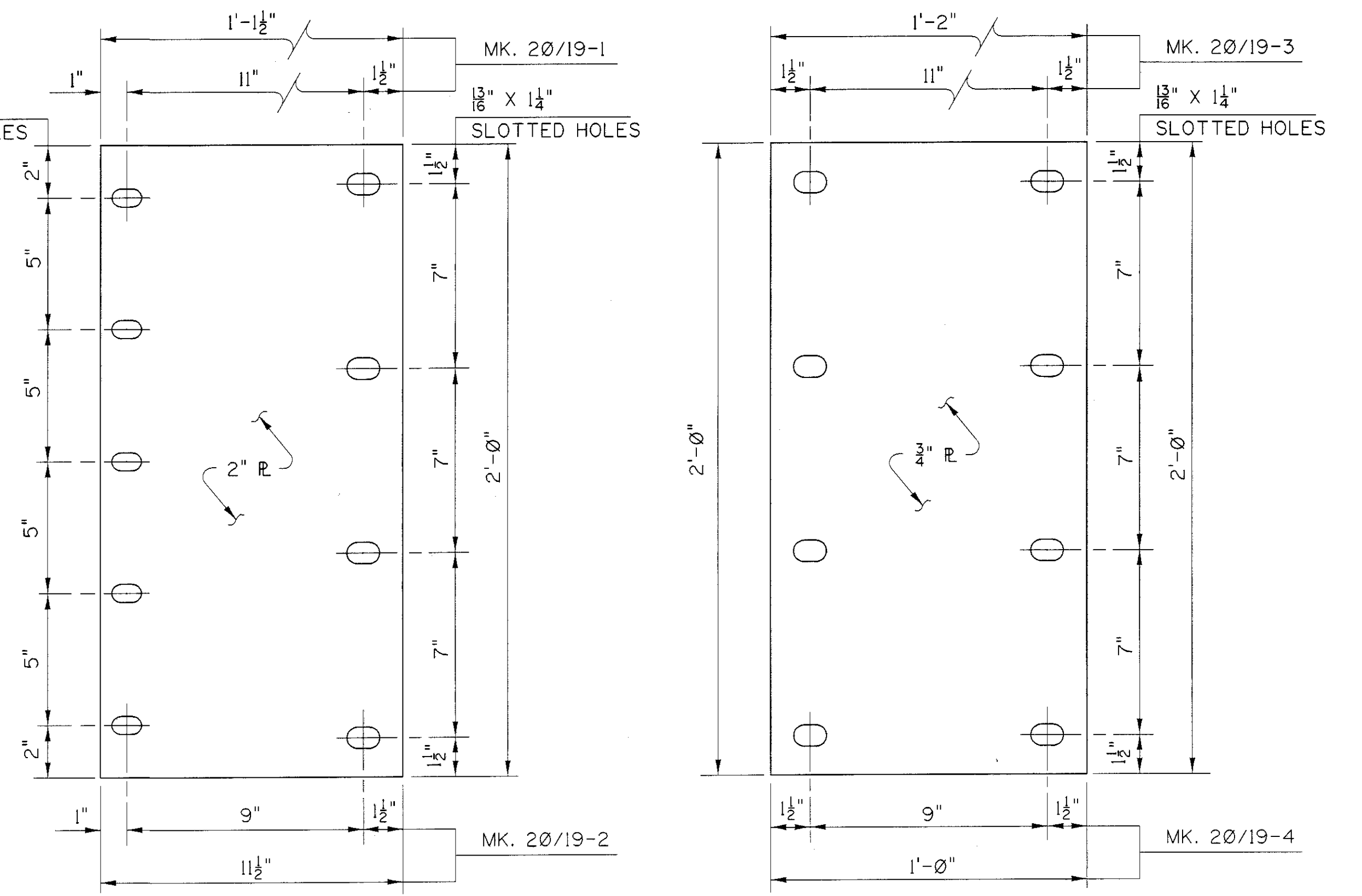
**SECTION C-C**  
 SCALE: 1"=1'-0"



**SECTION D-D**  
 SCALE: 1"=1'-0"



**SECTION E-E**  
 SCALE: 1"=1'-0"

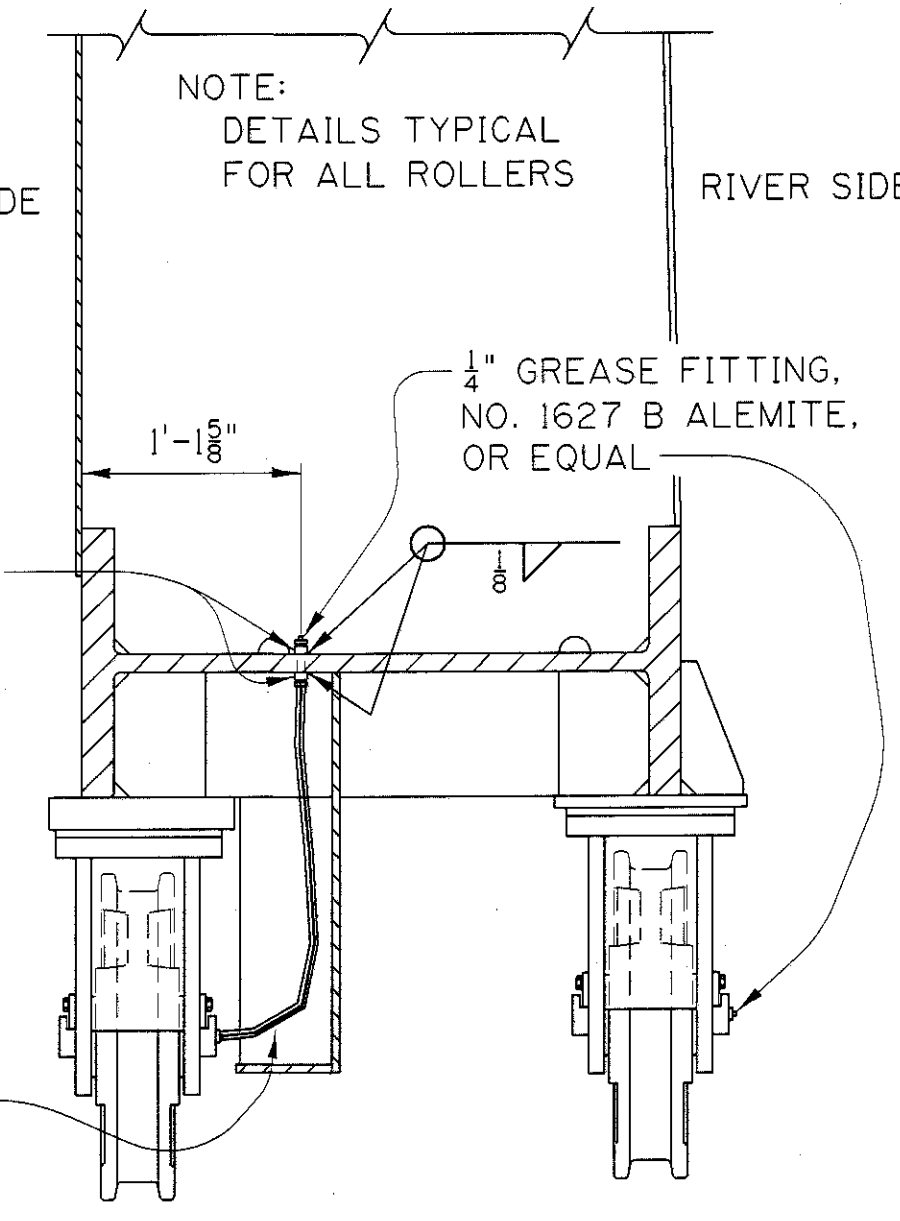


**ROLLER ASSEMBLY MOUNTING PLATES**

- MK. 20/19-1 MAKE 3
  - MK. 20/19-2 MAKE 2
  - MK. 20/19-3 MAKE 3
  - MK. 20/19-4 MAKE 2
- SCALE: 3"=1'-0"

**NOTES**

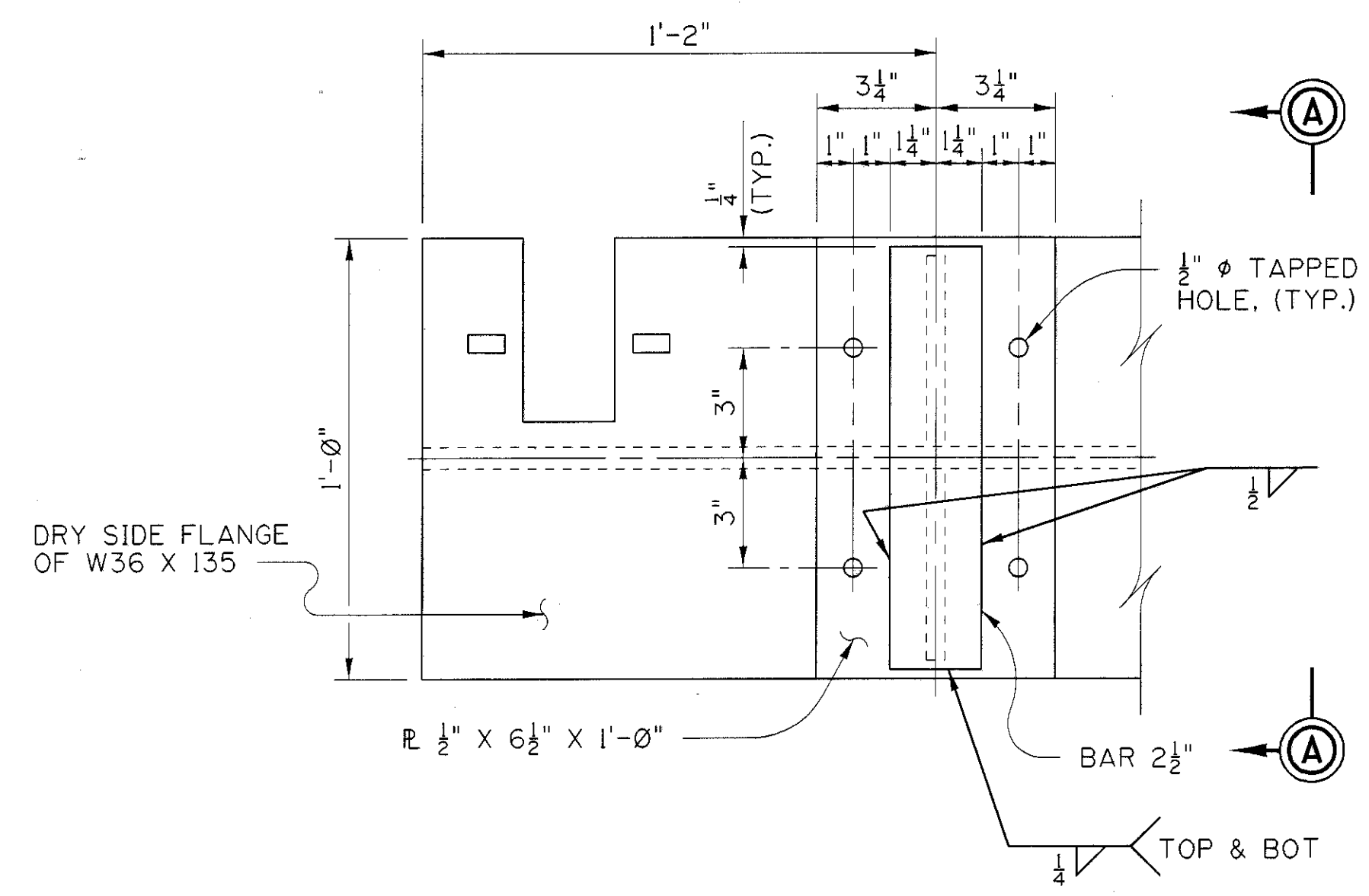
1. FOR GENERAL NOTES SEE DWG. 0/3.
2. FOR LOCATIONS OF SECTIONS B-B AND C-C SEE DWG. 20/18.
3. FOR GATE SEAL DETAILS SEE DWGS. 20/21 THRU 20/23.
4. QUANTITIES LISTED ARE FOR ONE GATE.



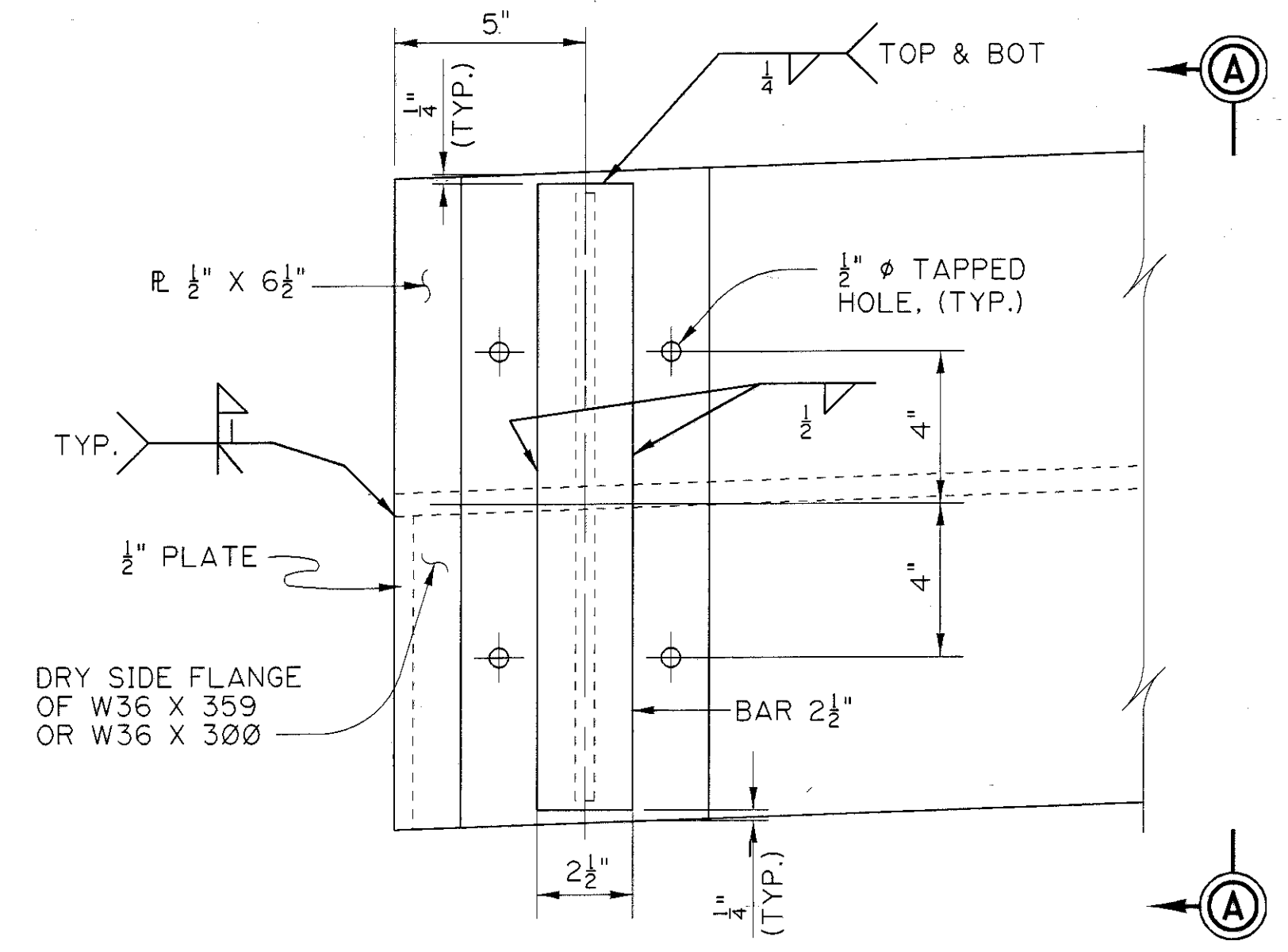
**GREASE LINE DETAILS**  
 SCALE: 1"=1'-0"

REVISION	DATE	DESCRIPTION	BY

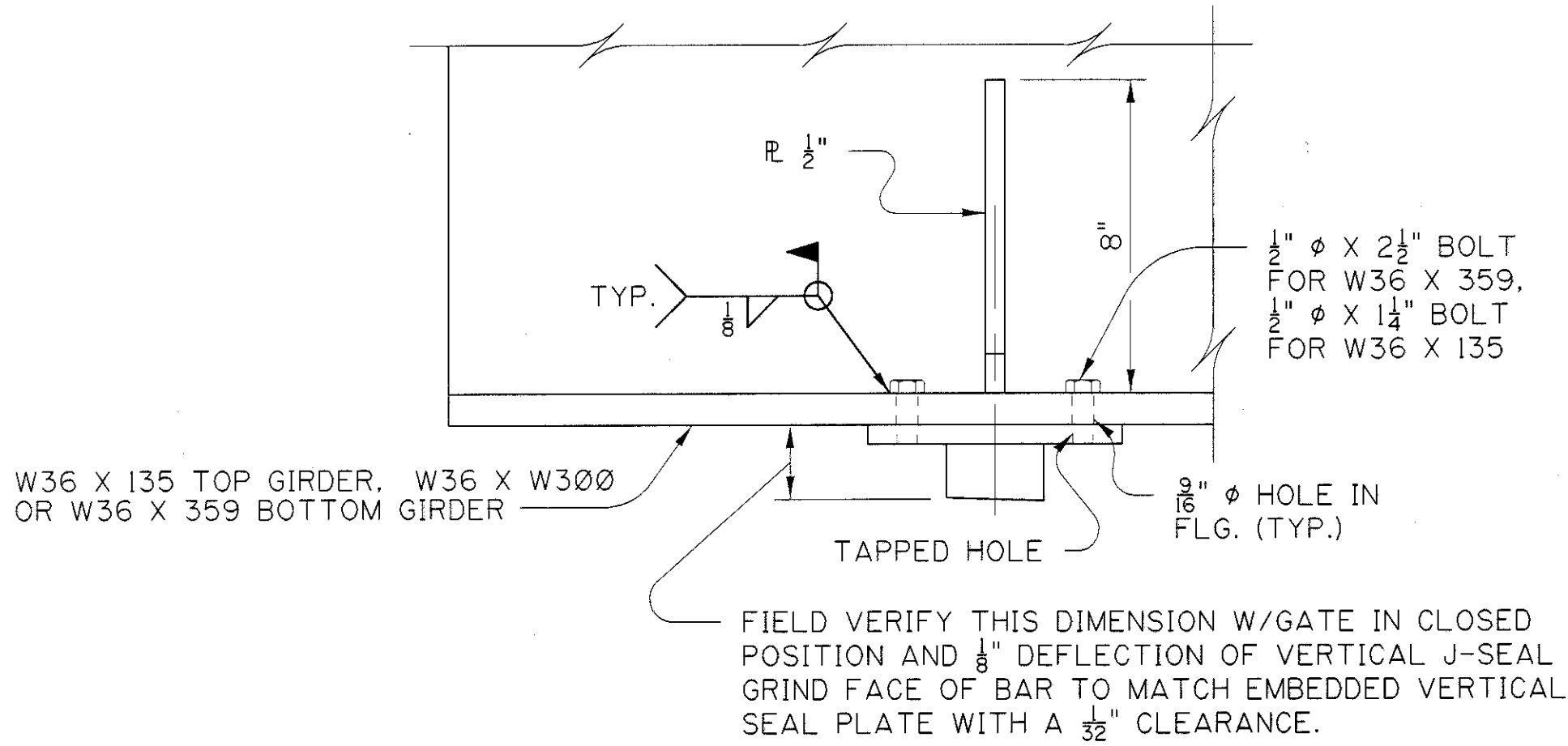
COMPUTER AIDED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-19.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS, HUNTINGTON, W.VA.	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> SOUTHBOUND GATE SECTIONS AND DETAILS
DESIGNED BY: B.W.D. R.E.T. DRAWN BY: B.W.D. CHECKED BY: R.E.T. SUBMITTED BY:	CHIEF DESIGN BRANCH APPROVED: DATE:
CHIEF ENGINEERING DIVISION APPROVED FOR:	COL. C.E. DISTRICT ENGINEER DATE:
SCALE: AS SHOWN	CONTR. NO.:
DRAWING NUMBER: 016-PWC-2-20/19	SHEET OF



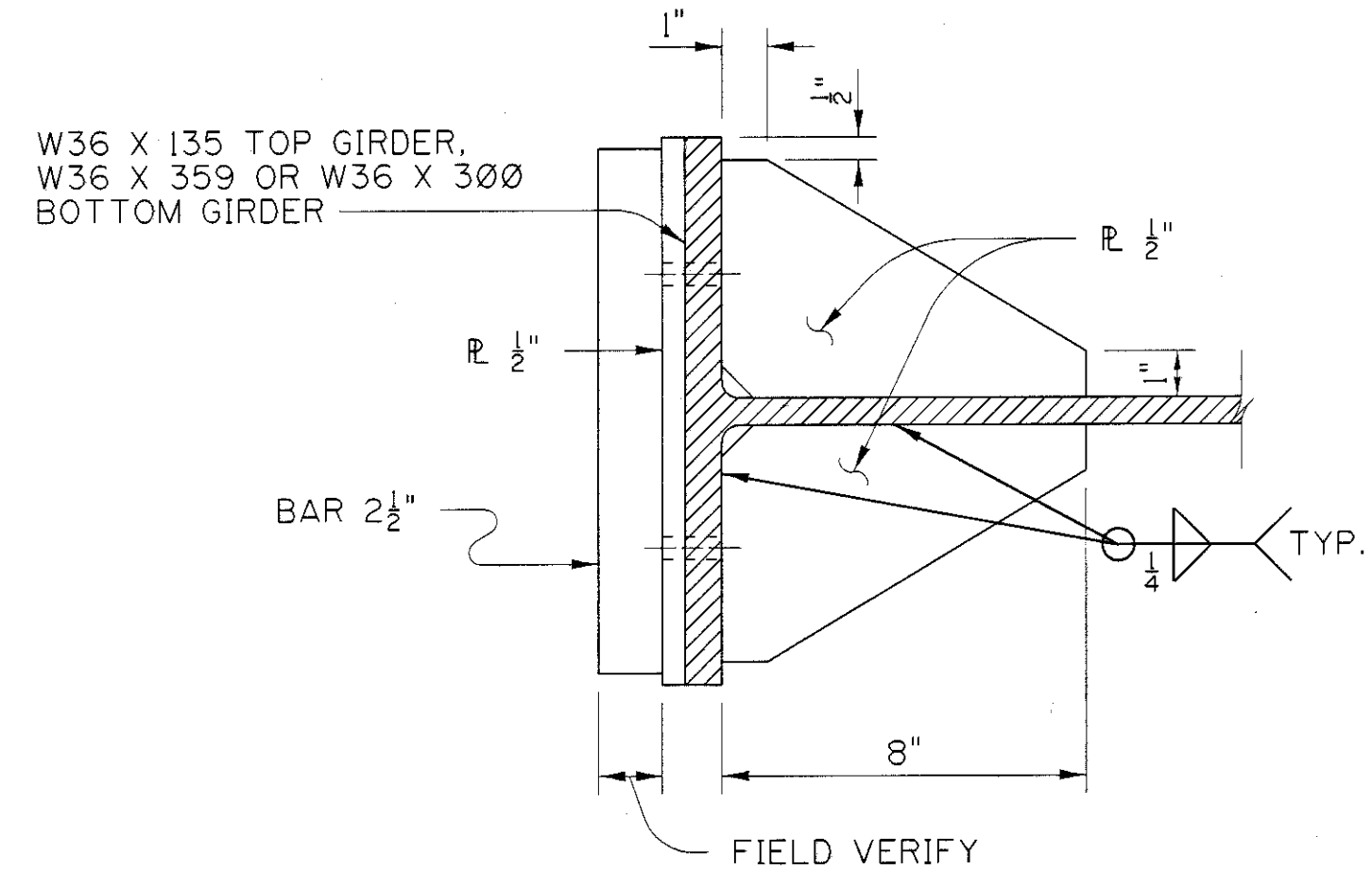
**TOP GIRDER ELEVATION**



**BOTTOM GIRDER ELEVATION**



**PLAN**



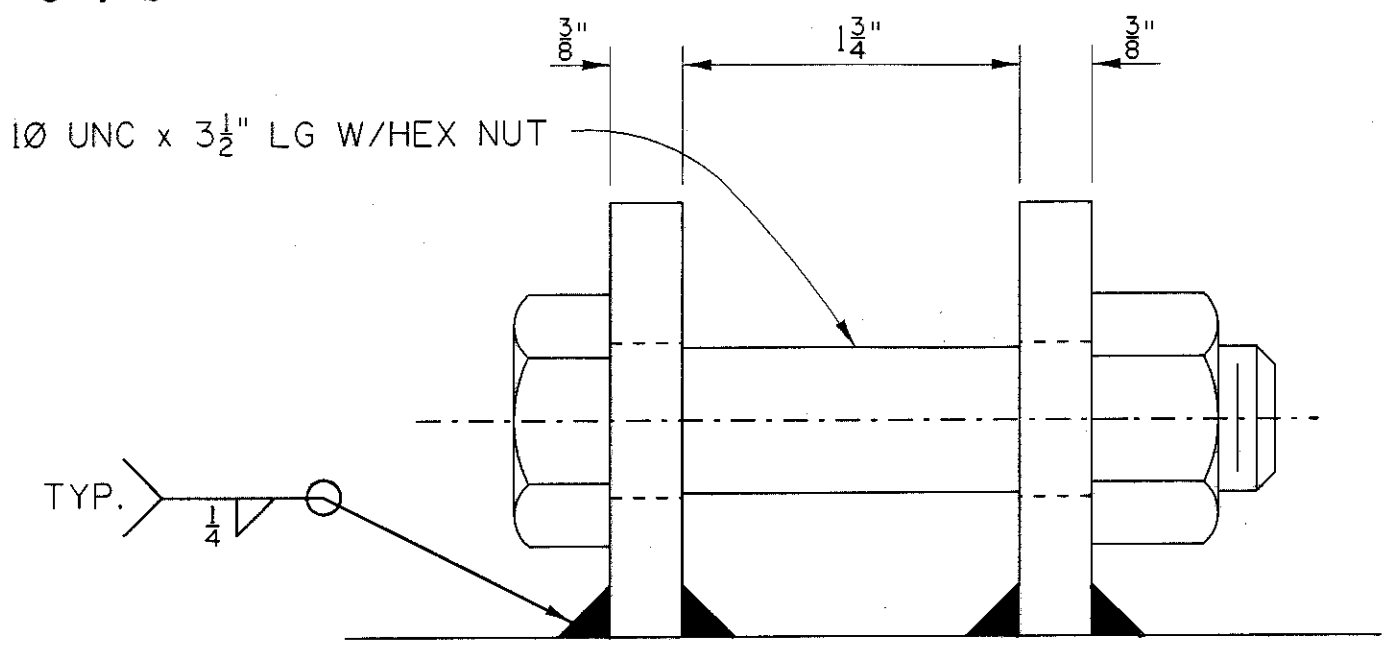
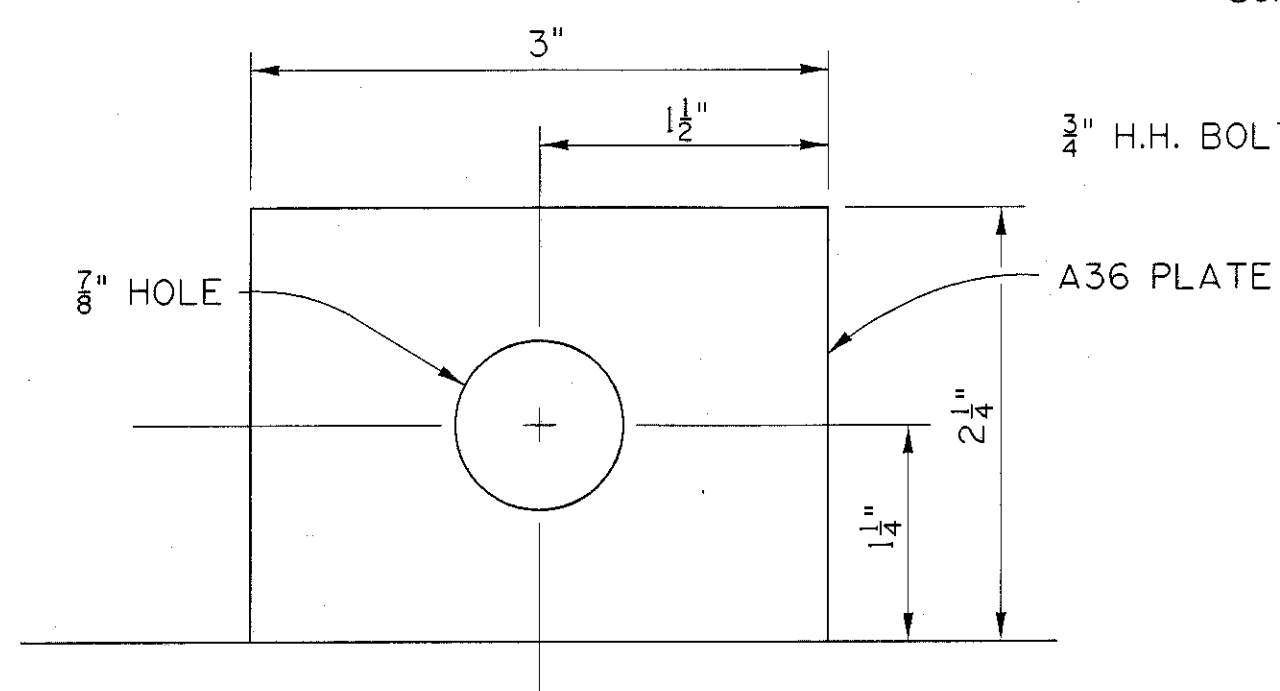
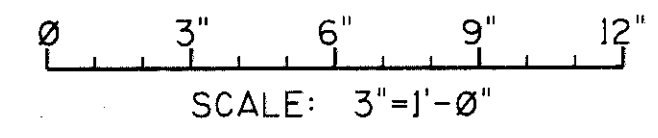
**SECTION A-A**

**NOTES**

1. FOR GENERAL NOTES SEE DWG. Ø/3.
2. FOR LOCATIONS SEE DWGS. 2Ø/16 AND 2Ø/18.
3. QUANTITIES SHOWN ON THIS SHEET ARE FOR TWO GATES.

**BEARING BAR ASSEMBLY**

WEST END SHOWN, EAST END OPP. HAND  
MAKE 8

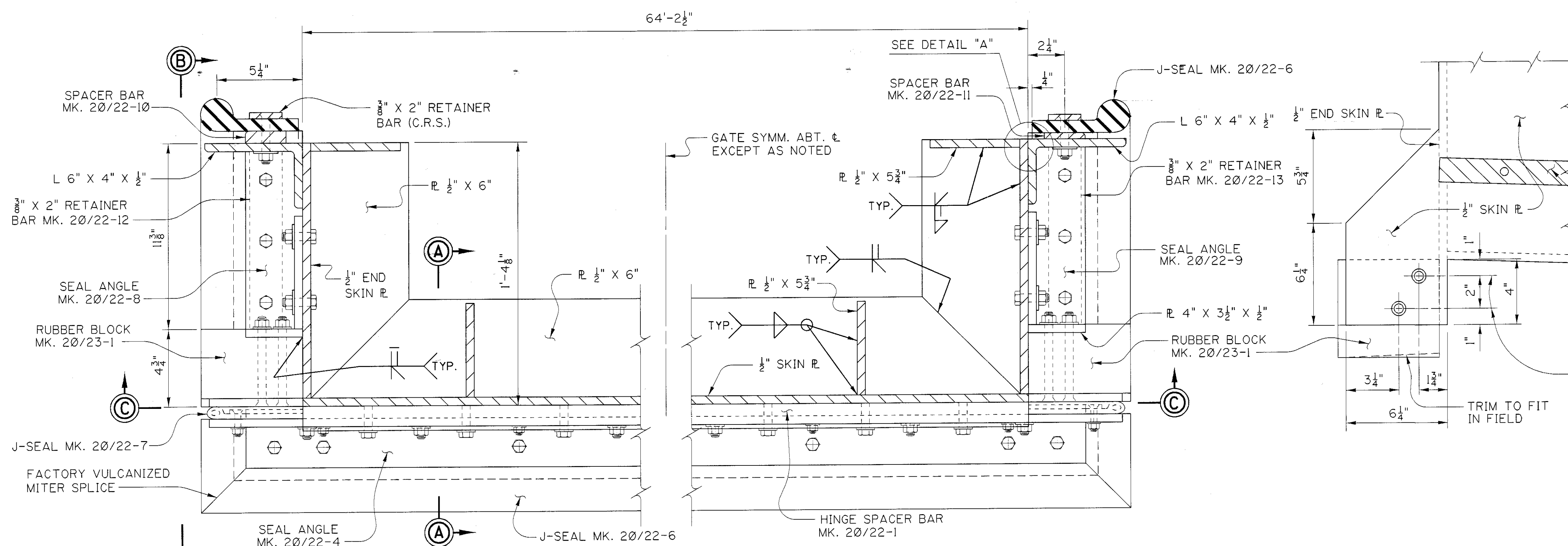


**WINCH CABLE ANCHOR**

SCALE: 12" = 1'-0" - MAKE 4

DESIGNED BY: W.F.E. R.E.T.		SCIO TO RIVER, OH	
DRAWN BY: R.K.R.		<b>WEST COLUMBUS, L.P.P.</b>	
CHECKED BY: B.W.D. R.E.T.		COLUMBUS, OHIO	
SUBMITTED BY:		<b>S.R. 315 GATE CLOSURE</b>	
CHIEF DESIGN BRANCH		MISCELLANEOUS DETAILS	
APPROVAL RECOMMENDED:		APPROVED: _____ DATE: _____	
CHIEF ENG DIVISION		COL. C. E. DISTRICT ENGINEER	
APPROVED FOR:		SCALE: AS SHOWN CONTR.NO:	
DATE: _____		DRAWING NUMBER	
		016-PWC-2-2Ø/2Ø	
		SHEET OF	

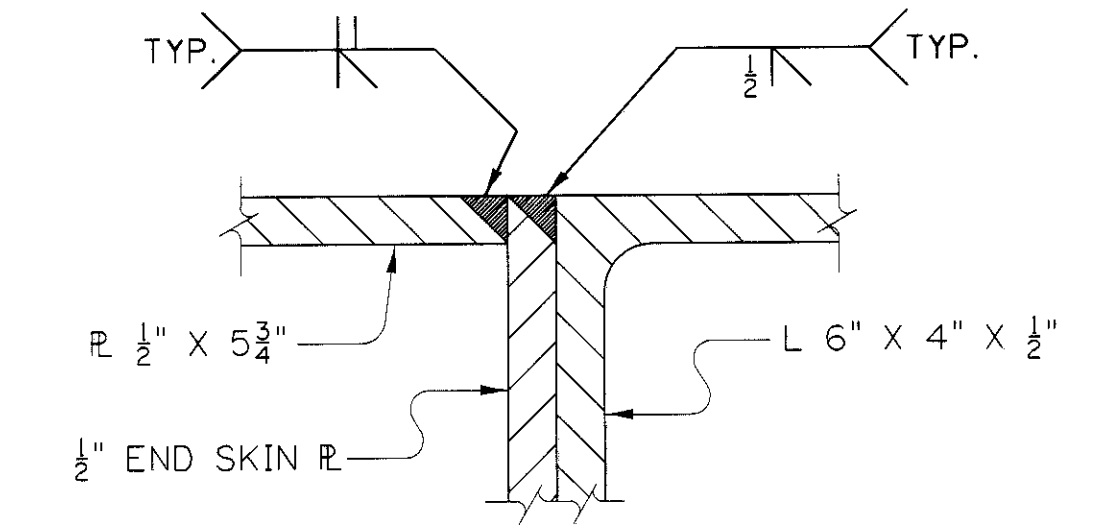
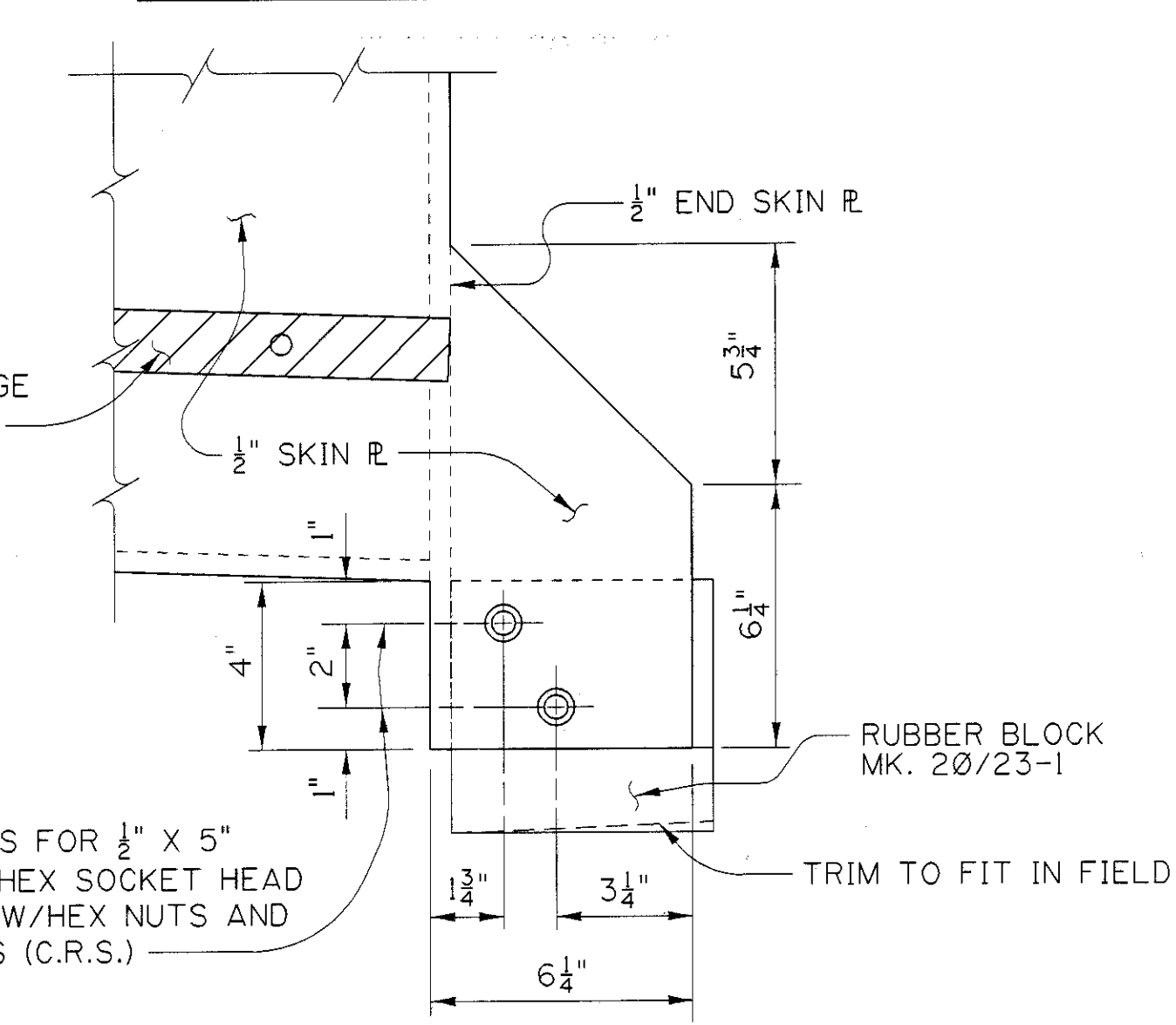




**SECTIONAL PLAN BELOW BOTTOM GIRDER**

NORTHBOUND GATE SHOWN  
SOUTHBOUND GATE OPP. HAND  
SCALE: 3"=1'-0"

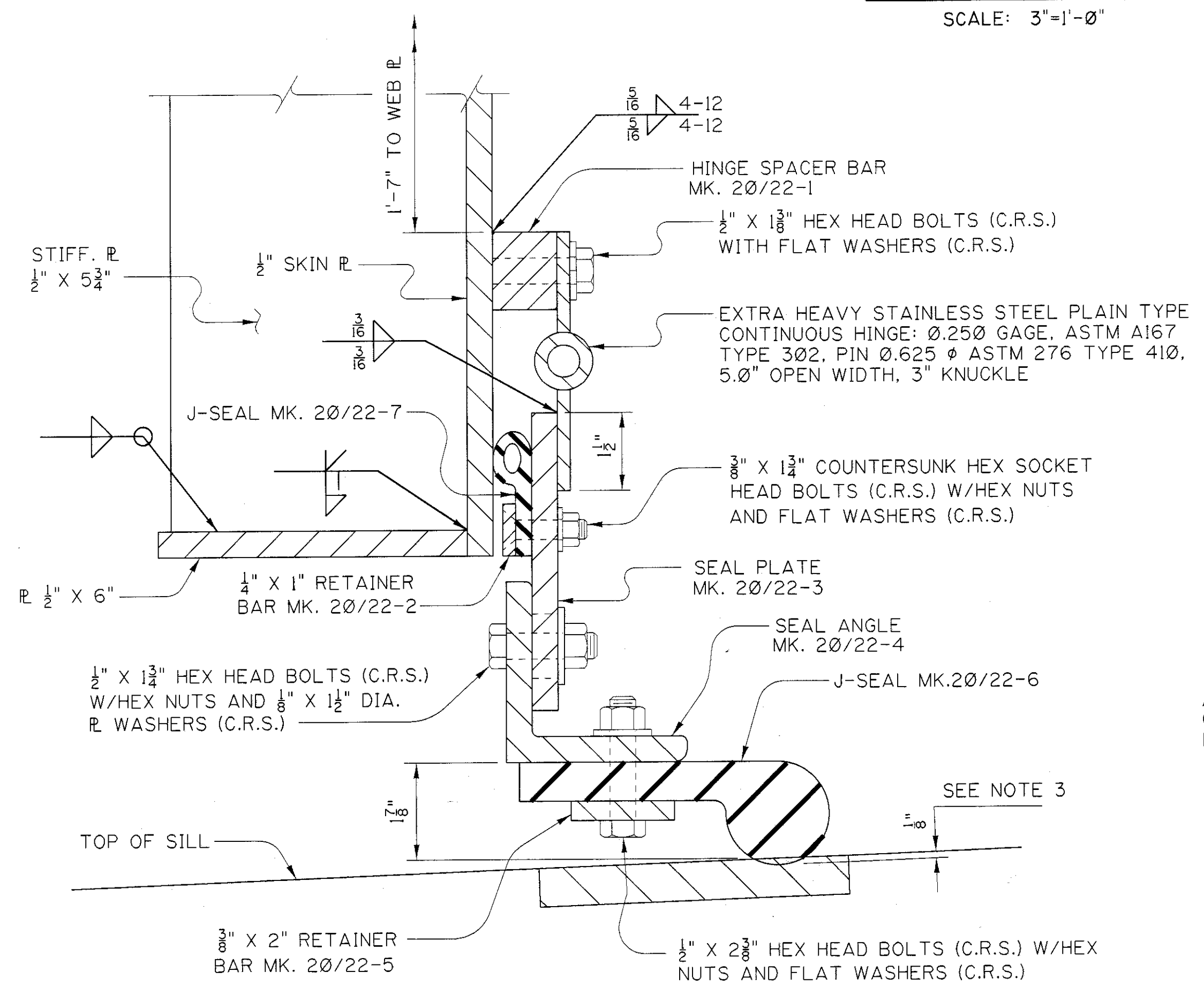
**SECTION C-C**  
SCALE: 3"=1'-0"



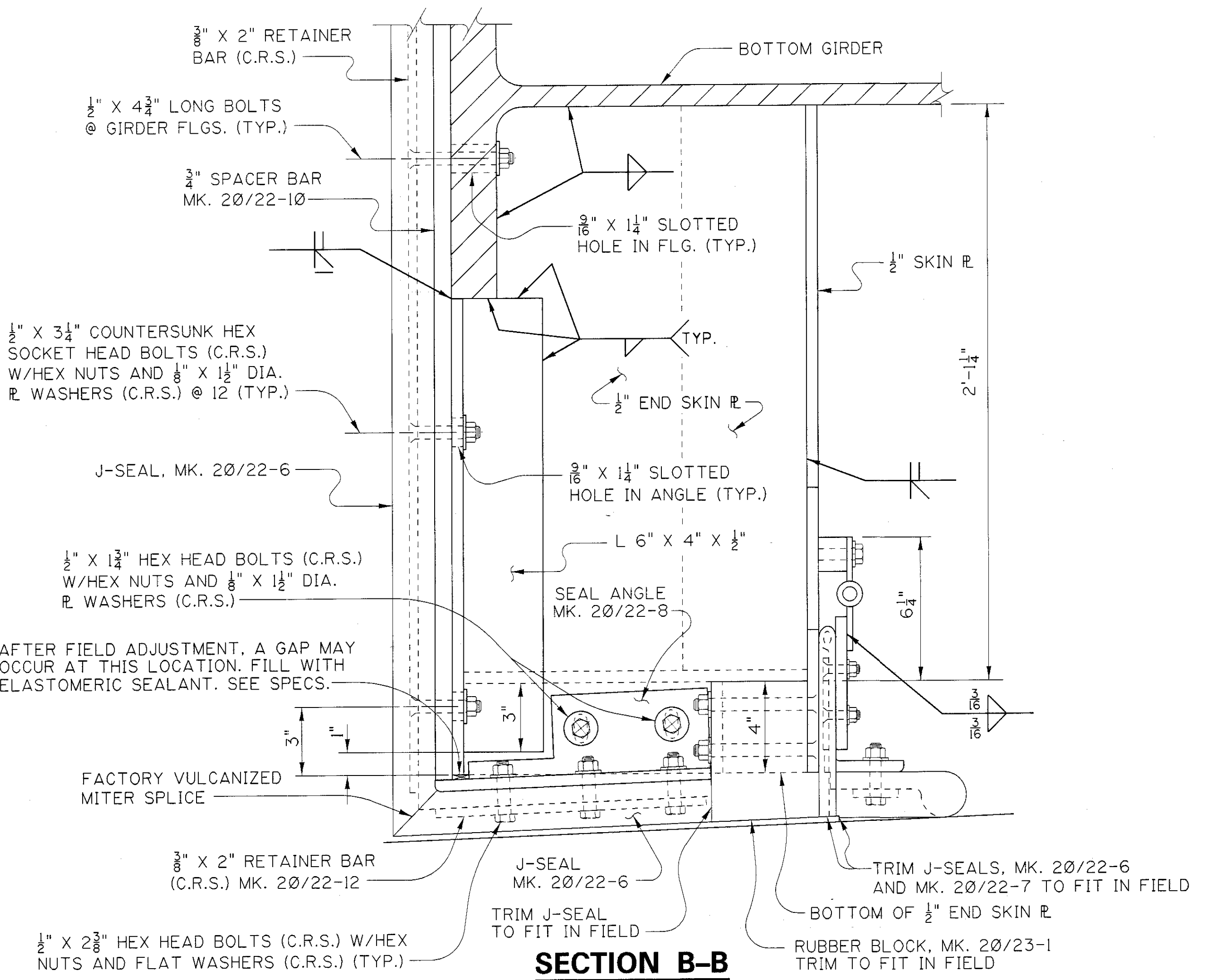
**DETAIL "A"**  
SCALE: 6"=1'-0"

**NOTES**

1. FOR GENERAL NOTES SEE DWG. 0/3.
2. GATE SEAL BOLTS SHALL BE ASTM A325.
3. SEAL WILL BE DEFLECTED 1/8" IN THE CLOSED POSITION.
4. ALL SLOTTED HOLES SHALL BE FILLED WITH ELASTOMERIC SEALANT, UNLESS OTHERWISE NOTED. SEE SPECIFICATIONS.



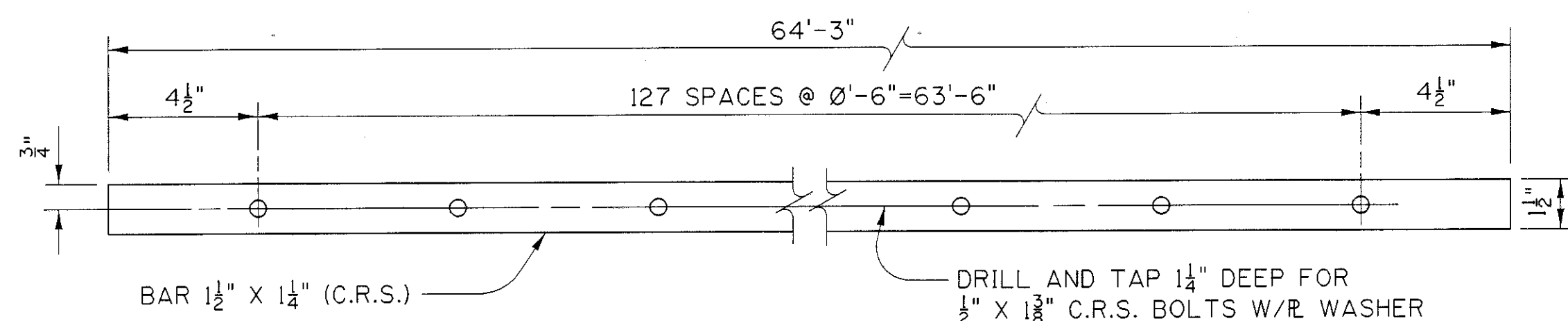
**SECTION A-A**  
SCALE: 6"=1'-0"



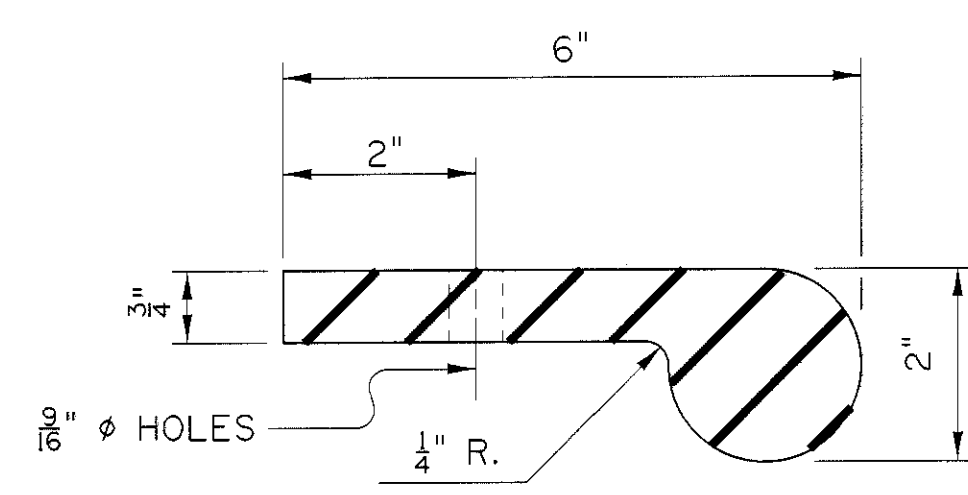
**SECTION B-B**  
SCALE: 3"=1'-0"

REVISION	DATE	DESCRIPTION	BY

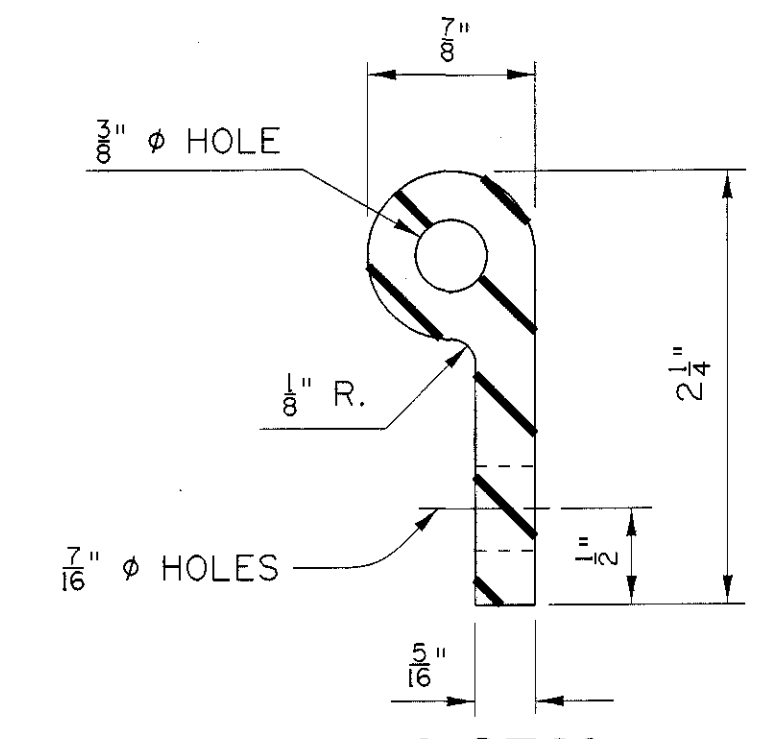
COMPUTER A IDEED DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-21.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: D.P.S. B.W.D. DRAWN BY: B.W.D. CHECKED BY: R.E.T. SUBMITTED BY:	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> SEAL DETAILS SHEET 1
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED: _____ DATE: _____ CHIEF ENG DIVISION APPROVED FOR: _____	APPROVED: _____ DATE: _____ COL. C. E. DISTRICT ENGINEER
DATE: _____	SCALE: AS SHOWN CONTR. NO.: _____ DRAWING NUMBER 016-PWC-2-20/21 SHEET OF



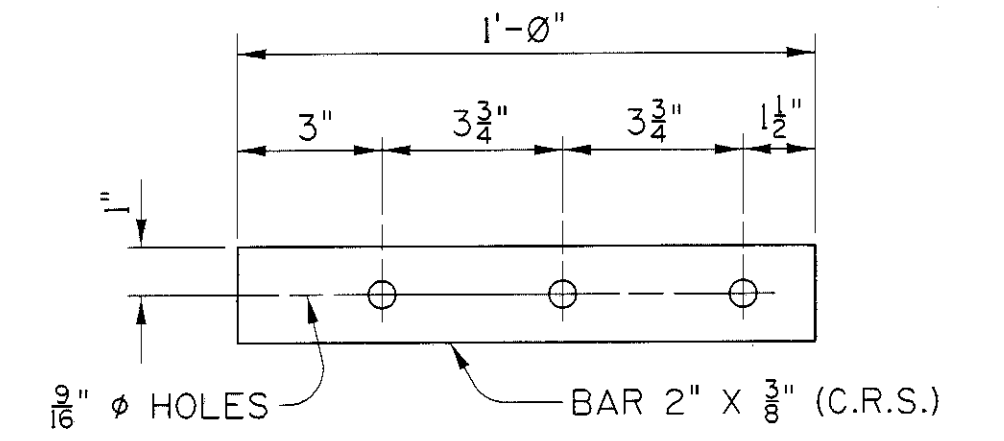
**HINGE SPACER BAR**  
 MARK 20/22-1 MAKE 2  
 SCALE: 3"=1'-0"



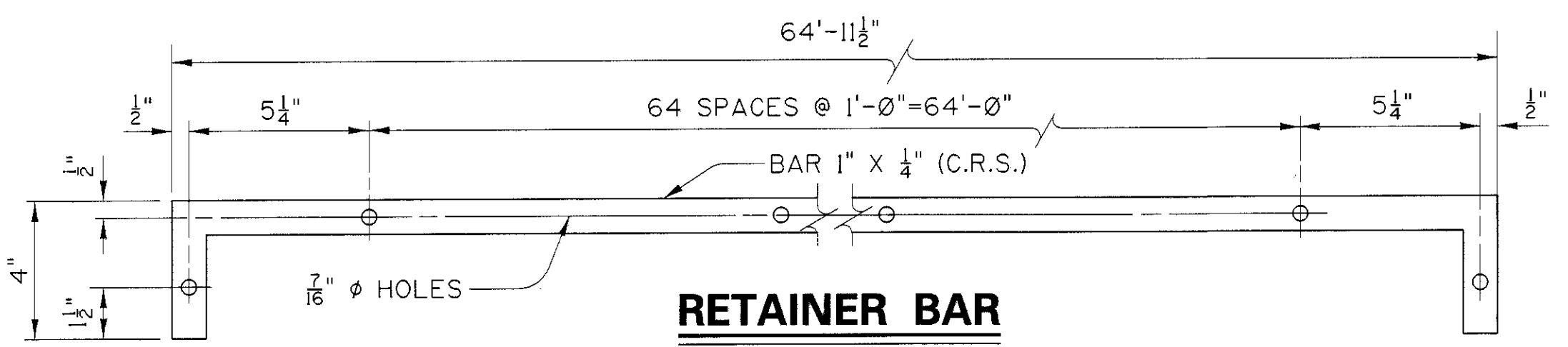
**J-SEAL**  
 MARK 20/22-6  
 SCALE: 6"=1'-0"



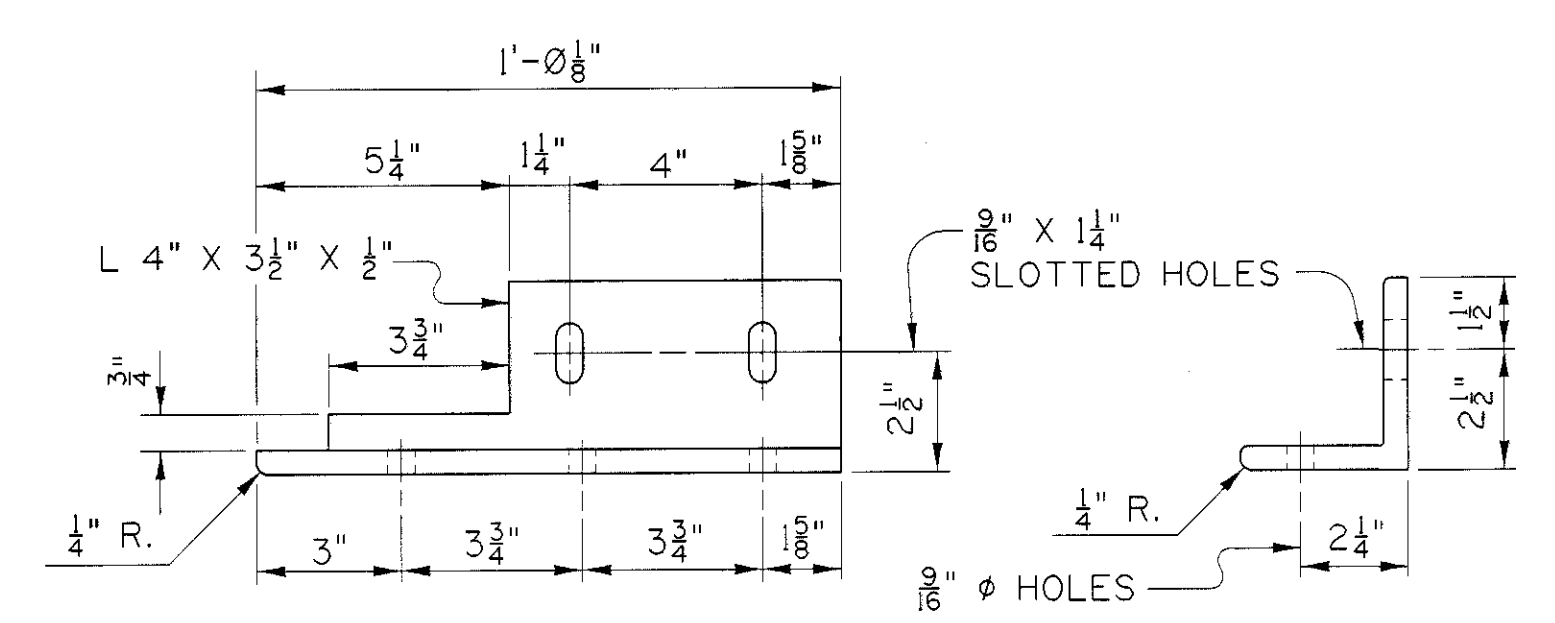
**J-SEAL**  
 MARK 20/22-7  
 FULL SCALE



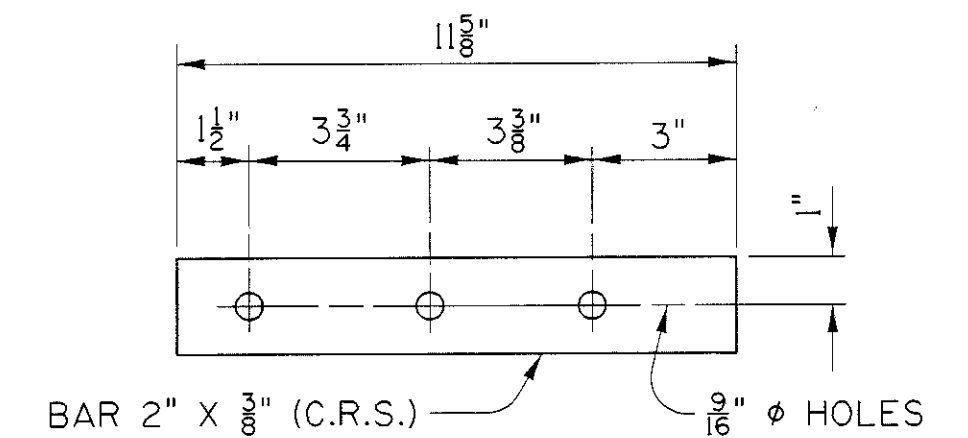
**RETAINER BAR**  
 MARK 20/22-12 MAKE 2  
 SCALE: 3"=1'-0"



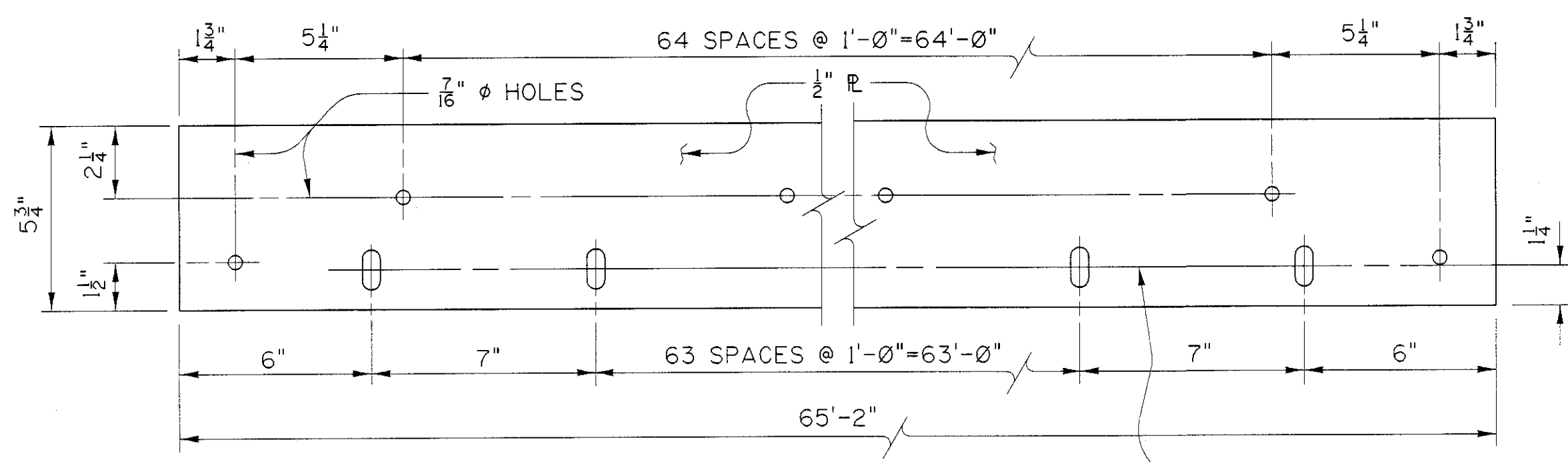
**RETAINER BAR**  
 MARK 20/22-2 MAKE 2  
 SCALE: 3"=1'-0"



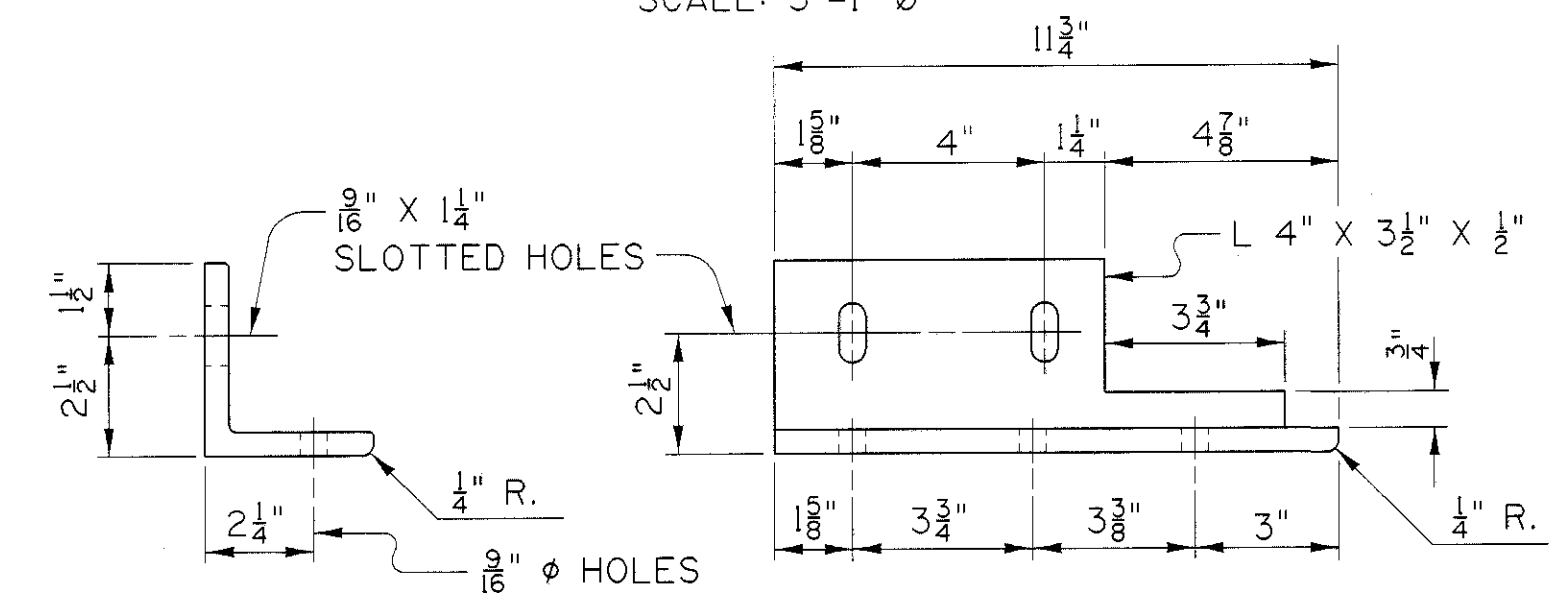
**SEAL ANGLE**  
 MARK 20/22-8 MAKE 2  
 SCALE: 3"=1'-0"



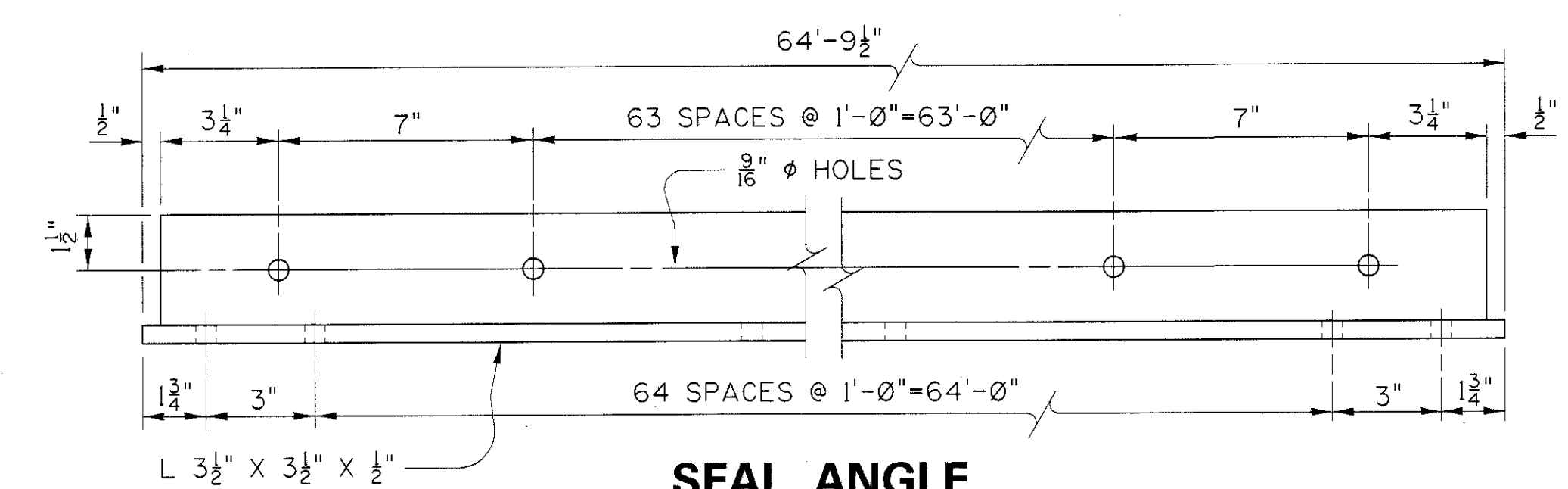
**RETAINER BAR**  
 MARK 20/22-13 MAKE 2  
 SCALE: 3"=1'-0"



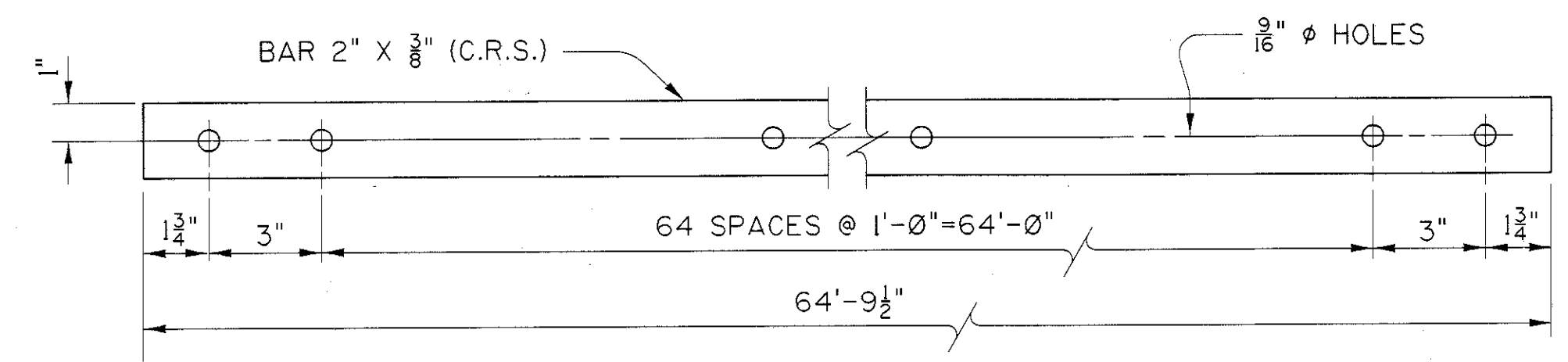
**SEAL PLATE**  
 MARK 20/22-3 MAKE 2  
 SCALE: 3"=1'-0"



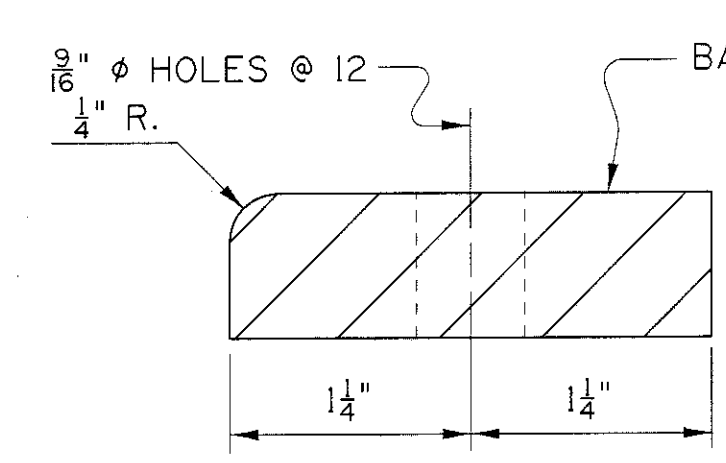
**SEAL ANGLE**  
 MARK 20/22-9 MAKE 2  
 SCALE: 3"=1'-0"



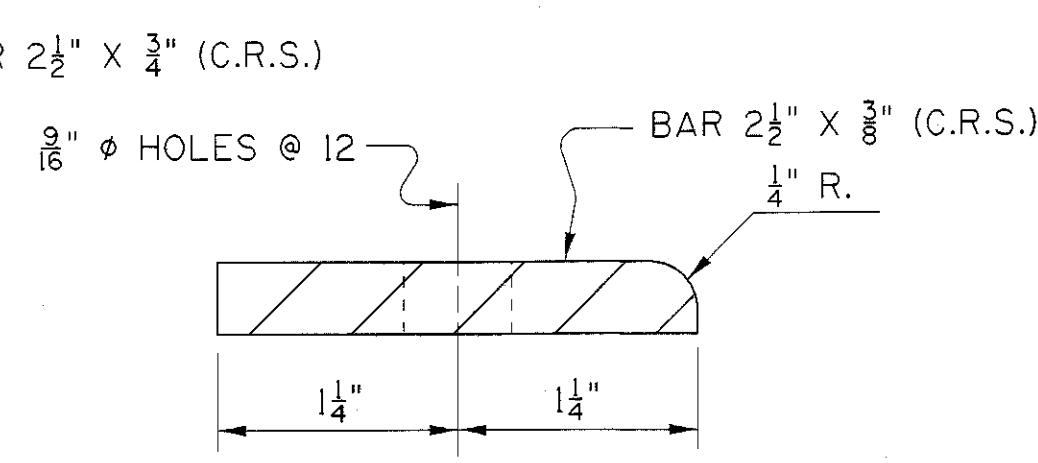
**SEAL ANGLE**  
 MARK 20/22-4 MAKE 2  
 SCALE: 3"=1'-0"



**RETAINER BAR**  
 MARK 20/22-5 MAKE 2  
 SCALE: 3"=1'-0"



**SPACER BAR**  
 MARK 20/22-10 MAKE 2  
 SCALE: FULL SIZE



**SPACER BAR**  
 MARK 20/22-11 MAKE 2  
 SCALE: FULL SIZE

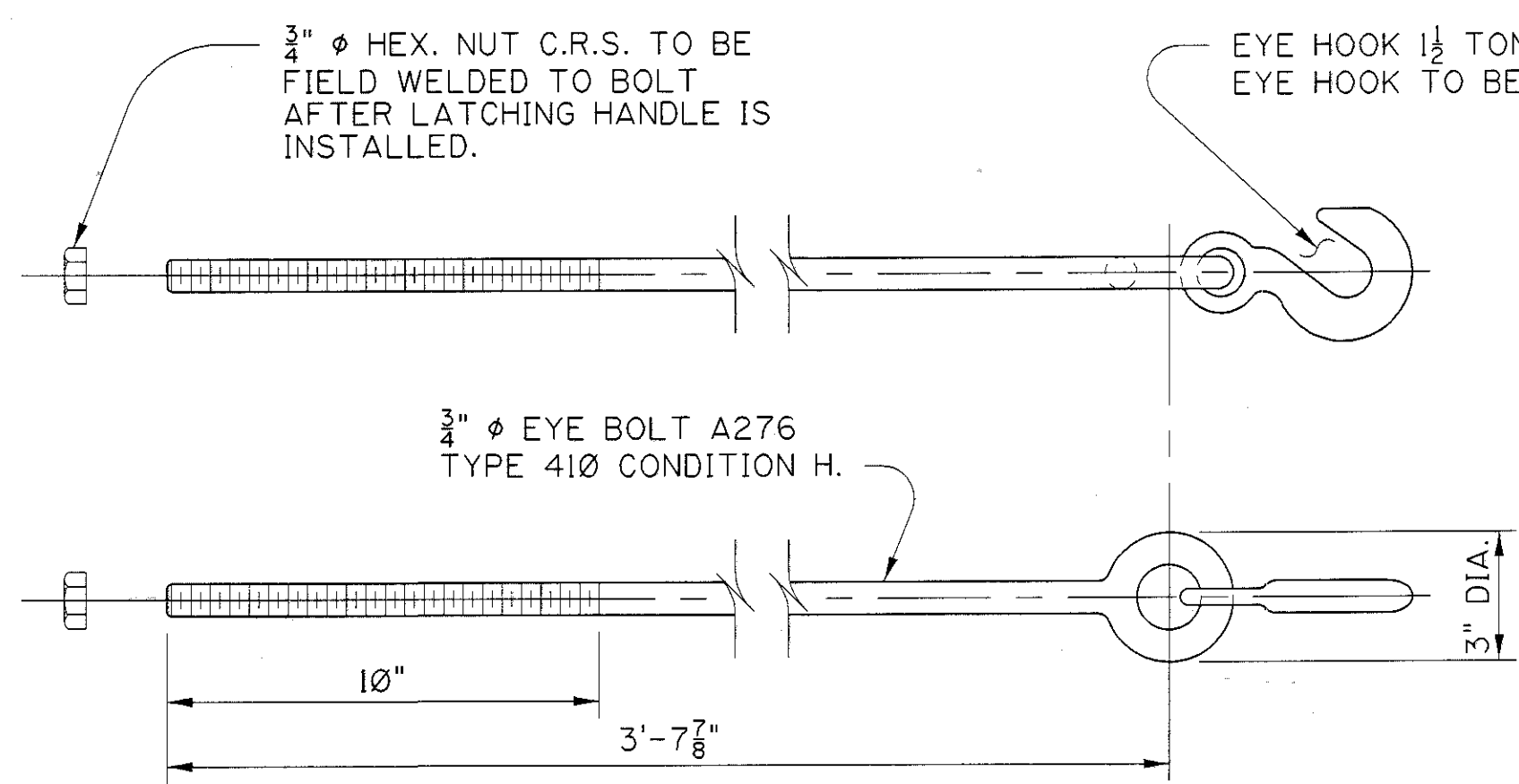
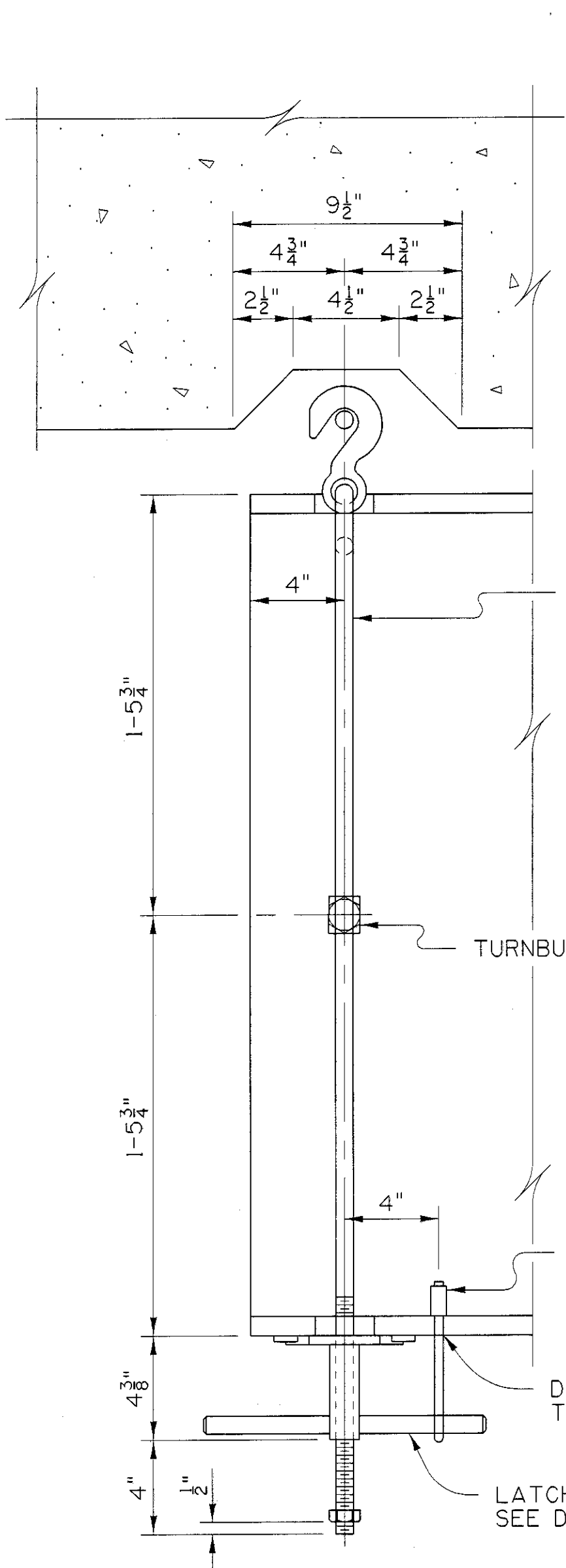
**NOTES**

1. FOR GENERAL NOTES SEE DWG. Ø/3.
2. QUANTITIES LISTED ARE FOR TWO GATES.

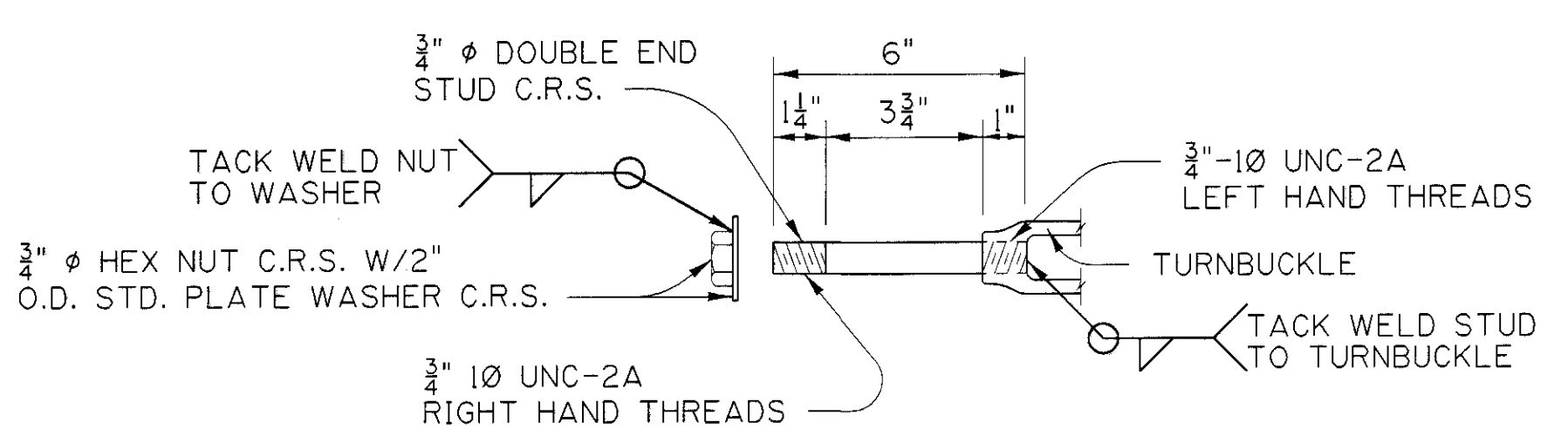
DESIGNED BY: D.P.S. B.W.D.	DRAWN BY: B.W.D.	CHECKED BY: R.E.T.	SUBMITTED BY:	CHIEF DESIGN BRANCH:	APPROVAL RECOMMENDED:	APPROVED:	DATE:
C ADDER A IDDED D ESIGN & D RAFTING				CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-22.DGN			
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.							
DESIGNED BY: D.P.S. B.W.D. DRAWN BY: B.W.D. CHECKED BY: R.E.T. SUBMITTED BY:				SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>SEAL DETAILS</b> <b>SHEET 2</b>			
CHIEF DESIGN BRANCH: APPROVAL RECOMMENDED: CHIEF ENGINE DIVISION: APPROVED FOR:				COL. C. E. DISTRICT ENGINEER SCALE: AS SHOWN CONTR. NO.: DRAWING NUMBER <b>016-PWC-2-20/22</b> SHEET OF			



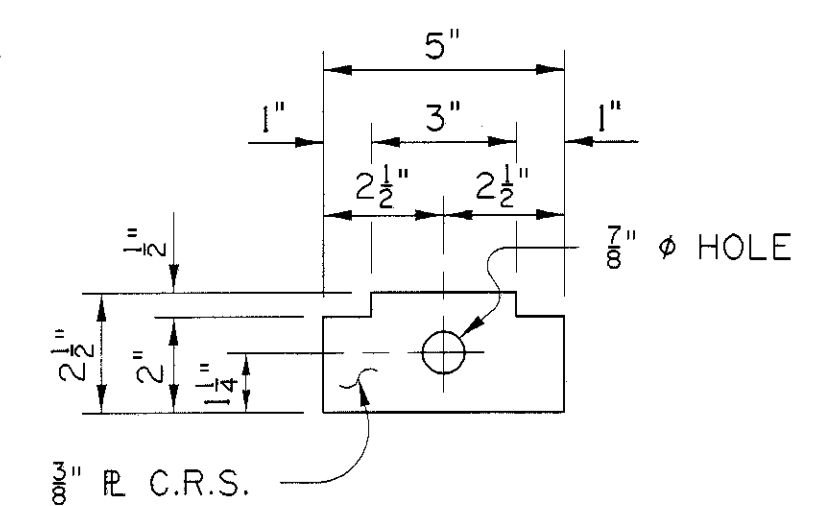




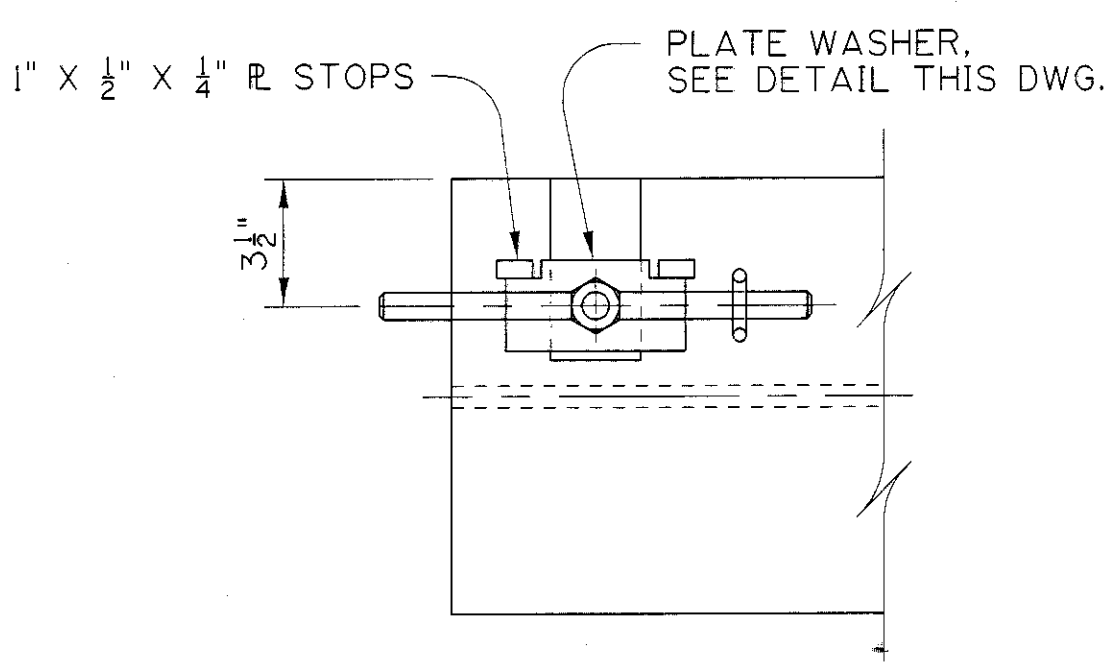
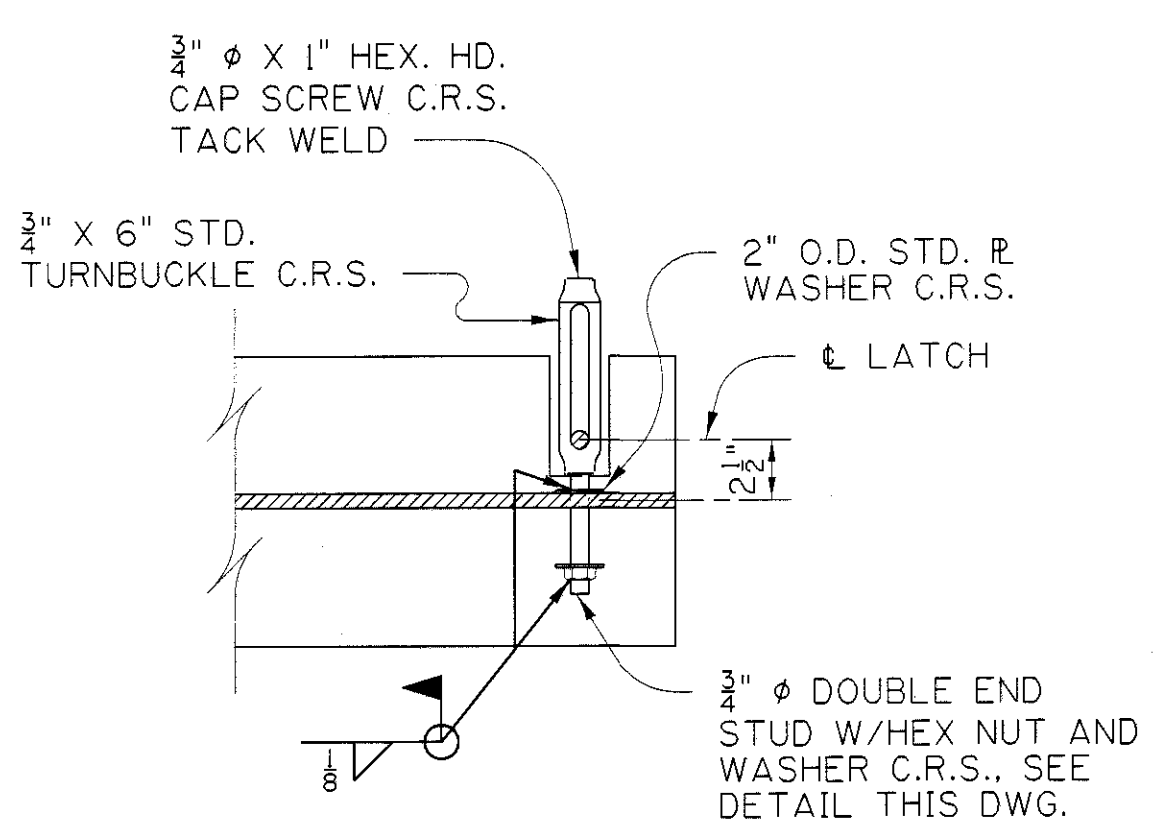
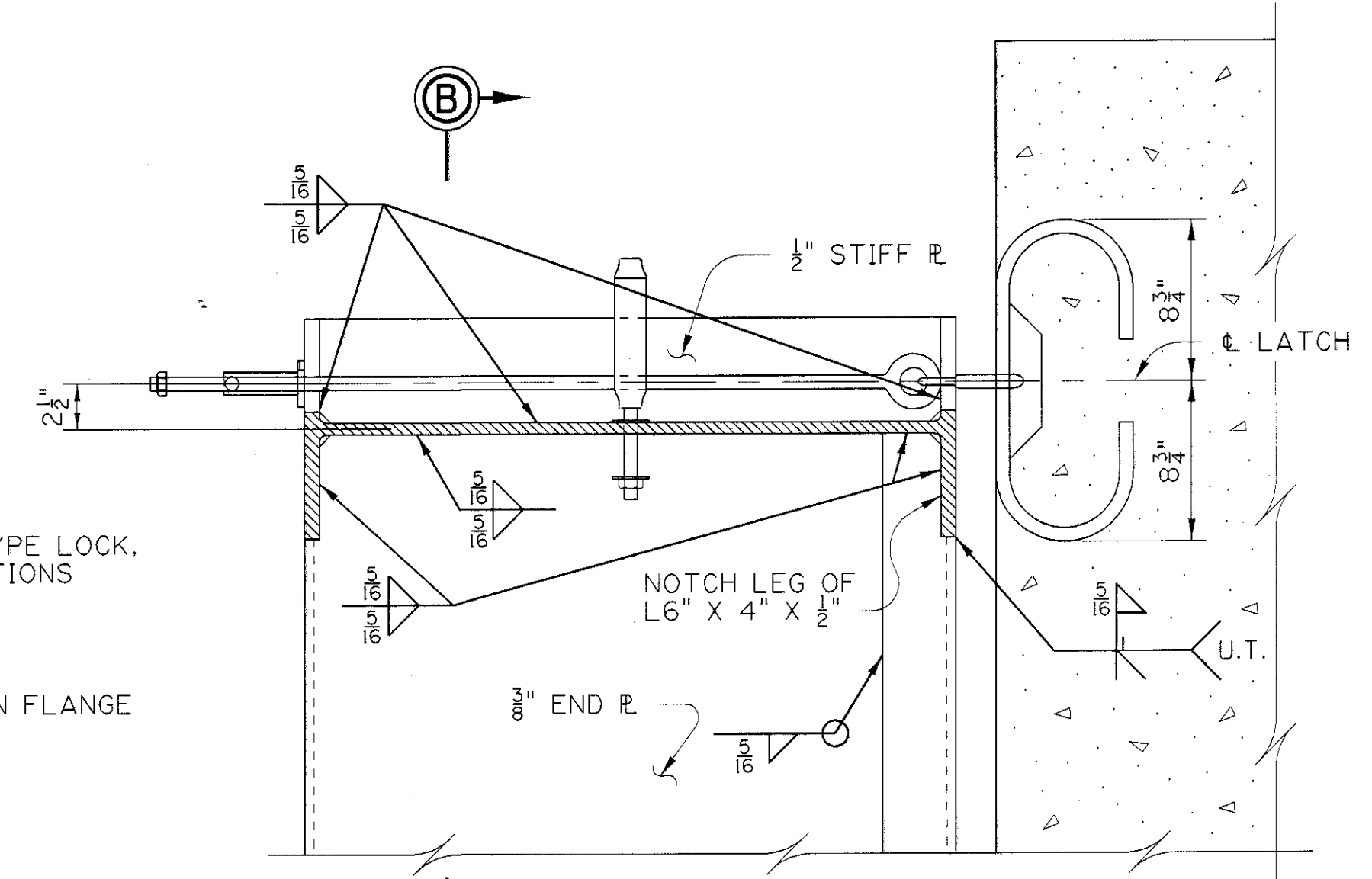
**LATCHING EYE BOLT WITH HOOK**  
 SCALE: 3" = 1'-0"



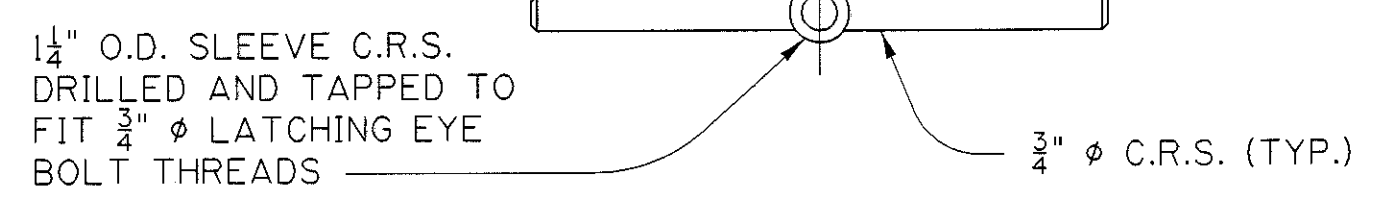
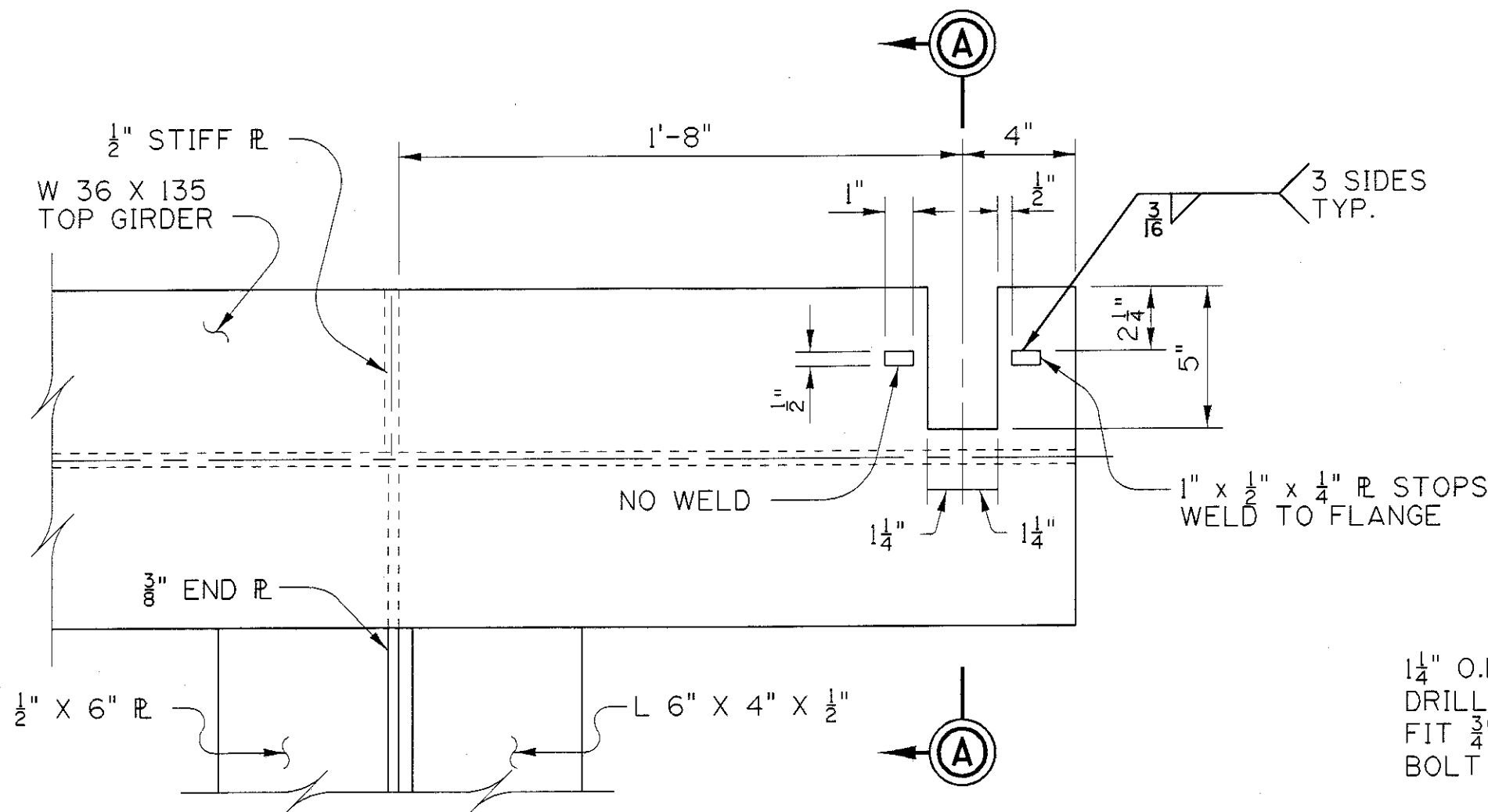
**DOUBLE END STUD**  
 SCALE: 3" = 1'-0"



**PLATE WASHER**  
 SCALE: 3" = 1'-0"



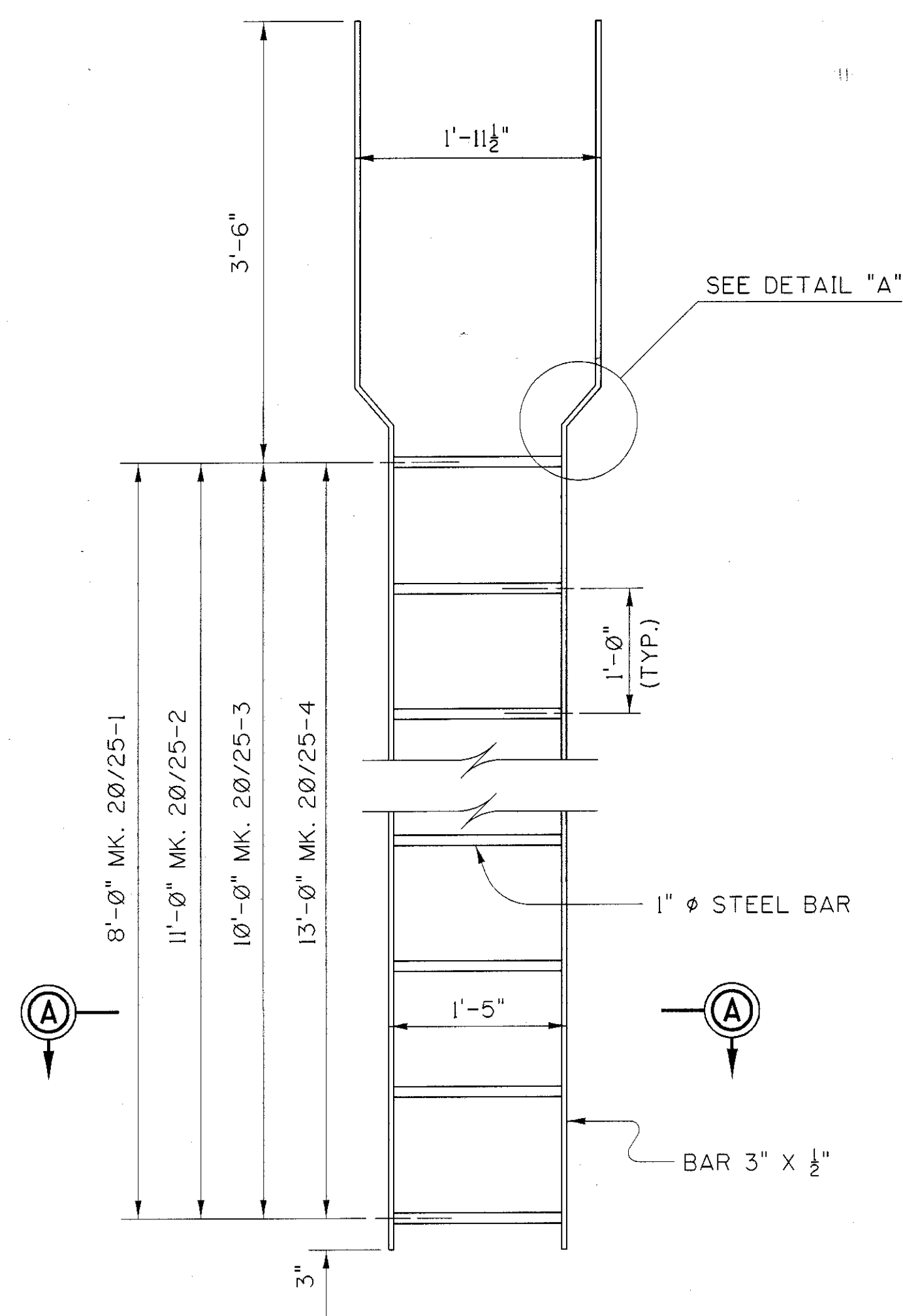
**TYP. LATCHING ASSEMBLY**  
 SCALE: 3/16" = 1"



- NOTES**
- FOR GENERAL NOTES SEE DWG. 0/3.
  - ALL MATERIAL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED.
  - FOR LOCATIONS OF DETAIL "A" SEE DWGS. 20/16 AND 20/18.
  - TWO LATCHING ASSEMBLIES REQUIRED FOR EACH GATE.

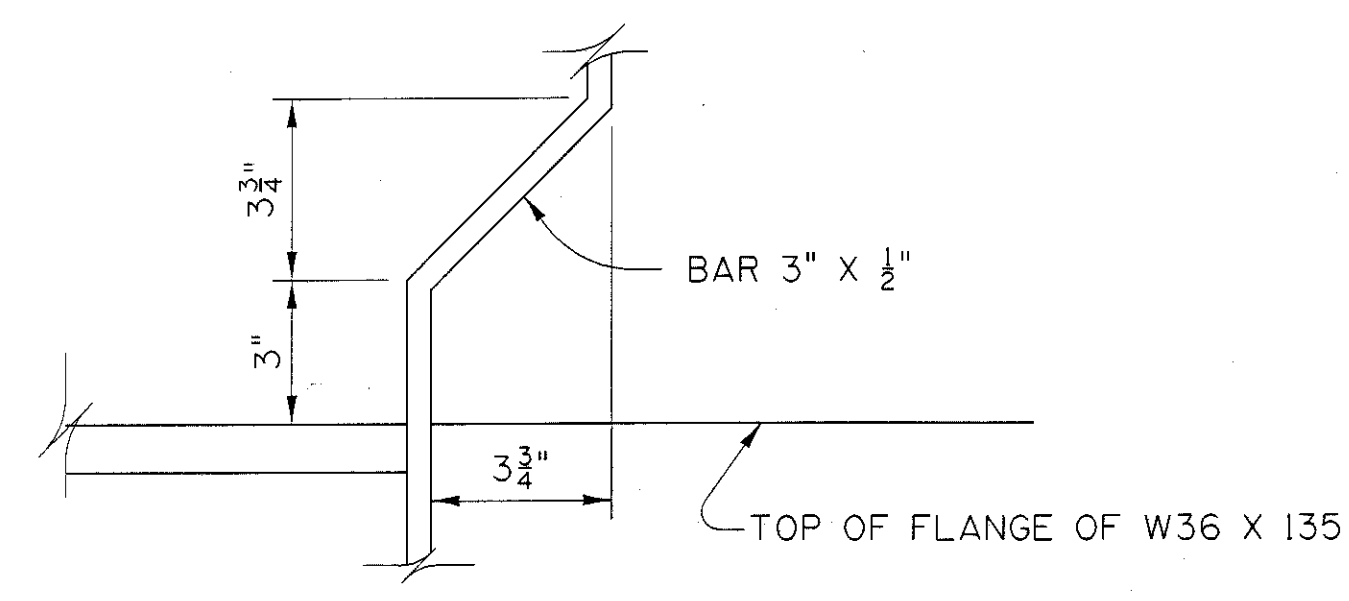
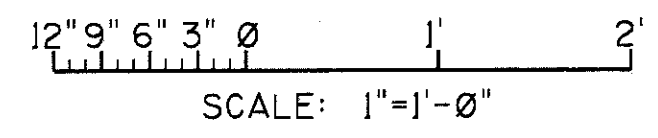
REVISION	DATE	DESCRIPTION	BY
C A D D I D E O		CADD COMPUTER INFORMATION	
D E S I G N & D R A F T I N G		SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-24.DGN	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY:	B.W.D. R.E.T.	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>LATCHING DEVICE</b> <b>DETAILS</b>	
DRAWN BY:	T.L.C.	APPROVAL RECOMMENDED: _____ DATE: _____ COL. C. E. DISTRICT ENGINEER	
CHECKED BY:	B.W.D. R.E.T.	SCALE: AS SHOWN CONTR. NO: _____ DRAWING NUMBER <b>016-PWC-2-20/24</b>	
SUBMITTED BY:		SHEET OF	
CHIEF DESIGN BRANCH		DATE: _____	
APPROVAL RECOMMENDED:		DATE: _____	
CHIEF ENG DIVISION		DATE: _____	
APPROVED FOR:		DATE: _____	





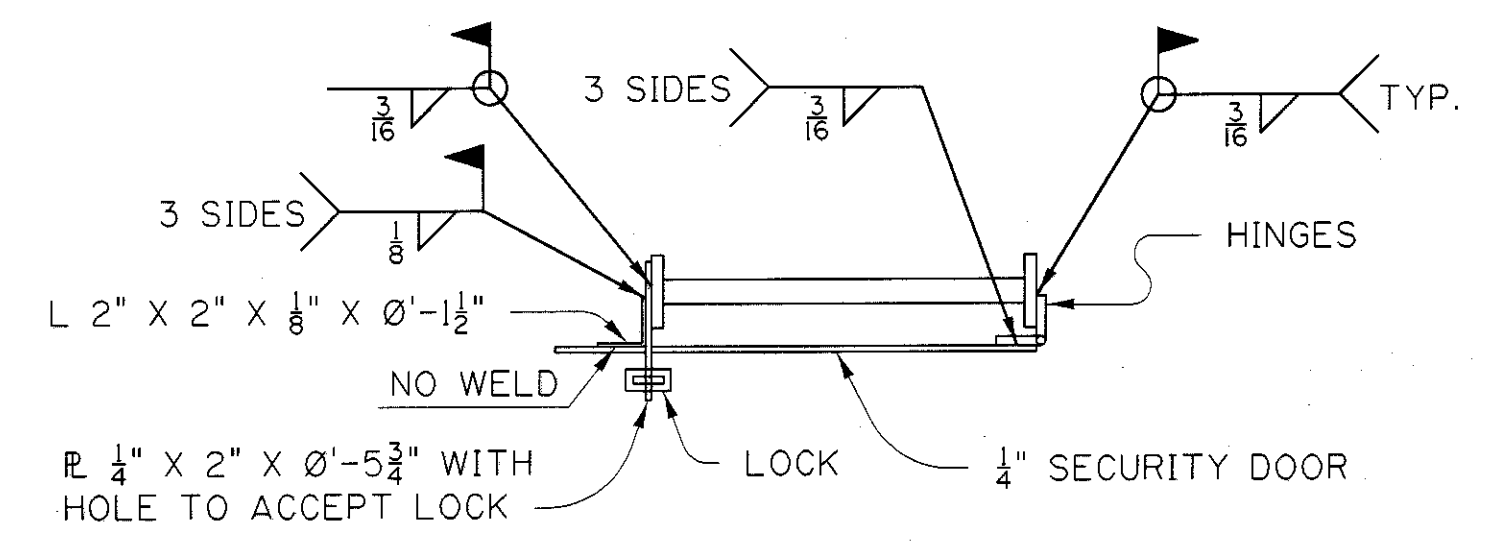
**LADDERS**

MK. 20/25-1	MAKE 1
MK. 20/25-2	MAKE 1
MK. 20/25-3	MAKE 1
MK. 20/25-4	MAKE 1



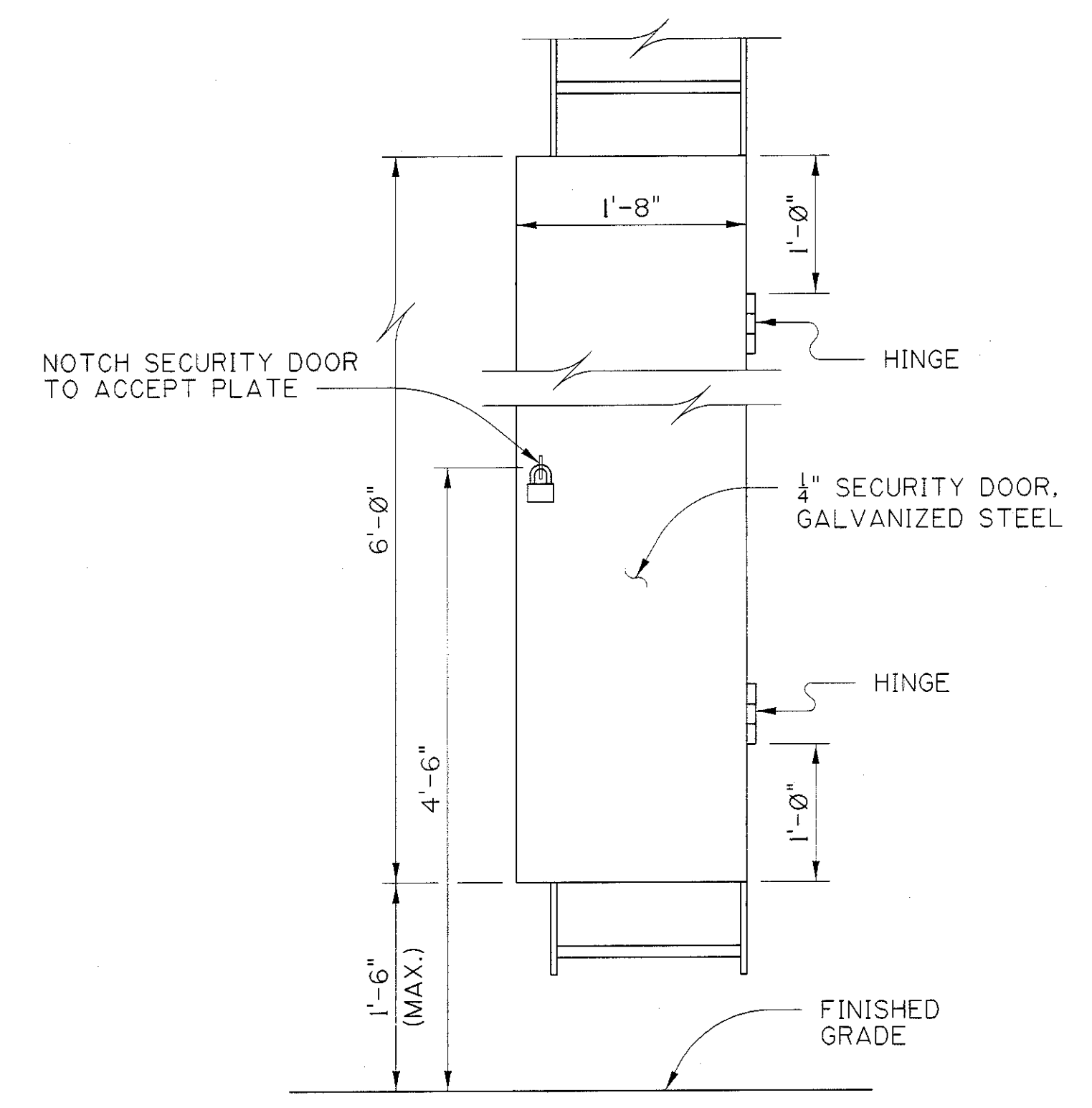
**DETAIL "A"**

SCALE: 3" = 1'-0"



**PLAN**

SCALE: 1 1/2" = 1'-0"

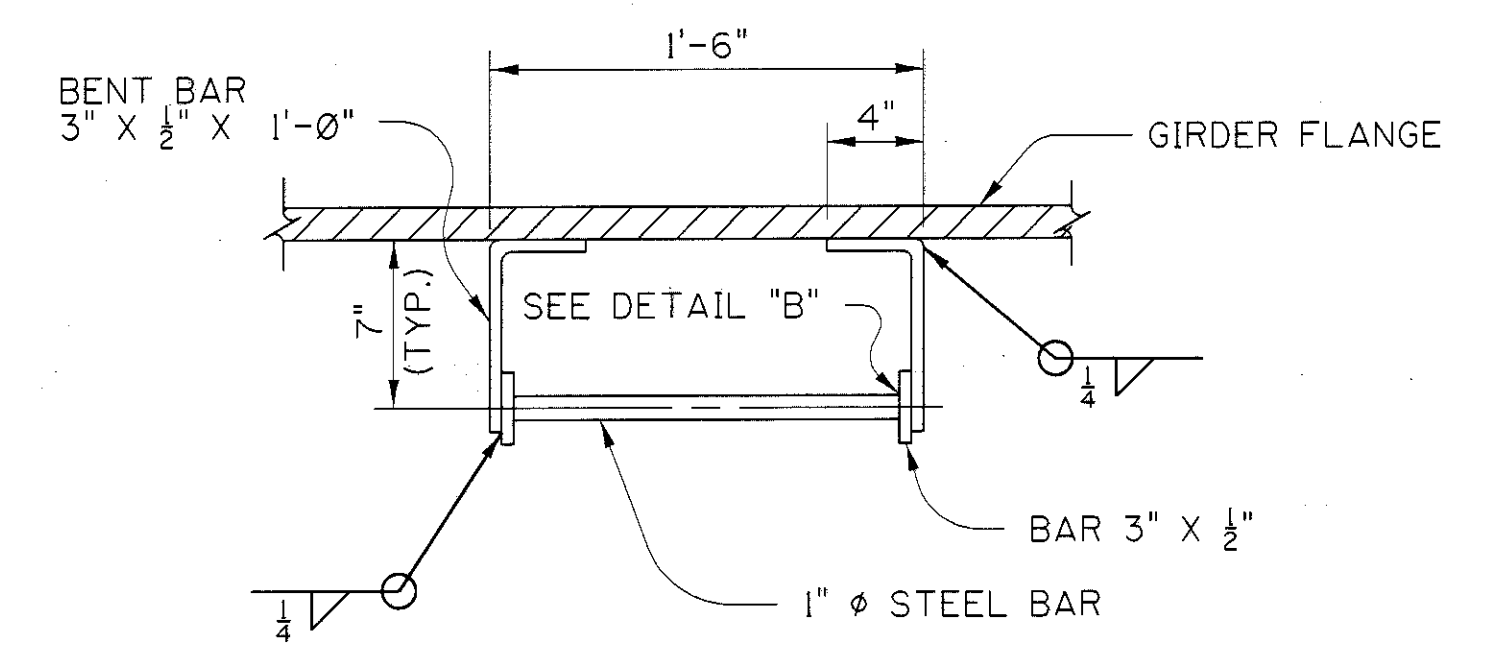


**ELEVATION**

SCALE: 1" = 1'-0"

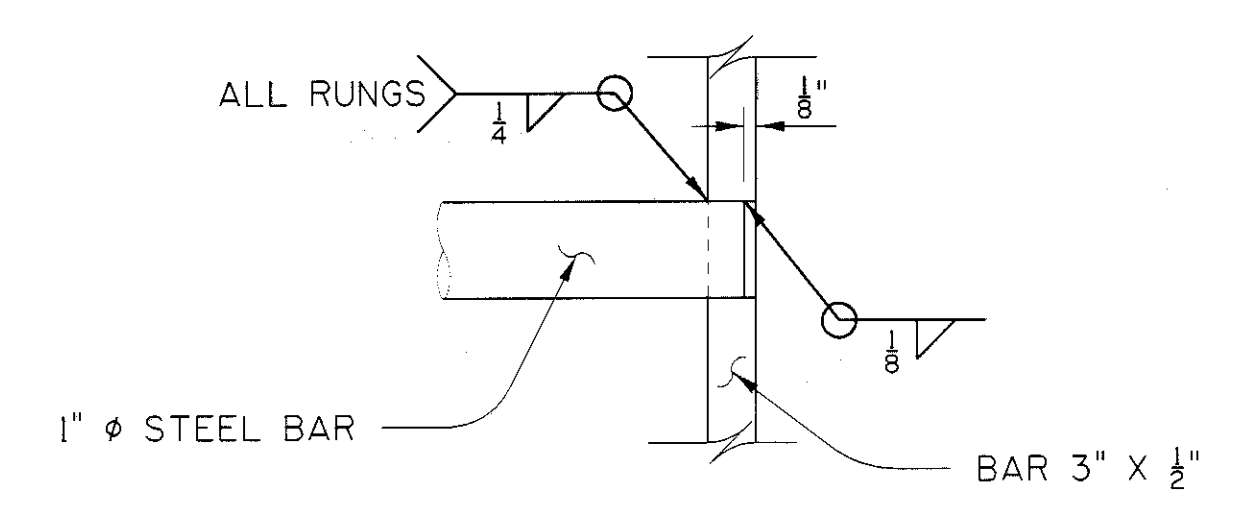
**SECURITY DOOR DETAIL**

MAKE 2 AS SHOWN  
MAKE 2 OPP. HAND



**SECTION A-A**

SCALE: 1 1/2" = 1'-0"



**DETAIL "B"**

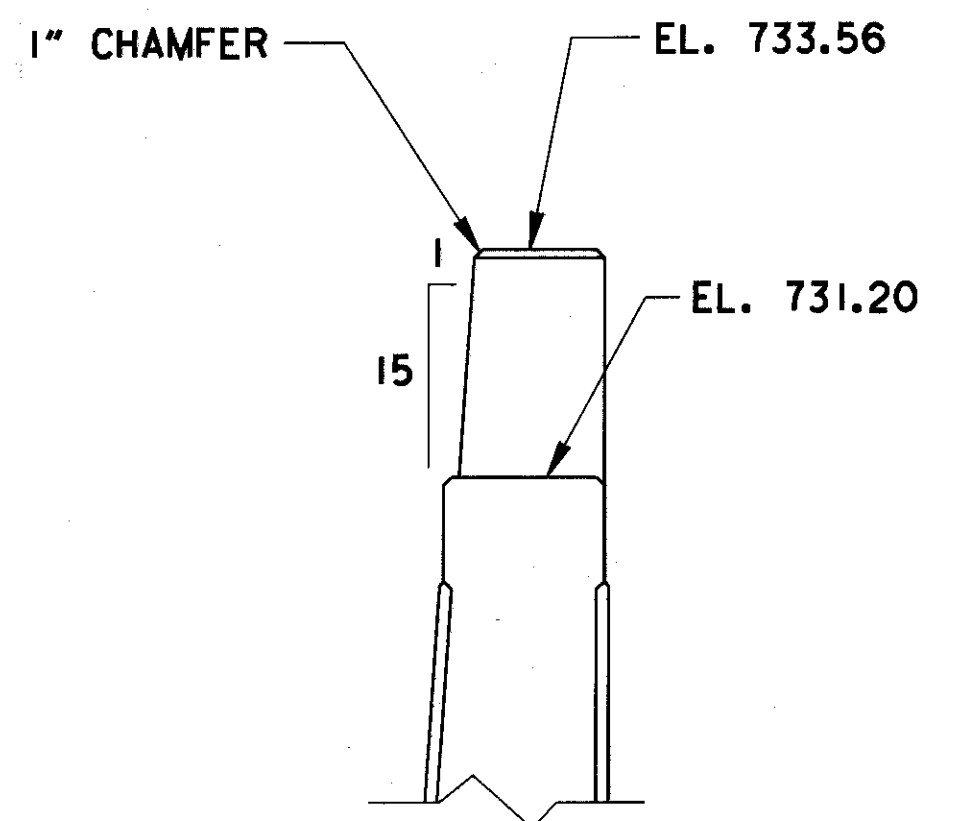
SCALE: 6" = 1'-0"

**NOTES**

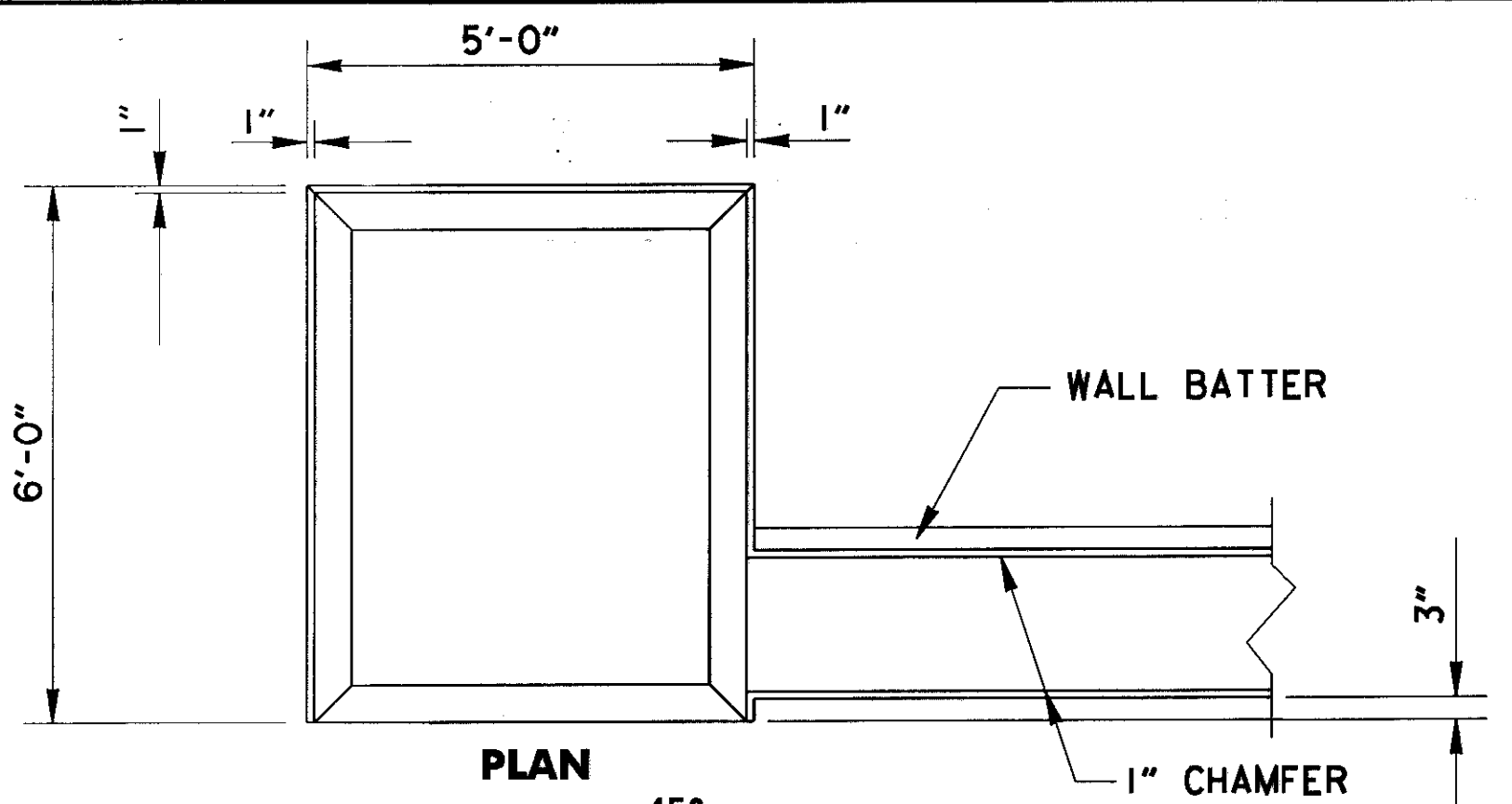
- FOR GENERAL NOTES SEE DWG. 0/3.
- FOR LADDER LOCATIONS SEE DWGS. 20/16 AND 20/18.
- LADDERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
- QUANTITIES LISTED ARE FOR TWO GATES.

REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: 20-25.DGN	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY:	B.W.D.	SCIOTO RIVER, OH <b>WEST COLUMBUS, L.P.P.</b> COLUMBUS, OHIO <b>S.R. 315 GATE CLOSURE</b> <b>LADDER DETAILS</b>	
DRAWN BY:	T.L.C. B.W.D.		
CHECKED BY:	R.E.T.		
SUBMITTED BY:			
CHIEF DESIGN BRANCH	APPROVAL RECOMMENDED:	APPROVED:	DATE:
CHIEF ENGINEERING DIVISION		COL. C. E. DISTRICT ENGINEER	
APPROVED FOR:		SCALE: AS SHOWN	CONTR. NO:
DATE:		DRAWING NUMBER <b>016-PWC-2-20/25</b>	
		SHEET	OF

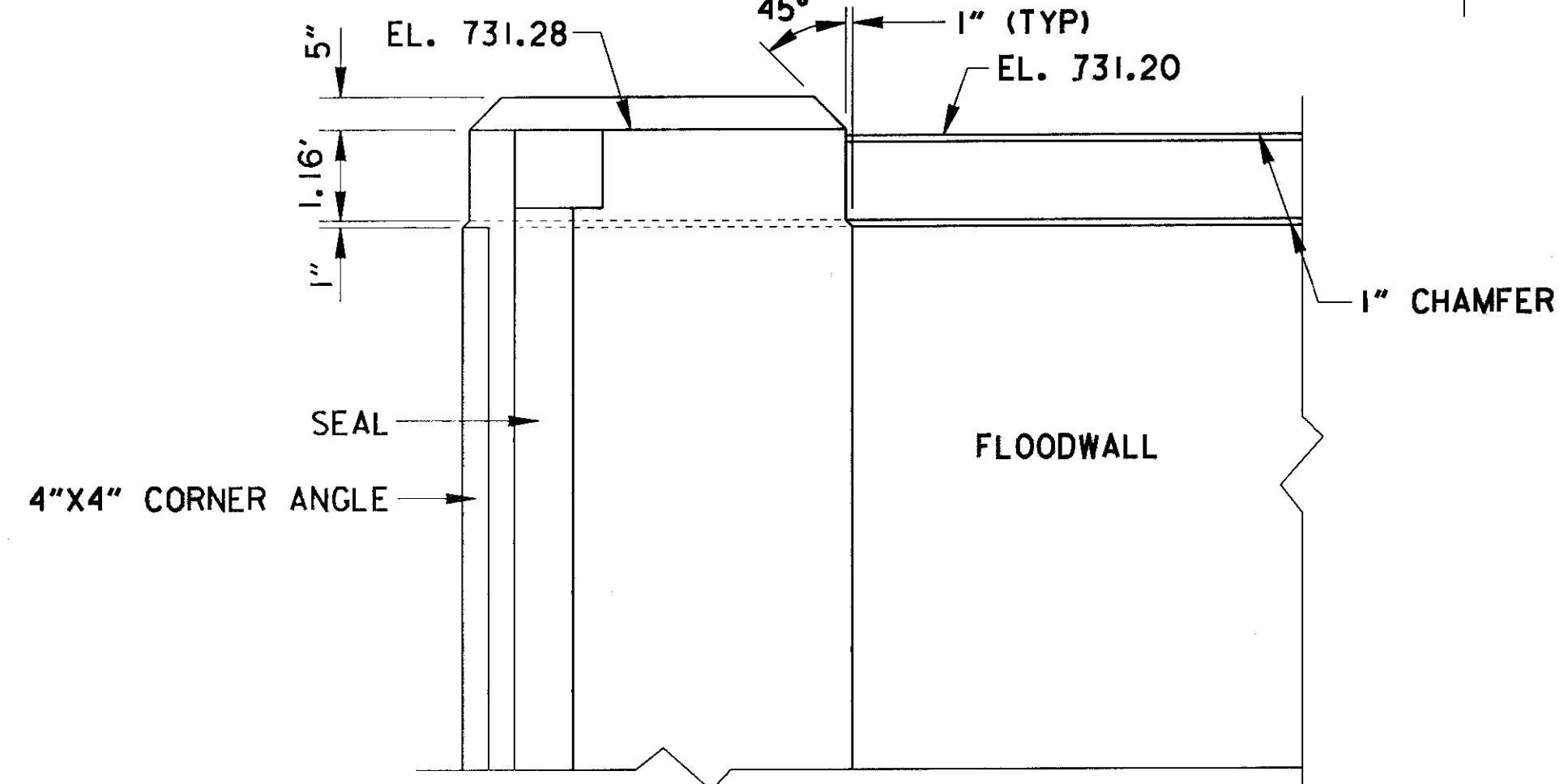




**SECTION A-A-FAR EAST LATCH PIER**



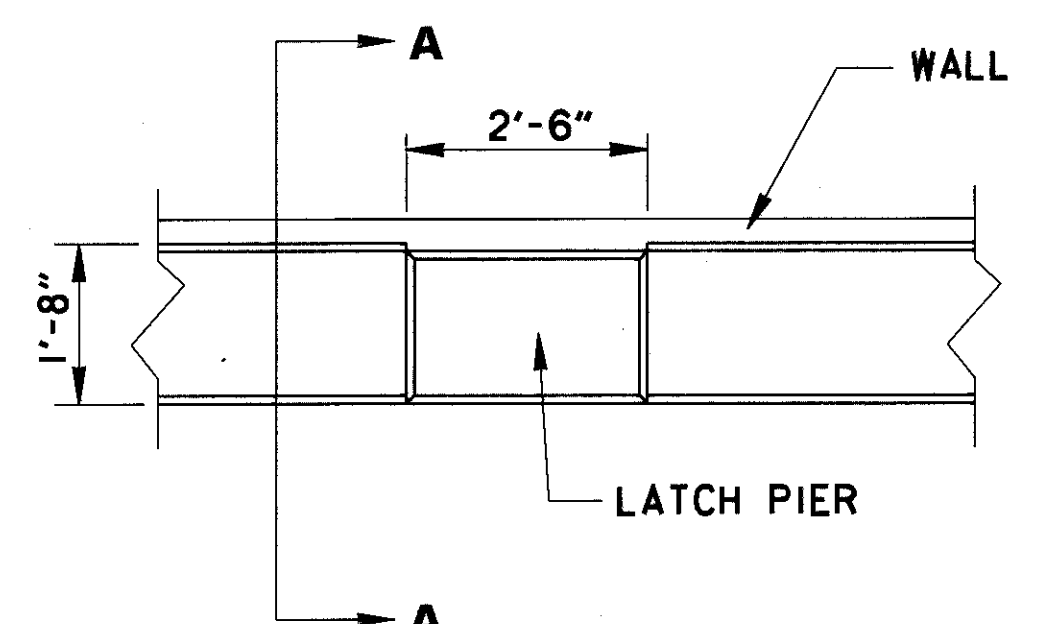
**PLAN**



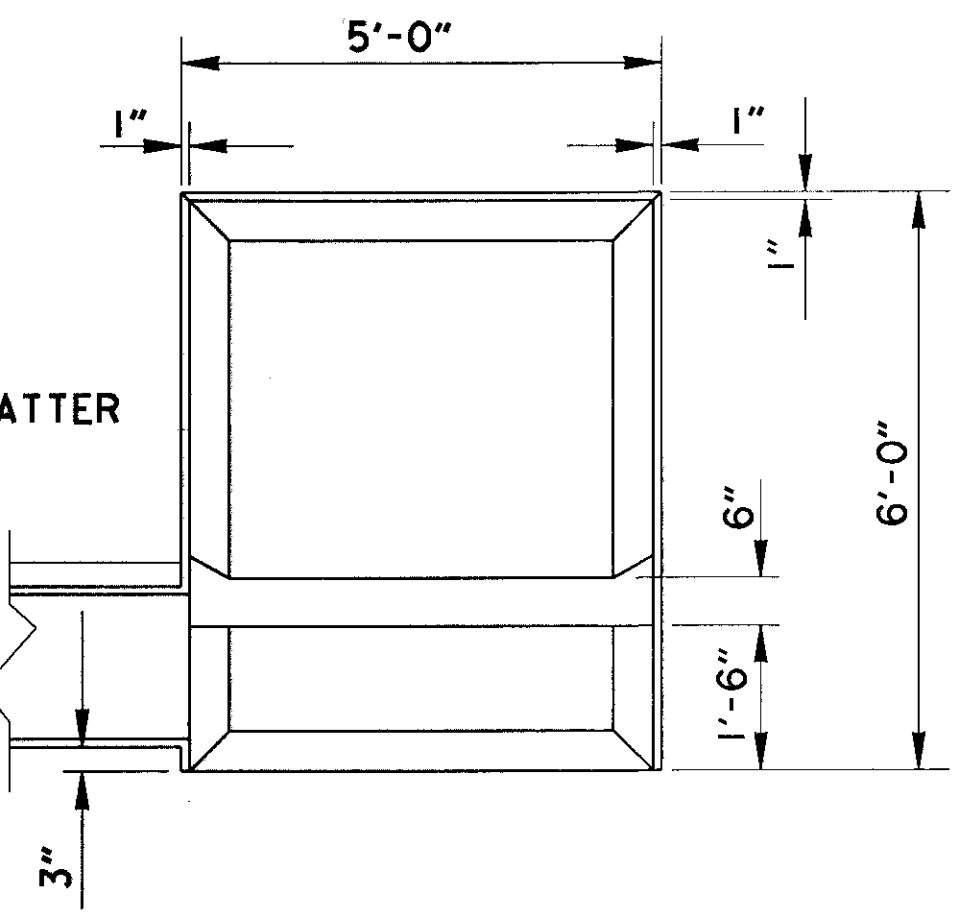
**RIVER ELEVATION**

**WEST PIER**

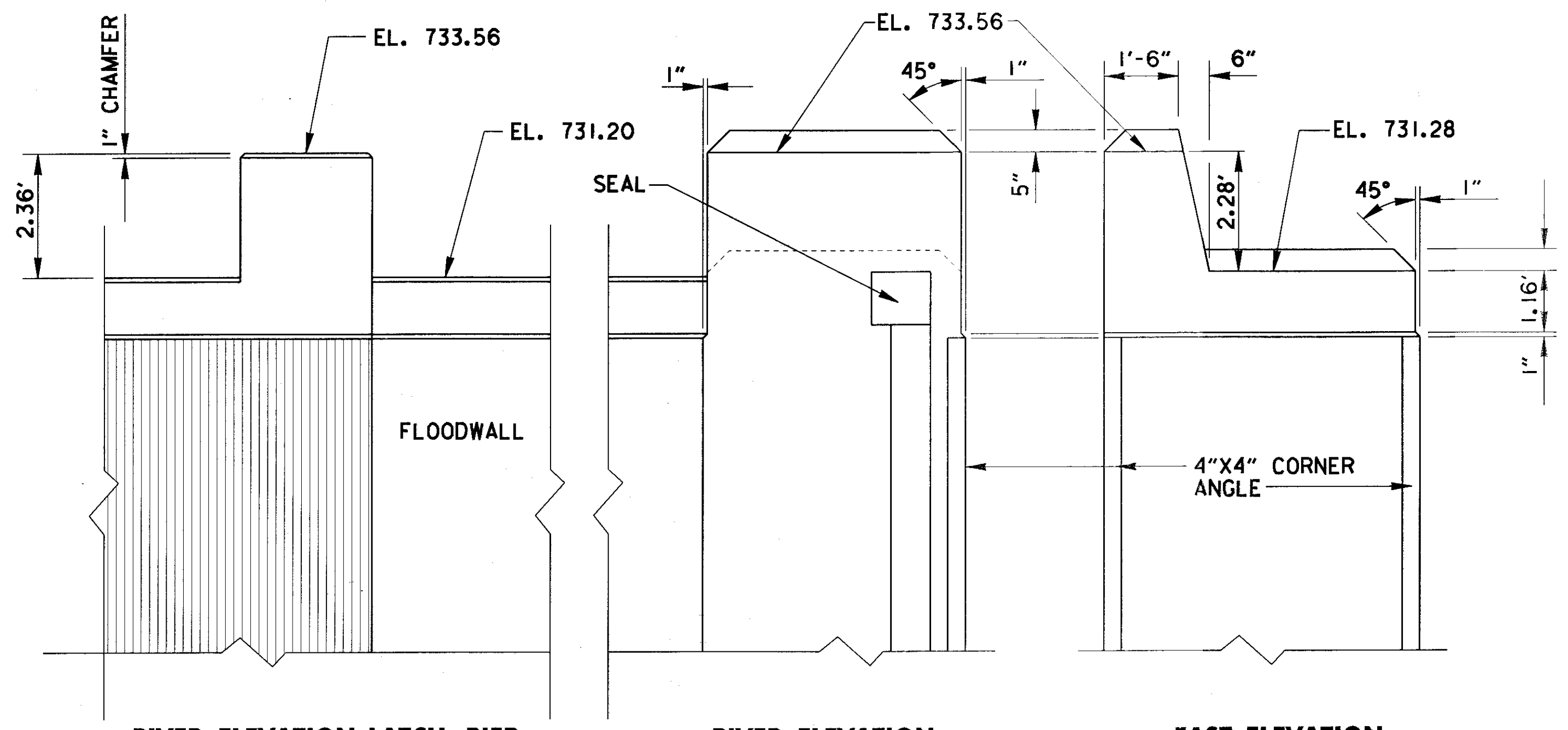
SCALE: 1/2" = 1'-0"



**PLAN-FAR EAST LATCH PIER**



**PLAN**



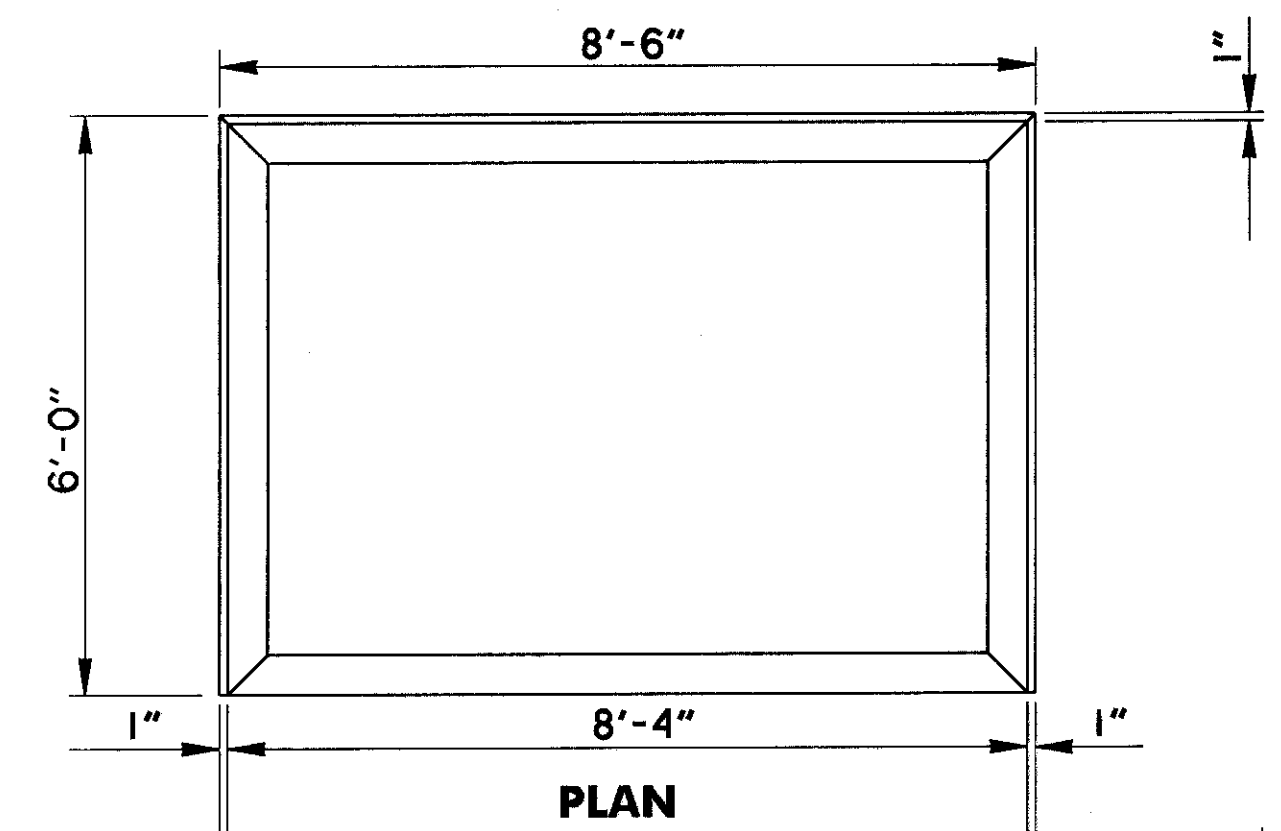
**RIVER ELEVATION-LATCH PIER**

**RIVER ELEVATION**

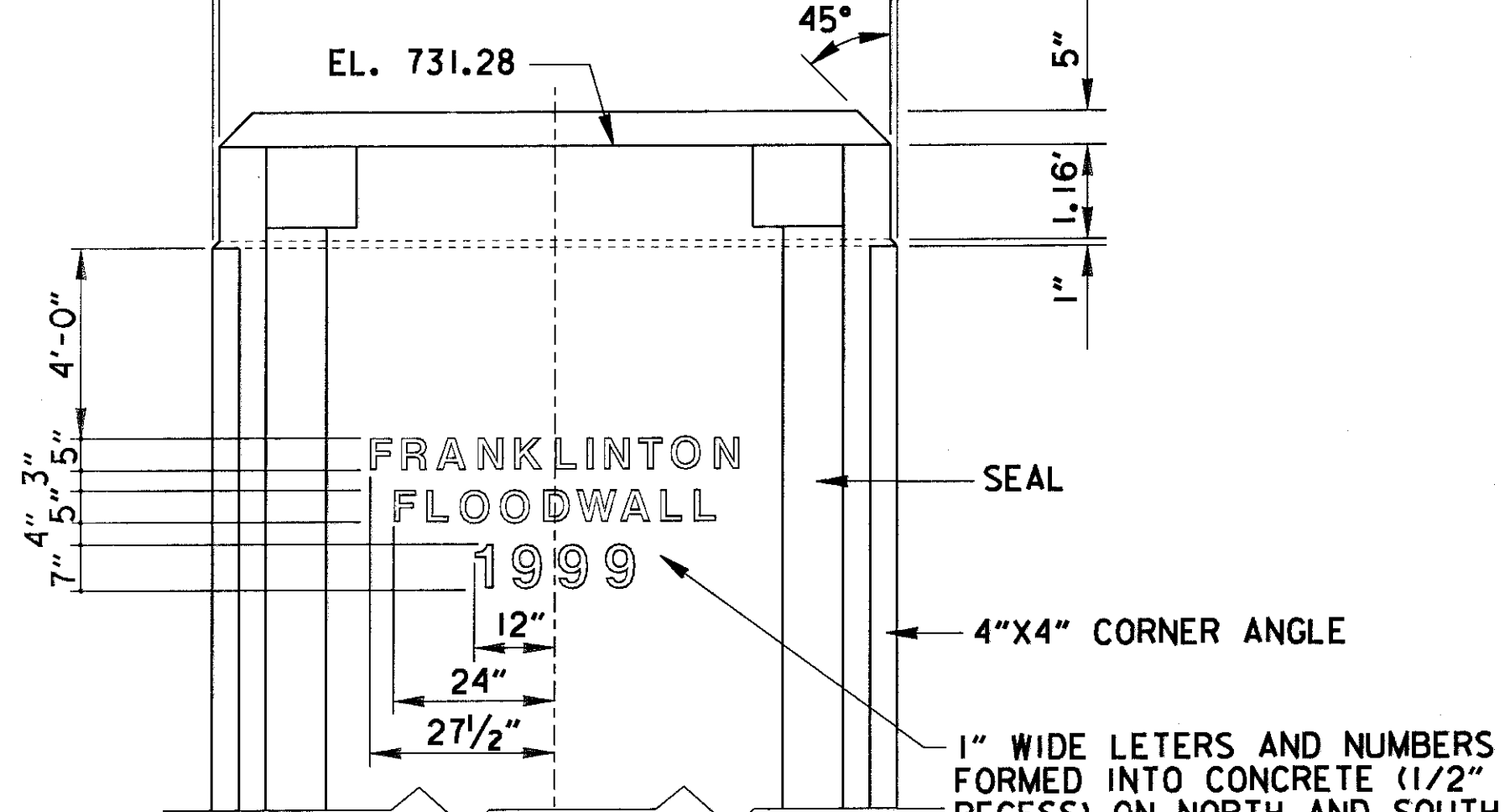
**EAST ELEVATION**

**EAST PIER**

SCALE: 1/2" = 1'-0"



**PLAN**



**NORTH ELEVATION**

**MEDIAN PIER**

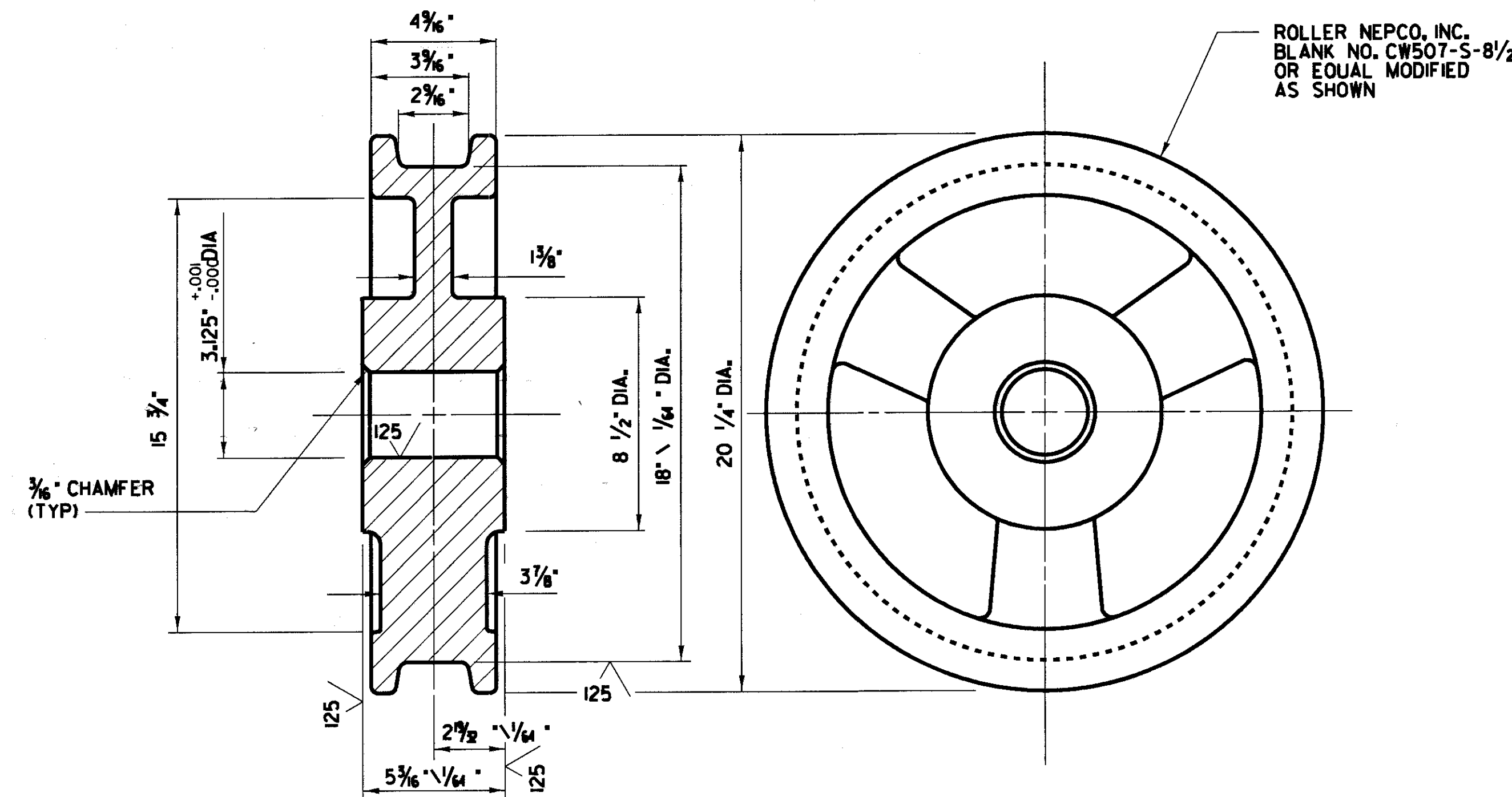
SCALE: 1/2" = 1'-0"

**NOTES**

1. FOR STRUCTURAL DETAILS SEE DWGS. 20/1 THRU 20/25.
2. FOR WALL TEXTURE DETAILS SEE DWG. 20/26.

DESIGNED BY:	CADD COMPUTER INFORMATION	
DRAWN BY:	SYSTEM: INTERGRAPH CADD SYSTEM	
CHECKED BY:	SOFTWARE: MicroStation Version 4.X	
SUBMITTED BY:	FILE SPEC: wallarch.dgn	
CHIEF, DESIGN BRANCH	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON	
APPROVAL RECOMMENDED:	CORPS OF ENGINEERS	
APPROVED FOR:	HUNTINGTON, W.VA.	
DATE:	DESIGNED BY:	
	DRAWN BY:	
	CHECKED BY:	
	SUBMITTED BY:	
	CHIEF, DESIGN BRANCH	
	APPROVAL RECOMMENDED:	
	APPROVED FOR:	
	DATE:	
	SCALE: AS SHOWN	
	CONTR. NO.:	
	DRAWING NUMBER	
	O16-PWC-2-2027	
	SHEET 1 OF 1	

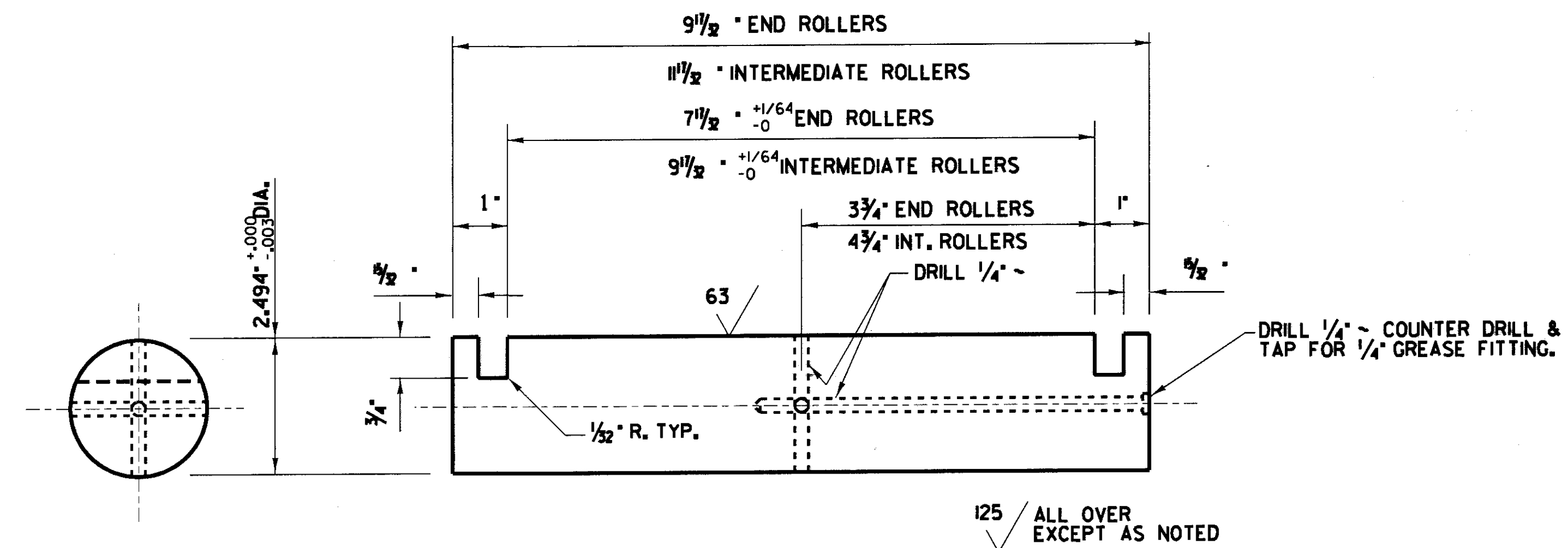




**ROLLER 1**

MARK 23/1-1 MATERIAL CAST STEEL ASTM A148 GR.90-60  
 MAKE 20 UNIT WT. 440 LBS.  
 SCALE: 3" = 1'- 0"

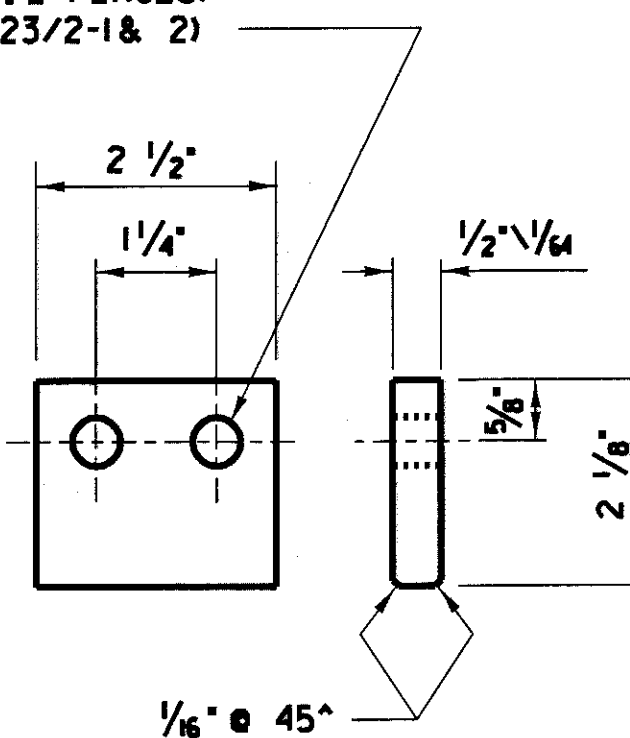
ROLLER NEPCO, INC.  
 BLANK NO. CW507-5-8 1/2  
 OR EQUAL MODIFIED  
 AS SHOWN



**ROLLER AXLE 2 3**

MARK 23/1-2 MATERIAL STAINLESS STEEL  
 A276-90, TYPE 410, COND. A  
 UNIT WT. 16.0 LBS.  
 MAKE 12  
 MARK 23/1-3 MATERIAL STAINLESS STEEL  
 A276-90, TYPE 410, COND. A  
 UNIT WT. 13.3 LBS.  
 MAKE 8  
 SCALE: 6" = 1'- 0"

2 HOLES, DRILL 3/16" - FOR 1/2" X 1/4" LG.  
 HEX HEAD CAP SCREW, ASTM A193-90A, GR.88  
 WITH 1/2" LOCK WASHER, STAIN. STEEL (TYP, 2 PLACES)  
 (TO MATCH HOLES IN ROLLER BRACKETS 23/2-1 & 2)



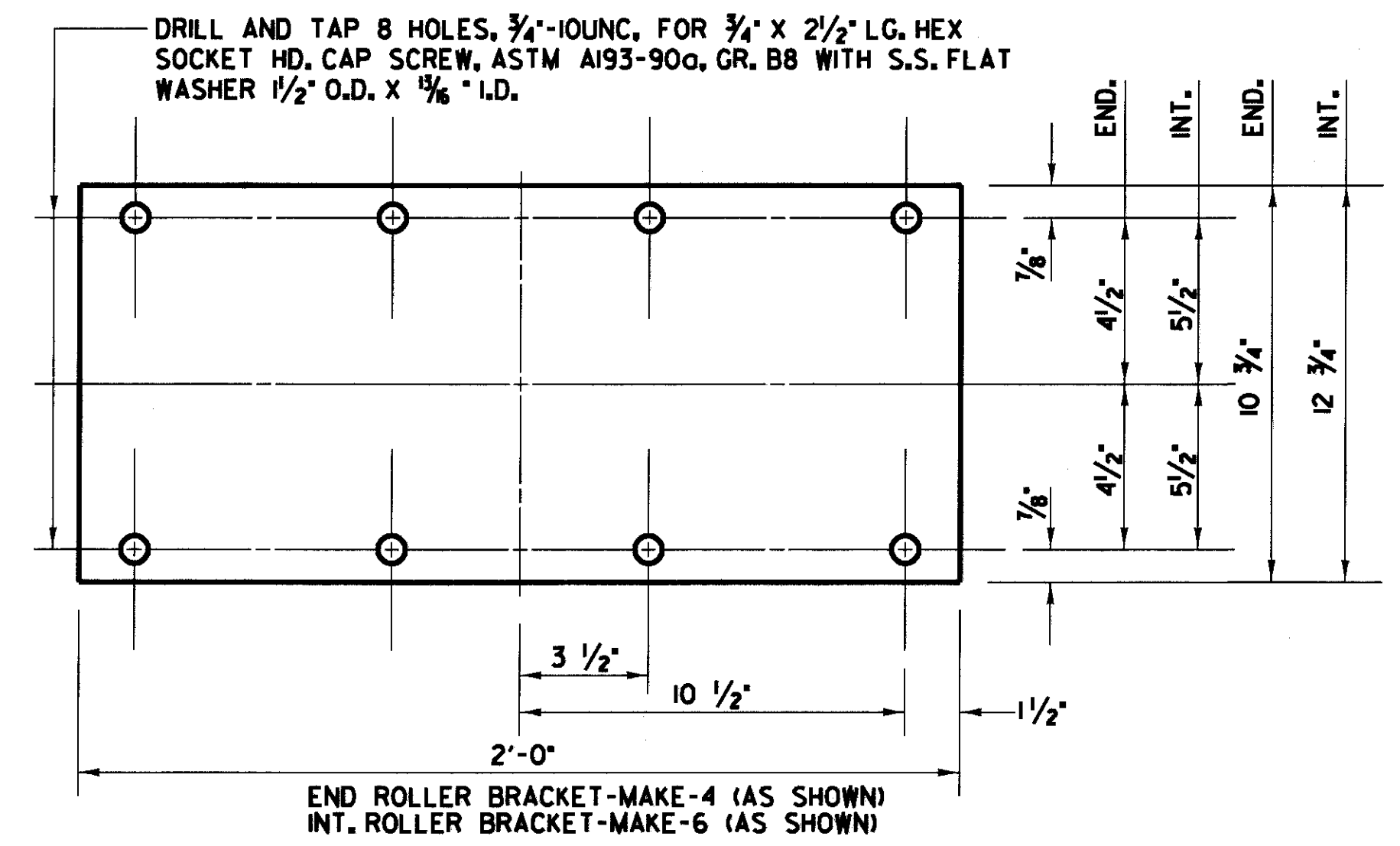
**KEEPER PLATE 4**

MARK 23/1-4 MATERIAL STEEL ASTM A36-91  
 MAKE 40 UNIT WT. 0.9 LBS.  
 SCALE: 6" = 1'- 0"

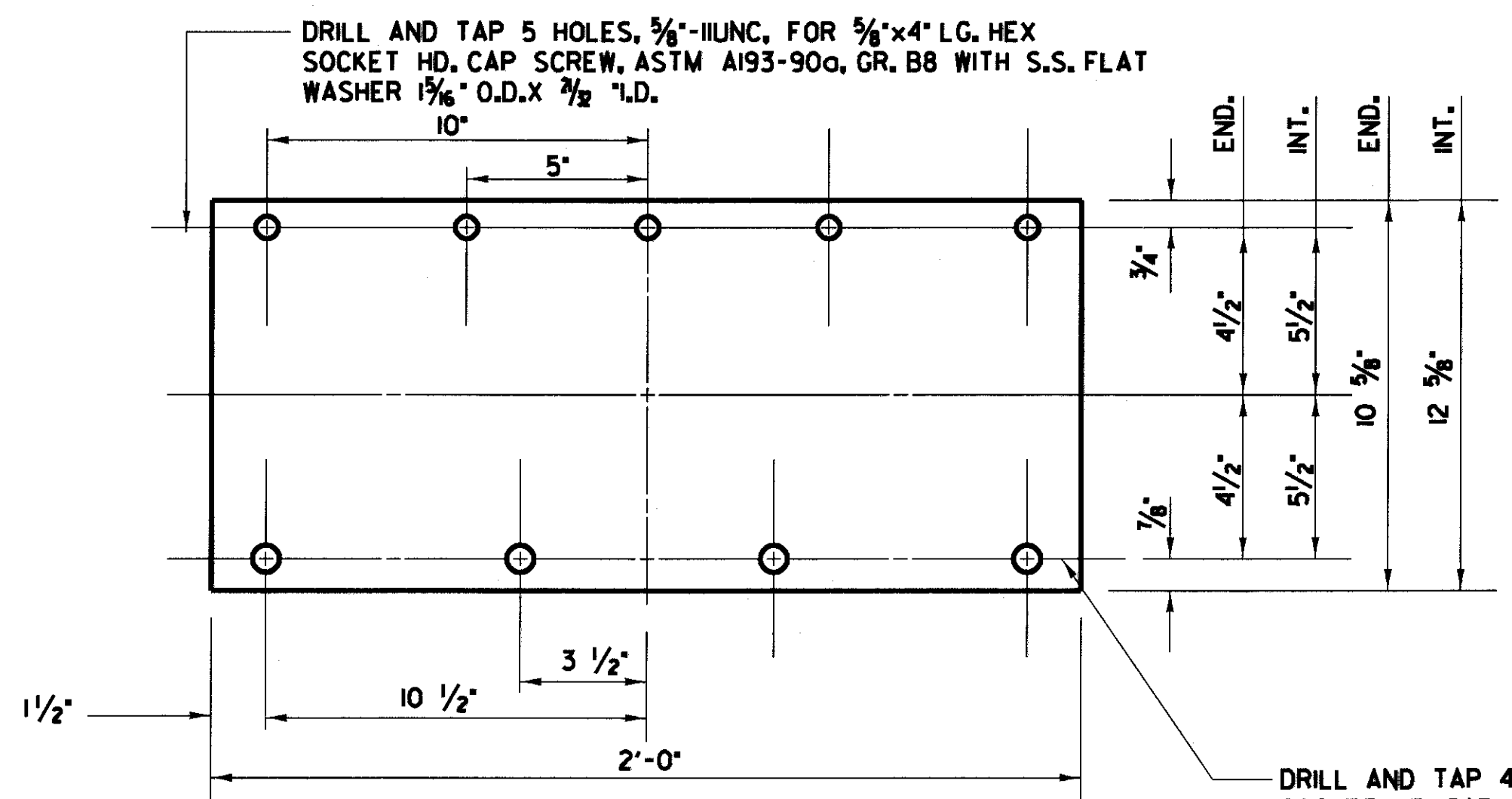
**NOTES**

1. FOR ROLLER ASSEMBLY SEE DWG. 23/3.

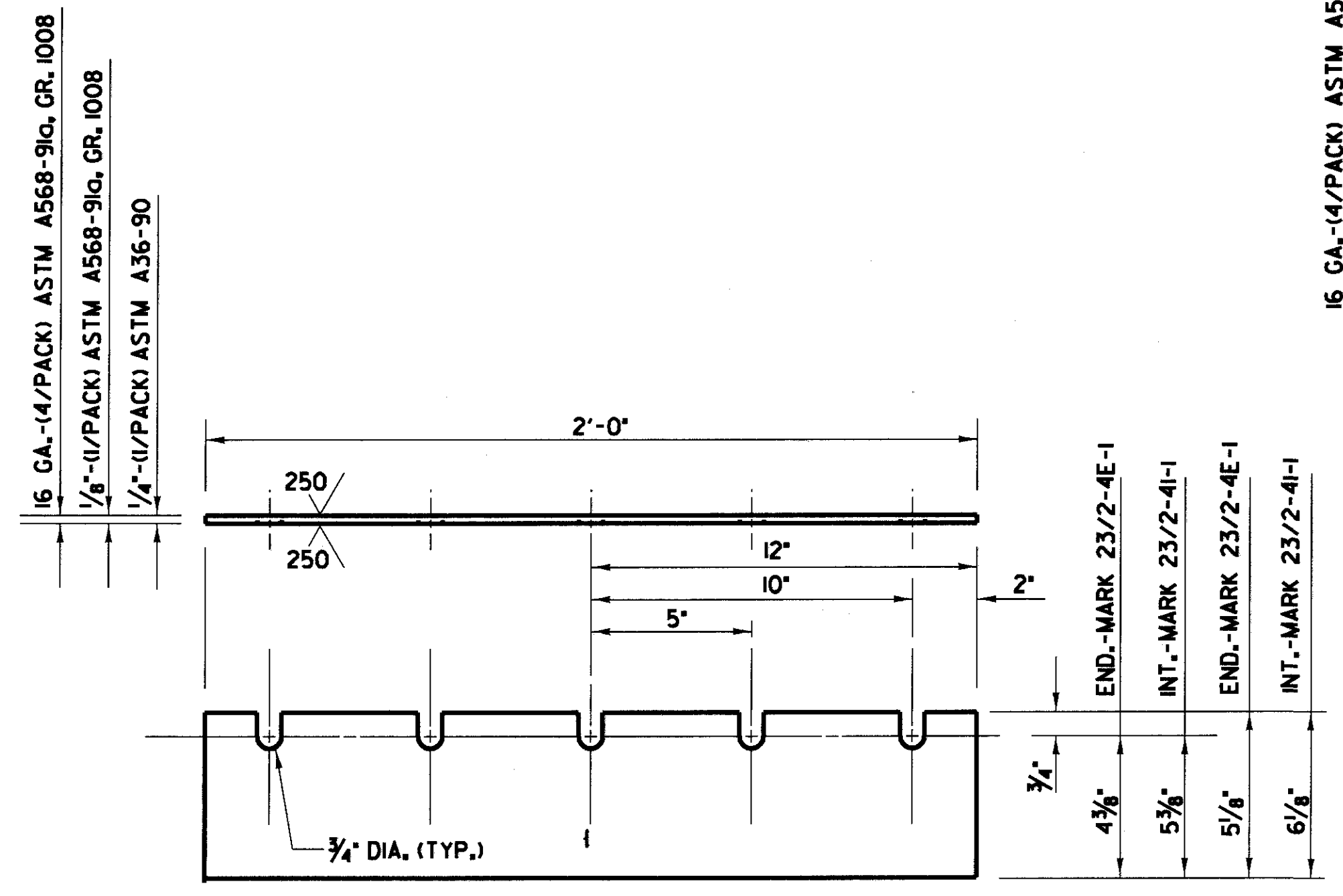
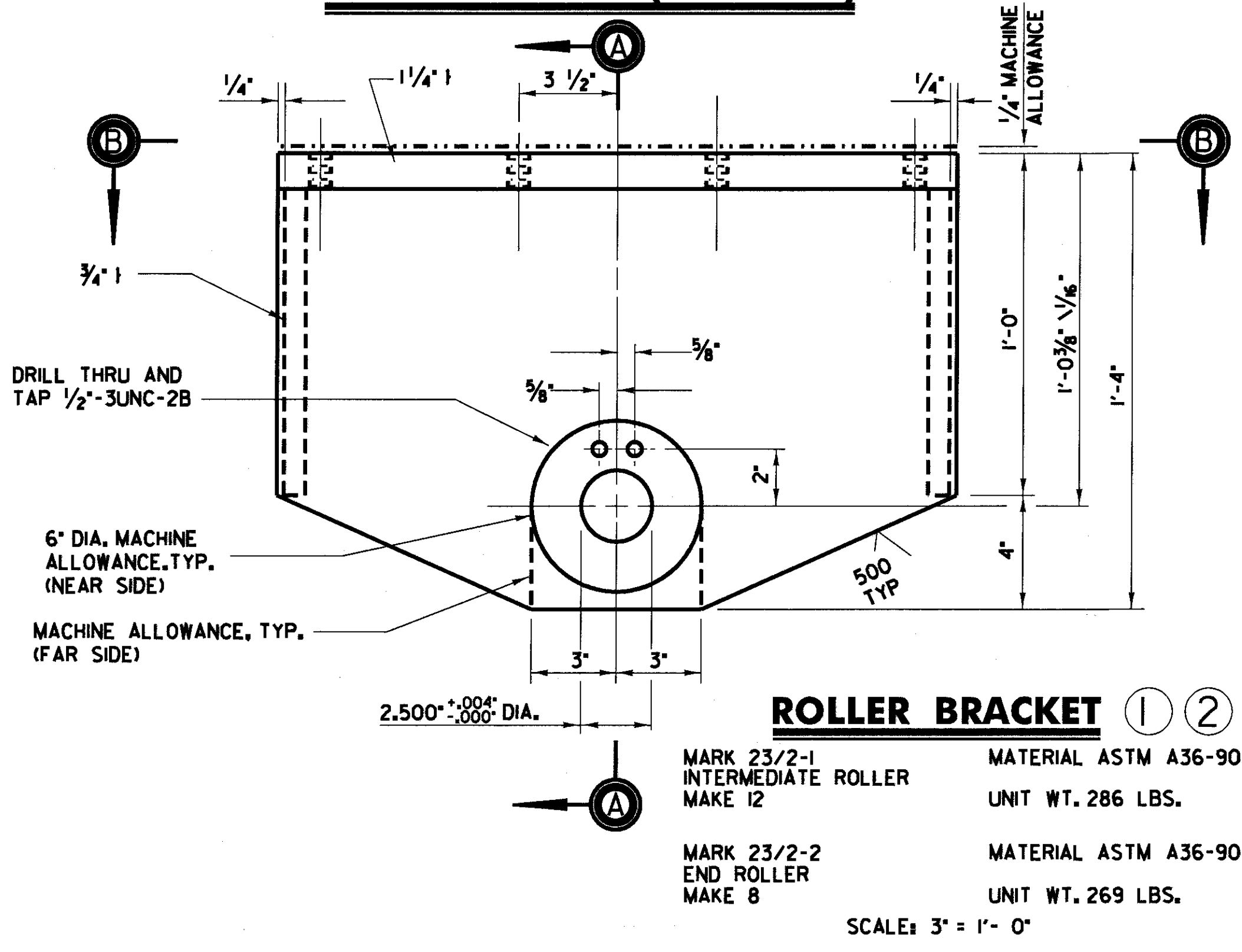
REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION	
		SYSTEM: INTERGRAPH CADD SYSTEM	
		SOFTWARE: IGDS VERSION 8.8	
		FILE SPEC: WC2301.DGN	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY:	R.P.W. B.F.M.	SCIOTO RIVER LOCAL PROTECTION PROJECT WEST COLUMBUS GATE ROLLER AND DETAILS, SHEET 1	
DRAWN BY:	R.F.M. W.B.J.		
CHECKED BY:	M.F.E. R.P.W.		
SUBMITTED BY:			
CHIEF, DESIGN BRANCH	APPROVED:	DATE:	MAY 1997
CHIEF, ENG. DIVISION	COL. C. E. DISTRICT ENGINEER		
APPROVED FOR:	SCALE: X	CONTR. NO: X	
DATE:	DRAWING NUMBER	016-PWC-2-23/1	
	SHEET X	OF X	



**SECTION "B-B" (WET SIDE)**



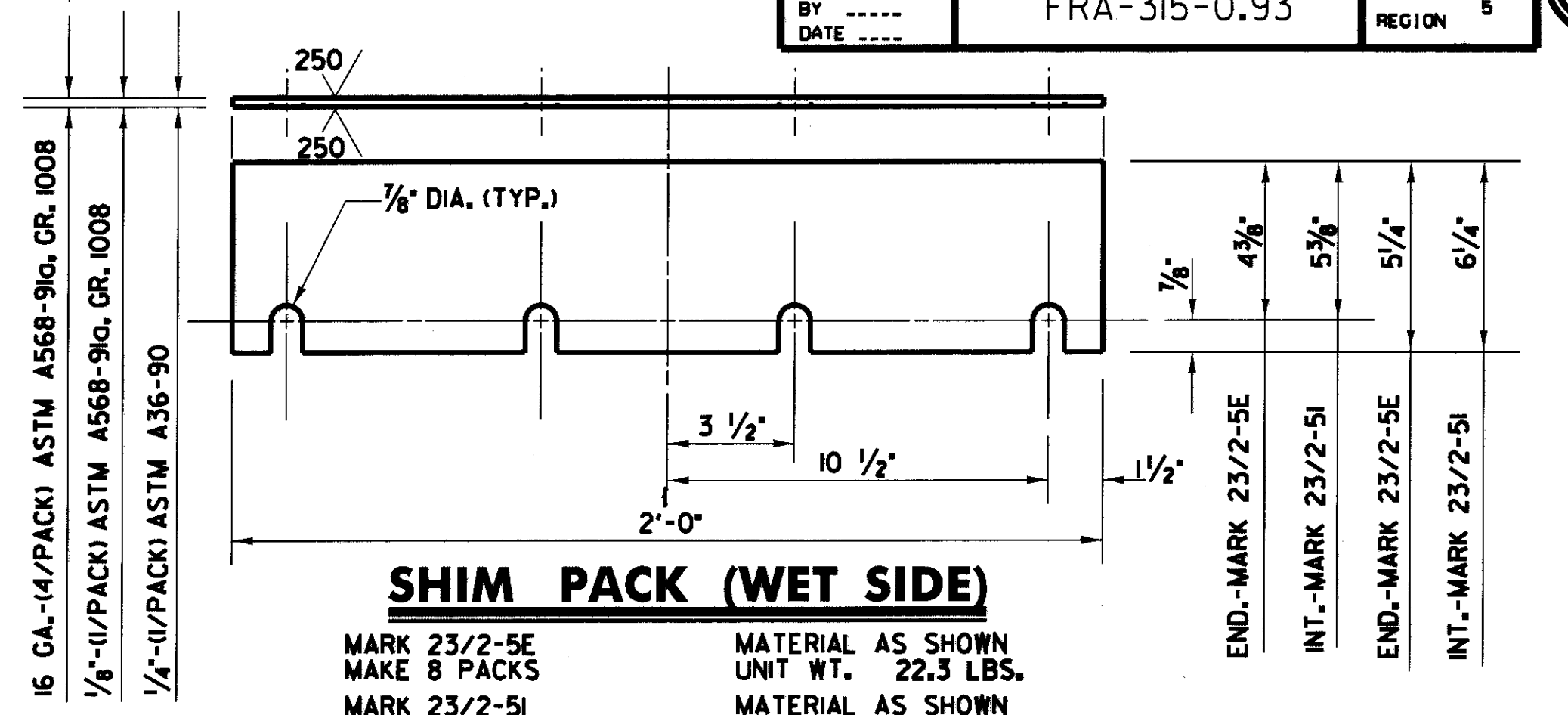
**SECTION "B-B" (DRY SIDE)**



**SHIM PACK (DRY SIDE)**

MARK 23/2-4E1 MATERIAL AS SHOWN UNIT WT. 21.8 LBS.  
MAKE 4 PACKS

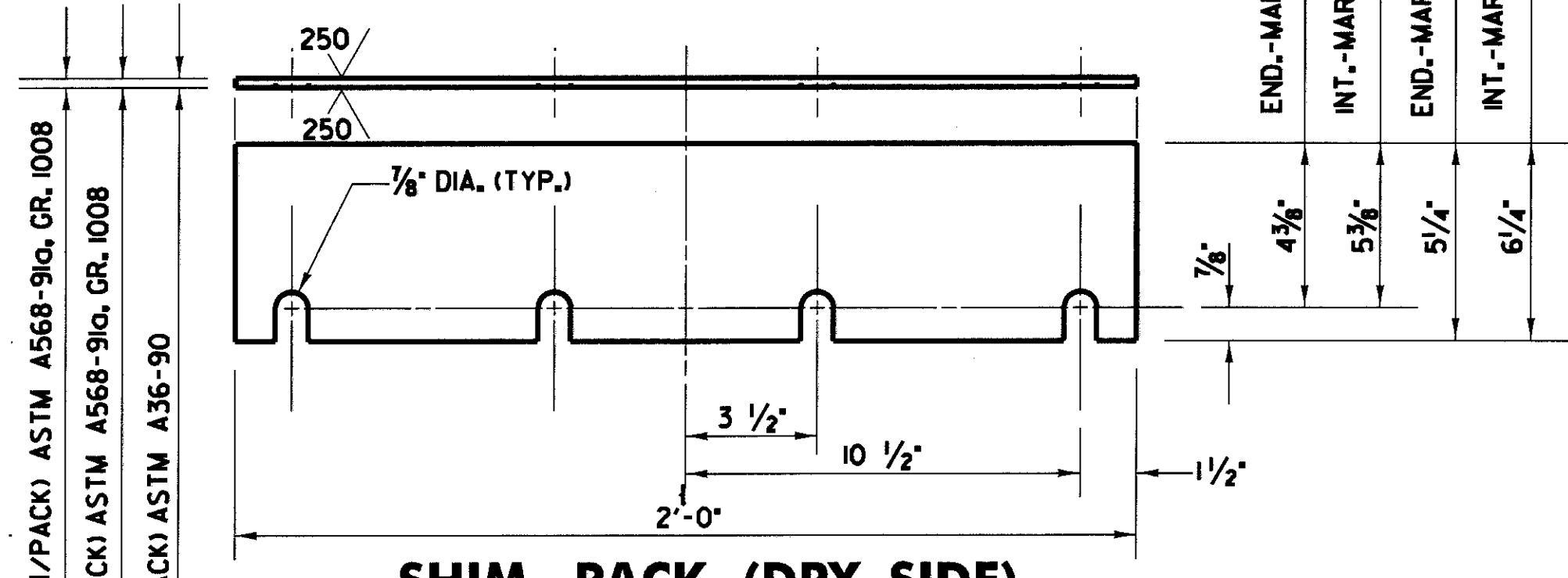
MARK 23/2-4I1 MATERIAL AS SHOWN UNIT WT. 26.1 LBS.  
MAKE 6 PACKS



**SHIM PACK (WET SIDE)**

MARK 23/2-5E MATERIAL AS SHOWN UNIT WT. 22.3 LBS.  
MAKE 8 PACKS

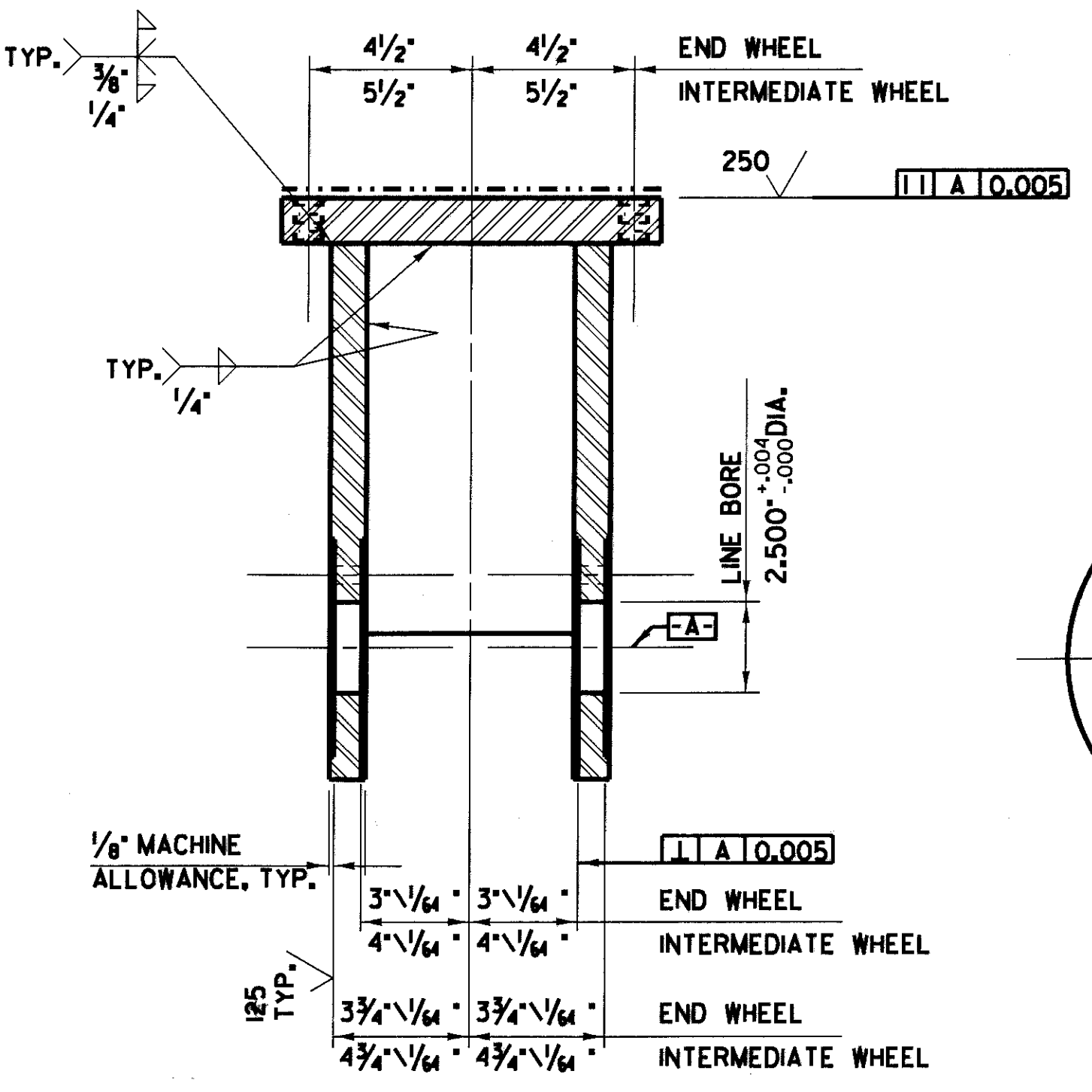
MARK 23/2-5I MATERIAL AS SHOWN UNIT WT. 26.6 LBS.  
MAKE 12 PACKS



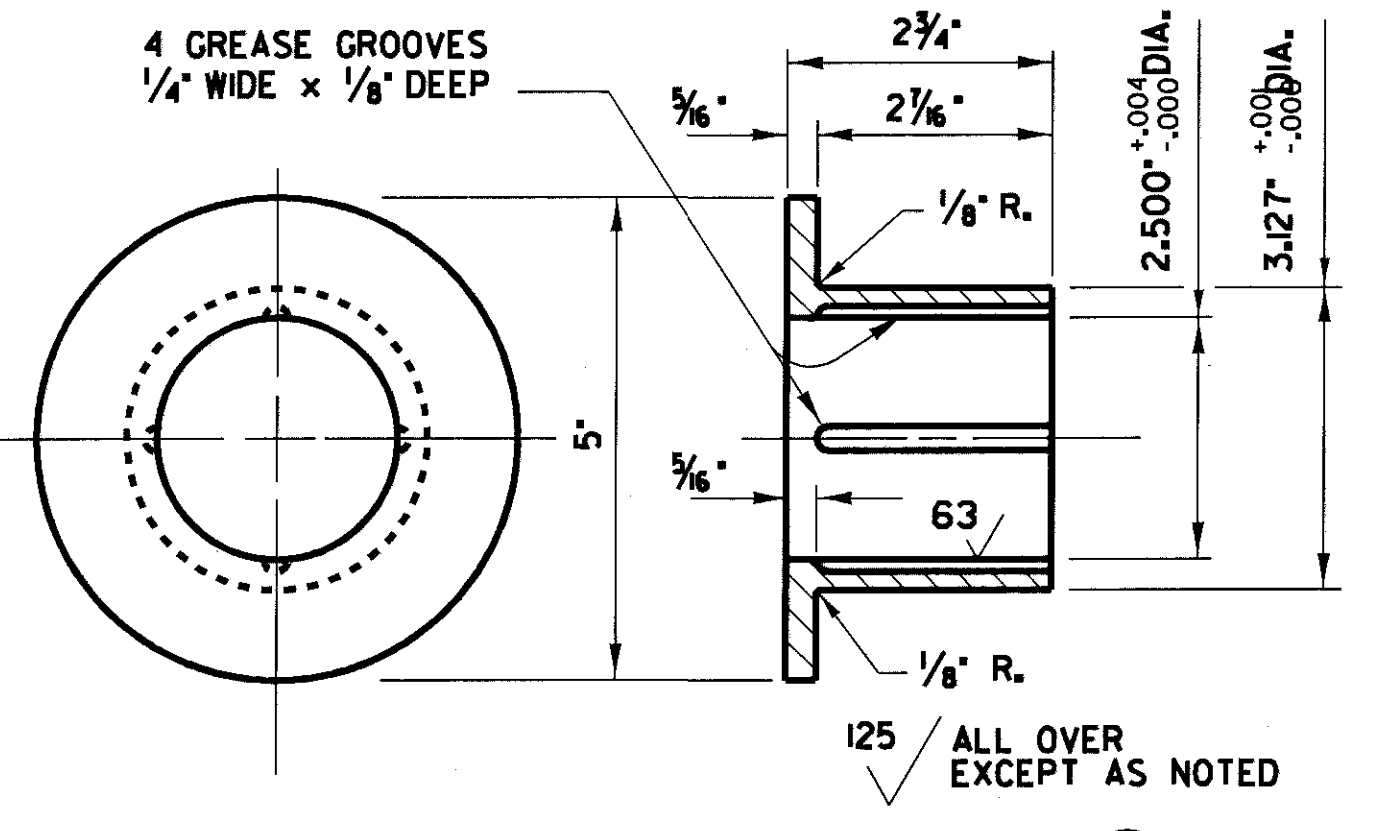
**SHIM PACK (DRY SIDE)**

MARK 23/2-4E2 MATERIAL AS SHOWN UNIT WT. 23.3 LBS.  
MAKE 4 PACKS

MARK 23/2-4I2 MATERIAL AS SHOWN UNIT WT. 26.6 LBS.  
MAKE 6 PACKS



**SECTION "A-A"**



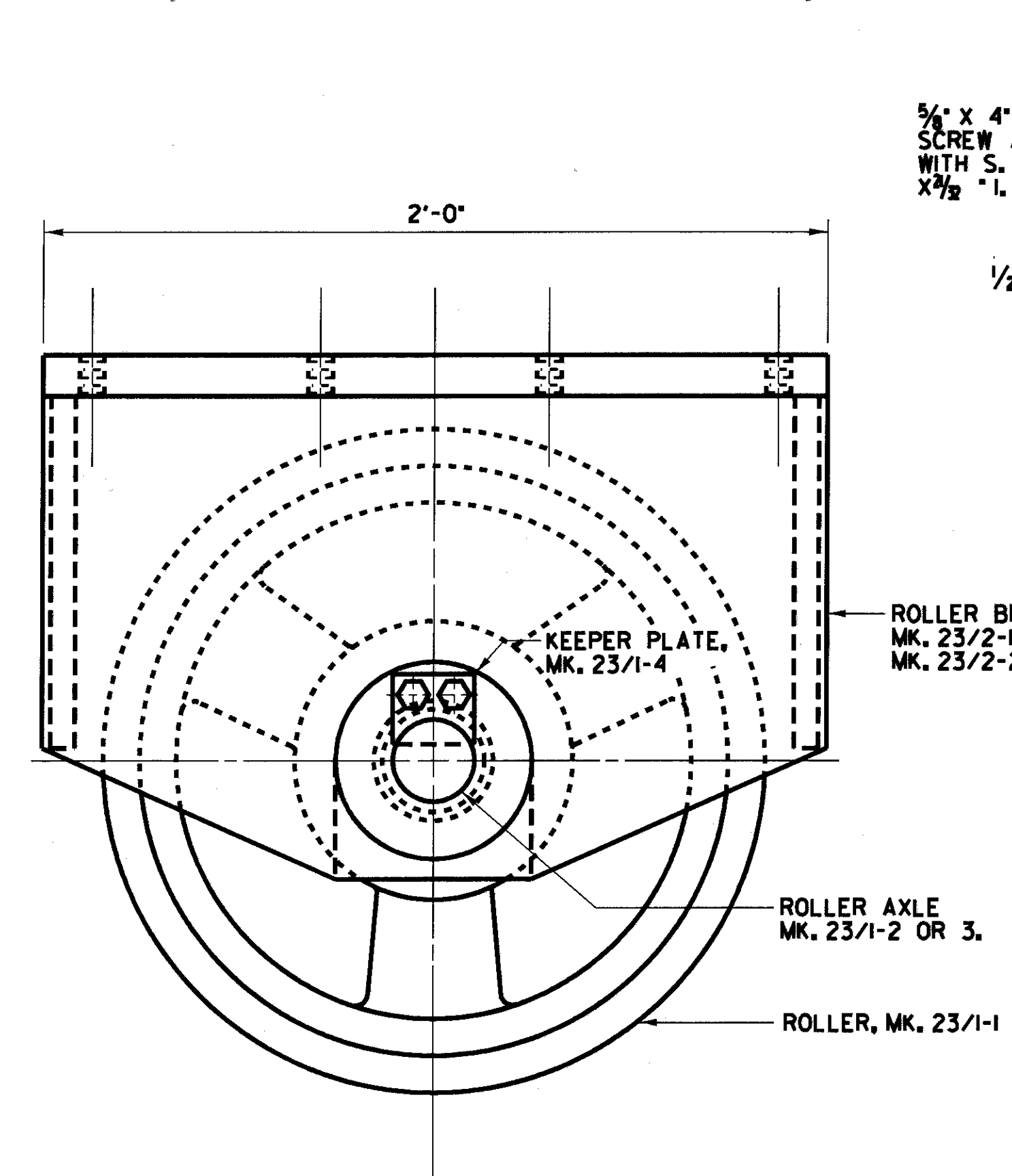
**ROLLER BUSHING** ③

MARK 23/2-3 MATERIAL ASTM B 148-90b, COPPER ALLOY NO. C95400 UNIT WT. 3.3 LBS.  
MAKE 40

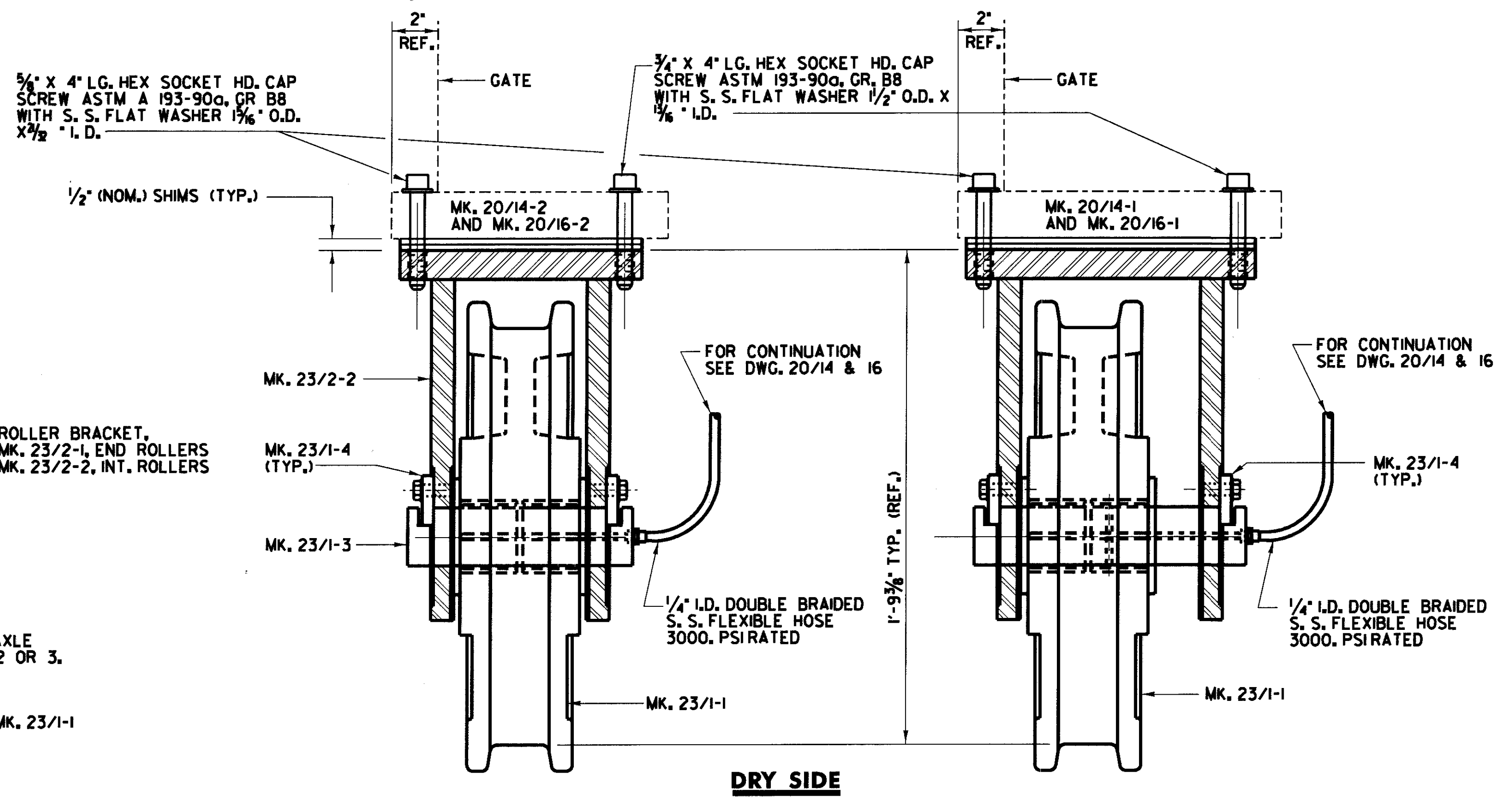
**NOTES**

- FOR ROLLER ASSEMBLY SEE DWG. 23/3.
- S.S. DENOTES STAINLESS STEEL.
- QUANTITIES SHOWN ARE FOR 2-GATES.

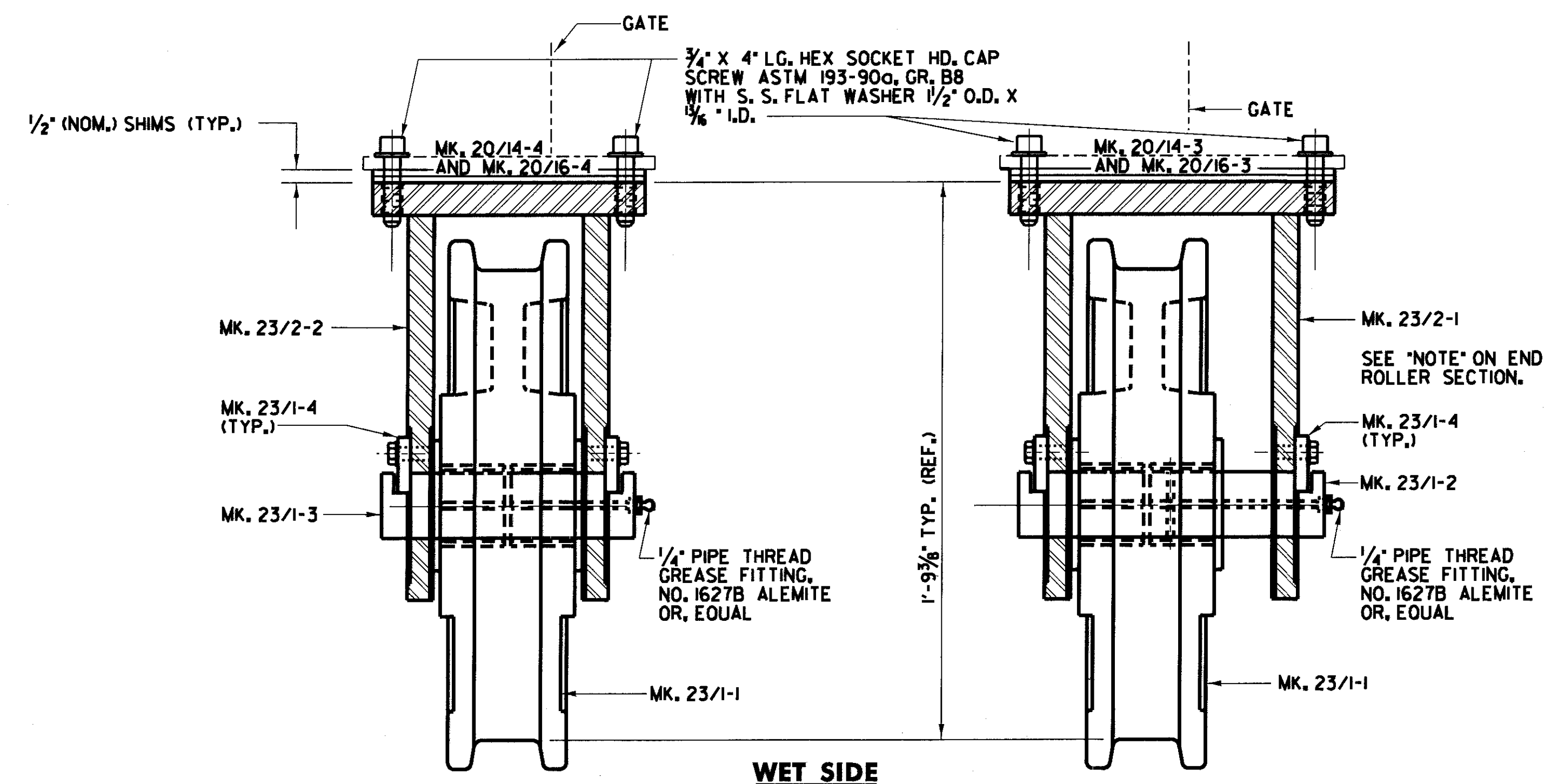
REVISION	DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION	
SYSTEM: INTERGRAPH CADD SYSTEM		SOFTWARE: IGDS VERSION 8.8	
FILE SPEC: WC2302.DGN		U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: R.P.W. B.F.M.		SCIO TO RIVER LOCAL PROTECTION PROJECT	
DRAWN BY: B.F.M. W.B.L. D.D.C.		WEST COLUMBUS GATE ROLLER BRACKET AND DETAILS, SHEET 2	
CHECKED BY: W.F.E. R.P.W.		APPROVED FOR: _____	
SUBMITTED BY: _____		APPROVED: _____ DATE: MAY 1997	
CHIEF DESIGN BRANCH: _____		COL. C. E. DISTRICT ENGINEER	
APPROVED FOR: _____		SCALE: X CONTR. NO: X	
DATE: _____		DRAWING NUMBER: 016-PWC-2-23/2	
		SHEET X OF X	



**END ROLLER ASSEMBLY (8 REQ'D)**  
**INTERMEDIATE ROLLER ASSEMBLY (12 REQ'D)**  
 SCALE: 3" = 1'-0"



**END ROLLER SECTION (4-REQ'D.)**    **INTERMEDIATE ROLLER SECTION (6-REQ'D.)**  
 SCALE: 3" = 1'-0"    SCALE: 3" = 1'-0"



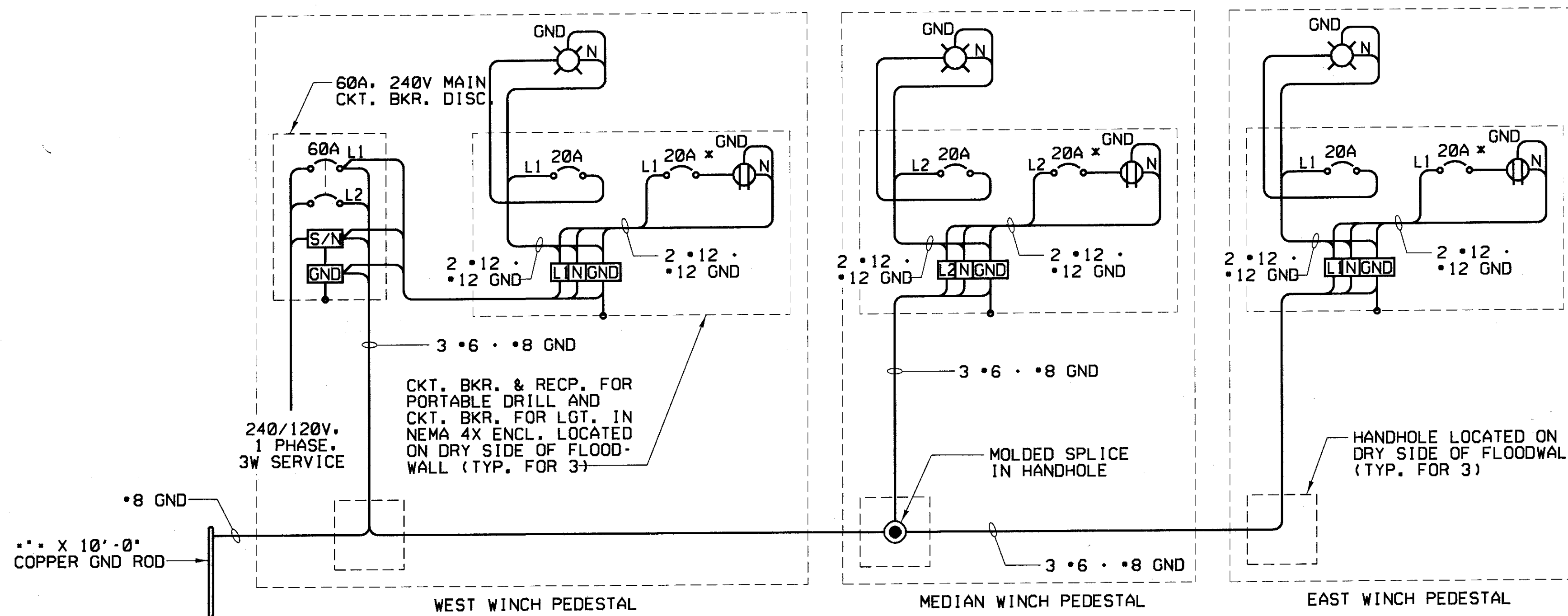
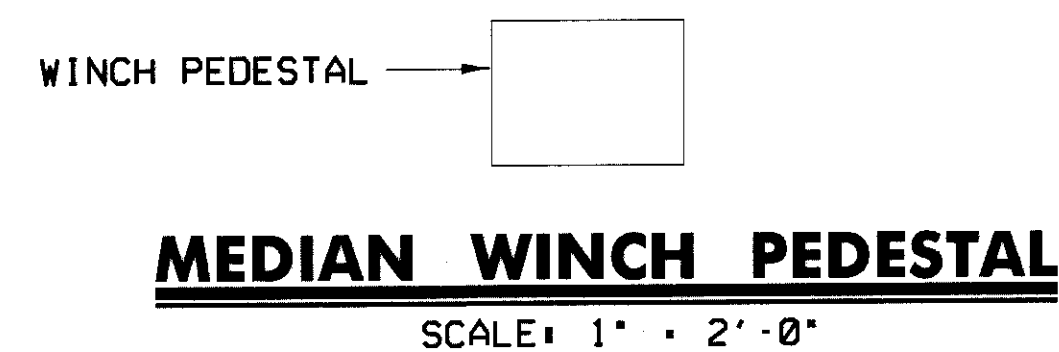
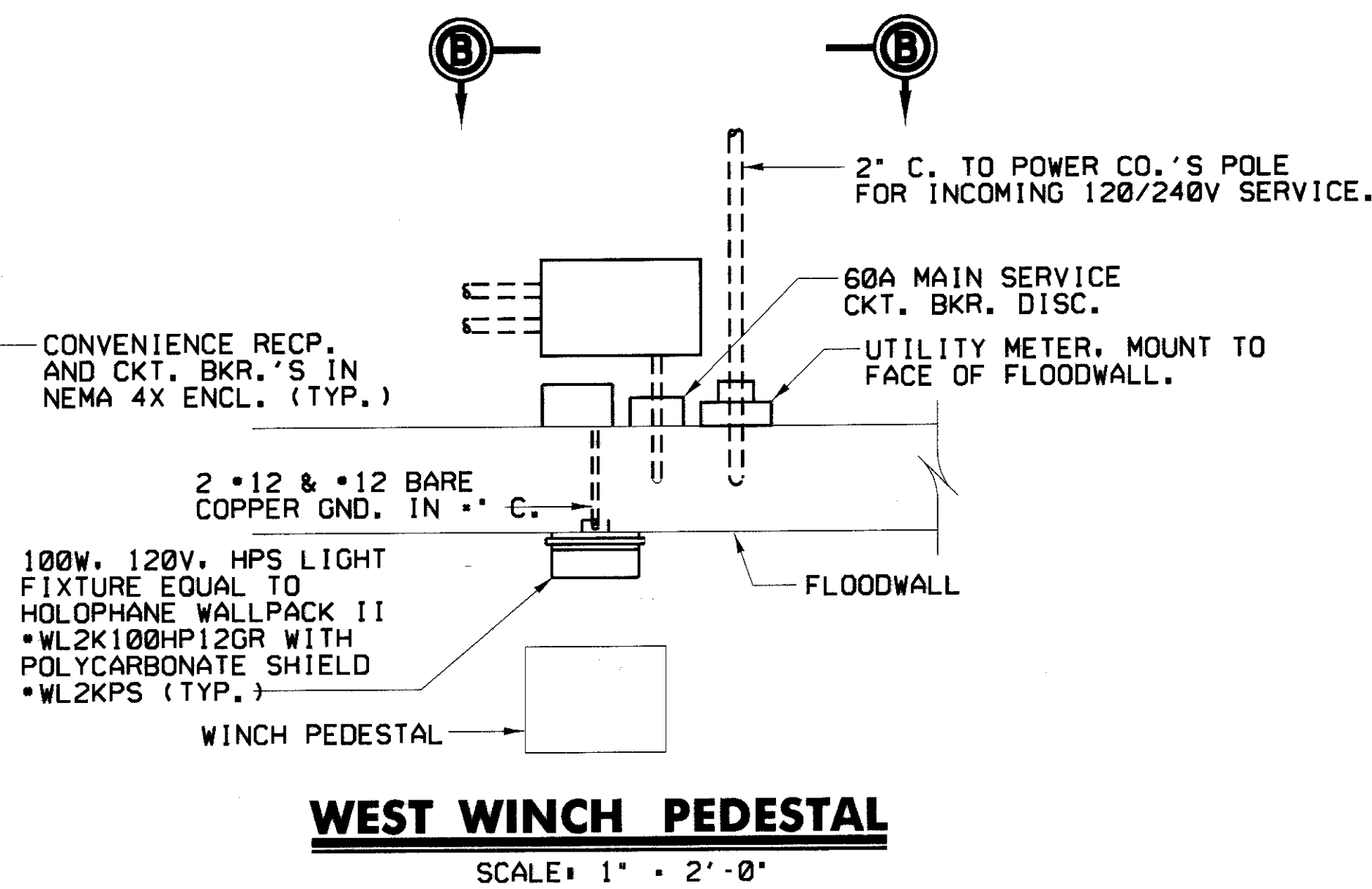
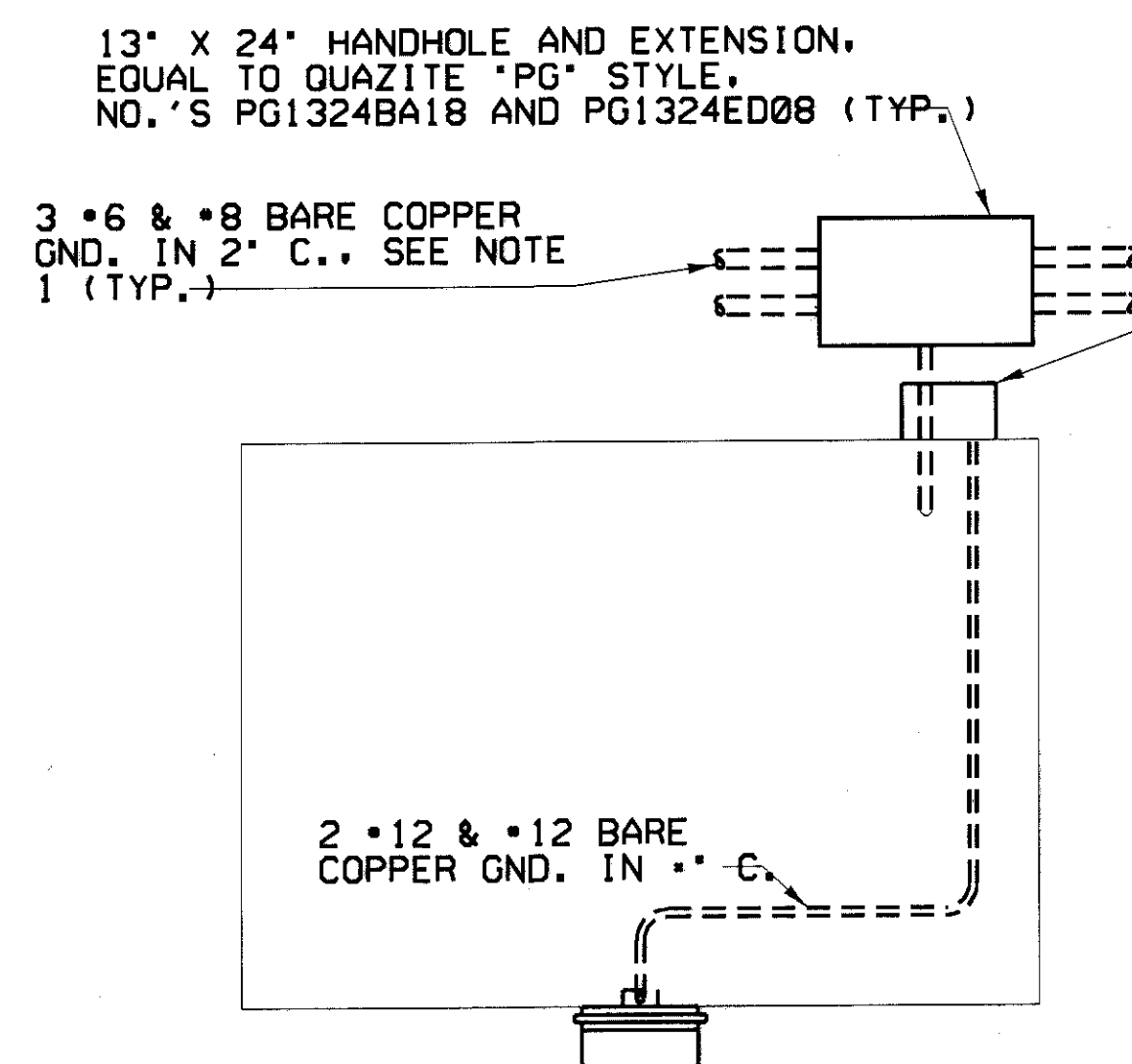
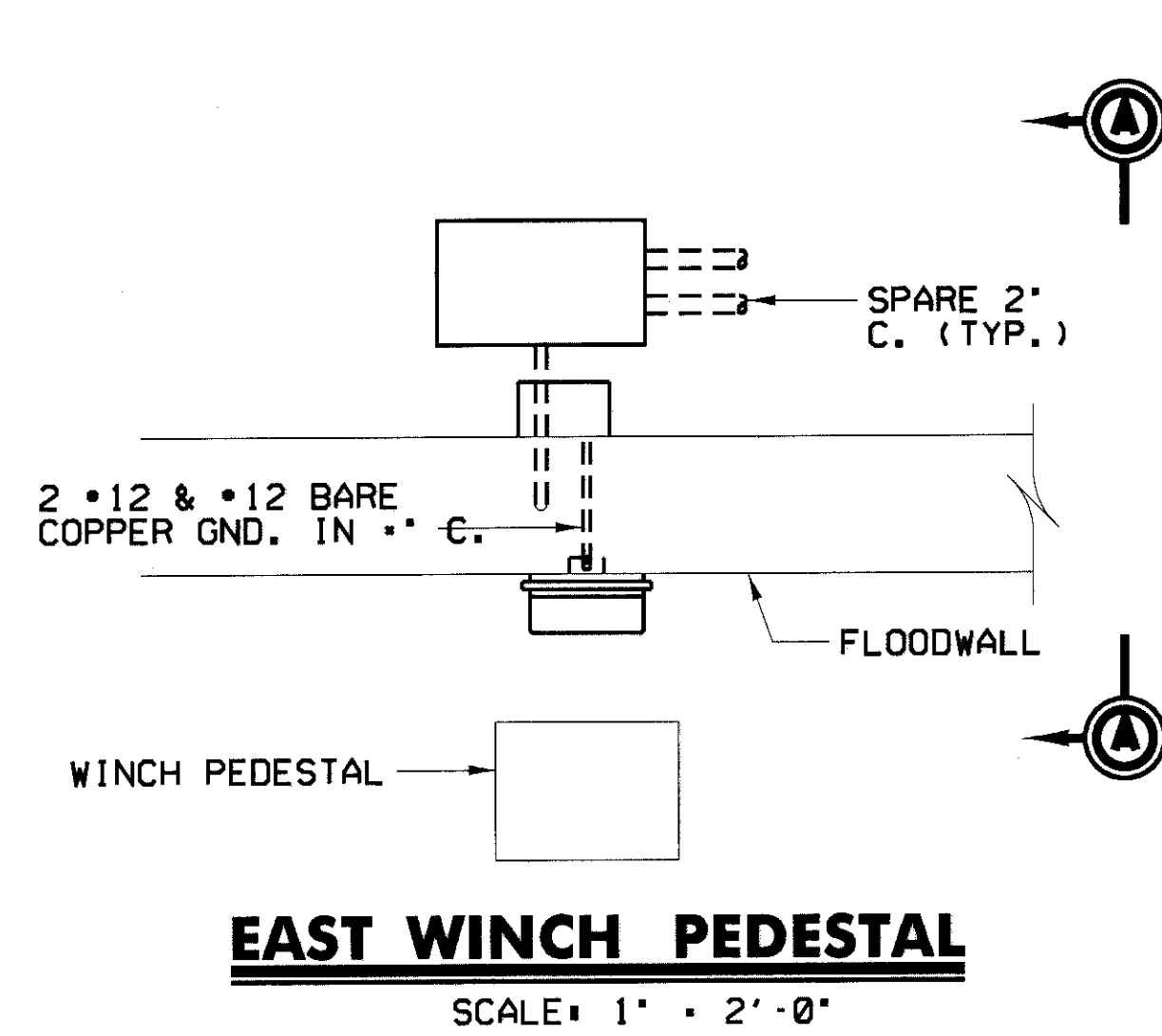
**END ROLLER SECTION (4-REQ'D.)**    **INTERMEDIATE ROLLER SECTION (6-REQ'D.)**  
 SCALE: 3" = 1'-0"    SCALE: 3" = 1'-0"

**NOTES**

1. THE ROLLER ASSEMBLIES AND ACCESSORIES SHALL BE INSTALLED ON THE GATE IN THE SHOP, MATCH MARKED AND DISASSEMBLED FOR SHIPMENT.
2. S.S. DENOTES STAINLESS STEEL.

DESIGNED BY: <b>R.P.W. B.F.M.</b>	CONTR. NO: X
DRAWN BY: <b>B.F.M. B.B. D.D.C.</b>	DRAWING NUMBER <b>016-PWC-2-23/3</b>
CHECKED BY: <b>W.F.E. R.P.W.</b>	SHEET X OF X
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
<b>SCIOTO RIVER          LOCAL PROTECTION PROJECT          WEST COLUMBUS          GATE ROLLER ASSEMBLIES</b>	
APPROVED FOR:	APPROVED: <b>MAY 1997</b>
CHIEF, DESIGN BRANCH	DATE:
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER
APPROVAL RECOMMENDED:	SCALE: AS SHOWN
DATE:	





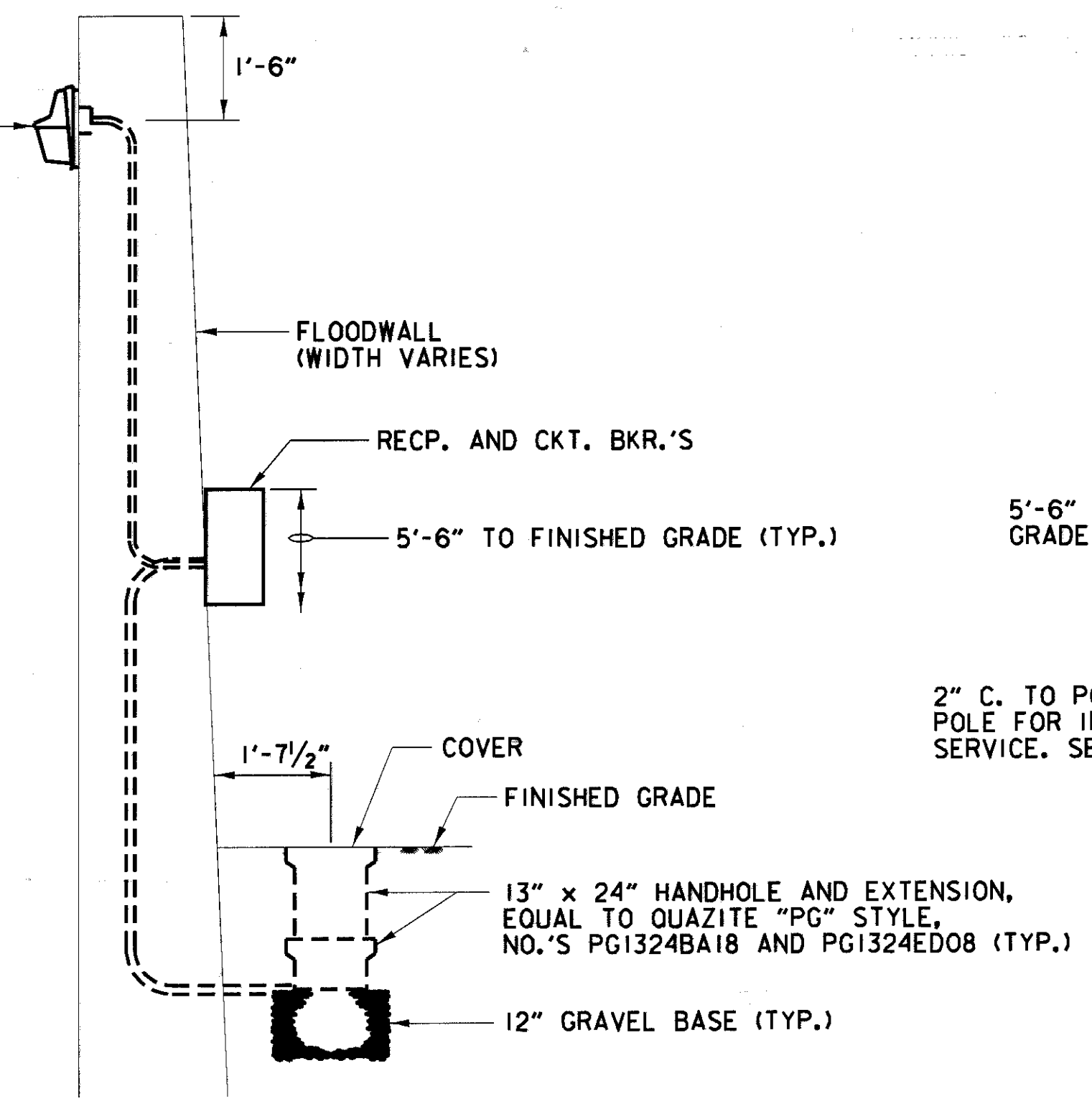
**NOTES**

1. CONDUITS RUN UNDER ROADWAY SHALL BE ENCASED IN CONCRETE. SEE DUCT BANK DETAIL DWG. 29/2.
2. SEE DWG. 29/2 FOR SECTION VIEWS.

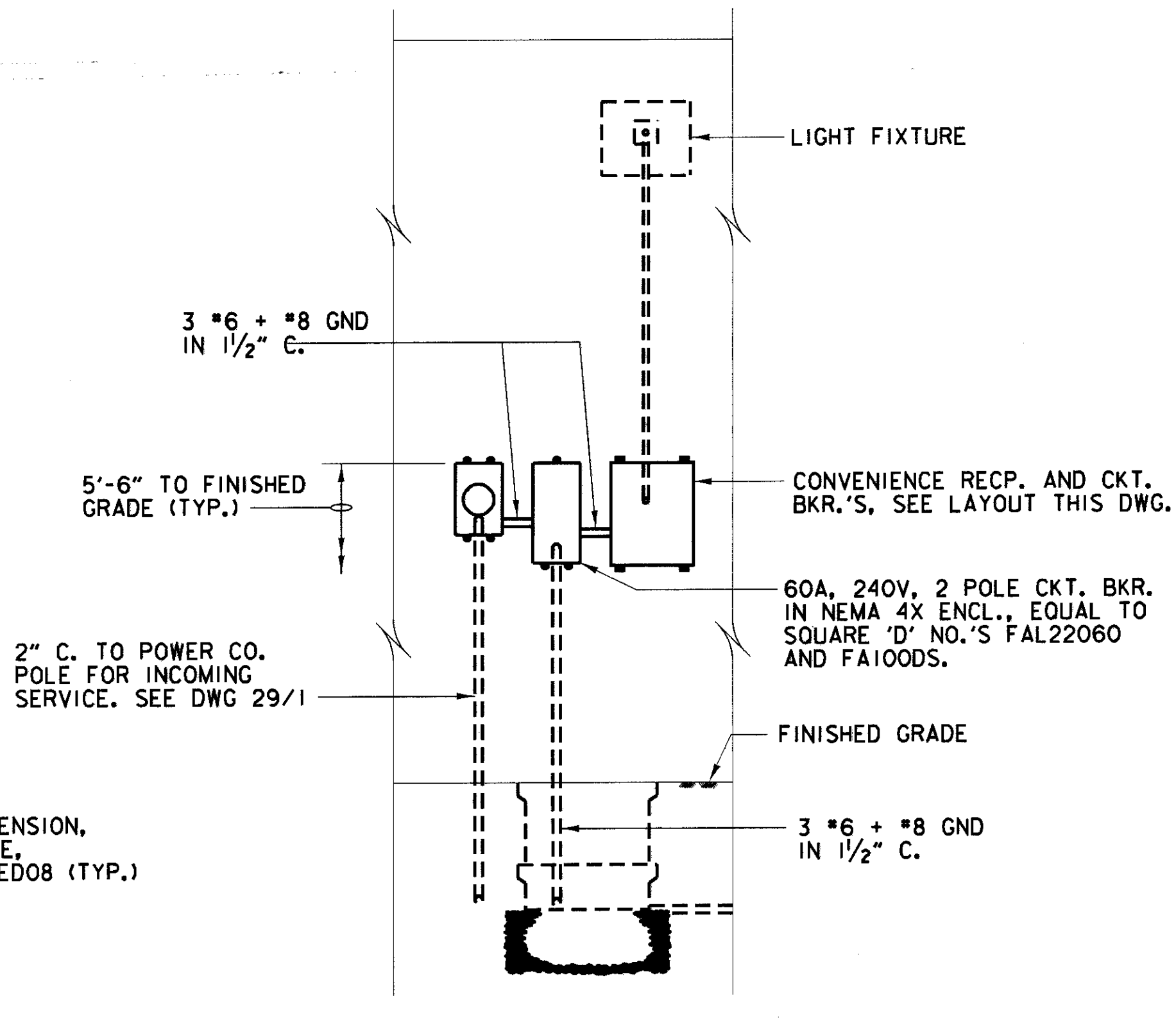
REVISION	DATE	DESCRIPTION	BY

C A DESIGN & D DRAWING	<b>CADD COMPUTER INFORMATION</b> SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: WC2901A.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>R.G.C.</b> DRAWN BY: <b>R.G.C.</b> CHECKED BY: <b>B.G.P.</b> SUBMITTED BY:	<b>SCIOTO RIVER          LOCAL PROTECTION PROJECT          WEST COLUMBUS          ELECTRICAL          PLAN AND WIRING DIAGRAM</b>
CHIEF, DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> CHIEF, ENG. DIVISION COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____	SCALE: <b>AS SHOWN</b> CONTR. NO: X DRAWING NUMBER <b>016-PWC-2-29/1</b> SHEET X OF X

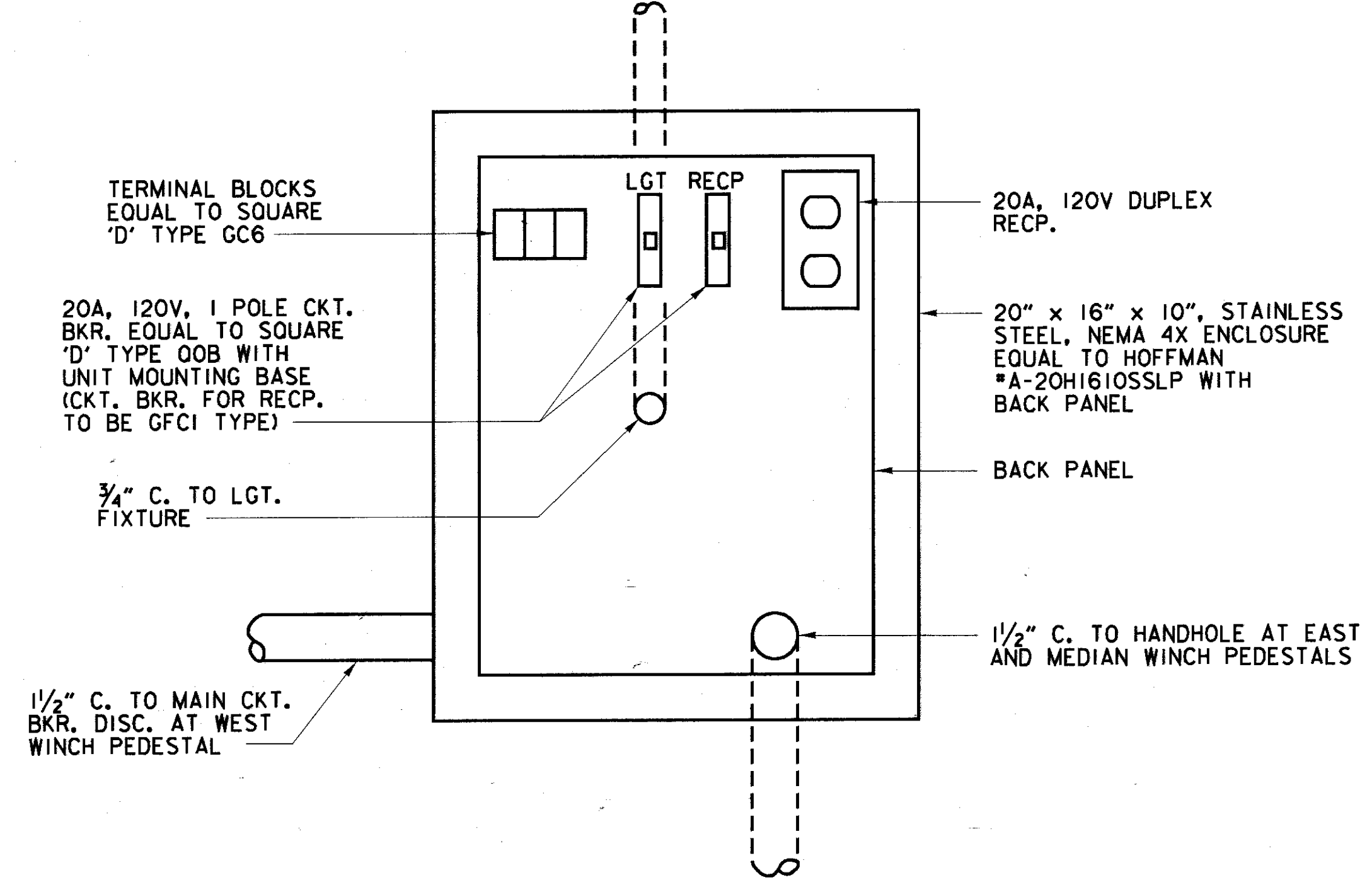
100W, 120V HPS LIGHT FIXTURE, EQUAL TO HOLOPHANE WALLPACK II \*WL2K100HP12GR WITH POLYCARBONATE SHIELD \*WL2KPS



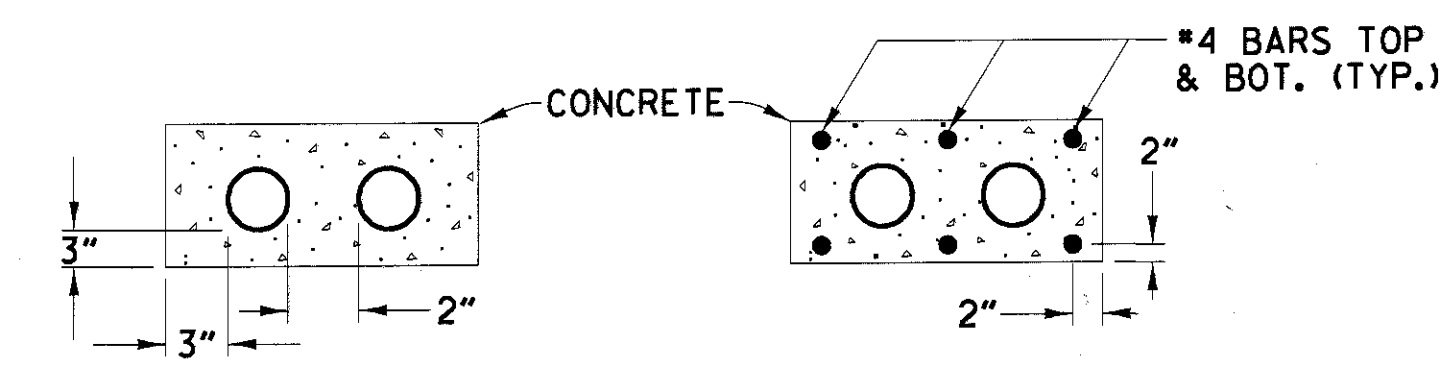
**SECTION A-A**  
SCALE: 1" = 2'-0"



**SECTION B-B**  
SCALE: 1" = 2'-0"



**RECP. AND CKT. BKR.'S**  
SCALE: 3" = 1'-0"

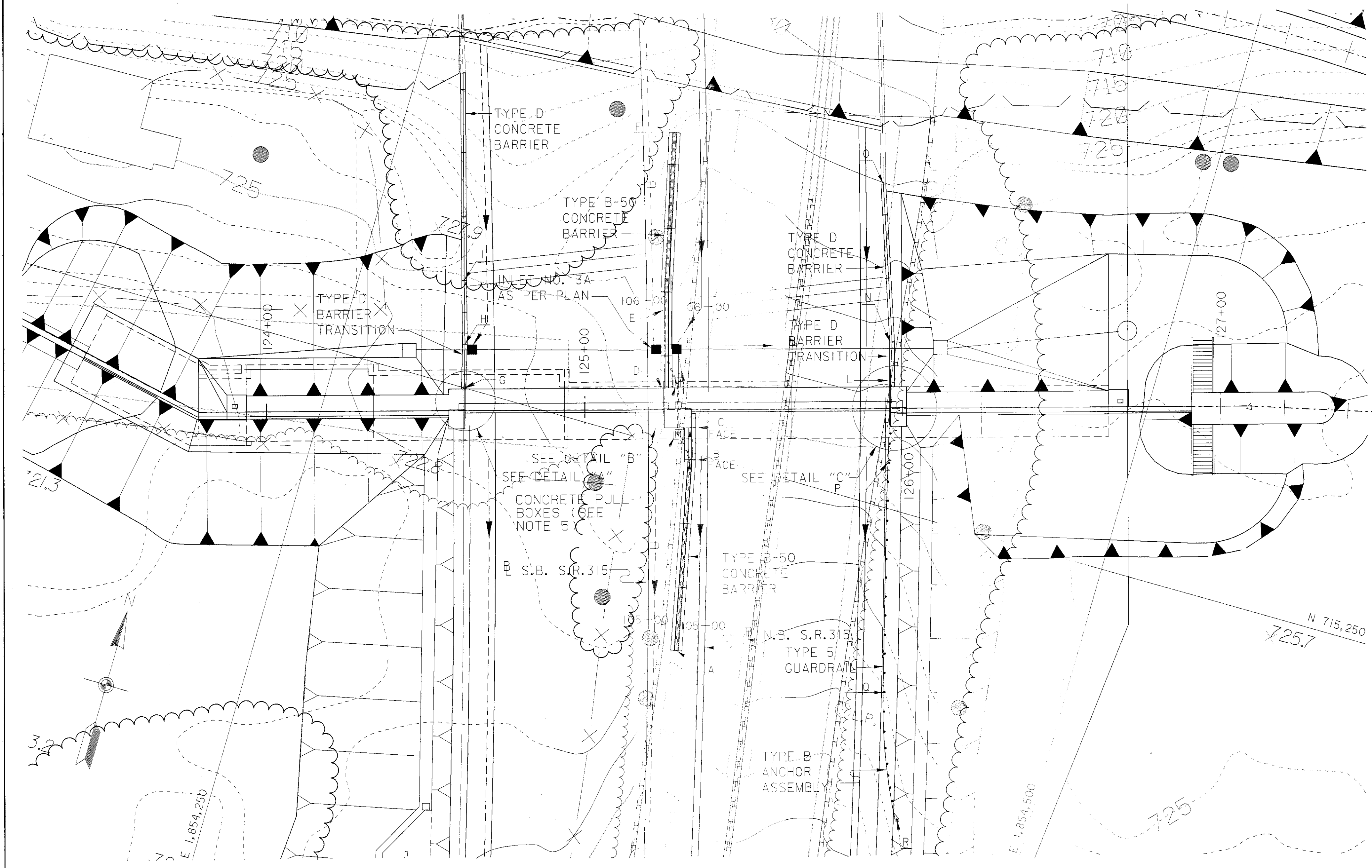


STAGGER CONDUIT JOINTS. CONDUITS SHALL BE SEPARATED BY 2" MINIMUM OF CONCRETE. THE OUTSIDE ENVELOPE OF CONCRETE AT BOTTOM, SIDES AND TOP SHALL BE 3" MINIMUM OVER CONDUITS. STEEL REBARS SHALL BE #4, AS SHOWN. MAINTAIN 2" MINIMUM CONCRETE COVER AT TOP, SIDE AND BOTTOM.

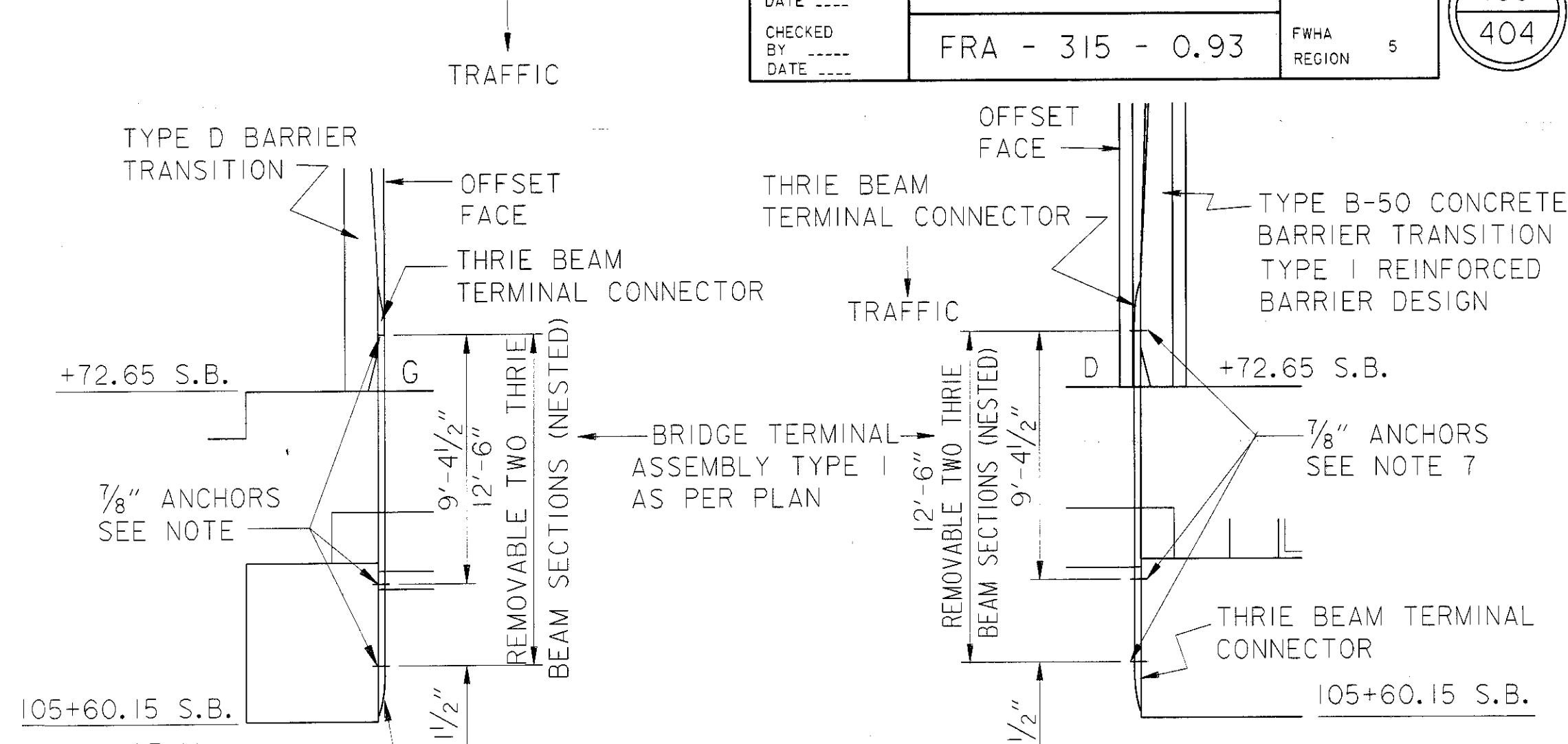
**DUCT BANK DETAIL**  
N.T.S.

REVISION	DATE	DESCRIPTION	BY

COMPUTER AIDED DESIGN & DRAFTING	<b>CADD COMPUTER INFORMATION</b> SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: IGDS VERSION 8.8 FILE SPEC: WC2902A.DGN
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>R.G.C.</b> DRAWN BY: <b>R.G.C.</b> CHECKED BY: <b>B.C.P.</b> SUBMITTED BY:	<b>SCIOTO RIVER LOCAL PROTECTION PROJECT WEST COLUMBUS ELECTRICAL DETAIL SHEET</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: COL. C. E. DISTRICT ENGINEER 1
CHIEF ENG DIVISION	DATE: MAY 1997
APPROVED FOR:	SCALE: X OF X CONTR. NO: X DRAWING NUMBER: <b>016-PWC-2-29/2</b> SHEET X OF X



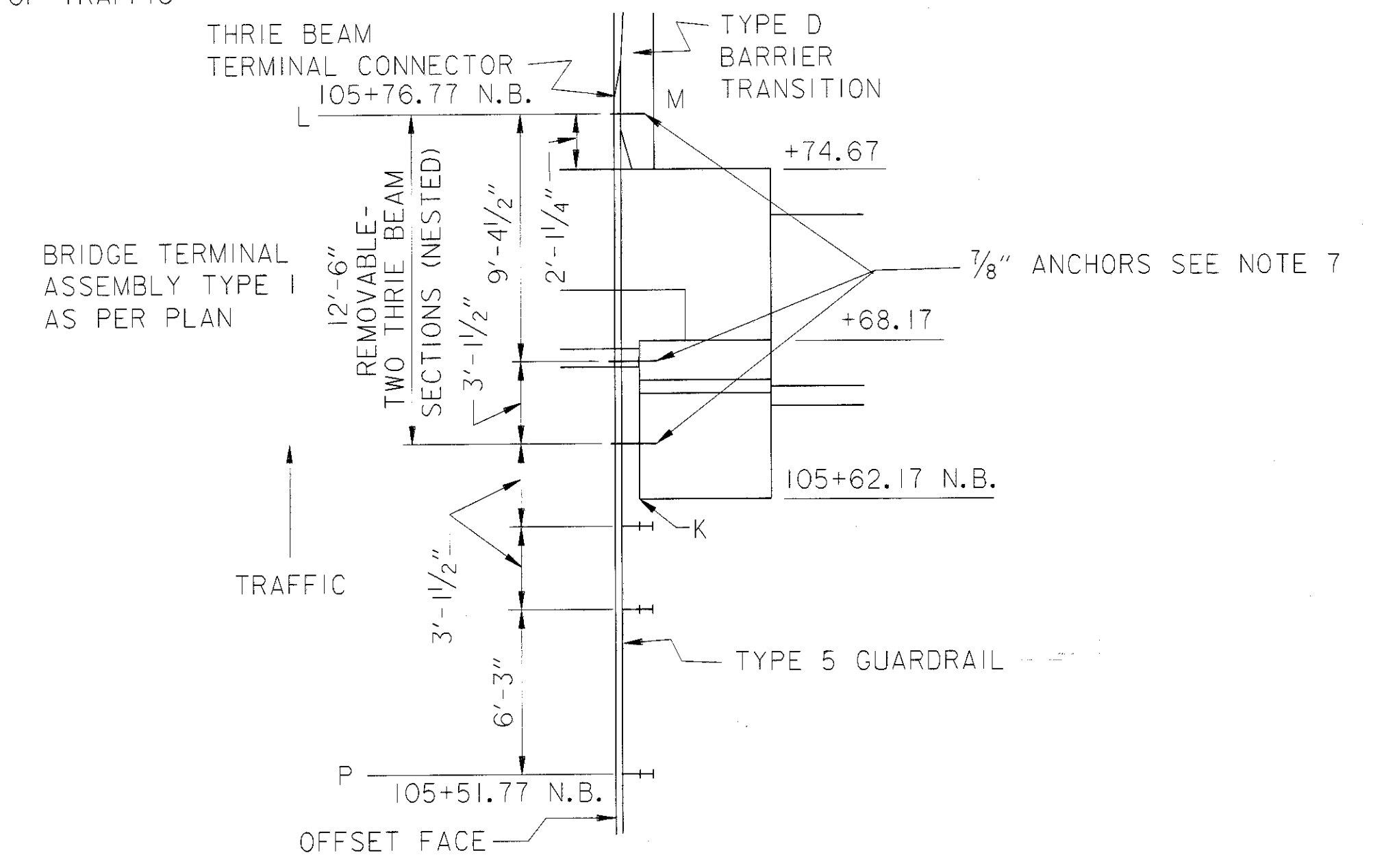
**PLAN**  
 SCALE: 1" = 20'



**DETAIL "A"**

**DETAIL "B"**

THRIE BEAM TERMINAL CONNECTOR SHALL BE PLACED SO THAT THE LAP IS IN THE DIRECTION OF TRAFFIC



**DETAIL "C"**

**DETAILS**  
 SCALE: 1" = 5'-0"

**NOTES**

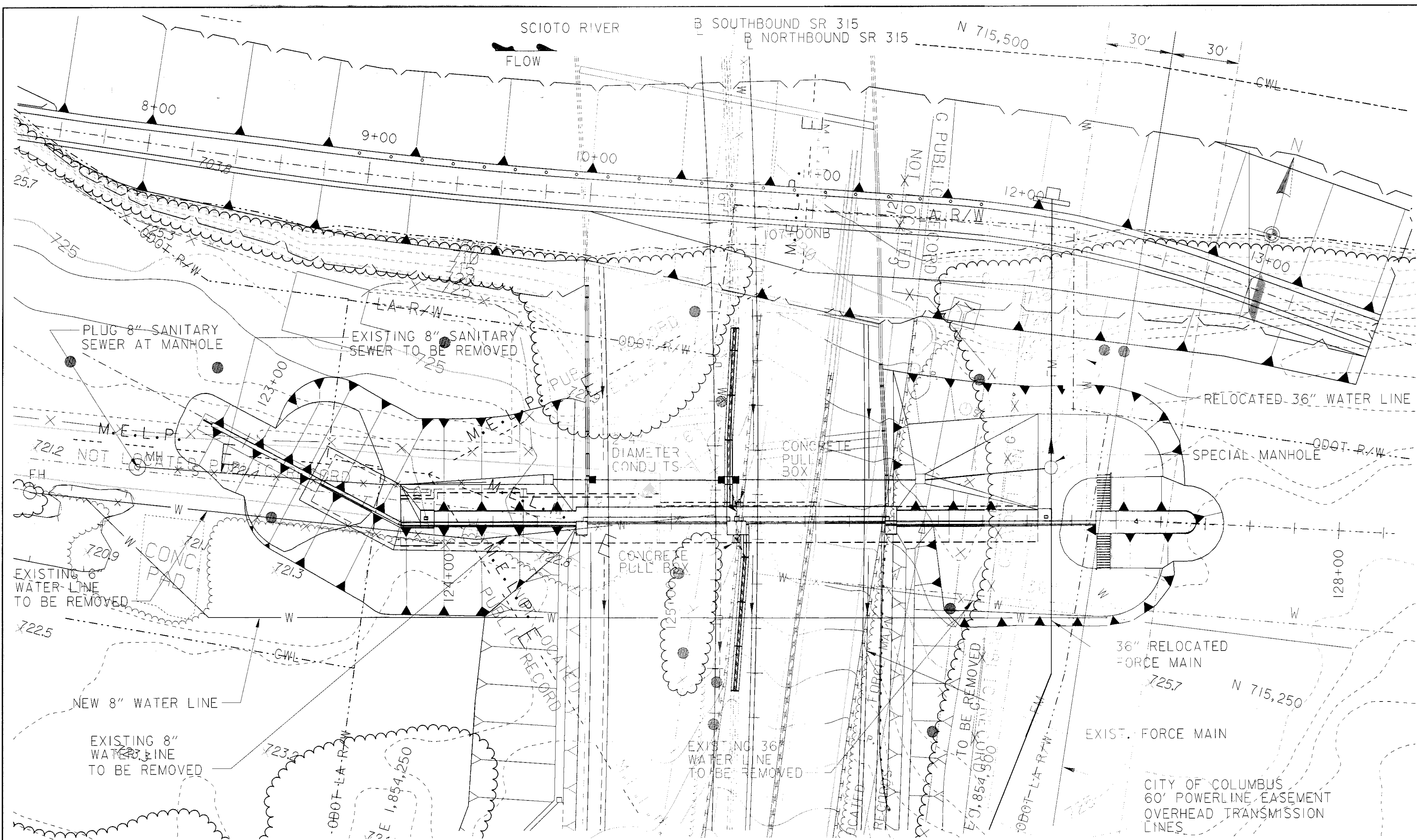
- FOR LEGEND, SEE DWG. 0/2.
- FOR GENERAL NOTES, SEE DWG. 0/3.
- FOR SITE PLAN AND PROFILE, SEE DWG. 16/1.
- S.R. 315 NORTH BOUND AND SOUTH BOUND BASELINES REFERENCED TO ODOT CONTRACT FRA-670-1.25 (A-5).
- FOR CONSTRUCTION OF CONCRETE PULL BOXES SEE ITEM SPECIAL 32" PULL BOX DETAIL ON DWG. 102/2. PULL BOX COVERS SHALL HAVE THE WORD "TRAFFIC" STAMPED INTO THEM AND SHALL BE CONSTRUCTED PER ODOT SPECIFICATION 713.09.
- CONCRETE BARRIERS TYPE B-50 AND TYPE 5 GUARDRAIL QUANTITIES ARE INCLUDED WITH CONTRACT FRA-670-1.25(A-5).
- 3/8" ANCHORS CONFORMING TO ODOT SPECIFICATION 712.01, OR ANCHORS AS PER FF-S-325 GROUP VIII, TYPE I WITH PROOF LOAD CERTIFICATION AS PER 712.01. LENGTH OF ANCHORS AND BOLTS TO BE DETERMINED IN FIELD.
- FOR TYPE B-50 BARRIER TRANSITIONS AND TYPE D BARRIER TRANSITIONS SEE ODOT STD. DWG. GR-3.5 AND GR-8.1.

**GUARDRAIL / BARRIER STATIONING**

POINT I.D.	BASELINE STATION	BASELINE OFFSET	DESCRIPTION
A	NB 104+92.2	7.7' LEFT	FACE OF 30" BARRIER
B	NB 105+52.2	4.5' LEFT	FACE OF 30" BARRIER
C	NB 105+62.2	4.5' LEFT	FACE OF 30" BARRIER
D	SB 105+72.7	5.0' RIGHT	FACE OF 30" BARRIER
E	SB 105+96.6	5.0' RIGHT	FACE OF 30" BARRIER
F	SB 106+51.6	8.4' RIGHT	FACE OF 30" BARRIER
G	SB 105+72.6	57.2' LEFT	FACE OF TYPE "D" BARRIER
H	SB 105+86.6	57.2' LEFT	
I	SB 106+06.6	56.0' LEFT	
J	SB 106+72.6	56.0' LEFT	
K	NB 105+62.2	57.4' RIGHT	
L	NB 105+76.8	56.7' RIGHT	END TYPE I, BRIDGE TERMINAL ASSY.
M	NB 105+74.4	57.4' RIGHT	
N	NB 105+88.7	56.7' RIGHT	
O	NB 106+41.0	56.0' RIGHT	
P	NB 105+51.8	56.7' RIGHT	BEGIN TYPE I, BRIDGE TERMINAL ASSY.
Q	NB 104+76.8	56.7' RIGHT	BEGINNING OF TYPE B, ANCHOR ASSY. FLARE
R	NB 104+39.3	60.7' RIGHT	BUFFER END SECTION

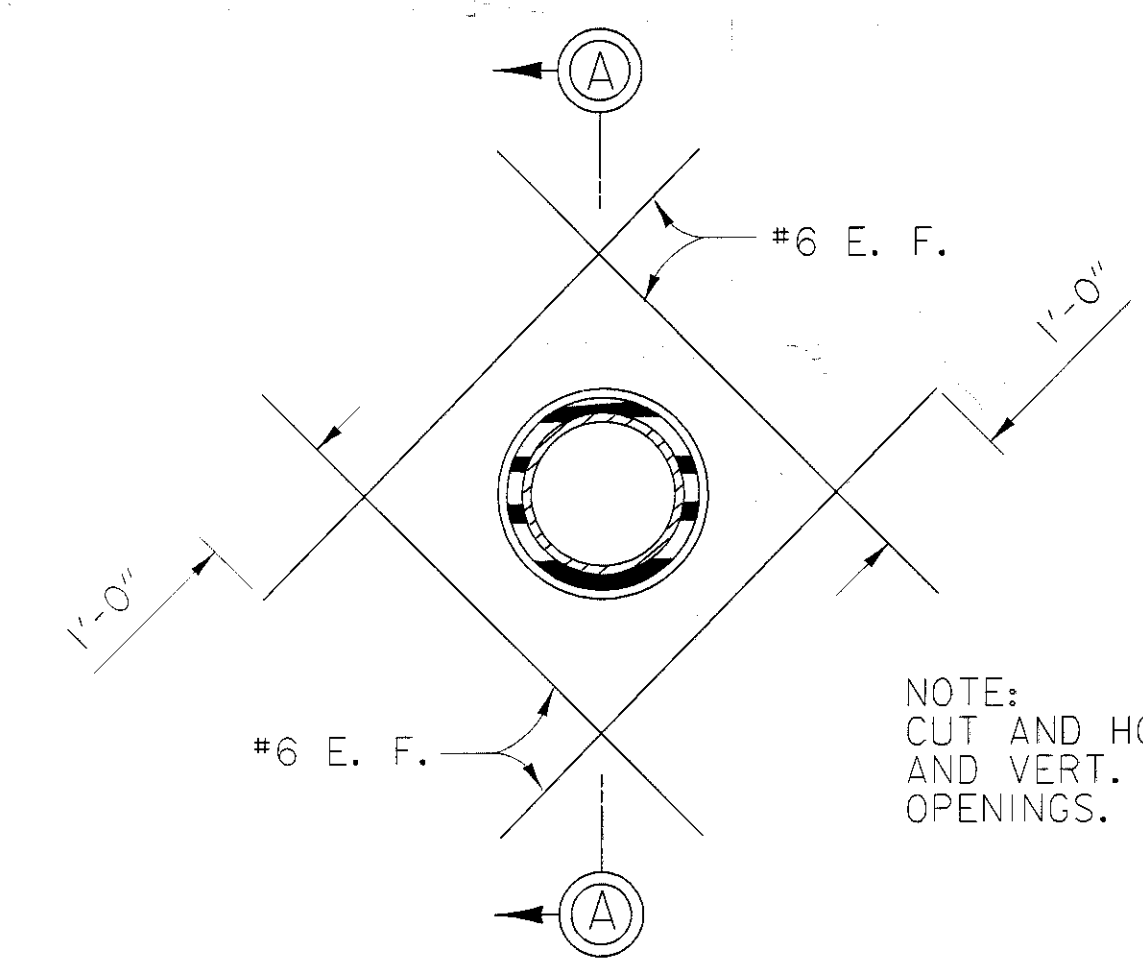
REVISION	DATE	DESCRIPTION	BY
COMPUTER A 10ED		CADD COMPUTER INFORMATION	
DESIGN & DRAFTING		SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 315gr.dgn	
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.			
DESIGNED BY: J. VASSAR R. RAKES	SCIO TO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE HIGHWAYS GUARDRAIL / BARRIER PLAN AND DETAILS		
DRAWN BY: R. RAKES J. SIMPKINS	APPROVED: DATE: MAY 1997		
CHECKED BY: J. NOLEN P. FERGOUSON	COL. C. E. DISTRICT ENGINEER		
SUBMITTED BY:	SCALE: AS SHOWN CONTR. NO. DRAWING NUMBER 016-FWC-2-681		
CHIEF, DESIGN BRANCH	APPROVED FOR: SHEET 1 OF 1		





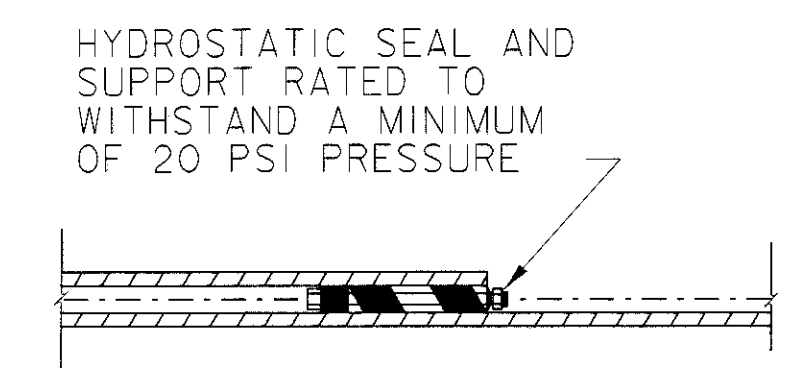
**PLAN**

30' 20' 10' 0 30' 60'  
 SCALE IN FEET



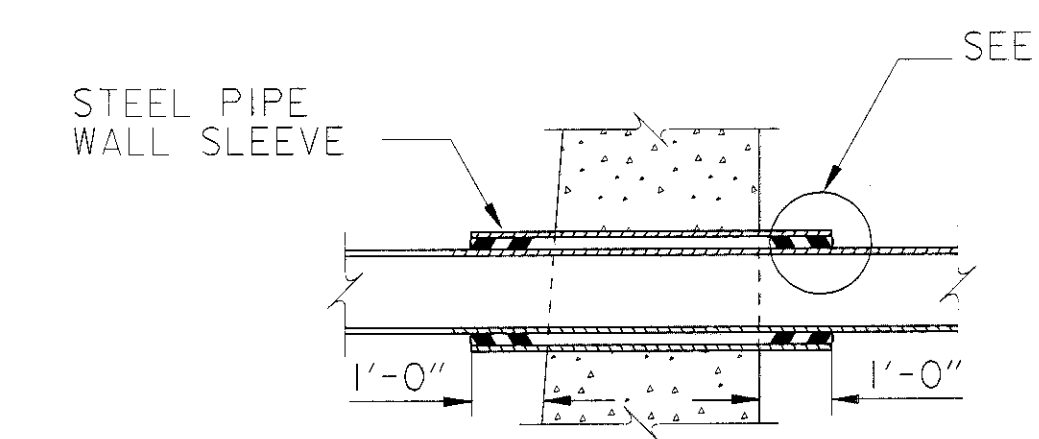
**ELEVATION**

12" 6" 0 1' 2' 3'  
 SCALE: 3/4"=1'-0"



**DETAIL "A"**

12" 6" 0 1' 2' 3'  
 SCALE: 3/4"=1'-0"



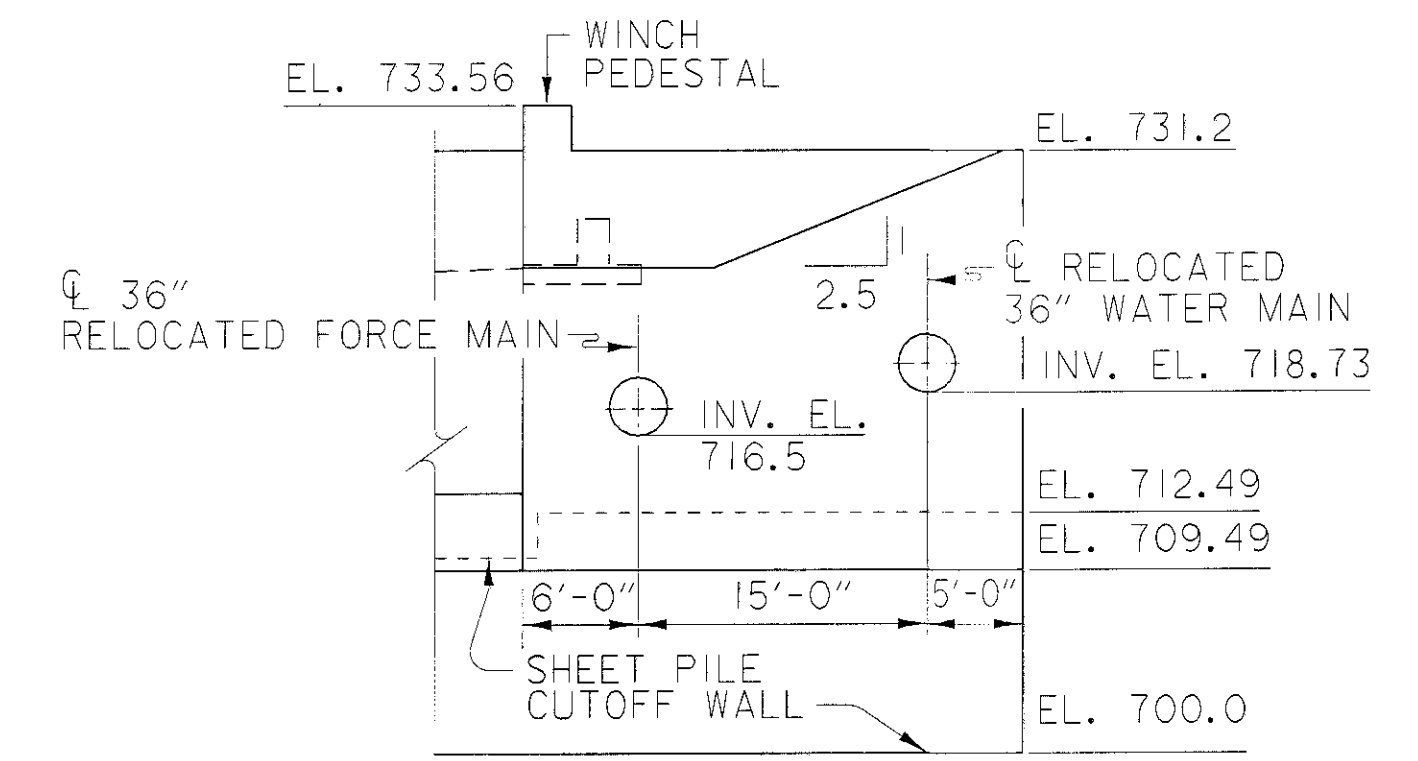
**SECTION A-A**

12" 6" 0 2' 4' 6'  
 SCALE: 3/8"=1'-0"

**METHOD OF PASSING UTILITY PIPE THROUGH WALL STEM**

**NOTES**

1. FOR PLAN AND PROFILE, SEE DWG. 16/1.
2. FOR LEGEND, SEE DWG. 0/2.
3. FOR GENERAL NOTES, SEE DWG. 0/3.
4. FOR CONSTRUCTION OF CONCRETE PULL BOXES SEE DETAILS ON DWG. 102/2.
5. FOR LOCATION OF 4" CONDUITS THROUGH THE MEDIAN PIER MONOLITH SEE DRAWINGS 20/1, 20/2 AND 20/7.



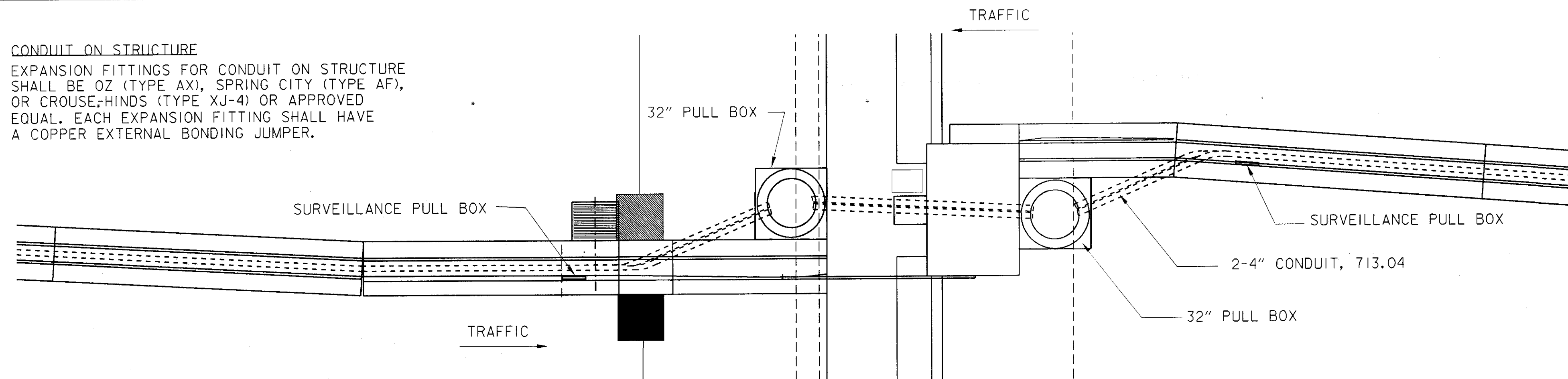
**I-WALL DETAIL**

SCALE: 1" = 10'  
 10' 0'

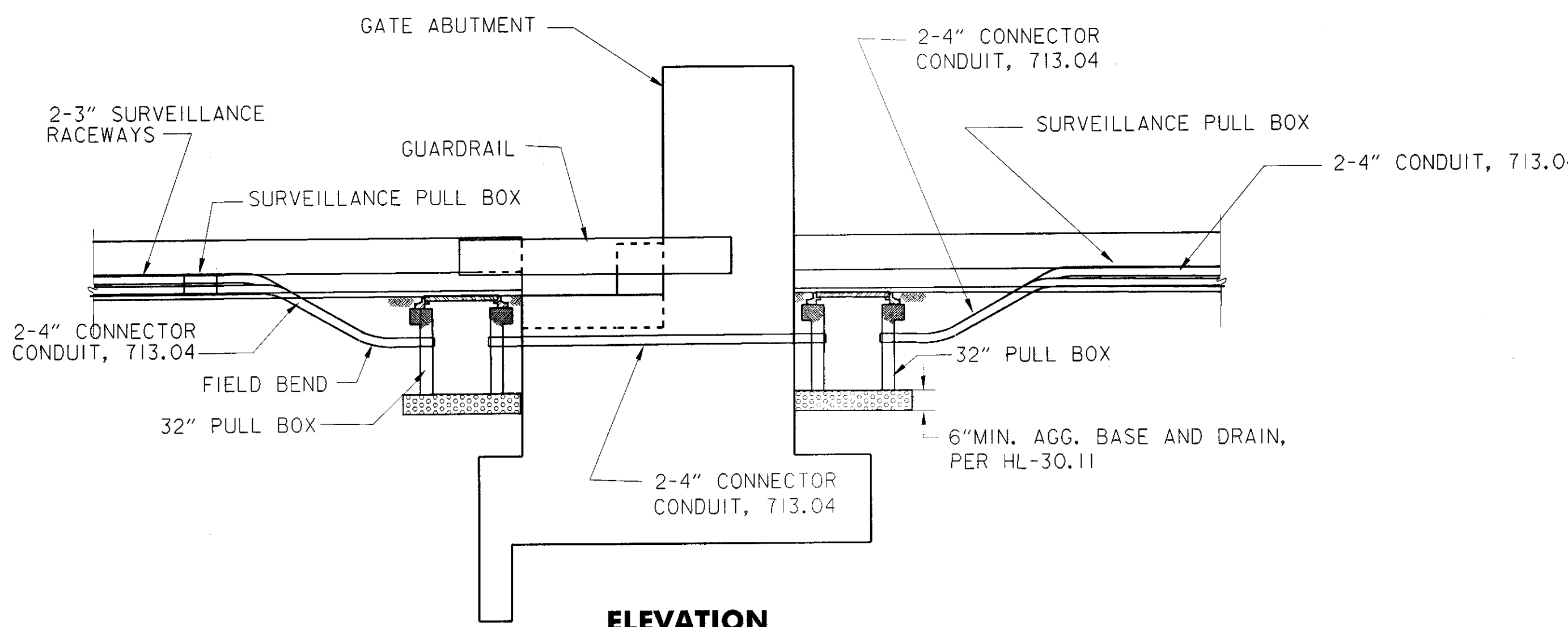
REVISION	DATE	DESCRIPTION	BY

COMPUTER A IDEO DESIGN & DRAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: 102001.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>F. HUFF</b> <b>T. LOUDERMILK</b> DRAWN BY: <b>J. SIMPKINS</b> <b>H. WEHRLE</b> CHECKED BY: <b>J. NOLEN</b> <b>T. LOUDERMILK</b> SUBMITTED BY:	<b>SCIOTO RIVER          COLUMBUS, OHIO          WEST COLUMBUS I.P.P.          SR 315 GATE CLOSURE          UTILITIES          PLAN</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> COL. C. E. DISTRICT ENGINEER
APPROVED FOR: _____	SCALE: <b>AS SHOWN</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-1021</b>
DATE: _____	SHEET 1 OF 1

**CONDUIT ON STRUCTURE**  
 EXPANSION FITTINGS FOR CONDUIT ON STRUCTURE SHALL BE OZ (TYPE AX), SPRING CITY (TYPE AF), OR CROUSE-HINDS (TYPE XJ-4) OR APPROVED EQUAL. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

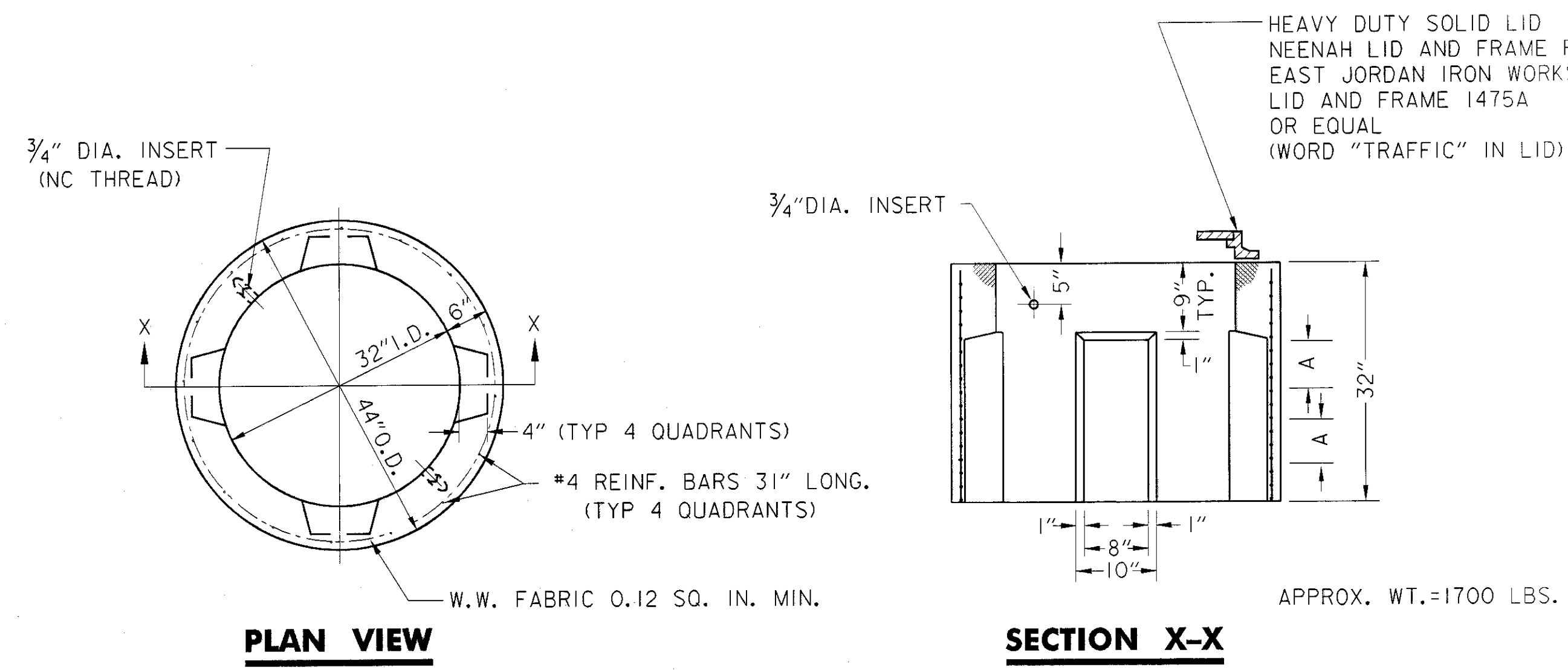


**PLAN VIEW**



**ELEVATION**

**TYPICAL SURVEILLANCE CONDUIT TREATMENT AT GATE SILL**



**PLAN VIEW**

**SECTION X-X**

**ITEM SPECIAL 32" PULL BOX**

"A" CUT OUT 4 WIRES IN THE AREA OF THE REDUCED WALL SECTION. ALSO INCLUDE THE VERTICAL WIRE FOR REMOVAL.  
 CONCRETE COMP. STRENGTH 4000 PSI MIN. DESIGN.  
 CONCRETE AIR ENTRAINMENT TO BE 6% + 1 1/2%.  
 COATING OF PROTECTIVE ACRYLIC IS TO BE APPLIED TO THE TOP 12" OF THE OUTSIDE FACE AND TOTAL INSIDE FACE.  
 LID RING LOAD TRANSFER IS TO BE DISTRIBUTED BY THE USE OF A PERFORMED MOSTIC JOINT MATERIAL.

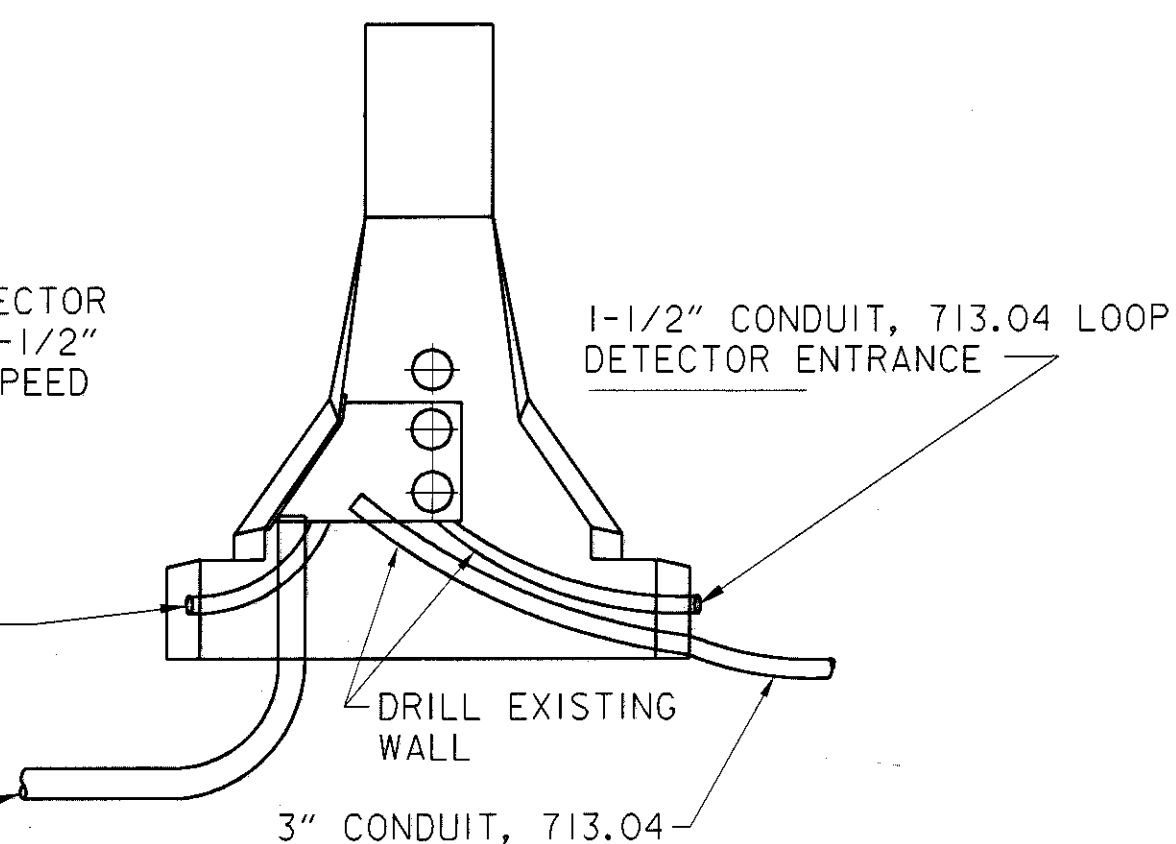
DESIGNED BY:	CADD COMPUTER INFORMATION	
DRAWN BY:	SYSTEM: INTERGRAPH CADD SYSTEM	
CHECKED BY:	SOFTWARE: MicroStation Version 4.X	
SUBMITTED BY:	FILE SPEC: pullbx01.dgn	
CHIEF, DESIGN BRANCH	U.S. ARMY ENGINEER DISTRICT, HUNTINGTON	
APPROVAL RECOMMENDED:	CORPS OF ENGINEERS	
CHIEF, ENG DIVISION	HUNTINGTON, W.VA.	
APPROVED FOR:	APPROVED:	DATE: MAY 1997
DATE:	SCALE: AS SHOWN	CONTR. NO:
	DRAWING NUMBER	016-PWC-2-1022
	SHEET 1 OF 1	

**NOTE:**

FOR EACH SIDE, ONE (1) 1-1/2" CONDUIT IS REQUIRED FOR DETECTOR STATION LOCATIONS. TWO (2) 1-1/2" CONDUITS ARE REQUIRED FOR SPEED TRAP LOCATIONS.

1-1/2" CONDUIT, 713.04 LOOP DETECTOR ENTRANCE, WHERE NEEDED. (2 EA. THIS SIDE)

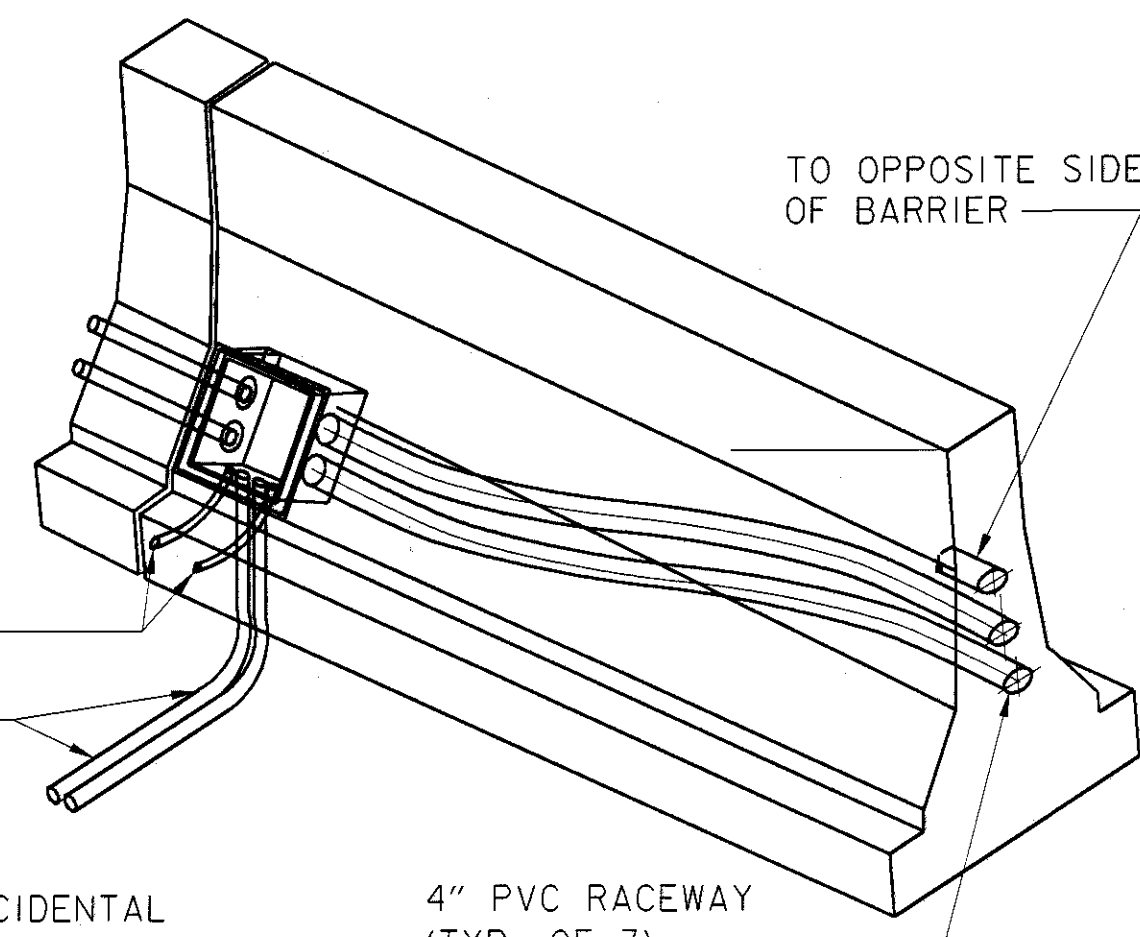
3" CONDUIT, 713.04



**ALTERNATE METHOD:**

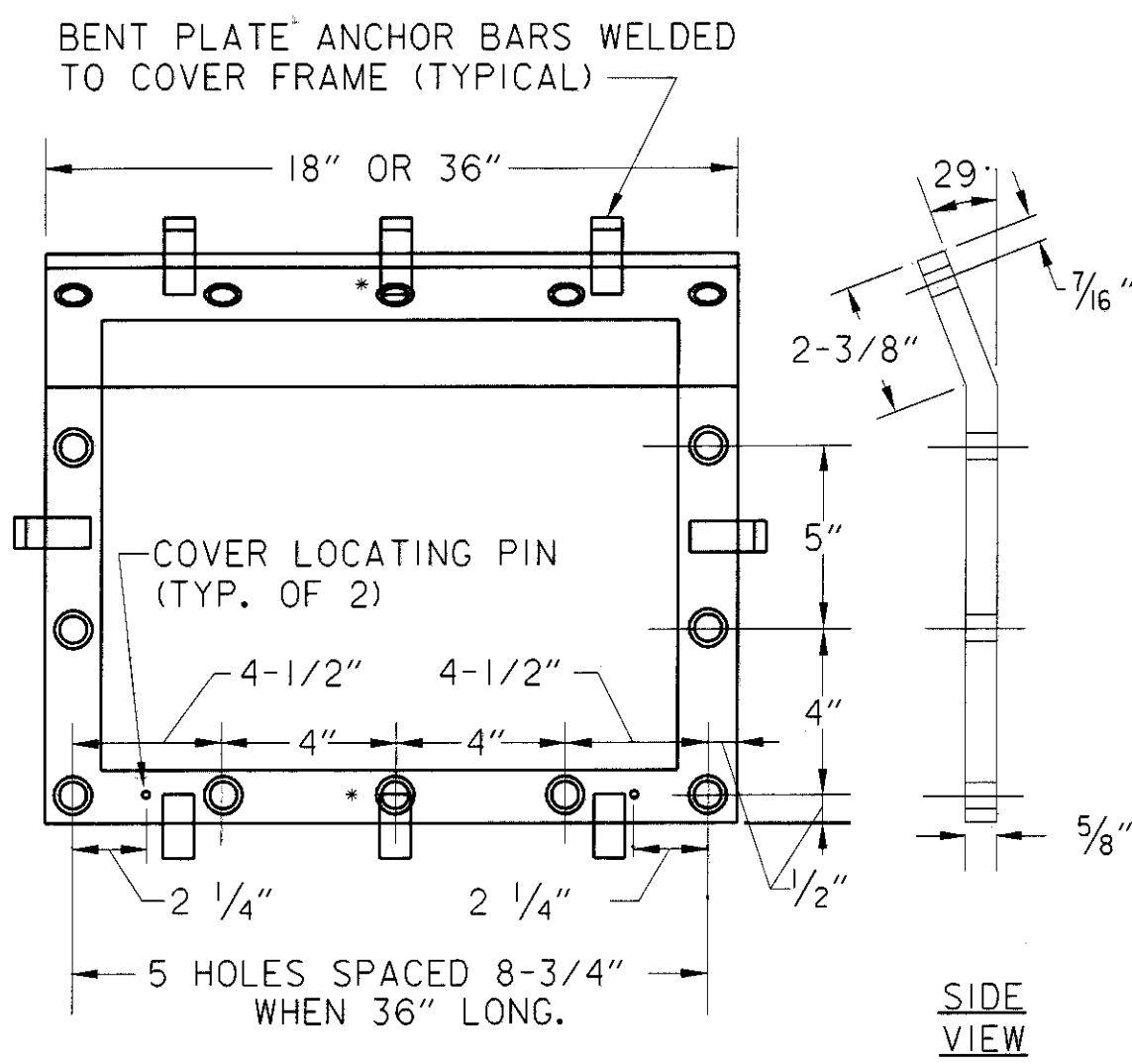
CONTRACTOR MAY CUT OUT A 10'-0" SECTION OF WALL AND REPLACE IT WITH A SECTION CONTAINING A NEW PULLBOX. AN EXPANSION JOINT SHALL BE USED ON EACH END OF THE CUT OUT SECTION. SEE DETAIL, SHEET 6.

1-1/2" CONDUIT, 713.04  
3" CONDUIT, 713.04



REFINISHED AROUND BOX IS INCIDENTAL TO THE COST OF INSTALLATION.

**MODIFICATIONS TO MEDIAN PULL BOX**



**DETAIL OF COVER PLATE FOR PULLBOX CAVITY**

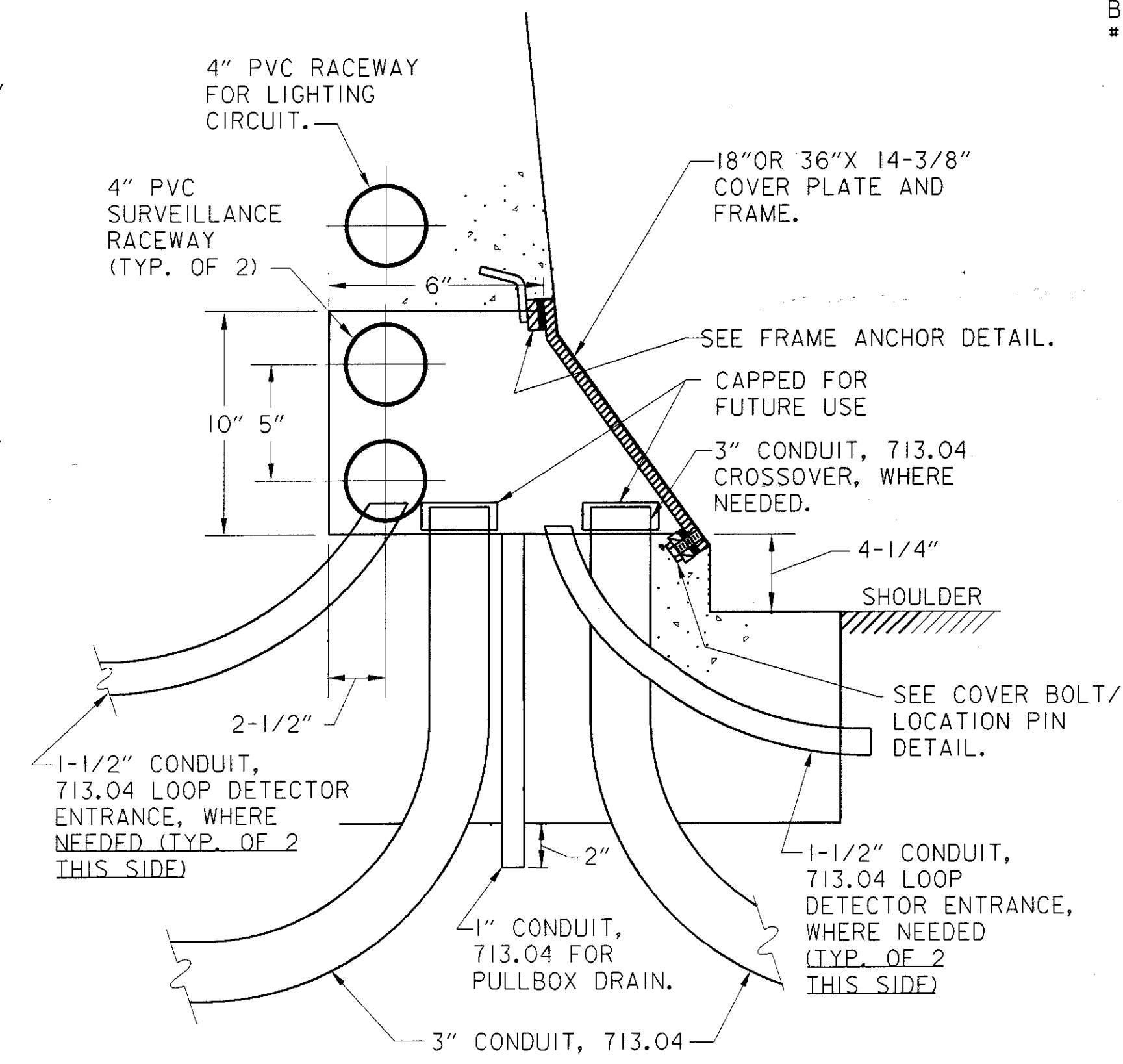
\*NOTE: WHEN 36" LONG COVER PLATE IS USED LOCATE 2 ADDITIONAL PLATE ANCHOR BARS AS SHOWN.

**ASSEMBLY NOTE:**

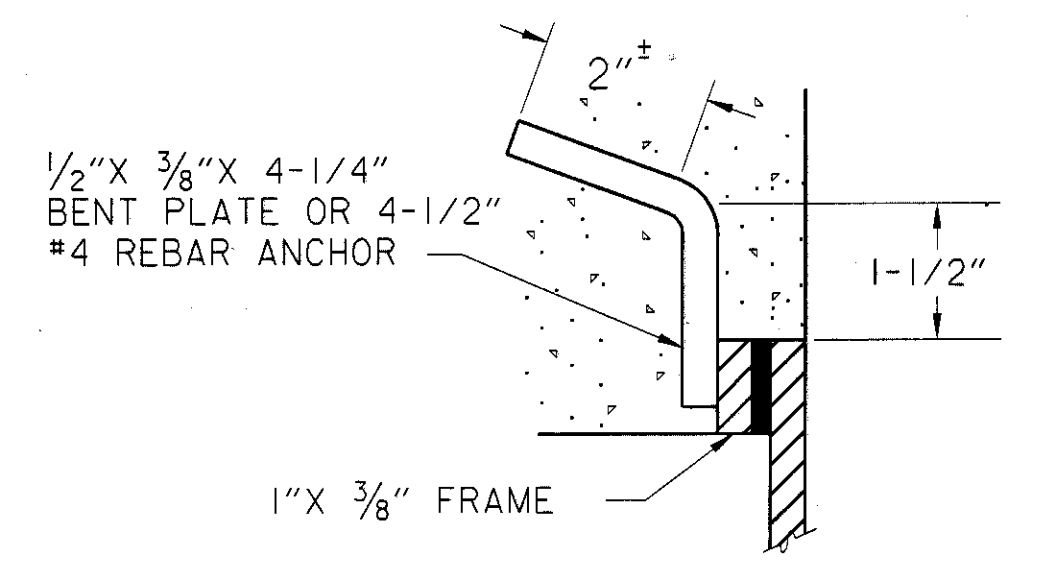
COVER SHALL BE ORIENTED WITH THE LOCATING PINS BEFORE DRILLING COVER PLATE BOLT HOLES.

**NOTE:**

THE PULLBOX CAVITY COVER PLATE AND FRAME SHALL BE HOT DIP GALVANIZED AFTER ALL FABRICATION IS FINISHED, IN ACCORDANCE WITH REQUIREMENTS OF ASTM A-123.

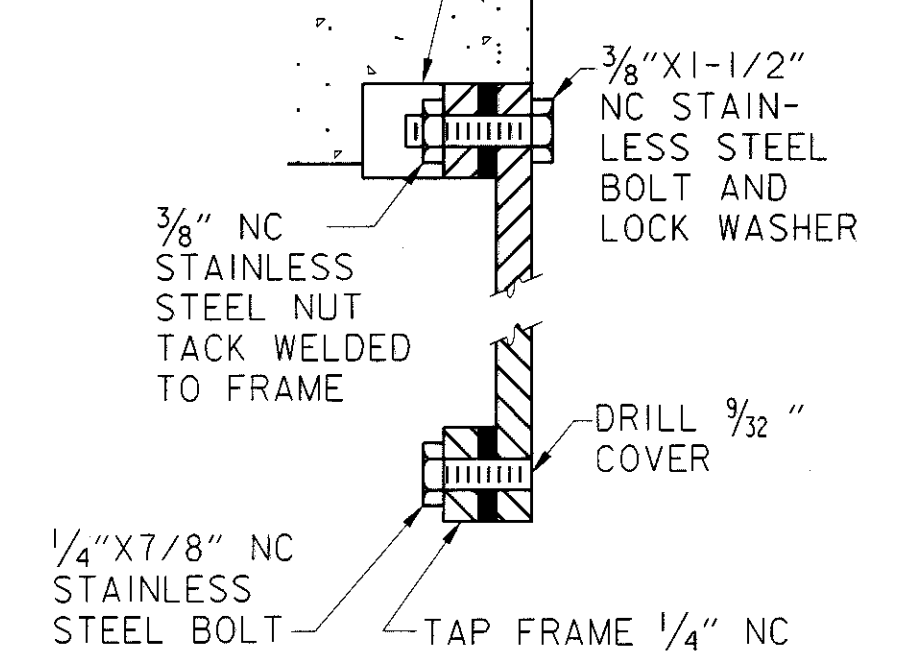


**TYPICAL TRAFFIC SURVEILLANCE PULLBOX**



**FRAME ANCHOR DETAIL**

1"X1"X1" STYROFOAM BLOCK GLUED TO BACK OF FRAME AND NUT TO REMAIN IN PLACE AFTER CONCRETE HAS BEEN POURED.

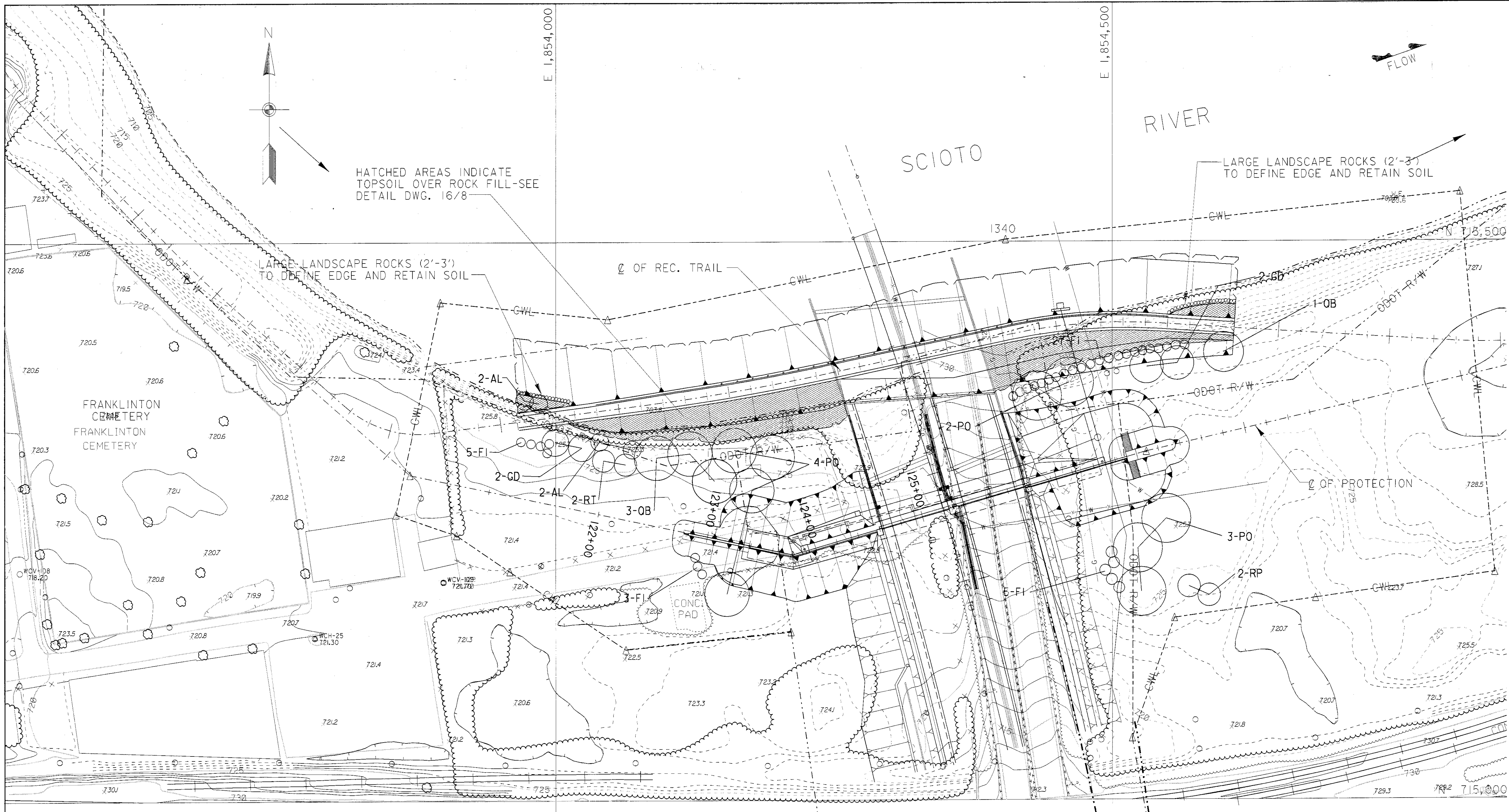


**COVER BOLT AND LOCATION PIN DETAIL**

**SURVEILLANCE MEDIAN PULL BOX AND CONDUIT**

REVISION		DATE	DESCRIPTION	BY
COMPUTER AIDED DESIGN & DRAFTING		CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: pullbx02.dgn		
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.				
DESIGNED BY:	SCIO TO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE MEDIAN PULL BOX DETAILS			
DRAWN BY: S. CAMPBELL				
CHECKED BY: J. ASHWORTH				
SUBMITTED BY:				
CHIEF, DESIGN BRANCH	APPROVED:	DATE:	MAY 1997	
CHIEF, ENG DIVISION	COL. C. E. DISTRICT ENGINEER			
APPROVED FOR:	SCALE: AS SHOWN	CONTR. NO.:	DRAWING NUMBER	
DATE:	SHEET 1 OF 1		O16-PWC-2-1023	





**PLAN**

SCALE: 1" = 50'  
 50' 0 50'

QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	MIN. HEIGHT	MIN. ROOT BALL SIZE
		LARGE TREES				
4	GD	GYMNOCLADUS DIOICUS	KENTUCKY COFFEETREE	2 1/2" CAL.	12-14'	28X18.7"
9	PO	PLANTANUS OCCIDENTALIS	AMERICAN SYCAMORE	2 1/2" CAL.	12-14'	28X18.7"
4	OB	QUERCUS BICOLOR	SWAMP WHITE OAK	2 1/2" CAL.	12-14'	28X18.7"
2	RP	ROBINA PSEUDOACACIA	BLACK LOCUST	2 1/2" CAL.	12-14'	28X18.7"
19		ORNAMENTALS & SHRUBS				
4	AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY		4' B&B	14X10.5"
40	FI	FORSYTHIA X INTERMEDIA	FORSYTHIA	NO. 3 CONT.	18"	
2	RT	RHUS TYPHINA	STAGHORN SUMAC		18" B&B	9X6.8"
46						

REVISION DATE DESCRIPTION BY	
COMPUTER A IDEO DESIGN & D RAFTING	CADD COMPUTER INFORMATION SYSTEM: INTERGRAPH CADD SYSTEM SOFTWARE: MicroStation Version 4.X FILE SPEC: plantplan.dgn
U.S. ARMY ENGINEER DISTRICT, HUNTINGTON CORPS OF ENGINEERS HUNTINGTON, W.VA.	
DESIGNED BY: <b>K. KLARE</b> DRAWN BY: <b>J. SALVINO T. FUDGE</b> CHECKED BY: <b>C. BARRY L. MCCOY</b> SUBMITTED BY:	<b>SCIOTO RIVER COLUMBUS, OHIO WEST COLUMBUS L.P.P. SR 315 GATE CLOSURE PLANTING PLAN</b>
CHIEF DESIGN BRANCH APPROVAL RECOMMENDED:	APPROVED: _____ DATE: <b>MAY 1997</b> COL. C. E. DISTRICT ENGINEER
CHIEF ENG DIVISION APPROVED FOR:	SCALE: <b>AS SHOWN</b> CONTR. NO.: _____ DRAWING NUMBER <b>016-PWC-2-121</b>
DATE: _____	SHEET 1 OF 1













SHEET NUMBER					PARTICIPATION			ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.	CALCULATED	CHECKED
				203-X											
				8025				202	30700	8025	LIN FT	CONCRETE BARRIER REMOVED			
				2				202	47000	2	EACH	BRIDGE TERMINAL ASSEMBLY REMOVED			
				1				202	98100	1	EACH	REMOVAL MISC.: TEMPORARY IMPACT ATTENUATOR REMOVED			
				6				202	98100	6	EACH	REMOVAL MISC.: TYPE III BARRICADE REMOVED			
				50				202	98100	50	EACH	REMOVAL MISC.: PLASTIC SAFETY DRUM REMOVED			
				40				202	98100	40	EACH	REMOVAL MISC.: TEMPORARY REBOUNDABLE TUBULAR PYLONS REMOVED			
				100				202	98200	100	LIN FT	REMOVAL MISC.: PORTABLE CONCRETE BARRIER REMOVED FOR STORAGE			
				80				614	11100	80	HOURLY	LAW ENFORCEMENT OFFICER WITH PATROL CAR			
				50				SPECIAL	61412720	50	EACH	PLASTIC SAFETY DRUM			
				2				614	18601	2	SIGN MNTH	PORTABLE CHANGEABLE MESSAGE SIGN, AS PER PLAN	203-A		
				1				SPECIAL	61418000	1	EACH	MAINTAINING TRAFFIC, MISC.: TYPE III BARRICADE (10 FEET LONG)			
				0.5				614	20100	0.5	MILE	TEMPORARY LANE LINE, CLASS I, 642 PAINT			
				0.5				614	22100	0.5	MILE	TEMPORARY EDGE LINE, CLASS I, 642 PAINT			
				200				614	23200	200	LIN FT	TEMPORARY CHANNFLIZING LINE, CLASS I, 642 PAINT			
				25				630	85000	25	EACH	REMOVAL OF GROUND MOUNTED SIGN AND STORAGE			
				31				630	87000	31	EACH	REMOVAL OF OVERHEAD MOUNTED SIGN AND STORAGE			
				74				630	87510	74	EACH	REMOVAL OF POLE MOUNTED SIGN AND STORAGE			
				30				630	89898	30	EACH	REMOVAL OF TEMPORARY OVERLAY SIGN AND STORAGE			
				130				630	91000	130	EACH	PREPARATION AND SHIPMENT OF STORED SIGNS, FLAT SHEET			
				31				630	91010	31	EACH	PREPARATION AND SHIPMENT OF STORED SIGNS, EXTRUSHEET			
				6				631	97700	6	EACH	SIGN LIGHTING MISC.: REMOVAL AND REINSTALLATION OF LIGHTING			
				17820				642	30000	17820	LIN FT	REMOVAL OF PAVEMENT MARKING			
				5				642	30020	5	EACH	REMOVAL OF PAVEMENT MARKING			
				4				644	01300	4	EACH	LANE ARROW			
				2				644	01410	2	EACH	WORD ON PAVEMENT, 96"			

TRAFFIC CONTROL GENERAL SUMMARY

FRA - 315 - 0.93





# GROUND MOUNTED SIGNS SUB-SUMMARY

STATION	DISTANCE RT. OR LT. OF $\epsilon$ OR $\phi$ OF SURVEY TO $\epsilon$ POST OR $\phi$ NEAREST POST OF THE SIGN	TYPE OF SIGN(S)	PARTICIPATION		NUMBER OF SUPPORTS	630											REMARKS	
			F	IR		EA.	SIGNS FLAT SHEET SQ. FT.	SIGNS FLAT SHEET TYPE "G" SHEETING SQ. FT.	SIGNS EXTRUSHEET TYPE "G" SHEETING SQ. FT.	GROUND MOUNTED SUPPORT, No. 2 POST LIN. FT.	GROUND MOUNTED SUPPORT, No. 3 POST LIN. FT.	GROUND MOUNTED SUPPORT, No. 4 POST LIN. FT.	ONE WAY SUPPORT No. 4 Post LIN. FT.	GROUND MOUNTED SUPPORT, 54" x 7.7" BEAM LIN. FT.	GROUND MOUNTED SUPPORT, 110" x 12" BEAM LIN. FT.	CONCRETE FOR EMBEDDED FOUNDATION BREAKAWAY BEAM CONNECTION CU. YD.		EA.
96+00 RAMP W-E	S.B.	12.50' LT.			2		22.5					15	16					
96+00 RAMP W-E	S.B.	33.50' RT.			2		22.5					15	16					
96+95 RAMP W-E	S.B.	13.98' LT.			2		6.19	27					28		0.54	2		
97+95 RAMP W-E	S.B.	13.50' LT.			2		13.5						27					
97+95 RAMP W-E	S.B.	34.50' RT.			2		15.5						29					
98+18 S.R. 315	S.B.	183'( $\pm$ ) LT.			1/3		2.25/6.75						9/27				ON $\epsilon$ GAY ST.	
99+30 S.R. 315	S.B.	63.57' LT.			2			30						30	0.54	2		
100+64 S.R. 315	N.B.	113'( $\pm$ ) RT.			1/3		2.25/6.75						9/27				ON $\epsilon$ SCOTT ST.	
101+25 S.R. 315	S.B.	89.56' LT.			2		16						32				ON $\epsilon$ SCOTT ST.	
100+76 S.R. 315	S.B.	163'( $\pm$ ) LT.			1/3		2.25/6.75						9/27				ON $\epsilon$ SCOTT ST.	
111+10 S.R. 315	N.B.	63.57' RT.			2			30							0.54	2		
112+00 RAMP S-M	N.B.	13.98' RT.			2			58.5		15				41	2.20	2		
114+50 RAMP S-M	N.B.	35.5' LT.			1		8			15								
114+50 RAMP S-M	N.B.	30.0' RT.			1		6			14								
116+60 RAMP S-M	N.B.	22.0' RT.			2			15.0					15	16				
116+75 RAMP S-M	N.B.	34.0' LT.			2			15.0					15	16				
121+58 S.R. 315	N.B.	51.57' RT.			2			30						30	0.54	2		
452+25 RAMP S-J	S.B.	30.0' LT.			2			16					32					
2+50 RICKENBACKER DRIVE		16.5' RT.			1			5.0					13					
12+25 RICKENBACKER DRIVE		16.5' LT.			1			6.25					13					
113+25 BIKEWAY (SCIOTO)		25.0' RT.			1			8.50					13					
114+04 BIKEWAY		19.5' RT.			1			8					13					
114+55 BIKEWAY		8.0' RT.			1			4					11					
114+55 BIKEWAY		8.0' LT.			1			8					13					
115+55 BIKEWAY		8.0' LT.			1			2.25					11					
5+75 BIKEWAY (OLENTANGY)		12.0' RT.			1			4					11					
6+60 BIKEWAY		12.0' LT.			1			12.0					13					
120+30 BIKEWAY (SCIOTO)		8.0' RT.			1			2.25					11					
120+82 BIKEWAY		8.0' RT.			1			9.75					14					
0+16 BIKEWAY CONNECTOR		8.0' RT.			1			4					13					
0+16 BIKEWAY CONNECTOR		8.0' LT.			1			2.25					13					
1+76 BIKEWAY CONNECTOR		8.0' LT.			1			2.25					13					
SUB-TOTALS "F"							116.4	57.0	—	137	62	32	58	—	1.08	4		
SUB-TOTALS "IR"							138.5	118.5	—	192	89	32	30	41	3.28	6		
TOTALS							254.9	175.5	—	329	151	64	88	41	4.36	10		

# TRAFFIC CONTROL SUB-SUMMARY

644 PAVEMENT MARKING				PARTICIPATION F IR		(WE)	(YE)	(DLS)	(LL)	(XW)	(CH)	(WIM)	(YIM)	(YCM)	(SL)	(WT)	(WP)	(A)	(CL)	(DCL)				
						5" WHITE EDGE LINE	5" YELLOW EDGE LINE	5" DOUBLE WHITE CHAN'G LINE	5" LANE LINE	10" CROSS-WALK LINE	10" CHAN'G LINE WHITE	ISLAND MARKING WHITE	ISLAND MARKING YELLOW	CURB MARKING YELLOW	20" STOP LINES WHITE	20" TRANS-VERSE LINE WHITE	WORD "ONLY" ON PAV'T. 72" WHITE	LANE ARROW WHITE	10" STOP LINE WHITE	5" CENTER LINES	5" DOUBLE YELLOW CENTER LINES			
ROADWAY	STATION TO	STATION	SIDE			LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. FT.	SQ. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LIN. FT.	LIN. FT.	LIN. FT.			
S.R. 315	95+75	104+00	N.B.	✓		825	825		1650															
S.R. 315	95+75	99+90	S.B.	✓		415	415		830															
S.R. 315	99+90	102+70	S.B.	✓		280	280	560	280							220								
S.R. 315	102+70	104+00	S.B.	✓		130	130	260	260															
RAMP W-E	95+77	95+82	S.B.	✓						90														
RAMP W-E	95+93	98+00	S.B.	✓						207				32			2	4						
RAMP W-E	96+28	99+95	S.B.	✓		367	367																	
S.R. 315	104+00	109+35	N.B.	✓		535	535		1605															
S.R. 315	109+35	110+75	N.B.	✓		140	140		830						167									
S.R. 315	110+75	115+00	N.B.	✓		425	425		550															
RAMP S-M	110+70	115+00	N.B.	✓		430	430		430					125					3					
S.R. 315	104+00	110+80	S.B.	✓		680	680	680	1360					90										
S.R. 315	110+80	115+00	S.B.	✓		420	420		420															
ROAD S-K	440+22	444+50	S.B.	✓		428	428		428															
ROAD S-K	444+50	448+20	S.B.	✓		370	370		370															
ROAD S-K	448+20	450+60	S.B.	✓		480	240		240															
ROAD S-K	450+60	452+50	S.B.	✓		190	190																	
RAMP S-J	450+60	455+78	S.B.	✓		518																		
RAMP S-J	450+60	456+67	S.B.	✓			583			100				18	55									
S.R. 315	115+00	122+00	S.B.	✓		700	700		700															
S.R. 315	115+00	118+42	N.B.	✓		342	342		342															
S.R. 315	118+42	120+82	N.B.	✓		240	240		240						188									
S.R. 315	120+82	122+00	N.B.	✓		118	118		118															
ROAD S-L	120+80	122+00	N.B.	✓		118	118																	
RAMP S-M	115+00	116+85	N.B.	✓		125	185		185					58			2	6						
BIKEWAY	5+45	10+00		✓																	455			
BIKEWAY	101+50	120+85		✓																	1935			
BIKEWAY CONN.	0+22	1+75		✓																	10	153		
RICKENBACKER	0+57	11+38.74																				1082		
RICKENBACKER	11+38.74	14+50																				311		
SUB-TOTALS "F"						2017	2017	820	3020	90	767			32	220	2	4							
SUB-TOTALS "IR"						6259	6144	680	7168		2142			76	410	2	9	10	2543	1393				
TOTALS						8276	8161	2180	10188	90	2907			108	630	4	13	10	2543	1393				

### ITEM 644 PAVEMENT MARKING

#### "F" PARTICIPATION

(WE) EDGE LINES (WHITE)	2,017 ÷ 5,280 = 0.382 MI.	} 0.764 MILES
(YE) EDGE LINES (YELLOW)	2,017 ÷ 5,280 = 0.382 MI.	
(LL) LANE LINES, 5"	3,020 ÷ 5,280 = 0.572 MI.	
(DLS) DOUBLE WHITE LINE, 5"	820 ÷ 5,280 = 0.155 MI.	

#### "IR" PARTICIPATION

(WE) EDGE LINES (WHITE)	6,259 ÷ 5,280 = 1.186 MI.	} 2.350 MILES
(YE) EDGE LINES (YELLOW)	6,144 ÷ 5,280 = 1.164 MI.	
(LL) LANE LINES, 5"	7,168 ÷ 5,280 = 1.358 MI.	
(DLS) DOUBLE WHITE LINE, 5"	680 ÷ 5,280 = 0.129 MI.	} 0.469 MILES
(CL) CENTER LINES, 5"	1,085 ÷ 5,280 = 0.205 MI.	
(DCL) CENTER LINES 5" DOUBLE YELLOW	1,393 ÷ 5,280 = 0.264 MI.	

TOTALS TO GENERAL SUMMARY



# TRAFFIC CONTROL NOTES

625 POWER SUPPLY FOR SIGN LIGHTING

ELECTRIC POWER SHALL BE OBTAINED FROM THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY AT THE LOCATION INDICATED ON THE PLANS. POWER SUPPLIED SHALL BE 480 VOLTS.

858 ENCLOSURE PADLOCKS

DISCONNECT SWITCH ENCLOSURES FURNISHED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 858.08 SHALL INCLUDE A PADLOCK EQUAL TO MASTER NO. 4BKA OR WILSON BOHANNON 660, WITH LOCK BODY OF BRONZE OR BRASS, AND KEYING IN ACCORDANCE WITH THE FOREGOING SPECIFICATION.

620 DELINEATORS, BY TYPE, FLEXIBLE POST MOUNTED, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING AND INSTALLING DELINEATORS AS SPECIFIED. THE REFLECTORS SHALL BE EITHER TYPE C OR D AND SHALL BE APPROXIMATELY 3" BY 6" WITH A MINIMUM AREA OF 18 SQUARE INCHES. THE REFLECTOR SHALL BE REFLECTIVE SHEETING BONDED DIRECTLY TO THE DELINEATOR POST ( NOT SCREWED OR BOLTED ).

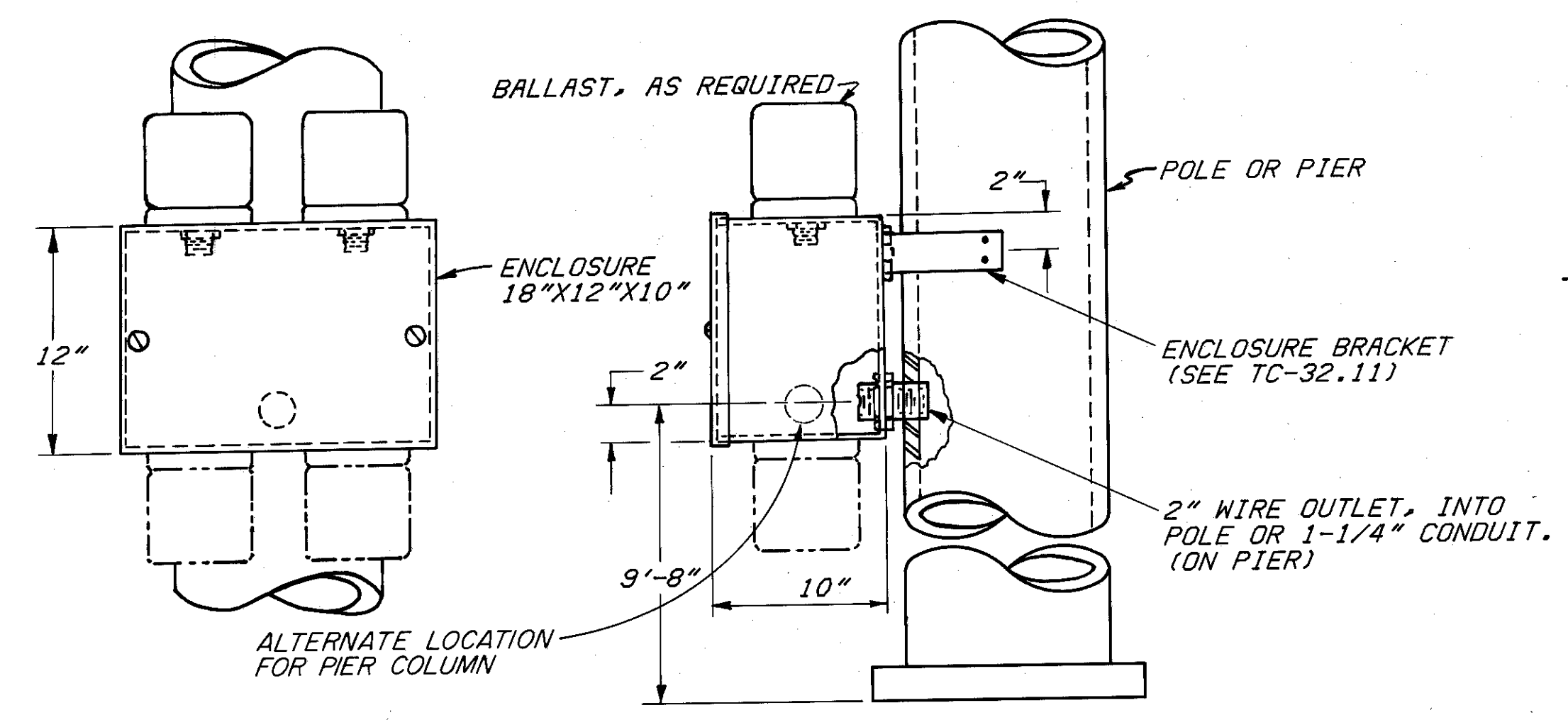
THE FLEXIBLE POSTS SHALL BE WHITE NON-METALLIC, ULTRAVIOLET RESISTANT, AND DESIGNED TO WITHSTAND REPEATED AUTOMOBILE IMPACTS AT 55 MPH AND RETURN TO A VERTICAL POSITION WITH LITTLE OR NO DAMAGE TO THE VEHICLE. THE POSTS SHALL BE CAPABLE OF BEING HAND DRIVEN. WHERE ADVERSE SOIL CONDITIONS CAUSE THE DELINEATOR POST TO EXCEED 1/4" PER FOOT OUT OF PLUMB IN ANY DIRECTION, THE CONTRACTOR MAY DRIVE A PILOT SHAFT BEFORE DRIVING THE POST.

FLEXIBLE DELINEATOR POSTS SHALL BE ONE OF THE FOLLOWING DESIGNS OR APPROVED EQUAL:

1. DESIGN 1. FLEXIBLE POST SHALL BE MANUFACTURED FROM LEXAN WITH A 24" LENGTH OF NO. 1 STEEL DRIVE POST BOLTED TO THE BOTTOM OF THE FLEXIBLE PORTION. THE TOTAL LENGTH OF THE COMPOSITE POST SHALL BE 78". THE WIDTH OF THE POST SHALL BE 3.25".
2. DESIGN 2. FLEXIBLE POST SHALL BE MANUFACTURED FROM FIBERGLASS REINFORCED PLASTIC WITH A T-CROSS-SECTION. THE POST SHALL BE 72" LONG AND 3.60" WIDE.
3. DESIGN 3. FLEXIBLE POST SHALL BE MANUFACTURED FROM FIBERGLASS REINFORCED PLASTIC WITH A CURVED CROSS-SECTION. THE POST SHALL BE 72" LONG AND 3.60" WIDE.
4. DESIGN 4. FLEXIBLE POST SHALL BE MANUFACTURED FROM FIBERGLASS REINFORCED PLASTIC WITH A CURVED CROSS-SECTION. THE POST SHALL BE 72" LONG AND 3.25" IN WIDTH. THESE POSTS MAY BE INSTALLED BY THE CONTRACTOR IN LIEU OF DESIGNS 1, 2 OR 3 WHEN DELINEATORS WOULD BE PLACED BEHIND GUARDRAIL. THESE POSTS SHALL BE INSTALLED ON THE FRONT OF THE WOODEN GUARDRAIL BLOCKOUTS FACING APPROACHING TRAFFIC BY INSTALLING EITHER TWO 5/16" DIAMETER BY 1-1/2" LONG, ZINC COATED LAG SCREWS WITH ZINC COATED 5/16" FLAT WASHERS OR TWO 5/16" DIAMETER BY 1-1/2" LONG, ZINC COATED INDENTED HEX WASHERHEAD LAG SCREWS.

PAYMENT WILL BE AT THE CONTRACT UNIT PRICE FOR EACH DELINEATOR WHICH SHALL INCLUDE FURNISHING AND INSTALLING THE POST AND ALL NECESSARY HARDWARE, LABOR AND EQUIPMENT.

620 EACH DELINEATORS, TYPE , FLEXIBLE POST MOUNTED, AS PER PLAN



~~631 MERCURY VAPOR LUMINAIRE, TYPE TC-31.21, WITH WATT LAMP, AS PER PLAN~~

MERCURY VAPOR LUMINAIRES FOR SIGNS ON THIS PROJECT SHALL BE ERECTED ON TOP MOUNTED FIXTURES AS SHOWN ON THIS SHEET.

CENTER LINES (BIKEWAY)  
WHERE THE BIKEWAY CENTER LINE IS BROKEN, IT SHALL CONSIST OF A 3 FOOT DASH FOLLOWED BY A 9 FOOT SPACE.

