

CUY-71-17.83
CUY-176-12.76

CUYAHOGA COUNTY
CITY OF CLEVELAND

CUYAHOGA COUNTY
CUY-71-17.83
CUY-176-12.76

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

Part 1 ~ For Part 2
See CUY-80-9.08

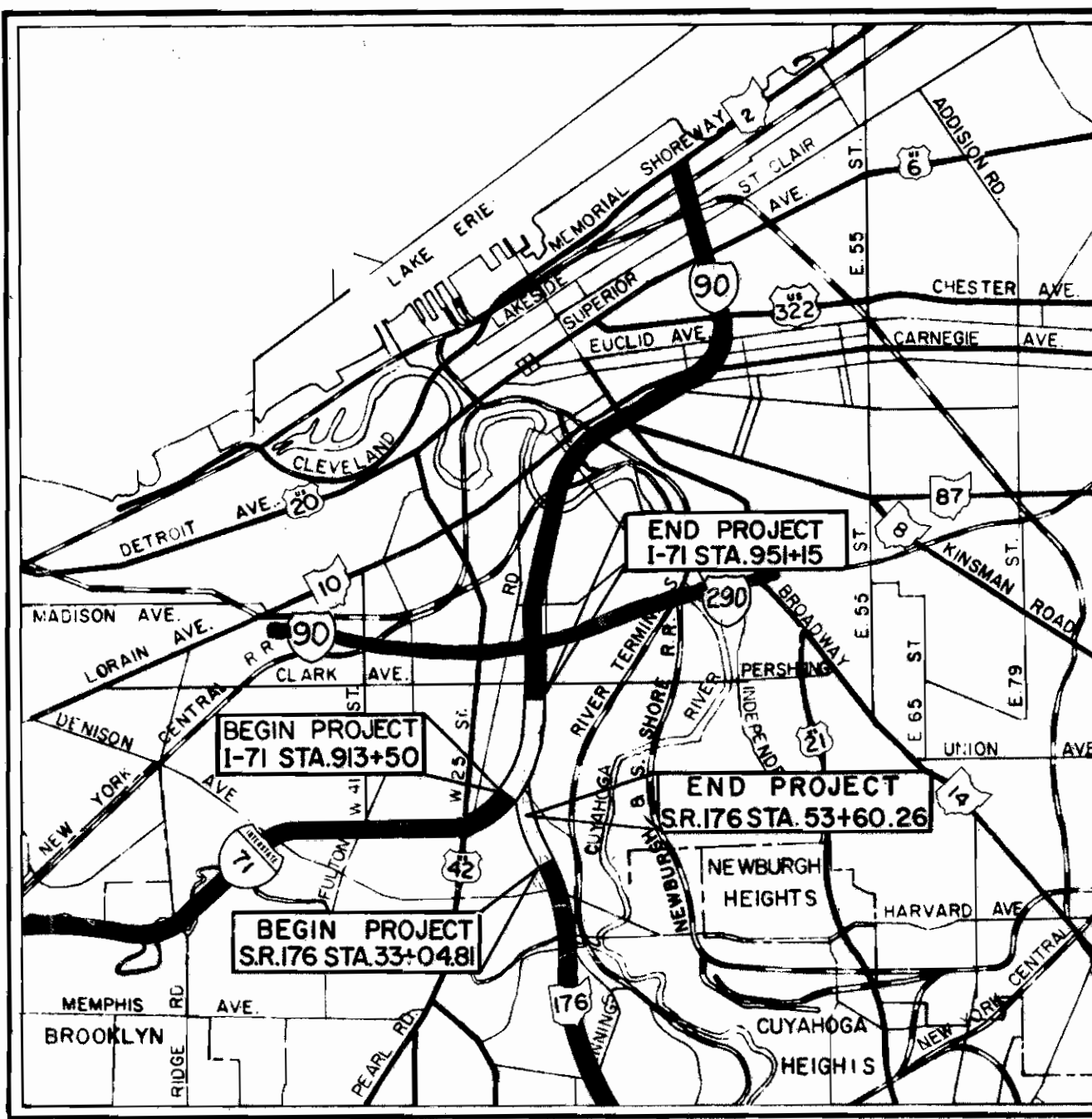
I-71-5(33)244
US-1463(2)

The standard specifications of the State of Ohio, Department of Highways, including changes and supplemental specifications listed in the proposal shall govern this improvement.

The right of way for this improvement will be provided by the State of Ohio.

I hereby approve these plans and declare that the making of this improvement will not require the closing of the highway to traffic and that provisions for the maintenance and safety of traffic will be as set forth on the plans and estimates.

- Approved Date 1/25/65 Director of Public Service, City of Cleveland
Approved Date 1-22-65 Division Deputy Director
Approved Date 2-11-65 Engineer of Location and Design
Approved Date 2-11-65 Deputy Director of Design and Construction
Approved Date 2-2-65 Deputy Director of Right of Way
Approved Date 2-25-65 Deputy Director of Planning and Programming
Approved Date 2-10-65 Engineer of Bridges
Approved Date First Assistant Director
Approved Date 2/26/65 Director of Highways



DELIVERY POINT LOCATION MAP AVERAGE HAUL 1/2 MILE



Portion to be improved
State Roads
Other Roads

PLAN 1" = 20' & 50'
PROFILE: Horizontal 1" = 100'
PROFILE: Vertical 1" = 10'
CROSS SECTIONS 1" = 10' H

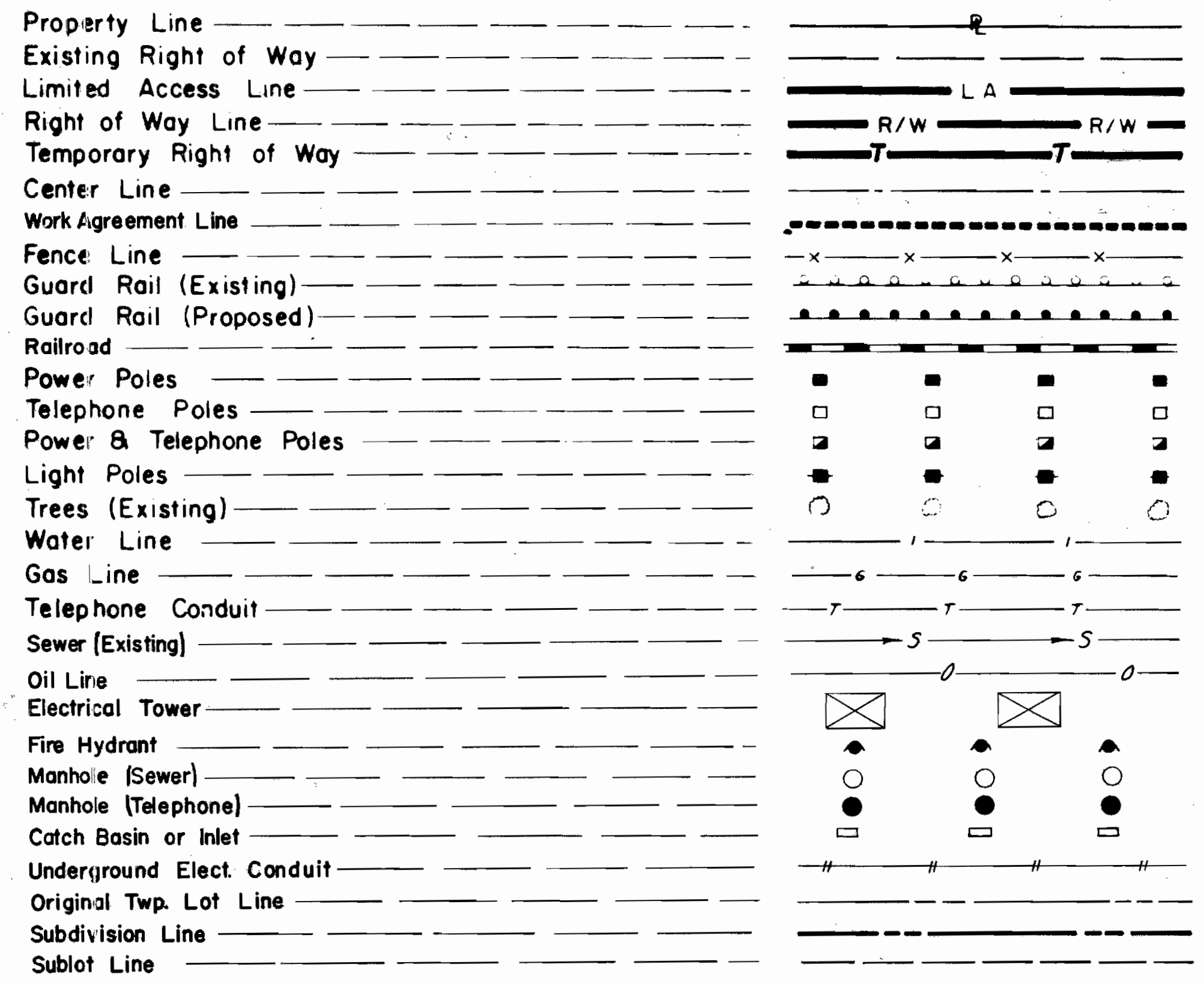
LINE DATA

CUY-71-17.83 (I-71-5(33)244)
I-71 STA. 913+50.00 TO STA. 951+15.00 3,765.00 L.F.
NET LENGTH OF PROJECT 0.713 MILES
ADD FOR APPROACHES
I-71 STA. 908+18.00 TO STA. 913+50.00 = 532.00 L.F.
I-71 STA. 951+15.00 TO STA. 955+15.00 = 400.00 L.F.
DETOUR ROAD STA 10+00 TO 121+32.8 = 11132.80 L.F.
OUTFALL SEWER STA 0+00 TO 23+30 = 2330.00 L.F.
NET LENGTH OF WORK 18,159.80 L.F. OR 3.439 MILES
CUY-176-12.76 (US-1463(2))
S.R.176 STA. 33+04.81 TO STA. 53+60.26 = 2,055.45 L.F.
NET LENGTH OF PROJECT = 0.389 MILES
ADD FOR APPROACHES
S.R.176 - STA.25+23.00 TO STA. 33+04.81 = 781.81 L.F.
NET LENGTH OF WORK = 2,837.26 L.F. = 0.537 MILES
TOTAL LENGTH OF PROJECT = 5820.45 L.F. = 1.102 MILES
(TOTAL LENGTH OF WORK 20,997.06 L.F. = 3.976 MILES)
Part 2 LENGTH OF PROJECT/WORK = 5,808.00 L.F. = 1.100 MILE
TOTAL LENGTH OF PROJECT 11,628.45 L.F. = 2.202 MILES
TOTAL LENGTH OF WORK 26,805.06 L.F. = 5.076 MILES

SUPPLEMENTAL SPECIFICATIONS

Table with columns: NUMBER, DATE, NUMBER, DATE. Includes entries like I-129, S-307, S-101, M-106.11, M-106.6(C).

CONVENTIONAL SIGNS



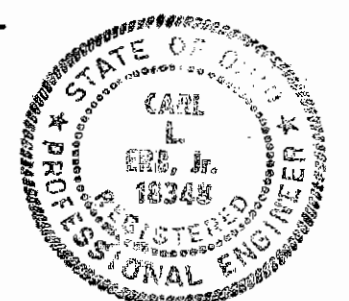
INDEX OF SHEETS

Table with columns: TITLE, SHEET NOS., TITLE, SHEET NOS. Lists various sheets like SCHEMATIC PLAN, GENERAL NOTES, QUANTITY CALC, etc.

PREPARED AND RECOMMENDED BY HOWARD NEEDLES TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK

DELETED ~ SHEET 43 H. G. SOURS ASSOCIATE COLUMBUS

FILE NO. CUYAHOGA COUNTY CUY-71-17.83 CUY-176-12.76 DATE OF LETTING CONTRACT NO. 00326



Sheet No. 295 and 311 revised 3-11-66
Sheet No. 357A added 3-10-66
Sheet Nos. 306 and 416 revised 6-2-65
Sheet No. 467 revised 7-30-65
Sheet Nos. 42 and 306-313 incl. revised 12-9-65
Sheet Nos. 314-319 incl. deleted 12-9-65
Sheet Nos. 307A and 309A added 12-9-65
Sheets 553, 560, 579, 582 revised 12-28-65 C.E.H.
Sheets 17, 35, 613, 638, 639 revised 2-18-66 C.E.H.
Sheet No. 582 revised 3-25-66 C.E.H.

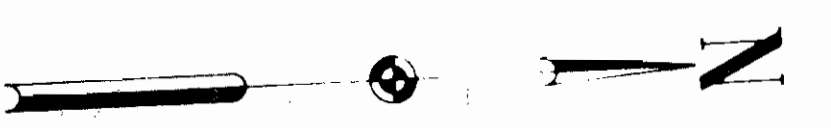
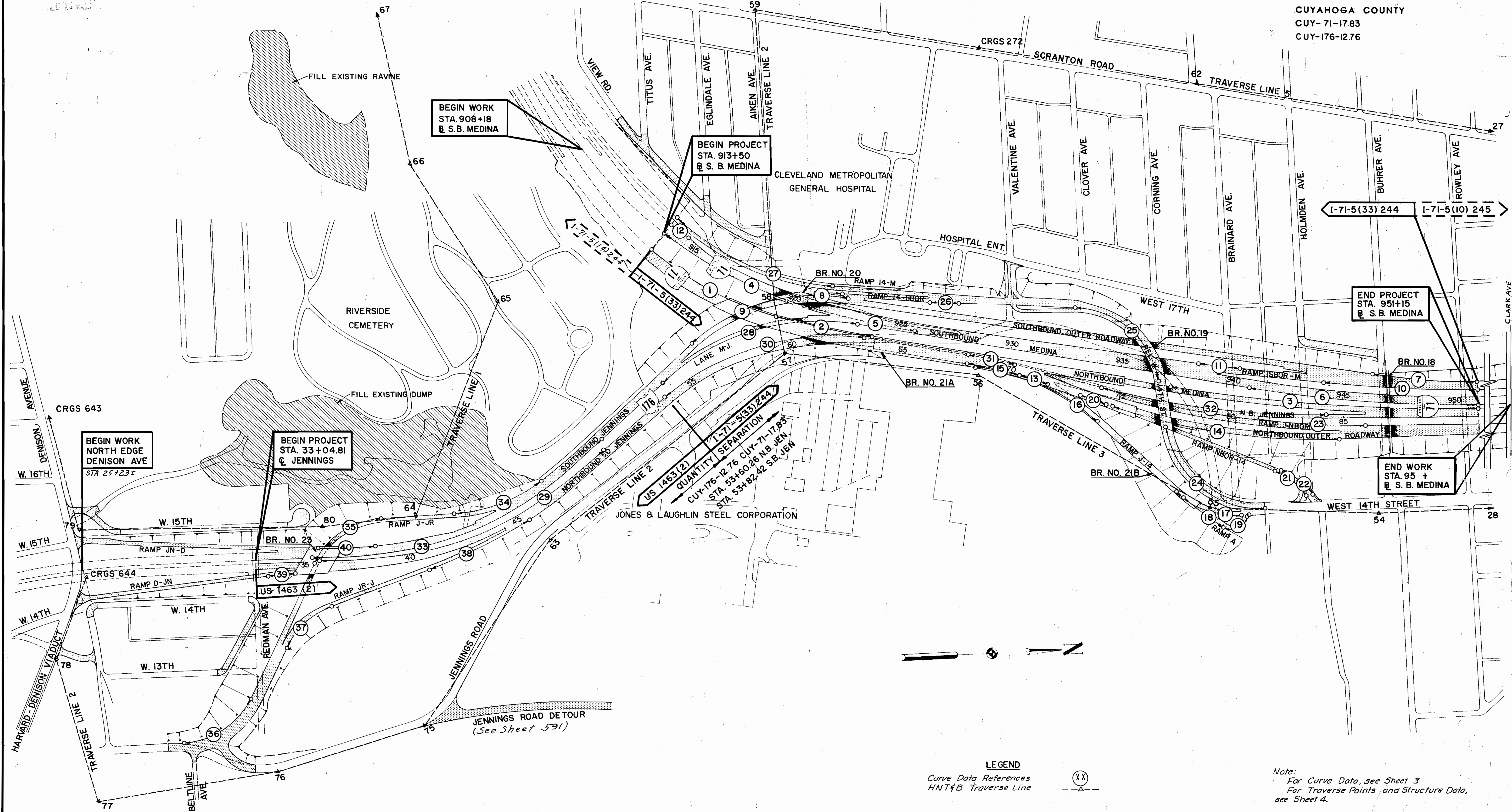
DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS APPROVED DIVISION ENGINEER DATE

SCHEMATIC GEOMETRIC PLAN

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

2
646

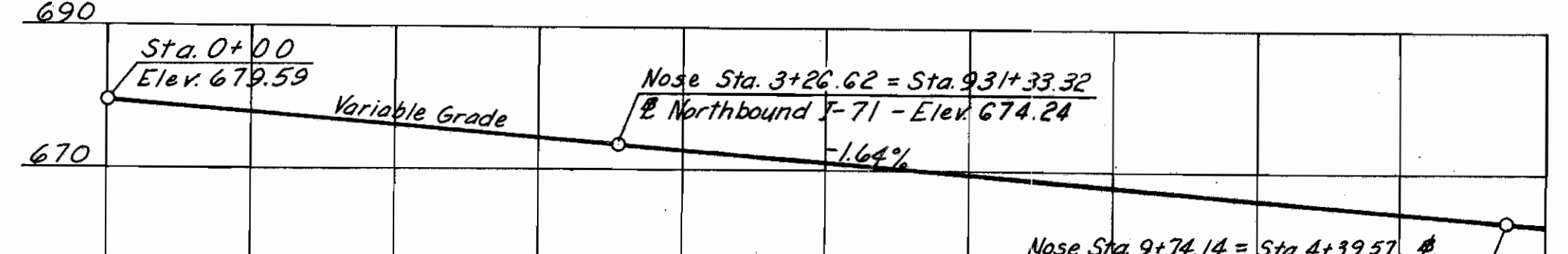
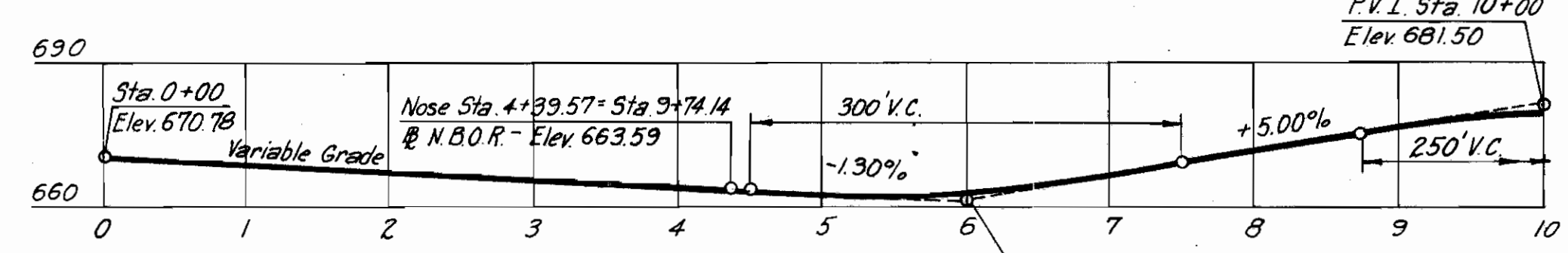
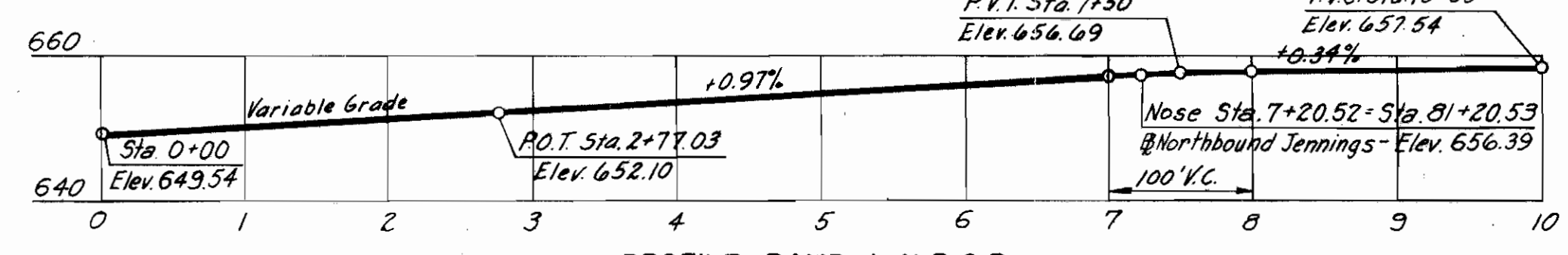
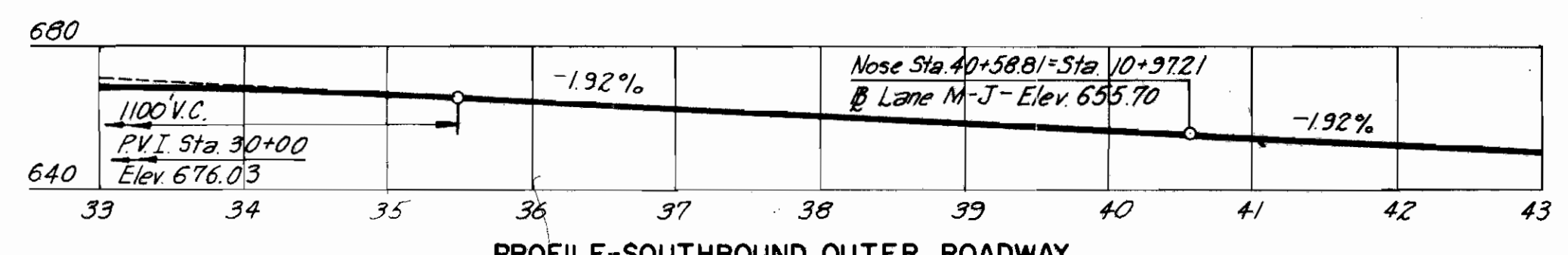
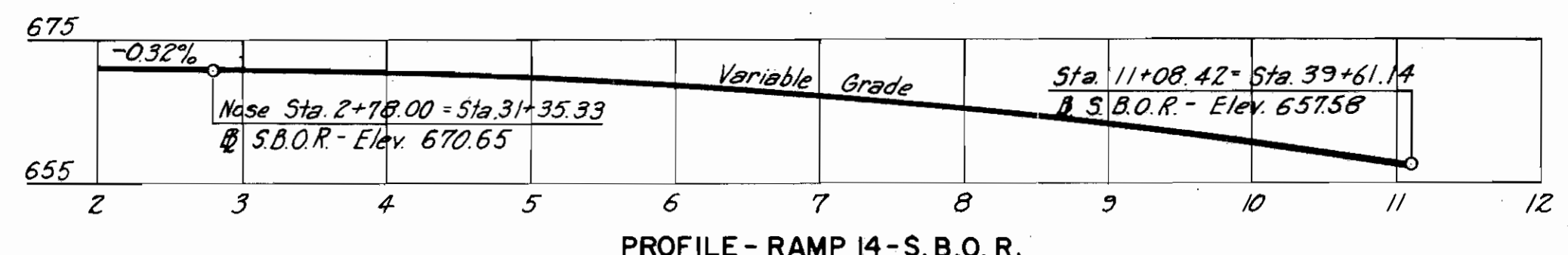
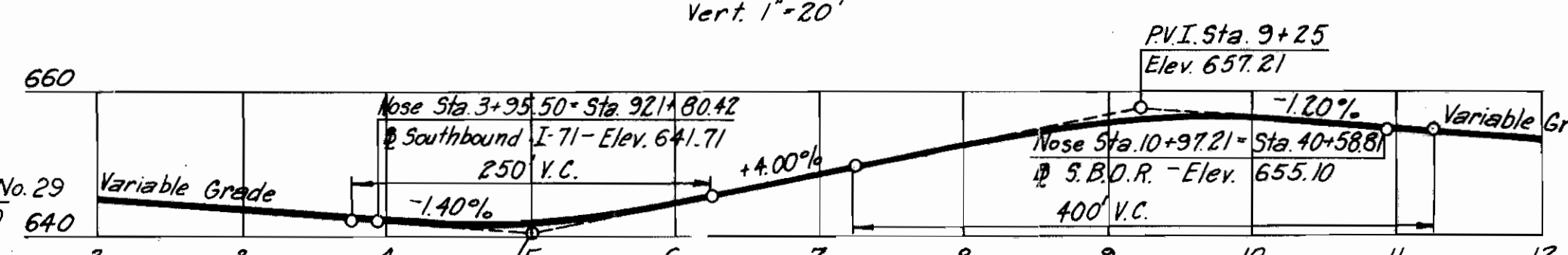
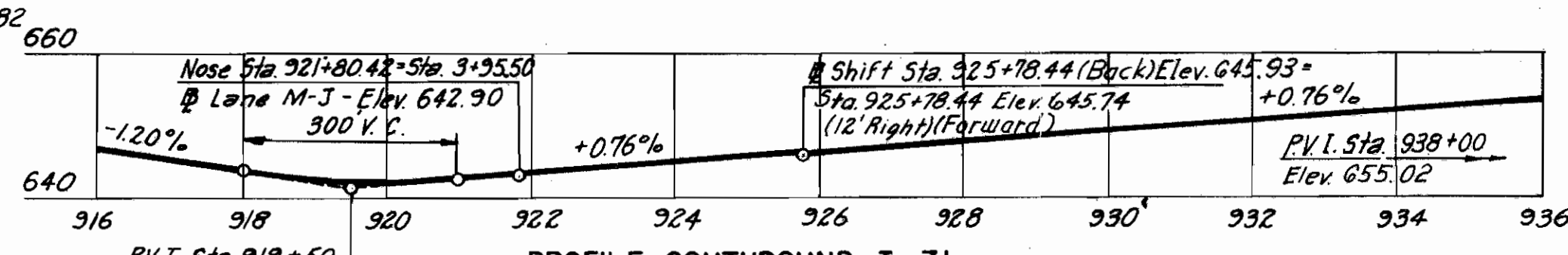
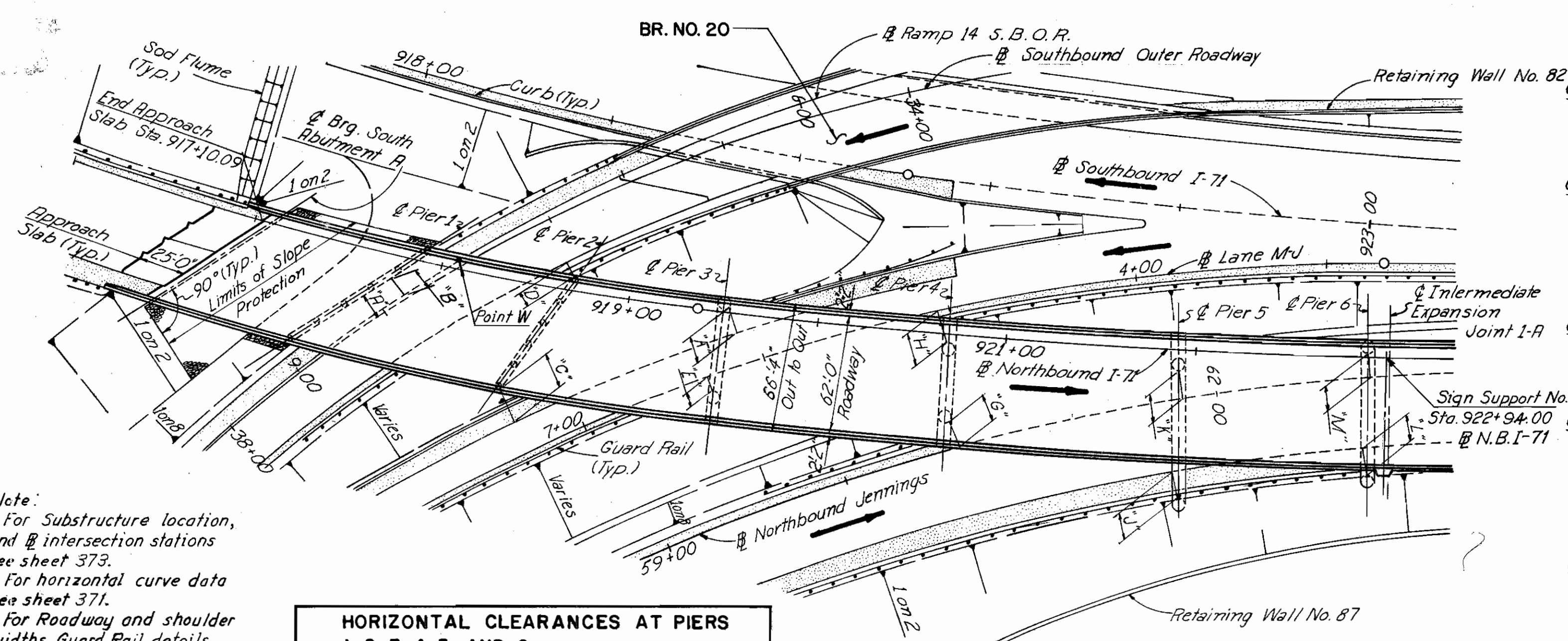
CUYAHOGA COUNTY
CUY-71-17.83
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LEGEND
Curve Data References
HNT&B Traverse Line

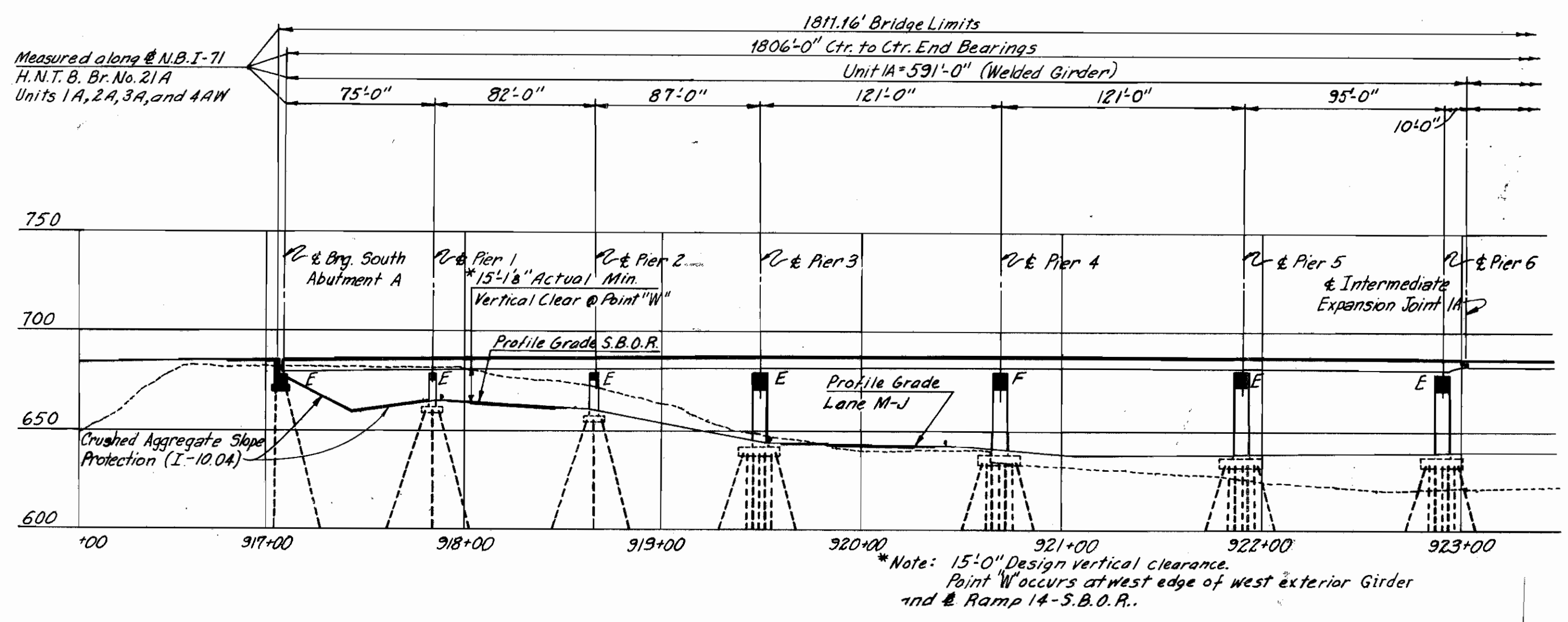
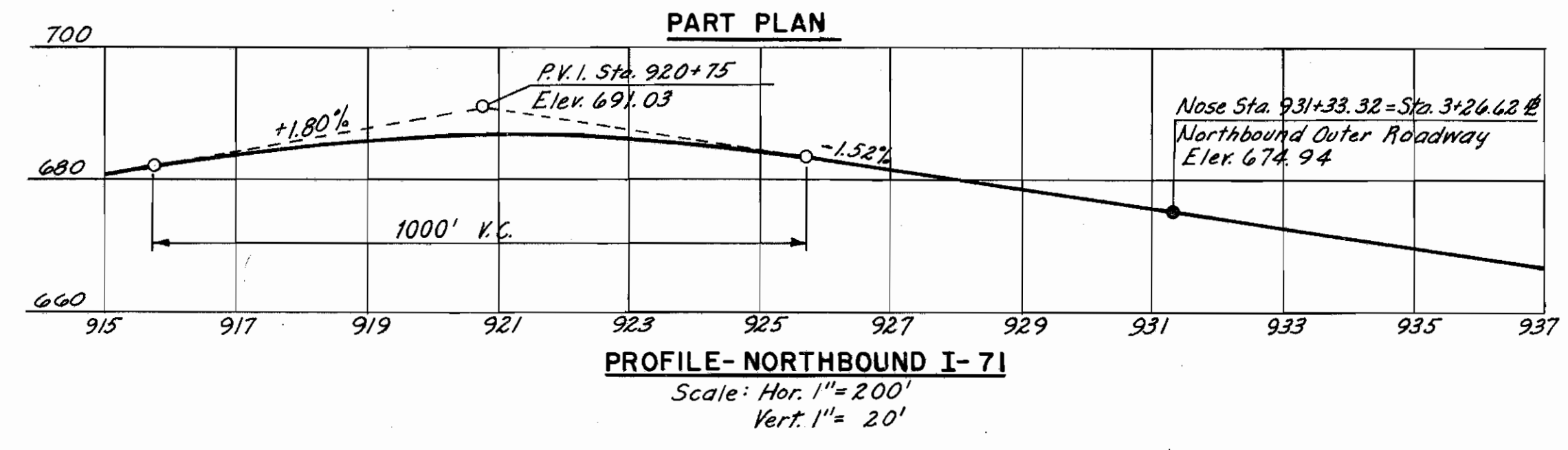
Note:
For Curve Data, see Sheet 3
For Traverse Points and Structure Data, see Sheet 4.

SCALE 1" = 200'
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK



HORIZONTAL CLEARANCES AT PIERS 1, 2, 3, 4, 5, AND 6.

Required Min. Clear	Actual Min. Clear	Required Min. Clear	Actual Min. Clear
"A"=14'-0"	14'-0 3/8"	"G"=8'-0"	10'-5 3/4"
"B"=10'-0"	11'-11 3/8"	"H"=6'-0"	19'-3"
"C"=10'-0"	19'-4 1/2"	"J"=14'-0"	14'-0"
"D"=8'-0"	8'-4"	"K"=8'-0"	8'-2 3/4"
"E"=6'-0"	8'-0 1/4"	"L"=14'-0"	14'-0"
"F"=10'-0"	13'-9 1/2"	"M"=8'-0"	9'-6 1/2"



CUYAHOGA COUNTY
CUY-71-17.83
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PROPOSED STRUCTURE-BRIDGE NO. 21A

TYPE: Continuous welded girder (Unit 1A) and continuous steel beam (Units 2A, 3A, 4AW, and 4AE) with reinforced concrete deck and sub-structure.

SPANS: Unit 1A - 75'-0", 82'-0", 87'-0", 2 @ 121'-0", 95'-0" and 101'-0" cantilever; Unit 2A - 68'-6", 4 @ 78'-6" and 6'-0" cantilever; Unit 3A - 72'-6", 4 @ 78'-6" and 6'-6" cantilever; Unit 4AW - 72'-6", 2 @ 78'-6", 70'-0" and 56'-0", Unit 4AE - 73'-5 1/2", 2 @ 79'-6 1/2", 70'-11 1/2", 70'-10 1/2" and 56'-6 1/2"

ROADWAY: Unit 1A - 64'-0" face to face of parapets; Unit 2A - 64'-0" face to face of parapets; Unit 3A - varies face to face of parapets; Unit 4AW - 40'-0" face to face of parapets; Unit 4AE - Varies face to face of parapets; with 1'-0" safety curbs.

LOAD FREQUENCY: CF 2000 (57) Adequate for A.A.S.H.O. alternate loading.

SKEW: Unit 1A - Varies; Unit 2A, 3A, 4AW and 4AE - None, with respect to Northbound I-71.

WEARING SURFACE: 1" Monolithic Concrete

APPROACH SLABS: AS-1-54 (25' long)

ALIGNMENT: Units 1A, 2A, 3A and 4AW - 4°00'00" Curve Left, 1°28'00" Curve Left and Tangent; Unit 4AE - 2°30'00" Curve Right, Tangent and 2°00'00" Curve Left.

PROPOSED STRUCTURE-BRIDGE NO. 21B

TYPE: Continuous steel beam with reinforced concrete deck and sub-structure

SPANS: Unit 1B - 62'-0", 4 @ 78'-6" and 72'-6"; Unit 2B - 6'-0" cantilever; 78'-6", 78'-8 1/2", 78'-10 1/2", 78'-4 1/2" and 73'-4 1/2"; Unit 3BW - 6'-0" cantilever; 2 @ 78'-10 1/2" and 62'-3"; Unit 3BE - 6'-0" cantilever; 5 @ 75'-0" and 69'-0"; Unit 4BE - 6'-0" cantilever; 4 @ 75'-0" and 60'-0"

ROADWAY: Varies face to face of parapets with 1'-0" safety curbs.

LOAD FREQUENCY: CF 2000 (57) Adequate for A.A.S.H.O. alternate loading.

SKEW: Units 1B, 2B and 3BW - None with respect to Northbound I-71; Units 3BE and 4BE - Varies.

