CUY-90-14.90

PID 77332/85531

APPENDIX EX-13

CUY-071-1718 PID 0.240
(Reference Document)

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: 1965

M-14

RECEIVED
MAY 2 4 1965

CONVENTIONAL SIGNS

PROPERTY LINE
EXISTING RIGHT OF WAY
LIMITED ACCESS LINE
LIMITED ACCESS AND RIGHT OF WAY LINE
RIGHT OF WAY LINE
TEMPORARY RIGHT OF WAY
CENTER LINE
WORK AGREEMENT LINE
FENCE LINE
GUARD RAIL(EXISTING)
GUARD RAIL(PROPOSED)
RAILROAD
POWER POLES
TELEPHONE POLES
POWER AND TELEPHONE POLES
LIGHT POLES
TREES (EXISTING)
WATER LINE
GAS LINE
TELEPHONE CONDUIT
SEWER(EXISTING)
OIL LINE
ELECTRICAL TOWER
FIRE HYDRANT
MANHOLE(SEWER)
MANHOLE (TELEPHONE)
CATCH BASIN OR INLET
UNDERGROUND ELECT. CONDUIT
SUBDIVISION LINE
SUBLOT LINE
ORIGINAL TOWNSHIP LOT LINE

INDEX OF SHEETS

PREPARED AND RECOMMENDED BY

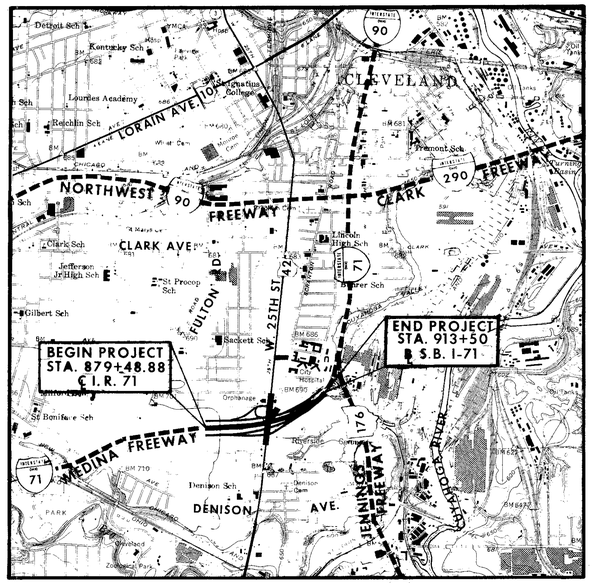
HOWARD NEEDLES TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

H.G. SOURS
ASSOCIATE
COLUMBUS

00325

FILE NO.	CUYAHOGA COUNTY- CUY- 71-17.18 DATE OF LETTING ____ ____ ____ 19__ CONTRACT NO. ____ ____ ____ ____

STATE OF OHIO
DEPARTMENT OF HIGHWAYS
CUY-71-17.18
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY



DELIVERY POINT
BALTIMORE AND OHIO RR

LOCATION MAP

AVERAGE HAUL 1 MILE

2,000 0 2,000 4,000 6,000 8,000
SCALE IN FEET

PORTION TO BE IMPROVED
STATE ROADS
OTHER ROADS

SCALE
PLAN 1"=20'&50'
PROFILE HOR 1"=50'
PROFILE VERT 1"=10'
CROSS SECTIONS 1"=10'

SUPPLEMENTAL SPECIFICATIONS

NUMBER	DATE	NUMBER	DATE
CE-101.04	5-22-56		
I-212 R.	6-23-61	S-307 R.	10-1-64
L-120 R.	1-2-62	S-101	7-12-62
T-335	10-28-63	I-129 R.	4-5-61
M-106.11	1-26-61		

LINE DATA

BEGIN PROJECT STA. 879+48.88 ℄ I-71
END PROJECT STA. 913+50 ℄ S.B. I-71
NET LENGTH OF PROJECT = 3,401.12 L.F.
LENGTH OF PROJECT = 0.644 MILE
ADD FOR APPROACHES
STA. 878+82.85 TO STA. 879+48.88 = 66.03 L.F.
STA. 913+50 TO STA. 914+50 100.00 L.F.
RELOCATED WEST 25 TH STREET
STA. 8+60 TO STA. 23+41 1481.00 L.F.
NET LENGTH OF WORK 5048.15 L.F.
OR 0.956 MILE

STANDARD DRAWINGS

NUMBER	DATE	NUMBER	DATE
B-T-70-71	11-15-60	LJ NO. 1	7-1-55
B-T-71R	3-2-53	RI-1	9-1-64
F-1	2-1-63	T.J.	9-12-60
F-3	2-1-63	AS-1-54	7-5-62
FAC I-1	2-25-64	I-8 C.B. NO. 6	2-1-63
FAC I-2	2-25-64	I-15 NO. 1	11-15-60
G707	4-1-64	I-8 I NO.1	2-1-63
I-1	11-15-60	I-8 I NO. 2	2-1-63
I-8 C.B. 2-2 A&B	2-1-63	I-8 I NO. 2A	2-1-63
I-8 C.B. NO. 3-A	2-1-63	I-14G	1-22-52
I-8 C.B. NO. 5	2-1-63	L-1	4-1-50
I-8 M.H. NO. 1	2-1-63	F-4	9-1-64
I-8 M.H. NO. 1-A	2-1-63	RB-1-55	2-2-59
I-8 M.H. NO. 2	2-1-63	AR-1-57	4-2-62
I-12	2-1-63	SD-1-63 (2,3,4 Empty)	11-12-63
I-15 NO. 6	2-1-63	SD-2-64	11-25-64
I-15 NO. 2-A	8-17-60		
I-21-23	3-10-64		
L-3	4-1-50		
L-3A	4-1-50		

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO	I-71-5(14)251	

1/241

LIMITED ACCESS

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

CUYAHOGA COUNTY
CUY. 71-17.18

I-71-5(14) 251

1963 SPECIFICATIONS

Revise Sheet Nos. 1, 2, 3, 5, 6, 13, 14, 17
10-26-65 C.E.H.

Revise Sheet No. 208
12-8-65 C.E.H.

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 4/9/65 — Louis L. Fraser — DIRECTOR OF PUBLIC SERVICE, CITY OF CLEVELAND

APPROVED
DATE 4-6-65 — Charles M. Zurick — DIVISION DEPUTY DIRECTOR

APPROVED
DATE 4-26-65 — C.H. Abbuhl — ENGINEER OF BRIDGES

APPROVED
DATE 4-29-65 — R.N. Richter — ENGINEER OF LOCATION AND DESIGN

APPROVED
DATE 4-29-65 — R.E. Shultz — DEPUTY DIRECTOR OF DESIGN AND CONSTRUCTION

APPROVED
DATE 4-15-65 — T.A. Bound — DEPUTY DIRECTOR OF RIGHT OF WAY

APPROVED
DATE 5-6-65 — F.W. Wilson — DEPUTY DIRECTOR OF PLANNING AND PROGRAMMING

APPROVED
DATE ____ — FIRST ASSISTANT DIRECTOR

APPROVED
DATE 5/6/65 — P.B. Mashuda — DIRECTOR OF HIGHWAYS

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

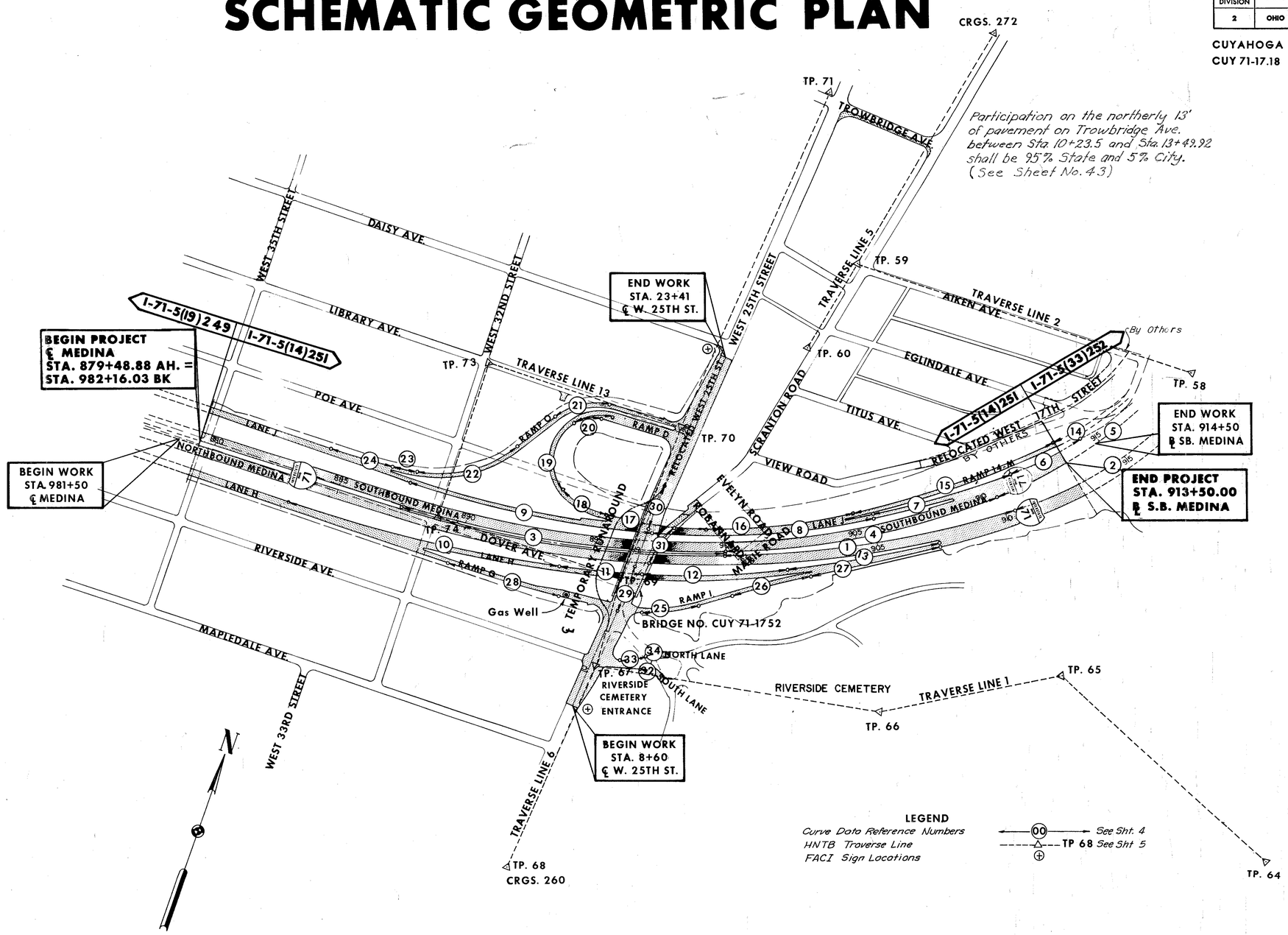
DIVISION ENGINEER — DATE

SCHEMATIC GEOMETRIC PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

2/241

CUYAHOGA COUNTY
CUY 71-17.18



SCALE 1"=200' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE I.M. DATE 2-15-65 CONSULTING ENGINEERS
TRCD. H.L.D. DATE 2-20-65 KANSAS CITY CLEVELAND NEW YORK
CKD. D.R.K. DATE 2-15-65

Rev. 10-26-65 C.E.H.

SCHEMATIC GEOMETRIC PLAN

STRUCTURE DATA AND CONTROL POINTS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

3
241

CUYAHOGA COUNTY
CUY 71-17.18

TRAVERSE POINTS

Point No.		Distance		Length	Bearing	Coordinates	
C.R.G.S.	H.N.T.B.	From	To			North	East
				Line No. 1			
643	82					651,240.34	2,221,221.54
	79	82	79	528.10	N 76°23'22" E	651,364.61	2,221,734.82
	80	79	80	1,097.57	N 0°04'51" E	652,462.18	2,221,736.37
	64	80	64	422.72	N 5°50'51" W	652,882.71	2,221,693.30
	65	64	65	1,031.13	N 68°18'28" W	653,263.84	2,220,735.20
	66	65	66	744.70	S 58°19'40" W	652,872.82	2,220,101.41
	67	66	67	1,078.64	S 78°50'48" W	652,664.18	2,219,043.14
260	68	67	68	842.09	S 3°50'19" W	651,823.98	2,218,986.76
				Line No. 2			
644	81					651,401.26	2,221.952.48
	78	81	78	397.28	S 68°35'06" E	651,256.20	2,222,322.34
	77	78	77	677.56	N 74°50'03" E	651,433.46	2,222,976.30
	76	77	76	818.95	N 8°56'04" W	652,242.47	2,222,849.11
	75	76	75	696.80	N 16°51'04" W	652,909.36	2,222,647.12
	63	75	63	1,008.83	N 55°35'34" W	653,479.42	2,221,814.79
	57	63	57	1,352.30	N 37°07'08" W	654,577.73	2,220,998.71
	58	57	58	242.23	S 79°14'10" W	654,512.49	2,220,760.74
	59	58	59	1,323.06	S 82°19'21" W	654,450.68	2,219,439.13
272	61	59	61	1,014.66	N 10°36'31" E	655,447.99	2,219,625.93
				Line No. 6			
	62					656,424.40	2,219,812.65
	72	62	72	575.56	S 88°29'56" W	656,409.32	2,219,237.29
	71	72	71	1,368.73	S 3°48'40" W	655,043.61	2,219,146.32
	70	71	70	1,394.48	S 3°54'15" W	653,652.37	2,219,051.37
	69	70	69	615.03	S 3°52'32" W	653,038.75	2,219,009.80
	67	69	67	376.06	S 5°05'11" E	652,664.18	2,219,043.14
				Line No. 13			
	69					653,038.75	2,219,009.80
	74	69	74	731.04	S 88°49'18" W	653,023.72	2,218,278.92
	73	74	73	611.52	N 01°42'17" W	653,634.97	2,218,260.72
	70	73	70	790.84	N 88°44'21" E	653,652.37	2,219,051.37

BENCHMARK ELEVATIONS

B.M. NO.	ELEVATION	DESCRIPTION
38	687.039	Top N.E. Flange Bolt Top Fire Hydrant S.W. Corner of Aiken Avenue and 1st Street W. of Scranton Road
39	686.260	Top N.E. Flange Bolt Top Fire Hydrant S.E. Corner of Holmden Avenue and Scranton Road
40	685.971	Top West Flange Bolt Top Fire Hydrant Across Street from 3295 West 25th Street
41	690.666	Top N.E. Flange Bolt Top Fire Hudrant S.W. Corner of West 25th Street and Woodbridge Avenue
42	692.612	Top N.E. Flange Bolt Top Fire Hydrant N.W. Corner of West 25th Street and Library Avenue
43	689.573	Top N.E. Flange Bolt Top Fire Hydrant N.W. Corner of West 25th Street and Riverside Avenue
48	695.409	Top N.E. Flange Bolt Top Fire Hydrant N.E. Corner of West 32nd Street and Library Avenue
49	694.777	Top N.E. Flange Bolt Top Fire Hydrant N. side 3008 Dover Avenue
64	685.975	T.P. No. 61 and C.R.G.S. O.M. 272
65	686.819	T.P. No. 68 and C.R.G.S. O.M. 260
66	674.906	T.P. No. 81 and C.R.G.S. O.M. 644
67	681.540	T.P. No. 82 and C.R.G.S. O.M. 643

STRUCTURE DATA

TYPE:	Continuous steel beam with reinforced concrete deck and substructure
SPANS:	49'-4 3/16", 62'-4 1/8", 62'-1 1/16", 63'-11 3/8", 64'-0 13/16", 45'-2".
ROADWAY:	Varies
LOAD FREQUENCY:	CF 2000 (57) Adequate for AASHO alternate loading
SKEW:	Varies
WEARING SURFACE:	1" Monolithic Concrete
APPROACH SLABS:	AS-1-54 (25' Long)
ALIGNMENT:	2°30' Curve Left, Tangent
	2°30' Curve Right

SCALE ———— HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE IM DATE 2-15-65
TRCD. ____ DATE ____ CONSULTING ENGINEERS
CKD. DRK DATE 2-17-65 KANSAS CITY CLEVELAND NEW YORK

GEOMETRICS TABLE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY 71-17.18

LINE	CURVE	P.C.			P.I.			P.T.			△	D	R	T	L	E
		STATION	N CO-ORD	E CO-ORD	STATION	N CO-ORD	E CO-ORD	STATION	N CO-ORD	E CO-ORD						
N.B. Medina	1	899+23.96	653,256.47	219,354.74	904+88.43	653,458.57	219,881.81	910+45.18	653,801.34	220,330.30	16°24'40"		3,914.53	564.48	1,121.23	40.49
	2	910+45.18	653,801.34	220,330.30	915+06.68	654,081.58	220,696.98	919+38.10	654,523.17	220,831.09	35°43'01"	4°00'00"	1,433.39	461.50	892.92	72.52
℄ Medina	3	887+53.56	653,009.16	218,133.57	893+83.95	653,038.25	218,763.28	900+03.56	653,263.94	219,351.88	18°20'00"	1°28'00"	3,906.53	630.38	1,250.00	50.53
S.B. Medina	4	900+03.56	653,271.41	219,349.02	905+40.84	653,463.77	219,850.69	910+65.79	653,824.84	220,248.56	21°14'41"	2°00'00"	2,864.79	537.28	1,062.23	49.95
S.B. Medina	5	910+65.79	653,824.84	220,248.56	915+72.64	654,165.45	220,623.90	920+56.64	654,647.35	220,780.96	29°43'32"	3°00'00"	1,909.86	506.84	990.85	66.11
Lane J	6	0+00.00	654,141.89	220,469.27	1+49.25	654,021.31	220,381.31	2+97.15	653,924.34	220,267.85	13°22'19"	4°30'00"	1,273.24	149.25	297.15	8.72
	7	2+97.15	653,924.34	220,267.85	5+71.46	653,746.12	220,059.32	8+44.84	653,599.52	219,827.45	8°12'55"	1°30'00"	3,819.72	274.31	547.69	9.84
	8	8+44.84	653,586.00	219, 836.00	12+70.94	653,358.30	219,475.85	16+90.83	653,245.27	219,065.02	16°55'11"	2°00'00"	2,864.79	426.09	845.99	31.51
	9	16+90.83	653,245.27	219,065.02	21+63.71	653,119.83	218,609.08	26+31.81	653,109.36	218,136.31	14°06'53"	1°30'00"	3,819.72	472.88	940.98	29.16
Lane H	10	3+90.56	652,880.15	217,722.60	9+23.53	652,891.95	218,255.44	14+53.45	653,001.82	218,776.97	10°37'44"	1°00'00"	5,729.58	532.97	1,062.89	24.74
	11	14+53.45	653,001.82	218,776.97	16+11.24	653,034.35	218,931.36	17+68.86	653,078.95	219,082.71	4°31'23"		3,995.53	157.78	315.41	3.11
	12	17+68.86	653,078.95	219,082.71	20+47.13	653,157.61	219,349.63	23+23.66	653,286.17	219,596.42	11°05'46"	2°00'00"	2,864.79	278.27	554.80	13.48
	13	23+23.66	653,286.17	219,596.42	26+16.44	653,421.44	219,856.10	29+08.70	653,582.46	220,100.61	5°51'02"	1°00'00"	5,729.58	292.78	585.04	7.47
Ramp 14-M	14	7+92.78	654,787.59	220,700.83	12+01.08	654,381.02	220,663.22	15+77.25	654,089.84	220,376.99	39°13'24"	5°00'00"	1,145.92	408.31	784.47	70.57
	15	15+77.25	654,089.84	220,376.99	19+81.58	653,801.49	220,093.54	23+82.92	653,578.88	219,756.00	12°05'07"	1°30'00"	3,819.72	404.34	805.68	21.34
	16	23+82.92	653,578.88	219,756.00	26+49.24	653,432.26	219,533.69	29+13.17	653,340.51	219,283.67	13°15'22"	2°30'00"	2,291.83	266.31	530.25	15.42
Ramp D	17	0+00.00	653,328.76	219,251.03	1+89.03	653,265.81	219,072.78	3+75.89	653,228.33	218,886.08	15°02'08"	4°00'00"	1,432.39	189.03	375.89	12.42
	18*	See Table below for curve data														
	19	5+75.89	653,282.45	218,689.52	11+08.85	653,567.44	218,239.16	10+14.62	653,604.90	218,770.80	143°38'39"		175.00	532.96	438.74	
	20	8+61.28	653,532.61	218,641.09	9+19.84	653,580.13	218,675.32	9+70.81	653,584.24	218,733.74	50°12'27"		125.00	58.56	109.54	13.04
Ramp O	21	3+14.23	653,648.79	218,767.71	4+46.67	653,639.48	218,635.60	5+59.27	653,527.24	218,565.30	53°54'31"	22°00'00"	260.44	132.44	245.04	31.74
	22	7+42.41	653,372.04	218,468.08	9+54.46	653,192.34	218,355.52	11+41.52	653,155.35	218,146.72	47°53'38"	12°00'00"	477.46	212.05	399.12	44.97
	23	11+41.52	653,155.35	218,146.72	11+91.54	653,146.63	218,097.46	12+41.52	653,141.36	218,047.72	4°00'00"	4°00'00"	1,432.39	50.02	100.00	0.87
	24	12+41.52	653,141.36	218,047.72	13+61.00	653,128.78	217,928.91	14+80.33	653,126.13	217,809.47	4°46'34"	2°00'00"	2,864.79	119.47	238.81	2.49
Ramp I	25	0+84.47	652,943.60	219,124.33	1+99.18	652,975.44	219,234.54	3+11.46	653,043.75	219,326.70	20°25'45"	9°00'00"	636.62	114.71	226.99	10.25
	26	4+45.28	653,123.43	219,434.21	5+99.79	653,215.43	219,558.34	7+54.12	653,297.10	219,689.49	4°37'57"	1°30'00"	3,819.72	154.50	308.83	3.12
	27	7+54.12	653,297.10	219,689.49	10+04.46	653,429.44	219,902.01	12+54.71	653,570.92	220,108.53	2°30'11"	0°30'00"	11,459.16	250.34	500.59	2.73
Ramp G	28	6+50.00	652,870.54	218,372.97	8+70.90	652,875.43	218,593.81	10+91.57	652,897.31	218,813.62	4°24'57"	1°00'00"	5,729.58	220.90	441.57	4.26
W. 25th St.	29	12+60.18	652,920.16	219,043.18	13+48.61	653,008.38	219,049.17	14+36.95	653,096.81	219,048.35	4°25'09"	2°30'00"	2,291.83	88.43	176.77	1.70
	30	15+97.35	653,257.20	219,046.86	16+85.83	653,345.68	219,046.03	17+74.23	653,433.96	219,052.03	4°25'19"	2°30'00"	2,291.83	88.48	176.88	1.71
Rel. Scranton Road	31	4+81.99	653,142.03	219,094.33	5+73.45	653,233.28	219,100.53	6+61.52	653,311.82	219,147.38	26°55'48"	15°00'00"	381.97	91.46	179.53	10.80
Riverside Cemetery Entrance South Lane	32	1+85.59	652,751.77	219,194.29	2+48.35	652,768.44	219,254.80	3+00.33	652,726.22	219,301.24	57°40'16"	50°15'32"	114.00	62.76	114.75	16.14
North Lane	33	0+00.00	652,744.68	219,115.80	0+46.52	652,758.34	219,160.26	0+91.54	652,789.61	219,194.71	25°10'21"	27°30'00"	208.35	46.52	91.54	5.01
" "	34	0+91.54	652,789.61	219,194.71	1+41.90	652,823.47	219,231.99	1+90.38	652,836.55	219,280.63	27°10'50"	27°30'00"	208.35	50.37	98.84	5.83

LINE	CURVE	C.S.	S.C.	Θ_s	D_1	D_2	L_s	T_1	T_2
Ramp D	18	3+75.89 N 653,228.33 E 218,886.08	5+75.89 N 653,282.45 E 218,689.52	28°44'26"	4°00'00"	32°44'26"	200.00	130.07	77.05

Note:
Add 2,000,000 to all East Coordinates.

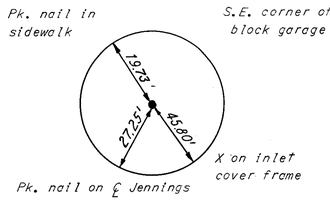
SCALE ——— HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE IM DATE 2-15-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 2-17-65 KANSAS CITY CLEVELAND NEW YORK

TRAVERSE TIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

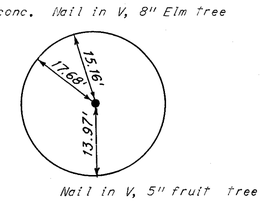
5
241

CUYAHOGA COUNTY
CUY-71-17.18



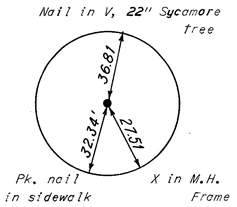
TP. 57

Jennings, S. J&L Employment Office
Stud in sidewalk with screw inserted into it.



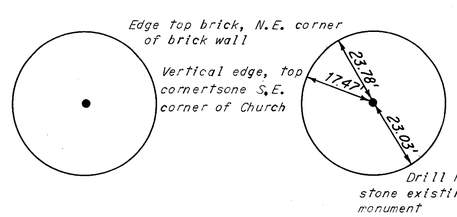
TP. 58

E. # 3457 W. 17th Street
Cast bronze HNTB marker.



TP. 59

Scranton @ Aiken
Stud in sidewalk with screw inserted into it.

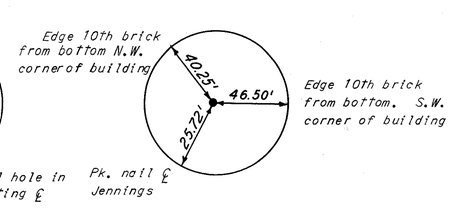


TP. 61

W. side Scranton Rd., S. of Sackett.
Existing C.R.G.S. monument # O.M. 272

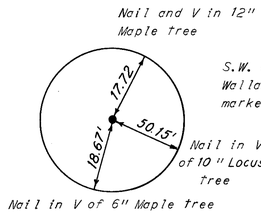
TP. 62

Scranton @ Meyer
Pk. nail leaded into sidewalk



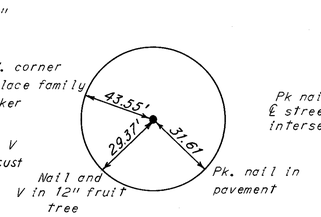
TP. 63

Jennings Rd. @ Cleve. Slag Plant
Stud in conc. sidewalk with screw inserted into it.



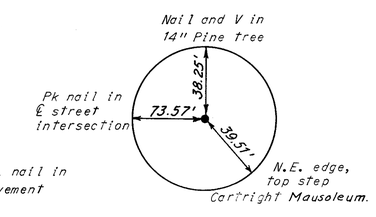
TP. 64

West of Jennings
Cast bronze HNTB marker.



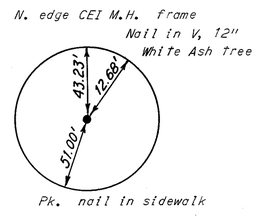
TP. 65

Riverside Cemetery
Stud in conc. pavement
with screw inserted into it.



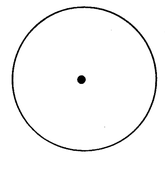
TP. 66

Riverside Cemetery (South of Chapel)
Punch mark in lag bolt
driven into pavement



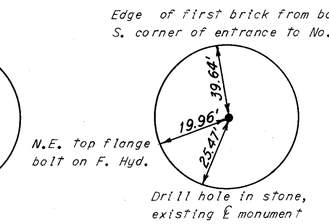
TP. 67

W. side of W. 25th St @ Riverside
Pk. nail in sidewalk.



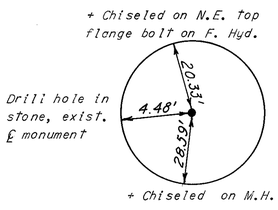
TP. 68

S.E. corner of W. 25th and Forestdale. Existing C.R.G.S. monument No. O.M. 260.



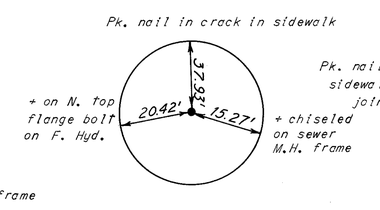
TP. 69

N.W. corner of W. 25th and Dover
Punch mark in iron rod driven through sandstone sidewalk and cemented into it.



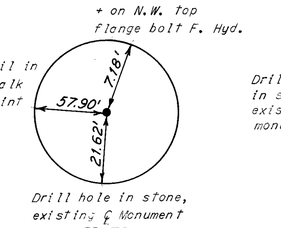
TP. 70

On ℄ of Library W. of W. 25th intersection
Punch mark in head of lag bolt driven
into asphalt pavement



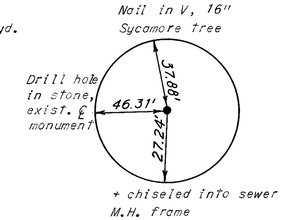
TP. 71

N.W. corner of Trowbridge and West 25th. Stud drilled into concrete sidewalk with Phillips head screw inserted into it.



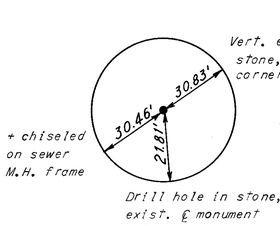
TP. 72

N.W. corner of Meyer and West 25th. Stud drilled into concrete sidewalk with Phillips head screw inserted into it.



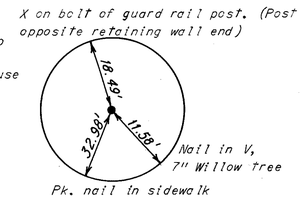
TP. 73

On ℄ of Library E. of W. 32nd intersect.
Stud drilled into brick pvmt. with Phillipshead screw inserted into it.



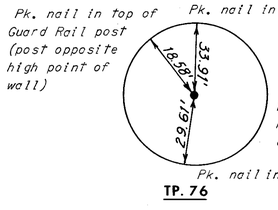
TP. 74

N.E. corner of Dover and W. 32nd intersect. Stud drilled into conc. sidewalk with Phillipshead screw inserted into it.



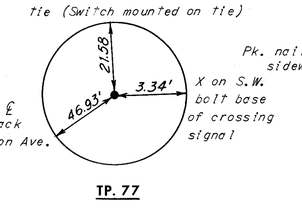
TP. 75

E. side Jennings @ retaining wall
with screw inserted into it.



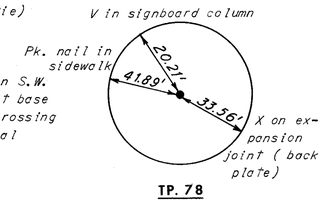
TP. 76

East side Jennings @ retaining wall.
Stud in retaining wall with screw inserted into it.



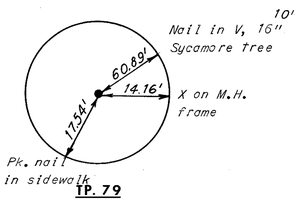
TP. 77

N. side Denison, East of rail
crossing. Punch mark in iron
rod in ground.



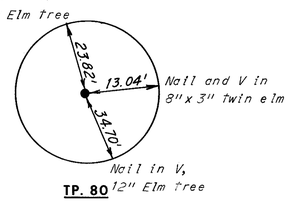
TP. 78

N.W. of west end Harvard St.
Viaduct. Punch mark in iron
rod in ground.



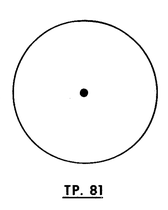
TP. 79

W. 15th @ Denison. Punch
mark in lag bolt in asphalt
pavement.



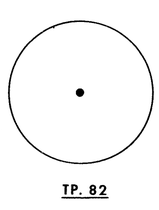
TP. 80

N. of North end West 15th
Punch mark in iron rod in
ground.



TP. 81

Denison @ Harvard
Existing C.R.G.S. monument
No. O.M. 644



TP. 82

Denison @ West 17th
Existing C.R.G.S. monument
No. O.M. 643

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE J.M. DATE 2-15-65
TRCD. _____ DATE _____ CONSULTING ENGINEERS
CKD. D.R.K. DATE 2-17-65 KANSAS CITY CLEVELAND NEW YORK

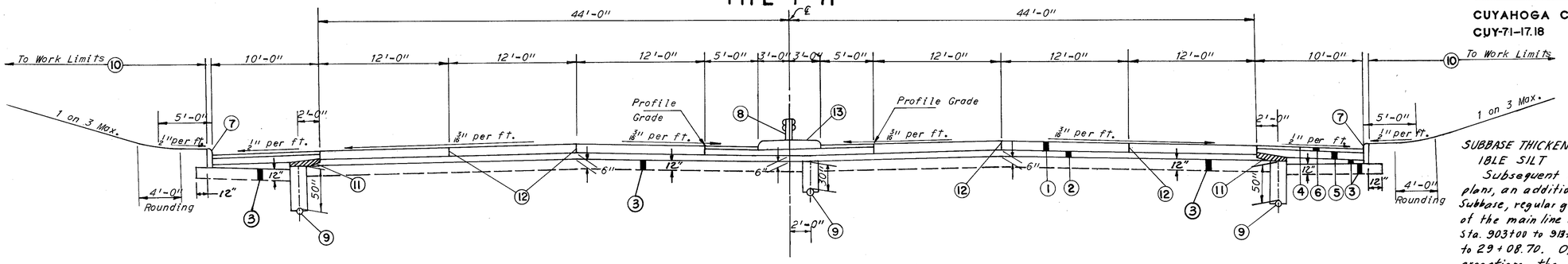
TYPICAL SECTIONS

TYPE T-71

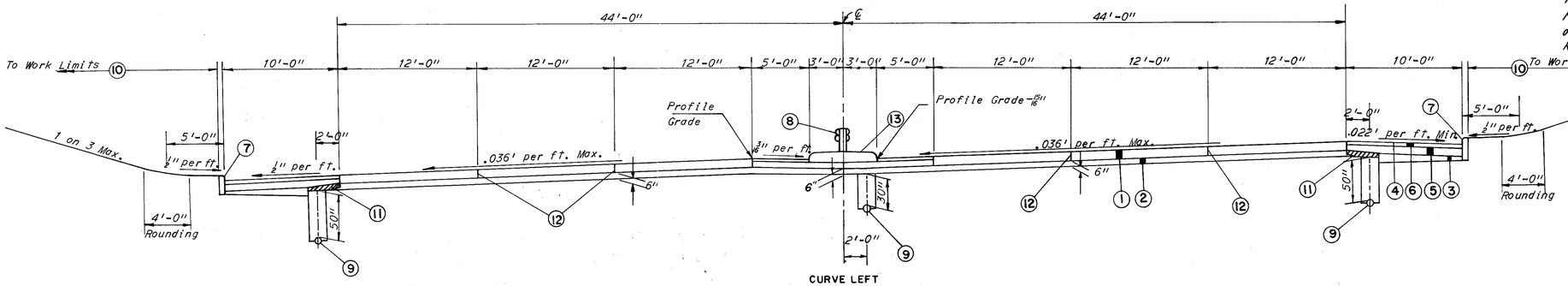
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

6
241

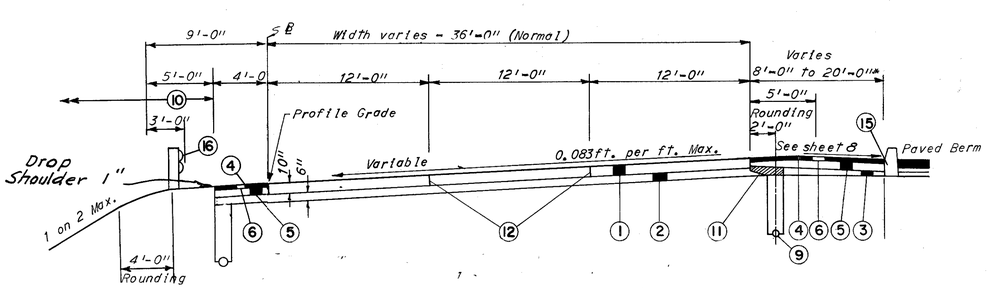
CUYAHOGA COUNTY
CUY-71-17.18



TANGENT
MEDINA FREEWAY
STA. 879+48.88 TO STA. 885+ 11.56

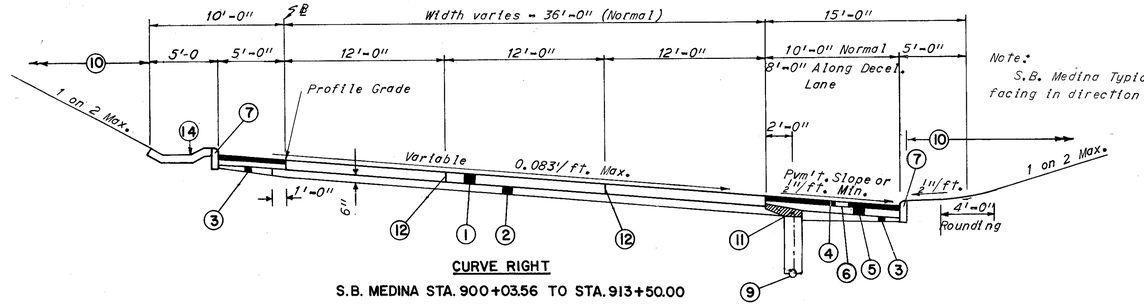


CURVE LEFT
MEDINA FREEWAY
STA. 885+ 11.56 TO STA. 900+03.56



CURVE LEFT N.B. MEDINA STA. 899+23.96 TO STA. 913+00.00

* Note:
See Pavement Plan Sheets for shoulder details. Use Barrier Curb from Sta. 903+25 to 907+33.18.



CURVE RIGHT
S.B. MEDINA STA. 900+03.56 TO STA. 913+50.00

Note:
S.B. Medina Typical Section is shown facing in direction of traffic.

SUBBASE THICKENED DUE TO FROST SUSCEPTIBLE SILT

Subsequent to the completion of these plans, an additional 12" of Item I-22 Subbase, regular grading, was added to all of the main line and ramps except NB Medina Sta. 903+00 to 918+00 and Ramp H Sta. 241093 to 29+08.70. Other than these two exceptions, the additional 12" of Ref. 3, as shown on typical section "Tangent Medina Freeway", shall apply to all typical sections on Sheets 6 thru 10. An estimated quantity of 26,000 cu.yds. of Item I-22 Subbase and Item E-1 Roadway Excavation has been carried to the General Summary for this purpose.

The Type 3 backfill for all underdrains shall consist of Sec. M-2.1 sand above the point 6" above the top of the pipe.

Note:
Typical Sections are intended to show general roadway and pavement features only. For details see Paved Shoulder Details, Plan Sheets and Cross Section Sheets.

Note:
Sequence of operations - (1) Install pipe underdrain on outside shoulder. Installation of shallow underdrain in median may be deferred until T-71 is placed, (2) Place subbase out to outside edge of underdrain or to one foot beyond edge of pavement where no underdrain is present, (3) Construct T-71, (4) Remove subbase and any contaminated backfill over drain and replace with No. 6 aggregate as shown by (11), (5) Complete shoulder construction.

LEGEND

(1)	Item T-71	10" Reinforced Portland Cement Concrete Pavement
(2)	Item I-22	Subbase, Grading "A" or "B", modified as per General Note Sheet No. 13
(3)	Item I-22	Subbase, Regular Grading
(4)	Item T-31	Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 aggregate and 0.25 Gal. Bituminous material per Sq. Yd. (See note in proposal)
(5)	Item B-19-6"	Aggregate Base Course
(6)	Item B-21-3"	Waterproofed Aggregate Base Course (Type "A" T-35 or T-335 material may be used in construction of this course - (See note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01
(7)	Item I-12	Standard Type 6 Concrete Curb
(8)	Item I-15	Guard Rail, Steel Beam Barrier Type (Deep)
(9)	Item I-1	6" Pipe, Class I-3
(10)	Item L-9	Seeding and Protecting, as per plan
(11)	Item special	drainage connection using No. 6 aggregate (See note in proposal)
(12)	Standard	Longitudinal Joint
(13)	Item I-21	Portland Cement Concrete Median, as per plan (See Miscellaneous Details)
(14)	Item I-14	Standard Type 1 Paved Gutter (Modified)
(15)	Item I-12	Standard Type 8 Concrete Curb
(16)	Item I-15	Guard Rail, Steel Beam Standard Type (Deep)

SCALE 3/16" = 1'
MADE IN DATE 1-20-65
TRCD. ____ DATE ____
CKD. D.R.K. DATE 1-20-65

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

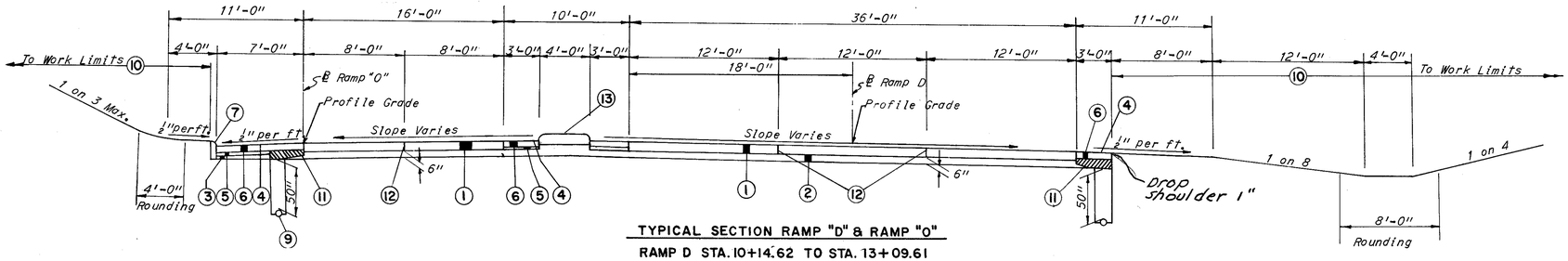
TYPICAL SECTIONS

TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

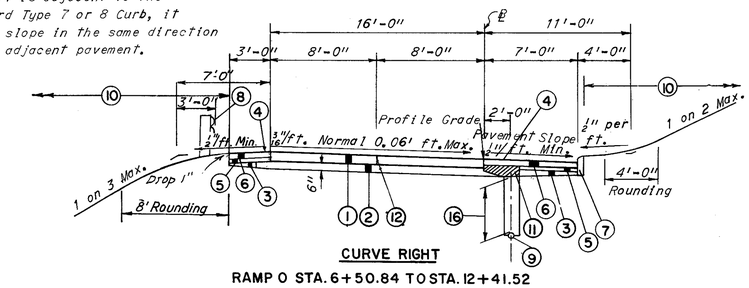
7 / 241

CUYAHOGA COUNTY
CUY 71-17.18

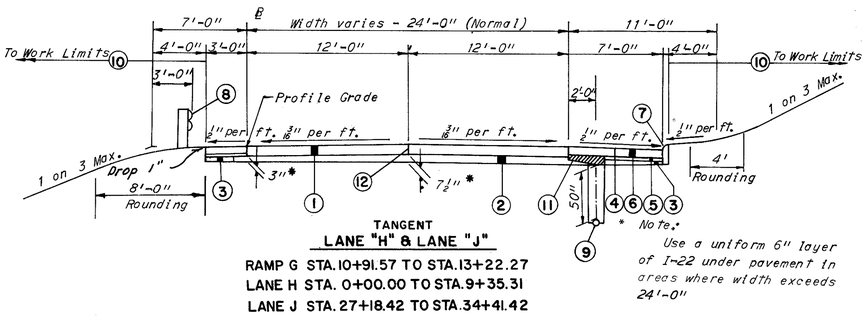


TYPICAL SECTION RAMP "D" & RAMP "O"
RAMP D STA. 10+14.62 TO STA. 13+09.61
RAMP O STA. 0+00.00 TO STA. 3+14.23

Note:
When 3'-0" Paved Shoulder on the left is adjacent to the Standard Type 7 or 8 Curb, it should slope in the same direction as the adjacent pavement.



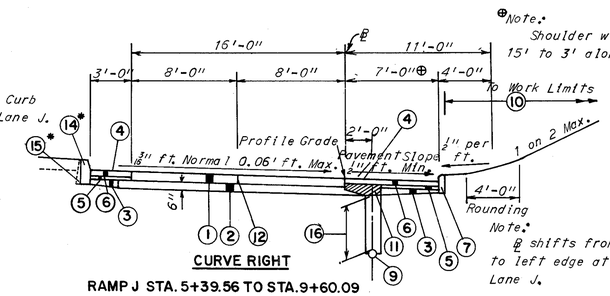
CURVE RIGHT
RAMP O STA. 6+50.84 TO STA. 12+41.52



TANGENT
LANE "H" & LANE "J"
RAMP G STA. 10+91.57 TO STA. 13+22.27
LANE H STA. 0+00.00 TO STA. 9+35.31
LANE J STA. 27+18.42 TO STA. 34+41.42

* Note:
Use a uniform 6" layer of I-22 under pavement in areas where width exceeds 24'-0"

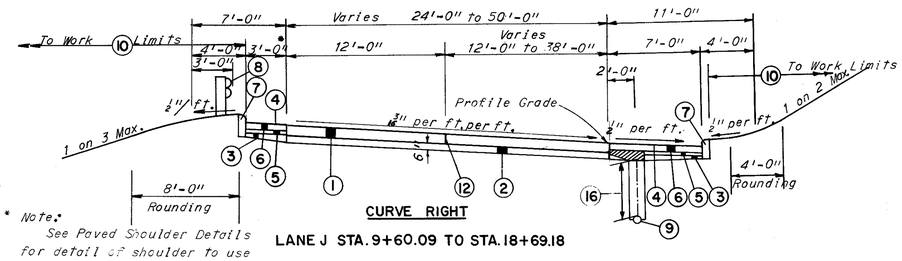
* Note:
Use Standard Type 6 Curb along the left side of Lane J.



CURVE RIGHT
RAMP J STA. 5+39.56 TO STA. 9+60.09
RAMP 14M STA. 15+77.25 TO STA. 24+25.96

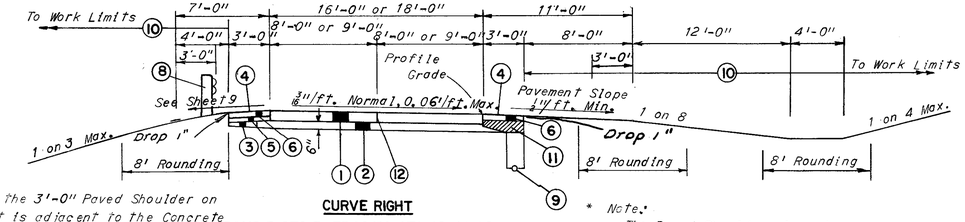
⊕ Note:
Shoulder width varies from 15' to 3' along Lane J.

Note:
℄ shifts from right edge to left edge at Sta. 8+44.84, Lane J.



* Note:
See Paved Shoulder Details for detail of shoulder to use when curb is not shown on plans.

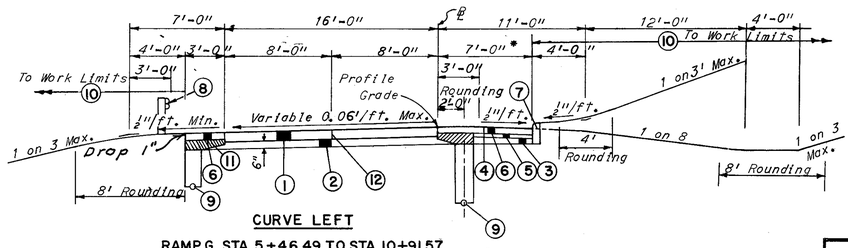
CURVE RIGHT
LANE J STA. 9+60.09 TO STA. 18+69.18



Note:
When the 3'-0" Paved Shoulder on the left is adjacent to the Concrete Curb or Median, it should slope in the same direction as the adjacent pavement.

CURVE RIGHT
RAMP D STA. 3+75.89 TO STA. 10+14.62
RAMP I STA. 3+78.37 TO STA. 7+54.12
LANE J STA. 18+69.18 TO STA. 27+18.42

* Note:
The Paved Shoulder along the right side of Ramp "I" should be 7'-0". The total shoulder width remains 11'-0".



CURVE LEFT
RAMP G STA. 5+46.49 TO STA. 10+91.57
RAMP H STA. 9+35.31 TO STA. 29+08.70
RAMP I STA. 0+00.00 TO STA. 3+78.37
RAMP O STA. 3+14.23 TO STA. 6+50.84

* Note:
Use a 3'-0" wide paved shoulder along the right side of Lane "H". See Paved Shoulder Details.

LEGEND

(1)	Item T-71	9" Reinforced Portland Cement Concrete Pavement
(2)	Item I-22	Subbase, Grading "A" or "B", modified as per General Note
(3)	Item I-22	Subbase, Regular Grading
(4)	Item T-31	Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 aggregate and 0.25 Gal. Bituminous material per Sq. Yd. (See note in proposal)
(5)	Item B-19	Aggregate Base Course
(6)	Item B-21	Waterproofed Aggregate Base Course (Type "A" T-35 or T-335 material may be used in construction of this course - (See note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01
(7)	Item I-12	Standard Type 6 Concrete Curb
(8)	Item I-15	Guard Rail, Steel Beam Standard Type (Deep)
(9)	Item I-1	6" Pipe, Class I-3
(10)	Item L-9	Seeding and Protecting, as per plan
(11)	Item special	drainage connection using No. 6 aggregate (See note in proposal)
(12)		Standard Longitudinal Joint
(13)	Item I-21	Portland Cement Concrete Median
(14)	Item I-12	Standard Type 7 Concrete Curb
(15)	Item I-12	Standard Type 8 Concrete Curb
(16)		50" from bottom of subbase to crown of pipe in cuts 30" from bottom of subbase to crown of pipe in fills

Note:
Typical Sections are intended to show general roadway and pavement features only. For details see Paved Shoulder Details, Plan Sheets and Cross Section Sheets.

Thickened subbase — see note on Sheet 6

Sequence of operations - see Sheet 6

NOTE
On all ramps and speed change lanes, where B-21 paved shoulders are indicated, the B-21 shall be 6" thick, placed in two 3" courses, and the thickness of the B-19 course shall be decreased a corresponding amount.

SCALE 3/16" = 1' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE EM DATE 2-15-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 2-17-65 KANSAS CITY CLEVELAND NEW YORK

TYPICAL SECTIONS

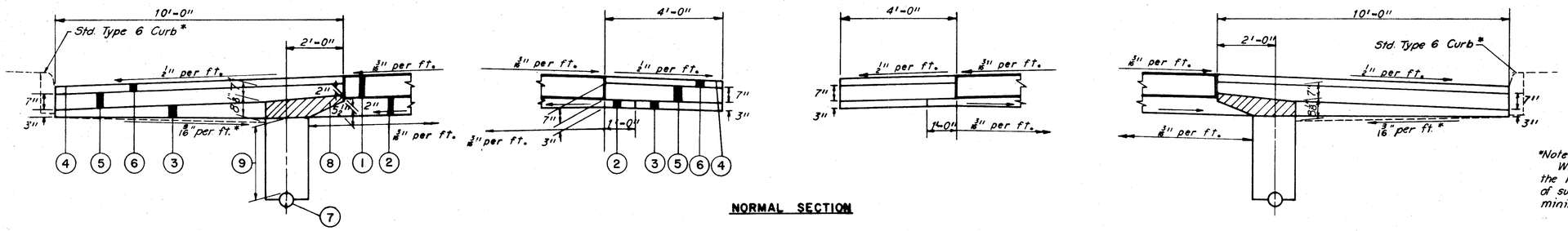
TYPE T-71

PAVED SHOULDERS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

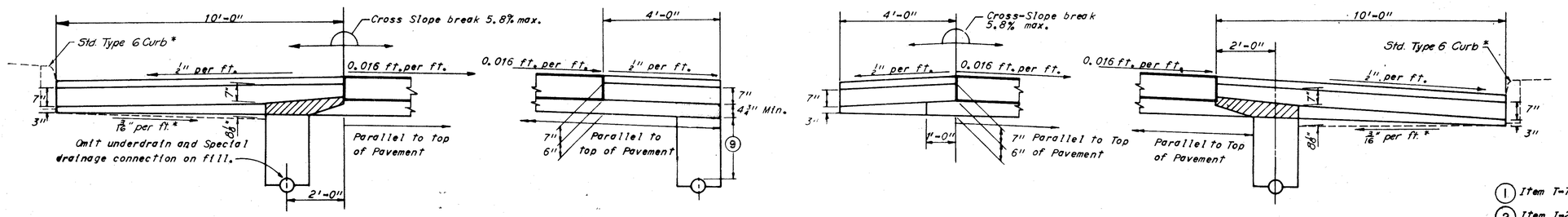
8
241

CUYAHOGA COUNTY
CUY-71-17.18

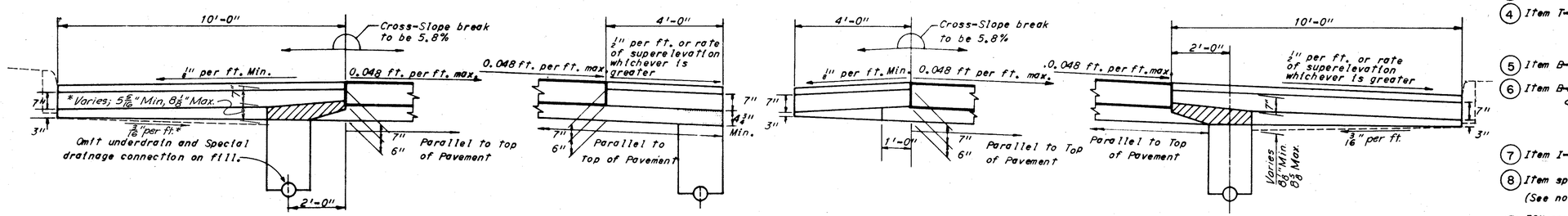


NORMAL SECTION

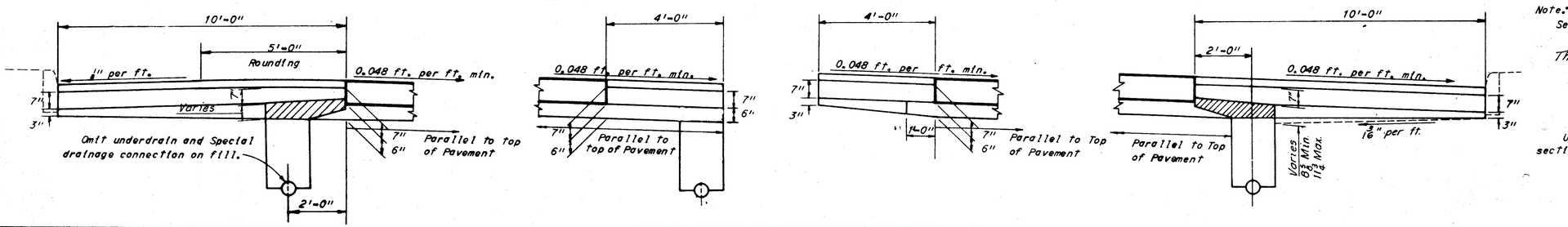
*Note:
When curb is shown on the plans to be used adjacent to the 10' wide paved shoulder the bottom of the subbase (top of subgrade) shall slope toward the underdrain at 3/16" per ft. minimum slope.



TRANSITION SECTION



SUPERELEVATION NOT MORE THAN 0.048 FT. PER FT.



SUPERELEVATION MORE THAN 0.048 FT. PER FT.

LEGEND

(1) Item T-71 10" Reinforced Portland Cement Concrete Pavement
(2) Item I-22 Subbase, Grading "A" or "B", modified as per General Note
(3) Item I-22 Subbase, Regular Grading
(4) Item T-31 Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 aggregate and 0.25 Gal. Bituminous material per Sq. Yd. (See note in proposal)
(5) Item B-19 Aggregate Base Course
(6) Item B-21 3" Waterproofed Aggregate Base Course (Type "A" T-35 or T-335 material may be used in construction of this course - see note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01
(7) Item I-1 6" Pipe, Class I-3
(8) Item special drainage connection, using No. 6 aggregate (See note in proposal)
(9) 30" cover from bottom of subbase to crown of pipe in fill
50" cover from bottom of subbase to crown of pipe in cut

Note:
Sequence of operations - See Sheet 6.

Thickened Subbase - See note on Sheet 6.

Unless otherwise noted, call-outs shown on top section shall apply to all sections on this sheet.