TRAFFIC CONTROL STANDARD CONSTRUCTION DRAWINGS

TC-7.65	3-01-79	TC-22.20	9-01-92	TC-51.11	9-30-94
TC-12.30	1-20-84	TC-31.21	9-01-92	TC-52.10	4-03-79
TC-15.115	3-01-79	TC-32.10	9-01-92	TC-52.20	4-03-79
TC-16.20	1-20-84	TC-35.10	8-29-84	TC-61.10	4-05-82
		TC-41.10	8-29-84	TC-65.10	7-07-95
		TC-41.20	6-21-94	TC-65.11	7-07-95
		TC-41.50	6-21-94	TC-71.10	9-10-91
		TC-42.10	8-19-77	TC-72.20	2-26-82
		TC-42.20	3-26-79		

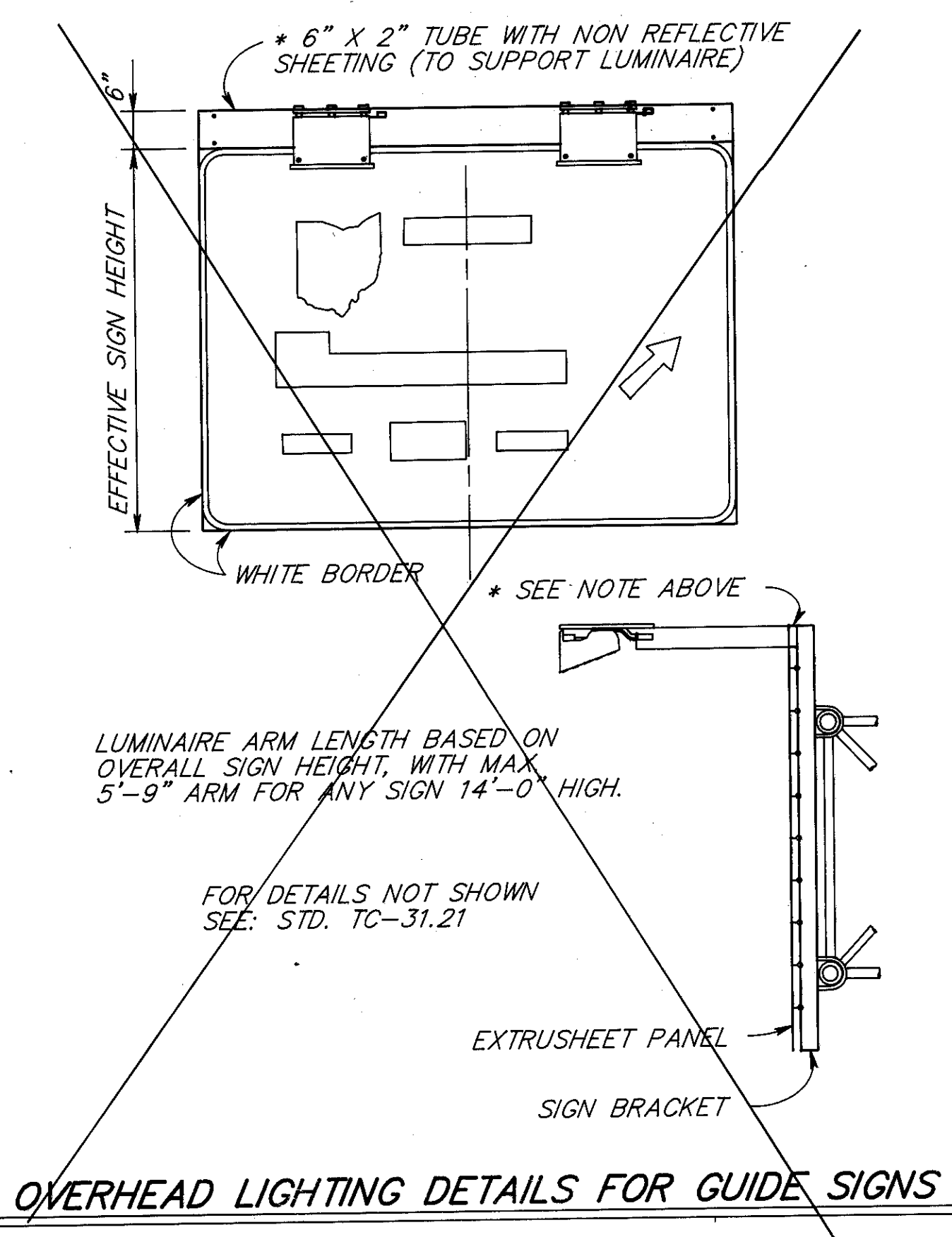
PRE-MARKING INSPECTION

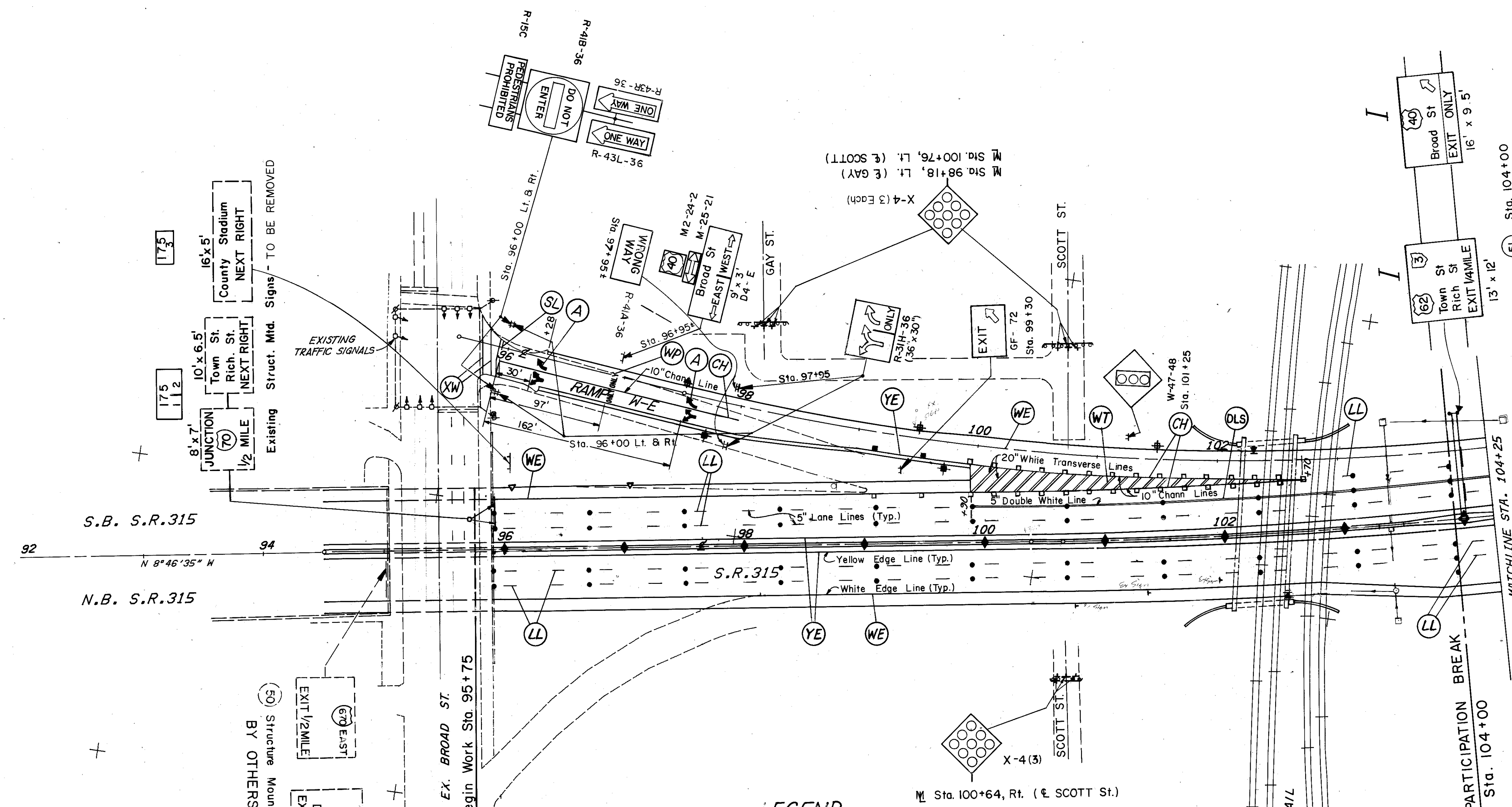
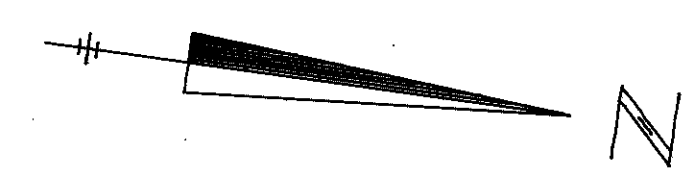
THE CONTRACTOR SHALL NOTIFY THE CITY OF COLUMBUS, DIVISION OF TRAFFIC ENGINEERING, AT LEAST TWO (2) WORKING DAYS PRIOR TO THE PLACEMENT OF THE PRE-MARKING FOR PERMANENT PAVEMENT MARKING SO THAT A REPRESENTATIVE OF THE DIVISION CAN BE PRESENT TO INSPECT THE WORK AND INSURE ACCURACY (PHONE # 614-222-7790).

644.01 - PAVEMENT MARKING MODIFICATIONS

IN ADDITION TO 641.03 GENERAL SPECIFICATIONS, THE FOLLOWING LINE WIDTH MODIFICATIONS SHALL APPLY AS PER TABLE SHOWN:

ITEM	DESCRIPTION	O.D.O.T. WIDTH	COLUMBUS WIDTH	REMARKS
641.08	EDGE LINES	4"	5"	
641.08	LANE LINES	4"	5"	
641.08	CENTER LINES	4"	5"	
641.08	CHANNELIZING LINES	8"	10"	
641.08	STOP LINES	24"	20"	
641.08	CROSSWALK LINES	12"	10"	
641.08	TRANSVERSE LINES	24"	20"	





- ITEM 630 - Removal of Overhead Sign Supports
- ITEM 630 - Removal of Ground Mounted (MAJOR) Sign Supports
- ITEM 630 - Removal of Ground Mounted (MAJOR) Sign
- ITEM 630 - Removal of Overhead Mounted Sign

STATION & OFFSET	GROUND MOUNTED	OVERHEAD	REMARKS [N <sup>o</sup> ] = Ex. Sign N <sup>o</sup>
98 + 75 M 50' LT.		✓ [180]	
98 + 75 M 50' LT.	✓		
99 + 45 M 105' LT.	✓		
100 + 75 M 55' RT.	✓		
101 + 35 M 45' RT.	✓		
101 + 95 M 35' RT.	✓		
95 + 90 M 20' LT.		✓	
TOTALS	5	1	To Gen. Summary

- LEGEND**
- (LL) LANE LINE, 5" DASHED WHITE
  - (WE) EDGE LINE, 5" WHITE
  - (WT) TRANSVERSE LINE, 20" WHITE
  - (YE) EDGE LINE, 5" YELLOW
  - (DLS) DOUBLE LINE, 5" SOLID WHITE
  - (SL) STOP LINE, 20" WHITE
  - (XW) CROSSWALK LINE, 10" WHITE
  - (A) LANE ARROW, WHITE
  - (WP) WORD ON PAVEMENT, 72" WHITE
  - (CH) CHANNELIZING LINE, 10" WHITE
  - (CL) CENTER LINE, 5" DASHED YELLOW
  - (DCL) CENTER LINE DOUBLE 5" DASHED YELLOW
  - ⊕ TYPE 'C' DELINEATORS, COLORLESS
  - ⊕ TYPE 'D' DELINEATORS, YELLOW
  - 1-WAY RAISED PAVEMENT MARKER, WHITE
  - 1-WAY RAISED PAVEMENT MARKER, YELLOW
  - 2-WAY RAISED PAVEMENT MARKER (WHITE/RED)
  - ▲ BARRIER REFLECTORS, TYPE B (YELLOW)
  - ▲ BARRIER REFLECTORS, TYPE B (WHITE)
  - △ BARRIER REFLECTORS, TYPE A (WHITE)
  - (IR) INTERSTATE CONSTRUCTION
  - (F) FEDERAL CONSTRUCTION
  - △ BARRIER REFLECTORS, TYPE A (YELLOW)

RAISED PAVEMENT MARKERS, DELINEATORS & CONC. BARRIER RETRO-REFLECTORS

SIDE	LOCATION/STATION	ITEM		621		620		802		PARTICIPATION	REMARKS
		□	■	●	⊕	▲	▲	F	IR		
LT.	S.R. 315 95+75 - 104+00			24				9		✓	▲ ON 50" MEDIAN
RT.	S.R. 315 95+75 - 104+00			23				9		✓	▲ ON 50" MEDIAN
LT.	S.R. 315 99+10 - 99+90	2								✓	
LT.	S.R. 315 99+90 - 102+05	23								✓	▲ ON 32" BARRIER
LT.	S.R. 315 102+40							1		✓	▲ ON 32" BARRIER
RT.	S.R. 315 102+40							1		✓	▲ ON 32" BARRIER
* LT.	RAMP WE 97+50 - 101+50						3			✓	
* RT.	RAMP WE 97+75 - 99+75				2					✓	
* RT.	RAMP WE 98+15 - 98+95	2								✓	
GUARDRAIL TOTAL							4			✓	
SHEET TOTALS		31	2	47	2	3	4	18	2	✓	

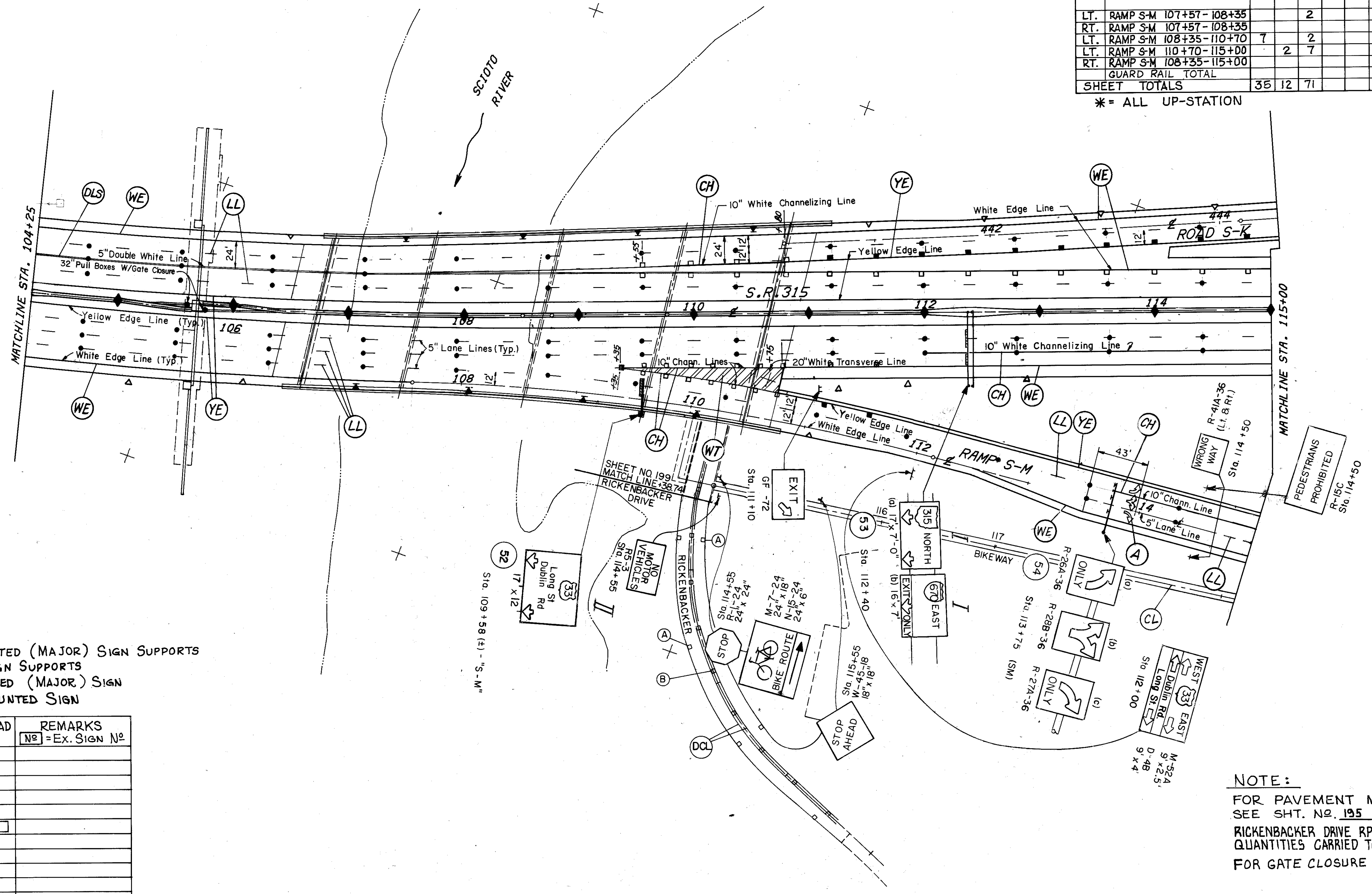
\* = ALL UP-STATION

S.R. 315 TRAFFIC CONTROL - STA. 92+00 TO STA. 104+25

RAISED PAVEMENT MARKERS, DELINEATORS & CONC. BARRIER RETRO-REFLECTORS

SIDE	LOCATION/STATION	ITEM			PARTICIPATION			REMARKS
		621	620	802	F	IR		
LT.	S.R. 315 104+00-109+55		18		5	2		✓
LT.	S.R. 315 109+55-110+80	8	2		1	2		✓
LT.	S.R. 315 110+80-115+00	10	5		5			✓
RT.	S.R. 315 104+00-107+60		12		3	1		✓
RT.	S.R. 315 107+60-109+35		4		2			✓
RT.	S.R. 315 109+35-110+75	8	4		1			✓
RT.	S.R. 315 110+80-115+00	2	10		5			✓
* RT.	RD. S-K 440+60-444+20		10	5				✓
LT.	RAMP S-M 107+57-108+35		2					✓
RT.	RAMP S-M 107+57-108+35					1		✓
LT.	RAMP S-M 108+35-110+70	7	2			2		✓
LT.	RAMP S-M 110+70-115+00	2	7					✓
RT.	RAMP S-M 108+35-115+00							✓
GUARD RAIL TOTAL					11	22	8	✓
SHEET TOTALS		35	12	71				✓

\* = ALL UP-STATION



- ITEM 630 - REMOVAL OF GROUND MOUNTED (MAJOR) SIGN SUPPORTS
- ITEM 630 - REMOVAL OF OVERHEAD SIGN SUPPORTS
- ITEM 630 - REMOVAL OF GROUND MOUNTED (MAJOR) SIGN
- ITEM 630 - REMOVAL OF OVERHEAD MOUNTED SIGN

STATION & OFFSET	GROUND MOUNTED	OVERHEAD	REMARKS N <sup>o</sup> = Ex. SIGN N <sup>o</sup>
105+70 ML 5' LT.	✓ 134		
106+15 ML 105' RT.	✓		
112+10 (S-M) 28' LT.	✓		
113+30 ML 75' RT.	✓		
113+90 (S-M) 28' LT.		✓ [ ]	
115+00 (S-M) 45' LT.	✓		
TOTALS	5	1	To GEN. SUMMARY

NOTE:  
 FOR PAVEMENT MARKING LEGEND SEE SHT. NO. 195 AND 199  
 RICKENBACKER DRIVE RPM AND PAVEMENT MARKING QUANTITIES CARRIED TO SHEET 199 AND 193  
 FOR GATE CLOSURE PLANS SEE SHEETS 132 THRU 189

1941030R



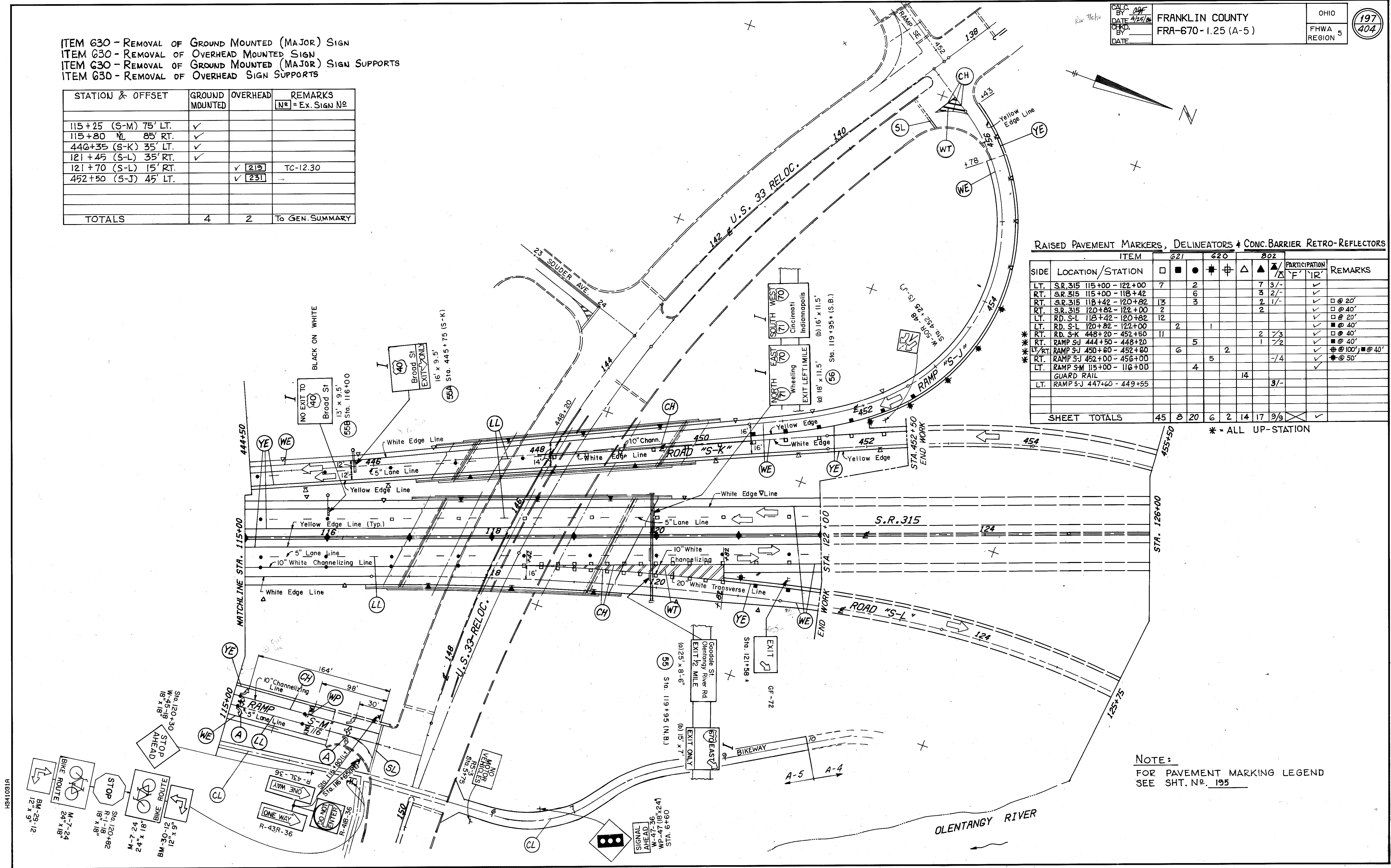
ITEM 630 - REMOVAL OF GROUND MOUNTED (MAJOR) SIGN  
 ITEM 630 - REMOVAL OF OVERHEAD MOUNTED SIGN  
 ITEM 630 - REMOVAL OF GROUND MOUNTED (MAJOR) SIGN SUPPORTS  
 ITEM 630 - REMOVAL OF OVERHEAD SIGN SUPPORTS

STATION & OFFSET	GROUND MOUNTED	OVERHEAD	REMARKS [No] = Ex. SIGN No
115+25 (S-M) 75' LT.	✓		
115+80 (L) 85' RT.	✓		
446+35 (S-K) 35' LT.	✓		
121+45 (S-L) 35' RT.	✓		
121+70 (S-L) 15' RT.		✓ [219]	TC-12.30
452+50 (S-J) 45' LT.		✓ [231]	
TOTALS	4	2	To GEN. SUMMARY

RAISED PAVEMENT MARKERS, DELINEATORS & CONC. BARRIER RETRO-REFLECTORS

SIDE	LOCATION/STATION	ITEM					PARTICIPATION	REMARKS	
		□	■	●	⊕	△			
LT.	S.R. 315 115+00 - 122+00	7		2			7 3/-		
RT.	S.R. 315 115+00 - 118+42	6		2			3 2/-		
RT.	S.R. 315 118+42 - 120+82	13		3			2 1/-	□ @ 20'	
RT.	S.R. 315 120+82 - 122+00	2					2	□ @ 20'	
LT.	RD. S-L 118+42 - 120+82	12						□ @ 20'	
LT.	RD. S-L 120+82 - 122+00	2		1			2 3/-	□ @ 40'	
RT.	RD. S-K 448+20 - 452+50	11					2 3/-	□ @ 40'	
RT.	RAMP S-J 444+50 - 448+20	6		5			1 2/-	□ @ 40'	
LT/RT	RAMP S-J 450+60 - 452+60	6			2			□ @ 40'	
RT.	RAMP S-J 452+00 - 456+60	5					-1/4	□ @ 100'; □ @ 40'	
LT.	RAMP S-M 115+00 - 116+00	4						□ @ 50'	
LT.	GUARD RAIL					14			
LT.	RAMP S-J 447+60 - 449+55						3/-		
SHEET TOTALS		45	8	20	6	2	14	17	9/8

\* - ALL UP-STATION



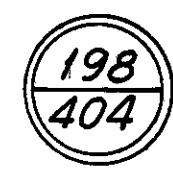
NOTE:  
 FOR PAVEMENT MARKING LEGEND  
 SEE SHT. No. 195

S.R. 315 TRAFFIC CONTROL - STA. 115+00 TO STA. 126+00

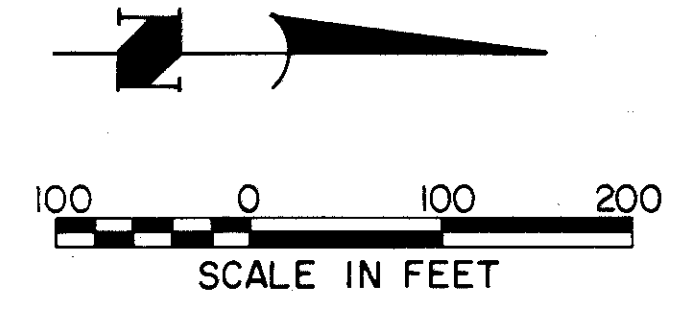
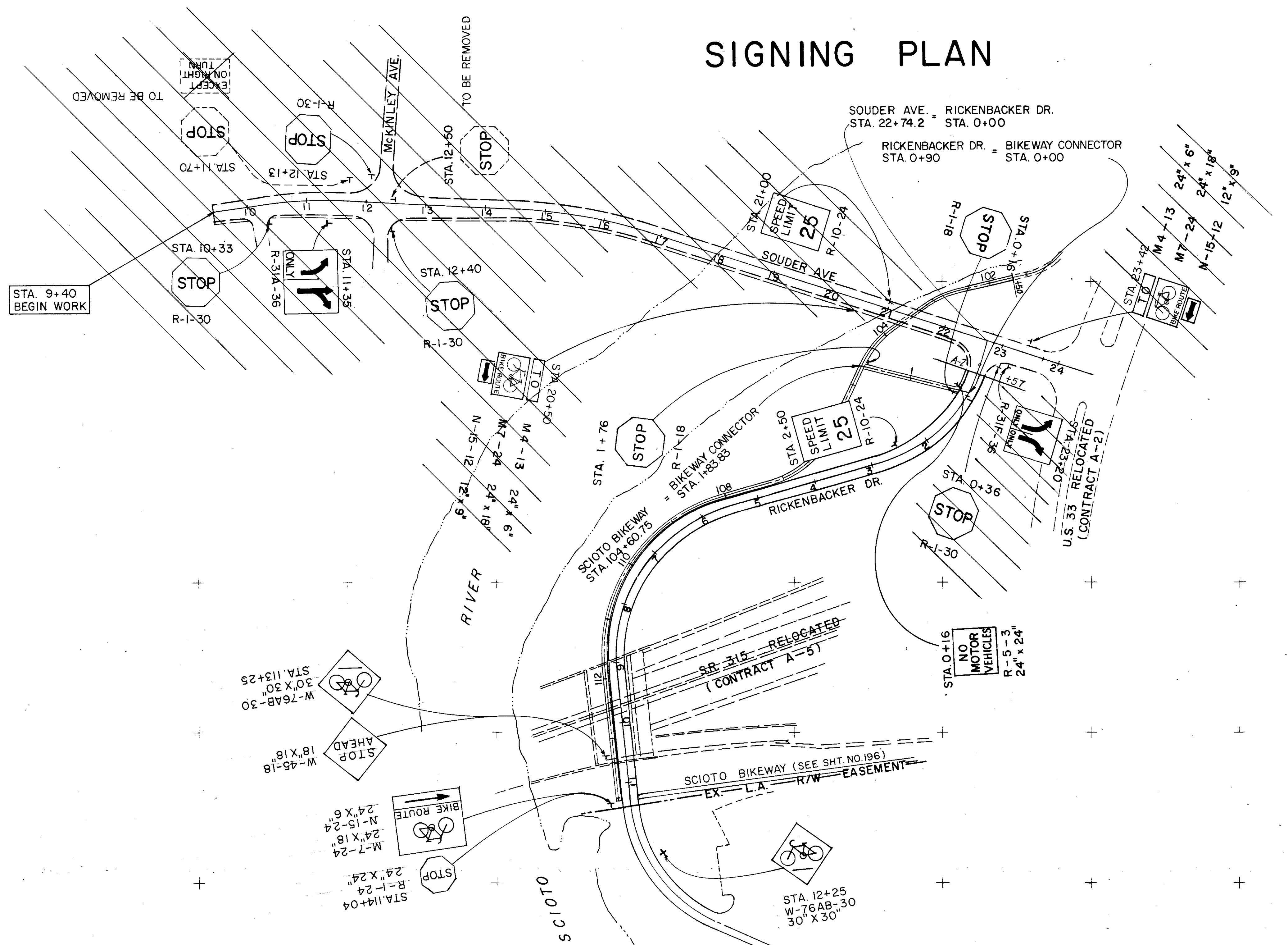
CALC. M.G.  
 BY DATE 7/2/86  
 CHKD. p.c.  
 BY DATE 7/2/86

FRA-670-1.25, A-5

OHIO  
 FHWA REGION 5



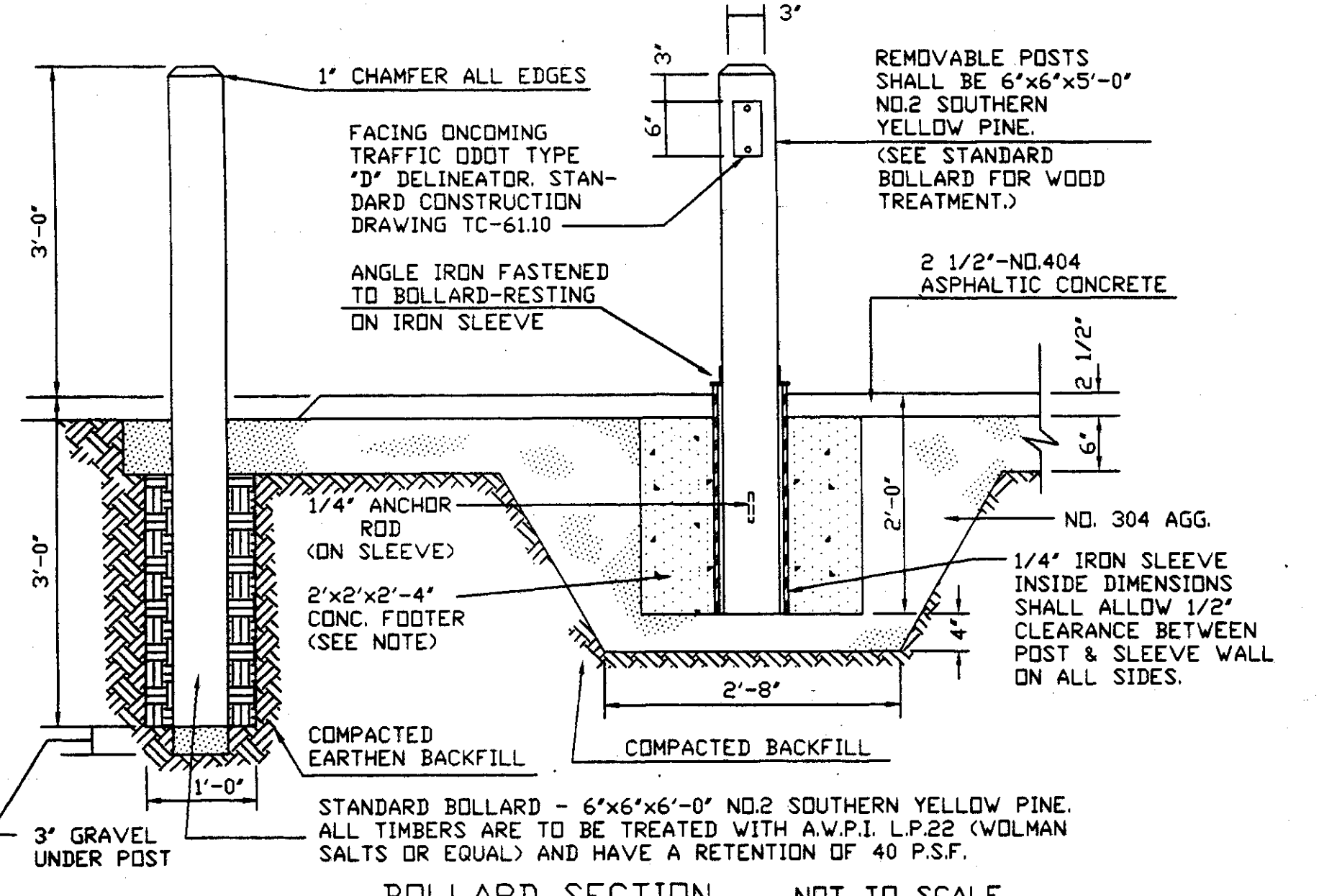
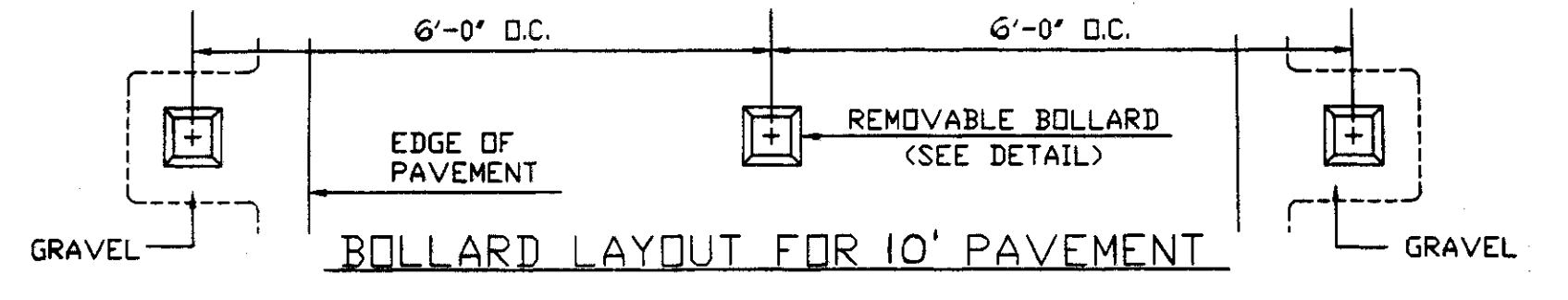
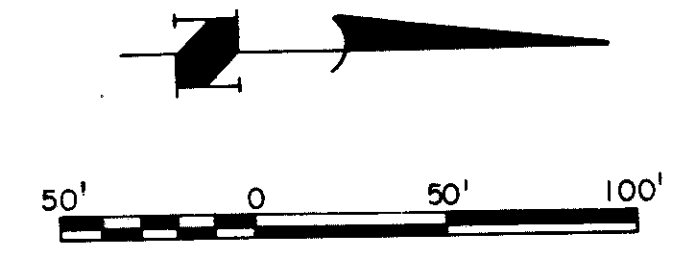
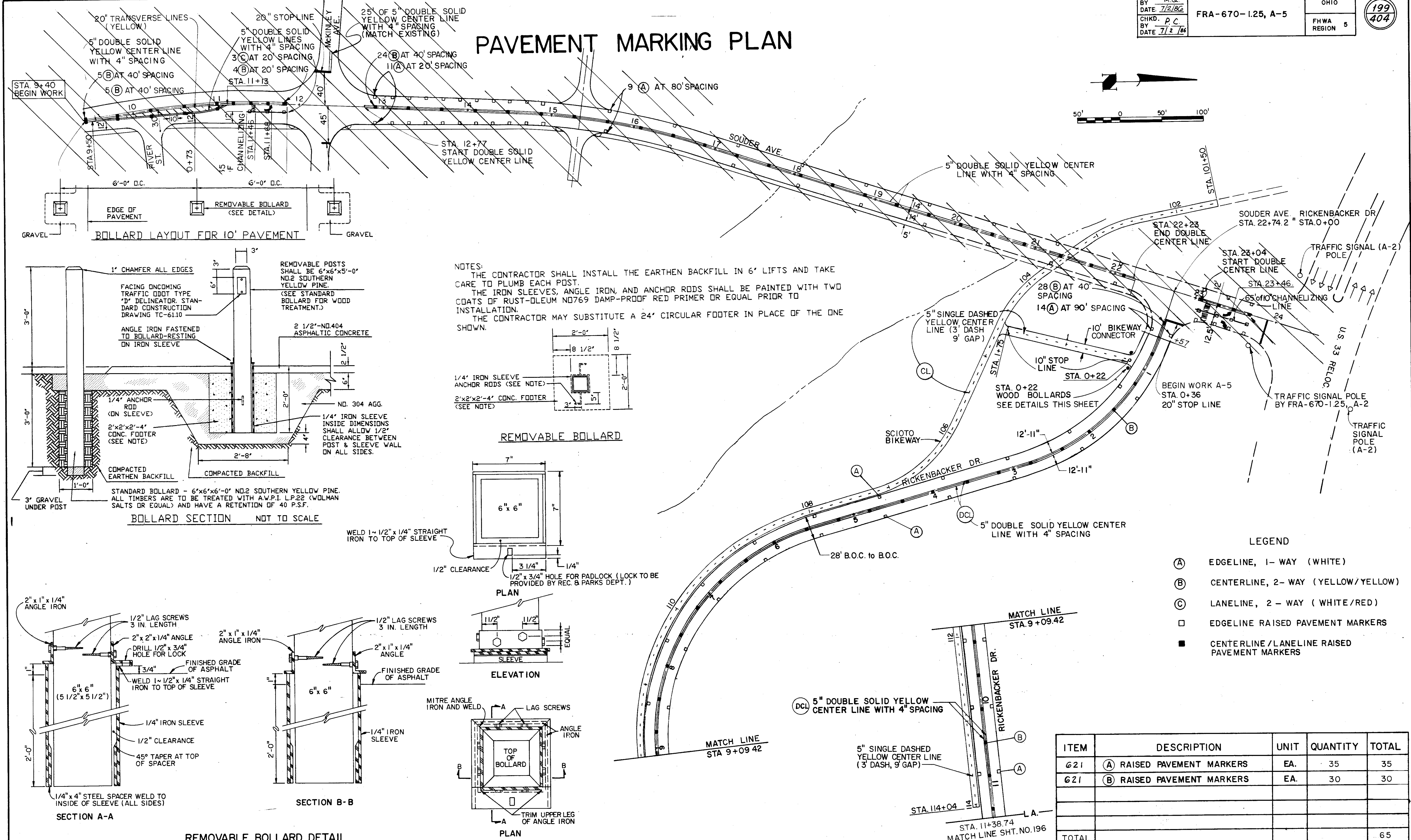
# SIGNING PLAN



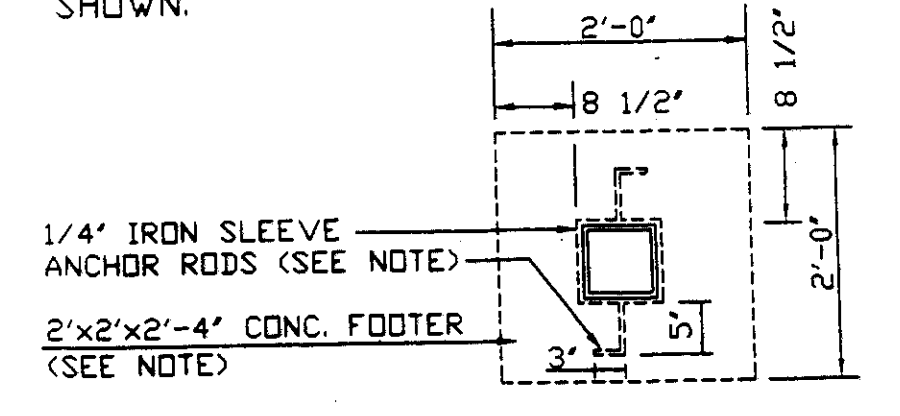
NOTE: FOR ADDITIONAL BIKEWAY NOTES AND DETAILS SEE SHEETS 88 THRU 91



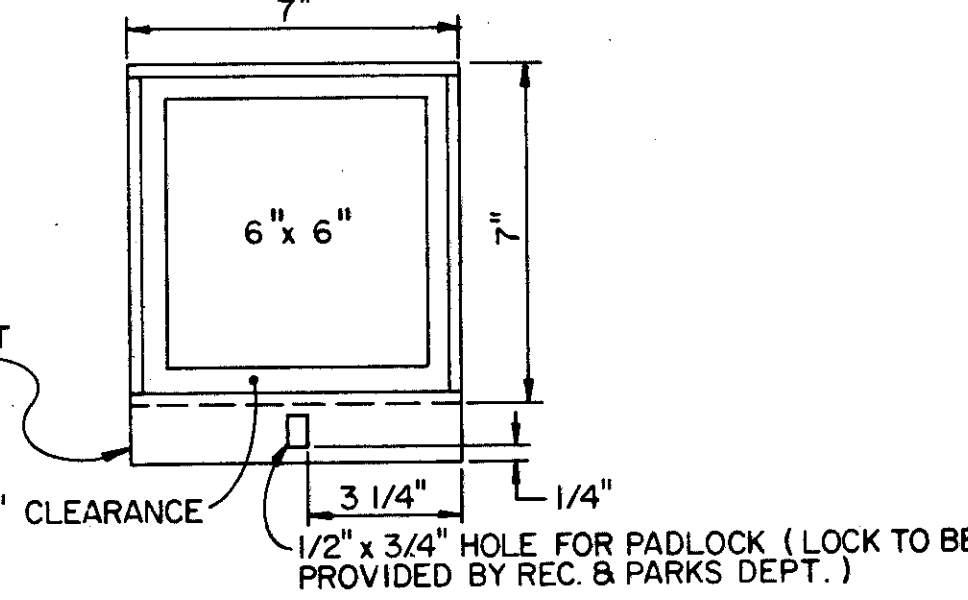
# PAVEMENT MARKING PLAN



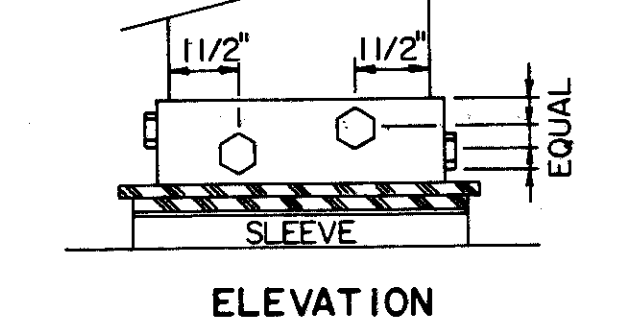
NOTES:  
 THE CONTRACTOR SHALL INSTALL THE EARTHEN BACKFILL IN 6' LIFTS AND TAKE CARE TO PLUMB EACH POST.  
 THE IRON SLEEVES, ANGLE IRON, AND ANCHOR RODS SHALL BE PAINTED WITH TWO COATS OF RUST-OLEUM ND769 DAMP-PROOF RED PRIMER OR EQUAL PRIOR TO INSTALLATION.  
 THE CONTRACTOR MAY SUBSTITUTE A 24" CIRCULAR FOOTER IN PLACE OF THE ONE SHOWN.



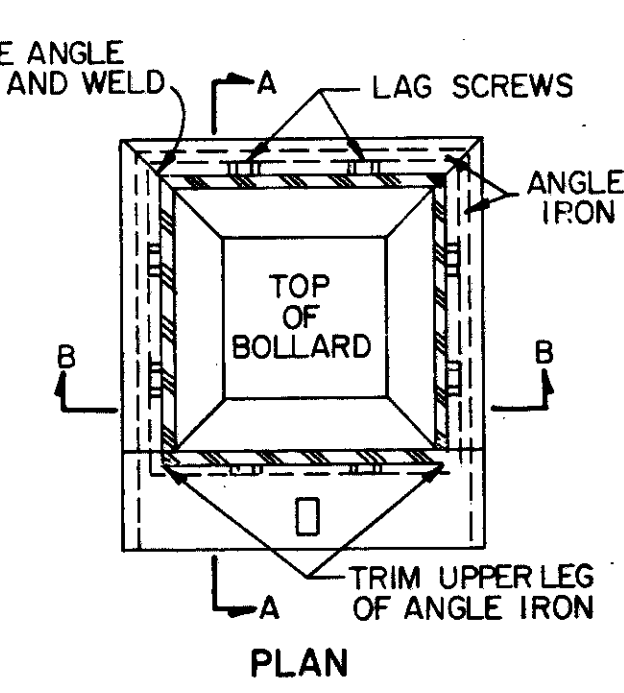
REMOVABLE BOLLARD



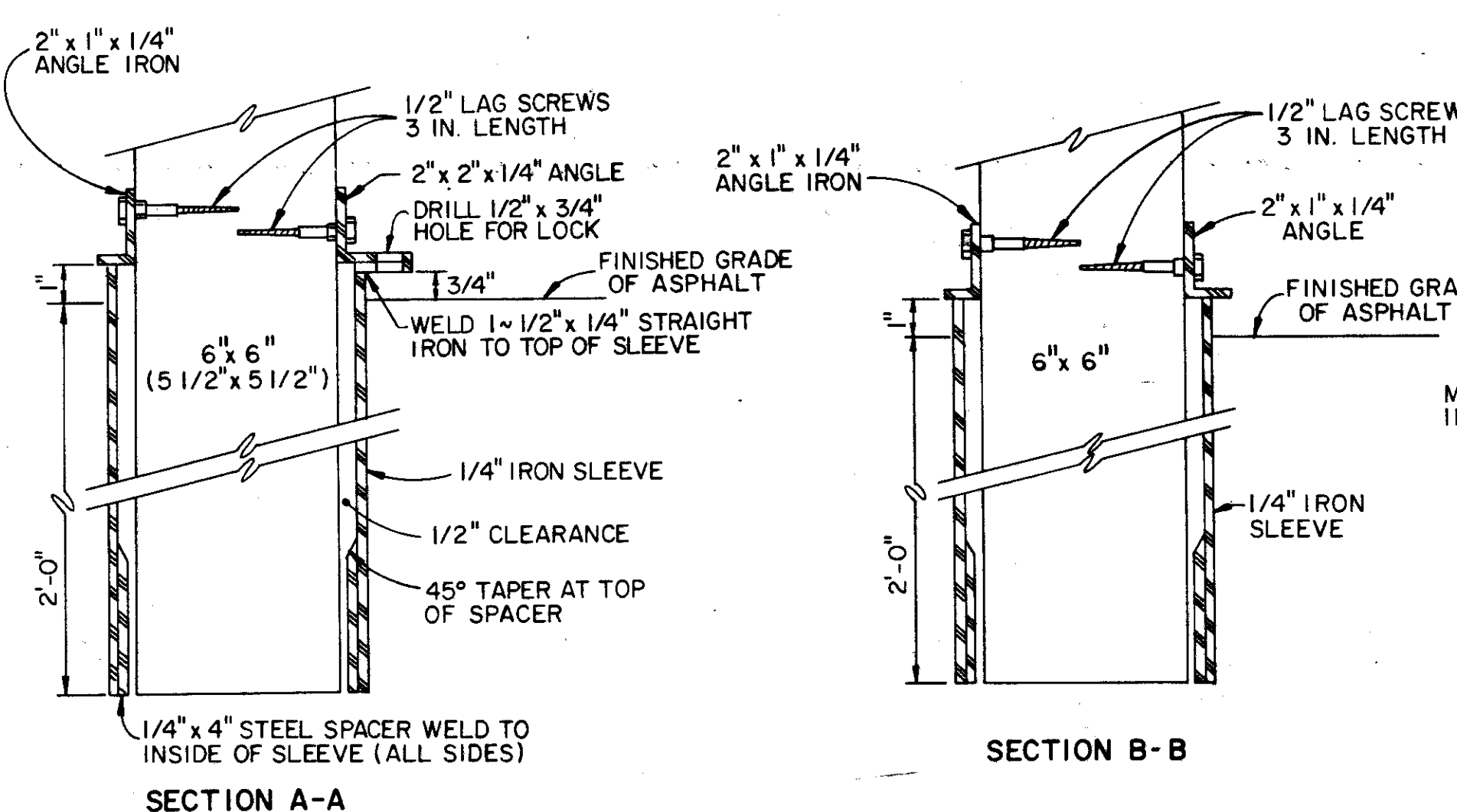
PLAN



ELEVATION



PLAN



REMOVABLE BOLLARD DETAIL (1301 DR. A, CITY OF COLUMBUS)

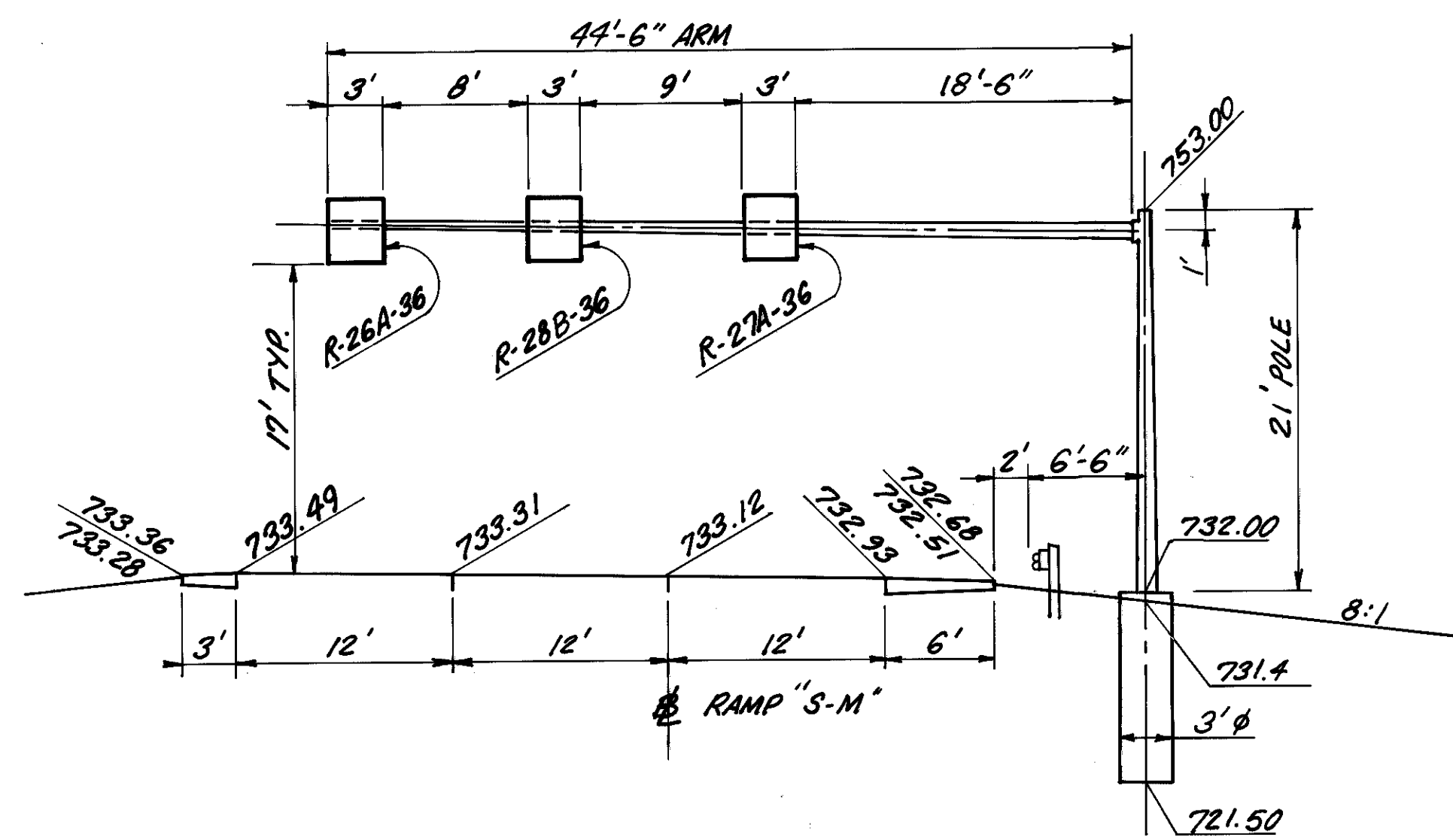
- LEGEND
- (A) EDGELINE, 1-WAY (WHITE)
  - (B) CENTERLINE, 2-WAY (YELLOW/YELLOW)
  - (C) LANELINE, 2-WAY (WHITE/RED)
  - EDGELINE RAISED PAVEMENT MARKERS
  - CENTERLINE/LANELINE RAISED PAVEMENT MARKERS

ITEM	DESCRIPTION	UNIT	QUANTITY	TOTAL
621	(A) RAISED PAVEMENT MARKERS	EA.	35	35
621	(B) RAISED PAVEMENT MARKERS	EA.	30	30
TOTAL				65

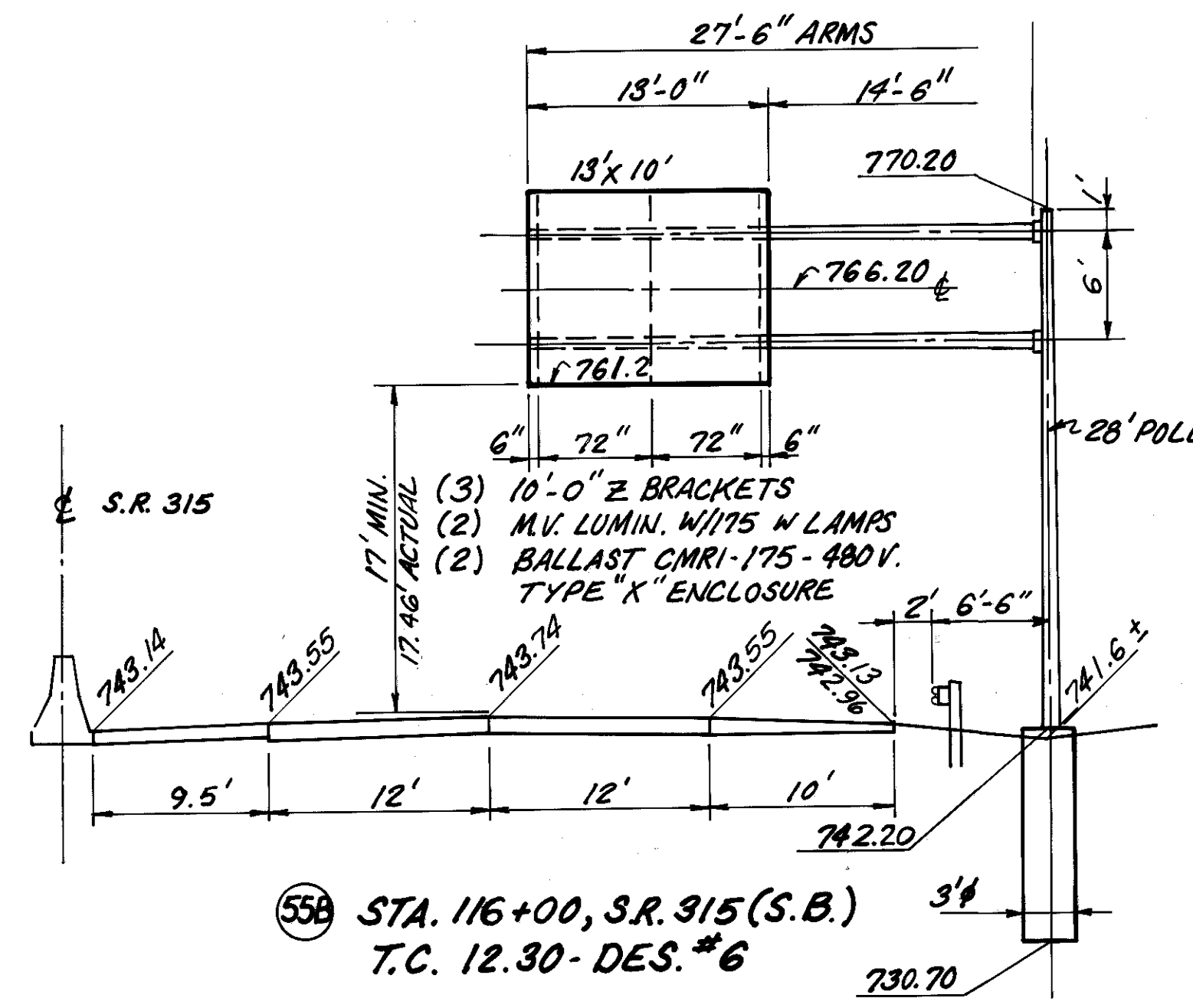
QUANTITIES CARRIED TO TRAFFIC CONTROL GENERAL SUMMARY



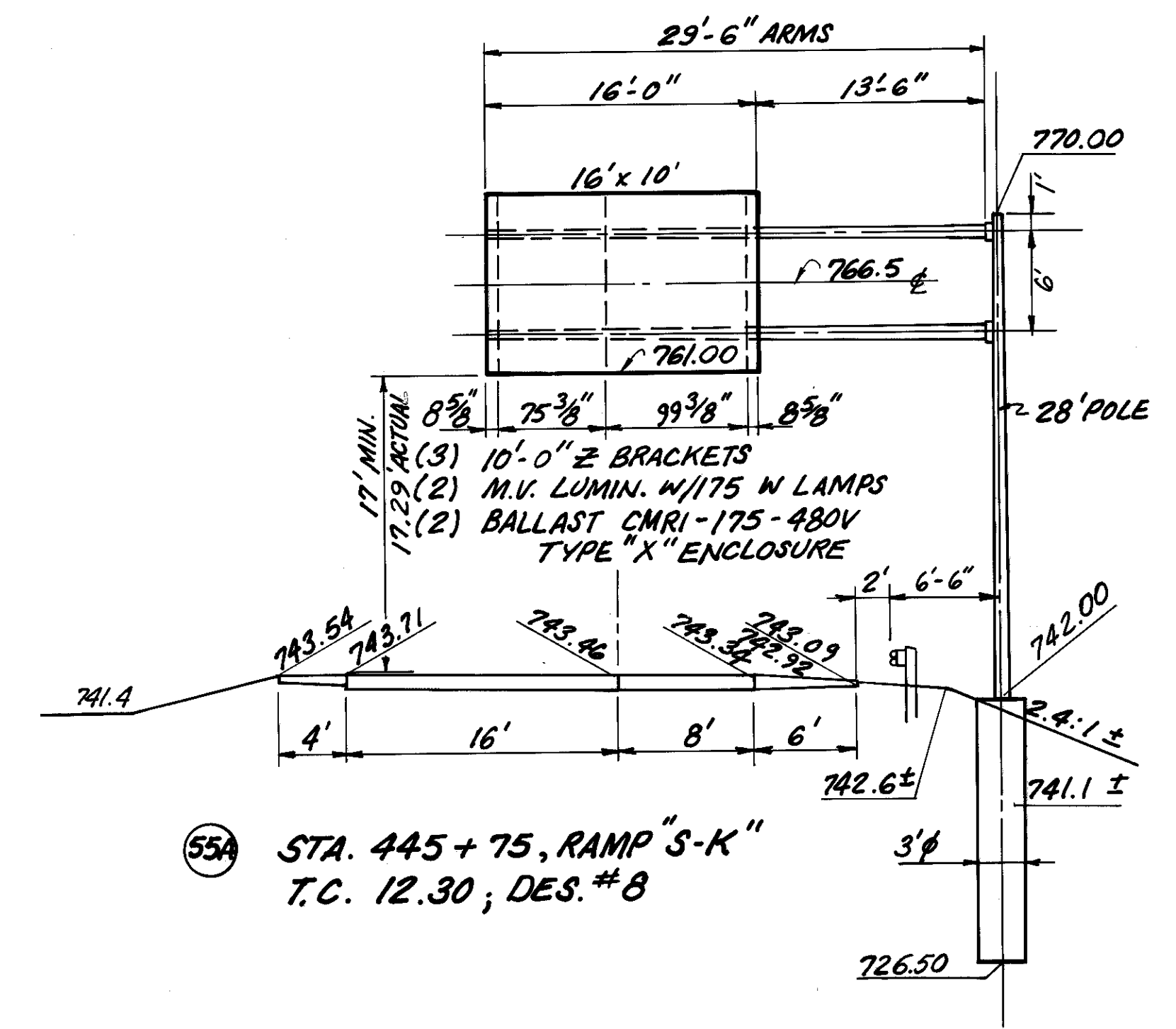




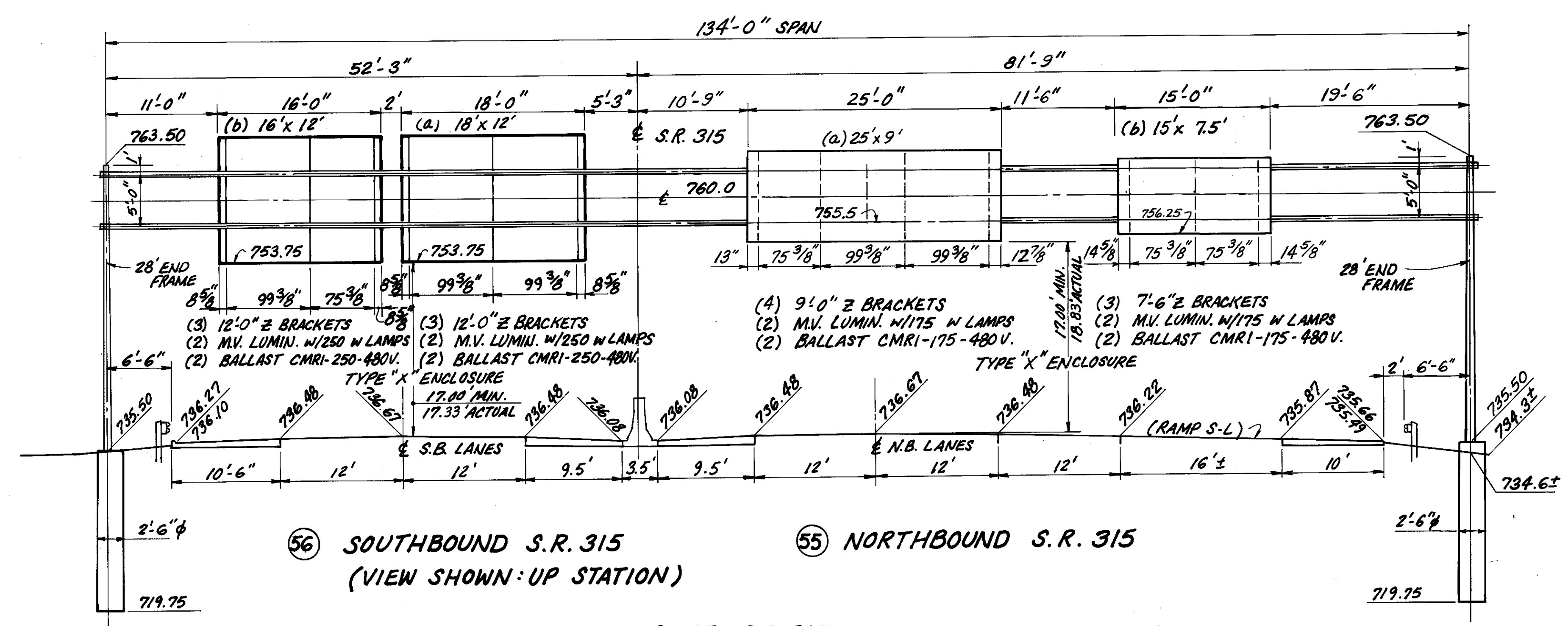
54 STA. 113+75, RAMP "S-M"  
T.C. 16.20; DES. #4



55a STA. 116+00, S.R. 315 (S.B.)  
T.C. 12.30-DES. #6



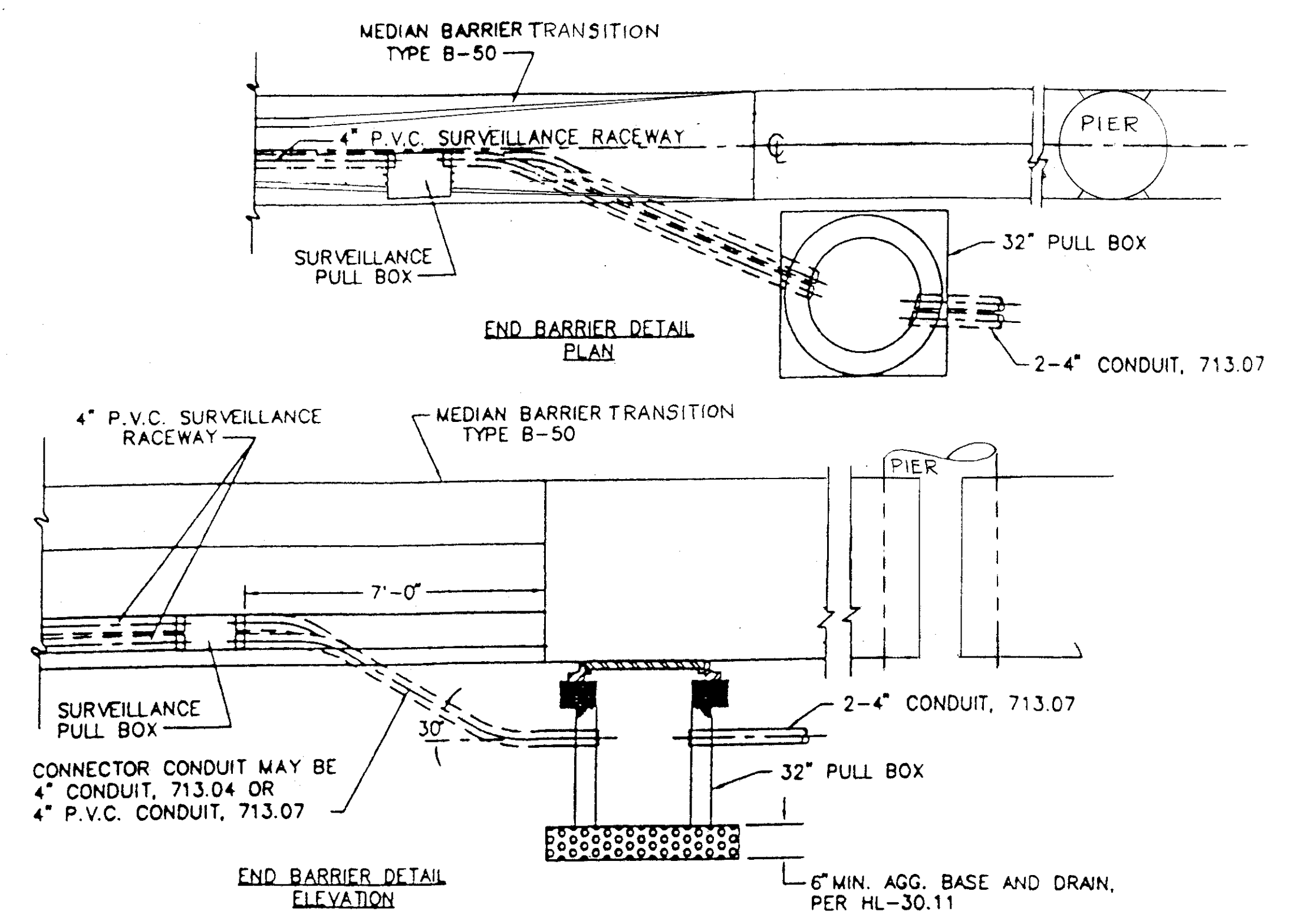
55a STA. 445+75, RAMP "S-K"  
T.C. 12.30; DES. #8



56 SOUTHBOUND S.R. 315  
(VIEW SHOWN: UP STATION)

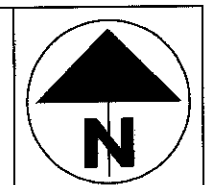
55 NORTHBOUND S.R. 315

STA. 119+95, S.R. 315  
T.C. 15.115; 134'-0" SPAN



TYPICAL SURVEILLANCE CONDUIT TREATMENT AT END BARRIER





DRAWN  
FCP/JLF  
CHECKED  
LCK

FREEWAY MANAGEMENT LOOP DETECTORS

ALL DETECTORS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD CONSTRUCTION DRAWING TC-82.10, EXCEPT THAT THE MAINLINE LOOPS SHALL BE ORIENTED IN A DIAMOND PATTERN IN THE CENTER OF EACH LANE AS SHOWN ON THE TYPICAL.

THE INSTALLED LOOPS SHALL BE TESTED FOR CONTINUITY (PARAGRAPH 3) AND INSULATION (PARAGRAPH 4) AS PER 632.27. THE INSULATION RESISTANCE MEASURED TO GROUND SHALL NOT BE LESS THAN ONE HUNDRED (100) MEGOHMS. AN ADDITIONAL CERTIFIED COPY OF THE TEST RECORDS SHALL BE SENT TO THE CITY OF COLUMBUS, DIVISION OF TRAFFIC ENGINEERING, 109 NORTH FRONT STREET, COLUMBUS, OHIO 43215. ATTENTION FREEWAY ENGINEER.

THE LOOPS SHALL BE INSTALLED IN THE CONCRETE BASE PRIOR TO THE PLACEMENT OF THE SURFACE COURSE OF ASPHALT.


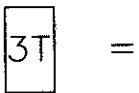

THE 20 FEET BETWEEN SPEED MEASUREMENT LOOPS SHALL BE MAINTAINED AT ALL TIMES.

ALL LOOPS SHALL BE CENTERED IN THE PERMANENT TRAFFIC LANES. IN ORDER TO INSURE THIS, A PERMANENT REFERENCE SHALL BE ESTABLISHED FROM THE CENTER LINE OF CONSTRUCTION OR THE RIGHT EDGE OF PAVEMENT OR THE 32 INCH PULL BOX ADJACENT TO THE STATION. THE LOCATION OF EACH LOOP IN THE STATION SHALL BE RECORDED WITH RESPECT TO THIS REFERENCE. ONE COPY OF THIS LOG SHALL BE KEPT IN THE PROJECT OFFICE, ONE COPY SHALL BE GIVEN TO THE PAVEMENT SUBCONTRACTOR AND ONE COPY SHALL BE SENT TO THE CITY OF COLUMBUS, ATTENTION FREEWAY ENGINEER, AT THE ABOVE ADDRESS. THIS REFERENCE LOG SHALL BE USED TO VERIFY THE LOCATION OF THE PERMANENT LANE LINES AND EDGE LINES.

32 INCH PULL BOXES SHALL BE CONCRETE CONSTRUCTED AND INSTALLED AS PER PLAN. ALL PULL BOX LIDS FOR THE SURVEILLANCE LOOPS AND CONDUIT SHALL BE PERMANENTLY EMBOSSED WITH THE WORD "TRAFFIC". PAYMENT SHALL BE MADE UNDER ITEM 625 PULL BOX, MISC.: 32 INCH, 713.08, AS PER PLAN.

ALL CONDUIT SHALL BE CAPPED. A PULL WIRE SHALL BE INSTALLED IN ALL CONDUITS WITH THE PULL WIRE EXTENDING THROUGH THE CAP AND AS PER 625.13.

GENERAL NOTES TYPICAL TO ALL PLAN SHEETS:

- 1) ALL MULTICELL CONTAIN 4 EA. 1.25 INCH INNERDUCT
- 2) ALL LOOPS 6 FT X 6 FT, CENTERED IN TRAVEL LANE, UNLESS NOTED OTHERWISE
- 3)  AND  = 3 TURNS OF LOOP WIRE
- 4)  = 4 TURNS OF LOOP WIRE
- 5) CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING LOOPS IN THE CENTER OF LANES BASED ON THE PROJECT CENTERLINE OF SURVEY AND CONSTRUCTION

ITEM 625: CONDUIT, MISC. : 4 INCH, MULTICELL RACEWAY - 713.07, SCHEDULE 40, AS PER PLAN

THE TRAFFIC SURVEILLANCE RACEWAY SHALL CONSIST OF A FACTORY ASSEMBLED SYSTEM OF (4) INNERDUCTS ASSEMBLED WITHIN A PROTECTIVE OUTERDUCT.

THE INNERDUCTS SHALL BE NOMINAL 1.25 INCH, TYPE DB PVC PER NEMA TC-8 WITH A BELL INSERTION DEPTH OF 1.75 INCHES MINIMUM.

THE COUPLING SHALL BE DESIGNED IN A MANNER TO PERMIT EASY FIELD ASSEMBLY. THE COUPLING SHALL BE MARKED OR KEYED IN A MANNER TO ENSURE THE INNERDUCTS ARE PROPERLY ALIGNED, ANY COLOR CODES ARE CONTINUED AND THE ADJOINING SECTION IS INSERTED TO THE PROPER DEPTH IN THE BELL. ALL KEYS AND/OR MARKINGS SHALL BE VISIBLE AFTER ASSEMBLY, TO ALLOW THE INSPECTION OF EACH JOINT FOR PROPER ASSEMBLY BEFORE BURIAL. THE SEALING SYSTEM SHALL BE DESIGNED TO ASSURE AIR INTEGRITY OF EACH INDIVIDUAL INNERDUCT AND WATER INTEGRITY OF THE ENTIRE SYSTEM.

WHERE A MULTICELL DUCT IS TO REMAIN EMPTY, A 1/4" NYLON ROPE SHALL BE INSTALLED. THE ROPE WILL REMAIN TO BE USED FOR A FUTURE CABLE INSTALLATION.

ITEM 625: CONDUIT, MISC. : 4 INCH, MULTICELL CROSSOVER - 713.07, SCHEDULE 80, AS PER PLAN

THE TRAFFIC SURVEILLANCE RACEWAY SHALL CONSIST OF A FACTORY ASSEMBLED SYSTEM OF (4) INNERDUCTS ASSEMBLED WITHIN A PROTECTIVE OUTERDUCT.

THE INNERDUCTS SHALL BE NOMINAL 1.25 INCH, TYPE DB PVC PER NEMA TC-8 WITH A BELL INSERTION DEPTH OF 1.75 INCHES MINIMUM.

THE COUPLING SHALL BE DESIGNED IN A MANNER TO PERMIT EASY FIELD ASSEMBLY. THE COUPLING SHALL BE MARKED OR KEYED IN A MANNER TO ENSURE THE INNERDUCTS ARE PROPERLY ALIGNED, ANY COLOR CODES ARE CONTINUED AND THE ADJOINING SECTION IS INSERTED TO THE PROPER DEPTH IN THE BELL. ALL KEYS AND/OR MARKINGS SHALL BE VISIBLE AFTER ASSEMBLY, TO ALLOW THE INSPECTION OF EACH JOINT FOR PROPER ASSEMBLY BEFORE BURIAL. THE SEALING SYSTEM SHALL BE DESIGNED TO ASSURE AIR INTEGRITY OF EACH INDIVIDUAL INNERDUCT AND WATER INTEGRITY OF THE ENTIRE SYSTEM.

WHERE A MULTICELL DUCT IS TO REMAIN EMPTY, A 1/4" NYLON ROPE SHALL BE INSTALLED. THE ROPE WILL REMAIN TO BE USED FOR A FUTURE CABLE INSTALLATION.

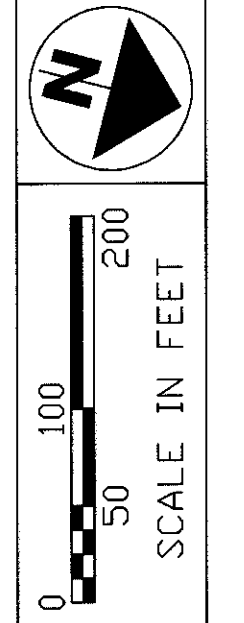
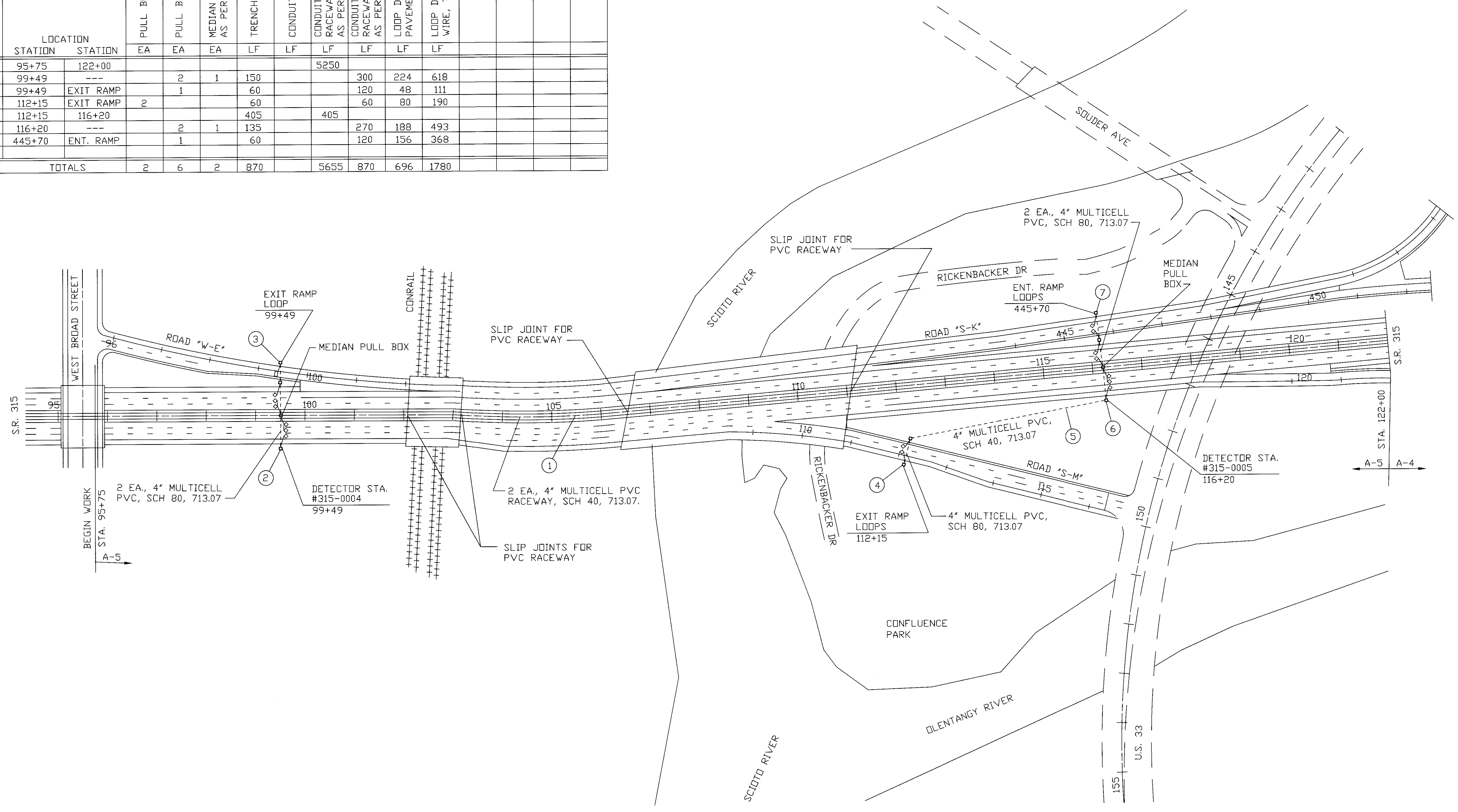
FREEWAY SURVEILLANCE SYSTEM  
GENERAL NOTES

FRA-315-0.93 (A-5)

202A  
404

ESTIMATED QUANTITIES

REFERENCE	LOCATION		ESTIMATED QUANTITIES														
	STATION	STATION	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF
1	95+75	122+00											5250				
2	99+49	---		2	1	150							300	224	618		
3	99+49	EXIT RAMP		1		60							120	48	111		
4	112+15	EXIT RAMP	2			60							60	80	190		
5	112+15	116+20				405						405					
6	116+20	---		2	1	135							270	188	493		
7	445+70	ENT. RAMP		1		60							120	156	368		
TOTALS			2	6	2	870						5655	870	696	1780		



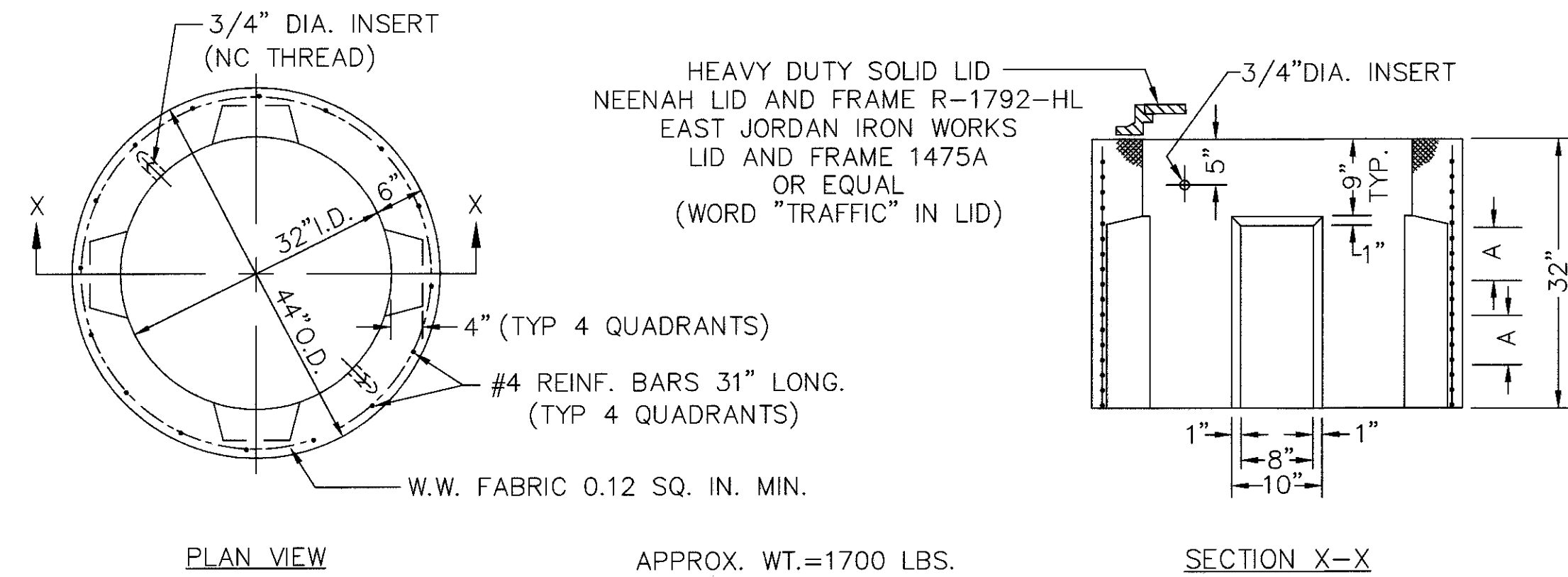
DRAWN: FCP/JLF  
CHECKED: LCK

FREWAY SURVEILLANCE SYSTEM  
PLAN DETAIL

FRA-315-0.93 (A-5)

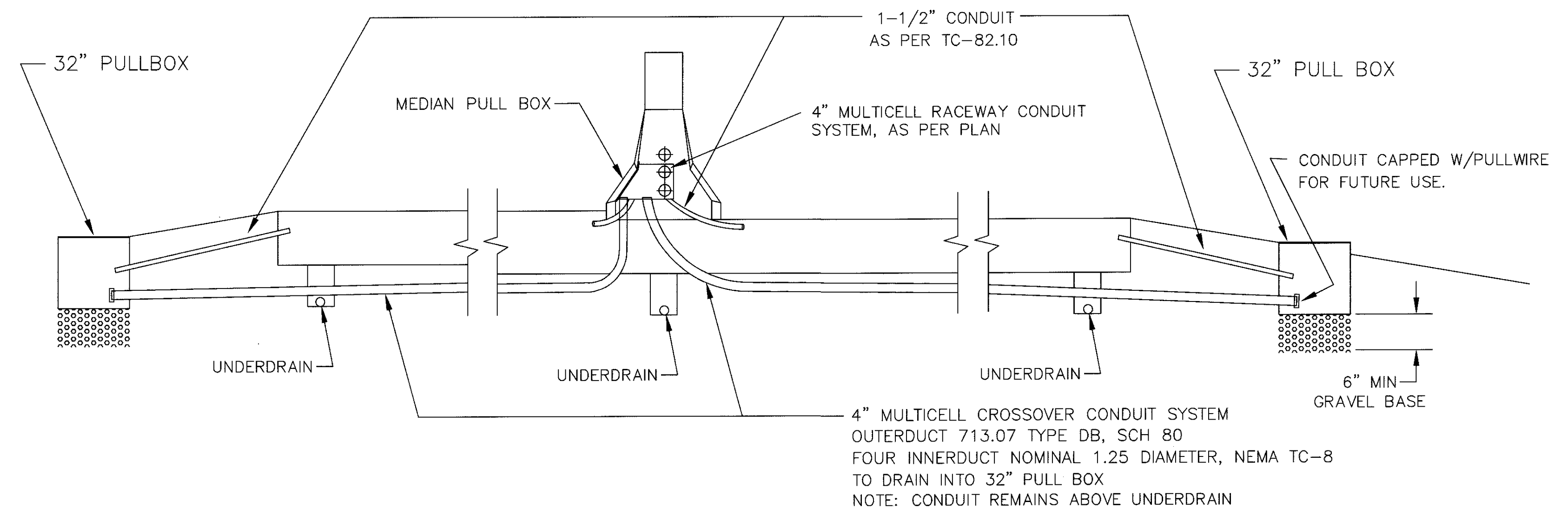
202B  
404

\\P121\SRP\DWG\CHAL.DWG DJS 3-13-97

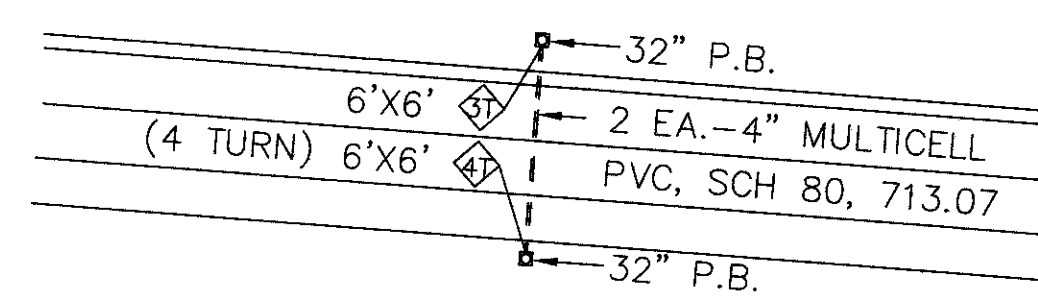


"A" CUT OUT 4 WIRES IN THE AREA OF THE REDUCED WALL SECTION. ALSO INCLUDE THE VERTICAL WIRE FOR REMOVAL.  
CONCRETE COMP. STRENGTH 4000 PSI MIN. DESIGN.  
CONCRETE AIR ENTRAINMENT TO BE 6% + 1 1/2%.  
COATING OF PROTECTIVE ACRYLIC IS TO BE APPLIED TO THE TOP 12" OF THE OUTSIDE FACE AND TOTAL INSIDE FACE.  
LID RING LOAD TRANSFER IS TO BE DISTRIBUTED BY THE USE OF A PERFORMED MOSTIC JOINT MATERIAL.

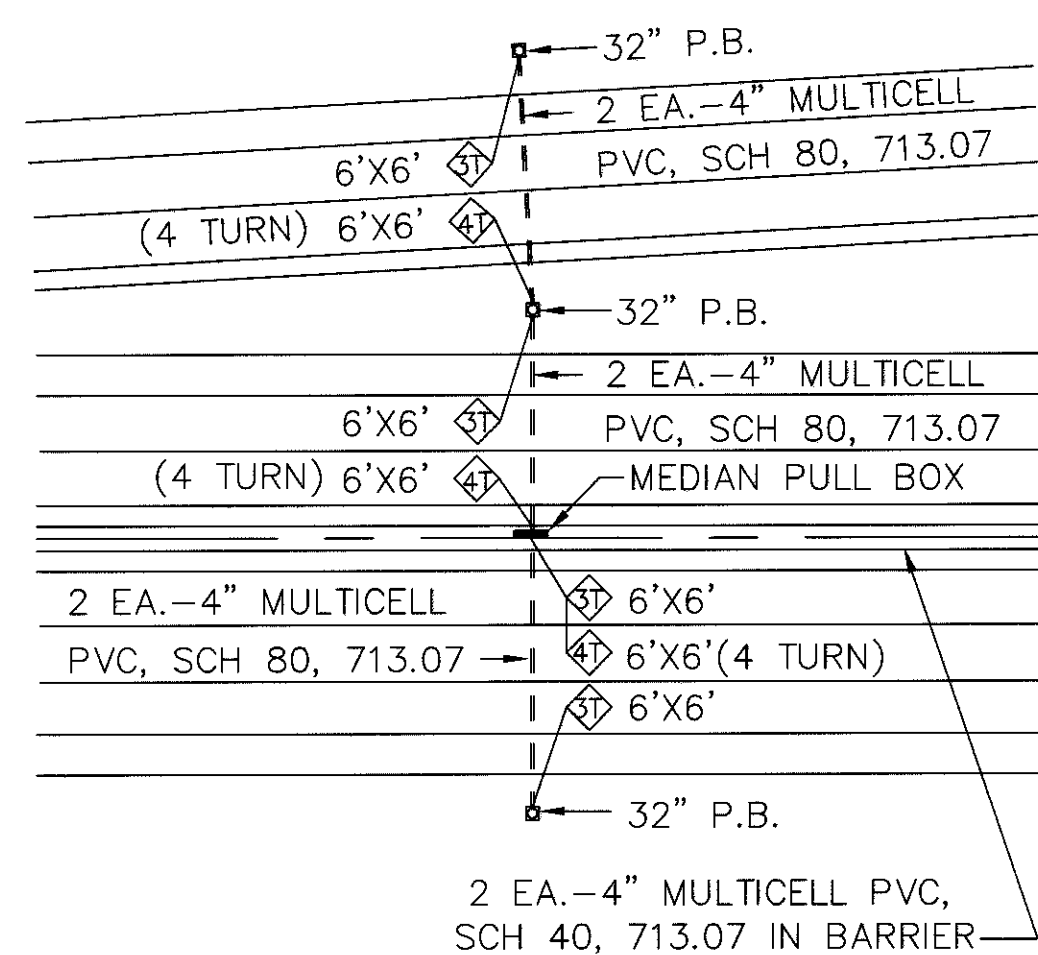
32" PULL BOX DETAIL



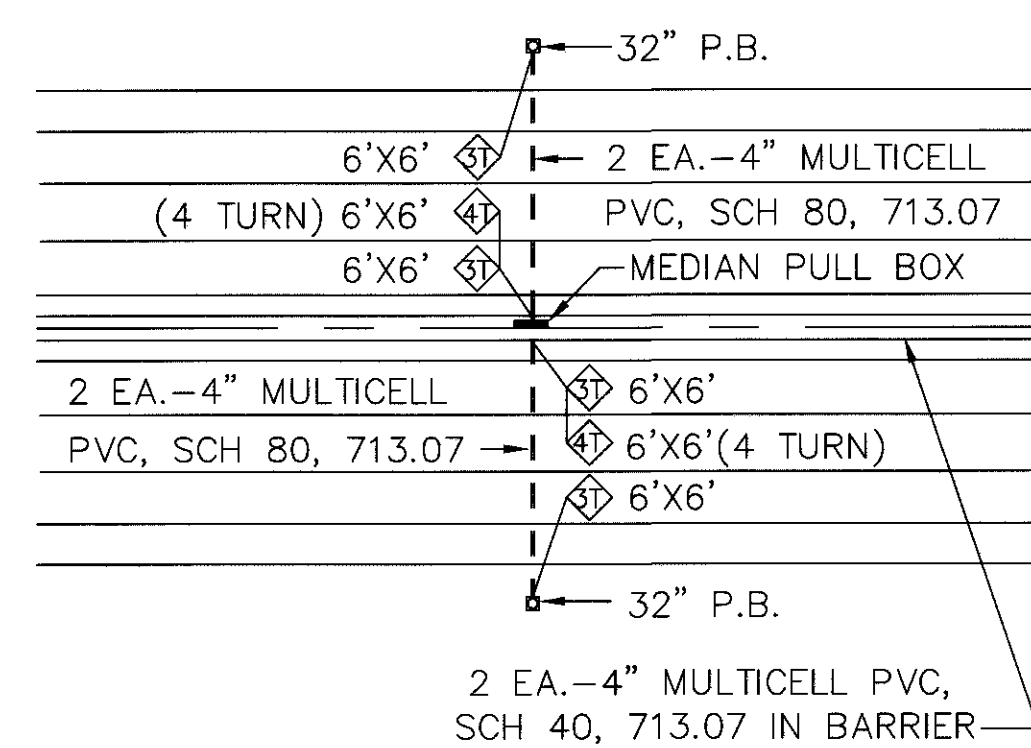
CROSS SECTION  
DETECTOR/SPEED MEASUREMENT STATION



EXIT RAMP STA. 112+15

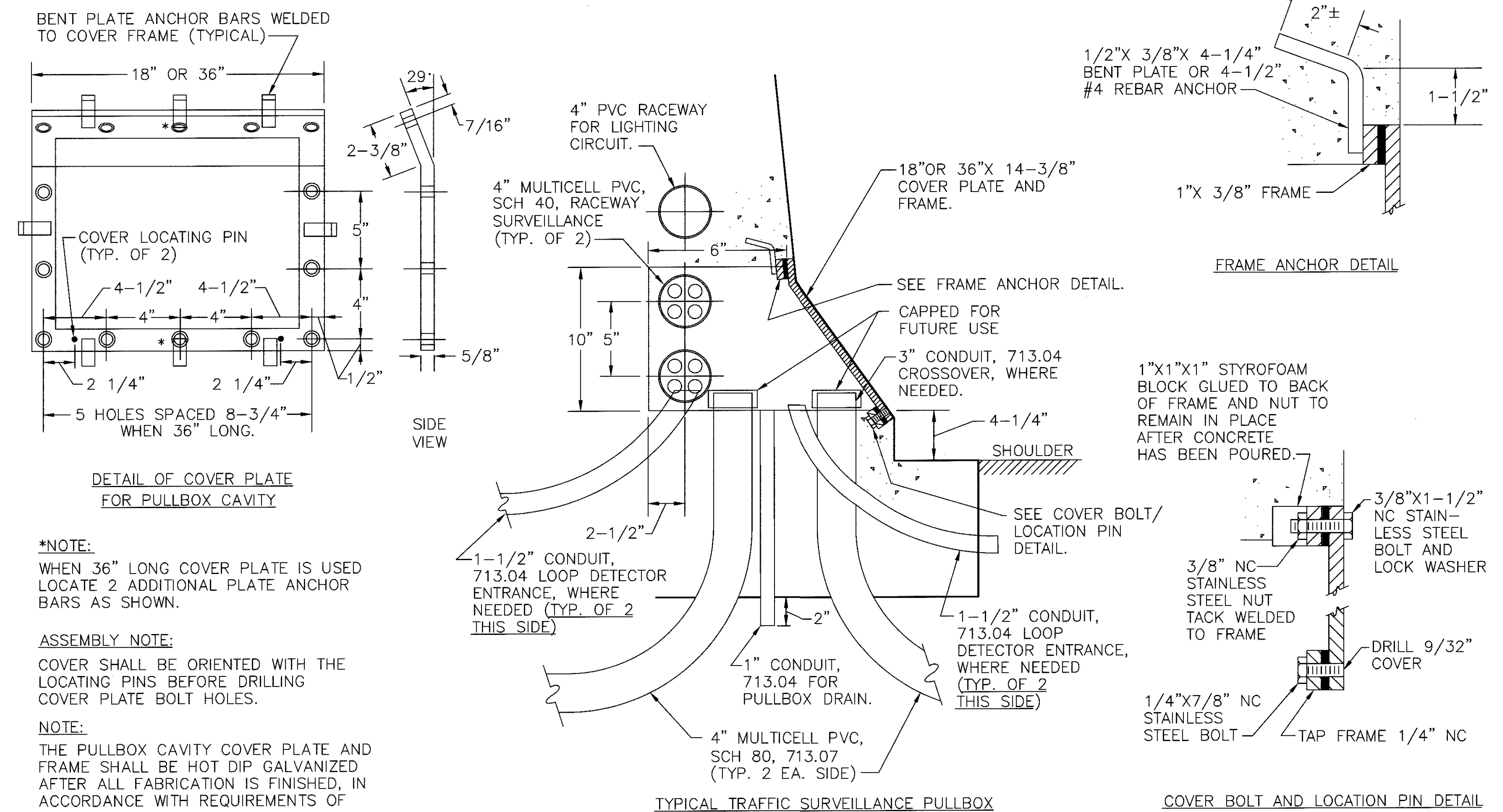


DETECTOR STATION #315-0005  
ENTRANCE RAMP STA. 445+70



DETECTOR STATION #315-0004

LOOP PLACEMENT



NEW SURVEILLANCE MEDIAN PULL BOX AND CONDUIT

FEDERAL PROJECT NO.

PID NO.

CONSTRUCTION PROJECT NO.

FREEWAY SURVEILLANCE SYSTEM  
315 DETAILS AND TYPICALS

FRA-315-0.93 (A-5)

2020  
404



# GENERAL NOTES

ALL OVERHEAD SIGNS SHALL BE GREEN COLORED, UNLESS SPECIFIED OTHERWISE IN THE PLANS, HIGH INTENSITY, TYPE G (NEW).

ALL EXISTING SIGNING REMOVED SHALL BE DELIVERED TO THE OHIO DEPARTMENT OF TRANSPORTATION'S SIGN SHOP AT 1980 WEST BROAD STREET (614-351-2850).

THE CONTRACTOR SHALL CONTACT THE CITY OF COLUMBUS, DIVISION OF TRAFFIC, FOR SCHEDULING ALL WORK INVOLVING THE CLOSURE TO TRAFFIC OF ANY LANE OR SHOULDER.

## ITEM 614 - MAINTAINING TRAFFIC

THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, REMOVE ANY AND ALL CONFLICTING TRAFFIC CONTROLS, I.E. SIGNING, PAVEMENT MARKINGS, RAISED PAVEMENT MARKERS, ETC....

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED, WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

## WORKING HOURS

THE FOLLOWING WORK IS TO BE ACCOMPLISHED DURING THE FOLLOWING HOURS:

7:00 PM TO 5:00 AM - MONDAY THROUGH THURSDAY

7:00 PM FRIDAY TO 5:00 AM - MONDAY

9:00 AM TO 3:00 PM - MONDAY THROUGH FRIDAY SHALL BE AT THE DIRECTION OF THE PROJECT ENGINEER AND THE CITY OF COLUMBUS, CONSTRUCTION COORDINATOR AT 645-8269.

REMOVAL OF PORTABLE CONCRETE BARRIERS AND OF OVERHEAD SIGNS AND INSTALLATION OF NEW SIGN PANELS. THIS WORK SHALL ALSO REQUIRE THE USE OF A LAW ENFORCEMENT OFFICER (WITH PATROL CAR) AND SIGNAGE (PER MT-95.30) IN ADVANCE OF THE WORK AREA.

UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR BE PERMITTED TO REDUCE THE NUMBER OF LANES, AS DESIGNATED ON THE PLANS, DURING THE PEAK HOURS OF:  
5:00 AM TO 9:00 AM - MONDAY THROUGH FRIDAY  
3:00 PM TO 7:00 PM - MONDAY THROUGH FRIDAY

## LIQUIDATED DAMAGES

LANE CLOSURES BEFORE THE ALLOWABLE TIME AND/OR FAILURE TO REOPEN ALL LANES TO TRAFFIC AS DESIGNATED ABOVE, SHALL SUBJECT THE CONTRACTOR TO LIQUIDATED DAMAGES AS SHOWN BELOW FOR EACH INFRACTION:

\$500.00 PER MINUTE FOR THE FIRST FIVE MINUTE PERIOD  
\$100.00 PER MINUTE FOR EACH MINUTE THEREAFTER

LIQUIDATED DAMAGES SHALL ACCUMULATE FOR EACH INFRACTION UNTIL THE CONTRACTOR RESTORES THE DESIGNATED NUMBER OF TRAVEL LANES AND HAS MOVED ALL CONSTRUCTION EQUIPMENT A MINIMUM DISTANCE OF 30 FEET FROM THE EDGE OF ALL TRAVEL LANES.

## COVERING OF SIGNS

WHERE THE PLANS CALL FOR A PERMANENT SIGN TO BE COVERED, THE CONTRACTOR SHALL DO SO IN SUCH A MANNER AS TO AVOID DAMAGING THE PERMANENT SIGN WHEN THE COVER IS REMOVED. THE SIGN COVER SHALL BE A BLANK GREEN FLAT SIGN OF THE SAME MATERIAL AS THE EXISTING SIGN.

## ITEM 614 - LAW ENFORCEMENT OFFICER (WITH PATROL CAR)

IN ADDITION TO THE REQUIREMENTS OF ITEM 614 AND THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD), A UNIFORMED LAW ENFORCEMENT OFFICER AND OFFICIAL PATROL CAR WITH WORKING TOP MOUNTED EMERGENCY FLASHING LIGHTS SHALL BE PROVIDED FOR CONTROLLING TRAFFIC FOR THE FOLLOWING TASKS:

FOR LANE CLOSURES, DURING INITIAL SETUP PERIODS, TEAR DOWN PERIODS, SUBSTANTIAL SHIFTS OF A CLOSURE POINT OR WHEN NEW LANE CLOSURE ARRANGEMENTS ARE INITIATED.

DURING THE ENTIRE ADVANCE PREPARATION AND CLOSURE SEQUENCE IN THE EVENT OF COMPLETE BLOCKAGE OF TRAFFIC.

DURING ALL OPERATIONS WHERE A LAW ENFORCEMENT OFFICER IS SPECIFIED IN THESE NOTES.

IF THE CONTRACTOR WISHES TO UTILIZE A LAW ENFORCEMENT OFFICER FOR FLAGGING AND TRAFFIC CONTROL OTHER THAN FOR THAT REQUIRED IN THESE PLANS, HE MAY DO SO AT HIS OWN EXPENSE. PAYMENT FOR THE EXCESS ABOVE THE CONTRACT REQUIREMENTS WILL BE INCLUDED UNDER ITEM 614 MAINTAINING TRAFFIC.

THE LAW ENFORCEMENT OFFICERS ARE CONSIDERED TO BE EMPLOYED BY THE CONTRACTOR AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR ACTIONS. ALTHOUGH THEY ARE EMPLOYED BY THE CONTRACTOR, THE PROJECT ENGINEER SHALL HAVE CONTROL OVER THEIR PLACEMENT. THE OFFICIAL PATROL CAR SHALL BE A PUBLIC SAFETY VEHICLE AS REQUIRED BY THE OHIO REVISED CODE.

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THESE SERVICES WITH:

THE CITY OF COLUMBUS  
DEPARTMENT OF PUBLIC SAFETY  
DIVISION OF POLICE  
120 MARCONI BLVD  
COLUMBUS, OHIO 43215  
(614) 645-4795

LAW ENFORCEMENT OFFICERS, WITH PATROL CAR, REQUIRED BY THE TRAFFIC MAINTENANCE TASKS ABOVE SHALL BE PAID FOR ON A UNIT PRICE (HOURLY) BASIS UNDER ITEM 614-LAW ENFORCEMENT OFFICER WITH PATROL CAR. THE HOURS PAID SHALL INCLUDE MINIMUM SHOW-UP TIME REQUIRED BY THE LAW ENFORCEMENT AGENCY INVOLVED. THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN CARRIED TO THE MAINTENANCE OF TRAFFIC SUB-SUMMARY:

ITEM 614, LAW ENFORCEMENT OFFICER WITH PATROL CAR 80 HOURS

## ITEM 202 - REMOVAL MISC. PORTABLE CONCRETE BARRIER FOR STORAGE

THE CONTRACTOR SHALL REMOVE ALL PORTABLE CONCRETE BARRIER SHOWN ON THE PLANS FOR THIS PAY ITEM AND DELIVER THEM TO THE CITY OF COLUMBUS, DIVISION OF TRAFFIC ENGINEERING AT 1820 EAST 17th AVENUE. THE CONTRACTOR SHALL NOTIFY THE MAINTENANCE YARD AT 645-7393, 72 HOURS PRIOR TO ANY DELIVERY.

ALL COSTS ASSOCIATED WITH THE REMOVAL OF THE PORTABLE CONCRETE BARRIERS AND SAFE DELIVERY SHALL BE INCLUDED IN THE UNIT COST BID FOR THIS ITEM.

## ADDITIONAL TEMPORARY TRAFFIC CONTROL

THE FOLLOWING ITEMS ARE TO BE USED WHEN IT HAS BEEN DETERMINED, BY THE ENGINEER, THAT ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES, NOT SHOWN IN THESE PLANS, ARE REQUIRED.

DRUMS, BARRICADES OR SIGNS AND PAVEMENT MARKINGS FURNISHED SHALL BE IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS FOR THE ORIGINAL.

SIGNS FURNISHED UNDER THIS ITEM SHALL BE INSTALLED COMPLETE IN PLACE INCLUDING SUPPORT AND MOUNTING HARDWARE.

PAVEMENT MARKINGS FURNISHED UNDER THIS ITEM SHALL INCLUDE INSTALLATION AND REMOVAL OF EXISTING TEMPORARY AND PERMANENT PAVEMENT MARKINGS.

ITEM SPECIAL - 614, PLASTIC SAFETY DRUM	50	EACH
ITEM 614 - TYPE III BARRICADE (10 FEET LONG)	1	EACH
ITEM 614 - TEMPORARY LANE LINE	0.5	MILE
ITEM 614 - TEMPORARY EDGE LINE	0.5	MILE
ITEM 614 - TEMPORARY CHANNELIZING LINE	200	LIN. F.T.
ITEM 630 - REMOVAL OF POLE MOUNTED SIGN	5	EACH
ITEM 630 - REMOVAL OF GROUND MOUNTED SIGN	2	EACH
ITEM 630 - REMOVAL OF TEMPORARY OVERLAY	1	EACH
ITEM 630 - REMOVAL OF OVERHEAD SIGN	1	EACH
ITEM 630 - REMOVAL OF PAVEMENT MARKING	500	LIN. FT.
ITEM 644 - LANE ARROW	4	EACH
ITEM 644 - WORD ON PAVEMENT, 96"	2	EACH

PAYMENT FOR THESE ITEMS SHALL BE AT THE CONTRACT UNIT PRICE INCLUDING ALL NECESSARY MATERIALS, PARTS, EQUIPMENT AND LABOR.

THE CONTRACTOR SHALL NOT ORDER MATERIALS OR PERFORM WORK FOR ITEMS DESIGNATED BY PLAN NOTE TO BE USED "AS DIRECTED BY THE ENGINEER" UNLESS AUTHORIZED BY THE ENGINEER.

## COORDINATION WITH THE COLUMBUS PAVING THE WAY PROGRAM (PTWP)

THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES ON A WEEKLY BASIS. WHEN DETOURS ARE PLANNED, THE NOTIFICATION SHALL BE AT THE PRECONSTRUCTION MEETING OR 30 DAYS IN ADVANCE ONCE CONSTRUCTION HAS BEGUN. LANE AND RAMP CLOSURES FOR MORE THAN TWO WEEKS IN ADVANCE OF THE CLOSURE, LANE AND RAMP CLOSURES OF LESS THAN TWO WEEKS DURATION AND MORE THAN TWO DAYS SHALL BE REPORTED AT LEAST 3 WORKING DAYS IN ADVANCE. FOR SHORT-TERM LANE OR RAMP CLOSURES (TWO DAYS OR LESS) NOTIFICATION SHALL BE MADE AT LEAST ONE WORKING DAY IN ADVANCE.

INFORMATION SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL CONSTRUCTION ACTIVITIES THAT IMPACT TRAFFIC AT PRESENT AND IN THE NEXT 30 DAYS. THE REPORT SHALL BE OF A FORMAT APPROVED BY THE PROJECT ENGINEER OR ONE SUPPLIED BY PTWP. THE CONTRACTOR SHALL DESIGNATE AN INDIVIDUAL WHO WILL BE RESPONSIBLE TO PREPARE THIS REPORT AT THE PRECONSTRUCTION MEETING.

ANY UNFORESEEN IMPACT TO TRAFFIC SHALL BE REPORTED TO THE PROJECT ENGINEER AS SOON AS POSSIBLE.

THE PROJECT ENGINEER SHALL PROVIDE THIS INFORMATION TO THE PTWP PROGRAM. ALL CONSTRUCTION ACTIVITIES THAT INTERFERE WITH TRAFFIC SHALL BE REPORTED TO THE PTWP. THIS INFORMATION SHALL BE PROVIDED TO THE PROGRAM COORDINATOR AT (614) 645-3970, 645-6016 OR BY FAX AT (614) 645-5844.

## ITEM 614 - PORTABLE CHANGEABLE MESSAGE SIGN, CLASS II, AS PER PLAN

THE CONTRACTOR SHALL FURNISH, INSTALL, MAINTAIN AND, WHEN NO LONGER NEEDED, REMOVE THE CHANGEABLE MESSAGE SIGNS (PCMS).

EACH SIGN SHALL BE TRAILER MOUNTED AND EQUIPPED WITH A FUNCTIONAL DIMMING MECHANISM TO DIM THE SIGN DURING DARKNESS AND A TAMPER AND VANDALS PROOF ENCLOSURE. THE SIGNS SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ON-SITE PERSONNEL TO OPERATE AND TROUBLE SHOOT THE UNIT. THE SIGN SHALL ALSO BE CAPABLE OF BEING POWERED BY AN ELECTRICAL SERVICE LOOP FROM A LOCAL UTILITY COMPANY.

THE LOCATIONS AND MESSAGES SHALL BE AS DIRECTED BY THE ENGINEER. THE PCMS SHALL BE LOCATED IN A HIGHLY VISIBLE POSITION OR PROTECTED FROM TRAFFIC. THE CONTRACTOR SHALL, AT THE DIRECTION OF THE ENGINEER, RELOCATE THE PCMS TO IMPROVE VISIBILITY OR TO ACCOMMODATE CHANGED CONDITIONS. WHEN NOT IN USE, THE PCMS WILL BE OFF, FACING AWAY FROM ALL TRAFFIC AND SHALL DISPLAY ONE OR MORE HIGH INTENSITY YELLOW REFLECTIVE SHEETING SURFACES OF 9-INCH BY 15-INCH MINIMUM SIZE FACING TRAFFIC.

THE ENGINEER SHALL BE PROVIDED ACCESS TO EACH SIGN UNIT AND SHALL BE PROVIDED WITH APPROPRIATE TRAINING AND OPERATION INSTRUCTIONS TO ENABLE ODOT AND THE CITY OF COLUMBUS, DIVISION OF TRAFFIC PERSONNEL TO OPERATE AND TROUBLESHOOT THE UNIT AND TO REVISE SIGN MESSAGES, IF NECESSARY.

THE PCMS SHALL CONTAIN AN ACCURATE CLOCK AND PROGRAMMING LOGIC ALLOWING THE SIGN TO BE ACTIVATED, DEACTIVATED OR MESSAGES CHANGED AUTOMATICALLY AT DIFFERENT TIMES OF THE DAY FOR DIFFERENT DAYS OF THE WEEK.

THE PCMS UNIT SHALL BE MAINTAINED IN GOOD WORKING ORDER BY THE CONTRACTOR IN ACCORDANCE WITH THE PROVISIONS OF 614.03 (C). THE CONTRACTOR SHALL, PRIOR TO ACTIVATING THE UNIT, MAKE ARRANGEMENTS WITH AN AUTHORIZED SERVICE AGENT FOR THE PCMS TO ASSURE PROMPT SERVICE IN THE EVENT OF FAILURE. ANY FAILURE SHALL NOT RESULT IN THE SIGN BEING OUT OF SERVICE FOR MORE THAN 12 HOURS INCLUDING WEEKENDS. FAILURE TO COMPLY MAY RESULT IN AN ORDER TO STOP WORK AND OPEN ALL TRAFFIC LANES AND/OR IN THE DEPARTMENT TAKING APPROPRIATE ACTION TO SAFELY CONTROL TRAFFIC. THE ENTIRE COST TO CONTROL TRAFFIC ACCRUED BY THE DEPARTMENT WILL BE DEDUCTED FROM MONIES DUE, OR TO BECOME DUE THE CONTRACTOR ON HIS OWN CONTRACT.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR 24 HOURS PER DAY OPERATION AND MAINTENANCE OF THESE SIGNS ON THE PROJECT FOR THE DURATION OF THE PHASES WHEN THE PLAN REQUIRES THEIR USE. THE REQUIREMENTS TO FURNISH, INSTALL, MAINTAIN AND REMOVE A PCMS UNIT ON THIS PROJECT SHALL NOT IN ANY WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES AS OUTLINED IN CMS 104.04.

PAYMENT FOR THE ABOVE DESCRIBED ITEM SHALL BE AT THE CONTRACT UNIT PRICE BID PER SIGN-MONTH SIGN-MONTH FOR EACH ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, CLASS II, AS PER PLAN AND SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, FUELS, LUBRICATING OILS, SOFTWARE, HARDWARE AND INCIDENTALS TO PERFORM THE ABOVE DESCRIBED WORK.

THE FOLLOWING QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM 614 PORTABLE CHANGEABLE MESSAGE SIGN, CLASS II, AS PER PLAN 2 SIGN MONTHS

## ITEM 630 - PREPARATION AND SHIPMENT OF STORED SIGNS, BY TYPE

FLAT SHEET AND EXTRUSHEET SIGNS REMOVED UNDER OTHER ITEMS OF WORK SHALL BE PROCESSED AND SHIPPED TO THE ODOT SIGN SHOP, 1606 WEST BROAD STREET, COLUMBUS, OHIO.

FLAT SHEET SIGNS SHALL BE SECURED ON PALLETS. LOADED PALLETS SHALL HAVE A MAXIMUM WEIGHT OF 450 KG.

THE LOADING, SECURING, TRANSPORTING AND UNLOADING OF EXTRUSHEET SIGNS SHALL BE BY SUITABLE MEANS TO AVOID DAMAGE TO THE SIGN PANELS. LARGE SIGNS MAY BE CAREFULLY DISASSEMBLED INTO SMALLER ASSEMBLIES TO FACILITATE TRANSPORTATION.

DELIVERIES SHALL BE MADE BETWEEN 8:00 A.M. AND 2:00 P.M. LATE ARRIVALS MUST UNLOAD THE FOLLOWING DAY. NO DELIVERIES WILL BE ACCEPTED ON SATURDAYS, SUNDAYS AND HOLIDAYS. THE SIGN AND SIGNAL SHOPS ADMINISTRATOR SHALL BE NOTIFIED AT (614) 351-2850 AT LEAST THREE DAYS PRIOR TO THE DELIVERY OF THE SIGNS. DELIVERY ARRANGEMENTS OTHER THAN THOSE DESCRIBED ABOVE MUST BE APPROVED IN ADVANCE BY THE SIGN AND SIGNAL SHOPS ADMINISTRATOR.

THE SIGNS SHALL BE TRANSPORTED BY THE CONTRACTOR TO THE ODOT SIGN SHOP WHERE THEY WILL BE UNLOADED AND STORED. PERSONNEL AND A FORK LIFT OF 450 KG MAXIMUM CAPACITY WILL BE PROVIDED BY THE STATE FOR UNLOADING.

PAYMENT WILL BE AT THE CONTRACT PRICE PER EACH SIGN, INCLUDING ALL LABOR, EQUIPMENT, BANDING MATERIAL, PALLETS, TRANSPORTATION AND MISCELLANEOUS MATERIAL NECESSARY TO PERFORM THE WORK.

630 EACH PREPARATION AND SHIPMENT OF STORED SIGNS, FLAT SHEET	130	EACH
630 EACH PREPARATION AND SHIPMENT OF STORED SIGNS, EXTRUSHEET	30	EACH

## ITEM 631 - SIGNING, MISC. REMOVAL AND REINSTALLATION OF LIGHTING

INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM, THE CONTRACTOR SHALL REMOVE THE EXISTING OVERHEAD SIGN LIGHTING SYSTEMS AND REINSTALL ACCORDING TO STANDARD CONSTRUCTION DRAWINGS, TC-31.21; TC-32.10 AND TC-32.11.

THE CONTRACTOR SHALL PROVIDE ALL HARDWARE, WIRING, LUMINAIRES, LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE WORK.

GENERAL NOTES

FRA-315-0.93 (A-5)

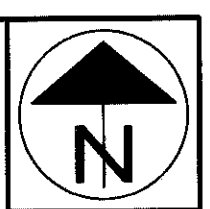
203-A  
404

91178\175MPL.DWG JK 4/29/88 1-250



	630 POLE MOUNTED SIGN REMOVAL EACH			
	11			
TOTAL	11			

<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(A)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(B)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(C)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR AHEAD</p> <p>OC-29-30</p> <p>(D)</p>	<p>SOUTH WEST</p> <p>M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(E)</p>	<p>SOUTH WEST</p> <p>M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(F)</p>	<p>SOUTH</p> <p>M-38-24</p> <p>M-5-24</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(G)</p>	<p>SOUTH WEST</p> <p>M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(H)</p>	<p>WEST</p> <p>M-40-24</p> <p>M-1-24-2</p> <p>DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(J)</p>	<p>WEST</p> <p>M-40-24</p> <p>M-1-24-2</p> <p>DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(K)</p>	<p>WEST</p> <p>M-40-24</p> <p>M-1-24-2</p> <p>DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(L)</p>	<p>SOUTH</p> <p>M-38-24</p> <p>M-5-24</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(M)</p>
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CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

DETOUR PLAN  
DOWNTOWN SURFACE STREETS

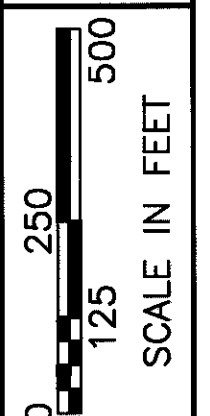
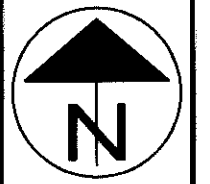
FRA-315-0.93 (A-5)

203-B  
404









CALCULATED  
A.W.F.  
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	630 REMOVAL OF POLE MOUNTED SIGN EACH		
TOTAL	12		

DETOUR PLAN  
DOWNTOWN SURFACE STREETS

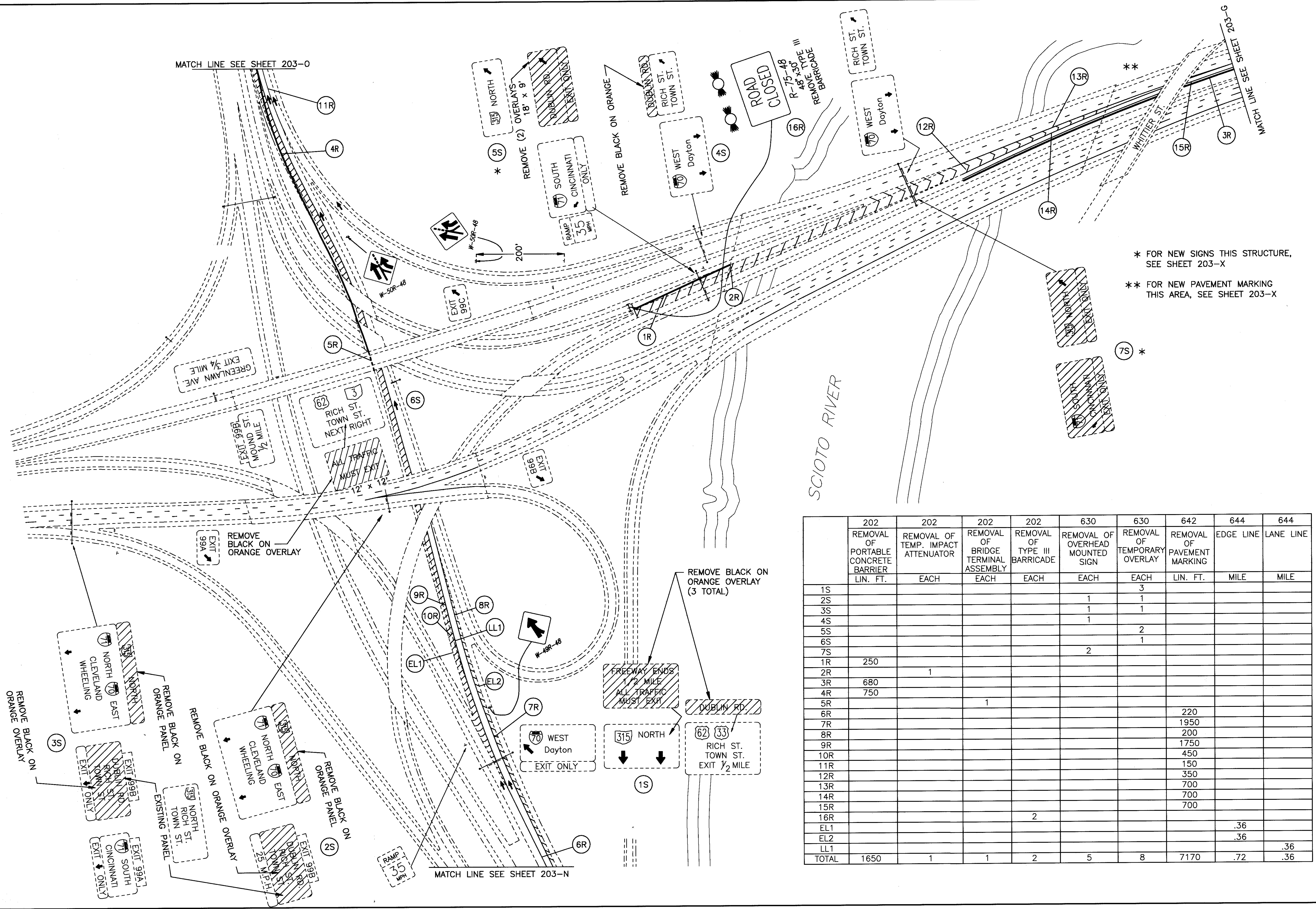
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203-E  
404

<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(A)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(B)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(C)</p>	<p>NORTH M-37-24</p> <p>M-2C-24-3</p> <p>DETOUR AHEAD</p> <p>OC-29-30</p> <p>(D)</p>	<p>SOUTH WEST M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(E)</p>	<p>SOUTH WEST M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(F)</p>	<p>SOUTH M-38-24</p> <p>M-5-24</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(G)</p>	<p>SOUTH WEST M-38-24 M-38-24</p> <p>M-5-24 M-5-24</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(H)</p>	<p>WEST M-40-24</p> <p>M-1-24-2 DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR ↑</p> <p>OC-29-30</p> <p>(J)</p>	<p>WEST M-40-24</p> <p>M-1-24-2 DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(K)</p>	<p>WEST M-40-24</p> <p>M-1-24-2 DUBLIN ROAD</p> <p>D-12Y-36</p> <p>DETOUR →</p> <p>OC-29R-30</p> <p>(L)</p>	<p>SOUTH M-38-24</p> <p>M-5-24</p> <p>DETOUR ←</p> <p>OC-29L-30</p> <p>(M)</p>	<p>DETOUR CM-23-24 NORTH M-37-24</p> <p>M-5-24 M-5-24</p> <p>NEXT RIGHT</p> <p>(N)</p>	<p>DETOUR CM-23-24 NORTH M-37-24</p> <p>M-5-24</p> <p>KEEP LEFT</p> <p>RP-38L-24 (P)</p>	<p>DETOUR CM-23-24 INTERSTATE M-5-24</p> <p>M-5-24</p> <p>KEEP LEFT</p> <p>RP-38L-24 (P)</p>
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91175\175MPLD.DWG JJK 4/30/98 1=250

91175\175MPC.DWG JJK 4/30/98 1=100



\* FOR NEW SIGNS THIS STRUCTURE, SEE SHEET 203-X  
 \*\* FOR NEW PAVEMENT MARKING THIS AREA, SEE SHEET 203-X

	202	202	202	202	630	630	642	644	644
	REMOVAL OF PORTABLE CONCRETE BARRIER	REMOVAL OF TEMP. IMPACT ATTENUATOR	REMOVAL OF BRIDGE TERMINAL ASSEMBLY	REMOVAL OF TYPE III BARRICADE	REMOVAL OF OVERHEAD MOUNTED SIGN	REMOVAL OF TEMPORARY OVERLAY	REMOVAL OF PAVEMENT MARKING	EDGE LINE	LANE LINE
	LIN. FT.	EACH	EACH	EACH	EACH	EACH	LIN. FT.	MILE	MILE
1S									
2S					1	3			
3S					1	1			
4S					1	1			
5S						2			
6S						1			
7S					2				
1R	250								
2R		1							
3R	680								
4R	750								
5R			1						
6R							220		
7R							1950		
8R							200		
9R							1750		
10R							450		
11R							150		
12R							350		
13R							700		
14R							700		
15R							700		
16R				2					
EL1								.36	
EL2								.36	
LL1									.36
TOTAL	1650	1	1	2	5	8	7170	.72	.36

SCALE IN FEET  
0 100 200

CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

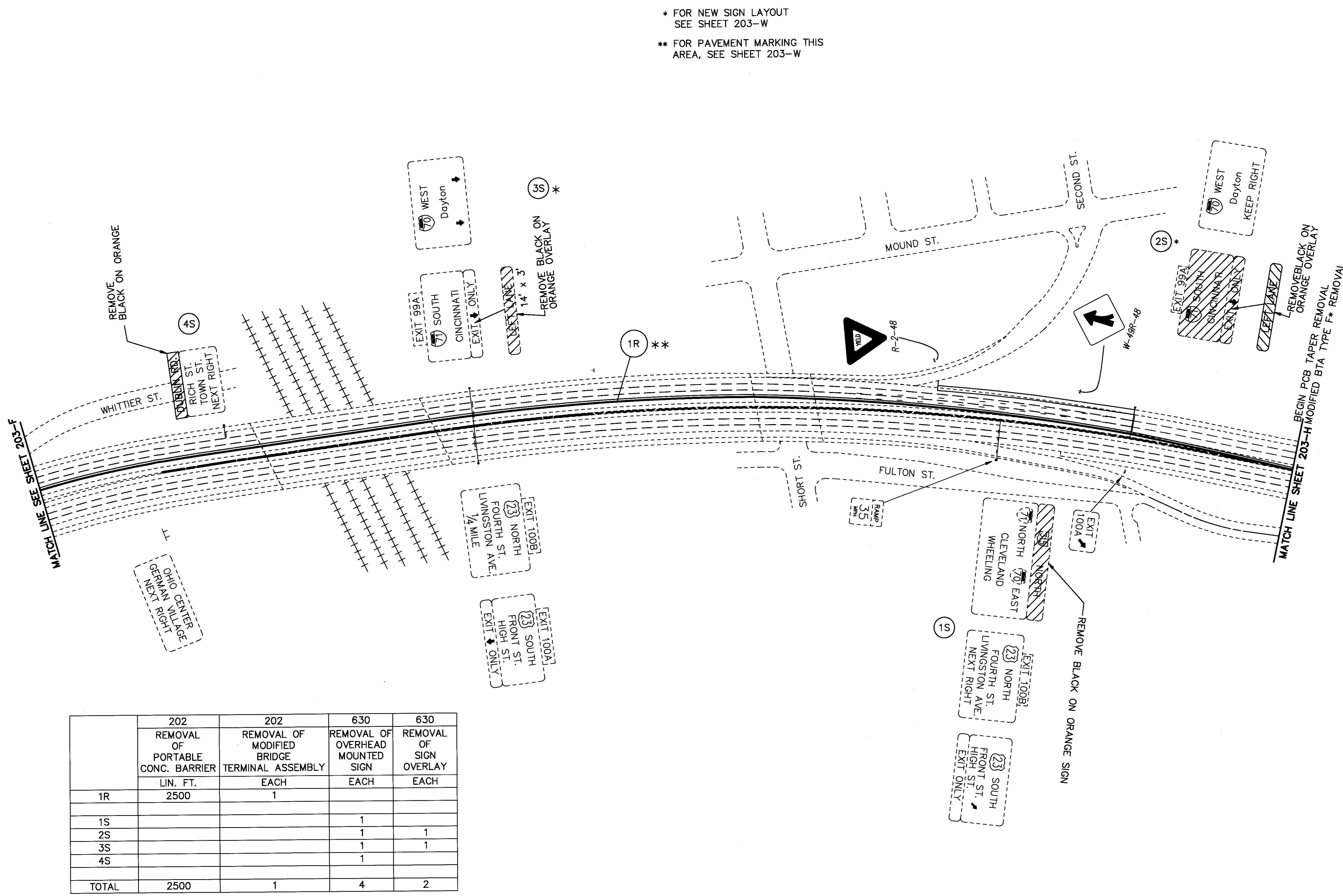
**PLAN - I-70 / I-71 SOUTH INNERBELT**

**FRA-315-093 (A-5)**

**203-F  
404**



91175\175MPLDWC.dwg 5/1/98 1=100



\* FOR NEW SIGN LAYOUT  
SEE SHEET 203-W

\*\* FOR PAVEMENT MARKING THIS  
AREA, SEE SHEET 203-W

	202	202	630	630
	REMOVAL OF PORTABLE CONC. BARRIER	REMOVAL OF MODIFIED BRIDGE TERMINAL ASSEMBLY	REMOVAL OF OVERHEAD MOUNTED SIGN	REMOVAL OF SIGN OVERLAY
	LIN. FT.	EACH	EACH	EACH
1R	2500	1		
1S			1	
2S			1	1
3S			1	1
4S			1	
TOTAL	2500	1	4	2

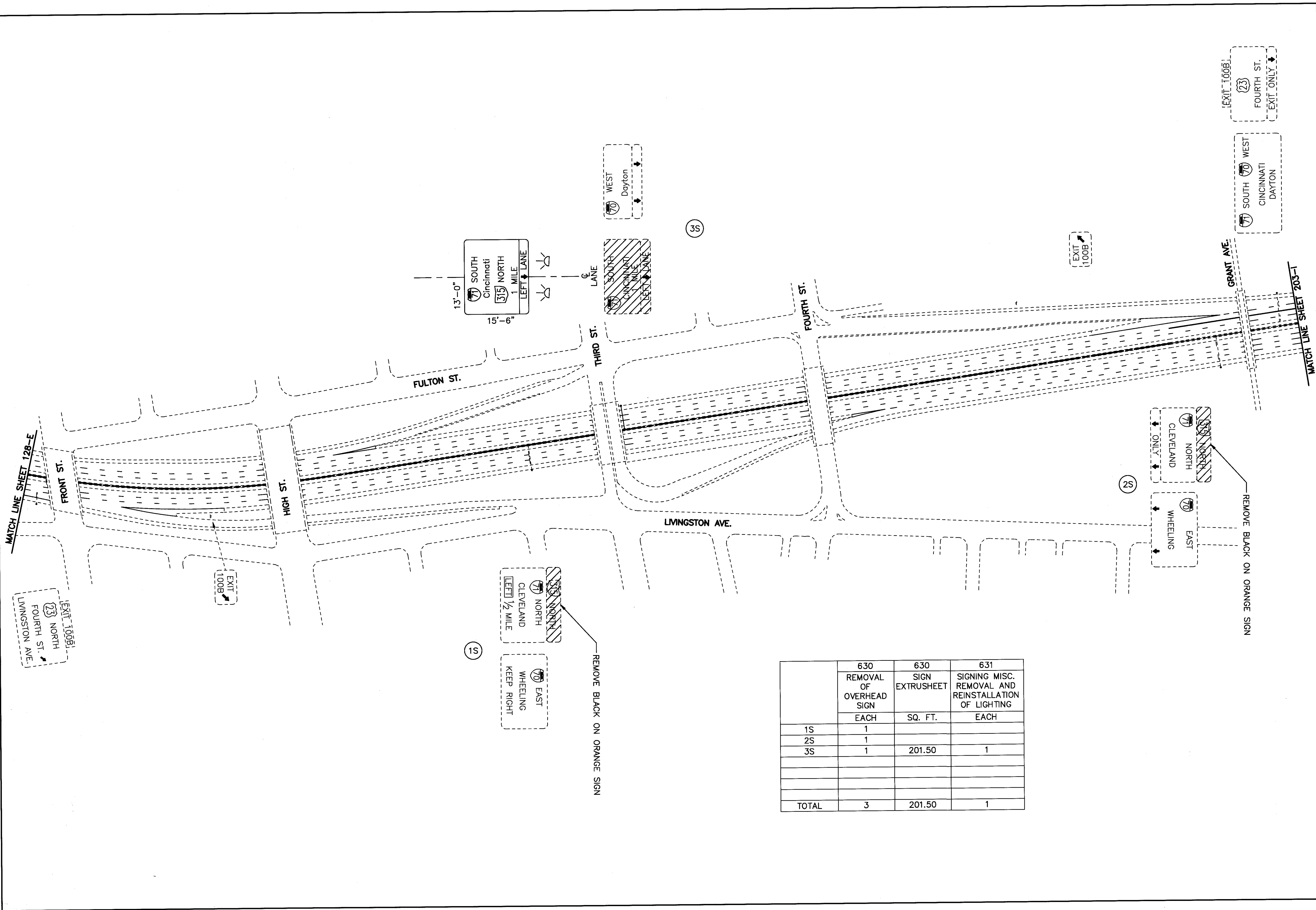
0 100 200  
SCALE IN FEET

CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

PLAN - I-70 / I-71 SOUTH INNERBELT

FRA-315-0.93 (A-5)

203-G  
404



	630 REMOVAL OF OVERHEAD SIGN EACH	630 SIGN EXTRUSHEET SQ. FT.	631 SIGNING MISC. REMOVAL AND REINSTALLATION OF LIGHTING EACH
1S	1		
2S	1		
3S	1	201.50	1
TOTAL	3	201.50	1

203-1H  
404

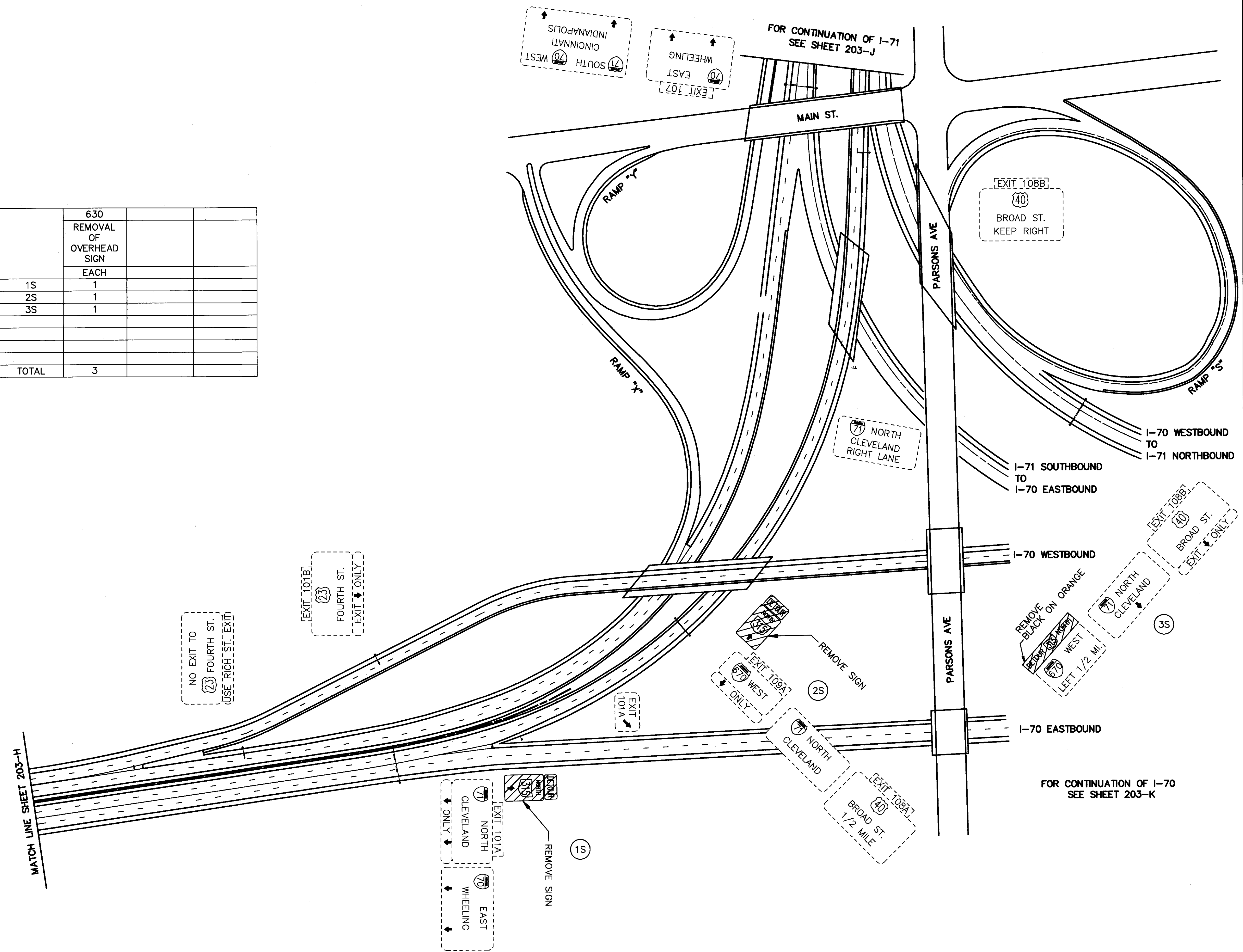
**PLAN - I-70 / I-71 SOUTH INNERBELT**


CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

0 100 200  
SCALE IN FEET

91175\175MP.DWG JK 4/20/88 1-100

	630 REMOVAL OF OVERHEAD SIGN EACH		
1S	1		
2S	1		
3S	1		
TOTAL	3		





SCALE IN FEET

0 50 100 200

CALCULATED  
A.W.F.

CHECKED  
G.L.B.

**PLAN - I-70 / I-71 SOUTH INNERBELT**

**FRA-315-093 (A-5)**

203-1  
404



	630	630	
	REMOVAL OF OVERHEAD SIGN FOR STORAGE EACH	REMOVAL OF TEMPORARY OVERLAY EACH	
1S	1		
2S	1		
3S	1		
4S	1	1	
TOTAL	4	1	

SIGN LAYOUT FOR THIS TRUSS - SEE SHEET 203-1

SIGN LAYOUT FOR THIS TRUSS - SEE SHEET 203-1



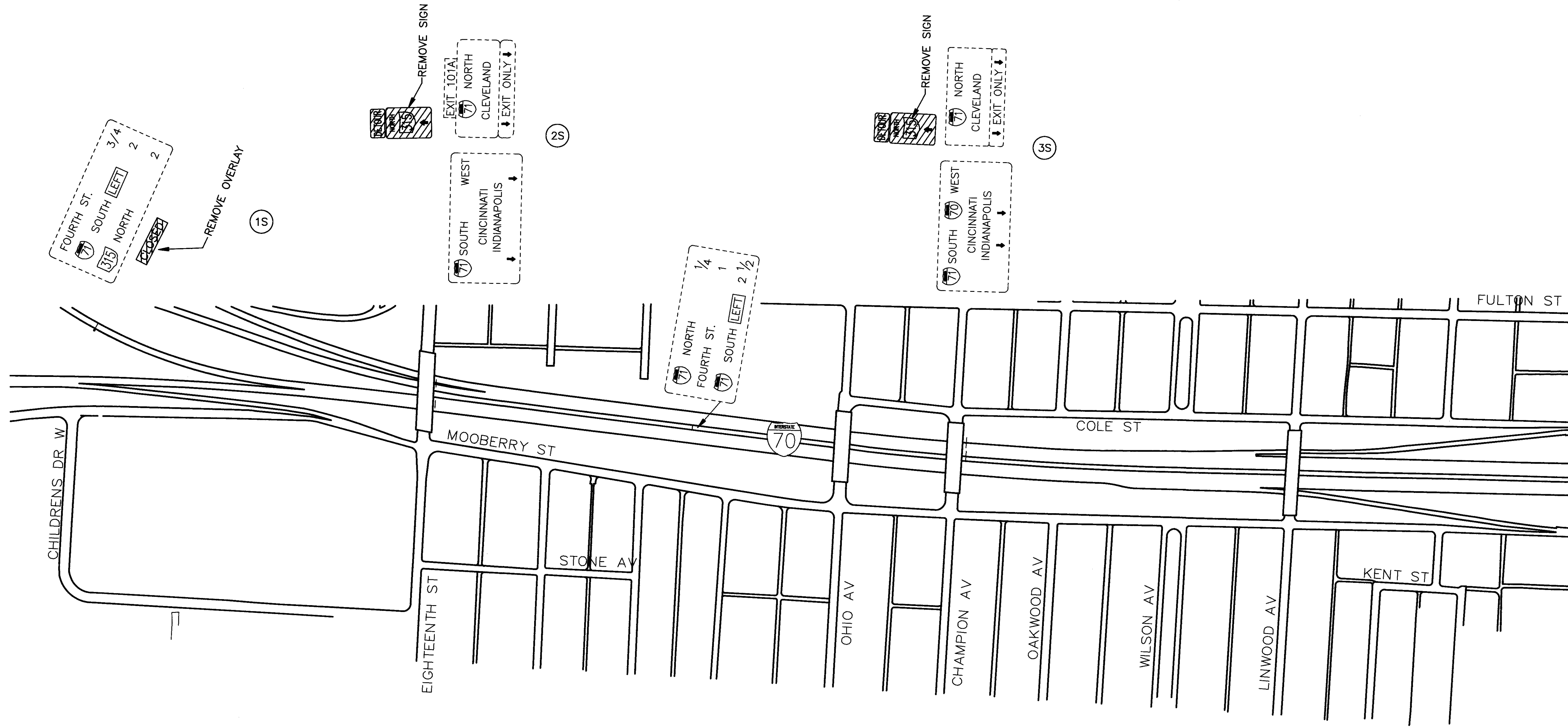
SCALE IN FEET

CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

PLAN - I-71 / I-670 NORTHEAST FREEWAY

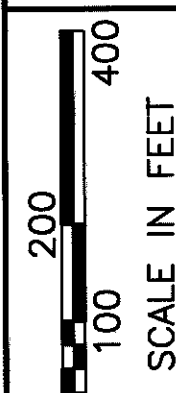
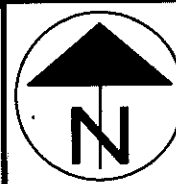
FRA-315-0.93 (A-5)

203-J  
404



	630 REMOVAL OF OVERHEAD SIGN EACH	630 REMOVAL OF TEMPORARY OVERLAY EACH	
1S		1	
2S	1		
3S	1		
TOTAL	2	1	

MATCH LINE SEE SHEET 203-L



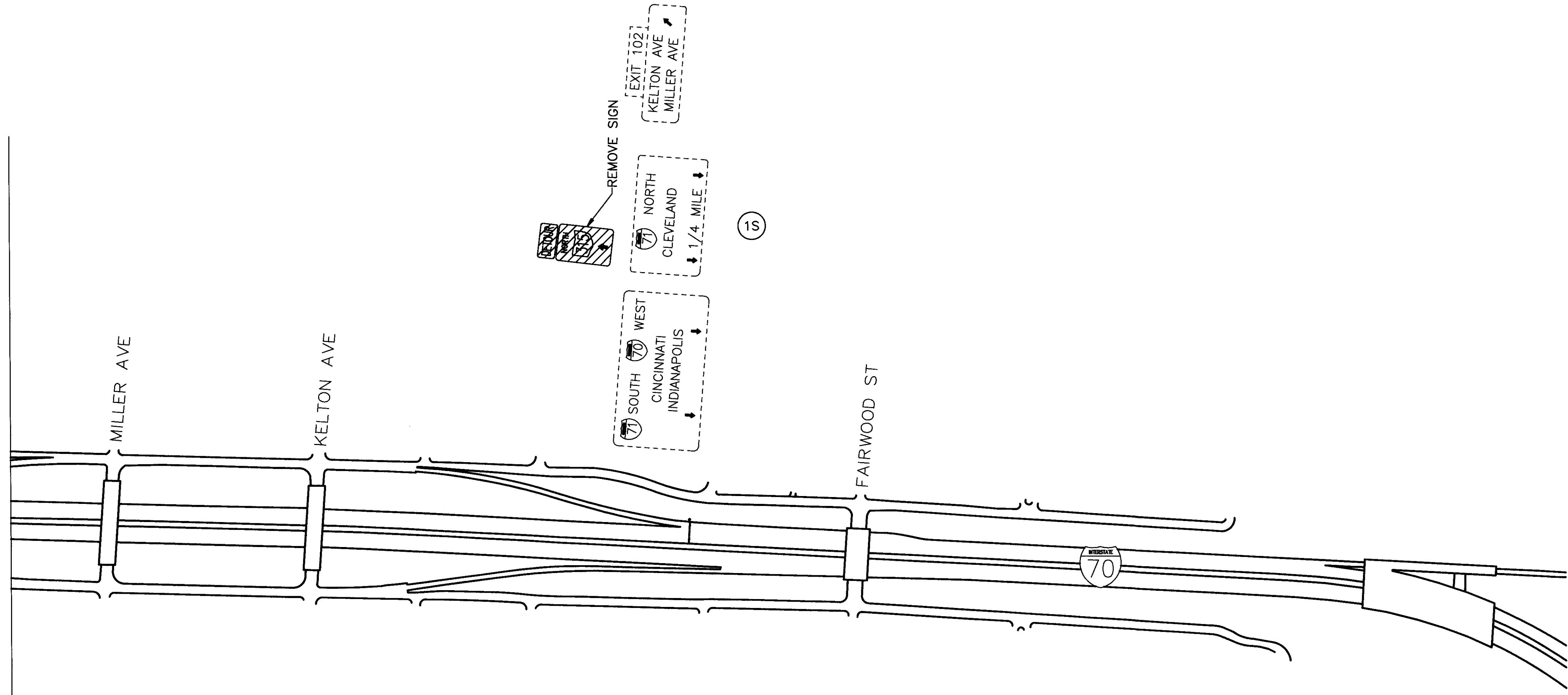
CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

PLAN - I-70 EAST FREEWAY

FRA-315-093 (A-5)

203-K  
404

MATCHLINE SEE SHEET 203-K



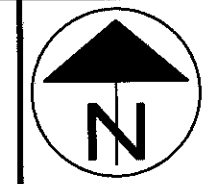
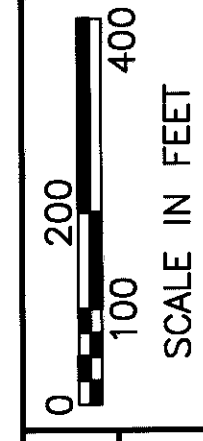
	630 REMOVAL OF OVERHEAD SIGN EACH		
1S	1		
TOTAL	1		

203-L  
404

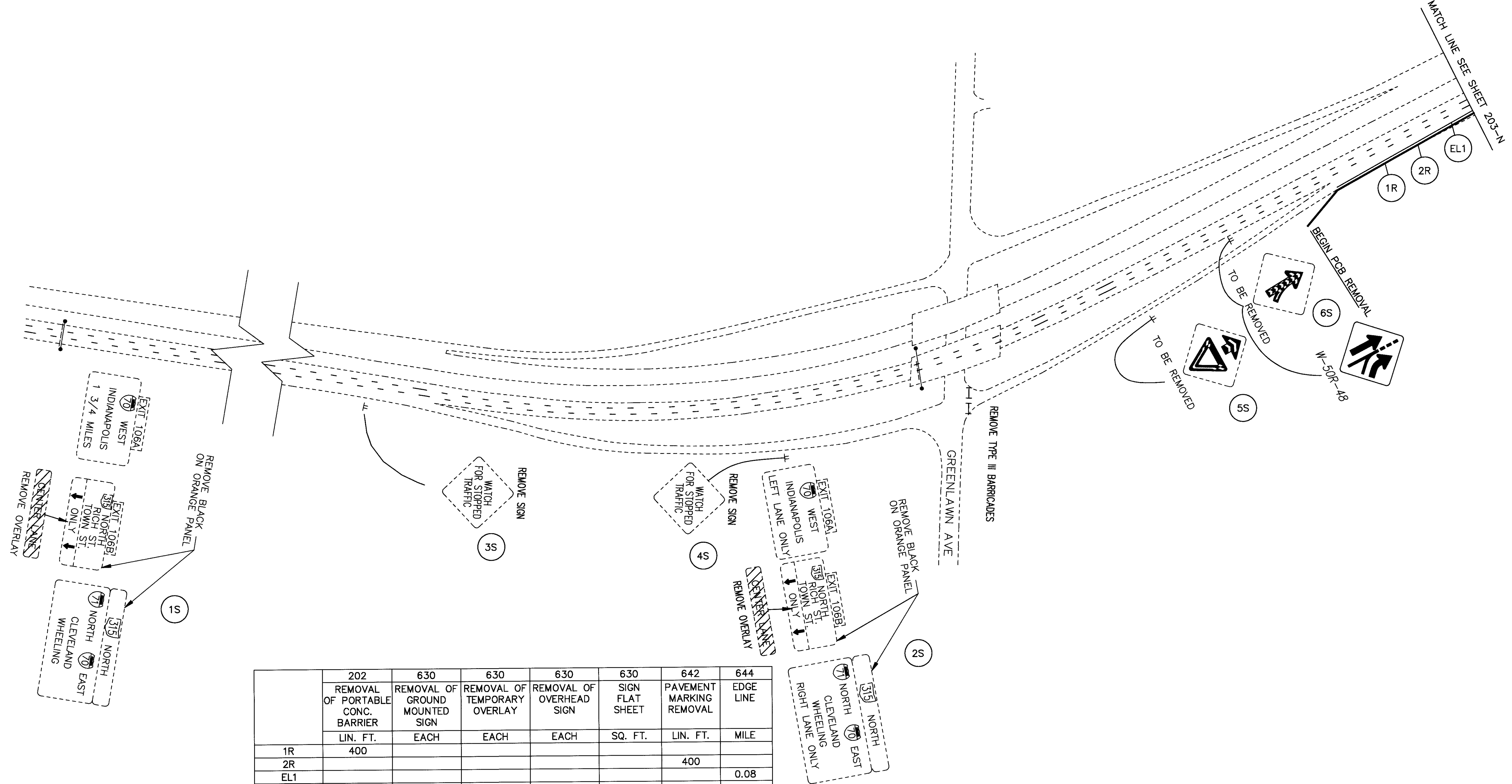
FRA-315-0.93 (A-5)

PLAN - I-70 EAST FREEWAY

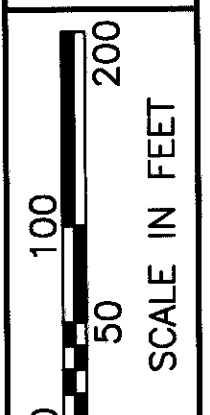
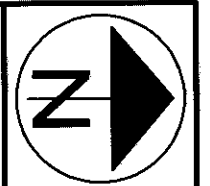
CALCULATED  
A.W.F.  
CHECKED  
G.L.B.







	202	630	630	630	630	642	644
	REMOVAL OF PORTABLE CONC. BARRIER	REMOVAL OF GROUND MOUNTED SIGN	REMOVAL OF TEMPORARY OVERLAY	REMOVAL OF OVERHEAD SIGN	SIGN FLAT SHEET	PAVEMENT MARKING REMOVAL	EDGE LINE
	LIN. FT.	EACH	EACH	EACH	SQ. FT.	LIN. FT.	MILE
1R	400						
2R						400	
EL1							0.08
1S			2	1			
2S			2	1			
3S		1					
4S		1					
5S		1					
6S					16		
TOTAL	400	3	4	2	16	400	0.08



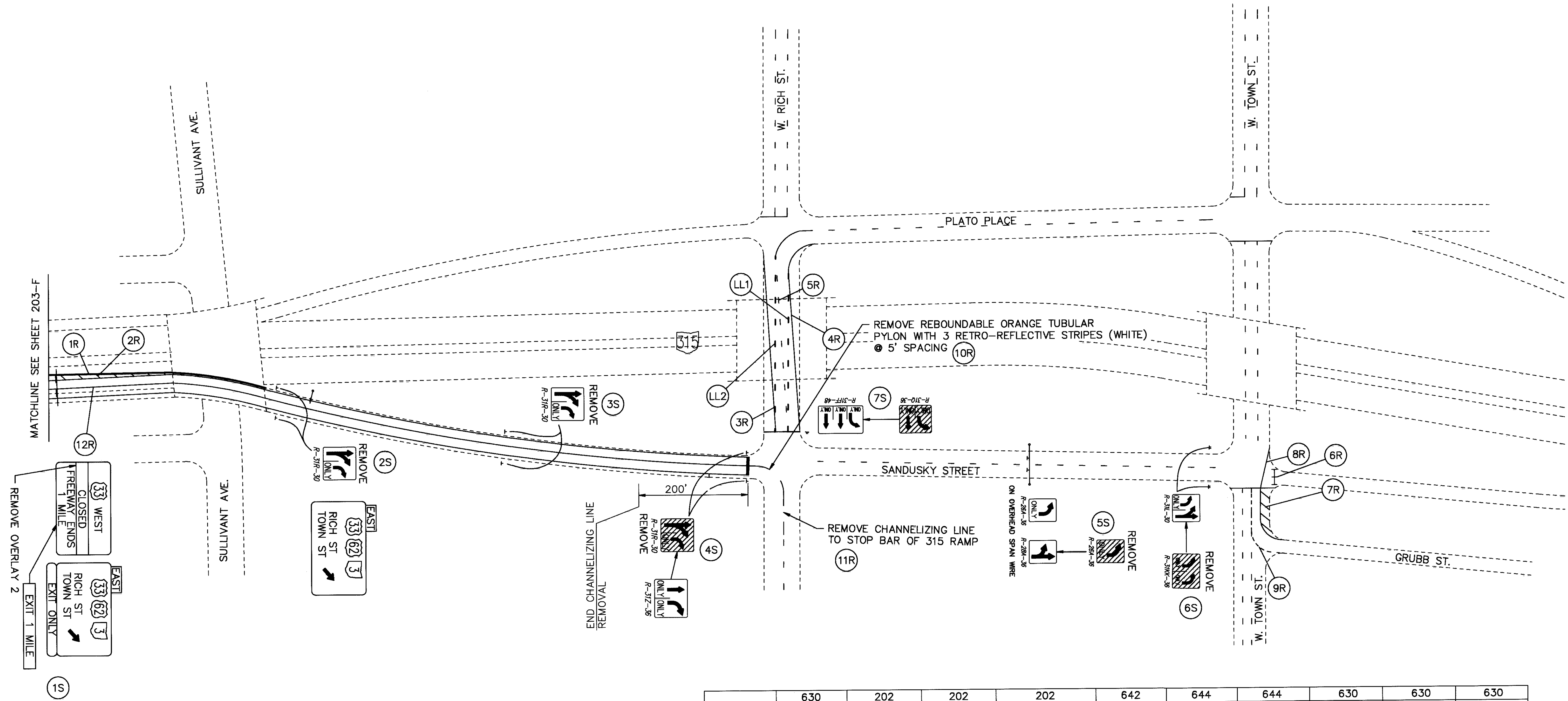
CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

PLAN - 1-71 SOUTH FREEWAY

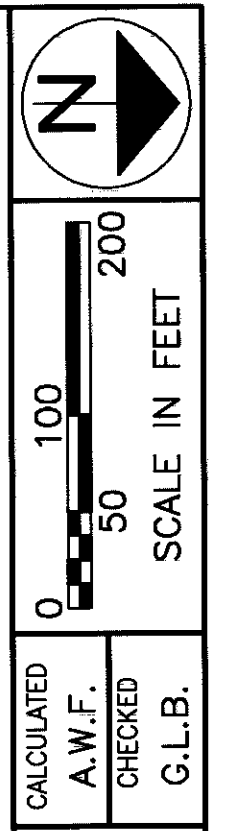
FRA-315-093 (A-5)

203-M  
404





	630	202	202	202	642	644	644	630	630	630
	REMOVAL OF TEMPORARY OVERLAY	REMOVAL OF PORTABLE CONC. BARRIER	REMOVAL OF TYPE III BARRICADE	REMOVAL OF TEMP. REBOUNDABLE TUBULAR PYLONS	REMOVAL OF PAVEMENT MARKING	LANE LINE	STOP BAR	SIGN, FLAT SHEET	REMOVAL OF GROUND MTD. SIGN	REMOVAL OF OVERHEAD SIGN
	EACH	LIN. FT.	EACH	LIN. FT.	LIN. FT.	MILE	FEET	SQ. FT.	EACH	EACH
1R		425								
2R					60					
3R					350					
4R					350					
5R					350					
6R		50	2							
7R					50					
8R					200					
9R					100					
10R				40						
11R					200					
12R					1000					
1S	2									
2S									2	
3S									2	
4S								6.25	1	
5S								10.5		1
6S								6.25	1	
7S								10	1	
LL1						0.07	33			
LL2						0.07				
TOTAL	2	475	2	40	2550	0.14	33	33	7	1



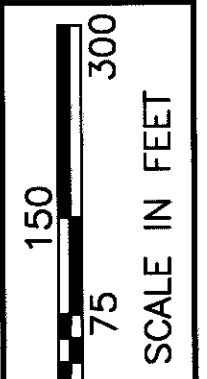
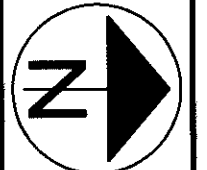
CALCULATED A.W.F. CHECKED G.L.B.

STATE ROUTE 315 NORTH

FRA-315-0.93 (A-5)

203-0  
404





CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

STATE ROUTE 315 NORTH

FRA-315-0.93 (A-5)

203-P  
404

REMOVE PORTABLE CONCRETE BARRIER AND SIGNING (1R)

REMOVE PLASTIC SAFETY DRUMS, TRANSVERSE LINES AND 5 PAVEMENT MARKING SYMBOLS

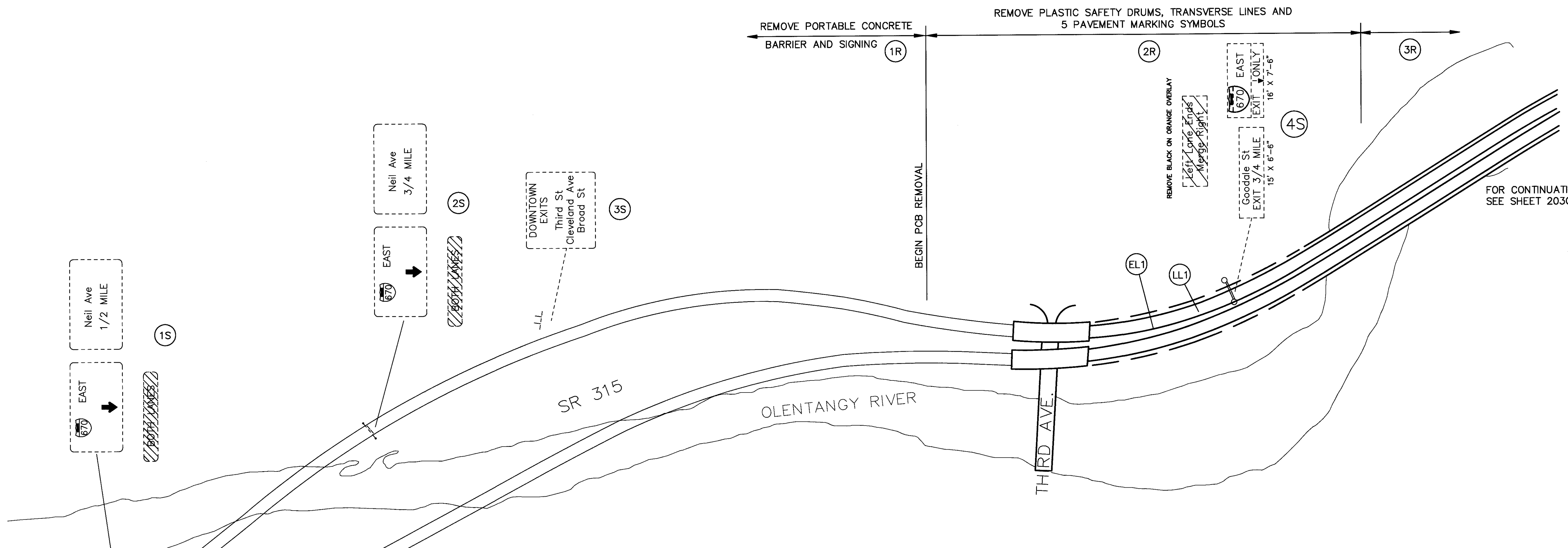
BEGIN PCB REMOVAL

REMOVE BLACK ON ORANGE OVERLAY  
Left Lane Ends  
Merge Right

Goodale St  
EXIT 3/4 MILE  
15' X 6'-6"

EAST  
EXIT ONLY  
16' X 7'-6"

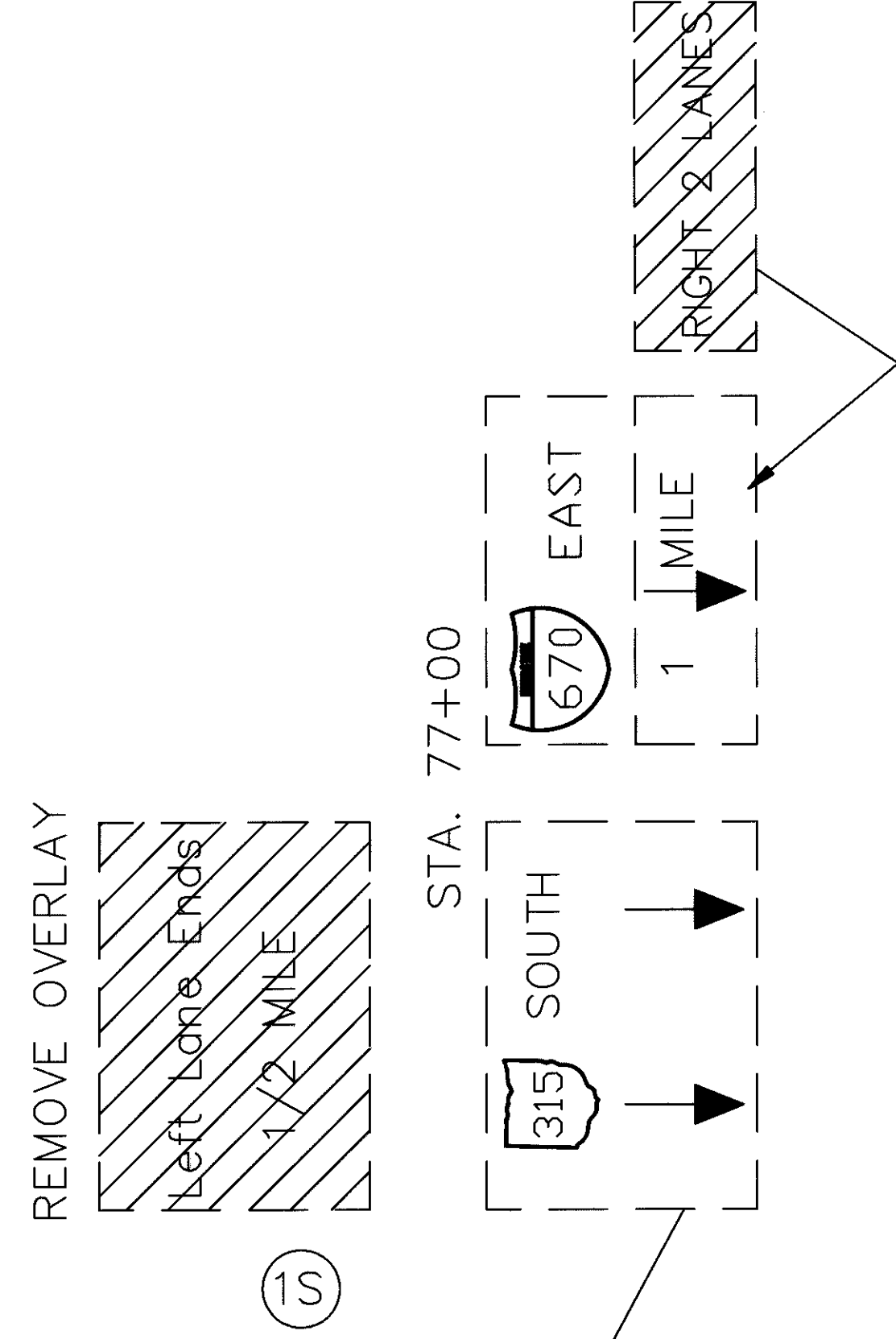
FOR CONTINUATION  
SEE SHEET 203Q



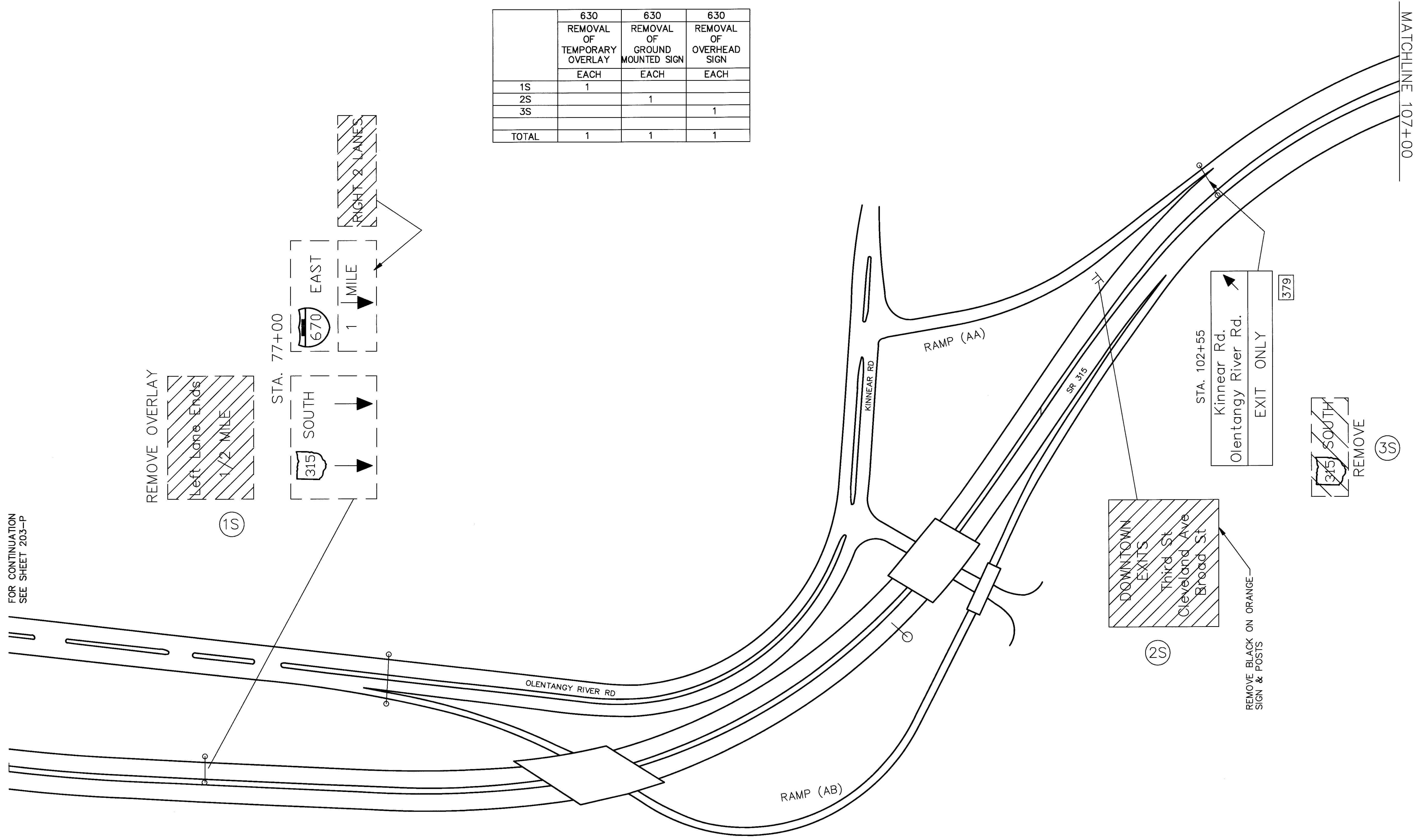
	202	630	630	202	642	642	644	644
	REMOVAL OF PORTABLE CONC. BARRIER	REMOVAL OF TEMPORARY OVERLAY	REMOVAL OF GROUND MOUNTED SIGN	REMOVAL OF PLASTIC SAFETY DRUM	REMOVAL OF PAVEMENT SYMBOL	REMOVAL OF PAVEMENT MARKING	EDGE LINE	LANE LINE
	LIN. FT.	EACH	EACH	EACH	EACH	LIN. FT.	MILE	MILE
1R	1200					600		
2R			4	50				
3R					5			
3S			1					
1S		1						
2S		1						
4S		1						
EL1							0.5	
LL1								0.5
TOTAL	1200	3	5	50	5	600	0.5	0.5

91175\315\ENR MEP 5/1/98 1=150

FOR CONTINUATION  
SEE SHEET 203-P



	630 REMOVAL OF TEMPORARY OVERLAY EACH	630 REMOVAL OF GROUND MOUNTED SIGN EACH	630 REMOVAL OF OVERHEAD SIGN EACH
1S	1		
2S		1	
3S			1
TOTAL	1	1	1



(2S)

REMOVE BLACK ON ORANGE  
SIGN & POSTS

379

315 SOUTH  
REMOVE

(3S)

MATCHLINE 107+00

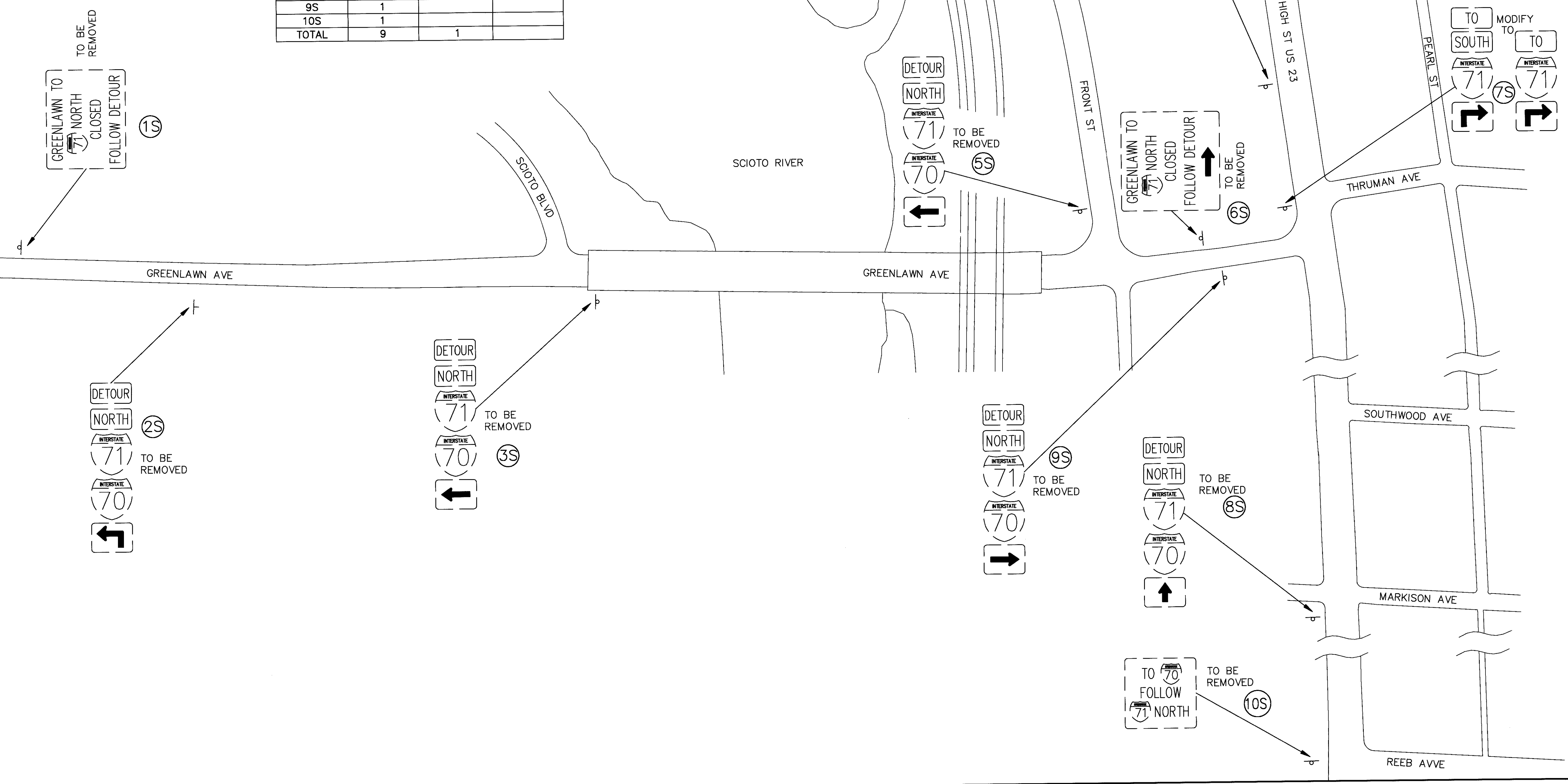






MATCHLINE SHEET 203-

	630		
	REMOVAL OF POLE MOUNTED SIGN EACH	REMOVAL OF GROUND MOUNTED SIGN EACH	
1S	1		
2S		1	
3S	1		
4S	1		
5S	1		
6S	1		
7S	1		
8S	1		
9S	1		
10S	1		
TOTAL	9	1	



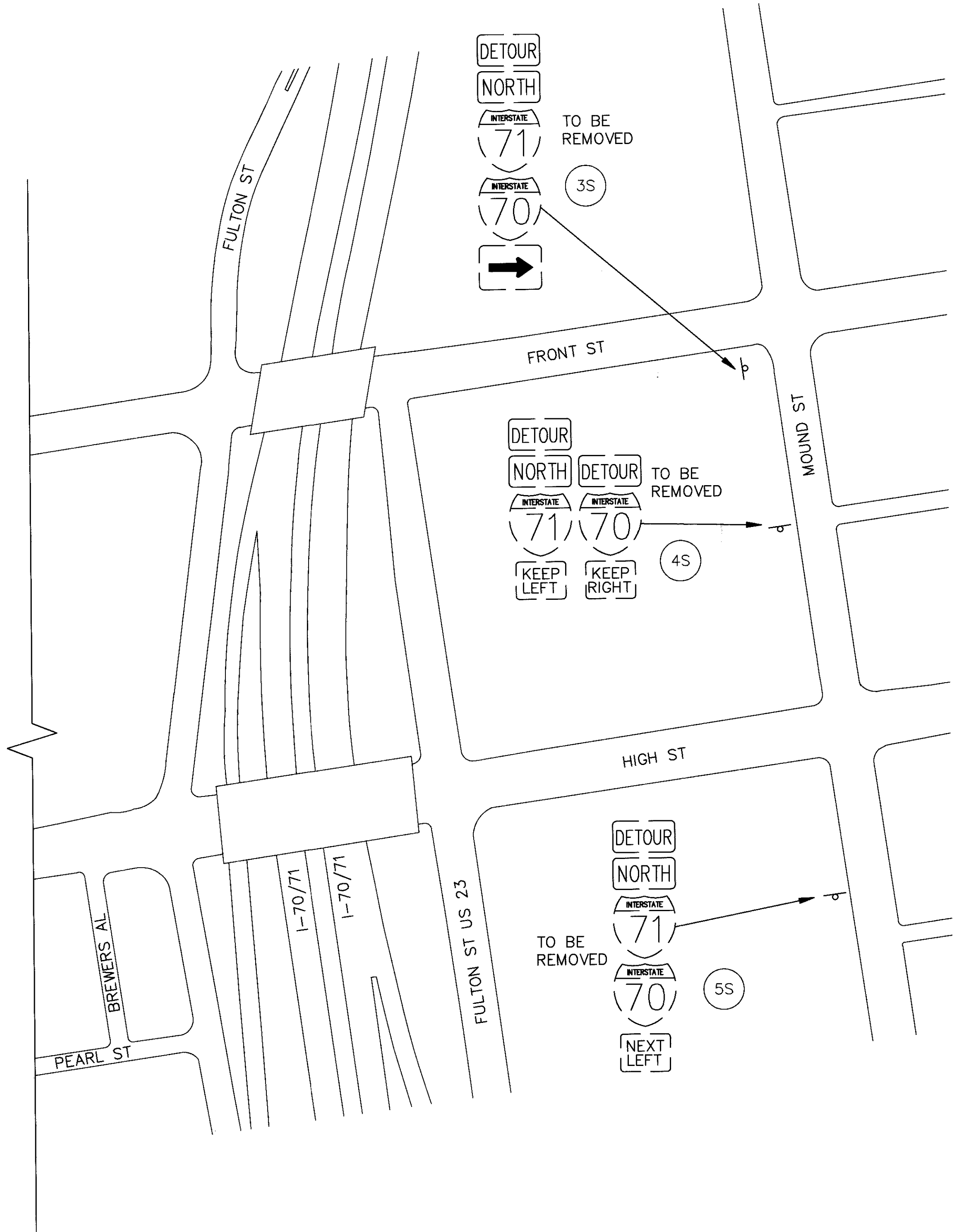
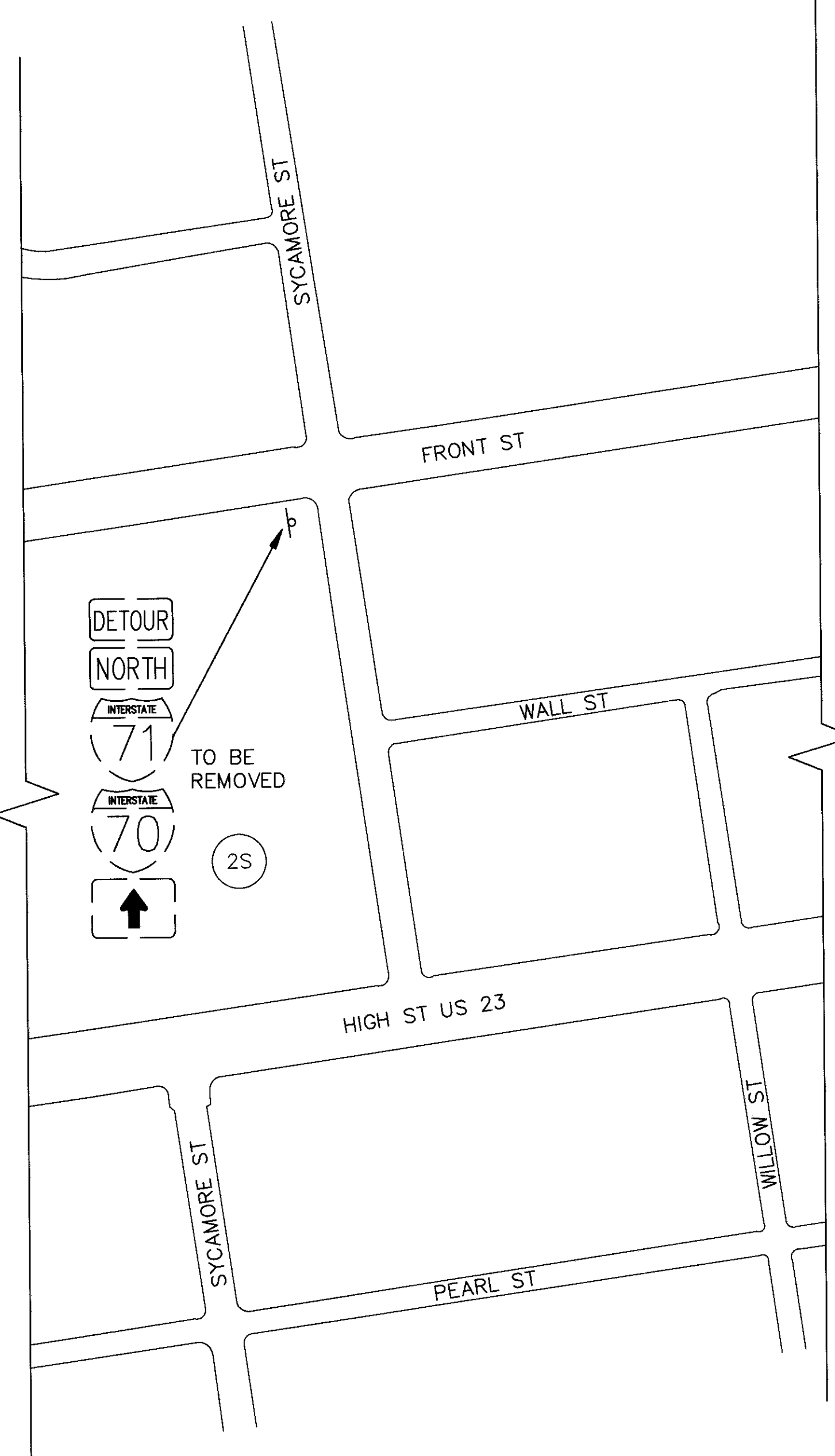
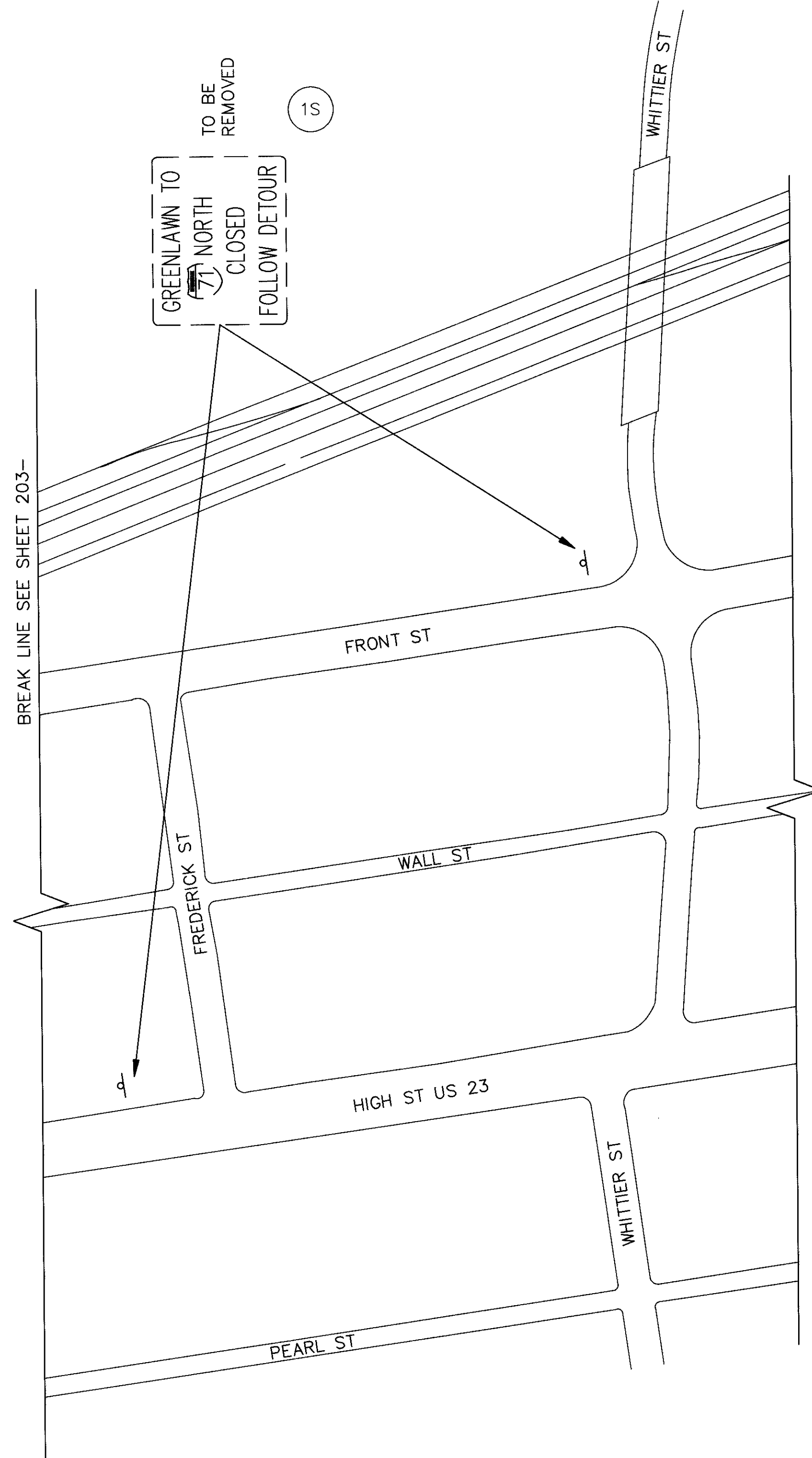
**GREENLAWN AVENUE WEST OF HIGH STREET**

**FRA-315-0.93 (A-5)**

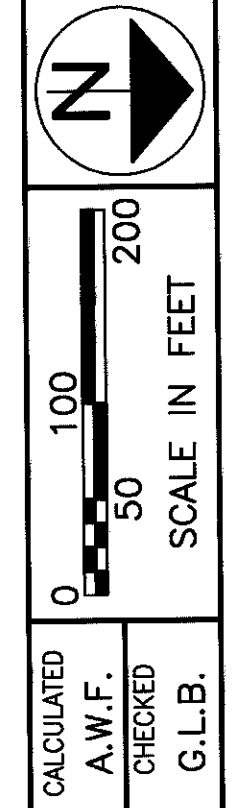
203-T  
404

CALCULATED  
A.W.F.  
CHECKED  
G.L.B.

0 100 200  
SCALE IN FEET



	630		
	REMOVAL OF POLE MOUNTED SIGN		
	EACH		
1S	2		
2S	1		
3S	1		
4S	1		
5S	1		
TOTAL	6		



CALCULATED A.W.F. CHECKED G.L.B.

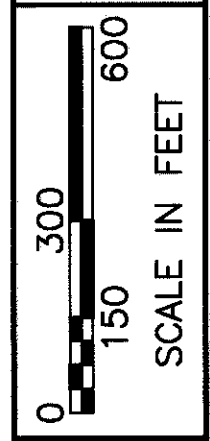
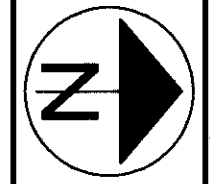
GREENLAWN AVE. DETOUR

FRA-315-0.93 (A-5)

203-U  
404



	202	630	
	REMOVAL OF POLE MOUNTED SIGN EACH	REMOVAL OF GROUND MOUNTED SIGN EACH	
1S	1		
2S	1		
3S	1		
4S	1		
5S		1	
TOTAL	4	1	

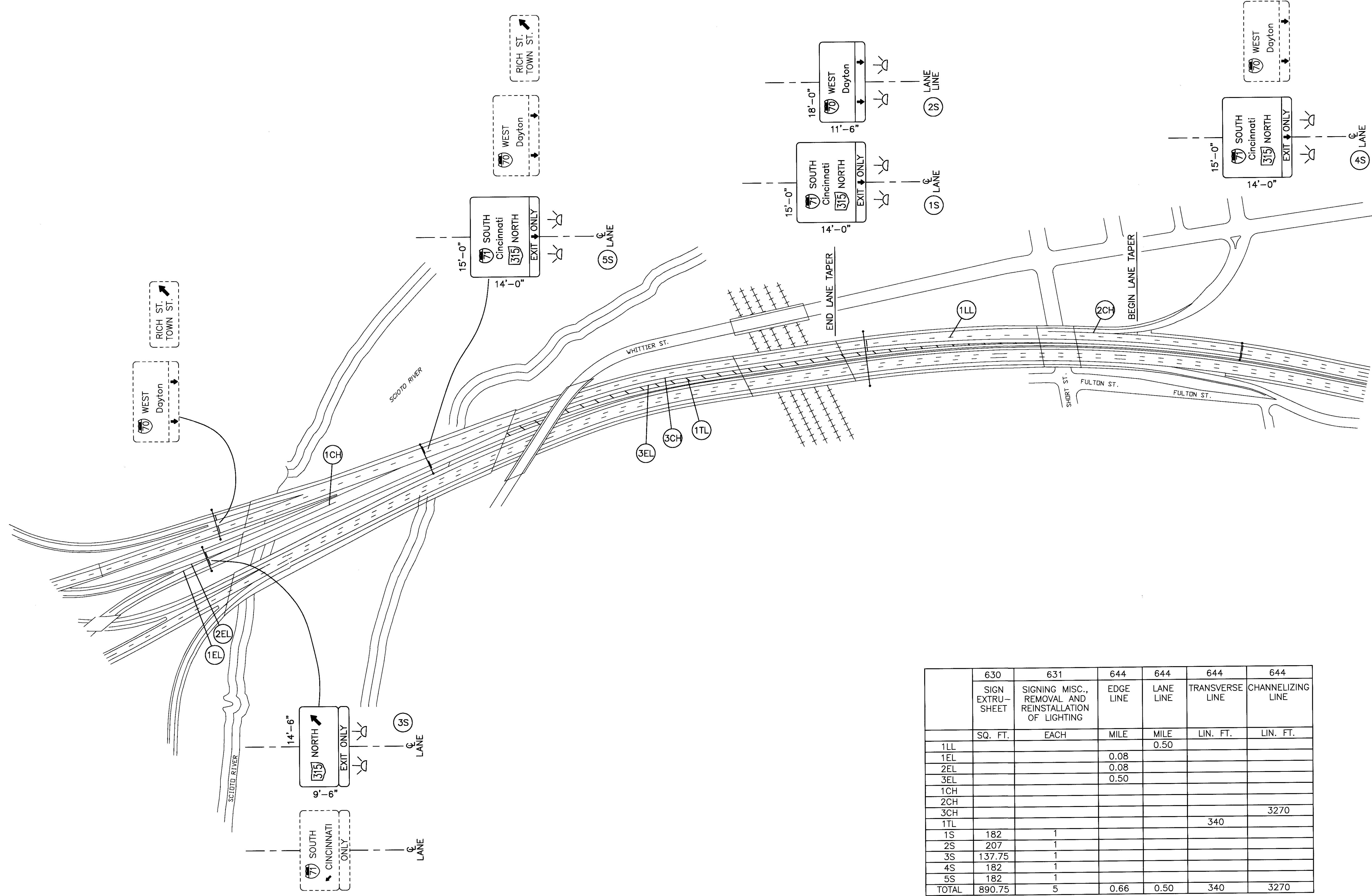


CALCULATED  
A.W.F.  
CHECKED  
G.L.B.


DETOUR SIGNING FOR GRANDVIEW HEIGHTS

FRA-315-0.93 (A-5)

203-V  
404



	630	631	644	644	644	644
	SIGN EXTRU-SHEET	SIGNING MISC., REMOVAL AND REINSTALLATION OF LIGHTING	EDGE LINE	LANE LINE	TRANSVERSE LINE	CHANNELIZING LINE
	SQ. FT.	EACH	MILE	MILE	LIN. FT.	LIN. FT.
1LL				0.50		
1EL			0.08			
2EL			0.08			
3EL			0.50			
1CH						
2CH						
3CH						3270
1TL					340	
1S	182	1				
2S	207	1				
3S	137.75	1				
4S	182	1				
5S	182	1				
TOTAL	890.75	5	0.66	0.50	340	3270

  
 CALCULATED  
 A.W.F. 150  
 CHECKED 75  
 G.L.B. 300  
 SCALE IN FEET

PLAN 70/71 INNERBELT

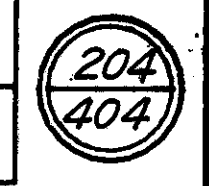
FRA-315-0.93 (A-5)



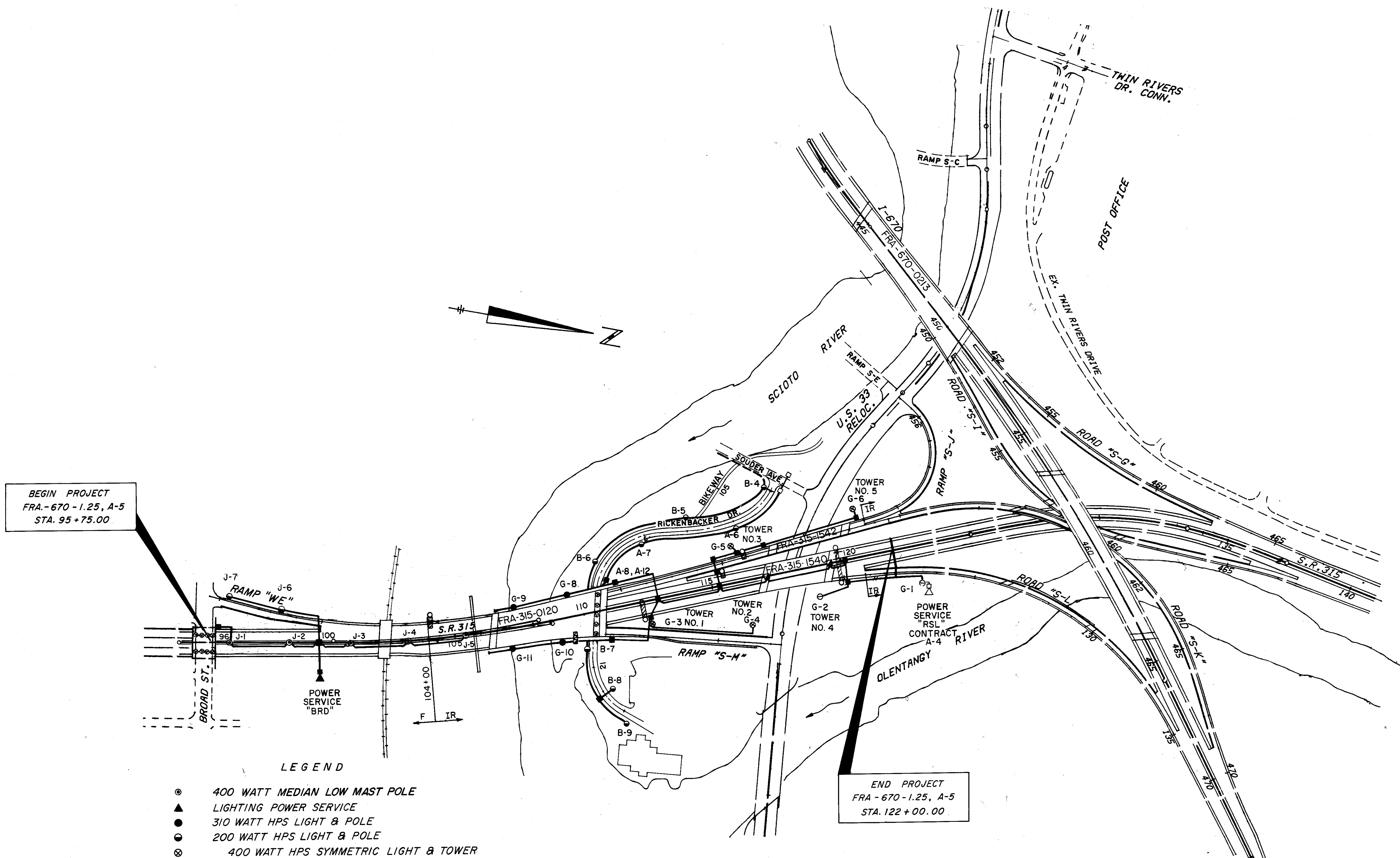


# LIGHTING SCHEMATIC PLAN

CALC. BY	FRANKLIN COUNTY	OHIO
DATE	FRA-670 - 1.25/A-5	FHWA REGION 5
CHKD. BY		
DATE		



SCALE IN FEET  
0 100 200 400



BEGIN PROJECT  
FRA-670-1.25, A-5  
STA. 95+75.00

END PROJECT  
FRA-670-1.25, A-5  
STA. 122+00.00

### LEGEND

- 400 WATT MEDIAN LOW MAST POLE
- ▲ LIGHTING POWER SERVICE
- 310 WATT HPS LIGHT & POLE
- 200 WATT HPS LIGHT & POLE
- ⊗ 400 WATT HPS SYMMETRIC LIGHT & TOWER
- ⊙ 400 WATT HPS ASYMMETRIC LIGHT & TOWER
- ⊖ UNDERPASS LUMINAIRE
- PULLBOX (18" OR 24" SQUARE OR MEDIAN)
- NO. 4 AWG CIRCUIT CABLE
- ▣ JUNCTION BOX
- ▨ ILLUMINATED OVERHEAD SIGN

# LIGHTING GENERAL NOTES

## UTILITIES

SEE SHEET NO. 14.

## POWER SERVICE

THE POWER SUPPLYING AGENCY FOR THIS PROJECT IS -

CITY OF COLUMBUS  
DIVISION OF ELECTRICITY  
910 DUBLIN ROAD  
COLUMBUS, OHIO 43215  
614-647-7098

## 625.07 - 713.11 LUMINAIRES

IN ADDITION TO THE REQUIREMENTS OF THE DEPARTMENT'S CONSTRUCTION AND MATERIAL SPECIFICATIONS, CONVENTIONAL, STYLE B, TYPE II, 200, 310 WATT, 480 VOLT LUMINAIRES SHALL BE GENERAL ELECTRIC M-400R2 TEST #7317, COOPER OVD TEST #766503, AMERICAN ELECTRIC SERIES 126 TEST #AE38491, OR EQUAL AS APPROVED BY THE ENGINEER.

PAYMENT WILL BE PAID AT THE UNIT BID PRICE FOR EACH ITEM 625- "LUMINAIRE, CONVENTIONAL, STYLE B, TYPE II, 200, 310 WATT HIGH PRESSURE SODIUM, 480 VOLT AS PER PLAN."

## 713.14 - LAMPS

HIGH PRESSURE SODIUM LAMPS SHALL BE GENERAL ELECTRIC "LUCALOX" OSRAM SYLVANIA "LUMALUX", PHILLIPS "CERAMALUX", OR EQUAL APPROVED BY THE ENGINEER.

## UNDERDRAINS FOR PULL BOXES

REFERENCE IS MADE TO THE 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 20 FEET. AN ESTIMATED QUANTITY OF 50 LINEAR FEET OF ITEM 603, 4" CONDUIT TYPE E IS INCLUDED IN THE LIGHTING GENERAL SUMMARY FOR THIS PURPOSE.

## 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 CABLE SPLICE KITS IN THE PULL BOX OR JUNCTION BOX. QUANTITIES FOR ELECTRICAL SERVICE FROM THE CONNECTIONS IN THE PULL BOX OR JUNCTION BOX TO THE SIGN ARE INCLUDED IN THE TRAFFIC CONTROL GENERAL SUMMARY.

## HIGH VOLTAGE TEST

A LUMP SUM FOR PERFORMING THE HIGH VOLTAGE TEST REQUIRED BY THE ODOT CONSTRUCTION AND MATERIALS SPECIFICATIONS HAS BEEN INCLUDED IN THE GENERAL SUMMARY.

## ITEM 625 - 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 A BRIDGE. 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 ON SCD HL-20.31.

THE LUMP SUM 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.

## PADLOCK AND KEYS

PADLOCKS FURNISHED SHALL BE EITHER BRASS OR BRONZE, EQUAL TO MASTER NO. 4BKA 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.

## TRANSITION JUNCTION BOX

THE UNIT PRICE BID FOR EACH "ITEM 625 TRANSITION JUNCTION BOX" SHALL BE FULL COMPENSATION FOR FURNISHING AND PLACING THE JUNCTION BOX AS SHOWN IN THE DETAIL ON THE STANDARD DRAWINGS AND ALL LABOR, MATERIAL, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SPECIFIED.

## CONDUIT ON STRUCTURES

EXPANSION FITTINGS FOR CONDUIT ON STRUCTURES SHALL BE OZ TYPE AX, CROUSE-HINDS TYPE XJ-4, APPLETON TYPE XJ-4, OR EQUAL APPROVED BY THE ENGINEER. EACH EXPANSION FITTING SHALL HAVE A COPPER EXTERNAL BONDING JUMPER.

## ITEM 625 - LOW MAST LIGHT POLE

THE ROUND, TAPERED STEEL POLE SHALL INCLUDE SHAFT HANDHOLE, ANCHOR BASE, BOLT COVERS, SHEPHERD'S CROOK CONFIGURATION BRACKET ARM AND TO BE CAPABLE OF MOUNTING TO LIGHT POLE FOUNDATION TYPE B-50 BARRIER MEDIUM. THE POLE SHALL PROVIDE A LUMINAIRE NOMINAL MOUNTING HEIGHT OF 50' ABOVE THE PAVEMENT. THE LOW MAST LIGHT POLE SHALL BE HOLOPHANE "POLE-STAR SYSTEM", POLE NO H3719 OR EQUAL APPROVED BY THE ENGINEER.

## ITEM 625 - LOW MAST LUMINAIRES

THE LUMINAIRES SHALL BE AS SPECIFIED FOR HIGH MAST LUMINAIRES IN SECTION 713.21 OF THE CONSTRUCTION AND MATERIALS SPECIFICATIONS EXCEPT THAT THE LUMINAIRE ARRAYS AND ASSOCIATED ILLUMINATION TEST AREAS ARE HEREBY WAIVED. IN ADDITION, THE LUMINAIRES FOR LOW MAST LIGHTING SHALL MEET THE FOLLOWING REQUIREMENTS.

SYMMETRIC, TYPE V, LUMINAIRES FOR LOW MAST POLE LIGHTING MAY BE HOLOPHANE "HMST" TEST #36383, 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.

## ITEM 625 - LUMINAIRE, UNDERPASS, TYPE II, 55 WATT

### LOW PRESSURE SODIUM, 480 VOLT, AS PER PLAN

THE LUMINAIRES SHALL BE A LOW PRESSURE SODIUM 55 WATT FLOODLIGHT SUITABLE FOR 480 VOLT OPERATION. THE LUMINAIRE HOUSING SHALL BE CONSTRUCTED OF EXTRUDED (.093" MINIMUM THICKNESS) OR CAST ALUMINUM WITH END PLATES OF FORMED ALUMINUM SECURED TO EXTRUSIONS TO FORM A SEALED UNIT. SILICONE SEALER SHALL BE APPLIED WHERE REQUIRED TO INSURE WATER-TIGHT INTEGRITY. THE LUMINAIRE'S EXTERNAL HARDWARE SHALL BE NON-CORROSIVE STAINLESS STEEL OR CADMIUM PLATED. THE REFLECTOR SHALL BE A SPECULAR FINISH ALUMINUM WITH A MINIMUM REFLECTION FACTOR OF 80%.

THE LENS SHALL BE OF CLEAR .125" THICK POLYCARBONATE MATERIAL. THE TRUNION (YOKE) SHALL BE 3/16" MINIMUM THICKNESS, ZINC PLATED STEEL FEATURING TWO LOCKING BOLTS HOLDING FIXTURE FIRMLY IN POSITION AFTER AIMING ADJUSTMENT. THE BALLAST SHALL BE 55W, 480 VOLT REACTOR TYPE. THE UNIT SHALL BE UL LISTED FOR WET LOCATIONS.

INCOMING LEAD CABLE GLAND SHALL BE SUITABLE FOR 3/8" TO 7/16" DIAMETER TYPE SJ CORD WIRE SIZE. THE LUMINAIRE SHALL BE SUPPLIED COMPLETE WITH 55W SOX LAMP. THE LUMINAIRE SHALL BE THE APPROVED EQUAL IN APPEARANCE, QUALITY AND DESIGN TO PHILIPS #34314 OR VERTA RAY VL 0113.

## ITEM 713.11 - 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 HOLOPHANE "HMST" TEST #36648, OR GENERAL ELECTRIC "HM" TEST #7349, OR COOPER "HMC" TEST #764130.

SYMMETRIC, TYPE V, LUMINAIRES FOR TOWER LIGHTING MAY BE HOLOPHANE "HMST" TEST #36383, OR GENERAL ELECTRIC "HM" TEST #6312, OR COOPER "HMX" 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 FIXTURE PER POLE.

# EXISTING LIGHTING GENERAL NOTES

## 625.03 - POWER SERVICE

THE POWER SUPPLYING AGENCIES FOR THIS PROJECT ARE:

CITY OF COLUMBUS  
DIVISION OF ELECTRICITY (MELP)  
910 DUBLIN ROAD  
COLUMBUS, OHIO 43215  
(614) 645-7627

### PULLBOX REMOVED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF REMOVING AN EXISTING PULLBOX WHICH SHALL THEN BE PROPERLY DISPOSED OF. THE RESULTING OPENING SHALL THEN BE BACKFILLED TO GRADE WITH SUITEABLE COMPACTED SOIL AND RESTORED TO MATCH THE SURROUNDING AREA

PAYMENT WILL BE MADE FOR EACH ITEM 202 \*CONCRETE PULLBOX REMOVED AS PER PLAN

### LUMINAIRE REMOVED, AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF AN EXISTING LUMINAIRE.

THE LUMINAIRE SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF THE PROJECT SITE.

PAYMENTS WILL BE MADE AT THE UNIT PRICE BID FOR EACH ITEM 202 LUMINAIRE REMOVED AND SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK SATISFACTORILY.

### LIGHT POLE REMOVED AS PER PLAN

THIS ITEM OF WORK SHALL CONSIST OF THE REMOVAL AND DISPOSAL OF AN EXISTING LIGHT POLE.

THE LIGHT POLE, INCLUDING THE BRACKET ARMS, TRANSFORMER BASE, AND POLE AND BRACKET CABLES IN THE POLE SHALL BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF THE PROJECT SITE.

PAYMENT WILL BE MADE AT UNIT PRICE BID FOR EACH "ITEM 202 LIGHT POLE REMOVED" AND SHALL BE FULL COMPENSATION FOR ALL LABOR, AND INCIDENTALS REQUIRED TO COMPLETE THE WORK SATISFACTORILY.

### LIGHT POLE FOUNDATION REMOVED, AS PER PLAN

THIS ITEM OF WORK WILL CONSIST OF REMOVING AN EXISTING LIGHT POLE FOUNDATION TO A MINIMUM OF ONE FOOT BELOW FINISHED GRADE, BACK-FILLING THE RESULTING DEPRESSION WITH COMPACTED SOIL AND RESTORING THE DISTURBED AREA

PAYMENT WILL BE MADE FOR EACH ITEM 202 "LIGHT POLE FOUNDATION REMOVED, AS PER PLAN".

### BRACKET ARM REMOVED, AS PER PLAN

THE ITEM OF WORK SHALL CONSIST OF REMOVING THE BRACKET ARM FROM AN EXISTING LIGHT POLE. THE EXISTING WIRING SHALL BE REMOVED FROM THE POLE. THE POLE SHALL BE LEFT IN PLACE TO SUPPORT THE OVERHEAD POWER LINE WHICH IS ATTACHED THERETO.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE FOR EACH ITEM 202 "BRACKET ARM REMOVED".

### POWER SERVICE REMOVED AS PER PLAN

THIS ITEM SHALL CONSIST OF REMOVING THE EXISTING SERVICE EQUIPMENT AND SUPPORTING POLE. THE MATERIAL REMOVED SHALL BE PROPERLY DISPOSED OF. THE INCOMING POWER WILL BE DISCONNECTED BY THE SERVING POWER COMPANY.

PAYMENT WILL BE MADE AT THE UNIT PRICE BID FOR EACH SERVICE REMOVED.

### UTILITIES NOTIFICATION

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN ANY AREA WHICH MAY INVOLVE UNDERGROUND FACILITIES, THE CONTRACTOR SHALL NOTIFY PROJECT ENGINEER, THE REGISTERED UNDERGROUND UTILITY PROTECTION SERVICES AND THE OWNERS OF ALL UNDERGROUND UTILITY FACILITIES.

### SAFETY NOTE

THE CONTRACT INVOLVES WORK ON LIGHTING CIRCUITS WHICH ARE MAINTAINED BY THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY. THE CONTRACTOR SHALL CONFORM TO THE DIVISION OF ELECTRICITY'S EXISTING SAFETY POLICY, COPIES OF WHICH ARE AVAILABLE FROM THE DIVISION OF ELECTRICITY.

PRIOR TO PERFORMING ANY WORK ON ANY PART OF A LIGHTING CIRCUIT WHICH COULD AFFECT THE DIVISION OF ELECTRICITY, OR ANOTHER CONTRACTOR, THE CONTRACTOR SHALL NOTIFY THE OTHER CONTRACTOR AND THE DIVISION OF ELECTRICITY AT 645-7627. HE AGAIN SHALL CALL THE DIVISION OF ELECTRICITY OR OTHER CONTRACTORS THAT SAME DAY WHEN HE IS CLEAR OF THAT WORK.





# GENERAL SUMMARY

## LIGHTING QUANTITIES

CALC. BY	FRANKLIN COUNTY	OHIO
CHKD. BY	FRA-315-0.93	FHWA REGION 5
DATE		207 404

SHEET NUMBERS										PARTICIPATION		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION
202B		209A		"IR"	"F"	"IR"	"F"	PRIMARY CONST.	INTER-STATE RECONST.							
				205	210	211	212	213	"F"	"IR"						
					6	5		8	14	5	625	00500	19	EACH	CONNECTOR KIT, TYPE II	
					6	9	2	8	14	11	625	00600	25	EACH	CONNECTOR KIT, TYPE III	
					3	4	10		3	14	625	01000	17	EACH	CONNECTOR KIT, TYPE VII-A	
					1		4		1	4	625	01004	5	EACH	CONNECTOR KIT, TYPE VII-B	
					2	2	4		2	6	625	01100	8	EACH	CONNECTOR KIT, TYPE VII-C	
					4	8	12	4	8	20	625	01500	28	EACH	CABLE SPlicing KIT	
					1				1		625	34000	1	EACH	POWER SERVICE	
							1			1	625	20000	1	EACH	PORTABLE POWER UNIT	
					LUMP			LUMP	LUMP		625	37001	LUMP		SERVICE TO UNDERPASS LIGHTING, AS PER PLAN	
						1	2			3	625	33000	3	EACH	STRUCTURE GROUNDING SYSTEM	
											625	38000	LUMP		HIGH VOLTAGE TEST	
					50					50	603	00400	50	L.F.	4" CONDUIT, TYPE E	
						1					202	75301	1	EACH	PULL BOX REMOVED, AS PER PLAN	
					29						202	75401	29	EACH	LIGHT POLE REMOVED, AS PER PLAN	
					29						202	75501	29	EACH	LIGHT POLE FOUNDATION REMOVED, AS PER PLAN	
						30					202	75507	30	EACH	LUMINAIRE REMOVED, AS PER PLAN	
					1						202	75511	1	EACH	POWER SERVICE REMOVED, AS PER PLAN	
					30						202	98100	30	EACH	REMOVAL, MISC.: BRACKET ARM REMOVED, AS PER PLAN	
					870						625	29000	870	L.F.	TRENCH	
					5655						625	25920	5655	L.F.	CONDUIT, MISC.: 4" MULTICELL RACEWAY, 713.07, SCHEDULE 40, AS PER PLAN	
					870						625	25920	870	L.F.	CONDUIT, MISC.: 4" MULTICELL RACEWAY, 713.07, SCHEDULE 80, AS PER PLAN	
					2						625	30700	2	EACH	PULL BOX, 713.08, 18"	
					6						625	31600	6	EACH	PULL BOX, MISC.: 713.08, 32"	
					696						625	27500	696	L.F.	LOOP DETECTOR PAVEMENT CUTTING	
					1780						625	64900	1780	L.F.	LOOP DETECTOR WIRE, TYPE E	

[RGL] - I:\TRANS\SR315-AS\FR-05-56.DWG - APR 23, 1997 - 13:44:17 - SCALE = 1:30



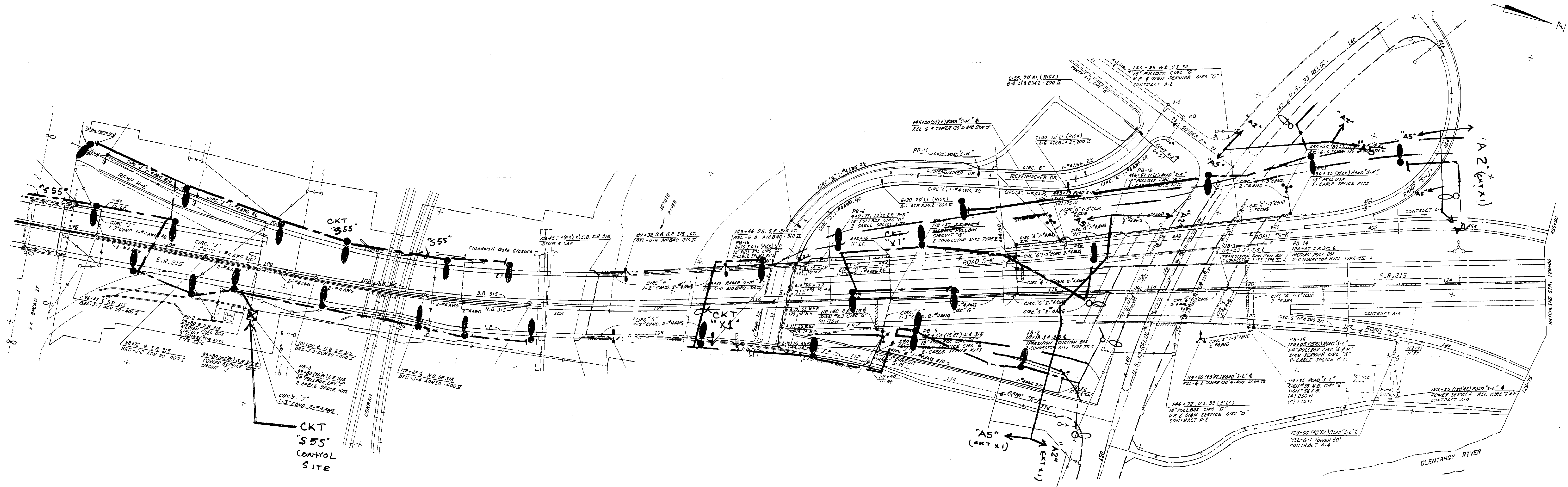




LIGHTING SUB-SUMMARY				
ITEM	EXT.	TOTAL	UNIT	DESCRIPTION
202E	75301	1	EA	PULLBOX REMOVED, AS PER PLAN
202E	75507	30	EA	LUMINAIRE REMOVED, AS PER PLAN
202E	98100	30	EA	BPACKET REMOVED, AS PER PLAN
202E	75401	29	EA	LIGHT POLE REMOVED, AS PER PLAN
202E	75501	29	EA	LIGHTPOLE FOUNDATION REMOVED, AS PER PLAN
202E	75511	1	EA	POWER SERVICE REMOVED, AS PER PLAN

**LEGEND**

- ◉ POLE TO BE REMOVED
- ☒ EXISTING CONTROL SITE S-55



UNGROUND  
 240/240

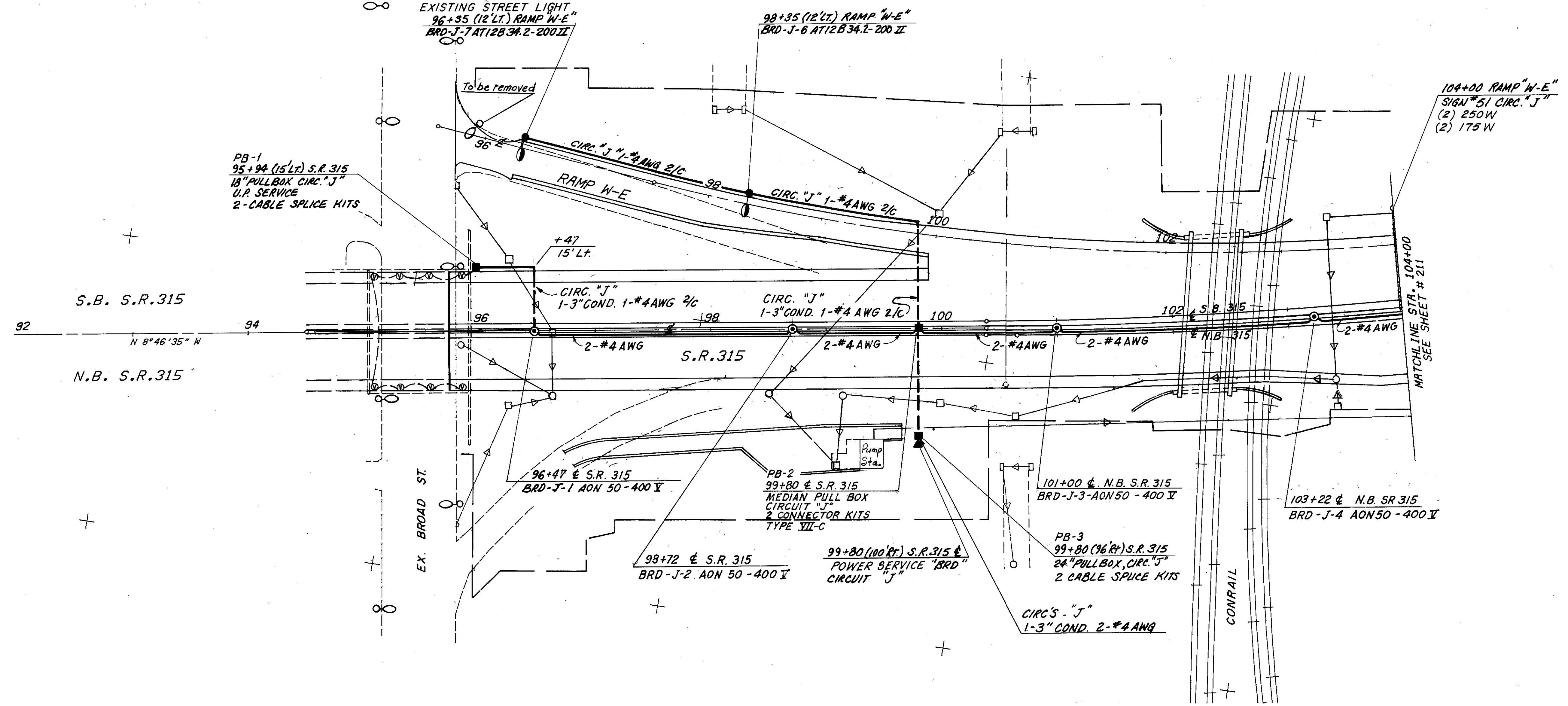
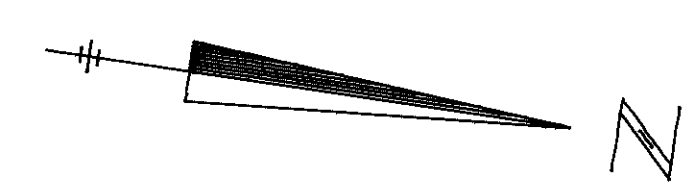
CIRCUIT LOCATIONS MAY NOT BE SHOWN CORRECTLY  
 FIELD VERIFY BEFORE DOING EXCAVATION IN ANY AREA

EXISTING CONTROL SITE LOCATION  
 X1 - NORTH OF SCIOTO RIVER  
 AT PUMP STATION ON US 33  
 (REMOVED BY "A 2")  
 S55 - E/S OF SR 315  
 AT PUMP STATION N/OF BROAD ST  
 (REMOVED BY "A 5")

EXISTING LIGHTING

- LEGEND**
- MEDIAN LOW MAST POLE - 400 WATT HPS
  - LIGHT POLE & LUMINAIRE - 200 WATT HPS
  - LIGHT POLE & LUMINAIRE - 310 WATT HPS
- 96+50 S.R.-315, 15' Lt. (STA. LOCATION AND OFFSET FROM PAV'T EDGE)  
BRD-K-3 AT15B41.7-310 II (POLE AND LUMINAIRE DESCRIPTION)
- IES DISTRIBUTION TYPE
  - LAMP WATTAGE
  - LUMINAIRE MOUNTING HEIGHT
  - BRACKET (B-SINGLE, BB-DOUBLE, N-POST TOP)
  - BRACKET ARM LENGTH (O-POST TOP)
  - BASE (A-ANCHOR, AT-ALUMINUM TRANSFORMER, ST-STEEL TRANSFORMER)
  - POLE NUMBER
  - CIRCUIT IDENTIFICATION
  - CONTROL CENTER IDENTIFICATION

- ▲ POWER SERVICE
- ▣ JUNCTION BOX
- PULL BOX (18" OR 24" CIRCULAR, MEDIAN)
- 〰 OVERHEAD SIGN (ILLUMINATED)
- - - FERROUS METAL CONDUIT
- ⊥ STRUCTURE GROUND (NOT CONSIDERED COMPLETE IN NUMBER OR MORE THAN APPROXIMATE LOCATION)
- DISTRIBUTION OR DUCT CABLE (NUMBER AND SIZE INDICATED)
- ⊙ UNDERPASS LUMINAIRE
- ⊙ LIGHT TOWER SYMMETRICAL
- ⊙ LIGHT TOWER ASYMMETRICAL
- ⊗ BARRIER MEDIAN DRAINAGE INLET
- ⊗ BARRIER MEDIAN TRANSITION SECTION
- ⊕ SERVICE POLE
- ⊕ EXISTING STREET LIGHT  
96+35 (12' Lt.) RAMP W-E  
BRD-J-7 AT12B34.2-200 II

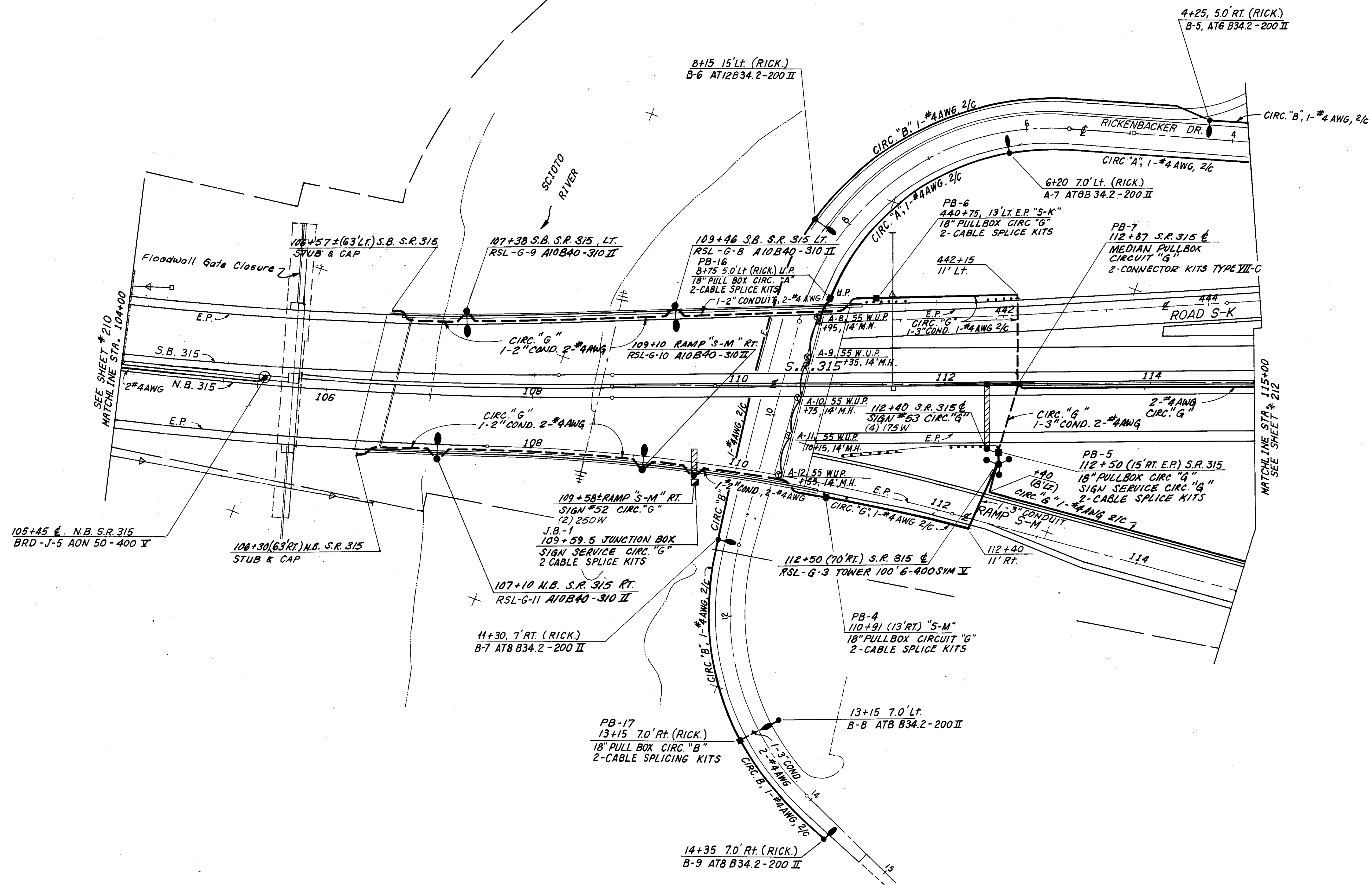
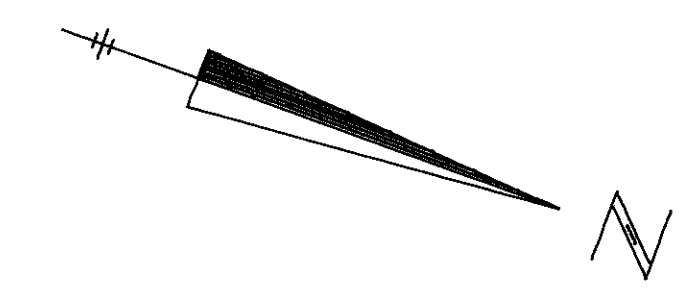


POWER SERVICE DATA

POWER SERVICE	TYPE OF SERVICE	CONNECTED LOAD	ENCLOSURE RATING	SERVICE CONDUCTOR SIZE	CIRCUIT			MAINTAINING AGENCY
					NUMBER	LOAD AMPS	FUSE AMPS	
BRD	480 VOLT 1 Ø, ZW GROUNDED NEUTRAL	5.280 KVA	60 AMP	#4	J	11	20	CITY OF COLUMBUS

H541052R





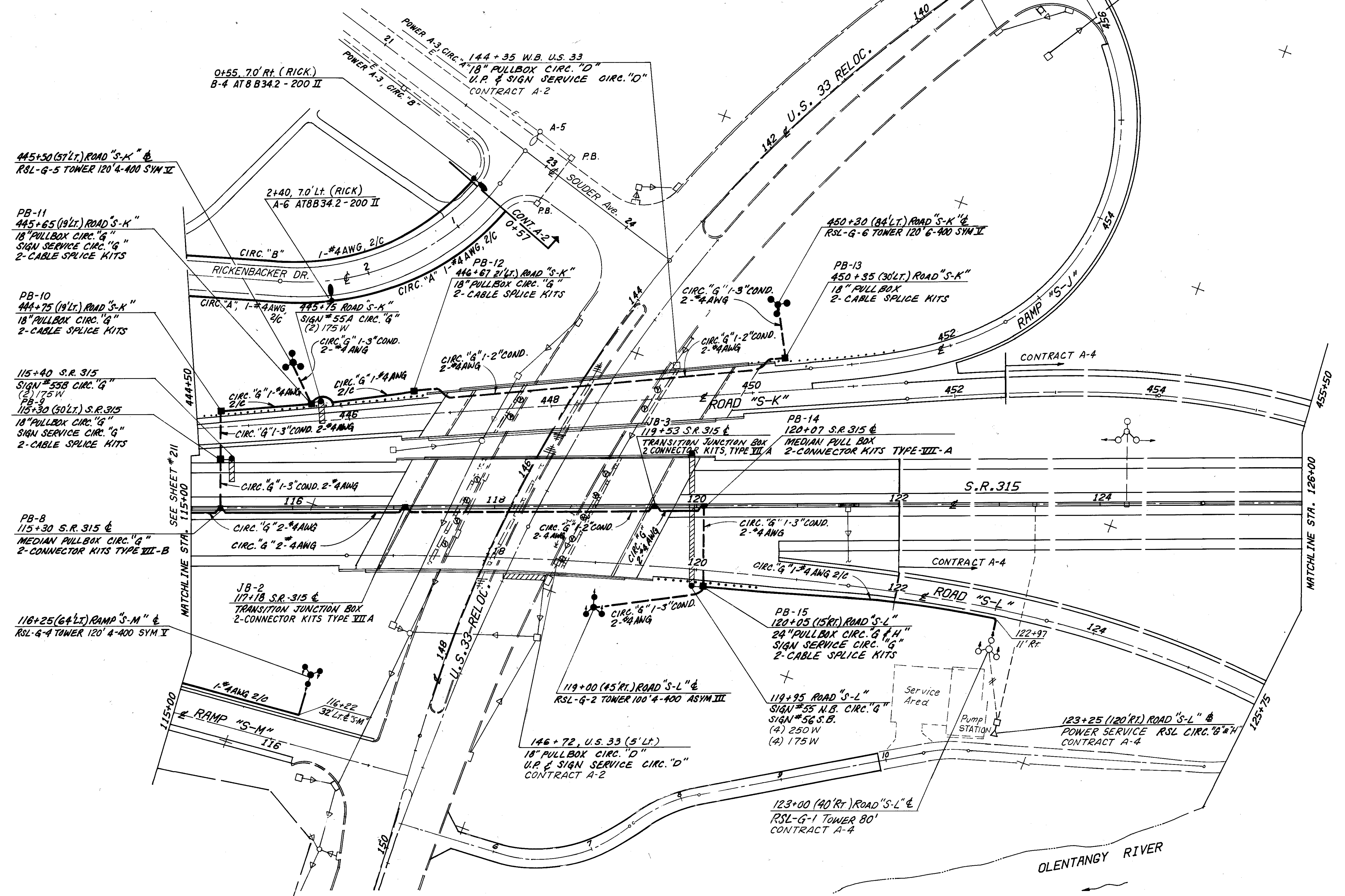
SEE SHEET # 210  
MATCHLINE STA. 104+00

MATCHLINE STA. 115+00  
SEE SHEET # 212

HS41039R

POWER SERVICE DATA

POWER SERVICE	TYPE OF SERVICE	CONNECTED LOAD	ENCLOSURE RATING	SERVICE CONDUCTOR SIZE	CIRCUIT			MAINTAINING AGENCY
					NUMBER	LOAD AMPS	FUSE AMPS	
RSL	480 VOLT 1Ø, ZW GROUNDED NEUTRAL	22.56 KVA	60 AMP	EXISTING	G	39	60	CITY OF COLUMBUS



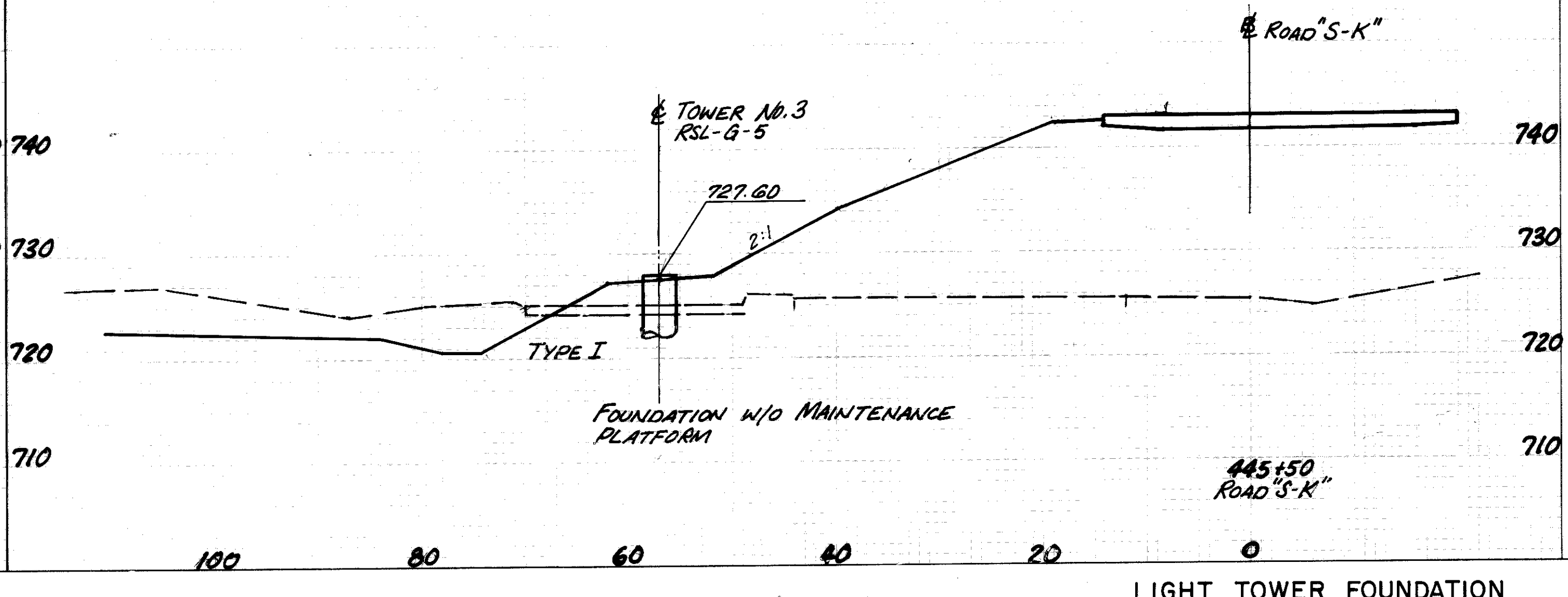
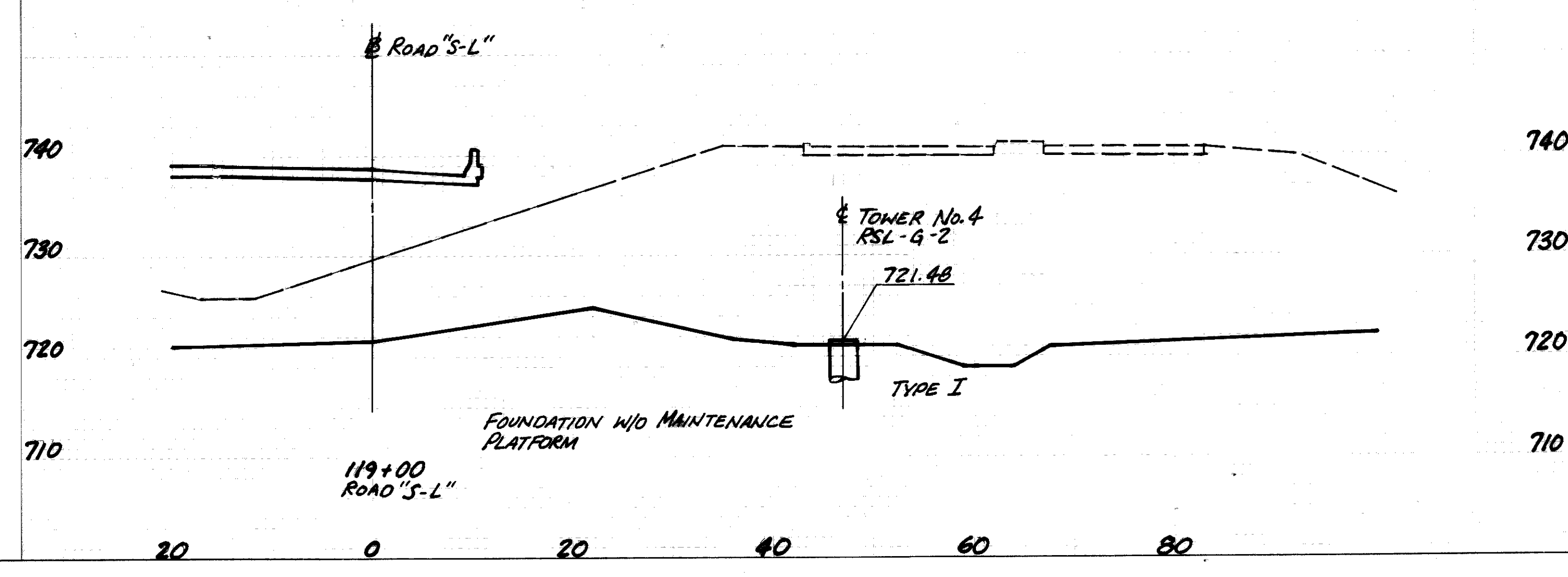
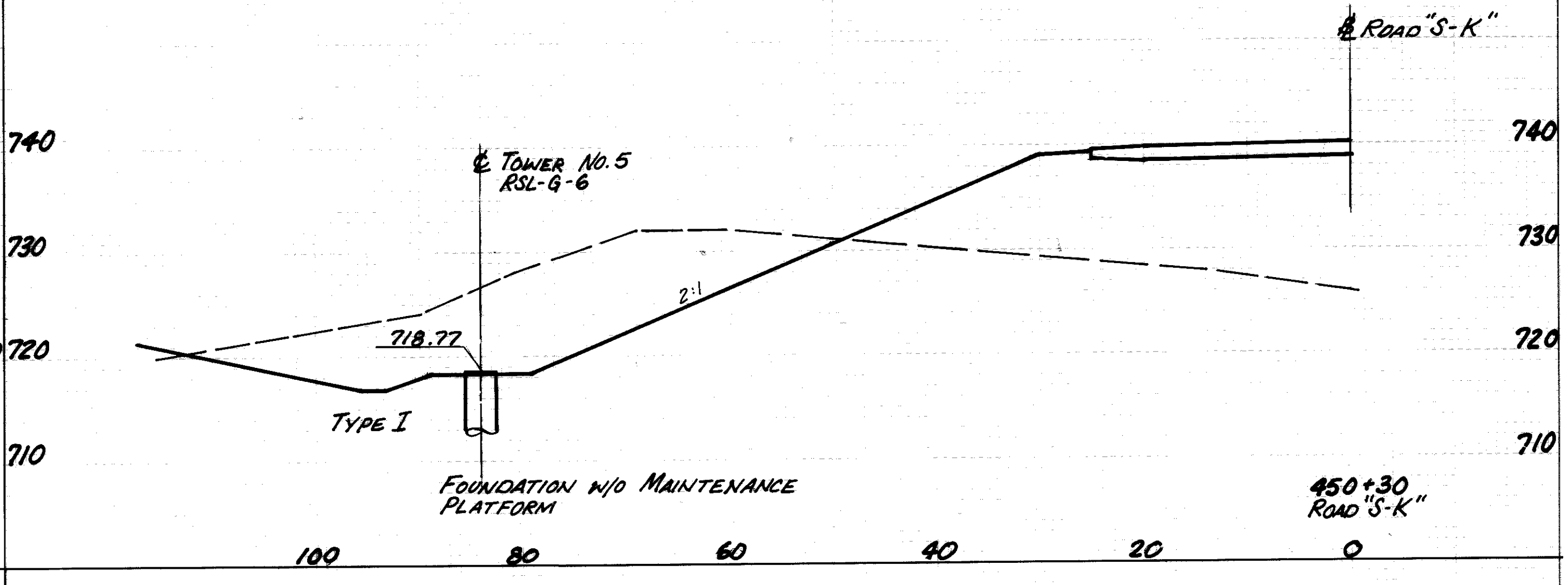
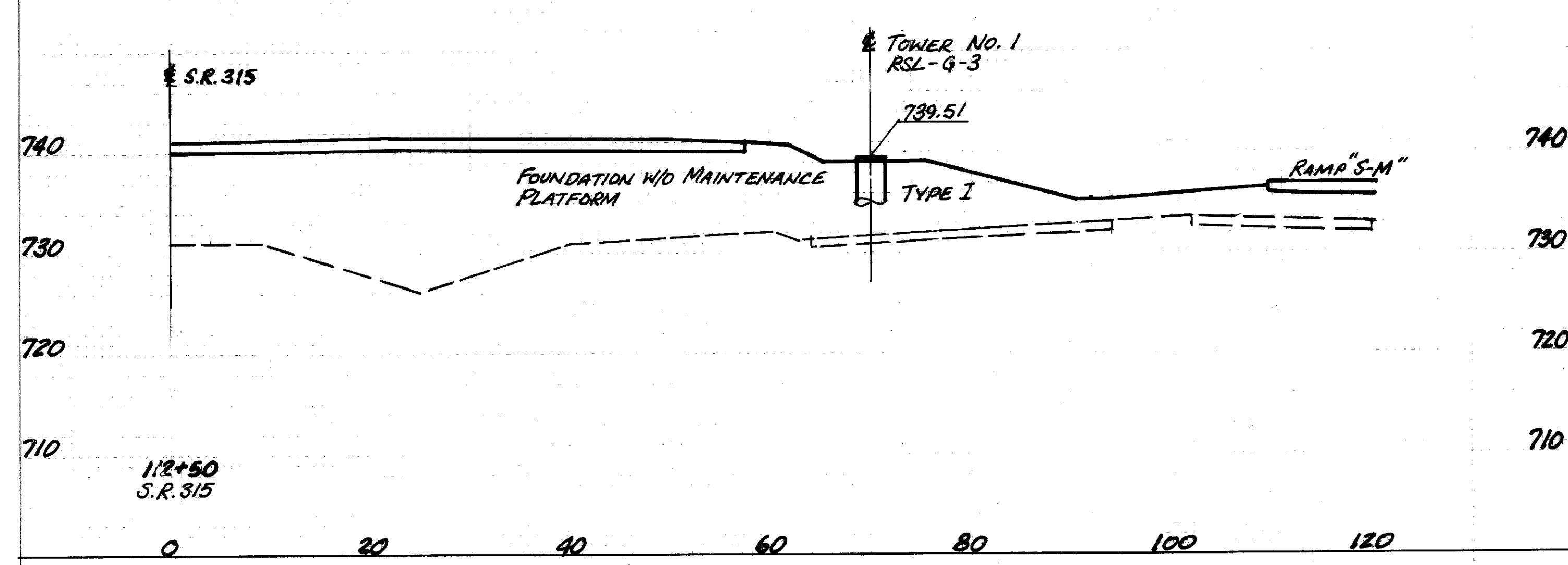
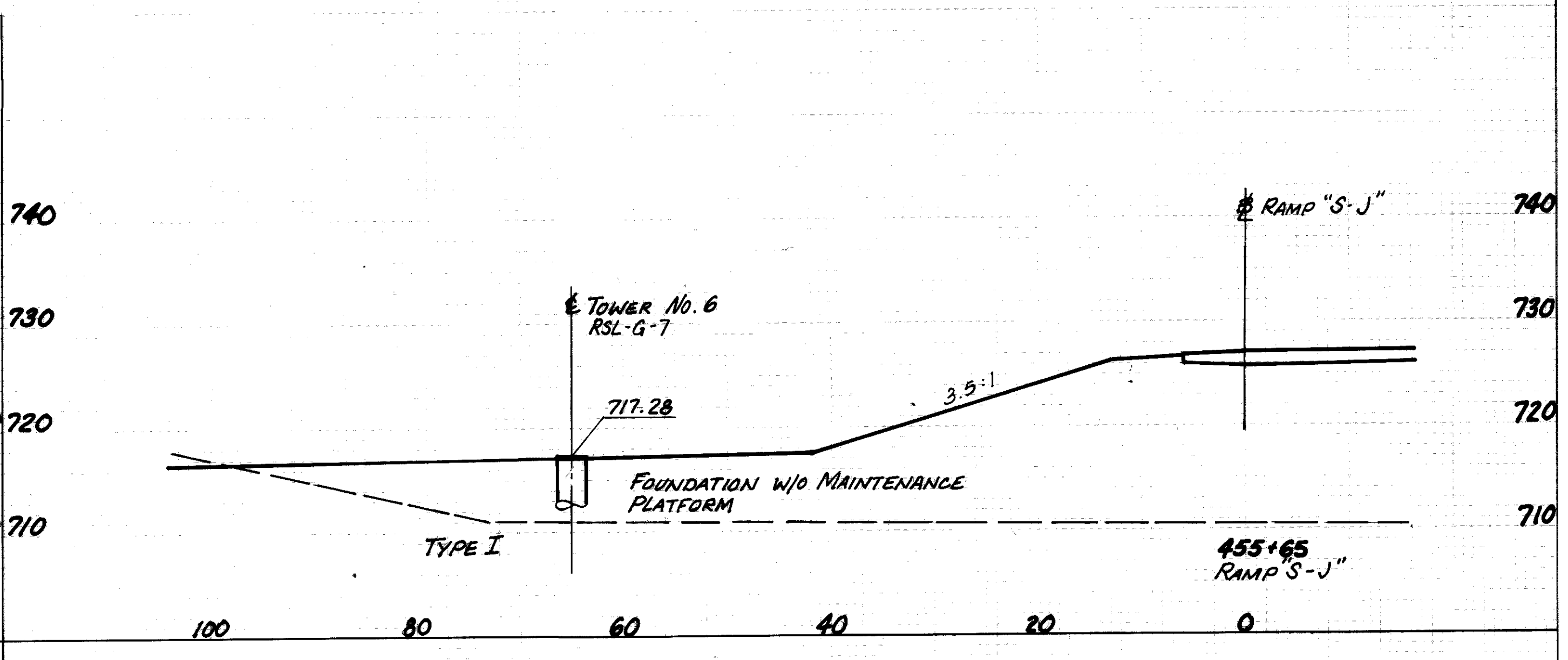
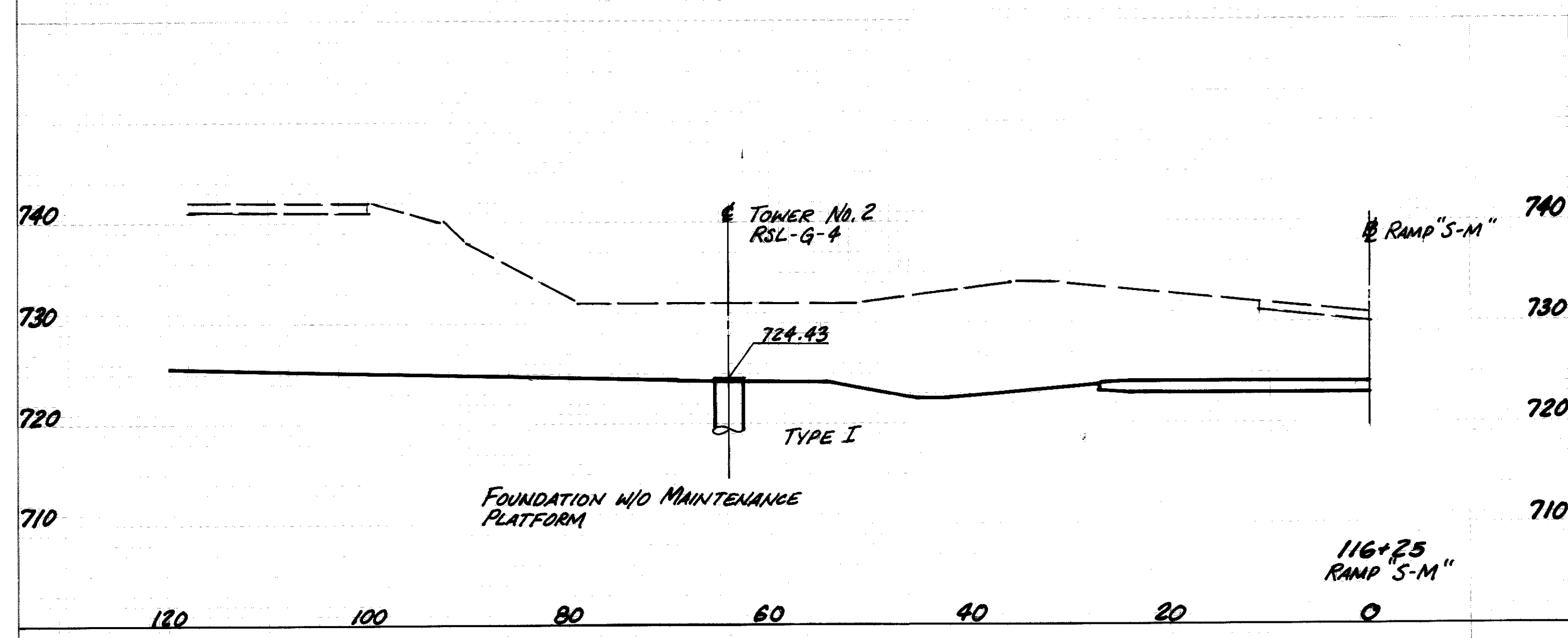
SEEDING  
END WIDTH  
SQ. YDS.

FHWA REGION	STATE	PROJECT
5	OHIO	

213  
404

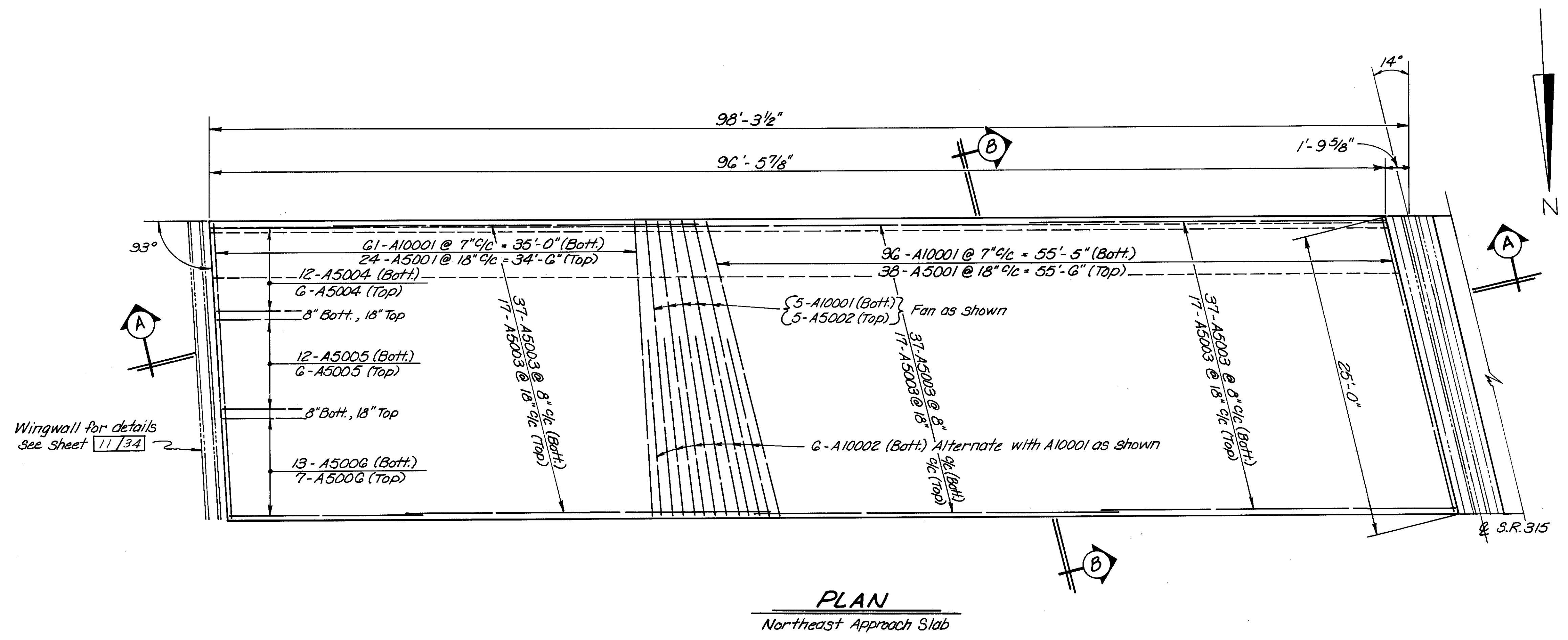
FRANKLIN COUNTY  
FRA-670-1.25 A-5

END AREA		VOLUME	
CUT	FILL	CUT	FILL



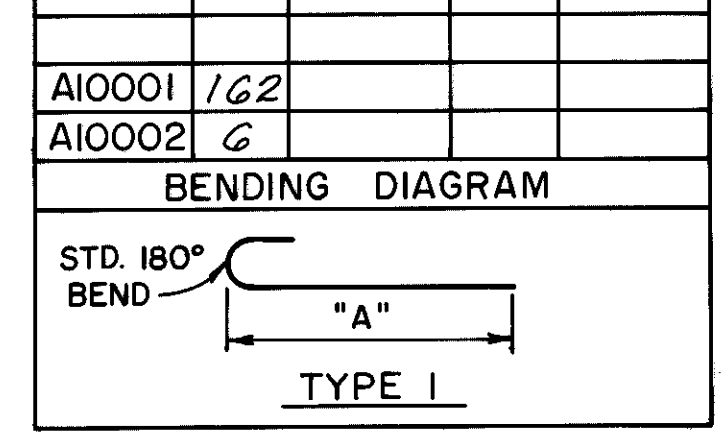
LIGHT TOWER FOUNDATION





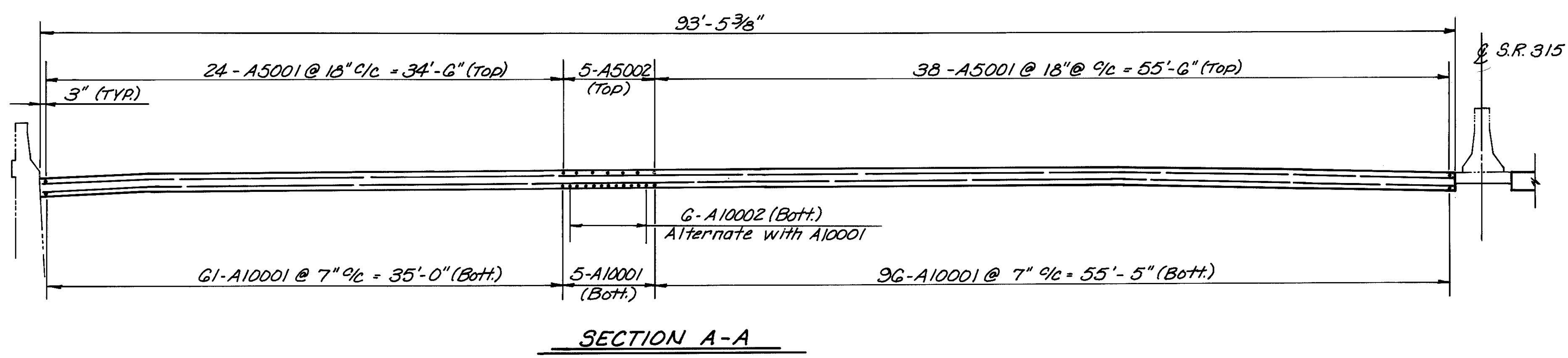
**PLAN**  
Northeast Approach Slab

REINFORCING STEEL TABLE				
MARK	NO.	LENGTH	TYPE	"A"
A5001	62	24'-6"	5T	
A5002	5	24'-4"	5T	
A5003	162	23'-8"	5T	
A5004	18			
A5005	18			
A5006	20			
A10001	162			
A10002	6			

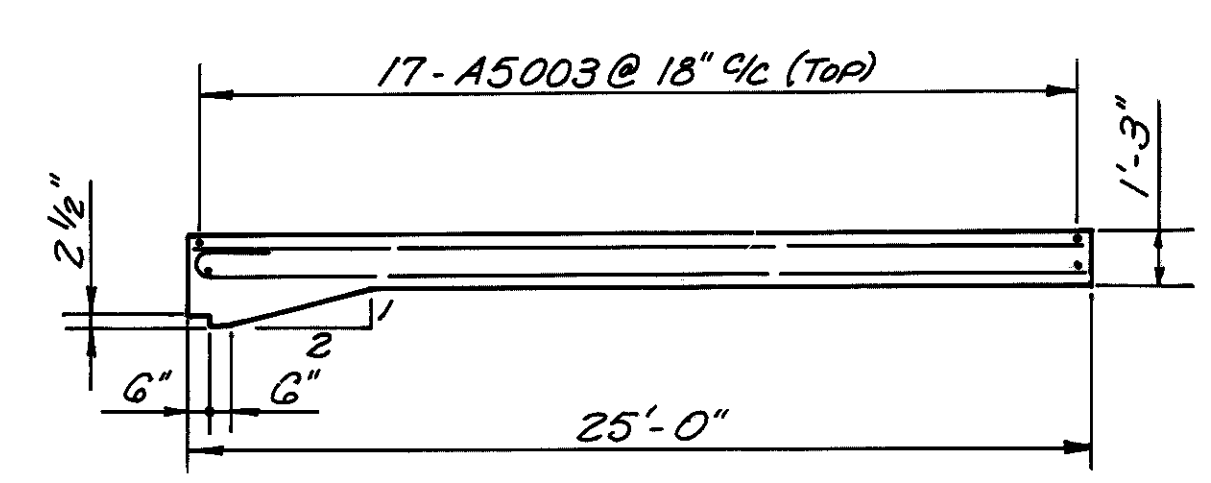


QUANTITIES			
ITEM	UNIT	TOTAL	DESCRIPTION
611	S.Y.	268	REINFORCED CONCRETE APPROACH SLABS (T=15")

**NOTE:**  
FOR ADDITIONAL NOTES AND DETAILS, SEE STANDARD DRAWING AS-1-81.  
ALL REINFORCING STEEL TO BE EPOXY COATED. SEE ITEM 509 NOTE ON SHEET 3/34.



**SECTION A-A**



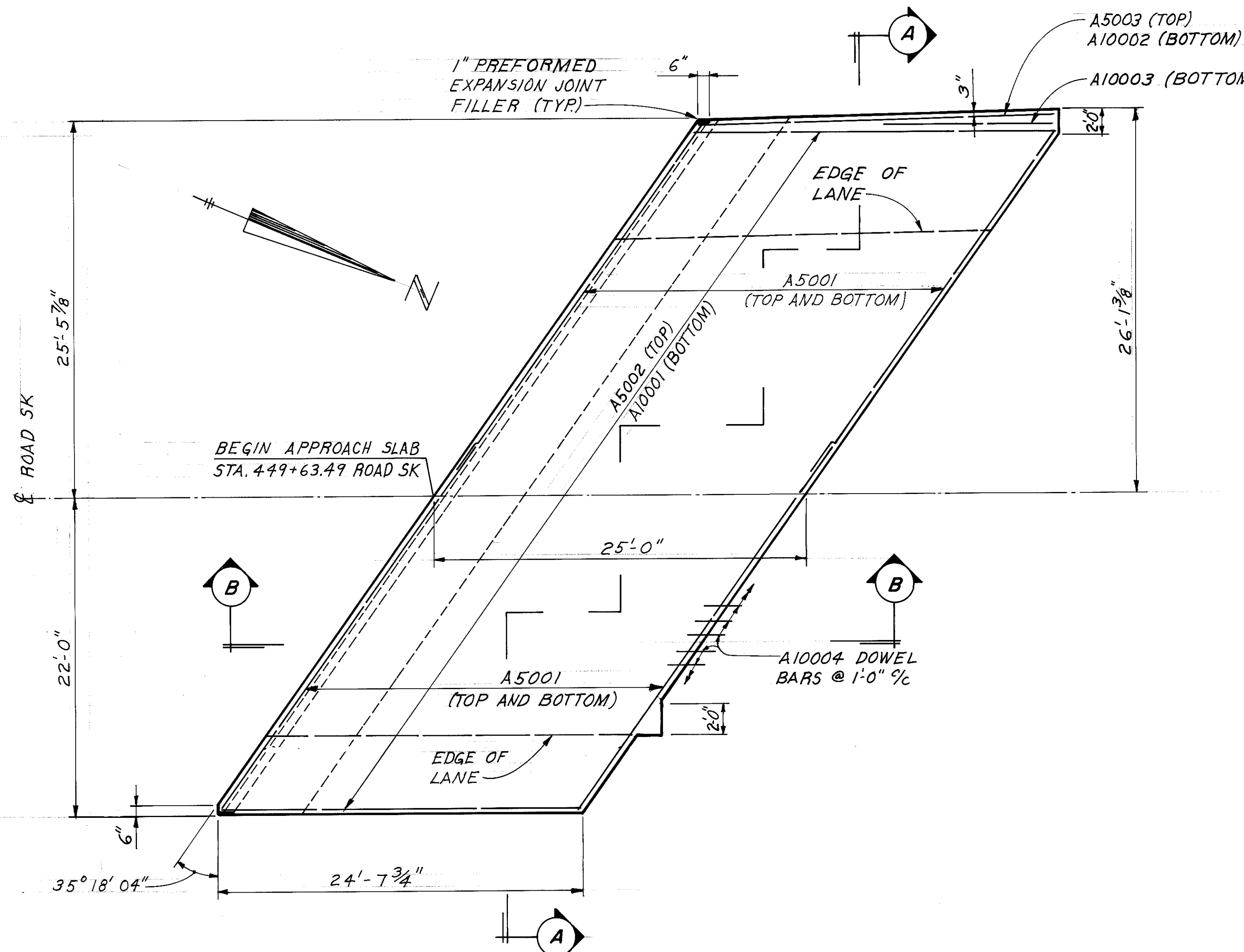
**SECTION B-B**

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**APPROACH SLAB DETAILS**

BRIDGE NO. FRA-315-0120  
S.R. 315 OVER SCIOTO RIVER  
FRANKLIN COUNTY STA. 106+67.18 (NB) TO STA. 110+64.32

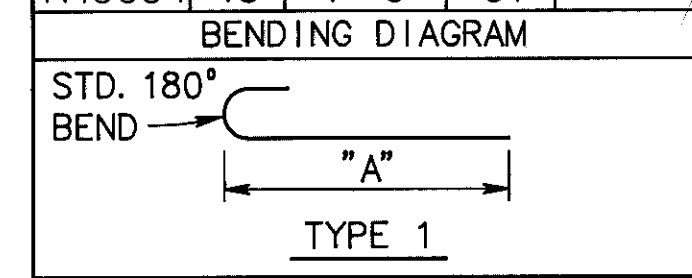
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAP	KRH		WM	G.W.M.	5/24/89	



**NORTH ABUTMENT APPROACH SLAB PLAN**

REINFORCING STEEL TABLE

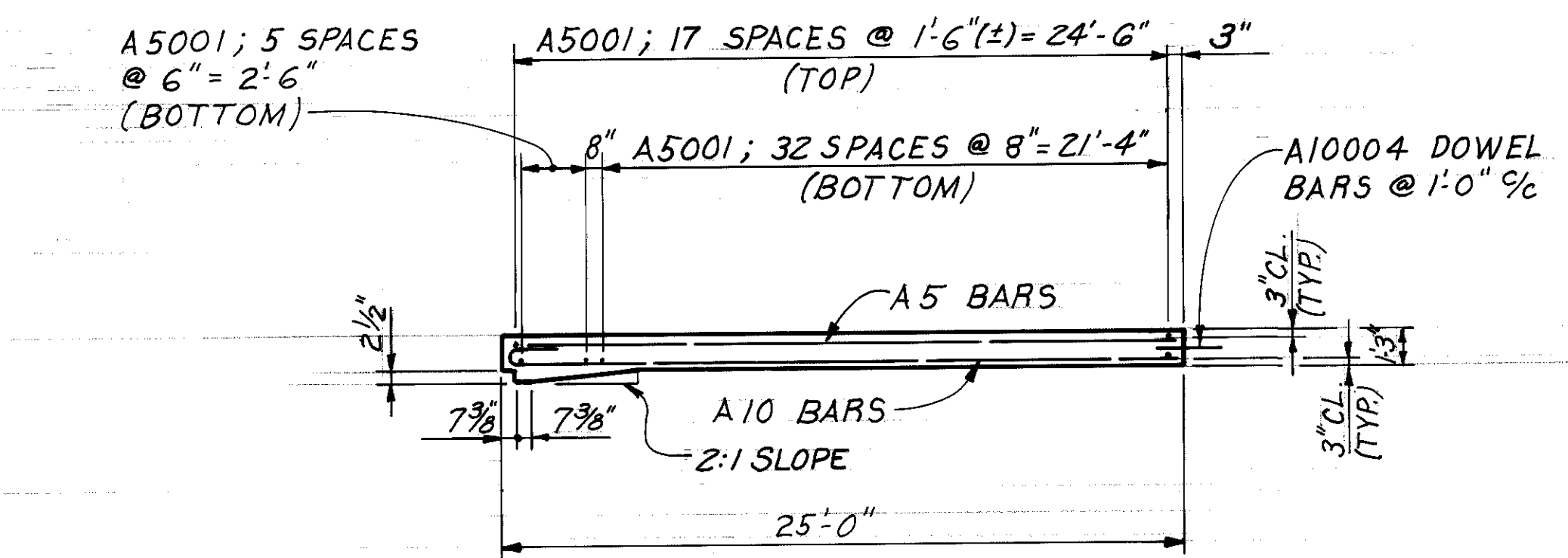
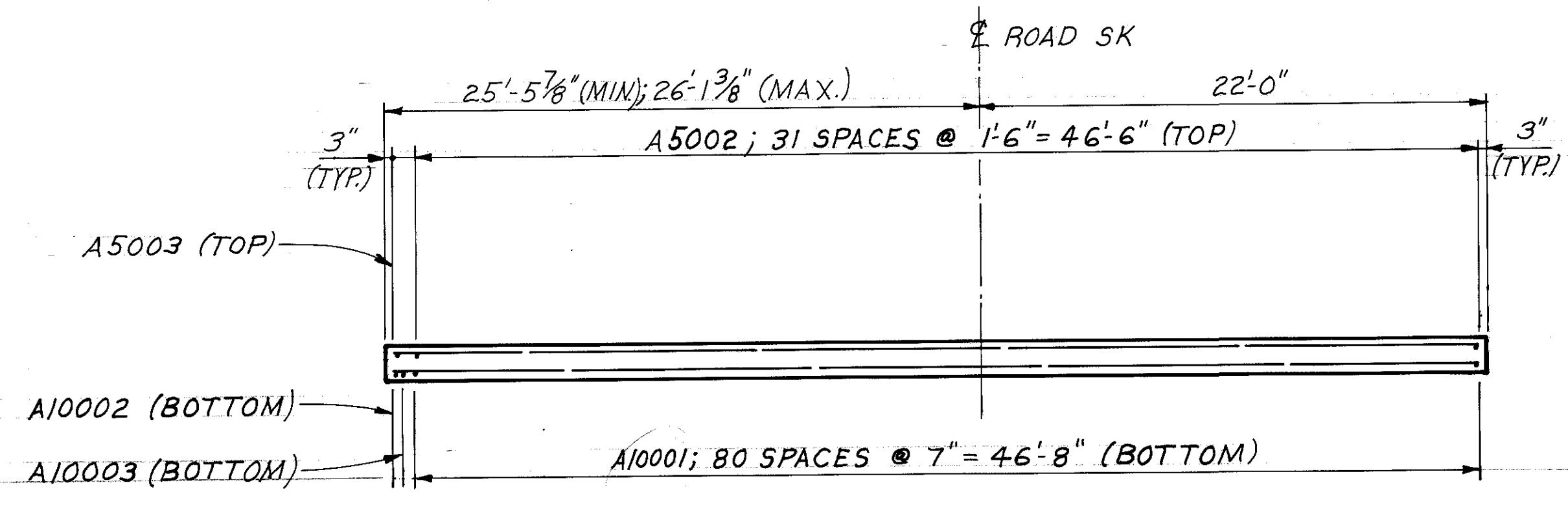
MARK	NO.	LENGTH	TYPE	"A"
A5001	114	30'-0"	ST	
A5002	32	24'-6"	ST	
A5003	1	24'-7"	ST	
A10001	81	25'-11"	1	24'-6"
A10002	1	26'-0"	1	24'-7"
A10003	1	13'-5"	1	12'-0"
A10004	48	1'-6"	ST	



QUANTITIES

ITEM	UNIT	TOTAL	DESCRIPTION
611	S. Y.	133	REINFORCED CONCRETE APPROACH SLAB (T=15")

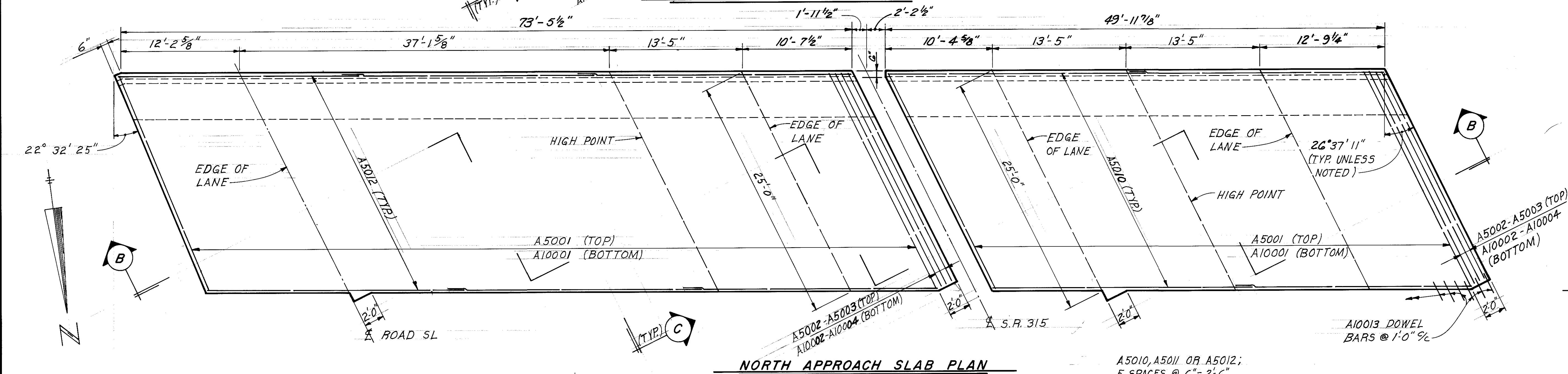
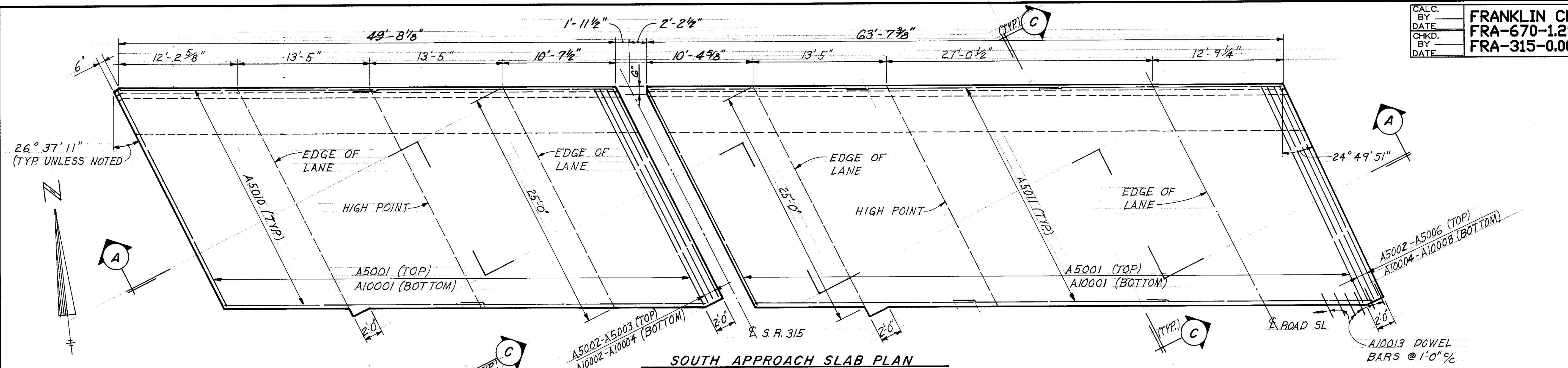
**NOTE:**  
 FOR ADDITIONAL NOTES AND DETAILS, SEE STANDARD DRAWING AS-1-81.  
 ALL REINFORCING STEEL TO BE EPOXY COATED. SEE ITEM 509 NOTE ON SHEET 3/16.



STILSON & ASSOCIATES, INC.  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**APPROACH SLAB DETAILS**  
 BRIDGE NO. FRA-33-1540  
 ROAD SK OVER U. S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAP	MAP	JAH	KM	G.W.M.	5/24/89	

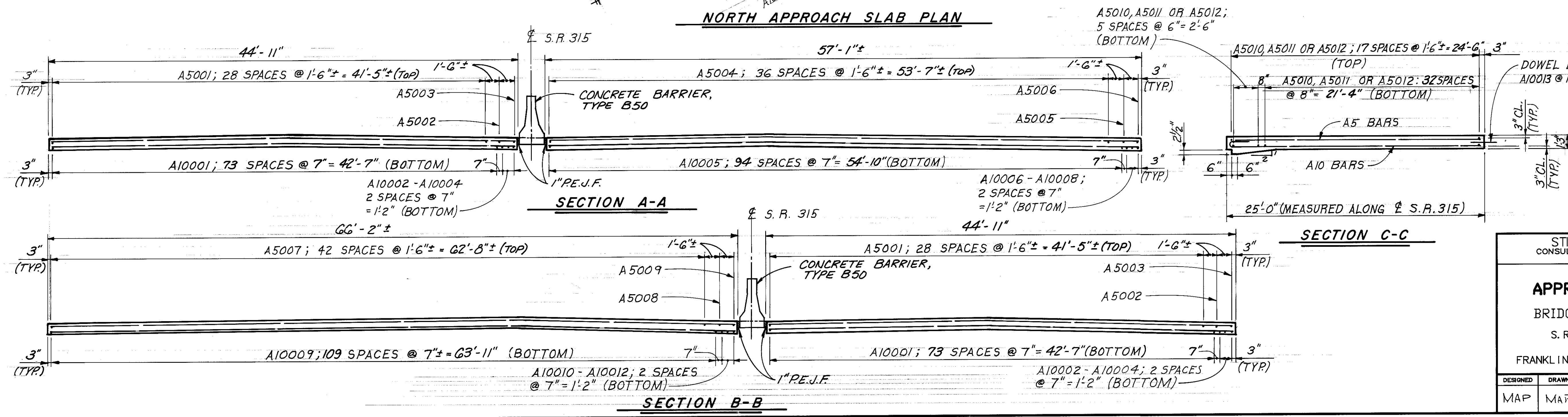


REINFORCING STEEL TABLE				
MARK	NO.	LENGTH	TYPE	"A"
A5001	138	24'-6"	ST	
A5002	4	24'-4"	ST	
A5003	4	23'-8"	ST	
A5010	228	25'-10"	ST	
A5011	171	22'-4"	ST	
A5012	171	25'-9"	ST	
A10001	353	25'-11"	1	24'-6"
A10002	4	25'-8"	1	24'-3"
A10003	4	25'-4"	1	23'-11"
A10004	4	25'-1"	1	23'-8"
A10013	217	1'-6"	ST	

BENDING DIAGRAM  
 STD. 180° BEND TYPE 1

QUANTITIES			
ITEM	UNIT	TOTAL	DESCRIPTION
611	S. Y.	593	REINFORCED CONCRETE APPROACH SLABS (T=15')

NOTE:  
 FOR ADDITIONAL NOTES AND DETAILS, SEE STANDARD DRAWING AS-1-81.  
 ALL REINFORCING STEEL TO BE EPOXY COATED. SEE ITEM 509 NOTE ON [3] [24].



STILSON & ASSOCIATES, INC.  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**APPROACH SLAB DETAILS**  
 BRIDGE NO. FRA-33-1542 L&R  
 S.R. 315 OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
MAP	MAP	JAH	WM	G.W.M.	5/24/89	



FRANKLIN COUNTY  
 FRA-670-1.25  
 FRA-315-0.00

**RAILROAD TRAFFIC DATA**  
 No. of trains per day: 20  
 Movements: Main line  
 Speed: 50 mph

**EXISTING STRUCTURE No. FR-782-01A**  
 TYPE: Simple span riveted steel girders with steel plate ballasted deck and reinforced concrete substructure.  
 SPAN: 50'-2 1/2", 50'-2 1/2" c/c Bearings  
 ROADWAY: 34'-0" c/c Fascia girders  
 LOADING: Coopers E-72, 1946 A.R.E.A. Specs  
 ALIGNMENT: Tangent  
 SKEW: 4°-05' Right forward  
 DATE BUILT:  
 STRUCTURE FILE NO.:  
 CONDITION: Good

**EXISTING STRUCTURE No. 7804**  
 TYPE: Simple span trough floor with concrete encased fascia girders, steel piers and concrete abutments with sandstone facing.  
 SPAN: 19'-6", 31'-6", 31'-6", 19'-6" c/c Bearings  
 ROADWAY: 61'-8 3/4" % Fascia girders  
 ALIGNMENT: Tangent  
 SKEW: 4°-02' Right forward  
 DESIGN LOADING: Penn. lines W. of Pitt. April 1906  
 DATE BUILT:  
 STRUCTURE FILE NO.:  
 CONDITION: Good

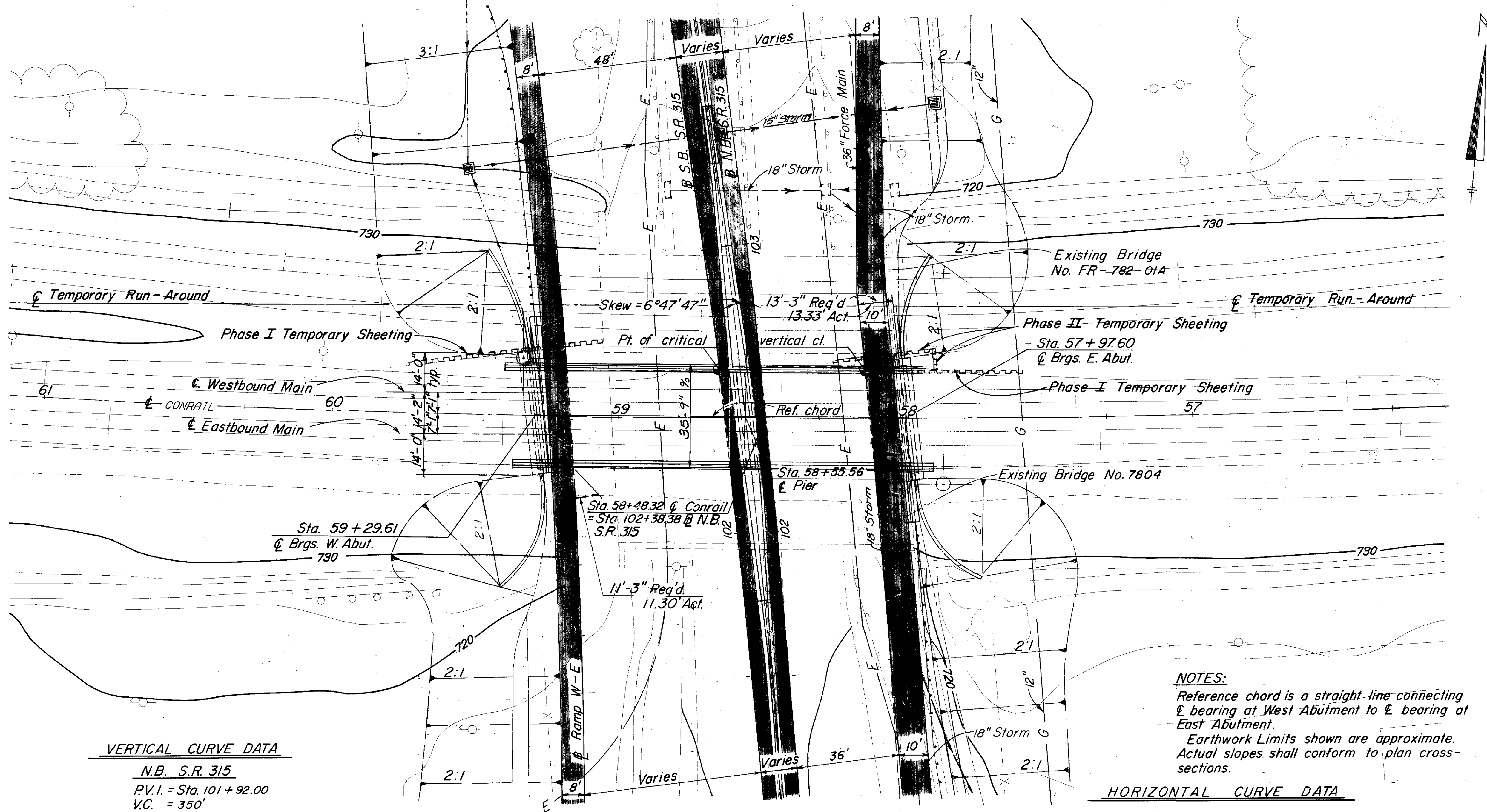
**PROPOSED STRUCTURE**  
 TYPE: Simple welded steel girders with steel plate ballasted deck and reinforced concrete substructure.  
 SPANS: 73'-4", 57'-4" c/c bearings  
 ROADWAY: Two tracks, 32'-9" min. f/f parapets  
 DESIGN LOADING: Coopers E-80 with diesel impact.  
 SKEW: 6°47'47" Rt. fwd. with ref. chord  
 ALIGNMENT: 1°00'00" Right  
 SUPERELEVATION:  
 LATITUDE: N 39° 57' 43"  
 LONGITUDE: W 83° 01' 04"  
 STRUCTURE FILE NO.:

ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**SITE PLAN**  
 BRIDGE NO. FRA-315-0061  
 S.R. 315 UNDER CONRAIL

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
G.W.M.	G.W.M.	K.R.H.	DE.M.	G.W.M.	10/1/84	



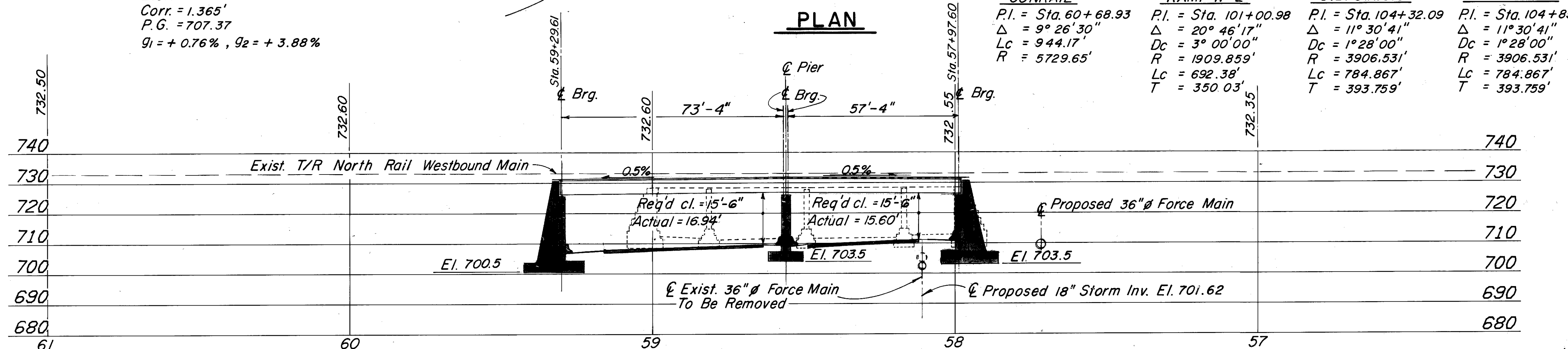
**NOTES:**  
 Reference chord is a straight line connecting bearing at West Abutment to bearing at East Abutment.  
 Earthwork Limits shown are approximate.  
 Actual slopes shall conform to plan cross-sections.

**VERTICAL CURVE DATA**

N.B. S.R. 315  
 P.V.I. = Sta. 101+92.00  
 V.C. = 350'  
 Elev. = 706.00  
 Corr. = 1.365'  
 P.G. = 707.37  
 g<sub>1</sub> = + 0.76% , g<sub>2</sub> = + 3.88%

**HORIZONTAL CURVE DATA**

CONRAIL	RAMP W-E	S.B. S.R.315	N.B. S.R.315
P.I. = Sta. 60+68.93	P.I. = Sta. 101+00.98	P.I. = Sta. 104+32.09	P.I. = Sta. 104+85.92
Δ = 9° 26' 30"	Δ = 20° 46' 17"	Δ = 11° 30' 41"	Δ = 11° 30' 41"
LC = 944.17'	Dc = 3° 00' 00"	Dc = 1° 28' 00"	Dc = 1° 28' 00"
R = 5729.65'	R = 1909.859'	R = 3906.531'	R = 3906.531'
	Lc = 692.38'	Lc = 784.867'	Lc = 784.867'
	T = 350.03'	T = 393.759'	T = 393.759'



**PROFILE ALONG CL CONRAIL**

BS20001A

**ESTIMATED QUANTITIES**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	E. ABUT.	W. ABUT.	SUPER.	NW WING	NE WING	SW WING	SE WING	PIER	GENERAL
503	11100	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING									LUMP
503	21100	2695	C.Y.	UNCLASSIFIED EXCAVATION	604	692		360	276	365	308	90	
509	15841	63468	LB	EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN	9885	13038	3443	8106	4626	10112	6522	7736	
511	31500	65	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE			65						
511	40500	95	C.Y.	CLASS C CONCRETE, PIER ABOVE FOOTINGS								95	
511	44100	492	C.Y.	CLASS C CONCRETE, ABUTMENT NOT INCLUDING FOOTING	231	261							
511	46000	152	C.Y.	CLASS C CONCRETE, WINGWALLS ABOVE FOOTINGS				41	28	47	36		
511	46500	458	C.Y.	CLASS C CONCRETE, FOOTINGS	102	111		56	45	56	52	36	
512	33300	239	S.Y.	TYPE A WATERPROOFING	113	126							
SPECIAL	51267000	534	S.Y.	MEMBRANE WATERPROOFING			534						
SPECIAL	51267500	474	S.Y.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	64	75		56	43	66	54	116	
516	00610	602800	LB	FIELD PAINTING OF NEW STEEL, SYSTEM IZEU			602800						
516	10000	33	L.F.	PREFORMED ELASTOMERIC COMPRESSION JOINT SEAL (705.11)			33						
516	13400	30	S.F.	3/4" PREFORMED EXPANSION JOINT FILTER	15	15							
516	13600	208	S.F.	1" PREFORMED EXPANSION JOINT FILLER				57	46	57	48		
516	30501	320	L.F.	PVC WATERSTOP, AS PER PLAN	85	85		40	32	42	36		
516	43001	10	EA	ELASTOMERIC BEARING WITH LOAD PLATE, AS PER PLAN (TYPE A)		10							
516	43001	10	EA	ELASTOMERIC BEARING WITH LOAD PLATE, AS PER PLAN (TYPE B)	10								
516	43001	10	EA	ELASTOMERIC BEARING WITH LOAD PLATE, AS PER PLAN (TYPE C)								10	
516	43001	10	EA	ELASTOMERIC BEARING WITH LOAD PLATE, AS PER PLAN (TYPE D)								10	
518	21100	265	C.Y.	POROUS BACKFILL	66	74		34	24	35	32		
518	41101	103	L.F.	6" PERFORATED HELICAL CORRUGATED STEEL PIPE, 707.01, AS PER PLAN					41	46	16		
518	42201	159	L.F.	8" PERFORATED CORRUGATED STEEL PIPE, 707.01, AS PER PLAN	48	48		38			25		
518	42301	173	L.F.	8" NON-PERFORATED CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01, AS PER PLAN	60	68		25			20		
518	62100	417	L.F.	STRUCTURE DRAINAGE, MISC., 8" HALF ROUND PERFORATED DECK DRAINS (WITH PAN) AND SPECIALS, AS PER PLAN			417						
SPECIAL	53000900	49	TON	STRUCTURE MISC.: ASPHALT SAND WATERPROOFING PROTECTION COURSE			49						
SPECIAL	60739910	265	L.F.	VANDAL PROTECTION FENCE, 8' STRAIGHT, COATED FABRIC			265						
810	11200	602800	LB	STRUCTURAL STEEL, A588 (AISC CATEGORY III)			602800						

**ITEM 509 - EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN**

THE REINFORCING STEEL LIST BAR MARKS FOR THIS STRUCTURE INDICATE SOME REGULAR AND SOME EPOXY COATED REINFORCING STEEL ARE REQUIRED, BUT IT IS INTENDED THAT ALL REINFORCING STEEL REQUIRED FOR THIS STRUCTURE BE EPOXY COATED. THEREFORE, DURING THE SHOP DRAWING PREPARATION FOR THE REINFORCING STEEL, THE CONTRACTOR AND FABRICATOR SHALL MAKE THE NECESSARY REVISIONS TO PROVIDE ALL EPOXY COATED REINFORCING STEEL. PARTICULAR CARE SHALL BE TAKEN TO ADJUST THE BAR SPLICE AND LAP LENGTHS WHERE AND AS NECESSARY TO MEET THE CURRENT AASHTO CRITERIA FOR EPOXY COATED REINFORCING STEEL. COST OF THE ADDITIONAL WORK TO BE INCLUDED IN THE PRICE BID FOR ITEM 509, EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN.

**SUGGESTED CONSTRUCTION PROCEDURE**

1. DRIVE PHASE I TEMPORARY SHEETING.
2. REMOVE EAST SPAN FASCIA GIRDER AND A PORTION OF THE EAST ABUTMENT OF EXISTING BRIDGE NO FR-782-01 A.
3. DRIVE PHASE II TEMPORARY SHEETING.
4. CONSTRUCT TEMPORARY RAILROAD RUN-AROUND UTILIZING EXISTING BRIDGE NO FR-782-01A.
5. ROUTE RAILROAD TRAFFIC ONTO TEMPORARY RUN-AROUND.
6. REMOVE EXISTING BRIDGE NO. 7804.
7. EXCAVATE TO ROADWAY SUBGRADE ELEVATION.
8. CONSTRUCT NEW RAILROAD BRIDGE (EXCEPT FOR NORTH WINGWALLS) INCLUDING TRACK WORK.
9. ROUTE RAILROAD TRAFFIC OVER NEW BRIDGE.
10. REMOVE EXISTING RAILROAD BRIDGE NO. FR-782-01A AND TEMPORARY TRACKS.
11. CONSTRUCT NORTH WINGWALLS.

SIMULTANEOUS OPERATIONS WILL BE PERMITTED IF APPROVED BY THE ENGINEER. COST OF TEMPORARY SHEETING INCLUDED IN THE PRICE BID FOR ITEM 503 COFFERDAMS, CRIBS, AND SHEETING.

**STANDARD DRAWING REFERENCES**

DESCRIPTION	DWG NO.	DATE
VANDAL PROTECTION FENCE	VPF-1-90	3-24-93 R

**SUPPLEMENTAL SPECIFICATION REFERENCES**

DESCRIPTION	NO.	DATE
STRUCTURAL STEEL FOR STRUCTURES CARRYING RAILROAD TRAFFIC	810	3-23-95
FIELD PAINTING OF NEW STEEL, SYSTEM IZEU	816	3-3-95

**DESIGN SPECIFICATIONS**

EXCEPT FOR CONCRETE AND REINFORCED CONCRETE, THIS STRUCTURE CONFORMS TO THE REQUIREMENTS OF "MANUAL FOR RAILWAY ENGINEERING" OF THE AMERICAN RAILWAY ENGINEERING ASSOCIATION 1990 EDITION. DESIGN OF CONCRETE AND REINFORCED CONCRETE CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES", AASHTO, 1989, INCLUDING THE 1990 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**

STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, DATED JANUARY 1, 1995.

**DESIGN DATA**

- DESIGN LOADING - COOPER E-80 WITH DIESEL IMPACT  
 CONCRETE CLASS S - UNIT STRESS 1500 PSI FOR SUPERSTRUCTURE  
 CONCRETE CLASS C - UNIT STRESS 1333 PSI FOR SUBSTRUCTURE  
 STRUCTURAL STEEL - ASTM A588 GRADE 50-UNIT STRESS 20,000 PSI  
 REINFORCING STEEL - ASTM A615 GRADE 60-UNIT STRESS 20,000 PSI

**FOUNDATION BEARING PRESSURE**

ALL FOOTINGS, AS DESIGNED, PRODUCE A MAXIMUM BEARING PRESSURE OF 4 TONS PER SQUARE FOOT.

**RAILROAD COMMUNICATION AND SIGNAL FACILITIES**

THE UNDERGROUND RAILROAD COMMUNICATION AND SIGNAL FACILITIES WILL BE RELOCATED BY THE RAILROAD. THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO SEE THAT THESE FACILITIES ARE NOT DISTURBED DURING THE CONSTRUCTION STAGE AND SHALL COOPERATE WITH THE RAILROAD IN THE RELOCATION OF THE FACILITIES. THE COST OF THE RELOCATION SHALL BE INCLUDED IN THE RAILROAD FORCE ACCOUNT WORK.

**REMOVAL OF EXISTING STRUCTURE**

WHEN NO LONGER NEEDED TO MAINTAIN RAILROAD TRAFFIC, THE EXISTING STRUCTURE SHALL BE REMOVED.

**MAINTENANCE OF TRAFFIC AND CONSTRUCTION PROCEDURE**

THE NORTHERLY EXISTING BRIDGE WILL BE UTILIZED TO MAINTAIN RAILROAD TRAFFIC DURING CONSTRUCTION OF THE NEW BRIDGE. SEE PLAN SHEETS NO.'S 318-320 FOR TEMPORARY RUN AROUND TRACK DETAILS.

**ITEM SPECIAL - SEALING OF CONCRETE SURFACES**

A CONCRETE SEALER, EITHER EPOXY OR NON-EPOXY SHALL BE APPLIED TO THE CONCRETE SURFACES AS LISTED BELOW. SEE THE PROPOSAL FOR SEALER MATERIAL, SURFACE PREPARATION REQUIREMENTS, AND APPLICATION RATES AND PROCEDURES.

1. ABUTMENT WALL FROM BRIDGE SEAT TO TOP OF SAFETY BARRIER SHAPE.
2. WINGWALLS FROM TOP OF WALL TO 1'-0" BELOW PROPOSED GROUND LINE.
3. PIER - ALL VERTICAL SURFACES FROM BRIDGE SEAT TO TOP OF MEDIAN SAFETY BARRIER.

2 / 20						
<b>STILSON &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>GENERAL NOTES &amp; ESTIMATED QUANTITIES</b> BRIDGE NO. FRA-315-0061 SR 315 UNDER CONRAIL FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WM	PF		VS	GWM	8-31-91	



**MEMBRANE WATERPROOFING**

**DESCRIPTION**

A TWO COAT, COLD-APPLIED, LIQUID MEMBRANE WATERPROOFING SYSTEM SHALL BE APPLIED TO THE TOP SURFACE OF THE UNPAINTED DECK AND CURB PLATES.

**MATERIALS**

THE WATERPROOFING MATERIALS SHALL BE:  
 RUB-R-ROAD, INC.  
 SEALING COMPOUND- NO. R-526B  
 SOLVENT- NO. R-607  
 OR  
 R. C. MARBRI CO.  
 BLACK MARBRILASTIC NEOPRENE  
 RED MARBRILASTIC NEOPRENE  
 OR  
 APPROVED EQUAL

**PREPARATION OF DECK AND CURB PLATES**

PRIOR TO PLACEMENT OF THE MEMBRANE WATERPROOFING, THE UNPAINTED PLATE SURFACES SHALL BE CLEANED TO REMOVE ALL SURFACE DIRT AND THOROUGHLY DRIED. TRAFFIC SHALL NOT BE PERMITTED ON THE CLEAN DECK PLATES PRIOR TO THE APPLICATION OF THE MEMBRANE.

**WEATHER LIMITATIONS**

NO WORK SHALL BE UNDERTAKEN IF RAIN IS FORECAST FOR 24 HOURS. THE PLATES AND AMBIENT AIR TEMPERATURE MUST BE ABOVE 50F.

**APPLICATION OF SEALING COMPOUND (RUB-R-ROAD)**

THE DECK PLATE SURFACE SHALL BE DRY AND FREE OF DUST AND LOOSE PARTICLES AT THE TIME OF APPLICATION OF THE SEALING COMPOUND. NO WORK SHALL BE UNDERTAKEN ON DAMP SURFACES. THE R-526 AND R-607 SHALL NOT BE HEATED. THE R-526 SHALL BE STIRRED THOROUGHLY BEFORE USING. THESE MATERIALS SHALL BE USED ONLY IN WELL VENTILATED AREAS. SUITABLE PRECAUTIONS SHALL BE TAKEN TO AVOID FIRE HAZARDS WHEN USING THESE MATERIALS. THEY SHALL NOT BE USED NEAR FIRE OR FLAME. APPLICATION TOOLS MAY BE CLEANED WITH R-607 SOLVENT. THE CONTRACTOR SHALL PROVIDE FOR CHECKING AND CONTROLLING THE RATE OF APPLICATION OF THE SEALING COMPOUND BY APPLYING MEASURED INCREMENTS. THE SEALING COMPOUND SHALL BE APPLIED AS FOLLOWS:

- A. FIRST COAT. FOR THE FIRST COAT, THE SEALING COMPOUND SHALL BE A MIXTURE BY VOLUME OF ONE PART OF R-607 SOLVENT TO TWO PARTS OF R-526B SEALING COMPOUND. THIS MIXTURE SHALL BE APPLIED TO THE PREPARED SURFACES AND SPREAD, UNIFORMLY, USING A LONG-HANDLED, NYLON BRUSH-TYPE SQUEEGEE\*, AT A RATE NOT LESS THAN 0.15 GALLON PER SQUARE YARD.
- B. SECOND COAT. FOR THE SECOND COAT, THE SEALING COMPOUND R-526B SHALL BE APPLIED UNDILUTED AND SPREAD UNIFORMLY AT THE RATE OF 0.15 GALLON PER SQUARE YARD.

THE COMBINED TWO COAT LAYER SHALL HAVE A 20 MIL NOMINAL THICKNESS. THE APPLICATION RATES MAY BE MODIFIED TO ACHIEVE THIS THICKNESS.

EACH APPLICATION SHALL BE ALLOWED TO CURE APPROXIMATELY TWO HOURS, OR AT LEAST UNTIL IT IS FREE FROM TACK OR ANY TENDENCY TO STICK TO SHOES, BEFORE APPLYING ANY ADDITIONAL APPLICATIONS. THE DIRECTION OF APPLICATION FOR EACH APPLICATION SHALL BE CROSSWISE TO THAT OF THE PRIOR APPLICATION.

\*SUCH AS 3-H BLADE SWEEPS, AVAILABLE FROM FULLER BRUSH CO., INDUSTRIAL PRODUCTS DIVISION, HARTFORD, CONN. 06115.

**APPLICATION OF SEALING COMPOUND (MARBRILASTIC)**

THE FIRST COAT OF NEOPRENE, BLACK MARBRILASTIC, SHALL BE APPLIED IN A THIN, EVEN COATING FREE OF RUNS, DRIPS AND THICK SPOTS AT THE RATE OF 0.27 GALLONS PER SQUARE YARD. USE APPROVED APPLICATION METHODS SUCH AS BRUSH OR ROLLER. THE SECOND COAT OF NEOPRENE, RED MARBRILASTIC, SHALL BE APPLIED WHEN THE FIRST COAT IS THOROUGHLY DRY (4 TO 6 HOURS UNDER NORMAL CONDITIONS) AT THE RATE OF 0.18 GALLONS PER SQUARE YARD. THE COMBINED 2-COAT LAYER SHALL HAVE A 20 MIL NOMINAL THICKNESS. THE APPLICATION RATE MAY BE MODIFIED TO ACHIEVE THIS THICKNESS.

APPLICATION SHOULD BE MADE AS LATE IN THE DAY AS POSSIBLE, BUT ALWAYS WHEN THE PLATES ARE COOLING.

**PROTECTION OF MEMBRANE**

TRAFFIC SHALL NOT BE PERMITTED ON THE STRUCTURE UNTIL THE ASPHALT SAND PROTECTION COURSE HAS BEEN PLACED AND COMPACTED ON THE DECK PLATE AND THE PROTECTIVE ASPHALT PLANKS HAVE BEEN PLACED ON THE CURB PLATES. EQUIPMENT USED IN PLACING THE ASPHALT SAND SHALL BE RUBBER Tired, OPERATED AT SLOW SPEED, AND SHALL NOT MAKE SUDDEN STARTS, STOPS, OR TURNS THAT COULD CAUSE BREAKS OR LIFTING OF THE MEMBRANE. ANY BREAK SHALL BE REPAIRED IMMEDIATELY BEFORE THE ASPHALT SAND IS PLACED.

**METHOD OF PAYMENT**

THIS WILL BE IN SQUARE YARDS OF MEMBRANE PLACED. THIS PRICE INCLUDES SURFACE PREPARATION AND PLACING OF THE COLD-APPLIED LIQUID MEMBRANE WATERPROOFING.

**ASPHALT SAND WATERPROOFING PROTECTION COURSES**

**DESCRIPTION**

A PROTECTIVE COURSE, USING ASPHALT SAND SHALL BE PLACED AND COMPACTED ON THE MEMBRANE WATERPROOFING BEFORE BALLAST IS PLACED.

ASPHALT CEMENT SHALL BE ASTM VISCOSITY GRADE AC-20 MEETING THE REQUIREMENTS OF TABLE 1. COMPOSITION OF ASPHALT SAND MIXTURE SHALL MEET THE REQUIREMENTS OF TABLE 2.

**EQUIPMENT**

THE EQUIPMENT SHALL INCLUDE: (1) ONE OR MORE ASPHALT MIXING PLANTS DESIGNED TO PRODUCE A UNIFORM MIXTURE WITHIN THE JOB-MIX TOLERANCE; (2) ENOUGH SMOOTH METAL-BEDDED HAUL TRUCKS, WITH COVERS, WHEN REQUIRED, TO ENSURE ORDERLY AND CONTINUOUS PAVING OPERATIONS; (3) ONE OR MORE STEEL-WHEELED PNEUMATIC-TIRED OR VIBRATORY ROLLERS AND (4) HAND TOOLS NECESSARY TO COMPLETE THE JOB. OTHER EQUIPMENT MAY BE USED IN ADDITION TO, OR IN LIEU OF, THE SPECIFIED EQUIPMENT WHEN APPROVED BY THE ENGINEER.

**SAMPLES**

SAMPLES OF ALL MATERIALS PROPOSED FOR USE SHALL BE SUBMITTED TO THE ENGINEER FOR TEST AND ANALYSIS.

SAMPLING OF ASPHALT MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF "SAMPLING ASPHALT PRODUCTS FOR SPECIFICATION COMPLIANCE", MANUAL SERIES NO. 18 (MS-18), THE ASPHALT INSTITUTE. SAMPLING OF MINERAL AGGREGATE SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) DESIGNATION T2 [AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) DESIGNATION 75]. SAMPLING OF THE ASPHALT MIXTURE, AS REQUIRED BY THE ENGINEER, SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF AASHTO DESIGNATION T 168 (ASTM DESIGNATION D 979).

**METHODS OF TESTING**

SAMPLES OF MATERIALS WILL BE TESTED BY THE APPLICABLE METHODS SPECIFIED IN THIS ARTICLE. THE MATERIALS SHALL NOT BE USED UNTIL APPROVED BY THE ENGINEER.

(1) ASPHALT MATERIALS WILL BE TESTED BY THE METHOD OF TEST OF THE AASHTO DESIGNATED IN THE APPLICABLE ASPHALT SPECIFICATION. IF AN AASHTO METHOD OF TEST PROCEDURE IS NOT AVAILABLE, THE EQUIVALENT ASTM METHOD WILL BE USED.

(2) MINERAL AGGREGATES WILL BE TESTED BY ONE OR MORE OF THE FOLLOWING METHODS OF TEST OF THE AASHTO OR ASTM.

CHARACTERISTIC	METHOD OF TEST	
	AASHTO	ASTM
AMOUNT OF MATERIAL FINER THAN NO. 200 SIEVE IN AGGREGATE	T 11	C 117
SIEVE ANALYSIS, FINE AND COARSE AGGREGATE	T 27	C 136
SIEVE ANALYSIS OF MINERAL FILLER	T 37	D 546

(3) THE MIXTURE WILL BE TESTED FOR ASPHALT CONTENT BY "METHOD OF TEST FOR QUANTITATIVE EXTRACTION OF BITUMEN FROM BITUMINOUS PAVING MIXTURES" AASHTO DESIGNATION T 164 (ASTM DESIGNATION D 2172). THE MIXTURE WILL BE TESTED FOR COMPLIANCE WITH AGGREGATE GRADING REQUIREMENTS BY "METHOD OF TEST FOR MECHANICAL ANALYSIS OF EXTRACTED AGGREGATE", AASHTO DESIGNATION T 30.

**MATERIALS**

ASPHALT CEMENT AC - 20 SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF AASHTO SPECIFICATION M 226 OR ASTM D 3381.

THE MINERAL AGGREGATE SHALL BE NATURAL SAND, CRUSHED OR UNCRUSHED GRAVEL, CRUSHED STONE OR SLAG SCREENINGS OR A COMBINATION OF TWO OR MORE OF THESE MATERIALS. THE COMBINED AGGREGATE AFTER GOING THROUGH THE DRYER SHALL HAVE A SAND EQUIVALENT VALUE OF NOT LESS THAN 30.

**PLACEMENT LIMITATIONS**

ASPHALT PAVING MIXTURE SHALL BE PLACED ONLY WHEN THE SPECIFIED DENSITY CAN BE OBTAINED. PRECAUTIONS SHALL BE TAKEN AT ALL TIMES TO COMPACT THE MIXTURE BEFORE IT COOLS TOO MUCH TO OBTAIN THE REQUIRED DENSITY. THE MIXTURE SHALL NOT BE PLACED ON ANY WET SURFACE OR WHEN WEATHER CONDITIONS WILL OTHERWISE PREVENT ITS PROPER HANDLING OR FINISHING. ASPHALT SAND SHALL NOT BE PLACED WHEN THE TEMPERATURE OF THE STEEL FLOOR PLATE IS BELOW 40F. A RANGE OF TEMPERATURE OF THE MIXTURE FROM 180F TO 250F IS ACCEPTABLE. PROPER ROLLING TEMPERATURE IS IN THE RANGE OF 175F - 225F. THE MIX SHOULD BE PLACED AS NEAR THIS TEMPERATURE AS IS CONSISTENT WITH OTHER REQUIREMENTS, SO THAT ROLLING MAY BE ACCOMPLISHED AS SOON AFTER PLACEMENT AS POSSIBLE.

**METHOD OF PAYMENT**

THIS WILL BE IN TONS OF ASPHALT SAND IN PLACE ON BRIDGE DECK.

**TABLE 1  
AC - 20 ASPHALT CEMENT**

VISCOSITY - 140F (60C), P	2000 ± 400
VISCOSITY - 275F (135C), MIN., C ST	210
PENETRATION, 77F (25C), 100 G, 5S, MIN.	40
FLASH POINT, CLEVELAND OPEN CUP MIN. °F (°C)	450 (232)
SOLUBILITY IN TRICHLOROETHYLENE, MIN. %	99.0
TESTS ON RESIDUE FROM THIN-FILM OVEN TEST:	
VISCOSITY, 140F (60C), MAX., P	10,000
DUCTILITY, 77F (25C), 5 CM/MIN., MIN. CM	20

THE ASPHALT CEMENT SHALL BE PREPARED FROM CRUDE PETROLEUM BY SUITABLE METHODS.

THE ASPHALT CEMENT SHALL BE HOMOGENEOUS, FREE FROM WATER AND SHALL NOT FOAM WHEN HEATED TO 347F (175C).

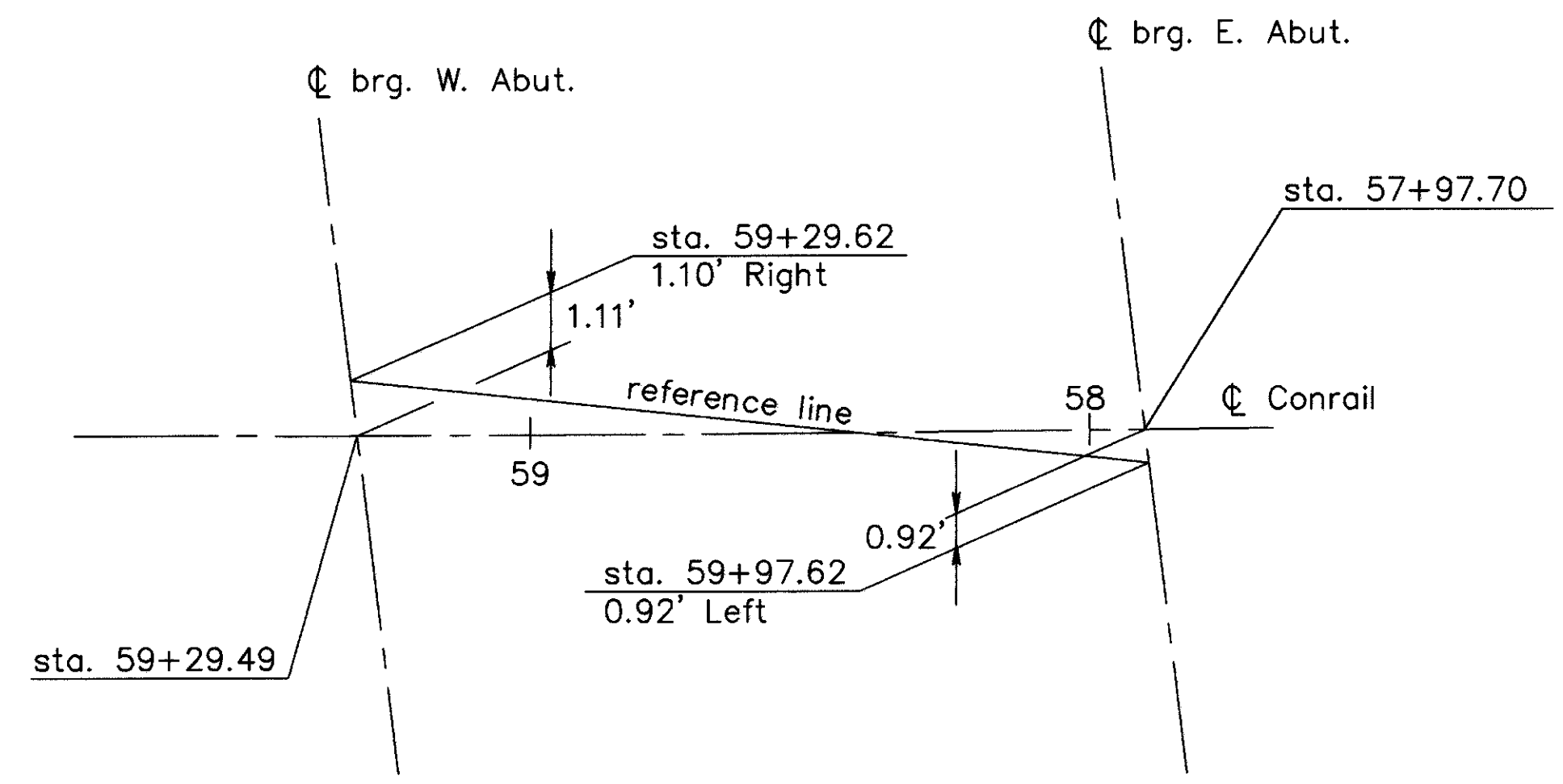
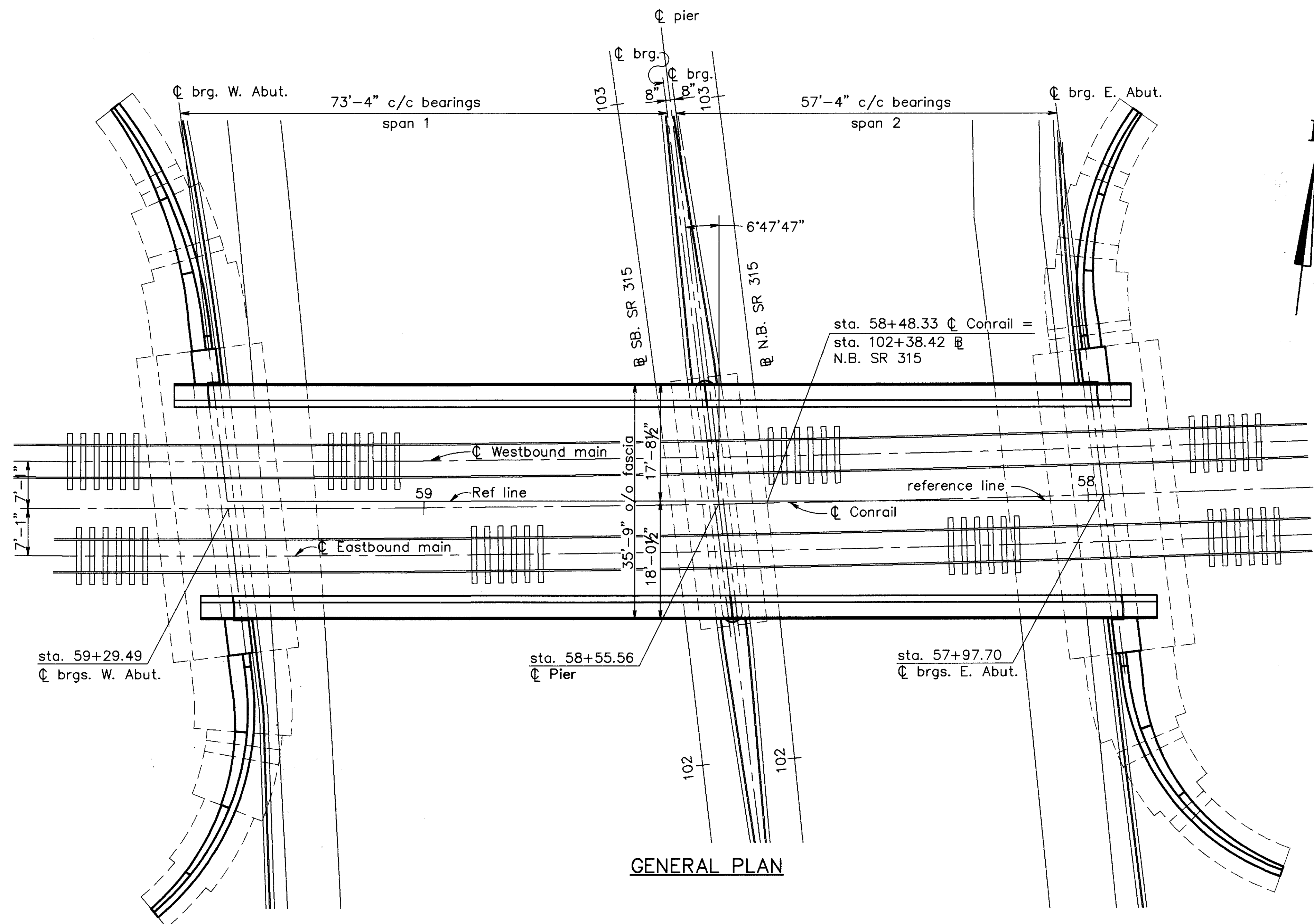
**TABLE 2  
COMPOSITION OF ASPHALT SAND**

SIEVE SIZE	PERCENT PASSING (BY WEIGHT)
3/8 IN.	100
NO. 4	80 TO 100
NO. 8	65 TO 100
NO. 16	40 TO 80
NO. 30	20 TO 65
NO. 50	7 TO 40
NO. 100	2 TO 20
NO. 200	0 TO 10

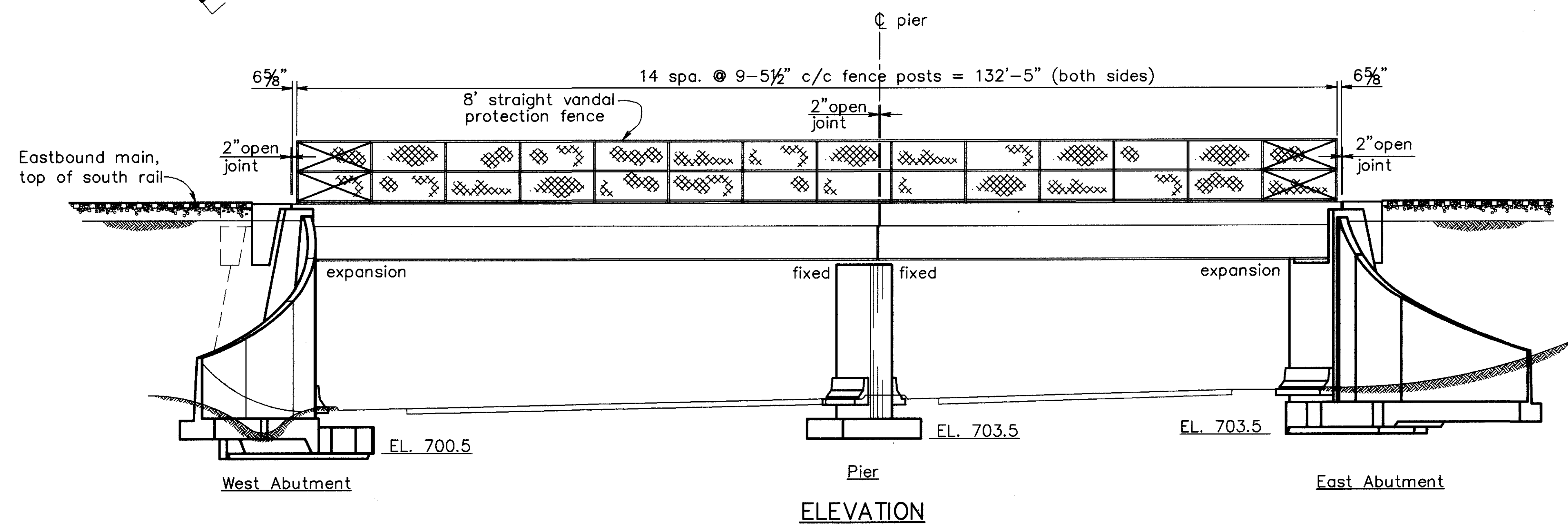
AC - 20 ASPHALT CEMENT 7 TO 12% OF TOTAL MIXTURE  
(PERCENT BY WEIGHT OF TOTAL MIXTURE)

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>GENERAL NOTES</b> BRIDGE NO. FRA-315-0061 SR 315 UNDER CONRAIL						
FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
WJM	PF		YB	GWM	8/31/91	





LAYOUT DIAGRAM  
FOR  
CONSTRUCTION REFERENCE LINE



**NOTE:**  
For Vandal Protection Fence details not shown, see Standard Construction Drawing VPF-1-90. Post section PS-3 and Base Plate BP-5 shall be used. Truss rods shall be used in fence end panels, both sides.