WEARING SURFACE: 1" Monolithic Concrete

APPROACH SLABS: AS-1-54 (25' long)

ALIGNMENT: Units 1B, 2B and 3BW - 5°00'00" Curve Right, Tangent; 2°30'00" Curve Right, Tangent; and 1°30'00" Curve Left; Units 3BE and 4BE - 6°00'00" Curve Right, Tangent and 14°00'00" Curve Left.

TRAFFIC DATA:

Northbound I-71: 1975 - 37,296 ADT. (Total one way)

Northbound Jennings: 1975 - 27,366 (Total one way)

For light standard support location see sheet 476.A.

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

SITE PLAN

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: R.A.B. TRACED CHECKED: J.P.B. REVIEWED: W.F. REVISION
 DATE: 1-8-64 DATE: 11-22-64 DATE: 12-22-64

SHEET 370

CUYAHOGA COUNTY
 CUY-71-17.83
 CUY-176-12.76

CURVE DATA

RAMP 14-S.B.O.R.	SOUTHBOUND OUTER ROADWAY
P.C. Sta. 4+04.41	P.C. Sta. 32+30.74
P.I. Sta. 7+77.18	P.I. Sta. 36+22.27
P.T. Sta. 11+08.42	P.T. Sta. 39+61.14
$\Delta = 46^{\circ}34'54''$	$\Delta = 51^{\circ}07'41''$
$D = 6^{\circ}37'00''$ Lt.	$D = 7^{\circ}00'00''$ Lt.
$R = 865.93'$	$R = 818.51'$
$T = 372.76'$	$T = 391.53'$
$L = 704.00'$	$L = 730.40'$
$E = 76.83'$	$E = 88.82'$

LANE M-J	RAMP N.B.O.R.-14
P.C. Sta. 2+70.62	P.C. Sta. 0+00.00
P.I. Sta. 7+79.42	P.I. Sta. 0+59.81
P.T. Sta. 12+17.23	P.T. Sta. 1+19.60
$\Delta = 52^{\circ}03'49''$	$\Delta = 2^{\circ}59'24''$
$D = 5^{\circ}30'00''$ Lt.	$D = 2^{\circ}30'00''$ Rt.
$R = 1041.74'$	$R = 2,291.83'$
$T = 508.81'$	$T = 59.81'$
$L = 946.61'$	$L = 119.60'$
$E = 117.62'$	$E = 0.78'$

NORTHBOUND I-71

NORTHBOUND I-71	NORTHBOUND OUTER ROADWAY
P.C.C. Sta. 910+45.18	P.C.C. Sta. 919+38.10
P.I. Sta. 915+06.49	P.I. Sta. 921+59.77
P.C.C. Sta. 919+38.10	P.T. Sta. 923+80.96
$\Delta = 35^{\circ}43'01''$	$\Delta = 6^{\circ}29'43''$
$D = 4^{\circ}00'00''$ Lt.	$D = 1^{\circ}28'00''$ Lt.
$R = 1,432.39'$	$R = 3,906.53'$
$T = 461.50'$	$T = 221.66'$
$L = 892.92'$	$L = 442.86'$
$E = 72.52'$	$E = 6.28'$

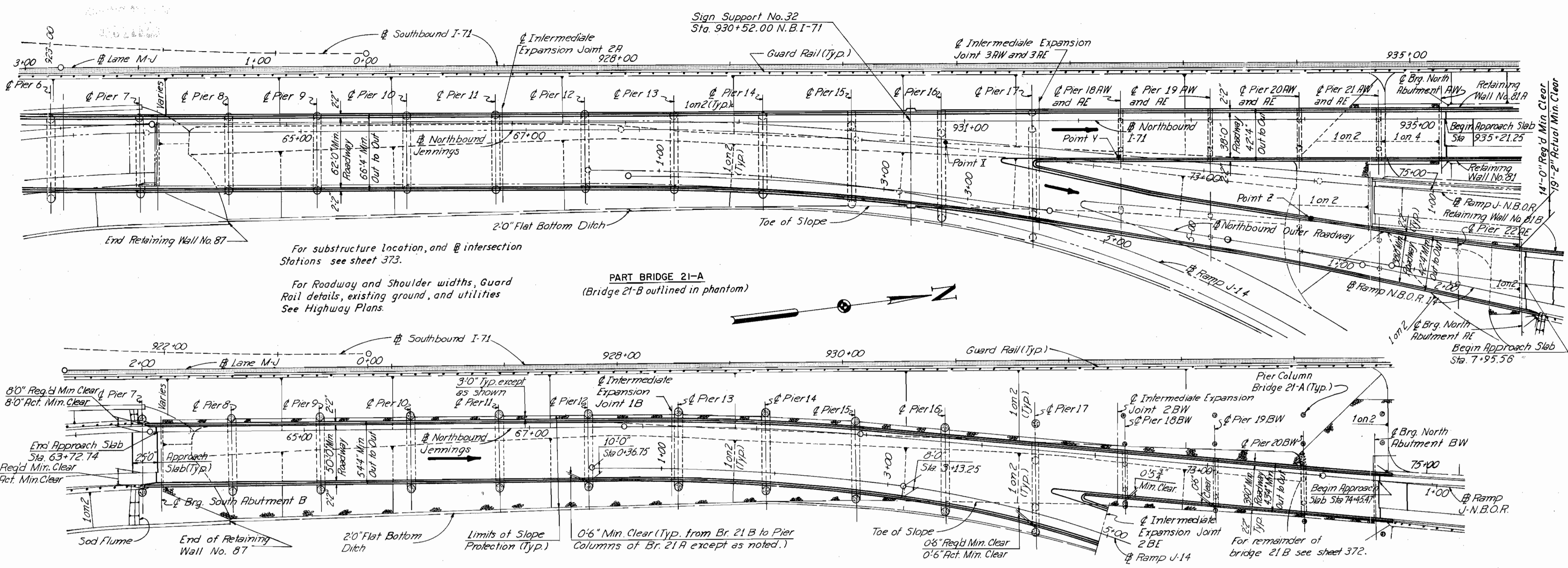
SOUTHBOUND I-71

SOUTHBOUND I-71	NORTHBOUND JENNINGS
P.C.C. Sta. 910+65.79	P.C.C. Sta. 920+56.64
P.I. Sta. 915+72.64	P.I. Sta. 923+17.93
P.C.C. Sta. 920+56.64	P.T. Sta. 925+78.44
$\Delta = 29^{\circ}43'32''$	$\Delta = 7^{\circ}39'11''$
$D = 3^{\circ}00'00''$ Lt.	$D = 1^{\circ}28'00''$ Lt.
$R = 1,909.86'$	$R = 3,906.52'$
$T = 506.84'$	$T = 261.28'$
$L = 990.85'$	$L = 521.80'$
$E = 66.11'$	$E = 8.73'$

NORTHBOUND JENNINGS

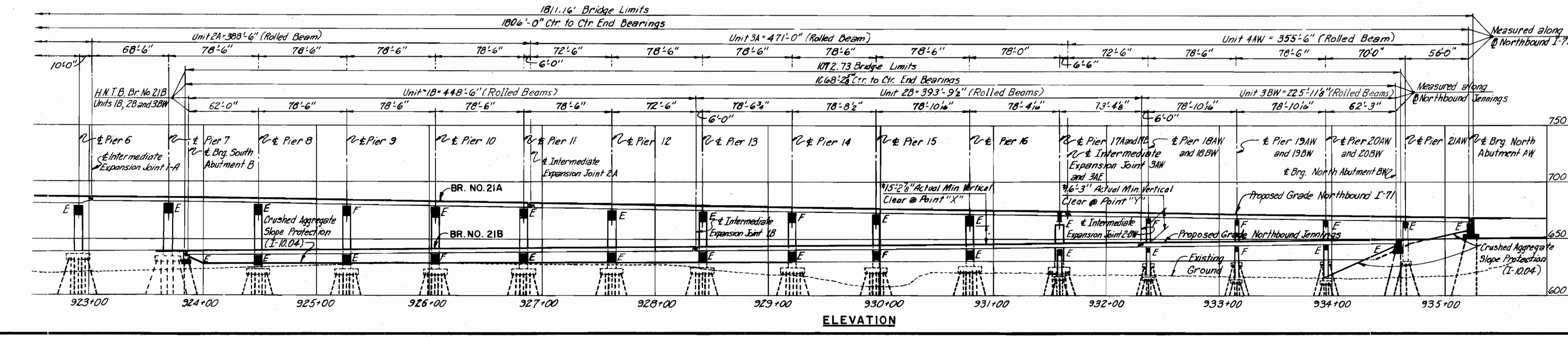
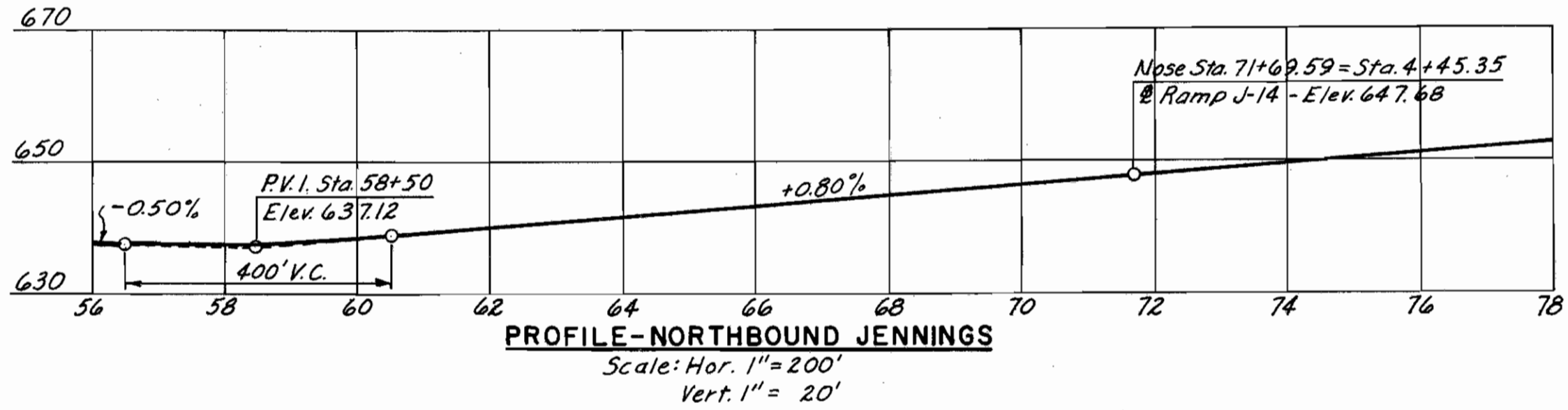
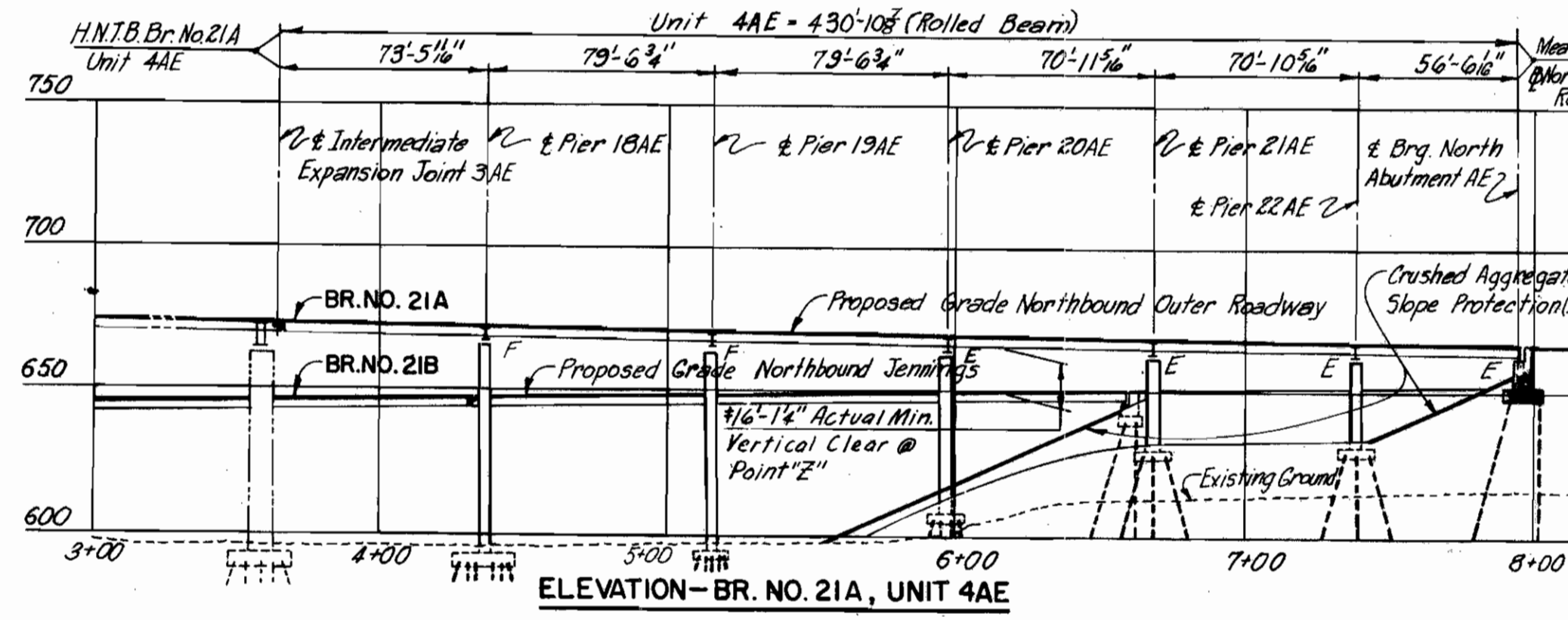
NORTHBOUND JENNINGS	NORTHBOUND I-71
P.C. Sta. 53+60.26	P.C. Sta. 67+82.31
P.I. Sta. 58+95.43	P.I. Sta. 68+88.97
P.T. Sta. 63+61.93	P.T. Sta. 69+95.47
$\Delta = 50^{\circ}05'01''$	$\Delta = 5^{\circ}19'44''$
$D = 5^{\circ}00'00''$ Rt.	$D = 2^{\circ}30'00''$ Rt.
$R = 1,145.92'$	$R = 2,291.83'$
$T = 535.37'$	$T = 106.66'$
$L = 1,001.67'$	$L = 213.16'$
$E = 118.89'$	$E = 2.48'$

*Note: 15'-0" Design vertical clearance
 Point "X" occurs at north bottom edge of Pier 16 cap beam and west curb line of Br. No. 21 B.
 Point "Y" occurs at south bottom edge of Pier 18 AW cap beam and west curb line of Br. No. 21 B.
 Point "Z" occurs at west edge of west exterior beam and east curb line of Northbound Jennings Br. No. 21 B.



PART BRIDGE 21-B

PART PLAN
 Section taken below Bridge 21-A



H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

SITE PLAN

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

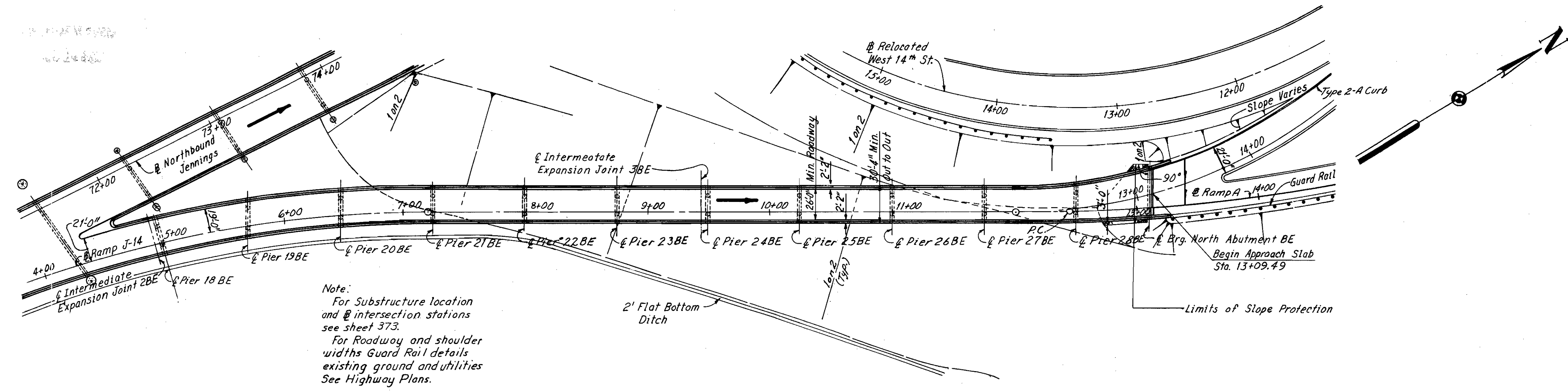
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN/R.A.B.	TRACED	CHECKED	REVIEWED/W.P.
DATE/1-8-64	DATE	DATE/11-12-64	DATE/12-22-64

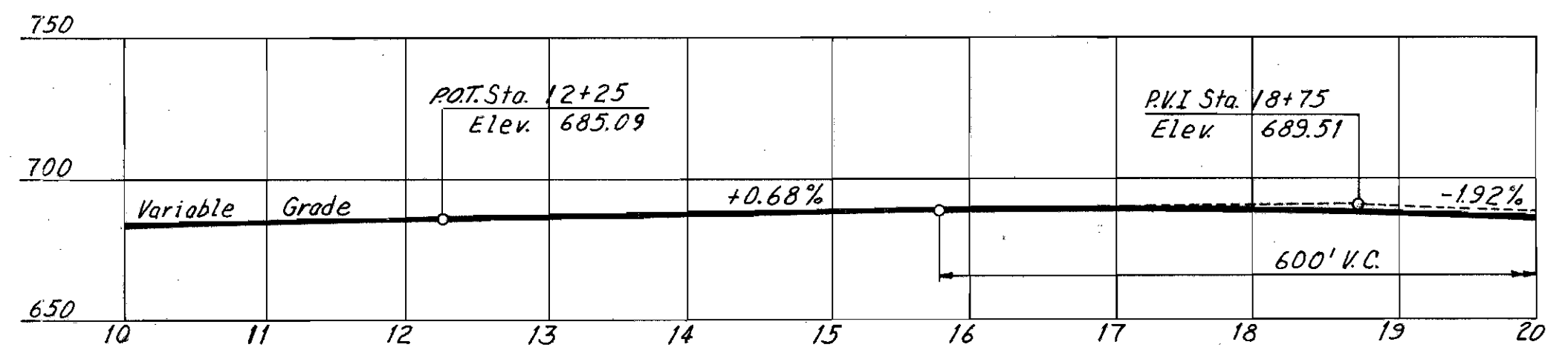
SHEET 371

CUYAHOGA COUNTY
CUY-71-17.83
CUY-176-12.76

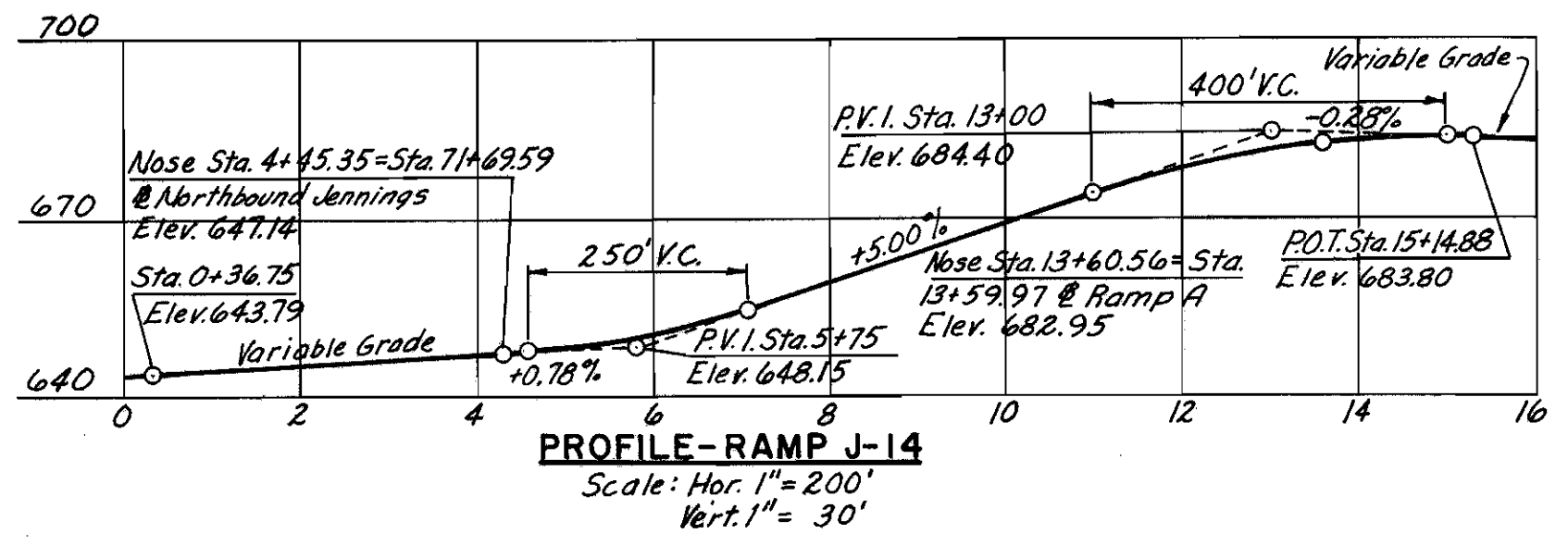
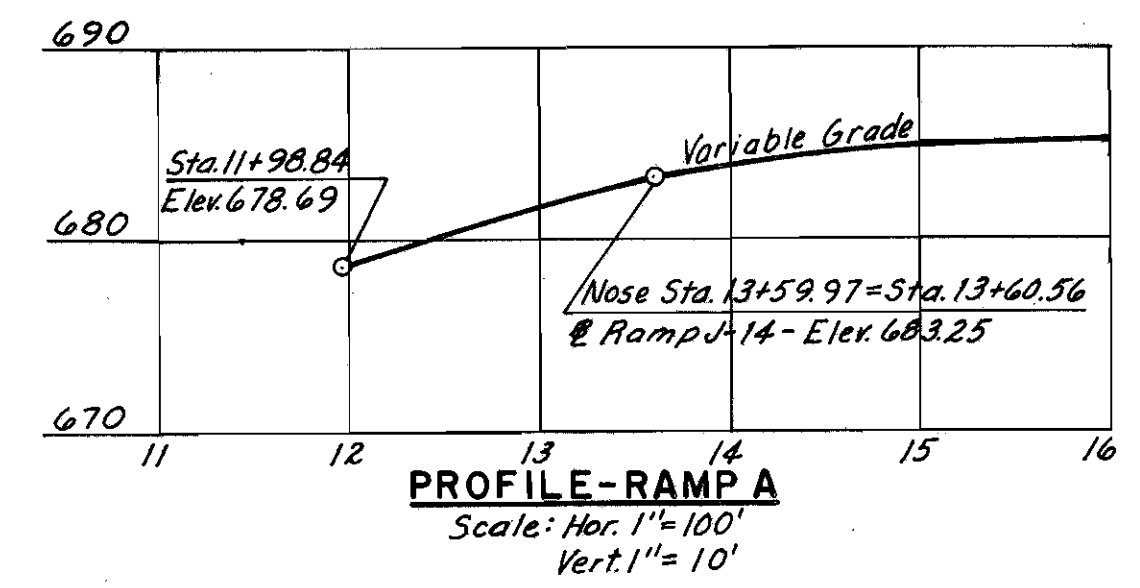
Note: For pile data see tabulated results below.



PART PLAN
(Bridge 21A not shown)

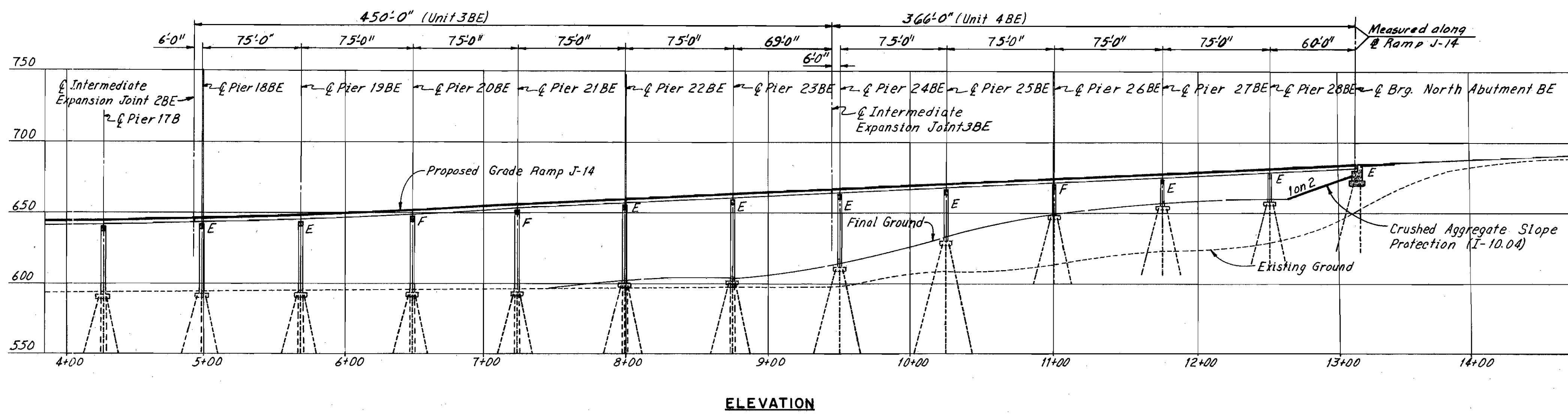


RAMP J-14			RAMP A		
P.C. Sta. 0+36.75	P.C.C. Sta. 3+13.25	P.C. Sta. 11+98.84	P.C. Sta. 12+41.14		
P.I. Sta. 1+75.24	P.I. Sta. 5+20.11	P.I. Sta. 13+65.21	P.I. Sta. 13+52.97		
P.C.C. Sta. 3+13.25	P.T. Sta. 7+20.67	P.T. Sta. 15+14.88	P.C.C. Sta. 14+64.34		
$\Delta = 8^{\circ}17'42''$	$\Delta = 24^{\circ}26'43''$	$\Delta = 44^{\circ}14'42''$	$\Delta = 8^{\circ}55'41''$		
$D = 3^{\circ}00'00''$ RT.	$D = 6^{\circ}00'00''$ RT.	$D = 14^{\circ}00'00''$ LT.	$D = 4^{\circ}00'00''$ LT.		
$R = 1909.86'$	$R = 954.93'$	$R = 409.26'$	$R = 1432.39'$		
$T = 138.49'$	$T = 206.86'$	$T = 166.37'$	$T = 111.83'$		
$L = 276.50'$	$L = 407.42'$	$L = 316.04'$	$L = 223.20'$		
$E = 5.02'$	$E = 22.15'$	$E = 32.52'$	$E = 4.36'$		



SUBSTRUCTURE UNIT	PILE TYPE	EST. AVE. VERTICAL PILE LENGTH (FT.)
So. Abut. A	12" C.I.P.C.	65'
Pier 1	12" C.I.P.C.	65'
Pier 2	12" C.I.P.C.	65'
Pier 3	12" C.I.P.C.	55'
Pier 4	12" B.P. 53	68'
Pier 5	12" B.P. 53	73' (W), 64' (E)
Pier 6	12" B.P. 53	76' (W), 68' (E)
Pier 7	12" B.P. 53	77' (W), 71' (E)
Pier 8	12 B.P. 53	67' (W), 48' (E)
Pier 9	12 B.P. 53	68' (W), 48' (E)
Pier 10	12 B.P. 53	69' (W), 47' (E)
Pier 11	12 B.P. 53	69' (W), 47' (E)
Pier 12	12 B.P. 53	74' (W), 52' (E)
Pier 13	12 B.P. 53	72' (W), 46' (E)
Pier 14	12 B.P. 53	70' (W), 44' (E)
Pier 15	12 B.P. 53	63' (W), 44' (E)
Pier 16	12 B.P. 53	66' (W), 42' (E)
Pier 17A	12 B.P. 53	77' (W), 50' (E)
Pier 18AW	12 B.P. 53	80' (W), 70' (E)
Pier 19AW	12 B.P. 53	80' (W), 70' (E)
Pier 20AW	12 B.P. 53	81' (W), 71' (E)
Pier 21AW	12 B.P. 53	102'
No. Abut. AW	12 B.P. 53	115'
Pier 18AE	12 B.P. 53	52'
Pier 19AE	12 B.P. 53	51'
Pier 20AE	12 B.P. 53	63'
Pier 21AE	12 B.P. 53	97' (W), 87' (E)
Pier 22AE	12 B.P. 53	104' (W), 103' (E)
No. Abut. AE	12 B.P. 53	112'
So. Abut. B	12 B.P. 53	81'
Pier 17B	12 B.P. 53	66' (W), 52' (E)
Pier 18BW	12 B.P. 53	70' (W), 52' (E)
Pier 19BW	12 B.P. 53	70' (W), 57' (E)
Pier 20BW	12 B.P. 53	70' (W), 69' (E)
No. Abut. BW	12 B.P. 53	100'
Pier 18BE	12 B.P. 53	52'
Pier 19BE	12 B.P. 53	52'
Pier 20BE	12 B.P. 53	52'
Pier 21BE	12 B.P. 53	56'
Pier 22BE	12 B.P. 53	56'
Pier 23BE	12 B.P. 53	66'
Pier 24BE	12 B.P. 53	79'
Pier 25BE	12 B.P. 53	92'
Pier 26BE	12 B.P. 53	104'
Pier 27BE	12 B.P. 53	116'
Pier 28BE	12 B.P. 53	117'
No. Abut. BE	12 B.P. 53	134'

Note:
(W) denotes West footing of Pier.
(E) denotes East footing of Pier.



H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SITE PLAN

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
STA. 935+21.25

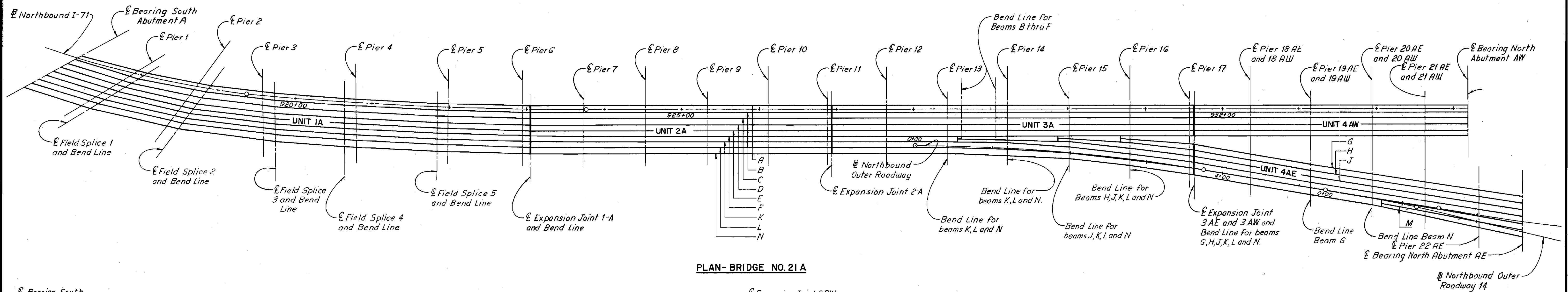
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN R.A.B. TRACED C.H.B. CHECKED W.J. REWIS
DATE 11-8-64 DATE 11-12-64 DATE 12-22-64 SHEET 372

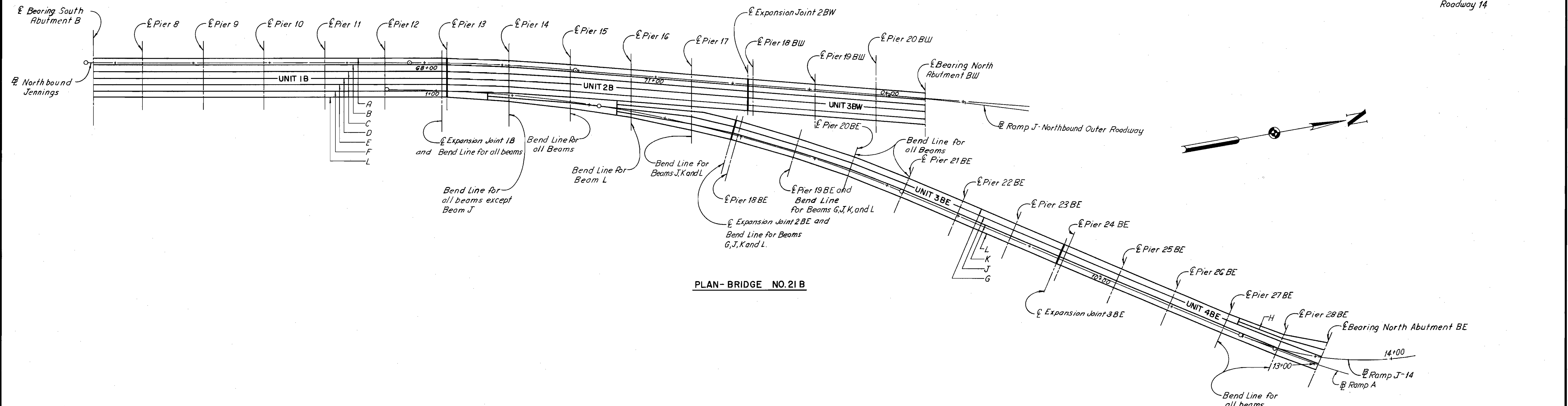
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

408
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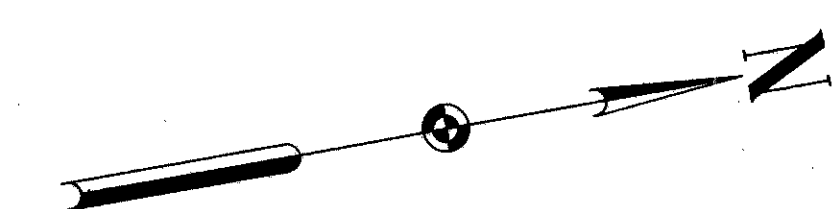
CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



PLAN-BRIDGE NO. 21A



PLAN-BRIDGE NO. 21B



H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

SCHEMATIC FRAMING PLAN

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

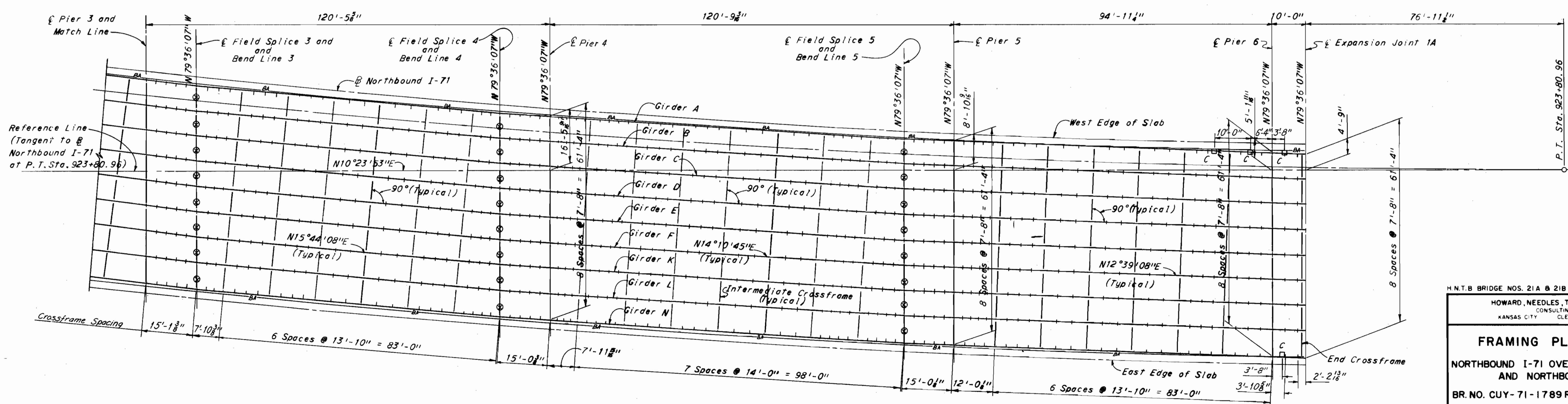
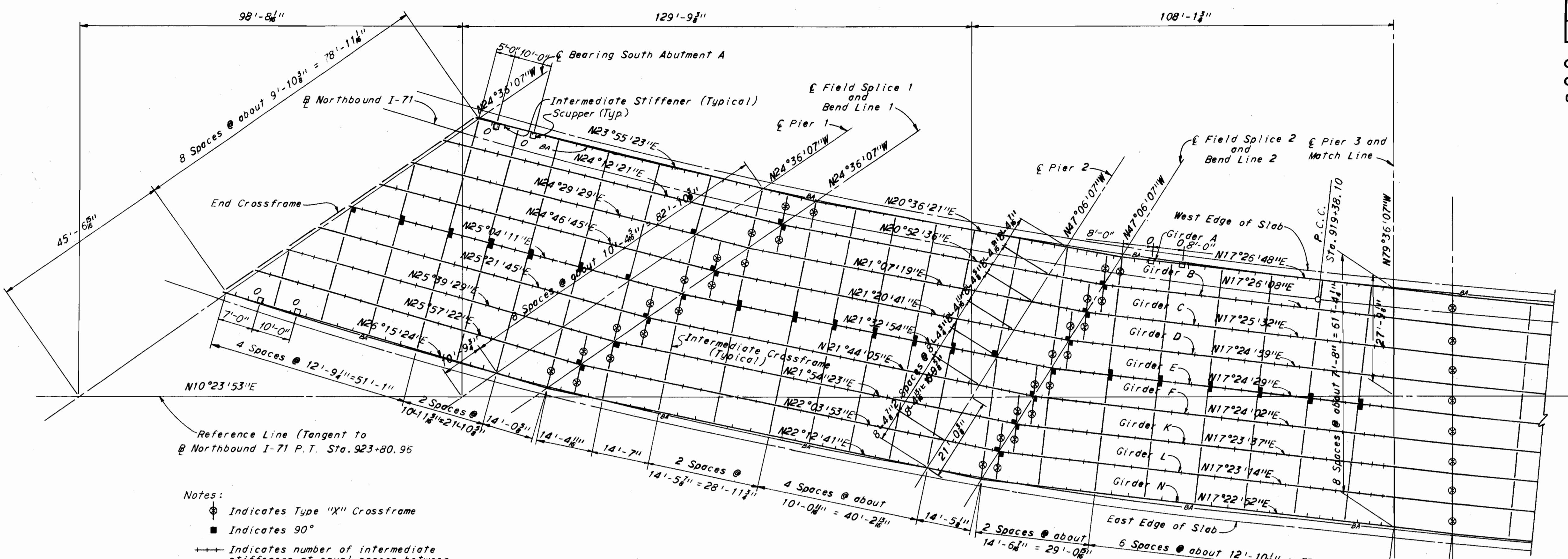
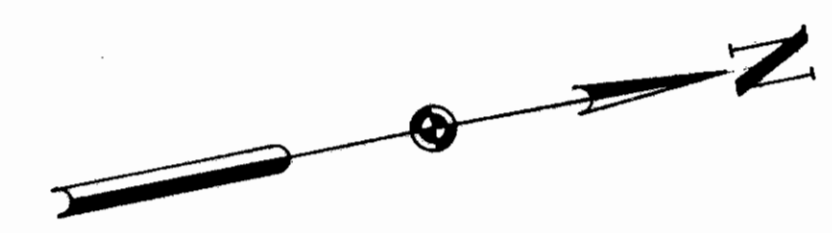
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN J.M.C.	TRACED	CHECKED
DATE 12-11-64	DATE 12-13-64	DATE 12-22-64