SCALE 1/2" = 1'
MADE SDH DATE 2-3-64
TRCD ____ DATE ____
CKD DRK DATE 8-31-64

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

TYPICAL SECTIONS

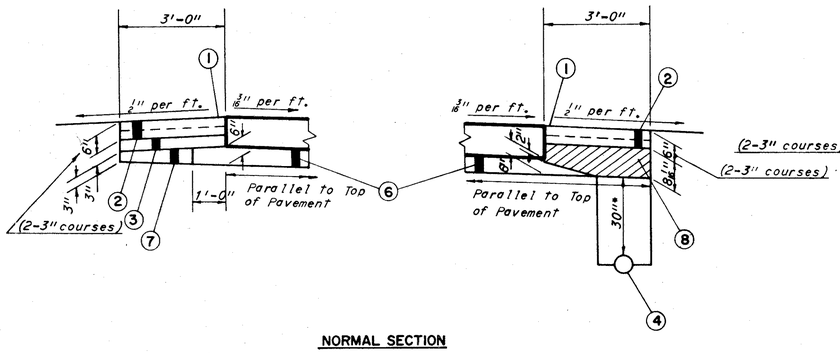
TYPE T-71

PAVED SHOULDERS

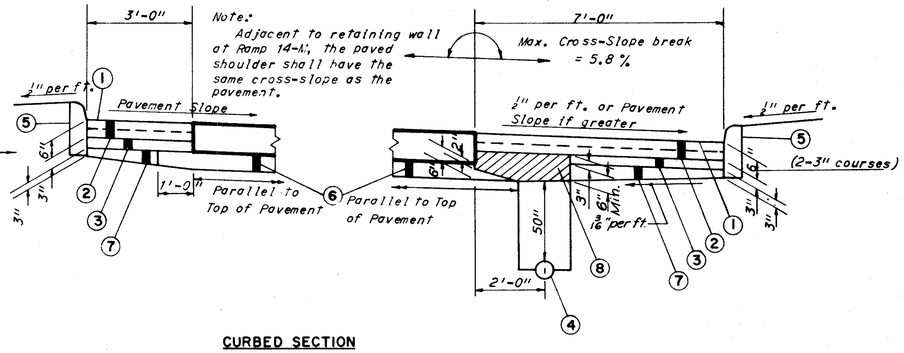
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

9 / 241

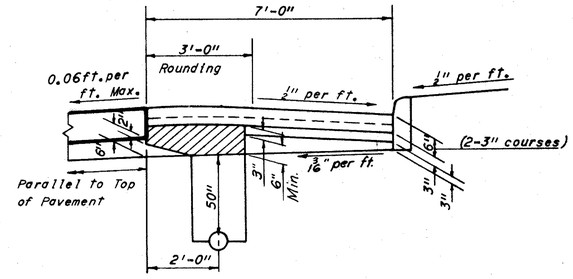
CUYAHOGA COUNTY
CUY-71-17.18



NORMAL SECTION

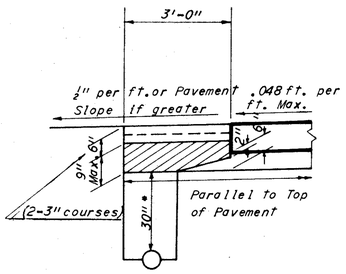


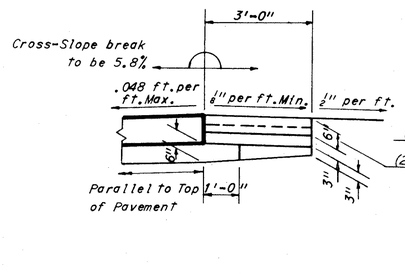
CURBED SECTION

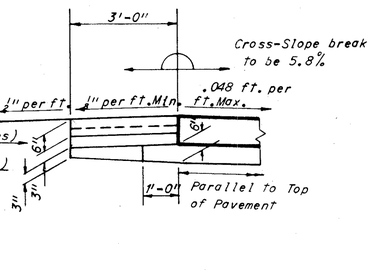


CURBED SECTION - CURVE LEFT

3' ROUNDING DETAIL

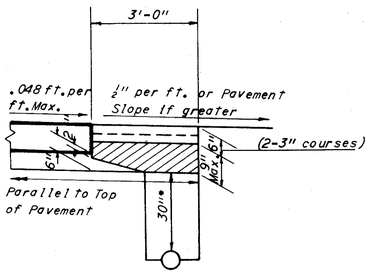


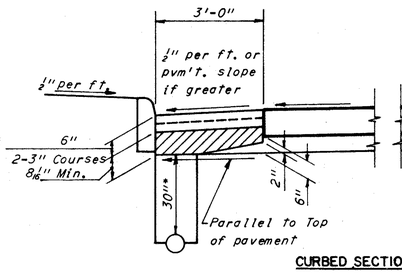


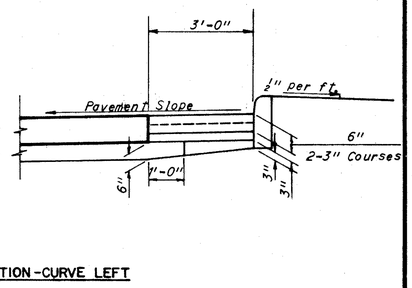


CURVED LEFT OR TRANSITION SECTION

SUPERELEVATION NOT MORE THAN 0.048 FT PER FT



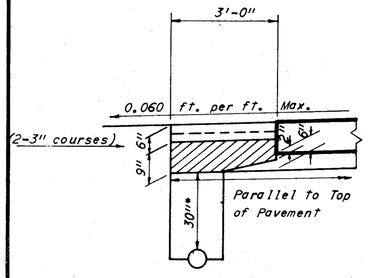


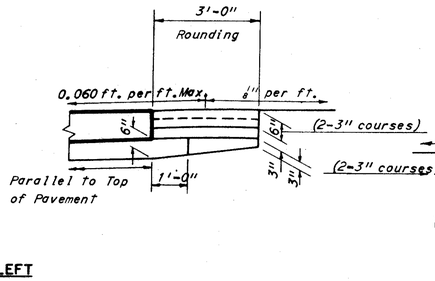


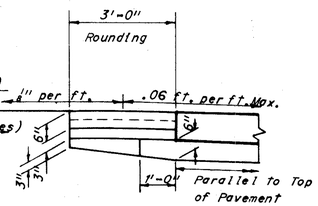
CURBED SECTION - CURVE LEFT

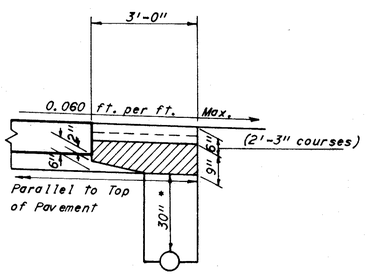
CURVED LEFT OR TRANSITION SECTION

SUPERELEVATION NOT MORE THAN 0.048 FT PER FT









CURVE LEFT

SUPERELEVATION GREATER THAN 0.048 FT PER FT

CURVE RIGHT

SUPERELEVATION GREATER THAN 0.048 FT PER FT

* 30" cover from bottom of subbase to crown of pipe in fill
50" cover from bottom of subbase to crown of pipe in cut

LEGEND

(1) Item T-31 Bituminous Surface Treatment, using 0.008 Cu. Yd. No. 6 Aggregate per Sq. Yd. and 0.25 Gal. Bituminous Material per Sq. Yd. (See notes in proposal)

(2) Item B-21 Waterproofed Aggregate Base Course. Thickness shown is "designed" thickness as described in Sec. B-21.01. (Type "A" T-351 material may be used in construction of this course - see note in proposal)

(3) Item B-19 Aggregate Base Course

(4) Item I-1 6" Pipe, Class I-3

(5) Item I-12 Standard Type 6 Concrete Curb

(6) Item I-22 6" (Except as noted) Subbase, Grading "A" or "B" modified, as per General Note

(7) Item I-22 Subbase, Regular Grading

(8) Item special drainage connection, using No. 6 Aggregate (See note in proposal)

Note:
Sequence of operations - See Sheet 6.

Thickened Subbase — See note on Sheet 6

Unless otherwise noted, callouts shown on top sections shall apply to all sections on this sheet.

SCALE 1/2" = 1' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE SDH DATE 1-31-64 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 2-29-64 KANSAS CITY CLEVELAND NEW YORK

TYPICAL SECTIONS - 3' & 7' WIDE PAVED SHOULDERS

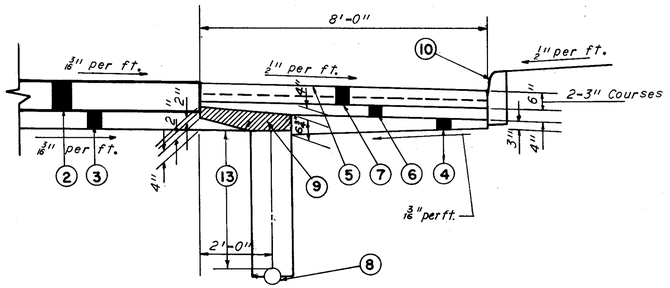
TYPICAL SECTIONS

TYPE T-71

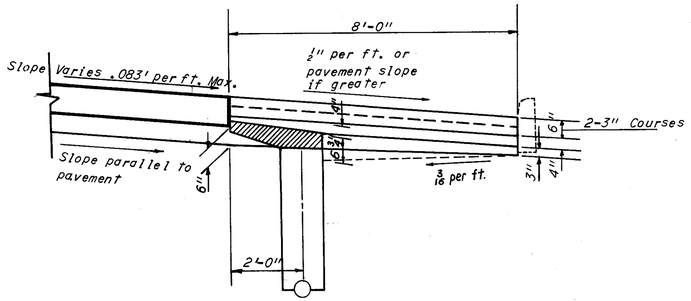
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10
241

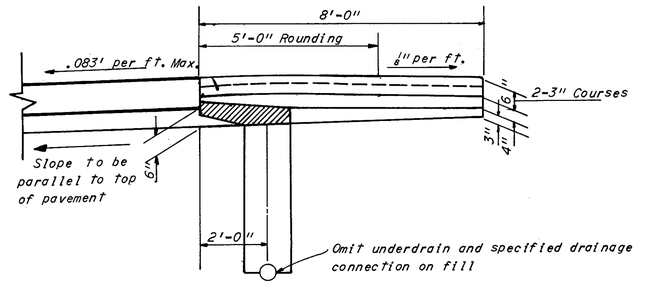
CUYAHOGA COUNTY
CUY. 71-17.18



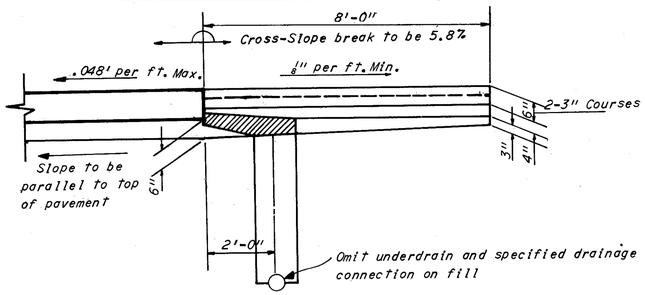
NORMAL SECTION



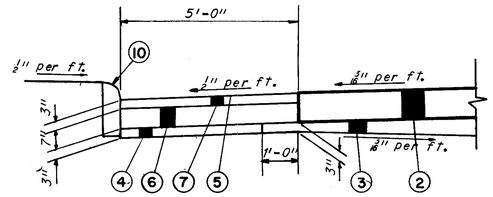
CURVE RIGHT



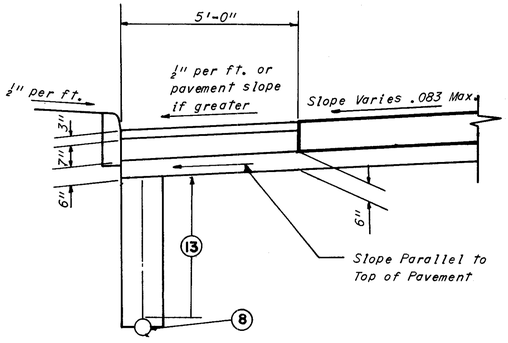
CURVE LEFT- .048' PER FT. < S.E. ≤.083' PER FT.



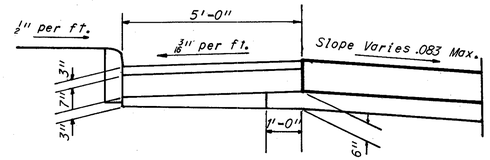
CURVE LEFT-S.E. < 0.048' PER FT.



NORMAL SECTION



CURVE LEFT OR TRANSITION

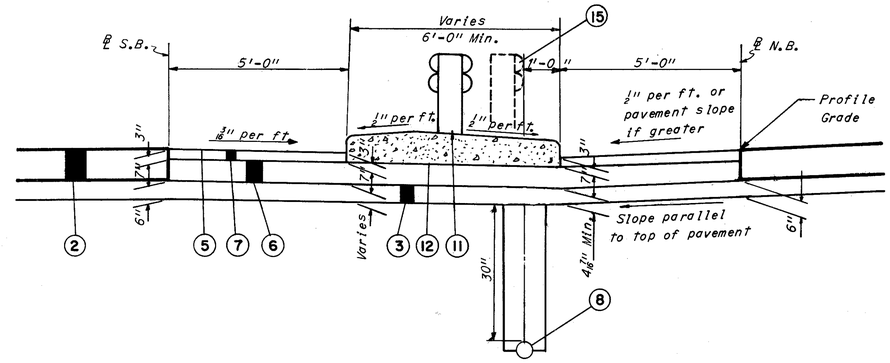


CURVE RIGHT OR TRANSITION

Note:
Sequence of operations - See Sheet 6.

Thickened Subbase ~ See note on Sheet 6.

Unless otherwise noted, call-outs shown on the top section shall apply to all sections on this sheet.



MEDIAN SECTION

S.B. MEDINA STA. 900+03.56 TO STA. 902+92
N.B. MEDINA STA. 899+23.96 TO STA. 902+15

LEGEND

(1) Item T-71 9" Reinforced Portland Cement Concrete Pavement
(2) Item T-71 10" Reinforced Portland Cement Concrete Pavement
(3) Item I-22 Subbase, Grading "A" or "B", modified as per General Note
(4) Item I-22 Subbase, Regular Grading
(5) Item T-31 Bituminous Surface Treatment, using 0.008 Cu.Yd. No. 6 aggregate and 0.25 Gal. Bituminous material per Sq.Yd. (See note in proposal)
(6) Item B-19 Aggregate Base Course
(7) Item B-21 Waterproofed Aggregate Base Course (Type "A" T-35 material may be used in construction of this course - see note in proposal) Thickness shown is "designed" thickness as described in Sec. B-21.01
(8) Item I-1 6" Pipe, Class I-3
(9) Item special drainage connection, using No. 6 aggregate (See note in proposal)
(10) Item I-12 Standard Type 6 Concrete Curb
(11) Item I-15 Guard Rail, Steel Beam Barrier Type (Deep)
(12) Item I-21 Portland Cement Concrete Median, as per plan (See Miscellaneous Details)
(13) 30" cover from bottom of subbase to crown in fill
50" cover from bottom of subbase to crown in cut

(15) Item I-15 Guard Rail, Steel Beam Standard Type (Deep)

SCALE 1/2" = 1'
MADE DRK DATE 8-25-64
TRCD. DJS DATE 9-25-64
CKD. _____ DATE _____

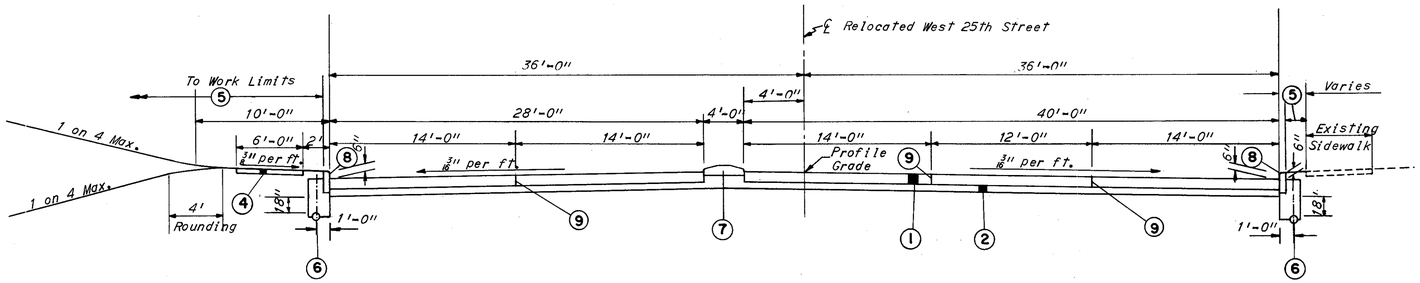
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

TYPICAL SECTIONS
TYPE T-71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

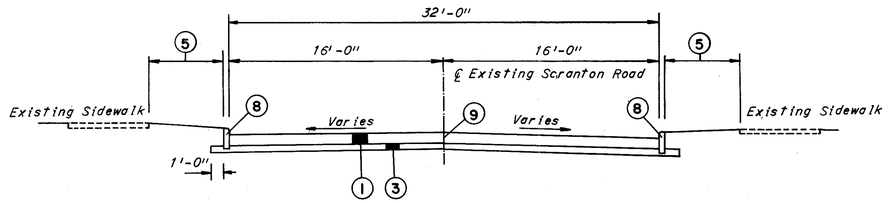
11
241

CUYAHOGA COUNTY
CUY 71-17.18

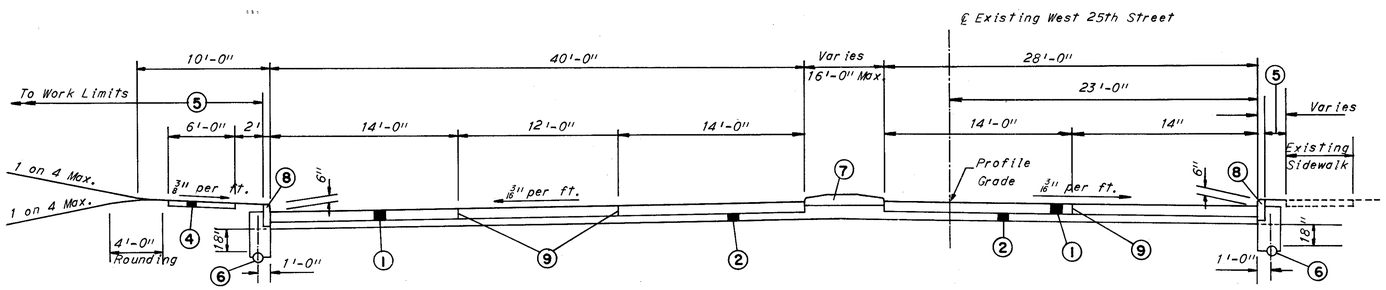


RELOCATED WEST 25th STREET

SECTION TAKEN AT STA. 18+00.00 *

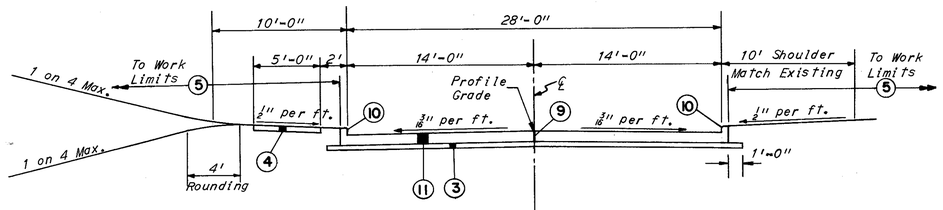


RELOCATED SCRANTON ROAD

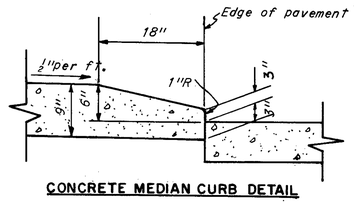


RELOCATED WEST 25th STREET

SECTION TAKEN AT STA. 21+00.00 *



RIVERSIDE CEMETERY ENTRANCE



CONCRETE MEDIAN CURB DETAIL

Scale: 1" = 1'

LEGEND

(1)	Item T-71	9" Reinforced Portland Cement Concrete Pavement
(2)	Item I-22	6" Subbase
(3)	Item I-22	4" Subbase
(4)	Item I-13	4½" Concrete Sidewalk
(5)	Item L-9	Seeding and Protecting
(6)	Item I-1	6" Pipe, Class I-3
(7)	Item I-21	Portland Cement Concrete Median
(8)	Item I-11	Sandstone Curb Reset (Existing Curb 5" Wide)
(9)	Standard Longitudinal Joint	
(10)	Item I-12	Standard Type 2-A Integral Concrete Curb
(11)	Item T-71	8" Reinforced Portland Cement Concrete Pavement

* Note:
Typical Sections are intended to show general roadway and pavement features only. For details see Plan Sheets and Cross-Section Sheets.

SCALE 3/16" = 1' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE JM DATE 1-20-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 1-20-65 KANSAS CITY CLEVELAND NEW YORK

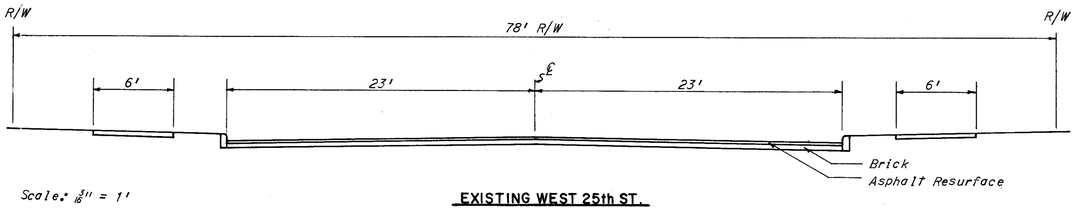
RELOCATED WEST 25th STREET AND RIVERSIDE CEMETERY ENTRANCE TYPICAL SECTIONS

EXISTING TYPICAL SECTIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

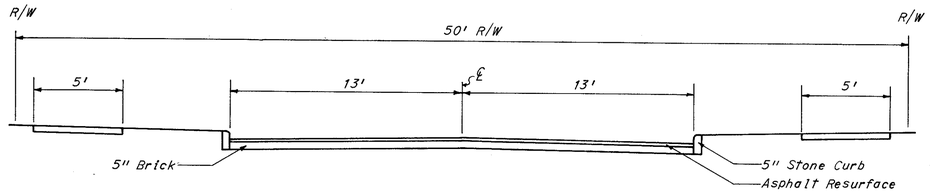
12
241

CUYAHOGA COUNTY
CUY 71 – 17.18

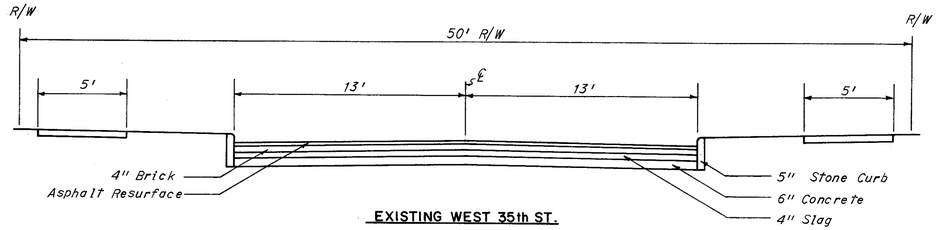


Scale: $\frac{3}{16}$" = 1'

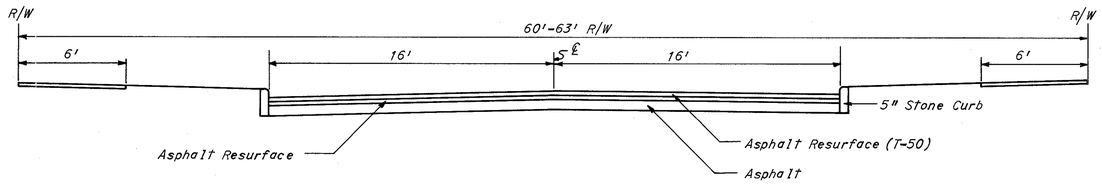
EXISTING WEST 25th ST.



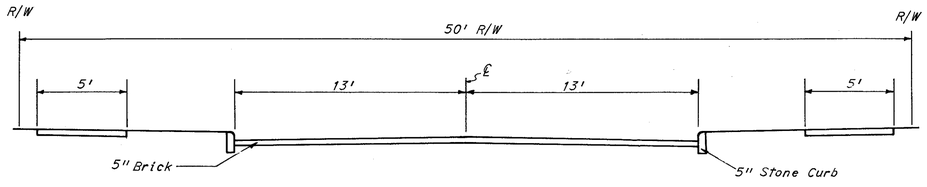
EXISTING WEST 32nd ST.



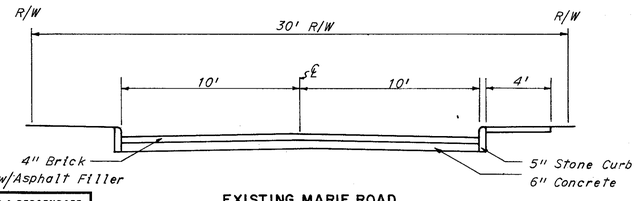
EXISTING WEST 35th ST.



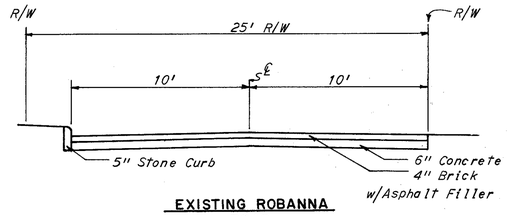
EXISTING SCRANTON ROAD



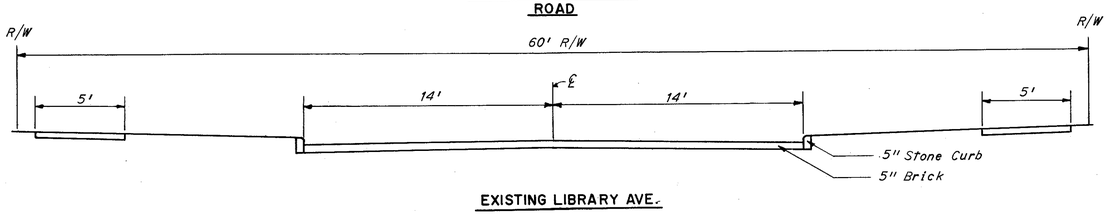
EXISTING POE AVE.



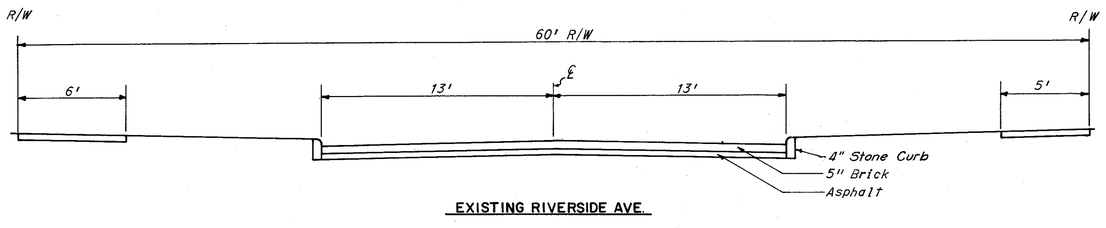
EXISTING MARIE ROAD



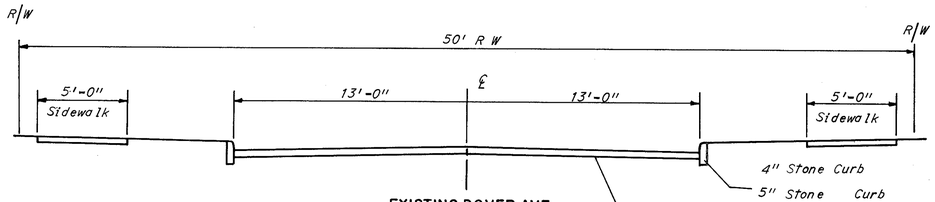
EXISTING ROBANNA ROAD



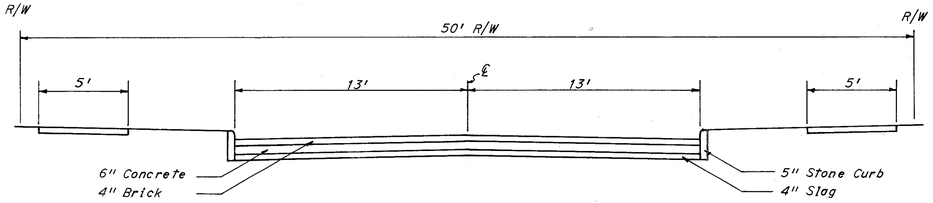
EXISTING LIBRARY AVE.



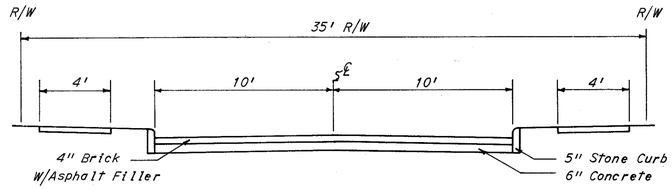
EXISTING RIVERSIDE AVE.



EXISTING DOVER AVE.
W. 25th ST. to 619' W. of W. 35th ST.



EXISTING DOVER AVE.
619'W. of W.32nd ST. to W.35 th ST.



EXISTING EVELYN ROAD

SCALE 1/4" = 1' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DLD DATE 4-25-64 CONSULTING ENGINEERS
TRCD. ____ DATE ____ KANSAS CITY CLEVELAND NEW YORK
CKD. DRT DATE 4-27-64

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

13
241

CUYAHOGA COUNTY
CUY- 71-17.18

GENERAL

SCOPE OF WORK

The principal items of work to be performed under this contract include the following:

1. Complete the construction of all items of Grading, Pavement, Drainage and Lighting for the entire interchange and the Medina Freeway.
2. Construct the widening of Trowbridge Avenue.
3. The complete construction of the bridge carrying West 25th Street and Scranton Road across the Medina Freeway. HNTB Br. No. 22(CUY-71-17 52)

DESIGN SPEED

The geometric design of the work to be performed under this contract on the roadway and structures to carry Interstate Highway traffic has been prepared for a speed of sixty (60) miles per hour.

ELEVATION DATUM

All elevations shown on these plans are in feet above the Cleveland Regional Geodetic Survey Datum Plane.

FIELD OFFICE

The field office required by Section S-0.01(b), shall provide a minimum of 500 square feet of floor space for the exclusive use of the Engineer until final acceptance of the work to be performed under the contract. The Contractor shall install a telephone in the field office and maintain it in service for the exclusive use of the Engineer during the same time period. The Contractor shall install wiring and outlets suitable for connection to office equipment and shall provide 110 volt alternating electric power to this Field Office until final acceptance. All costs for the telephone and electric power incurred by the Engineer and required by the work shall be included in the contract unit price bid for the various items of the work.

This field office shall be provided within 10 days after start of construction.

BASELINE REFERENCE MONUMENTS

Monuments shall be constructed of Class "C" concrete, cast-in-place in a circular hole eight (8) inches in diameter and fourty-four (44) inches in depth. Top of concrete shall be finished at a depth of two (2) inches below ground level and the upper six (6) inch portion of the concrete shall be formed. A one-half (½) inch steel rod six (6) inches long shall be embedded in the wet concrete as directed by the Engineer to mark the centerline and station. See Sheet No. 222.

ADJACENT CONTRACT

The contract for construction of the adjacent projects may be let prior to or while construction under this contract is in progress. The Contractor for this project shall coordinate his operations with that of the Contractor for the adjacent projects so as to complete all projects without undue delay or interference to the other Contractors.

UTILITIES

Following is a list of the utilities within the limits of construction:

East Ohio Gas Company, 1717 E. 9th St., Cleveland, Ohio
Cleveland Electric Illuminating Company, 55 Public Sq., Cleveland, Ohio
Ohio Bell Telephone Company, 750 Huron Rd., Cleveland, Ohio
City of Cleveland Water Department, City Hall, Cleveland, Ohio
Municipal Light and Power Co., City Hall, Cleveland, Ohio
City of Cleveland Police and Fire Communications System, City Hall, Cleveland, Ohio

UNDERGROUND UTILITIES

The locations of the underground utilities shown on the plans have been obtained by diligent field checks and searches of available records. It is believed that they are essentially correct, but the State of Ohio makes no guarantee as to their accuracy or completeness.

UTILITY ADJUSTMENT

Any or all work required for public or private utilities will be done by and at the expense of their respective owners, unless otherwise noted on these plans.

GENERAL

FEDERAL AID CONSTRUCTION IDENTIFICATION SIGNS

The Contractor shall furnish, erect, maintain and subsequently remove Federal Aid Construction Identification signs at each of the following locations:

1. West 25th Street, Right of Sta. 9+40
2. West 25th Street, Left of Sta. 23+00

Sign details shall be as specified on Standard Drawing FACI-1, "Code N-55 (1)132-(3)". Signs shall be erected in accordance with Standard Drawing FACI-2. Additional requirements shall be in accordance with notes in the proposal.

ESTIMATED QUANTITIES

Specific locations and usage of estimated quantities set up in this plan to be used "as directed by the Engineer" shall be made a matter of record by incorporation into the final change order governing completion of this project.

MAINTENANCE OF TRAFFIC

Where any of the work called for under this contract involves the closing of existing streets and/or the re-routing of traffic, the Contractor for this project shall prosecute to the fullest extent the work involved so as to reduce to a minimum the length of time that the roadway will be closed to traffic. No street or alley will be closed until necessary for construction as determined by the Project Engineer. The Contractor shall also be required to give the City of Cleveland Traffic Department a notice in writing ten (10) days in advance of any such closing of any existing street.

In addition to the above, Section G-4.05, "Maintenance of Local Traffic", will be in force during the entire life of the contract.

Attention is directed particularly to the need for providing adequate facilities to accommodate school children and other pedestrian traffic in the vicinity of the project. The Contractor shall provide and maintain such temporary boardwalks, cinder walks, handrails adjacent to excavation, etc., as may be necessary to accommodate in a reasonable and safe manner pedestrian traffic in the vicinity of the project.

All of the above are included in the lump sum price bid for "Maintaining Traffic", except that the cost of the temporary detour road for West 25th Street shall be paid for as Item S-15, Temporary Run-Around Road, using Class "A" Pavement, as per plan.

On West 25th Street and West 25th Street Runaround, four lanes shall be open to traffic throughout the length of the work between the hours of 7-9 a.m. and 4-6 p.m.

Trowbridge Avenue widening shall be completed prior to the closing of Scranton Road.

COOPERATION - TRAFFIC CONTROL DEVICES

A separate traffic control device contractor will be required to install or erect traffic control devices within contract work limits prior to completion of work by the Contractor.

The Contractor shall cooperate with the separate Contractor to arrange a suitable work schedule, subject to the approval of the Engineer, to permit the separate Contractor to work and operate necessary equipment within work limits to carry out the provisions of his contract. The Engineer shall notify the Contractor a minimum of thirty (30) days prior to any scheduled work by the separate Contractor.

Each Contractor shall be held responsible for any damage by him, or his agents, to the work performed by the other Contractor.

Compensation for the above cooperation, shall be incidental to the various pay items included within this construction project.

ITEM I-5, PIPE SPECIALS
Pipe without perforations will be permitted for use on this project for all Item I-5 Pipe Specials.

SEEDING AND PROTECTING
See notes on Sheet 185 for Seeding, and Liming.

FERTILIZER
All areas to be seeded under Item L-9, or sodded under Item L-10, shall have Commercial Fertilizer (12-12-12) applied at the rate of twenty (20) pounds per 1000 square feet.

PAVEMENT REMOVAL OUTSIDE NORMAL CONSTRUCTION LIMITS
After the existing pavement as indicated on the plans has been removed, the old roadway shall be plowed, harrowed, and dragged to a smooth grade, the old ditches filled, and the entire area sloped to drain and left in a neat condition ready for seeding. Payment for this work shall be included in the unit price bid for pavement removal, Item E-8. Seeding shall be measured and paid for in accordance with Item L-9.

OVERHEAD SIGNS
The exact stationing of Bridge Type Overhead Sign Assemblies in guard rail sections may be adjusted at the time of construction as directed by the Engineer, to avoid interference with guard rail posts.

ROCK SUBGRADE
The Contractor will be paid for the thickness of I-22 material shown on the typical sections in rock or shale excavation areas. Any pockets in the rock or shale below the plan subgrade elevation shall drain either longitudinally or laterally and all irregularities in the rock or shale below this elevation shall be filled with I-22 material at no additional cost to the State.

ITEM T-30 TACK COAT
Although this item has been estimated for use on the entire existing bituminous pavement area to be resurfaced, it shall be used only on dry or checked pavement areas where specifically directed by the Engineer. Payment will be made on final measurement.

APPROACH SLAB LONGITUDINAL JOINTS
Longitudinal impressed or sawed joints shall be provided between lane elements, on all approach slabs, in accordance with Standard Construction Drawing L.J. No.1.

Payment for providing the joints shall be included in the unit price bid for Item I-7, Reinforced Concrete Approach Slabs, T= 13".

Where curbs or median pavement are provided on the proposed pavement, they shall be provided on the approach slabs, with necessary curb height transitions effected as shown on the plans or as directed by the Engineer.

CONTRACTION AND EXPANSION JOINTS

Although specific locations of certain expansion and contraction joints have been detailed on this plan, no waiver of the Specifications is intended. Provision of expansion joints at all major structures and the maximum spacing between contraction joints shall in all cases be in accordance with Standard Construction Drawing T.J.

SUBBASE, ITEM I-22 GRADING A OR B, AS PER PLAN

Material for this item shall meet the requirements of Section I-22.02, Grading "A" or "B" except that for either grading the per cent passing a No. 200 sieve shall not exceed ten (10) after all operations of placing and compacting have been completed.

The Contractor shall place 6 inches of I-22 subbase under all bridge approach slabs and shall be compensated therefor at the unit price bid for Item I-22, Subbase, Grading "A" or "B", as per plan.

SANDSTONE CURB TO BE REMOVED AND RESET

Relocated West 25th Street is to be curbed with the existing sandstone curb to be removed along West 25th Street and the other existing streets within the construction limits. It is expected that sufficient quantities of the existing curb will be salvageable in a condition satisfactory for re-use. The portion of the curb which is removed for re-use will be paid for at the unit price bid for Item E-8 Removal for Re-Use of Existing Sandstone Curb. The remainder of the curb which is removed and disposed of shall be paid for at the unit price bid for Item E-8 Removal and Disposal of Existing Curb.

That portion of the existing curb removed for re-use shall be set as shown in the plans and the cost of setting it shall be the unit price bid for Item I-11 Sandstone Curb Reset. In the event that insufficient quantities of reusable curb are available, as determined by the Engineer, it will be necessary to install new sandstone curb. An estimated quantity of new curb, 500 Lin.Ft., Item I-11 Sandstone Curb, has been included in the General Summary.

For Drainage Notes, see Sheet 97
For Waterwork Notes, see Sheets 165-171
For Lighting Notes, see Sheets 205-208
For Structure Notes, see Sheet 125
For Landscaping Notes, see Sheet 185
For Traffic Control Notes see Sheet 192

SCALE ---
MADE DRK DATE 11-1-64
TRCD ---
CKD DWK DATE 3-3-65
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY- 71-17.18

ROADWAY

ITEM S.S. CE-101.04 COMPACTION USING HEAVY PNEUMATIC TIRED ROLLER

An estimated quantity for this item has been included in the General Summary for use, as directed by the Engineer, in proof rolling of all subgrade of Main Line, Ramps and Paved Shoulders except for areas where rock or shale is encountered. In lieu of the requirements of CE-101.04, a minimum of one coverage will be required to check the subgrade. Moisture content of the top 12" of subgrade shall not exceed optimum at the time of proof rolling. Tire pressure and total load shall be varied as directed by the Engineer within the limits provided in Supplemental Specification No. CE-101.04.

Proof rolling will not be required in areas where the subbase has been thickened to replace frost susceptible silts.

~~FENCING~~

~~Chain Link Fence shall be placed to within limits as shown on the plans, to the line and grade directed by the Engineer. This location shall generally be one foot inside the right-of-way line unless shown otherwise on the plans.~~

ORNAMENTAL IRON FENCE TO BE RESET

The portion of the properties of the Jones Home Orphanage and Riverside Cemetery fronting on West 25th Street are protected by an ornamental iron fence set on a concrete or stone slab base. West 25th Street will be widened in front of both of these properties, making necessary the removal of this fence. The ornamental iron fence shall be reset in front of these properties as shown in the plans.

The cost of removing and resetting this fence shall be paid for at the unit price bid per linear foot for Item Special - Remove and Reset Ornamental Iron Fence. This cost shall include the cost of paving a 2 foot wide slab, as per Sec. I-13 of the Specifications, upon which to mount the fence, the removing and resetting of the fence, and the reconstruction of corner posts similar to those now in existence. Care shall be taken not to damage the fence during moving. Pieces which are presently bent or which are bent by the Contractor during the work shall be repaired by the Contractor in a manner satisfactory to the Engineer.

The cemetery has a large gate across the entrance. This gate along with the gate posts, and the steel track upon which it rolls, shall be reset and paid for at the linear foot price bid for the fence. Any additional costs involved shall be included in that unit price. The cemetery entrance gate may be relocated in a manner to accommodate the existing gate length, as approved by the Engineer.

REMOVAL OF TREES AND STUMPS

Unless otherwise shown on the plans or directed by the Engineer, all trees and stumps lying within the construction limits of this project shall be removed under the lump sum price bid for Item E-9, Removal of Trees and Stumps.

The following is an approximate estimate of the number of trees to be removed.

Sizes	No. of Trees
12"-18"	144
18"-24"	69
24"-30"	29
30"-36"	17
36"-42"	3
42"-Up	4

The above estimate is approximate and the State of Ohio reserves the right at any time during the duration of the contract to order the removal of additional trees or stumps outside 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 E-9.

ROADWAY

EXISTING GAS WELLS TO BE ABANDONED

The following gas well is located within the path of the Medina Freeway:
2603 Dover Avenue. Total depth unknown, in pit, 5⅝" casing. Located 103' south of Dover Avenue ℄ and 190' west of West 25th Street ℄.

~~The active gas wells shall be plugged by the Contractor before any other construction is started in the vicinity of the well. The well shall be filled solid from bottom to top and all work shall be done in accordance with the requirements of the State of Ohio Division of Mines. All work connected with plugging of the well must be performed under the supervision of a representative of the Division of Mines. The Contractor shall notify the Project Engineer and the Division of Mines at least 14 days in advance of the date on which he intends to begin work.~~

Payment for the above work shall be made at the contract unit price bid for each for "Item Special, Plugging Gas Well", which price and payment shall constitute full compensation for furnishing all material, labor, tools and equipment, and all incidentals necessary to complete this item.

Abandoned wells not in service shall be capped and vented as shown in the Miscellaneous Details. The following quantities have been included in the general summary to provide for the capping. For details see Sheet 59.

Item I-2	Masonry	5 Cu.Yds.
Item I-1	2" Pipe, Sec. M-6.9 Std. Wt. Galvanized with Type 4 Backfill, as per plan	50 Lin.Ft.

~~EXISTING WATER WELLS~~

~~Dug wells, cisterns, and septic tanks encountered within the right-of-way shall be filled with broken foundation masonry, rock or granular material placed as rock embankment, in accordance with Section E-1.08. Payment for such work shall be included in the price bid for Item E-1, Roadway Excavation.~~

~~Drilled well casing shall be removed to an elevation approximately three (3) feet below the finished roadway surface and covered with a precast concrete slab or a large rock. Prior to construction of the embankment the Contractor shall remove any masonry surrounding a well to three (3) feet below the finished roadway surface. Pumps and other appurtenances shall become the property of the Contractor and shall be disposed of by him. The cost of filling or capping of wells shall be included in the unit price bid for Item E-1, Roadway Excavation.~~

ROUNDING OF CORNERS ON CROSS SECTIONS

The rounded corners shown on Standard Construction Drawing RI-1 as modified by the typical sections apply to all cross sections even though otherwise shown in these plans.

CONSTRUCTION LAYOUT STAKES

See note in proposal describing the work included in this lump sum pay item.

GUARD RAIL FLARES

Where proposed guard rail flares are constructed of rail elements which have not been fabricated exactly to fit the curvature on the plans, the two end posts of each flared section shall be encased in a minimum 4-inch thickness of Class "E" concrete for the full depth of post below the ground line. Payment for encasement, if required, shall be included in the unit price bid for the guard rail.

~~GUARD RAIL ADJUSTMENT~~

~~The stationing of individual runs of guard rail shall be adjusted, if necessary, by the Engineer at the time of construction to accommodate the standard panel lengths furnished. Guard rail shall be continuous at adjoining projects when guard rail is specified on both of them.~~

ROADWAY

~~FLARING GUARD RAIL AT BRIDGES~~

~~Guard rail on crossroads shall be flared to meet the bridge railing in such a manner that the change in alignment of the guard rail shall not exceed one in twenty. (1:20).~~

~~SCARIFICATION OF EXISTING FLEXIBLE PAVEMENT~~

~~Within the limits of construction where the existing flexible pavement will have less than six (6) inches of fill placed upon it the pavement shall be thoroughly scarified for its full depth, mixed with sufficient soil and properly recompacted to insure the elimination of any planes of separation between it and the embankment placed thereon. Payment for scarification as described above shall be included in the unit price bid for Item E-1, Roadway Excavation.~~

REMOVAL OF EXISTING RIGID PAVEMENT

Existing rigid type pavements shall be removed under Item E-8 when they are located less than three feet below the proposed pavement subgrade in proposed pavement areas or less than three feet below the proposed finished surface in areas outside the proposed pavement.

When existing rigid type pavements lie below the above limits, they shall not be removed. In lieu thereof, they shall be broken up in place into portions not to exceed one square foot in area prior to placement of the proposed embankment. Payment for this operation shall be included in the unit price bid for Roadway Excavation, Item E-1.

NON-RIGID PAVEMENT REMOVAL

Removal and disposal of existing non-rigid pavement, unless otherwise indicated on these plans, shall be measured and paid for as Item E-1, Roadway Excavation.

T-35 FOR MAINTAINING TRAFFIC

For description of this item see note in proposal. An estimated quantity of Asphaltic Concrete Surface Course or an approved Bituminous Premixed Surface Course for Maintaining Traffic has been entered in the General Summary under Roadway Quantities, Item T-35.

ITEM SPECIAL-MOWING SEEDED AND SODDED AREAS
See Note on Sheet 185.

ESTIMATED QUANTITIES

Quantities of the following items are estimated and are included for use only when and in amounts as directed by the Engineer.

The amounts of these items and their location shall be recorded as used, and payment will be included in the Final Payment Estimate.

ITEM T-10,	TRAFFIC COMPACTED SURFACE COURSE	100 C.Y.
ITEM I-4,	CALCIUM CHLORIDE, FOR DUST CONTROL	2 Tons
ITEM I-4,	WATER, FOR DUST CONTROL	100 M.Gal.
ITEM T-35	BITUMINOUS PREMIXED SURFACE COURSE FOR MAINTAINING TRAFFIC	100 C.Y.

SCALE ——— HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DRK DATE 11-2-64 CONSULTING ENGINEERS
TRCD. ——— DATE ———
CKD. DWK DATE 3-3-65 KANSAS CITY CLEVELAND NEW YORK

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

15/241

CUYAHOGA COUNTY
CUY. 71-17.18

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING PAVEMENT (DRIVEWAY APRONS)

Station From	Station To	Side	Av. Length Lin. Ft.	Width Lin. Ft.	Area Sq. Yds.	Remarks
West 35th Street						
1+59.00	1+69.00	Right	10.0	5.0	5.6	
4+22.00	4+33.00	Right	9.5	5.5	5.8	
4+25.00	4+44.00	Left	17.0	5.5	10.4	
4+38.00	4+48.00	Right	9.0	6.0	6.0	
4+47.00	4+58.00	Left	9.0	5.5	5.5	
Dover Avenue						
1+25.00	1+37.00	Left	11.0	5	6.1	
1+57.00	1+68.00	Left	9.0	5	5.0	
1+82.00	1+94.00	Right	9.0	5	5.0	
1+90.00	2+02.00	Left	10.0	5	5.6	
2+14.00	2+28.00	Right	11.0	5	6.1	
2+21.00	2+30.00	Left	7.0	5	3.9	
2+49.00	2+60.00	Right	9.0	5	5.0	
2+53.00	2+63.00	Left	8.0	5	4.4	
2+80.00	2+93.00	Right	10.0	5	5.6	
3+13.00	3+22.00	Right	10.0	5	5.6	
3+09.00	3+21.00	Left	9.0	5	5.0	
3+53.00	3+69.00	Right	12.0	5	6.7	
3+58.00	3+71.00	Left	10.0	5	5.6	
3+98.00	4+11.00	Right	10.0	5	5.6	
4+03.00	4+19.00	Left	13.0	5	7.2	
4+13.00	4+24.00	Right	10.0	5	5.6	
4+52.00	4+54.00	Left	10.0	5	5.6	
4+95.00	5+05.00	Left	8.0	5	4.4	
5+02.00	5+21.00	Right	16.0	5	8.9	
5+42.00	5+54.00	Left	10.0	5	5.6	
5+90.00	6+04.00	Left	11.0	5	6.1	
5+94.00	6+10.00	Right	14.0	5	7.8	
6+42.00	6+63.00	Right	19.0	5	10.6	
6+32.00	6+43.00	Left	8.0	5	4.4	
6+84.00	6+96.00	Left	10.0	5	5.6	
7+08.00	7+20.00	Right	10.0	5	5.6	
7+57.00	7+69.00	Left	9.0	5	5.0	
7+93.00	8+01.00	Right	6.0	5	3.3	
7+97.00	8+07.00	Left	8.0	5	4.4	
8+38.00	8+53.00	Right	11.0	5	6.1	
8+64.00	8+86.00	Left	19.0	5	10.6	
10+00.00	10+33.00	Right	33.0	5	18.3	
10+42.00	10+52.00	Left	8.0	5	4.4	
11+24.00	11+34.00	Left	10.0	5	5.6	
11+73.00	11+83.00	Left	10.0	5	5.6	
12+02.00	12+13.00	Right	8.0	5	4.4	
12+11.00	12+23.00	Left	10.0	5	5.6	
12+71.00	12+89.00	Left	17.0	5	9.4	
12+83.00	12+95.00	Right	10.0	5	5.6	
13+25.00	13+37.00	Right	8.0	5	4.4	
13+54.00	13+67.00	Left	9.0	5	5.0	
13+86.00	13+96.00	Right	8.0	5	4.4	
13+90.00	14+01.00	Left	9.0	5	5.0	
14+30.00	14+44.00	Left	12.0	5	6.7	
14+36.00	14+86.00	Right	49.0	5	27.2	
14+68.00	14+80.00	Left	10.0	5	5.6	
15+11.00	15+24.00	Left	10.0	5	5.6	
15+59.00	15+76.00	Left	15.0	5	8.3	
15+33.00	15+49.00	Right	13.0	5	7.2	
16+09.00	16+25.00	Left	12.0	5	6.7	
16+84.00	17+20.00	Right	35.0	5	19.4	

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING PAVEMENT (DRIVEWAY APRONS)

Station From	Station To	Side	Length Lin. Ft.	Av. Width Lin. Ft.	Area Sq. Yds.	Remarks
West 32nd Street						
2+45	2+57	Right	5	12	6.7	
5+38	5+48	Right	5	8	4.4	
5+82	5+91	Right	5	8	4.4	
2+61	2+73	Left	5	11	6.1	
2+93	3+04	Left	5	10	5.6	
4+71	4+82	Left	5	10	5.6	
5+10	5+22	Left	5	11	6.1	
5+85	6+10	Left	5	22	12.2	
Poe Avenue						
10+61	10+72	Right	5	8	4.4	
10+96	11+11	Right	5	11	6.1	
11+37	11+50	Right	5	10	5.6	
11+99	12+12	Right	5	10	5.6	
12+37	12+47	Right	5	8	4.4	
12+51	12+61	Right	5	8	4.4	
13+15	13+27	Right	5	9	5.0	
13+36	13+46	Right	5	8	4.4	
13+99	14+10	Right	5	9	5.0	
14+88	15+02	Right	5	11	6.1	
10+37	10+49	Left	5	10	5.6	
11+03	11+09	Left	5	11	6.1	
11+47	11+67	Left	5	16	8.9	
12+26	12+38	Left	5	8	4.4	
12+62	12+75	Left	5	9	5.0	
13+05	13+18	Left	5	9	5.0	
13+43	13+57	Left	5	10	5.6	
13+75	13+85	Left	5	7	3.9	
14+20	14+33	Left	5	8	4.4	
14+37	14+49	Left	5	10	5.6	
15+13	15+30	Left	5	14	7.8	
Library Avenue						
3+59	3+70	Right	7	8	6.2	
4+00	4+13	Right	7	9	7.0	
4+40	4+54	Right	7	10	7.8	
4+82	4+94	Right	7	8	6.2	
5+22	5+42	Right	7	16	12.4	
5+70	5+82	Right	7	9	7.0	
7+20	7+33	Right	7	11	8.6	
5+55	5+68	Left	10	8	8.9	
West 25th Street						
12+29	12+80	Left	3	51	17.0	
17+35	18+20	Left	2	85	18.9	
Scranton Road						
5+57	5+74	Right	6	16	10.7	
5+96	6+13	Right	6	16	10.7	
6+66	7+01	Right	6	33	22.0	
E. Line W. 25	W. Line Scranton	Left		Varies	364.4	Planimeter
Robanna Avenue						
0+55	0+87	Right	5	22	12.2	
0+95	1+07	Right	5	10	5.6	
1+21	1+44	Right	5	20	11.1	
Marie Road						
1+56	1+58	N. End	2.5	15	4.2	
Evelyn Avenue						
0+81	0+92	Right	2	10	2.2	
Total =					1,087.2	

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING PAVEMENT

Station From	Station To	Length Lin. Ft.	Av. Width Lin. Ft.	Area Sq. Yds.	Remarks
West 35th Street					
1+58.00	4+68.00	310.0	26.0	895.6	
Dover Avenue					
0+43.00	0+54.00	11.0	26.0	37.2	Meas. Incl. radia at W. 35th Street
0+81.00	17+32.00	1,651.0	26.0	4,793.6	Incl. radia at W. 25th St.
West 32nd Street					
2+45	3+89	140	26	404.4	
4+15	6+13	201	26	580.7	
Poe Avenue					
10+34	16+83	646	26	1,873.9	Includes radia at W. 25th St.
Library Avenue					
3+40	3+80	40	2	8.9	
4+00	8+43	443	28	1,384.9	Includes radia at W. 25th St.
West 25th Street					
8+60	13+97	537	46	2,744.7	
13+97	14+45	48	46 to 56	272.0	
14+45	15+08	63	56	392.0	
15+08	23+04	796	56	4,952.9	
Riverside Avenue					
9+50	9+78	28	26	84.2	Includes radia at W. 25th St.
Riverside Cemetery Entrance					
W. 25th St.	2+90S. Lane 1+90N. Lane		Varies	1,298.0	Planimeter
West 27th Street					
S. LA Line	S. Line Dover Ave.	130	8	115.6	
N. Line Dover Ave.	S. Line Poe Ave.	259	8	230.2	
Robanna Avenue					
0+10	2+25	215	20	477.8	
0+10	0+18		Varies	1.7	N. E. Radius
Marie Road					
0-10	1+56	166	20	368.9	
Evelyn Avenue					
0+10	1+20	110	20	244.4	
0+10	0+15		Varies	0.9	S. W. Radius
Total =				21,162.5	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. TM DATE 3-4-65 KANSAS CITY CLEVELAND NEW YORK

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

16/241

CUYAHOGA COUNTY
CUY.71-17.18

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING CURB

Station From	Station To	Side	Length Lin. Ft.	Remarks
West 35th Street				
1+58	2+89	Right	131	
3+37	4+68	Right	131	
1+58	2+89	Left	131	
3+37	4+68	Left	131	
Dover Avenue				
0+43	W. Line W. 35	Right	18	
0+43	W. Line W. 35	Left	18	
E. Line W. 35	0+91	Right	18	
E. Line W. 35	0+91	Left	18	
0+91	9+50	Right	859	
0+91	9+50	Left	859	
9+50	W. Line W. 32	Right	18	
9+50	W. Line W. 32	Left	18	
E. Line W. 32	10+00	Right	18	
E. Line W. 32	10+00	Left	18	
10+00	15+33	Right	533	
15+49	17+20	Right	171	
10+00	15+59	Left	559	
15+76	17+24	Left	148	
17+20	W. Line. W. 25	Right	18	
17+24	W. Line. W. 25	Left	18	
West 32nd Street				
2+45	3+78	Right	133	
4+25	6+16	Right	191	
2+45	3+78	Left	133	
4+25	6+16	Left	191	
Poe Avenue				
10+34	14+88	Right	454	
15+02	16+72	Right	170	
16+72	W. Line W. 25	Right	18	
10+34	15+13	Left	479	
15+30	16+77	Left	147	
16+77	W. Line W. 25	Left	14	
Library Avenue				
3+40	8+33	Right	493	
8+33	W. Line W. 25	Right	15	
4+00	8+36	Left	436	
8+36	W. Line W. 25	Left	20	
Riverside Avenue				
9+50	W. Line W. 25	Right	32	
9+50	W. Line W. 25	Left	32	
West 25th Street				
8+60	11+71	Right	311	
12+75	13+97	Right	122	
13+97	14+45	Right	50	
14+45	15+08	Right	63	
16+48	23+04	Right	656	
8+60	10+19	Left	159	
10+61	13+33	Left	272	
13+80	16+36	Left	256	
16+82	19+60	Left	278	
20+18	23+25	Left	307	
23+25	Daisy Avenue	Left	45	
Scranton Road				
E. Line W. 25	5+74	Right	70	
5+74	7+44	Right	170	
7+65	8+00	Right	35	
E. Line W. 25	6+35	Left	35	
6+35	7+30	Left	95	
Robanna Avenue				
0+10	0+17	Right	9	N. E. Radius
0+17	2+38	Right	221	

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING CURB

Station From	Station To	Side	Length Lin. Ft.	Remarks
Marie Road				
0+10	1+56	Right	166	
1+56	1+56	N. End	20	
0+18	1+30	Left	112	
Evelyn Avenue				
0+10	0+15	Left	6	S. W. Radius
0+15	1+20	Left	105	
0+10	1+20	Right	110	
Total: Item E-8 Remove and Dispose Existing Curb			8,058.5	
Total: Item E-8 Remove Existing Sandstone Curb for Re-Use			2,405.5	