4 / 20

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COLUMBUS AND CLEVELAND

**GENERAL PLAN & ELEVATION**  
BRIDGE NO. FRA-315-0061  
SR 315 UNDER CONRAIL

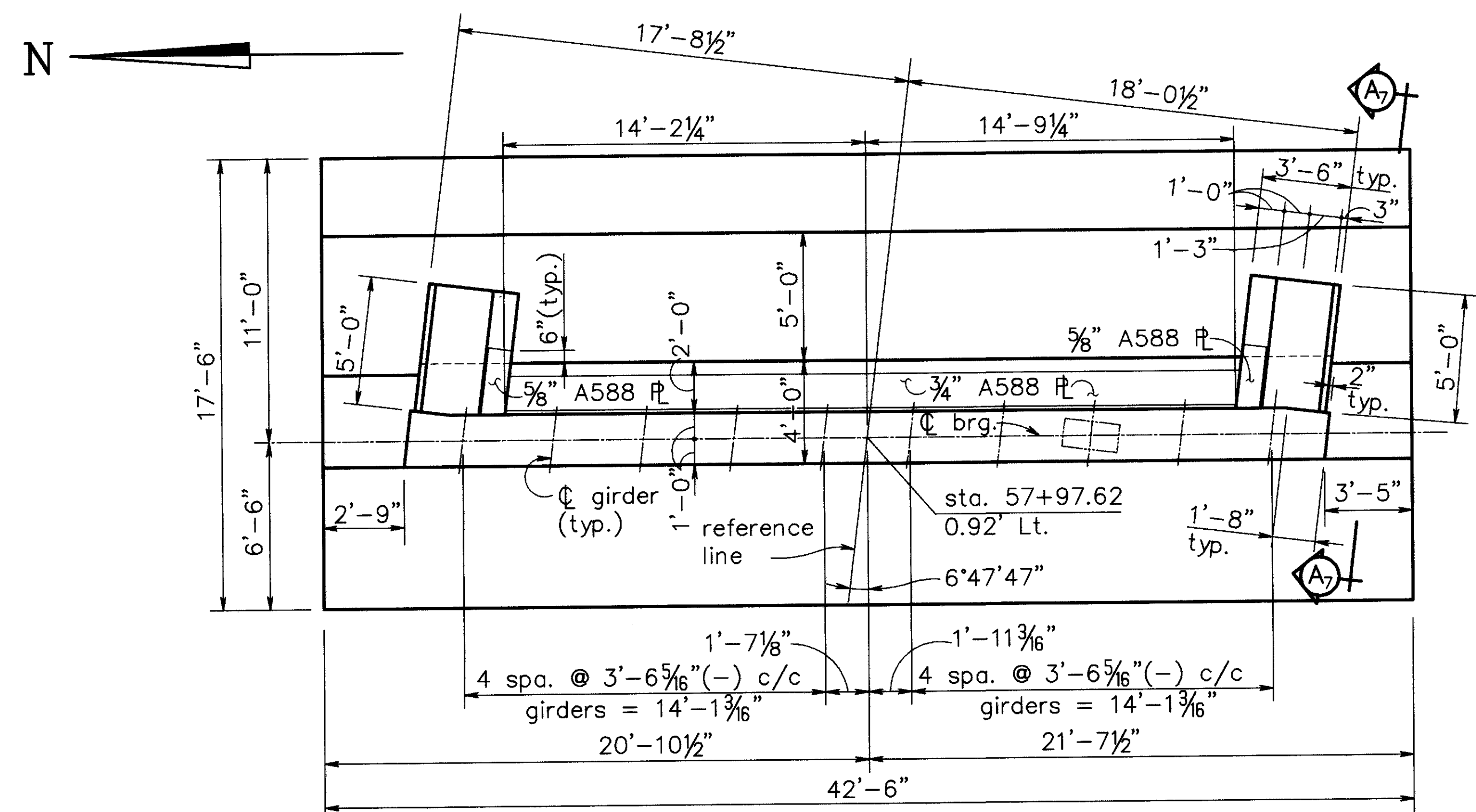
FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
VS	PF		WM	GMM	8/31/91	

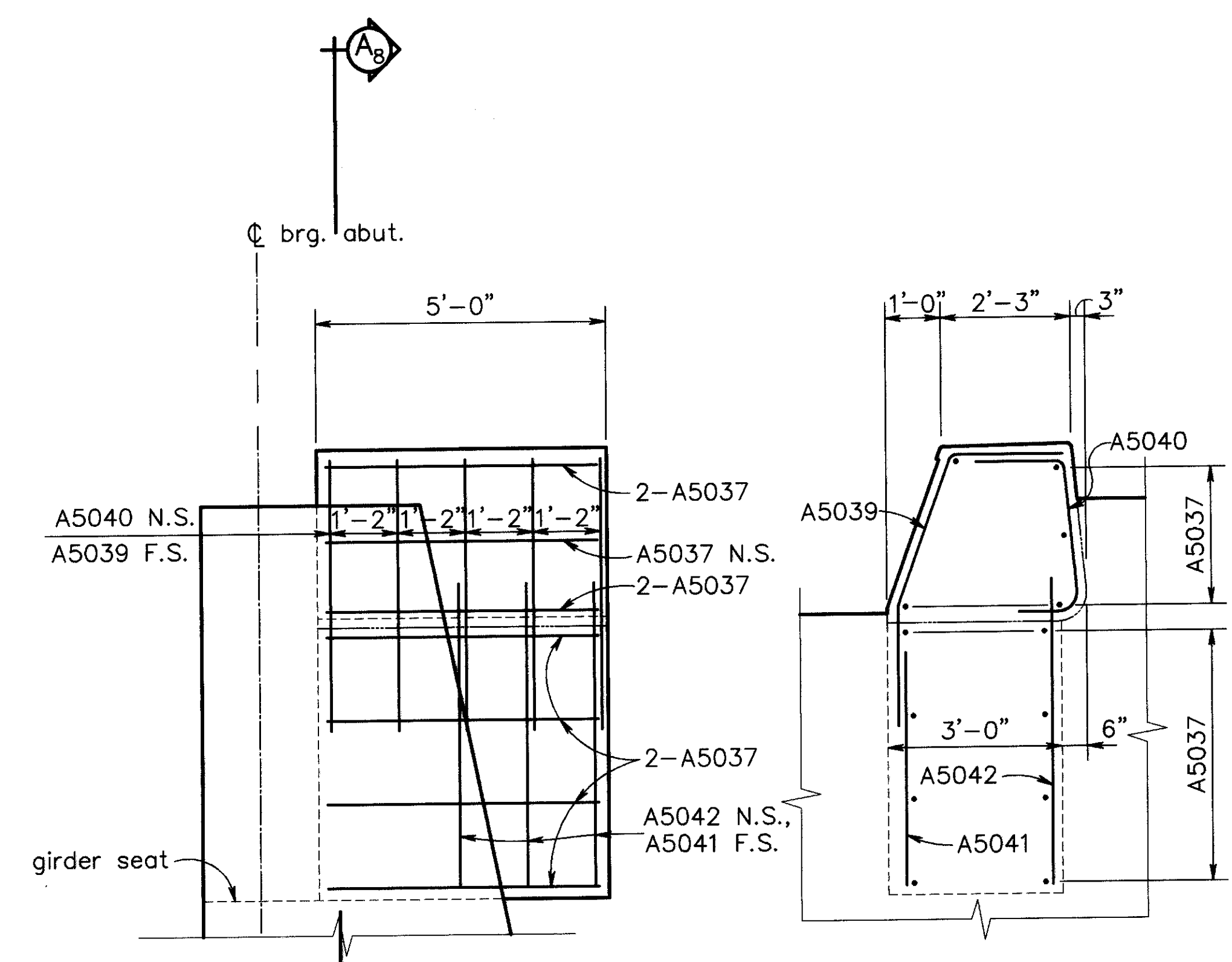
[C:\P\TRANS\SR315-40\WALDOU\BRIDGE\PLAN\LEV.DWG - MAY 02, 1997 - 10:34:30 - PLOT: 1-120



**NOTES:**  
For additional notes see sheet [5/20].

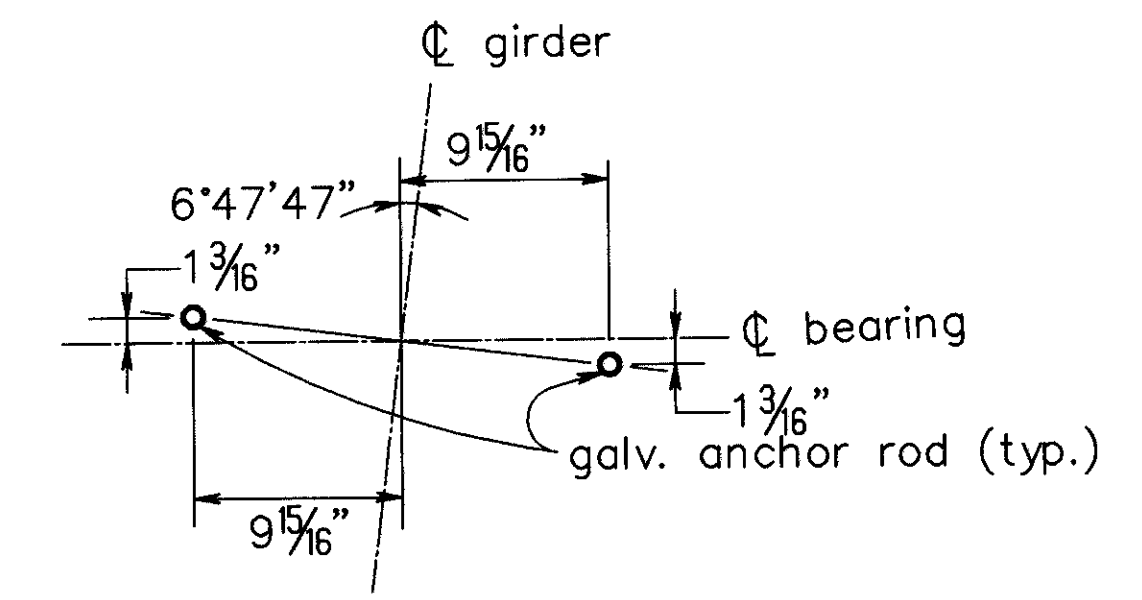


**EAST ABUTMENT PLAN**

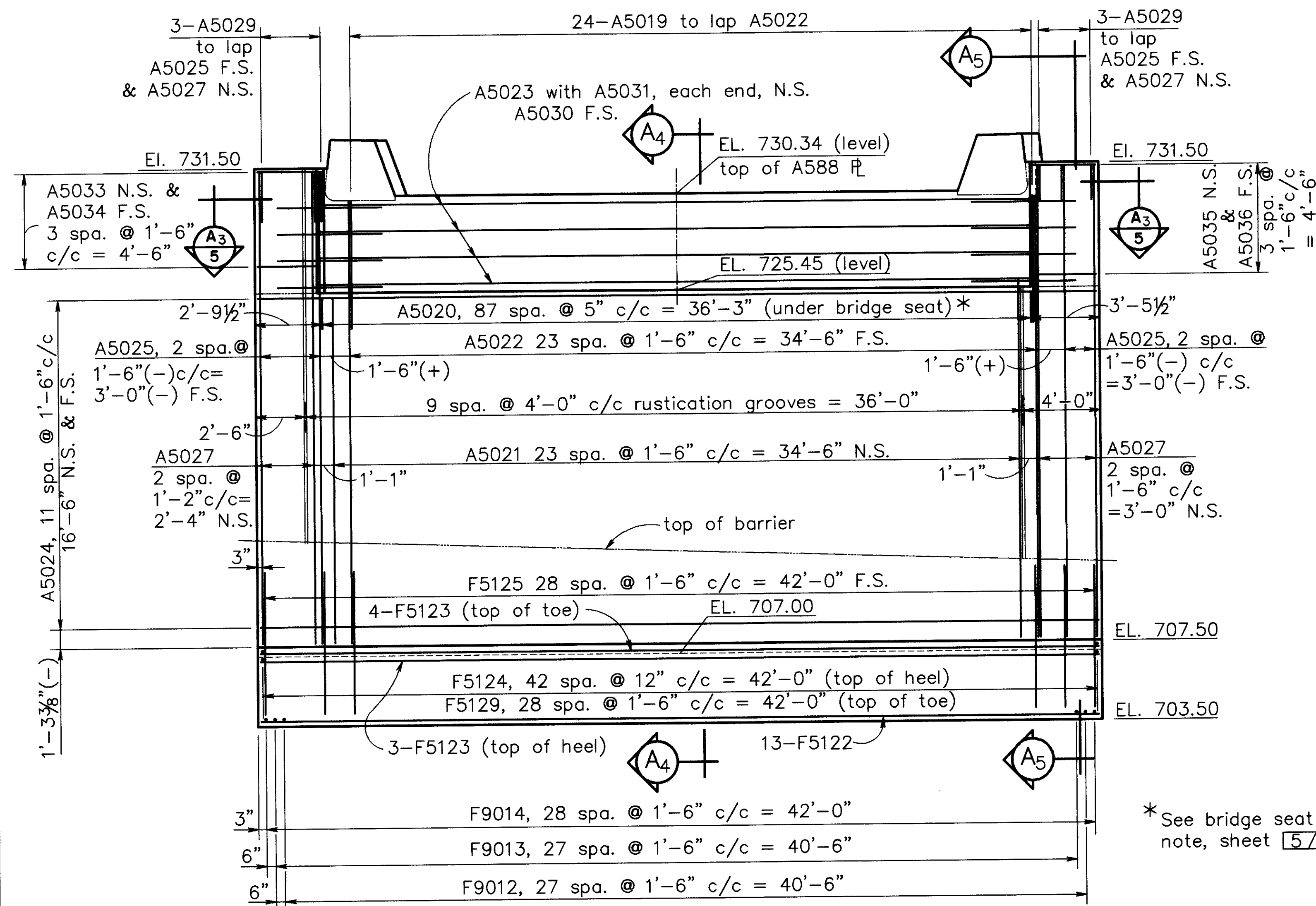


**SECTION A7-A7**

**SECTION A8-A8**

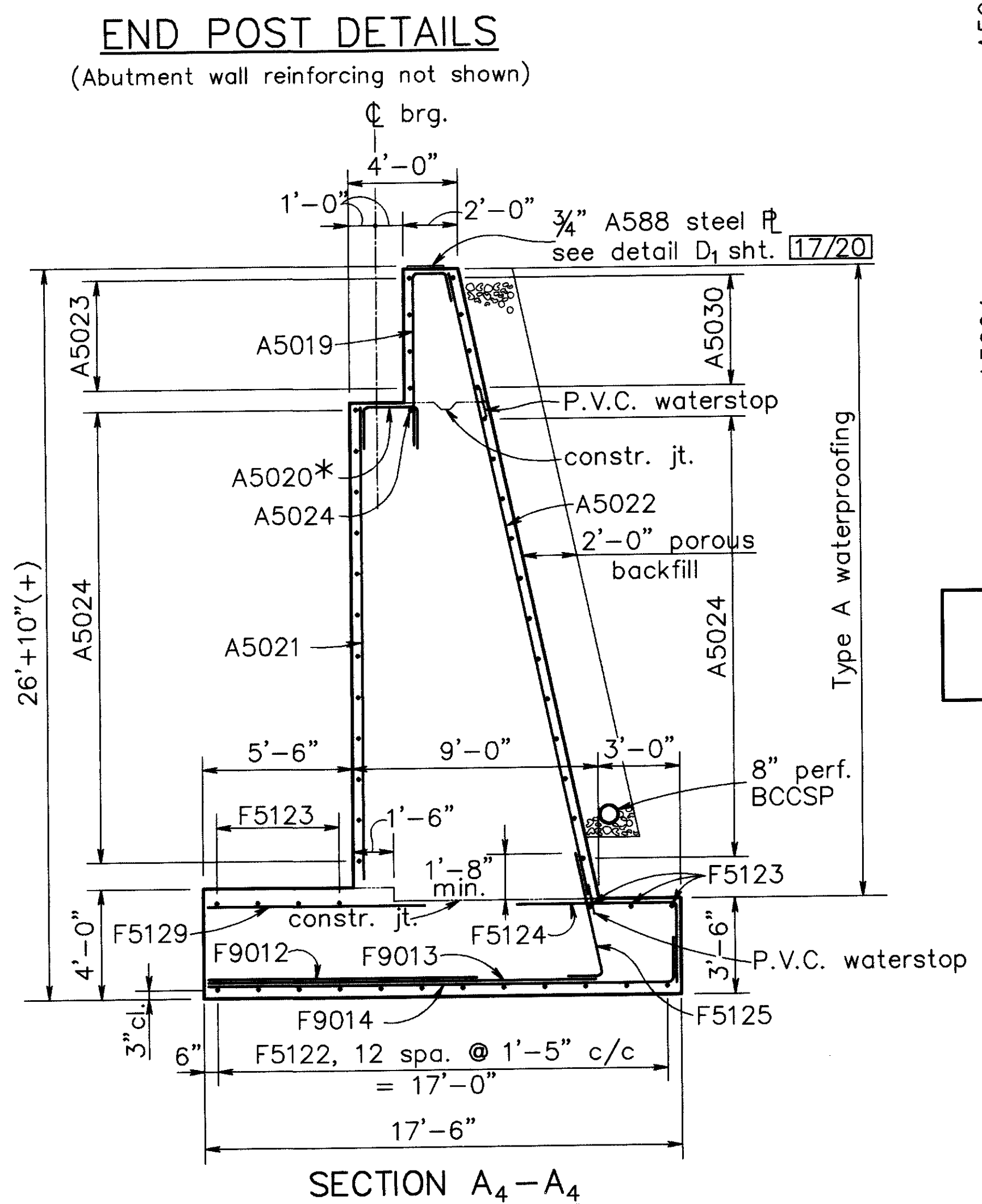


**BEARING ANCHOR LOCATION PLAN**  
East Abutment

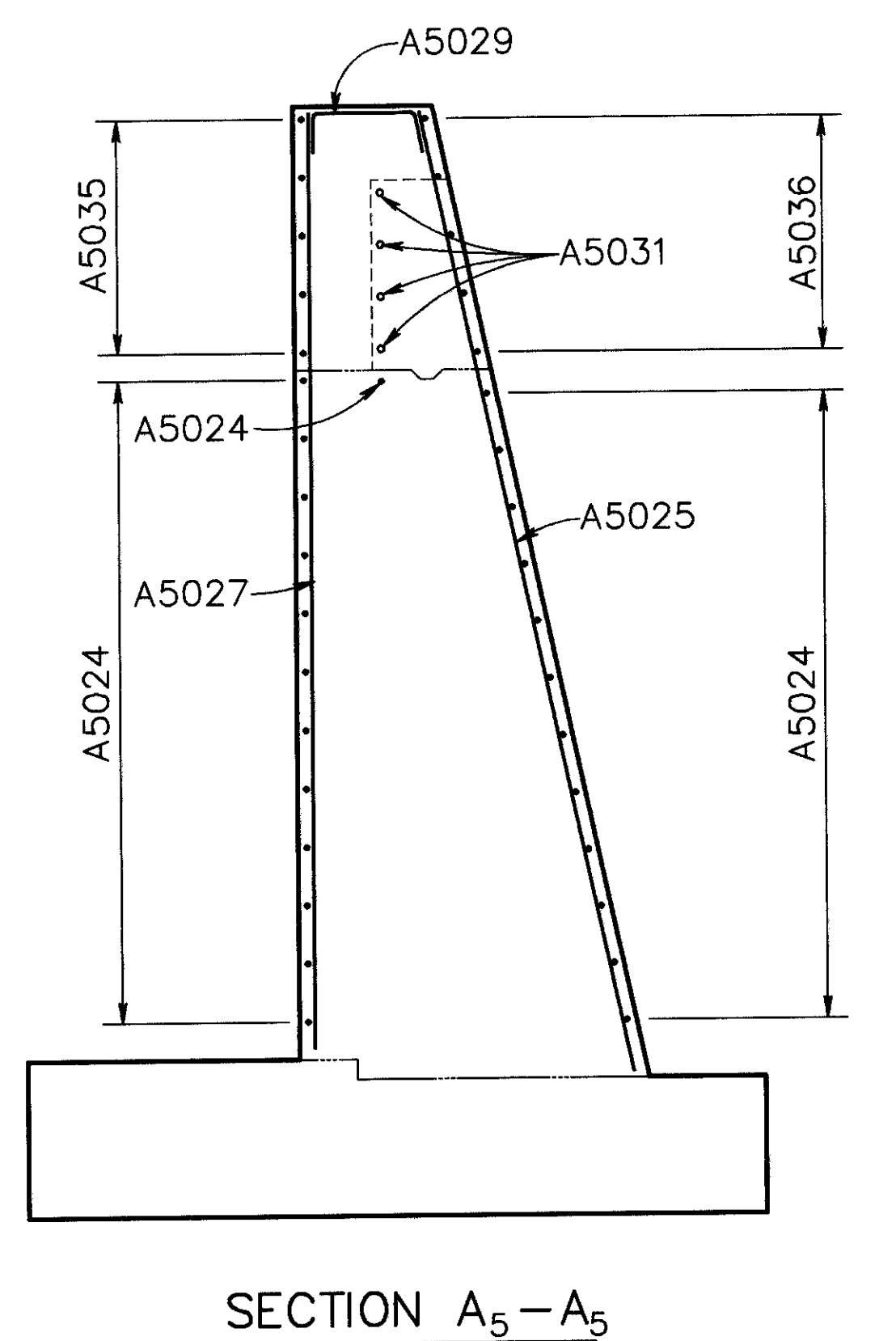


**EAST ABUTMENT ELEVATION**

\* See bridge seat reinforcing note, sheet [5/20].



**SECTION A4-A4**

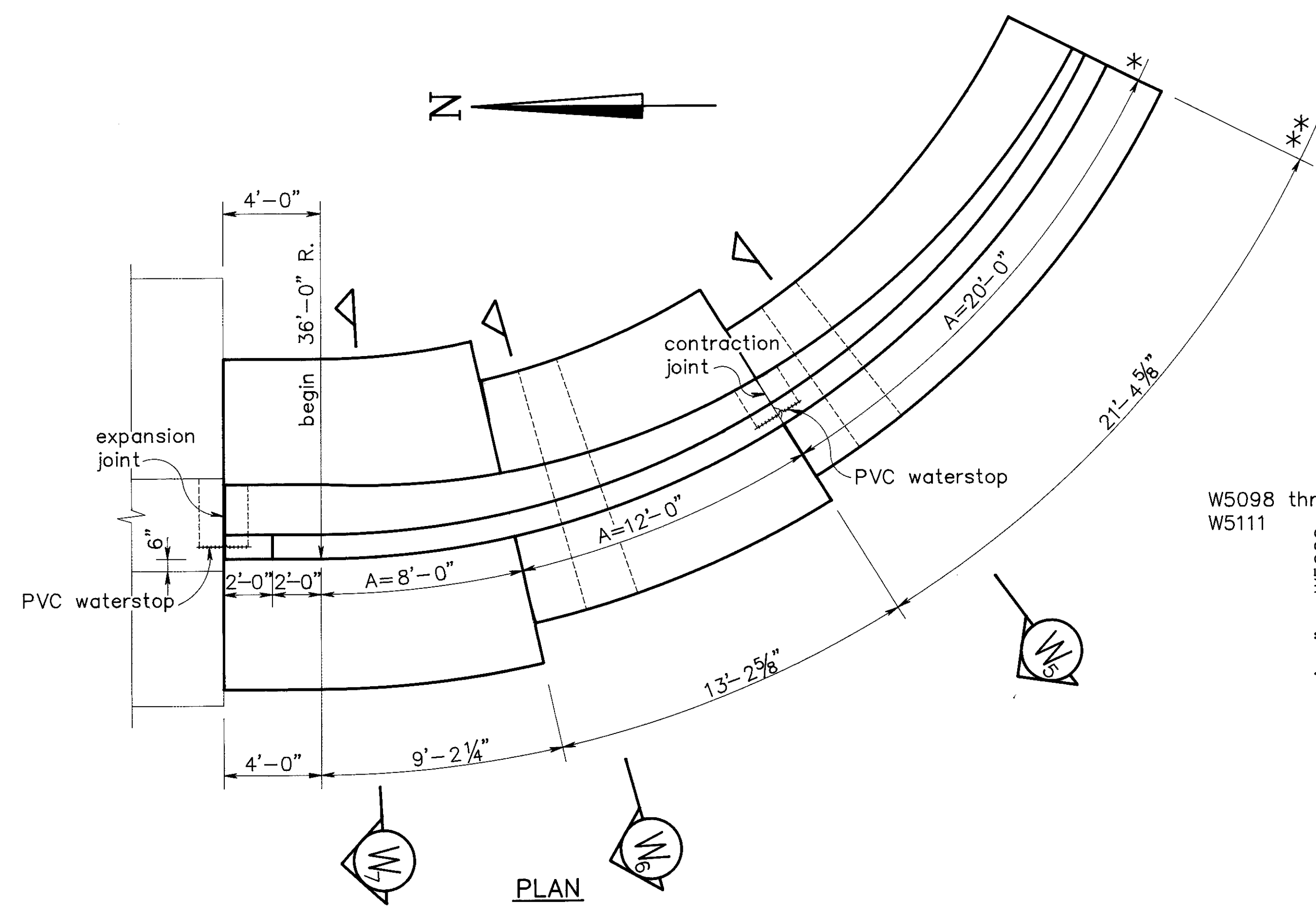


**SECTION A5-A5**

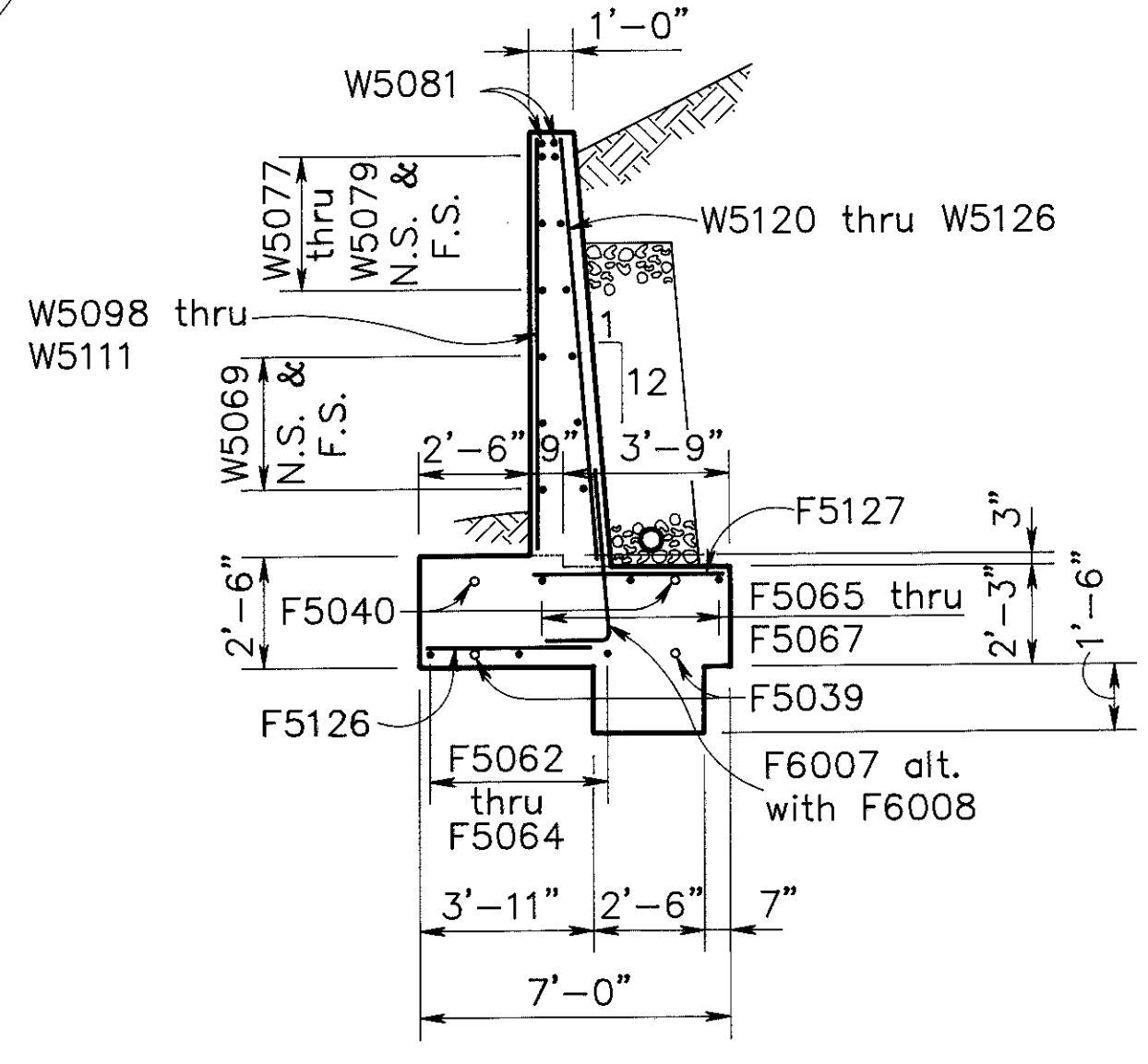
STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>EAST ABUTMENT DETAILS</b>						
BRIDGE NO. FRA-315-0061 SR 315 UNDER CONRAIL						
FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
VS	PF		WM	GWM	8/31/91	



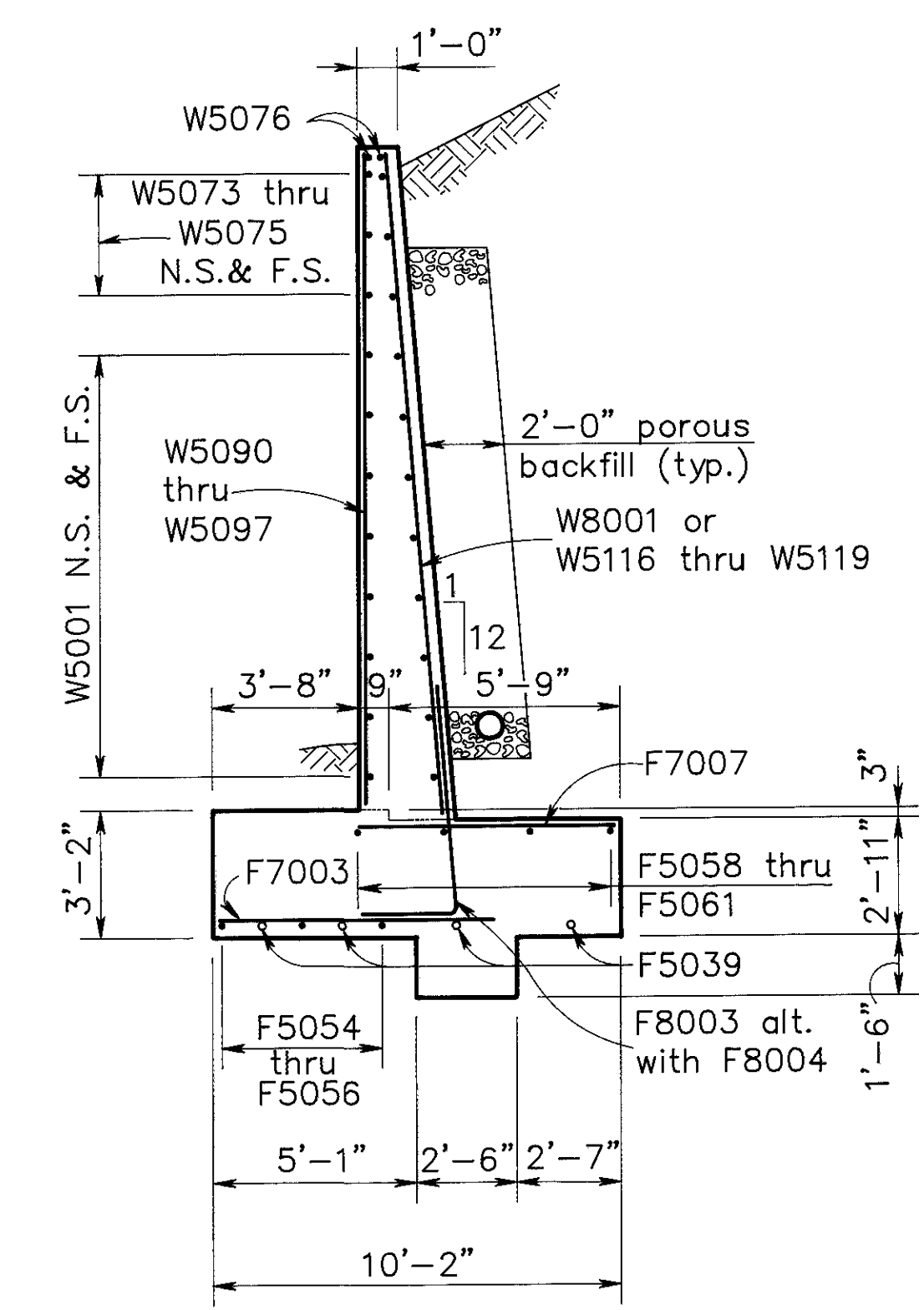




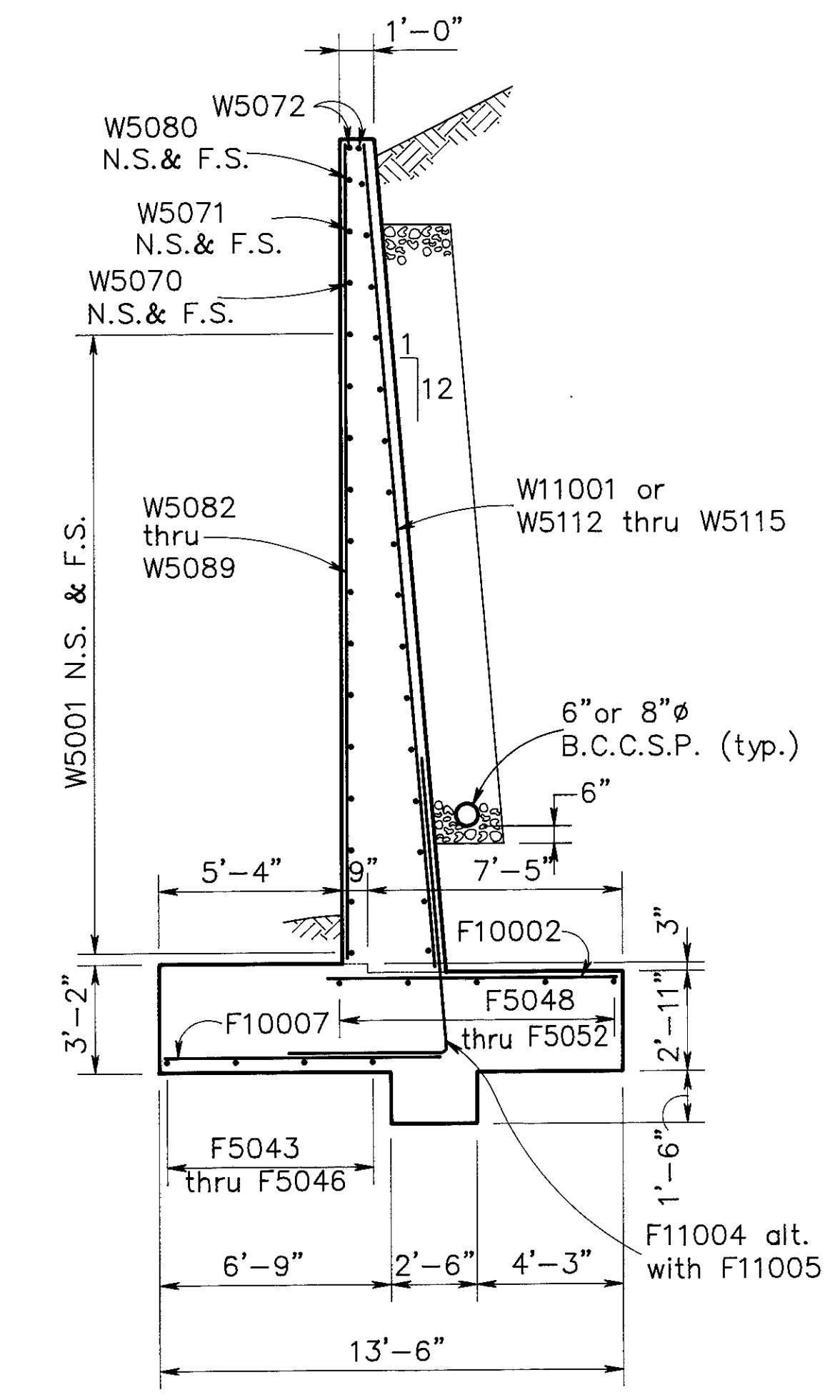
\* Along front face of wall  
\*\* Along front of footing



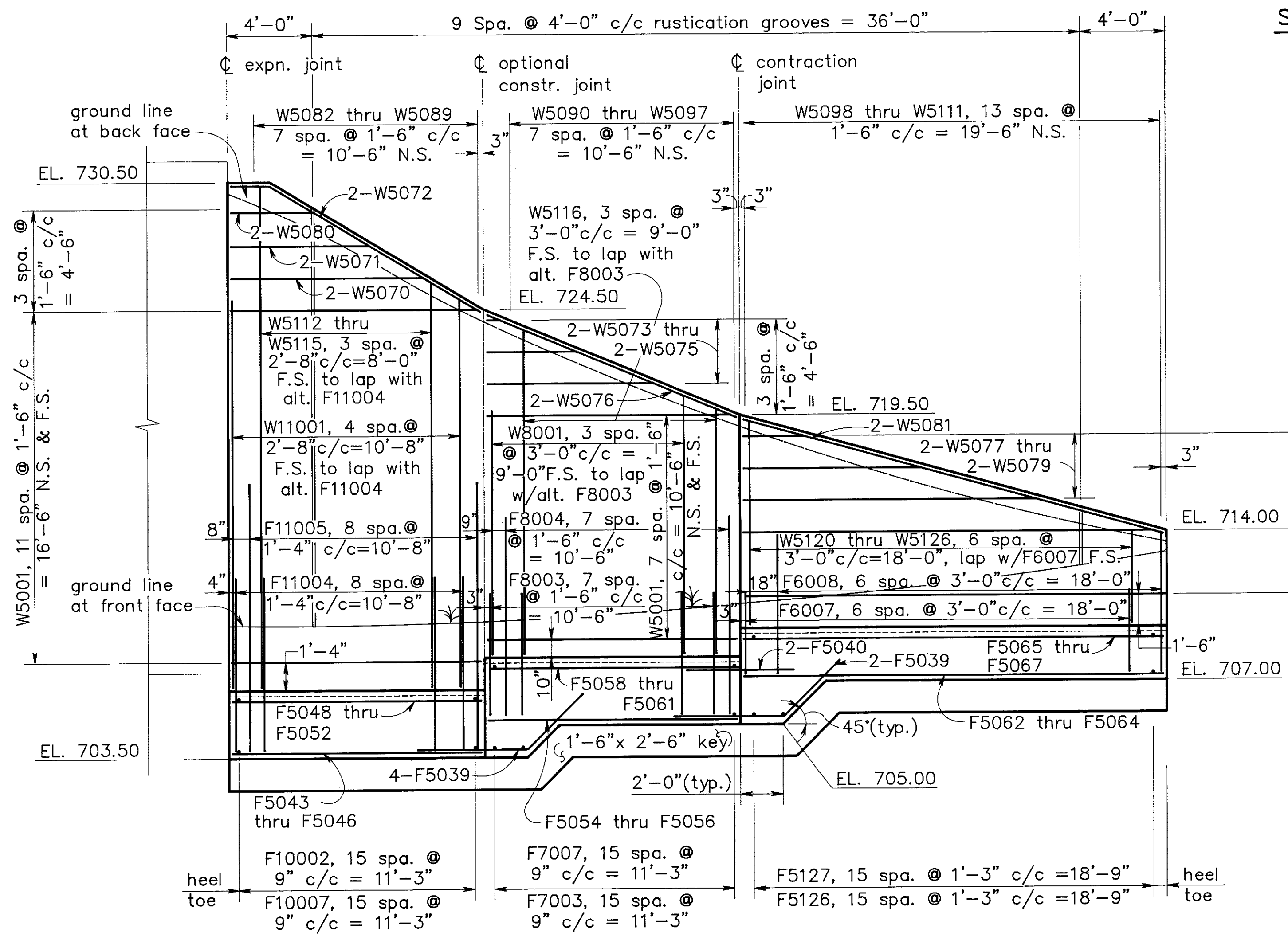
SECTION W5



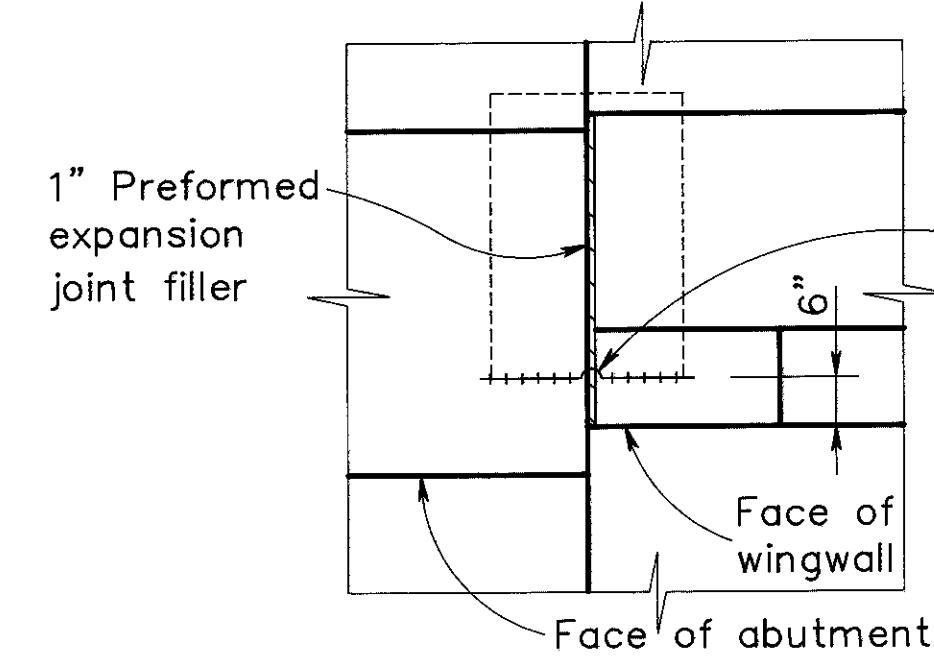
SECTION W6



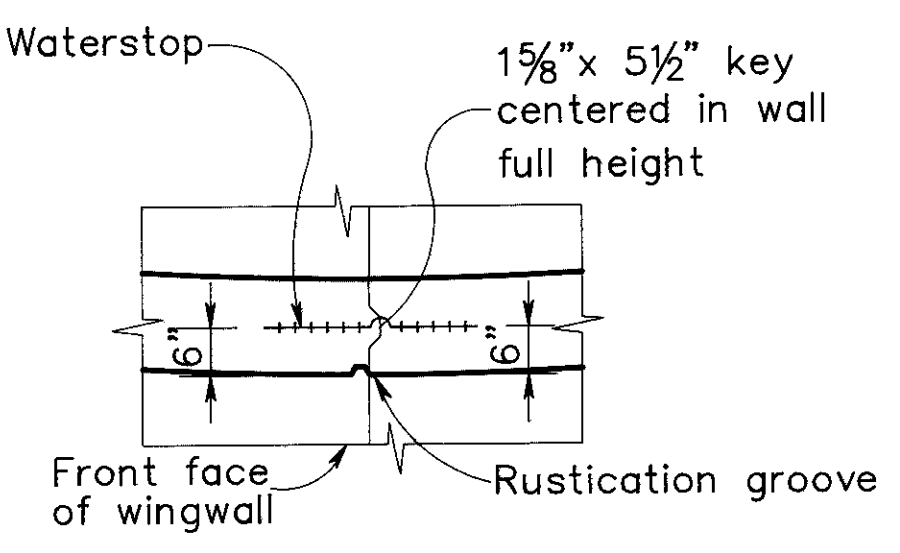
SECTION W7



DEVELOPED ELEVATION



EXPANSION JOINT DETAIL



CONTRACTION JOINT DETAIL

NOTES:

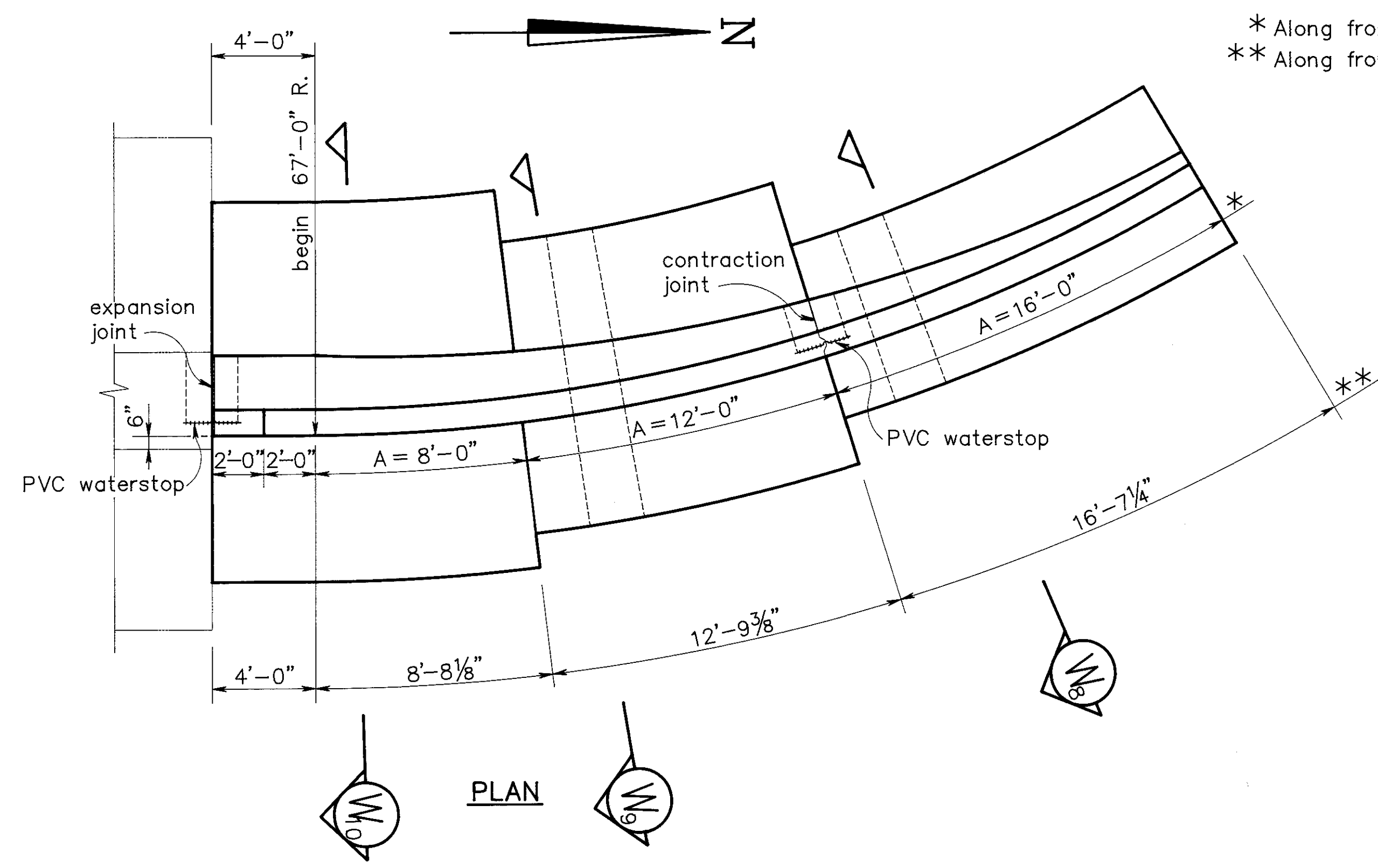
- In reinforcing callouts: N.S. indicates near side F.S. indicates far side
- In sections, the symbol indicates additional bars centered under joints.
- For PVC Waterstop detail, see sheet 10/20.
- For rustication groove detail, see sheet 9/20.
- For drainage details, see sheet 17/20.

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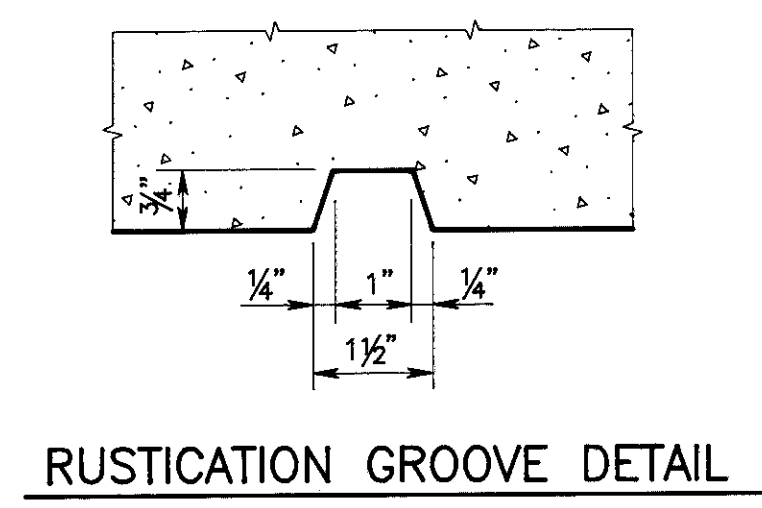
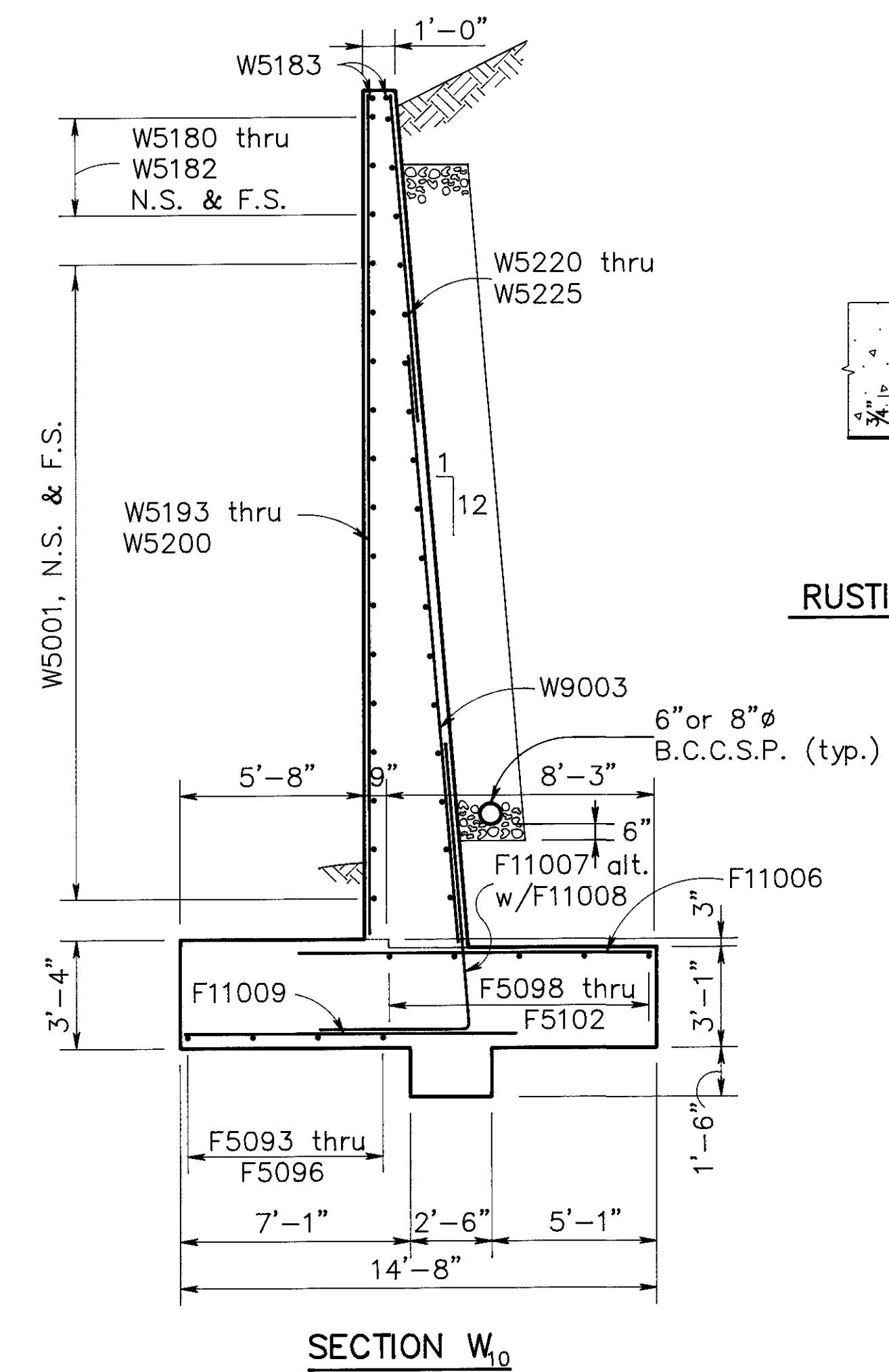
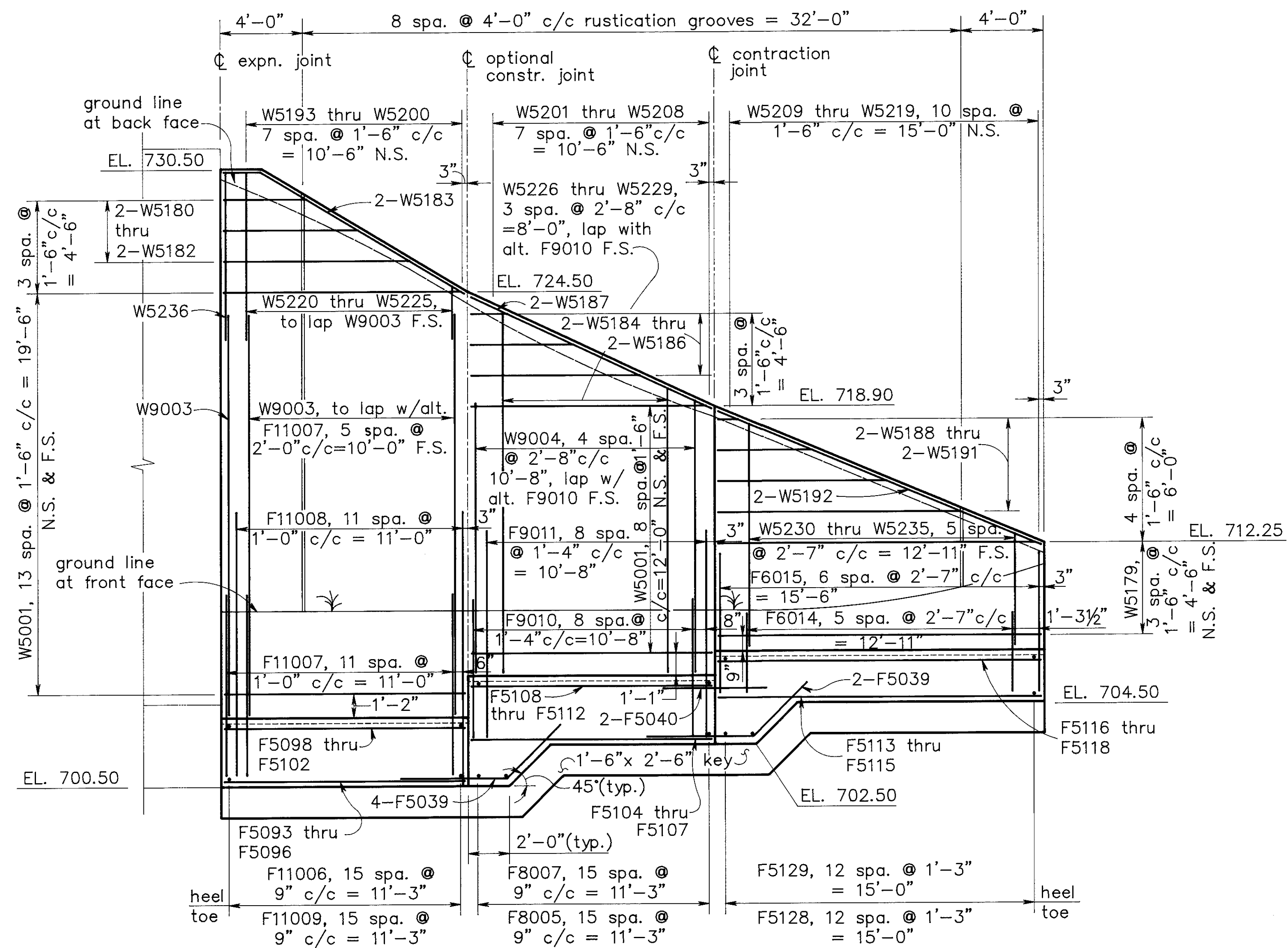
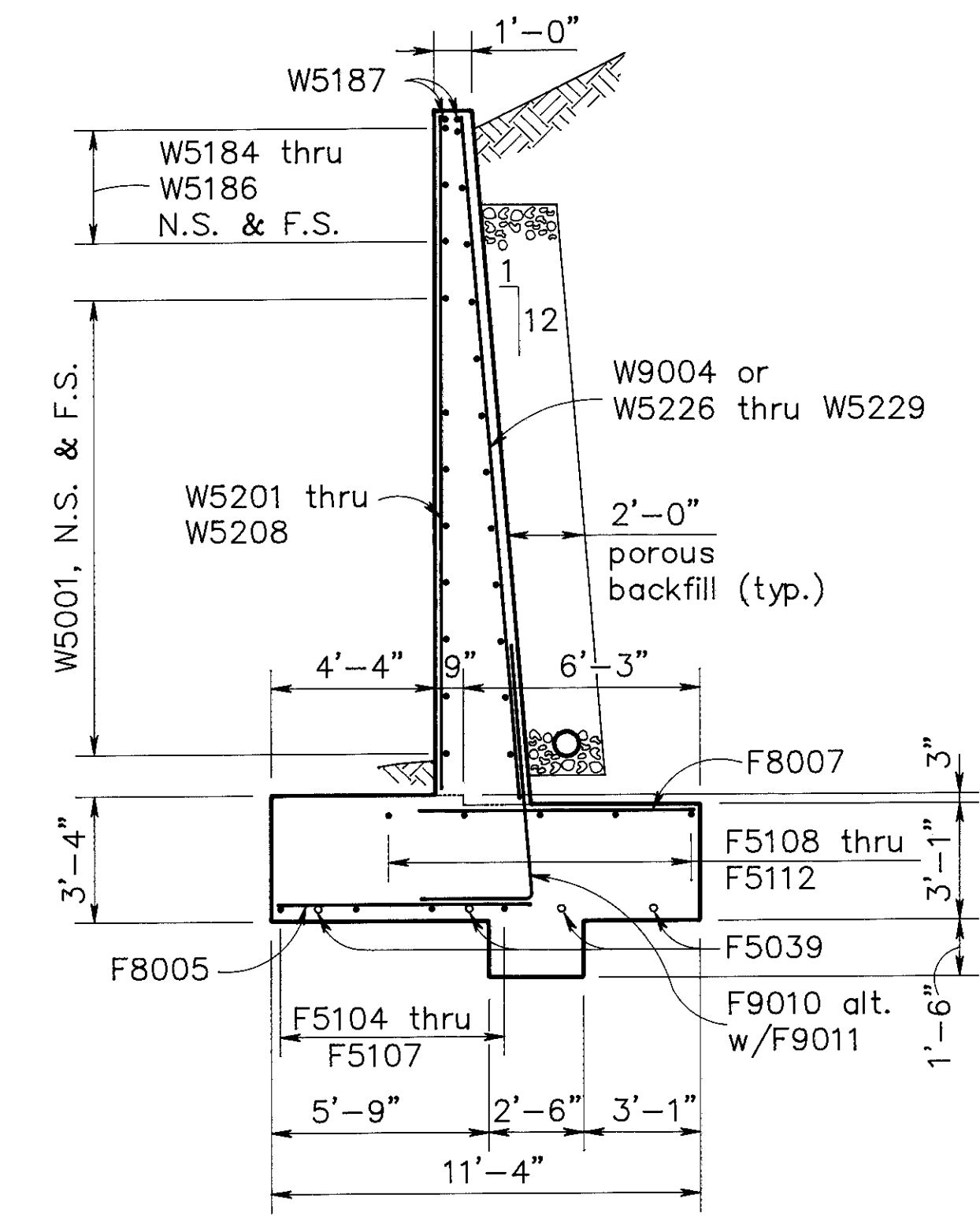
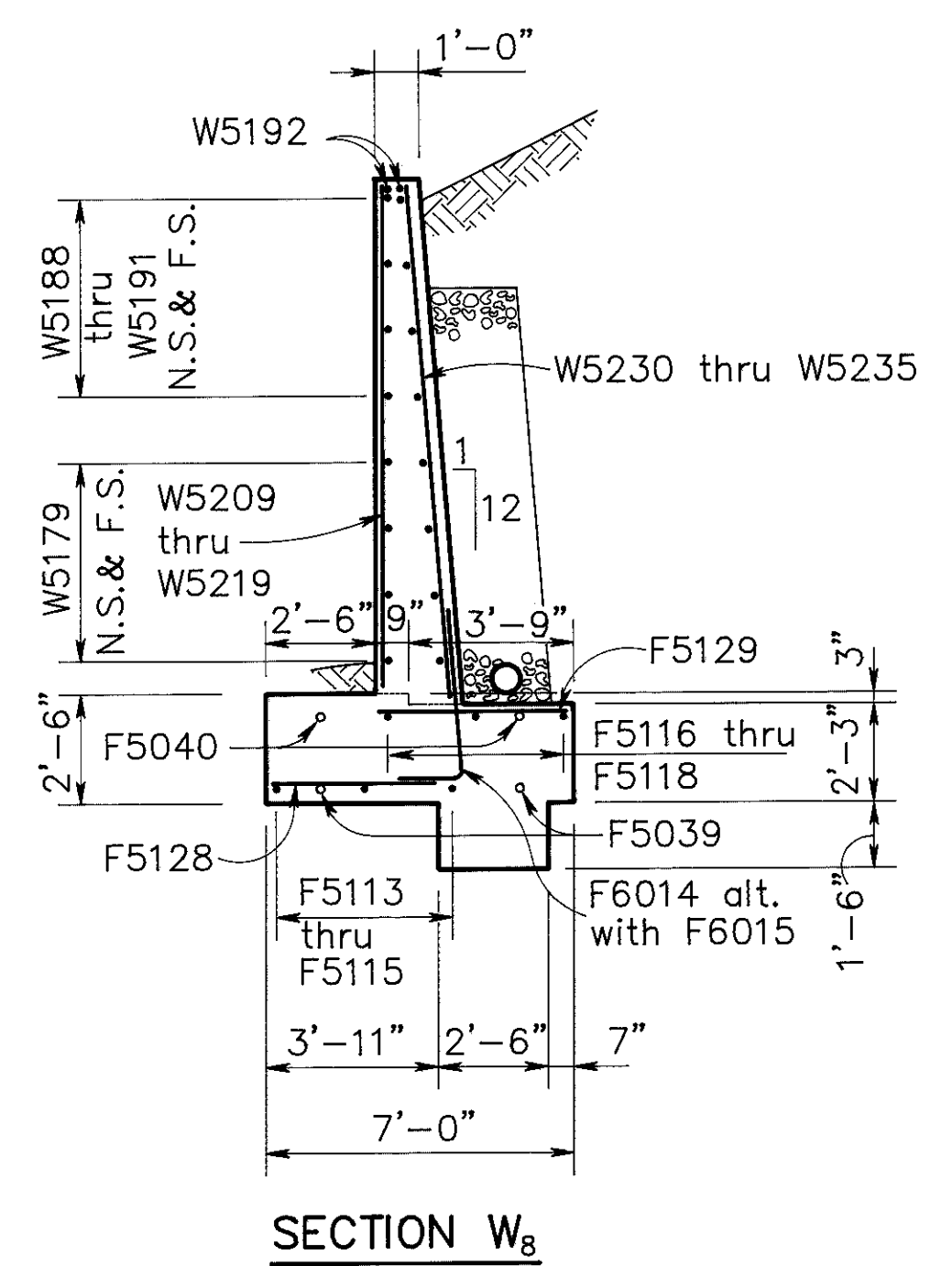
**SOUTHEAST WINGWALL**  
BRIDGE NO. FRA-315-0061  
SR 315 UNDER CONRAIL

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
1/5	PF		KM	GMM	8/21/91	



\* Along front face of wall  
\*\* Along front of footing



**NOTES:**  
 In reinforcing callouts: N.S. indicates near side F.S. indicates far side  
 In sections, the symbol ◦ indicates additional bars centered under joints.  
 For expansion joint detail and contraction joint detail, see sheet 8/20.  
 For PVC Waterstop detail, see sheet 10/20.  
 For drainage details, see sheet 17/20.

STILSON & ASSOCIATES, INC.  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

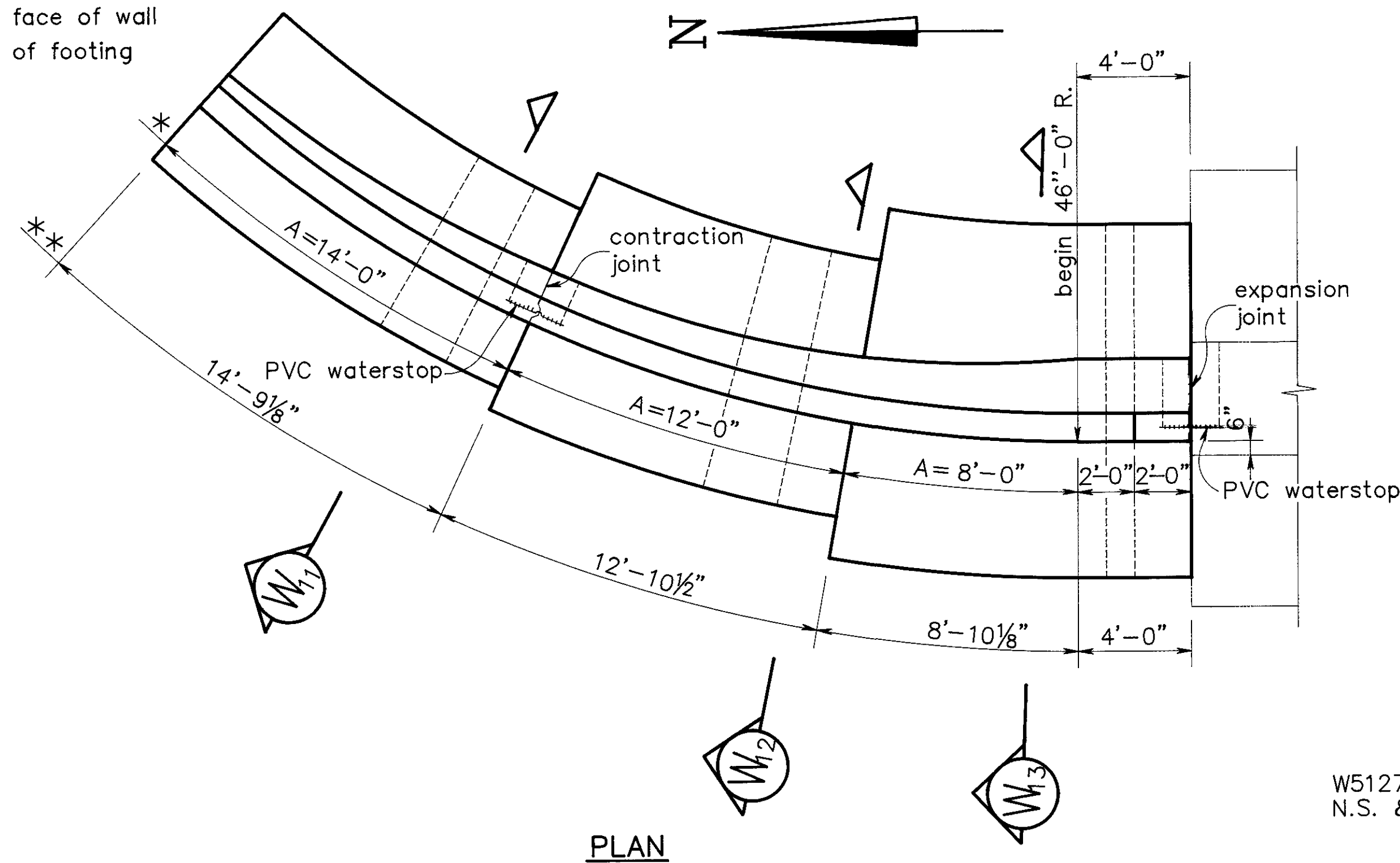
**NORTHWEST WINGWALL**  
 BRIDGE NO. FRA-315-0061  
 SR 315 UNDER CONRAIL

FRANKLIN COUNTY

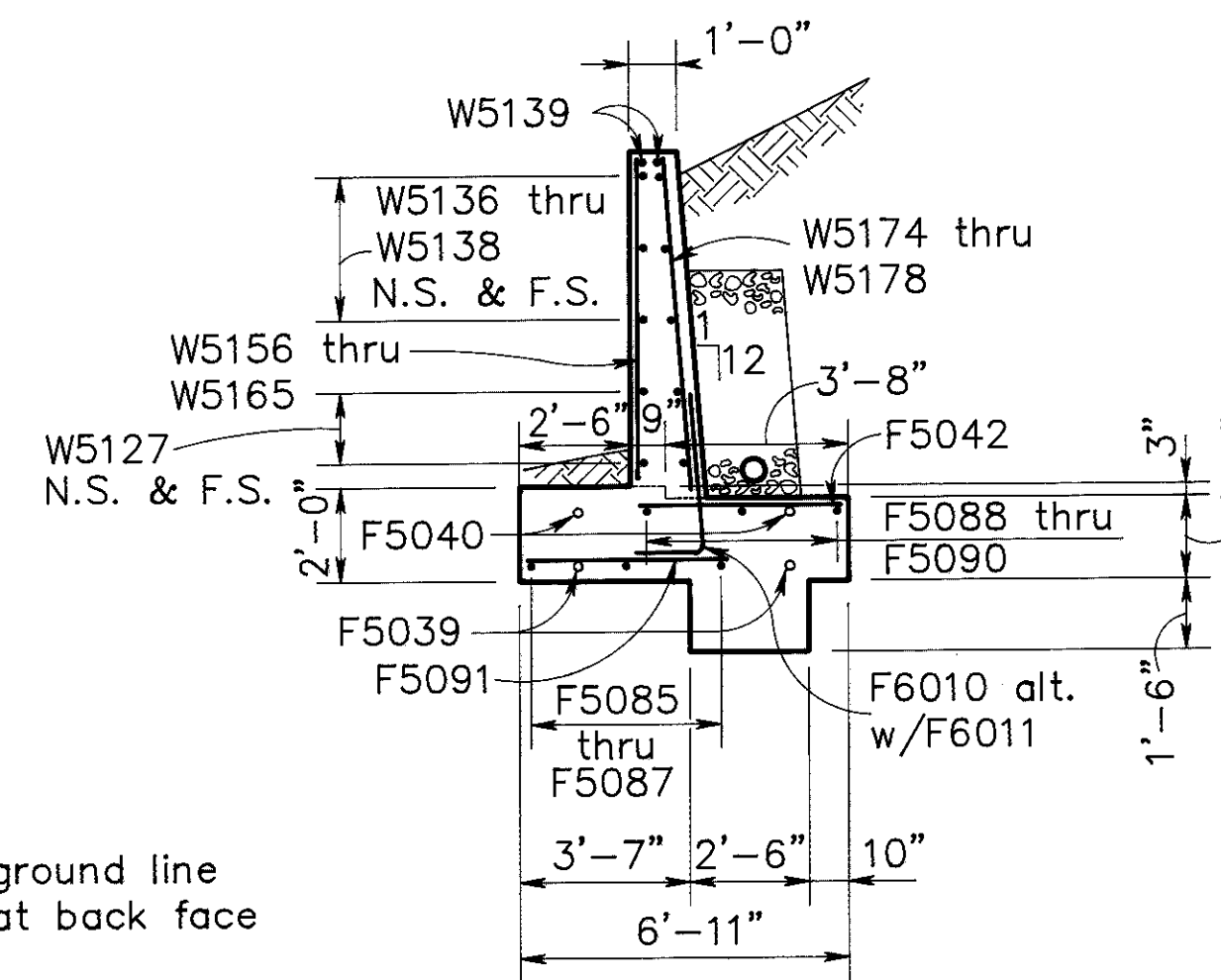
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
YB	PF		WM	GWM	8/31/91	



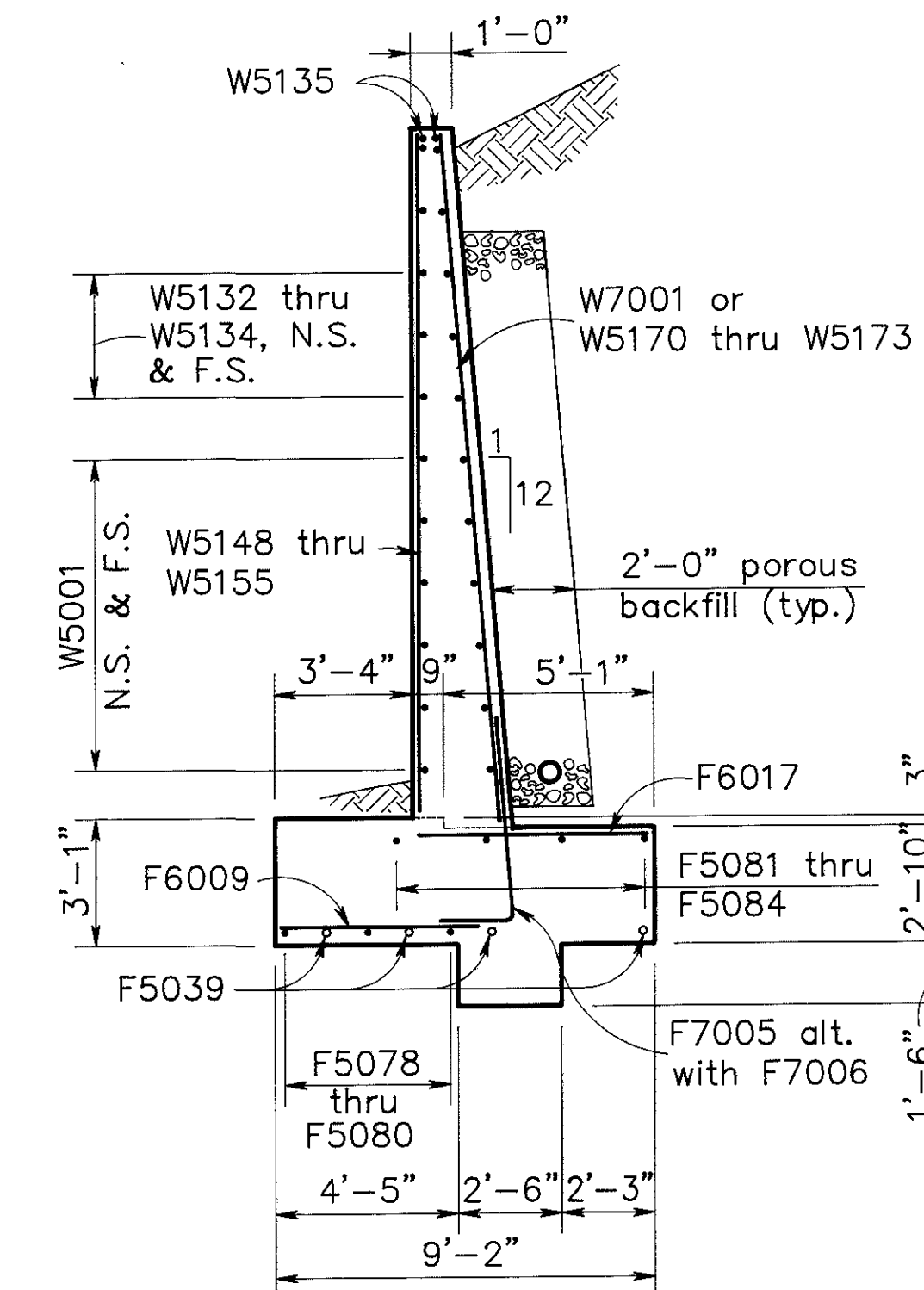
\* Along front face of wall  
 \*\* Along front of footing



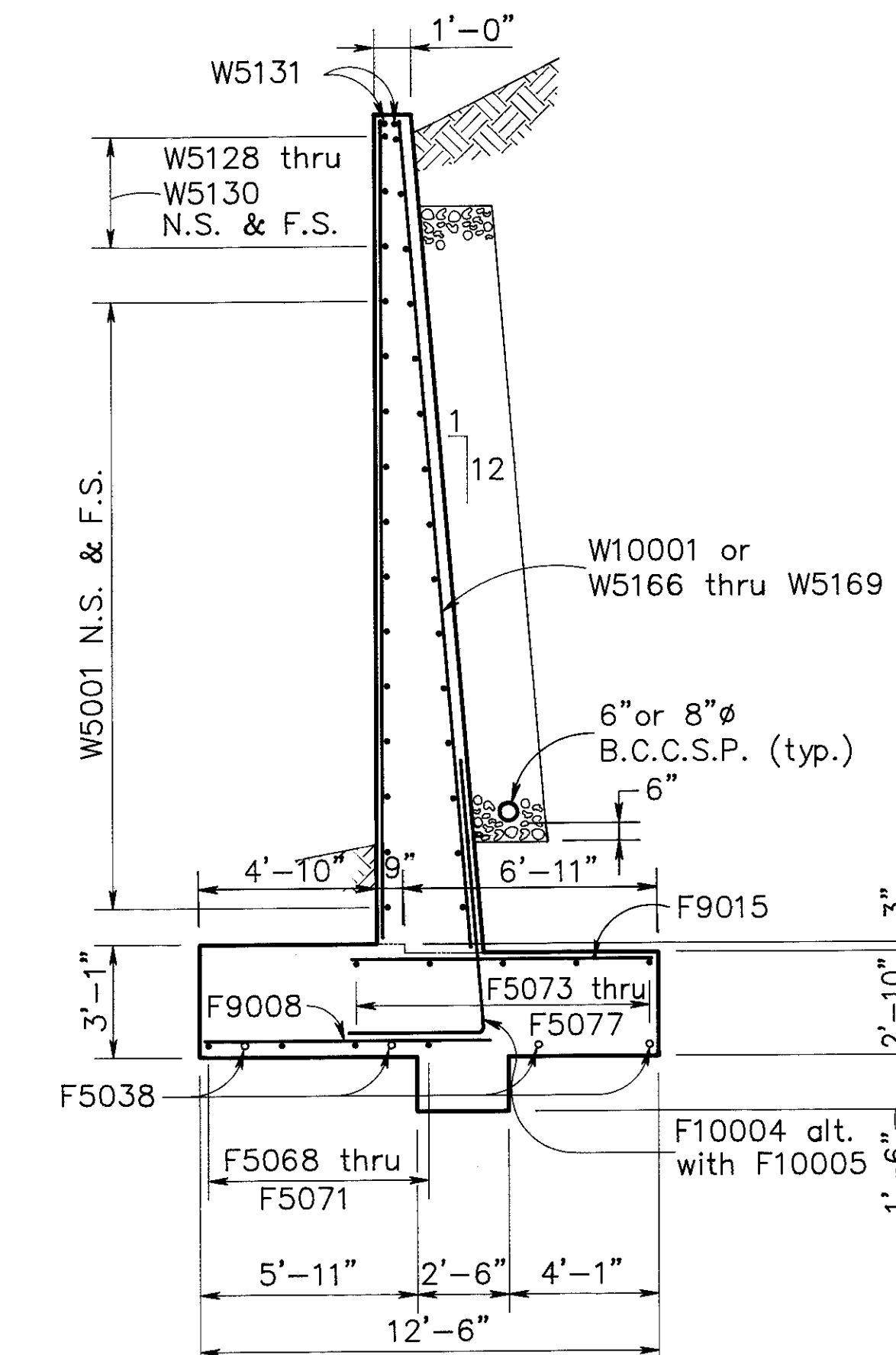
PLAN



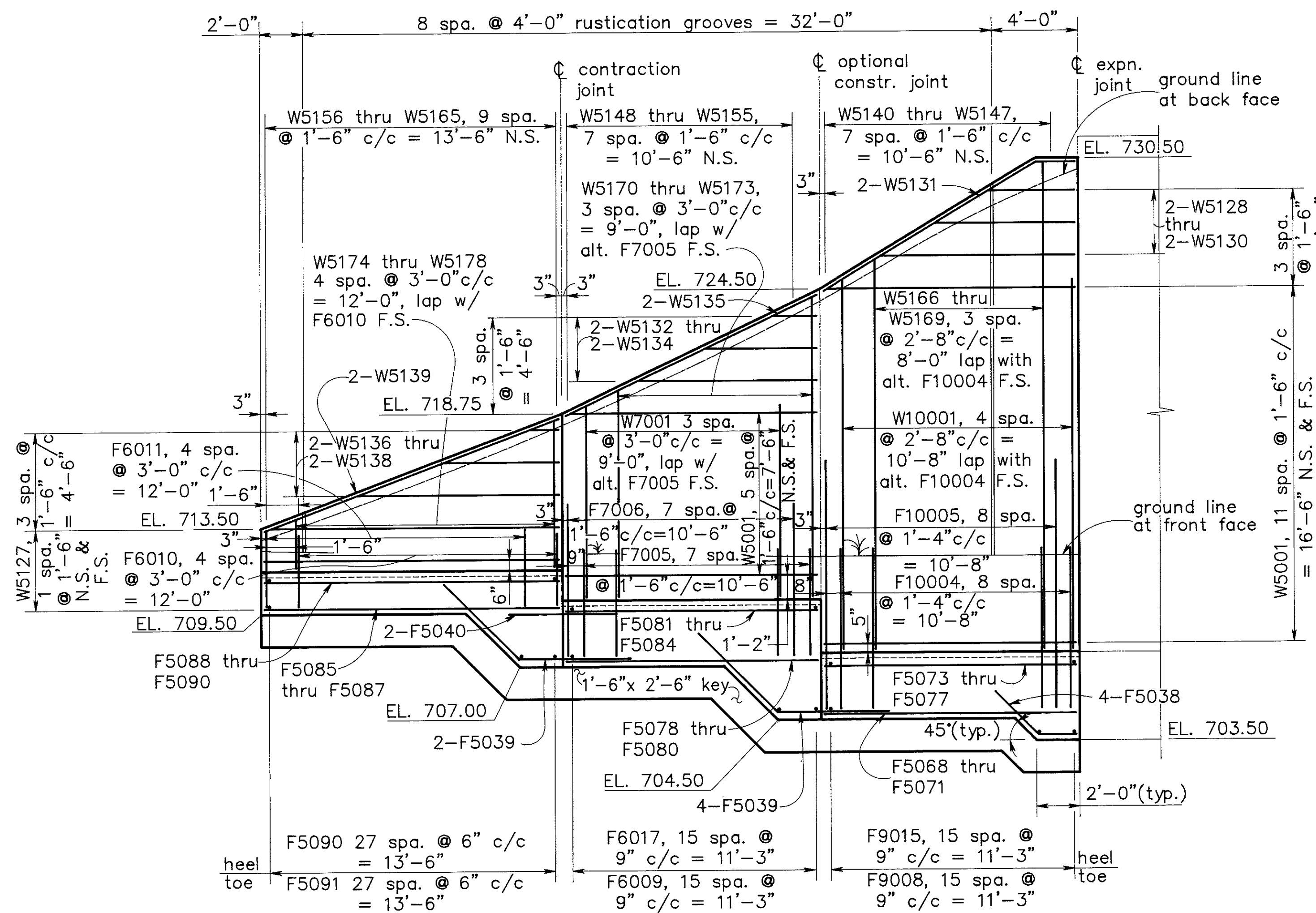
SECTION W<sub>11</sub>



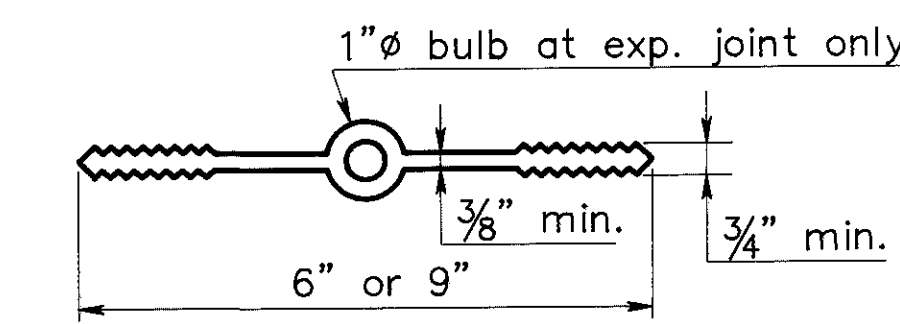
SECTION W<sub>12</sub>



SECTION W<sub>13</sub>



DEVELOPED ELEVATION



Construction and contraction joints...6"  
 Expansion joints...9"

PVC WATERSTOP DETAIL  
 Refer to notes this sheet

PVC WATERSTOP NOTES

1. THE WATERSTOPS SHALL BE OF THE SIZE AND GENERAL SHAPE SHOWN ON THE PLANS. THEY SHALL BE DENSE, HOMOGENOUS, AND WITHOUT HOLES OR OTHER DEFECTS.
2. MITERED SPLICES AT TEES AND ELLS SHALL BE MADE BY HEAT FUSING ENDS OF WATERSTOPS TO FORM A WATERTIGHT JOINT.
3. FOR THE FIRST POUR, THE WATERSTOP SHOULD BE HELD SECURELY IN PLACE BY THE USE OF SPLIT FORMS AND TIE-WIRES. FOR THE SECOND POUR, SECURE THE FREE END OF WATERSTOP IN PROPER POSITION WITH TIE-WIRES. ALTERNATE METHODS, AS APPROVED BY THE ENGINEER, MAY BE USED TO INSURE THE CORRECT POSITIONING OF THE WATERSTOP.

NOTES:

In reinforcing callouts:  
 N.S. indicates near side  
 F.S. indicates far side

In sections, the symbol • indicates additional bars centered under joints.

For expansion joint detail and contraction joint detail, see sheet 8/20.

For rustication groove detail, see sheet 9/20.

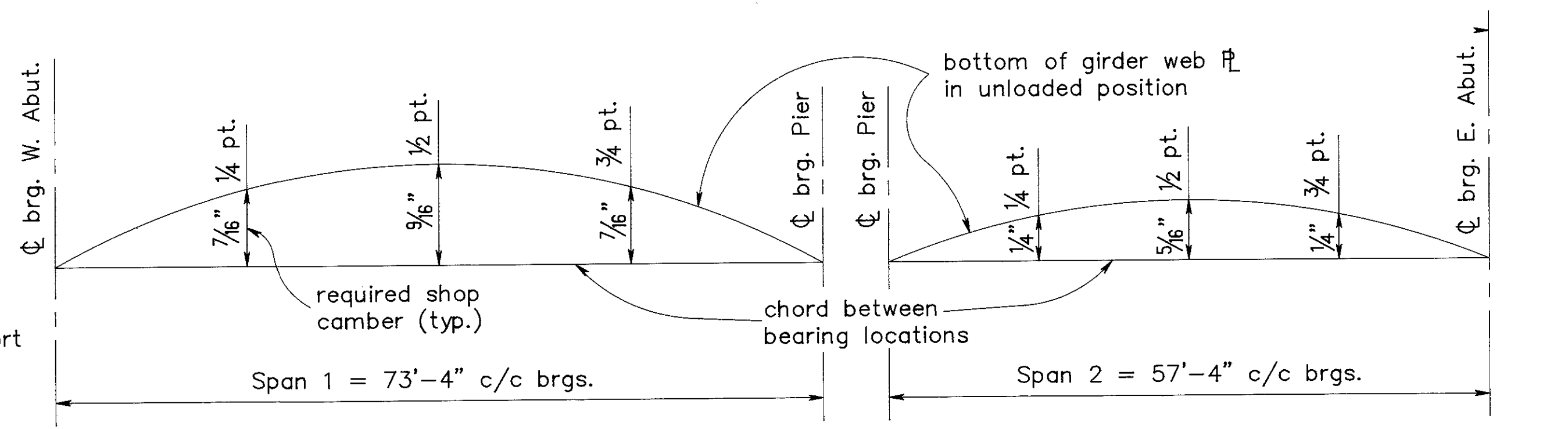
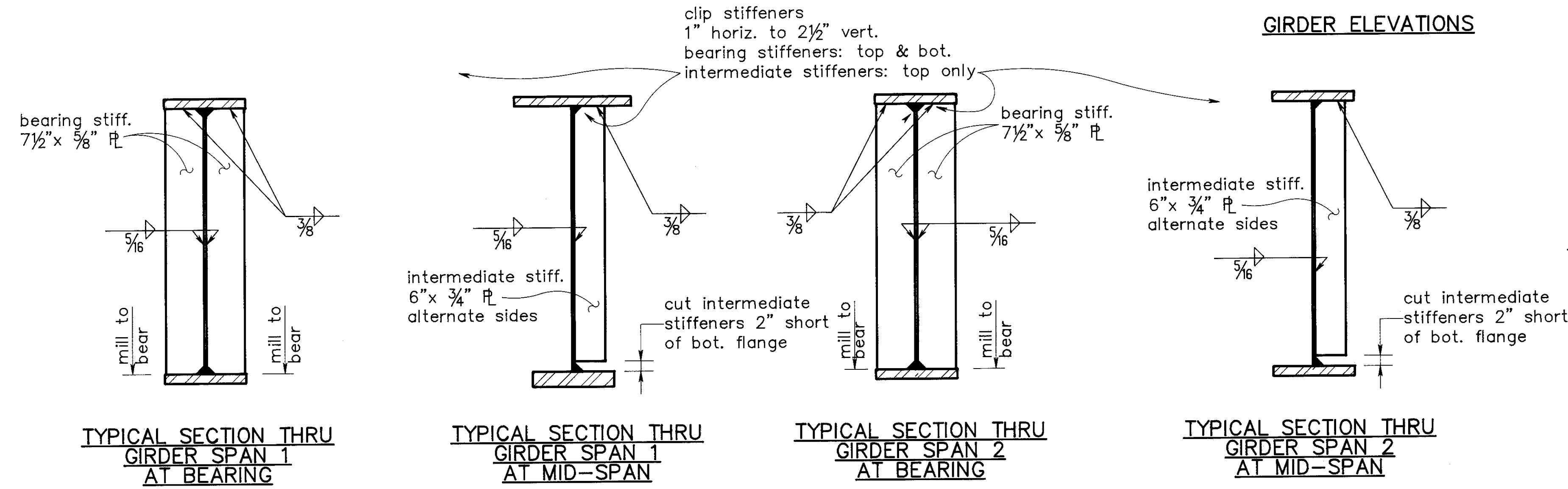
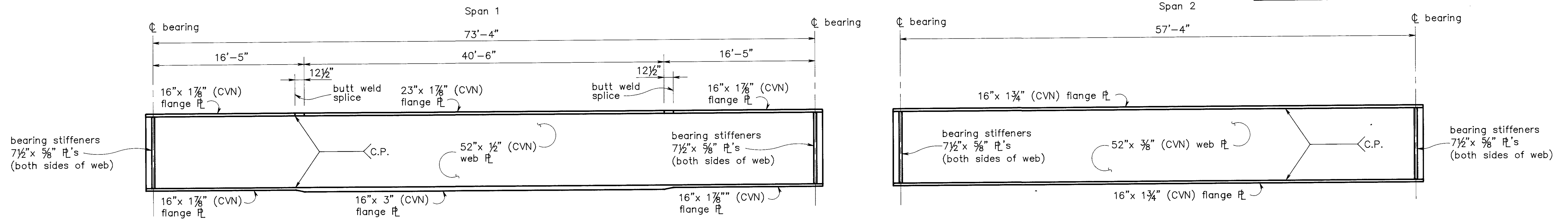
For drainage details, see sheet 17/20.

10/20						
STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>NORTHEAST WINGWALL</b>						
BRIDGE NO. FRA-315-0061						
SR 315 UNDER CONRAIL						
FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JS	PF		WM	GWM	8/8/14	









CAMBER DIAGRAMS

NOTES:

Optional shop web splices shall be located a minimum of 3'-0" from shop flange splice locations, and a minimum of 6" from stiffener locations.

For intermediate stiffener locations see Framing Plan sheet 12/20.

Bearing stiffeners shall be placed in pairs, set vertical, and welded to the top flange.

All stiffeners shall be clipped at the corners to clear the web-to-flange welds.

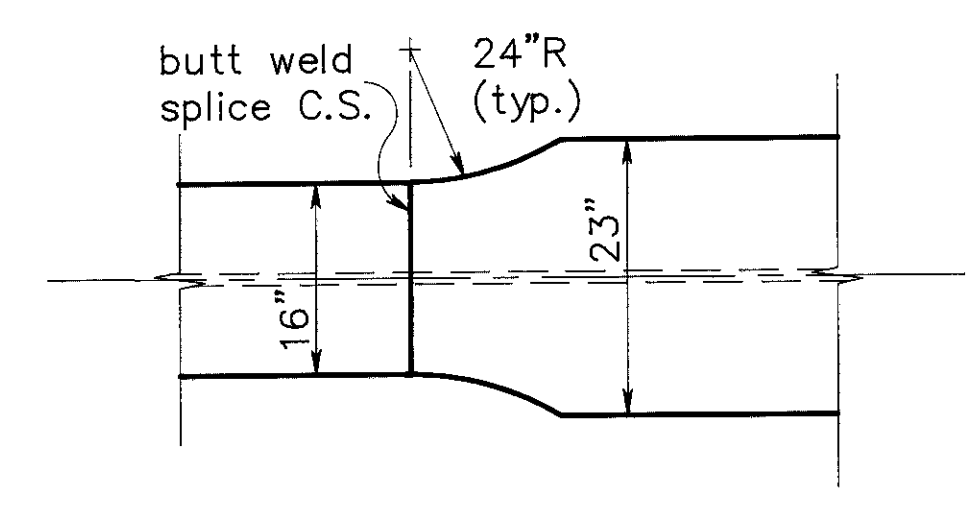
Grinding of shop welds: All butt welds shall be ground flush. Grinding shall be done in the direction of stress.

C.P. indicates complete penetration weld.

All web-to-flange welds shall be complete penetration.

Where a plate is designated (CVN), the material shall meet specified minimum notch toughness requirements as specified in ODOT CMS Item 711.01.

C.S. indicates weld subject to compressive stresses only



PART PLAN OF TOP FLANGE (Showing flange transition from 16" to 23" width)

GIRDER DESIGN SCHEDULE

SPECIFICATIONS: Superstructure - A.R.E.A. 1990  
Substructure - AASHTO 1989

DESIGN LOADING: Cooper E-80 with Diesel Impact

DESIGN SPEED: 50 mph

GIRDER SPACING: 3'-6" c/c

DESIGN DEAD LOAD: Rails & fastenings, ties, steel deck plate, asphalt sand, ballast (including 6" additional), concrete parapets & supports, railing and structural steel.

IMPACT: SPAN 1 = 52%      SPAN 2 = 56%

W. Abut.	73'-4"	Pier	57'-4"	E. Abut.
	1/2 pt.		1/2 pt.	

**SHEAR:**

DL -	64 *	64 *	47 *	47 *
LL -	115	115	95	95
I -	61	61	53	53
TOTALS	240 *	240 *	195 *	195 *

**MOMENTS:**

DL -	1167 *	670 *
LL -	1855	1200
I -	977	674
TOTALS	3999 *	2544 *

GIRDER SECTIONS:

	Span 1			Span 2		
	End	Center	End	End	Center	End
Top Flange	1 7/8" x 16"	1 7/8" x 23"	1 7/8" x 16"	1 3/4" x 16"	1 3/4" x 16"	1 3/4" x 16"
Web	1/2" x 52"	1/2" x 52"	1/2" x 52"	3/8" x 52"	3/8" x 52"	3/8" x 52"
Bottom Flange	1 7/8" x 16"	3" x 16"	1 7/8" x 16"	1 3/4" x 16"	1 3/4" x 16"	1 3/4" x 16"
I Gross	49414 in <sup>4</sup>	73384 in <sup>4</sup>	49414 in <sup>4</sup>	44855 in <sup>4</sup>	44855 in <sup>4</sup>	44855 in <sup>4</sup>
<b>f<sub>t</sub> Tension</b>						
Actual		18.11 ksi			18.88 ksi	
Allowable		20.00 ksi			20.00 ksi	
<b>f<sub>c</sub> Compression</b>						
Actual		19.14 ksi			18.88 ksi	
Allowable		20.00 ksi			20.00 ksi	
<b>Shear in Web @ Bearings</b>						
Actual		9.21 ksi			10.02 ksi	
Allowable		12.50 ksi			12.50 ksi	
<b>Fatigue Stress Range @ 1/2 pt.</b>						
Max. Positive Moment		3999 *			2544 *	
Min. Positive Moment		1167 *			674 *	
<b>Actual Stress Range</b>		12.83 ksi			13.90 ksi	
<b>Allowable Stress Range</b>		26.00 ksi			26.00 ksi	

13/20

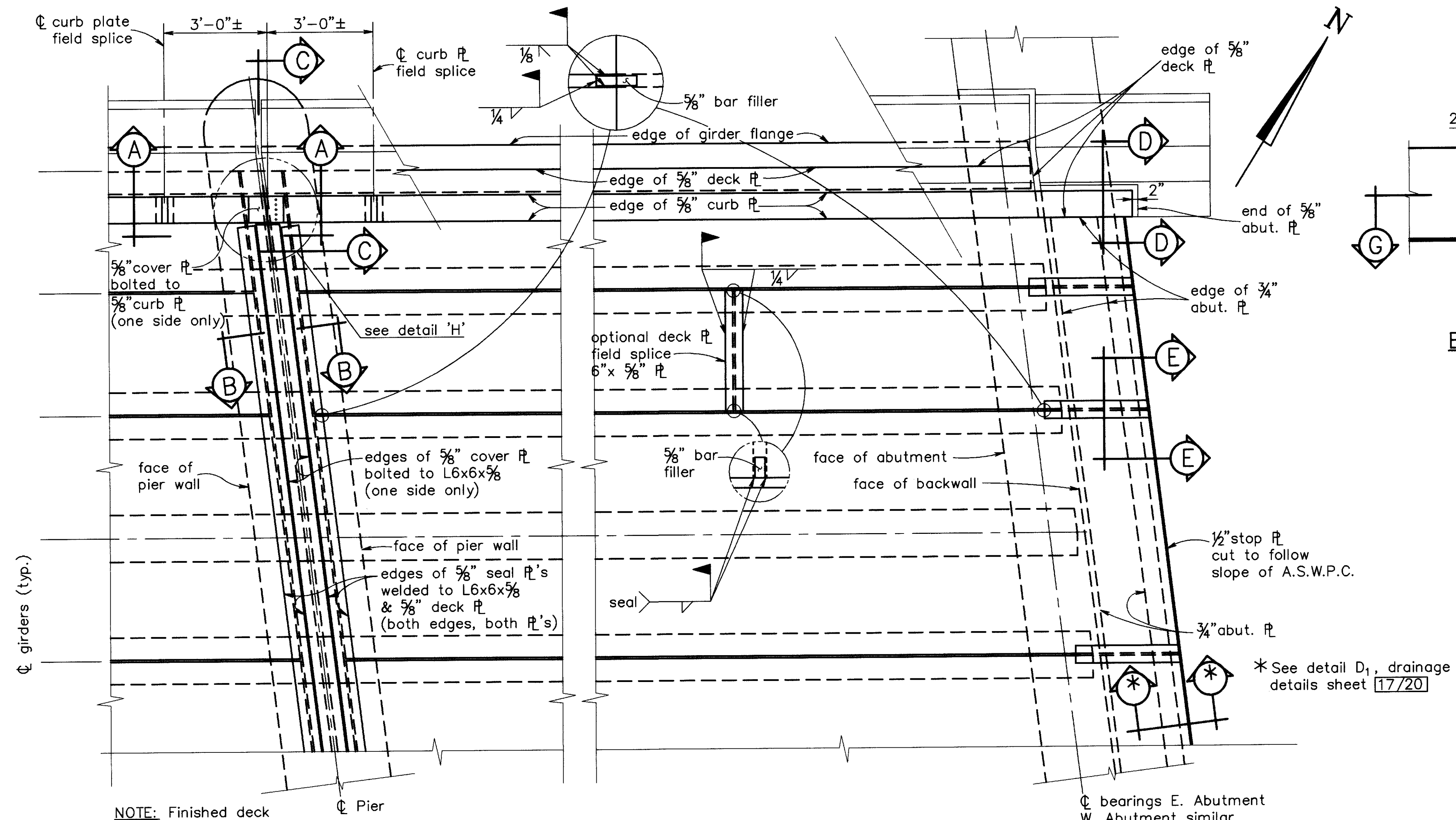
STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**SUPERSTRUCTURE DETAILS**

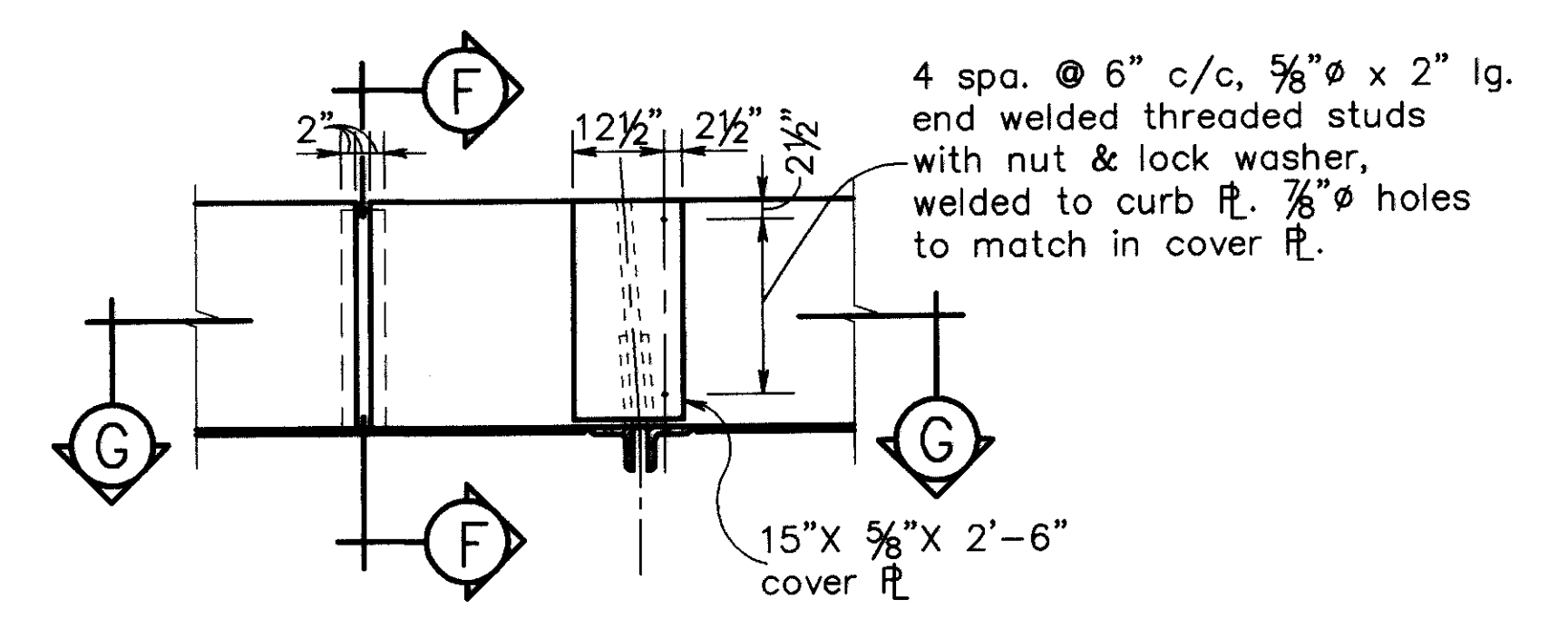
BRIDGE NO. FRA-315-0061  
SR 315 UNDER CONRAIL

FRANKLIN COUNTY

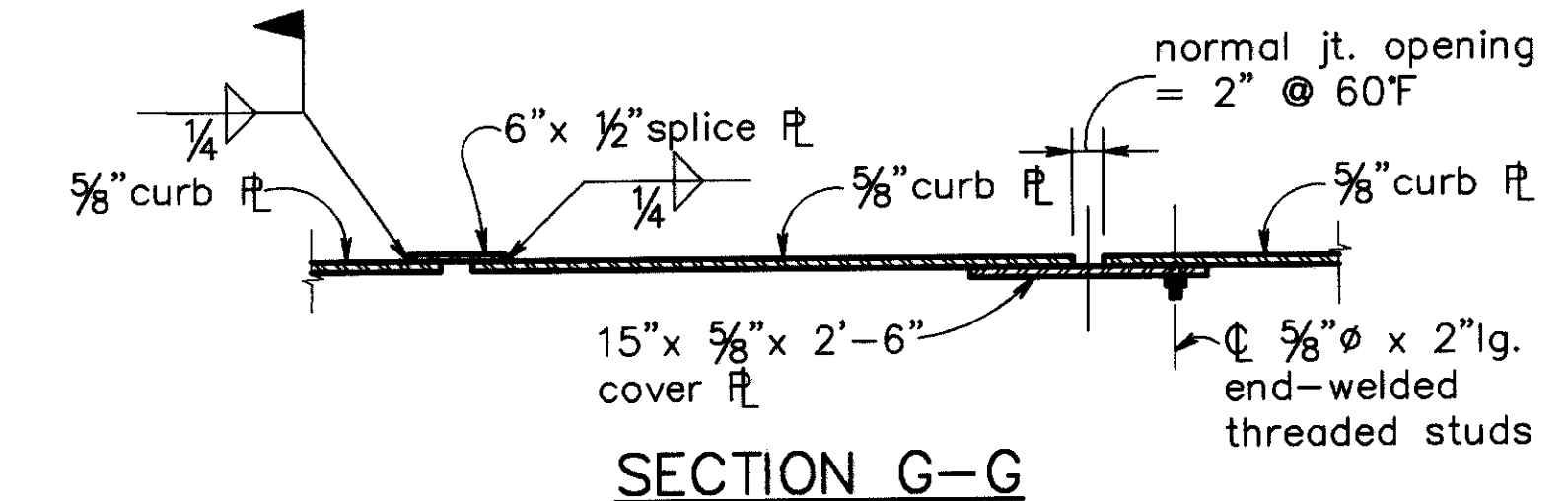
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
JS	PF		NM	GWM	8/2/91	



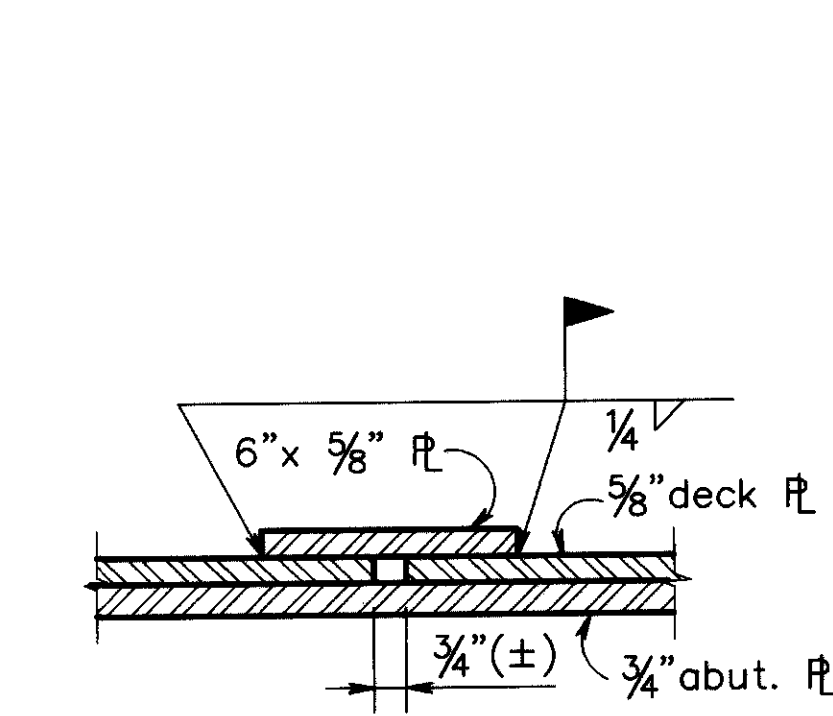
**PARTIAL DECK PLATE PLAN**



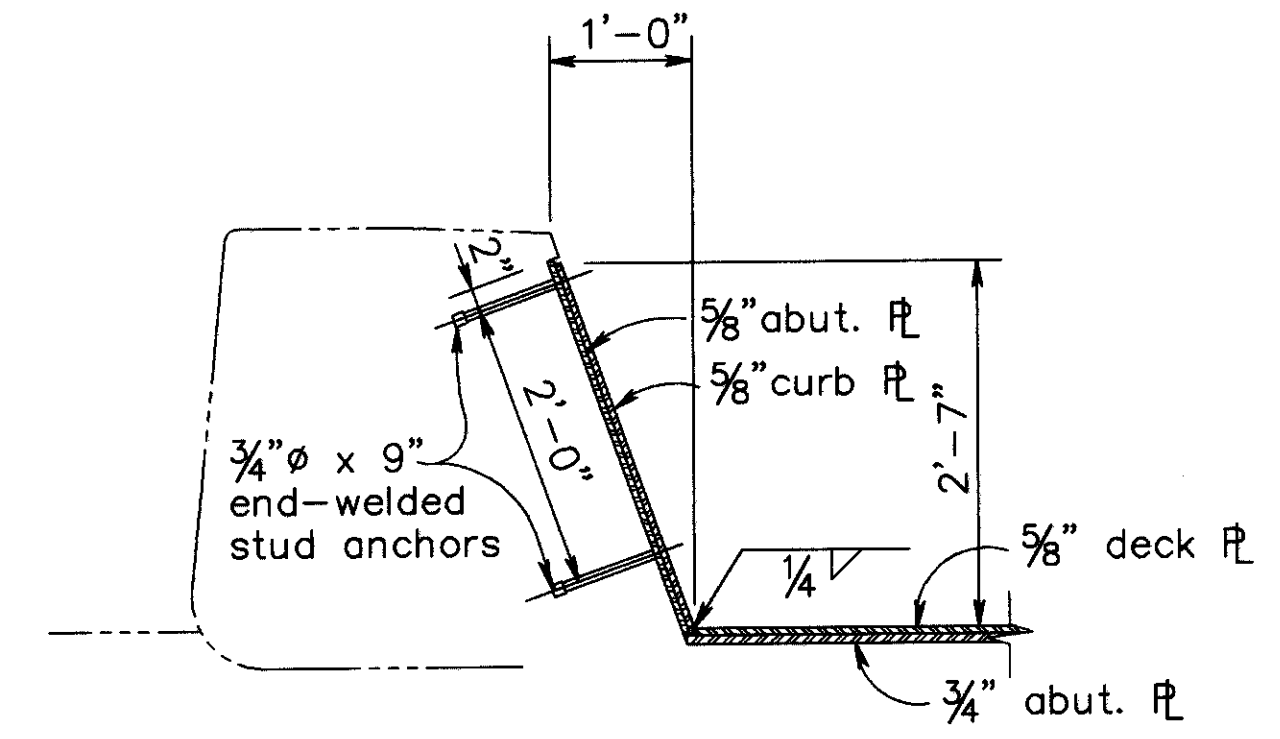
**ELEVATION A-A**



**SECTION G-G CURB PLATE DETAILS**

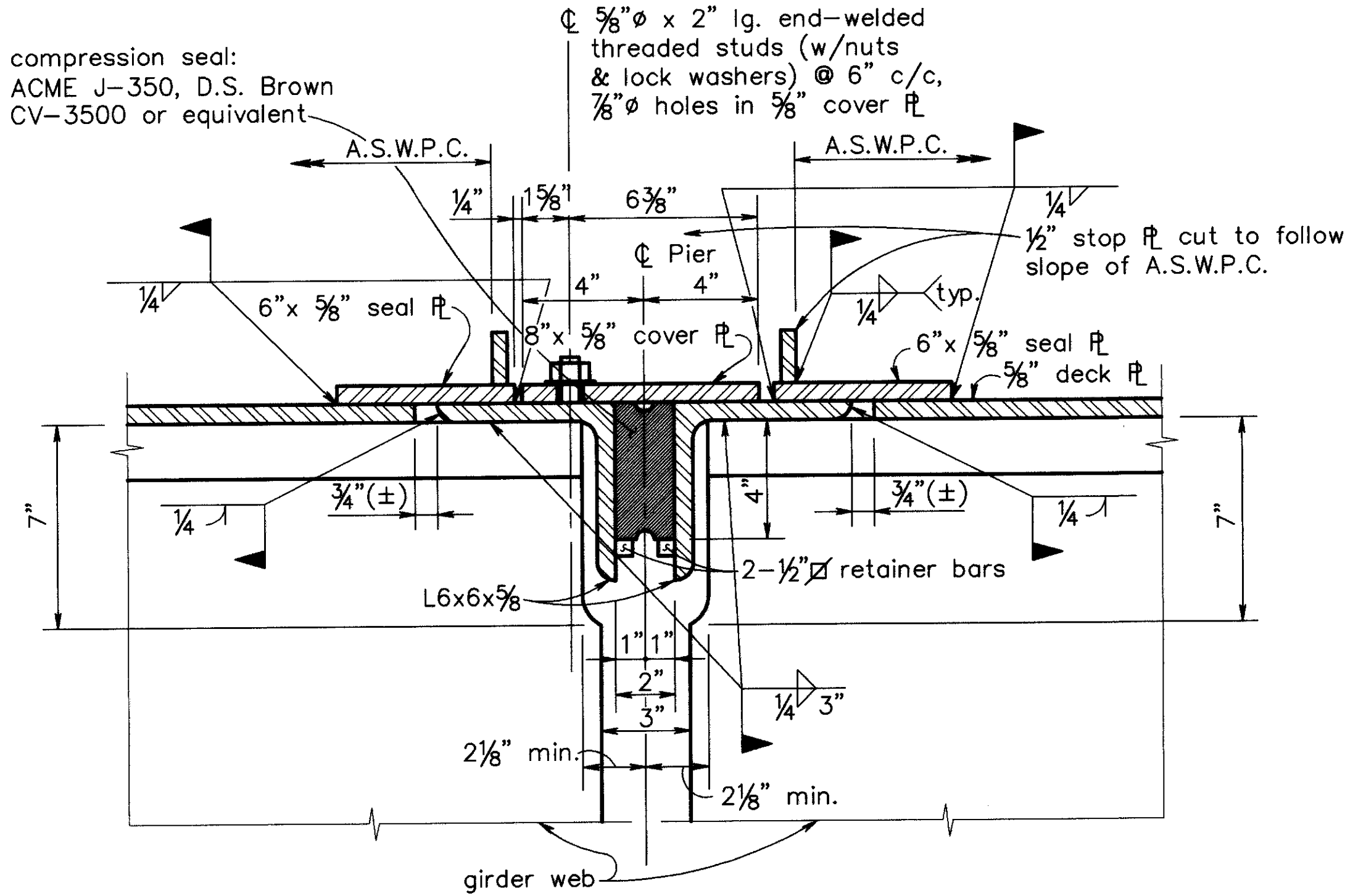


**SECTION E-E**



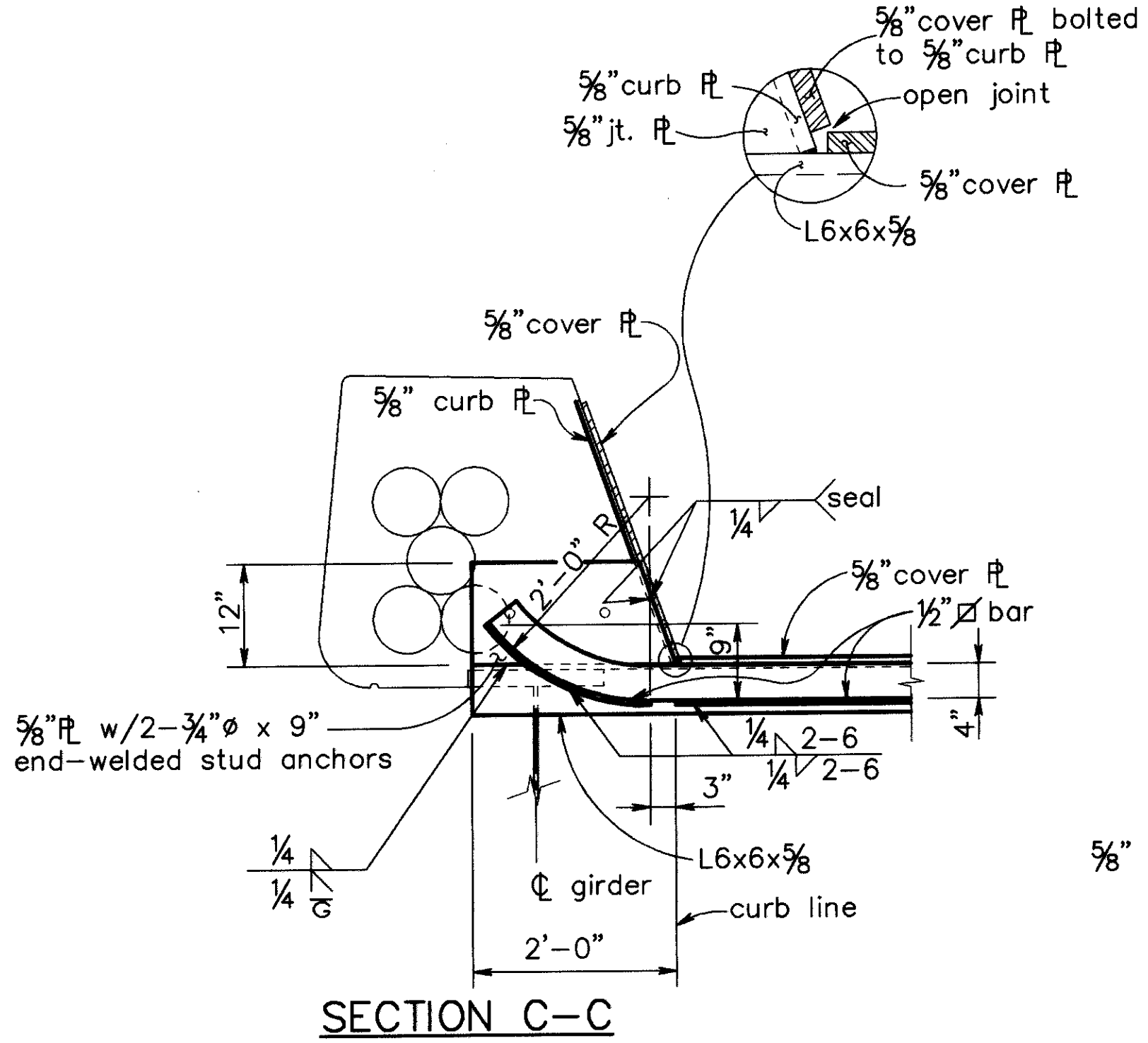
**SECTION D-D**

**PLATE DETAILS AT ABUTMENTS**

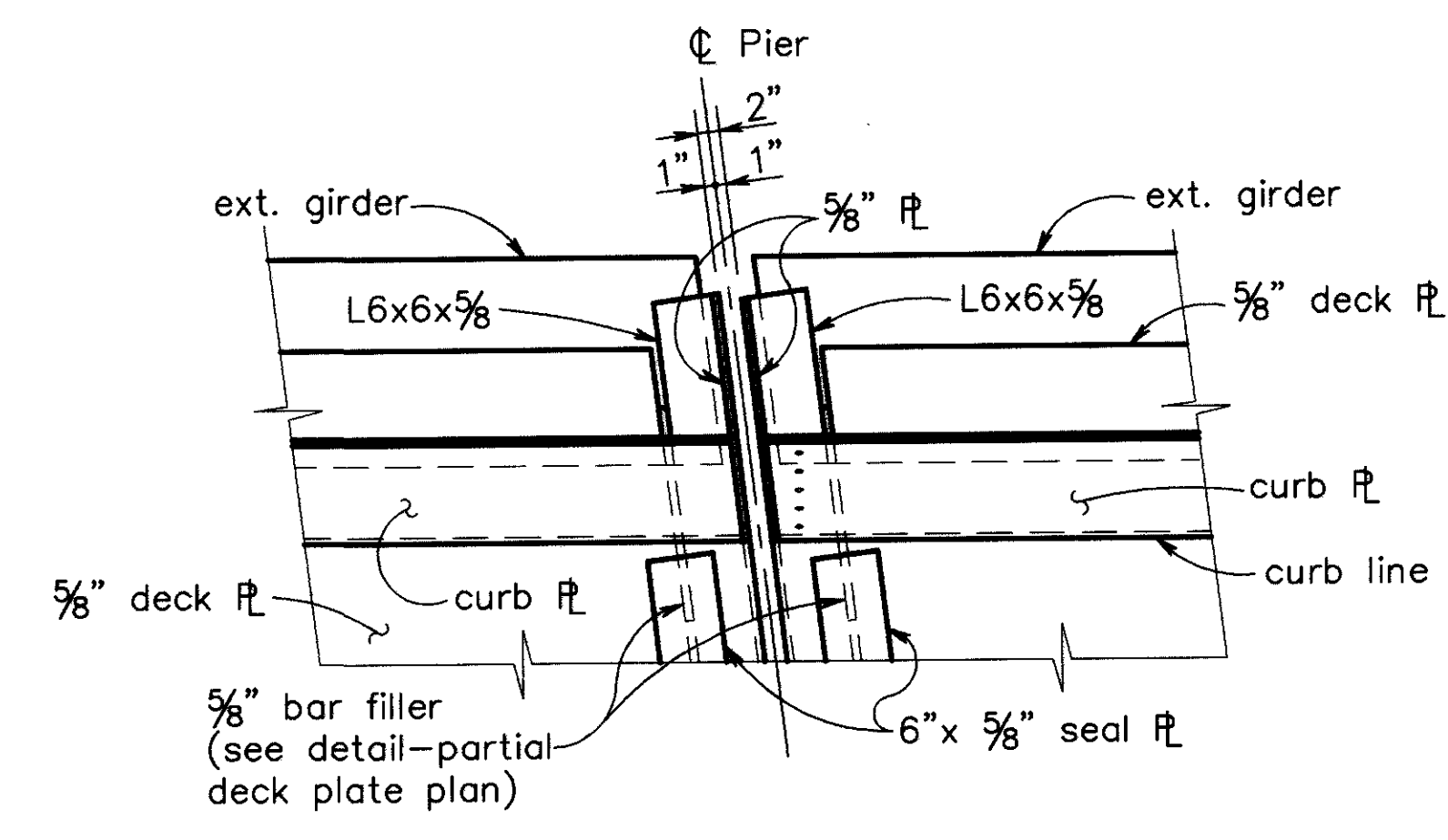


**SECTION B-B**

**COMPRESSION SEAL DETAILS AT FIXED JOINT OVER PIER**



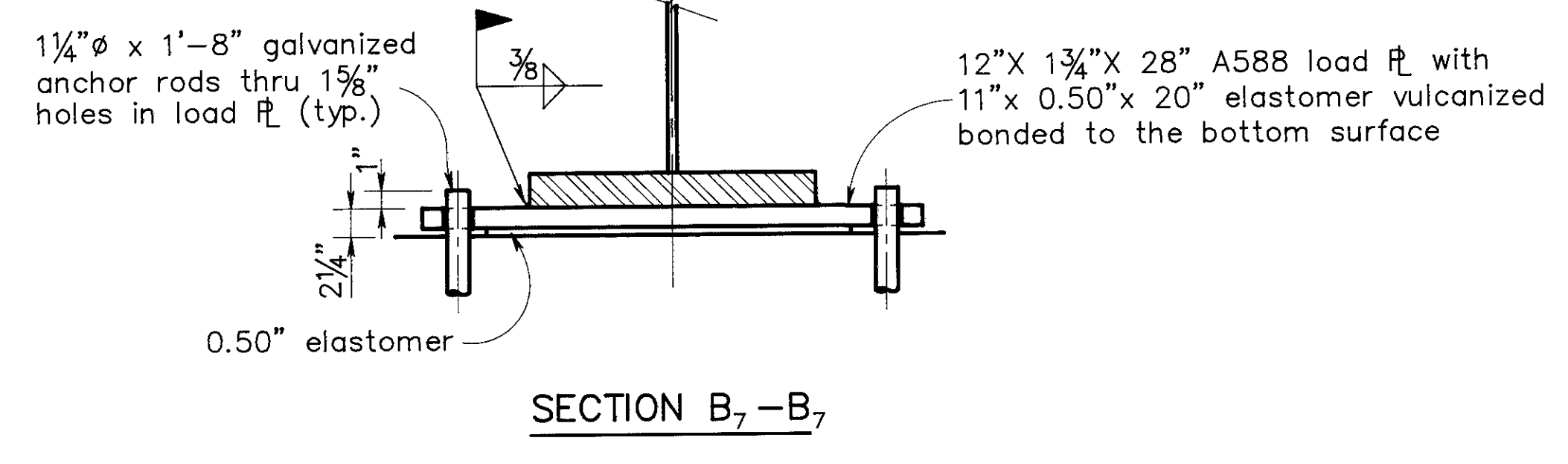
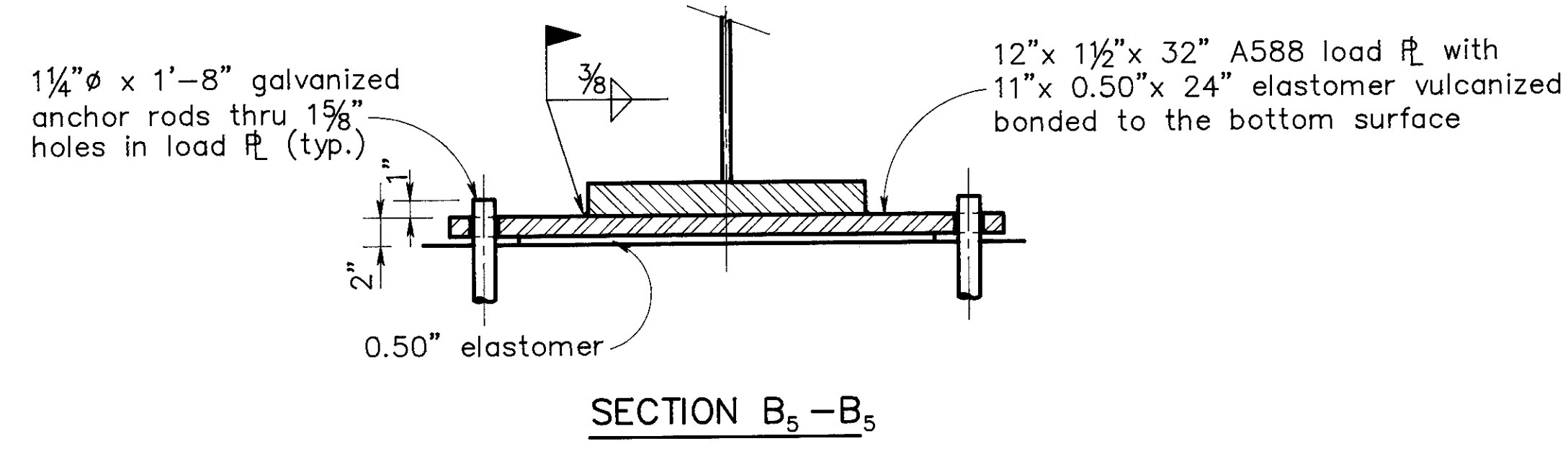
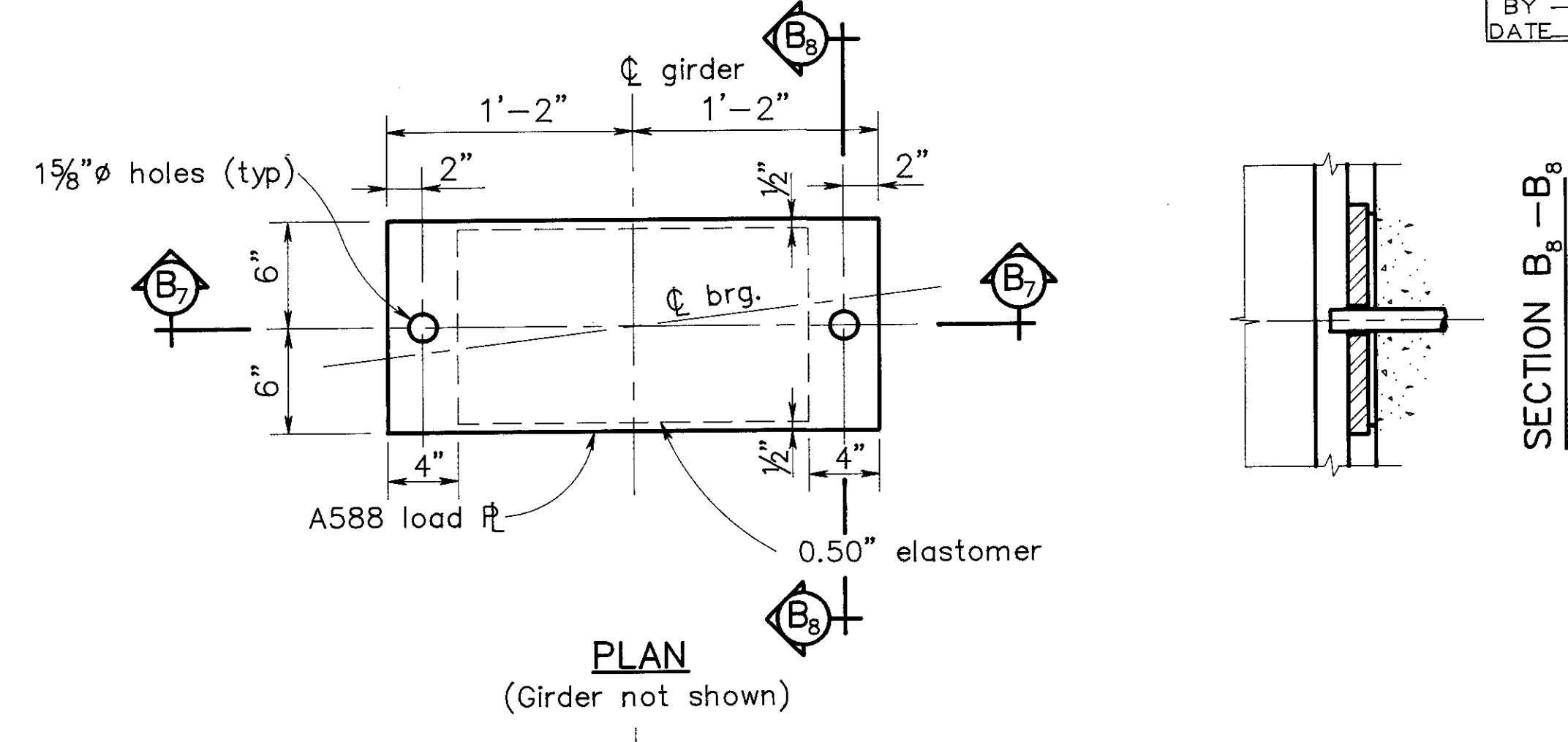
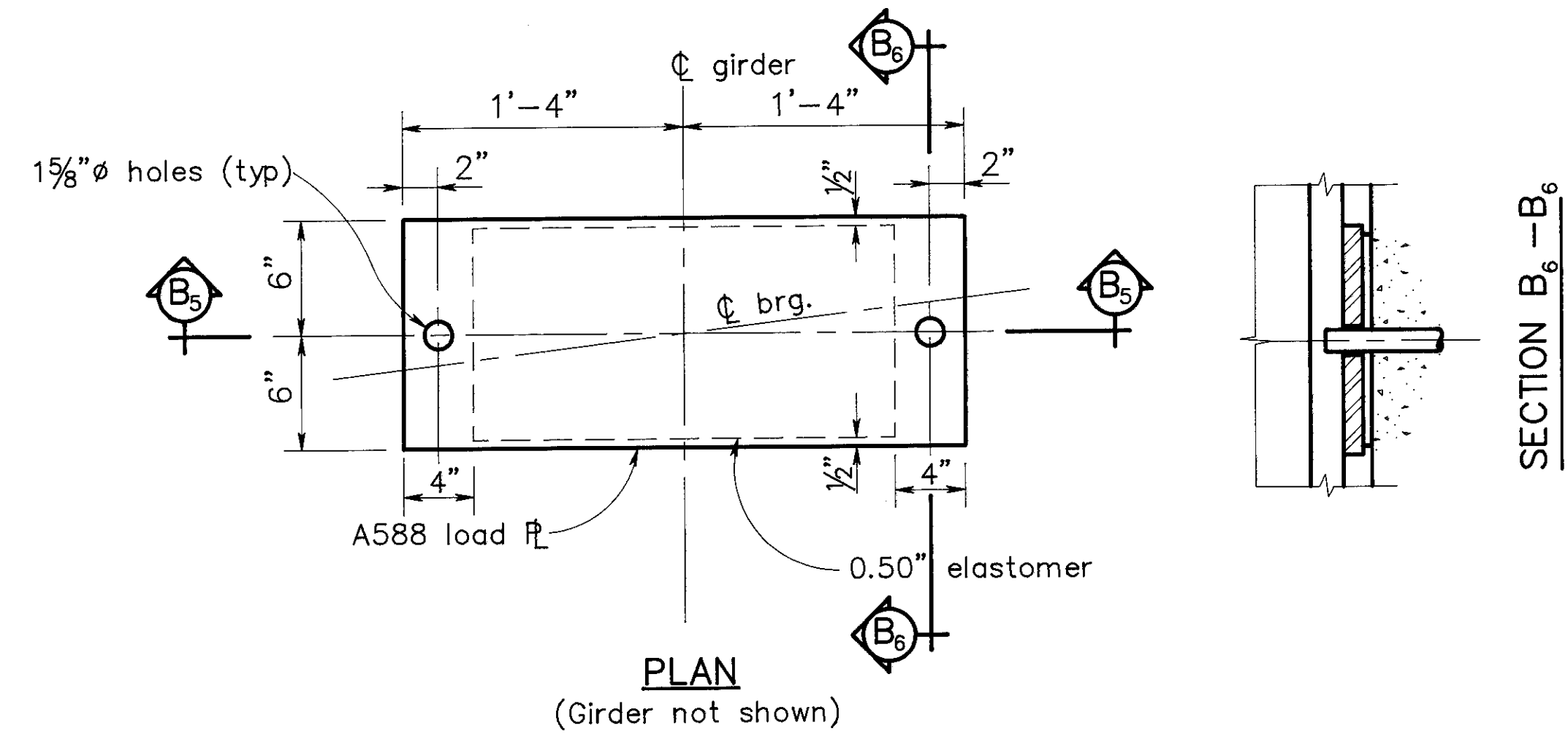
**SECTION C-C**



**DETAIL H**

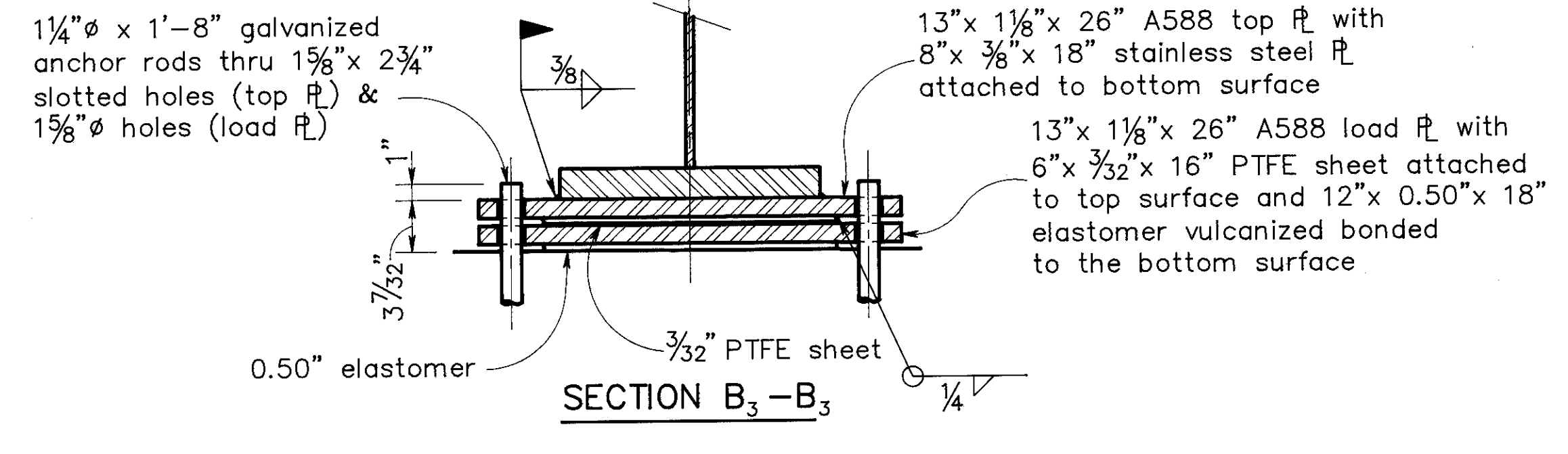
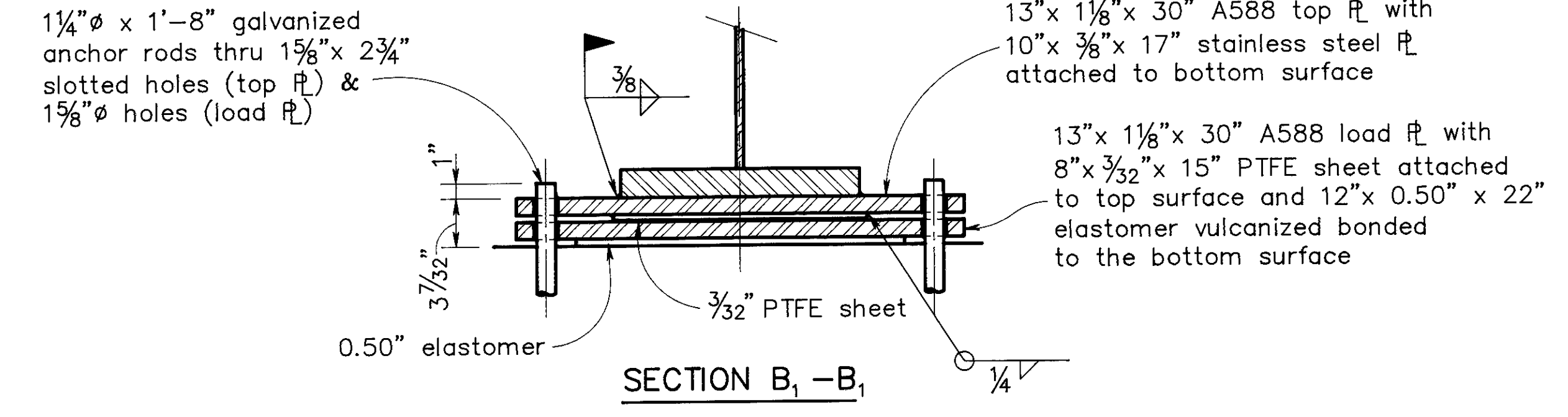
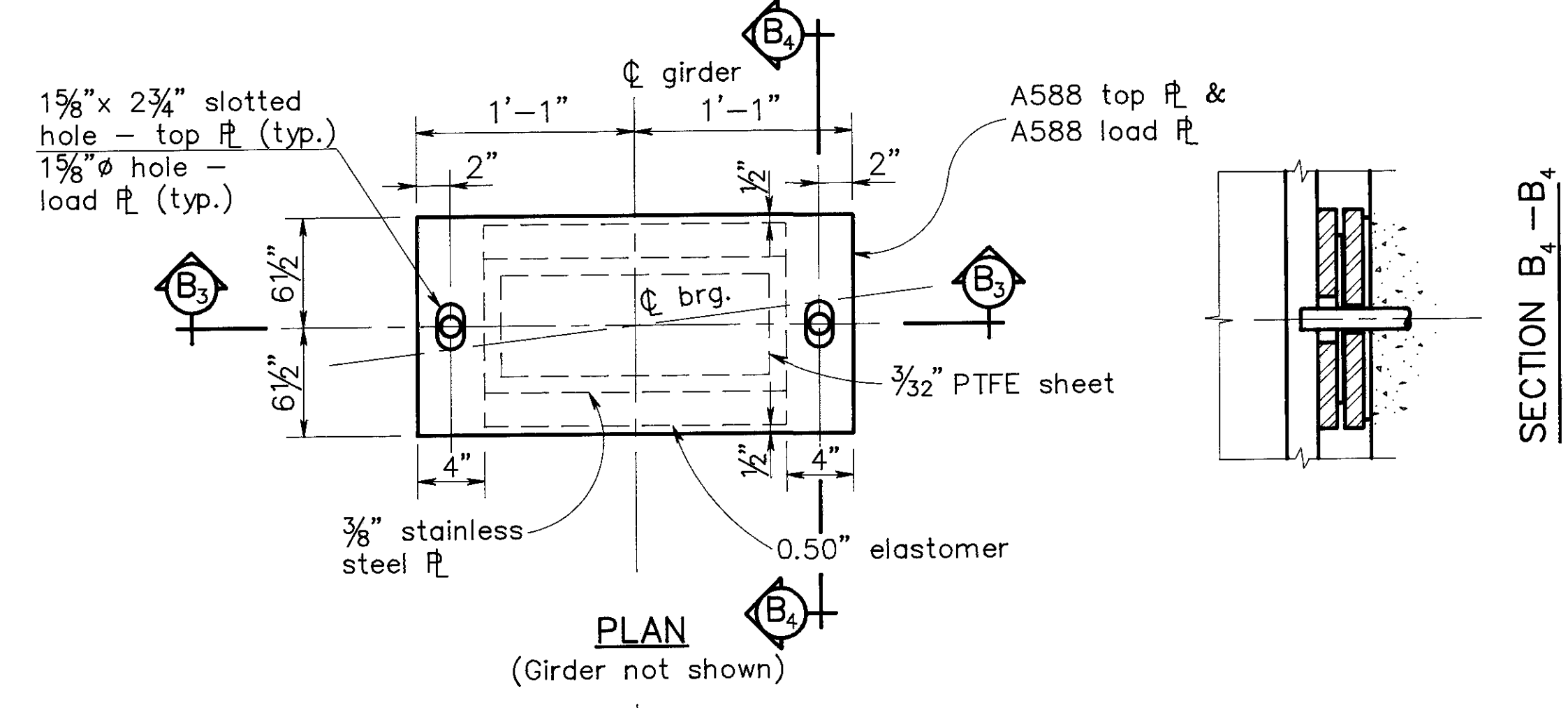
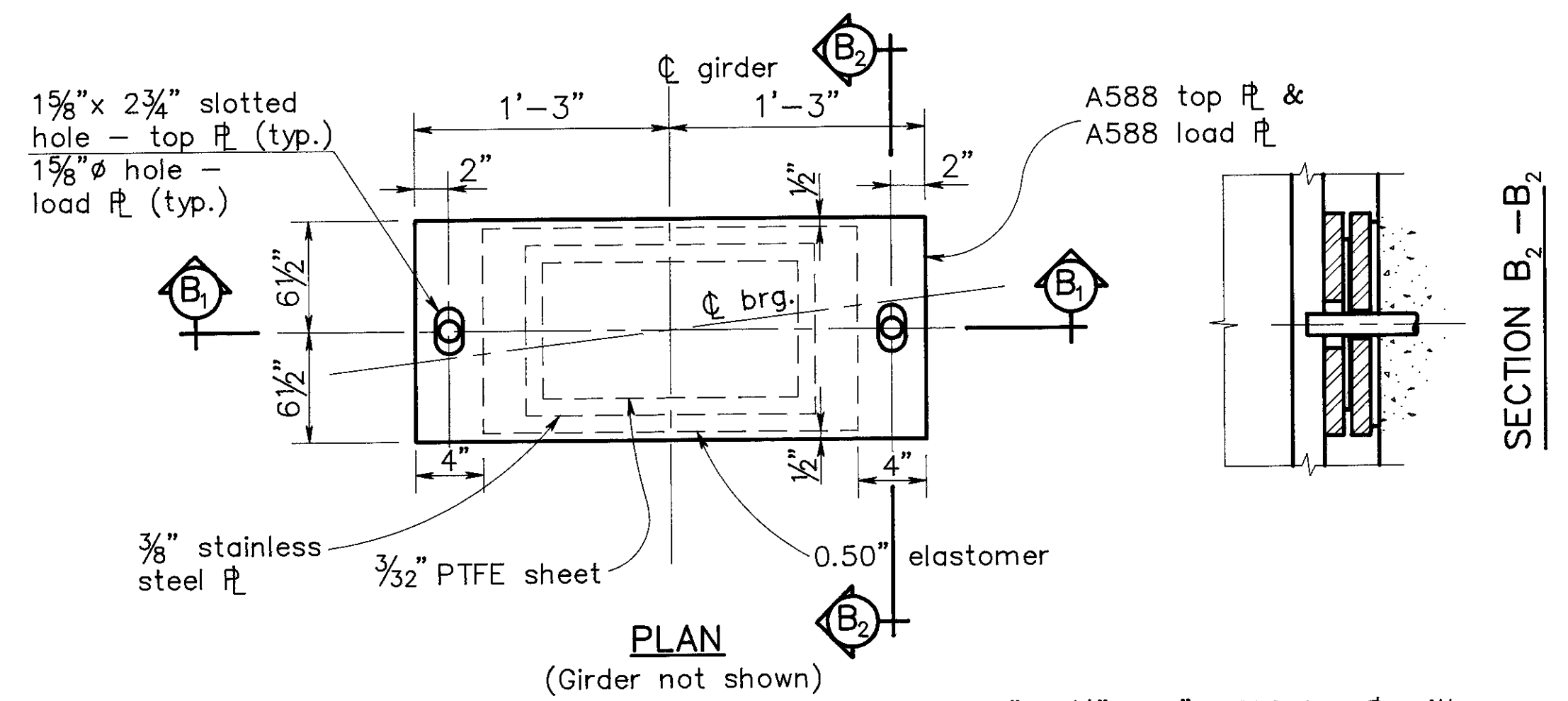
Cover plates not shown

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>DECK PLATE DETAILS</b>						
BRIDGE NO. FRA-315-0061						
SR 315 UNDER CONRAIL						
FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
VS	PF		WM	GWM	8/31/91	



**FIXED BEARINGS - TYPE "C"**  
West Side of Pier - 10 units required

**FIXED BEARING - TYPE "D"**  
East Side of Pier - 10 units required



**EXPANSION BEARING - TYPE "A"**  
West Abutment - 10 units required

**EXPANSION BEARING - TYPE "B"**  
East Abutment - 10 units required

For Bearing Notes see sheet 16/20.

15/20						
STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>BEARING DETAILS</b>						
BRIDGE NO. FRA-315-0061 SR 315 UNDER CONRAIL						
FRANKLIN COUNTY						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
✓	PF		WM	GNM	9/3/41	



**DESCRIPTION**

THE EXPANSION BEARINGS DETAILED ON SHEET 15/20 ARE COMBINATION DEVICES UTILIZING AN ELASTOMERIC PAD FOR ROTATION AND A LOW-FRICTION SLIDING SURFACE OF STAINLESS STEEL MATED TO A POLYTETRAFLUORETHYLENE (PTFE) SHEET FOR LONGITUDINAL MOVEMENT.

**MATERIALS:**

**PTFE SHEETS:**

THE UNFILLED PTFE SHEETS COMPRISING THE SLIDING SURFACE SHALL BE MADE FROM 100% VIRGIN (NOT PROCESSED) POLYTETRAFLUOROETHYLENE (PTFE) RESINS AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

- 1). TENSILE STRENGTH ASTM D-1457: 2800PSI (MIN.)
- 2). ELONGATION ASTM D-1457: 200% (MIN.)
- 3). SPECIFIC GRAVITY ASTM D-1457: 2.13 (MIN.)
- 4). MELTING POINT ASTM D-1457: 327° C ± 10° C
- 5). NOMINAL THICKNESS AS PER PLAN SHALL BE 3/32". MINIMUM THICKNESS, UNDER MAXIMUM STATIC LOAD, SHALL BE 0.092".

**EPOXY ADHESIVE:**

SELECTION OF THE EPOXY ADHESIVE AND SUPPLEMENTING OF THE SURFACE PREPARATION AND ADHESIVE APPLICATION PROCEDURES GIVEN BELOW SHALL BE BY THE BEARING MANUFACTURER WITH PRIOR APPROVAL OF THE ENGINEER.

**STAINLESS STEEL:**

THE STAINLESS STEEL SLIDING SURFACE SHALL BE 3/8 INCH MINIMUM THICKNESS AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM DESIGNATION A240 TYPE 347. STAINLESS STEEL SURFACES IN CONTACT WITH PTFE SHALL HAVE A 20 MICRO-INCH RMS FINISH OR BETTER IN ACCORDANCE WITH ANSI STANDARD 845.1. THE STAINLESS STEEL SHALL HAVE A MINIMUM BRINELL HARDNESS OF 125. THE SURFACE SHALL BE MECHANICALLY POLISHED.

**STRUCTURAL STEEL:**

STRUCTURAL STEEL FOR BEARINGS, INCLUDING ANCHOR RODS, SHALL BE ASTM A588. ANCHOR RODS SHALL BE GALVANIZED PER ODOT CMS, ITEM 711.02.

**ELASTOMER:**

THE ELASTOMER FOR FIXED AND EXPANSION BEARINGS SHALL BE 50 DUROMETER NEOPRENE. EACH PAD SHALL CONSIST OF ONE SOLID PIECE OF ELASTOMER.

**FABRICATION:**

SLIDING SURFACES OF EXPANSION BEARINGS SHALL BE DESIGNED TO TRANSLATE BY SLIDING OF A HARD MATING SURFACE OF STAINLESS STEEL ACROSS A PTFE SURFACE.

AFTER FABRICATION AND BEFORE ATTACHMENT OF THE STAINLESS STEEL PLATE OR THE PTFE SHEET, EACH LOAD PLATE AND TOP PLATE BEARING SURFACE SHALL BE TESTED FOR FLATNESS.

FLATNESS SHALL BE DETERMINED BY PLACING A STRAIGHTEDGE, LONGER THAN THE NOMINAL DIMENSION TO BE MEASURED, IN CONTACT WITH THE SURFACE TO BE MEASURED OR AS PARALLEL TO IT AS POSSIBLE. SELECT A FEELER GAGE HAVING A TOLERANCE OF ± 0.001 INCH AND ATTEMPT TO INSERT IT UNDER THE STRAIGHTEDGE (THE SMALLEST NUMBER OF BLADES SHALL BE USED). FLATNESS IS ACCEPTABLE IF THE FEELER DOES NOT PASS UNDER THE STRAIGHTEDGE. THE STRAIGHTEDGE MAY BE LOCATED AT ANY POSITION ON THE SURFACE AND NOT NECESSARILY AT 90 DEGREES TO THE EDGES.

THE FLATNESS TOLERANCES OF THE TOP PLATES AND LOAD PLATES ARE AS FOLLOWS:

- 1). FLATNESS OF SURFACE IN CONTACT WITH BEAM OR GIRDER = 0.001 x NOMINAL DIMENSION.
- 2). FLATNESS OF SURFACE TO BE FACED WITH PTFE SHEET OR STAINLESS STEEL PLATE (EXPANSION BEARINGS) = 0.0005 x NOMINAL DIMENSION.

THE NOMINAL DIMENSION SHALL BE DEFINED AS THE ACTUAL DIMENSION OF THE PLATE, IN INCHES, SPANNED BY THE STRAIGHTEDGE.

THE ELASTOMER SHALL BE VULCANIZED BONDED TO THE LOAD PLATE.

THE STAINLESS STEEL SLIDING SURFACE SHALL BE AN ACCURATE FLAT SURFACE AS REQUIRED BY THE DESIGN AND SHALL COMPLETELY COVER THE PTFE SURFACE IN ALL OPERATING POSITIONS OF THE BEARING. THE STAINLESS STEEL PLATE SHALL BE FILLET WELDED TO THE A588 STEEL TOP PLATE. FILLET WELDS SHALL BE CONTINUOUS FOR THE ENTIRE PERIPHERY OF THE STAINLESS STEEL PLATE.

THE BONDING OF THE PTFE SHEETS TO THE A588 STEEL LOAD PLATES SHALL BE PERFORMED UNDER CONTROLLED CONDITIONS AND IN ACCORDANCE WITH THESE APPROVED PROCEDURES IN THE FACTORY OF THE BEARING MANUFACTURER.

THE PTFE BONDING SURFACE OF THE STEEL SHALL BE CLEANED OF RUST, SCALE, OIL AND GREASE BY BLAST CLEANING. THE ENTIRE SURFACE TO BE BONDED SHALL BE BLAST CLEANED TO THE ANCHOR PROFILE REQUIRED AND WIPED CLEAN WITH CLEANING SOLVENT. BLAST CLEANING SHALL BE PERFORMED WITHIN A MAXIMUM OF FOUR HOURS PRIOR TO BONDING.

THE PTFE SURFACE SHALL BE ETCHED IF REQUIRED.

NOT MORE THAN ONE HALF (1/2) HOUR PRIOR TO USE, A SUFFICIENT QUANTITY OF EPOXY SHALL BE PREPARED FOR THE AMOUNT OF WORK TO BE PERFORMED. ACCURATELY MEASURED PROPORTIONS OF THE TWO COMPONENTS SHALL BE BLENDED IN ACCORDANCE WITH THE EPOXY MANUFACTURER'S INSTRUCTIONS. TO INSURE ACCURATE PROPORTIONS FOR ALL PRODUCTION RUNS AND A RELATIVELY BUBBLE-FREE MIXTURE OF UNIFORM CONSISTENCY, THE BEARING MANUFACTURER SHALL PROVIDE SPECIFIC INSTRUCTIONS AND, IF NECESSARY, SPECIFIC EQUIPMENT FOR THE PROPER BLENDING OF THE EPOXY COMPONENTS.

A THIN UNIFORM COAT OF EPOXY SHALL BE SPREAD OVER THE ENTIRE SAURFACE TO BE BONDED. IT MAY BE APPLIED TO EITHER THE STEEL OR THE PTFE SURFACE, OR TO BOTH.

THE PTFE SURFACE SHALL THEN BE BONDED TO THE STEEL SURFACE UNDER FACTORY CONTROLLED CONDITIONS USING HEAT AND PRESSURE FOR THE TIME REQUIRED TO SET THE EPOXY ADHESIVE.

A COPY OF THE ADHESIVE MANUFACTURER'S INSTRUCTIONS AND THE COMPLETE PROCEDURES USED TO ACHIEVE ADEQUATE BOND STRENGTH SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO START OF PRODUCTION BONDING.

THE A588 STEEL PORTIONS OF THE BEARINGS SHALL BE PAINTED UTILIZING THE SYSTEM SPECIFIED FOR THE BRIDGE STRUCTURAL STEEL, ITEM SPECIAL - PAINTING OF NEW STEEL, SYSTEM IZEU. THE COST OF PAINTING SHALL BE INCLUDED WITH ITEM 516 FOR PAYMENT.

EACH BEARING SHALL BE ASSEMBLED AT THE PLANT, SHALL BE MARKED FOR IDENTIFICATION AND SHALL BE DELIVERED TO THE SITE OF CONSTRUCTION AS A COMPLETE UNIT. THE EXPANSION BEARINGS SHALL HAVE PERMANENT MATCH MARKS TO INDICATE THE NORMAL POSITION OF THE BEARING. THE PTFE SURFACES SHALL BE STORED IN THE SHADE TO AVOID THE DAMAGING EFFECTS OF ULTRAVIOLET RAYS.

**TESTING:**

TESTS SHALL BE PERFORMED BY THE MANUFACTURER OR BY AN INDEPENDENT TESTING LABORATORY. THE TESTING AGENT CHOSEN BY THE CONTRACTOR WILL BE SUBJECT TO APPROVAL BY THE ENGINEER. APPROVAL WILL BE BASED ON 1). THE ABILITY OF THE TESTING FACILITY TO PERFORM THE REQUIRED TESTS - POSSESSION OF PROPER TESTING EQUIPMENT AND TRAINED PERSONNEL AND 2). SUBMITTAL OF A REPORT DESCRIBING THE TESTING PROCEDURES TO BE USED, INCLUDING SET UP OF TESTING APPARATUS, STEPS TO BE FOLLOWED IN THE TESTING APPARATUS AND THE TESTING PROCEDURES, READINGS, CONVERSION OF READINGS TO FINAL DATA, AND SAMPLE CALCULATIONS SHOWING HOW FINAL RESULTS ARE OBTAINED FROM RAW DATA.

ADHESION BETWEEN THE PTFE AND THE A588 STEEL SHALL BE TESTED ON A TEST SPECIMEN IN ACCORDANCE WITH ASTM D-429, METHOD B. THE MINIMUM PEEL STRENGTH SHALL BE 25 LBS. PER INCH.

A FRICTION TEST SHALL BE PERFORMED ON ONE EXPANSION BEARING, SELECTED AT RANDOM, FROM EACH OF THE TYPES OF EXPANSION BEARINGS USED IN THE DESIGN.

THE TEST SHALL BE CONDUCTED AT THE MAXIMUM WORKING STRESS FOR THE BEARING WITH THE LOAD APPLIED CONTINUOUSLY FOR 12 HOURS PRIOR TO MEASURING THE FRICTION. MAXIMUM WORKING STRESS SHALL BE DETERMINED BY DIVIDING THE MAXIMUM VERTICAL REACTION (OBTAINED FROM THE PLANS) BY THE AREA OF THE PTFE USED ON THE LOAD PLATE.

THE STATIC AND DYNAMIC COEFFICIENT OF FRICTION SHALL BE DETERMINED. A SLIDING SPEED OF LESS THAN ONE INCH PER MINUTE SHALL BE USED. THE COEFFICIENT THUS DETERMINED SHALL NOT EXCEED 0.06.

**INSTALLATION:**

FIELD WELDING SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMER BONDED SURFACE DOES NOT EXCEED 300°F, AS DETERMINED BY THE USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

ANCHOR RODS SHALL BE GALVANIZED PER ODOT CMS ITEM 711.02 AND INSTALLED PER ODOT CMS ITEM 510. INCLUDE DOWEL HOLES AND ANCHOR RODS WITH ITEM 516 - ELASTOMERIC BEARINGS, FOR PAYMENT.

For Bearing Details see sheet 15/20

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND					
<b>BEARING NOTES</b>  BRIDGE NO. FRA-315-0061 SR 315 UNDER CONRAIL  FRANKLIN COUNTY					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
KS	PF		NM	GWM	9/2/91
					REVISED



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
WEST ABUTMENT										
A 5001	24	13- 9	344	14	6- 1	1- 7	0- 1	6- 0		
A 5002	88	4- 9	436	3	1- 6	2- 0				
A 5003	24	20- 8	517	1						
A 5004	24	26- 5	661	1						
A 5005	4	32- 7	136	1						
A 5006	29	42- 0	1271	1						
A 5007	6	27- 3	171	1						
A 5009	6	26-10	168	1						
A 5011	6	8- 7	54	3	3- 8	1- 6				
A 5012	4	39- 4	164	1						
A 5013	8	4- 0	34	9	2- 0	2- 0	0- 3			
A 5015	5	7- 8	40	14	2- 9	2- 0	0- 4	2- 9		
A 5016	5	7- 8	40	16	2- 9	2- 6	0	0- 4	2- 9	
A 5017	5	8- 6	44	16	2- 9	3- 4	0	0- 4	2- 9	
A 5018	5	8- 5	44	14	2- 9	2-10	0- 4	2- 9		
A 5037	26	4- 8	127	1						
A 5039	10	6- 1	63	15	0	1- 6	1- 0	2- 7	2- 0	
A 5040	10	4-10	50	15	1- 0	0	2- 7	0- 3	1- 6	
A 5041	6	4- 0	25	1						
A 5042	6	5- 3	33	1						
F 5001	13	42- 0	569	1						
F 5002	8	42- 0	350	1						
F 5003	43	8-10	396	2	3- 0	6- 0				
F 5004	29	8- 3	250	8	2- 0	5- 3	1- 0			
F 5128	29	9- 0	272	1						
F 9001	42	11- 0	1571	1						
F 9002	42	16- 0	2284	1						
F 9003	43	20- 0	2924	2	1- 8	18- 6				
TOTAL = 13038										
EAST ABUTMENT										
A 5019	24	13- 9	344	14	6- 1	1- 7	0- 1	6- 0		
A 5020	88	4- 9	436	3	1- 6	2- 0				
A 5021	24	17- 9	444	1						
A 5022	24	23- 7	590	1						
A 5023	4	33- 0	138	1						
A 5024	25	42- 0	1096	1						
A 5025	6	24- 4	152	1						
A 5027	6	23-10	149	1						
A 5029	6	8- 7	54	3	3- 8	1- 6				
A 5030	4	39- 4	164	1						
A 5031	8	4- 0	34	9	2- 0	2- 0	0- 3			
A 5033	4	8- 0	33	14	2- 9	2- 4	0- 4	2- 9		
A 5034	4	8- 0	33	16	2- 9	2-10	0	0- 4	2- 9	
A 5035	4	8- 2	34	16	2- 9	3- 0	0	0- 4	2- 9	
A 5036	4	8- 2	34	14	2- 9	2- 6	0- 4	2- 9		
A 5037	26	4- 8	127	1						
A 5039	10	6- 1	63	15	0	1- 6	1- 0	2- 7	2- 0	
A 5040	10	4-10	50	15	1- 0	0	2- 7	0- 3	1- 6	
A 5041	6	4- 0	25	1						
A 5042	6	5- 3	33	1						
F 5122	13	42- 0	569	1						
F 5123	7	42- 0	307	1						
F 5124	43	8-10	396	2	3- 0	6- 0				
F 5125	29	8- 1	244	8	2- 0	5- 0	1- 1			
F 5129	29	7- 6	228	1						
F 9012	28	9- 6	904	1						
F 9013	28	14- 6	1380	1						
F 9014	29	18- 6	1824	2	1- 8	17- 0				
TOTAL = 9885										

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER										
F 5119	8	36- 0	300	1						
F 5120	8	36- 0	300	1						
F 5121	26	9- 6	258	1						
F 6016	78	7- 1	830	2	6- 3	1- 0				
F 9012	51	9- 6	1648	1						
P 5001	30	36- 6	1142	1						
P 5002	28	7- 5	232	11	2- 6	3- 0	3- 0	1- 3		
P 6001	78	19- 7	2294	1						
P 6002	81	5- 9	700	3	1-10	2- 6				
P 6003	2	5- 6	17	3	1-10	2- 3				
P 6004	2	5- 1	15	3	1-10	1-10				
TOTAL = 7736										
SUPERSTRUCTURE										
S 5001	32	20- 0	668	1						
S 5002	24	20- 6	513	1						
S 5003	182	5- 7	1060	15	1- 6	0- 0	2- 7	1- 0	1- 6	
S 5004	182	6- 4	1202	15	2- 6	0- 0	2- 7	0- 3	1- 6	
TOTAL = 3443										

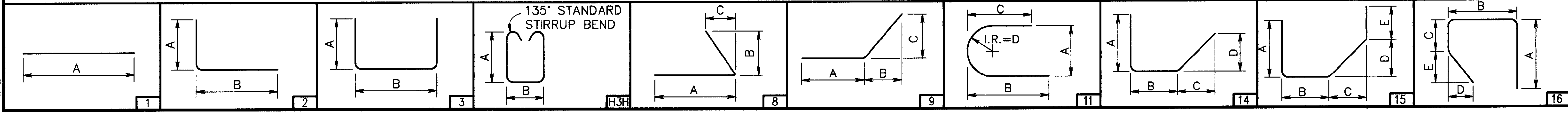
- NOTES
- ALL REINFORCING SHALL BE EPOXY COATED. SEE ITEM 509 NOTE ON [2/20].
  - INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.

BAR SIZE DESIGNATION

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

REINFORCING STEEL LIST FOR BRIDGE NO. FRA-315-0061 - SR 315 UNDER CONRAIL - FRANKLIN COUNTY - OHIO - 8/31/91

BAR BENDING DIAGRAM TYPES



18 / 20

**STILSON & ASSOCIATES, INC.**  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**  
**ABUTMENTS, PIER,**  
**& SUPERSTRUCTURE**  
 BRIDGE NO. FRA-315-0061  
 SR 315 UNDER CONRAIL  
 FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
VS	PF		WM	GWM	8/31/91	



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTHWEST WINGWALL										
W 5001	62		744	1	11- 6					
W 5002	12		94	1	7- 6					
W 5003	2			1	9- 2					2
THRU			42		VARY LENGTH BY 2- 6					
W 5005	2			1	4- 2					2
W 5006	2		28	9	1- 9	10- 0	6- 0			
W 5007	2			1	8- 5					2
THRU			29		VARY LENGTH BY 3- 8½					
W 5009	2			1	1- 0					2
W 5010	2		27	1	12-10					
W 5011	2			1	7- 8					2
THRU			24		VARY LENGTH BY 4- 0					
W 5012	2			1	3- 8					2
W 5013	2		26	1	12- 6					
W 5014	2		9	1	4- 6					
W 5015	2		17	1	8- 0					
W 5016	1			1	26- 1					2
THRU			171		VARY LENGTH BY 0-10¾					
W 5022	1			1	20- 8					2
W 5023	1		28	1	26- 6					
W 5024	1			1	18-11					2
THRU			138		VARY LENGTH BY 0- 8¼					
W 5031	1			1	14- 1					2
W 5032	1			1	14- 3					2
THRU			104		VARY LENGTH BY 0-6¾					
W 5039	1			1	10- 4					2
W 5040	1			1	10- 2					2
THRU			57		VARY LENGTH BY 0- 5¾					
W 5045	1			1	7-11					2
W 5046	1			1	9- 4					2
THRU			51		VARY LENGTH BY 0- 9½					
W 5052	1			1	4- 7					2
W 5053	1		11	1	10- 1					
W 5054	1			1	18-11					2
THRU			71		VARY LENGTH BY 1- 2¾					
W 5057	1			1	15- 3					2
W 5058	1			1	14-11					2
THRU			108		VARY LENGTH BY 0- 6¾					
W 5065	1			1	11- 0					2
W 5066	1			1	10- 5					2
THRU			30		VARY LENGTH BY 0-11					
W 5068	1			1	8- 7					2
W 9001	7		432	1	18- 2					
W 9002	5		249	1	14- 8					
F 5005	1			1	12- 6					2
THRU			51		VARY LENGTH BY 0- 2					
F 5008	1			1	12- 0					2
F 5010	1			1	10- 9					2
THRU			53		VARY LENGTH BY 0- 3					
F 5014	1			1	9- 9					2
F 5016	1			1	12- 8					2
THRU			38		VARY LENGTH BY 0- 5½					
F 5018	1			1	11- 9					2
F 5020	1			1	10- 9					2
THRU			42		VARY LENGTH BY 0- 5¾					
F 5023	1			1	9- 5					2
F 5025	1			1	12- 3					2
THRU			37		VARY LENGTH BY 0- 5½					
F 5027	1			1	11- 4					2
F 5028	1			1	10-11					2
THRU			33		VARY LENGTH BY 0- 5					
F 5030	1			1	10- 1					2
F 5032	1			1	7-10					2
THRU			24		VARY LENGTH BY 0- 3½					
F 5034	1			1	7- 3					2

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTHWEST WINGWALL CONTINUED										
F 5035	1			1	7- 4					2
THRU			22		VARY LENGTH BY 0- 3½					
F 5037	1			1	6- 9					2
F 5039	5	10- 4	54	9	5- 2	3- 8	3- 8			
F 5040	6		31	1	5- 0					
F 5041	6		20	1	3- 2					
F 5042	6		22	1	3- 6					
F 6001	8	5- 9	69	8	1- 5	4- 0	0- 4			
F 6002	8	10-10	130	8	1- 5	8- 9	0- 8¾			
F 6003	3	5- 9	26	8	1- 5	4- 0	0- 4			
F 6004	3	7- 7	34	8	1- 5	5- 9	0- 5¾			
F 6017	12		80	1	4- 5					
F 6018	12		83	1	4- 7					
F 7001	11		126	1	5- 7					
F 7002	11		127	1	5- 8					
F 8001	16		285	1	6- 8					
F 8006	16		306	1	7- 2					
F 9004	16		435	1	8- 0					
F 9005	9	10- 2	311	8	2-11	6- 9	0- 6¾			
F 9006	9	13- 8	418	8	2-11	10- 0	0- 10			
F 10001	20		904	1	10- 6					
F 11001	16		928	1	10-11					
F 11002	12	14- 0	893	8	4- 7	8- 9	0- 8¾			
F 11003	12	18- 4	1169	8	4- 7	12- 9	1- 0¾			
F 11010	16		871	1	10- 3					
TOTAL = 10112										
SOUTHEAST WINGWALL										
W 5001	42		504	1	11- 6					
W 5069	6		123	1	19- 8					
W 5070	2		19	1	9- 2					
W 5071	2		14	1	6- 8					
W 5072	2	13- 5	28	9	1- 9	10- 0	6- 0			
W 5073	2			1	8- 1					2
THRU			28		VARY LENGTH BY 3- 7					
W 5075	2			1	0-11					2
W 5076	2		26	1	12- 8					
W 5077	2			1	14- 2					2
THRU			55		VARY LENGTH BY 5- 5					
W 5079	2			1	3- 4					2
W 5080	2		9	1	4- 2					
W 5081	2		42	1	20- 4					
W 5082	1		25	1	23-11					
W 5083	1			1	23- 5					2
THRU			151		VARY LENGTH BY 0-10¾					
W 5089	1			1	18- 1					2
W 5090	1			1	15-10					2
THRU			114		VARY LENGTH BY 0- 7¾					
W 5097	1			1	11- 6					2
W 5098	1			1	10- 0					2
THRU			107		VARY LENGTH BY 0- 4¾					
W 5111	1			1	4- 8					2
W 5112	1		25	1	23-11					
W 5113	1			1	22- 6					2
THRU			65		VARY LENGTH BY 1- 7					
W 5115	1			1	19- 4					2
W 5116	1			1	15- 8					2
THRU			66		VARY LENGTH BY 1- 3					
W 5119	1			1	11-11					2
TOTAL = 6522										

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTHEAST WINGWALL CONTINUED										
W 5120	1			1	10- 0					2
THRU			55		VARY LENGTH BY 0- 9¾					
W 5126	1			1	5- 1					2
W 8001	8		269	1	12- 7					
W 11001	5		445	1	16- 9					
F 5039	6	10- 4	65	9	5- 2	3- 8	3- 8			
F 5040	2		10	1	5- 0					
F 5043	1			1	12- 7					2
THRU			50		VARY LENGTH BY 0- 4					
F 5046	1			1	11- 7					2
F 5048	1			1	11- 1					2
THRU			54		VARY LENGTH BY 0- 4					
F 5052	1			1	9- 9					2
F 5054	1			1	12- 7					2
THRU			38		VARY LENGTH BY 0- 6					
F 5056	1			1	11- 7					2
F 5058	1			1	10-11					2
THRU			42		VARY LENGTH BY 0- 6					
F 5061	1			1	9- 5					2
F 5062	1			1	20- 5					2
THRU			61		VARY LENGTH BY 0- 9½					
F 5064	1			1	18-10					2
F 5065	1			1	18- 7					2

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTHWEST WINGWALL										
W 5001	48	11- 6	576	1						
W 5179	8	15- 6	129	1						
W 5180	2	9- 2		1						2
THRU			42		VARY LENGTH BY 2- 6					
W 5182	2	4- 2		1						2
W 5183	2	13- 3	28	9	1- 9	9-10	6- 0			
W 5184	2	8- 5		1						2
THRU			33		VARY LENGTH BY 3- 1½					
W 5186	2	2- 2		1						2
W 5187	2	12-11	27	1						
W 5188	2	12- 0		1						2
THRU			55		VARY LENGTH BY 3- 7					
W 5191	2	1- 3		1						2
W 5192	2	17- 0	35	1						
W 5193	1	26- 5	28	1						2
W 5194	1	26- 0		1						2
THRU			170		VARY LENGTH BY 0-10½					
W 5200	1	20- 8		1						2
W 5201	1	18- 4		1						2
THRU			131		VARY LENGTH BY 0- 9½					
W 5208	1	13- 0		1						2
W 5209	1	11- 5		1						2
THRU			95		VARY LENGTH BY 0- 7½					
W 5219	1	5- 2		1						2
W 5220	1	9- 7		1						2
THRU			38		VARY LENGTH BY 1- 1¾					
W 5224	1	5- 0		1						2
W 5225	1	10- 5	11	1						
W 5226	1	17-11		1						2
THRU			67		VARY LENGTH BY 1- 3¾					
W 5229	1	14- 1		1						2
W 5230	1	11- 4		1						2
THRU			54		VARY LENGTH BY 1- 0¾					
W 5235	1	6- 0		1						2
W 5236	1	10- 5	11	1						
W 9003	7	18- 2	432	1						
W 9004	5	13- 2	224	1						
F 5039	6	10- 4	65	9	5- 2	3- 8	3- 8			
F 5040	2	5- 0	10	1						
F 5093	1	12- 2		1						2
THRU			50		VARY LENGTH BY 0- 2					
F 5096	1	11- 8		1						2
F 5098	1	11- 3		1						2
THRU			57		VARY LENGTH BY 0- 2¼					
F 5102	1	10- 6		1						2
F 5104	1	12- 2		1						2
THRU			49		VARY LENGTH BY 0- 3					
F 5107	1	11- 5		1						2
F 5108	1	11- 4		1						2
THRU			56		VARY LENGTH BY 0- 3¼					
F 5112	1	10- 3		1						2
F 5113	1	6- 0		1						2
THRU			49		VARY LENGTH BY 0- 4½					
F 5115	1	15- 3		1						2
F 5116	1	15- 2		1						2
THRU			46		VARY LENGTH BY 0- 4½					
F 5118	1	14- 5		1						2
F 5128	13	3- 9	51	1						
F 5129	13	4- 3	58	1						
F 6014	6	5- 9	52	8	1- 5	4- 0	0- 4			
F 6015	7	8- 8	91	8	1- 5	6- 9	0- 6¾			
F 8005	16	6- 8	285	1						
F 8007	16	7- 3	310	1						

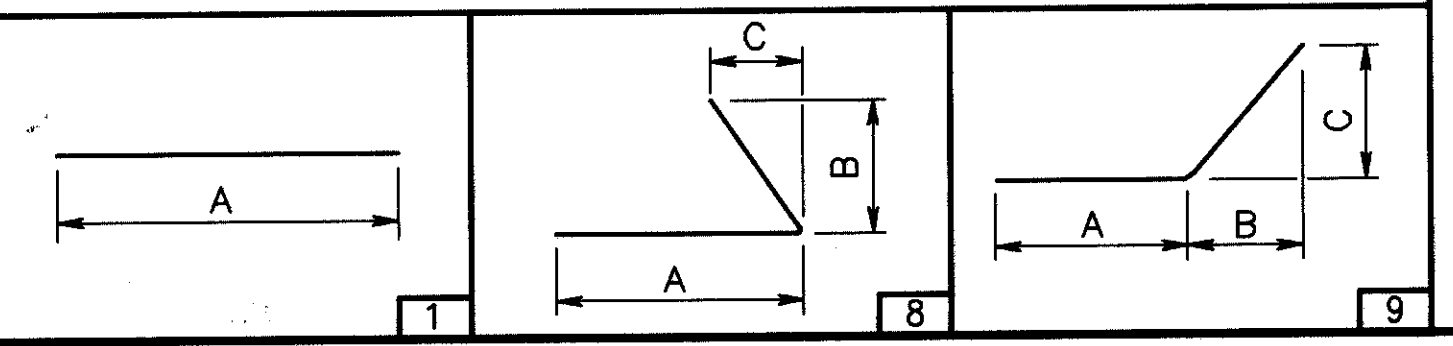
MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTHWEST WINGWALL CONTINUED										
F 9010	9	10- 2	311	8	2-11	6- 9	0- 6¾			
F 9011	9	13- 8	418	8	2-11	10- 0	0- 10			
F 11006	16	10-10	921	1						
F 11007	12	14- 0	893	8	4- 7	8- 9	0- 8¾			
F 11008	12	18- 4	1169	8	4- 7	12- 9	1- 0¾			
F 11009	16	10- 3	871	1						
TOTAL = 8106										
NORTHEAST WINGWALL										
W 5001	36	11- 6	432	1						
W 5127	4	13- 6	56	1						
W 5128	2	8- 4		1						2
THRU			33		VARY LENGTH BY 3- 1½					
W 5130	2	2- 1		1						2
W 5131	2	12- 7	26	9	1- 9	9- 8	4-10			
W 5132	2	8- 8		1						2
THRU			34		VARY LENGTH BY 3- 2½					
W 5134	2	2- 3		1						2
W 5135	2	12-11	27	1						
W 5136	2	9- 7		1						2
THRU			35		VARY LENGTH BY 4- 0					
W 5138	2	1- 7		1						2
W 5139	2	14- 7	30	1						
W 5140	1	21- 6	22	1						
W 5141	1	21- 2		1						2
THRU			139		VARY LENGTH BY 0- 8½					
W 5147	1	16-11		1						2
W 5148	1	13- 8		1						2
THRU			93		VARY LENGTH BY 0- 8¾					
W 5155	1	8- 7		1						2
W 5156	1	5- 0		1						2
THRU			36		VARY LENGTH BY 0- 4¼					
W 5165	1	1-10		1						2
W 5166	1	22- 9	24	1						
W 5167	1	21- 6		1						2
THRU			62		VARY LENGTH BY 1-10					
W 5169	1	17-10		1						2
W 5170	1	14- 0		1						2
THRU			49		VARY LENGTH BY 1-5¾					
W 5173	1	9- 8		1						2
W 5174	1	5- 0		1						2
THRU			19		VARY LENGTH BY 1- 8¼					
W 5178	1	2- 3		1						2
W 7001	4	9- 0	74	1						
W 10001	4	16- 9	288	1						
F 5038	4	4-11	21	9	1- 9	2- 3	2- 3			
F 5039	6	10- 4	65	9	5- 2	3- 8	3- 8			
F 5040	2	5- 0	10	1						
F 5068	1	12- 3		1						2
THRU			49		VARY LENGTH BY 0- 4					
F 5071	1	11- 3		1						2
F 5073	1	11- 3		1						2
THRU			56		VARY LENGTH BY 0- 3					
F 5077	1	10- 3		1						2
F 5078	1	12- 3		1						2
THRU			37		VARY LENGTH BY 0- 6½					
F 5080	1	11- 5		1						2
F 5081	1	11- 2		1						2
THRU			44		VARY LENGTH BY 0- 4¾					
F 5084	1	10- 0		1						2
F 5085	1	14- 1		1						2
THRU			42		VARY LENGTH BY 0- 7					
F 5087	1	12-11		1						2

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTHEAST WINGWALL CONTINUED										
F 5088	1	12-11		1						2
THRU			39		VARY LENGTH BY 0- 4½					
F 5090	1	12- 2		1						2
F 5091	28	4- 3	124	1						
F 5092	28	3-10	112	1						
F 6009	16	4- 9	114	1						
F 6010	5	5- 2	39	8	1- 5	3- 6	0- 3½			
F 6011	5	5- 5	41	8	1- 5	3- 9	0- 3¾			
F 6017	16	5- 6	132	1						
F 7005	8	7- 2	117	8	1- 9	5- 0	0- 5			
F 7006	8	9-10	161	8	1- 9	7- 6	0- 7½			
F 9008	16	7- 9	422	1						
F 9015	16	8- 2	444	1						
F 10004	9	11- 9	455	8	3- 8	7- 6	0- 7½			
F 10005	9	16- 1	623	8	3- 8	11- 6	0-11½			
TOTAL = 4626										

NOTE:  
FOR REINFORCING STEEL NOTES SEE 18/20

[C:\J:\STRUCT\202313\43\CONCRETE\315-CORRAL\STEEL.DWG - MAY 05, 1997 - 13:58:17 - PLOT: 1-4

BAR BENDING DIAGRAM TYPES



20/20

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

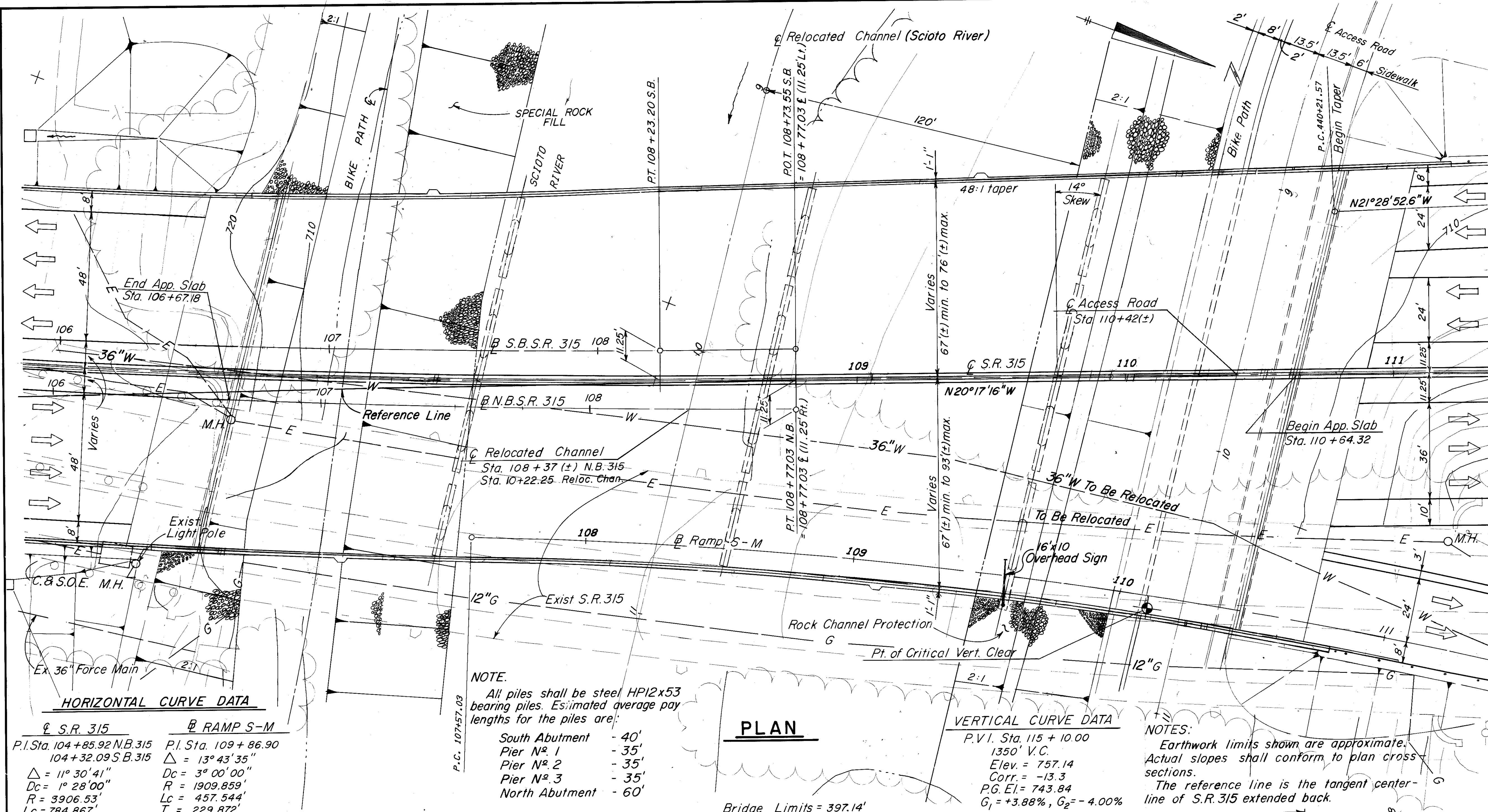
REINFORCING STEEL LIST  
NORTH WINGWALLS  
BRIDGE NO. FRA-315-0061  
SR 315 UNDER CONRAIL

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
VS	PF		WM	GWM	9-3-91	



FRANKLIN COUNTY  
FRA-670-1.25(A-5)  
FRA-315-0.00



**TRAFFIC DATA**

CURRENT ADT (1984): 51,957 (N.B.), 47,597 (S.B.)  
DESIGN YEAR ADT (2004): 66,294 (N.B.) & 60,733 (S.B.)  
DESIGN SPEED: 55 MPH  
PERCENTAGE TRUCKS: 5%

ACCESS ROAD DESIGN YEAR ADT (2004) ESTIMATED: 1000 - 2000

**HYDRAULIC DATA**

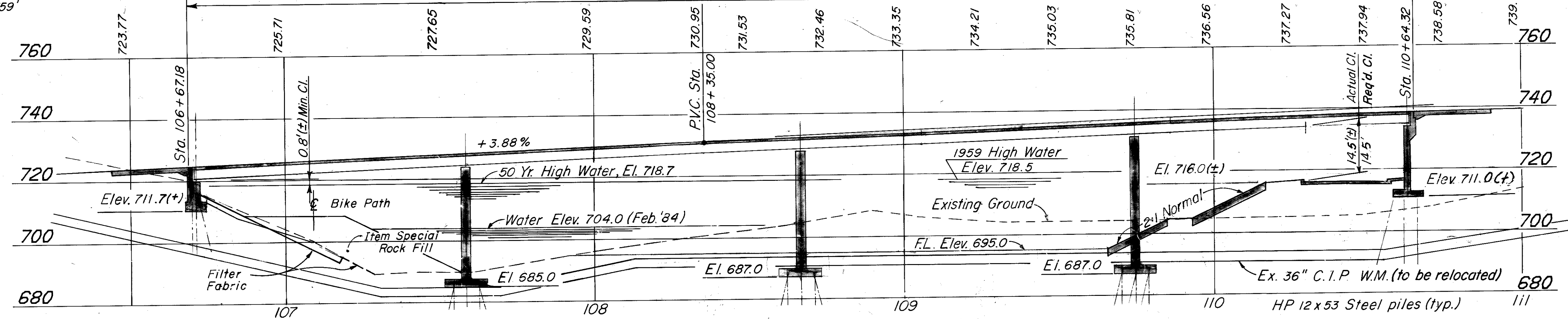
DRAINAGE AREA: 1076 Sq. Mi.  
 $Q_{100} = 58,300$  cfs  
 $V_{100} = 7.4$  ft./sec.  
 $HW_{100} = 721.65$   
WATERWAY OPENING BELOW  
ELEV. 718.7, 6925 Sq. Ft.  
 $Q_{50} = 48,500$  cfs.  
 $V_{50} = 7.1$  ft./sec.  
 $HW_{50} = 718.7$

**EXISTING STRUCTURE DATA**

TYPE: Continuous steel girder with concrete deck & substructure.  
SPANS: 80'-0", 3 @ 100'-0", 80'-0" c/c brgs.  
ROADWAY: 2 @ 26' with 4' median and 2 @ 6'-0" sidewalks.  
SKEW: None  
DESIGN LOADING: S-20-46  
DATE BUILT:  
STRUCTURE FILE NO.:  
CONDITION: To be removed

**PROPOSED STRUCTURE**

TYPE: Continuous composite A-572 steel beam with reinforced concrete deck and substructure.  
SPANS: 87.5', 2 @ 108', 87.5' c/c brgs along Ref. Line  
ROADWAY: Variable width f/t BR-1 railing (modified) with concrete barrier median.  
DESIGN LOADING: HS-20-44 (case I) and the Alternate Military Loading.  
SKEW: 14° Lt. fwd. with reference line  
WEARING SURFACE: 1" Monolithic concrete  
APPROACH SLABS: AS-1-81, 25' long  
ALIGNMENT: 1° 28' curve Lt. & tangent, ☉ S.R. 315; 3° 00' curve Rt. ☉ Ramp S-M.  
SUPERELEVATION: Varies, 0.036', Max.  
LATITUDE: N 39° 57' 49"  
LONGITUDE: W 83° 01' 06"  
STRUCTURE FILE NO.:



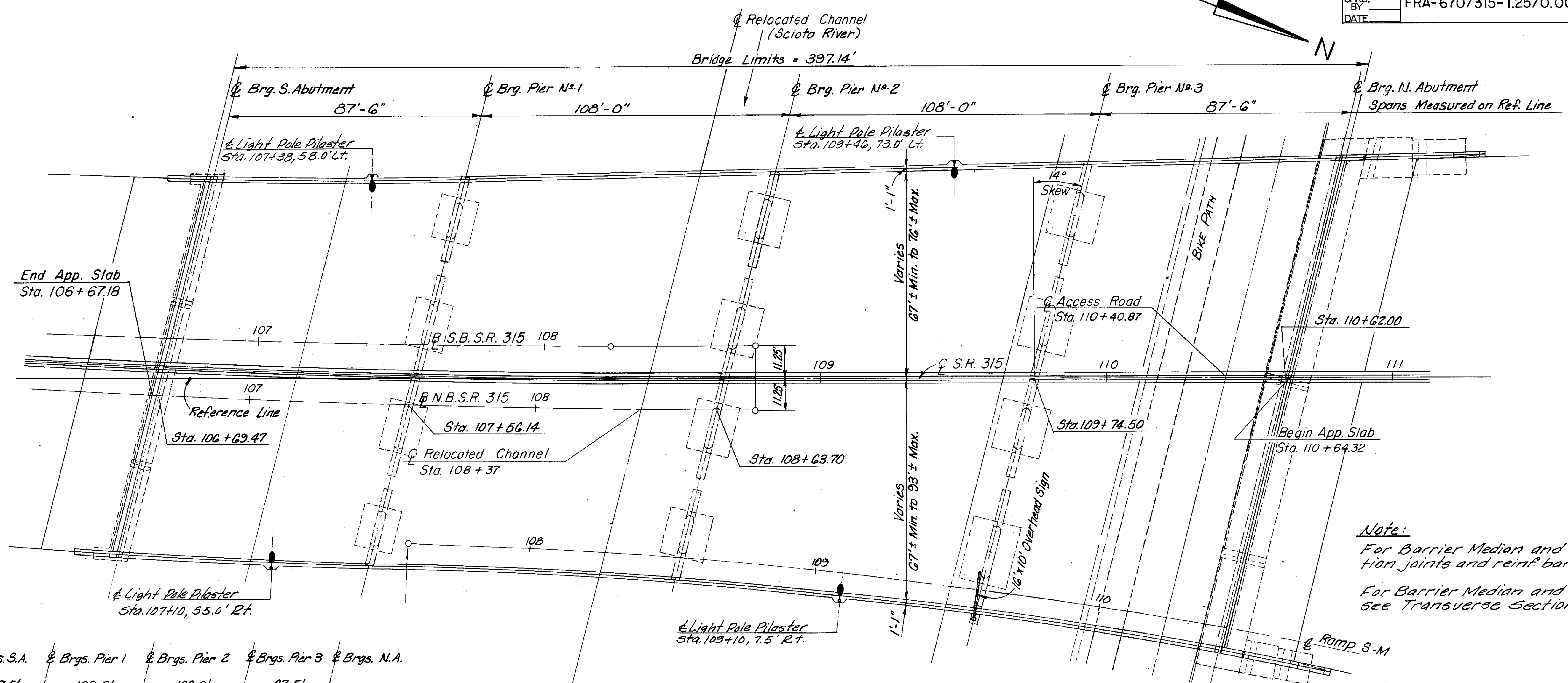
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**SITE PLAN**  
BRIDGE NO. FRA-315-0120  
S.R. 315 OVER SCIOTO RIVER  
FRANKLIN COUNTY STA. 106+67.18 (☉ N.B.) TO STA. 110+64.32

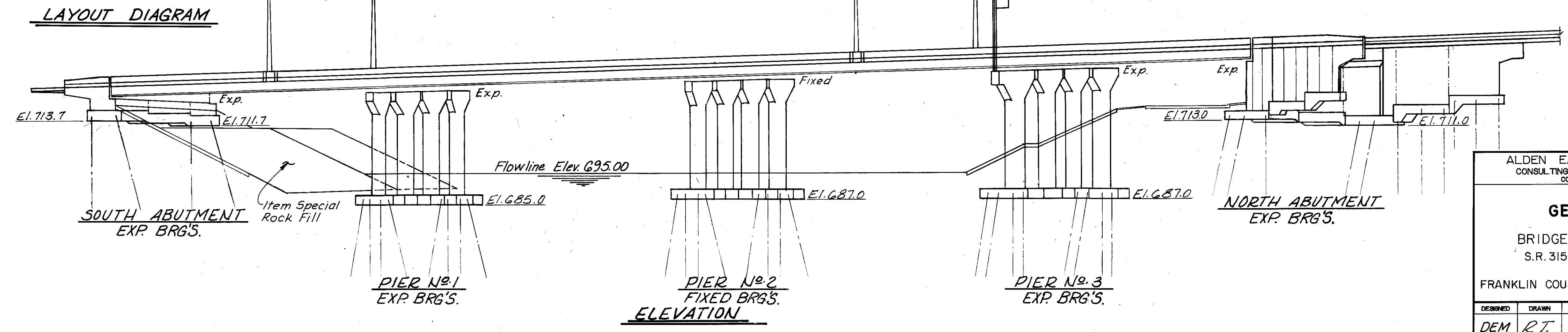
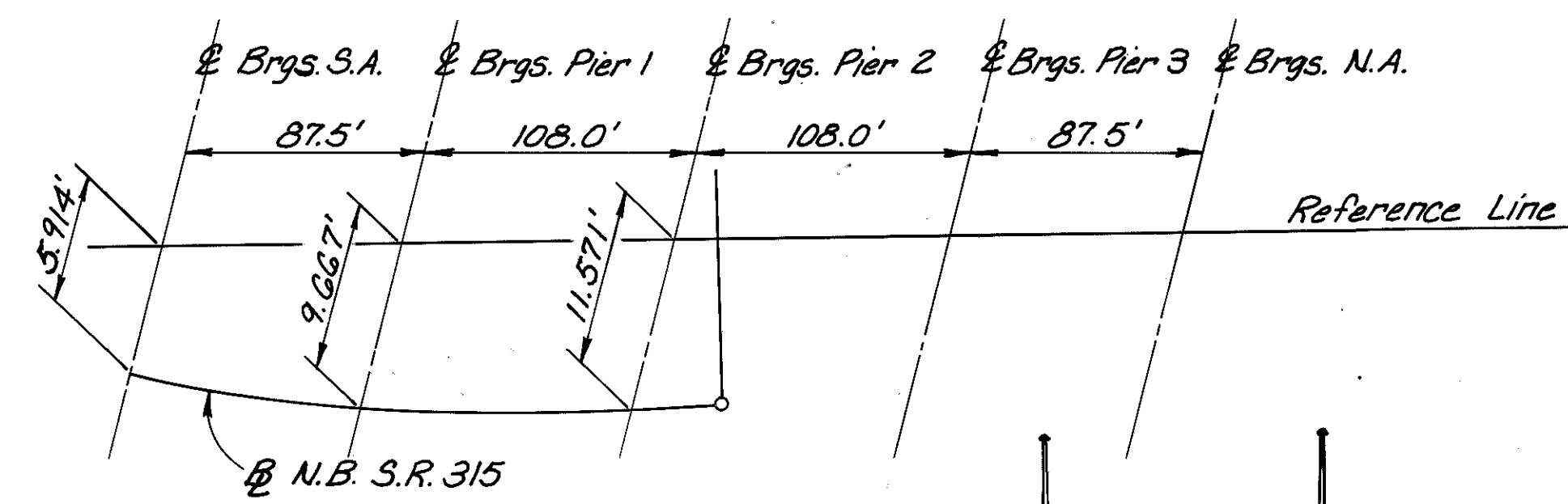
DESIGNED	DRAWN	TRACED	CHECKED	INVENTED	DATE	REVISION
G.W.M.	G.W.M.	K.R.H.	GVB	G.W.M.	10/5/84	

B321001A





**Note:**  
For Barrier Median and Parapet deflection joints and reinf. bars see Sht. 22/34  
For Barrier Median and Parapet details see Transverse Section Sht. 21/34



2/34

ALDEN E. STILSON & ASSOCIATES  
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COLUMBUS, CLEVELAND, WERTON

**GENERAL PLAN**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (S.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	R.T.		GVB	G.W.M.	5/24/89	

**ESTIMATED QUANTITIES**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	N. ABUT.	S. ABUT.	PIERS	SUPER.	GENERAL
503	11100	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING					LUMP
503	21100	2714	C.Y.	UNCLASSIFIED EXCAVATION	1144	351	1219		
505	11100	LUMP	SUM	PILE DRIVING EQUIPMENT MOBILIZATION					LUMP
506	11100	LUMP	SUM	STATIC LOAD TEST					LUMP
506	12200	1	EA.	SUBSEQUENT STATIC LOAD TEST					1
507	14400	14,900	L.F.	STEEL PILES, HP12 X 53	6480	1560	6860		
507	93300	343	EA.	STEEL POINT (OR SHOE)	108	39	196		
509	15841	741,268	LB.	EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN	84728	19001	149087	488452	
511	32202	1687	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE				1687	
511	42000	890	C.Y.	CLASS C CONCRETE, PIERS ABOVE FOOTINGS			890		
511	44100	510	C.Y.	CLASS C CONCRETE, ABUTMENTS NOT INCLUDING FOOTINGS	375	135			
511	46000	128	C.Y.	CLASS C CONCRETE, WINGWALLS ABOVE FOOTINGS	128				
511	46500	993	C.Y.	CLASS C CONCRETE, FOOTINGS	471	106	416		
SPECIAL	51267500	2196	S.Y.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	585	133		1478	
SPECIAL	51267502	111	S.Y.	SEALING OF CONCRETE SURFACES, EPOXY (SEE PROPOSAL NOTE)	85	26			
816	00610	112,500	LB.	FIELD PAINTING OF NEW STRUCTURAL STEEL, SYSTEM IZEU				112,500	
516	11210	310.3	L.F.	STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEAL	175.7	134.6			
516	13600	177	S.F.	1 INCH PREFORMED EXPANSION JOINT FILLER	154	23			
516	30501	185	L.F.	P.V.C. WATERSTOP, AS PER PLAN	156	29			
516	44300	20	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (11 1/2" X 23" X 2", NEOPRENE) AND LOAD PLATE (12 1/2" X 29" X 2" TO 2 1/2")			20		
516	44400	40	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (10" X 10" X 2 3/4", NEOPRENE) AND LOAD PLATE (14" X 11" X 1 13/16" TO 2 1/2")	22	18			
516	44400	40	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (13" X 20" X 2 1/2", NEOPRENE) AND LOAD PLATE (14" X 21" X 2" TO 2 9/16")			40		
516	44400	1	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (10" X 10" X 2 3/4", NEOPRENE) AND LOAD PLATE (18" X 11" X 1 13/16" TO 2 1/2")	1				
518	21101	410	C.Y.	POROUS BACKFILL, AS PER PLAN	359	51			
518	41100	134	L.F.	6" PERFORATED, HELICAL CORRUGATED STEEL PIPE, 707.01		134			
518	41200	14	L.F.	6" NON-PERFORATED, CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01		14			
518	42200	249	L.F.	8" PERFORATED, CORRUGATED STEEL PIPE, 707.01	249				
518	42300	50	L.F.	8" NON-PERFORATED, CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01	50				
523	11100	9	HOUR	DYNAMIC LOAD TEST					9
625				SEE SHEET 207 FOR LIGHTING SUMMARY					
863	10060	LUMP	SUM	STRUCTURAL STEEL MEMBERS, LEVEL THREE (3) FABRICATION				LUMP	
863	20000	15,969	EA.	WELDED STUD SHEAR CONNECTOR				15,969	

**GENERAL BRIDGE NOTES**

DESCRIPTION	DWG. NO.	SHT.	DATE
APPROACH SLABS	AS-1-81	1-3	9-15-94 R
BRIDGE RAILING	BR-1		12-15-94 R
END CROSSFRAMES	GSD-1-96	1-3	2-12-97

DESCRIPTION	ITEM	DATE
FIELD PAINTING OF NEW STEEL, SYSTEM IZEU	816	3-3-95
STRUCTURAL STEEL MEMBERS	863	9-9-97

**DESIGN SPECIFICATIONS**

THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1983, INCLUDING THE 1984 THRU 1987 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

**DESIGN DATA**

DESIGN LOADING - HS20-44 CASE I AND THE ALTERNATE MILITARY LOADING.

**DESIGN STRENGTHS: DECK AND PIERS**

CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616, A617 -  
 GRADE 60 - MINIMUM YIELD STRENGTH 60,000 P.S.I.

**DESIGN STRESSES, ALL OTHERS**

CONCRETE CLASS C - UNIT STRESS 1333 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616 OR A617 -  
 GRADE 60 - UNIT STRESS 24,000 P.S.I.  
 STRUCTURAL STEEL ASTM A588 - UNIT STRESS 27,000 P.S.I.

**DECK PROTECTION METHOD**

EPOXY COATED REINFORCING STEEL, ALL REINFORCING. MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK. SEALING TREATMENT ON BRIDGE FASCIA.

**ITEM SPECIAL, SEALING OF CONCRETE SURFACES**

A CONCRETE SEALER SHALL BE APPLIED TO THE CONCRETE FASCIA FOR THE FULL LENGTH OF THE SURFACES SHOWN ON SHEET [21/34]. SEE THE PROPOSAL FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

**REMOVAL OF EXISTING STRUCTURE**

WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC THE EXISTING STRUCTURE SHALL BE REMOVED. SUITABLE WASTE MASONRY MAY BE PLACED AS SLOPE PROTECTION AS DIRECTED BY THE ENGINEER.

**PILE DESIGN LOADS**

THE DESIGN LOADS FOR THE PILES ARE AS FOLLOWS:	
SOUTH ABUTMENT	48 TONS PER PILE
PIER NO.1	61 TONS PER PILE
PIER NO.2	62 TONS PER PILE
PIER NO.3	64 TONS PER PILE
NORTH ABUTMENT	68 TONS PER PILE

**EMBANKMENT CONSTRUCTION**

SEE NOTES AND DIAGRAMS ON SHEET NO. [4/34]

**ITEM 506 - STATIC LOAD TEST**

THE CONTRACTOR SHALL CONDUCT A STATIC LOAD TEST ON A PILE LOCATED IN OR NEAR A PIER FOOTING.

**PILE DRIVING CONSTRAINTS**

PRIOR TO DRIVING PILES AT THE PROPOSED SOUTH ABUTMENT, THE SPILL-THRU SLOPE EMBANKMENT AT THE ABUTMENT SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUB-GRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF BOTH ABUTMENTS. AFTER THE EMBANKMENT HAS BEEN COMPLETED WITHIN THE ABOVE REQUIRED LIMITS, A 60 DAY WAITING PERIOD IS REQUIRED PRIOR TO EXCAVATING AND DRIVING PILES AT THE ABUTMENT. THE DIRECTOR MAY SHORTEN THE WAITING PERIOD IF THE CONTRACTOR'S FIELD MEASUREMENTS INDICATE THAT 90 PERCENT CONSOLIDATION HAS BEEN ATTAINED.

**PILE HAMMER**

THE PILE HAMMER USED TO INSTALL THE STEEL "H" BEARING PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 16,500 FOOT-POUNDS. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.05 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE REQUIRED WORK. REFER TO "ODOT'S MANUAL OF PROCEDURES FOR STRUCTURES" TO OBTAIN THE STATE'S ENERGY RATING.

**PILE POINTS**

STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED PILING. IF H-PILES ARE INSTALLED THE H-SHAPE PILE POINT SHALL BE USED. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BOULEVARD, CLIFTON, NEW JERSEY 07014; INTER-NATIONAL 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.

**UTILITY LINES**

ALL EXPENSE INVOLVED IN RELOCATING AND INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER(S). THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

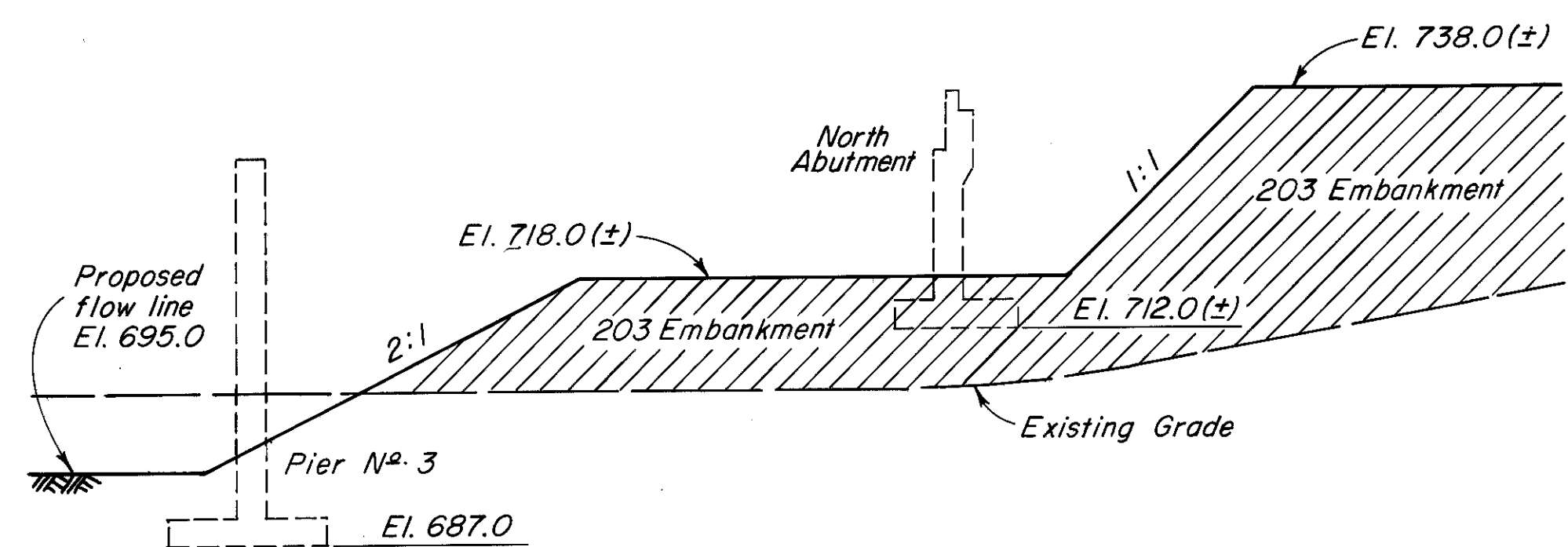
**COMMON DETAIL REFERENCES**

STRIP SEAL EXPANSION JOINTS	SHEET 311
EXPANSION & CONTRACTION JOINTS	SHEET 311
RUSTICATION GROOVE	SHEET 311
P.V.C. WATERSTOP	SHEET 311

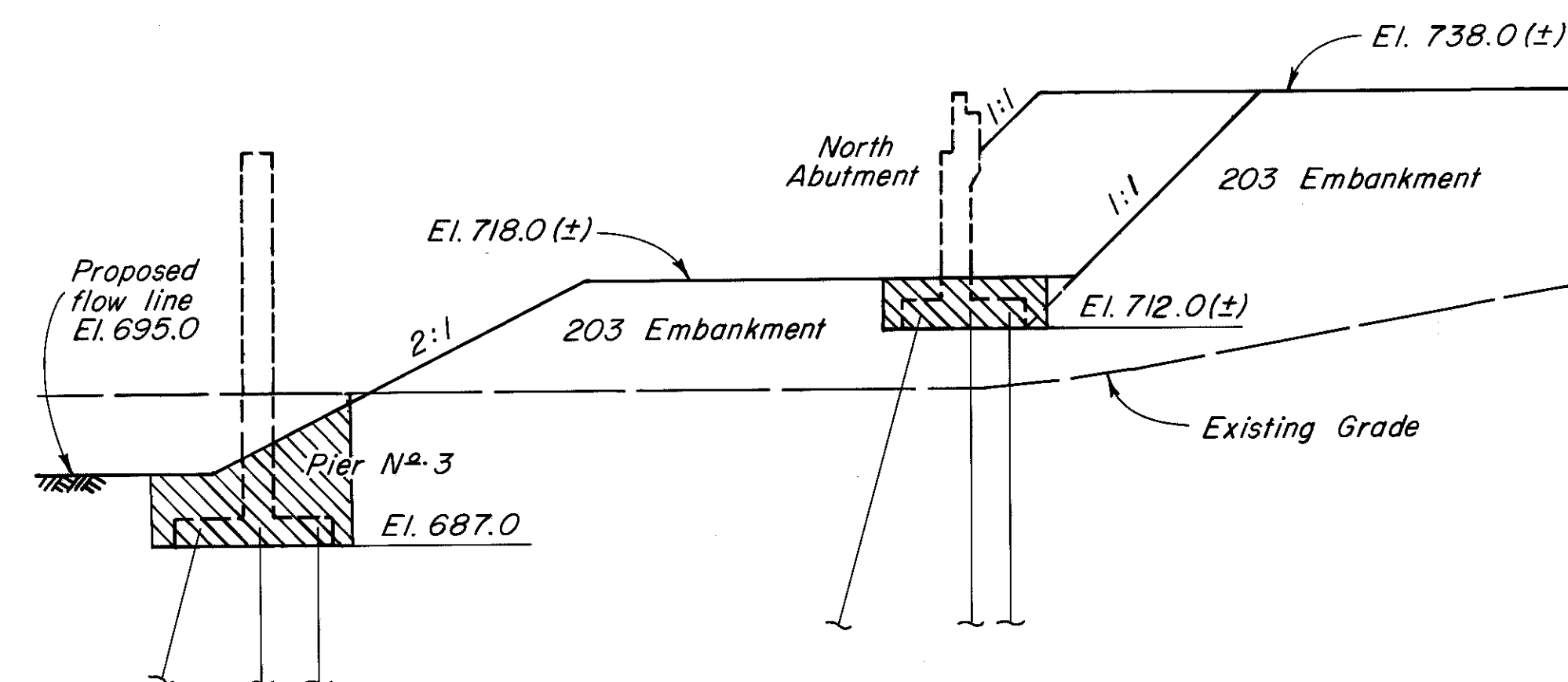
**ITEM 509 - EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN**

THE REINFORCING STEEL LIST BAR MARKS FOR THIS STRUCTURE INDICATE SOME REGULAR AND SOME EPOXY COATED REINFORCING STEEL ARE REQUIRED, BUT IT IS INTENDED THAT ALL REINFORCING STEEL REQUIRED FOR THIS STRUCTURE BE EPOXY COATED. THEREFORE, DURING THE SHOP DRAWING PREPARATION FOR THE REINFORCING STEEL, THE CONTRACTOR AND FABRICATOR SHALL MAKE THE NECESSARY REVISIONS TO PROVIDE ALL EPOXY COATED REINFORCING STEEL. PARTICULAR CARE SHALL BE TAKEN TO ADJUST THE BAR SPLICE AND LAP LENGTHS WHERE AND AS NECESSARY TO MEET THE CURRENT AASHTO CRITERIA FOR EPOXY COATED REINFORCING STEEL. COST OF THE ADDITIONAL WORK TO BE INCLUDED IN THE PRICE BID FOR ITEM 509, EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN.

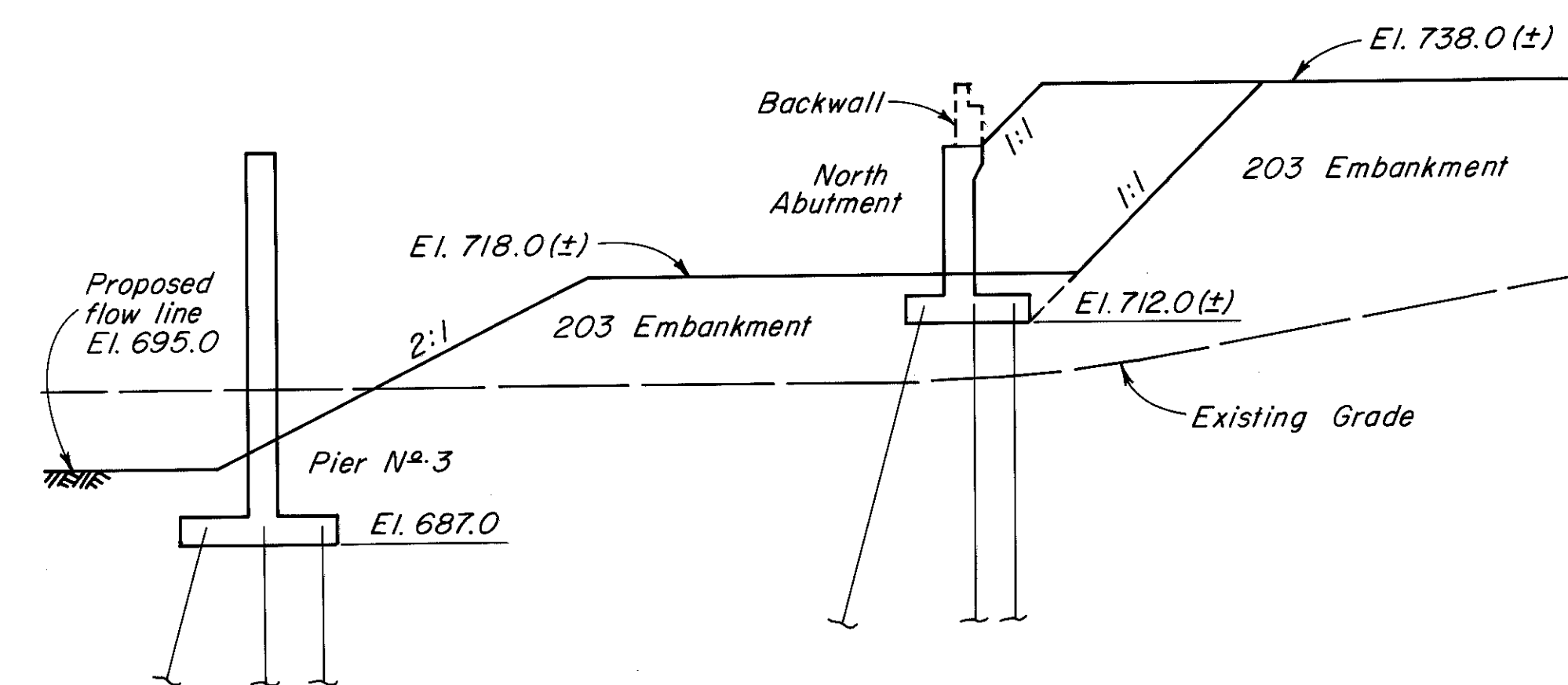
<b>STILSON &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND	
<b>ESTIMATED QUANTITIES AND GENERAL NOTES</b> BRIDGE NO. FRA-315-0120 S.R.315 OVER SCIOTO RIVER	
FRANKLIN COUNTY STA. 106+67.18 @ (NB) STA. 110+64.32	
DESIGNED	REVISED
DRAWN	DATE
TRACED	
CHECKED	
REVISED	
DEM	GVM 5-24-89



FIRST STAGE OF CONSTRUCTION



SECOND STAGE OF CONSTRUCTION



THIRD STAGE OF CONSTRUCTION

Construction Constraints - Pier No. 3 and North Abutment: Construction at the proposed pier no. 3 and north abutment shall be as follows:

1. Place embankment as shown.
2. The excavation for pier no. 3 and the north abutment and the installation of the piles for pier no. 3 and north abutment shall not begin until after the above required embankment has been constructed and the completed embankment has experienced a waiting period of 30 days.
3. Before the north abutment backwall is constructed, embankment located behind the north abutment shall be placed up to the level of the subgrade with a 1:1 slope from the bridge seat. Payment for backfill and new embankment, 503.10, required in excess of 503, 518 and 203 quantities shall be included in the price bid for Item 203 Embankment.

4/34

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

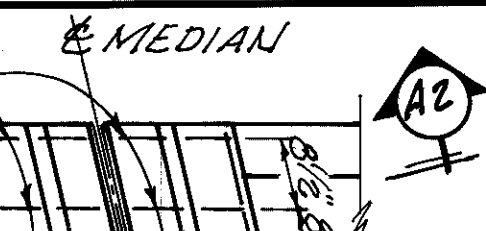
**CONSTRUCTION STAGES**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER  
FRANKLIN COUNTY STA. 106 + 67.18 (E.N.B.) TO  
STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	5/24/89	

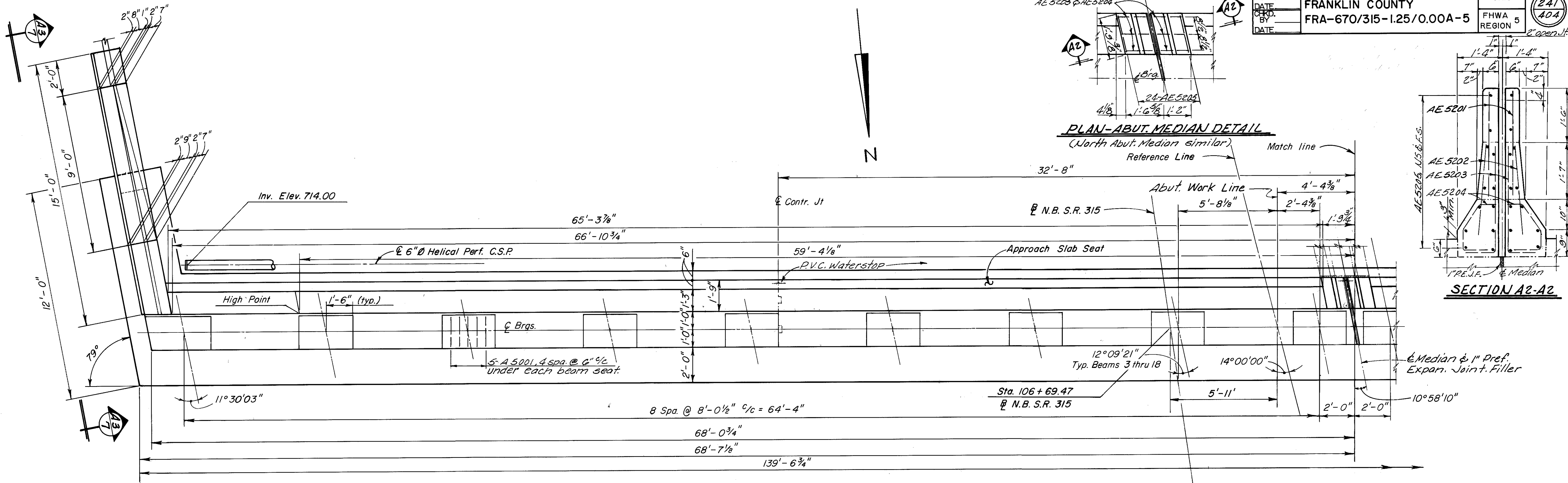


AE 5201, AE 5202, AE 5203 & AE 5204

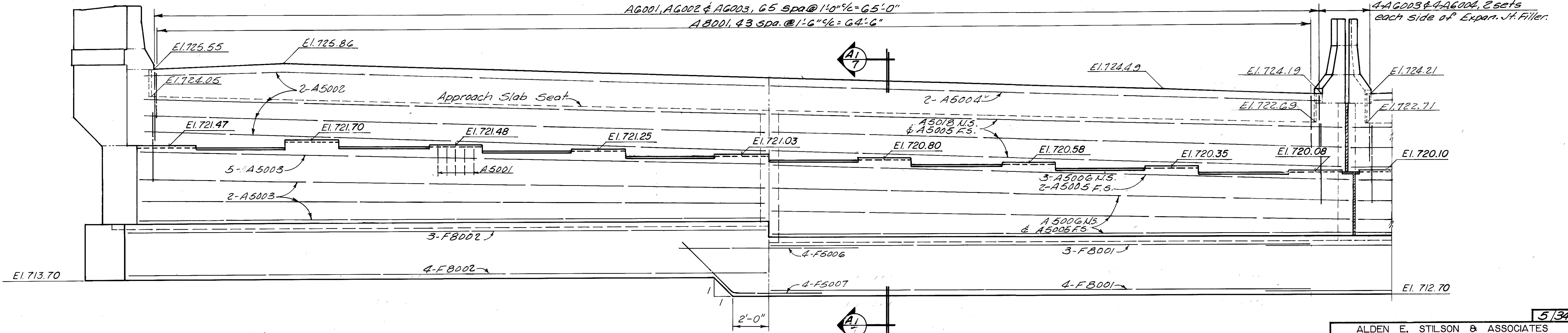


**PLAN-ABUT. MEDIAN DETAIL**  
(North Abut. Median similar)

CALC. BY	FRANKLIN COUNTY	OHIO	
DATE	FRA-670/315-1.25/0.00A-5	FHWA REGION 5	
CHECKED BY			
DATE			



**PART PLAN**



**ELEVATION**  
(Piling not shown)

NOTE: For A5007, F5001, F5002 & F6001 see South Abutment Foundation Plan, sheet 13/34

For section A<sub>1</sub>-A<sub>1</sub>, see South Abutment Details sheet 7/34

5/34

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**SOUTH ABUTMENT DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

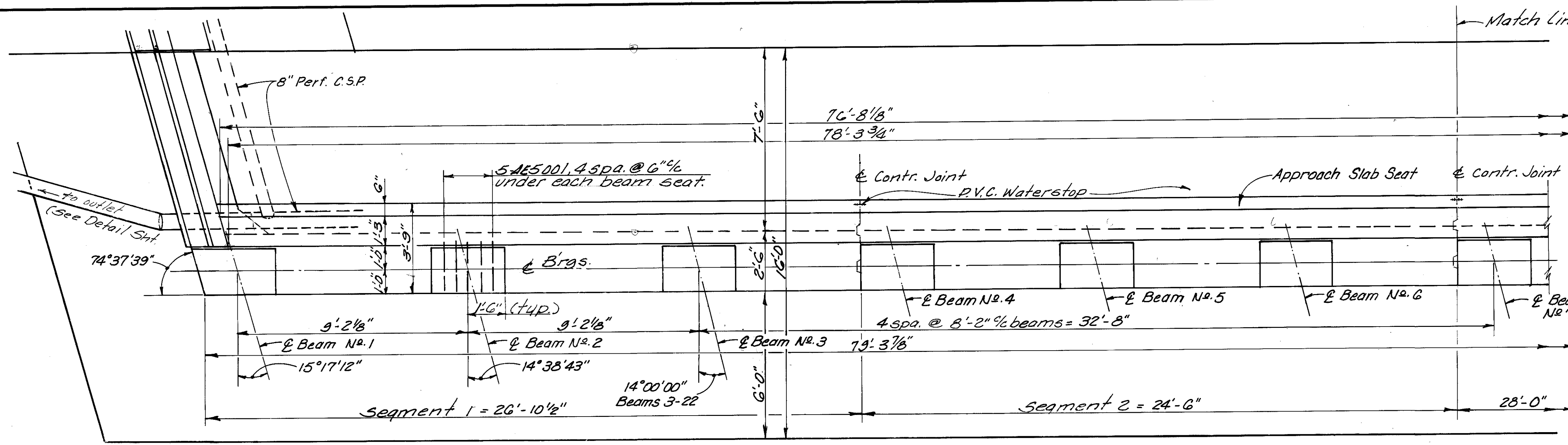
FRANKLIN COUNTY STA. 106 + 67.18 (N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACKED	CHECKED	REVIEWED	DATE	REVISION
DEM	R.T.		GVB	G.W.M.	5/24/89	

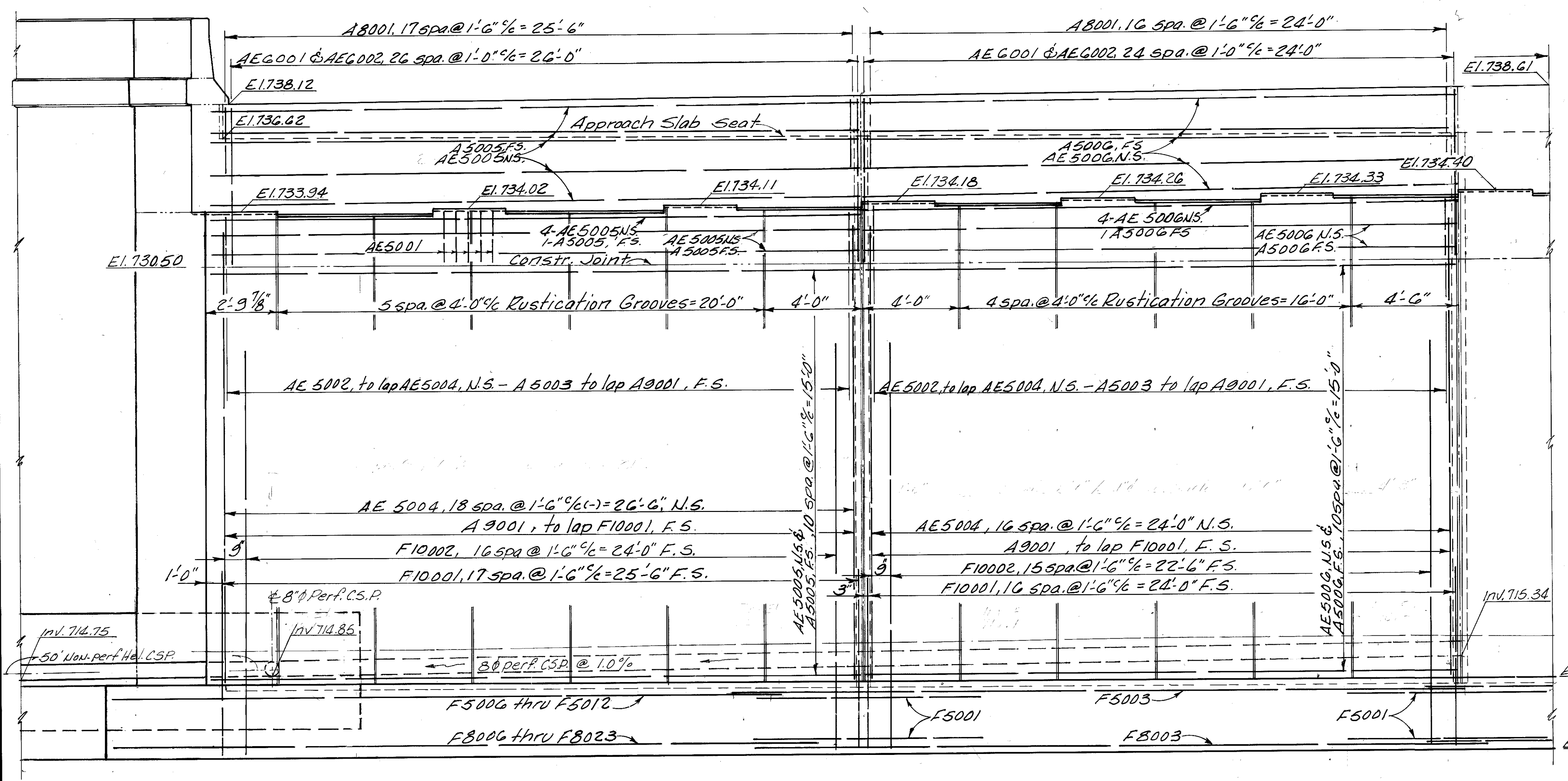






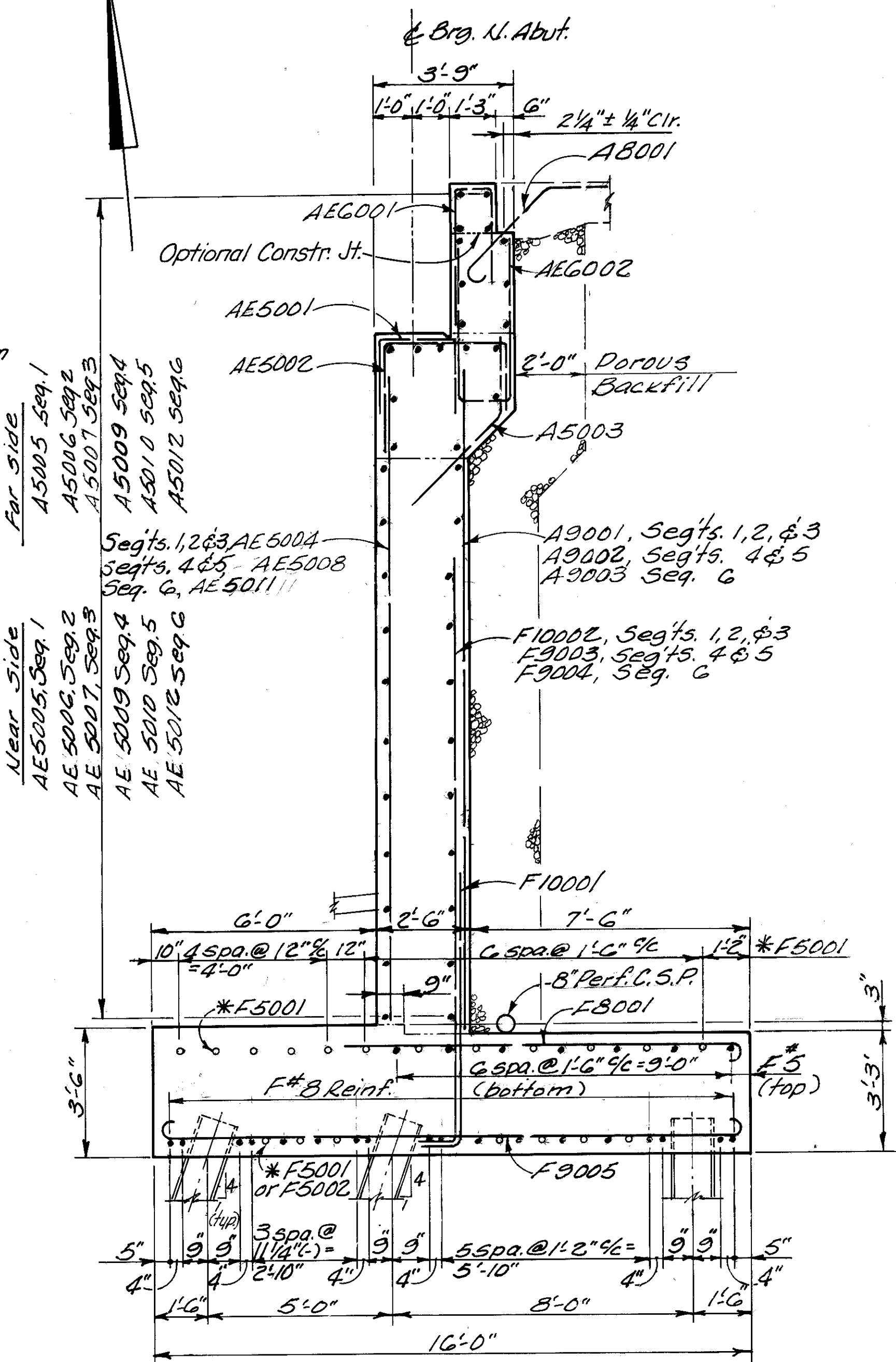


**PLAN**



**ELEVATION**

Piles not shown, see Foundation Plan Sht. 14/34



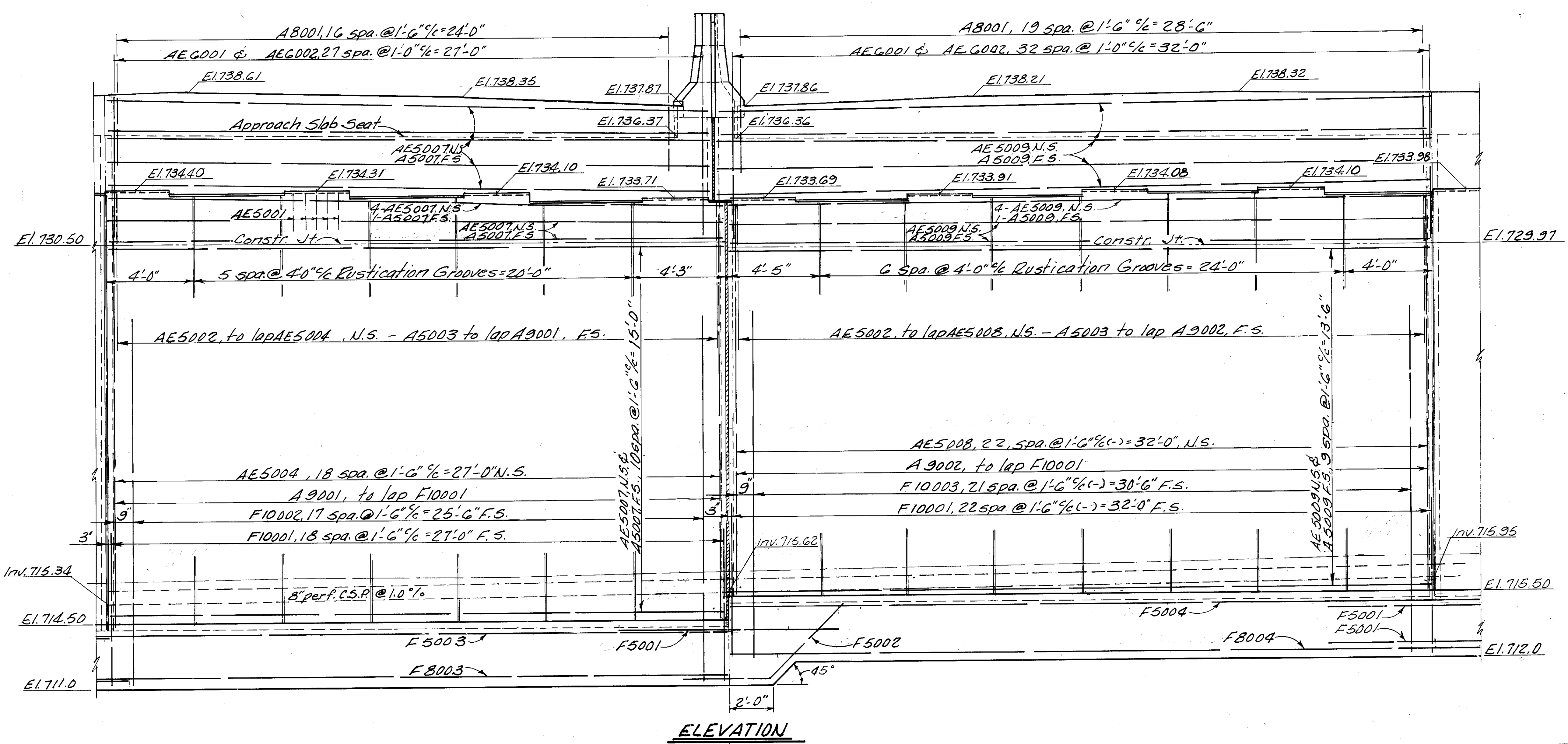
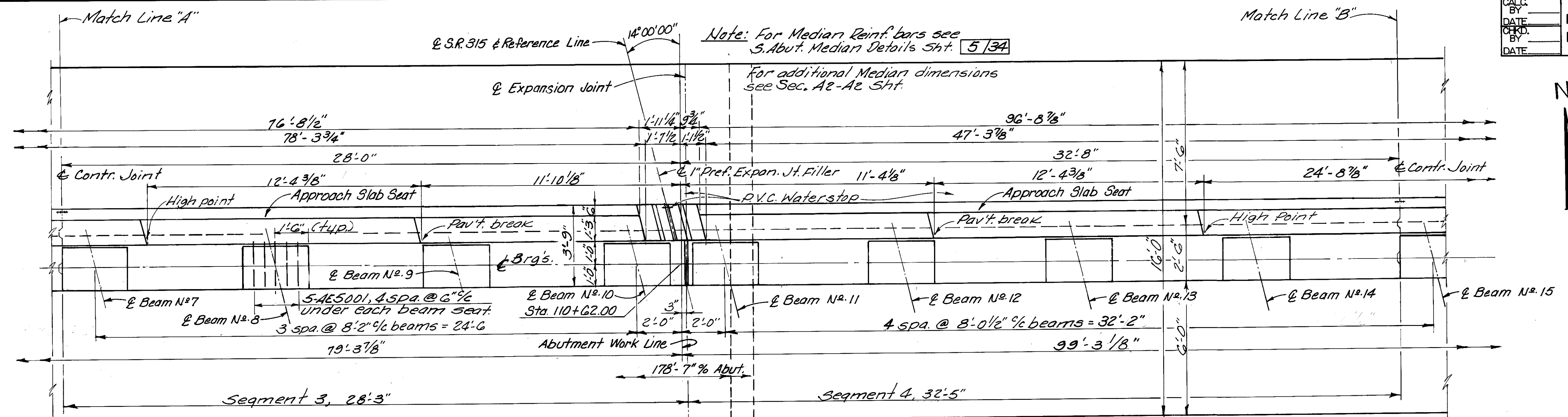
**TYPICAL SECTION THRU N. ABUTMENT**

**Notes:**  
 \*In Typical Section the symbol o indicates F5001 (top) & F5002 (bottom) to be centered under Construction Joint or Expansion Joint.  
 In reinforcing bar callouts: N.S. indicates near side. F.S. indicates far side.  
 For location & runs of footing transverse & longitudinal bars see Footing Foundation plans Sheet, 14/34.

ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WERTON

**NORTH ABUTMENT DETAILS**  
 BRIDGE NO. FRA-315-0120  
 S.R. 315 OVER SCIOTO RIVER  
 FRANKLIN COUNTY STA. 106 + 67.18 (@ N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.N.M.	5/24/89	



9/34

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CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

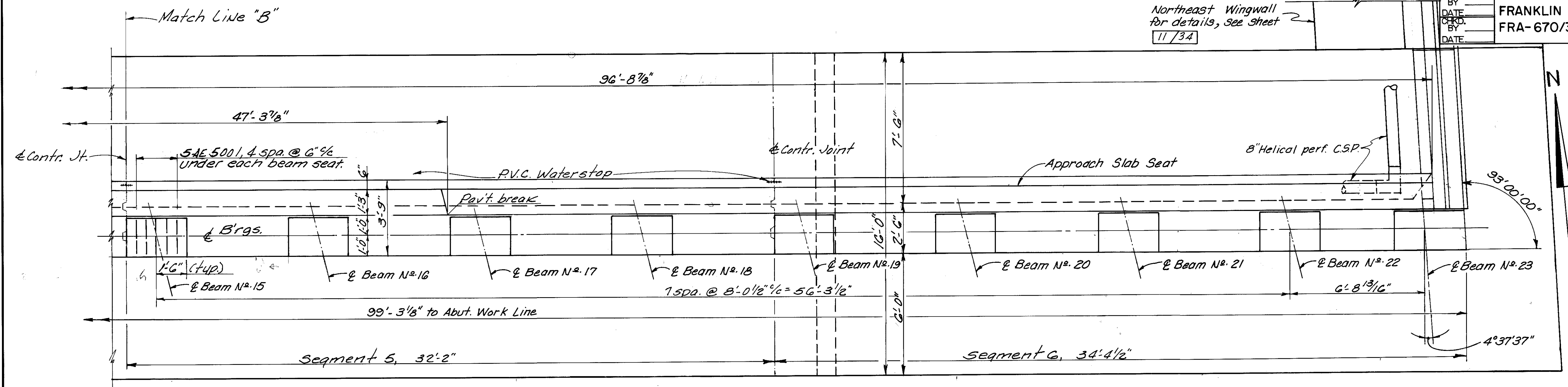
**NORTH ABUTMENT DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

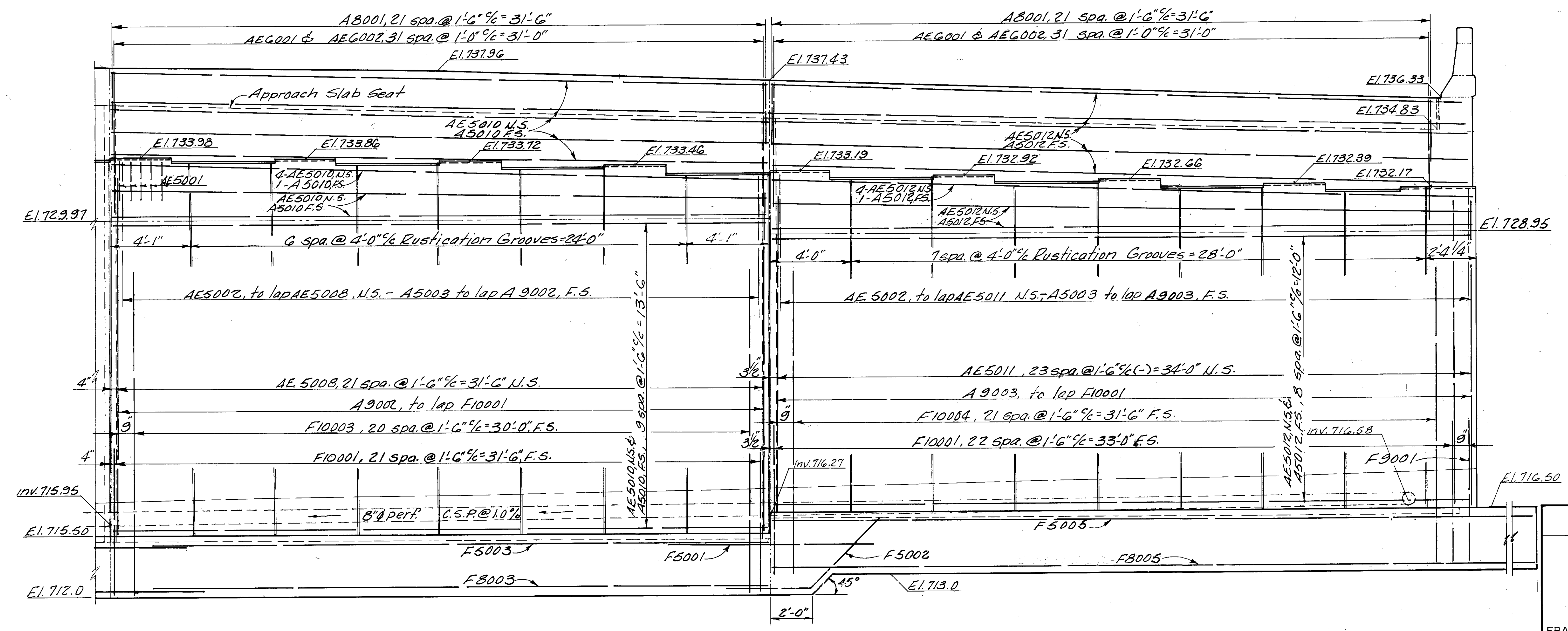
FRANKLIN COUNTY STA. 106 + 67.18 (@ N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/89	

Northeast Wingwall  
for details, see sheet  
11/34



PLAN



ELEVATION

10/34

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

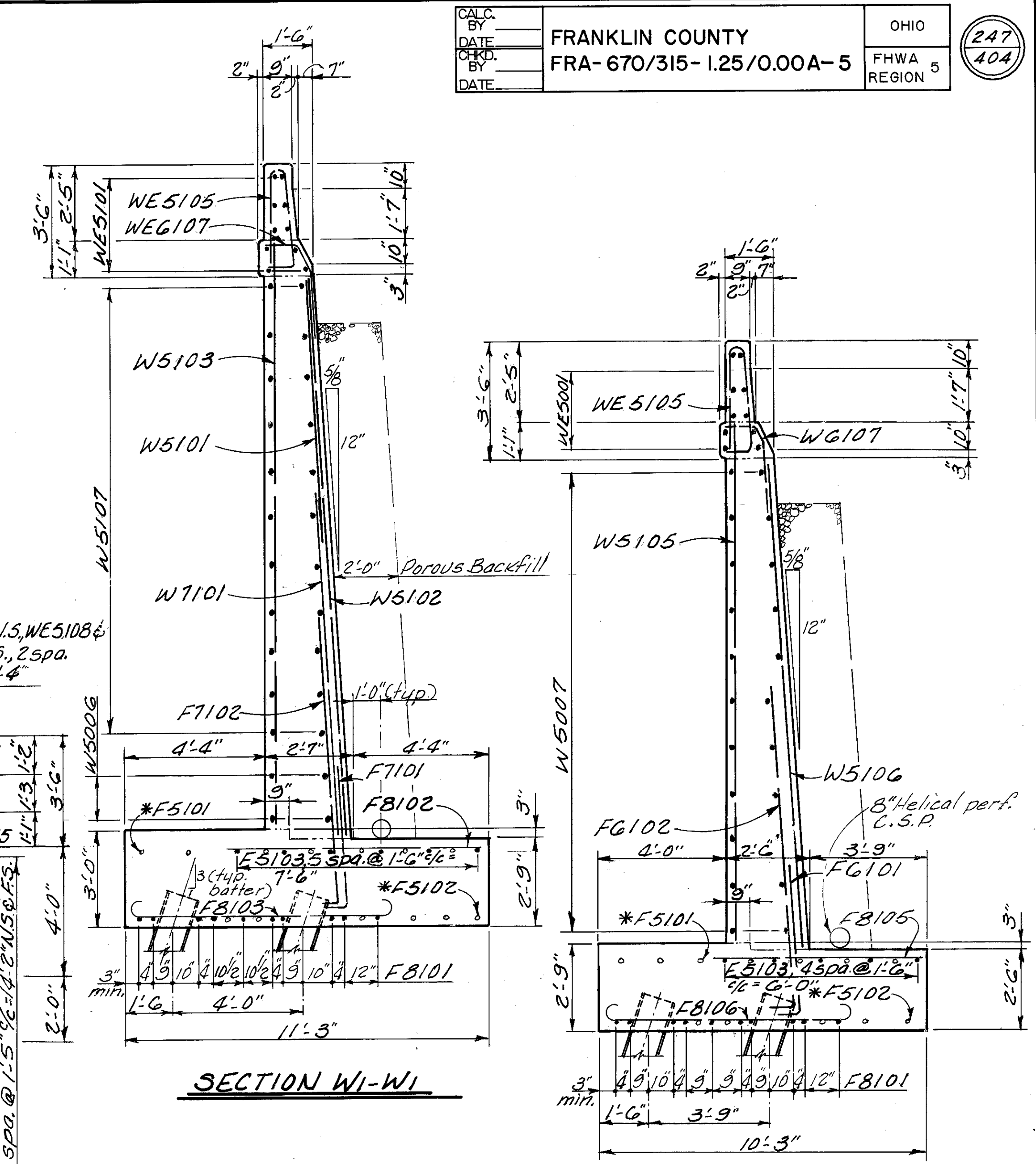
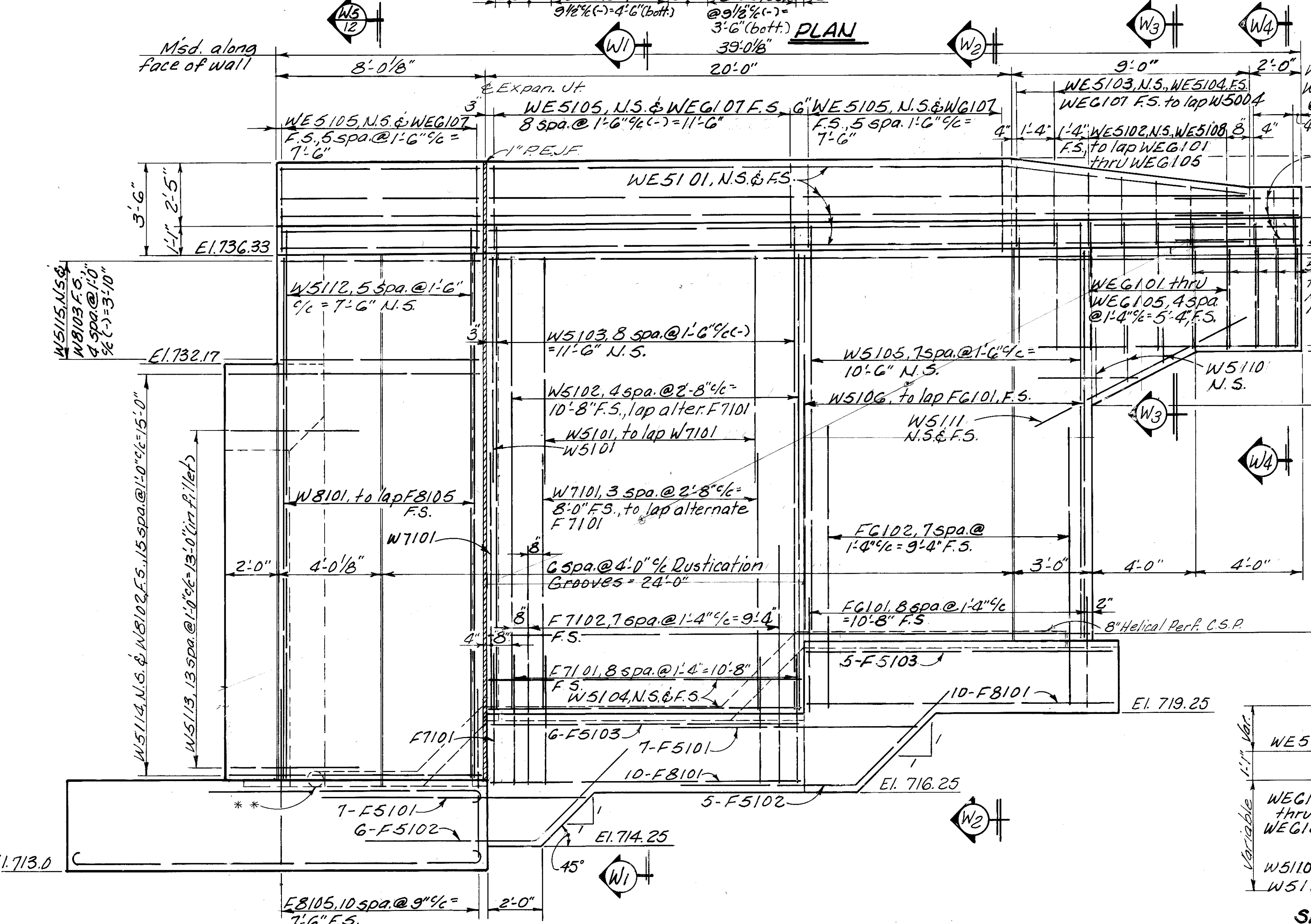
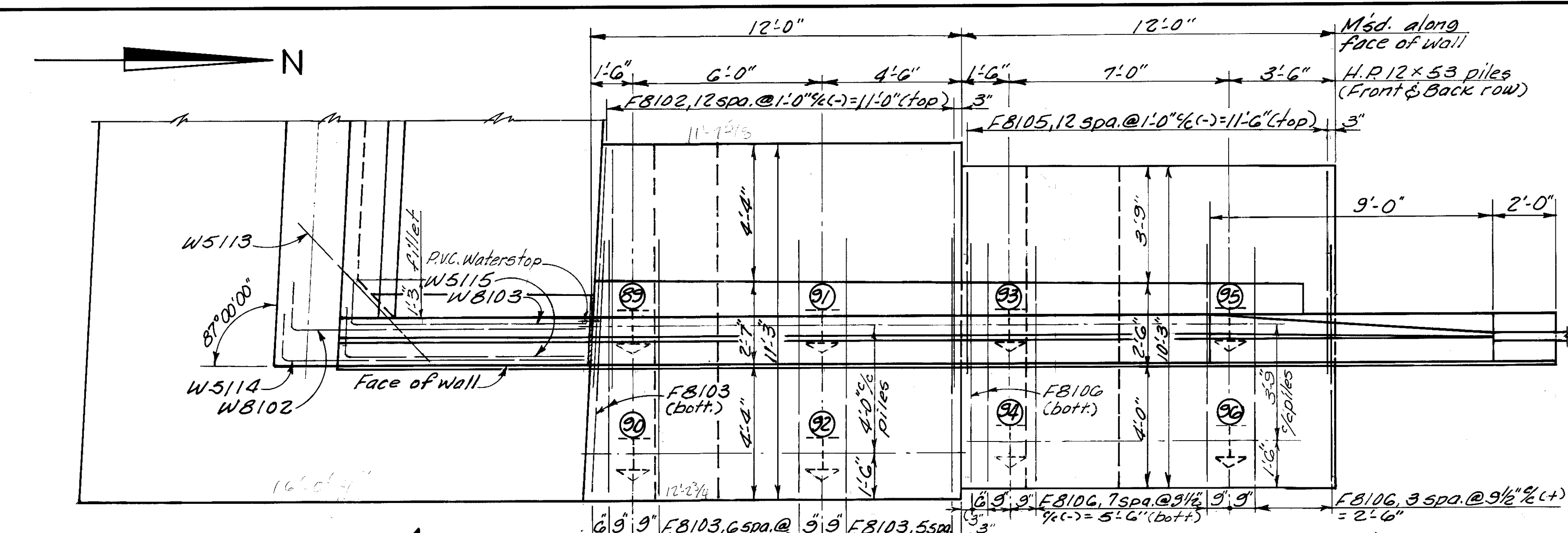
**NORTH ABUTMENT DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	R.T.		GVB	G.W.M.	5/24/89	





**SECTION W1-W1**

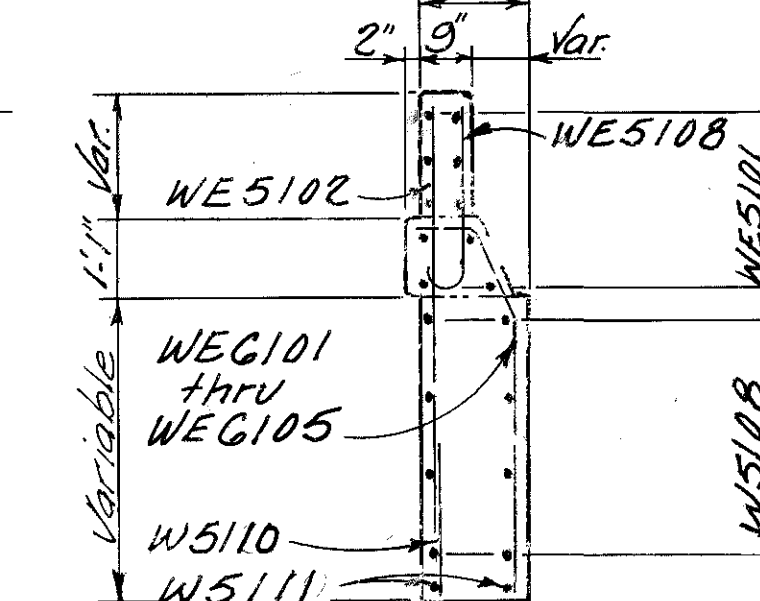
**SECTION W2-W2**

**PILE SYMBOLS**

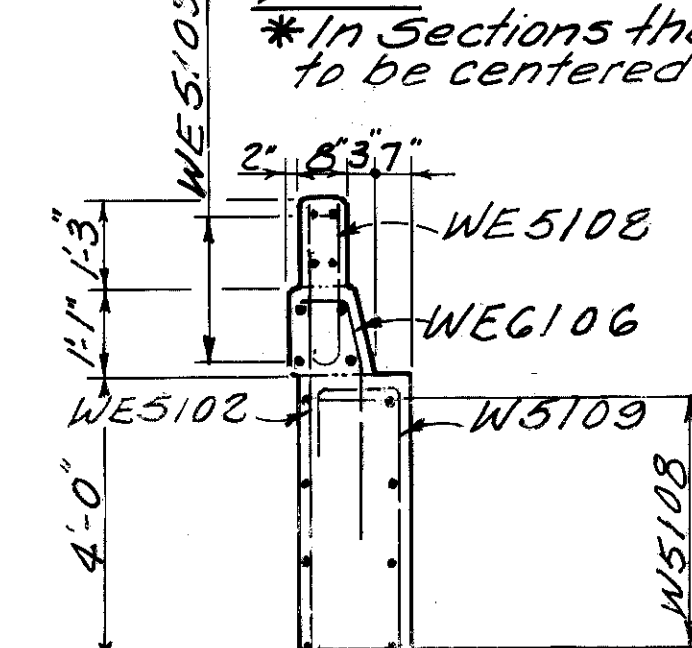
- Pile No.
- Batter Pile
- Batter direction @ 4:1
- Vertical Pile

**Notes:**  
 \* In Sections the symbol  $\circ$  indicates F5101 (top) & F5102 (bottom) to be centered under Construction or Expansion Joint.

In reinforcing bar callouts:  
 N.S. indicates near side.  
 F.S. indicates far side.



**SECTION W3-W3**



**SECTION W4-W4**

Note: For abutment footing reinf. bars see Shts 8-103A  
 \*\* For 8" Helical perf. C.S.P. see N. Abut. Shts. 8-1013A

11/34

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 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

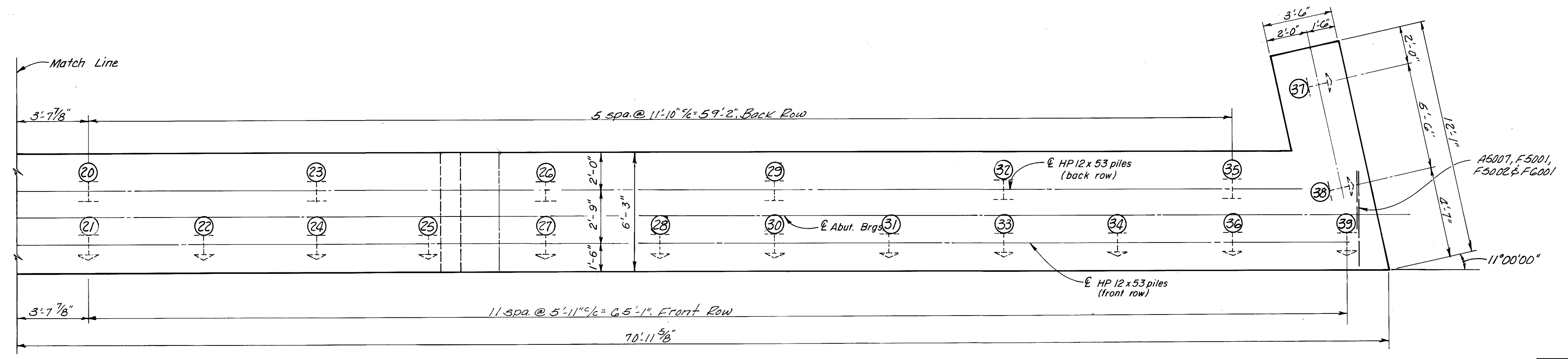
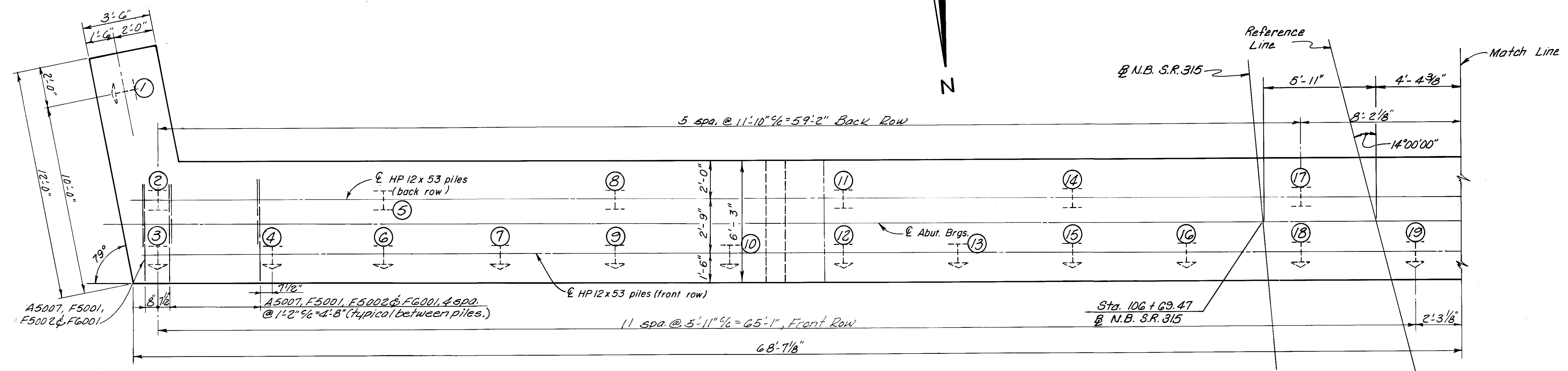
**NORTHEAST WINGWALL**  
 BRIDGE NO. FRA - 315 - 0120  
 S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 ( @ N.B. ) TO  
 STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/89	







SOUTH ABUTMENT

FOUNDATION PLAN

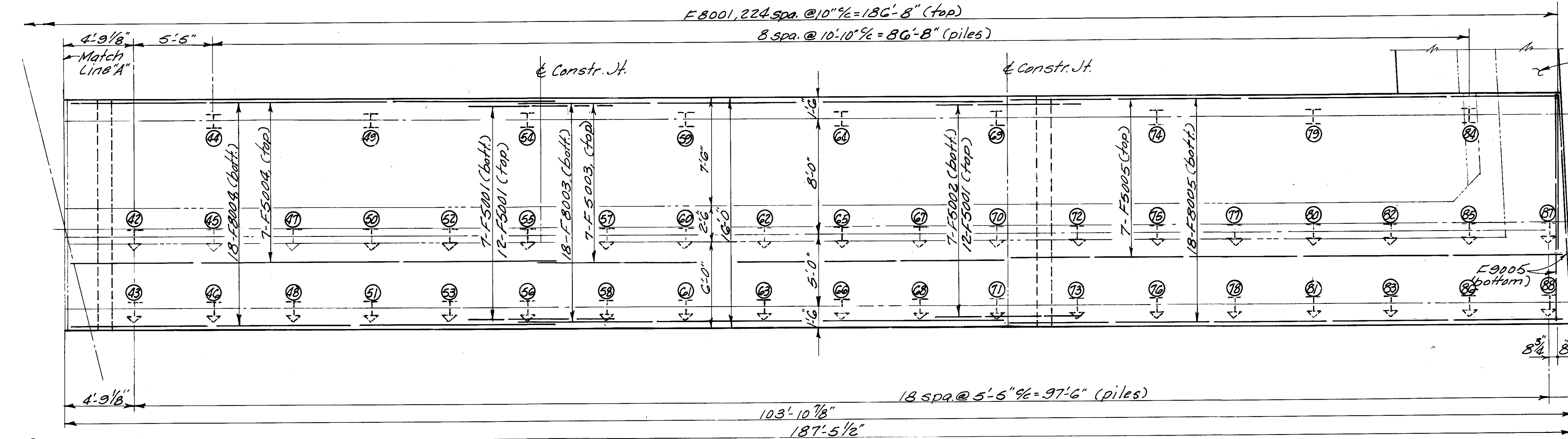
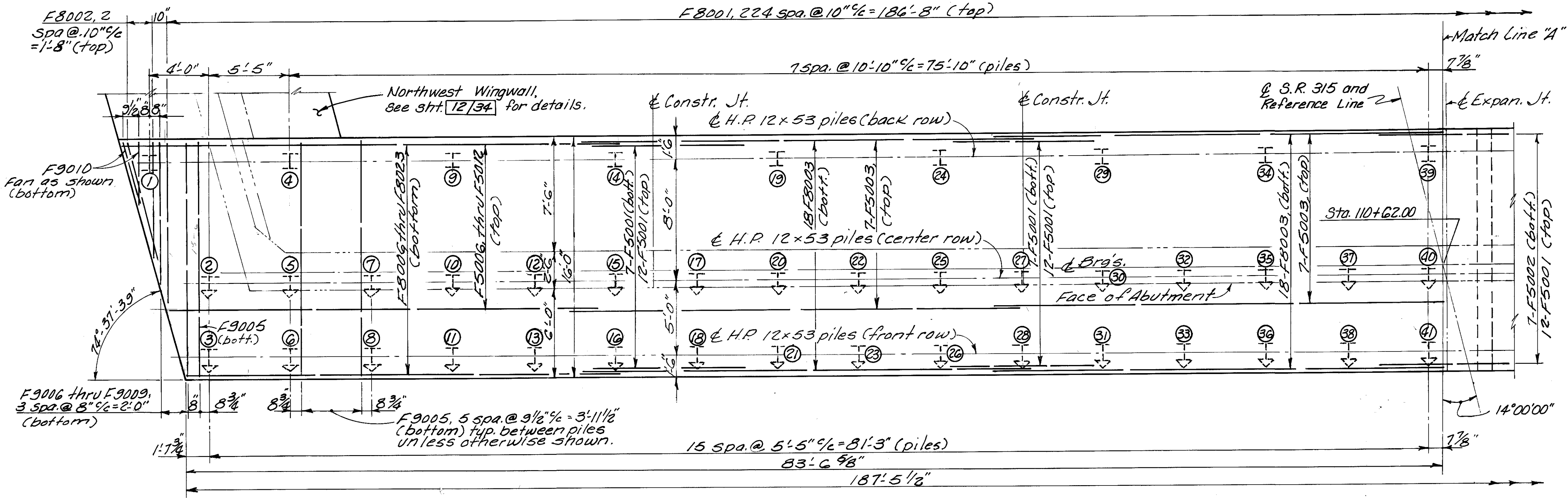
PILE SYMBOLS

Pile No.  
 Batterd Pile  
 Batter direction @ 4:1  
 Vertical Pile

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON						
<b>SOUTH ABUTMENT FOUNDATION PLAN</b>						
BRIDGE NO. FRA - 315 - 0120 S.R. 315 OVER SCIOTO RIVER						
FRANKLIN COUNTY					STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32	
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	R.T.		GVB	G.W.M.	5/24/89	

13/34





**NORTH ABUTMENT  
FOUNDATION PLAN**

**PILE SYMBOLS**

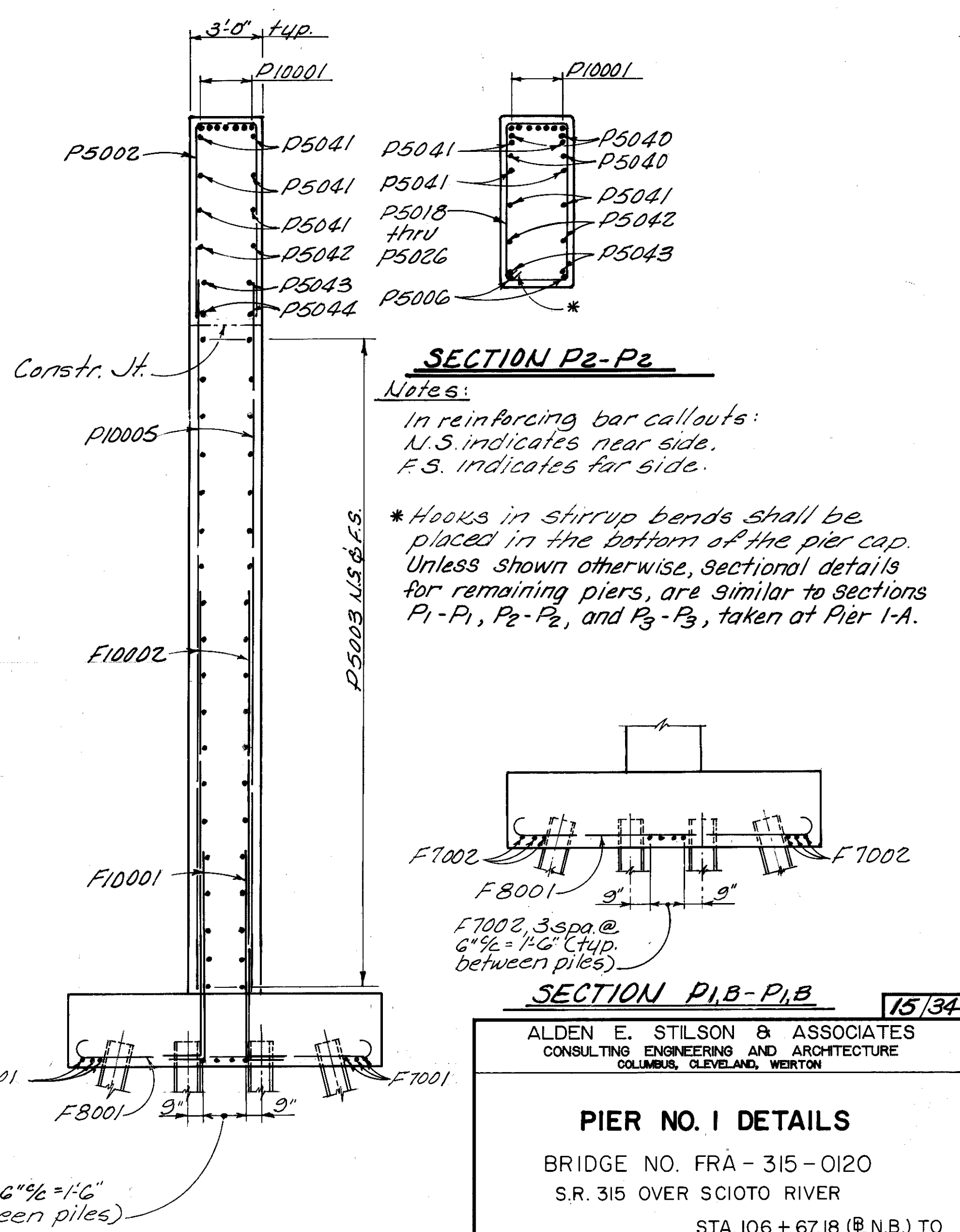
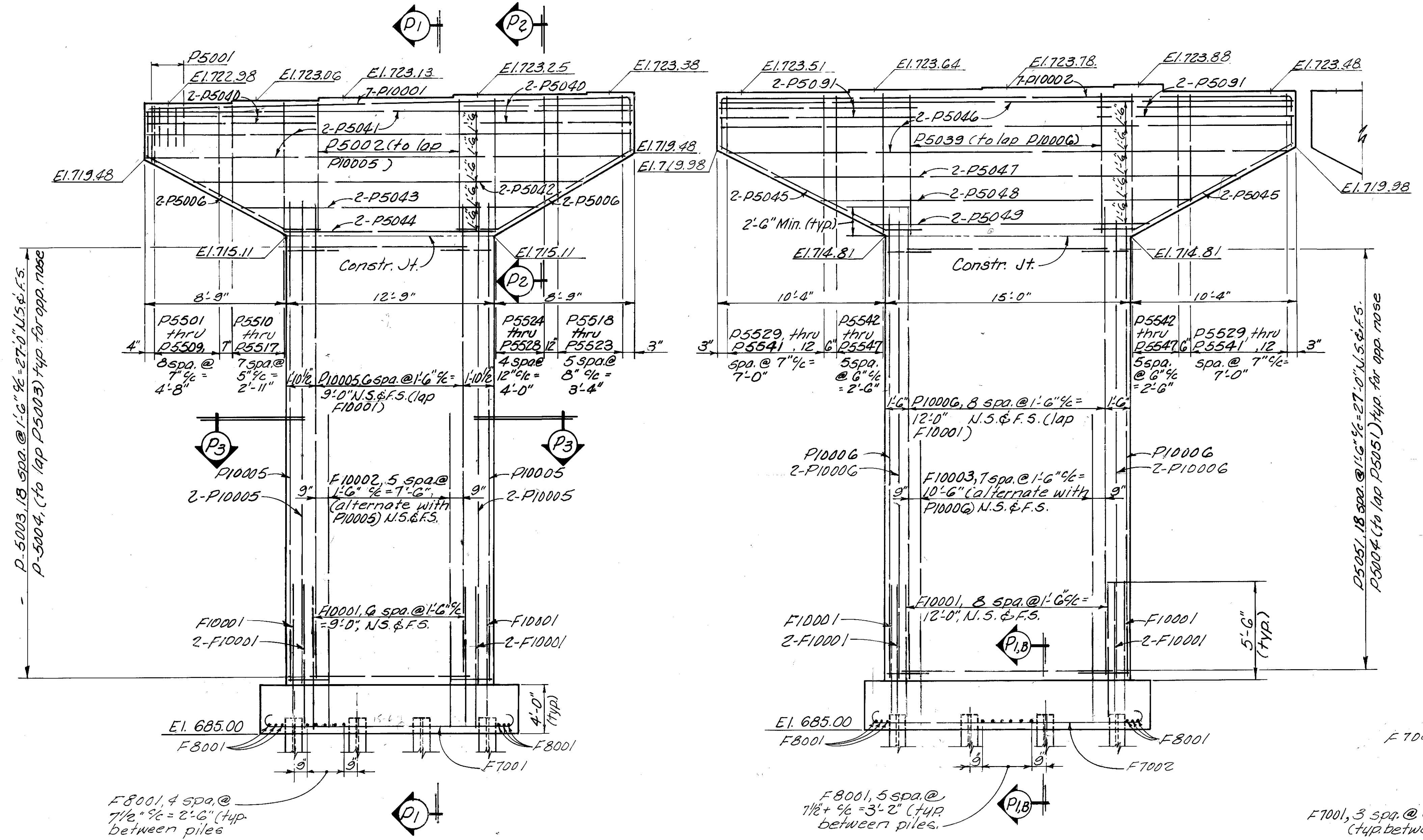
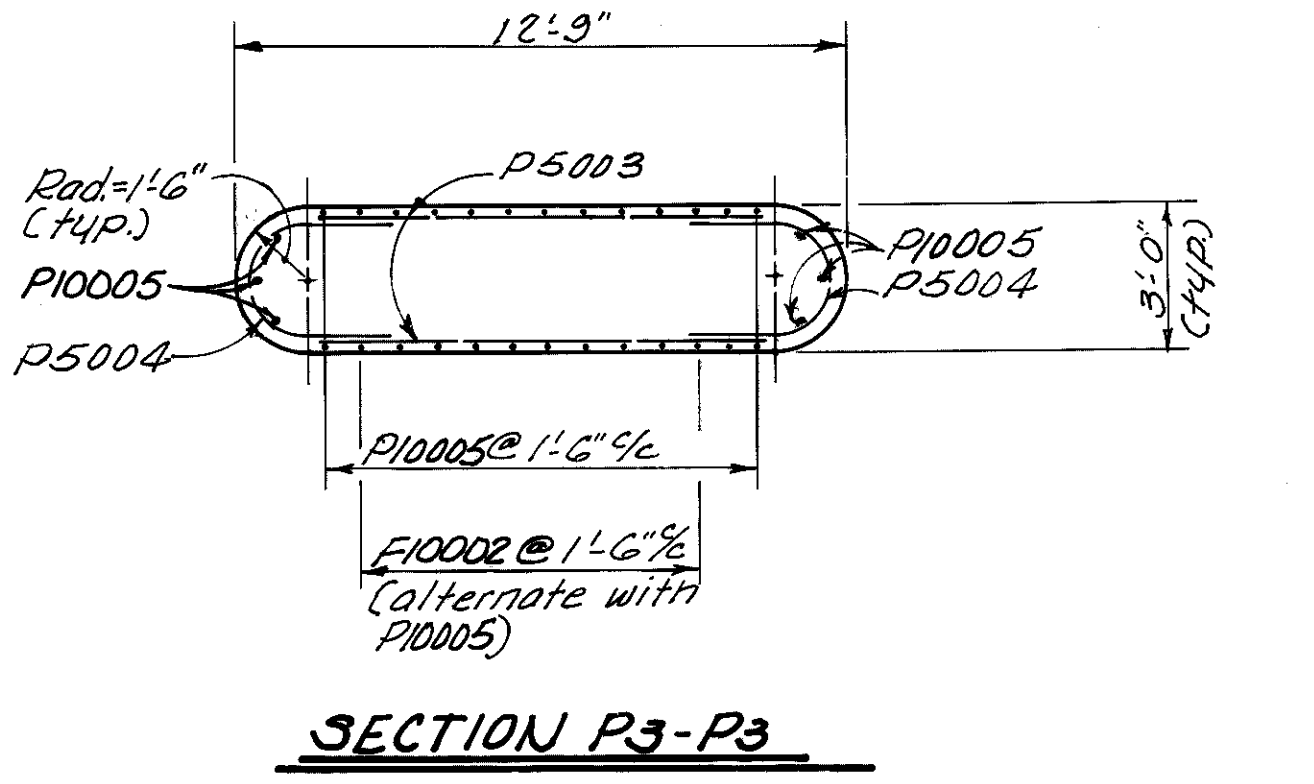
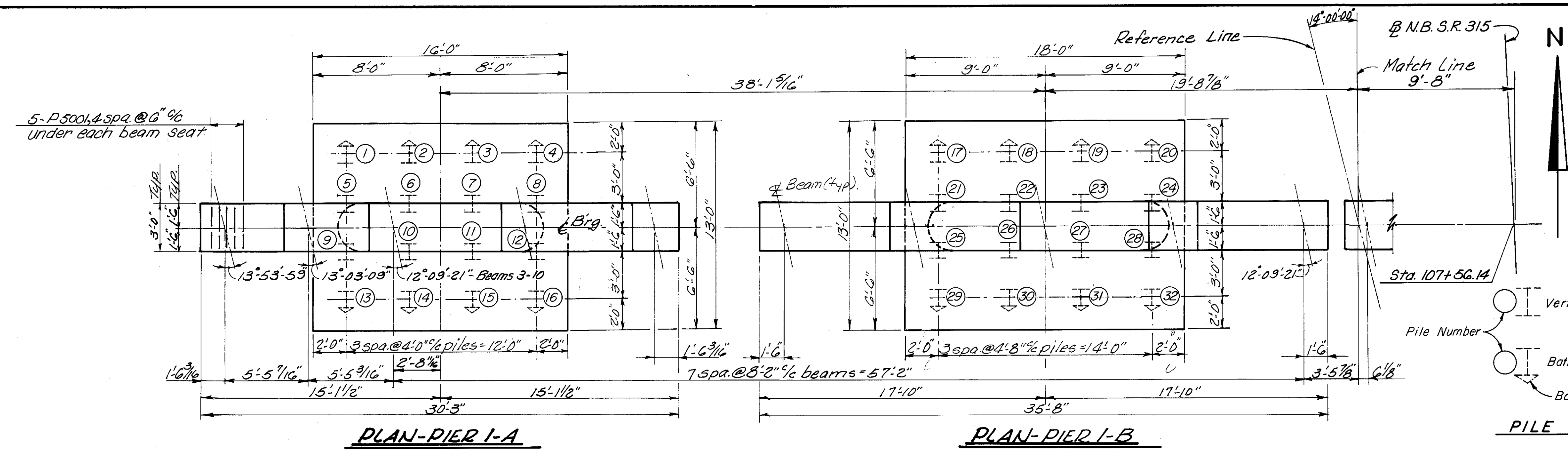
Pile No.  
 Batterd Pile  
 Batter direction @ 4:1

Vertical Pile

*Note:* Each run of transverse footing reinforcing shall be comprised of the following: Top bars, 3-F5003, 1-F5004, 1-F5005 & 1-F5006 thru F5012, min. lap 1'-7". Bottom bars, 3-F8003, 1-F8004, 1-F8005 & 1-F8006 thru F8023, min. lap 2'-6". For transverse footing reinforcing spacing see Typical Abutment Section Sht. 8/34

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>NORTH ABUTMENT FOUNDATION PLAN</b>						
BRIDGE NO. FRA - 315 - 0120 S.R. 315 OVER SCIOTO RIVER						
FRANKLIN COUNTY				STA. 106 + 67.18 (± N.B.) TO STA. 110 + 64.32		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	RT.		GVB	G.W.M.	5/24/89	

5-0712  
4-2374  
5-25512  
1-6972



15/34

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**PIER NO. 1 DETAILS**

BRIDGE NO. FR-315-0120  
S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	R.T.		MAP	G.W.M.	7/21/89	



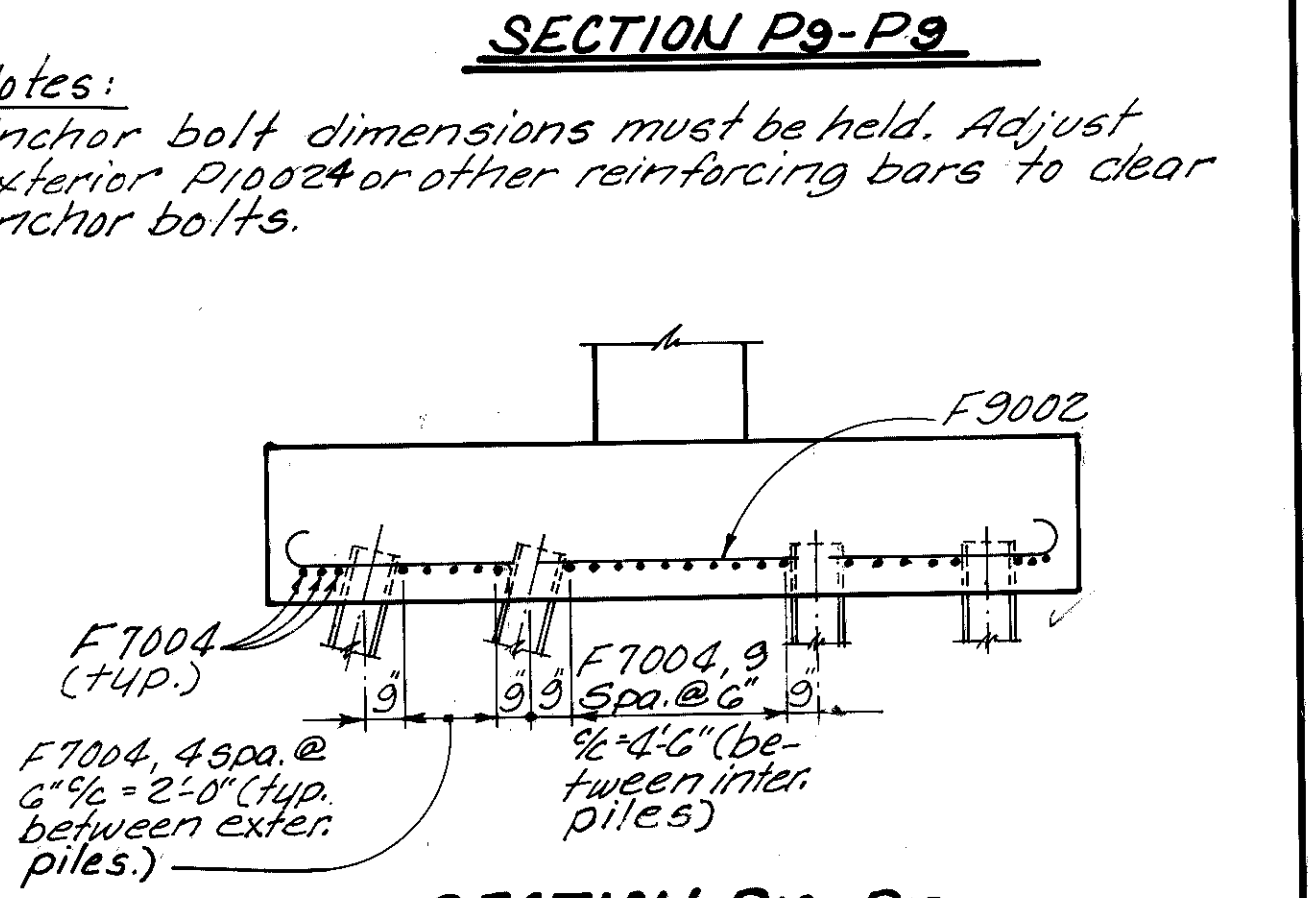
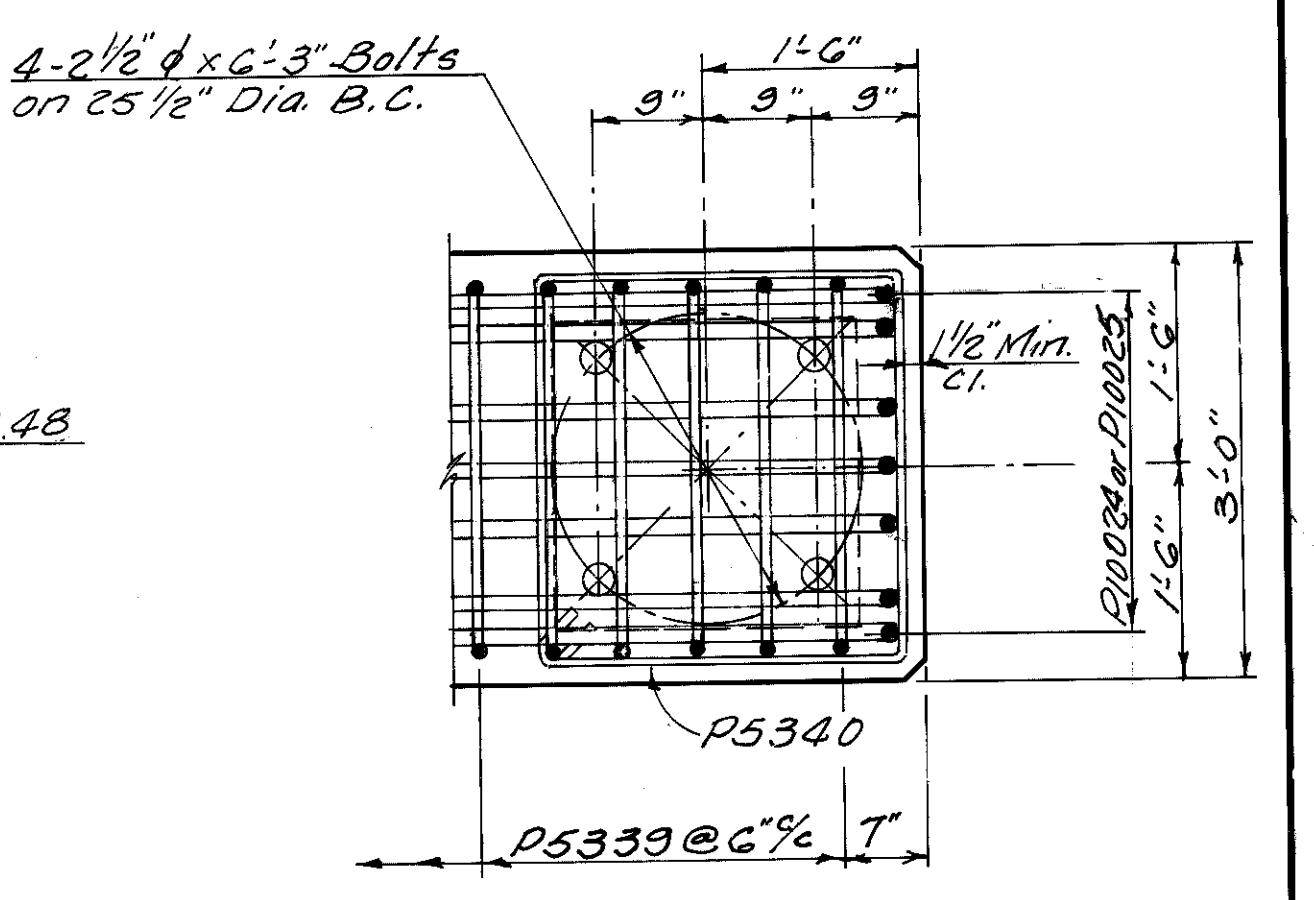
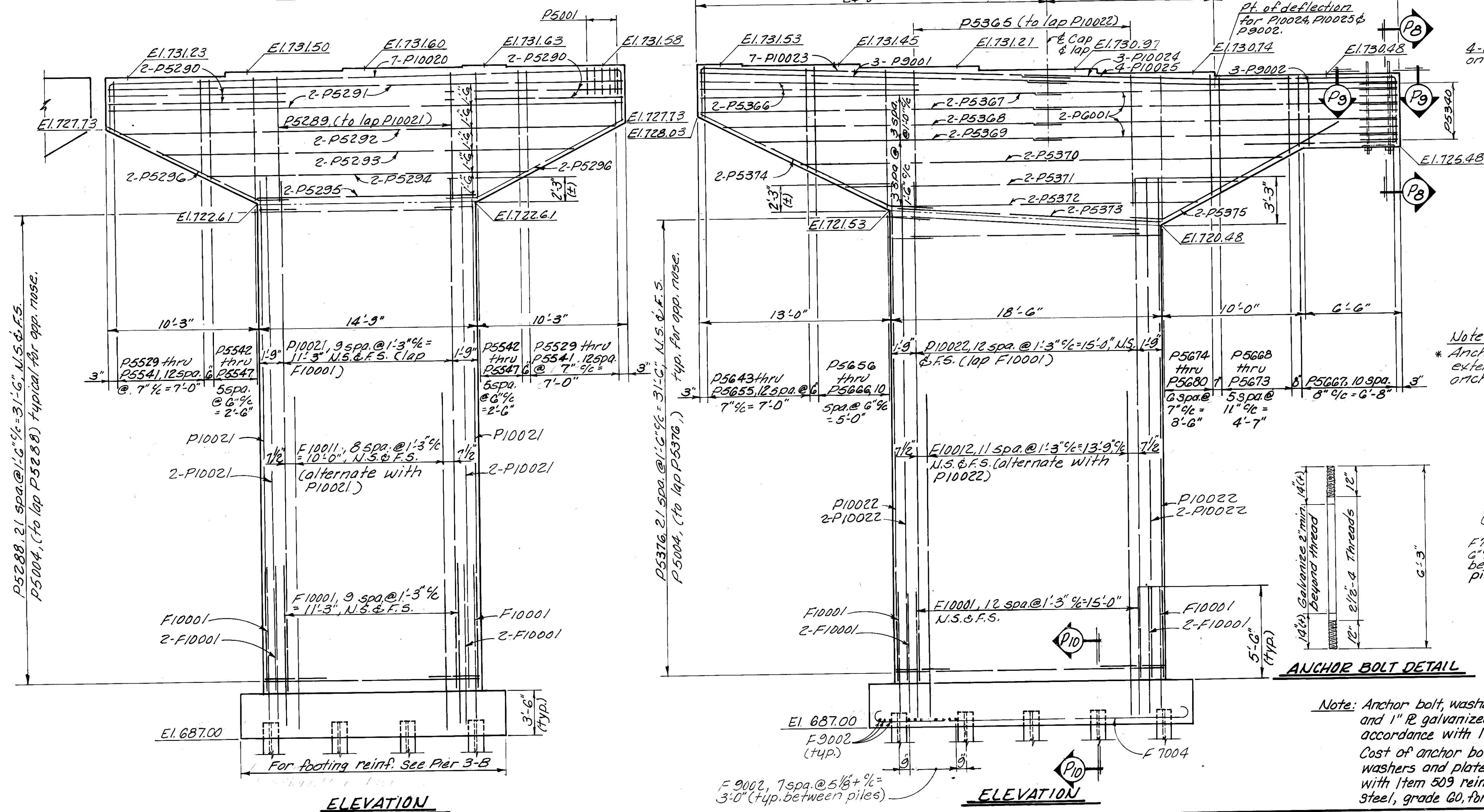
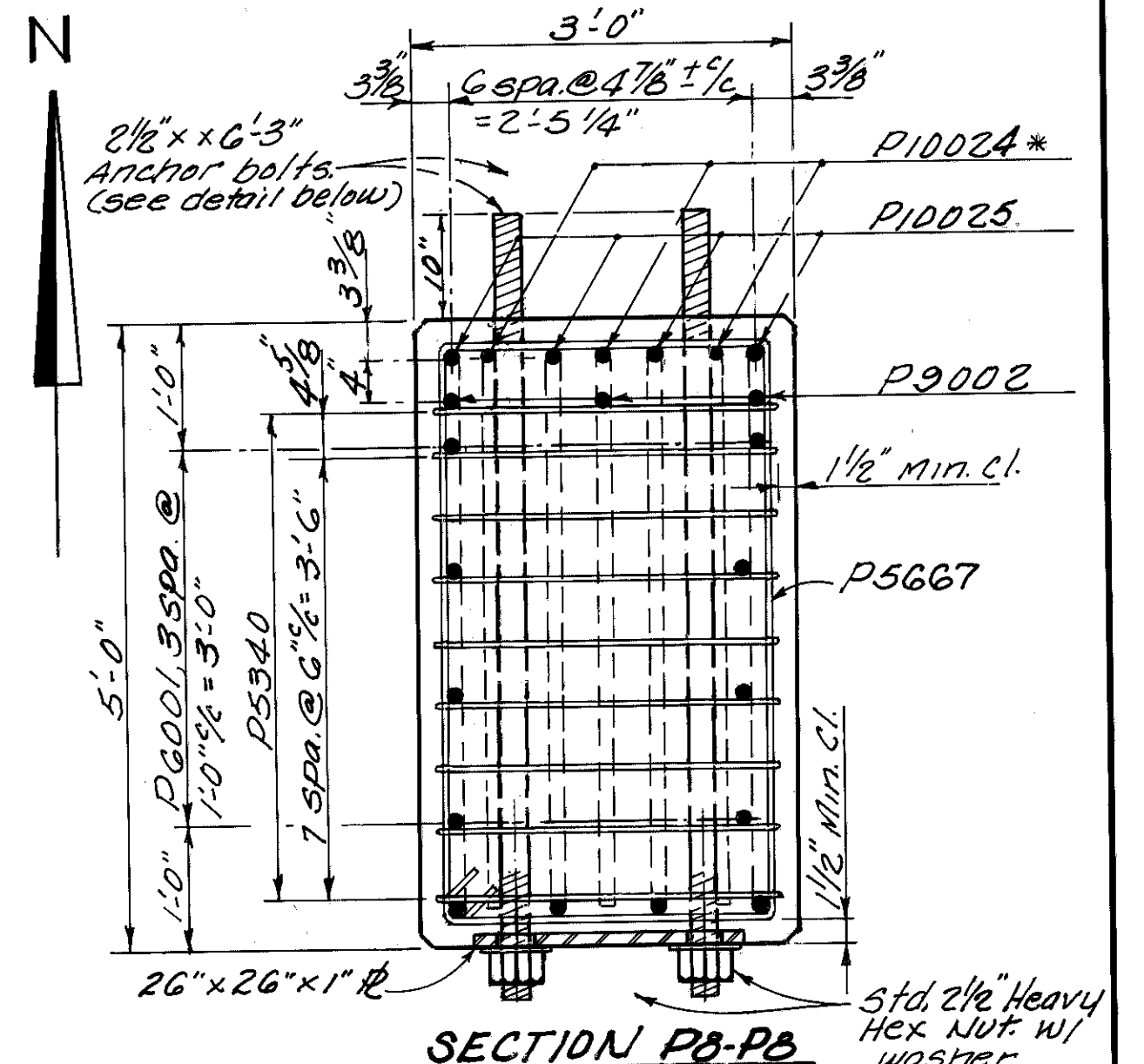
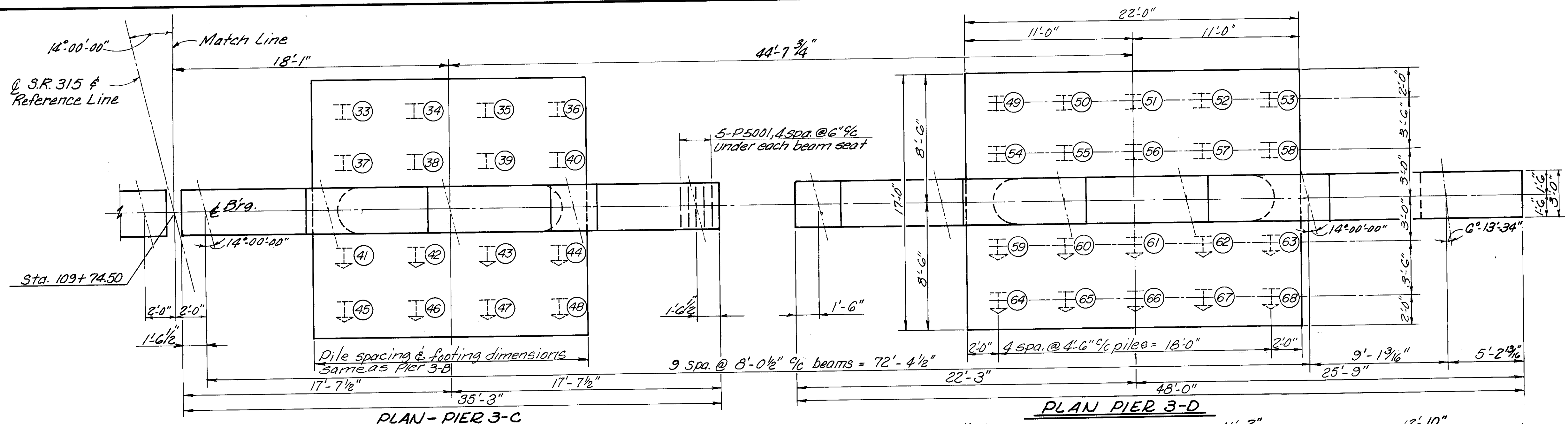












**Notes:**  
 \* Anchor bolt dimensions must be held. Adjust exterior P10024 or other reinforcing bars to clear anchor bolts.

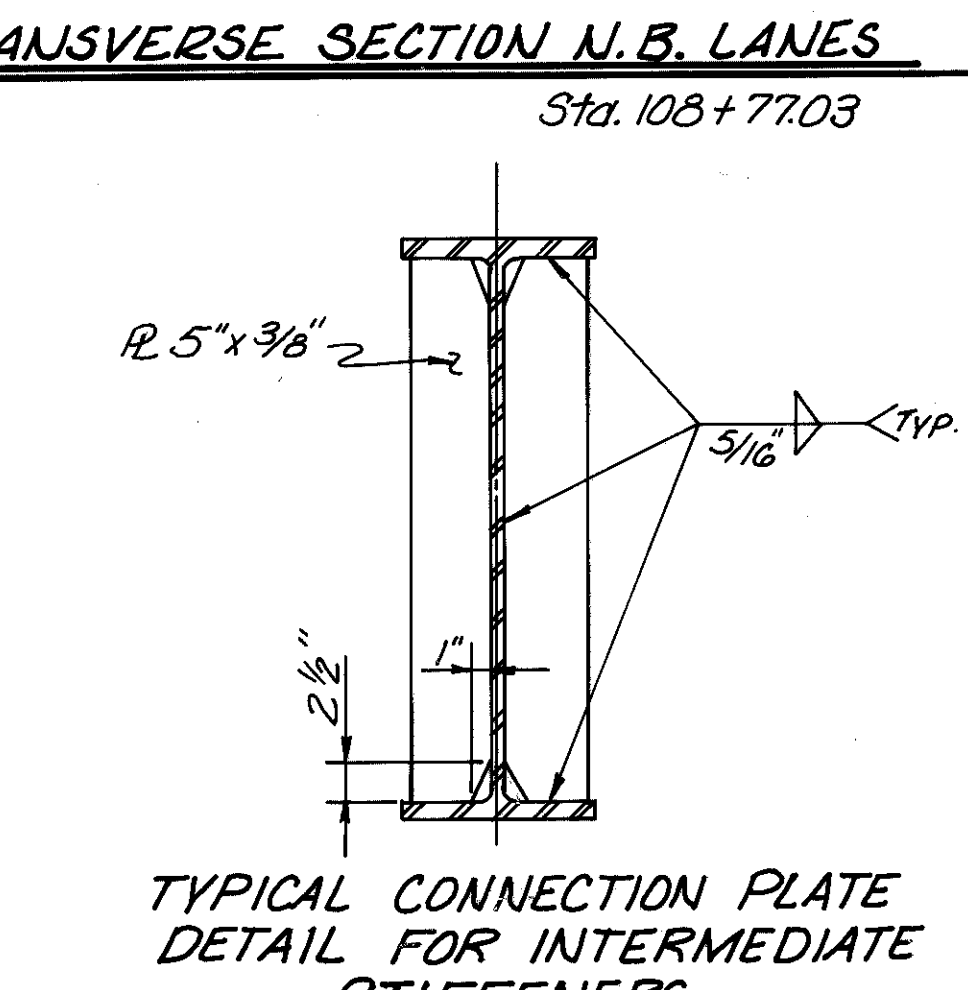
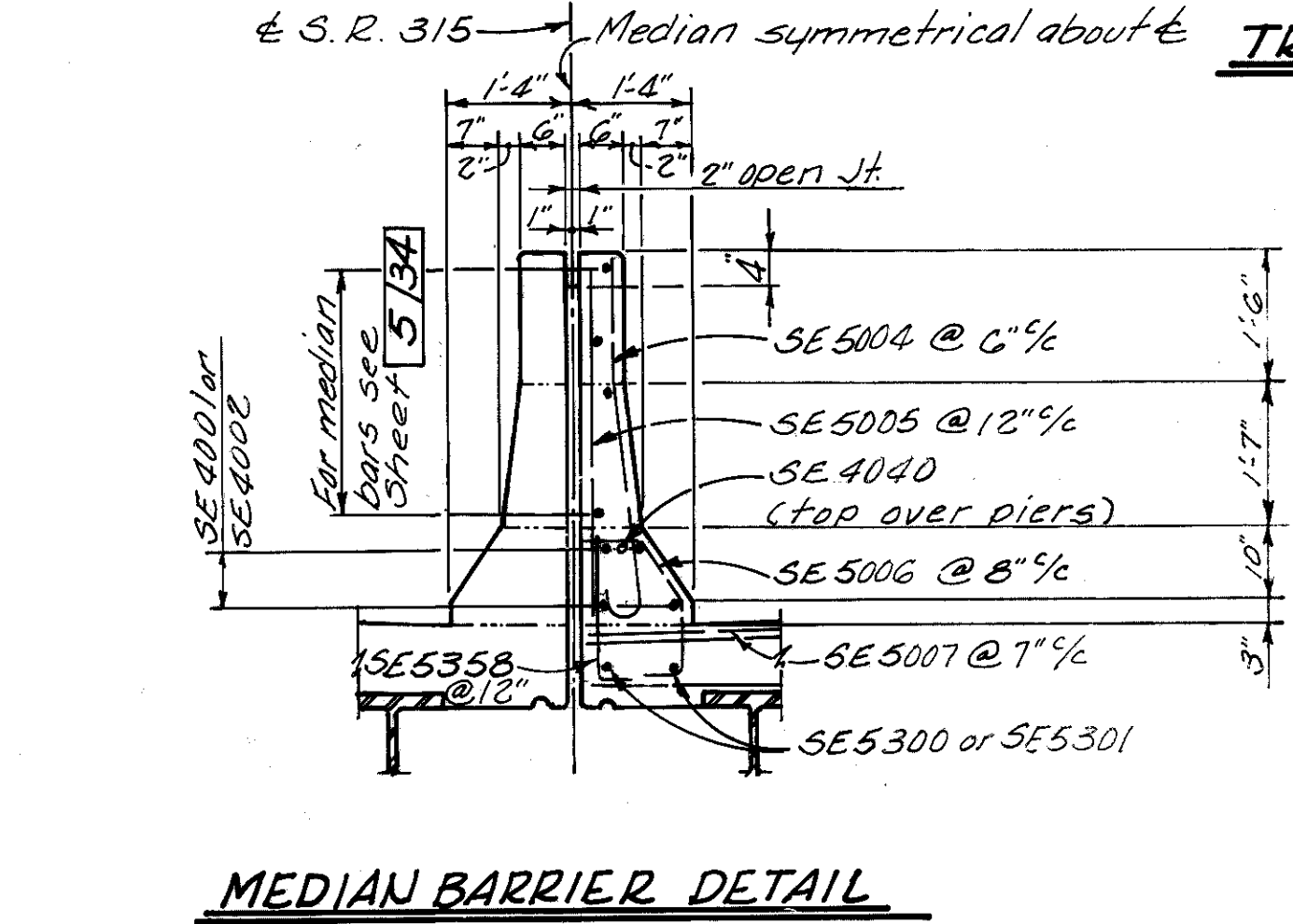
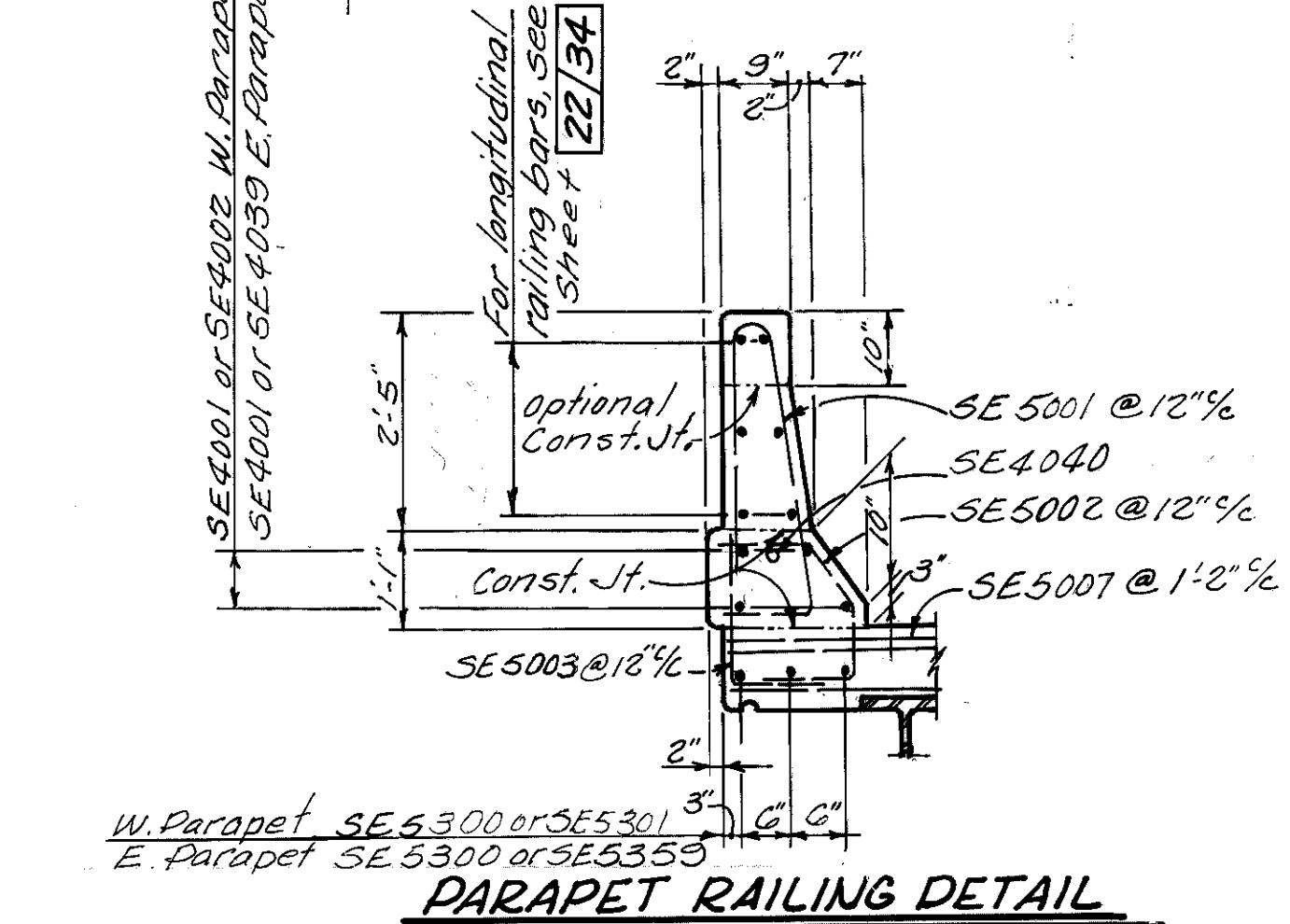
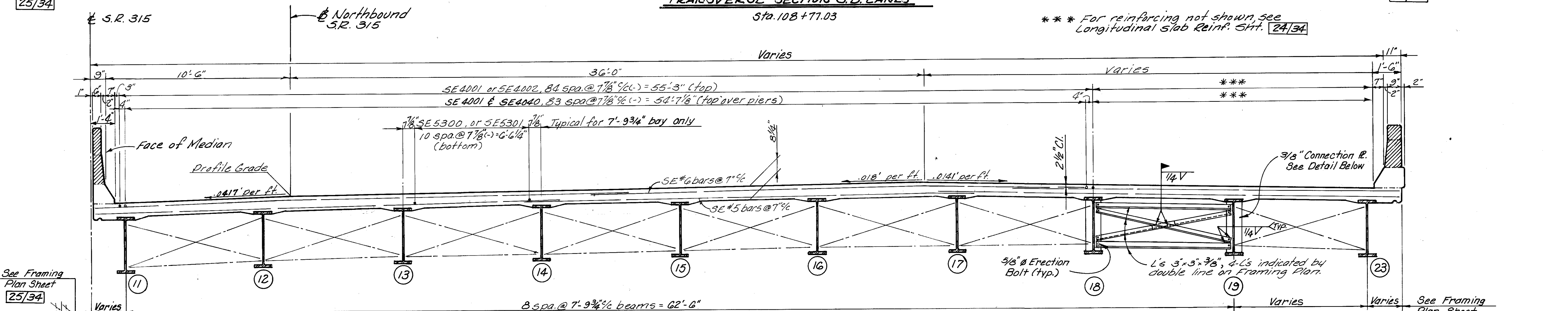
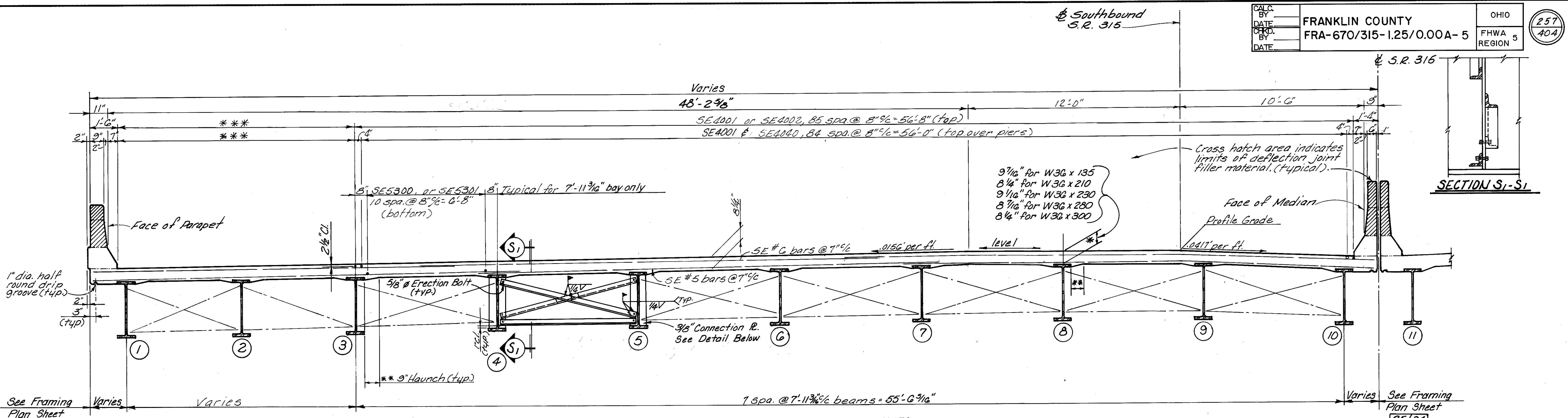
**Note:** Anchor bolt, washer, nut and 1" # galvanized in accordance with Item 711.02. Cost of anchor bolt, nuts, washers and plate included with Item 509 reinforcing steel, grade 60, for payment.

20/34

ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**PIER NO. 3 DETAILS**  
 BRIDGE NO. FRA-315-0120  
 S.R. 315 OVER SCIOTO RIVER  
 FRANKLIN COUNTY STA. 106+67.18 (E.N.B.) TO STA. 110+64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	12/19/89	



Notes: \* The distance shown from top of deck slab to top of steel beam is the 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.

\*\* A typical haunch width of 9" shall be used for all beams for computing quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.

Field bending of transverse slab steel to be included in Item 509 for payment.