REVIEWED / / / REVISIONS

SHEET 408

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN - UNIT 1A

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

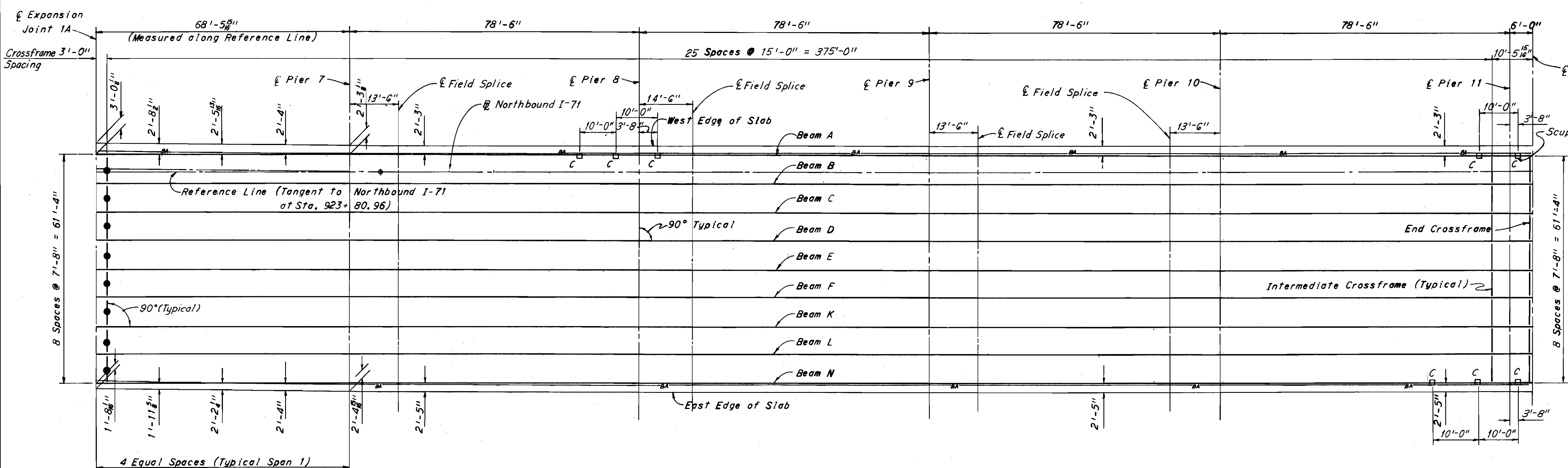
BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
G.R.D.		J.M.C.	W.F.C.	
DATE	DATE	DATE	DATE	DATE
7-16-64		12-21-64	12-22-64	

SHEET 409

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



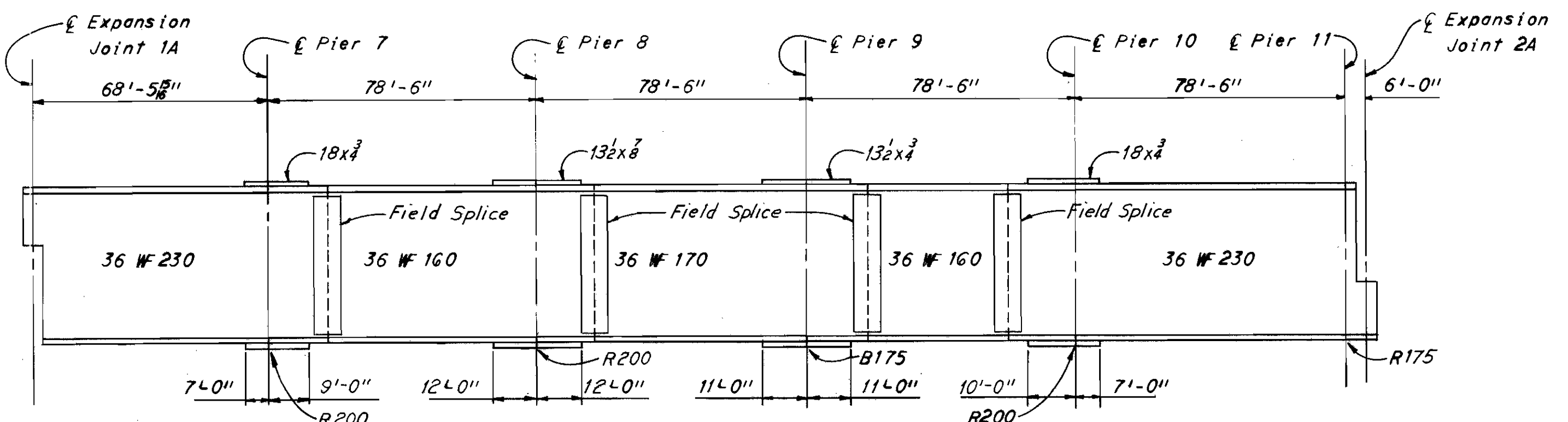
FRAMING PLAN

SCUPPER LEGEND
 C - Outlets at ground level
 O - Outlets just below superstructure

Note:
 • Denotes Type "Y" Crossframe
 -BA- Denotes Bulb Angle Gutter

BEAM CAMBER NOTE

Where the combined effects of total dead load deflection and convexity is $\frac{3}{8}$ " or more, the required camber shall be the same as this sum. Where the combined effects are less than $\frac{3}{8}$ ", no camber is required but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.



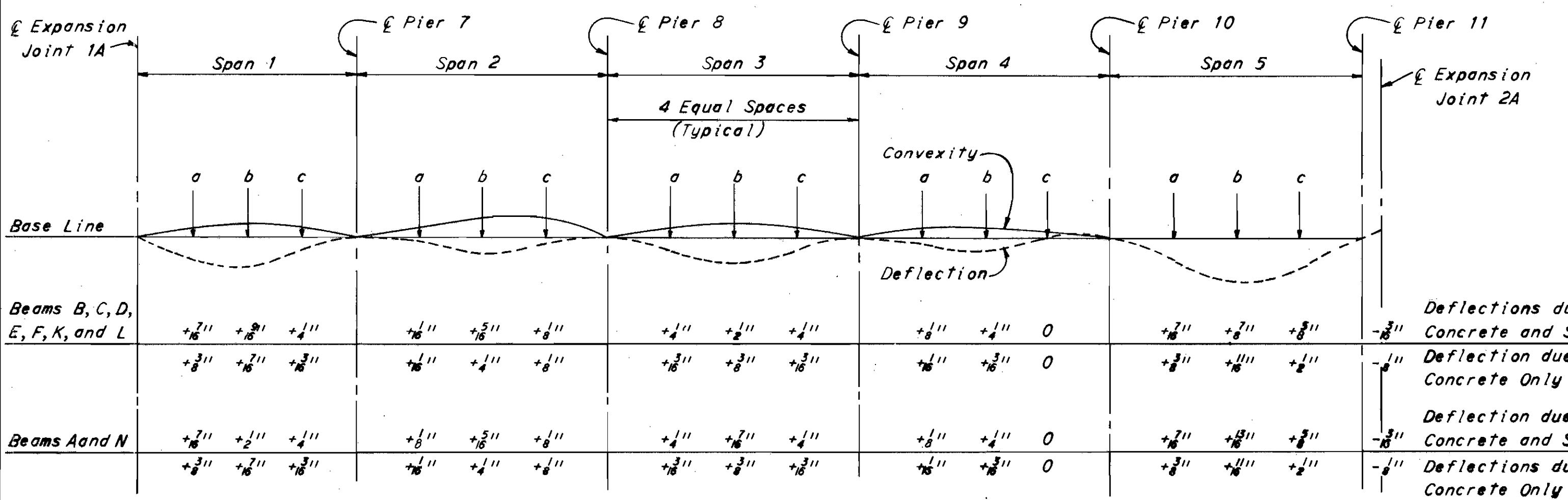
TYPICAL BEAM ELEVATION

Note: Cover plate lengths and sizes shown are typical top and bottom.

Beam	CONVEXITY CORRECTIONS														
	Span 1			Span 2			Span 3			Span 4			Span 5		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
A	1/16"	3/16"	1/8"	5/16"	3/8"	1/4"	1/16"	3/16"	1/8"	3/16"	1/8"	1/16"	0	0	0
B				3/16"	1/4"	3/16"	1/16"	3/16"	1/8"	3/16"	1/8"	1/16"			
C				1/16"	1/8"	1/16"	1/16"	3/16"	1/8"	3/16"	1/8"	1/16"			
D				1/16"	1/8"	3/16"	3/16"	1/8"	3/16"	1/8"	3/16"	1/8"			
E				3/16"	1/4"	1/16"	3/16"	1/8"	3/16"	1/8"	3/16"	1/8"			
F				3/16"	3/16"	3/16"	1/16"	3/16"	1/8"	3/16"	1/8"	1/16"			
K				1/16"	3/16"	3/16"	1/16"	1/16"	1/16"	0	0	0			
L	1/16"	3/16"	1/8"	3/16"	3/16"	1/16"	0	0	0	0	0				
N	3/16"	1/4"	3/16"	3/16"	1/16"	1/16"	-1/16"	-1/16"	-1/16"	-1/16"	-1/16"				

Notes:
 Negative values for convexity indicate convexity below the base line.
 Negative values for deflection indicate deflection above the base line.
 Deflections are measured to nearest 1/16 inch.

Notes:
 For details of beam field splices see sheet 447.
 For crossframes and cover plate details see sheet 414.
 For details of Rockers and bolsters see Ohio Standard Drawing RB-1-55.



DEAD LOAD DEFLECTION AND CONVEXITY DIAGRAM

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN - UNIT 2A
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

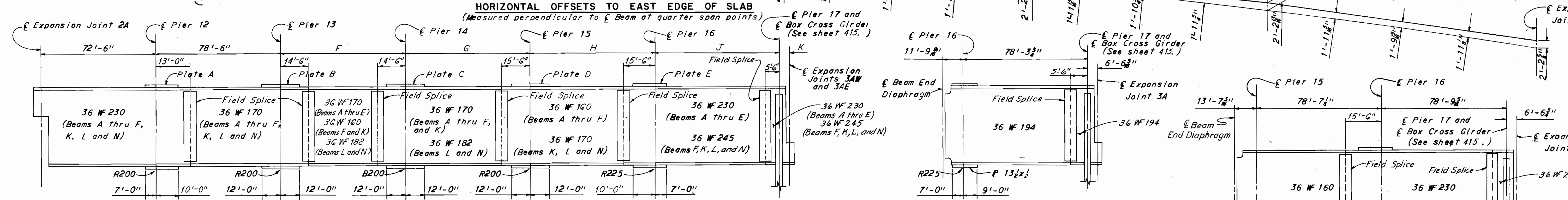
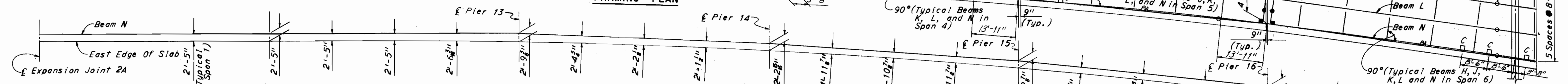
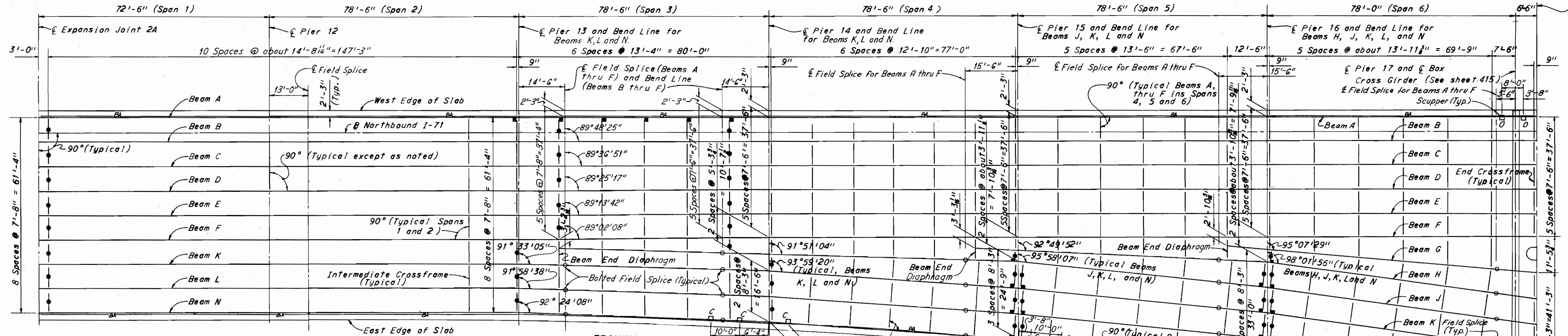
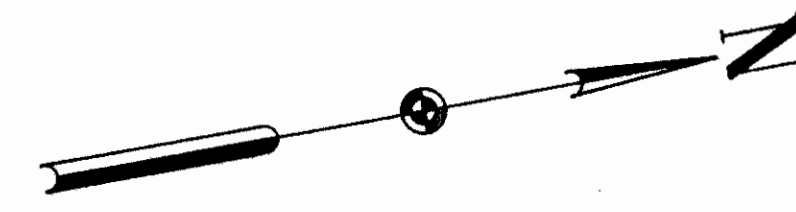
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: S.R.D. TRACED: J.M.C. CHECKED: J.M.C. REVIEWED: J.M.C. REVISION:
 DATE: 7-16-64 DATE: 12-22-64 DATE: 12-22-64 DATE: 12-22-64

SHEET 412

SCUPPER LEGEND
C - Outlets at ground level
O - Outlets just below superstructure

Notes:
• Denotes Type "Y" Crossframe
■ Denotes 90°
-BA- Denotes Bulb Angle Gutter

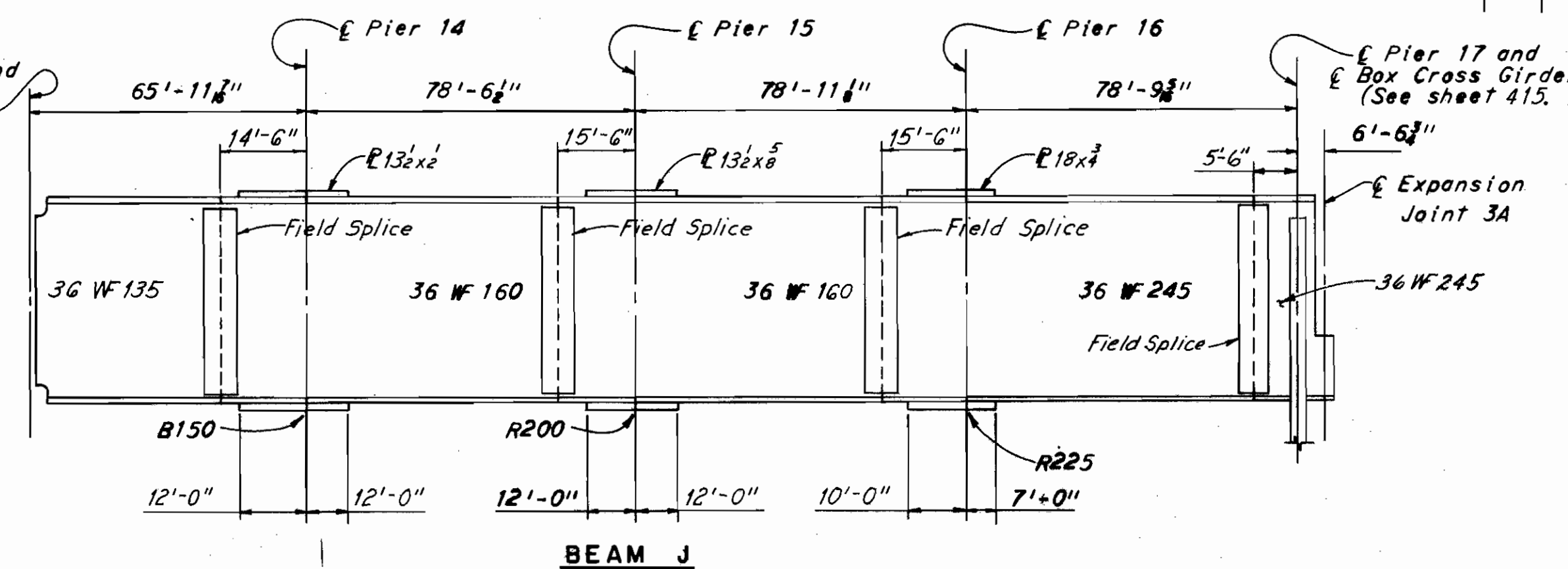


Beams	Plate A	Plate B	Plate C	Plate D	Plate E
A thru E	18x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	18x ³ / ₂
F	18x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	18x ³ / ₂
K	18x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	18x ³ / ₂
L and N	18x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	13 ¹ / ₂ x ³ / ₂	18x ³ / ₂

Beams	F	G	H	J	K
A thru D	78'-6"	78'-6"	78'-6"	78'-0"	6'-6"
E and F	78'-6"	78'-5"	78'-6"	78'-0"	6'-6"
K	78'-6"	78'-8"	78'-11"	78'-9"	6'-6"
L	78'-6"	78'-8"	78'-11"	78'-9"	6'-6"
N	78'-6"	78'-8"	78'-11"	78'-9"	6'-6"

Note:
Beams with bend points at piers shall be shop spliced in accordance with the procedure outlined on Ohio Standard Drawing SD-1-63, sheet 1 of 4.

Notes:
For beam end diaphragm details and dead load deflection and convexity diagrams see sheet 414.
For additional notes see sheet 412.



H.N.T.B BRIDGE NOS. 21A & 21B

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FRAMING PLAN - UNIT 3A
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

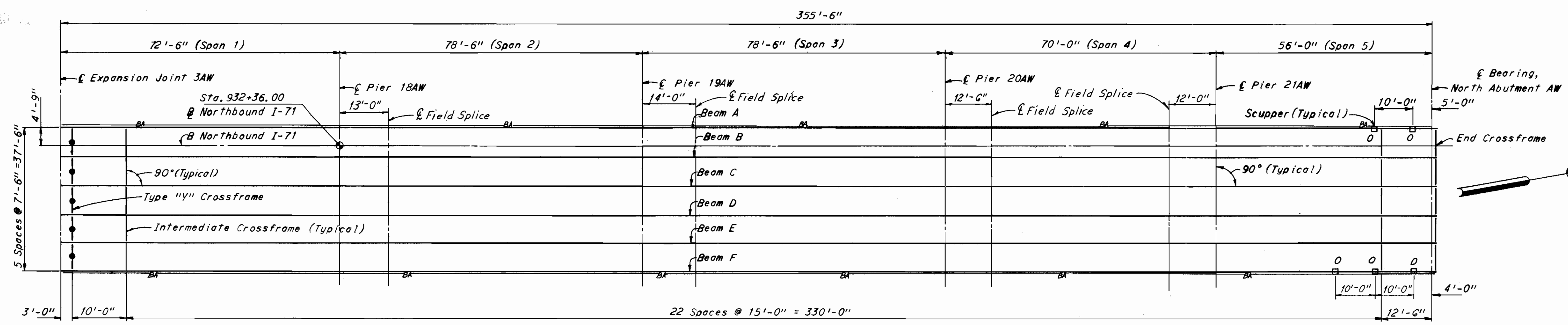
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: G.R.D. TRACED: J.M.C. CHECKED: J.M.C. REVIEWED: J.M.C. REVISION: J.M.C.
DATE: 7-18-44 DATE: 12-21-44 DATE: 12-22-44 DATE: 12-22-44

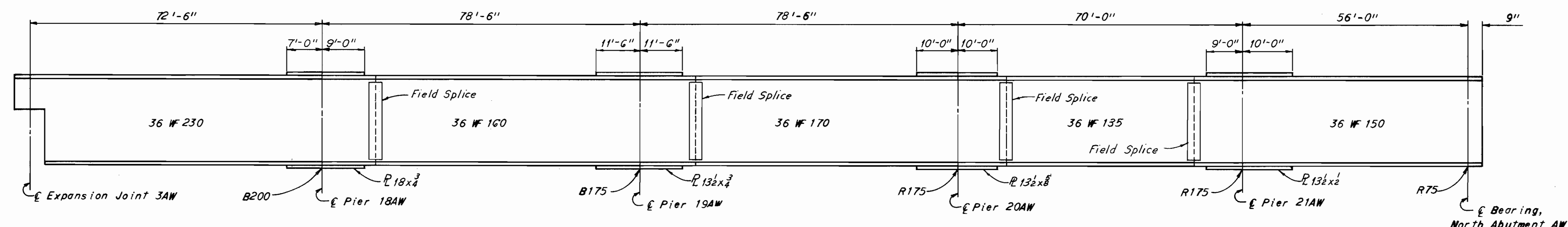
SHEET 413

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



FRAMING PLAN

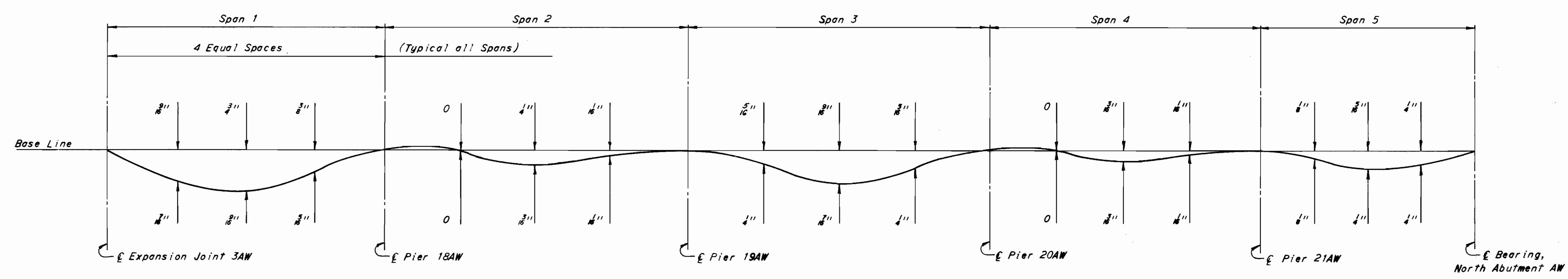
SCUPPER LEGEND
C - Outlets at ground level
O - Outlets just below superstructure



TYPICAL BEAM ELEVATION

Note. Cover plate lengths and sizes shown are typical top and bottom.

BEAM CAMBER NOTE
No camber is required but beams shall be fabricated so that any curved beam will be placed with the convex flange up.



DEAD LOAD DEFLECTION DIAGRAM

Note:
Values shown above base line are total deflections due to steel and concrete.
Values shown below base line are for deflections due to concrete only.
Deflections are measured to nearest 1/16 inch.

Notes:
For roadway end dam and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4.
The supporting angle shown in the "Roadway End Dam Data Table" shall be increased from 6x4x1/2 to 8x4x1/2.
For additional notes see sheet 412.
The rockers at Pier 21AW shall be provided with 4-1/2" shims under the base plates and the rockers at Pier 20AW shall be provided with 2-1/2" shims under the rockers. Other dimensions of shims to match base plate.

H.N.T.B. BRIDGE NOS. 21A & 21B

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FRAMING PLAN - UNIT 4AW

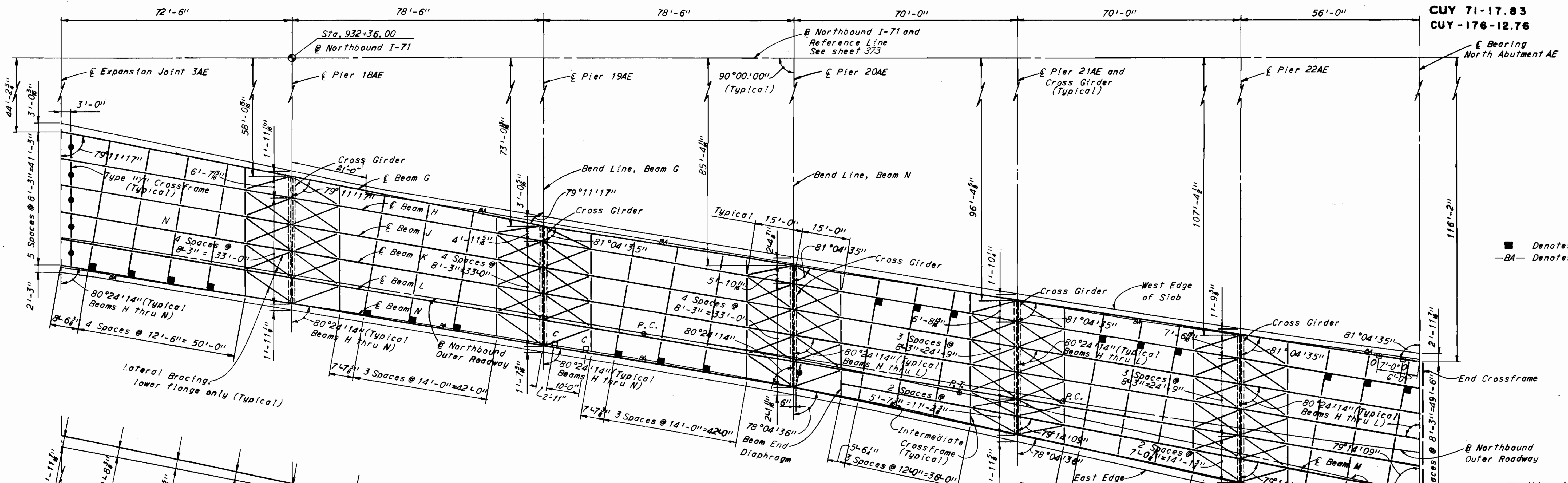
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
STA. 935+21.25

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN J.M.C.	TRACED	CHECKED W.F.
DATE 12-21-64	DATE 12-22-64	DATE 12-22-64

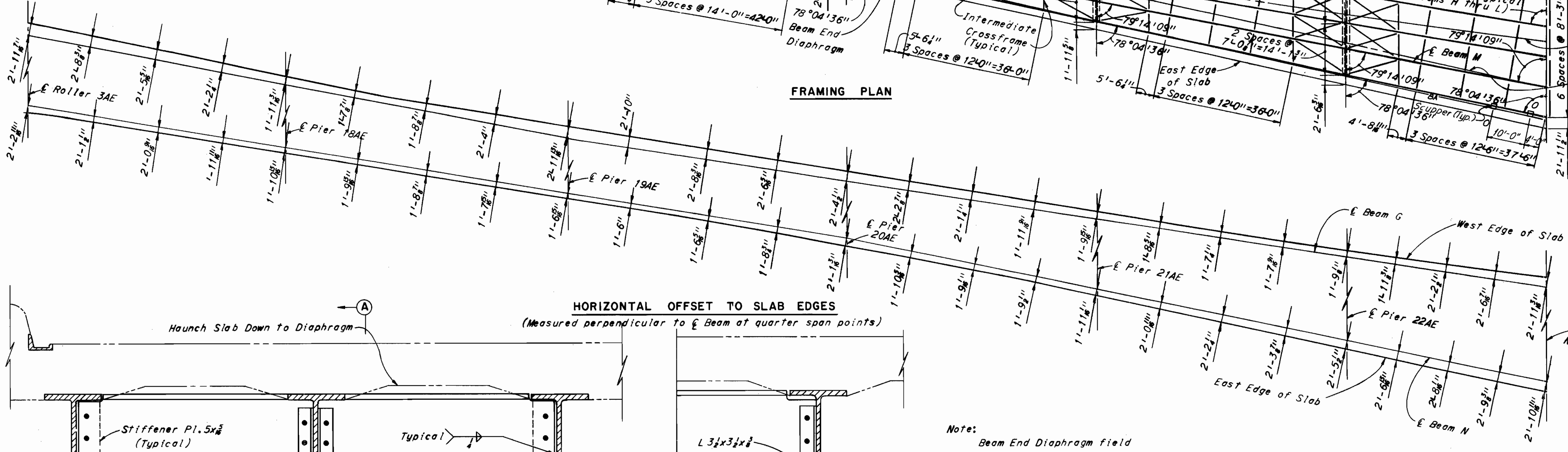
SHEET 417

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76

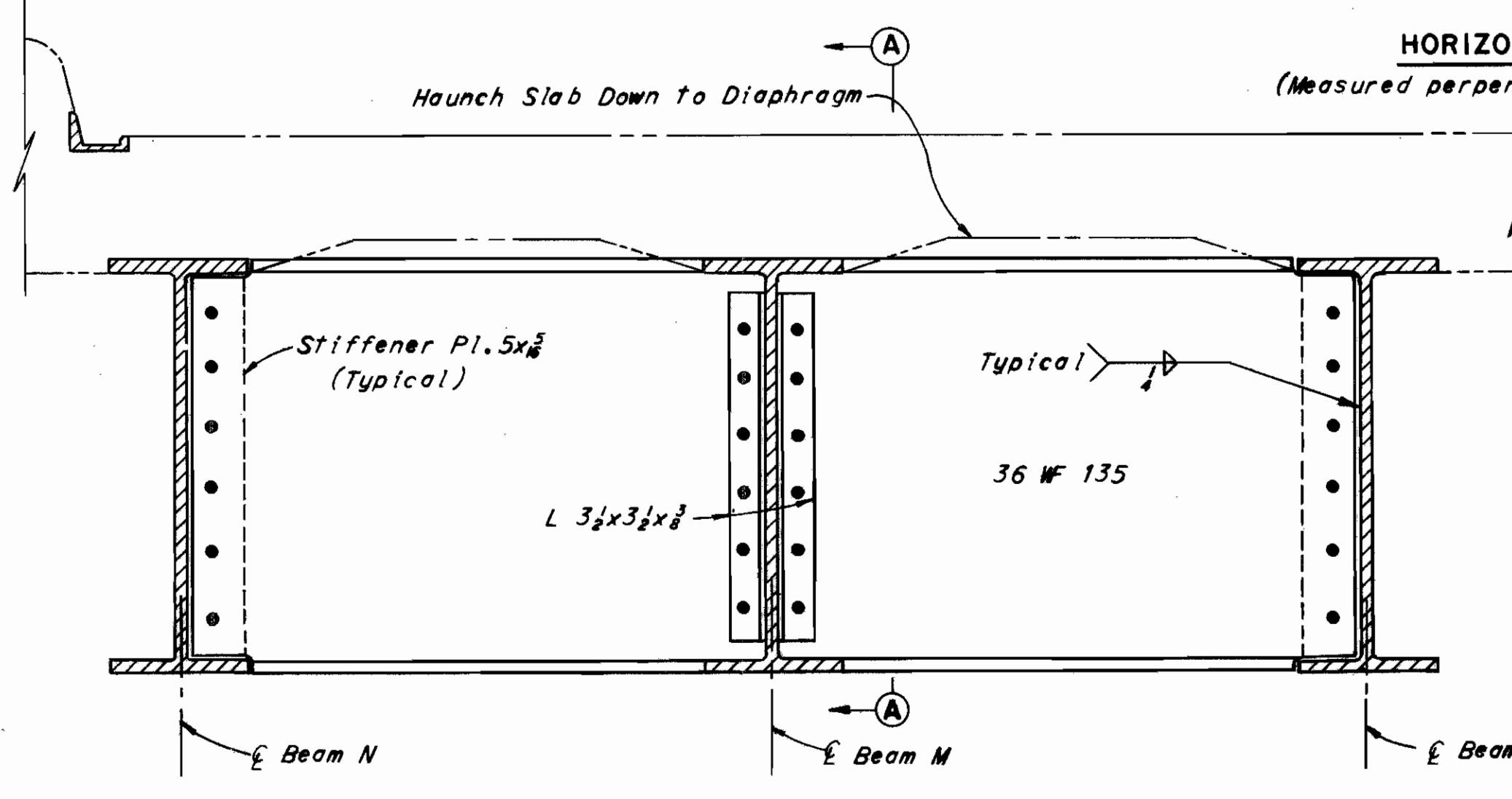


■ Denotes 90°
 -BA- Denotes Bulb Angle Gutter

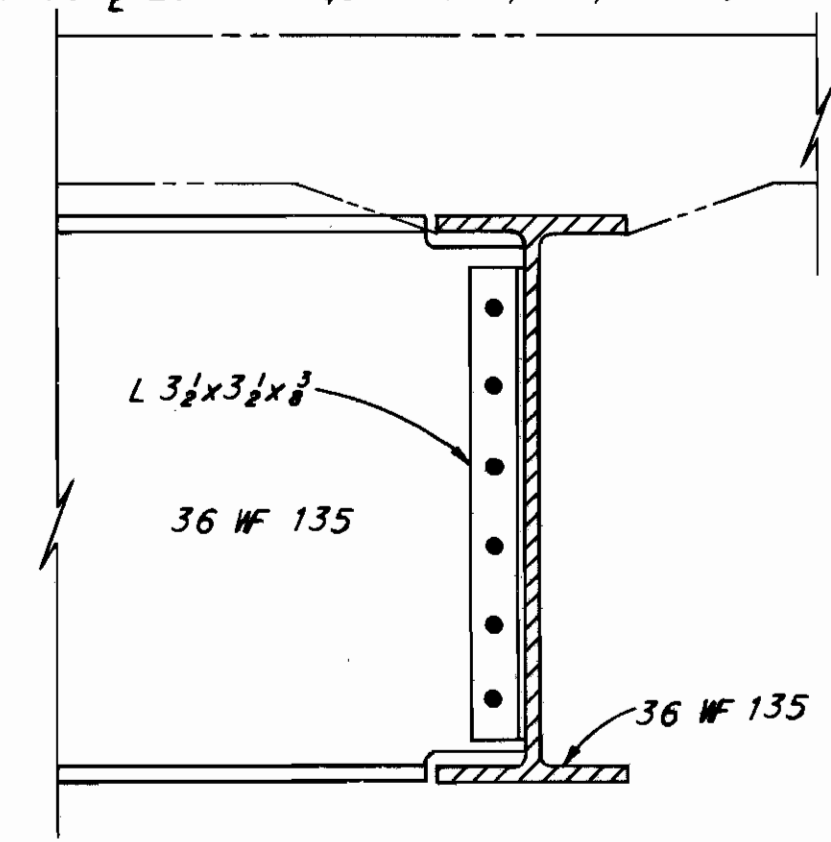
FRAMING PLAN



HORIZONTAL OFFSET TO SLAB EDGES
 (Measured perpendicular to E Beam at quarter span points)



BEAM END DIAPHRAGM



SECTION A-A

Note:
 Beam End Diaphragm field connections shall be made with 2" High Strength Bolts.

SCUPPER LEGEND

C - Outlets at ground level
 O - Outlets just below superstructure

Notes:
 For roadway end dam and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4.
 The supporting angle shown in the "Roadway End Dam Table" shall be increased from 6x4x3/4 to 8x4x3/4.
 For additional notes see sheet 412.