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING SIDEWALK

Station From	Station To	Side	Length Lin. Ft.	Width Lin. Ft.	Area Sq. Ft.	Remarks
West 25th Street						
8+60	11+78	Right	318	6	1,908	
12+75	15+08	Right	233	6	1,398	
17+15	17+88	Right	73	7	511	
8+68	9+07	Left	39	8	312	
10+19	10+29	Left		Varies	40	
10+57	10+61	Left		Varies	25	
11+95	13+33	Left	138	5	690	
13+80	16+36	Left	256	95	2,432	
16+82	19+60	Left	278	6	1,668	
20+18	23+25	Left	307	6	1,842	
23+25	Daisy Ave.	Left		Varies	215	
19+12	19+20	Left	8	3	24	
21+55	21+61	Left	6	3	18	
9+07	10+19	Left	112	3	336	
10+61	11+65	Left	104	3	312	
Riverside Cemetery Entrance						
W. 25th St.	1+90N. Lane	Left	265	4	1,060	
Library Avenue						
3+50	8+33	Right	483	5	2,415	
3+85	3+89	Right	4	7	28	
4+24	4+27	Right	3	7	21	
6+62	6+65	Right	3	7	21	
7+01	7+04	Right	3	7	21	
8+33	W. Line W. 25	Right		Varies	55	
4+00	8+36	Left	436	5	2,180	
8+36	W. Line W. 25	Left		Varies	130	
4+34	4+40	Left	10	6	60	
Scranton Road						
5+07	7+44	Right	237	6	1,422	
7+65	7+70	Right	5	6	130	
Robanna Avenue						
1+61	1+65	Right	5	4	20	
Marie Road						
0+20	1+58	Right	138	3.5	483	
1+58	1+62	N. End	27	4	108	
Evelyn Avenue						
0+10	1+20	Right	110	4	440	
0+10	1+35	Left	125	4	500	

ITEM E-8 REMOVAL AND DISPOSAL OF EXISTING SIDEWALK

Station From	Station To	Side	Length Lin. Ft.	Width Lin. Ft.	Area Sq. Ft.	Remarks
Dover Avenue						
0+91.00	9+50.00	Left	859.0	5	4,295.0	
9+50.00	9+61.00	Left	Varies	Varies	63.0	
9+88.00	10+00.00	Left	Varies	Varies	95.0	
10+00.00	17+24.00	Left	724.0	5	3,620.0	
17+24.00	17+33.00	Left	Varies	Varies	94.0	
6+22.00	6+25.00	Left	3	5	15.0	
7+10.00	7+14.00	Left	4	5	20.0	
8+44.00	8+47.00	Left	3	5	15.0	
10+70.00	10+74.00	Left	4	5	20.0	
11+06.00	11+08.00	Left	2	5	10.0	
11+54.00	11+56.00	Left	2	5	10.0	
11+89.00	11+93.00	Left	4	5	20.0	
13+07.00	13+10.00	Left	3	5	15.0	
14+23.00	14+26.00	Left	3	5	15.0	
14+61.00	14+63.00	Left	2	5	10.0	
14+97.00	15+01.00	Left	4	5	20.0	
16+85.00	16+89.00	Left	4.0	5	20.0	
0+81.00	0+86.00	Right	4.0	5	20.0	
0+91.00	9+50.00	Right	859.0	5	4,295.0	
9+50.00	9+61.00	Right	Varies	Varies	75.0	
9+88.00	10+00.00	Right	Varies	Varies	75.0	
10+00.00	17+20.00	Right	720.0	5	3,600.0	
17+20.00	17+30.00	Right	Varies	Varies	60.0	
3+02.00	3+04.00	Right	2	5	10.0	
3+82.00	3+85.00	Right	3	5	15.0	
4+85.00	4+88.00	Right	3	5	15.0	
5+35.00	5+39.00	Right	4	5	20.0	
10+44.00	10+46.00	Right	2	5	10.0	
10+79.00	10+82.00	Right	3	5	15.0	
11+49.00	11+52.00	Right	3	5	15.0	
11+93.00	11+95.00	Right	2	5	10.0	
13+15.00	13+17.00	Right	2	5	10.0	
13+73.00	13+76.00	Right	3	5	15.0	
14+11.00	14+16.00	Right	5	5	25.0	
15+10.00	15+12.00	Right	2	5	10.0	
15+66.00	15+70.00	Right	4	5	20.0	
7+35.00	7+39.00	Right	4	5	20.0	
West 32nd Street						
2+45	3+78	Right	133	5	665	
2+45	3+78	Left	133	5	665	
4+25	6+16	Right	191	5	955	
4+25	6+16	Left	191	5	955	
Poe Avenue						
10+34	15+51	Right	517	5	2,585	
15+51	16+72	Right	121	11	1,331	
16+72	W. Line W. 25	Right		Varies	80	
10+44	10+46	Right	5	2	10	
11+65	11+68	Right	5	3	15	
15+23	15+26	Right	5	3	15	
15+47	15+49	Right	5	2	10	
10+34	16+77	Left	643	5	3,215	
16+77	W. Line W. 25	Left		Varies	68	
11+75	11+78	Left	5	3	15	
14+94	14+98	Left	5	4	20	
West 35th Street						
1+58.00	2+88.00	Left	130.0	5	650.0	
2+88.00	3+01.00	Left	Varies	Varies	76.0	
3+26.00	3+36.00	Left	Varies	Varies	99.0	
3+36.00	4+68.00	Left	132.0	5	660.0	
1+58.00	2+98.00	Right	140.0	5	700.0	
3+26.00	3+36.00	Right	Varies	Varies	94.0	
3+36.00	4+68.00	Right	132.0	5	660.0	
Total:					50,960.0	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD. TM DATE 3-4-65

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

17/241

CUYAHOGA COUNTY
CUY.71-17.18

ITEM B-19 AGGREGATE BASE COURSE

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Southbound Medina						
879+48.88	887+53.56	804.68	8	7"	139.1	Rt. Shoulder
879+48.88	887+53.56	804.68	10	7" Max.	167.4	Lt. Shoulder
887+53.56	900+03.56	1,248.72	8	7"	215.8	Rt. Shoulder & Calcs.
887+53.56	900+03.56	1,234.32	10	7" Max.	256.8	Lt. Shoulder & Calcs.
900+03.56	910+65.79	1,063.16	5	7"	114.8	Rt. Shoulder & Calcs.
900+03.56	908+00.02	785.06	10	7" Max.	163.4	Lt. Shoulder & Calcs.
910+65.79	913+50.00	284.58	5	7"	30.7	Rt. Shoulder & Calcs.
Northbound Medina						
879+48.88	887+53.56	804.68	10	7" Max.	167.4	Rt. Shoulder
879+48.88	887+53.56	804.68	8	7"	139.1	Lt. Shoulder
887+53.56	900+03.56	1,265.68	10	7" Max.	263.4	Rt. Shoulder & Calcs.
887+53.56	900+03.56	1,251.28	8	7"	216.3	Lt. Shoulder & Calcs.
899+23.96	902+15		Varies	7"	50.5	Under Median
899+23.96	902+90	369.87	10	7" Max.	77.0	Rt. Shoulder & Calcs.
899+23.96	902+15	290.85	5	7"	31.4	Lt. Shoulder & Calcs.
902+90	907+33.18		Varies	7"	112.5	Rt. Shoulder
902+15	903+15	99.94	5 to 4	7"	9.7	Lt. Shoulder & Calcs.
903+15	910+45.18	729.81	4	7"	63.1	Lt. Shoulder & Calcs.
910+45.18	913+00.00	254.46	4	7"	22.0	Lt. Shoulder & Calcs.
907+33.18	908+33.18	100	7 to 8	4"	9.3	Rt. Shoulder & Meas.
908+33.18	911+29.18	305	8	4"	30.1	Rt. Shoulder & Meas.
911+29.18	912+01.18	75	8 to 10	4"	8.3	Rt. Shoulder & Meas.
912+01.18	913+00.00	102.48	10	7"	22.1	Rt. Shoulder & Calcs.
Lane H						
0+00.00	3+90.56	390.56	4.42	3"	16.0	Rt. Shoulder
0+00.00	3+90.56	390.56	3	3"	10.8	Lt. Shoulder
3+90.56	9+35.31	544.61	3	3"	15.1	Lt. Shoulder & Calcs.
10+35.31	11+35.31	100	7 to 3	3"	4.6	Rt. Shoulder
11+35.31	14+53.45	319.11	3	3"	8.9	Rt. Shoulder & Calcs.
14+53.45	17+68.86	316.79	3	3"	8.8	Rt. Shoulder & Calcs.
17+68.86	22+75	509.23	3	3"	14.1	Rt. Shoulder & Calcs.
22+75	24+09.81		Varies	3"	10.0	Rt. Shoulder
27+49	29+08.71	160.25	7	3"	10.4	Rt. Shoulder & Calcs.
Lane J						
1+00	2+97.15	196.53	8	4" Max.	17.8	Rt. Shoulder & Calcs.
2+97.15	5+30	232.61	8	4" Max.	21.1	Rt. Shoulder & Calcs.
5+30	9+60.09		Varies	3" Max.	29.0	Rt. Shoulder
5+39.56	8+44.84	306.68	3	3"	8.5	Lt. Shoulder & Calcs.
8+44.84	16+90.83	846.43	3	3"	23.5	Lt. Shoulder & Calcs.
16+90.83	26+31.81	941+35	3	3"	26.1	Lt. Shoulder & Calcs.
19+69.18	20+69.18	100	4.42 to 0	3"	2.0	Rt. Shoulder
26+20	27+18.42		Varies	3"	6.9	Rt. Shoulder
26+31.81	34+41.42	809.61	3	3"	22.5	Lt. Shoulder
29+58.20	34+41.42	483.22	4.42	3"	19.8	Rt. Shoulder
Ramp G						
0+00.00	6+50.00	650.00	4.42	3"	26.6	Rt. Shoulder
5+46.49	6+00	53.5	3	3"	1.5	Lt. Shoulder
6+50.00	10+89.20	439.57	4.42	3"	18.0	Rt. Shoulder & Calcs.
10+89.20	12+05.63	116.43	4.42	3"	4.8	Rt. Shoulder
11+75	12+72.19	97.19	3	3"	2.7	Lt. Shoulder
Ramp I						
1+13.37	3+11.46	199.18	7	3"	12.9	Rt. Shoulder & Calcs.
3+11.46	3+75	63.54	7	3"	4.1	Rt. Shoulder
3+75	4+45.28	70.28	4.42	3"	2.9	Rt. Shoulder
3+75	4+45.28	70.28	3	3"	2.0	Lt. Shoulder
4+45.28	7+54.12	308.45	4.42	3"	12.6	Rt. Shoulder & Calcs.
4+45.28	5+54.12	109.34	3	3"	3.0	Lt. Shoulder & Calcs.
7+54.12	10+95	340.98	7	3"	22.1	Rt. Shoulder & Calcs.
Ramp 14-M						
15+77.25	23+82.93	804.67	4.42	3"	32.9	Rt. Shoulder & Calcs.
15+77.25	22+25.96	651.68	3	3"	18.1	Lt. Shoulder & Calcs.
22+25.96	23+25.96	100.43	3 to 2	3"	2.3	Lt. Shoulder & Calcs.
23+82.93	29+13.17	529.13	4.42	3"	21.7	Rt. Shoulder & Calcs.
29+13.17	29+48.16	34.99	4.42	3"	1.4	Rt. Shoulder

ITEM B-19 AGGREGATE BASE COURSE

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Ramp D						
0+00.00	3+75.89	374.71	4.42	3"	15.3	Rt. Shoulder & Calcs.
3+75.89	4+75.89	100	4.42 to 0	3"	2.0	Rt. Shoulder
3+75.89	5+75.89	213	3	3"	5.9	Lt. Shoulder & Meas.
5+75.89	10+14.62	487.62	3	3"	13.5	Lt. Shoulder & Calcs.
10+14.62	12+55.00	240.38	3	3"	6.7	Lt. Shoulder
Ramp O						
0+71	2+50	174	3	3"	5.0	Lt. Shoulder
1+21.00	1+40	19	7	3"	1.2	Rt. Shoulder
1+40	3+14.23	174.23	4.42	3"	7.1	Rt. Shoulder
3+14.23	5+59.27	249.55	4.42	3"	10.2	Rt. Shoulder & Calcs.
4+25	5+59.27	125.25	3	3"	3.5	Lt. Shoulder & Calcs.
5+59.27	7+42.41	183.14	4.42	3"	7.5	Rt. Shoulder
5+59.27	7+42.41	183.14	3	3"	5.1	Lt. Shoulder
7+42.41	11+41.52	395.11	4.42	3"	16.2	Rt. Shoulder & Calcs.
7+42.41	10+41.52	310.07	3	3"	8.6	Lt. Shoulder & Calcs.
10+41.52	11+41.52	103.40	3 to 2	3"	2.4	Lt. Shoulder & Calcs.
11+41.52	12+41.52	99.67	4.42	3"	4.1	Rt. Shoulder & Calcs.
12+41.52	14+80.33	238.41	4.42	3"	9.8	Rt. Shoulder & Calcs.
Total =					2,899.8	

ITEM B-21 WATERPROOFED AGGREGATE BASE COURSE

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Southbound Medina						
879+48.88	887+53.56	804.68	10	3"	74.5	Lt. Shoulder
879+48.88	887+53.56	804.68	5	3"	37.3	Rt. Shoulder
887+53.56	900+03.56	1,234.32	10	3"	114.3	Lt. Shoulder & Calcs.
887+53.56	900+03.56	1,248.24	5	3"	57.8	Rt. Shoulder & Calcs.
900+03.56	908+00.02	785.06	10	3"	72.7	Lt. Shoulder & Calcs.
900+03.56	910+65.79	1,063.16	5	3"	49.2	Rt. Shoulder & Calcs.
910+65.79	913+50.00	284.58	5	3"	13.2	Rt. Shoulder & Calcs.
Northbound Medina						
879+48.88	887+53.56	804.68	5	3"	37.3	Lt. Shoulder
879+48.88	887+53.56	804.68	10	3"	74.5	Rt. Shoulder
887+53.56	900+03.56	1,251.76	5	3"	58.0	Lt. Shoulder & Calcs.
887+53.56	900+03.56	1,265.68	10	3"	117.2	Rt. Shoulder & Calcs.
899+23.96	902+15	290.85	5	3"	13.5	Lt. Shoulder & Calcs.
899+23.96	902+90	369.87	10	3"	34.2	Rt. Shoulder & Calcs.
902+15	903+15	99.94	5 to 4	3"	4.2	Lt. Shoulder & Calcs.
903+15	910+45.18	729.81	4	3"	27.0	Lt. Shoulder & Calcs.
910+45.18	913+00.00	254.46	4	3"	9.4	Lt. Shoulder & Calcs.
902+90	907+33.18		Varies	3"	48.2	Rt. Shoulder
907+33.18	908+33.18	100	7 to 8	6"	13.8	Rt. Shoulder & Meas.
908+33.18	911+29.18	305	8	6"	45.2	Rt. Shoulder & Meas.
911+29.18	912+01.18	75	8 to 10	6"	12.5	Rt. Shoulder & Meas.
912+01.18	913+00.00	102.48	10	3"	9.5	Rt. Shoulder & Calcs.
Lane H						
0+00.00	3+90.56	390.56	7	6"	50.6	Rt. Shoulder
0+00.00	3+90.56	390.56	3	6"	21.7	Lt. Shoulder
3+90.56	14+53.45	1,062.61	3	6"	59.0	Lt. Shoulder & Calcs.
10+35.31	11+35.31	100	7 to 3	6"	9.3	Rt. Shoulder
11+35.31	14+53.45	319.11	3	6"	17.7	Rt. Shoulder & Calcs.
14+53.45	17+68.86	315.29	3	6"	17.5	Lt. Shoulder & Calcs.
14+53.45	17+68.86	316.79	3	6"	17.6	Rt. Shoulder & Calcs.
17+68.86	23+23.66	554.51	3	6"	30.8	Lt. Shoulder & Calcs.
17+68.86	23+75	509.23	3	6"	28.3	Rt. Shoulder & Calcs.
22+75	24+09.81		Varies	6"	20.0	Rt. Shoulder
23+23.66	27+08.71	384.59	3	6"	21.4	Lt. Shoulder & Calcs.
27+08.71	28+08.71	99.98	3 to 2	6"	4.6	Lt. Shoulder & Calcs.
27+49	29+68.71	160.25	7	6"	20.8	Rt. Shoulder & Calcs.

ITEM B-21 WATERPROOFED AGGREGATE BASE COURSE

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Lane J						
1+02.00	2+97.15	196.53	8	6"	29.1	Rt. Shoulder & Calcs.
2+97.15	5+30	232.61	8	6"	34.5	Rt. Shoulder & Calcs.
5+30	9+60.09		Varies	6"	64.8	Rt. Shoulder
5+39.56	8+44.84	306.68	3	6"	17.0	Lt. Shoulder & Calcs.
8+44.84	16+90.83	846.43	3	6"	47.0	Lt. Shoulder & Calcs.
16+90.83	26+31.81	941.35	3	6"	52.3	Lt. Shoulder & Calcs.
19+69.18	20+69.18	100	7 to 3	6"	9.3	Rt. Shoulder
20+69.18	26+20	548.30	3	6"	30.5	Rt. Shoulder & Calcs.
26+20	27+18.42		Varies	6"	13.8	Rt. Shoulder
26+31.81	34+41.42	809.61	3	6"	45.0	Lt. Shoulder
29+58.20	34+41.42	483.22	7	6"	62.6	Rt. Shoulder
Ramp G						
0+00.00	6+50.00	650.00	7	6"	84.3	Rt. Shoulder
5+46.49	6+50.00	103.51	3	6"	5.8	Lt. Shoulder
6+50.00	10+89.20	439.46	7	6"	57.0	Rt. Shoulder & Calcs.
6+50.00	10+00	348.93	3	6"	19.4	Lt. Shoulder & Calcs.
10+00	11+00	100	3	6"	5.6	Lt. Shoulder & Meas.
10+89.20	12+05.63	116.43	7	6"	15.1	Rt. Shoulder
11+00	12+72.19	172.19	3	6"	9.6	Lt. Shoulder
Ramp I						
1+13.37	3+11.46	199.18	7	6"	25.8	Rt. Shoulder & Calcs.
0+79.68	3+11.46	225.41	3	6"	12.5	Lt. Shoulder & Calcs.
3+11.46	4+45.28	133.82	7	6"	17.3	Rt. Shoulder
3+11.46	4+45.28	133.82	3	6"	7.4	Lt. Shoulder
4+45.28	7+54.12	308.56	7	6"	40.0	Rt. Shoulder & Calcs.
4+45.28	5+54.12	109.34	3	6"	6.1	Lt. Shoulder & Calcs.
5+54.12	6+54.12	100.43	3 to 2	6"	4.6	Lt. Shoulder & Calcs.
7+54.12	10+95	340.98	7	6"	44.2	Rt. Shoulder & Calcs.
Ramp 14-M						
15+77.25	23+82.93	804.94	7	6"	104.3	Rt. Shoulder & Calcs.
15+77.25	22+25.96	651.68	3	6"	36.2	Lt. Shoulder & Calcs.
22+25.96	23+25.96	100.43	3 to 2	6"	4.6	Lt. Shoulder & Calcs.
23+82.93	29+13.17	529.43	7	6"	68.6	Rt. Shoulder & Calcs.
29+13.17	29+48.16	34.99	7	6"	4.5	Rt. Shoulder & Calcs.
Ramp D						
0+00.00	3+75.89	374.97	7	6"	48.6	Rt. Shoulder & Calcs.
3+75.89	4+75.89	100	7 to 3	6"	9.3	Rt. Shoulder & Meas.
4+75.89	5+75.89	99	3	6"	5.5	Rt. Shoulder & Meas.
3+75.89	5+75.89	213	3	6"	11.8	Lt. Shoulder & Meas.
5+75.89	10+14.62	487.62	3	6"	27.1	Lt. Shoulder & Calcs.
5+75.89	8+61.28	282.94	3	6"	15.7	Rt. Shoulder & Calcs.
8+61.28	9+70.81	108.22	3	6"	6.0	Rt. Shoulder & Calcs.
9+70.81	12+04.33	233.52	3	6"	13.0	Rt. Shoulder
10+14.62	12+55	240.38	3	6"	13.4	Lt. Shoulder
Ramp O						
0+71.00	3+14.23	243.23	3	6"	13.5	Lt. Shoulder
1+21.00	3+14.23	193.23	7	6"	25.0	Rt. Shoulder
3+14.23	5+59.27	228.57	3	6"	12.7	Lt. Shoulder
3+14.23	5+59.27	248.33	7	6"	32.2	Rt. Shoulder
5+59.27	7+42.41	183.14	3	6"	10.2	Lt. Shoulder
5+59.27	7+42.41	183.14	7	6"	23.7	Rt. Shoulder
7+42.41	10+41.52	310.07	3	6"	17.2	Lt. Shoulder & Calcs.
10+41.52	11+41.52	103.40	3 to 2	6"	4.8	Lt. Shoulder & Calcs.
7+42.41	11+41.52	396.18	7	6"	51.4	Rt. Shoulder & Calcs.
11+41.52	12+41.52	99.76	7	6"	12.9	Rt. Shoulder & Calcs.
12+41.52	14+80.33	238.52	7	6"	30.9	Rt. Shoulder & Calcs.
Total =					2,606.5	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.P.R. DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD. Z.M. DATE 3-4-65

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

18
241

CUYAHOGA COUNTY
CUY.71-17.18

ITEM I-11 SANDSTONE CURB RESET

Station From	Station To	Side	Lin. Ft.	Remarks
Relocated West 25th Street				
9+07.00	10+20.20	Left	113.2	
10+63.05	11+94.98	Left	131.9	
16+77.00	17+74.23	Left	98.0	Meas.
17+74.23	18+85.73	Left	111.5	
20+44.09	23+08.59	Left	264.5	
8+60.00	9+80.00	Right	120.0	
9+80.00	10+27.74	Right	47.7	
11+20.54	11+72.00	Right	51.5	
11+72.00	12+35.70	Right	63.7	
13+07.00	13+27.00	Right	20.0	Meas.
17+08.00	23+04.23	Right	596.2	
8+60.00	9+07.00	Left	47.0	Commercial Drive
Riverside Avenue				
10+20.20 W.25	9+68.70	Right	12.5	
9+68.70	9+50.00	Right	18.7	
9+50.00	9+67.66	Left	17.7	
9+67.66	10+63.05 W.25	Left	14.8	
Ramp G				
11+94.98 W.25	12+26.63	Right	86.9	
12+26.63	12+05.63	Right	23.0	Meas.
12+72.19	12+81.19	Left	9.0	Meas.
12+81.19	12+87.43W.25	Left	14.2	
Ramp G				
12+87.43	12+98.00	Left	10.5	
Ramp D				
18+85.73W.25	12+13.33	Right	85.4	
12+13.33	12+04.33	Right	9.0	Meas.
Ramp O				
1+21.58	1+00.58	Right	23.0	Meas.
1+00.58	20+44.09W.25	Right	67.5	
Daisy Avenue				
23+08.59W. 25	0+61.98	Left	43.5	
Scranton Road				
7+20.00	7+30.00	Left	16.0	Meas.
7+47.00	8+00	Right	53.0	Meas.
Ramp I				
12+35.70 W.25	1+13.37	Right	95.6	Incl. Std. Flare
13+07.00W.25	0+88.68	Left	46.0	Incl. Std. Flare
Library Avenue Turn-Around				
At 3+60		Left	46.0	
		Right	46.0	
Total =			2,405.5	

ITEM I-7 REINFORCED CONCRETE APPROACH SLAB, T=13"

Station From	Station To	Calculations	Area Sq. Yds.	Remarks
Relocated West 25th Street				
13+01.3	13+26.3	25 x 72 ÷ 9	200.0	
16+78.7	17+03.7	25 x 72 ÷ 9	200.0	
Relocated Scranton Road				
7+18	7+43	25 x 20 ÷ 9	55.6	
Total =			455.6	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD. T.M. DATE 3-4-65

ITEM I-12 CONCRETE CURB

Station From	Station To	Side	Std. Type 6 Lin. Ft.	Std. Type 7 Lin. Ft.	Std. Type 8 Lin. Ft.	Std. Type 2-A Lin. Ft.	
Southbound Medina							
879+48.88	887+53.56	Left	804.7				
887+53.56	900+03.56	Left	1,232.6				℄ Calcs.
900+03.56	908+00.02	Left	783.6				℄ Calcs.
902+92	910+65.79	Right	775.2				℄ Calcs. Meas.
910+65.79	913+50.00	Right	285.0				℄ Calcs.
Northbound Medina							
879+48.88	887+53.56	Right	804.7				
887+53.56	900+03.56	Right	1,267.4				℄ Calcs.
899+23.96	902+91.30	Right	381.7				Incl. 10' Nose
902+15	902+90.00	Left	75.0				℄ Calcs. Meas.
							Meas.
Lane H							
0+00.00	3+90.56	Right	390.6				
9+81.31	10+35.31	Right	54.0				
14+53.45	17+68.86	Left	315.2				
17+68.86	23+23.66	Left	554.2				
23+23.66	24+60.00	Left	136.3				
24+60.00	28+08.71	Left			348.5		
28+08.71	29+08.71	Left			100.0		
Lane J							
1+02.05	2+97.15	Right	193.8				℄ Calcs.
2+97.15	5+30.00	Right	238.3				Incl. Nose
6+39.56	8+44.84	Left	206.3				℄ Calcs.
8+44.84	16+00.00	Left	756.0				℄ Calcs.
29+58.20	34+41.42	Right	483.2				
19+02.18	19+69.18	Right	67.0				Meas.
Ramp G							
0+00.00	6+50.00	Right	650.0				
6+50.00	10+91.57	Right	442.1				
10+91.57	12+05.63	Right	114.0				
5+91.49	6+46.49	Left	55.0				
Ramp I							
4+65.00	6+20.12	Left		154.5			Meas.
6+20.12	7+54.12	Left			134.0		Meas.
8+20.00	12+54.71	Right	435.0				℄ Calcs.
Ramp 14-M							
15+77.25	20+00.00	Left		424.9			℄ Calcs.
20+00.00	22+25.96	Left			227.1		℄ Calcs.
22+25.96	24+25.96	Left			202.0		Meas.
15+77.25	23+82.92	Right	804.1				
23+82.92	29+13.17	Right	528.6				
29+13.17	29+48.17	Right	35.0				Meas.
Ramp D							
0+00.00	3+00.00	Right	298.5				℄ Calcs.
4+07.00	4+75.89	Left	72.0				Meas.
8+00.00	9+00.00	Left	112.0				Meas.
Ramp O							
1+21.58	3+14.23	Right	192.6				
3+14.23	5+59.27	Right	251.9				
5+59.27	7+42.41	Right	183.1				
7+42.41	11+41.52	Right	393.1				
11+41.52	12+41.52	Right	99.5				
12+41.52	14+80.33	Right	238.2				
4+56	5+75.00	Left	109.0				Meas.
10+30	11+41.52	Left		115.7			
11+41.52	12+41.52	Left			101.1		
Riverside Cemetery Entrance - South Lane							
10+27.74W.25	0+64.64	Right				28.5	
0+64.64	1+85.59	Right				121.0	
1+85.59	3+00.33	Right				100.4	
2+26.36	2+90.39	Left				68.7	
2+26.36	1+23.54N.	Left				36.1	

ITEM I-12 CONCRETE CURB

Station From	Station To	Side	Std. Type 6 Lin.Ft.	Std. Type 7 Lin.Ft.	Std. Type 8 Lin.Ft.	Std. Type 2A Lin.Ft.	Remarks
Riverside Cemetery Entrance - South Lane							
11+20.54 W. 25						60.1	
Riverside Cemetery Entrance - North Lane							
0+00.00	0+91.54	Left				91.4	
0+91.54	1+90.38	Left				99.0	
1+23.54	1+90.38	Right				60.3	
Library Avenue							
At 4+00.00		℄	28.0				
Total =			14,846.5	695.1	1,122.7	665.5	

ITEM I-13 4½" CONCRETE SIDEWALK

Station From	Station To	Side	Length Lin.Ft.	Width Lin.Ft.	Area Sq. Ft.	Remarks
Relocated West 25th Street						
8+60.00	8+75.50	Left	15.5	6	93.0	Meas.
9+00.50	10+27.00	Left	126.5	6	759	Meas.
10+54.00	12+12.00	Left	158.0	6	948	Meas.
12+78.00	12+98.00	Left	17.0	8	136.0	
16+77.00	18+85.73	Left	209.0	6	1,254.0	
18+85.73	19+25.00	Left	39.0	6	234.0	Meas.
20+17.00	20+44.09	Left	23.0	6	138.0	Meas.
20+44.09	23+08.59	Left	264.5	6	1,587.0	Incl. Steps
23+08.59	0+61.98 Daisy	Left	34.0	6	204.0	
8+60.00	10+27.74	Right	168.0	6	1,008.0	
10+27.74	10+32.74	Right	15.0	6	90.0	
11+07.54	11+20.54	Right	13.0	6	78.0	
11+20.54	12+35.70	Right	115.0	6	690.0	
12+35.70	12+56.70	Right	21.0	6	126.0	
17+13.00	17+88.00	Right	75.0	6	450.0	
17+88.00	23+04.23	Right	516.0	6	3,120.0	
Riverside Cemetery Entrance - South Lane						
11+10.00 W.25	1+08.03	Left	40.0	4	160.0	Calcs.
Riverside Cemetery Entrance - North Lane						
0+00.00	0+91.54	Left	89	4	356.0	Calcs.
0+91.54	1+90.38	Left	96	4	384.0	Calcs.
Ramp I						
13+07.00 W.25	13+27.00 W.25	Left	20.0	8	160.0	
13+07.00 W.25	0+67.00	Left	15.0	6	90.0	Meas.
8+30.00	9+50.00	Right	120.0	2.5	300.0	
9+80.00	12+48.00	Right	268.0	2.5	670.0	
Relocated Scranton Road						
7+47.00	7+70.00	Right	26.0	6	156.0	
At 7+19.00		Left	65.0	5	325.0	
Library Avenue						
3+40.00	3+49.50	Right	9.0	5	45.0	
Total =					13,561.0	

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

(19/241)

CUYAHOGA COUNTY
CUY. 71-17.18

ITEM I-22 SUBBASE GRADING "A" OR "B"

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Southbound Medina						
879+48.88	887+53.56	804.68	46.58	6"	694.1	
887+53.56	900+03.56	1,242.55	46.58	6"	1,071.8	℄ Calcs.
900+03.56	902+92	286.75	43.58	6"	231.4	℄ Calcs.
902+92	908+00.02	504.69	39.58	6"	369.9	℄ Calcs.
908+00.02	909+00.02	99.20	48	6"	88.2	℄ Calcs.
909+00.02	910+65.79	164.76	37	6"	112.9	℄ Calcs.
910+65.79	913+50.00	281.61	37	6"	193.0	℄ Calcs.
Northbound Medina						
879+48.88	887+53.56	804.68	46.58	6"	694.1	
887+53.56	900+03.56	1,257.45	46.58	6"	1,084.7	℄ Calcs.
899+23.96	902+15	292.29	43.58	6"	235.9	℄ Calcs.
899+23.96	902+15		Varies	6"	43.3	Under Median
902+15	907+33.18	520.36	41	6"	395.1	℄ Calcs.
907+33.18	910+45.18	313.28	40	6"	232.1	Left Lanes, ℄ Calcs.
910+45.18	913+00.00	257.67	40	6"	190.9	Left Lanes, ℄ Calcs.
907+33.18	910+45.18		Varies	6"	125.7	Acceleration Lane
910+45.18	913+00.00		Varies	6"	74.1	Acceleration Lane
Lane H						
0+00.00	3+90.56	390.56	27.58	7½" Max.	214.1	
3+90.56	9+35.31	545.27	13	6"	131.3	℄ Calcs.
5+46	9+35.31		Varies	6"	82.8	Taper
9+35.31	10+35.31	100.17	28 to 26	6"	50.1	Includes Widening
10+35.31	14+53.45	418.65	20	6"	155.1	℄ Calcs.
14+53.45	17+68.86	315.96	20	6"	117.0	℄ Calcs.
17+68.86	23+23.66	556.16	20	6"	206.0	℄ Calcs.
23+23.66	24+09.81	86.26	20	6.	31.9	℄ Calcs.
24+09.81	27+49	339.34	11	6"	69.1	℄ Calcs.
27+49	29+08.71	159.94	22 to 15	6"	54.8	Includes Widening
Lane J						
1+02	1+52		Varies	6"	15.6	
1+52	2+97.15	145.69	14.58	6"	39.3	Right Lane, ℄ Calcs.
2+97.15	5+39.56	242.71	14.58	6"	65.5	Right Lane, ℄ Calcs.
1+52	5+39.56		Varies	6"	59.4	Taper
5+39.56	6+39.56	100.20	21.58 to 19.58	6"	38.2	℄ Calcs.
6+39.56	8+44.84	205.67	19.58	6"	74.6	℄ Calcs.
8+44.84	9+60.09	114.96	19.58	6"	41.7	℄ Calcs.
9+60.09	16+90.83	729.34	13	6"	175.6	℄ Calcs.
16+90.83	18+69.18	178.09	13	6"	43.1	℄ Calcs.
18+69.18	19+69.18	99.70	26 to 24	6"	46.2	℄ Calcs.
19+69.18	20+69.18	99.77	19.58	6"	36.2	℄ Calcs.
20+69.18	26+31.81	561.30	20	6"	207.9	℄ Calcs.
26+31.81	27+18.42	86.61	18	6"	28.9	
27+18.42	29+58.20	239.78	13	6"	57.7	
29+58.20	34+41.42	483.22	27.58	7½" Max.	261.6	
Ramp 14-M						
15+77.25	22+25.96	649.93	19.58	6"	235.7	℄ Calcs.
22+25.96	23+25.96	100.12	19.58 to 17.58	6"	34.4	℄ Calcs.
23+25.96	24+25.96	100.16	18.58 to 16.58	6"	32.6	℄ Calcs.
24+25.96	29+13.17	488.74	24.58 to 14.58	6"	177.2	℄ Calcs.
29+13.17	29+48.16	34.99	14.58	6"	9.4	
Ramp D						
0+00.00	3+75.89	377.13	14.58	6"	101.8	℄ Calcs.
0+68	3+75.89		Varies	6"	58.0	Taper
3+75.89	4+75.89	103	21.58	6"	41.2	℄ Meas.
4+75.89	5+75.89	104	22	6"	42.4	℄ Meas.
5+75.89	8+61.28	298.44	22	6"	121.6	℄ Calcs.
8+61.28	10+14.62	161.66	19	6"	56.9	℄ Calcs.
8+61.28	10+14.62		Varies	6"	30.0	Rt. Side, Planimeter
10+14.62	12+04.33	189.71	42	6"	147.6	
12+04.33	12+54.90	50.57	39	6"	36.5	
12+54.90	12+62.00	7.10	36	6"	4.7	
12+04.33	12+59		Varies	6"	8.8	S.W. Radius Flare

ITEM I-22 SUBBASE GRADING "A" OR "B"

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Ramp O						
0+60	0+70	10.5	9	6"	1.5	Left Widening
20+44.09W.25	1+21		Varies	6"	9.2	Northwest Radius Flare
0+61	1+21	60	17	6"	18.9	
1+21	1+40	19	18	6"	6.3	
1+40	2+50	110	21.58	6"	44.0	
2+50	3+14.23	64.23	21.58	6"	25.7	
3+14.23	4+25	107.28	21.58	6"	42.9	℄ Calcs.
4+25	5+59.27	130.55	21.58	6"	52.2	℄ Calcs.
5+59.27	7+42.41	183.14	19.58	7½" Max.	71.6	
7+42.41	10+41.52	303.63	19.58	6"	110.1	℄ Calcs.
10+41.52	11+41.52	101.41	19.58 to 17.58	6"	34.9	℄ Calcs.
11+41.52	12+41.52	100.43	19.58 to 17.58	6"	34.6	℄ Calcs.
12+41.52	14+80.33	239.60	14.50	6"	64.7	℄ Calcs.
12+41.52	14+80.33		Varies	6"	15.5	Taper
Ramp G						
0+00.00	1+55		Varies	6"	2.9	Taper
0+00.00	5+46.49	546.49	14.58	6"	147.6	
5+46.49	6+50.00	103.51	21.58	6"	41.4	
6+50.00	10+00.00	349.50	21.58	6"	139.7	℄ Calcs.
10+00.00	11+00.00	100.00	21.58 to 29.58	6"	47.4	
11+00.00	11+75	75	29.58	6"	41.1	
11+75	12+05.63	30.63	27.58	6"	15.6	
12+05.63	12+87	81.37	25	6"	37.7	
12+05.63	11+94.98W.25		Varies	6"	18.7	Southwest Radius Flare
12+72.19	12+87.43W.25		Varies	6"	0.7	Northwest Radius Flare
Ramp I						
0+52	1+13.37		Varies	6"	27.9	Planimeter
1+13.37	3+11.46	195.29	20	6"	72.3	℄ Calcs.
3+11.46	3+75	63.54	20	6"	23.5	
3+75	4+45.28	70.28	19.58	7½" Max.	27.5	
4+45.28	5+54.12	109.05	19.58	6"	39.5	℄ Calcs.
5+54.12	7+54.12	200.36	21.58 to 16.58	6"	70.8	℄ Calcs.
7+54.12	10+95	340.77	9	6"	56.8	℄ Calcs.
7+54.12	10+95		Varies	6"	47.8	Taper
Total =					10,670.5	

ITEM I-12 PORTLAND CEMENT CONCRETE MEDIAN, AS PER PLAN

Station From	Station To	Area Calculations Sq. Yds.	Remarks
Southbound Medina			
879+48.88	900+03.56	2,054.68 x 6 ÷ 9 = 1369.8	Median Pavement
900+03.56	902+92	2,338 ÷ 9 = 259.8	Median Pavement, Planimeter
908+00.02	909+00.02	600 ÷ 9 = 66.7	Nose Pavement
Ramp D			
3+75.89	4+10	232 ÷ 9 = 25.8	Nose Pavement
9+00	10+14.62	910 ÷ 9 = 101.1	Median Pavement, Planimeter
10+14.62	12+54.90	240.28 x 4 ÷ 9 = 106.8	Median Pavement
Lane H			
9+35.31	9+81	290 ÷ 9 = 32.2	Nose Pavement
West 25th Street			
10+91.69	11+13.34	187 ÷ 9 = 20.8	Median Pavement, Planimeter
11+13.34	11+72.00	792 ÷ 9 = 88.0	Median Pavement
11+72.00	12+10.00	38 x 16 ÷ 9 = 67.6	Median Pavement
12+19.00	12+65.18	724.5 ÷ 9 = 80.5	Median Pavement
16+78.7	19+18	239.2 x 4 ÷ 9 = 106.4	Median Pavement
19+26	19+49	23 x 4 ÷ 9 = 10.2	Median Pavement
20+24.31	21+36.23	904 ÷ 9 = 100.4	Median Pavement, Planimeter
Total =		2,436.1	

ITEM I-15 GUARD RAIL

Station From	Station To	Side	Std. Type (Deep) Lin. Ft.	Barrier Type (Deep) Lin. Ft.	Remarks
Medina Freeway					
879+48.88	896+12.50	℄		1,662.5	
896+12.50	897+62.50	℄	300.0		
897+62.50	900+00.00	℄		237.5	
896+48.00	899+47.50	Left	300.0		
895+60.00	897+23.00	Right	325.0		
Northbound Medina					
899+23.96	913+00.00	Left	1,375.0		
Lane J					
14+72.50	27+00.00	Left	1,225.0		
27+00.00	29+00.00	Left	200.0		
Lane H					
8+00.00	12+00.00	Left	400.0		
16+20.00	17+83.00	Right	162.5		
Ramp D					
29+30.5(14-M)	2+56.00Ramp D	Right	275.0		
Ramp G					
7+75.00	12+84.00	Left	512.5		Meas.
Ramp I					
0+65	4+00	Left	337.5		Meas.
West 35th Street					
4+68.00			25.0		
1+58.00			25.0		
West 32nd Street					
2+45			25.0		
6+13			25.0		
Poe Avenue					
10+34			37.5		
Evelyn Avenue					
1+20			25.0		
Library Avenue					
4+00			25.0		
Total =			5,600.0	1,900.0	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE EPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. T.M. DATE 2-9-65 KANSAS CITY CLEVELAND NEW YORK

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

20
241

CUYAHOGA COUNTY
CUY. 71-17.18

ITEM I-22 SUBBASE REGULAR GRADING

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
Ramp G						
0+00.00	6+50.00	650.00	4.42	6"-3"	39.9	Rt. Shld.
6+50.00	10+89.20	439.57	4.42	6"-3"	27.0	Rt. Shld., & Calcs.
10+89.20	12+05.63	116.43	4.42	6"-3"	7.1	Rt. Shld.
11+75	12+72.19	97.19	2	5"-3"	2.4	Lt. Shld.
Ramp I						
1+13.37	3+11.46	199.33	6	5.57"-3"	15.8	Rt. Shld., & Calcs.
3+11.46	3+75	63.54	6	5.57"-3"	5.0	Rt. Shld.
3+75	4+45.28	70.28	4.42	6"-3"	4.3	Rt. Shld.
3+75	4+45.28	70.28	2	5"-3"	1.7	Lt. Shld.
4+45.28	7+54.12	308.45	4.42	6"-3"	18.9	Rt. Shld., & Calcs.
4+45.28	5+54.12	109.35	2	5"-3"	2.7	Lt. Shld., & Calcs.
7+54.12	10+95	341.00	6	5.57"-3"	27.1	Rt. Shld., & Calcs.
Ramp 14-M						
15+77.25	20+00	424.74	2	5"-3"	10.5	Lt. Shld., & Calcs.
20+00	22+25.96	227.02	2	6"	8.4	Lt. Shld., & Calcs.
22+25.96	23+25.96	100.44	2 to 1	6"	2.8	Lt. Shld., & Calcs.
15+77.25	23+82.93	804.67	4.42	6"-3"	49.7	Rt. Shld., & Calcs.
23+82.93	29+13.17	529.13	4.42	6"-3"	32.5	Rt. Shld., & Calcs.
29+13.17	29+48.16	34.99	4.42	6"-3"	2.1	Rt. Shld.
Library Avenue Turnaround						
3+60 Library		32	20	4"	5.9	
3+60 Library			Varies	4"	0.4	Southeast Radius
3+60 Library			Varies	4"	0.4	Southwest Radius
Ramp D						
0+00.00	3+75.89	374.71	4.42	6"-3"	23.0	Rt. Shld., & Calcs.
3+75.89	4+10		Varies	12"	8.6	Under nose pvmt.
3+75.89	4+75.89	100	4.42 to 0	6"-3"	3.1	Rt. Shld.
3+75.89	5+75.89	213	2	5"-3"	5.3	Lt. Shld., & Meas.
5+75.89	9+00	361.15	2	5"-3"	9.0	Lt. Shld., & Calcs.
9+00	10+14.62	127.72	2	6"	4.7	Lt. Shld., & Calcs.
10+14.12	12+55	240.38	2	6"	8.9	Lt. Shld., & Calcs.
Ramp O						
0+70	3+14.23	244.23	4	12"	36.2	Under median
3+14.23	4+60		Varies	12"	33.7	Under median
0+70	2+50	180	2	6"	6.7	Lt. Shld.
1+21.00	1+40	19	6	5.57"-3"	1.5	Rt. Shld.
1+40	3+14.23	174.23	4.42	6"-3"	10.7	Rt. Shld.
3+14.23	5+59.27	249.55	4.42	6"-3"	15.3	Rt. Shld., & Calcs.
5+59.27	7+42.41	183.14	4.42	6"-3"	11.2	Rt. Shld.
5+59.27	7+42.41	183.14	2	5"-3"	4.5	Lt. Shld.
7+42.41	11+41.52	395.11	4.42	7.01"-3"	27.0	Rt. Shld., & Calcs.
7+42.41	10+41.52	310.39	2	5"-3"	7.7	Lt. Shld., & Calcs.
10+41.52	11+41.52	103.51	2 to 1	5"-3"	1.9	Lt. Shld., & Calcs.
11+41.52	12+41.52	99.67	4.42	6"-3"	6.1	Rt. Shld., & Calcs.
12+41.52	14+80.33	238.41	4.42	6"-3"	14.6	Rt. Shld., & Calcs.
Scranton Road						
7+00	8+00		Varies	4"	28.5	
South Lane						
10+27.74 W.25	0+64.64		Varies	4"	1.2	Southeast Radius
11+20.54 W.25	1+08.23		Varies	4"	7.6	Northeast Radius
0+54	0+85	31	29.67	4"	11.4	
0+85	1+85.59	100.59	29.5	4"	36.6	
1+85.59	2+26.36	38.00	15.5	4"	7.3	& Calcs.
2+26.36	2+92	65.64	25	4"	20.3	& Calcs.

ITEM I-22 SUBBASE REGULAR GRADING

Station From	Station To	Length Feet	Width Feet	Thickness Inches	Volume Cu. Yds.	Remarks
North Lane						
0+00.00	1+90.38		Varies	4"	48.2	Planimeter
Riverside Avenue						
9+68.70	10+20.20W. 25		Varies	6"	0.5	Southwest Radius
9+67.66	10+63.05W. 25		Varies	6"	0.7	Northwest Radius
9+50	9+78	28	29	6"	15.1	
West 25th Street						
8+60.00	9+80.00	120.00	49.17 to17.17	6"	133.7	
9+80.00	11+72.00	192.00	Varies	6"	295.6	Inc. add. 6" under med.
11+72.00	13+26.30	154.30	84 Max.	6"	264.2	Inc. add. 6" under med.
16+78.70	18+85.73	207.00	75.17	6"	303.5	Inc. add. 6" under med.
18+85.73	20+04.23	118.50	85.58 Max.	6"	188.6	Inc. add. 6" under med.
20+04.23	23+04.23	300.00	87.17 to 61.17	6"	628.7	Inc. add. 6" under med.
23+04.23	0+61.98Daisy		Varies	6"	11.5	Planimeter
Southbound Medina						
879+48.88	887+53.56	804.68	7.42	8⅛"-3"	102.6	Lt. Shld.
887+53.56	900+03.56	1,233.91	7.42	8⅛"-3"	157.3	Lt. Shld., & Calcs.
900+03.56	908+00.02	784.70	7.42	8.57"-3"	104.2	Lt. Shld., & Calcs.
902+92	910+65.79	774.60	4	5.4"-3"	40.2	Rt. Shld., & Calcs.
908+00.02	909+00.02		Varies	12"	22.2	Under Nose
910+65.79	913+50.00	284.66	4	5.4"-3"	14.8	Rt. Shld., & Calcs.
Northbound Medina						
879+48.88	887+53.56	804.68	7.42	8⅛"-3"	102.1	Rt. Shld.
887+53.56	900+03.56	1,266.09	7.42	6.35"-3"	135.7	Rt. Shld., & Calcs.
899+23.96	902+15	294.18	7.42	6.35"-3"	31.5	Rt. Shld., & Calcs.
902+15	902+90	75.80	9	5.4"-3"	8.8	Rt. Shld., & Calcs.
902+90	907+33.18		Varies	6"	96.4	Rt. Shld., & Calcs. Extends under curb
907+33.18	908+33.18	100	6 to 7	5.2"-3"	8.2	Rt. Shld.
908+33.18	910+45.18	218	7	5.3"-3"	19.6	Rt. Shld., & Meas.
910+45.18	911+29.18	87.25	7	6"-3"	10.2	Rt. Shld., & Calcs.
911+29.18	912+01.18	74.71	7 to 9	6"-3"	10.0	Rt. Shld., & Calcs.
912+01.18	913+00.00	102.51	9	6"-3"	15.4	Rt. Shld., & Calcs.
Lane H						
0+00.00	3+90.56	390.56	2	3"	7.2	Lt. Shld.
0+00.00	3+90.56	390.56	4.42	6"-3"	24.0	Rt. Shld.
3+90.56	9+35.31	544.56	2	5"-3"	13.5	Lt. Shld., & Calcs.
9+35.31	9+81		Varies	12"	10.7	Under Nose Pvmt.
10+35.31	11+35.31	100	6 to 2	5"-3"	4.9	Rt. Shld.
11+35.31	14+53.45	319.14	2	5"-3"	7.9	Rt. Shld., & Calcs.
14+53.45	17+68.86	316.83	2	5"-3"	7.9	Rt. Shld., & Calcs.
17+68.86	22+75	509.32	2	5"-3"	12.6	Rt. Shld., & Calcs.
22+75	24+09.81	135	13 to 3	6"	20.0	Rt. Shld., Extends under curb
27+49	29+08.71	160.27	6	5.57"-3"	12.7	Rt. Shld., & Calcs.
Lane J						
1+00	2+97.15	196.33	5.42	8.63"-3"	19.1	Rt. Shld., & Calcs.
2+97.15	5+30	232.53	5.42	7.9"-3"	21.2	Rt. Shld., & Calcs.
5+30	9+60.09		Varies	6"	51.7	Rt. Shld., Extends under curb
5+39.56	8+44.84	306.72	2	5"-3"	7.6	Lt. Shld., & Calcs.
8+44.84	16+90.83	846.58	2	5"-3"	21.0	Lt. Shld., & Calcs.
16+90.83	26+31.81	941.47	2	5"-3"	23.4	Lt. Shld., & Calcs.
19+69.18	20+69.18	100	4.42 to 0	6"	4.1	Rt. Shld.
26+20	27+18.42		Varies	6"	12.8	Rt. Shld., extends under curb
26+31.81	34+41.42	809.61	2	5"-3"	20.1	Lt. Shld.
29+58.20	34+41.42	483.22	4.42	6"-3"	29.7	Rt. Shld.
Total =					3,517.9	

ITEM SPECIAL DRAINAGE CONNECTION

Station From	Station To	Length Feet	Width Feet	X-Sectional Area Sq.Ft.	Volume Sq. Yds.	Remarks
Southbound Medina						
879+48.88	887+53.56	804.68	2.58	1.24	37.0	Lt. Shoulder
887+53.56	900+03.56	1,235.51	2.58	1.22	55.8	Lt. Shoulder, & Calcs.
900+03.56	908+00.02	786.09	2.58	1.22	35.5	Lt. Shoulder, & Calcs.
Northbound Medina						
879+48.88	887+53.56	804.68	2.58	1.24	37.0	Rt. Shoulder
887+53.56	900+03.56	1,264.49	2.58	1.18	55.3	Rt. Shoulder, & Calcs.
899+23.96	902+15	293.81	2.58	1.18	12.8	Rt. Shoulder, & Calcs.
Lane H						
0+00.00	3+90.56	390.56	2.58	1.79	25.9	Rt. Shoulder
9+35.31	14+53.45	518.05	3	1.83	35.1	Lt. Shoulder, & Calcs.
14+53.45	17+68.86	315.29	3	1.83	21.4	Lt. Shoulder, & Calcs.
17+68.86	23+23.66	554.51	3	1.83	37.6	Lt. Shoulder, & Calcs.
23+23.66	27+08.71	384.59	3	1.83	26.1	Lt. Shoulder, & Calcs.
27+08.71	28+08.71	99.98	3 to 2	1.57	5.8	Lt. Shoulder, & Calcs.
28+08.71	29+08.71	100	1.17	0.58	2.1	Lt. Side
Lane J						
1+00	2+97.15	196.95	2.58	1.21	8.8	Rt. Shoulder, & Calcs.
2+97.15	3+75	77.82	2.58	1.21	3.5	Rt. Shoulder, & Calcs.
3+75	8+44.84	469.68	2.58	1.12 to 1.06	19.7	Rt. Shoulder, & Calcs.
8+44.84	9+60.09	114.55	2.58	1.06	4.5	Rt. Shoulder, & Calcs.
19+69.18	20+69.18	99.94	2.58	1.06	3.9	Rt. Shoulder, & Calcs.
20+69.18	26+00.00	530.50	3	1.83	36.0	Rt. Shoulder, & Calcs.
29+58.20	34+41.42	483.22	2.58	1.79	32.0	Rt. Shoulder
Ramp G						
0+00.00	6+50.00	650.00	2.58	1.59	38.3	Rt. Shoulder
6+00.00	10+00.00	398.78	3	1.83	27.0	Lt. Shoulder, & Calcs.
10+00.00	11+00.00	100	3	1.83	6.8	Lt. Shoulder
6+50.00	10+89.20	439.30	2.58	1.58	25.7	Rt. Shoulder, & Calcs.
10+89.20	12+05.63	116.43	2.58	1.58	6.8	Rt. Shoulder
11+00.00	11+75.00	75.00	3	1.83	5.1	Lt. Shoulder
Ramp I						
0+79.68	3+11.46	225.41	3	1.83	15.3	Lt. Shoulder, & Calcs.
3+11.46	3+75	63.54	3	1.83 to 1.77	4.2	Lt. Shoulder
3+75	4+45.28	70.28	2.58	1.58 to 1.59	4.1	Rt. Shoulder
4+45.28	7+75	329.61	2.58	1.59	19.4	Rt. Shoulder, & Calcs.
5+54.12	6+54.12	100.43	3 to 2	1.42	5.3	Lt. Shoulder, & Calcs.
6+54.12	7+54.12	100	1.17	0.58	2.1	Lt. Side
Ramp 14-M						
15+77.25	23+82.93	805.41	2.58	1.59	47.4	Rt. Shoulder, & Calcs.
23+82.93	29+13.17	529.94	2.58	1.59	31.2	Rt. Shoulder, & Calcs.
29+13.17	29+48.16	34.99	2.58	1.59	2.1	Rt. Shoulder,
Ramp D						
0+00.00	3+75.89	375.55	2.58	1.59	22.1	Rt. Shoulder, & Calcs.
3+75.89	4+75.89	100	2.58	1.59 to 1.93	6.5	Rt. Shoulder
4+75.89	5+75.89	99	3	1.95	7.2	Rt. Shoulder, & Meas.
5+75.89	8+61.28	282.94	3	1.95	20.4	Rt. Shoulder, & Calcs.
8+61.28	9+70.81	108.22	3	1.95	7.8	Rt. Shoulder, & Calcs.
9+70.81	10+50.00	79.19	3	1.95 to 1.83	5.5	Rt. Shoulder
10+50.00	12+04.33	154.33	3	1.83	10.5	Rt. Shoulder
Ramp O						
1+40	3+14.23	174.33	2.58	1.59 to 1.58	10.2	Rt. Shoulder
2+50	3+14.23	64.23	3	1.78 to 1.95	4.4	Lt. Shoulder
3+14.23	5+59.27	246.25	2.58	1.58	14.4	Rt. Shoulder, & Calcs.
3+14.23	4+25	103.33	3	1.95	7.5	Lt. Shoulder, & Calcs.
5+59.27	7+42.41	183.14	2.58	1.58 to 1.63	10.9	Rt. Shoulder
7+42.41	11+41.52	398.03	2.58	1.63	24.0	Rt. Shoulder, & Calcs.
11+41.52	12+41.52	99.92	2.58	1.63 to 1.59	6.0	Rt. Shoulder, & Calcs.
12+41.52	14+80.33	238.70	2.58	1.59	14.1	Rt. Shoulder, & Calcs.
Total =					908.1#	

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE EPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. EM DATE 3-9-65 KANSAS CITY CLEVELAND NEW YORK

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

21/241

CUYAHOGA COUNTY
CUY. 71-17.18

ITEM. I-23 CONCRETE TRAFFIC DIVIDERS

Station From	Station To	Traffic Dividers Each	Remarks
Relocated West 25th Street			
9+48.00	10+20.20	7	
21+45.00	22+16.00	7	
Total =		14	

ITEM T-71 8" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

Station From	Station To	Length Feet	Width Feet	Area Sq. Yds.	Remarks
Library Avenue Turnaround					
3+60 ℄ Library		32	20	71.1	
3+60 ℄ Library			Varies	4.8	Southeast Radius
3+60 ℄ Library			Varies	4.8	Southwest Radius
West 25th Street					
At 8+88		9	Varies	27.4	Commercial Drive
At 11+09		3	23	9.3	Commercial Drive
Riverside Cemetery Entrance - South Lane					
11+27.74W.24	0+64.64		Varies	6.7	Southeast Radius
11+20.54W.25	1+08.03		Varies	61.5	Northeast Radius
0+54	1+85.59	131.59	28.5	416.7	
1+85.59	2+26.36	38.18	14.5	61.5	℄ Calcs.
2+26.36	2+92.00	65.64	23.0	167.7	℄ Calcs.
Riverside Cemetery Entrance - North Lane					
0+00.00	1+90.38		Varies	401.2	Planimeter
Total =				1,232.7	

ITEM T-71 10" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

Station From	Station To	Length Feet	Width Feet	Area Sq. Yds.	Remarks
Southbound Medina					
879+48.88	887+53.56	804.68	36	3,218.7	
887+53.56	900+03.56	1,241.68	36	4,966.7	℄ Calcs.
900+03.56	908+00.02	791.46	36	3,165.8	℄ Calcs.
908+00.02	909+00.02	99.20	46	507.0	℄ Calcs.
909+00.02	910+65.79	164.2	36	656.8	℄ Calcs.
910+65.79	913+50.00	281.53	36	1,126.1	℄ Calcs.
Northbound Medina					
879+48.88	887+53.56	804.68	36	3,218.7	
887+53.56	900+03.56	1,258.32	36	5,033.3	℄ Calcs.
899+23.96	907+33.18	812.94	36	3,251.8	℄ Calcs.
907+33.18	910+45.18	313.43	36	1,253.7	Left Lanes, ℄ Calcs.
910+45.18	913+00.00	258.02	36	1,032.1	Left Lanes, ℄ Calcs.
907+33.18	910+45.18	315.69	Varies	719.0	Acceleration Lane
910+45.18	913+00.00	263.74	Varies	415.2	Acceleration Lane
Lane J					
1+02	1+52		Varies	78.5	
1+52	2+97.15	145.83	12	194.4	Right Lanes, ℄ Calcs.
2+97.15	5+39.56	242.79	12	323.7	Right Lanes, ℄ Calcs.
1+52	5+39.56		Varies	356.5	Taper
Total =				29,518.0	

ITEM T-71 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

Station From	Station To	Length Feet	Width Feet	Area Sq. Yds.	Remarks
Lane H					
0+00.00	3+90.56	390.56	24	1,041.5	
3+90.56	10+35.31	645.42	12	860.6	℄ Calcs.
5+46	9+35.31		Varies	496.5	Taper
9+35.31	10+35.31	100	13 to 11	133.3	Widening
10+35.31	14+53.45	418.72	16	744.4	℄ Calcs.
14+53.45	17+68.86	316.04	16	561.8	℄ Calcs.
17+68.86	23+23.66	556.35	16	989.1	℄ Calcs.
23+23.66	24+09.81	86.27	16	153.4	℄ Calcs.
24+09.81	27+49	339.66	8	301.9	℄ Calcs.
27+49	29+08.71	159.93	18 to 14	295.4	Includes Widening
Lane J					
5+39.56	6+39.56	100.22	18 to 16	189.3	℄ Calcs.
6+39.56	8+44.84	205.71	16	365.7	℄ Calcs.
8+44.84	9+60.09	114.93	16	204.3	℄ Calcs.
9+60.09	16+90.83	729.21	12	972.3	℄ Calcs.
16+90.83	18+69.18	178.07	12	237.4	℄ Calcs.
18+69.18	19+69.18	99.69	25 to 23	265.8	℄ Calcs.
19+69.18	26+31.81	661.24	16	1,175.5	℄ Calcs.
26+31.81	27+18.42	86.61	16	154.0	
27+18.42	29+58.20	239.78	12	319.7	
29+58.20	34+41.42	483.22	24	1,288.6	
Ramp 14-M					
15+77.25	22+25.96	650.07	16	1,155.7	℄ Calcs.
22+25.96	24+25.96	200.42	16 to 14	334.0	℄ Calcs.
24+25.96	29+13.17	490.82	22 to 12	927.1	℄ Calcs.
29+13.17	29+48.16	34.99	12	46.6	
Ramp D					
0+00.00	3+75.89	377.46	12	503.3	℄ Calcs.
0+68	3+75.89		Varies	348.0	Taper
3+75.89	5+75.89	207	18	414.0	℄ Meas.
5+75.89	10+14.62	458.79	18	917.6	℄ Calcs.
8+61.28	10+14.62		Vaires	130.7	Right Side, Planimeter
10+14.62	12+62	247.38	36	989.5	
12+04.33	12+59		Varies	42.2	Southwest Radius + Flare, Planimeter
Ramp O					
0+60	0+70	10.50	10	10.2	Left Widening
20+44.09 W. 25	1+21.00		Varies	40.0	Northwest Radius and Flare
0+61	3+14.23	253.23	16	450.2	
3+14.23	5+59.27	237.51	16	422.2	℄ Calcs.
5+59.27	7+42.41	183.14	16	325.6	
7+42.41	10+41.52	304.12	16	540.6	℄ Calcs.
10+41.52	11+41.52	101.57	16 to 14	169.3	℄ Calcs.
11+41.52	12+41.52	100.52	16 to 14	167.5	℄ Calcs.
12+41.52	14+80.33	240.06	12	320.1	
12+41.52	14+80.33		Varies	93.3	Taper
Ramp G					
0+00.00	1+55		Varies	17.2	Taper
0+00.00	5+46.49	546.49	12	728.6	
5+46.49	6+50.00	103.51	18 to 16	195.5	
6+50.00	10+00.00	349.51	16	621.4	℄ Calcs.
10+00.00	11+00.00	100.00	16 to 24	222.2	
11+00.00	12+87	187	24	498.7	
12+05.63	11+94.98W.25		Varies	92.5	Southwest Radius and Flare
12+72.19	12+87.43W.25		Varies	4.0	Northwest Radius and Flare
Ramp I					
0+52	1+13.37		Varies	149.6	Planimeter
1+13.37	3+11.46	195.60	16	347.7	℄ Calcs.
3+11.46	4+45.28	133.82	16	237.9	
4+45.28	5+54.12	109.07	16	193.9	℄ Calcs.
5+54.12	7+54.12	200.39	16 to 14	334.0	℄ Calcs.
7+54.12	10+95	340.76	8	302.9	℄ Calcs.
7+54.12	10+95		Varies	287.0	Taper
Scranton Road					
7+25	8+00		Varies	250.0	

ITEM T-71 9" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT

Station From	Station To	Length Feet	Width Feet	Area Sq. Yds.	Remarks
Riverside Avenue					
9+68.70	10+20.20 ℄ W. 25		Varies	1.5	Southwest Radius
9+67.66	10+63.05 ℄ W. 25		Varies	1.9	Northwest Radius
9+50	9+78	28	26	80.9	
West 25th Street					
8+60.00	9+80.00	120.00	46 to 68	760.0	
9+80.00	11+72.00	192.00	68 to 84	1,512.6	Deduct Median
11+72.00	13+01.30	129.30	84 Max.	1,038.0	Deduct Median
17+03.70	18+85.73	182.00	72	1,375.1	Deduct Median
18+85.73	20+04.23	118.50	84 Max.	1,056.4	Deduct Median
20+04.23	23+04.23	300.00	84 to 58	2,266.2	Deduct Median
23+04.23	0+61.98Daisy		Varies	60.7	Planimeter
Total =				31,734.6	

ITEM T-31 BITUMINOUS SURFACE TREATMENT

Area from B-21 Calcs. Sq. Yds.	Bit. Mat. @ .025 Gal./Sq.Yd. Gal.	No. 6 Agg. @ 0.008 Cu. Yd./Sq. Yd. Cu. Yds.
852.0 Cu. Yd. @ 3" = 10,224.0		
1,754.5 Cu. Yd. @ 6" = 10,527.0	20,751 x 0.25 = 5,188	20,751 x 0.008 = 166.0
Total = 20,751.0		

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RFR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. TM DATE 3-9-65 KANSAS CITY CLEVELAND NEW YORK

QUANTITY CALCULATIONS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

22/241

CUYAHOGA COUNTY
CUY. 71-17.18

ITEM L-9 SEEDING AND PROTECTING

Description of Area	Station From	Station To	Area Sq. Yds.
Southbound Medina	879+48.88	887+53.56	6,010
Northbound Medina	879+48.88	887+53.56	5,260
Southbound Medina	887+53.56	900+03.56	30,250
Northbound Medina	887+53.56	900+03.56	14,740
Southbound Medina	900+03.56	907+00	7,000
Northbound Medina and median	899+23.96	907+00	7,700
Southbound Medina	907+00	913+50.00	6,200
Northbound Medina and median	907+00	913+00.00	7,200
Riverside Cemetery Entrance			2,810
			87,170
Subtract vine planted areas.			16,745
Total =			70,425

Sheet 44 74
Total 70,499

ITEM L-9 AGRICULTURAL LIMING MATERIAL

L-9 Seeding and Protecting + L-10 Sodding = 71,992 Sq. Yds.