Each run of longitudinal reinforcing shall be composed of the following:  
 Top, 13-SE4001 and 1-SE4002, lap 1'-4" min.  
 Bottom, 13-SE5300 and 1-SE5301, lap 1'-7" min.  
 See Sheets 23/24/34

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 COLUMBUS, CLEVELAND, WERTON

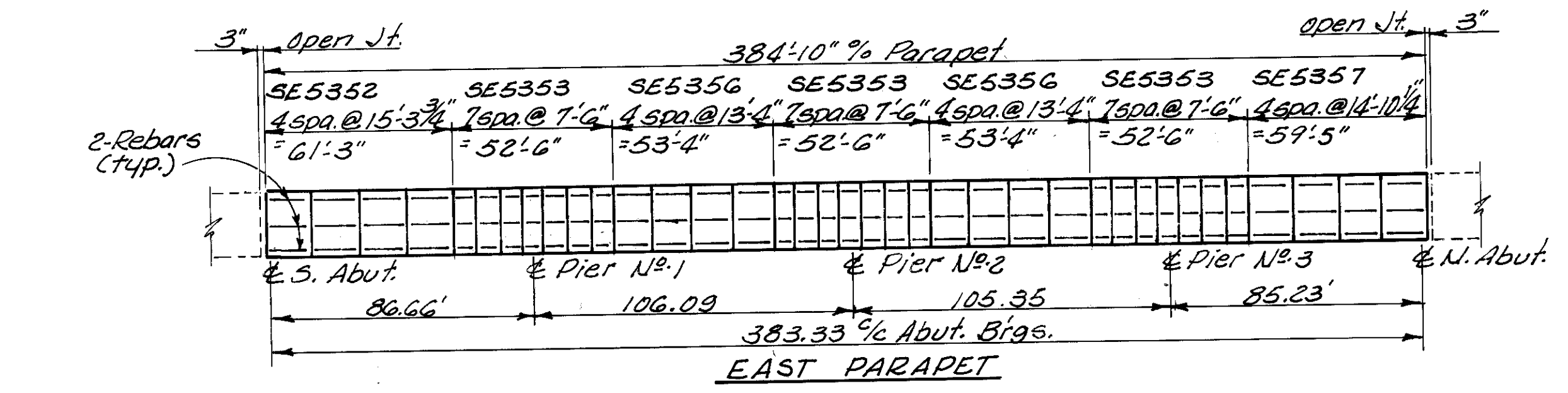
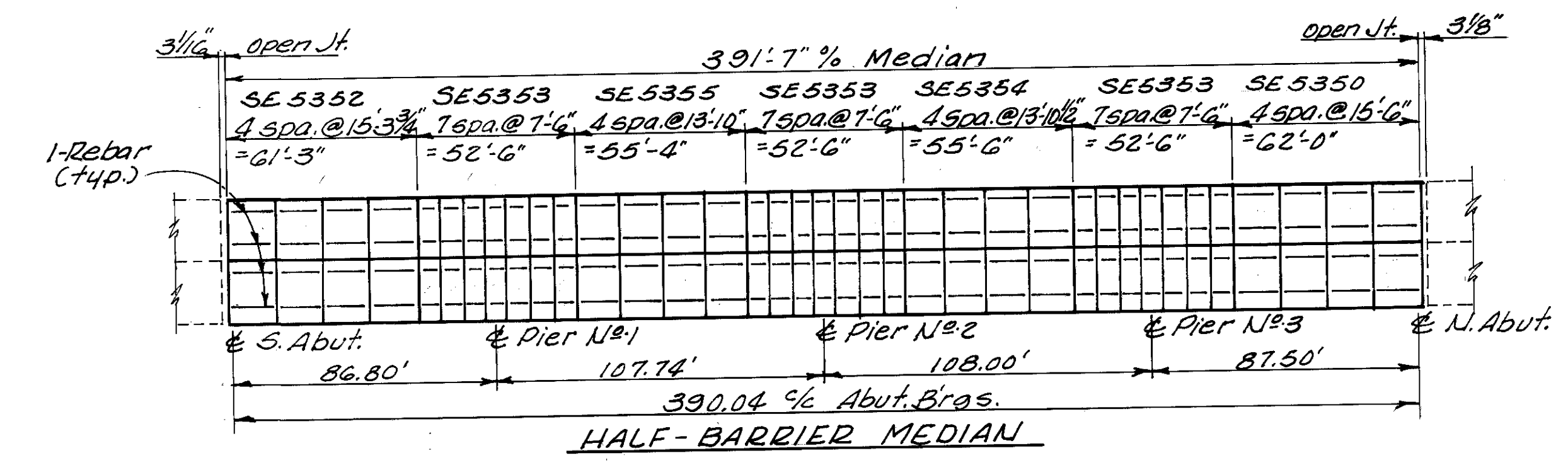
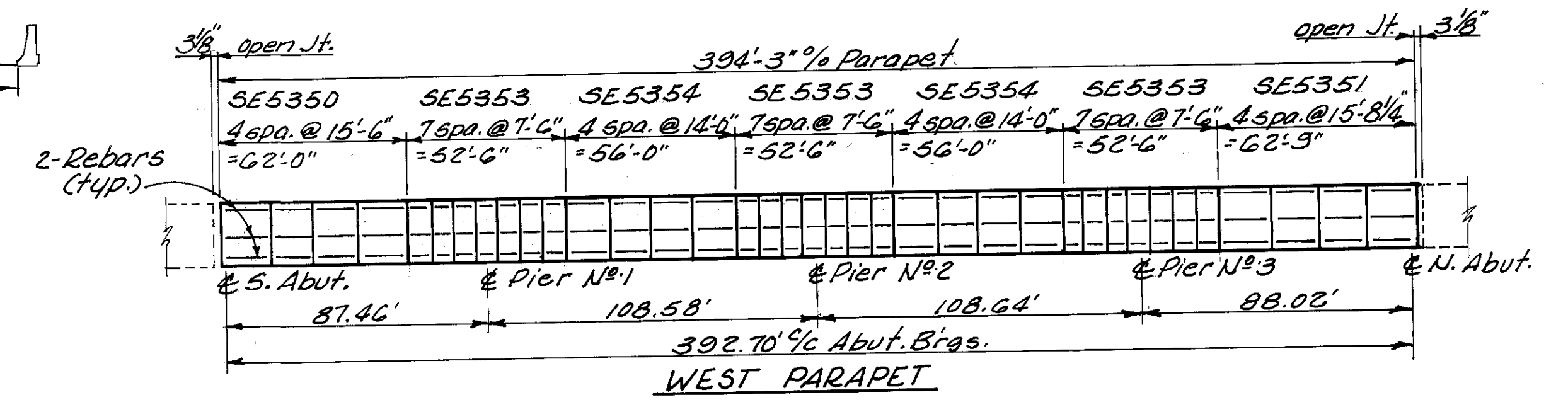
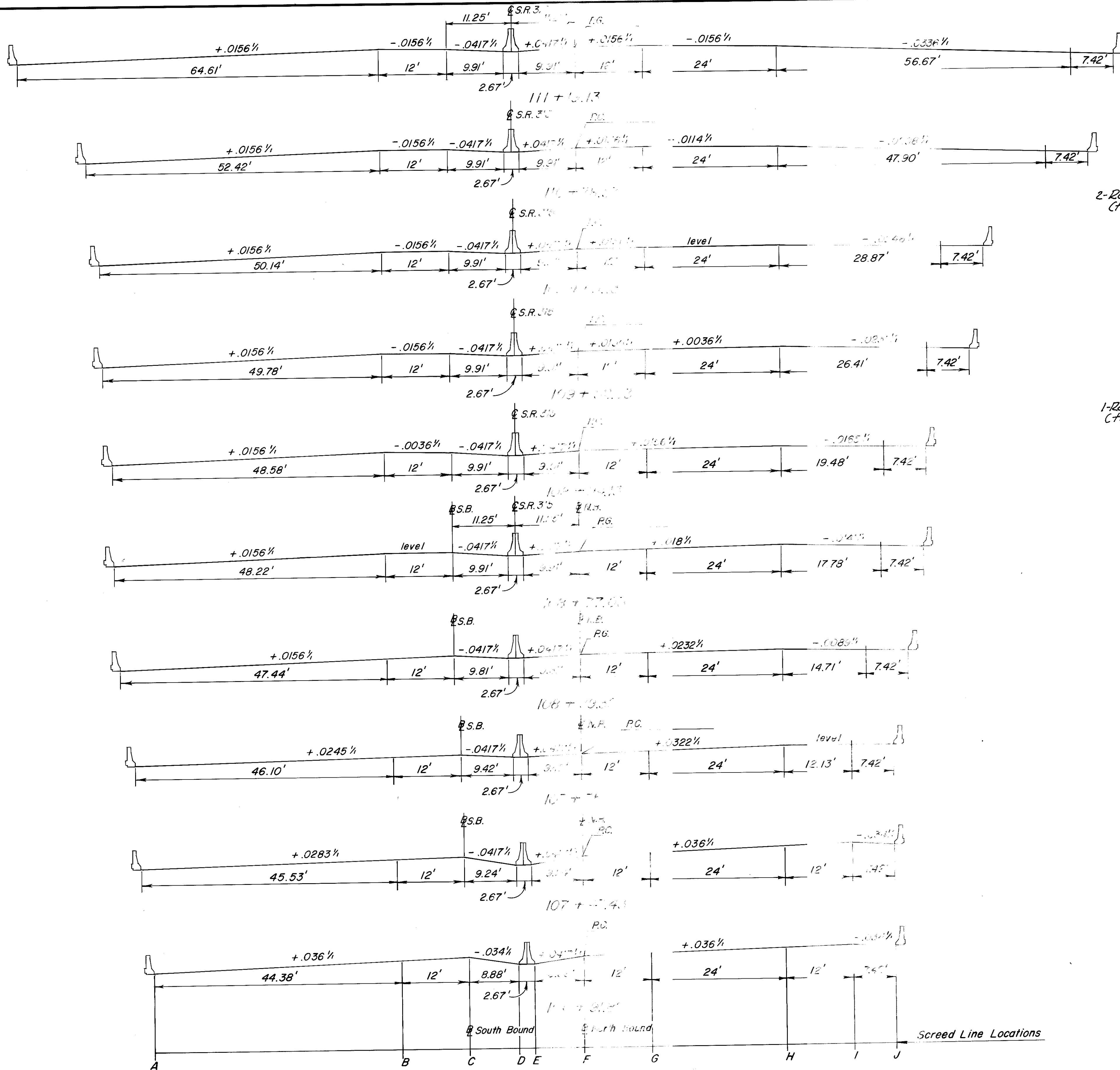
**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 315 - 0120  
 S.R.315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/1/89	





**DEFLECTION JOINT SPACING**

Note: For barrier median and parapet details see Transverse Section Sheet 21/34



22/34

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COLUMBUS, CLEVELAND, WERTON

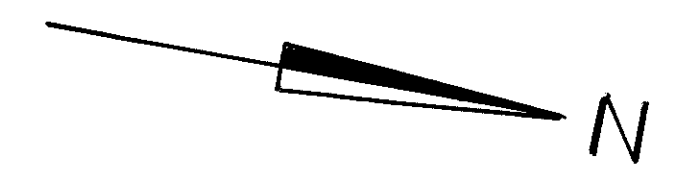
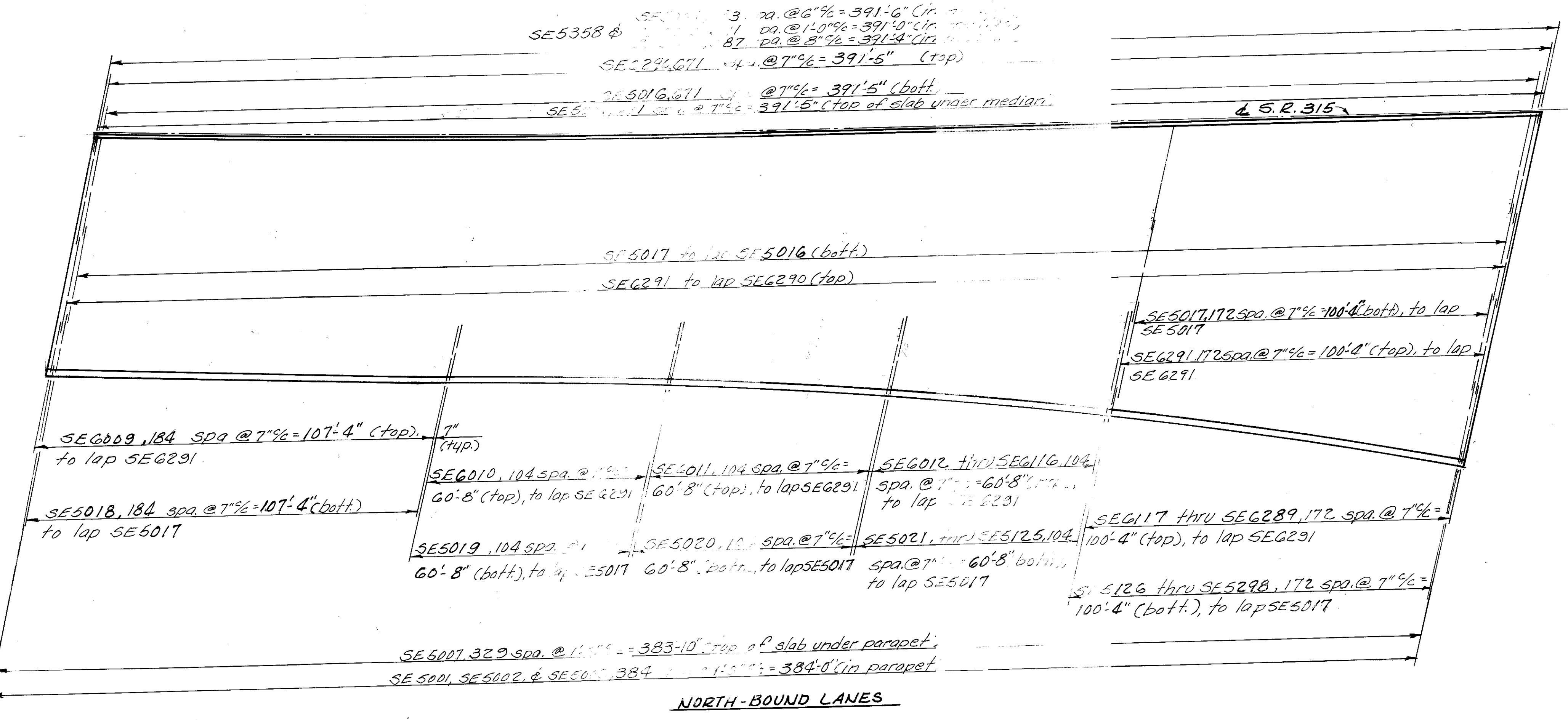
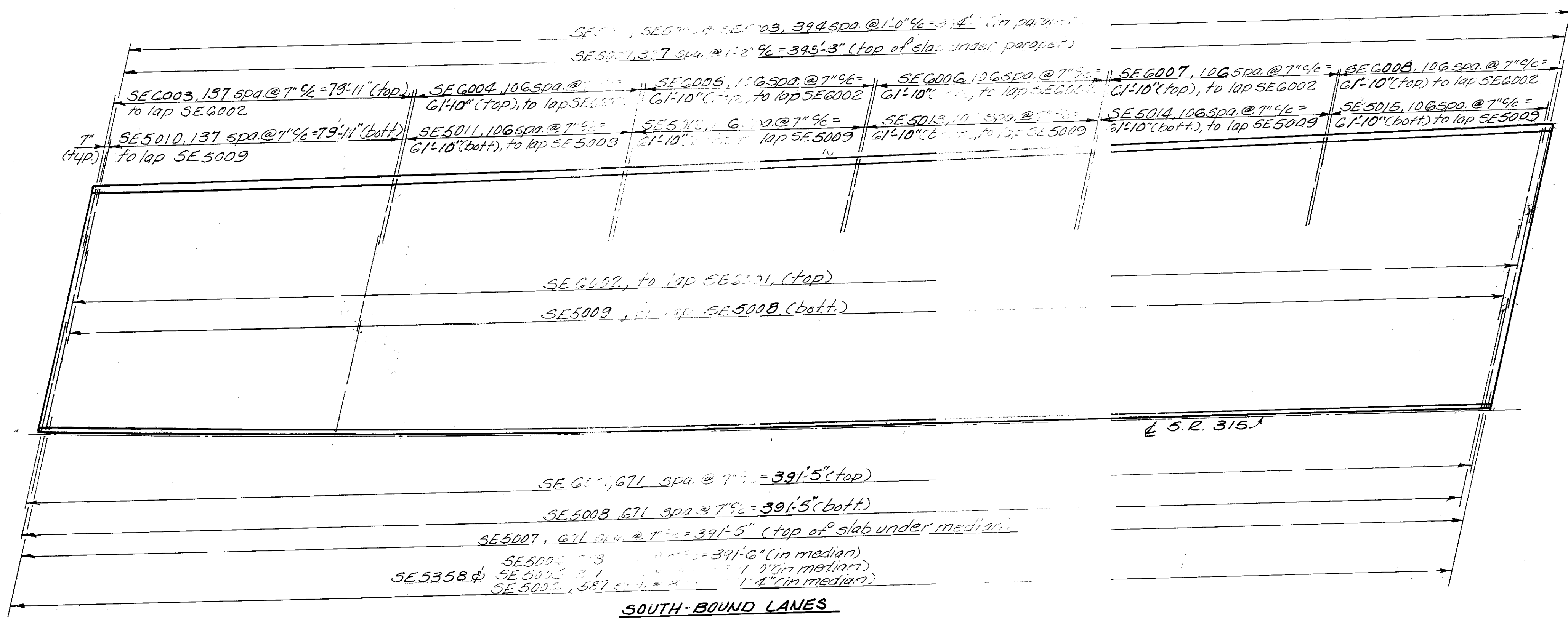
**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R.315 OVER SCIOTO RIVER

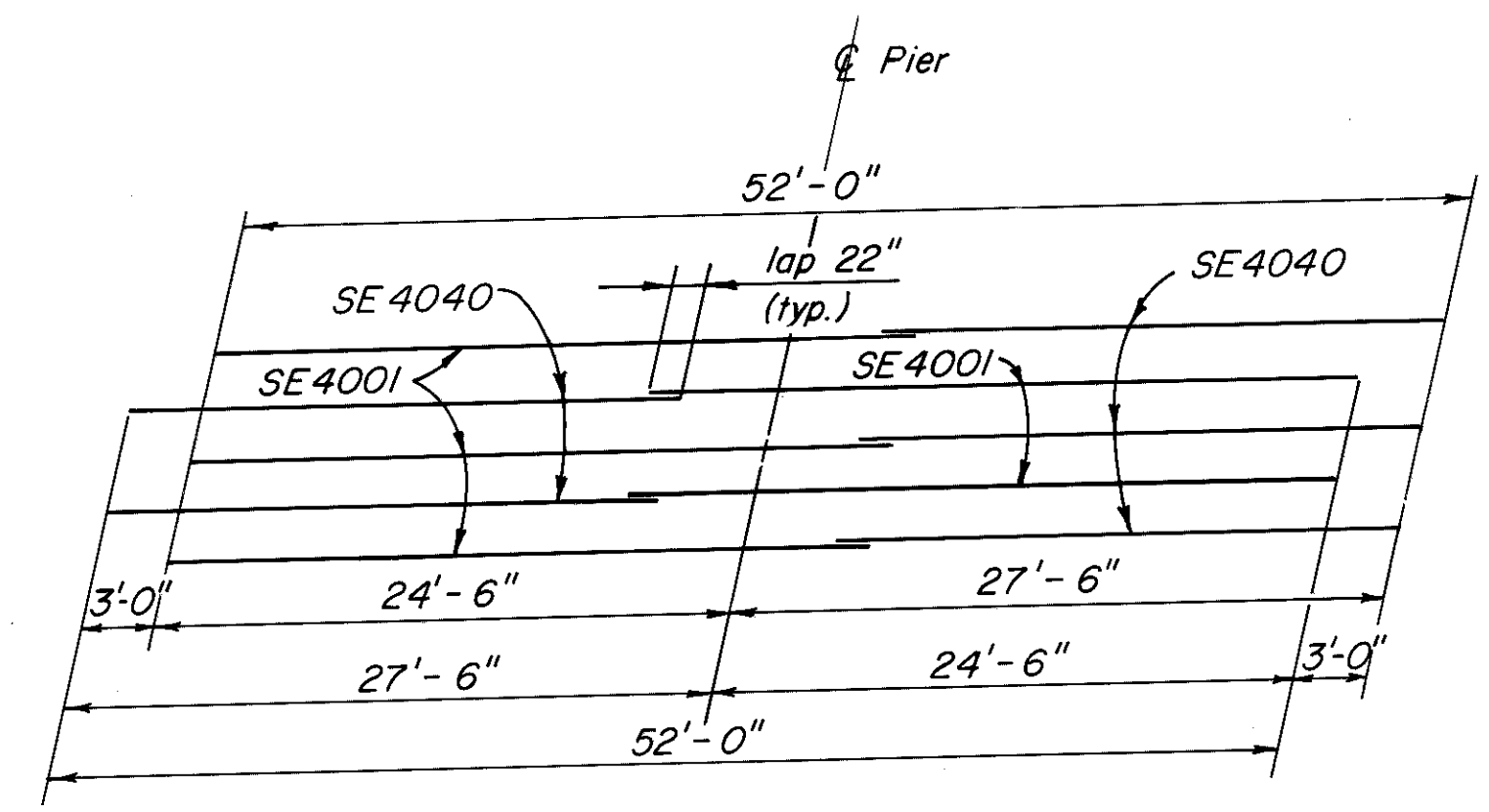
FRANKLIN COUNTY STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/89	





**NOTE:**  
 Rebar minimum lap: #4 = 1'-5"  
 #5 = 1'-8"  
 #6 = 2'-2"  
 See Item 509 note on 3/34.



**DIAGRAMS SHOWING STAGGER OF BARS OVER PIERS**

**TRANSVERSE SLAB REINFORCING**

384'10"

23/34

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 COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**

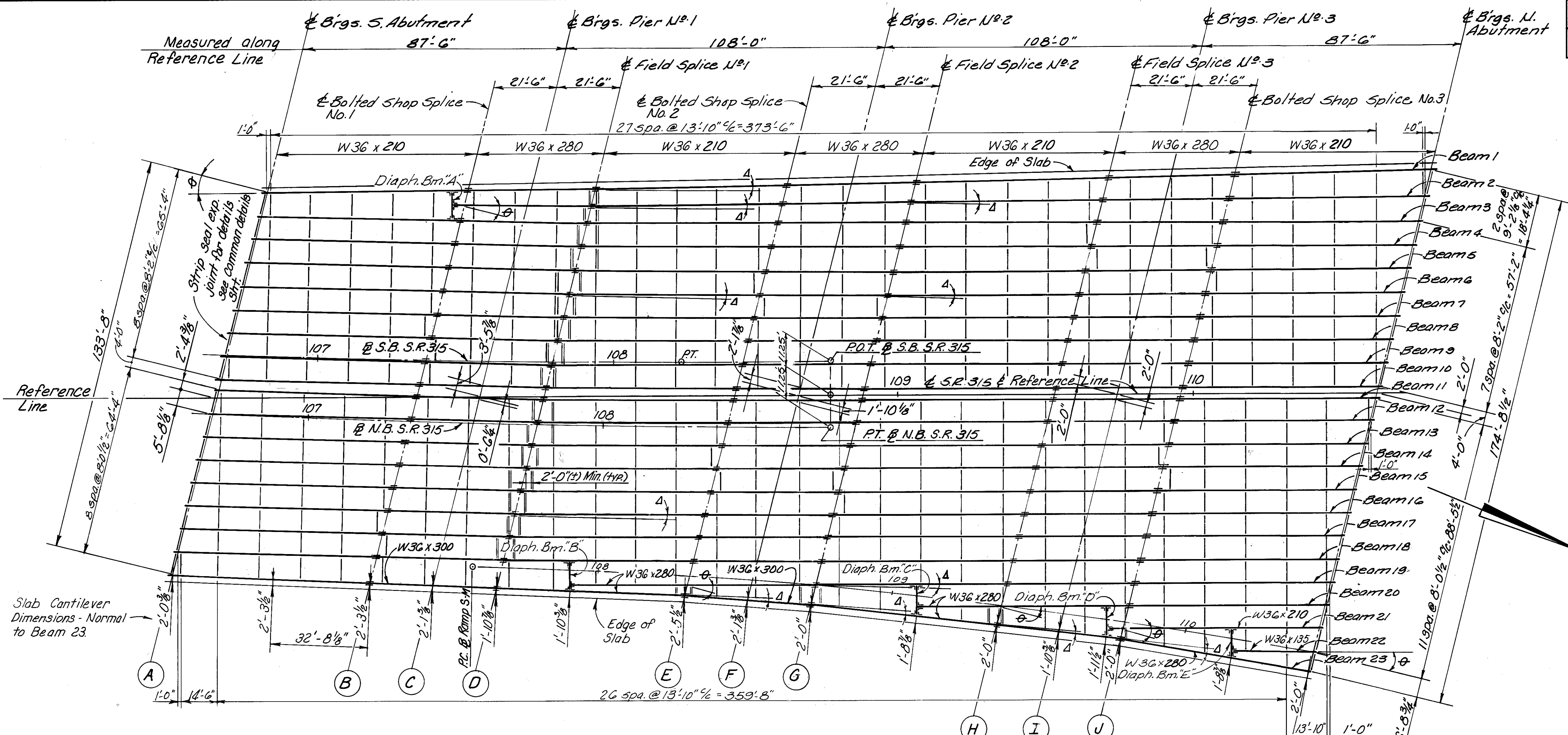
BRIDGE NO. FRA-315-0120  
 S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106+67.18 (E.N.B.) TO STA. 110+64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/11/89	





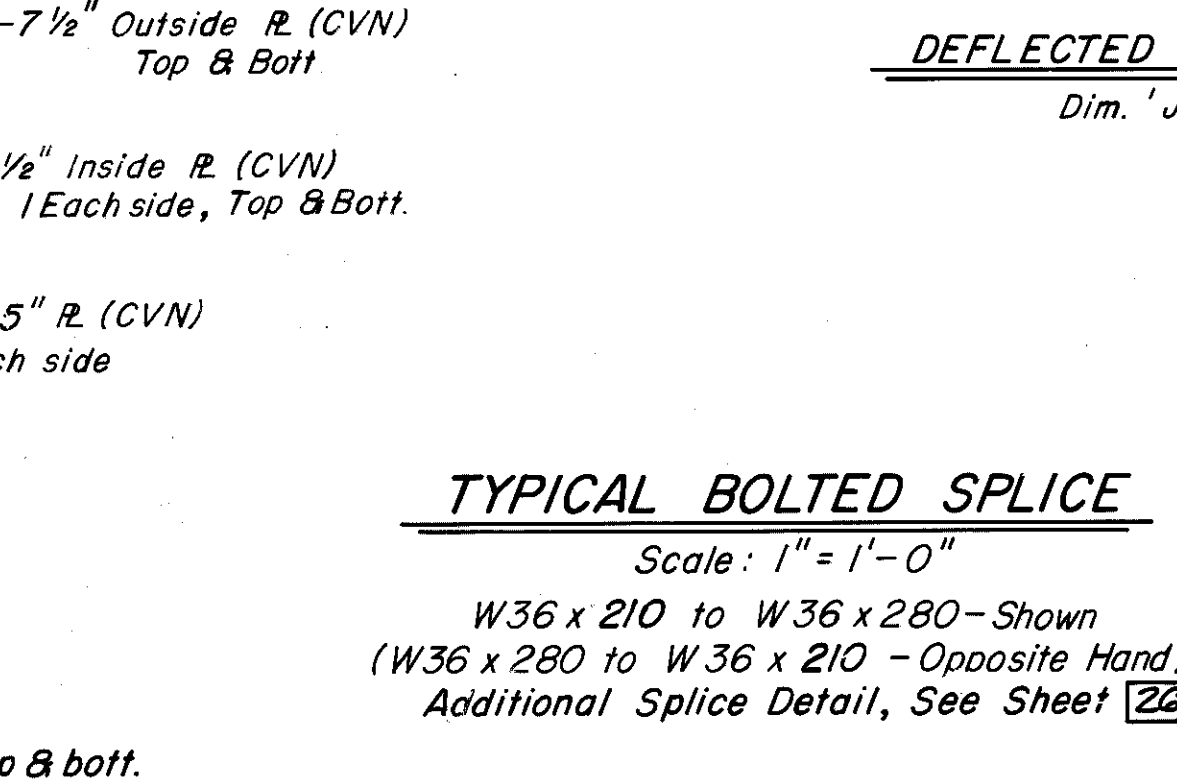
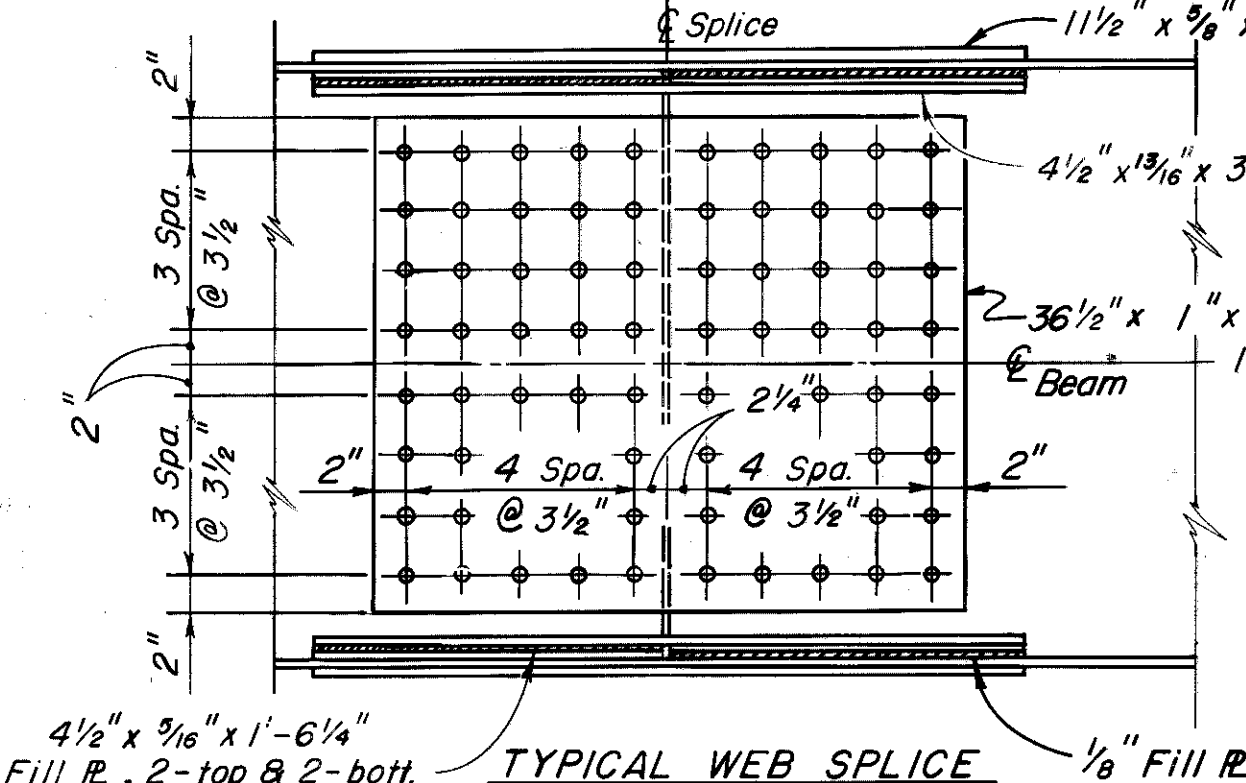
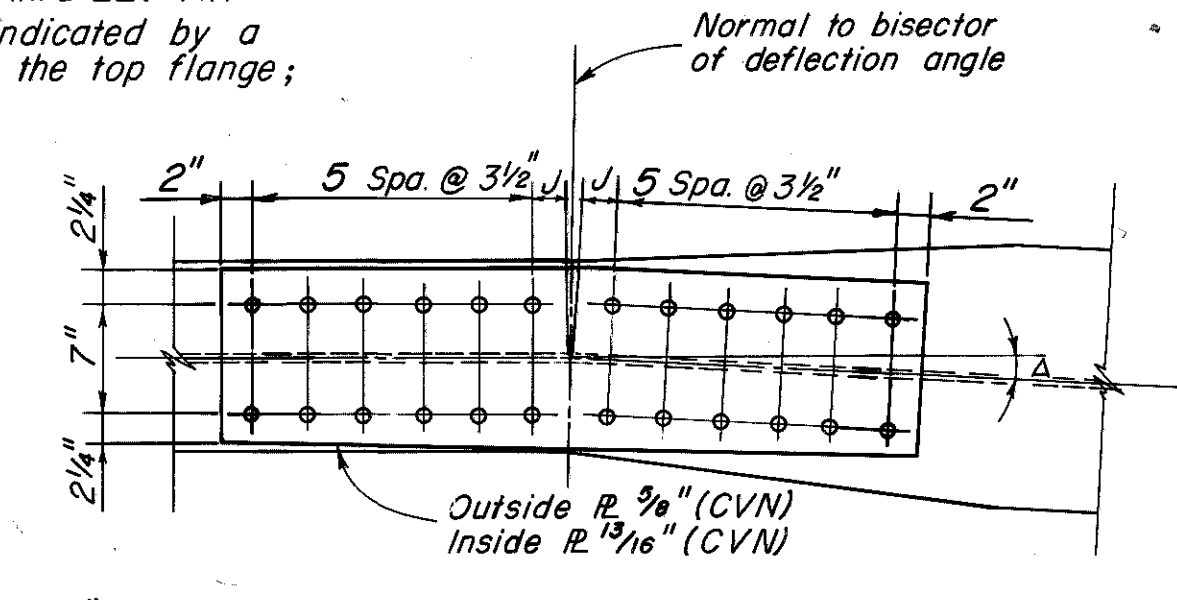
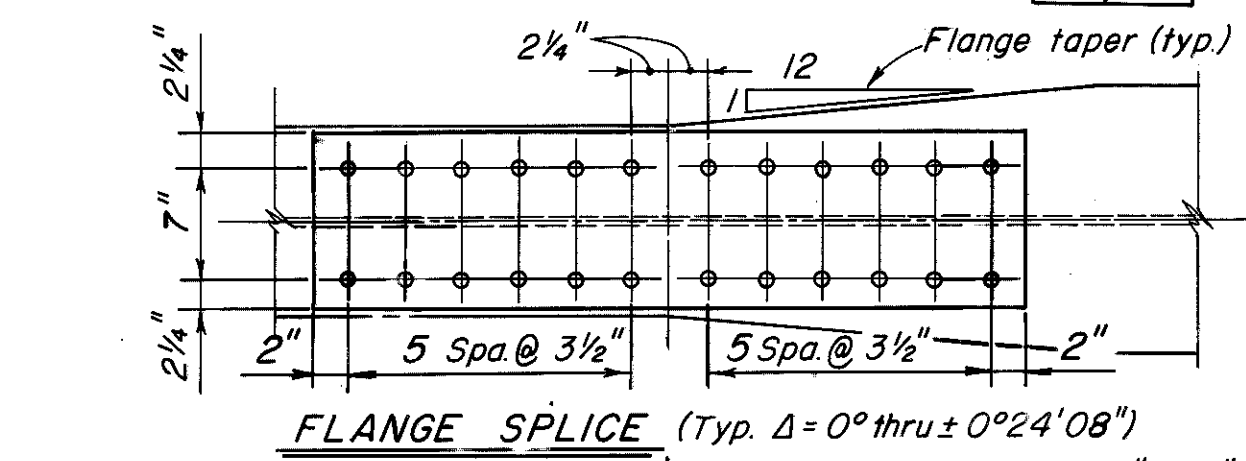


LOCATION	BEAM 1	BEAM 10	BEAM 11
@ Brg. South Abut.	1'-10 1/2"	1'-10 1/2"	1'-10 1/2"
0.25 Pt. Span 1	1'-8 3/8"	2'-1 3/8"	1'-7 3/8"
0.50 Pt. Span 1	1'-7 1/4"	2'-2 3/4"	1'-6 1/8"
Shop Splice 1	1'-7 1/2"	2'-2 3/4"	1'-6 1/8"
@ Brg. Pier 1	1'-9 1/4"	2'-1 3/8"	1'-7 3/8"
Field Splice 1	2'-0 1/4"	1'-10 1/2"	1'-10 1/2"
0.50 Pt. Span 2	2'-0 1/2"	2'-1 1/8"	1'-7 1/2"
Shop Splice 2	2'-0"	2'-2"	1'-6 3/4"
@ Brg. Pier 2	2'-0"	2'-0 1/2"	1'-8 1/2"
Field Splice 2	2'-0"	1'-10 1/4"	1'-10 1/4"
0.50 Pt. Span 3	2'-0"	1'-10 1/4"	1'-10 1/4"
Field Splice 3	2'-0"	1'-10 1/4"	1'-10 1/4"
@ Brg. Pier 3	2'-0"	1'-10 1/4"	1'-10 1/4"
Shop Splice 3	2'-0"	1'-10 1/4"	1'-10 1/4"
0.50 Pt. Span 4	2'-0"	1'-10 1/4"	1'-10 1/4"
0.75 Pt. Span 4	2'-0"	1'-10 1/4"	1'-10 1/4"
@ Brg. North Abut.	2'-0"	1'-10 1/4"	1'-10 1/4"

	Beam No. 1	Beam No. 2	Beam No's 3 thru 18	Beam No. 19	Beam No. 20	Beam No. 21	Beam No. 22	Beam No. 23
A	13°53'59"		12°09'21"					11°30'03"
B	0	13°03'13"	0					0
C	0	0	0					0
D	1°23'13"	1°23'35"	1°26'31"					0
E	0	0	0	13°35'52"				2°42'31"
F	0	0	0	0				0
G	0	0	0	0	0			0
H	0	0	0	0	0			0
I	0	0	0	0	0			0
J	0	0	0	0	0			0
K	15°17'12"	14°38'43"	14°00'00"	14°00'00"	14°00'00"	14°00'00"	14°00'00"	4°37'37"

**FRAMING PLAN**  
 Scale: 20 = 1'-0"

All crossframes shall be placed normal to Beams 3 thru 22. All crossframe angles are 3" x 3" x 3/8". Crossframes indicated by a double line include an additional horizontal angle near the top flange; for detail, see Transverse Section, sheet 21/34



**NOTES:**  
 Where a shape or plate is designated (CVN) the material shall meet specified minimum notch toughness requirements as specified in 711.02 of CMS.  
 High strength bolts shall be 1" diameter, A325, unless otherwise noted.  
 Adjust crossframe locations to clear field splices.  
 PARTIAL PAINTING OF A588 STEEL: An 8 foot length of the ends of beams adjacent to abutments, and all crossframes and other A588 steel within these limits shall be painted. Paint shall be 514, System A. The prime coat shall be 708.17. The top coat shall be 708.18 except that the color shall closely approach Federal Standard No. 595a - 20045 or 20059.

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 COLUMBUS, CLEVELAND, WERTON

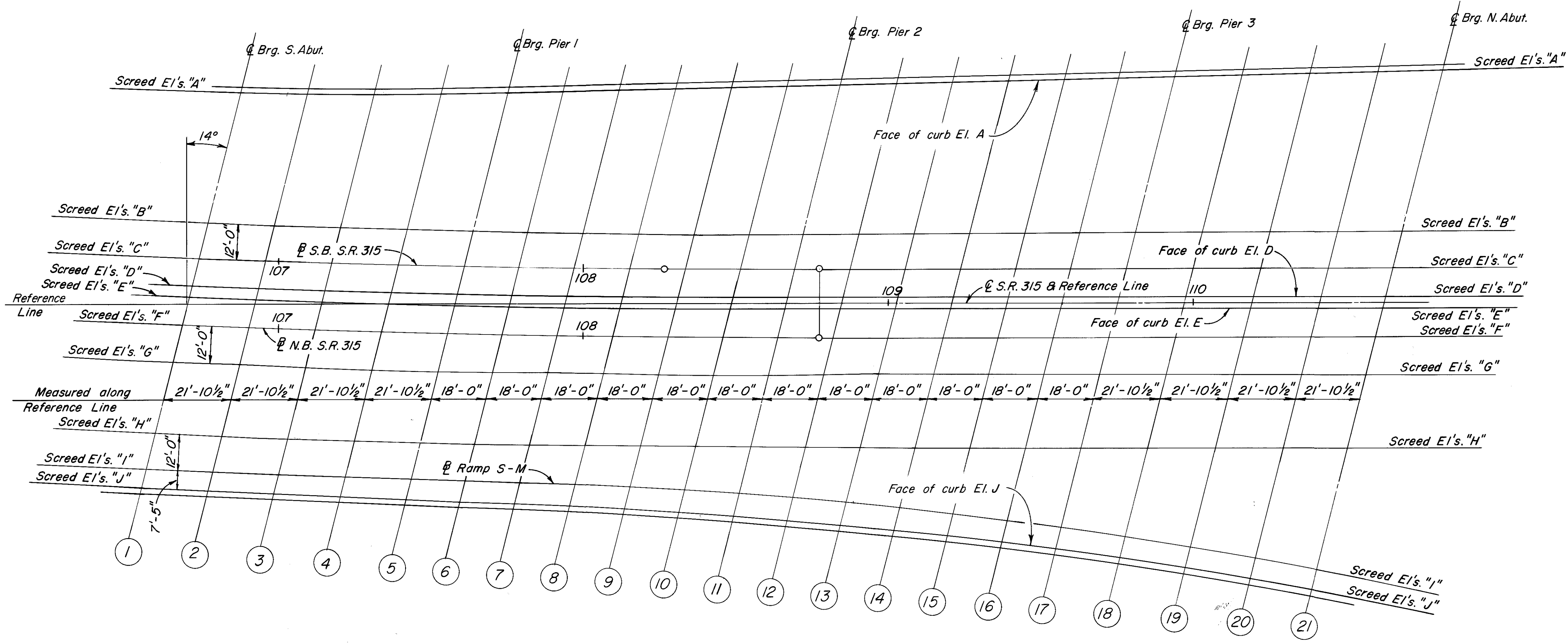
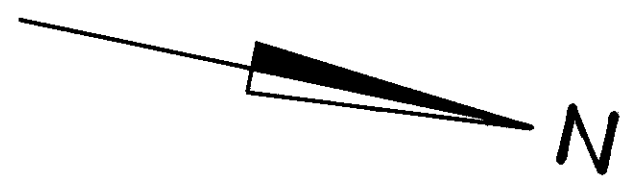
**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. FRA - 315 - 0120  
 S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (R.N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	5/24/89	

Deflection Sign Convention; Negative (-) to Right  
 \* Indicates distance to diaphragm beam

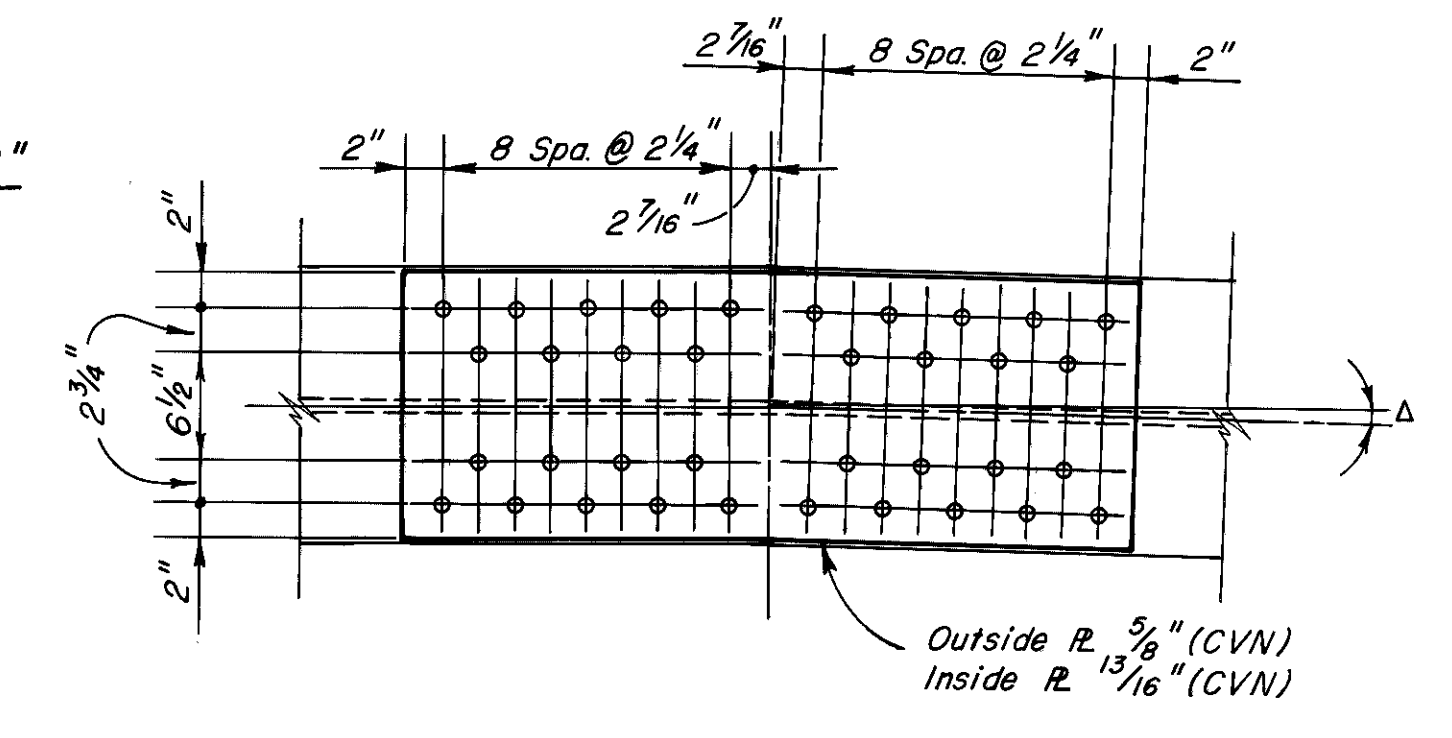




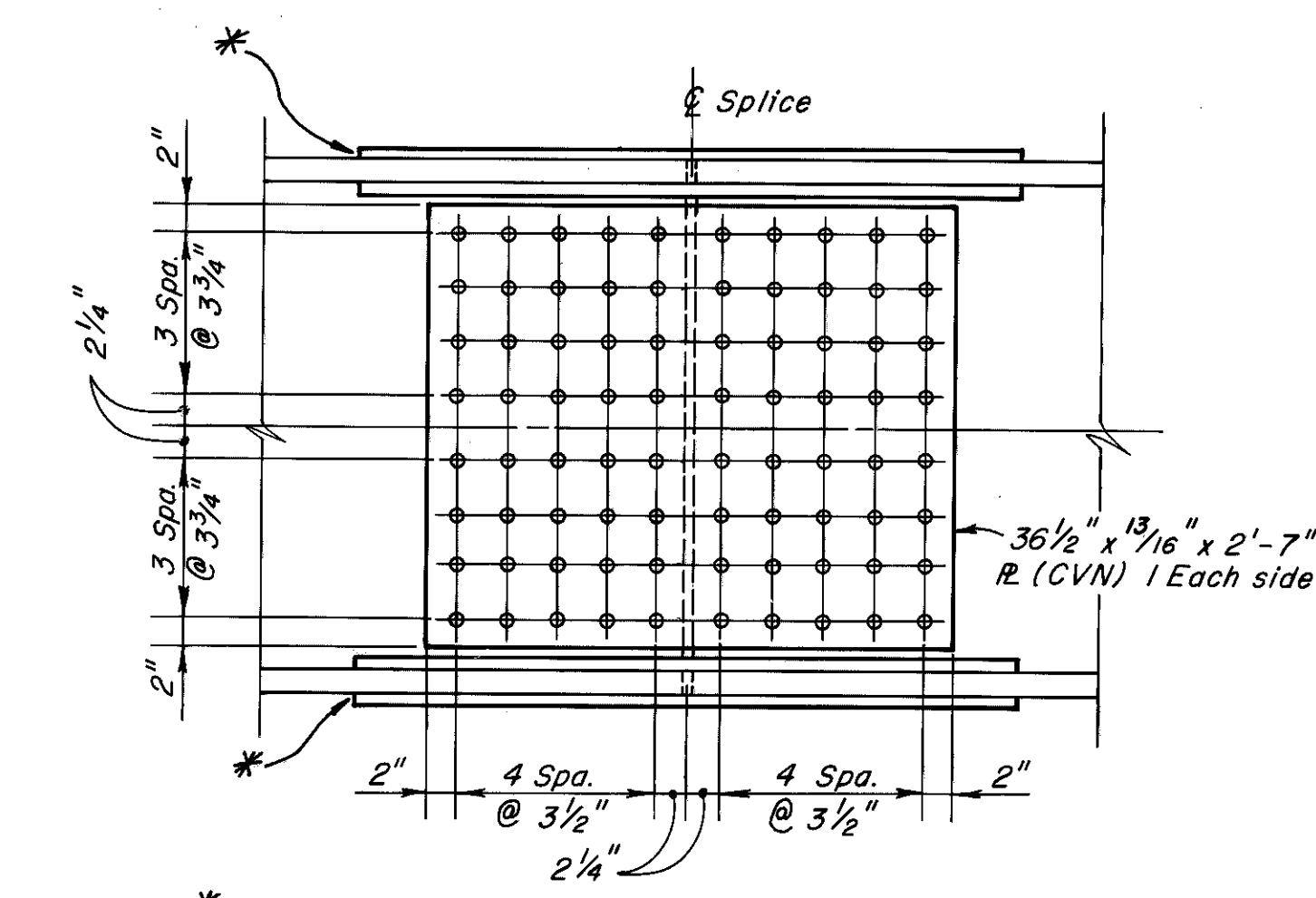
**SCREED ELEVATION LOCATIONS**

**NOTE:**  
The screed elevations listed are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete.

TABLE OF SCREED ELEVATIONS																					
Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
El. A	723.03	724.07	725.15	726.22	727.15	728.03	728.87	729.79	730.61	731.37	732.06	732.76	733.47	734.12	734.76	735.26	735.76	736.43	737.05	737.63	738.11
El. B	724.28	725.23	726.15	726.97	727.87	728.63	729.39	730.16	730.88	731.62	732.33	733.07	733.60	734.47	735.10	735.66	736.17	736.85	737.53	738.12	738.60
El. C	724.62	725.55	726.43	727.27	728.08	728.81	729.54	730.27	730.96	731.62	732.25	732.94	733.60	734.25	734.84	735.38	735.89	736.57	737.25	737.85	738.34
El. D	724.26	725.15	726.00	726.85	727.61	728.32	729.04	729.76	730.45	731.11	731.75	732.42	733.11	733.73	734.32	734.88	735.40	736.10	736.75	737.36	737.86
El. E	724.24	725.13	725.98	726.82	727.59	728.30	729.02	729.66	730.42	731.09	731.72	732.40	733.09	733.71	734.30	734.86	735.38	736.08	736.73	737.34	737.84
El. F	724.54	725.46	726.31	727.11	727.90	728.62	729.35	730.08	730.76	731.42	732.05	732.73	733.40	734.06	734.65	735.20	735.72	736.41	737.10	737.70	738.20
El. G	724.88	725.81	726.64	727.45	728.22	728.91	729.60	730.30	730.95	731.58	732.18	732.84	733.48	734.15	734.74	735.29	735.81	736.51	737.20	737.80	738.30
El. H	725.57	726.48	727.32	728.11	728.89	729.51	730.15	730.78	731.37	731.94	732.47	733.08	733.66	734.31	734.75	735.23	735.66	736.29	736.93	737.49	737.95
El. I	725.91	726.82	727.66	728.45	729.23	729.61	730.05	730.64	731.19	731.71	732.19	732.73	733.24	733.74	734.16	734.53	734.85	735.33	735.85	736.28	736.58
El. J	725.61				728.92						732.06						734.64				736.33



**FLANGE SPLICE**



\* Provide 1/8" fill plates for W36 x 280 to W36 x 300 splice

**WEB SPLICE**

**BEAM 23 SPLICE DETAILS**

W36 x 280 to W36 x 280 & W36 x 280 to W36 x 300 shown. W36 x 210 to W36 x 300 same as typical splice, sheet 25/34, except for deletion of 1/8" thick fill plates.

26/34

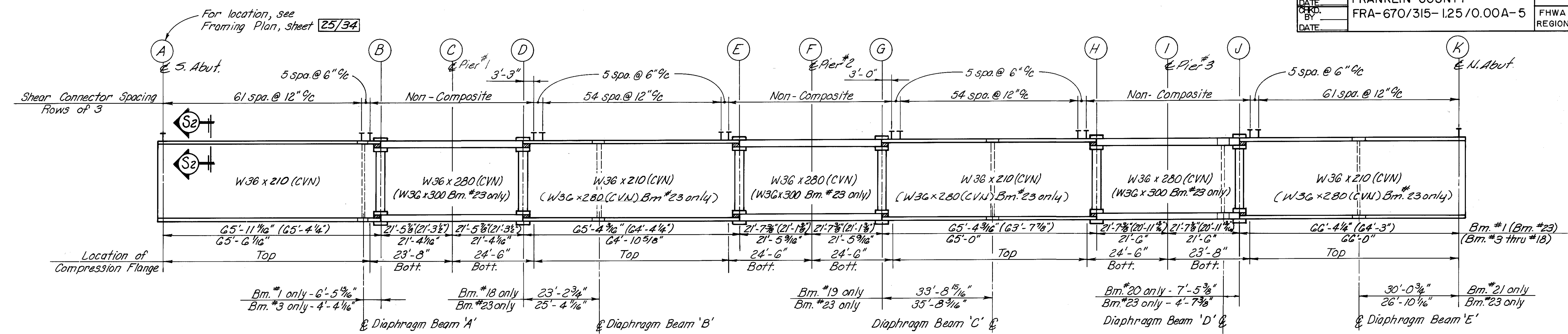
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

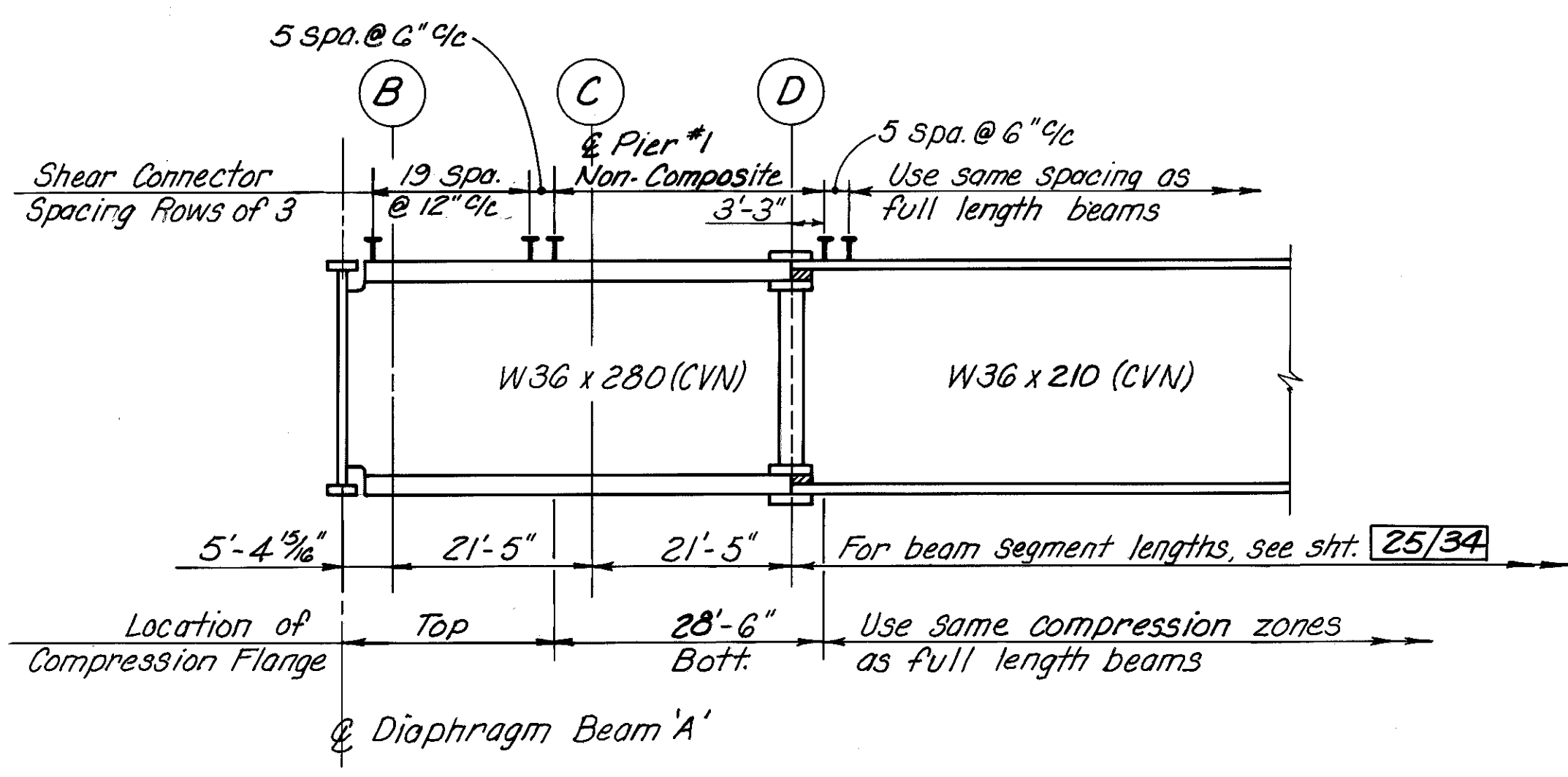
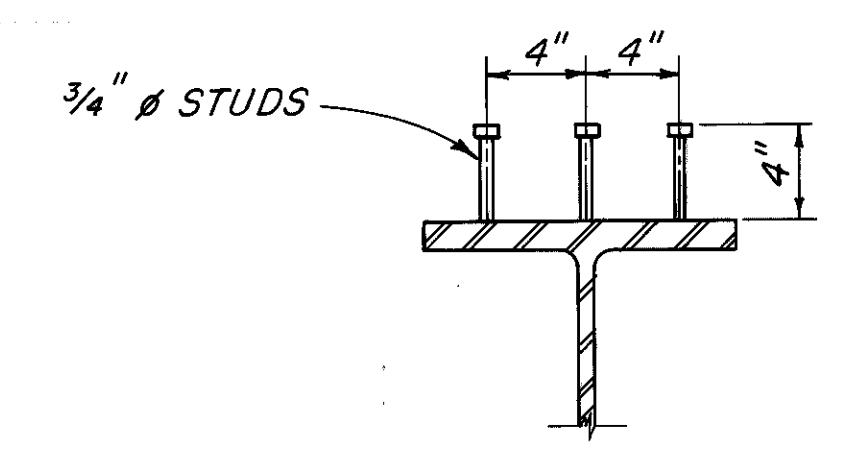
FRANKLIN COUNTY STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	KRH		GVB	G.W.M.	5/24/89	

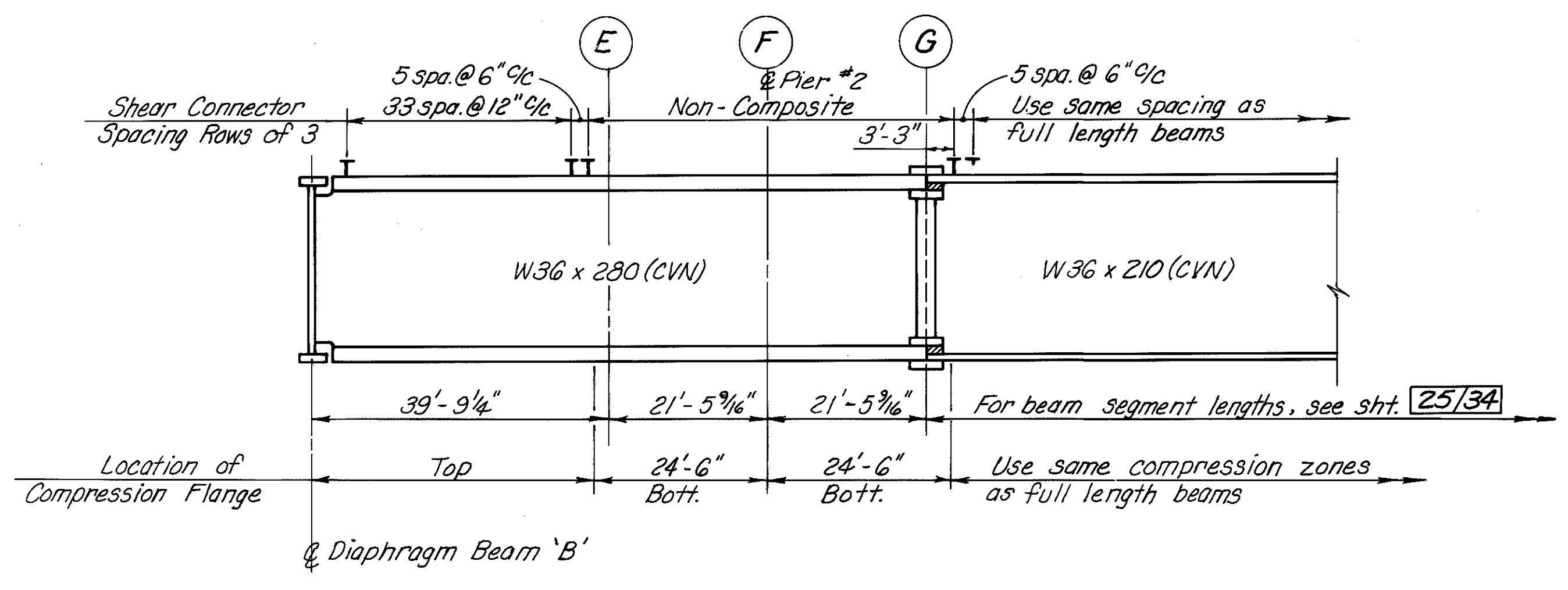


**TYPICAL BEAM ELEVATION**  
BEAM No. 1, 3 thru 18 and 23

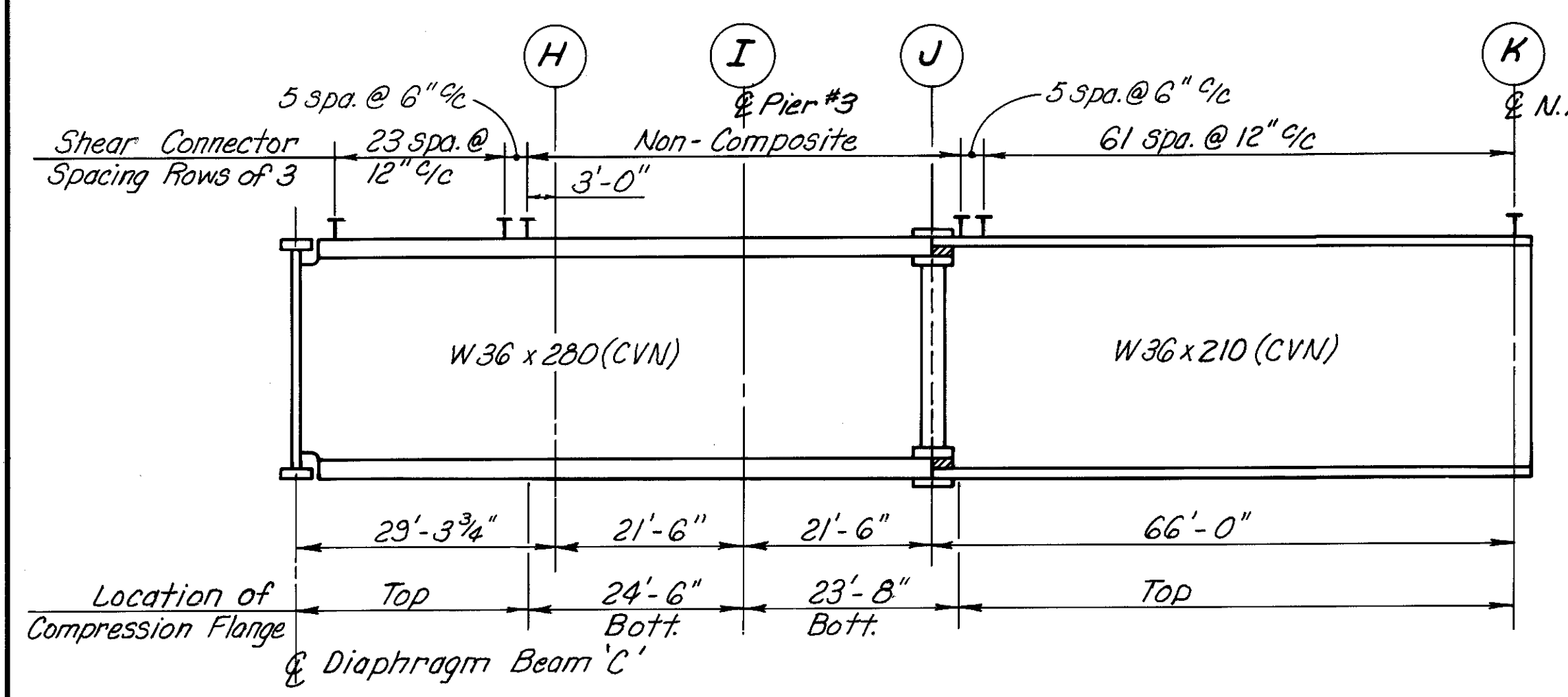
PARTIAL PAINTING OF A588 STEEL: A 10 foot length from the ends of beams (girders) adjacent to abutments (on both sides of intermediate expansion joints) and all cross frames and other A588 steel within these limits shall be painted. Paint shall be System IZEU. The prime coat shall be 708.17. The top coat color shall closely approach Federal Standard No. 595a-20045 or 20059 (the color of weathering steel).



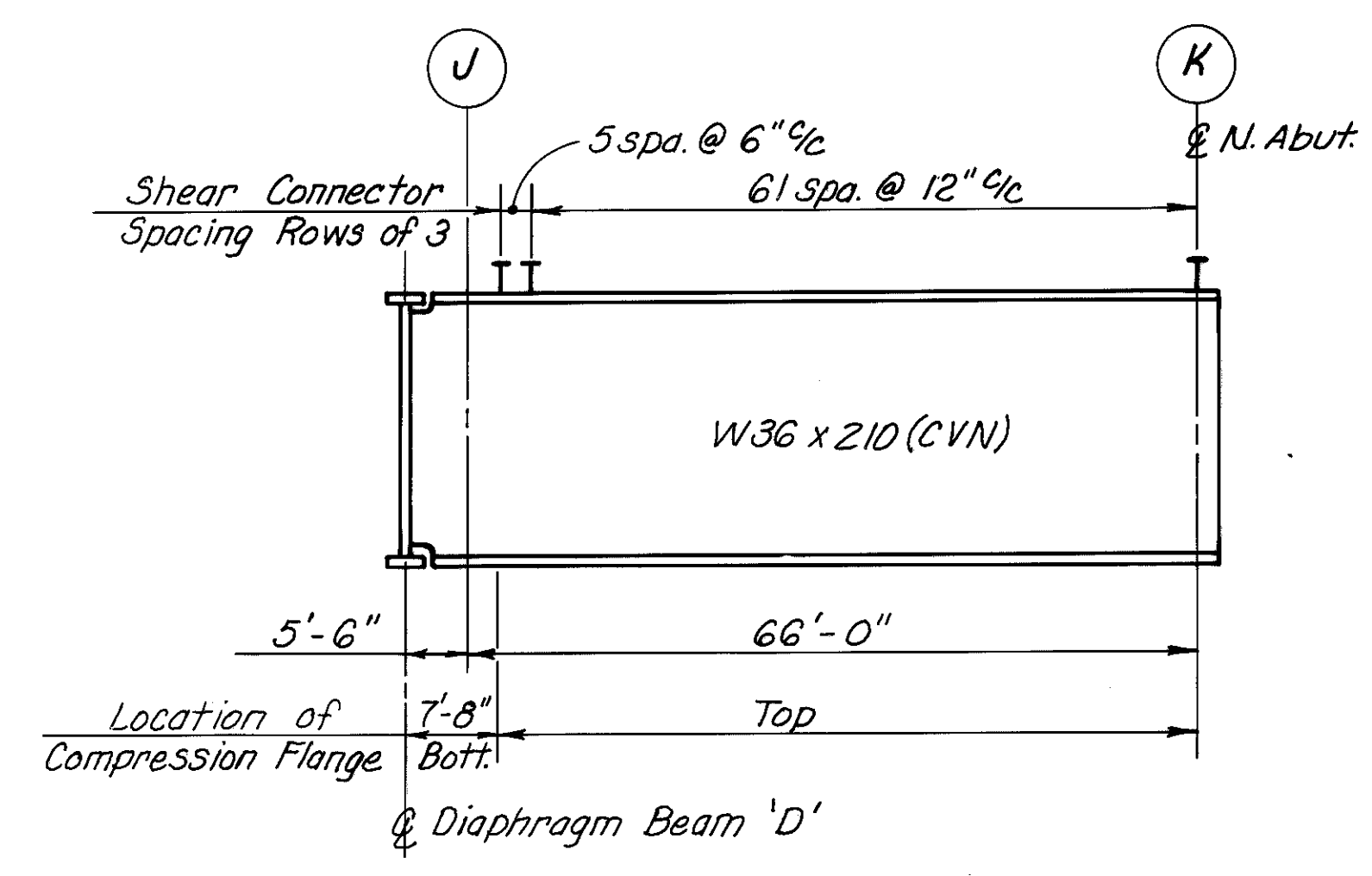
**BEAM 2**



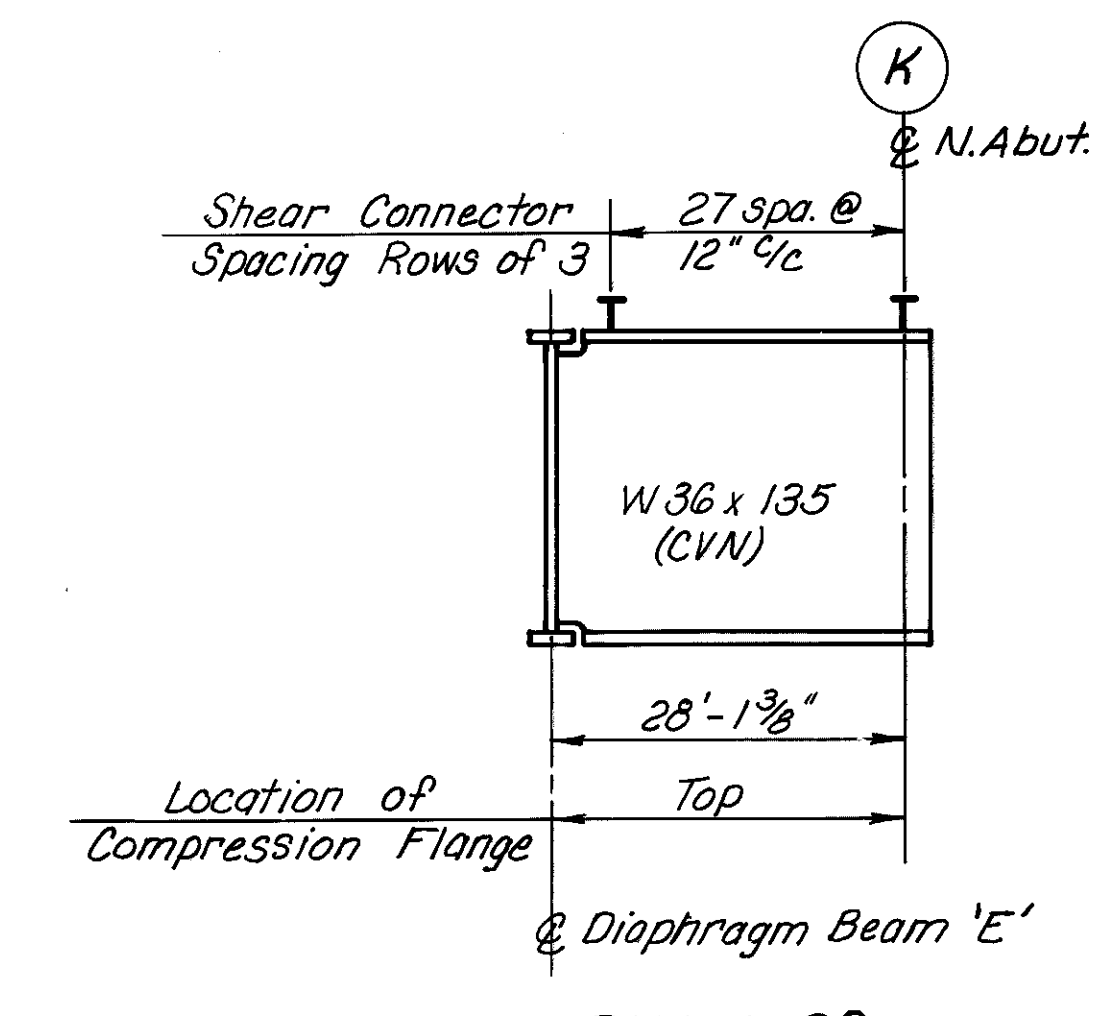
**BEAM 19**



**BEAM 20**



**BEAM 21**



**BEAM 22**

**NOTES:**  
Where a shape or plate is designated (CVN) the material shall meet specified minimum notch toughness requirements as specified in 711.02 of CMS.  
Shear connector location may be adjusted by a maximum of 1/2" to avoid conflict with high strength bolts and edges of plates.  
Shear connector spacing in the vicinity of field splices shall be adjusted to allow connectors to be placed between the splice bolts.  
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 intermediate stiffener connection plate details, see sheet 27/34.

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON						
<b>SUPERSTRUCTURE DETAILS</b>						
BRIDGE NO. FRA-315-0120 S.R. 315 OVER SCIOTO RIVER						
FRANKLIN COUNTY				STA. 106 + 67.18 (R.N.B.) TO STA. 110 + 64.32		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	5/24/89	



DEFLECTION AND CAMBER	BEAM 1																BEAM 3															
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4			
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75
DEFL. DUE TO WEIGHT OF STEEL	3/16	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4
DEFL. DUE TO REMAINING DEAD LOAD	9/16	13/16	7/16	1/4	9/16	7/8	3/4	1/2	1/4	7/8	7/8	3/4	1/2	1/2	3/4	7/8	1/4	1/16	5/8	5/16	3/4	1/8	1/8	5/8	3/8	1/16	1/8	1/8	5/8	3/8	1	1
ADJUSTMENT REQ'D. FOR CURVATURE	-5/8	-3/8	-1/8	9/16	7/8	13/8	1/2	1/16	15/16	15/16	15/8	15/8	1	1/2	11/16	1/2	-5/8	-5/16	0	7/16	5/8	7/8	1	11/16	7/8	15/16	15/8	15/8	1	1/2	11/16	1/2
REQUIRED SHOP CAMBER	7/16	3/4	9/16	7/8	15/8	29/16	2 1/2	13/4	1 1/4	2 1/2	2 13/16	2 5/8	11/16	1 1/16	1 1/16	1 5/8	5/8	1 1/16	13/16	13/16	19/16	2 5/16	2 1/4	1 1/2	1 5/16	2 3/16	3 1/16	2 7/8	1 13/16	15/16	1 5/16	1 3/4

DEFLECTION AND CAMBER	BEAM 4																BEAM 5																BEAM 6															
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4			
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75
DEFL. DUE TO WEIGHT OF STEEL	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4
DEFL. DUE TO REMAINING DEAD LOAD	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1
ADJUSTMENT REQ'D. FOR CURVATURE	-5/8	-3/8	0	5/16	3/8	1/2	5/8	1/2	7/8	15/16	19/16	15/8	1/8	1/2	11/16	1/2	-5/8	-3/8	0	1/8	3/16	3/16	3/16	1/4	7/8	1 1/4	1 1/2	19/16	17/16	1/2	11/16	1/2	-9/16	-5/16	0	1/16	0	-1/16	-1/8	0	15/16	15/16	1 1/2	19/16	1 1/8	1/2	11/16	1/2
REQUIRED SHOP CAMBER	5/8	1	13/16	11/16	15/16	17/8	15/16	15/16	2 3/16	3	2 7/8	15/16	15/16	1 5/16	1 3/4	1 3/4	5/8	1	13/16	1/2	1 1/8	1 5/8	17/16	1 1/16	1 5/16	2 1/8	2 15/16	2 13/16	2 1/4	15/16	1 15/16	1 3/4	11/16	1 1/16	13/16	7/16	15/16	1 3/8	1 1/8	13/16	1 3/8	2 3/16	2 15/16	2 13/16	1 15/16	1 15/16	1 15/16	1 3/4

DEFLECTION AND CAMBER	BEAM 7																BEAM 8																BEAM 9																
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	
DEFL. DUE TO WEIGHT OF STEEL	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	
DEFL. DUE TO REMAINING DEAD LOAD	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	
ADJUSTMENT REQ'D. FOR CURVATURE	-1/2	-1/4	0	0	-1/4	-5/16	-7/16	-1/8	1	15/16	19/16	19/16	13/16	1/2	11/16	1/2	-3/8	-3/16	0	1/16	0	-1/16	-1/8	0	7/8	1 1/8	1 5/16	1/4	15/16	1/2	11/16	1/2	-1/16	1/16	3/16	0	1/8	3/16	5/16	1/4	5/8	7/8	1	7/8	5/8	1/2	11/16	1/2	
REQUIRED SHOP CAMBER	3/4	1 1/8	13/16	3/8	11/16	1 1/8	13/16	11/16	17/16	2 3/16	3	2 13/16	2	15/16	1 5/16	1 3/4	1 3/4	7/8	1 1/16	13/16	7/16	15/16	1 3/8	1 1/8	13/16	15/16	2	2 3/4	2 1/2	1 3/4	15/16	1 15/16	1 3/4	5/16	1 1/16	1	3/8	1 1/16	1 5/8	19/16	1 1/16	1 1/16	1 3/4	15/16	1 15/16	1 3/4	15/16	1 15/16	1 7/8

DEFLECTION AND CAMBER	BEAM 10																BEAM 11																BEAM 12															
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4			
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75
DEFL. DUE TO WEIGHT OF STEEL	3/16	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	3/16	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4
DEFL. DUE TO REMAINING DEAD LOAD	9/16	13/16	7/16	1/4	9/16	7/8	3/4	1/2	1/4	7/8	7/8	3/4	1/2	1/2	3/4	7/8	9/16	13/16	7/16	1/4	9/16	7/8	3/4	1/2	1/4	7/8	7/8	3/4	1/2	1/2	3/4	7/8	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1
ADJUSTMENT REQ'D. FOR CURVATURE	1/16	1/8	1/8	-1/16	1/16	3/16	1/4	1/4	1/2	7/8	1	7/8	9/16	1/2	11/16	1/2	-1/8	-1/8	-1/16	1/8	1/8	1/8	1/8	1/8	5/8	15/16	1 1/16	15/16	3/4	1/2	11/16	1/2	-1/8	-1/8	-1/16	1/8	1/8	1/8	1/8	1/8	3/4	15/16	1 1/16	15/16	3/4	1/2	11/16	1/2
REQUIRED SHOP CAMBER	13/16	1 1/4	3/4	1/2	13/16	1 1/16	1 1/4	15/16	13/16	2 1/16	2 3/16	1 7/8	1 1/4	1 1/16	1 11/16	1 5/8	1 5/8	1	9/16	7/16	7/8	1 5/16	1 1/8	13/16	15/16	2 1/8	2 1/4	15/16	17/16	1 1/16	1 11/16	1 5/8	1 1/8	1 1/4	3/4	1/2	1 1/16	19/16	1 3/8	15/16	13/16	13/16	2 1/2	2 3/16	19/16	15/16	1 15/16	1 3/4

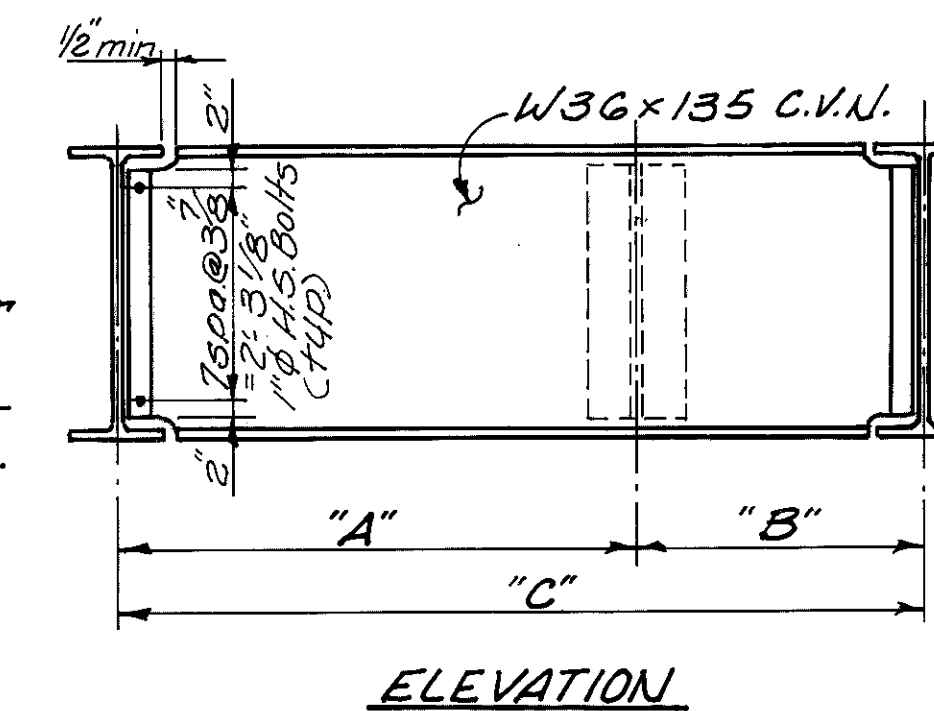
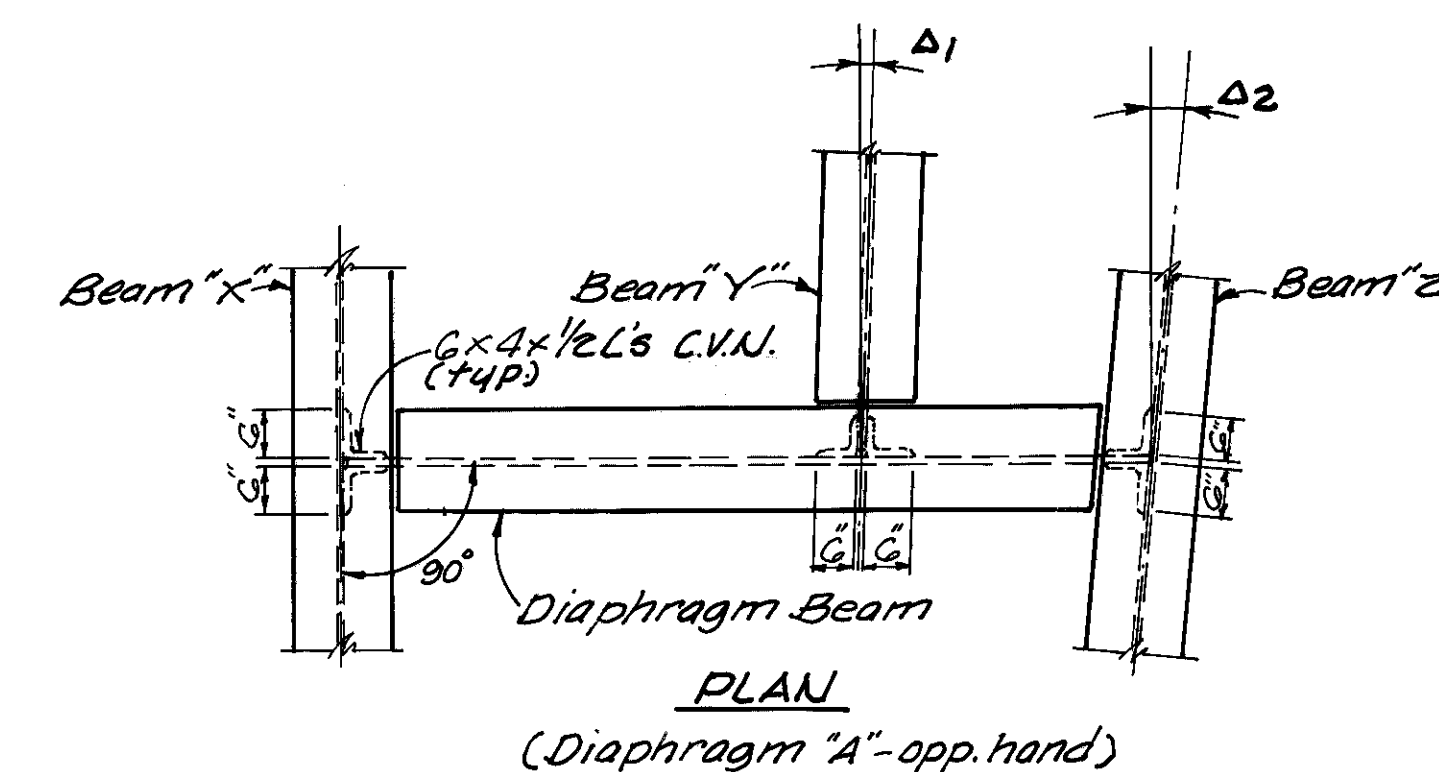
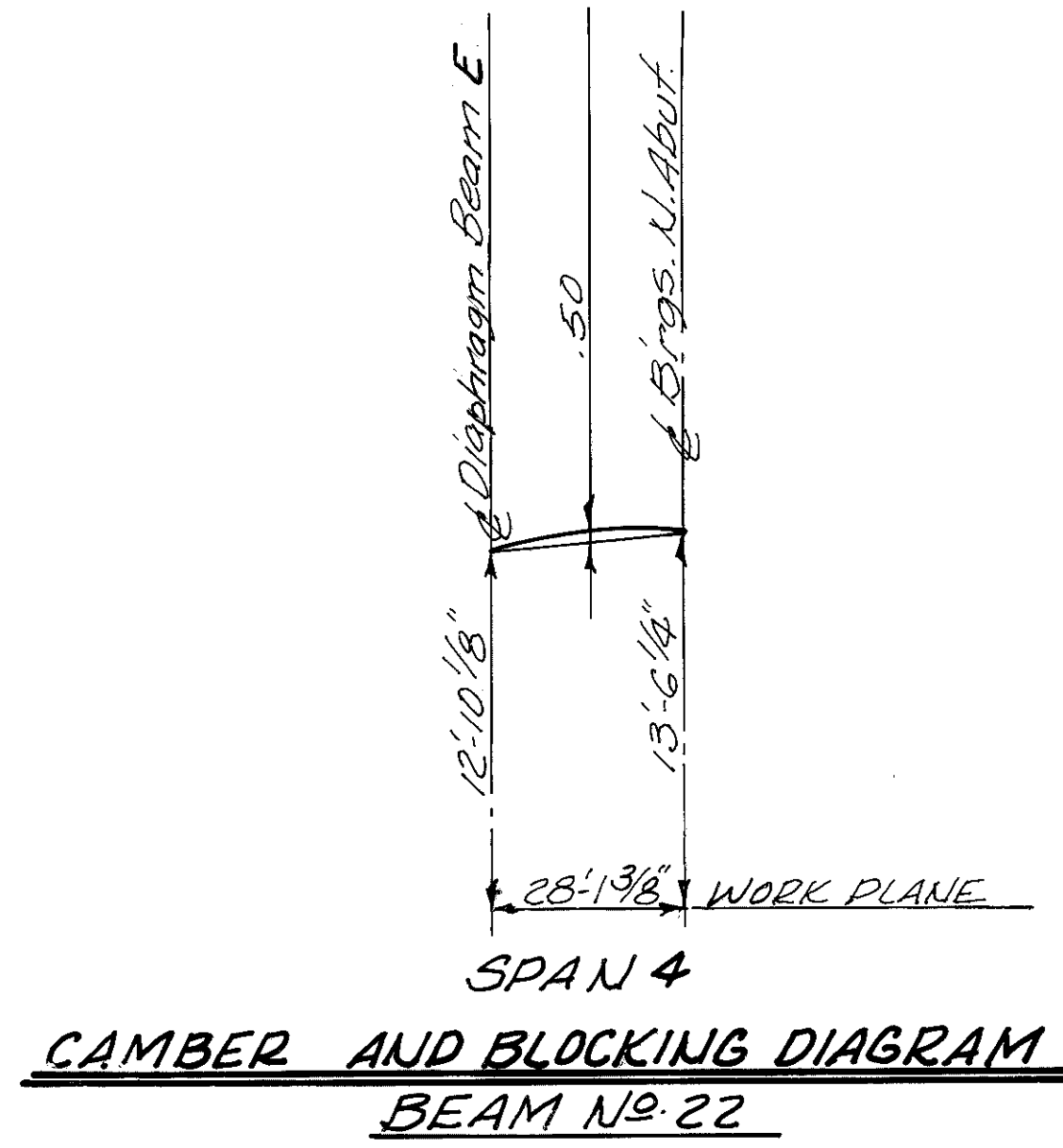
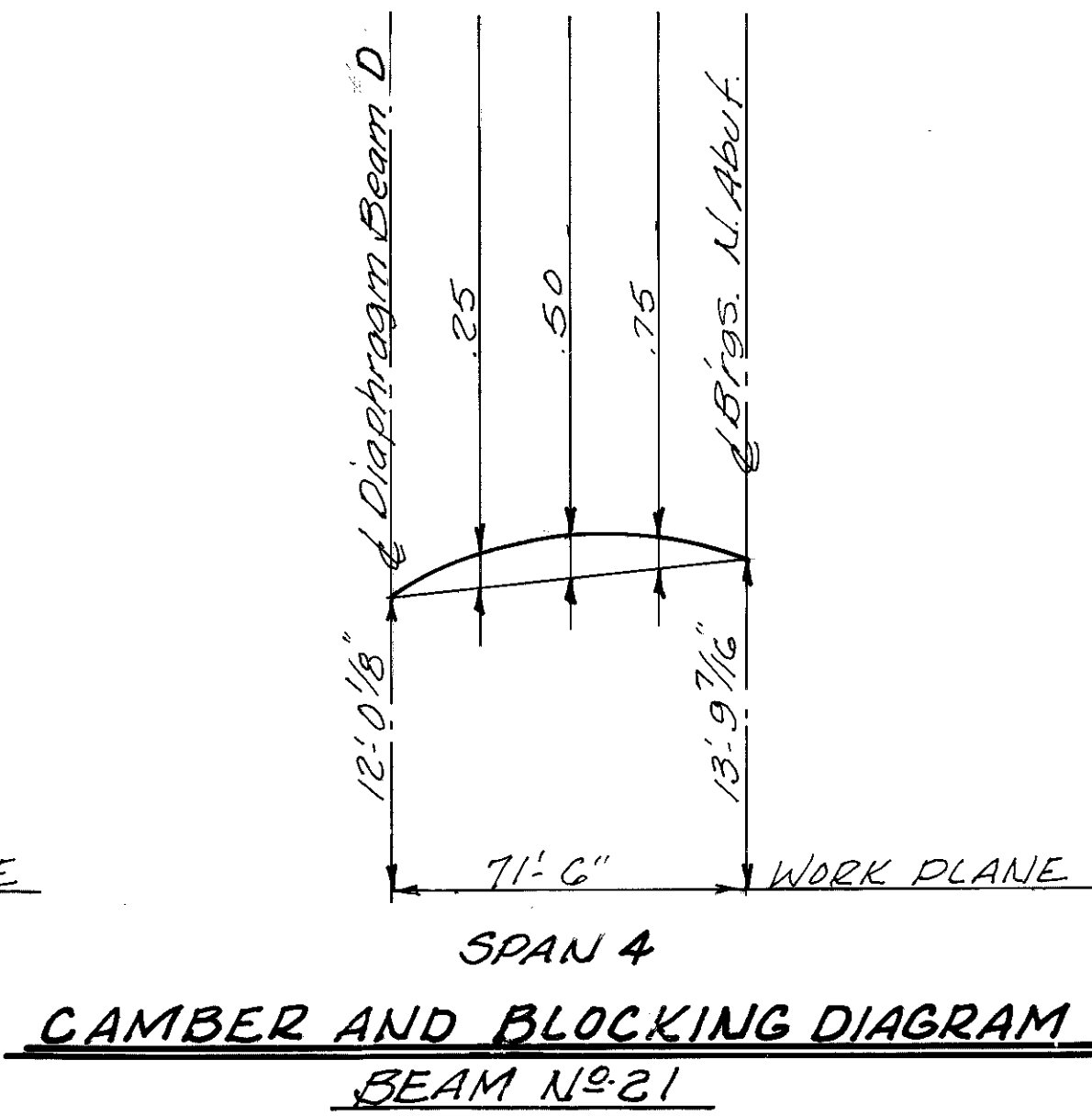
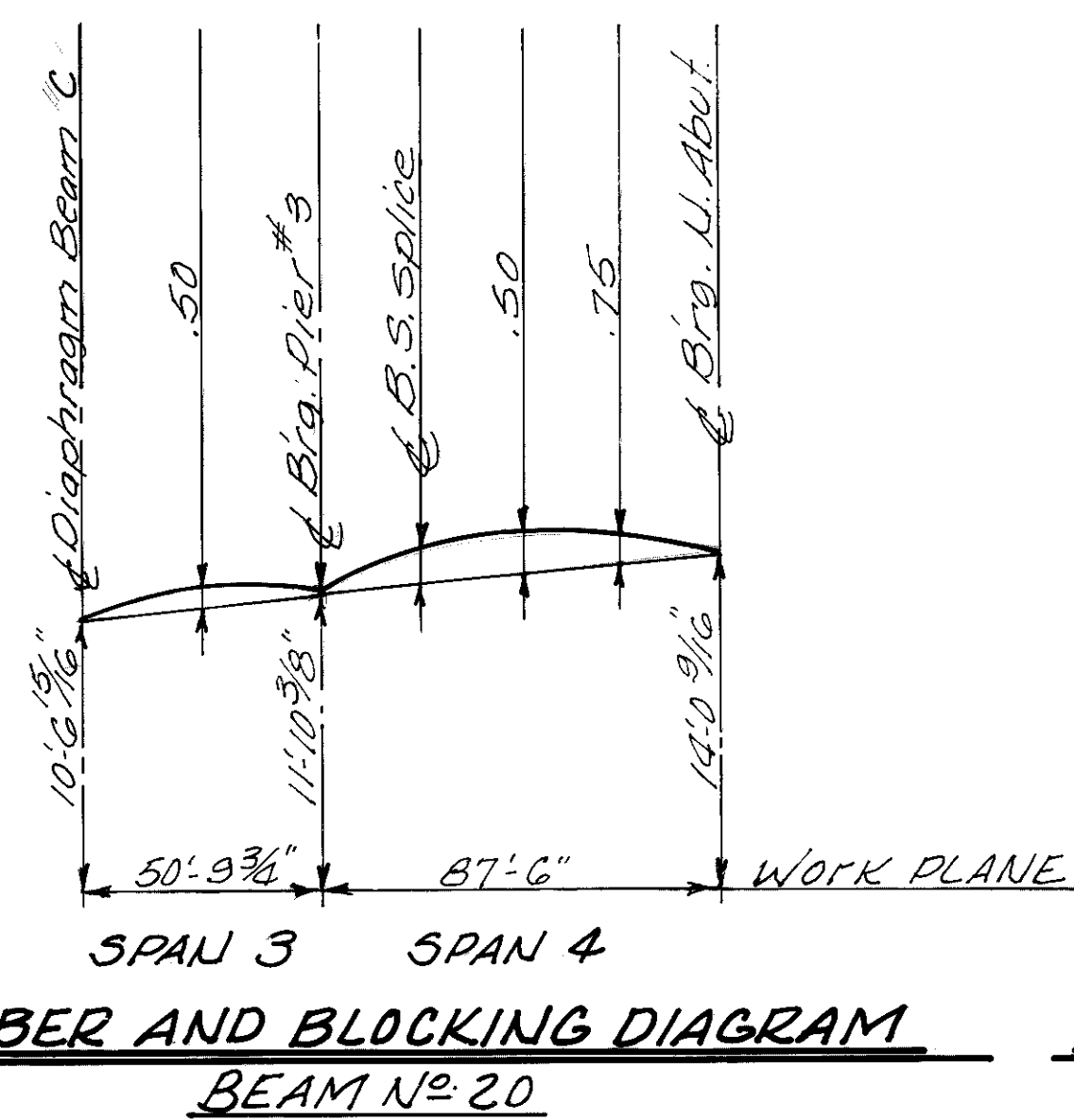
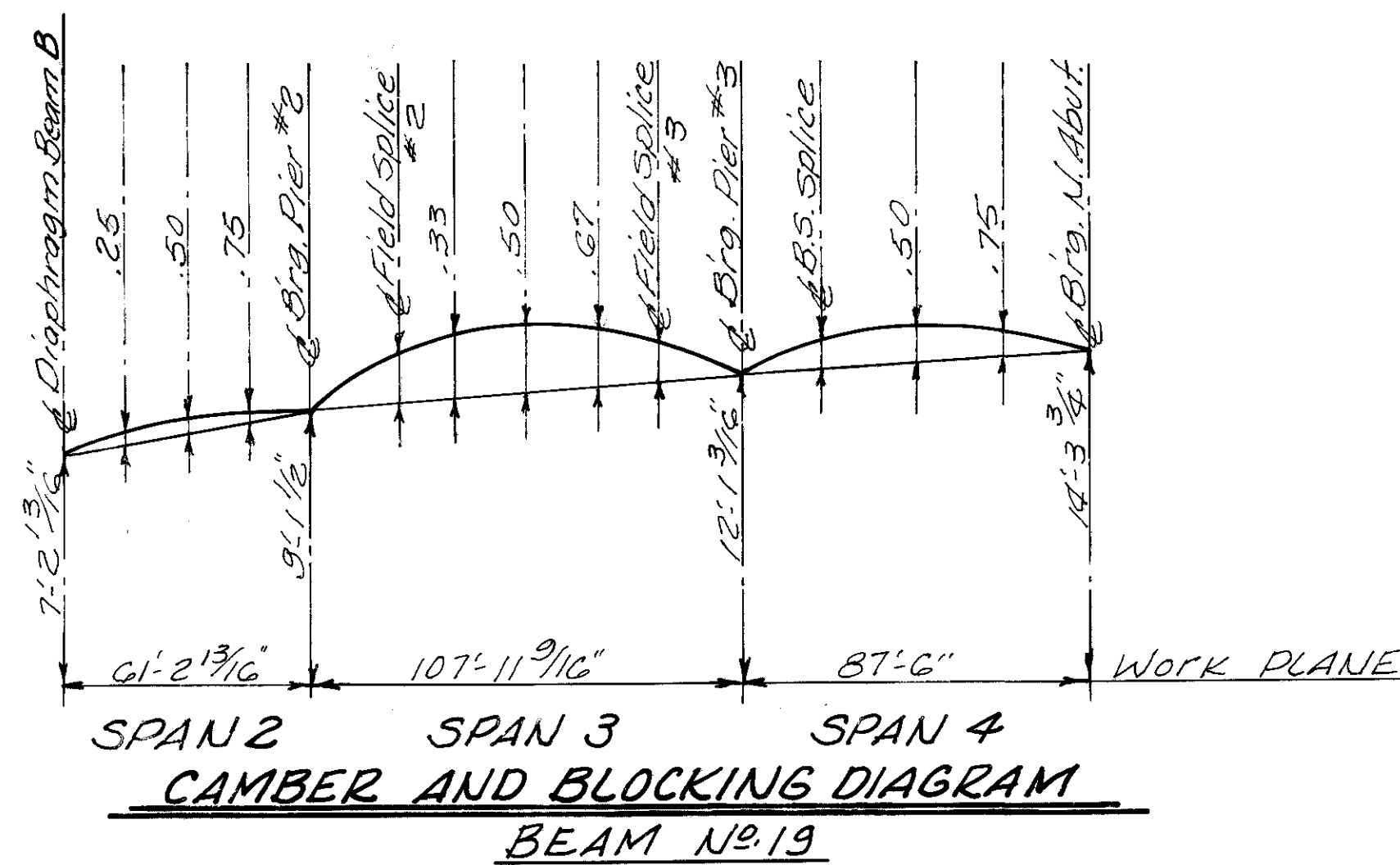
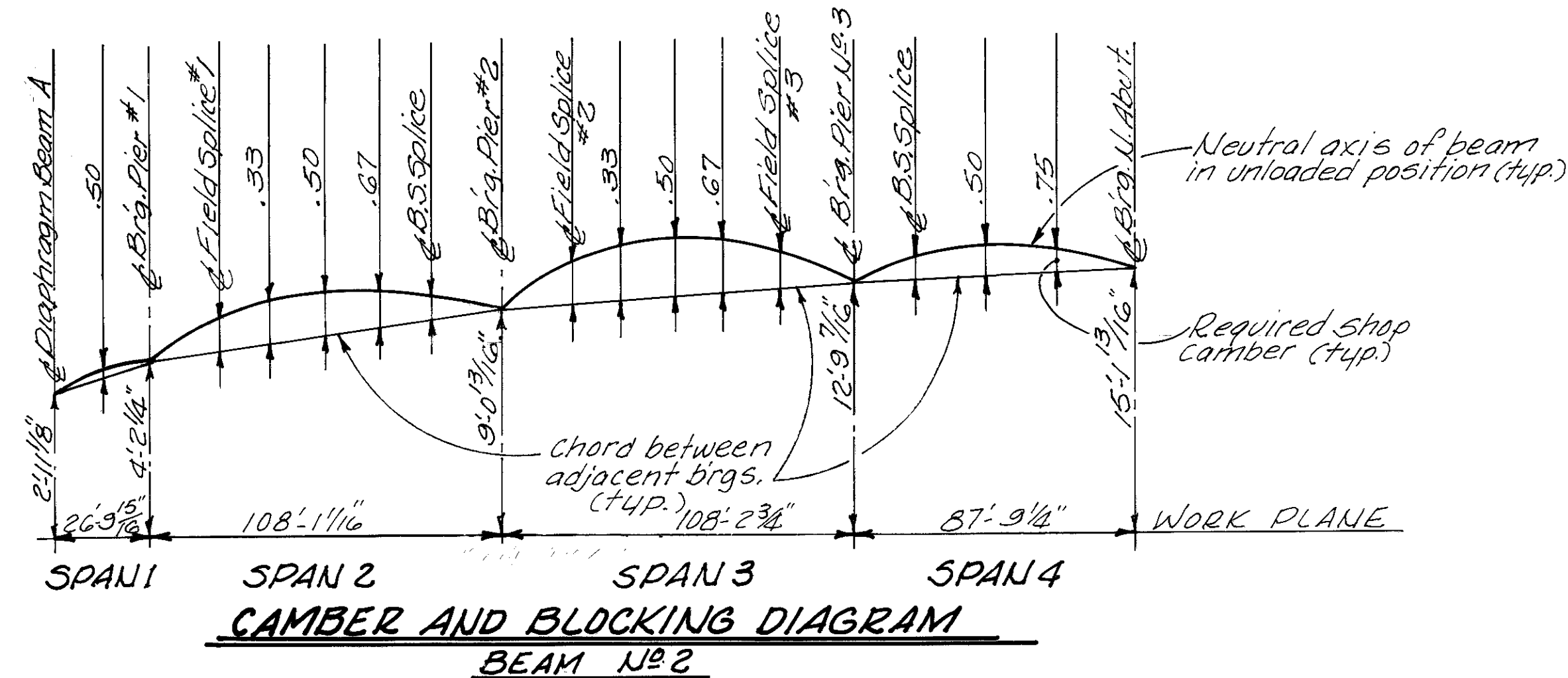
  

DEFLECTION AND CAMBER	BEAM 13																BEAM 14																BEAM 15																
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	
DEFL. DUE TO WEIGHT OF STEEL	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4	
DEFL. DUE TO REMAINING DEAD LOAD	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/16	1 1/8	1	5/8	3/8	1	1	
ADJUSTMENT REQ'D. FOR CURVATURE	-1/16	-1/16	0	1/8	1/16	1/16	1/8	1/8	1/2	11/16	7/8	13/16	9/8	1/2	11/16	1/2	0	0	1/16	1/8	1/16	1/16	1/16	1/8	3/8	1/2	3/4	11/16	1/2	1/2	11/16	1/2	0	0	1/16	1/8	1/16	1/16	1/16	1/8	1/2	5/8	13/16	3/4	9/16	1/2	11/16	1/2	
REQUIRED SHOP CAMBER	13/16	1 5/16	13/16	1/2	1	1 1/2	1 3/8	15/16	1	1 7/16	2 3/16	2 1/8	1 1/2	1 1/16	1 3/4	1 3/4	1 1/4	1 5/8	7/8	1/2	1	1 1/2	15/16	15/16	13/16	1 3/8	2 3/16	15/16	5/16	15/16	1 3/4	1 7/8	1 1/4	1 3/8	7/8	1/2	1	1 1/2	15/16	15/16	15/16	13/16	13/16	2 1/2	2 3/16	19/16	15/16	1 15/16	1 3/4

DEFLECTION AND CAMBER	BEAM 16																BEAM 17																BEAM 18															
	SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4				SPAN 1				SPAN 2				SPAN 3				SPAN 4			
LOCATION	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75	.25	.50	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.33	.50	.67	SPL.	SPL.	.50	.75
DEFL. DUE TO WEIGHT OF STEEL	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	5/16	5/16	1/4	3/16	1/16	1/4	1/4	1/4	5/16	3/16	1/16	3/16	5/16	1/4	3/16	1/16	3/16	5/16	1/4	3/16	1/16	1/4	1/4
DEFL. DUE TO REMAINING DEAD LOAD	1	1 1/16	5/8	5/16	3/4	1 1/8	1	5/8	3/8	11/																																						





NOTE: Connection shown is typical for diaphragm to beam and for beam to diaphragm connections.

**DIAPHRAGM BEAM DETAILS**

For diaphragm beam locations see Framing Plan, Sheet 25/34

Note: Work Plane is a horizontal plane passing through the neutral axis of Beam 1 at & South Abutment.  
Work Plane elevation = 720.82.

BLOCKING DIMENSIONS			
BEAM	PIER #1	PIER #2	PIER #3
1	3 1/16"	1-6 1/8"	1-0 7/8"
3	8 3/8"	1-4 3/4"	11 3/4"
4	7 1/2"	1-3 9/16"	11 1/4"
5	6 11/16"	1-2 1/4"	10 3/4"
6	5 5/16"	1-0 5/16"	10 3/16"
7	5 3/16"	11 5/8"	9 5/8"
8	4 5/16"	10 7/16"	8 9/16"
9	4 13/16"	9 3/16"	7 3/8"
10	4 1/8"	8 5/8"	7 1/8"
11	3 3/4"	8 3/8"	7 1/16"
12	3 5/8"	8 1/8"	7"
13	3 13/16"	7 9/16"	6 9/16"
14	4 1/4"	7 3/16"	6 1/8"
15	5 1/16"	7 5/8"	5 5/16"
16	5 1/8"	8 1/8"	5 13/16"
17	6 1/8"	8 5/16"	5 5/8"
18	8 1/8"	6 13/16"	4 5/8"
23	10 13/16"	1-0 11/16"	8 3/16"

DEFLECTION AND CAMBER	BEAM 2												BEAM 19												BEAM 20			BEAM 21			BEAM 22		
	SP1	SPAN 2			SPAN 3			SPAN 4			SPAN 2			SPAN 3			SPAN 4			SP2	SPAN 4		SPAN 4		SPAN 4								
LOCATION	50	SPL	.33	.50	.67	SPL	SPL	.33	.50	.67	SPL	SPL	.50	.75	.25	.50	.75	SPL	.33	.50	.67	SPL	SPL	.50	.75	.50	SPL	.50	.75	.25	.50	.75	.50
Deflec. due to weight of steel	0	1/2	7/16	1/2	3/8	3/16	1/8	1/4	5/16	1/4	1/8	3/16	5/16	1/4	0	0	0	1/2	7/16	9/16	3/8	3/16	1/8	5/16	1/4	-1/16	1/4	1/2	3/8	1/4	3/8	1/4	0
Deflec. due to remaining dead load	-1/8	15/16	1 9/16	1 7/8	1 3/8	3/4	7/16	7/8	1 5/16	1 1/8	1/2	5/8	1 3/16	1 1/8	1/16	0	-1/8	1	1 1/16	2 1/16	1 1/2	1 3/16	1 1/2	1 1/8	1	-1/8	1	1 13/16	1 7/16	1 1/16	1 1/2	1 1/16	1/16
Adjustment reqd. for curvature	0	1/2	3/4	1 1/8	1 1/4	7/8	7/8	1 5/16	1 5/8	1 5/8	1 1/16	1/2	1 1/16	1/2	-1/4	1/16	1/16	1/2	1 1/16	1 3/16	3/4	1/2	1/8	7/16	3/8	3/16	1/16	3/8	5/16	5/16	7/16	3/8	1/8
Required Shop Camber in inches	-1/8	1 11/16	2 3/4	3 1/2	3	1 13/16	1 7/16	2 1/16	3 1/8	3	1 1/16	1 5/16	2 3/16	1 7/8	-3/16	1/16	-1/16	1 3/4	2 13/16	3 7/16	2 5/8	1 1/2	3/4	1 7/8	1 5/8	0	1 5/16	2 1/16	2 1/8	1 5/8	2 5/16	1 1/16	3/16

DIAPHRAGM BEAM DATA								
LOCATION	"A"	"B"	"C"	"X"	"Y"	"Z"	Δ <sub>1</sub>	Δ <sub>2</sub>
Diaphragm "A"	4-10 3/4"	4-10 13/16"	9-9 9/16"	Beam 3	Beam 2	Beam 1	0°-53'-52"	1°-44'-38"
Diaphragm "B"	7-9 5/8"	1-11 1/8"	9-9 1/2"	Beam 18	Beam 19	Beam 23	0°	2°-29'-57"
Diaphragm "C"	7-9 5/8"	2-11 13/16"	10-9 1/16"	Beam 19	Beam 20	Beam 23	0°	6°-11'-01"
Diaphragm "D"	7-9 5/8"	3-3 1/16"	11-0 11/16"	Beam 20	Beam 21	Beam 23	0°	7°-46'-26"
Diaphragm "E"	7-9 5/8"	2-2 3/16"	9-11 13/16"	Beam 21	Beam 22	Beam 23	0°	9°-22'-23"

29/34

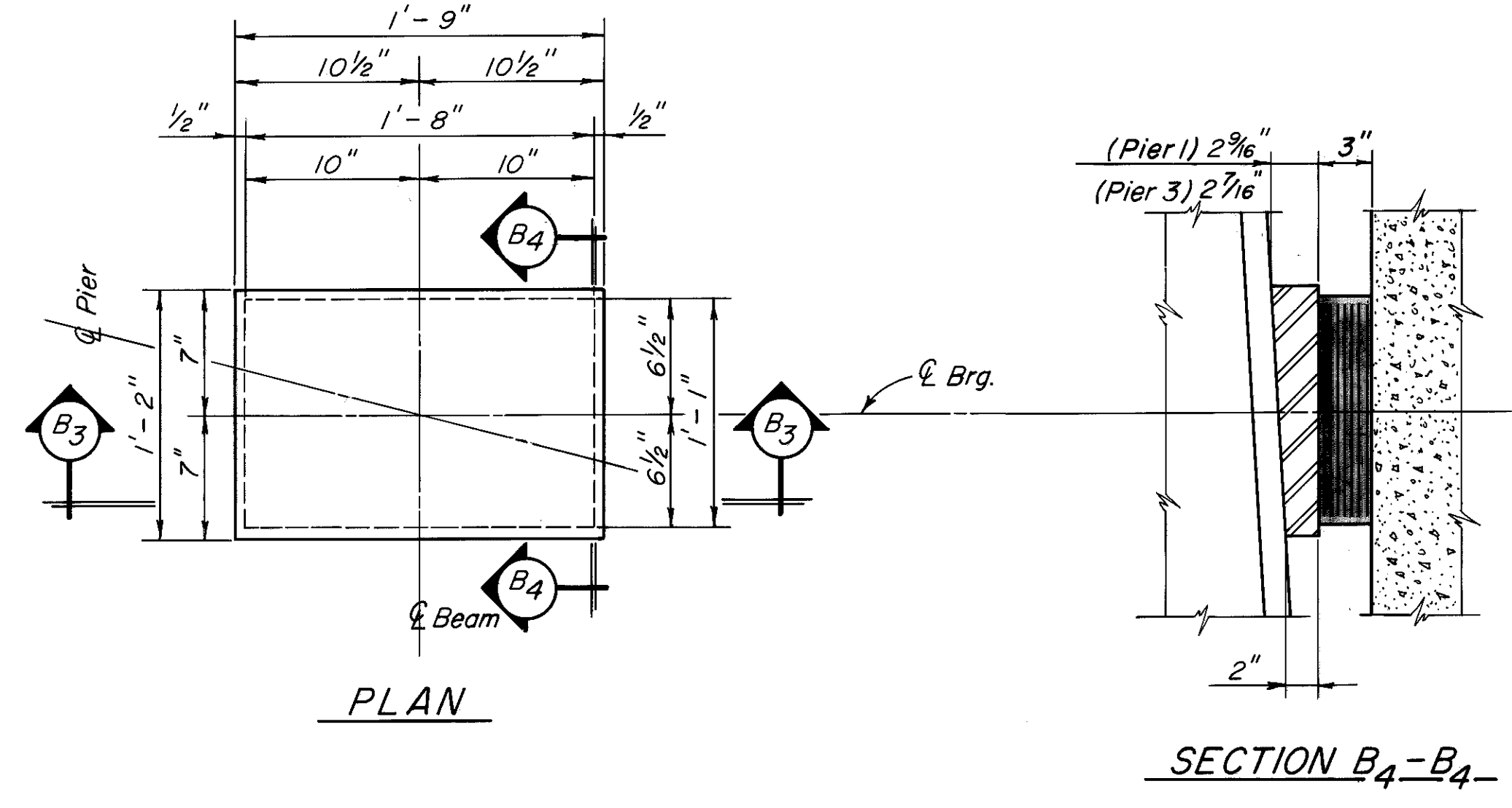
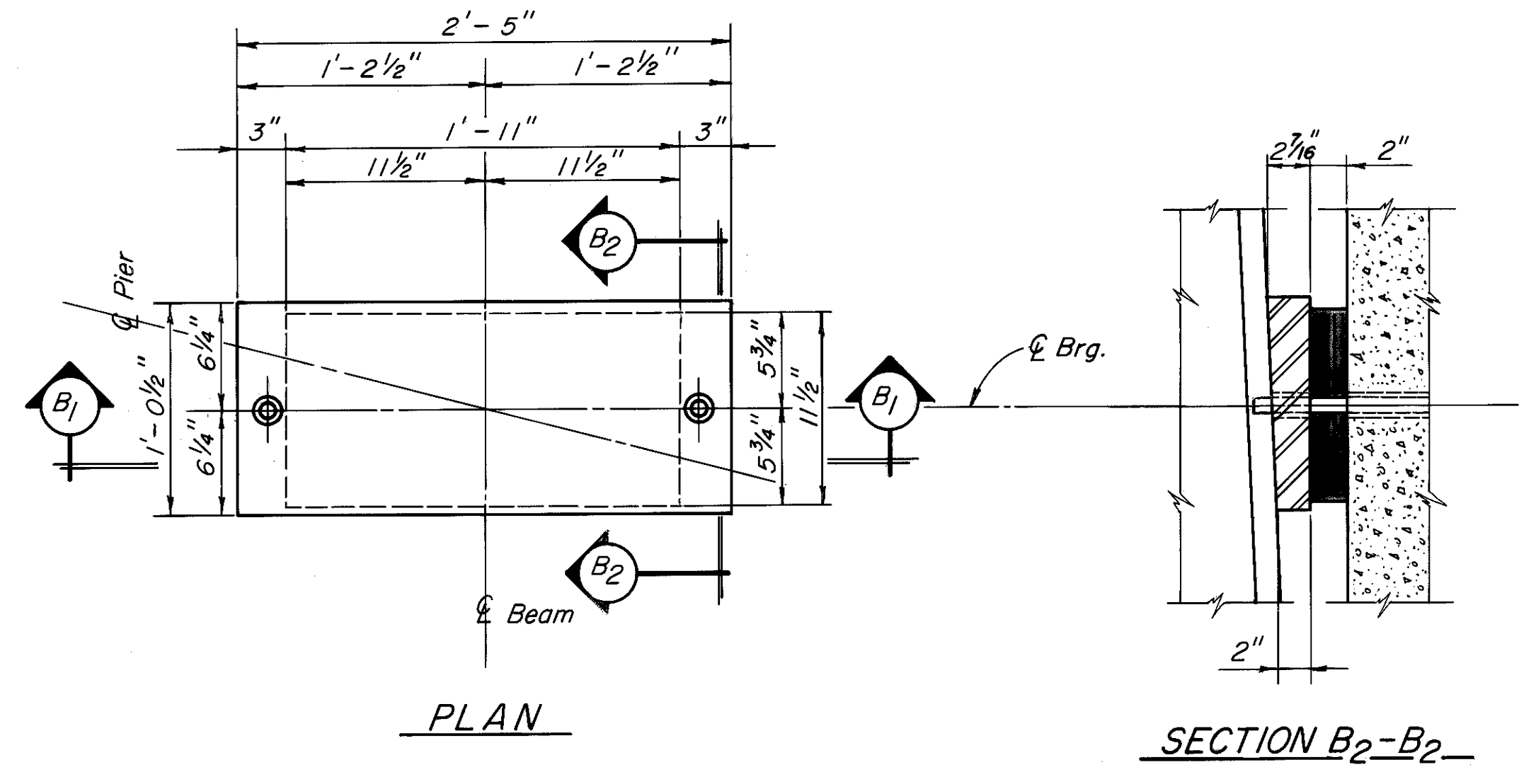
STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 315 - 0120  
S.R. 315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106 + 67.18 (N.B.) TO STA. 110 + 64.32

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		TEU	G.W.M.	5/24/89	



**NOTES:**

**MATERIALS:**  
 All elastomer layers shall be 50 durometer neoprene.  
 All internal laminates shall be A36 or A570 steel, 0.0747" thk.  
 All load plates shall be A572 steel.

**TOLERANCES:**  
 Individual elastomer layer thickness:  $\pm 20\%$  of design value (not to exceed  $\pm 1/8"$ )

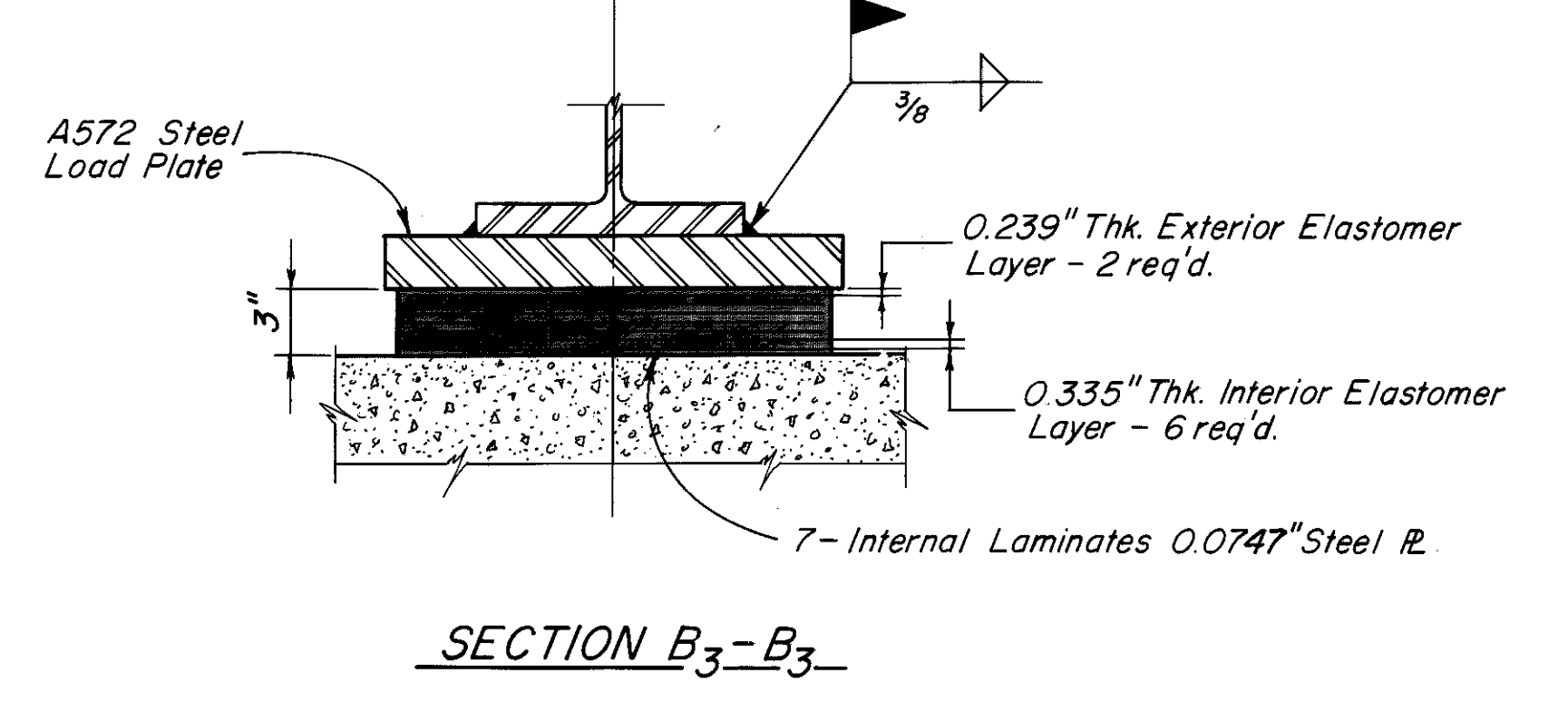
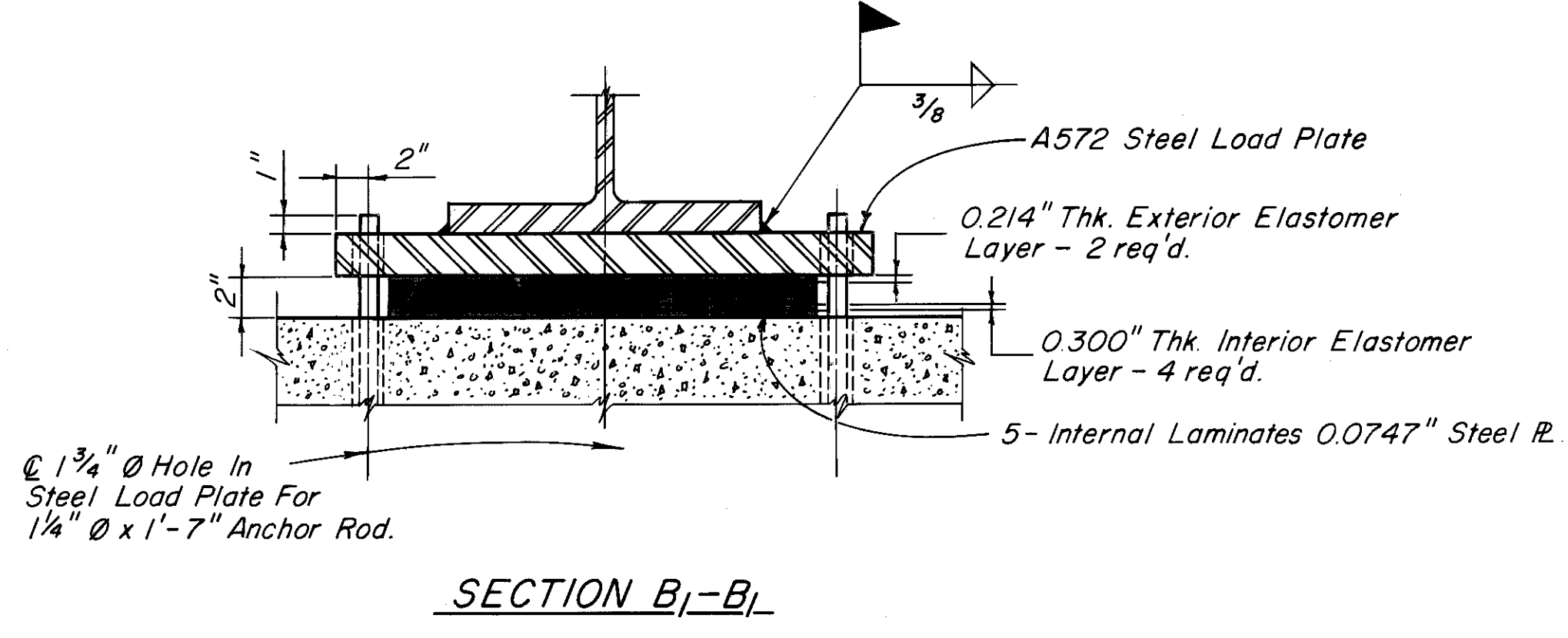
Plan Dimensions -0. + 1/4"  
 Design Thickness  $\leq 1/4"$  -0. + 1/8"  
 Design Thickness  $> 1/4"$  -0. + 1/4"  
 Edge Cover of Embedded Laminates -0. + 1/8"

**LOAD PLATE:**  
 The steel load 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 400°F as determined by the use of pyrometric sticks or other temperature monitoring devices.

**ANCHOR RODS:**  
 1/4"  $\phi$  x 1'-7" Anchor Rods shall be galvanized according to 711.02. Install anchor rods per 510. Include dowel holes and anchor rods with Item 516 for payment.

**BEARING REPOSITIONING:**  
 If deck concrete is placed at an ambient temperature higher than 80°F or lower than 40°F and the bearing shear deflection exceeds one-sixth of the bearing height at 60°F  $\pm$  10°F, the beams or girders shall be raised to allow the bearings to return to their undeformed shape at 60°F  $\pm$  10°F.

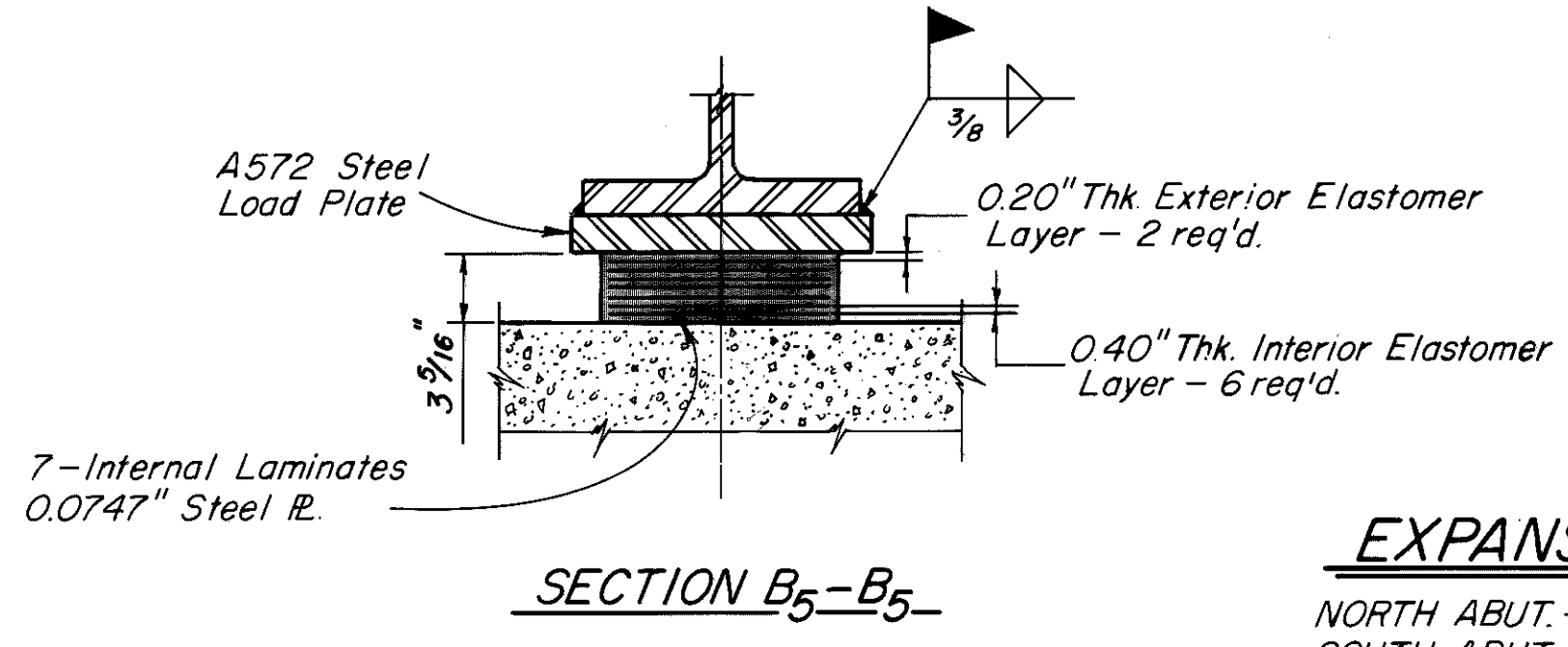
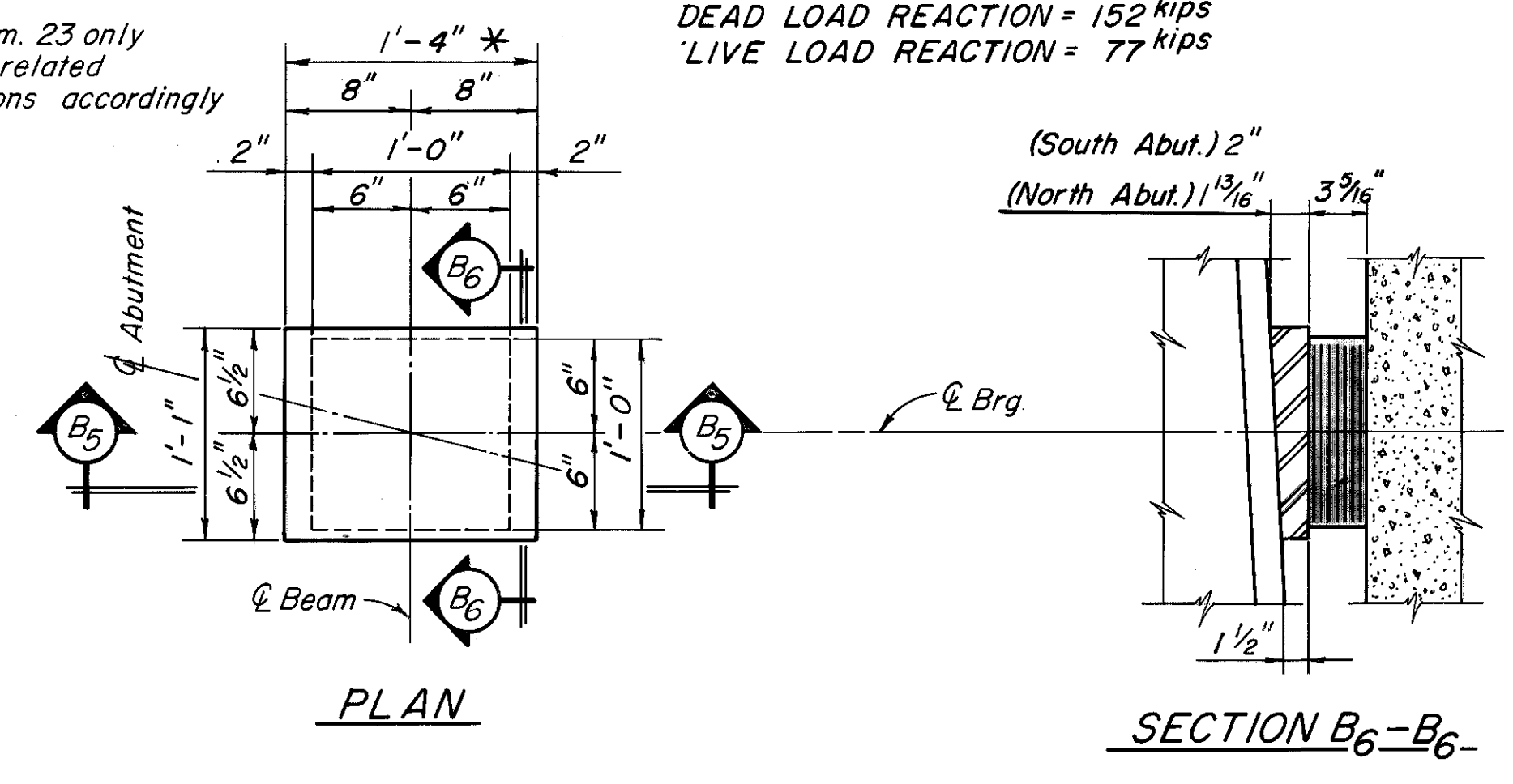
**BASIS OF PAYMENT:**  
 The unit bid price shall include all materials, labor and incidentals necessary to furnish and install laminated elastomeric bearings either fixed or expansion. Payment will be made at the contract price for Item 516.



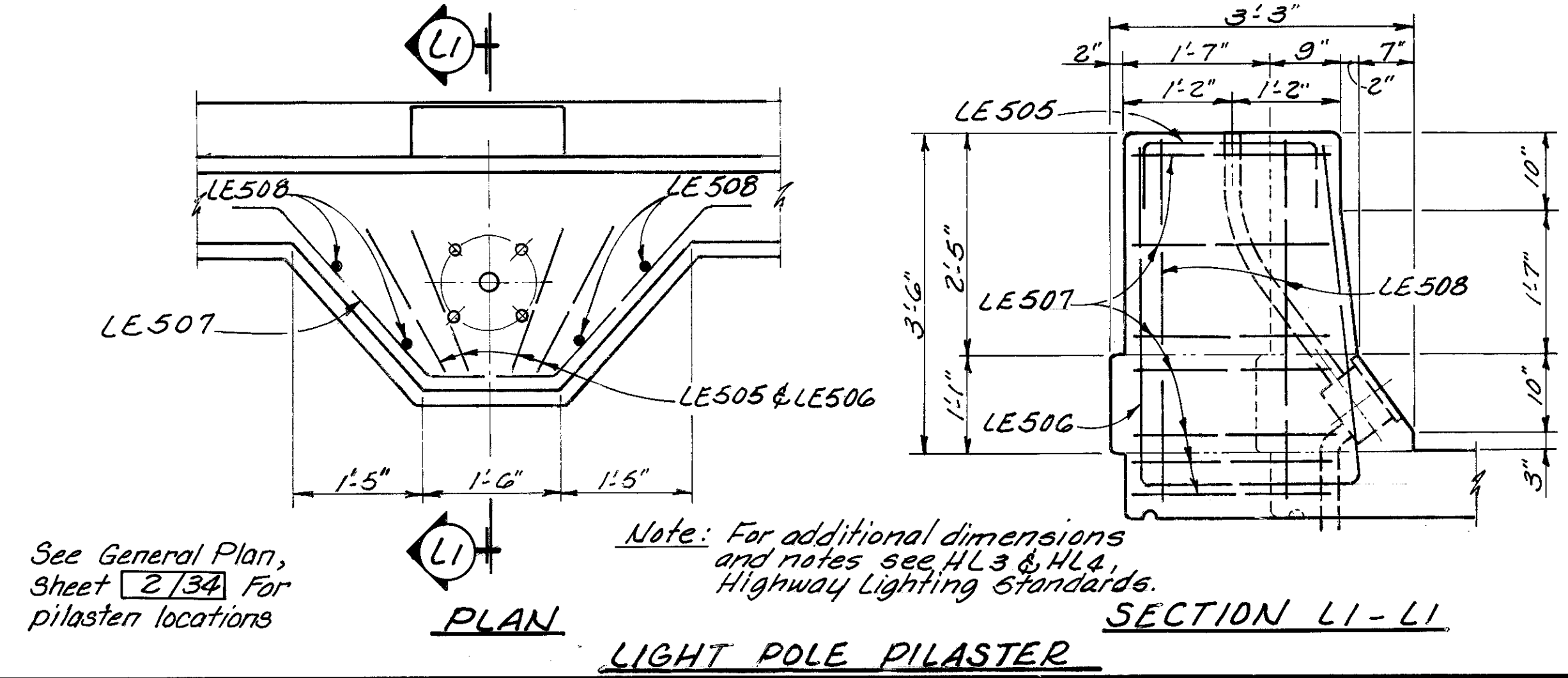
**FIXED BEARING**  
 PIER NO. 2 - 20 BEARING UNITS REQ'D.  
 SERVICE LOAD REACTION = 229 kips  
 DEAD LOAD REACTION = 152 kips  
 LIVE LOAD REACTION = 77 kips

**EXPANSION BEARING**  
 PIER NO. 1 - 19 BEARING UNITS REQ'D.  
 PIER NO. 3 - 21 BEARING UNITS REQ'D.  
 SERVICE LOAD REACTION = 229 kips  
 DEAD LOAD REACTION = 154 kips  
 LIVE LOAD REACTION = 75 kips

\* 1'-6" Bm. 23 only  
 Adjust related dimensions accordingly



**EXPANSION BEARING**  
 NORTH ABUT. - 23 BEARING UNITS REQ'D.  
 SOUTH ABUT. - 18 BEARING UNITS REQ'D.  
 DEAD LOAD REACTION = 46 kips  
 LIVE LOAD REACTION = 49 kips



See General Plan, Sheet 2/34 for pilaster locations

Note: For additional dimensions and notes see H.L.3 & H.L.4 Highway Lighting Standards.

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON						
<b>SUPERSTRUCTURE DETAILS</b>						
BRIDGE NO. FRA - 315 - 0120 S.R. 315 OVER SCIOTO RIVER						
FRANKLIN COUNTY				STA. 106 + 67.18 (E.N.B.) TO STA. 110 + 64.32		
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	7/24/89	



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTH ABUTMENT										
A 5001	90	4-11	462	1		1-6	2-2	1-6		
A 5002	8	34-0	284	ST						
A 5003	11	35-0	402	ST						
A 5004	2	30-4	63	ST						3
A 5005	8	31-8	264	ST						
A 5006	6	32-2	201	ST						
A 5007	117	8-4	1017	1		2-7	3-5	2-7		
A 5008	2	23-5	49	ST						3
A 5009	3	24-8	77	ST						
A 5010	6	24-6	153	ST						
A 5011	19	19-0	377	ST						
A 5012	8	23-0	192	ST						
A 5013	11	24-9	284	ST						
A 5014	12	14-8	184	ST						
A 5015	4	9-11	41	12	2-0	7-10		0-11		
A 5016	4	6-8	28	ST						
A 5017	16	8-8	145	ST						
A 5018	3	32-0	100	ST						
A 5019	8	25-0	209	ST						
A 6001	133	5-10	1165	2	2-0	0-11	3-3			
A 6002	133	5-1	1015	2	2-0	1-5	2-0			
A 6003	137	9-3	1903	2	4-1	1-5	4-1			
A 6004	4	8-1	49	2	3-6	1-5	3-6			
A 8001	89	5-8	1347	21	3-3	1-0	1-0			
F 5001	117	8-3	1007	2	1-7	5-4	1-7			
F 5002	117	6-9	824	2	6-3	0-8				
F 5003	25	11-7	302	3	2-6	3-0	2-6	3-0		
F 5004	1	7-8	8	2	7-2	0-8				
F 5005	1	7-1	7	2	6-7	0-8				
F 5006	8	10-0	83	ST						
F 5006	8	9-3	77	12		3-0	5-0	3-0		
F 6001	117	13-10	2431	2	6-3	5-4	2-7			
F 6002	5	19-6	146	1		9-4	1-2	9-4		
F 6003	5	18-4	138	1		8-9	1-2	8-9		
F 8001	21	30-0	1682	ST						
F 8002	7	35-6	663	ST						
F 8003	7	18-0	336	ST						
F 8004	12	11-6	368	ST						
SOUTH ABUTMENT-EPOXY COATED										
AE 5006	4	13-2	55	12	3-10	8-10	0-9			
AE 5007	16	2-9	46	11	2-2					
AE 5008	6	6-3	39	22	0-8	3-3	3-0			
AE 5009	4	2-10	12	ST						
AE 5010	4	3-4	14	11	2-9					
AE 5011	16	4-6	75	ST						
AE 5012	6	6-3	39	1		2-8	1-2	2-8		
AE 5013	6	3-9	23	ST						
AE 5014	16	12-8	211	ST						
AE 5015	10	4-10	50	ST						
AE 5016	2	5-4		ST						1
THRU			64		VARY LENGTH BY 0-4 3/4					
AE 5020	2	6-11		ST						1
AE 5201	6	2-9	17	ST						
AE 5202	6	2-5	15	ST						
AE 5203	6	3-5	21	1		2-10	0-9			
AE 5204		0-0		ST						
AE 5204	6	2-5	15	15	0-10	0-6	0-9	0-5	0-6	
AE 5205	24	1-5	35	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTH ABUTMENT-EPOXY COATED CONTINUED										
AE 6001	2	4-8	14	15		0-7	0-2	3-5	0-9	
AE 6002	2	4-8	14	15		0-7	0-3	3-5	0-9	
AE 6003	2	5-0	15	15		0-8	0-4	3-7	0-9	
AE 6004	2	5-2	16	15		0-8	0-5	3-9	0-9	
AE 6005	2	5-6	17	15		0-9	0-6	3-11	0-9	
AE 6006	6	2-9	25	15		0-7	0-2	1-6	0-9	
AE 6007	10	5-9	86	15		0-9	0-6	4-2	0-9	
NORTH ABUTMENT										
A 5003	54	5-2	291	12		2-6	1-8	2-6		
A 5005	19	26-6	525	ST						
A 5006	19	24-4	482	ST						
A 5007	19	27-8	548	ST						
A 5009	18	32-4	607	ST						
A 5010	18	31-10	598	ST						
A 5012	17	34-0	603	ST						
A 8001	116	5-8	1755	21	3-0	1-1	1-3			
A 9001	54	19-0	3488	ST						
A 9002	45	17-9	2716	ST						
A 9003	23	15-6	1212	ST						
F 5001	81	10-0	845	ST						
F 5002	14	8-7	125	12	4-0	3-3		3-3		
F 5003	21	30-0	657	ST						
F 5004	7	36-0	263	ST						
F 5005	7	38-2	279	ST						
F 5006	1	28-3		ST						1
THRU			219		VARY LENGTH BY 0-7					
F 5012	1	31-9		ST						1
F 8001	225	11-10	7109	11	10-9					
F 8002	3	8-10	71	11	7-9					
F 8003	54	30-0	4325	ST						
F 8004	18	37-0	1778	ST						
F 8005	18	38-2	1834	ST						
F 8006	1	29-0		ST						1
THRU			1496		VARY LENGTH BY 0-3					
F 8023	1	33-3		ST						1
F 9001	123	8-3	3450	1	1-0	7-6				
F 9002	51	18-0	3121	1	1-0	17-3				
F 9003	43	17-0	2485	1	1-0	16-3				
F 9004	22	16-0	1197	1	1-0	15-3				
F 9005	201	18-0	12301	10	15-6					
F 9006	1	11-9		10	9-3					1
THRU			202		VARY LENGTH BY 2-0 5/8					
					VARY DIM. A BY 2-0 5/8					
F 9009	1	17-11		10	15-5					1
F 9010	2	6-8	45	10	4-2					
NORTH ABUTMENT-EPOXY COATED										
AE 5001	115	4-11	590	1		1-6	2-2	1-6		
AE 5002	124	7-10	1013	1		3-0	3-5	1-8		
AE 5004	55	19-0	1090	ST						
AE 5005	22	26-6	608	ST						
AE 5006	22	24-4	558	ST						
AE 5007	22	27-8	635	ST						
AE 5008	45	17-9	833	ST						
AE 5009	21	32-4	708	ST						
AE 5010	21	31-10	697	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTH ABUTMENT-EPOXY COATED CONTINUED										
AE 5011	24	15-6	388	ST						
AE 5012	20	34-0	709	ST						
AE 5201	6	2-9	17	ST						
AE 5202	6	2-5	15	ST						
AE 5203	6	3-5	21	1		2-10	0-9			
AE 5204	6	2-5	15	15	0-10	0-6	0-9	0-5	0-6	
AE 5205	24	1-5	35	ST						
AE 6001	177	6-11	1839	1		3-10	0-11	2-6		
AE 6002	177	10-1	2681	1		4-6	1-5	4-6		
NORTHEAST WINGWALL										
W 5101	5	8-8	45	ST						
W 5102	5	17-0	89	ST						
W 5103	9	17-10	167	ST						
W 5104	4	11-8	49	ST						
W 5105	8	15-3	127	ST						
W 5106	9	14-5	135	ST						
W 5107	22	22-8	520	ST						
W 5108	8	10-0	83	ST						
W 5109	5	6-1	32	1		1-6	1-2	3-8		
W 5110	3	3-6	11	ST						
W 5111	2	9-0	19	ST						
W 5112	6	20-6	128	ST						
W 5113	14	5-6	80	ST						
W 5114	16	11-1	185	4	0-1	1-6	9-8			
W 5115	5	9-1	47	4	0-1	1-6	7-8			
W 7101	5	10-7	108	ST						
W 8101	11	19-8	578	ST						
W 8102	16	10-10	463	4	0-1	1-6	9-6			
W 8102	5	8-10	118	4	0-1	1-6	7-6			
F 5101	14	10-0	146	ST						
F 5102	11	12-10	147	6	4-2	4-2	7-0			
F 5013	11	11-6	132	ST						
F 6101	9	5-0	68	4	0-3	4-2	1-0			
F 6102	8	11-7	139	4	0-7	10-9	1-0			
F 7101	10	5-5	111	4	0-3	4-7	1-0			
F 7102	8	9-10	161	4	0-6	9-0	1-0			
F 8101	20	11-6	614	ST						
F 8102	13	7-9	269	ST						
F 8103	15	10-1	404	10	7-11					
F 8105	13	6-3	217	ST						
F 8016	14	9-8	361	10	7-6					
NORTHEAST WINGWALL-EPOXY COATED										
WE 5101	10	28-8	299	ST						
WE 5102	8	6-0	50	ST						
WE 5103	2	4-0	8	ST						
WE 5104	2	3-4	7	11	2-9					
WE 5105	21	5-11	130	22	0-8	3-3	2			



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTHEAST WINGWALL-EPOXY COATED CONTINUED										
WE 6101	1	4-10	7	15		0-7	0-2	3-8	0-8	
WE 6102	1	4-10	7	15		0-7	0-3	3-8	0-8	
WE 6103	1	5-7	8	15		0-8	0-4	4-3	0-8	
WE 6104	1	6-5	10	15		0-8	0-5	5-0	0-8	
WE 6105	1	7-4	11	15		0-9	0-6	5-10	0-8	
WE 6106	3	4-10	22	15		0-7	0-2	3-8	0-8	
WE 6107	21	4-0	126	15		0-9	0-6	2-6	0-8	
NORTHWEST WINGWALL										
W 5000	6	20-6	128	ST						
W 5001	7	6-9	49	ST						
W 5002	12	21-6	269	ST						
W 5003	6	18-0	113	ST						
W 5004	8	7-3	60	ST						
W 5005	14	18-10	275	ST						
W 5006	18	17-8	332	ST						
W 5007	8	25-8	214	ST						
W 5008	2	19-6	41	ST						
W 5009	2	10-6	22	ST						
W 5010	6	6-2	39	1		1-7	1-2	3-8		
W 5011	2	3-6	7	ST						
W 5012	28	15-8	458	ST						
W 5013	6	24-3	152	ST						
W 5014	17	5-6	98	ST						
W 5015	20	11-4	236	6	0-5	1-6	9-10			
W 5016	5	9-4	49	6	0-5	1-6	7-10			
W 8001	8	12-9	272	ST						
W 8002	11	23-6	690	ST						
W 8003	20	11-2	596	6	0-5	1-6	9-9			
W 8004	5	9-2	122	6	0-5	1-6	7-9			
W 10001	7	16-7	500	ST						
F 5001	17	10-0	177	ST						
F 5002	13	12-10	174	6	4-2	4-2	7-0			
F 5003	6	18-6	116	ST						
F 5004	1	15-6		ST						1
THRU			122			VARY LENGTH BY	0-4 5/8			
F 5010	1	17-10		ST						1
F 5011	2	14-4	30	ST						
F 5012	2	11-9	25	ST						
F 8001	14	5-9	215	4	0-3	4-11	1-0			
F 8002	13	11-3	390	4	0-6	10-5	1-0			
F 8003	19	11-8	592	10	9-6					
F 8004	15	9-6	380	ST						
F 8005	1	9-4	25	ST						
F 8006	1	5-9	15	ST						
F 8006	1	5-9	15	ST						
F 8007	1	2-6	7	ST						
F 8008	23	10-8	655	10	8-6					
F 8009	20	8-6	454	ST						
F 8010	10	18-6	494	ST						
F 8011	2	14-0	75	ST						
F 8012	2	14-6	77	ST						
F 8013	2	15-0	80	ST						
F 8014	2	15-6	83	ST						
F 8015	2	16-0	85	ST						
F 8016	1	16-6	44	ST						
F 10001	13	6-8	373	4	0-3	5-11	1-0			
F 10002	11	13-3	627	4	0-8	12-6	1-0			

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTHWEST WINGWALL-EPOXY COATED										
WE 5001	10	23-8	247	ST						
WE 5002	8	6-0	50	ST						
WE 5003	3	3-4	10	11	2-9					
WE 5004	3	5-0	16	ST						
WE 5005	33	5-11	204	22	0-8	3-3	2-8			
WE 5006	10	15-8	163	ST						
WE 5007		0-0		ST						
WE 5008	8	2-8	22	11	2-1					
WE 5009	10	4-6	47	ST						
WE 5010	10	7-11	83	ST						
WE 6001	1	5-0	8	15	0-7	0-2	3-10	0-8		
WE 6002	1	5-0	8	15	0-7	0-3	3-10	0-8		
WE 6003	1	5-4	8	15	0-8	0-4	4-0	0-8		
WE 6004	1	6-1	9	15	0-8	0-5	4-8	0-8		
WE 6005	1	6-9	10	15	0-9	0-6	5-3	0-8		
WE 6006	3	5-0	23	15	0-7	0-2	3-10	0-8		
WE 6007	33	3-11	194	15	0-9	0-6	2-5	0-8		
SUPERSTRUCTURE-EPOXY COATED										
SE 4001	3571	30-0	71563	ST						
SE 4002	258	23-0	3964	ST						
SE 4003	1	6-0		ST						1
THRU			27			VARY LENGTH BY	7-6			
SE 4005	1	21-0		ST						1
SE 4006	1	4-6		ST						1
THRU			21			VARY LENGTH BY	6-1 1/2			
SE 4008	1	16-9		ST						1
SE 4009	1	5-0		ST						1
THRU			28			VARY LENGTH BY	9-0			
SE 4011	1	23-0		ST						1
THRU				ST						
SE 4012	1	4-0		ST						1
THRU			36			VARY LENGTH BY	6-4			
SE 4015	1	23-0		ST						1
SE 4016	1	3-0		ST						1
THRU			43			VARY LENGTH BY	5-0			
SE 4020	1	23-0		ST						1
SE 4021	1	4-0		ST						1
THRU			67			VARY LENGTH BY	5-1 1/4			
SE 4026	1	29-6		ST						1
SE 4027	1	5-0		ST						1
THRU			40			VARY LENGTH BY	3-6			
SE 4031	1	19-0		ST						1
SE 4032	1	3-6		ST						1
THRU			25			VARY LENGTH BY	4-0			
SE 4035	1	15-6		ST						1
SE 4036	1	27-0	18	ST						
SE 4037	1	26-0	17	ST						
SE 4038	1	22-6	15	ST						
SE 4039	4	13-6	36	ST						
SE 4040	618	24-0	9908	ST						
SE 5001	780	6-3	5085	22	0-8	3-3	3-0			
SE 5002	780	3-0	2441	15	0-9	0-10	0-9	0-9	0-5	
SE 5003	780	2-0	1627	1	0-9	1-5				
SE 5004	1568	4-5	7223	11	3-10					
SE 5005	784	3-10	3135	ST						
SE 5006	1176	2-5	2964	15	0-5	0-10	0-9	0-6	0-5	
SE 5007	2012	3-9	7869	ST						
SE 5008	672	27-7	19333	ST						
SE 5009	672	26-6	18574	ST						
SE 5010	138	21-0	3023	ST						
SE 5011	107	22-6	2511	ST						
SE 5012	107	24-0	2678	ST						
SE 5013	107	25-6	2846	ST						
SE 5014	107	27-0	3013	ST						
SE 5015	107	28-6	3181	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SUPERSTRUCTURE-EPOXY COATED CONTINUED										
SE 5016	672	26-8	18691	ST						
SE 5017	845	26-2	23062	ST						
SE 5018	185	20-0	3859	ST						
SE 5019	105	22-0	2409	ST						
SE 5020	105	24-0	2628	ST						
SE 5021	1	24-0		ST						1
THRU			3121			VARY LENGTH BY	0-1			
SE 5125	1	33-0		ST						1
SE 5126	1	9-6		ST						1
THRU			3022			VARY LENGTH BY	0-1			
SE 5298	1	24-0		ST						1
SE 5300	2629	30-0	82261	ST						
SE 5301	231	26-5	6365	ST						
SE 5302	1	6-2		ST						1
THRU			43			VARY LENGTH BY	7-6			
SE 5304	1	21-2		ST						1
SE 5305	1	4-8		ST						1
THRU			34			VARY LENGTH BY	6-2			
SE 5307	1	17-0		ST						1
SE 5308	1	5-3		ST						1
THRU			45			VARY LENGTH BY	9-0			
SE 5310	1	23-3		ST						1
SE 5311	1	4-3		ST						1
THRU			57			VARY LENGTH BY	6-4			
SE 5314	1	23-3		ST						1
SE 5315	1	3-3		ST						1
THRU			69			VARY LENGTH BY	5-0			
SE 5319	1	23-3		ST						1
SE 5320	1	4-3		ST						1
THRU			106			VARY LENGTH BY	5-1 1/4			
SE 5325	1	29-9		ST						1
SE 5326	1	5-3		ST						1
THRU			64			VARY LENGTH BY	3-6			
SE 5330	1	19-3		ST						1
SE 5331	1	3-9		ST						1
THRU			43			VARY LENGTH BY	4-5			
SE 5334	1	17-0		ST						1
SE 5350	56	15-2	886	ST						
SE 5351	24	15-4	384	ST						
SE 5352	56	15-0	876	ST						
SE 5353	420	7-2	3139	ST						
SE 5354	80	13-8	1140	ST						
SE 5355	32	13-6	451	ST						
SE 5356	48	13-0	651	ST						
SE 5357	24	14-6	363	ST						
SE 5358	784	1-9	1431	1	0-6	1-5				
SE 5359	3	17-0	53	ST						
SE 6001	672	31-5	31710							

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 1											
P 5001	95	6-5	636	1		2-0	2-8	2-0			
P 5002	7	17-9	130	1		7-8	2-8	7-8			
P 5003	38	9-9	386	ST							
P 5004	154	7-1	1138	7	1-5	1-5	1-4				
P 5005	4	11-7	48	6	1-9	1-0	9-7				
P 5039	9	19-1	179	1		8-4	2-8	8-4			
P 5040	8	10-9	90	ST							
P 5041	6	29-11	187	ST							
P 5042	2	24-0	50	ST							
P 5043	2	18-4	38	ST							
P 5044	2	12-6	26	ST							
P 5045	4	13-5	56	6	1-9	1-0	11-5				
P 5046	6	35-4	221	ST							
P 5047	2	28-6	59	ST							
P 5048	2	23-0	48	ST							
P 5049	2	15-0	31	ST							
P 5051	38	12-0	476	ST							
P 5080	2	13-5	28	6	2-0	0-10	11-3				
P 5081	2	13-5	28	6	1-10	1-3	11-3				
P 5082	9	18-3	171	1		7-11	2-8	7-11			
P 5083	8	12-0	100	ST							
P 5084	4	34-11	146	ST							
P 5085	2	31-6	66	ST							
P 5086	2	25-6	53	ST							
P 5087	2	19-4	40	ST							
P 5088	2	14-7	30	ST							
P 5091	8	12-4	103	ST							
P 5092	38	11-9	466	ST							
P 5104	7	17-3	126	1		7-5	2-8	7-5			
P 5105	40	9-0	375	ST							
P 5107	4	10-9	45	6	1-9	1-0	8-9				
P 5108	8	10-0	83	ST							
P 5109	4	27-10	116	ST							
P 5110	2	26-0	54	ST							
P 5111	2	19-0	40	ST							
P 5112	2	12-0	25	ST							
P 5501	1	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			140		VARY LENGTH BY 0-7						
					VARY DIM. B BY 0-3 1/2						
					VARY DIM. D BY 0-3 1/2						
P 5509	1	17-3		3	2-8	5-8	2-8	5-8		1	
P 5510	1	17-11		3	2-8	6-0	2-8	6-0		1	
THRU			162		VARY LENGTH BY 0-5 1/8						
					VARY DIM. B BY 0-2 5/8						
					VARY DIM. D BY 0-2 5/8						
P 5517	1	20-11		3	2-8	7-6	2-8	7-6		1	
P 5518	1	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			89		VARY LENGTH BY 0-8						
					VARY DIM. B BY 0-4						
					VARY DIM. D BY 0-4						
P 5523	1	15-11		3	2-8	5-0	2-8	5-0		1	
P 5524	1	16-11		3	2-8	5-6	2-8	5-6		1	
THRU			99		VARY LENGTH BY 1-0						
					VARY DIM. B BY 0-6						
					VARY DIM. D BY 0-6						
P 5528	1	20-11		3	2-8	7-6	2-8	7-6		1	
P 5529	2	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			436		VARY LENGTH BY 0-7						
					VARY DIM. B BY 0-3 1/2						
					VARY DIM. D BY 0-3 1/2						
P 5541	2	19-7		3	2-8	6-10	2-8	6-10		1	
P 5542	2	20-1		3	2-8	7-1	2-8	7-1		1	
THRU			267		VARY LENGTH BY 0-6						
					VARY DIM. B BY 0-3						
					VARY DIM. D BY 0-3						
P 5547	2	22-7		3	2-8	8-4	2-8	8-4		1	

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 1 CONTINUED											
P 5548	1	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			140		VARY LENGTH BY 0-7						
					VARY DIM. B BY 0-3 1/2						
					VARY DIM. D BY 0-3 1/2						
P 5556	1	17-3		3	2-8	5-8	2-8	5-8		1	
P 5557	2	18-3		3	2-8	6-2	2-8	6-2		1	
THRU			120		VARY LENGTH BY 1-0						
					VARY DIM. B BY 0-6						
					VARY DIM. D BY 0-6						
P 5559	2	20-3		3	2-8	7-2	2-8	7-2		1	
P 5560	1	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			156		VARY LENGTH BY 0-6 1/4						
					VARY DIM. B BY 0-3 1/8						
					VARY DIM. D BY 0-3 1/8						
P 5569	1	17-3		3	2-8	5-8	2-8	5-8		1	
P 10001	7	36-0	1084	1		3-2	29-11	3-6			
P 10002	1	41-1	177	1		3-2	35-4	3-2			
P 10003	7	40-7	1222	1		3-2	34-10	3-2			
P 10004	6	33-6	865	1		3-2	27-9	3-2			
P 10005	20	28-8	2467	ST							
P 10006	24	28-4	2926	ST							
P 10007	24	29-9	3072	ST							
P 10008	20	31-0	2668	ST							
F 7001	36	17-2	1263	10	15-6						
F 7002	36	19-2	1410	10	17-6						
F 8001	90	14-8	3524	10	12-6						
F 10001	88	10-7	4008	1	1-8	9-3					
F 10002	12	24-6	1265	1	23-4	1-6					
F 10003	16	24-9	1704	1	23-7	1-6					
F 10004	16	24-10	1710	1	23-8	1-6					
F 10005	12	25-5	1312	1	24-3	1-6					
PIER 2											
P 5001	100	6-5	669	1		2-0	2-8	2-0			
P 5004	162	7-1	1197	7	1-5	1-5	1-4				
P 5129	4	12-8	53	6	1-9	1-0	10-8				
P 5130	10	18-7	194	1		8-1	2-8	8-1			
P 5131	8	11-10	99	ST							
P 5132	4	33-4	139	ST							
P 5133	2	32-0	67	ST							
P 5134	2	23-9	50	ST							
P 5135	2	20-0	42	ST							
P 5136	2	13-10	29	ST							
P 5162	4	13-4	56	6	1-9	1-0	11-4				
P 5163	11	19-5	223	1		8-6	2-8	8-6			
P 5164	8	12-4	103	ST							
P 5165	4	35-4	147	ST							
P 5166	2	33-0	69	ST							
P 5167	2	27-0	56	ST							
P 5168	2	21-3	44	ST							
P 5169	2	14-11	31	ST							
P 5170	40	12-0	501	ST							
P 5196	4	13-1	55	6	1-9	1-0	11-1				
P 5197	11	19-5	223	1		8-6	2-8	8-6			
P 5198	8	12-5	104	ST							
P 5199	4	34-11	146	ST							
P 5200	2	32-8	68	ST							
P 5201	2	27-0	56	ST							
P 5202	2	21-3	44	ST							
P 5203	2	14-8	31	ST							
P 5204	40	11-9	490	ST							

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 2 CONTINUED											
P 5230	4	12-4	51	6	1-9	1-0	10-4				
P 5231	42	10-6	460	ST							
P 5232	10	18-5	192	1		8-0	2-8	8-0			
P 5233	4	32-2	134	ST							
P 5234	2	30-6	64	ST							
P 5235	2	24-6	51	ST							
P 5236	2	19-0	40	ST							
P 5237	2	13-3	28	ST							
P 5257	8	11-6	96	ST							
P 5570	2	12-7		3	2-8	3-4	2-8	3-4		1	
THRU			394		VARY LENGTH BY 0-6 7/8						
					VARY DIM. B BY 0-3 1/2						
					VARY DIM. D BY 0-3 1/2						
P 5581	2	18-11		3	2-8	6-6	2-8	6-6		1	
P 5582	2	19-5		3	2-8	6-9	2-8	6-9		1	
THRU			259		VARY LENGTH BY 0-6						
					VARY DIM. B BY 0-3						
					VARY DIM. D BY 0-3						
P 5587	2	21-11		3	2-8	8					



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER 2 CONTINUED										
F 9001	48	17-0	2774	10	14-6					
F 10001	108	10-1	4684	1	1-8	8-9				
F 10006	18	25-11	2007	1	24-9	1-6				
F 10007	40	26-0	4475	1	24-10	1-6				
F 10008	18	26-2	2027	1	25-0	1-6				
PIER 3										
P 5001	105	6-5	703	1		2-0	2-8	2-0		
P 5004	178	7-1	1315	7	1-5	1-5	1-4			
P 5259	4	13-7	57	6	1-9	1-0	11-7			
P 5260	10	19-3	201	1		8-5	2-8	8-5		
P 5261	8	12-6	104	ST						
P 5262	4	35-11	150	ST						
P 5263	2	33-9	70	ST						
P 5264	2	27-9	58	ST						
P 5265	2	15-1	31	ST						
P 5266	2	21-6	45	ST						
P 5280	4	13-4	56	6	1-9	1-0	11-4			
P 5281	10	19-1	199	1		8-4	2-8	8-4		
P 5282	8	12-4	103	ST						
P 5283	4	35-4	147	ST						
P 5284	2	32-6	68	ST						
P 5285	2	27-0	56	ST						
P 5286	2	21-4	45	ST						
P 5287	2	15-2	32	ST						
P 5288	44	11-9	539	ST						
P 5289	10	19-7	204	1		8-7	2-8	8-7		
P 5290	8	12-3	102	ST						
P 5291	4	34-11	146	ST						
P 5292	2	33-7	70	ST						
P 5293	2	28-0	58	ST						
P 5294	2	21-9	45	ST						
P 5295	2	14-8	31	ST						
P 5296	4	13-3	55	6	1-9	1-0	11-3			
P 5298	46	12-4	592	ST						
P 5299	44	12-1	555	ST						
P 5340	9	12-3	115	3	2-8	3-2	2-8	3-2		
P 5365	13	21-5	290	1		9-6	2-8	9-6		
P 5366	4	15-0	63	ST						
P 5367	4	24-10	104	ST						
P 5368	2	23-0	48	ST						
P 5369	2	20-10	43	ST						
P 5370	2	32-9	68	ST						
P 5371	2	26-9	56	ST						
P 5372	2	20-10	43	ST						
P 5373	2	18-4	38	ST						
P 5374	2	16-5	34	6	0-9	2-0	14-4			
P 5375	2	15-6	32	6	1-3	2-3	13-0			
P 5376	44	15-7	715	ST						
P 5529	4	12-7		3	2-8	3-4	2-8	3-4		1
THRU			872		VARY LENGTH BY 0-7					
					VARY DIM. B BY 0-3 1/2					
					VARY DIM. D BY 0-3 1/2					
P 5541	4	19-7		3	2-8	6-10	2-8	6-10		1
P 5542	4	20-1		3	2-8	7-1	2-8	7-1		1
THRU			534		VARY LENGTH BY 0-6					
					VARY DIM. B BY 0-3					
					VARY DIM. D BY 0-3					
P 5547	4	22-7		3	2-8	8-4	2-8	8-4		1
P 5624	2	12-7		3	2-8	3-4	2-8	3-4		1
THRU			436		VARY LENGTH BY 0-7					
					VARY DIM. B BY 0-3 1/2					
					VARY DIM. D BY 0-3 1/2					
P 5636	2	19-7		3	2-8	6-10	2-8	6-10		1

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER 3 CONTINUED										
P 5637	2	20-1		3	2-8	7-1	2-8	7-1		1
THRU			267		VARY LENGTH BY 0-6					
					VARY DIM. B BY 0-3					
					VARY DIM. D BY 0-3					
P 5642	2	22-7		3	2-8	8-4	2-8	8-4		1
P 5643	1	12-7		3	2-8	3-4	2-8	3-4		1
THRU			217		VARY LENGTH BY 0-6 7/8					
					VARY DIM. B BY 0-3 3/8					
					VARY DIM. D BY 0-3 3/8					
P 5655	1	19-5		3	2-8	6-9	2-8	6-9		1
P 5656	1	19-11		3	2-8	7-0	2-8	7-0		1
THRU			254		VARY LENGTH BY 0-5 3/8					
					VARY DIM. B BY 0-2 3/4					
					VARY DIM. D BY 0-2 3/4					
P 5666	1	24-5		3	2-8	9-3	2-8	9-3		1
P 5667	11	15-3	175	3	2-8	4-8	2-8	4-8		
P 5668	1	15-11		3	2-8	5-0	2-8	5-0		1
THRU			114		VARY LENGTH BY 0-11 1/4					
					VARY DIM. B BY 0-5 5/8					
					VARY DIM. D BY 0-5 5/8					
P 5673	1	20-7		3	2-8	7-4	2-8	7-4		1
P 5674	1	21-1		3	2-8	7-7	2-8	7-7		1
THRU			169		VARY LENGTH BY 0-8					
					VARY DIM. B BY 0-4					
					VARY DIM. D BY 0-4					
P 5680	1	25-1		3	2-8	9-7	2-8	9-7		1
P 6001	8	24-10	298	ST						
P 9001	3	25-3	258	ST						
P 9002	3	25-5	259	12	12-7	12-10		0-5		
P 10016	7	41-11	1263	1		3-2	35-11	3-5		
P 10017	7	41-9	1258	1		3-10	35-4	3-2		
P 10018	26	34-10	3897	ST						
P 10019	26	34-6	3860	ST						
P 10020	7	41-1	1237	1		3-2	34-11	3-7		
P 10021	26	34-8	3878	ST						
P 10022	32	33-6	4613	ST						
P 10023	7	30-5	916	4	0-10	27-6	3-2			
P 10024	3	31-4	404	24	0-5	14-9	12-7	4-4		
P 10025	4	41-7	716	24	0-5	14-9	12-7	4-5	10-6	
F 7002	52	19-2	2037	10	17-6					
F 7003	26	18-2	965	10	16-6					
F 7004	26	23-2	1231	10	21-6					
F 9002	128	19-0	8269	10	16-6					
F 10001	110	10-1	4771	1	1-8	8-9				
F 10009	18	27-9	2149	1	26-7	1-6				
F 10010	18	27-11	2162	1	26-9	1-6				
F 10011	18	27-7	2136	1	26-5	1-6				
F 10012	24	27-5	2831	1	26-3	1-6				
PILASTERS-4 EACH										
LE 5005	16	2-11	49	1	2-0	0-7	0-7			
LE 5006	16	9-10	164	2	2-4	3-9	3-9	0-5		
LE 5007	28	5-11	173	3	1-10	1-4	1-8	0-6		
LE 5008	16	3-10	64	ST						

NOTES

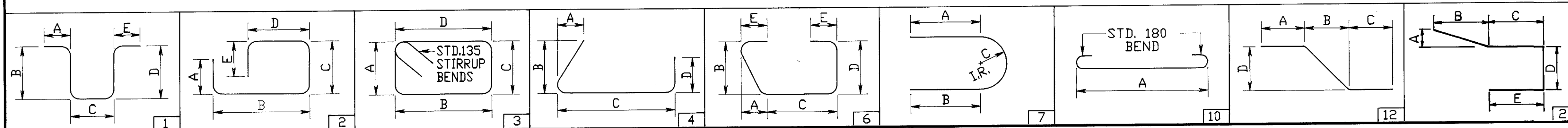
1. INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.

BAR SIZE DESIGNATION  
BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

ALL REINFORCING STEEL SHALL BE EPOXY COATED. SEE ITEM 509 NOTE ON 3/34.

BAR BENDING DIAGRAM TYPES



34/34

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**

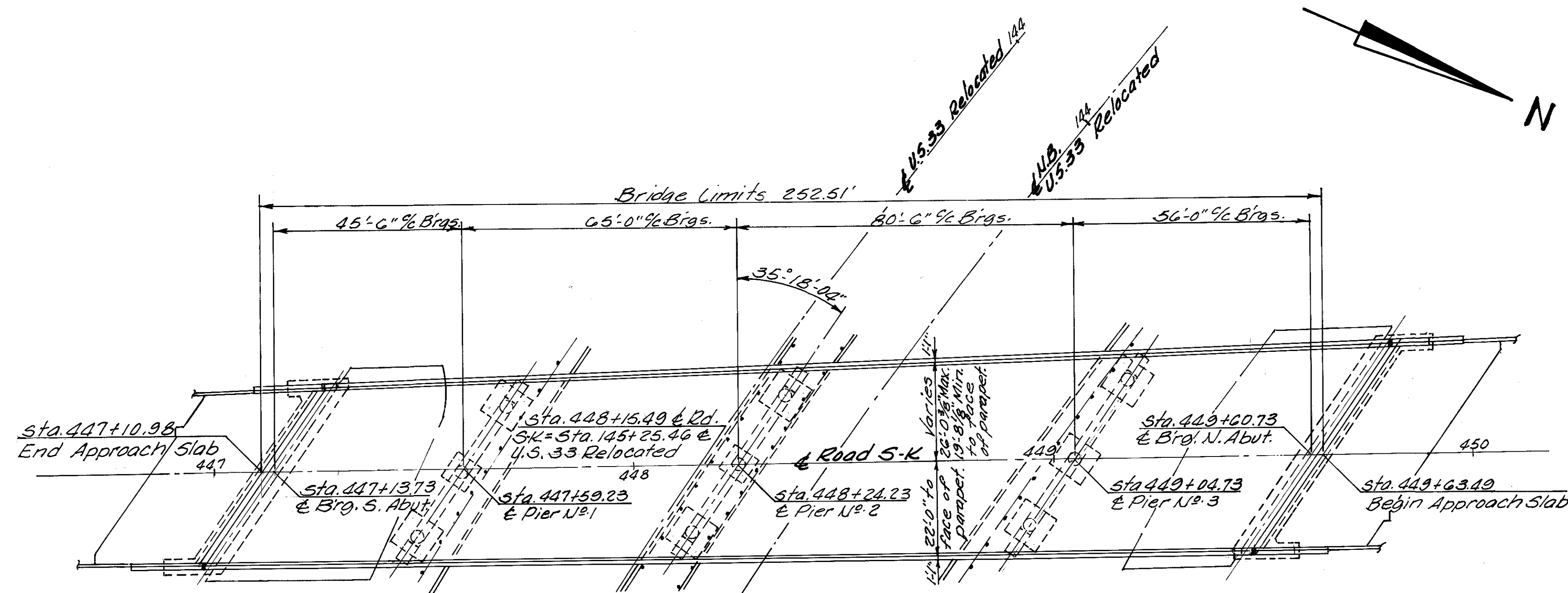
BRIDGE NO. FRA-315-0120  
S.R.315 OVER SCIOTO RIVER

FRANKLIN COUNTY STA. 106+67.18 @ (NB) TO STA. 110+64.32

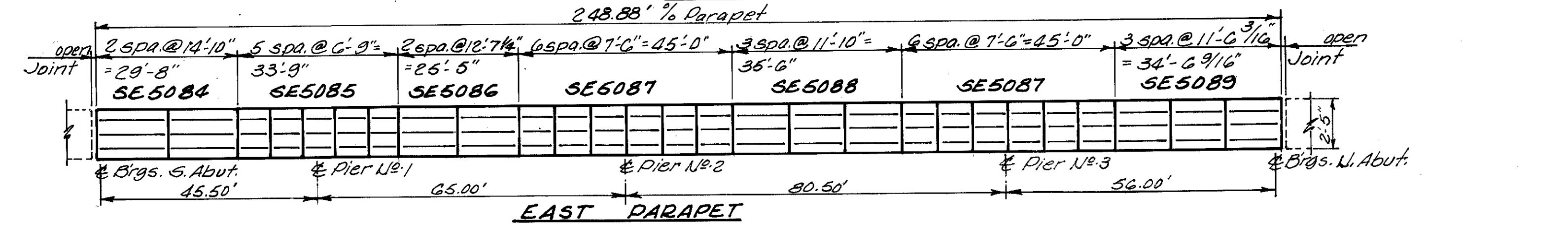
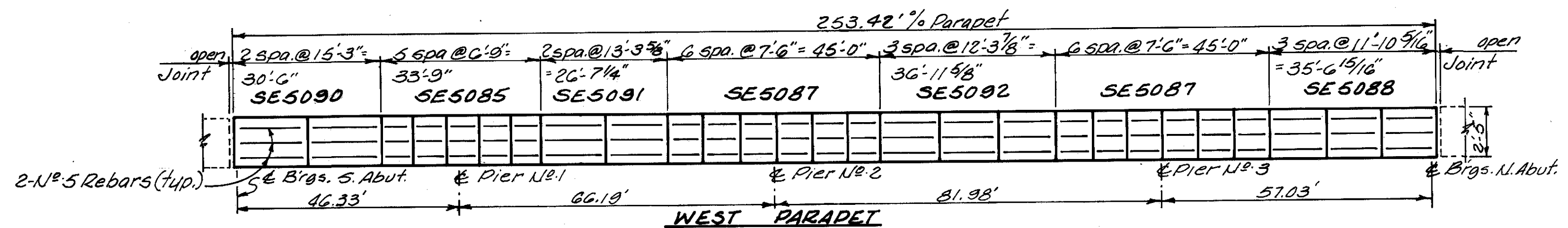
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.T.			GVB	G.W.M.	5/18/89	



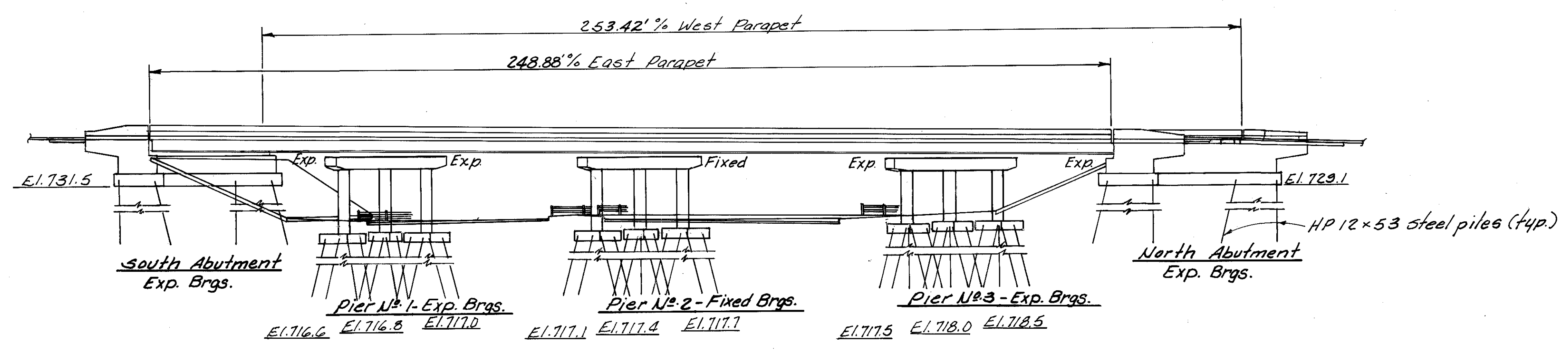




**GENERAL PLAN**



**DEFLECTION JOINT SPACING**



**ELEVATION**

2/16

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**GENERAL PLAN**

BRIDGE NO. FRA - 33-1540  
ROAD S-K OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 447+10.98 TO  
STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/87	



**GENERAL BRIDGE NOTES**

STANDARD DRAWING REFERENCES

DESCRIPTION	DWG. NO.	SHT.	DATE
APPROACH SLABS	AS-1-81	1-3	9-15-94 R
BRIDGE RAILING	BR-1		12-15-94 R
END CROSSFRAMES	GSD-1-96	1-3	2-12-97

SUPPLEMENTAL SPECIFICATION REFERENCES

DESCRIPTION	ITEM	DATE
FIELD PAINTING OF NEW STEEL,		
SYSTEM IZEU	816	3-3-95
STRUCTURAL STEEL MEMBERS	863	9-9-97

**DESIGN SPECIFICATIONS**  
 THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1983, INCLUDING THE 1984 THRU 1987 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

**DESIGN DATA**

DESIGN LOADING - HS20-44 CASE II AND THE ALTERNATE MILITARY LOADING.

**DESIGN STRENGTHS; DECK, PIER CAPS AND COLUMNS**  
 CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616, A617 -  
 GRADE 60 - MINIMUM YIELD STRENGTH 60,000 P.S.I.  
 SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615.

**DESIGN STRESSES, ALL OTHERS**  
 CONCRETE CLASS C - UNIT STRESS 1333 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616 OR A617 -  
 GRADE 60 - UNIT STRESS 24,000 P.S.I.  
 STRUCTURAL STEEL ASTM A572 - UNIT STRESS 27,000 P.S.I.

**DECK PROTECTION METHOD**  
 EPOXY COATED REINFORCING STEEL, ALL REINFORCING. MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK. SEALING TREATMENT ON BRIDGE FASCIA.

**ITEM SPECIAL, SEALING OF CONCRETE SURFACES**  
 A CONCRETE SEALER SHALL BE APPLIED TO THE CONCRETE FASCIA FOR THE FULL LENGTH OF THE SURFACES SHOWN ON SHEETS [11/16] SEE THE PROPOSAL FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

**PILE DESIGN LOADS**  
 THE DESIGN LOAD FOR THE ABUTMENT PILES IS 50 TONS PER PILE AND THE DESIGN LOAD FOR THE PIER PILES IS 50 TONS PER PILE FOR PIER 1, 50 TONS PER PILE FOR PIER 2, AND 50 TONS PER PILE FOR PIER 3.

~~**CAST-IN-PLACE REINFORCED CONCRETE PILES AS PER PLAN**  
 NINE (9) 14 INCH CAST-IN-PLACE REINFORCED CONCRETE PILES SHALL BE INSTALLED AT THE THREE PIERS, ONE PILE AT EACH OF THE INDIVIDUAL COLUMN FOOTINGS. SHOULD A CONCRETE PILE(S) BE FOUND UNACCEPTABLE, DUE TO DAMAGE OR INABILITY TO ACHIEVE DESIGN CAPACITY, THE DEFECTIVE CONCRETE PILE(S) SHALL BE REPLACED BY STEEL HP 12 X 53 PILE(S) DRIVEN TO THE DESIRED CAPACITY. PAYMENT FOR THE INSTALLATION OF THE CAST-IN-PLACE REINFORCED CONCRETE PILES SHALL BE PER UNIT PRICE BID FOR LINEAR FOOT OF 507 CAST-IN-PLACE REINFORCED CONCRETE PILES. PAYMENT SHALL BE MADE FOR THE INSTALLED LENGTH OF DAMAGED CAST-IN-PLACE REINFORCED CONCRETE PILES AND ALSO FOR THE INSTALLED LENGTH OF THE REPLACEMENT H-PILE.~~

~~**PILE WALL THICKNESS**  
 THE THICKNESS OF THE PILE WALL FOR THE CAST-IN-PLACE REINFORCED CONCRETE PILES ON THIS PROJECT SHALL NOT BE LESS THAN 0.250 INCHES.~~

**PILE DRIVING CONSTRAINTS**  
 PRIOR TO DRIVING PILES AT THE PROPOSED ABUTMENTS AND PIER NO.1, THE SPILL-THRU SLOPE EMBANKMENT AT THE ABUTMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUB-GRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF BOTH ABUTMENTS. AFTER THE EMBANKMENT HAS BEEN COMPLETED WITHIN THE ABOVE REQUIRED LIMITS, A 60 DAY WAITING PERIOD IS REQUIRED PRIOR TO EXCAVATING AND DRIVING PILES AT THE ABUTMENTS. THE DIRECTOR MAY SHORTEN THE WAITING PERIOD IF THE CONTRACTOR'S FIELD MEASUREMENTS INDICATE THAT 90 PERCENT CONSOLIDATION HAS BEEN ATTAINED.

**PILE HAMMER**  
 THE PILE HAMMER USED TO INSTALL THE STEEL "H" BEARING PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 16,500 FOOT-POUNDS. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.05 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE REQUIRED WORK. REFER TO "ODOT'S MANUAL OF PROCEDURES FOR STRUCTURES" TO OBTAIN THE STATE'S ENERGY RATING.

**PILE POINTS**  
 STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED PILING. IF CAST-IN-PLACE REINFORCED CONCRETE PILES ARE INSTALLED, THE PILE POINT SHAPE SHALL BE USED. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORP., 262 RUTHERFORD BOULEVARD, 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 506 - STATIC LOAD TEST**  
 THE CONTRACTOR SHALL CONDUCT A STATIC LOAD TEST ON A PILE LOCATED IN OR NEAR A PIER FOOTING.

**UTILITY LINES**  
 ALL EXPENSE INVOLVED IN RELOCATING AND INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER(S). THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

**COMMON DETAILS REFERENCES**  
 STRIP SEAL EXPANSION JOINTS SHEETS 312-314  
 EXPANSION AND CONTRACTION JOINTS SHEET 311  
 P.V.C. WATERSTOP SHEET 311

**ITEM 509 - EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN**  
 THE REINFORCING STEEL LIST BAR MARKS FOR THIS STRUCTURE INDICATE SOME REGULAR AND SOME EPOXY COATED REINFORCING STEEL ARE REQUIRED, BUT IT IS INTENDED THAT ALL REINFORCING STEEL REQUIRED FOR THIS STRUCTURE BE EPOXY COATED. THEREFORE, DURING THE SHOP DRAWING PREPARATION FOR THE REINFORCING STEEL, THE CONTRACTOR AND FABRICATOR SHALL MAKE THE NECESSARY REVISIONS TO PROVIDE ALL EPOXY COATED REINFORCING STEEL. PARTICULAR CARE SHALL BE TAKEN TO ADJUST THE BAR SPLICE AND LAP LENGTHS WHERE AND AS NECESSARY TO MEET THE CURRENT AASHTO CRITERIA FOR EPOXY COATED REINFORCING STEEL. COST OF THE ADDITIONAL WORK TO BE INCLUDED IN THE PRICE BID FOR ITEM 509, EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN.

**ESTIMATED QUANTITIES**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	N. ABUT.	S. ABUT.	PIERS	SUPER.	GENERAL
503	11100	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING					LUMP
⊙ 503	21100	321	C.Y.	UNCLASSIFIED EXCAVATION	168	153			
505	11100	LUMP	SUM	PILE DRIVING EQUIPMENT MOBILIZATION					LUMP
506	11100	LUMP	SUM	STATIC LOAD TEST					LUMP
⊙ 507	14401	1605	L.F.	STEEL PILES, HP12 X 53, AS PER PLAN	825	780			
⊙ 507	93300	28	EA.	STEEL POINT (OR SHOE)	15	13			
⊙ 509	15841	121967	LB.	EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN	9573	8679		103,715	
511	31502	372	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE				372	
511	44100	128	C.Y.	CLASS C CONCRETE, ABUTMENTS NOT INCLUDING FOOTINGS	69	59			
⊙ 511	46500	98	C.Y.	CLASS C CONCRETE, FOOTINGS	52	46			
SPECIAL	51267500	379	S.Y.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	44	44	291		
SPECIAL	51267502	801	S.Y.	SEALING OF CONCRETE SURFACES, EPOXY (SEE PROPOSAL NOTE)	57	50	55	639	
⊙ 516	00610	250,900	LB.	FIELD PAINTING OF NEW STEEL, SYSTEM IZEU				250,900	
516	11210	113	L.F.	STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEALS	60	53			
516	30501	16	L.F.	P.V.C. WATERSTOP, AS PER PLAN	8	8			
516	44100	6	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (15 1/2" X 15 1/2" X 1 7/16", NEOPRENE) AND LOAD PLATE (16 1/2" X 21 1/2" X 1 1/2" TO 1 5/8")			6		
516	44200	6	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (15 1/2" X 15 1/2" X 1 15/16", NEOPRENE) AND LOAD PLATE (17 1/2" X 17 1/2" X 1 1/2" TO 1 5/8")			6		
516	44200	6	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (15 1/2" X 15 1/2" X 2 1/4", NEOPRENE) AND LOAD PLATE (17 1/2" X 17 1/2" X 1 1/2" TO 1 5/8")			6		
516	44300	6	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (11" X 11" X 3 3/8", NEOPRENE) AND LOAD PLATE (13" X 14" X 1 1/2")		6			
516	44400	6	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (11" X 11" X 4", NEOPRENE) AND LOAD PLATE (13" X 14" X 1 1/2")	6				
518	21200	71	C.Y.	POROUS BACKFILL, WITH FILTER FABRIC	35	36			
518	41100	104	L.F.	6" PERFORATED, HELICAL CORRUGATED STEEL PIPE, 707.01	55	49			
518	41200	74	L.F.	6" NON-PERFORATED, CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01	39	35			
523	11100	3	HOUR	DYNAMIC LOAD TEST					3
601	20000	418	S.Y.	CRUSHED AGGREGATE SLOPE PROTECTION	207	211			
625				SEE SHEET 207 FOR LIGHTING SUMMARY					
863	10040	LUMP	SUM	STRUCTURAL STEEL MEMBERS, LEVEL TWO (2) FABRICATION				LUMP	
863	20000	5562	EA.	WELDED STUD SHEAR CONNECTOR				5562	

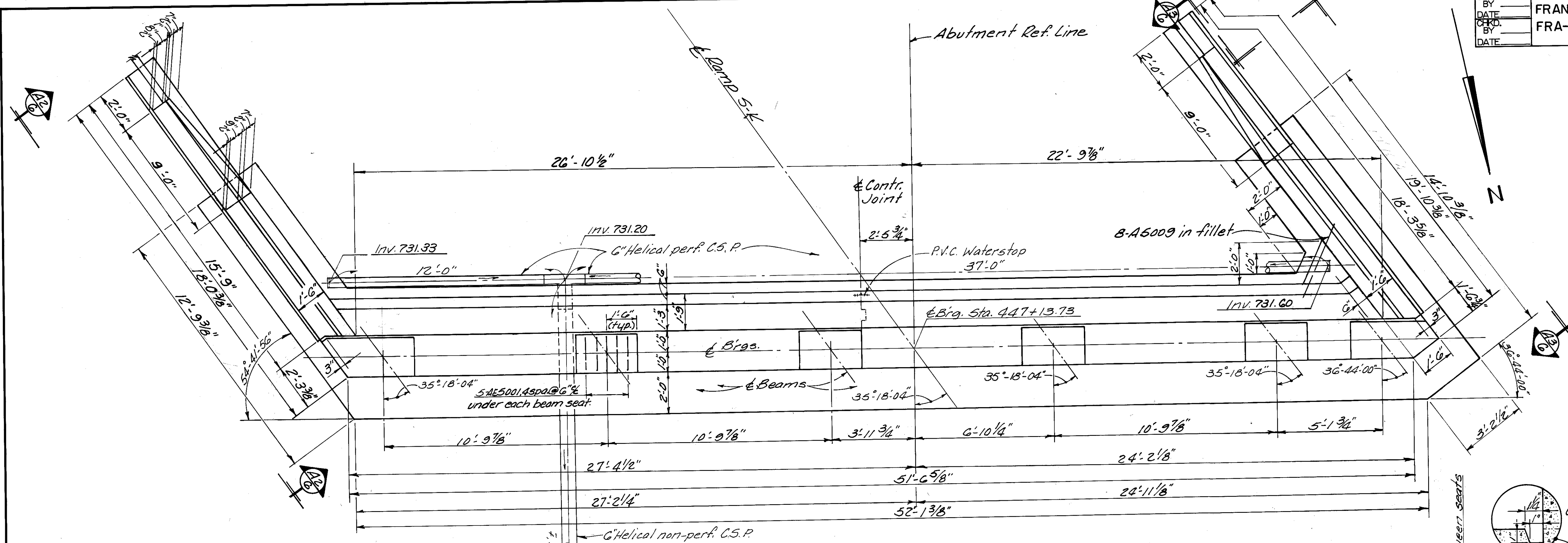
\* HELICAL

⊙ IN ORDER TO AVOID POTENTIAL COORDINATION PROBLEMS AND CONSTRUCTION DELAYS, IT HAS BECOME NECESSARY TO CONSTRUCT PIERS 1, 2 AND 3 OF BRIDGE NO. FRA-33-1540 (ROAD SK OVER U.S. 33) WITH PROJECT 713-97 (FRA-33-14.65-PT. I; FRA-33-15.52-PT. II). ALL DETAILS AND REFERENCES IN THE PLANS FOR PIERS CONSTRUCTED UNDER PROJECT 713-97 SHALL BE IGNORED. THE QUANTITIES FOR THESE BID ITEMS HAVE BEEN REVISED TO REFLECT THIS.

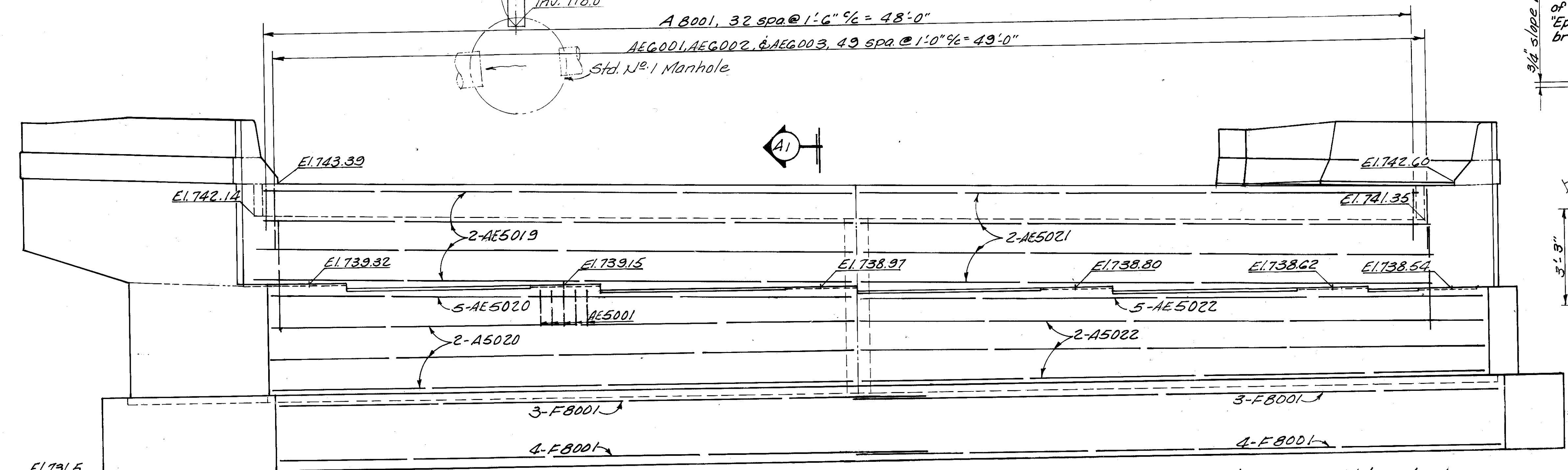
<b>STILSON &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND	
<b>ESTIMATED QUANTITIES AND GENERAL NOTES</b> BRIDGE NO. FRA-33-1540 ROAD SK OVER U.S.33 RELOCATED	
FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49	
DESIGNED	REVISED
DEM	GVM 5-24-89

[C:\01\STRUCT\0231143\CONTRACT\04\04-33\ESTQ3.DWG - JUN 07, 1998 - 14:26:09 - PLOT: 1=1]

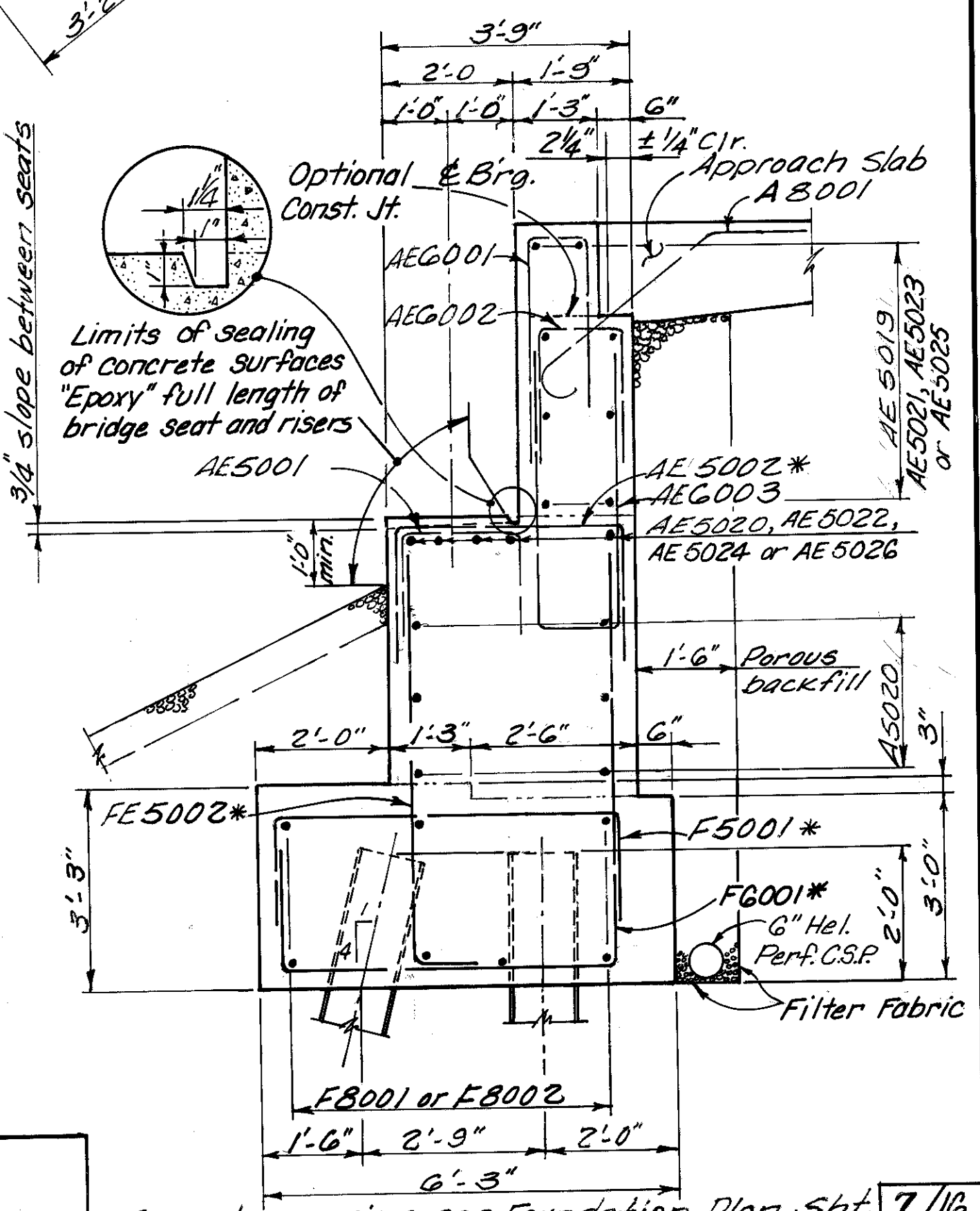




**PLAN**



**ELEVATION**



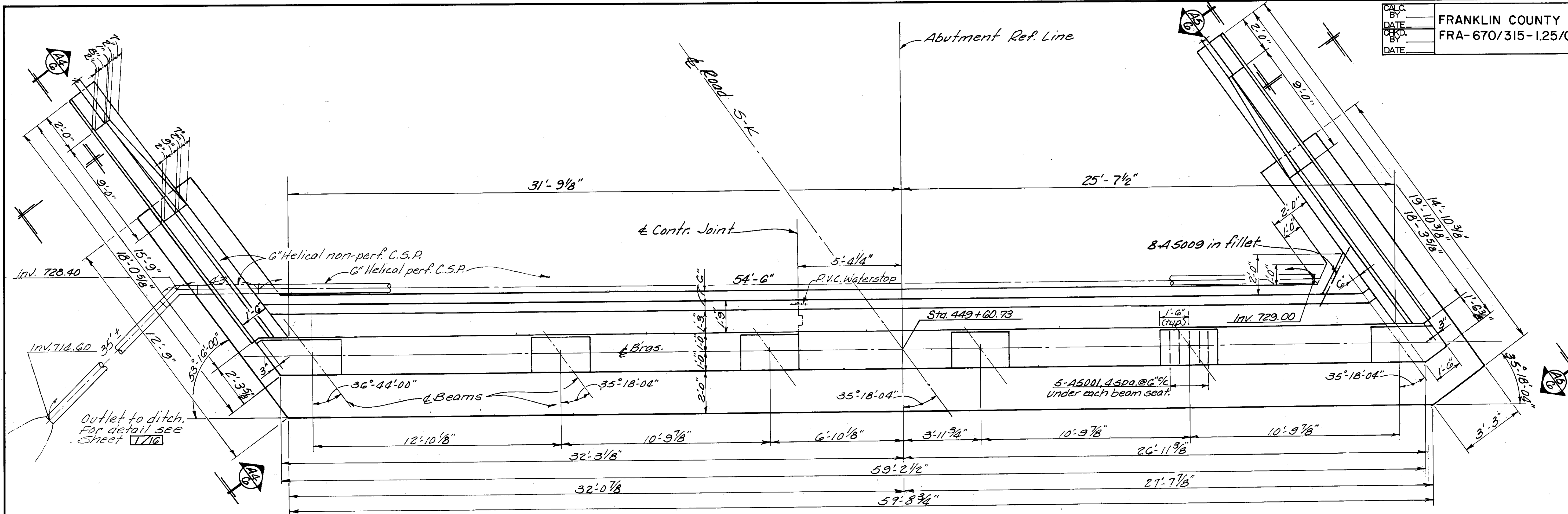
\* For rebar spacing, see Foundation Plans Sht. 7/16  
SECTION A1-A1  
SECTION A6-A6 similar 4/16

Note: For pile spacing and additional rebars see Foundation Plans, Sheet 7/16

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**SOUTH ABUTMENT DETAILS**  
BRIDGE NO. FRA - 33 - 1540  
ROAD S-K OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

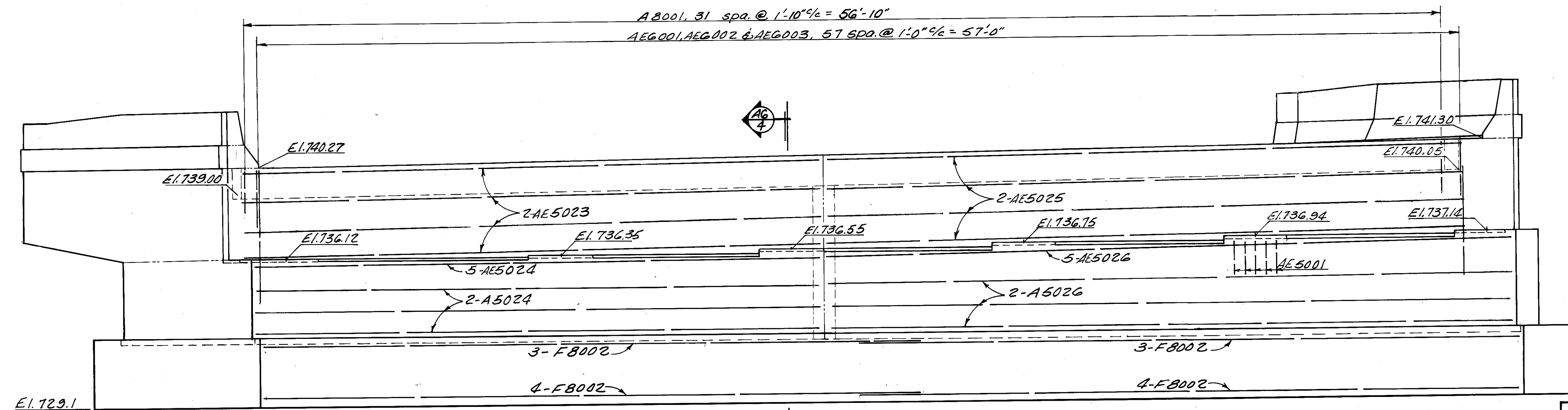
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	RT		GVB	G.W.M.	5/24/89	



**PLAN**

A8001, 31 spa. @ 1'-10" = 56'-10"

AEG001, AEG002 & AEG003, 57 spa. @ 1'-0" = 57'-0"



Note: For pile spacing and additional rebars see Foundation Plan, Sheet 7/16

**ELEVATION**

**BACKWALL CONCRETE:** In addition to the provisions of 511.08, backwall concrete shall not be placed until after the concrete in the span adjacent to the backwall has been placed.

NOTE: For pile spacing and additional rebars see Foundation Plans, sheet 7/16

- NOTES:**
- In reinforcing bar callouts: N.S. indicates near side. F.S. indicates far side.
  - Elevations shown thus are pavement elevations at the face of backwall and the point indicated.
  - Porous Backfill 1.5ft. thick shall extend up to the plane of the subgrade and laterally to the ends of the wing walls.
  - 6" Ø Helical Perforated C.S.P. shall have all ends capped.
  - 6" Ø Helical non-perforated C.S.P. shall extend into crushed aggregate.
  - For details of contraction joint see "Common Detail Sheet" 7/17.
  - Concrete and reinforcing steel for parapets is included for payment with Item 511 concrete and 509 Reinforcing Steel. See Item 509 note on Sheet 3/16.
  - A joint shall be provided in the abutment portion of the end dam at contraction joint.

5/16

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COLUMBUS, CLEVELAND, WERTON

**NORTH ABUTMENT DETAILS**

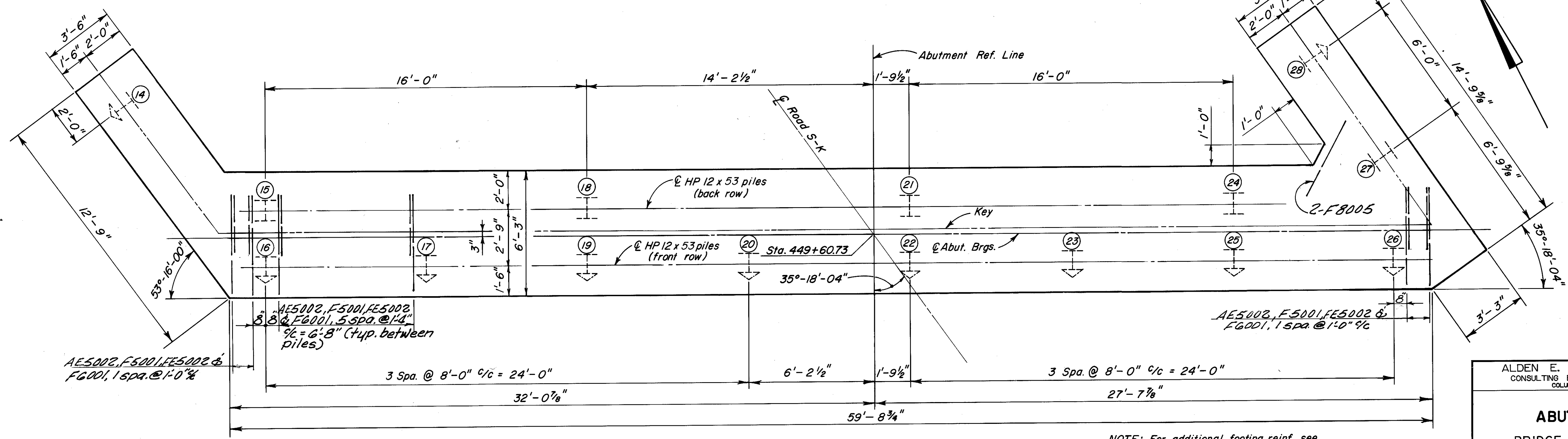
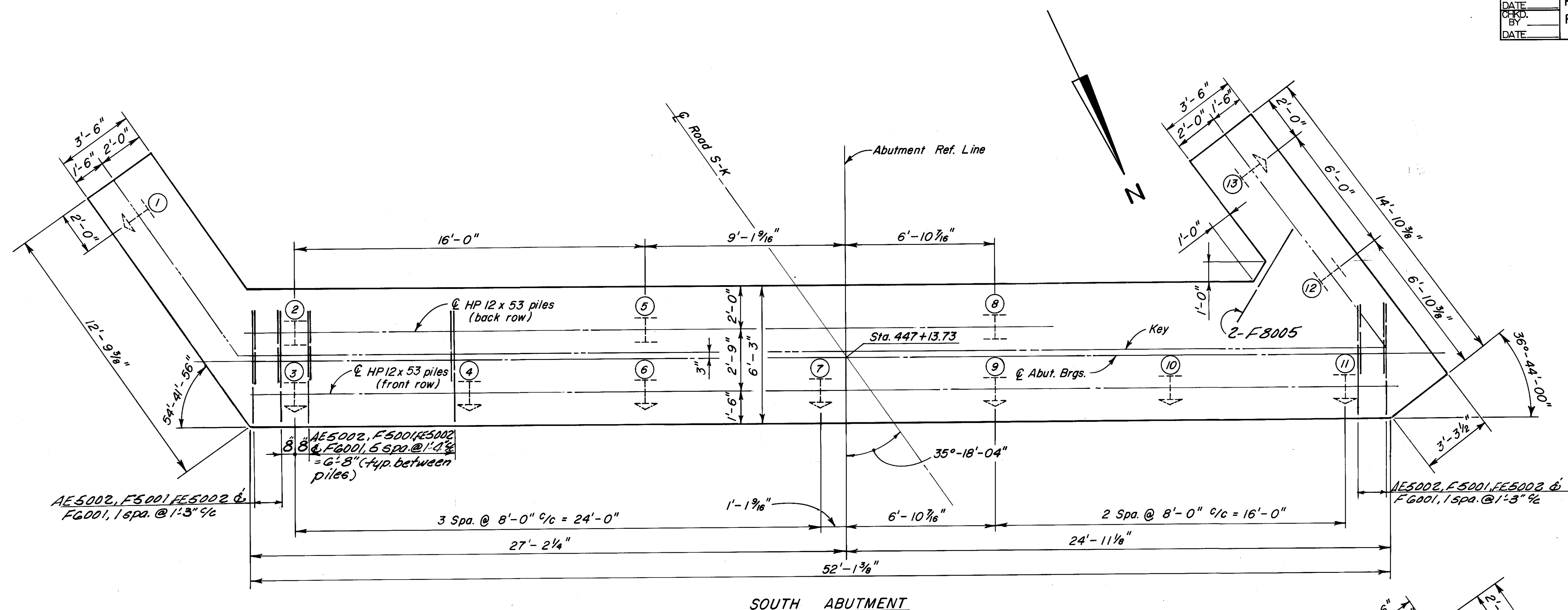
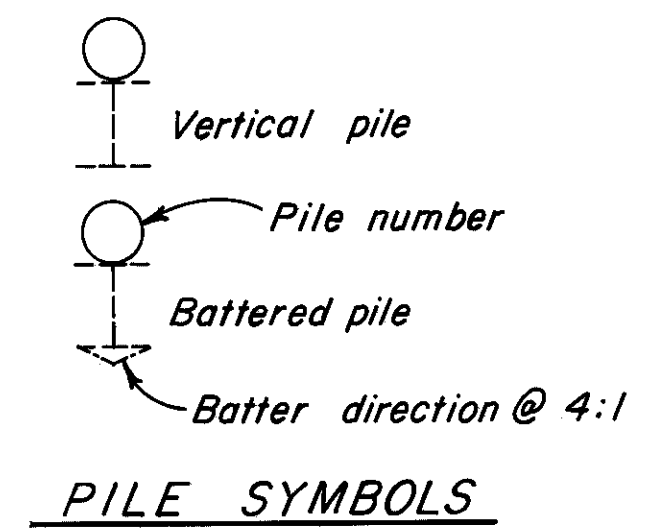
BRIDGE NO. FRA - 33-1540  
ROAD S-K OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/89	







NOTE: For additional footing reinf. see Abut. Elev. sheet 445/16

**FOUNDATION PLANS**

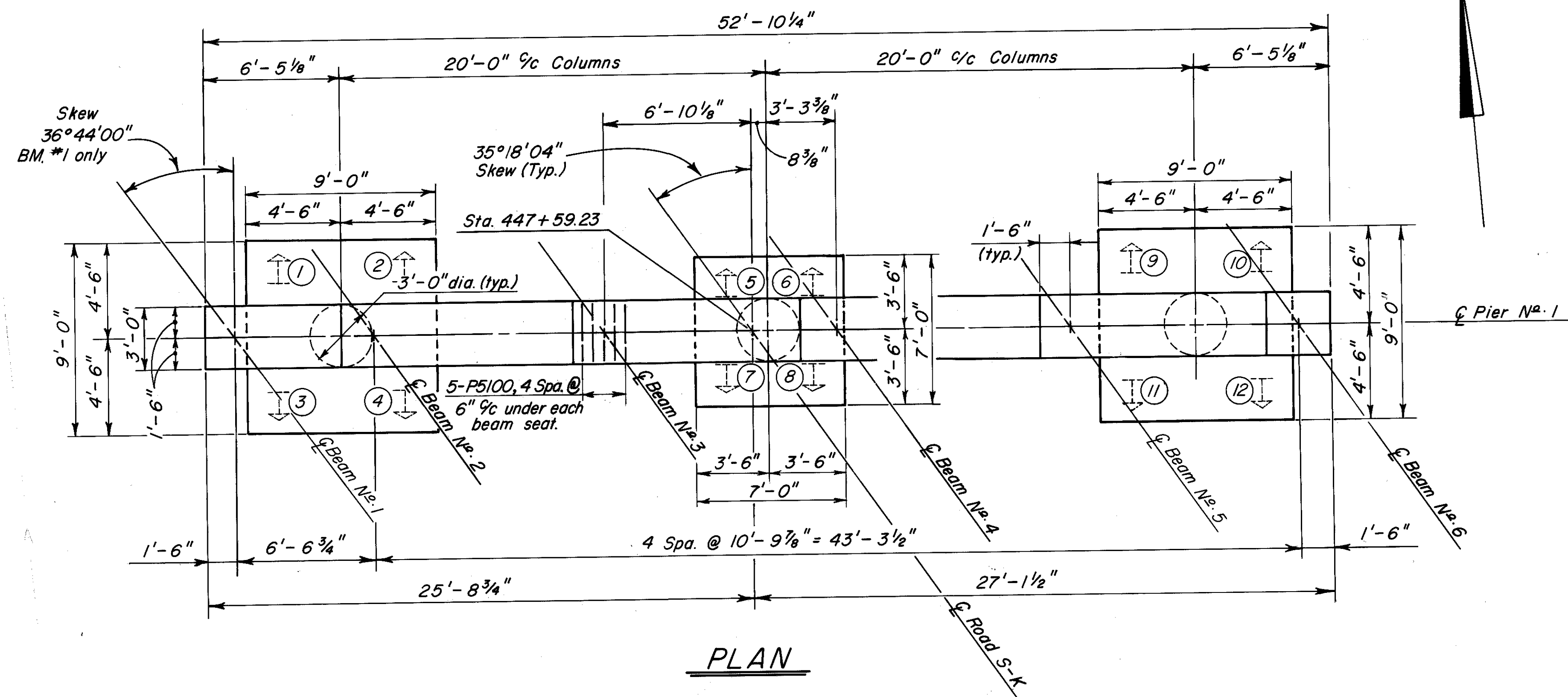
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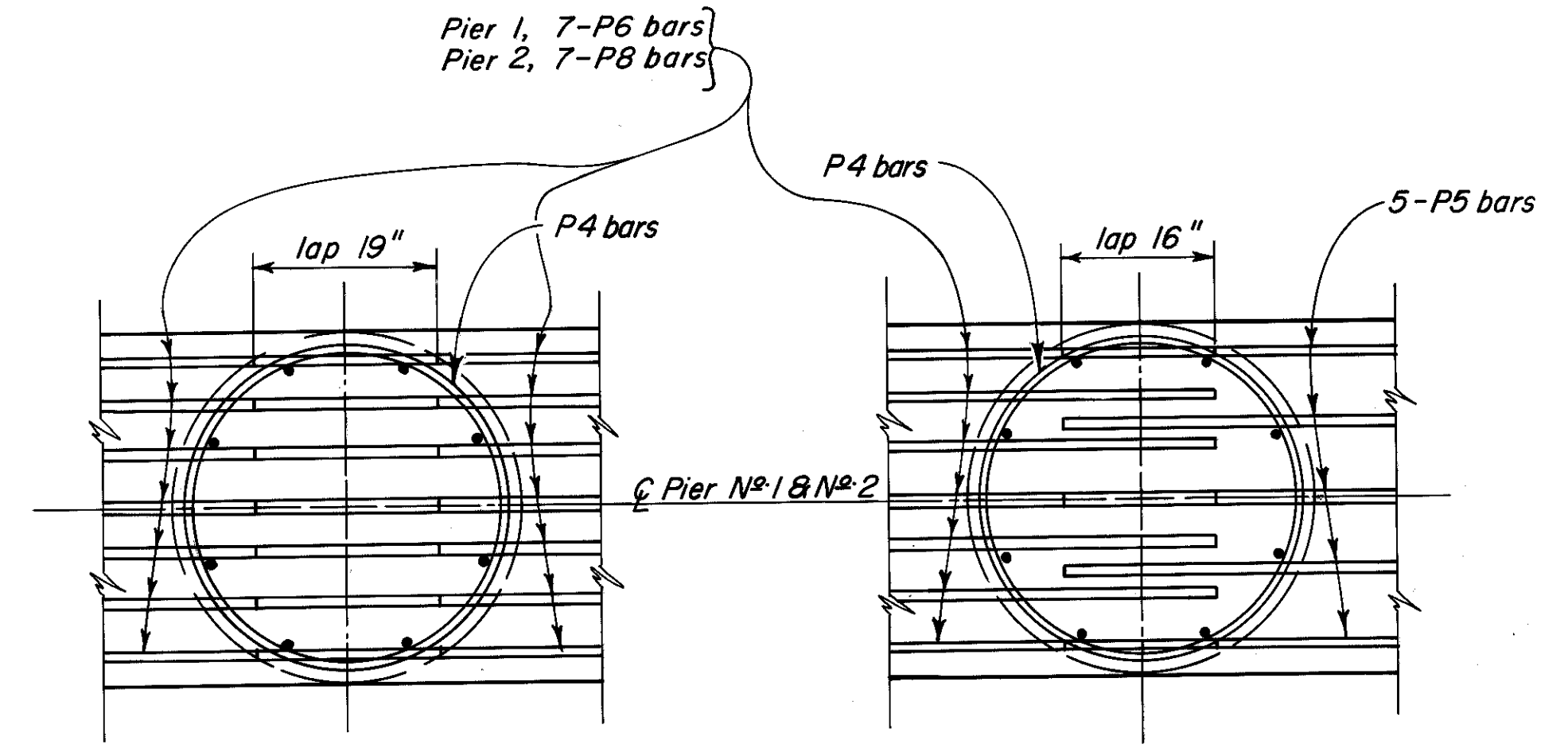
**ABUTMENT DETAILS**

BRIDGE NO. FRA - 33-1540  
ROAD S-K OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	12/18/89	

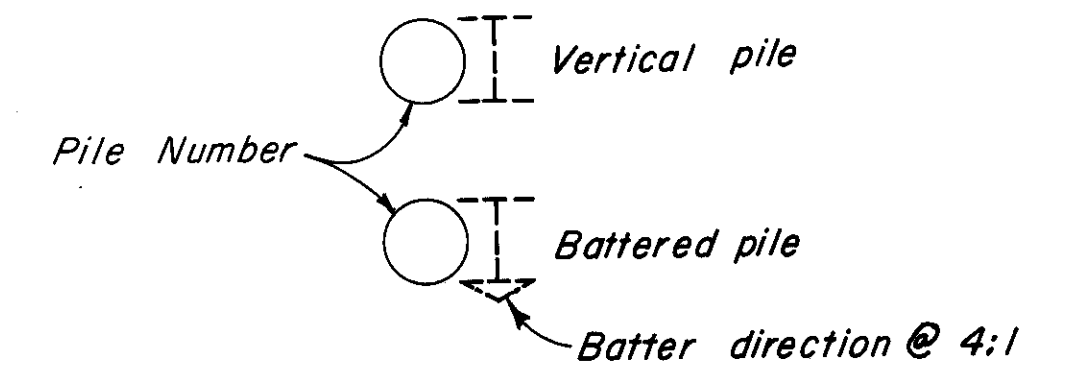


**PLAN**

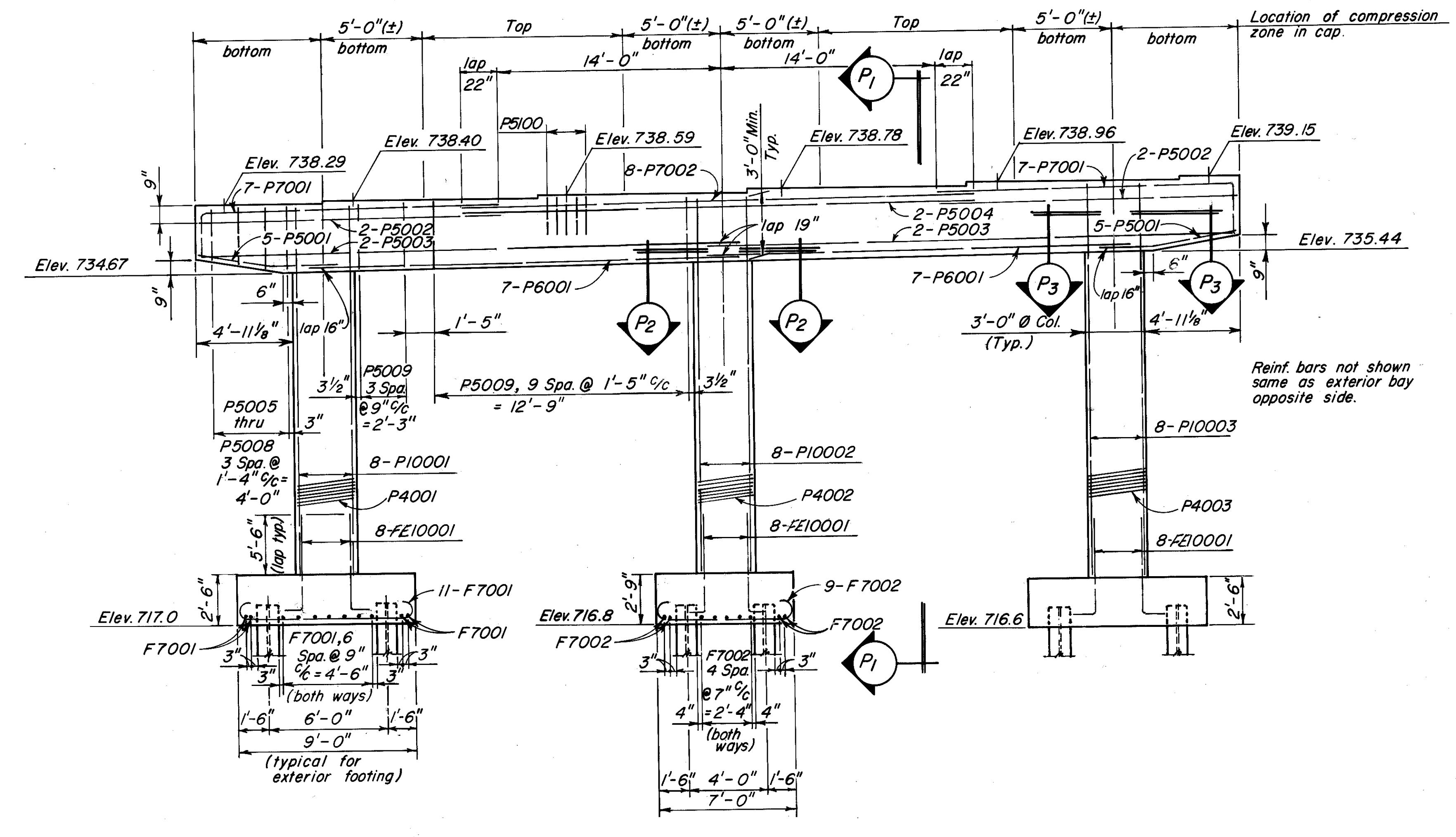


**SECTION P2-P2**  
Vertical Col. Steel P10 bars

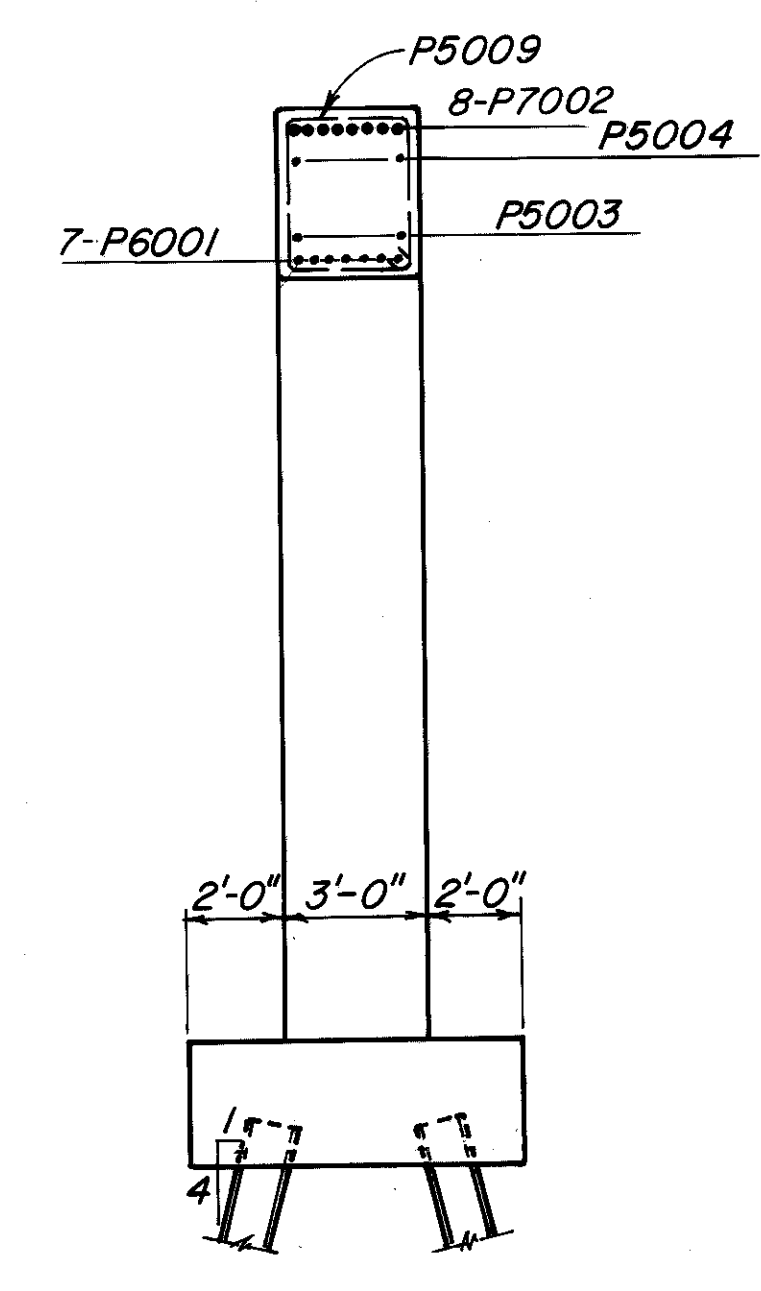
**SECTION P3-P3**  
Vertical Col. Steel P10 bars



**PILE SYMBOLS**



**ELEVATION**



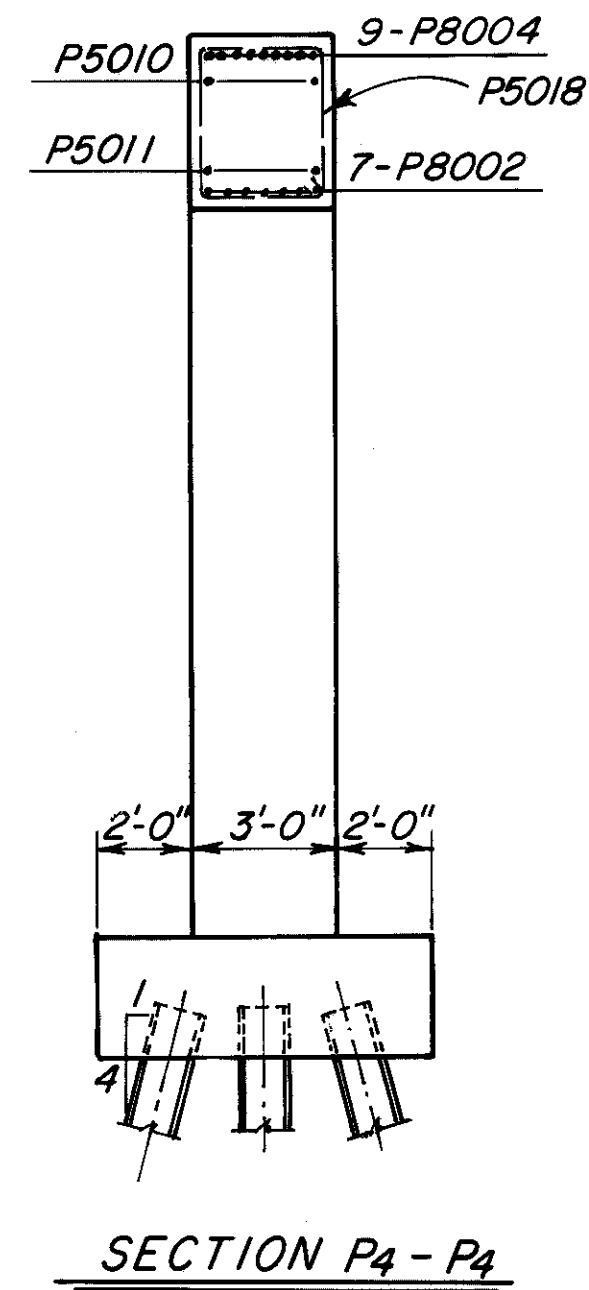
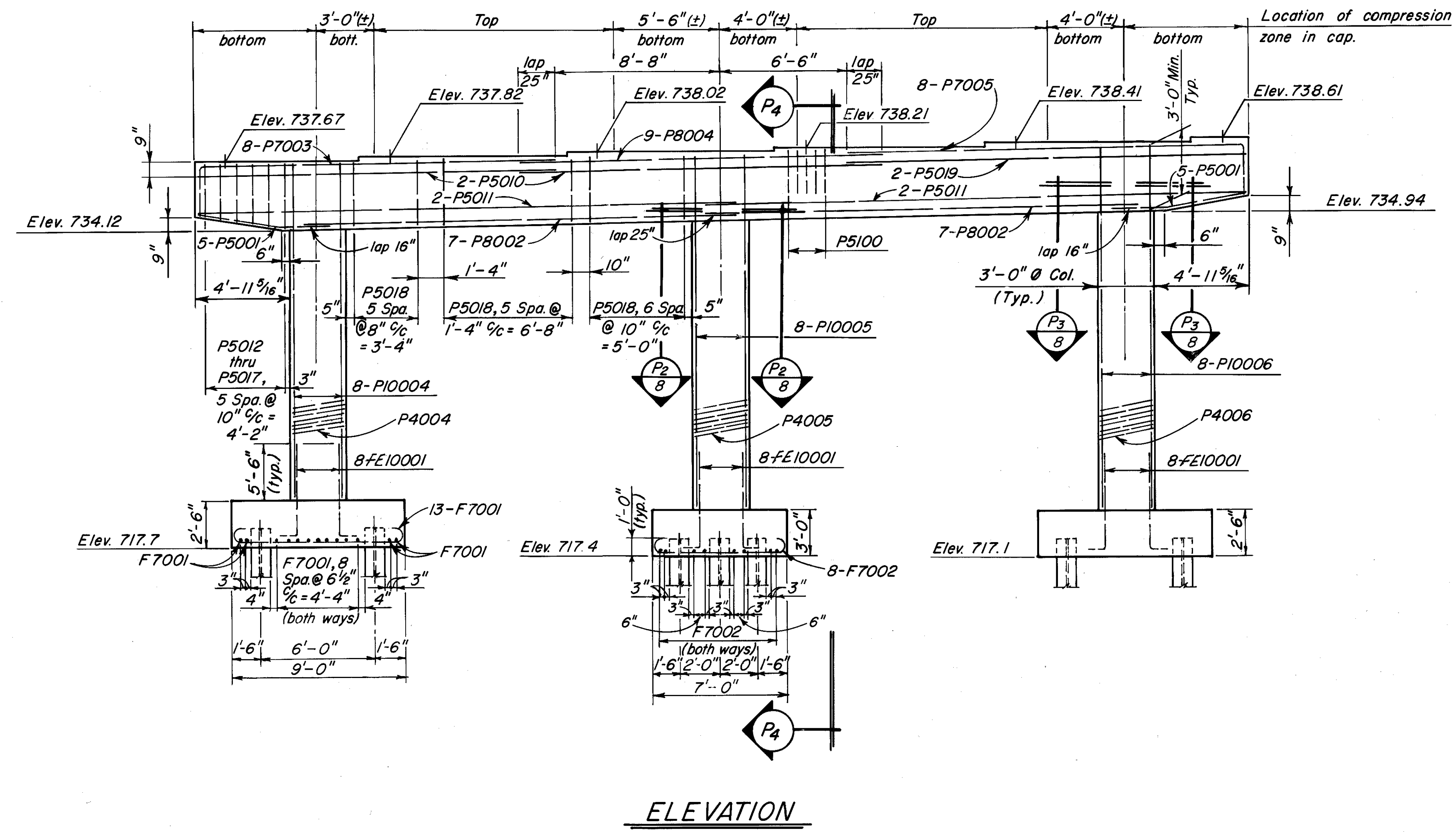
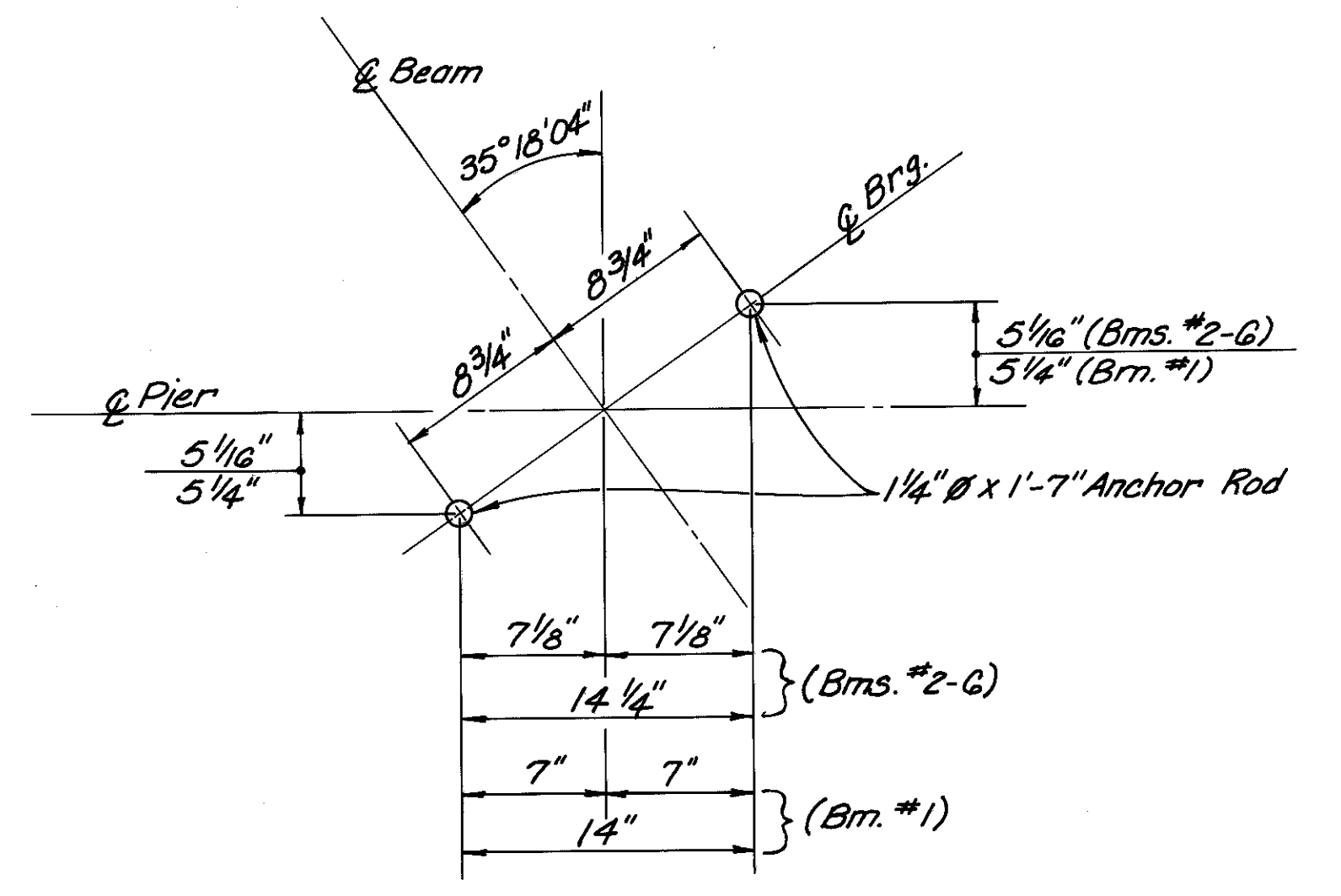
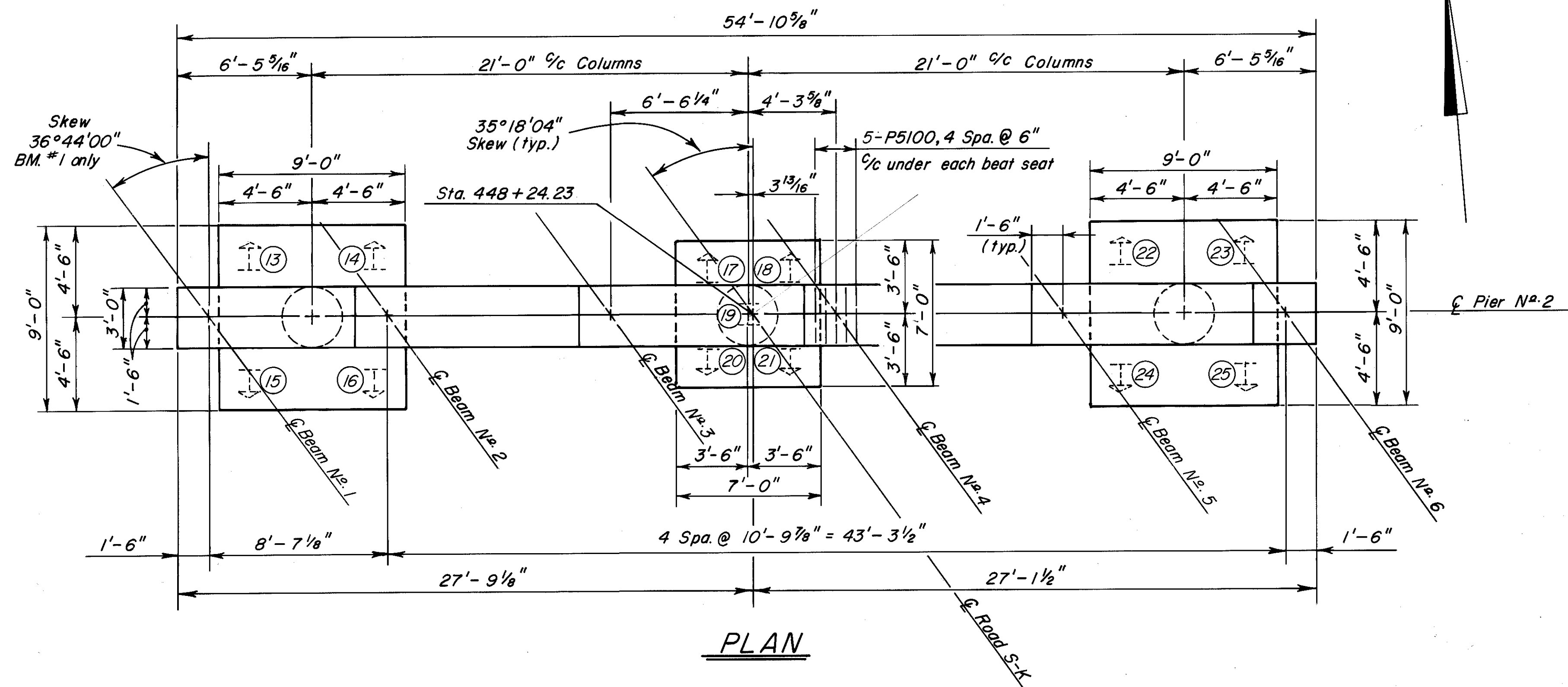
**SECTION P1-P1**

**NOTE:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.

All pier column and cap rebar are to be Epoxy Coated. Where the prefix "P" is used in bar callouts it shall be understood to read "PE". See Item 509 note on [3116].

Following are limits of pier concrete surfaces to be sealed: Epoxy - full length of cap top surface including risers. Non-Epoxy - full perimeter of columns from top of footing to bottom of cap and all cap surfaces except top.

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WEIRTON					
<b>PIER NO. 1 DETAILS</b>					
BRIDGE NO. FRA - 33 - 1540					
ROAD S-K OVER U.S. 33 RELOCATED					
FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
DEM	KRH		GVB	G.W.M.	3/24/89



For notes, see Shd. B/16, Pier No. 1 Details  
 Note: Bridge seat reinforcing shall be accurately placed to avoid interference with the placement of anchor rods.

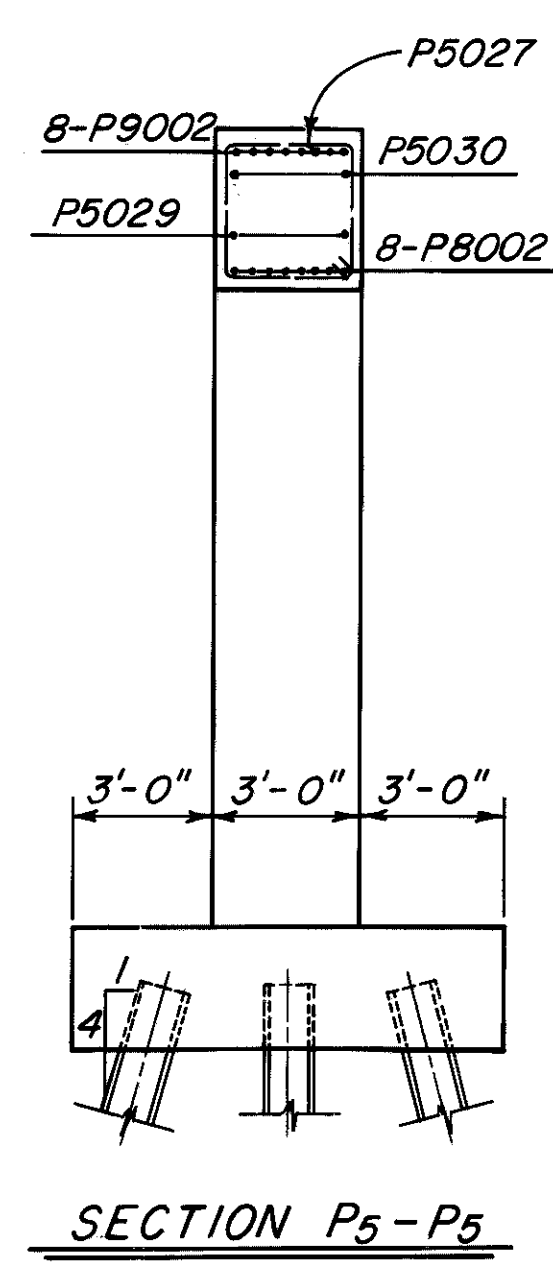
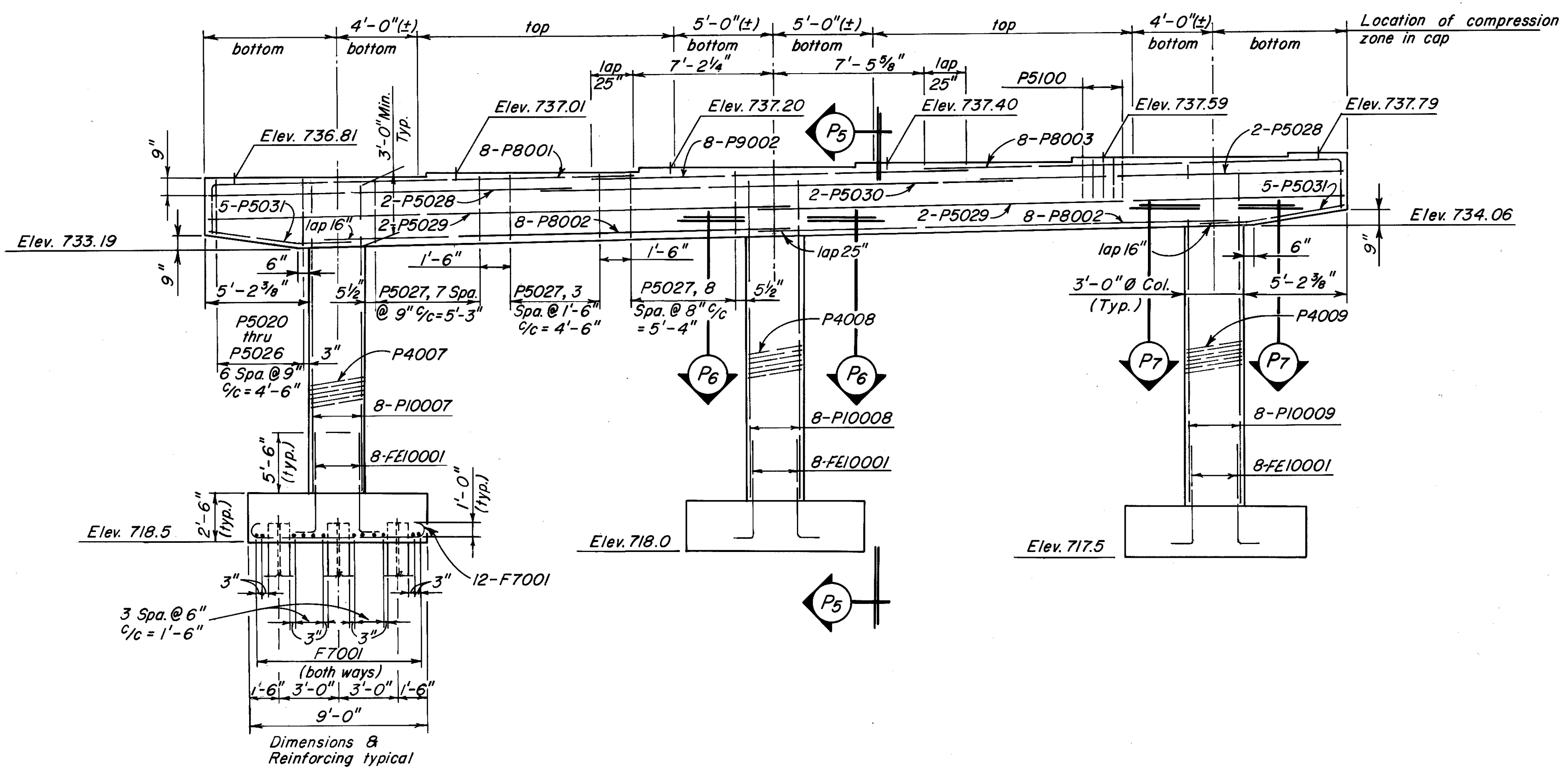
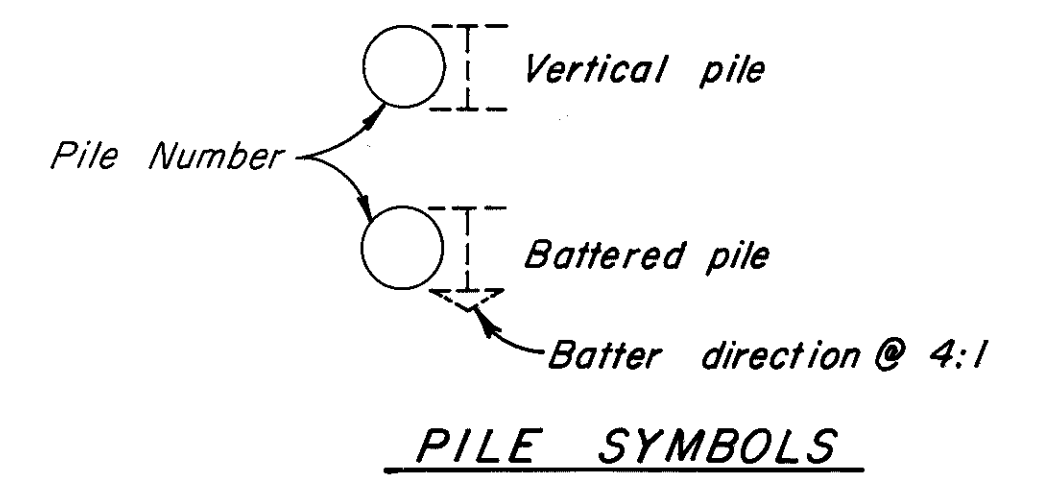
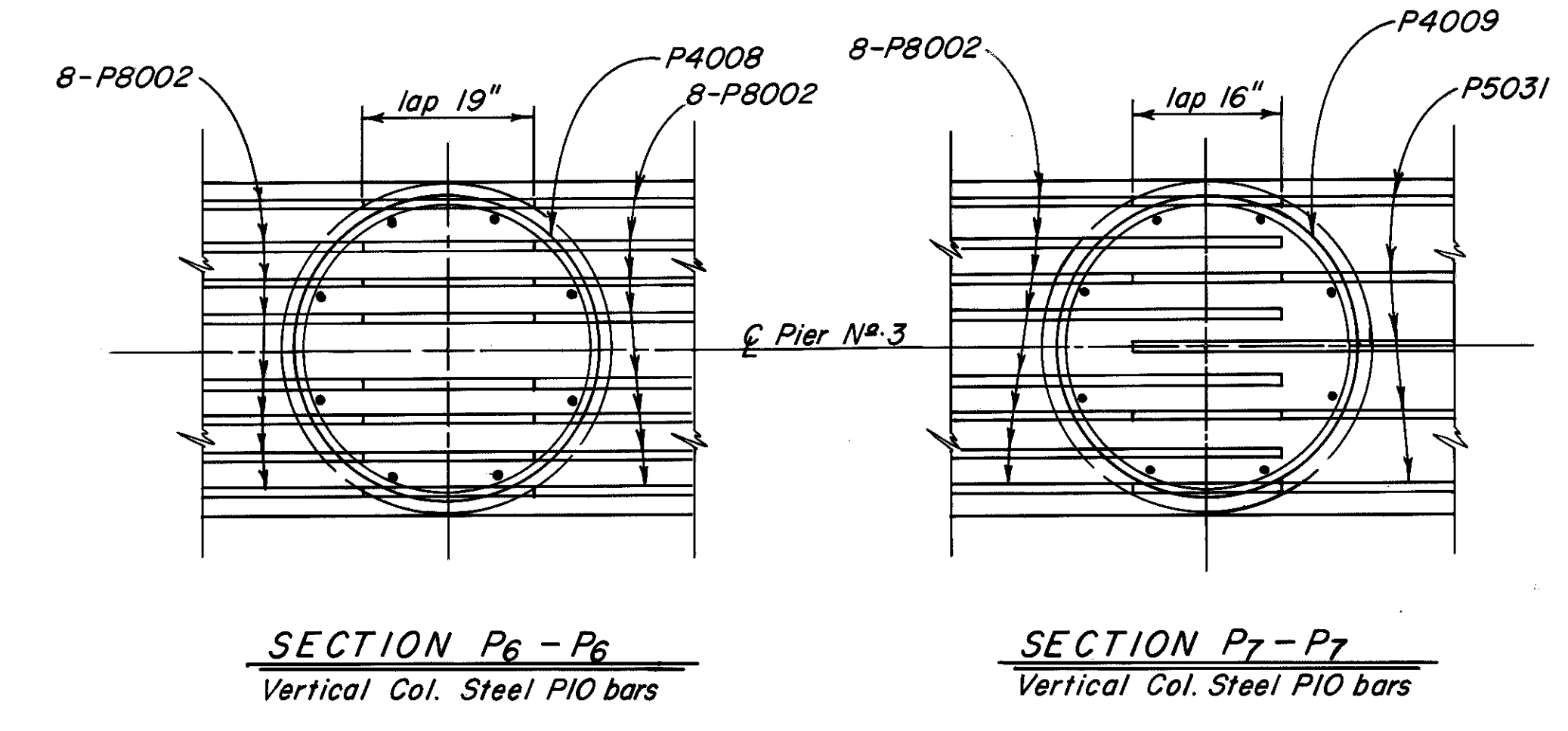
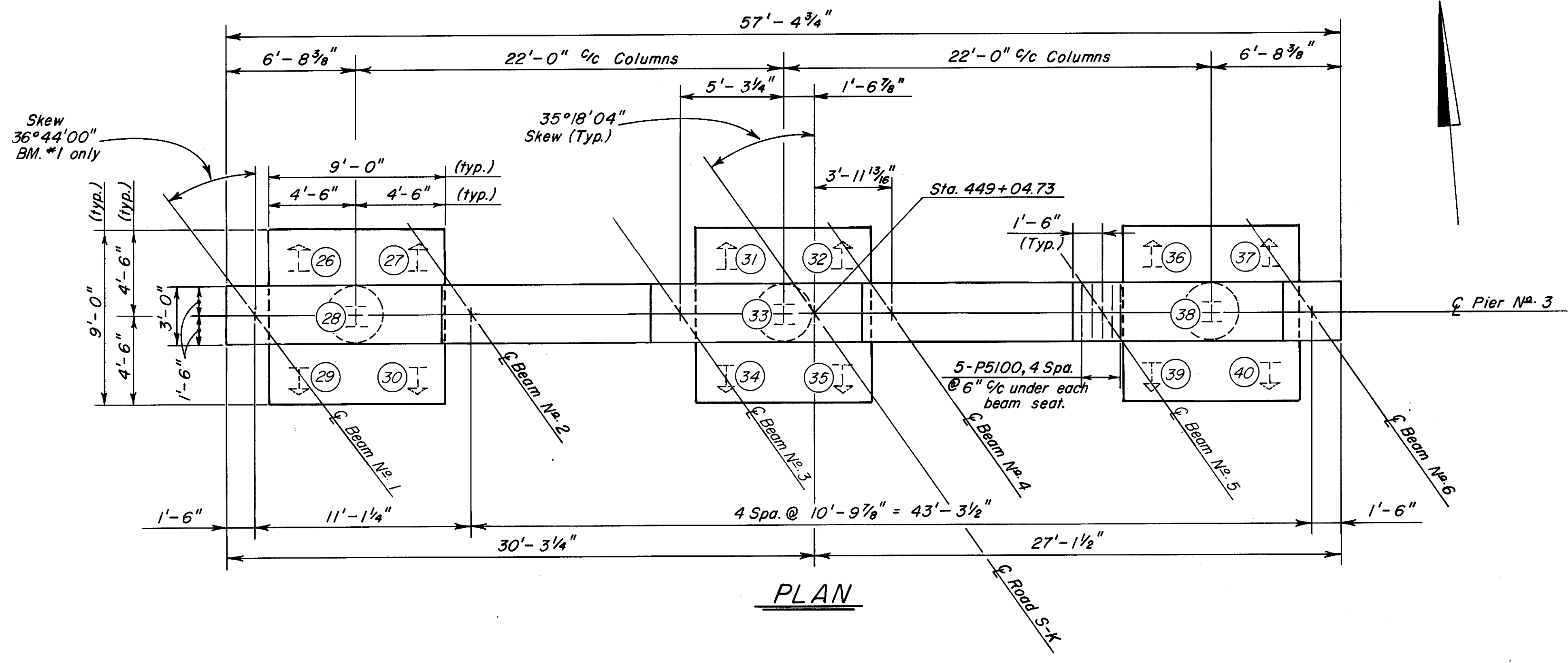
9/16

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 COLUMBUS, CLEVELAND, WERTON

**PIER NO. 2 DETAILS**  
 BRIDGE NO. FRA - 33-1540  
 ROAD S-K OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 447+10.98 TO  
 STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISD
DEM	KRH		GVB	G.W.M.	5/24/89	





**NOTE:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.  
For additional notes see Sht. **B/16**, Pier No. 1 Details.

10/16

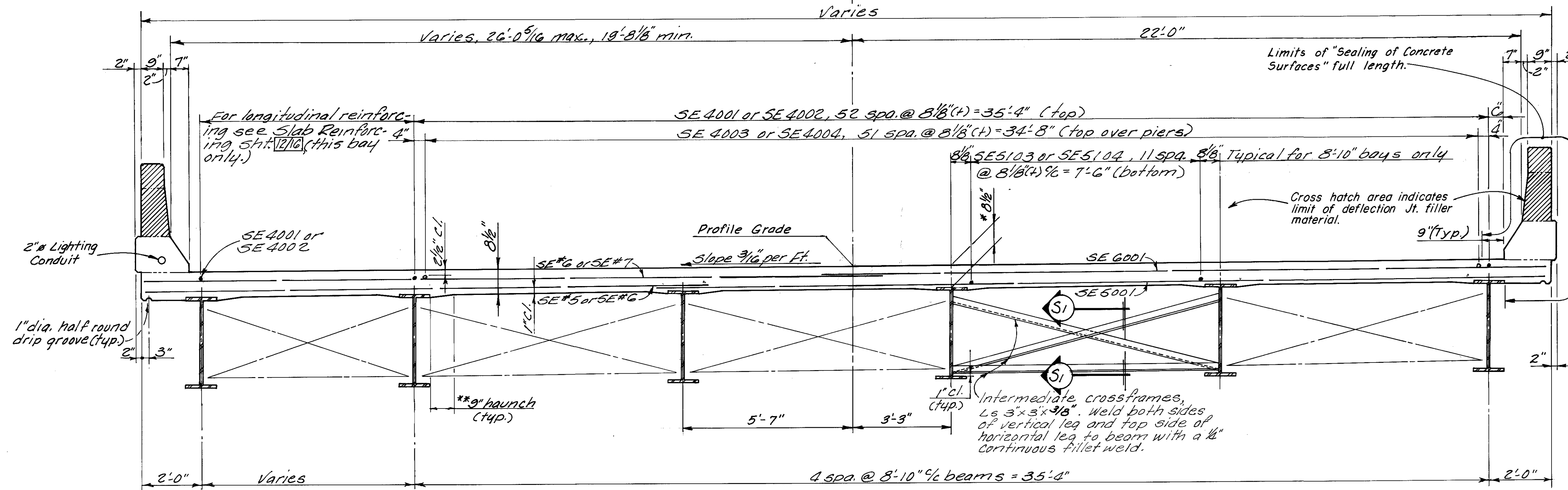
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CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**PIER NO. 3 DETAILS**  
BRIDGE NO. FRA-33-1540  
ROAD S-K OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

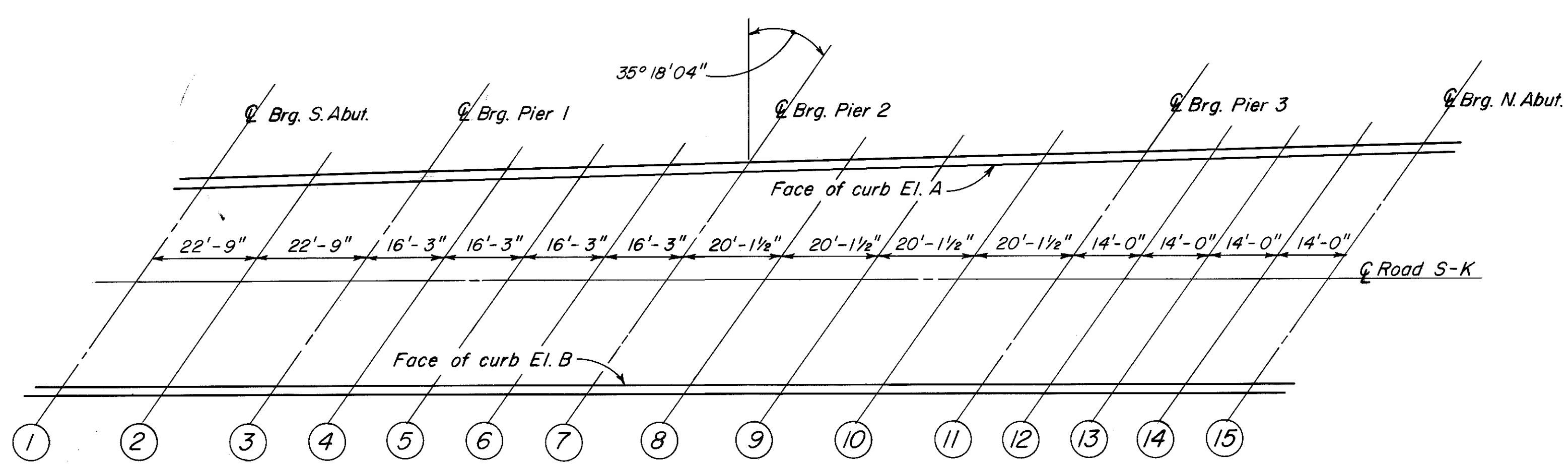
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISD
DEM	KRH		GVB	G.W.M.	5/24/89	

Note: Each run of longitudinal deck reinforcing excluding top over pier bars, shall be comprised of the following:  
 Top, 8 runs of SE4001 & 1 run of SE4002; Bottom, 8 runs of SE5103 & 1 run of SE5104.

Reinforcing minimum lap: #4=1'-3"  
 #5=1'-7"  
 #6=1'-11"  
 #7=2'-3"

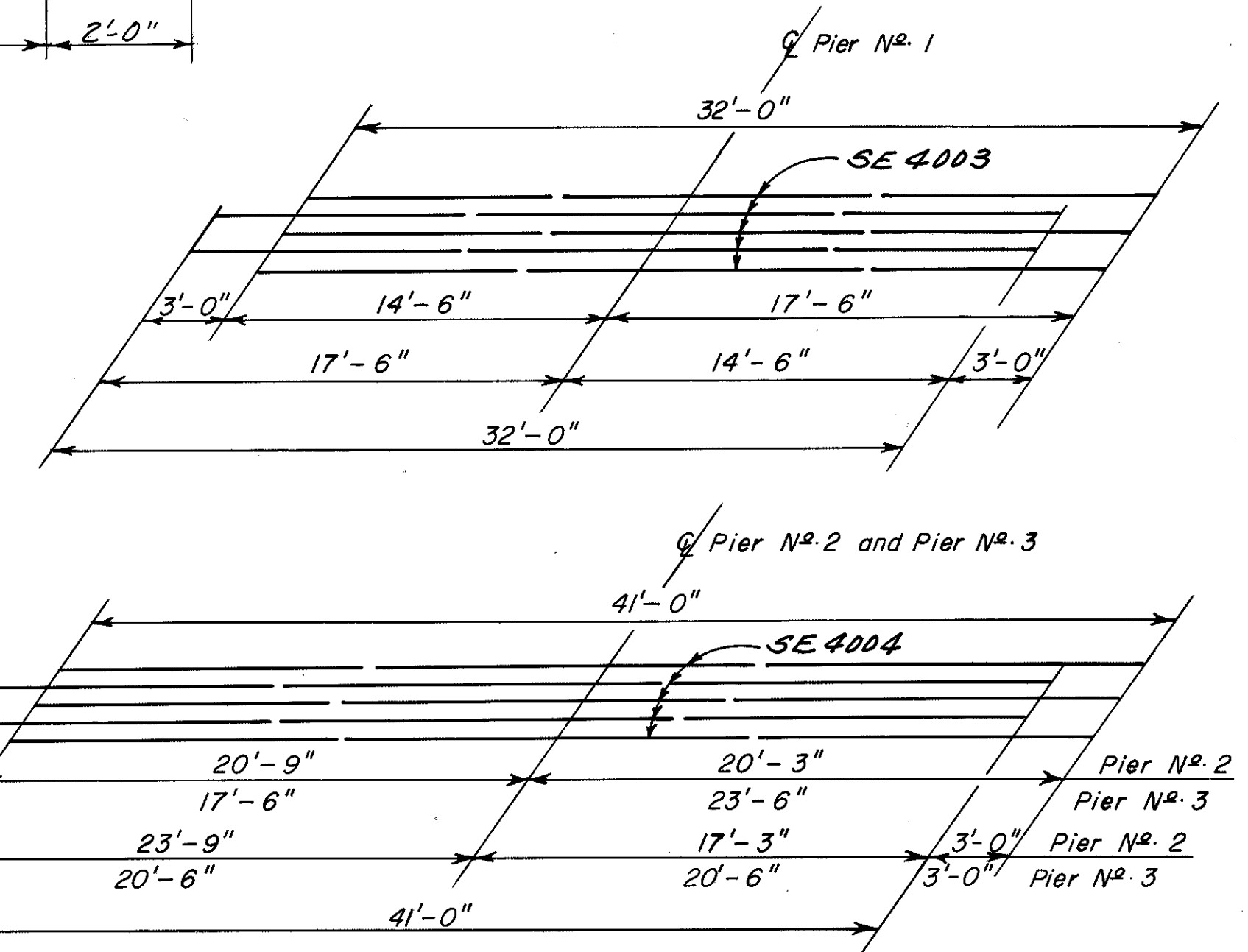
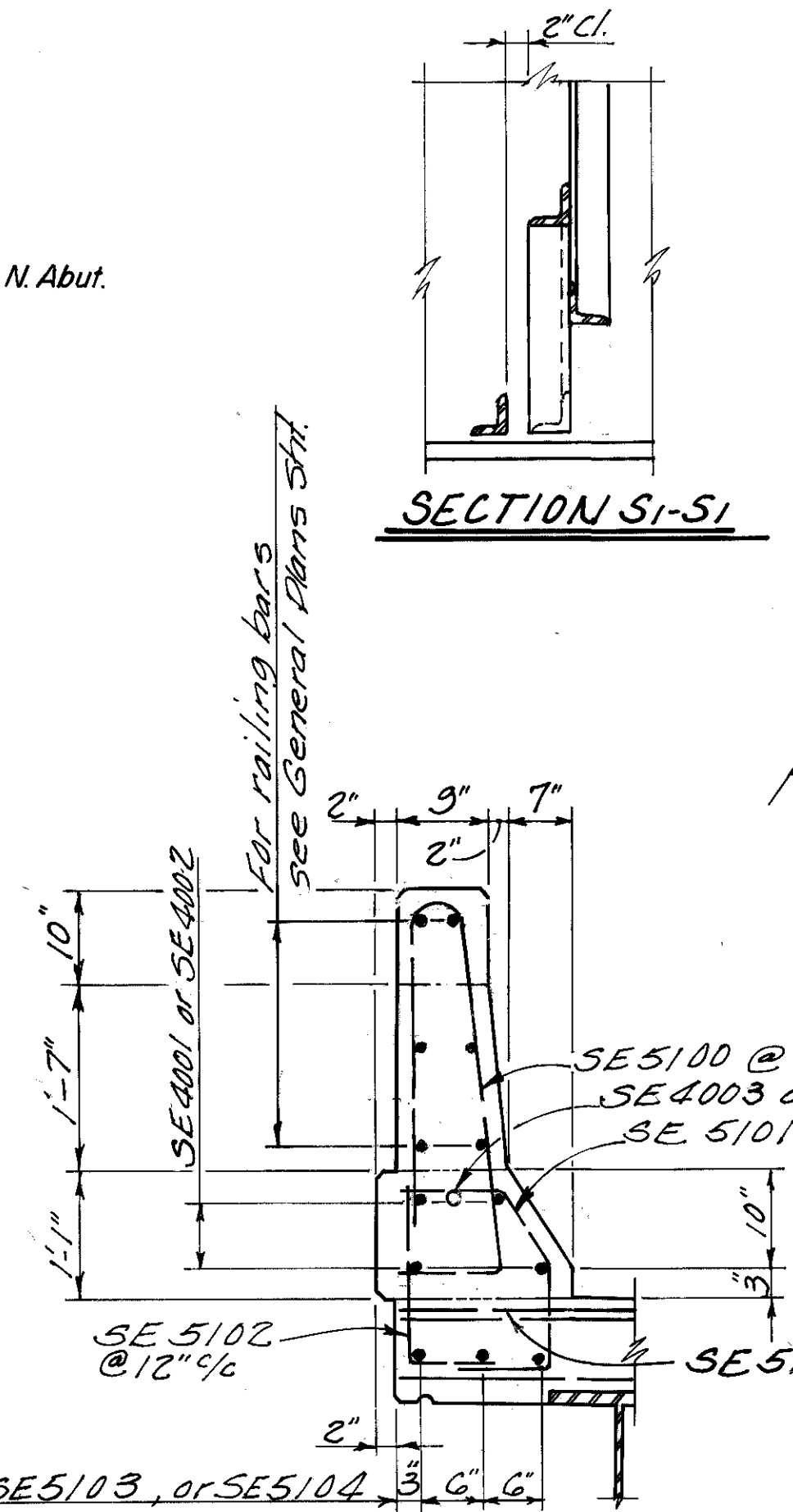


NOTES:  
 \* DECK SLAB DEPTH: The distance shown from top of deck slab to top of steel beam is the design dimension. The quantity of deck concrete to be paid for shall be based on this dimension even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or camformation required to place it parallel to the finished grade.  
 \*\* A typical haunch width of 9" shall be used for all beams for computing quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.  
 Field bending of transverse slab steel to be included in Item 509 for payment. See Item 509 note on 3/16.  
 For transverse reinforcing see slab reinf. sht. 12/16.



NOTE:  
 The screed elevations listed are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete.

Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Elev. A	742.60	742.45	742.24	742.11	741.96	741.78	741.62	741.47	741.29	741.08	740.84	740.70	740.58	740.44	740.29
Elev. B	743.41	743.29	743.12	743.01	742.89	742.73	742.57	742.44	742.27	742.08	741.84	741.71	741.60	741.47	741.33



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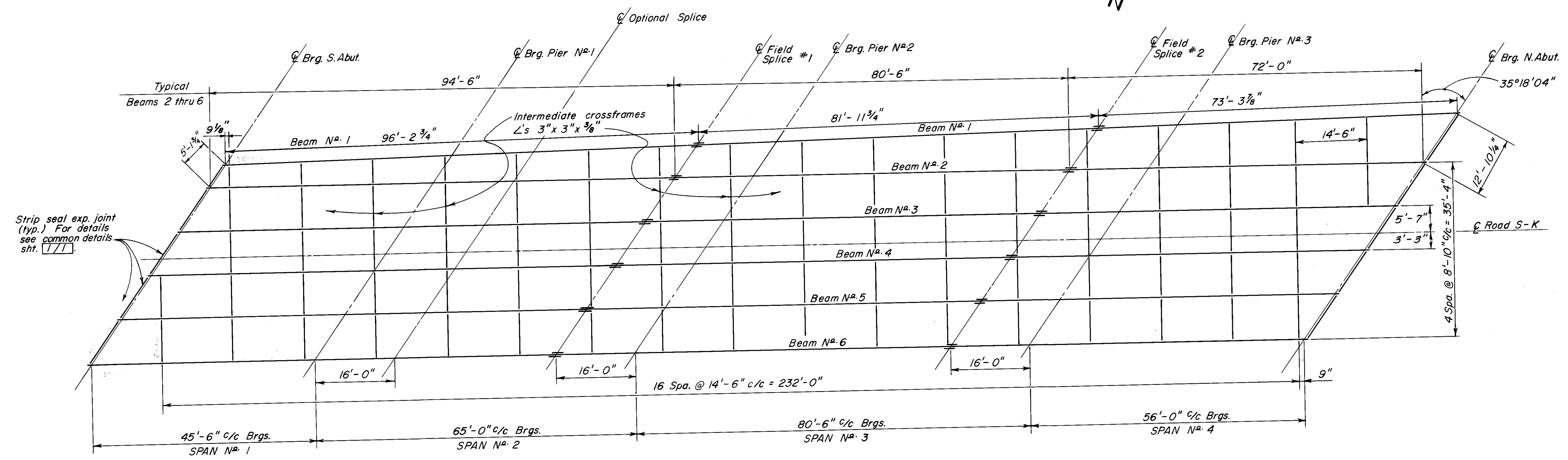
**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 33-1540  
 ROAD S-K OVER US. 33 RELOCATED  
 FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		GVB	G.W.M.	5/24/89	

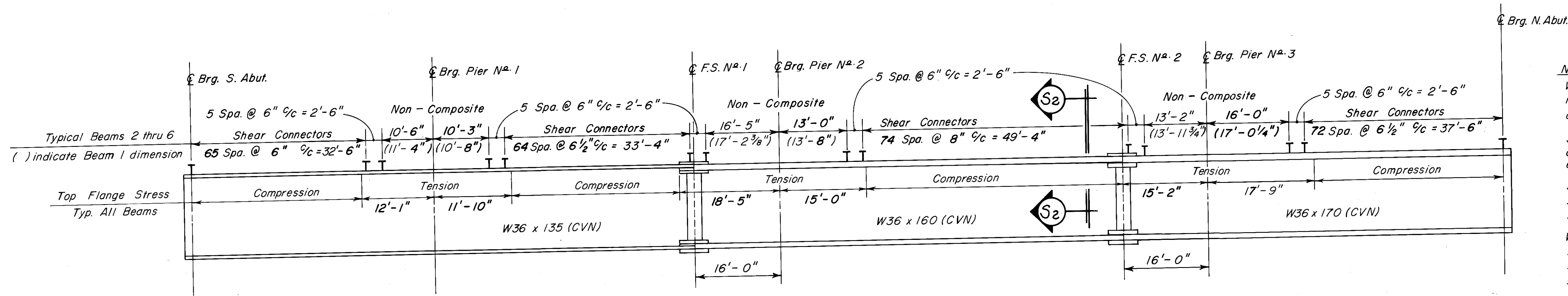






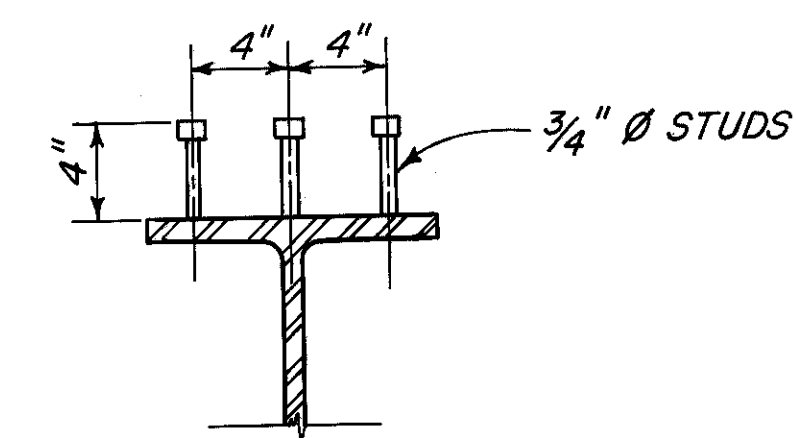
**FRAMING PLAN**

**NOTE:**  
 Intermediate crossframes may be shifted to avoid interference with field splice plates.



**BEAM ELEVATION**

**NOTES:**  
 Where a plate is designated (CVN) the material shall meet specified minimum notch toughness requirements as specified in 711.02 of CMS.  
 Shear connector location may be adjusted by a maximum of 1/2" to avoid conflict with high strength bolts and edges of plates.  
 Shear connector spacing in the vicinity of field splices shall be adjusted to allow connectors to be placed between the splice bolts.  
 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.

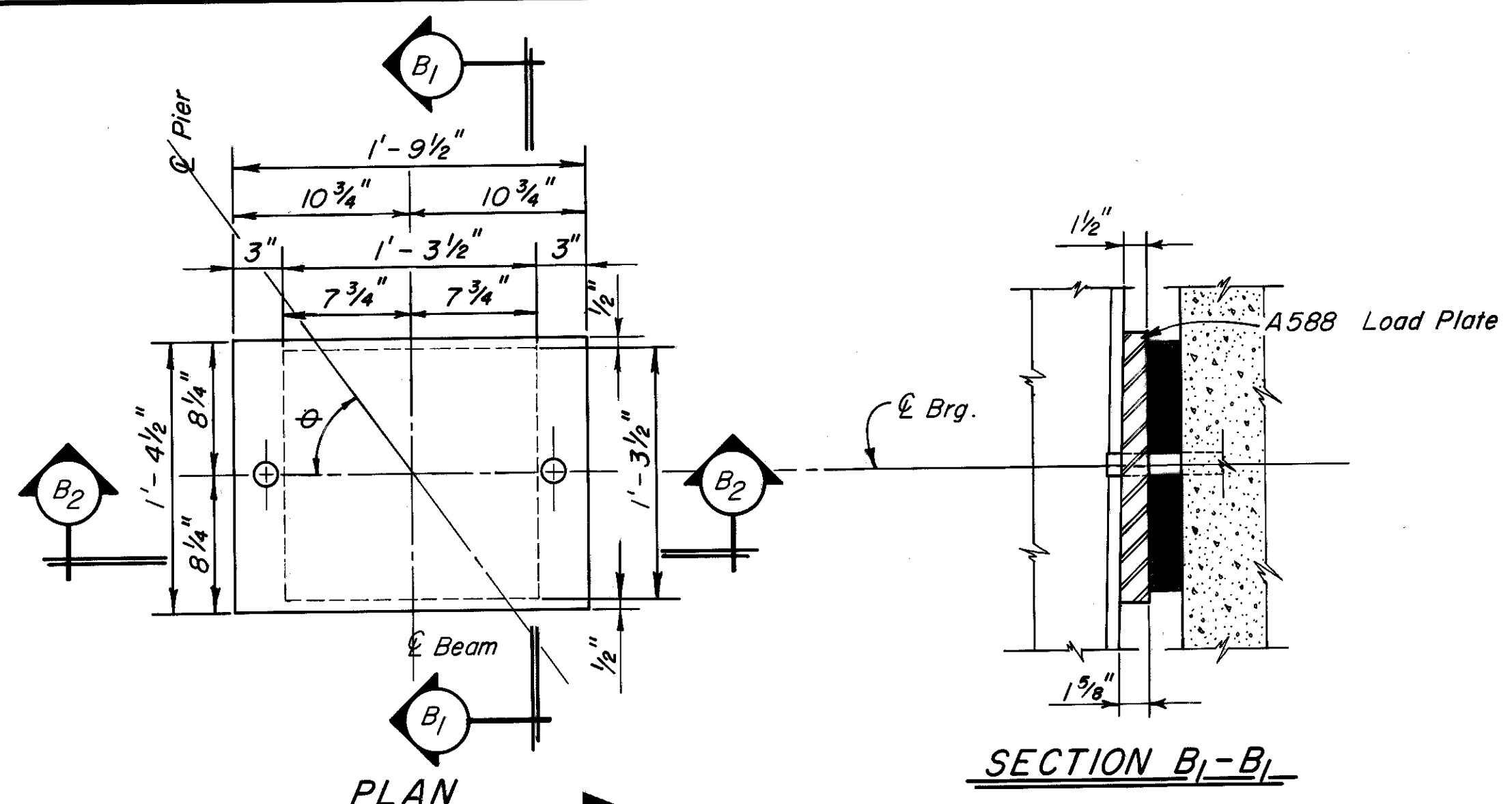


**SECTION S2-S2**

13/16  
**ALDEN E. STILSON & ASSOCIATES**  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. FRA - 33 - 1540  
 ROAD S-K OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	5/24/89	



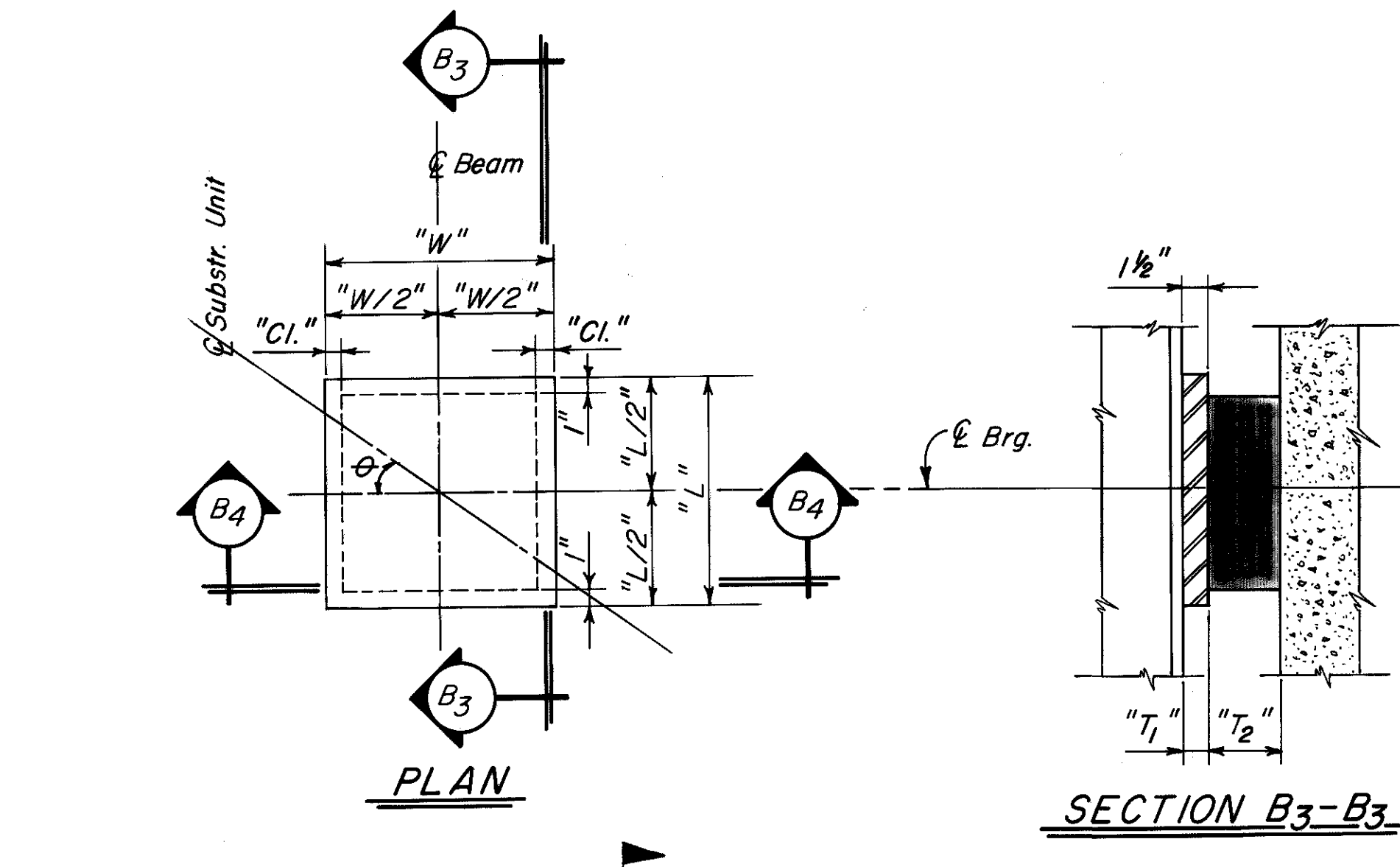
PLAN

SECTION B<sub>1</sub>-B<sub>1</sub>

SECTION B<sub>2</sub>-B<sub>2</sub>

**FIXED BEARING**  
PIER N<sup>o</sup>. 2

NOTE:  
 $\theta = 36^{\circ}44'00''$  for beam line 1  
 $\theta = 36^{\circ}18'04''$  for beam lines 2-6



PLAN

SECTION B<sub>3</sub>-B<sub>3</sub>

SECTION B<sub>4</sub>-B<sub>4</sub>

**EXPANSION BEARINGS**

LAMINATED ELASTOMERIC EXPANSION BEARINGS								
LOCATION	"W"	"L"	"CL."	"T <sub>1</sub> "	"T <sub>2</sub> "	"T <sub>3</sub> "	Elastomer Layers	Internal Laminates
South Abutment	1'-2"	1'-1"	1 1/2"	1 1/2"	3 3/8"	4 7/8"	6-0.50"	5
Pier N <sup>o</sup> . 1	1'-5 1/2"	1'-5 1/2"	1"	1 5/8"	1 15/16"	3 1/2"	3-0.60"	2
Pier N <sup>o</sup> . 3	1'-5 1/2"	1'-5 1/2"	1"	1 5/8"	2 1/4"	3 3/16"	3-0.70"	2
North Abutment	1'-2"	1'-1"	1 1/2"	1 1/2"	4"	5 1/2"	6-0.60"	5

BEARING LOCATION	REACTIONS		
	Dead Load (Kips)	Live Load (Kips)	Maximum Reaction (Kips)
South Abutment	24.6	48.7	73.3
Pier N <sup>o</sup> . 1	83.6	58.4	142.0
Pier N <sup>o</sup> . 2	111.1	65.4	176.4
Pier N <sup>o</sup> . 3	113.6	64.6	178.2
North Abutment	28.9	51.0	79.9

NOTES:  
 The elastomer for fixed and expansion bearings shall be grade 50.  
 The elastomer shall be vulcanized bonded to the steel load plate during the molding process.  
 Welding shall be controlled so that the plate temperature at the elastomer bonded surface does not exceed 300° F, as determined by use of pyrometric sticks or other temperature monitoring devices.

14/16

ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. FRA - 33 - 1540  
 ROAD S-K OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 447+10.98 TO STA. 449+63.49

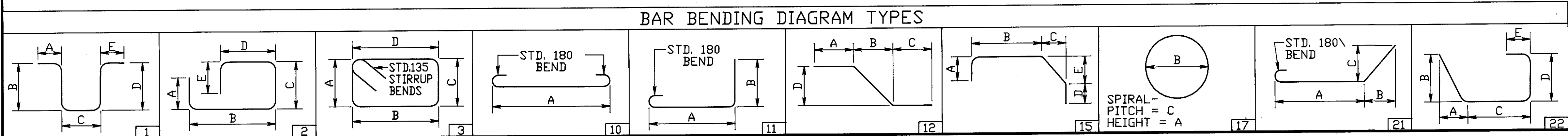
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		GVB	G.W.M.	5/12/89	

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SOUTH ABUTMENT										
A 5005	6	15-5	97	ST						
A 5006	2	7-6	16	ST						
A 5007	4	9-11	41	12	2-0	7-10		1-0		
A 5008	10	9-8	102	ST						
A 5009	8	4-6	38	ST						
A 5017	8	11-5	95	ST						
A 5020	6	24-6	153	ST						
A 5022	6	26-4	165	ST						
A 5023	6	17-11	112	ST						
A 8001	33	5-10	514	21	3-3	1-3	0-10			
SOUTH ABUTMENT-EPOXY COATED										
AE 5001	30	4-11	154	1	1-6	2-2	1-6			
AE 5002	40	7-10	327	1	2-4	3-5	2-4			
AE 5003	10	13-6	141	ST						
AE 5004	16	4-6	75	ST						
AE 5010	2	5-4		ST						1
THRU		63			VARY LENGTH BY 0-4 1/4					1
AE 5014	2	6-9		ST						
AE 5015	16	2-8	45	11	2-1					
AE 5016	6	3-9	23	ST						
AE 5018	10	6-3	65	22	0-8	3-3	3-0			
AE 5019	8	25-3	211	ST						
AE 5020	5	24-6	128	ST						
AE 5021	8	24-3	202	ST						
AE 5022	5	26-4	137	ST						
AE 5027	4	3-0	13	ST						
AE 5028	4	2-8	11	ST						
AE 5029	14	5-0	73	ST						
AE 5030	6	6-3	39	1	2-8	1-2	2-8			
AE 5031	10	16-0	167	ST						
AE 6001	50	5-10	438	2	2-0	0-11	3-3			
AE 6002	50	5-1	382	2	2-0	1-5	2-0			
AE 6003	50	9-3	695	2	4-1	1-5	4-1			
AE 6004	2	4-6	14	15	0-7	0-2	3-3	0-9		
AE 6005	2	4-8	14	15	0-7	0-3	3-5	0-9		
AE 6006	2	5-0	15	15	0-8	0-4	3-7	0-9		
AE 6007	2	5-2	16	15	0-8	0-5	3-9	0-9		
AE 6008	2	5-6	17	15	0-9	0-6	3-11	0-9		
AE 6009	6	2-9	25	15	0-7	0-2	1-6	0-9		
AE 6010	14	5-9	121	15	0-9	0-6	4-2	0-9		
FE 5002	42	7-1	310	2	6-7	0-8				
FE 5004	1	7-11	8	2	7-5	0-8				

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
NORTH ABUTMENT										
A 5005	12	16-8	209	ST						
A 5006	4	8-8	36	ST						
A 5007	4	9-11	41	12	2-0	7-10		1-0		
A 5008	8	9-8	81	ST						
A 5009	8	4-6	38	ST						
A 5017	8	11-5	95	ST						
A 5024	6	26-7	166	ST						
A 5026	6	32-2	201	ST						
A 8001	38	5-10	592	21	3-3	1-3	0-10			
F 5001	46	8-3	396	2	1-7	5-4	1-7			
F 5003	28	11-7	338	3	2-6	3-0	2-6	3-0		
F 6001	46	14-2	979	2	6-7	5-4	2-7			
F 6002	14	20-2	424	1		9-8	1-2	9-8		
F 8002	14	30-10	1153	ST						
F 8003	6	12-3	196	ST						
F 8004	6	14-3	228	ST						
F 8005	2	5-0	27	ST						
NORTH ABUTMENT-EPOXY COATED										
AE 5001	30	4-11	154	1	1-6	2-2	1-6			
AE 5002	46	7-10	376	1	2-4	3-5	2-4			
AE 5003	20	14-8	306	ST						
AE 5004	16	4-6	75	ST						
AE 5010	2	5-4		ST						1
THRU		63			VARY LENGTH BY 0-4 1/4					1
AE 5014	2	6-9		ST						
AE 5015	16	2-8	45	11	2-1					
AE 5016	6	3-9	23	ST						
AE 5018	10	6-3	65	22	0-8	3-3	3-0			
AE 5023	8	27-3	227	ST						
AE 5024	5	26-7	139	ST						
AE 5025	8	30-0	250	ST						
AE 5026	5	32-2	168	ST						
AE 5027	4	3-0	13	ST						
AE 5028	4	3-3	14	11	2-8					
AE 5029	14	5-0	73	ST						
AE 5030	6	6-3	39	1	2-8	1-2	2-8			
AE 6001	58	5-10	508	2	2-0	0-11	3-3			
AE 6002	58	5-1	443	2	2-0	1-5	2-0			
AE 6003	58	9-3	806	2	4-1	1-5	4-1			
AE 6004	2	4-6	14	15	0-7	0-2	3-3	0-9		
AE 6005	2	4-8	14	15	0-7	0-3	3-5	0-9		
AE 6006	2	5-0	15	15	0-8	0-4	3-7	0-9		
AE 6007	2	5-2	16	15	0-8	0-5	3-9	0-9		
AE 6008	2	5-6	17	15	0-9	0-6	3-11	0-9		
AE 6009	6	2-9	25	15	0-7	0-2	1-6	0-9		
AE 6010	14	5-9	121	15	0-9	0-6	4-2	0-9		
FE 5002	47	7-1	347	2	6-7	0-8				
FE 5004	2	7-11	17	2	7-5	0-8				
PIER 1										
PE 4001	1	15-2	286	17	15-2	2-8				6
					NO. TURNS= 43		NO. SPACERS= 4			
PE 4002	1	15-8	298	17	15-8	2-8				6
					NO. TURNS= 45		NO. SPACERS= 4			
PE 4003	1	16-3	306	17	16-3	2-8				6
					NO. TURNS= 46		NO. SPACERS= 4			

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER 1 CONTINUED										
PE 5001	10	6-11	72	12	2-7	4-3		0-9		
PE 5002	4	14-3	59	ST						
PE 5003	4	27-0	113	ST						
PE 5004	2	27-8	58	ST						
PE 5005	2	10-11		3	2-6	2-8	2-6	2-8		1
THRU			97		VARY LENGTH BY 0-6					
					VARY DIM. A BY 0-3					
					VARY DIM. C BY 0-3					
PE 5008	2	12-5		3	3-3	2-8	3-3	2-8		1
PE 5009	28	12-3	358	3	3-2	2-8	3-2	2-8		
PE 5100	30	6-5	201	1		2-0	2-8	2-0		
PE 6001	14	21-6	452	ST						
PE 7001	14	16-7	475	1	2-6	14-3				
PE 7002	8	27-8	452	ST						
PE10001	8	18-3	628	ST						
PE10002	8	18-9	645	ST						
PE10003	8	19-3	663	ST						
F 7001	44	10-2	914	10	8-6					
F 7002	18	8-2	300	10	6-6					
FE10001	24	8-10	912	1	1-8	7-6				
PIER 2										
PE 4004	1	13-11	265	17	13-11	2-8				6
					NO. TURNS= 40		NO. SPACERS= 4			
PE 4005	1	14-7	278	17	14-7	2-8				6
					NO. TURNS= 42		NO. SPACERS= 4			
PE 4006	1	15-3	291	17	15-3	2-8				6
					NO. TURNS= 44		NO. SPACERS= 4			
PE 5001	10	6-11	72	12	2-7	4-3		0-9		
PE 5010	4	18-10	79	ST						
PE 5011	4	28-4	118	ST						
PE 5012	2	10-11		3	2-6	2-8	2-6	2-8		1
THRU			146		VARY LENGTH BY 0-3 5/8					
					VARY DIM. A BY 0-1 3/4					
					VARY DIM. C BY 0-1 3/4					
PE 5017	2	12-5		3	3-3	2-8	3-3	2-8		1
PE 5018	38	12-3	486	3	2-8	3-2	2-8	3-2		
PE 5019	2	20-10	43	ST						
PE 5100	30	6-5	201	1		2-0	2-8	2-0		
PE 7003	8	21-2	346	1	2-6	18-10				
PE 7005	8	23-3	380	1	2-7	20-10				
PE 8002	14	22-10	854	ST						
PE 8004	9	19-4	465	ST						
PE10004	8	16-11	582	ST						
PE10005	8	17-7	605	ST						
PE10006	8	18-3	628	ST						
F 7001	52	10-2	1081	10	8-6					
F 7002	16	8-2	267	10	6-6					
FE10001	24	8-10	912	1	1-8	7-6				

NOTE: FOR REINFORCING STEEL NOTES SEE 16/16.



15/16

**STILSON & ASSOCIATES, INC.**  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**

BRIDGE NO. FRA-33-1540  
 ROAD SK OVER U.S.33 RELOCATED

FRANKLIN COUNTY  
 STA. 447+10.98 TO  
 STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RT			G.V.B.	G.W.M.	8/24/89	





MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
PIER 3										
PE 4007	1	12- 2	232	17	12- 2	2- 8				6
					NO. TURNS= 35		NO. SPACERS= 4			
PE 4008	1	13- 1	251	17	13- 1	2- 8				6
					NO. TURNS= 38		NO. SPACERS= 4			
PE 4009	1	14- 0	265	17	14- 0	2- 8				6
					NO. TURNS= 40		NO. SPACERS= 4			
PE 5020	2	11- 1		3	2- 7	2- 8	2- 7	2- 8		1
THRU			172		VARY LENGTH BY		0- 2 5/ 8			
					VARY DIM. A BY		0- 1 3/ 8			
					VARY DIM. C BY		0- 1 3/ 8			
PE 5026	2	12- 5		3	3- 3	2- 8	3- 3	2- 8		1
PE 5027	42	12- 5	544	3	3- 3	2- 8	3- 3	2- 8		
PE 5028	4	18- 6	77	ST						
PE 5029	4	29- 5	123	ST						
PE 5030	2	23- 9	50	ST						
PE 5031	10	7- 2	75	12	2- 7	4- 6		0- 9		
PE 5100	30	6- 5	201	1		2- 0	2- 8	2- 0		
PE 9002	8	18-10	512	ST						
PE 8001	7	23- 6	439	1	2- 7	21- 2				
PE 8002	16	23- 9	1015	ST						
PE 8003	7	23- 4	436	1	2- 7	21- 0				
PE10007	8	15- 3	525	ST						
PE10008	8	16- 3	559	ST						
PE10009	8	17- 2	591	ST						
F 7001	72	10- 2	1496	10	8- 6					
FE10001	24	8-10	912	1	1- 8	7- 6				
SUPERSTRUCTURE										
SE 4001	577	30- 0	11563	ST						
SE 4002	75	24- 0	1202	ST						
SE 4003	62	32- 0	1325	ST						
SE 4004	132	41- 0	3615	ST						
SE 5001	408	29- 2	12412	ST						
SE 5002	1	5- 4		ST						1
THRU			527		VARY LENGTH BY		0- 9 1/ 2			
SE 5031	1	28- 4		ST						1
SE 5032	4	5- 3	22	ST						
SE 5033	1	2- 3		ST						1
THRU			166		VARY LENGTH BY		0- 9 1/ 4			
SE 5050	1	15- 5		ST						1
SE 5051	39	16- 4	664	ST						
SE 5052	71	17- 4	1284	ST						
SE 5053	71	18- 4	1358	ST						
SE 5054	71	19- 4	1432	ST						
SE 5055	71	20- 4	1506	ST						
SE 5056	1	6- 5		ST						1
THRU			503		VARY LENGTH BY		0- 9 5/ 8			
SE 5083	1	28- 0		ST						1
SE 5084	12	14- 6	181	ST						
SE 5085	60	6- 5	402	ST						
SE 5086	12	12- 6	156	ST						
SE 5087	144	7- 2	1076	ST						
SE 5088	36	11- 6	432	ST						
SE 5089	18	11- 2	210	ST						
SE 5090	12	14-11	187	ST						
SE 5091	12	13- 1	164	ST						
SE 5092	18	12- 0	225	ST						

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SUPERSTRUCTURE CONTINUED										
SE 5100	501	5-11	3092	22	0- 8	3- 3	2- 8			
SE 5101	501	3- 0	1568	15	0- 9	0-10	0- 8	0- 9	0- 6	
SE 5102	501	2- 3	1176	1	0- 9	1- 8				
SE 5103	513	30- 0	16052	ST						
SE 5104	66	27- 0	1859	ST						
SE 5105	447	3- 9	1748	ST						
SE 6001	413	23- 9	14733	ST						
SE 6002	1	4-11		ST						1
THRU			438		VARY LENGTH BY		0- 9 1/ 2			
SE 6023	1	21- 7		ST						1
SE 6024	4	5- 3	32	ST						
SE 6025	1	5- 3		ST						1
THRU			554		VARY LENGTH BY		0- 9 1/ 2			
SE 6049	1	24- 3		ST						1
SE 6050	1	3- 3		ST						1
THRU			415		VARY LENGTH BY		0- 9 1/ 2			
SE 6072	1	20- 9		ST						1
SE 6073	39	21-11	1284	ST						
SE 6074	71	22-11	2444	ST						
SE 6075	71	23-11	2551	ST						
SE 6076	71	24-11	2657	ST						
SE 6077	71	25-11	2764	ST						
SE 6078	97	21-10	3181	ST						
SE 6079	1	4- 4		ST						1
THRU			419		VARY LENGTH BY		0- 9 1/ 2			
SE 6100	1	21- 0		ST						1
SE 6101	4	4- 4	26	ST						
SE 7001	91	27- 6	5115	ST						
SE 7002	1	5- 8		ST						1
THRU			949		VARY LENGTH BY		0- 9 3/ 4			
SE 7029	1	27- 6		ST						1
SE 7030	4	5- 8	46	ST						

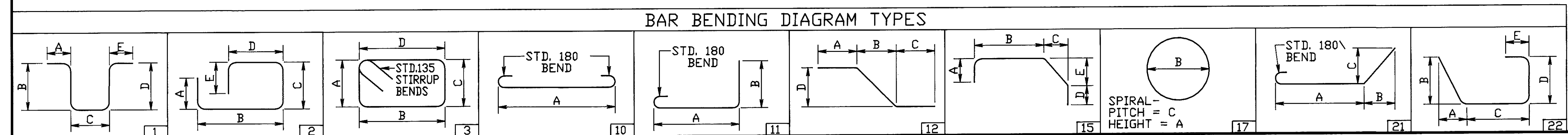
NOTES

- INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.
- 'LENGTH' SHOWN FOR SPIRAL BARS IS DISTANCE FROM TOP OF FOOTING TO BOTTOM OF PIER CAP.  
'NO. TURNS' SHOWN IS 'LENGTH' DIVIDED BY PITCH, PLUS 3 TURNS (NUMBER OF CLOSED COILS), EXPRESSED AS NEAREST WHOLE NUMBER.  
1 1/2 CLOSED COILS SHALL BE PROVIDED AT ENDS OF EACH SPIRAL UNIT. FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 LB. PER LIN. FT. OF SPACER SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF COIL. WEIGHT OF SPACERS, AT 0.80 LB. PER LIN. FT. WILL BE PAID FOR AS REINFORCING STEEL AND IS INCLUDED IN TABULATED WEIGHT.

BAR SIZE DESIGNATION  
BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05.  
SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

ALL REINFORCING STEEL SHALL BE EPOXY COATED. SEE ITEM 509 NOTE ON [3/16].



16/16

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**

BRIDGE NO. FRA-33-1540  
ROAD SK U.S.33 RELOCATED

FRANKLIN COUNTY STA. 447+10.98 TO  
STA. 449+63.49

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.T.			GVB	G.W.M.	5/24/89	

FRANKLIN COUNTY  
FRA-670-1.25 (A-5)  
FRA-315-0.00

NOTE:  
All piles shall be steel HP12x53 bearing piles.  
Estimated average pay lengths for the piles are:

South Abutment	- 60'
Pier No. 1	- 50'
Pier No. 2	- 50'
Pier No. 3	- 45'
North Abutment	- 50'

**TRAFFIC DATA**

CURRENT ADT (1984): 27,227 (Southbound)  
36,809 (Northbound)

DESIGN YEAR ADT (2004): 34,737 (Southbound)  
46,966 (Northbound)

V (DESIGN SPEED): 55 MPH.  
PERCENTAGE TRUCKS: 5%

**EXISTING STRUCTURE DATA**

TYPE: Continuous steel beam with reinforced concrete deck and substructure  
SPAN: 82'-6", 60'-0", 74.5', 52.0' c/c Brg's.  
ROADWAY: 49'-0" f/f curbs including 4'-0" median & 1'-9" safety curbs  
SKEW: 14° 32' Left forward  
DESIGN LOADING: CF-1000  
DATE BUILT:  
STRUCTURE FILE NO.:  
CONDITION: To be removed

**PROPOSED STRUCTURE**

TYPE: Continuous steel beams composite with reinforced concrete deck and substructure  
SPAN: 42.0', 60.0', 74.5', 52.0' c/c Brg's.  
ROADWAY: Width varies; 111.5' (±) Avg. f/f deflector parapets (BR-1), conc. barrier median.  
DESIGN LOADING: HS 20-44 (case II) and the alternate military loading  
SKEW: 26° 37' 11" Left forward  
WEARING SURFACE: Monolithic concrete  
APPROACH SLABS: AS-1-81, 25' long  
ALIGNMENT: Tangent  
SUPERELEVATION: Varies  
LATITUDE: N39°57'57" LONGITUDE: W83°01'16"  
STRUCTURE FILE NO.:

Earthwork limits shown are approximate.  
Actual slopes shall conform to plan cross-sections.

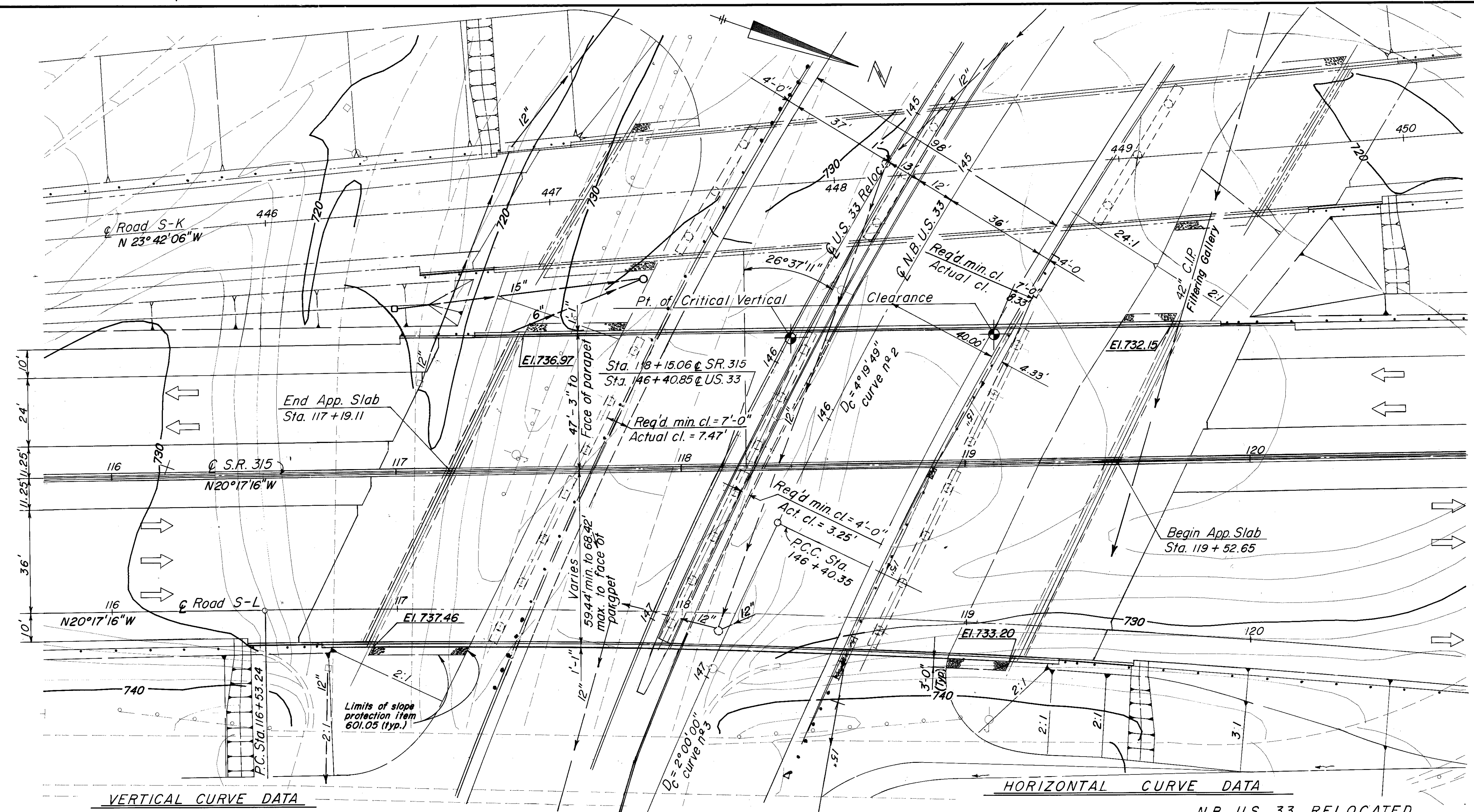
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**SITE PLAN**

BRIDGE NO. FRA-33-1542  
S.R. 315 OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

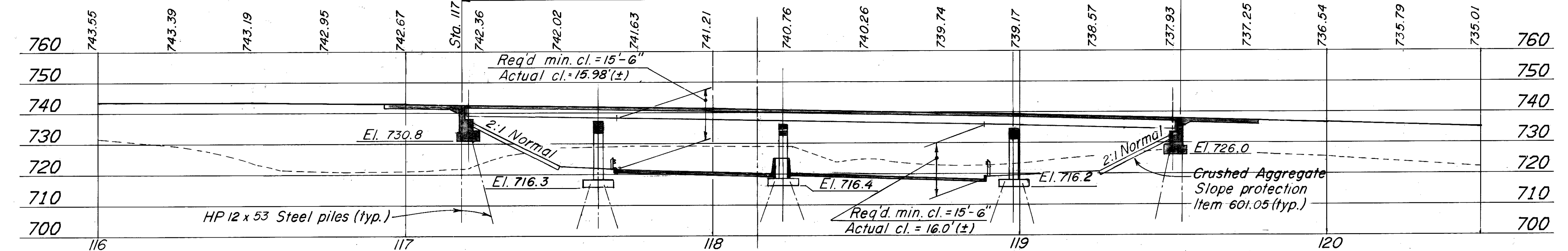
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
G.W.M.	G.W.M.	K.R.H.	MAP	G.W.M.	9/94	



U.S. 33 RELOC.		S.R. 315		Road S-L		U.S. 33 RELOCATED		CURVE No. 1		CURVE No. 2		CURVE No. 3	
P.V.I. Sta. 146+00	350' V.C.	P.V.I. Sta. 115+10.00	1350' V.C.	P.I. Sta. 119+02.81	$\Delta = 7^{\circ}28'35''$	P.I. Sta. 144+61.67	$\Delta = 37^{\circ}19'55''$	P.I. Sta. 141+35.91	$\Delta = 14^{\circ}30'03''$	P.I. Sta. 144+91.79	$\Delta = 12^{\circ}55'18''$	P.I. Sta. 148+88.71	$\Delta = 9^{\circ}54'34''$
Elev. = 718.37		Elev. = 757.14		$Dc = 1^{\circ}30'00''$	$R = 3819.719'$	$Dc = 4^{\circ}15'00''$	$R = 1348.136'$	$Dc = 3^{\circ}30'00''$	$R = 1637.022'$	$Dc = 4^{\circ}19'49''$	$R = 1323.136'$	$Dc = 2^{\circ}00'00''$	$R = 2864.789'$
Corr. = + 2.17		Corr. = - 13.30		$T = 249.57'$	$Lc = 498.43'$	$T = 455.42'$	$Lc = 878.39'$	$T = 208.27'$	$Lc = 414.31'$	$T = 149.84'$	$Lc = 298.40'$	$T = 248.35'$	$Lc = 495.47'$
EI. = 720.54		P.G. EI. = 743.84											
$G_1 = -3.00\%$ , $G_2 = +1.96\%$		$G_1 = 3.88\%$ , $G_2 = -4.00\%$											

**PLAN**

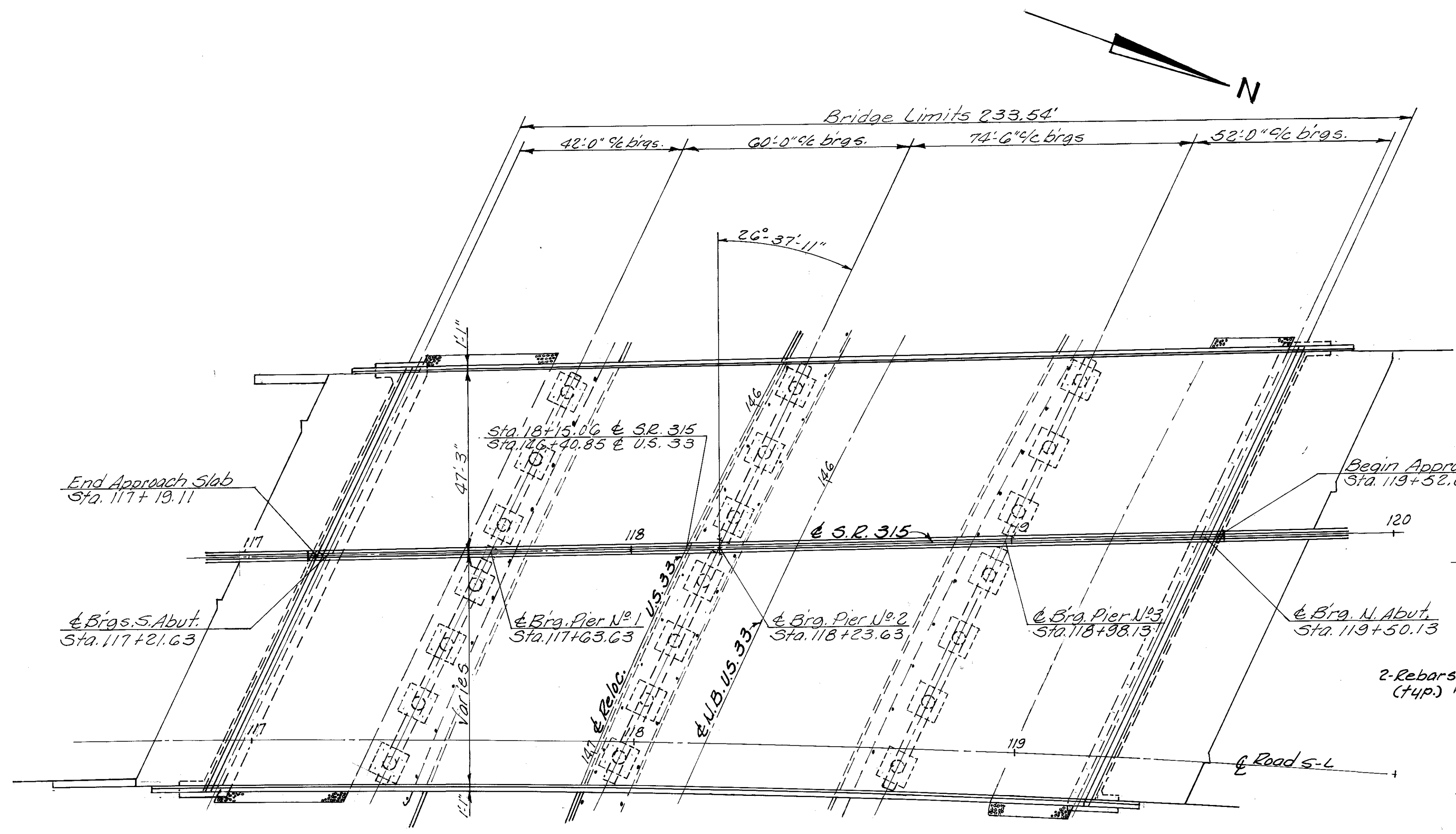
Bridge Limits = 233.54'



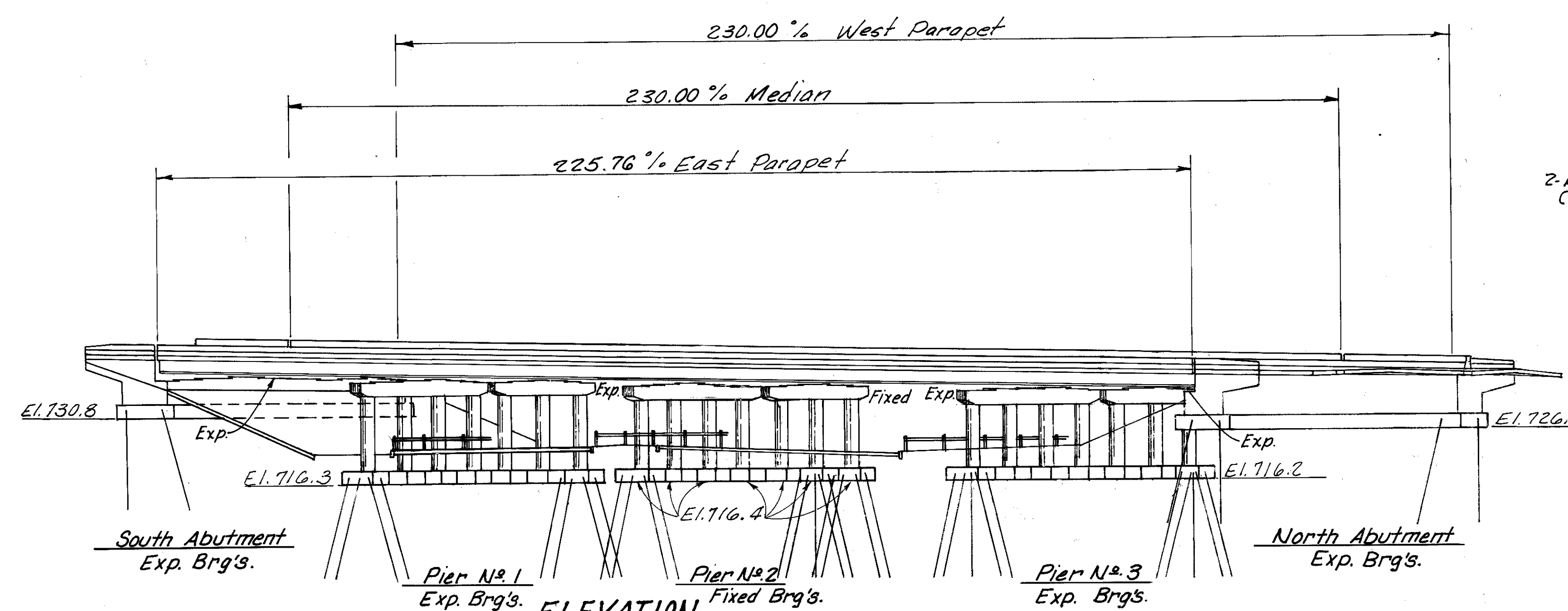
**PROFILE ALONG S.R. 315**

BS22001A





**GENERAL PLAN**



**ELEVATION**

open Jt.		230.00' % parapet							open Jt.	
SE5155	SE5156	SE5157	SE5158	SE5159	SE5156	SE5160				
2 spa. @ 4 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 11'4" 3 spa. @ 7'6"	5 spa. @ 7'6"	3 spa. @ 7'6"				
13'-10 1/2" = 27'-9"	30'-0" = 24'-9"	12'-4 1/2" = 24'-9"	6'-9" = 40'-6"	11'-10" = 35'-6"	7'-6" = 37'-6"	11'-4" = 34'-0"				
2-Rebars (4R)										
El. S. Abut.	El. Pier No. 1	El. Pier No. 2	El. Pier No. 3	El. N. Abut.						
42.0'	60.0'	74.5'	52.0'							
228.50' % abut's.										
<b>WEST PARAPET</b>										
open Jt.		230.00' % parapets							open Jt.	
SE5155	SE5156	SE5157	SE5158	SE5159	SE5156	SE5160				
2 spa. @ 4 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 11'4" 3 spa. @ 7'6"	5 spa. @ 7'6"	3 spa. @ 7'6"				
13'-10 1/2" = 27'-9"	30'-0" = 24'-9"	12'-4 1/2" = 24'-9"	6'-9" = 40'-6"	11'-10" = 35'-6"	7'-6" = 37'-6"	11'-4" = 34'-0"				
1-Rebar (4R)										
1-Rebars (4R)										
El. S. Abut.	El. Pier No. 1	El. Pier No. 2	El. Pier No. 3	El. N. Abut.						
42.0'	60.0'	74.5'	52.0'							
228.50' % abut's.										
<b>HALF-BARRIER MEDIAN</b>										
open Jt.		225.76'							open Jt.	
SE5155	SE5156	SE5159	SE5158	SE5160	SE5156	SE5161				
2 spa. @ 4 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 6 spa. @ 7'6"	2 spa. @ 11'4" 3 spa. @ 7'6"	5 spa. @ 7'6"	3 spa. @ 7'6"				
13'-10 1/2" = 27'-9"	30'-0" = 24'-9"	11'-10" = 40'-6"	11'-3" = 33'-9"	7'-6" = 37'-6"	10'-10 9/16" = 32'-7 1/8"					
2-Rebars (4R)										
El. S. Abut.	El. Pier No. 1	El. Pier No. 2	El. Pier No. 3	El. N. Abut.						
41.68'	58.84'	73.22'	50.52'							
224.26' % abut's.										
<b>EAST PARAPET</b>										

**DEFLECTION JOINT SPACING**

Note:  
For barrier median and parapet details see Transverse Section Sheet 16/24

2/24

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

**GENERAL PLAN**

BRIDGE NO. FRA - 33-1542  
S.R. 315 OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 117+19.11 TO  
STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	9/24/89	



**GENERAL BRIDGE NOTES**

STANDARD DRAWING REFERENCES			
DESCRIPTION	DWG. NO.	SHT.	DATE
APPROACH SLABS	AS-1-81	1-3	9-15-94 R
BRIDGE RAILING	BR-1		12-15-94 R
END CROSSFRAMES	GSD-1-96	1-3	2-12-97

SUPPLEMENTAL SPECIFICATION REFERENCES			
DESCRIPTION	ITEM	DATE	
FIELD PAINTING OF NEW STEEL, SYSTEM IZEU	816	3-3-95	
STRUCTURAL STEEL MEMBERS	863	9-9-97	

**DESIGN SPECIFICATIONS**  
 THIS STRUCTURE CONFORMS TO THE "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1983, INCLUDING THE 1984 THRU 1987 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

**DESIGN DATA**  
 DESIGN LOADING - HS20-44 CASE II AND THE ALTERNATE MILITARY LOADING.

**DESIGN STRENGTHS: DECK, PIER CAPS AND COLUMNS**  
 CONCRETE CLASS S - COMPRESSIVE STRENGTH 4500 P.S.I.  
 CONCRETE CLASS C - COMPRESSIVE STRENGTH 4000 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616, A617 - GRADE 60 - MINIMUM YIELD STRENGTH 60,000 P.S.I.  
 SPIRAL REINFORCEMENT MAY BE PLAIN BARS, ASTM A82 OR A615.

**DESIGN STRESSES, ALL OTHERS**  
 CONCRETE CLASS C - UNIT STRESS 1333 P.S.I.  
 REINFORCING STEEL - ASTM A615, A616 OR A617 - GRADE 60 - UNIT STRESS 24,000 P.S.I.  
 STRUCTURAL STEEL ASTM A572 - UNIT STRESS 27,000 P.S.I.

**DECK PROTECTION METHOD**  
 EPOXY COATED REINFORCING STEEL, ALL REINFORCING. MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK. SEALING TREATMENT ON BRIDGE FASCIA.

**ITEM SPECIAL, SEALING OF CONCRETE SURFACES**  
 A CONCRETE SEALER SHALL BE APPLIED TO THE CONCRETE FASCIA FOR THE FULL LENGTH OF THE SURFACES SHOWN ON SHEET 117/161. SEE THE PROPOSAL FOR SURFACE PREPARATION REQUIREMENTS, APPLICATION RATES, MATERIAL REQUIREMENTS AND APPLICATION PROCEDURES.

**REMOVAL OF EXISTING STRUCTURE**  
 WHEN NO LONGER NEEDED TO MAINTAIN TRAFFIC THE EXISTING STRUCTURE SHALL BE REMOVED. SUITABLE WASTE MASONRY MAY BE PLACED AS SLOPE PROTECTION AS DIRECTED BY THE ENGINEER.

**PILE DESIGN LOADS**  
 THE DESIGN LOAD FOR THE ABUTMENT PILES IS 50 TONS PER PILE AND THE DESIGN LOAD FOR THE PIER PILES IS 57 TONS PER PILE FOR PIER 1, 55 TONS PER PILE FOR PIER 2, AND 53 TONS PER PILE FOR PIER 3.

**ITEM 514 - FIELD PAINTING OF NEW STRUCTURAL STEEL**  
 FIELD PAINTING OF NEW STRUCTURAL STEEL, SYSTEM IZEU, AS PER PLAN. MATERIALS USED FOR THIS ITEM SHALL BE MANUFACTURED BY THE SAME COMPANY THAT MANUFACTURED THE SHOP PRIME PAINT SO THAT COMPATIBILITY OF COATS IS INSURED.

**ITEM 506 - STATIC LOAD TEST**  
 THE CONTRACTOR SHALL CONDUCT A STATIC LOAD TEST ON A PILE LOCATED IN OR NEAR A PIER FOOTING.

**PILE DRIVING CONSTRAINTS**  
 PRIOR TO DRIVING PILES AT THE PROPOSED ABUTMENTS AND PIER NO.1, THE SPILL-THRU SLOPE EMBANKMENT AT THE ABUTMENTS SHALL BE CONSTRUCTED TO THE LEVEL OF THE SUBGRADE FOR A MINIMUM DISTANCE OF 200 FEET BACK OF BOTH ABUTMENTS. AFTER THE EMBANKMENT HAS BEEN COMPLETED WITHIN THE ABOVE REQUIRED LIMITS, A 60 DAY WAITING PERIOD IS REQUIRED PRIOR TO EXCAVATING AND DRIVING PILES AT THE ABUTMENTS. THE DIRECTOR MAY SHORTEN THE WAITING PERIOD IF THE CONTRACTOR'S FIELD MEASUREMENTS INDICATE THAT 90 PERCENT CONSOLIDATION HAS BEEN ATTAINED.

**PILE HAMMER**  
 THE PILE HAMMER USED TO INSTALL THE STEEL "H" BEARING PILES SHALL HAVE A STATE'S ENERGY RATING OF NOT LESS THAN 16,500 FOOT-POUNDS. THIS REQUIREMENT DOES NOT RELIEVE THE CONTRACTOR FROM 108.05 WHICH STATES THAT THE CONTRACTOR IS TO PROVIDE SUFFICIENT EQUIPMENT FOR PROSECUTING THE REQUIRED WORK. REFER TO "ODOT'S MANUAL OF PROCEDURES FOR STRUCTURES" TO OBTAIN THE STATE'S ENERGY RATING.

**PILE POINTS**  
 STEEL PILE POINTS SHALL BE USED TO PROTECT THE TIPS OF THE PROPOSED PILING. THE STEEL POINTS SHALL BE FURNISHED BY ASSOCIATED PILE AND FITTING CORPORATION, 262 RUTHERFORD BOULEVARD, CLIFTON, NEW JERSEY 07014; INTERNATIONAL CONSTRUCTION EQUIPMENT, INC., 501 WAREHOUSE DRIVE, MATTHEWS, NORTH CAROLINA 28015; DOUGHERTY FOUNDATION PRODUCTS, 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.

**UTILITY LINES**  
 ALL EXPENSE INVOLVED IN RELOCATING AND INSTALLING THE AFFECTED UTILITY LINES SHALL BE BORNE BY THE OWNER(S). THE CONTRACTOR AND OWNERS ARE REQUESTED TO COOPERATE BY ARRANGING THEIR WORK IN SUCH A MANNER THAT INCONVENIENCE TO EITHER WOULD BE HELD TO A MINIMUM.

**ITEM 507 - STEEL PILES, HP12X53, AS PER PLAN**  
 AT THE OPTION OF THE CONTRACTOR, HE MAY SELECT OIL FIELD CASING PIPE PILES TO SUPPORT THE ABUTMENTS AND PIERS IN LIEU OF STEEL PILES (HP12X53) SHOWN IN THE PLANS. THIS OPTIONAL PILE TYPE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

1. THE PILE TYPE SHALL BE NEW SEAMLESS NORMALIZED LIMITED SERVICE OIL COUNTRY PIPE.
  2. THE MINIMUM OUTSIDE DIAMETER OF THE PIPE IS 9 5/8" AND THE MINIMUM WALL THICKNESS IS 0.5 INCHES.
  3. THE MINIMUM YIELD STRENGTH IS 65,000 P.S.I.
- THE ROUND OIL FIELD CASING PIPE PILES SHALL BE DRIVEN OPEN ENDED, AND ANY VOID SPACE SHALL BE FILLED WITH SAND. WHEN ADDITIONAL PILE LENGTH IS REQUIRED AND A PILE SPLICE IS APPROPRIATE, THE OIL COUNTRY PIPE PILE SHALL BE SPLICED UTILIZING A BUTT WELD IN ACCORDANCE WITH 513.17 AND ALL APPLICABLE REQUIREMENTS IN 507. WELDS SHALL BE COMPLETE PENETRATION GROOVE WELDS, 45 DEGREE SINGLE BEVEL IN HORIZONTAL POSITION (WELDER QUALIFICATION POSITION 2G) AND 45 DEGREE SINGLE VEE IN FLAT POSITION, (WELDER QUALIFICATION 1G) USING A BACKUP BAR OF THE SAME MATERIAL AS THE PILE. THE SURFACE OF THE PARTS BEING WELDED, WITHIN 3 INCHES LATERALLY AND IN ADVANCE OF THE WELDING, SHALL BE PREHEATED TO A MINIMUM TEMPERATURE OF 500 DEGREE F, AND THIS TEMPERATURE WILL BE MAINTAINED DURING WELDING. WELDING WILL NOT BE PERMITTED WHEN THE AMBIENT TEMPERATURE IS BELOW 0 DEGREE F. IN INCLEMENT OR WINDY WEATHER SUITABLE SHIELDING MUST BE PROVIDED. THE ESTIMATED AVERAGE PAY LENGTH FOR THE OIL COUNTRY PIPE PILE CAN BE FIVE FEET LESS THAN THAT PROVIDED FOR THE STEEL "H" PILES.

**COMMON DETAILS REFERENCES**  
 STRIP SEAL EXPANSION JOINTS SHEETS 312-314  
 EXPANSION AND CONTRACTION JOINTS SHEET 311  
 P.V.C. WATERSTOP SHEET 311

**ITEM 509 - EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN**

THE REINFORCING STEEL LIST BAR MARKS FOR THIS STRUCTURE INDICATE SOME REGULAR AND SOME EPOXY COATED REINFORCING STEEL ARE REQUIRED, BUT IT IS INTENDED THAT ALL REINFORCING STEEL REQUIRED FOR THIS STRUCTURE BE EPOXY COATED. THEREFORE, DURING THE SHOP DRAWING PREPARATION FOR THE REINFORCING STEEL, THE CONTRACTOR AND FABRICATOR SHALL MAKE THE NECESSARY REVISIONS TO PROVIDE ALL EPOXY COATED REINFORCING STEEL. PARTICULAR CARE SHALL BE TAKEN TO ADJUST THE BAR SPLICE AND LAP LENGTHS WHERE AND AS NECESSARY TO MEET THE CURRENT AASHTO CRITERIA FOR EPOXY COATED REINFORCING STEEL. COST OF THE ADDITIONAL WORK TO BE INCLUDED IN THE PRICE BID FOR ITEM 509, EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN.