H.N.T.B. BRIDGE NOS. 21A & 21B

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FRAMING PLAN - UNIT 4AE

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND SOUTHBOUND JENNINGS

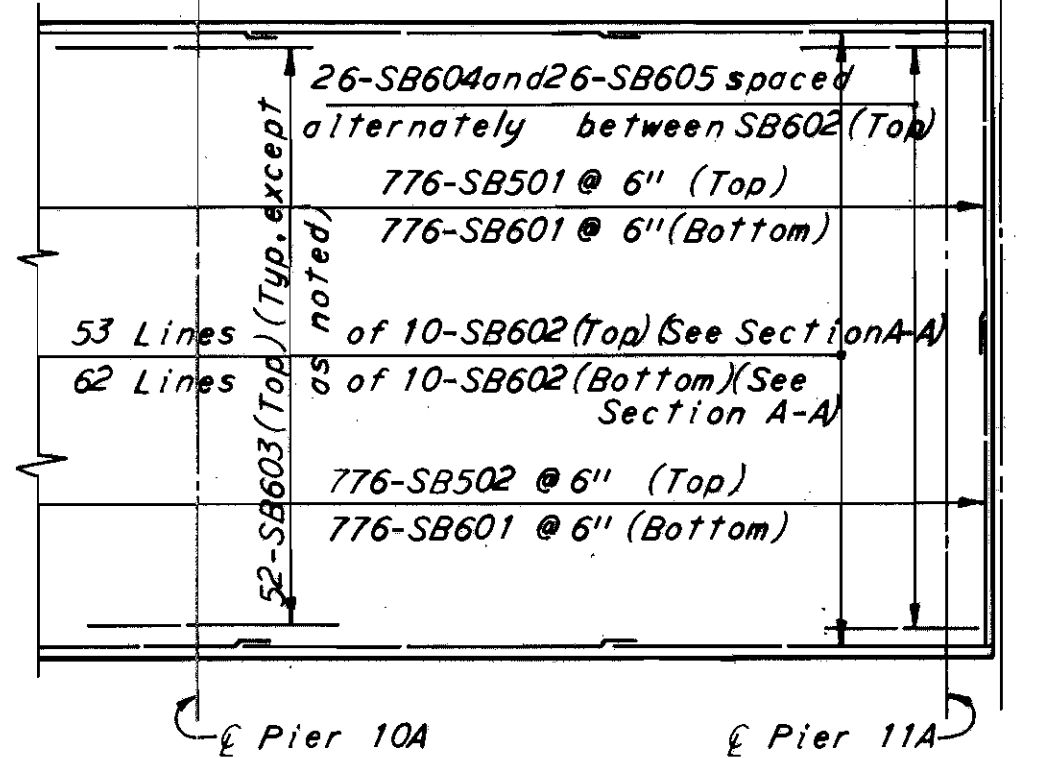
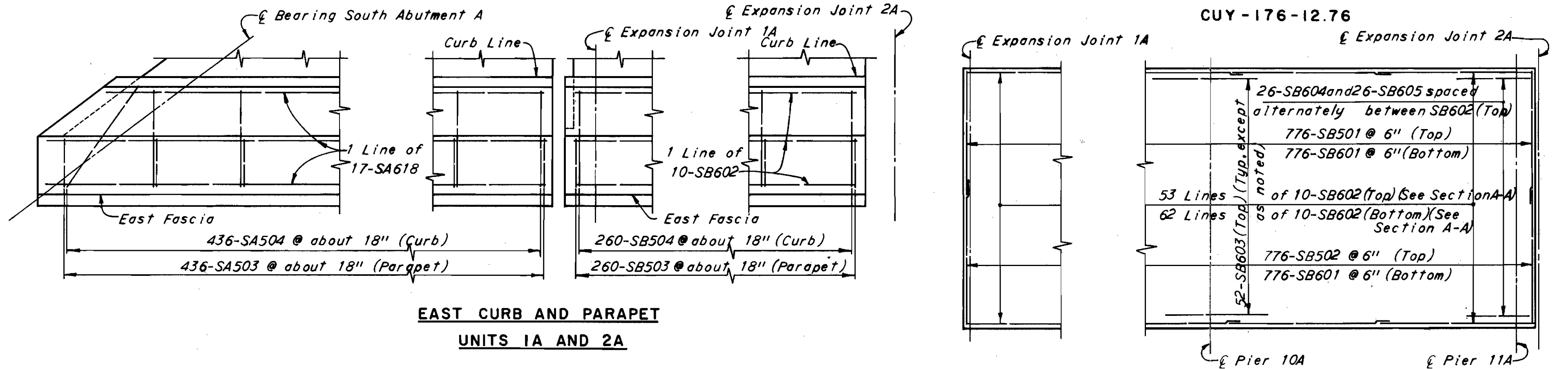
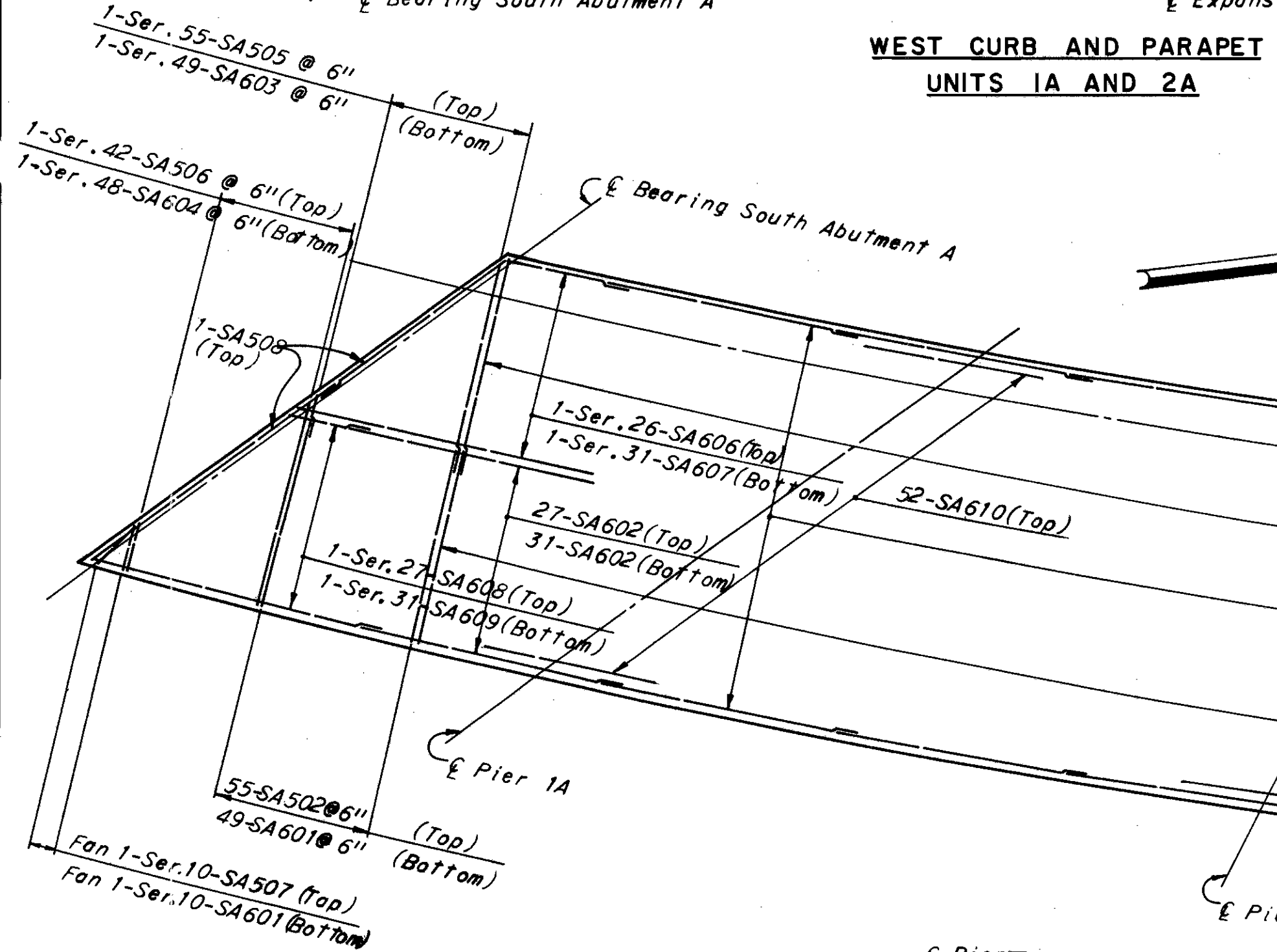
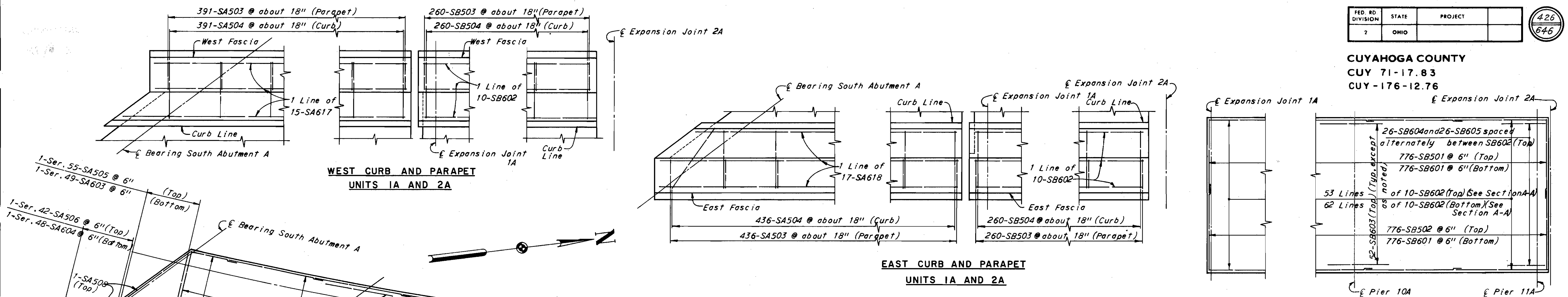
BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

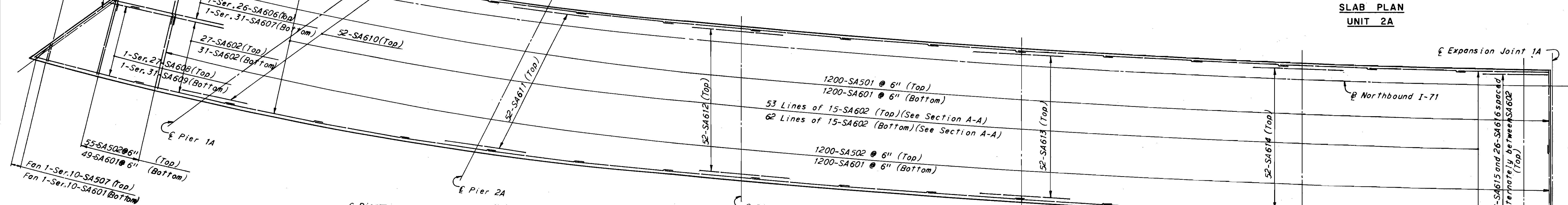
DRAWN	TRACED	CHECKED	REVIEWED
DATE 11-3-64	DATE 7-2-64	DATE 7-2-64	DATE 12-22-64

SHEET 418

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



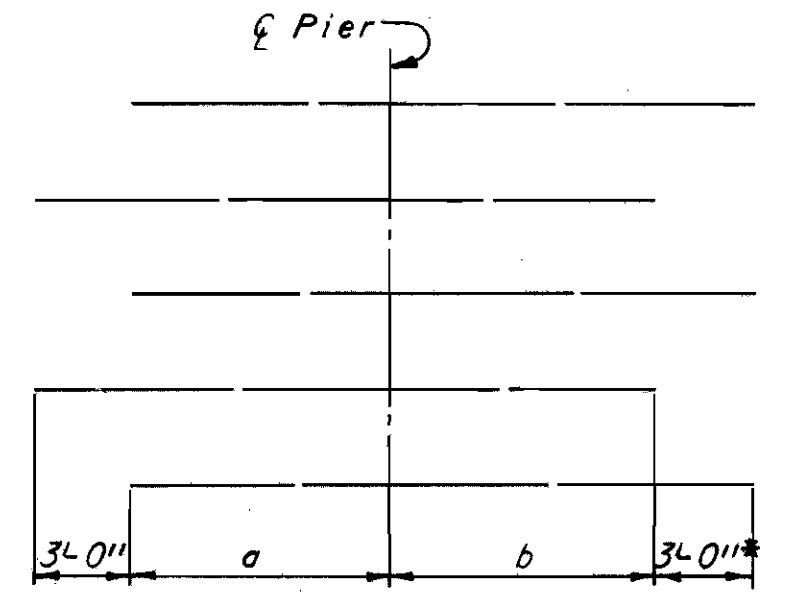
SLAB PLAN
UNIT 2A



SLAB PLAN
UNIT IA

Pier	Bar Mark	Dim. a	Dim. b
1A	SA610	12'-6"	12'-6"
2A	SA611	12'-6"	13'-3"
3A	SA612	13'-3"	18'-3"
4A	SA613	18'-3"	18'-3"
5A	SA614	18'-3"	14'-3"
6A	SA615 and SA616	14'-3"	8'-9"
7A thru 10A	SB603	12'-0"	12'-0"
11A	SB604 and SB605	12'-0"	4'-9"

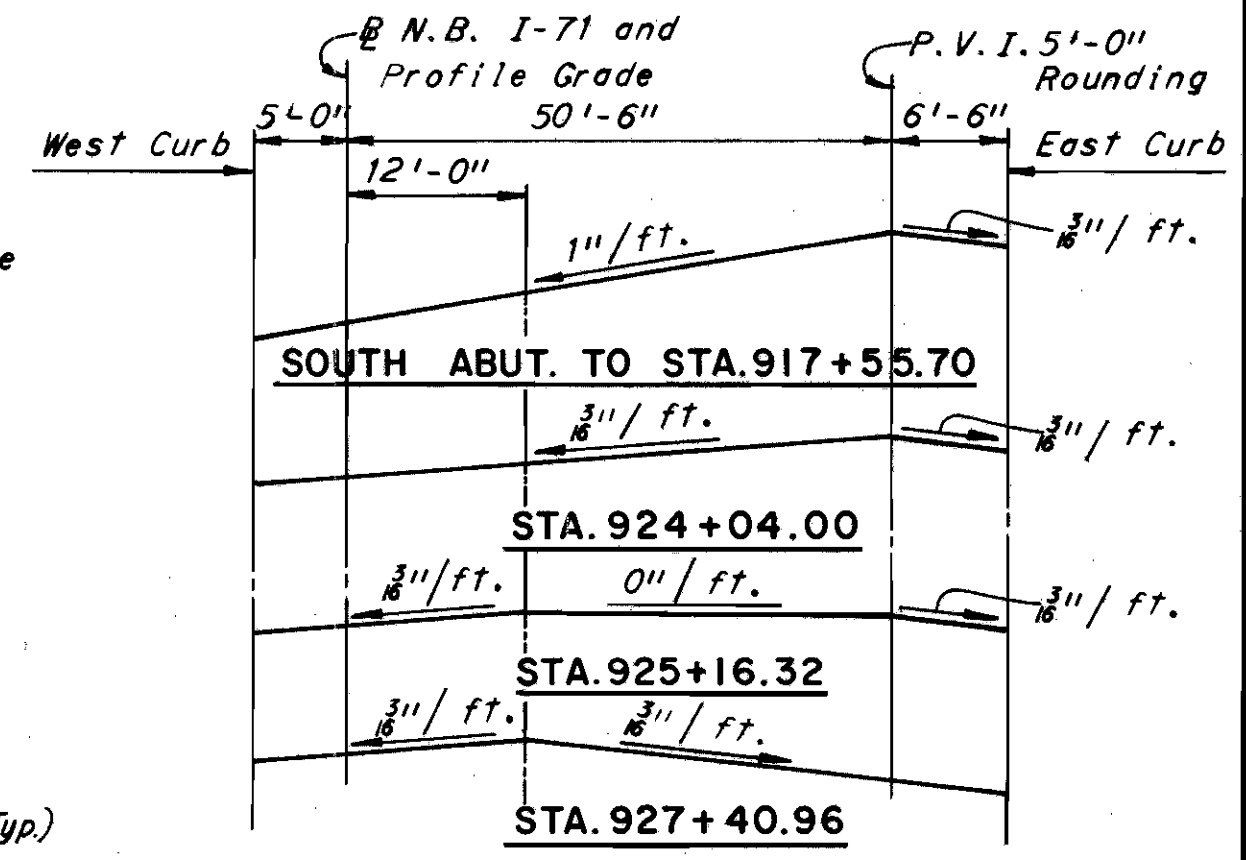
*Note: The 3'-0" additional length on alternate bars is omitted on North side of Pier 6 and Pier 11.



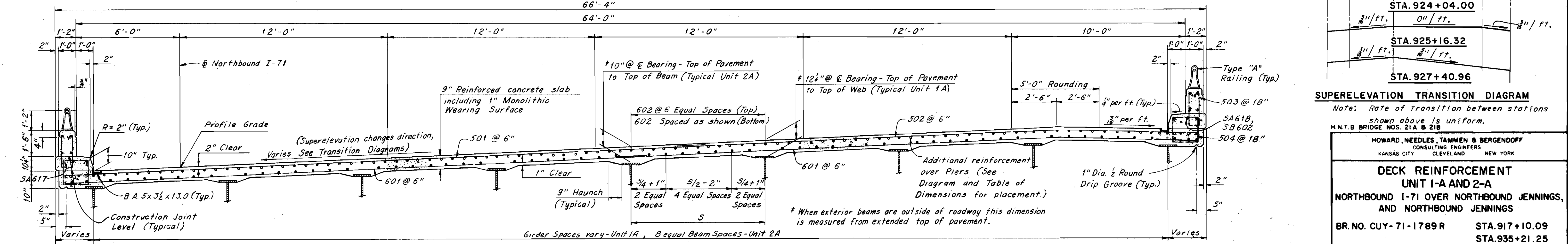
PLACEMENT OF ADDITIONAL
REINFORCEMENT OVER PIERS

Notes:
 Full width transverse reinforcement shall be spaced along and radial to East edge of slab. Transverse series reinforcement shall be spaced parallel to the nearest full width transverse reinforcement.
 Longitudinal reinforcement shall be field bent concentric, as required.
 Transverse slab bars shall be field bent below safety curb and roadway crowns as required.
 Field bending shall be included in "Item S-4, Reinforcing Steel" for payment.
 Additional reinforcement over piers shall be placed parallel to normal longitudinal reinforcement.

Notes:
 For Reinforcement Schedule and Bending Diagrams see sheet 455.
 For railing post and parapet joint spacing and longitudinal reinforcement in the parapet see sheet 431.
 For additional details of railing see Ohio Standard Drawing AR-1-57.
 For optional transverse slab construction joint see sheet 429.
 For details of intermediate expansion joints, see sheets 423, 424 and 425.



SUPERELEVATION TRANSITION DIAGRAM
 Note: Rate of transition between stations shown above is uniform.
 H.N.T.B. BRIDGE NOS. 21A & 21B



TYPICAL SECTION

Note: All reinforcing bar marks in Unit 1A shall be prefixed SA and all reinforcing bar marks in Unit 2A shall be prefixed SB. In Typical Section bars having no prefix are typical for both units.

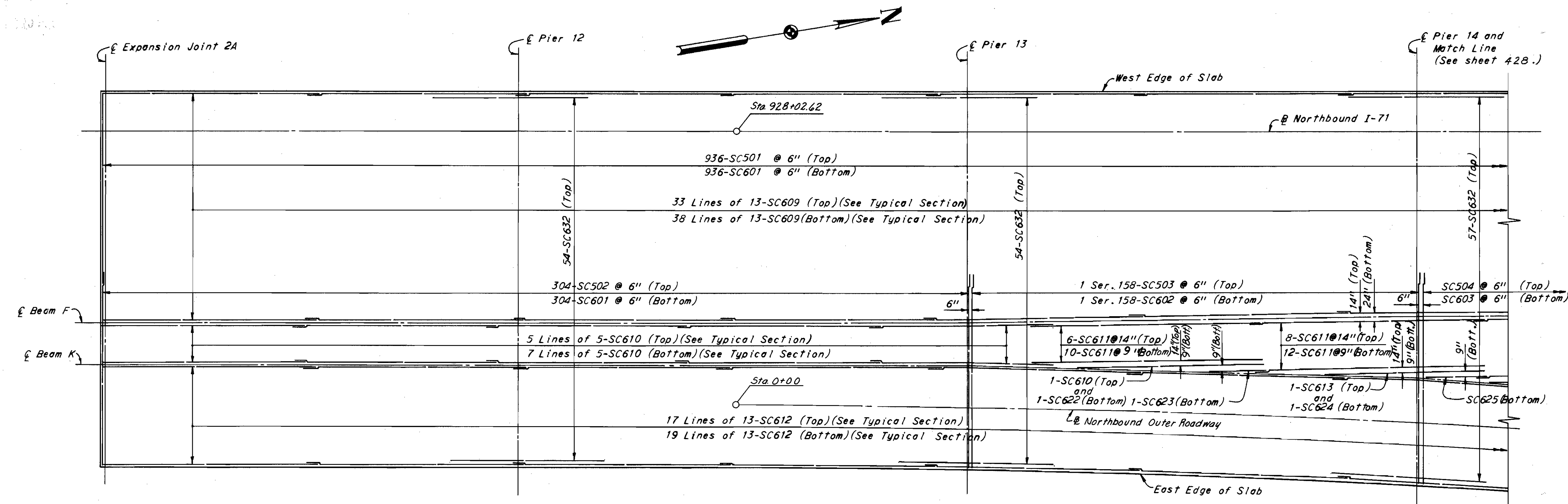
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT
 UNIT 1-A AND 2-A
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

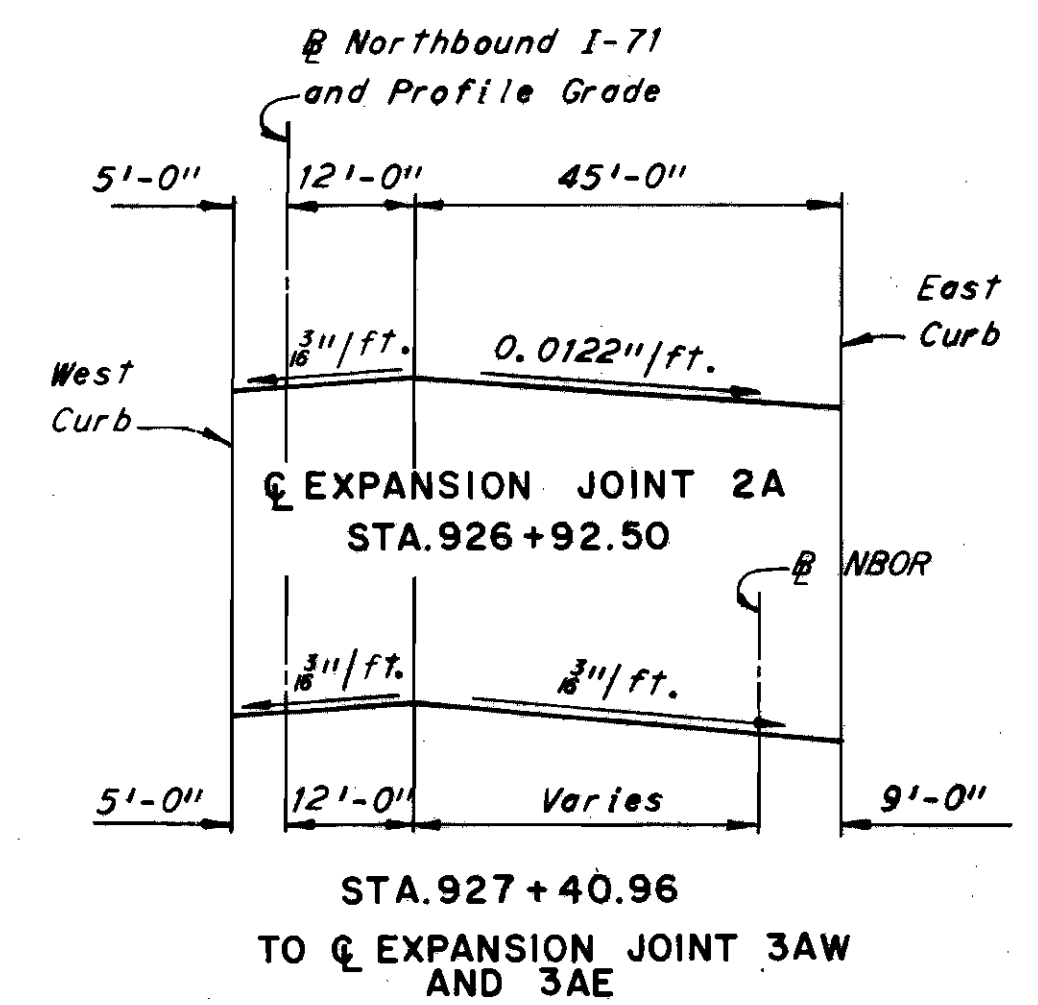
BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO
 DRAWN/MC TRACED CHECKED/REVIEWED/REVISOR
 DATE/10-10-64 DATE/11-17-64 DATE/12-22-64 SHEET 426

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



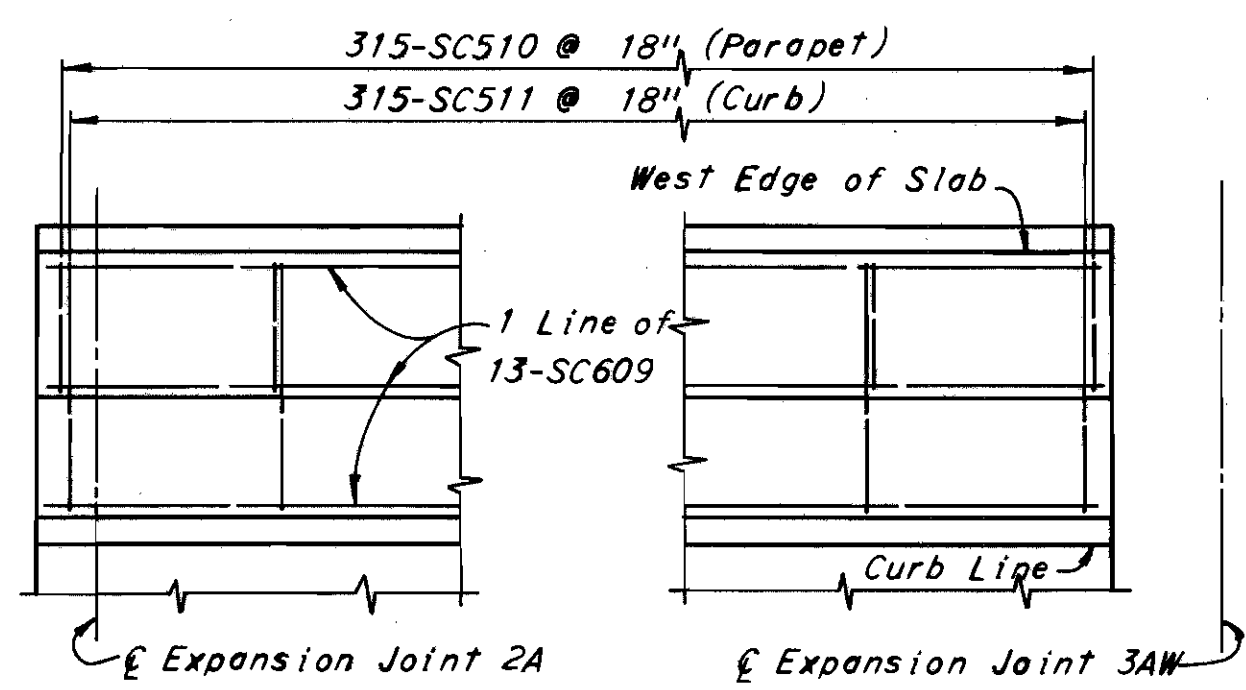
PART SLAB PLAN



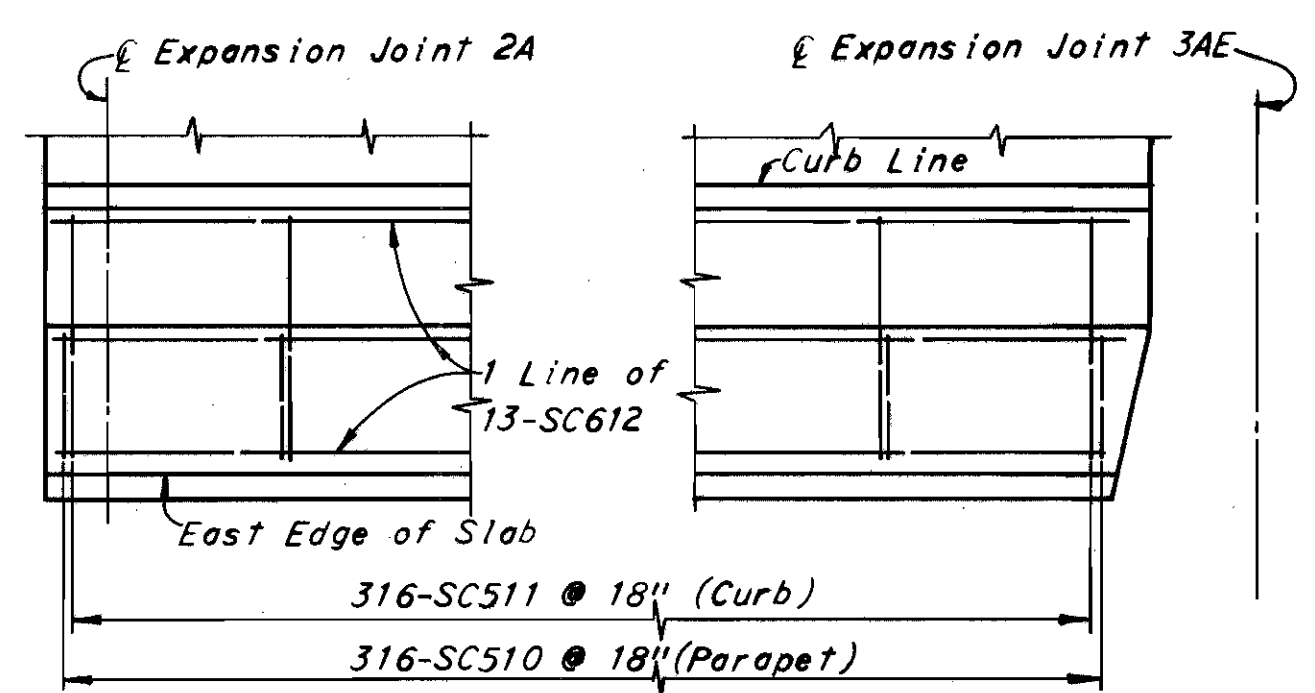
SUPERELEVATION TRANSITION DIAGRAMS

Notes: Rate of transition between stations shown above is uniform.

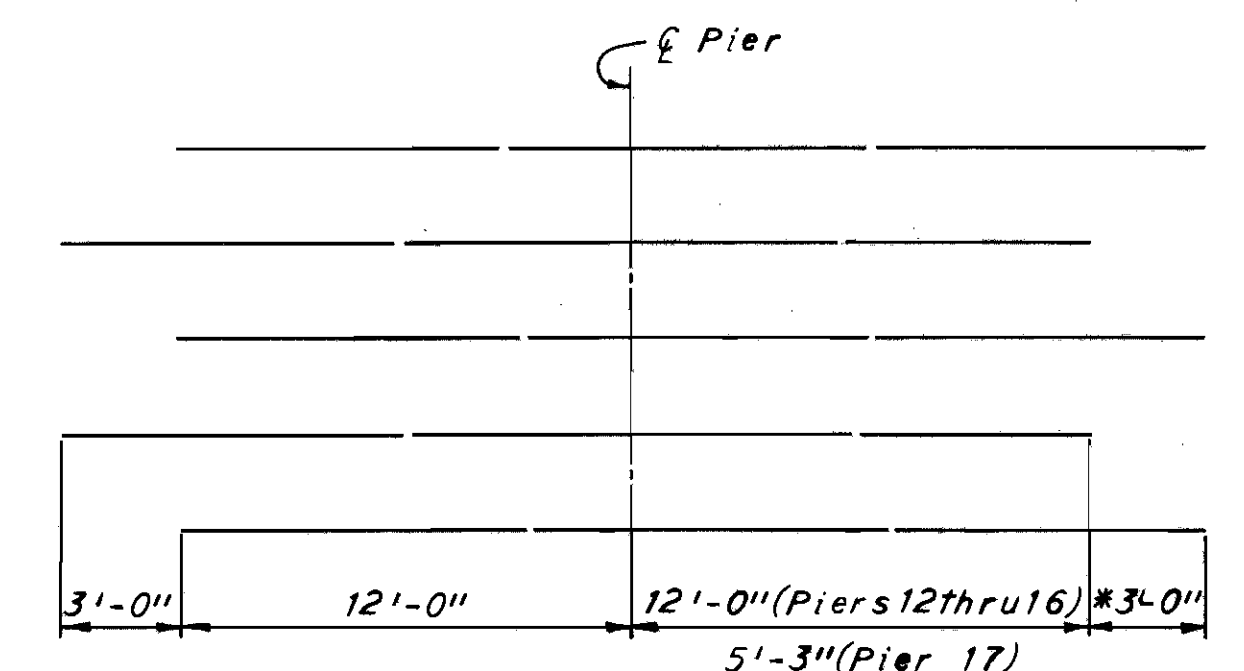
Notes:
All transverse reinforcement shall be spaced along E Beam A.
Longitudinal reinforcement between the West Edge of Slab and E Beam K shall be parallel to E Beam A. Longitudinal reinforcement between E Beam K and the East Edge of Slab shall be parallel to B Northbound I-71 to Sta. 928+02.62 B Northbound I-71, and then shall be concentric with B Northbound Outer Roadway from Sta. 0+00.00 B Northbound Outer Roadway.



WEST CURB & PARAPET

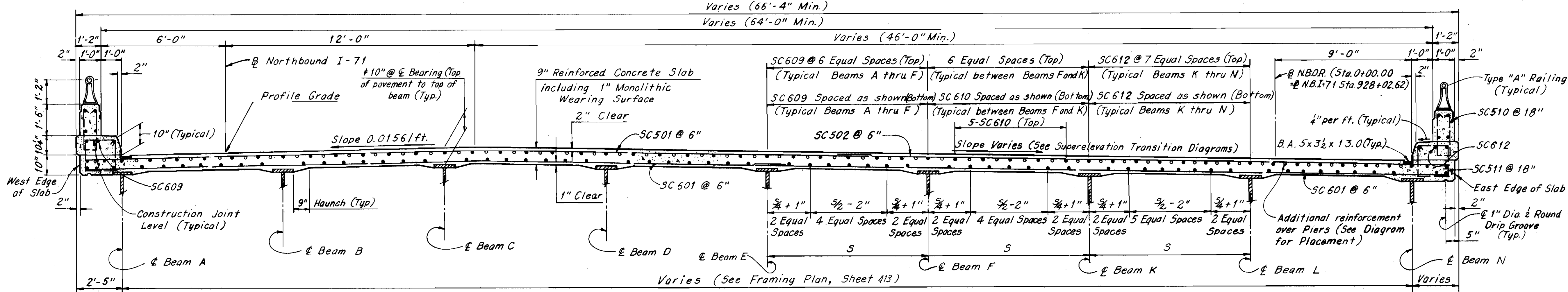


EAST CURB & PARAPET



PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

* The 3'-0" additional length on alternate bars is omitted on North side of Pier 17.



TYPICAL SECTION
(Beam F adjacent to Beam K)

* Note: When exterior beams are outside of roadway this dimension is measured from extended top of pavement.