Tons of Lime = 9 x 71,992 x 100 ÷ (1000 x 2000) = 32.40 Tons

ITEM L-9 COMMERCIAL FERTILIZER

L-9 Seeding and Protecting + L-10 Sodding = 71,992 Sq.Yds.

Tons of Commercial Fertilizer = 9 x 71,992 x 20 ÷ (1000 x 2000) = 6.48 Tons

ITEM L-6 ROADSIDE CLEAN-UP

Location	Calculation
Area bounded by Loop Ramp O	58,800 Sq. Ft. ÷ 1,000 = 59 units

ITEM E-I COMPACTED SUBGRADE

Source	Calculations	Area Sq. Yds.
T-71 Pavement Calcs.	29,518.0 + 31,734.6 + 1,232.7 =	62,485.3
I-7 Approach Slab Calcs.		455.6
I-21 Median Calcs.		2,436.1
T-31 Surface Treatment Calcs.		20,751.0
I-11 Sandstone Curb Calcs.	2,405.5 x 0.5 ÷ 9 =	133.6
I-12 Type 6 Curb Calcs.	14,846.5 x 0.5 ÷ 9 =	824.8
I-12 Type 7 Curb Calcs.	695.1 x 0.67 ÷ 9 =	51.7
I-12 Type 8 Curb Calcs.	1,112.7 ÷ 9 =	123.6
	Total =	87,261.7 Cu. Yds.

7,262 ÷ 2000 = 3.6 - Use 4 Hrs. S.S.C.E. 101.04

ITEM I-8 STANDARD MONUMENT ASSEMBLIES

Location	Station	Each	Remarks
℄ Existing W. 25th St.	11+72.00	1	
℄ Existing W. 25th St.	19+91.48	1	
℄ Scranton Road	8+00.00	1	
℄ Library Avenue	3+60.00	1	
Total		4	

ITEM E-II WATER

E-1	Embankment + 18	251,098.0
I-22	Subbase Grading "A" or "B"	10,670.5 Cu.Yds.
I-22	Subbase Regular Grading	3,517.9 Cu.Yds.
B-19	Aggregate Base Course	2,899.8 Cu.Yds.
	Total =	268,186.2

Water = 268,186.2 Cu.Yd. x 5 Gal./Cu.Yd. ÷ 1000 = 1,340.9 M. Gal.

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RPR DATE 2-9-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD. ZM DATE 3-4-65

GENERAL SUMMARY

TYPE CODE 7221*

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

SHEET NUMBER

Normal Partic. (44) — 95% State 5% City (44)

6	14	15	16	18	19	22		44	44	60	99	100	102	103	104	185	191	221	222	224	TOTAL QUANT.	UNIT	ITEM	* TYPE CODE Y005 DESCRIPTION
																								ROADWAY (TYPE CODE 7221)
26,000										537,436											563,436	Cu. Yds.	E-1	Roadway Excavation, Method "B", as per plan
						87,262		496													87,758	Sq. Yds.	E-1	Compacted Subgrade
		21,162						22													21,184	Sq. Yds.	E-8	Removal and Disposal of Existing Pavement
			50,960					3025													53,985	Sq. Ft.	E-8	Removal and Disposal of Existing Sidewalk
			8,058					535													8,593	Lin. Ft.	E-8	Removal and Disposal of Existing Curb
		1,087						55													1,142	Sq. Yds.	E-8	Removal and Disposal of Existing Concrete Driveways and Aprons
	Lump																				Lump	Lump	E-9	Removal of Trees and Stumps
							616	~~1,086~~	470												1,086	Sq. Yds.	E-8	Removal and Disposal of Existing Wearing Surface
			2406																		2,406	Lin. Ft.	E-8	Removal for Re-Use of Existing Sandstone Curb
						1,341															1,341	M. Gal.	E-11	Water
												823	174								997	Lin. Ft.	E-12	Pipe Removed, 15" and under
												598	1,518								2,116	Lin. Ft.	E-12	Pipe Removed, over 15"
	2																				2	Tons	I-4	Calcium Chloride for Dust Control
	100																				100	M. Gal.	I-4	Water for Dust Control
																			4		4	Each	I-8	Baseline Reference Monuments, as per plan
						4													5		9	Each	I-8	Standard Monument Assemblies
				13,561				1940													15,501	Sq. ft	I-13	4½" Concrete Sidewalks
					1,900																1,900	Lin. Ft.	I-15	Guard Rail, Steel Beam Barrier Type (Deep), as per plan
					5600																5,600	Lin. Ft.	I-15	Guard Rail, Steel Beam Standard Type (Deep)
																				5821	5821	Lin. Ft.	I-26	Chain Link Fence
																				3	3	Each	I-26	14' Chain Link Gates
						4															4	Hours	S.S. CE 101.04	Compaction Using Heavy Pneumatic Tired Roller
						59															* 59	Units	L-6	Roadside Cleanup
						70,425		74													* 70,499	Sq. Yds.	L-9	Seeding and Protecting, as per plan
						6.48															* 6.48	Tons	L-9	Commercial Fertilizer (12-12-12)
						32.40															* 32.40	Tons	L-9	Agricultural Liming Material
													728	508	257						* 1,493	Sq. Yds.	L-10	Sodding
											875										* 875	Sq. Yds.	L-120	Jute Matting
																		Lump			Lump	Lump	S-15	Temporary Run-Around Road, using Class "A" Pavement, as per plan
	100																				100	Cu. Yds.	T-10	Traffic Compacted Surface Course for Maintaining Traffic
	100																				100	Cu. Yds.	T-35	Asphaltic Concrete Surface Course, or on approved Bituminous Premixed Surface Course for Maintaining Traffic
																				1,035	1,035	Lin. Ft.	Special	Remove and Reset Ornamental Iron Fence
																30					* 30	Acres	Special	Mowing Seeded and Sodded Areas
	5																				5	Cu. Yds.	I-2	Masonry
	50																				50	Lin. Ft.	I-1	2" Pipe, Sec. M-6.9 Standard Wt. Galvanized with Type 4 Backfill, as per plan

SCALE ——
MADE DRK DATE 3-25-65
TRCD. ____ DATE ____
CKD. ____ DATE ____

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

Rev. 10-26-65 C.E.H.

GENERAL SUMMARY

TYPE CODE Y003

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

24
241

CUYAHOGA COUNTY
CUY.-71-17.18

LANDSCAPING PLAN SHEET NUMBER					R/W	Symbol	TOTAL QUANT.	SIZE	B&B SCHED.	PLAN SYMBOL	UNIT	ITEM	DESCRIPTION	
186	187	188	189										BOTANICAL NAME	COMMON NAME
													LARGE TREES	
7						x	7	2"-2 1/2"	24"	A-PL	Each	L-14	Acer Platanoides	Norway Maple
8	25	4				x	37	2"-2 1/2"	24"	A-R	Each	L-14	Acer Rubrum	Red Maple
	2	1	3			x	6	2"-2 1/2"	24"	F-PN	Each	L-14	Fraxinus Pennsylvanica Lanceolata	Green Ash
	2					x	2	1 3/4"- 2"	22"	G-B	Each	L-14	Ginkgo Biloba	Ginkgo
7	4	4				x	15	2"-2 1/2"	24"	G-T	Each	L-14	Gleditsia triacanthos	Common Honeylocust
	2	3	1			x	6	2"-2 1/2"	24"	PH-A	Each	L-14	Phellodendron Amurense	Amur Cork Tree
3	3	5	11			x	22	2"-2 1/2"	24"	PL-A	Each	L-14	Platanus Acerifolia	London Plane Tree
		3	1				4	6'-8'	18"	P-AL	Each	L-14	Populus Alba	White Poplar
			4				4	6'-8'	18"	P-EU	Each	L-14	Populus Canadensis Eugenei	Carolina Poplar
6	16	4				x	26	1 1/2"-1 3/4"	22"	Q-B	Each	L-14	Quercus Borealis	Northern Red Oak
	1						1	6'-8'	18"	S-A	Each	L-14	Salix Alba	White Willow
	1	6	2				9	6'-8'	18"	S-E	Each	L-14	Salix Elegantissima	Thurlow Weeping Willow
	8	2	1			x	11	1 1/2"-1 3/4"	22"	Q-P	Each	L-14	Quercus Palustris	Pin Oak
6	14	1				x	21	2"-2 1/2"	24"	T-C	Each	L-14	Tilia Cordata	Littleleaf Linden
	6	2				x	8	1 3/4"-2"	22"	T-E	Each	L-14	Tilia Euchlora	Crimean Linden
17	8	8											**SMALL TREES AND LARGE SHRUBS**	
1	8	1	8				33	5'-6'	16"	C-MA	Each	L-14	Cornus Mas	Cornelian Cherry Dogwood
37	17	8	3				18	6'-7'	18"	CR-C	Each	L-14	Crataegus Crusgalli	Cockspur Hawthorn
34	10	7	1				65	6'-7'	18"	CR-L	Each	L-14	Crataegus Lavallei	Lavalle Hawthorn
5	2	6					52	6'-7'	18"	CR-P	Each	L-14	Crataegus Phaenopyrum	Washington Hawthorn
4	8		5				13	5'-6'	16"	E-A	Each	L-14	Elaeagnus Angustifolia	Russian Olive
16	17		2				17	6'-7'	18"	M-A	Each	L-14	Malus Atrosanguinea	Carmine Crab Apple
3	2	3	3				35	6'-7'	18"	M-BJ	Each	L-14	Malus Baccata 'Jackii'	Jack Crab Apple
3	6	3					11	6'-7'	18"	M-D	Each	L-14	Malus 'Dorothea'	Dorothea Crab Apple
	3	5					12	6'-7'	18"	M-F	Each	L-14	Malus Floribunda	Japanese Flowering Crab Apple
3	6	4	1				8	6'-7'	18"	M-PG	Each	L-14	Malus 'Prince Georges'	Prince Georges Crab Apple
			1				14	6'-7'	18"	M-PL	Each	L-14	Malus Purpurea Lemoinei	Lemoine Purple Crab Apple
12	8						1	6'-7'	18"	M-PA	Each	L-14	Malus Purpurea Aldenhamensis	Aldenham Purple Crab Apple
							20	6'-7'	18"	A-G	Each	L-14	Acer ginnala	Amur Maple
									SPACING				**SHRUBS**	
				116			116	3'-4'	6' O.C.	C-R	Each	L-13	Cornus Racemosa	Gray Dogwood
15	42	490					547	3'-4'	6' O.C.	C-ST	Each	L-13	Cornus Stolonifera	Red Osier Dogwood
21		971					992	2'-3'	4' O.C.	R-MU	Each	L-13	Rosa Multiflora	Japanese Rose
		1033					1033	2'-3'	4' O.C.	R-VA	Each	L-13	Rosa Virginiana	Virginia Rose
													VINES	
	515	1340	596				2451	12"-15"	3' O.C.	F-AD	Each	L-12	Forsythia 'Arnold Dwarf'	Arnold Dwarf Forsythia
450		3233	307				3,990	2-3'Sprd	3' O.C.	LY-C	Each	L-12	Lycium Halimifolium	Matrimony Vine
360	2206	3477	457				6,500	2yr. No.1.	3' O.C.	L-JH	Each	L-12	Lonicera Japonica Halliana	Halls Japanese Honeysuckle
3295	3970	648					7,913	2yr. No.1.	2' O.C.	PO-RE	Each	L-12	Polygonum Reynoutria	Dwarf Polygonum
			645				645	15"-18"	4' O.C.	S-PN	Each	L-12	Salix Purpurea Nana	Dwarf Purple Osier Willow
									TYPE	CODE	7221		REMOVAL OF BUILDINGS	
						Lump	Lump				Lump	E-10	Parcel No. 3001 BWL- Removal of one 2½ story frame residence, one frame garage, one 1story brick building.	
						Lump	Lump				Lump	E-10	Parcel No. 3002 WL- Removal of one frame office building, one metal service station, one metal car wash, three frame storage buildings, one metal storage building	
						Lump	Lump				Lump	E-10	Parcel No. 3004 WL- Removal of one 2½ story frame residence.	
						Lump	Lump				Lump	E-10	Parcel No. 3013 WL- Removal of one 2½ story frame residence.	
						Lump	Lump				Lump	E-10	Parcel No. 3022 WL- Removal of one block garage	
													REMOVAL OF BUILDINGS continued on Sheet 27	

Note:
Plants indicated by an "X" shall be wrapped in accordance with the specifications. All other plants need not be wrapped.

SCALE _____ **HOWARD, NEEDLES, TAMMEN & BERGENDOFF**
MADE TPM DATE 2-18-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. IM DATE 2-18-65 KANSAS CITY CLEVELAND NEW YORK

GENERAL SUMMARY

FED. RD DIVISION	STATE	PROJECT	
2	OHIO		

25/241

TYPE CODE 7221*

CUYAHOGA COUNTY
CUY.-71-17.18

DRAINAGE PLAN SHEET NUMBERS								TOTAL QUANT.	UNIT	ITEM	* TYPE CODE Y005 DESCRIPTION
98	99	100	102	103	104	44					**DRAINAGE**
		58	196	134	30			418	Lin.Ft.	I-1	6" Pipe, Class F-4
		5616	10,016	4860	1032			21,524	Lin.Ft.	I-1	6" Pipe, Class I-3, as per plan.
			48					48	Lin.Ft.	I-1	6" Pipe, Class R-1
793						82		875	Lin.Ft.	I-1	12" Pipe, Class B-1
253								253	Lin.Ft.	I-1	12" Pipe, Class E-1
168								168	Lin.Ft.	I-1	12" Pipe, Class E-1 Sec. M-6.6(c)
1897								1897	Lin.Ft.	I-1	15" Pipe, Class B-1
228								228	Lin.Ft.	I-1	15" Pipe, Class B-1, Sec. M-6.6(b)
263								263	Lin.Ft.	I-1	15" Pipe, Class E-1
161								161	Lin.Ft.	I-1	18" Pipe, Class B-1
39								39	Lin.Ft.	I-1	21" Pipe, Class B-1
28								28	Lin.Ft.	I-1	21" Pipe, Class E-1
172								172	Lin.Ft.	I-1	54" Pipe, Class B-1, Sec. M-6.6(c)
1508								1508	Lin.Ft.	I-1	54" Pipe, Class B-1, Sec. M-6.6(d)
214								214	Lin.Ft.	I-1	60" Pipe, Class B-1, Sec. M-6.6(b)
156								156	Lin.Ft.	I-1	72" Pipe, Class B-1, Sec. M-6.6(b)
297								297	Lin.Ft.	I-1	72" Pipe, Class B-1, Sec. M-6.6(c)
545								545	Lin.Ft.	I-1	84" Pipe, Class B-1.
944								944	Lin.Ft.	I-1	84" Pipe, Class B-1, Sec. M-6.6(b)
		3	21	12	2			38	Each	I-5	6" Pipe Special, Class I-3
2								2	Each	I-8	Standard No. 2-2-A Catch Basin
2								2	Each	I-8	Standard No. 2-2-A Catch Basin, Modified as per plan
6								6	Each	I-8	Standard No. 3-A Catch Basin
23						5		28	Each	I-8	Standard No. 3-A Catch Basin (with trap), as per plan
6								6	Each	I-8	Standard No. 5 Catch Basin
6								6	Each	I-8	Standard No. 6 Catch Basin
1								1	Each	I-8	Standard No. 1 Side Ditch Inlet, Modified as per plan
9								9	Each	I-8	Standard No. 2-A-6 Paved Shoulder Inlet
1								1	Each	I-8	Standard No. 2-A-6 Paved Shoulder Inlet, Modified as per plan
2								2	Each	I-8	Standard No. 2-A-6 Paved Shoulder Inlet (with trap), as per plan
4								4	Each	I-8	Standard No. 2-A-8 Paved Shoulder Inlet
5								5	Each	I-8	Standard No. 2-A-8 Paved Shoulder Inlet, Modified as per plan
1								1	Each	I-8	Standard No. 2-A-10 Paved Shoulder Inlet
1								1	Each	I-8	Standard No. 2-A-12 Paved Shoulder Inlet
1								1	Each	I-8	Standard No. 2-A-14 Paved Shoulder Inlet
1								1	Each	I-8	Standard No. 2-A-14 Paved Shoulder Inlet, Modified as per plan
2								2	Each	I-8	Standard No. 2-A-16 Paved Shoulder Inlet
1								1	Each	I-8	Standard No. 2-A-20 Paved Shoulder Inlet
3						1		4	Each	I-8	Standard No. 1 Manhole (without drop pipe), as per plan
1								1	Each	I-8	Standard No. 1-A Manhole, Modified as per plan
8								8	Each	I-8	Standard No. 2 Manhole (without drop pipe), as per plan
2								2	Each	I-8	Standard No. 2 Manhole (with drop pipe), as per plan
2								2	Each	I-8	Standard No. 2 Manhole (without drop pipe), Modified as per plan
2								2	Each	I-8	Standard No. 2 Manhole (with drop pipe), Modified as per plan
			4					4	Each	I-8	Manhole Adjusted to Grade, as per plan
				635	350			*985	Lin.Ft.	I-14	Paved Gutter, Standard Type 1, Modified as per plan
		4	9			5		18	Each	I-16	Catch Basins Abandoned
		4	5					9	Each	I-16	Manholes Abandoned
		1						1	Each	I-16	Manhole Abandoned, Adjusted to Grade with Reinforced Concrete Slab, as per plan.

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.D.J. DATE 2-18-65 CONSULTING ENGINEERS
TRCD _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD. R.J.T. DATE 2-18-65

GENERAL SUMMARY

Normal partici. 95% State 5% City

PLAN SHEET NUMBER 6	13	17	18	19	20	21		44	44	DRAINAGE PLAN SHEET NUMBER 100	102	103	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
																SANITARY SEWERS (TYPE CODE YO60)
										90	200		290	Lin.Ft.	I-1	6" Pipe, Class B-1, Sec. M-6.8(b) with compression joints
											10		10	Lin.Ft.	I-1	8" Pipe, Class B-1, Sec. M-6.8(b) with compression joints
										233	10		243	Lin.Ft.	I-1	12" Pipe, Class B-1, Sec. M-6.8(b) with compression joints
											543		543	Lin.Ft.	I-1	21" Pipe, Class B-1, Sec. M-6.8(b) with compression joints
											631		631	Lin.Ft.	I-1	21" Pipe, Class B-4, Sec. M-6.8(a) with compression joints, encasement as per plan
											414		414	Lin.Ft.	I-1	27" Pipe, Class E-1, Sec. M-6.8(b) with compression joints
											440		440	Lin.Ft.	I-1	30" Pipe, Class B-1, Sec. M-6.8(b) with compression joints
										4			4	Each	I-5	12" Pipe Special, Class B-1, Sec. M-6.8(b) with compression joints
											2		2	Each	I-5	30" Pipe Special, Class B-1, Sec. M-6.8(b) with compression joints
										2	10	1	13	Each	I-8	Standard No. 1 Manhole, Modified as per plan
										1	5		6	Each	I-8	Standard No. 2 Manhole (without drop pipe) Modified as per plan
											1		1	Each	I-8	Separation Chamber, as per plan
																PAVEMENT (TYPE CODE 7221)
		2,900											2,900	Cu.Yds.	B-19	Aggregate Base Course
		2,606											2,606	Cu.Yds.	B-21	Waterproofed Aggregate Base Course, As Per Plan
								12					12	Cu.Yds.	B-35	Asphaltic Concrete Leveling Course (70-85)
								20					20	Cu.Yds.	B-35	Asphaltic Concrete Base Course (70-85)
								496					496	Sq.Yds.	B-71	9" Reinforced Portland Cement Concrete Base Course
			456										456	Sq.Yds.	I-7	Reinforced Concrete Approach Slabs (T = 13")
			2,406										2,406	Lin.Ft.	I-11	Sandstone Curb, Reset
			666										666	Lin.Ft.	I-12	Standard Type 2-A Curb
								471					471	Lin.Ft.	I-12	Standard Type 2-B Curb
			14,846										14,846	Lin.Ft.	I-12	Standard Type 6 Curb
			695										695	Lin.Ft.	I-12	Standard Type 7 Curb
			1,123										1,123	Lin.Ft.	I-12	Standard Type 8 Curb
	500												500	Lin.Ft.	I-11	Sandstone Curb
				2,436									2,436	Sq.Yds.	I-21	Std. Portland Cement Concrete Median Pavement, as per plan
						14							14	Each	I-23	Std. Precast White Portland Cement Concrete Traffic Dividers
				10,670									10,670	Cu.Yds.	I-22	Subbase, Grading "A" or "B", as per plan
26,000					3,518			41					29,559	Cu.Yds.	I-22	Subbase,
							210 →	~~257~~	47				257	Gallon	T-30	Bituminous Tack Coat, Sec. M-5.5, MS-2 or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per Section T-30.02
						5,188							5,188	Gallon	T-31	Bituminous Surface Treatment - Bituminous Material, as per plan
						166							166	Cu.Yds.	T-31	Bituminous Surface Treatment - No. 6 Aggregate
							45 →	~~65~~	20				65	Cu.Yds.	T-35	Asphaltic Concrete Surface Course, Type "C" (70-85)
								48					48	Sq.Yds.	T-70	7" Portland Cement Concrete Pavement
						1,233							1,233	Sq.Yds.	T-71	8" Reinforced Portland Cement Concrete Pavement
						31,735							31,735	Sq.Yds.	T-71	9" Reinforced Portland Cement Concrete Pavement
						29,518							29,518	Sq.Yds.	T-71	10" Reinforced Portland Cement Concrete Pavement
					908								908	Cu.Yds.	Special	Drainage Connection using No. 6 Aggregate
													Lump	Lump	I-3	Maintaining Traffic
													Lump	Lump		Construction Layout Stakes
																TYPE CODE 7221
																For Quantities required for Signing, see Sheet 191 ✓
																For Quantities required for Lighting see Sheet 208 ✓
																For Quantities required for Traffic Signal Duct Work, see Sheet 203 ✓
																For Quantities required for Structure No. CUY-71-1752, see Sheet 125
																For Quantities required for Retaining Walls, see Sheet 155 —
																TYPE CODE YO60
																For Quantities required for Underground MELP Ducts, see Sheet 159

SCALE ______
MADE RDJ DATE 2-18-65
TRCD. ______ DATE ______
CKD. RJT DATE 2-18-65

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

Rev. 10-26-65 C.E.H.

WATERWORK SUMMARY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

27
241

TYPE CODE Y060

CUYAHOGA COUNTY
CUY.-71-17.18

SHEET NUMBER

172	173	174	175	177	178	180	181	182	R/W	TOTAL QUANT.	UNIT	ITEM	DESCRIPTION
10	10	6	47	16		12	5			106	Lin.Ft.	Special	6" Water Main A.S.A. Class 25 Cast Iron Pipe, Cement Lined and Fittings
	434	138	160							732	Lin.Ft.	Special	8" Water Main A.S.A. Class 25 Cast Iron Pipe, Cement Lined (Lead or Slip-on Joints) and Fittings
			250							250	Lin.Ft.	Special	8" Water Main A.S.A. Class 25 Ductile Iron Pipe and Cast Iron Fittings (Lead or Slip-on Joints)
434										434	Lin.Ft.	Special	12" Water Main A.S.A. Class 25 Ductile Iron Pipe and Cast Iron Fittings (Lead or Slip-on Joints)
		146	165							311	Lin.Ft.	Special	16" Water Main A.S.A. Class 25 Cast Iron Pipe, Cement Lined (Lead or Slip-on Joints)
			262							262	Lin.Ft.	Special	16" Water Main A.S.A. Class 25 Ductile Iron Pipe and Cast Iron Fittings (Lead or Slip-on Joints)
2	1		1	2		1	1			8	Each	Special	6" Valve
			1							1	Each	Special	6" x 6" x 6" Branch Sleeve and Valve
	1		1							2	Each	Special	8" Valve
		1								1	Each	Special	8" Inserting Valve
	1	1								2	Each	Special	8" x 8" x 8" Branch Sleeve and Valve
2										2	Each	Special	12" Valve
		1	1							2	Each	Special	16" Valve
		1								1	Each	Special	16" x 16" x 16" Branch Sleeve and Valve
2	1		1	2		1	1			8	Each	Special	Furnishing and Setting 6" Hydrants, as per plan
2			2		1					5	Each	Special	Hydrants and Valves and Valve Boxes Removed and disposed of.
		1								1	Each	Special	Fire Hydrant Relocated
	1						1			2	Each	Special	6" C.I. Plug, Complete with Clamps and Concrete Pier
		1	1							2	Each	Special	8" C.I. Plug, Complete with Clamps and Concrete Pier
	2	2	5			2	2	10		23	Each	Special	Service Connection Plugged at the Main
2	1		2							5	Each	Special	Retap and Reconnect Existing Service Connection
	1									1	Each	Special	3" Meter Relocated
	2		2			2	2	10		18	Each	Special	Remove Abandoned Existing Curb Cock and Valve Box
		7	1							8	Each	Special	Adjust Existing Valve Boxes to Grade
							1			1	Each	Special	Remove Abandoned Existing 6" Valve and Box
732	537	724	724	358		179	179			3433	Lbs.	Special	Miscellaneous Metal Work
1	1	2								4	Each	Special	Test Main

		TYPE	CODE	7221 REMOVAL OF BUILDINGS-Cont'd from Sh. 24
Lump	Lump	Lump	E-10	Parcel No 2240 WL-WA - Removal of two 1-story frame garages
Lump	Lump	Lump	E-10	Parcel No 2242 WL - Removal of one 2-car frame garage
Lump	Lump	Lump	E-10	Parcel No 2263 WL - Removal of one 1½ & 2-story frame residence
Lump	Lump	Lump	E-10	Parcel No 2328 WL - Removal of one 1-story brick church, one 1-story frame residence, one 1-story frame & brick residence, one 1-story frame garage
Lump	Lump	Lump	E-10	Parcel No 2382 WL - Removal of one 1-story concrete block commercial building, one 2-story frame residence
Lump	Lump	Lump	E-10	Parcel No 2395 WL - Removal of one 2-story frame residence, one 3-car frame garage
Lump	Lump	Lump	E-10	Parcel No 2402 WL - Removal of one 1-story frame & concrete block commercial building, one 1-story concrete block slaughter house
Lump	Lump	Lump	E-10	Parcel No 2411 WL - Removal of one brick & frame church
Lump	Lump	Lump	E-10	Parcel No 2935 WL-WA - Removal of one 2½ story frame residence
Lump	Lump	Lump	E-10	Parcel No 3130 WD-WA - Removal of one 2-story brick commercial & apartment building, one 1-story concrete block storage building, one 1-story brick garage

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RHA DATE 3-30-65 CONSULTING ENGINEERS
TRCD _____ DATE _____
CKD. ECE DATE 3-31-65 KANSAS CITY CLEVELAND NEW YORK

M-14

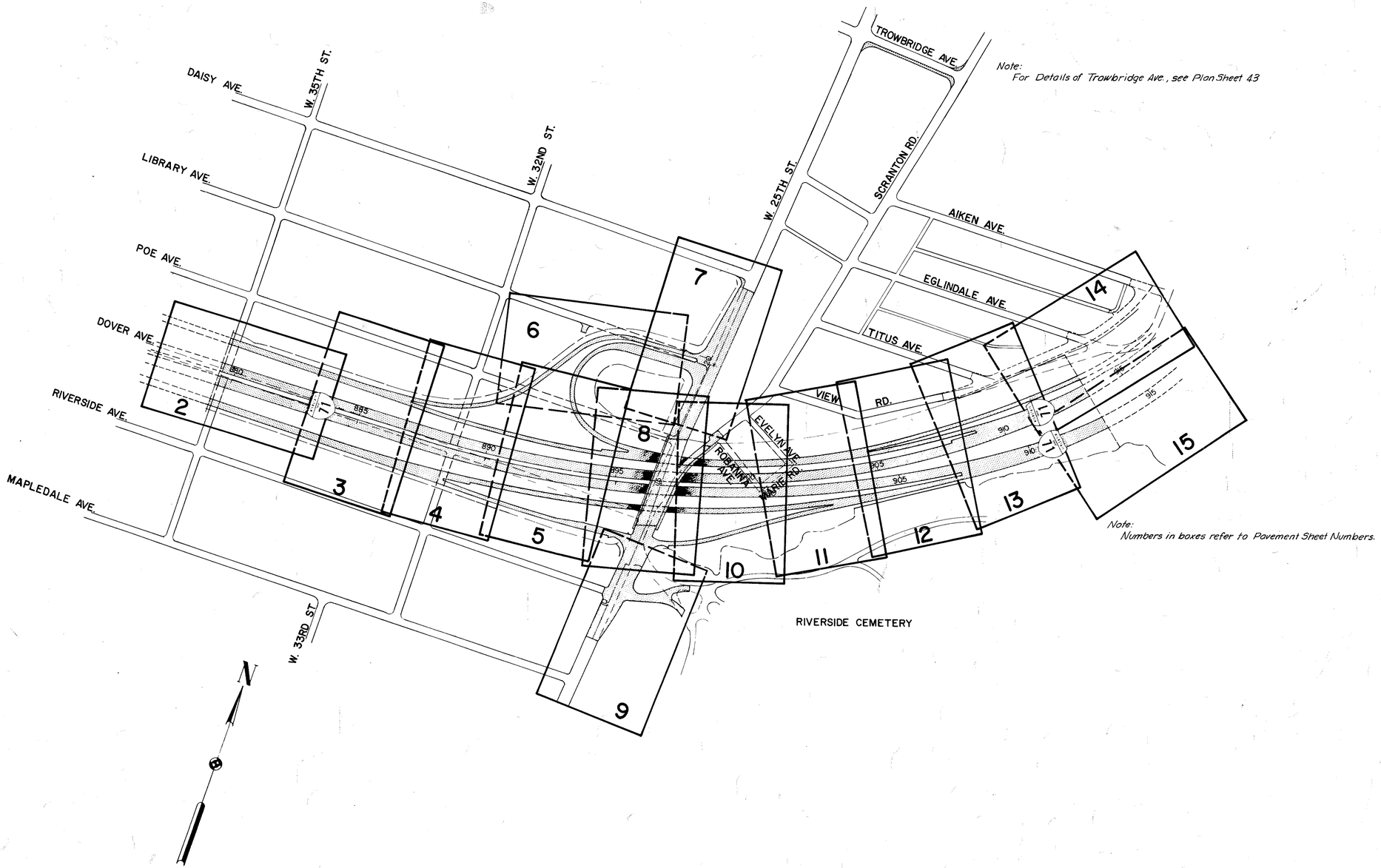
SCHEMATIC PAVEMENT PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

28/241

1/15

CUYAHOGA COUNTY
CUY-71-17.18



Note:
For Details of Trowbridge Ave., see Plan Sheet 43

Note:
Numbers in boxes refer to Pavement Sheet Numbers.

SCALE	1"=200'
MADE	DATE
TRCD	HLD DATE 8-20-69
CKD	DATE

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

29/241

2/15

CUYAHOGA COUNTY
CUY-71-17.18

MATCH LINE STA. 883+50 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 3

Drill Hole in Stone Mon. Sta. 6+21.29 ℄ W. 35 Street (℄ Pod Ave.)

25' Guard Rail Item I-15

Remove Exist. Pavement & Sidewalk to Sta. 4+68

Item I-15 Guard Rail Quantity is included with Sign Quantities

1on 8

7' Paved Shoulder

11' Shoulder

L A & R W

Construction Limits

1on 8

Std. Type 6 Curb

Sign No.1 Sta. 34+15 Lane J
For details see sheet 193

980 981 ℄ Line B

End Lane J, Sta. 34+41.42 = Sta. 982+45.26 ℄ Line B, Bk.

34 ℄ Lane J 33 S 88° 49' 55" W 32 31

12' 12'

P.T. Sta. 980+50.42 "B"

End Guard Rail Sta. 34+15 ℄ Lane J (Typ.)

Sta. 4+23.20 ℄ Exist. W. 35th St. = Sta. 34+16.42 ℄ Lane J

N

N 01° 21' 52" W ℄ Existing W. 35th St.

Begin Guard Rail Sta. 33+70 Lane J (Typ.)

10' Paved Shoulder

15' Shoulder

Varies 1 on 3 Max.

3' Paved Shoulder

7' Shoulder

Std. Type 6 Curb

BEGIN PROJECT
CUY.-71-17.18
STA. 879+48.88 AH =
STA. 982+16.03 BK.

SOUTHBOUND MEDINA

P.K. Nail Set. Sta. 3+13.20 ℄ Exist. W. 35th St. = Sta. 0+70.96 ℄ Exist. Dover Ave.

DOVER AVE.

980 ℄ Median Freeway 981 982 880 Concrete Median Pavement 881 ℄ ℄ Exist. Dover Ave. 882 883 ℄ ℄ Medina Freeway

5' Paved Shoulder

16' Median

12' 12' 12'

BEGIN WORK
CUY-71-17.18
STA. 981+50.00

℄ I-71 Sta. 879+73.88
℄ W. 35th Sta. 3+04.34

Barrier Type Guard Rail

N 87° 21' 16" E

Begin Grading Sta. 981+66.03

WEST 35th STREET

12' 12' 12'

5' Paved Shoulder

NORTHBOUND MEDINA

Sign No. 2 Sta. 881+00 N.B. Medina
For details see sheet 193

Std. Type 6 Curb

10' Paved Shoulder

15' Shoulder

Begin Guard Rail Sta. 880+63 ℄ Medina

3' Paved Shoulder

7' Shoulder

End Guard Rail Sta. 881+05 ℄ Medina

Item I-15 Guard Rail Quantity is included with Sign Quantities

P.C. Sta. 3+90.56 ℄ Lane H = Sta. 0+00.00 ℄ Ramp G 24.1 Lt.

Sta. 2+03.20 ℄ W. 35th St. = Sta. 0+25.00 ℄ Lane "H"

980 ℄ Line F 981

Begin Lane H, Sta. 0+00.00 = Sta. 981+87.18 ℄ Line F, Bk.

2 12' 12' N 88° 43' 55" E 2 ℄ Lane H 3 4

LANE H

Std. Type 6 Curb

0 ℄ Ramp G

Construction Limits

1on 4

L A & R W

1on 3

7' Paved Shoulder

11' Shoulder

Remove Exist. Pavement & Sidewalk to Sta. 1+58

25' Guard Rail, Item I-15

N 632,800 E 217,300

Drill Hole in Stone Mon. ℄ W. 35th Street Sta. 0+00.00 (℄ Riverside Ave.)

Note:
The contractor shall cooperate with the contractor on the adjoining construction section in providing for temporary drainage during construction. It will also be necessary to arrange with the adjoining contractor for the connection of the permanent drainage facilities.
The typical section on the adjoining construction section is the same as is shown on Sheet 6.

LEGEND

- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

CURVE DATA ℄ LANE "H"

P.I. = Sta. 9+23.53
Δ = 10° 37' 44"
D = 1° 00' 00"
R = 5,729.58'
L = 1,062.89'
T = 532.97'
E = 24.74'

SCALE	1" = 20'
MADE	RBH DATE 2-10-65
TRCD.	DATE
CKD.	DRK DATE 2-16-65

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

PAVEMENT PLAN 2

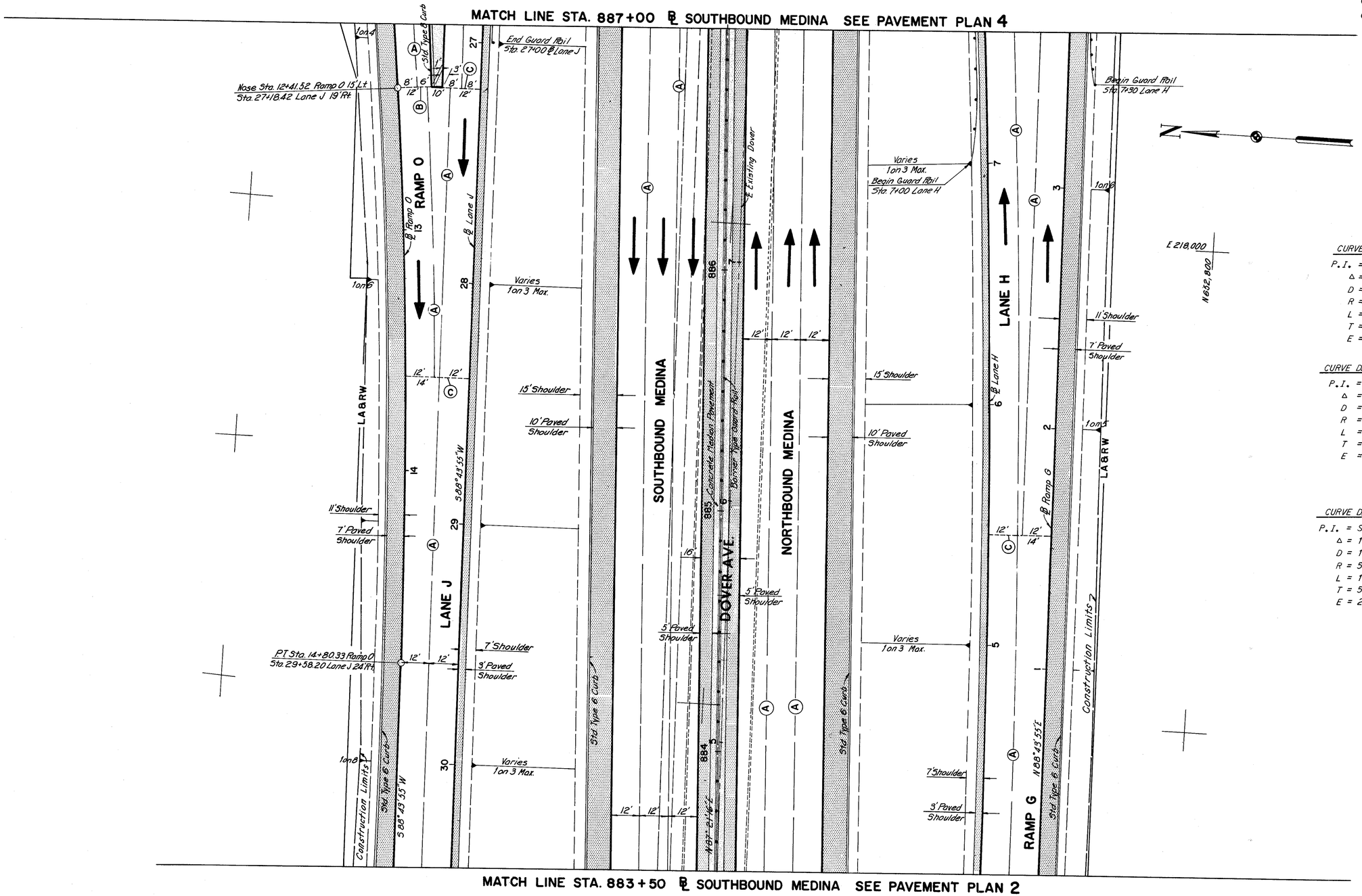
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

30/241

CUYAHOGA COUNTY
CUY- 71-17.18

3/15

MATCH LINE STA. 887+00 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 4



MATCH LINE STA. 883+50 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 2

CURVE DATA ℄ RAMP "O"

P.I. = Sta. 11+91.54
Δ = 4°00'00"
D = 4°00'00"
R = 1,432.39'
L = 100.00'
T = 50.02'
E = 0.87

CURVE DATA ℄ RAMP "O"

P.I. = Sta. 13+60.00
Δ = 4°46'34"
D = 2°00'00"
R = 2,864.79'
L = 238.81'
T = 119.47'
E = 2.49'

CURVE DATA ℄ LANE "H"

P.I. = Sta. 9+23.53
Δ = 10°37'44"
D = 1°00'00"
R = 5,729.58'
L = 1,062.89'
T = 532.97'
E = 24.74'

LEGEND

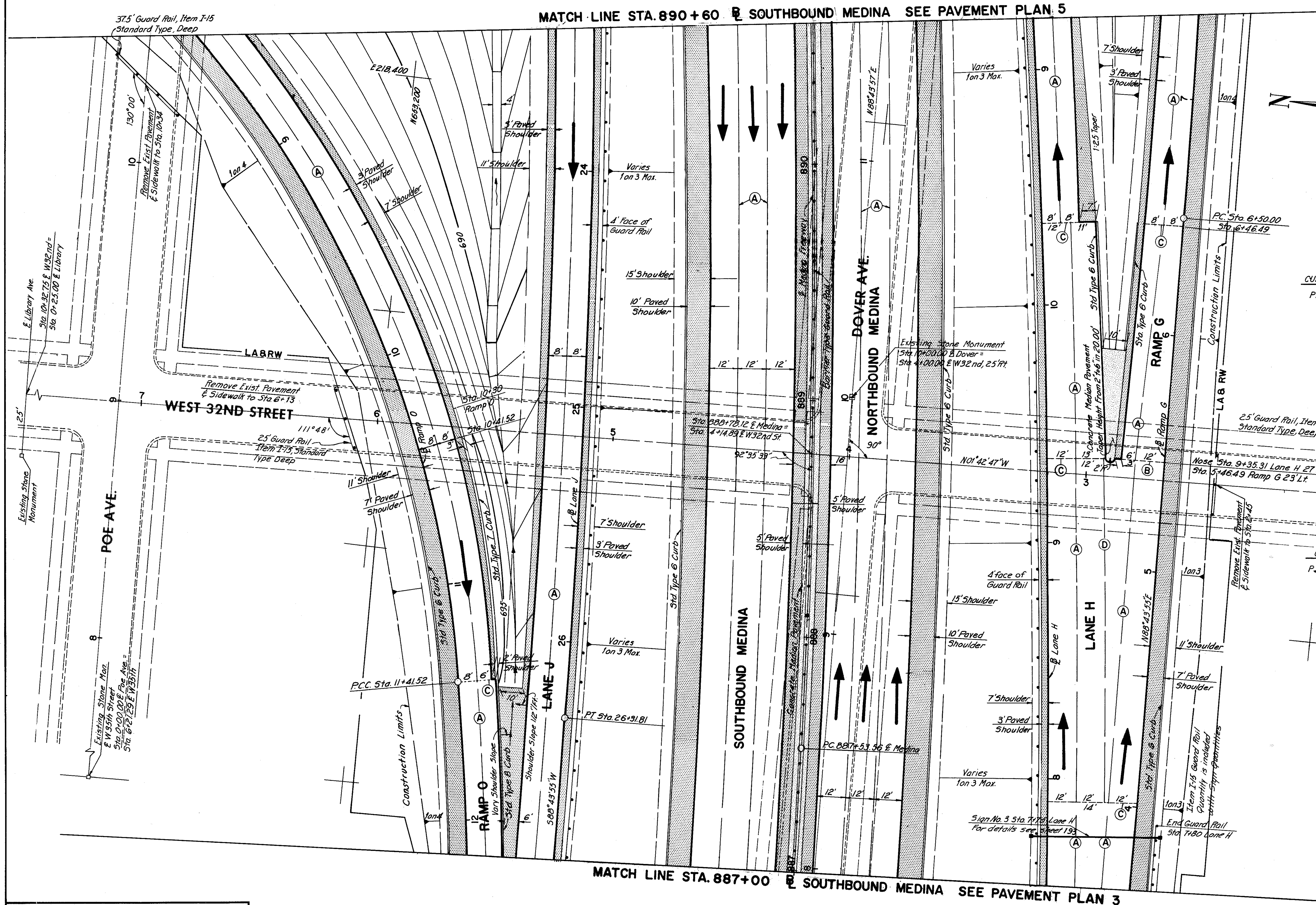
Ⓐ Standard Longitudinal Joint
Ⓑ Standard Expansion Joint
Ⓒ Standard Contraction Joint
Ⓓ Standard Key Joint Without Tie Bars
Ⓔ Expansion Joint Without Dowels

SCALE 1"=20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE
TRCD. DATE CONSULTING ENGINEERS
CKD. PMA DATE KANSAS CITY CLEVELAND NEW YORK

PAVEMENT PLAN 3

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18



CURVE DATA ℄ RAMP "O"
P.I. = Sta. 11+91.54
Δ = 4°00'00"
D = 4°00'00"
R = 1,432.39'
L = 100.00'
T = 50.02'
E = 0.87'

CURVE DATA ℄ RAMP "G"
P.I. = Sta. 8+70.90
Δ = 4°24'57"
D = 1°00'00"
R = 5,729.58'
T = 220.90'
L = 441.57'
E = 4.26'

CURVE DATA ℄ RAMP "O"
P.I. = Sta. 9+54.46
Δ = 47°53'38"
D = 12°00'00"
R = 477.46'
L = 399.12'
T = 212.05'
E = 44.97'

CURVE DATA ℄ LANE "J"
P.I. = Sta. 21+63.71
Δ = 14°06'53"
D = 1°30'00"
R = 3,819.72'
L = 940.98'
T = 472.88'
E = 29.16'

CURVE DATA ℄ LANE "H"
P.I. = Sta. 9+23.53
Δ = 10°37'44"
D = 1°00'00"
R = 5,729.57'
L = 1,062.89'
T = 532.97'
E = 24.74'

CURVE DATA ℄ MEDINA
P.I. = Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3,906.53'
L = 1,250.00'
T = 630.38'
E = 50.53'

LEGEND
- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1"=20' — HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE — CONSULTING ENGINEERS
TRCD. DATE — KANSAS CITY CLEVELAND NEW YORK
CKD. DRK DATE 1-23-65

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY. 7-17.18

32/241

5/15

MATCH LINE STA. 894+25 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 8

MATCH LINE SEE PAVEMENT PLAN 6

MATCH LINE STA. 890+60 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 4

RAMP D

RAMP G

RAMP H

LANE J

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

DOVER AVE.

POE AVE.

LABRW

Construction Limits

Sta. 20+69.18

PC Sta. 7+42.41

P.C.C. Sta. 14+53.45

P.T. Sta. 10+91.57

Begin Guard Rail Sta. 8+15

End Guard Rail Sta. 8+65

End Guard Rail Sta. 12+00 Lane H

Begin Guard Rail Sta. 11+75

Sign No. 4 Sta. 89+40 ℄ Medina See Sheet 193 for details

Item 625 Guard Rail Quantity is Included with Item Pavement

Concrete Median Barrier Guard Rail

Varies 1on3 Max.

4' Face of Guard Rail

Std. Type 6 Curb

Std. Type 6 Curb & Gutter

1on4

1on6

1on8

℄ Ramp D

℄ Ramp G

℄ Ramp H

℄ Lane J

℄ Lane H

11' Shoulder

7' Shoulder

3' Paved Shoulder

5' Paved Shoulder

7' Paved Shoulder

10' Paved Shoulder

15' Shoulder

4'

8'

9'

12'

16'

CURVE DATA ℄ MEDINA

P.I. = Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3,906.53'
L = 1,250.00'
T = 630.38'
E = 50.53'

CURVE DATA ℄ RAMP "D"

O_s = 28°44'26"
L_s = 200.00'
D_1 = 40°00'00"
D_2 = 32°44'26"
T_1 = 130.07'
T_2 = 77.05'

CURVE DATA ℄ RAMP "G"

P.I. = Sta. 8+70.90
Δ = 4°24'57"
D = 1°00'00"
R = 5,729.58'
T = 220.90'
L = 441.57'
E = 4.26'

CURVE DATA ℄ LANE "H"

P.I. = Sta. 9+23.53
Δ = 10°37'44"
D = 1°00'00"
R = 5,729.58'
L = 1,062.89'
T = 532.97'
E = 24.74'

CURVE DATA ℄ RAMP "O"

P.I. = Sta. 9+54.46
Δ = 47°53'38"
D = 12°00'00"
R = 477.46'
L = 399.12'
T = 212.05'
E = 44.97'

CURVE DATA ℄ LANE "J"

P.I. = Sta. 21+63.71
Δ = 14°06'53"
D = 1°30'00"
R = 3,819.72'
L = 940.98'
T = 472.88'
E = 29.16'

CURVE DATA ℄ RAMP "O"

P.I. = Sta. 11+08.85
Δ = 143°38'39"
R = 175.00'
L = 438.74'
T = 532.96'

LEGEND

(A) Standard Longitudinal Joint
(B) Standard Expansion Joint
(C) Standard Contraction Joint
(D) Standard Key Joint Wihout Tie Bars
(E) Expansion Joint Without Dowels

SCALE 1"=20' MADE RAH DATE
TRCD. DATE
CKD. DAK DATE 1-23-67

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

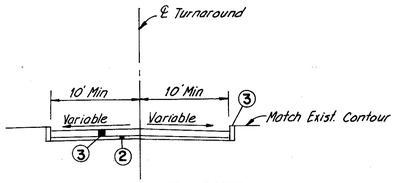
PAVEMENT PLAN 5

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

33/241

CUYAHOGA COUNTY
CUY.