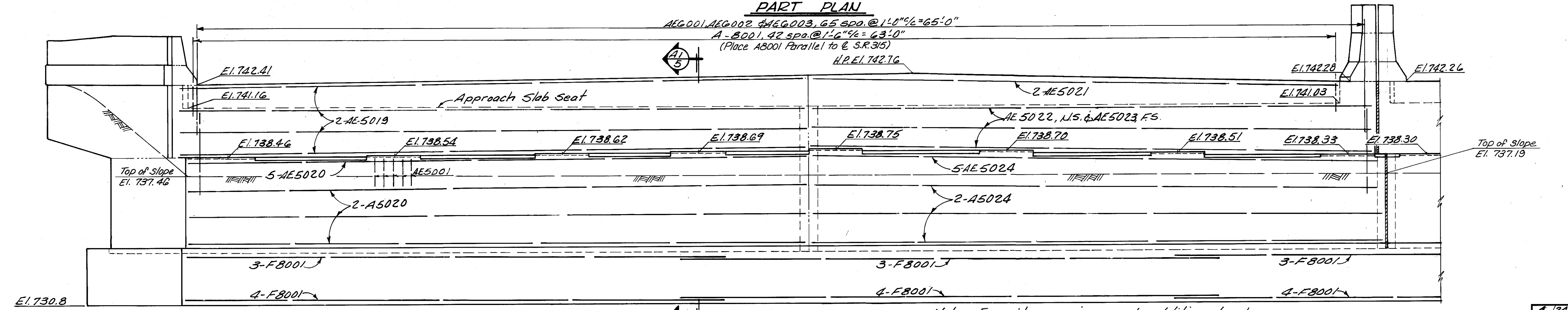
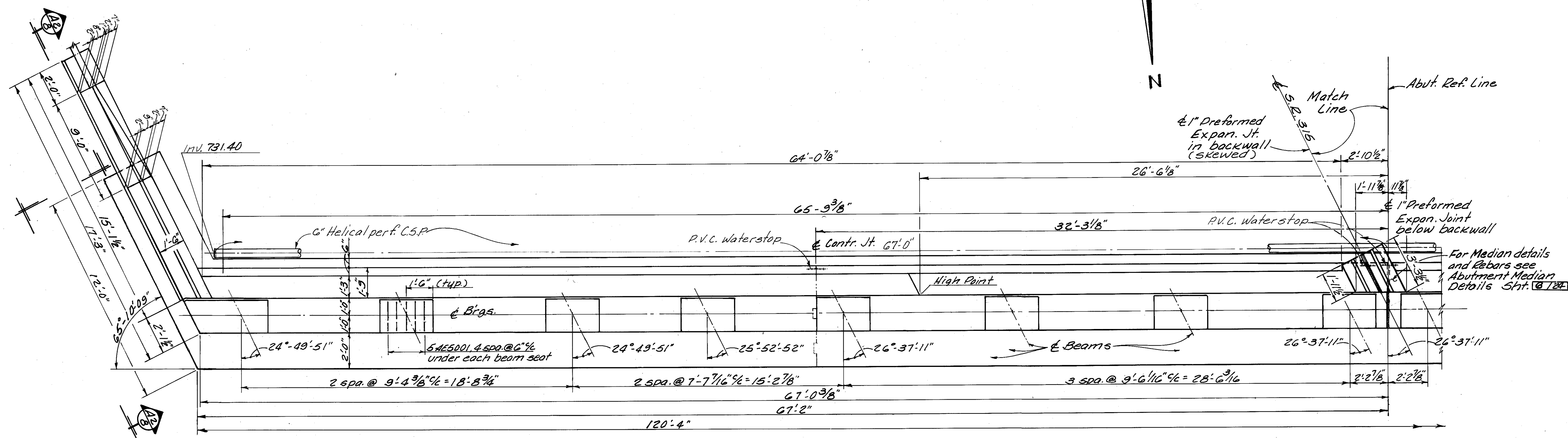
**ESTIMATED QUANTITIES**

ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	N. ABUT.	S. ABUT.	PIERS	SUPER.	GENERAL
503	11100	LUMP	SUM	COFFERDAMS, CRIBS AND SHEETING					LUMP
⊙ 503	21100	639	C.Y.	UNCLASSIFIED EXCAVATION	337	302			
505	11100	LUMP	SUM	PILE DRIVING EQUIPMENT MOBILIZATION					LUMP
506	11100	LUMP	SUM	STATIC LOAD TEST					LUMP
⊙ 507	14401	3020	L.F.	STEEL PILES, HP12 X 53, AS PER PLAN	1400	1620			
⊙ 507	93300	55	EA.	STEEL POINT (OR SHOE)	28	27			
⊙ 509	15841	268 775	LB.	EPOXY COATED REINFORCING STEEL, GRADE 60, AS PER PLAN	17683	15511		235581	
511	31502	793	C.Y.	CLASS S CONCRETE, SUPERSTRUCTURE				793	
511	44100	246	C.Y.	CLASS C CONCRETE, ABUTMENTS NOT INCLUDING FOOTINGS	129	117			
⊙ 511	46500	197	C.Y.	CLASS C CONCRETE, FOOTINGS	102	95			
SPECIAL	51267500	920	S.Y.	SEALING OF CONCRETE SURFACES (SEE PROPOSAL NOTE)	30	30		860	
SPECIAL	51267502	205	S.Y.	SEALING OF CONCRETE SURFACES, EPOXY (SEE PROPOSAL NOTE)	43	40	122		
SPECIAL	51267504	727	S.Y.	SEALING OF CONCRETE SURFACES, NON-EPOXY (SEE PROPOSAL NOTE)			727		
816	00610	513,700	LB.	FIELD PAINTING OF NEW STEEL, SYSTEM IZEU				513,700	
516	11210	252	L.F.	STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEAL	131	121			
516	13600	47	S.F.	1 INCH PREFORMED EXPANSION JOINT FILLER	24	23			
516	30501	56	L.F.	P.V.C. WATERSTOP, AS PER PLAN	31	25			
516	44100	14	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (14 1/2" X 14 1/2" X 11/16", NEOPRENE) AND LOAD PLATE (20 1/2" X 16 1/2" X 2" TO 2 5/16")			14		
516	44200	14	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (11" X 11" X 1 25/32", NEOPRENE) AND LOAD PLATE (14" X 13" X 1 1/2" TO 1 11/16")		14			
516	44200	14	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (16" X 16" X 1 9/16", NEOPRENE) AND LOAD PLATE (18" X 18" X 2" TO 2 1/4")			14		
516	44200	14	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (16" X 16" X 1 9/16", NEOPRENE) AND LOAD PLATE (18" X 18" X 2" TO 2 3/8")			14		
516	44200	14	EA.	ELASTOMERIC BEARING WITH INTERNAL LAMINATES (11" X 11" X 1 25/32", NEOPRENE) AND LOAD PLATE (14" X 13" X 1 1/2" TO 1 13/16")	14				
518	21200	113	C.Y.	POROUS BACKFILL, WITH FILTER FABRIC	58	55			
518	41100	243	L.F.	6" PERFORATED, HELICAL CORRUGATED STEEL PIPE, 707.01	126	117			
518	41200	68	L.F.	6" NON-PERFORATED, CORRUGATED STEEL PIPE, INCLUDING SPECIALS, 707.01	16	52			
523	11100	6	HOUR	DYNAMIC LOAD TEST					6
601	20000	764	C.Y.	CRUSHED AGGREGATE SLOPE PROTECTION	333	431			
625				SEE SHEET 207 FOR LIGHTING SUMMARY					
863	10060	LUMP	SUM	STRUCTURAL STEEL MEMBERS, LEVEL THREE (3) FABRICATION				LUMP	
863	20000	10,626	EA.	WELDED STUD SHEAR CONNECTOR				10,626	

\* HELICAL

⊙ IN ORDER TO AVOID POTENTIAL COORDINATION PROBLEMS AND CONSTRUCTION DELAYS, IT HAS BECOME NECESSARY TO CONSTRUCT PIERS 1, 2 AND 3 OF BRIDGE NO. FRA-33-1542 (S.R. 315 OVER U.S. 33) WITH PROJECT 713-97 (FRA-33-14.65-PT.I; FRA-33-15.52-PT.II). ALL DETAILS AND REFERENCES IN THE PLANS FOR PIERS CONSTRUCTED UNDER PROJECT 713-97 SHALL BE IGNORED. THE QUANTITIES FOR THESE BID ITEMS HAVE BEEN REVISED TO REFLECT THIS.

<b>STILSON &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND						
<b>ESTIMATED QUANTITIES AND GENERAL NOTES</b> BRIDGE NO. FRA-33-1542 S.R.315 OVER U.S.33 RELOCATED						
FRANKLIN COUNTY						STA. 117+19.11 TO STA. 119+52.65
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	GV		MAP	GWM	5-24-89	



Note: For pile spacing and additional rebars see Foundation Plans Sheet 9/24

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WIRTON

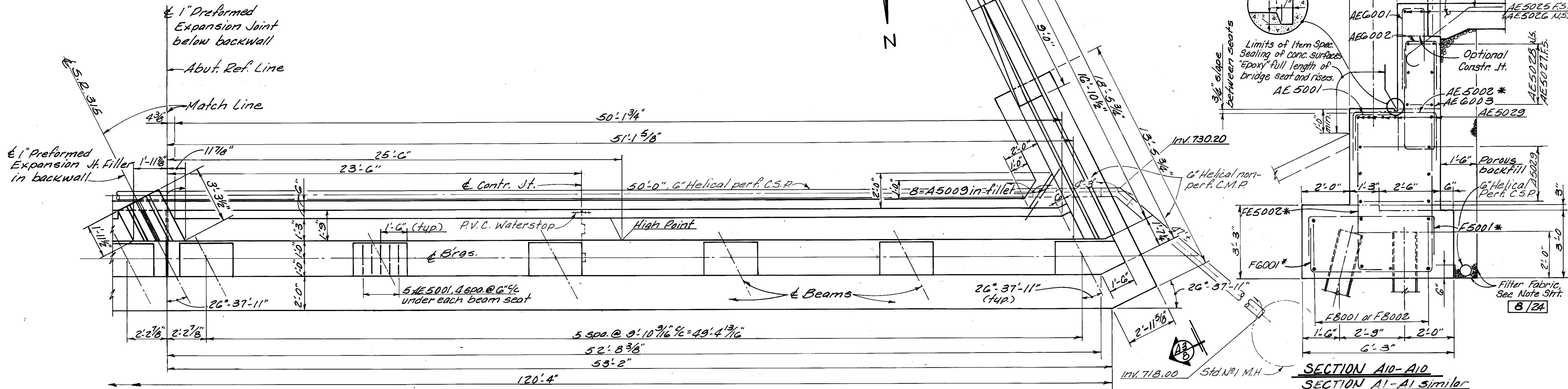
**SOUTH ABUTMENT DETAILS**

BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED

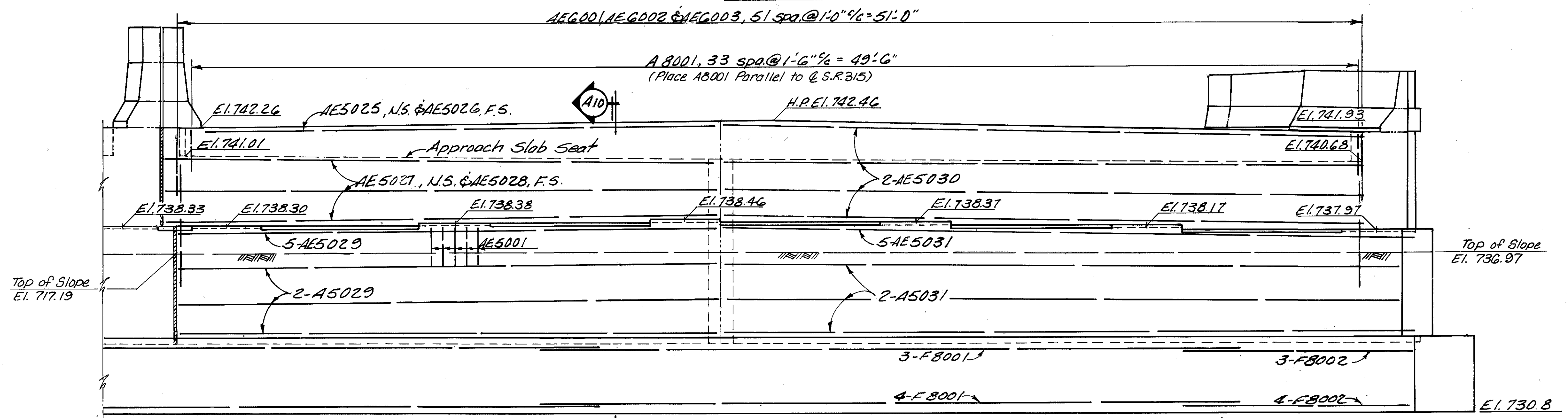
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	5/18/89	





**PART PLAN**



**ELEVATION**

**SECTION A10-A10**  
**SECTION A1-A1 similar**

**NOTES:**

In reinforcing bar callouts:  
N.S. indicates near side.  
F.S. indicates far side.

Elevations shown thus are pavement elevations at the face of backwall and the point indicated.

Porous Backwall 1.5 ft. thick shall extend up to the plane of the subgrade and laterally to the ends of the wing walls.

6" Helical Perforated C.S.P. shall have all ends capped.  
6" Helical non-perforated C.S.P. shall extend into crushed aggregate or into a manhole.

For details of expansion and contraction joint see "Common Detail Sheet" 1/1.

Concrete and reinforcing steel for parapets is included for payment with Item 511 concrete and 509 Reinforcing Steel.

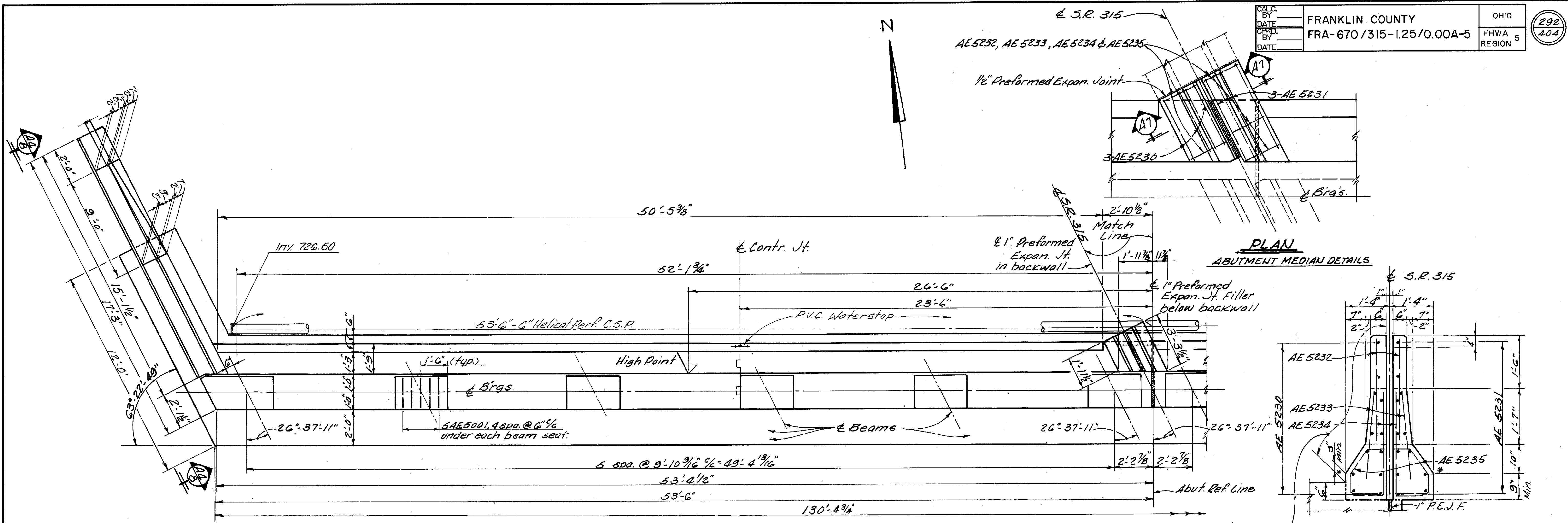
A joint shall be provided in the abutment portion of the end dam at expansion and contraction joint.

Note: For pile spacing and additional \* rebars see Foundation Plans, Sheet 3/24

**BACKWALL CONCRETE:** In addition to the provisions of 511.08, backwall concrete shall not be placed until after the concrete in the span adjacent to the backwall has been placed.

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON						
<b>SOUTH ABUTMENT DETAILS</b>						
BRIDGE NO. FRA - 33 - 1542 S.R. 315 OVER U.S. 33 RELOCATED						
FRANKLIN COUNTY STA. 117 + 19.11 TO STA. 119 + 52.65						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
DEM	R.T.	MAP	G.W.M.		5/24/89	

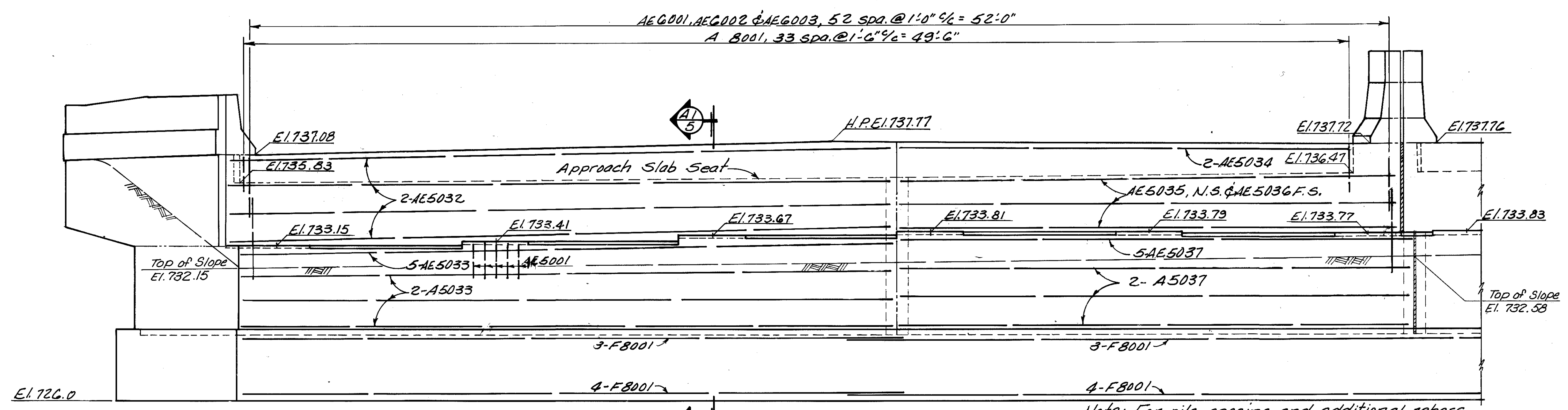




**PART PLAN**

Limits of Item Spec., Sealing of Conc. Surfaces Full length (typ.)  
 \*Top of curb shall be the same elevation

**SECTION A1-A1**



**ELEVATION**

Note: For pile spacing and additional rebar see Foundation Plans Sheet 10/24

6/24

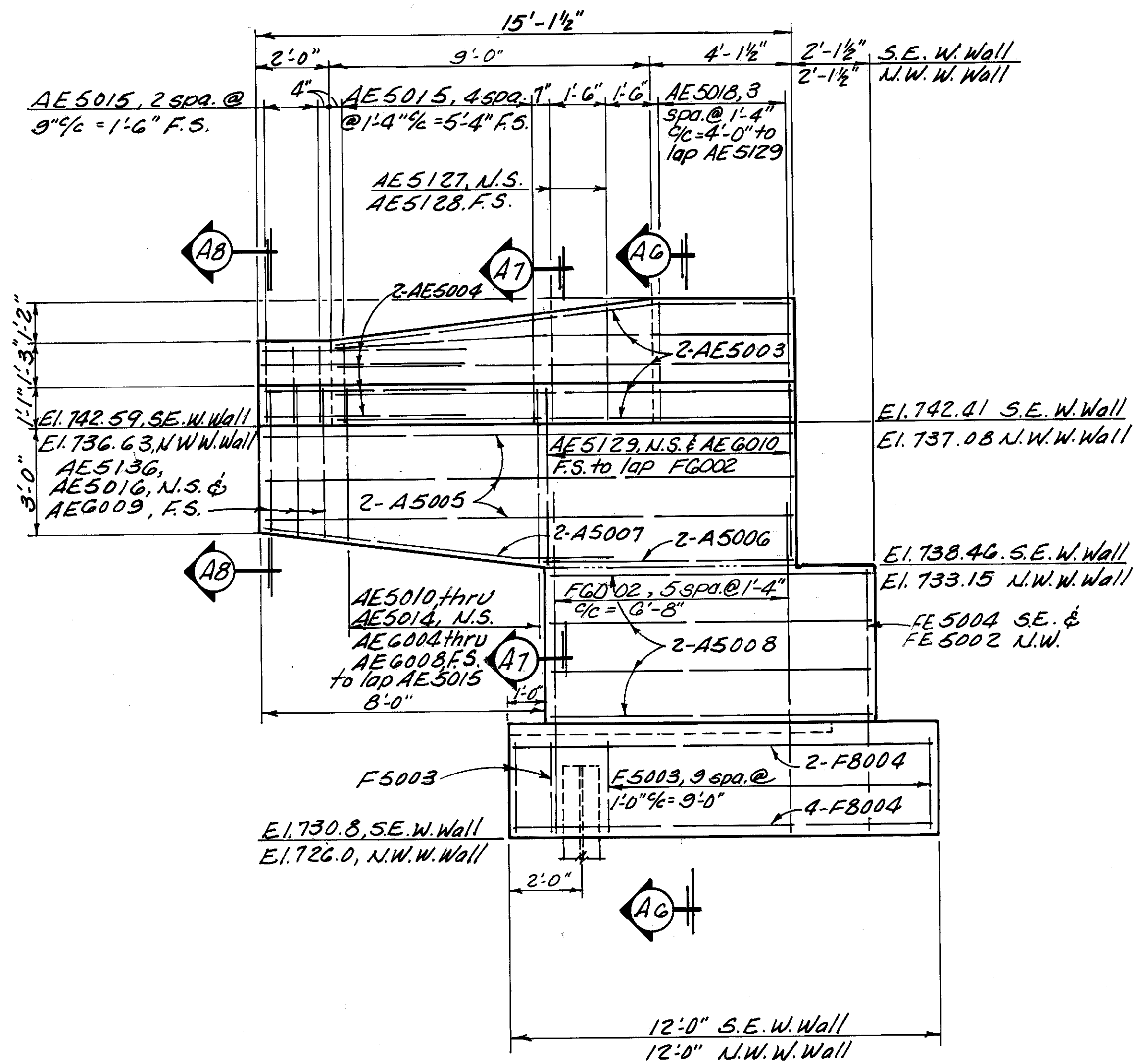
ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**NORTH ABUTMENT DETAILS**  
 BRIDGE NO. FRA - 33-1542  
 S.R. 315 OVER U.S. 33 RELOCATED

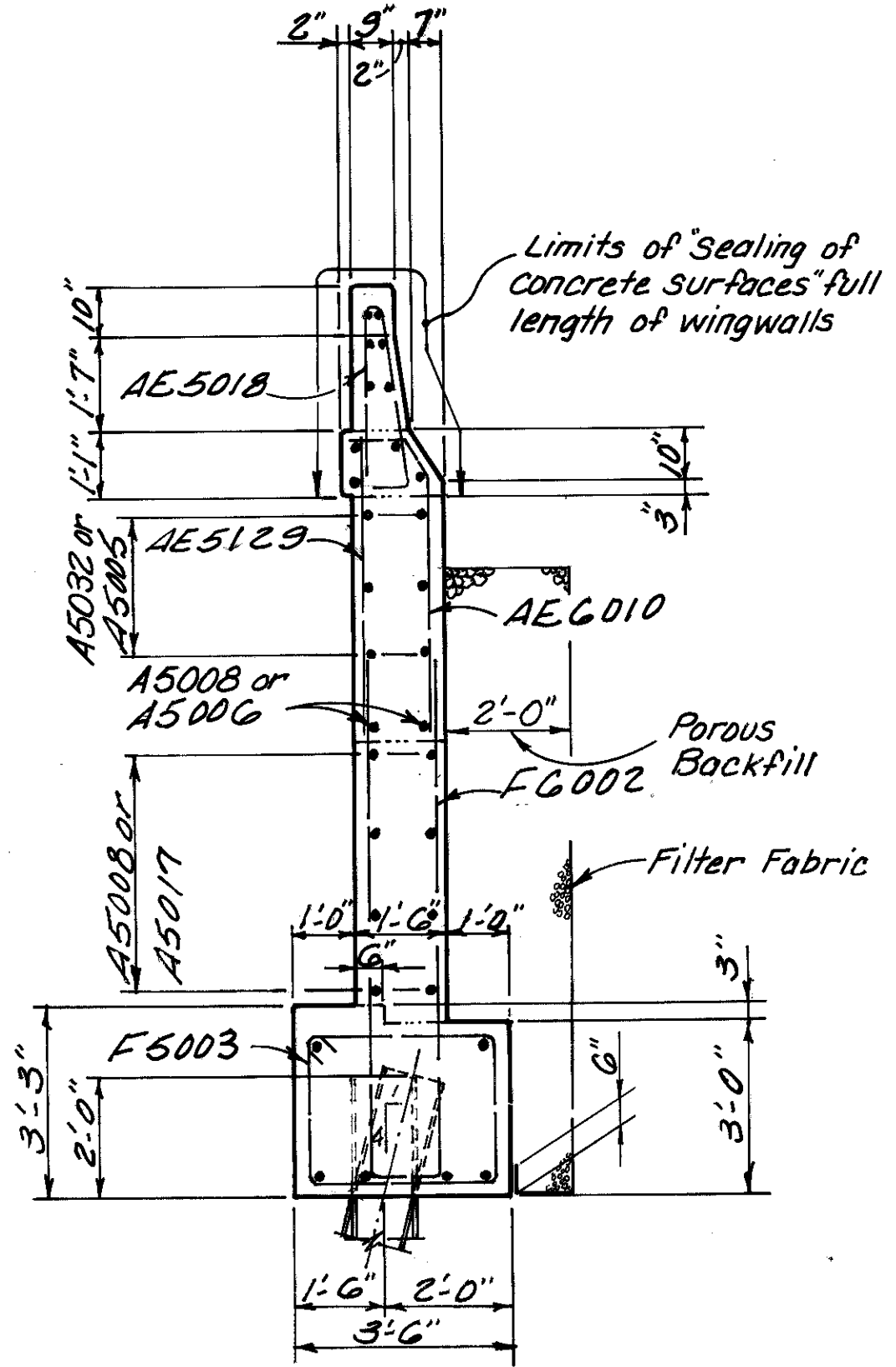
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	5/24/89	



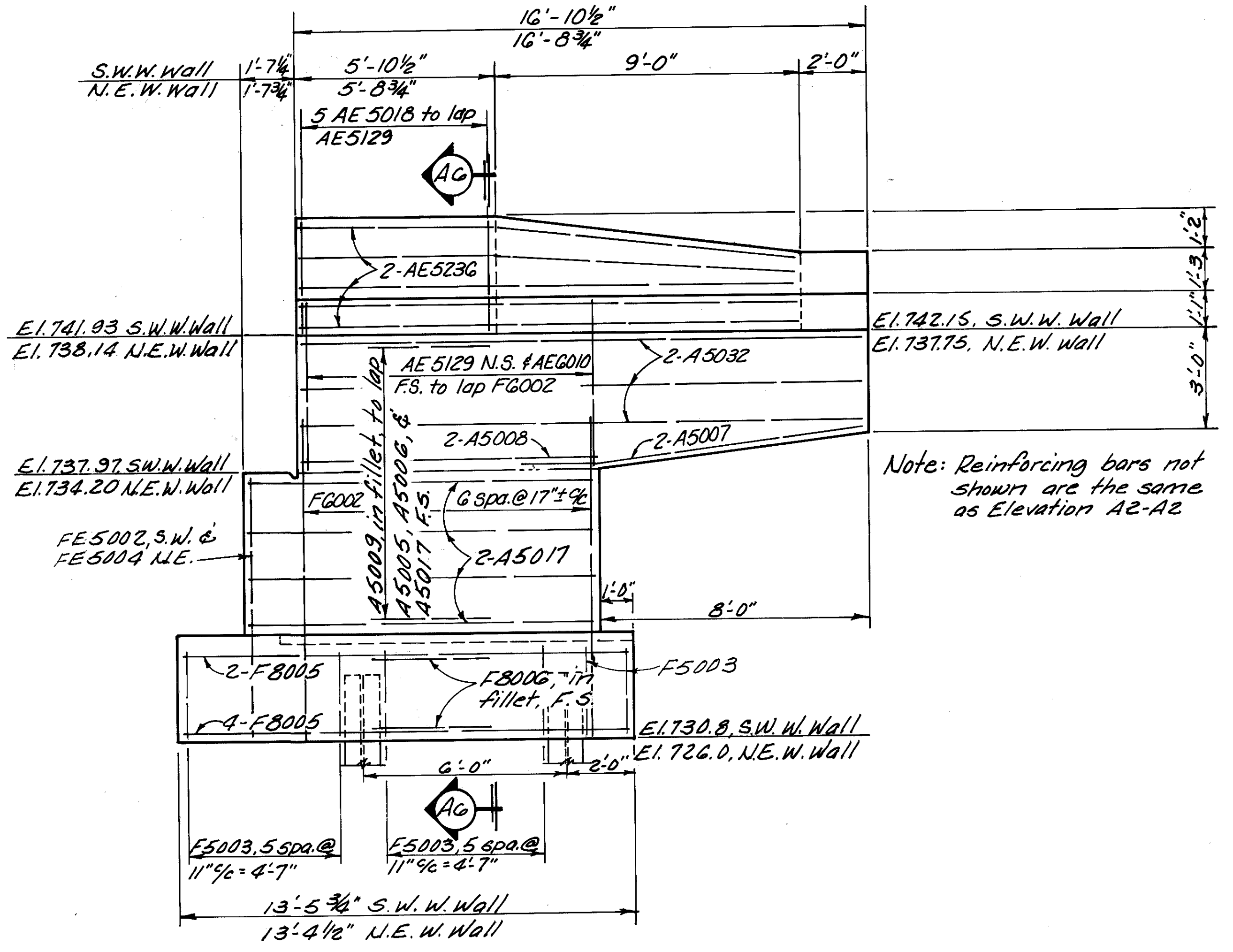


ELEVATION A2-A2 & A4-A4



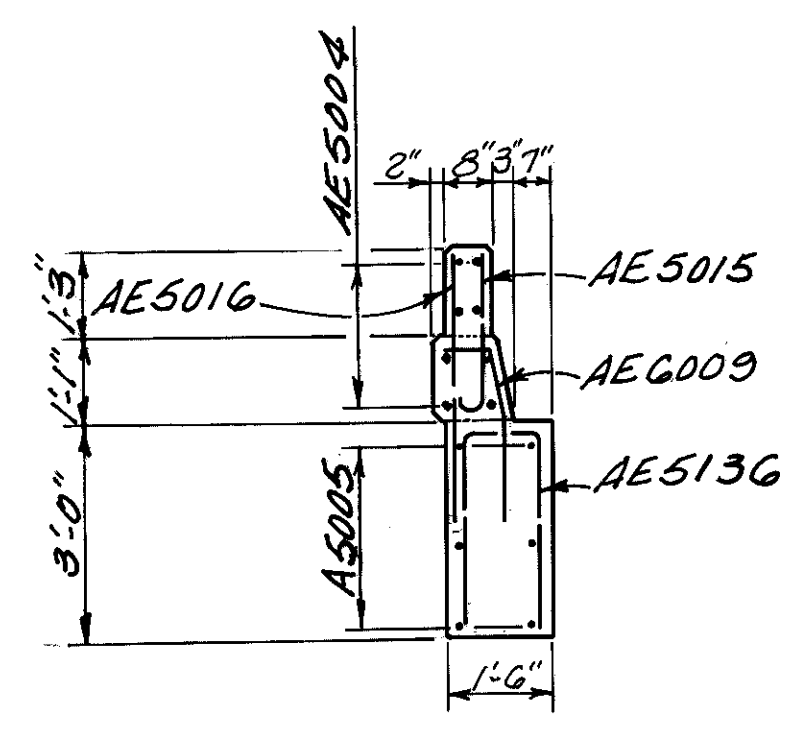
SECTION AG-AG

NOTE: Filter fabric shall be placed between the porous backfill and the approach fill and below the porous backfill as shown. The fabric shall conform to 712.09 type A, B, or C and shall be included with the porous backfill for payment.

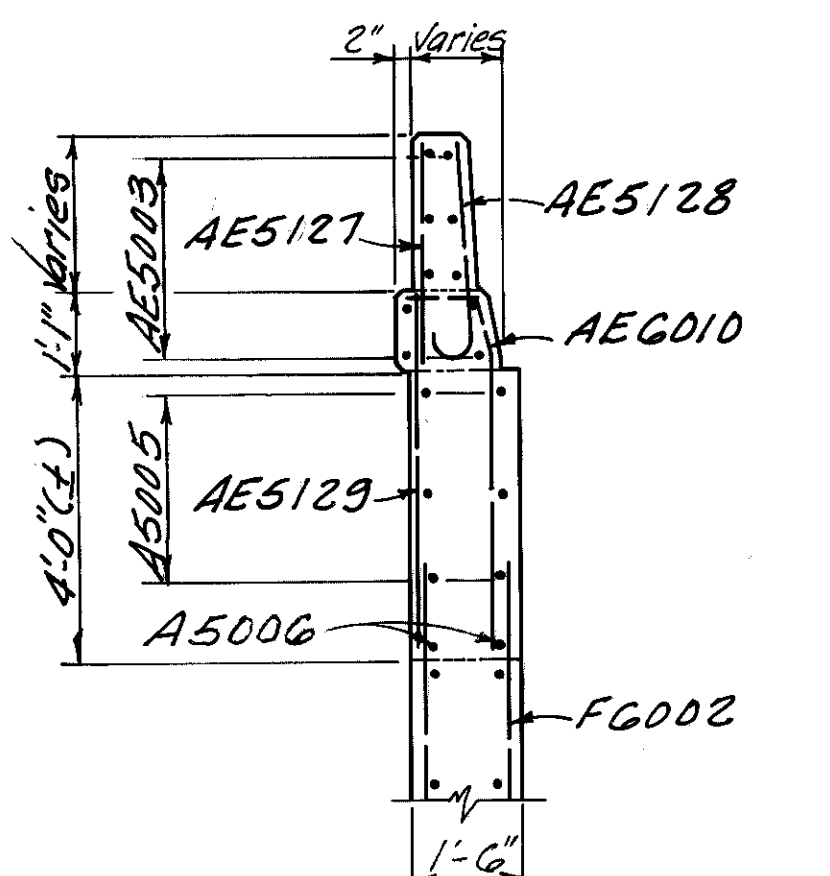


ELEVATION A3-A3 & A5-A5

Note: Reinforcing bars not shown are the same as Elevation A2-A2



SECTION AB-AB



SECTION A7-A7

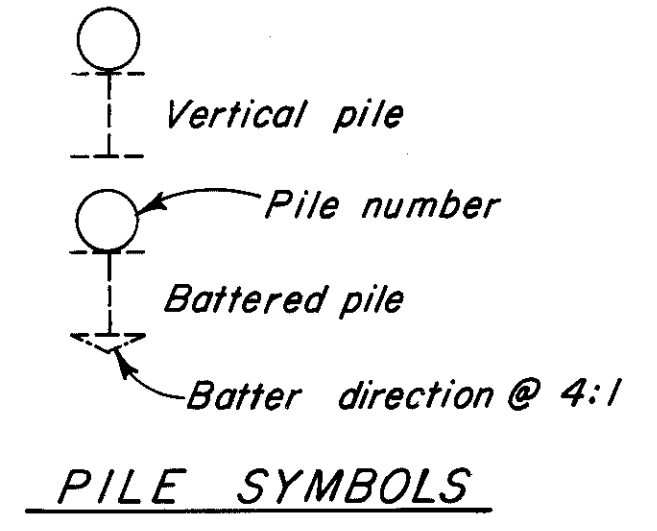
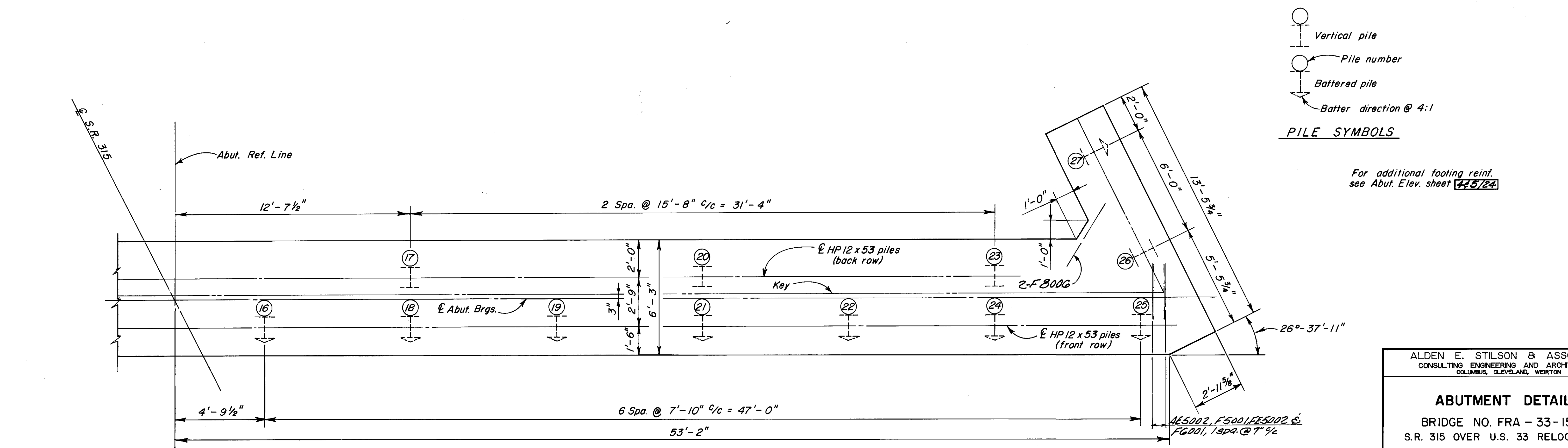
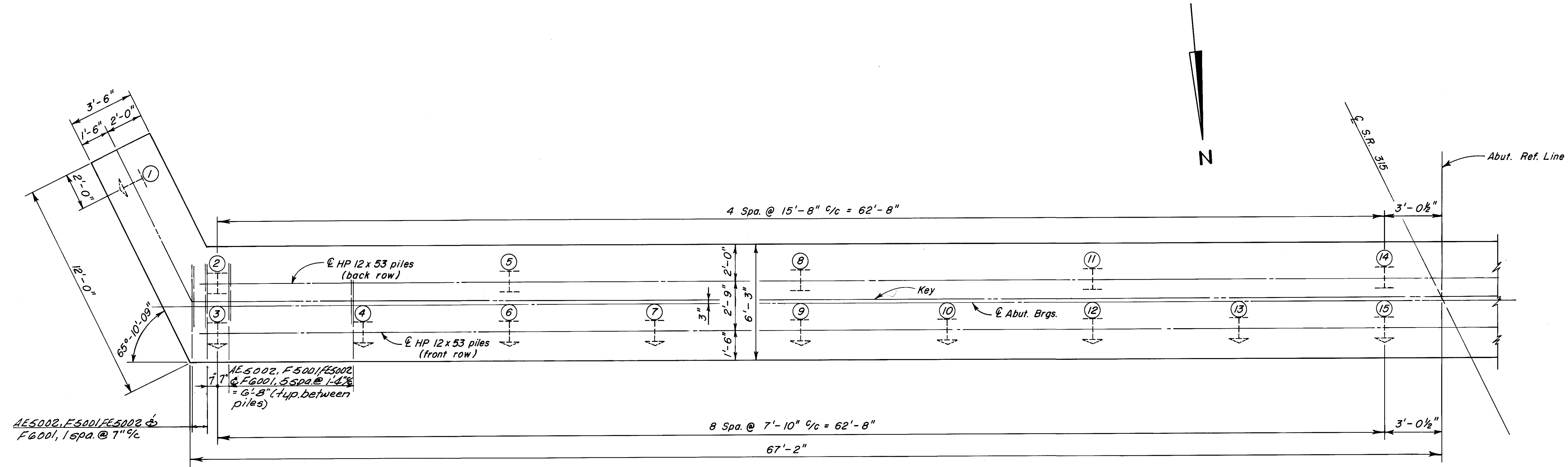
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERS AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

**ABUTMENT DETAILS**

BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	5/24/89	





For additional footing reinf. see Abut. Elev. sheet **445/24**

**SOUTH ABUTMENT  
FOUNDATION PLAN**

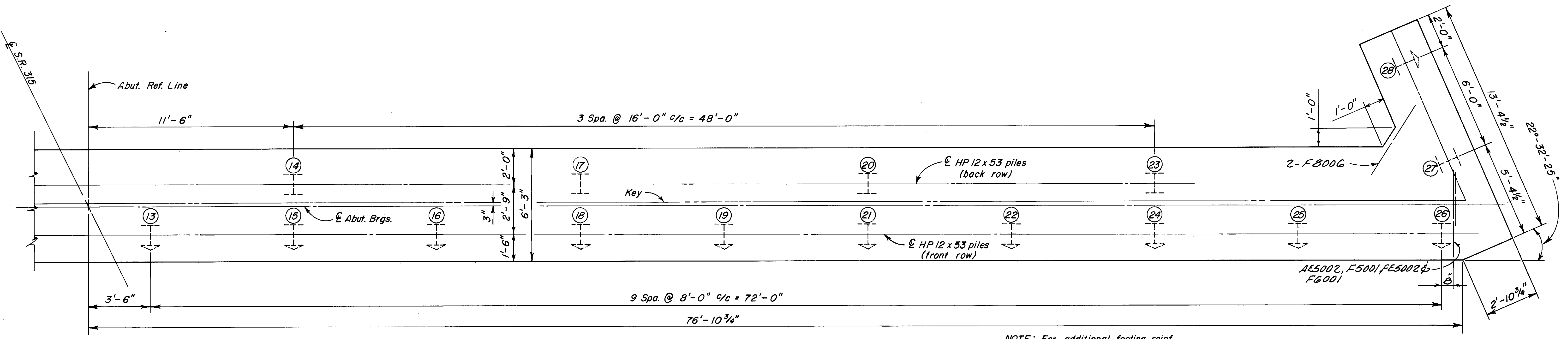
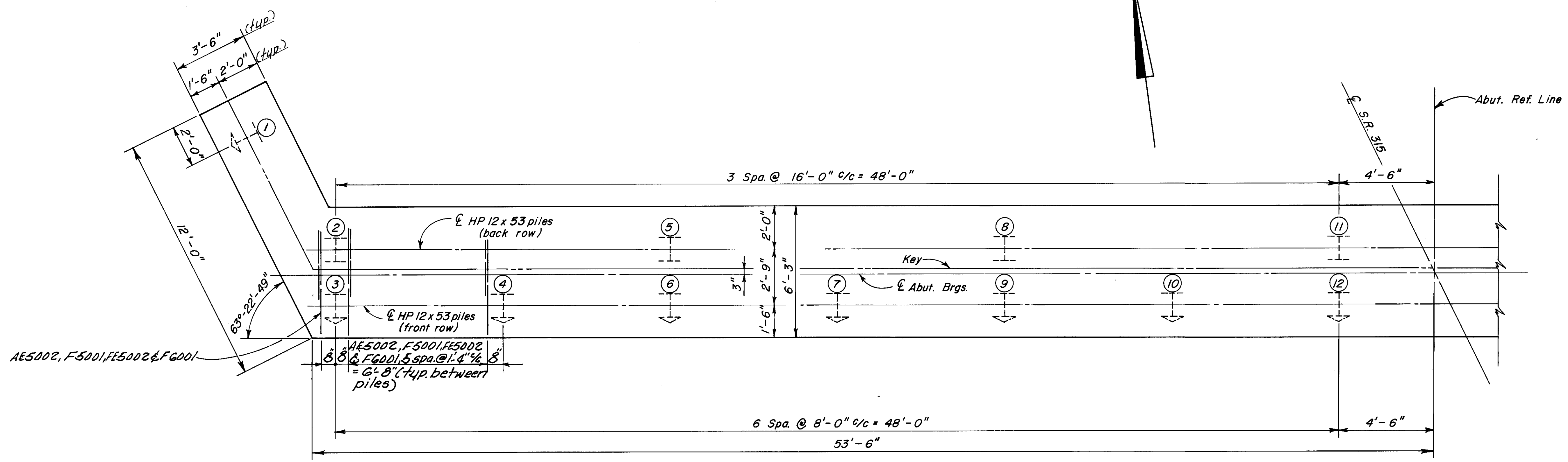
**9/24**

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COLUMBUS, CLEVELAND, WEIRTON

**ABUTMENT DETAILS**

BRIDGE NO. FRA - 33-1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/89	



NOTE: For additional footing reinf. see Abut. Elev. sheet **647/24**

NORTH ABUTMENT  
FOUNDATION PLAN

10/24

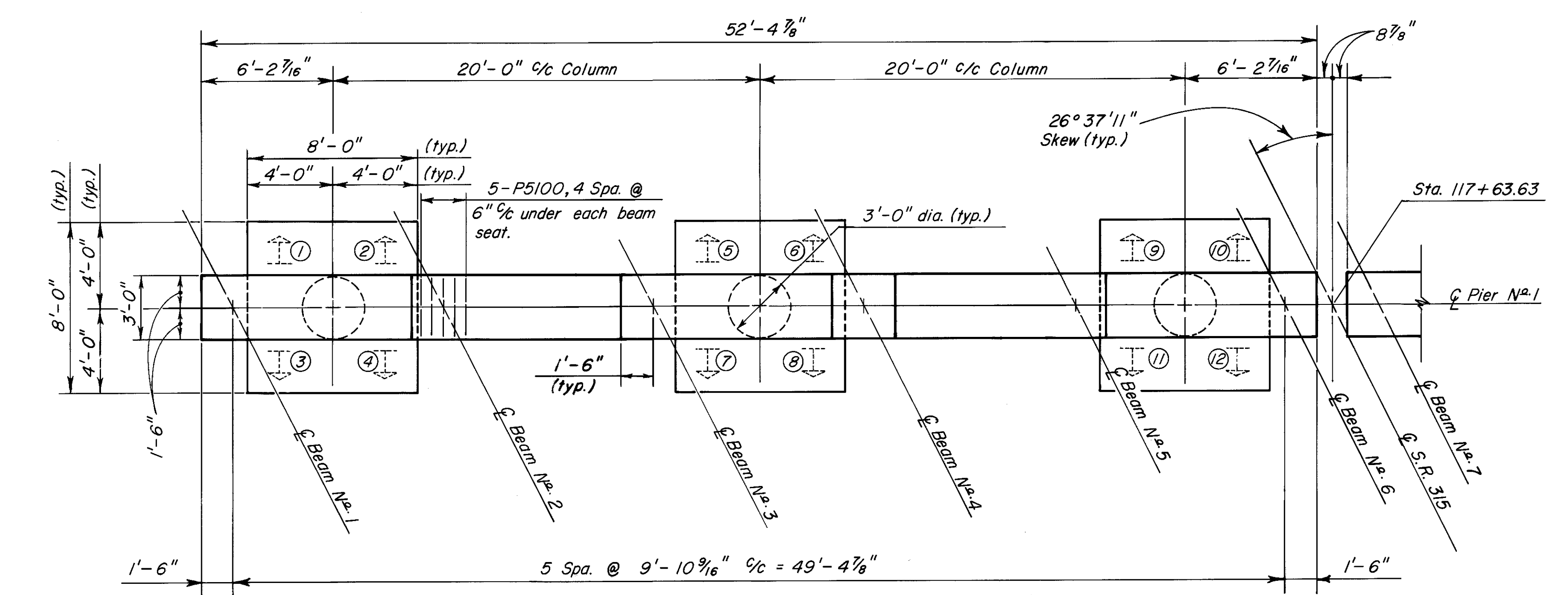
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

**ABUTMENT DETAILS**

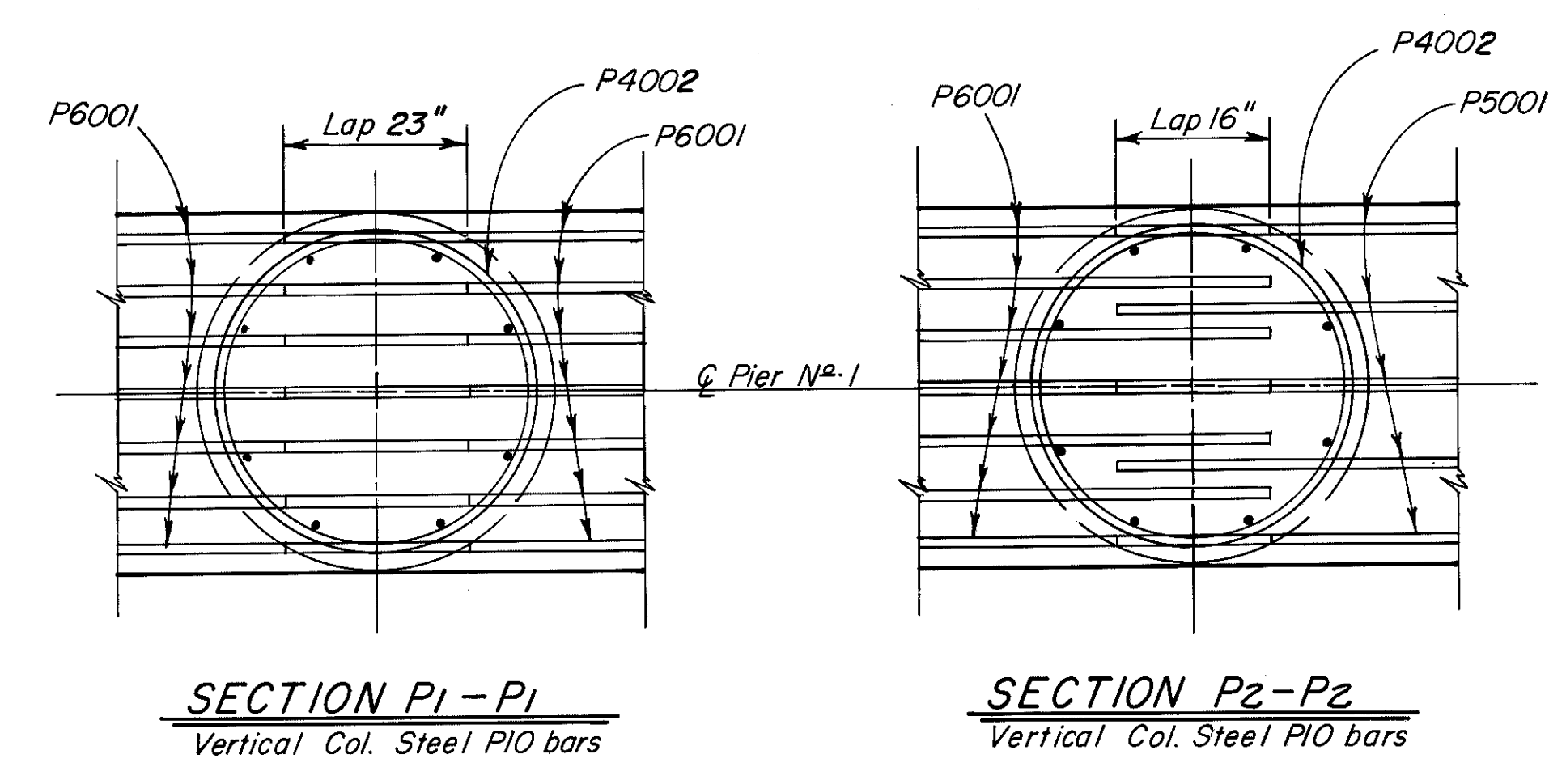
BRIDGE NO. FRA - 33-1542  
S.R. 315 OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISD
DEM	KRH		MAP	G.W.M.	10/24/89	

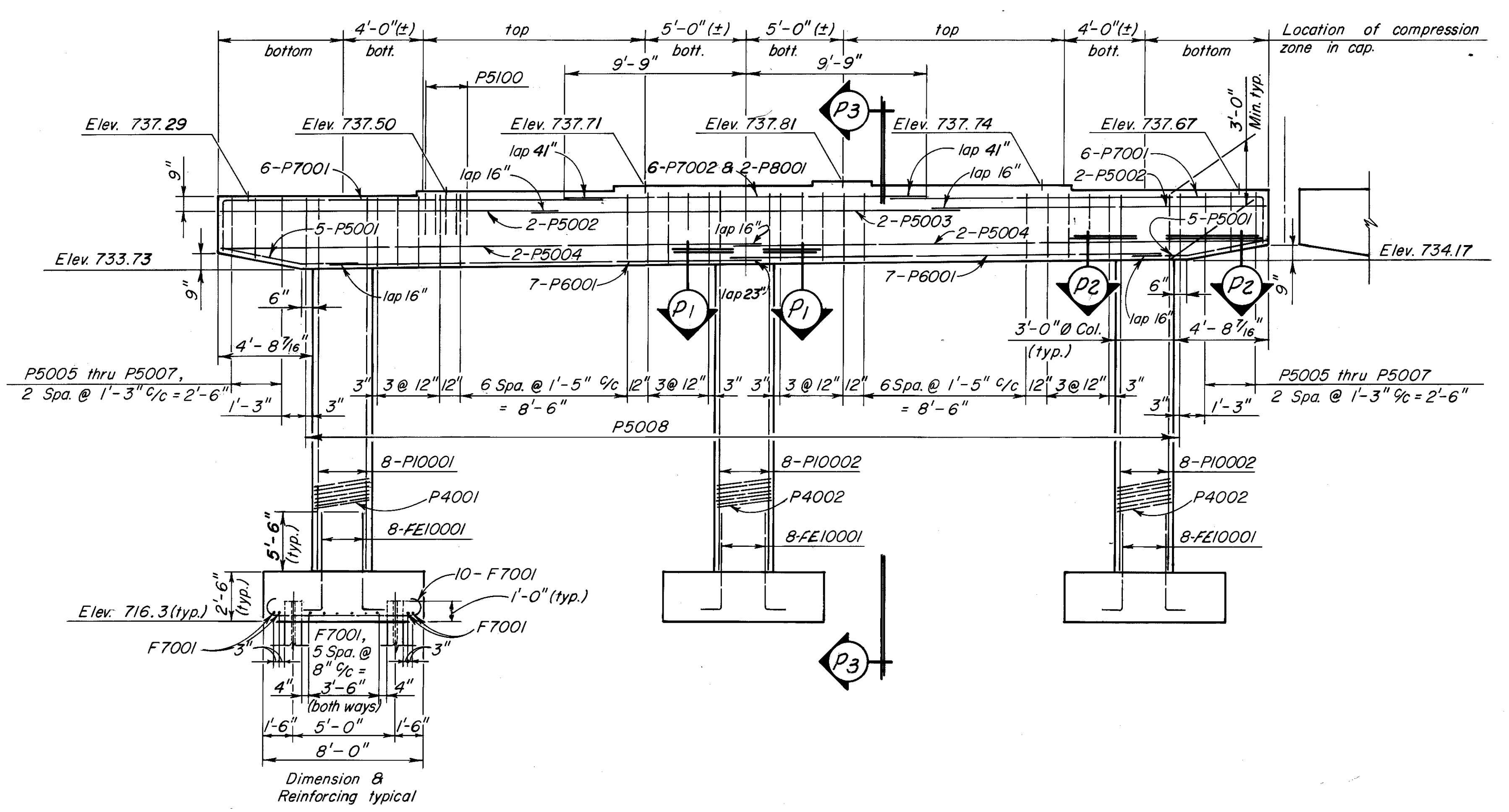
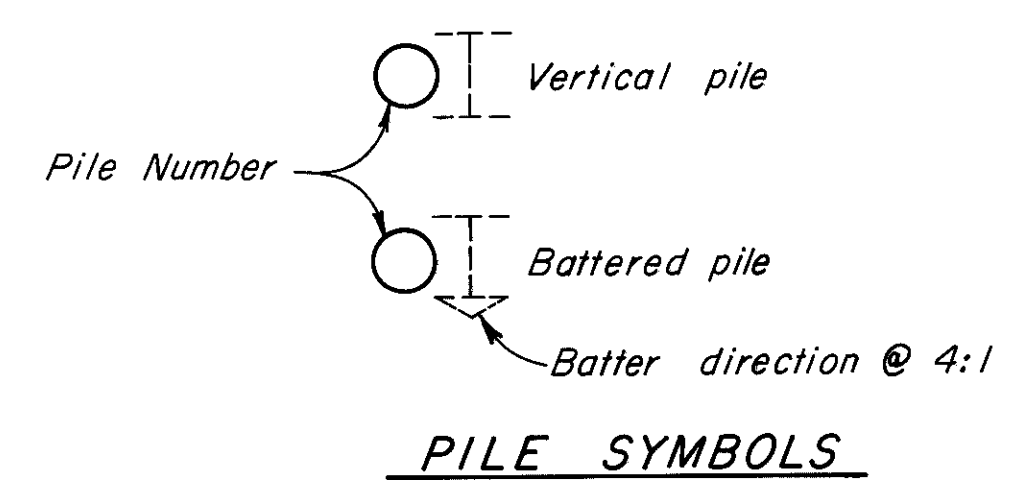


**PLAN**

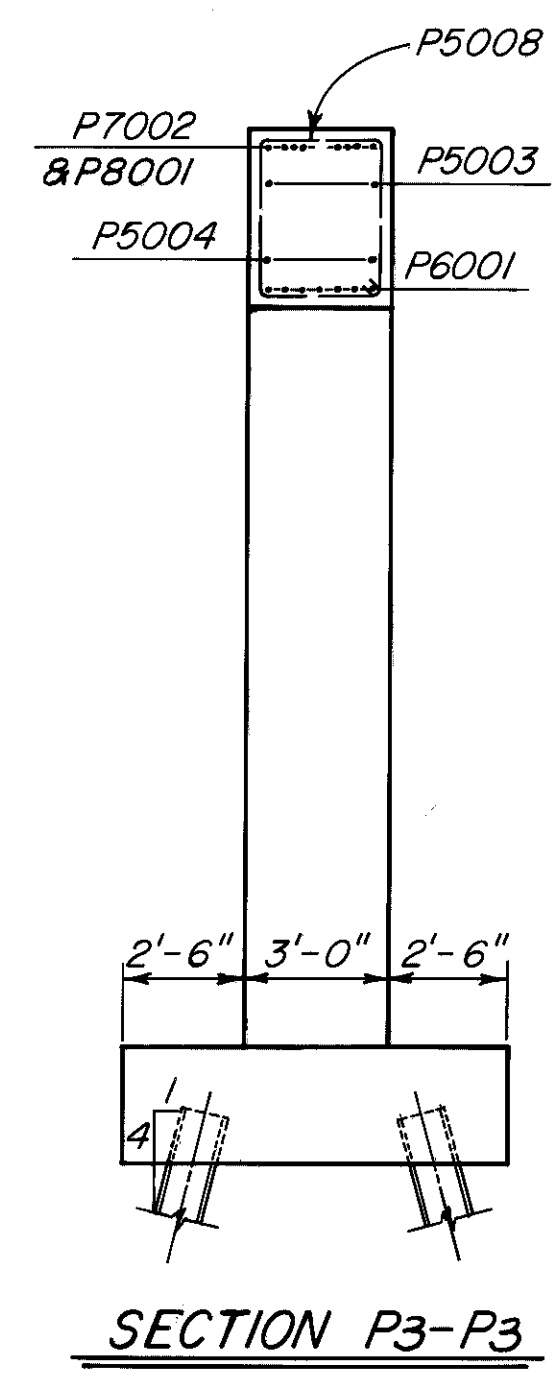


**SECTION P1-P1**  
Vertical Col. Steel P10 bars

**SECTION P2-P2**  
Vertical Col. Steel P10 bars



**ELEVATION**



**SECTION P3-P3**

**NOTES:**

The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.

All pier column and cap rebar are to be Epoxy coated. Where the prefix "D" is used in bar callouts it shall be understood to read "DE". For Item 509 Note see 3124.

Limits of "Sealing of concrete surface, non-Epoxy" full perimeter of column from top of footing to bottom of cap. Also seal the full length of cap (sides and bottom) including ends.

Limits of "Sealing of concrete surfaces, Epoxy" full length of bridge seat including risers.

11/24

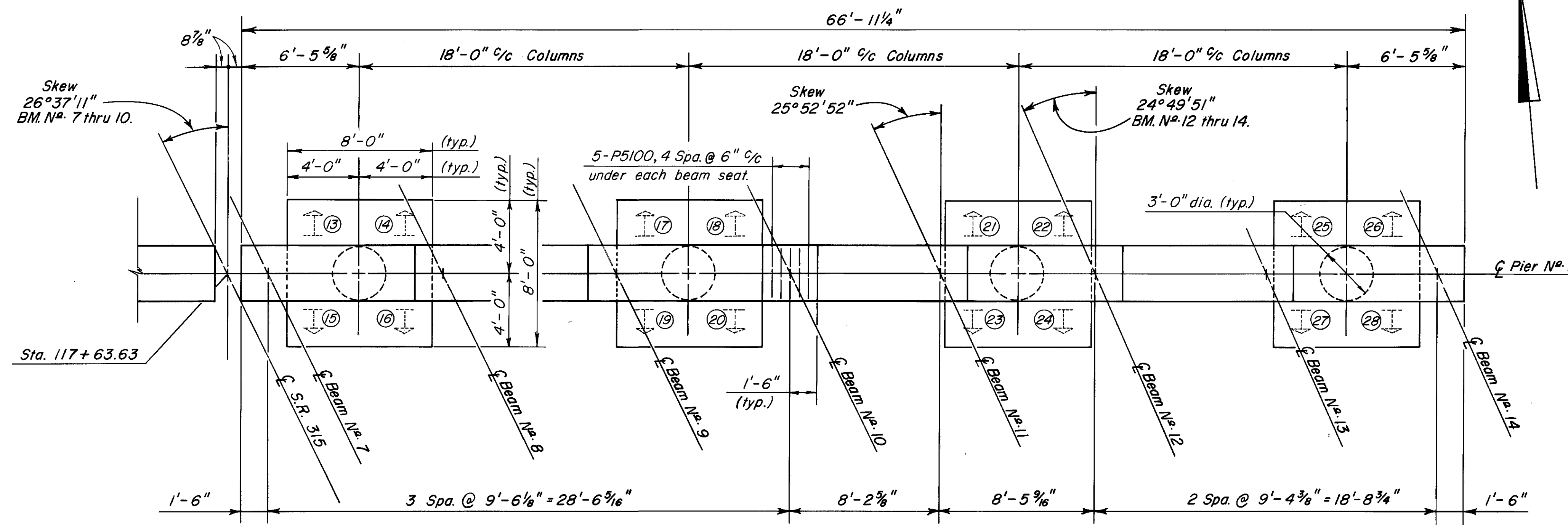
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**PIER NO. 1 - WEST BENT**  
BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED

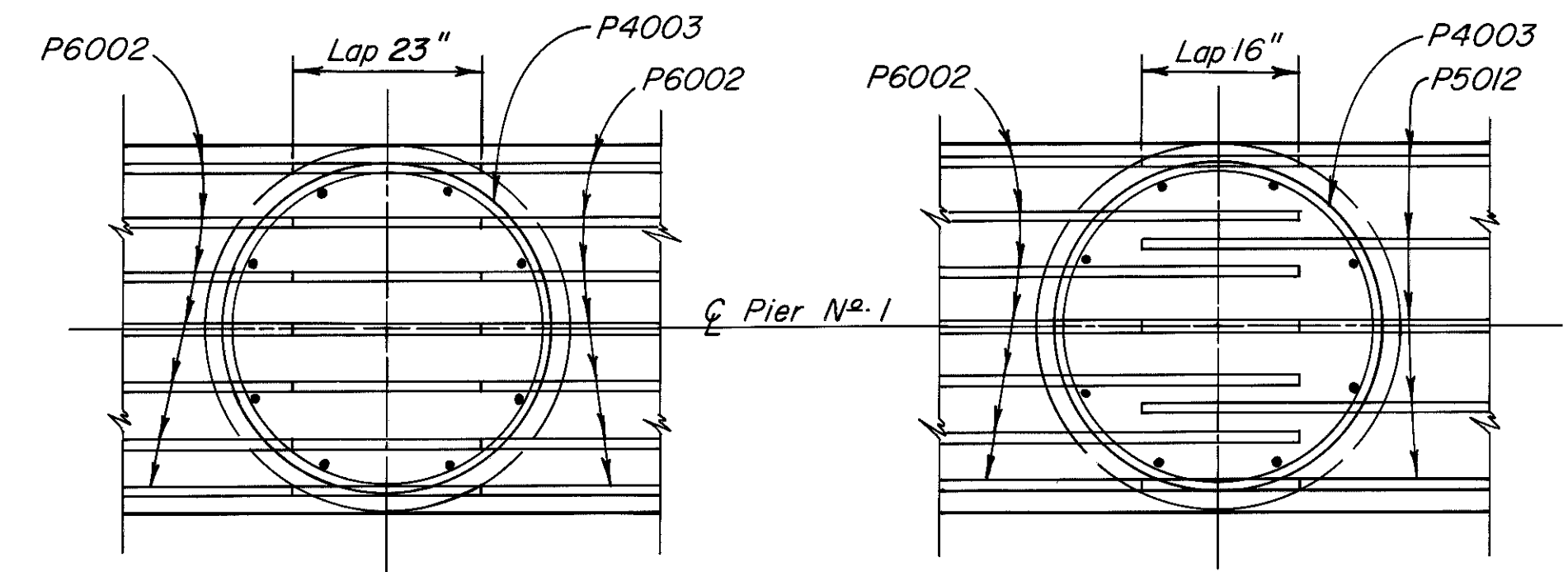
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/89	



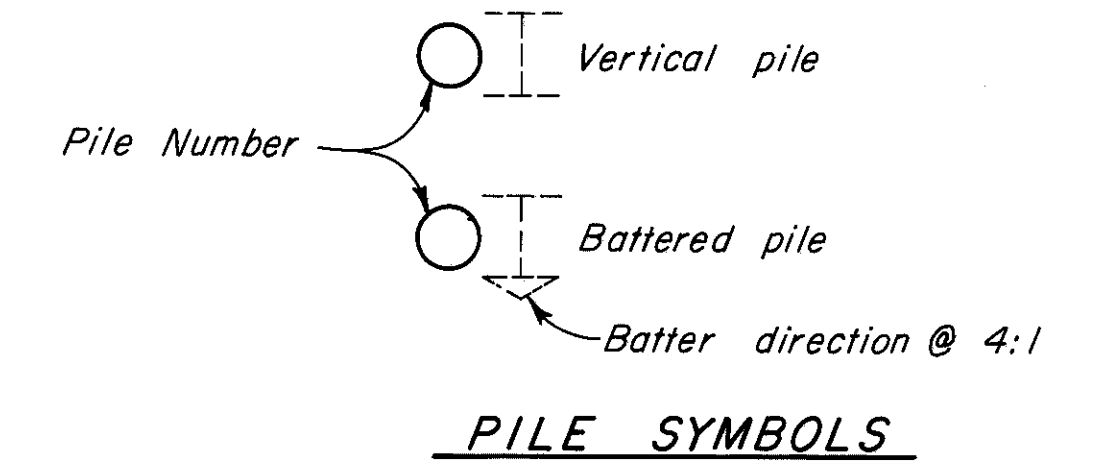


**PLAN**



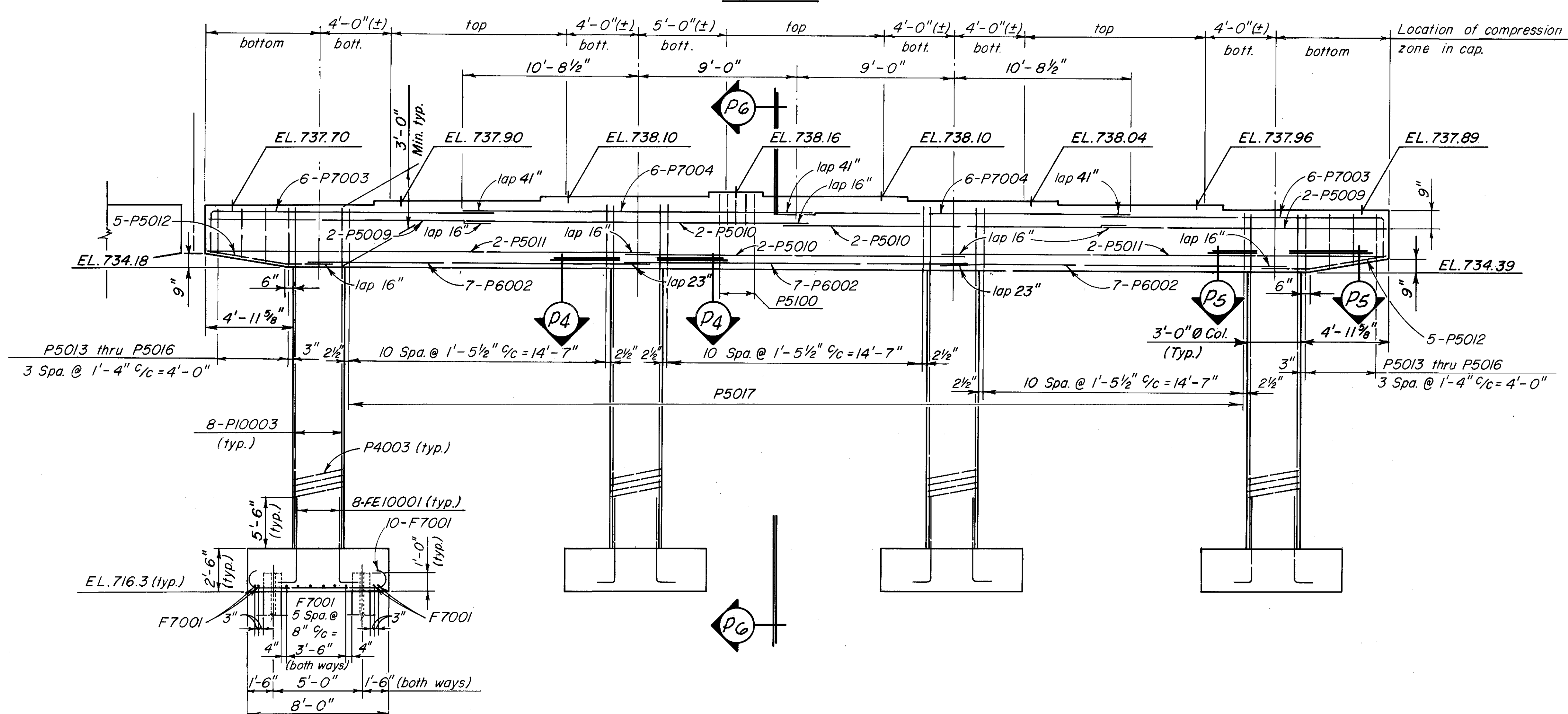
**SECTION P4-P4**  
Vertical Col. Steel P10 bars

**SECTION P5-P5**  
Vertical Col. Steel P10 bars

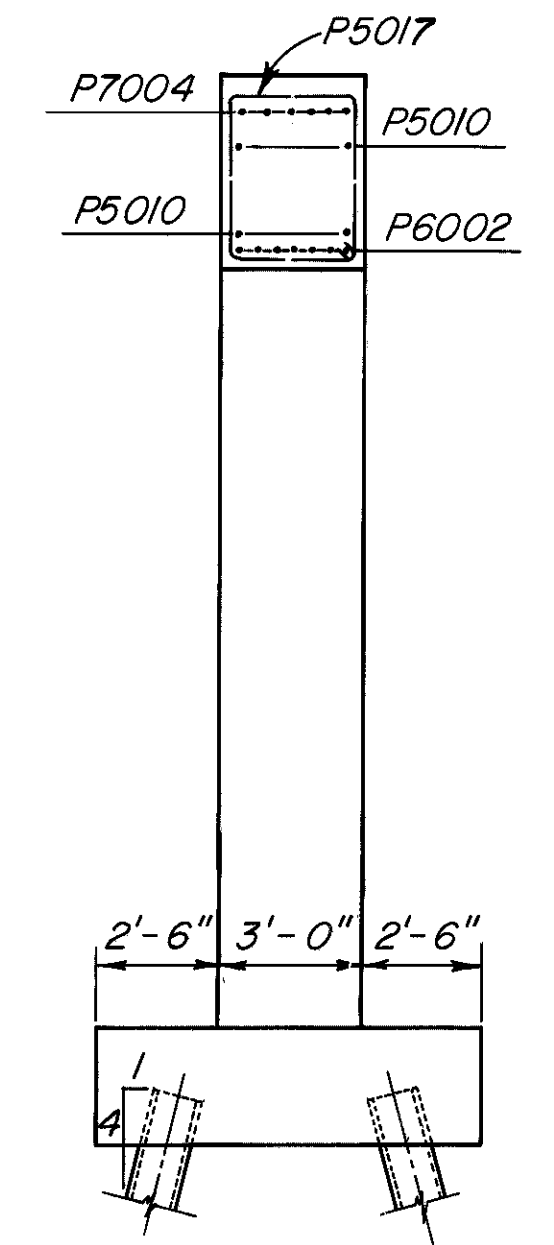


**PILE SYMBOLS**

**NOTES:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.  
For additional notes see Sht. 11/24  
Pier No. 1 West Bent.



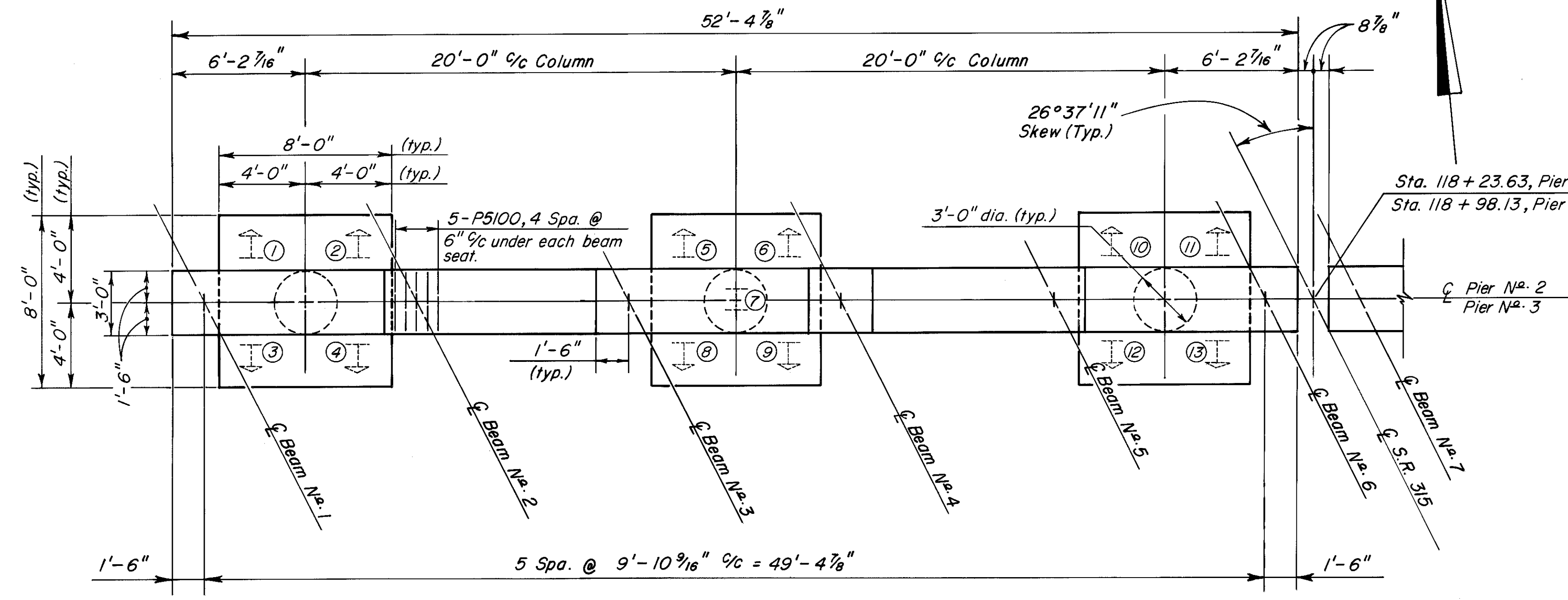
**ELEVATION**



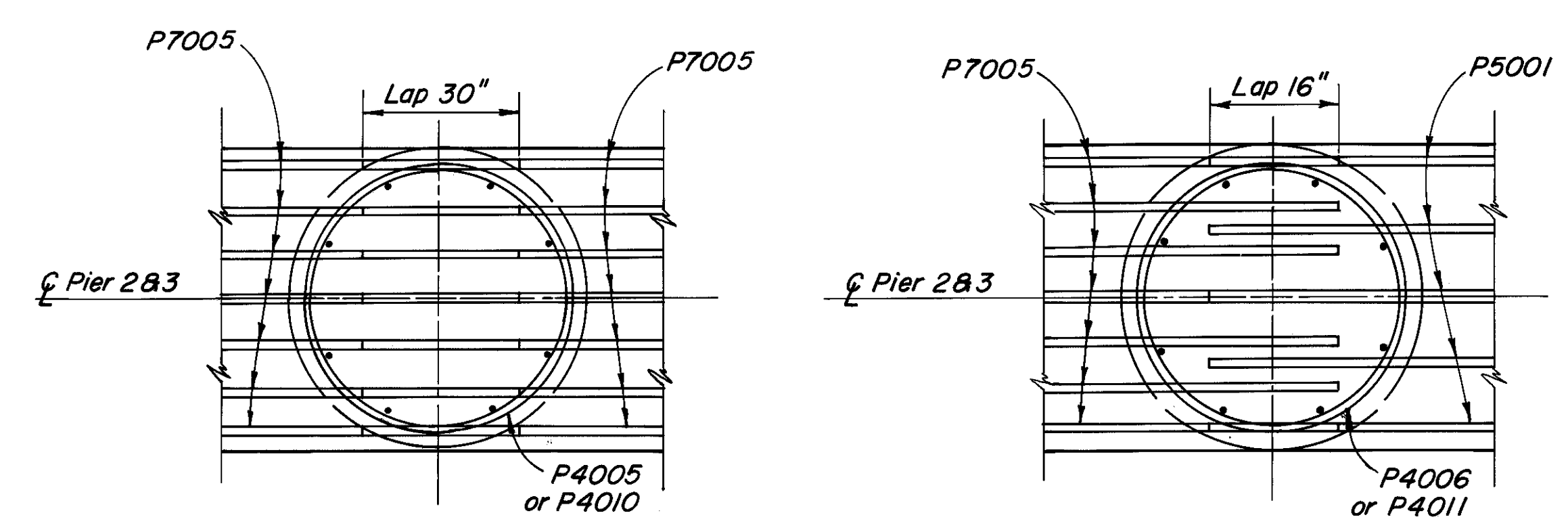
**SECTION P6-P6**

Dimension & Reinforcing typical

ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WEIRTON						
<b>PIER NO. 1 - EAST BENT</b>						
BRIDGE NO. FRA - 33 - 1542 S.R. 315 OVER U.S. 33 RELOCATED						
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/21/89	

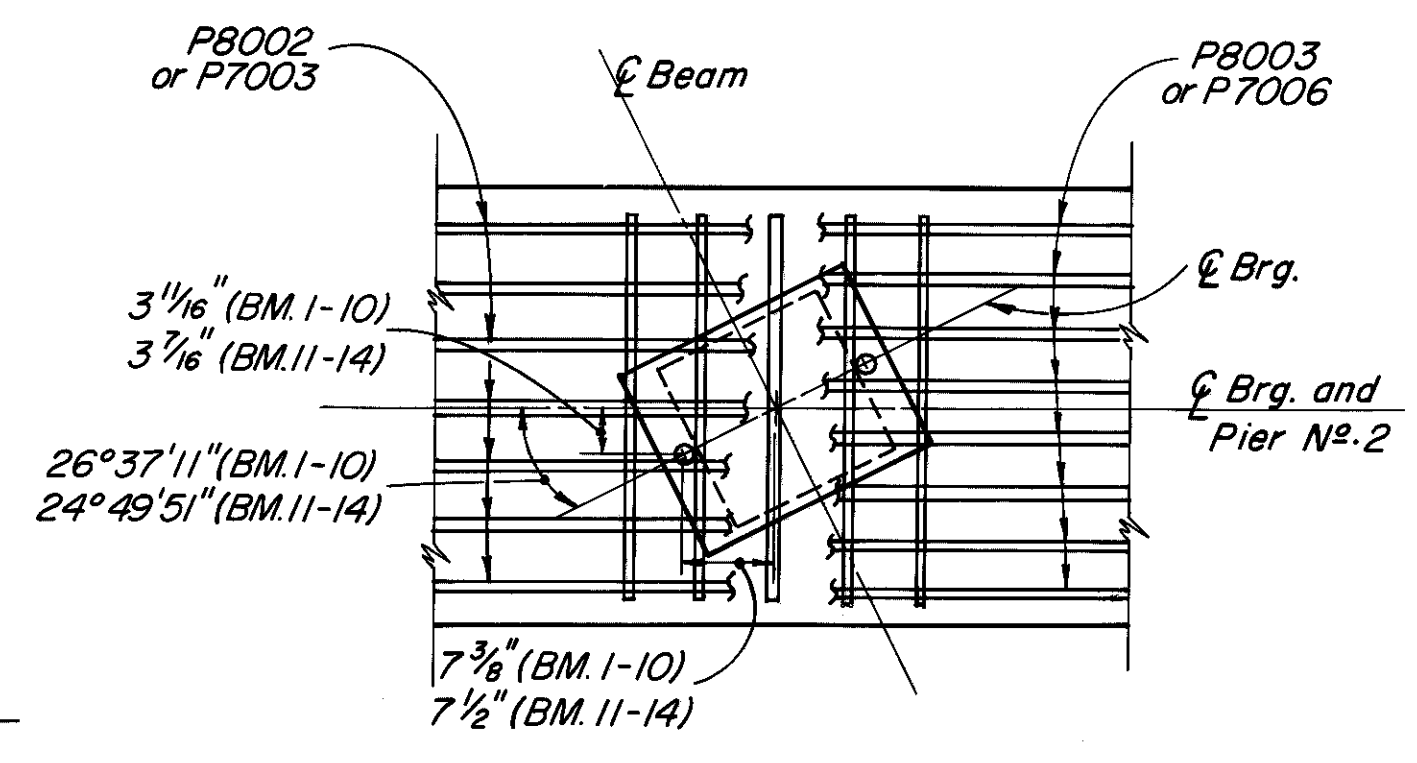


**PLAN**

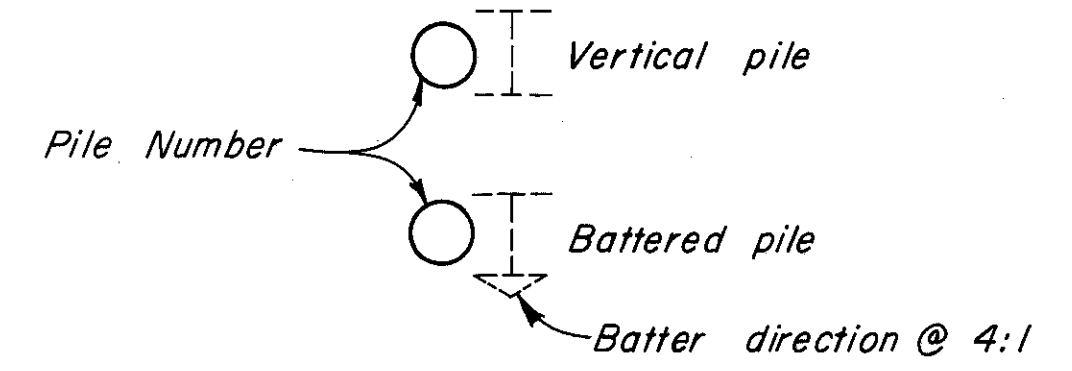


**SECTION P14 - P14**  
Vertical Col. Steel P10 bars

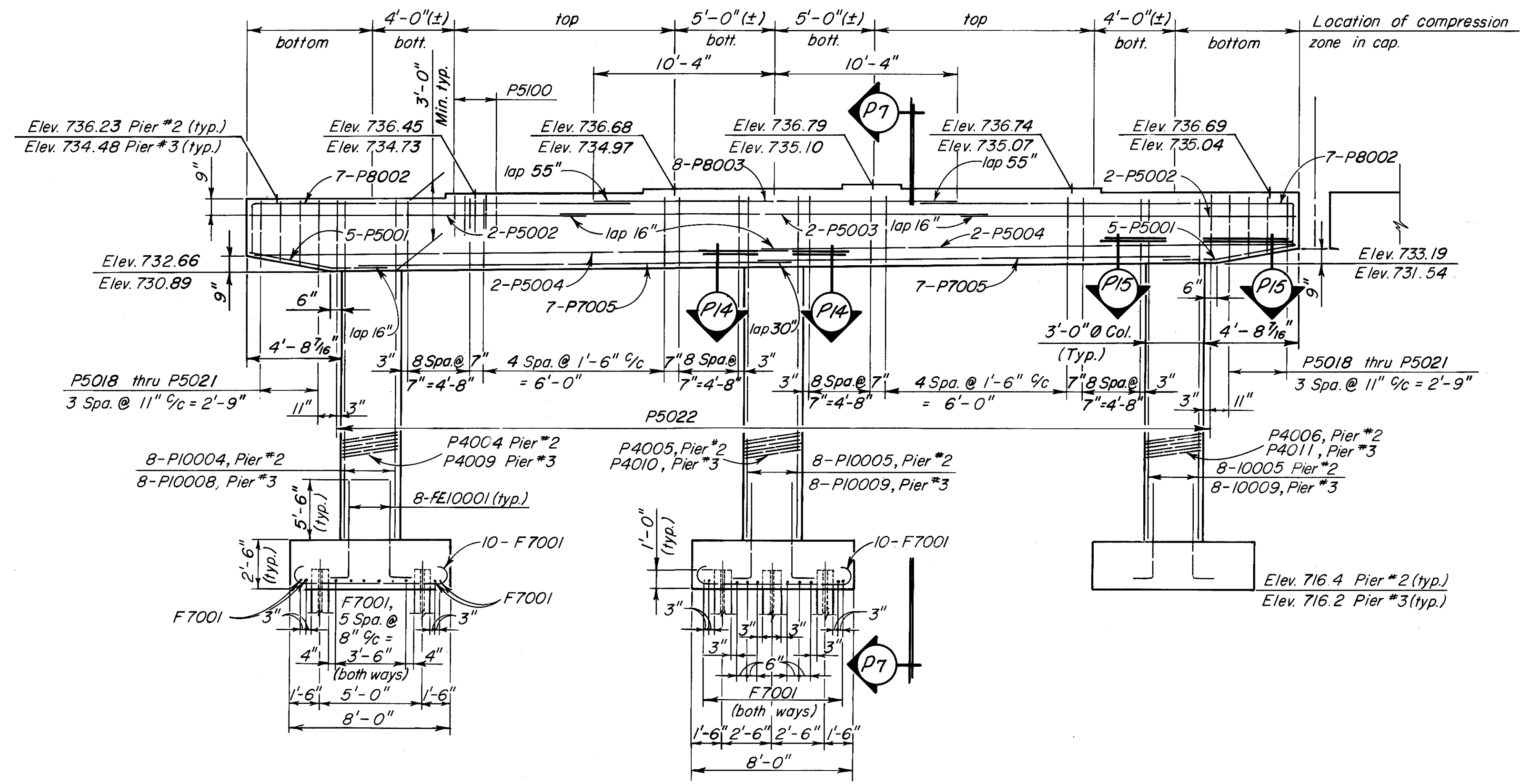
**SECTION P15 - P15**  
Vertical Col. Steel P10 bars



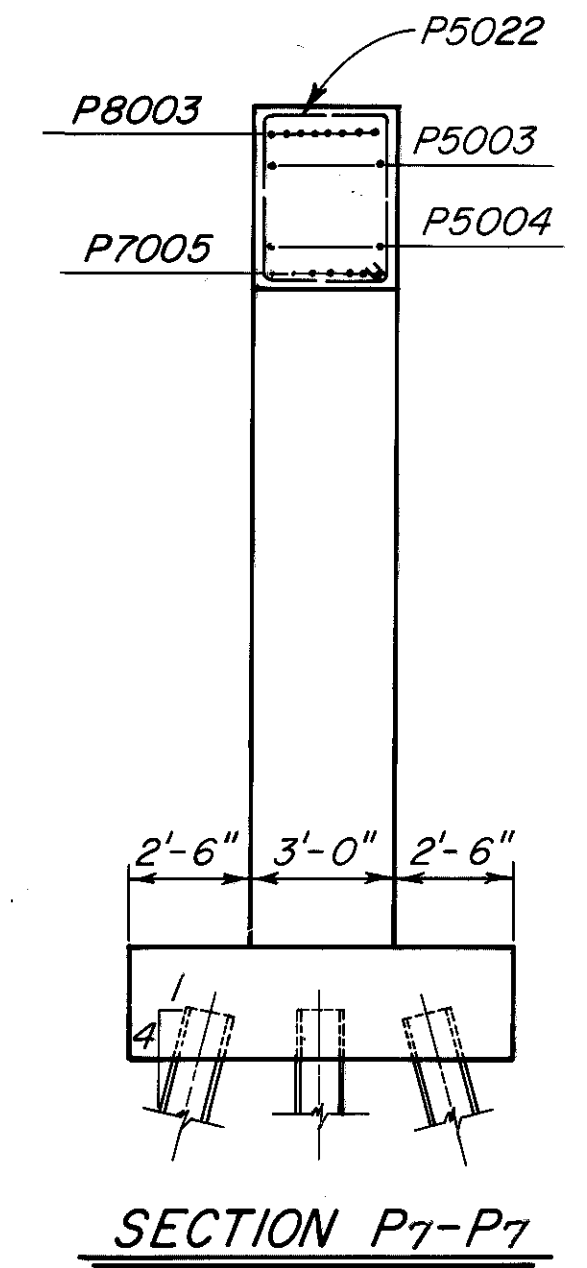
**ANCHOR ROD LAYOUT - FIXED BEARING**



**PILE SYMBOLS**



**ELEVATION**



**SECTION P7-P7**

**NOTES:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.  
For additional notes see Sht. 11/24  
Pier No. 1 West Bent.

Typ. for exterior col. footings

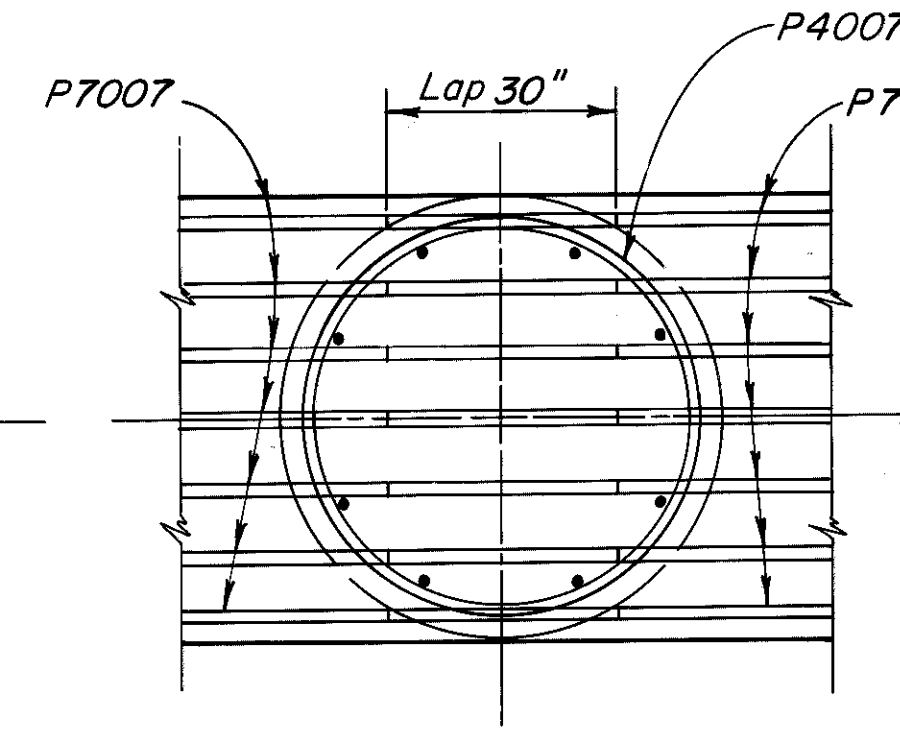
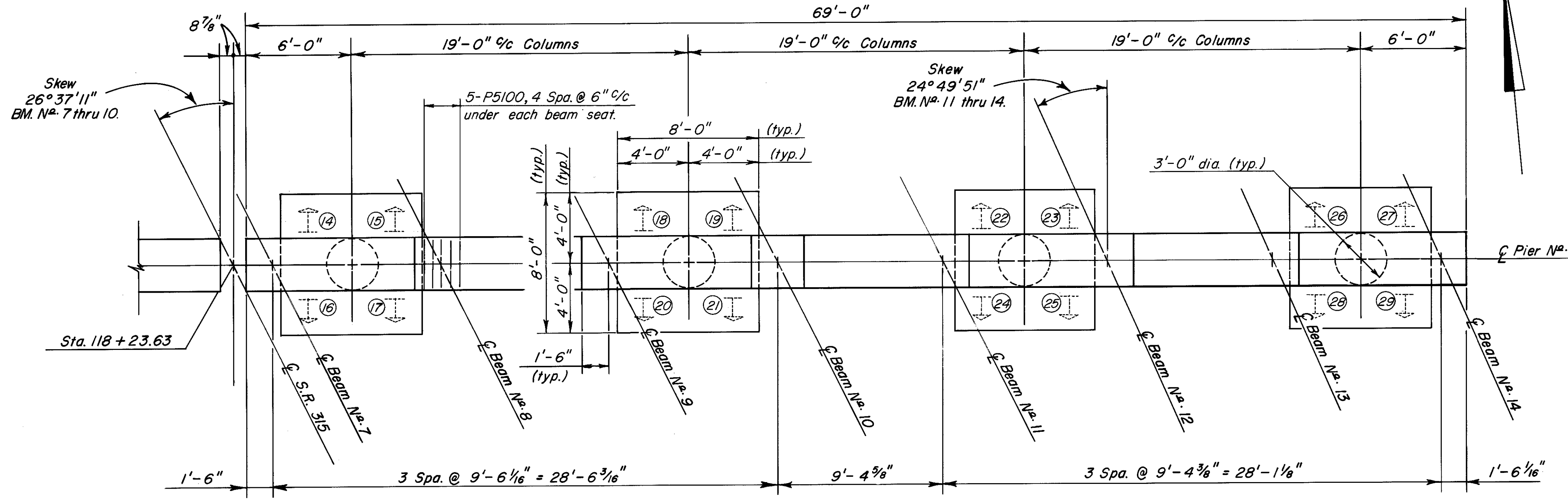
Typ. for interior col. footings

13/24

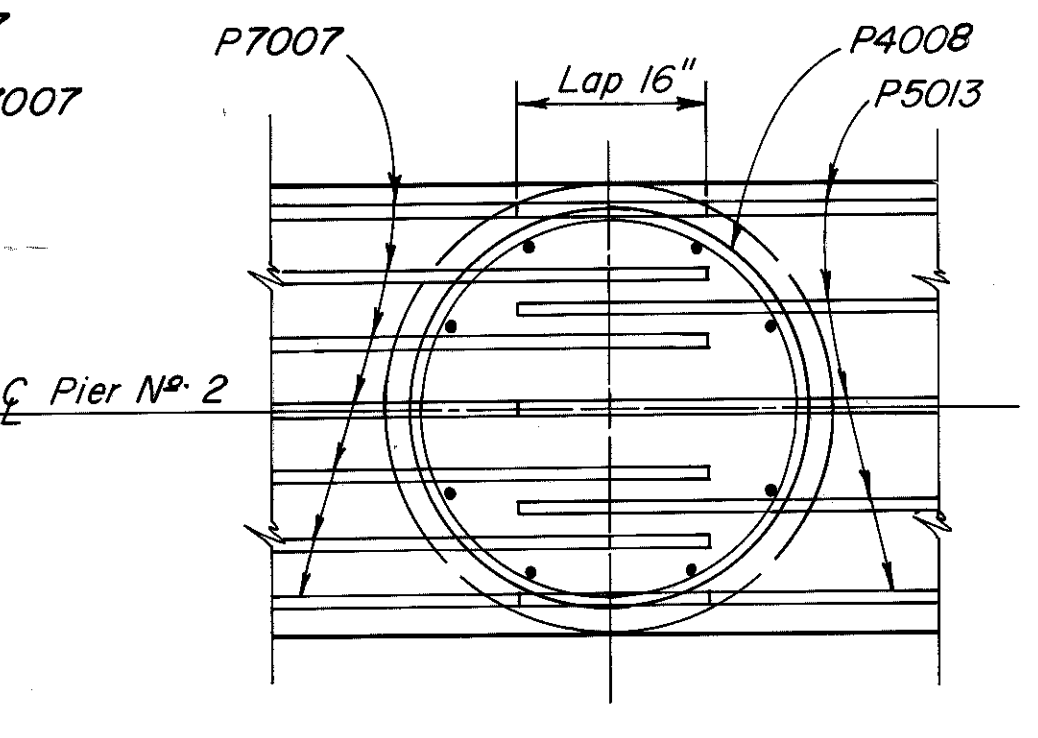
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**PIER NO. 283-WEST BENT**  
BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/89	

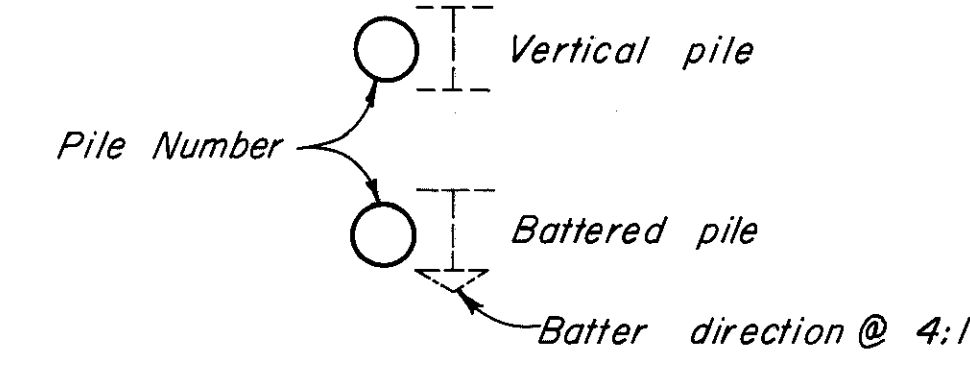


**SECTION P8-P8**  
Vertical Col. Steel P10 bars



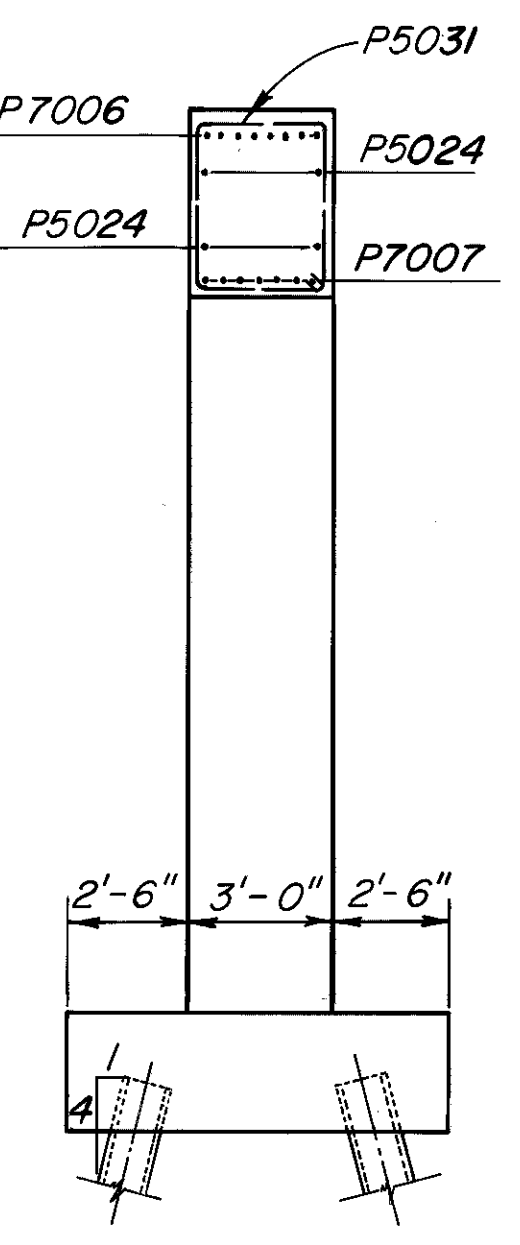
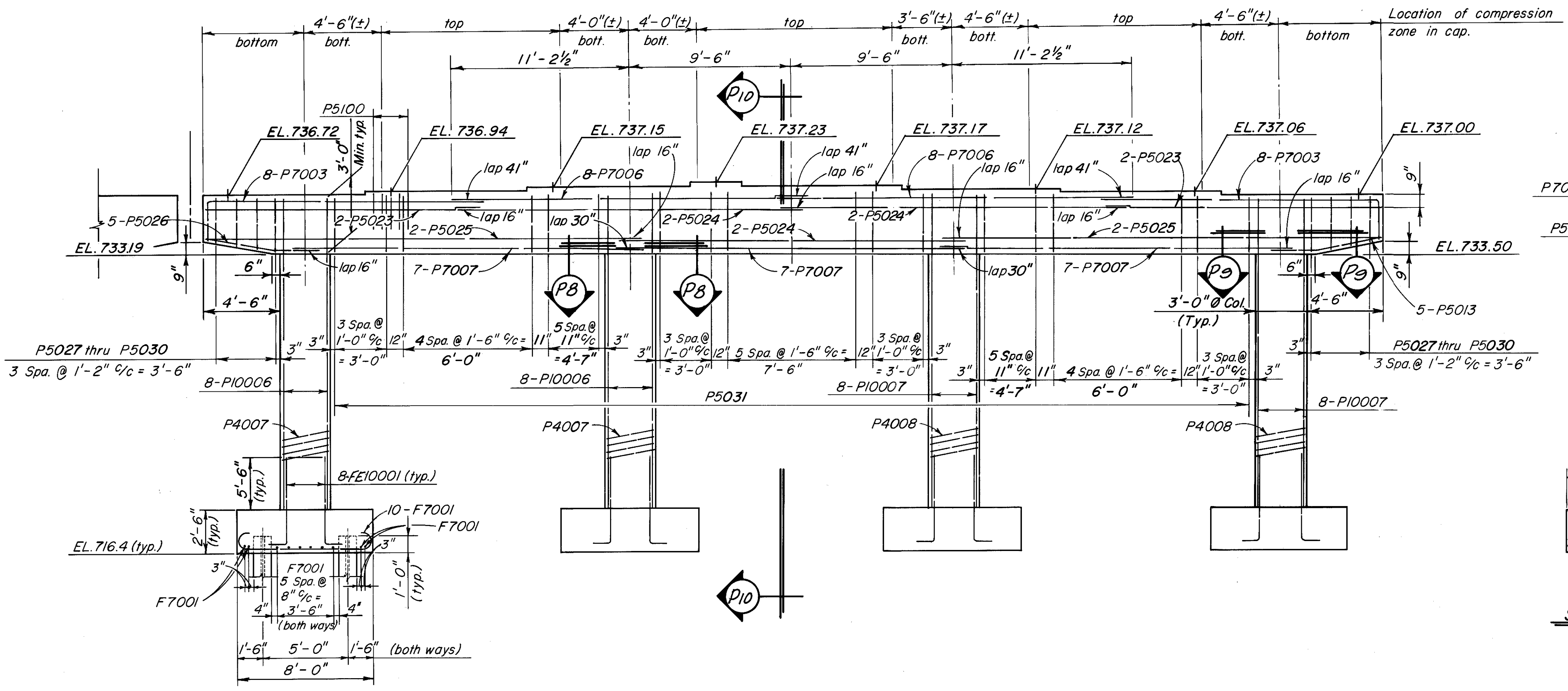
**SECTION P9-P9**  
Vertical Col. Steel P10 bars

**PLAN**



**PILE SYMBOLS**

**NOTES:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.  
For additional notes see Sht. **11/24** Pier No. 1 West Bent.  
For Bearing Anchor Rod Layout see Sht. **13/24**



**SECTION P10-P10**

Dimension & Reinforcing typical

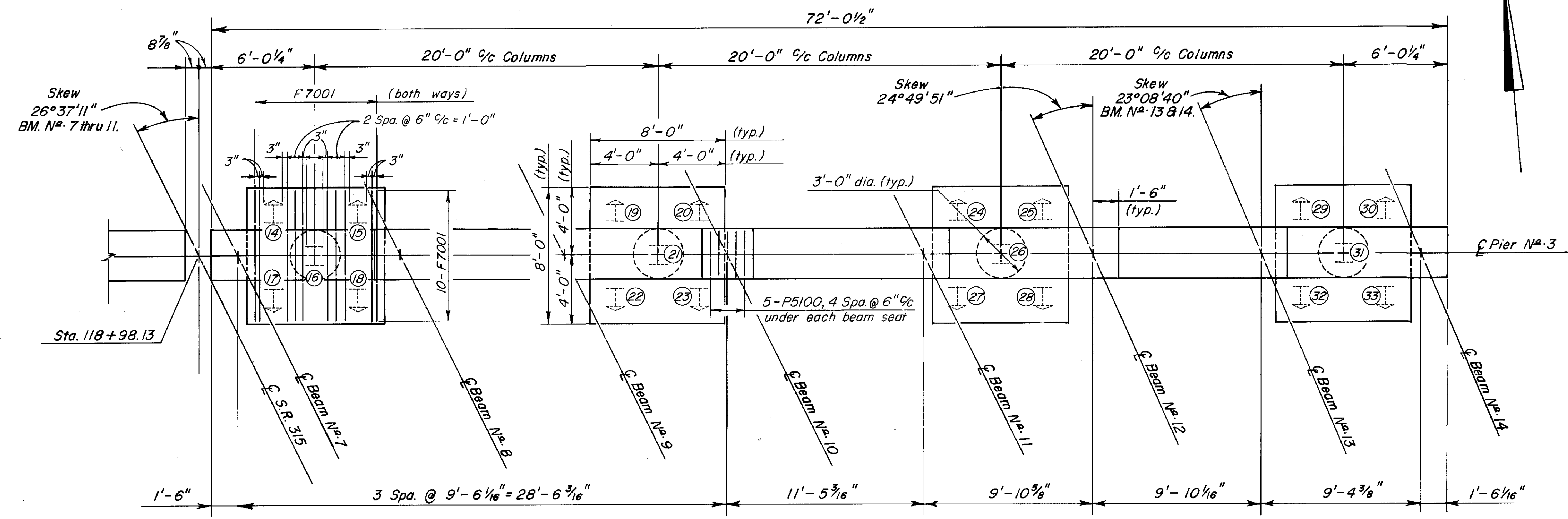
**ELEVATION**

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

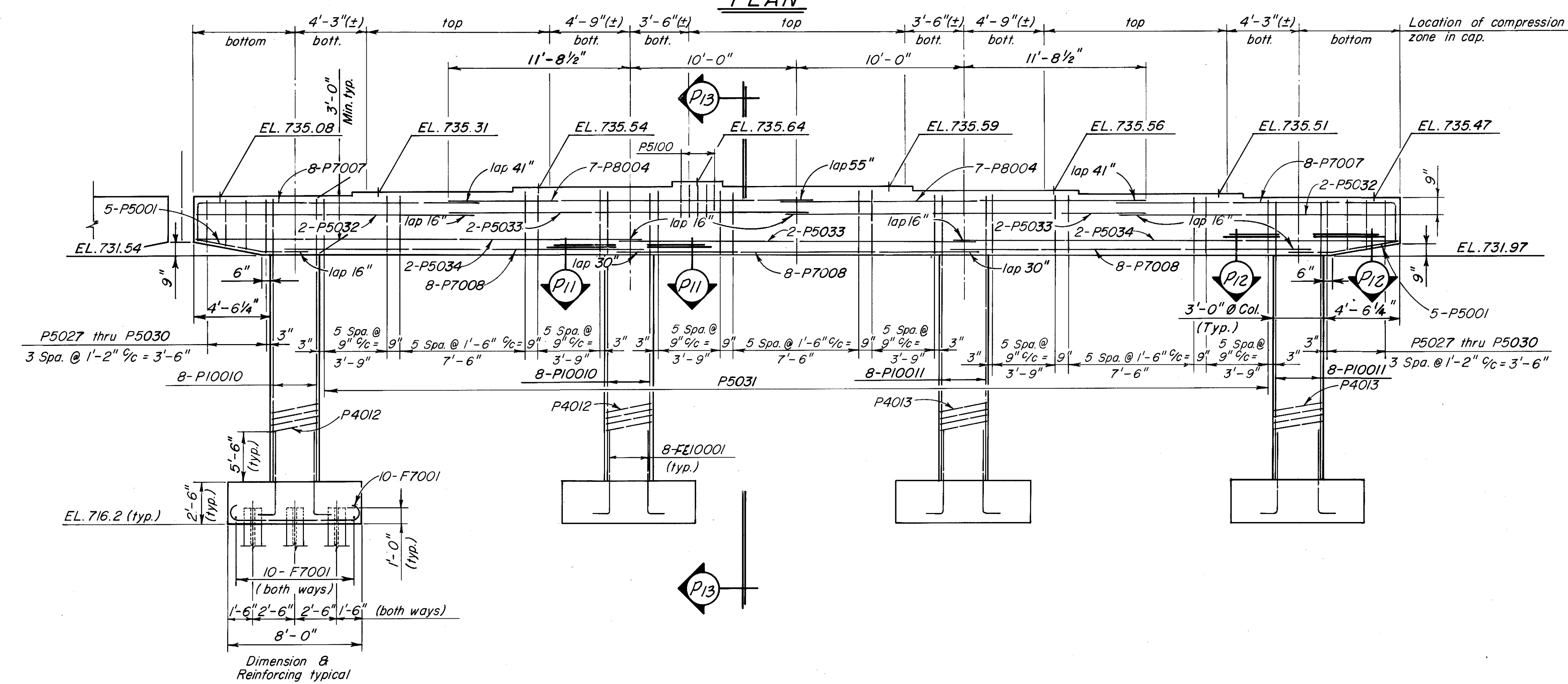
**PIER NO.2- EAST BENT**  
BRIDGE NO. FRA - 33-1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	12/24/99	

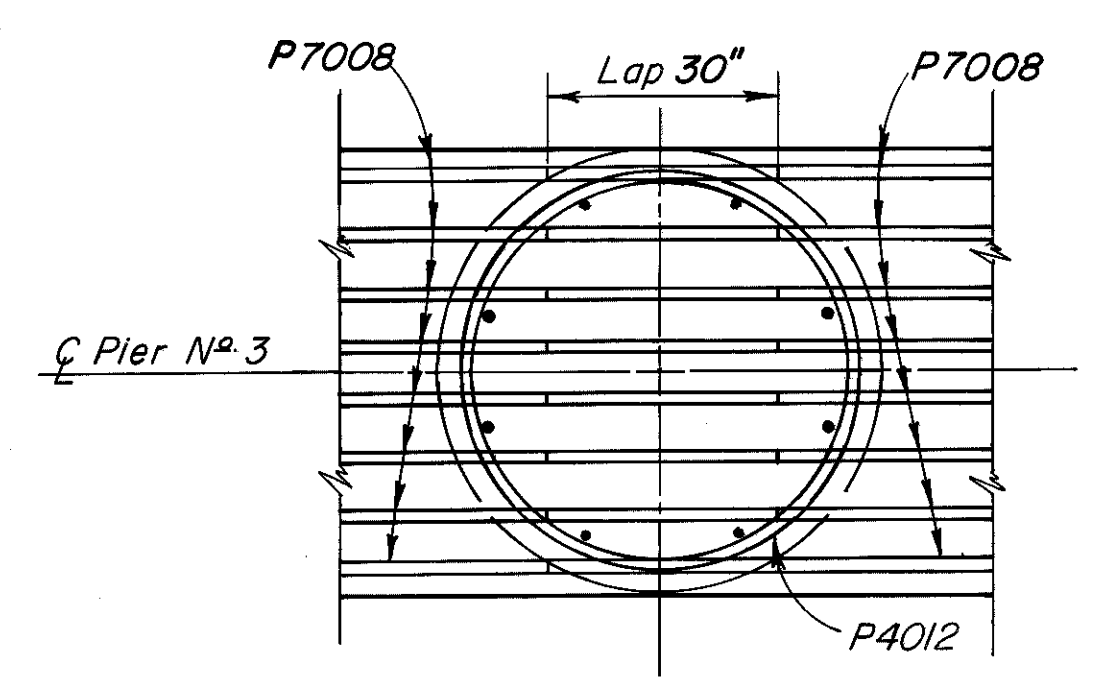




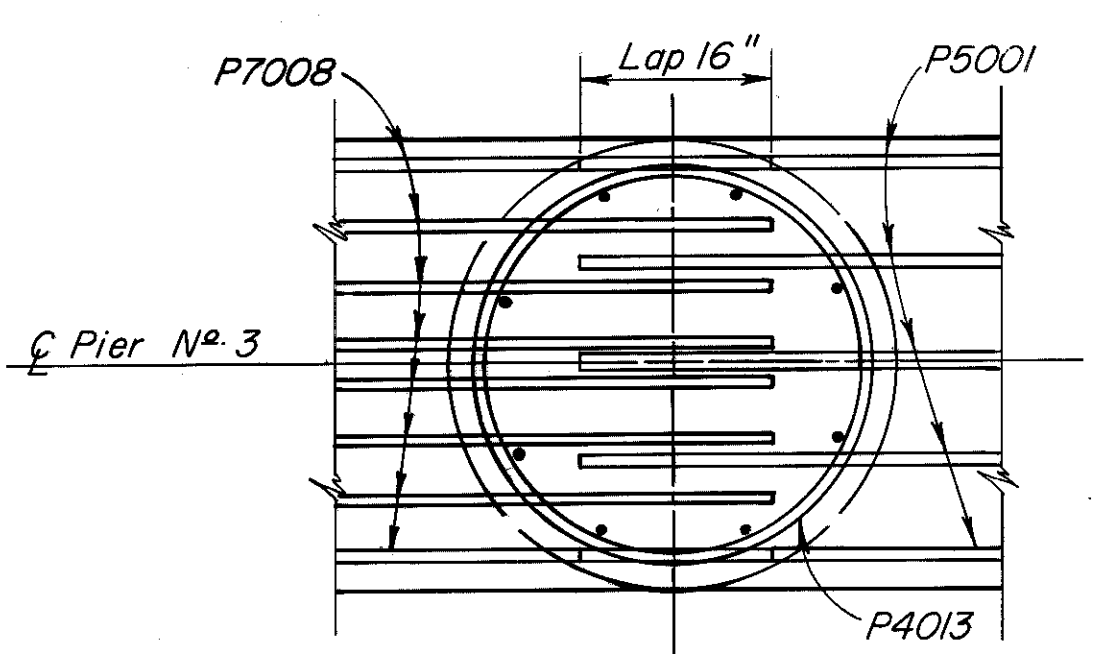
**PLAN**



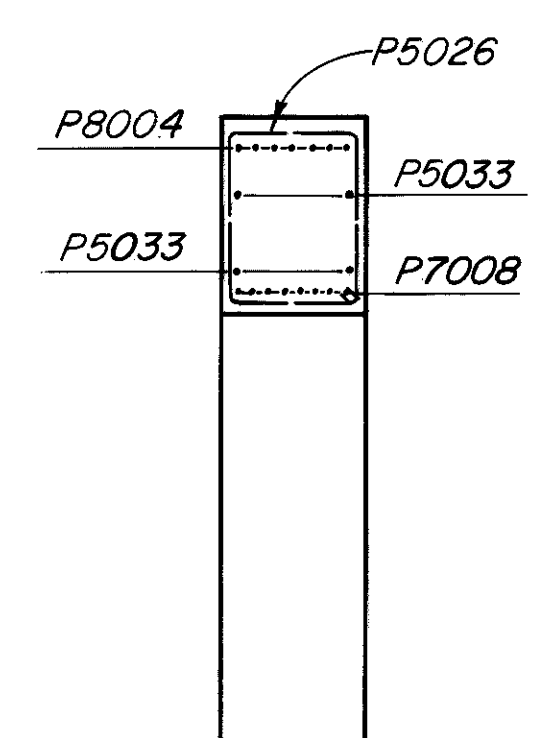
**ELEVATION**



**SECTION P11-P11**  
Vertical Col. Steel P10 bars



**SECTION P12-P12**  
Vertical Col. Steel P10 bars

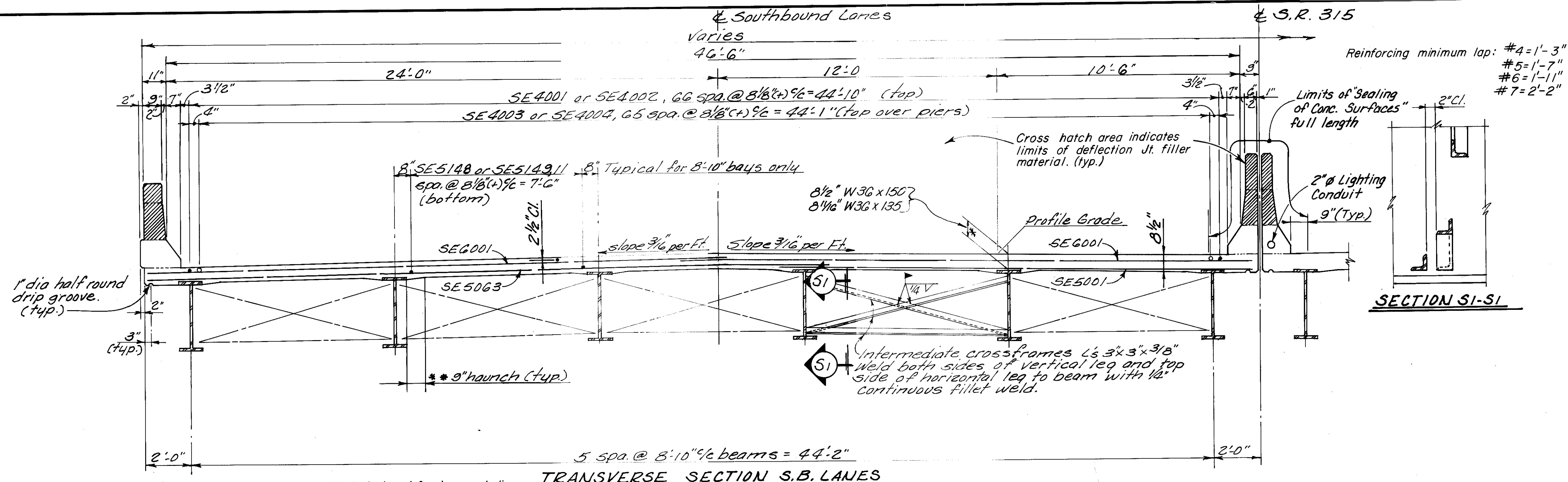


**PILE SYMBOLS**

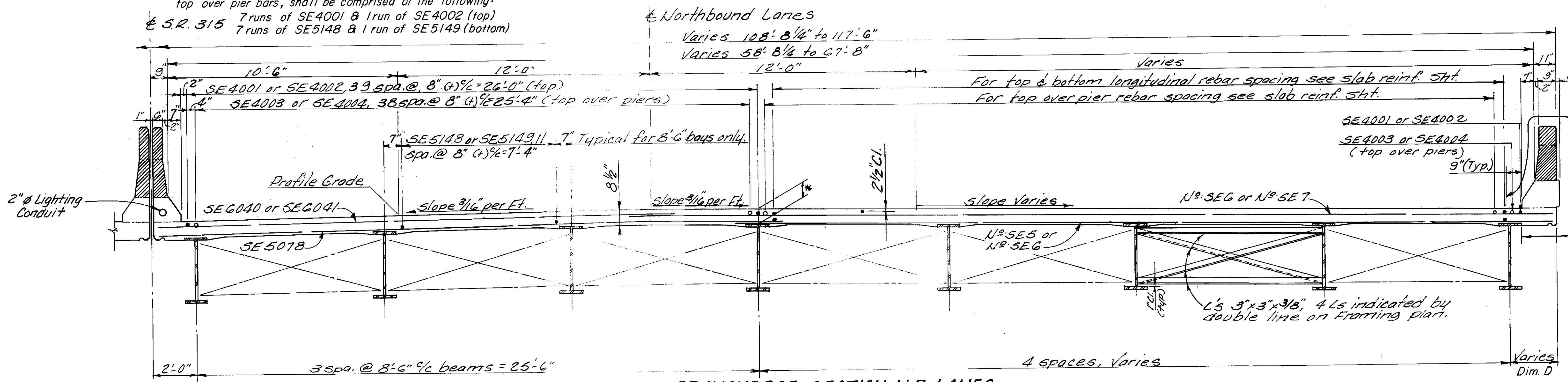
**NOTES:**  
The hooked corner of the stirrups shall be placed in the compression zone of the pier cap.  
For additional notes see Sht. 11/24 Pier No. 1, West Bent.

**SECTION P13-P13**

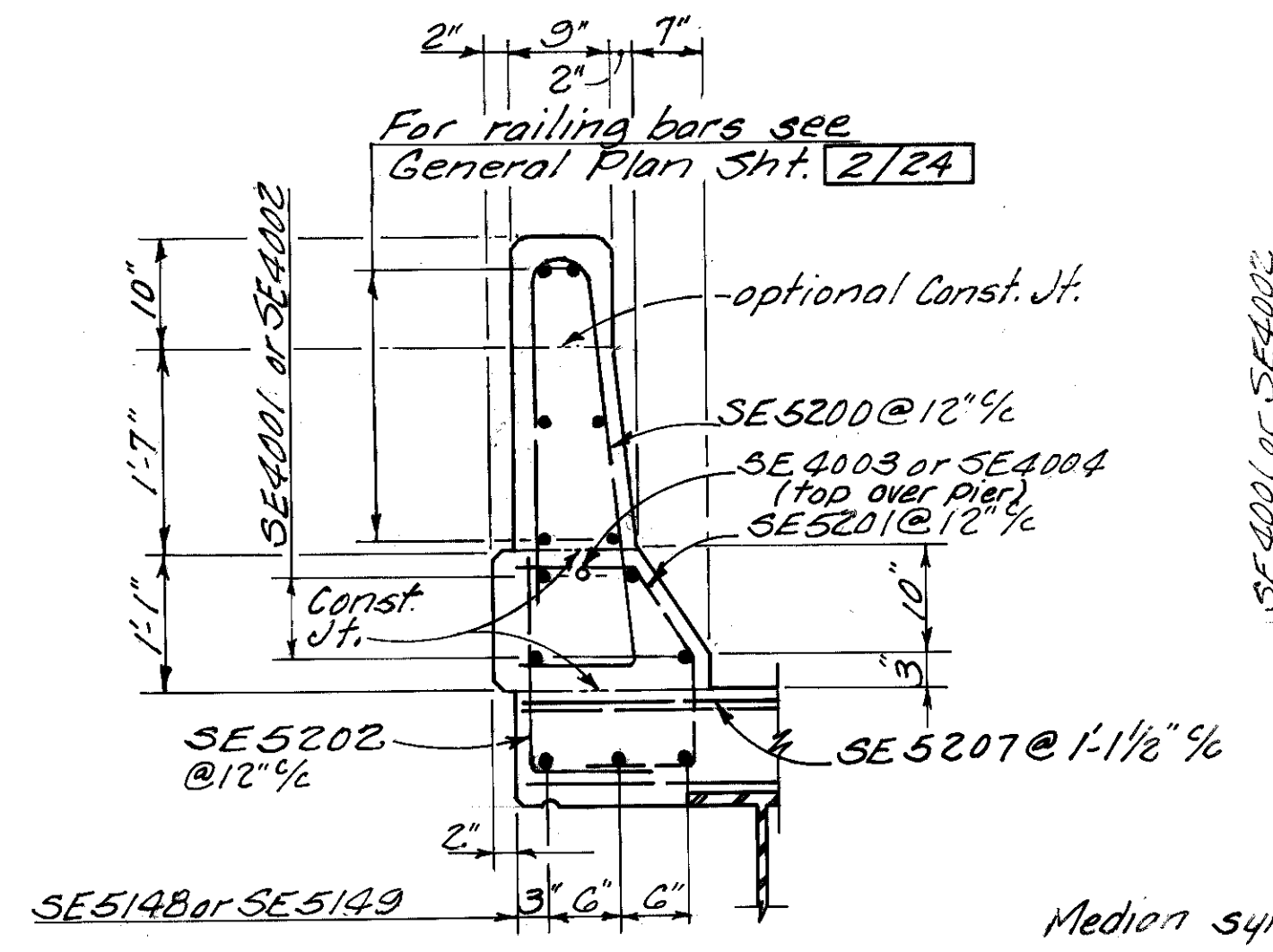
ALDEN E. STILSON & ASSOCIATES CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS, CLEVELAND, WERTON		15/24
<b>PIER NO.3- EAST BENT</b>		
BRIDGE NO. FRA - 33-1542		
S.R. 315 OVER U.S. 33 RELOCATED		
FRANKLIN COUNTY		STA. 117+19.11 TO STA. 119+52.65
DESIGNED	DRAWN	TRACED
DEM	KRH	MAP
CHECKED	REVIEWED	DATE
	G.W.M.	5/24/89



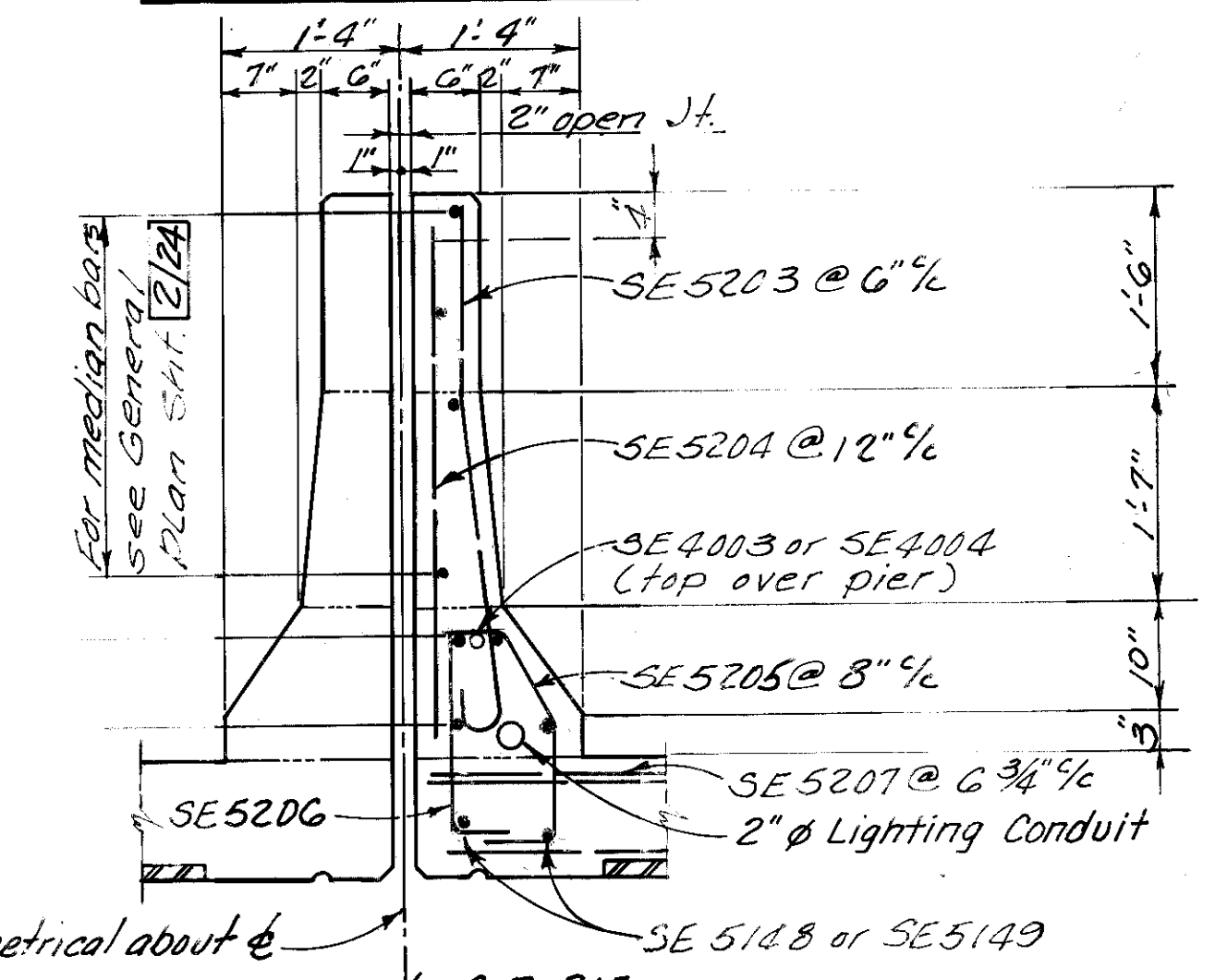
**NOTES:** \* The distance shown from top of deck slab to top of steel beam is the design dimension. The quantity of deck concrete to be paid for shall be based on this dimension even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade. Deduction shall be made for volume of encased steel plates as per 511.18.  
 \*\* A typical haunch width of 9" shall be used for all beams for computing quantity of concrete. However the haunch width may vary between 6" and 12" provided that the slope shall be not more than 1:4 for a haunch less than 9" in width.  
 Field bending of transverse slab steel to be included in Item 509 for payment.



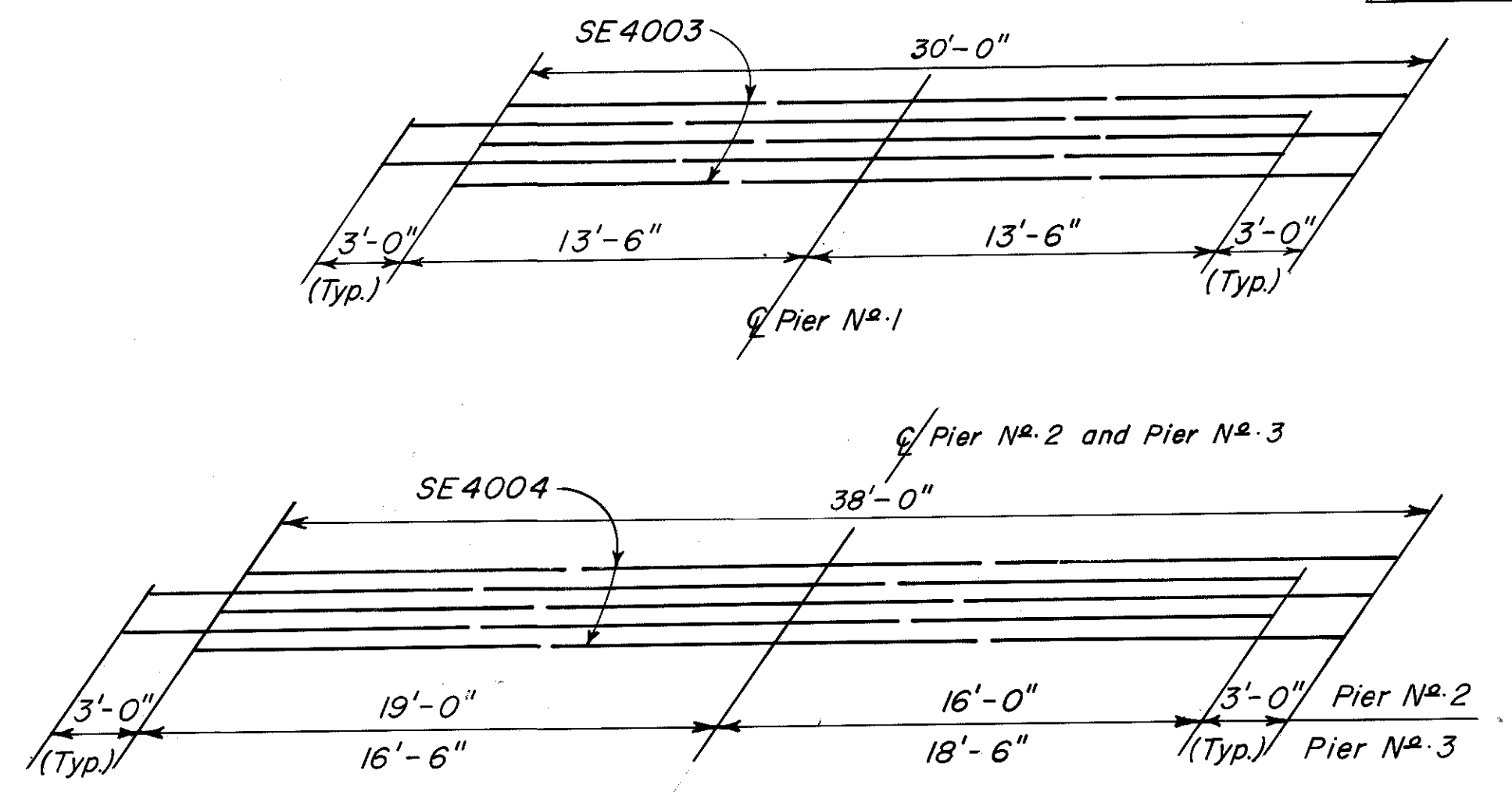
SPAN	LOCATION				
	0.00 pt.	0.25 pt.	0.50 pt.	0.75 pt.	As Noted
1	2'-6"	2'-3 3/8"	2'-1 1/2"	1'-11 3/4"	
2	1'-10 3/8"	1'-8 7/8"	1'-8 1/8"	1'-8 1/8"	
3	1'-8 3/4"	1'-10 1/2"	2'-1 1/4"	2'-5 1/8"	2'-6", F.S. No. 2
4	2'-4 7/8"	2'-4 3/8"	2'-4 3/8"	2'-5"	2'-6", N. Abut.



PARAPET RAILING DETAIL



MEDIAN BARRIER DETAIL



DIAGRAMS SHOWING STAGGER OF BARS OVER PIERS

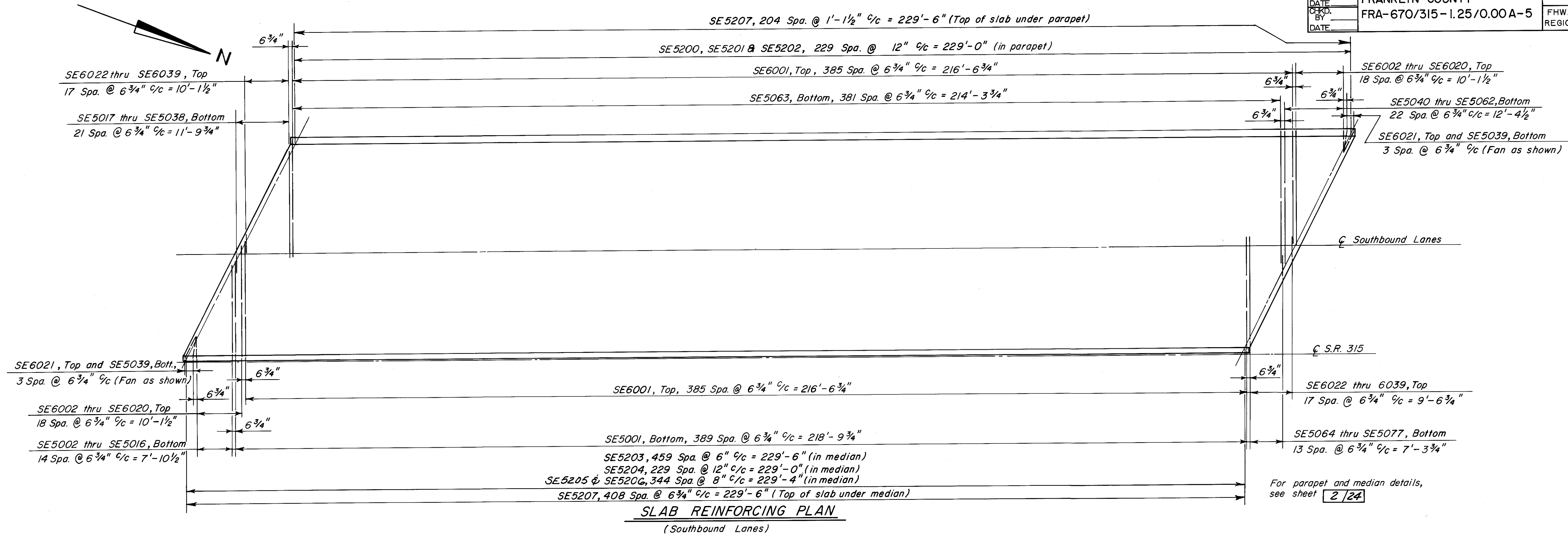
16/24  
 ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. FRA - 33-1542  
 S.R. 315 OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	R.T.		MAP	G.W.M.	5/24/89	

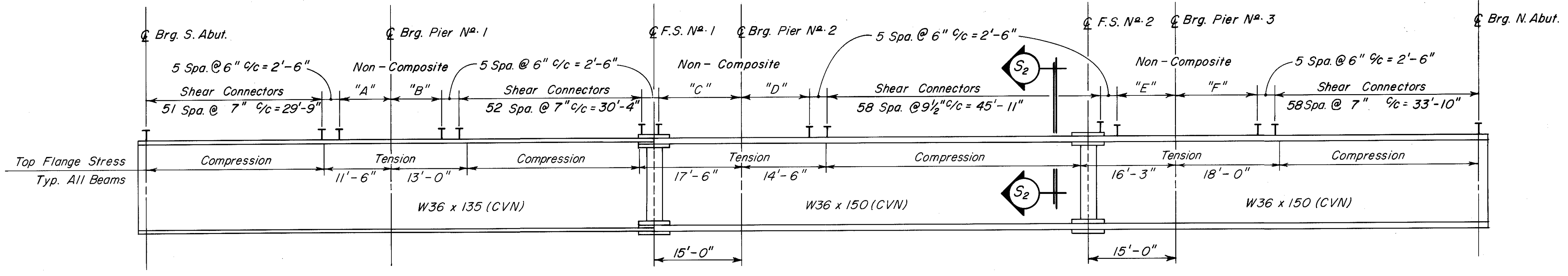






**SLAB REINFORCING PLAN**  
(Southbound Lanes)

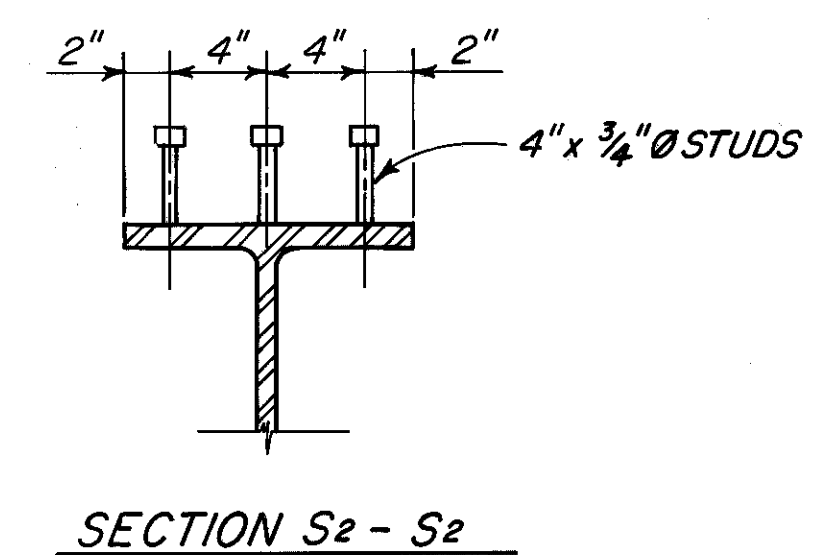
For parapet and median details, see sheet 2/24



**BEAM ELEVATION**

**NOTES:**  
Where a shape or plate is designated (CVN) the material shall meet specified minimum notch toughness requirements as specified in 711.01 of CMS.  
Shear connector location may be adjusted by a maximum of 1/2" to avoid conflict with high strength bolts and edges of plates.  
Shear connector spacing in the vicinity of field splices shall be adjusted to allow connectors to be placed between the splice bolts.  
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.

DIMENSION	Beam Nos. 1 thru 10	Beam No. 11	Beam No. 12	Beam No. 13	Beam No. 14
"A"	9'-9"	9'-5 7/8"	9'-1 1/2"	9'-1 1/2"	9'-1 1/2"
"B"	9'-6"	9'-4"	9'-3"	9'-3"	9'-3"
"C"	15'-2"	14'-9 7/8"	14'-6 1/4"	14'-6 1/4"	14'-6 1/4"
"D"	11'-9"	11'-3"	11'-3"	11'-3"	11'-3"
"E"	11'-10"	11'-5 3/8"	11'-2 3/8"	11'-0 3/8"	11'-0 3/8"
"F"	15'-8"	15'-8"	14'-10 3/4"	14'-2 3/4"	14'-2 3/4"



**SECTION S2 - S2**

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERS AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**SUPERSTRUCTURE DETAILS**  
BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117 + 19.11 TO STA. 119 + 52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/89	

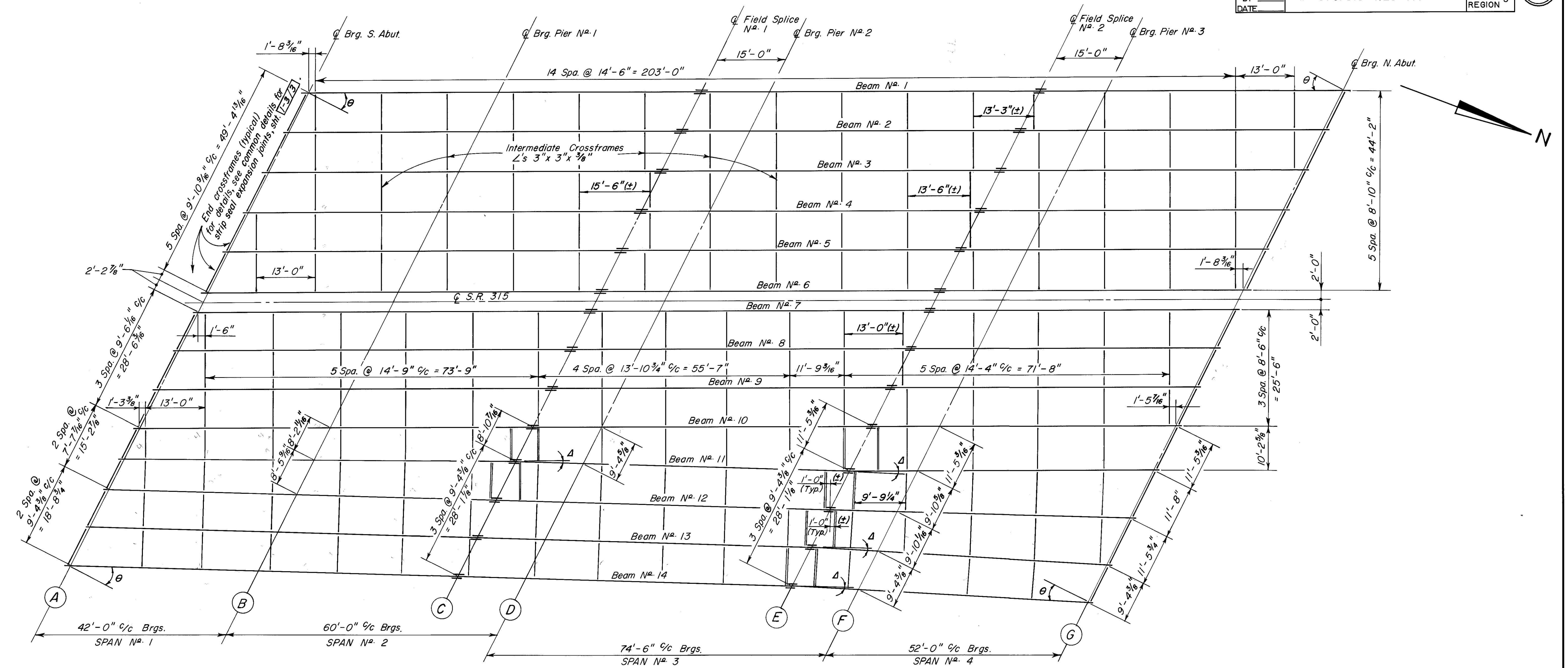


TABLE OF DEFLECTION ANGLES AND BEAM LENGTHS

Bearing Point or Splice Point		Beam Nos.	Beam	Beam	Beam	Beam
		1 thru 10	No. 11	No. 12	No. 13	No. 14
A	$\theta$	26°37'11"	25°52'52"	24°49'51"	24°49'51"	24°49'51"
	Length (A)-B	42'-0"	41'-8 <sup>13</sup> / <sub>16</sub> "	41'-4 <sup>1</sup> / <sub>2</sub> "	41'-4 <sup>1</sup> / <sub>2</sub> "	41'-4 <sup>1</sup> / <sub>2</sub> "
B	$\Delta$	0	0	0	0	0
	Length (B)-C	45'-0"	44'-8 <sup>3</sup> / <sub>16</sub> "	44'-3 <sup>13</sup> / <sub>16</sub> "	44'-3 <sup>13</sup> / <sub>16</sub> "	44'-3 <sup>13</sup> / <sub>16</sub> "
C	$\Delta$	0	-1°03'01"	0	0	0
	Length (C)-D	15'-0"	14'-9 <sup>3</sup> / <sub>16</sub> "	14'-9 <sup>3</sup> / <sub>16</sub> "	14'-9 <sup>3</sup> / <sub>16</sub> "	14'-9 <sup>3</sup> / <sub>16</sub> "
D	$\Delta$	0	0	0	0	0
	Length (D)-E	59'-6"	58'-7 <sup>3</sup> / <sub>8</sub> "	58'-7 <sup>3</sup> / <sub>8</sub> "	58'-7 <sup>3</sup> / <sub>8</sub> "	58'-7 <sup>3</sup> / <sub>8</sub> "
E	$\Delta$	0	1°47'20"	0	-1°41'11"	-1°41'11"
	Length (E)-F	15'-0"	15'-0"	14'-9 <sup>3</sup> / <sub>16</sub> "	14'-7"	14'-7"
F	$\Delta$	0	0	0	0	0
	Length (F)-G	52'-0"	52'-0"	51'-2 <sup>1</sup> / <sub>16</sub> "	50'-6 <sup>1</sup> / <sub>16</sub> "	50'-6 <sup>1</sup> / <sub>16</sub> "
G	$\theta$	26°37'11"	26°37'11"	24°49'51"	23°08'40"	23°08'40"

Deflection Sign Convention: Negative (-) to Right.

FRAMING PLAN

Scale: 3/32" = 1'-0"

Crossframes connected to Beams 1 thru 10, 12 and 14 shall be placed normal to E Beam. All crossframe angles are  $\angle$  3"x3"x3/8". Crossframes indicated by a double line include an additional horizontal angle near the top flange, for detail see Transverse Section, sht. 16/24

Crossframe spacing may be adjusted to clear field splices.

19/24

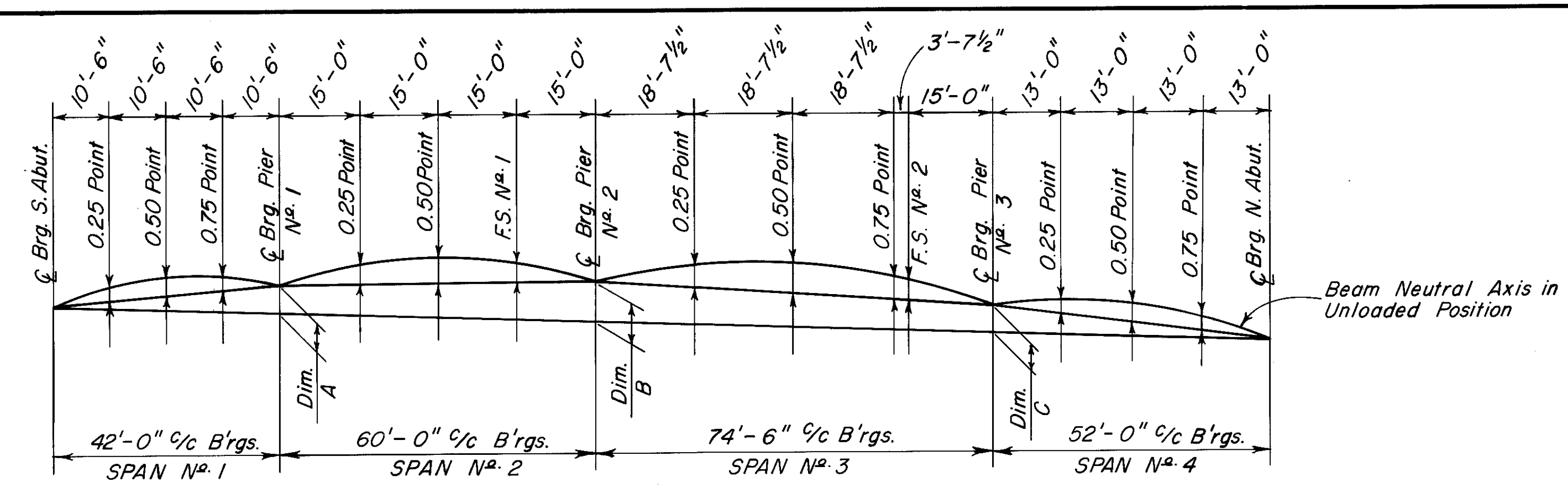
ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WERTON

**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 33 - 1542  
S.R. 315 OVER U.S. 33 RELOCATED

FRANKLIN COUNTY STA. 117+19.11 TO  
STA. 119+52.65

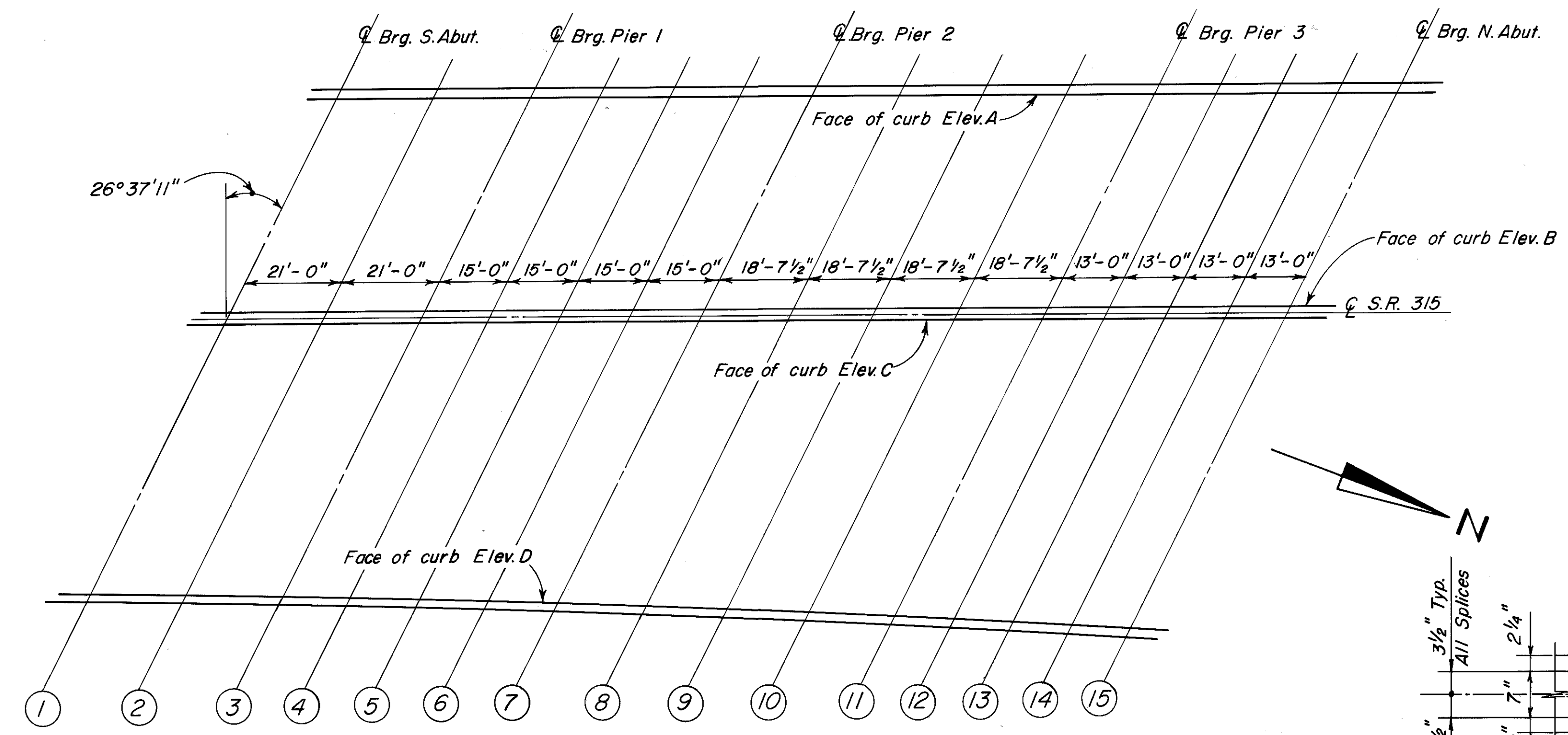
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISION
DEM	KRH		MAP	G.W.M.	5/24/89	



**CAMBER AND BLOCKING DIAGRAM**

Location	SPAN No. 1			SPAN No. 2			SPAN No. 3				SPAN No. 4		
	0.25	0.50	0.75	0.25	0.50	F.S.#1	0.25	0.50	0.75	F.S.#2	0.25	0.50	0.75
Point along Beam	0.25	0.50	0.75	0.25	0.50	F.S.#1	0.25	0.50	0.75	F.S.#2	0.25	0.50	0.75
Deflection due to weight of steel	0	0	0	0	0	0	1/16	1/8	1/16	1/16	0	0	0
Deflection due to remaining dead load	1/8	1/8	1/16	1/8	3/16	1/16	7/16	3/4	1/16	3/8	1/16	3/16	1/8
Adjust req'd. for vertical curve	1/8	3/16	1/8	1/4	3/16	1/4	3/8	1/2	3/8	5/16	3/16	1/4	3/16
Required shop camber	1/4	5/16	3/16	3/8	1/2	5/16	7/8	1 3/8	7/8	3/4	1/4	7/16	5/16

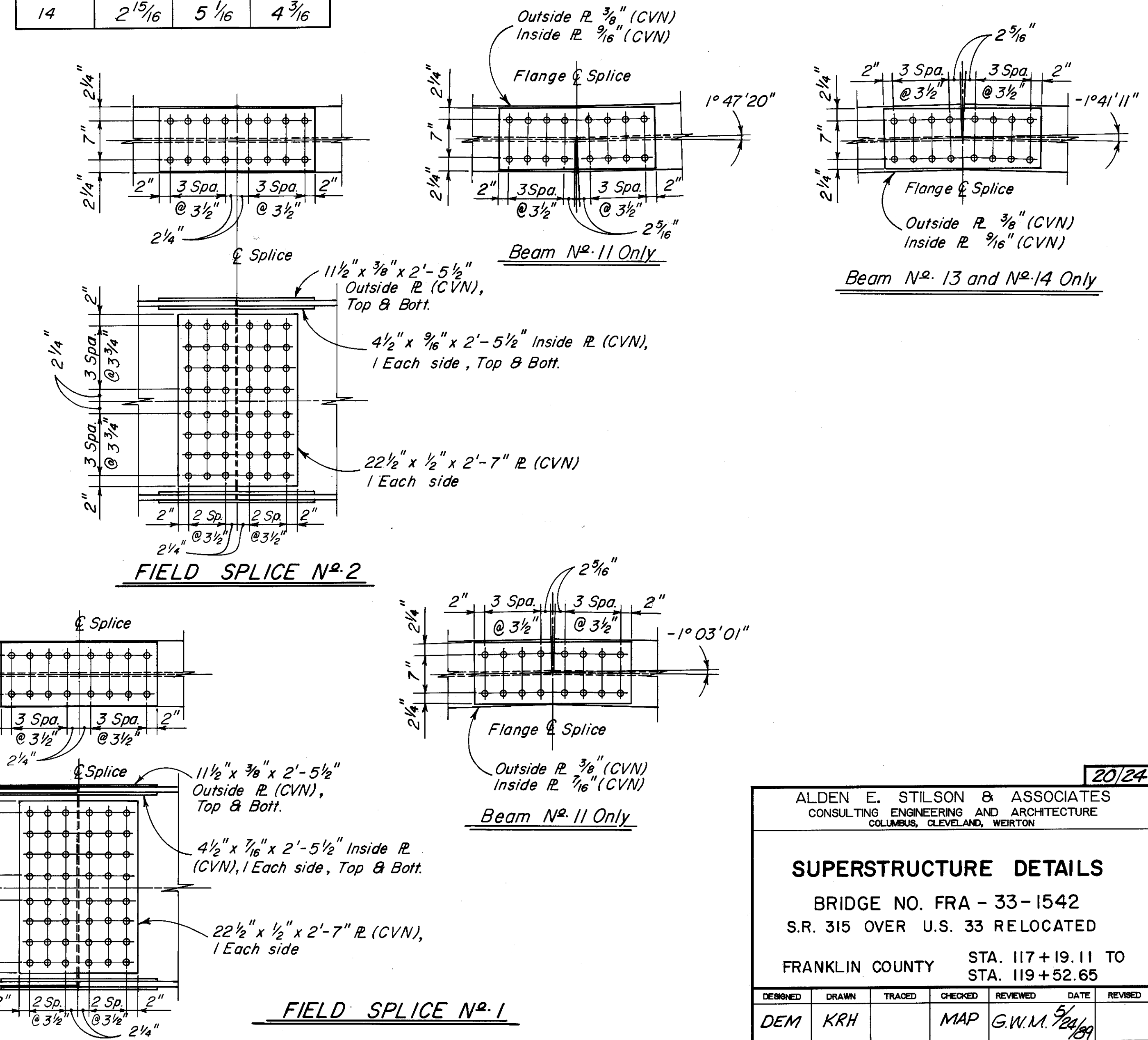
Beam No.	Dim. "A"	Dim. "B"	Dim. "C"
1 thru 10	2 3/4	4 1/2	3 3/16
11	2 3/4	4 1/2	3 1/8
12	2 3/4	4 5/8	3 3/16
13	2 7/8	4 15/16	4
14	2 15/16	5 1/16	4 3/16



**SCREED ELEVATION LOCATIONS**

**NOTE:**  
 The screed elevations listed are those which are required prior to placing of the concrete deck. Proper allowance has been made for the dead load deflection caused by the weight of the concrete.

Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Elev. A	741.92	741.62	741.27	741.02	740.74	740.46	740.15	739.80	739.42	738.96	738.48	738.16	737.83	737.48	737.13
Elev. B	742.25	741.98	741.65	741.43	741.17	740.90	740.62	740.29	739.94	739.51	739.05	738.75	738.43	738.10	737.76
Elev. C	742.27	741.99	741.67	741.45	741.19	740.93	740.64	740.32	739.96	739.54	739.08	738.78	738.46	738.14	737.80
Elev. D	742.40	742.16	741.87	741.67	741.44	741.20	740.94	740.64	740.31	739.91	739.49	739.20	738.89	738.54	738.19



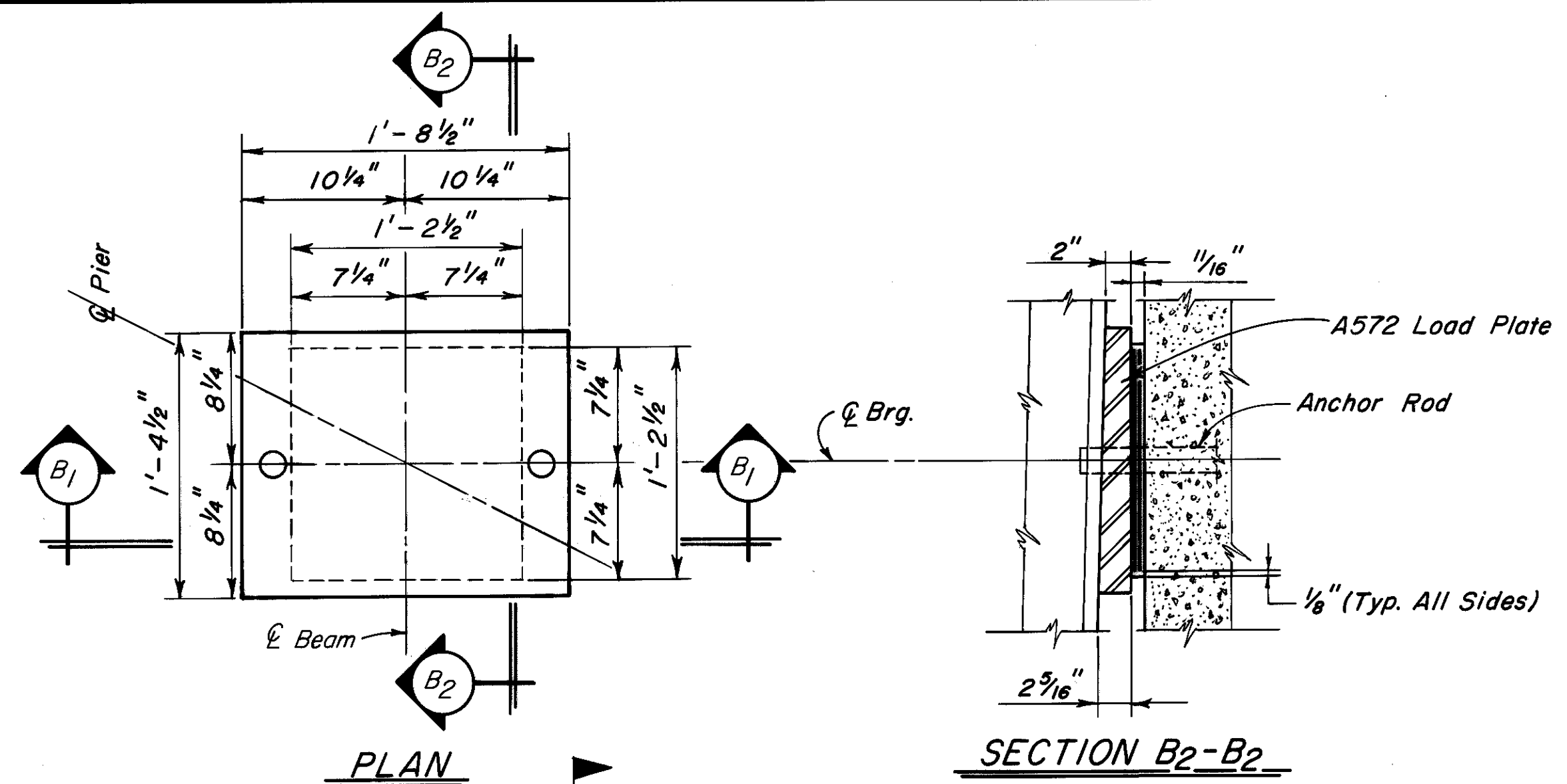
20/24

ALDEN E. STILSON & ASSOCIATES  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS, CLEVELAND, WERTON

**SUPERSTRUCTURE DETAILS**  
 BRIDGE NO. FRA - 33-1542  
 S.R. 315 OVER U.S. 33 RELOCATED  
 FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

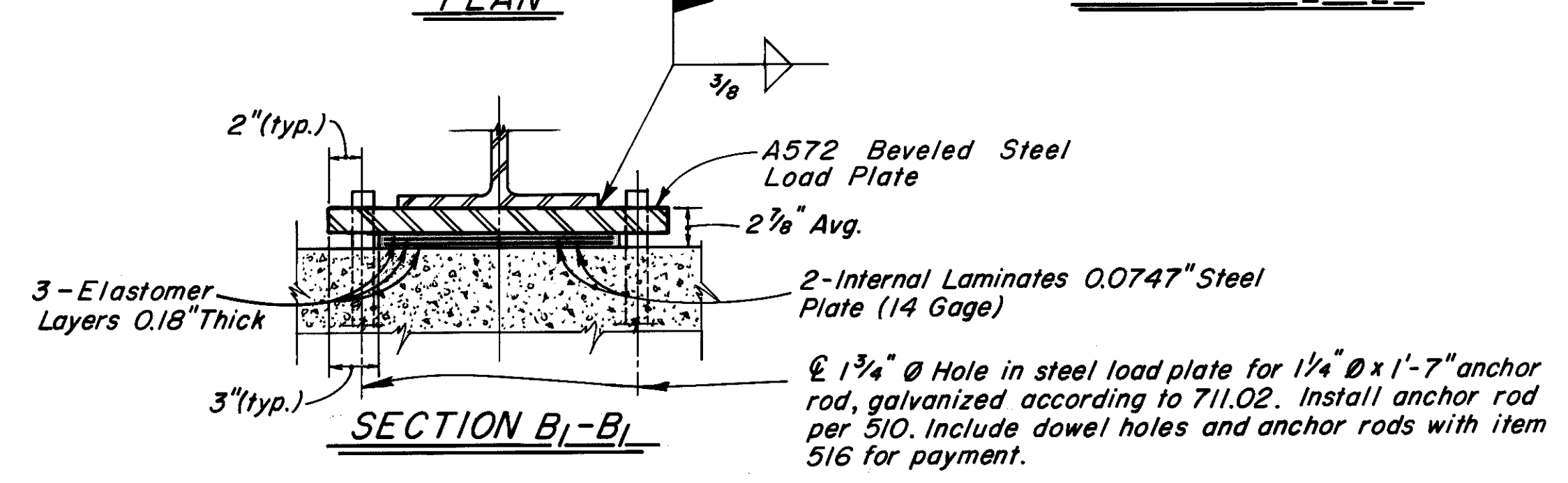
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/69	





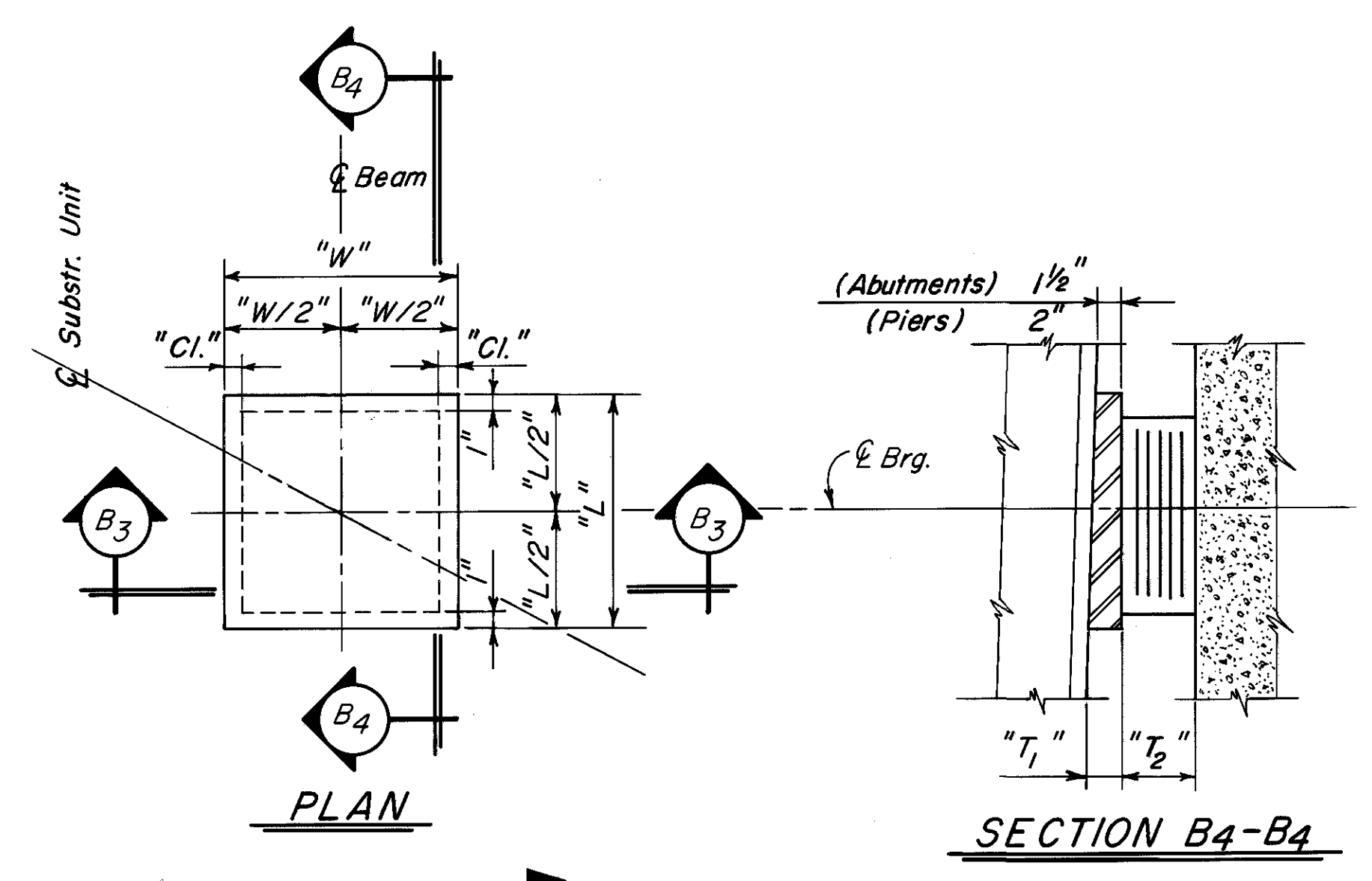
PLAN

SECTION B<sub>2</sub>-B<sub>2</sub>



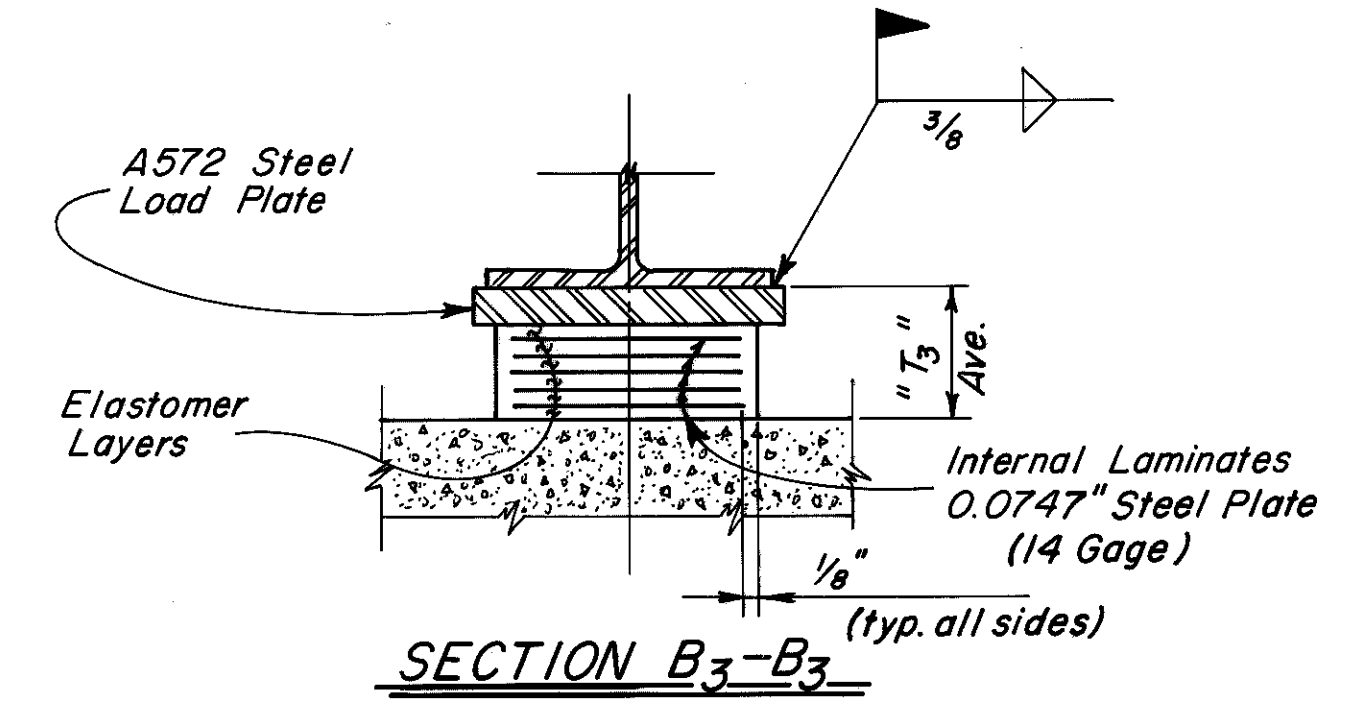
SECTION B<sub>1</sub>-B<sub>1</sub>

**FIXED BEARING**  
PIER No. 2



PLAN

SECTION B<sub>4</sub>-B<sub>4</sub>



SECTION B<sub>3</sub>-B<sub>3</sub>

**EXPANSION BEARINGS**

LAMINATED ELASTOMERIC EXPANSION BEARINGS								
LOCATION	"W"	"L"	"CL."	"T <sub>1</sub> "	"T <sub>2</sub> "	"T <sub>3</sub> "	Elastomer Layers	Internal Laminates
South Abutment	1'-2"	1'-1"	1 1/2"	1 1/16"	1 29/32"	3 3/8"	7-0.19"	6
Pier No. 1	1'-6"	1'-6"	1"	2 1/4"	1 9/16"	3 1/16"	5-0.25"	4
Pier No. 3	1'-6"	1'-6"	1"	2 3/8"	1 9/16"	3 3/4"	5-0.25"	4
North Abutment	1'-2"	1'-1"	1 1/2"	1 13/16"	1 29/32"	3 1/16"	7-0.19"	6

BEARING LOCATION	REACTIONS		
	Dead Load (Kips)	Live Load (Kips)	Maximum Reaction (Kips)
South Abutment	23.2	72.1	95.3
Pier No. 1	78.9	105.7	184.6
Pier No. 2	104.5	122.7	227.2
Pier No. 3	106.2	119.2	225.4
North Abutment	27.2	78.7	105.9

**NOTES:**

The steel laminate shall be vulcanized bonded to the neoprene during the molding process as per item 711.23.

At the option of the contractor, the bearing anchor rods (or formed holes), located and supported by templates, may be cast in place.

The anchor rods shall be galvanized according to 711.02. Install the anchor rod as per 510. Include dowel holes and anchor rods with item 516 for payment.

If deck concrete is placed at an ambient temperature higher than 80°F or lower than 40°F, and the bearing shear deflection exceeds one-sixth of the bearing height at 60°F ± 10°F, the beams shall be raised to allow the bearings to return to their undeformed shape at 60°F ± 10°F.

Bearing seats shall be level.

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).

**Tolerances:** Individual elastomer layer thickness: ± 20% of design value  
Plan dimensions: - 0", + 1/4"; Design thickness: - 0", + 1/4"; Edge cover of embedded laminates: - 0", + 1/8"

The laminated elastomeric bearing manufacturer shall proof load each laminated elastomeric bearing with a compressive load equal to 1.5 times the maximum design load as per article 25.7, bearing tests and acceptance criteria, division II, construction of the 1985 interim specifications for the "Standard Specifications For Highway Bridges" adopted by the American Association of State Highway and Transportation Officials, thirteenth edition, 1983. The testing shall be included in the price bid for the bearings. Acceptance of the bearing shall be according to level I acceptance criteria of article 25.7 and 711.23 of the construction and material specifications. The manufacturer shall furnish certified test data.

**NOTES:**

The elastomer for fixed and expansion bearings shall be neoprene of 50 durometer hardness.

The elastomer shall be vulcanized bonded to the steel load plate during the molding process.

Welding shall be controlled so that the plate temperature at the elastomer bonded surface does not exceed 400°F, as determined by use of pyrometric sticks or other temperature monitoring devices.

21/24

ALDEN E. STILSON & ASSOCIATES  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS, CLEVELAND, WEIRTON

**SUPERSTRUCTURE DETAILS**

BRIDGE NO. FRA - 33-1542  
S.R. 315 OVER U.S. 33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO  
STA. 119+52.65

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
DEM	KRH		MAP	G.W.M.	5/24/89	

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
SOUTH ABUTMENT											
A 5005	6	14-9	92	ST							
A 5006	2	7-0	15	ST							
A 5007	4	9-11	41	12	2-0	7-10		0-11			
A 5008	10	8-11	93	ST							
A 5009	8	4-6	38	ST							
A 5017	8	10-0	83	ST							
A 5020	6	34-6	216	ST							
A 5024	6	31-10	199	ST							
A 5029	6	23-2	145	ST							
A 5031	6	28-10	180	ST							
A 5032	6	16-6	103	ST							
A 8001	77	5-10	1199	21	3-3	1-3	0-10				
F 5001	94	8-3	809	2	1-7	5-4	1-7				
F 5003	26	10-11	296	3	2-2	3-0	2-2	3-0			
F 6001	94	14-2	2000	2	6-7	5-4	2-7				
F 6002	12	19-10	357	1		9-6	1-2	9-6			
F 8001	28	30-0	2243	ST							
F 8002	7	10-2	190	ST							
F 8004	6	11-6	184	ST							
F 8005	6	12-10	206	ST							
F 8006	2	5-0	27	ST							
SOUTH ABUTMENT-EPOXY COATED											
AE 5001	70	4-11	359	1		1-6	2-2	1-6			
AE 5002	94	7-10	768	1		2-4	3-5	2-4			
AE 5003	10	12-9	133	ST						3	
AE 5004	16	4-6	75	ST							
AE 5010	2	5-4		ST						1	
THRU			63		VARY LENGTH BY 0-4 1/4						
AE 5014	2	6-9		ST						1	
AE 5015	16	2-9	46	11	2-2						
AE 5016	6	3-9	23	ST							
AE 5018	8	6-11	58	23	0-8	3-3	3-0				
AE 5019	8	34-9	290	ST							
AE 5020	5	34-6	180	ST							
AE 5021	2	29-2	61	ST							
AE 5022	3	31-2	98	ST							
AE 5023	3	30-6	95	ST							
AE 5024	5	31-10	166	ST							
AE 5025	1	22-0	23	ST							
AE 5026	1	22-9	24	ST							
AE 5027	3	23-6	74	ST							
AE 5028	3	24-2	76	ST							
AE 5029	5	23-2	121	ST							
AE 5030	8	27-5	229	ST							
AE 5031	5	28-10	150	ST							
AE 5127	4	3-0	13	ST							
AE 5128	4	3-3	14	11	2-8						
AE 5129	12	4-10	60	ST							
AE 5136	6	6-3	39	1		2-8	1-2	2-8			
AE 5230	12	1-4	17	ST							
AE 5231	12	3-0	38	ST							
AE 5232	5	2-9	14	ST							
AE 5233	5	2-5	13	ST							
AE 5234	5	3-5	18	1		2-10	0-9				
AE 5235	5	2-5	13	15	0-10	0-6	0-9	0-5	0-6		
AE 5236	10	14-6	151	ST							

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
SOUTH ABUTMENT-EPOXY COATED CONTINUED											
AE 6001	118	5-10	1034	2	2-0	0-11	3-3				
AE 6002	118	5-1	901	2	2-0	1-5	2-0				
AE 6003	118	9-3	1639	2	4-1	1-5	4-1				
AE 6004	2	4-6	14	15	0-7	0-2	3-3	0-9			
AE 6005	2	4-8	14	15	0-7	0-3	3-5	0-9			
AE 6006	2	5-0	15	15	0-8	0-4	3-7	0-9			
AE 6007	2	5-2	16	15	0-8	0-5	3-9	0-9			
AE 6008	2	5-6	17	15	0-9	0-6	3-11	0-9			
AE 6009	6	2-9	25	15	0-7	0-2	1-6	0-9			
AE 6010	12	5-7	101	15	0-9	0-6	4-0	0-9			
FE 5002	96	7-1	709	2	6-7	0-8					
FE 5004	1	7-8	8	2	7-2	0-8					
NORTH ABUTMENT											
A 5005	6	14-9	92	ST							
A 5006	2	7-0	15	ST							
A 5007	4	9-11	41	12	2-0	7-10		0-11			
A 5008	10	8-11	93	ST							
A 5009	8	4-6	38	ST							
A 5017	8	10-0	83	ST							
A 5033	6	29-9	186	ST							
A 5037	6	23-2	145	ST							
A 5042	6	22-5	140	ST							
A 5043	6	29-3	183	ST							
A 5045	6	23-7	148	ST							
A 5032	6	16-6	103	ST							
A 8001	84	5-10	1308	21	3-3	1-3	0-10				
F 5001	98	8-3	843	2	1-7	5-4	1-7				
F 5003	26	10-11	296	3	2-2	3-0	2-2	3-0			
F 6001	98	14-2	2085	2	6-7	5-4	2-7				
F 6002	12	19-10	357	1		9-6	1-2	9-6			
F 8001	28	30-0	2243	ST							
F 8003	7	20-2	377	ST							
F 8004	6	11-6	184	ST							
F 8005	6	12-10	206	ST							
F 8006	2	5-0	27	ST							
NORTH ABUTMENT-EPOXY COATED											
AE 5001	70	4-11	359	1		1-6	2-2	1-6			
AE 5002	98	7-10	801	1		2-4	3-5	2-4			
AE 5003	10	12-9	133	ST						3	
AE 5004	16	4-6	75	ST							
AE 5010	2	5-4		ST						1	
THRU			63		VARY LENGTH BY 0-4 1/4						
AE 5014	2	6-9		ST						1	
AE 5015	16	2-9	46	11	2-2						
AE 5016	6	3-9	23	ST							
AE 5018	8	6-11	58	23	0-8	3-3	3-0				
AE 5032	8	29-6	246	ST							
AE 5033	5	29-9	155	ST							
AE 5034	2	20-8	43	ST							
AE 5035	3	22-8	71	ST							
AE 5036	3	21-9	68	ST							
AE 5037	5	23-2	121	ST							
AE 5038	1	21-8	23	ST							
AE 5039	1	22-0	23	ST							
AE 5040	3	23-0	72	ST							
AE 5041	3	23-9	74	ST							
AE 5042	5	22-5	117	ST							
AE 5043	13	29-3	397	ST							

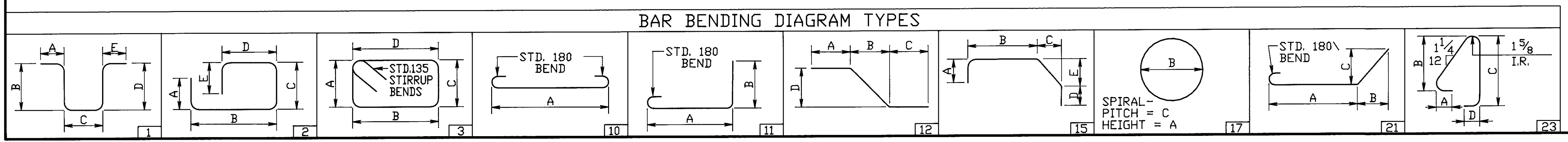
MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
NORTH ABUTMENT-EPOXY COATED CONTINUED											
AE 5044	8	22-0	184	ST							
AE 5045	5	23-7	123	ST							
AE 5127	4	3-0	13	ST							
AE 5128	4	3-3	14	11	2-8						
AE 5129	12	4-10	60	ST							
AE 5136	6	6-3	39	1		2-8	1-2	2-8			
AE 5230	12	1-4	17	ST							
AE 5231	12	3-0	38	ST							
AE 5232	5	2-9	14	ST							
AE 5233	5	2-5	13	ST							
AE 5234	5	3-5	18	1		2-10	0-9				
AE 5235	5	2-5	13	15	0-10	0-6	0-9	0-5	0-6		
AE 5236	10	14-6	151	ST							
AE 6001	128	5-10	1121	2	2-0	0-11	3-3				
AE 6002	128	5-1	977	2	2-0	1-5	2-0				
AE 6003	128	9-3	1778	2	4-1	1-5	4-1				
AE 6004	2	4-6	14	15	0-7	0-2	3-3	0-9			
AE 6005	2	4-8	14	15	0-7	0-3	3-5	0-9			
AE 6006	2	5-0	15	15	0-8	0-4	3-7	0-9			
AE 6007	2	5-2	16	15	0-8	0-5	3-9	0-9			
AE 6008	2	5-6	17	15	0-9	0-6	3-11	0-9			
AE 6009	6	2-9	25	15	0-7	0-2	1-6	0-9			
AE 6010	12	5-7	101	15	0-9	0-6	4-0	0-9			
FE 5002	99	7-1	731	2	6-7	0-8					
FE 5004	2	7-8	16	2	7-2	0-8					
PIER 1-WEST BENT											
PE 4001	1	14-11	285	17	14-11	2-8				6	
NO. TURNS= 43 NO. SPACERS= 4											
PE 4002	2	15-2	571	17	15-2	2-8				6	
NO. TURNS= 43 NO. SPACERS= 8											
PE 5001	10	6-9	70	12	2-8	4-0		0-9			
PE 5002	4	16-8	70	ST							
PE 5003	2	21-4	45	ST							
PE 5004	4	26-8	111	ST							
PE 5005	2	11-1		3	2-8	2-7	2-8	2-7		1	
THRU			72		VARY LENGTH BY 0-6						
VARY DIM. B BY 0-3											
VARY DIM. D BY 0-3											
PE 5007	2	12-1		3	2-8	3-1	2-8	3-1		1	
PE 5008	32	12-3	409	3	2-8	3-2	2-8	3-2			
PE 5100	30	6-5	201	1		2-0	2-8	2-0			
PE 6001	14	21-8	456	ST							
PE 7001	12	21-11	538	1	2-5	19-8					
PE 7002	6	19-6	239	ST							
PE 8001	2	19-6	104	ST							
PE10001	8	17-11	617	ST							
PE10002	16	18-5	1268	ST							
F 7001	60	9-2	1124	10	7-6						
FE10001	24										

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 1-EAST BENT											
PE 5009	4	15-11	66	ST							
PE 5010	6	19-4	121	ST							
PE 5011	4	24-11	104	ST							
PE 5012	10	7-0	73	12	2-8	4-3		0-9			
PE 5013	2	10-11		3	2-8	2-6	2-8	2-6		1	
THRU			97		VARY LENGTH BY 0-5 3/8						
					VARY DIM. B BY 0-2 5/8						
					VARY DIM. D BY 0-2 5/8						
PE 5016	2	12-3		3	2-8	3-2	2-8	3-2		1	
PE 5017	33	12-3	422	3	2-8	3-2	2-8	3-2			
PE 5100	40	6-5	268	1		2-0	2-8	2-0			
PE 6002	21	19-11	628	ST							
PE 7003	12	19-3	472	1	2-5	17-0					
PE 7004	12	21-5	525	ST							
PE10003	32	18-7	2559	ST							
F 7001	80	9-2	1499	10	7-6						
FE10001	32	8-10	1216	1	1-8	7-6					
PIER 2-WEST BENT											
PE 4004	1	13-9	265	17	13-9	2-8				6	
					NO. TURNS= 40		NO. SPACERS= 4				
PE 4005	1	14-0	265	17	14-0	2-8				6	
					NO. TURNS= 40		NO. SPACERS= 4				
PE 4006	1	14-3	272	17	14-3	2-8				6	
					NO. TURNS= 41		NO. SPACERS= 4				
PE 5001	10	6-9	70	12	2-8	4-0		0-9			
PE 5002	4	16-8	70	ST							
PE 5003	2	21-4	45	ST							
PE 5004	4	26-8	111	ST							
PE 5018	2	11-1		3	2-8	2-7	2-8	2-7		1	
THRU			97		VARY LENGTH BY 0-4						
					VARY DIM. B BY 0-2						
					VARY DIM. D BY 0-2						
PE 5021	2	12-1		3	2-8	3-1	2-8	3-1		1	
PE 5022	48	12-3	613	3	2-8	3-2	2-8	3-2			
PE 5100	30	6-5	201	1		2-0	2-8	2-0			
PE 7005	14	21-11	627	ST							
PE 8002	14	22-5	838	1	2-5	20-3					
PE 8003	8	20-8	441	ST							
PE10004	8	16-9	577	ST							
PE10005	16	17-3	1188	ST							
F 7001	60	9-2	1124	10	7-6						
FE10001	24	8-10	912	1	1-8	7-6					

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 2-EAST BENT											
PE 4007	2	14-3	543	17	14-3	2-8				6	
					NO. TURNS= 41		NO. SPACERS= 8				
PE 4008	2	14-6	556	17	14-6	2-8				6	
					NO. TURNS= 42		NO. SPACERS= 8				
PE 5023	4	16-0	67	ST							
PE 5024	6	20-4	127	ST							
PE 5025	4	25-6	106	ST							
PE 5026	10	6-10	71	12	2-8	4-1		0-9			
PE 5027	2	11-1		3	2-8	2-7	2-8	2-7		1	
THRU			97		VARY LENGTH BY 0-4 5/8						
					VARY DIM. B BY 0-2 3/8						
					VARY DIM. D BY 0-2 3/8						
PE 5030	2	12-3		3	2-8	3-2	2-8	3-2		1	
PE 5031	44	12-3	562	3	2-8	3-2	2-8	3-2			
PE 5100	40	6-5	268	1		2-0	2-8	2-0			
PE 7003	16	19-3	630	1	2-5	17-0					
PE 7006	16	22-5	733	ST							
PE 7007	21	21-2	909	ST							
PE10006	16	17-4	1193	ST							
PE10007	16	17-7	1211	ST							
F 7001	80	9-2	1499	10	7-6						
FE10001	32	8-10	1216	1	1-8	7-6					
PIER 3-WEST BENT											
PE 4009	1	12-2	232	17	12-2	2-8				6	
					NO. TURNS= 35		NO. SPACERS= 4				
PE 4010	1	12-6	239	17	12-6	2-8				6	
					NO. TURNS= 36		NO. SPACERS= 4				
PE 4011	1	12-10	245	17	12-10	2-8				6	
					NO. TURNS= 37		NO. SPACERS= 4				
PE 5001	10	6-9	70	12	2-8	4-0		0-9			
PE 5002	4	16-8	70	ST							
PE 5003	2	21-4	45	ST							
PE 5004	4	26-8	111	ST							
PE 5018	2	11-1		3	2-8	2-7	2-8	2-7		1	
THRU			97		VARY LENGTH BY 0-4						
					VARY DIM. B BY 0-2						
					VARY DIM. D BY 0-2						
PE 5021	2	12-1		3	2-8	3-1	2-8	3-1		1	
PE 5022	48	12-3	613	3	2-8	3-2	2-8	3-2			
PE 5100	30	6-5	201	1		2-0	2-8	2-0			
PE 7006	14	21-11	627	ST							
PE 8002	14	22-5	838	1	2-5	20-3					
PE 8003	8	20-8	441	ST							
PE10008	8	15-2	522	ST							
PE10009	16	15-10	1090	ST							
F 7001	60	9-2	1124	10	7-6						
FE10001	24	8-10	912	1	1-8	7-6					

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE	
PIER 3-EAST BENT											
PE 4012	2	12-10	490	17	12-10	2-8				6	
					NO. TURNS= 37		NO. SPACERS= 8				
PE 4013	2	13-1	503	17	13-1	2-8				6	
					NO. TURNS= 38		NO. SPACERS= 8				
PE 5001	10	6-9	70	12	2-8	4-0		0-9			
PE 5032	4	16-6	69	ST							
PE 5033	6	21-4	134	ST							
PE 5034	4	26-6	111	ST							
PE 5027	2	11-1		3	2-8	2-7	2-8	2-7		1	
THRU			97		VARY LENGTH BY 0-4 5/8						
					VARY DIM. B BY 0-2 3/8						
					VARY DIM. D BY 0-2 3/8						
PE 5030	2	12-3		3	2-8	3-2	2-8	3-2		1	
PE 5031	54	12-3	690	3	2-8	3-2	2-8	3-2			
PE 5100	40	6-5	268	1		2-0	2-8	2-0			
PE 7007	16	19-9	646	1	2-5	17-6					
PE 7008	24	22-2	1087	ST							
PE 8004	14	24-0	897	ST							
PE10010	16	16-0	1102	ST							
PE10011	16	16-3	1119	ST							
F 7001	80	9-2	1499	10	7-6						
FE10001	32	8-10	1216	1	1-8	7-6					
SUPERSTRUCTURE-EPOXY COATED											
SE 4001	1276	30-0	25571	ST							
SE 4002	160	28-7	3055	ST							
SE 4003	164	30-0	3287	ST							
SE 4004	339	38-0	8605	ST							
SE 4005	32	25-2	538	ST							
SE 5001	390	20-4	8271	ST							
SE 5002	1	4-5		ST						1	
THRU			194		VARY LENGTH BY 1-1 5/8						
SE 5016	1	20-4		ST						1	
SE 5017	1	2-6		ST						1	
THRU			331		VARY LENGTH BY 1-1 5/8						
SE 5038	1	26-4		ST						1	
SE 5039	8	4-5	37	ST							
SE 5040	1	4-5		ST						1	
THRU			401		VARY LENGTH BY 1-1 3/8						
SE 5062	1	29-0		ST						1	
SE 5063	382	29-0	11554	ST							
SE 5064	1	2-9		ST						1	
THRU			148		VARY LENGTH BY 1-1 5/8						
SE 5077	1	17-6		ST						1	
SE 5078	384	28-0	11214	ST							
SE 5079	1	5-4		ST						1	
THRU			365		VARY LENGTH BY 1-1 5/8						
SE 5099	1	28-0		ST						1	
SE 5100	1	6-6		ST						1	
THRU			360		VARY LENGTH BY 1-1 5/8						
SE 5119	1	28-0		ST						1	
SE 5021	175	35-10	6540	ST							
SE 5122	1	5-6		ST						1	
THRU			534		VARY LENGTH BY 1-1 5/8						
SE 5147	1	33-11		ST						1	

NOTE: SEE NOTES ON 24/2A.



STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**

BRIDGE NO. FRA-33-1542  
S.R.315 OVER U.S.33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

DESIGNED: R.T. DRAWN: MAP TRACED: G.W.M. CHECKED: G.W.M. REVIEWED: G.W.M. DATE: 5/18/89



MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SUPERSTRUCTURE-EPOXY COATED CONTINUED										
SE 5148	1108	30- 0	34669	ST						
SE 5149	139	31- 0	4494	ST						
SE 5150	4	4- 8	19	ST						
SE 5151	4	4- 6	19	ST						
SE 5155	40	13- 6	563	ST						
SE 5156	180	7- 2	1345	ST						
SE 5157	28	12- 0	350	ST						
SE 5158	120	6- 5	803	ST						
SE 5159	54	11- 6	648	ST						
SE 5160	60	10-11	683	ST						
SE 5161	18	10- 6	197	ST						
SE 5162	29	27- 9	839	ST						
SE 5200	456	7- 0	3329	23	0- 9	3- 3	3- 0			
SE 5201	456	3- 0	1427	15	0- 9	0-10	0- 9	0- 9	0- 6	
SE 5202	456	2- 3	1070	1	0- 9	1- 8				
SE 5203	920	4- 5	4238	11	3-10					
SE 5204	460	3-10	1839	ST						
SE 5205	690	2- 6	1799	15	0- 6	0-10	0- 9	0- 6	0- 5	
SE 5206	690	2- 3	1619	1	0- 9	1- 8				
SE 5207	1224	3- 9	4787	ST						
SE 6001	772	24-10	28795	ST						
SE 6002	2	4- 5		ST						1
THRU			835		VARY LENGTH BY	1- 1 5/ 8				
SE 6020	2	24-10		ST						1
SE 6021	8	4- 5	53	ST						
SE 6022	2	2- 9		ST						1
THRU			669		VARY LENGTH BY	1- 1 5/ 8				
SE 6039	2	22- 0		ST						1
SE 6040	333	32- 0	16005	ST						
SE 6041	233	23- 8	8283	ST						
SE 6042	1	5- 6		ST						1
THRU			372		VARY LENGTH BY	1- 1 5/ 8				
SE 6058	1	23- 8		ST						1
SE 6059	4	4- 6	27	ST						
SE 6060	1	4- 3		ST						1
THRU			577		VARY LENGTH BY	1- 1 5/ 8				
SE 6082	1	29- 2		ST						1
SE 6083	1	5- 9		ST						1
THRU			629		VARY LENGTH BY	1- 1 5/ 8				
SE 6105	1	30- 8		ST						1
SE 6106	4	4- 8	28	ST						
SE 6107	1	19- 0		ST						1
THRU			2794		VARY LENGTH BY	0- 0 1/ 4				
SE 6199	1	21- 0		ST						1
SE 6200	93	20- 0	2794	ST						
SE 6201	119	21- 6	3843	ST						
SE 6202	1	2- 7		ST						1
THRU			295		VARY LENGTH BY	1- 1 1/ 2				
SE 6218	1	20- 6		ST						1
SE 6219	1	19- 0		ST						1
THRU			3241		VARY LENGTH BY	0- 0 3/ 8				
SE 6322	1	22- 6		ST						1
SE 6323	1	3- 8		ST						1
THRU			265		VARY LENGTH BY	1- 1 7/ 8				
SE 6337	1	19-10		ST						1
SE 7001	1	19- 3		ST						1
THRU			3881		VARY LENGTH BY	0- 0 1/ 4				
SE 7093	1	21- 7		ST						1

MARK	NUM.	LENGTH	WEIGHT	TYPE	A	B	C	D	E	NOTE
SUPERSTRUCTURE-EPOXY COATED CONTINUED										
SE 7094	123	21- 7	5426	ST						
SE 7095	1	3- 4		ST						1
THRU			429		VARY LENGTH BY	1- 1 1/ 2				
SE 7111	1	21- 4		ST						1
SE 7112	93	24- 0	4562	ST						
SE 7113	1	24- 0		ST						1
THRU			5483		VARY LENGTH BY	0- 0 3/ 8				
SE 7216	1	27- 7		ST						1
SE 7217	1	4- 0		ST						1
THRU			553		VARY LENGTH BY	1- 1 5/ 8				
SE 7235	1	24- 6		ST						1

NOTES

1. INDICATES SERIES BAR. EACH BAR VARIES FROM ADJACENT BAR(S) BY TABULATED AMOUNT(S), CALCULATED TO NEAREST 1/8 INCH. WEIGHT SHOWN IS FOR ENTIRE SERIES UTILIZING AVERAGE LENGTH.

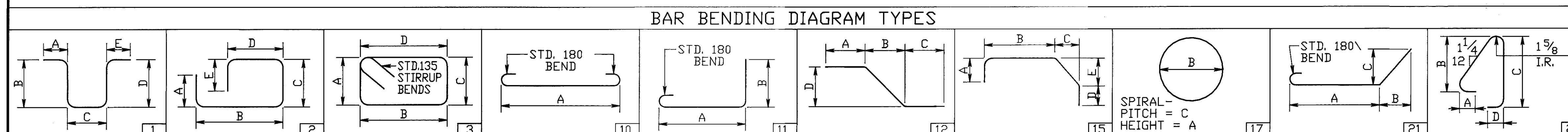
3. COST OF FIELD BENDING SHALL BE INCLUDED WITH ITEM 509.

6. 'LENGTH' SHOWN FOR SPIRAL BARS IS DISTANCE FROM TOP OF FOOTING TO BOTTOM OF PIER CAP. 'NO. TURNS' SHOWN IS 'LENGTH' DIVIDED BY PITCH, PLUS 3 TURNS (NUMBER OF CLOSED COILS), EXPRESSED AS NEAREST WHOLE NUMBER. 1 1/2 CLOSED COILS SHALL BE PROVIDED AT ENDS OF EACH SPIRAL UNIT. FOUR STEEL CHANNEL, TEE OR ANGLE SPACERS, WEIGHING APPROXIMATELY 0.80 LB. PER LIN. FT. OF SPACER SHALL BE PROVIDED FOR EACH SPIRAL UNIT. THEY SHALL BE EQUALLY SPACED ALONG THE PERIPHERY OF COIL. WEIGHT OF SPACERS, AT 0.80 LB. PER LIN. FT. WILL BE PAID FOR AS REINFORCING STEEL AND IS INCLUDED IN TABULATED WEIGHT.

BAR SIZE DESIGNATION  
BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE FOUR DIGITS ARE USED, AND FIRST TWO DIGITS WHERE FIVE DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER. FOR EXAMPLE, A7001 IS A NO. 7 SIZE BAR AND A10140 IS A NO. 10 SIZE.

REFER TO CMS SECTIONS 106.03, 700, 709.01 THROUGH 709.05 AND 709.08. SUFFICIENT ADDITIONAL REINFORCING STEEL SHALL BE PROVIDED FOR SAMPLING. RANDOM SAMPLES SHALL BE REPLACED IN THE STRUCTURES BY THE ADDITIONAL STEEL, SPLICED IN ACCORDANCE WITH 509.08.

ALL REINFORCING STEEL SHALL BE EPOXY COATED. SEE ITEM 509 NOTE ON [3/24].



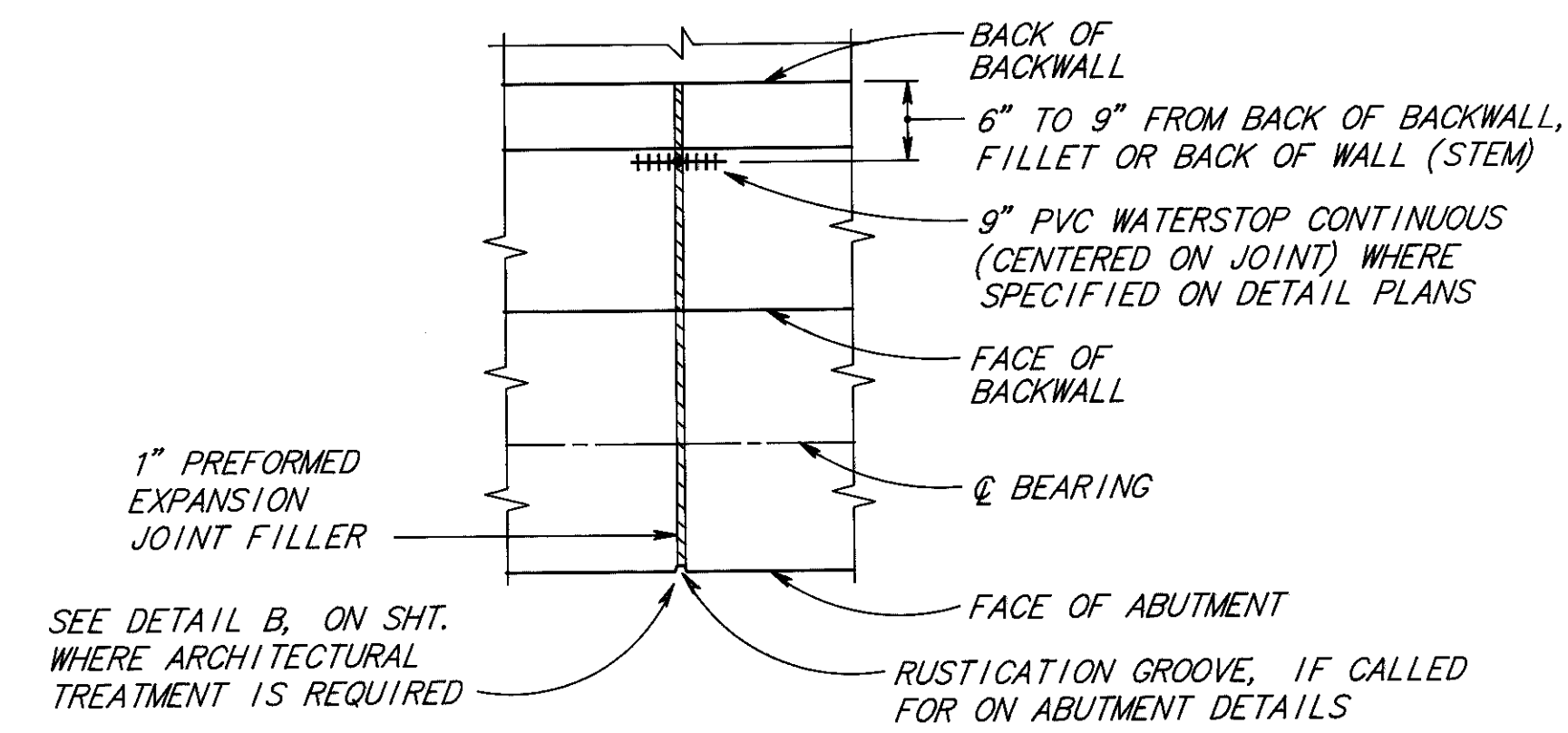
24/24

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**REINFORCING STEEL LIST**

BRIDGE NO. FRA-33-1542  
S.R.315 OVER U.S.33 RELOCATED  
FRANKLIN COUNTY STA. 117+19.11 TO STA. 119+52.65

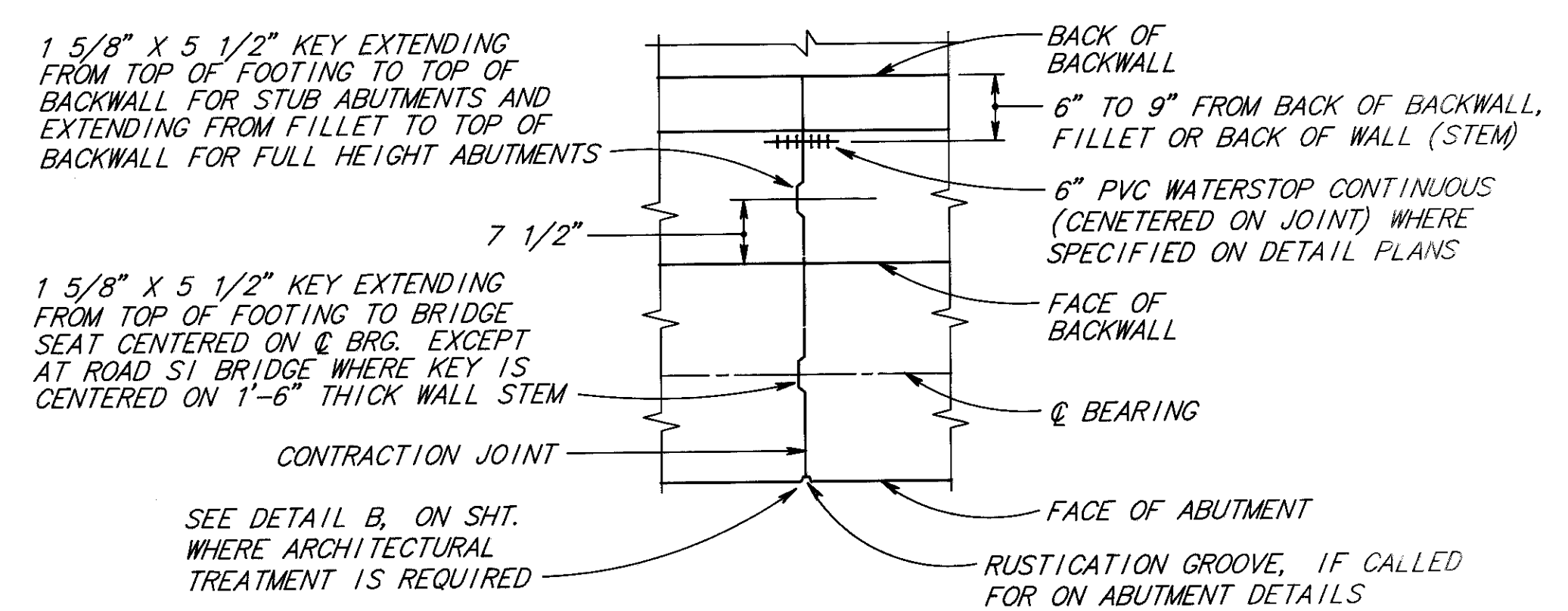
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
R.T.			MAP	G.W.M.	5/24/89	



**ABUTMENT EXPANSION**

**JOINT DETAIL**

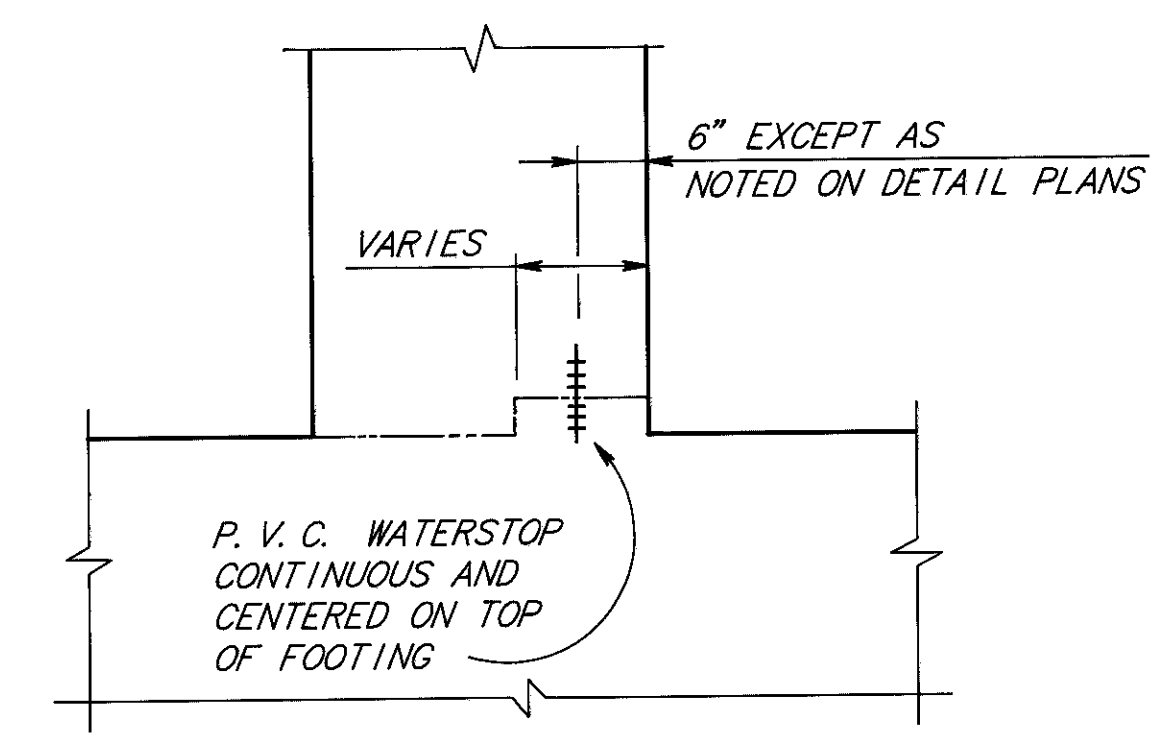
(REINFORCING SHALL NOT EXTEND THROUGH JOINT)



**ABUTMENT CONTRACTION**

**JOINT DETAIL**

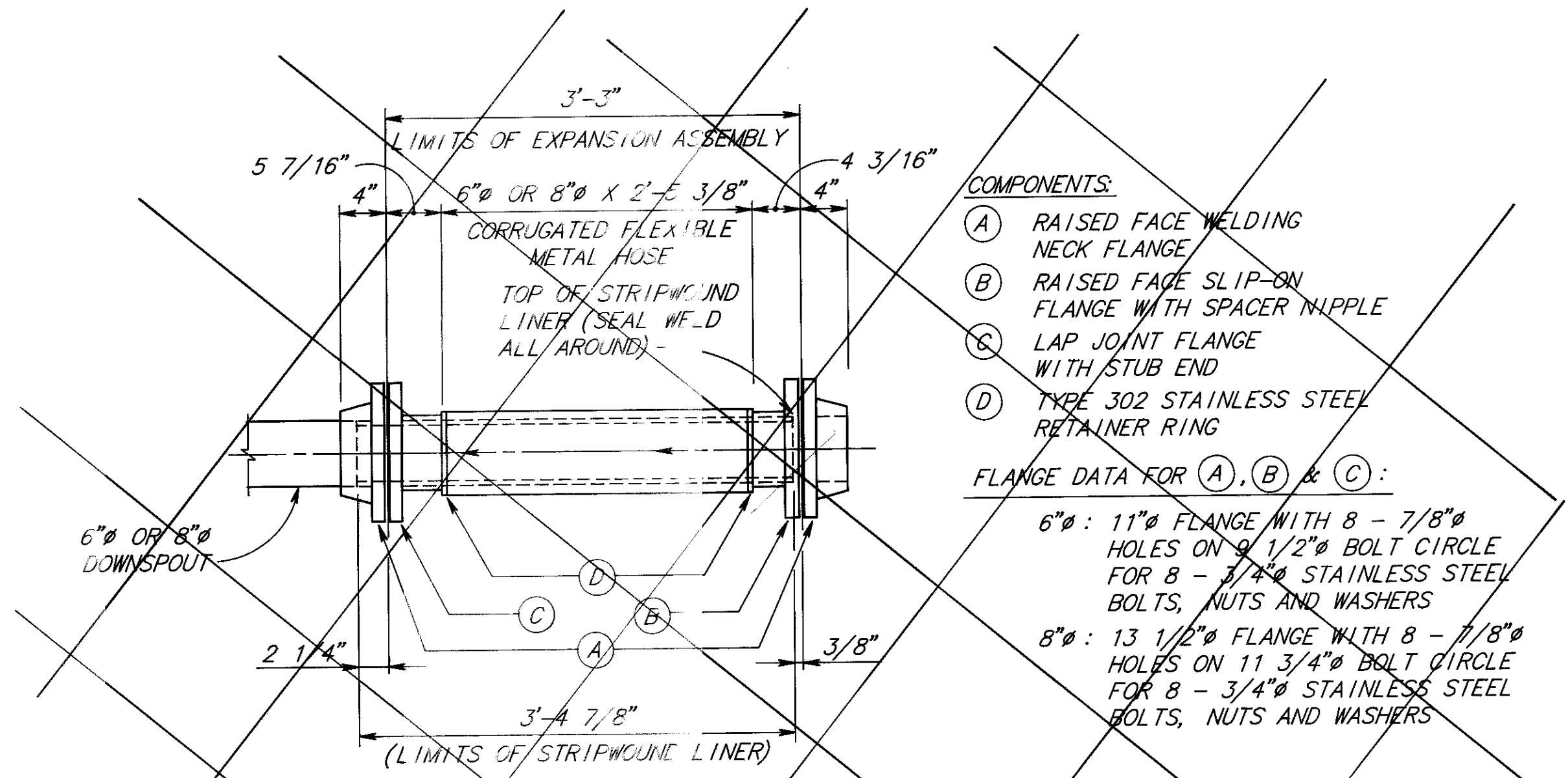
(REINFORCING SHALL NOT EXTEND THROUGH JOINT)



**AT CANTILEVERED ABUTMENTS WINGWALLS & RETAINING WALLS**

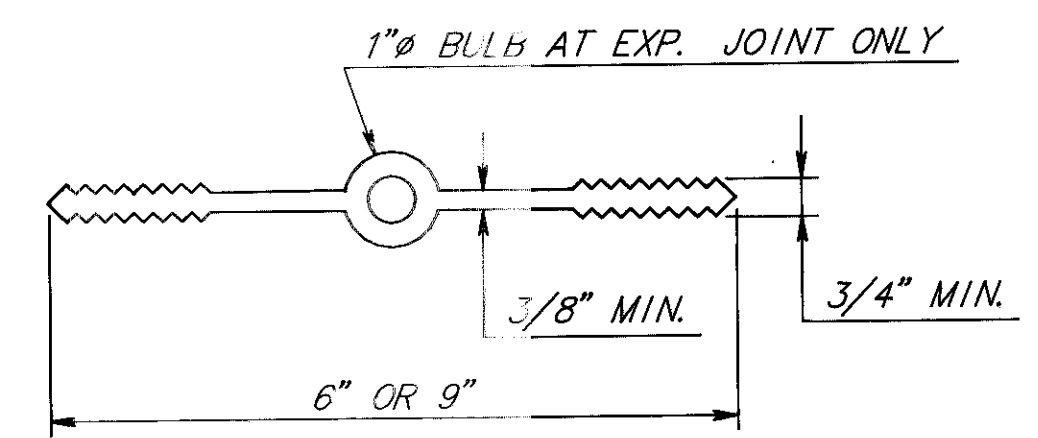
**CONSTRUCTION JOINT AT FOOTINGS**

(PROVIDE PVC WATERSTOP ONLY WHERE CALLED FOR ON DETAIL PLANS)



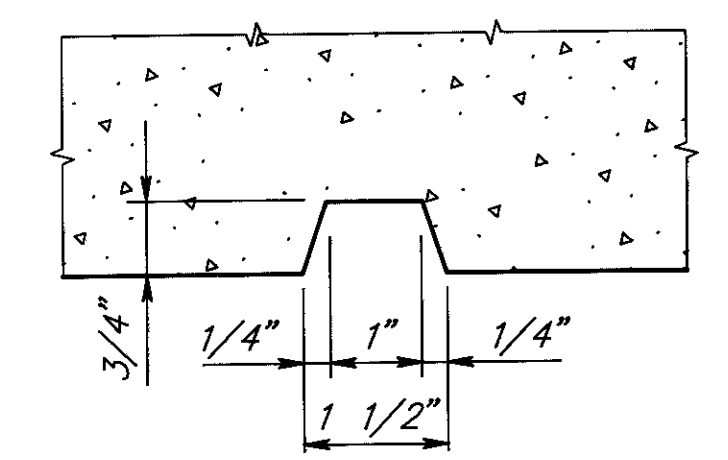
**PIPE EXPANSION ASSEMBLY (FLEXIBLE COUPLING) DETAIL**

TO BE INCLUDED WITH ITEM 518 - 8"Ø OR 6"Ø DOWNSPOUTS, INCLUDING SPECIALS FOR PAYMENT

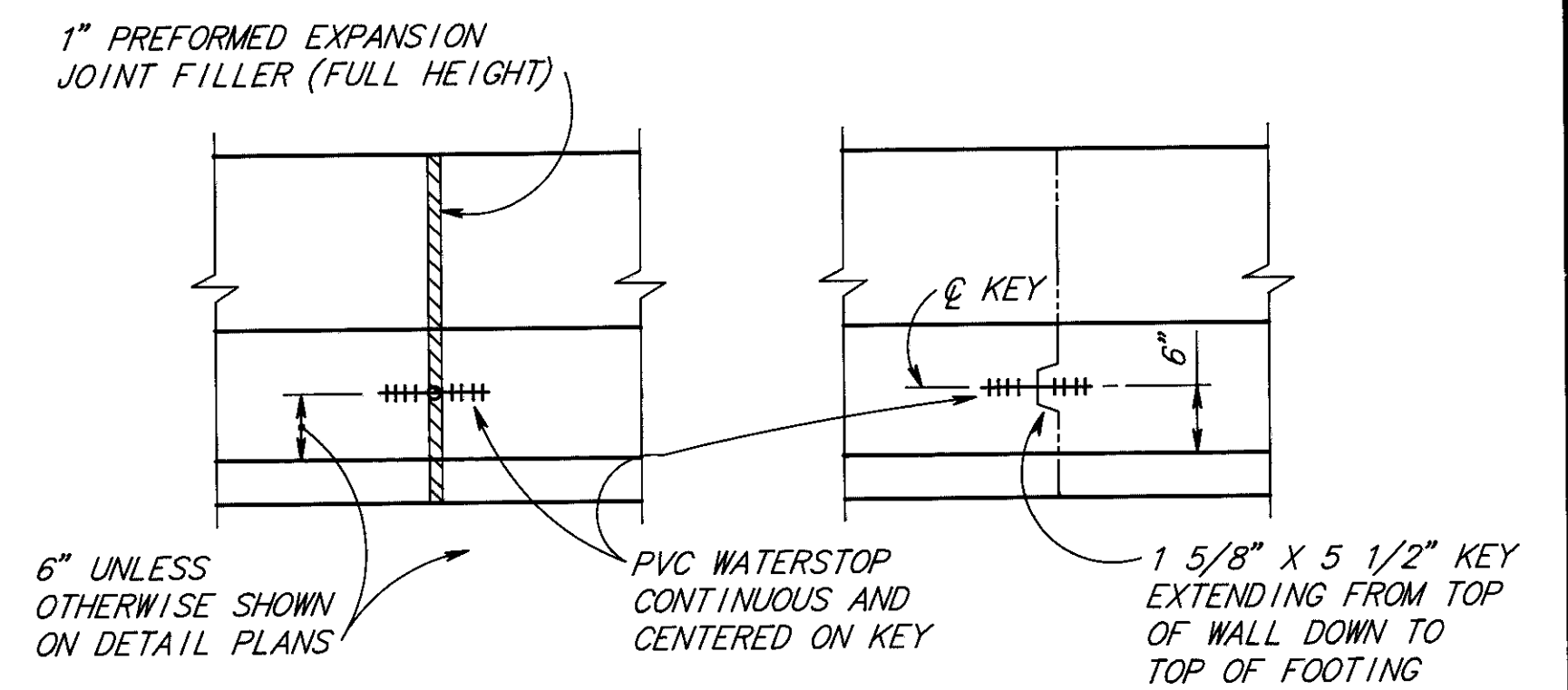


**PVC WATERSTOP DETAIL**

REFER TO NOTES THIS SHEET



**RUSTICATION GROOVE DETAIL**



**EXPANSION JOINT CONTRACTION JOINT**

REINFORCING SHALL NOT EXTEND THROUGH JOINT

**WALL JOINT DETAILS**

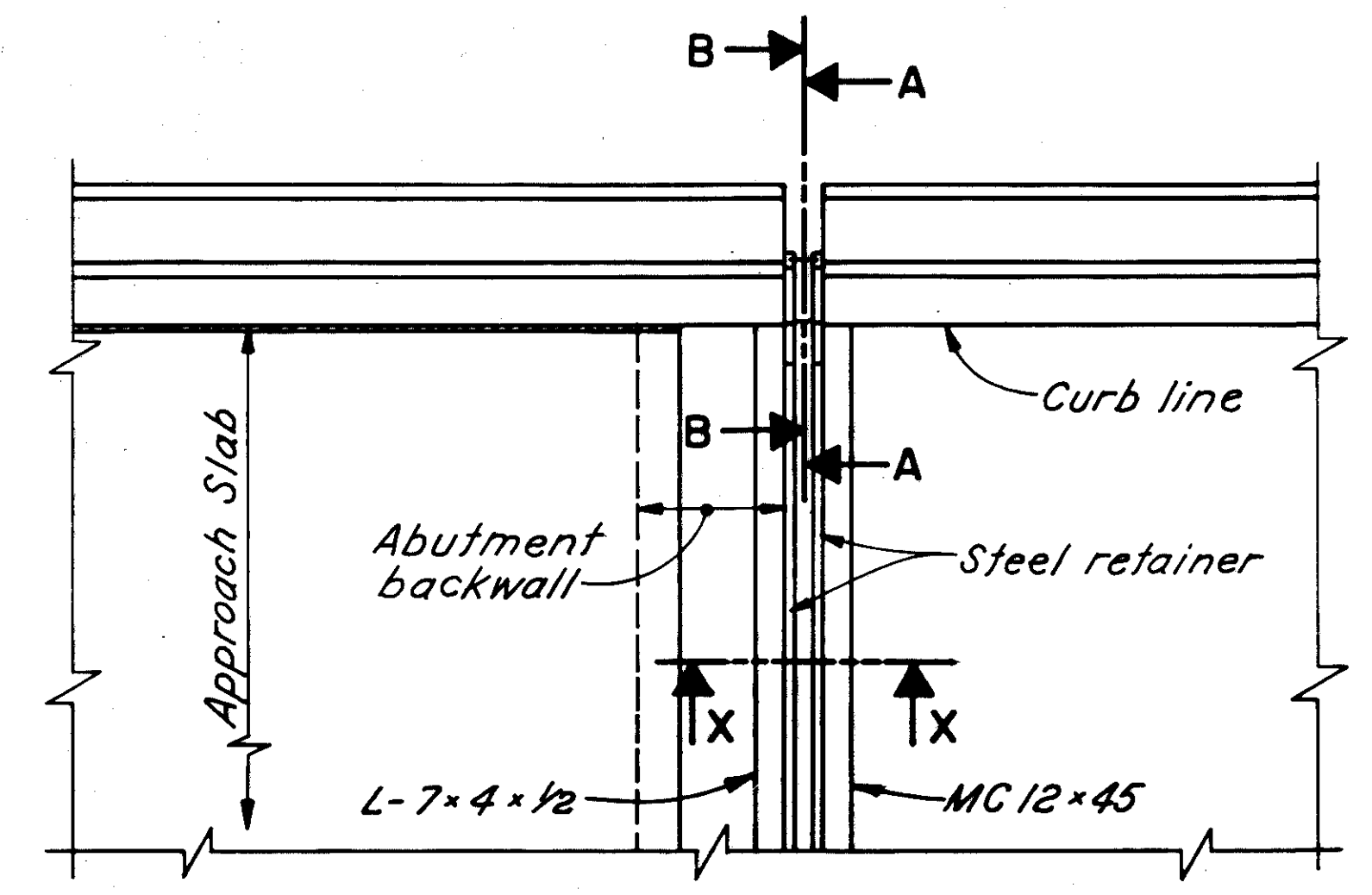
**PVC WATERSTOP NOTES**

1. THE WATERSTOPS SHALL BE OF THE SIZE AND GENERAL SHAPE SHOWN ON THE PLANS. THEY SHALL BE DENSE, HOMOGENOUS, AND WITHOUT HOLES OR OTHER DEFECTS.
2. MITERED SPLICES AT TEES AND ELLS SHALL BE MADE BY HEAT FUSING ENDS OF WATERSTOPS TO FORM A WATERTIGHT JOINT.
3. FOR THE FIRST POUR, THE WATERSTOP SHOULD BE HELD SECURELY IN PLACE BY THE USE OF SPLIT FORMS AND TIE-WIRES. FOR THE SECOND POUR, SECURE THE FREE END OF WATERSTOP IN PROPER POSITION WITH TIE-WIRES. ALTERNATE METHODS, AS APPROVED BY THE ENGINEER, MAY BE USED TO INSURE THE CORRECT POSITIONING OF THE WATERSTOP.

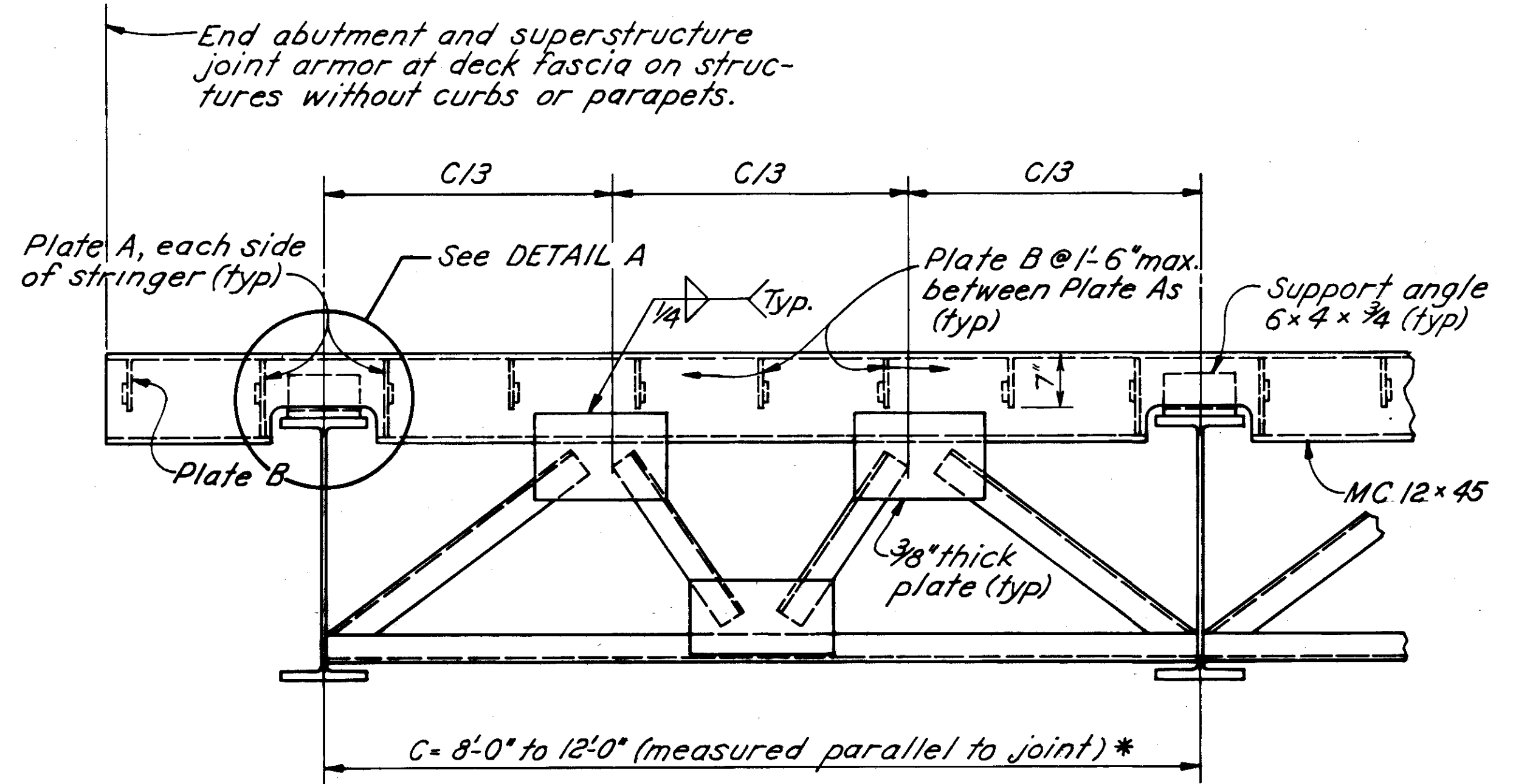
STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

**COMMON DETAILS (BRIDGE AND WALLS)**

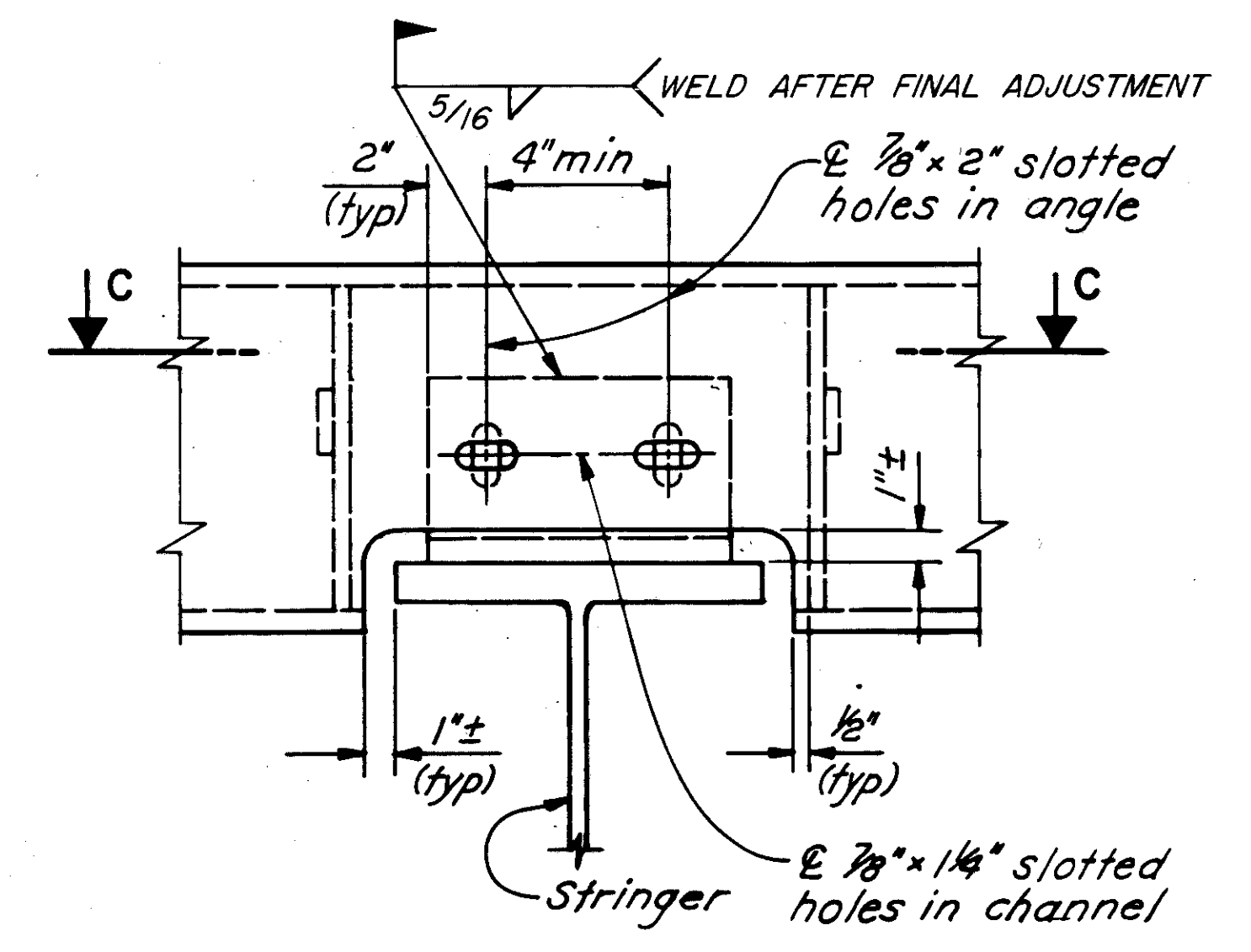
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
PHB	R.T.P.		MAP	G.W.M.	3/24/89	



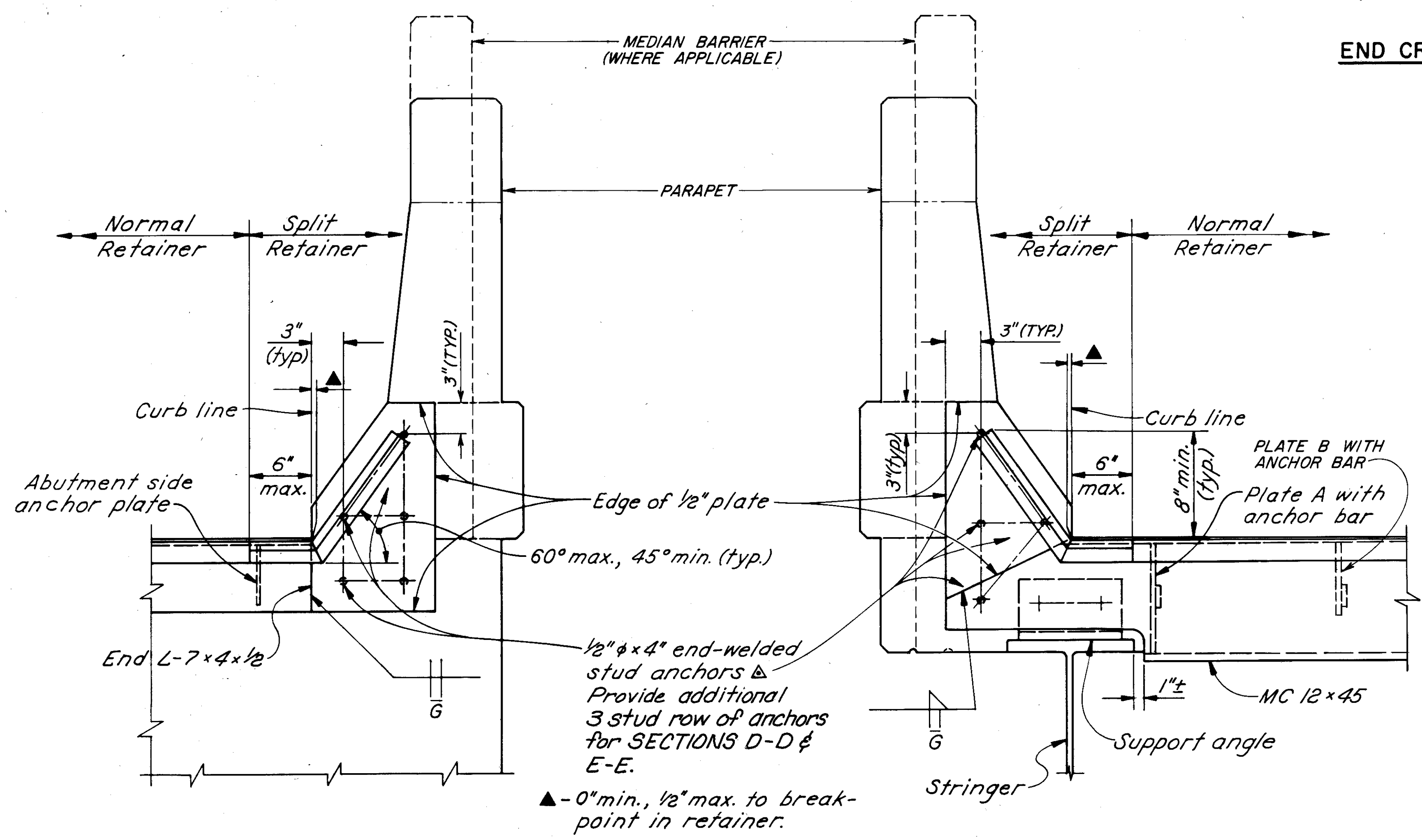
**PART PLAN AT ABUTMENT**  
FOR SQUARE OR LOW SKEWED (15° OR LESS)  
BRIDGES WITH DEFLECTOR PARAPET RAILING



**END CROSSFRAME DETAIL**  
\* For C dimensions and support points other than shown and additional end crossframe details see Standard Drawing SD-1-69, sheet 1 of 4.



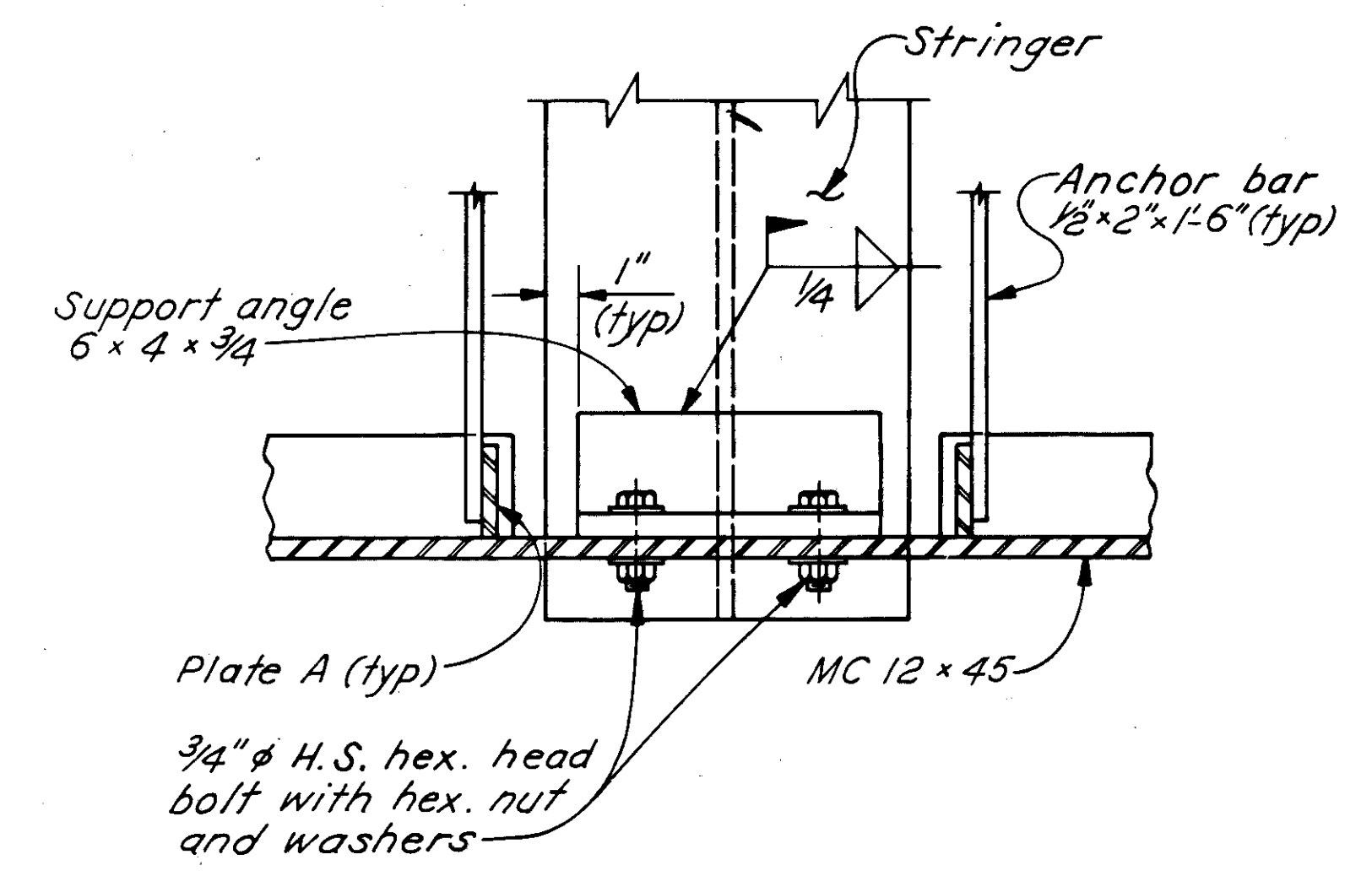
**DETAIL A**



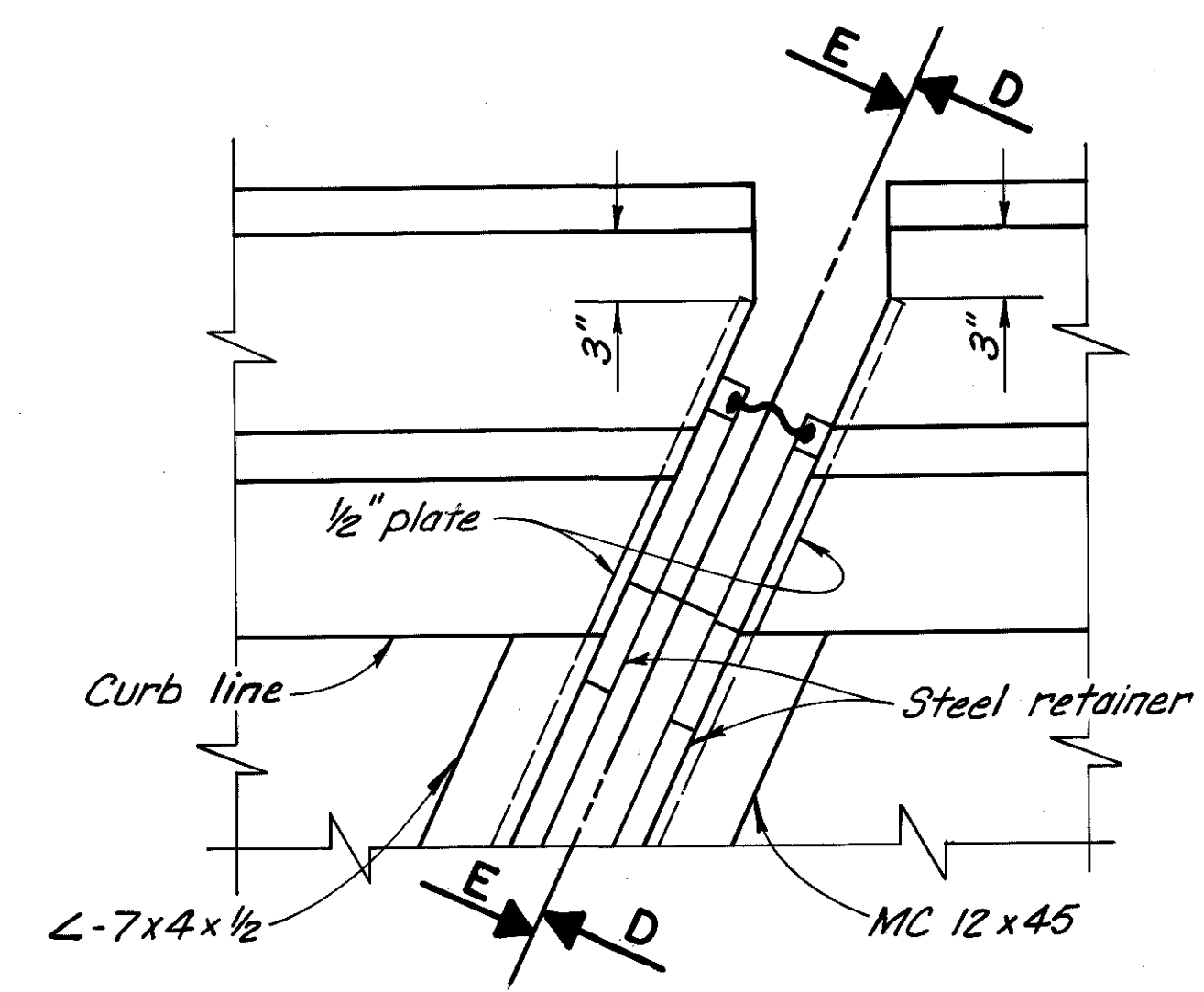
**SECTION A-A**  
SECTION D-D Similar

**SECTION B-B**  
SECTION E-E Similar

▲ PARAPET JOINT ARMOR ANCHORS:  
IN LIEU OF THE 1/2" Ø END-WELDED STUDS SHOWN,  
ALTERNATE METHODS OF ANCHORING THE 1/2" PLATES  
MAY BE USED, SUBJECT TO APPROVAL BY THE DIRECTOR.



**SECTION C-C**

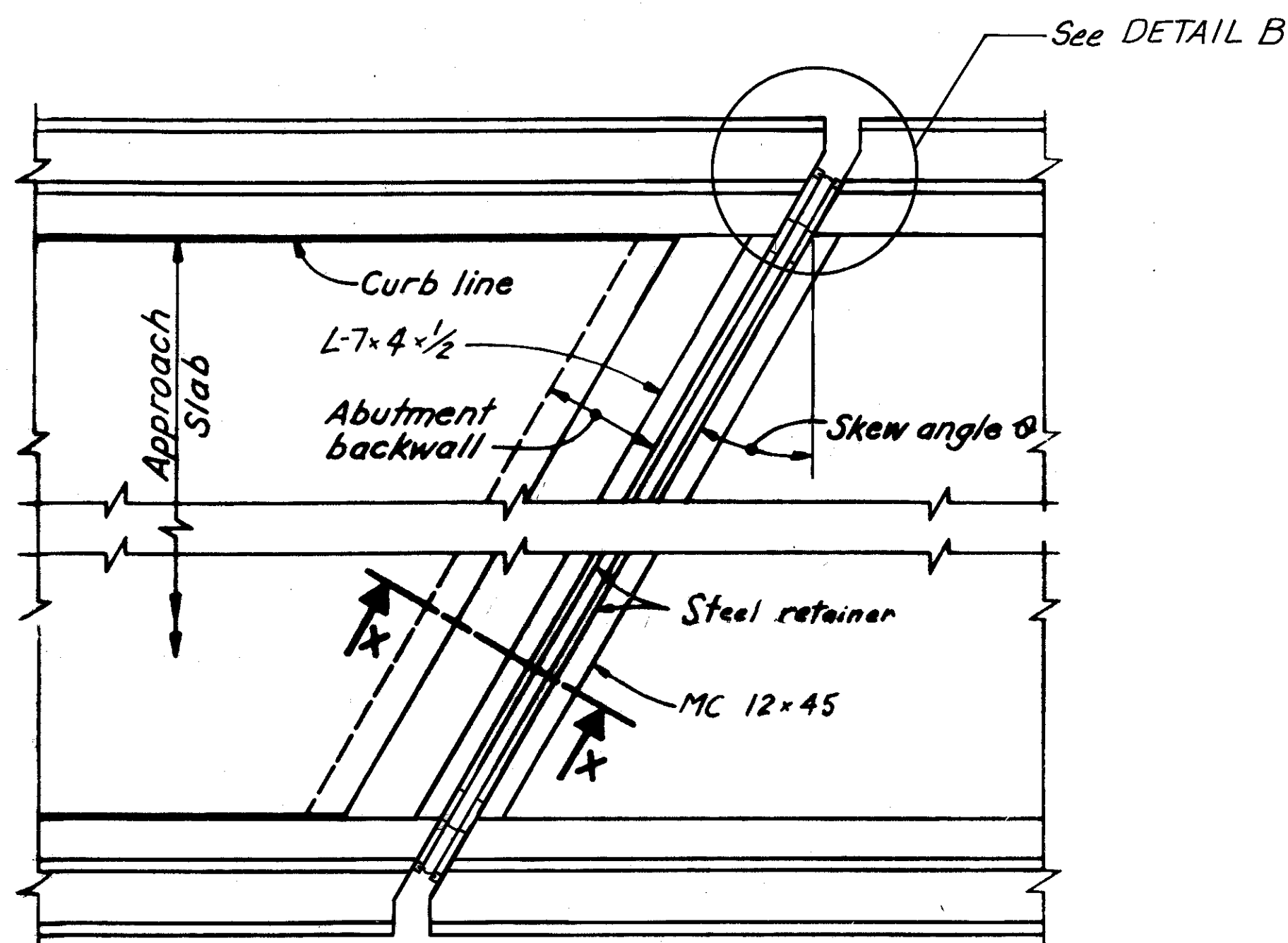


**DETAIL B**  
See Sheet 2/3

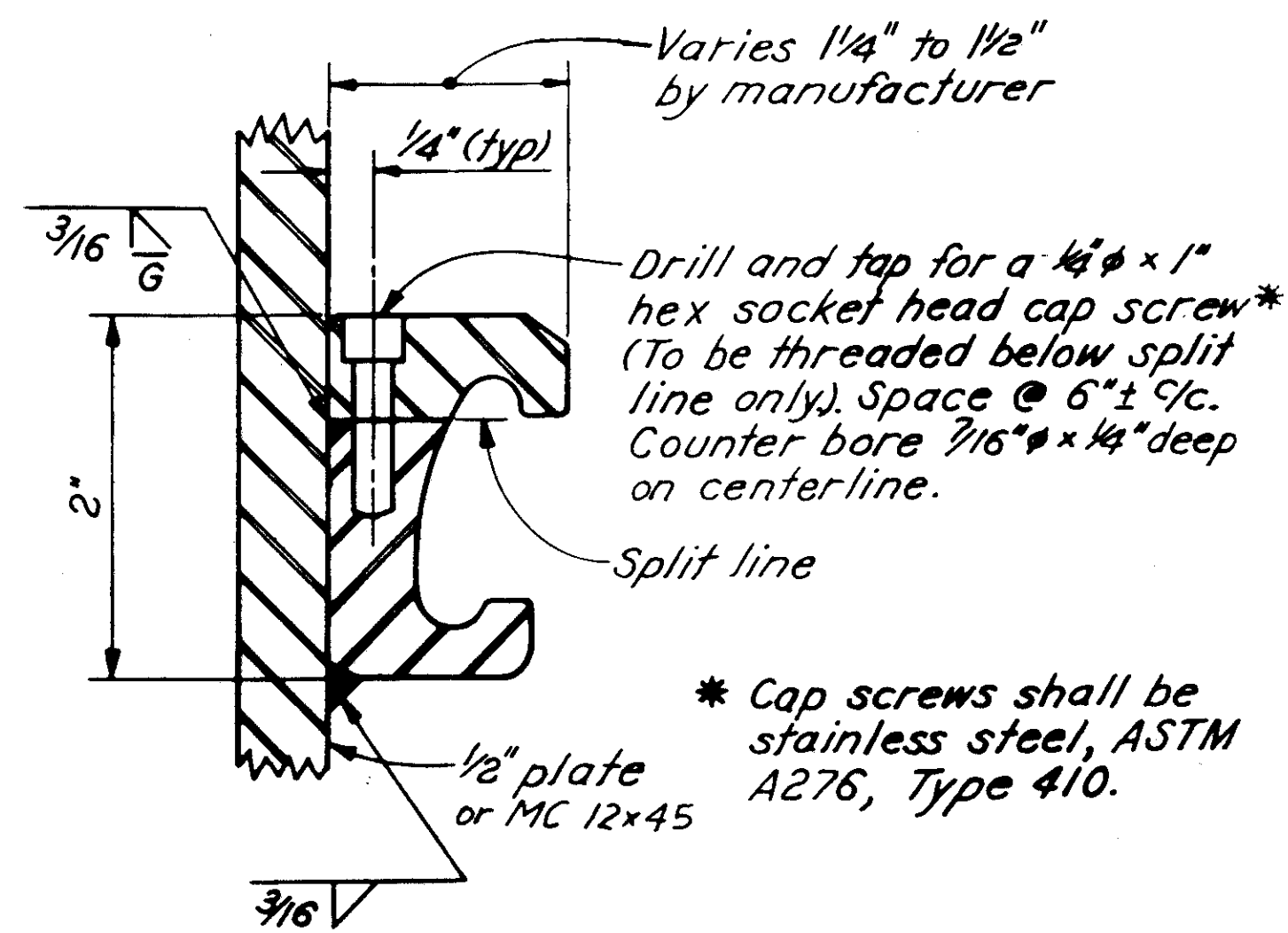
For SECTION X-X see sheet 2/3

STILSON & ASSOCIATES, INC. CONSULTING ENGINEERING AND ARCHITECTURE COLUMBUS AND CLEVELAND					
COMMON DETAILS STRIP SEAL EXPANSION JOINTS AT ABUTMENTS FOR STEEL STRINGER STRUCTURES					
FRANKLIN COUNTY					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
AJM	AJM		RLD	G.W.M.	5/24/69





**PLAN AT ABUTMENT**  
FOR SKEWED (OVER 15°) BRIDGES WITH  
DEFLECTOR PARAPET RAILING  
MEDIAN BARRIER SIMILAR TO EDGE  
PARAPETS SHOWN ABOVE  
For DETAIL B See sheet 1/3



**SPLIT RETAINER DETAIL**  
NORMAL RETAINER SIMILAR

The split retainer shown above is a normal retainer which has been modified as indicated. At joint upturns, especially on skewed bridge decks, the use of split retainers may be necessary to insure good seal gland installation. On shop drawings, where the split retainer is not used, the seal gland Manufacturer or his agent warrants to the Director that the furnished configuration will provide for ready installation and replacement of the gland.

\* Cap screws shall be stainless steel, ASTM A276, Type 410.

**NOTES:**

**JOINTS IN END DAM ARMOR:** Transverse joints in armor shall have complete penetration butt welds. Welds which will be in contact with steel retainers shall be ground flush.

**JOINTS IN RETAINERS** shall have watertight, partial penetration butt welds completely around the outer periphery of the abutting surfaces. Welds which will be in contact with the seal gland and/or joint armor shall be ground smooth.

See table sheet 3/3 for Dimension "A" for temperatures between 30°F and 90°F in 10 degree increments.

THE MINIMUM LENGTH OF RETAINER shall be 6'-0" between joints unless otherwise shown.

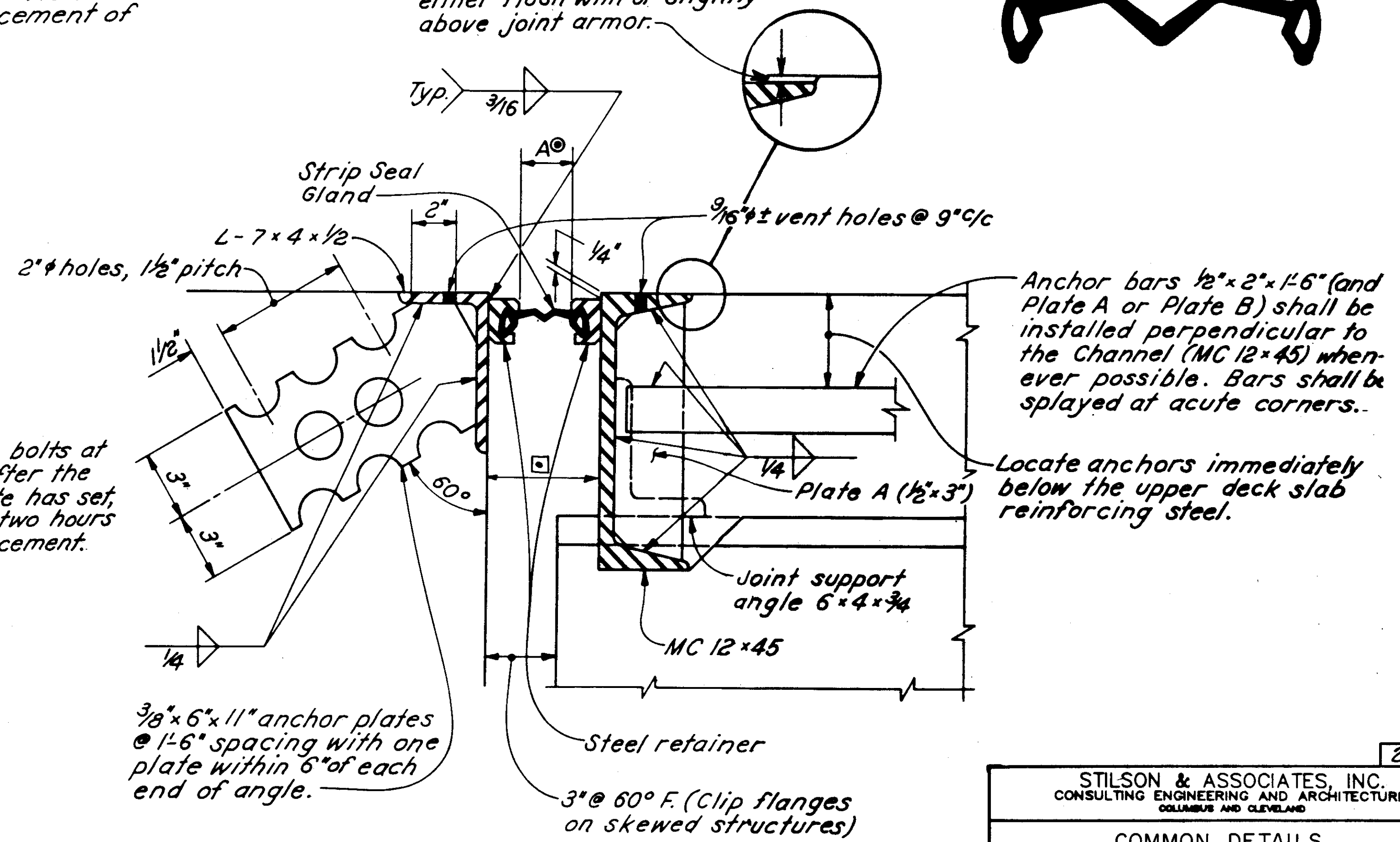
STRIP SEAL GLAND TABLE			
SEAL MOVEMENT RATING	MANUFACTURER & DESIGNATION †		
	D. S. BROWN	STRUCTURAL ACCESSORIES	WATSON BOWMAN & ACME
3"	300L	—	SE-300
4"	400L	40SEQ	SE-400
5"	500L	50SEQ	SE-500

† OR AN APPROVED ALTERNATE



Seal Size required is listed in the table of estimated quantities for each bridge.

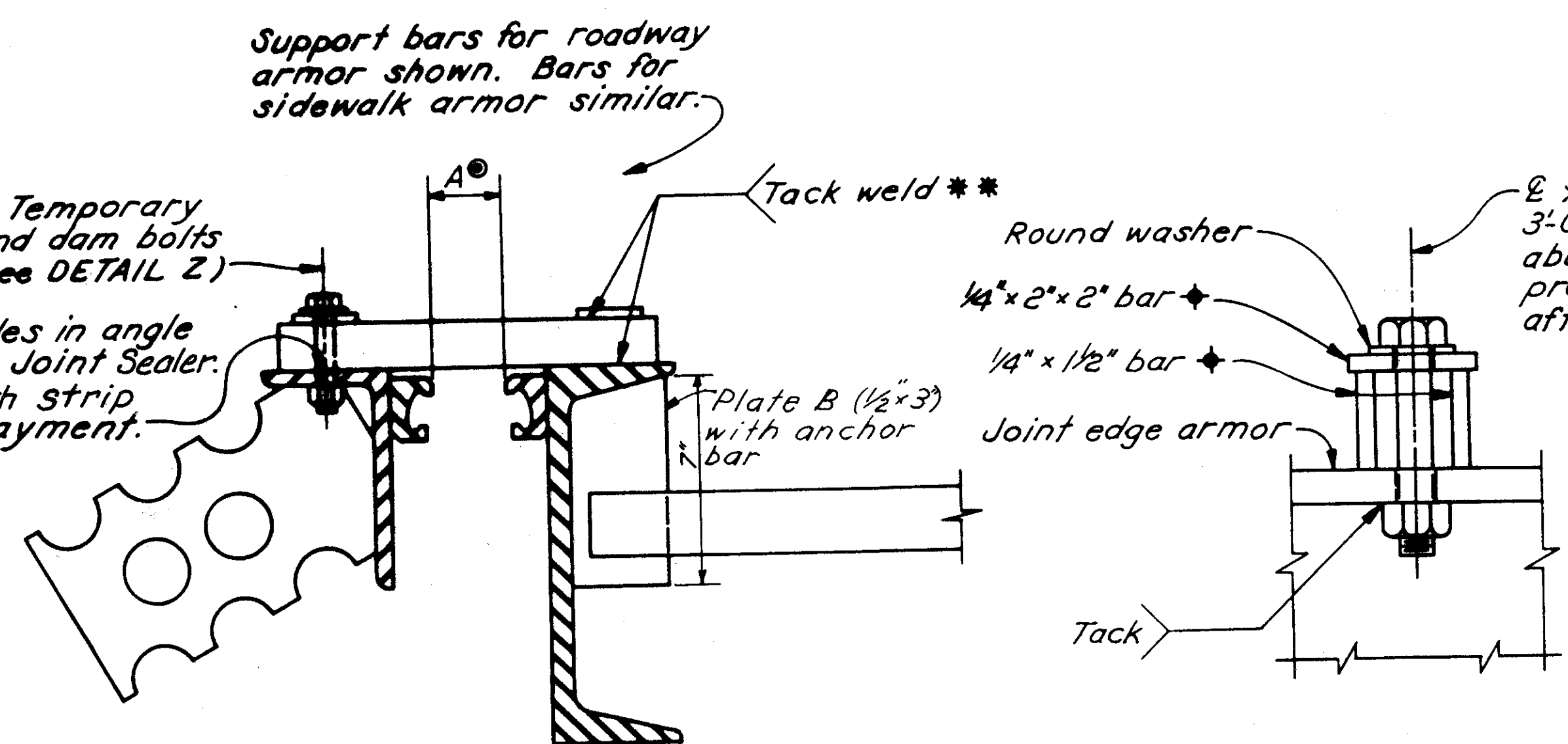
Finish concrete surface either flush with or slightly above joint armor.



**SECTION X-X**

⊙ - Dimension "A" shall be determined from TABLE B, TABLE C, or TABLE D on sheet 3/3.

⊠ - This dimension is the sum of (2x steel retainer width + Dim. "A").



**JOINT ARMOR ADJUSTMENT DETAIL**

⊙ - Dimension "A" shall be determined from TABLE B, TABLE C, or TABLE D on sheet 3/3.

\*\* Remove after abutment concrete has cured

**DETAIL Z**  
TEMPORARY SUPPORT BARS

⊠ - Alternate parts may be used subject to the Director's approval.

STILSON & ASSOCIATES, INC.  
CONSULTING ENGINEERING AND ARCHITECTURE  
COLUMBUS AND CLEVELAND

COMMON DETAILS  
STRIP SEAL EXPANSION  
JOINTS AT ABUTMENTS FOR  
STEEL STRINGER STRUCTURES

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AJM	AJM	—	RLD	G.W.M.	5/24/99	

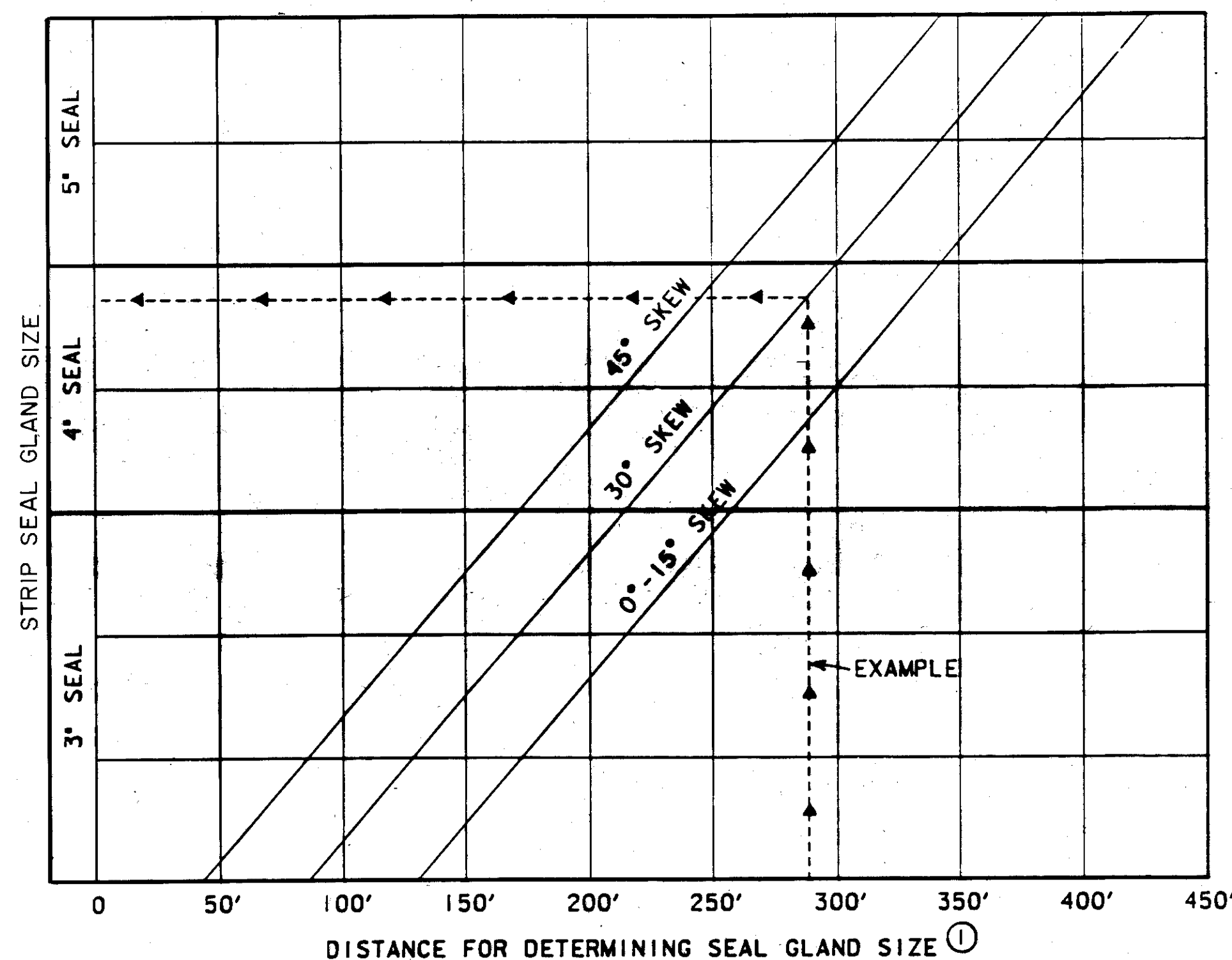


TABLE A

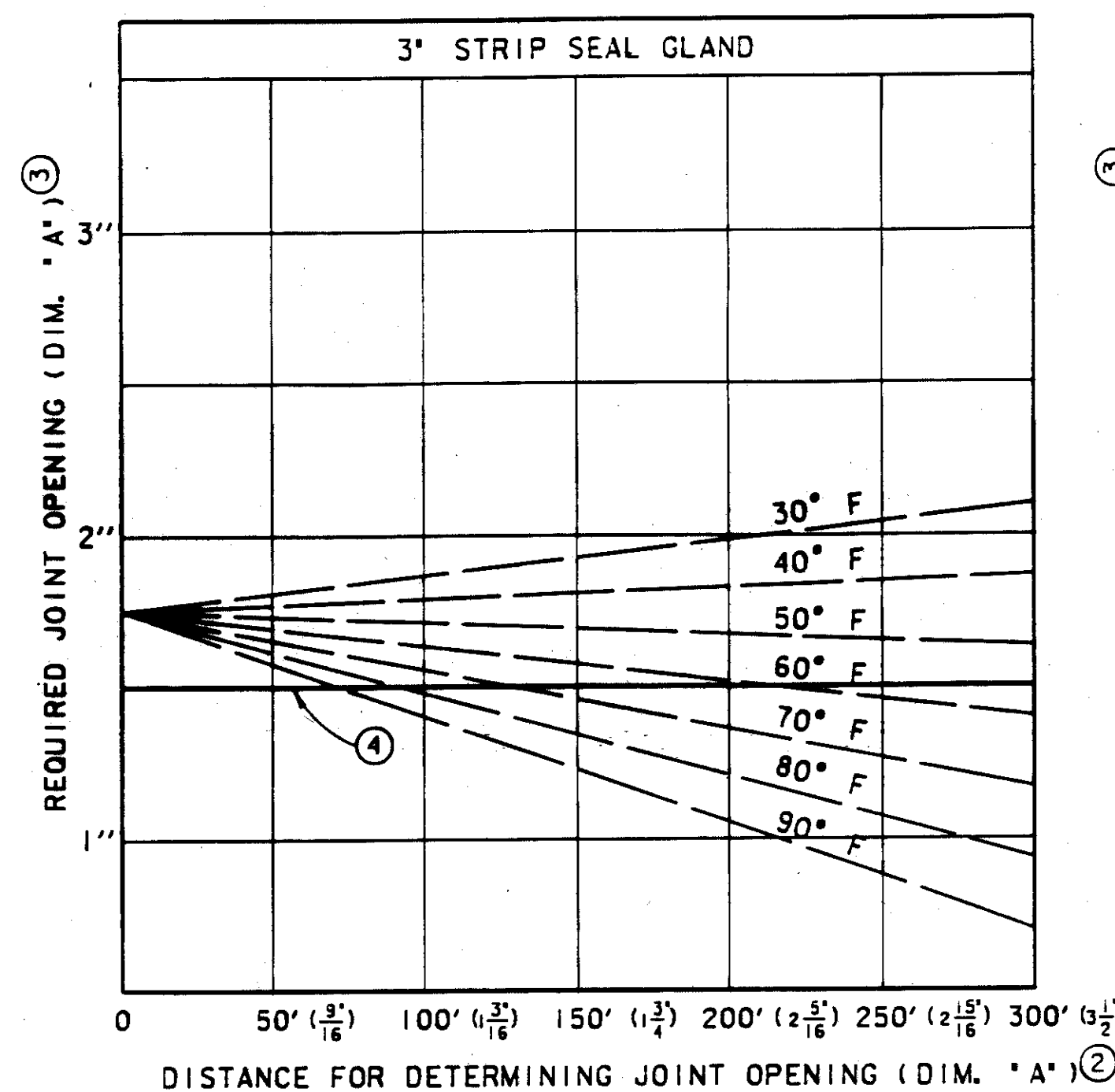


TABLE B

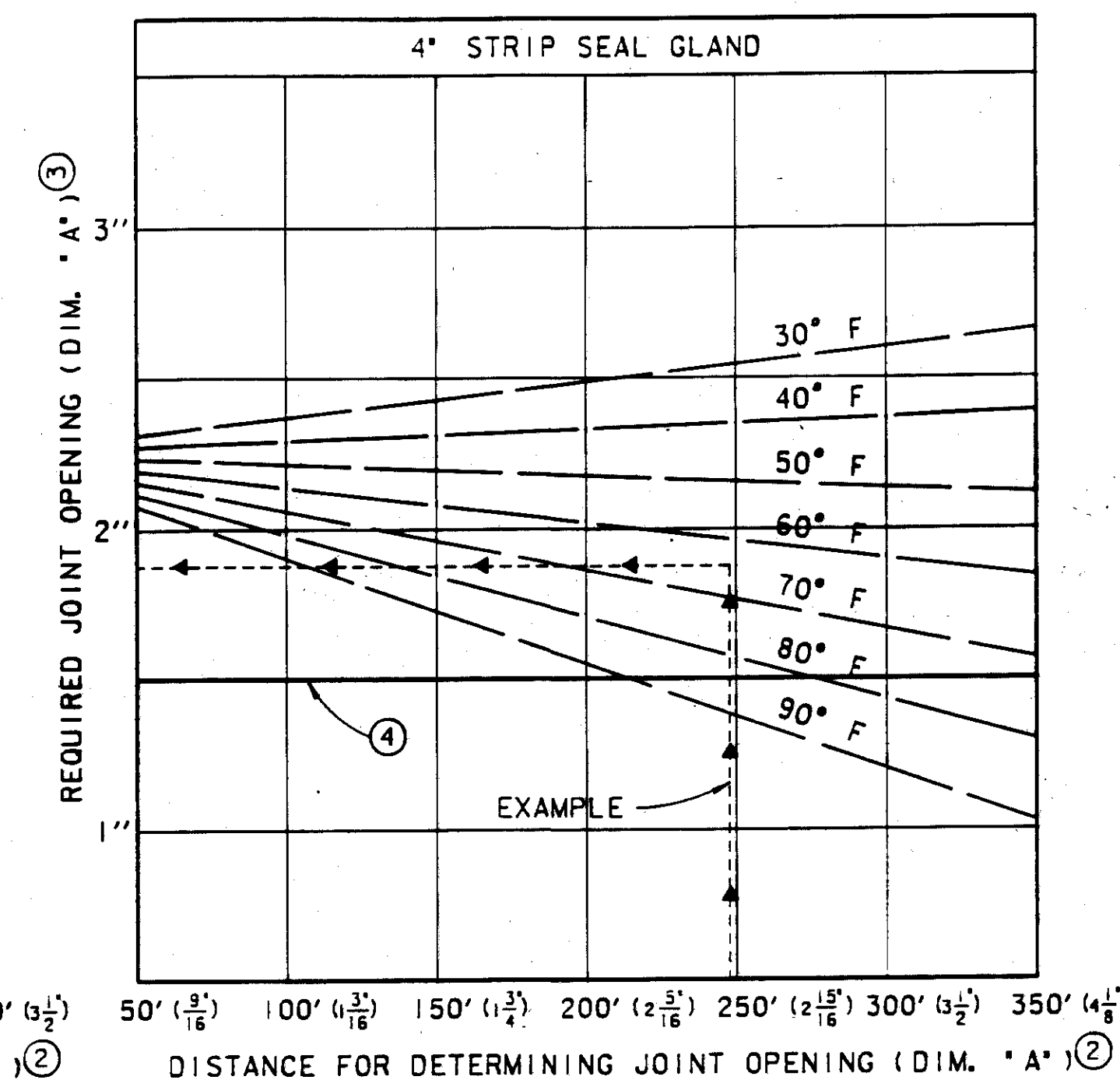


TABLE C

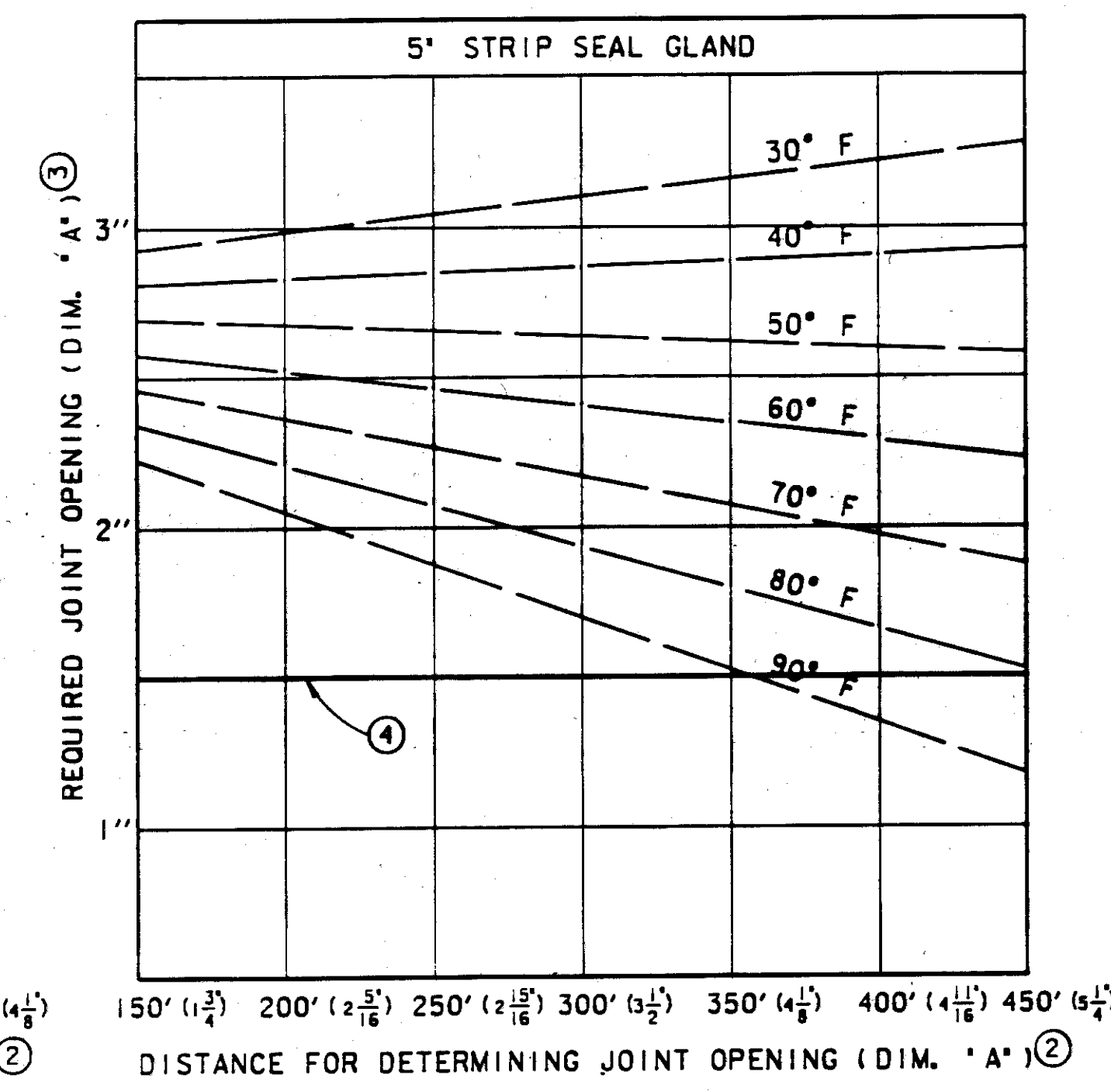


TABLE D

GENERAL NOTES

**SPLICE OR JOINT IN SEAL GLAND:** SEAL GLANDS FOR BRIDGE DECK JOINTS SHALL BE FURNISHED IN ONE CONTINUOUS PIECE UNLESS A SHOP FABRICATED SPLICE, FIELD SPLICE OR FIELD BUTT JOINT IS INDICATED ON THE PLANS OR APPROVED BY THE ENGINEER.

COMPLETED SPLICES SHALL HAVE NO OFFSETS ON EXTERIOR SURFACES, AND AFTER INSTALLATION, THERE SHALL BE NO EVIDENCE OF BOND FAILURE AT THE SPLICES.

FOR OTHER THAN STRAIGHT SEALS WITHOUT INTERMEDIATE SPLICES, SEAL GLANDS SHALL BE SHOP FABRICATED IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. SHOP DRAWING DIMENSIONS FOR EXISTING JOINTS OR FOR JOINTS WHICH ARE BEING MODIFIED SHALL BE BASED ON FIELD MEASUREMENTS PROVIDED BY THE CONTRACTOR.

**PREPARATIONS FOR INSTALLATION:** TO AVOID THE SUBSEQUENT CONTAMINATION OF THE PREPARED SURFACES, ALL SURFACES OF ELASTOMERIC STRIP SEAL GLANDS SHALL BE CLEANED WITH METHYL ETHYL KETONE (MEK), TOLUENE (T) OR OTHER APPROVED SOLVENT USING CLEAN DISPOSABLE CLOTHS.

THE BONDING SURFACES OF THE STEEL EXTRUSIONS (THE INTERIOR OF THE ANCHOR GROOVES) SHALL BE PREPARED TO GRADE SA 3, ASTM D2200. PREPARATION SHALL BE ACCOMPLISHED NOT MORE THAN 24 HOURS PRIOR TO ADHESIVE BONDING.

**INSTALLATION:** IMMEDIATELY PRIOR TO APPLICATION OF LUBRICANT-ADHESIVE, BONDING SURFACES SHALL BE CLEAN, DRY AND WARMER THAN 45 DEGREES F, AND THEY SHALL BE MAINTAINED AT OR ABOVE THIS TEMPERATURE UNTIL THE ADHESIVE HAS CURED. LUBRICANT-ADHESIVE SHALL BE APPLIED LIBERALLY TO BOTH STEEL AND ELASTOMERIC BONDING SURFACES USING A STIFF BRUSH IF NECESSARY TO ACHIEVE A COMPLETE AND RELATIVELY UNIFORM COATING. THEN THE BULBED EDGES OF THE ELASTOMERIC SEAL SHALL BE INSERTED INTO THE ANCHOR GROOVES. AFTER INSTALLATION, EXCESS LUBRICANT-ADHESIVE SHALL BE REMOVED FROM THE EXPOSED SEAL SURFACES.

SEAL GLANDS SHALL BE INSTALLED WITH EQUIPMENT DESIGNED OR SPECIFICALLY ADAPTED FOR THE INSTALLATION OF ELASTOMERIC JOINT SEAL GLANDS. THIS EQUIPMENT SHALL NOT ELONGATE THE SEAL GLAND OR CAUSE STRUCTURAL DAMAGE TO THE COMPLETED INSTALLATION.

MEASUREMENT FOR PAY PURPOSES SHALL BE BASED ON THE LINEAR FOOT OF SEALED JOINT SYSTEM, MEASURED HORIZONTALLY ALONG THE JOINT CENTERLINES AND BETWEEN THE OUTER LIMITS OF THE FABRICATED JOINT, FURNISHED AND PLACED, INCLUDING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO COMPLETE THE JOINT IN PLACE, WHICH INCLUDES THE JOINT ARMOR, ANCHORING DEVICES, TEMPORARY SUPPORTS AND END CROSSFRAME GUSSET PLATES. PAYMENT SHALL BE MADE PER LINEAR FOOT FOR ITEM 516 STRUCTURAL EXPANSION JOINTS, INCLUDING ELASTOMERIC STRIP SEALS.

LEGEND

- ① - THIS IS THE ACTUAL DISTANCE FROM THE CENTERLINE OF JOINT TO THE NEUTRAL POINT OF THE SUPERSTRUCTURE MEASURED ALONG THE CENTERLINE OF ROADWAY. THIS DIMENSION SHALL BE A MAXIMUM OF 342' FOR 45 DEGREE SKEWS, 385' FOR 30 DEGREE SKEWS AND 427' FOR 0 DEGREE - 15 DEGREE SKEWS.
- ② - THIS DISTANCE FOR EXPANSION JOINTS HAVING SKEW ANGLES OF 15 DEGREES OR LESS IS THE ACTUAL DISTANCE TO THE NEUTRAL POINT OF SUPERSTRUCTURE ALONG CENTERLINE OF ROADWAY. THIS DISTANCE FOR EXPANSION JOINTS HAVING SKEW ANGLES OVER 15 DEGREES BUT NOT GREATER THAN 45 DEGREES IS ARRIVED AT BY MULTIPLYING THE ABOVE DEFINED DISTANCE ALONG CENTERLINE OF ROADWAY BY THE COSINE OF THE EXPANSION JOINT SKEW ANGLE. DIMENSIONS SHOWN IN PARENTHESES REPRESENT THE TOTAL JOINT MOVEMENT NORMAL TO THE CENTERLINE OF BEARINGS.
- ③ - THIS IS THE JOINT OPENING (DIMENSION 'A') REQUIRED, AT THE TIME OF ABUTMENT BACKWALL CONCRETE PLACEMENT, BASED ON THE DAY'S ANTICIPATED PEAK AMBIENT TEMPERATURE.
- ④ - MINIMUM JOINT OPENING (DIMENSION 'A') AT TIME OF SEAL GLAND INSTALLATION SHALL NOT BE LESS THAN 1 1/2". IF THE JOINT OPENING IS LESS, THE INSTALLATION SHALL BE POSTPONED UNTIL THE TEMPERATURE DROPS A SUFFICIENT AMOUNT TO ALLOW THE MINIMUM 1 1/2" OPENING.
- ⑤ - THE NEUTRAL POINT OF THE SUPERSTRUCTURE IS THAT POINT WHICH HAS ZERO HORIZONTAL MOVEMENT DURING TEMPERATURE CHANGES.

CONSTRUCTION PROCEDURE

1. ABUTMENT BACKWALL CONCRETE SHALL NOT BE PLACED UNTIL AFTER SUPERSTRUCTURE CONCRETE IN THE SPAN ADJACENT TO THE ABUTMENT HAS BEEN PLACED.
2. PLACE BACKWALL CONCRETE DURING STABLE OR RISING AMBIENT TEMPERATURES AND CONCLUDE PLACEMENT AT OR IMMEDIATELY BEFORE THE DAY'S PEAK AMBIENT TEMPERATURE.
3. NOT MORE THAN FOUR HOURS PRIOR TO THE DAY'S PEAK AMBIENT TEMPERATURE, SET ABUTMENT EXPANSION JOINT WIDTH TO DIMENSION 'A'. (SEE DIMENSION 'A' TABLE, THIS SHEET.)
4. LOOSEN TEMPORARY JOINT ARMOR BOLTS AFTER INITIAL SET OF CONCRETE, PREFERABLY NOT LATER THAN TWO HOURS AFTER CONCLUSION OF CONCRETE PLACEMENT.

THE PREFORMED STRIP SEAL GLAND SHALL BE EXTRUDED POLYCHLOROPRENE MATERIAL MEETING THE REQUIREMENTS OF ASTM D2628. DUE TO THE CONFIGURATIONS OF THE STRIP SEAL, THE RECOVERY TESTS ARE NOT APPLICABLE. PHYSICAL PROPERTIES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 'E' THIS SHEET.

EACH LOT OF STRIP SEAL GLANDS SHALL BE TESTED BY THE MANUFACTURER OR AN ACCREDITED LABORATORY TO INSURE COMPLIANCE WITH THESE PROVISIONS. TWO CERTIFIED COPIES OF THE QUALIFICATION TEST DATA INDICATING THAT THE TESTED MATERIALS COMPLY WITH THESE PROVISIONS SHALL BE SUBMITTED TO THE TESTING LABORATORY.

EACH STRIP SEAL GLAND DESIGN, SHAPE, WIDTH, DEPTH AND THICKNESS SHALL BE APPROVED BY THE DIRECTOR. MATERIAL ACCEPTANCE WILL BE BASED UPON LABORATORY EVALUATION OF CERTIFIED TEST DATA AND THE TE-30 FIELD INSPECTION REPORT.

LUBRICANT - ADHESIVE USED TO INSTALL THE PREFORMED STRIP SEALS SHALL BE A POLYURETHANE AND HYDROCARBON SOLVENT MIXTURE AS SPECIFIED BY THE SEAL MANUFACTURER. IT SHALL HAVE SUITABLE CONSISTENCY AT THE TEMPERATURE AT WHICH THE SEALS ARE INSTALLED AND SHALL BE COMPATIBLE WITH THE SEALS AND THE STEEL RETAINERS.

PROPERTY	REQUIREMENT	ASTM METHOD
TENSILE STRENGTH, MIN. P.S.I.	2000	D412
ELONGATION AT BREAK, MIN. PERCENT	250	D412
HARDNESS, TYPE A DUROMETER	50 MIN. 65 MAX.	D2240 (MODIFIED)
OVEN AGING, 70 HR. AT 212° F TENSILE STRENGTH, LOSS, MAX. ELONGATION, LOSS, MAX. HARDNESS, TYPE A DUROMETER (POINTS CHANGE)	20 PERCENT 20 PERCENT 0 TO +10	D573
OZONE RESISTANCE 20 PERCENT STRAIN, 300 PPHM, IN AIR AT 104° F (WIPED WITH TOLUENE TO REMOVE SURFACE CONTAMINATION)	NO CRACKS	D1149

MATERIALS: A588 OR A36 WITH PAINT AS SPECIFIED FOR THE MAIN STRUCTURAL STEEL. EXCEPT THAT SYSTEM OZEU SHALL BE USED WHEN THE MAIN STRUCTURAL STEEL IS TO REMAIN UNPAINTED. PAINTING SHALL BE DONE IN THE FIELD EXCEPT THAT A WASH COAT OF PRIMER SHALL BE APPLIED IN THE SHOP TO ALL SURFACES, INCLUDING THOSE TO BE EMBEDDED IN CONCRETE, TO PREVENT RUSTING AND RUST RUN-OFF. THE WASH COAT SHALL BE REMOVED FROM ALL SURFACES BY SANDBLASTING DURING SURFACE PREPARATION FOR THE FIELD PAINTING. THE FIELD PAINT SHALL CONSIST OF ONE PRIME COAT FOR SYSTEMS A & OZEU OR TWO PRIME COATS FOR SYSTEM B, ONE INTERMEDIATE COAT FOR SYSTEM OZEU, AND ONE FINISH COAT FOR THE SYSTEM USED. A CLOSED CELL BACKER ROD OR SIMILAR MATERIAL SHALL BE INSERTED INTO THE RETAINER GROOVES TO MASK THEM OFF DURING THE PAINTING. STEEL PORTIONS OF THE JOINTS THAT ARE TO BE ENCASED IN CONCRETE OR SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE MAY REMAIN UNPAINTED.

BRIDGE NUMBER	TEMPERATURE IN DEGREES "F"						
	30	40	50	60	70	80	90
FRA-33-1540	1 7/8	1 5/8	1 1/2	1 1/4	1 1/4	1 1/2	1 1/2
FRA-33-1542	1 7/8	1 5/8	1 1/2	1 1/4	1 1/4	1 1/2	1 1/2
FRA-315-0120	1 5/8	1 3/8	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2

3/3

STILSON & ASSOCIATES, INC.  
 CONSULTING ENGINEERING AND ARCHITECTURE  
 COLUMBUS AND CLEVELAND

COMMON DETAILS  
 STRIP SEAL EXPANSION  
 JOINTS AT ABUTMENTS FOR  
 STEEL STRINGER STRUCTURES

FRANKLIN COUNTY

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
AJM	REF	-	RLD	G.W.M.	5/24/89	



FHWA REGION	STATE	PROJECT
5	OHIO	

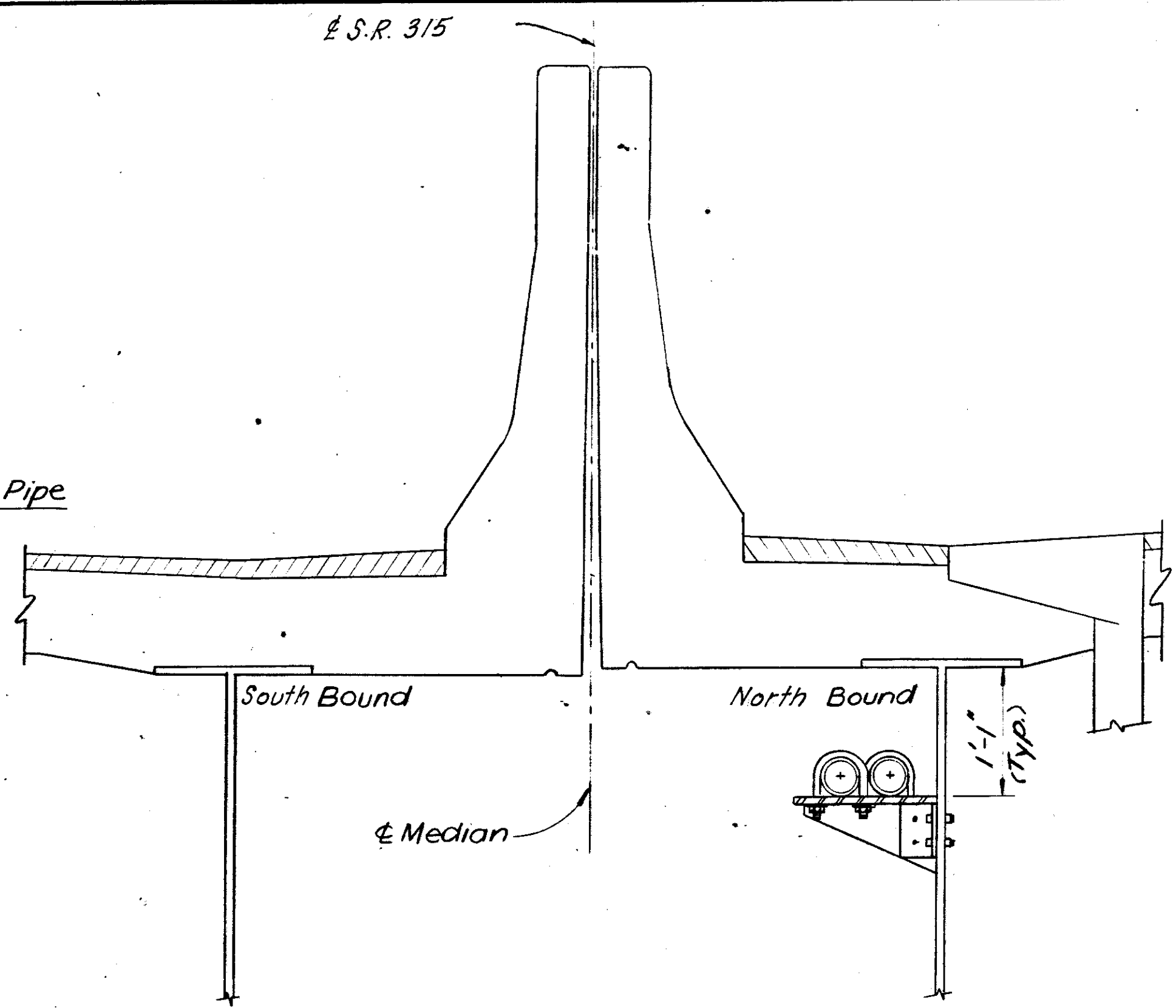
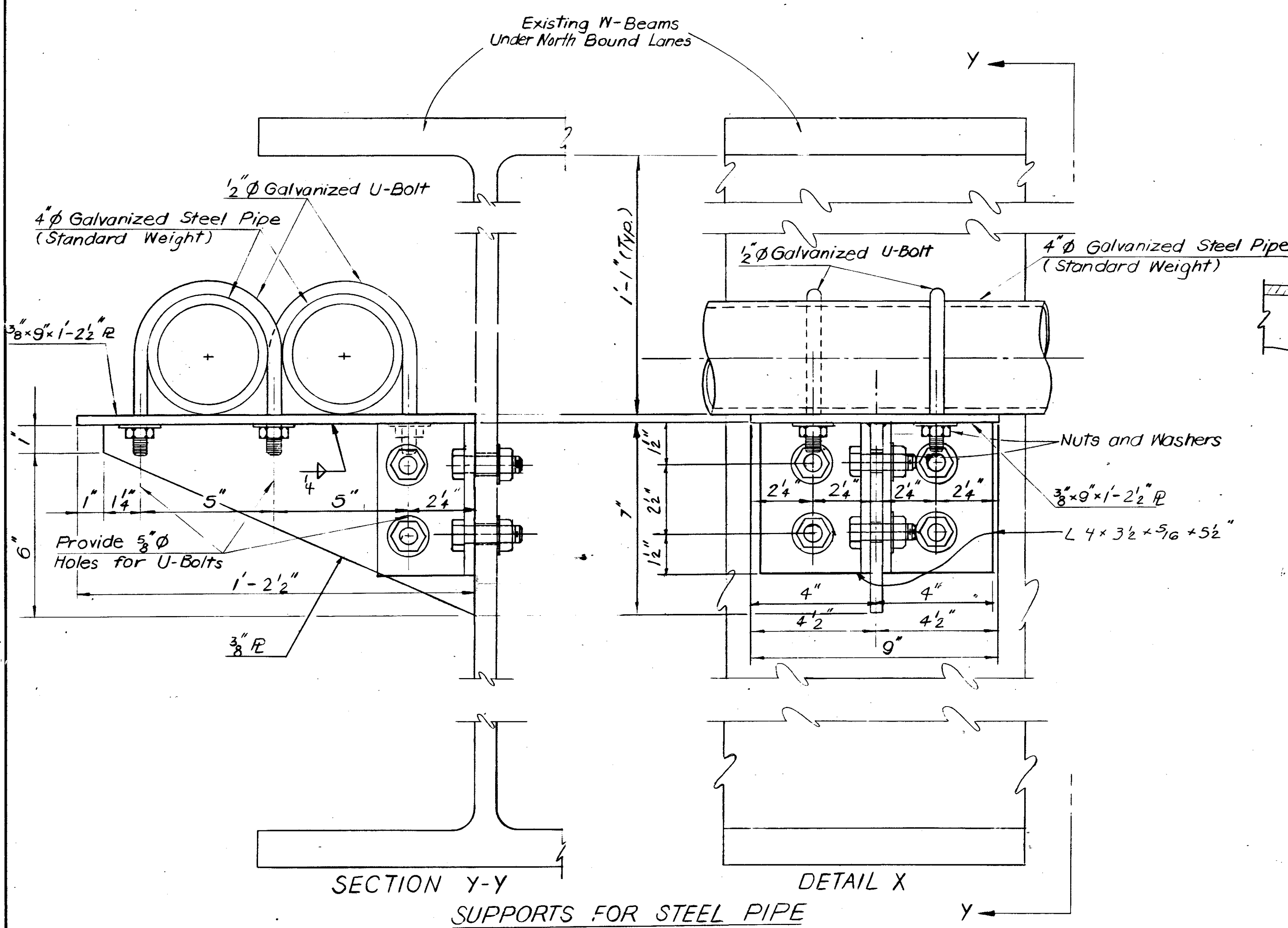
315  
A04

FRA-315-0.93

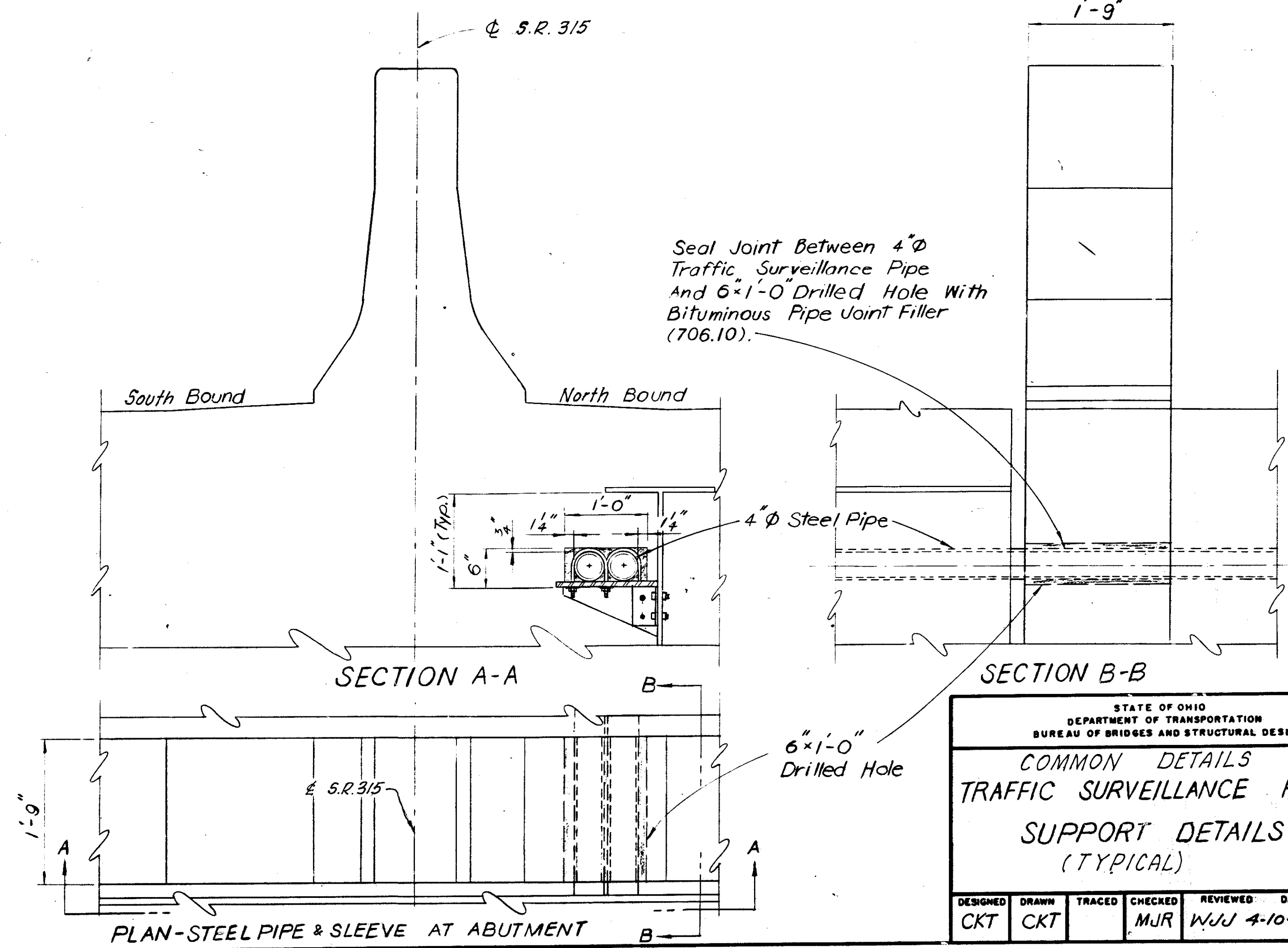
Notes: The 4" Diameter Pipe Shall Meet the Requirements of ASTM-A53, Galvanized. Payment Shall be Made Under Item Special, Lin.Ft., 4" Diameter Traffic Surveillance Conduit, Which Shall Include the Furnishing and Installing of the Pipe, the U-Bolts with Nuts and Lock Washers and Joint Sealer (706.10) Between the Pipe and the 6x1-0" Drilled Holes in the Abutment Backwalls and the Furnishing of all labor Tools and Equipment Necessary to Complete This Item.

The 3/8" Plate Support Brackets Shall be Included With Item 513 For Payment. All Brackets Shall be Painted With One Coat Primer and One Coat of Finish Paint.

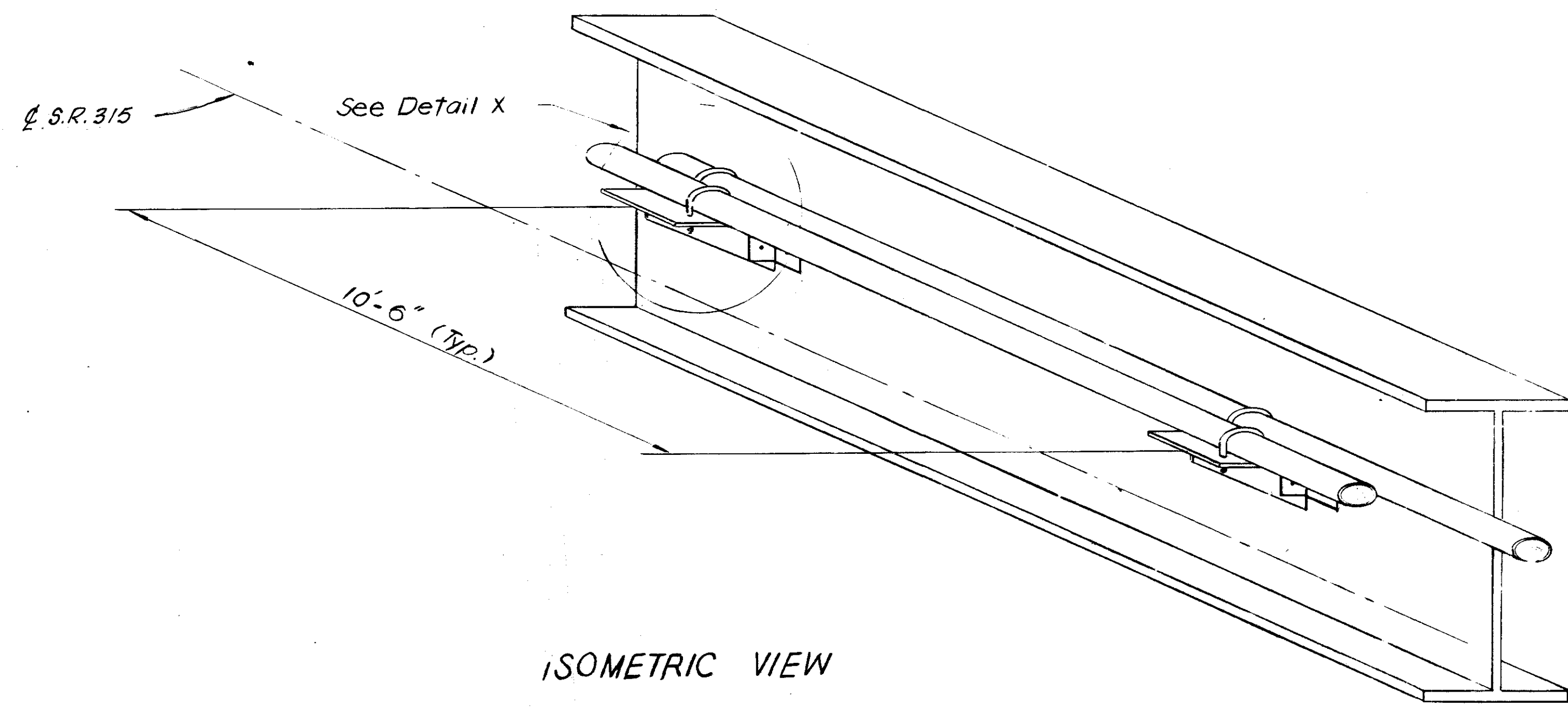
All bolts shall be A325, 5/8" Diameter. Provide 3/8" oversize holes in angle.



PROPOSED MEDIAN & SUPPORTS FOR TRAFFIC SURVEILLANCE CONDUITS



Seal Joint Between 4" Traffic Surveillance Pipe And 6x1-0" Drilled Hole With Bituminous Pipe Joint Filler (706.10).

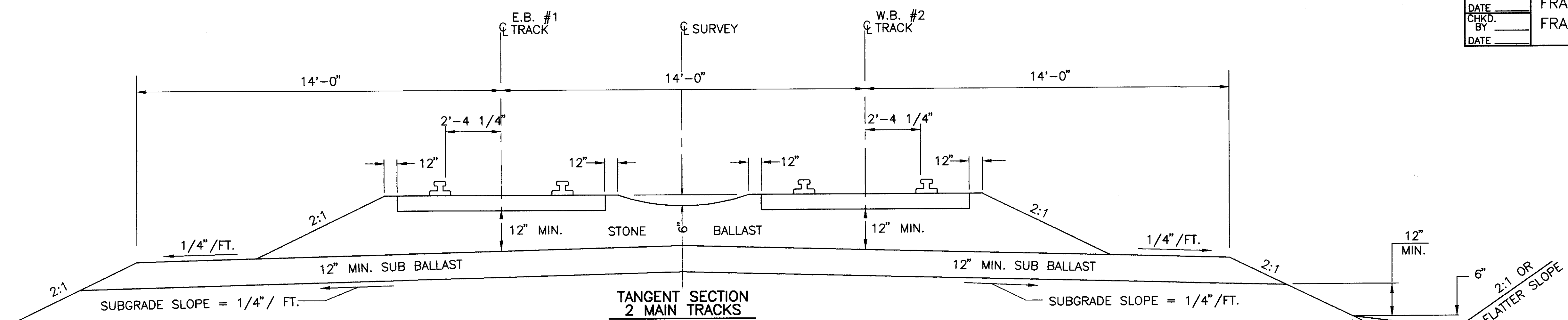


ISOMETRIC VIEW

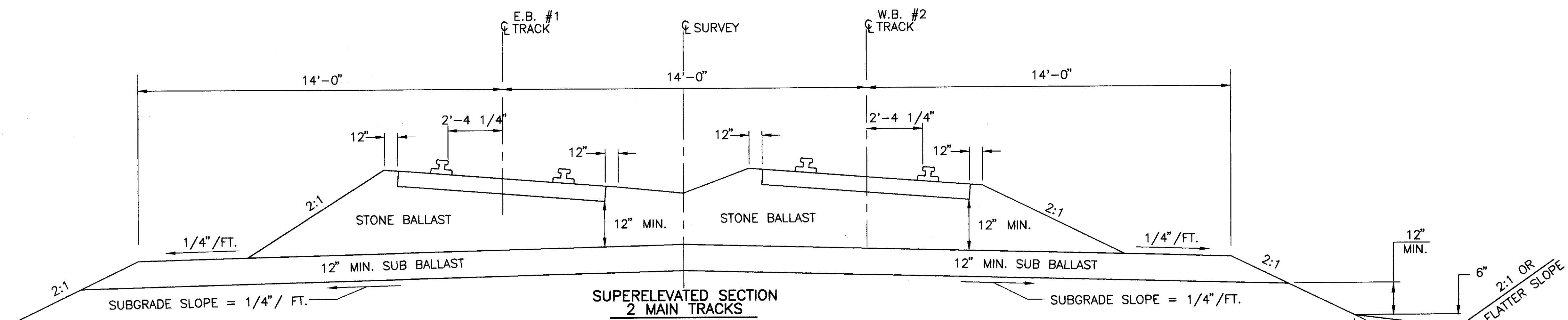
STATE OF OHIO DEPARTMENT OF TRANSPORTATION BUREAU OF BRIDGES AND STRUCTURAL DESIGN						
COMMON DETAILS TRAFFIC SURVEILLANCE PIPE SUPPORT DETAILS (TYPICAL)						
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
CKT	CKT		MJR	WJJ	4-10-79	

REVISED 7-10-79

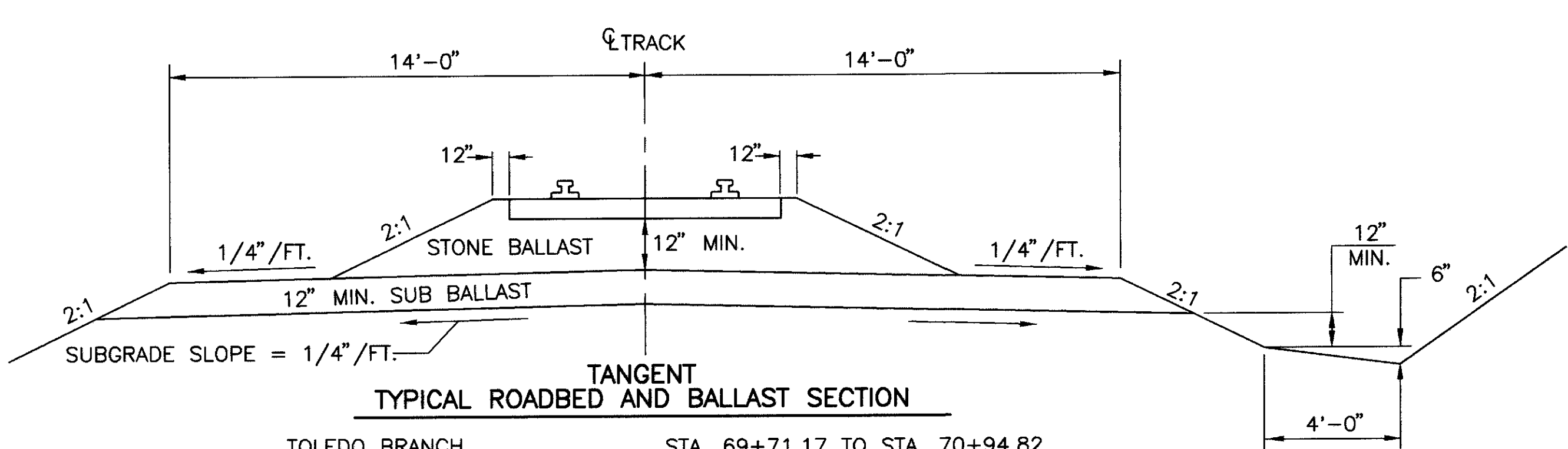




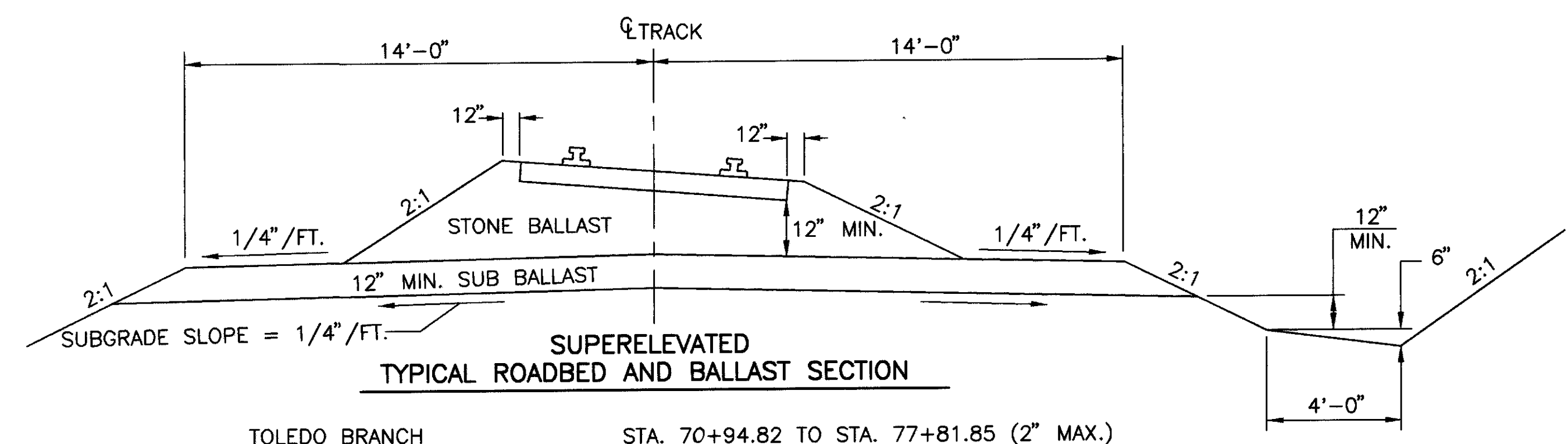
**TANGENT SECTION  
2 MAIN TRACKS**  
 TEMPORARY MAINLINE RUNAROUND  
 STA. 48+00 TO STA. 48+77.29  
 STA. 52+27.98 TO STA. 58+55.24  
 PERMANENT MAINLINE RELOCATION  
 STA. 52+53.48 TO STA. 57+12.20



**SUPERELEVATED SECTION  
2 MAIN TRACKS**  
 TEMPORARY MAINLINE RUNAROUND  
 STA. 48+77.29 TO STA. 52+27.98 (1/2" MAX.) - SUPER REVERSED  
 PERMANENT MAINLINE RELOCATION  
 STA. 46+69.54 TO STA. 52+53.48 (1/2" MAX.) - SUPER REVERSED  
 STA. 57+12.20 TO STA. 64+89.24 (1/2" MAX.)



**TANGENT  
TYPICAL ROADBED AND BALLAST SECTION**  
 TOLEDO BRANCH STA. 69+71.17 TO STA. 70+94.82  
 STA. 77+81.85 TO STA. 80+00.00  
 PERMANENT WESTERN BRANCH STA. 6952+28.85 TO STA. 6953+57.33  
 STA. 6958+52.85 TO STA. 6959+47.21  
 TEMPORARY WESTERN BRANCH STA. 6944+65.98 TO STA. 6945+68.19  
 STA. 6947+60.82 TO STA. 6948+62.38  
 STA. 6950+49.41 TO STA. 6953+09.77  
 STA. 6957+38.91 TO STA. 6960+55.99  
 TEMPORARY AUBURN STA. 6940+87.52 TO STA. 6942+17.07  
 STA. 6943+71.94 TO STA. 6944+65.98  
 TEMPORARY MAINLINE #1 TRK. STA. 58+55.24 TO STA. 62+21.07



**SUPERELEVATED  
TYPICAL ROADBED AND BALLAST SECTION**  
 TOLEDO BRANCH STA. 70+94.82 TO STA. 77+81.85 (2" MAX.)  
 PERMANENT WESTERN BRANCH STA. 6953+57.33 TO STA. 6958+52.85 (2" MAX.) - SUPER REVERSED  
 STA. 6959+47.21 TO STA. 6962+84.21 (2" MAX.)  
 TEMPORARY WESTERN BRANCH STA. 6945+68.19 TO STA. 6947+60.82 (1" MAX.)  
 STA. 6948+62.38 TO STA. 6950+49.41 (1" MAX.) - SUPER REVERSED  
 STA. 6953+09.77 TO STA. 6957+38.91 (2" MAX.) - SUPER REVERSED  
 STA. 6960+55.99 TO STA. 6962+84.21 (2" MAX.)  
 TEMPORARY AUBURN STA. 6942+17.07 TO STA. 6943+71.94 (1" MAX.) - SUPER REVERSED  
 STA. 6944+65.98 TO STA. 6946+83.60 (1" MAX.)  
 TEMPORARY MAINLINE #1 TRK. STA. 62+21.07 TO STA. 68+30.59 (1/2" MAX.)

[R60] - \\\TMS\SR315-65\ROAD\VD\TPT.DWG - MAY 08, 1998 - 10:58:51 - SCALE = 1:00

# GENERAL NOTES

CALC. BY	FRANKLIN COUNTY	OHIO
DATE	FRA-670-1.25 (A-5)	
CHKD. BY		FHWA
DATE		REGION 5

317  
404

## TEMPORARY AND PERMANENT RAILROAD RELOCATIONS'

### SCOPE OF WORK

THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO LAYOUT AND CONSTRUCT THE TEMPORARY AND PERMANENT RAILROAD ALIGNMENTS, AS SHOWN ON SHEETS 318 THROUGH 327. THE WORK INCLUDES CLEARING AND GRUBBING, EXCAVATION, EMBANKMENT CONSTRUCTION, SUBGRADE PREPARATION AND COMPACTION, SEEDING, SUB-BALLAST, AND TOP BALLAST PLACEMENT TO WITHIN TWO (2) INCHES OF FINISHED GRADE, AND ALL INCIDENTALS SHOWN ON THE PLANS. ADEQUATE SIDE DITCHES, CULVERT PIPES AND DRAINAGE STRUCTURES SHALL BE PROVIDED WHERE NECESSARY FOR THE TEMPORARY ALIGNMENTS.

WHEN THE TEMPORARY ALIGNMENTS ARE NO LONGER REQUIRED, AND AFTER THE TEMPORARY RAILS AND TIES HAVE BEEN REMOVED BY OTHERS, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EMBANKMENT, SUB-BALLAST AND BALLAST MATERIAL, AND RESTORE THE AREA AS CLOSE AS POSSIBLE TO EXISTING CONDITIONS.

PAYMENT FOR THE ABOVE DESCRIBED WORK SHALL BE MADE UNDER ITEM SPECIAL - TEMPORARY AND PERMANENT RAILROAD TRACK BED PREPARATION, AT THE LUMP SUM PRICE BID.

### APPLICABLE SPECIFICATIONS

EXCEPT WHERE OTHERWISE SHOWN OR SPECIFIED, ALL WORK AND MATERIALS SHALL CONFORM TO THE MOST CURRENT CONSOLIDATED RAIL CORPORATION SPECIFICATIONS, STANDARDS OF THE AMERICAN RAILWAY ENGINEERING ASSOCIATION (A.R.E.A.), AND THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS. "SPECIFIC REQUIREMENTS OF CONSOLIDATED RAIL CORPORATION FOR WORK ON ITS RIGHT OF WAY" ARE AVAILABLE UPON REQUEST AT THE OHIO DEPARTMENT OF TRANSPORTATION, DISTRICT 6 OFFICE (PH: 740-363-1251 EXT. 687)

### MATERIALS

MATERIALS OTHER THAN THOSE REQUIRED FOR THE TRACK WORK, INCLUDING, BUT NOT LIMITED TO, EMBANKMENT, CONCRETE, SEEDING, AND MULCHING MATERIALS SHALL BE IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS.

BALLAST - SHALL BE CLASS B WITH GRADATION CR 3-4 IN ACCORDANCE WITH CONRAIL SPECIFICATIONS FOR BALLAST - MW 170B.

SUB-BALLAST - SHALL BE A MINIMUM DEPTH OF 12" AND SHALL MEET REQUIREMENTS OF OHIO DEPARTMENT OF TRANSPORTATION ITEM 304.

SEEDING AND MULCHING - SHALL BE IN ACCORDANCE WITH OHIO DEPARTMENT OF TRANSPORTATION ITEM 659.

### CONSTRUCTION

WORK OTHER THAN THAT REQUIRED FOR TRACK WORK, INCLUDING, BUT NOT LIMITED TO CLEARING AND GRUBBING, EXCAVATION, BACKFILLING, PLACING OF EMBANKMENTS, COMPACTION OF SUB-GRADE, FERTILIZING, SEEDING AND MULCHING SHALL BE IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIALS SPECIFICATIONS AND AS SHOWN ON THE PLANS.

GRADING - SUBGRADE SHALL BE THOROUGHLY COMPACTED, FREE FROM VOIDS, AND GRADED TO ALLOW 12 INCHES MINIMUM OF SUB-BALLAST AND 12 INCHES MINIMUM OF BALLAST UNDER CROSSTIES AND CONFORM TO CONSOLIDATED RAIL CORPORATION'S STANDARDS FOR WIDTH.

### WORK BY RAILROAD FORCES

THE CONSOLIDATED RAIL CORPORATION (CONRAIL) SHALL FURNISH, INSTALL AND MAINTAIN THE TOP TWO (2) INCHES OF BALLAST, TIES, RAIL, AND FASTENINGS FOR ALL TEMPORARY AND PERMANENT TRACK RELOCATIONS. THE RAILROAD SHALL ALSO REMOVE AND/OR RELOCATE ALL EXISTING RAILROAD FACILITIES NECESSARY FOR THE CONSTRUCTION AND OPERATION OF BOTH THE TEMPORARY AND THE PERMANENT TRACKS.

WHEN THE PERMANENT TRACKS HAVE BEEN RESTORED TO SERVICE, THE RAILROAD FORCES SHALL REMOVE ALL TIES AND RAILS USED FOR TEMPORARY MAINLINE AND WESTERN BRANCH ALIGNMENTS.

ALL AERIAL AND UNDERGROUND RAILROAD COMMUNICATION AND SIGNAL FACILITIES SHALL BE REMOVED AND/OR RELOCATED BY RAILROAD FORCES, AS REQUIRED BY THE PROJECT. THE CONTRACTOR SHALL USE ALL PRECAUTIONS NECESSARY TO SEE THAT THESE FACILITIES ARE NOT DISTURBED DURING THE CONSTRUCTION STAGE AND SHALL COOPERATE WITH THE RAILROAD IN THE RELOCATION OF THE FACILITIES.

### GENERAL

THE RAILROAD INVOLVED ON THIS PROJECT IS THE CONSOLIDATED RAIL CORPORATION (CONRAIL). ALL REFERENCE TO THE RAILROAD OR THE RAILROAD COMPANY, HEREIN, SHALL BE MEANT TO APPLY TO THE ABOVE NAMED RAILROAD.