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

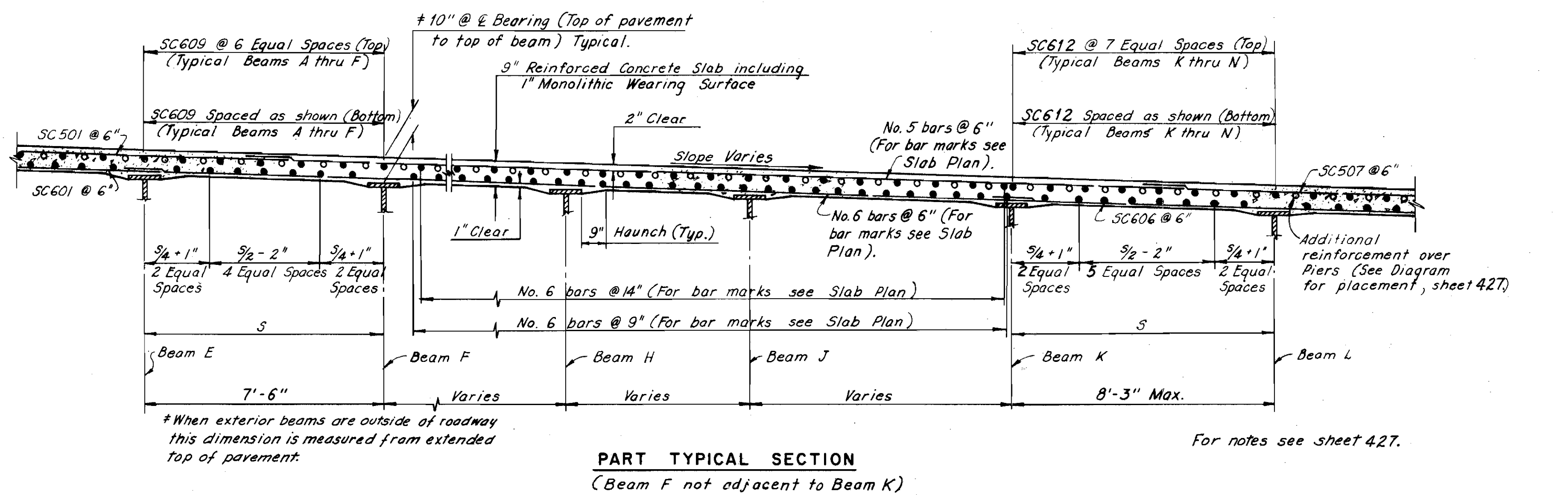
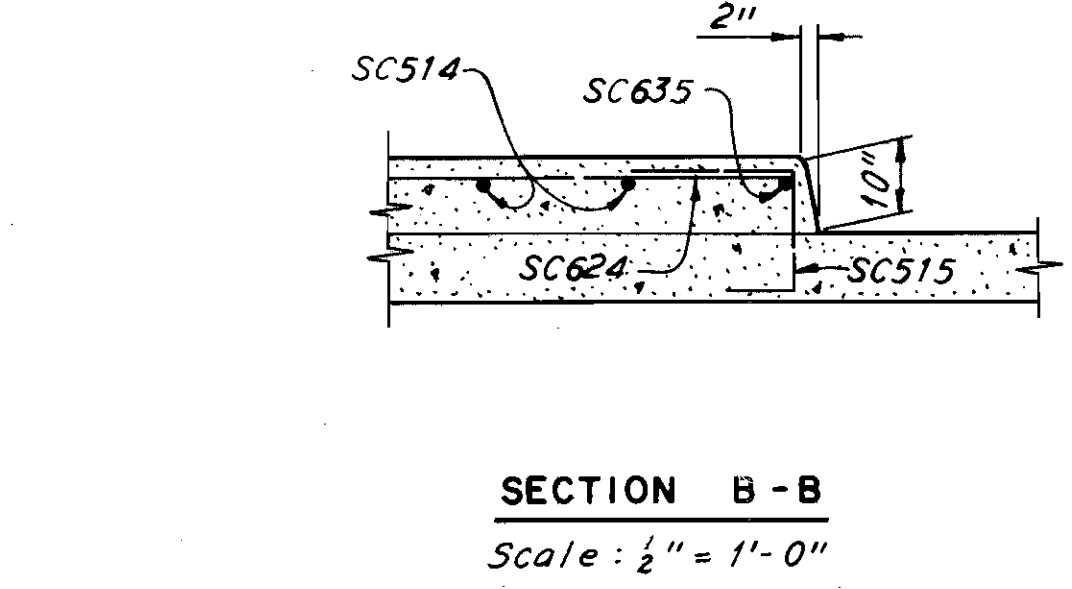
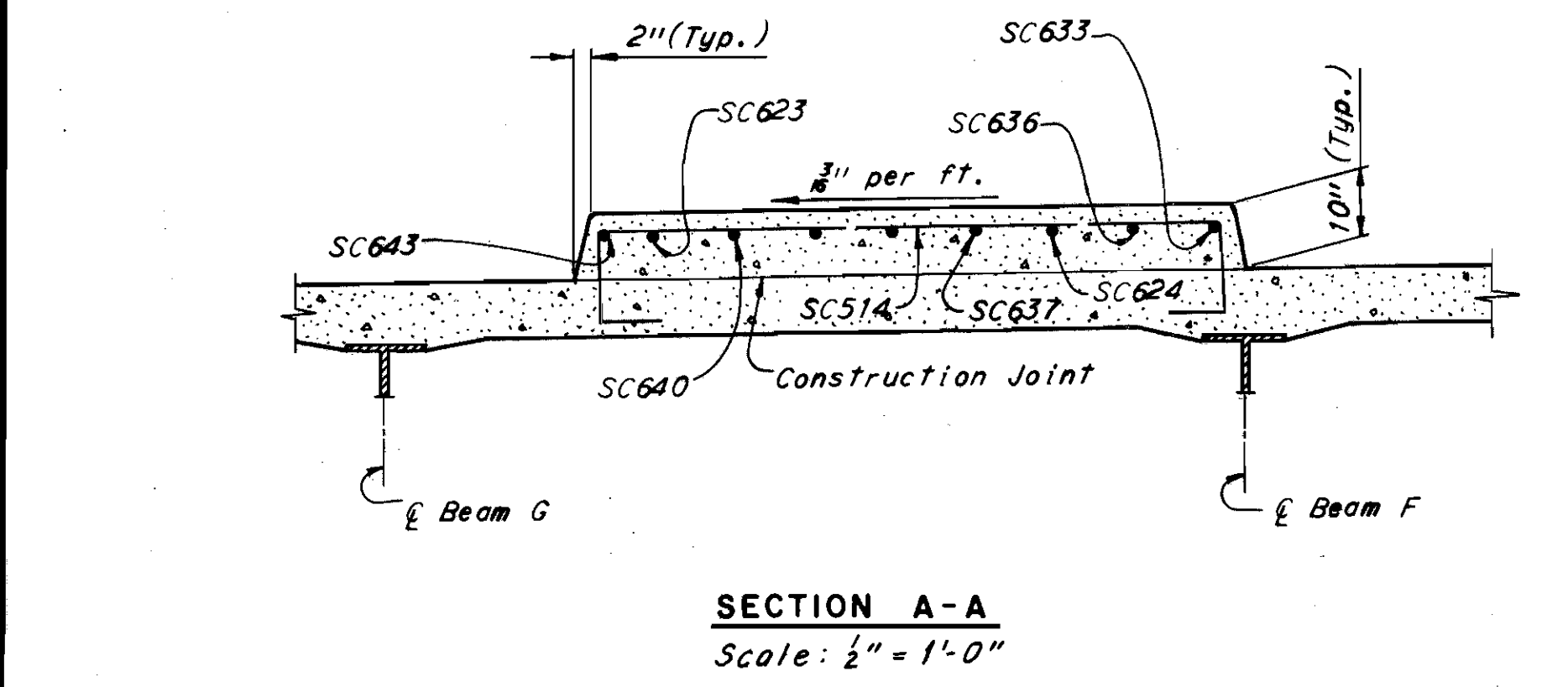
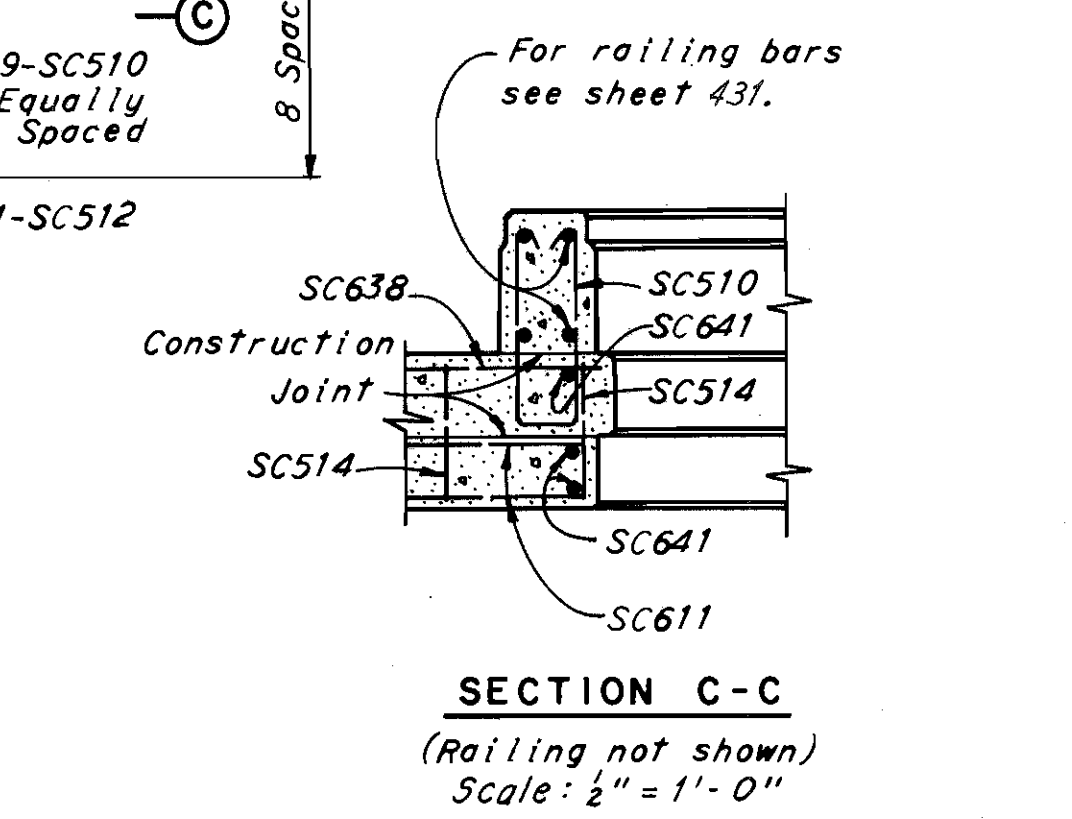
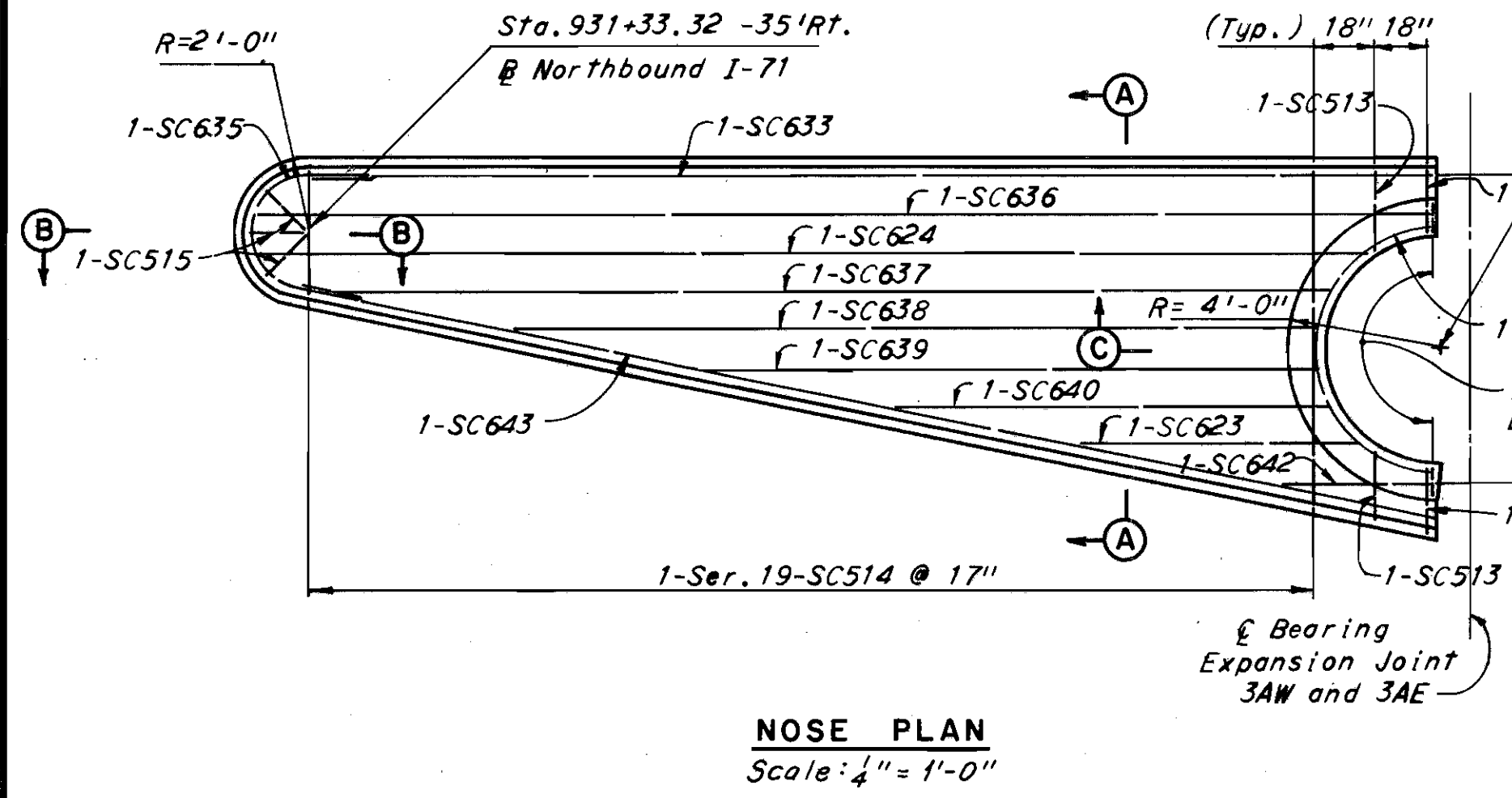
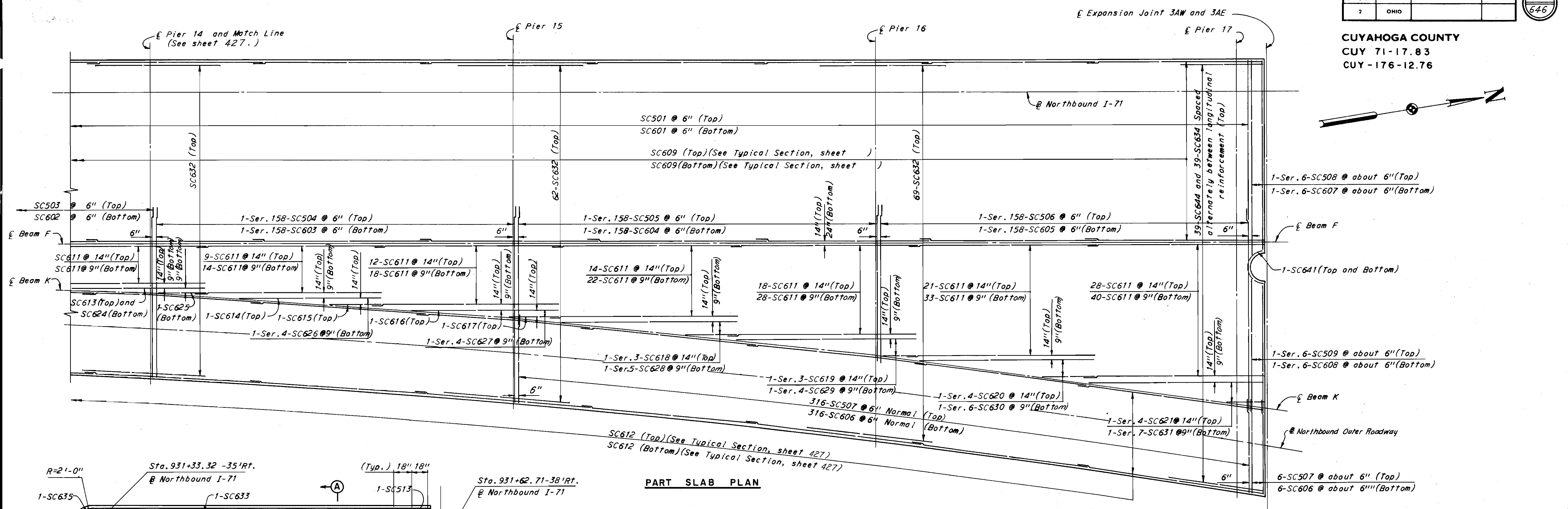
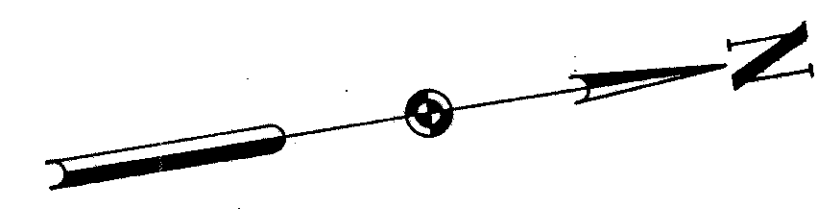
DECK REINFORCEMENT
UNIT 3-A
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN/MC TRACED CHECKED/AS REVISIONS
DATE 10-10-64 DATE 10-20-64 DATE 12-22-64 SHEET 427

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

**DECK REINFORCEMENT
UNIT 3-A**

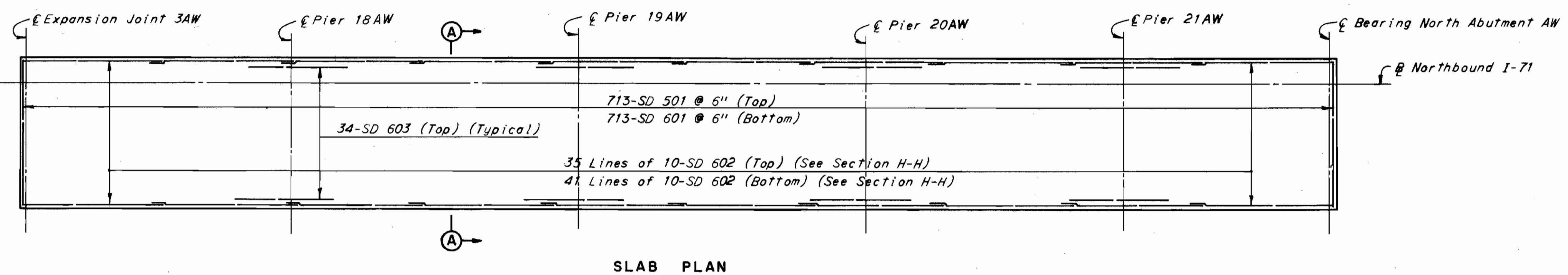
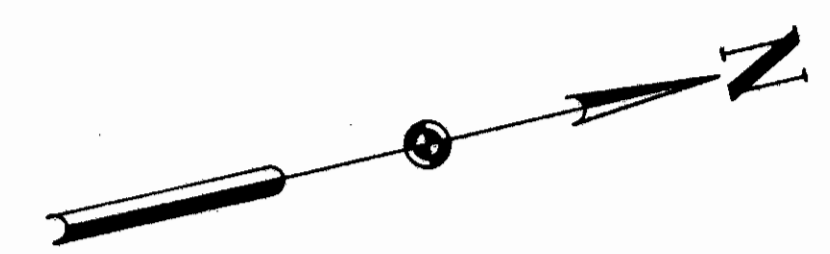
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
STA. 935+21.25

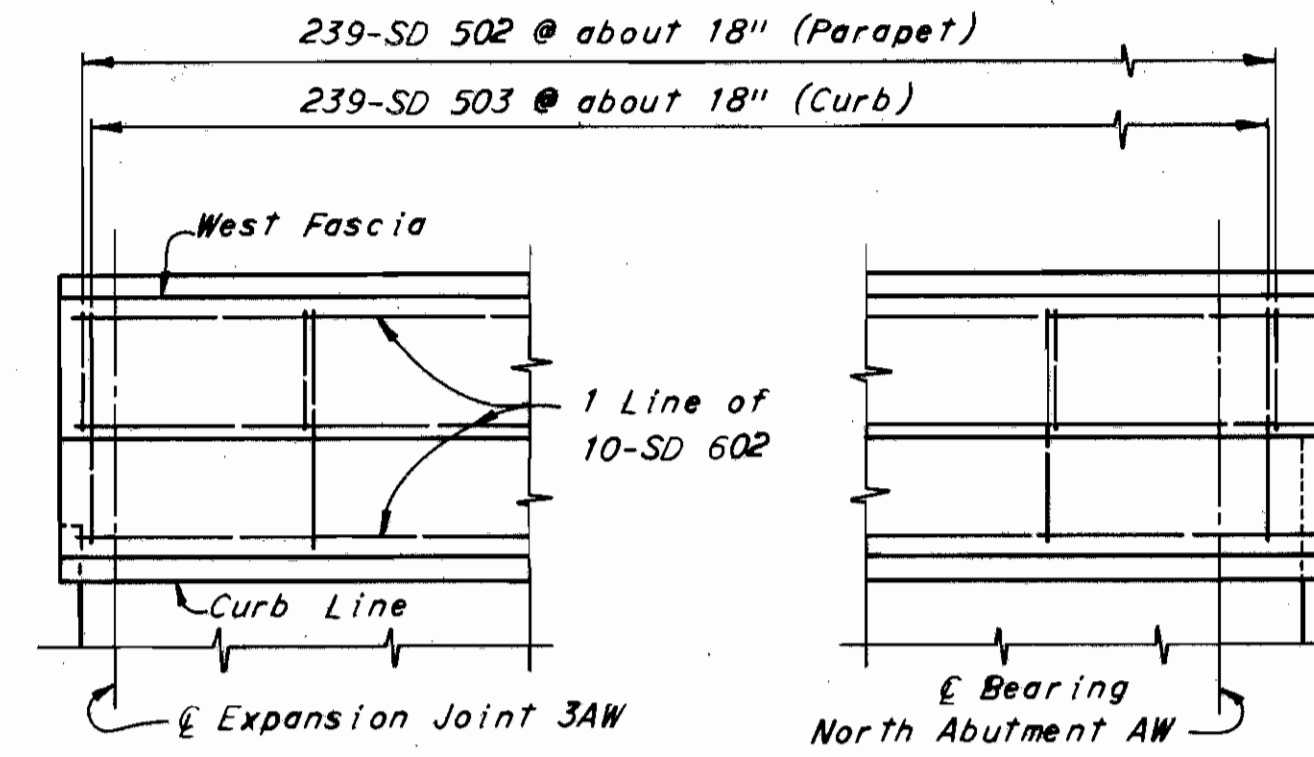
CLEVELAND CUYAHOGA COUNTY OHIO

DATE 10-10-64 TRACED CHECKED AS REVIEWED WZ REVISION
DATE 10-20-64 DATE 12-22-64 SHEET 428

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76

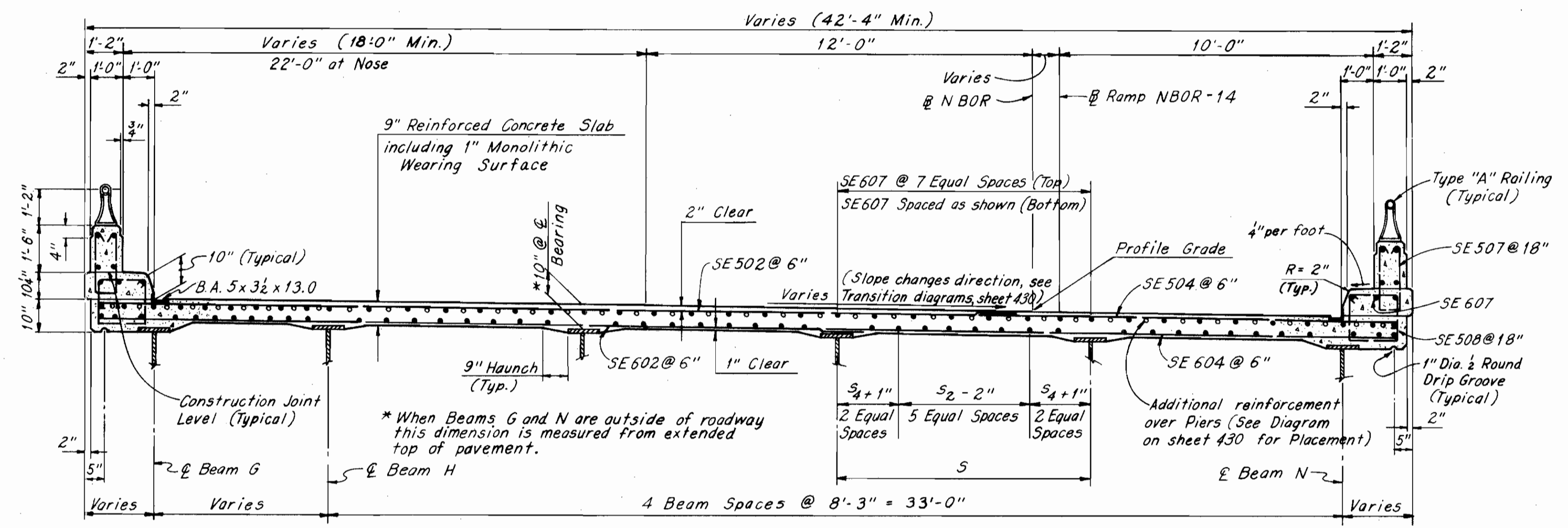


SLAB PLAN

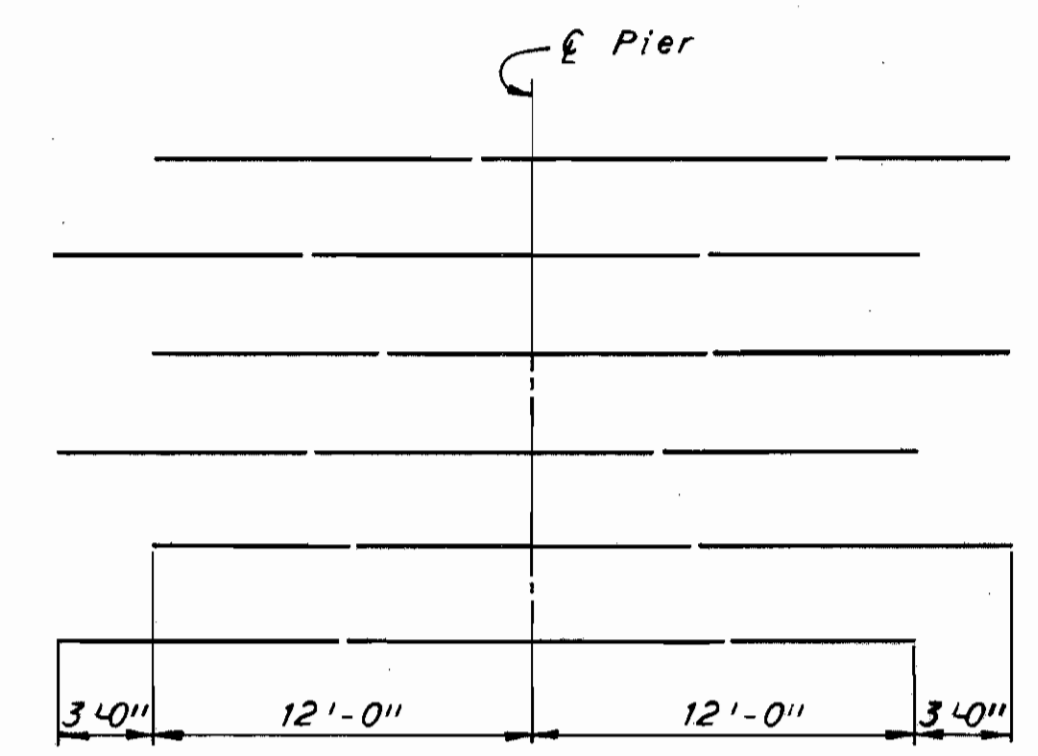


WEST CURB AND PARAPET

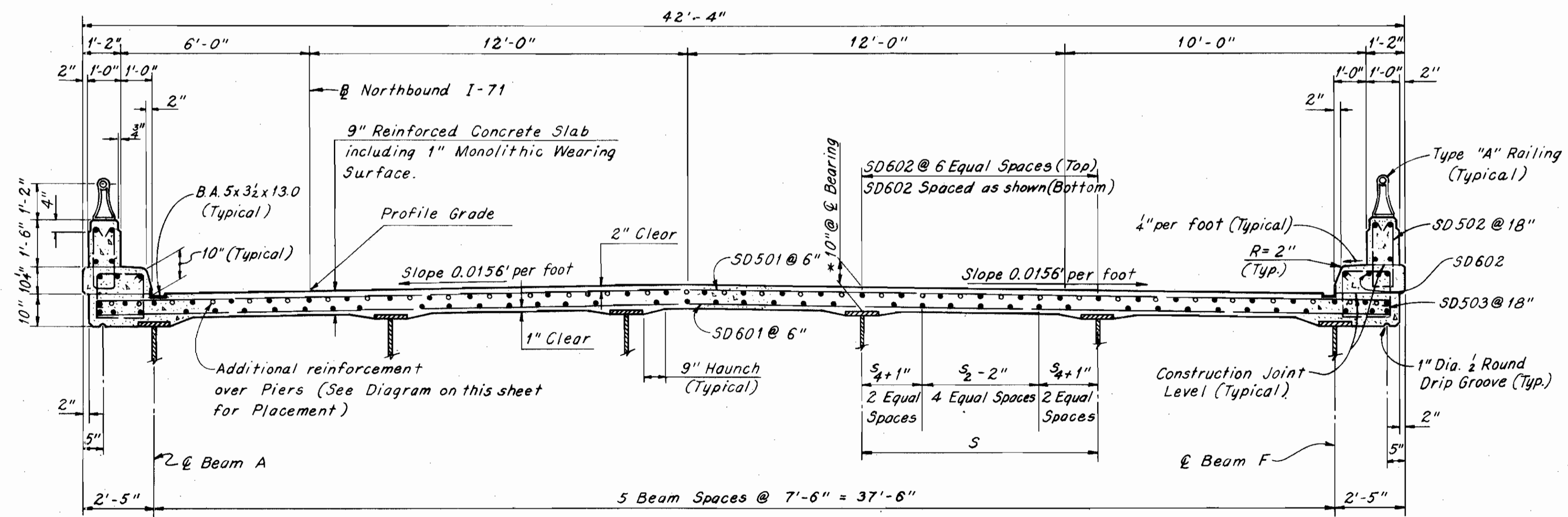
EAST CURB AND PARAPET



SECTION B-B

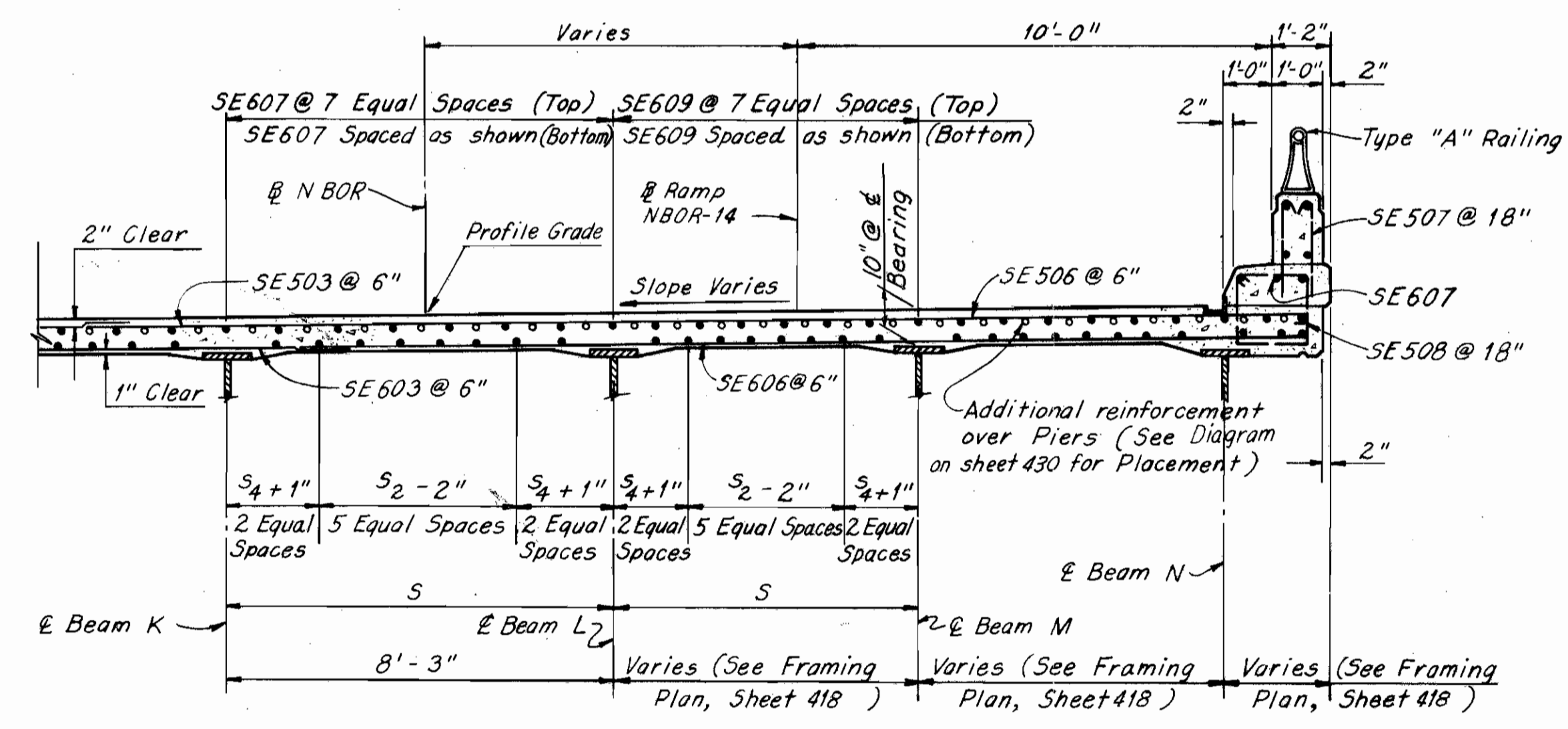


PLACEMENT OF ADDITIONAL REINFORCEMENT OVER PIERS

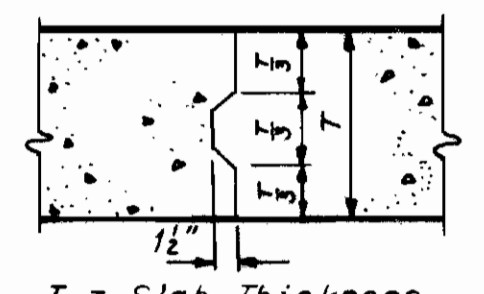


SECTION A-A

* For Beams A and F this dimension is measured from extended top of pavement.



SECTION C-C



OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT

Notes:
All reinforcing bar marks in Unit 4AW shall be prefixed SD and all reinforcing bar marks in Unit 4AE shall be prefixed SE.
For location of Sections B-B and C-C see sheet 430.
For additional notes see sheet 426.

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY CLEVELAND NEW YORK

**DECK REINFORCEMENT
UNIT 4-AW**

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

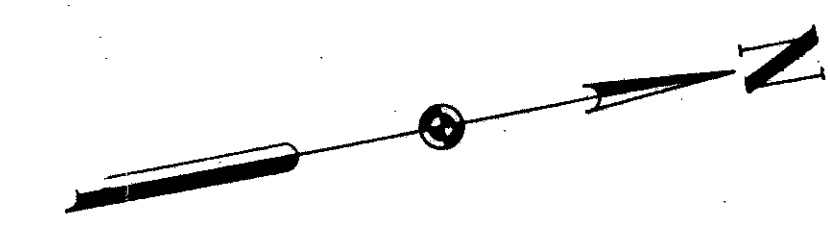
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

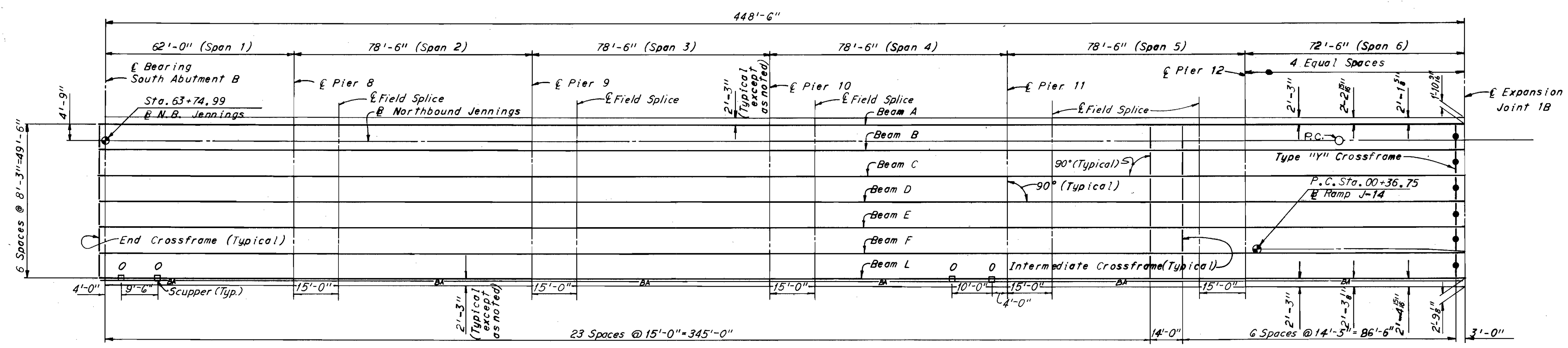
DRAWN/M/C	TRACED	CHECKED/	REVIEWED/WF	REVISED
DATE 10-10-64	DATE 11-19-64	DATE 12-22-64		

SHEET 429

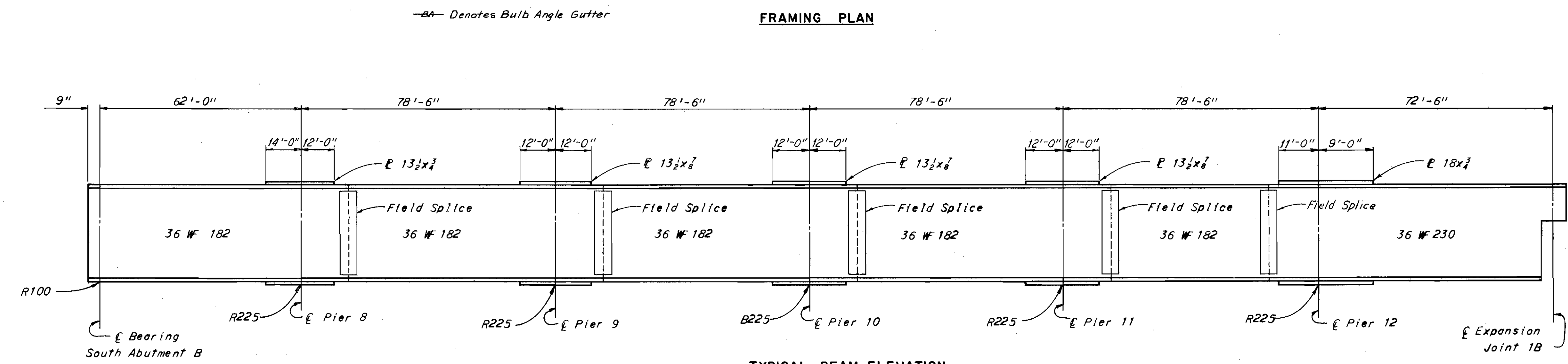
CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



SCUPPER LEGEND
C - Outlets at ground level
O - Outlets just below superstructure

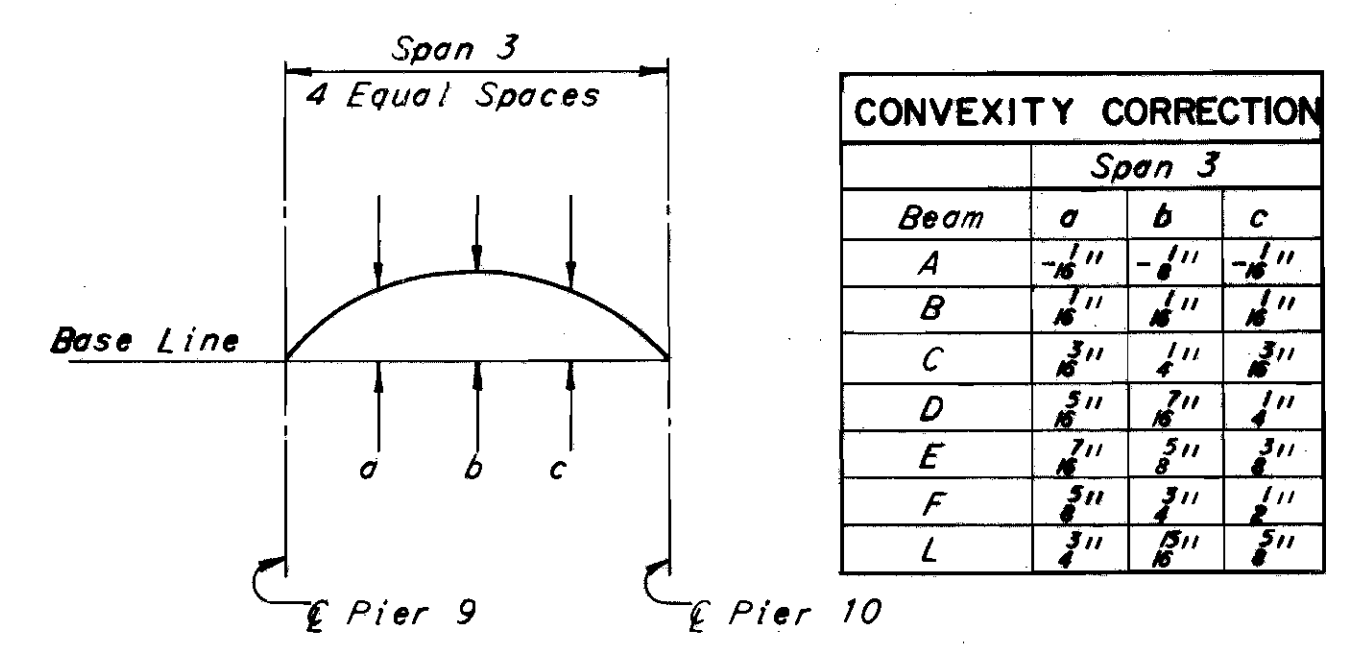


FRAMING PLAN



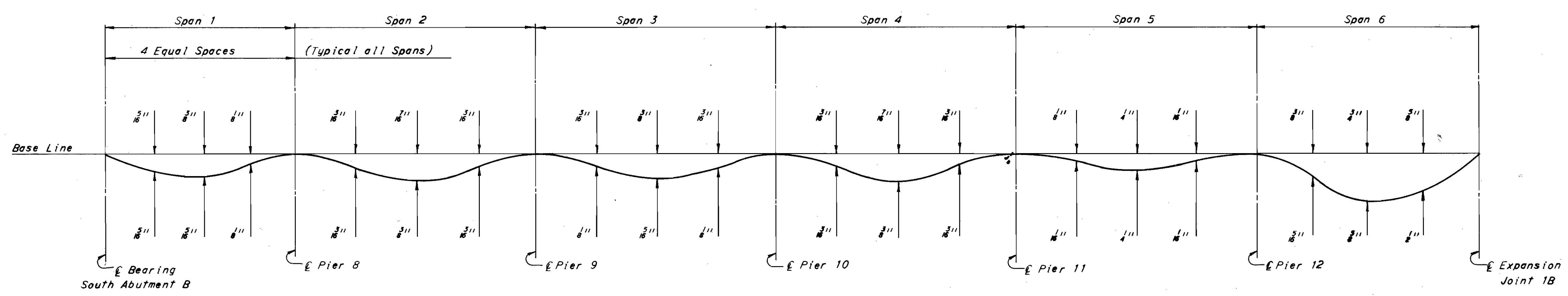
TYPICAL BEAM ELEVATION

Note. Cover Plate lengths and sizes shown are typical top and bottom.