6/15



LIBRARY AVE. TURNAROUND

Scale : 1/8"=1'-0"

(1) Item 1-71 8" Reinforced Portland Cement Pavement

(2) Item 1-22 4" Subbase

(3) Item 1-11 Sandstone Curb, Reset

CURVE DATA ℄ RAMP "D" (Rt. Edge)

P.I. = Sta. 9+19.84
Δ = 50°12'27"
R = 125.00'
L = 109.54'
T = 58.56'
E = 13.04'

CURVE DATA ℄ RAMP "D"

P.I. = Sta. 11+08.85
Δ = 143°38'39"
R = 175.00'
L = 438.74'
T = 532.96'

CURVE DATA ℄ RAMP "O"

P.I. = Sta. 4+46.67
Δ = 53°54'31"
D = 22°00'00"
R = 260.44'
L = 245.04'
T = 132.44'
E = 31.74'

LEGEND

(A) Standard Longitudinal Joint
(B) Standard Expansion Joint
(C) Standard Contraction Joint
(D) Standard Key Joint Without Tie Bars
(E) Expansion Joint Without Dowels

SCALE 1"=20' MADE RDH DATE
TRCD. RHA DATE 1-23-45
CKD. DATE

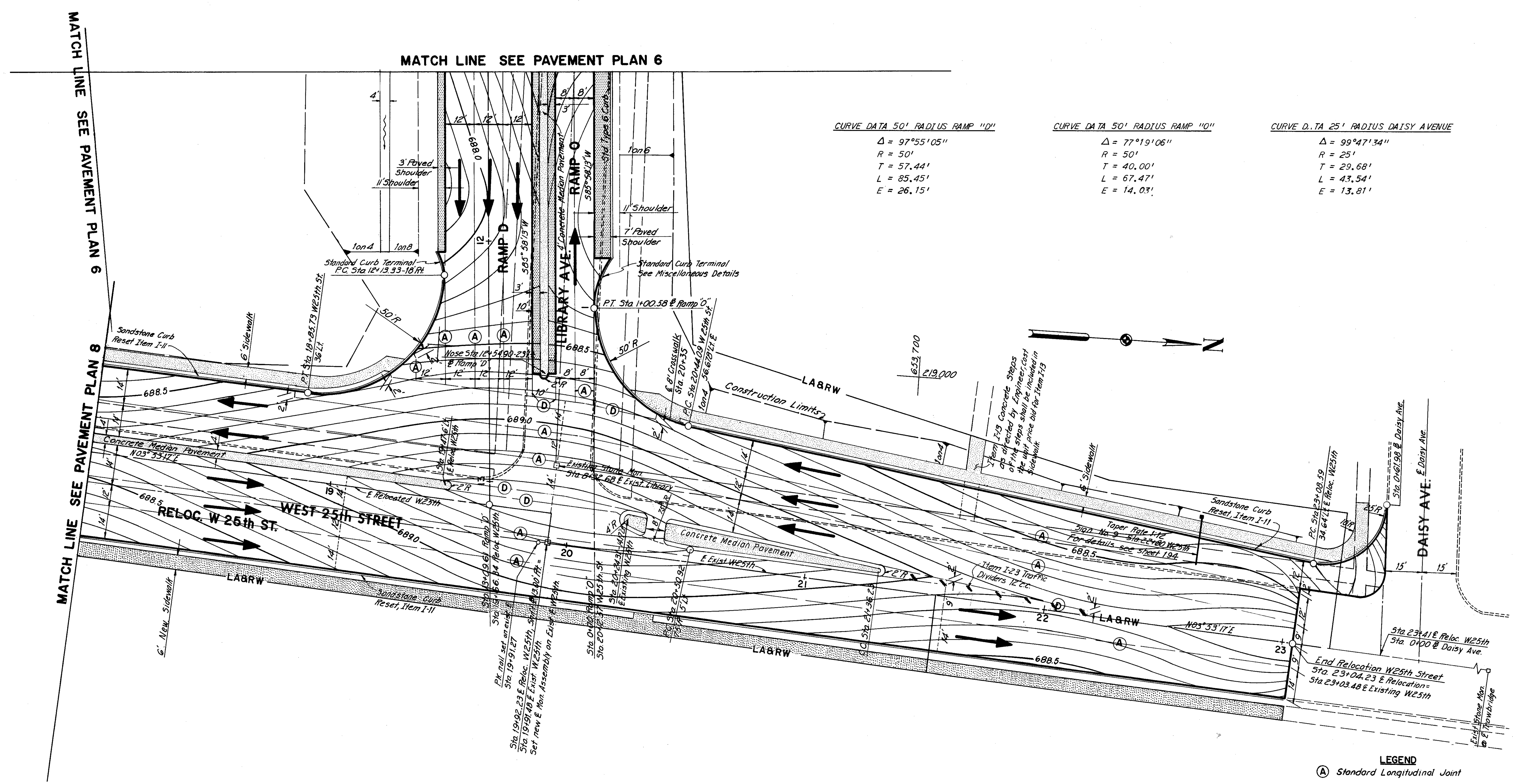
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

PAVEMENT PLAN 6

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY. 71–17.18

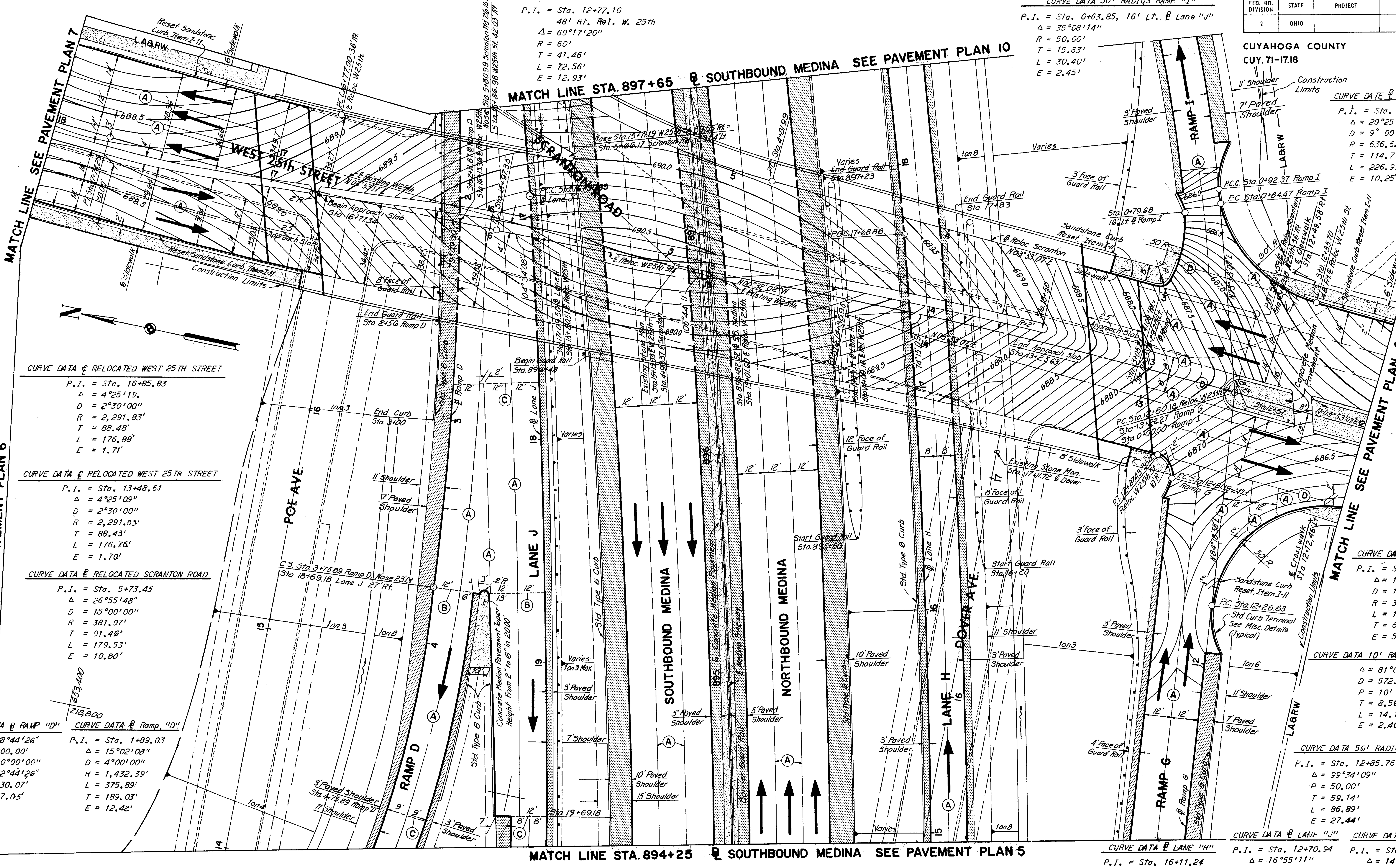
CURVE DATA 50' RADIUS RAMP "D"	CURVE DATA 50' RADIUS RAMP "O"	CURVE DATA 25' RADIUS DAISY AVENUE
Δ = 97°55'05"	Δ = 77°19'06"	Δ = 99°47'34"
R = 50'	R = 50'	R = 25'
T = 57.44'	T = 40.00'	T = 29.68'
L = 85.45'	L = 67.47'	L = 43.54'
E = 26.15'	E = 14.03'	E = 13.81'



LEGEND

- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1"=20'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE 1-23-65	CONSULTING ENGINEERS
TRCD. DATE	
CKD. DRK DATE 1-26-65	KANSAS CITY CLEVELAND NEW YORK



CURVE DATA 60' RADIUS RAMP "I"

P.I. = Sta. 12+77.16
48' Rt. Rel. W. 25th
Δ = 69°17'20"
R = 60'
T = 41.46'
L = 72.56'
E = 12.93'

CURVE DATA 50' RADIUS RAMP "I"

P.I. = Sta. 0+63.85, 16' Lt. ℄ Lane "J"
Δ = 35°08'14"
R = 50.00'
T = 15.83'
L = 30.40'
E = 2.45'

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
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CURVE DATE ℄ RAMP "I"

P.I. = Sta. 1+99.18
Δ = 20°25'45"
D = 9° 00'00"
R = 636.62'
T = 114.71
L = 226.99'
E = 10.25'

CURVE DATA ℄ RELOCATED WEST 25TH STREET

P.I. = Sta. 16+85.83
Δ = 4°25'19.
D = 2°30'00"
R = 2,291.83'
T = 88.48'
L = 176.88'
E = 1.71'

CURVE DATA ℄ RELOCATED WEST 25TH STREET

P.I. = Sta. 13+48.61
Δ = 4°25'09"
D = 2°30'00"
R = 2,291.83'
T = 88.43'
L = 176.76'
E = 1.70'

CURVE DATA ℄ RELOCATED SCRANTON ROAD

P.I. = Sta. 5+73.45
Δ = 26°55'48"
D = 15°00'00"
R = 381.97'
T = 91.46'
L = 179.53'
E = 10.80'

CURVE DATA ℄ RAMP "D"

θ_s = 28°44'26"
L_s = 200.00'
D_1 = 40°00'00"
D_2 = 32°44'26"
T_1 = 130.07'
T_2 = 77.05'

CURVE DATA ℄ Ramp "D"

P.I. = Sta. 1+89.03
Δ = 15°02'08"
D = 4°00'00"
R = 1,432.39'
L = 375.89'
T = 189.03'
E = 12.42'

CURVE DATA ℄ MEDINA

P.I. = Sta. 893+83.9
Δ = 18°20 00"
D = 1°28'00"
R = 3,906.53'
L = 1,250.00'
T = 630.38'
E = 50.53'

CURVE DATA 10' RADIUS RAMP "G"

Δ = 81°06'43"
D = 572.958°
R = 10'
T = 8.56'
L = 14.16'
E = 2.40'

CURVE DATA 50' RADIUS RAMP "G"

P.I. = Sta. 12+85.76 ℄ Ramp "G"
Δ = 99°34'09"
R = 50.00'
T = 59.14'
L = 86.89'
E = 27.44'

CURVE DATA ℄ LANE "H"

P.I. = Sta. 16+11.24
Δ = 4°31'23"
R = 3,995.53'
L = 315.41'
T = 157.78'
E = 3.11'

CURVE DATA ℄ LANE "J"

P.I. = Sta. 12+70.94
Δ = 16°55'11"
D = 2°00'00"
R = 2,864.79'
L = 845.99'
T = 426.09'
E = 31.51'

CURVE DATA ℄ LANE "J"

P.I. = Sta. 21+63.71
Δ = 14°06'53"
D = 1°30'00"
R = 3,819.72'
L = 940.98'
T = 472.88'
E = 29.16'

SCALE 1" = 20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE 1-23-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 1-25-65 KANSAS CITY CLEVELAND NEW YORK

PAVEMENT PLAN 8

FED. RD. DIVISION	STATE	PROJECT	
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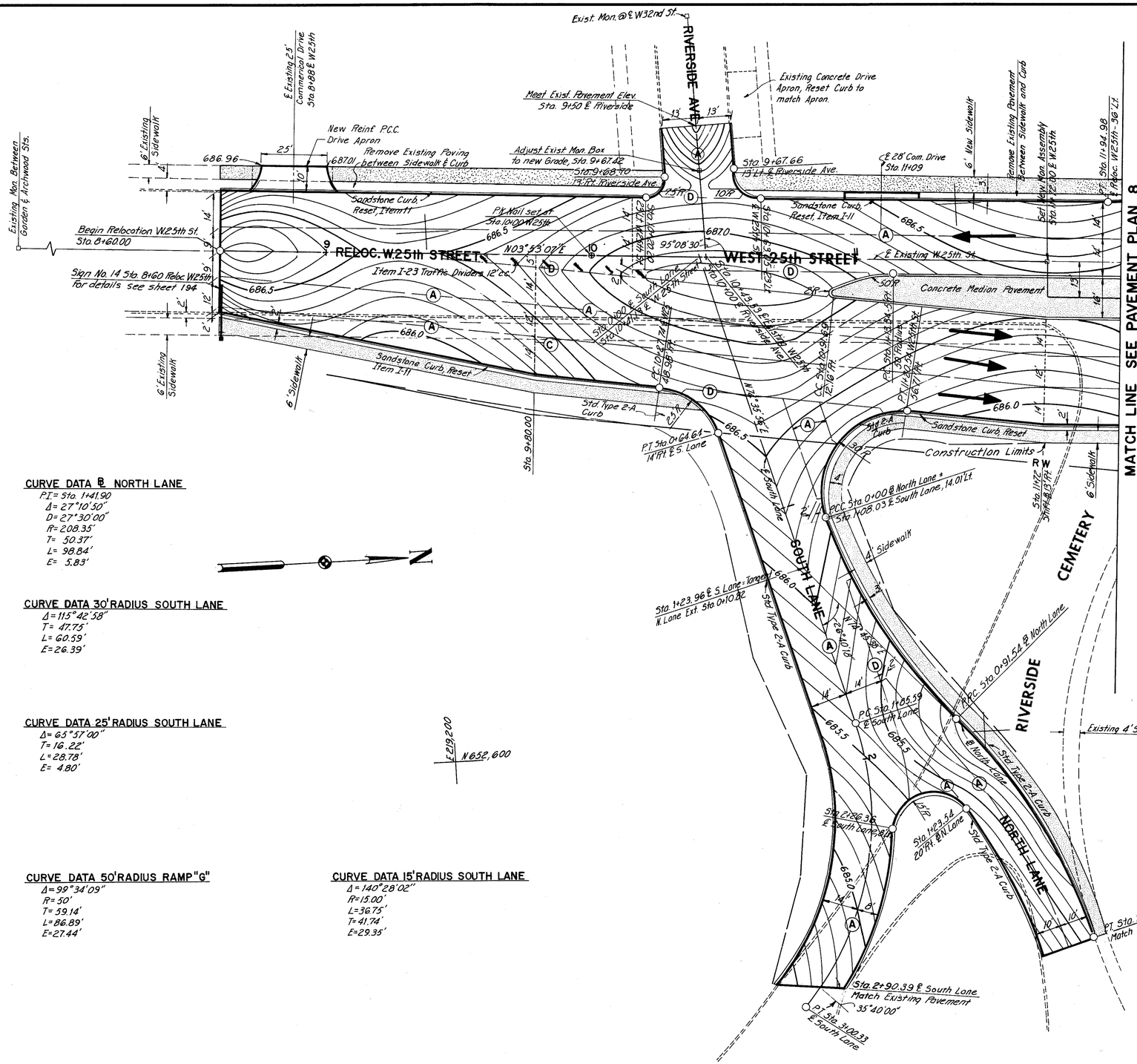

CURVE DATA 10' RADIUS RIVERSIDE AVE.
Δ = 84°51'30"
T = 9.14'
L = 14.81'
E = 3.55'

CURVE DATA ℄ NORTH LANE
P.I. = Sta. 1+41.90
Δ = 27°10'50"
D = 27°30'00"
R = 208.35'
T = 50.37'
L = 98.84'
E = 5.89'

CURVE DATA 75' RADIUS RIVERSIDE AVE.
Δ = 95°08'30"
T = 8.20'
E = 3.62'
L = 12.46'

CURVE DATA 30' RADIUS SOUTH LANE
Δ = 11.5°42'58"
T = 47.75'
L = 60.59'
E = 26.39'

CURVE DATA ℄ SOUTH LANE
P.I. = Sta. 2+48.35
Δ = 57°40'16"
R = 114.00'
T = 62.76'
L = 114.75'
E = 16.14'

CURVE DATA 25' RADIUS SOUTH LANE
Δ = 65°57'00"
T = 16.22'
L = 28.78'
E = 4.80'

CURVE DATA ℄ NORTH LANE
P.I. = Sta. 0+46.52
Δ = 25°10'21"
D = 27°30'00"
R = 208.35'
T = 46.52'
L = 91.54'
E = 5.01'

CURVE DATA 50' RADIUS RAMP "G"
Δ = 99°34'09"
R = 50'
T = 59.14'
L = 86.89'
E = 27.44'

CURVE DATA 15' RADIUS SOUTH LANE
Δ = 140°28'02"
R = 15.00'
L = 36.75'
T = 41.74'
E = 29.35'

LEGEND
- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1" = 20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE 1-23-65 CONSULTING ENGINEERS
TRCD. DATE
CKD. RHA DATE 1-25-65 KANSAS CITY CLEVELAND NEW YORK

MATCH LINE SEE PAVEMENT PLAN 8

PAVEMENT PLAN 9

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY. 71-17.18

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CURVE DATA ℄ Ramp "D"
P.I. = Sta. 1+89.03
Δ = 15°02'08"
D = 4°00'00"
R = 1,432.39'
L = 375.89'
T = 189.03'
E = 12.41'

CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 905+40.84
Δ = 21°14'41"
D = 2°00'00"
R = 2,864.79'
L = 1,062.23'
T = 537.28'
E = 49.95'

CURVE DATA ℄ LANE "J"
P.I. = Sta. 12+70.94
Δ = 16°55'11"
D = 2°00'00"
R = 2,864.79'
L = 845.99'
T = 426.09'
E = 31.51'

MATCH LINE STA. 901+00 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 11

Existing Stone Monument Sta. 10+00 ℄ Exist. Scranton Road

EVELYN ROAD

25' Guard Rail Item 615 Standard Type Deep ℄ Exist. Evelyn Rd.

1on2

N 30°48'55"E

SCRANTON ROAD

Sta. 8+00 End new pavement
Set new Man Assembly
Leave exist. Curb in place and match the exist. grade at edge of pavement

LA&RW

Sandstone Curb Reset Item 611

New 6' Sidewalk

Construction Limits

Sta. Type B Curb

℄ Ramp 14-M

RAMP 14-M

LANE J

℄ Lane J

ROBANNA ROAD

MAPLE ROAD

Face of Guard Rail

P.C. Sta. 899+23.96 ℄ N.B. Medina

P.C.C. Sta. 901+03.56 ℄ S.B. Medina = Sta. 899+23.96 N.B. Medina = Sta. 900+03.56 ℄ Medina

End Barrier Type Guard Rail Sta. 900+00

Varies

5' Paved Shoulder

3' Paved Shoulder

16'

P.T. Sta. 29+13.17 Ramp 14-M = Sta. 14+52.48 Lane J 24' Rt.

Begin Guard Rail Sta. 29+31 ℄ Ramp 14-M

End Guard Rail Sta. 899+47

P.C. Sta. 0+00.00 Ramp D = Sta. 14+87+47 Lane J 24' Rt.

7' Paved Shoulder

11' Shoulder

3' Paved Shoulder

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

Std. Type 6 Curb

Concrete Median Pavement

Barrier Type Guard Rail

LANE H

℄ Lane H

12' 12' 12'

8' 8'

10' Paved Shoulder

Varies

End Std. Type 6 Curb Sta. 10+00 Lane J

Sign No. 5 Sta. 15+40 Lane J For details see Sheet 133

Sta. 7+15.31 ℄ Scranton Rd.

Approach Slab

Exist. Scranton Rd.

P.T. Sta. 6+41.52

4' Sidewalk

Construction Limits

RAMP D

℄ Ramp D

℄ Lane H

1on8

1on6

℄ Ramp I

Begin Std. Type 7 Curb Sta. 4+65 ℄ Ramp I

P.C. Sta. 4+45.28

7' Paved Shoulder

11' Shoulder

End Guard Rail Sta. 4+00 ℄ Ramp I Varies

RAMP I

N 53°22'53" E

4' Ditch

LA&RW

Varies

Construction Limits

4' Face of Guard Rail

8' 8'

4' Ditch

P.T. Sta. 3+11.46

RIVERSIDE CEMETERY

Note: This Area Contains 27 Graves

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 904+88.43
Δ = 16°24'40"
R = 3,914.53'
L = 1,121.23'
T = 564.48'
E = 40.49'

CURVE DATA ℄ MEDINA
P.I. = Sta. 893+83.94
Δ = 18°20'00"
D = 1°28'00"
R = 3,906.53'
L = 1,250.00'
T = 630.38'
E = 50.53'

CURVE DATA ℄ LANE "H"
P.I. = Sta. 20+47.13
Δ = 11°05'46"
D = 2°00'00"
R = 2,864.79'
L = 554.80'
T = 278.27'
E = 13.48'

CURVE DATA ℄ RAMP "I"
P.I. = Sta. 5+99.79
Δ = 4°37'57.0"
D = 1°30'00.0"
R = 3,819.72'
T = 154.50'
L = 308.83'
E = 3.12'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 26+49.24
Δ = 13°15'22"
D = 2°30'00"
R = 2,291.83'
L = 530.25'
T = 266.31'
E = 15.42'

CURVE DATE ℄ RAMP "I"
P.I. = Sta. 1+99.18
Δ = 20°25'45"
D = 9° 00'00"
R = 636.62'
T = 114.71'
L = 226.99'
E = 10.25'

CURVE DATA ℄ RELOCATED SCRANTON ROAD
P.I. = Sta. 5+73.45
Δ = 26°55'48"
D = 15°00'00"
R = 381.97'
T = 91.46'
L = 179.53'
E = 10.80'

LEGEND
(A) Standard Longitudinal Joint
(B) Standard Expansion Joint
(C) Standard Contraction Joint
(D) Standard Key Joint Without Tie Bars
(E) Expansion Joint Without Dowels

SCALE 1"=20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE
TRCD. DATE CONSULTING ENGINEERS
CKD. DRK DATE 1-28-65 KANSAS CITY CLEVELAND NEW YORK

MATCH LINE STA. 897+65 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 8

PAVEMENT PLAN 10

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
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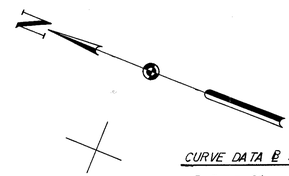
MATCH LINE STA. 904+50 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 12

Note:
For location and details of retaining walls see sheets 152 trough 155
Pave area between curb and face of retaining wall with 4 1/2" concrete in accordance with Item I-13



CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 905+40.85
Δ = 21°14'41"
D = 2°00'00"
R = 2,864.79'
L = 1,062.23'
T = 537.28'
E = 49.94'

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 904+88.43
Δ = 16°24'40"
R = 3,914.53'
L = 1,121.23'
T = 564.48'
E = 40.49'

CURVE DATA ℄ LANE "J"
P.I. = Sta. 13+86.1
Δ = 16°55'11"
D = 2°00'00"
R = 2,864.79'
L = 845.99'
T = 426.09'
E = 31.51'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 26+49.24
Δ = 13°15'22"
D = 2°30'00"
R = 2,291.83'
L = 530.24'
T = 266.31'
E = 15.42'

CURVE DATA ℄ RAMP "I"
P.I. = Sta. 5+99.79
Δ = 4°37'57"
D = 1°30'00"
R = 3,819.72'
T = 154.50'
L = 308.83'
E = 3.12'

CURVE DATE ℄ RAMP "I"
P.I. = Sta. 10+04.46
Δ = 2°30'10"
D = 0°30'00"
R = 11,459.16"
T = 250.34"
L = 500.59"
E = 2.73"

CURVE DATA ℄ LANE "H"
P.I. = Sta. 26+16.43
Δ = 5°51'02"
D = 1°00'00"
R = 5,729.58'
L = 585.04'
T = 292.78'
E = 7.47'

CURVE DATA ℄ LANE "H"
P.I. = Sta. 20+47.13
Δ = 11°05'46"
D = 2°00'00"
R = 2,864.79'
L = 554.80'
T = 278.27'
E = 13.48'

LEGEND
Ⓐ Standard Longitudinal Joint
Ⓑ Standard Expansion Joint
Ⓒ Standard Contraction Joint
Ⓓ Standard Key Joint Without Tie Bars
Ⓔ Expansion Joint Without Dowels

MATCH LINE STA. 901+00 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 10

SCALE 1"=20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE FBH DATE 1-23-65 CONSULTING ENGINEERS
TRCD. DATE
CKD. DAK DATE 1-26-65 KANSAS CITY CLEVELAND NEW YORK

PAVEMENT PLAN 11

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
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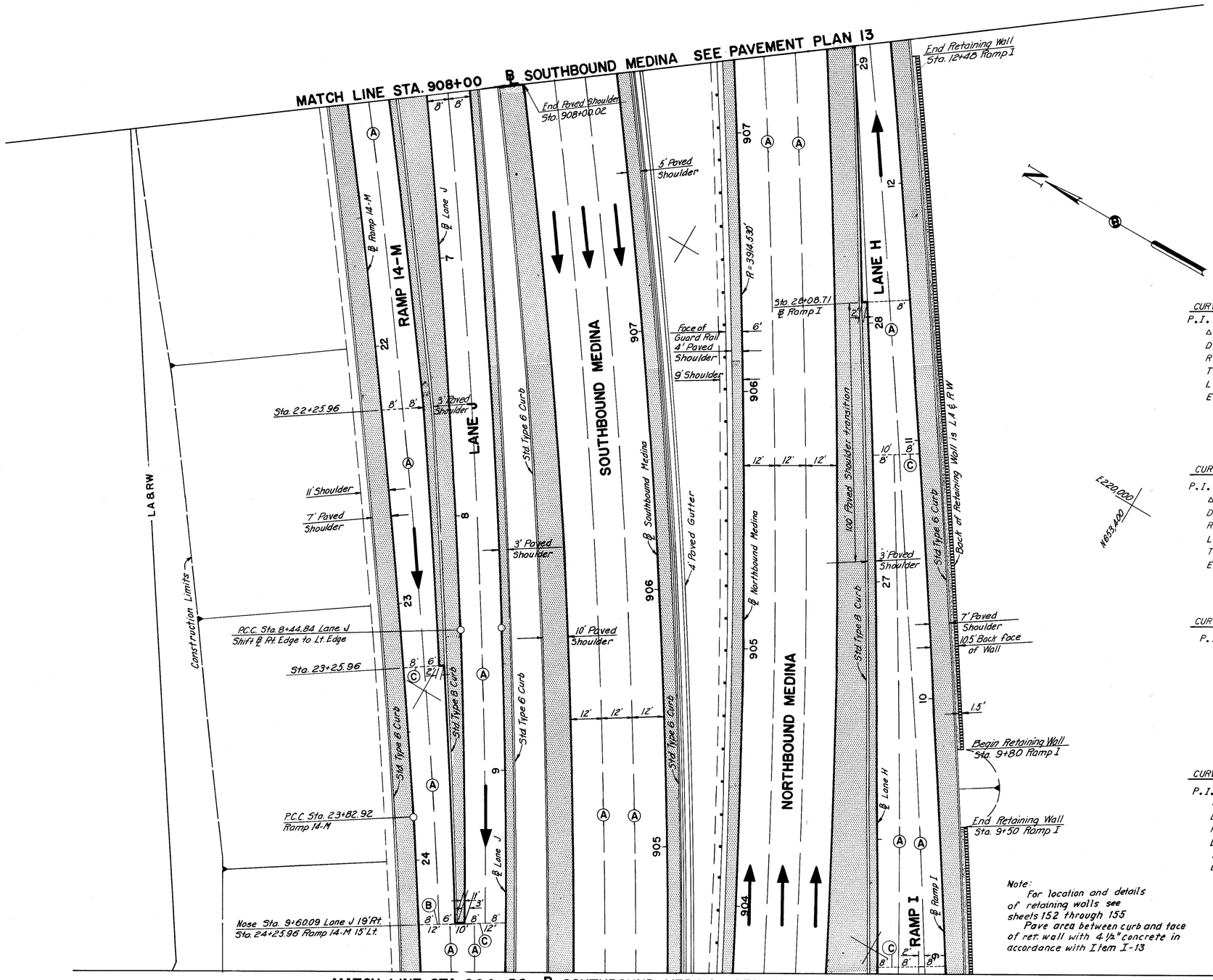

CURVE DATE ℄ RAMP "I"
P.I. = Sta. 10+04.46
Δ = 2°30'11"
D = 0°30'00"
R = 11,459.16'
T = 250.34'
L = 500.59'
E = 2.73'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 26+49.24
Δ = 13°15'22"
D = 2°30'00"
R = 2,291.83'
L = 530.25'
T = 266.31'
E = 15.42'

CURVE DATA ℄ LANE "H"
P.I. = Sta. 26+15.44
Δ = 5°51'02"
D = 1°00'00"
R = 5,729.58'
L = 585.04'
T = 292.78'
E = 7.47'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 19+81.58
Δ = 12°05'07"
D = 1°30'00"
R = 3,819.72'
L = 805.68'
T = 404.34'
E = 21.34'

CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 905+40.84
Δ = 21°14'41"
D = 2°00'00"
R = 2,864.79'
L = 1,062.23'
T = 537.28'
E = 49.95'

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 904+88.43
Δ = 16°24'40"
R = 3,914.53'
L = 1,121.23'
T = 564.48'
E = 40.49'

CURVE DATA ℄ LANE "J"
P.I. = Sta. 5+71.46
Δ = 8°12'55"
D = 1°30'00"
R = 3,819.72'
L = 547.69'
T = 274.31'
E = 9.84'

CURVE DATA ℄ LANE "J"
P.I. = Sta. 12+70.94
Δ = 16°55'11"
D = 2°00'00"
R = 2,864.79'
L = 845.99'
T = 426.09'
E = 31.51'

Note:
For location and details of retaining walls see sheets 152 through 155
Pave area between curb and face of ret. wall with 4½" concrete in accordance with Item I-13

LEGEND
Ⓐ Standard Longitudinal Joint
Ⓑ Standard Expansion Joint
Ⓒ Standard Contraction Joint
Ⓓ Standard Key Joint Without Tie Bars
Ⓔ Expansion Joint Without Dowels

SCALE 1"=20'
MADE FBH DATE 1-23-65
TRCD. DATE
CKD. AHA DATE 1-22-65

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

PAVEMENT PLAN 12

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
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MATCH LINE STA. 911+50 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 14

MATCH LINE SEE PAVEMENT PLAN 15

MATCH LINE STA. 908+00 ℄ SOUTHBOUND MEDINA SEE PAVEMENT PLAN 12

RELOCATED WEST 17TH STREET (BY OTHERS)

VIEW ROAD

THTUS AVE.

RAMP 14-M

LANE J

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

LANE H

Std Type 2A Curb

5' Sidewalk

4' Edge of Sidewalk

R.W.

Existing Stone Monument Sta 9+48.17 ℄ Titus Avenue

Sta 2+01.39 ℄ Rel. W. 17th, 47' Lt.

Sta 1+79.31 ℄ Rel. W. 17th St. = Sta 9+67.25 ℄ Titus Ave.

Sta 9+42.45 ℄ Titus Ave. 13' Lt.

Sta 9+03.31 ℄ Titus Ave.

Begin Work Sta 9+03.31 ℄ Titus Ave.

Sta 9+03.31 ℄ Titus Ave. 14' Rt.

Sta 1+15.46 ℄ W. 17th St., 16' Lt.

Sta 10+43.90 ℄ Existing View Rd. = Sta 10+00.00 ℄ Titus Avenue

Set New ℄ Monument Assembly, Item I-8

Existing Stone Monument Sta 10+00.00 ℄ Existing View Rd.

P.C. Sta 1+24.30

P.C. Sta 0+00.00 = Sta 8+37.69 Exist. View Rd. Set ℄ Monument, Item I-8

N 56° 36' 28" E

N 46° 39' 50" E

35° 16' 25"

175° 17' 58"

Varies

Std Type 6 Curb

Std Type 7 Curb

8' Paved Shoulder

3' Paved Shoulder

7' Paved Shoulder

11' Shoulder

Nose Sta 5+39.56 ℄ Lane J, 23' Lt. = Sta 909+00.02 ℄ S.B. Medina, 48' Lt.

Std. Type 4A Curb

Std. Type 8 Curb

Std. Guard Rail Sta 910+10 S.B. Medina (Typ.)

Begin Guard Rail Sta 909+60 S.B. Medina (Typ.)

Item 615 Guard Rail quantity is included with Sta. Quantities

Sign No. 7 Sta 909+65 S.B. Medina For details see sheet 194

9" Reinf. PCC Pavement

10" Reinf. PCC Pavement

Concrete Median Nose Pavement Taper Nose Height from 2" to 6" in 20'

Begin Median Pavement Sta. 908+00.02

P.C.C. Sta 2+97.15 ℄ Lane J

P.C.C. Sta 910+45.18 ℄ N.B. Medina

P.C.C. Sta 910+65.79

Std. Paved Gutter

4' Paved Shoulder

6" Face of Guard Rail

9' Shoulder

5' Paved Shoulder

10' Shoulder Width Transition

℄ S.B. Medina

℄ N.B. Medina

Construction Limits

Nose Sta 907+33.18 ℄ N.B. Medina, 47' Rt. = Sta 29+08.71 ℄ Lane H

Nose Sta 5+39.56 ℄ Lane J, 23' Lt. = Sta 909+00.02 ℄ S.B. Medina, 48' Lt.

Varies

1on 8

1on 6

1on 4

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 9+19+81.58
Δ = 12°05'07"
D = 01°30'00"
R = 3819.72'
T = 404.34'
L = 895.68'
E = 21.34'

CURVE DATA ℄ LANE J
P.I. = Sta. 05+71.47
Δ = 08°12'55"
D = 01°30'00"
R = 3819.72'
T = 274.31'
L = 547.69'
E = 9.84'

CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 905+40.85
Δ = 21°14'41"
D = 02°00'00"
R = 2864.79'
T = 537.29'
L = 1062.23'
E = 49.95'

CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 915+72.64'
Δ = 29°43'32"
D = 03°00'00"
R = 1909.86'
T = 506.84'
L = 990.85'
E = 66.11'

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 904+88.43
Δ = 16°24'40"
D = 01°27'49"
R = 3914.53'
T = 564.48'
L = 1121.23'
E = 40.49'

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 915+06.69
Δ = 35°43'01"
D = 04°00'00"
R = 1432.39'
T = 461.50'
L = 892.92'
E = 72.52'

CURVE DATA ℄ REL. W. 17TH ST
P.I. = Sta. 0+62.31
Δ = 09°56'38"
D = 08°00'00"
R = 716.20'
T = 62.31'
L = 124.30'
E = 2.71'

CURVE DATA 50' RADIUS TITUS
Δ = 40°31'01"
R = 50'
T = 18.45'
L = 35.36'
E = 3.30'

CURVE DATA 10' RADIUS TITUS
Δ = 140°11'24"
R = 10'
T = 27.62'
L = 24.47'
E = 19.37'

LEGEND
- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1"=20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE JEN DATE 8-24-64 CONSULTING ENGINEERS
TRCD. DATE
CKD. RJT DATE 8-31-64 KANSAS CITY CLEVELAND NEW YORK

PAVEMENT PLAN 13

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY -71- 17.18

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CURVE DATA 10' RADIUS EGLINDALE
Δ = 139°07'44"
R = 10'
T = 26.84'
L = 24.28'
E = 18.64'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 12+01.09
Δ = 39°13'24"
D = 05°00'00"
R = 1145.92'
T = 408.31'
L = 784.47'
E = 70.57'

CURVE DATA ℄ S.B. MEDINA
P.I. = Sta. 915+72.64
Δ = 29°43'32"
D = 03°00'00"
R = 1909.86'
T = 506.84'
L = 990.85'
E = 66.11'

CURVE DATA ℄ REL. W. 17 TH ST.
P.I. = Sta. 06+47.40
Δ = 18°08'01"
D = 08°00'00"
R = 716.20'
T = 114.29'
L = 226.67'
E = 9.06'

CURVE DATA 25' RADIUS AIKEN
Δ = 75°36'42"
R = 25'
T = 19.33
L = 32.99
E = 6.64'

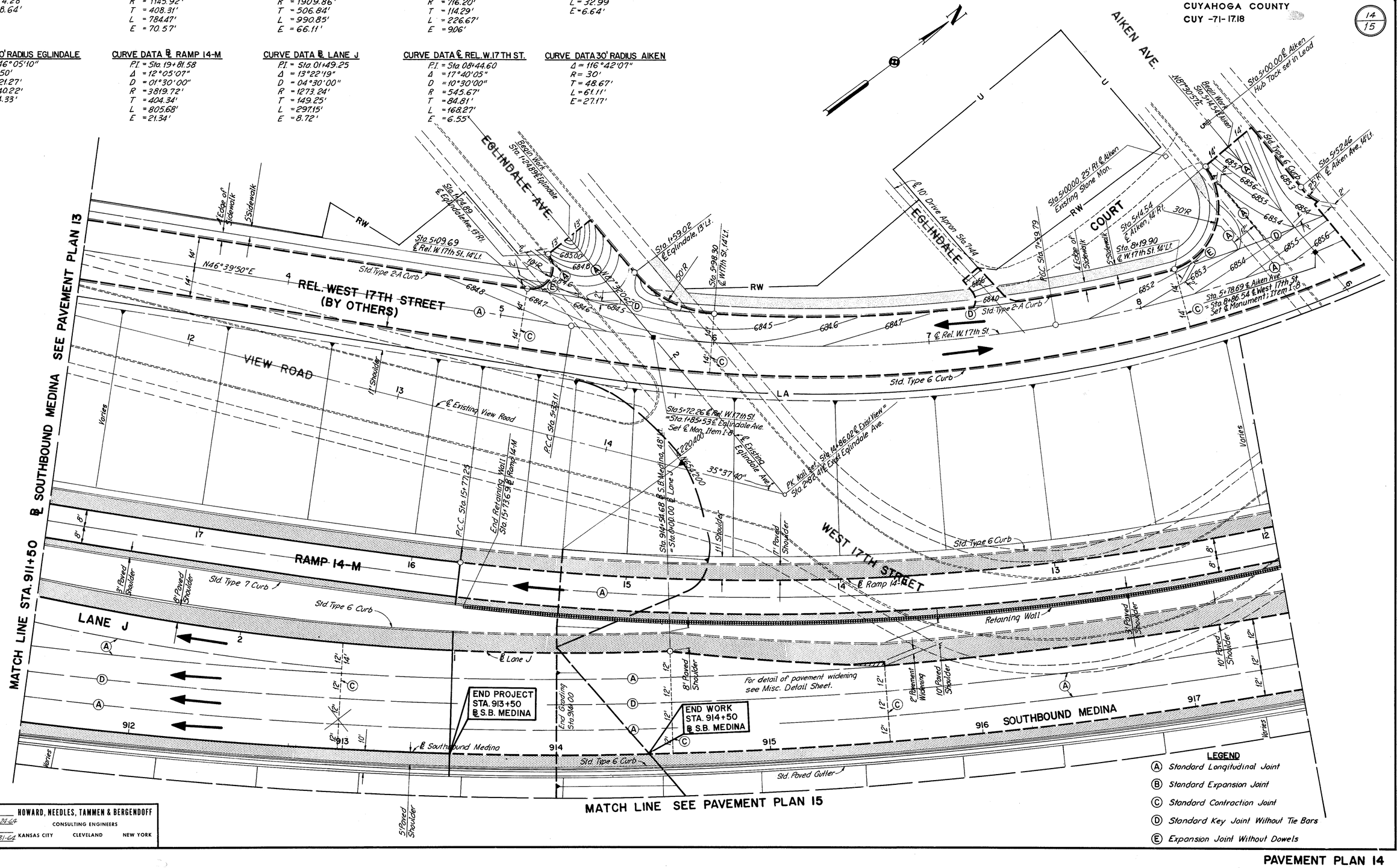
CURVE DATA 50' RADIUS EGLINDALE
Δ = 46°05'10"
R = 50'
T = 21.27'
L = 40.22'
E = 4.33'

CURVE DATA ℄ RAMP 14-M
P.I. = Sta. 19+81.58
Δ = 12°05'07"
D = 01°30'00"
R = 3819.72'
T = 404.34'
L = 805.68'
E = 21.34'

CURVE DATA ℄ LANE J
P.I. = Sta. 01+49.25
Δ = 13°22'19"
D = 04°30'00"
R = 1273.24'
T = 149.25'
L = 297.15'
E = 8.72'

CURVE DATA ℄ REL. W. 17 TH ST.
P.I. = Sta. 08+44.60
Δ = 17°40'05"
D = 10°30'00"
R = 545.67'
T = 84.81'
L = 168.27'
E = 6.55'

CURVE DATA 30' RADIUS AIKEN
Δ = 116°42'07"
R = 30'
T = 48.67'
L = 61.11'
E = 27.17'



LEGEND
- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1"=20'
MADE LEN DATE 8-28-64
TRCD. ____ DATE ____
CKD. RJT DATE 8-31-64

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

PAVEMENT PLAN 14

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY -71-17.18

MATCH LINE SEE PAVEMENT PLAN 13

MATCH LINE SEE PAVEMENT PLAN 14

911 912 913 914 915 916 917

END PROJECT STA. 913+00 ℄ N.B. MEDINA

END WORK STA. 914+50 ℄ N.B. MEDINA

℄ Northbound Medina

End Grading Sta. 913+50

NORTHBOUND MEDINA

Varies 4' Paved Shoulder 6' Face of Guard Rail 9' Shoulder

12' 12' 12' 12' 12' 12' 12' 12'

48'

Taper 1:36

4' Paved Shoulder 6' Face of Guard Rail 9' Shoulder

9' Shoulder 6' Paved Shoulder and Face of Guard Rail 6' Face of Parapet

25' Approach Slab

6:75 6:70 48'

100' Guard Rail Transition

Std. Guard Rail Flare

3' Shoulder 15' Shoulder

End Acceleration Lane Sta 912+01.18 ℄ N.B. Medina

10' Paved Shoulder

1on8 1on4 1on2

15' Shoulder 12' Face of Guard Rail 10' Paved Shoulder

10' Face of Parapet

End Approach Slab Sta 917+10.96 ℄ N.B. Medina

Sta 911+29.18 ℄ N.B. Medina 8' Paved Shoulder

Construction Limits

L.A. & R.W. 220.800

L.A. & R.W. 54.200

L.A. & R.W.

CURVE DATA ℄ N.B. MEDINA
P.I. = Sta. 915+06.69
Δ = 35°43'01"
D = 04°00'00"
R = 1432.39'
T = 461.50'
L = 892.92'
E = 72.52'

Note:
The contractor shall co-operate with the contractor on the adjoining construction section in providing for temporary drainage during construction. It will also be necessary to arrange with the adjoining contractor for the connection of the permanent drainage facilities.
The typical section on the adjoining construction section is the same as shown on Sheet 6.

LEGEND
- (A) Standard Longitudinal Joint
- (B) Standard Expansion Joint
- (C) Standard Contraction Joint
- (D) Standard Key Joint Without Tie Bars
- (E) Expansion Joint Without Dowels

SCALE 1"=20'
MADE JEN DATE 8-24-64
TRCD ____ DATE ____
CKD. RJT DATE 9-3-64

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

PAVEMENT PLAN 15

TROWBRIDGE AVENUE WIDENING

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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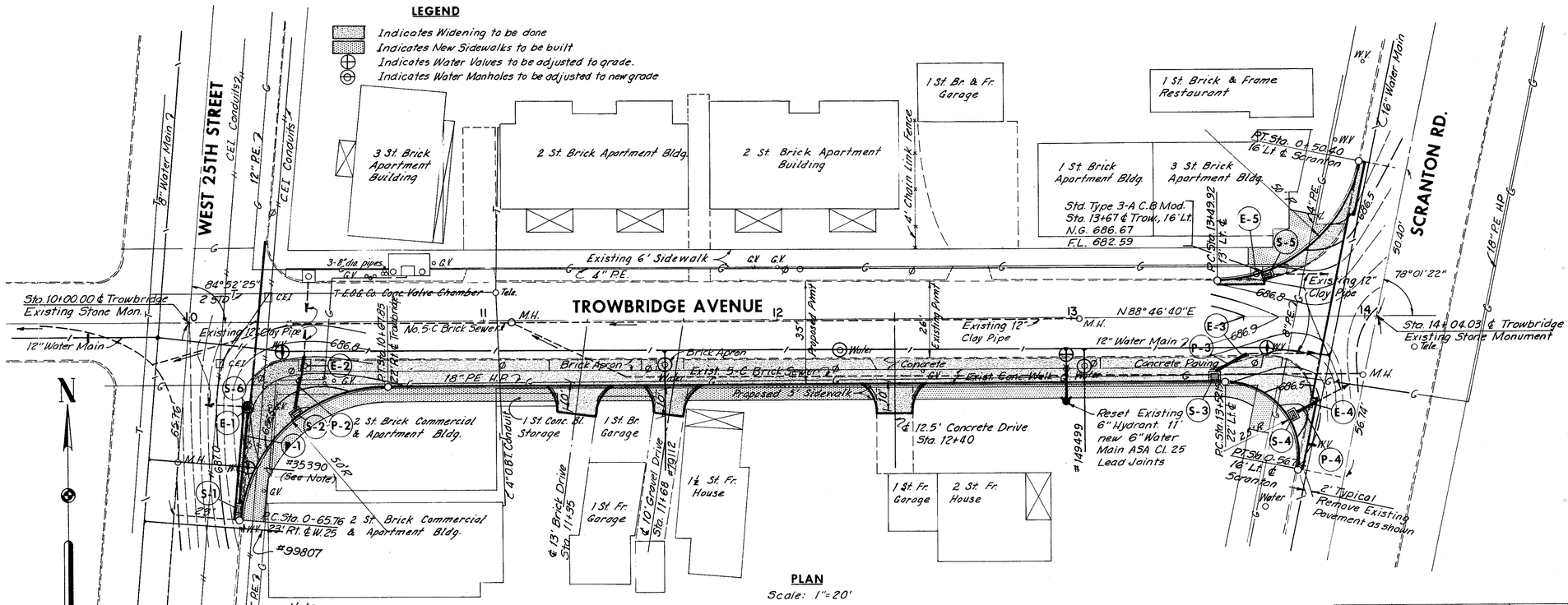
CUYAHOGA COUNTY
CUY-71-17.18

LEGEND

- Indicates Widening to be done
- Indicates New Sidewalks to be built
- Indicates Water Valves to be adjusted to grade.
- Indicates Water Manholes to be adjusted to new grade



PLAN
Scale: 1"=20'

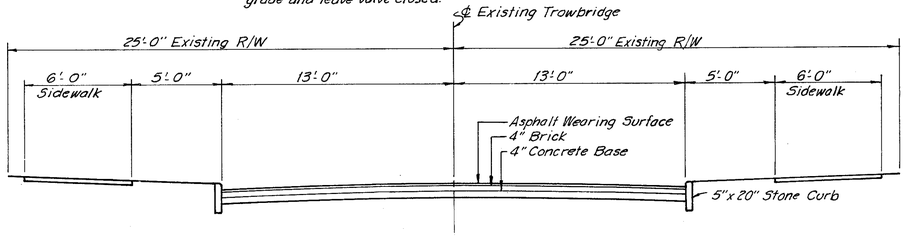
CURVE DATA

SE CORNER-W25TH ST.
P.I. Sta. 10+21.12, 22' Rt.
P.C. Sta. 0-65.76, 23' Rt.
P.T. Sta. 10+67.85, 22' Rt.
Δ = 84° 53' 30"
R = 50.00'
T = 45.73'
L = 74.08'
E = 17.76'

SW CORNER-SCRANTON RD.
P.I. Sta. 13+83.01, 22' Rt.
P.C. Sta. 13+52.15, 22' Rt.
P.T. Sta. 0-56.74, 16' Lt.
Δ = 101° 58' 38"
R = 25.00'
T = 30.86'
L = 44.50'
E = 14.72'

NW CORNER-SCRANTON RD.
P.I. Sta. 13+90.43, 13' Lt.
P.C. Sta. 13+49.92, 13' Lt.
P.T. Sta. 0+50.40, 16' Lt.
Δ = 78° 01' 22"
R = 50.00'
T = 40.51'
L = 68.09'
E = 14.35'

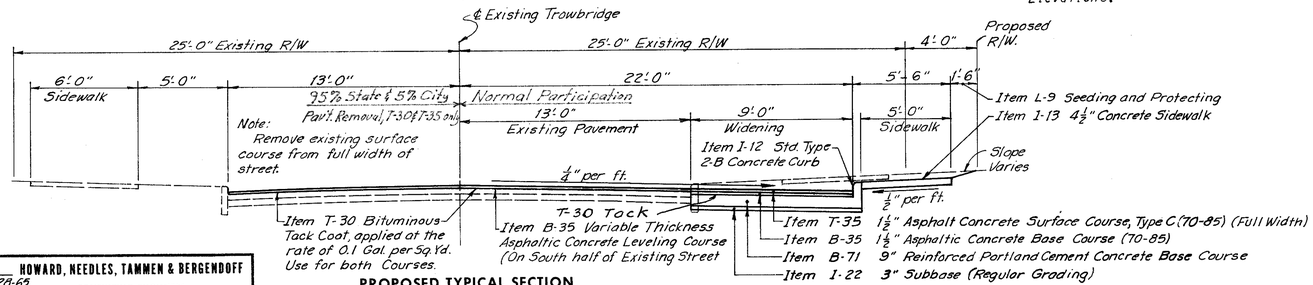
BENCH MARK #41
Top of N.E. flange bolt on top of hydrant on S.W. corner of 25th and Woodbridge. Elev. 690.67



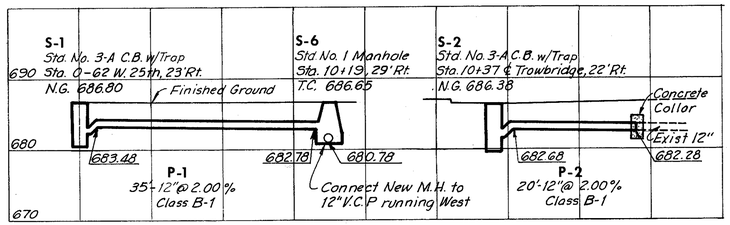
EXISTING TYPICAL SECTION
Scale: ¼"= 1'

PAVEMENT ELEVATIONS			
Station	℄ Elevation*	13' Right	22' Right
10+50	686.96	686.69	686.50
11+00	687.14	686.87	686.68
11+50	687.39	687.12	686.93
12+00	687.54	687.27	687.08
12+50	687.59	687.32	687.13
13+00	687.34	687.07	686.88
13+50	687.07	686.80	686.61

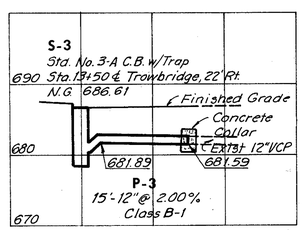
* Note: These are also existing ℄ Pavement Elevations.



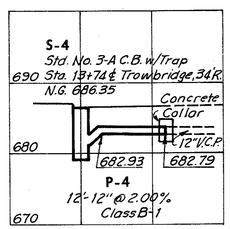
PROPOSED TYPICAL SECTION
Scale: ¼"= 1'



PIPE PROFILES P-1 & P-2



PIPE PROFILE P-3



PIPE PROFILE P-4

Note:
The cost of the concrete collar necessary to connect the new pipes to the old shall be included in the price bid for the pipe.

SCALE	1" = 20'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE	DRK DATE 1-28-65	CONSULTING ENGINEERS
TRCD.	DATE	KANSAS CITY CLEVELAND NEW YORK
CKD.	RJZ DATE 3-10-65	

Rev. 10-26-'65 C.E.H.

For additional notes, see the next sheet.

TROWBRIDGE AVE QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY 71-17.18

WATERWORK QUANTITIES

QUANTITY	UNIT	ITEM	DESCRIPTION
11	Lin. Ft.	Special	6" Water Main, ASA Class 25, Cast Iron, Cement Lined with Lead Joints
1	Each	Special	Reset 6" Hydrant
4	Each	Special	Adjust Existing Value Box to new grade.
3	Each	Special	Adjust Existing Water-Meter Manhole to new grade.

ROADWAY AND PAVEMENT QUANTITIES

QUANTITY	UNIT	ITEM	DESCRIPTION
*	Cu. Yds.	E-1	Excavation, Method "B" as per plan
496	Sq. Yds.	E-1	Compacted Subgrade
22	Sq. Yds.	E-8	Removal and Disposal of Existing Pavement
55	Sq. Yds.	E-8	Removal and Disposal of Concrete Drives and Aprons.
535	Lin. Ft.	E-8	Removal and Disposal of Existing Stone Curb
△ 1,086	Sq. Yds.	E-8	Removal and Disposal of Existing Wearing Surface.
3,025	Sq. Ft.	E-8	Removal and Disposal of Existing Sidewalk
496	Sq. Yds	B-71	Reinforced Portland Cement Concrete Base Course (9")
12	Cu. Yds	B-35	Asphaltic Concrete Leveling Course (70-85)
20	Cu. Yds.	B-35	Asphaltic Concrete Base Course (70-85)
471	Lin. Ft.	I-12	Standard Type 2-B Concrete Curb
1,940	Sq. Ft.	I-13	4½" Concrete Sidewalk
41	Cu. Yds.	I-22	Subbase, Regular Grading
○ 257	Gal.	T-30	Bituminous Tack Coat, Sec. M-5.5, M-5.2, or RS-1, or Sec. M-5.2, RC-1 or RC-2, as per T-30.02
□ 65	Cu. Yds.	T-35	Asphaltic Concrete Surface Course, Type C (70-85)
48	Sq. Yds.	T-70	7" Portland Cement Concrete Pavement (Drive Aprons)
0.2	M-Gal.	E-11	Water
74	Sq. Yds.	L-9	Seeding and Protecting, as per plan.

* This quantity is included in Earthwork Summary on Sheet No. 60.