ALL WORK ON THE RAILROAD BY THE CONTRACTOR SHALL BE SUBJECT TO THE APPROVAL OF THE RAILROAD COMPANY AND TO INSPECTION AT ALL TIMES BY ITS PROPERLY DESIGNATED REPRESENTATIVE. SAFETY AND CONTINUITY OF OPERATIONS OF THE RAILROAD TRAFFIC AND THE PROTECTION OF RAILROAD COMMUNICATION LINES SHALL BE OF MAJOR IMPORTANCE AND SHALL AT ALL TIMES BE PROTECTED AND SAFEGUARDED. THE CONTRACTOR SHALL GIVE WRITTEN NOTICE TO A DULY AUTHORIZED REPRESENTATIVE OF THE RAILROAD AT LEAST TEN WORKING DAYS IN ADVANCE OF THE TIME THE CONTRACTOR INTENDS TO COMMENCE ANY OPERATIONS. WHENEVER PERFORMING ANY WORK WHICH COULD AFFECT RAILROAD OPERATIONS, THE CONTRACTOR SHALL SUBMIT COMPLETE PLANS AND DETAILS OF THE PROPOSED WORK TO BOTH THE RAILROAD AND THE STATE FOR APPROVAL. NO SUCH WORK SHALL BE COMMENCED OR PROSECUTED WITHOUT PRIOR APPROVAL OF BOTH AGENCIES. APPROVAL OF SUCH WORK SHALL NOT BE CONSTRUED AS A RELEASE FROM RESPONSIBILITY OR LIABILITY FOR ANY DAMAGE WHICH THE RAILROAD MAY SUFFER.

THE CONTRACTOR SHALL NOT AT ANY TIME PERMIT EQUIPMENT IN HIS USE TO ENTER UPON OR FOUL THE RAILROAD COMPANY TRACKS EXCEPT WHEN SUCH EQUIPMENT IS PROTECTED BY AUTHORIZED EMPLOYEES OF THE RAILROAD COMPANY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF RAILROAD OPERATIONS DURING CONSTRUCTION OF THE RAILROAD BRIDGE AND DURING EXCAVATION AND EMBANKMENT CONSTRUCTION FOR THE TEMPORARY AND PERMANENT TRACK LOCATIONS. HE SHALL CONSULT IN ADVANCE DIRECTLY WITH THE RAILROAD AREA ENGINEER AND SHALL ARRANGE FOR PROVIDING ANY NECESSARY FLAGMEN DURING ANY CONSTRUCTION ACTIVITIES THAT MIGHT BE HAZARDOUS TO RAILROAD OPERATIONS.

### MATERIALS (CONT'D)

THE BALLASTS WILL BE PROVIDED BY THE CONSOLIDATED RAIL CORPORATION (CRC) AND WILL BE PICKED UP BY THE CONTRACTOR AT CRC'S BUCKEYE YARD.

ALL REFERENCES IN THE PLANS TO ITEM 310 AS THE MATERIAL TO BE USED FOR THE RAILROAD SUB-BALLAST SHALL BE CONSIDERED TO READ ITEM 304.

## SEQUENCE OF CONSTRUCTION

### TEMPORARY ALIGNMENT PHASES: I - VI

#### PHASE I

INSTALL THE #15 T.O. ON #2 TRACK AT APPROXIMATELY STATION 6940+47.54 (EAST OF SOUDER AVENUE) AND CONSTRUCT APPROXIMATELY 300 LF OF TRACK BEHIND THE T.O. ON THE T.O. SIDE, SUBSEQUENTLY CONNECTING TO THE AUBURN TRACK ON A "TEMPORARY" ALIGNMENT. THEN REMOVE THE OLD T.O. TO THE AUBURN TRACK IN #2 TRACK AT APPROXIMATELY STATION 78+50 AND 1,000 LF OF THE FORMER AUBURN BEHIND THE T.O. SIDE.

#### PHASE II

INSTALL A #15 T.O. ON #2 TRACK AT APPROXIMATELY STATION 6869+31.19 (WEST OF SOUDER AVENUE) AND CONSTRUCT APPROXIMATELY 700 LF OF TRACK BEHIND THE T.O. ON THE T.O. SIDE, SUBSEQUENTLY CONNECTING TO THE WESTERN BRANCH (LABELED TOLEDO BRANCH). THEN REMOVE APPROXIMATELY 850 LF OF THE WESTERN BRANCH, STATION 78+00 TO SOUDER AVENUE.

#### PHASE III

CONNECT THE TEMPORARY ALIGNMENT FROM #2 TRACK THAT CONNECTS TO THE AUBURN TRACK TO THE WESTERN BRANCH, APPROXIMATELY 600 LF OF "REALIGNMENT" ON THE TEMPORARY STATION 6944+65.98 TO 6950+49.41.

#### PHASE IV

REMOVE THE AUBURN TRACK FROM APPROXIMATELY STATION 6962+00 TO 6946+00 AND CONSTRUCT NEW TEMPORARY ALIGNMENT BETWEEN 6960+50 TO 6953+00, SUBSEQUENTLY CONNECTING AT BOTH ENDS TO THE WESTERN BRANCH.

#### PHASE V

INSTALL A #15 T.O. AT STATION 57+63.78 ON THE TEMPORARY ALIGNMENT OF MAINLINE #2 TRACK AND CONSTRUCT APPROXIMATELY 400 LF OF TRACK BEHIND THE STRAIGHT SIDE OF THE T.O. TO #2 TRACK, SUBSEQUENTLY CONNECTING WITH CUT AND THROW TO #2 TRACK. THEN REMOVE #2 TRACK'S PREVIOUS EXISTING ALIGNMENT.

#### PHASE VI

CONSTRUCT APPROXIMATELY 1,400 LF OF TRACK ON TEMPORARY #1 TRACK ALIGNMENT BETWEEN STATION 50+00 TO 64+00, SUBSEQUENTLY CONNECTING WITH CUT AND THROWS INTO EXISTING #1 TRACK. THEN REMOVE #1 TRACK FROM ITS PREVIOUS EXISTING ALIGNMENT.

### PHASES TO FINAL ALIGNMENT: VII - X (SUBSEQUENT TO COMPLETION OF NEW R.R. STRUCTURE.)

#### PHASE VII

CONSTRUCT #1 TRACK ON FINAL ALIGNMENT BETWEEN APPROXIMATELY STATION 50+00 TO 64+00, 1,400 LF, SUBSEQUENTLY CONNECTING TO EXISTING #1 TRACK WITH CUT AND THROWS. THEN REMOVE 1,400 LF OF TEMPORARY #1 TRACK ALIGNMENT.

#### PHASE VIII

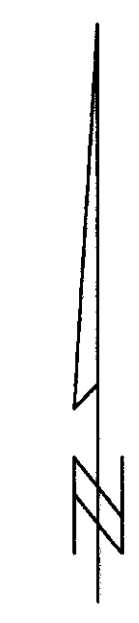
CONSTRUCT #2 TRACK FINAL ALIGNMENT BETWEEN APPROXIMATELY STATION 52+00 TO STRAIGHT SIDE OF #15 T.O. AT APPROXIMATELY STATION 6942+07.54, 1,500 LF OF TRACK, SUBSEQUENTLY CONNECTING TO EXISTING #2 TRACK WITH A CUT AND THROW ON EAST END. WEST END RUNS THROUGH THE EXISTING T.O. SUBSEQUENTLY REMOVE TEMPORARY #2 TRACK ALIGNMENT FROM STATION 56+00 TO 52+00, 400 LF.

#### PHASE IX

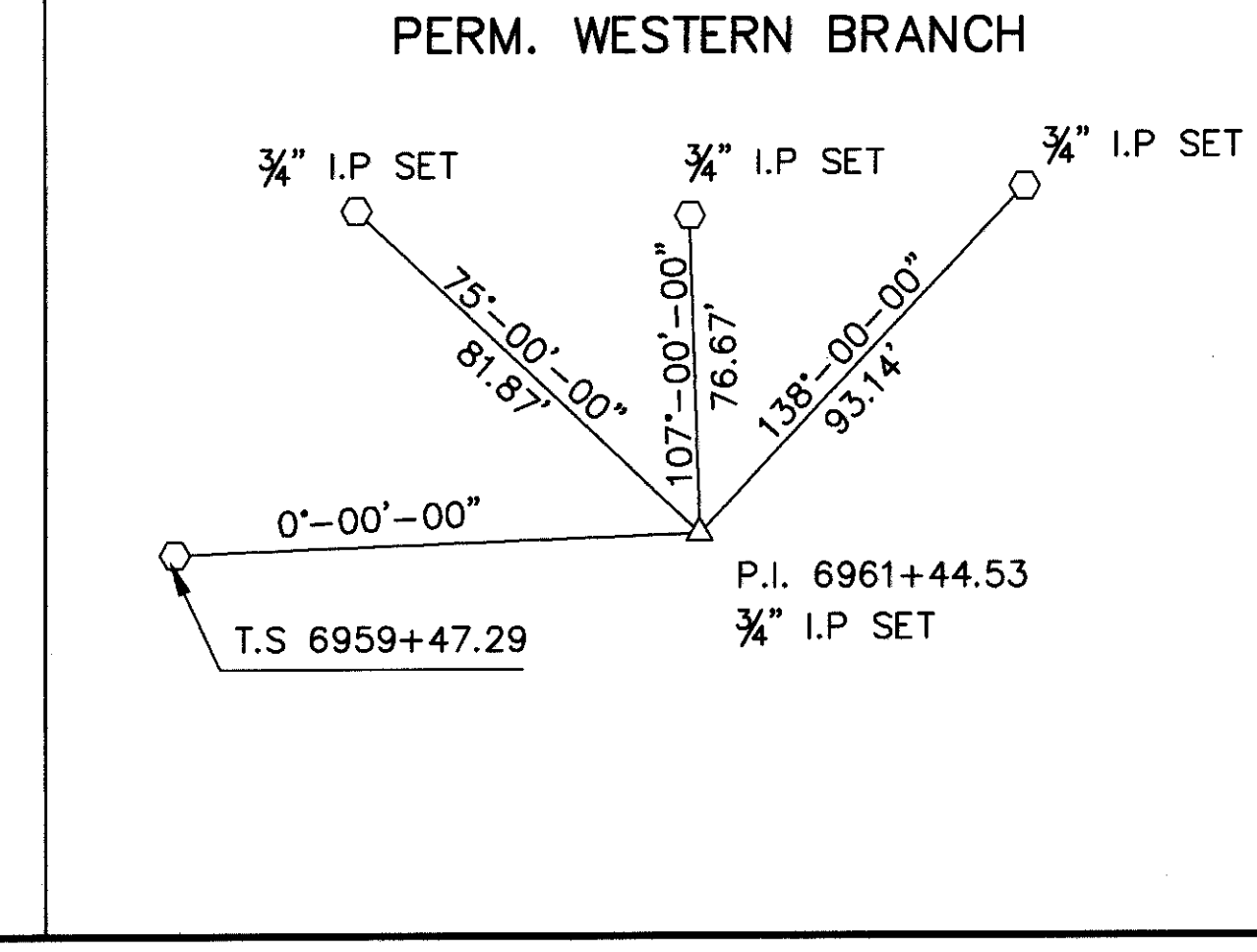
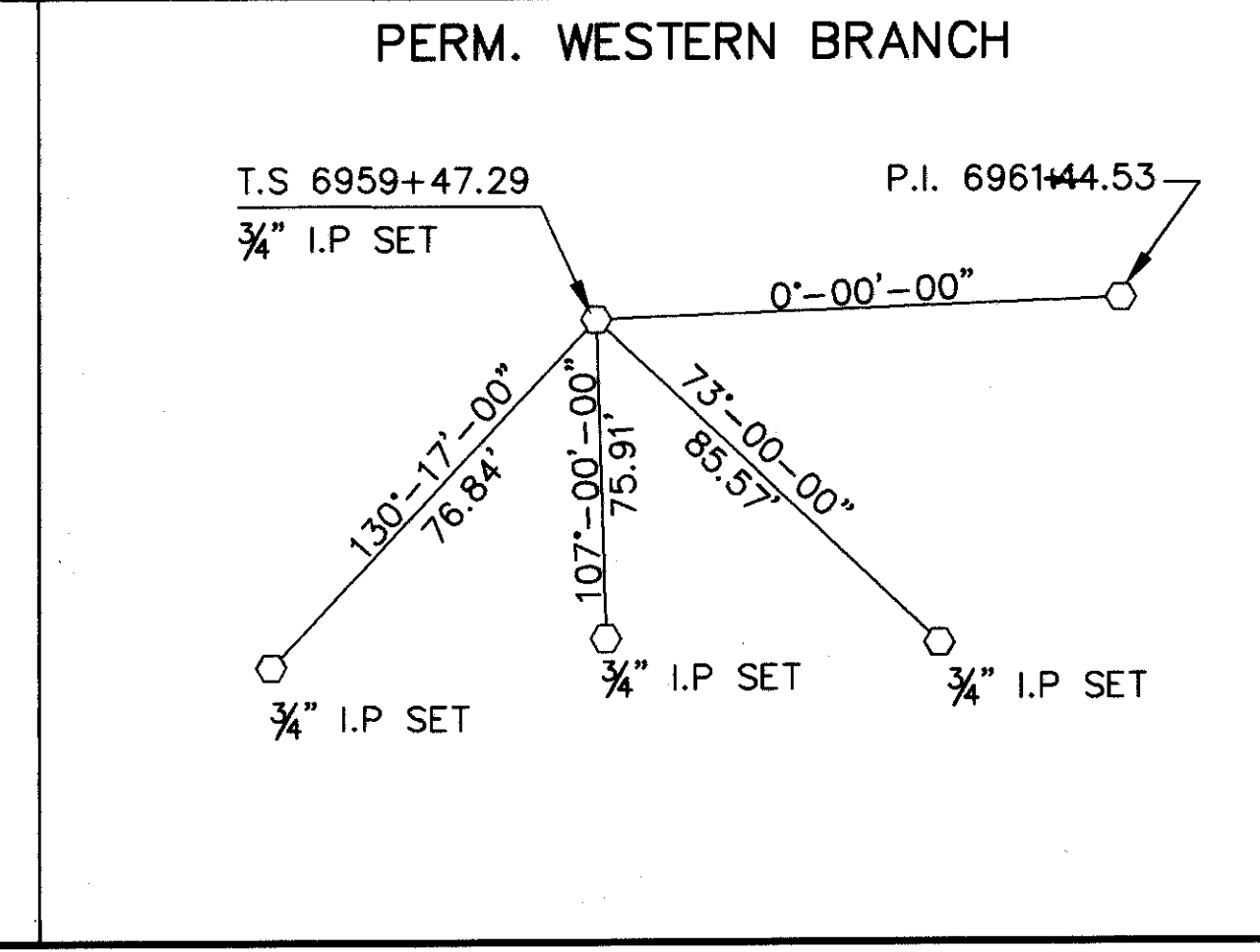
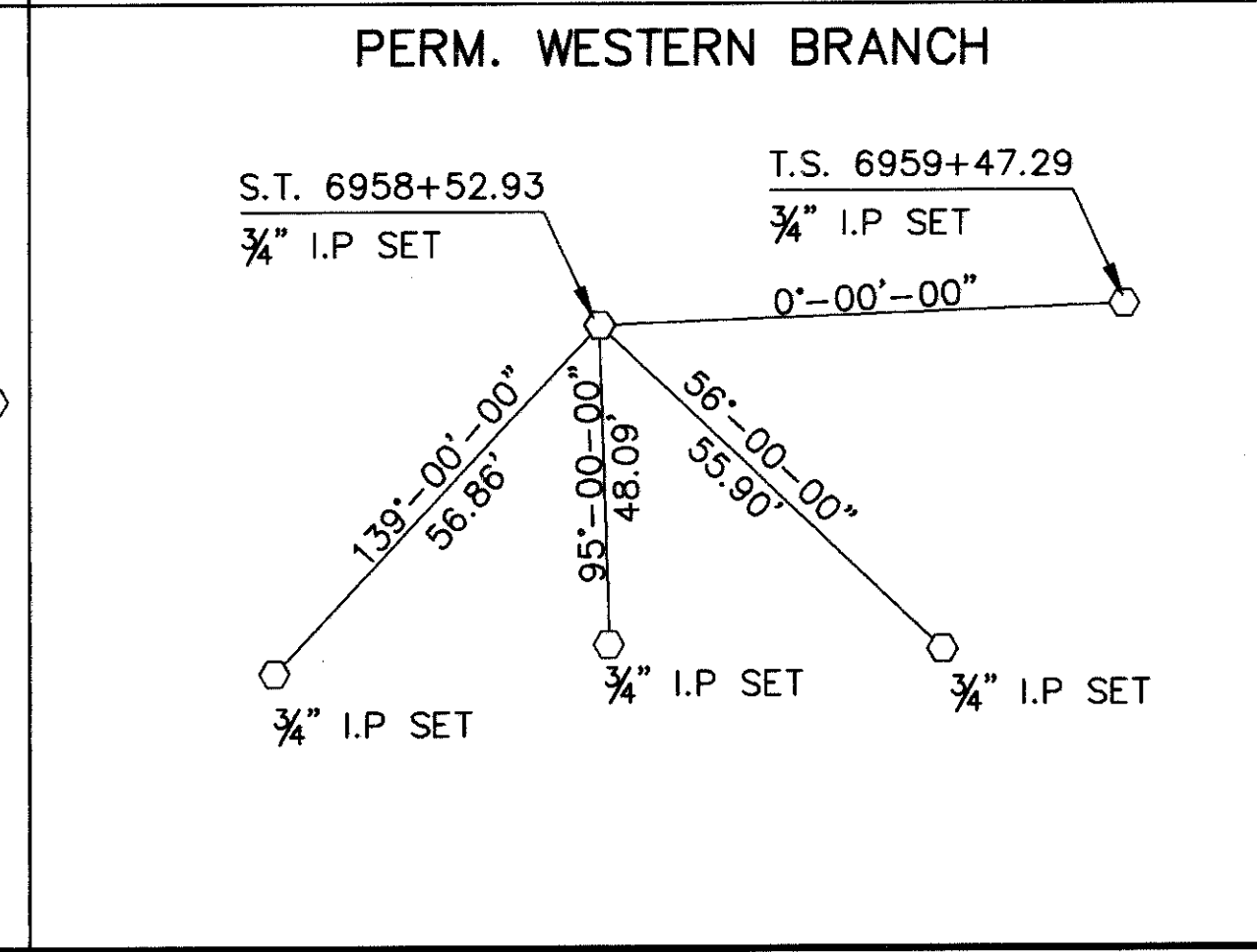
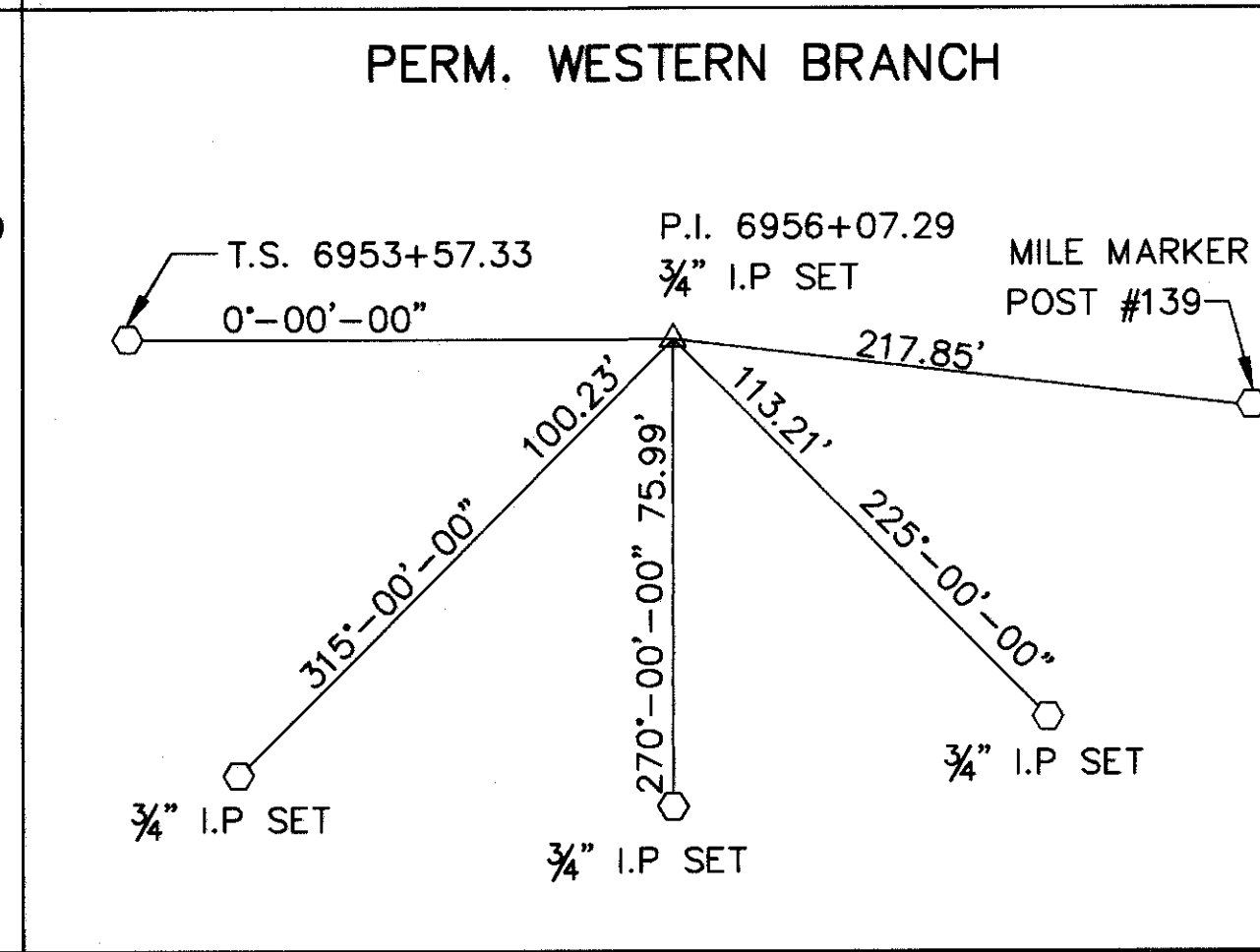
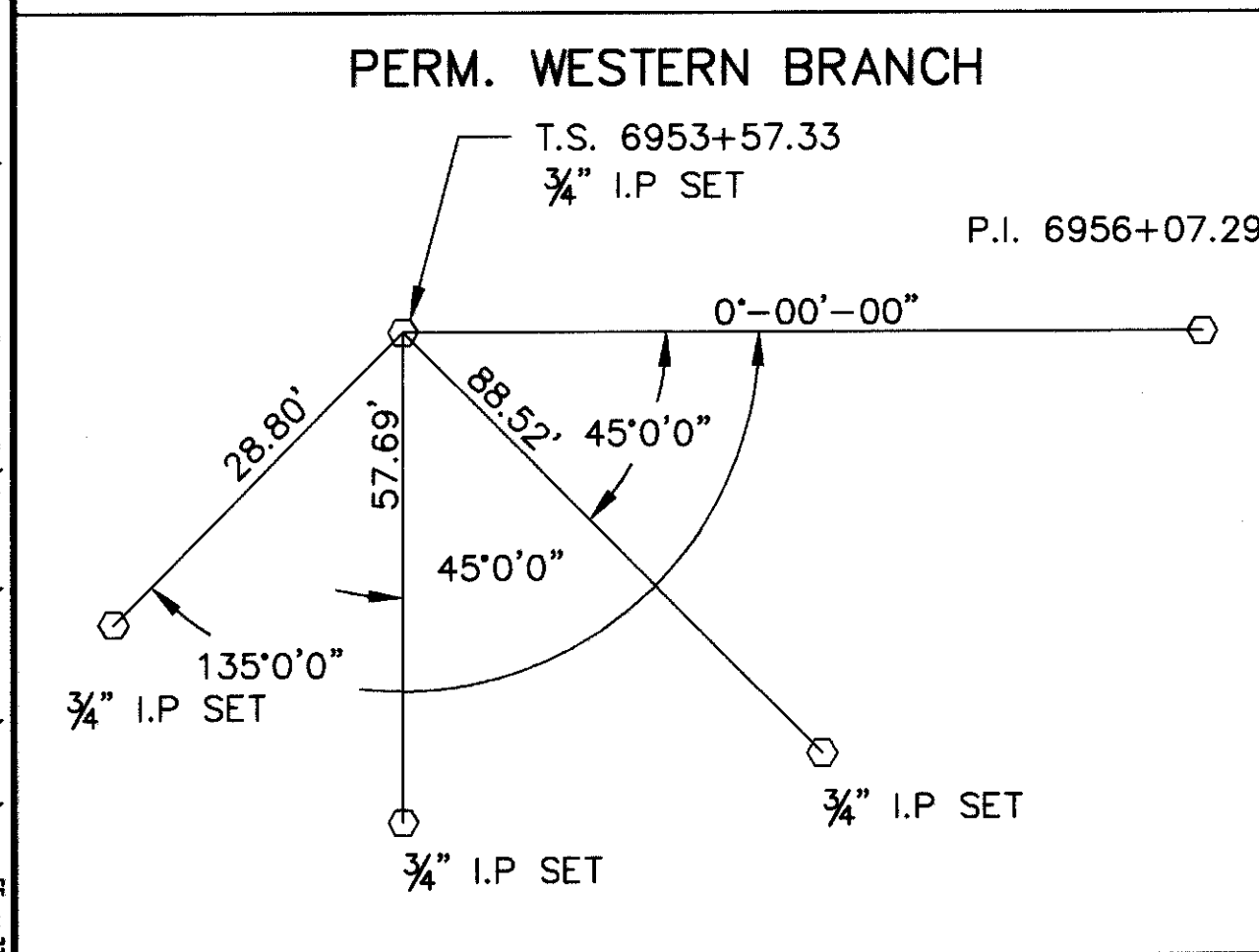
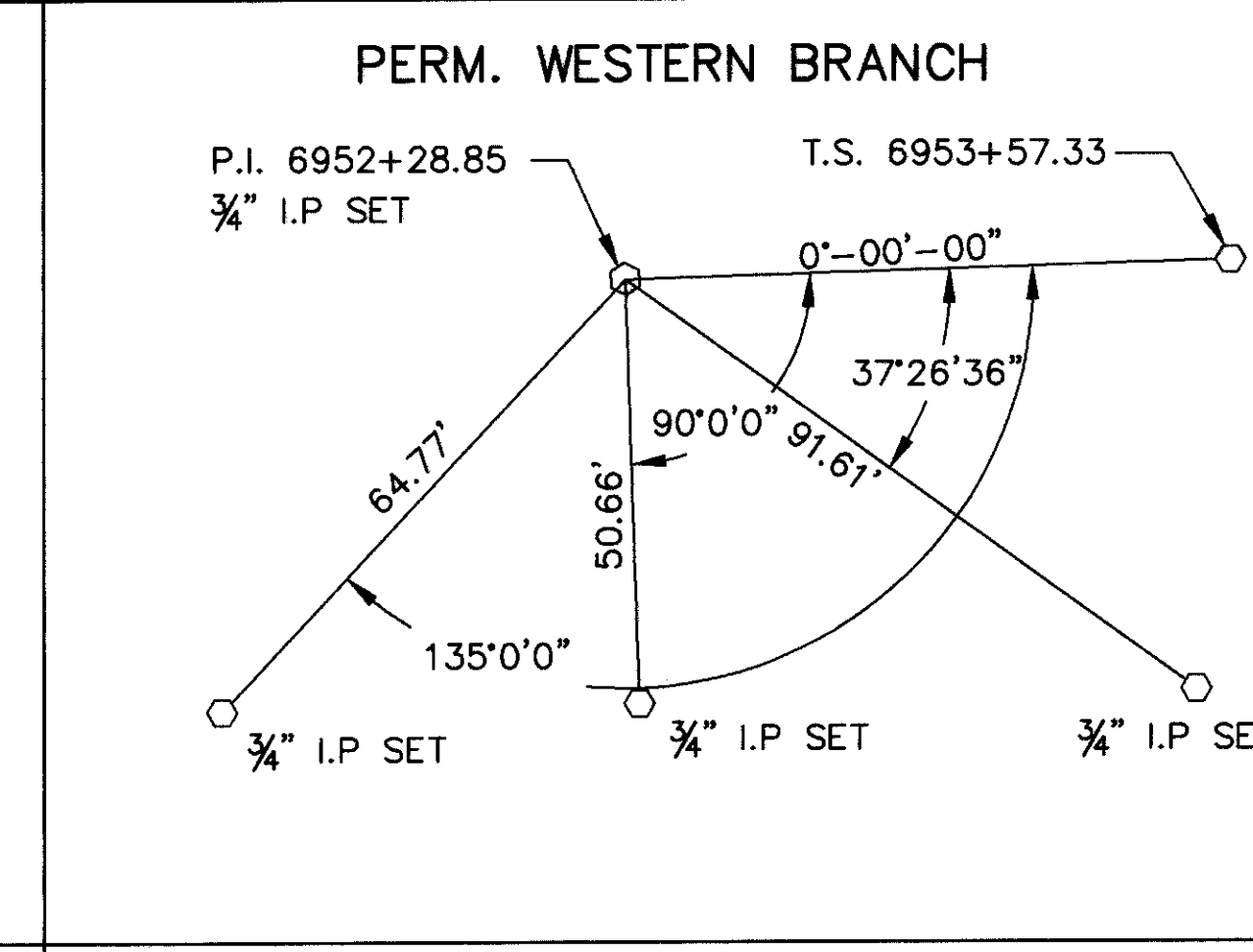
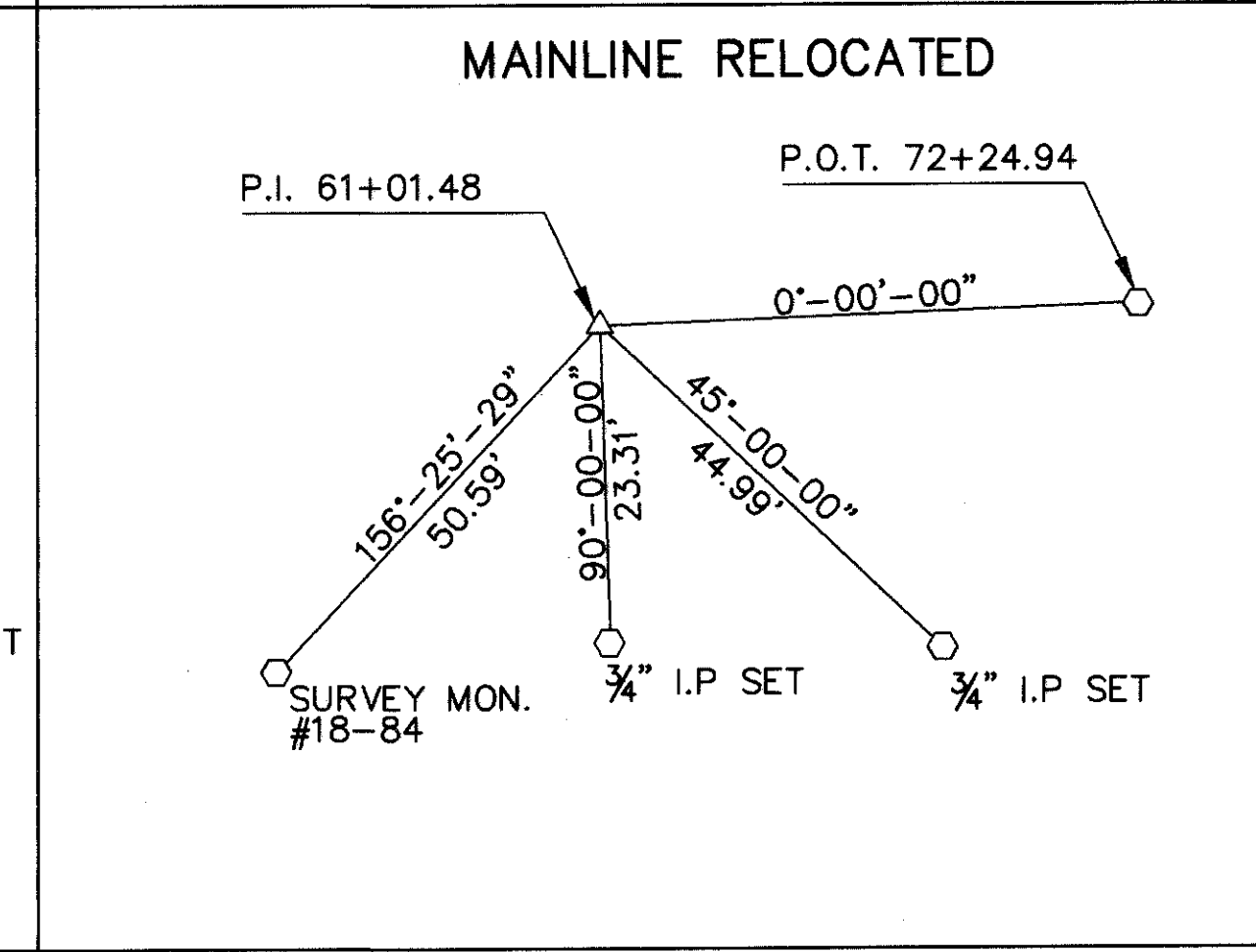
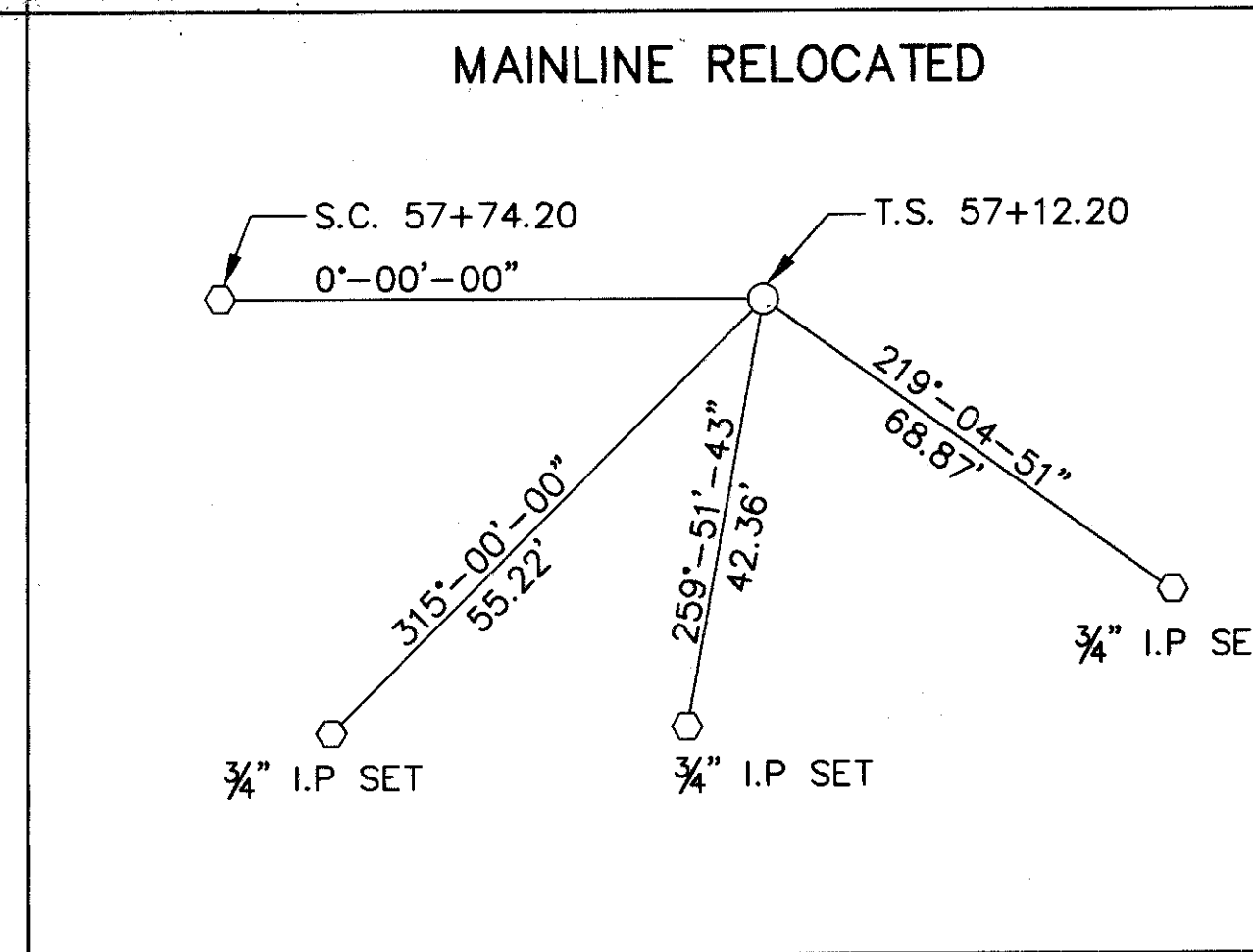
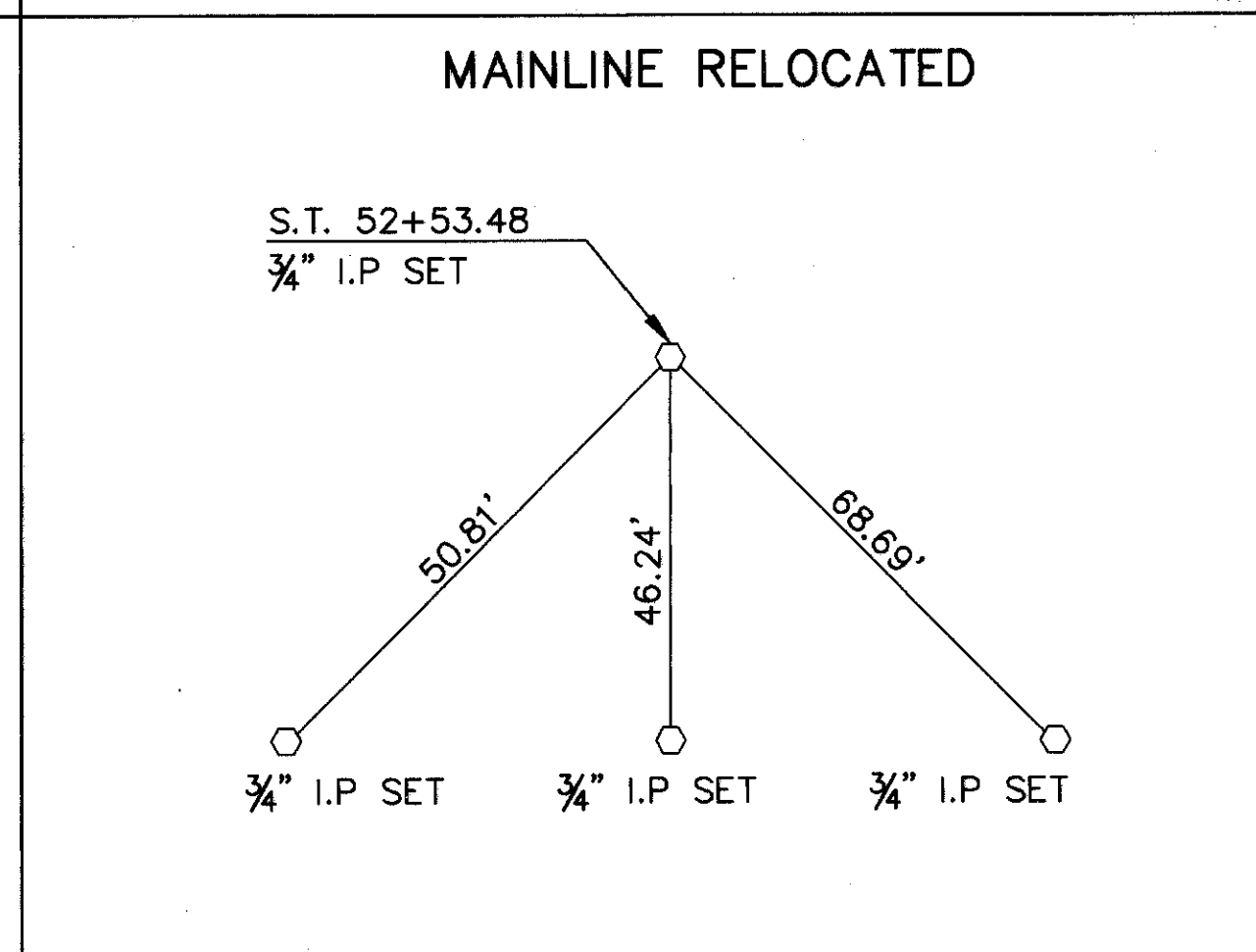
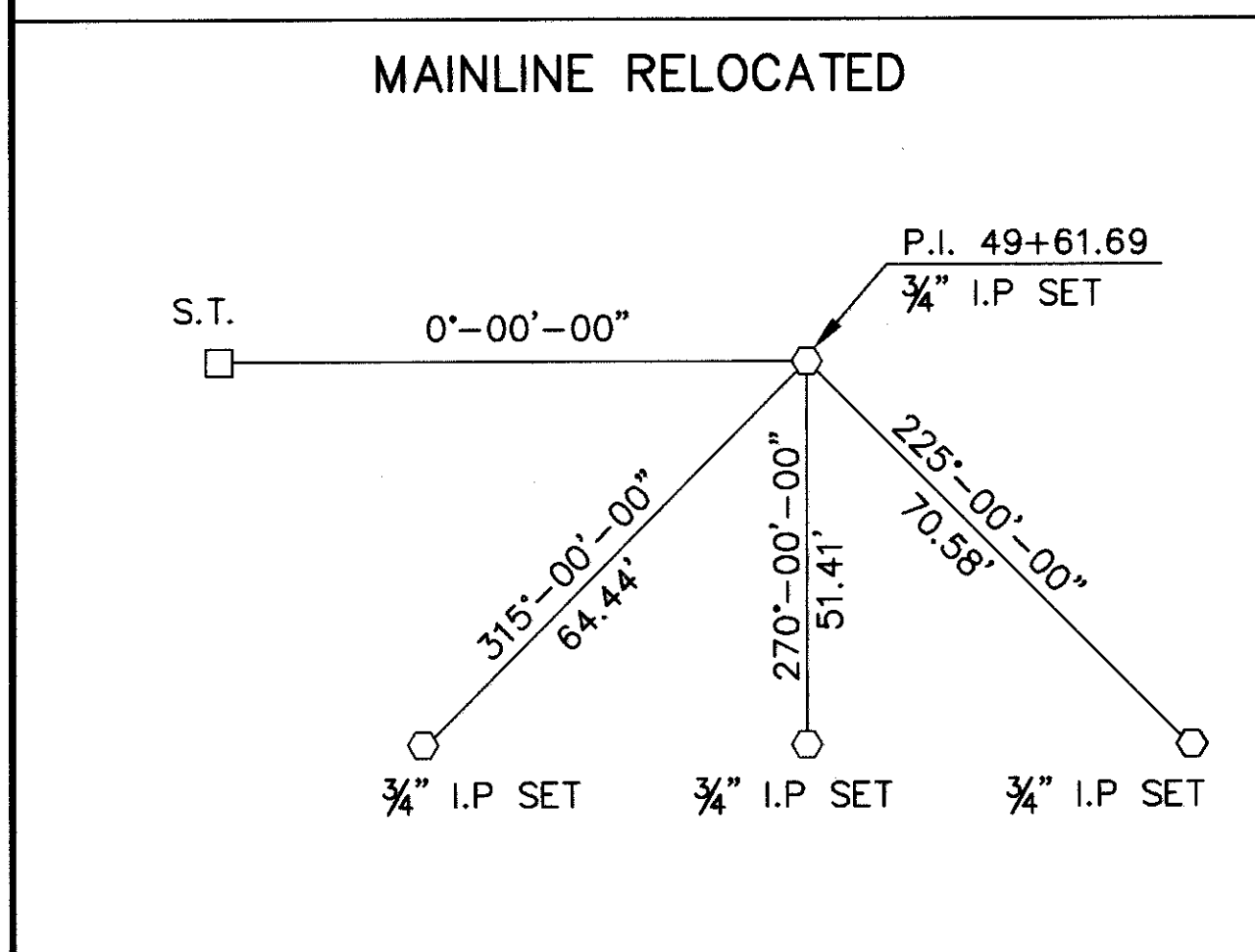
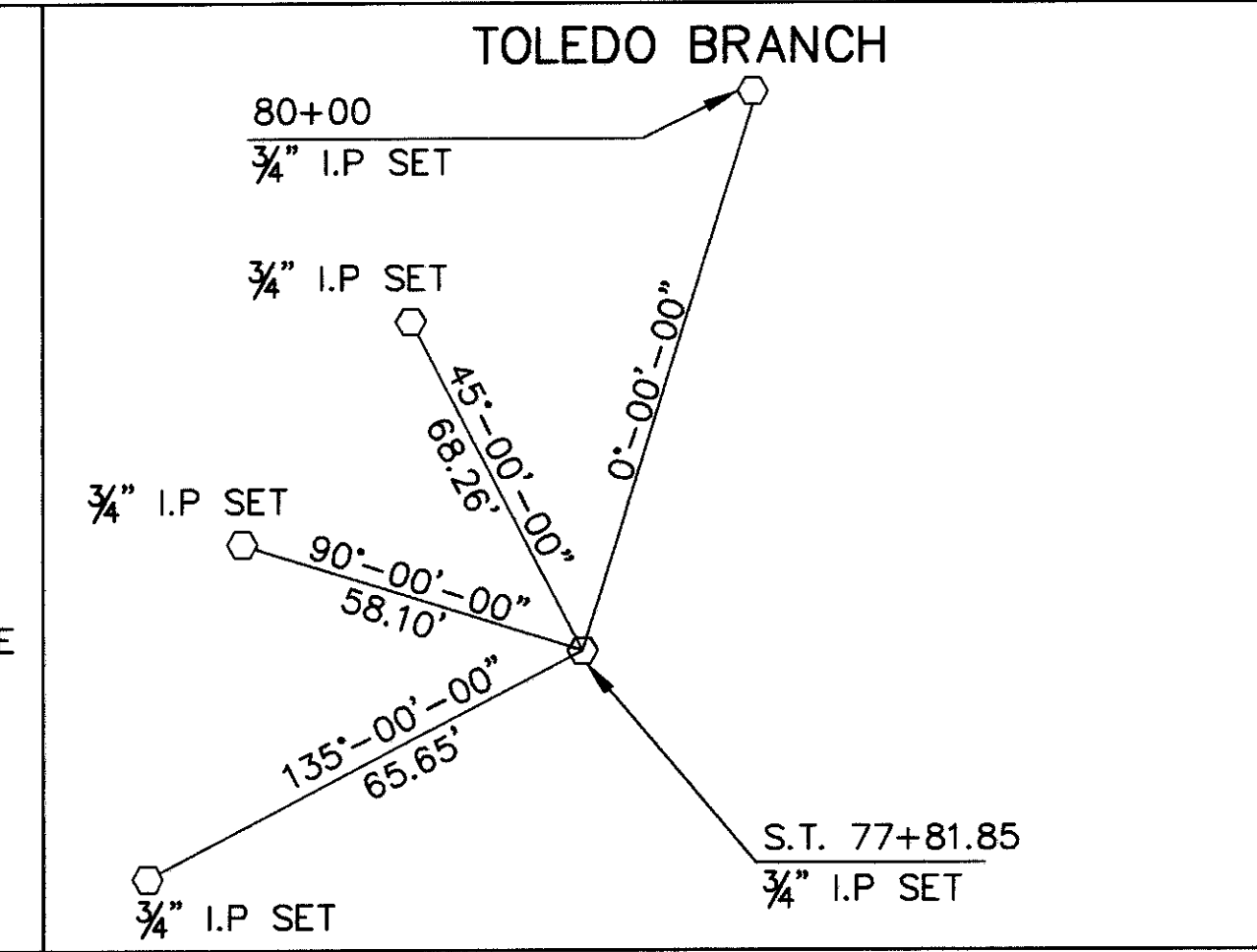
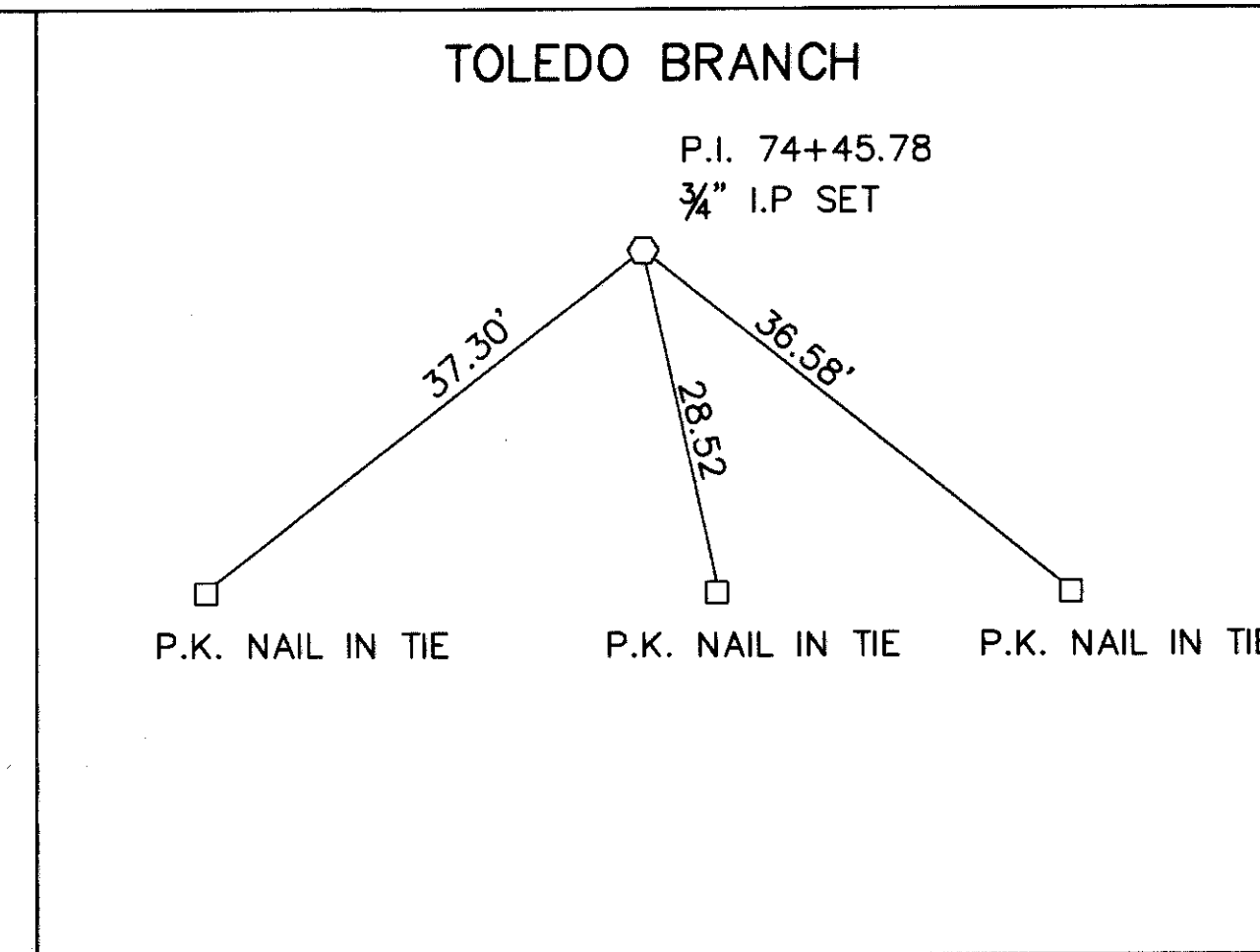
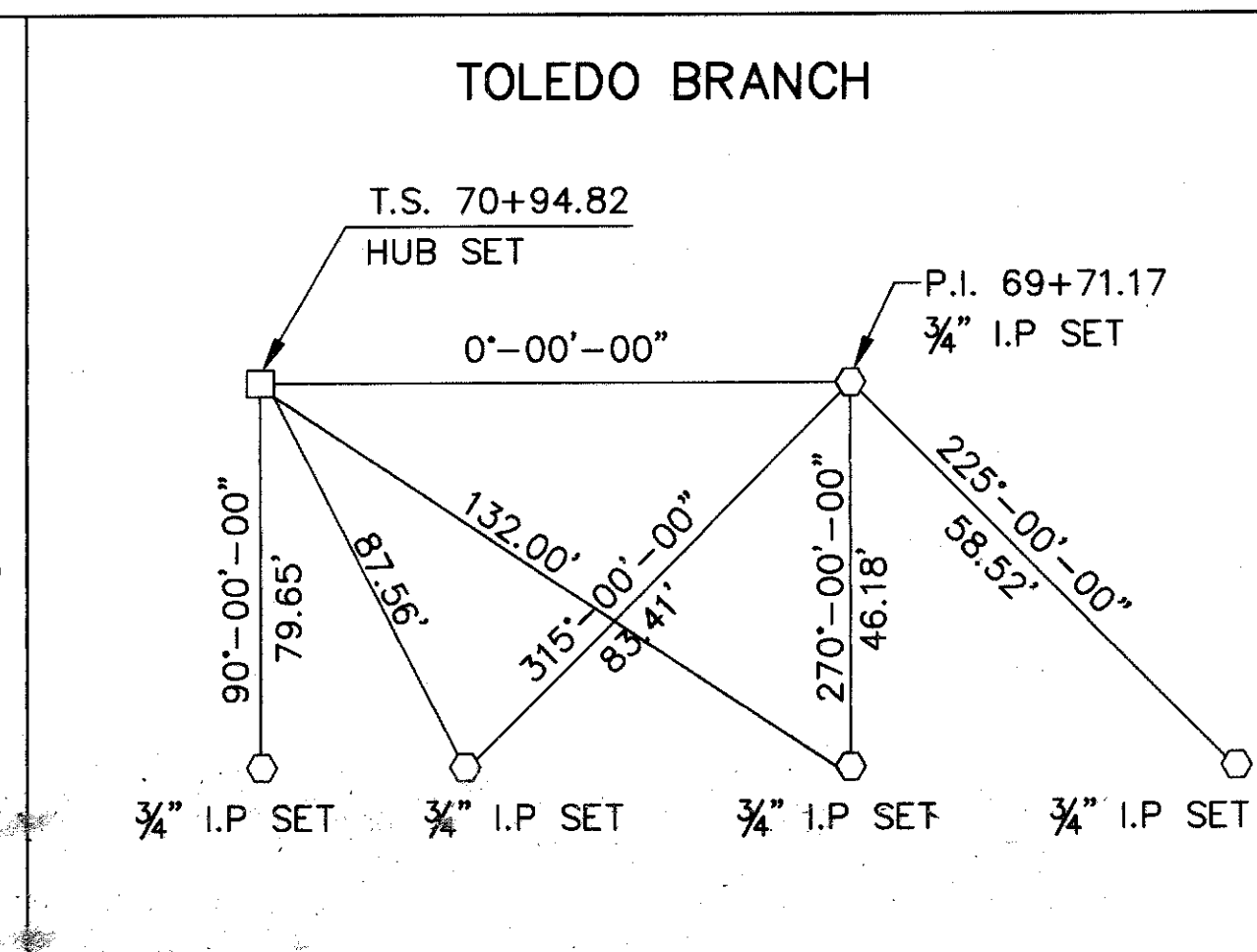
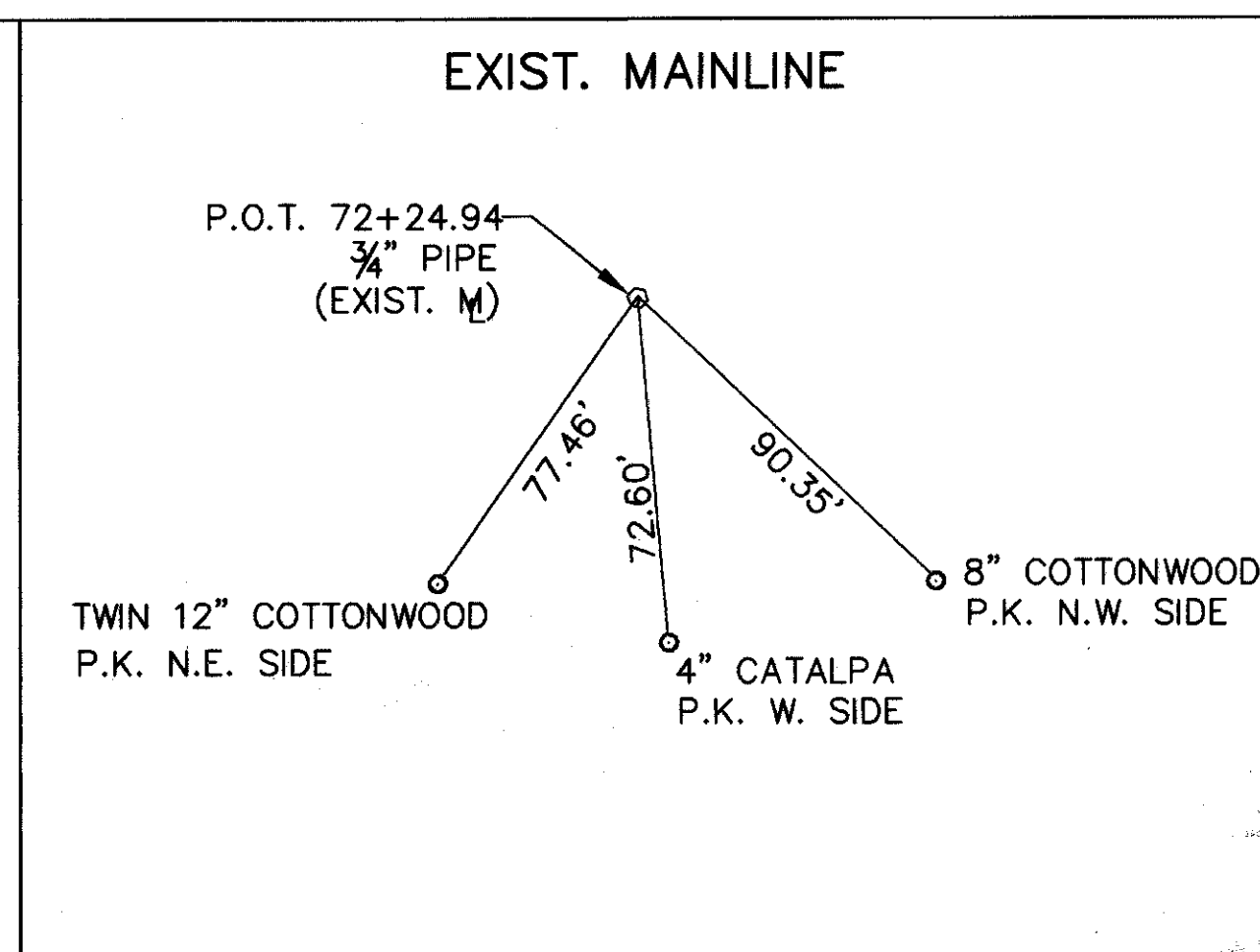
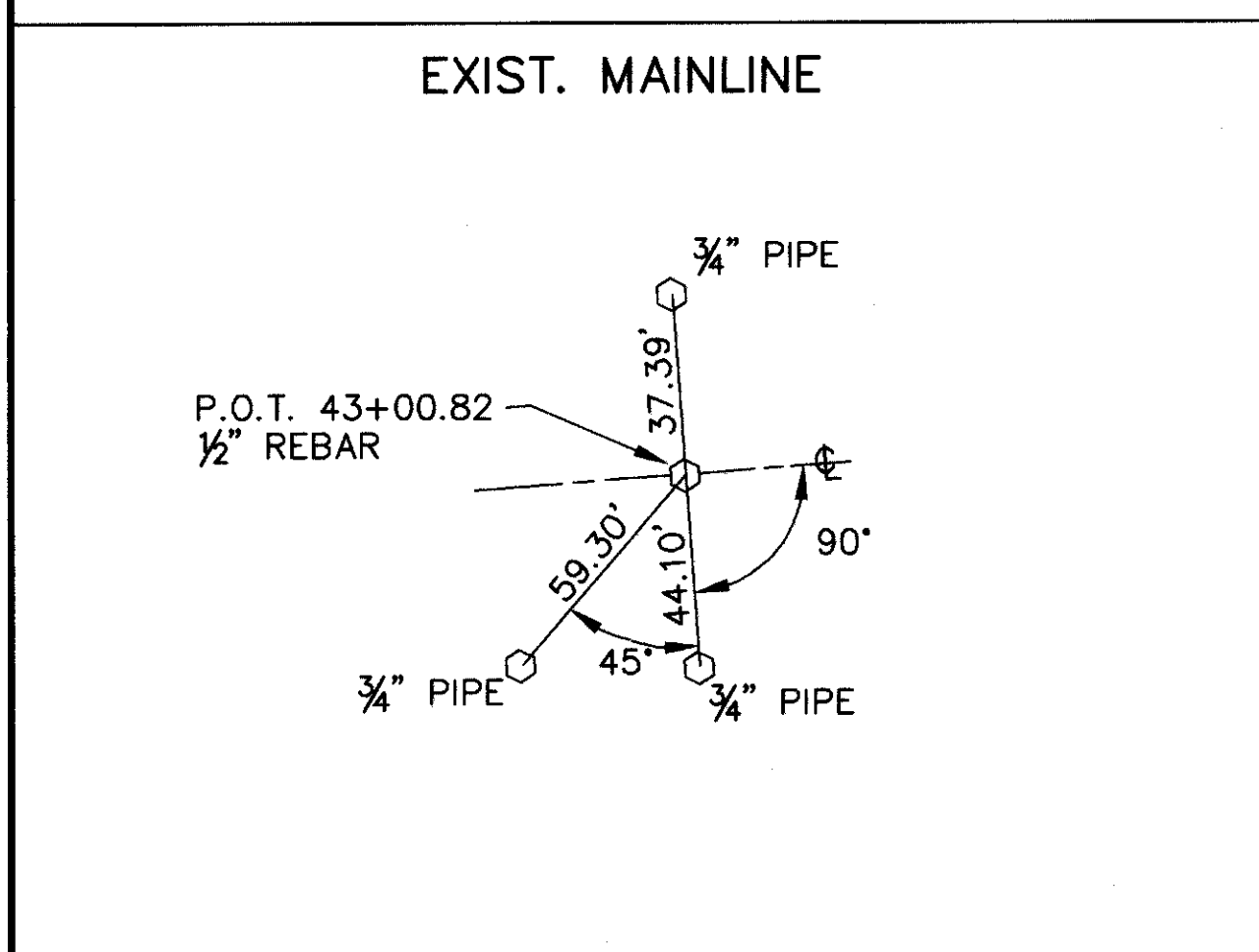
INSTALL PERMANENT #15 T.O. ON #2 TRACK AT STATION 57+02.19 AND CONSTRUCT APPROXIMATELY 540 LF OF TRACK BEHIND THE T.O. SIDE (STATION 6954+60 TO STATION 6960+00), SUBSEQUENTLY CONNECTING TO THE WESTERN BRANCH WITH A CUT AND THROW.

#### PHASE X

REMOVE #15 T.O. AT APPROXIMATELY STATION 6940+47.54 AND INSTALL TRACK PANEL, 170 LF. SUBSEQUENTLY REMOVE TEMPORARY ALIGNMENT ON WESTERN BRANCH.



[646] - [TRANS]SR15-45 (ROAD) REF - PRTS.DWG - MAY 29, 1997 - 11:13:46 - SCALE = 1:30



REFERENCE POINTS

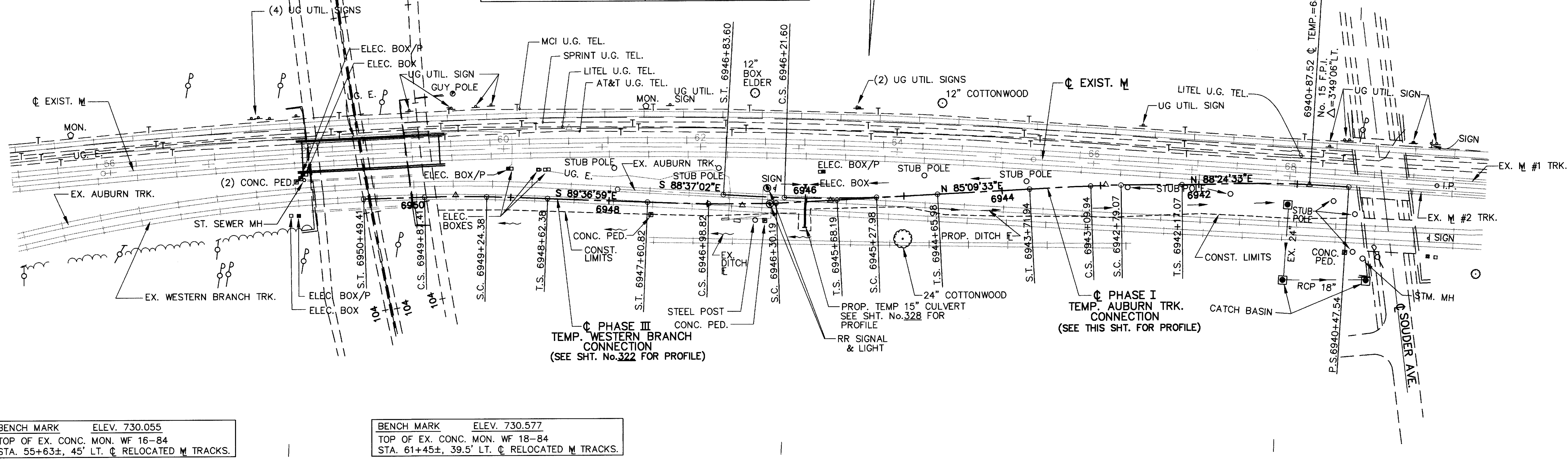


**TEMPORARY WESTERN BRANCH**

CURVE DATA		CURVE DATA	
P.I. = STA. 6946+64.56	Ls = 62.00'	P.I. = STA. 6949+55.94	Ls = 62.00'
Δ = 513'28"	Θs = 114°23'	Δ = 5100'00"	Θs = 114°23'
Δc = 244'42"	L.T. = 41.33'	Δc = 231'14"	L.T. = 41.33'
Dc = 4'00'00"	S.T. = 20.67'	Dc = 4'00'00"	S.T. = 20.67'
R = 1432.69'	Ts = 96.37'	R = 1432.69'	Ts = 96.37'
T = 34.33'	Es = 1.60'	T = 31.52'	Es = 1.48'
L = 68.64'		L = 63.03'	
Se = 1'		Se = 1'	

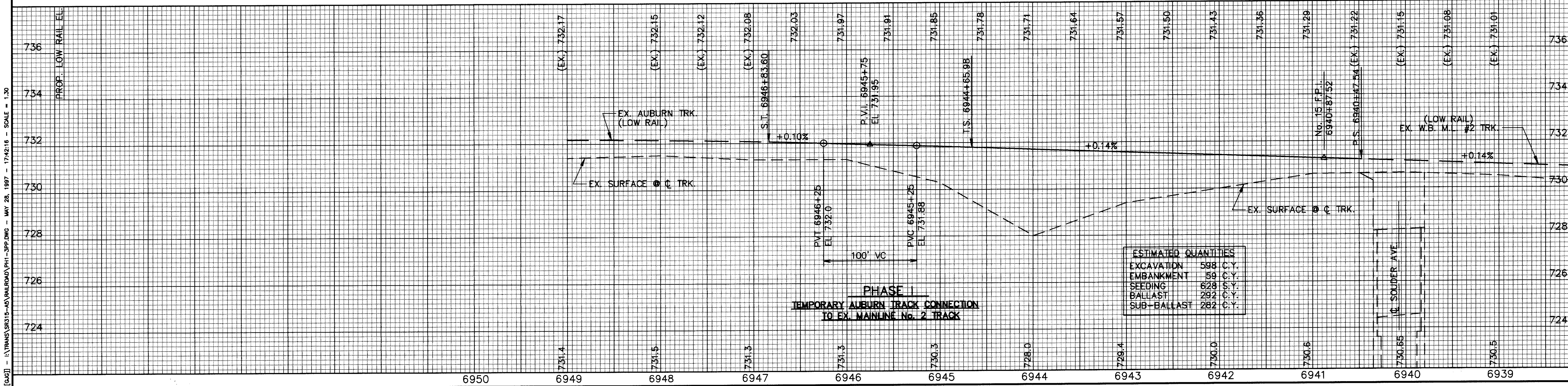
**TEMPORARY AUBURN TRACK**

CURVE DATA		CURVE DATA	
P.I. = STA. 6942+94.52	Ls = 62.00'	P.I. = STA. 6945+74.87	Ls = 62.00'
Δ = 315'00"	Θs = 105°05'	Δ = 613'25"	Θs = 114°23'
Δc = 1'04'49"	L.T. = 41.33'	Δc = 3'44'39"	Θs = 114°23'
Dc = 3'30'00"	S.T. = 20.67'	Dc = 4'00'00"	L.T. = 41.33'
R = 1637.28'	Ts = 77.45'	R = 1432.69'	S.T. = 20.67'
T = 15.44'	Es = 0.76'	T = 46.83'	Ts = 108.89'
L = 30.87'		L = 93.62'	Es = 2.23'
Se = 1'		Se = 1'	



BENCH MARK ELEV. 730.055  
 TOP OF EX. CONC. MON. WF 16-84  
 STA. 55+63±, 45' LT. C. RELOCATED M TRACKS.

BENCH MARK ELEV. 730.577  
 TOP OF EX. CONC. MON. WF 18-84  
 STA. 61+45±, 39.5' LT. C. RELOCATED M TRACKS.



PHASE I & III - TEMPORARY AUBURN & WESTERN BRANCH PLAN & PROFILE



NOTE: ALL R.R. CURVE DATA BASED ON CHORD DEFINITION.

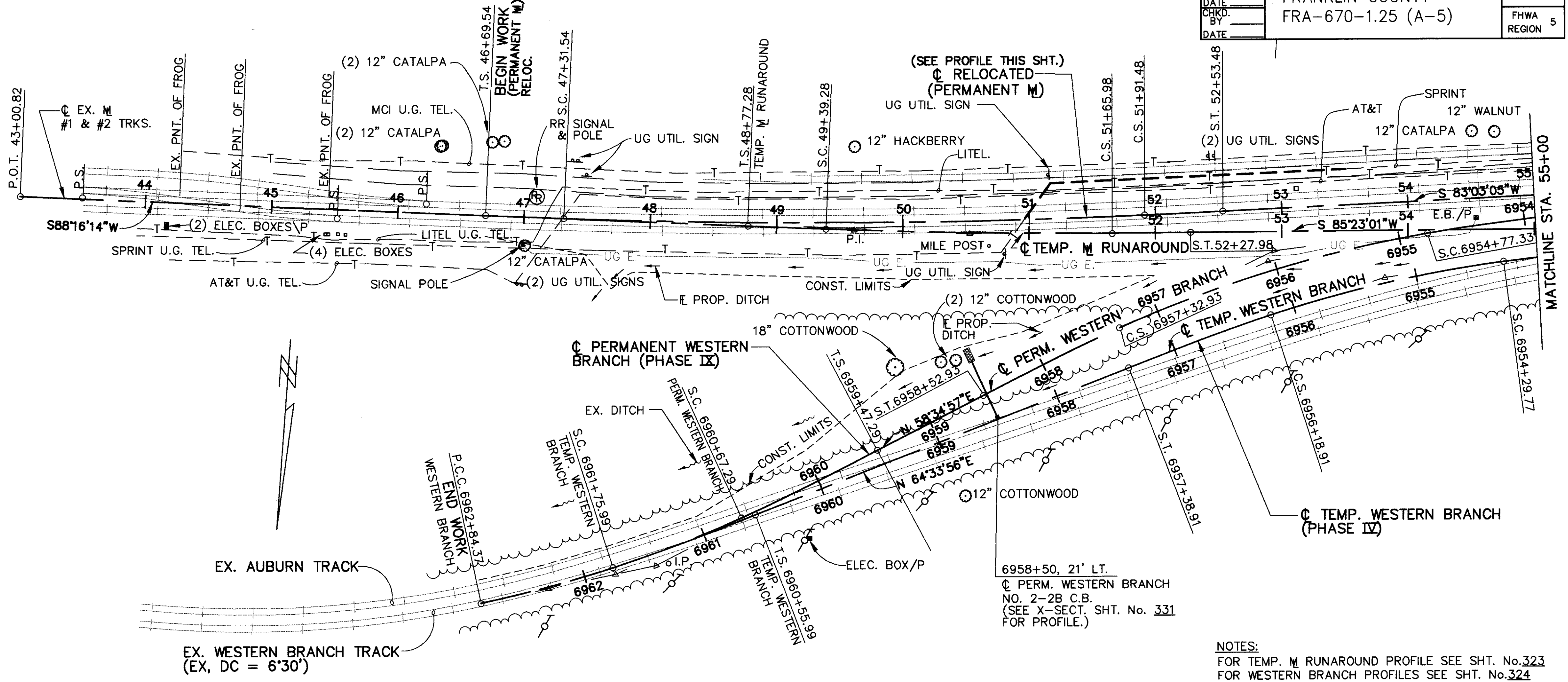
PERMANENT M		TEMP. M RUNAROUND	
CURVE DATA		CURVE DATA	
P.I. = STA. 49+61.69	Ls = 62.00'	P.I. = STA. 50+52.66	Ls = 62.00'
Δ = 5'13"10"	Os = 0'18"36"	Δ = 2'53"13"	Os = 0'18"36"
Δc = 4'35"58"	L.T. = 41.33'	Δc = 2'16"01"	L.T. = 41.33'
Dc = 1'00"00"	S.T. = 20.67'	Dc = 1'00"00"	S.T. = 20.67'
R = 5729.65'	Ts = 292.15'	R = 5729.65'	Ts = 175.38'
T = 230.09'	Es = 5.98'	T = 113.37'	Es = 1.85'
L = 459.94'		L = 226.70'	
Se = 1/2"		Se = 1/2"	

PERMANENT WESTERN BRANCH		TEMPORARY WESTERN BRANCH	
CURVE DATA		CURVE DATA	
P.I. = STA. 6956+07.29	Ls = 120.00'	P.I. = STA. 6961+44.53	Ls = 120.00'
Δ = 20'39"01"	Os = 3'17"55"	Δ = 15'14"00"	Os = 3'17"55"
Δc = 14'03"11"	L.T. = 80.01'	Δc = 11'56"05"	L.T. = 80.01'
Dc = 5'30"00"	S.T. = 40.01'	Dc = 5'30"00"	S.T. = 40.01'
R = 1042.14'	Ts = 249.96'	R = 1042.14'	Ts = 197.24'
T = 128.45'	Es = 17.74'	T = 108.94'	Es = 9.57'
L = 255.53'		L = 217.08'	
Se = 2"		Se = 2"	

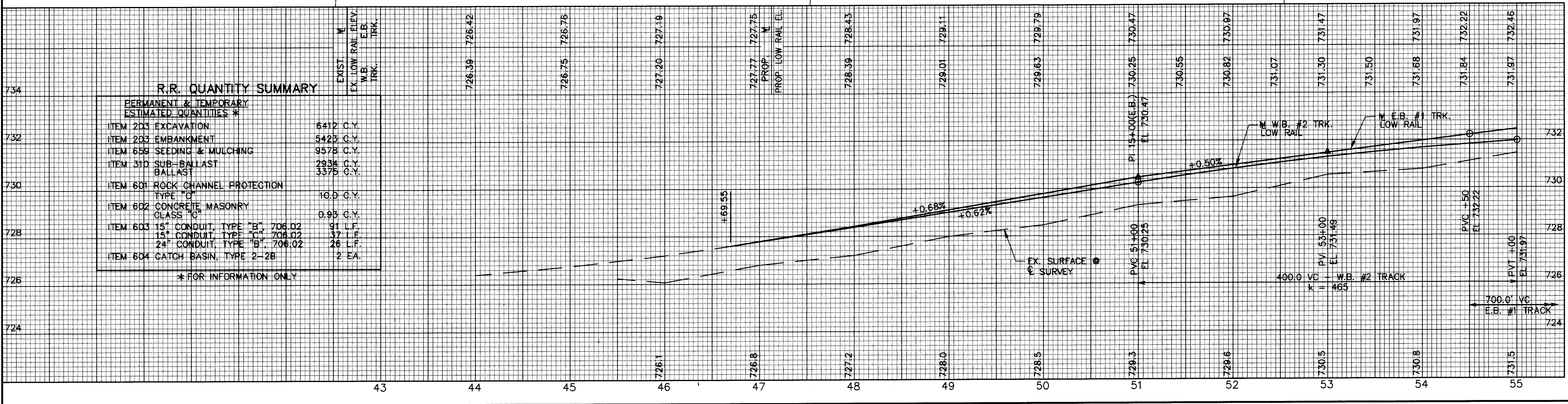
  

PERMANENT WESTERN BRANCH		TEMPORARY WESTERN BRANCH	
CURVE DATA		CURVE DATA	
P.I. = STA. 6955+25.60	Ls = 120.00'	P.I. = STA. 6961+96.76	Ls = 120.00'
Δ = 16'59"58"	Os = 3'17"55"	Δ = 9'15"02"	Os = 3'17"55"
Δc = 10'24"08"	L.T. = 80.01'	Δc = 5'57"07"	L.T. = 80.01'
Dc = 5'30"00"	S.T. = 40.01'	Dc = 5'30"00"	S.T. = 40.01'
R = 1042.14'	Ts = 215.83'	R = 1042.14'	Ts = 140.77'
T = 94.86'	Es = 12.16'	T = 54.18'	Es = 3.70'
L = 189.14'		L = 108.22'	
Se = 2"		Se = 2"	



No. OF TRAINS = 20 MOVEMENTS DAILY  
 DESIGN SPEED - MAINLINE (EX. & TEMP.) = 30 M.P.H.  
 BRANCH TRACKS (PERMANENT & TEMP.) = 30 M.P.H.

NOTES:  
 FOR TEMP. M RUNAROUND PROFILE SEE SHT. No. 323  
 FOR WESTERN BRANCH PROFILES SEE SHT. No. 324



PLAN & PROFILE - M STA. 43+00 TO STA. 55+00



**PERMANENT M**

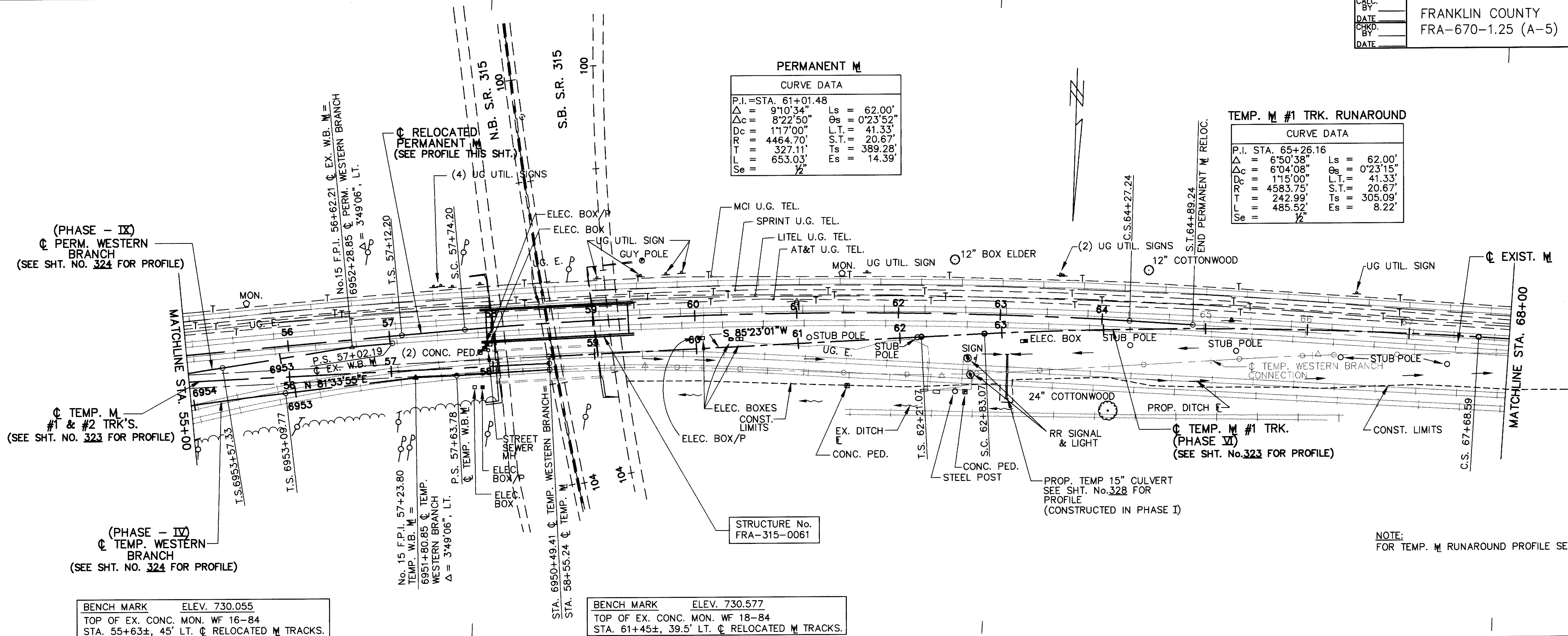
CURVE DATA

P.I. = STA. 61+01.48	Ls = 62.00'
$\Delta_c = 910'34"$	$\theta_s = 0'23'52"$
$\Delta_c = 8'22'50"$	L.T. = 41.33'
$D_c = 1'17'00"$	S.T. = 20.67'
R = 4464.70'	Ts = 389.28'
T = 327.11'	Es = 14.39'
L = 653.03'	
Se = $\frac{1}{2}$	

**TEMP. M #1 TRK. RUNAROUND**

CURVE DATA

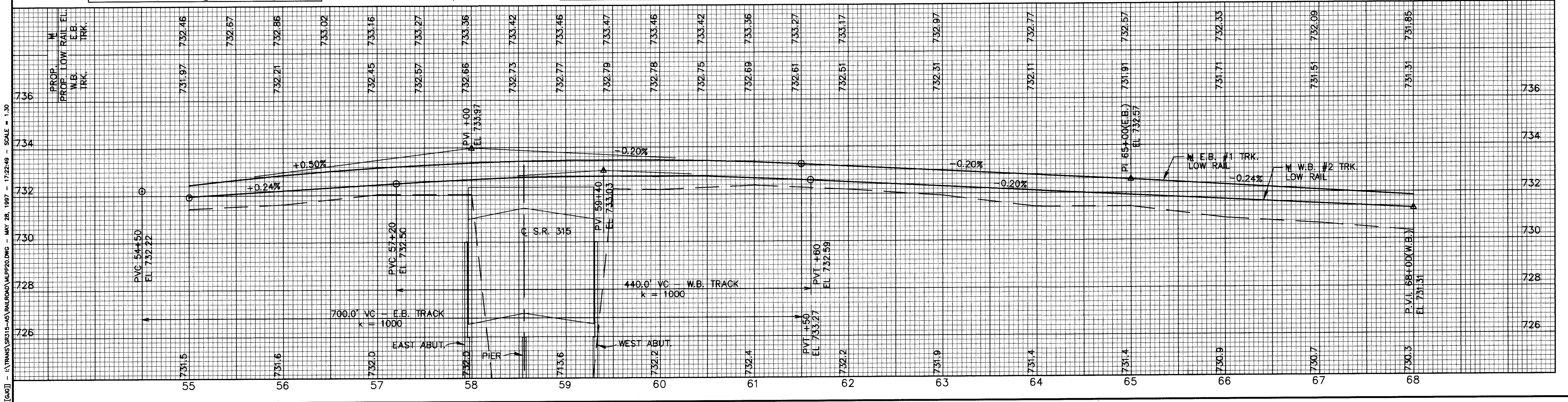
P.I. STA. 65+26.16	Ls = 62.00'
$\Delta_c = 6'50'38"$	$\theta_s = 0'23'15"$
$\Delta_c = 6'04'08"$	L.T. = 41.33'
$D_c = 1'15'00"$	S.T. = 20.67'
R = 4583.75'	Ts = 305.09'
T = 242.99'	Es = 8.22'
L = 485.52'	
Se = $\frac{1}{2}$	



BENCH MARK ELEV. 730.055  
TOP OF EX. CONC. MON. WF 16-84  
STA. 55+63±, 45' LT. C RELOCATED M TRACKS.

BENCH MARK ELEV. 730.577  
TOP OF EX. CONC. MON. WF 18-84  
STA. 61+45±, 39.5' LT. C RELOCATED M TRACKS.

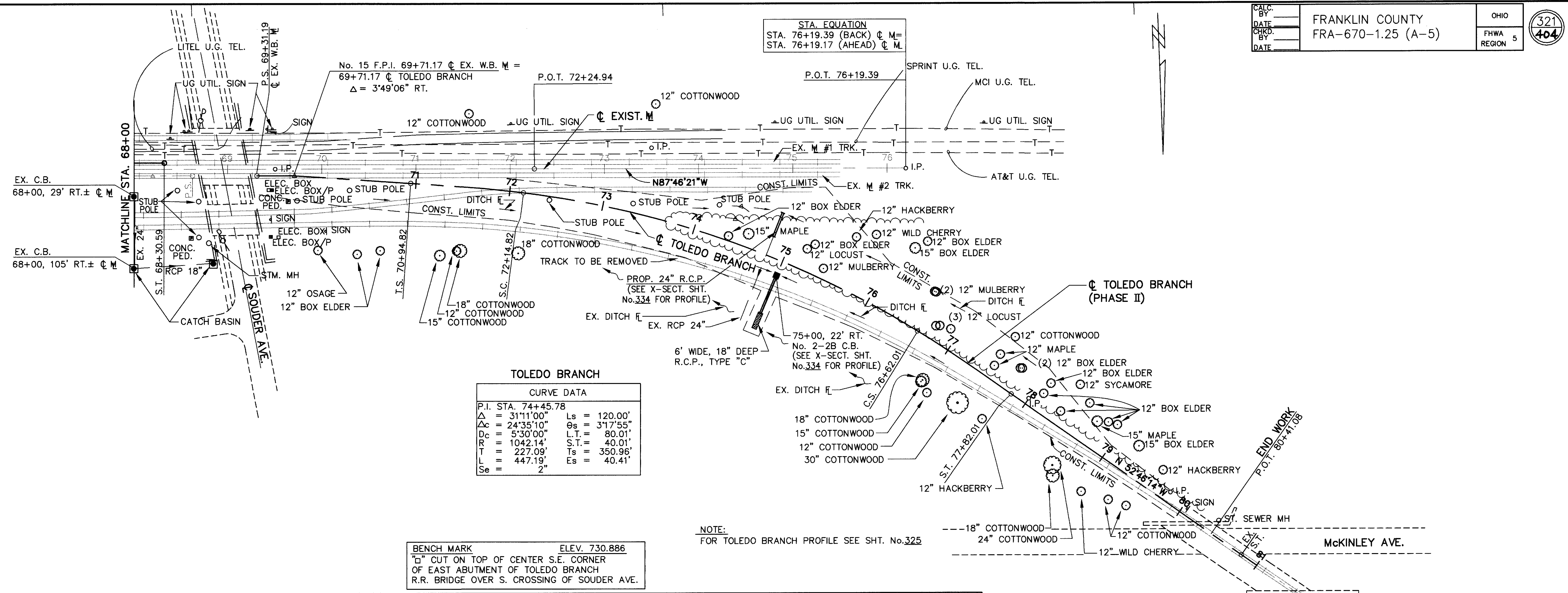
NOTE:  
FOR TEMP. M RUNAROUND PROFILE SEE SHT. No. 323



PLAN & PROFILE - M STA. 55+00 TO 68+00



STA. EQUATION  
STA. 76+19.39 (BACK) C M=  
STA. 76+19.17 (AHEAD) C M=



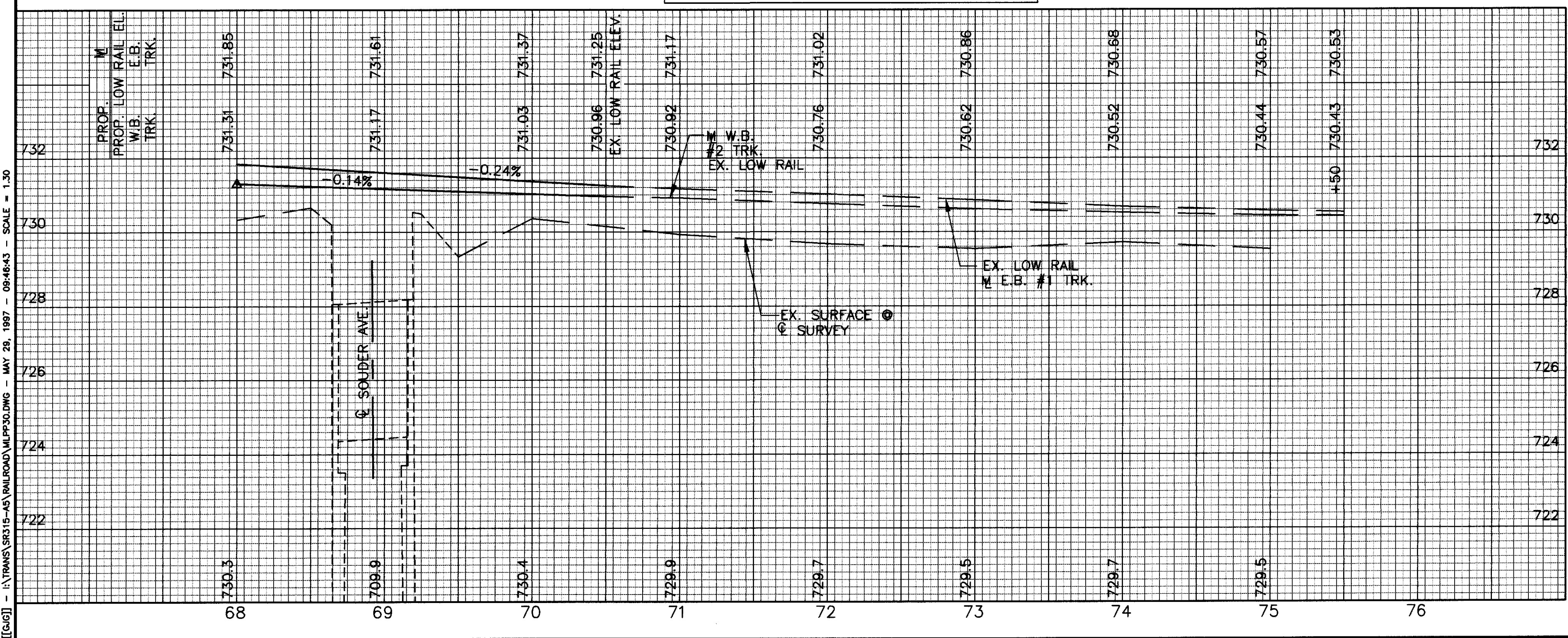
**TOLEDO BRANCH**

CURVE DATA

P.I. STA.	74+45.78	Ls	120.00'
Δ	31°11'00"	Os	317'55"
Δc	24°35'10"	L.T.	80.01'
Dc	5°30'00"	S.T.	40.01'
R	1042.14'	Ts	350.96'
T	227.09'	Es	40.41'
L	447.19'		
Se	2"		

BENCH MARK ELEV. 730.886  
"B" CUT ON TOP OF CENTER S.E. CORNER OF EAST ABUTMENT OF TOLEDO BRANCH R.R. BRIDGE OVER S. CROSSING OF SOUDER AVE.

NOTE:  
FOR TOLEDO BRANCH PROFILE SEE SH. No. 325



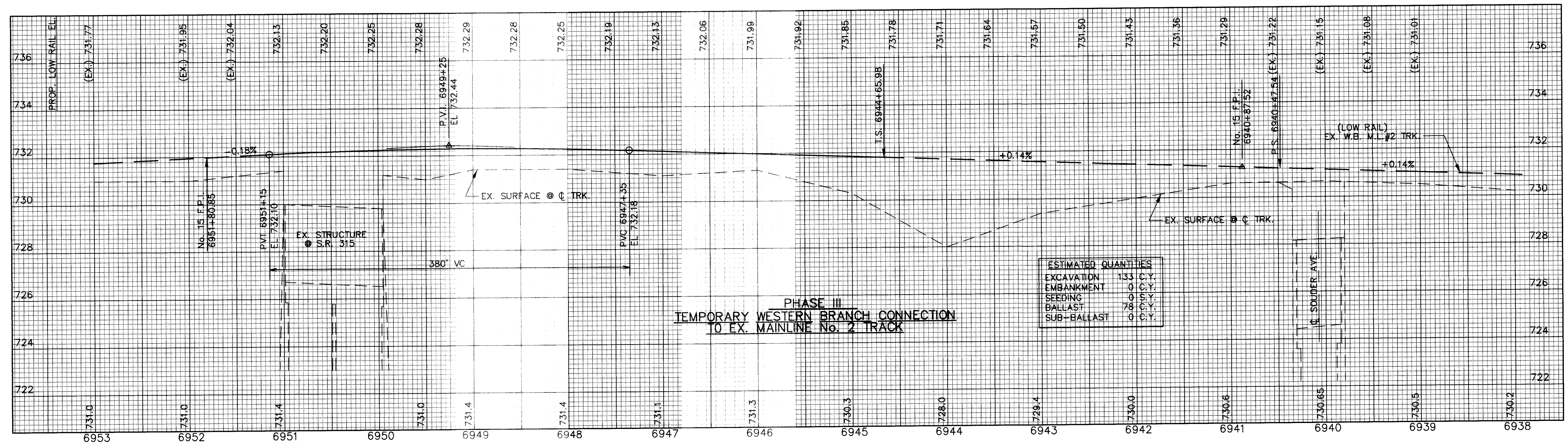
**PERMANENT MAINLINE - RAIL ELEVATIONS**  
MAX. Se = 1/2"

STATION	EASTBOUND TRK.		WESTBOUND TRK.		EASTBOUND TRK.		WESTBOUND TRK.		
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL	
T.S. +69.54	727.41	727.41	727.46	727.46	58+00	733.36	733.40	732.66	732.70
S.C. +31.54	727.54	727.54	727.58	727.58	+50	733.42	733.46	732.73	732.77
+50	727.77	727.75	727.79	727.77	59+00	733.46	733.50	732.77	732.81
+50	728.01	727.97	728.01	727.97	+50	733.47	733.51	732.79	732.83
+50	728.13	728.09	728.12	728.08	60+00	733.46	733.50	732.78	732.82
+50	728.47	728.43	728.43	728.39	+50	733.42	733.46	732.75	732.79
+50	728.81	728.77	728.74	728.70	61+00	733.36	733.40	732.69	732.73
+50	729.15	729.11	729.05	729.01	+50	733.27	733.31	732.61	732.65
+50	729.49	729.45	729.36	729.32	62+00	733.17	733.21	732.51	732.55
50+00	729.83	729.79	729.67	729.63	+50	733.07	733.11	732.41	732.45
+50	730.17	730.13	729.98	729.94	63+00	732.97	733.01	732.31	732.35
+50	730.51	730.47	730.29	730.25	+50	732.87	732.91	732.21	732.25
+50	730.76	730.72	730.59	730.55	64+00	732.77	732.81	732.11	732.15
C.S. +91.48	730.97	730.93	730.81	730.77	+27.24	732.72	732.76	732.06	732.10
+50	731.00	730.97	730.85	730.82	+50	732.67	732.69	732.01	732.03
+50	731.22	731.22	731.07	731.07	+89.24	732.59	732.59	731.93	731.93
S.T. +53.48	731.24	731.24	731.09	731.09	S.T. +89.24	732.57	732.57	731.91	731.91
+50	731.47	731.47	731.30	731.30	+50	732.45	732.45	731.81	731.81
+50	731.72	731.72	731.50	731.50	65+00	732.33	732.33	731.71	731.71
+50	731.97	731.97	731.68	731.68	+50	732.21	732.21	731.61	731.61
+50	732.22	732.22	731.84	731.84	67+00	732.09	732.09	731.51	731.51
+50	732.46	732.46	731.97	731.97	+50	731.97	731.97	731.41	731.41
+50	732.67	732.67	732.09	732.09	68+00	731.85	731.85	731.31	731.31
+50	732.86	732.86	732.21	732.21	+50	731.73	731.73	731.24	731.24
+50	733.02	733.02	732.33	732.33	69+00	731.61	731.61	731.17	731.17
+50	733.16	733.16	732.45	732.45	+50	731.49	731.49	731.10	731.10
T.S. +12.20	733.22	733.22	732.48	732.48	70+00	731.37	731.37	731.03	731.03
+50	733.27	733.29	732.57	732.59	+50	731.25	731.25	730.96	730.96
S.C. +74.20	733.31	733.35	732.63	732.67					

PLAN & PROFILE - M STA. 68+00 TO STA. 76+00

[SCALE] - (A) TRANS(SR)15-A(5) RAILROAD MAP PRO.DWG - MAY 28, 1997 - 09:48:43 - SCALE = 1:30

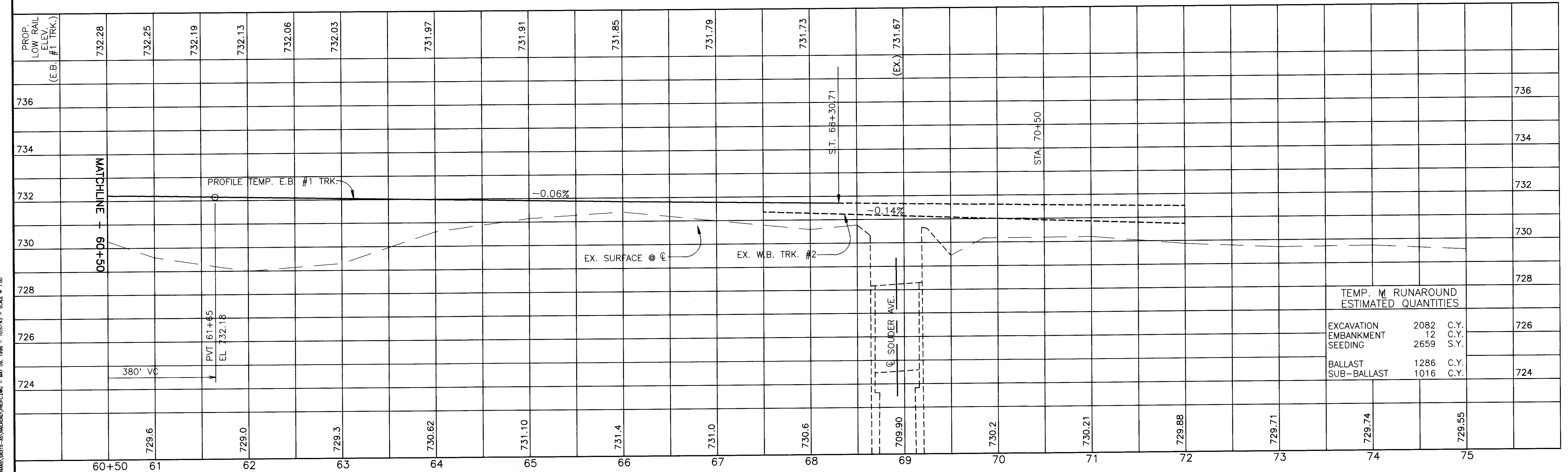
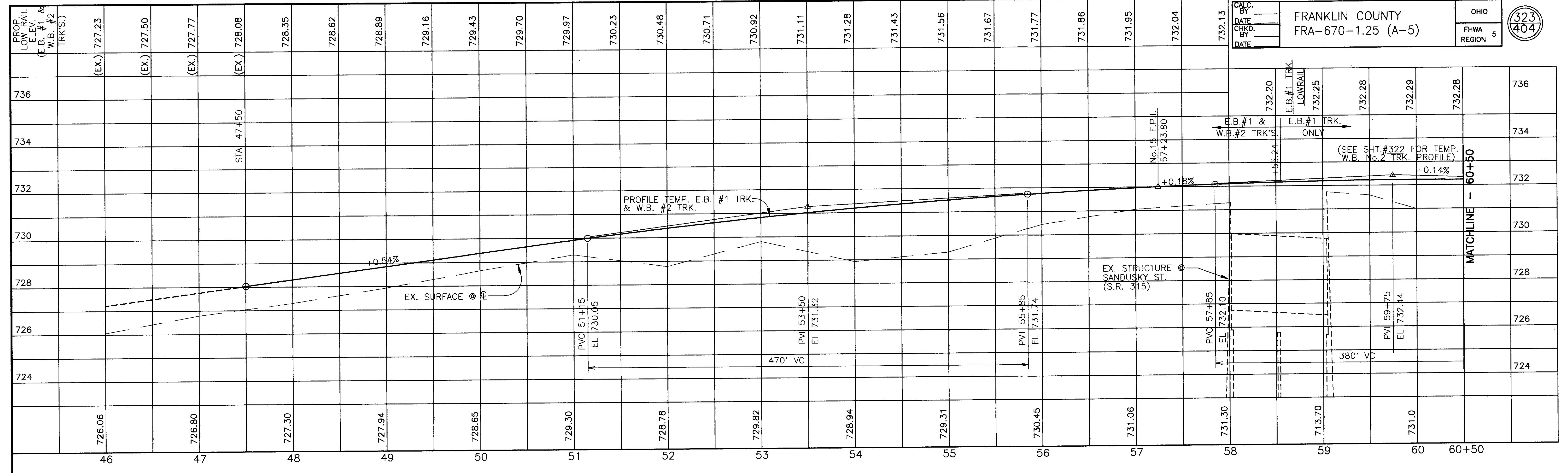
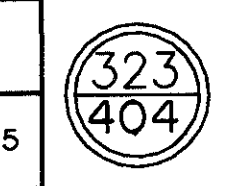




[RLG] - I:\TRANS\SR315-AS\RAILROAD\PHOPP.DWG - MAR 03, 1997 - 08:41:19 - SCALE = 1:30

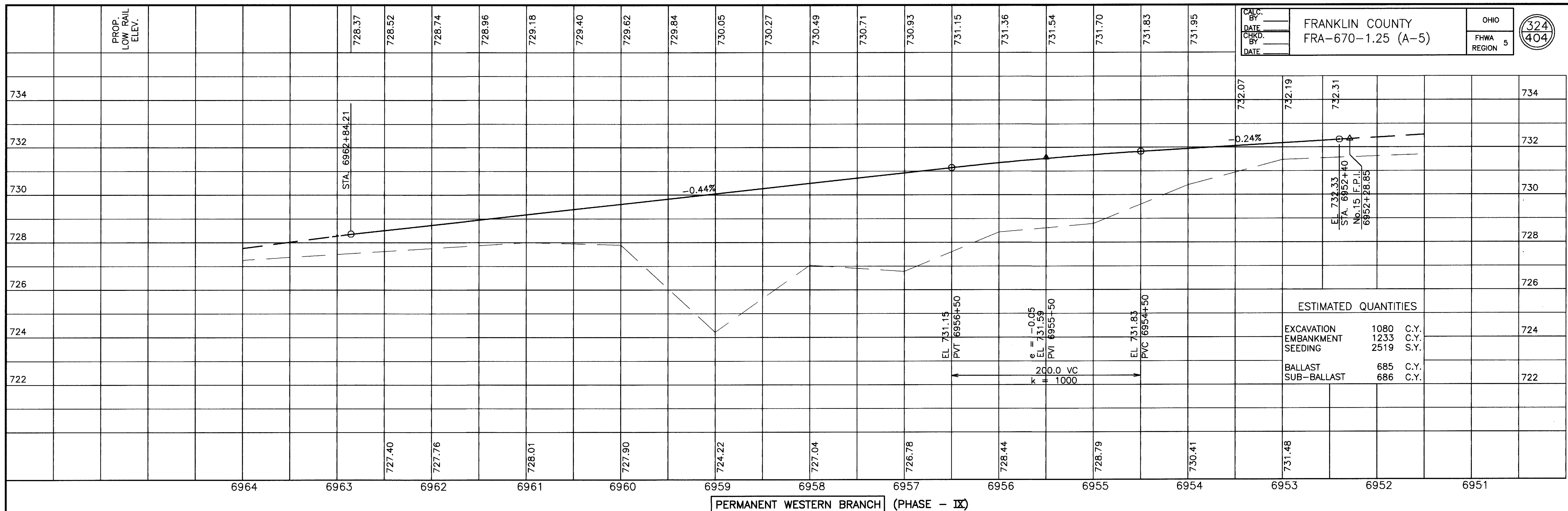
PHASE III - TEMPORARY WESTERN BRANCH CONNECTION PROFILE

[R60] - A:\TRANS\80315-A\RAILROAD\PROFC.DWG - MAY 09, 1996 - 10:57:43 - SCALE = 1:00

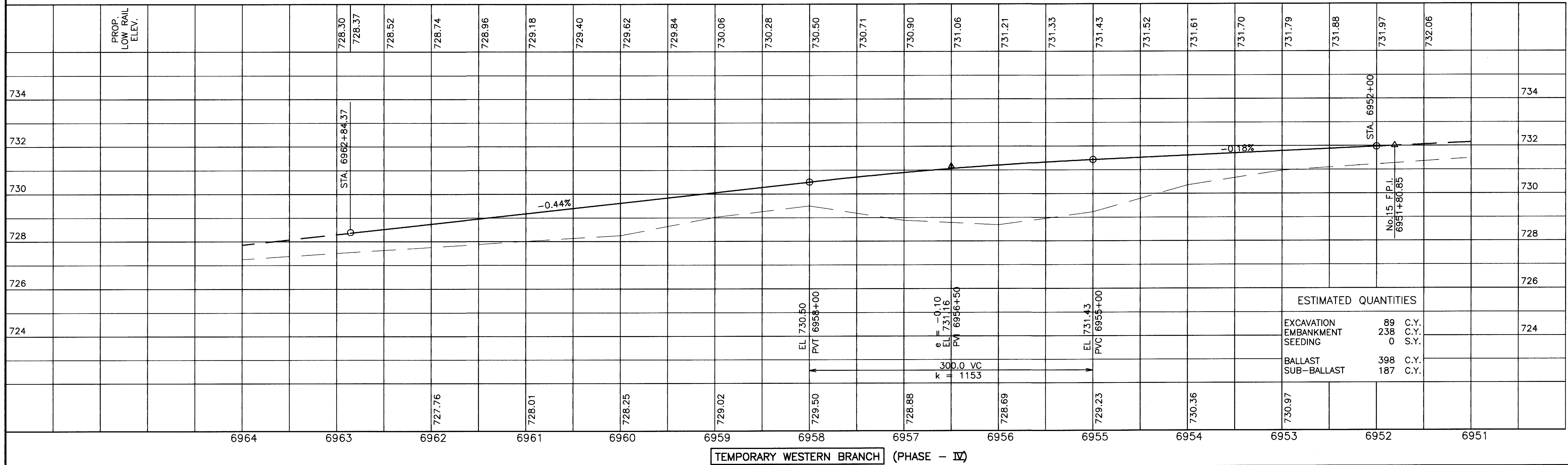


TEMPORARY M RUNAROUND



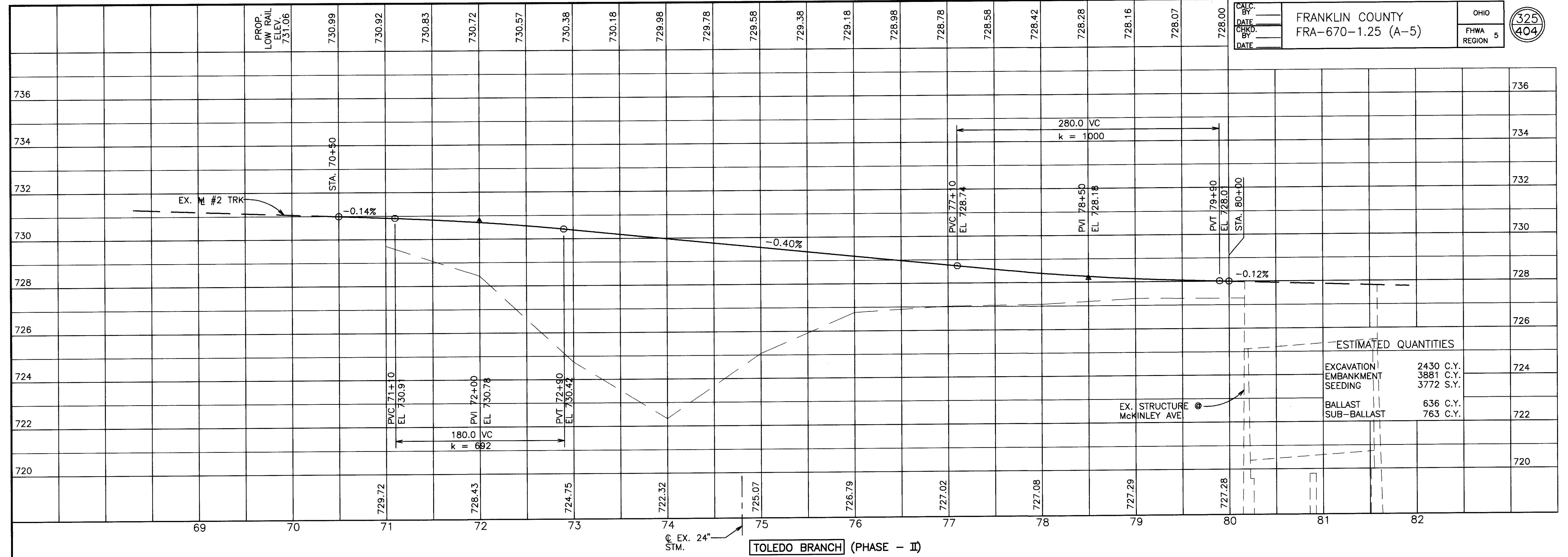


PERMANENT WESTERN BRANCH (PHASE - IX)



TEMPORARY WESTERN BRANCH (PHASE - IV)

[[66]] - \\\TAMES\02115-40\RAILWAY\PROFILES - MAY 09, 1996 - 08:59:55 - SCALE = 1:60



TEMP. M RUNAROUND  
RAIL ELEVATIONS

STATION	EASTBOUND #1 TRK.		WESTBOUND #2 TRK.	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
47+00	727.80	727.79	727.80	727.78
+50		728.08		728.08
48+00	728.35	728.35	728.35	728.35
+50	728.62	728.62	728.62	728.62
+77.28	728.77	728.77	728.77	728.77
49+00	728.89	728.88	728.89	728.88
+39.28	729.13	729.09	729.13	729.09
+50	729.20	729.16	729.20	729.16
50+00	729.47	729.43	729.47	729.43
+50	729.74	729.70	729.74	729.70
51+00	730.01	729.97	730.01	729.97
+50	730.27	730.23	730.27	730.23
C.S. +65.98	730.35	730.31	730.35	730.31
S.T. 52+00	730.50	730.48	730.50	730.48
+27.98	730.61	730.61	730.61	730.61
+50	730.71	730.71	730.71	730.71
53+00	730.92	730.92	730.92	730.92
54+00	731.28	731.28	731.28	731.28
55+00	731.56	731.56	731.56	731.56

MAX. Se = 1/2"

TEMP. AUBURN TRACK  
RAIL ELEVATIONS

STATION	EASTBOUND #1 TRK.		WESTBOUND #2 TRK.	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
56+00	731.77	731.77	731.77	731.77
57+00	731.95	731.95	731.95	731.95
58+00	732.13	732.13	732.13	732.13
59+00	732.25	732.25		
60+00	732.29	732.29		
61+00	732.25	732.25		
62+00	732.13	732.13		
T.S. +21.19	732.10	732.10		
+50	732.06	732.08		
S.C. +83.19	732.04	732.08		
63+00	732.03	732.07		
64+00	731.97	732.01		
65+00	731.91	731.95		
66+00	731.85	731.89		
67+00	731.79	731.83		
C.S. +68.71	731.75	731.79		
68+00	731.73	731.75		
S.T. +30.71	731.71	731.71		
69+00	731.67	731.67		

MAX. Se = 1"

TEMP. WESTERN BRANCH  
CONNECTION  
RAIL ELEVATIONS

STATION	NORTH RAIL		SOUTH RAIL	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
P.O.T. 6944+65.98	731.80	731.80	731.80	731.80
6945+00	731.85	731.85	731.85	731.85
+50	731.92	731.92	731.92	731.92
T.S. +68.19	731.95	731.95	731.95	731.95
S.C. 6946+00	732.03	731.99	732.03	731.99
+30.19	732.11	732.03	732.11	732.03
+50	732.14	732.06	732.14	732.06
C.S. +98.82	732.21	732.13	732.21	732.13
6947+00	732.21	732.13	732.21	732.13
+50	732.20	732.19	732.20	732.19
S.T. +60.82	732.22	732.22	732.22	732.22
6948+00	732.25	732.25	732.25	732.25
+50	732.28	732.28	732.28	732.28
T.S. +62.38	732.28	732.28	732.28	732.28
S.C. 6949+00	732.29	732.34	732.29	732.34
+24.38	732.29	732.37	732.29	732.37
+50	732.28	732.36	732.28	732.36
C.S. +87.41	732.25	732.33	732.25	732.33
6950+00	732.25	732.31	732.25	732.31
S.T. +49.41	732.20	732.20	732.20	732.20
+50	732.20	732.20	732.20	732.20
P.O.T. 6951+00	732.13	732.13	732.13	732.13
+50	732.04	732.04	732.04	732.04
P.C.C. 6951+80.85	731.99	731.99	731.99	731.99

MAX. Se = 1"

TEMP. WESTERN BRANCH  
RAIL ELEVATIONS

STATION	NORTH RAIL		SOUTH RAIL	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
6951+80.85	731.99	731.99	731.99	731.99
6952+00.00	731.97	731.97	731.97	731.97
+50	731.88	731.88	731.88	731.88
T.S. 6953+00	731.79	731.79	731.79	731.79
+09.77	731.77	731.77	731.77	731.77
S.C. 6954+00	731.70	731.76	731.70	731.76
+29.77	731.56	731.73	731.56	731.73
+50	731.52	731.69	731.52	731.69
6955+00	731.43	731.60	731.43	731.60
+50	731.33	731.50	731.33	731.50
C.S. 6956+00	731.21	731.38	731.21	731.38
+18.91	731.15	731.32	731.15	731.32
+50	731.06	731.19	731.06	731.19
S.T. 6957+00	730.90	730.95	730.90	730.95
+38.91	730.75	730.75	730.75	730.75
+50	730.71	730.71	730.71	730.71
6958+00	730.50	730.50	730.50	730.50
+50	730.28	730.28	730.28	730.28
T.S. 6959+00	730.06	730.06	730.06	730.06
+50	729.84	729.84	729.84	729.84
6960+00	729.62	729.62	729.62	729.62
+50	729.40	729.40	729.40	729.40
T.S. 6961+00	729.37	729.37	729.37	729.37
+50	729.24	729.18	729.24	729.18
S.C. 6962+00	729.09	728.96	729.09	728.96
+75.99	729.01	728.84	729.01	728.84
+50	728.91	728.74	728.91	728.74
P.C.C. 6962+84.21	728.69	728.52	728.69	728.52
+84.21	728.54	728.37	728.54	728.37

MAX. Se = 2"

PERM. WESTERN BRANCH  
RAIL ELEVATIONS

STATION	NORTH RAIL		SOUTH RAIL	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
6952+28.85	732.25	732.25	732.25	732.25
6953+00	732.19	732.19	732.19	732.19
+50	732.07	732.07	732.07	732.07
T.S. +57.33	732.05	732.05	732.05	732.05
S.C. 6954+00	731.95	732.01	731.95	732.01
+50	731.83	731.96	731.83	731.96
+77.33	731.77	731.94	731.77	731.94
6955+00	731.70	731.87	731.70	731.87
+50	731.54	731.71	731.54	731.71
6956+00	731.36	731.53	731.36	731.53
+50	731.15	731.32	731.15	731.32
C.S. 6957+00	730.93	731.10	730.93	731.10
+32.85	730.79	730.96	730.79	730.96
+50	730.71	730.86	730.71	730.86
6958+00	730.49	730.57	730.49	730.57
+50	730.27	730.28	730.27	730.28
S.T. 6959+00	730.05	730.05	730.05	730.05
+47.21	729.84	729.84	729.84	729.84
+50	729.85	729.84	729.85	729.84
6960+00	729.69	729.62	729.69	729.62
+50	729.44	729.40	729.44	729.40
S.C. 6961+00	729.35	729.18	729.35	729.18
+50	729.13	728.96	729.13	728.96
+84.21	728.69	728.52	728.69	728.52
P.C.C. 6962+84.21	728.54	728.37	728.54	728.37

MAX. Se = 2"

PERM. TOLEDO BRANCH  
RAIL ELEVATIONS

STATION	NORTH RAIL		SOUTH RAIL	
	NORTH RAIL	SOUTH RAIL	NORTH RAIL	SOUTH RAIL
69+71.17	731.10	731.10	731.10	731.10
70+00	731.06	731.06	731.06	731.06
+50	730.99	730.99	730.99	730.99
T.S. +94.82	730.93	730.93	730.93	730.93
S.C. 71+00	730.92	730.92	730.92	730.92
+50	730.83	730.90	730.83	730.90
+14.82	730.72	730.87	730.72	730.87
+50	730.68	730.85	730.68	730.85
72+00	730.57	730.74	730.57	730.74
+50	730.38	730.55	730.38	730.55
73+00	730.18	730.35	730.18	730.35
+50	729.98	730.15	729.98	730.15
74+00	729.78	729.95	729.78	729.95
+50	729.58	729.75	729.58	729.75
75+00	729.38	729.55	729.38	729.55
+50	729.18	729.35	729.18	729.35
76+00	728.98	729.15	728.98	729.15
+50	728.78	728.90	728.78	728.90
C.S. 77+00	728.58	728.63	728.58	728.63
+50	728.38	728.48	728.38	728.48
S.T. +81.85	728.28	728.28	728.28	728.28
+50	728.16	728.16	728.16	728.16
78+00	728.07	728.07	728.07	728.07
+50	728.00	728.00	728.00	728.00

MAX. Se = 2"

[160] - A:\MANUALS\15-K\RAILROAD\PROFILING - MAY 08, 1998 - 162257 - SCALE = 1:00

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

END WIDTH 19 56 0

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

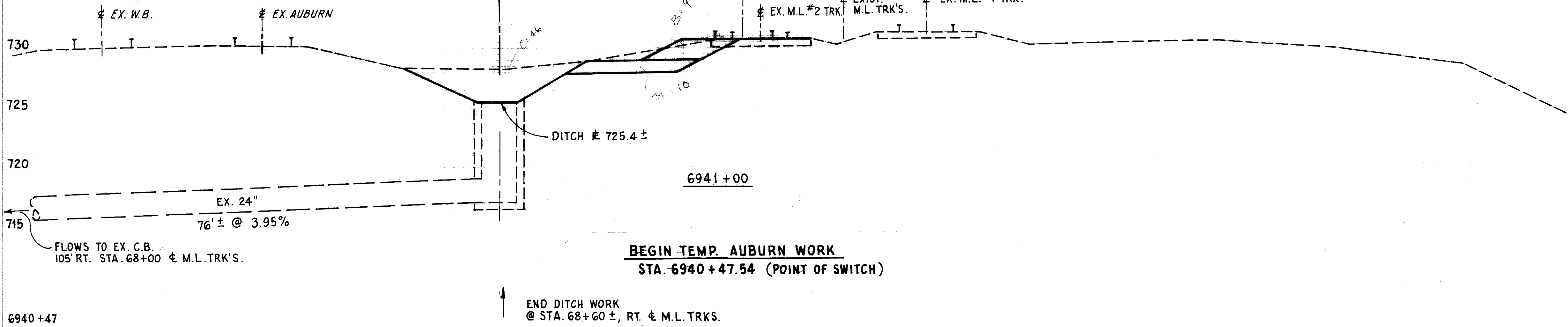
326  
404

FRANKLIN COUNTY  
FRA-670-1.25 (A-5)

\*NOTE: CLEANOUT EX. CATCH BASIN & CONDUIT,  
DISPOSE OF DEBRIS AS DIRECTED  
BY THE ENGINEER.

EX. CATCH BASIN \*  
STA. 6941+08 ±, 29.0' RT. ±  
GRATE: 725.40 ±  
INV. EX. 24" 717.00

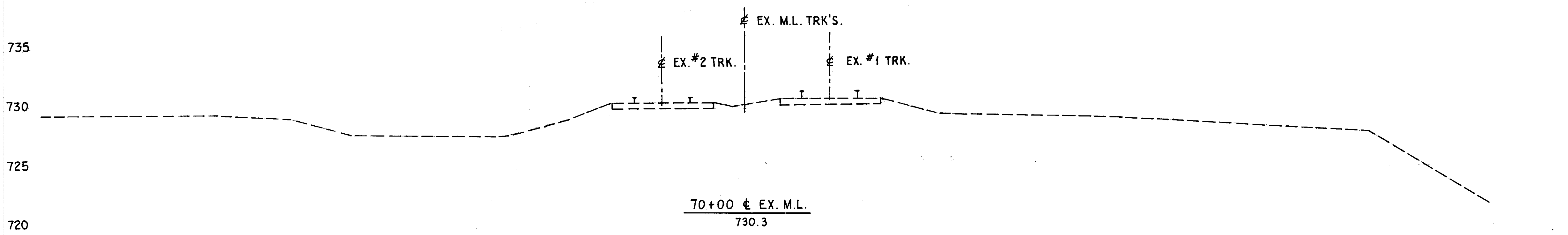
TEMP. AUBURN TRK.  
(PHASE I)  
EX. M.L.#2 TRK.  
EXIST. M.L. TRK'S.  
EX. M.L.#1 TRK.



BEGIN TEMP. AUBURN WORK  
STA. 6940+47.54 (POINT OF SWITCH)

END DITCH WORK  
@ STA. 68+60 ±, RT. & M.L. TRKS.

~ EXIST. STRUCTURE ~



70+00 & EX. M.L.  
730.3

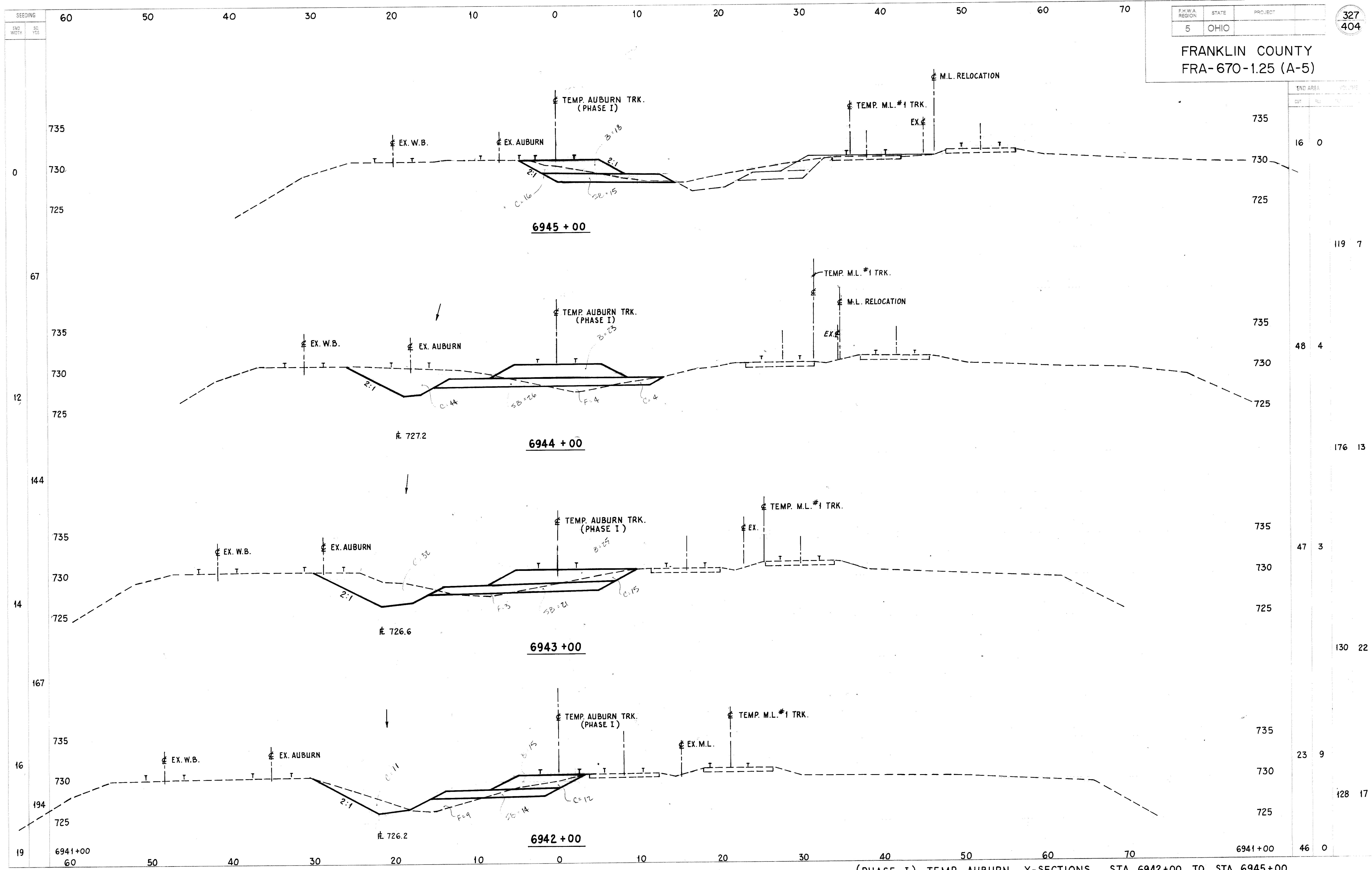
END AREA	OUT	IN	DIFF
6941+00	46	0	
6940+47.54	0	0	
			45 0

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

(PHASE-I) TEMP. AUBURN X-SECTIONS - STA. 6941+00

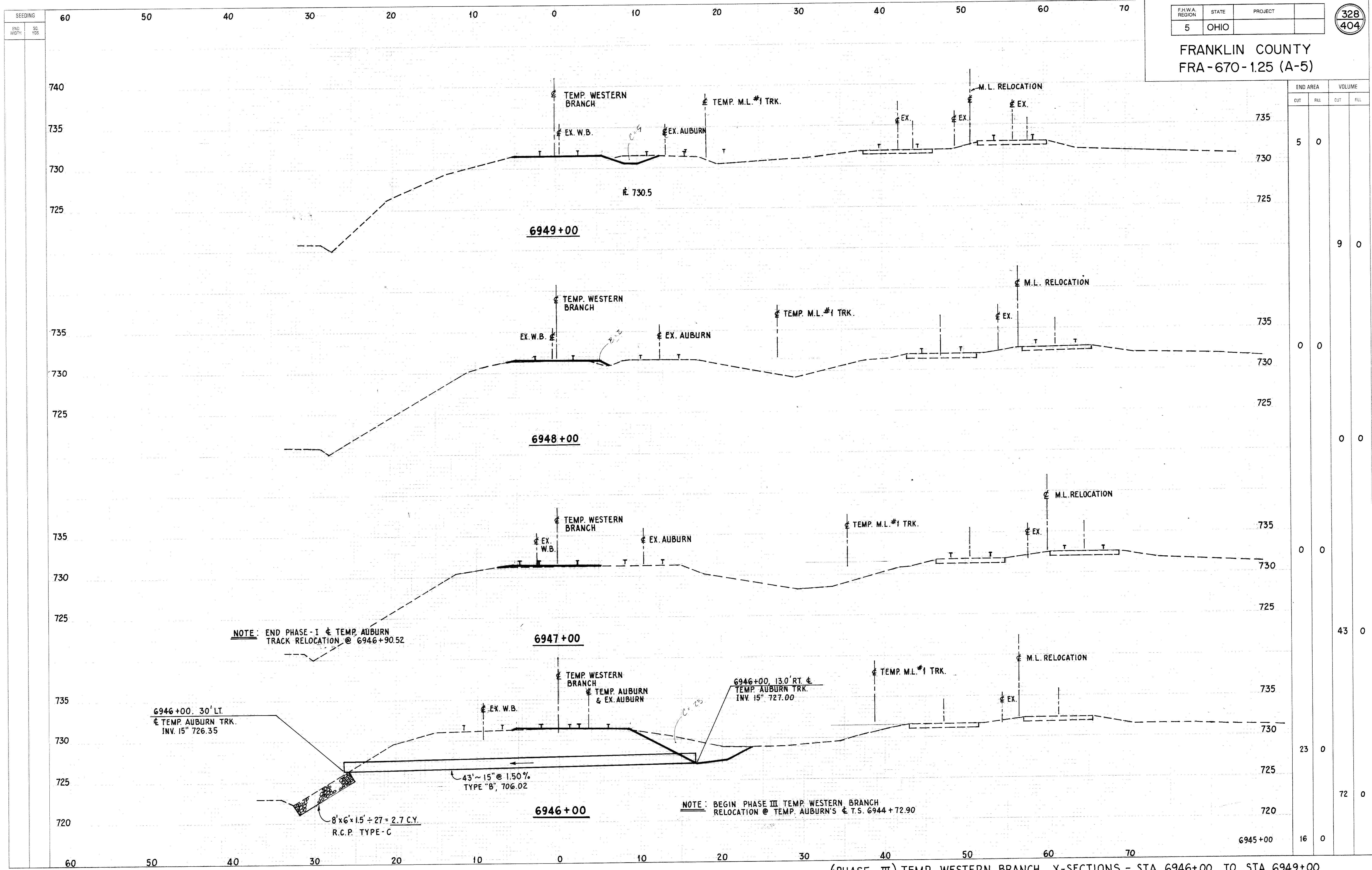


FRANKLIN COUNTY  
FRA-670-1.25 (A-5)



(PHASE-I) TEMP. AUBURN X-SECTIONS STA. 6942+00 TO STA. 6945+00

FRANKLIN COUNTY  
FRA-670-1.25 (A-5)



END AREA	VOLUME	
	CUT	FILL
5	0	0
9	0	0
0	0	0
0	0	0
43	0	0
23	0	0
72	0	0
16	0	0

(PHASE - III) TEMP. WESTERN BRANCH X-SECTIONS - STA. 6946+00 TO STA. 6949+00

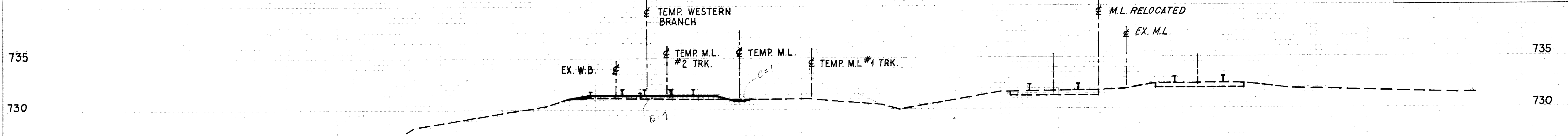
SEEDING 60 50 40 30 20 10 0 10 20 30 40 50 60 70

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

329  
404

FRANKLIN COUNTY  
FRA-670-1.25 (A-5)

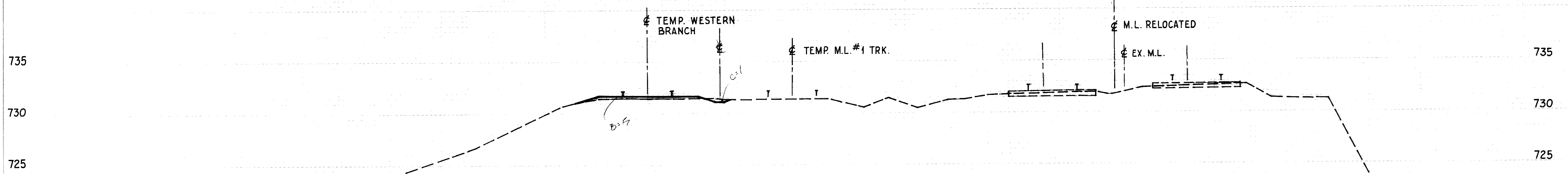
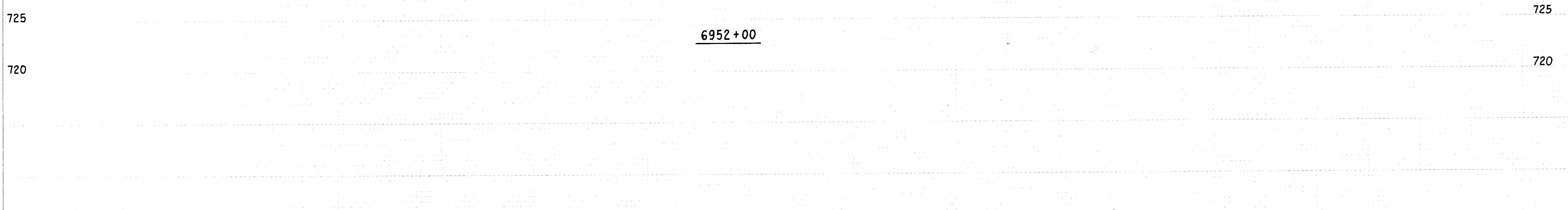
NOTE: SEE SHT. NO. 350 FOR CONTINUED TEMP. WESTERN BRANCH X-SECTIONS. (STA. 6953+00)



6952+00

END AREA		VOLUME	
CUT	FILL	CUT	FILL

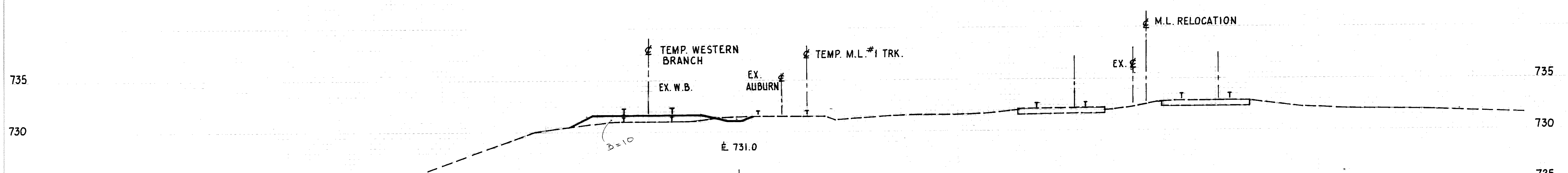
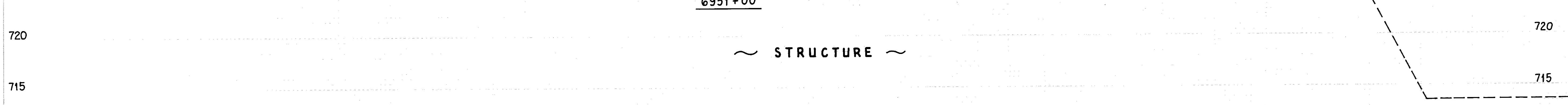
1	0		
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6951+00

~ STRUCTURE ~

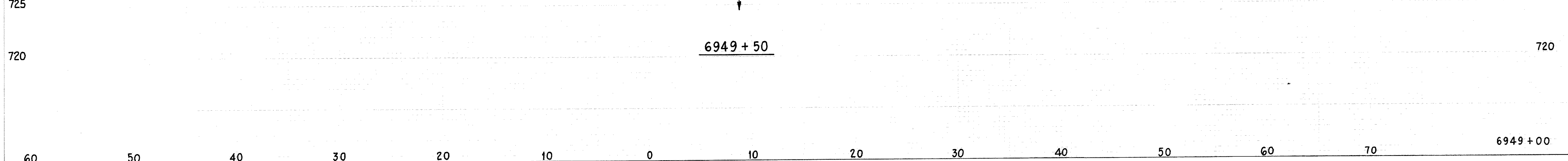
1	0		
---	---	--	--



6949+50

E 731.0

2	0		
---	---	--	--

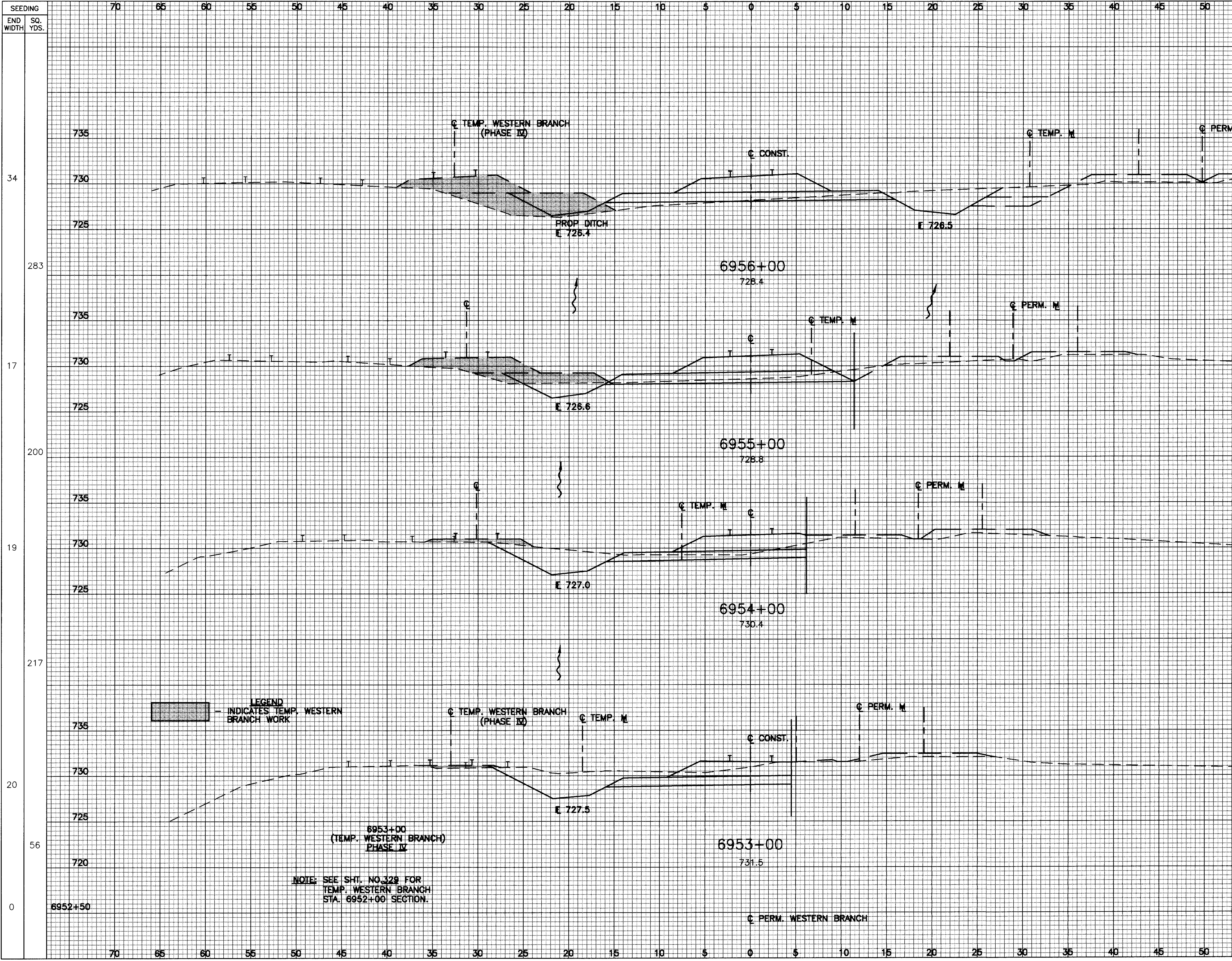


7	0		
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5	0		
---	---	--	--

(PHASE-III) TEMP. WESTERN BRANCH X-SECTIONS - STA. 6949+50 TO STA. 6952+00





STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
6952+50	0	0	0	0
6953+00	(PERM.) 49	0	0	0
6954+00	(PERM.) 174	0	0	0
6955+00	(PERM.) 41	0	154	0
6956+00	(PERM.) 37	0	135	9
TOTAL	0	0	135	9

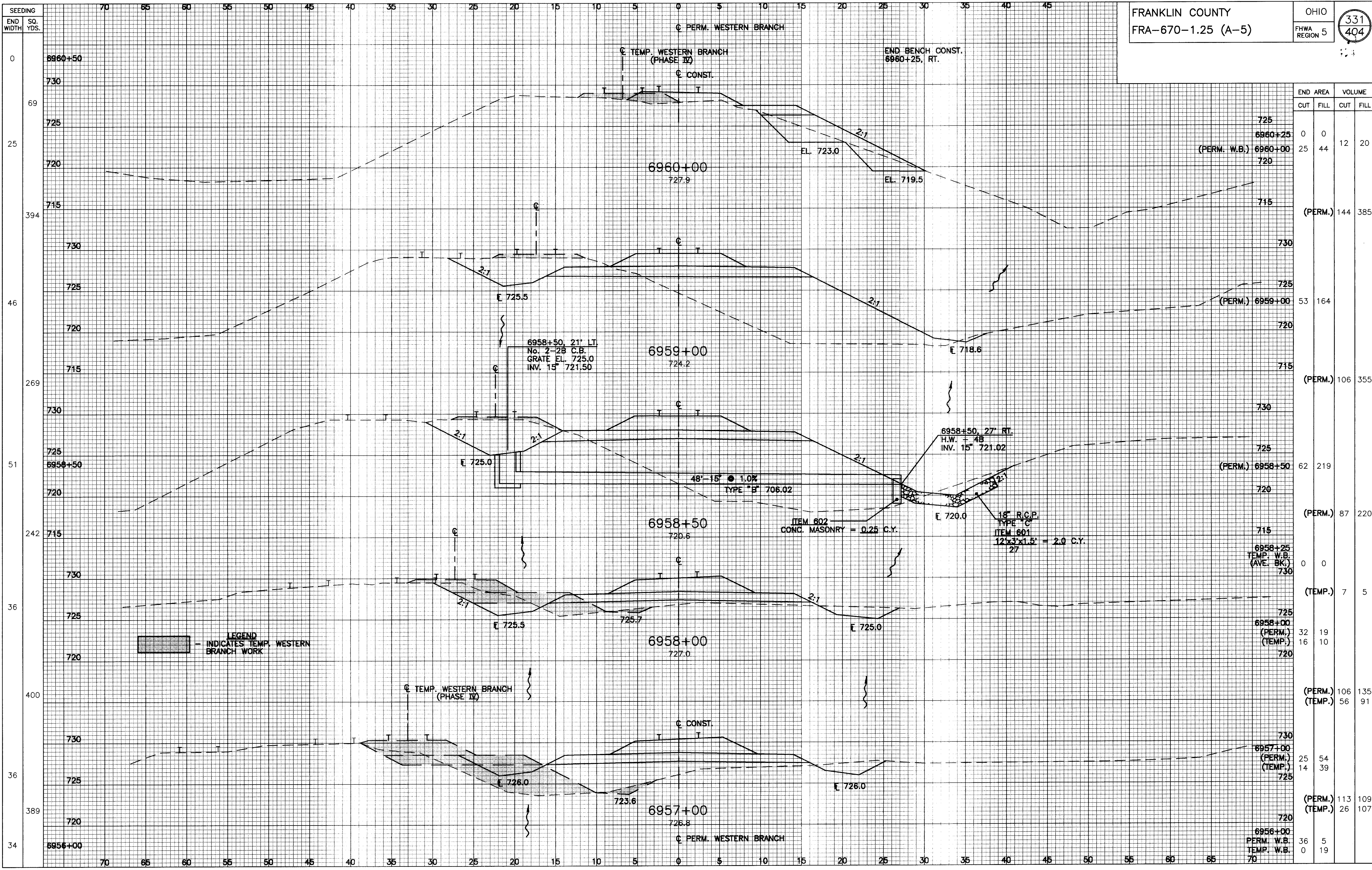
LEGEND  
- INDICATES TEMP. WESTERN BRANCH WORK

NOTE: SEE SHI. NO. 329 FOR TEMP. WESTERN BRANCH STA. 6952+00 SECTION.

PERM. & TEMP. WESTERN BRANCH X-SECTIONS 6953+00 TO 6956+00

[\\PCB - \\\\TRANS\_SRT15-45\\RAILROAD\\WBSEC-1.DWG - MAY 01, 1998 - 13:19:57]



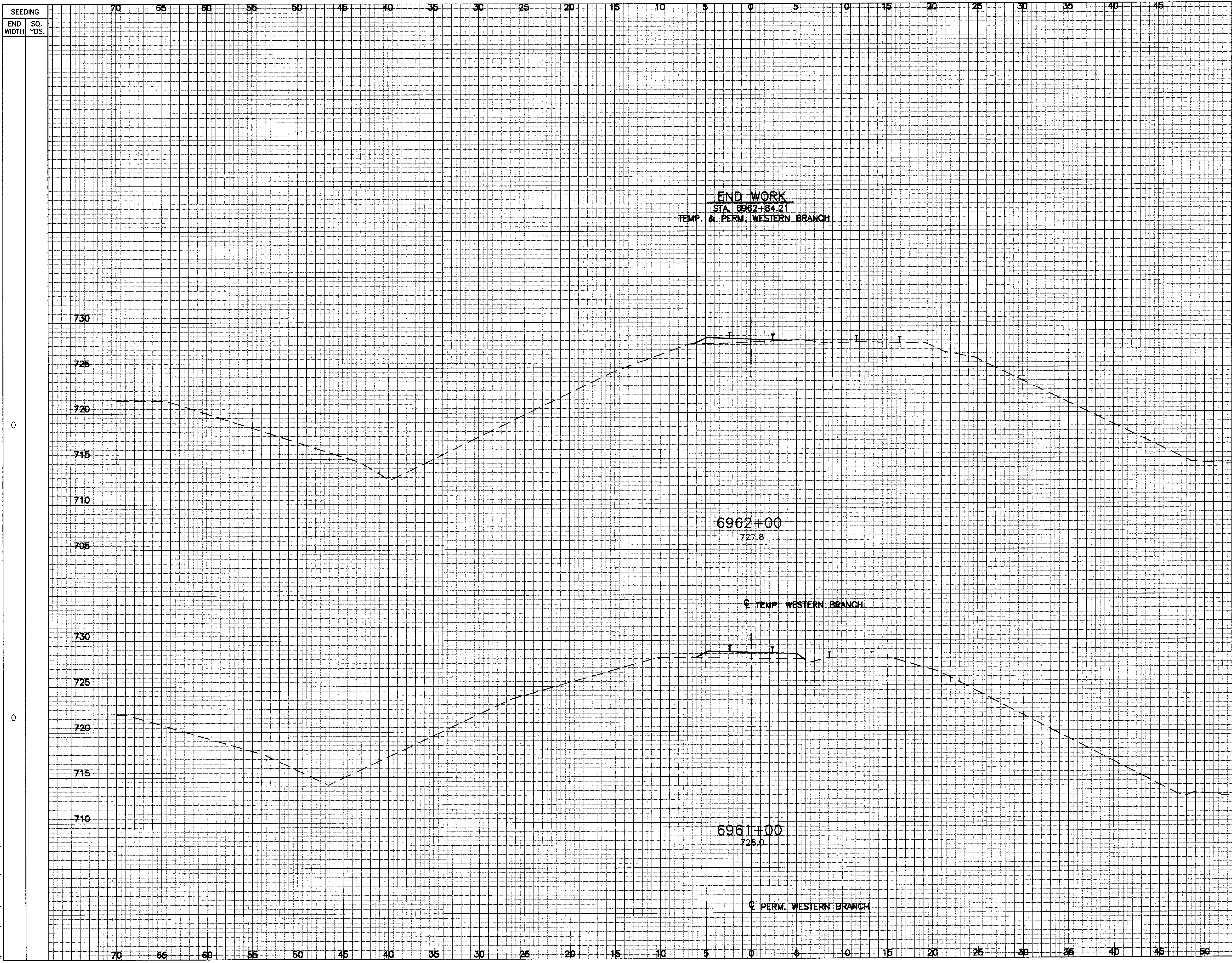


STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
6960+25	0	0	12	20
(PERM. W.B.) 6960+00	25	44		
6959+00			144	385
(PERM.) 6959+00	53	164		
6958+50			106	355
(PERM.) 6958+50	62	219		
6958+50			87	220
(PERM.) 6958+00	32	19		
6958+00			7	5
(TEMP.) 6958+00	16	10		
6957+00			106	135
(TEMP.) 6957+00	56	91		
6957+00			25	54
(PERM.) 6957+00	14	39		
6956+00			113	109
(TEMP.) 6956+00	26	107		
6956+00			36	5
(PERM. W.B.) 6956+00	0	19		

PERM. & TEMP. WESTERN BRANCH X-SECTIONS 6957+00 TO 6960+00

[INCB - I:\TRANS\SR315-AS\RAILROAD\WBSEC-2.DWG - MAY 01, 1998 - 13:23:03



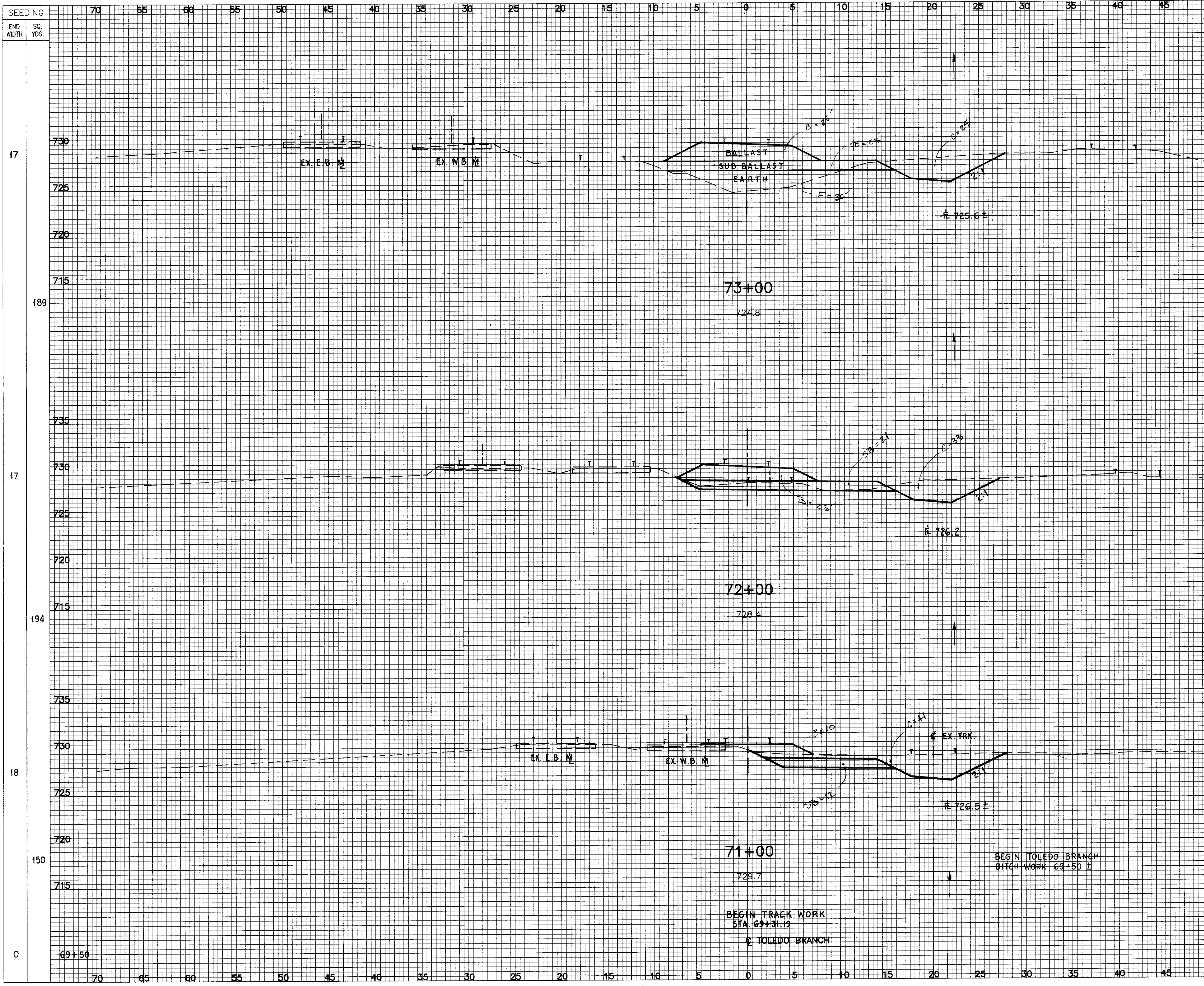


END AREA		VOLUME	
CUT	FILL	CUT	FILL
0	0	0	0

[\\PCB - 1\TRANS\S0315-45\RAILROAD\WBSEC-3.DWG - MAY 01, 1996 - 13:25:13]

PERM. & TEMP. WESTERN BRANCH X-SECTIONS 6961+00 TO 6962+00

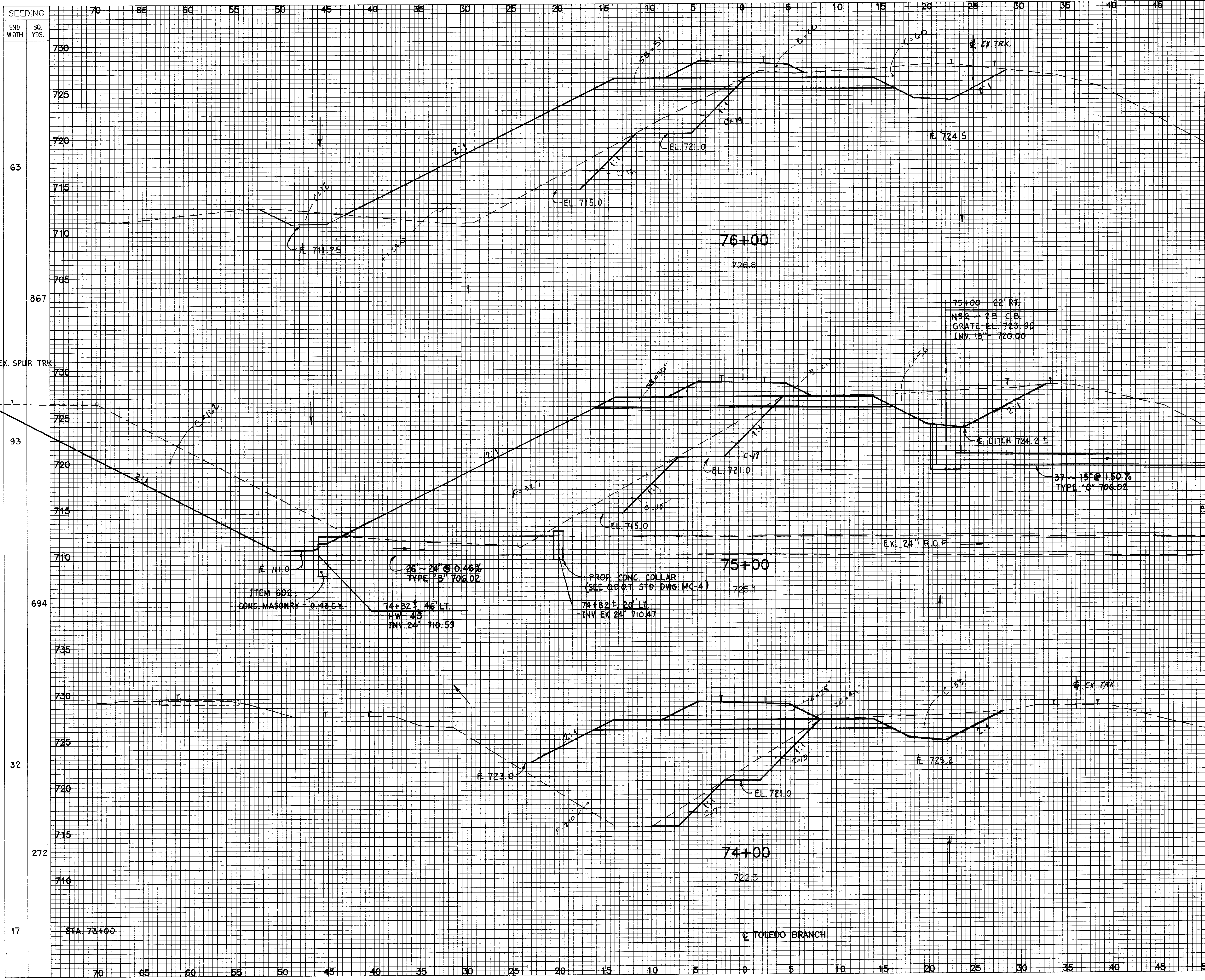




STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
73+00	25	30		
72+00	33	0	107	56
71+00	41	0	137	0
69+50	0	0	114	0

(PHASE II) TOLEDO BRANCH X-SECTIONS 71+00 TO 73+00

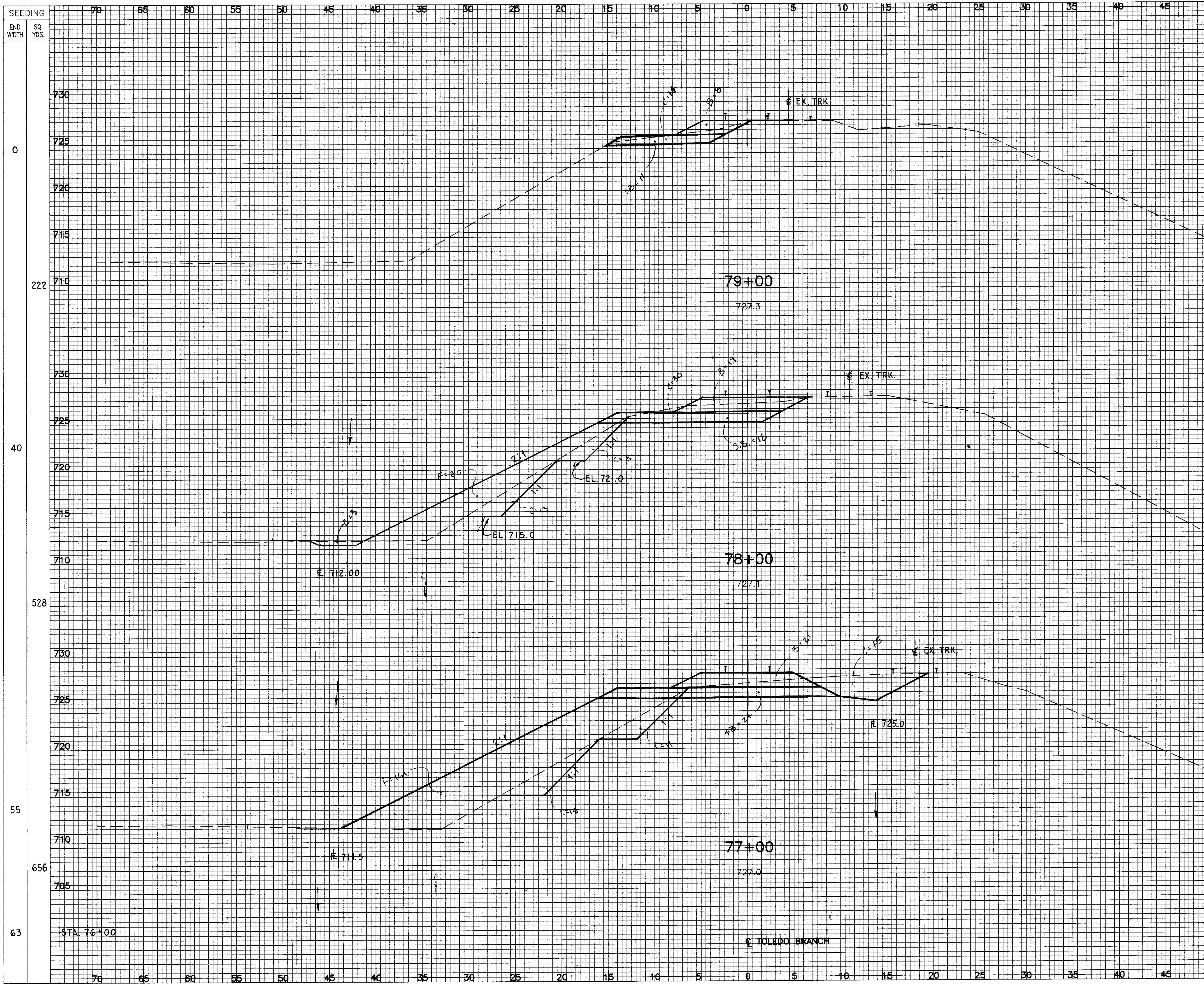




END STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
63	105	240		
867			657	1050
93	250	327		
694			561	994
32	53	210		
272			144	444
17	25	30		

(PHASE II) TOLEDO BRANCH X-SECTIONS 74+00 TO 76+00





STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
79+00	14	0	126	148
78+00	54	80	232	446
77+00	71	161	326	743
STA. 76+00	105	240		

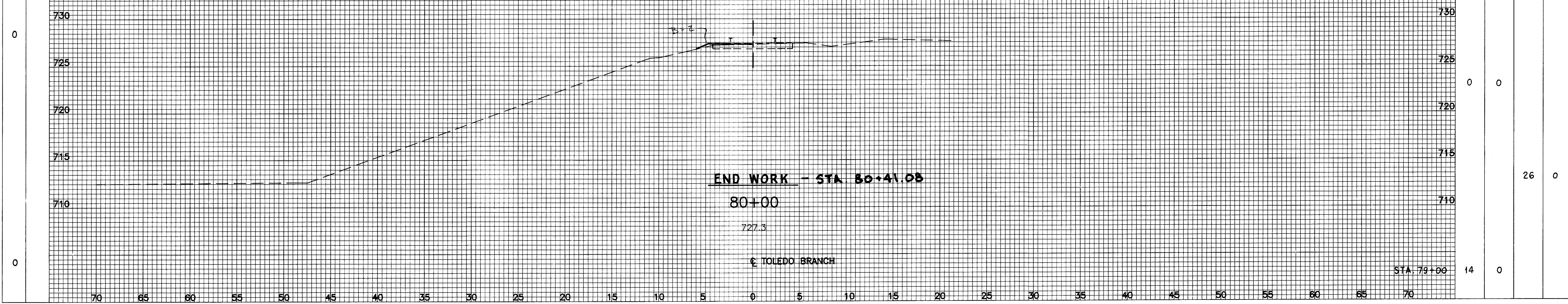
(PHASE II) TOLEDO BRANCH X-SECTIONS 77+00 TO 79+00



SEEDING  
END WIDTH SQ. YDS.

CALC. BY \_\_\_\_\_  
DATE \_\_\_\_\_  
CHKD. BY \_\_\_\_\_  
DATE \_\_\_\_\_  
FRANKLIN COUNTY  
FRA-670-1.25 (A-5)  
OHIO  
FHWA REGION 5  
336  
404

END AREA  
CUT FILL  
VOLUME  
CUT FILL



END AREA	VOLUME
CUT	FILL
0	0
14	0
26	0

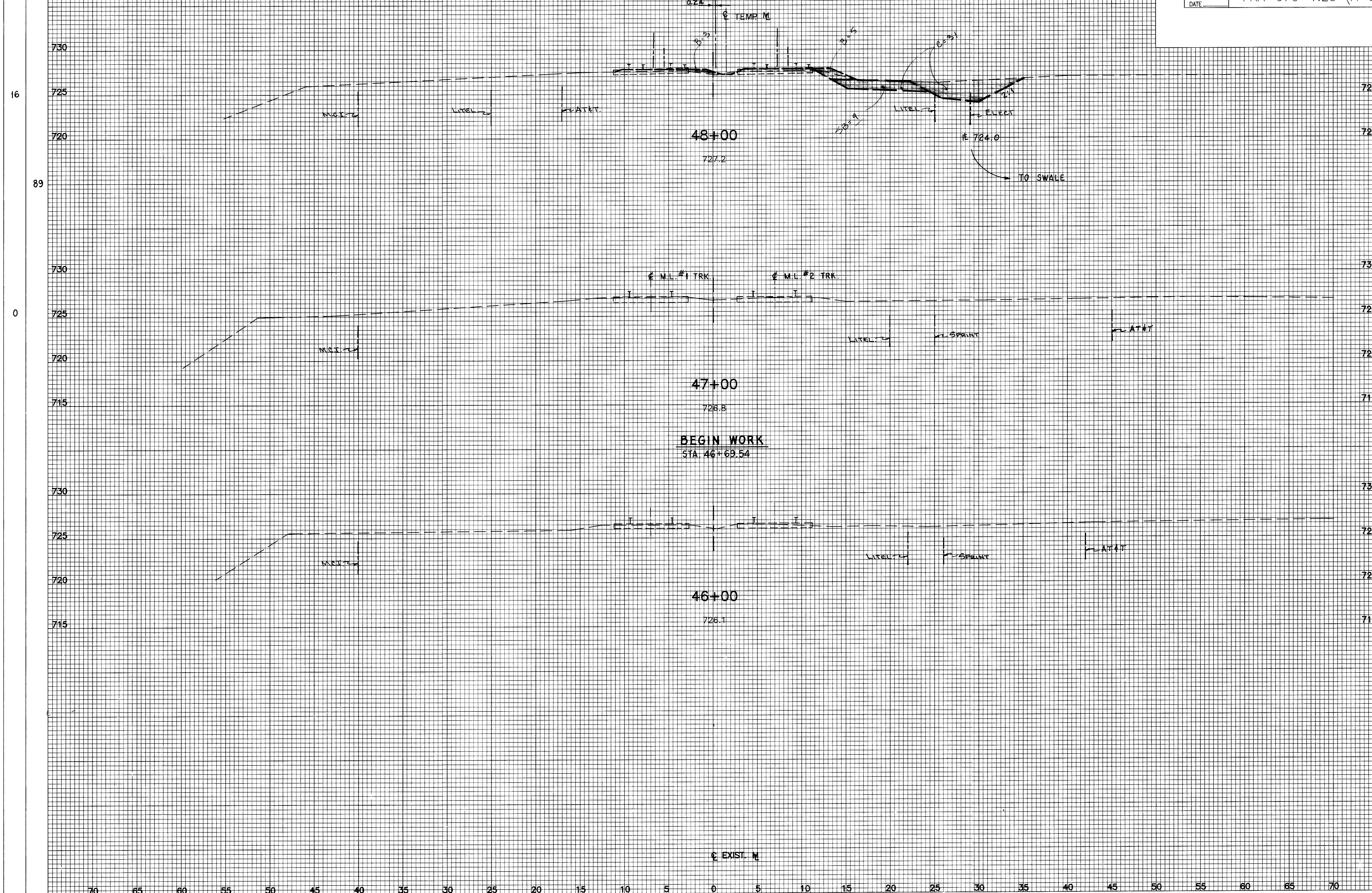
(PHASE II) TOLEDO BRANCH X-SECTION 80+00



SEEDING 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45

END SQ. WIDTH YDS.

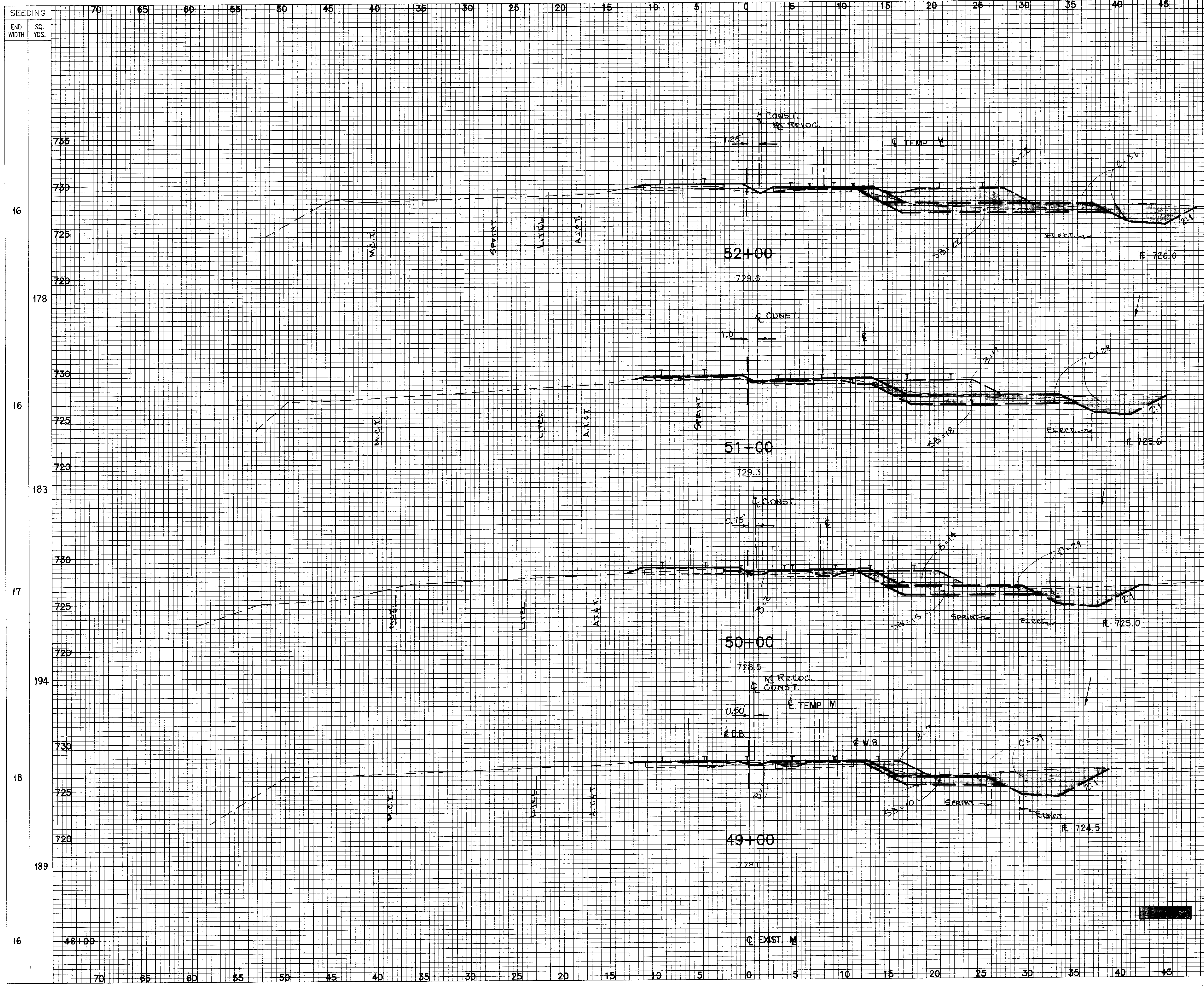
CALC. BY	FRANKLIN COUNTY	OHIO	<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;"> <span style="font-size: 10px;">337</span>  <span style="font-size: 10px;">404</span> </div>
DATE	FRA-670-1.25 (A-5)	FHWA REGION 5	
CHKD. BY			
DATE			



END AREA		VOLUME	
CUT	FILL	CUT	FILL
31	0		
		57	0
0	0		

EXIST. & TEMP. M X-SECTIONS STA. 45+00 TO 48+00



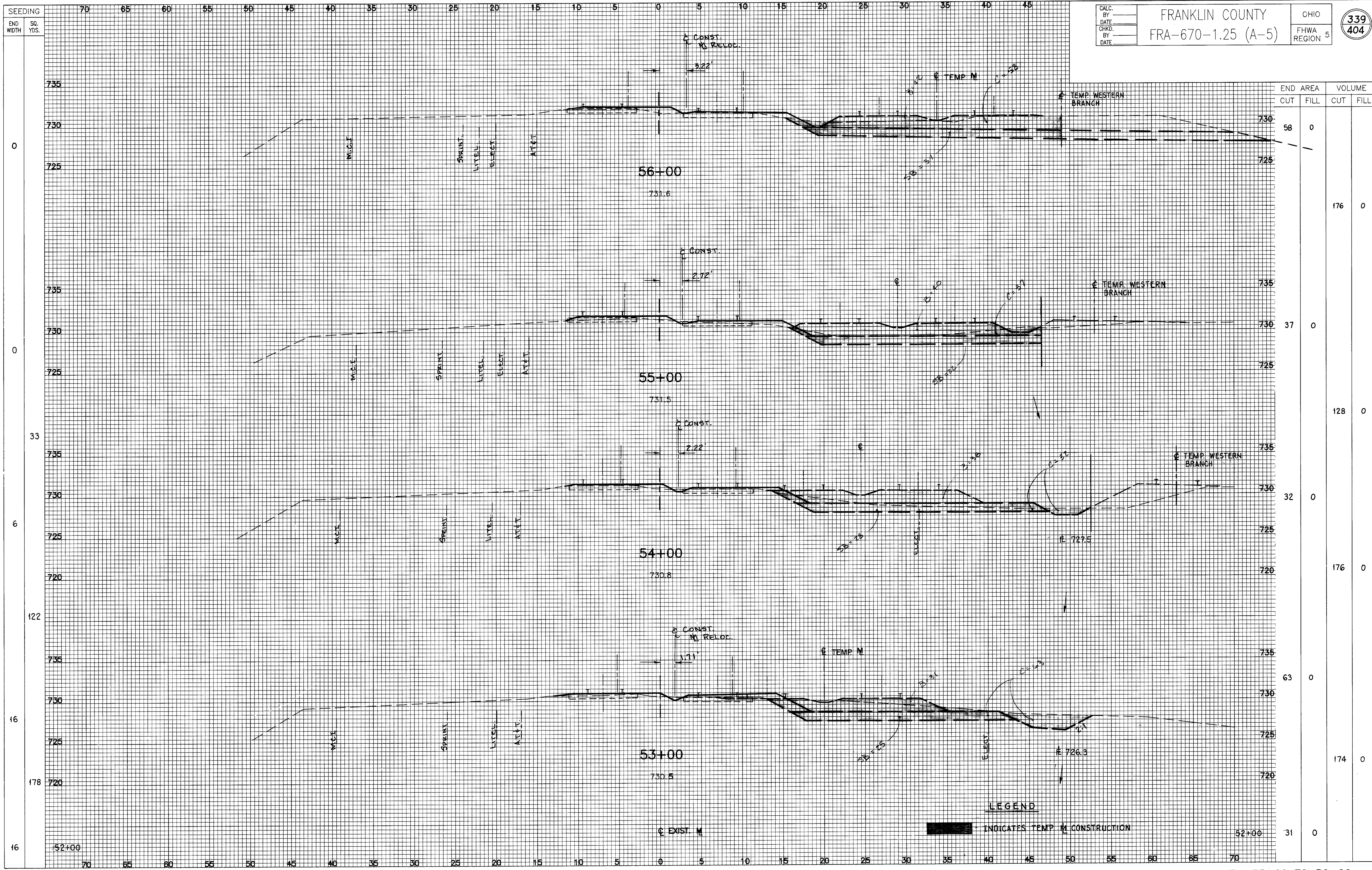


STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
52+00	31	0	109	0
51+00	28	0	106	0
50+00	29	0	126	0
49+00	39	0	130	0
48+00	31	0		

**LEGEND**  
 INDICATES TEMP. M. CONSTRUCTION

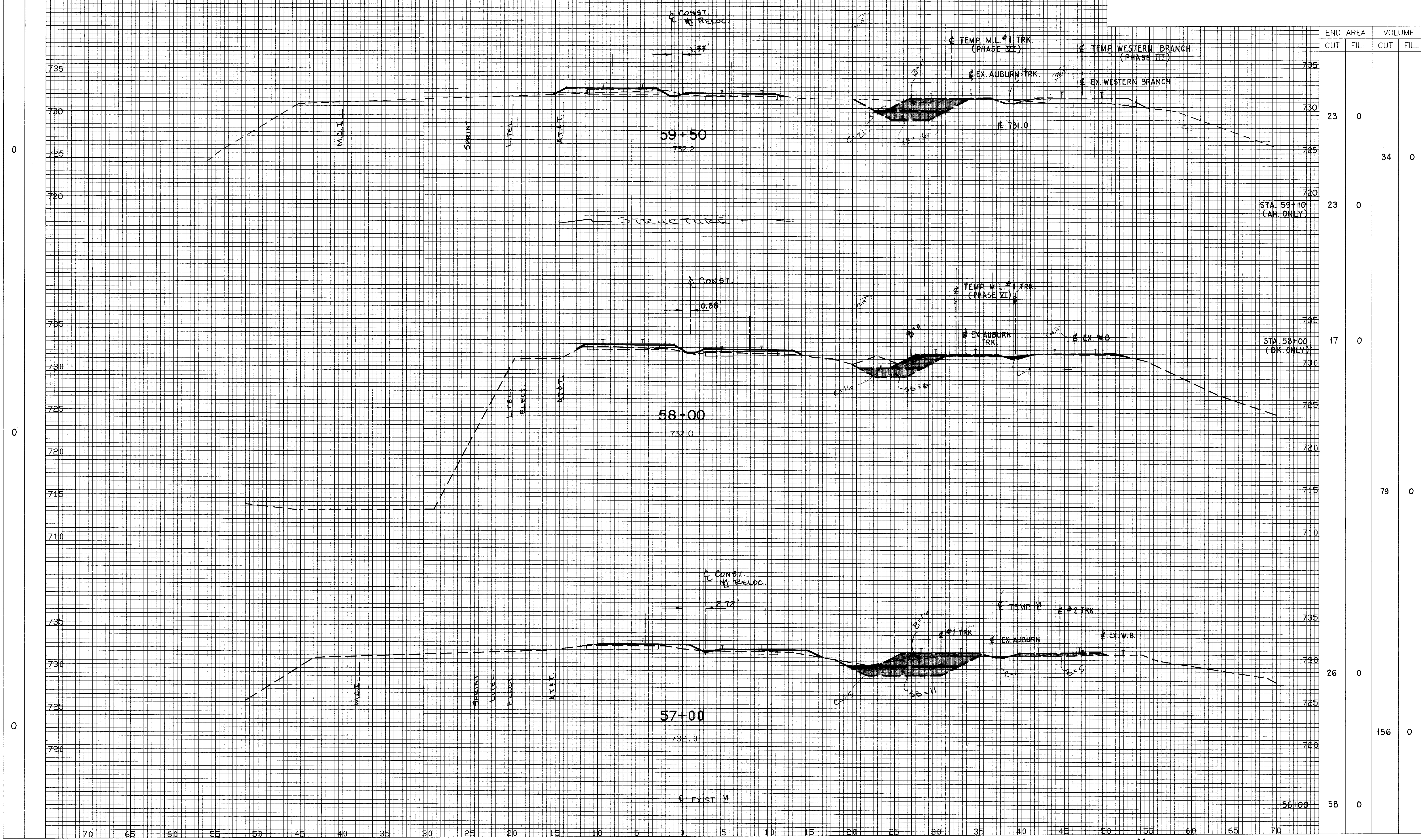
EXIST. & TEMP. M X-SECTIONS STA. 49+00 TO 52+00







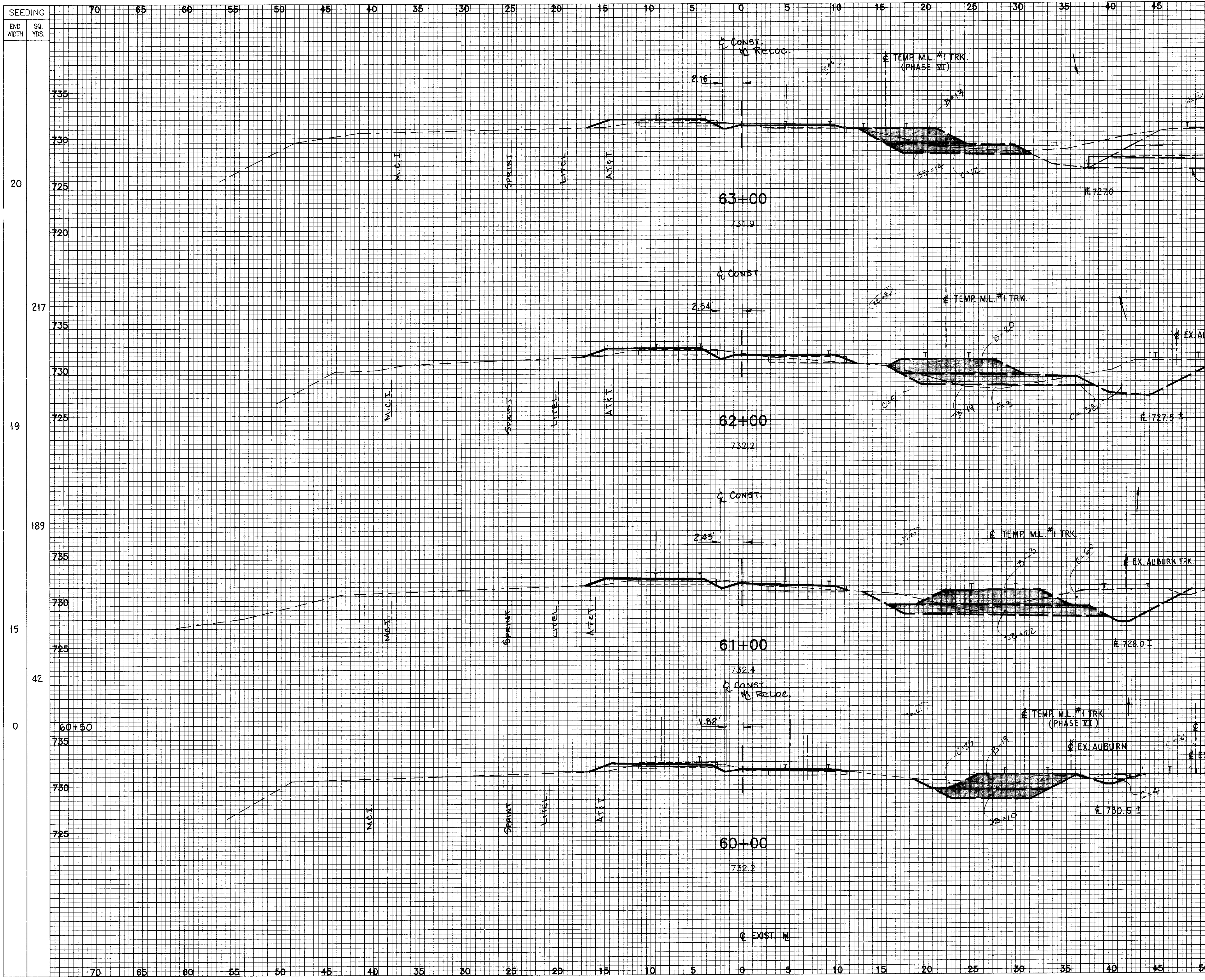
SEEDING  
END WIDTH SQ. YDS.



END STA.	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
59+50	23	0	34	0
59+10 (AH ONLY)	23	0		
58+00 (BK ONLY)	17	0	79	0
57+00	26	0	156	0
56+00	58	0		

EXIST. & TEMP. M L X-SECTIONS STA. 57+00 TO STA. 59+50

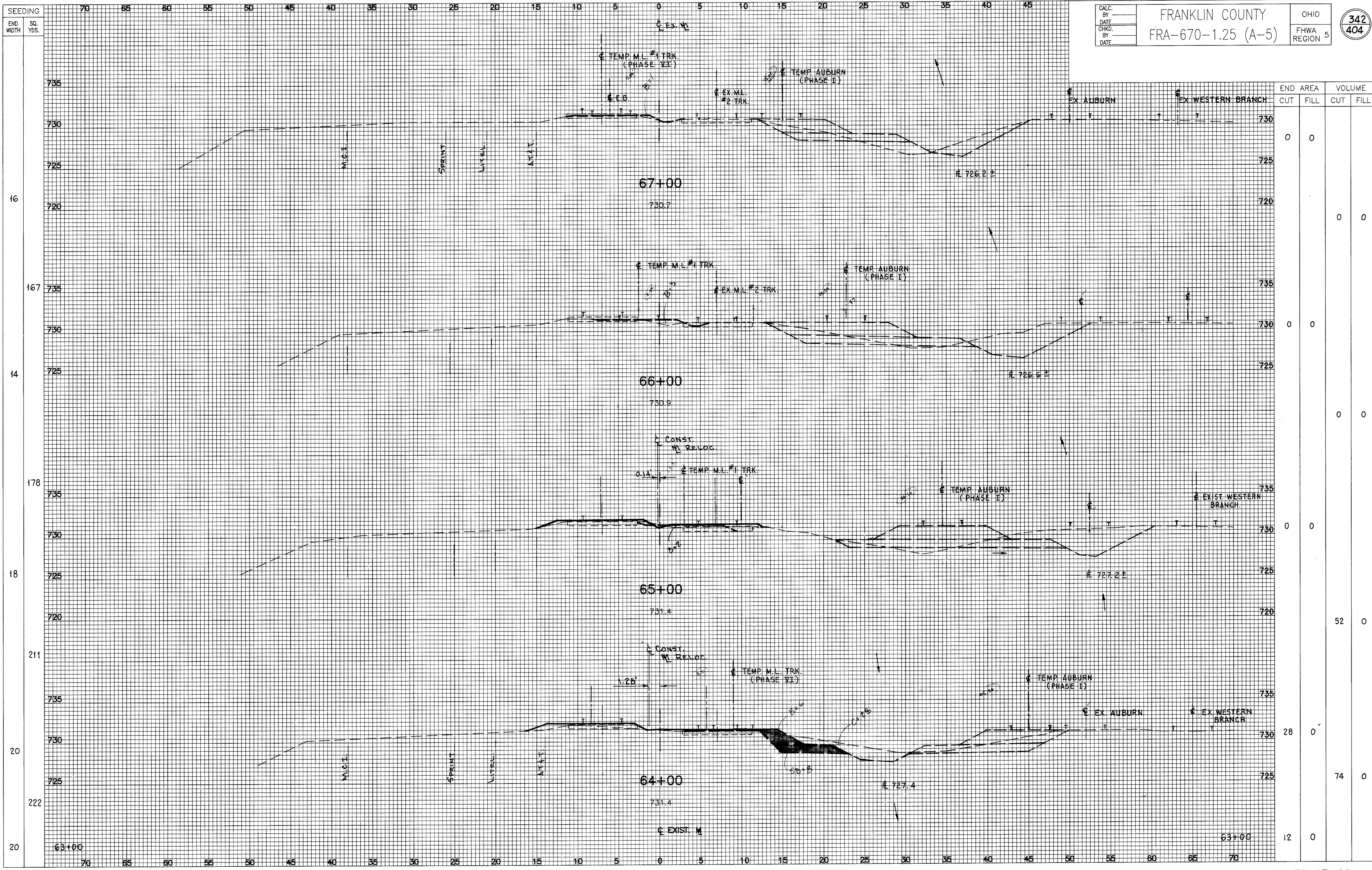




STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
63+00	12	0		
62+00	43	3	102	6
61+00	60	0	190	6
60+50	29	0	165	0
60+00	23	0	48	0

EXIST. & TEMP. M X-SECTIONS STA. 60+00 TO 63+00

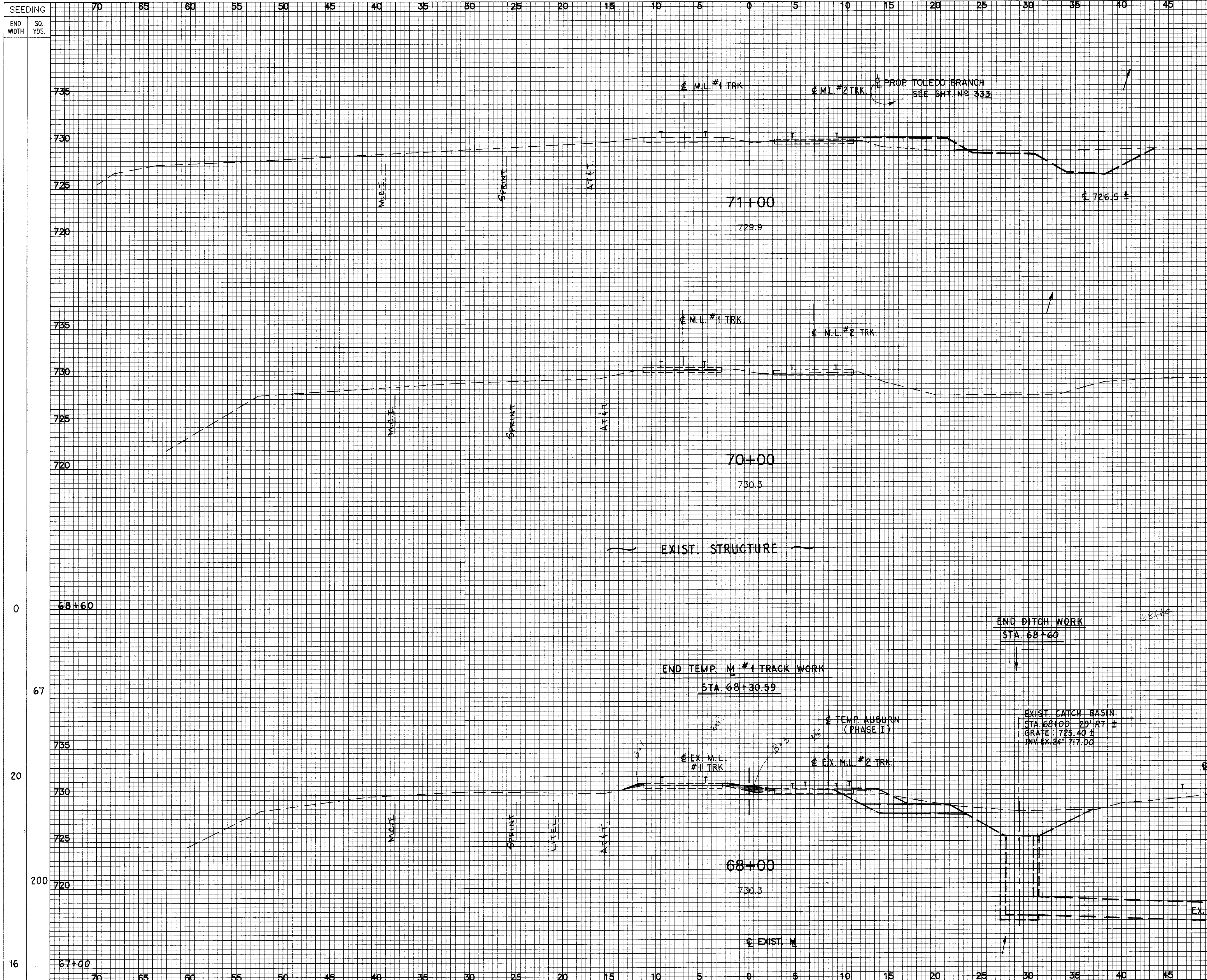




STATION	END AREA		VOLUME	
	CUT	FILL	CUT	FILL
67+00	0	0	0	0
66+00	0	0	0	0
65+00	0	0	52	0
64+00	28	0	74	0
63+00	12	0		

EXIST. & TEMP. M X-SECTIONS STA. 64+00 TO 67+00





END AREA		VOLUME	
CUT	FILL	CUT	FILL
730	730		
725	725		
720	720		
735	735		
730	730		
725	725		
720	720		
0	68+60	0	0
67	68+30.59		0
735	735		0
730	730	0	0
725	725		
200	720		0
16	67+00	0	0

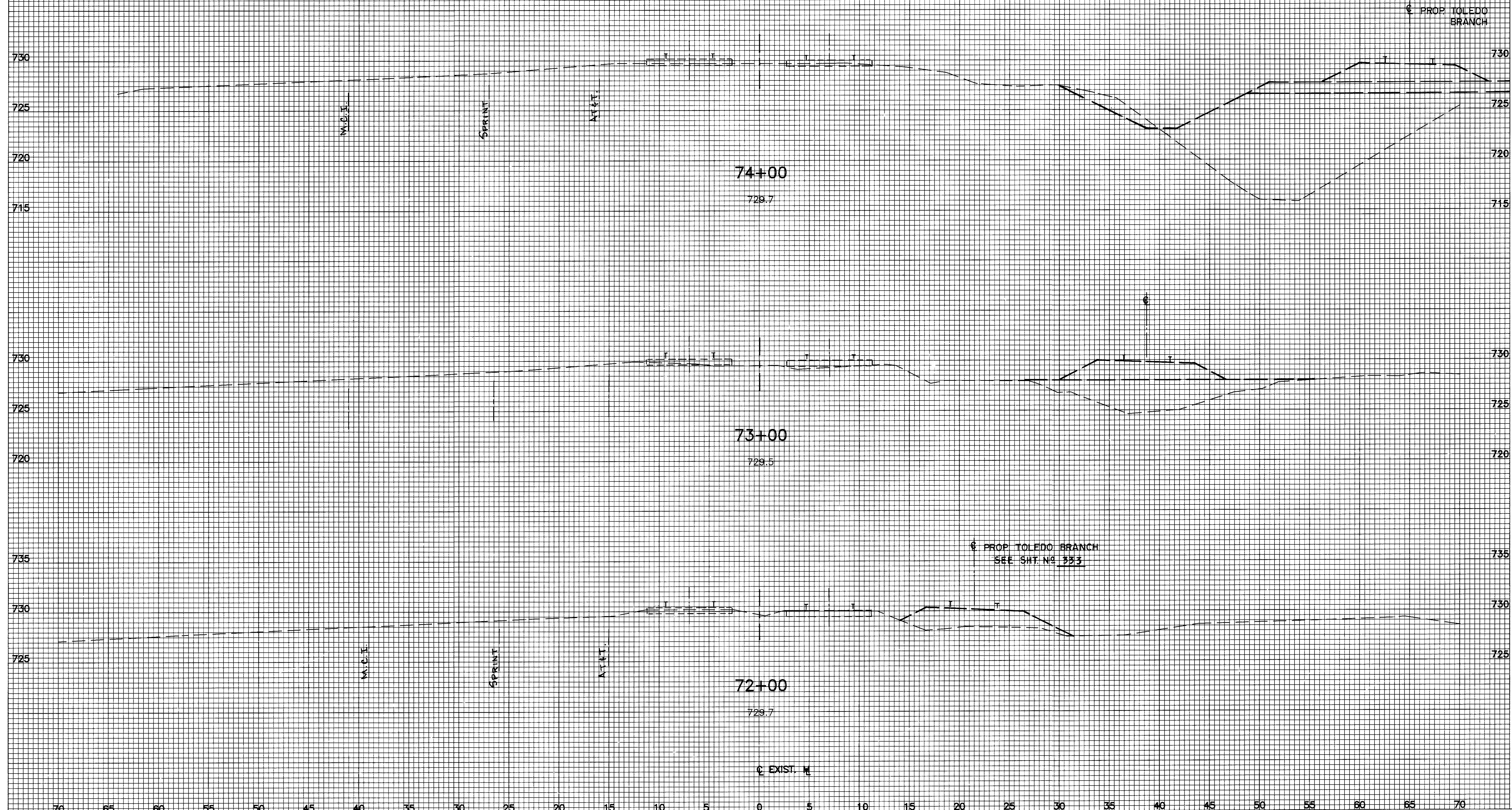
EXIST. & TEMP. M X-SECTIONS STA. 68+00 TO 71+00



SEEDING 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45

END WIDTH SQ. YDS. 4. EX. M

END AREA		VOLUME	
CUT	FILL	CUT	FILL

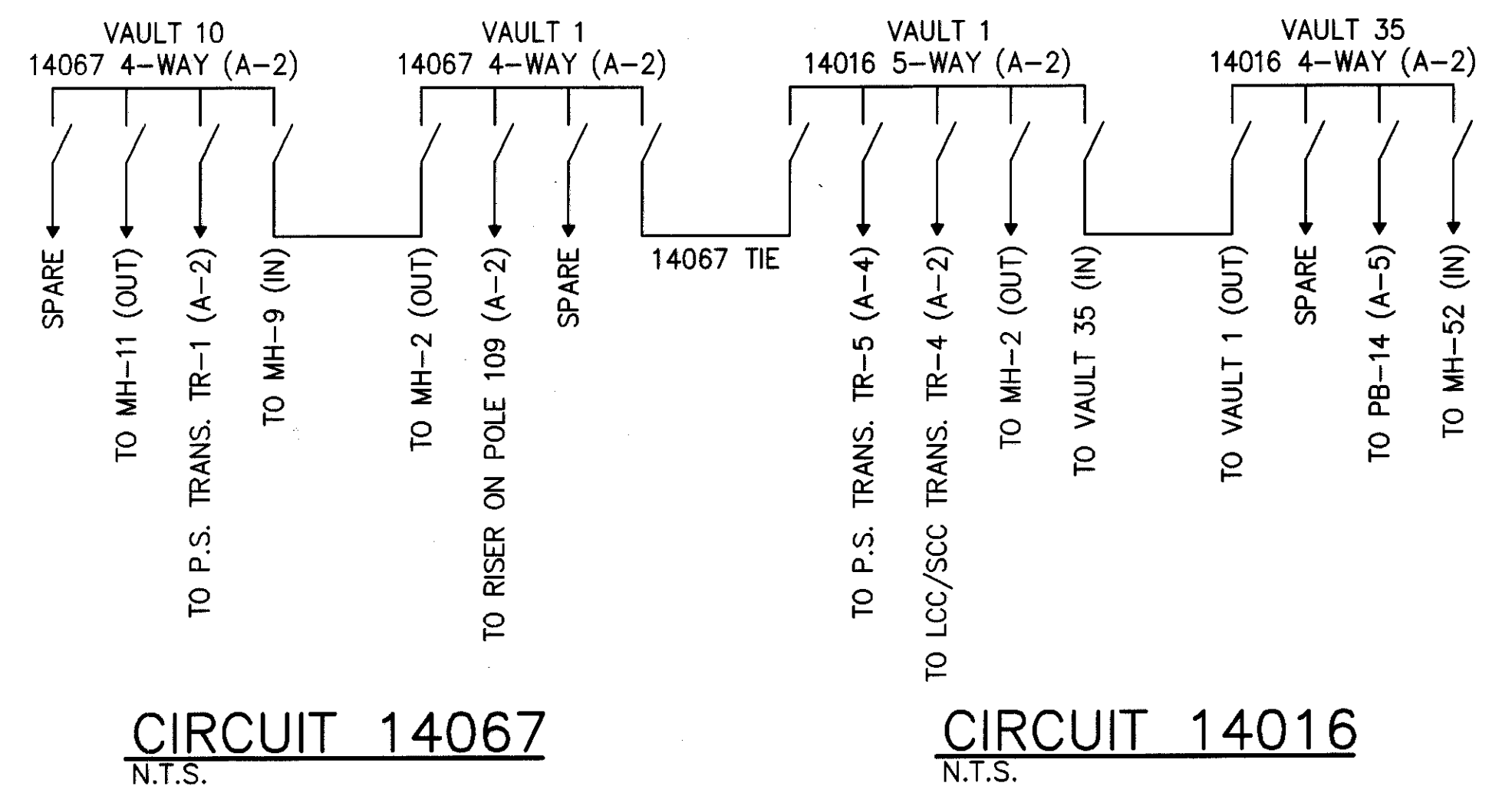
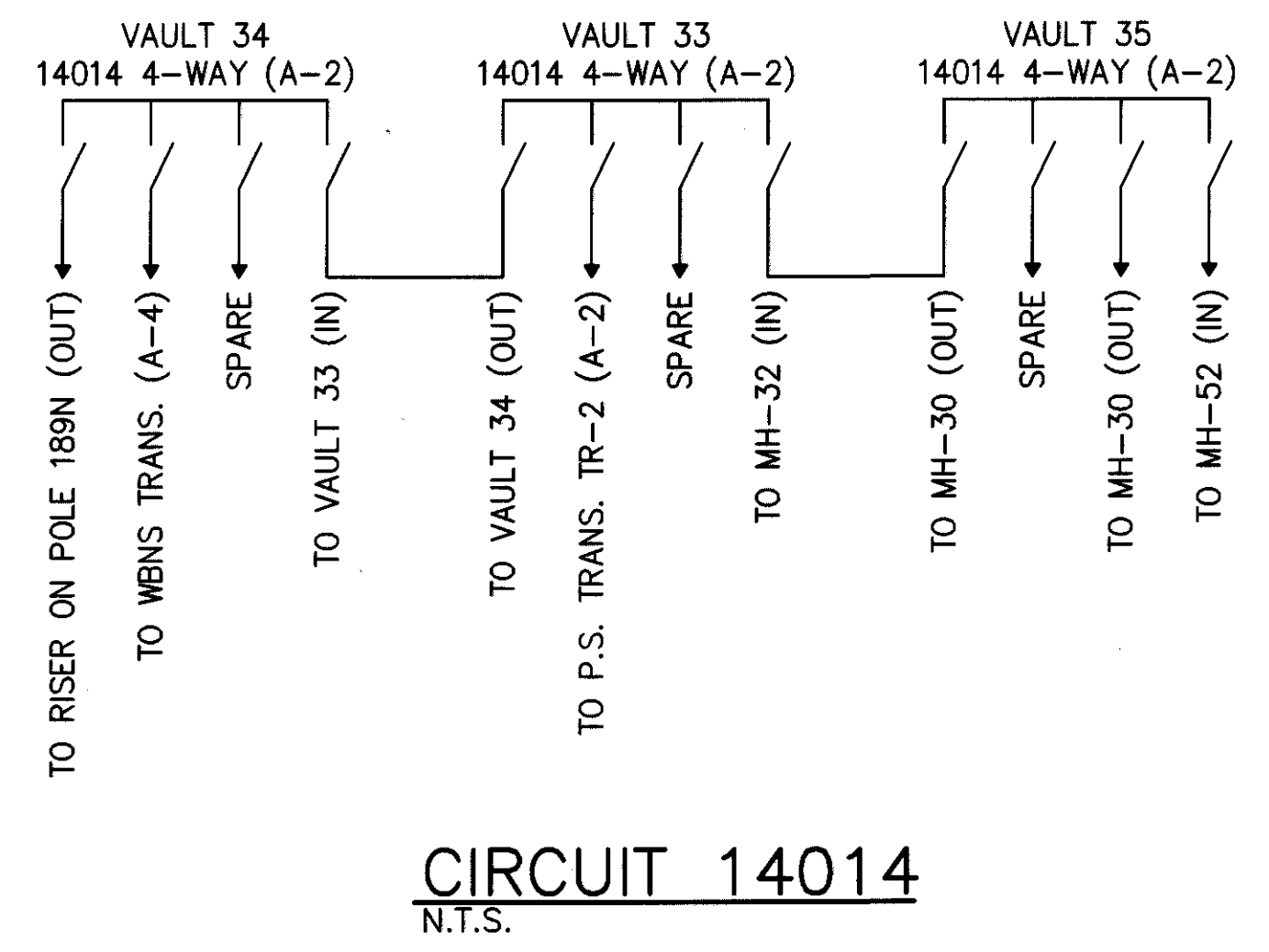
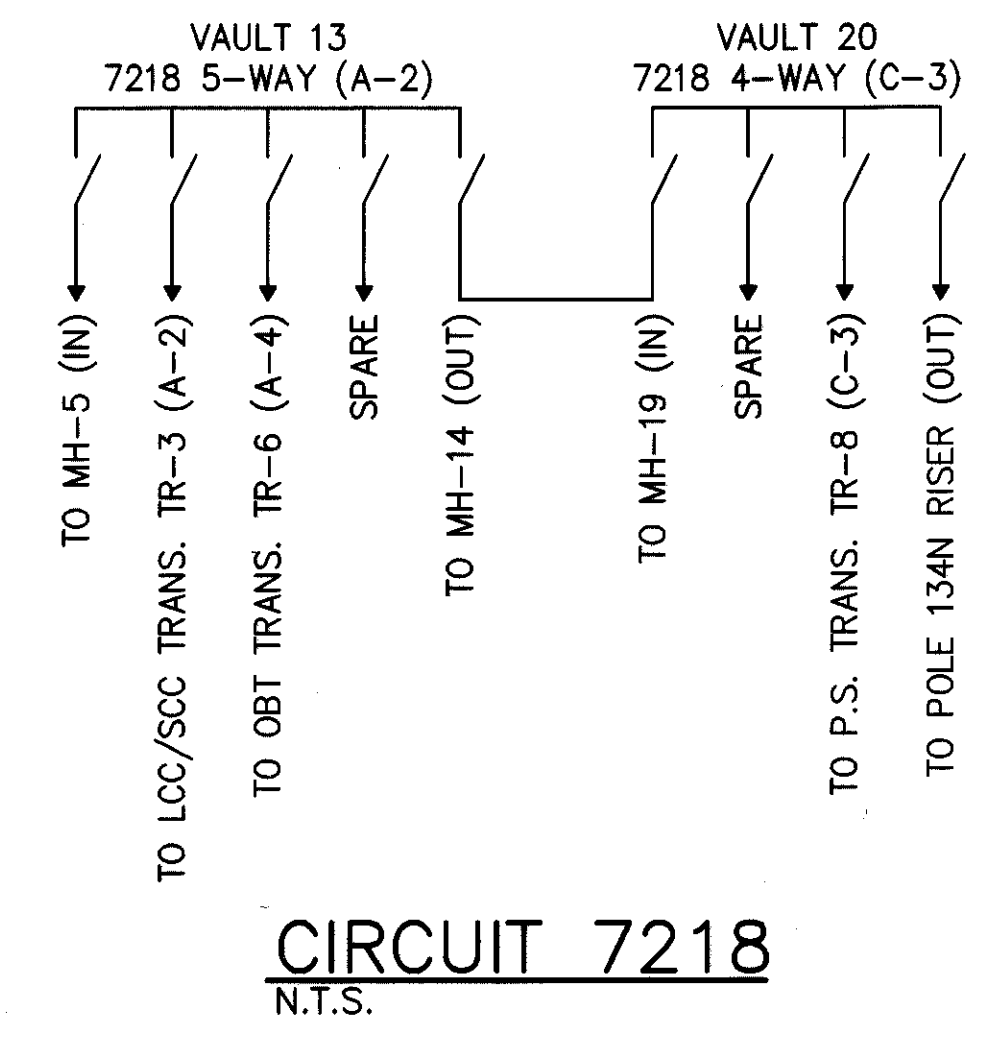


70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70

EXIST. & TEMP. M X-SECTIONS STA. 72+00 TO 74+00



### VAULT SWITCHING DIAGRAMS



### PLAN SYMBOLS LIST

- NEW POWER POLE
- ⊗ EXISTING POWER POLE TO BE REMOVED
- EXISTING POWER POLE TO REMAIN
- NEW ELECTRICAL VAULT
- NEW ELECTRICAL MANHOLE
- ⊗ EXISTING ELECTRICAL MANHOLE TO BE REMOVED
- EXISTING ELECTRICAL MANHOLE TO REMAIN
- ▲ NEW PRIMARY OR CATV RISER
- △ EXISTING PRIMARY OR CATV RISER
- E— NEW UNDERGROUND PRIMARY
- OH— EXISTING OVERHEAD PRIMARY TO REMAIN
- OH--- EXISTING OVERHEAD PRIMARY TO BE REMOVED
- ⊠ NUMBER AND CONFIGURATION OF 5" CONDUITS. CIRCLES REPRESENT CIRCUIT CONDUCTORS.
- ← GUY WIRE AND ANCHOR
- ⊞ LIGHTING OR SIGNAL CONTROL CENTER
- NEW ELECTRIC OR CATV PULLBOX
- NEW PAD-MOUNTED TRANSFORMER
- ⊙ POLE MOUNTED TRANSFORMER BANK

### POLE SYMBOLS LIST

- OR DISCONNECT SWITCH - 15KV
- LIGHTNING ARRESTOR - 9KV, 12KV
- FUSIBLE CUTOUT - 15KV
- CABLE TERMINATOR - 15KV
- POST INSULATOR-69KV
- PIN INSULATOR - 15KV
- OR SUSPENSION INSULATOR-15KV
- OR SUSPENSION INSULATOR-69KV
- SUSPENSION INSULATOR - STRAIN CLAMP
- POLE MOUNTED TRANSFORMER
- BUNDLE CONSTRUCTION

### ABBREVIATIONS

ACSR	ALUMINUM CONDUCTOR STEEL REINFORCED
AL.	ALUMINUM
CO	FUSED CUTOUT
COND.	CONDUCTOR
CSP	COLUMBUS & SOUTHERN POWER COMPANY
CU.	COPPER
D.O.E.	DIVISION OF ELECTRICITY
DE	DEAD END
DISC.	DISCONNECT
E	EAST
EXIST.	EXISTING
GRS	GALVANIZED RIGID STEEL
LA	LIGHTNING ARRESTOR
LCC	LIGHTING CONTROL CENTER
MELP	MUNICIPAL ELECTRICAL LIGHT & POWER (D.O.E.)
MH	MANHOLE
ML	MATCHLINE
N	NORTH
OBT	OHIO BELL TELEPHONE COMPANY (AMERITECH)
PB	PULLBOX
PCI	PIN INSULATOR
PI	POST INSULATOR
PS	PUMP STATION (ST-1, ST-2, ETC.)
S	SOUTH
SC	STRAIN CLAMP
SCC	SIGNAL CONTROL CENTER
SEC.	SECONDARY
SI	SUSPENSION INSULATOR
STA.	STATION
STR.	STRUCTURE
SW.	SWITCH
T	CABLE TERMINATOR
TEMP.	TEMPORARY
TRANS.	TRANSFORMER
U.G.	UNDERGROUND
VLT	VAULT
W	WEST

[[PROJ]] - I:\FAC\92313143.5\F\CONTRACT A-5\A5-E-1.DWG - JUNE 16, 1997 - 09:07:50 - SCALE = 1:56



MELP CONSTRUCTION NOTES

CIRCUIT		CIRCUIT		CIRCUIT																																																																																											
	<p><u>CONSTRUCTION NOTES</u></p> <p>A. ALL EXISTING MELP CIRCUITS MUST REMAIN IN OPERATION UNTIL THE NEW RESPECTIVE CIRCUIT INSTALLATIONS ARE COMPLETE INCLUDING TESTING AND APPROVAL BY D.O.E. - SWITCH OVER TO NEW CIRCUIT WILL BE MADE BY D.O.E.</p> <p>B. COORDINATE WORK WITH ADJACENT CONTRACTS TO MINIMIZE DOWNTIME OF EXISTING CIRCUITS.</p> <p>C. IN THE AREA OF POLES 109, 110, 111, 112, 154, 301, 304, 326, VAULTS 1, 13, 34, 35, AND MANHOLE 40 THE WORK OF CONTRACTS A-2, A-4, AND A-5 OVERLAP. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE THE WORK OF OTHER CONTRACTS IN THEIR RESPECTIVE AREA.</p> <p>D. COORDINATE THE INSTALLATION OF EQUIPMENT IN EACH CONTRACT AS FOLLOWS:</p> <table border="1"> <thead> <tr> <th>TRANS</th> <th>SERVING</th> <th>CONTRACT</th> <th>PULLBOX</th> <th>SERVING</th> <th>CONTRACT</th> </tr> </thead> <tbody> <tr><td>TR-1</td><td>ST-4</td><td>A-2</td><td>PB-1</td><td>14014</td><td>BY D.O.E.</td></tr> <tr><td>TR-2</td><td>ST-20</td><td>A-2</td><td>PB-2</td><td>14016</td><td>BY D.O.E.</td></tr> <tr><td>TR-3</td><td>LCC/SCC</td><td>A-2</td><td>PB-3</td><td>LCC/SCC</td><td>A-2</td></tr> <tr><td>TR-4</td><td>LCC/SCC</td><td>A-2</td><td>PB-4</td><td>SCC</td><td>A-2</td></tr> <tr><td>TR-5</td><td>ST-3</td><td>A-4</td><td>PB-5</td><td>LCC</td><td>A-2</td></tr> <tr><td>TR-6</td><td>OBT-VLT</td><td>A-4</td><td>PB-6</td><td>14067</td><td>BY D.O.E.</td></tr> <tr><td>TR-7</td><td>ST-2</td><td>A-5</td><td>PB-7</td><td>CATV</td><td>A-2</td></tr> <tr><td>TR-8</td><td>ST-28</td><td>C-3</td><td>PB-8</td><td>CATV</td><td>A-2</td></tr> <tr><td>TR-9</td><td>LCC</td><td>A-5</td><td>PB-9</td><td>CATV</td><td>A-2</td></tr> <tr><td>---</td><td>---</td><td>---</td><td>PB-10</td><td>CATV</td><td>A-2</td></tr> <tr><td>---</td><td>---</td><td>---</td><td>PB-11</td><td>CATV</td><td>A-2</td></tr> <tr><td>---</td><td>---</td><td>---</td><td>PB-12</td><td>CATV</td><td>A-4</td></tr> <tr><td>---</td><td>---</td><td>---</td><td>PB-13</td><td>SCC</td><td>A-2</td></tr> <tr><td>---</td><td>---</td><td>---</td><td>PB-14</td><td>14016</td><td>A-5</td></tr> </tbody> </table> <p>E. THE SHEET NUMBER IN THE LOWER RIGHT HAND CORNER OF THE DRAWING APPLIES TO THE MELP RELOCATION DRAWINGS ONLY. THE SHEET NUMBER IN THE UPPER RIGHT HAND CORNER REFERS TO THE DRAWING NUMBER FOR THE ENTIRE CONTRACT SET.</p> <p>F. SPLICES IN MANHOLES SHALL BE INCLUDED IN CONTRACT A-5 WORK. MANHOLES 41, 42, 43, ASSOCIATED CONDUIT AND RISERS ARE INCLUDED IN CONTRACT A-3 WORK. INSTALLATION OF CONDUCTORS ONLY IS INCLUDED IN CONTRACT A-5 WORK.</p>	TRANS	SERVING	CONTRACT	PULLBOX	SERVING	CONTRACT	TR-1	ST-4	A-2	PB-1	14014	BY D.O.E.	TR-2	ST-20	A-2	PB-2	14016	BY D.O.E.	TR-3	LCC/SCC	A-2	PB-3	LCC/SCC	A-2	TR-4	LCC/SCC	A-2	PB-4	SCC	A-2	TR-5	ST-3	A-4	PB-5	LCC	A-2	TR-6	OBT-VLT	A-4	PB-6	14067	BY D.O.E.	TR-7	ST-2	A-5	PB-7	CATV	A-2	TR-8	ST-28	C-3	PB-8	CATV	A-2	TR-9	LCC	A-5	PB-9	CATV	A-2	---	---	---	PB-10	CATV	A-2	---	---	---	PB-11	CATV	A-2	---	---	---	PB-12	CATV	A-4	---	---	---	PB-13	SCC	A-2	---	---	---	PB-14	14016	A-5	7213	G. CIRCUIT 7213	7218	I. CIRCUIT 7218
TRANS	SERVING	CONTRACT	PULLBOX	SERVING	CONTRACT																																																																																										
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		7213	<ol style="list-style-type: none"> <li>ORIGINATES AT THE DUBLIN ROAD POWER PLANT.</li> <li>EXISTING CIRCUIT RUNS THROUGH MANHOLES 50, 51, AND 52.</li> <li>NEW CIRCUIT TO BE SPLICED IN VAULT 35 AND RUNS BACK THROUGH MANHOLE 52, VAULT 1, MANHOLE 2 AND TERMINATES IN MANHOLE 40 (CONTRACT A-2 WORK). CIRCUIT IS EXTENDED THROUGH MANHOLES 41, 42, 43 AND 58 (CONTRACT A-5 WORK).</li> <li>EXISTING CIRCUIT IS REMOVED FROM DUCKBANK THROUGH MANHOLES 53, 54, 55, 56, 57, TO MANHOLE 58 (CONTRACT A-5).</li> <li>EXISTING OVERHEAD CIRCUIT IS REMOVED ON POLES 237, 238, 239, AND 239A. OVERHEAD CIRCUIT FROM POLE 243, 239,..... TO REMAIN IN-USE. EXISTING POLE 237, 238, AND 239A REMOVED.</li> <li>CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED (CONTRACTS A-2 AND A-5) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACT A-5.</li> <li>THE DIVISION OF ELECTRICITY WILL CUT EXISTING CABLES AND SPLICE NEW CABLES IN EXISTING MANHOLE 58.</li> <li>SEE DRAWING E-14 FOR CIRCUIT 7213 - CIRCUIT DIAGRAM.</li> </ol>	7218	<ol style="list-style-type: none"> <li>ORIGINATES AT THE DUBLIN ROAD POWER PLANT. RUNS OVERHEAD ACROSS RIVER TO POLES 110 AND 111.</li> <li>NEW CIRCUIT RUNS OVERHEAD TO POLE 110N, 326, 303N, 325, 324 323, 322 BUNDLE, 321, 320, 223 (CONTRACT A-5 WORK).</li> <li>NEW RISER ON POLE 110N, CIRCUIT RUNS UNDERGROUND TO VAULT 1. RUNS FROM VAULT 1 TO MANHOLE 2, 3, 4, 5, AND VAULT 13. CIRCUIT IS SWITCHED IN VAULT 13 (5-WAY: 7218 IN; TR-3/A-2; TR-6/A-4; 7218 OUT, SPARE) AND RUNS BACK THROUGH MANHOLE 5 TO MANHOLE 6 AND TRANSFORMER TR-3 (SIGNALS AND STREET LIGHTING).</li> <li>CIRCUIT RUNS FROM VAULT 13 TO MANHOLE 14, 15, 16, 17, 19, AND VAULT 20 (CONTRACT A-4). CIRCUIT IS SWITCHED IN VAULT 20 (4-WAY; SPARE; 7218 IN; TR-8/C-3; POLE 134N RISER). SWITCH IN VAULT 20 IS INSTALLED IN CONTRACT C-3 WORK.</li> <li>EXISTING OVERHEAD CIRCUIT IS REMOVED ON POLES 111 (POLE 111 REMAINS IN-USE), 113, 114, 115, 116, 117, 118, 119, 120, 121, 123, 124, 125, 127, 128, 129, 130, 131, 132, 133, AND 134. FOR POLES 113 THROUGH 134, THE POLE AND CONDUCTORS ARE REMOVED (CONTRACT A-4).</li> <li>FROM POLE 124, THE CIRCUIT PASSES OVER STATE ROUTE 315 AND IS REMOVED (POLE AND CONDUCTORS) ON POLES 141, 143, 144, 145, 150, 151, 152, 153, 154 (POLE REMAINS), 189, 188, 187, 186. POLES 141 THROUGH 154 ARE IN CONTRACT A-4 AND POLES 154 THROUGH 186 ARE IN CONTRACT A-2.</li> <li>FROM POLES 110 AND 111, THE CIRCUIT IS REMOVED (CONDUCTORS ONLY) TO POLE 112 IN CONTRACT A-2. FROM POLE 112, THE CIRCUIT IS REMOVED (POLES AND CONDUCTORS) ON POLES 112, 301, 302, 303, 309, 310, 311, 312, 313, 215. FROM POLE 216, THE CIRCUIT IS REMOVED (CONDUCTORS ONLY) ON POLES 316, 318, 319 AND 222.</li> <li>CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED (CONTRACTS A-2, A-4, AND A-5) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACTS A-2, A-4, AND A-5.</li> <li>SEE DRAWING E-15 FOR CIRCUIT 7218 - CIRCUIT DIAGRAM.</li> </ol>																																																																																										
		7214	H. CIRCUIT 7214																																																																																												
			<ol style="list-style-type: none"> <li>ORIGINATES AT THE DUBLIN ROAD POWER PLANT.</li> <li>EXISTING CIRCUIT RUNS THROUGH MANHOLES 50, 51, AND 52.</li> <li>NEW CIRCUIT TO BE SPLICED IN VAULT 35 AND RUNS THROUGH DUCTBANK TO NEW RISER ON POLE 303N (CONTRACT A-5).</li> <li>NEW OVERHEAD CIRCUIT RUNS ON POLES 303N, 325, 324, 323 (BUNDLE) 322 (BUNDLE), 321 AND 220N. NEW CIRCUIT SPLICED TO EXISTING OVERHEAD CONDUCTORS (BY D.O.E.) AT POLE 220N (CONTRACT A-5 WORK).</li> <li>EXISTING CIRCUIT IS REMOVED FROM DUCTBANK THROUGH MANHOLE 53, 54, 55, AND 56. EXISTING RISER ON POLE 245, CIRCUIT REMOVED (POLE AND CONDUCTORS) ON POLES 245, 246, 247, 248, 250, 215, 217, 252, 228 AND 229. CIRCUIT REMAINS IN-USE ON POLES 256, 254, 253, 217, 220, 221 AND 221B (CONTRACT A-5 WORK).</li> <li>CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED (CONTRACTS A-2 AND A-5) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACT A-5.</li> <li>SEE DRAWING E-14 FOR CIRCUIT 7214 - CIRCUIT DIAGRAM.</li> </ol>																																																																																												

TLS I:\FAC\92313143.56\CONTRACT A-5\A5-E-02.DWG SEP 08, 1997 10:20:15 PLOT SCALE = 1

# MELP CONSTRUCTION NOTES

CALC. BY _____	FRANKLIN COUNTY FRA-670-1.25 (A-5)	OHIO	346A 404
DATE _____		FHWA REGION 5	
CHKD. BY _____			
DATE _____			

CIRCUIT	DESCRIPTION	CIRCUIT	DESCRIPTION	CIRCUIT	DESCRIPTION
14014	<p>J. CIRCUIT 14014</p> <ol style="list-style-type: none"> <li>1. ORIGINATES AT THE DUBLIN ROAD POWER PLANT.</li> <li>2. NEW CIRCUIT RUNS THROUGH PULLBOX PB-1 (BY D.O.E.), MANHOLES 50, 51, 52 TO VAULT 35 (CONTRACT A-2).</li> <li>3. CIRCUIT IS SWITCHED IN VAULT 35 (4-WAY; 14014 IN; MANHOLE 30 (OUT); MANHOLE 30 (OUT); SPARE) AND RUNS IN DUCTBANK TO MANHOLES 30, 31, AND 40 (CONTRACT A-2). CIRCUIT IS EXTENDED FROM MANHOLE 40 TO MANHOLE 41, 42, 43 AND NEW RISER ON POLE 242 (CONTRACT A-5).</li> <li>4. CIRCUIT RUNS FROM VAULT 35 TO MANHOLE 30, 31, 32 VAULT 33, 34 AND TO NEW RISER ON POLE 189N (CONTRACT A-2).</li> <li>5. CIRCUIT IS SWITCHED IN VAULT 33 (4-WAY; 14014 IN; TRANS TR-2; VAULT 34 (OUT); SPARE) AND RUNS TO THE PAD-MOUNTED TRANSFORMER TR-2 AT PUMP STATION PS-20 (CONTRACT A-2).</li> <li>6. CIRCUIT IS SWITCHED IN VAULT 34 (4-WAY; 14014 IN; WBNS TRANS; RISER POLE 189N (OUT); SPARE) AND RUNS TO MANHOLE 14 (CONTRACT A-4). CONDUCTORS FROM MANHOLE 14 TO WBNS PULLBOX (CONTRACT A-4). CIRCUIT RUNS FROM VAULT 34 TO NEW RISER ON POLE 189N AND FROM FROM POLE 189N RUNS OVERHEAD TO POLE 154 AND TIES INTO EXISTING 14014.</li> <li>7. EXISTING OVERHEAD CIRCUIT IS REMOVED ON POLES 304, 305, 303, 309, 310, 311, AND 240. EXISTING POLES 305, 303, 309, 310 AND 311 REMOVED (CONTRACT A-5).</li> <li>8. EXISTING CIRCUIT ON POLES 294N, 242, 241 AND 240 TO REMAIN IN-USE.</li> <li>9. CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED IN CONTRACT A-2 BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACTS A-4 AND A-5.</li> <li>10. SEE DRAWING E-17 FOR CIRCUIT 14014 - CIRCUIT DIAGRAM.</li> </ol>	14056	<p>L. CIRCUIT 14056</p> <ol style="list-style-type: none"> <li>1. ORIGINATES AT THE DUBLIN ROAD POWER PLANT. RUNS OVERHEAD TO POLE 326. FROM POLE 326, THE EXISTING CONDUCTORS ARE RE-CONNECTED TO NEW SUSPENSION INSULATORS ON POLE 325.</li> <li>2. FROM POLE 325, THE CIRCUIT RUNS OVERHEAD ON POLES 324, 323, 322 321, 320, 224, 225 AND 226. NEW CONDUCTORS FROM POLE 225 TO 226 ARE BY D.O.E.</li> <li>3. THE EXISTING CONDUCTORS ON POLES 309, 310, 312, 313, 217, 223, 223A, 223B AND 223C ARE TO BE REMOVED. POLES 309, 310, 312 AND 313 ARE REMOVED.</li> <li>4. NEW OVERHEAD CONDUCTORS MUST BE INSTALLED AND ENERGIZED BEFORE EXISTING OVERHEAD CIRCUIT CAN BE REMOVED.</li> <li>5. SEE DRAWING E-16 FOR CIRCUIT 14056 - CIRCUIT DIAGRAM.</li> </ol>	14073	<p>N. CIRCUIT 14073</p> <ol style="list-style-type: none"> <li>1. ORIGINATES AT THE DUBLIN ROAD POWER PLANT.</li> <li>2. EXISTING CIRCUIT RUNS THROUGH MANHOLES 50, 51, 52.</li> <li>3. CIRCUIT IS SPLICED IN VAULT 35 AND RUNS THROUGH DUCTBANK TO NEW VAULT 1, MANHOLE 2, AND MANHOLE 40 (CONTRACT A-2).</li> <li>4. CIRCUIT IS EXTENDED FROM MANHOLE 40 TO MANHOLE 41, 42, 43 AND NEW RISER ON POLE 002 (CONTRACT A-5).</li> <li>5. CIRCUIT IS EXTENDED FROM POLE 002 TO POLES 294N, 292, 291, 290 AND DEADENDS AT EXISTING POLE 253. AT POLE 290 THE CIRCUIT IS EXTENDED TO POLE 287, 286 AND 261 (BY DIVISION OF ELECTRICITY).</li> <li>6. CIRCUIT IS EXTENDED FROM POLE 253 TO NEW POLE 217N AND 228N. POLE 217N HAS NEW TRANSFORMER FOR LIGHTING CONTROL CENTER. POLE 228N HAS NEW RISER WHICH SERVES PAD-MOUNTED TRANSFORMER TR-7 (PUMP STATION ST-2) (CONTRACT A-5).</li> <li>7. EXISTING CIRCUIT IS REMOVED FROM DUCTBANK THROUGH MANHOLES 53, 54, 55, 56 TO RISER ON POLE 245. EXISTING OVERHEAD CIRCUIT REMOVED ON POLES 245, 246, 247, 248, 250, 252 AND 254. EXISTING POLES 245, 246, 247, 248 AND 250 REMOVED (CONTRACT A-5).</li> <li>8. EXISTING CIRCUIT ON POLES 263, 262, 261, 258, 255, 254 AND 253 TO REMAIN IN USE.</li> <li>9. CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED IN (CONTRACT A-2) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACT A-5.</li> <li>10. OVERHEAD CONDUCTORS MUST BE INSTALLED AND ENERGIZED IN (CONTRACT A-5) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACT A-5.</li> <li>11. SEE DRAWING E-16 FOR CIRCUIT 14073 - CIRCUIT DIAGRAM.</li> </ol>
		14067	<p>M. CIRCUIT 14067</p> <ol style="list-style-type: none"> <li>1. NO WORK IN THIS CONTRACT.</li> </ol>		
14016	<p>K. CIRCUIT 14016</p> <ol style="list-style-type: none"> <li>1. ORIGINATES AT THE DUBLIN ROAD POWER PLANT.</li> <li>2. NEW CIRCUIT RUNS THROUGH PULLBOX PB-2 (BY D.O.E.), MANHOLES 50, 51, 52 TO VAULT 35 (CONTRACT A-2).</li> <li>3. CIRCUIT IS SWITCHED IN VAULT 35 (4-WAY; 14016 IN; CONFLUENCE UNDERGROUND FEED; VAULT 1 SWITCH; SPARE) AND RUNS TO PULLBOX PB-14 WHERE THE CIRCUIT IS SPLICED TO THE EXISTING TRANSFORMER FEED BY D.O.E. THE UNDERGROUND FEED TO PB-14 IS IN CONTRACT A-5.</li> <li>4. CIRCUIT RUNS TO VAULT 1 WHERE THE CIRCUIT IS SWITCHED (5-WAY; 14016 IN; MH-2 (OUT); TR-4/A-2; TR-5/A-4; 14067 TIE). FROM VAULT 1 CIRCUIT RUNS TO THE PAD-MTD TRANS. TR-5 AT ST-3 (CONTRACT A-4) AND FROM MANHOLE 40 TO MANHOLE 41, 42, 43 AND TO A NEW RISER ON POLE 241 (CONTRACT A-5). THE NEW RISER ON POLE 241 IS BY D.O.E.</li> <li>5. FROM POLE 109, THE CIRCUIT IS REMOVED (CONDUCTORS ONLY) TO POLE 112 IN CONTRACT A-2. FROM POLE 112, THE CIRCUIT IS REMOVED (POLES AND CONDUCTORS) ON POLES 112, 301, 302, 303, 309, AND 310. POLE 240, CONDUCTORS REMOVED, POLE REMAINS IN PLACE.</li> <li>6. CONDUCTORS AND DUCTBANK MUST BE INSTALLED AND ENERGIZED (CONTRACTS A-2 AND A-5) BEFORE EXISTING CIRCUIT CAN BE REMOVED IN CONTRACTS A-2 AND A-5.</li> <li>7. SEE DRAWING E-15 FOR CIRCUIT 14016 - CIRCUIT DIAGRAM.</li> </ol>				

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# MELP SPECIFICATIONS

CALC. BY	FRANKLIN COUNTY FRA-670-1.25 (A-5)	OHIO
DATE		FHWA REGION 5
CHKD. BY		347 404
DATE		

**GENERAL**

- A. SCOPE:** A COMPLETE OPERATING AND TESTED SYSTEM SHALL BE PROVIDED INCLUDING:
1. OVERHEAD AND UNDERGROUND PRIMARY CIRCUITS
  2. CONNECTION OF HIGH AND LOW VOLTAGE FEEDS TO LOADS SUCH AS PUMP STATIONS, AND STREET LIGHTS.
  3. TEMPORARY POLES, EQUIPMENT AND CIRCUITS.
  4. COORDINATION WITH OTHER CONTRACTORS AND CONTRACTS ASSOCIATED WITH THE SPRING SANDUSKY INTERCHANGE.
  5. THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY "CONDUCTOR SAFETY POLICY" SHALL BE FOLLOWED:
- PRIOR TO STARTING ANY WORK (EACH DAY) AND AT THE END OF EACH WORKING DAY THE CONTRACTOR SHALL CALL THE DIVISION OF ELECTRICITY, CENTRAL LOAD DISPATCHER (645-7627). COPIES OF "CONDUCTOR SAFETY POLICY" CAN BE OBTAINED THROUGH THE DIVISION OF ELECTRICITY, 910 DUBLIN ROAD, 4TH FLOOR.
6. OWNER - CITY OF COLUMBUS, DIVISION OF ELECTRICITY (MELP), 910 DUBLIN ROAD, COLUMBUS, OHIO 43215 (645-7627).
  7. THE DIVISION OF ELECTRICITY (MELP) REQUIRES THREE (3) WEEKS PRIOR NOTICE FROM THE CONTRACTOR TO SCHEDULE ANY MAJOR WORK. ANY SIGNIFICANT DELAY BY CONTRACTOR WILL REQUIRE ADDITIONAL THREE (3) WEEKS NOTICE TO RESCHEDULE THE WORK.
- B. COORDINATION:** ALL WORK IS TO BE COORDINATED WITH THE HIGHWAY CONSTRUCTION AND WITH THE CITY OF COLUMBUS, DIVISION OF ELECTRICITY, ELECTRICAL ENGINEERING DEPARTMENT. NO TIES ARE TO BE MADE TO THE EXISTING MELP SYSTEM. MELP WILL PROVIDE ALL FINAL PRIMARY TIES TO THEIR EXISTING CIRCUITS.
- C. OUTAGES PROHIBITED:** CONTRACTOR SHALL INCLUDE IN HIS BID ALL COST ASSOCIATED WITH TEMPORARY LINES, RIGGING AND HOT LINE WORK SO THAT THE CONSTRUCTION MAY BE ACCOMPLISHED WITHOUT AN OUTAGE ON THESE LINES.
- D. SUBMITTALS:** SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL ITEMS OF EQUIPMENT AND MATERIAL USED ON THIS PROJECT SUCH AS, POLES, CROSSARMS, POLE APPARATUS, MANHOLES, VAULTS, PULLBOXES, CONDUIT, CABLE AND ACCESSORIES, SWITCHES, TRANSFORMERS, ETC. SHOP DRAWINGS WILL INCLUDE DETAILED DRAWINGS, PHOTOGRAPHS, CERTIFICATIONS, APPROVAL, AND INSTALLATION DATA. TEN (10) COPIES OF EACH SUBMITTAL SHALL BE PROVIDED.
- E. TESTS:**
1. PERFORM HIGH POTENTIAL TESTS ON ALL 15 KV CABLES PRIOR TO ENERGIZATION.
  2. CHECK ALL FUSES AND CHANGE IF NECESSARY TO PROVIDE RECOMMENDED PROTECTION FOR LINES AND EQUIPMENT.
  3. MAKE ADDITIONAL TESTS AND INSPECTIONS NECESSARY TO INSURE THAT ALL WIRING AND EQUIPMENT IS IN SATISFACTORY CONDITION TO BE ENERGIZED.
  4. ALL TESTS TO MEET THE APPLICABLE STANDARD OF THE IEEE, NATIONAL ELECTRICAL CODE, NATIONAL ELECTRICAL SAFETY CODE, AND OSHA.
- F. PERMITS:** ALL PERMITS TO BE OBTAINED AND PAID FOR BY CONTRACTOR.
- G. REFERENCE STANDARDS:** WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE BEST PRACTICE OF THE TRADE. EQUIPMENT SHALL BE CONSTRUCTED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ISSUE OF THE FOLLOWING CODES, STANDARDS, AND REGULATIONS WHEREIN THEY APPLY:
1. THE CITY OF COLUMBUS DIVISION OF ELECTRICITY MINIMUM ELECTRIC STANDARDS.
  2. NATIONAL BOARD OF UNDERWRITERS - PAMPHLET NO. 70.
  3. NATIONAL ELECTRICAL CODE.
  4. NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION (NEMA).
  5. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE).
  6. AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI) (FORMERLY UNITED STATES OF AMERICAN STANDARDS INSTITUTE, INC.)
  7. INSULATED POWER CABLE ENGINEER'S ASSOCIATION
  8. NATIONAL ELECTRICAL SAFETY CODE, NATIONAL BUREAU OF STANDARDS NO. H-30.
  9. RADIO MANUFACTURER'S ASSOCIATION, ELECTRONIC CONTROL AND SOUND SYSTEMS.
  10. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).
  11. AMERICAN SOCIETY FOR TESTING AND MATERIAL (ASTM) STANDARDS - AMERICAN WOOD PRESERVERS' ASSOCIATION (AWPA) STANDARDS.
  12. EDISON ELECTRIC INSTITUTE (EEI) SPECIFICATIONS.
  13. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) PUBLICATIONS.
  14. INSULATED POWER CABLE ENGINEER'S ASSOCIATION (IPCEA) STANDARD PUBLICATIONS.

**H. REMOVAL AND DISPOSAL OF ELECTRICAL LINE MATERIALS**

1. THE DIVISION OF ELECTRICITY (MELP) WILL BE RESPONSIBLE TO REMOVE ALL THE EXISTING TRANSFORMERS AND CAPACITORS OBSOLETE BY THIS CONSTRUCTION.
2. ALL OTHER MATERIALS SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR UNLESS OTHERWISE DIRECTED BY THE PLANS OR ENGINEER.

**CONCRETE**

- A. CONCRETE FOR PRECAST FOOTINGS SHALL BE IN ACCORDANCE WITH ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS.**

STRENGTH	4,000 PSI
REINFORCING	ASTM A611115 (SI) GRADE 60

**GROUNDING**

- A. SUBMIT EQUIPMENT LISTS FOR APPROVAL**
- B. GROUND RODS:** MINIMUM 8 FT. x 5/8".
- C. GROUND WIRE:** MINIMUM NO. 2 BARE COPPER.
- D. GROUNDING IS TO BE PROVIDED ON ALL NEUTRAL CONDUCTORS, TRANSFORMER NEUTRALS, TRANSFORMER ENCLOSURES, TERMINATORS, LIGHTNING ARRESTERS, SF 6 SWITCHES AND GROUND CABLES IN MANHOLES. GROUND WIRE FOR POLES SHALL BE TIED TO EQUIPMENT RUN DOWN POLE AND CONNECTED TO GROUND ROD. GROUND WIRE SHALL BE PROTECTED BY HALF-ROUND WOOD, PLASTIC OR FIBER MOLDING FROM GROUND LINE TO A POINT AT LEAST 8 FT. ABOVE GROUND LINE AND THROUGHOUT THE COMMUNICATION AND TRANSFORMER SPACES. GROUND WIRES FOR MANHOLES SHALL BE TIED TO EQUIPMENT OR GROUND CABLE AND CONNECTED TO GROUND ROD. ALL CONNECTIONS SHALL BE MADE WITH SODERLESS CONNECTORS OR BY THE MOLDED FUSION WELDING PROCESS.**
- E. GROUND RODS SHALL BE DRIVEN FULL LENGTH IN UNDISTURBED EARTH IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TOP SHALL BE AT LEAST 12 INCHES BELOW THE SURFACE OF THE EARTH. THE GROUND WIRE SHALL BE ATTACHED TO THE ROD WITH A CLAMP AND SECURED TO THE POLE WITH STAPLES. THE STAPLES ON THE GROUND WIRE SHALL BE SPACED TWO FEET APART EXCEPT FOR A DISTANCE OF EIGHT FEET ABOVE THE GROUND AND EIGHT FEET DOWN FROM THE TOP OF THE POLE WHERE THEY SHALL BE SIX INCHES APART.**
- F. ALL EQUIPMENT GROUND, NEUTRAL WIRES, AND LIGHTNING-PROTECTIVE EQUIPMENT SHALL BE INTERCONNECTED AND ATTACHED TO A COMMON GROUND WIRE.**

**POLES**

- A. SPECIES:** POLES FURNISHED UNDER THESE BID SPECIFICATIONS SHALL BE SOUTHERN PINE, DOUGLAS FIR OR WESTERN RED CEDAR.
- B. POLE FABRICATION:** POLES SHALL BE FABRICATED FROM THE RAW TIMBER AS DEFINED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI) IN THEIR MOST RECENT COPY IN EFFECT OF AMERICAN NATIONAL STANDARDS SPECIFICATIONS AND DIMENSIONS FOR WOOD POLES, ANSI .05.1. STRICT ADHERENCE SHALL BE GIVEN TO SECTIONS PERTAINING TO POLE CLASSES, PROHIBITED DEFECTS, DIMENSIONS, MANUFACTURING REQUIREMENTS, AND STORAGE AND HANDLING. THIS SHALL INCLUDE ALL APPLICABLE TABLES AND FIGURES.
- C. FRAMING:** POLES SHALL BE FRAMED AND MARKED OR BRANDED AS PROVIDED BY DIVISION OF ELECTRICITY DRAWING NUMBER 03S0037, OR AS PER THE U.S. DEPARTMENT OF AGRICULTURE, RURAL ELECTRIFICATION ADMINISTRATION (REA), POLE FRAMING GUIDE M20. THE POLE BUTT SHALL ALSO INCLUDE THE INSPECTOR'S STAMP.
- D. PRESERVATIVE TREATMENT:** POLES SHALL BE CURED AND HAVE ALL MANUFACTURING PROCESSES COMPLETED PRIOR TO TREATMENT. POLES SHALL BE CURED AND TREATED FULL LENGTH IN ACCORDANCE WITH THE LATEST REVISION OF THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) GUIDELINES AS PUBLISHED IN THE LATEST REVISION OF THEIR BOOK OF STANDARDS. TREATMENT SHALL BE ACCOMPLISHED USING A SOLUTION OF COPPER NAPHTHENATE; WITH METHODS, PREPARATION, AND SOLVENTS AS DIRECTED IN THE AWPA BOOK OF STANDARDS. RETENTION SHALL BE AS FOLLOWS:

SPECIES	ASSAY ZONE (INS.)	MINIMUM RETENTION (PCF AS COPPER)
SOUTHERN PINE	0.50-2.00	0.060
DOUGLAS FIR	0.25-1.00	0.075
WESTERN RED CEDAR	0.10-0.60	0.120

- E. TREATED POLES SHALL BE TESTED FOR PENETRATION AND RETENTION USING AWPA STANDARDS. TREATMENT REPORTS SHALL BE APPROVED BY THE INSPECTOR AND SHALL BE FURNISHED WITH THE POLE SHIPMENT.**

- F. INSPECTION AND REJECTION:** ALL POLES SHALL BE INSPECTED (100% INSPECTION) PRIOR TO AND AFTER TREATMENT AND SHIPMENT BY AN INDEPENDENT AGENCY, SELECTED USING REA GUIDELINES. A CERTIFICATE OF INSPECTION SHALL BE FURNISHED WITH EACH SHIPMENT OF POLES, AND THE INSPECTOR SHALL HAMMER STAMP THE BUTT AND TOP OF EACH POLE TO INDICATE ITS CONFORMANCE TO THE SPECIFICATIONS AND THEREFORE ITS APPROVAL. ANY POLE WHICH HAS BEEN DELIVERED AND IS FOUND NOT TO MEET THE SPECIFICATIONS WILL BE REJECTED.

- G. POLES SHALL BE SET AT A MINIMUM OF THE FOLLOWING UNLESS OTHERWISE INDICATED:**

POLE LENGTH	DEPTH
25', 30'	5'6"
35'	6'
40', 45'	6'6"
50', 60'	7'

- H. IN ROCK, DEPTH MAY BE DECREASED BY 2'. IN SWAMP OR LOW LYING AREAS NET TO RIVER, POND, STREAM, ETC., DEPTH SHALL BE INCREASED SUCH THAT THE POLE IS SET SOLID. IN SWAMP, BOG SHOES MAY BE USED. HOLES SHALL BE DUG LARGE ENOUGH TO PERMIT THE PROPER USE OF TAMPERS TO THE FULL DEPTH OF THE HOLE. BACKFILL MATERIAL SHALL BE GRANULAR, SIZE 46D. THOROUGHLY TAMP FULL DEPTH IN 8 INCH LAYERS. THE DEPTH SPECIFIED UNDER "SETTING IN ALL SOLID ROCK" PROVIDED, HOWEVER, THAT SUCH DEPTH SHALL NOT EXCEED THE DEPTH SPECIFIED UNDER THE "SETTING IN SOIL."**
- I. ON SLOPING GROUND, THE DEPTH OF THE HOLE ALWAYS SHALL BE MEASURED FROM THE LOW SIDE OF THE HOLE.**
- J. POLES SHALL BE SET SO THAT ALTERNATE CROSSARM GAINS FACE IN OPPOSITE DIRECTIONS, EXCEPT AT TERMINALS AND DEADENDS WHERE THE GAINS OF THE LAST TWO POLES SHALL BE ON THE SIDE FACING THE TERMINAL OR DEADEND. ON UNUSUALLY LONG SPANS, THE POLES SHALL BE SET SO THAT THE CROSSARM COMES ON THE SIDE OF THE POLE AWAY FROM THE LONG SPAN. WHERE POLE TOP PINS ARE USED, THEY SHALL BE ON THE OPPOSITE SIDE OF THE POLE FROM THE GAIN, WITH THE FLAT SIDE AGAINST THE POLE.**
- K. POLES SHALL BE SET IN ALIGNMENT AND PLUMB EXCEPT AT CORNERS, TERMINALS, ANGLES, JUNCTIONS, OR THE POINTS OF STRAIN, WHERE THEY SHALL BE SET AND RAKED AGAINST THE STRAIN SO THAT THE CONDUCTORS SHALL BE IN LINE.**
- L. POLES SHALL BE RAKED AGAINST THE CONDUCTOR STRAIN NOT LESS THAN ONE INCH FOR EACH TEN FEET OF POLE LENGTH NOR MORE THAN TWO INCHES FOR EACH TEN FEET OF POLE LENGTH AFTER CONDUCTORS ARE INSTALLED AT THE REQUIRED TENSION.**
- M. POLE BACKFILL MUST BE THOROUGHLY TAMPED THE FULL DEPTH. EXCESS DIRT MUST BE BANKED AROUND THE POLE. AFTER COMPLETION OF THE JOB, HOLES SHALL BE INSPECTED AND ANY SETTLEMENT REFILLED.**
- N. POLE MODIFICATIONS:**
1. WHERE NEW HOLES ARE REQUIRED, THE HOLES SHALL BE TREATED WITH PRESERVATIVE COMPOUND.
  2. THE TOPS OF POLES SHALL NOT BE CUT EXCEPT UNDER VERY EXCEPTIONAL CONDITIONS AND UPON APPROVAL OF THE ENGINEER. IF CUTTING IS DEEMED NECESSARY, THE POLE TOP SHALL BE COVERED WITH A MASTIC TYPE CAP. UNDER NO CIRCUMSTANCES SHALL THE BUTT OF ANY POLE BE CUT.
  3. ALL UNUSED HOLES IN POLES SHALL BE PLUGGED PRIOR TO ERECTION, USING TREATED WOOD DOWEL PINS. FOR HOLES IN USED POLES WHERE THE HOLE HAS BEEN ENLARGED, THE HOLE WILL BE TREATED WITH PRESERVATIVE COMPOUND.

**CROSSARMS**

- A. PRESERVATIVE TREATMENT:** ALL CROSSARMS SHALL BE MANUFACTURED FROM DOUGLAS FIR TIMBER IN ACCORDANCE WITH REA SPECIFICATIONS DTSB LATEST REVISION. CROSSARMS SHALL BE CURED AND HAVE ALL MANUFACTURING PROCESSES COMPLETED PRIOR TO TREATMENT. CROSSARMS SHALL BE CURED AND TREATED IN ACCORDANCE WITH THE LATEST REVISION OF THE AMERICAN WOOD PRESERVERS ASSOCIATION (AWPA) GUIDELINES AS PUBLISHED IN THE LATEST REVISION OF THEIR BOOK OF STANDARDS. TREATMENT SHALL BE ACCOMPLISHED USING A SOLUTION OF COPPER NAPHTHENATE; WITH METHODS, PREPARATION, AND SOLVENTS AS DIRECTED IN THE AWPA BOOK OF STANDARDS.

RETENTION SHALL BE AS FOLLOWS:

SPECIES	ASSAY ZONE (INS.)	MINIMUM RETENTION (PCF AS COPPER)
DOUGLAS FIR	0.25-1.00	0.075

- B. TREATED CROSSARMS SHALL BE TESTED FOR PENETRATION AND RETENTION USING AWPA STANDARDS. TREATMENT REPORTS SHALL BE APPROVED BY THE INSPECTOR AND SHALL BE FURNISHED WITH THE CROSSARM SHIPMENT.**
- C. CROSSARMS SHALL BE INCISED TO A DEPTH OF 1/8 INCH ON ALL FOUR SIDES BEFORE TREATMENT. HOLES SHALL BE DRILLED BEFORE TREATMENT.**
- D. DRILLING:** DIMENSIONS AND DRILLING SHALL BE STRICTLY IN ACCORDANCE WITH DIVISION OF ELECTRICITY DRAWING 03S0040.
- E. RELATED SPECIFICATIONS:** THE FOLLOWING LISTED SPECIFICATIONS OR LATEST REVISION THEREOF, MAY BE CONSIDERED AS PERTINENT TO THIS SPECIFICATION.
1. ANSA 05.1: SPECIFICATION AND DIMENSIONS FOR WOOD POLES, LATEST REVISION.
  2. AWPA C-1-89: STANDARD FOR PRESERVATIVE TREATMENT BY PRESSURE PROCESS ALL TIMBER PRODUCTS, LATEST REVISION.
  3. AWPA P-8-89: STANDARDS FOR OIL-BORNE PRESERVATIVES.
  4. AWPA P-9-87: STANDARDS FOR PRESERVATIVES.

**INSULATORS AND PINS**

- A. SUBMIT CATALOG CUTS FOR APPROVAL ON INSULATORS**
- B. ALL INSULATORS EXCEPT FOR GUY INSULATORS TO BE RATED AT 15 KV OR 69 KV AS INDICATED. MECHANICAL STRENGTH OF SUSPENSION AND STRAIN INSULATORS SHALL EXCEED THE ULTIMATE STRENGTH OF THE CONDUCTOR OR GUY ATTACHED THERETO.**
- C. PINS SHALL BE ZINC COATED FORGED STEEL WITH LEAD THREAD HEIGHT TO SUIT THE INSULATOR PROVIDED AND EQUIPPED WITH WASHERS, NUT AND LOCKNUTS.**
- D. HORIZONTAL LINE POST INSULATOR WITH FLAT BASE (69 KV SYSTEM)**  
MATERIAL: PORCELAIN  
COLOR: SKY GRAY  
CONSTRUCTION: SINGLE SECTION  
MANUFACTURE: SIMILAR TO LAPP NO. 4766-70 WITH 301614 STUD EXCEPT ALSO WITH LOAD LIMITING HARDWARE, OR EQUAL.
- E. BALL & SOCKET TYPE SUSPENSION INSULATOR (69 KV SYSTEM)**  
MATERIAL: PORCELAIN  
COLOR: SKYTONE  
CONSTRUCTION: BALL & SOCKET, 10"  
MANUFACTURE: LAPP NO. 9200-70 OR EQUAL
- F. CLEVIS TYPE SUSPENSION INSULATOR (15 KV SYSTEM)**  
MATERIAL: PORCELAIN  
COLOR: SKY GRAY GLAZE  
CONSTRUCTION: ALUMINUM CLEVIS  
MANUFACTURE: CHANCE NO. C907-1209 OR EQUAL
- G. PIN TYPE INSULATOR (15 KV SYSTEM)**  
MATERIAL: PORCELAIN  
COLOR: SKYTONE  
MANUFACTURE: SIMILAR TO OHIO BRASS NO. 38149 EXCEPT SKYTONE GLAZE
- H. GUY STRAIN INSULATOR**  
MATERIAL: PORCELAIN  
COLOR: SKYTONE  
MANUFACTURE: OHIO BRASS NO. 31506
- I. BASIS OF PAYMENT**

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	69 KV POST INSULATOR
SPEC	EACH	69 KV SUSPENSION INSULATOR
SPEC	EACH	15 KV SUSPENSION INSULATOR
SPEC	EACH	15 KV PIN INSULATOR



# MELP SPECIFICATIONS

## POST INSULATOR CLAMP

- A. DESCRIPTION: FOR MOUNTING ON THE METAL CAP CEMENTED TO LINE POST PORCELAIN; HOLDS CONDUCTOR WITHOUT DAMAGE ON TANGENT, ON LINE ANGLE UP TO 15 DEGREES, AND ON VERTICAL ANGLE OF 20 DEGREES ON EACH SIDE OF CLAMP. DESIGNED TO BE MOUNTED ON A TRUNNION BEARING AND REMOVABLE TRUNNION CAP SCREW. COMPLETE WITH CAP SCREWS AND CONDUCTOR "KEEPER".
- B. MATERIAL:  
 1. FOR ASCR: HEAT TREATED ALUMINUM ALLOY.  
 2. FOR COPPER: MALLEABLE IRON, GALVANIZED.
- C. MANUFACTURER EQUIVALENT:
- |                       |                     |           |
|-----------------------|---------------------|-----------|
| CONDUCTOR:            | CONDUCTOR DIAMETER: | LAPP NO.: |
| 1. NO. 4/0 AWG COPPER | .563 IN             | 47102     |
| 2. 556.5 MCM ASCR     | .914 IN             | 47113     |

## I. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	POST INSULATOR CLAMP (4/0)
SPEC	EACH	POST INSULATOR CLAMP (556.5)

## GUYS & ANCHORS

- A. GUY STRAND SHALL BE STEEL STR. OF #8 ALUMOWELD WITH ULTIMATE STRENGTH NOT LESS THAN 16,000 LBS. GUY ANCHORS AND ATTACHMENTS SHALL PROVIDE A STRENGTH EXCEEDING THE REQUIRED GUY STRENGTH. GUYS SHALL BE INSULATED. THE GUY WIRE SHALL BE ALUMOWELD, TYPE M, #ER3008 OR APPROVED EQUAL. USE MULTIPLE (2 OR MORE) GUY WIRES WHERE REQUIRED TO PROVIDE A COMBINED STRENGTH WHICH EXCEEDS THE REQUIRED GUY STRENGTH.
- B. A HALF-ROUND GUY PROTECTOR NOT LESS THAN 8 FT. LONG SHALL BE PROVIDED AT THE ANCHOR OF EACH GUY.
- C. GUYS SHALL BE PLACED BEFORE THE CONDUCTORS ARE STRUNG AND SHALL BE ATTACHED TO THE POLE AS SHOWN IN THE CONSTRUCTION DRAWINGS.
- D. ALL ANCHORS AND RODS SHALL BE IN LINE WITH THE STRAIN AND SHALL BE SO INSTALLED THAT APPROXIMATELY SIX INCHES OF THE ROD REMAIN OUT OF THE GROUND. AS DEEMED NECESSARY, THE PROJECTION OF THE ANCHOR ROD ABOVE EARTH MAY BE INCREASED TO A MAXIMUM OF 12 INCHES TO PREVENT BURIAL OF THE ROD EYE. THE BACKFILL OF ALL ANCHOR HOLES MUST BE THOROUGHLY TAMPED THE FULL DEPTH.
- E. ANCHOR DESIGN BASED ON A.B. CHANCE WITH AN OVERLOAD FACTOR OF 2.0 FOR ALL ANCHOR COMPONENTS TO ESTABLISH ULTIMATE STRENGTH. ANCHOR SOIL HOLDING CAPACITY AND SOIL CLASS 7 (A.B. CHANCE) HOLDING CAPACITY SHALL BE EQUAL TO OR GREATER THAN THE ULTIMATE STRENGTH OF THE ANCHOR.

- F. WHEN A CONE ANCHOR IS USED, THE HOLE, AFTER THE ANCHOR HAS BEEN SET IN PLACE, SHALL BE BACKFILLED WITH COARSE ROCK FOR TWO FEET ABOVE THE ANCHOR. TAMP DURING THE ROCK BACKFILLING. THE REMAINDER OF THE HOLE TO BE FILLED AND TAMPED WITH DIRT.
- G. INSTALL GUYS AS INDICATED ON DRAWING AND WHEREVER CONDUCTOR TENSIONS ARE NOT BALANCED. A COMPLETE GUY SYSTEM INCLUDING ANCHOR INSULATOR AND CONNECTOR SHALL BE INSTALLED AT EACH GUY LOCATION.

## H. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	DOWN GUYS

## 15 KV, THREE CONDUCTOR, TRIPLEX POWER CABLE

- A. COPPER CONDUCTOR, 15 KV, UNGROUNDED, TRIPLEX CONDUCTOR POWER CABLE.
- B. THE CABLE SHALL MEET THE REQUIREMENTS OF ICEA, S-66-524/NEMA WC7-1982, OR THE LATEST REVISION FOR TREE RETARDANT CROSS-LINKED THERMOSETTING POLYETHYLENE INSULATED WIRE AND CABLE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY, AND AEIC CS5-87, OR THE LATEST REVISION FOR SPECIFICATIONS FOR THERMOPLASTIC AND CROSS-LINKED POLYETHYLENE INSULATED SHIELDED POWER CABLES RATED 5 THROUGH 35 KV, EXCEPT WHERE IT CONFLICTS WITH THE REQUIREMENTS OF THIS SPECIFICATION IN WHICH CASE THIS SPECIFICATION SHALL APPLY. THE CABLE SHALL CONSIST OF THREE SINGLE CONDUCTOR CABLES TWISTED TOGETHER WITHOUT FILLER OR BINDER, SO AS TO FORM THE EQUIVALENT OF A THREE CONDUCTOR CABLE. THE CABLE SHALL BE INSTALLED ON A SYSTEM ON WHICH THE CABLE WILL BE USED AT 60 HZ, 14,400 VOLTS, AC LINE-TO-LINE, AND BE INSTALLED IN UNDERGROUND DUCTS.
- C. THE CABLE SHALL CONSIST OF A 350 MCM, 37 STRAND OR #2/0 AWG, 19 STRAND, CLASS B COPPER CONDUCTOR, OVER WITH A SEMI-CONDUCTING TAPE SHIELD, POLYETHYLENE INSULATION, A SECOND SEMI-CONDUCTING SHIELD, A COPPER TAPE SHIELD, AND A PVC JACKET.
- D. THE CONDUCTORS SHALL BE CLASS B CONCENTRIC-LAY COMPRESSED STRAND UNCOATED AND IN ACCORDANCE WITH ASTM B 8. THE CONDUCTORS SHALL BE STRAND FILLED WITH A TREE RETARDANT WATER STOP.
- E. AN EXTRUDED SEMI-CONDUCTING CONDUCTOR SHIELD MEETING THE REQUIREMENTS OF ICEA SECTION C AND ICEA S-66-524, PARAGRAPH 2.7 SHALL BE PROVIDED. THEN THICKNESS OF THE STRAND SHIELD SHALL BE IN ACCORDANCE WITH AEIC CS5, TABLE C1. THE SHIELD SHALL BE BONDED TO THE INSULATION AND STRIP FREELY FROM THE CONDUCTOR.
- F. THE INSULATION SHALL BE VIRGIN TREE RETARDANT CROSS-LINKED POLYETHYLENE AND SHALL MEET THE REQUIREMENTS OF ICEA S-66-524. INSULATION THICKNESS SHALL BE AS SPECIFIED IN TABLE B.1 COLUMN B, FOR 133% INSULATION LEVEL (INSULATION THICKNESS SHALL BE 0.220 INCHES). THE INSULATION SHALL BE SUITABLE FOR USE IN WET OR DRY LOCATIONS AT CONDUCTOR TEMPERATURES NOT TO EXCEED 90 DEGREES C FOR CONTINUOUS OPERATION, 130 DEGREES C FOR EMERGENCY OVERLOAD CONDITIONS AND 250 DEGREES C FOR SHORT-CIRCUIT CONDITIONS IN ACCORDANCE WITH AEIC CS5, SECTION A, AND ICEA S-66-524, PART 3. THE INSULATION COMPOUND SHALL BE EXTRA CLEAN AND STORED IN A CONTAMINATION FREE BULK HANDLING SYSTEM PRIOR TO CONVEYANCE AND USE IN THE EXTRUDER. THE INSULATION OF THE CABLE SHALL BE DEFORMATION TESTED IN ACCORDANCE WITH ASTM-D-2220.
- G. A SEMI-CONDUCTING LAYER OF DEFORMATION RESISTANT SEMI-CONDUCTING THERMOPLASTIC MEETING THE REQUIREMENTS OF PARAGRAPH 4.1.1 OF ICEA S-66-524, NEMA WC7 SHALL BE EXTRUDED OVER THE INSULATION TO SERVE AS AN ELECTROSTATIC SHIELD. THE SHIELD COMPOUND SHOULD BE COMPATIBLE WITH THE INSULATION AND LEGIBLY IDENTIFIED AS CONDUCTING. THE THICKNESS OF THE SHIELDING SHALL BE IN ACCORDANCE WITH TABLE C2 IN AEIC CS5 (TABLE 7-2 IN ICEA 2-66-524, NEMA WC7). THE SEMICONDUCTING SHIELDING SHALL BE FREE OF STRIPPING FROM THE INSULATION WITH A STRIP TENSION OF 6 TO 12 POUNDS PER SQ. INCH STRIP WHEN TESTED IN ACCORDANCE WITH PARAGRAPH D.1 IN AEIC CS5.
- H. A NEUTRAL OF COPPER TAPE SHALL BE WOUND OVER THE SEMI-CONDUCTING SHIELD LAYER. THE COPPER TAPE SHALL BE .004" THICK HELICALLY APPLIED BARE COPPER TAPE, 25% OVERLAPPED OVER THE INSULATION SHIELD IN ACCORDANCE WITH 4.1.1.2 OF ICEA 2-66-524.

- I. THE OUTER JACKET SHALL BE AN EXTRUDED JACKET OF BLACK PVC EXTRUDED SO AS TO COVER THE TAPE SHIELD. THE JACKET SHALL MEET THE REQUIREMENTS OF 4.3.1 OF ICEA S-66-524. THICKNESS OF THE JACKET SHALL BE .080 INCHES.

- J. THE OUTSIDE SURFACE OF EACH CABLE SHALL BE DURABLY MARKED THROUGHOUT ITS LENGTH IN ACCORDANCE WITH AEIC CS5-87, PARAGRAPH H. THE MARKINGS SHALL BE PROMINENT ON THE ENTIRE LENGTH OF CABLE, AND NOT TO IMPAIR THE CHARACTERISTICS OF THE CABLE. THE CABLE IS TO BE MARKED EITHER PHASE A OR PHASE B OR PHASE C. THE "A" PHASE OF THE TRIPLEX CABLE SHALL ALSO BE SEQUENTIALLY MARKED IN 1 FOOT NUMERICAL INCREMENTS FOR INVENTORY PURPOSES. AN EQUAL AMOUNT OF CABLE FOR EACH PHASE SHALL BE SUPPLIED.

- K. THE MAXIMUM OUTSIDE DIAMETER OF EACH INDIVIDUAL CONDUCTOR SHALL BE APPROXIMATELY 1.61 INCHES FOR THE 350 MCM CABLE, OR 1.33 INCHES FOR THE 2/0 AWG CABLE.

- L. THE CABLE AMPACITY SHALL BE 395 AMPS FOR THE 350 MCM CABLE, OR 225 AMPS FOR THE 2/0 AWG CABLE, USING ICEA METHODS, 3 CABLES PER CONDUIT, 40 DEGREES C AMBIENT AND 90 DEGREES C CONDUCTOR TEMPERATURE.

- M. THE CABLE SHALL BE AN APPROVED EQUAL TO GENERAL ELECTRIC CABLE SI-58796 OR HENDRIX TYPE HQ-200.

- N. EACH LENGTH OF CABLE SHALL BE TESTED IN ACCORDANCE WITH AEIC C5.5 LATEST EDITION.

- O. CERTIFIED COPIES OF TEST DATA SHALL BE PROVIDED AS REQUIRED BY PARAGRAPHS J2.1, J2.2, J2.3 OF AEIC NO. 5 SPECIFICATIONS.

- P. THE BIDDER SHALL FURNISH, WITH HIS PROPOSAL, RESULTS OF THE LATEST QUALIFICATIONS TESTS AS DESCRIBED IN SECTION B OF THE AEIC C5.5 LATEST EDITION SPECIFICATIONS.

- Q. WATER TIGHT SEALS SHALL BE APPLIED TO ALL CABLE ENDS TO PREVENT THE ENTRANCE OF MOISTURE DURING TRANSMIT OUT-OF-DOOR STORAGE OR INSTALLATION.

## R. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	LIN. FT.	350 MCM, 15 KV TRIPLEX POWER CABLE
SPEC	LIN. FT.	2/0 AWG, 15 KV TRIPLEX POWER CABLE

## 600 VOLT XHHW POWER CABLE

- A. COPPER CONDUCTOR, 600 VOLT POWER CABLE.
- B. THE CABLE SHALL BE SUITABLE FOR OPERATION AT 600 VOLT AND SHALL CONSIST OF A #2 AWG, 7 STRAND OR A 250 MCM, 37 STRAND COPPER CONDUCTOR. THE CABLE SHALL BE SUITABLE FOR INSTALLATION IN DRY LOCATIONS AT A CONDUCTOR TEMPERATURE NOT EXCEEDING 90 DEGREES C, OR WET LOCATIONS AT A CONDUCTOR TEMPERATURE NOT EXCEEDING 75 DEGREES C. THE CABLE SHALL BE ADAPTABLE FOR DUCT OR DIRECT BURIAL INSTALLATION.
- C. THE INSULATION SHALL BE AN EXTRUDED WALL OF LIGHT AND HEAT STABILIZED CHEMICALLY CROSS-LINKED, POLYETHYLENE WITH A THICKNESS OF .045 INCHES FOR THE #2 AWG POWER CABLE AND .065 INCHES FOR THE 250 MCM POWER CABLE.
- D. THE APPROXIMATE OUTSIDE DIAMETER OF THE CABLE SHALL BE 0.40 INCHES FOR THE #2 AWG CABLE AND 0.73 INCHES FOR THE 250 MCM CABLE.
- E. THE AMPACITY SHALL NOT BE LESS THAN 130 AMPS FOR #2 AWG CABLE AND 317 AMPS FOR THE 250 MCM CABLE, BASED UPON LATEST ICEA METHODS OF AMPACITY RATING FOR CONDUCTORS IN CONDUIT.
- F. THE CABLE SHALL MEET ICEA S-66-524, NEMA PUBLICATION NO. WC-7 STANDARD FOR CROSS-LINKED - THERMOSETTING - POLYETHYLENE - INSULATED WIRE AND CABLE.
- G. THE CABLE SHALL BE RATED FOR 90 DEGREES C NORMAL OPERATING TEMPERATURE, 130 DEGREES C EMERGENCY OVERLOAD AND 250 DEGREES C SHORT CIRCUIT CONDUCTOR TEMPERATURE.

- H. THE OUTSIDE SURFACE OF EACH CABLE SHALL BE DURABLY MARKED THROUGHOUT ITS LENGTH IN ACCORDANCE WITH AEIC CS5-87, PARAGRAPH H. THE MARKING SHALL BE PROMINENT ON THE ENTIRE LENGTH OF CABLE, AND NOT TO IMPAIR THE CHARACTERISTICS OF THE CABLE. THE CABLE IS TO BE SEQUENTIALLY MARKED IN 1 FOOT NUMERICAL INCREMENTS FOR INVENTORY PURPOSES.

- I. THE CABLE SHALL BE GENERAL ELECTRIC SI-58053, OR APPROVED EQUAL.

## J. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	LIN. FT.	250 MCM, 600 VOLT POWER CABLE
SPEC	LIN. FT.	AWG #2, 600 VOLT POWER CABLE

## CABLE INSTALLATION

- A. EXTREME CARE SHALL BE GIVEN WHILE HANDLING AND INSTALLING THE CABLE. LOADING AND UNLOADING OF CABLE SHALL BE ACCOMPLISHED SO THAT EQUIPMENT USED DOES NOT CONTACT CABLE SURFACE OR THE PROTECTIVE WRAP. UNDER NO CIRCUMSTANCES WILL CABLE REELS THAT HAVE BEEN DROPPED FROM THE DELIVERING VEHICLE TO THE GROUND SHALL BE USED. CABLE WITH MINOR PHYSICAL DAMAGE TO THE JACKET OR INSTALLATION WILL NOT BE PERMITTED TO BE INSTALLED.
- B. BEFORE THE START OF CABLE INSULATION, THE DUCT TO BE OCCUPIED SHALL BE SELECTED THROUGHOUT THE ENTIRE LENGTH OF THE RUN. AS FAR AS POSSIBLE, THE SAME RELATIVE POSITION IN THE DUCT BANK SHALL BE MAINTAINED.
- C. PORTIONS OF THIS JOB WILL INCLUDE INSTALLING NEW CABLE INTO AN EXISTING CONDUIT. THE EXISTING CONDUIT SYSTEM IS 4 INCH FIBER DUCT, 4 INCH METAL BRIDGE CONDUIT AND/OR 5 INCH PVC CONDUIT. CLEANING PROCEDURES FOR THE EXISTING CONDUIT TO BE THE SAME AS FOR THE NEW DUCT. WITH THE EXCEPTION THAT A SMALLER MANDREL AND WIRE BRUSH IS TO BE USED.
- D. BEFORE ANY CABLES ARE PULLED INTO THE DUCTS, CABLE RACKS MUST BE INSTALLED. THE TOTAL AMOUNT OF RACKS AND HOOKS REQUIRED PER MANHOLE SHALL BE DETERMINED BY THE USE OF THE "CABLE RACK" AND "CABLE PLACEMENT" DETAIL DRAWINGS INCLUDED IN THIS PLAN. SUPPORTS SHALL BE PROVIDED TO MAINTAIN SUFFICIENT CLEARANCE BETWEEN CABLES.
- E. THE PROPER CALCULATED PULLING TENSION AND THE PROPER SIZE AND TYPE OF RIGGING SHALL BE USED TO PULL IN CABLE. WHILE PULLING CABLE, SNATCH BLOCKS AND PULLING SLEEVES SHALL BE ADJUSTED PER PULL TO HOLD THE CABLE IN LINE WITH THE DUCT. THE PULLING ROPE SELECTED SHALL BE SIZED FOR THE TYPE OF CABLE BEING PULLED. THE ROPE SHALL NOT SAW INTO THE CONDUIT OR CAUSE HIGH TENSION OR JERKING OF THE CABLE.
- F. TO PREVENT INJURY TO THE CABLE BY SCRAPING ON THE MANHOLE FRAME OR AT THE DUCT OPENING OR IN PASSING OVER OTHER CABLES A FEEDING TUBE IS TO BE USED. THE FEEDING TUBE SHALL HAVE THE PROPER FITTING TO CONNECT AT THE DUCT AND BE THE PROPER LENGTH TO FIT FROM THE MANHOLE OPENING TO THE DUCT. USE DUCT END-BELLS, CONDUIT BUSHINGS AND RACK SADDLES TO PREVENT ABRASION.
- G. THE PULLING ROPE SHALL BE ATTACHED TO THE CABLE BY THE MEANS OF A WOVEN CABLE GRIP AND SWIVEL. THE BACK OF THE GRIP SHALL BE SECURELY FASTENED TO THE CABLE BY BANDING WITH STEEL STRAPPING. THE PULLING END OF THE CABLE SHALL BE CUT OFF WELL BEHIND THE AREA COVERED BY GRIP TO PREVENT DAMAGE CAUSED BY THE PULLING. THIS SHALL BE TAKEN INTO CONSIDERATION WHILE PULLING IN SLACK.
- H. THE REEL OF THE CABLE MUST BE PROPERLY PLACED AT THE PULLING END TO CAUSE MINIMUM FLEXING OF THE CABLE. IT SHOULD ALWAYS BE LOCATED ON THE SIDE OF THE MANHOLE TOWARD WHICH THE CABLE IS TO BE PULLED.
- I. TO PROTECT THE CABLE FROM EXCESSIVE TENSION DURING PULLING-IN, THE CABLE IS TO BE LUBRICATED. A COATING ABOUT 1/16 INCH THICK, 6 TO 8 LBS. PER 100 FOOT, OF THE PULLING COMPOUND "WIRE LUBE", YELLOW 77". OR EQUAL IS TO BE USED.
- J. CABLES SHALL BE PULLED SLOWLY AND STEADILY, DO NOT STOP ONCE THE PULL IS STARTED UNLESS ABSOLUTELY NECESSARY.
- K. WHEN THE CABLE END HAS BEEN DRAWN UP TO THE MANHOLE RIGGING, THE FIRST PULLING OPERATION MUST STOP. TO OBTAIN THE ADDITIONAL SLACK IN THE CABLE, A BASKET CABLE GRIP IS TO BE USED. CARE MUST BE USED TO AVOID INJURING THE CABLE. PULLING SUFFICIENT CABLE FOR THE TESTING PROCEDURES AND FOR THE SPLICING CREW TO TRAIN THE CABLE TO ITS FINAL RESTING AREA AS SHOWN ON THE "PRIMARY CABLE PLACEMENT" DRAWING.



# MELP SPECIFICATIONS

L. DUE TO THE NUMBER OF CIRCUITS THAT HAVE TO PULLED INTO EACH MANHOLE, THE CONTRACTOR IS TO LAY THE CABLE ON SOME OF ITS CABLE SUPPORTS. NO ATTEMPT SHOULD BE MADE TO TRAIN THE CABLE INTO ITS FINAL POSITION. THIS WILL BE DONE DURING THE SPLICING OPERATION. THE END OF THE CABLE IS TO BE SEALED.

### CABLE TERMINATORS AND SPLICES

- A. A FACTORY MOLDED STRESS CONE IS TO BE INSTALLED AFTER THE CABLE HAS BEEN PROPERLY DRESSED. THE MOLDED-RUBBER TERMINATOR SHALL CONSIST OF A ONE PIECE MOLDER-RUBBER STRESS CONE, A STAINLESS STEEL GROUNDING STRAP, A MOLDED SILICONE ONE PIECE SKIRTED RUBBER INSULATOR, A STEM-CABLE CONNECTOR OR AN AERIAL LUG, A CABLE SUPPORT, SILICONE LUBRICANT AND COMPLETE INSTRUCTIONS.
- B. SPLICES SHALL CONFORM TO THE TYPE OF CABLE INSULATION AND CABLE JACKET BEING SUPPLIED PER THE CABLE MANUFACTURERS RECOMMENDATION.
- C. AFTER THE CABLES HAVE BEEN SPLICED, THE ENTIRE CABLE INSIDE THE MANHOLE SHALL BE FIREPROOFED.
- D. COMPONENTS SHALL BE G&W, ELASTIMOLD, 3M, OR APPROVED EQUAL.
- E. ALL CABLE TERMINATORS AND SPLICES SHALL BE INSTALLED UNDER THE SUPERVISION OF THE MANUFACTURER'S REPRESENTATIVE.
- F. AFTER FINAL CONNECTIONS ARE MADE, THE CONTRACTOR IS TO TEST THE ENTIRE SYSTEM PER THE CABLE AND CABLE TERMINATOR/SPLICE MANUFACTURER RECOMMENDED SPECIFICATIONS.
- G. THE DIVISION OF ELECTRICITY WILL MAKE FINAL CONNECTION OF ALL NEW CABLE TO THE EXISTING CABLE.

H. ALL COMPONENTS AND TEST PROCEDURES SHALL BE SUBMITTED FOR APPROVAL.

### I. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	CABLE TERMINATOR
SPEC	EACH	CABLE SPLICE

### CABLE TRAINING

A. THE LOCATION OF CABLES IN THE MANHOLES IS TO BE DETERMINED BY THE DUCTS IN WHICH THEY OCCUPY. THE CABLES SHOULD BE FANNED OUT AS THEY LEAVE THEIR RESPECTIVE DUCTS SO THAT THEY DO NOT CROSS OTHER CABLES OR DUCTS. SUFFICIENT LENGTH MUST BE LEFT IN THE MANHOLES TO PERMIT "TRAINING" ON RACKS AROUND THE MANHOLE WALLS. THE RADIUS OF BENDS IN ALL CABLE SHOULD BE GREATER THAN THE MINIMUM SAFE BENDING RADIUS FOR THE CABLE, AND TO ALLOW FOR CABLE MOVEMENT.

### TESTS

- A. CONDUCT TESTS AND INSPECTIONS NECESSARY TO ENSURE THAT ALL WIRING AND EQUIPMENT IS IN SATISFACTORY CONDITION TO BE ENERGIZED. TESTS SHALL BE CONDUCTED IN THE PRESENCE OF MELP PERSONNEL.
- B. TESTS TO MEET IEEE AND NEC STANDARDS. TEST EQUIPMENT AND TESTING PROCEDURES TO BE FURNISHED BY THE CONTRACTOR. DETAILED TEST PROCEDURES SHALL BE SUBMITTED (TO MELP) 3 WEEKS PRIOR TO TESTING.
- C. HIGH VOLTAGE D-C SUPPORT TESTS SHALL BE PERFORMED ON ALL PRIMARY CABLES. TESTING TO BE DONE BEFORE BEING ENERGIZED.
- D. ALL WORK FOUND DEFECTIVE AS A RESULT OF TESTING SHALL BE REPLACED, THEN TESTED AGAIN UNTIL TESTS INDICATE ALL ITEMS FUNCTION PROPERLY.
- E. FURNISH THREE COPIES OF CERTIFIED GRAPHS SHOWING LEAKAGE CURRENT ON D-C TEST (CURRENT VERSUS TIME). THE GRAPH SHALL SHOW THE LEAKAGE CURRENT VALUE AT FIVE EQUAL STEPS TO THE SPECIFIED TEST VOLTAGE, FROM 20% TO 100%. THE SPECIFIED TEST VOLTAGE SHALL BE MAINTAINED CONSTANT AND THE LEAKAGE CURRENTS RECORDED AT ONE MINUTE INTERVALS FOR TEN MINUTES. IF THE CURRENT HAS NOT DROPPED, OR AFTER DROPPING IT STARTS TO RISE AGAIN, THE TESTS SHALL BE CONTINUED AS LONG AS THE CURRENT CONTINUES TO RISE, OR UNTIL FAILURE OCCURS.
- F. CABLE ENDS SHALL BE SEALED PRIOR TO AND FOLLOWING PROOF TESTING.

### MODIFICATION OF EXISTING MANHOLES

- A. EXISTING HIGH-VOLTAGE CABLES ARE ENERGIZED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT THESE CABLES WHILE THE MANHOLE ALTERATIONS ARE IN PROGRESS. A REPRESENTATIVE FROM THE DIVISION OF ELECTRICITY SHALL BE PRESENT WHILE ALTERATIONS ARE BEING MADE.
- B. EXISTING MANHOLES SHALL BE MODIFIED FOR ENTRANCE OF NEW UNDERGROUND DUCTS AS SHOWN ON DRAWINGS. BEFORE ANY HOLES ARE STARTED IN THE EXISTING WALLS, THE CONTRACTOR SHALL MAKE EXTERIOR EXCAVATIONS OF THE WALL PENETRATIONS TO VERIFY LOCATION OF ANY EXISTING UNDERGROUND DUCTS. INTERFERENCES WHICH REQUIRE ADJUSTMENT SHALL BE REFERRED TO THE ENGINEER.
- C. AFTER EXTERIOR EXCAVATION HAS BEEN COMPLETED AND INTERFERENCES RESOLVED, PENETRATIONS FOR NEW CONDUIT MAY PROCEED. PENETRATIONS SHALL BE MADE BY CORE DRILLINGS TO APPROXIMATELY THE OUTSIDE DIMENSIONS OF NEW HOLE -- ALLOW APPROXIMATELY 3" OVERSIZE IN BOTH HEIGHT AND WIDTH. WHEN OUTLINE OF HOLE HAS BEEN DRILLED, CENTER SECTION SHALL BE REMOVED BY SLEDGING. MINOR ENLARGING OR EVENING OF HOLE MAY BE DONE BY SMALL ELECTRIC OR AIR TOOLS.
- D. AFTER THE NEW CONDUIT IS IN PLACE THE MANHOLE WALL SHALL BE RESTORED TO ITS ORIGINAL WATER PROOF CONDITION AND MANHOLE CLEARED. ENDS OF CONDUIT SHALL BE ALIGNED FLUSH WITH THE INSIDE OF THE MANHOLE.

### 5" PVC CONDUIT RISERS

- A. CONDUIT - THE CONDUIT SHALL BE 5" SCHEDULE 40 PVC. ALL MISCELLANEOUS HARDWARE SHALL BE HOT DIPPED GALVANIZED. CONCRETE SHALL BE CLASS C.
- B. THE INSTALLATION SHALL BE AS DETAILED IN THE PLANS AT THE LOCATIONS INDICATED ON THE DRAWINGS AND SPECIFIED IN THE FIELD BY THE ENGINEER.
- C. BASIS OF PAYMENT  
THE ACCEPTED QUANTITIES OF THE CONDUIT, CONCRETE ENCASEMENT, HARDWARE AND ALL INCIDENTALS NECESSARY TO COMPLETE WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICES PER EACH COMPLETE AND IN PLACE.

ITEM	UNIT	DESCRIPTION
SPEC	EACH	CONDUIT, 5" SCHEDULE 40 POLE RISER

### CONCRETE ENCASED 2" AND 5" CONDUIT DUCT BANKS

- A. CONDUIT - THE NON-METALLIC CONDUIT SHALL BE SCHEDULE 40 PVC - POLYVINYL CHLORIDE. IT SHALL BE DESIGNED TO FORM A SOUND, STRONG DUCT, FREE FROM DEFECTS. IT SHALL BE NON-MAGNETIC, RESISTANT TO CORROSIVE ACTION, UNAFFECTED BY ELECTROLYSIS AND SHALL NOT SOFTEN, DEFORM OR DETERIORATE WHEN EXPOSED TO THE MAXIMUM SAFE OPERATING TEMPERATURES OF CABLES. THE INSIDE SURFACE OF THE CONDUIT SHALL BE SMOOTH, AND ROUND AND SHALL HAVE A 2" AND 5" NOMINAL INSIDE DIAMETER. THE CONDUIT SHALL BE CARLON HEAVY WALL "PV-DUIT PLUS" CONDUIT OR AN APPROVED EQUAL.
  - B. COUPLINGS - THE COUPLINGS SHALL BE OF THE SAME MATERIAL AS THE CONDUIT, AND SHALL BE SUFFICIENTLY TIGHT TO PREVENT SILT OR CONCRETE FROM ENTERING THE CONDUIT.
  - C. SPACERS - PLASTIC BASE AND INTERMEDIATE TYPE FOR 2" OR 5" CONDUIT.
- INSTALLATION - 2" AND 5" CONDUIT
- A. THE CONDUIT SHALL BE INSTALLED AS DETAILED IN THE PLAN.
  - B. IF THE CONDUIT IS INSTALLED IN AN AREA TO BE PAVED UNDER THIS OR ANOTHER CONTRACT, BACKFILL SHALL BE APPROPRIATE FOR THE PAVING INDICATED. NO OTHER SURFACE RESTORATION WILL BE REQUIRED.
  - C. THE DEPTH OF THE BURIAL SHALL BE A MINIMUM OF 30 INCHES FROM TOP OF THE TOP DUCT TO FINISHED (SURFACE) GRADE.

D. THE TRENCH SHALL BE DUG SO THAT ANY CURVE RADIUS WILL BE AS LARGE AS POSSIBLE. THE TRENCH SHALL BE DUG NO WIDER THAN NECESSARY TO ACCOMMODATE THE CONDUIT AND CONCRETE ENVELOPE AS INDICATED ON THE DETAILED DRAWINGS. THE BOTTOM OF THE TRENCH SHALL BE UNDISTURBED, TAMPED AND RELATIVELY SMOOTH EARTH. TRENCHES WHICH HAVE BEEN DUG TOO DEEP AT ANY POINT ARE TO BE PARTIALLY FILLED AND TAMPED SOLID. THE SIDES OF THE TRENCH WILL BE TRIMMED SMOOTH TO PROVIDE FOR A UNIFORM SHEATH OF CONCRETE AROUND THE CONDUITS. THE SIDES OF THE EXCAVATION ARE TO BE SHORED WHERE NECESSARY TO MAINTAIN A UNIFORM TRENCH. EXCESS MATERIAL SHALL BE REMOVED FROM THE JOB SITE.

E. WHERE A CONDUIT CROSSES A SEWER OR WATER LINE, OR ANY OTHER UNDERGROUND STRUCTURE, THE CLEARANCE BETWEEN THEM WILL NEED TO BE LARGE ENOUGH TO PERMIT MAINTENANCE OF THE SYSTEM WITHOUT DAMAGE TO THE STRUCTURES. THE CLEARANCES WILL NEED TO BE DETERMINED BY THE UTILITIES INVOLVED. A SUITABLE SUPPORT ON EACH SIDE OF THE UNDERGROUND STRUCTURE WILL BE BUILT TO AVOID TRANSFERRING ANY DIRECT LOAD ONTO THAT STRUCTURE.

F. THE CONDUIT RUN SHALL BE AS STRAIGHT AS POSSIBLE. THE RADIUS OF ANY CURVE SHALL BE AS LARGE AS POSSIBLE TO FACILITATE THE PULLING IN OF CABLE. SCHEDULE 40, 5 DEGREE ANGLE COUPLINGS OR COMBINATIONS OF 5 DEGREE ANGLE COUPLINGS AND STRAIGHT SECTIONS OF DUCT ARE RECOMMENDED TO NEGOTIATE CURVES, ANY FIELD BENDING OF CONDUIT SHALL BE DONE WITH MANUFACTURER RECOMMENDED CONDUIT BENDING EQUIPMENT AND PROCEDURES.

G. PRECAST PLASTIC BASE AND INTERMEDIATE SPACERS WILL BE PLACED AT 5 FOOT INTERVALS. SPACERS SHALL SEPARATE THE CONDUITS A MINIMUM OF 2 INCHES AND PROVIDE A 3 INCH MINIMUM OUTSIDE ENCASEMENT. BURRS ON THE END OF THE CONDUIT, AS THE RESULT OF SAWING, MUST BE REMOVED PRIOR TO COMPLETING A JOINT. JOINTS SHALL BE FORM A CONTINUOUS SMOOTH INTERIOR SURFACE BETWEEN DUCT SECTIONS SO THAT CABLE WILL NOT BE DAMAGED WHEN PULLED PAST THE JOINT. SURFACES TO BE JOINED WILL BE CLEAN AND FREE FROM DIRT, FOREIGN MATERIALS AND MOISTURE. THE JOINTS WILL BE SEALED WITH THE PROPER CEMENT SPECIFIED BY THE DUCT MANUFACTURER. DUCTS ARE TO BE TIED TOGETHER WITH HEAVY CORD AS TO SECURELY HOLD THE DUCTS IN PLACE. THE OPEN ENDS OF THE DUCT ARE TO BE SEALED WITH TIGHT FITTING PLUGS TO PREVENT THE ENTRANCE OF MUD OR FOREIGN MATERIAL INTO THE DUCT. AFTER CONDUIT IS INSTALLED IT SHALL BE INSPECTED.

H. THE CONCRETE IS TO BE POURED AS SOON AS POSSIBLE AFTER CONDUITS HAVE BEEN PLACED. DUCTS ARE TO BE TIED DOWN TO HOLD THEM IN POSITION WHILE THE CONCRETE IS POURED. THE CONCRETE SHALL HAVE A SLUMP OF 4 TO 5 INCHES. THE CONCRETE DELIVERY CHUTE SHALL BE ADJUSTED SO THAT THE FALL OF THE CONCRETE INTO THE TRENCH IS MINIMAL. A SPLASH BOARD WILL BE USED TO DIVERT THE FLOW OF CONCRETE AWAY FROM THE TRENCH SIDES TO AVOID DISLODGING SOIL AND STONES. CONCRETE SHALL BE PLACED FROM ONE END OF THE DUCT SECTION TO THE OTHER END OF THE SECTION. CONTINUOUS SPADING IS TO BE DONE TO ENSURE A FLOW OF CONCRETE BETWEEN AND UNDER THE INDIVIDUAL DUCTS. A LONG FLAT TOOL OR SPATULA WILL BE WORKED CAREFULLY UP AND DOWN BETWEEN EACH VERTICAL LINE OF DUCTS TO ELIMINATE VOIDS. THE TOP OF THE CONCRETE IS THEN TO BE SMOOTHED.

I. AFTER THE CONCRETE HAS TAKEN ITS INITIAL SET THE TRENCH CAN BE BACKFILLED. A PIECE OF CAUTION BURIED ELECTRIC TAPE IS TO BE PLACED ABOVE THE DUCT DURING BACKFILLING.

J. AFTER THE DUCTS ARE INSTALLED A FLEXIBLE STEEL MANDREL NOT LESS THAN 12 INCHES LONG WITH A CROSS SECTION OF 4 3/4 OR 1 3/4 INCHES (FITTED WITH A PULLING EYE AT EACH END) SHALL BE PULLED THROUGH EACH CONDUIT. BY WORKING THE MANDREL BACK AND FORTH, OBSTRUCTIONS SUCH AS CONCRETE WILL BE REMOVED. AFTER THE MANDREL HAS BEEN PULLED THROUGH, A STIFF 2" OR 5" INCH CIRCULAR WIRE BRUSH AND A SWAB SHALL THEN BE PULLED THROUGH THE DUCT TO REMOVE ANY BITS OF CONCRETE, ETC.

K. A NO. 10 AWG COPPER-CLAD, ALUMINUM-CLAD OR GALVANIZED PULLING WIRE SHALL BE INSTALLED IN ALL SPARE DUCTS. ENDS OF THE CONDUIT SHALL BE SEALED IN AN APPROVED MANNER TO KEEP ALL MOISTURE AND FOREIGN MATTER OUT OF THE CONDUIT.

L. CLEANING EXISTING CONDUIT - PORTIONS OF THIS CONTRACT WILL INCLUDE INSTALLING NEW CABLE IN EXISTING CONDUIT. THE EXISTING CONDUIT SYSTEM IS 4 INCH FIBER DUCT, 4 INCH METAL BRIDGE CONDUIT AND 5" PVC CONDUIT. CLEANING PROCEDURES FOR THE EXISTING CONDUIT SHALL BE THE SAME AS FOR NEW DUCT.

### M. BASIS OF PAYMENT - CONDUIT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	LIN. FT.	5" CONDUITS - SCHEDULE 40, PVC ENCASED IN CONCRETE
SPEC	LIN. FT.	2" CONDUITS - SCHEDULE 40, PVC ENCASED IN CONCRETE

### OVERHEAD CONDUCTOR AND CONNECTORS

- A. CONDUCTOR - MEDIUM HARD DRAWN STRANDED BARE COPPER DOE #14-28104.
  - 1. AWG #4/0 - MEDIUM HARD DRAWN STRANDED BARE COPPER WIRE. THE COPPER WIRE SHALL BE 7 STRAND #4/0 AWG, AND COMPLY WITH THE LATEST ASTM SPECIFICATIONS FOR STRANDED MEDIUM HARD DRAWN BARE COPPER WIRE.
  - 2. THE AMPACITY SHALL NOT BE LESS THAN 370 AMPS BASED ON 30 DEGREES AMBIENT TEMPERATURE FOR SINGLE CONDUCTOR IN THE AIR, PER N.E.C.
  - 3. THE MAXIMUM OUTSIDE DIAMETER OF THE CABLE SHALL BE APPROXIMATELY .528 INCHES.
  - 4. THE CABLE SHALL BE ANIXTER 1B-4041M, OR APPROVED EQUAL.
- B. CONDUCTOR - MEDIUM HARD DRAWN STRANDED BARE COPPER DOE #14-24100.
  - 1. AWG #2/0 - MEDIUM HARD DRAWN STANDARD BARE COPPER WIRE. THE COPPER WIRE SHALL BE 7 STRAND #2/0 AWG, AND COMPLY WITH THE LATEST ASTM SPECIFICATIONS FOR STRANDED MEDIUM HARD BARE COPPER WIRE.
  - 2. THE AMPACITY SHALL NOT BE LESS THAN 275 AMPS BASED ON 30 DEGREES AMBIENT TEMPERATURE FOR SINGLE CONDUCTOR IN THE AIR, PER N.E.C.
  - 3. THE MAXIMUM OUTSIDE DIAMETER OF THE CABLE SHALL BE APPROXIMATELY .419 INCHES.
  - 4. THE CABLE SHALL BE ANIXTER 1B-2021S, OR APPROVED EQUAL.
- C. CONDUCTOR - MEDIUM HARD DRAWN STRANDED BARE COPPER DOE #14-18104.
  - 1. AWG #2 - MEDIUM HARD DRAWN STRANDED BARE COPPER WIRE. THE COPPER WIRE SHALL BE 7 STRAND #2 AWG, AND COMPLY WITH THE LATEST ASTM SPECIFICATIONS FOR STRANDED MEDIUM HARD DRAWN BARE COPPER WIRE.
  - 2. THE AMPACITY SHALL NOT BE LESS THAN 230 AMPS BASED ON 30 DEGREES AMBIENT TEMPERATURE FOR SINGLE CONDUCTOR IN THE AIR, PER N.E.C.
  - 3. THE MAXIMUM OUTSIDE DIAMETER OF THE CABLE SHALL BE APPROXIMATELY .292 INCHES.
  - 4. THE CABLE SHALL BE ANIXTER 1B-2021M, OR APPROVED EQUAL.
- D. SINGLE CONDUCTOR ACSR AERIAL BARE CABLE DOE #14-32102.
  - 1. 336.4 MCM ACSR AERIAL BARE CABLE.
  - 2. THE SINGLE CONDUCTOR ALUMINUM CABLE SHALL CONSIST OF ONE ACSR, #336.4 MCM, 26/7 STRAND CONDUCTOR. THE CABLE SHALL BE MADE UP OF A MINIMUM OF 26 STRANDS OF EC - H - 19 GRADE ALUMINUM WIRES LAID OVER A CORE OF 7 STRANDS OF STEEL PER ASTM B232.
  - 3. THE ALUMINUM CABLE SHALL COMPLY WITH THE LATEST APPLICABLE ASTM SPECIFICATION, B498 AND B500 FOR CLASS "A" GALVANIZED STEEL CORE CABLE. THE AMPACITY RATING OF THE CABLE SHALL BE NOT LESS THAN 570 AMPS PER CONDUCTOR BASED UPON 25 DEGREE C AMBIENT TEMPERATURE, 75 DEGREE C CONDUCTOR TEMPERATURE WITH NO WIND OR SUN.
  - 4. THE SINGLE CONDUCTOR AERIAL CABLE CODE WORD SHALL BE "LINNETT".
  - 5. THE CABLE SHALL BE ANIXTER #1H - 3311 OR APPROVED EQUAL.
- E. SINGLE CONDUCTOR ACSR AERIAL BARE CABLE DOE #14-40105.
  - 1. 556.5 MCM ACSR AERIAL BARE CABLE.
  - 2. THE SINGLE CONDUCTOR ALUMINUM CABLE SHALL CONSIST OF ONE ACSR, #556.5 MCM, 26/7 STRAND CONDUCTOR. THE CABLE SHALL BE MADE UP OF A MINIMUM OF 26 STRANDS OF EC - H - 19 GRADE ALUMINUM WIRES LAID OVER A CORE OF 7 STRANDS OF STEEL PER ASTM B232.
  - 3. THE ALUMINUM CABLE SHALL COMPLY WITH THE LATEST APPLICABLE ASTM SPECIFICATION, B498 AND B500 FOR CLASS "A" GALVANIZED STEEL CORE CABLE. THE AMPACITY RATING OF THE CABLE SHALL BE NOT LESS THAN 790 AMPS PER CONDUCTOR BASED UPON 25 DEGREE C AMBIENT TEMPERATURE, 75 DEGREE C CONDUCTOR TEMPERATURE WITH NO WIND OR SUN.
  - 4. THE SINGLE CONDUCTOR AERIAL CABLE CODE WORD SHALL BE "DOVE".

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5. THE CABLE SHALL BE ANIXTER #1H - 5511 OR APPROVED EQUAL.

F. CONDUCTOR - SPACER CABLE MESSENGER DOE #14-81200

1. AWG #6, 1/2" ALUMOWELD MESSENGER.
2. THE 1/2 MESSENGER SHALL CONSIST OF 7 STRANDS OF #6 ALUMOWELD WITH A BREAKING STRENGTH OF APPROXIMATELY 22,730 POUNDS.
3. THE DIAMETER OF THE CABLE SHALL BE APPROXIMATELY .486 INCHES.

G. 15 KV, THREE CONDUCTOR AERIAL SPACER CABLE DOE #14-32115

1. 336.4 MCM, 15 KV, AERIAL CABLE WITH SPACERS AND MESSENGER CABLE.
2. THE THREE CONDUCTOR AERIAL SPACER CABLE SHALL CONSIST OF THREE- SINGLE 336.4 MCM ALL ALUMINUM CONDUCTORS, 19 STRAND, WITH 0.150 INCH THICK POLYETHYLENE INSULATION.
3. THE INSULATION SHALL CONSIST OF AN INNER LAYER OF 0.075 INCH THICK HIGH MOLECULAR WEIGHT POLYETHYLENE COVERED BY AN OUTSIDE LAYER OF 0.075 INCH THICK BLACK TRACK RESISTANT HIGH DENSITY POLYETHYLENE.
4. THE CABLE SHALL BE SEQUENTIALLY MARKED IN ONE (1) FOOT NUMERICAL INCREMENTS FOR INVENTORY PURPOSES.
5. THE 15,000 VOLT AERIAL SPACER CABLE SHALL BE HENDRIX CATALOG NUMBER HAC15-1B, OR APPROVED EQUAL.

H. BASIS OF PAYMENT - CABLE.

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	LIN. FT.	AWG #4/0 MHD STRAND BARE COPPER WIRE
SPEC	LIN. FT.	AWG #2/0 MHD STRAND BARE COPPER WIRE
SPEC	LIN. FT.	AWG #2 MHD STRAND BARE COPPER WIRE
SPEC	LIN. FT.	AWG #336.4 MCM ACSR BARE CABLE
SPEC	LIN. FT.	AWG #556.5 MCM ACSR BARE CABLE
SPEC	LIN. FT.	AWG #336.4 MCM ACSR SPACER CABLE

I. ALL CONNECTORS TO BE SUITABLE FOR COPPER OR ALUMINUM CONNECTIONS. ALL CONNECTORS FOR ALUMINUM CABLE TO BE OF COMPRESSION TYPE.

J. CONDUCTORS MUST BE HANDLED WITH CARE. CONDUCTORS SHALL NOT BE TRAMPED ON NOR RUN OVER BY VEHICLES. EACH REEL SHALL BE EXAMINED AND THE WIRE SHALL BE INSPECTED FOR CUTS, KINKS, OR OTHER INJURIES.

K. INJURED PORTIONS SHALL BE CUT OUT AND THE CONDUCTOR SPLICED. THE CONDUCTORS SHALL BE PULLED OVER SUITABLE ROLLERS OR STRINGING BLOCKS PROPERLY MOUNTED ON POLE OR CROSSARM IF NECESSARY TO PREVENT BINDING WHILE STRINGING.

L. THE NEUTRAL CONDUCTOR SHOULD BE MAINTAINED ON ONE SIDE OF THE POLE (PREFERABLY THE ROAD SIDE) FOR TANGENT CONSTRUCTION AND FOR ANGLES NOT EXCEEDING 30 DEGREES.

M. WITH PIN-TYPE INSULATORS THE CONDUCTORS SHALL BE TIED IN THE TOP GROOVE OF THE INSULATOR ON TANGENT POLES AND ON THE SIDE OF THE INSULATOR AWAY FROM THE STRAIN AT ANGLES. PIN-TYPE INSULATORS SHALL BE TIGHT ON THE PINS AND ON TANGENT CONSTRUCTION THE TOP GROOVE MUST BE IN LINE WITH THE CONDUCTOR AFTER TYING IN.

N. ALL CONDUCTORS SHALL BE CLEANED THOROUGHLY BY WIREBRUSHING BEFORE SPLICING OR THE INSTALLATION OF A CONNECTOR OR CLAMP. A SUITABLE INHIBITOR SHALL BE USED BEFORE SPLICING OR APPLYING CONNECTORS OVER ALUMINUM CONDUCTOR.

SPLICES AND DEADENDS

A. CONDUCTORS SHALL BE SPLICED AND DEADENDED AS SHOWN ON THE CONSTRUCTION DRAWINGS. THERE SHALL NOT BE MORE THAN ONE SPLICE PER CONDUCTOR IN ANY SPAN AND SPLICING SLEEVES SHALL BE LOCATED AT LEAST TEN FEET FROM THE CONDUCTOR SUPPORT. NO SPLICES SHALL BE LOCATED IN GRADE B CROSSING SPANS AND PREFERABLY NOT IN THE ADJACENT SPANS.

TAPS AND JUMPERS

A. JUMPERS AND OTHER LEADS CONNECTED TO LINE CONDUCTORS SHALL HAVE SUFFICIENT SLACK TO ALLOW FREE MOVEMENT OF THE CONDUCTORS. WHERE SLACK IS NOT SHOWN ON THE CONSTRUCTION DRAWINGS IT WILL BE PROVIDED BY AT LEAST TWO BENDS IN A VERTICAL PLANE, OR ONE IN A HORIZONTAL PLANE, OR THE EQUIVALENT. IN AREAS WHERE AEOLIAN VIBRATION OCCURS, SPECIAL MEASURES TO MINIMIZE THE EFFECTS OF JUMPER BREAKS SHALL BE USED AS SPECIFIED.

B. ALL LEADS ON EQUIPMENT SUCH AS TRANSFORMERS, RECLOSERS, ETC., SHALL BE A MINIMUM OF #6 COPPER CONDUCTIVITY. WHERE ALUMINUM JUMPERS ARE USED, A CONNECTION TO AN UNPLANTED BRONZE TERMINAL SHALL BE MADE BY SPLICING A SHORT STUB OF COPPER TO THE ALUMINUM USING A SUITABLE ALUMINUM COMPRESSION SLEEVE.

HOT-LINE CLAMPS AND CONNECTORS

A. CONNECTOR AND HOT-LINE CLAMPS SUITABLE FOR THE PURPOSE SHALL BE INSTALLED AS SHOWN ON GUIDE DRAWINGS. ON ALL HOT-LINE CLAMP INSTALLATIONS, THE CLAMP AND JUMPER SHALL BE SO INSTALLED SUCH THAT THEY ARE PERMANENTLY BONDED TO THE LOAD SIDE OF THE LINE, ALLOWING THE JUMPER TO BE DE-ENERGIZED WHEN THE CLAMP IS DISCONNECTED. THIS APPLIES IN ALL CASES WHERE THE LINE LAYOUT IS SUCH THAT THE TAP LINE IS IN ACTUALITY THE MAIN BACK TO THE POWER SOURCE.

PADMOUNT TRANSFORMERS - GENERAL

A. THE PADMOUNT TRANSFORMER SHALL BE 60 HERTZ, 65 DEGREES CELSIUS RISE, OIL IMMERSED AND SELF-COOLED. THE HIGH VOLTAGE SIDE SHALL BE EQUIPPED WITH TAPES FOR DE-ENERGIZED OPERATION. THE HIGH VOLTAGE WINDING SHALL BE RATED AT 95 KV BIL AND THE LOW-VOLTAGE WINDING SHALL BE RATED AT 30 KV BIL. THE PADMOUNT TRANSFORMER SHALL CONFORM TO THE FOLLOWING INFORMATION SPECIFIED ON THE PROPOSAL PAGE:

1. KVA RATING
2. THREE PHASE
3. PRIMARY AND SECONDARY WINDINGS RATED AND CONNECTED TO OPERATE AT THE VOLTAGE SPECIFIED.

B. UNIT SHALL BE CONSTRUCTED IN ACCORDANCE WITH ANSI STANDARD C57.12.26.

C. THE TRANSFORMERS DESCRIBED HEREIN SHALL BE DESIGNED FOR FLEXIBILITY, CONVENIENCE AND RELIABILITY.

D. LIFTING PROVISIONS SHALL BE PROVIDED ON THREE-PHASE UNITS, AND PROVISIONS FOR JACKING SHALL ALSO BE PROVIDED.

E. ALL INSULATING COMPONENTS, OIL, PAPER AND WIRE ENAMEL, SHALL BE MADE OF THERMALLY UPGRADED MATERIALS, WHICH ARE ALL COMPATIBLE AT TODAY'S INDUSTRY STANDARD 65 DEGREES CELSIUS TEMPERATURE RISE.

F. THE LOCATION OF THE NEAREST SERVICE SHOP SHALL BE INDICATED, WHICH IS OWNED AND OPERATED BY THE MANUFACTURER.

G. THE TRANSFORMER SHALL BE FURNISHED COMPLETE WITH OIL (NON PCB) AND ALL ACCESSORIES SUITABLE AND READY FOR ITS INTENDED USE.

H. THE QUALITY, DESIGN AND PERFORMANCE OF THE TRANSFORMERS SHALL BE APPROVED EQUAL TO THE STANDARD PRODUCTS OF ABB OR GENERAL ELECTRIC CORPORATION, WHERE THOSE PRODUCTS CONFORM TO THESE SPECIFICATIONS.

I. THE TRANSFORMER SHALL BE PAINTED OLIVE GREEN COLOR, MUNSSELL NUMBER 7 CY 3.29/1.5 TO BLEND IN WITH SURROUNDING LANDSCAPES, AND SHALL MEET ECI GUIDELINES.

J. THE TRANSFORMER ENCLOSURE SHALL BE SO DESIGNED AND CONSTRUCTED AS TO BE TAMPER RESISTANT. THERE SHALL BE NO EXPOSED SCREWS, BOLTS, OR OTHER FASTENING DEVICES WHICH ARE EXTERNALLY REMOVABLE. THERE SHALL BE NO OPENINGS THROUGH WHICH FOREIGN OBJECTS SUCH AS STICKS, RODS, OR WIRES MIGHT CONTACT LIVE PARTS. THE CONSTRUCTION SHALL LIMIT THE ENTRY OF WATER (OTHER THAN FLOOD WATER) INTO THE COMPARTMENT SO AS NOT TO IMPAIR THE OPERATION OF THE TRANSFORMER. THE TRANSFORMER ENCLOSURE SHALL UTILIZE SEALED-TANK CONSTRUCTION WITH A WELDED MAIN COVER. A BOLTED TAMPER RESISTANT HAND-HOLE SHALL BE PROVIDED IN THE TANK COVER ON 3-PHASE UNITS FOR ACCESS TO INTERNAL CONNECTIONS. THE ENCLOSURE SHALL ALSO MEET OR EXCEED NEMA TR-P9-1977 AND CURRENT ANSI STANDARDS, AND SHALL CONFORM TO WESTERN UNDERGROUND COMMITTEE GUIDE 2.13 (SECURITY FOR PADMOUNTED EQUIPMENT ENCLOSURES).

K. FULL-HEIGHT INCOMING AND OUTGOING TERMINAL SECTION SHALL BE LOCATED SIDE-BY-SIDE WITH THE INCOMING LINE SECTION TO THE LEFT. TO FACILITATE THE MAKING OF THE CONNECTIONS AND TO PERMIT CABLE PULLING, THE TERMINAL SECTION HOOD AND/OR DOORS AND ROOF SHALL BE REMOVABLE. THE SILL SHALL ALSO BE REMOVABLE TO PERMIT SLIDING OF THE TRANSFORMER UNIT ON OR OFF THE PAD WITHOUT DISTURBING THE CABLES OR CONDUITS. THE TERMINAL SECTION HOOD AND/OR DOORS SHALL BE SUITABLE FOR PADLOCKING.

L. PRIMARY VOLTAGE RATINGS OF THE TRANSFORMERS SPECIFIED HEREIN ARE DESIGNATED AS PER ANSI C57.12.00. THE VARIOUS RATINGS FOR THIS BID PROPOSAL ARE AS FOLLOWS:

POLE MOUNT, SINGLE-PHASE		
7200/12470Y	(E/E1 Y)	
14400/24940Y	(E/E1 Y)	
PAD MOUNT, THREE PHASE		
7200	(E) (DELTA ONLY)	
14400	(E) (DELTA ONLY)	

NOTE: E1 DESIGNATES THE SQUARE ROOT OF 3 TIMES E.

PADMOUNT TRANSFORMERS - REQUIRED ACCESSORIES

A. A ONE-INCH FILLING PLUG SHALL BE LOCATED AT THE TOP OF THE FRONT PANEL.

B. A ONE-INCH DRAIN VALVE AND SAMPLER SHALL BE PROVIDED ON 3-PHASE UNITS.

C. AN INSTRUCTION NAMEPLATE SHALL BE FURNISHED, AND READABLE WITH CABLES IN PLACE. (WHERE NAMEPLATE IS MOUNTED ON A REMOVABLE PART, THE MANUFACTURER'S NAME AND TRANSFORMER SERIAL NUMBER SHALL BE PERMANENTLY AFFIXED TO A NON-REMOVABLE PART).

D. A LIQUID-LEVEL INDICATION GAUGE SHALL BE PROVIDED ON THREE-PHASE TRANSFORMERS.

E. TAPPED HOLES SHALL BE PROVIDED IN BOTH THE LOW-VOLTAGE AND HIGH VOLTAGE SECTIONS FOR TANK GROUNDING.

F. AN AUTOMATIC PRESSURE RELIEF DEVICE SHALL BE PROVIDED.

G. THE HIGH VOLTAGE SECTION SHALL BE EQUIPPED WITH A TAP-CHANGER FOR DE-ENERGIZED OPERATION ONLY, AND MUST BE EXTERNALLY OPERABLE WITH A HOT-STICK AND MUST REQUIRE AT LEAST TWO OPERATOR ACTIONS TO CHANGE TAPS. TAPS SHALL BE EITHER TWO 2-1/2% ABOVE AND TWO 2-1/2% BELOW RATED VOLTAGE FOR 7200/12470Y OR 14400 Y/8320V TRANSFORMERS; OR FOUR 2-1/2% BELOW RATED VOLTAGE FOR 14400/24940Y OR 14400V TRANSFORMERS.

H. AN INTERNAL OIL-IMMERSED, GANG-OPERATED, LOAD BREAK SWITCH FOR LOOP-FEED OPERATION WITH A CONTINUOUS CURRENT RATING OF 200 AMPS ON 500 KVA AND BELOW OR 300 AMPS ON 750 KVA AND ABOVE SHALL BE PROVIDED. THE SWITCH SHALL BE THREE (3) THREE-POLE, TWO POSITION SWITCHES. THE SWITCH MUST BE CAPABLE OF SWITCHING CONTINUOUS RATED CURRENT TO PERMIT SECTIONALIZING THE LOOP. THE SWITCH HANDLES SHALL BE LOCATED IN THE PRIMARY COMPARTMENT, CONVENIENT FOR HOT-STICK OPERATION. THE SWITCH SHALL PROVIDE FOR: (1) FEED RIGHT, (2) FEED LEFT, (3) FEED THROUGH WITH COIL ON, AND (4) FEED THROUGH WITH COIL OFF. MAKE-AND-LATCH AND MOMENTARY RATINGS NAMEPLATE SHALL BE LOCATED IN PRIMARY COMPARTMENT.

PADMOUNT TRANSFORMERS - SHOP DRAWINGS

A. THE SUCCESSFUL BIDDER SHALL, UPON EXECUTION OF THE CONTRACT, FURNISH FOR EACH AWARDED ITEM TEN (10) PRINTS OF DRAWINGS INCLUDING THE FOLLOWING:

1. OUTLINE DRAWING SHOWING PRINCIPLE VIEW AND DIMENSIONS AND INCLUDING A DESCRIPTIVE TABLE OF THE TRANSFORMER FITTINGS.
2. NAMEPLATE DRAWING INCLUDING WIRING DIAGRAM.
3. TIME-CURRENT CHARACTERISTIC CURVES FOR THE FUSES.

B. ALL PRINTS, APPROVAL DRAWINGS, INSTRUCTION BOOKS, ETC., SHALL BE SENT TO THE DIVISION OF ELECTRICITY, 910 DUBLIN ROAD, COLUMBUS, OHIO 43215, ATTENTION: PROJECT ENGINEER.

C. PRINTS WILL BE CHECKED FOR COMPLIANCE AND APPLICATION BY THE STATE AND WILL BE PROMPTLY RETURNED APPROVED, OR FOR CORRECTION AS REQUIRED.

D. THE SUCCESSFUL BIDDER SHALL, AFTER ALL THE ARRANGEMENT DETAILS HAVE BEEN SETTLED, FURNISH THE CITY WITH THREE (3) PRINTS OF EACH FINALIZED DRAWINGS.

E. THE SUCCESSFUL BIDDER SHALL FURNISH AN INSTRUCTION BOOK IN TRIPLICATE FOR EACH ITEM, COVERING DETAILED INSTRUCTIONS ON THE PROPER INSTALLATION, OPERATION AND MAINTENANCE OF THE EQUIPMENT. THE INSTRUCTION BOOK SHALL ALSO COVER THE IDENTITY OF VARIOUS PARTS AND THE ORDERING PROCEDURES FOR REPAIR PARTS.

PADMOUNT TRANSFORMERS - THREE-PHASE REQUIREMENTS

A. INCOMING LINE SECTION - THE INCOMING LINE COMPARTMENT SHALL ENCLOSE THE HIGH VOLTAGE BUSHINGS AND SHALL PROVIDE FOR INCOMING CABLE FROM BELOW. THE COMPARTMENT SHALL HAVE A HINGED DOOR WITH A FASTENING DEVICE WHICH IS ACCESSIBLE ONLY THROUGH THE LOW-VOLTAGE COMPARTMENT, TO MAKE POSSIBLE THE USE OF A SINGLE PADLOCK. THE INCOMING LINE EQUIPMENT SHALL BE ARRANGED FOR LOOP-FEED AND SHALL HAVE DEAD-FRONT CONSTRUCTION. EQUIPMENT ENCLOSED IN THE INCOMING LINE COMPARTMENT SHALL INCLUDE SIX (6) 200 AMP BUSHING WELLS FOR LOOP-FEED TRANSFORMERS IN ACCORDANCE WITH ANSI STANDARD C119-2.

B. OUTGOING LINE SECTION - THE OUTGOING LINE COMPARTMENT SHALL BE ARRANGED FOR CABLING FROM BELOW. THE COMPARTMENT DOOR SHALL BE HINGED, HAVE 3-POINT LATCHING AND SHALL BE SUITABLE FOR PADLOCKING. LOW VOLTAGE BUSHING SHALL BE TINNED, SPADE-TYPE WITH 9/16" HOLES SPACED AND 1-3/4" CENTERS, FOUR HOLES PER BLADE ON 500 KVA AND BELOW AND SIX (6) HOLES PER BLADE ON 750 KVA AND ABOVE.

C. OVER CURRENT PROTECTION - THE TRANSFORMER HIGH VOLTAGE WINDINGS SHALL HAVE THREE BAYONET-TYPE FUSES, EACH PROVIDED IN SERIES WITH A CURRENT LIMITING FUSE. THE CURRENT LIMITING FUSES SHALL BE INTERNAL TO THE TRANSFORMER TANK, AND SHALL ISOLATE THE FAULTED WINDINGS FROM THE DISTRIBUTION SYSTEM. THE CURRENT LIMITING FUSES SHALL HAVE AN INTERRUPTING RATING OF AT LEAST 25,000 AMPS SYMMETRICAL AND 4,000 AMPS ASYMMETRICAL. THE BAYONET-TYPE FUSES SHALL PROTECT THE TRANSFORMER FROM OVERLOAD CONDITIONS; AND SHALL BE DRY WELL, AND THE DRAWOUT TYPE, LOADBREAK DESIGN, AND SHALL HAVE AN INTERRUPTING CAPACITY OF 3,500 AMPS.

PADMOUNT TRANSFORMERS - BASIS OF PAYMENT

A. THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	THREE-PHASE, 300 KVA 14,400 V/480 Y/277 V SEC. PAD-MTD. TRANS.

SURGE ARRESTORS

A. 7.2 KV CIRCUITS SHALL BE 9 KV MOV TYPE (METAL OXIDE ARRESTOR) 14.4 KV CIRCUITS SHALL BE 12 KV MOV TYPE (METAL-OXIDE VARISTOR)

B. ARRESTORS SHALL BE OF THE 15 KV DISTRIBUTION CLASS TYPE AND SHALL HAVE LINE AND GROUND CONNECTORS AND CROSS ARM MOUNTING BRACKETS.

C. ARRESTORS SHALL BE PROVIDED AT EACH TRANSFORMER AND AERIAL-TO-UNDERGROUND CONNECTION.

CONDUCTOR TIES

A. TIES SHALL BE IN ACCORDANCE WITH CONSTRUCTION DRAWINGS. HOT-LINE TIES SHALL NOT BE USED AT GRADE "B" CROSSINGS.

SAGGING OF CONDUCTORS

1. CONDUCTORS SHALL BE SAGGED IN ACCORDANCE WITH THE CONDUCTORS MANUFACTURERS' RECOMMENDATIONS AND AS SHOWN IN TABLES ON THE DRAWINGS. ALL CONDUCTORS SHALL BE SAGGED EVENLY. THE AIR TEMPERATURE AT THE TIME AND PLACE OF SAGGING SHALL BE DETERMINED BY A CERTIFIED ETCHED GLASS THERMOMETER.

2. THE SAG OF ALL CONDUCTORS AFTER STRINGING SHALL BE IN ACCORDANCE WITH THE CONDUCTOR MANUFACTURERS' RECOMMENDATIONS, EXCEPT THAT A MAXIMUM INCREASE OF THREE INCHES OF THE SPECIFIED SAG IN ANY SPAN WILL BE ACCEPTABLE. HOWEVER, UNDER NO CIRCUMSTANCES WILL A DECREASE IN THE SPECIFIED SAG BE ALLOWED.

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**FUSE CUTOUTS**

- A. CUTOUTS SHALL BE OF THE OPEN DISTRIBUTION TYPE AND RATED AT 15 KV, 100 AMPS, CONTINUOUS, 16,000 AMP RMS, SYMM. INTERRUPTING RATING, 95 KV BIL AND SHALL HAVE LINE CONNECTORS AND CROSSARM MOUNTING BRACKETS. FUSES SHALL BE RATED AT APPROXIMATELY 150% OF TRANSFORMER FULL LOAD RATING.
- B. INSTALL CUTOUTS AT EACH POLE MOUNTED TRANSFORMER AND AS INDICATED ON DRAWINGS.
- C. BASIS OF PAYMENT
- THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	FUSED CUTOUTS

**DISCONNECT SWITCHES**

- A. SWITCHES SHALL BE RATED AT 600 AMP CONTINUOUS, 15 KV, 110 KV BIL WITH HOOKSTICK RIGID BLADE, LINE CONNECTORS, AND CROSSARM MOUNTING BRACKET.
- B. SWITCHES ARE TO BE LOCATED AND MOUNTED AS PER DRAWINGS.

**POLEMOUNT TRANSFORMERS**

- A. TYPE  
THE TRANSFORMER SHALL BE SINGLE PHASE, OIL-IMMERSED, SELF COOLED, FOR POLE MOUNTING, AND FOR 60 HZ. OPERATION.
- B. RATINGS  
TRANSFORMERS WITH PRIMARY RATING OF 14400/24940Y SHALL BE 125 KV BIL FOR PRIMARY WINDINGS. ALL TRANSFORMERS SHALL BE RATED 30 KV BIL FOR SECONDARY WINDINGS.
- C. INSULATION  
THE KVA RATINGS ARE TO BE 65 DEGREES CELSIUS RATING. ALL INSULATING COMPONENTS SHALL BE MADE OF THERMALLY UPGRADED MATERIALS WHICH ARE COMPATIBLE WITH INDUSTRY STANDARD 65 DEGREES CELSIUS TEMPERATURE RISE.
- D. TAPS  
THE TRANSFORMER SHALL BE EQUIPPED WITH FOUR NO-LOAD ADJUSTABLE PRIMARY TAPS FOR DE-ENERGIZED OPERATION. TAPS SHALL BE ALL FOUR 2-1/2% BELOW RATED VOLTAGE FOR 14400/24940Y TRANSFORMERS.
- E. CAPACITY  
EACH TRANSFORMER SHALL HAVE FULL RATED KVA CAPACITY, REGARDLESS OF WHICH HIGH VOLTAGE TAP POSITION IS USED.
- F. REQUIRED ACCESSORIES  
1. THE PRIMARY VOLTAGE NO-LOAD TAP CHANGER SHALL BE EXTERNALLY MOUNTED, WELL AWAY FROM HIGH AND LOW VOLTAGE CONDUCTORS.  
2. AN AUTOMATIC PRESSURE RELIEF DEVICE SHALL BE PROVIDED.
- G. SECONDARY BUSHINGS  
THE SECONDARY BUSHINGS OF TRANSFORMERS SHALL BE INDIVIDUALLY SIDE WALL MOUNTED AND CONVENIENTLY REPLACEABLE. THE SECONDARY CONNECTIONS OF TRANSFORMERS RATED 50 KVA AND ABOVE SHALL HAVE TINNED SPADE-TYPE TERMINALS WITH FOUR 9/16" HOLES SPACED ON 1-3/4" CENTERS.
- H. COLOR  
THE COLOR OF THE TRANSFORMERS AND BUSHINGS SHALL BE ANSI 70 LIGHT GREY.