CONVEXITY DIAGRAM

Notes:
Convexity corrections in Spans 1, 2, 4, 5 and 6 are equal to zero.
Negative values for convexity indicate convexity below base line.



DEAD LOAD DEFLECTION DIAGRAM

Note: Values shown above base line are total deflections due to steel and concrete.
Values shown below base line are for deflections due to concrete only.
Deflections are measured to nearest 1/16 inch.

BEAM CAMBER NOTE

Where the combined effects of dead load deflection and convexity is 3/8" or more, the required camber shall be the same as this sum.
Where the combined effects are less than 3/8", no camber is required but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

Notes:
For details of beam field splices see sheet 447.
For end crossframe, end dam and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4.
The supporting angle shown in the "Roadway End Dam Table" shall be increased from 6x4x3/4 to 8x4x3/4.
For crossframe and cover plate details see sheet 414.
For rocker and bolster details see Ohio Standard Drawing RB-1-55.

H.N.T.B BRIDGE NOS. 21A & 21B

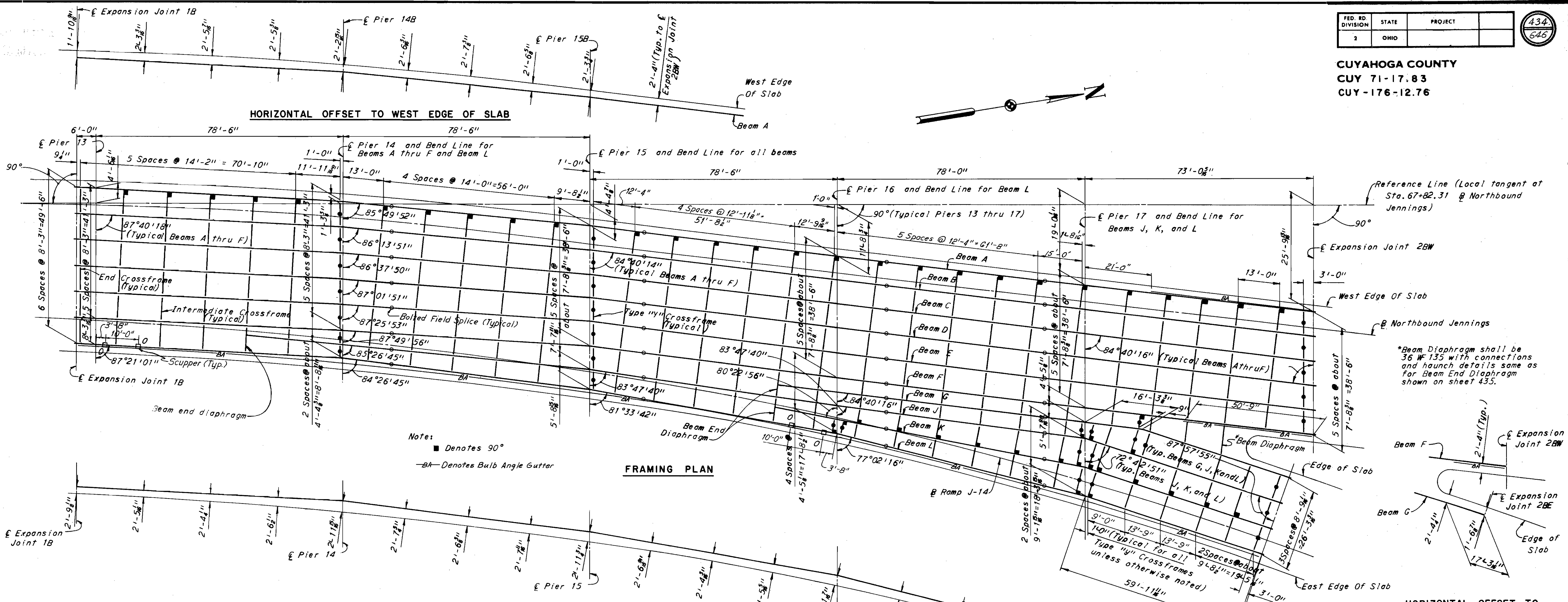
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT I-B
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

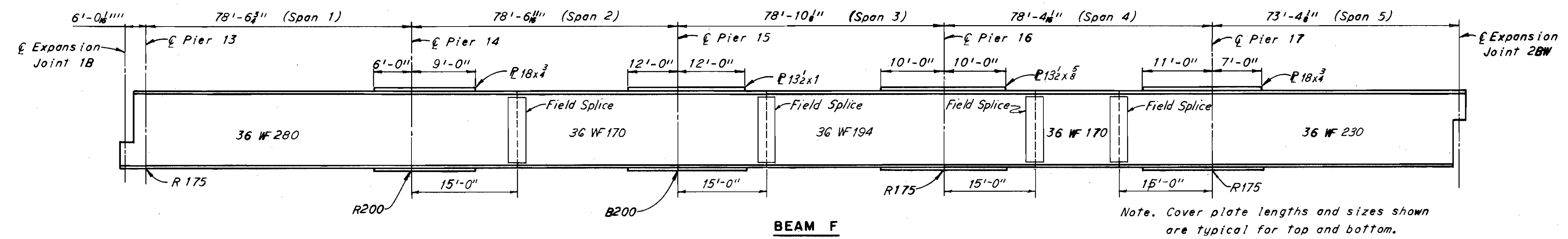
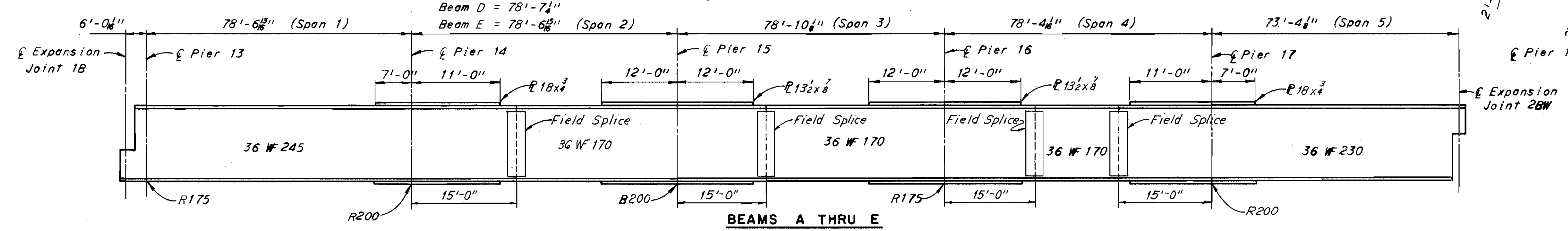
CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN J.M.C.	TRACED J.L.H.	CHECKED J.L.H.
DATE 7-31-64	DATE 7-23-64	DATE 12-23-64

SHEET 433

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



Beam A = 78'-8 1/2"
 Beam B = 78'-8 1/2"
 Beam C = 78'-7 3/4"
 Beam D = 78'-7 1/4"
 Beam E = 78'-6 3/4" (Span 2)



Note. Cover plate lengths and sizes shown are typical for top and bottom.

Notes:
 For Beam End Diaphragm details see sheet 435
 For Dead Load Deflection and Convexity Diagrams see sheet 435
 For details of beam field splices see sheet 447.
 Beams with bend points at pier shall be shop spliced in accordance with the procedure as outlined on Ohio Standard Drawing SD-1-63, sheet 1 of 4.
 For additional notes see sheet 433

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT 2-B

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

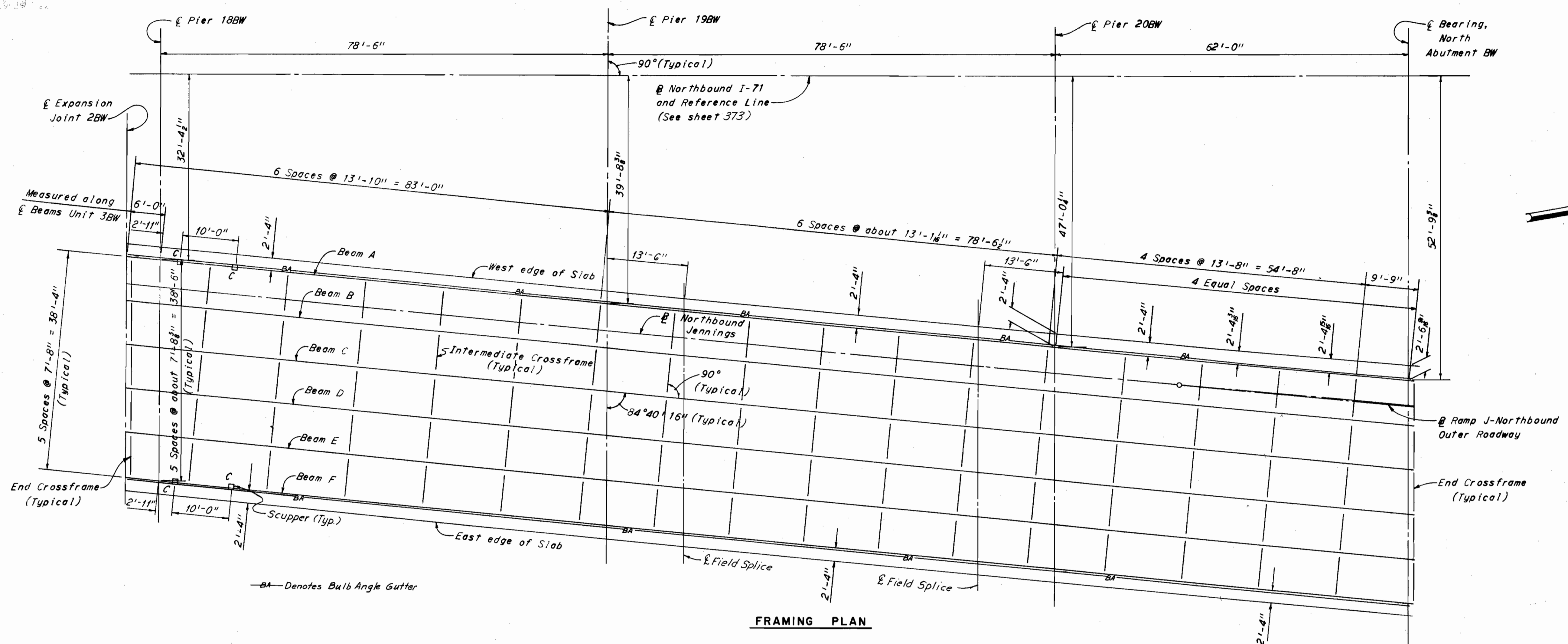
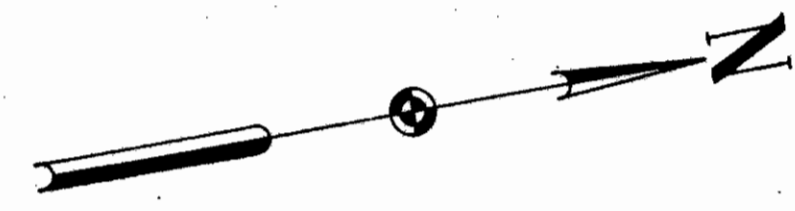
BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

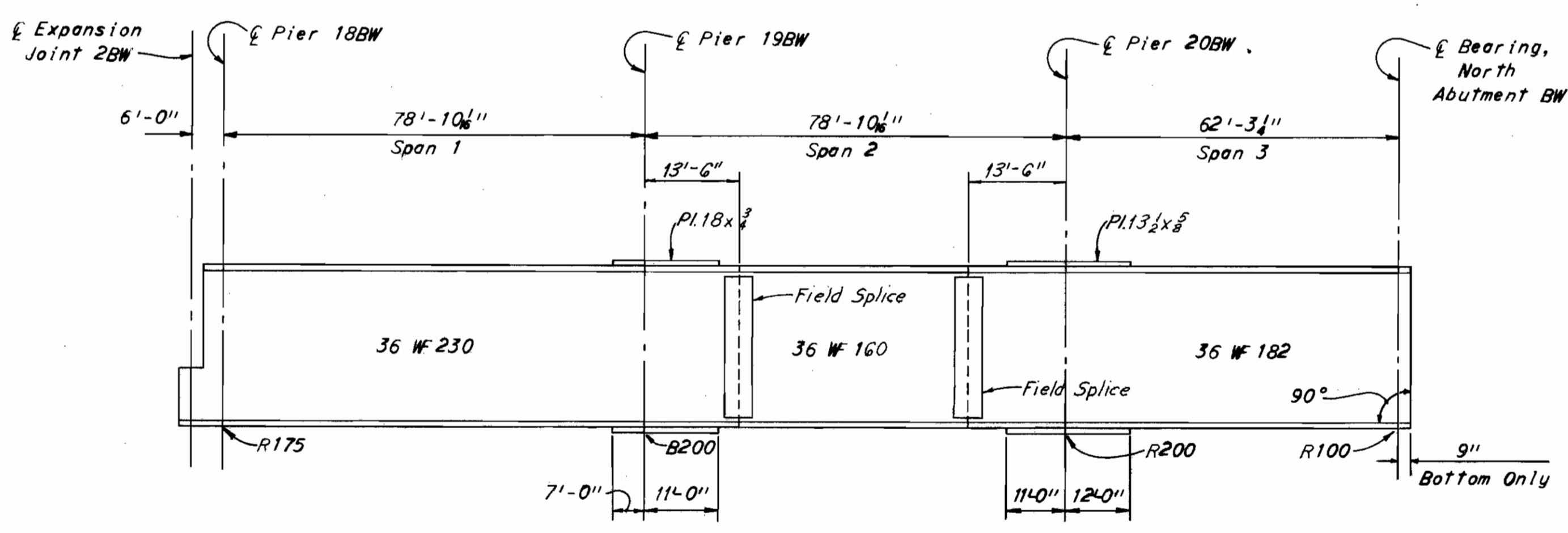
DRAWN J.M.C.	TRACED	CHECKED J.K.M.	REVIEWED W.F.	REVISED
DATE 7-2-64	DATE	DATE 7-2-64	DATE 12-28-64	

SHEET 434

CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



FRAMING PLAN



BEAMS A THRU F

Note: Cover plate lengths and sizes shown are typical top and bottom.

	Pier 18BW			Pier 19BW			Pier 20BW			
	a	b	c	a	b	c	a	b	c	
Typical-Beams	-3/8"	+5/8"	+7/8"	0	+1/4"	+1/8"	+3/8"	+7/8"	+3/8"	Deflections due to Concrete and Steel
A thru F	-1/4"	+1/2"	+5/8"	0	+1/4"	+1/8"	+3/8"	+5/8"	+3/8"	Deflections due to Concrete Only
Beam A	-1/8"	-1/8"	-1/8"	0	0	0	0	0	0	Convexity
Beam B	-1/8"	-1/8"	-1/8"	0	0	0	0	0	0	Convexity
Beams C thru F	+3/8"	+1/4"	+1/4"	0	0	0	0	0	0	Convexity

Note: Dead load deflections and convexity are measured to the nearest 1/16 inch. Negative values for deflection indicate deflection above the base line. Negative values for convexity indicate convexity below the base line.

DEAD LOAD DEFLECTION & CONVEXITY DIAGRAM

BEAM CAMBER NOTE:

Where the combined effects of dead load deflection and convexity are 1/4 inch or more, the required camber shall be the same as this amount. If the combined effects are less than 1/4 inch, no camber is required, but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

SCUPPER LEGEND
C = Outlets at ground level
O = Outlets just below superstructure

Notes: For notes see sheet 433.

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY CLEVELAND NEW YORK

FRAMING PLAN UNIT 3-BW

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
AND NORTHBOUND JENNINGS

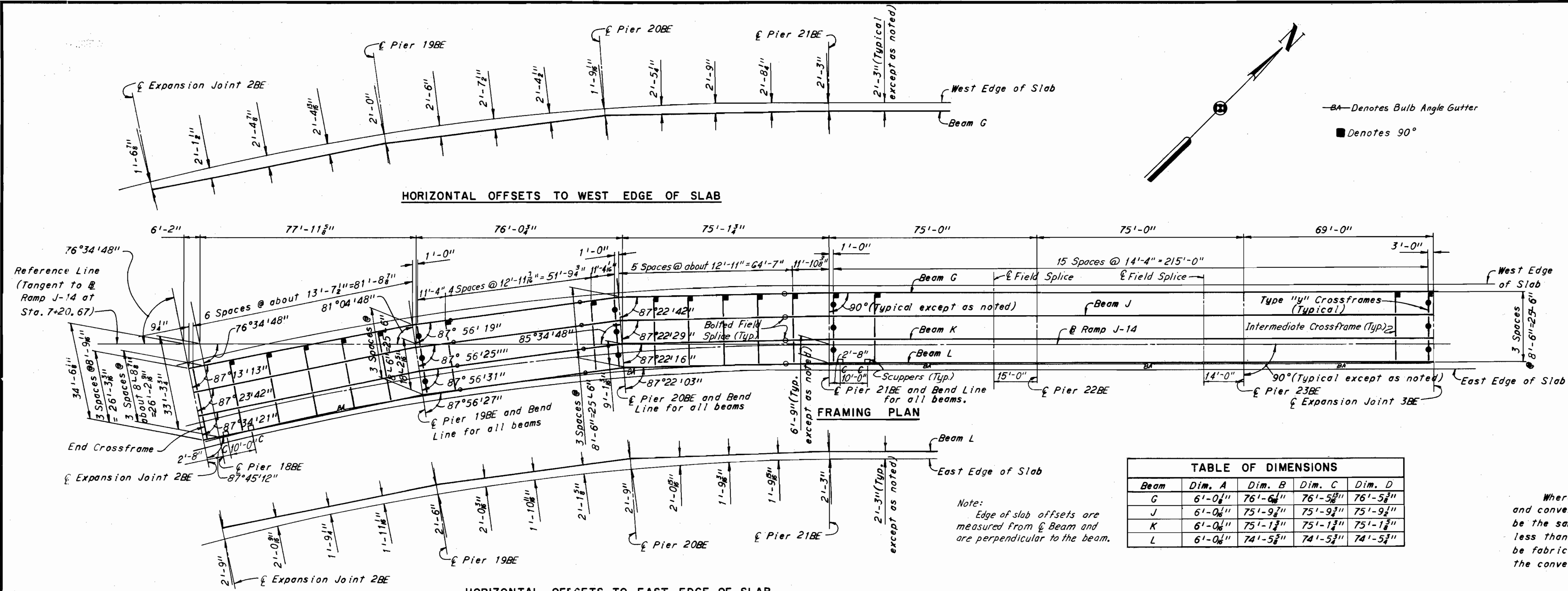
BR. NO. CUY-71-1789R STA. 917+10.09
STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 7-13-64	DATE	DATE 8-21-64	DATE 12-22-64	

SHEET 436

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



BA—Denotes Bulb Angle Gutter
 ■ Denotes 90°

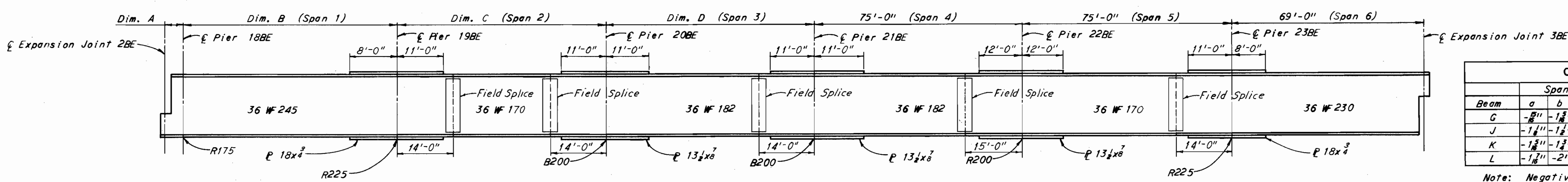
SCUPPER LEGEND
 C = Outlets at ground level
 O = Outlets just below superstructure

Beam	Dim. A	Dim. B	Dim. C	Dim. D
G	6'-0 1/2"	76'-6"	76'-5 1/2"	76'-5 3/4"
J	6'-0 1/2"	75'-9 1/2"	75'-9 1/2"	75'-9 1/2"
K	6'-0 1/2"	75'-1 1/2"	75'-1 1/2"	75'-1 1/2"
L	6'-0 1/2"	74'-5 1/2"	74'-5 1/2"	74'-5 1/2"

BEAM CAMBER NOTE

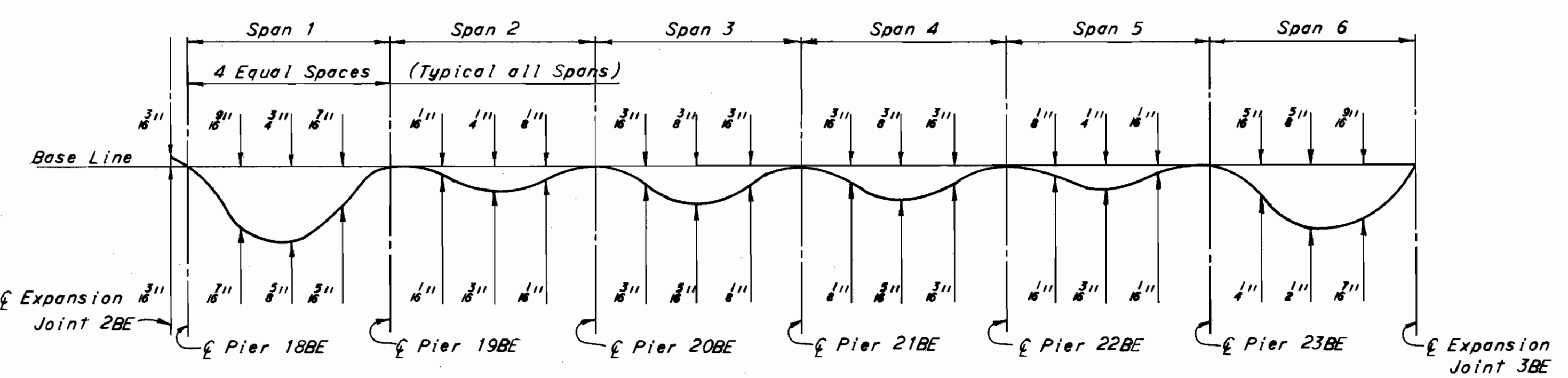
Where the combined effects of dead load deflection and convexity is 3/4" or more, the required camber shall be the same as this sum. Where the combined effects are less than 3/4", no camber is required but the beams shall be fabricated so that any curved beam will be placed with the convex flange up.

Note: Edge of slab offsets are measured from center of beam and are perpendicular to the beam.

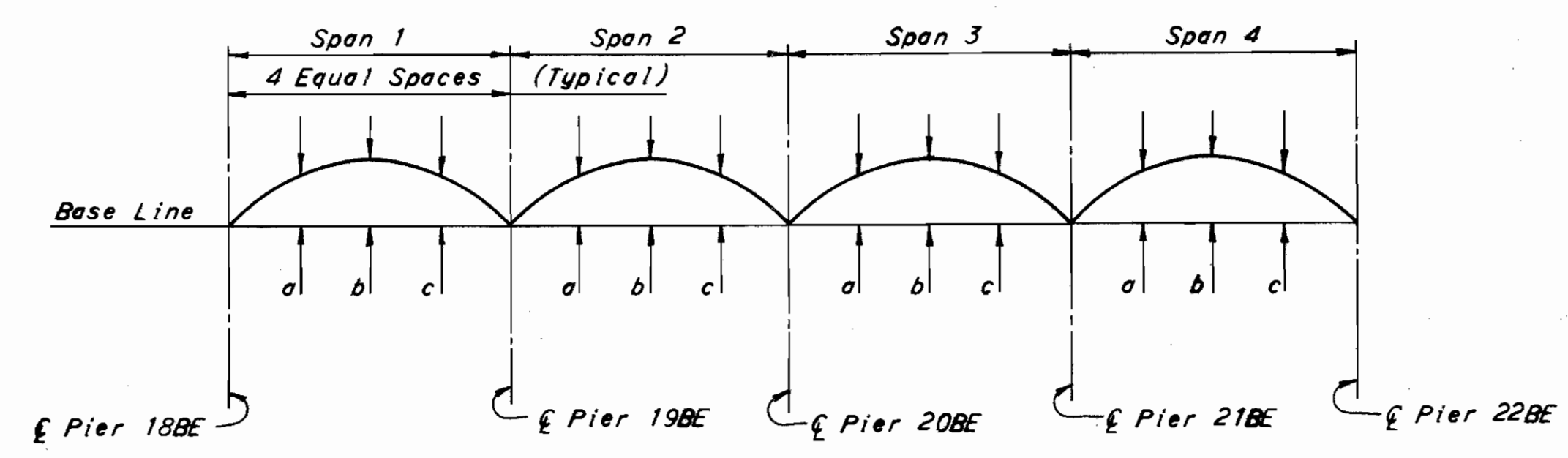


Beam	Span 1			Span 2			Span 3			Span 4		
	a	b	c	a	b	c	a	b	c	a	b	c
G	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"
J	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"
K	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	0
L	-1/8"	-2"	-1/8"	-1/8"	-2"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	-1/8"	0

Note: Negative values indicate convexity below the base line.



Note: Values shown above base line are total deflections due to steel and concrete. Values shown below base line for deflections due to concrete only. Deflections are measured to nearest 1/16 inch.



Note: Convexity corrections in Span 5 and Span 6 are equal to zero.

Note: For notes see sheet 433.

H.N.T.B BRIDGE NOS. 21A & 21B

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FRAMING PLAN UNIT 3-BE

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND	CUYAHOGA COUNTY	OHIO
DRAWN J.M.C.	TRACED	REVIEWED J.H.
DATE 7-8-64	DATE 7-8-64	DATE 12-23-64

SHEET 437

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76

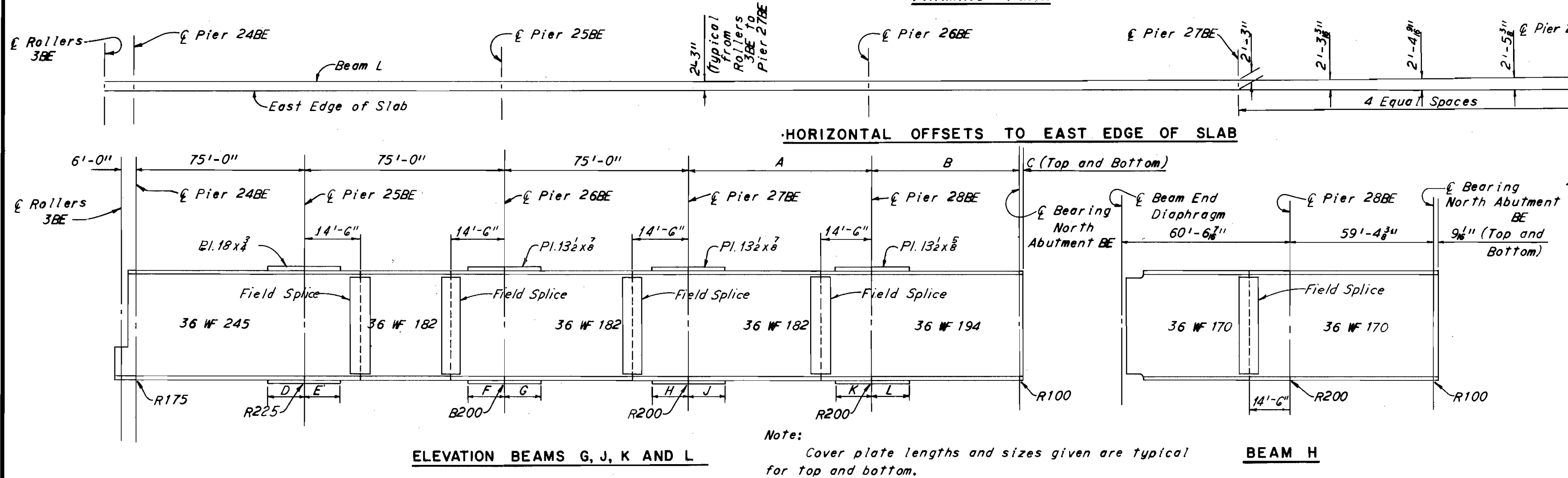
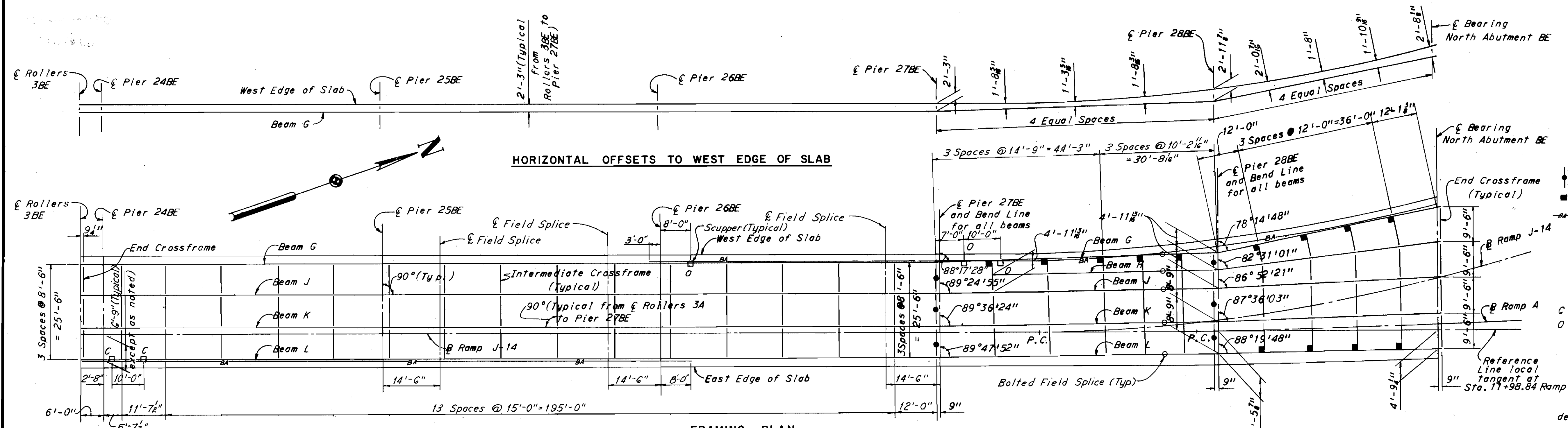
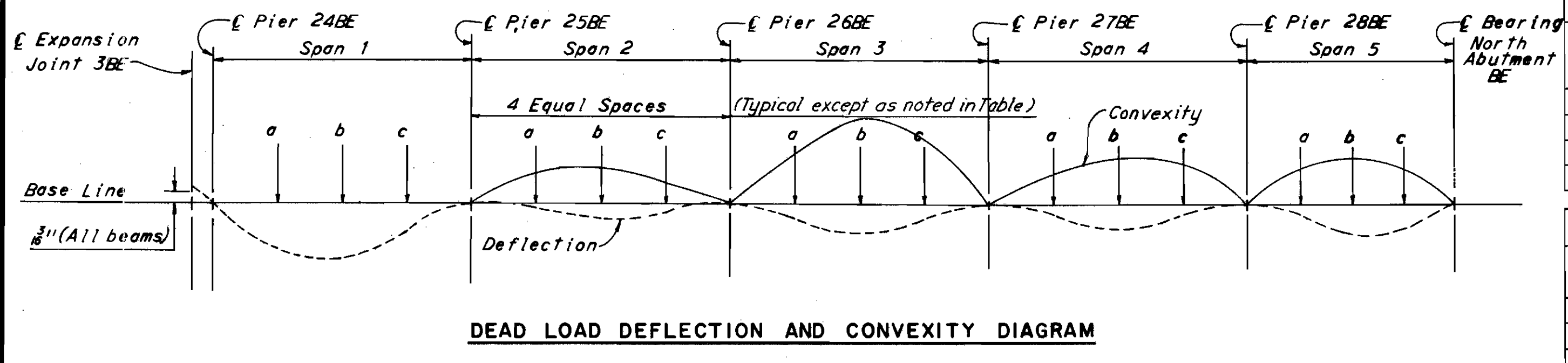


TABLE OF DIMENSIONS

Beams	A	B	C	D	E	F	G	H	J	K	L
G	74'-11 1/8"	60'-1 3/8"	9 3/8"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
J	74'-10 3/4"	58'-11 3/8"	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
K	74'-10 3/4"	58'-10 3/4"	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"
L	74'-10 3/4"	58'-10 3/4"	9"	7'-0"	10'-0"	12'-0"	12'-0"	12'-0"	12'-0"	10'-0"	11'-0"

DEAD LOAD DEFLECTION TABLE

Beam	Span 1			Span 2			Span 3			Span 4			Span 5		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
	T	C	T	T	C	T	T	C	T	T	C	T	T	C	T
G	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
H	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
J	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
K	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
L	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16



CONVEXITY

Beam	Span 1			Span 2			Span 3			Span 4			Span 5		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
G	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
H	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
J	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
K	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
L	0	0	0	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16

* At beam end diaphragm in Span 4

Deflections and convexity given for Beam H in Span 4 are at 1/4 points from beam end diaphragm to Pier 28BE.

Deflections and Convexities are given to nearest 1/16 inch. Negative values for convexity indicate displacement below the base line.

T indicates deflection due to both concrete and steel. C indicates deflection due to concrete only.

Notes:
 For end crossframe, end dam, and curb plate details at the abutment see Ohio Standard Drawing SD-1-63, sheets 2 of 4 and 4 of 4. The main angle shown in the End Dam Data table shall be 8x6x1.
 For additional notes see sheet 433.