△ 616 S.Y. Normal Participation ; 470 S.Y. 95% State & 5% City
○ 210 Gal. Normal Participation ; 47 Gal. 95% State & 5% City
□ 45 C.Y. Normal Participation ; 20 C.Y. 95% State & 5% City

DRAINAGE QUANTITIES

CODE	LOCATION	ITEM I-1 Class B-1 12" Lin. Ft.	I-8 Std. No. 1 M.H. Each	I-8 Std. No. 3-A C.B. w/Trap Each	I-16 Catch Basins Abandoned Each
	PIPES				
P-1	From S-1 to S-6	35			
P-2	From S-2 to E-2	20			
P-3	From S-3 to E-3	15			
P-4	From S-4 to E-4	12			
	STRUCTURES				
S-1	Sta. 0-62, W. 25th St., 23' Rt.			1	
S-2	Sta. 10+37 Trowbridge, 22' Rt.			1	
S-3	Sta. 13+50 Trowbridge, 22' Rt.			1	
S-4	Sta. 13+74 Trowbridge, 34' Rt.			1	
S-5	Sta. 13+67 Trowbridge, 16' Lt.			1	
S-6	Sta. 10+19 Trowbridge, 29' Rt.		1		
	STRUCTURES ABANDONED				
E-1	Sta. 10+19 Trowbridge, 30' Rt.				1
E-2	Sta. 10+39 Trowbridge, 15' Rt.				1
E-3	Sta. 13+59 Trowbridge, 12' Rt.				1
E-4	Sta. 13+82 Trowbridge, 30' Rt.				1
E-5	Sta. 13+63 Trowbridge, 15' Lt.				1
	TOTAL	82	1	5	5

NOTES:
For notes regarding Water Line Work, see sheets 165-171
For notes regarding Drainage Work, see sheet 97

SCALE 1" = 20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DRK DATE 1-28-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. RPR DATE 3/1065 KANSAS CITY CLEVELAND NEW YORK

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FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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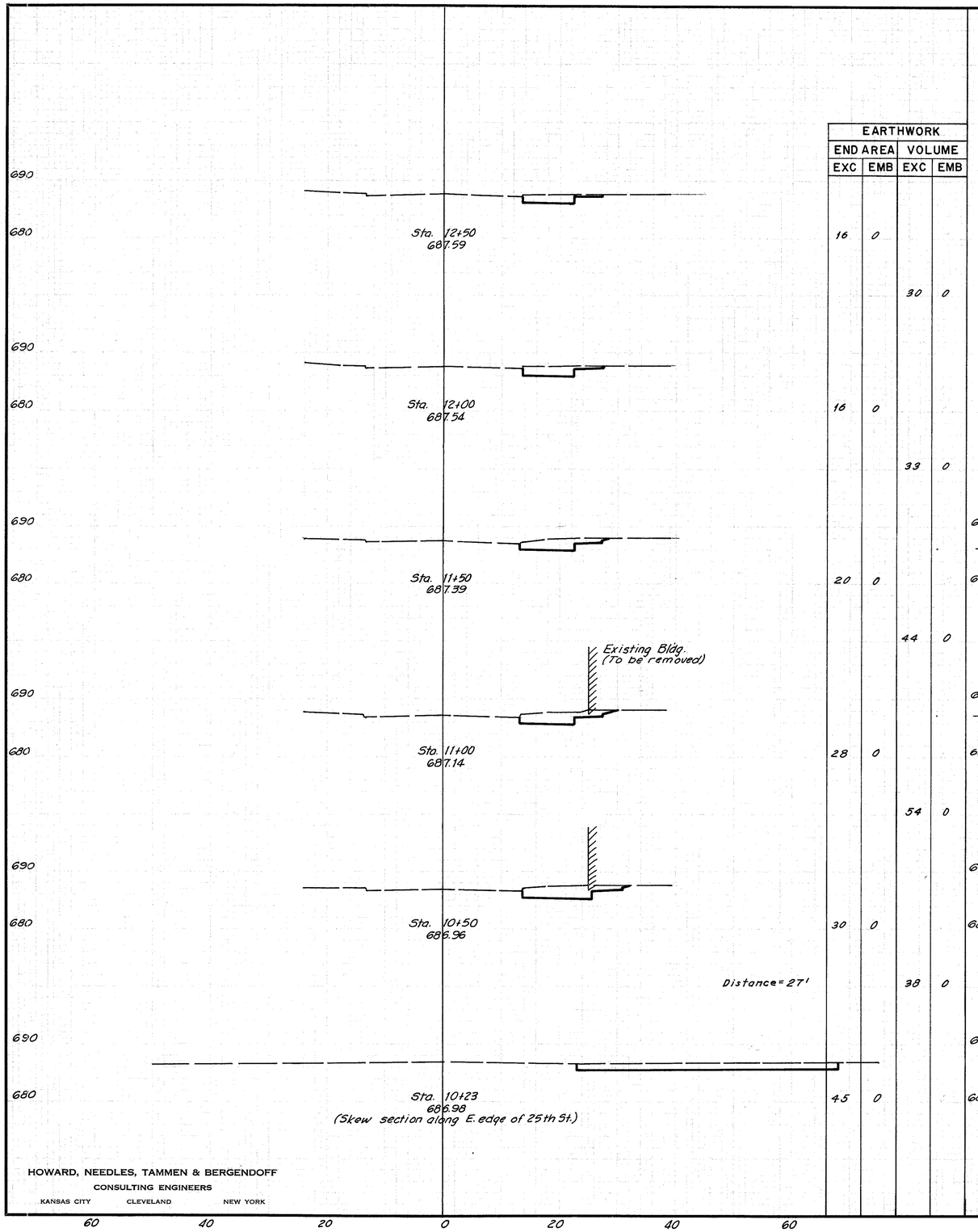
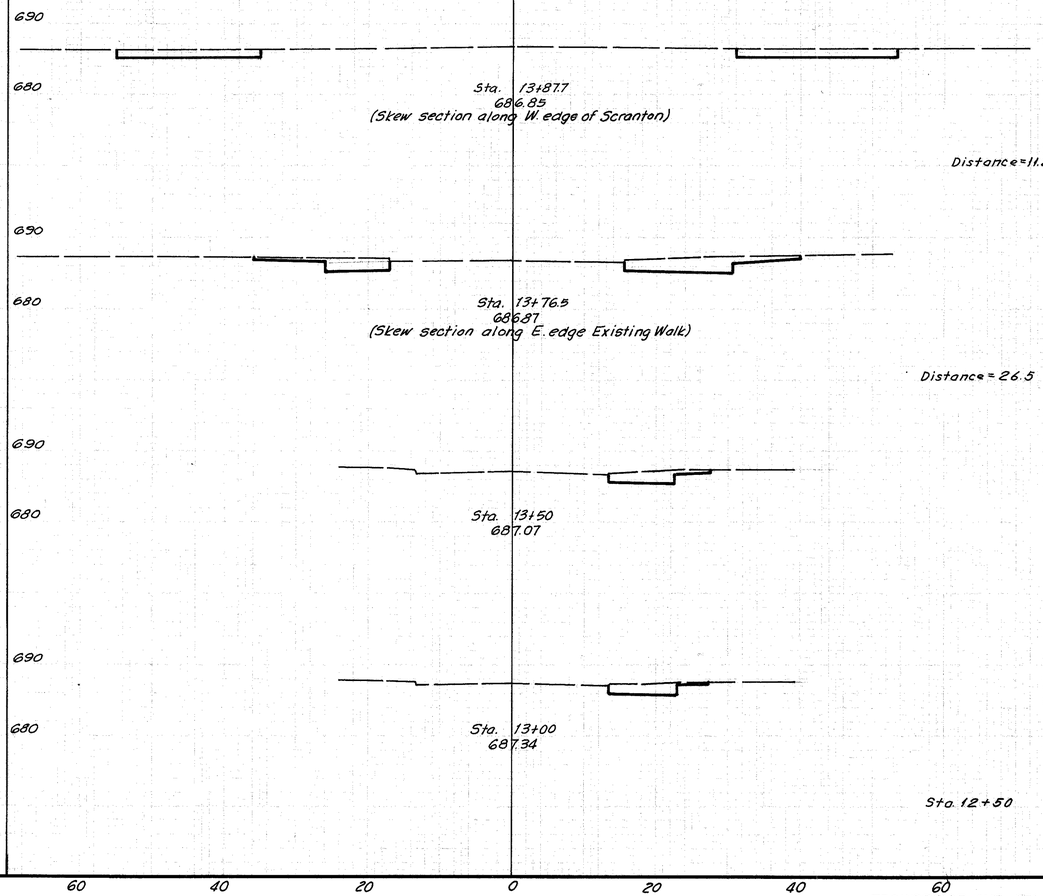
CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC	EMB	EXC	EMB
16	0		
		30	0
16	0		
		33	0
20	0		
		44	0
28	0		
		54	0
30	0		
		38	0
45	0		



EARTHWORK			
END AREA		VOLUME	
EXC	EMB	EXC	EMB
43	0		
		19	0
50	0		
		32	0
15	0		
		29	0
16	0		
		30	0
16	0		

Distance=11.2

Distance=26.5

Sta. 12+50

DESIGNED H.N.D. 2-1-65
DETAILED D.J.S. 2-11-65
CHECKED D.J.S. 2-11-65
QUANTITIES D.K.K. 2-11-65

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

60 40 20 0 20 40 60 60 40 20 0 20 40 60

TROWBRIDGE AVE. STA. 10+23 TO STA. 13+87.7

PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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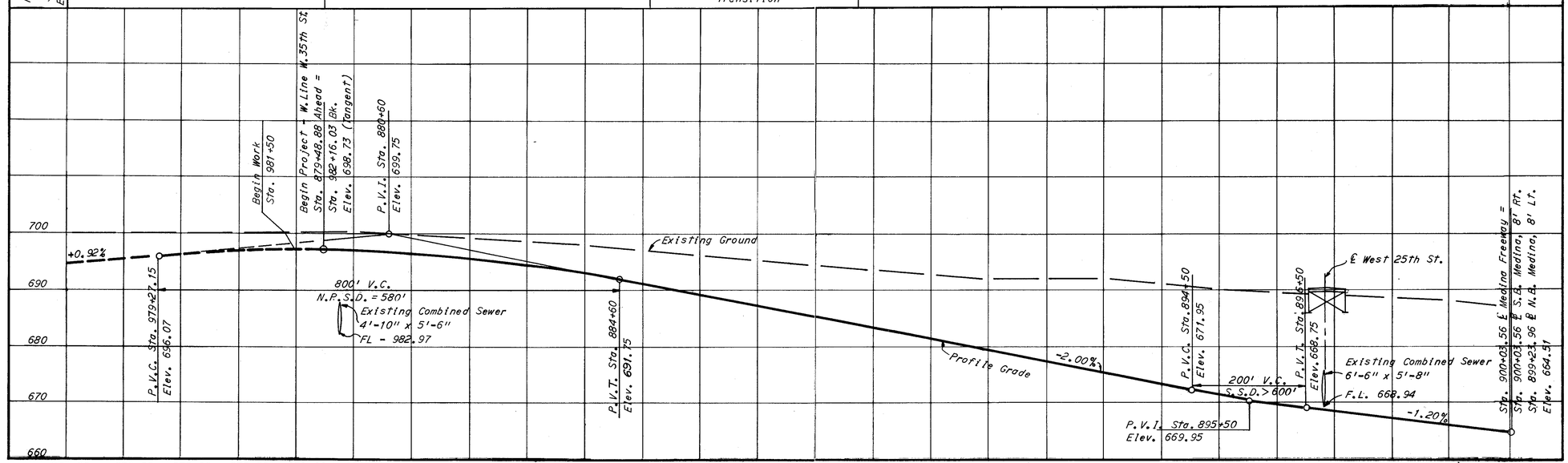
CUYAHOGA COUNTY
CUY.-71-17.18

Sta.	Left Edge	12' Left	24' Left	36' Left	Profile Grade	12' Right	24' Right	36' Right
25	697.20	697.39		697.02	697.20	697.39		697.02
50	697.16	697.34		696.97	697.16	697.34		696.97
75	697.09	697.27		696.90	697.09	697.27		696.90
25	697.00	697.18		696.81	697.00	697.18		696.81
50	696.88	697.07		696.69	696.88	697.07		696.69
75	696.75	696.93		696.56	696.75	696.93		696.56
25	696.58	696.77		696.40	696.58	696.77		696.40
50	696.40	696.59		696.22	696.40	696.59		696.22
75	696.20	696.38		696.01	696.20	696.38		696.01
25	695.97	696.15		695.78	695.97	696.15		695.78
50	695.72	695.90		695.53	695.72	695.90		695.53
25	695.44	695.63		695.25	695.44	695.63		695.25
50	695.14	695.33		694.96	695.14	695.33		694.96
75	694.82	695.01		694.64	694.82	695.01		694.64
	694.48	694.67		694.30	694.48	694.67		694.30
25	694.12	694.30		693.93	694.12	694.30		693.93
50	693.73	693.92		693.54	693.73	693.92		693.54
75	693.32	693.51		693.13	693.32	693.51		693.13
	692.88	693.07		692.70	692.88	693.07		692.70
25	692.43	692.61		692.24	692.43	692.61		692.24
50	691.95	692.13		691.76	691.95	692.13		691.76
75	691.45	691.64		691.26	691.45	691.64		691.26
	690.95	691.14		690.76	690.95	691.14		690.76
25	690.45	690.64		690.26	690.45	690.64		690.26
50	689.95	690.14		689.76	689.95	690.14		689.76
75	689.45	689.64		689.26	689.45	689.64		689.26
	688.95	689.14		688.76	688.95	689.14		688.76
25	688.45	688.64	688.45	688.26	688.45	688.64	688.59	688.54
50	687.95	688.14	687.88	687.70	687.95	688.07	688.12	688.11
75	687.45	687.64	687.32	687.14	687.45	687.51	687.67	687.70
	686.95	687.14	686.76	686.57	686.95	686.94	687.23	687.33
25	686.45	686.64	686.13	685.94	686.45	686.32	686.80	686.96
50	685.95	686.14	685.53	685.32	685.95	685.74	686.38	686.59
75	685.45	685.64	684.95	684.70	685.45	685.20	685.98	686.23
	684.95	685.14	684.36	684.07	684.95	684.66	685.29	685.87
25	684.45	684.64	683.78	683.44	684.45	684.12	684.85	685.52
50	683.95	684.14	683.20	682.82	683.95	683.57	684.41	685.16
75	683.45	683.64	682.61	682.13	683.45	683.03	683.96	684.80
	682.95	683.14	682.09	681.65	682.95	682.52	683.48	684.35
25	682.45	682.64	681.59	681.15	682.45	682.02	682.98	683.85
50	681.95	681.52	681.09	680.65	681.95	681.52	682.48	683.35
75	681.45	681.02	680.59	680.15	681.45	681.02	681.98	682.85
	680.95	680.52	680.09	679.65	680.95	680.52	681.48	682.35
25	680.45	680.02	679.59	679.15	680.45	680.02	680.98	681.85
50	679.95	679.52	679.09	678.65	679.95	679.52	680.48	681.35
75	679.45	679.02	678.59	678.15	679.45	679.02	679.98	680.85
	678.95	678.52	678.09	677.65	678.95	678.52	679.48	680.35
25	678.45	678.02	677.59	677.15	678.45	678.02	678.98	679.85
50	677.95	677.52	677.09	676.65	677.95	677.52	678.48	678.35
75	677.45	677.02	676.59	676.15	677.45	677.02	677.98	678.85
	676.95	676.52	676.09	675.65	676.95	676.52	677.48	677.35
25	676.45	676.02	675.59	675.15	676.45	676.02	676.98	677.85
50	675.95	675.52	674.59	674.15	675.95	675.52	676.48	676.35
75	675.45	674.52	674.09	673.65	675.45	674.52	675.98	676.85
25	674.45	674.02	673.59	673.15	674.45	674.02	674.98	675.85
50	673.95	673.52	673.09	672.65	673.95	673.52	674.48	674.35
75	673.45	673.02	672.59	672.15	673.45	673.02	673.98	674.85
	672.95	672.52	672.09	671.65	672.95	672.52	673.48	673.35
25	672.45	672.02	671.59	671.15	672.45	672.02	672.98	673.85
50	671.95	671.52	671.09	670.65	671.95	671.52	672.48	672.35
75	671.46	671.03	670.60	670.17	671.46	671.03	672.00	672.86
	671.00	670.57	670.14	669.70	671.00	670.56	671.53	671.96
25	670.56	670.13	669.70	669.27	670.15	669.72	669.29	688.85
50	670.15	669.72	669.29	688.85	669.76	669.33	668.90	668.47
75	669.76	669.33	668.90	668.47	669.40	668.97	668.54	668.10
25	669.40	668.97	668.54	668.10	669.06	668.63	668.20	667.77
50	669.06	668.63	668.32	667.89	668.75	668.32	667.89	667.45
75	668.75	668.32	667.89	667.45	668.45	668.02	667.59	667.15
	668.45	668.02	667.59	667.15	668.15	667.72	667.29	666.85
25	668.15	667.72	667.29	666.85	667.85	667.42	666.99	666.55
50	667.85	667.42	666.99	666.55	667.55	667.12	666.69	666.25
75	667.55	667.12	666.69	666.25	667.25	666.82	666.39	665.95
	667.25	666.82	666.39	665.95	666.95	666.52	666.09	665.65
25	666.95	666.52	666.09	665.65	666.65	666.22	665.79	665.35
50	666.65	666.22	665.79	665.35	666.35	665.92	665.49	665.05
75	666.35	665.92	665.49	665.05	666.05	665.62	665.19	664.75
	666.05	665.75	665.32	664.89	665.75	665.32	664.89	664.45
25	665.45	665.02	664.58	664.15	665.55	665.98	665.42	665.85
50	665.15	664.68	664.20	663.73	665.25	665.68	665.12	666.55
75	664.65	664.33	663.82	663.30	664.95	664.38	665.82	666.25
	664.55	663.99	663.43	662.88	664.65	664.08	665.52	665.94

Left Half Super Elevation: Superelevation +.0156 ft. per ft. (0 to 12' Left); Superelevation Transition; Superelevation -.036 ft. per ft.; Super. Trans.
Superelevation -0.156 ft. per ft. (12' to 36' Left); Super Trans.
Same as Profile Grade Elevations

Same as Left Edge Elevations

Right Half Super Elevation: Superelevation +.0156 ft. per ft. (0-12' Right); Super Trans.; Superelevation +.036 ft. per ft.
Superelevation -.0156 ft. per ft. (12'-36' Right); Superelevation Transition; Superelevation



Vert. 1"=10'
SCALE Hor. 1"=100'
MADE DJS DATE 1-16-65
TRCD. _____ DATE _____
CKD. DEK DATE 1-19-65

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

PROFILE MEDINA FREEWAY

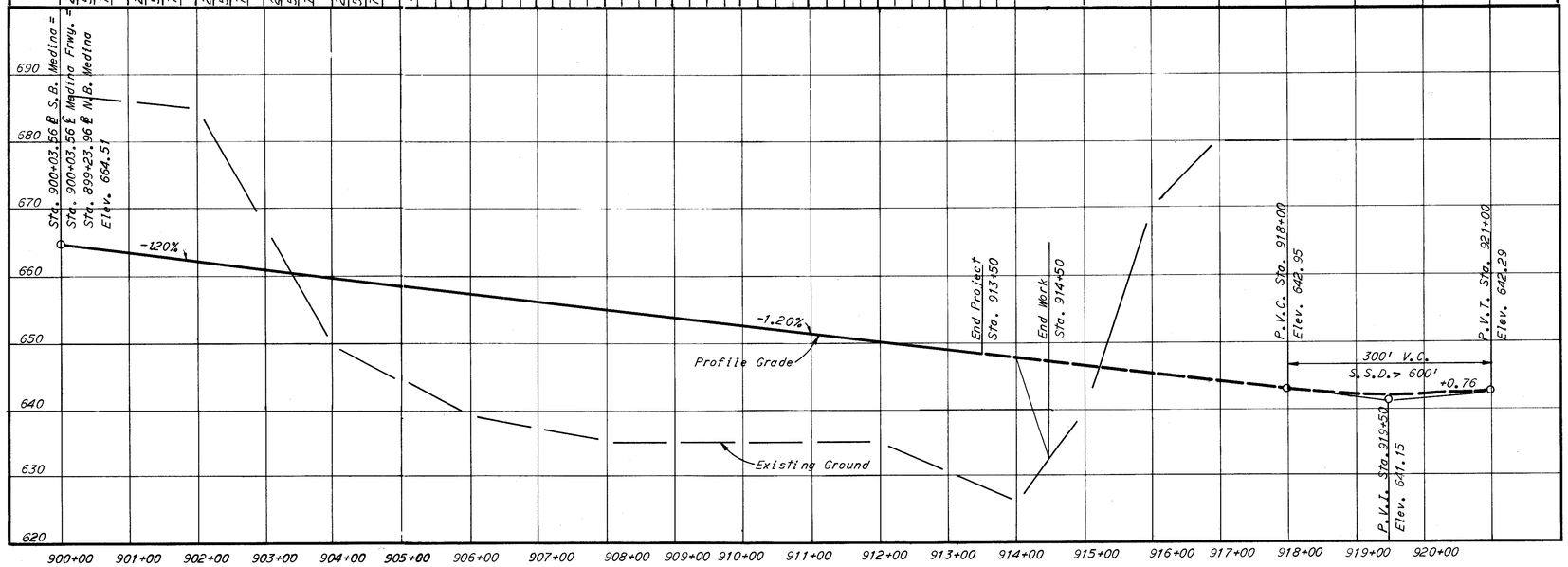
PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

47
241

CUYAHOGA COUNTY
CUY-71-17.18

	Profile Grade	12' Left	24' Left	36' Left	Total Width 36.00	Left Edge
Superelevation -.047 ft. per ft.	664.55	663.99	663.43	662.88	36.00	Same as 36' Left
	664.25	663.69	663.12	662.56		
	663.95	663.39	662.82	662.26		
	663.65	663.09	662.52	661.96		
	663.35	662.79	662.22	661.66		
	663.05	662.49	661.92	661.36		
	662.75	662.19	661.62	661.06		
	662.45	661.89	661.32	660.76		
	662.15	661.59	661.02	660.46		
	661.85	661.29	660.72	660.16		
	661.55	660.99	660.42	659.86		
	661.25	660.69	660.12	659.56		
	660.95	660.39	659.82	659.26		
	660.65	660.09	659.52	658.96		
	660.35	659.79	659.22	658.66		
	660.05	659.49	658.92	658.36		
	659.75	659.19	658.62	658.06		
	659.45	658.89	658.32	657.76		
	659.15	658.59	658.02	657.46		
	658.85	658.29	657.72	657.16		
	658.55	657.99	657.42	656.86		
	658.25	657.69	657.12	656.56		
	657.95	657.39	656.82	656.26		
	657.65	657.09	656.52	655.96		
	657.35	656.79	656.22	655.66		
	650.05	656.49	655.92	655.36		
	656.75	656.19	655.62	655.06		
	656.45	655.89	655.32	654.76		
	656.15	655.59	655.02	654.46		
	655.85	655.29	654.72	654.16		
	655.55	654.99	654.42	653.86		
	655.25	654.69	654.12	653.56		
	654.95	654.39	653.82	653.26		
	654.65	654.09	653.52	652.96	46.0	652.49
	654.35	653.79	653.22	652.66	46.0	652.19
	654.06	653.49	652.92	652.36	46.0	651.89
	653.75	653.19	652.62	652.06	46.0	651.59
Super Transition	653.45	652.84	652.23	651.63	70.3	649.89
	653.15	652.50	651.85	651.20	69.2	649.40
	652.85	652.16	651.46	650.77	68.2	648.90
	652.55	651.81	651.07	650.34	67.2	648.42
Superelevation -.071 ft. per ft.	652.25	651.47	650.69	649.91	66.1	647.95
	651.95	651.12	650.30	649.48	65.0	647.48
	651.65	650.80	649.95	649.09	63.6	647.13
	651.35	650.50	649.65	648.79	62.0	646.95
	651.05	650.20	649.35	648.49	60.6	646.75
	650.75	649.90	649.05	648.19	58.8	646.58
	650.45	649.60	648.75	647.89	57.1	646.40
	650.15	649.30	648.45	647.59	55.2	646.23
	649.85	649.00	648.15	647.29	54.0	646.02
	649.55	648.70	647.85	646.99	52.5	645.82
	649.25	648.40	647.55	646.69	51.2	645.62
	648.95	648.10	647.25	646.39	50.2	645.39
	648.65	647.80	646.95	646.09	49.4	645.14
	648.35	647.50	646.65	645.79	48.8	644.88



V=7.1"=10'
SCALE Hor. 1"=100'
MADE D.J.S. DATE 1-15-69
TRCD. DATE
CKD. D.R.K. DATE 1-19-69

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

PROFILE SOUTHBOUND MEDINA

PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

Superelevation +.036 ft. per ft. | Superelevation Transition | Superelevation 0.083 ft. per ft.

	Profile Grade	12' Right	24' Right	36' Right	Width	Right Edge Elev.
25	664.60	665.03	665.47	665.90	36.00'	Same as 36' Right Elevation
50	664.29	664.73	665.16	665.59		
75	663.99	664.42	664.85	665.28		
	663.68	664.11	664.54	664.98		
25	663.37	663.80	664.24	664.67		
50	663.06	663.50	663.93	664.36		
75	662.76	663.19	663.62	664.05		
	662.45	662.88	663.31	663.74		
25	662.14	662.57	663.01	663.44		
50	661.85	662.28	662.71	662.14		
75	661.60	662.04	662.47	662.90		
	661.40	661.84	662.27	662.70		
25	661.25	661.69	662.12	662.55		
50	661.15	661.58	662.01	662.44		
75	661.09	661.53	661.96	662.39		
	661.08	661.52	661.95	662.38		
25	661.12	661.56	661.99	662.42		
50	661.21	661.64	662.07	662.50		
75	661.34	661.77	662.21	662.64		
	661.52	661.95	662.38	663.82		
25	661.75	662.18	662.61	663.04		
50	662.02	662.45	662.89	663.32		
75	662.34	662.78	663.21	663.64		
	662.71	663.14	663.58	664.01		
25	663.13	663.56	664.00	664.43		
50	663.58	664.01	664.44	664.88		
75	664.03	664.46	664.89	665.33		
	664.48	664.91	665.34	665.78		
25	664.93	665.36	665.79	666.23		
50	665.38	665.81	666.24	666.68		
75	665.83	666.26	666.69	667.13		
	666.28	666.71	667.14	667.58		
25	666.73	667.19	667.66	668.12	36.00'	
50	667.18	667.68	668.19	668.69	60.53'	669.72
75	667.63	668.18	668.92	669.27	59.84'	670.35
	668.08	668.67	669.26	669.84	59.14'	670.98
25	668.53	669.16	669.79	670.42	58.45'	671.59
50	668.98	669.65	670.32	670.99	57.76'	671.21
75	669.44	670.14	670.86	671.57	57.06'	672.82
	669.88	670.63	671.39	672.14	56.37'	673.42
25	670.33	671.13	671.92	672.72	55.67'	674.02
50	670.78	671.62	672.46	673.29	54.98'	674.62
75	671.23	672.11	672.99	673.87	54.28'	675.21
	671.68	672.60	673.52	674.44	53.59'	675.79
25	672.13	673.09	674.06	675.02	52.89'	676.37
50	672.58	673.58	674.57	675.57	52.20'	676.91
75	673.03	674.03	675.02	676.02	51.51'	677.31
	673.48	674.48	675.47	676.47	60.81'	677.70
25	673.93	674.93	675.92	676.92	50.12'	678.09
50	674.38	675.38	676.37	677.37	49.42'	678.48
75	674.83	675.83	676.82	677.82	48.73'	678.87
	675.28	676.28	677.27	678.27	48.03'	679.27
25	675.73	676.73	677.72	678.72	48.00'	679.71
50	676.18	677.18	678.17	679.17	48.00'	680.16
75	676.63	677.63	678.62	679.62	48.00'	680.61
	677.08	678.08	679.07	680.07	48.00'	681.06

SCALE Vert. 1" = 10' Hor. 1" = 100'
MADE DJS DATE 1-16-64
TRCD. ____ DATE ____
CKD. DRK DATE 1-19-64

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

PROFILE NORTHBOUND MEDINA

PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

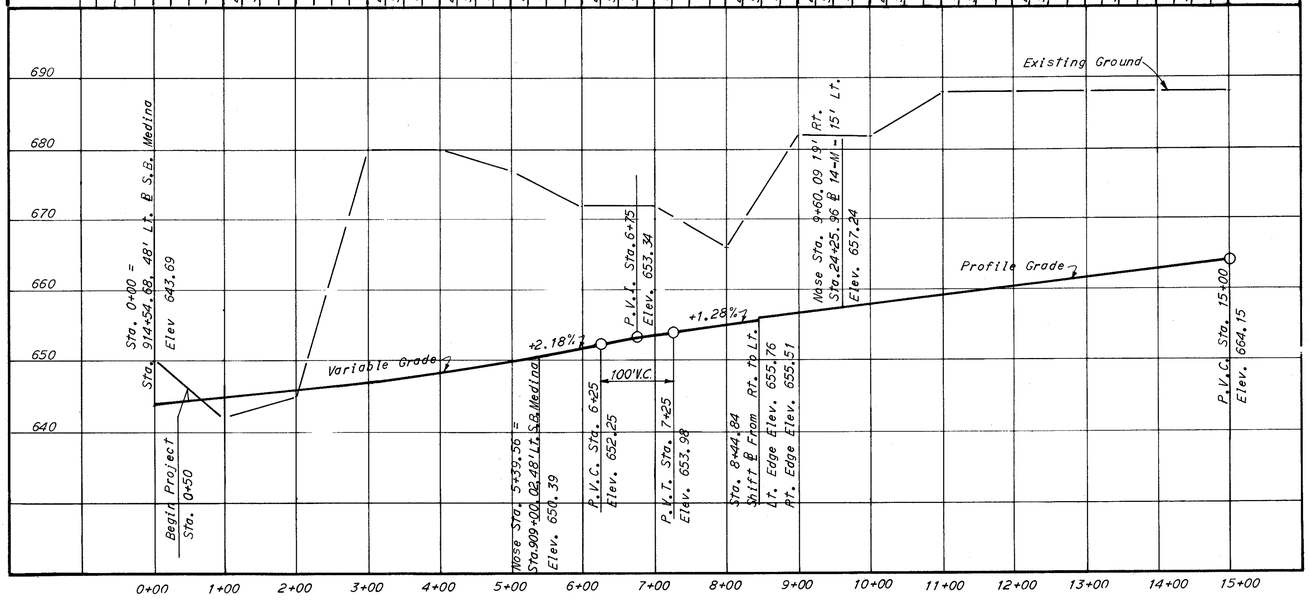
49/241

CUYAHOGA COUNTY
CUY-71-17.18

* Left Edge Elevations

		Profile Grade	Width	12' Right	Right Edge
				Super Varies	
		643.69			651.40*
	25	643.99			
	50	644.28			651.78*
	75	644.56			
		644.83		651.71	652.18*
	25	645.09			
	50	645.34			
	75	645.58			
		645.81		651.71	652.58*
	25	646.03			
	50	646.24			
	75	646.44			
		646.63		652.25	653.02*
	25	646.82			
	50	647.00			
	75	647.18			
		647.62		652.25	653.48*
	25	648.09			
	50	648.57			
	75	649.07			
		649.57		652.25	653.88*
	25	650.09	17.79'		654.23*
	50	650.62			
	75	651.16	17.29'		654.55*
		651.71	16.79'		654.87*
	25	652.25	16.29'		655.19*
	50	652.77	16.00'		655.51*
	75	653.23			655.58
		653.63			655.90
	25	653.98			656.22
	50	654.30			565.54
	75	654.62			656.86
		654.94			656.91
	25	655.26			657.24
	50	655.83			657.56
	75	656.15			657.25
		656.47			657.58
	25	656.79	16.00'		657.88
	50	657.11			658.20
	75	657.43			658.52
		657.75			658.25
	25	658.07			658.84
	50	658.39			658.58
	75	658.71			659.16
		659.03			658.91
	25	659.35			659.48
	50	659.67			659.24
	75	659.99			659.80
		660.31			659.57
	25	660.63			660.12
	50	660.95			659.90
	75	661.27			660.44
		661.59			660.23
	25	661.91			660.76
	50	662.23			660.56
	75	662.55			661.08
		662.87			660.88
	25	663.19			661.40
	50	663.51			661.21
	75	663.83			661.72
		664.15			661.53
					662.04
					661.85
					662.36
					662.17
					662.68
					662.49
					663.00
					662.81
					663.32
					663.13
					663.24
					663.45
					663.96
					663.77

Width Varies



Note:
For remainder of profile see next sheet.

SCALE Vert. 1"=10' Hor. 1"=100'
MADE DJS DATE 1-16-64
TRCD. _____ DATE _____
CKD DRK DATE 1-18-64

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

PROFILE LANE "J"

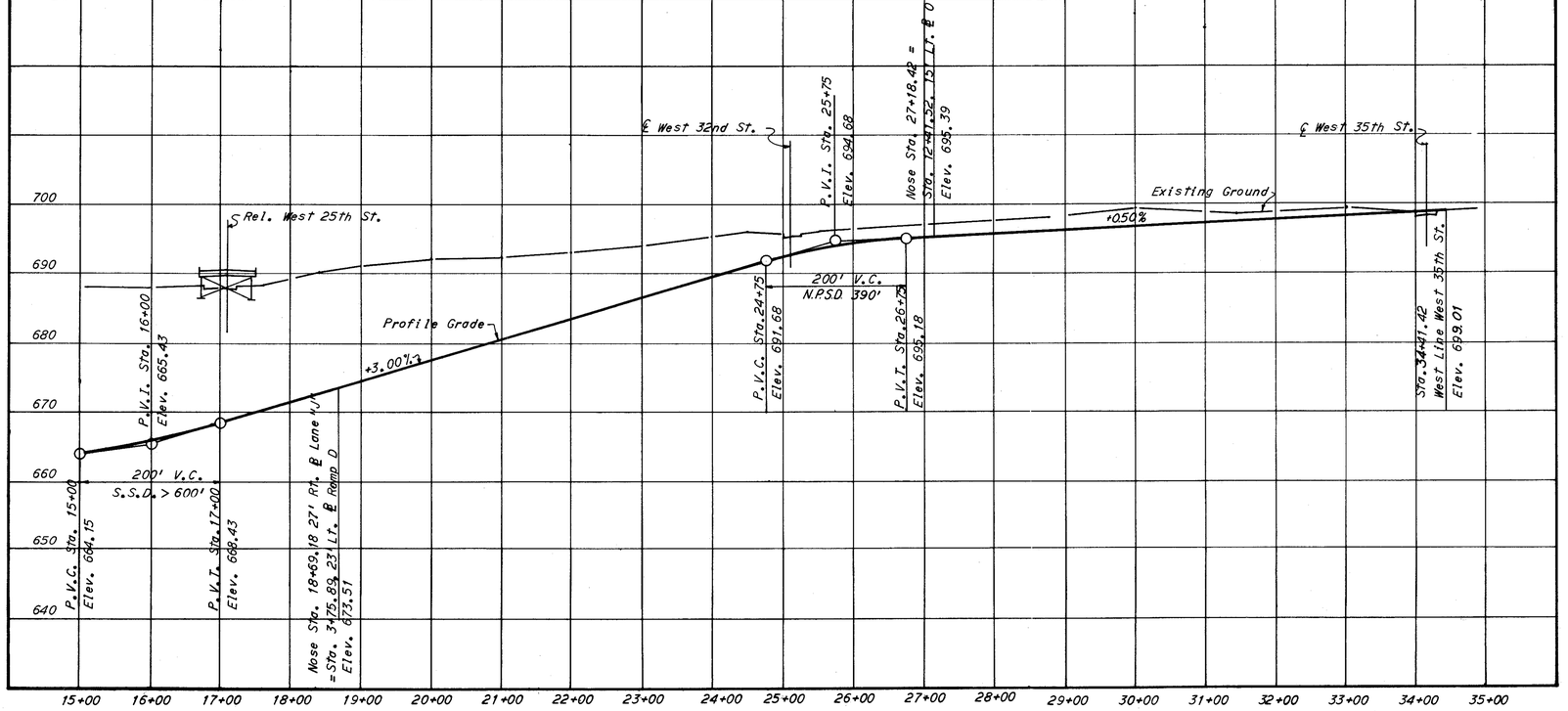
PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

50/241

CUYAHOGA COUNTY
CUY-71-17.18

		Profile Grade	Width	12' Right	Right Edge
Superelevation=-.0156 ft. per ft.		664.15		663.96	663.77
	25	664.50		664.31	664.12
	50	664.90		664.71	664.52
	75	665.35		665.16	664.96
		665.86	Width Varies	665.67	665.45
	25	666.42		666.23	665.99
	50	667.04		666.85	666.59
	75	667.71		667.52	667.24
		668.43		668.24	667.93
	25	669.18		668.99	668.65
	50	669.93		669.74	669.37
	75	670.68		670.49	670.08
		671.43		671.24	670.78
	25	672.18		671.99	671.49
	50	672.93		672.74	672.19
	75	673.68	24.88	673.49	673.29
		674.43	24.38	674.24	674.05
	25	675.18	23.88	674.99	674.81
	50	675.93	23.38	675.74	675.57
	75	676.68	16.00	676.43	676.43
		677.43		677.18	677.18
	25	678.18		677.93	677.93
	50	678.93		678.68	678.68
	75	679.68		679.43	679.43
		680.43		680.18	680.18
	25	681.18		680.93	680.93
	50	681.93		681.68	681.68
	75	682.68		682.43	682.43
		683.43		683.18	683.18
	25	684.18		683.93	683.93
	50	684.93		684.68	684.68
	75	685.68		685.43	685.43
		686.43		686.18	686.18
	25	687.18		686.93	686.93
	50	687.93		687.68	687.68
	75	688.68		688.43	688.43
		689.43		689.18	689.18
	25	690.18		689.93	689.93
	50	690.93		690.68	690.68
	75	691.68		691.43	691.43
		692.39		692.14	692.14
Super. Varies	25	693.02		692.77	692.77
	50	693.58		693.33	693.33
	75	694.06		693.83	693.83
		694.45		694.28	694.28
	25	694.77		694.66	694.66
	50	695.01		694.96	694.96
	75	695.18		695.21	695.21
		695.30	16.00	695.46	695.46
Left Half Superelevation = +.0156 ft. per ft.	25	695.43		695.62	695.28
	50	695.55		695.74	695.43
	75	695.68		695.87	695.59
		695.80		695.99	695.73
	25	695.93		696.12	695.88
	50	696.05		696.24	696.02
	75	696.18		696.37	696.16
		696.30	Width Varies	696.49	696.29
	25	696.43		696.62	696.42
	50	696.55		696.74	696.55
Right Half Superelevation = -.0156 ft. per ft.	75	696.68	24.00	696.87	Elevations same as Profile Grade
		696.80		696.99	
	25	696.93		697.12	
	50	697.05		697.24	
	75	697.18		697.37	
		697.30		697.49	
	25	697.43		697.62	
	50	697.55		697.74	
	75	697.68		697.87	
		697.80		697.99	
	25	697.93		698.12	
	50	698.05		698.24	
	75	698.18		698.37	
		698.30		698.49	
	25	698.43		698.62	
	50	698.55		698.74	
	75	698.68		698.87	
	25	698.93	24.00	698.99	699.12



SCALE Vert. 1"=10' Hor. 1"=100'
MADE D.J.S. DATE 1-16-69
TRCD. ____ DATE ____
CKD. D.R.K. DATE 1-16-69

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

PROFILE LANE "J"

PROFILE

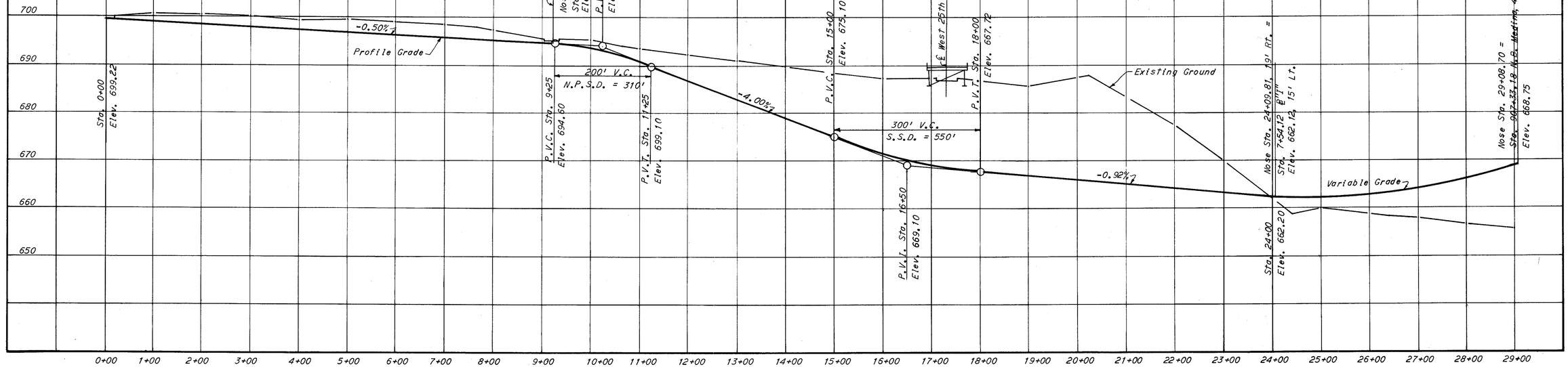
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

51
241

CUYAHOGA COUNTY
CUY-71-17.18

	Profile Grade	Width	12' Right	Right Edge
	699.22	24.00	699.41	
25	699.10	←	699.29	
50	698.98		699.16	
75	698.85		699.04	
	698.72		698.91	
25	698.60		698.79	
50	698.48		698.66	
75	698.35		698.54	
	698.22		698.41	
25	698.10		698.29	
50	697.98		698.16	
75	697.85		698.04	
	697.72		697.91	
25	697.60		697.79	
50	697.48		697.66	
75	697.35	24.00	697.54	
	697.22		697.41	
25	697.10		697.29	
50	696.98		697.16	
75	696.85		697.04	
	696.72		696.91	
25	696.60		696.79	
50	696.48		696.66	
75	696.35		696.54	
	696.22		696.41	
25	696.10		696.29	
50	695.98		696.16	
75	695.85		696.04	
	695.72		695.91	
25	695.60		695.79	
50	695.48		695.66	
75	695.35		695.54	
	695.22		695.41	
25	695.10	24.00	695.29	
50	694.98		695.16	
75	694.85		695.04	
	694.72		694.71	
25	694.60	24.00	694.79	
50	694.42	24.71	694.91	
75	694.13	24.21	694.32	
	693.72	23.71	693.91	
25	693.22	23.21	693.41	
50	692.60	16.00		
75	691.88		692.13	
	691.04		691.30	
25	690.10		690.35	
50	689.10		689.35	
75	688.10		688.35	
	687.10		687.35	
25	686.10		686.35	
50	685.10		685.35	
75	684.10		684.35	
	683.10		683.35	
25	682.10		682.35	
50	681.10		681.35	
75	680.10		680.35	
	679.10		679.35	
25	678.10		678.35	
50	677.10		677.35	
75	676.10		676.35	
	675.10		675.35	
25	674.13		674.38	
50	673.23		673.48	
75	672.39		672.64	
	671.61		671.86	
25	670.90		671.15	
50	670.26		670.51	
75	669.67		669.92	
	669.15		669.40	
25	668.70		668.95	
50	668.31		668.56	
75	667.95		668.23	
	667.72		667.97	
25	667.49		667.74	
50	667.26		667.51	
75	667.03		667.28	
	666.80		667.05	
25	666.57		666.82	
50	666.34		666.59	
75	666.11		666.36	
	665.88		666.13	
25	665.65		665.90	
50	665.42		665.67	
75	665.19		665.44	
	664.96		665.21	
25	664.73		664.98	
50	664.50		664.75	
75	664.27		664.52	
	664.04		664.29	
25	663.81		664.06	
50	663.58		663.83	
75	663.35		663.60	
	663.12		663.37	
25	662.89		663.14	
50	662.66		662.91	
75	662.43	16.00	662.68	
	662.20		662.45	
25	662.05			
50	662.00			
75	662.05			
	662.10			
25	662.25			
50	662.45			
75	662.65			
	662.90			
25	663.20			
50	663.60			
75	664.00			
	664.40			
25	664.80			
50	665.20			
75	665.70			
	666.20			
25	666.80			
50	667.40			
75	668.00			
	668.60			

Superelevation +.0156 ft. per ft.
Superelevation -.0156 ft. per ft.
Superelevation +.0156 ft. per ft.
24' Right Same as Profile Grade
Match ℄ Ramp G Elevations
Match Elevation 12' Left ℄ Ramp G
Same as ℄ Ramp "I"
Width Varies
Width Variable



SCALE Hor 1"=100' VERT 1"=10'
MADE RVR DATE 6-29-64
TRCD. ____ DATE ____
CKD. DRK DATE 6-29-64

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

PROFILE LANE H

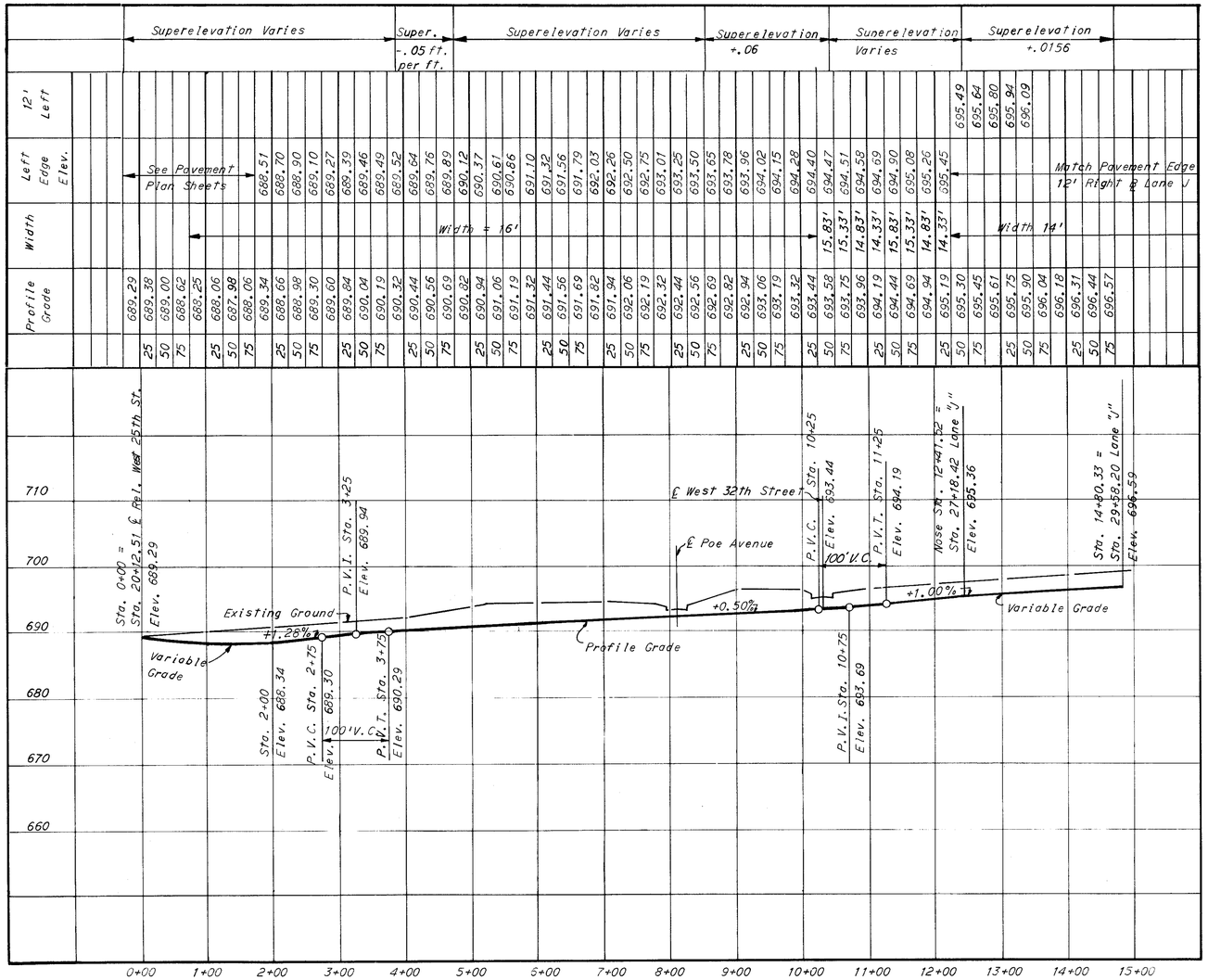
RAMP PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

52
241

CUYAHOGA COUNTY
CUY-71-17.18

		Profile Grade	Width	Left Edge Elev.	12' Left
Superelevation Varies	25	689.29			
	50	689.38		See Pavement Plan Sheets	
	75	689.00			
	25	688.62	←		
	50	688.25		688.06	
	75	687.98		688.06	
	25	688.06		688.06	
	50	688.06		689.34	
	75	689.34		688.51	
	25	688.66		688.70	
	50	688.98		688.90	
	75	689.30		689.10	
	25	689.60		689.27	
	50	689.84		689.39	
	75	690.04		689.46	
	25	690.19		689.49	
Super. -.05 ft. per ft.	50	690.32		689.52	
	75	690.44		689.64	
	25	690.56		689.76	
	50	690.69		689.89	
	75	690.82		690.12	
Superelevation Varies	25	690.94		690.37	
	50	691.06		690.61	
	75	691.19		690.86	
	25	691.32		691.10	
	50	691.44		691.32	
	75	691.56		691.56	
	25	691.69		691.79	
	50	691.82		692.03	
	75	691.94		692.26	
	25	692.06		692.50	
	50	692.19		692.75	
	75	692.32		693.01	
	25	692.44		693.25	
	50	692.56		693.50	
	75	692.69		693.65	
Superelevation +.06	25	692.82		693.78	
	50	692.94		693.96	
	75	693.06		694.02	
	25	693.19		694.15	
	50	693.32		694.28	
	75	693.44		694.40	
Superelevation Varies	25	693.58	15.83'	694.47	
	50	693.75	15.33'	694.51	
	75	693.96	14.83'	694.58	
	25	694.19	14.33'	694.69	
	50	694.44	15.83'	694.90	
	75	694.69	15.33'	695.08	
	25	694.94	14.83'	695.26	
Superelevation +.0156	25	695.19	14.33'	695.45	695.49
	50	695.30	←	←	695.64
	75	695.45		Match Pavement Edge 12' Right of Lane "J"	695.80
	25	695.61			695.94
	50	695.75	Width 14'		696.09
	75	695.90			
	25	696.04			
	50	696.18			
	75	696.31			
	25	696.44			
	50	696.57			
	75				



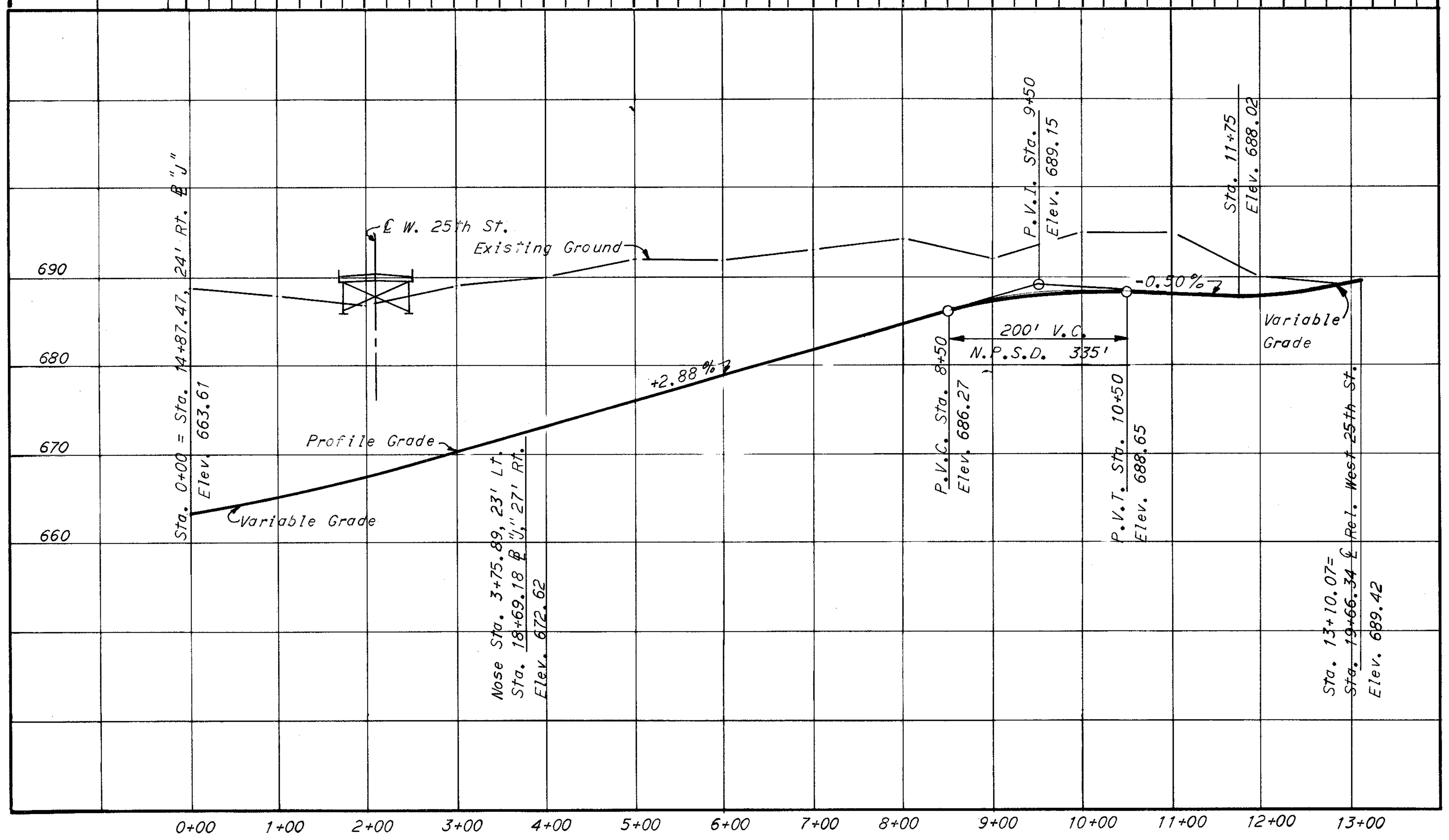
SCALE Ver. 1"=10' Hor. 1"=100'
MADE DWS DATE 1-15-69
TRCD. ____ DATE ____
CKD. DRK DATE 1-18-69

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

PROFILE RAMP "O"

RAMP PROFILE

Station	Profile Grade	Left Edge Width	Left Edge	Right Edge Width	Right Edge	Section
	663.61		Match Pavement Edge 12' Right Lane "J"	0		Cross-Slope +.0156 ft.
25	663.95					
50	664.33					
75	664.76					
	665.23					
25	665.74					
50	666.31					
75	666.95					
	667.64					
25	668.36					
50	669.06					
75	669.78					
	670.49					
25	671.20					
50	671.89		Match Edge 24' Lane "J"			
75	672.59					
	673.31	18.00	673.69			Superelevation Transition
25	674.03		674.51			
50	674.75		675.33			
75	675.47		676.15			
	676.19		676.97			
25	676.91		677.79			
50	677.63		678.61			
75	678.35		679.43			
	679.07		680.15			Superelevation +.06 ft. per ft.
25	679.79		680.87			
50	680.51		681.59			
75	681.23		682.31			
	681.95		683.03			
25	682.67		683.75			
50	683.39		684.47			
75	684.11		685.19			
	684.83		685.91			
25	685.55		686.63			
50	686.27		687.35	0	686.27	
75	686.94		688.02	Width Varies	686.91	
	687.50		688.58		687.39	Super Varies
25	687.94		688.89		687.69	
50	688.31		689.12		687.91	
75	688.53		689.20		688.01	
	688.69		689.22		688.17	
25	688.73		689.13	18.00	688.33	Super
50	688.65		688.93		688.37	
75	688.52		688.80		688.24	
	688.40		688.68		688.12	
25	688.27		688.55		687.99	
50	688.15		688.43		687.87	
75	688.02		688.30		687.74	
	688.08	18.00	See Pavement Plan	18.00	See Pavement Plan	Superelevation Varies
25	688.28					
50	688.62					
75	689.01					
	689.40					



SCALE Vert. 1"=10' Hor. 1"=100' | HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DJS DATE 1-15-64 | CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 1-19-64 | KANSAS CITY CLEVELAND NEW YORK

RAMP PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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241

CUYAHOGA COUNTY
CUY–71–17.18

.021'/'

Superelevation +.0156 ft. per ft.

Station	Left Edge	12' Left	Width	Profile Grade
75	645.50			645.17
	645.16		Width = 16'	644.91
25	644.96			644.71
50	644.83			644.58
75	644.76			644.51
	644.75			644.50
25	644.81			644.56
50	644.93			644.68
75	645.12			644.87
	645.37			645.12
25	645.68			645.43
50	646.06			645.81
75	646.50			646.25
	647.00			646.75
25	647.57			647.32
50	648.17			647.92
75	648.77			648.52
	649.37			649.12
25	649.97			649.72
50	650.57			650.32
75	651.17			650.92
	651.77			651.52
25	652.34			652.09
50	652.85			652.60
75	653.30			653.05
	653.70			653.44
25	654.06			653.81
50	654.41		15.52'	654.17
75	654.76		15.02'	654.53
	655.12		14.52'	654.89
25	655.47		14.02'	655.25
50	655.86		15.52'	655.62
75	656.21		15.02'	655.98
	656.57		14.52'	656.34
25	656.92		14.02'	656.70
50		657.23	Width = 14'	657.04
75		657.50		657.38
		657.91		657.72
25		658.24		658.06
50		658.59		658.40
75		658.92		658.73
		659.25		659.06
25		659.59		659.40
50		659.92		659.73
75		Match Lane "J" 12' Right		660.06
				660.40
25				660.72
50				661.05
75				661.38
				661.70
25				662.03
50				662.35
75				662.67
				663.00

SCALE Hor. 1" = 100' Ver. 1" = 10'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE D.R.K. DATE 6-24-64	CONSULTING ENGINEERS
TRCD. ____ DATE ____	
CKD. L.A.Z. DATE 6-26-64	KANSAS CITY CLEVELAND NEW YORK

RAMP PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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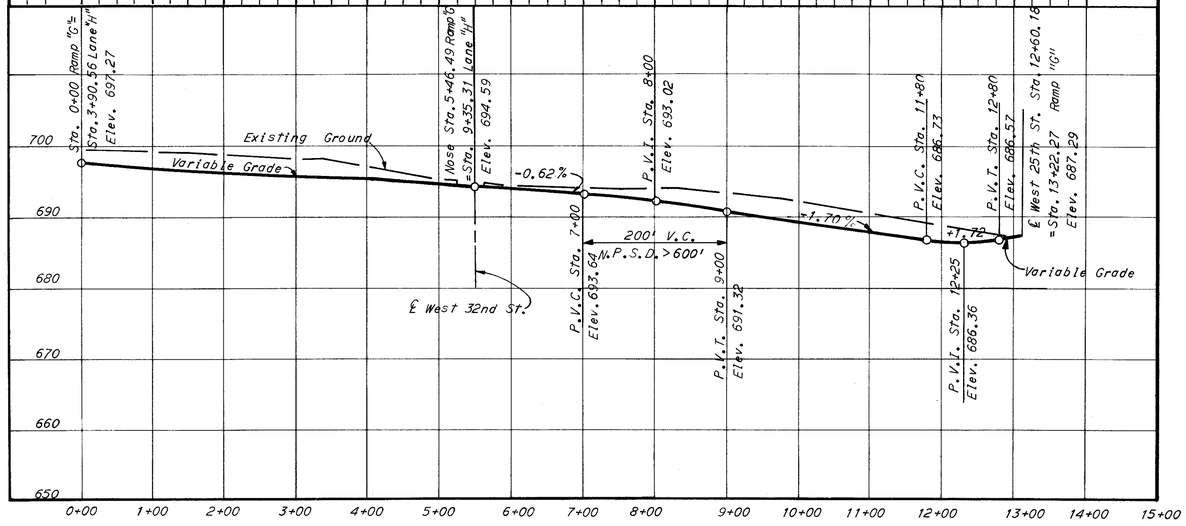
CUYAHOGA COUNTY
CUY-71-17.18

		Profile Grade	Width	12' Left	Left Edge
Superelevation +.0156 ft. per ft.	25	697.27			
	50	697.14			
	75	697.01			
	25	696.89			
	50	696.75			
	75	696.66			
	25	696.56			
	50	696.46		696.64	
	75	696.34		696.53	
	25	696.23		696.42	
	50	696.13		696.31	
	75	696.02		696.21	
	25	695.92		696.11	
	50	695.81		696.00	
	75	695.71		695.89	
	25	695.60		695.79	
	50	695.45		695.64	
	75	695.28		695.47	
	25	695.12		695.31	
	50	694.97		695.16	
	75	694.82		695.00	
	25	694.66		694.85	694.83
	50	694.57	17.93		694.54
Super Trans.	75	694.42	17.43		694.25
	25	694.26	16.93		693.97
	50	694.10	16.43		693.70
	75	693.95	16.00		693.54
Superelevation -.0156 ft. per ft.	25	693.80			693.39
	50	693.64			693.22
	75	693.47			693.01
	25	693.26			692.77
	50	693.02			692.50
	75	692.75			692.19
	25	692.44			691.85
	50	692.10			691.48
	75	691.73			691.07
	25	691.32			690.64
	50	690.90			690.22
	75	690.47			689.80
	25	690.04			689.37
	50	689.62	16.00	689.43	689.37
	75	689.20	18.00	689.01	688.91
Super. -.0156 ft. ft. (12'-24' Left)	25	688.77	20.00	688.58	688.46
	50	688.34	22.00	688.16	688.00
	75	687.92	24.00	687.75	687.57
	25	687.50		687.39	687.20
	50	687.07		687.03	686.84
	75	686.64		686.67	686.48
Super Varies (0'-12' Left) SE +.0156	25	686.29		686.37	686.18
	50	686.14	24.00	686.10	686.10
	75	686.21		686.40	686.21
		686.49		686.67	686.49
		686.90			

Note: For additional elevations see Pavement Plans.