- I. BASIS OF PAYMENT
- THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:
- | ITEM | UNIT | DESCRIPTION   |
|------|------|---|
| SPEC | EACH | SINGLE-PHASE, 50KVA 14400/24940Y//240/480V SECONDARY POLE MOUNTED TRANSFORMER |

**ELBOW STYLE CONNECTOR**

- A. A COMPLETE CONNECTOR ASSEMBLY SHALL BE PROVIDED FOR EACH PADMOUNT TRANSFORMER CABLE BUSHING CONNECTION.
- B. THEY SHALL BE 15KV, 600 AMP, NON-LOADBREAK OR 200 AMP LOADBREAK FOR TAPS. THEY SHALL BE DESIGNED FOR USE ON THREE PHASE SYSTEMS AND HAVE A MINIMUM BIL OF 110KV. CONNECTOR COMPONENTS MUST BE SELECTED FOR THE TYPE AND SIZE OF CABLE TO BE USED.
- C. CONNECTORS SHALL BE ELASTIMOLD OR COPPER CO., OR APPROVED EQUAL.
- D. ALL CONNECTORS SHALL BE INSTALLED UNDER THE SUPERVISION OF THE MANUFACTURER'S REPRESENTATIVE.
- E. AFTER FINAL CONNECTIONS HAVE BEEN MADE, THE CONTRACTOR IS TO TEST THE ENTIRE SYSTEM PER MANUFACTURER'S RECOMMENDED SPECIFICATIONS.
- F. ALL COMPONENTS AND TEST PROCEDURES SHALL BE SUBMITTED FOR APPROVAL.
- G. BASIS OF PAYMENT

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	ELBOW CONNECTOR, 15 KV

**15 KV PROTECTIVE CAPS**

- A. EACH SWITCH SHALL HAVE ALL SPARE CABLE ENTRANCE BUSHINGS PROTECTED BY A PROTECTIVE CAP. THE PROTECTIVE CAP SHALL BE DESIGNED TO INSULATE, ELECTRICALLY SHIELD AND MECHANICALLY SEAL LOADBREAK BUSHINGS.
- B. CONNECTORS SHALL BE ELASTIMOLD OR COPPER CO., OR APPROVED EQUAL.
- C. BASIS OF PAYMENT
- THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:
- | ITEM | UNIT | DESCRIPTION            |
|------|------|------------------------|
| SPEC | EACH | PROTECTIVE CAPS, 15 KV |

**PRECAST CONCRETE PULLBOX - ELECTRIC**

- A. MATERIAL - THE PRECAST CONCRETE PULLBOX SHALL MEET THE FOLLOWING SPECIFICATIONS:
- THE PULLBOX SHALL BE MANUFACTURED BY UNIVERSAL CONCRETE PRODUCTS, INC. OR AN APPROVED EQUAL.
  - THE PULLBOX SHALL HAVE OVERALL DIMENSIONS OF 2'-6" X 6'-0" X 6'-0".
  - THE PULLBOX SHALL BE DESIGNED IN ACCORDANCE WITH AASHO STANDARD HS20-44 FOR TRUCK LOADING.
  - THE TOP SLAB ACCESS OPENING SHALL BE RECTANGULAR.
  - PULLING EYES SHALL BE PROVIDED ON THE OPPOSITE SIDE OF EACH DUCT OPENING. PULLING EYES SHALL BE MANUFACTURED BY LINE MATERIAL CO. STYLE NO. DU2T3 OR APPROVED EQUAL.
  - ALL THE CONCRETE USED IN THE CONSTRUCTION SHALL BE CLASS C, 5000 PSI.
  - FRAME WITH SOLID LID, SIMILAR TO NEENAH FOUNDRY CO. NO. R-6661 V1H, SHALL BE PROVIDED AND INSTALLED AT EACH PULLBOX. COVER SHALL BE LETTERED "ELECTRIC".

**B. INSTALLATION**

- CONTRACTOR SHALL PROVIDE ALL EXCAVATION AND BACKFILL NECESSARY FOR PULLBOX AND UNDERGROUND CONDUIT DUCTS INSTALLATION.
- EXCAVATION FOR PULLBOX SHALL EXTEND TO 6" BELOW BOTTOM OF BASE OR AS NECESSARY FOR PROPER INSTALLATION AND COMPLETION OF WORK.
- EXCAVATION FOR UNDERGROUND CONDUIT DUCTS SHALL EXTEND TO PROFILE OF LOWER SIDE OF THE CONDUIT ENCASEMENT. CONDUITS SHALL HAVE A MINIMUM OF 30" COVER.
- AFTER PULLBOXES ARE SET AND CONDUITS ARE INSTALLED, BACKFILL SHALL BE BROUGHT TO PROPER LEVEL AND SHALL BE COMPACTED IN ACCORDANCE WITH ITEM 604 SECTION 604.4 OF ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS. BACKFILL SHALL BE BROUGHT TO THE BOTTOM OF EXISTING PAVING BASE IN PAVED AREAS, FINISHED GRADE SHALL BE REPLACED IN KIND, I.E., SOD GRAVEL, BLACKTOP, CONCRETE, ETC.
- WORK SHALL BE SO PLANNED THAT EXCAVATIONS ARE OPEN FOR A MINIMUM OF TIME. NO LOAD OR BACKFILL SHALL BE APPLIED OR OTHER WORK CONDUCTED THAT WOULD DAMAGE NEW CONCRETE OR INTERFERE WITH ITS CURING.
- OPEN TRENCHES IN OPEN AREAS SHALL BE BARRICADED AND PROPERLY PROTECTED.
- AFTER POLEBOX IS PLACED, POLEBOX COVER FRAME SHALL BE PLACED AND TOP ADJUSTED TO GROUND OR PAVING LEVEL, A 6" THICK CONCRETE OR BRICK ADJUSTING RING SHALL BE PROVIDED TO PROVIDE CONTINUOUS CLOSURE BETWEEN TOP SLAB OF MANHOLE AND MANHOLE COVER FRAME.

**C. BASIS OF PAYMENT**

THE WORK INCLUDED IN THIS ITEM INCLUDING EXCAVATION AND BACKFILL, SHALL BE PAID FOR AT THE CONTRACT PRICE, COMPLETE IN PLACE AS FOLLOWS:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	PRECAST PULLBOX 2'-6" X 6'-0" X 6'-0"

**TERMINAL POLE ASSEMBLY**

- A. THE 14.4KV TERMINAL POLE ASSEMBLY SHALL CONSIST OF THE FOLLOWING PREVIOUSLY SPECIFIED COMPONENTS:
- SOLID BLADE CUTOUT SWITCHES.
  - LIGHTNING ARRESTORS
  - OUTDOOR CABLE TERMINATORS.
  - COMPRESSION CONNECTORS.
  - POLE GROUNDING COMPONENTS.
  - WOOD CROSSARMS AND BRACES.
  - MACHINE BOLTS, WASHERS, AND LOCKNUTS.
  - JUMPERS AND LEADS.
  - 5" PVC CONDUIT RISER.
  - 50 FOOT - CLASS III WOODPOLE.
- B. THESE COMPONENTS SHALL BE ASSEMBLED INTO A COMPLETE 14.4KV, 3 PHASE TERMINAL POLE ASSEMBLY FOR TRANSITIONS FROM OVERHEAD TO UNDERGROUND CONSTRUCTION.

**C. BASIS OF PAYMENT**

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRIC WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	14.4KV, 3-PHASE TERMINAL POLE ASSEMBLY.

**MISCELLANEOUS ASSEMBLIES**

- A. THE FOLLOWING MISCELLANEOUS ASSEMBLIES SHALL CONSIST OF VARIOUS COMPONENTS EITHER DESCRIBED IN THE SPECIFICATIONS OR IDENTIFIED IN THE CONSTRUCTION DETAILS. THE INDIVIDUAL COMPONENTS OF THESE ASSEMBLIES SHALL BE PROVIDED AND ASSEMBLED AS INDICATED IN THE CONSTRUCTION DETAILS ON SHEETS E-36A THROUGH E-37.

- 15KV PHASE CONDUCTOR DEADEND ASSEMBLY
- 15KV NEUTRAL DEADEND ASSEMBLY
- 15KV BUNDLE BRACKET W/STIRRUP & ANTI-SWAY BAR
- 15KV BUNDLE MESSENGER SUSPENSION CLAMP
- 15KV BUNDLE INSULATOR DEADEND ASSEMBLY
- 15KV BUNDLE MESSENGER DEADEND ASSEMBLY
- 15KV BUNDLE BRACKET DEADEND ASSEMBLY
- 69KV POST INSULATOR
- 69KV SUSPENSION INSULATOR ASSEMBLY WITH STRAIN CLAMP
- 69KV SUSPENSION INSULATOR POLE BAND ASSEMBLY
- 69KV SUSPENSION CLAMP - 556.5 MCM ACSR
- 69KV POST INSULATOR CLAMP - 556.5 MCM ACSR
- 50 KVA, 1-PH 14.4//480V POLE MOUNTED TRANSFORMER

**B. BASIS OF PAYMENT**

THE ACCEPTED QUANTITIES OF SPECIFIC ITEMS OF ELECTRICAL WORK AND EQUIPMENT MEASURED AS PROVIDED ABOVE WILL BE PAID FOR UNDER:

ITEM	UNIT	DESCRIPTION
SPEC	EACH	MISC: NEW 15KV PHASE CONDUCTOR DEADEND ASSEMBLY
SPEC	EACH	MISC: NEW 15KV NEUTRAL DEADEND ASSEMBLY
SPEC	EACH	MISC: NEW 15KV BUNDLE BRACKET W/STIRRUP & ANTI-SWAY BAR
SPEC	EACH	MISC: NEW 15KV BUNDLE MESSENGER SUSPENSION CLAMP
SPEC	EACH	MISC: NEW 15KV BUNDLE INSULATOR DEADEND ASSEMBLY
SPEC	EACH	MISC: NEW 15KV BUNDLE MESSENGER DEADEND ASSEMBLY
SPEC	EACH	MISC: NEW 15KV BUNDLE BRACKET DEADEND ASSEMBLY
SPEC	EACH	MISC: NEW 69KV POST INSULATOR
SPEC	EACH	MISC: NEW 69KV SUSPENSION INSULATOR ASSEMBLY WITH STRAIN CLAMP
SPEC	EACH	MISC: NEW 69KV SUSPENSION INSULATOR POLE BAND ASSEMBLY
SPEC	EACH	MISC: NEW 69KV SUSPENSION CLAMP - 556.5 MCM ACSR
SPEC	EACH	MISC: NEW 69KV POST INSULATOR CLAMP - 556.5 MCM ACSR
SPEC	EACH	MISC: NEW 50 KVA, 1-PH 14.4//480V POLE MOUNTED TRANSFORMER

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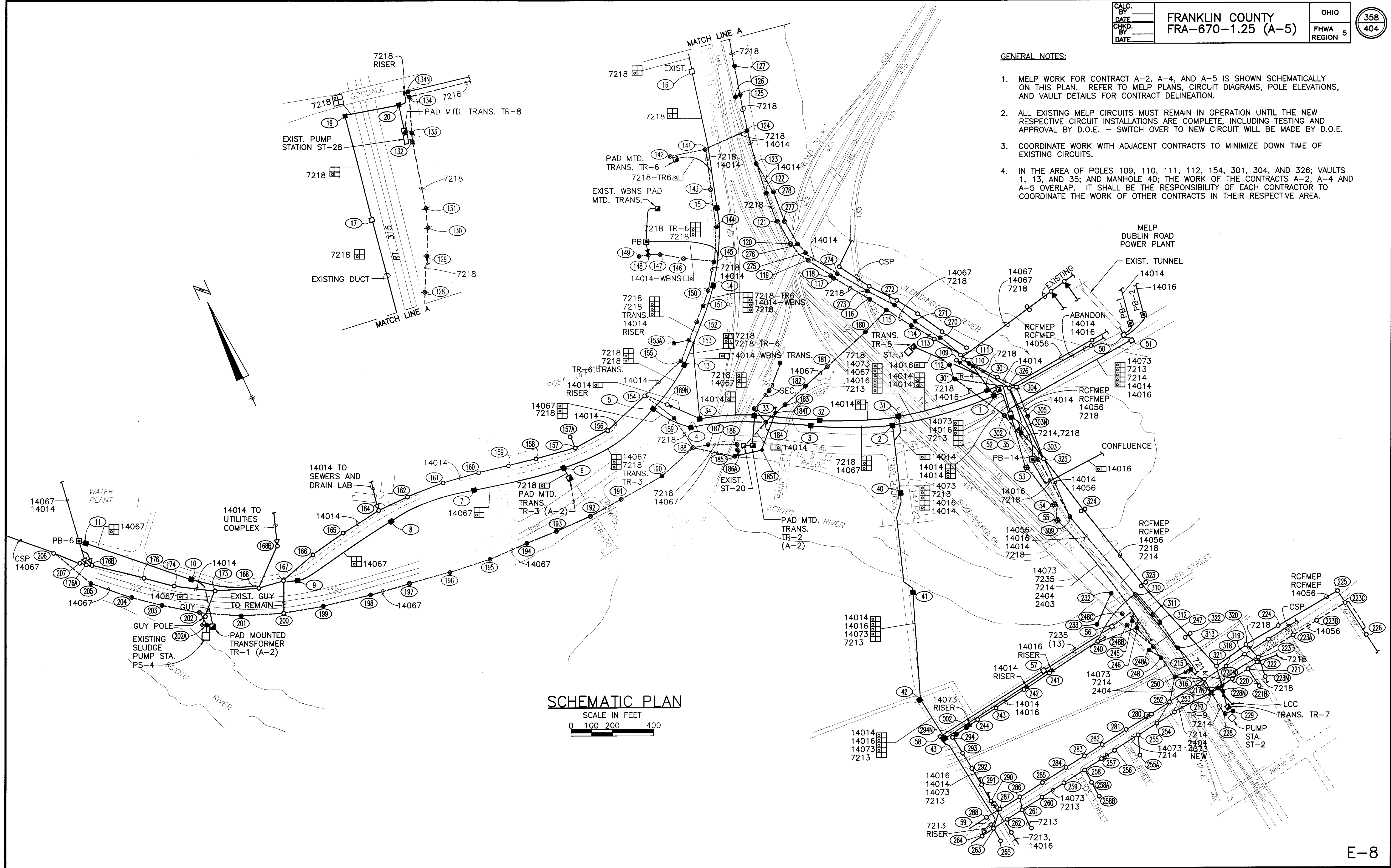






**GENERAL NOTES:**

- MELP WORK FOR CONTRACT A-2, A-4, AND A-5 IS SHOWN SCHEMATICALLY ON THIS PLAN. REFER TO MELP PLANS, CIRCUIT DIAGRAMS, POLE ELEVATIONS, AND VAULT DETAILS FOR CONTRACT DELINEATION.
- ALL EXISTING MELP CIRCUITS MUST REMAIN IN OPERATION UNTIL THE NEW RESPECTIVE CIRCUIT INSTALLATIONS ARE COMPLETE, INCLUDING TESTING AND APPROVAL BY D.O.E. - SWITCH OVER TO NEW CIRCUIT WILL BE MADE BY D.O.E.
- COORDINATE WORK WITH ADJACENT CONTRACTS TO MINIMIZE DOWN TIME OF EXISTING CIRCUITS.
- IN THE AREA OF POLES 109, 110, 111, 112, 154, 301, 304, AND 326; VAULTS 1, 13, AND 35; AND MANHOLE 40; THE WORK OF THE CONTRACTS A-2, A-4 AND A-5 OVERLAP. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE THE WORK OF OTHER CONTRACTS IN THEIR RESPECTIVE AREA.



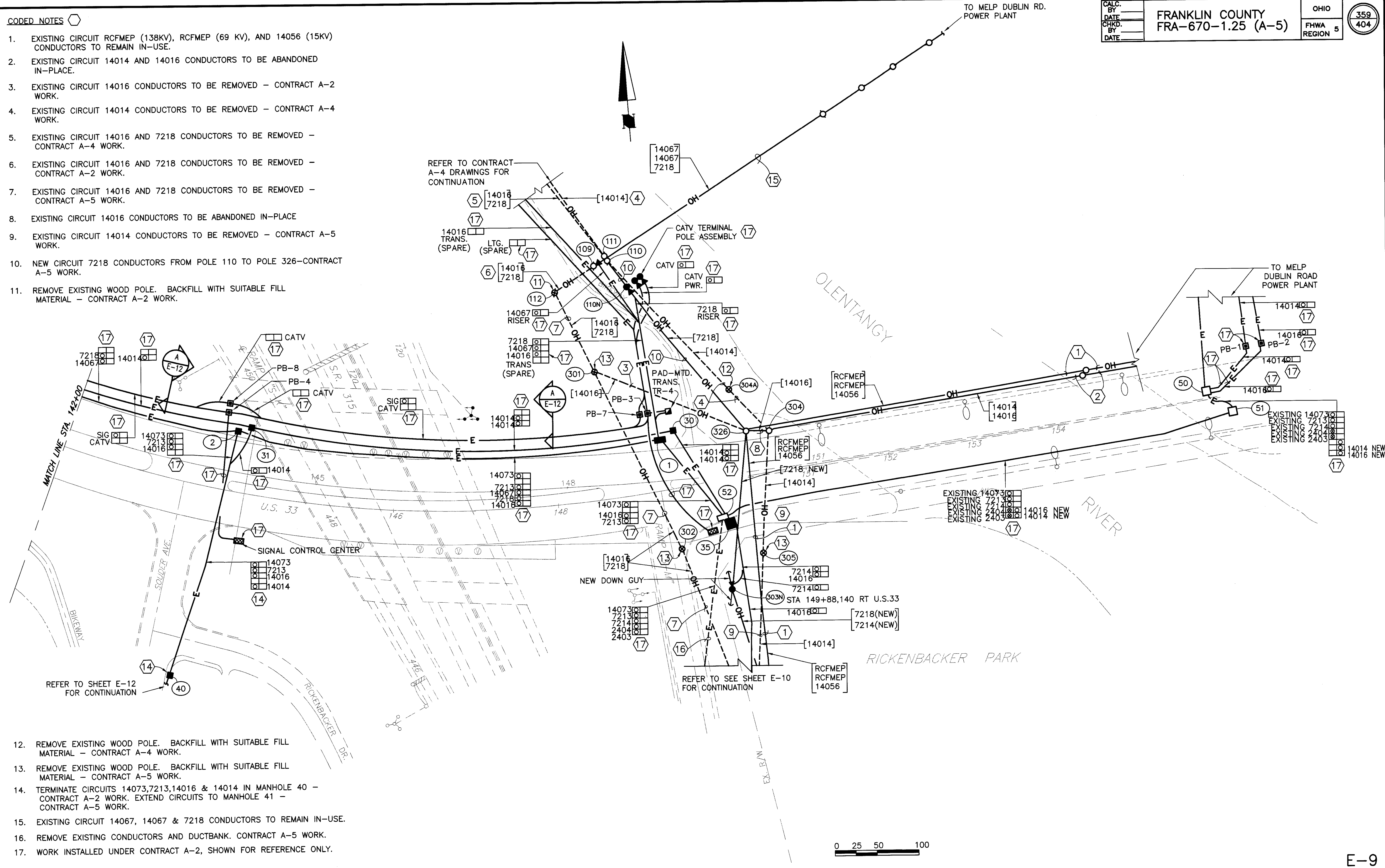
**SCHEMATIC PLAN**  
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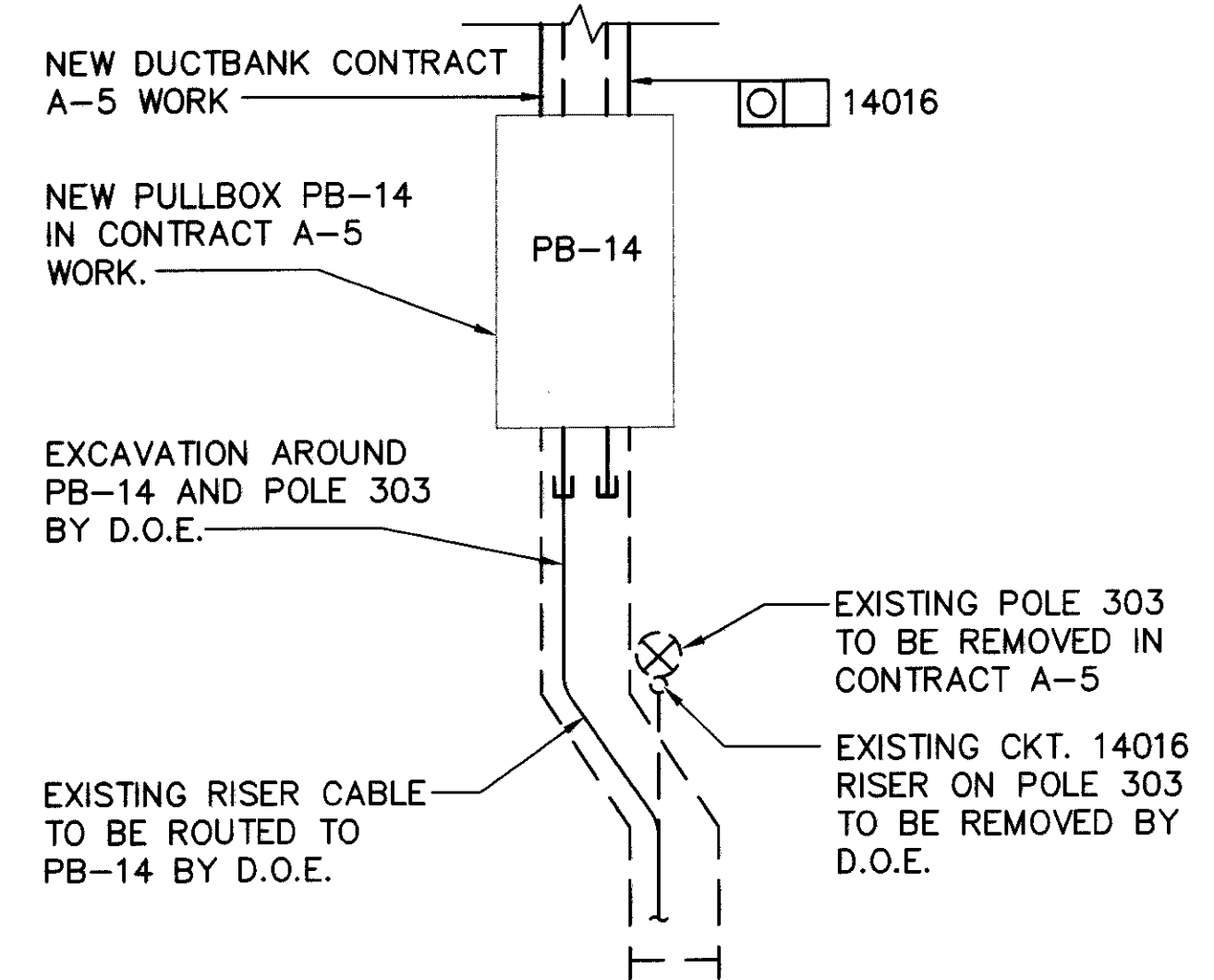
**CODED NOTES**

1. EXISTING CIRCUIT RCFMEP (138KV), RCFMEP (69 KV), AND 14056 (15KV) CONDUCTORS TO REMAIN IN-USE.
2. EXISTING CIRCUIT 14014 AND 14016 CONDUCTORS TO BE ABANDONED IN-PLACE.
3. EXISTING CIRCUIT 14016 CONDUCTORS TO BE REMOVED - CONTRACT A-2 WORK.
4. EXISTING CIRCUIT 14014 CONDUCTORS TO BE REMOVED - CONTRACT A-4 WORK.
5. EXISTING CIRCUIT 14016 AND 7218 CONDUCTORS TO BE REMOVED - CONTRACT A-4 WORK.
6. EXISTING CIRCUIT 14016 AND 7218 CONDUCTORS TO BE REMOVED - CONTRACT A-2 WORK.
7. EXISTING CIRCUIT 14016 AND 7218 CONDUCTORS TO BE REMOVED - CONTRACT A-5 WORK.
8. EXISTING CIRCUIT 14016 CONDUCTORS TO BE ABANDONED IN-PLACE
9. EXISTING CIRCUIT 14014 CONDUCTORS TO BE REMOVED - CONTRACT A-5 WORK.
10. NEW CIRCUIT 7218 CONDUCTORS FROM POLE 110 TO POLE 326-CONTRACT A-5 WORK.
11. REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL - CONTRACT A-2 WORK.

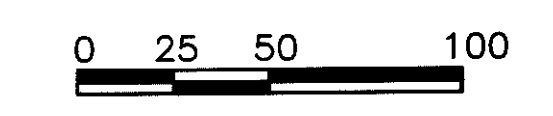
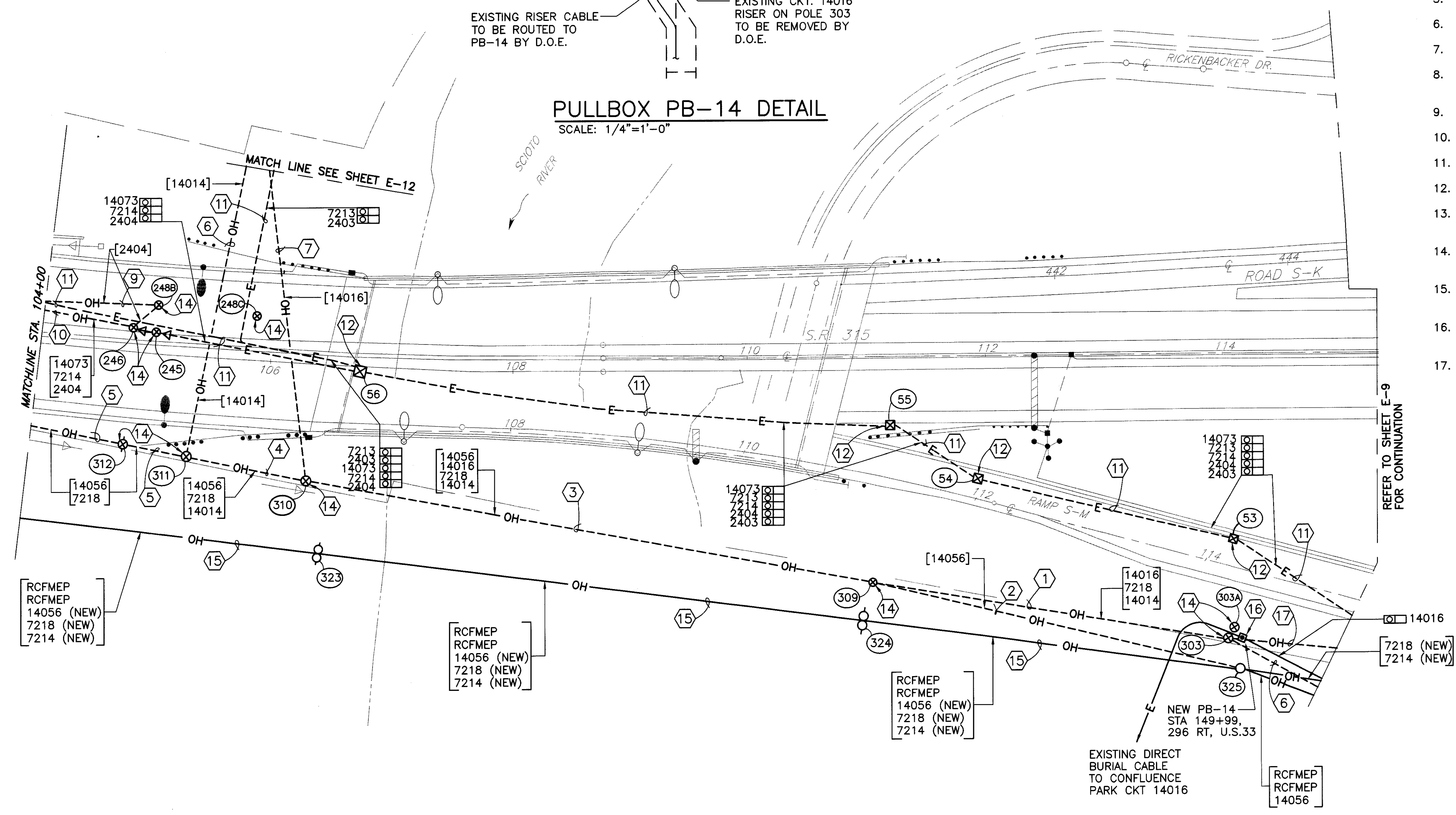


12. REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL - CONTRACT A-4 WORK.
13. REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL - CONTRACT A-5 WORK.
14. TERMINATE CIRCUITS 14073, 7213, 14016 & 14014 IN MANHOLE 40 - CONTRACT A-2 WORK. EXTEND CIRCUITS TO MANHOLE 41 - CONTRACT A-5 WORK.
15. EXISTING CIRCUIT 14067, 14067 & 7218 CONDUCTORS TO REMAIN IN-USE.
16. REMOVE EXISTING CONDUCTORS AND DUCTBANK. CONTRACT A-5 WORK.
17. WORK INSTALLED UNDER CONTRACT A-2, SHOWN FOR REFERENCE ONLY.

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- CODED NOTES**
- EXISTING CIRCUIT 14016, 7218, AND 14014 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14056 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14056, 14016, 7218, AND 14014 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14056, 7218, AND 14014 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14056 AND 7218 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14014 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14016 CONDUCTORS TO BE REMOVED.
  - NOT USED
  - EXISTING CIRCUIT 2404 CONDUCTORS TO BE REMOVED.
  - EXISTING CIRCUIT 14073, 7214, AND 2404 CONDUCTORS TO BE REMOVED.
  - REMOVE EXISTING CONDUCTORS AND DUCTBANK.
  - REMOVE EXISTING MAN-HOLE. CONTRACT A-5 WORK.
  - NOT USED
  - REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL.
  - EXISTING CIRCUIT RCFMFP (138KV) AND RCFMFP (69KV) TO REMAIN IN-USE. INSTALL NEW CIRCUIT 14056, 7218, AND 7214 CONDUCTORS.
  - TERMINATE NEW CIRCUIT 14016 CONDUCTORS IN PULLBOX PB-14. RACK CABLES PER DETAIL FOR CABLE SPLICE BY D.O.E.
  - EXISTING CIRCUIT 14016 & 7218 CONDUCTORS TO BE REMOVED.



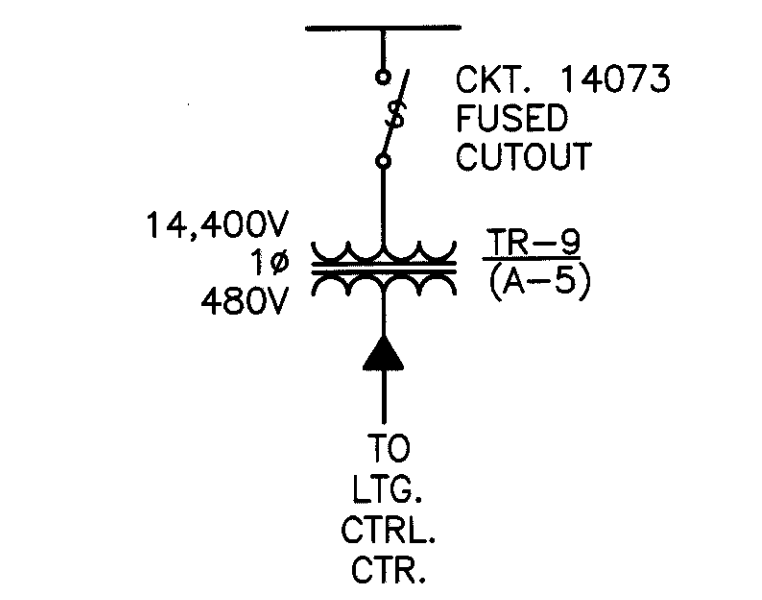
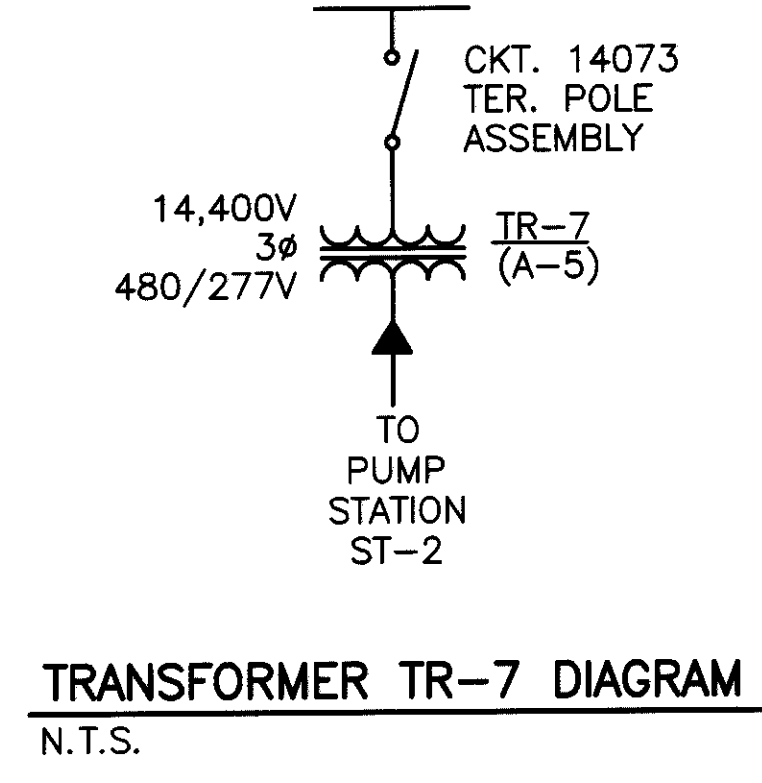
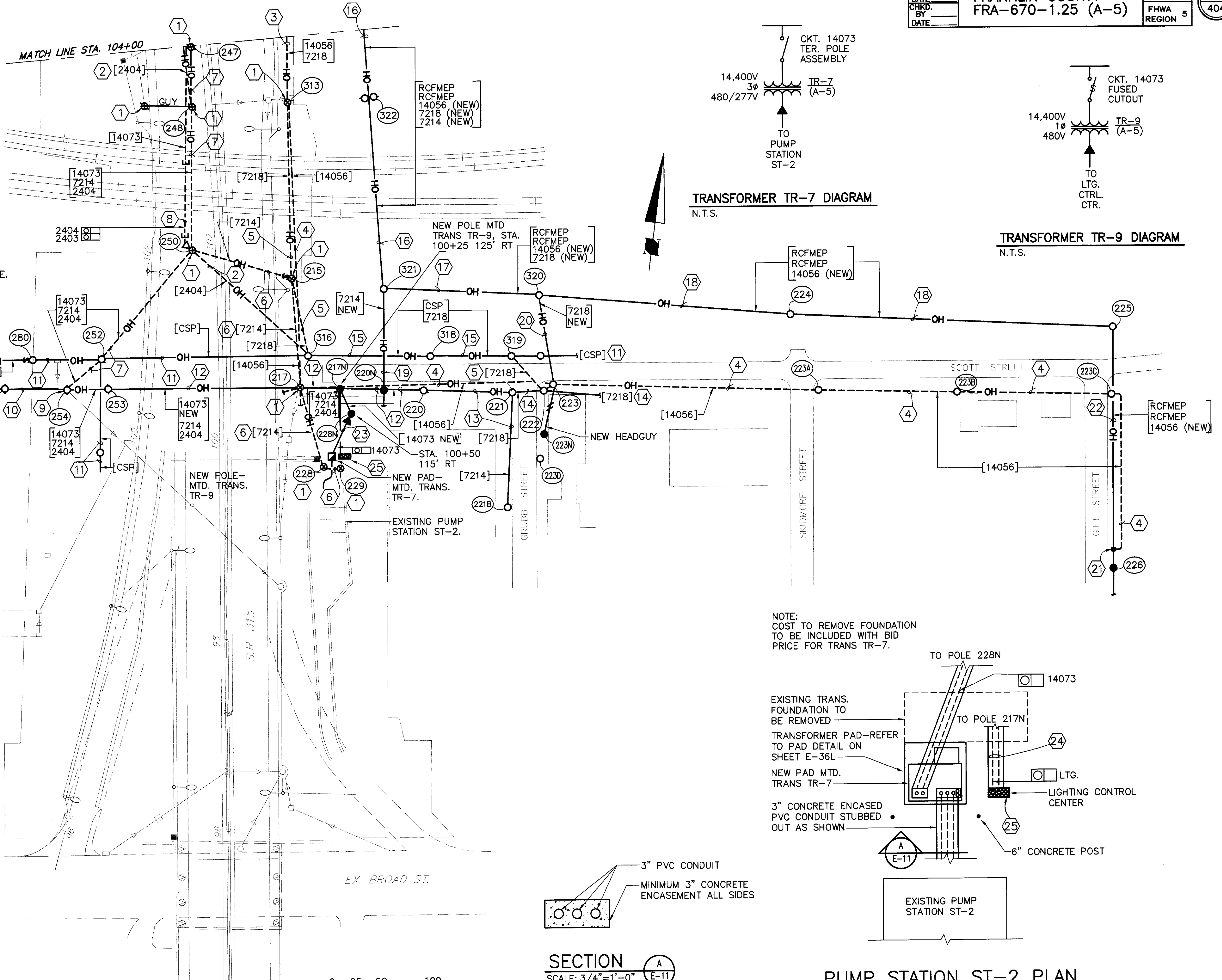
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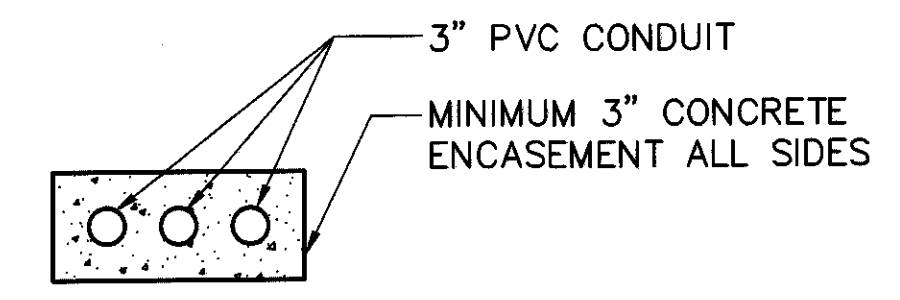
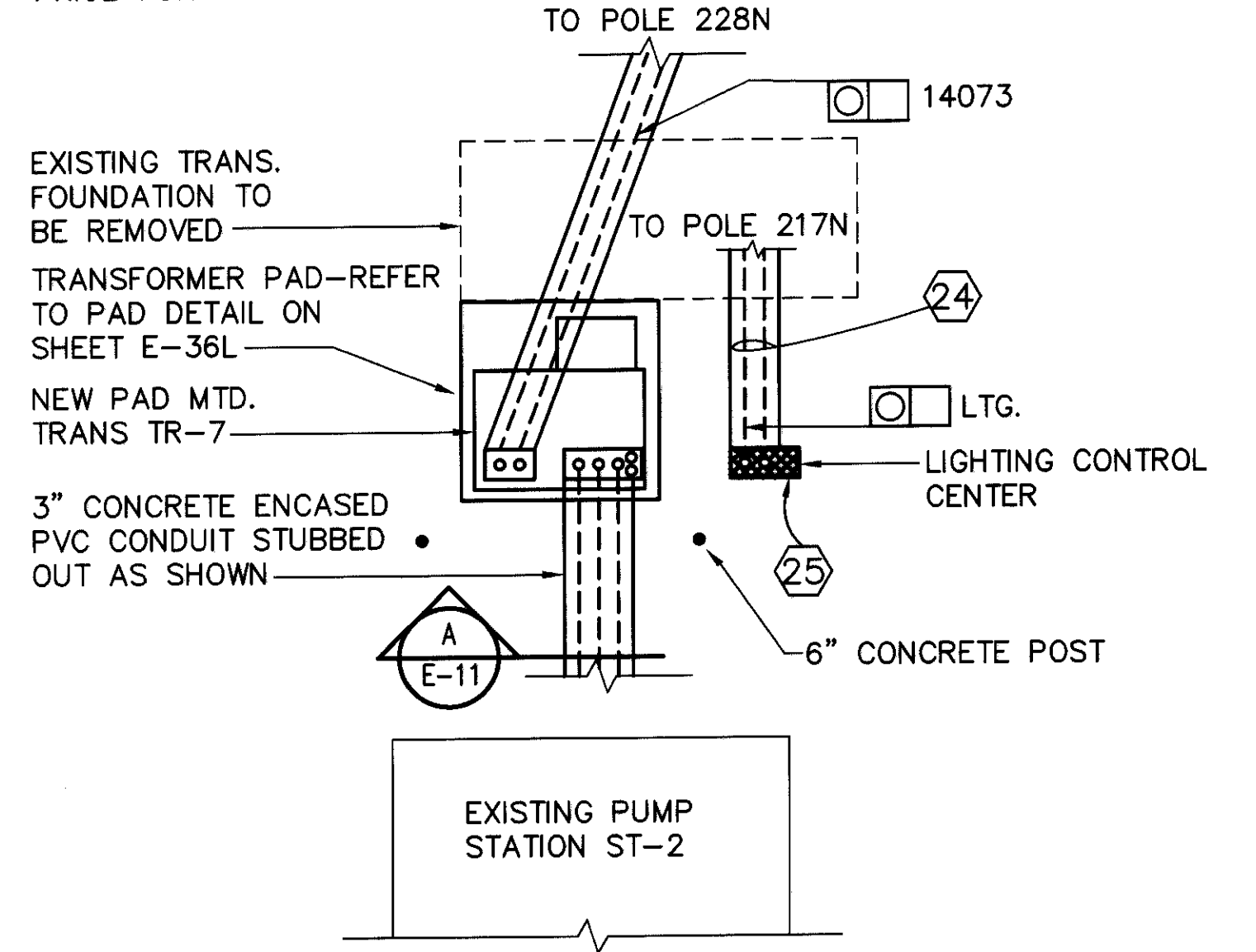
CODED NOTES

- REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL.
- EXISTING CIRCUIT 2404 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT 14056 AND 7218 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT 14056 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT 7218 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT 7214 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT 14073, 7214, AND 2404 CONDUCTORS TO BE REMOVED.
- REMOVE EXISTING CONDUCTORS AND DUCTBANK.
- REMOVE SUSPENSION INSULATORS FOR CONDUCTORS FROM POLE 252 - CIRCUITS 14073, 7214, AND 2404. REMOVE SWITCH AND JUMPER FOR CIRCUIT 14073.
- EXISTING CIRCUIT 14073, 7214, AND 2404 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CSP CIRCUIT CONDUCTORS TO REMAIN IN-USE.

- EXISTING CIRCUIT 7214 CONDUCTORS TO REMAIN IN-USE. EXISTING CIRCUIT 2404 CONDUCTORS TO BE REMOVED. NEW CIRCUIT 14073 CONDUCTORS.
- EXISTING CIRCUIT 7214 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CIRCUIT 7218 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CSP CIRCUIT CONDUCTORS TO REMAIN IN-USE. EXISTING CIRCUIT 7218 CONDUCTORS TO BE REMOVED.
- EXISTING CIRCUIT RCFMPEP (138KV) AND CIRCUIT RCFMPEP (69KV) TO REMAIN IN-USE. INSTALL NEW 14056, 7218, AND 7214 CONDUCTORS.
- EXISTING CIRCUIT RCFMPEP (138KV) AND RCFMPEP (69KV) TO REMAIN IN-USE. INSTALL NEW CIRCUIT 14056 AND 7218 CONDUCTORS.
- EXISTING CIRCUIT RCFMPEP (138KV) AND RCFMPEP (69KV) TO REMAIN IN-USE. INSTALL NEW CIRCUIT 14056 CONDUCTORS.
- NEW CIRCUIT 7214 CONDUCTORS FROM POLE 321 TO POLE 220N.
- NEW CIRCUIT 7218 CONDUCTORS FROM POLE 320 TO POLE 223.
- SPLICE EXISTING CIRCUIT 14056 CONDUCTORS FROM POLE 226 TO NEW CIRCUIT 14056 CONDUCTORS FROM POLE 225 BY DIVISION OF ELECTRICITY.
- NEW CIRCUIT 14056 CONDUCTORS FROM POLE 225 TO POLE 226 BY DIVISION OF ELECTRICITY.
- 3# 2/0 CU., 1# 2 NEU. IN 5" PVC DUCTBANK.
- NEW 2#6 CU., 1#8 GND. IN 2-2" CONCRETE ENCASED CONDUITS (1-2" SPARE) TO CONTROL CENTER.
- STUB 2-2" CONDUITS UP AT CONTROL CENTER SUPPORT COORDINATE INSTALLATION OF NEW CONDUCTORS WITH INSTALLATION OF CONTROL CENTER.



NOTE:  
COST TO REMOVE FOUNDATION  
TO BE INCLUDED WITH BID  
PRICE FOR TRANS TR-7.

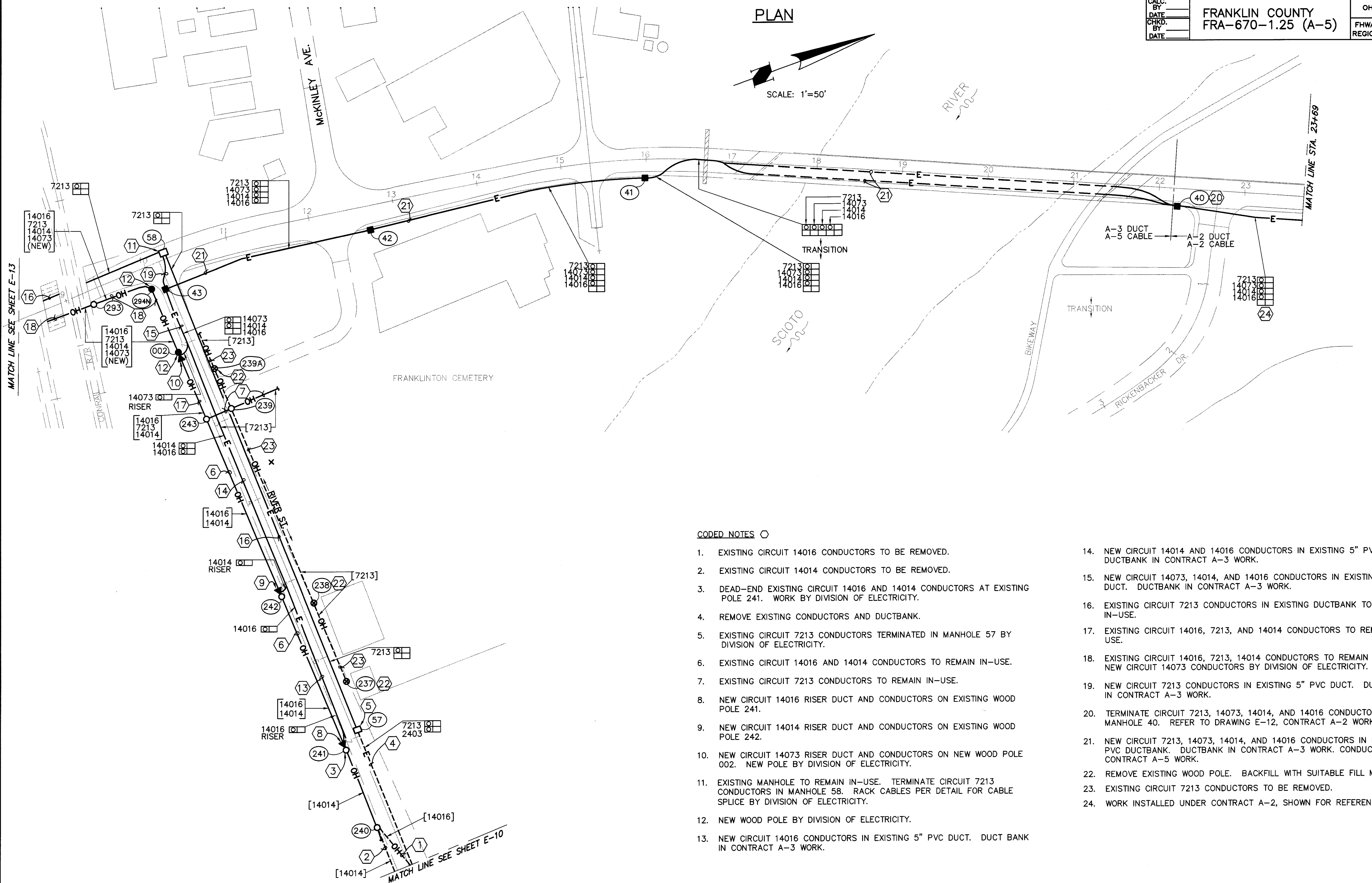
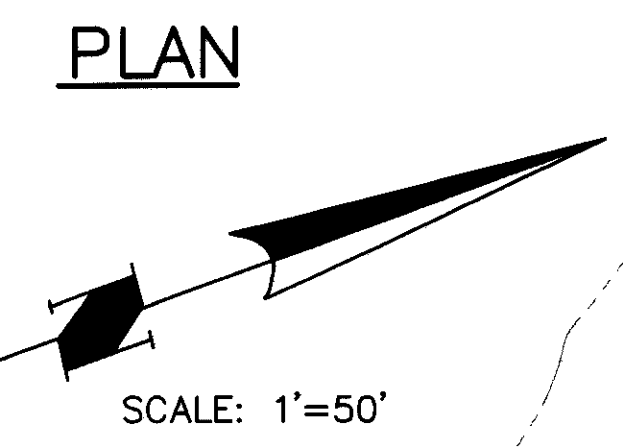


SECTION A  
SCALE: 3/4"=1'-0" E-11

PUMP STATION ST-2 PLAN  
SCALE: 1/8"=1'-0"

0 25 50 100

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**CODED NOTES**

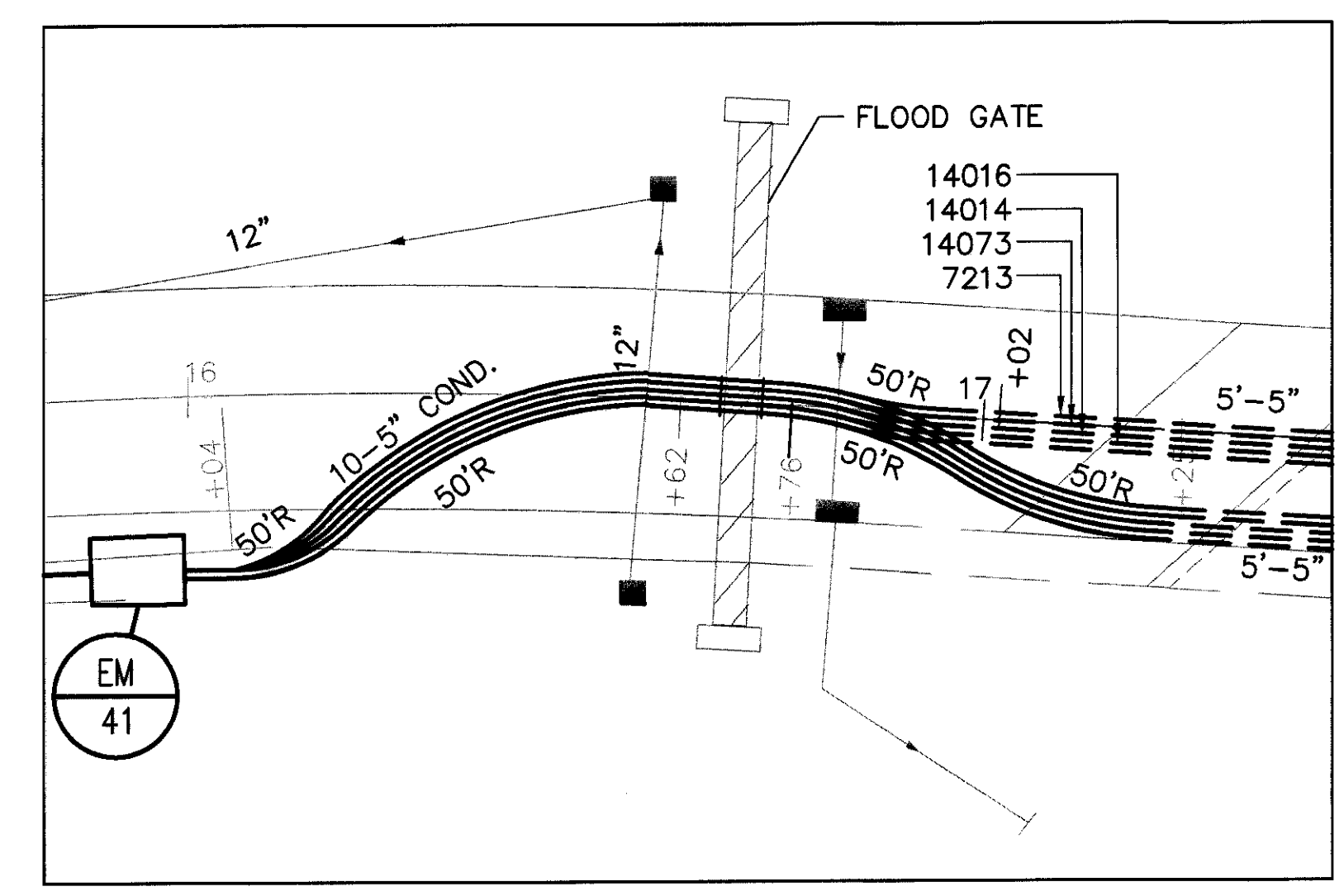
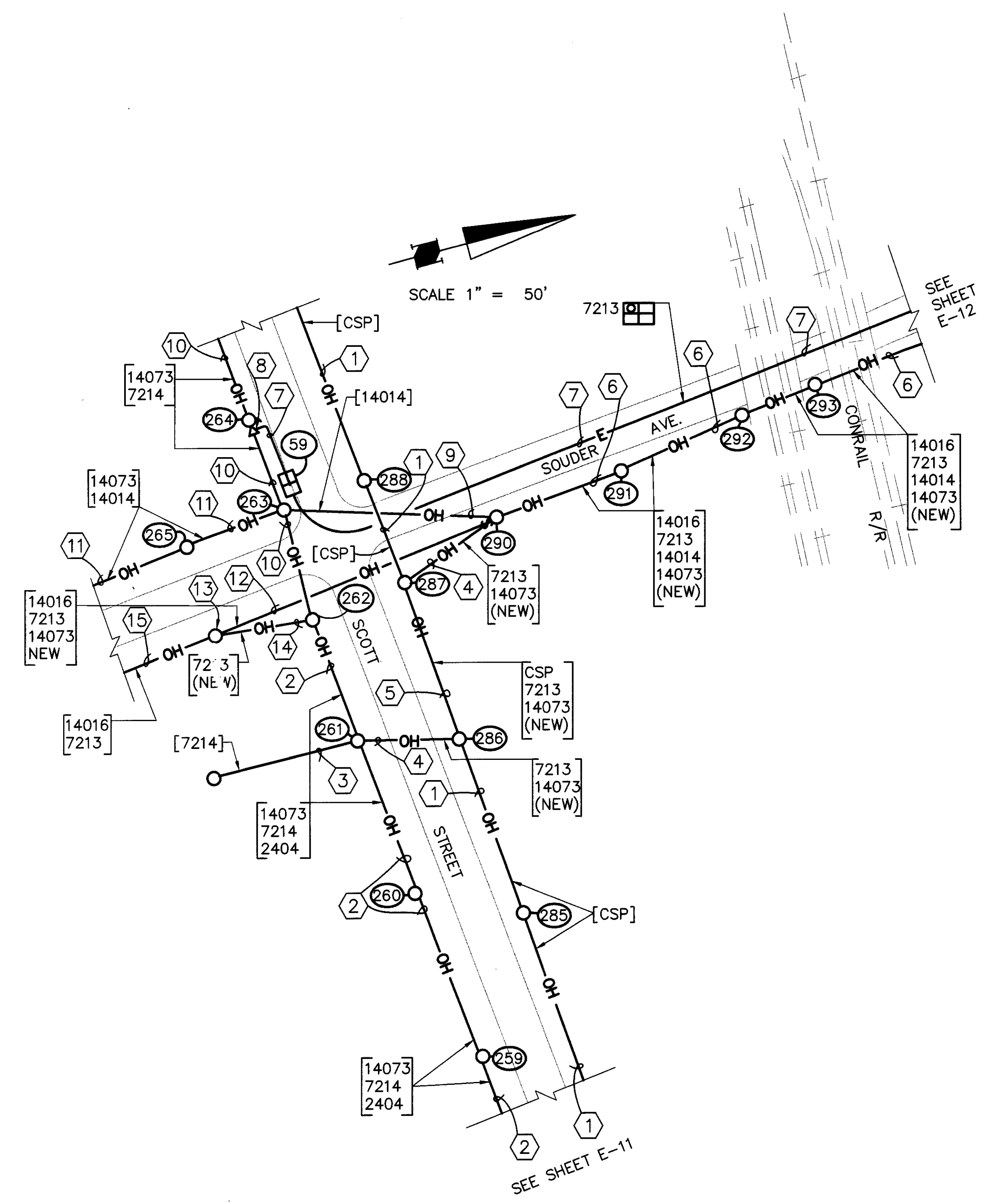
1. EXISTING CIRCUIT 14016 CONDUCTORS TO BE REMOVED.
2. EXISTING CIRCUIT 14014 CONDUCTORS TO BE REMOVED.
3. DEAD-END EXISTING CIRCUIT 14016 AND 14014 CONDUCTORS AT EXISTING POLE 241. WORK BY DIVISION OF ELECTRICITY.
4. REMOVE EXISTING CONDUCTORS AND DUCTBANK.
5. EXISTING CIRCUIT 7213 CONDUCTORS TERMINATED IN MANHOLE 57 BY DIVISION OF ELECTRICITY.
6. EXISTING CIRCUIT 14016 AND 14014 CONDUCTORS TO REMAIN IN-USE.
7. EXISTING CIRCUIT 7213 CONDUCTORS TO REMAIN IN-USE.
8. NEW CIRCUIT 14016 RISER DUCT AND CONDUCTORS ON EXISTING WOOD POLE 241.
9. NEW CIRCUIT 14014 RISER DUCT AND CONDUCTORS ON EXISTING WOOD POLE 242.
10. NEW CIRCUIT 14073 RISER DUCT AND CONDUCTORS ON NEW WOOD POLE 002. NEW POLE BY DIVISION OF ELECTRICITY.
11. EXISTING MANHOLE TO REMAIN IN-USE. TERMINATE CIRCUIT 7213 CONDUCTORS IN MANHOLE 58. RACK CABLES PER DETAIL FOR CABLE SPLICE BY DIVISION OF ELECTRICITY.
12. NEW WOOD POLE BY DIVISION OF ELECTRICITY.
13. NEW CIRCUIT 14016 CONDUCTORS IN EXISTING 5" PVC DUCT. DUCT BANK IN CONTRACT A-3 WORK.
14. NEW CIRCUIT 14014 AND 14016 CONDUCTORS IN EXISTING 5" PVC DUCT. DUCTBANK IN CONTRACT A-3 WORK.
15. NEW CIRCUIT 14073, 14014, AND 14016 CONDUCTORS IN EXISTING 5" PVC DUCT. DUCTBANK IN CONTRACT A-3 WORK.
16. EXISTING CIRCUIT 7213 CONDUCTORS IN EXISTING DUCTBANK TO REMAIN IN-USE.
17. EXISTING CIRCUIT 14016, 7213, AND 14014 CONDUCTORS TO REMAIN IN-USE.
18. EXISTING CIRCUIT 14016, 7213, 14014 CONDUCTORS TO REMAIN IN-USE. NEW CIRCUIT 14073 CONDUCTORS BY DIVISION OF ELECTRICITY.
19. NEW CIRCUIT 7213 CONDUCTORS IN EXISTING 5" PVC DUCT. DUCTBANK IN CONTRACT A-3 WORK.
20. TERMINATE CIRCUIT 7213, 14073, 14014, AND 14016 CONDUCTORS IN MANHOLE 40. REFER TO DRAWING E-12, CONTRACT A-2 WORK.
21. NEW CIRCUIT 7213, 14073, 14014, AND 14016 CONDUCTORS IN EXISTING 5" PVC DUCTBANK. DUCTBANK IN CONTRACT A-3 WORK. CONDUCTORS IN CONTRACT A-5 WORK.
22. REMOVE EXISTING WOOD POLE. BACKFILL WITH SUITABLE FILL MATERIAL.
23. EXISTING CIRCUIT 7213 CONDUCTORS TO BE REMOVED.
24. WORK INSTALLED UNDER CONTRACT A-2, SHOWN FOR REFERENCE ONLY.

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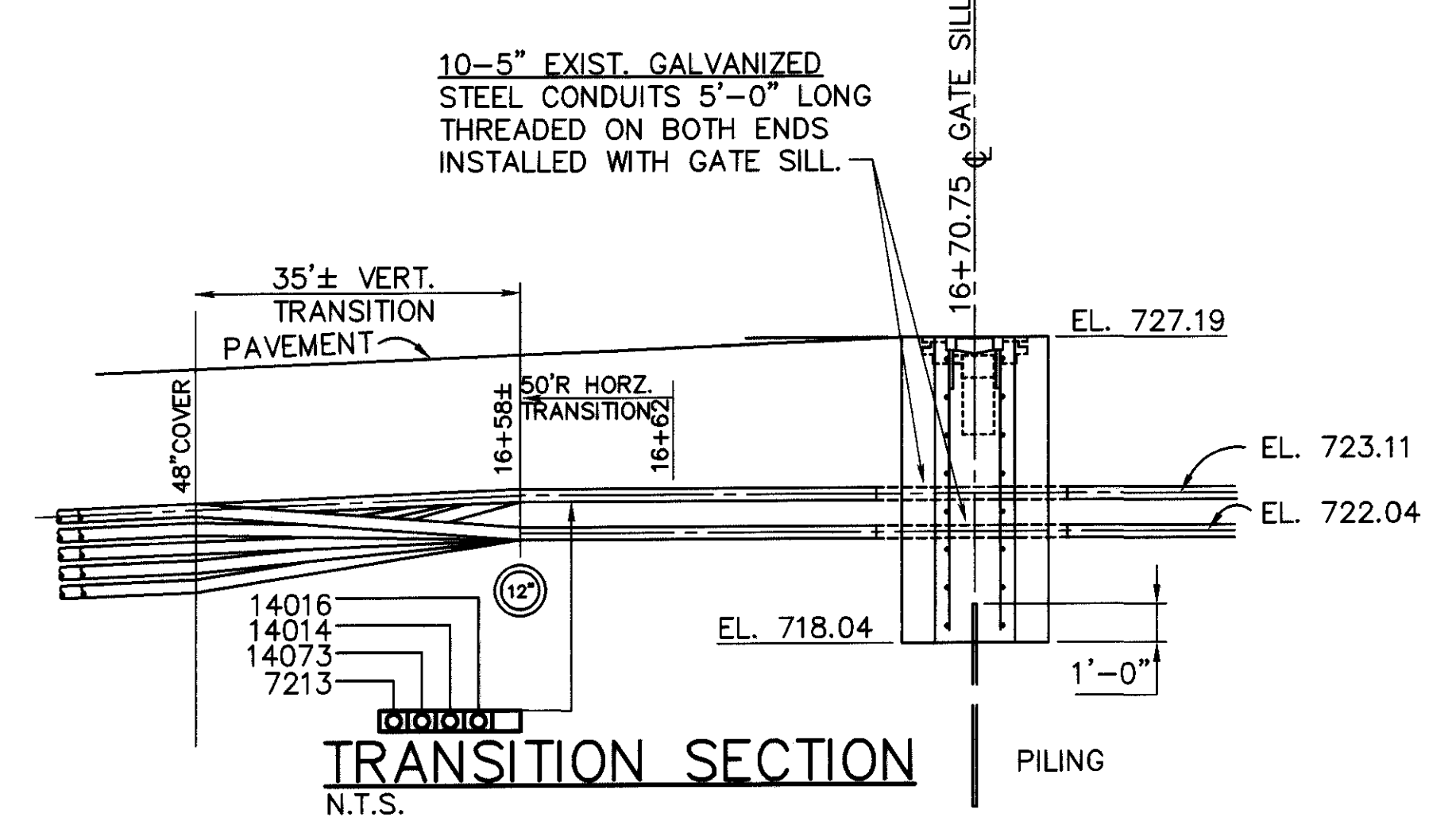


CODED NOTES

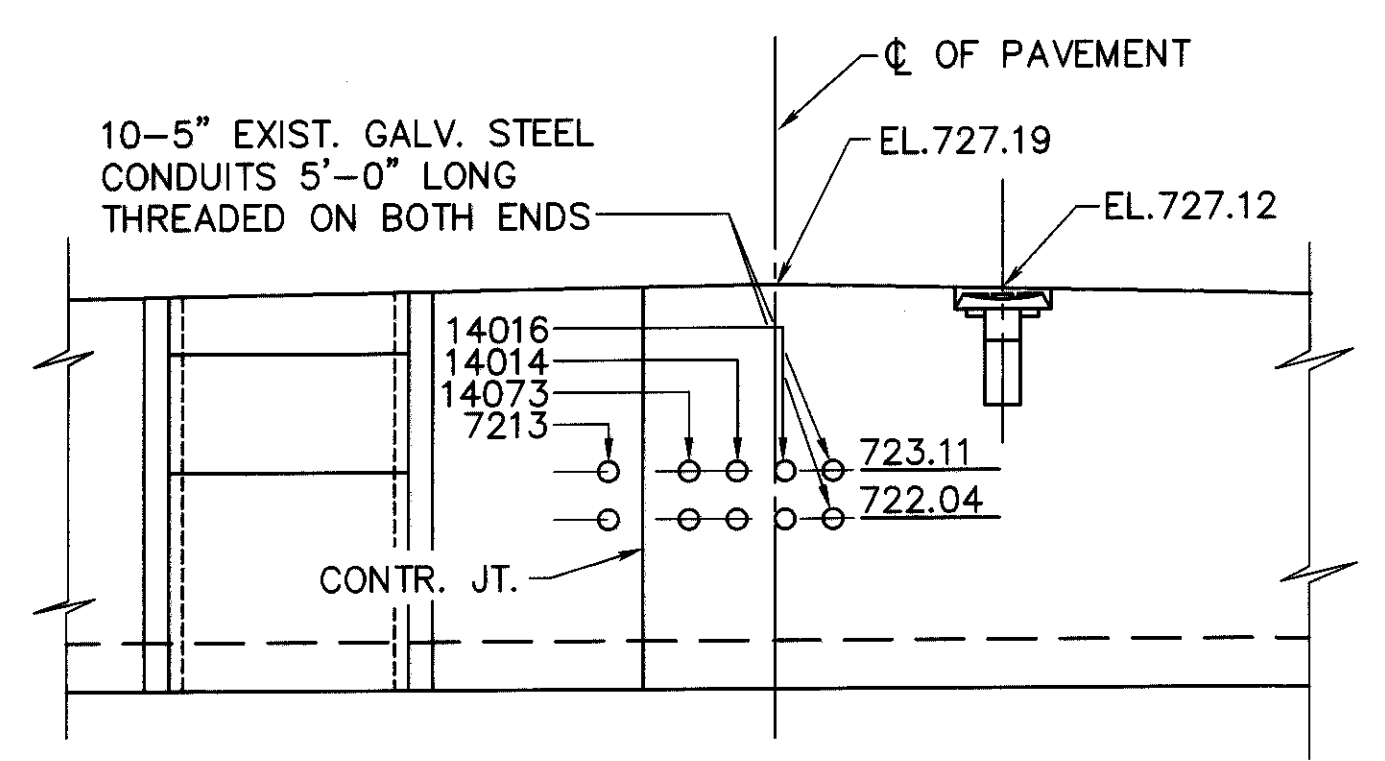
- EXISTING CSP CIRCUIT CONDUCTORS TO REMAIN IN-USE.
- EXISTING CIRCUIT 14073, 7214, AND 2404 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CONDUCTORS CONNECTED TO CIRCUIT 7214 BY DIVISION OF ELECTRICITY.
- EXISTING CIRCUIT 7213 CONDUCTORS REMOVED BY DIVISION OF ELECTRICITY.
- EXISTING CSP CIRCUIT CONDUCTORS TO REMAIN IN-USE. EXISTING CIRCUIT 7213 CONDUCTORS REMOVED BY DIVISION OF ELECTRICITY. NEW CIRCUIT 14073 CONDUCTORS BY DIVISION OF ELECTRICITY.
- EXISTING CIRCUIT 14016, 7213, AND 14014 CONDUCTORS TO REMAIN IN-USE. NEW CIRCUIT 14073 CONDUCTORS BY DIVISION OF ELECTRICITY.
- EXISTING CIRCUIT 7213 CONDUCTORS IN EXISTING DUCTBANK TO REMAIN IN-USE.
- EXISTING 7213 RISER TO REMAIN IN-USE.
- EXISTING CIRCUIT 14014 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CIRCUIT 14073 AND 7214 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CIRCUIT 14073 AND 14014 CONDUCTORS TO REMAIN IN-USE.
- EXISTING CIRCUIT 14016 AND 7213 CONDUCTORS TO REMAIN IN-USE. NEW CIRCUIT 14073 CONDUCTORS BY DIVISION OF ELECTRICITY.
- NEW CIRCUIT 14073 CONDUCTORS DEAD-ENDED BY DIVISION OF ELECTRICITY.
- NEW CIRCUIT 7213 CONDUCTORS BY DIVISION OF ELECTRICITY.
- EXISTING CIRCUIT 14016 AND 7213 TO REMAIN IN-USE.



HORIZONTAL TRANSITION  
N.T.S.



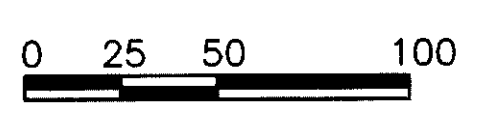
TRANSITION SECTION  
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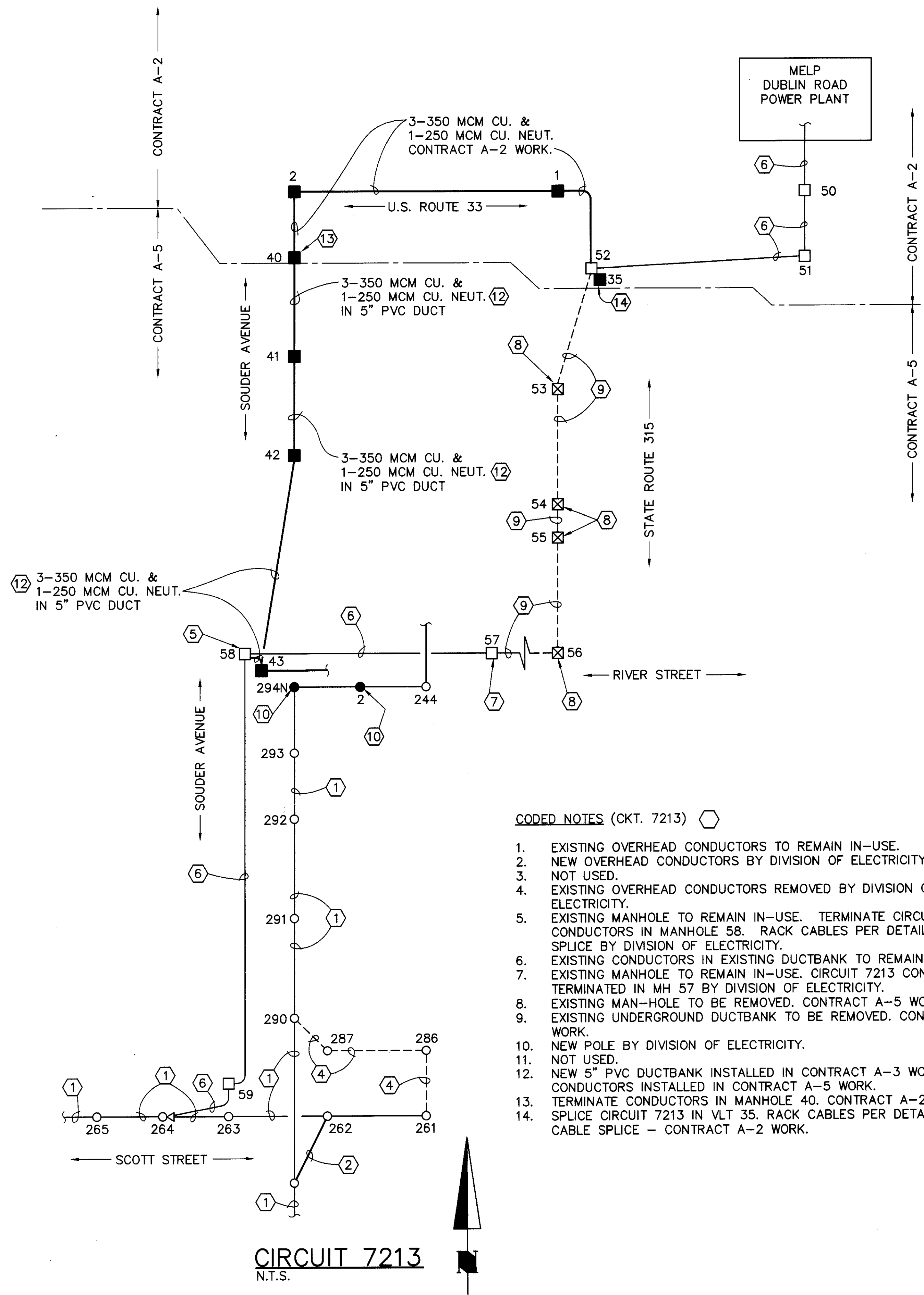


FLOODGATE SILL SECTION  
N.T.S.

FOR REFERENCE ONLY

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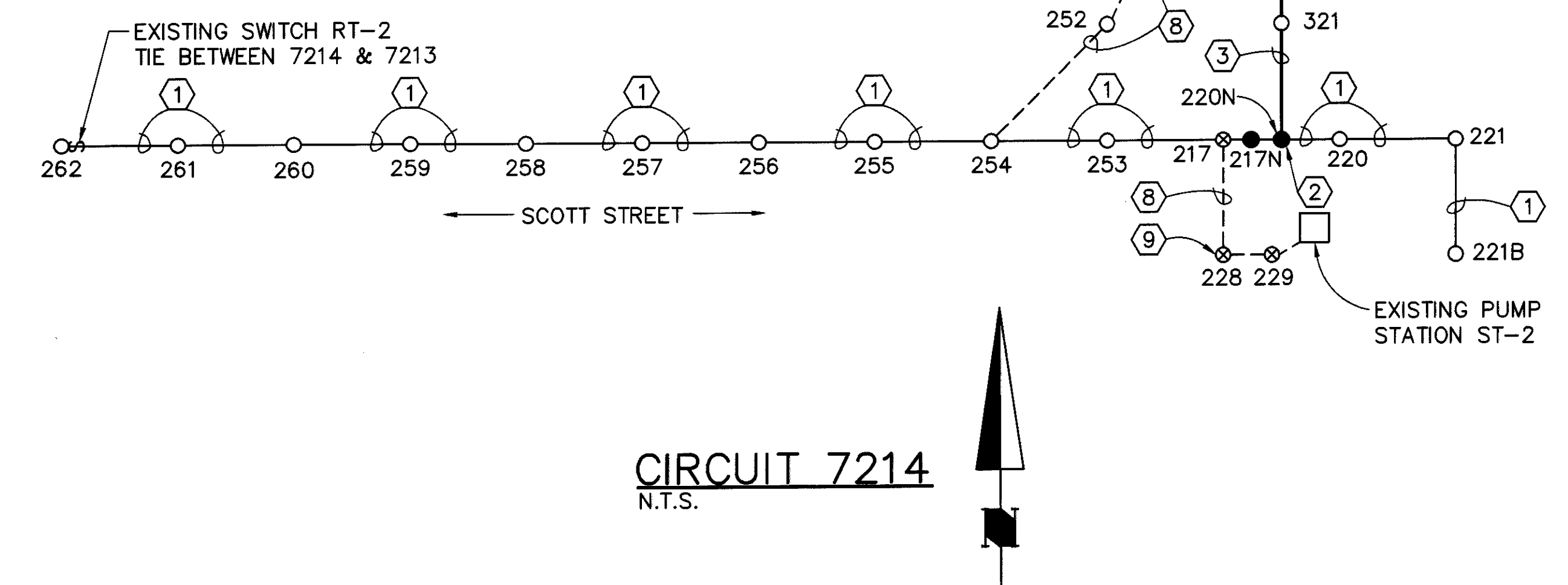




- CODED NOTES (CKT. 7213)**
- EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
  - NEW OVERHEAD CONDUCTORS BY DIVISION OF ELECTRICITY.
  - NOT USED.
  - EXISTING OVERHEAD CONDUCTORS REMOVED BY DIVISION OF ELECTRICITY.
  - EXISTING MANHOLE TO REMAIN IN-USE. TERMINATE CIRCUIT 7213 CONDUCTORS IN MANHOLE 58. RACK CABLES PER DETAIL FOR CABLE SPLICE BY DIVISION OF ELECTRICITY.
  - EXISTING CONDUCTORS IN EXISTING DUCTBANK TO REMAIN IN-USE.
  - EXISTING MANHOLE TO REMAIN IN-USE. CIRCUIT 7213 CONDUCTORS TERMINATED IN MH 57 BY DIVISION OF ELECTRICITY.
  - EXISTING MAN-HOLE TO BE REMOVED. CONTRACT A-5 WORK.
  - EXISTING UNDERGROUND DUCTBANK TO BE REMOVED. CONTRACT A-5 WORK.
  - NEW POLE BY DIVISION OF ELECTRICITY.
  - NOT USED.
  - NEW 5" PVC DUCTBANK INSTALLED IN CONTRACT A-3 WORK, NEW CONDUCTORS INSTALLED IN CONTRACT A-5 WORK.
  - TERMINATE CONDUCTORS IN MANHOLE 40. CONTRACT A-2 WORK.
  - SPLICE CIRCUIT 7213 IN VLT 35. RACK CABLES PER DETAIL FOR CABLE SPLICE - CONTRACT A-2 WORK.

**CODED NOTES (CKT. 7214)**

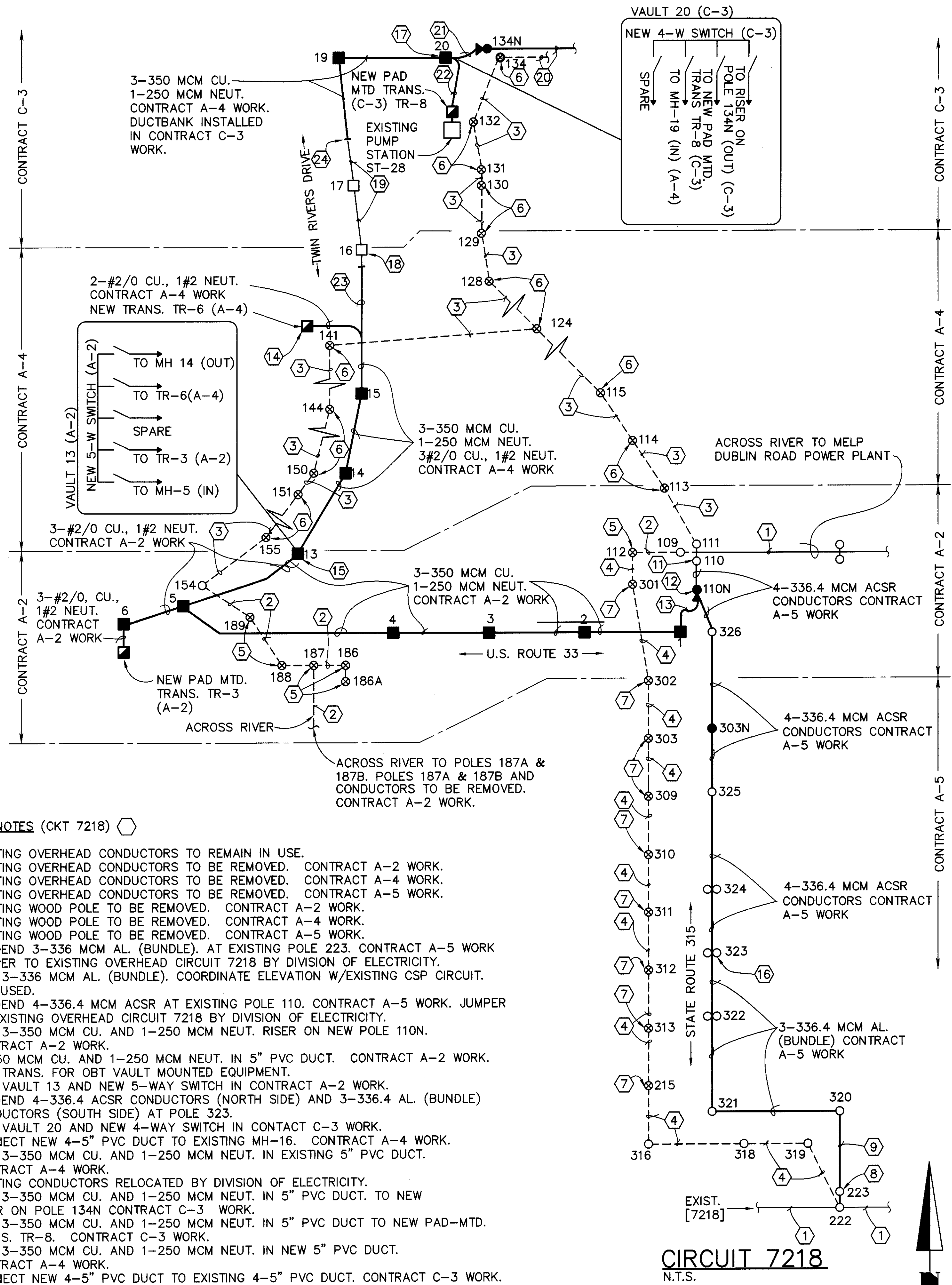
- EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
- DEADEND 3-336.4 MCM AL. BUNDLE AT NEW POLE 220N. CONTRACT A-5 WORK. JUMPER TO EXISTING OVERHEAD CIRCUIT 7214 BY DIVISION OF ELECTRICITY.
- NEW 3-336.4 MCM AL. BUNDLE, COORD. ELEV. W/EXISTING CSP CIRCUIT.
- DEADEND 4-336.4 MCM ACSR. AT NEW POLE 303N. CONTRACT A-5 WORK.
- NEW 3-350 MCM CU. RISER ON NEW POLE 303N. CONTRACT A-5 WORK.
- SPLICE 3-350 MCM CU. IN NEW VAULT 35. RACK CABLES PER DETAIL FOR CABLE SPLICE - CONTRACT A-2 WORK. NEW 5" PVC DUCTBANK AND 350 MCM CONDUCTORS TO POLE 303N IN CONTRACT A-5 WORK, NEW VAULT 35 IN CONTRACT A-2 WORK.
- EXISTING CONDUCTORS IN EXISTING DUCTBANK TO REMAIN IN-USE.
- EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING MAN-HOLE TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING UNDERGROUND DUCTBANK AND CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
- DEAD-END 4-336.4 ACSR CONDUCTORS (NORTH SIDE) AND 3-336.4 AL (BUNDLE) CONDUCTORS (SOUTH SIDE) AT POLE 323.



**CIRCUIT 7214**  
N.T.S.

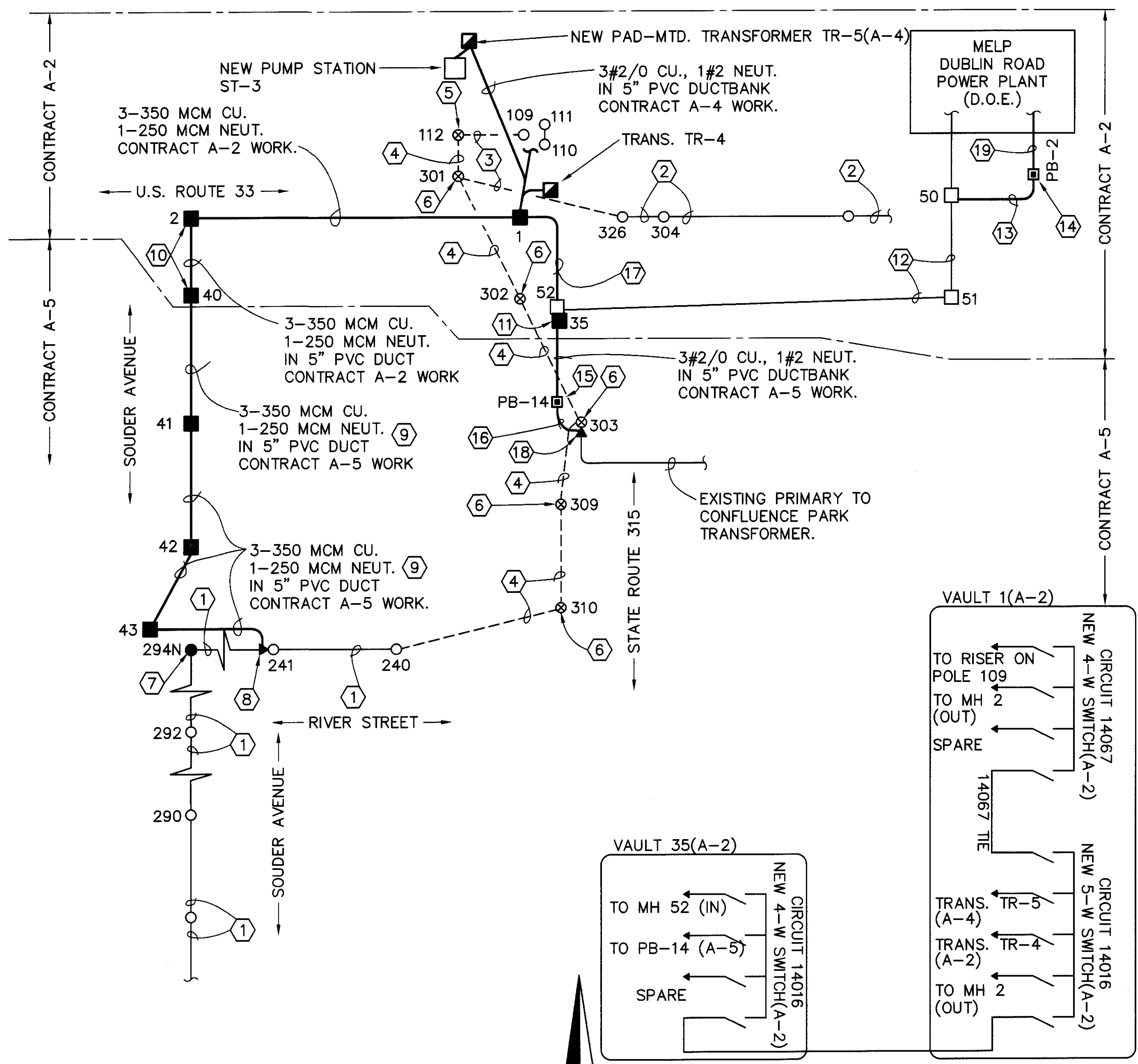
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**CODED NOTES (CKT 7218)**

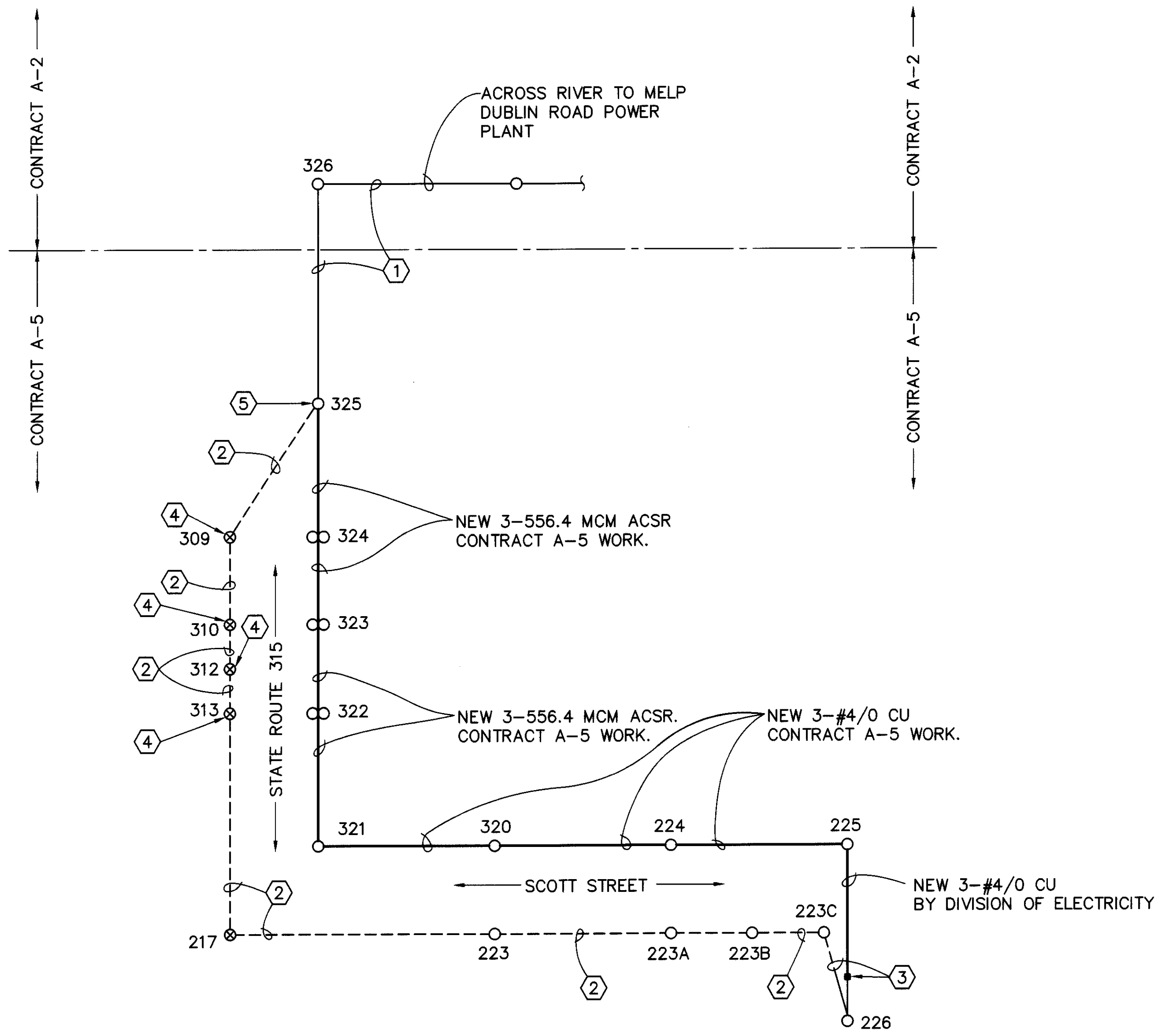
1. EXISTING OVERHEAD CONDUCTORS TO REMAIN IN USE.
2. EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-2 WORK.
3. EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-4 WORK.
4. EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
5. EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-2 WORK.
6. EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-4 WORK.
7. EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
8. DEADEND 3-336.4 MCM AL. (BUNDLE) AT EXISTING POLE 223. CONTRACT A-5 WORK JUMPER TO EXISTING OVERHEAD CIRCUIT 7218 BY DIVISION OF ELECTRICITY.
9. NEW 3-336.4 MCM AL. (BUNDLE). COORDINATE ELEVATION W/EXISTING CSP CIRCUIT. NOT USED.
11. DEADEND 4-336.4 MCM ACSR AT EXISTING POLE 110. CONTRACT A-5 WORK. JUMPER TO EXISTING OVERHEAD CIRCUIT 7218 BY DIVISION OF ELECTRICITY.
12. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. RISER ON NEW POLE 110N. CONTRACT A-2 WORK.
13. 3-350 MCM CU. AND 1-250 MCM NEUT. IN 5" PVC DUCT. CONTRACT A-2 WORK.
14. NEW TRANS. FOR OBT VAULT MOUNTED EQUIPMENT.
15. NEW VAULT 13 AND NEW 5-WAY SWITCH IN CONTRACT A-2 WORK.
16. DEADEND 4-336.4 ACSR CONDUCTORS (NORTH SIDE) AND 3-336.4 AL. (BUNDLE) CONDUCTORS (SOUTH SIDE) AT POLE 323.
17. NEW VAULT 20 AND NEW 4-WAY SWITCH IN CONTACT C-3 WORK.
18. CONNECT NEW 4-5" PVC DUCT TO EXISTING MH-16. CONTRACT A-4 WORK.
19. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN EXISTING 5" PVC DUCT. CONTRACT A-4 WORK.
20. EXISTING CONDUCTORS RELOCATED BY DIVISION OF ELECTRICITY.
21. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN 5" PVC DUCT. TO NEW RISER ON POLE 134N CONTRACT C-3 WORK.
22. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN 5" PVC DUCT TO NEW PAD-MTD. TRANS. TR-8. CONTRACT C-3 WORK.
23. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN NEW 5" PVC DUCT. CONTRACT A-4 WORK.
24. CONNECT NEW 4-5" PVC DUCT TO EXISTING 4-5" PVC DUCT. CONTRACT C-3 WORK.



**CODED NOTES (CKT 14016)**

1. EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
2. EXISTING OVERHEAD CONDUCTORS TO BE ABANDONED IN-PLACE.
3. EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-2 WORK.
4. EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
5. EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-2 WORK.
6. EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
7. NEW WOOD POLE 294N BY DIVISION OF ELECTRICITY. REPLACES EXISTING WOOD POLE 294.
8. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. RISER (CONDUIT AND WIRE ONLY) ON EXISTING POLE 241. CONTRACT A-5 WORK.
9. NEW 5" PVC DUCTBANK INSTALLED IN CONTRACT A-3 WORK. NEW CONDUCTORS INSTALLED IN CONTRACT A-5 WORK.
10. NEW CONDUCTORS FROM MH 40 TO MH 2 TO BE INSTALLED IN CONTRACT A-2 WORK.
11. TERMINATE CONDUCTORS FROM VLT 1 AND MH 51 IN VAULT 35. CONTRACT A-2 WORK. TERMINATE CONDUCTORS FROM PB-14 IN VAULT 35. CONTRACT A-5 WORK.
12. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN EXISTING 5" PVC DUCTBANK. CONTRACT A-2 WORK.
13. NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN NEW 5" PVC DUCT. CONTRACT A-2 WORK.
14. TERMINATE CONDUCTORS IN NEW PULLBOX PB-2. CONTRACT A-2 WORK. RACK CABLES PER DETAIL. NEW PULLBOX PB-2 BY DIVISION OF ELECTRICITY.
15. TERMINATE 3-#2/0 CU., 1-#2 NEUT. IN NEW PULLBOX PB-14. NEW PULLBOX PB-14 IN CONTRACT A-5 WORK.
16. NEW DUCT AND CABLE ROUTING BY DIVISION OF ELECTRICITY.
17. TWO(2)-NEW 3-350 MCM CU. AND 1-250 MCM NEUT. CABLES IN 5" PVC DUCTBANK. CONTRACT A-2 WORK.
18. EXISTING PRIMARY RISER CONDUCTORS RELOCATED FROM POLE 303 AND SPliced TO NEW CONDUCTORS IN PB-14 (A-5) BY DIVISION OF ELECTRICITY.
19. NEW DUCT AND CONDUCTORS BY DIVISION OF ELECTRICITY.

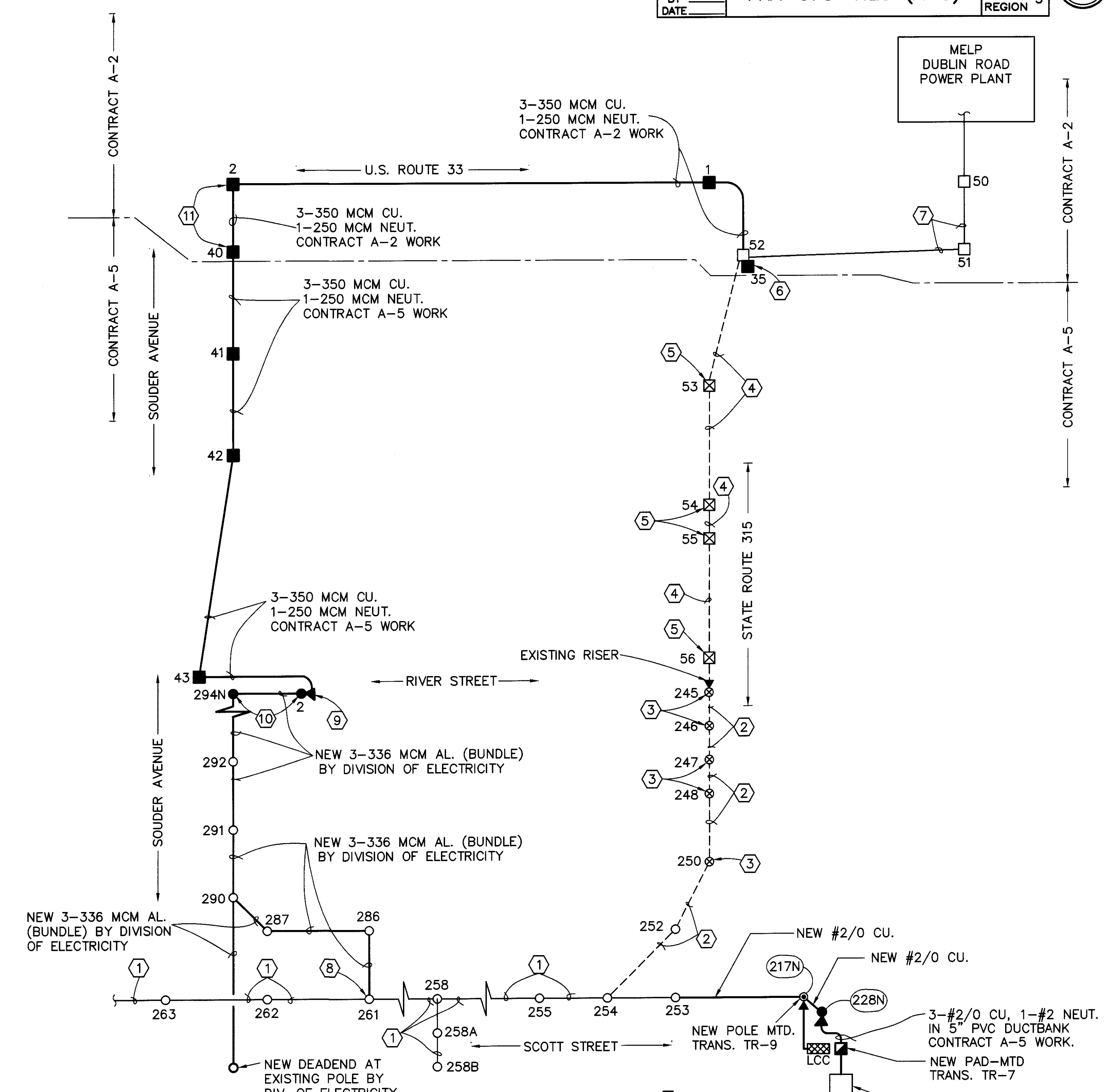
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**CIRCUIT 14056**  
N.T.S.

**CODED NOTES (CKT 14056)**

- EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
- EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
- SPLICE EXISTING 3-#4/0 CU CONDUCTORS FROM EXISTING POLE 226 TO NEW 3-#4/0 CU CONDUCTORS FROM POLE 225 (BY DIVISION OF ELECTRICITY).
- EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
- RE-CONNECT EXISTING 3-#4/0 CU CONDUCTORS FROM EXISTING POLE 326 TO NEW STRAP-ON SUSPENSION INSULATORS ON EXISTING POLE 325. CONNECT NEW 3-556.4 MCM ACSR CONDUCTORS FROM POLE 324 TO NEW STRAP-ON SUSPENSION INSULATOR AND JUMPER FROM EXISTING POST INSULATOR TO EXISTING CONDUCTORS. CONTRACT A-5 WORK.



**CIRCUIT 14073**  
N.T.S.

**CODED NOTES (CKT 14073)**

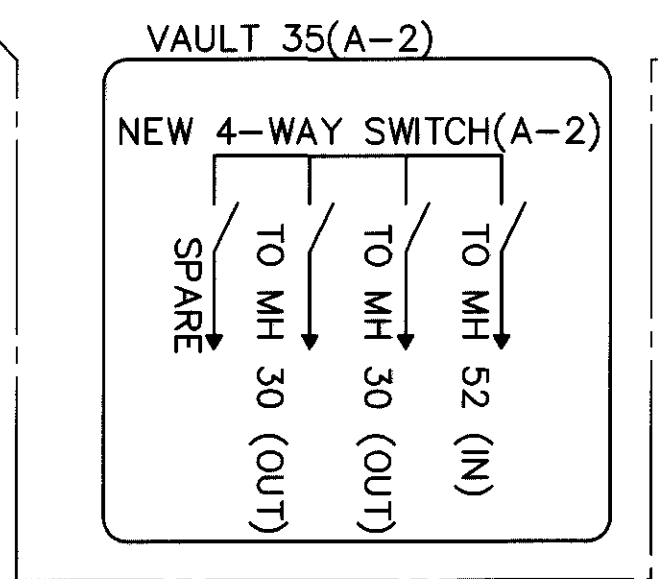
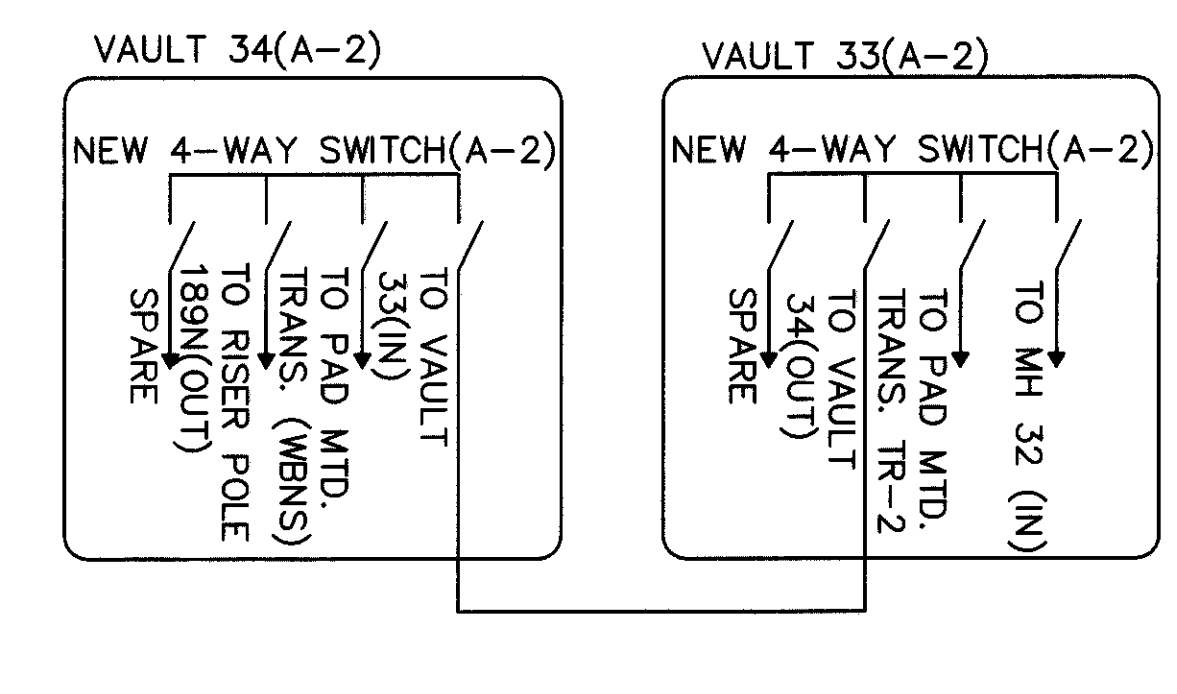
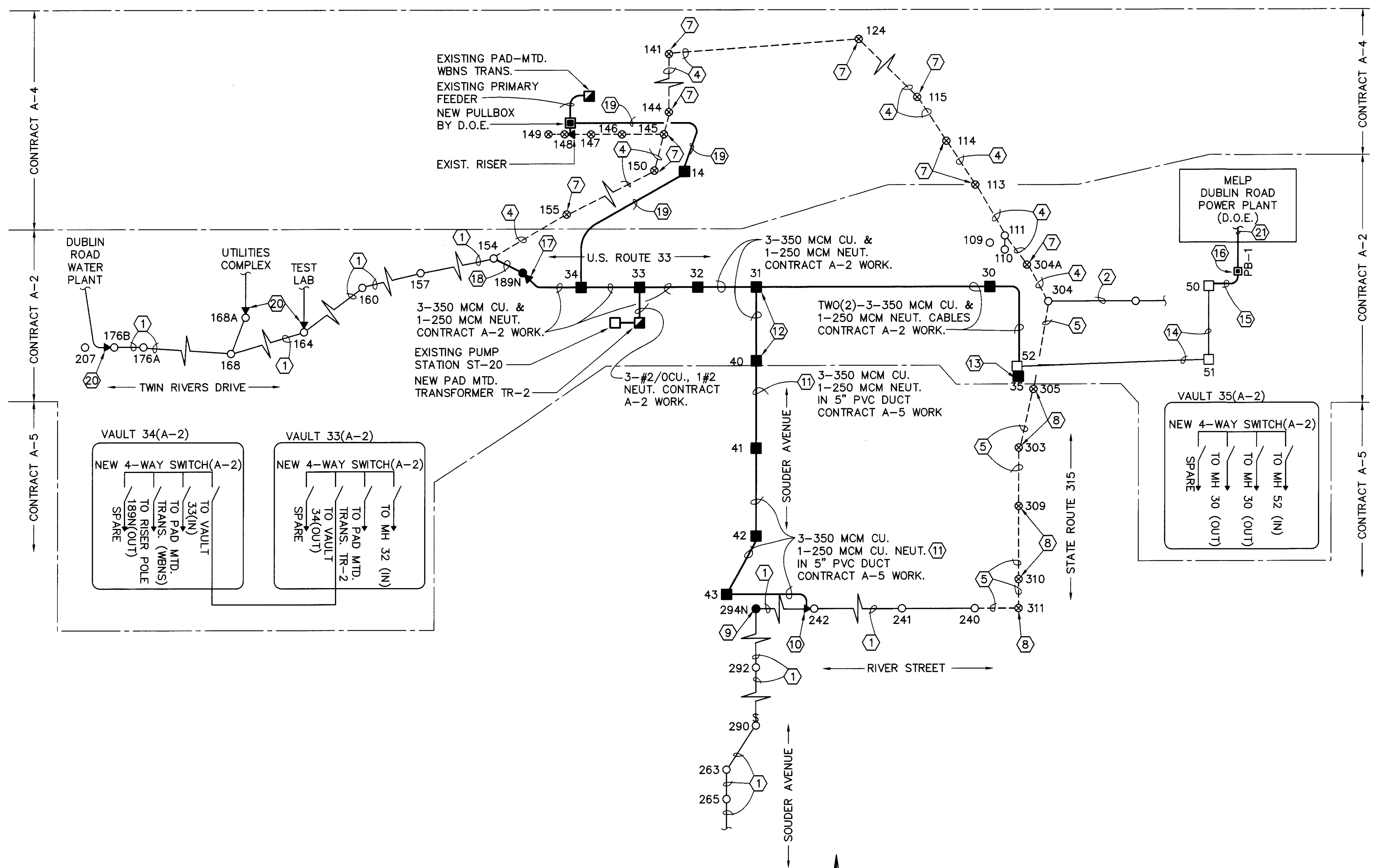
- EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
- EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING UNDERGROUND DUCTBANK TO BE REMOVED. CONTRACT A-5 WORK.
- EXISTING MANHOLE TO BE REMOVED CONTRACT A-5 WORK.
- SPLICE 3-350 MCM CU. AND 1-250 MCM NEUT. IN NEW VAULT-35. RACK CABLES PER DETAIL FOR CABLE SPLICE. CONTRACT A-2 WORK.
- EXISTING CONDUCTORS IN EXISTING DUCTBANK TO REMAIN IN-USE.
- NEW 3-336 MCM AL. TIED TO EXISTING CONDUCTORS BY DIVISION OF ELECTRICITY.
- NEW 3-350 MCM CU. AND 1-250 MCM NEUT. RISER (CONDUIT AND WIRE ONLY) ON NEW POLE 2. CONTRACT A-5 WORK.
- NEW WOOD POLE BY DIVISION OF ELECTRICITY.
- NEW CONDUCTORS FROM MH 40 TO MH 2 TO BE INSTALLED IN CONTRACT A-2 WORK.

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CODED NOTES (CKT 14014) ☐

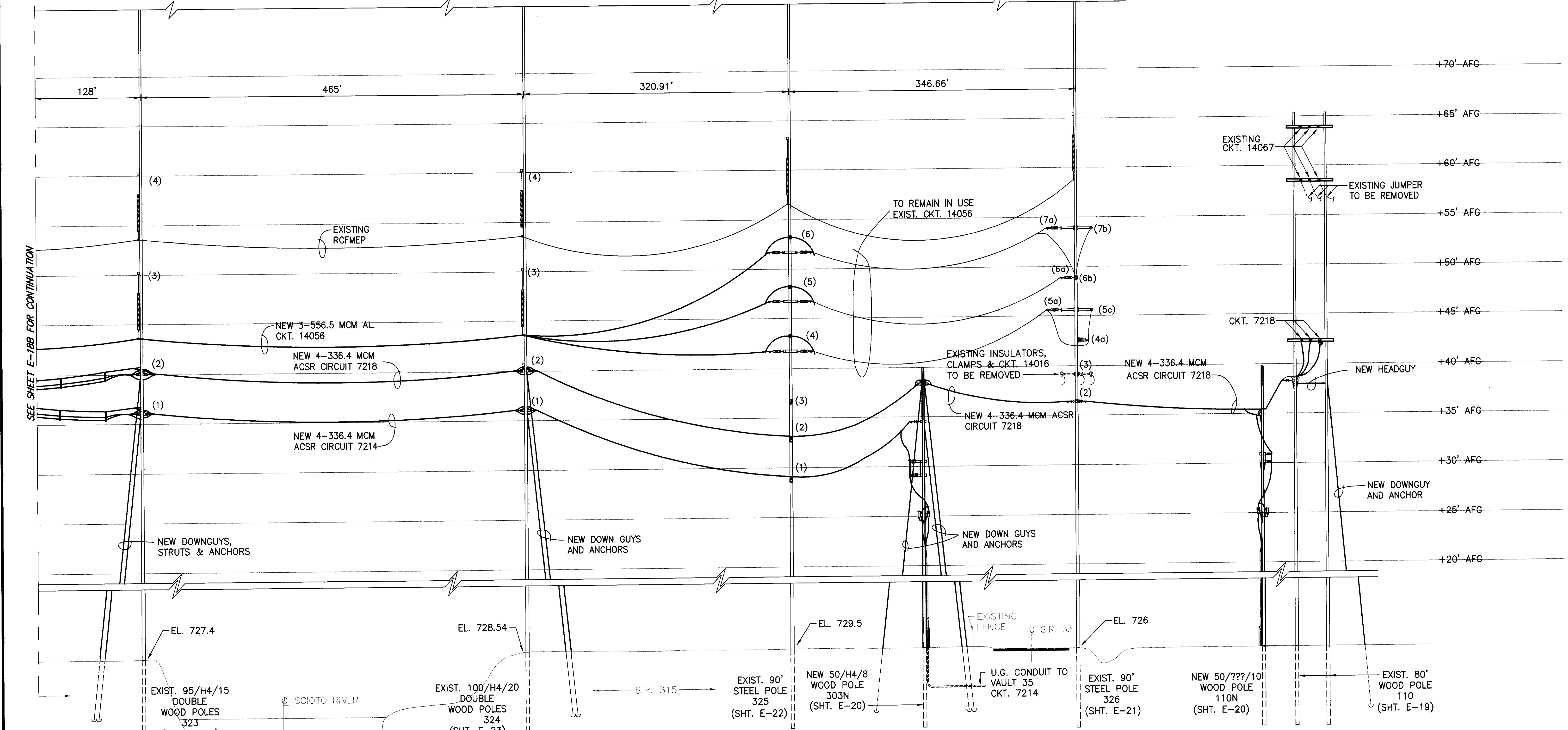
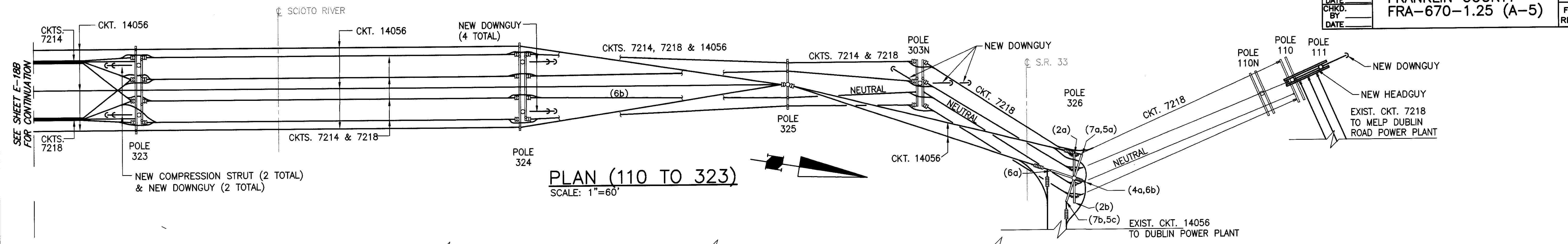
- 1 EXISTING OVERHEAD CONDUCTORS TO REMAIN IN-USE.
- 2 EXISTING OVERHEAD CONDUCTORS TO BE ABANDONED IN-PLACE.
- 3 NOT USED.
- 4 EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-4 WORK.
- 5 EXISTING OVERHEAD CONDUCTORS TO BE REMOVED. CONTRACT A-5 WORK.
- 6 NOT USED
- 7 EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-4 WORK.
- 8 EXISTING WOOD POLE TO BE REMOVED. CONTRACT A-5 WORK.
- 9 NEW WOOD POLE 294N BY DIVISION OF ELECTRICITY. REPLACES EXISTING WOOD POLE 294.
- 10 NEW 3-350 MCM CU. AND 1-250 MCM NEUT. RISER (CONDUIT AND WIRE ONLY) ON EXISTING POLE 242. CONTRACT A-5 WORK.
- 11 NEW 5" PVC DUCTBANK INSTALLED IN CONTRACT A-3 WORK, NEW CONDUCTORS INSTALLED IN CONTRACT A-5 WORK.
- 12 NEW CONDUCTORS AND CONDUIT FROM MH 40 TO VAULT 31 TO BE INSTALLED IN CONTRACT A-2 WORK.
- 13 TERMINATE CONDUCTORS FROM MH 30, MH 51, AND MH-52 IN VAULT 35. CONTRACT A-2 WORK.
- 14 NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN EXISTING 5" PVC DUCT-BANK. CONTRACT A-2 WORK.
- 15 NEW 3-350 MCM CU. AND 1-250 MCM NEUT. IN NEW 5" PVC DUCT. CONTRACT A-2 WORK.
- 16 TERMINATE CONDUCTORS IN NEW PULLBOX PB-1. CONTRACT A-2 WORK. NEW PULLBOX PB-1 BY DIVISION OF ELECTRICITY.
- 17 NEW 3-350 MCM CU. AND 1-250 MCM NEUT. RISER ON NEW POLE 189N. CONTRACT A-2 WORK.
- 18 NEW 4-336.4 MCM ACSR. (SLACK SPAN) FROM NEW RISER POLE 189N TO EXISTING POLE 154. CONTRACT A-2 WORK.
- 19 NEW 3-#2/0 CU., 1-#2 NEUT. IN 5" PVC CONDUIT. CONTRACT A-4 WORK.
- 20 EXISTING PRIMARY RISER TO REMAIN IN-USE.
- 21 NEW DUCT AND CONDUCTORS BY DIVISION OF ELECTRICITY.



**CIRCUIT 14014**  
N.T.S.

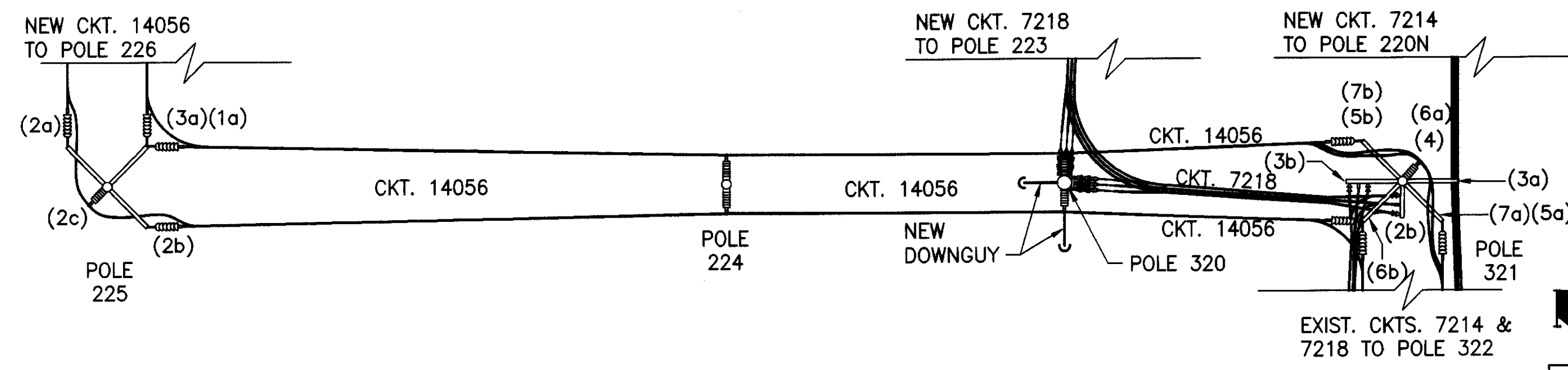


T:\S\FAC\9231314356\CONTRACT A-5\A5-E-17.DWG SEP 06 1997 11:06:16 PLOT SCALE = 12

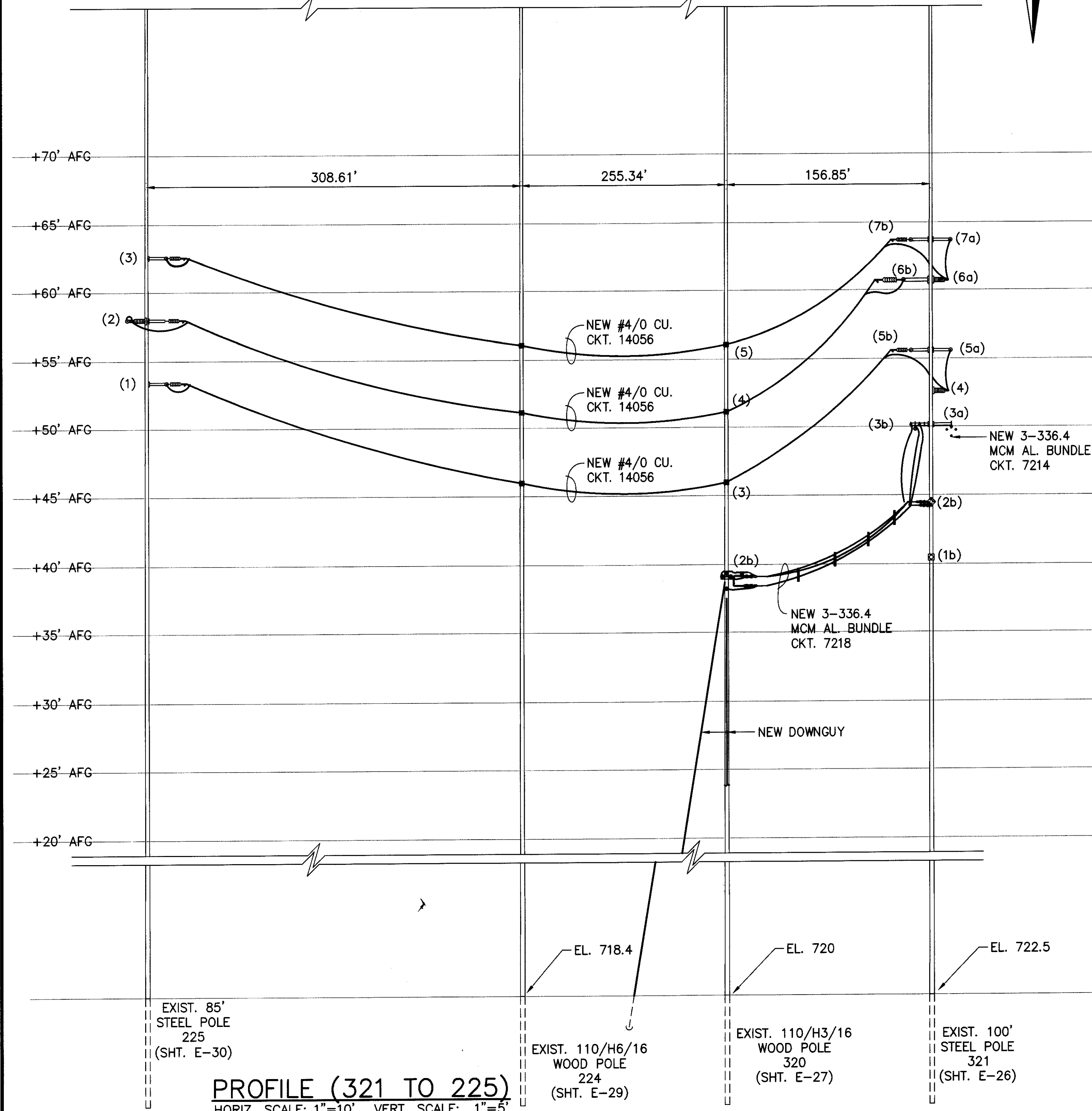


T.S. I:\PAC\923131\5\CONTRACT A-5\45-E-18A.DWG SEP 08, 1997 11:25:39 PLOT SCALE = 720

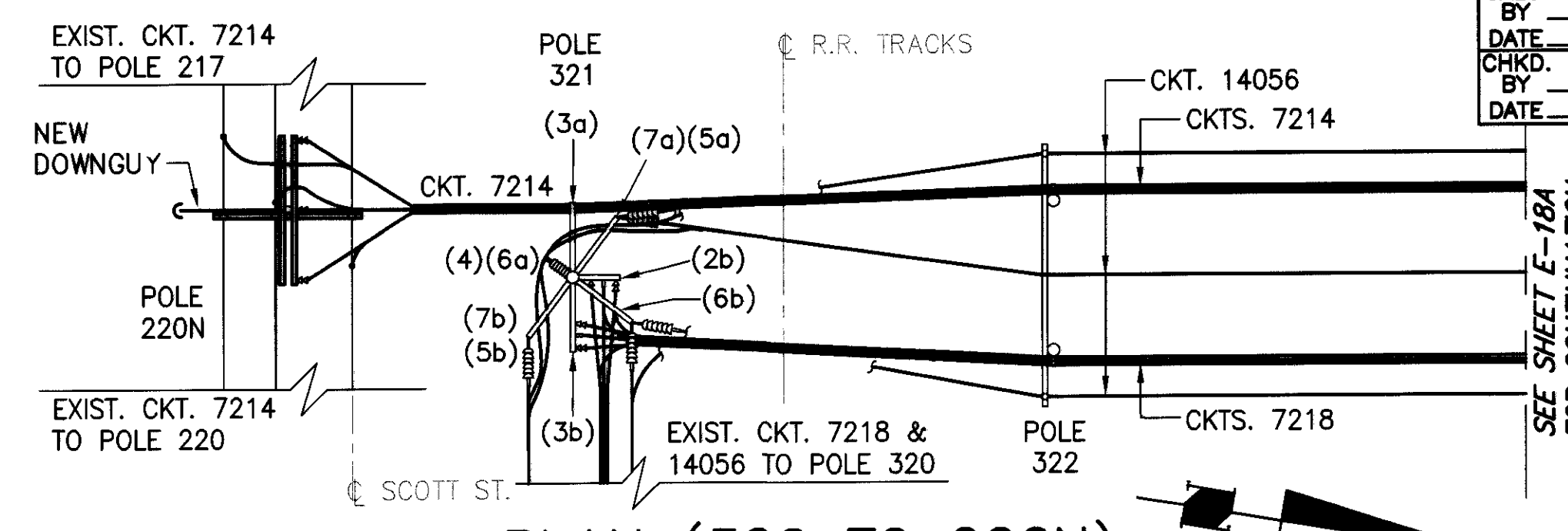




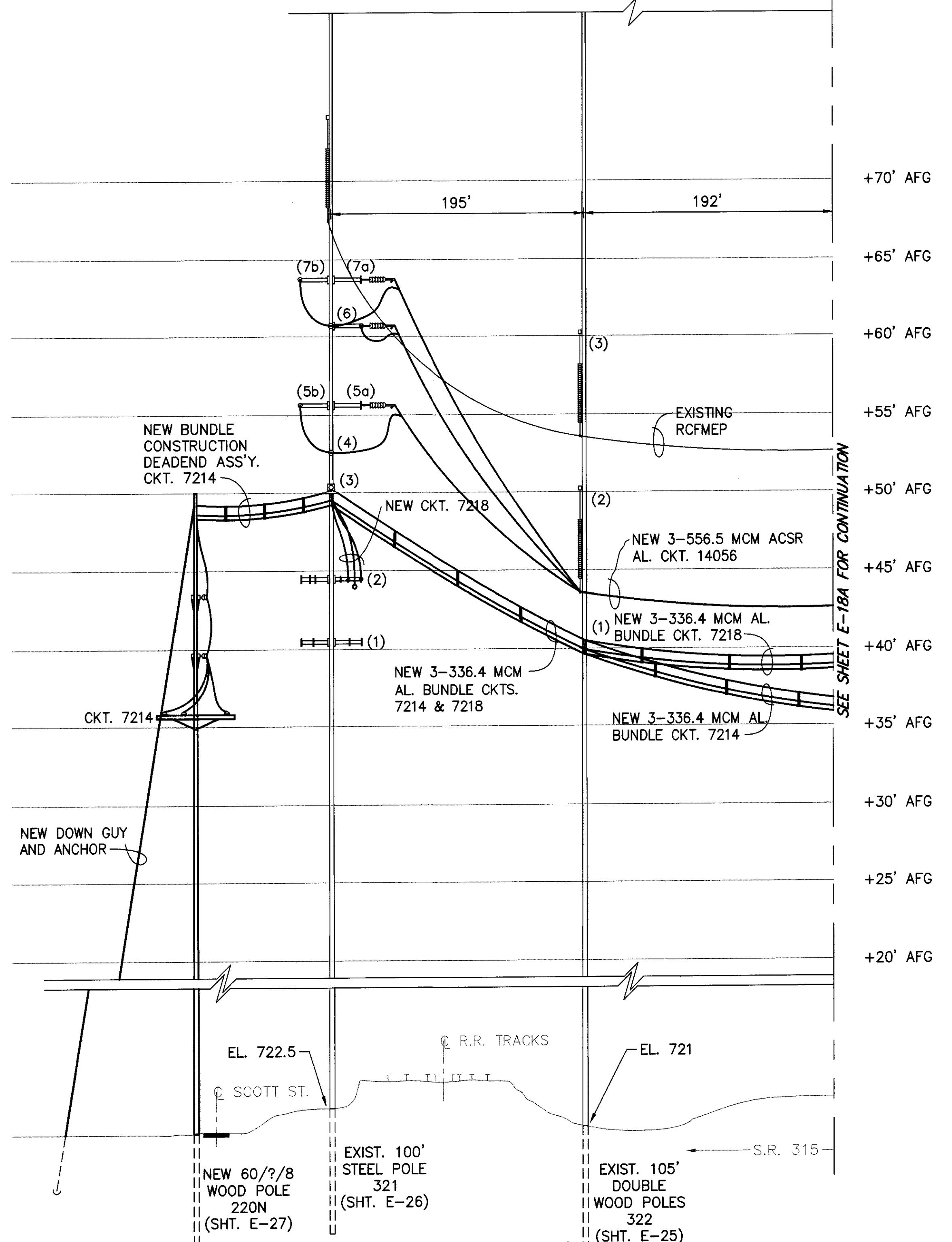
**PLAN (321 TO 225)**  
HORIZ. SCALE: 1"=10' VERT. SCALE: 1"=60'



**PROFILE (321 TO 225)**  
HORIZ. SCALE: 1"=10' VERT. SCALE: 1"=5'

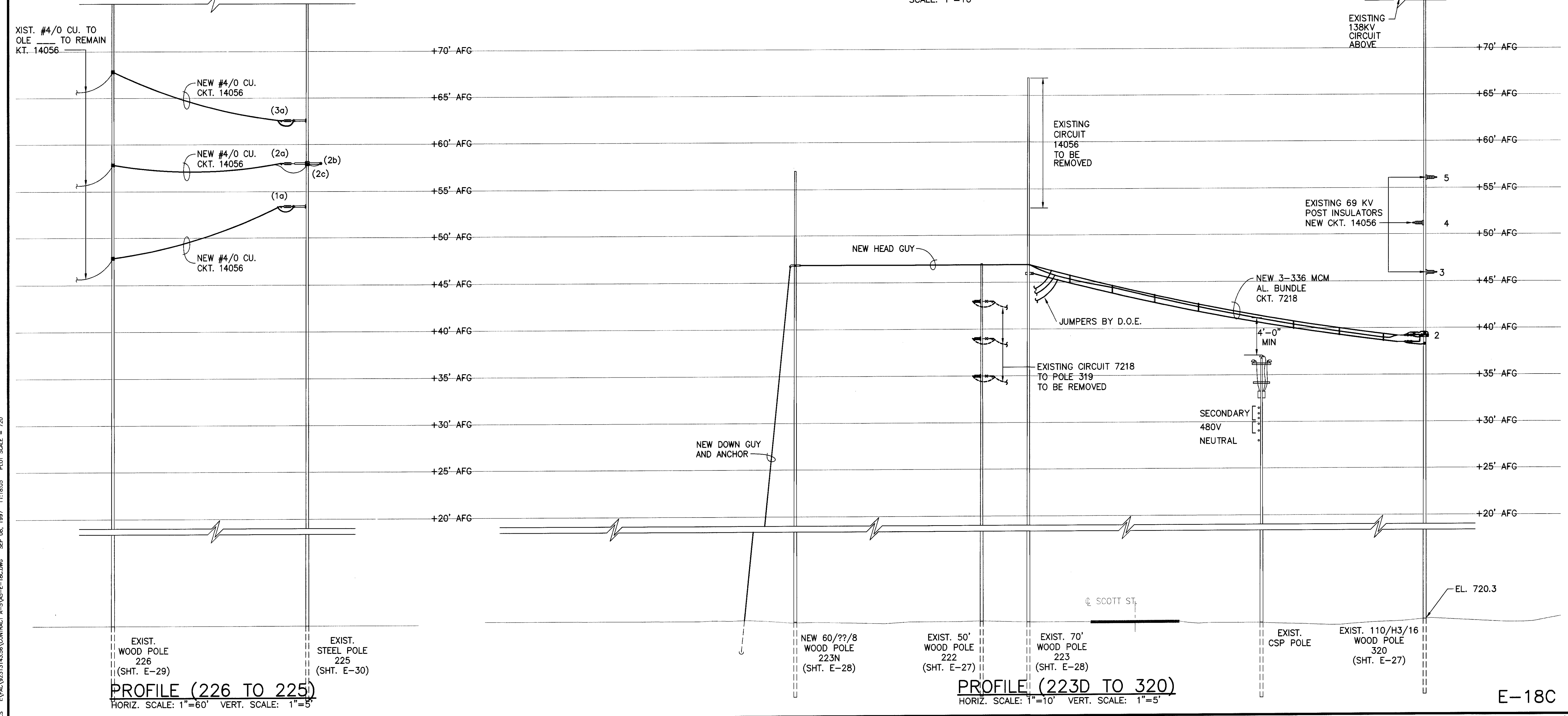
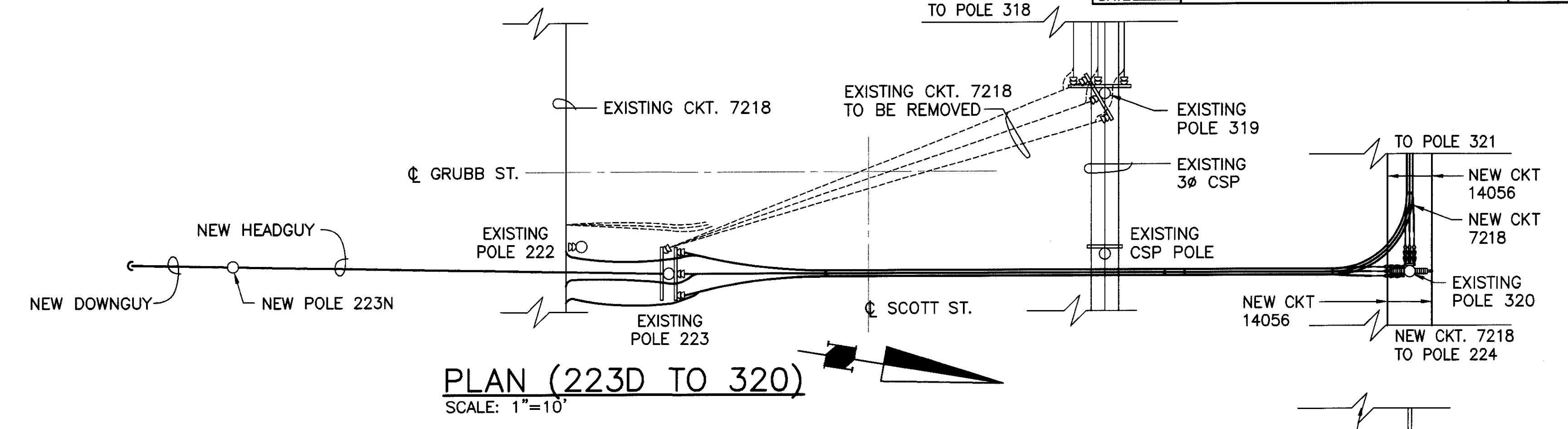
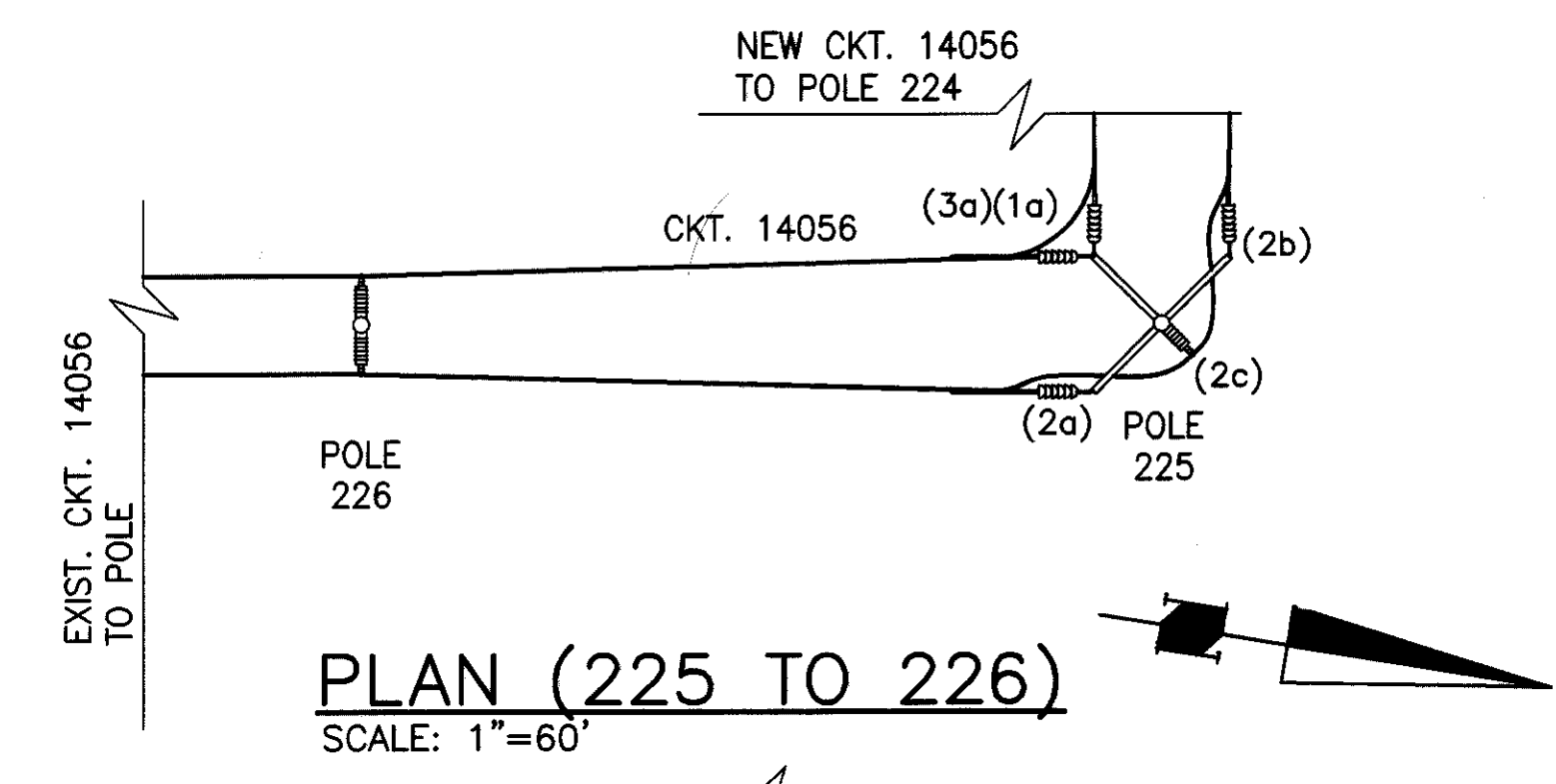


**PLAN (322 TO 220N)**  
SCALE: 1"=60'



**PROFILE (322 TO 220N)**  
HORIZ. SCALE: 1"=60' VERT. SCALE: 1"=5'

T.L.S. I:\PAC\9231314356\CONTRACT A-5\95-E-188.DWG SEP 08, 1997 11:28:40 PLOT SCALE = 720



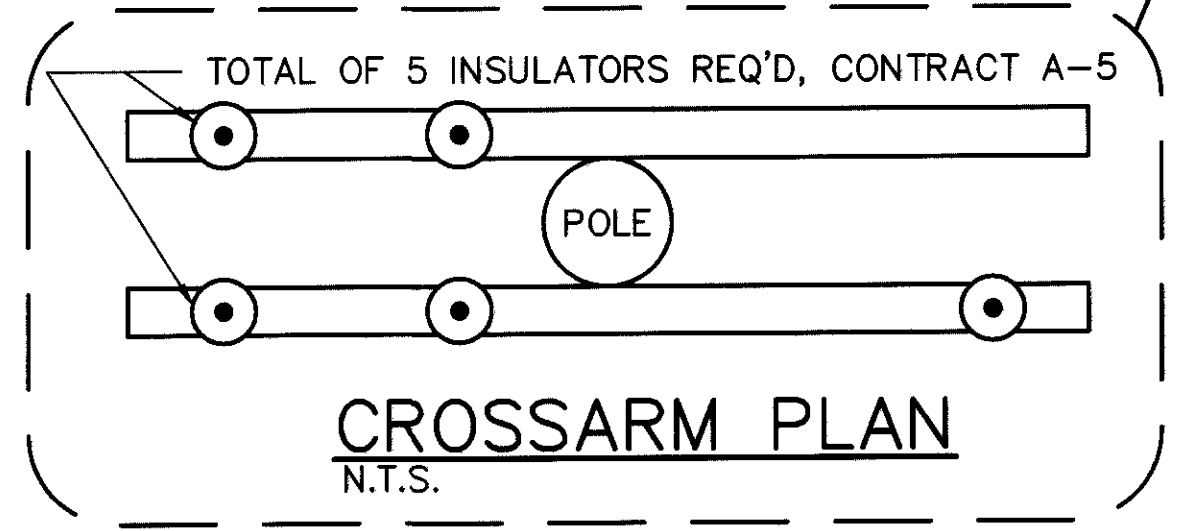
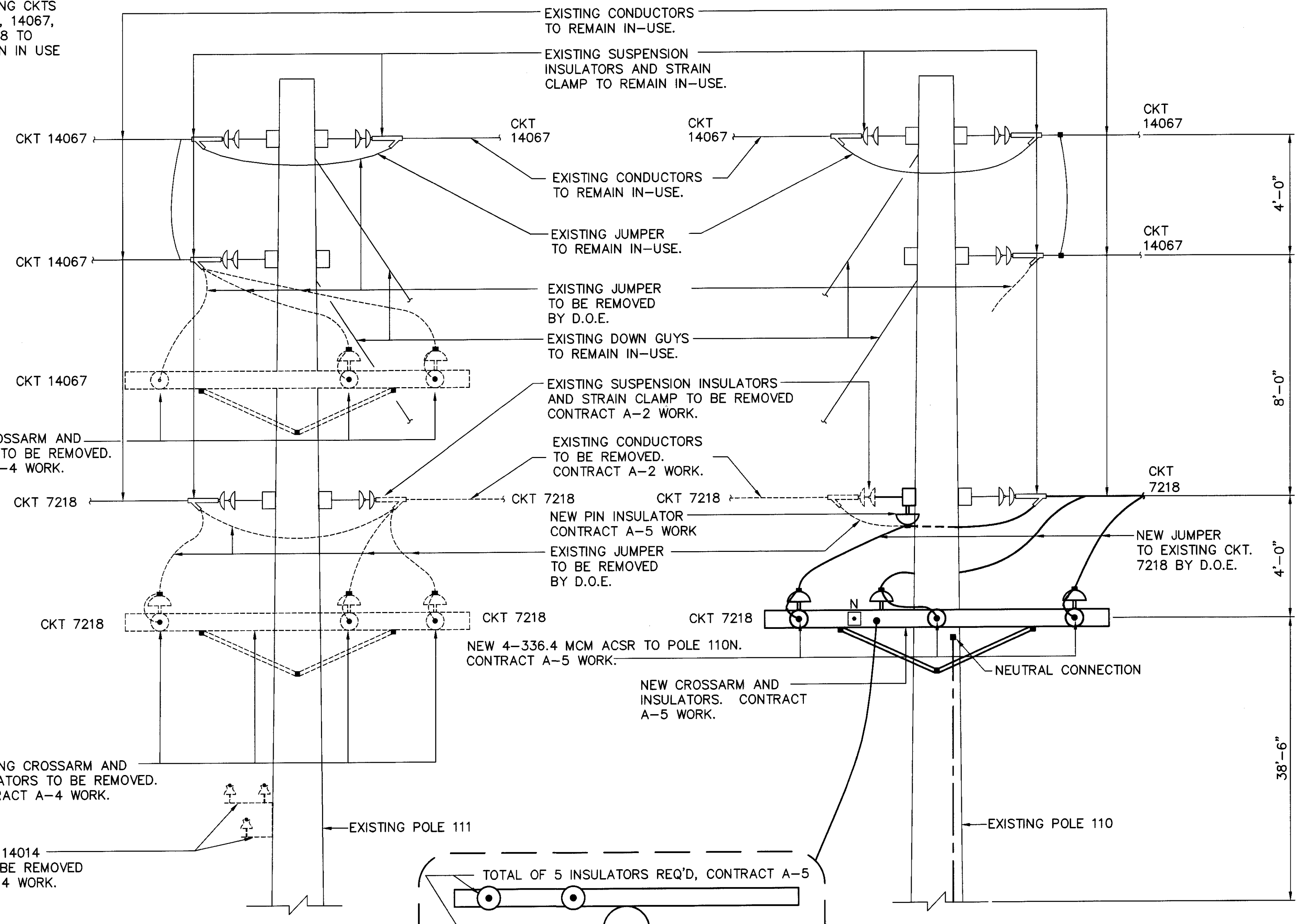
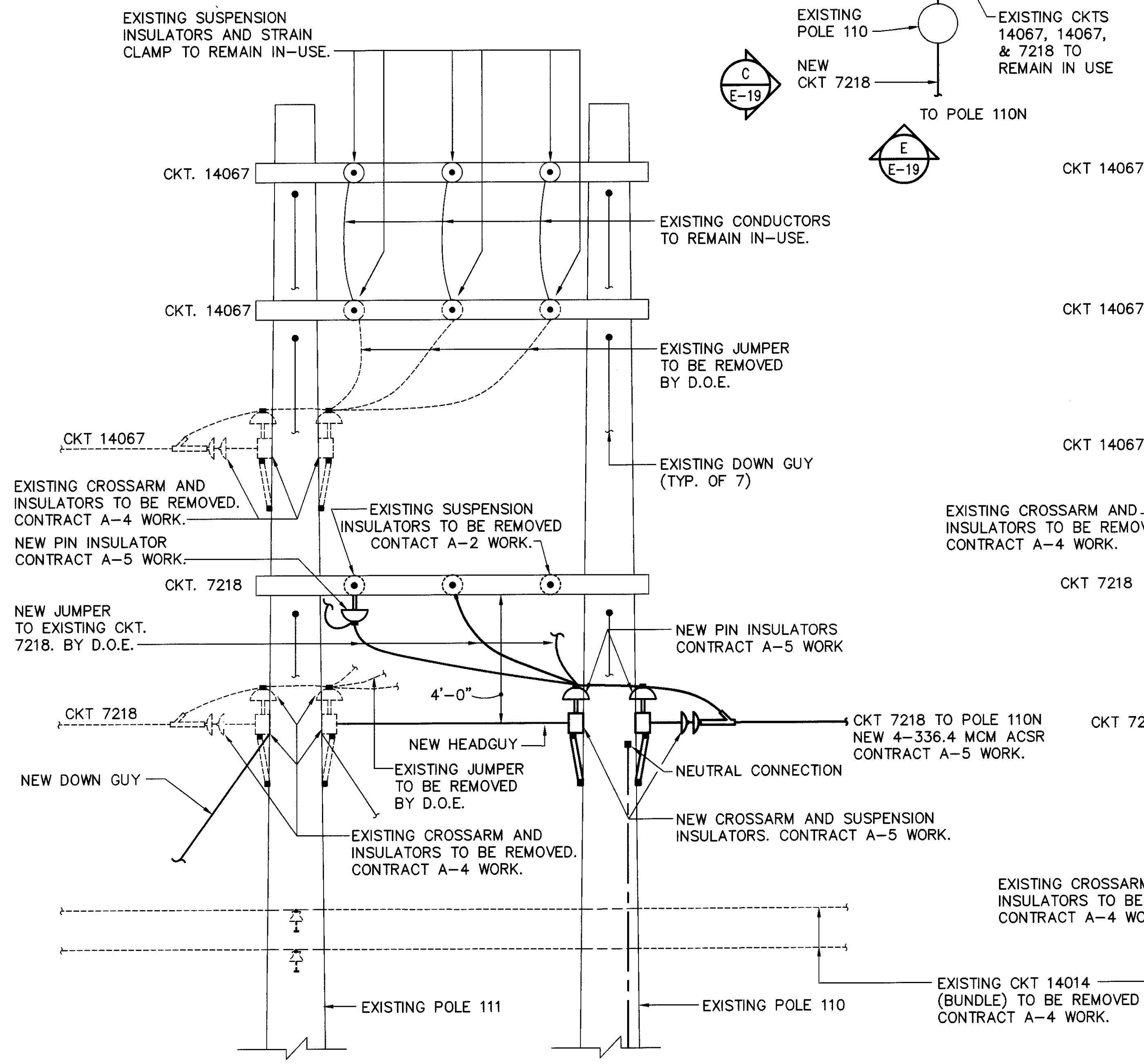
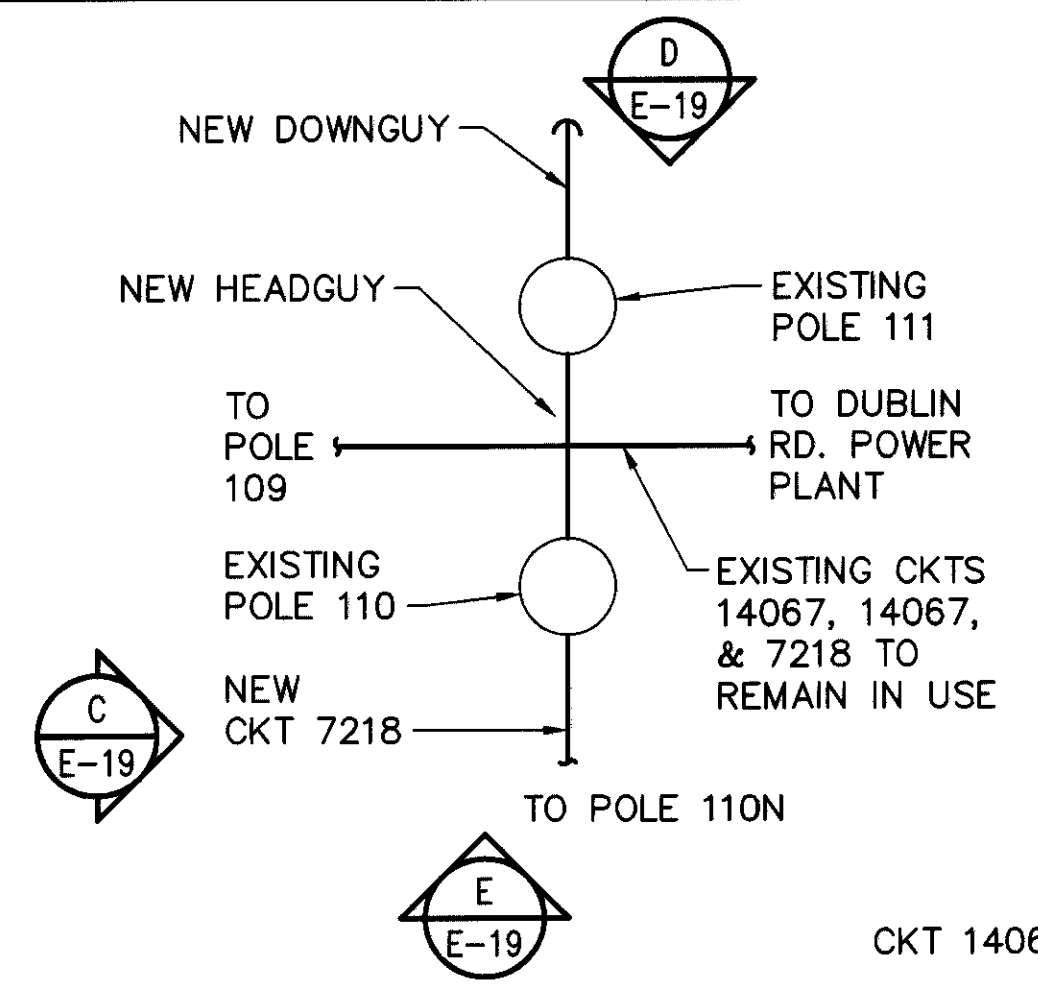
T15 I:\FAC\9231314356\CONTRACT A-5\A5-E-18C.DWG SEP 06, 1997 11:18:05 PLOT SCALE = 720



NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

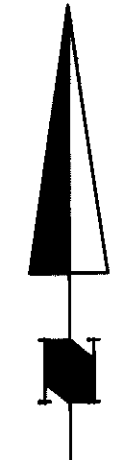


ELEVATION C  
N.T.S. (E-19)

ELEVATION D  
N.T.S. (E-19)

ELEVATION E  
N.T.S. (E-19)

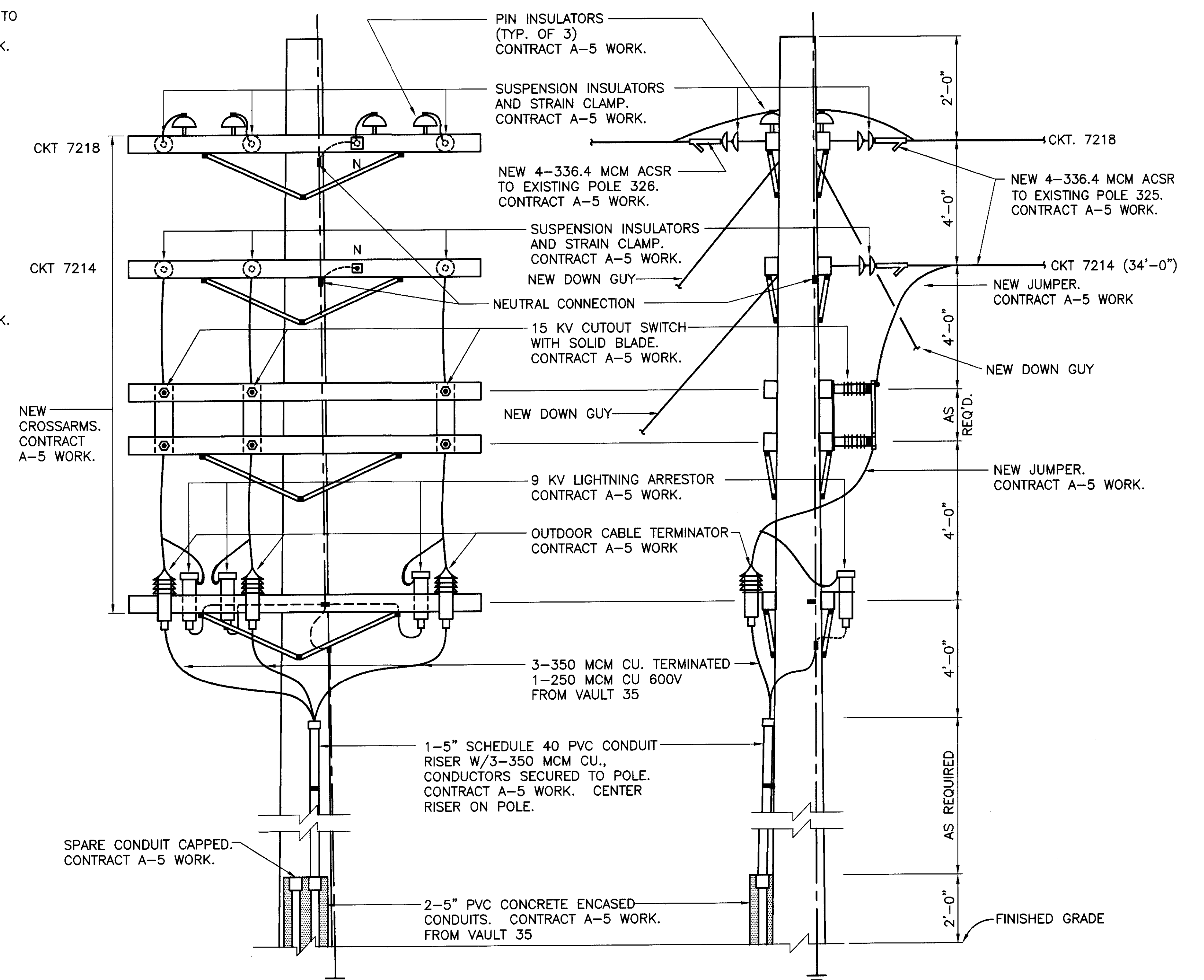
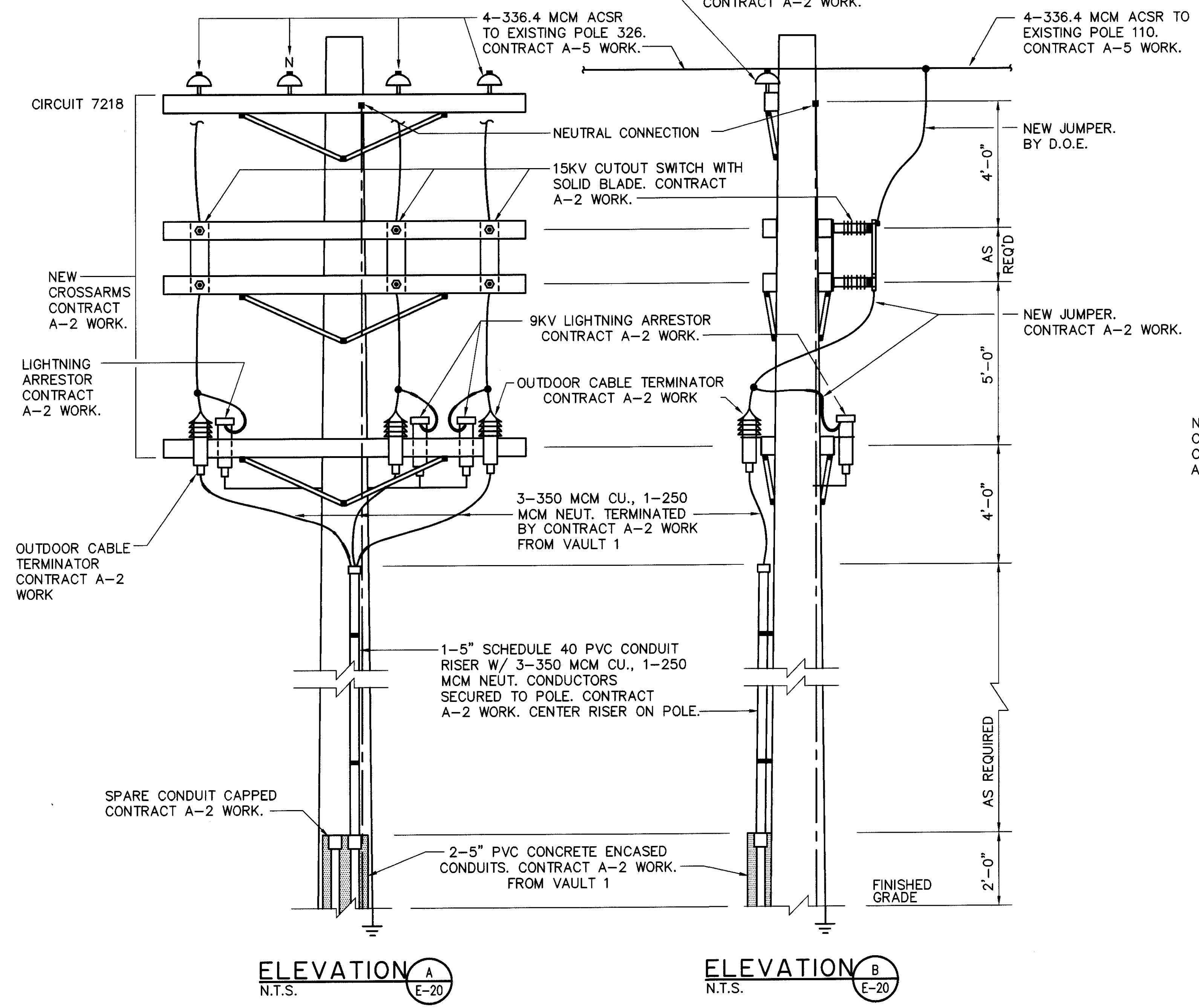
EXISTING POLES 110 & 111 (CKTS 7218, 14076)  
N.T.S.



TLS I:\FAC\92313143.95\CONTRACT A-5\A-5-E-19.DWG SEP 05 1997 14:33:57 PLOT SCALE = 12

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

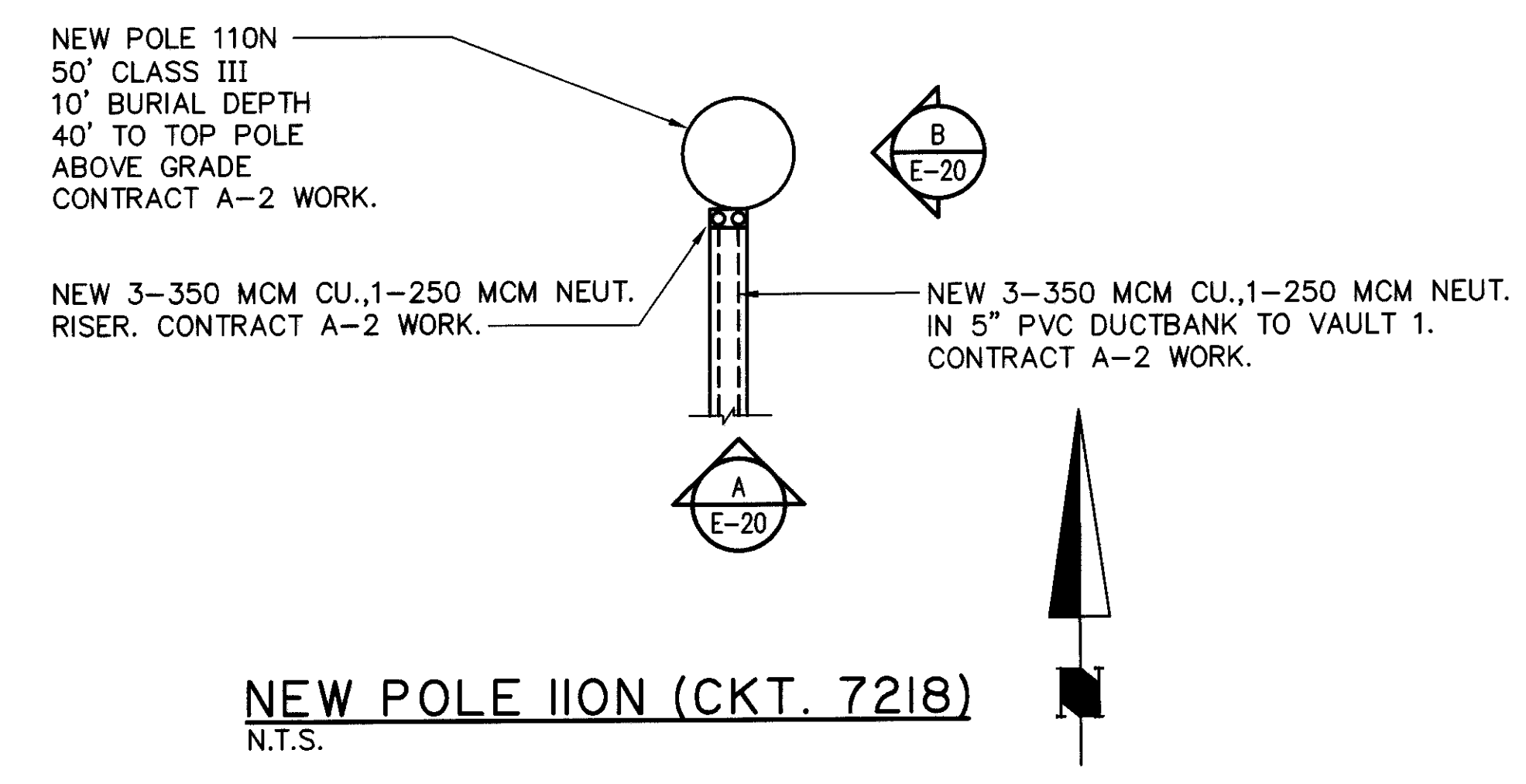


**ELEVATION A**  
N.T.S. E-20

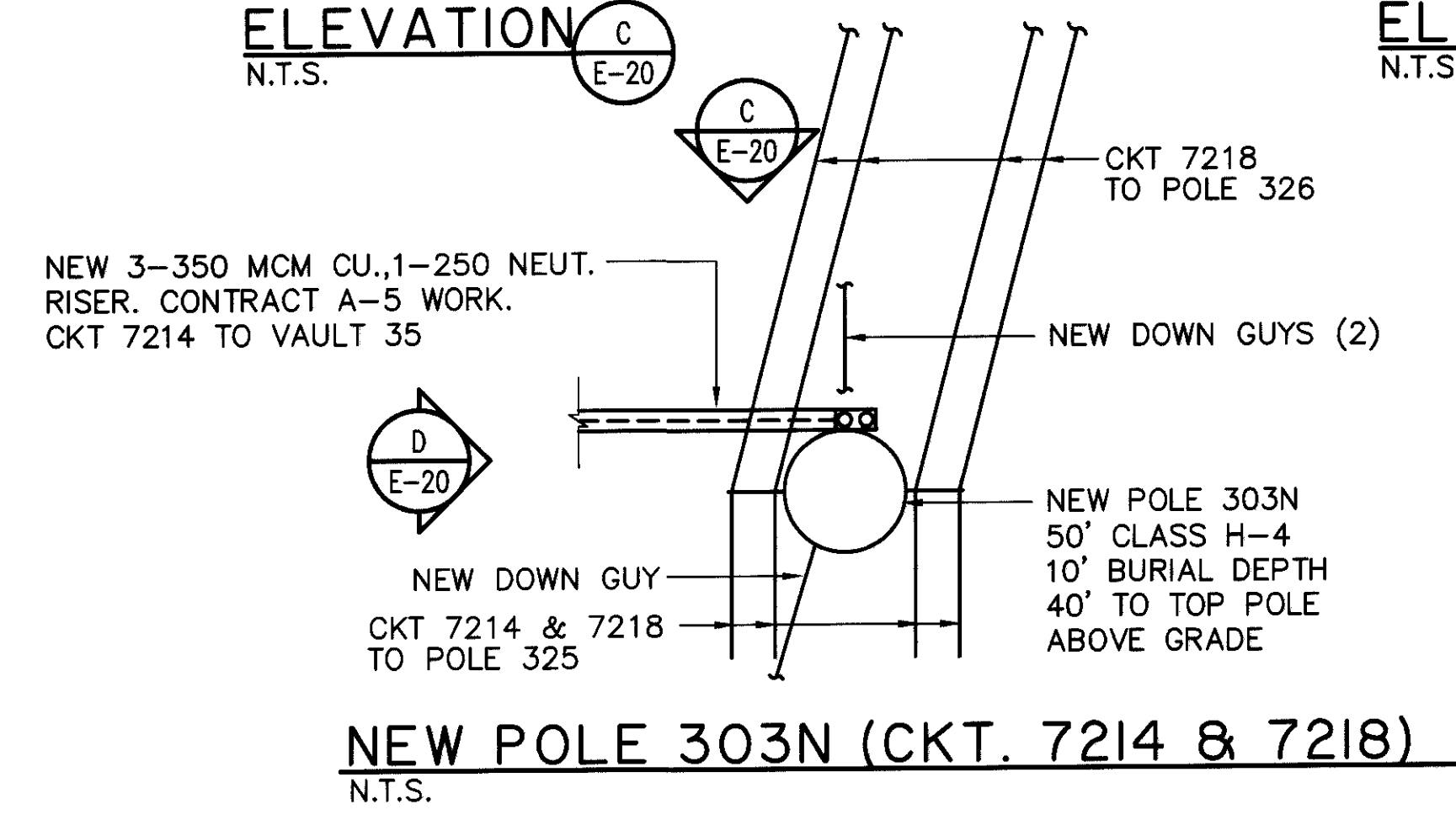
**ELEVATION B**  
N.T.S. E-20

**ELEVATION C**  
N.T.S. E-20

**ELEVATION D**  
N.T.S. E-20



**NEW POLE 110N (CKT. 7218)**  
N.T.S.

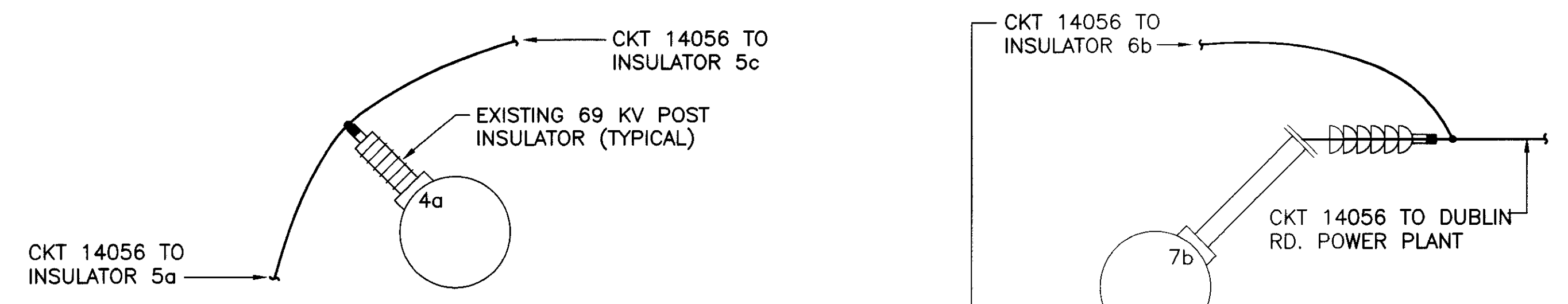


**NEW POLE 303N (CKT. 7214 & 7218)**  
N.T.S.

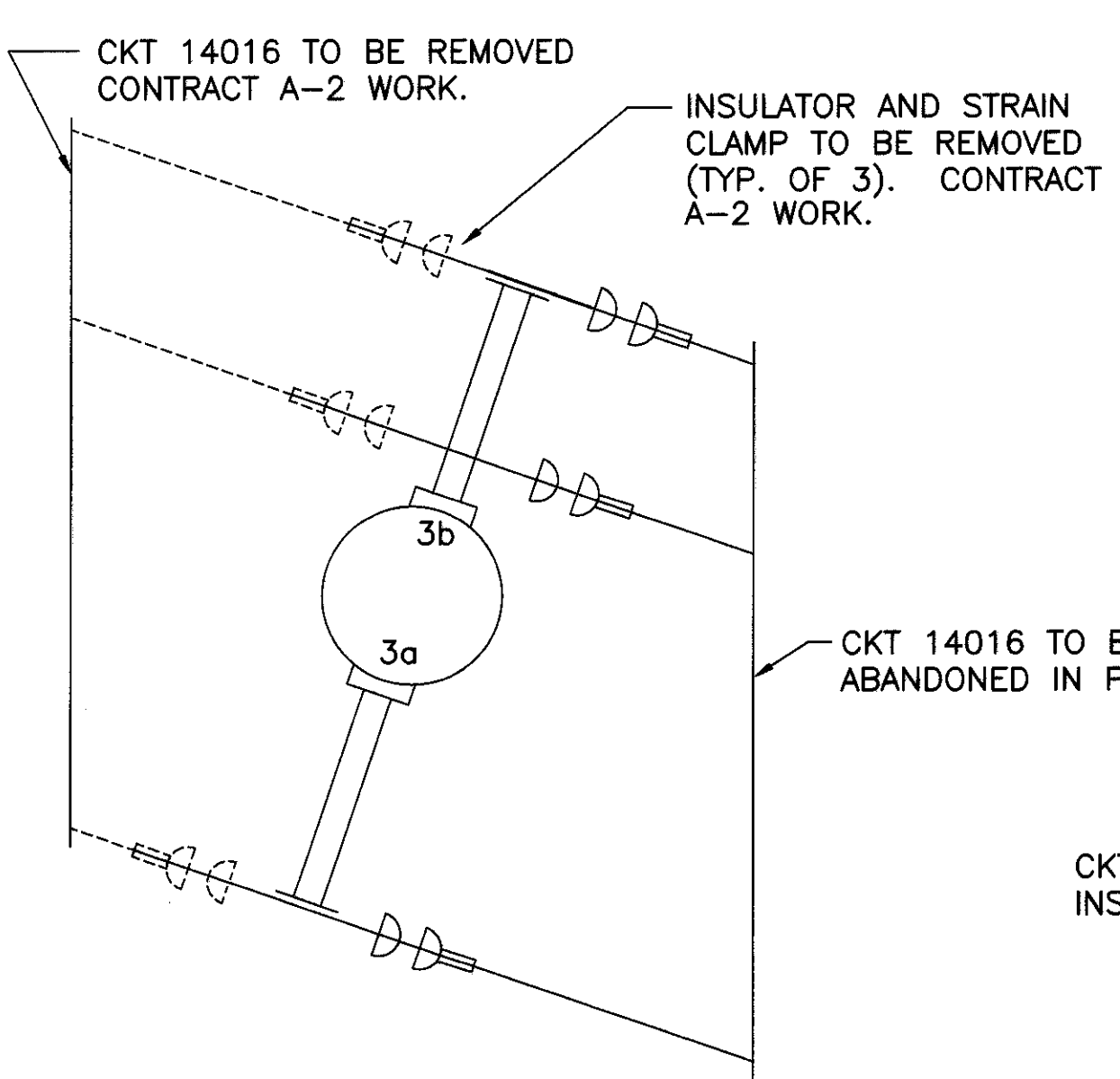
I:\FAC\92313143.56\CONTRACT A-5\A5-E-20.DWG SEP 02 1997 14:54:19 PLOT SCALE = 12



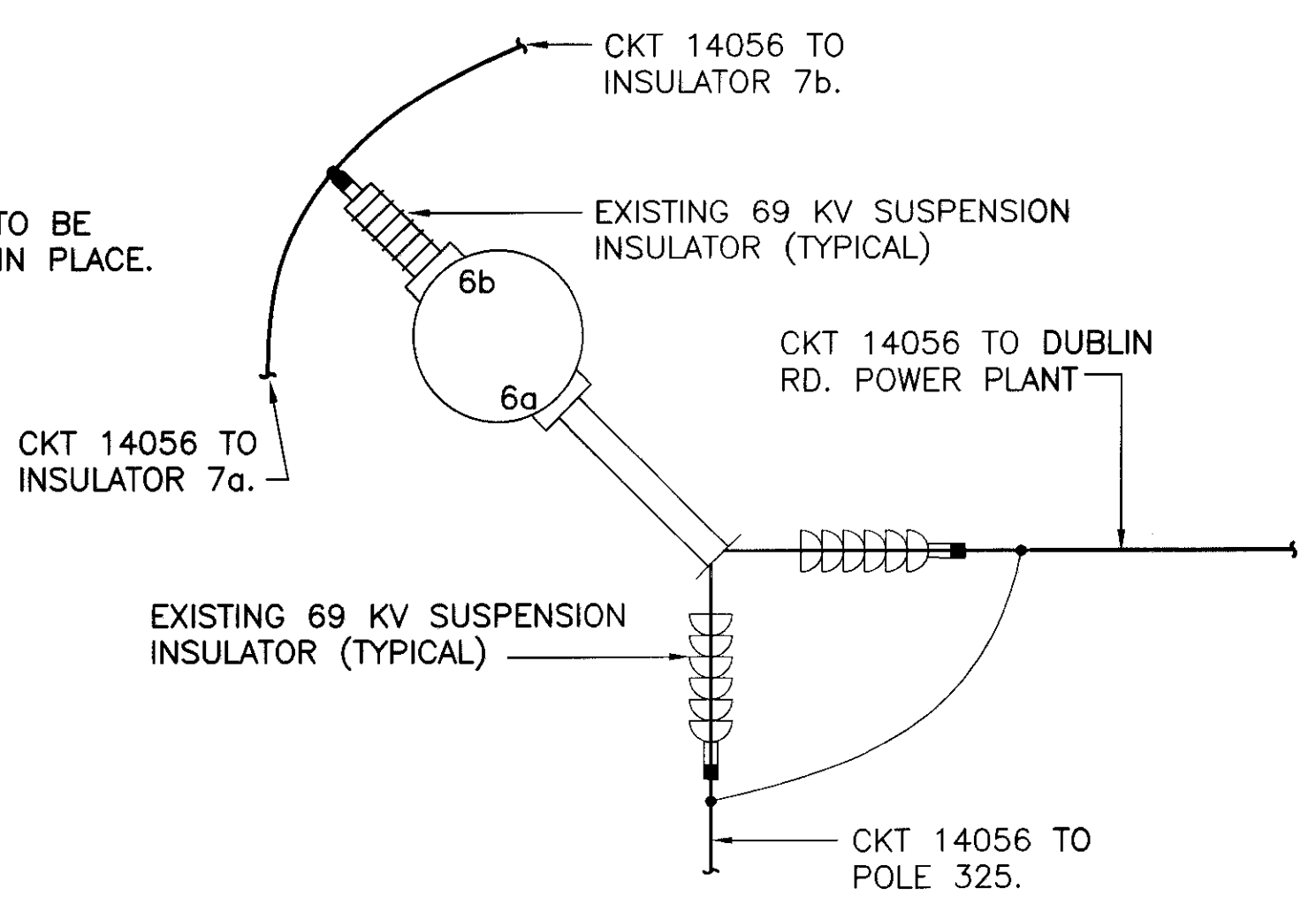
NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



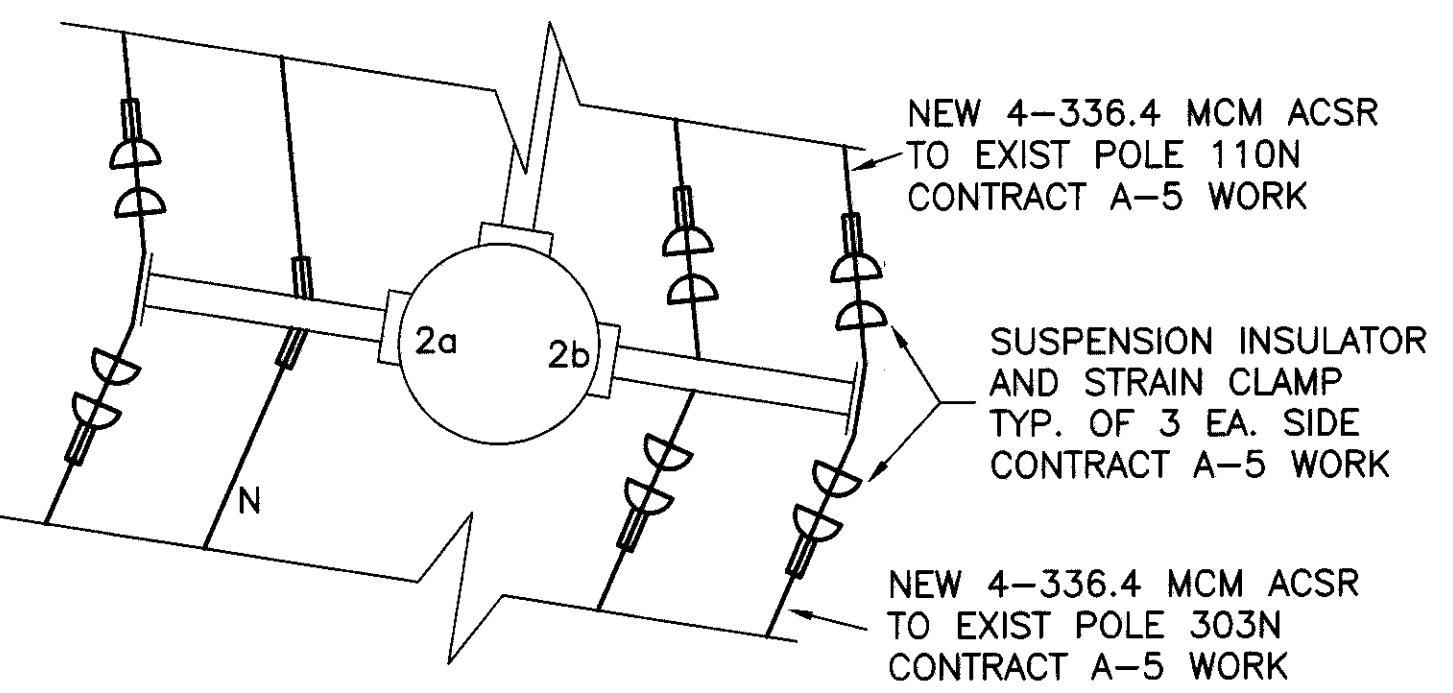
**STEEL CROSSARM-4**  
N.T.S.



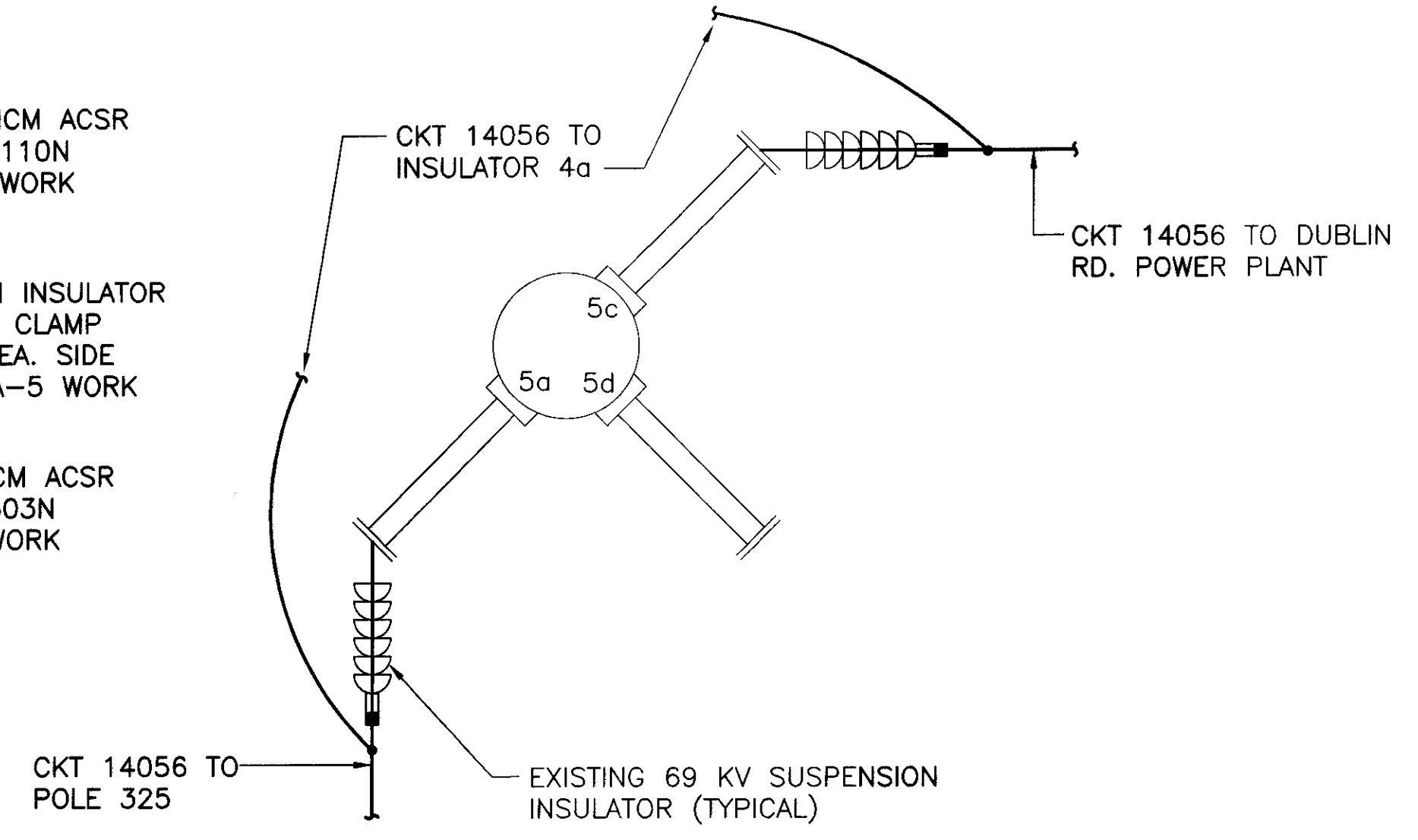
**STEEL CROSSARM-3**  
N.T.S.



**STEEL CROSSARM-6**  
N.T.S.

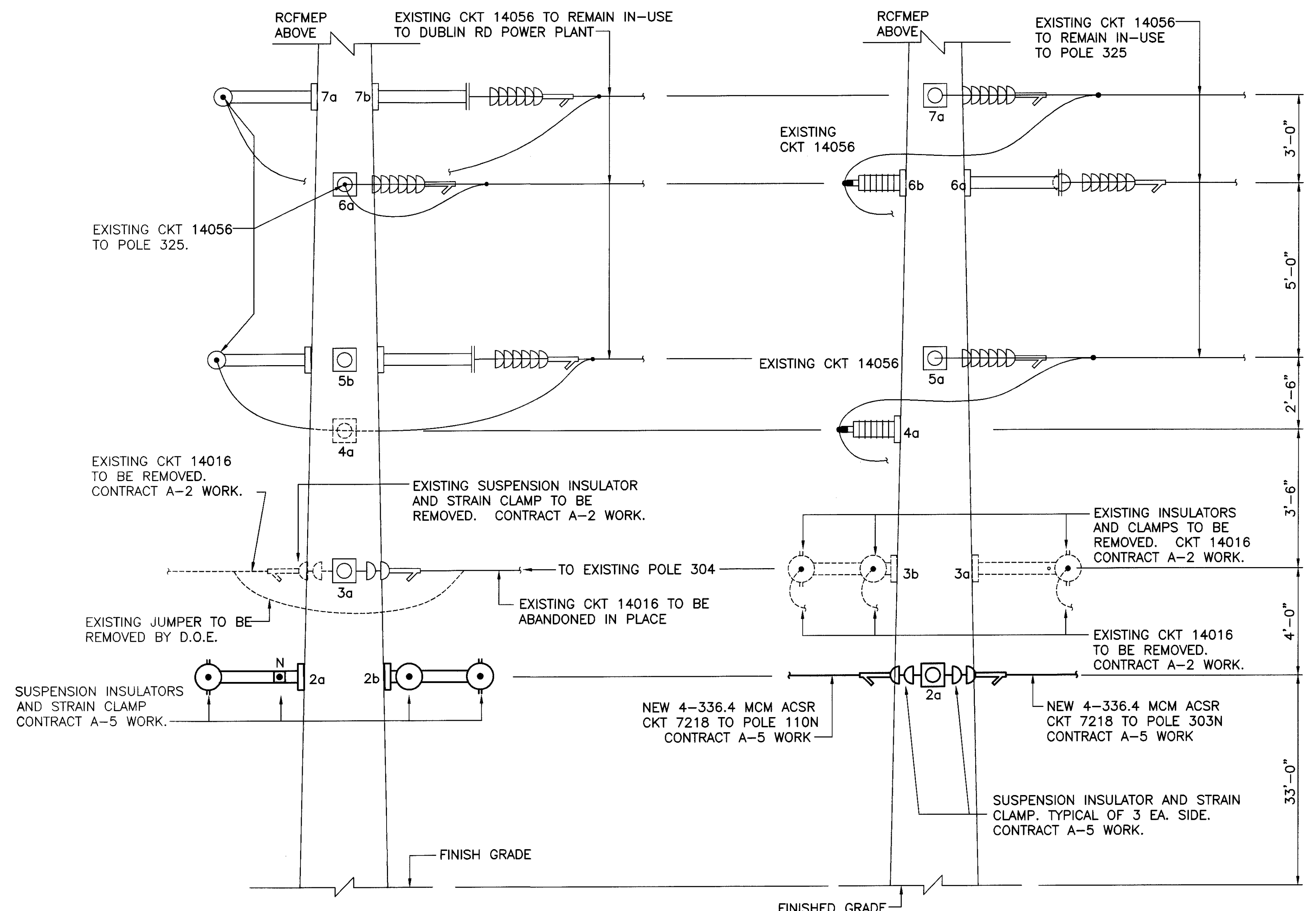


**STEEL CROSSARM-2**  
N.T.S.



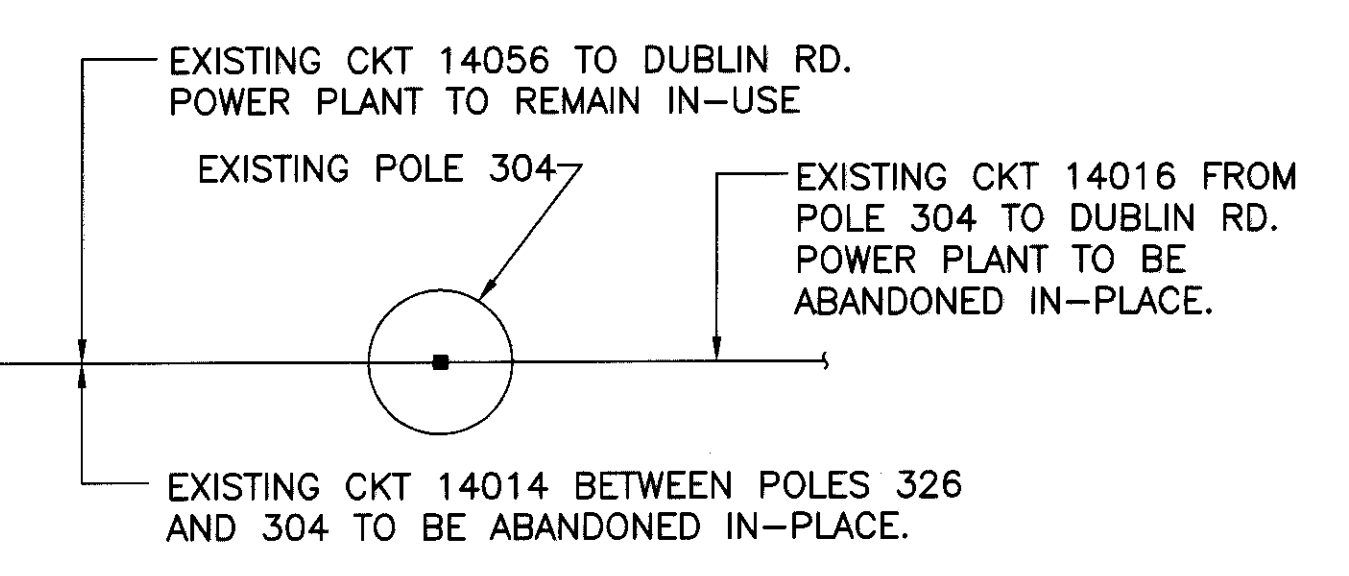
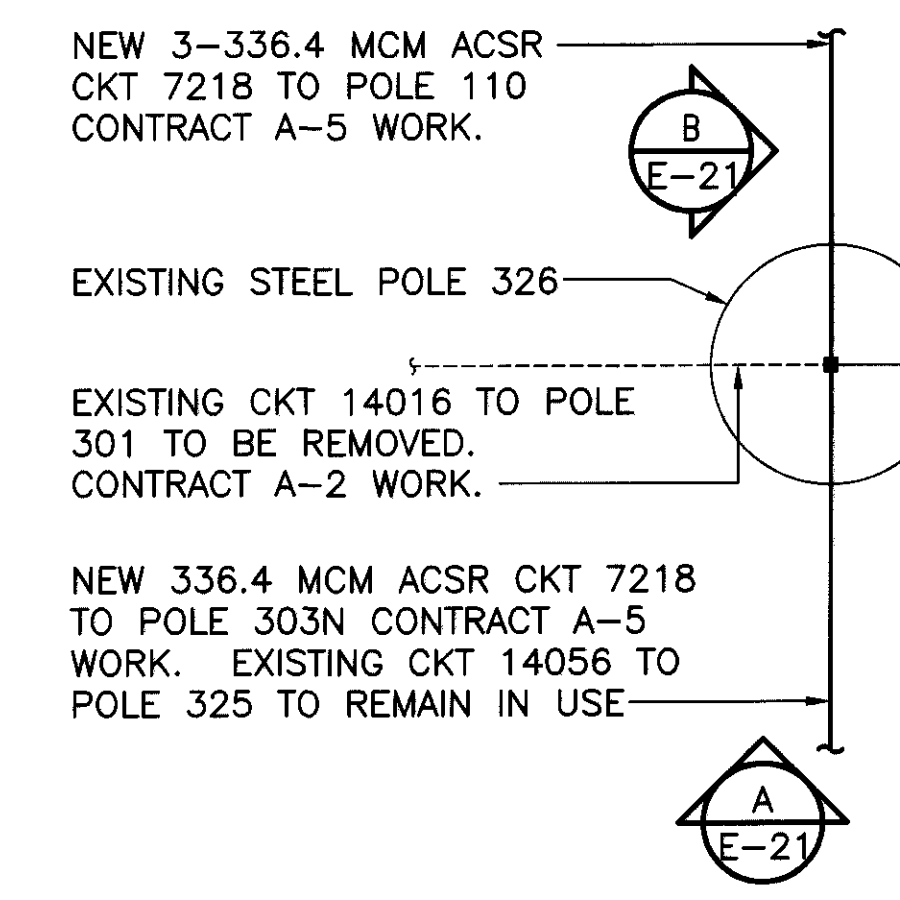
**STEEL CROSSARM-5**  
N.T.S.

**EXISTING POLE 326 (CKT 7218 & 14056)**  
N.T.S.



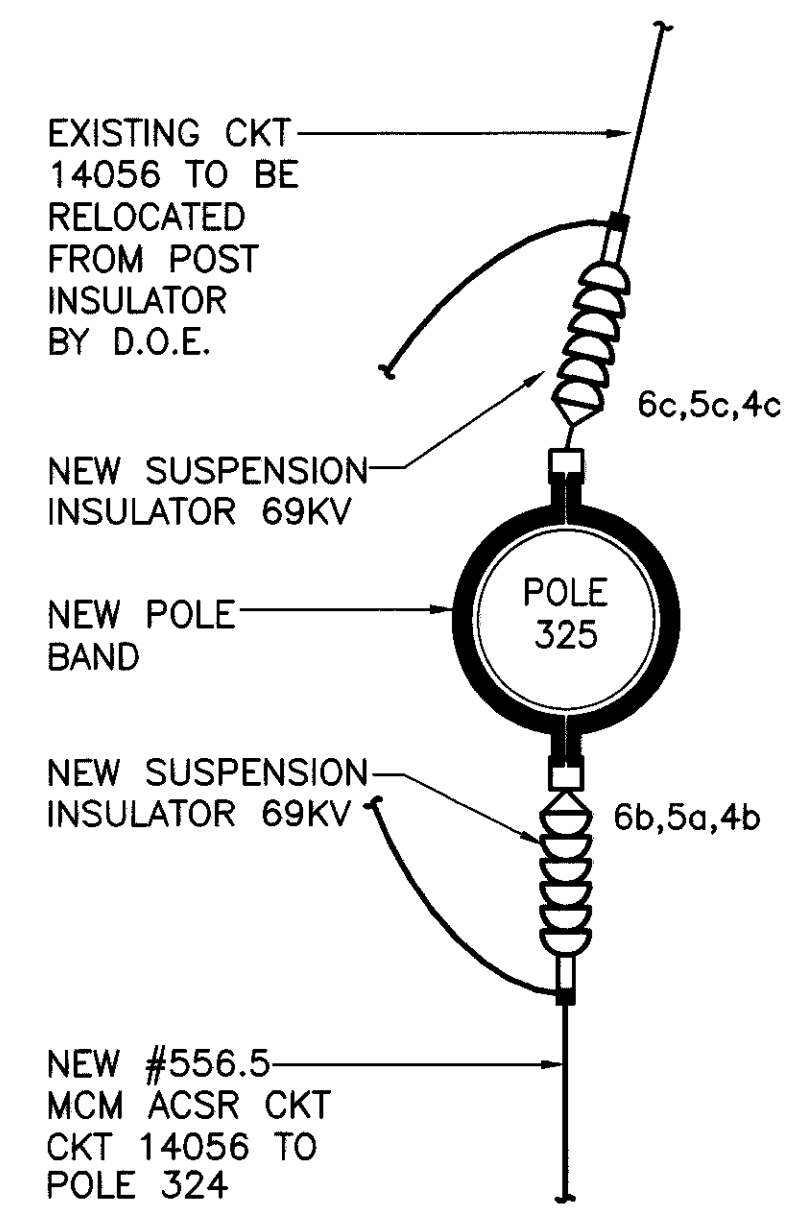
**ELEVATION A**  
N.T.S. E-21

**ELEVATION B**  
N.T.S. E-21

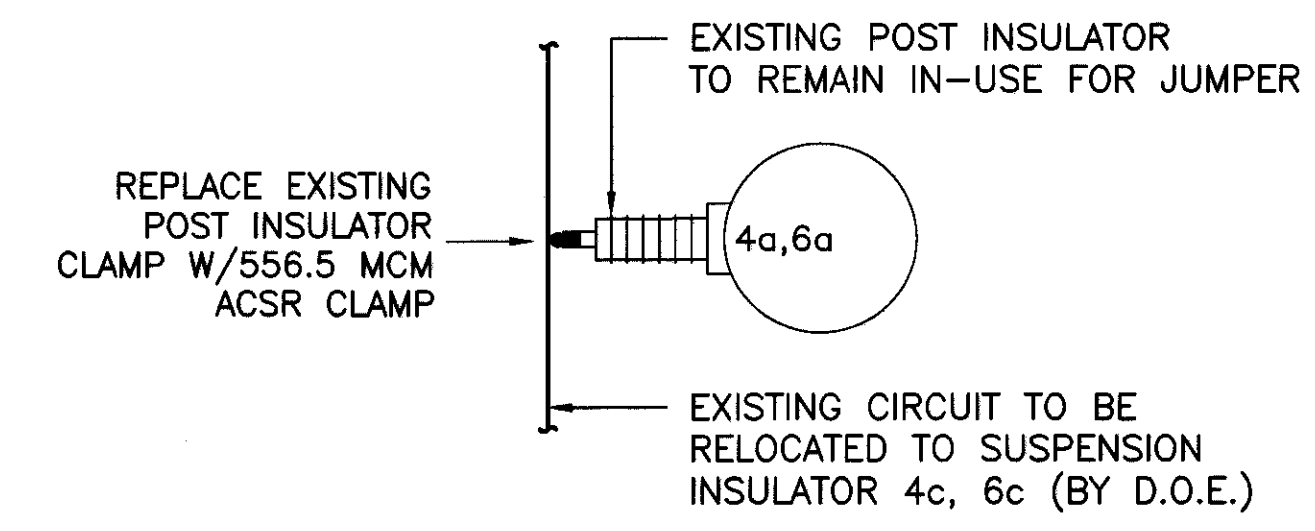


I:\FAC\92313143\56\CONTRACT A-5\A5-E-21.DWG AUG 26, 1997 10:18:45 PLOT SCALE = 12

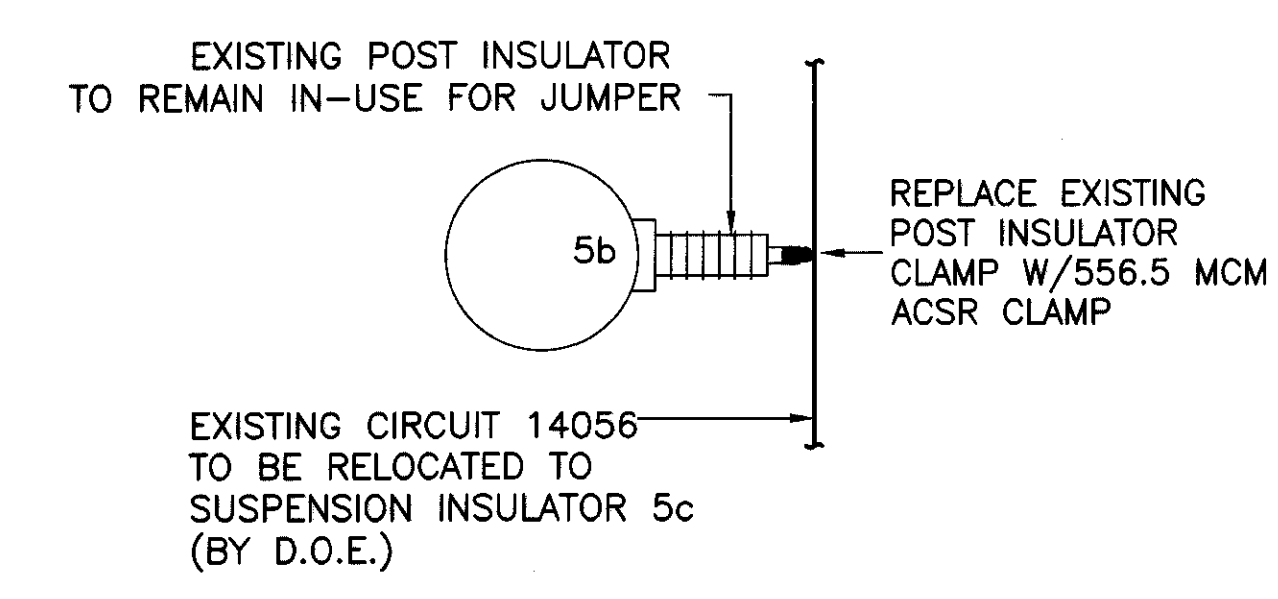
NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



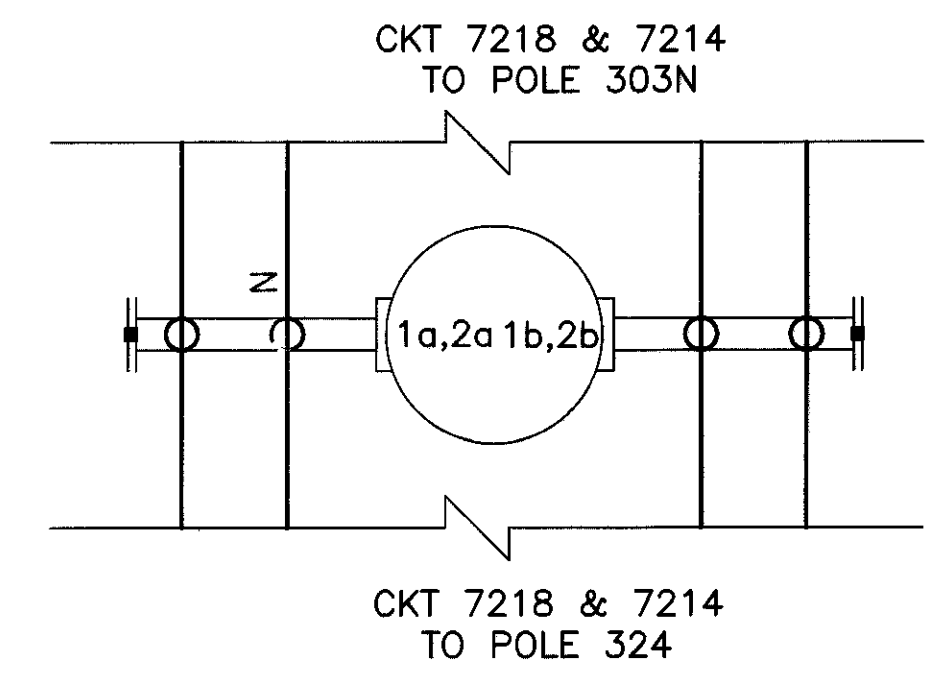
**POLE BAND 4, 5, 6**  
N.T.S.



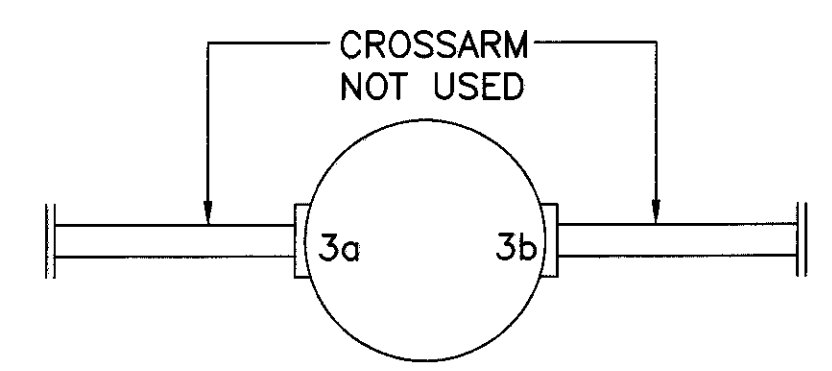
**POST INSULATOR 4a,6a**  
N.T.S.



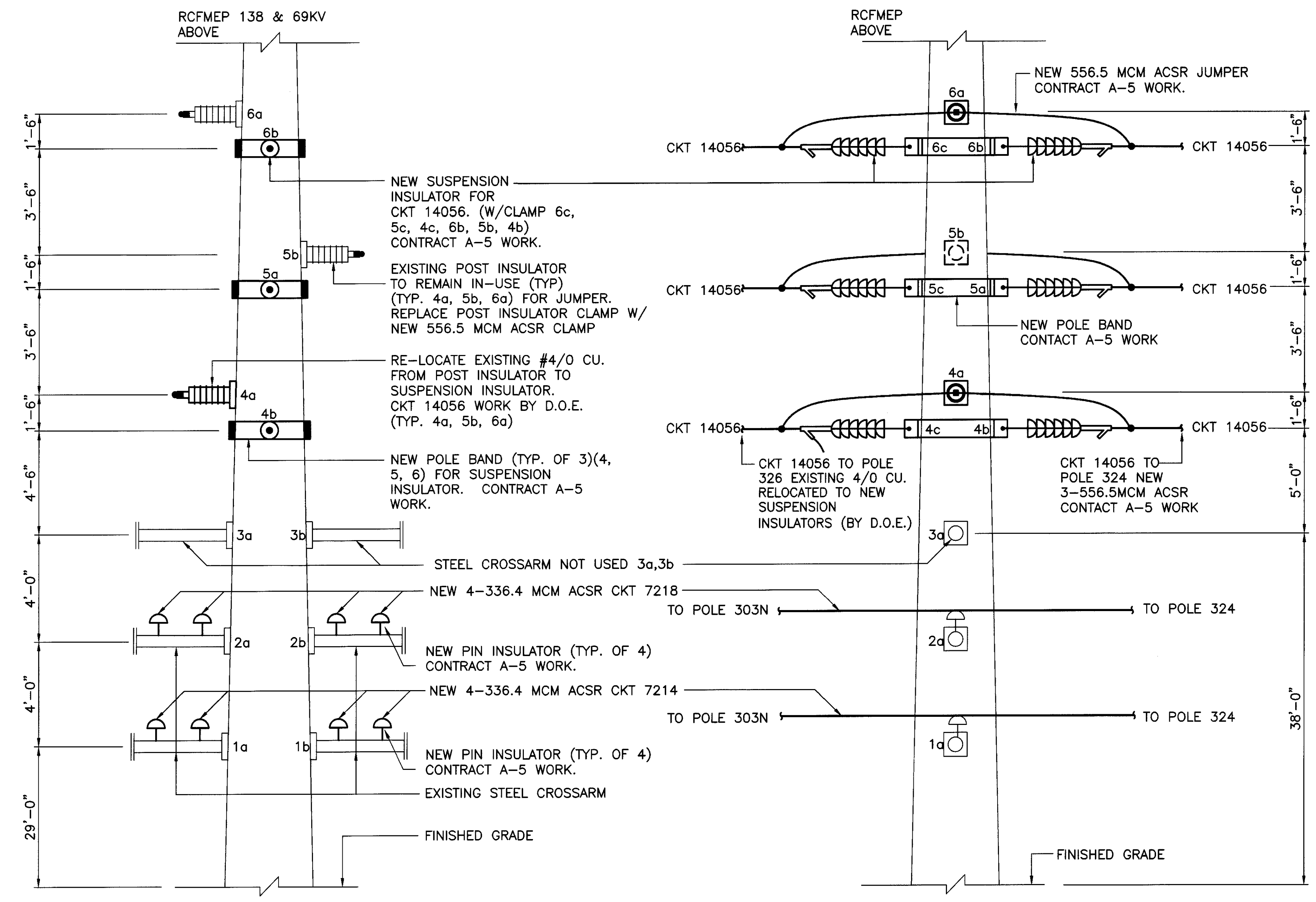
**POST INSULATOR 5b**  
N.T.S.



**STEEL CROSSARM-1a,2a & 1b,2b**  
N.T.S.

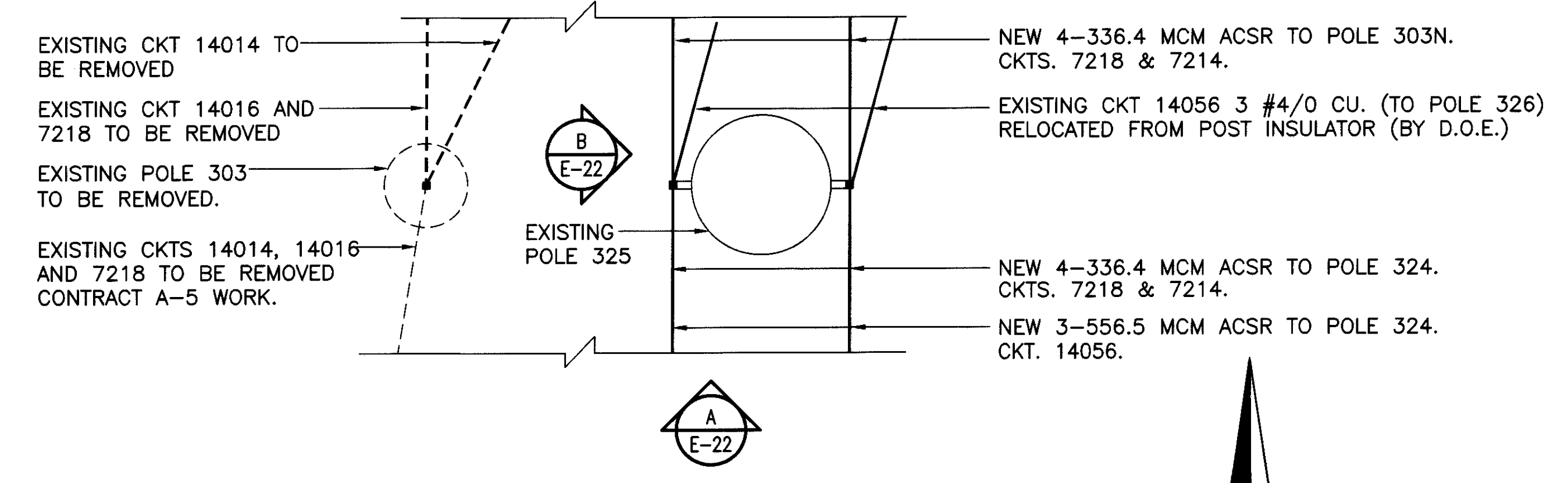


**STEEL CROSSARMS-3a & 3b**  
N.T.S.

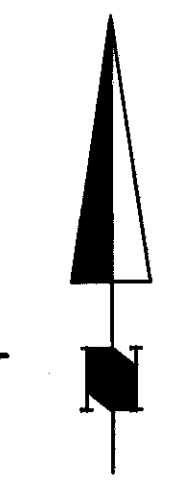


**ELEVATION A**  
N.T.S.

**ELEVATION B**  
N.T.S.

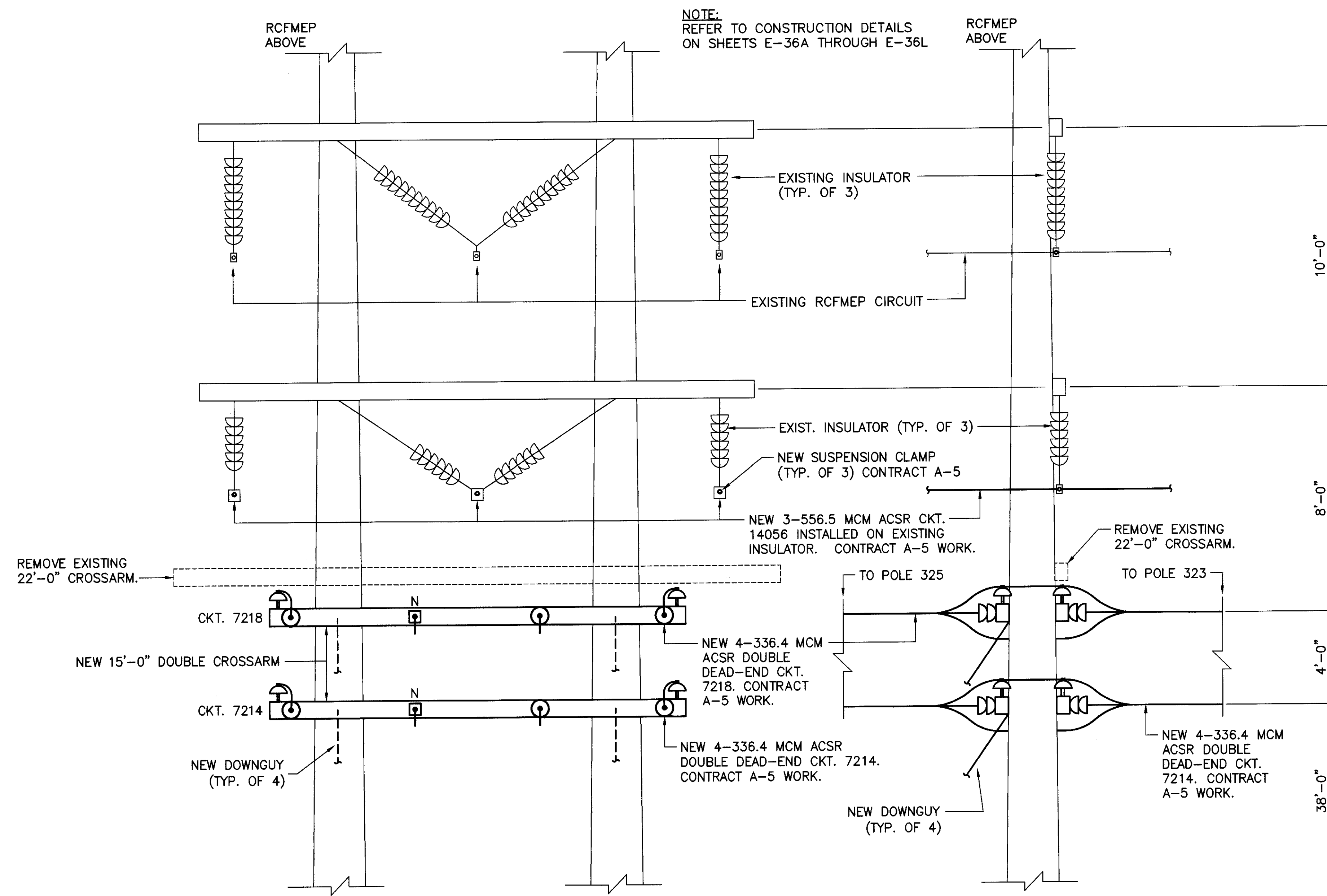


**EXISTING POLE 325 (CKT 7214, 7218, 14056)**  
N.T.S.



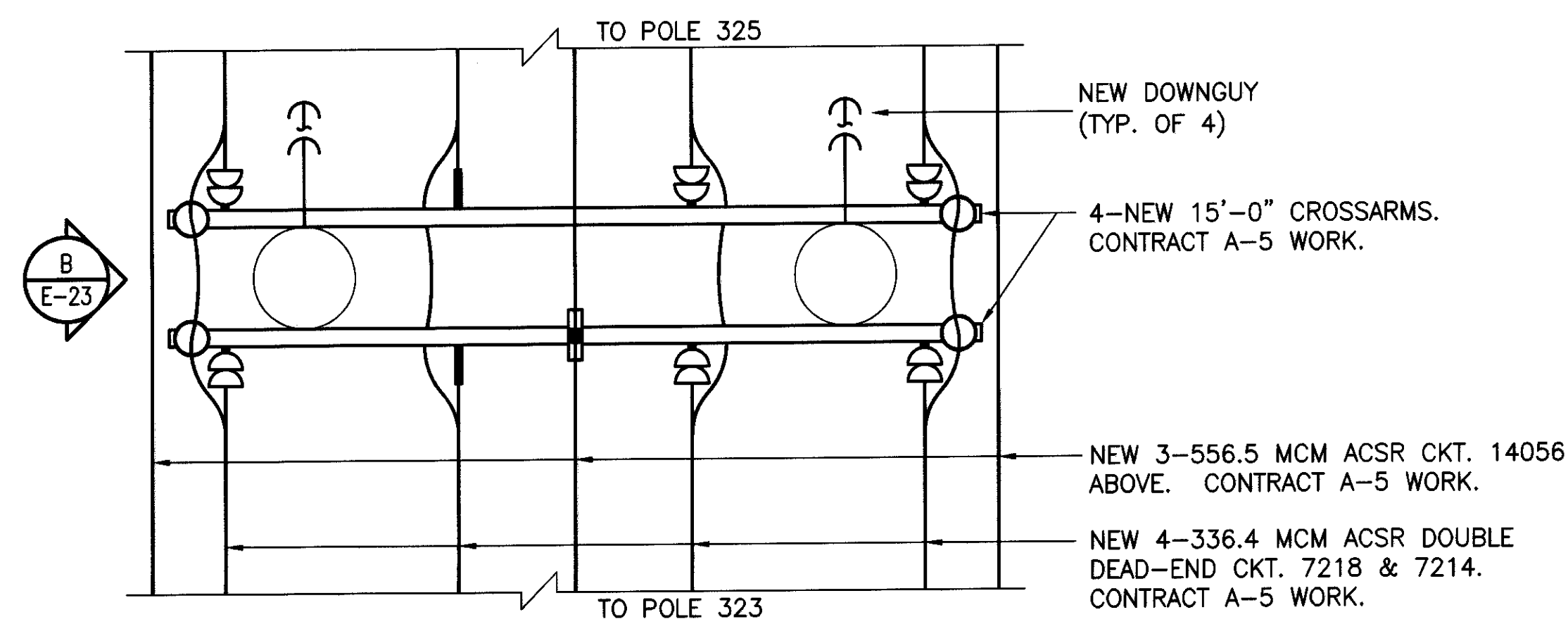
TLS I:\FAC\92313143.96\CONTRACT A-5\A5-E-22.DWG SEP 02, 1997 14:56:58 PLOT SCALE = 12





ELEVATION A  
N.T.S. E-23

ELEVATION B  
N.T.S. E-23

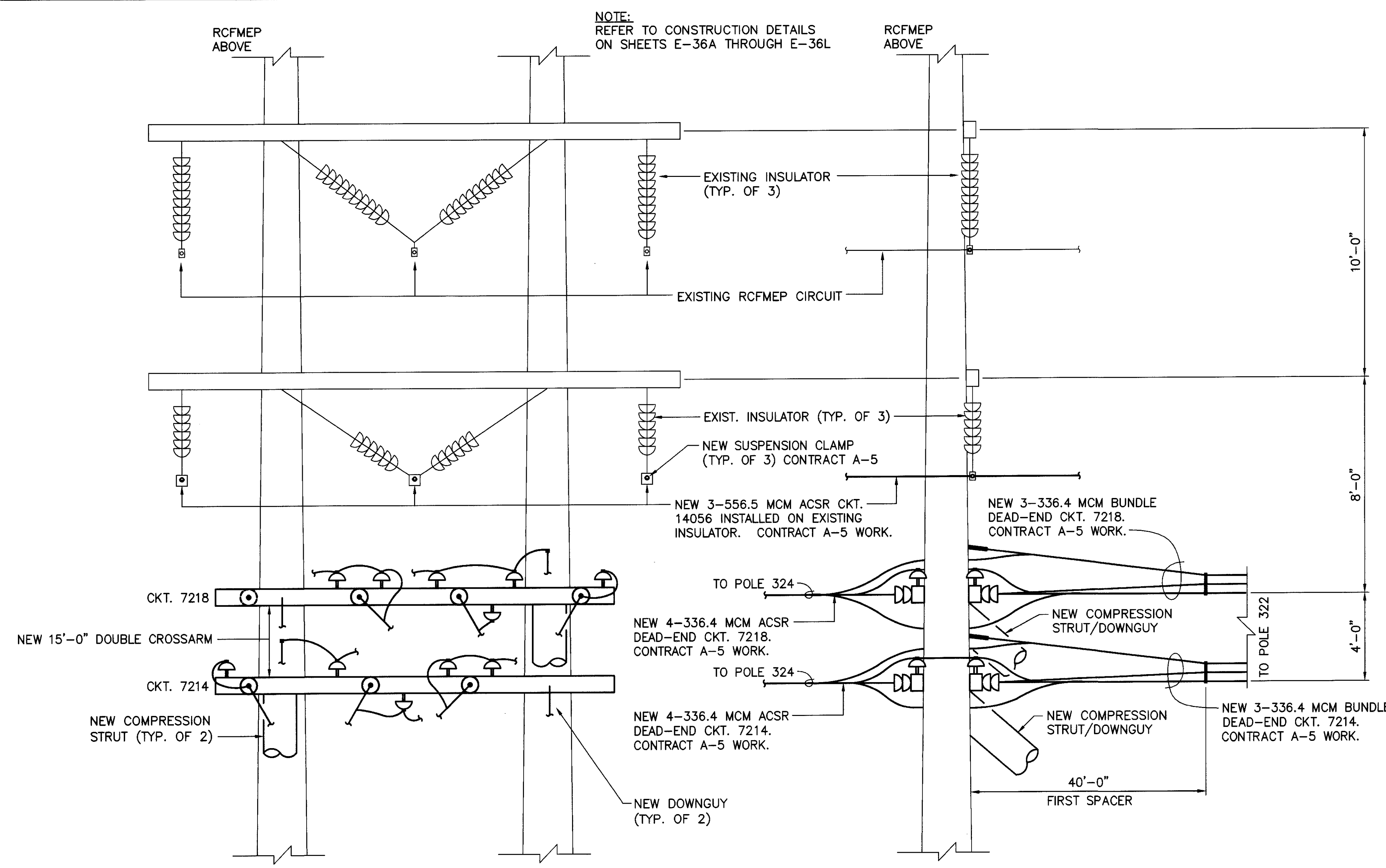


A  
E-23

EXISTING POLE 324 (CKTS. 7214, 7218, 14056)  
N.T.S.

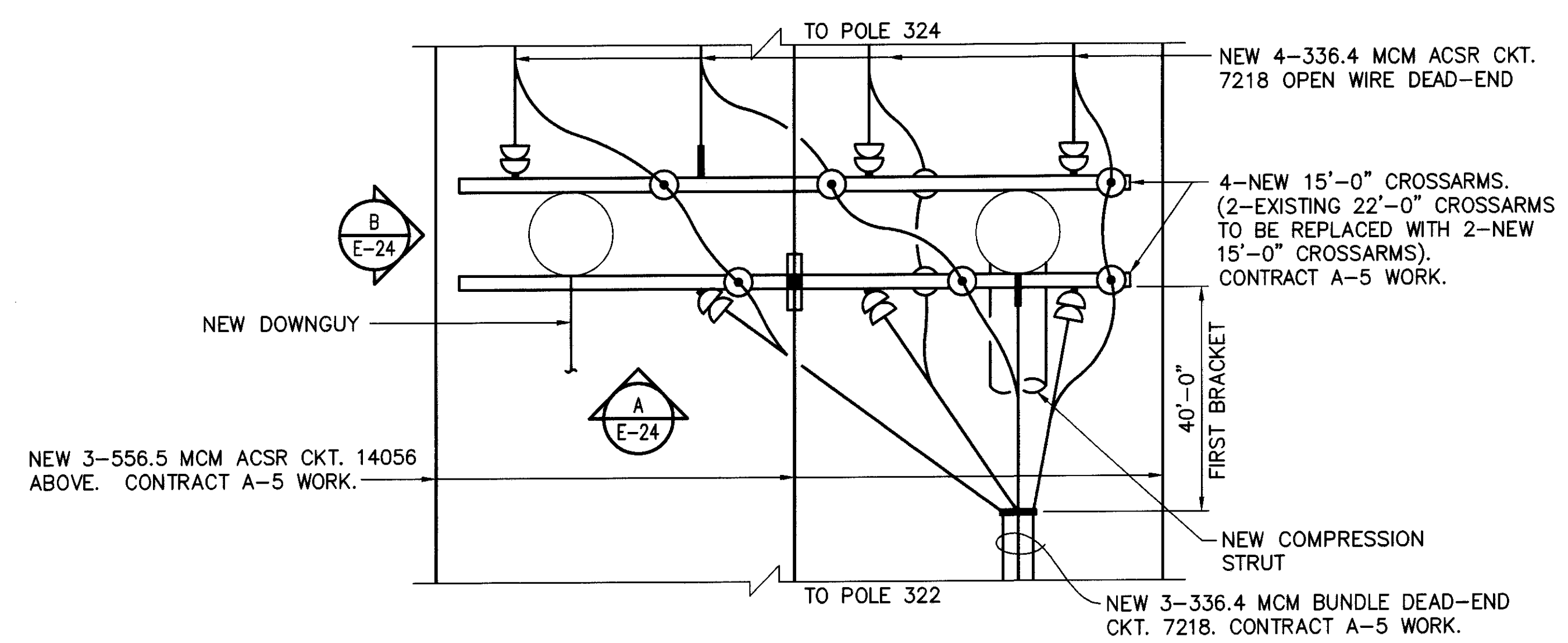


TLS I:\FAC\92313143.5\FAC\CONTRACT A-5\A5-E-23.DWG AUG 28, 1997 10:29:33 PLOT SCALE = 12

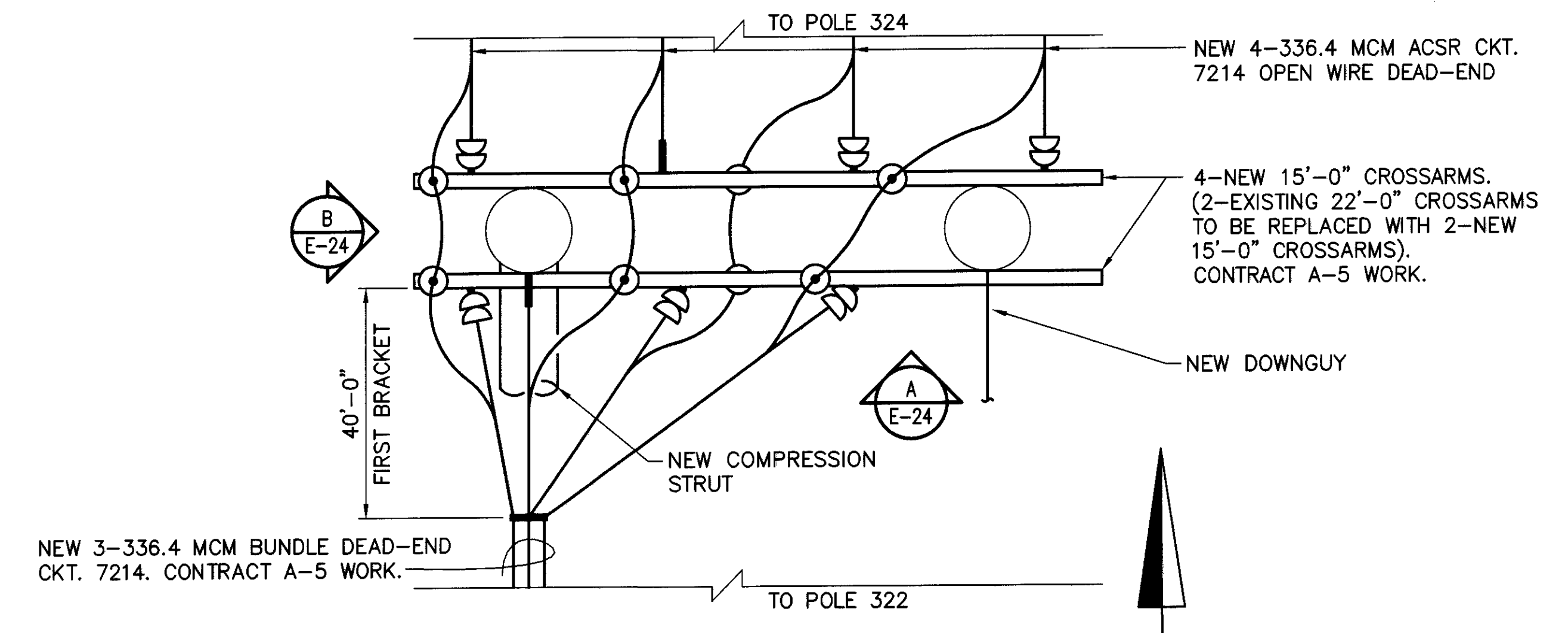


**ELEVATION A**  
N.T.S.

**ELEVATION B**  
N.T.S.



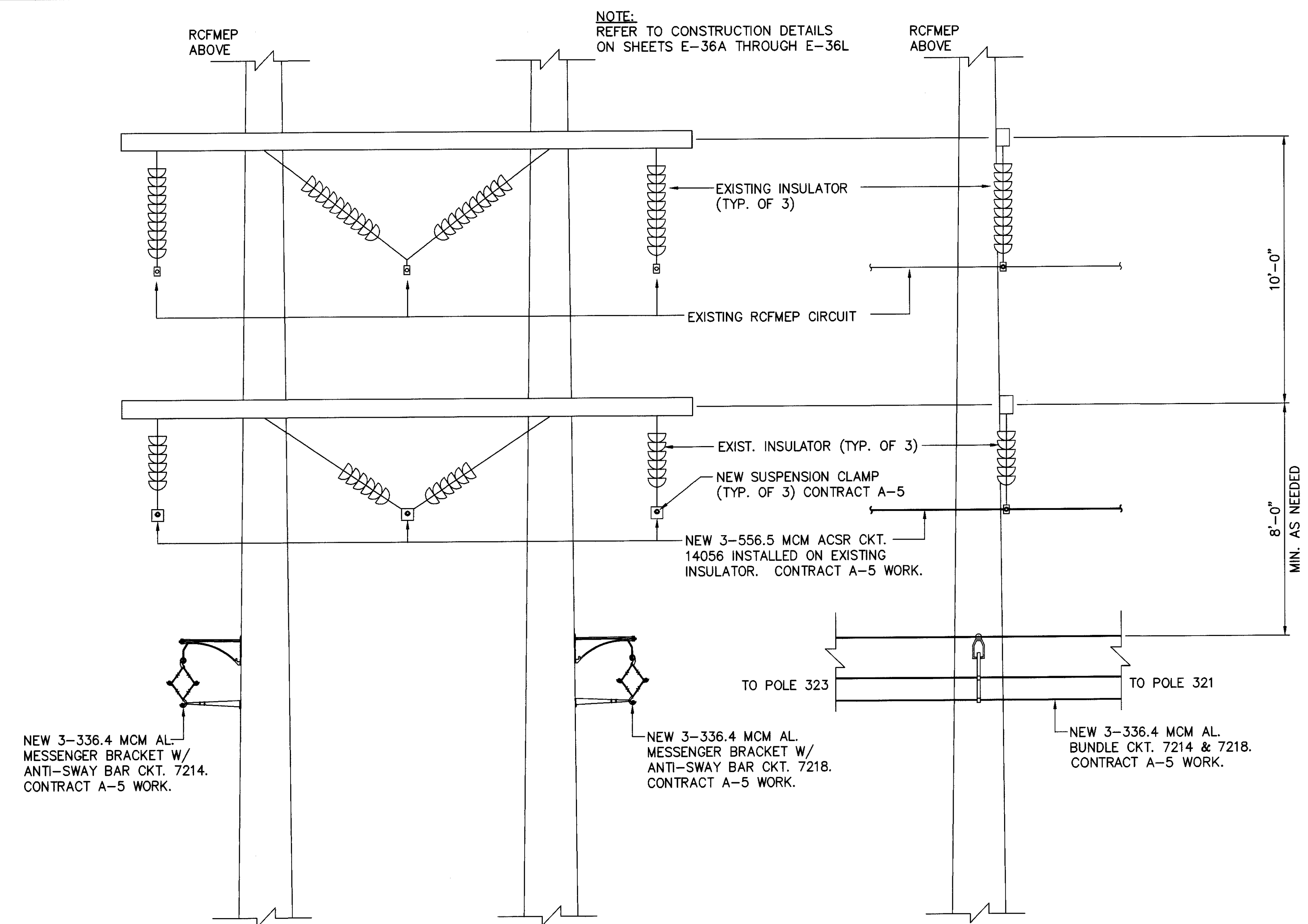
**EXISTING POLE 323 (CKTS. 7218 & 14056)**  
N.T.S.



**EXISTING POLE 323 (CKT. 7214)**  
N.T.S.

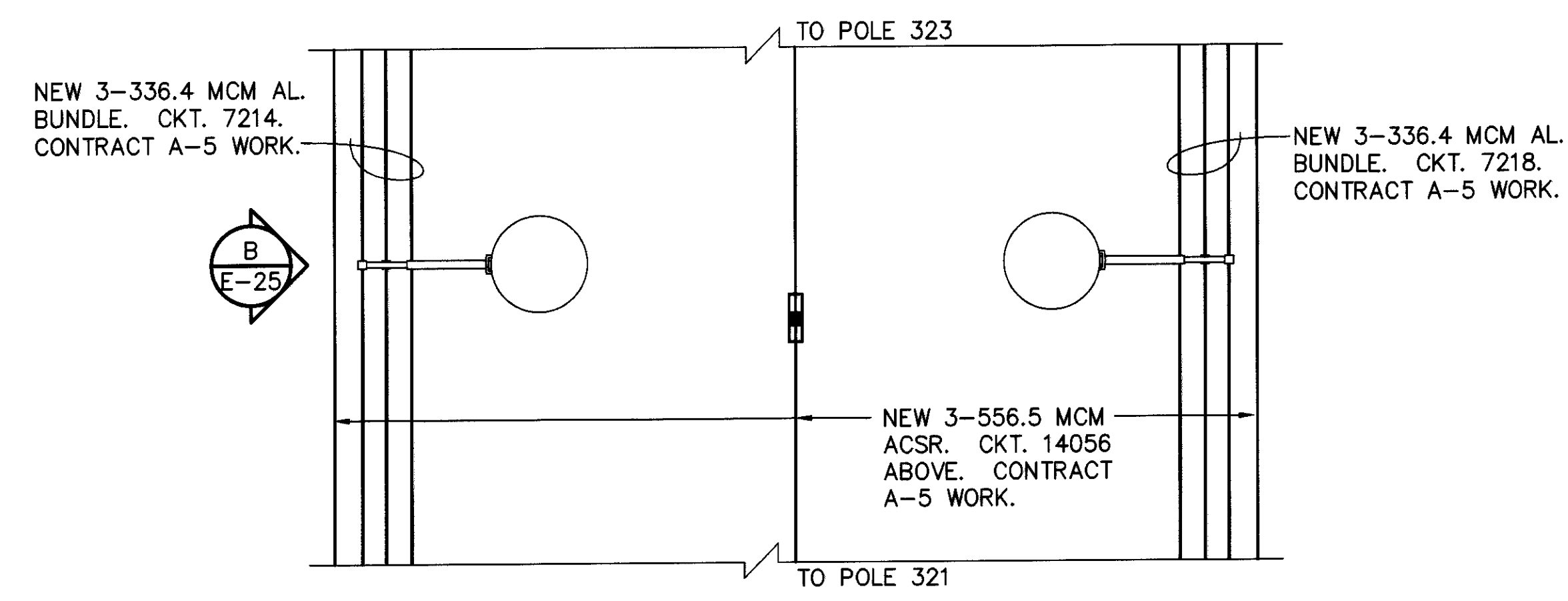
T15 I:\FAC\92313143.56\CONTRACT A-5\A5-E-24.DWG SEP 02 1997 14:59:07 PLOT SCALE = 12





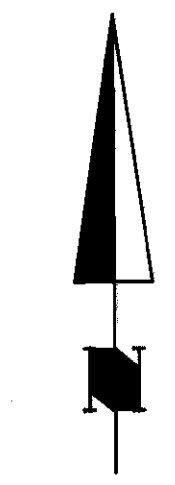
ELEVATION A  
N.T.S. E-25

ELEVATION B  
N.T.S. E-25



ELEVATION A  
N.T.S. E-25

EXISTING POLE 322 (CKTS. 7214, 7218, 14056)  
N.T.S.



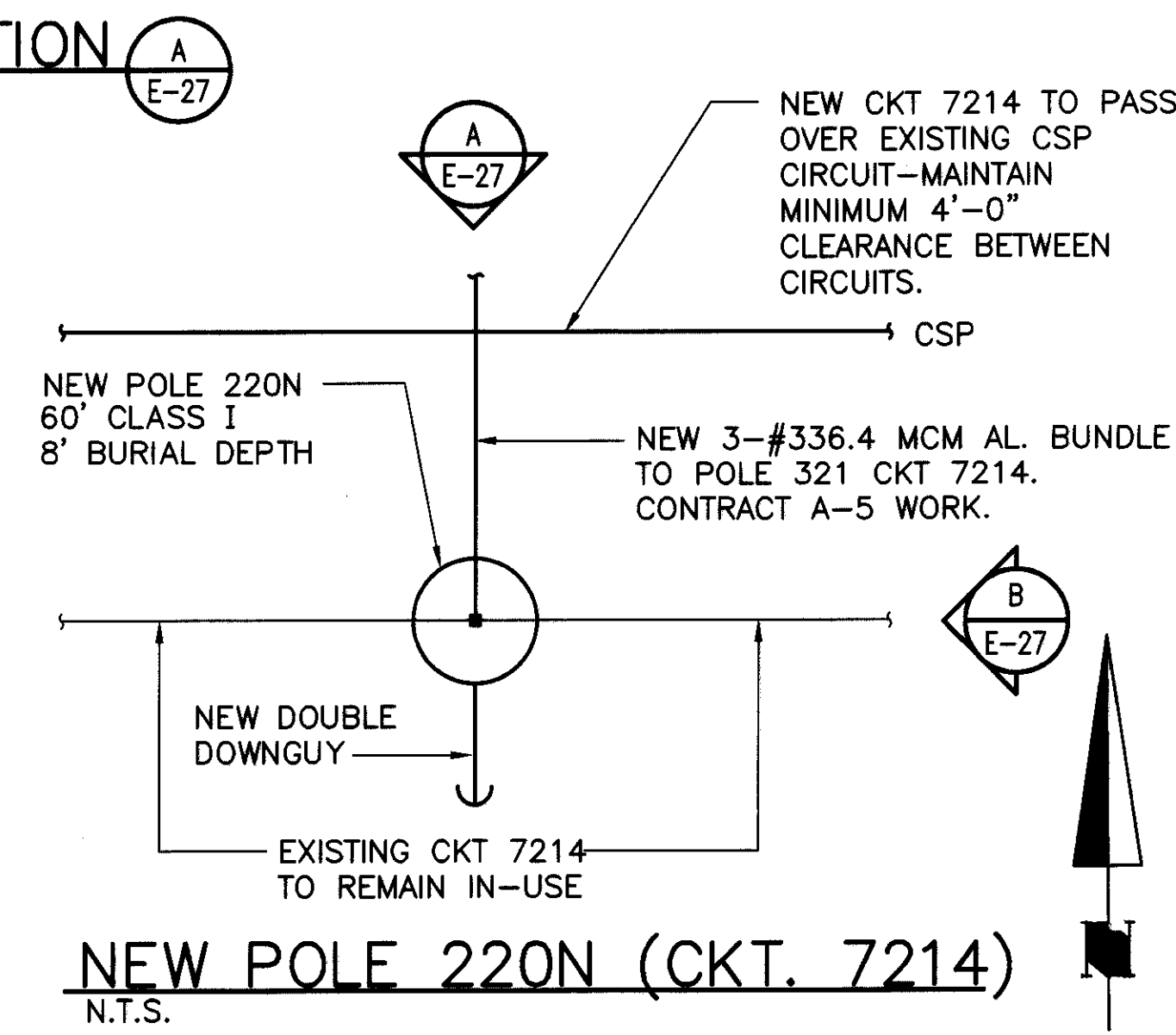
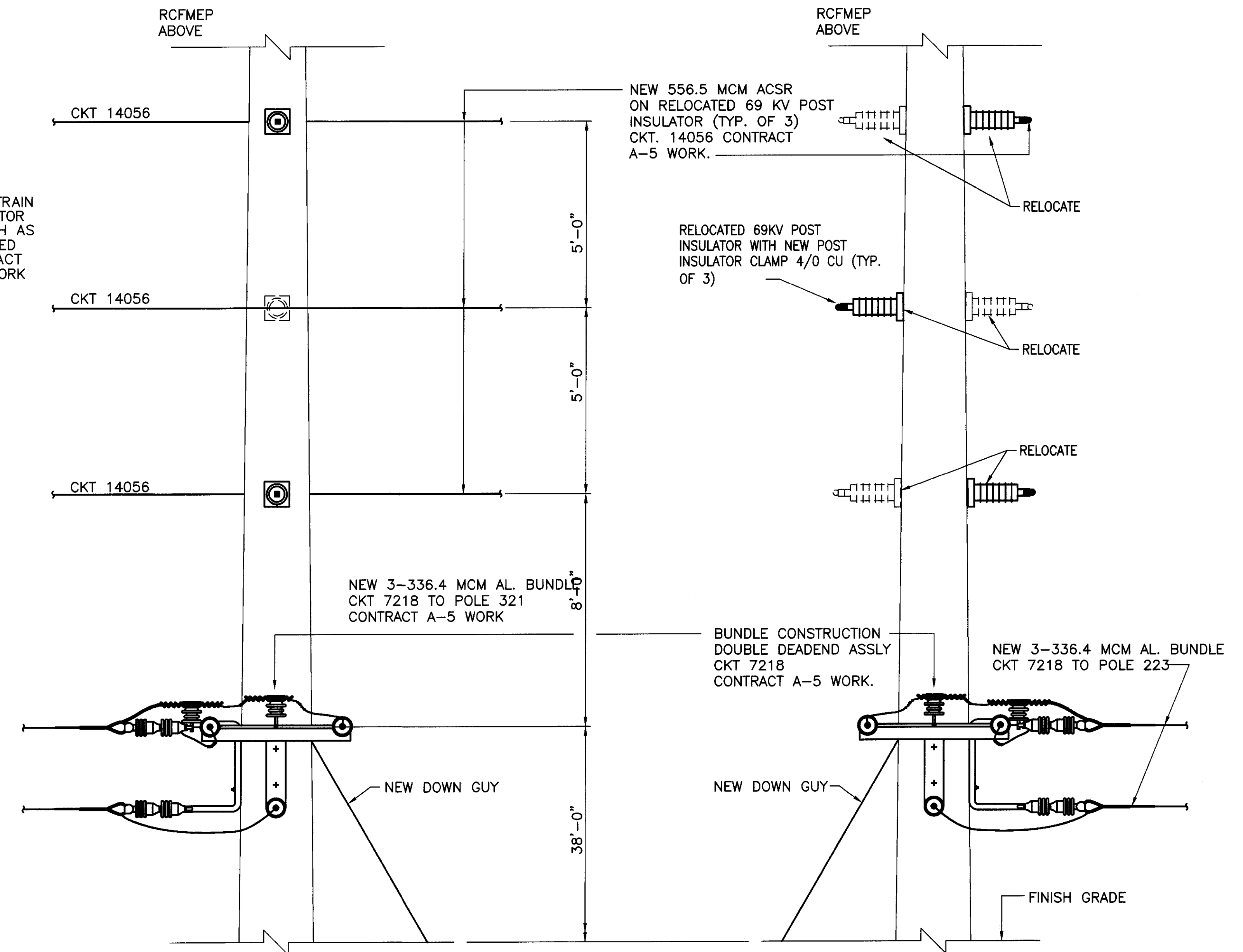
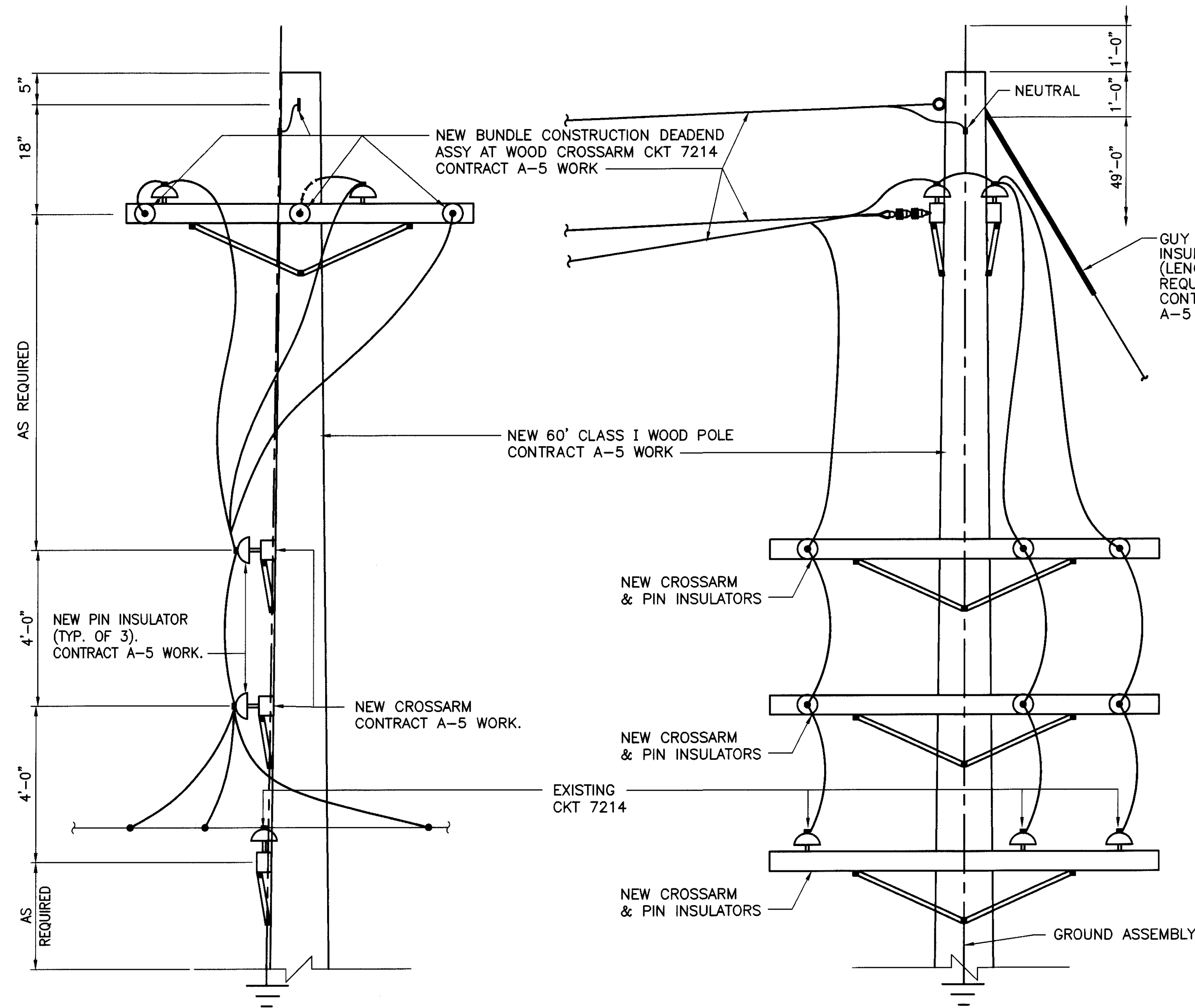
I:\FAC\92313143\56\CONTRACT A-5\A5-E-25.DWG SEP 08, 1997 11:35:50 PLOT SCALE = 12



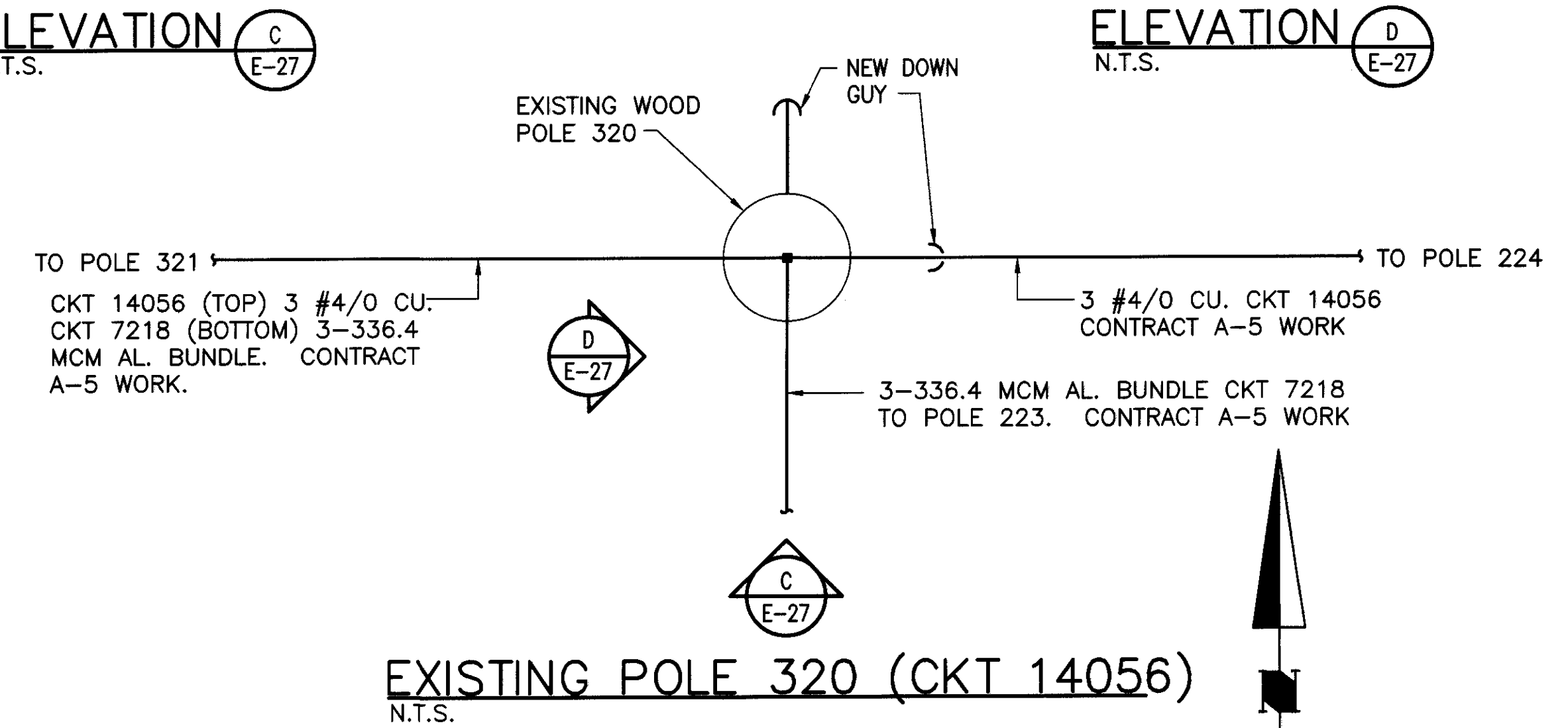


NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



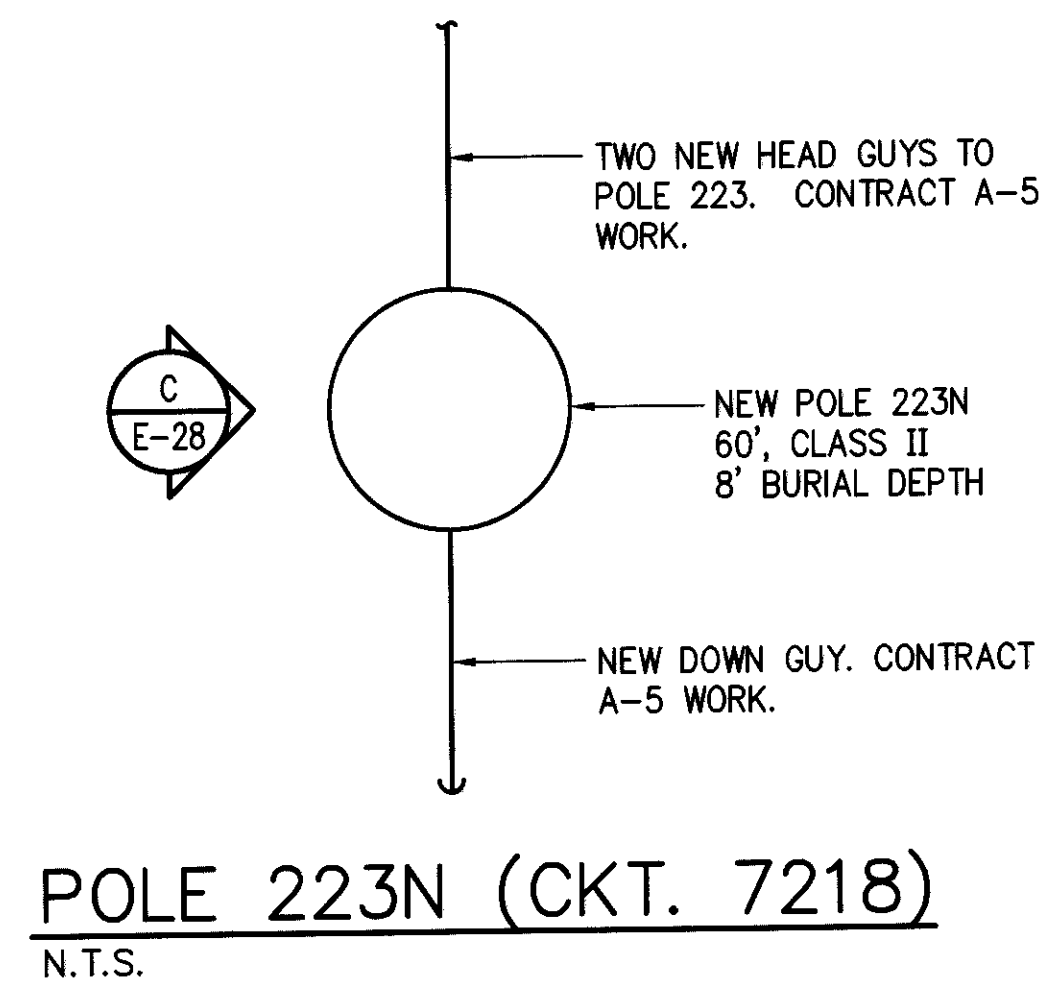
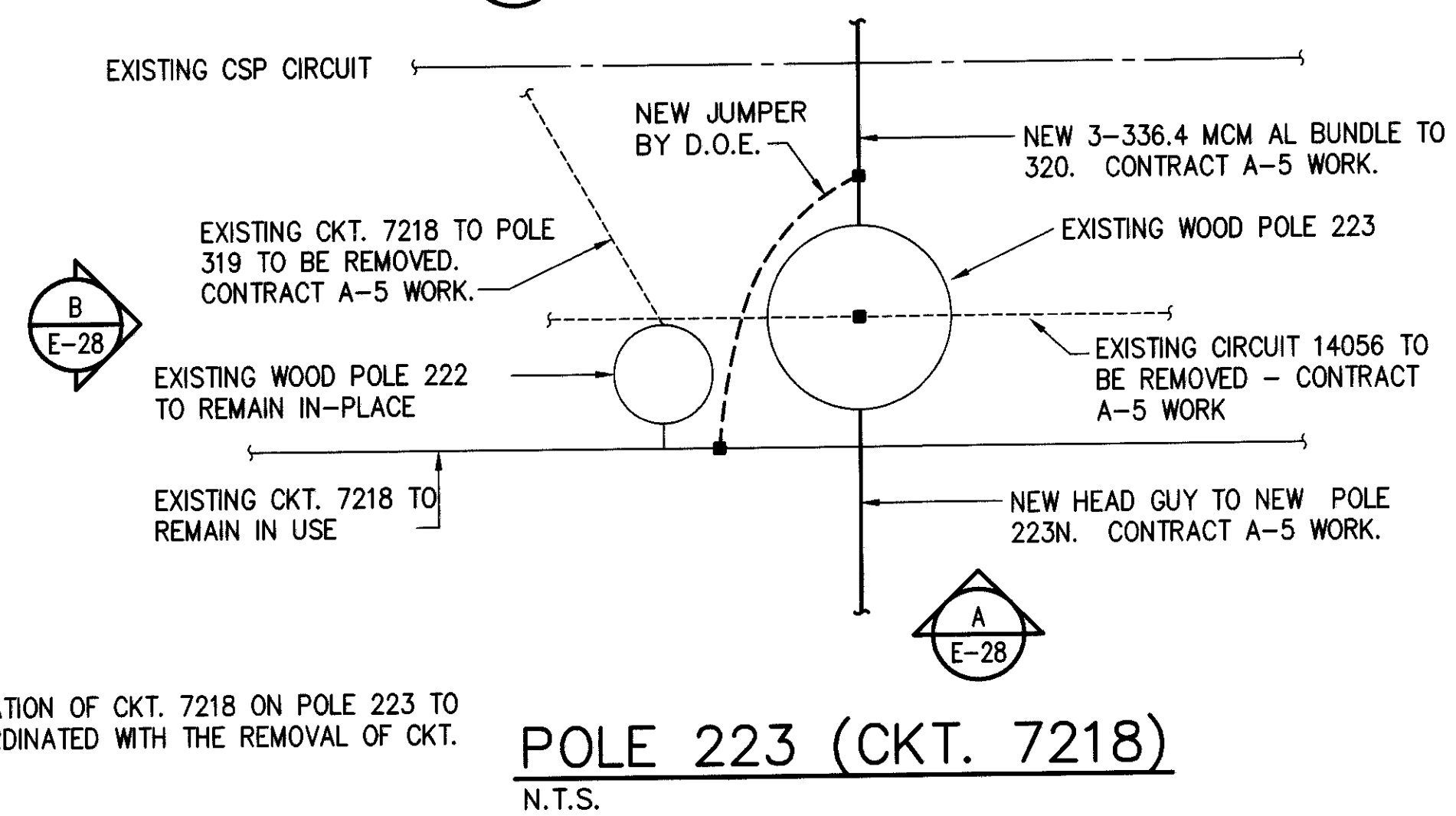
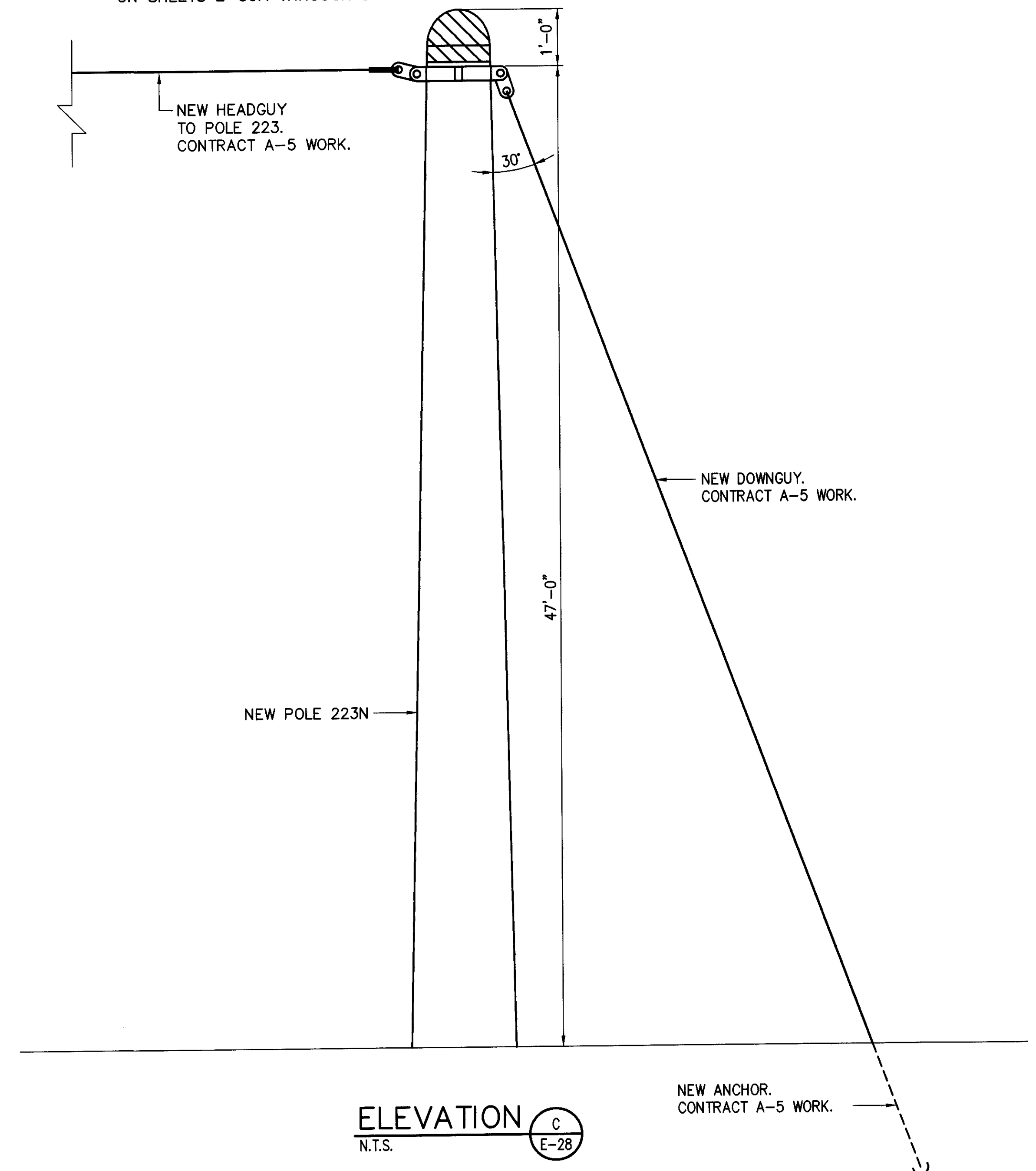
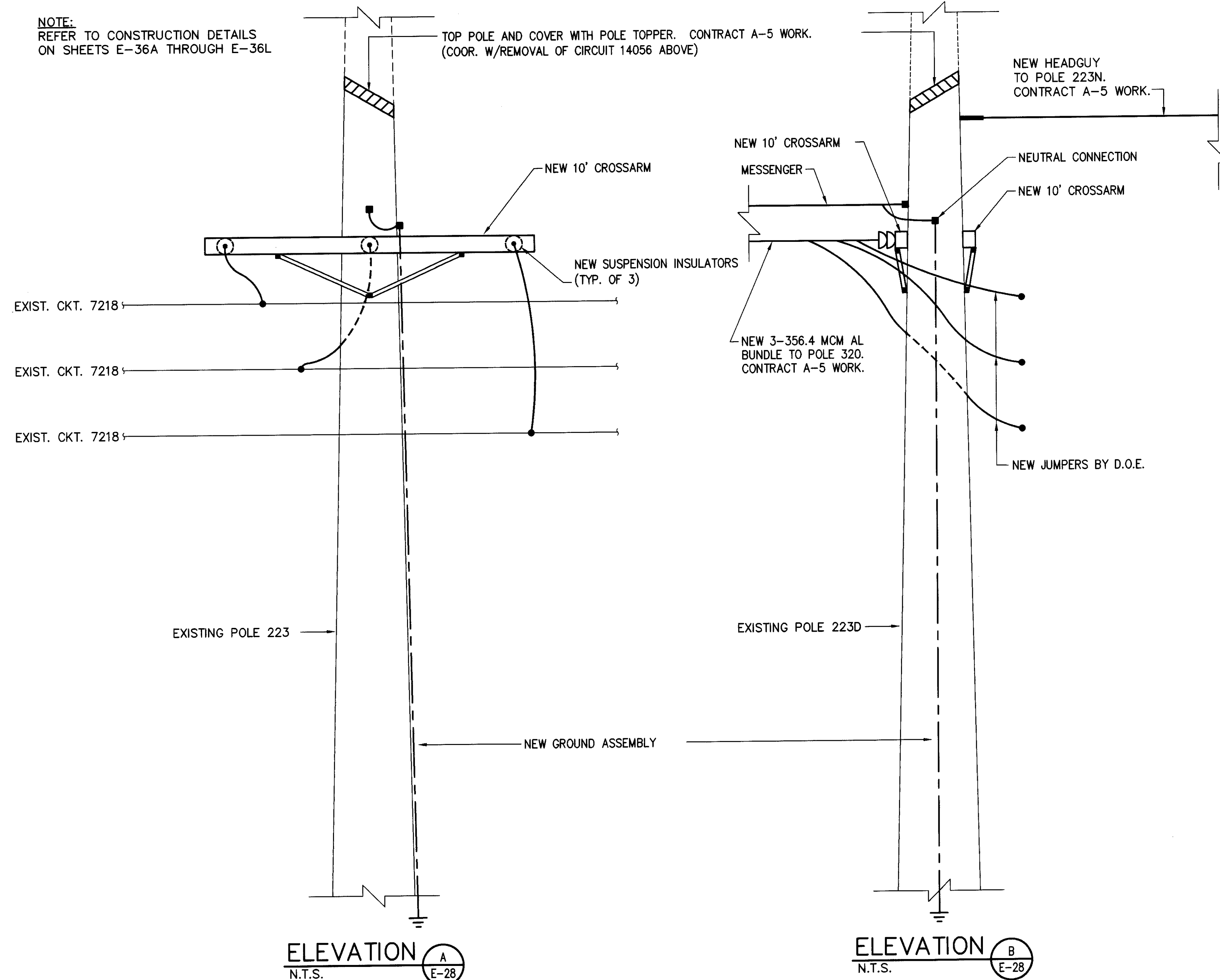
NOTE:  
INSTALLATION OF CKT 7214  
FROM POLE 321 TO BE  
COOR. W/ THE REMONAL  
OF CKT 14056 FROM  
POLES 217 AND 223.



TLS I:\PAC\0231343\56\CONTRACT A-5\A5-E-27.DWG SEP 08, 1997 09:59:09 PLOT SCALE = 12

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

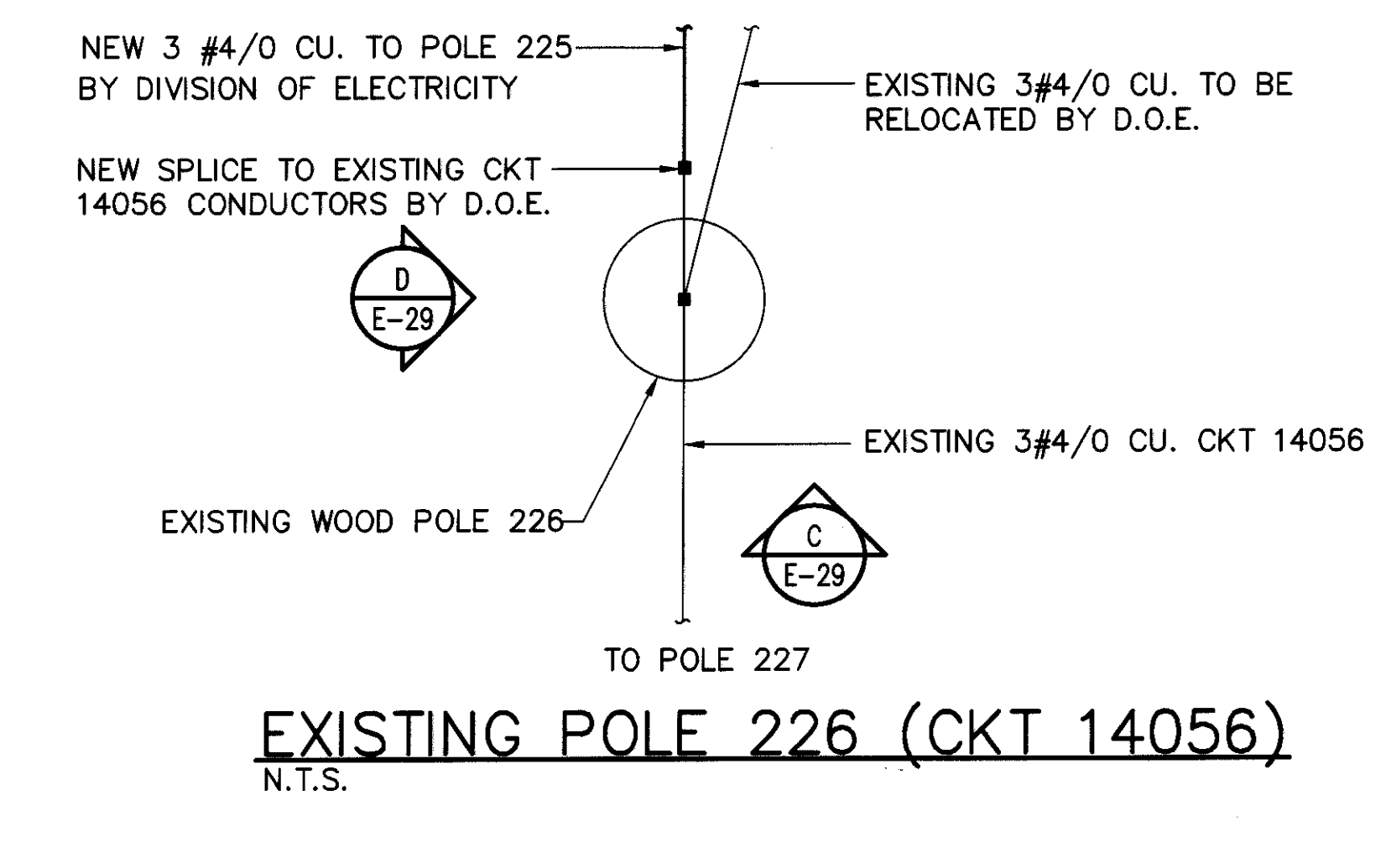
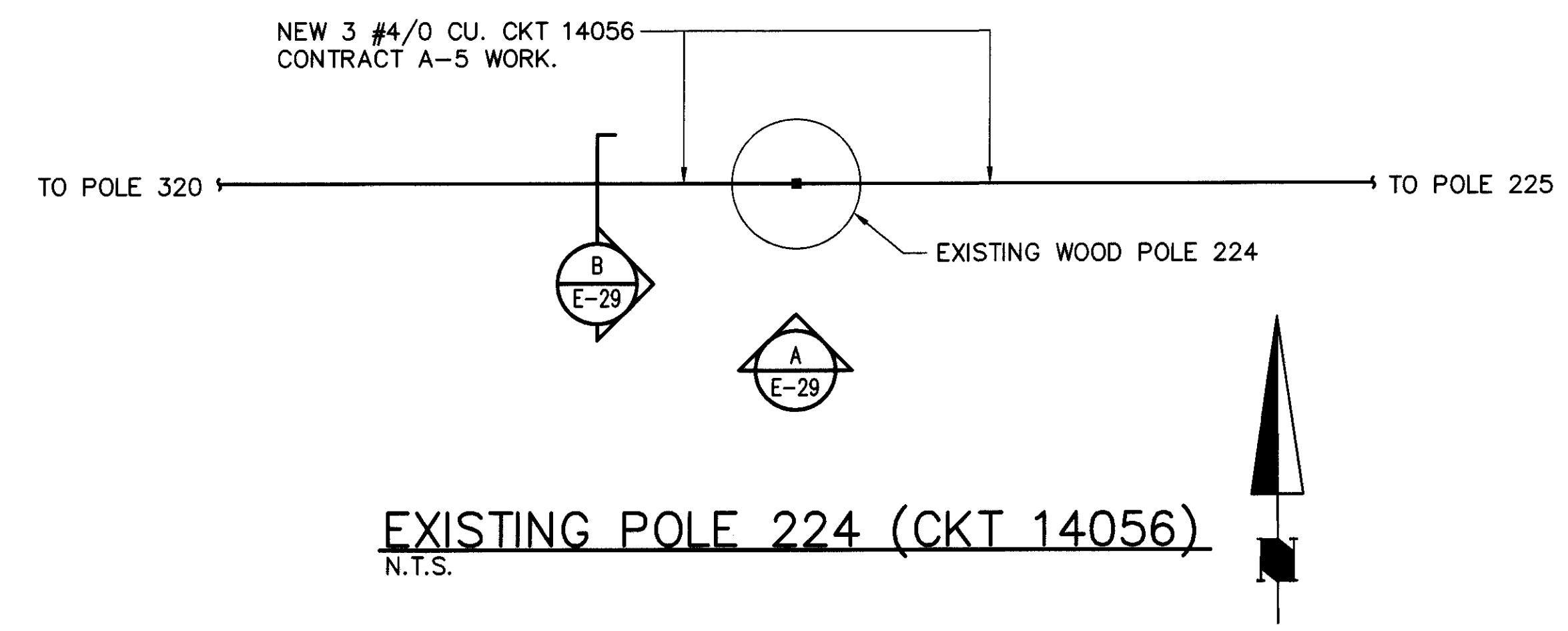
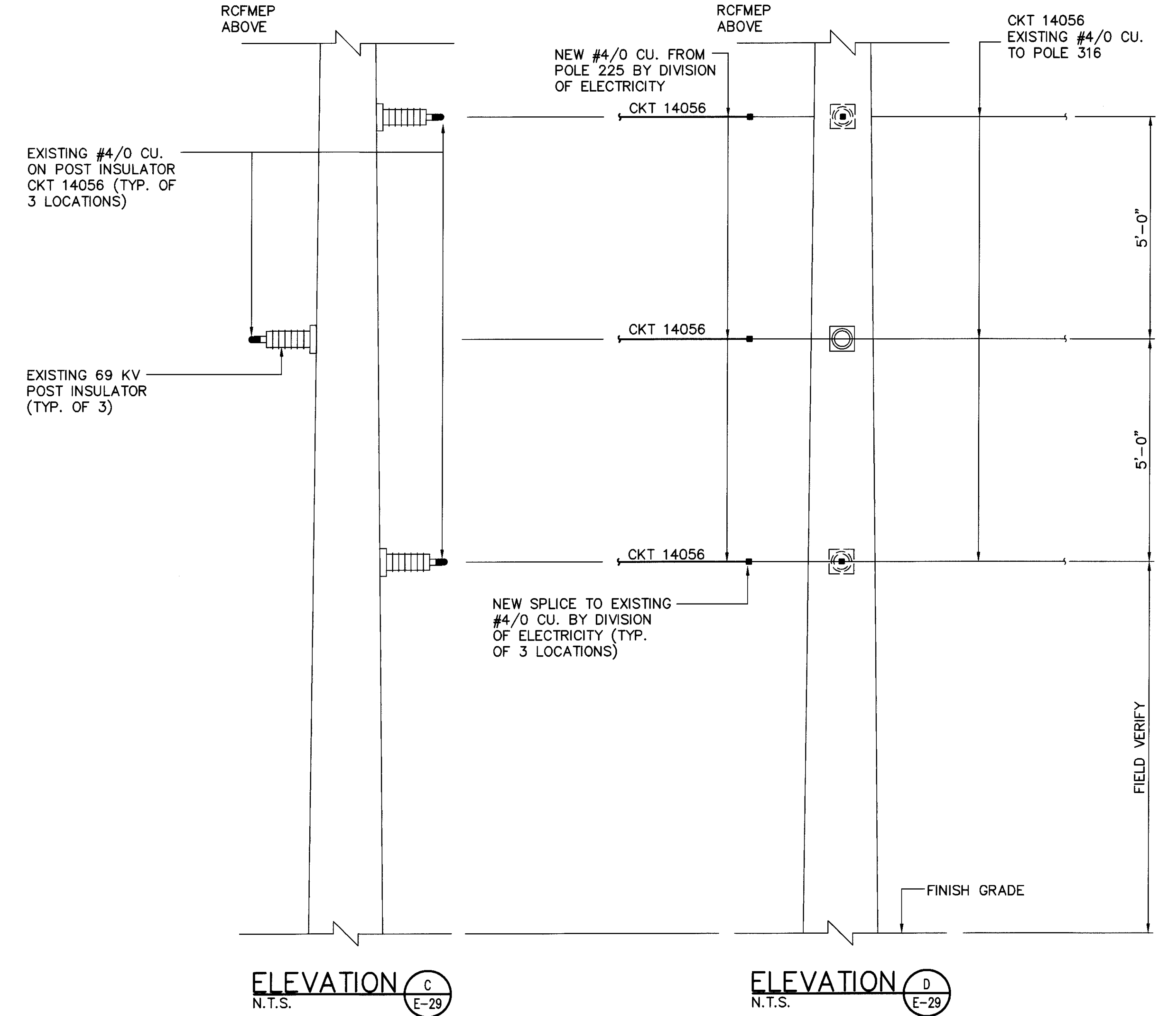
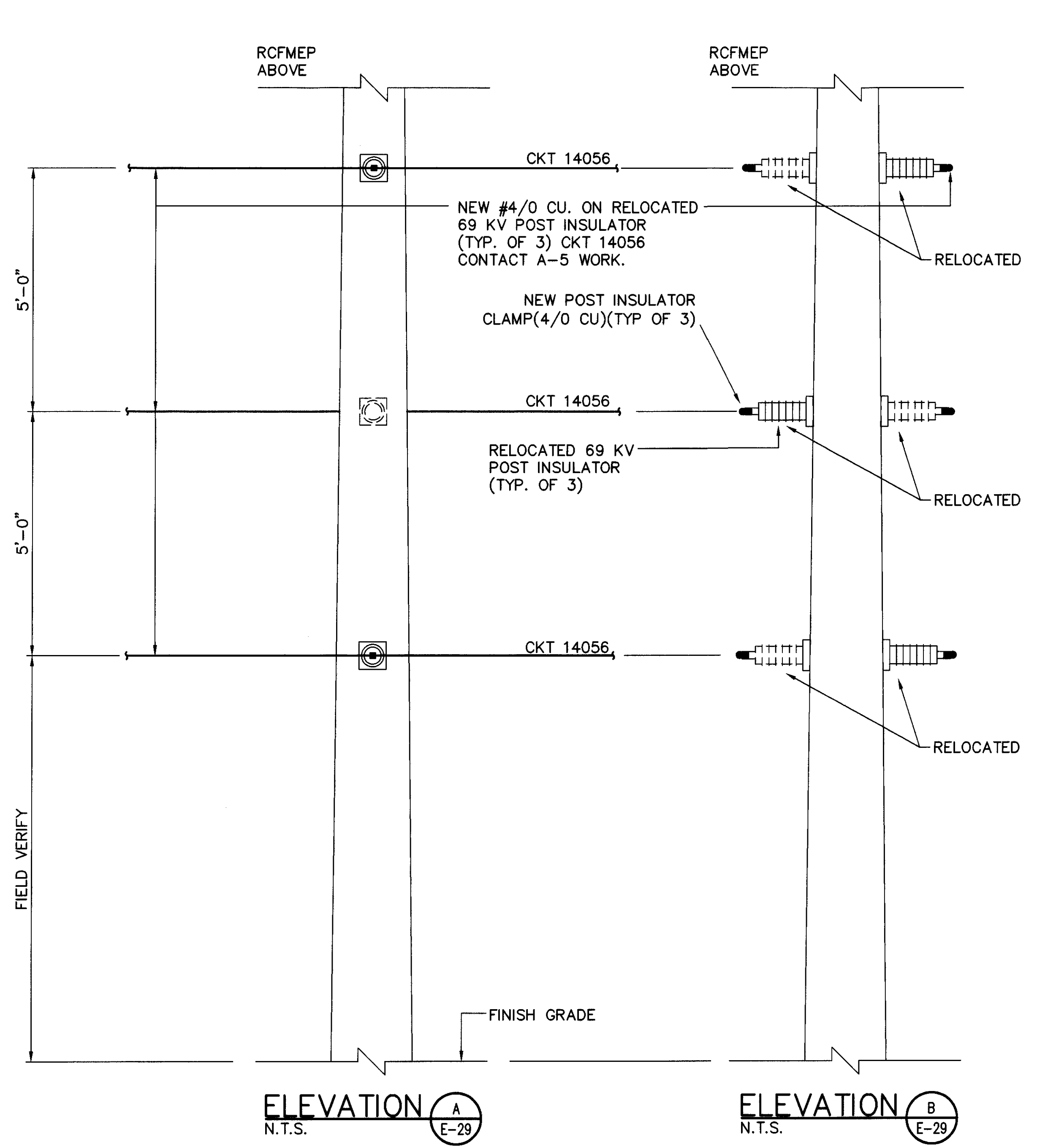


NOTE:  
INSTALLATION OF CKT. 7218 ON POLE 223 TO BE COORDINATED WITH THE REMOVAL OF CKT. 14056.

PLS. E:\940\9231314\56\CONTRACT P-5\A5-E-28.DWG SEP 01 10:57 15/10/57 PLOT SCALE = 1:2

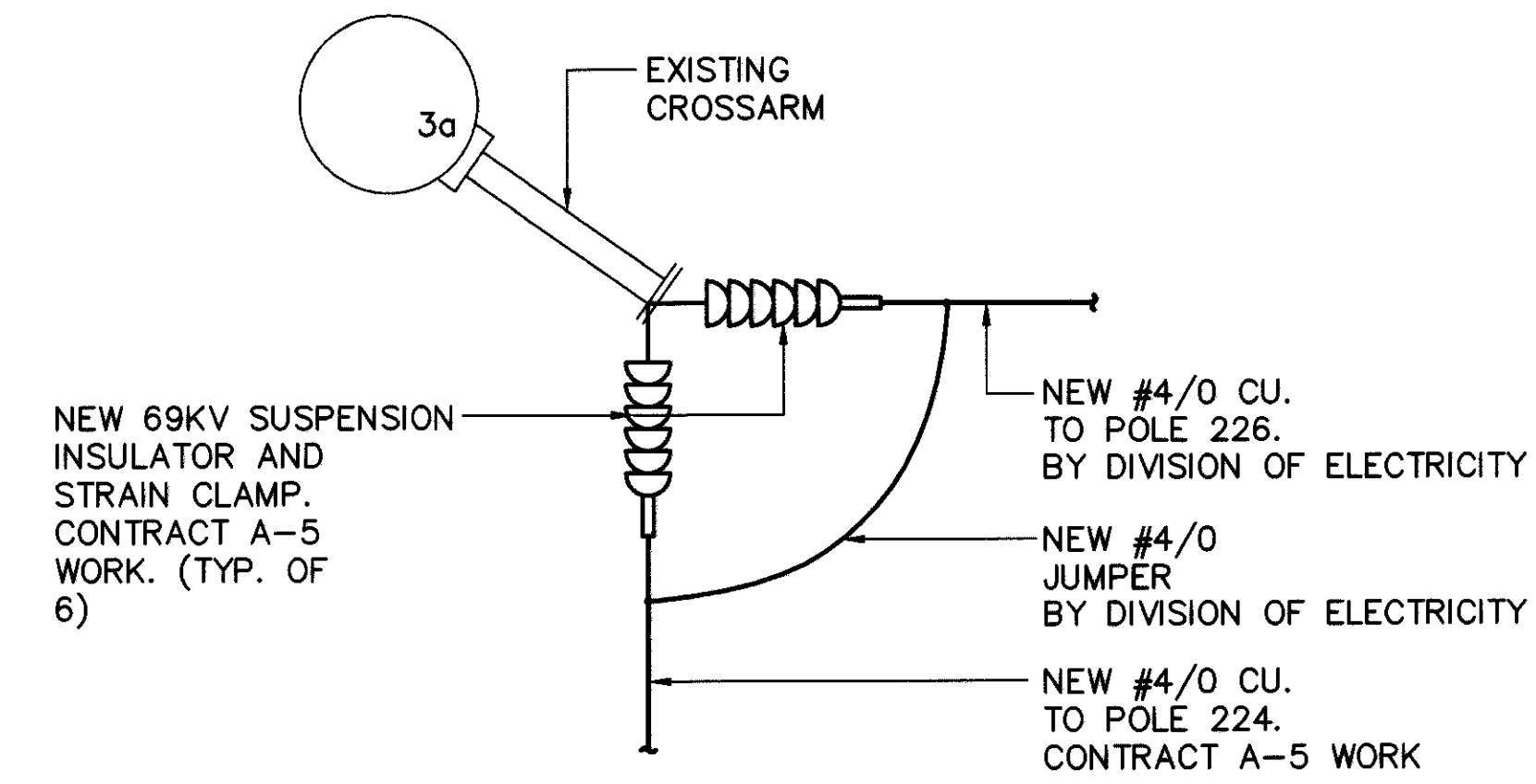


NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

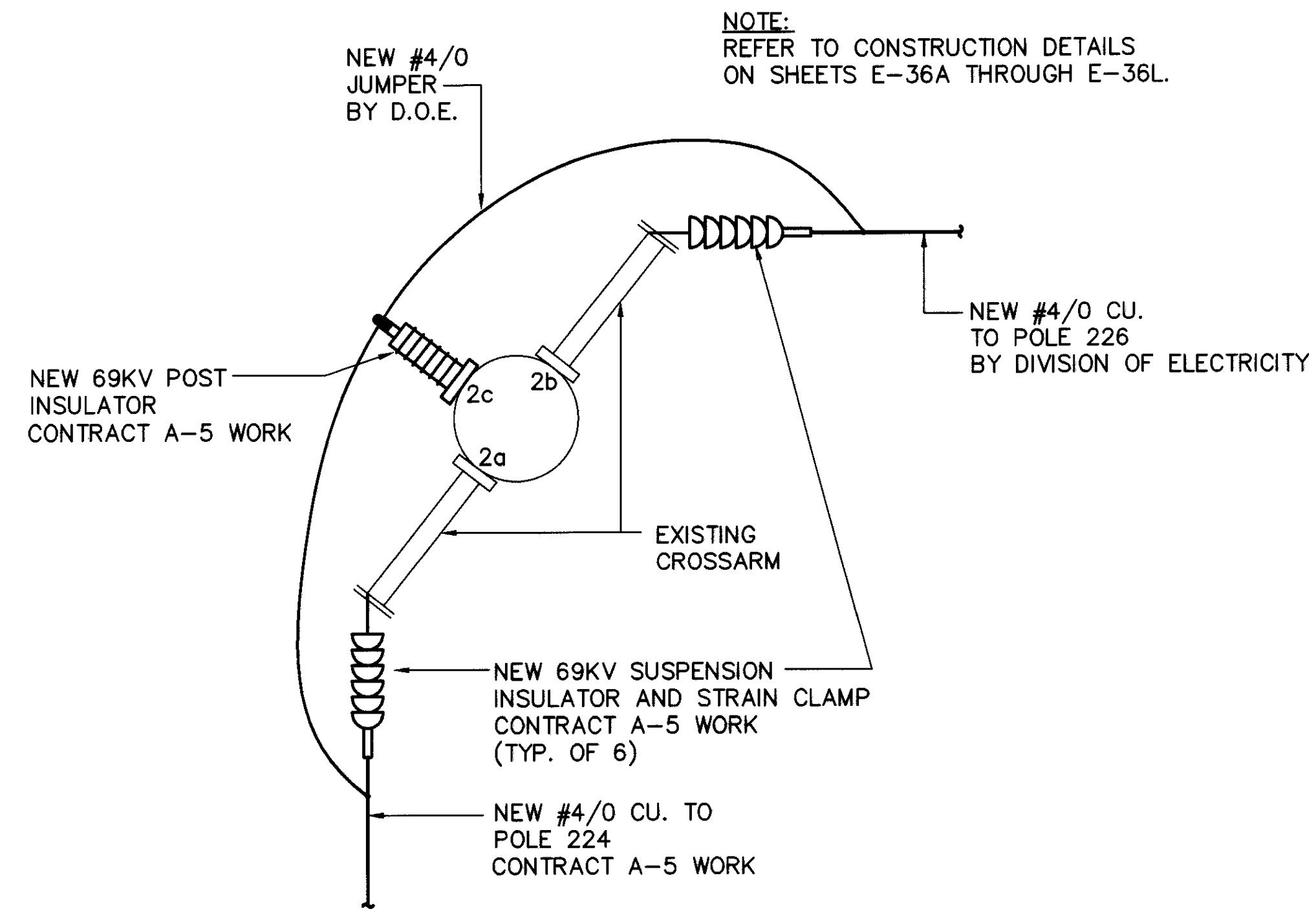


I:\PAC\92313143.56\CONTRACT A-5\A5-E-29.DWG AUG 28, 1997 14:02:09 PLOT SCALE = 12

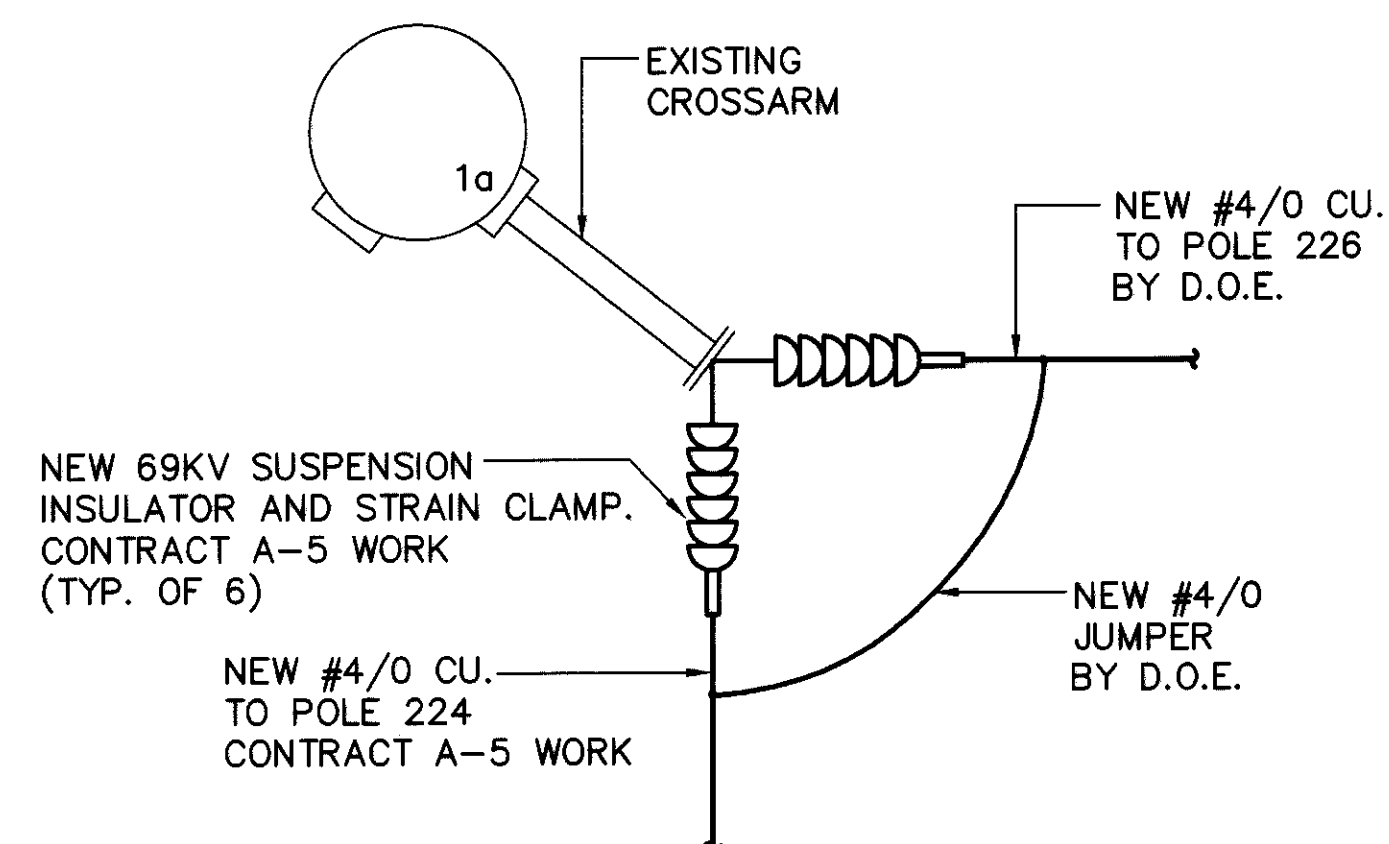
NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



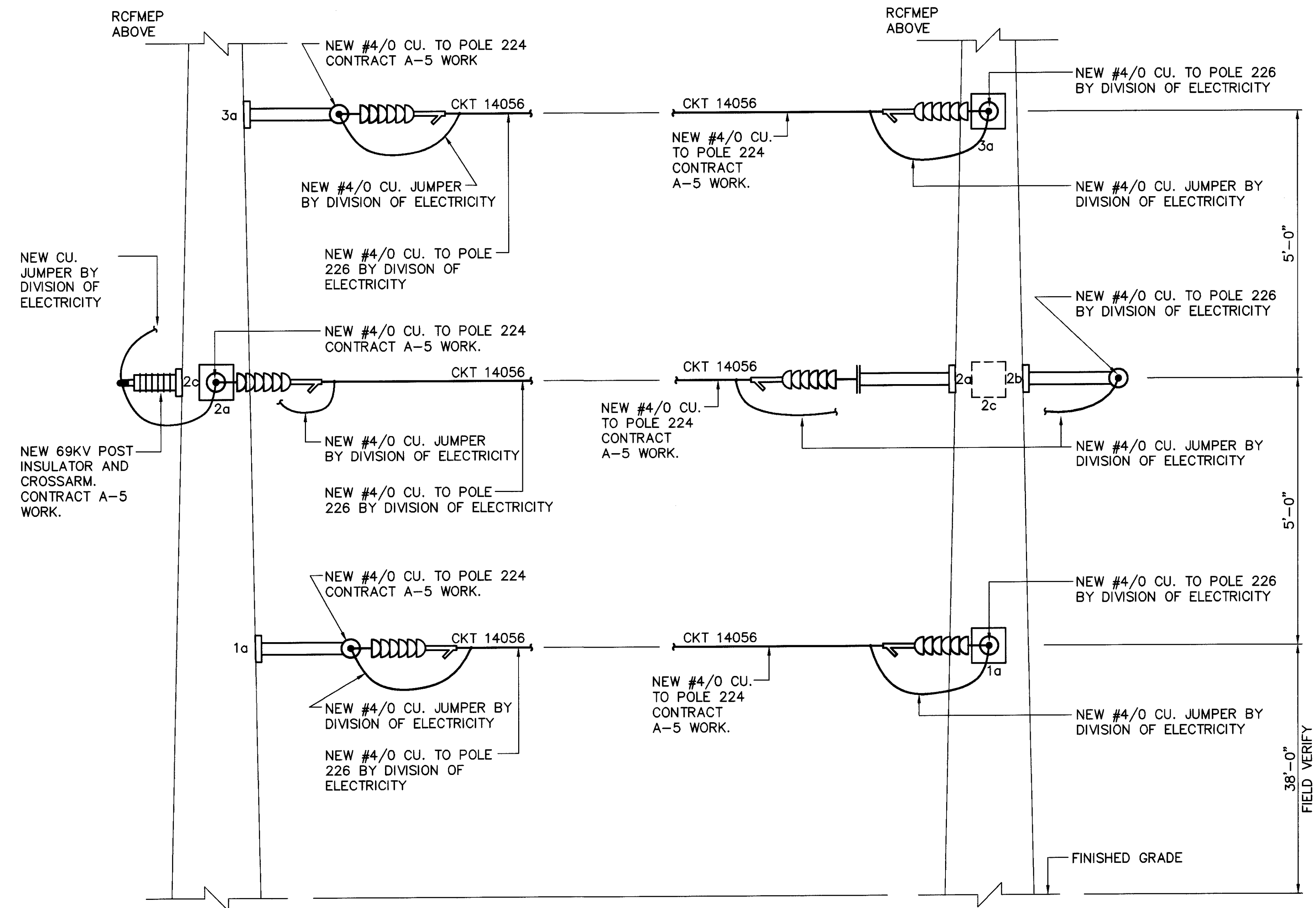
**STEEL CROSSARM-3**  
N.T.S.



**STEEL CROSSARM-2**  
N.T.S.

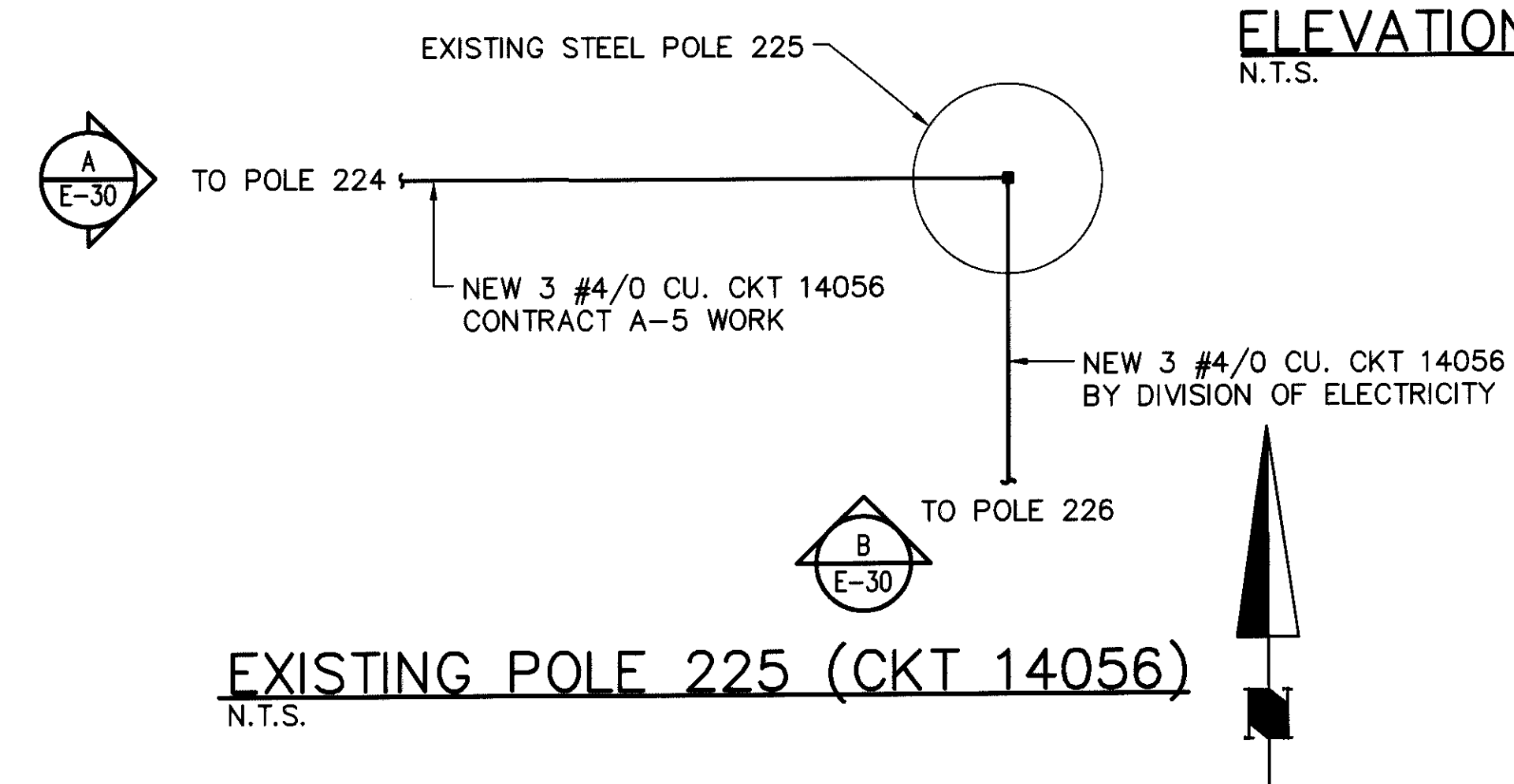


**STEEL CROSSARM-1**  
N.T.S.



**ELEVATION A**  
N.T.S.

**ELEVATION B**  
N.T.S.

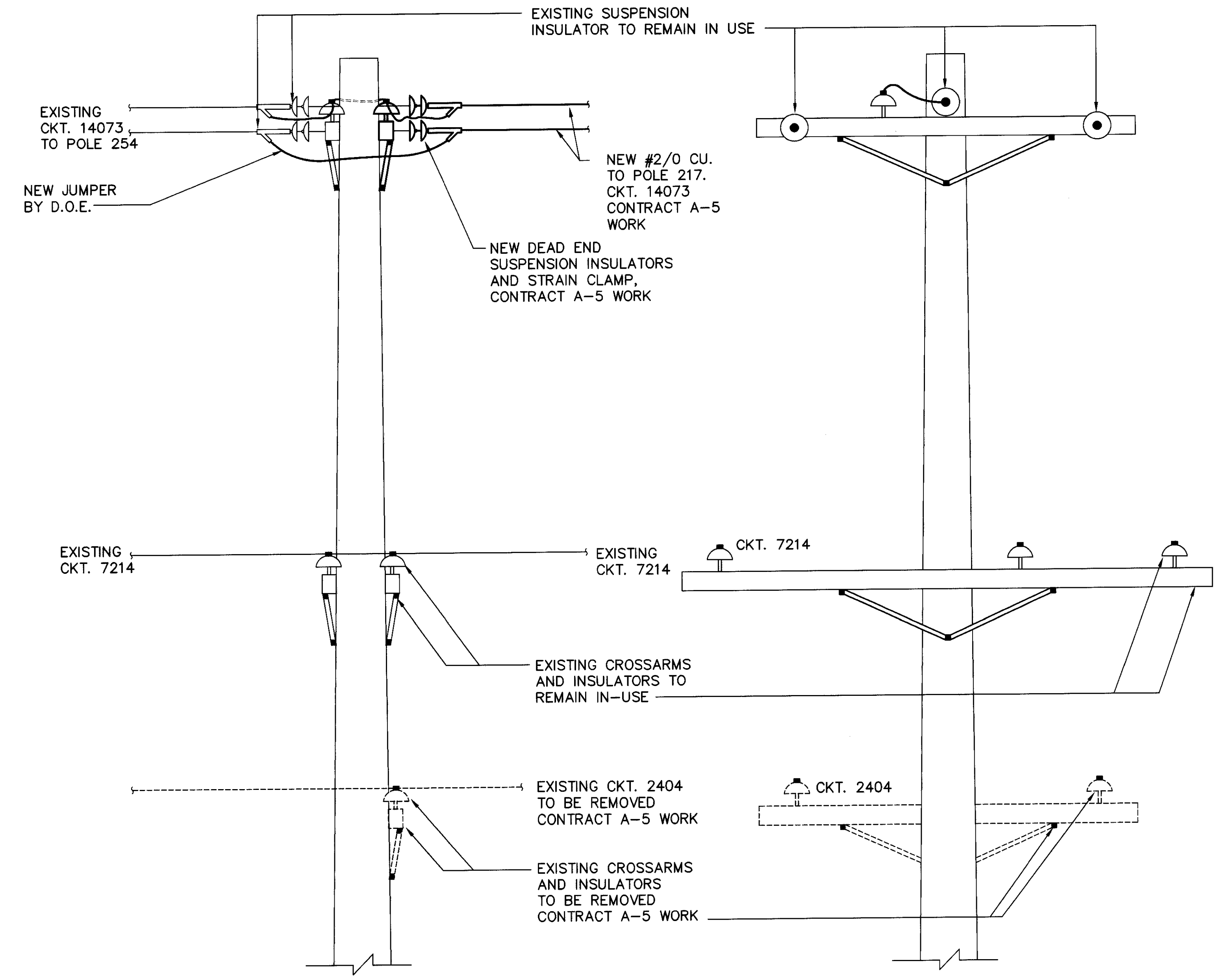


**EXISTING POLE 225 (CKT 14056)**  
N.T.S.

I:\FAC\92313143.56\CONTRACT A-5\A5-E-30.DWG SEP 02 1997 15:15:14 PLOT SCALE = 12

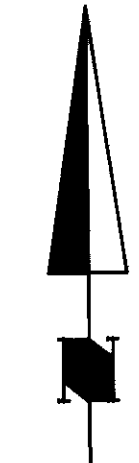
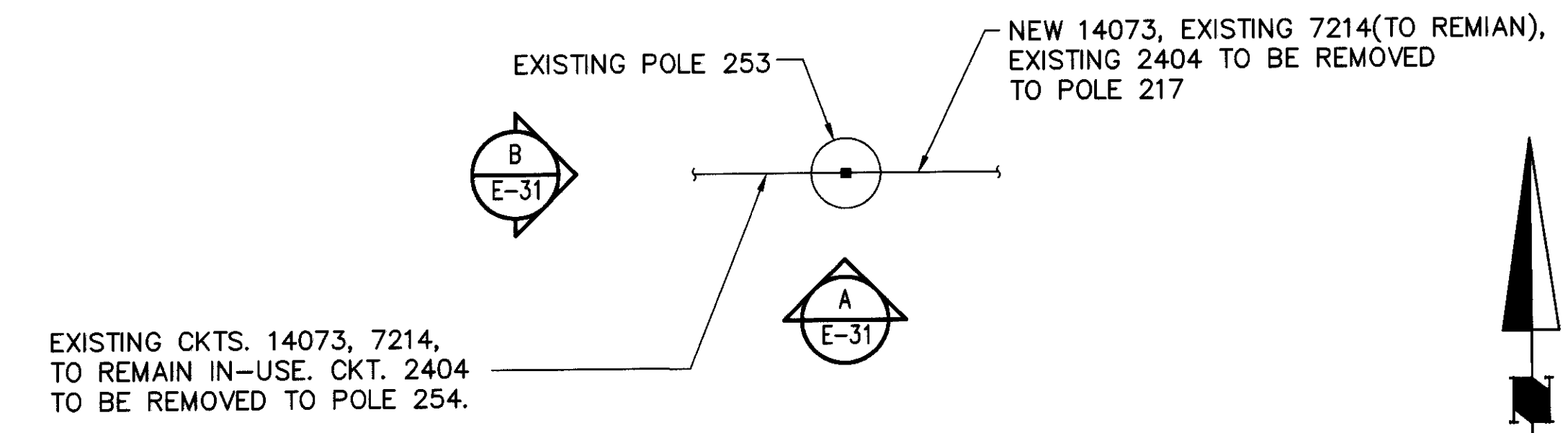


NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



ELEVATION A  
N.T.S. E-31

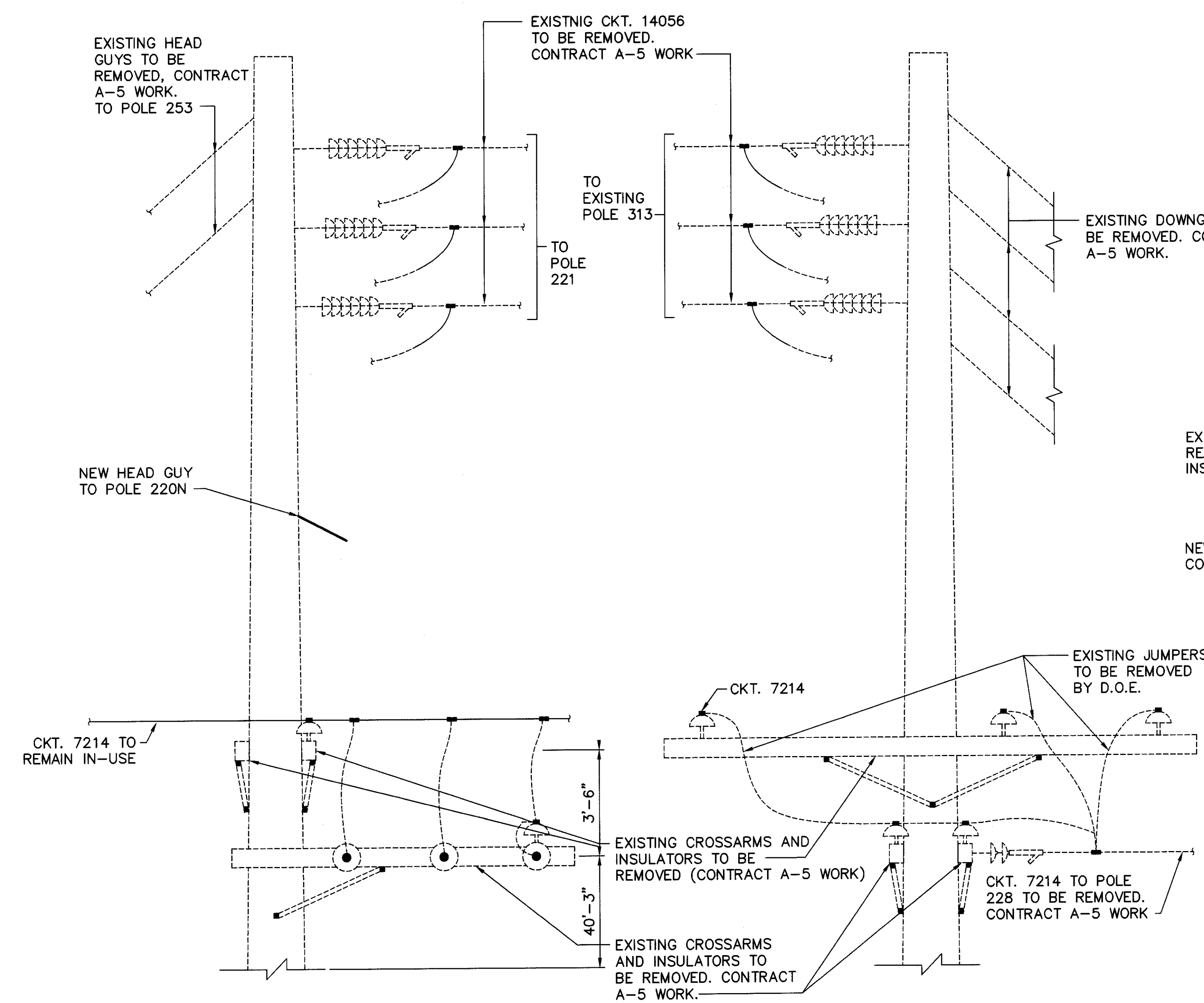
ELEVATION B  
N.T.S. E-31



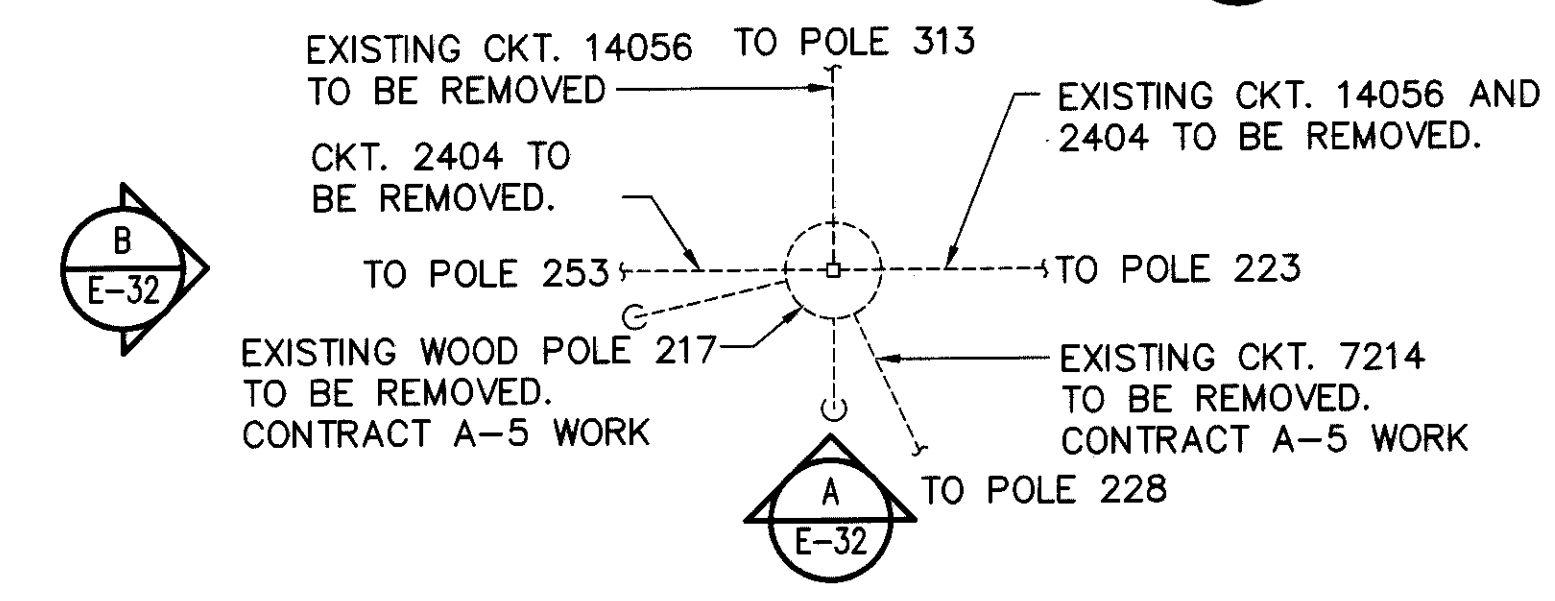
EXISTING POLE 253 (CKTS. 14073, 7214, 2404)  
N.T.S.

TSS I:\FPA\9231314356\CONTRACT A-5\A5-E-31.DWG SEP 08, 1997 11:39:18 PLOT SCALE = 12

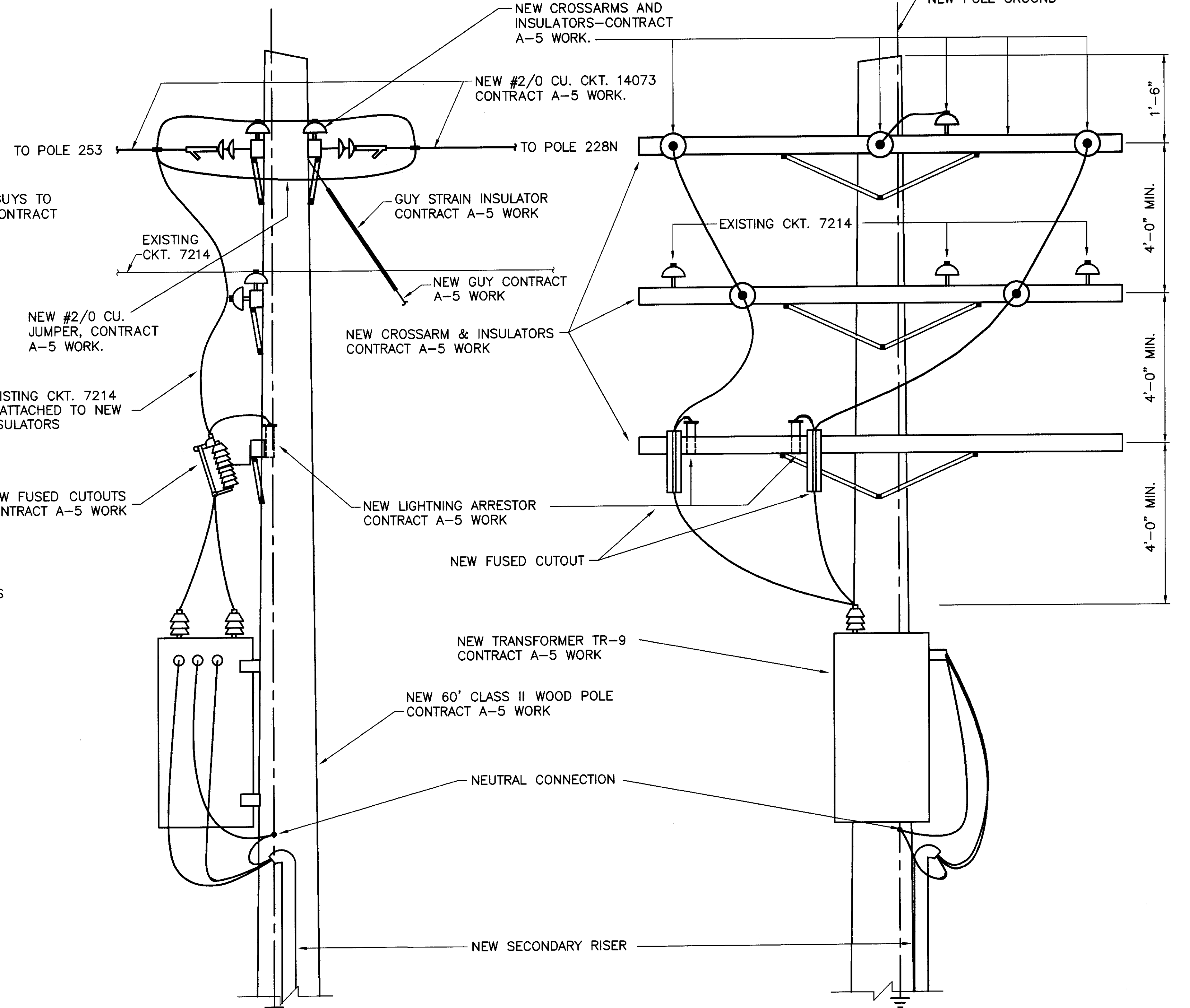
NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



**ELEVATION A**  
N.T.S. E-32

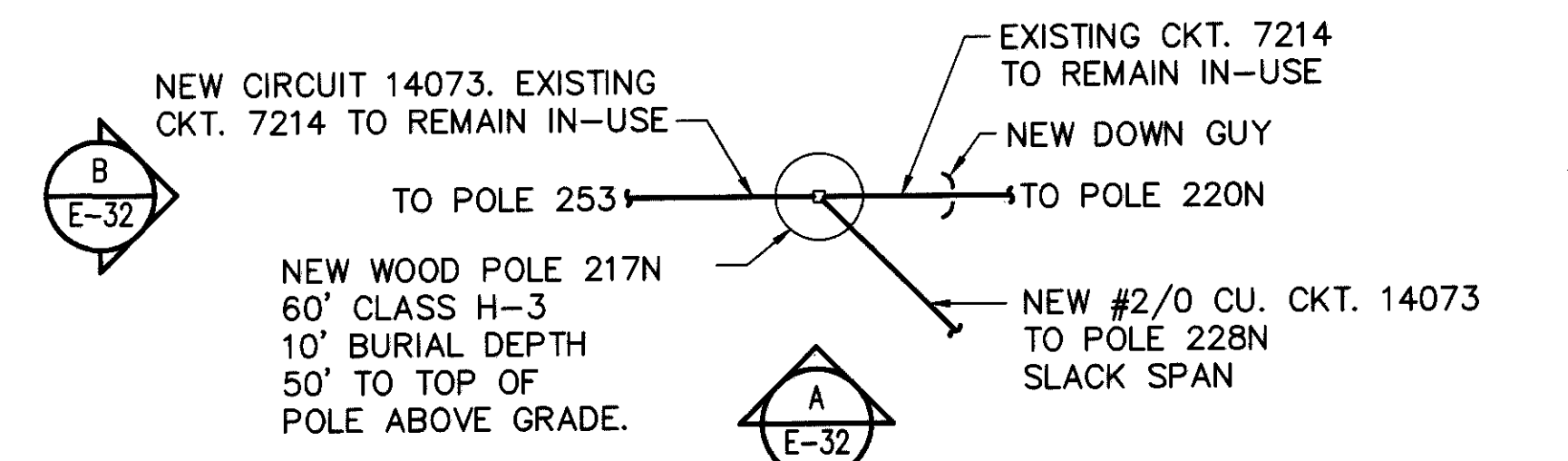


**EXISTING POLE 217 (CKTS. 14073, 7214, 2404)**  
N.T.S.



**ELEVATION A**  
N.T.S. E-32

**ELEVATION B**  
N.T.S. E-32



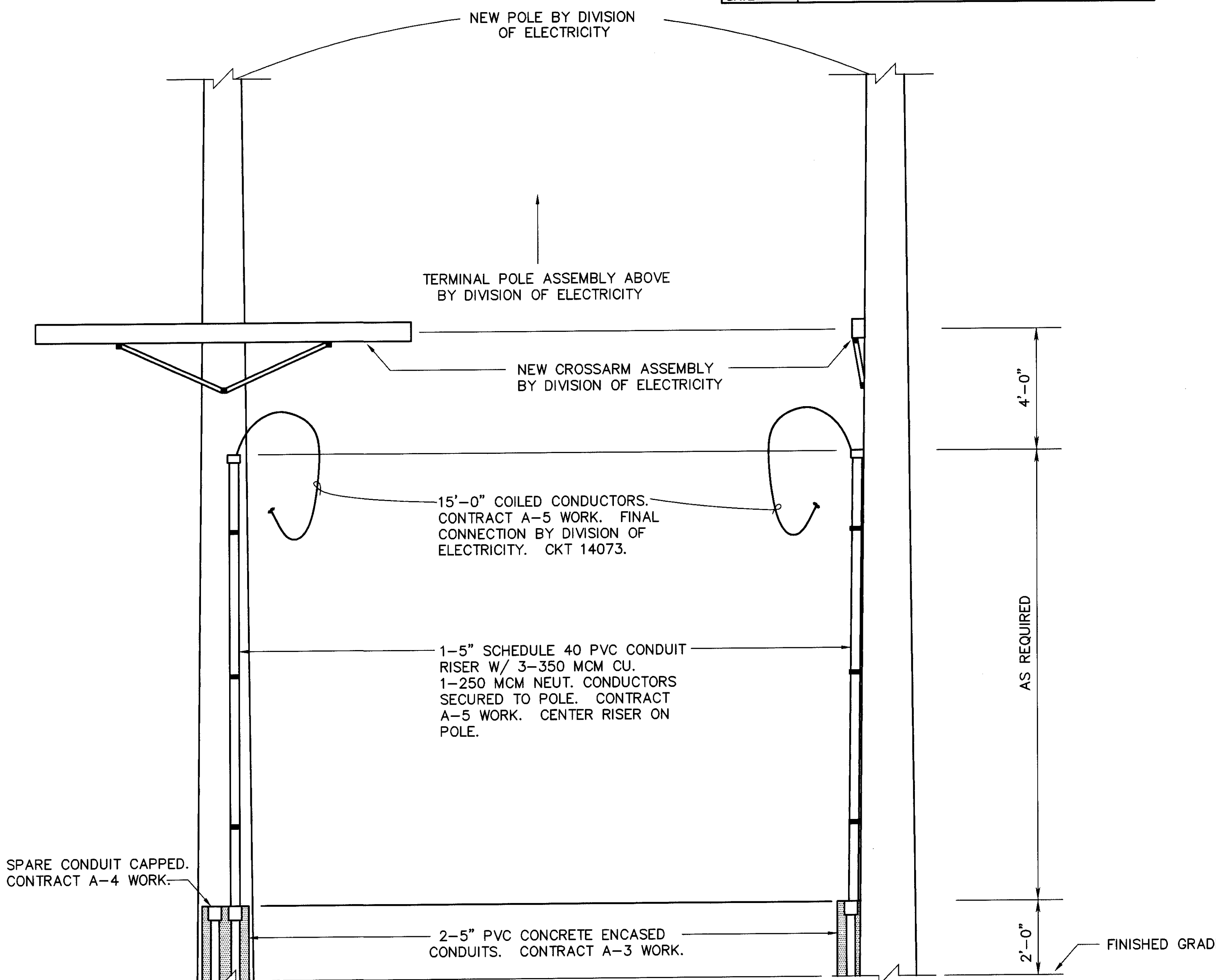
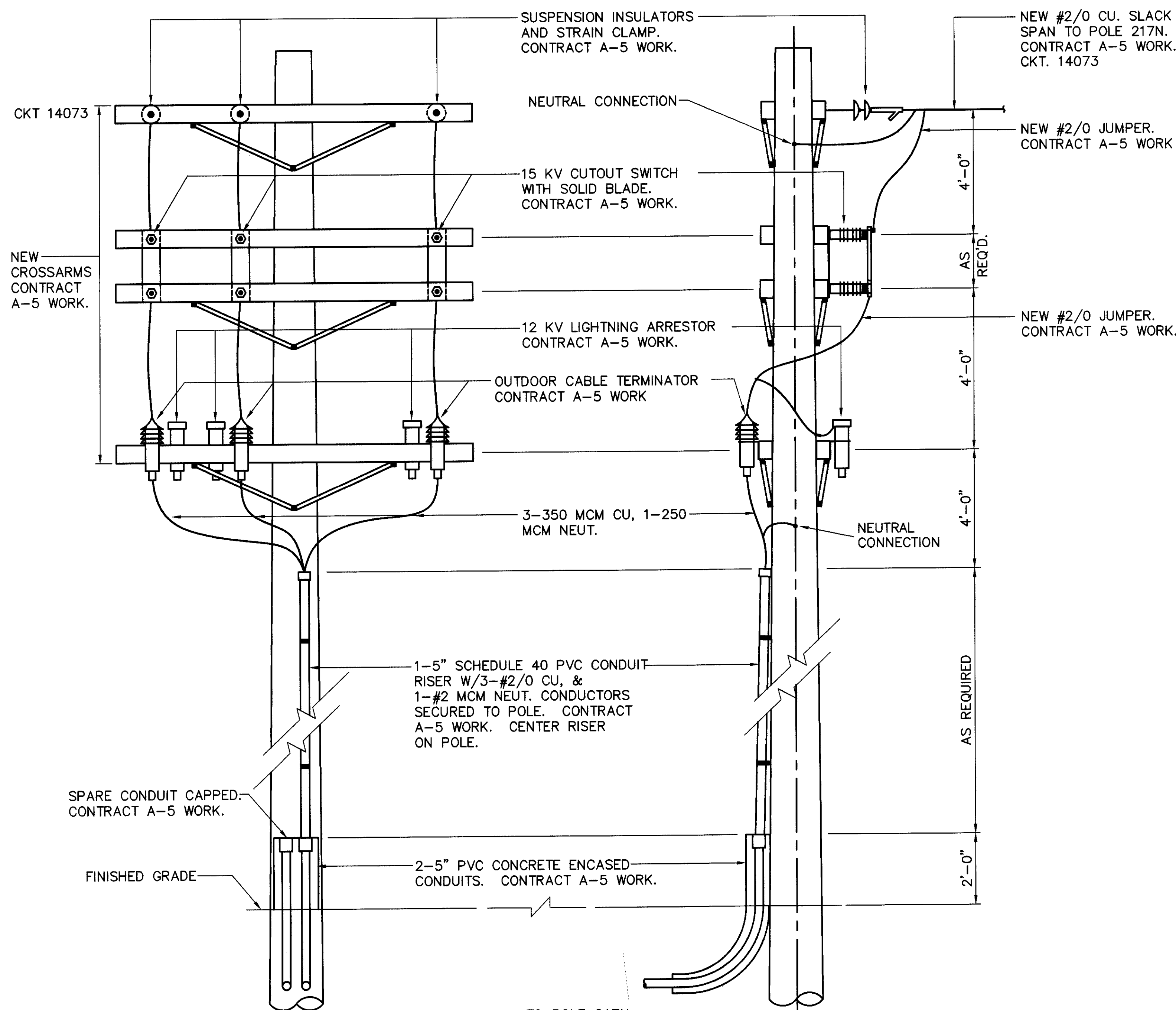
**NEW POLE 217N (CKTS. 14073, 7214, 2404)**  
N.T.S.