H.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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 KANSAS CITY NEW YORK CLEVELAND

FRAMING PLAN UNIT 4-BE

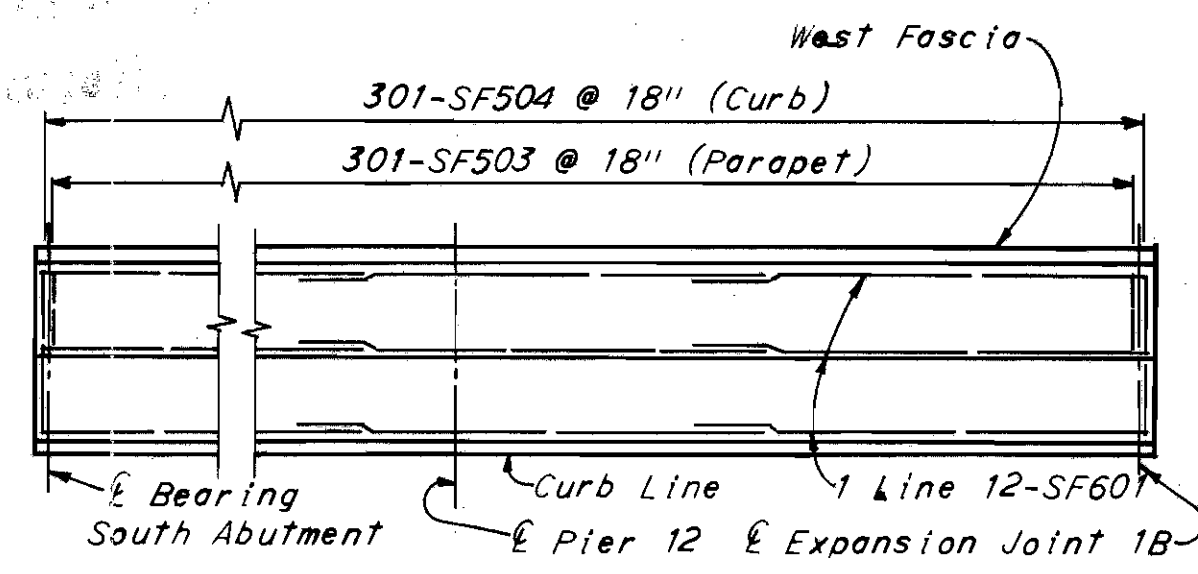
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789 R STA. 917+10.09
 STA. 935+21.25

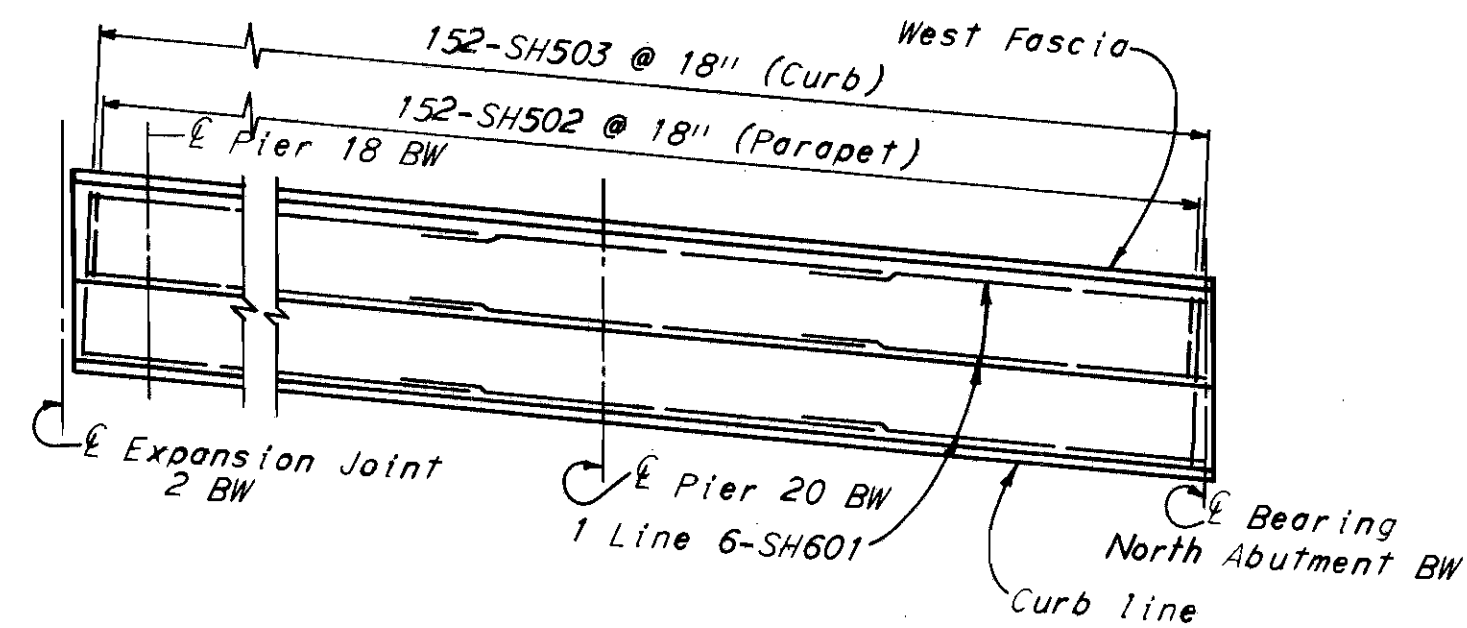
CLEVELAND CUYAHOGA COUNTY OHIO

DATE 7-15-64 TRACED DATE 7-24-64 CHECKED DATE 7-28-64 REVIEWED DATE 7-28-64 SHEET 438

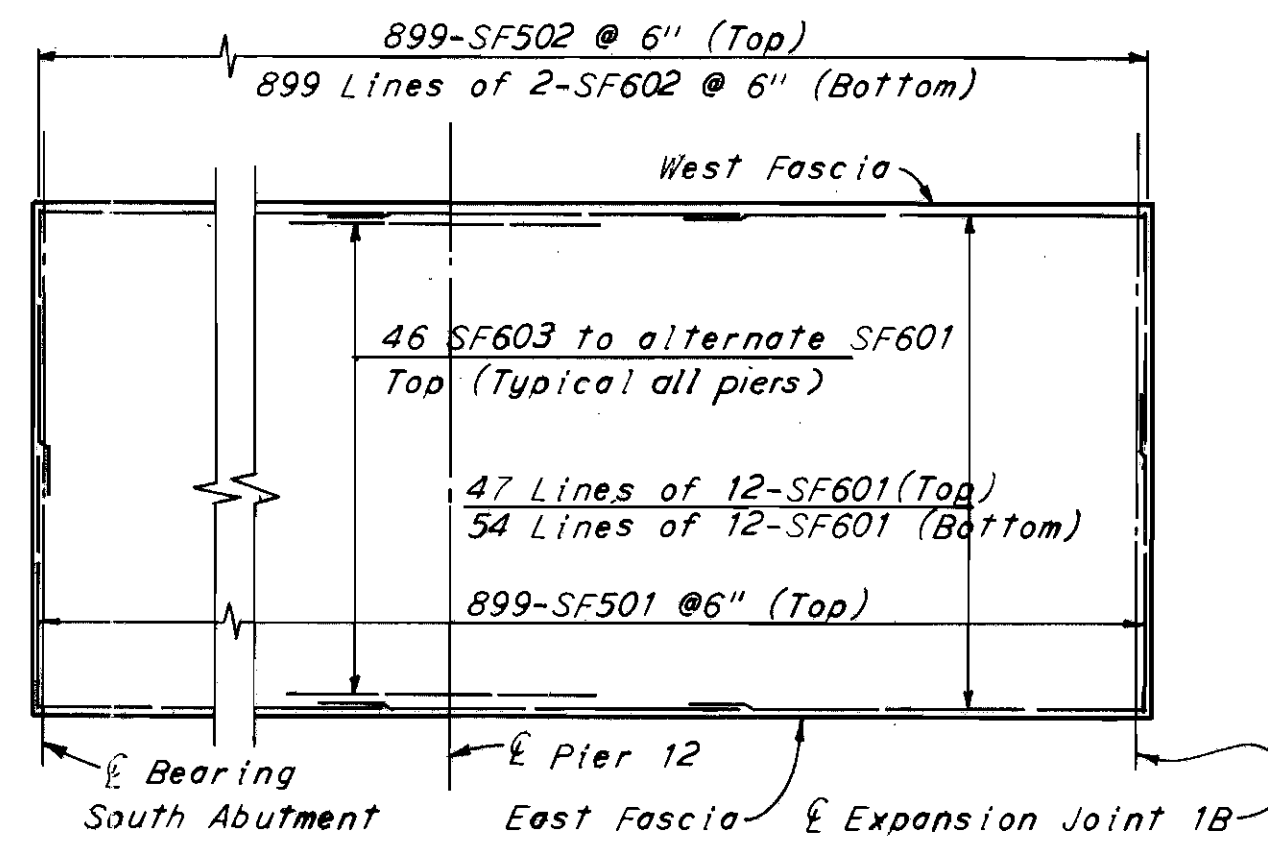
CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



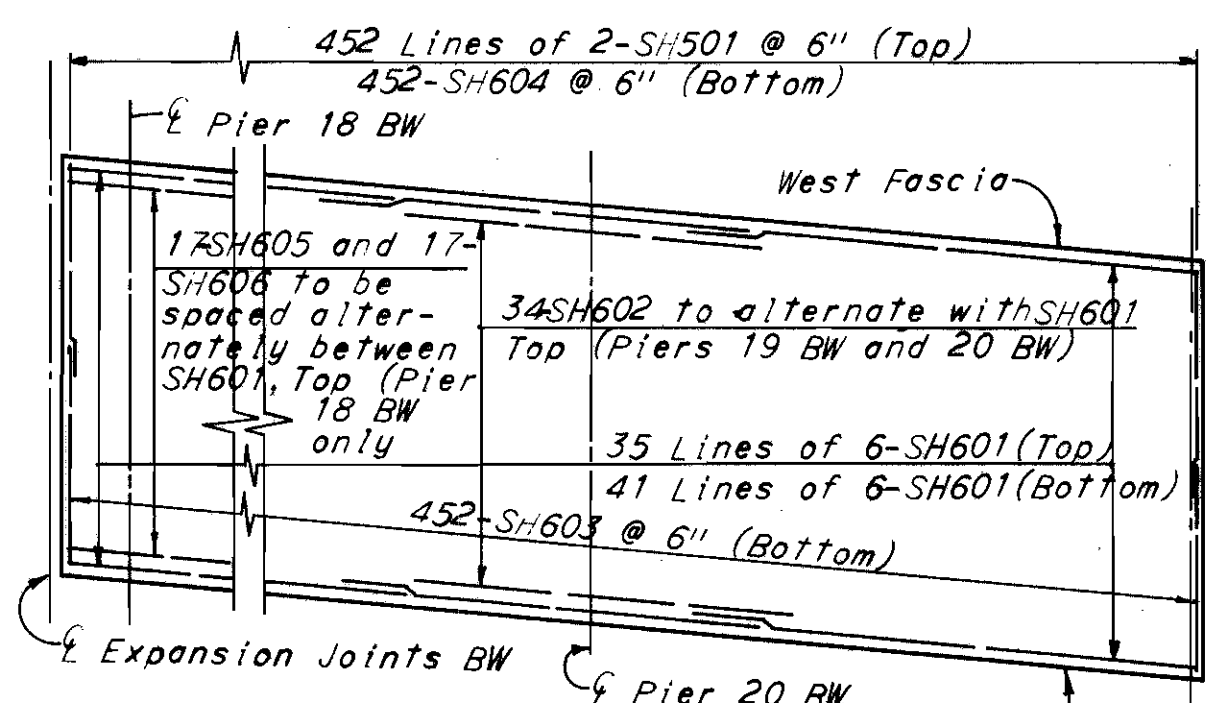
WEST CURB AND PARAPET



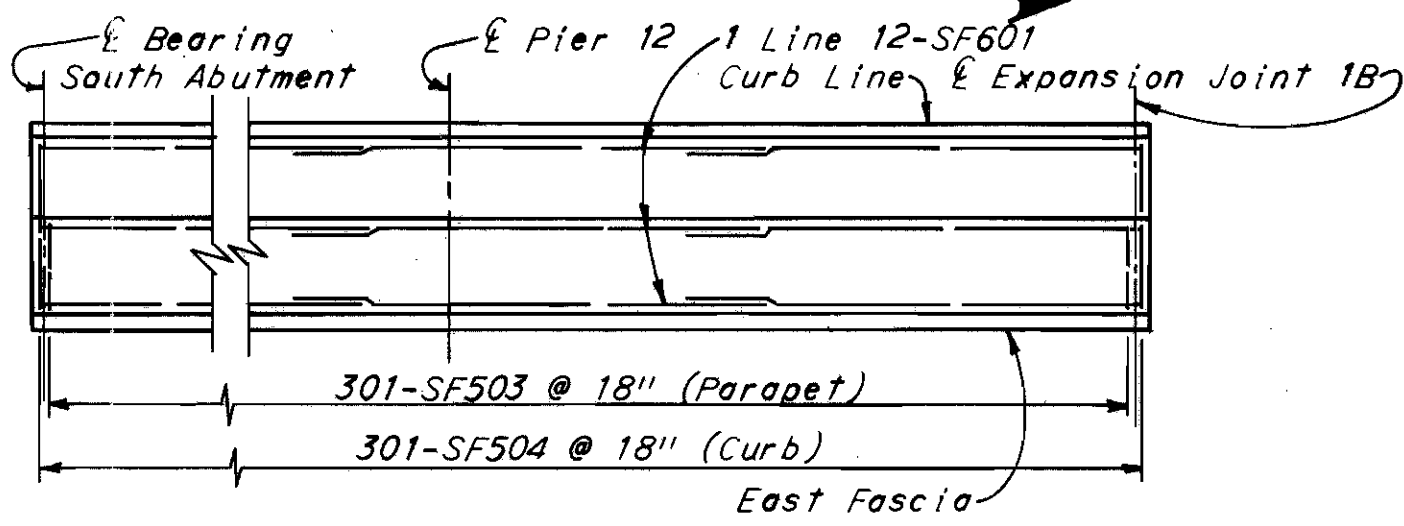
WEST CURB AND PARAPET



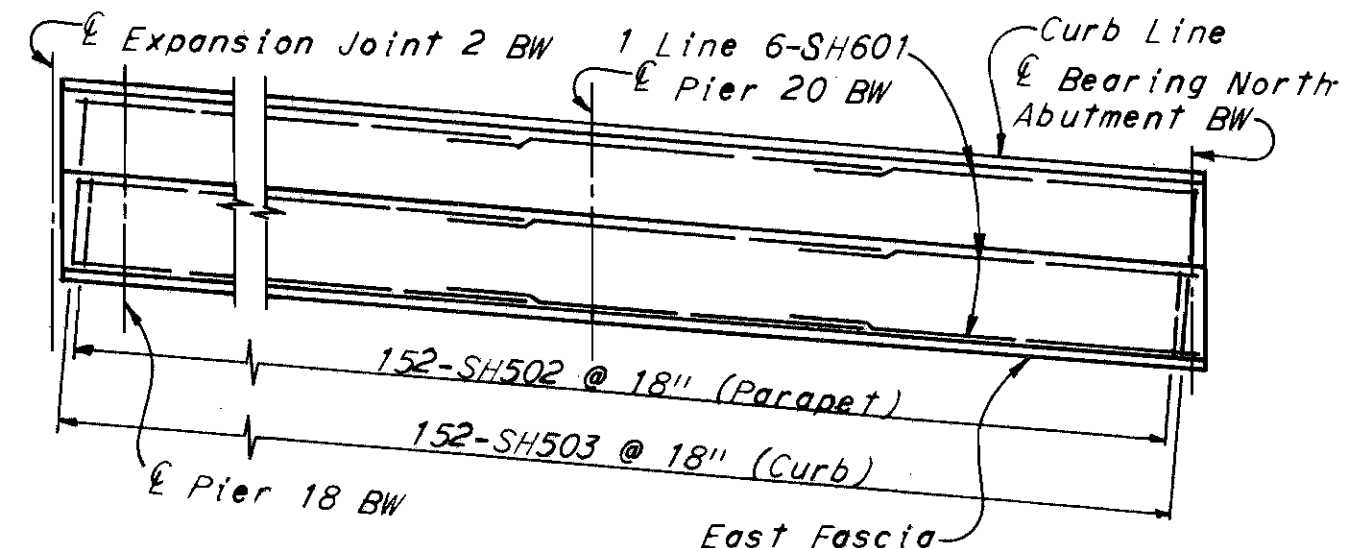
SLAB PLAN



SLAB PLAN



EAST CURB AND PARAPET



EAST CURB AND PARAPET

UNIT 1B

UNIT 3BW

*Omit 3'-0" Stagger on south side of Pier 18 BW

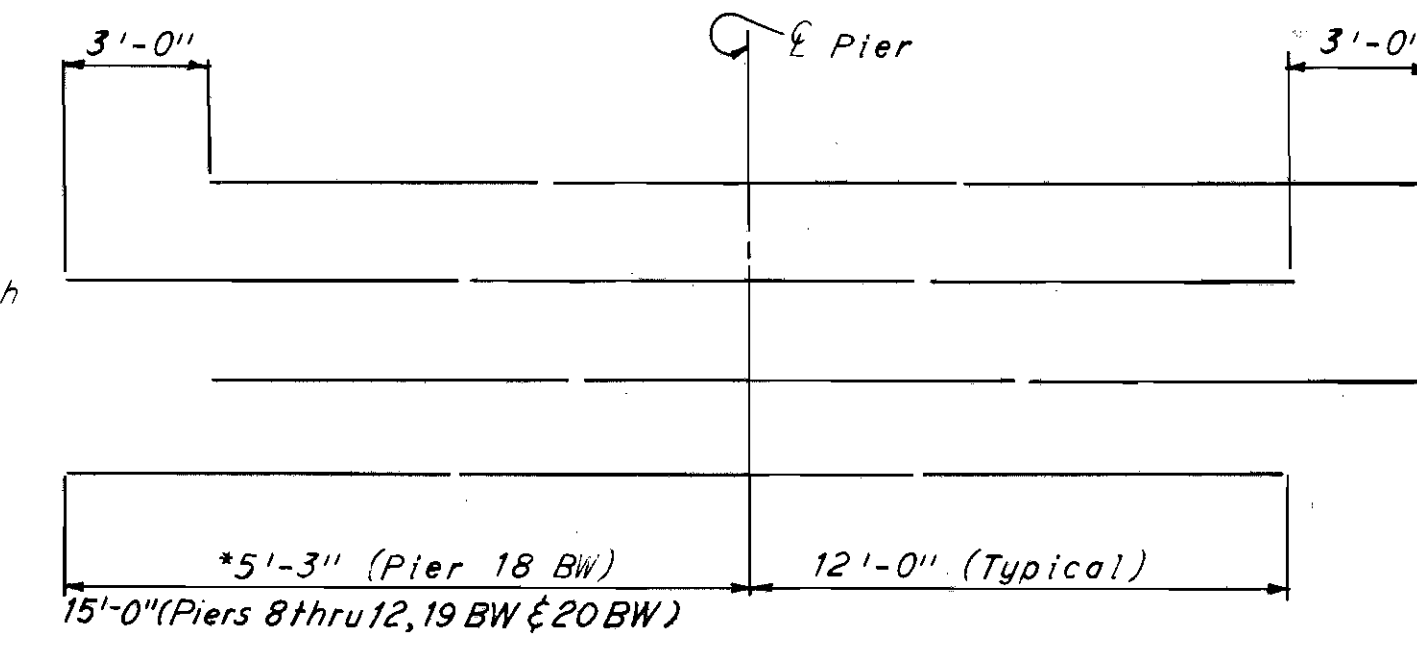
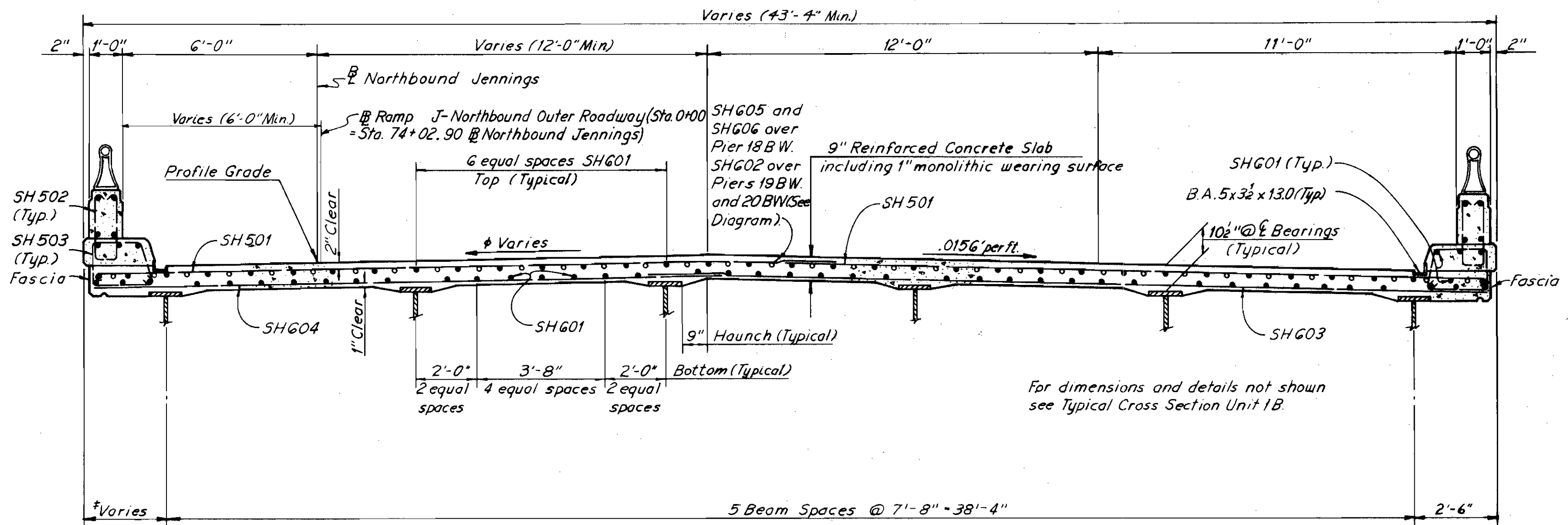


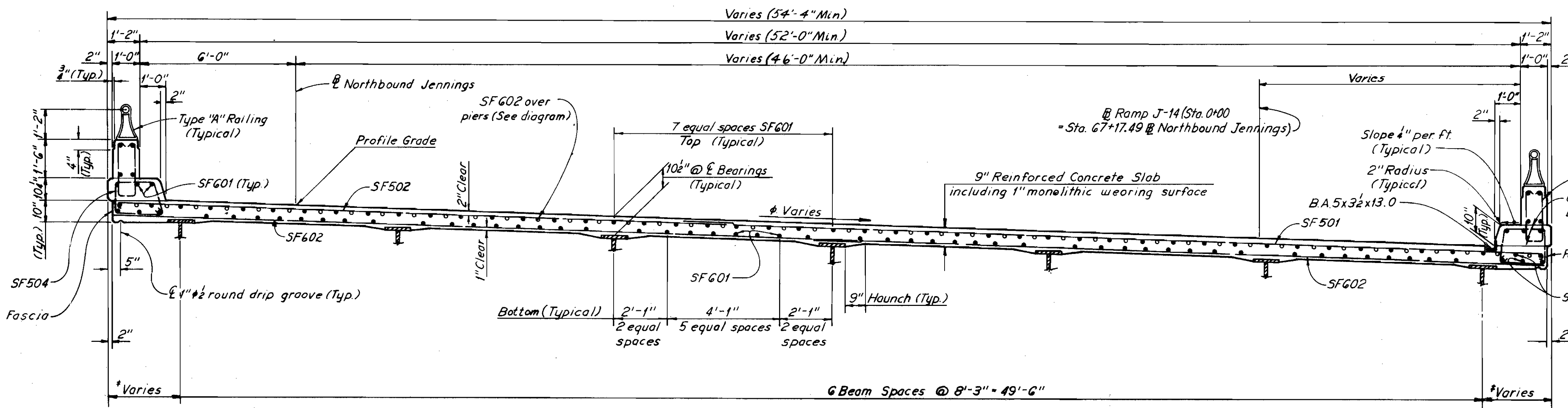
DIAGRAM SHOWING PLACEMENT OF ADDITIONAL LONGITUDINAL BARS OVER PIERS



TYPICAL CROSS SECTION (UNIT 3BW)

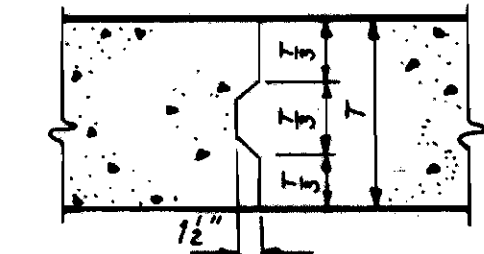
*See Framing Plan, Sheet 433.

*See Superelevation Transition Diagrams Sheet 442.



TYPICAL CROSS SECTION (UNIT 1-B)

Notes:
 For longitudinal reinforcement in the parapet see sheet 445. 445.
 For railing post spacing and parapet joint spacing see sheet 445.
 For additional railing details see Ohio Standard Drawing AP-1-57.
 For Reinforcement Schedule and Bending Diagrams see sheet 455.



OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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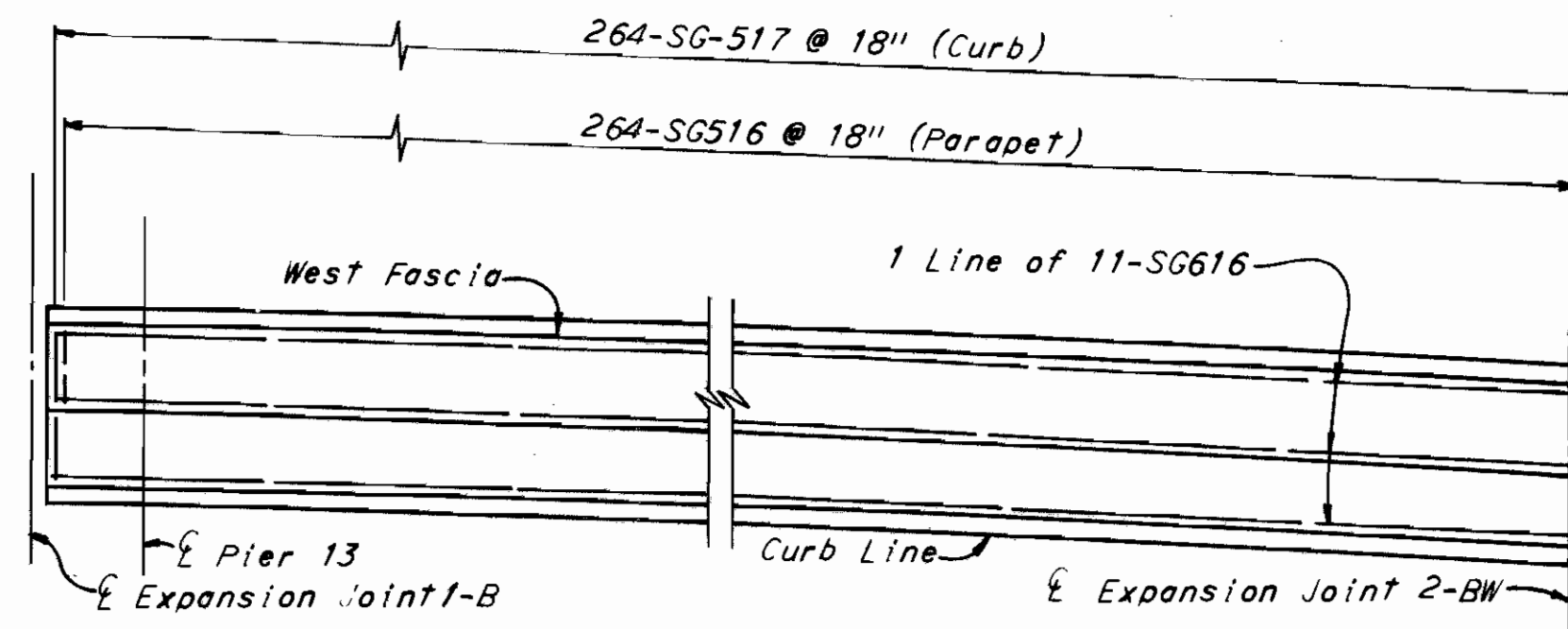
DECK REINFORCEMENT
UNIT 1-B AND 3-BW
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS,
 AND NORTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

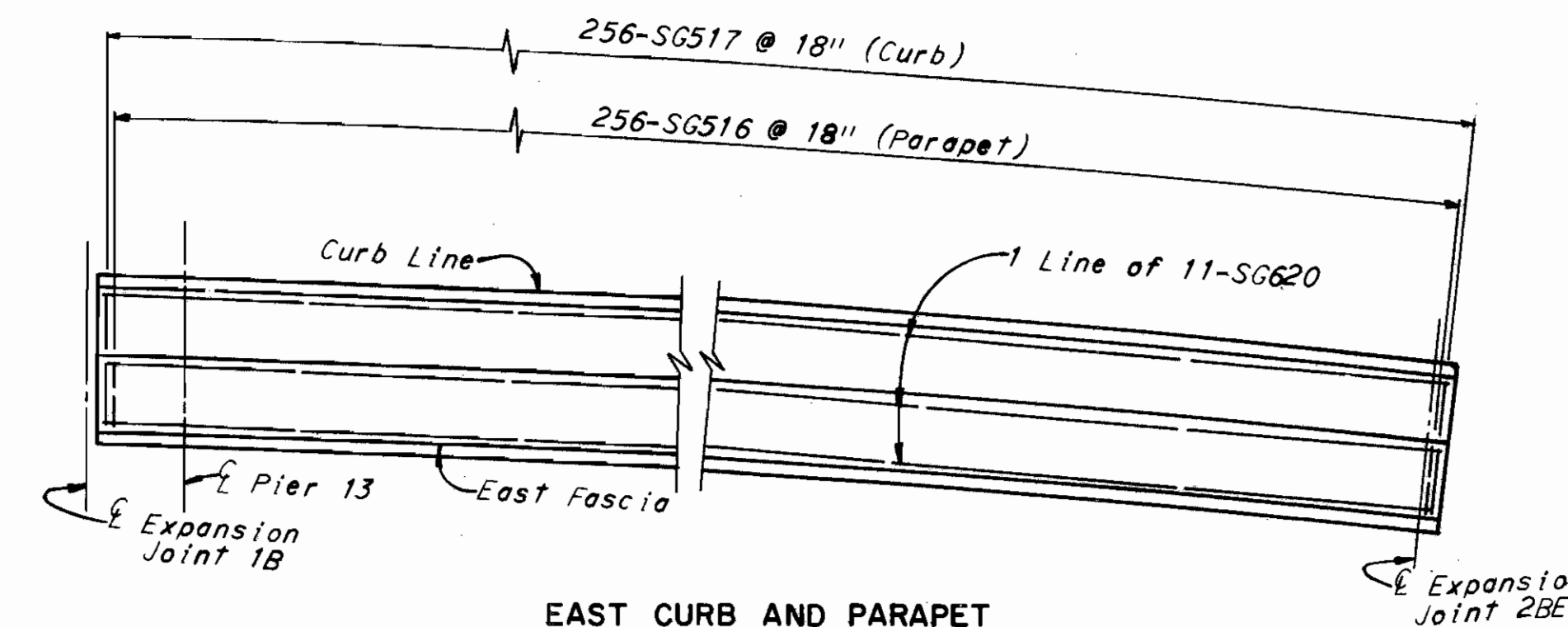
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED
DATE 7-8-64	DATE	DATE 12-22-64	DATE 12-22-64

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



WEST CURB AND PARAPET



EAST CURB AND PARAPET

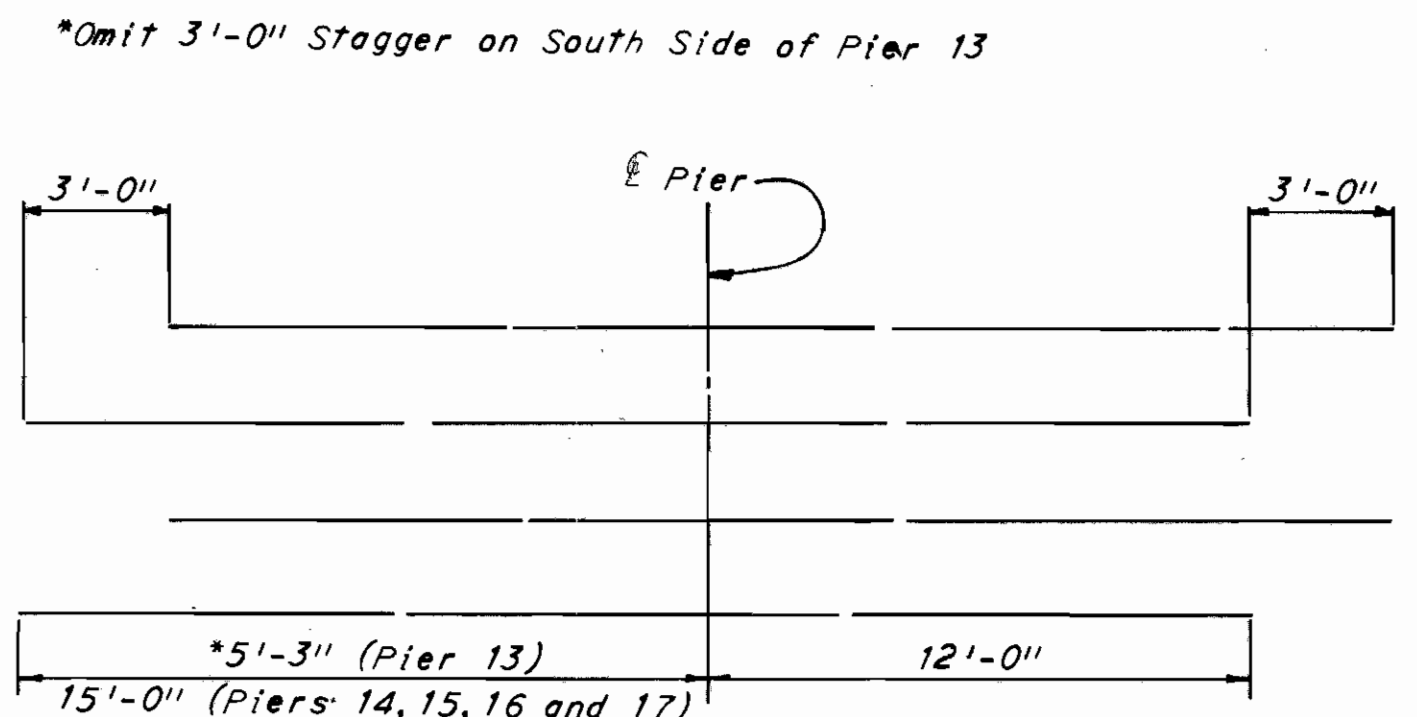
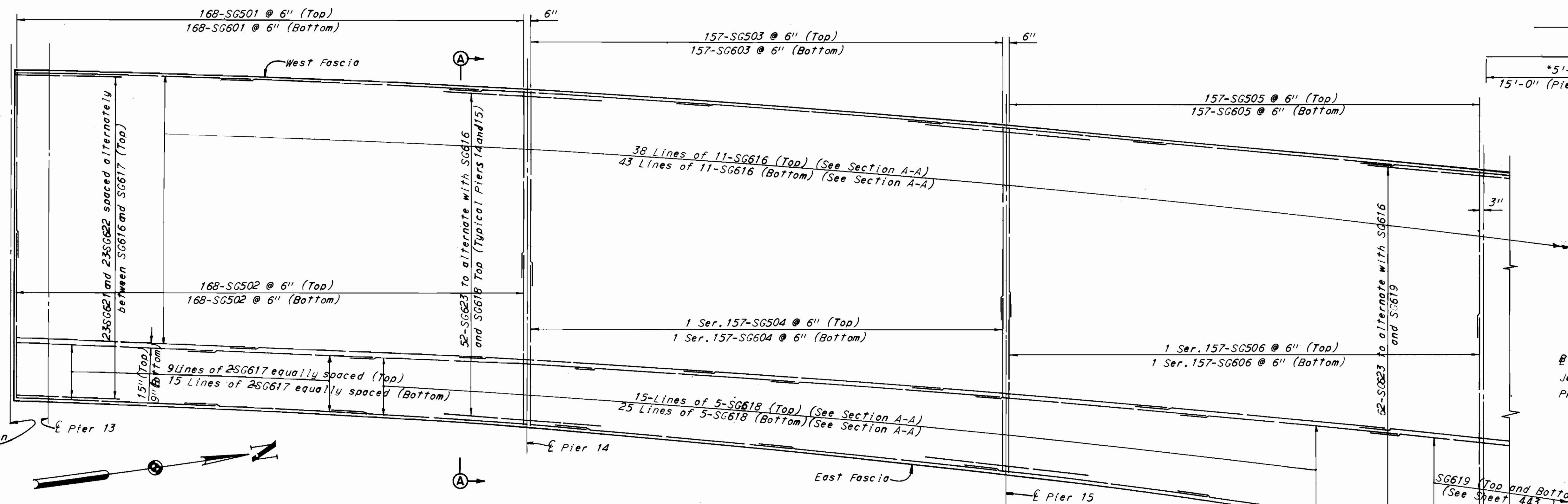
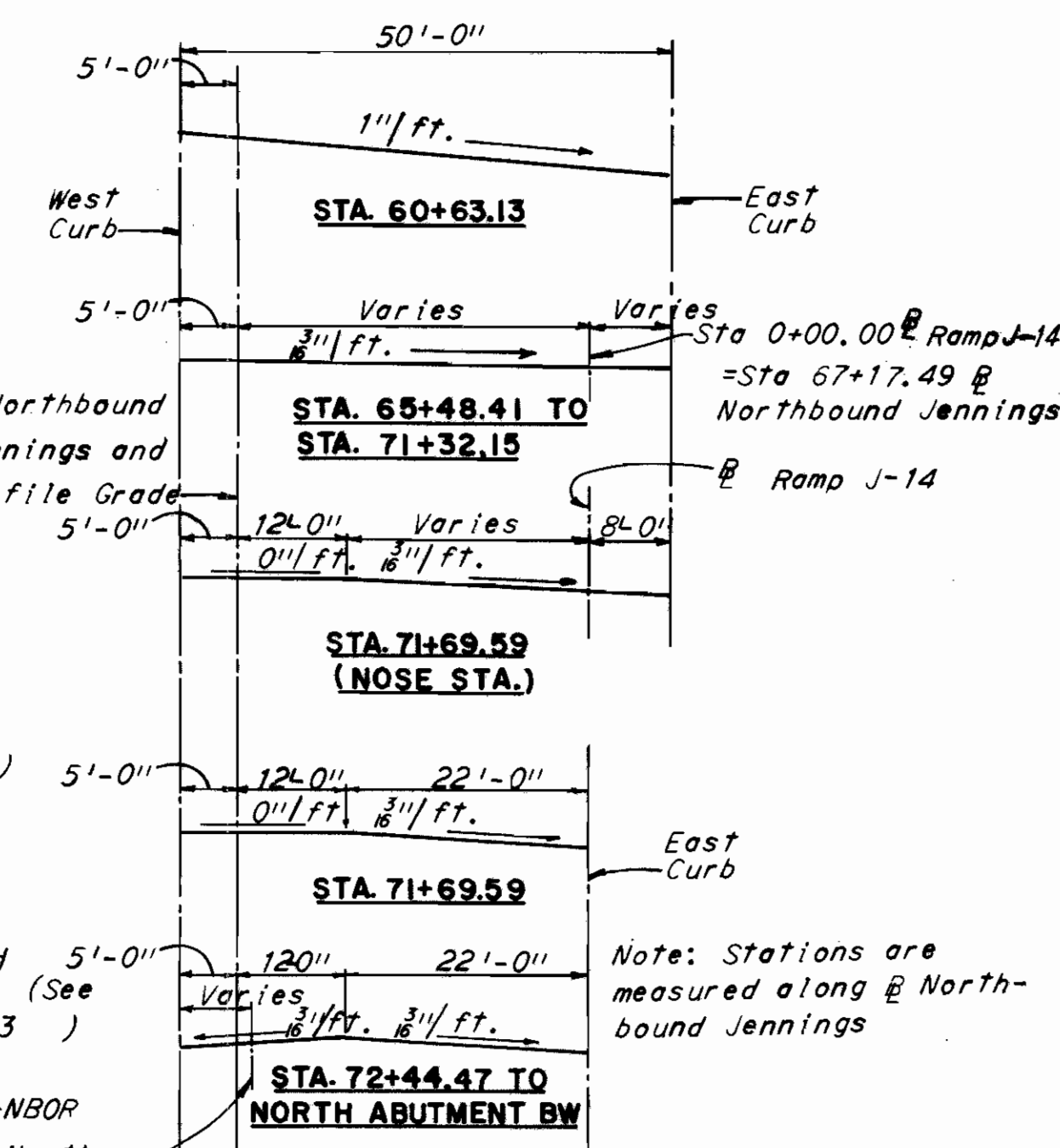


DIAGRAM SHOWING PLACEMENT OF ADDITIONAL LONGITUDINAL BARS OVER PIERS

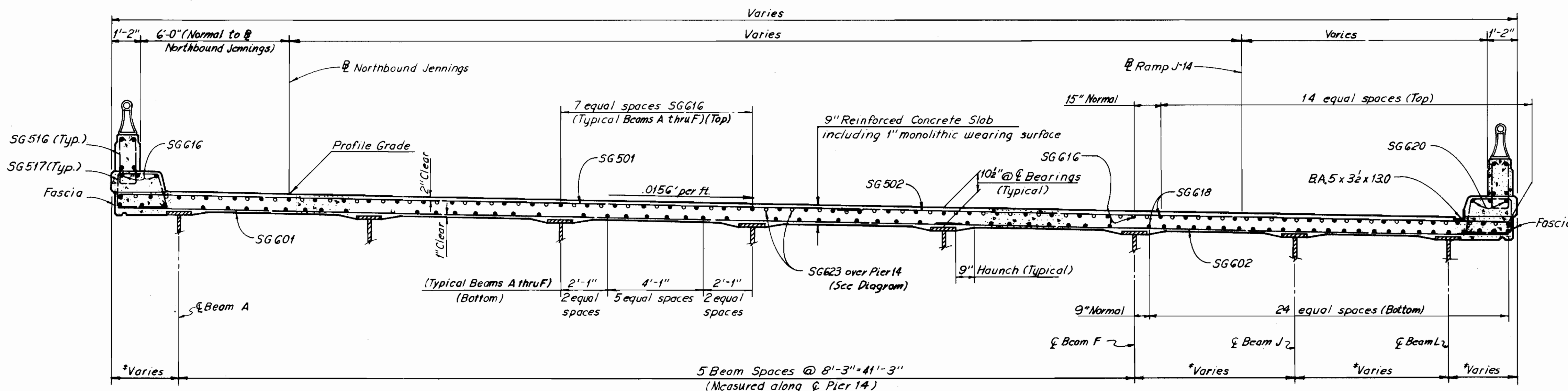


PART SLAB PLAN (UNIT 2B)



SUPERELEVATION TRANSITION DIAGRAMS (UNITS 1B, 2B TO NOSE, AND 3BW)

Note: Rate of transition between stations shown above is uniform.