SCALE Hor. 1"=100' Vert. 1"=10'
MADE DRK DATE 6-29-69
TRCD. DJS DATE 6-29-69
CKD. RJZ DATE 6-30.

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

PROFILE - RAMP "G"

RAMP PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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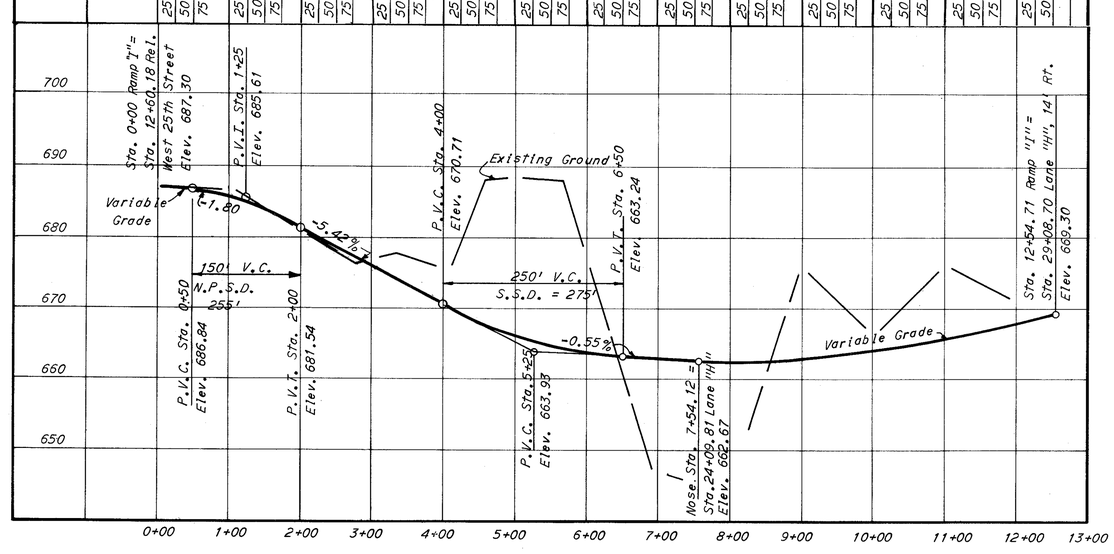
CUYAHOGA COUNTY
CUY.-71-17.18

	Superelevation Varies				Superelevation -.0156 ft. per				Super Varies				Superelevation +.0156 ft. per ft.				Super Varies				Superelevation -.0156 ft. per ft.																Super Varies		
Pavement Width				16.00												16.00				15.58				15.08				14.58				14.08							
Left Edge	See Pavement Plans			684.65	683.69	682.57	681.30		679.94		678.58		677.23		675.87		674.57		673.31		672.05		670.79		669.52		668.49		667.44		666.51		665.70		665.02		664.45		664.00	
Profile Grade	687.30	687.18	686.84	686.35	685.71	684.90	683.94	682.82	681.54	680.19	678.84	677.48	676.12	674.77	673.42	672.06	670.71	669.41	668.24	667.19	666.26	665.45	664.77	664.20	663.76	663.44	663.24	663.11	662.97	662.83	662.69	662.54	662.51	662.52	662.58	662.69	662.85	663.08	663.32	663.60	663.99	664.37	664.76	665.14	665.54	666.02	666.53	667.21	667.88	668.55	669.20
		25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50	75	25	50



SCALE Vert 1"=10' Hor 1"=100' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DJS DATE 1-18-64 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. DEK DATE 1-18-64 KANSAS CITY CLEVELAND NEW YORK

PROFILE RAMP "I"

PROFILE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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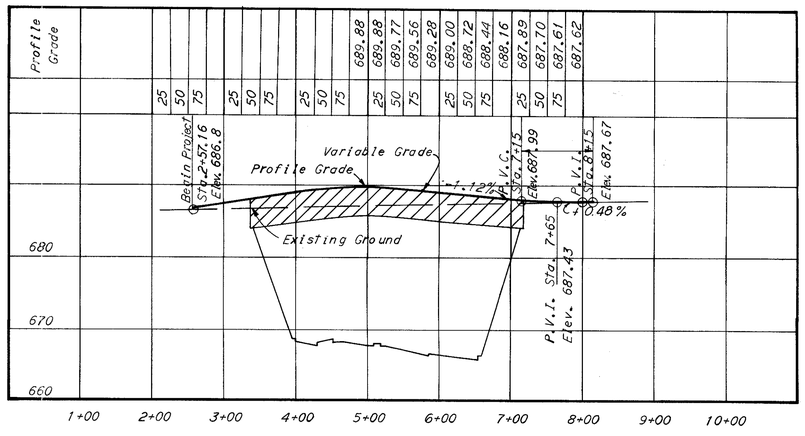
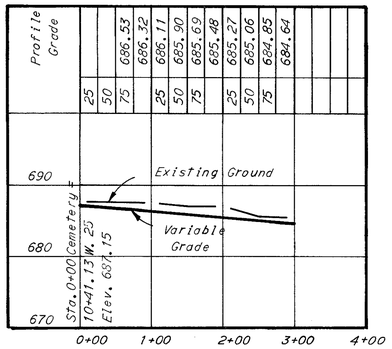
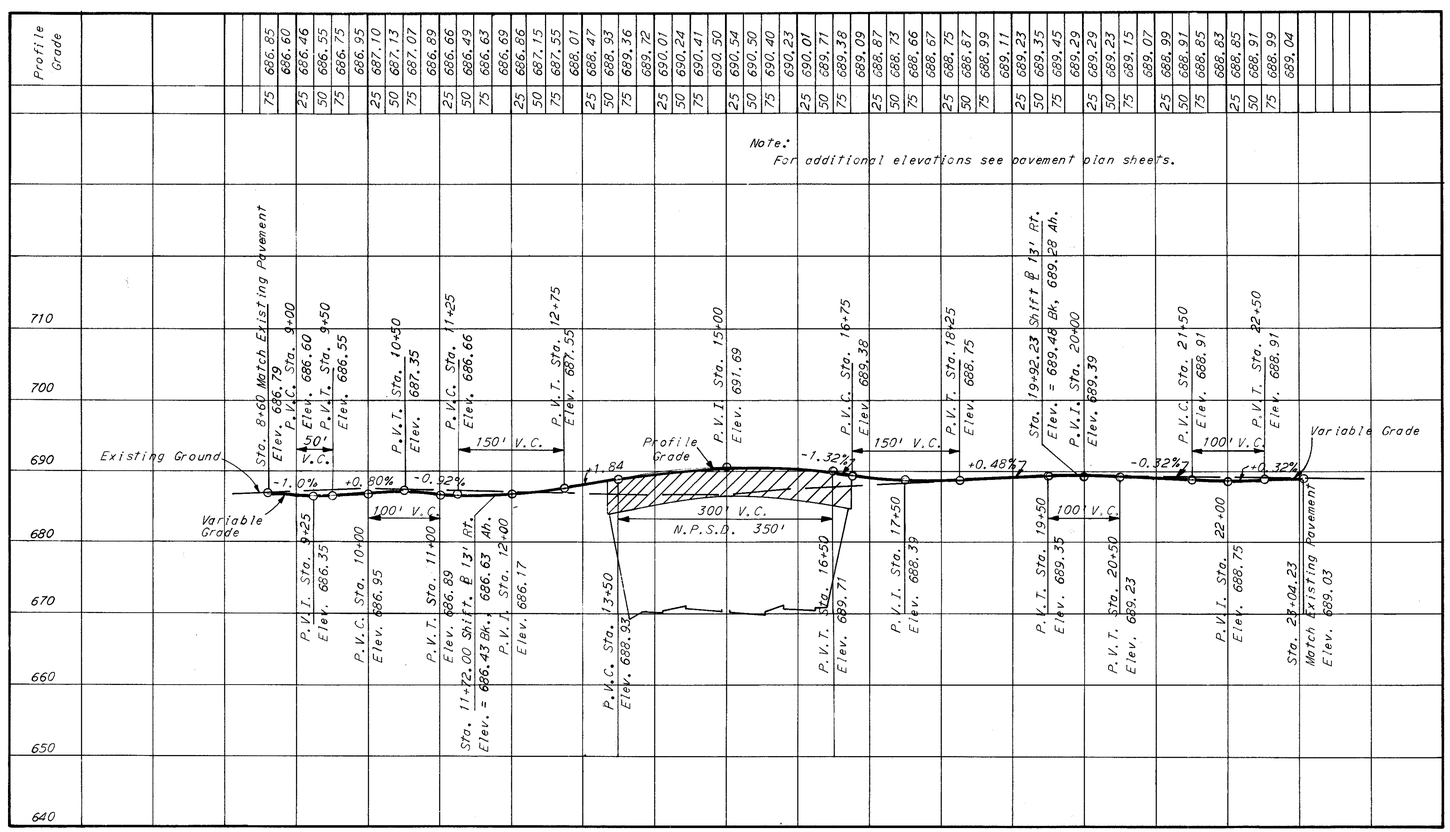
CUYAHOGA COUNTY
CUY-71-17.18



PROFILE – SCRANTON ROAD



PROFILE – RIVERSIDE CEMETERY



PROFILE – W. 25th ST.

SCALE Hor. 1"=100' Vert 1"=10'
MADE DRK DATE 6-25-69
TRCD HJO DATE 6-25-69
CKD LAR DATE 6-25-69

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

PROFILES – RIVERSIDE CEMETERY AND RELOCATED WEST 25TH STREET

MISCELLANEOUS DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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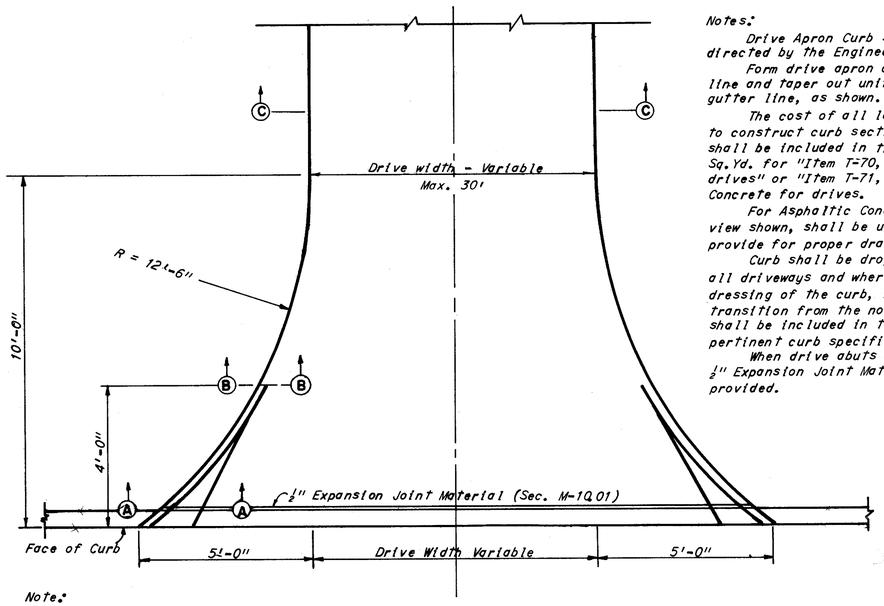
CUYAHOGA COUNTY
CUY-71-17.18



Notes:
Drive Apron Curb Section is to be placed where directed by the Engineer.

Form drive apron curb Sect. "A-A" behind curb line and taper out uniformly to no curb 4'-0" behind gutter line, as shown.

The cost of all labor and material necessary to to construct curb section and thickened edge as shown, shall be included in the contract unit price bid per Sq.Yd. for "Item T-70, 7" Portland Cement Concrete for drives" or "Item T-71, 8" Reinforced Portland Cement Concrete for drives.

For Asphaltic Concrete and Slag drives, the plan view shown, shall be used. Shape drive section to provide for proper drainage, as directed by the Engineer.

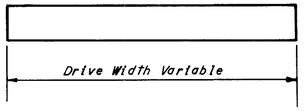
Curb shall be dropped to provide a 2½" gutter at all driveways and wherever directed by the Engineer. The dressing of the curb, necessary to effect a satisfactory transition from the normal curb height to a 2½" height, shall be included in the contract unit price bid for the pertinent curb specified.

When drive abuts new or existing concrete sidewalk, ½" Expansion Joint Material (Sec. M-10.01) shall be provided.

Note:
This Drive Detail applies to all driveways on this project.

CONCRETE DRIVE DETAIL

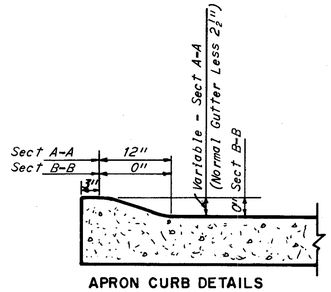
Scale ½" = 1'-0"



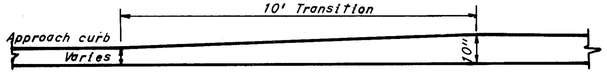
SECTION C-C
No Scale

Note
Residence drives having an existing hard surface or existing aggregate surface shall be replaced with a pavement of similar type in so far as practicable, using one of the following designs for the portion beyond the flared apron

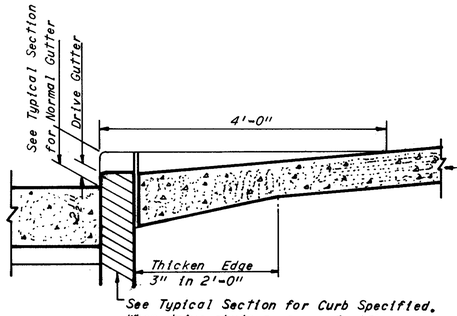
(a) 7" Plain Portland Cement Concrete, Item T-70.
(b) 5" B-19 surfaced with two 1" courses of Type "C" Asphaltic Concrete, Item T-35.
(c) 8" B-19 Aggregate, Stablized with calcium chloride.



APRON CURB DETAILS
SECTION A-A & B-B



CURB HEIGHT TRANSITION AT BRIDGE WINGWALLS
Scale: ½" = 1'-0"



See Typical Section for Curb Specified. When drive abuts a pavement with no curb, the drive apron curb section shall be omitted.

The flared portion of residence drives adjacent to bituminous paved shoulders shall be constructed of the same material and composition as used in the shoulder paving.

The flared portion of residence drives for which earth shoulders only are specified, shall be paved with either 7" Plain Portland Cement Concrete (Item T-70) or with two 1" courses of Type "C" Asphaltic Concrete (Item T-35) on 5" of B-19 Aggregate.

APRON CURB TRANSITION
scale: ¼"=1'0"

SCALE as shown
MADE D.R.K. DATE 7 June 64
TRCD. D.J.S. DATE 9 June 64
CKD. D.W.E. DATE 9-4-64

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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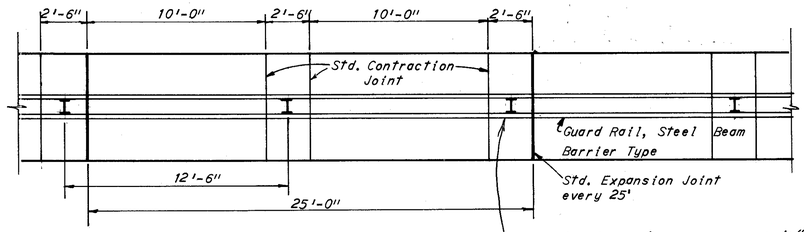
CUYAHOGA COUNTY
CUY- 71-17.18

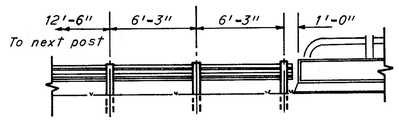
MISCELLANEOUS DETAILS



Note:
In lieu of spacing requirements of Standard Drawing I-21-23, expansion and contraction joints shall be provided in Item I-21, as shown above wherever guard rail is called for.

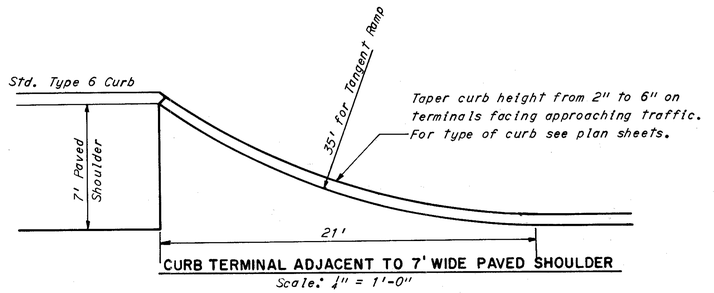
If Wood Posts are used, 1/4" Expansion Joint Material shall be placed on all sides of posts, in concrete. Payment for Joint Material shall be included in unit price bid for Item I-21.

BARRIER MEDIAN JOINT DETAIL

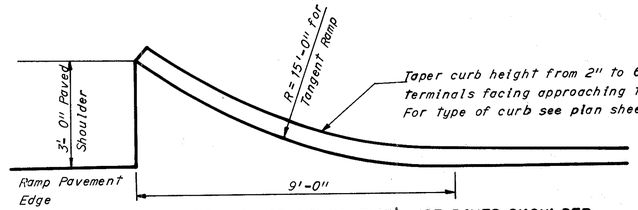


TYPICAL GUARD RAIL TERMINAL AT WINGWALLS

Note:
The cost of providing the additional post in the first span of guard rail at bridge wingwalls shall be included in the unit price bid for Item I-15, Guard Rail.
The face of rail shall be installed flush with face of wingwall parapet.
The standard terminal shall be omitted when Guard Rail terminates at parapet on bridge wingwalls.

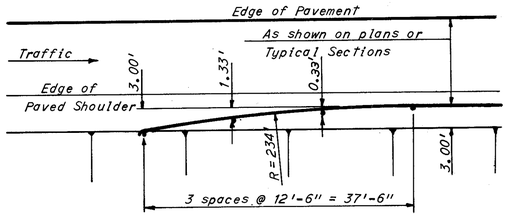


CURB TERMINAL ADJACENT TO 7' WIDE PAVED SHOULDER
Scale: 1" = 1'-0"



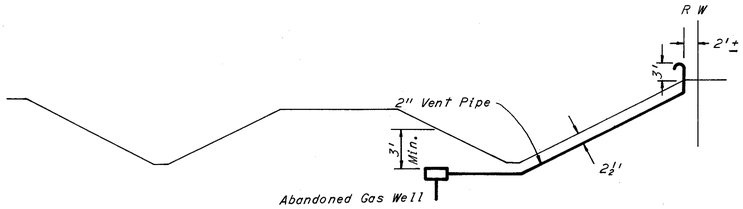
CURB TERMINAL ADJACENT TO 3' WIDE PAVED SHOULDER

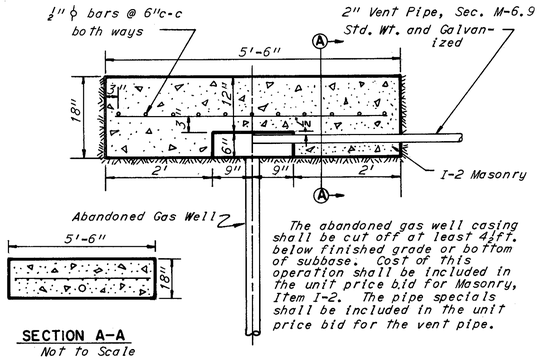
Scale 1" = 1'-0"



TYPICAL GUARD RAIL FLARE

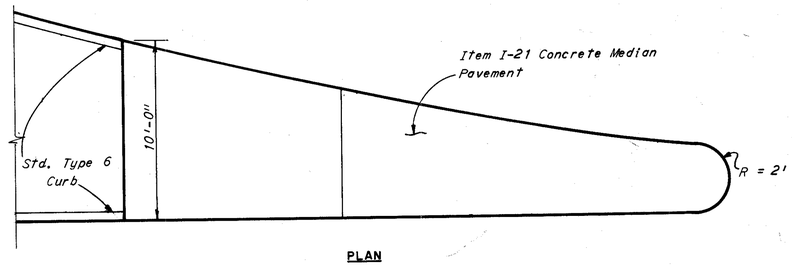
Scale: 1" = 10'



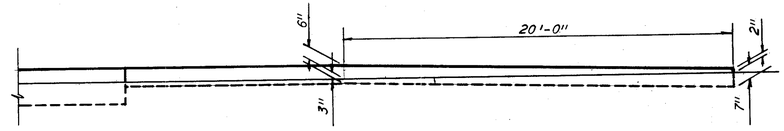


SECTION A-A
Not to Scale

ABANDONED GAS WELL VENT DETAIL



PLAN



ELEVATION

RAMP EXIT NOSE DETAIL

SCALE as shown HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DRK DATE 7 June 64
TRCD. DJS DATE 9 June 64
CKD. DWK DATE 3-4-64
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

M-14

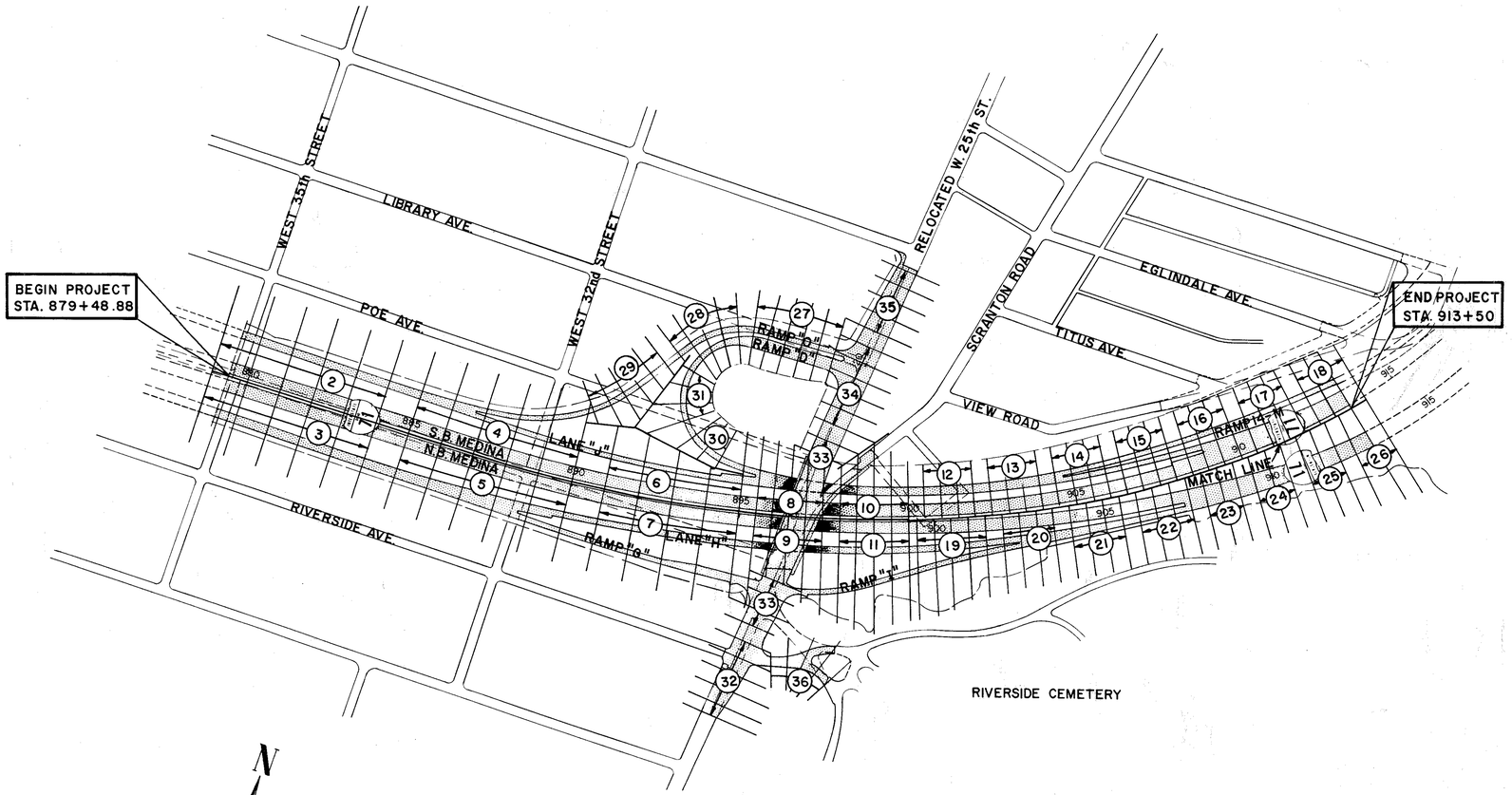
CROSS SECTION LAYOUT SHEET

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

60/241

1/36



EARTHWORK

CUY-71-17.18	Station From	Station To	Volume in Cu Yds Exc.	Emb.	Emb. +18%
Medina	981+66.03	900+00	290,253	651	768
Southbound Medina	900+50	914+00	164,845	22,509	26560
Northbound Medina	899+50	913+50	38,499	189,615	223,746
Ramp "G"	1+00	9+00	13,792	0	0
Ramp "D"	5+00	8+00	23,321	0	0
Relocated W. 25th St.	8+60	23+04	5,807	20	24
Riverside Cemetery Entrance	1+00	3+00	610	0	0
Trowbridge Ave.	13+23	13+87.7	309	0	0
Grand Total			537,436	212,795	251,098

Excess Excavation 286,338 Cu. Yds.

Note:
Numbers in circles refer to cross section sheet numbers.

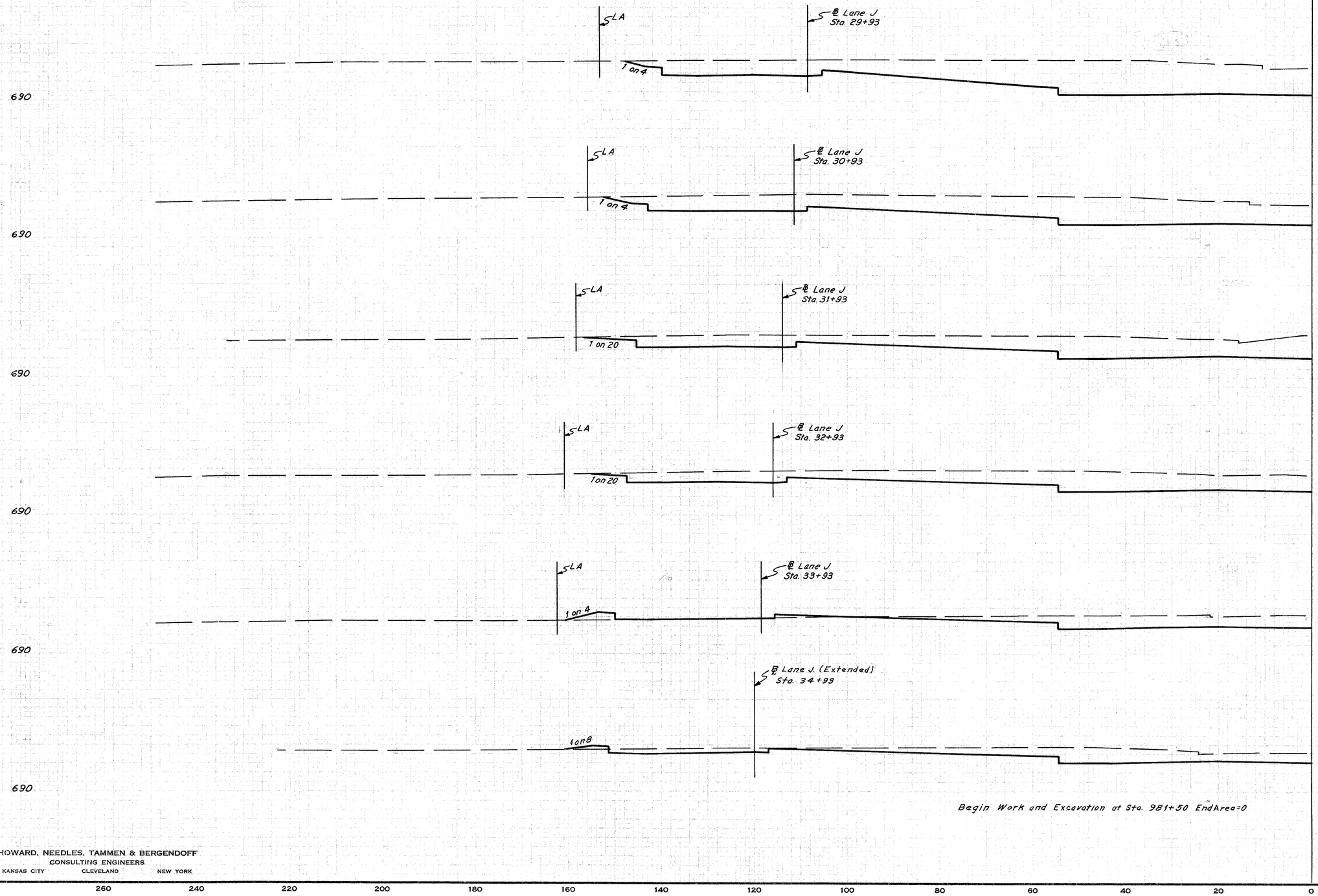
SCALE 1"=200' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE ____ DATE ____
TRCD H.L.D. DATE 8-20-69
CKD ____ DATE ____
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

61
241

2
96

CUYAHOGA COUNTY
CUY-71-17.18



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
692.88 Sta. 884+00 697.1	685	0		
			2417 ~~1208~~	0
694.48 Sta. 883+00 697.4	620	0		
			1991 ~~998~~	0
695.72 Sta. 882+00 698.2	455	0		
			1639 ~~819~~	0
696.58 Sta. 881+00 698.7	430	0		
			1130 ~~565~~	30 ~~15~~
697.09 Sta. 880+00 698.5	180	16		
			796 ~~398~~	37 ~~18~~
697.23 Sta. 981+66.03 698.4	250	4		
			74	1
Sta. 981+50	0	0		

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

260 240 220 200 180 160 140 120 100 80 60 40 20 0

LEFT HALF
STA. 981+66.03 TO STA. 884+00

H.L.D. 11-14-63, D.S. 11-17-64
D.S. 11-18-64, R.J.K. 12-17-64
H.L.D. D.S. 1-25-65, 2-21-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

62
241

CUYAHOGA COUNTY
CUY-71-17.18

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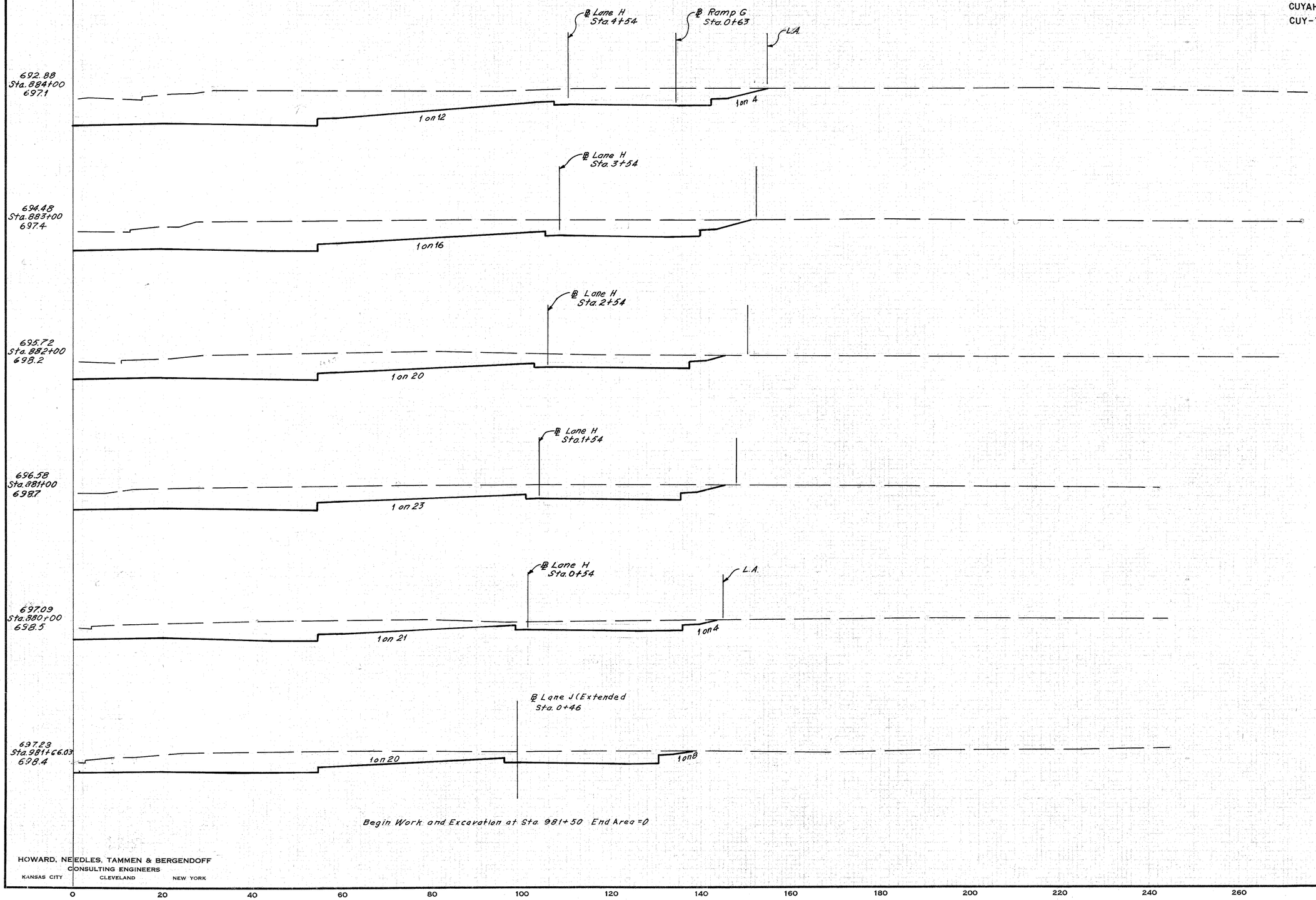
36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
742	0		
		2556	
		~~1278~~	0
638	0		
		2194	
		~~1097~~	0
547	0		
		1956	
		~~978~~	0
509	0		
		1646	
		~~823~~	0
380	0		
		1464	
		~~732~~	0
411	0		
		122	0
0	0		

HLD 11-10-64 DJS 11-18-64
DJS 11-18-64 VHD 12-1-64
DJS 11-18-64 RSH 12-14-64

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

0 20 40 60 80 100 120 140 160 180 200 220 240 260

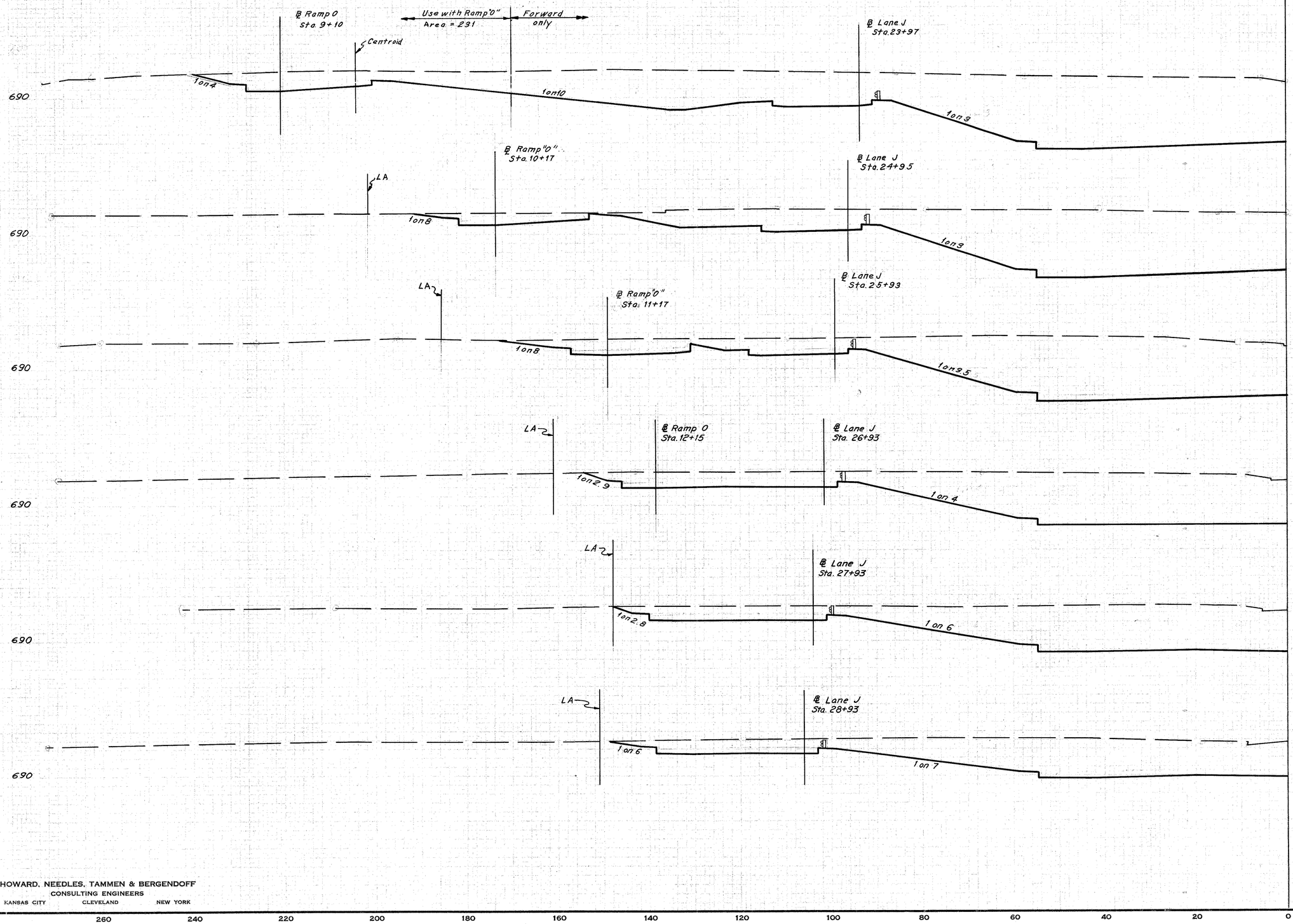
RIGHT HALF
STA. 981+66.03 TO STA. 884+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

63
241

4
96

CUYAHOGA COUNTY
CUY-71-17.18



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Forward	1790	0		
680.95 Bkwd. Sta. 890+00 693.2	2025			
			6278 ~~3139~~	0
682.95 Sta. 889+00 694.3	1365	0		
			4861 ~~2431~~	0
686.95 Sta. 888+00 694.7	1260	0		
			4315 ~~2157~~	0
686.95 Sta. 887+00 695.5	1070	0		
			3676 ~~1838~~	0
688.95 Sta. 886+00 696.4	915	0		
			3213 ~~1606~~	0
690.95 Sta. 885+00 697.3	820	0		
			2787 ~~1394~~	0
Sta. 884+00	685	0		

260 240 220 200 180 160 140 120 100 80 60 40 20 0

LEFT HALF
STA. 885+00 TO STA. 890+00

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

DES. 10-4-64 RSK 11/8/64
DET. 10-19-64 RLK 12-1-64
RSK 12-7-64 DJS 12-14-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

64 / 241

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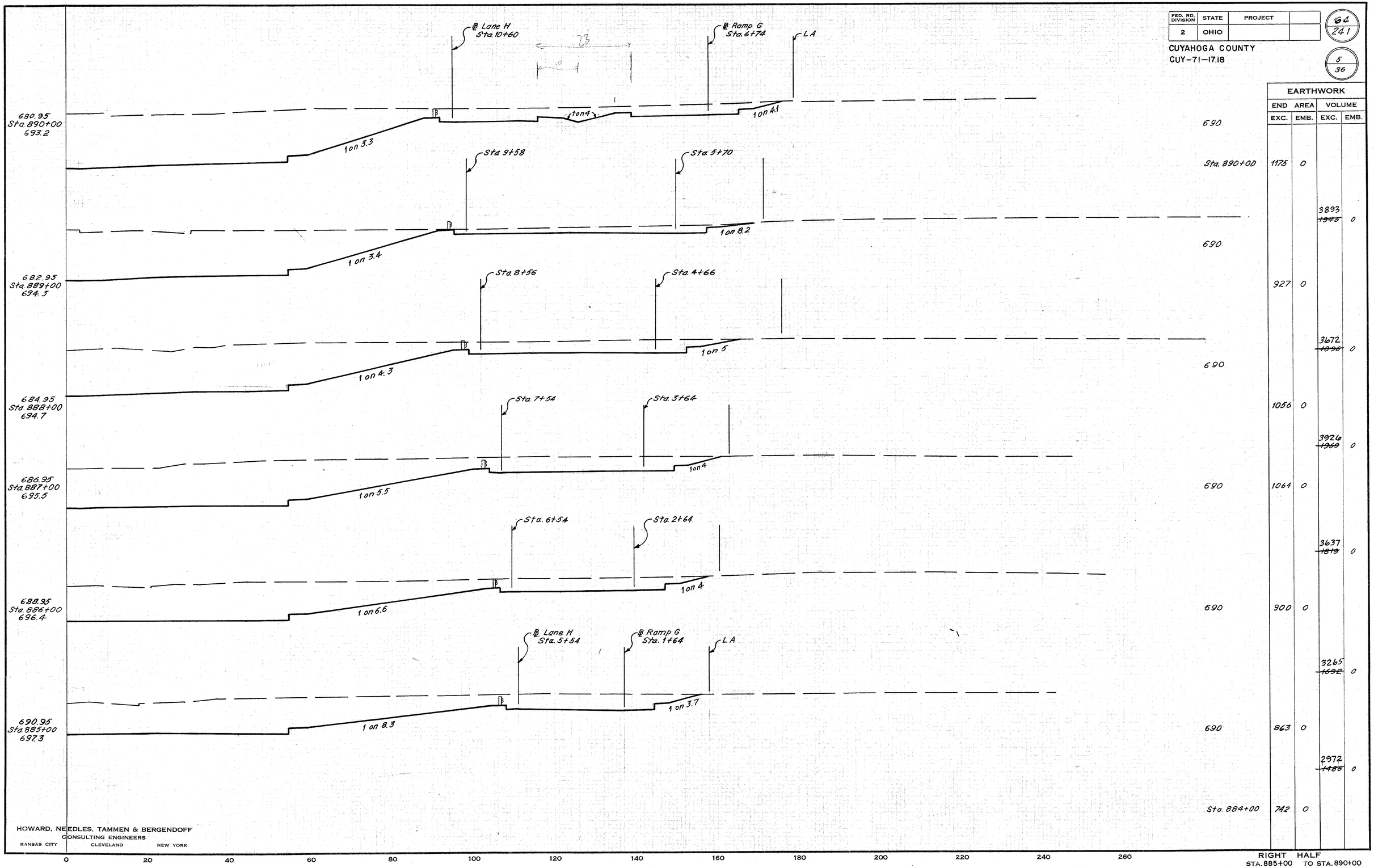


EARTHWORK				
END AREA		VOLUME		
	EXC.	EMB.	EXC.	EMB.
690				
Sta. 890+00	1175	0		
			3893	
			~~1945~~	0
690				
	927	0		
			3672	
			~~1896~~	0
690				
	1056	0		
			3926	
			~~1969~~	0
690	1064	0		
			3637	
			~~1819~~	0
690	900	0		
			3265	
			~~1692~~	0
690	863	0		
			2972	
			~~1488~~	0
Sta. 884+00	742	0		

RIGHT HALF
STA. 885+00 TO STA. 890+00

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

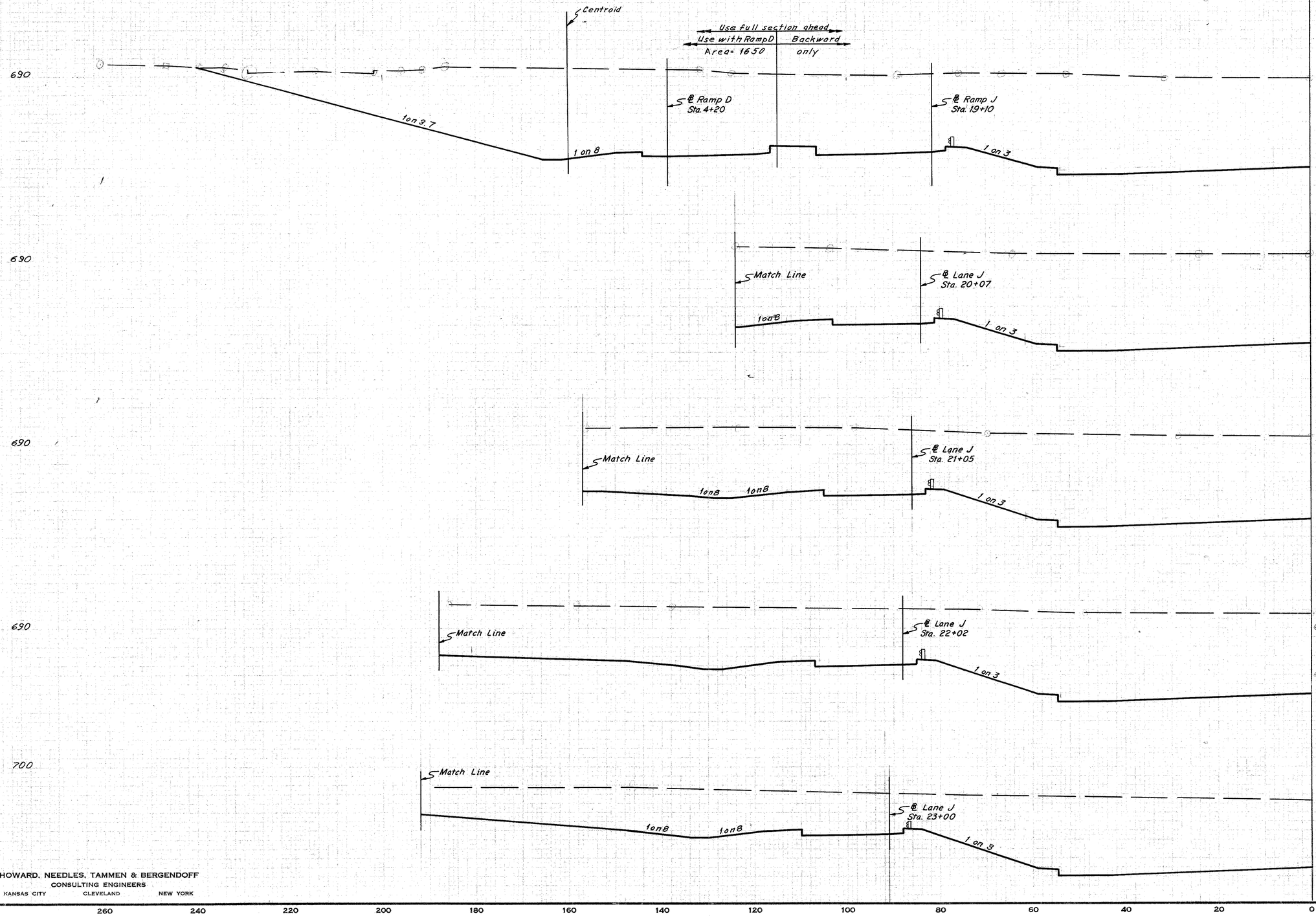
H.D. 11-1-64 R.S.H. 11-18-64
R.D.J. 11-20-64 J.L.O. 12-4-64
D.S. 12-14-64 J.J.D. 12-21-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

65
241

6
36

CUYAHOGA COUNTY
CUY-71-17.18



		EARTHWORK			
		END AREA		VOLUME	
		EXC.	EMB.	EXC.	EMB.
671.00 Sta. 895+00 689.8	Frwd	3827	0		
	Bkwd	2177	0		
				8235 ~~4118~~	0
672.95 Sta. 894+00 691.3		2270	0		
				8904 ~~4452~~	0
674.95 Sta. 893+00 691.8		2538	0		
				8898 ~~4449~~	0
676.95 Sta. 892+00 693.1		2267	0		
				8198 ~~4099~~	0
678.95 Sta. 891+00 692.6		2160	0	7315 ~~3657~~	0
Sta. 890+00		1790	0		

260 240 220 200 180 160 140 120 100 80 60 40 20 0

LEFT HALF
STA. 891+00 TO STA. 895+00

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

REV. 11-15-64 R.S.H. 11-8-64
REV. 12-8-64 R.D.K. 12-8-64
D.S. 12-17-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

66/241

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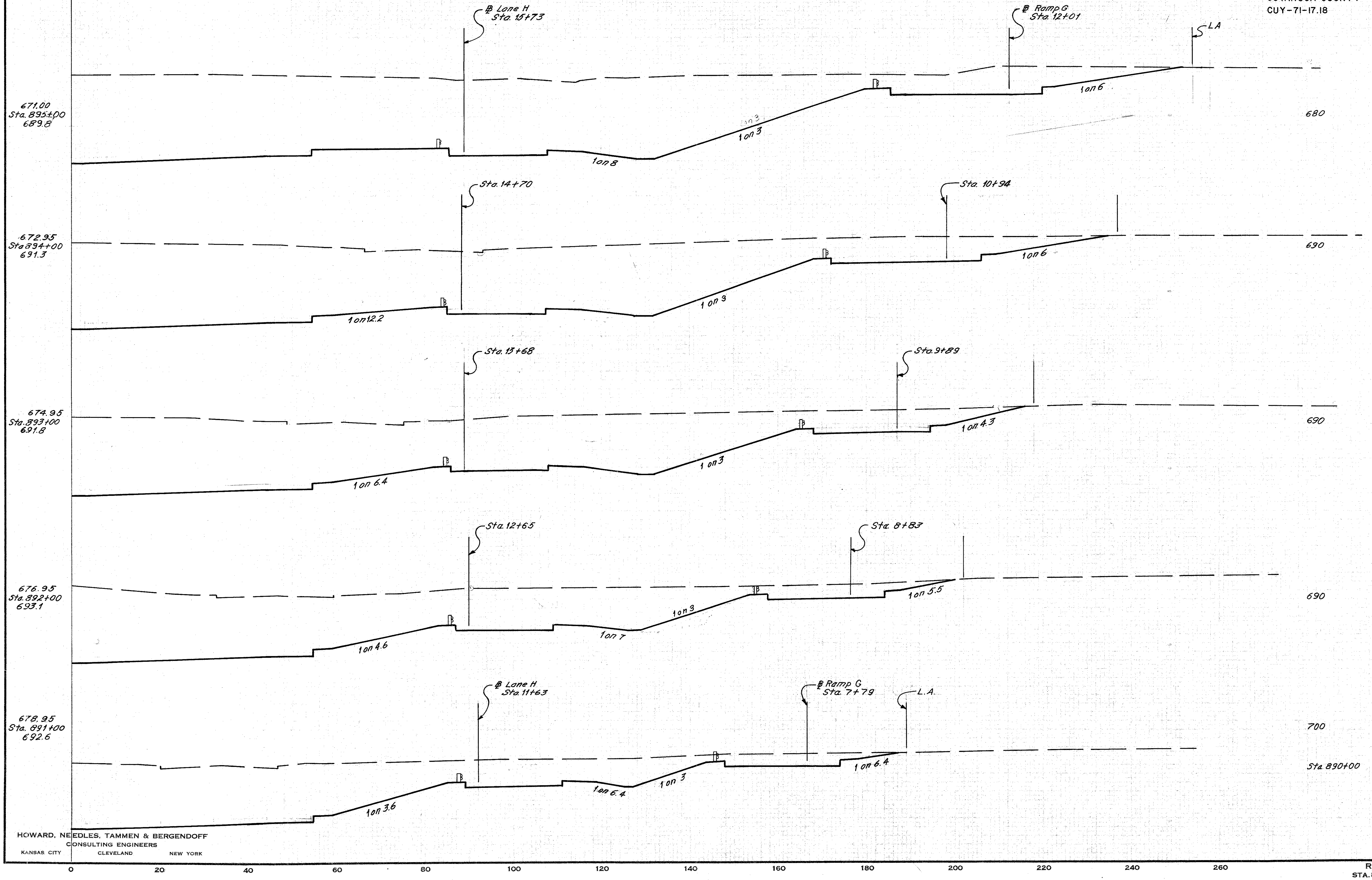
CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
3140	0		
		11,041 (~~5520~~)	0
2822	0		
		9507 (~~4754~~)	0
2312			
		7548 (~~3774~~)	0
1764	0		
		5841 (~~2920~~)	0
1390	0		
		4750 (~~2375~~)	0
1175	0		

RIGHT HALF
STA. 891+00 TO STA. 895+00

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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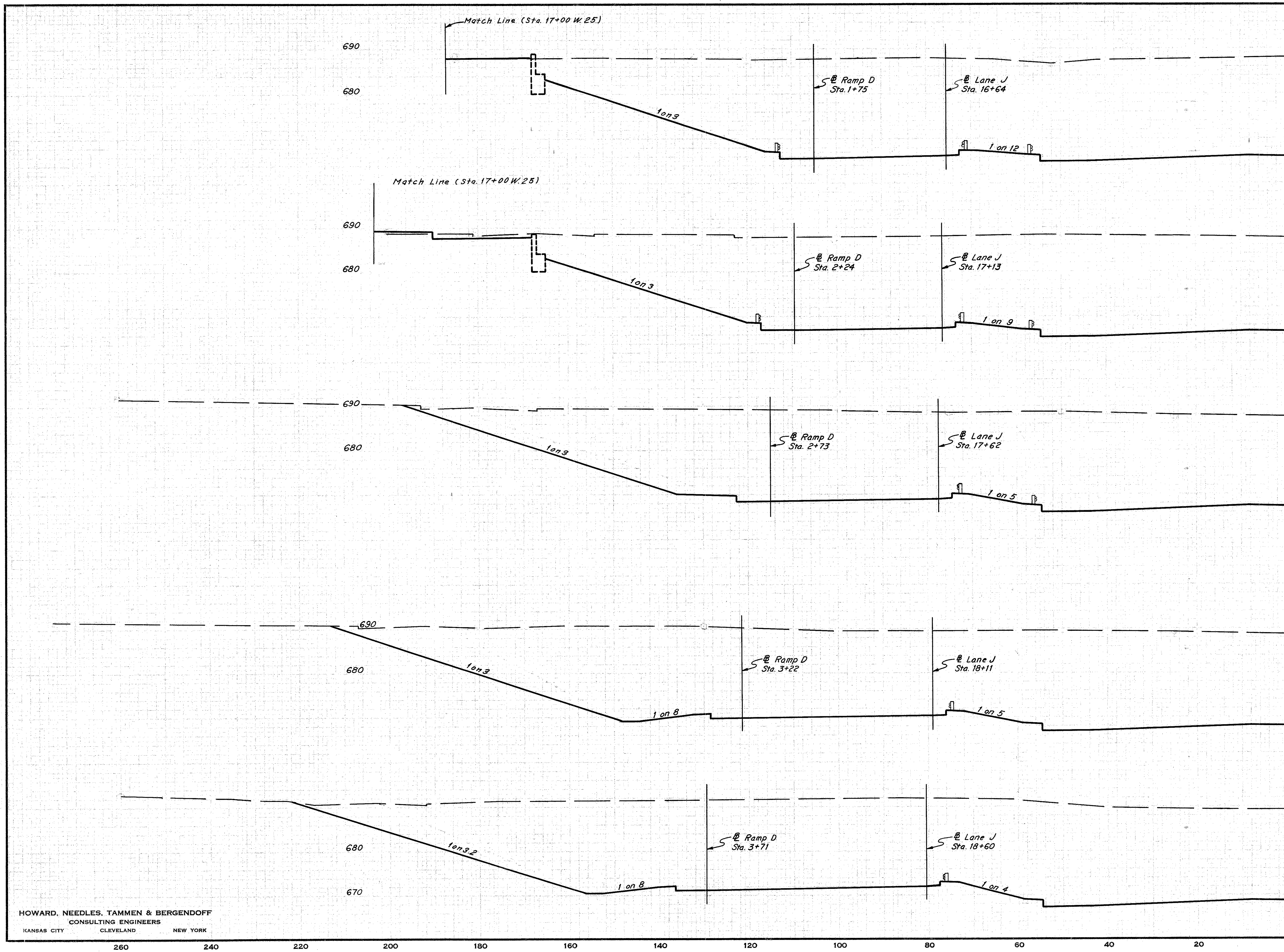
CUYAHOGA COUNTY
CUY-71-17.18