T.L.S. I:\FAC\92313143-56\CONTRACT A-5\A5-E-32.DWG AUG 28, 1997 14:46:57 PLOT SCALE = 12



NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



ELEVATION A  
N.T.S. E-33

ELEVATION B  
N.T.S. E-33

ELEVATION C  
N.T.S. E-33

ELEVATION D  
N.T.S. E-33

NEW POLE 228N  
50' CLASS II  
7.5' BURIAL DEPTH  
42.5' TO TOP POLE  
ABOVE GRADE

NEW 3-#2/0 CU 15 KV, & 1-#2 CU 600V, NEUT.  
IN 5" PVC DUCTBANK TO TRANS. TR-7.  
CONTRACT A-5 WORK.

NEW 3-350 MCM CU, 1-250 MCM NEUT. IN 5" PVC DUCTBANK  
TO MH-43. DUCTBANK IN CONTRACT A-3 WORK,  
CONDUCTORS IN CONTRACT A-5 WORK.

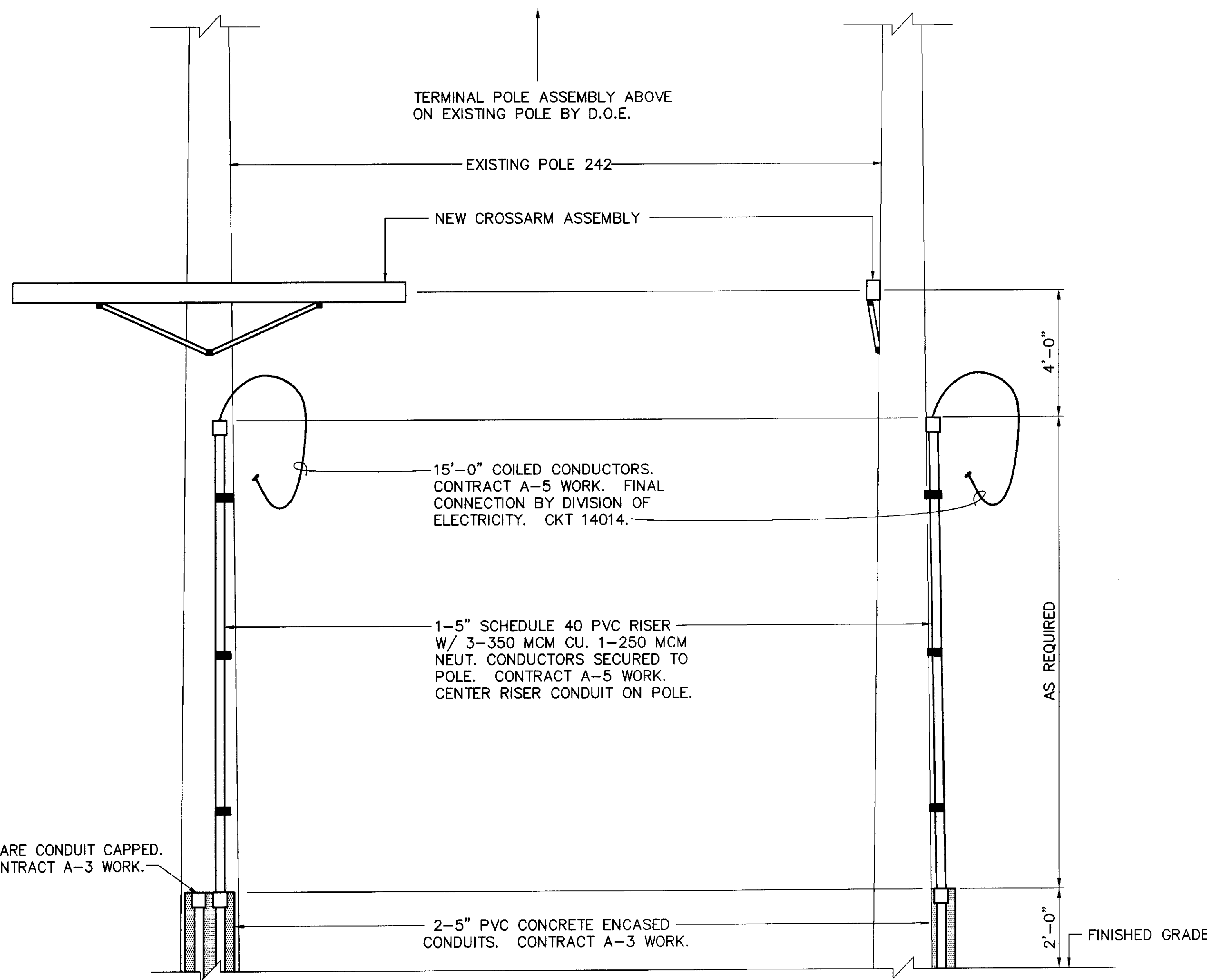
NEW 3-350 MCM CU, 1-250 MCM NEUT.  
RISER. RIGID CONDUIT RISER & CONDUCTORS  
IN CONTRACT A-5 WORK. CKT. 14073

NEW POLE 228N (CKT. 14073)  
N.T.S.

NEW POLE NO. 002 (CKT 14073)  
N.T.S.

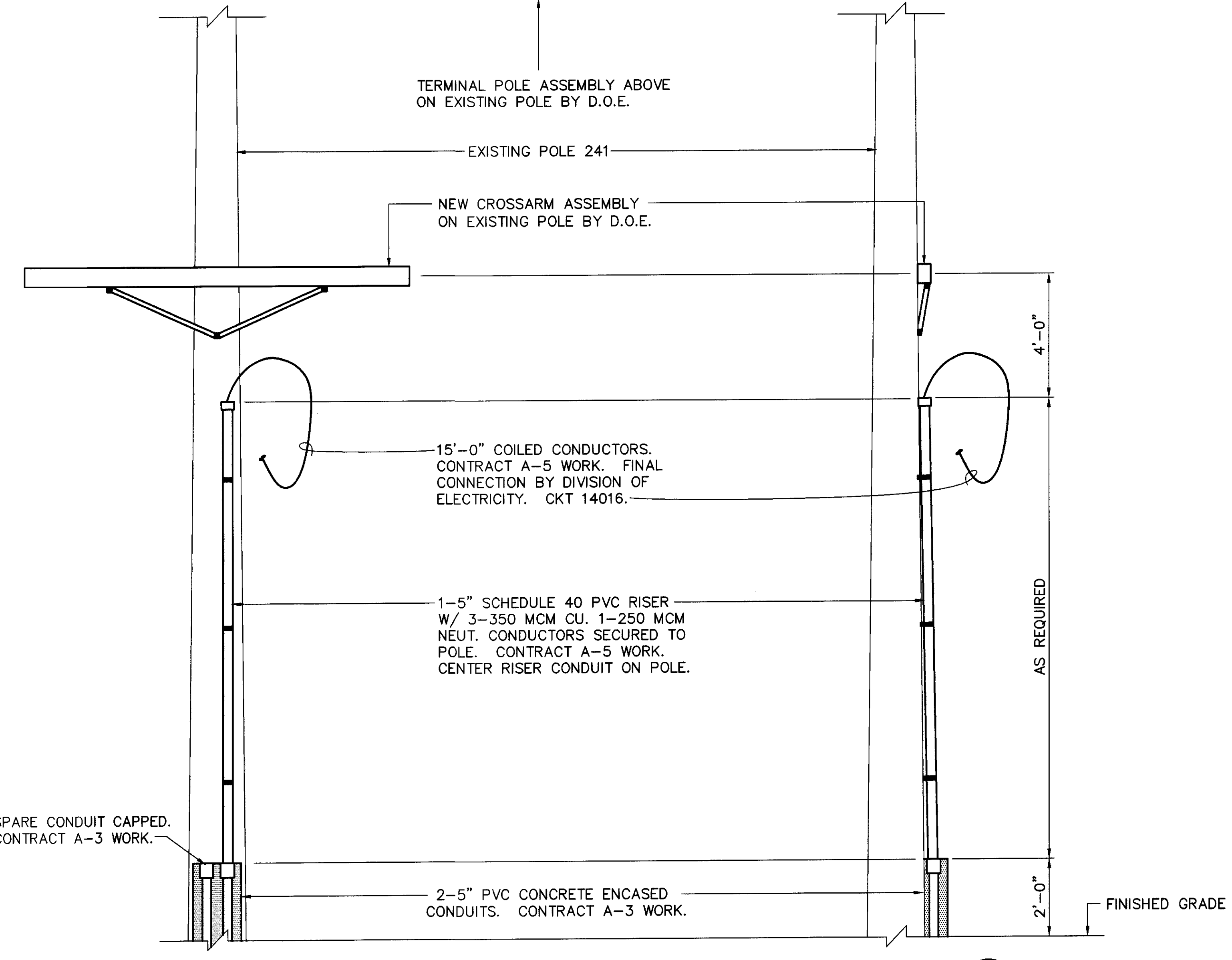
NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L



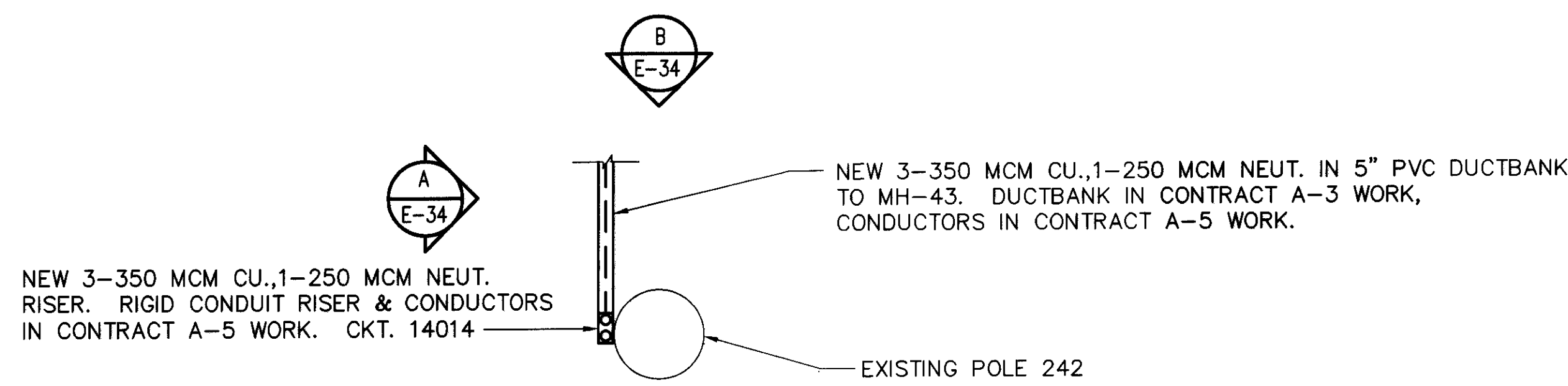
ELEVATION A  
N.T.S. E-354

ELEVATION B  
N.T.S. E-34

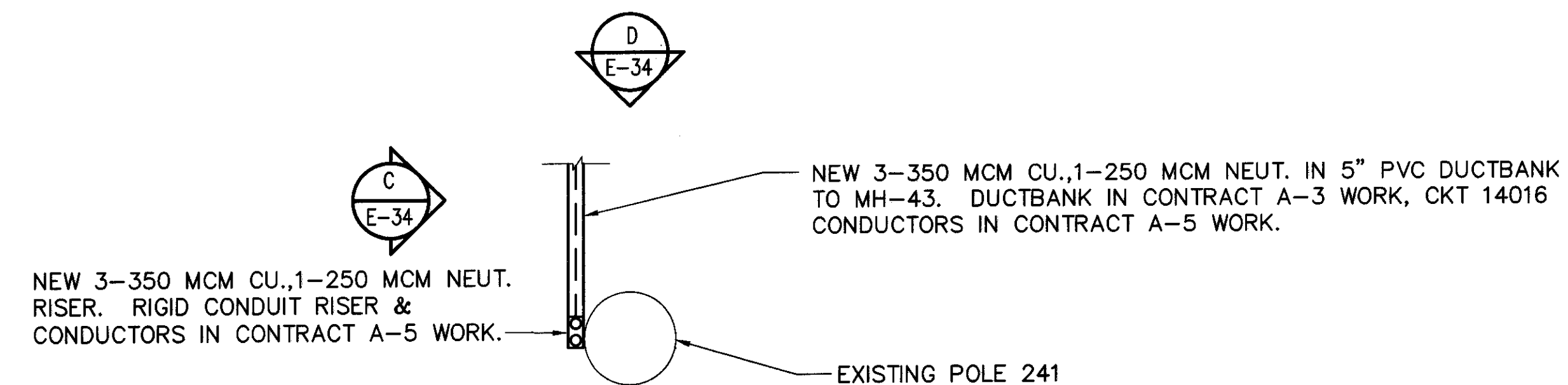


ELEVATION C  
N.T.S. E-34

ELEVATION D  
N.T.S. E-34

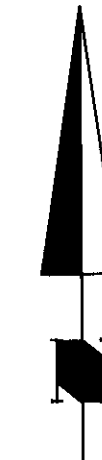


EXISTING POLE 242 (CKT 14014)  
N.T.S.

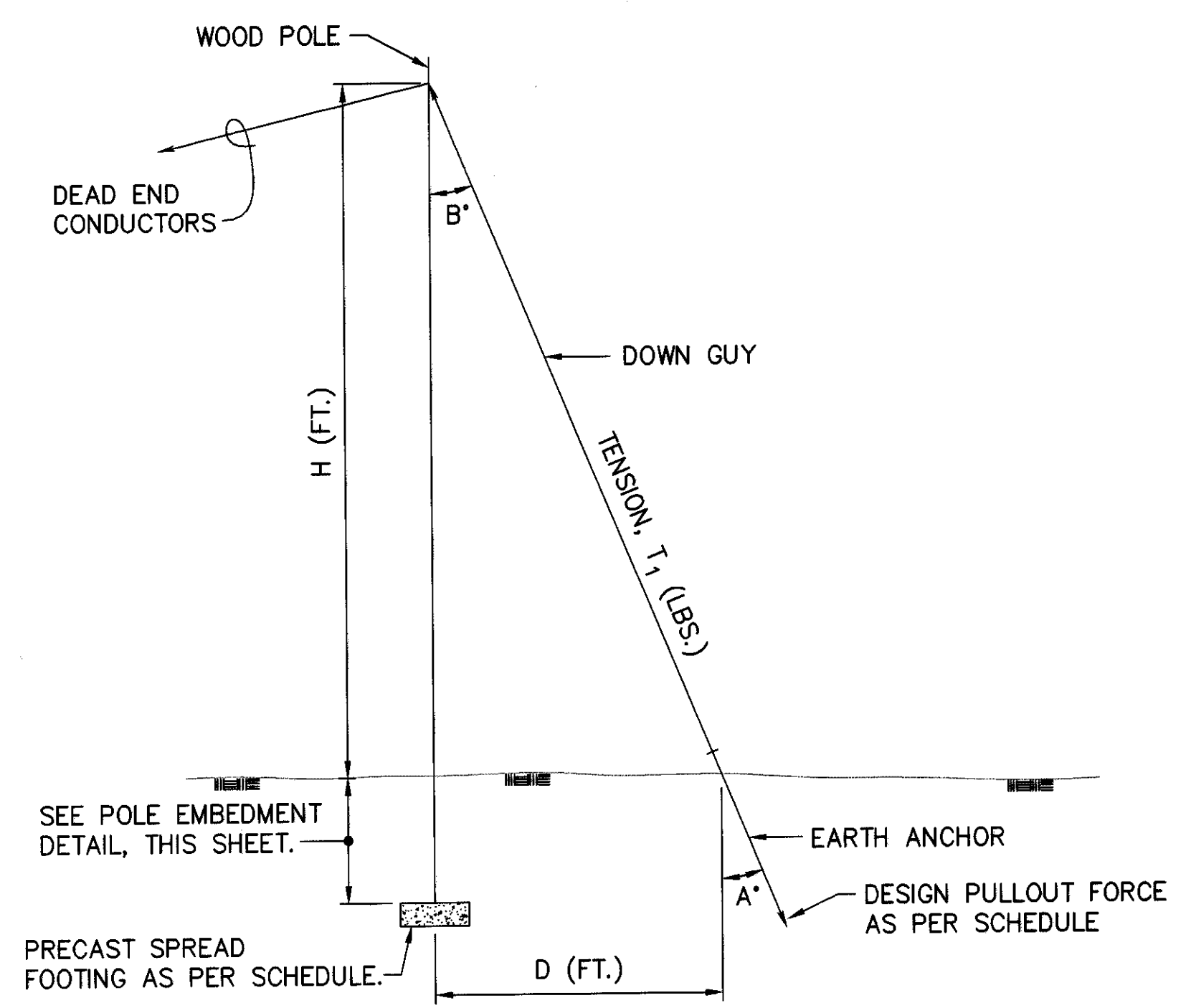


EXISTING POLE 241 (CKT 14016)  
N.T.S.

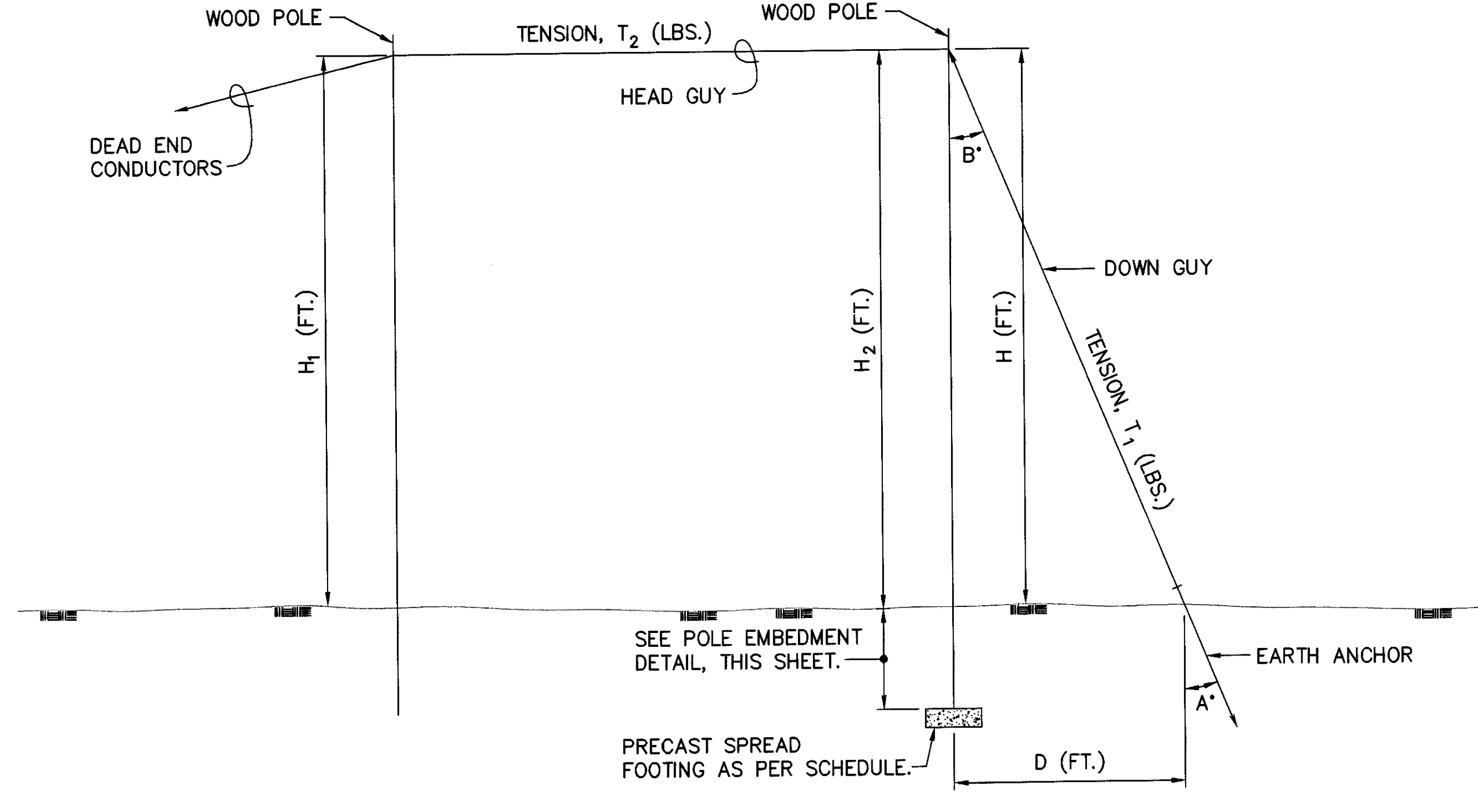
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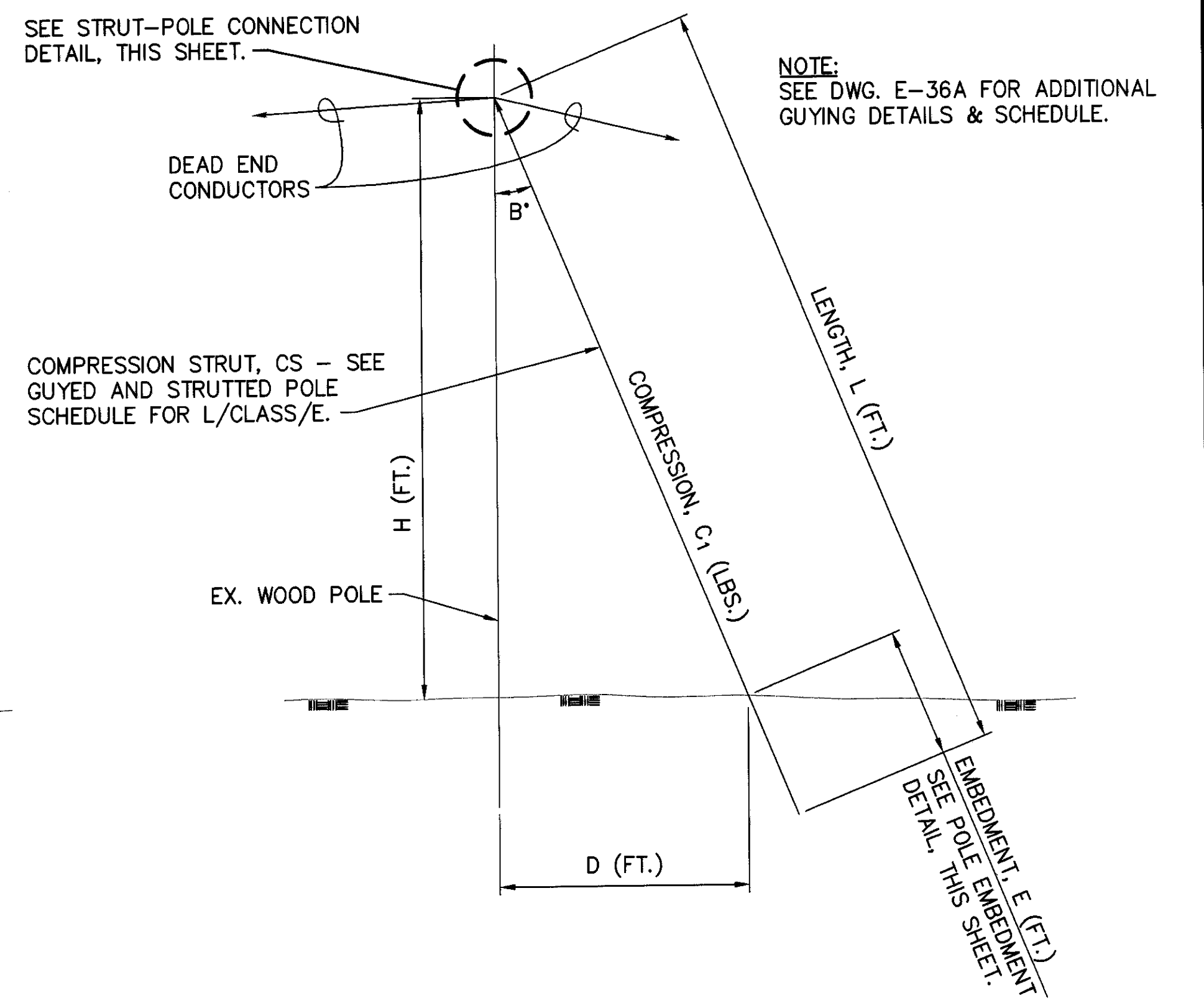




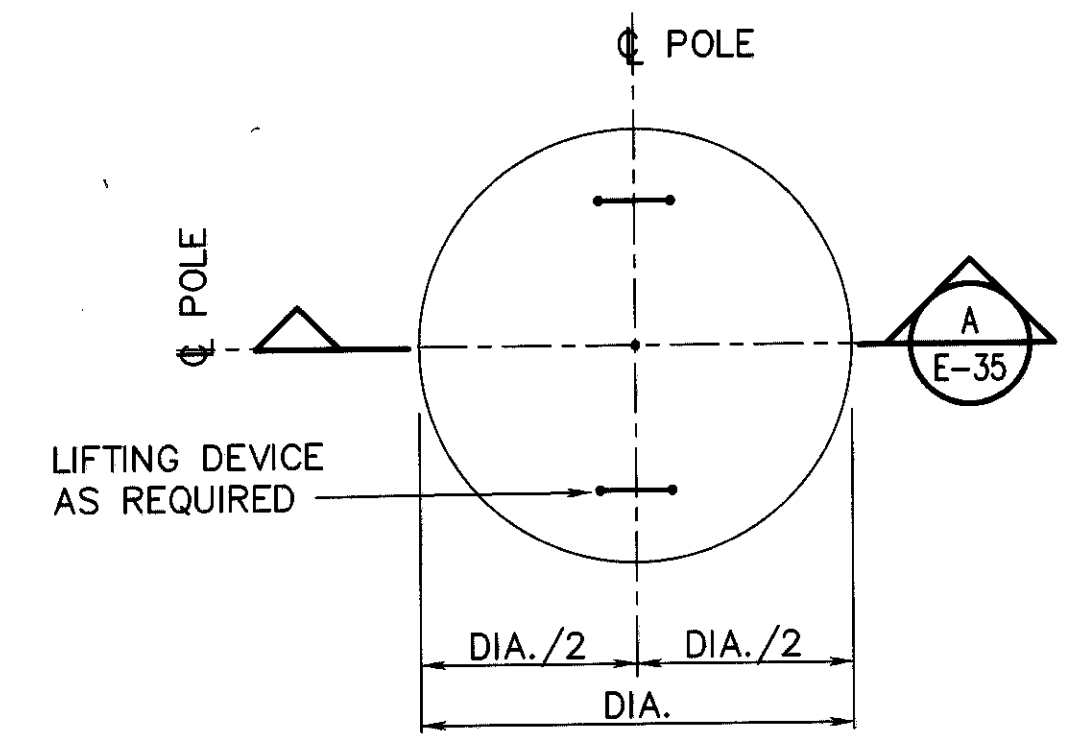
**TYPICAL GUYED POLE DETAIL**  
N.T.S.



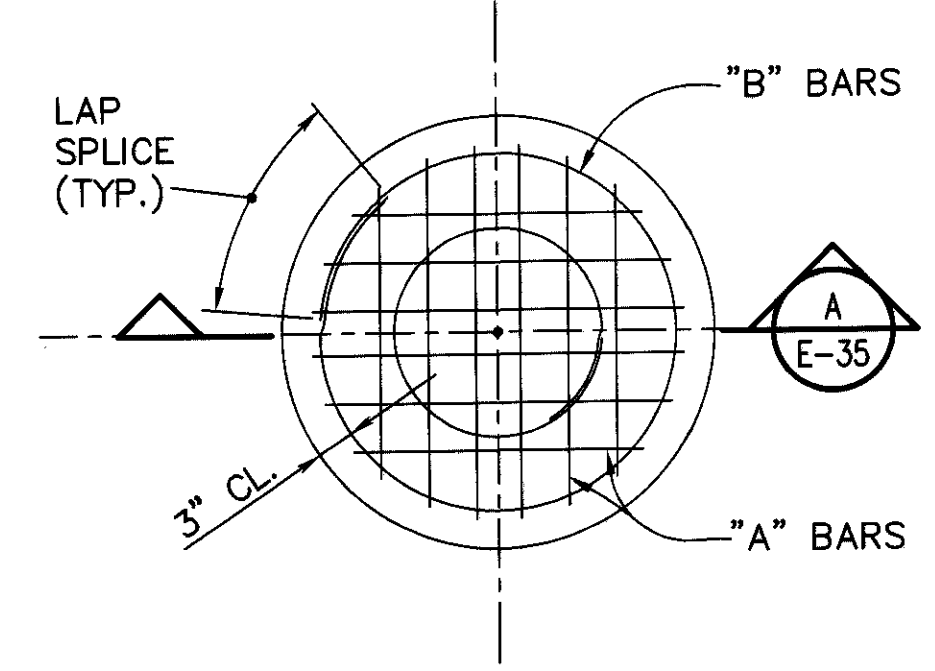
**TYPICAL HEAD GUY POLE DETAIL**  
N.T.S.



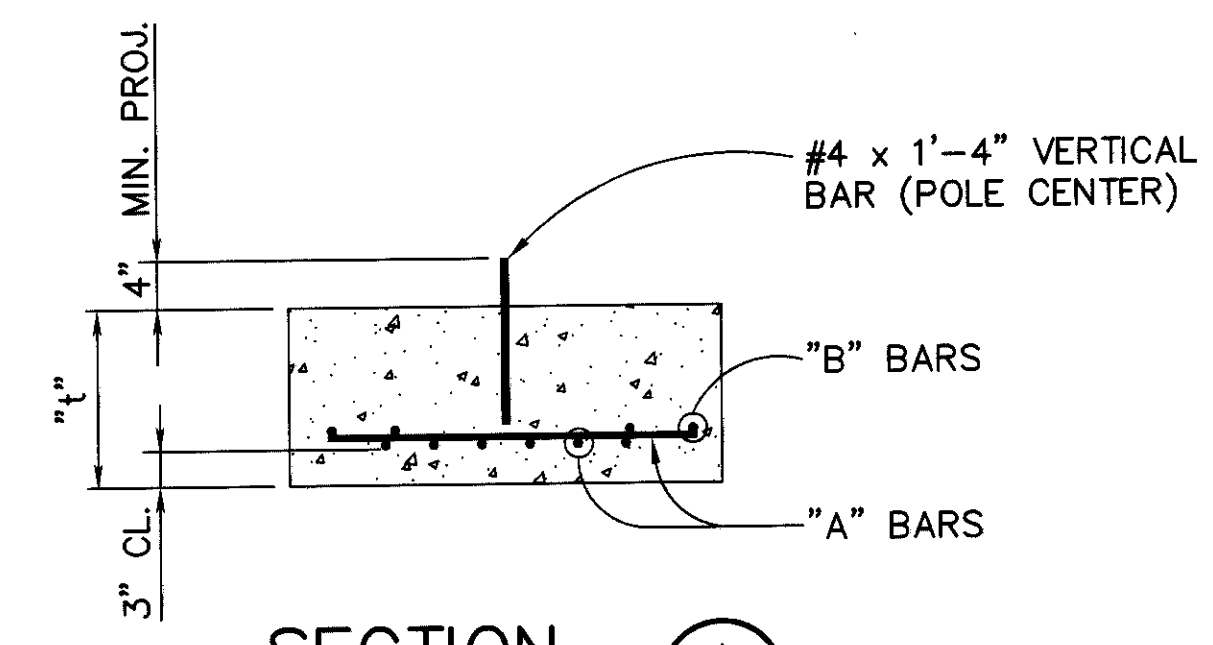
**TYPICAL COMPRESSION STRUT DETAIL**  
N.T.S. AT POLE 323, LOOKING EAST



**PLAN**  
N.T.S.



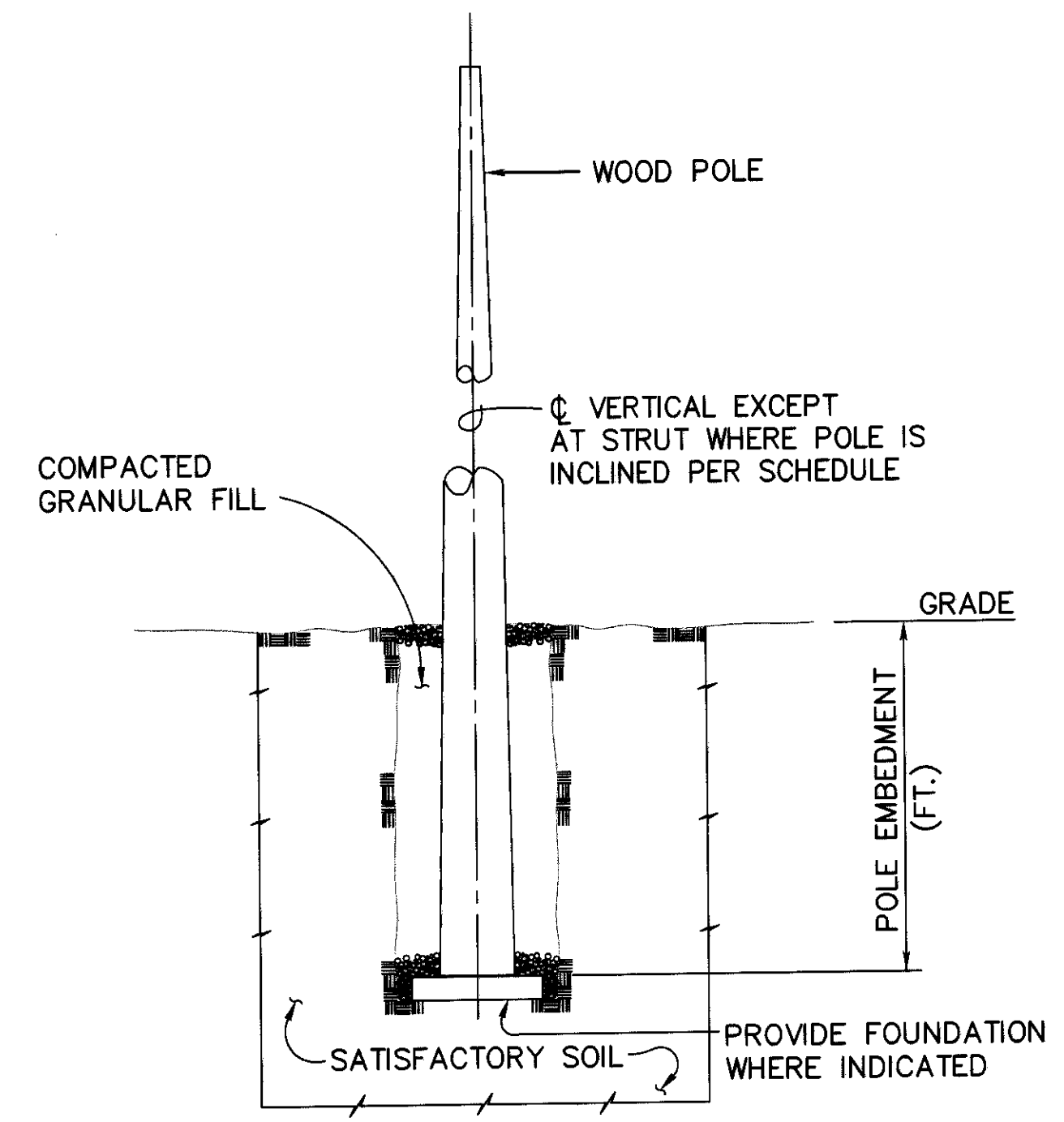
**PLAN-REINFORCING**  
N.T.S.



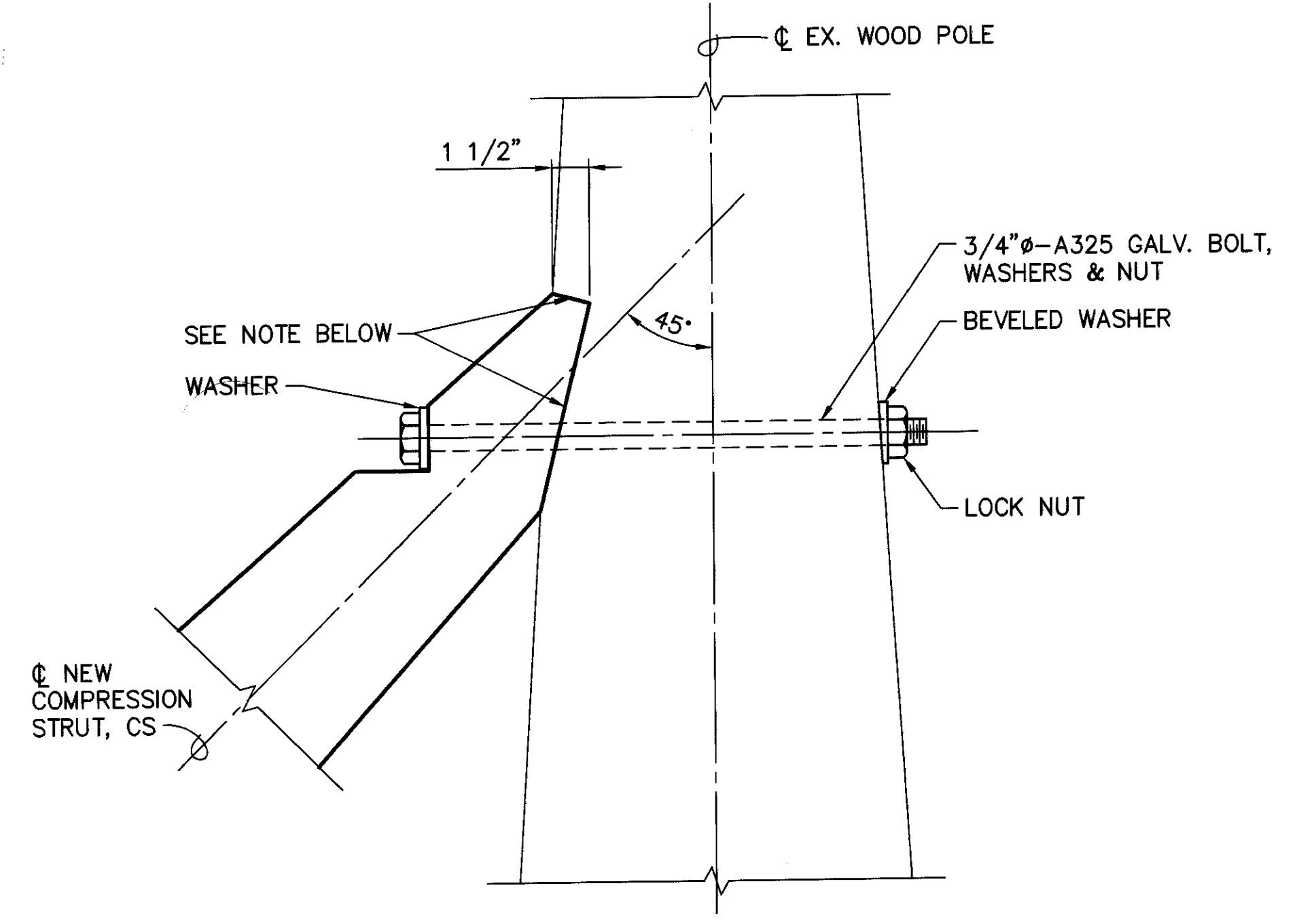
**SECTION**  
N.T.S.

FOOTING SCHEDULE			
DIA.	"t"	"A" BARS	"B" BARS
3'-0"	1'-0"	#4@4"	#4@6"
3'-6"	1'-3"	#4@4"	#4@6"
5'-0"	1'-6"	#4@4"	#4@6"

**PRECAST SPREAD FOOTING DETAILS**  
N.T.S.



**POLE EMBEDMENT DETAIL**  
N.T.S.



NOTE: NOTCH POLES TO FIT TOGETHER AS SHOWN. TREAT ALL CUT SURFACES WITH BITUMASTIC OR PENTACHLOROPHENOL.

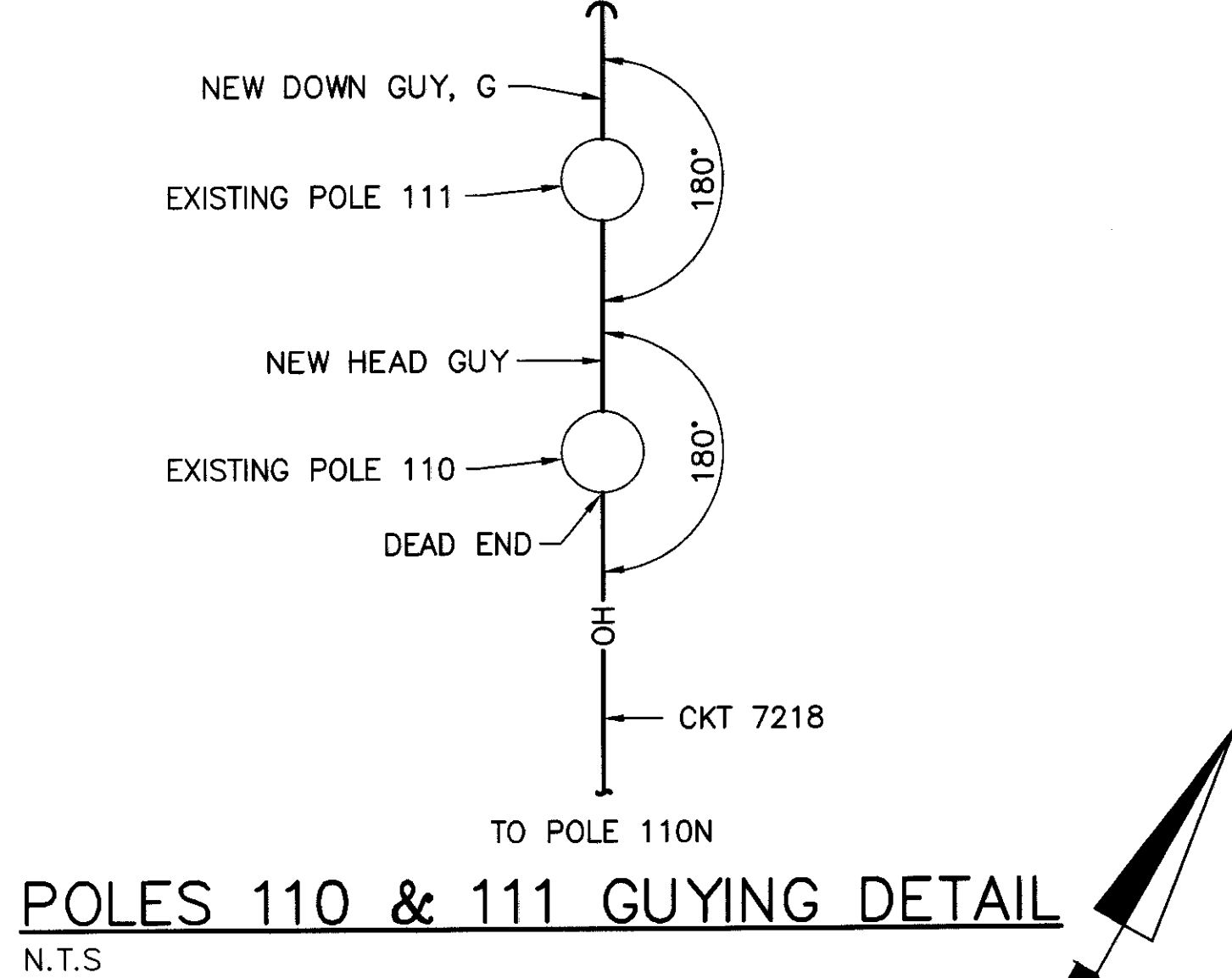
**STRUT-POLE CONNECTION DETAIL**  
N.T.S.

T15 I:\FAC\92313143\56\CONTRACT A-5\A5-E-35.DWG SEP 05, 1997 14:48:10 PLOT SCALE = 12

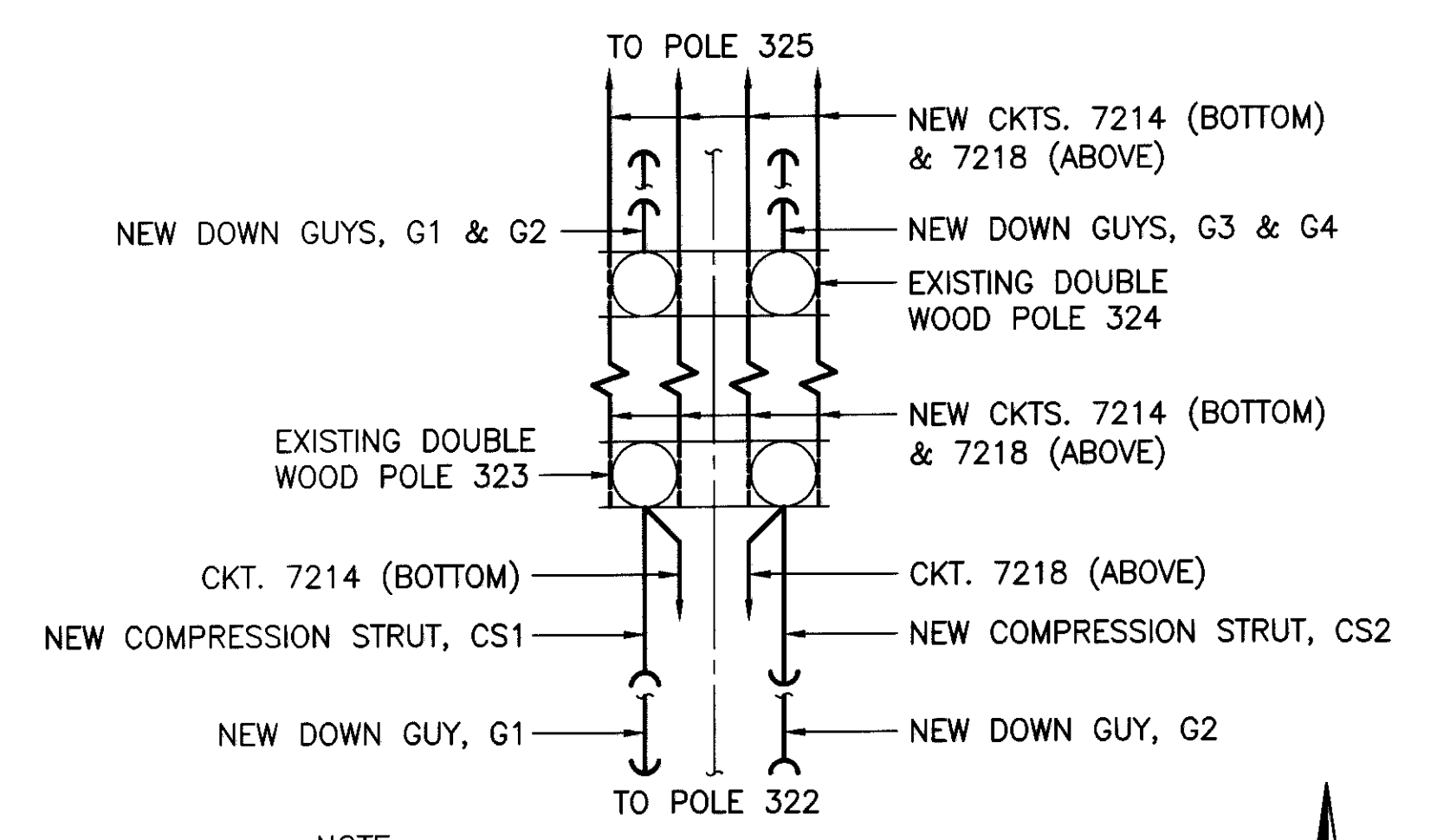
### GUYED & STRUTTED WOOD POLE SCHEDULE

POLE NO.	LENGTH/CLASS/EMBEDMENT	GUY OR STRUT	FOOTING DIAMETER	GUY EARTH ANCHOR			DOWN GUY OR STRUT			HEAD GUY			
				A'	ASSEMBLY TYPE	MIN. INSTALLED TORQUE (FT.-LBS.)	B'	T <sub>1</sub> (LBS.) C <sub>1</sub> (LBS.)	LOCATION H D	T <sub>2</sub> (LBS.)	H <sub>1</sub>	H <sub>2</sub>	
EX. 110													
EX. 111		G		45'	EJNS	2,500	45'	17,000	38.5'	38.5'	12,000	38.5'	38.5'
303N	50'/H-4/10'	G1	5'	45'	EJNS	3,500	45'	25,600	38'	38'			
		G2		45'	EJNS	3,500	45'	25,600	34'	34'			
		G3		45'	EJNS	2,500	45'	17,000	38'	38'			
EX. 324		G1		30'	AEJ	1,000	30'	1,800	42'	24.3'			
		G2		30'	AEJ	1,000	30'	1,800	38'	21.9'			
		G3		30'	AEJ	1,000	30'	1,800	42'	24.3'			
		G4		30'	AEJ	1,000	30'	1,800	38'	21.9'			
EX. 323	65'/4/11'	CS1		45'	AEJ	2,000	45'	13,600	38'	38'			
				45'	AEJ	2,000	45'	13,600	42'	42'			
				45'	AEJ	2,000	45'	2,000	42'	42'			
220N	60'/1/8'	G	3'	45'	AEJ	2,000	45'	15,500	49'	49'			
EX. 320		G1		45'	AEJ	1,500	45'	10,500	39'	39'			
		G2		45'	AEJ	2,000	45'	13,100	39'	39'			
EX. 223											7,450	47'	47'
223N	60'/1/8'	G	3'	30'	AEJ	2,000	30'	14,900	47'	27.1'			
217N	60'/H-3/10'	G	3.5'	30'	EJNS	3,000	30'	21,000	48'	27.7'			

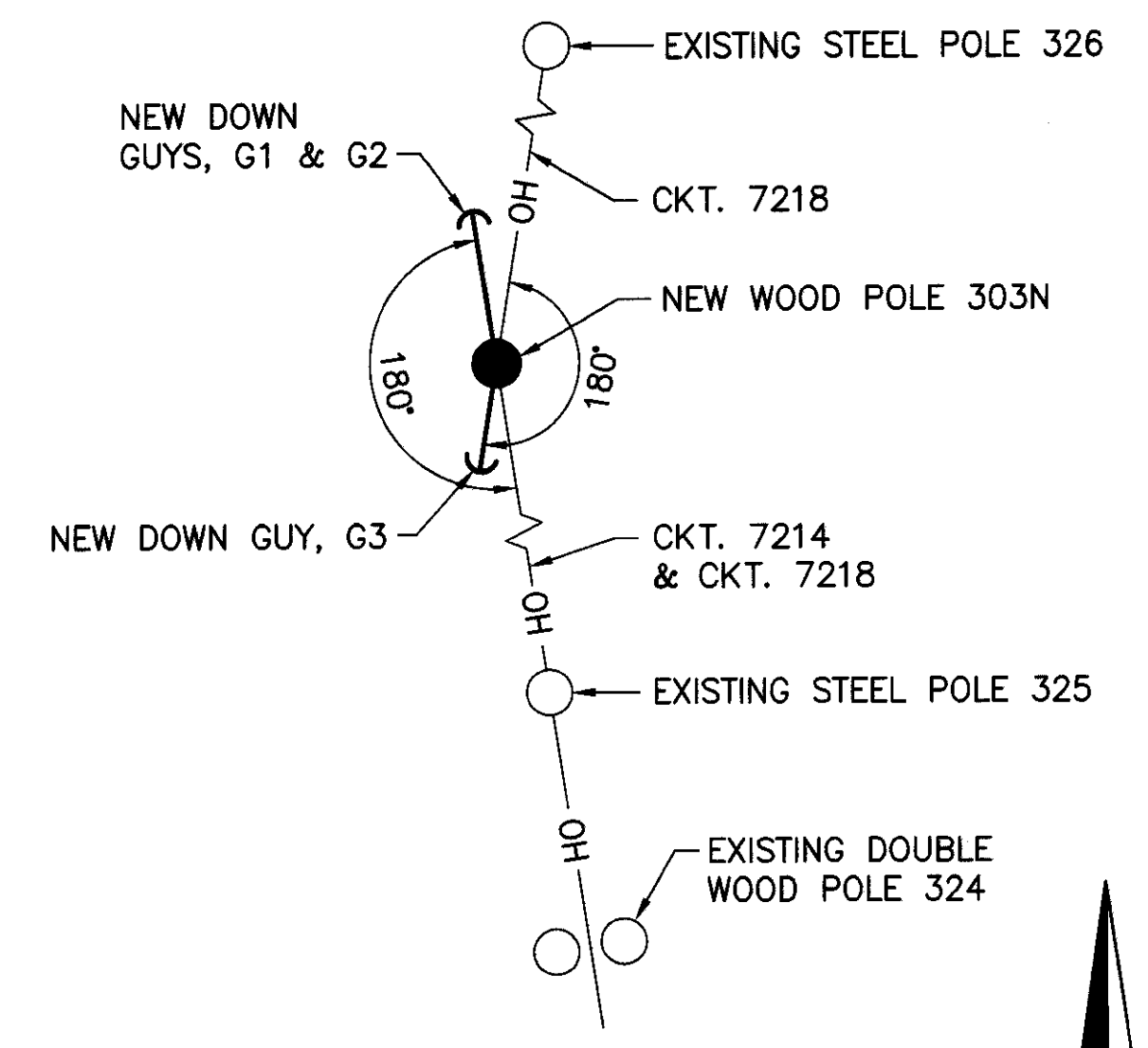
- SCHEDULE NOTES:**
- POLE DESIGN LOADS:**  
ALL NEW DISTRIBUTION POLES ARE DESIGNED TO RESIST THE NESC (1993) HEAVY LOADING CONDITION OF 4 PSF WIND ON 1/2" RADIAL ICE AT 0° F ON ALL CABLES.
  - POLE FOUNDATIONS:**  
DESIGN SOILS DATA FOR THE DISTRIBUTION POLE FOUNDATIONS IS AS FOLLOWS ...  
 - COEFFICIENT OF PASSIVE PRESSURE - 2.0  
 - SOIL UNIT WEIGHT (lbs/ft<sup>3</sup>) - 85  
 - NET ALLOWABLE BRG. PRESSURE (PSF) - 2000
  - NO POLES SHALL BE SET OR PRECAST FOOTINGS INSTALLED UNTIL THE ABOVE SOILS DATA HAS BEEN VERIFIED BY THE CONTRACTOR. PRECAST FOOTING SHALL BE DELETED ONLY WHERE DIRECTED BY DIVISION OF ELECTRICITY.
  - GUY EARTH ANCHORS:**  
THE MINIMUM INSTALLED TORQUE (FT.-LBS.) LISTED IN THE SCHEDULE ARE FOR THE A.B. CHANCE ASSEMBLY TYPE LISTED WITH AT LEAST 7 FEET MIN. EXTENSION ROD INSTALLED IN A CLASS 7 SOIL.
  - THE MAXIMUM INSTALLED TORQUE SHALL NOT EXCEED 5,500 FT.-LBS. FOR A.B. CHANCE ANCHORS.
  - SEE GUY EARTH ANCHORS ASSEMBLY DETAIL ON DWG. E-36B FOR A.B. CHANCE ASSEMBLY TYPE, COMPONENT PART NUMBERS, AND SOIL CLASSIFICATION DATA.
  - SEE DWG. E-35 FOR TYPICAL DETAILS AND NOTES RELATING TO GUYS, STRUTS, NEW POLE EMBEDMENTS, AND PRECAST SPREAD FOOTINGS.



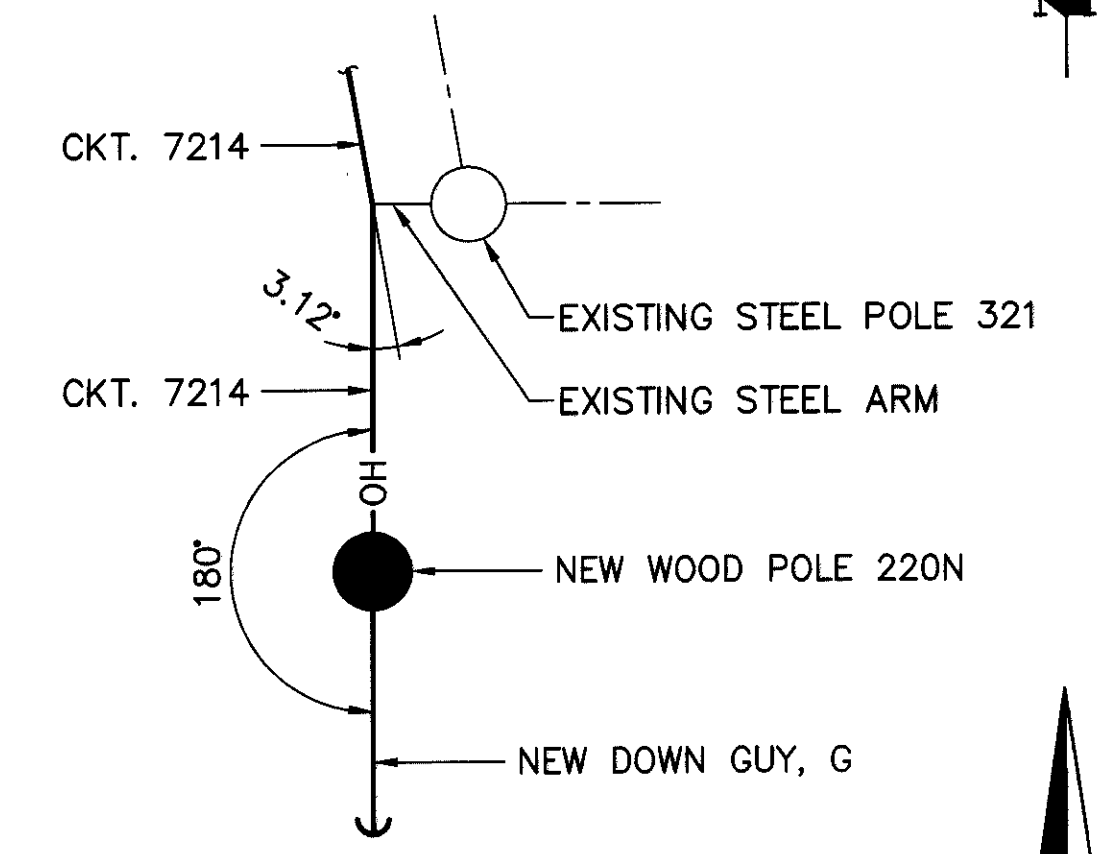
**POLES 110 & 111 GUYING DETAIL**  
N.T.S.



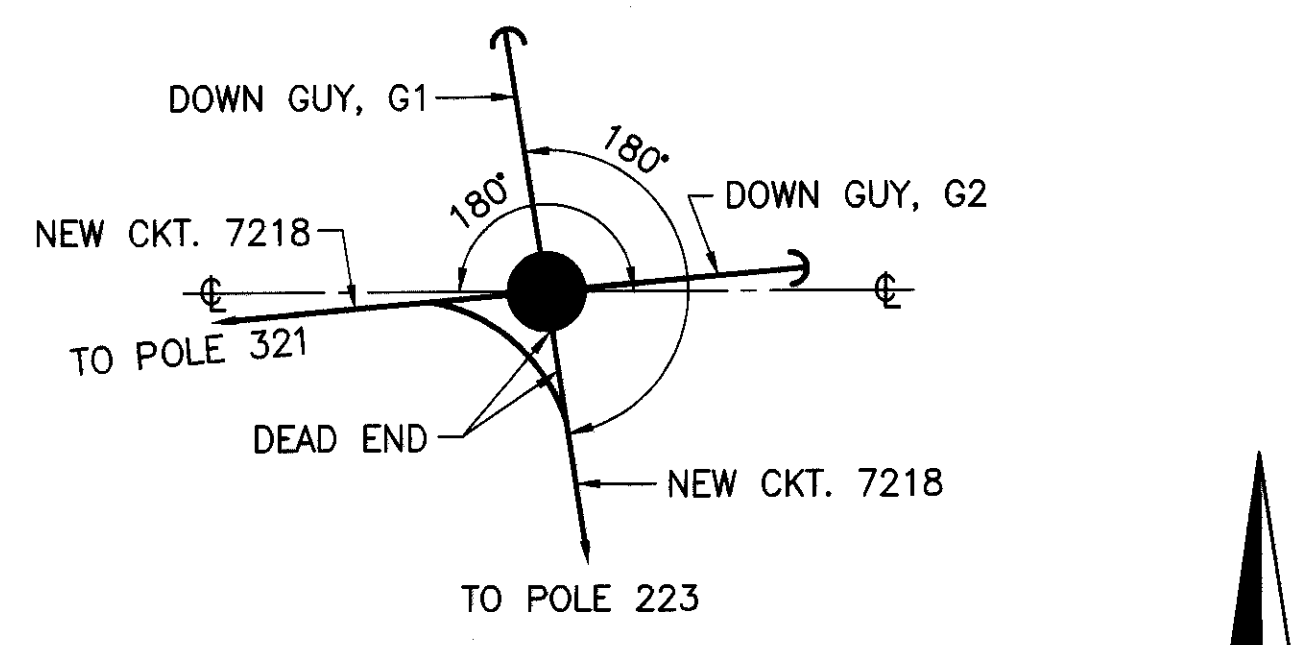
**POLES 323 & 324 GUYING DETAIL**  
N.T.S.



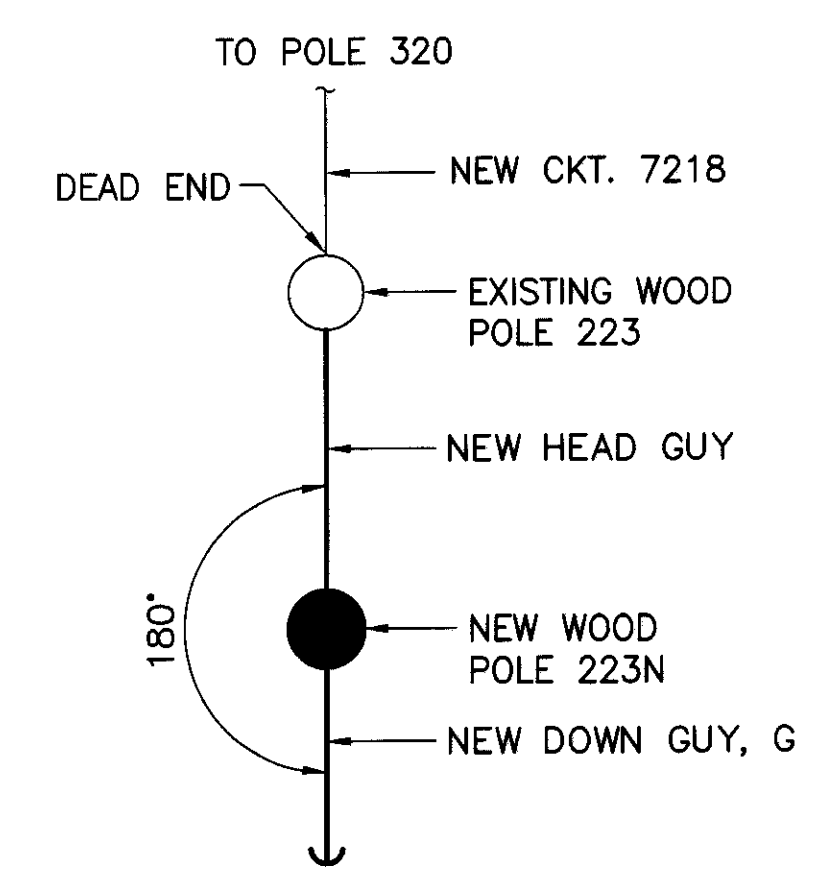
**POLE 303N GUYING DETAIL**  
N.T.S.



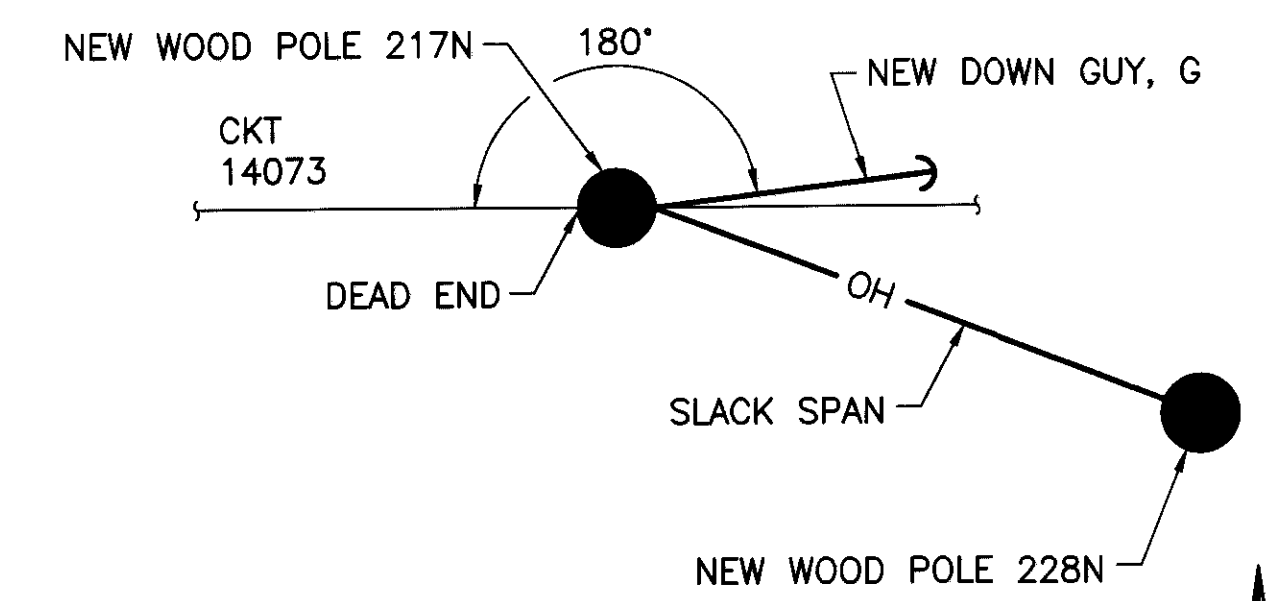
**POLE 220N GUYING DETAIL**  
N.T.S.



**EX. POLE 320 GUYING DETAIL**  
N.T.S.



**POLES 223 & 223N GUYING DETAIL**  
N.T.S.

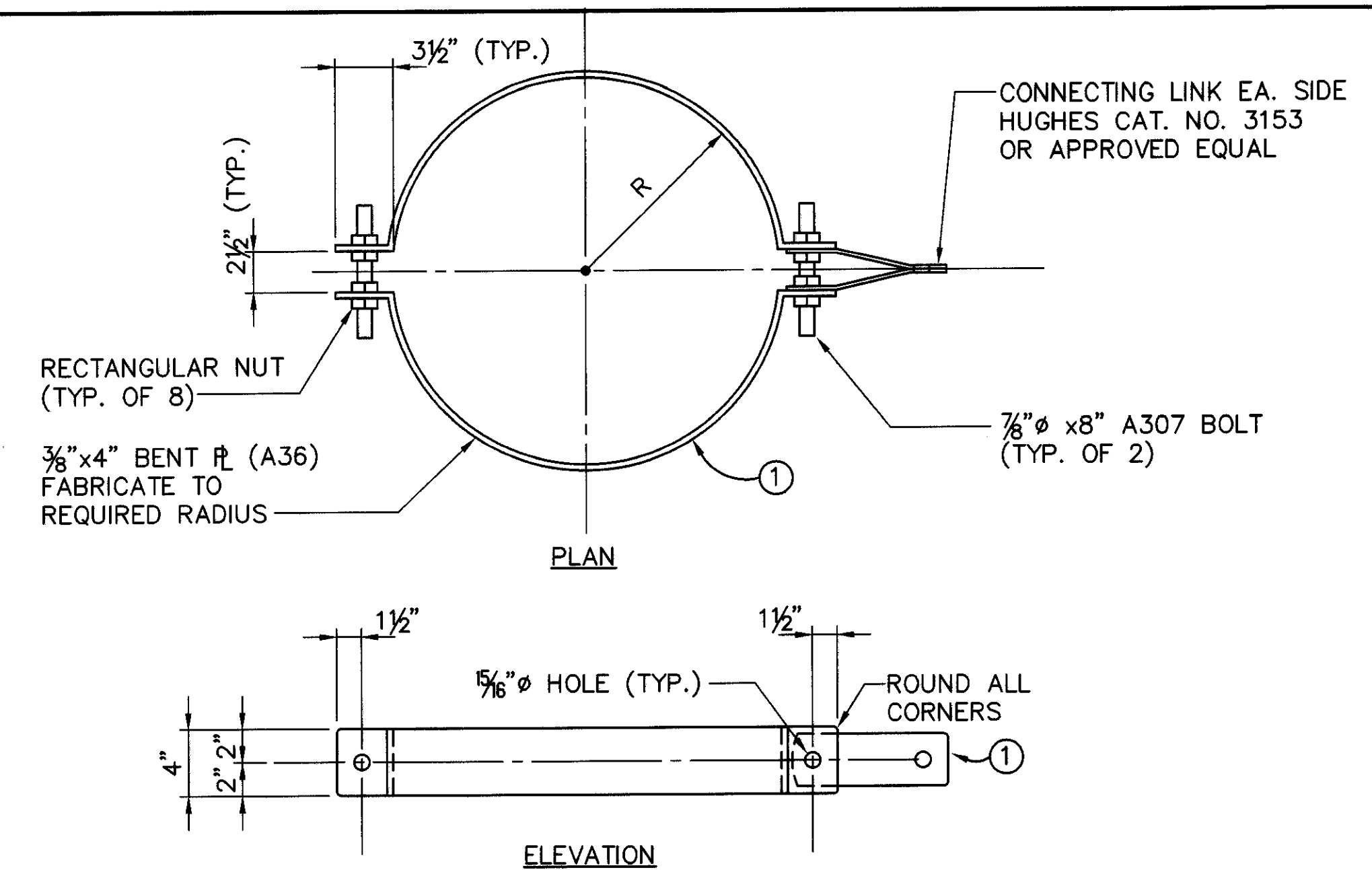


**POLE 217N GUYING DETAIL**  
N.T.S.

- LEGEND:**
- CKT CIRCUIT
  - OH OVERHEAD
  - G GUY
  - CS COMPRESSION STRUT

T15 I:\FAC\92313143\55\CONTRACT A-5\A5-E-36A.DWG SEP 05, 1997 15:09:50 PLOT SCALE = 12

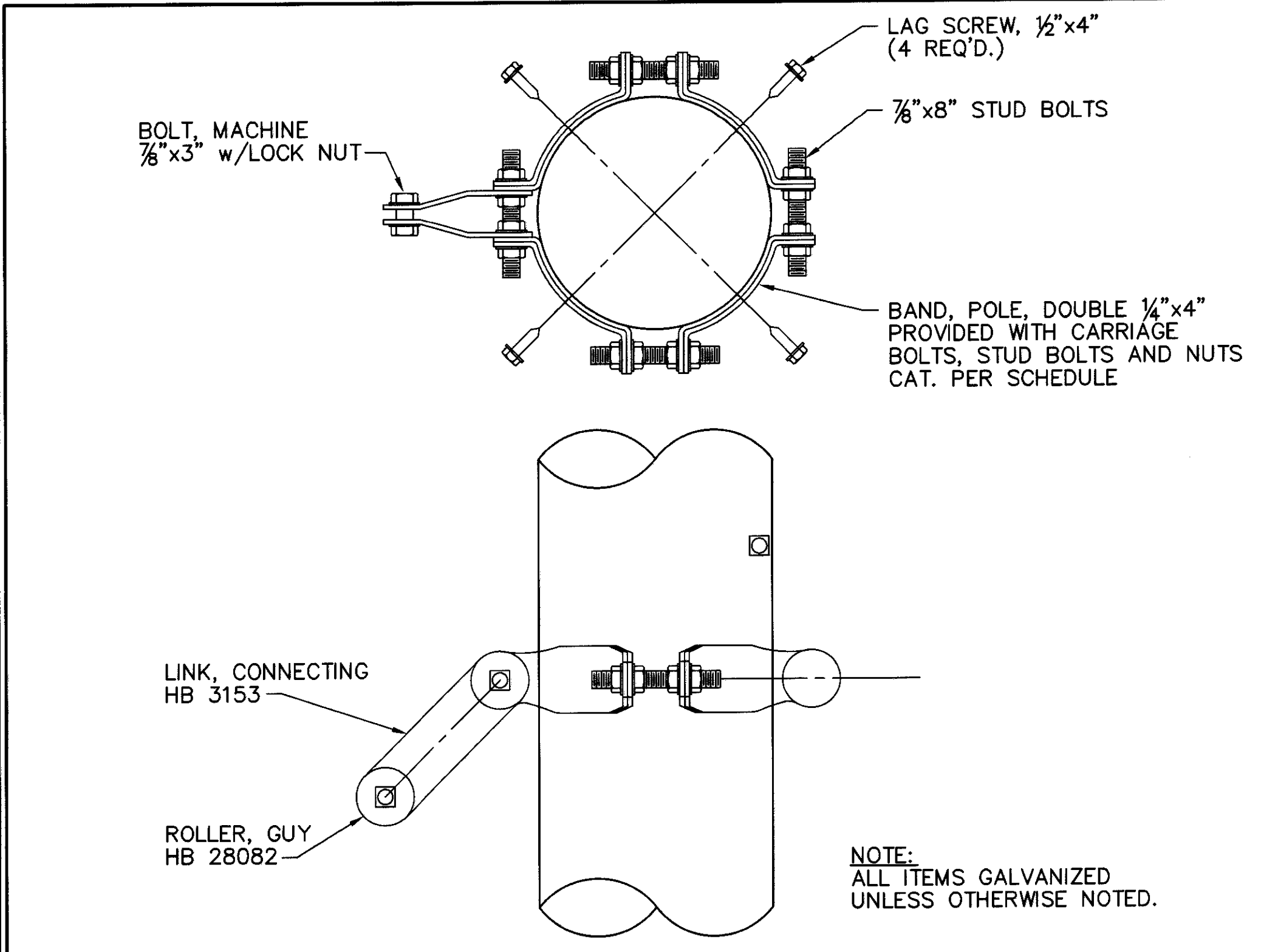




- NOTES:
1. R=FIELD MEASURED CIRCUMFERENCE DIVIDED BY 2π
  2. SUBASSEMBLY TO BE FABRICATED AND USED ON EXISTING LARGE DIA. WOOD AND/OR STEEL POLES WHERE STD. POLE BAND CANNOT BE USED.

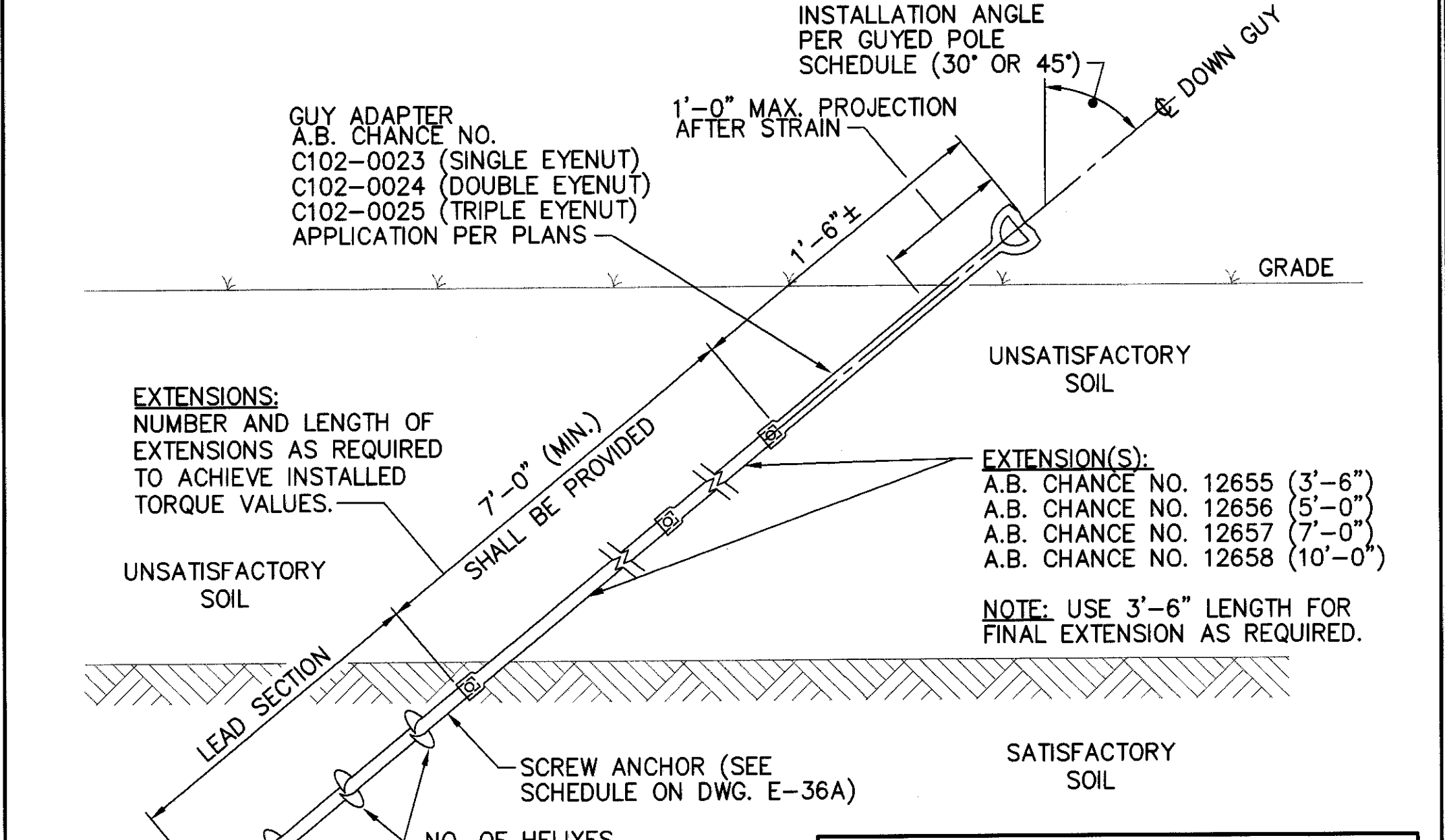
**69KV POLE BAND ASSEMBLY WITH INSULATOR CONNECTING LINK**  
 SCALE: NTS

① POLE 325



**POLE BAND (SINGLE DOWN GUY)**  
 SCALE: NTS

③ POLE 303N, 324, 323, 220N, 228N, 217N, 110



**GUY ANCHOR SCHEDULE - A.B. CHANCE**

ASSEMBLY TYPE	LEAD SECTION NO.
AEJ (3 HELIX)	12642-AEJ
EJNS (4 HELIX)	12642-EJNS

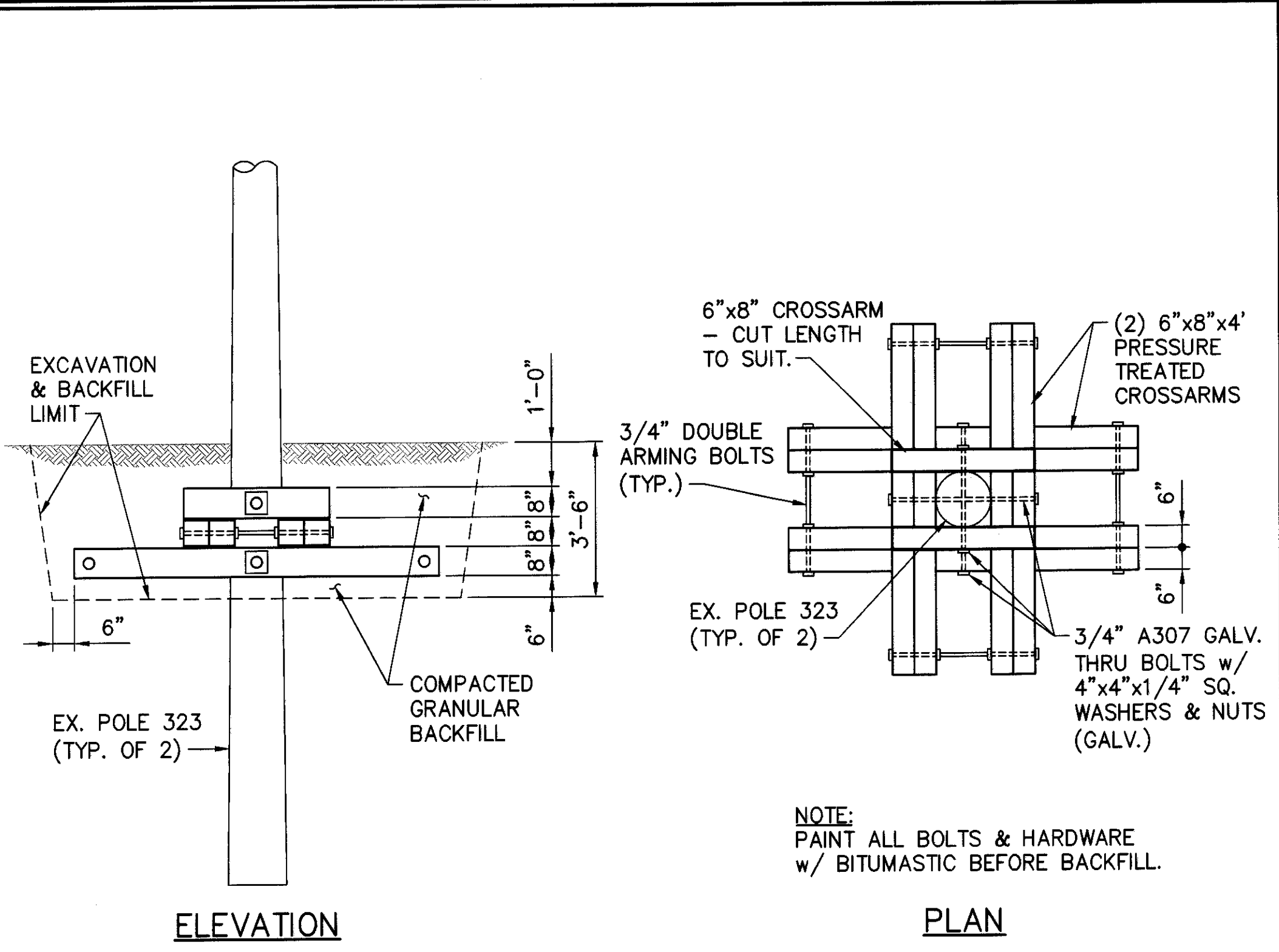
EXTENSION(S):  
 A.B. CHANCE NO. 12655 (3'-6")  
 A.B. CHANCE NO. 12656 (5'-0")  
 A.B. CHANCE NO. 12657 (7'-0")  
 A.B. CHANCE NO. 12658 (10'-0")  
 NOTE: USE 3'-6" LENGTH FOR FINAL EXTENSION AS REQUIRED.

NOTES:

1. INSTALL ANCHOR PER MFR'S. RECOMMENDED PROCEDURE.
2. BASED ON A.B. CLASS 7 SOIL.
3. ALL ITEMS HOT DIP GALVANIZED PER LATEST REVISION OF ASTM A-153.

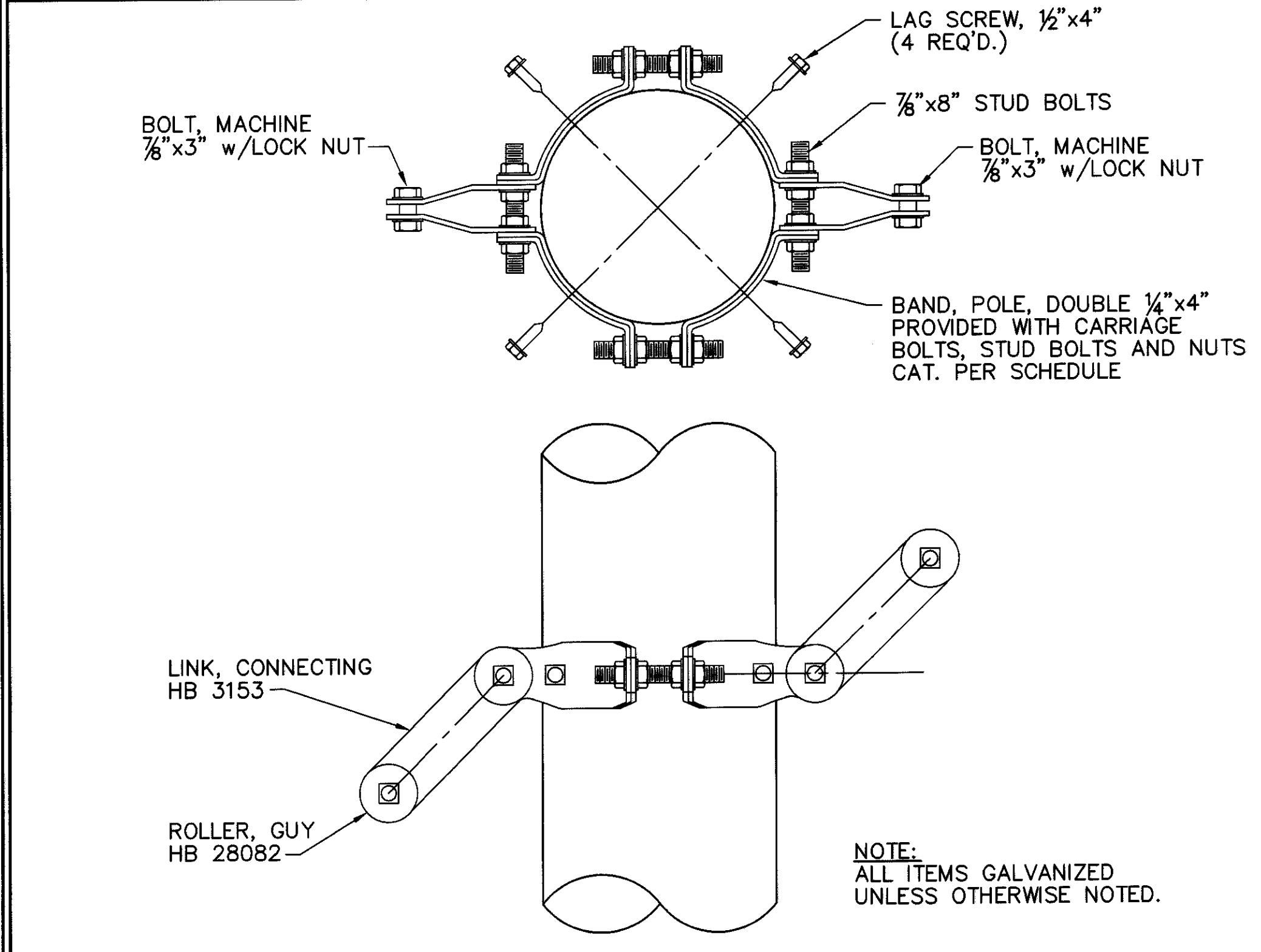
**GUY EARTH ANCHOR ASSEMBLY DETAIL**  
 SCALE: NTS

⑤ POLES 111, 303N, 324, 323, 320, 217N, 220N, 223N



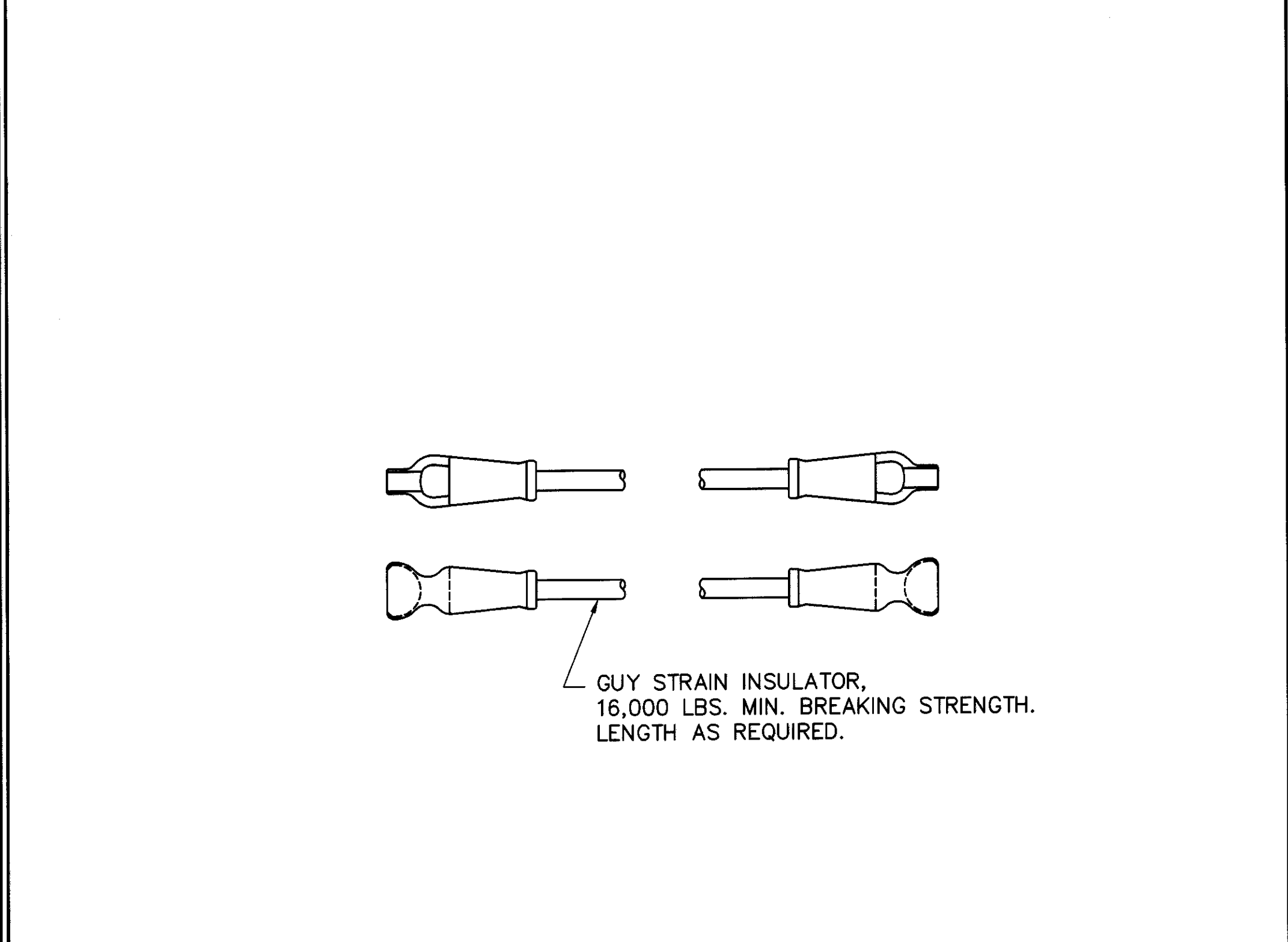
**POLE SHOE DETAIL**  
 SCALE: NTS

② POLE 323



**POLE BAND (HEAD/DOWN GUY)**  
 SCALE: NTS

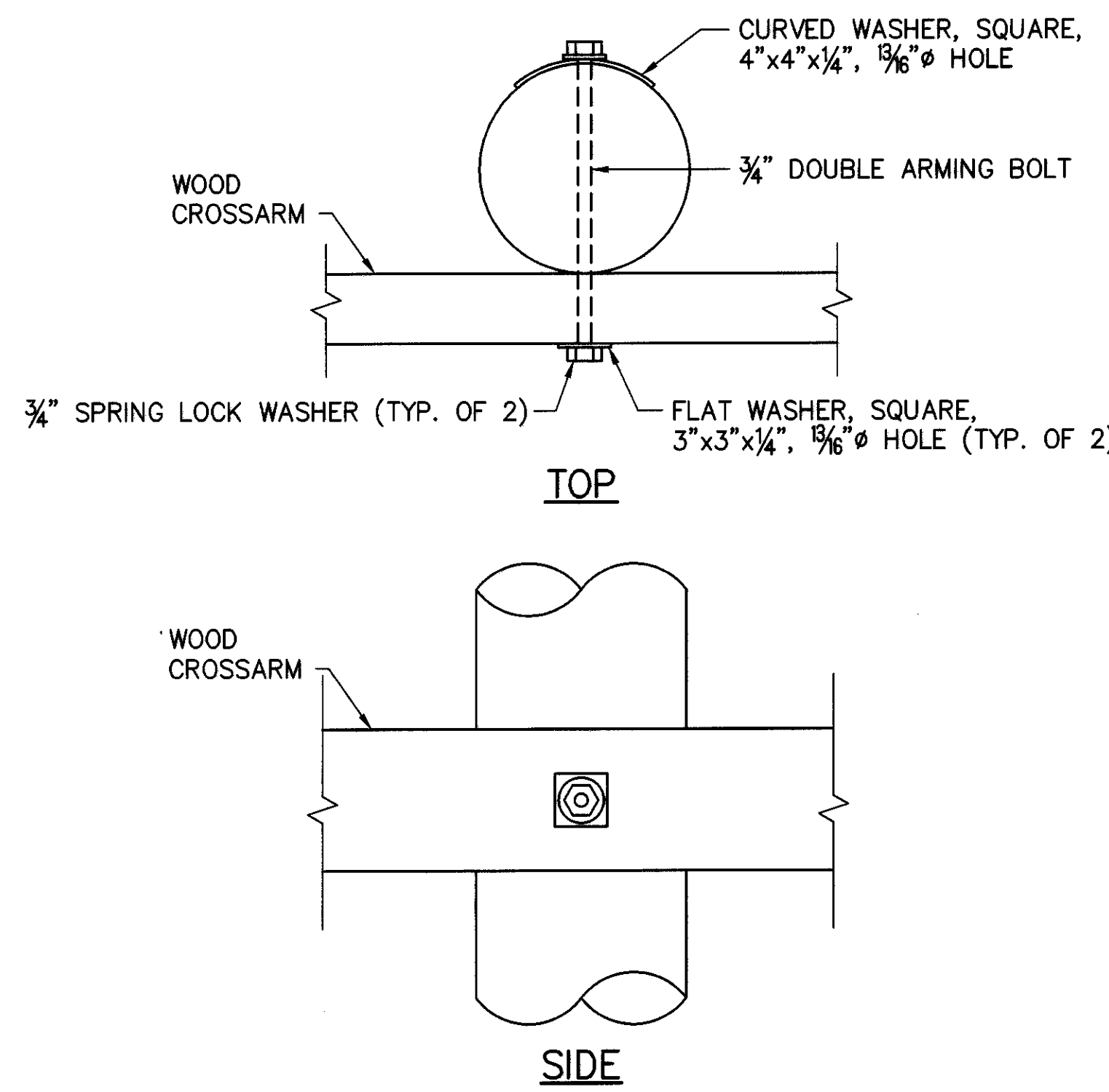
④ POLE 223D



**GUY STRAIN INSULATOR**  
 SCALE: NTS

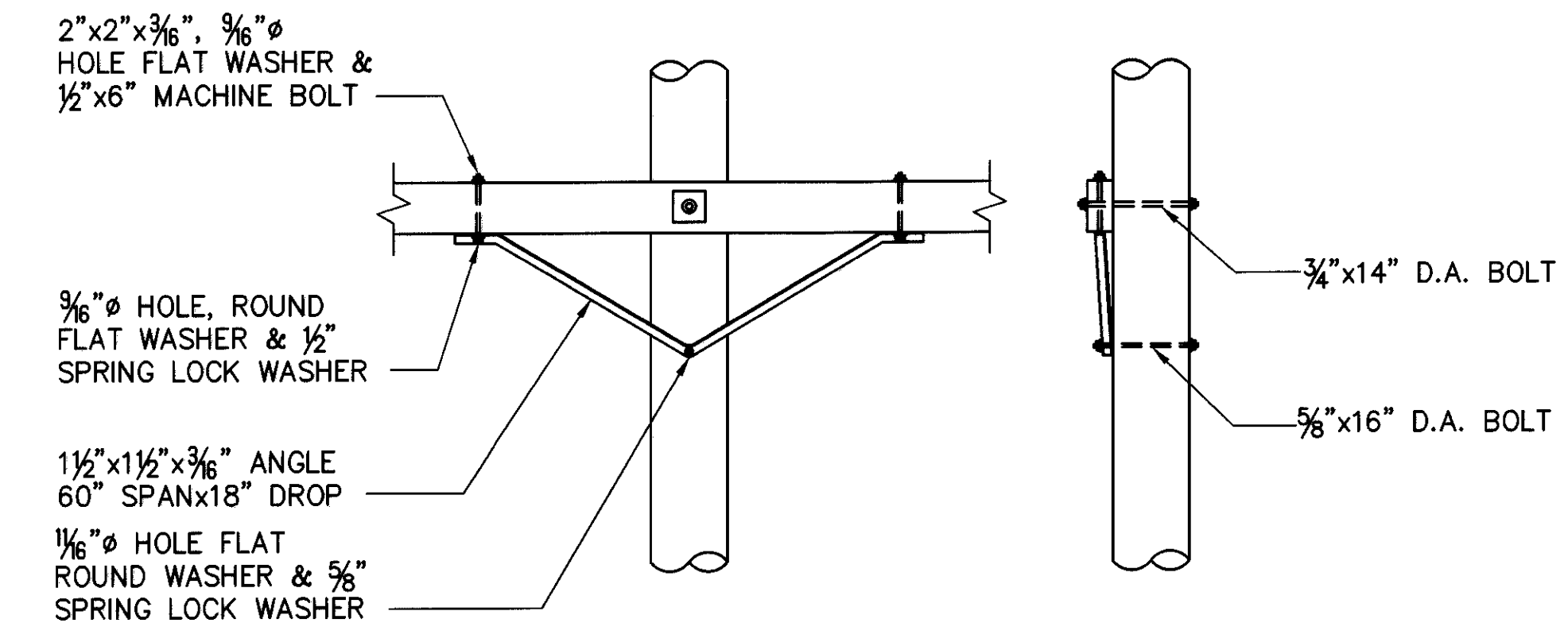
⑥ POLE 217N

I:\FAC\92313143\56\CONTRACT A-5\AS-E-366.DWG SEP 05, 1997 15:13:11 PLOT SCALE = 1



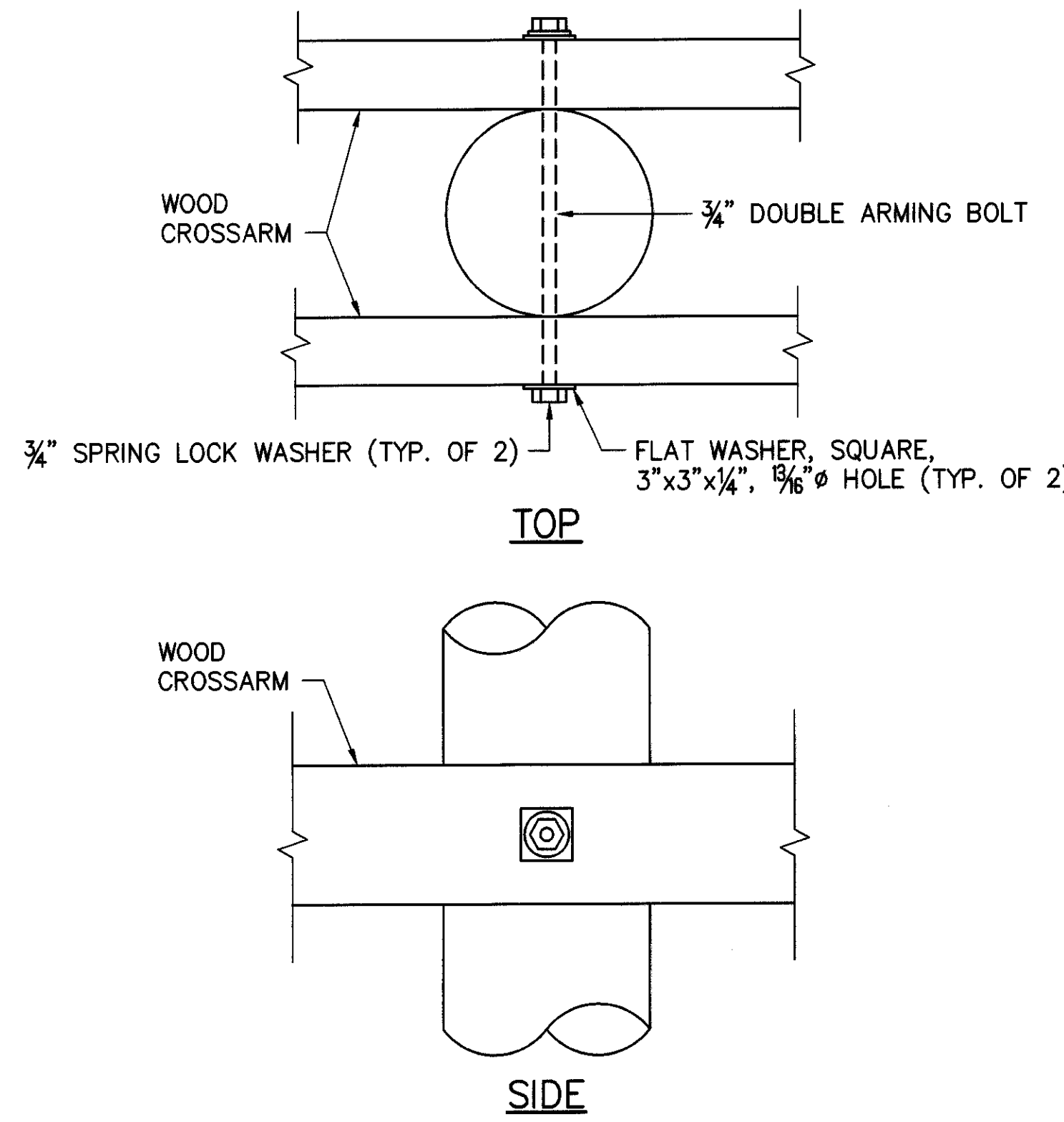
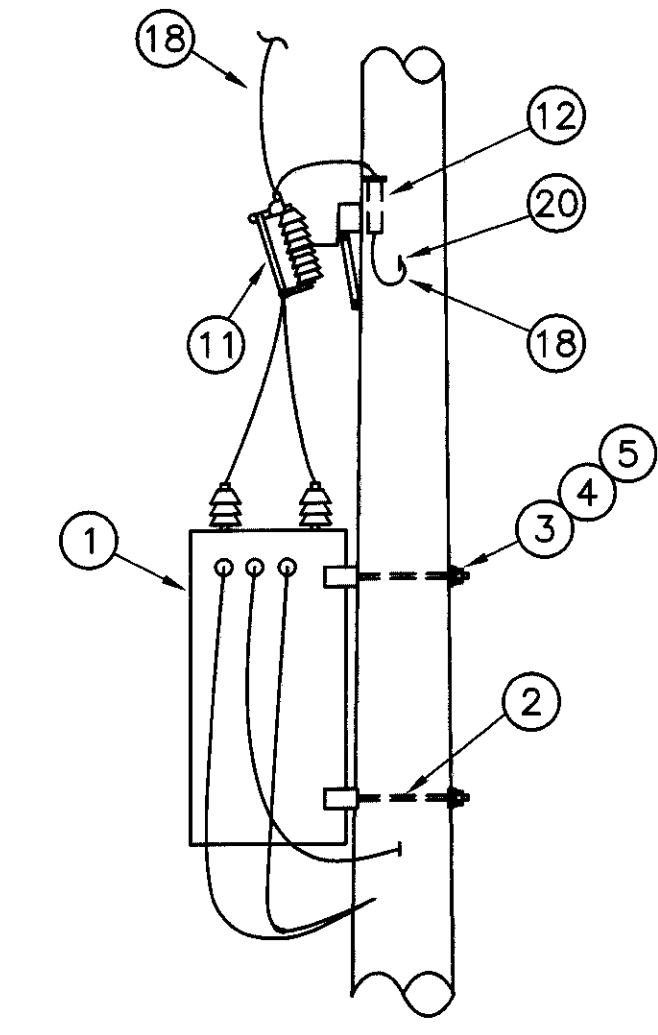
**CROSSARM MOUNTING 3/4"**  
**DAB ASSEMBLY (SINGLE)**  
SCALE: NTS

① POLE 220N, 217N



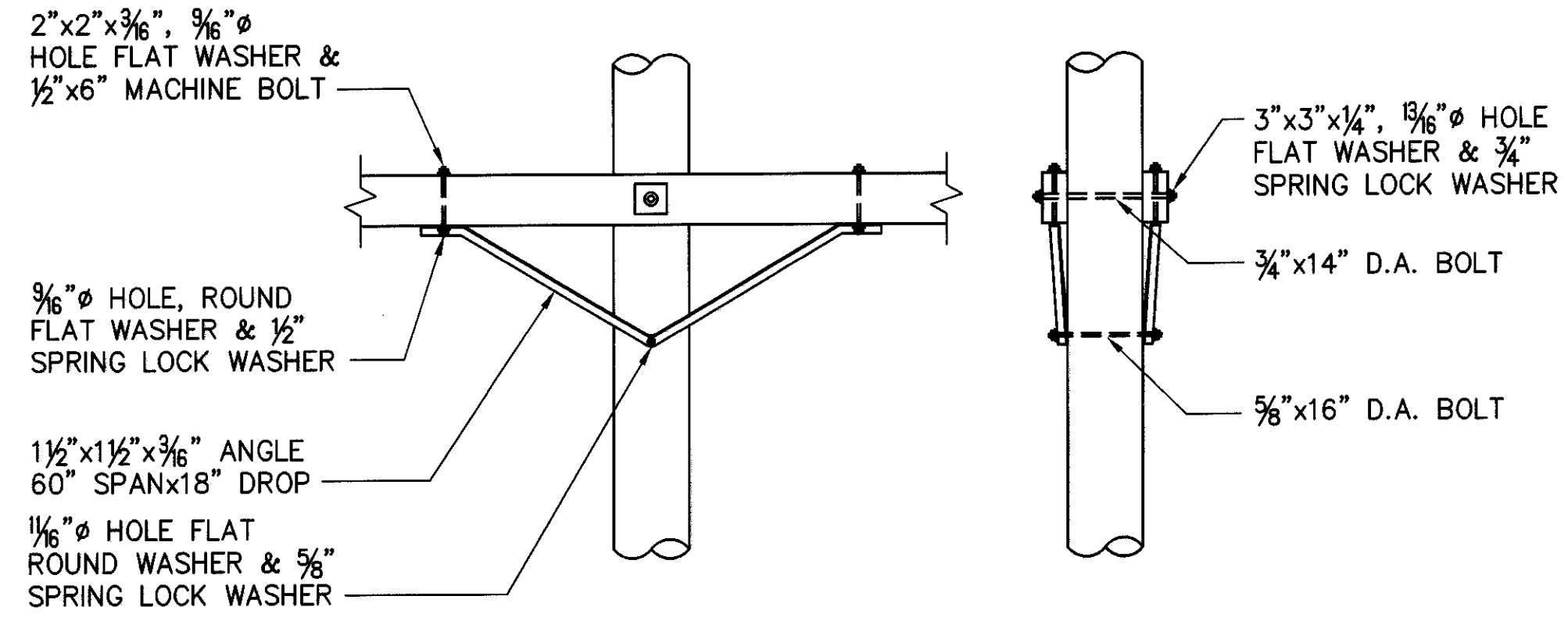
**CROSSARM MOUNTING &**  
**BRACE - SINGLE ARM ASSEMBLY**  
SCALE: NTS

③ POLE 220N, 217N



**CROSSARM MOUNTING 3/4"**  
**DAB ASSEMBLY (DOUBLE)**  
SCALE: NTS

② POLE 110, 253, 217N



**CROSSARM MOUNTING &**  
**BRACE - DOUBLE ARM ASSEMBLY**  
SCALE: NTS

④ POLE 110, 253, 217N

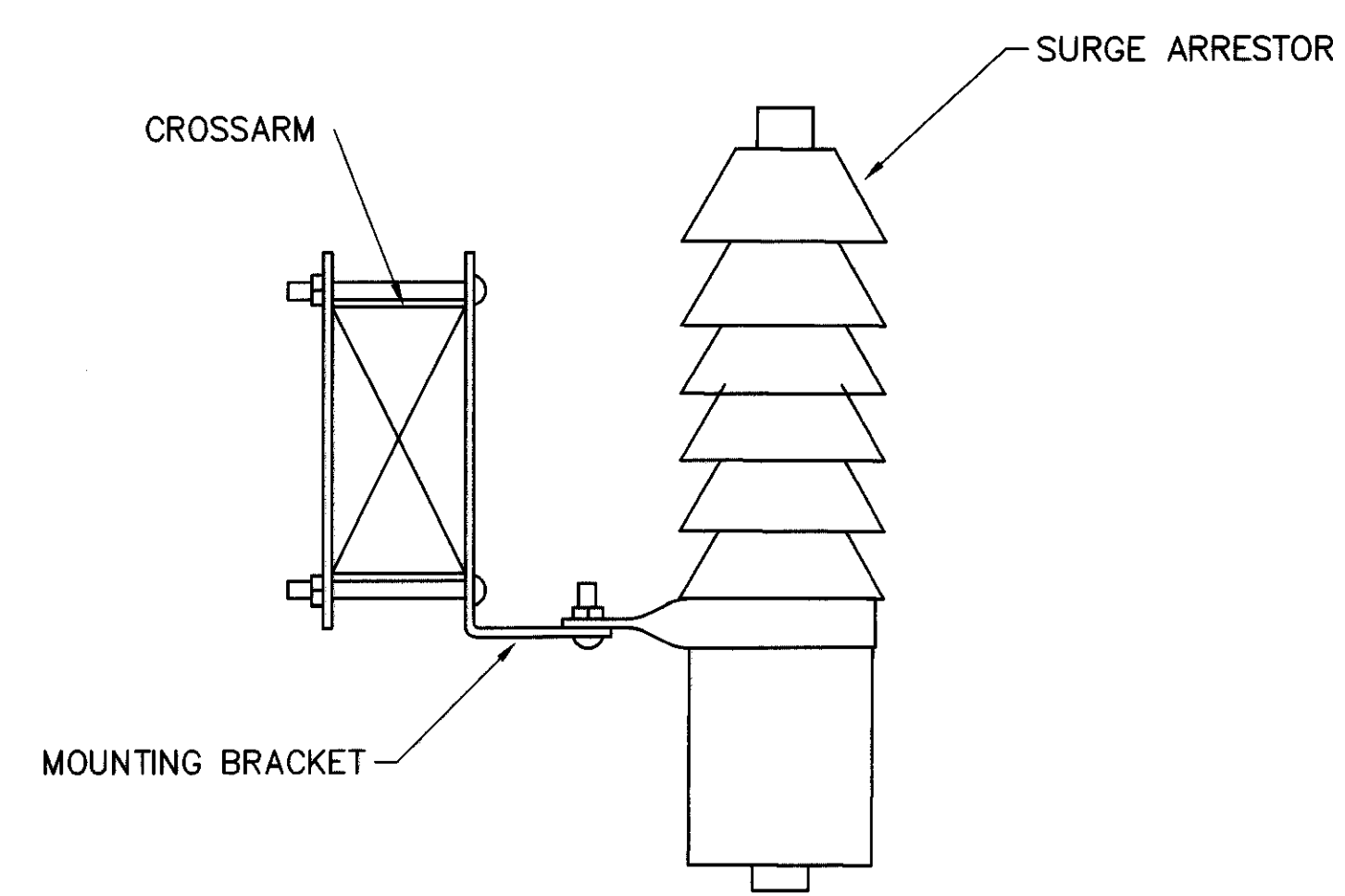
ITEM	DESCRIPTION	NO. REQUIRED
1	TRANSFORMER, POLE MOUNTED	1
2	BOLT, MACHINE, 3/4" x REQUIRED LENGTH	4
3	WASHERS, SQUARE, 2-1/4"	4
4	WASHER, SPRING	4
5	NUT	4
6		
7		
8		
9		
10		
1:1	SWITCH, CUTOUT WITH SOLID BLADE, 15KV	2
12	ARRESTOR, LIGHTNING, 12KV	2
13		
14		
15		
16		
17		
18	JUMPERS, STRANDED, AS REQUIRED	
19	CONNECTORS, COMPRESSION SIZE AS REQUIRED	
20	CONNECTORS, SPLIT BOLT SIZE AS REQUIRED	

⑤ POLE 217N

**14.4/24.9KV**  
**POLE MOUNTED TRANSFORMER ASSEMBLY**  
SCALE: NTS

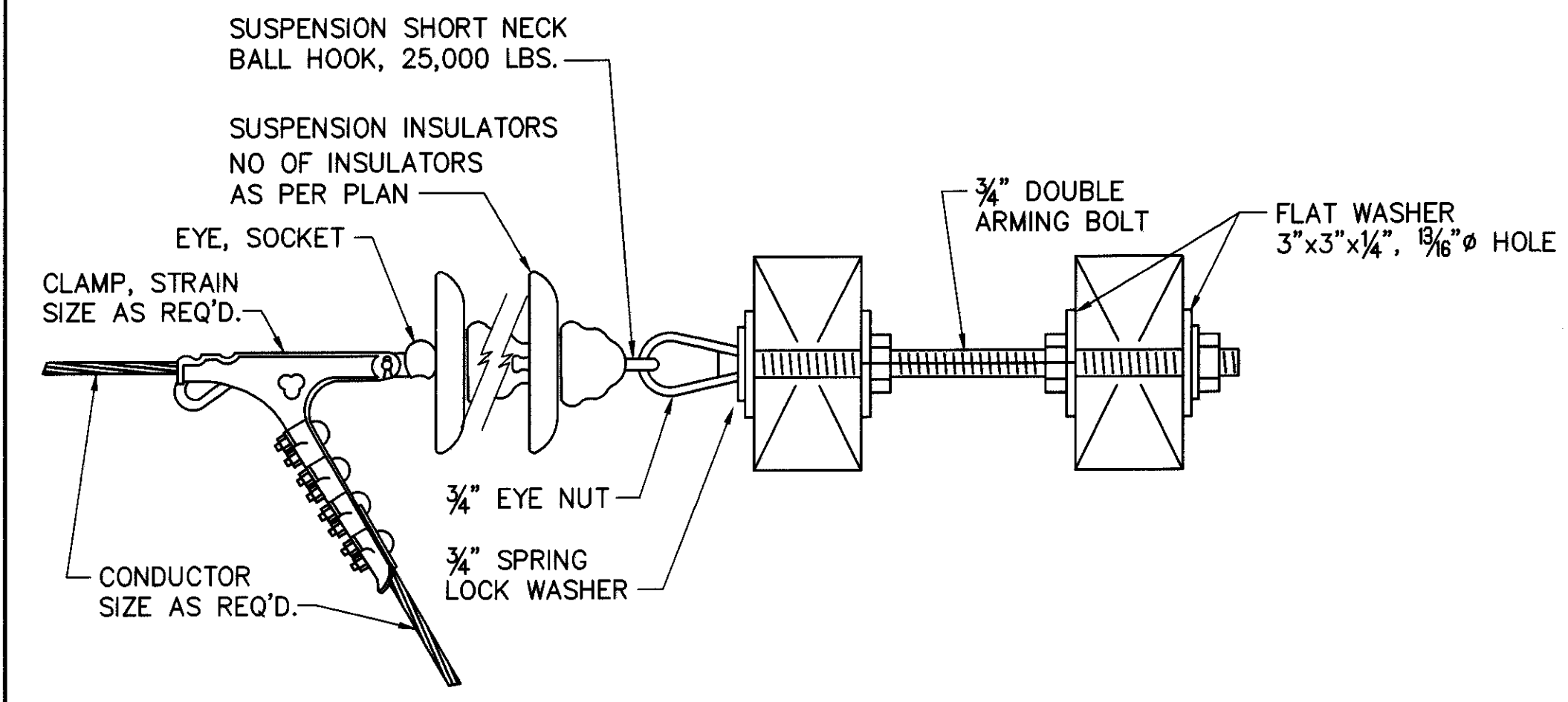
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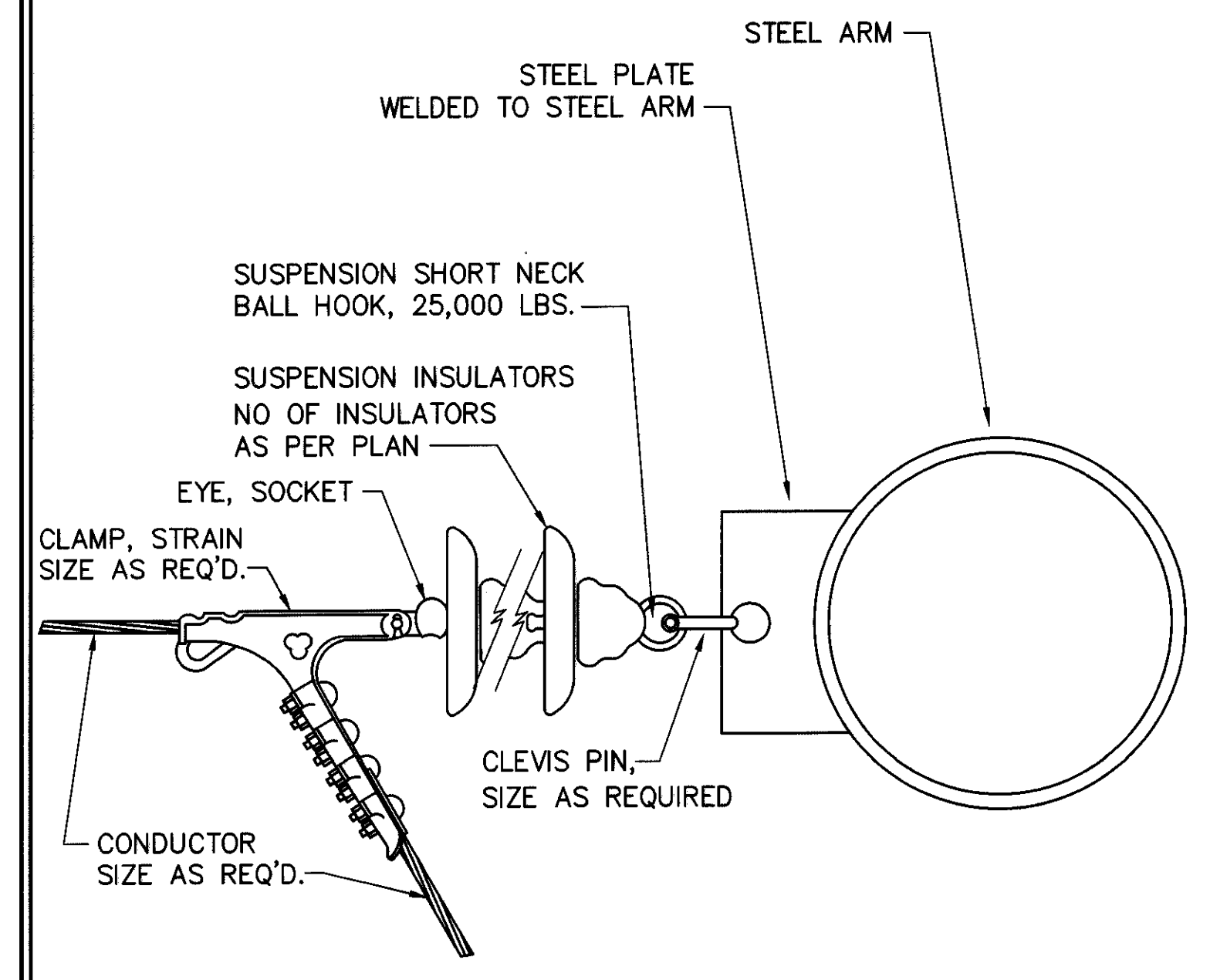
**SURGE ARRESTOR**  
SCALE: NTS

① POLES 303N, 228N, 217N



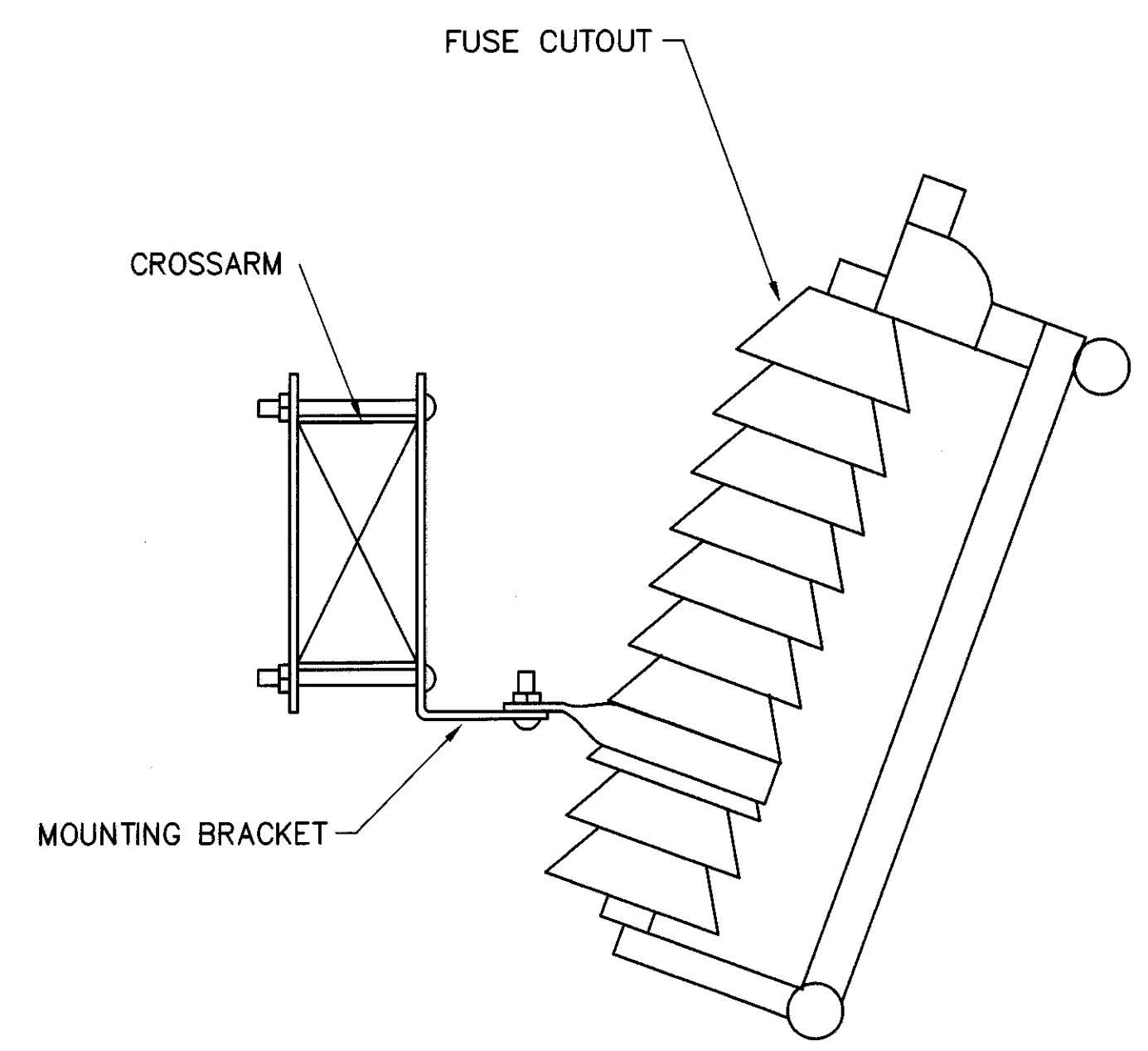
(PHASE CONDUCTOR DEADEND)  
**INSULATOR SUPPORT ASSEMBLY  
DOUBLE ARM (SINGLE SUPPORT)**  
SCALE: NTS

③ POLES 110, 217N



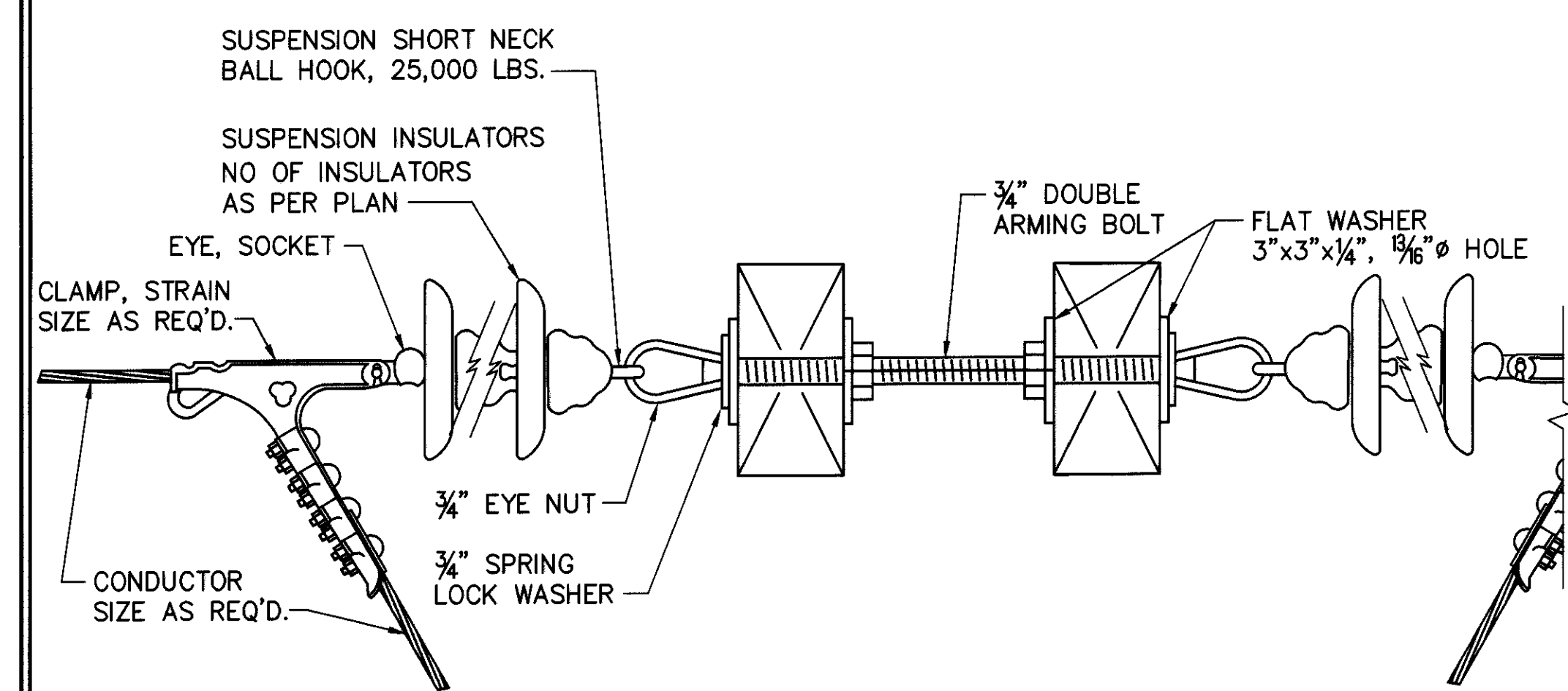
(PHASE CONDUCTOR DEADEND)  
**INSULATOR SUPPORT ASSEMBLY  
DOUBLE ARM (SINGLE SUPPORT)**  
SCALE: NTS

⑤



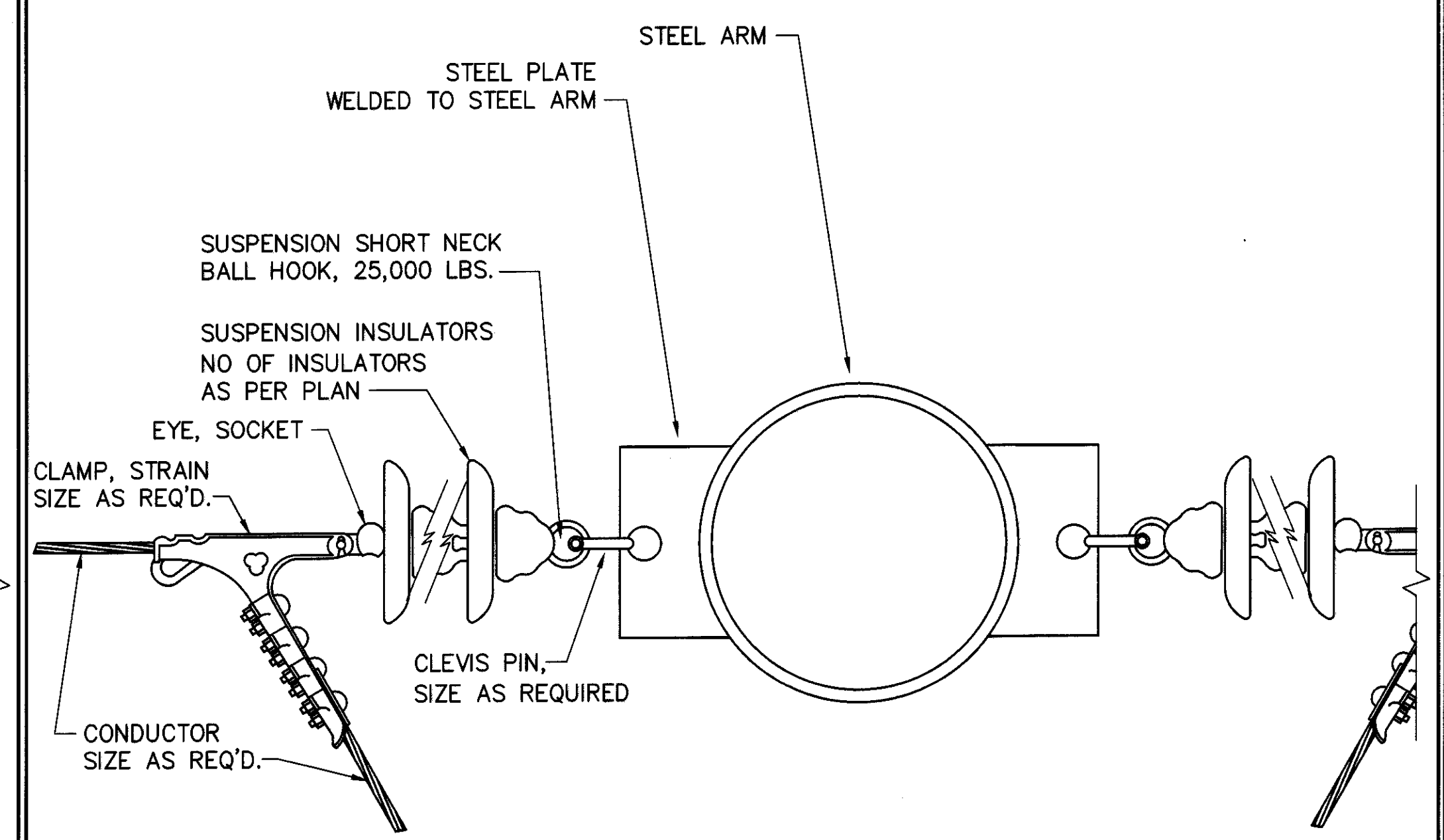
**FUSE CUTOUT**  
SCALE: NTS

② POLES 303N, 228N, 217N



(PHASE CONDUCTOR DEADEND)  
**INSULATOR SUPPORT ASSEMBLY  
DOUBLE ARM (DOUBLE SUPPORT)**  
SCALE: NTS

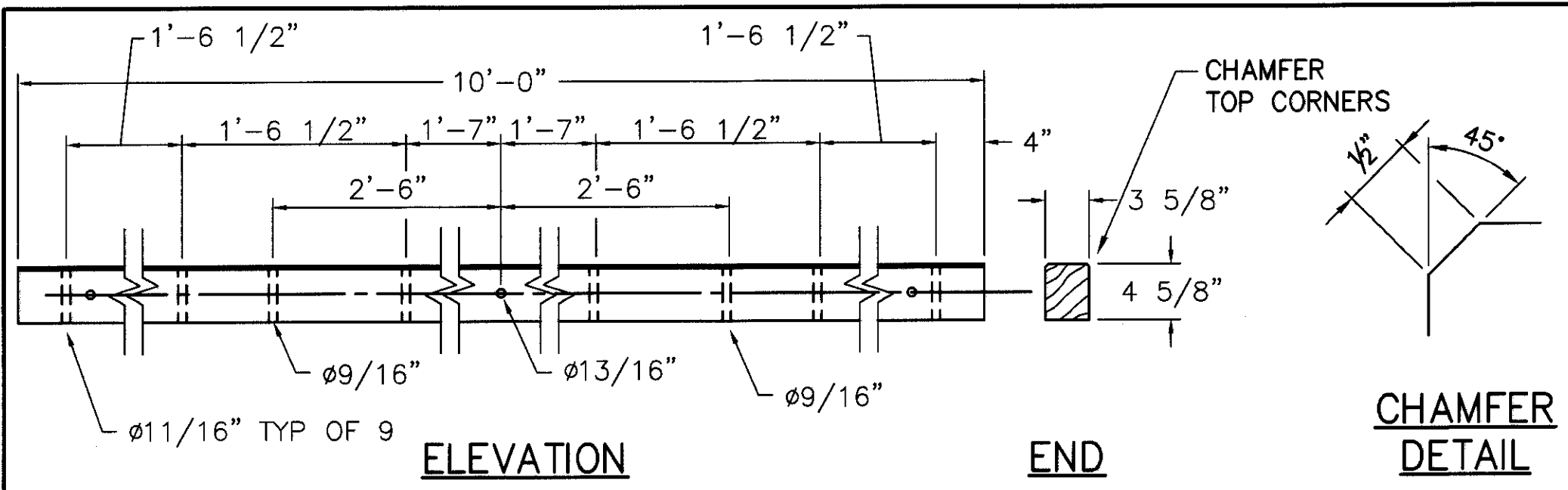
④ POLES 303N, 324, 253



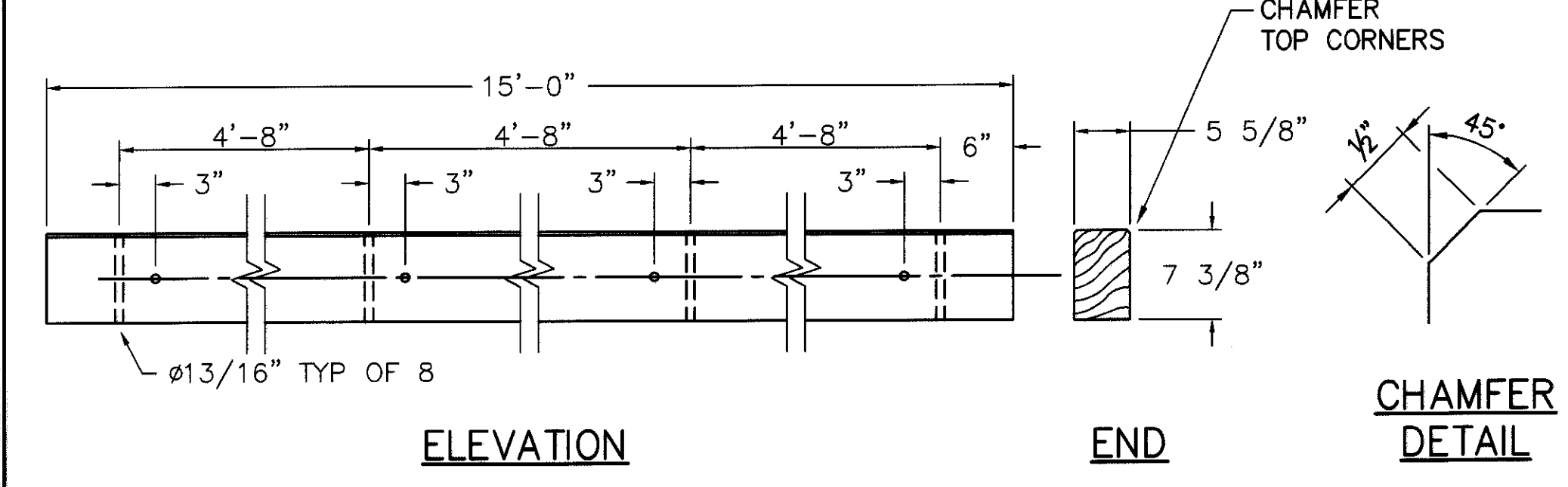
(PHASE CONDUCTOR DEADEND)  
**INSULATOR SUPPORT ASSEMBLY  
DOUBLE ARM (DOUBLE SUPPORT)**  
SCALE: NTS

⑥ POLE 326

TIS I:\FAC\2313143\56\CONTRACT A-5\A5-E-360.DWG SEP 02, 1997 15:46:27 PLOT SCALE = 1



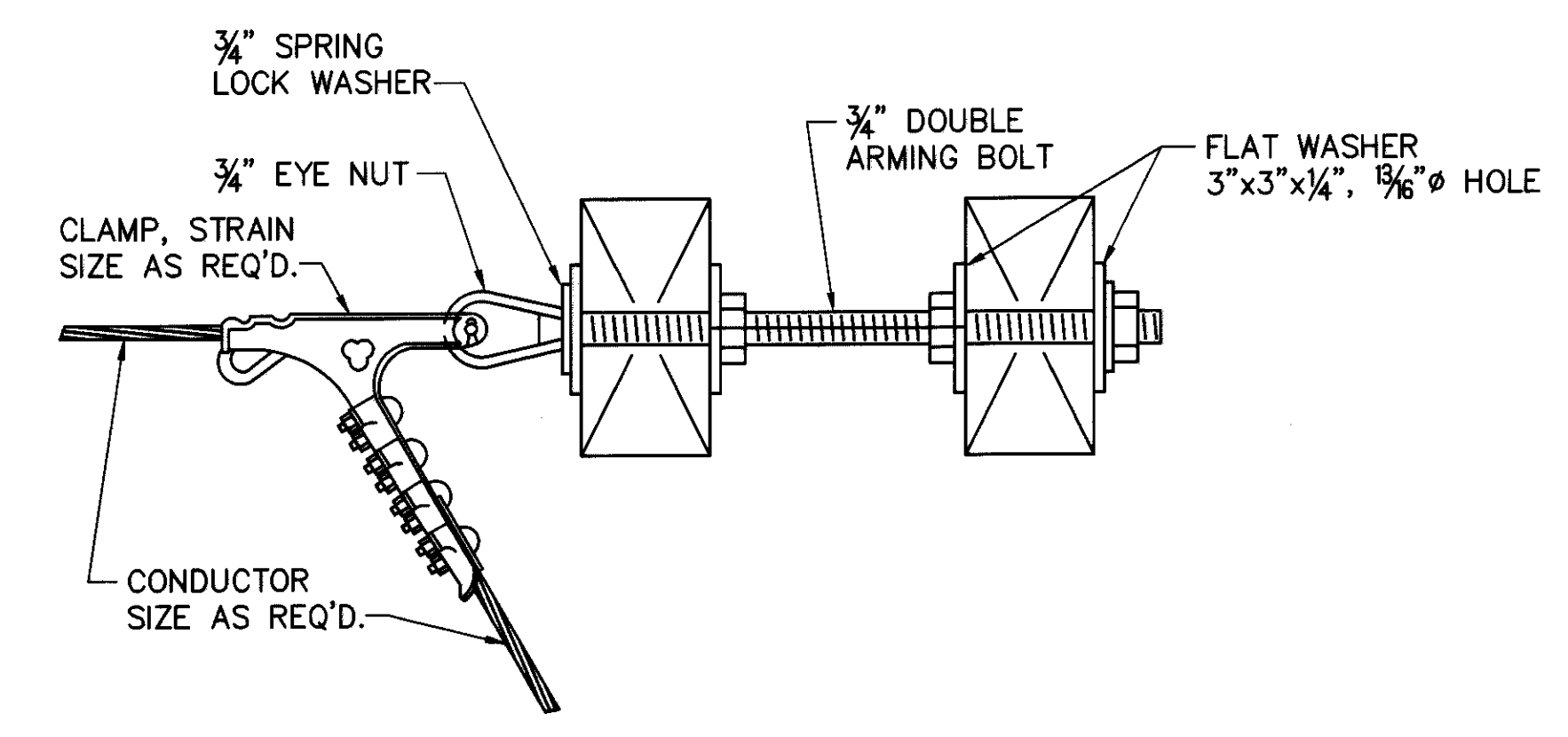
POLE 110, 220N  
**10' CROSSARM TYPE**



**15' CROSSARM TYPE**

**CROSSARM FRAMING DETAILS**  
SCALE: NTS

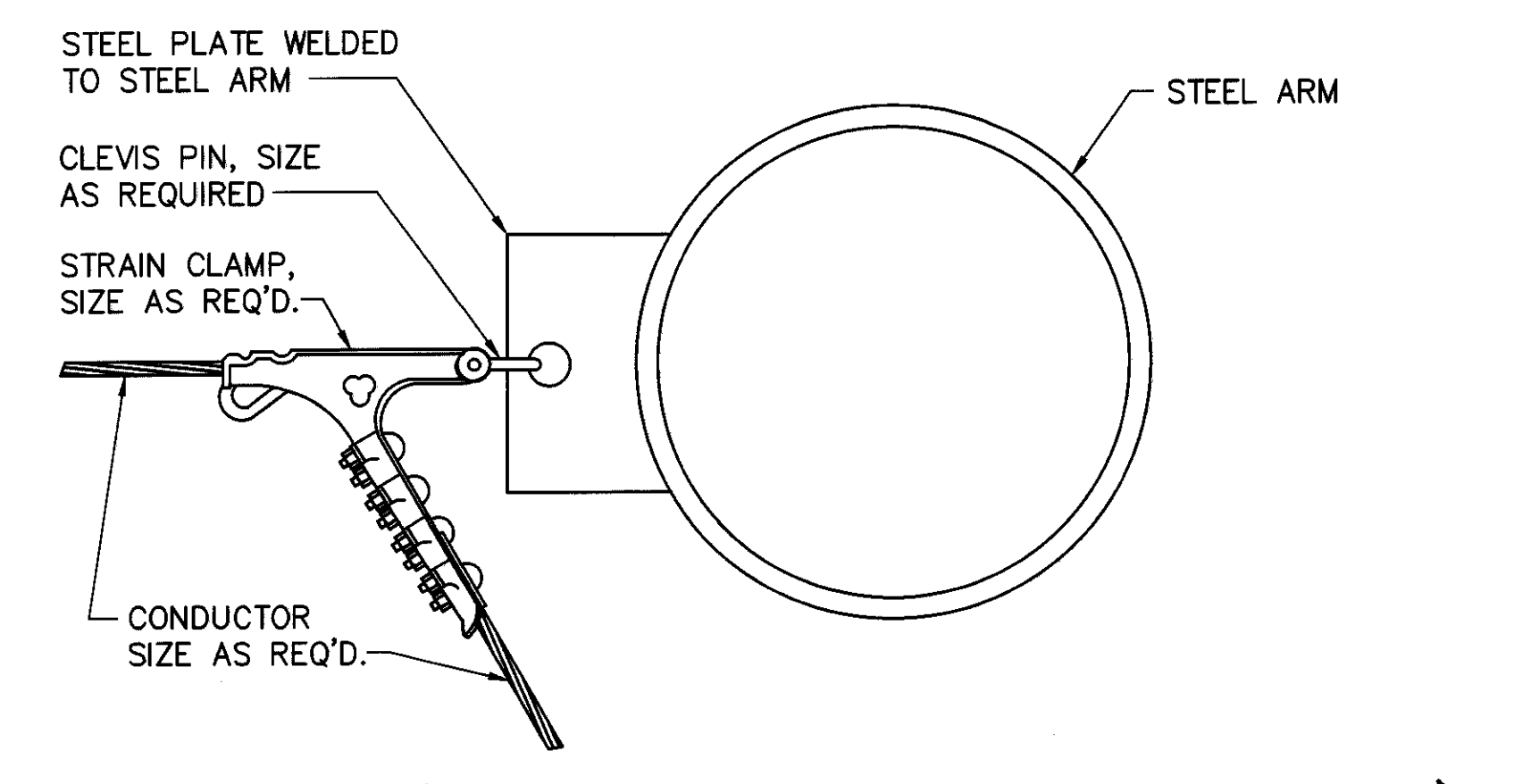
① POLE 324, 323 (CKT. 7214, 7218)



(NEUTRAL CONDUCTOR DEADEND)

**NEUTRAL ASSEMBLY  
DOUBLE ARM (SINGLE SUPPORT)**  
SCALE: NTS

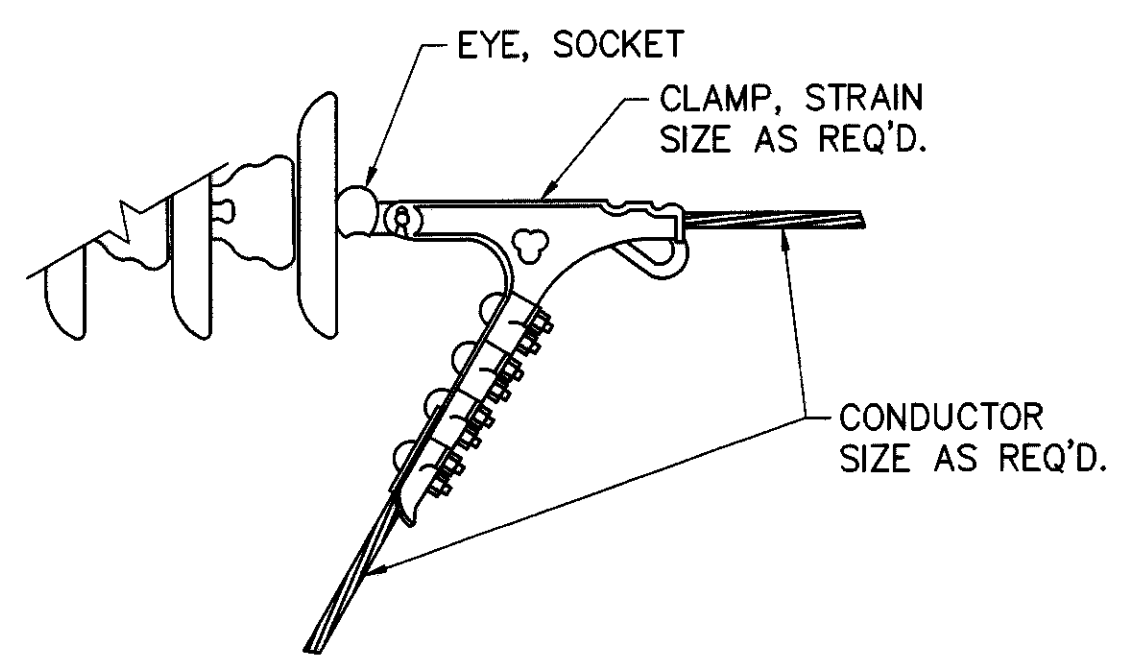
③ POLE 110, 323



(NEUTRAL CONDUCTOR DEADEND)

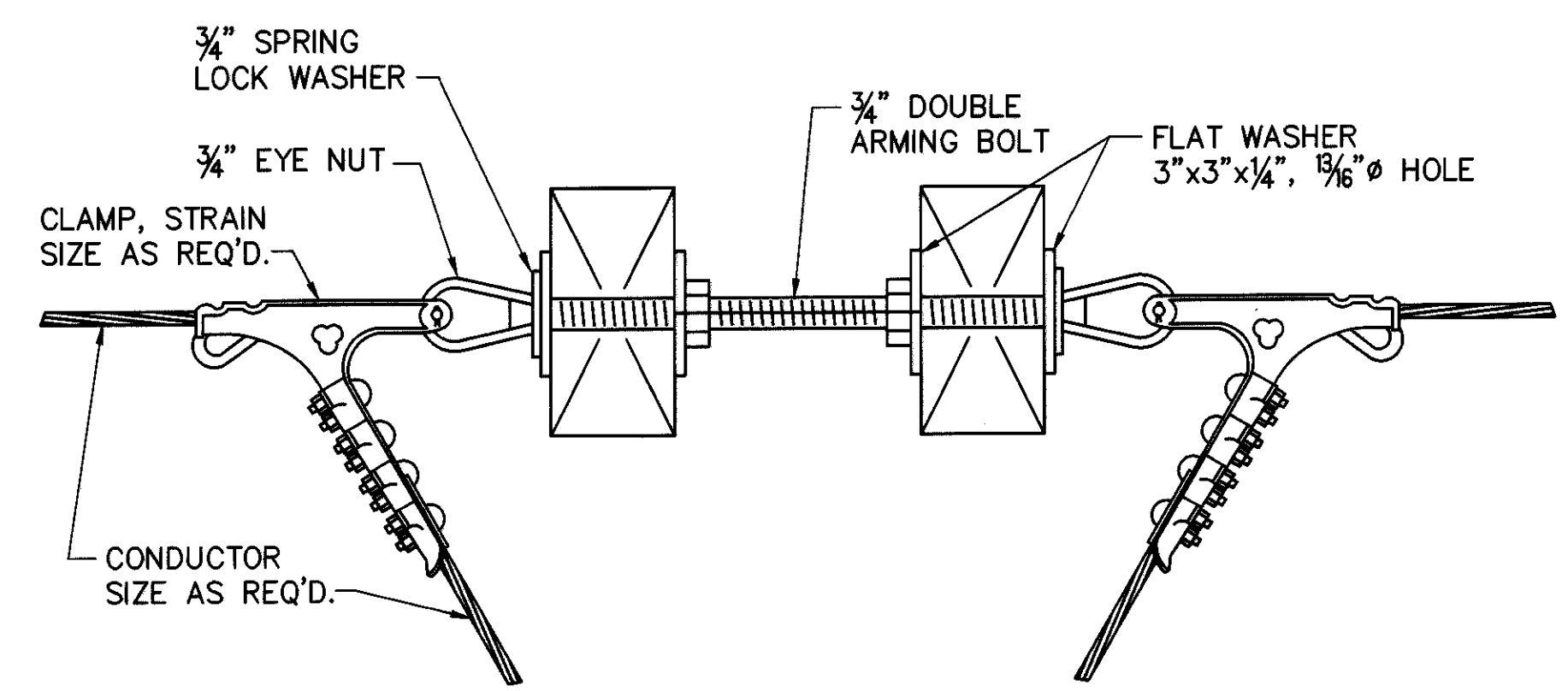
**STRAIN CLAMP  
STEEL ARM (SINGLE SUPPORT)**  
SCALE: NTS

⑤



**STRAIN CLAMP DEAD END ASSEMBLY**  
SCALE: NTS

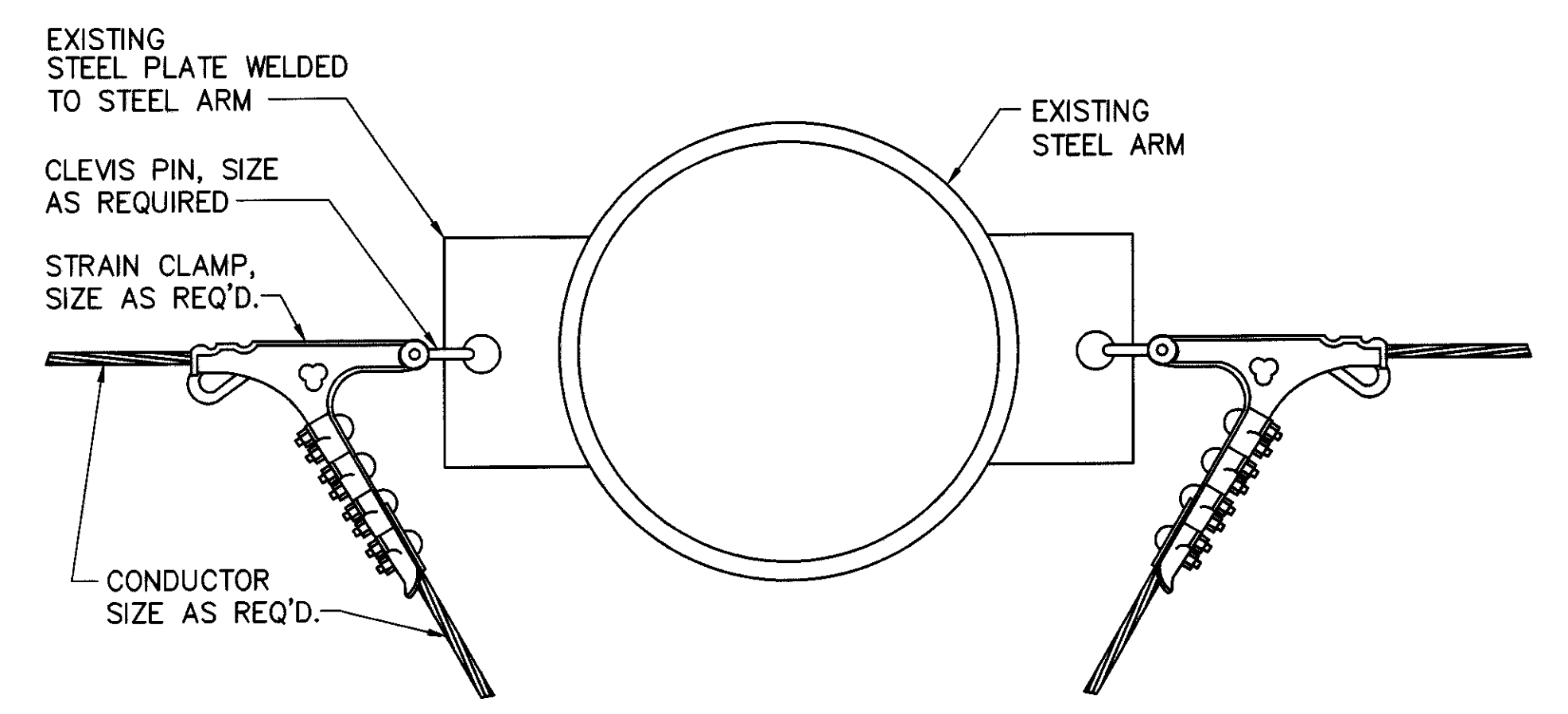
② POLE 225



(NEUTRAL CONDUCTOR DEADEND)

**NEUTRAL ASSEMBLY  
DOUBLE ARM (DOUBLE SUPPORT)**  
SCALE: NTS

④ POLE 303N, 324



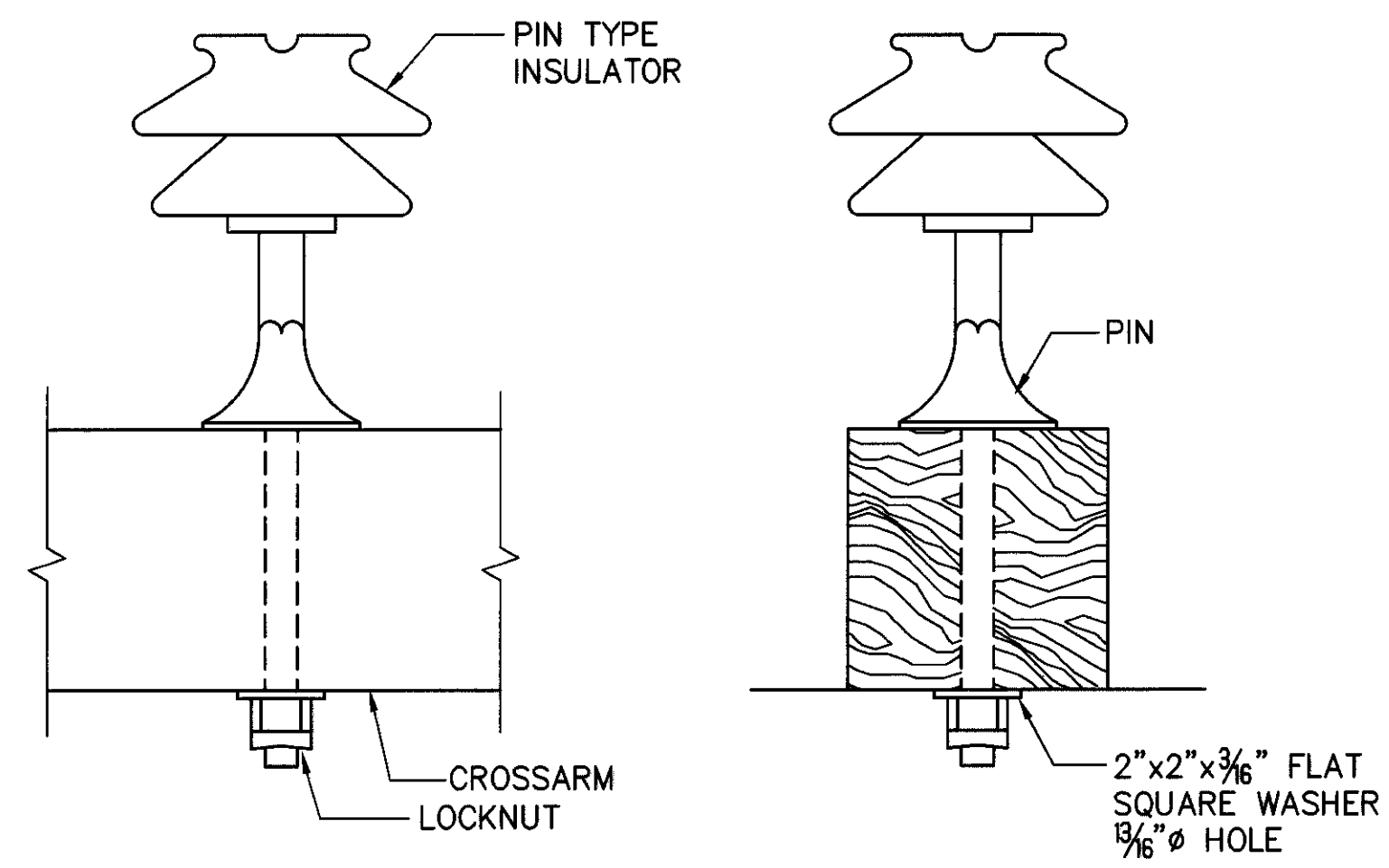
(NEUTRAL CONDUCTOR DEADEND)

**STRAIN CLAMP  
STEEL ARM (DOUBLE SUPPORT)**  
SCALE: NTS

⑥ POLE 326

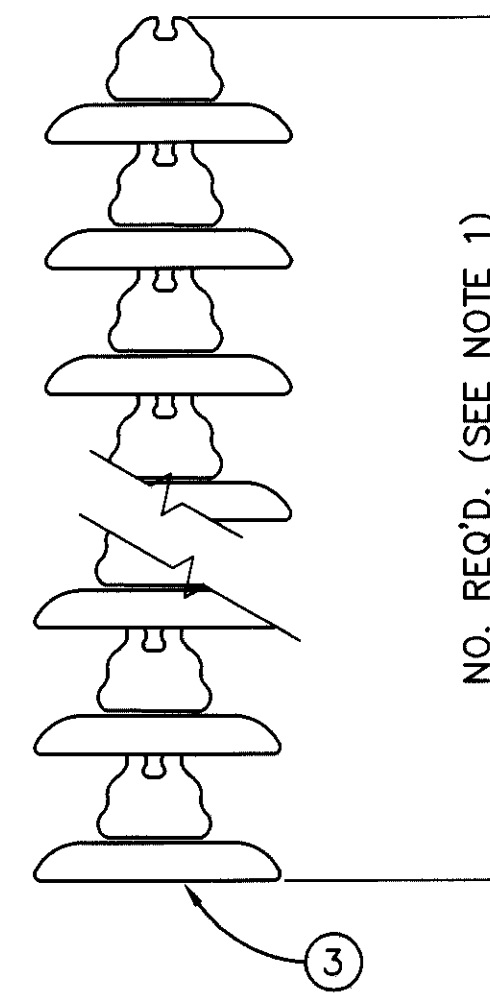
TLS I:\FAC\92313143\56\CONTRACT A-2\05-E-36E.DWG SEP 02, 1997 15:53:37 PLOT SCALE = 1





**INSULATOR MOUNTING  
 (PIN TYPE) ON WOOD ARM**  
 SCALE: NTS

① POLE 110, 303N, 324, 323, 220N, 217N, 253



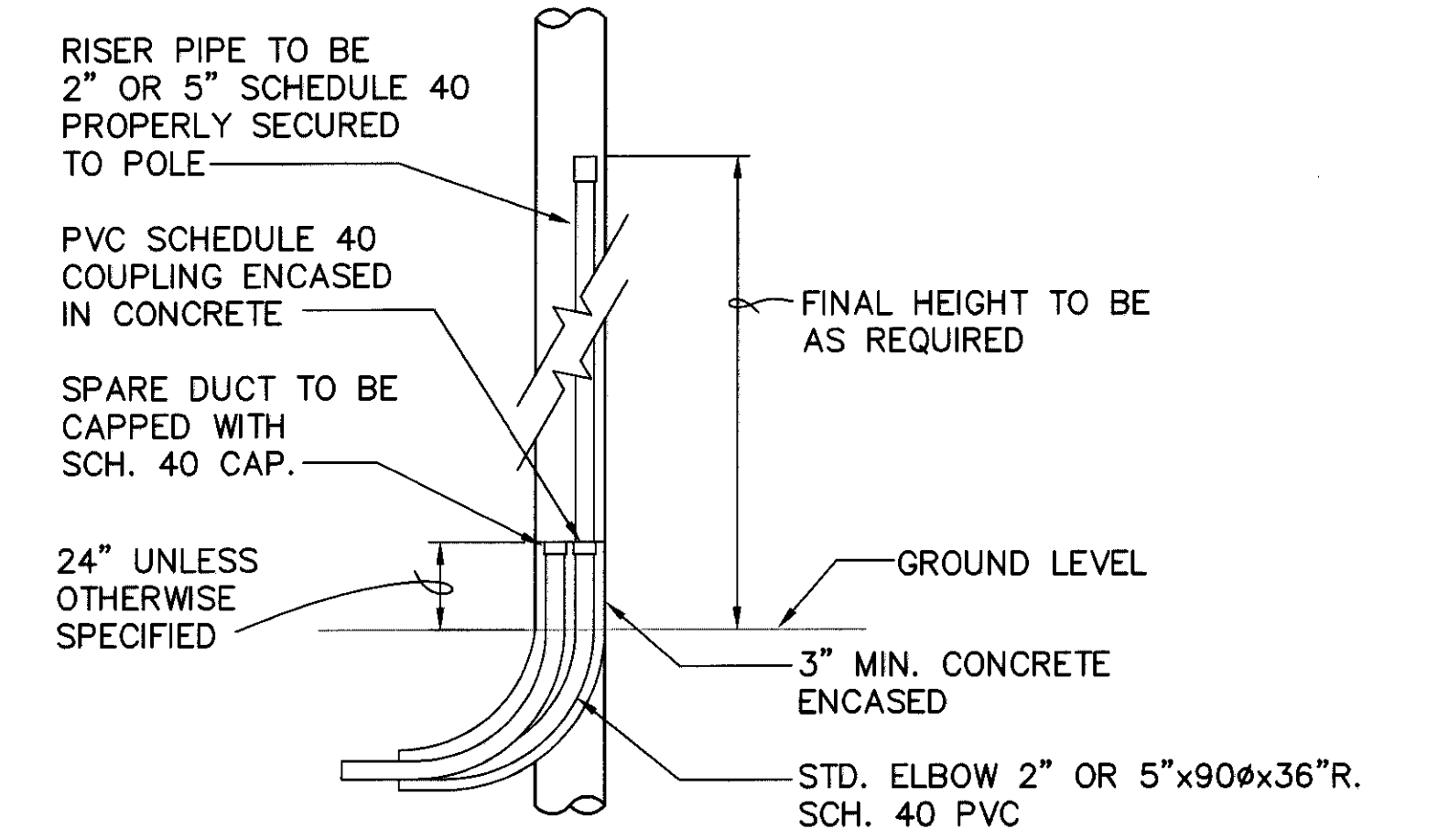
NOTES:

- | KV CLASS | NO. OF INSULATORS |        |
|----------|-------------------|--------|
|          | VERT.             | HORIZ. |
| 15       | 2                 | 2      |
| 34.5     | 3                 | 4      |
| 69       | 5                 | 6      |
| 138      | 8                 | 10     |
| 345      | 18                | 20     |
- INSULATORS TO BE BALL & SOCKET TYPE SUSPENSION DISCS 10" DIAMETER x 5 3/4" SPACING CONFORMING TO CURRENT RECOMMENDATIONS & STANDARDS OF JOINT E.E.I.-NEMA COMMITTEE & AMERICAN STANDARDS ASSOCIATION.
- MAXIMUM DESIGN LOAD FOR THESE UNITS SHOULD NOT EXCEED ONE HALF THE RATED M&E STRENGTH.

**SUSPENSION INSULATOR ASSEMBLY**  
 SCALE: NTS

③

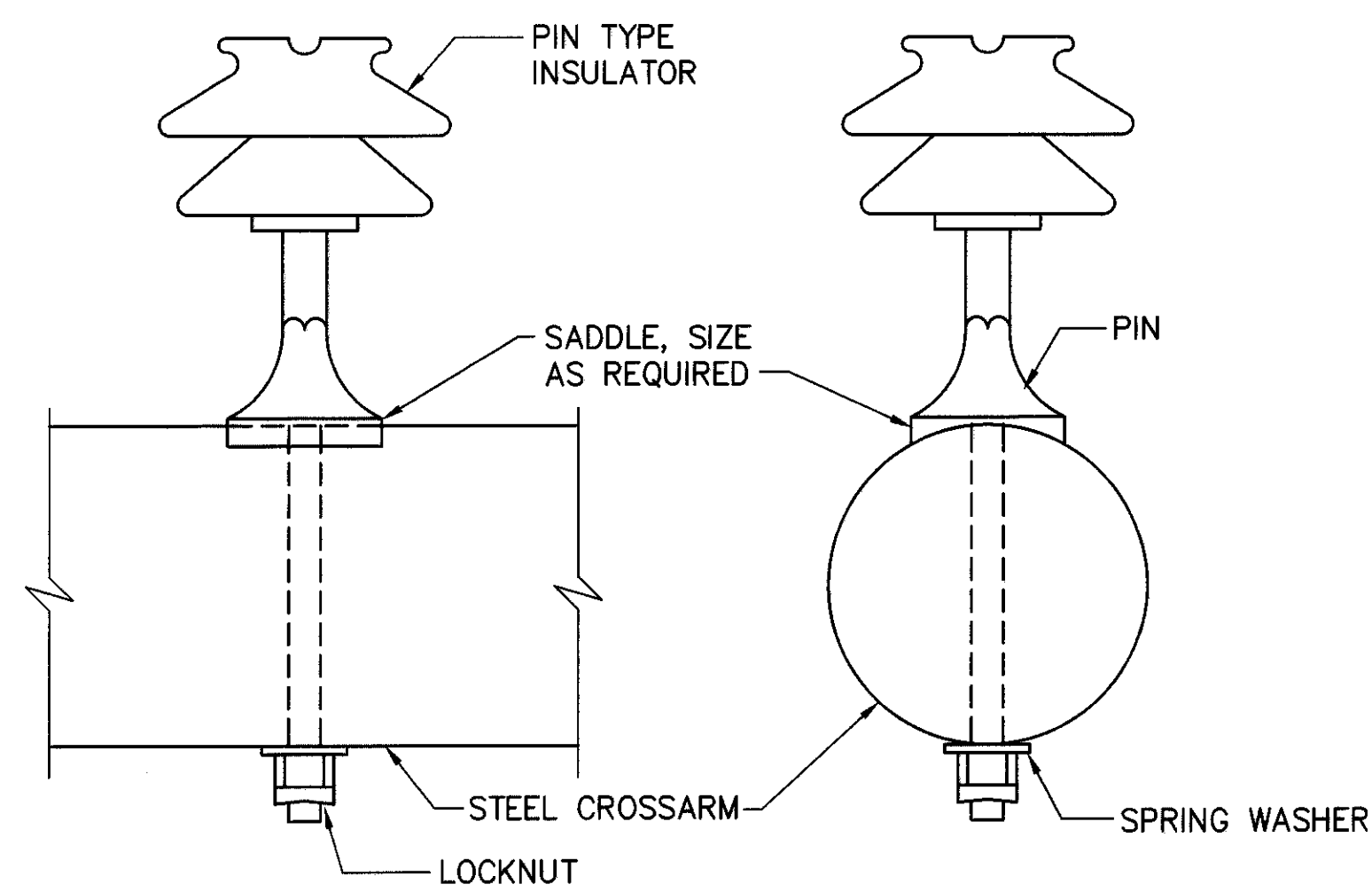
NOTE:  
 RISER TO BE CENTERED  
 ON LINE SIDE OF POLE  
 SPARE TO BE JUST  
 OFF CENTER.



NOTE:  
 WHEN TELEPHONE RISER IS INSTALLED ON THE  
 SAME POLE IT MUST BE ADJACENT TO ELECTRIC  
 RISER TO ALLOW ADEQUATE CLIMBING SPACE  
 TO BE COORDINATED IN FIELD.

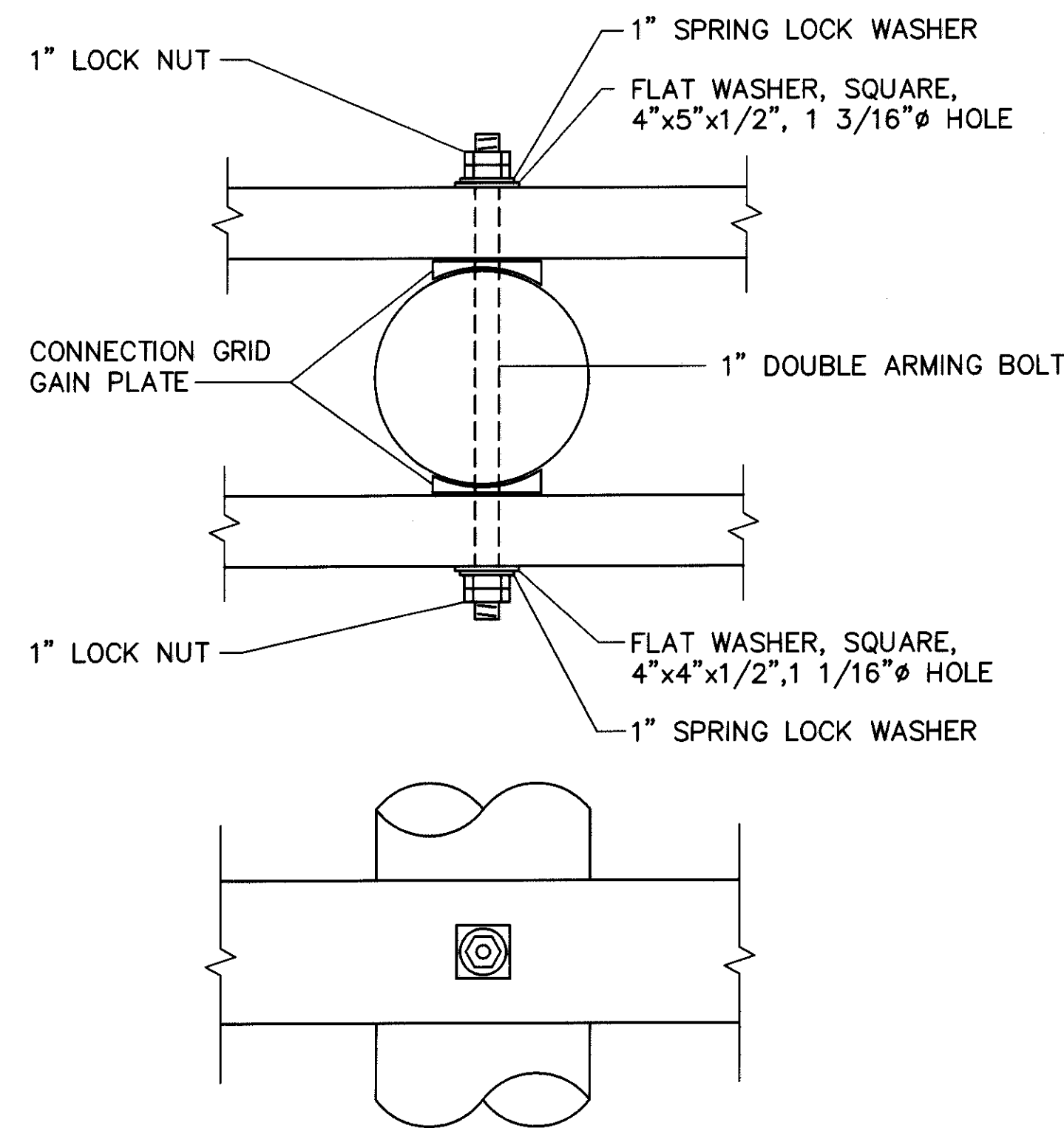
**RISER POLE DETAIL (PRIMARY)**  
 SCALE: NTS

⑤ POLE 002, 242, 241



**INSULATOR MOUNTING  
 (PIN TYPE) ON STEEL ARM**  
 SCALE: NTS

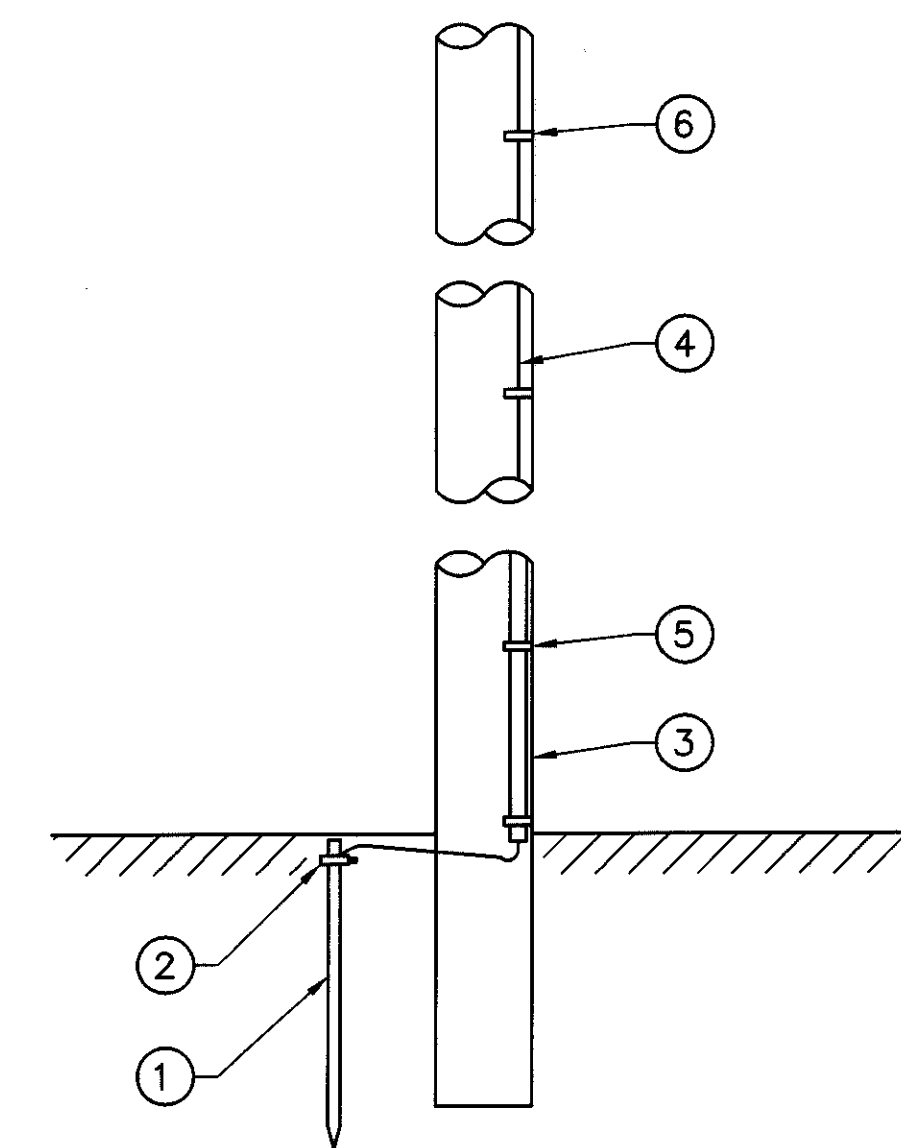
② POLE 325, 323, 228N, 217



**CROSSARM MOUNTING 1" DAB  
 ASSEMBLY (DOUBLE)**  
 N.T.S.

④ POLE 324, 323

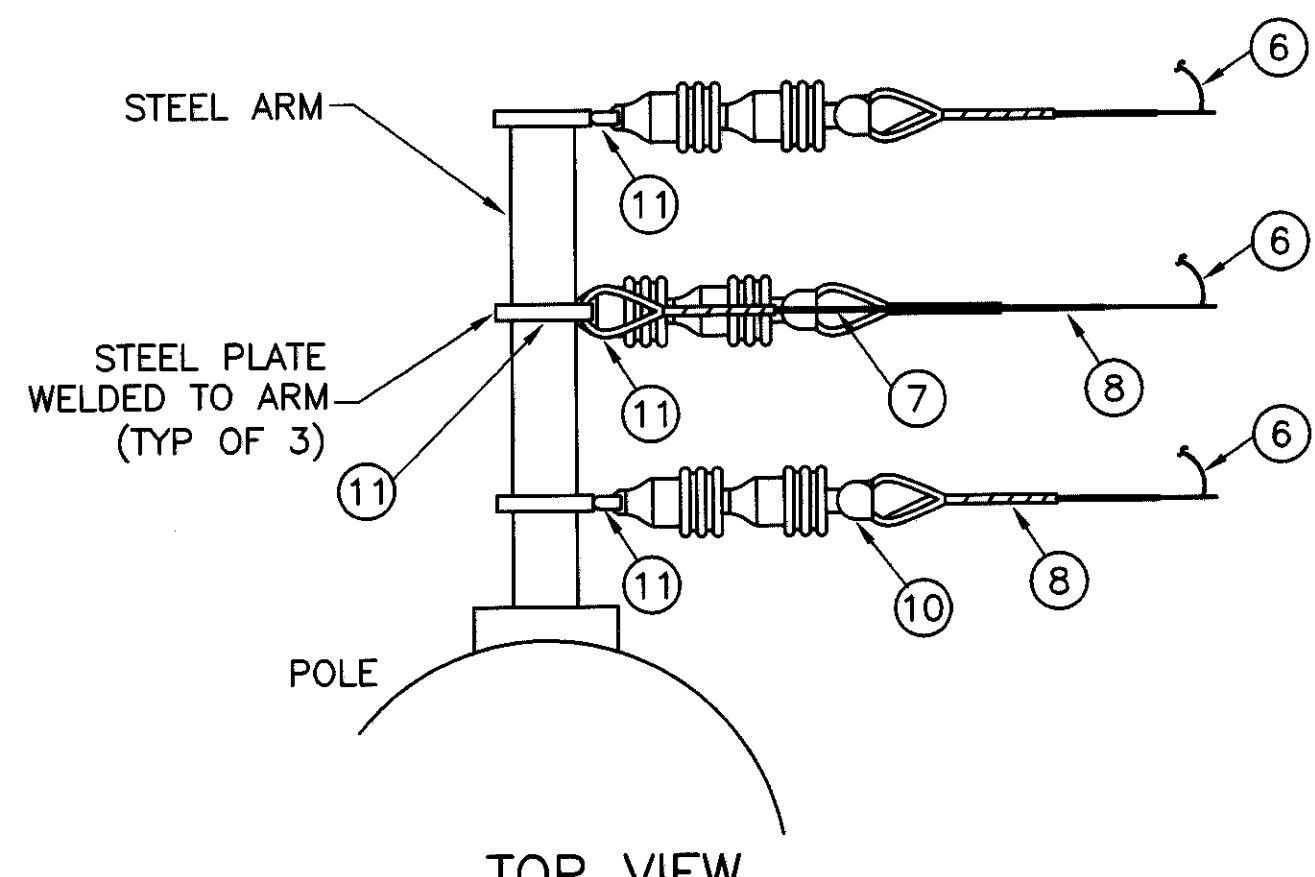
ITEM	DESCRIPTION	NO. REQ'D
1	ROD, GROUND, 1/2" X 8'-0", COPPERWELD	1
2	CLAMP, GROUND ROD 1/2" COPPER ALLOY	1
3	MOLDING, GROUND WIRE, 8' LENGTH	1
4	CONDUCTOR, #6 COPPER, SOLID, SOFT DRAWN	AS REQ'D
5	STAPLE, 1 1/16" X 3" LENGTH	3
6	STAPLE, 3/8" X 1 1/2" LENGTH	AS REQ'D
7	CONNECTOR, COMPRESSION (NOT SHOWN - SIZE AS REQUIRED)	1



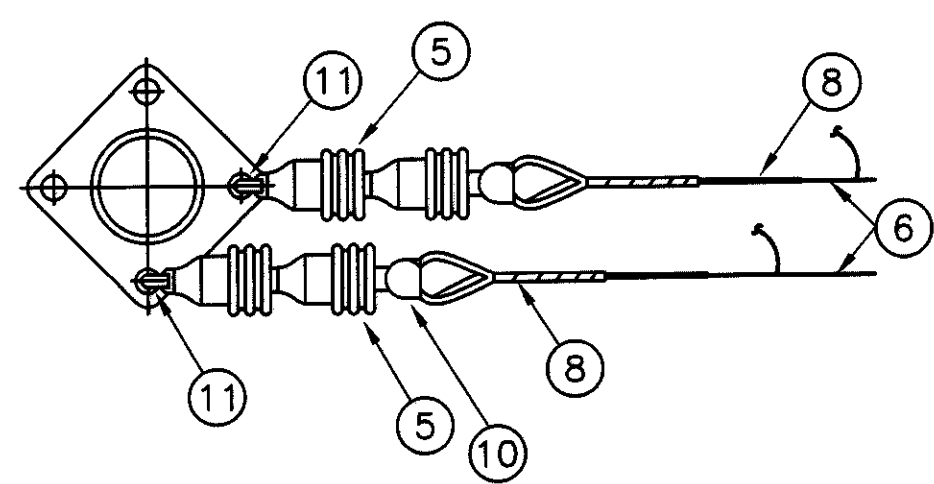
**POLE GROUNDING ASSEMBLY**  
 SCALE: NTS

⑥ POLE 303N, 220N, 228N, 217N, 223

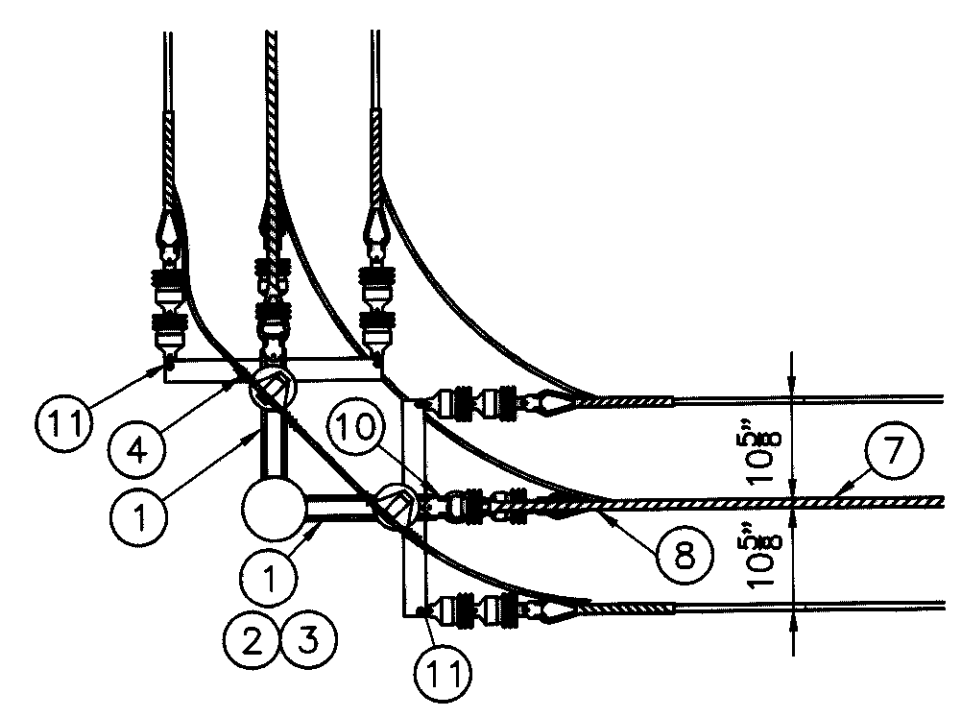
T:\S\FAC\20213143\56\CONTRACT A-5\A5-E-36F.DWG SEP 02, 1997 16:10:16 PLOT SCALE = 1



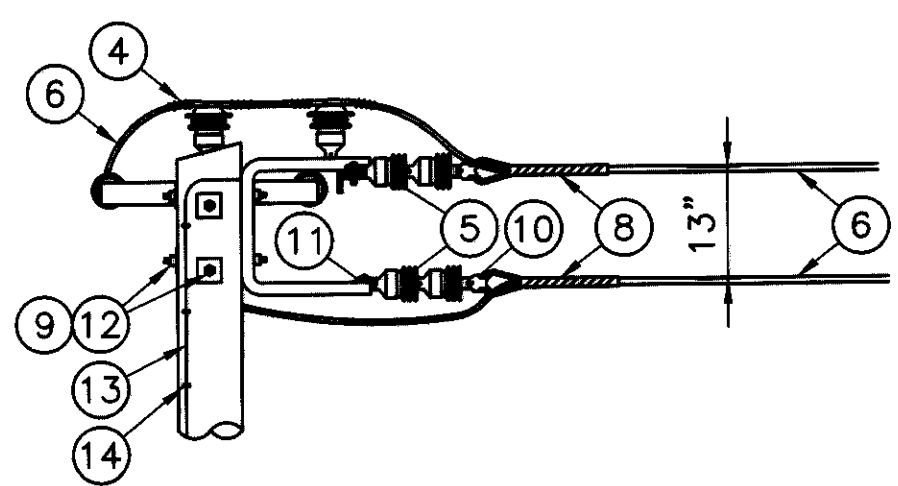
TOP VIEW



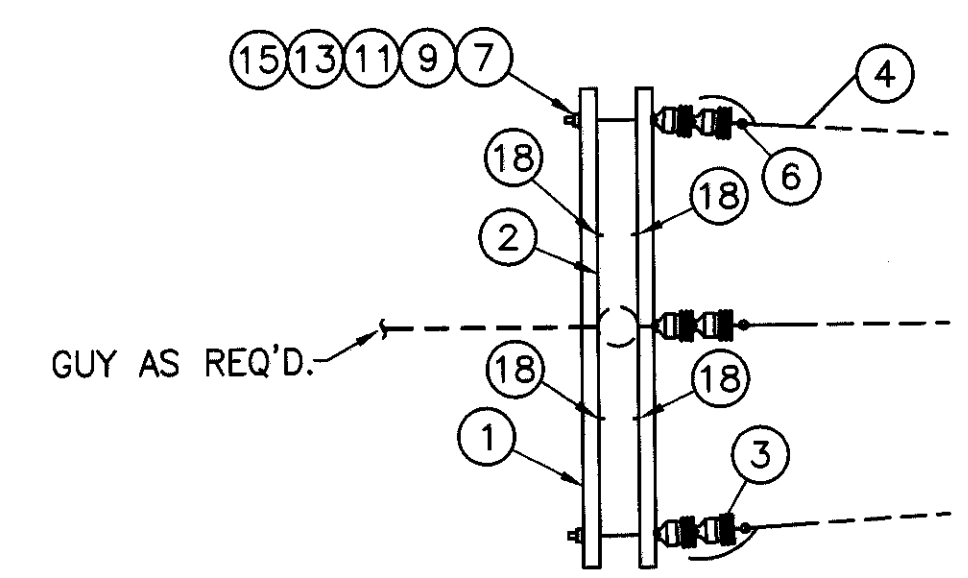
SIDE VIEW



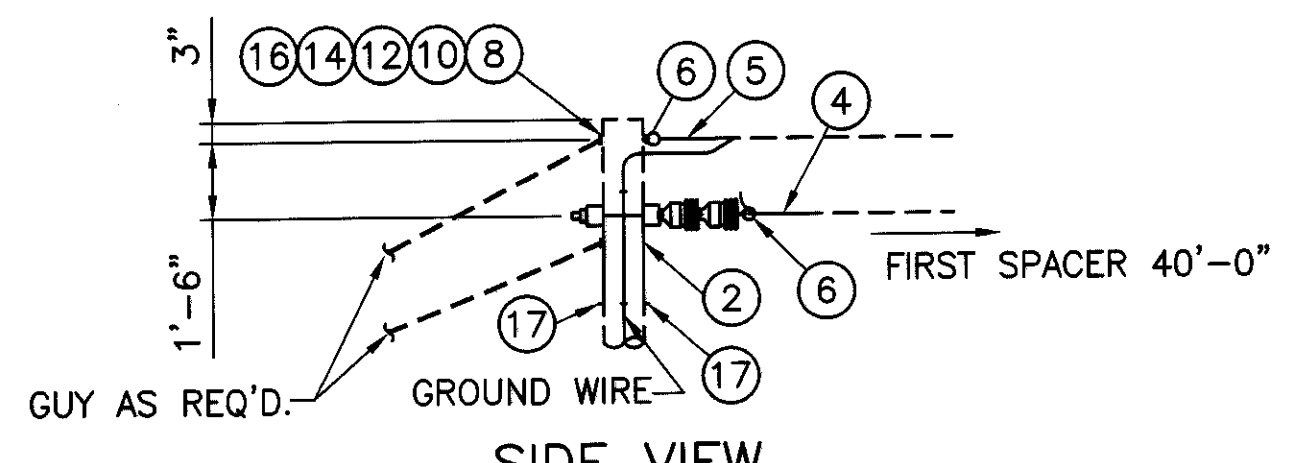
TOP VIEW



SIDE VIEW



TOP VIEW



SIDE VIEW

ITEM	DESCRIPTION	NO. REQUIRED
1		
2		
3		
4		
5	INSULATOR, DEAD END TYPE, CHANCE #C9071209, OR EQUAL	6
6	HENDRIX AERIAL CABLE, (SIZE AND VOLTAGE RATING AS REQUIRED)	AS REQ'D.
7	MESSENGER, (SIZE AND TYPE AS REQUIRED)	AS REQ'D.
8	PRESHAPED TYPE GRIP, (SIZE AND KIND AS REQUIRED)	4
9		
10	THIMBLE CLEVIS, HENDRIX #TC FOR STANDARD DUTY CONSTRUCTION, CONTINENTAL #CT-99, OR EQUAL, FOR MESSINGER ON HEAVY DUTY CONSTRUCTION, CONDUCTORS USE STANDARD DUTY THIMBLES	4
11	SHACKLE CLEVIS, HENDRIX CATALOG #SC	4
12		
13		
14		

**BUNDLE CONSTRUCTION DEAD END ASSEMBLY - STEEL ARM**  
SCALE: NTS

① POLE 325

ITEM	DESCRIPTION	NO. REQUIRED
1	DEAD END BRACKET, HENDRIX TYPE BD-15	2
2	INSULATOR, PIN TYPE, HENDRIX TYPE HPI-15	2
3	INSULATOR PIN, HENDRIX TYPE SSP-2	2
4	COVERED WIRE TIE, #4 SOLID S,D, ALUMINUM WITH .030" POLYETHYLENE	2
5	INSULATOR, DEAD END TYPE, CHANCE #C9071209, OR EQUAL	12
6	HENDRIX AERIAL CABLE, (SIZE AND VOLTAGE RATING AS REQUIRED)	AS REQ'D.
7	MESSENGER, (SIZE AND TYPE AS REQUIRED)	AS REQ'D.
8	PRESHAPED TYPE GRIP, (SIZE AND KIND AS REQUIRED)	10
9	MACHINE BOLT, 5/8" X REQUIRED LENGTH	4
10	THIMBLE CLEVIS, HENDRIX #TC FOR STANDARD DUTY CONSTRUCTION, CONTINENTAL #CT-99, OR EQUAL, FOR MESSINGER ON HEAVY DUTY CONSTRUCTION, CONDUCTORS USE STANDARD DUTY THIMBLES	8
11	SHACKLE CLEVIS, HENDRIX CATALOG #SC	6
12	SQUARE WASHER, 2-1/4" X 2-1/4" X 3/16", MIN.	2
13	GROUND WIRE, S.D. COPPER, SOLID, #6 MIN.	AS REQ'D.
14	GROUND WIRE STAPLE, COPPER CLAD OR GALVANIZED	AS REQ'D.

**BUNDLE CONSTRUCTION DOUBLE DEAD END ASSEMBLY**  
SCALE: NTS

② POLE 320

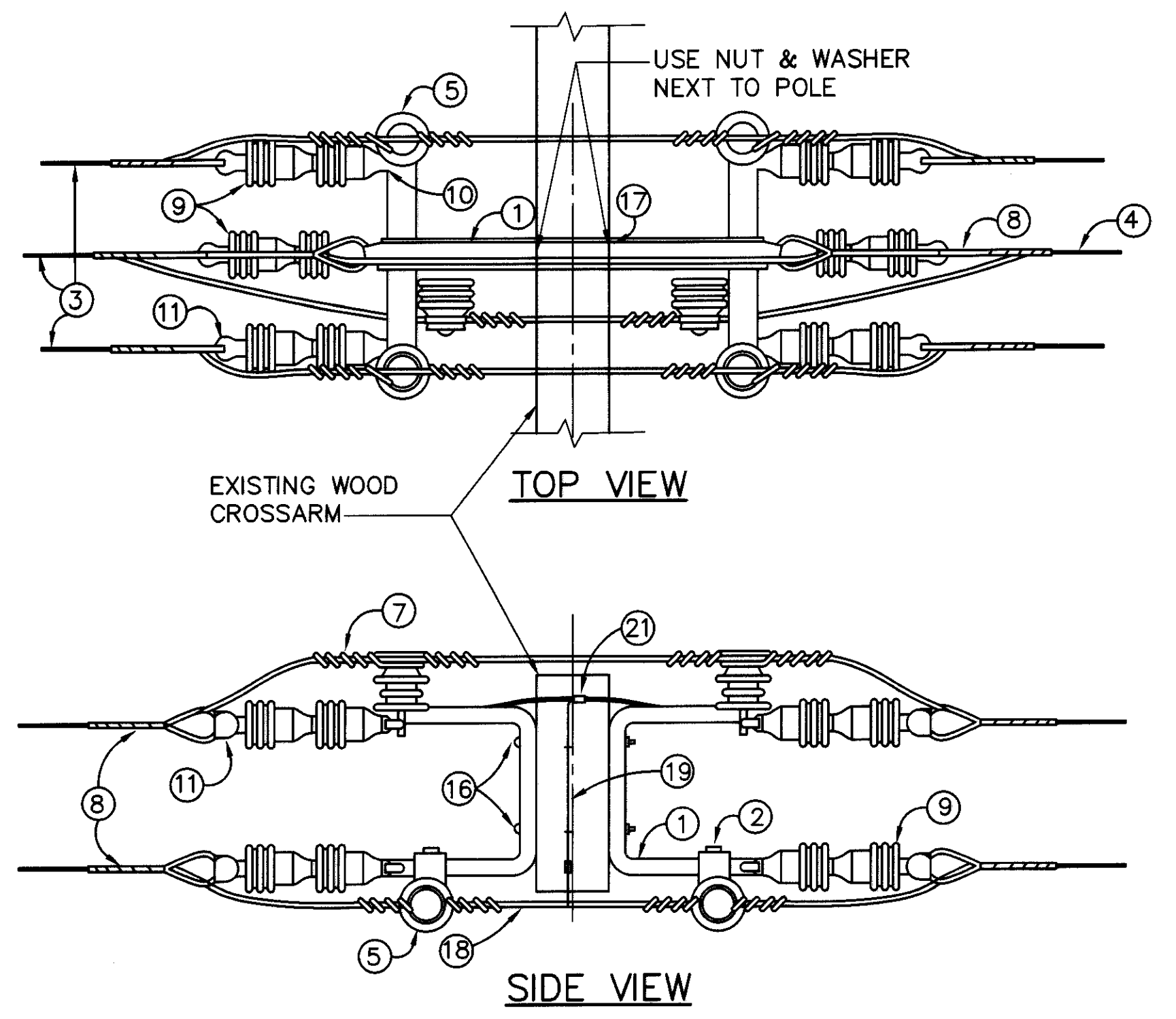
ITEM	DESCRIPTION	NO. REQUIRED
1	CROSSARM, WOODEN, 3-3/4" X 4-3/4" X 8'-0"	2
2	BRACE, 32" STEEL, FLAT	4
3	INSULATOR, DEADEND, PORCELAIN, 4-1/4", GRAY	6
4	GRIP, PREFORMED, 336.4 MCM	3
5	GRIP, PREFORMED, 20M, 1/2" - 7#6 ALUMWELD	1
6	CLEVIS, THIMBLE	4
7	BOLT, DOUBLE ARMING, 5/8" X LENGTH	3
8	BOLT, MACHINE, 3/4" X LENGTH REQUIRED	2
9	NUT, SQ, 5/8" - 11 UNC (INCLUDED WITH MACHINE BOLT)	10
10	NUT, OVAL EYE, 3/4" 10 UNC, GALVANIZED	1
11	WASHER, SQ. FLAT, 2" X 2" X 11/16" HOLE DIA.	10
12	WASHER, SQ. CURVED, 13/16" DIA. HOLE	2
13	WASHER, SPRING LOCK, 11/16" DIA. HOLE, DOUBLE COIL	5
14	WASHER, SPRING LOCK, 13/16" DIA. HOLE, DOUBLE COIL	1
15	NUT, OVAL EYE, 5/8" - 11 UNC	4
16	HOOK, GUY FOR 3/4" - BOLT, 1/2" DIA. WIRE	2
17	BOLT, MACHINE, 5/8" X REQ'D. LENGTH	1
18	BOLT, MACHINE, 1/2" X REQ'D. LENGTH	4
17A	WASHER, 2 1/4" X 2 1/4" X 3/16", 11/16" HOLE	2
18A	WASHER, ROUND 1 3/8" X 9/16" HOLE	8

**BUNDLE CONSTRUCTION DEAD END ASSEMBLY - WOOD CROSSARM**  
SCALE: NTS

③ POLE 223, 220N

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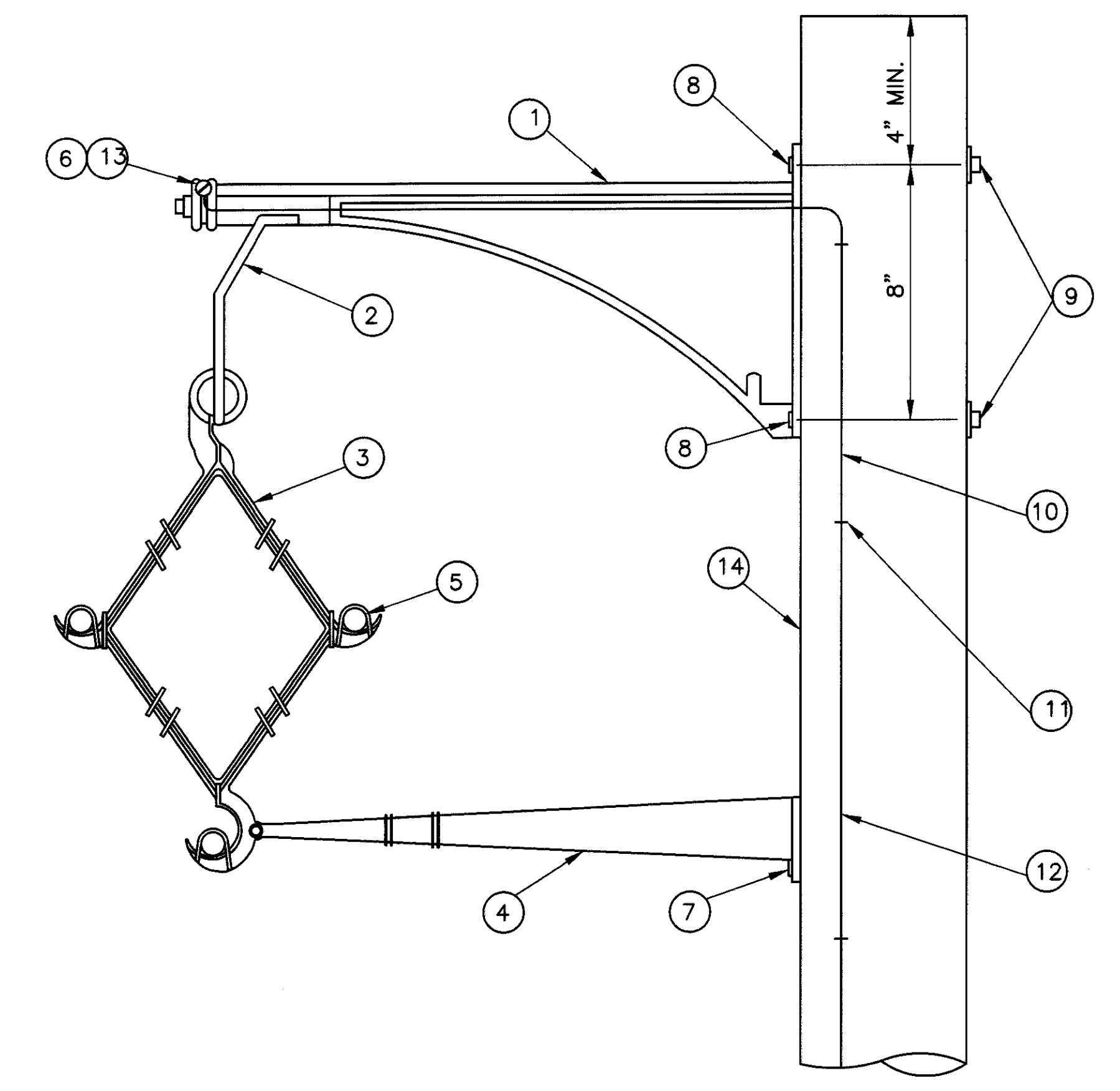


ITEM	QUAN.	DESCRIPTION
1	2	DEAD END BRACKET, HENDRIX TYPE BD-15
2	2	PIN BRACKET, HENDRIX TYPE BP-1 WITH MOUNTING BOLT
3	AS REQ'D.	HENDRIX AERIAL CABLE, (SIZE AND VOLTAGE RATING AS REQUIRED)
4	AS REQ'D.	MESSENGER (SIZE AND TYPE AS REQ'D.)
5	6	INSULATOR, PIN TYPE, HENDRIX TYPE HPI-15
6	6	INSULATOR PIN, HENDRIX TYPE SSP-2
7	6	COVERED WIRE TIE, #4 SOLID S.D. ALUM. WITH .030" POLYETHYLENE
8		
9	12	INSULATOR, DEAD END TYPE, CHANCE #C9071209, OR EQUAL
10	6	SHACKLE CLEVIS, HENDRIX CATALOG #SC
11	8	THIMBLE CLEVIS, HENDRIX CATALOG #TC FOR STANDARD DUTY CONSTRUCTION; CONTINENTAL #CT-88, OR EQUAL FOR HEAVY DUTY CONSTRUCTION; CONDUCTORS USE TC THIMBLE CLEVIS ONLY.
12		
13		
14	2	3-BOLT CLAMP OR AUTOMATIC TYPE DEAD END, (SIZE AND KIND AS REQUIRED; LOWER END OF GUY NOT SHOWN).
15		
16	2	DOUBLE ARMING BOLT, 5/8" x REQUIRED LENGTH
17	4	SQUARE WASHER, 2-1/4" x 2-1/4" x 3/16" MIN.
18	AS REQ'D.	GROUND WIRE, S.D. COPPER, SOLID, #6 MIN.
19	AS REQ'D.	GROUND WIRE STAPLE, COPPER CLAD OR GALVANIZED
20	1	GROUNDING ASSEMBLY, (TYPE AS REQUIRED, NOT SHOWN)
21	AS REQ'D.	CONNECTOR, (SIZE AND TYPE AS REQUIRED)
22	2	ANCHOR AND ANCHOR ROD, (SIZE AND TYPE AS REQUIRED)
23		

POLES 324 & 323 - BUNDLE SUPPORT (CKTS 7214 & 7218) CD-A5-324-009

**DOUBLE DEAD END BRACKET (STEEL ARM)**  
SCALE: NTS

①



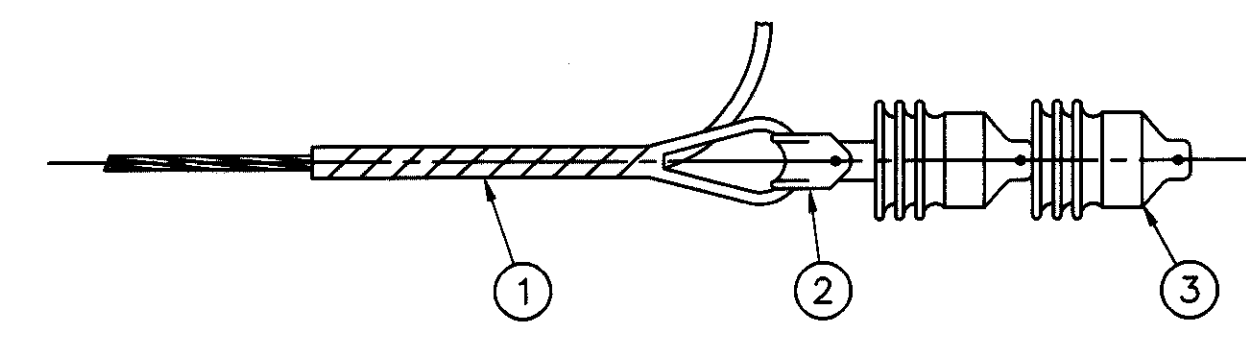
ITEM	QUAN.	DESCRIPTION
1	1	MESSENGER BRACKET, HENDRIX TYPE BM-24
2	1	STIRRUP HENDRIX TYPE TS-1, SUPPLIED WITH 1/2" BOLT AND SELF LOCKING NUT
3	1	HENDRI-CLAMP WITH TIES H-15V
4	1	ANTI-SWAY BAR HENDRIX TYPE BAS-24F, SUPPLIED WITH PLASTIC BOLT.
5	AS REQ'D.	HENDRIX AERIAL CABLE, (SIZE AND VOLTAGE RATING AS REQUIRED)
6	AS REQ'D.	MESSENGER (SIZE AND TYPE AS REQUIRED)
7	1	LAG SCREW, FETTER DRIVE, 1/2"x4"
8	2	MACHINE BOLT, 5/8"xREQUIRED LENGTH
9	2	SQUARE WASHER, 4"x4" SQ. CURVED
10	AS REQ'D.	GROUND WIRE, S.D. COPPER, SOLID, #6 MINIMUM
11	AS REQ'D.	GROUND WIRE STAPLES, COPPER CLAD OR GALVANIZED
12	1	GROUNDING ASSEMBLY, (TYPE AS REQUIRED, NOT SHOWN)
13	1	CONNECTOR, (SIZE, TYPE AS REQUIRED)
14	1	POLE, (LENGTH AND CLASS AS REQUIRED)

**BUNDLE TANGENT BRACKET WITH STIRRUP & ANTI-SWAY BAR**  
SCALE: NTS

② POLE 322 - BUNDLE SUPPORT (CKT 7214 & 7218)

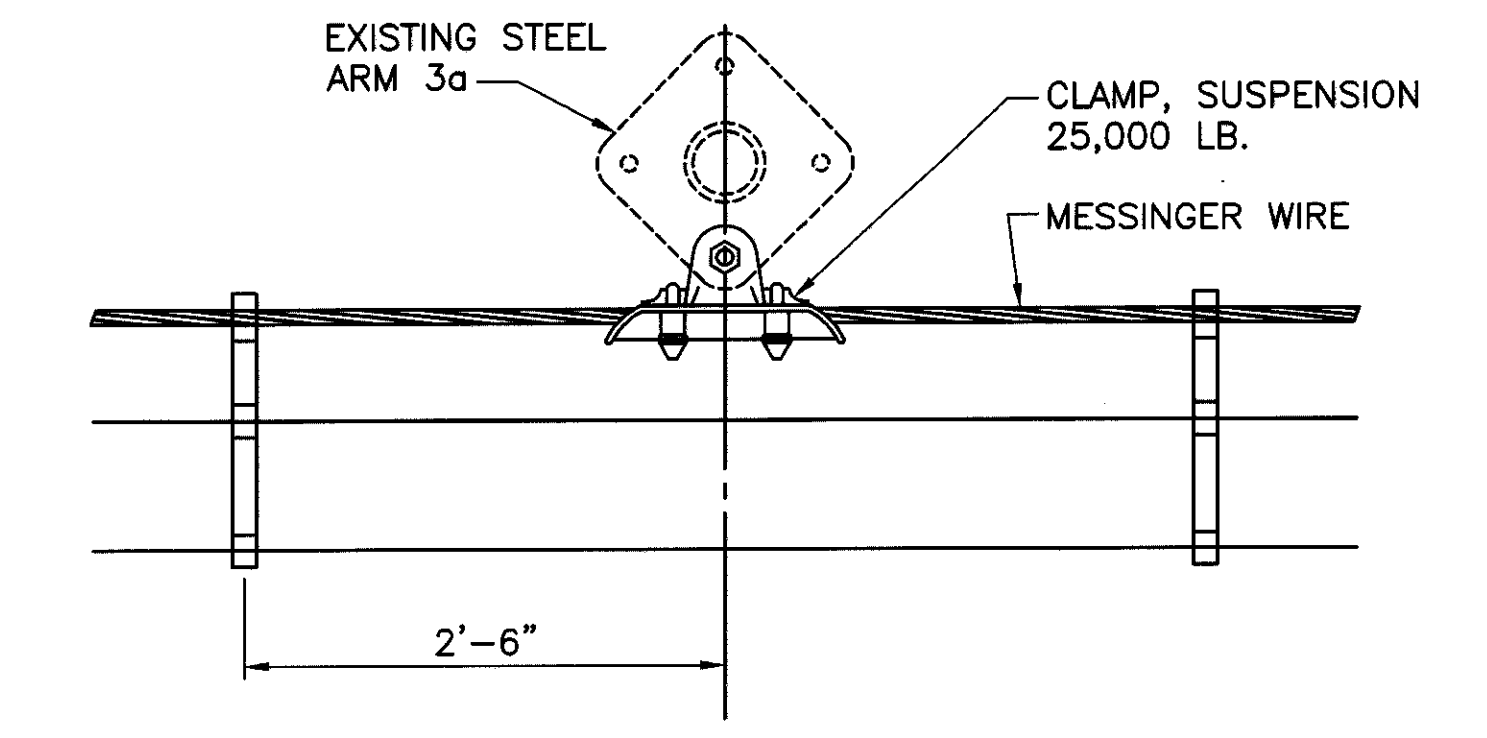
I:\FAC\92313143\56\CONTRACT A-5\A5-E-36H.DWG SEP 08, 1997 12:02:52 PLOT SCALE = 1  
 TJS

E-36H

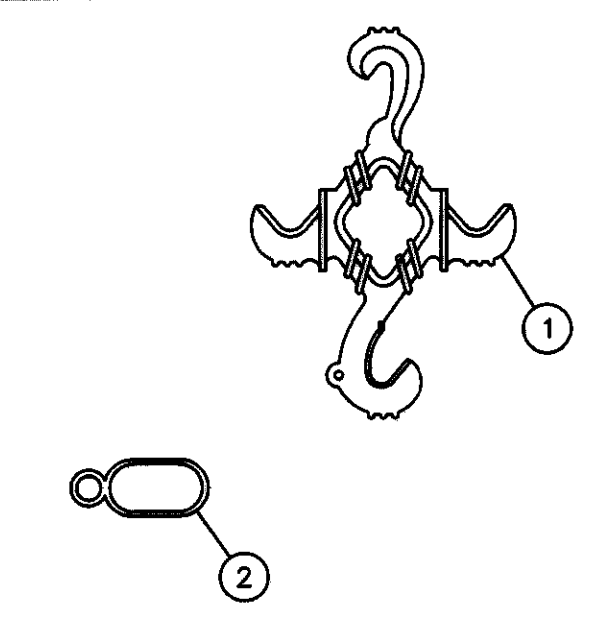


ITEM	DESCRIPTION	NO. REQ'D.
1	PREFORM TYPE GRIP, SIZE AND KIND AS REQUIRED	1
2	THIMBLE CLEVIS OLIVER #4255, OR EQUAL	1
3	INSULATOR, DEAD END TYPE, #C9071209 OR EQUAL	2

② **SPACER CABLE DEAD END ASSEMBLY (15KV)**  
SCALE: NTS

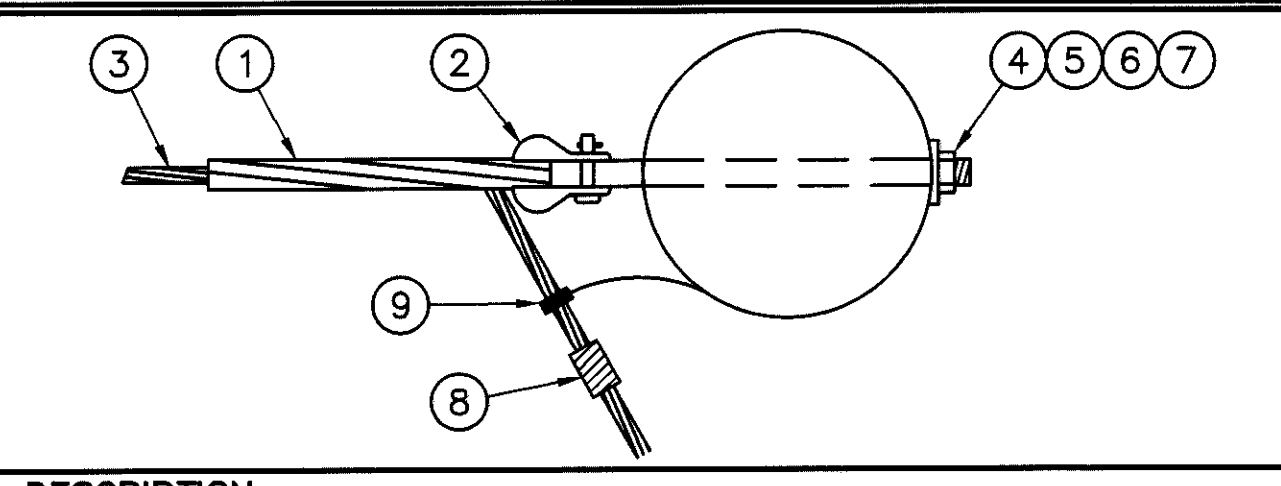


④ **MESSENGER SUSPENSION CLAMP (STEEL ARM)**  
SCALE: NTS



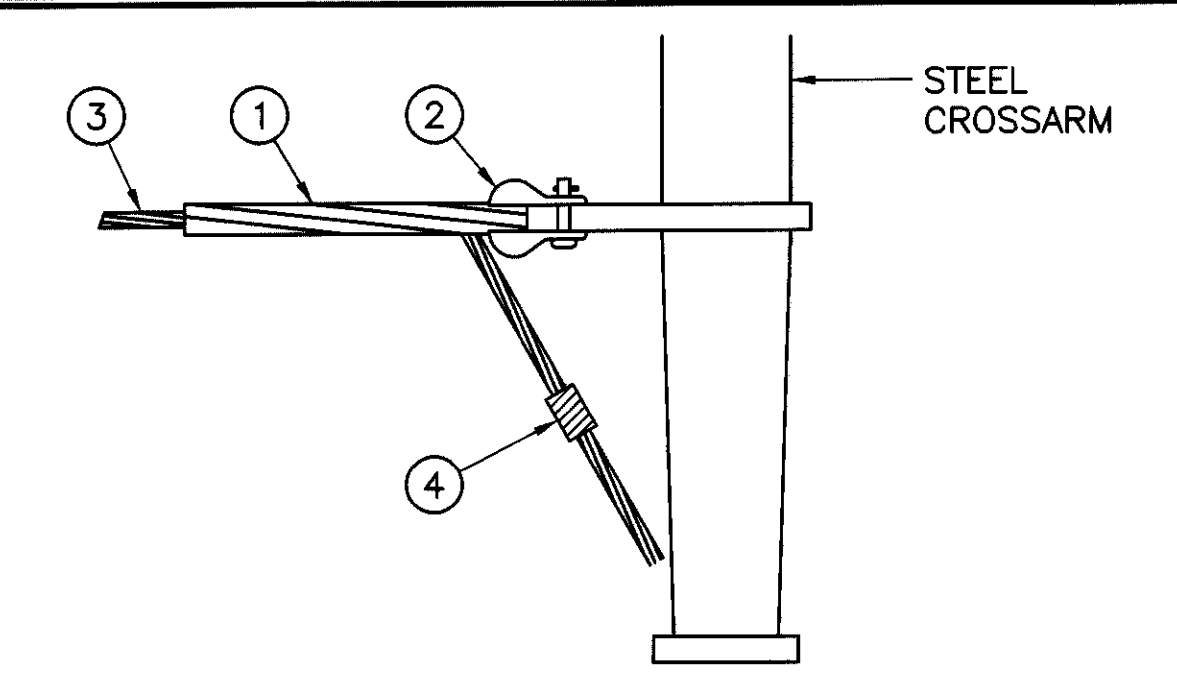
ITEM	DESCRIPTION	NO. REQUIRED
1	SPACER, 15KV, HENDRIX H-15D OR APPROVED EQUAL	1
2	TIE, RING, 3" DIA.	4

③ **SPACER WITH RING TIES**  
SCALE: NTS



ITEM	DESCRIPTION	NO. REQ'D.
1	GRIP, PREFORMED, 20M, 1/2"-7 #6 ALUM. WELD	1
2	CLEVIS, THIMBLE	1
3	MESSENGER, 1/2"-7 #6 ALUM. WELD	AS REQ'D.
4	BOLT, EYE 5/8" STANDARD, SIZE AS REQUIRED	1
5	NUT, 5/8"	1
6	WASHER, SPRING LOCK, 11/16" DIA. DOUBLE COIL	1
7	WASHER, SQ., CURVED, 11/16" DIA. HOLE	2
8	CONNECTORS, MESSENGER, TYPE AS REQUIRED	1
9	CONNECTORS, GROUND, TYPE AS REQUIRED	

⑤ **MESSENGER DEAD END ASSEMBLY (WOOD POLE)**  
SCALE: NTS



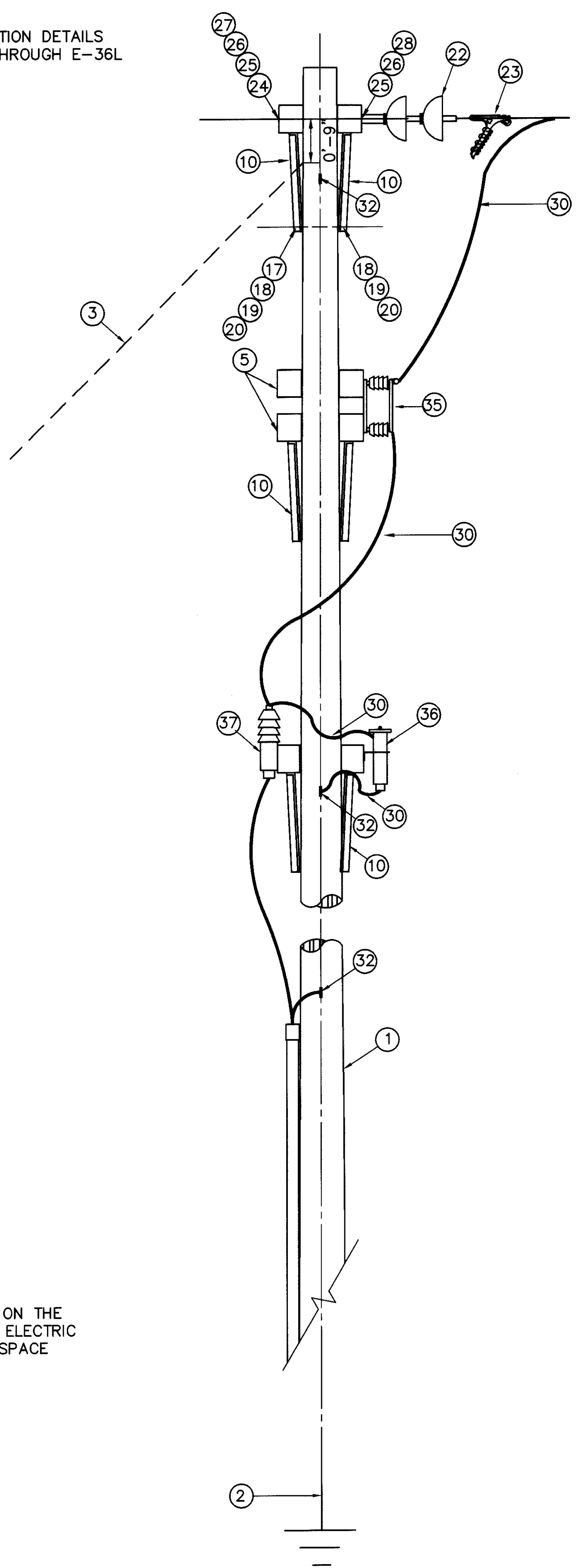
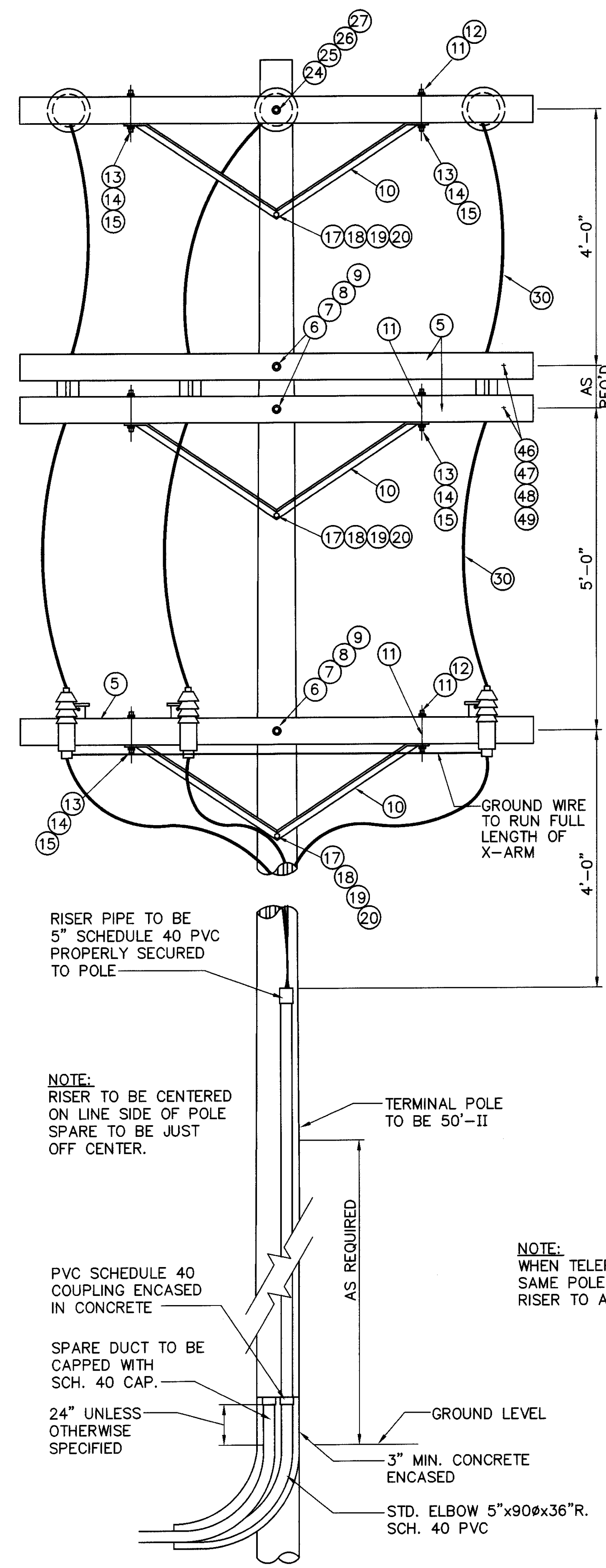
ITEM	DESCRIPTION	NO. REQ'D.
1	GRIP, PREFORMED, 20M, 1/2"-7 #6 ALUM. WELD	1
2	CLEVIS, THIMBLE	1
3	MESSENGER, 1/2"-7 #6 ALUM. WELD	AS REQ'D.
4	CONNECTORS, MESSENGER, TYPE AS REQ'D.	1

⑥ **MESSENGER DEAD END ASSEMBLY (STEEL POLE)**  
SCALE: NTS

TLS I:\PAC\92313143\56\CONTRACT A-5\A5-E-361.DWG SEP 06, 1997 12:03:48 PLOT SCALE = 1



NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

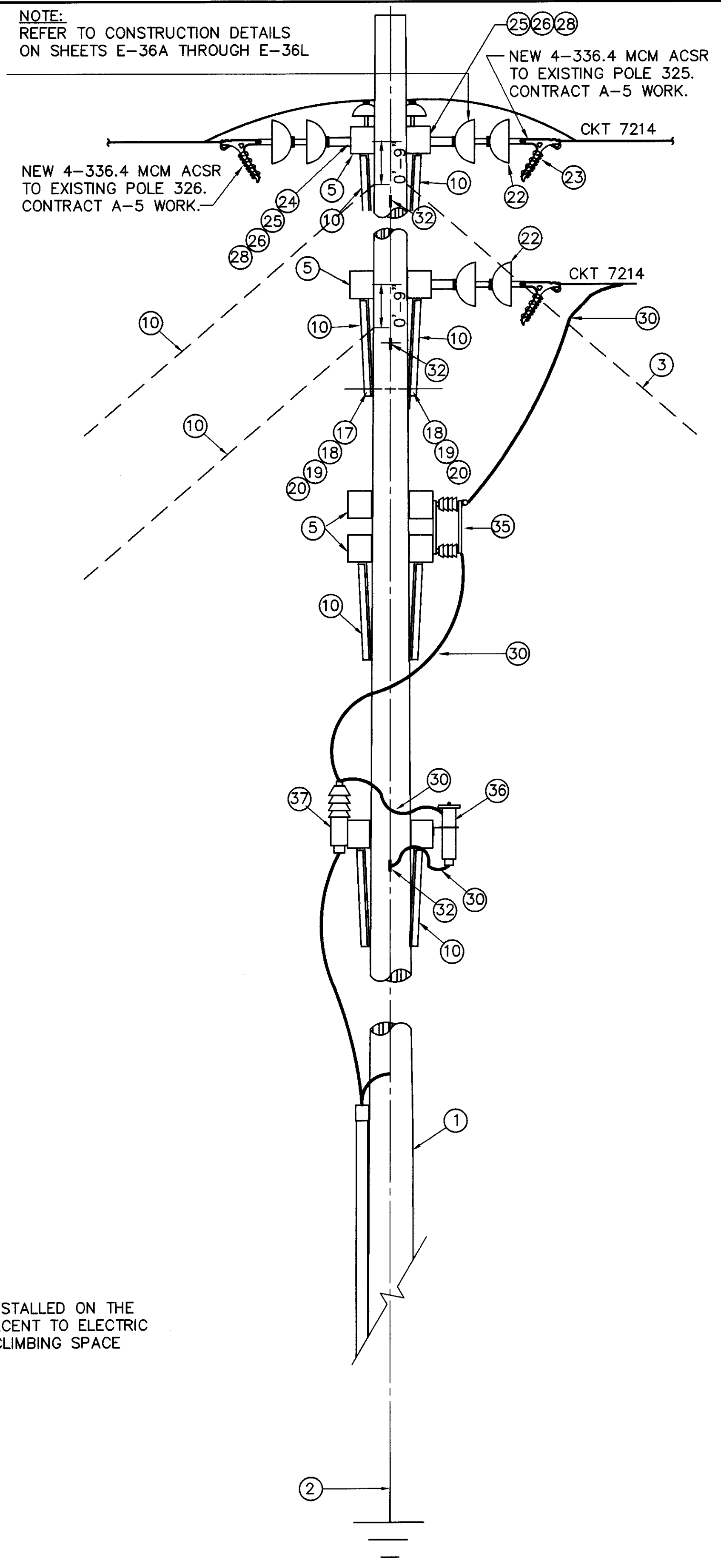
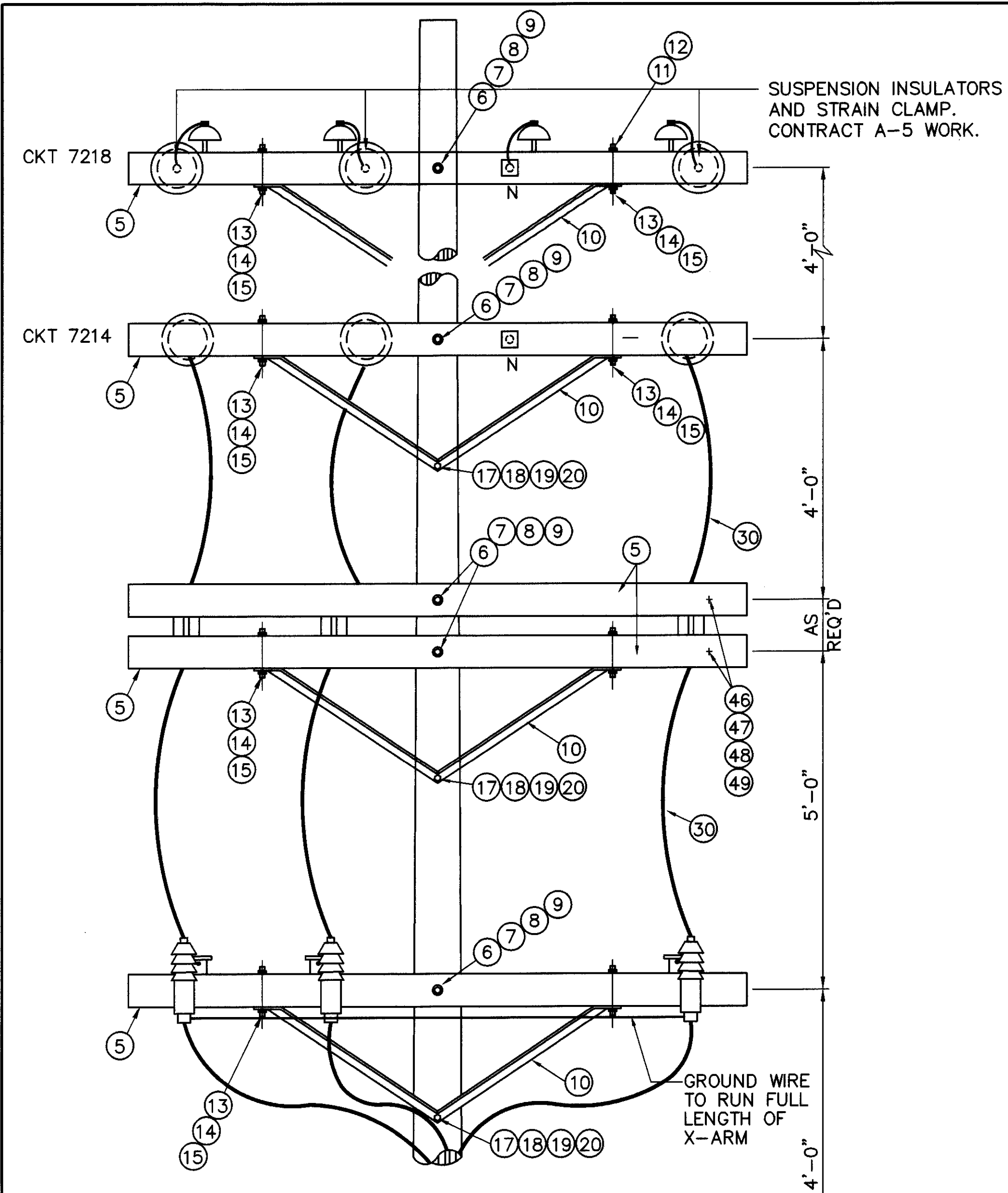


ITEM	QUAN.	DESCRIPTION
1	1	POLE, 50 FOOT CLASS I
2	1	POLE GROUNDING ASSEMBLY
3	1	POLE DOWNGUY
4		
5	8	CROSSARM, 3-5/8" x 4-5/8" x 10'-0"
6	3	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
7	6	WASHER, 3" x 3" x 1/4", 13/16" HOLE
8	6	WASHER, SPRING LOCK, 3/4"
9	3	NUT, 3/4"
10	12	BRACE, WOOD, 60" SPAN
11	12	BOLT, MACHINE, 1/2" x REQUIRED LENGTH
12	12	WASHER, 2" x 2" x 3/16", 9/16" HOLE
13	12	WASHER, ROUND 1-3/8" x 9/16" HOLE
14	12	WASHER, SPRING LOCK, 1/2"
15	12	NUT, 1/2"
16		
17	3	BOLT, DOUBLE ARMING, 5/8" x REQUIRED LENGTH
18	6	WASHER, ROUND 1-5/8" x 11/16" HOLE
19	6	WASHER, SPRING LOCK, 5/8"
20	6	NUT, 1/2"
21		
22	3	INSULATOR, SUSPENSION
23	4	CLAMP, STRAIN
24	3	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
25	10	WASHER, 3" x 3" x 1/4", 13/16" HOLE
26	6	WASHER, SPRING LOCK, 3/4"
27	7	NUT, 3/4"
28	3	NUT, EYE, 3/4"
29		
30	12	JUMPERS AS REQUIRED
31	3	CONNECTOR, COMPRESSION, AS REQUIRED
32	3	CONNECTOR, SPLIT BOLT, AS REQUIRED
33		
34		
35	3	SWITCH, CUTOUT WITH SOLID BLADE, 15KV
36	3	ARRESTOR, LIGHTNING, 12KV
37	3	OUTDOOR TERMINATOR
38		
39		
40		
41		
42		
43		
44		
45		
46	4	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
47	16	WASHER, 3" x 3" x 1/4", 13/16" HOLE
48	8	WASHER, SPRING LOCK, 3/4"
49	16	NUT, 3/4"
50		

14.4KV, 3-PHASE TERMINAL POLE ASSEMBLY  
NOT TO SCALE

① POLE 228N

I:\FAC\923134356\CONTRACT A-5\A5-E-36L.DWG SEP 08, 1997 12:04:36 PLOT SCALE = 12



NOTE:  
REFER TO CONSTRUCTION DETAILS  
ON SHEETS E-36A THROUGH E-36L

NEW 4-336.4 MCM ACSR  
TO EXISTING POLE 326.  
CONTRACT A-5 WORK.

NEW 4-336.4 MCM ACSR  
TO EXISTING POLE 325.  
CONTRACT A-5 WORK.

RISER PIPE TO BE  
5" SCHEDULE 40 PVC  
PROPERLY SECURED  
TO POLE

NOTE:  
RISER TO BE CENTERED  
ON LINE SIDE OF POLE.  
SPARE TO BE JUST  
OFF CENTER.

PVC SCHEDULE 40  
COUPLING ENCASED  
IN CONCRETE

SPARE DUCT TO BE  
CAPPED WITH  
SCH. 40 CAP.

24" UNLESS  
OTHERWISE  
SPECIFIED

TERMINAL POLE  
TO BE 50'-II

NOTE:  
WHEN TELEPHONE RISER IS INSTALLED ON THE  
SAME POLE IT MUST BE ADJACENT TO ELECTRIC  
RISER TO ALLOW ADEQUATE CLIMBING SPACE

14.4KV, 3-PHASE TERMINAL POLE ASSEMBLY  
NOT TO SCALE

① POLE 303N

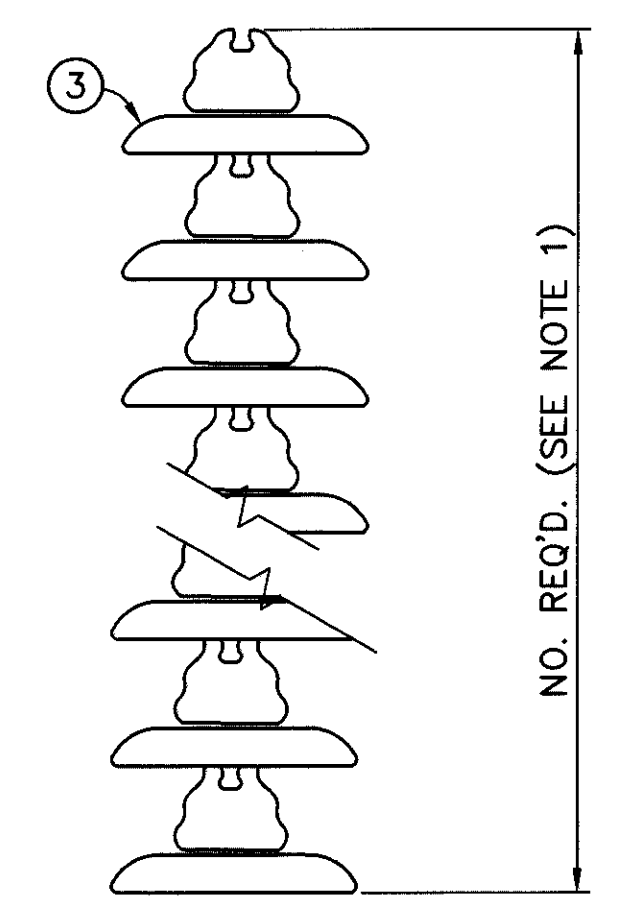
ITEM	QUAN.	DESCRIPTION
1	1	POLE, 50 FOOT CLASS I
2	1	POLE GROUNDING ASSEMBLY
3	3	POLE DOWN GUY
5	10	CROSSARM, 3-5/8" x 4-5/8" x 10'-0"
6	5	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
7	10	WASHER, 3" x 3" x 1/4", 13/16" HOLE
8	10	WASHER, SPRING LOCK, 3/4"
9	10	NUT, 3/4"
10	16	BRACE, WOOD, 60" SPAN
11	16	BOLT, MACHINE, 1/2" x REQUIRED LENGTH
12	16	WASHER, 2" x 2" x 3/16", 9/16" HOLE
13	16	WASHER, ROUND 1-3/8" x 9/16" HOLE
14	16	WASHER, SPRING LOCK, 1/2"
15	16	NUT, 1/2"
17	4	BOLT, DOUBLE ARMING, 5/8" x REQUIRED LENGTH
18	8	WASHER, ROUND 1-5/8" x 11/16" HOLE
19	8	WASHER, SPRING LOCK, 5/8"
20	8	NUT, 1/2"
21	8	INSULATOR, PINTYPE
22	9	INSULATOR, SUSPENSION
23	8	CLAMP, STRAIN
24	8	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
25	32	WASHER, 3" x 3" x 1/4", 13/16" HOLE
26	16	WASHER, SPRING LOCK, 3/4"
27	24	NUT, 3/4"
28	8	NUT, EYE, 3/4"
29		
30	12	JUMPERS AS REQUIRED
31	18	CONNECTOR, COMPRESSION, AS REQUIRED
32	3	CONNECTOR, SPLIT BOLT, AS REQUIRED
33		
34		
35	3	SWITCH, CUTOUT WITH SOLID BLADE, 15KV
36	3	ARRESTOR, LIGHTNING, 12KV
37	3	OUTDOOR TERMINATOR
38		
39		
40		
41		
42		
43		
44		
45		
46	4	BOLT, DOUBLE ARMING, 3/4" x REQUIRED LENGTH
47	16	WASHER, 3" x 3" x 1/4", 13/16" HOLE
48	8	WASHER, SPRING LOCK, 3/4"
49	16	NUT, 3/4"

I:\FAC\923134356\CONTRACT A-5\A5-E-36K.DWG SEP 08, 1997 12:05:29 PLOT SCALE = 12

E-36K

MELP CONSTRUCTION DETAILS

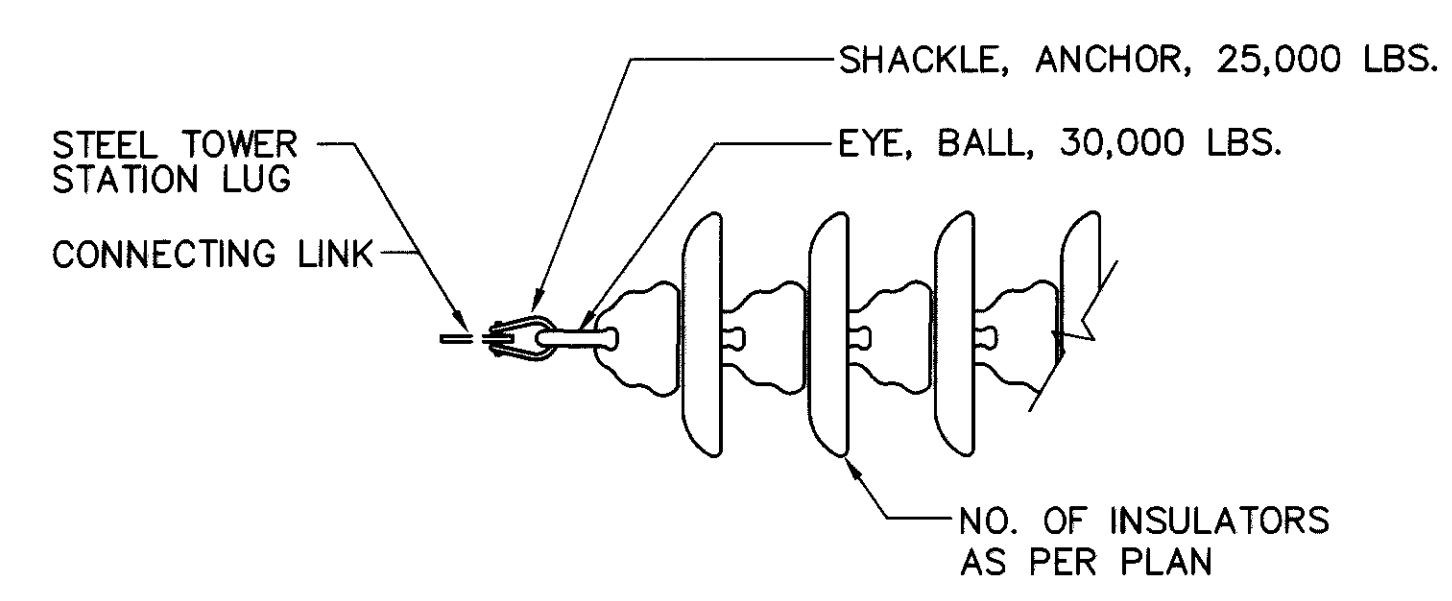




- NOTES:
- | KV CLASS | NO. OF INSULATORS |        |
|----------|-------------------|--------|
|          | VERT.             | HORIZ. |
| 15       | 2                 | 2      |
| 34.5     | 3                 | 4      |
| 69       | 5                 | 6      |
| 138      | 8                 | 10     |
| 345      | 18                | 20     |
  - INSULATORS TO BE BALL & SOCKET TYPE SUSPENSION DISCS 10" DIAMETER x 5 3/4" SPACING CONFORMING TO CURRENT RECOMMENDATIONS & STANDARDS OF JOINT E.E.I.-NEMA COMMITTEE & AMERICAN STANDARDS ASSOCIATION.
  - MAXIMUM DESIGN LOAD FOR THESE UNITS SHOULD NOT EXCEED ONE HALF THE RATED M&E STRENGTH.

**SUSPENSION INSULATOR ASSEMBLY**  
SCALE: NTS

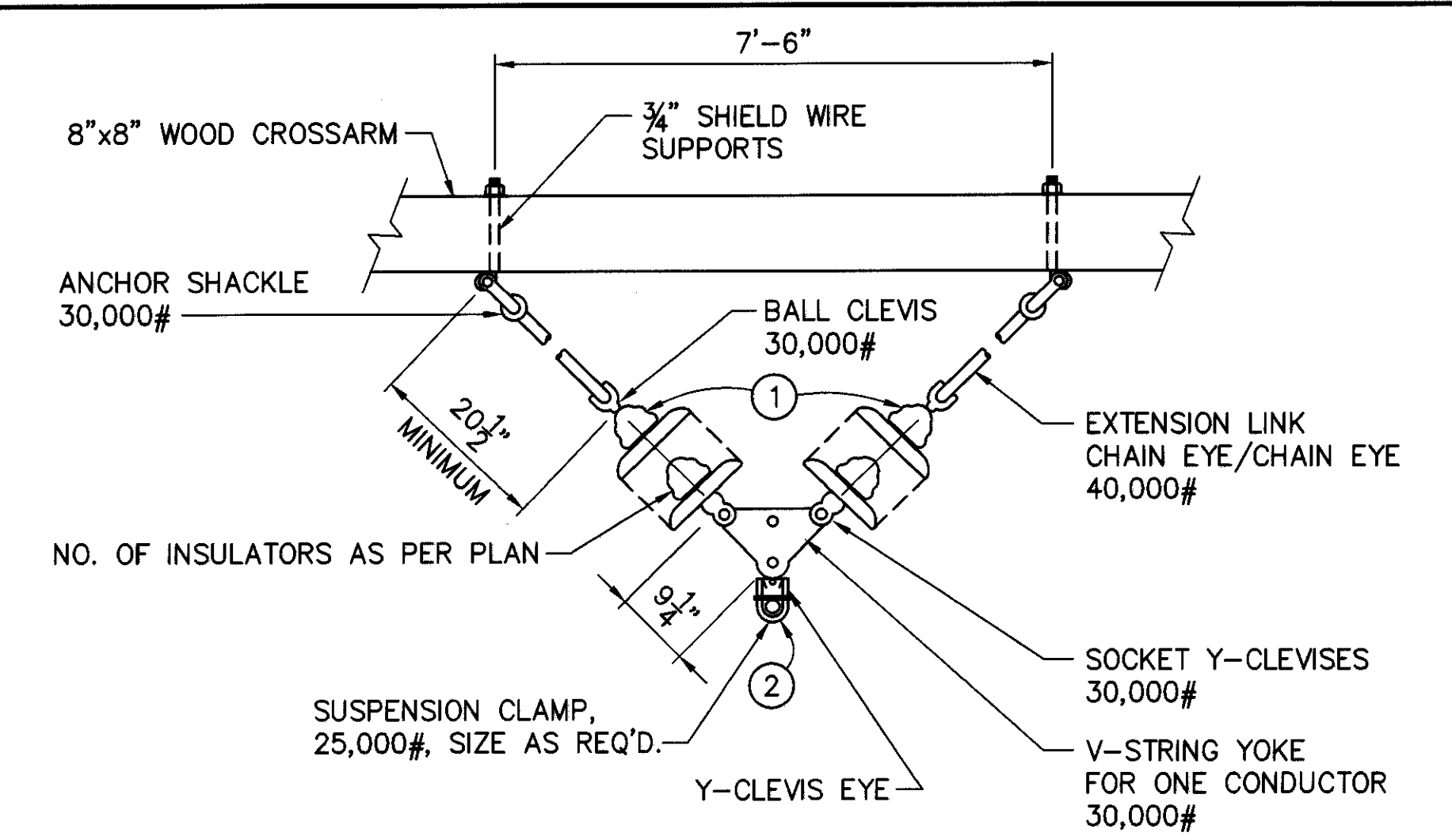
① POLE 325



ITEM	QUAN.	DESCRIPTION
1	3	69KV POLE BAND INSULATOR ASSEMBLY
2	6	SHACKLE ANCHOR
3	6	HORIZONTAL SUSPENSION INSULATOR ASSEMBLY - 69KV
4	6	STRAIN CLAMP

**TOWER FITTING**  
SCALE: NTS

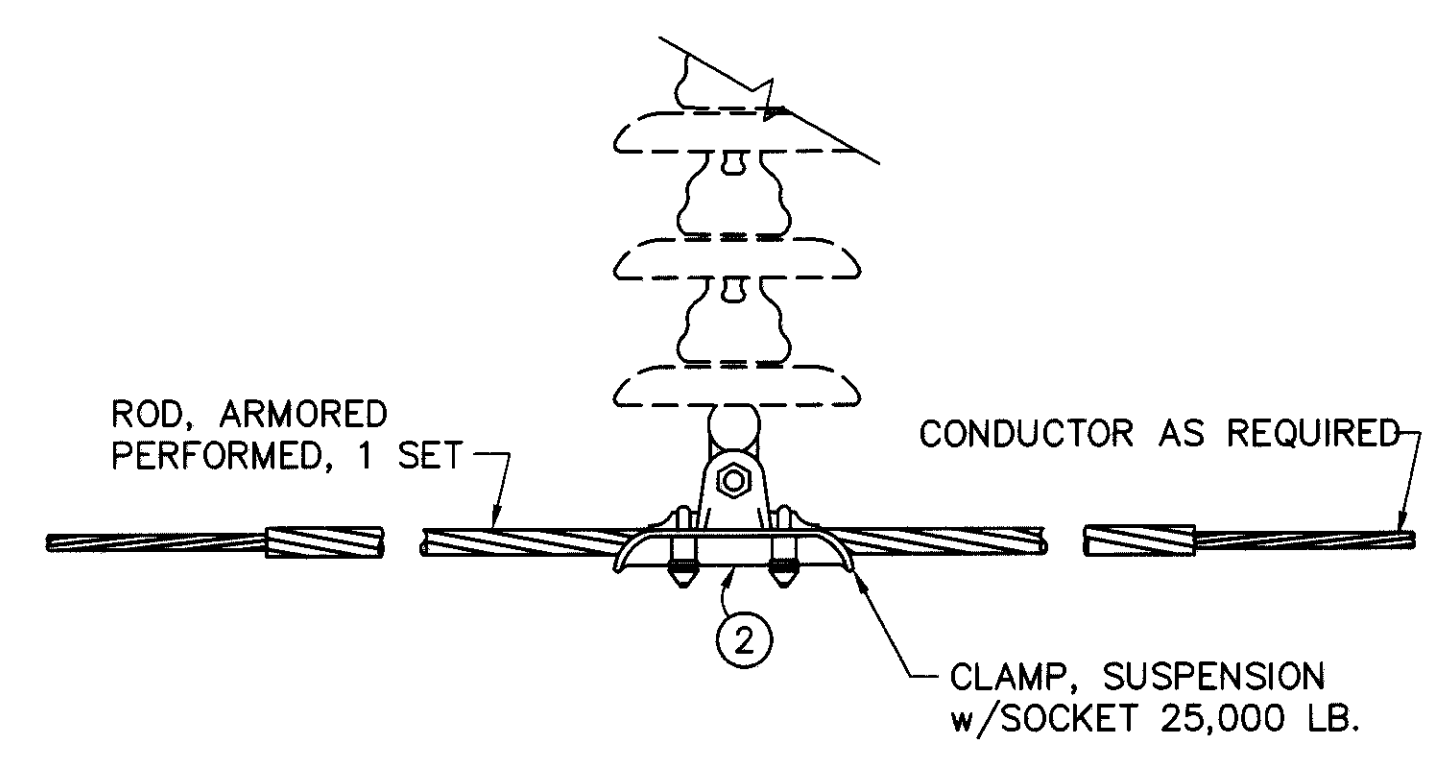
④ POLE 325, 321, 225



ITEM	QUAN.	DESCRIPTION
1		EXISTING V-STRING SUSPENSION INSULATOR ASSEMBLY
2	3	SUSPENSION CLAMP - 556.5 MCM ACSR

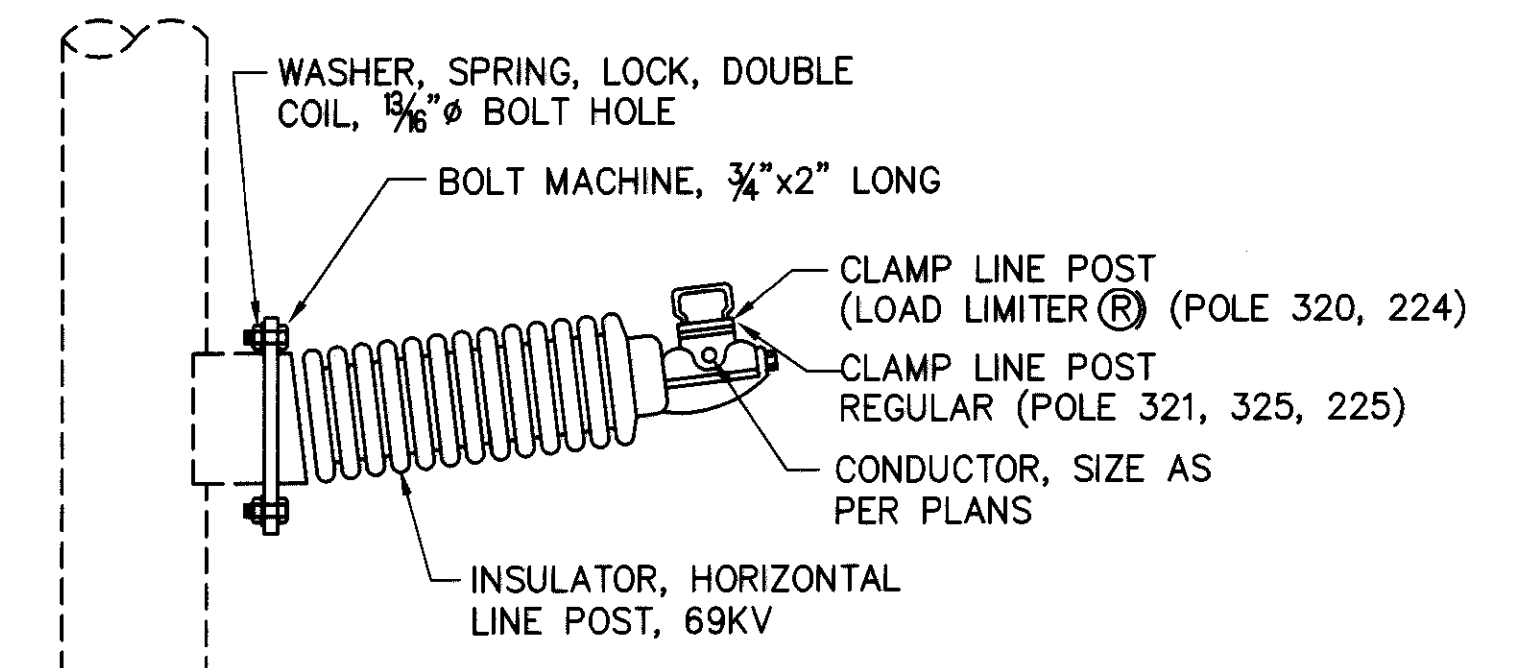
**EXISTING ONE-CONDUCTOR-SINGLE V-STRING**  
SCALE: NTS

⑥ POLE 324, 323, 322 - CONDUCTOR SUPPORT (CKT 14056)



**SUSPENSION CLAMP WITH ARMOR RODS**  
SCALE: NTS

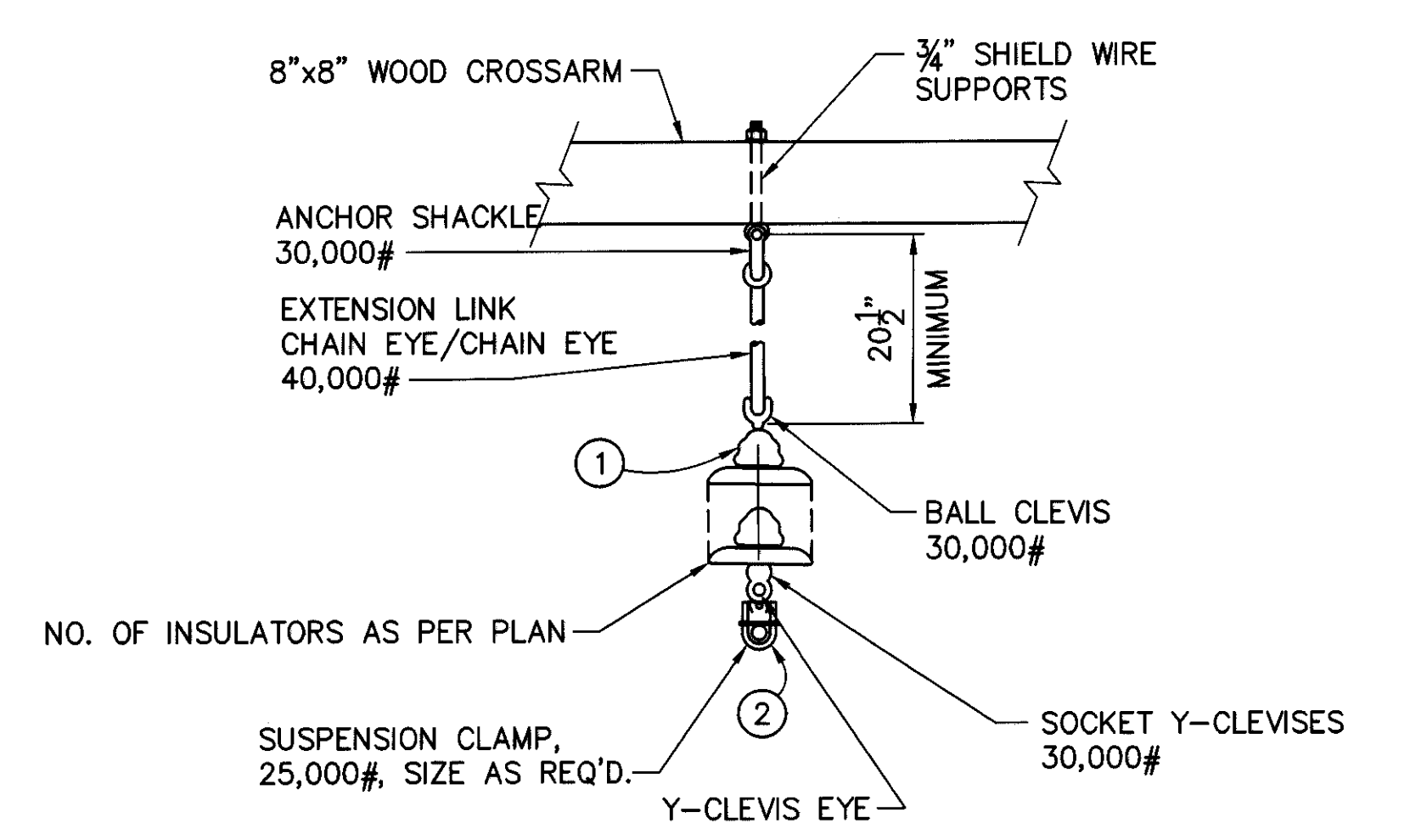
② POLE 321, 225



- NOTES:
- LINE ANGLES FOR THIS TYPE OF CONDUCTOR SUPPORT ARE LIMITED TO 30 DEGREES.
  - ON ANGLE STRUCTURES THE TANGENT LOAD LIMITER SHALL BE REPLACED WITH AN INSIDE OR OUTSIDE ANGLE LOAD LIMIT DEPENDING UPON LINE ANGLE.

**HORIZONTAL POST INSULATOR MOUNTING ASSEMBLY (69KV) SINGLE CIRCUIT STEEL POLE OR TOWER**  
SCALE: NTS

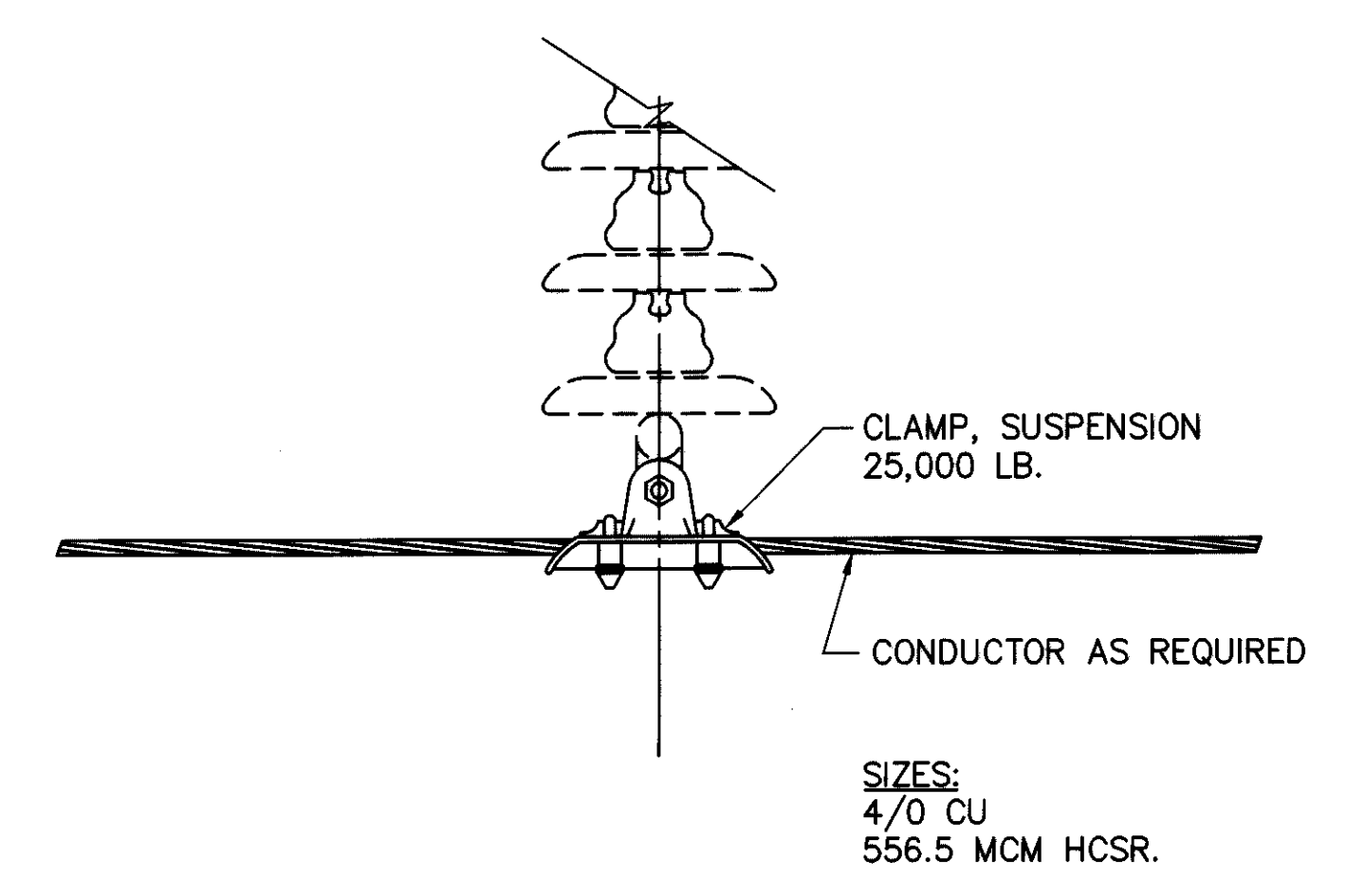
⑤ POLE 321, 225



ITEM	QUAN.	DESCRIPTION
1		EXISTING VERTICAL SUSPENSION INSULATOR ASSEMBLY
2	3	SUSPENSION CLAMP - 556.5 MCM ACSR

**EXISTING ONE-CONDUCTOR-SINGLE SUSPENSION**  
SCALE: NTS

⑦ POLE 324, 323, 322 - CONDUCTOR SUPPORT (CKT14056)

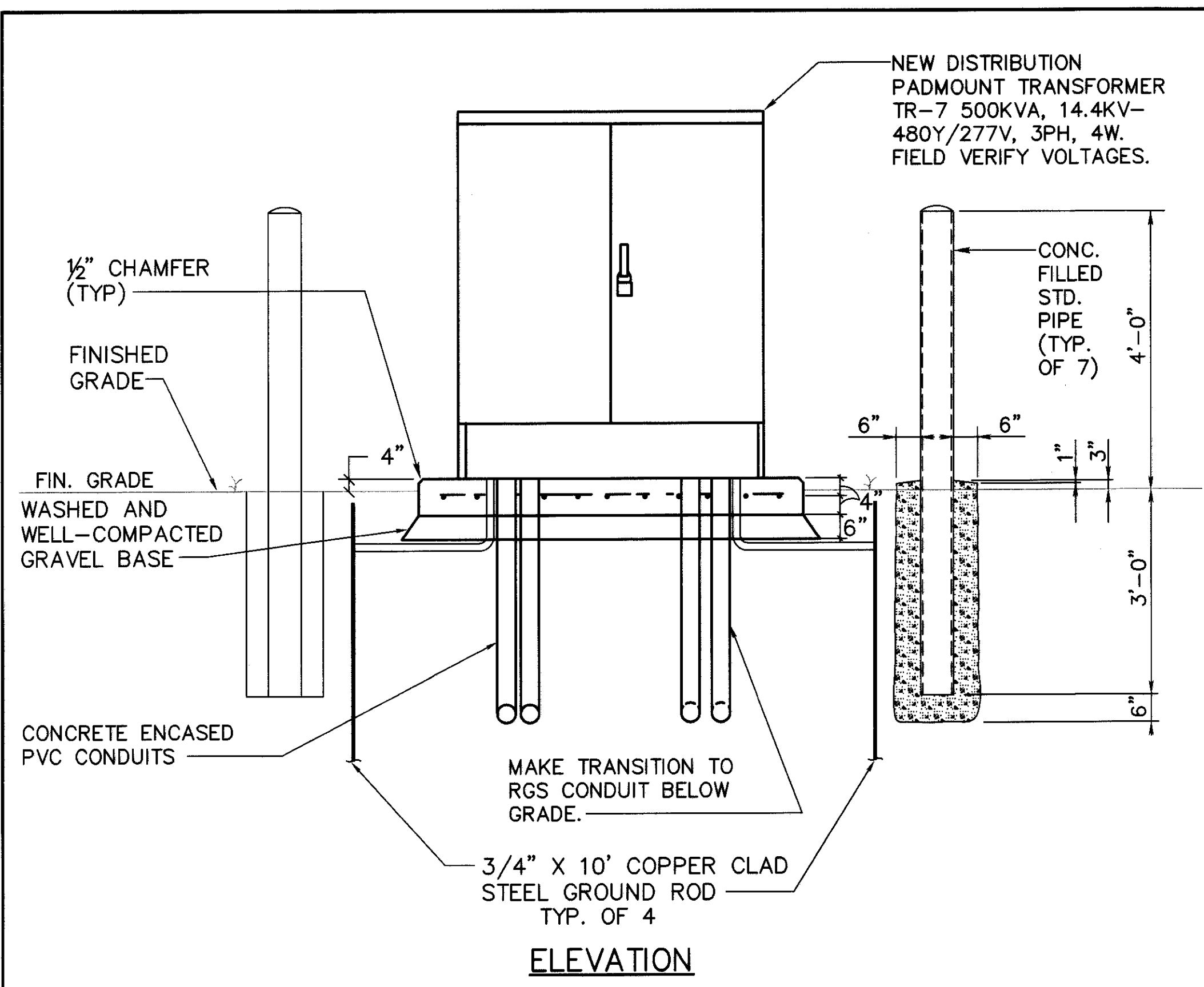


**SUSPENSION CLAMP**  
SCALE: NTS

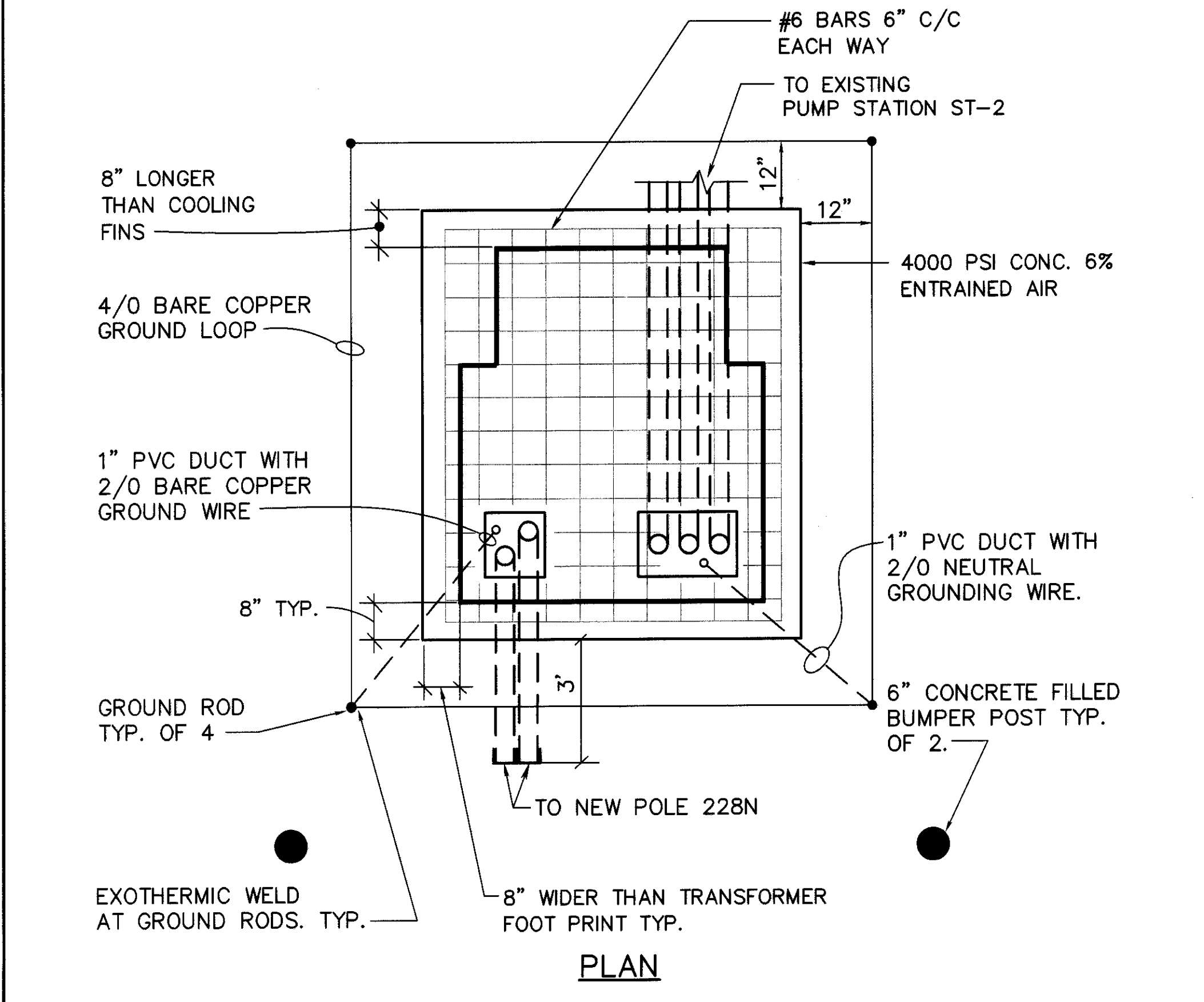
③ POLE 321 & 325

SIZES:  
4/0 CU  
556.5 MCM HCSR.

I:\FAC\92313143\56\CONTRACT A-5\A5-E-38L.DWG SEP 03, 1997 07:48:29 PLOT SCALE = 1



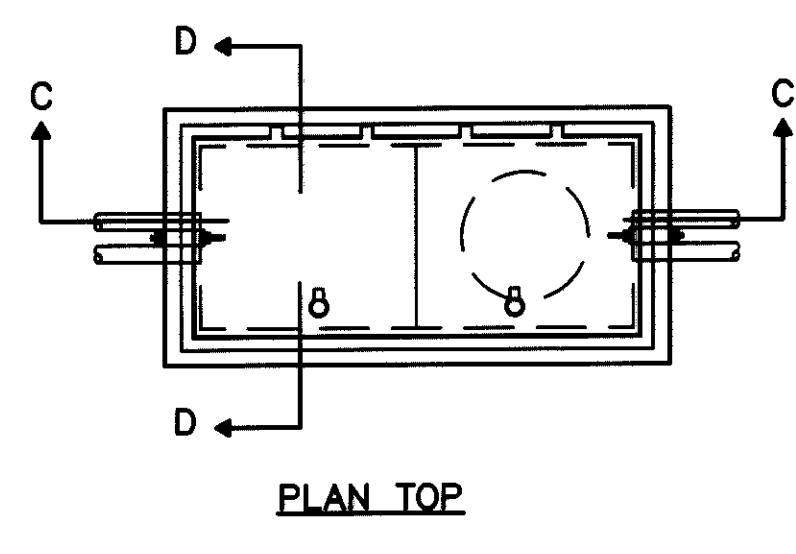
**ELEVATION**



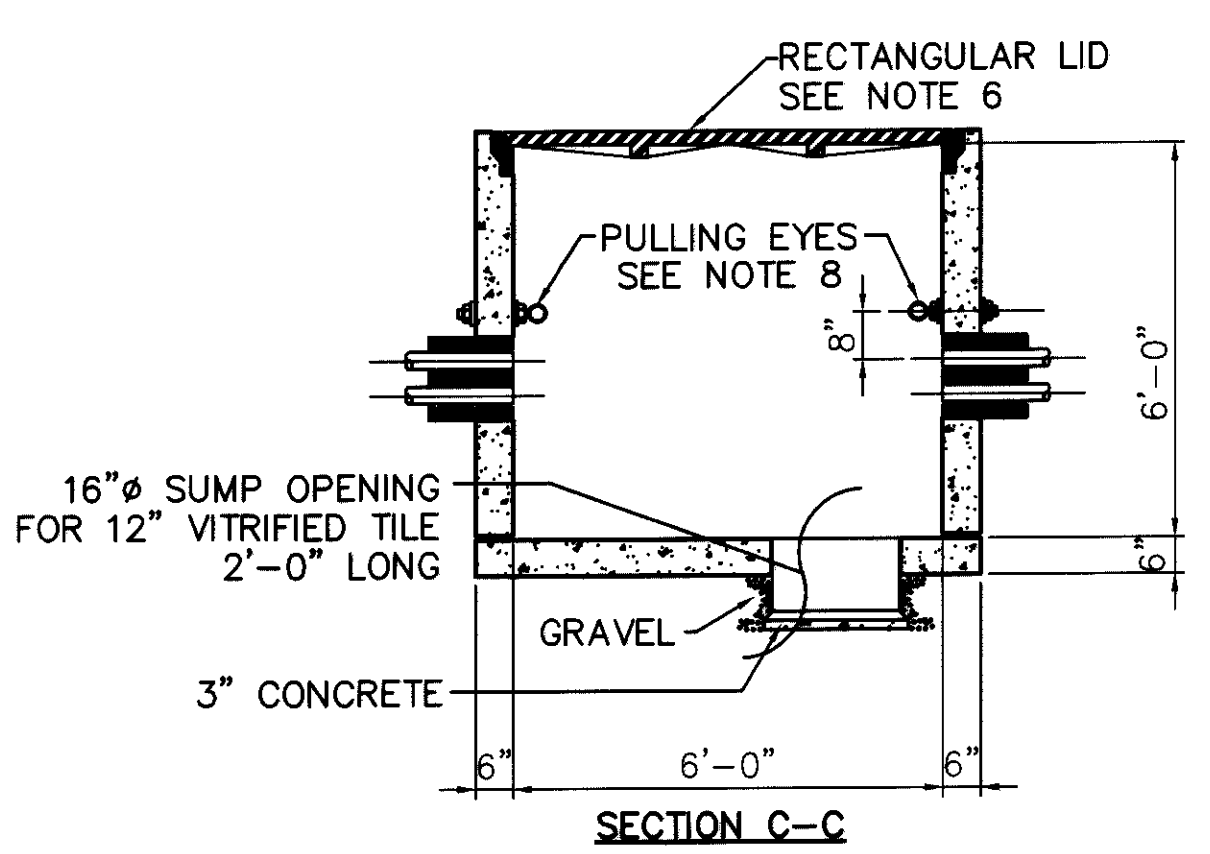
**PLAN**

**TR-7 TRANSFORMER PAD DETAILS**  
SCALE: NTS

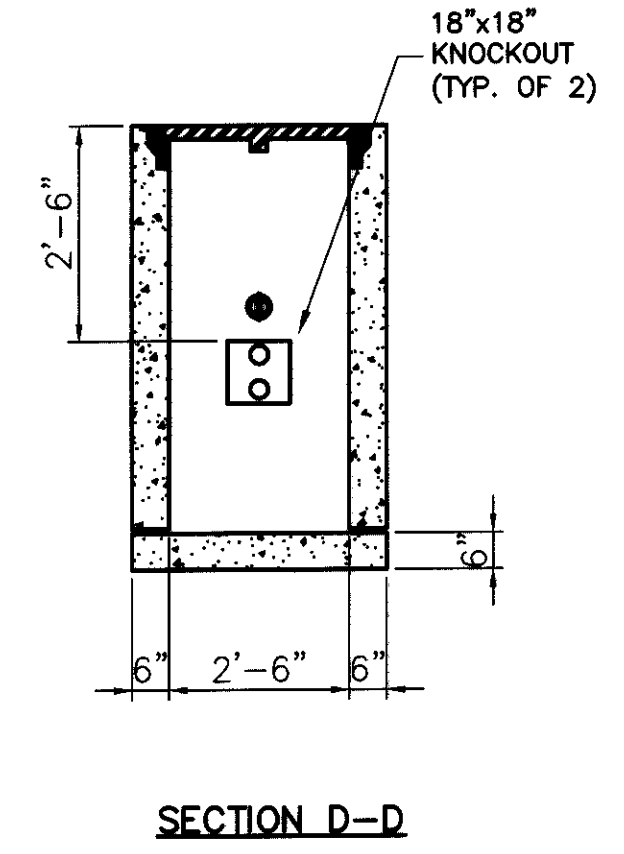
- NOTES:**
- PULL IN IRONS TO BE OPPOSITE AND ONE FOOT BELOW EACH WINDOW. IN NO CASE SHOULD THE PULL IN IRON BE CLOSER THAN SIX INCHES TO A JOINT. PULL IN IRONS SHALL BE LINE MATERIAL CO. STYLE NO. DU 2T3, JOSLYN MFG. CAT# J-8119 OR APPROVED EQUAL.
  - LIVE LOAD DESIGN - AASHTO HS-20-44
  - CONCRETE STRENGTH - 5,000 P.S.I.
  - NUMBER OF CONDUIT TO BE AS SPECIFIED
  - RECTANGULAR LID TO BE NEENAH FOUNDRY COMPANY CATALOG NUMBER R-6661-VII LIGHT DUTY COVER.
  - CONCRETE SHALL BE AS SPECIFIED IN ITEM 499 AND 604 OF COLUMBUS CONSTRUCTION AND MATERIALS SPECIFICATION.
  - PULLING EYES SHALL BE LINE MATERIAL CO. STYLE NO. DU2T3 OR APPROVED EQUAL.



**PLAN TOP**

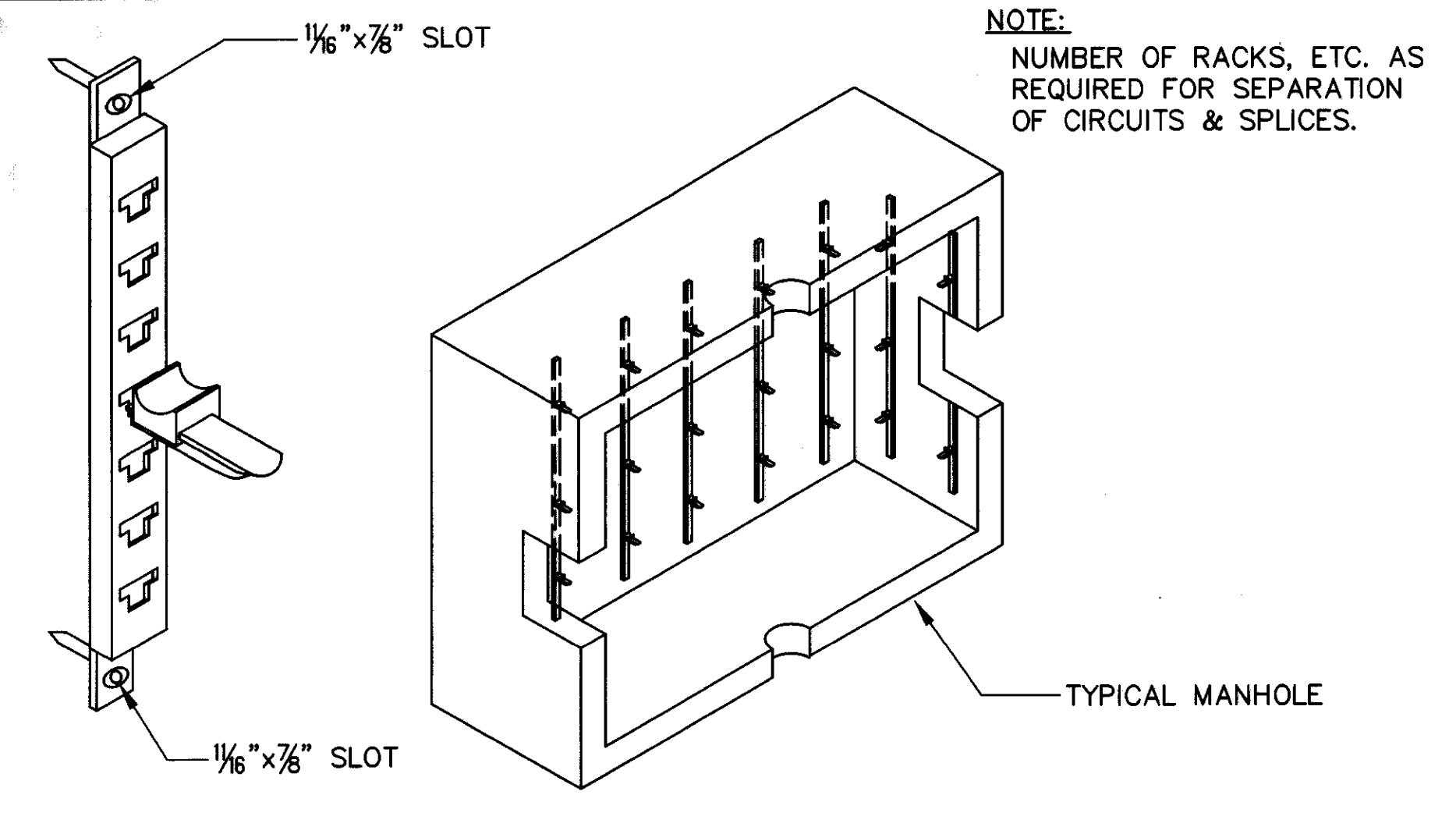


**SECTION C-C**



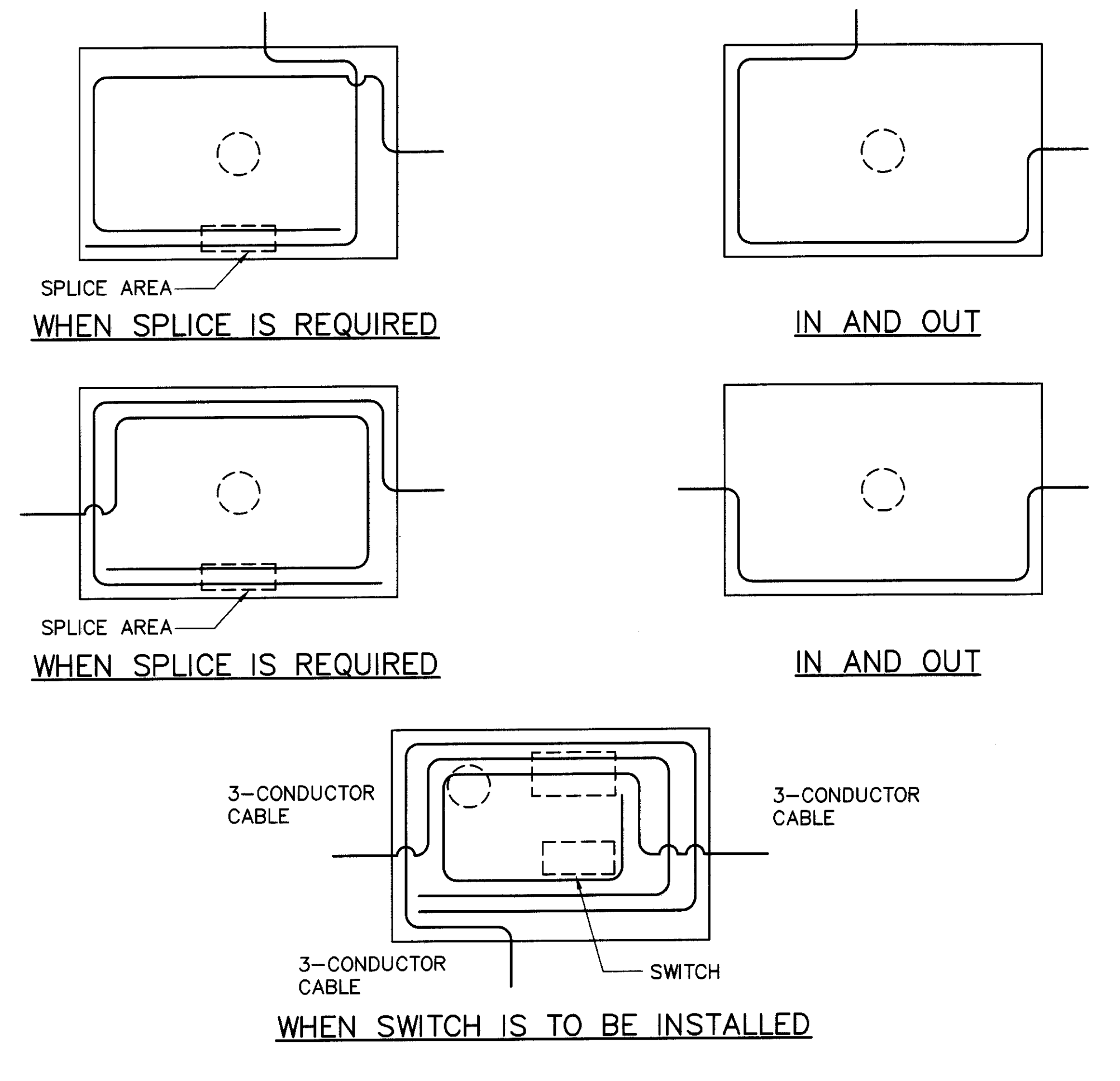
**SECTION D-D**

**PULLBOX**  
SCALE: NTS



**MANHOLE AND VAULT CABLE RACK DETAIL**  
NOT TO SCALE

③ MANHOLE 40, 41, 42, 43, 58



**MANHOLE & VAULT PRIMARY CABLE PLACEMENT**  
NOT TO SCALE

④ MANHOLES 40, 41, 42, 43, 58

I:\FAC\92313143\95\CONTRACT A-3\A5-E-37.DWG SEP 03, 1997 07:50:38 PLOT SCALE = 12



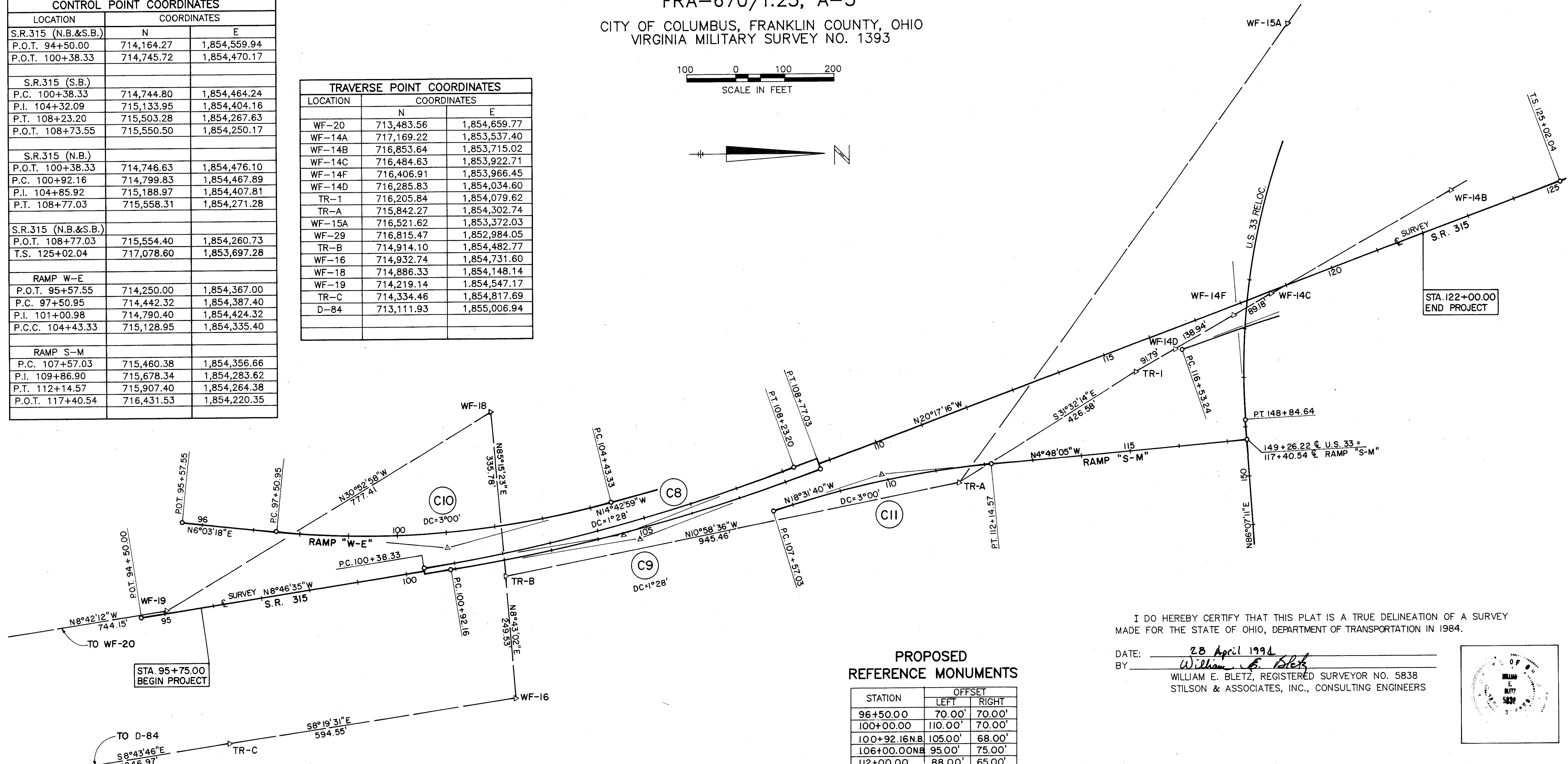
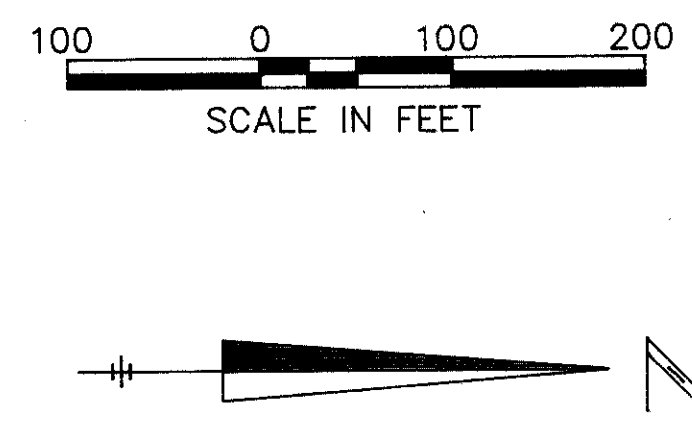
NOTE:  
CONTROL MONUMENT DATA BY THOMAS ENGINEERING AND SURVEYING COMPANY,  
COPIES OF WHICH ARE AVAILABLE AT CITY OF COLUMBUS DIVISION OF ENGINEERING  
109 NORTH FRONT STREET, 3RD FLOOR, COLUMBUS, OHIO 43215.

### CENTERLINE SURVEY PLAT FRA-670/1.25, A-5

CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO  
VIRGINIA MILITARY SURVEY NO. 1393

CONTROL POINT COORDINATES		
LOCATION	COORDINATES	
	N	E
<b>S.R.315 (N.B.&amp;S.B.)</b>		
P.O.T. 94+50.00	714,164.27	1,854,559.94
P.O.T. 100+38.33	714,745.72	1,854,470.17
<b>S.R.315 (S.B.)</b>		
P.C. 100+38.33	714,744.80	1,854,464.24
P.I. 104+32.09	715,133.95	1,854,404.16
P.T. 108+23.20	715,503.28	1,854,267.63
P.O.T. 108+73.55	715,550.50	1,854,250.17
<b>S.R.315 (N.B.)</b>		
P.O.T. 100+38.33	714,746.63	1,854,476.10
P.C. 100+92.16	714,799.83	1,854,467.89
P.I. 104+85.92	715,188.97	1,854,407.81
P.T. 108+77.03	715,558.31	1,854,271.28
<b>S.R.315 (N.B.&amp;S.B.)</b>		
P.O.T. 108+77.03	715,554.40	1,854,260.73
T.S. 125+02.04	717,078.60	1,853,697.28
<b>RAMP W-E</b>		
P.O.T. 95+57.55	714,250.00	1,854,367.00
P.C. 97+50.95	714,442.32	1,854,387.40
P.I. 101+00.98	714,790.40	1,854,424.32
P.C.C. 104+43.33	715,128.95	1,854,335.40
<b>RAMP S-M</b>		
P.C. 107+57.03	715,460.38	1,854,356.66
P.I. 109+86.90	715,678.34	1,854,283.62
P.T. 112+14.57	715,907.40	1,854,264.38
P.O.T. 117+40.54	716,431.53	1,854,220.35

TRAVERSE POINT COORDINATES		
LOCATION	COORDINATES	
	N	E
WF-20	713,483.56	1,854,659.77
WF-14A	717,169.22	1,853,537.40
WF-14B	716,853.64	1,853,715.02
WF-14C	716,484.63	1,853,922.71
WF-14F	716,406.91	1,853,966.45
WF-14D	716,285.83	1,854,034.60
TR-1	716,205.84	1,854,079.62
TR-A	715,842.27	1,854,302.74
WF-15A	716,521.62	1,853,372.03
WF-29	716,815.47	1,852,984.05
TR-B	714,914.10	1,854,482.77
WF-16	714,932.74	1,854,731.60
WF-18	714,886.33	1,854,148.14
WF-19	714,219.14	1,854,547.17
TR-C	714,334.46	1,854,817.69
D-84	713,111.93	1,855,006.94



CURVE DATA				
	S.R.315 (S.B.)	S.R.315 (N.B.)	RAMP "W-E"	RAMP "S-M"
	C8	C9	C10	C11
P.I.	104+32.09	104+85.92	101+00.98	109+86.90
Δ	11° 30' 41"	11° 30' 41"	20° 46' 17"	13° 43' 35"
D	1° 28' 00"	1° 28' 00"	3° 00' 00"	3° 00' 00"
R	3906.53'	3906.53'	1909.86'	1909.86'
L	784.87'	784.87'	692.38'	457.54'
T	393.76'	393.76'	350.03'	229.87'
E	19.79'	19.79'	31.81'	13.78'

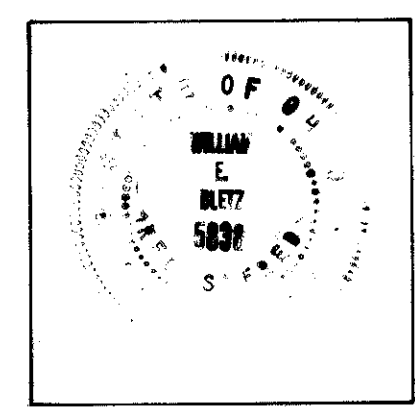
#### PROPOSED REFERENCE MONUMENTS

STATION	OFFSET	
	LEFT	RIGHT
96+50.00	70.00'	70.00'
100+00.00	110.00'	70.00'
100+92.16 N.B.	105.00'	68.00'
106+00.00 N.B.	95.00'	75.00'
112+00.00	88.00'	65.00'
116+00.00	60.00'	70.00'
121+00.00	65.00'	100.00'

NOTE  
REFERENCE MONUMENTS WILL BE SET AFTER  
CONSTRUCTION BY A REGISTERED SURVEYOR  
CONTRACTED BY THE GENERAL CONTRACTOR  
(ITEM 604) SEE MONUMENT DETAIL MC-1.

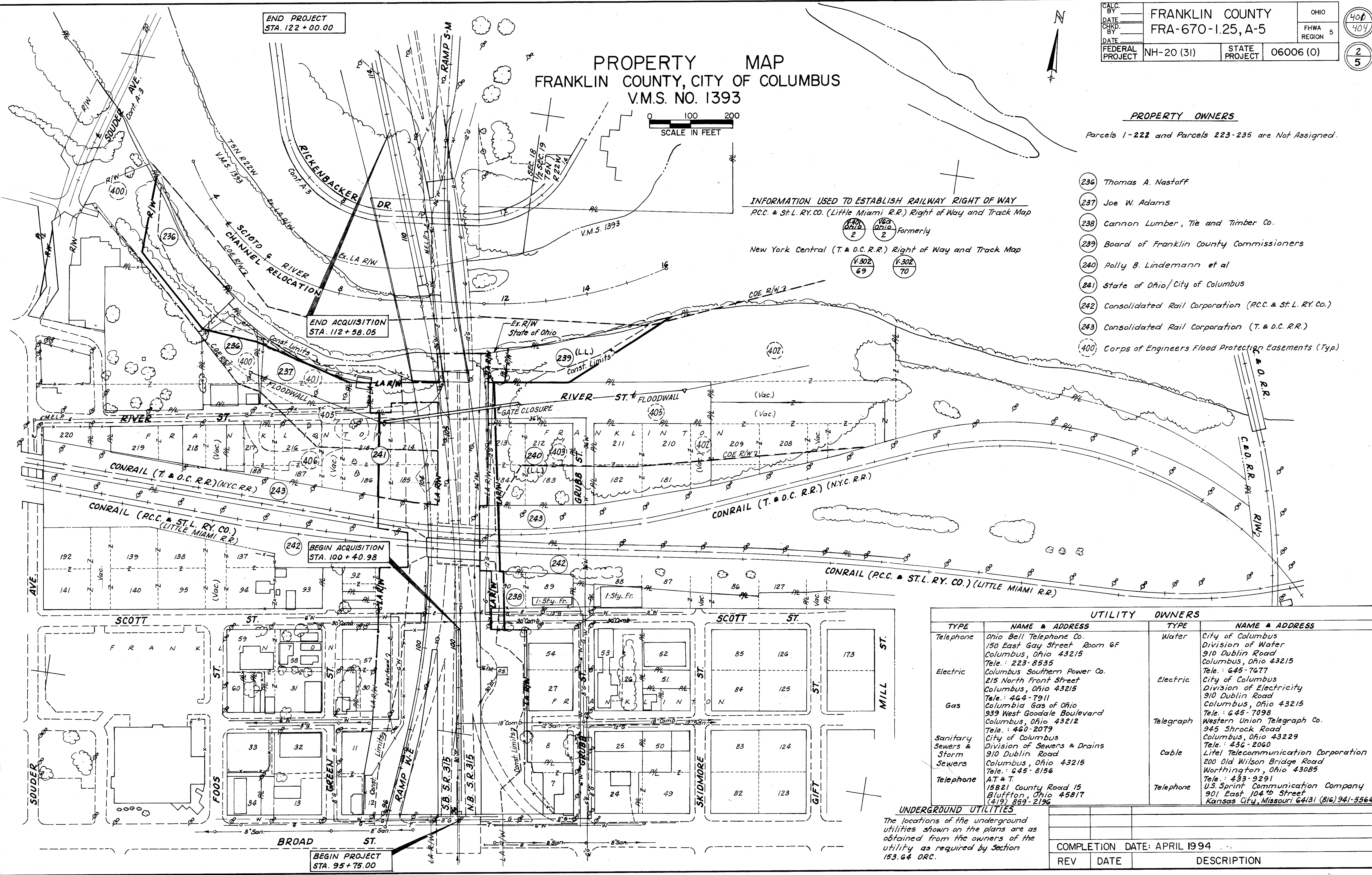
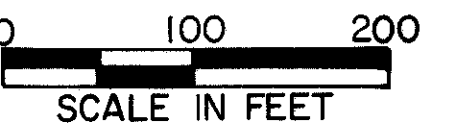
I DO HEREBY CERTIFY THAT THIS PLAT IS A TRUE DELINEATION OF A SURVEY  
MADE FOR THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION IN 1984.

DATE: 28 April 1994  
BY: William E. Bletz  
WILLIAM E. BLETZ, REGISTERED SURVEYOR NO. 5838  
STILSON & ASSOCIATES, INC., CONSULTING ENGINEERS



RECEIVED \_\_\_\_\_ AT \_\_\_\_\_  
RECORDED \_\_\_\_\_  
PLAT BOOK \_\_\_\_\_ PAGES \_\_\_\_\_  
SIGNED \_\_\_\_\_  
RECORDER, FRANKLIN COUNTY, OHIO

**PROPERTY MAP**  
FRANKLIN COUNTY, CITY OF COLUMBUS  
V.M.S. NO. 1393



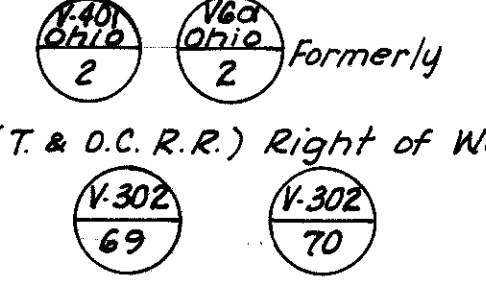
**PROPERTY OWNERS**

Parcels 1-222 and Parcels 223-235 are Not Assigned.

- (236) Thomas A. Nastoff
- (237) Joe W. Adams
- (238) Cannon Lumber, Tie and Timber Co.
- (239) Board of Franklin County Commissioners
- (240) Polly B. Lindemann et al
- (241) State of Ohio/City of Columbus
- (242) Consolidated Rail Corporation (P.C.C. & St. L. Ry. Co.)
- (243) Consolidated Rail Corporation (T. & O.C. R.R.)
- (400) Corps of Engineers Flood Protection Easements (Typ)

**INFORMATION USED TO ESTABLISH RAILWAY RIGHT OF WAY**  
P.C.C. & St. L. Ry. Co. (Little Miami R.R.) Right of Way and Track Map

New York Central (T. & O.C. R.R.) Right of Way and Track Map



UTILITY OWNERS			
TYPE	NAME & ADDRESS	TYPE	NAME & ADDRESS
Telephone	Ohio Bell Telephone Co. 150 East Gay Street Room 6F Columbus, Ohio 43215 Tele: 223-8535	Water	City of Columbus Division of Water 910 Dublin Road Columbus, Ohio 43215 Tele: 645-7677
Electric	Columbus Southern Power Co. 215 North Front Street Columbus, Ohio 43215 Tele: 464-7911	Electric	City of Columbus Division of Electricity 910 Dublin Road Columbus, Ohio 43215 Tele: 645-7098
Gas	Columbia Gas of Ohio 939 West Goodale Boulevard Columbus, Ohio 43212 Tele: 460-2079	Telegraph	Western Union Telegraph Co. 945 Shrock Road Columbus, Ohio 43229 Tele: 436-2060
Sanitary Sewers & Storm Sewers	City of Columbus Division of Sewers & Drains 910 Dublin Road Columbus, Ohio 43215 Tele: 645-8156	Cable	Litel Telecommunication Corporation 200 Old Wilson Bridge Road Worthington, Ohio 43085 Tele: 433-9291
Telephone	A.T. & T. 15821 County Road 15 Bluffton, Ohio 45817 (419) 859-2196	Telephone	U.S. Sprint Communication Company 901 East 104th Street Kansas City, Missouri 64131 (816) 941-5564

**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.

COMPLETION DATE: APRIL 1994		
REV	DATE	DESCRIPTION



P.I.D. NO. 4668

TOTAL NUMBER OF  
 8 OWNERSHIPS  
 0 TOTAL TAKES  
 1 OWNERSHIPS WITH STRUCTURES INVOLVED  
 0 OWNERSHIPS WITH "P" ITEMS

SUMMARY OF ADDITIONAL RIGHT OF WAY

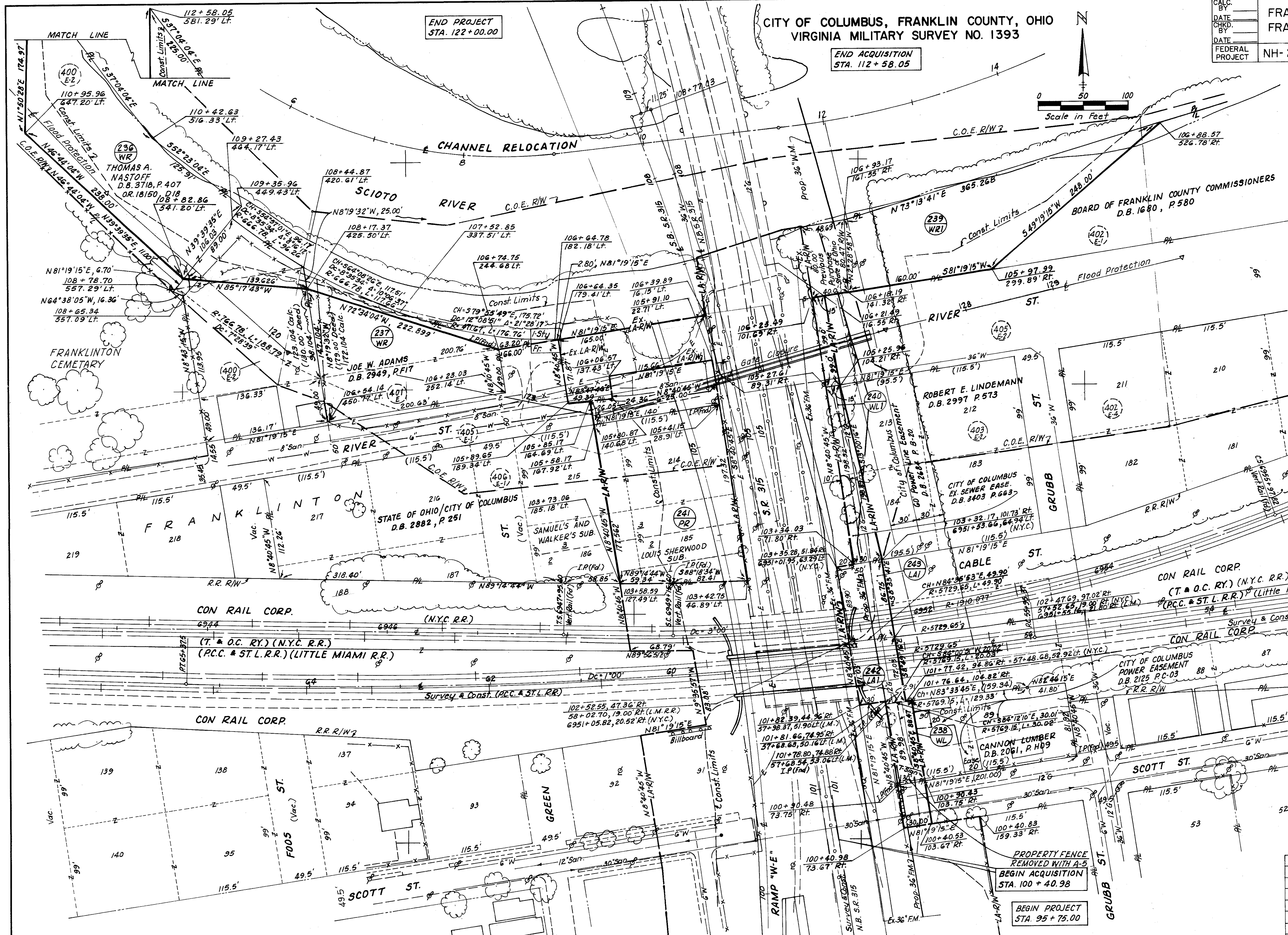
PARCEL	OWNER	SHEET NO.	TAXING DIST AUDITOR'S PARCEL NO.	OWNERS RECORD		RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE		TYPE FUND	REMARKS AND PERSONALTY	AS ACQUIRED		
				BOOK	PAGE							LEFT	RIGHT			BOOK	PAGE	
1-222	Not Used																	
223-235	Not Used																	
236-WR	Thomas A. Nastoff	4	3807	3718 18150	407 D18	0.672 Ac.* 5.088 Ac.	—	0.826 Ac.	—	0.826 Ac.		4.934 Ac.		IR	Right of Access to Scioto River Relocation. *Calculated Total Area, 4 Parcels			
237-WR	Joe W. Adams	4	66459	2949	F17	0.052 Ac. 0.507 Ac.*	—	0.056 Ac.	—	0.056 Ac.	** Yes	0.451 Ac.		IR	Right of Access to Scioto River Relocation *Calculated ** 1 Story Frame Business			
238-WL	Cannon Lumber, Tie and Timber Co.	4	66322	2061	H09	0.3942 Ac.	—	0.061 Ac.	—	0.061 Ac.			0.3332 Ac.	F				
239-WR1	Board of Franklin County Commissioners	4	66460	1680	580	5.620 Ac.*	—	0.568 Ac.	—	0.568 Ac.			Ex. Land Locked 5.052 Ac.	IR	*0.12 Ac. Acquired from Original 5.74 Ac. Tract for Highway Purposes in 1972.			
240-WL1	Polly B. Lindemann, Robert E. Lindemann, Trustee Emily B. Rutherford, Robert B. Rutherford	4	32962 32963	2997 2985	573 74-77	41909 S.F.*	—	4.462 S.F.	—	4.462 S.F.			Ex. Land Locked 37447 S.F.	IR	*3966 S.F. Acquired from Original 45,875 S.F. Tract for Highway Purposes in 1974, Including 1983 S.F. Sewer Easement. Parcel 32962 Take 2603 S.F., Parcel 32963 Take 1859 S.F.			
241-PR	State of Ohio / City of Columbus	4	3806	2882	251	1.844 Ac.	—	0.605 Ac.	—	0.605 Ac.		1.239 Ac.		IR	241-PR w/Reservations, Purchased 3-22-68, Total Ac. Access Note-(Acquiring Access Point Only) Purchasing Access Right from Columbus			
242-LA1	Consolidated Rail Corporation (P.C. & St. L. RY. Co.) (Little Miami Railroad Co.) (Columbus & Xenia Railroad Co.)	5	57603	3714	79	—	—	0.081 Ac.	—	0.081 Ac.		—	—	F				
243-LA1	Consolidated Rail Corporation (T. & O.C. R.R.) (Penn. Central Corp.) (N.Y.C. R.R.)	5	—	1685	543	—	—	0.098 Ac.	—	0.098 Ac.		—	—	F				

PLAN COMPLETION DATE: APRIL 1994  
 REV DATE DESCRIPTION

CITY OF COLUMBUS, FRANKLIN COUNTY, OHIO  
 VIRGINIA MILITARY SURVEY NO. 1393

CALC. BY	FRANKLIN COUNTY	OHIO
DATE	FRA-670-1.25, A-5	FHWA REGION 5
CHKD. BY		
DATE		
FEDERAL PROJECT	NH-20(31)	STATE PROJECT 06006(O)

403  
404  
4  
5



- (236) THOMAS A. NASTOFF  
T.B.A. 0.826
- (237) JOE W. ADAMS  
T.B.A. 0.056 Ac.
- (238) CANNON LUMBER, TIE and TIMBER CO.  
T.B.A. 0.061 Ac.
- (239) BOARD OF FRANKLIN COUNTY COMMISSIONERS  
T.B.A. 0.568 Ac.
- (240) ROBERT E. LINDEMANN ETAL  
T.B.A. 4.462 S.F.
- (241) STATE OF OHIO/CITY OF COLUMBUS  
T.B.A. 0.605 Ac.
- (242) CONSOLIDATED RAIL CORP (P.C. & ST. L.R.R.)  
T.B.A. 0.081 Ac.
- (243) CONSOLIDATED RAIL CORP (T. & O.C. R.R.)  
T.B.A. 0.098 Ac.
- (400) CORPS OF ENGINEERS FLOOD PROTECTION EASEMENTS (TYP)

NOTE: All Stations and Offsets are from the  $\pm$  Survey and Construction, N.B. S.R. 315 unless otherwise noted.

REV.	DATE	DESCRIPTION

S.R. 315 STA. 100+00 TO STA. 108+00 R/W



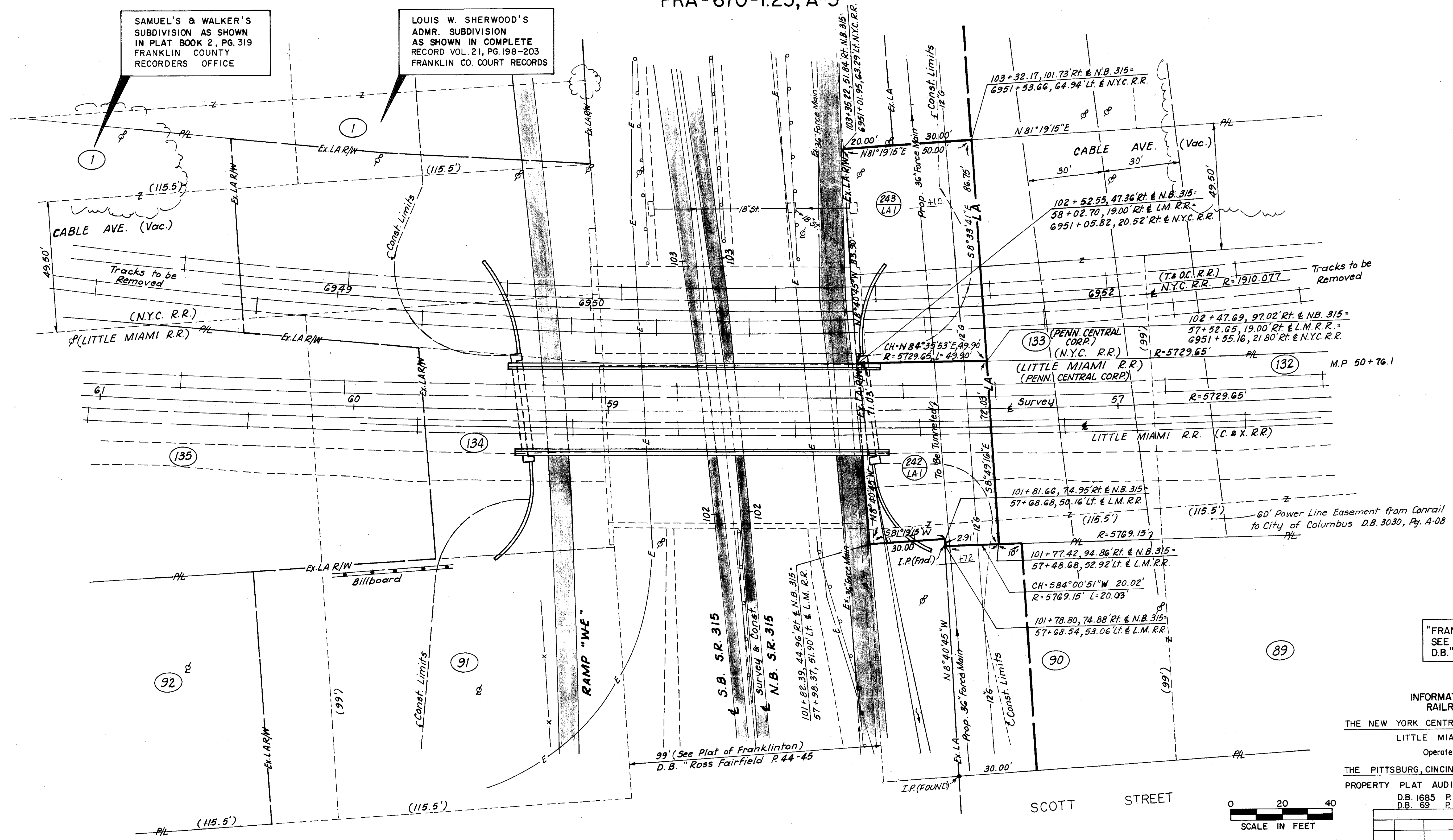
PROPERTY PLAT  
**CONSOLIDATED RAIL CORPORATION**  
 (PENN CENTRAL CORPORATION)  
 (LITTLE MIAMI RAILROAD CO.)  
 CITY OF COLUMBUS; FRANKLIN COUNTY, OHIO  
 VIRGINIA MILITARY SURVEY NO. 1393  
 FRA-670-1.25, A-5



CALC. BY	FRANKLIN COUNTY	OHIO
CHKD. BY	FRA-670-1.25, A-5	FHWA REGION 5
DATE		
FEDERAL PROJECT	NH-20 (31)	STATE PROJECT 06006 (0)

SAMUEL'S & WALKER'S  
 SUBDIVISION AS SHOWN  
 IN PLAT BOOK 2, PG. 319  
 FRANKLIN COUNTY  
 RECORDERS OFFICE

LOUIS W. SHERWOOD'S  
 ADMR. SUBDIVISION  
 AS SHOWN IN COMPLETE  
 RECORD VOL. 21, PG. 198-203  
 FRANKLIN CO. COURT RECORDS

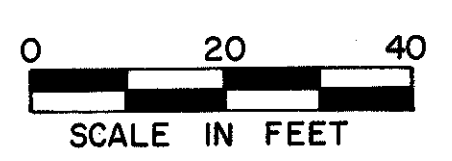


"FRANKLINTON SUBDIVISION"  
 SEE PLAT OF FRANKLINTON  
 D.B. "ROSS FAIRFIELD" P.44-45

INFORMATION USED TO ESTABLISH  
 RAILROAD RIGHT OF WAY

THE NEW YORK CENTRAL RAILROAD COMPANY  
 LITTLE MIAMI RAILROAD COMPANY  
 Operated by

THE PITTSBURG, CINCINNATI, CHICAGO & ST. LOUIS RY. CO.  
 PROPERTY PLAT AUDITOR'S SURVEY BOOK 1, PAGE 276  
 D.B. 1685 P.543 (T. & O.C. - N.Y.C.)  
 D.B. 69 P.220 (C. & X. RR. CO. - LITTLE MIAMI R.R. CO.)



TYPE				
FUND				
F	PLAN	COMPLETION DATE	APRIL 1994	
PRIMARY	REV	BY	DESCRIPTION	DATE

CONRAIL R/W PI AN