SECTION A-A

*See Framing Plan, Sheet 434.

Notes:
 For additional Slab Plan details of Unit 2B see sheet 443.
 For cross section details and dimensions not shown see Typical Cross Section Unit 1B
 For additional notes see sheet 441.

H.N.T.B. BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT UNIT 2-B
 NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS

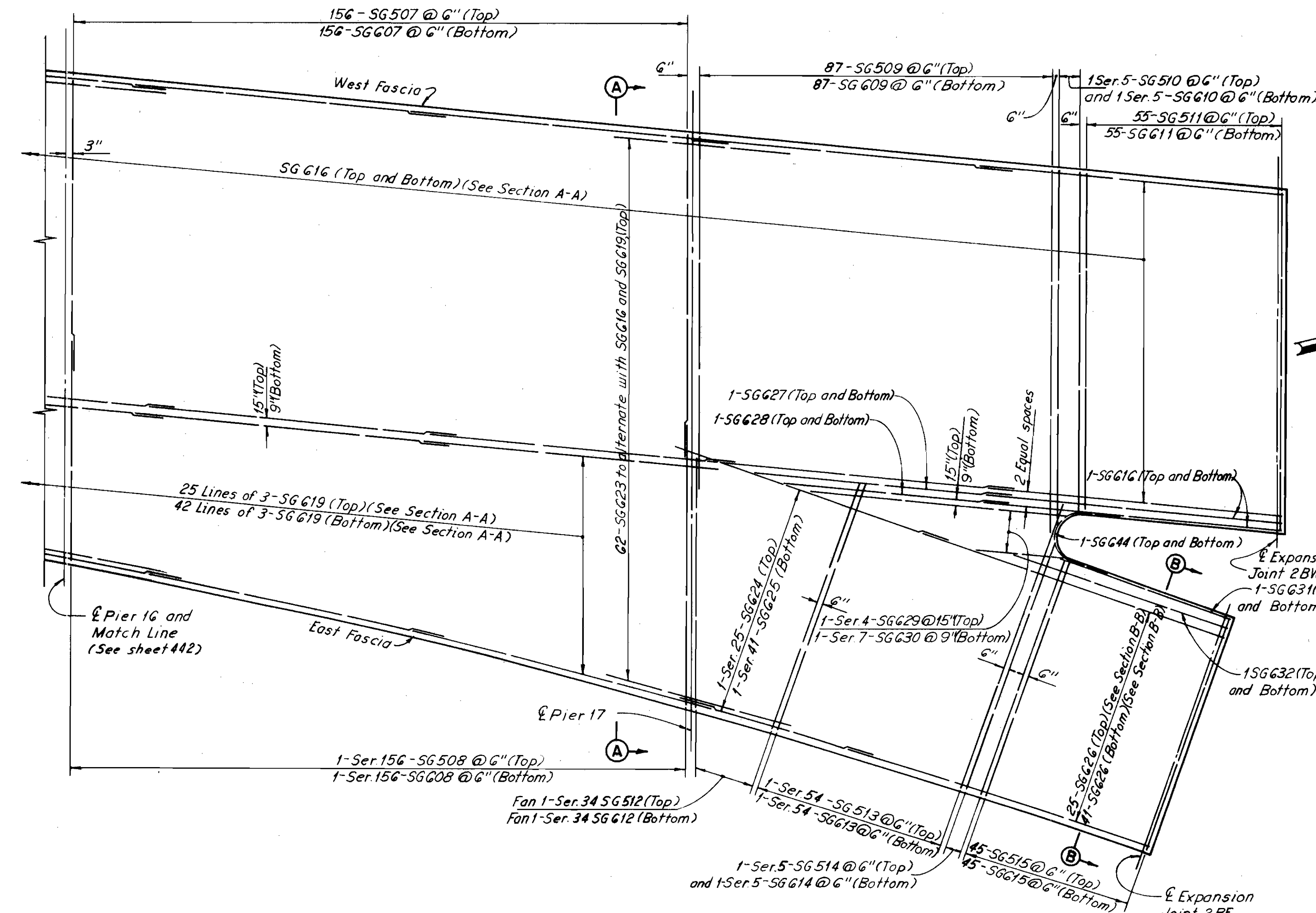
BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

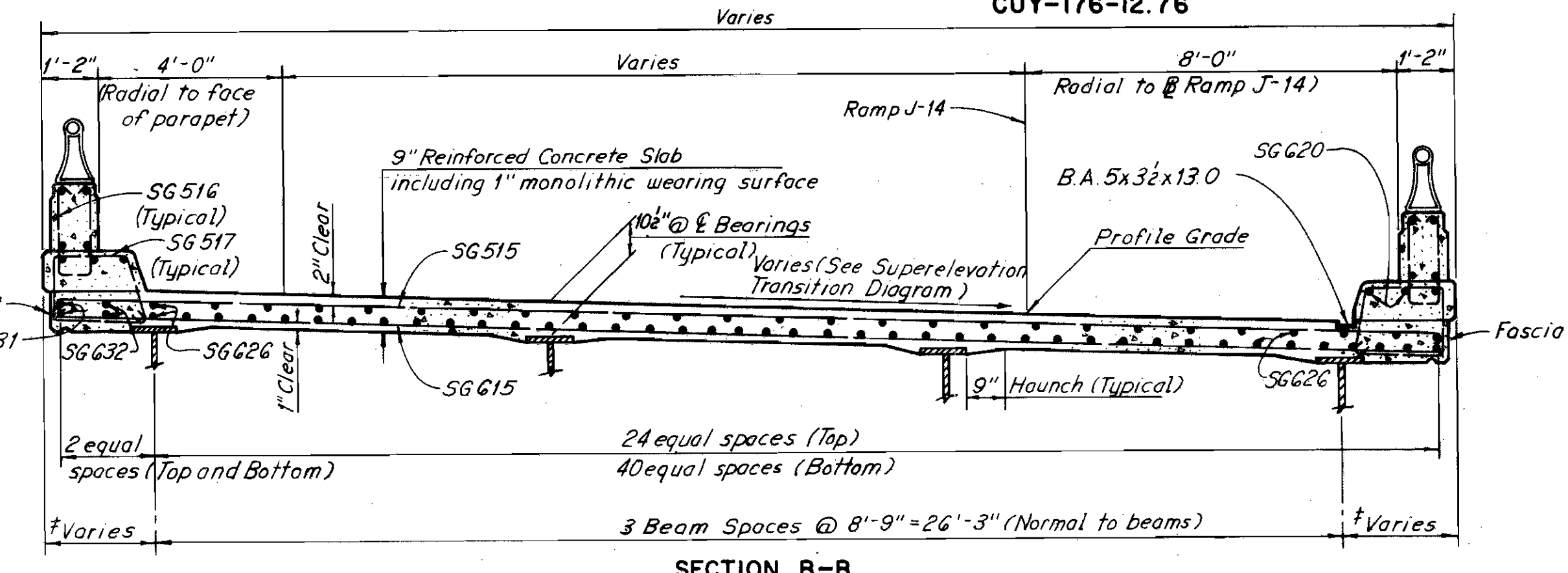
DRAWN	TRACED	CHECKED	REVIEWED
DATE 7-10-64	DATE	DATE 12-23-64	DATE 12-23-64

SHEET 442

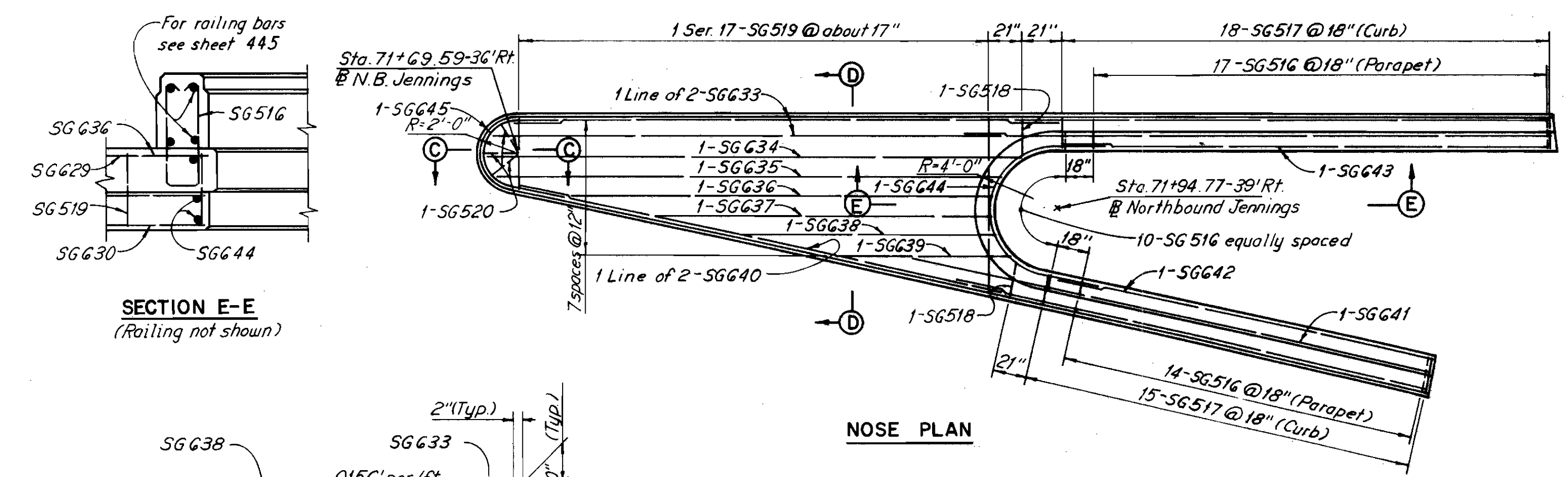
CUYAHOGA COUNTY
CUY 71-17.83
CUY-176-12.76



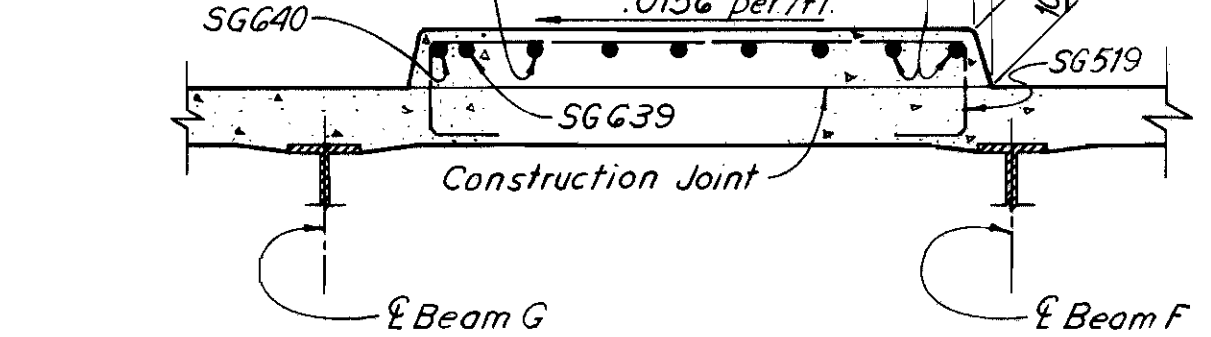
PART SLAB PLAN (UNIT 2B)



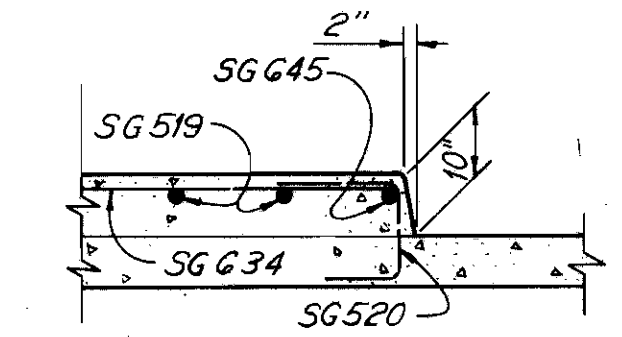
SECTION B-B



NOSE PLAN

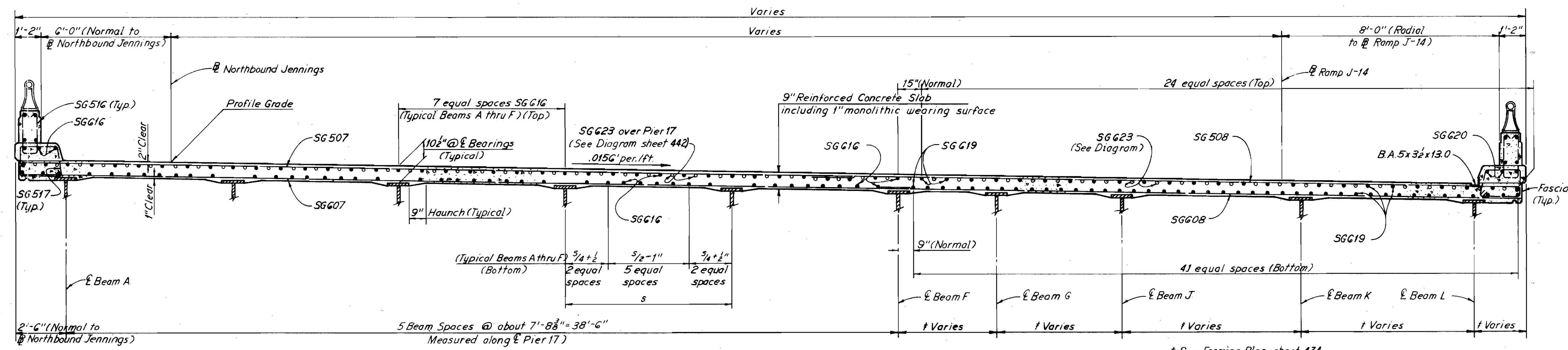


SECTION D-D



SECTION C-C

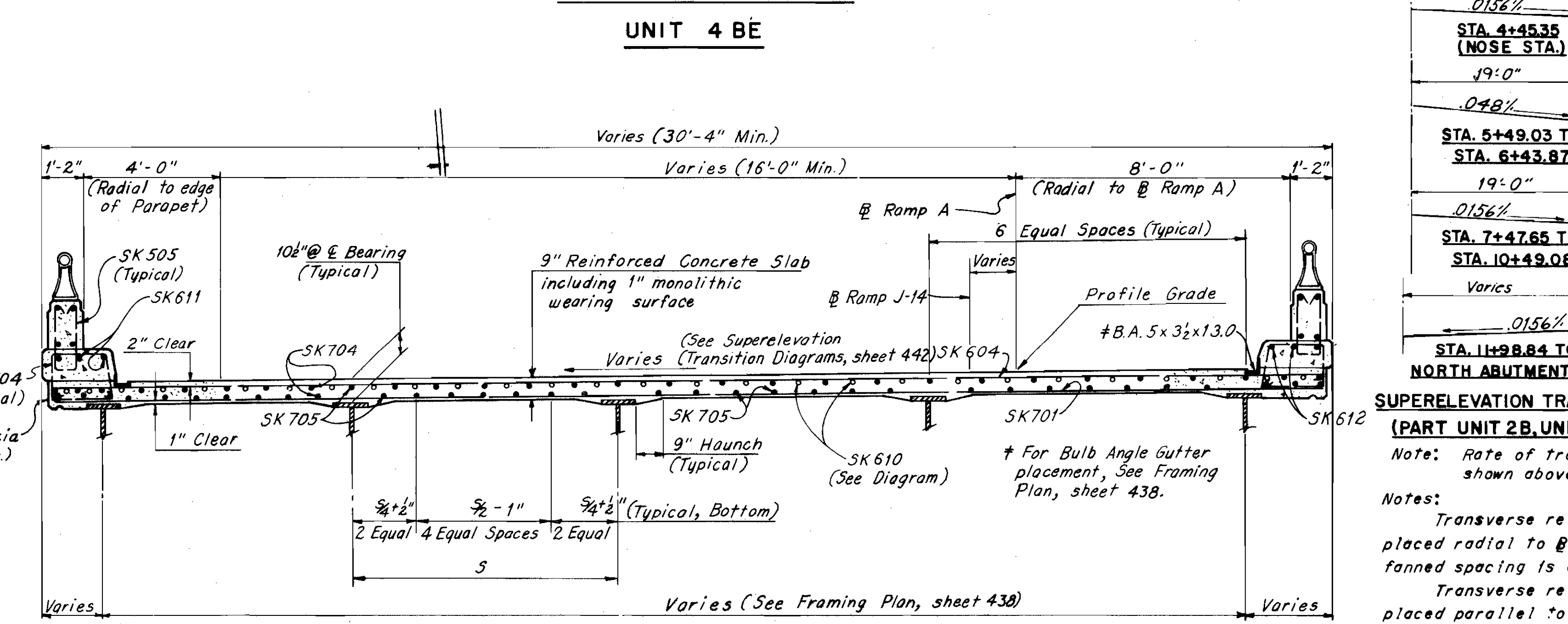
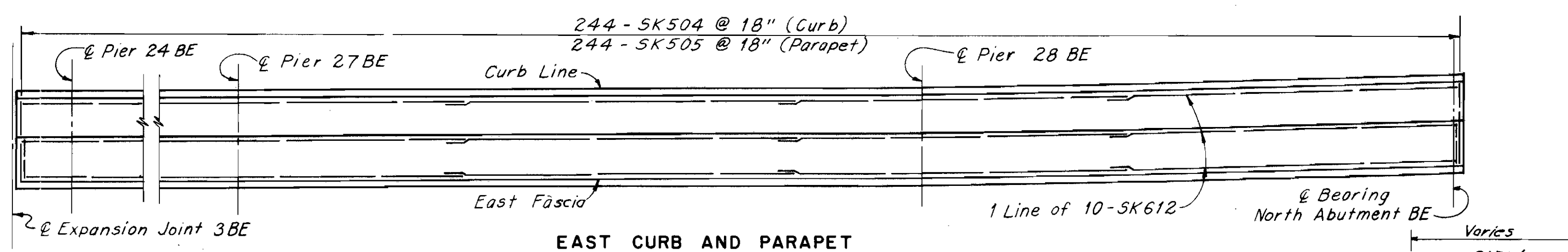
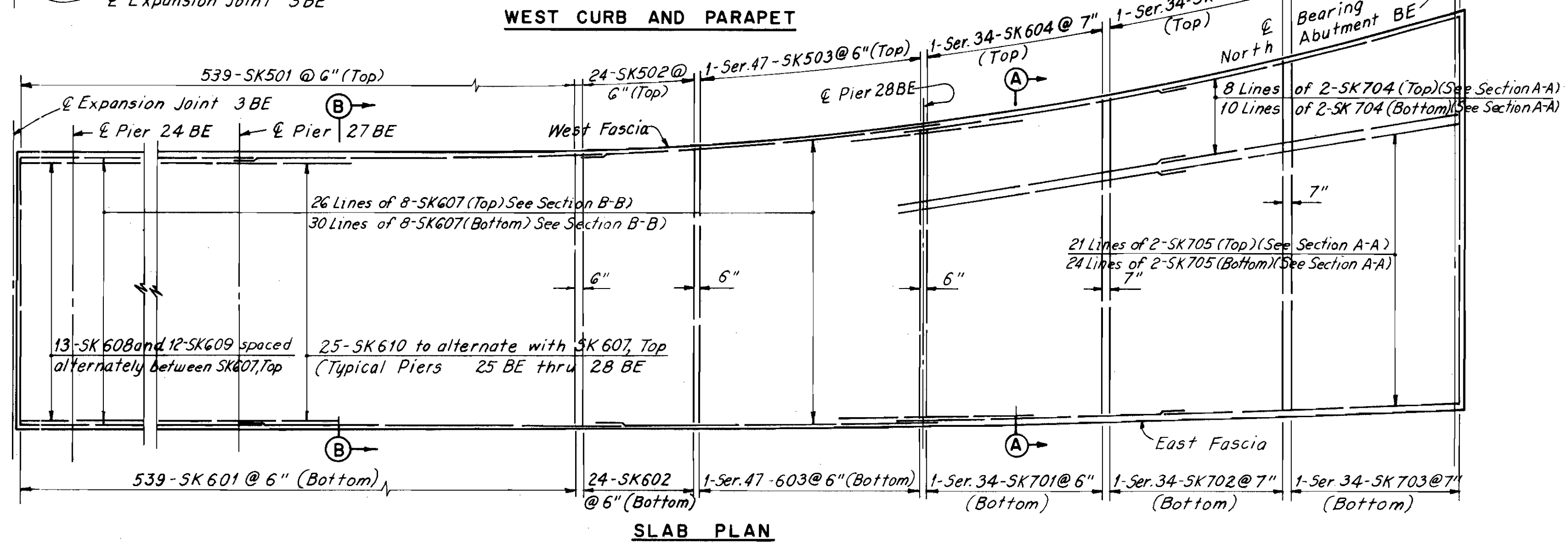
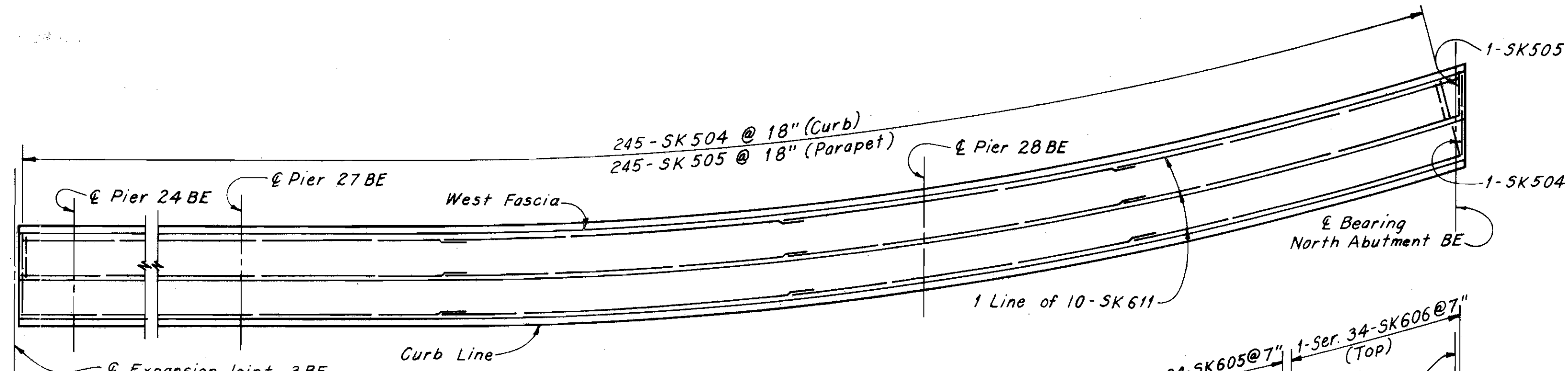
Notes:
For additional Slab Plan details of Unit 2B, see sheet 442.
For placement of additional reinforcement over Pier 17 see sheet 442.
For additional notes see sheet 441.



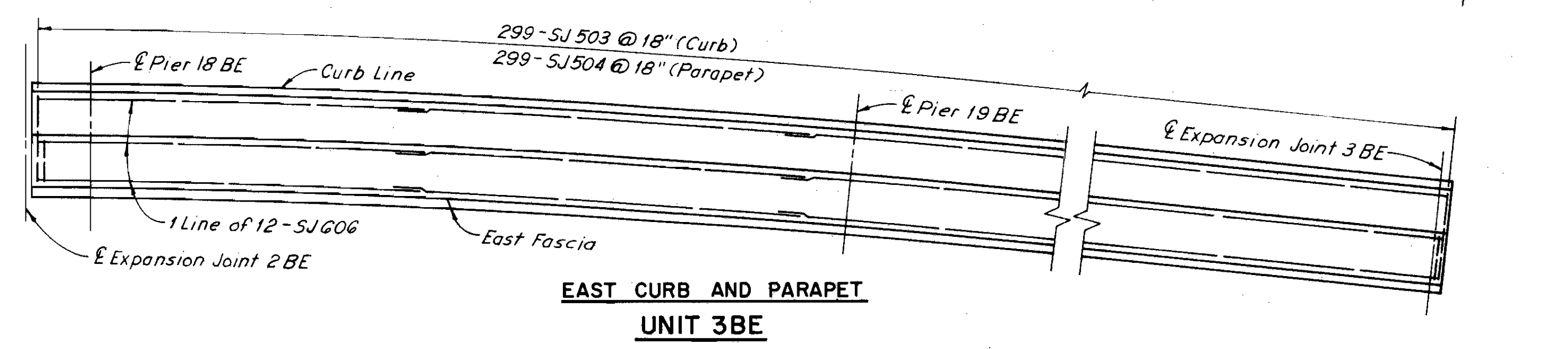
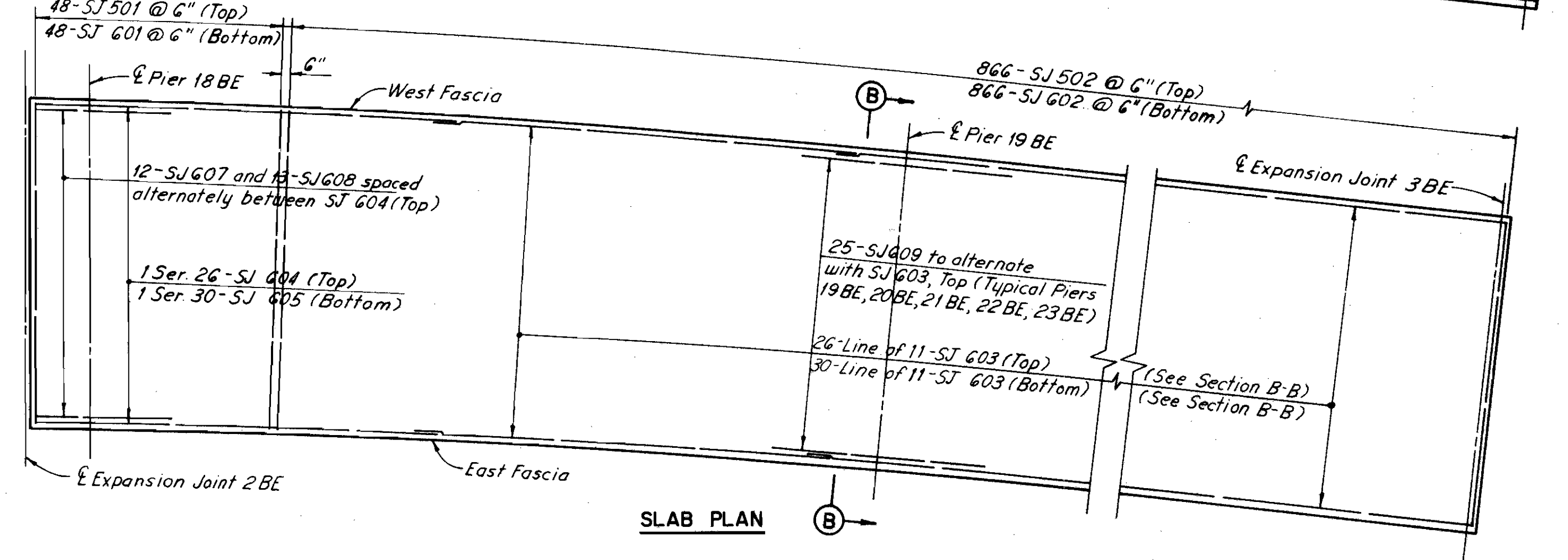
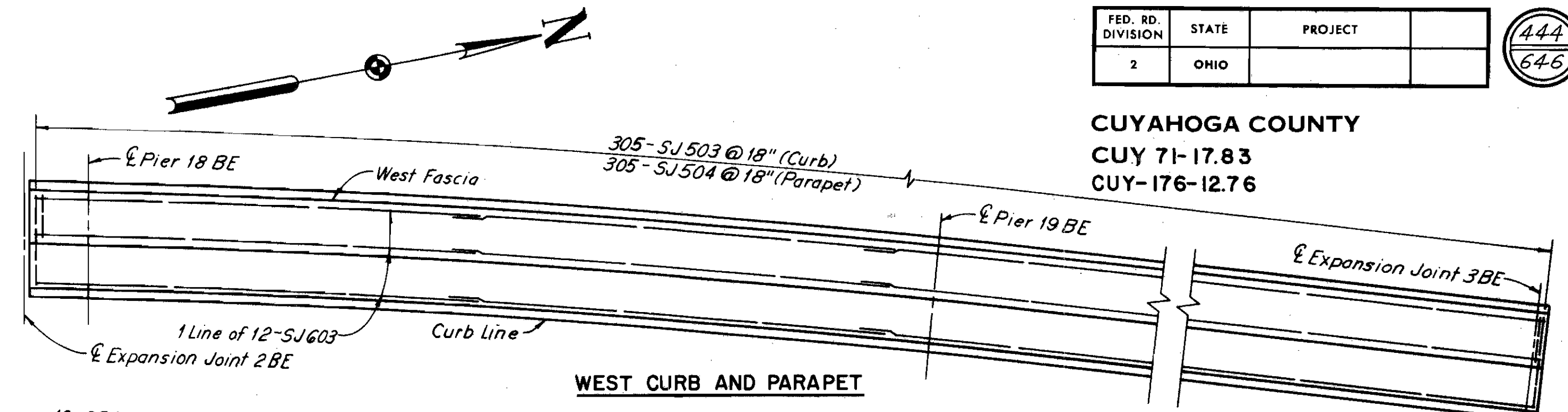
SECTION A-A

H.N.T.B BRIDGE NOS. 21A & 21B			
HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY CLEVELAND NEW YORK			
DECK REINFORCEMENT UNIT-2B			
NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND NORTHBOUND JENNINGS			
BR. NO. CUY-71-1789 R		STA. 917+10.09 STA. 935+21.25	
CLEVELAND	CUYAHOGA COUNTY	OHIO	
DRAWN DATE	TRACED DATE	CHECKED DATE	REVIEWED DATE
WJD 7-14-64	J.M. 12-23-64	J.M. 12-23-64	REVIS 12-28-64
			SHEET 443

CUYAHOGA COUNTY
 CUY 71-17.83
 CUY-176-12.76



SECTION A-A



UNIT 3BE

Varies 8'-0"

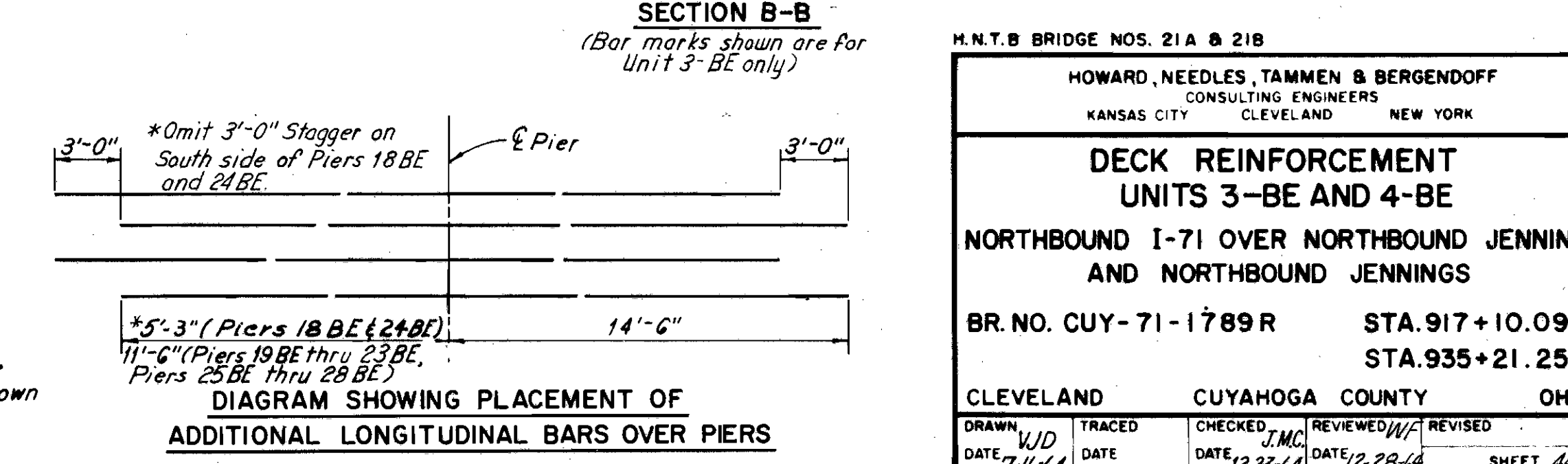
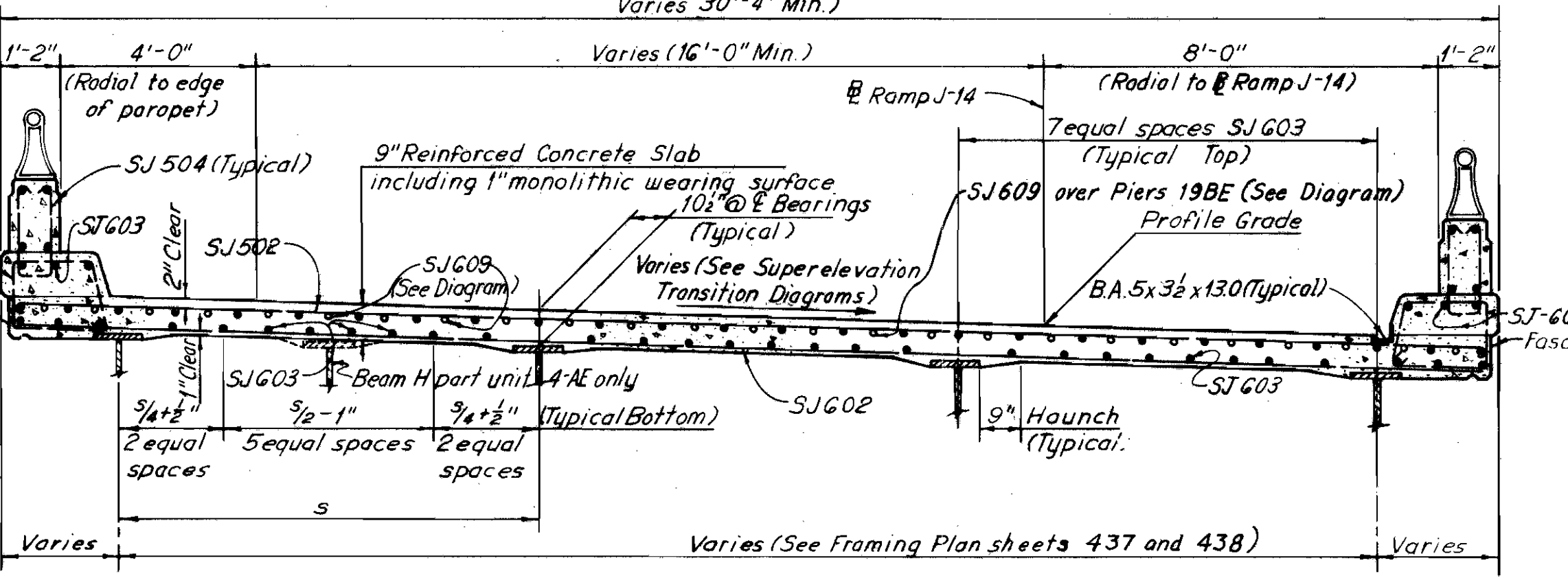
0.156%	8'-0"
STA. 4+45.35 (NOSE STA.)	8'-0"
0.48%	8'-0"
STA. 5+49.03 TO STA. 6+43.87	8'-0"
0.156%	8'-0"
STA. 7+47.65 TO STA. 10+49.08	8'-0"
Varies	8'-0"
0.156%	8'-0"
STA. 11+98.84 TO NORTH ABUTMENT BE	8'-0"

Note: Stations measured along Ramp J-14

SUPERELEVATION TRANSITION DIAGRAMS (PART UNIT 2B, UNITS 3BE, AND 4BE)

Note: Rate of transition between stations shown above is uniform.

Notes:
 Transverse reinforcement in Unit 3BE shall be placed radial to Ramp J-14 so that the maximum fanned spacing is equal to the spacing shown.
 Transverse reinforcement in Unit 4BE shall be placed parallel to Piers. Spacing shown is normal.
 For cross section details and dimensions not shown see Typical Cross Section Unit 1B, sheet 441.
 For additional notes see sheet 443.



M.N.T.B BRIDGE NOS. 21A & 21B

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY CLEVELAND NEW YORK

DECK REINFORCEMENT UNITS 3-BE AND 4-BE

NORTHBOUND I-71 OVER NORTHBOUND JENNINGS, AND SOUTHBOUND JENNINGS

BR. NO. CUY-71-1789R STA. 917+10.09
 STA. 935+21.25

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN: JLD TRACED: DATE: 7-16-64
 CHECKED: J.M.C. REVIEWED: W.F. DATE: 12-23-64
 SHEET 444