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

Station	EARTHWORK END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
667.55 Sta. 897+50 688.0	3158	0		
			5819	6
668.15 Sta. 897+00 687.5	3126	7		
			6028	6
668.75 Sta. 896+50 687.4	3384	0		
			6588	0
669.40 Sta. 896+00 688.7	3731	0		
			7092	0
670.15 Sta. 895+50 689.3	3928	0		
			7181	0
Sta. 895+00	3827	0		

LEFT HALF
STA. 895+50 TO STA. 897+50

HCD 11-11-64 RSK 11-19-64
DJS 11-19-64 RJK 12-9-64
DJS 12-14-64 HLO 12-22-64

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

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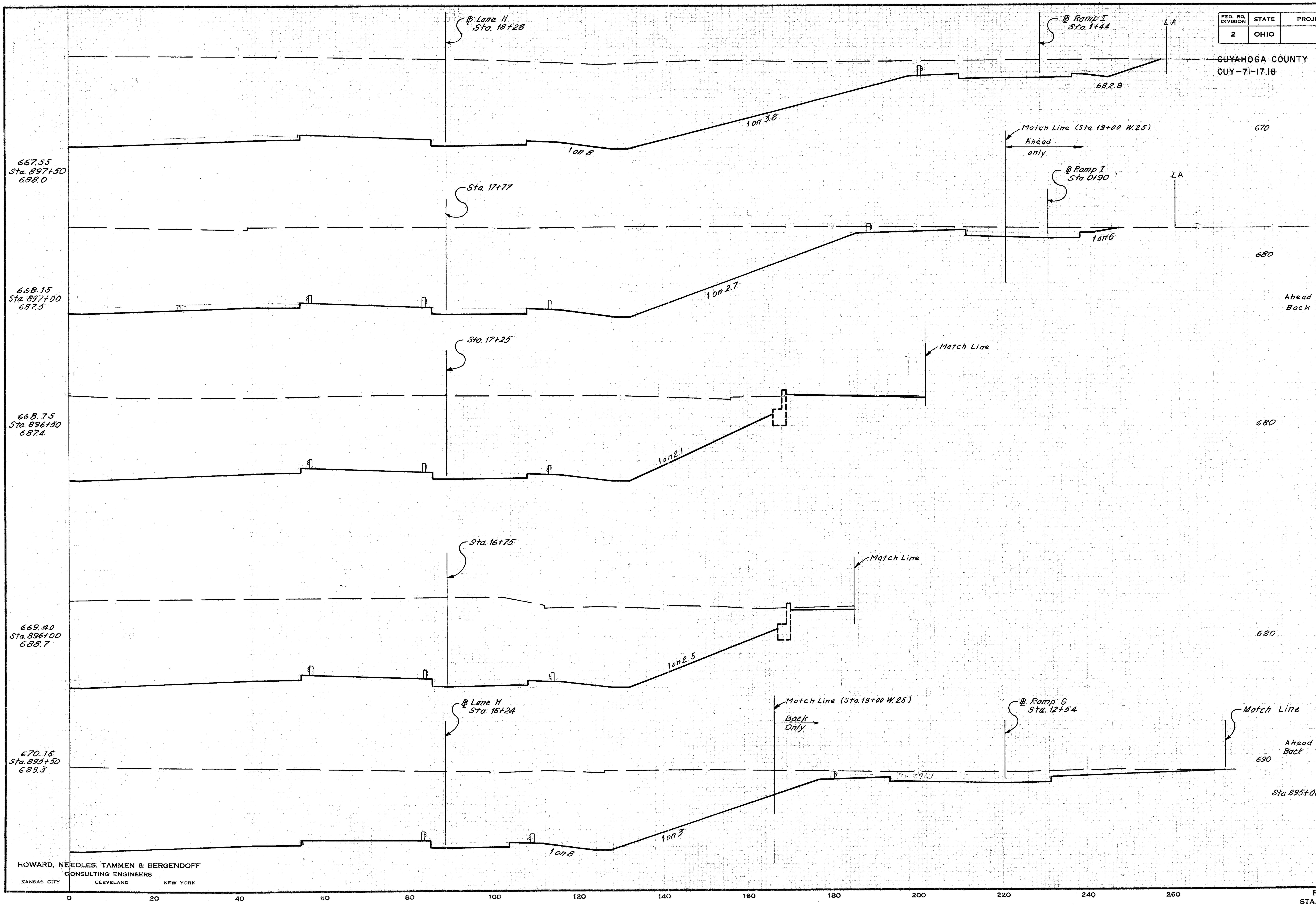
CUYAHOGA COUNTY
CUY-71-17.18



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

EARTHWORK

Station	END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
Sta. 897+50	3650	0		
			6435	0
Sta. 897+00 Ahead	3300	0		
Back	3260	0		
			5676	0
Sta. 896+50	2870	0		
			5446	0
Sta. 896+00	3012	0		
			5339	0
Sta. 895+50 Ahead	2754	0		
Back	2961	0		
			5649	0
Sta. 895+00	3140	0		

RIGHT HALF
STA. 895+50 TO STA. 897+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

69 / 241

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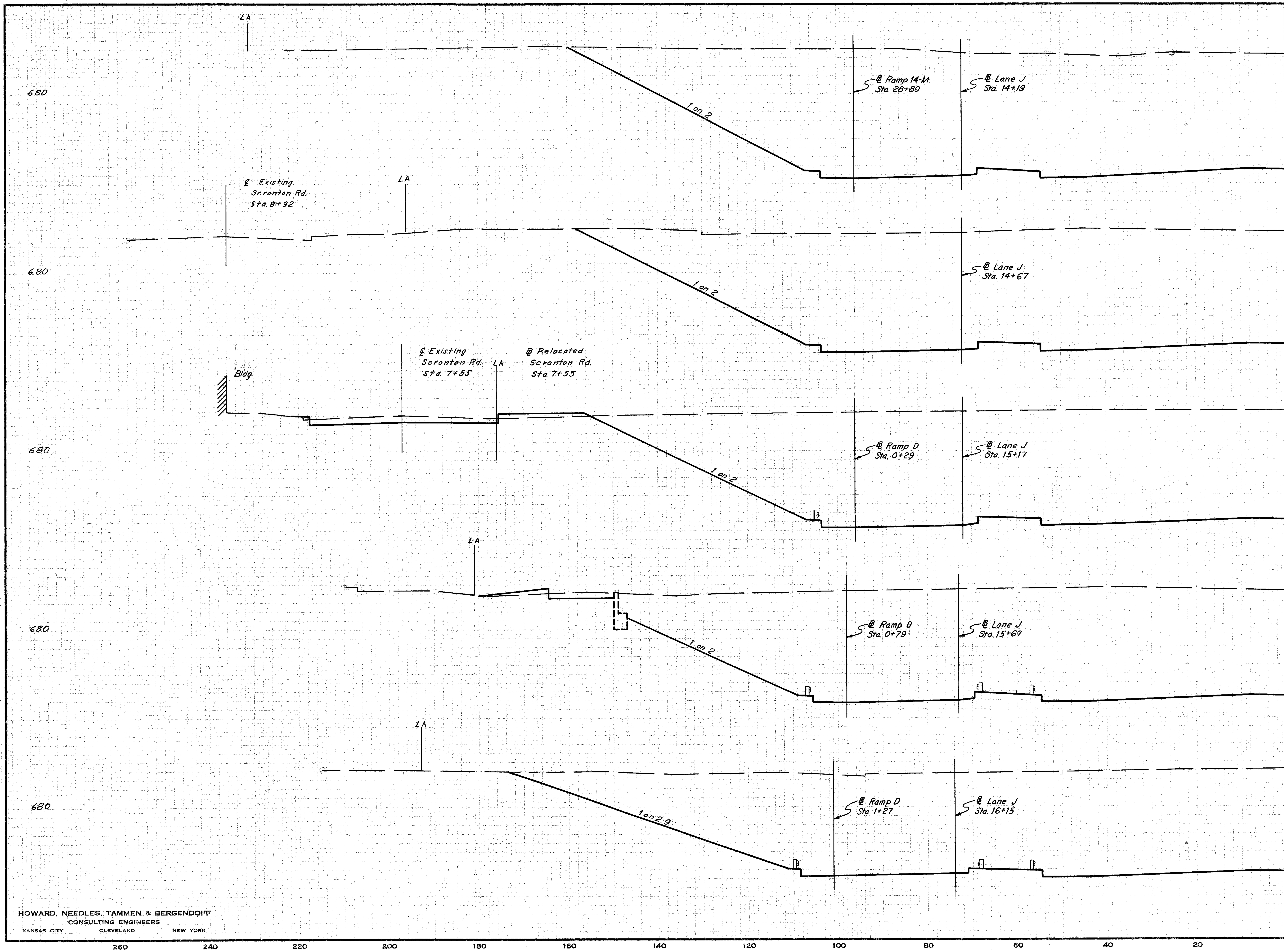
CUYAHOGA COUNTY
CUY-71-17.18



664.55
Sta. 900+00
688.8

665.15
Sta. 899+50
689.1

665.75
Sta. 899+00
683.0

666.35
Sta. 898+50
688.4

666.95
Sta. 898+00
688.4

Sta. 897+50

EARTHWORK

END AREA EXC.	END AREA EMB.	VOLUME EXC.	VOLUME EMB.
3591	0		
		6491	0
3419	0		
		6241	18
3321	20		
		6092	25
3268	7		
		5978	7
3198	0		
		5885	0
3158	0		

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

LEFT HALF
STA. 898+00 TO STA. 900+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

70 / 241

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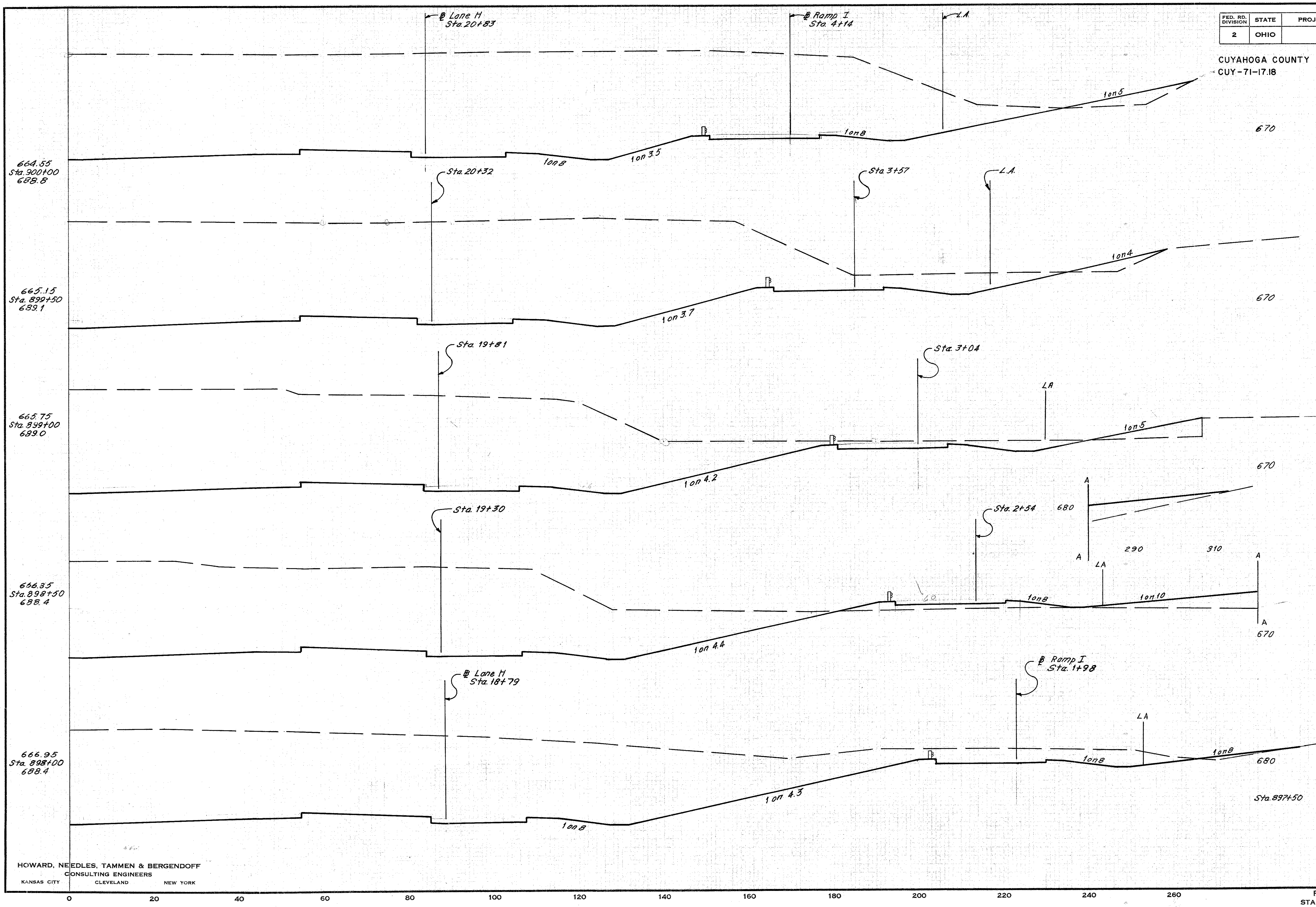
CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
4701	51		
		8114	78
4062	33		
		6834	87
3318	61		
		5756	202
2898	157		
		5961	150
3540	5		
		6657	5
3650	0		

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

RIGHT HALF
STA. 898+00 TO STA. 900+00

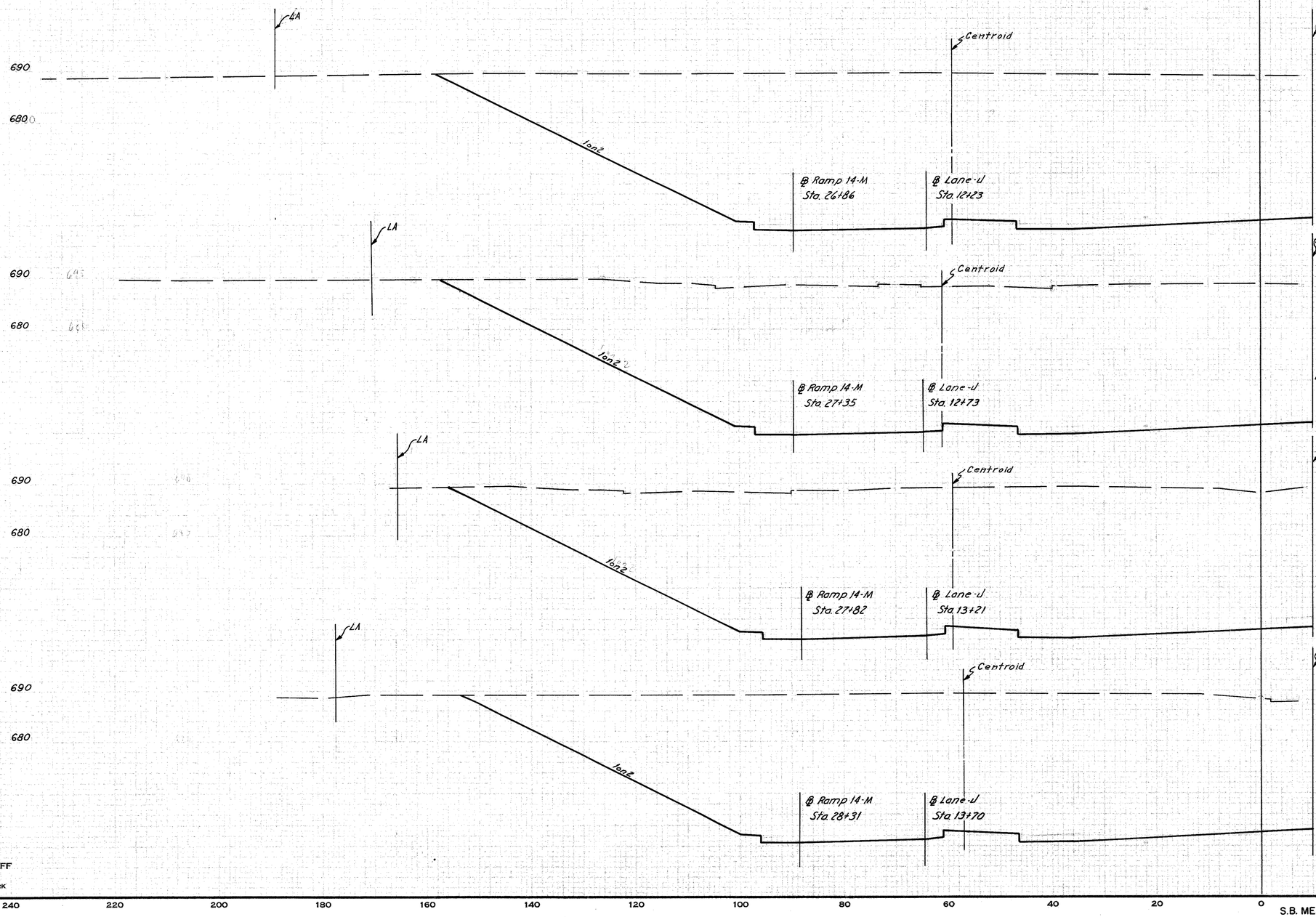
HLD 11-17-64 R.S.K. 11-19-64 R.D.L. 11-25-64 HLD 12-3-64 DJS 12-19-64 HLD 12-22-69

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

71
241

12
36

CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK

END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
4110	0		
		7268	0
3900	0		
		7014	0
3830	0		
		6881	0
3760	0		
		6670	0
3591	0		

S.B. MEDINA STA. 900+50 TO STA. 902+00

ROW 11-1964 R.I.K. 11-17-64
R.I.K. 11-1964 ADJ. 12-4-64
O.J.S. 12-17-64
I.L.D. 12-18-64

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

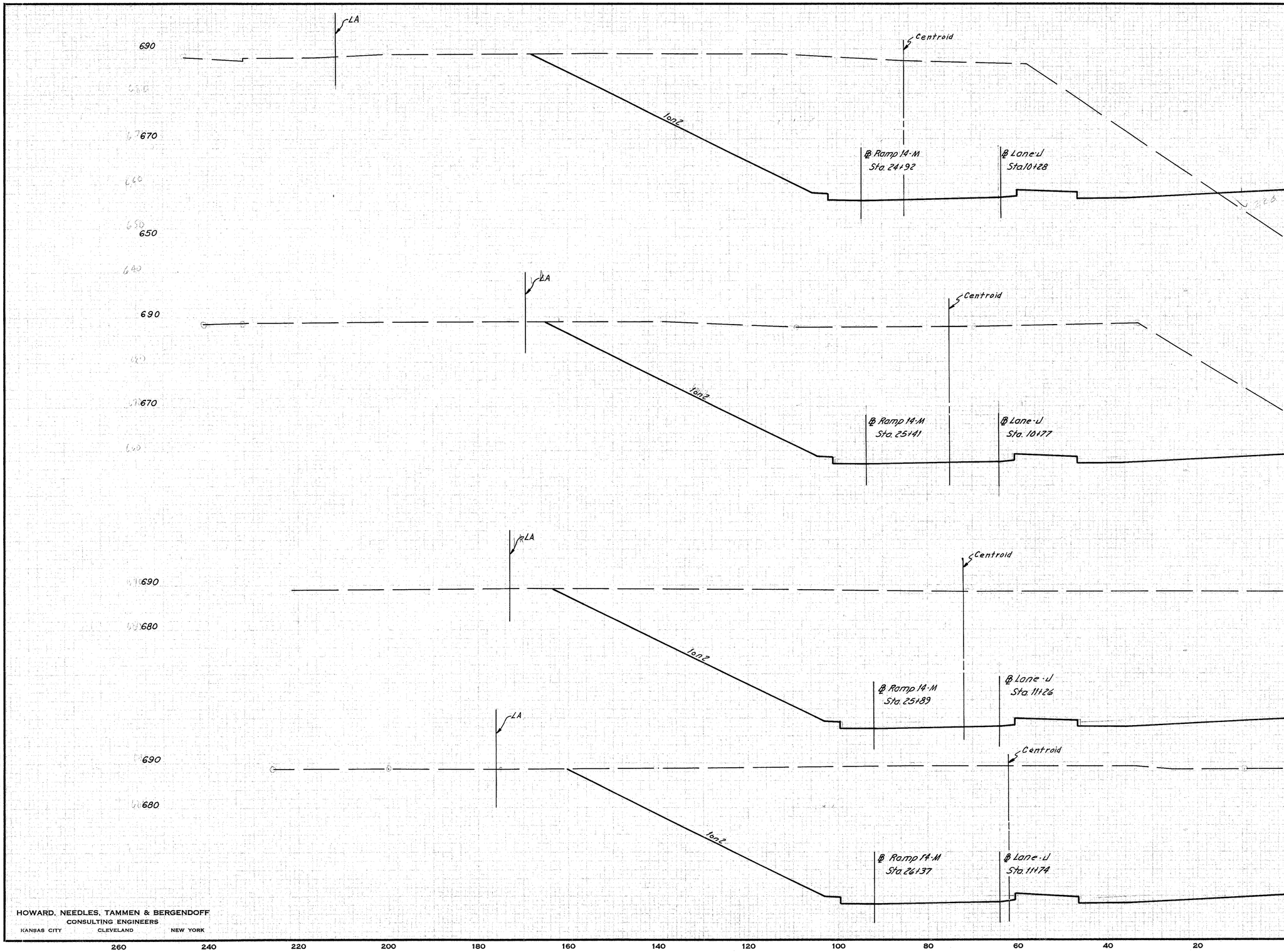
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

72
241

13
36

CUYAHOGA COUNTY

CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
3079	226		
		6244	209
3802	0		
		7352	0
4300	0		
		7725	0
4213	0		
		7552	0
4110	0		

REVISIONS R.J.K. 11-7-64
R.J.K. 12-4-64
D.S.T. 12-9-64
H.D. 12-18-64

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

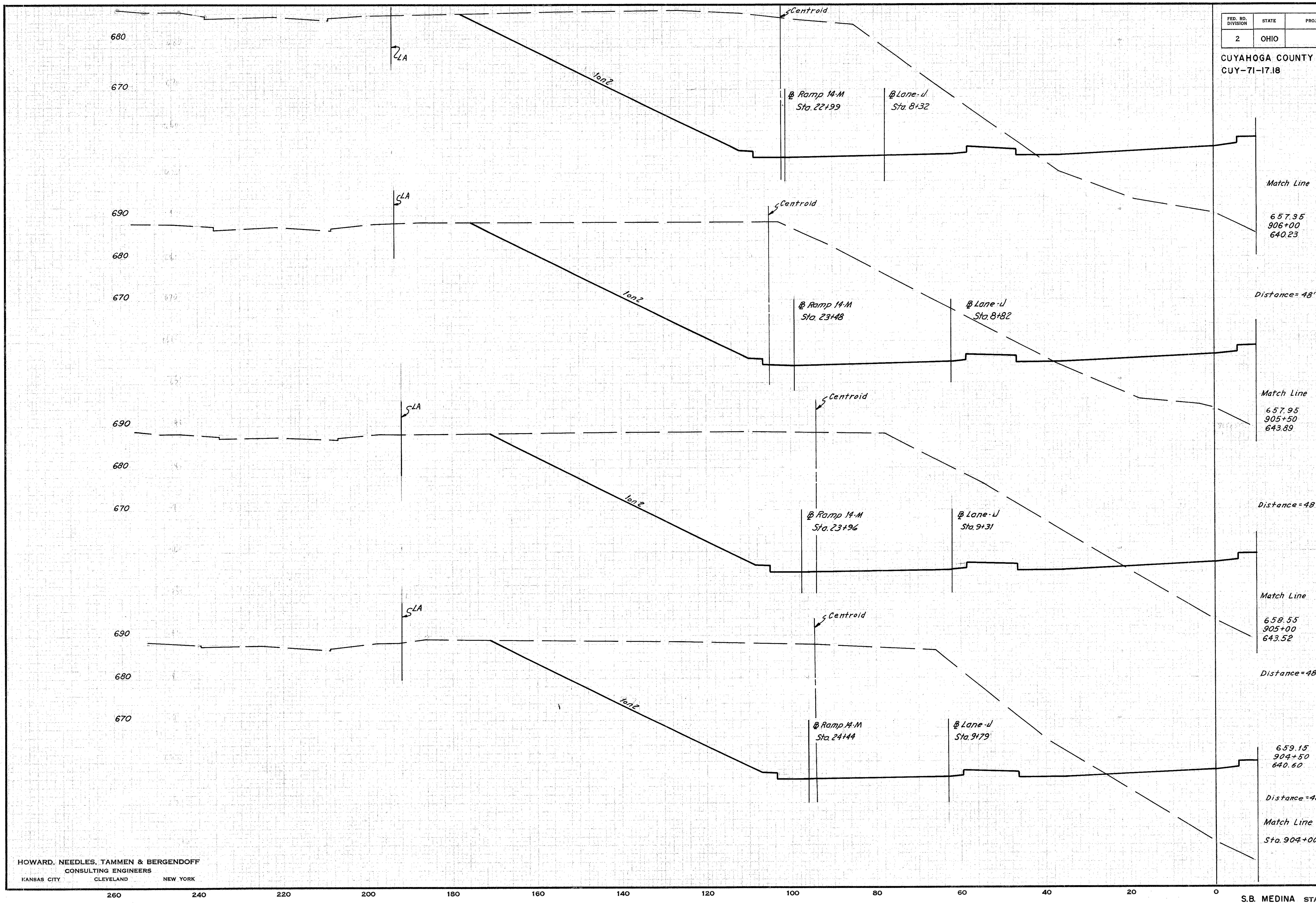
S.B. MEDINA STA. 902+50 TO 904+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

73/241

14/36

CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
2652	586		
		4503	969
2414	460		
		4784	724
2968	322		
		5184	694
2864	428		
		5283	606
3079	226		

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

R.D.J. 11-16-64 R.J.K. 11-18-64 ✓
R.J.K. 11-23-64 R.D.J. 12-7-64
R.S.K. 12-7-64
DJS 12-19-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

74
241

CUYAHOGA COUNTY
CUY-71-17.18

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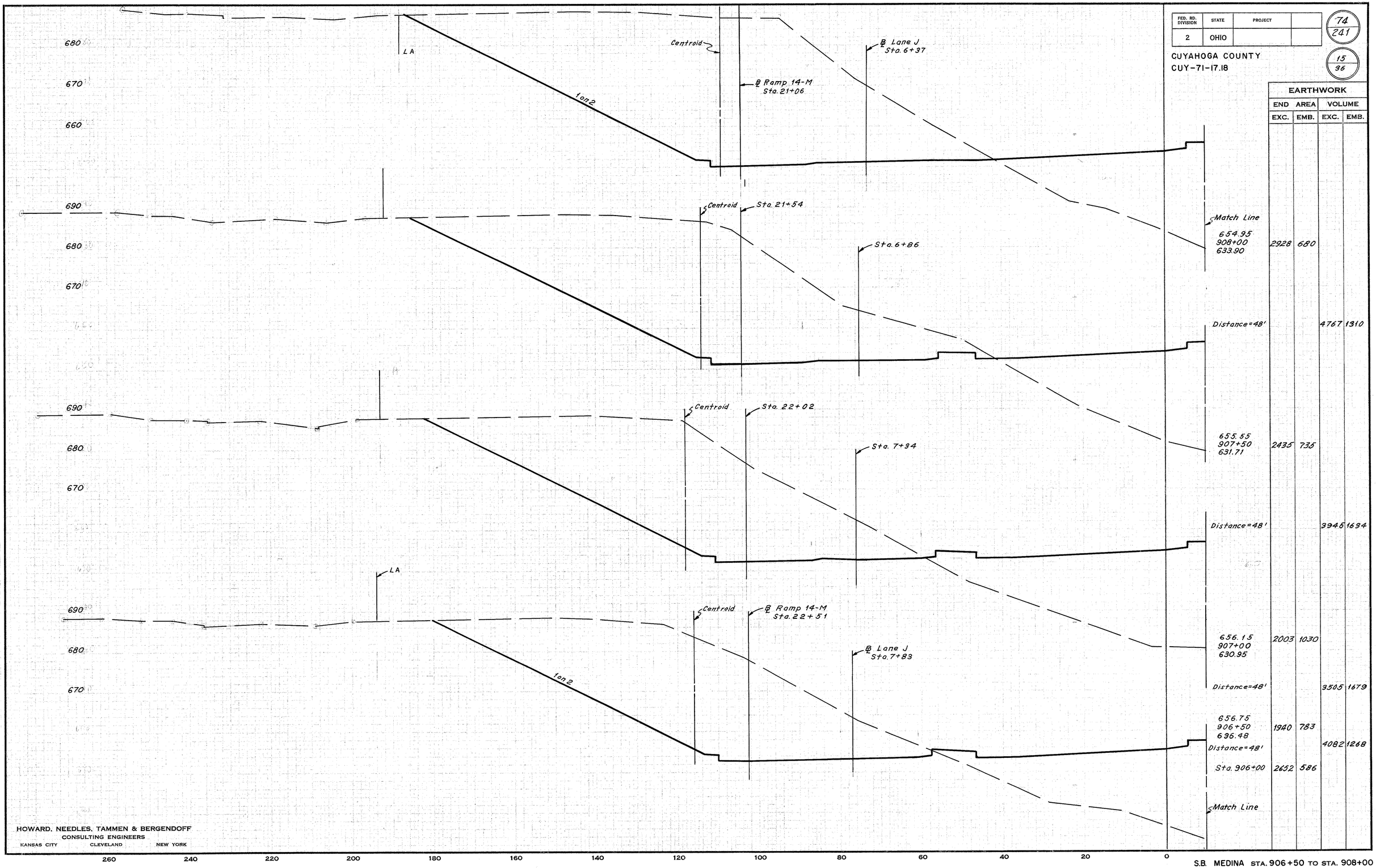
RDJ 11-16-64 RJK 11-18-64
RDJK 11-18-64 DJS 11-18-64
DJS 12-14-64 12-22-64
AZD



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
2928	680		
		4767	1310
2435	735		
		3945	1634
2003	1030		
		3505	1679
1940	783		
		4082	1268
2652	586		

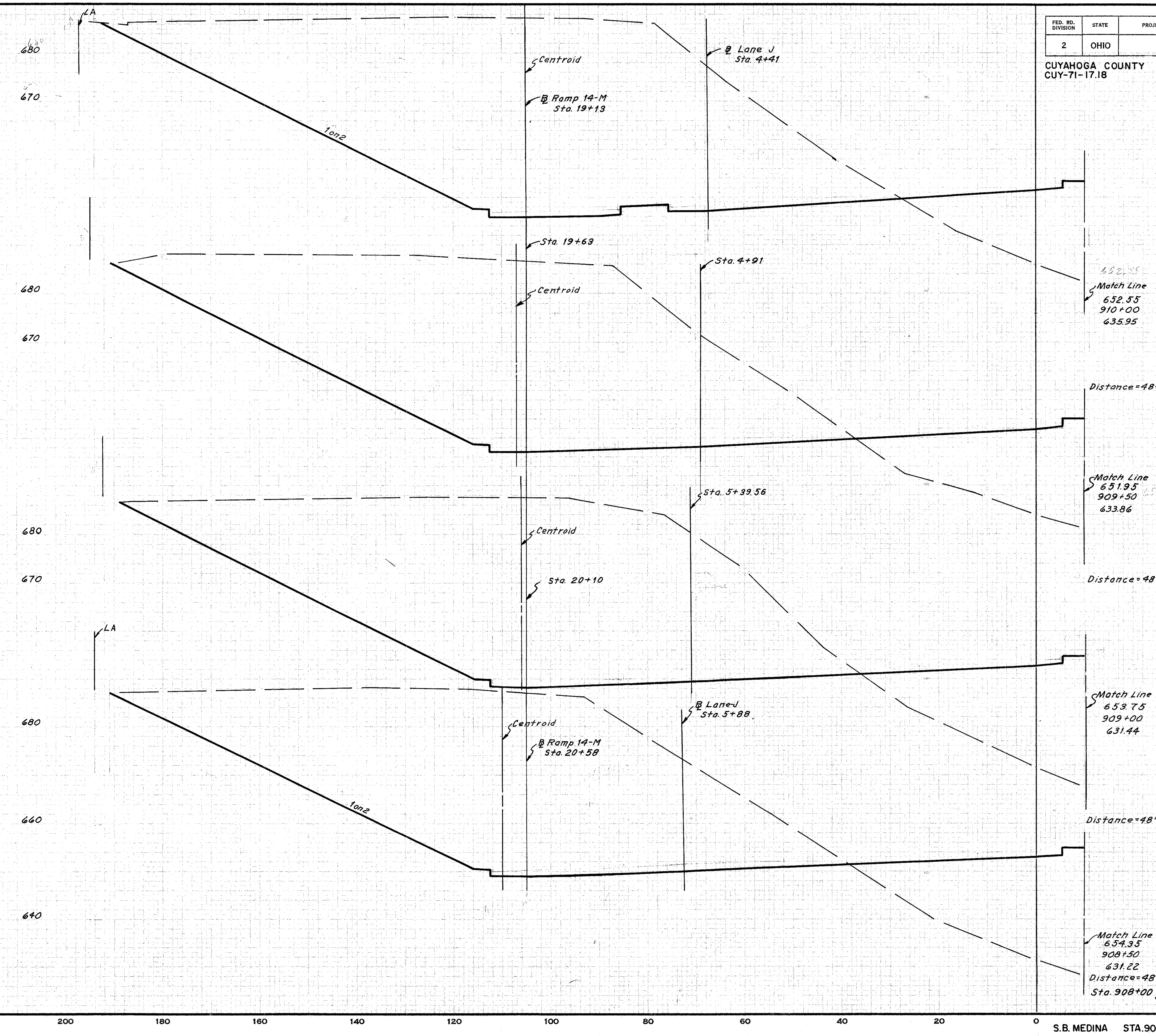
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

75/241

16/36



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Match Line 652.55 910+00 635.95	4010	420		
Distance=48'			6760	928
Match Line 651.95 909+50 633.86	3595	582		
Distance=48'			6404	1144
Match Line 653.75 909+00 631.44	3609	654		
Distance=48'			6142	1259
Match Line 654.35 908+50 631.22	3301	706		
Distance=48'			5537	1283
Sta. 908+00	2928	680		

R.J.K. 11-16-64 R.D.J. 11-16-64
R.D.J. 11-18-64 DJS 12-3-64
R.S.K. 12-7-64
DJS 12-14-64

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

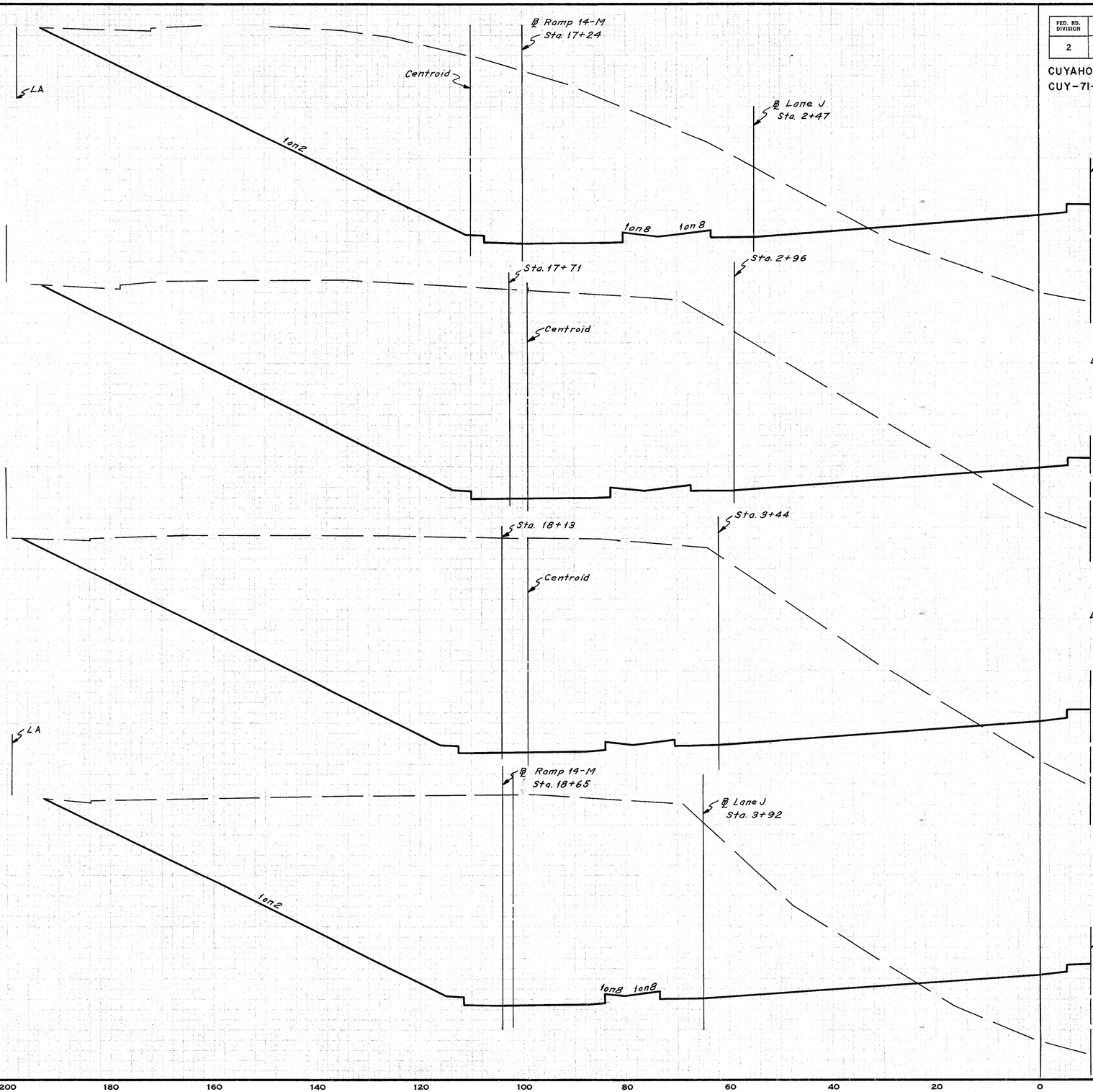
S.B. MEDINA STA. 908+50 TO STA. 910+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

76
241

CUYAHOGA COUNTY
CUY-71-17.18

17
96



RDX 11-16-67 RDJ 11-16-67
RDX 12-5-67 DDS 12-4-67
RDX 12-19-67 HJS 12-22-67

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

260 240 220 200 180 160 140 120 100 80 60 40 20 0

S.B. MEDINA STA. 910+50 TO STA. 912+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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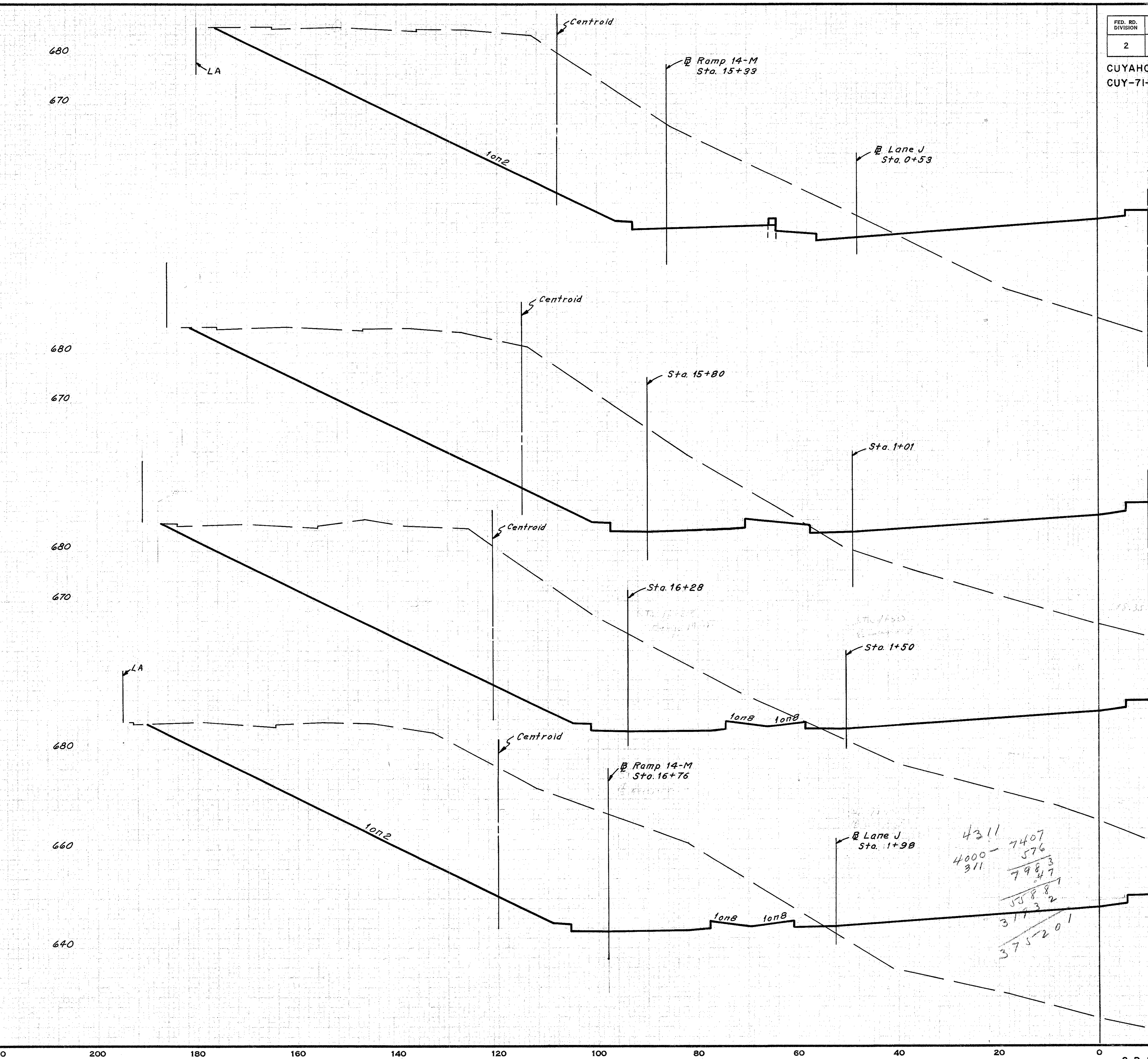
CUYAHOGA COUNTY
CUY-71-17.18



Station	End Area Exc.	End Area Emb.	Volume Exc.	Volume Emb.
End Work Sta. 914+50 Area	0	0		
Distance=47'			1862	611
Match Line 647.75 914+00 626.79	2140	660		
Distance=47'			3622	1434
Match Line 648.35 913+50 625.21	2022	889		
Distance=47'			3553	1647
Match Line 648.95 913+00 625.72	2060	890		
Distance=47'			3752	1711
649.55 912+50 625.57	2251	958		
Distance=47'			4740	1302
Match Line Sta. 912+00	3195	448		

R/K 11-16-64 RD.J. 11-17-64
R.D.J. 11-17-64 DJS 12-9-64
R.S.K. 12-7-64 DJS 12-14-64

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

S. B. MEDINA STA. 912+50 TO STA. 914+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

78
241

CUYAHOGA COUNTY
CUY-71.17.18

19
36

661.83
901+50
688.1

℄ Centroid

℄ Lane H
Sta. 23+16

℄ Ramp I
Sta 6+58

LA

1on8

1on9.2

℄ Centroid

662.45
901+00
689.0

Centroid

Sta. 22+66

Sta. 6+06

LA

1on5

1on6

℄ Centroid

663.06
900+50
688.6

Sta. 22+15

℄ Centroid

Sta. 5+55

LA

1on6

1on6

℄ Centroid

663.68
900+00
687.9

Sta. 21+64

Centroid

Sta. 5+00

LA

1on4

1on6.6

Centroid

Match Line

664.29
899+50
687.8

℄ Lane H
Sta. 21+13

Centroid

℄ Ramp I
Sta. 4+46

LA

1on8

1on3

1on8

1on6

Centroid

0 20 40 60 80 100 120 140 160 180 200 220 240 260

N.B. MEDINA STA. 899+50 TO STA. 901+50

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
1672	1428		
		2856	2565
1352	1185		
		5334	2184
4296	1040		
		8638	1255
4850	239		
		9260	298
4955	65		
		5543	69
4701	51		

Exc. Distance = 51'
Emb. Distance = 52'

Exc. Distance = 51'
Emb. Distance = 53'

Exc. Distance = 51'
Emb. Distance = 53'

Exc. Distance = 51'
Emb. Distance = 53'

Exc. Distance = 31'
Emb. Distance = 32'

Sta. 900+00 ℄ Medina. Right half

JEN 11-28-49 H.L.D. 12-9-49
H.L.D. 12-5-49 O.J.S. 12-8-49
O.J.S. 12-8-49 Revised

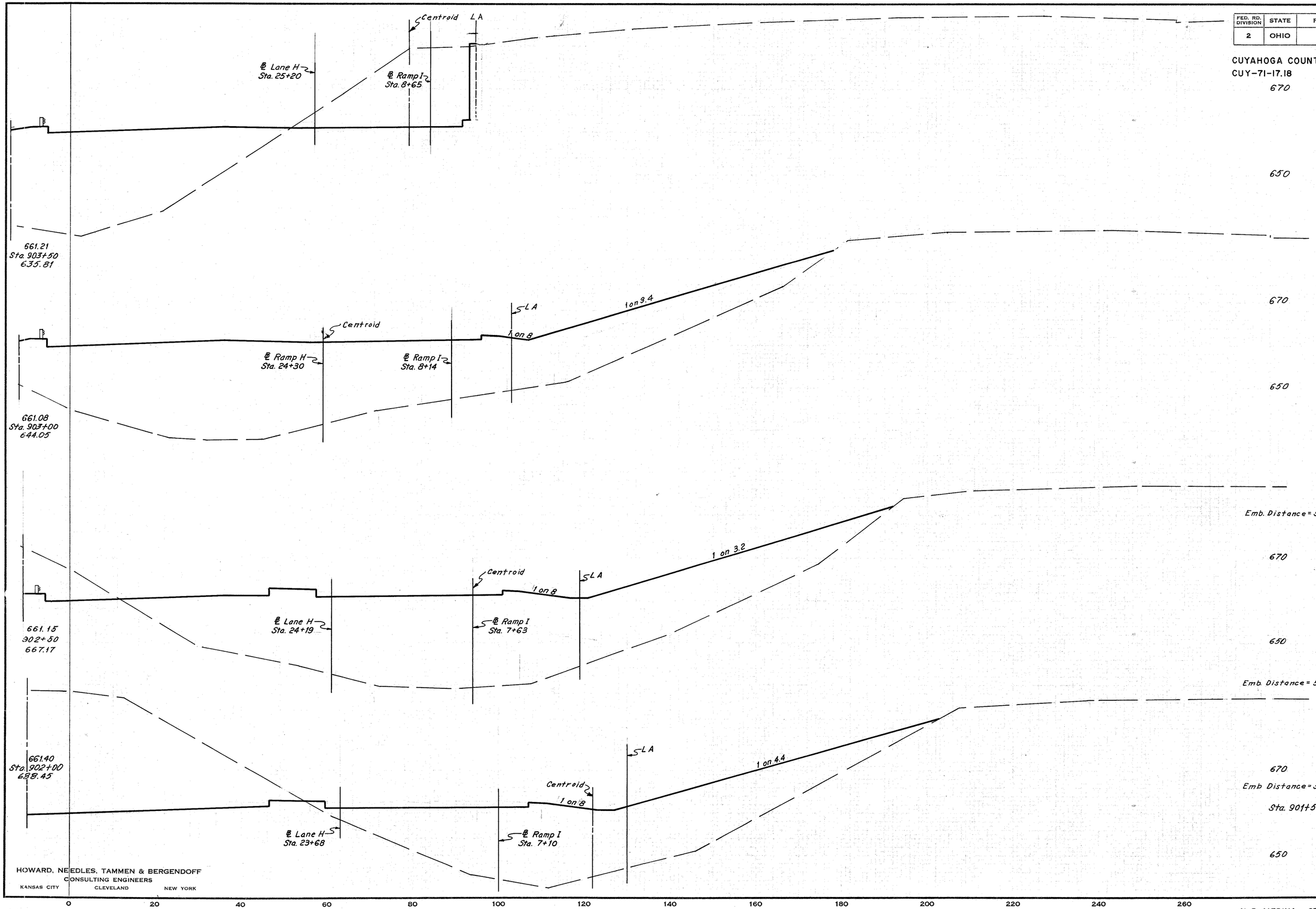
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

79
241

CUYAHOGA COUNTY
CUY-71-17.18

20
36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
488	1112		
		452	3494
0	2661		
		136	4860
147	2588		
		1251	3951
1204	1596		
		2663	2912
1672	1428		

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

N. B. MEDINA STA. 902+00 TO STA. 903+50

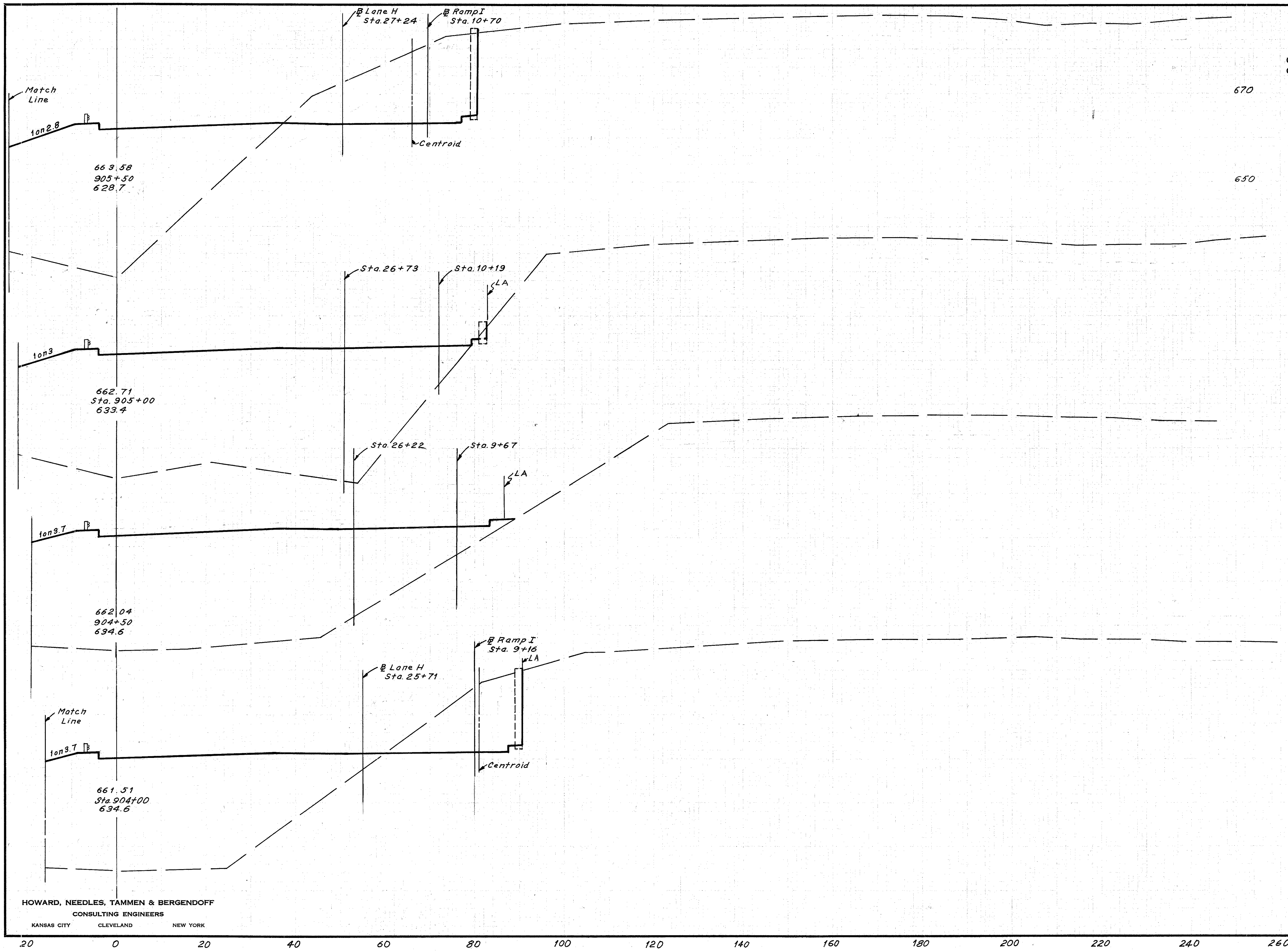
JEW 11-16-64 HLD 11-18-64
DJS 12-3-64 RJK 12-21-64
HLD 12-28-64
DJS 12-28-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

80/241

21/36

CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
540	1344		
		513	3483
3	2418		
		3	4270
0	2194		
		295	3483
312	1568		
		756	2481
488	1112		

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

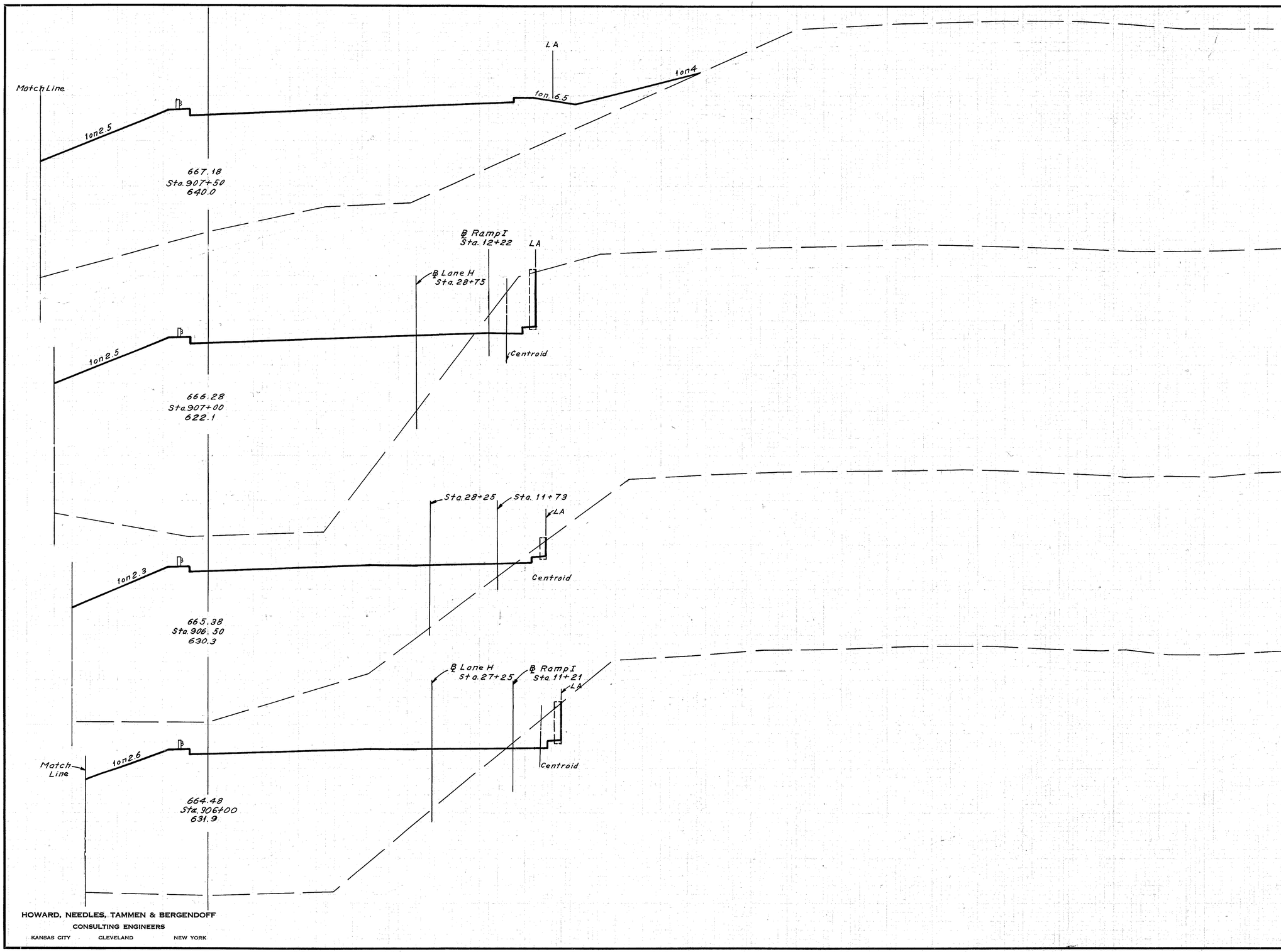
N. B. MEDINA STA. 904+00 TO STA. 905+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

81/241

CUYAHOGA COUNTY
CUY-71-17.18

22/36



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
660	0	2632		
640			93	5935
	100	3130		
660				
Exc. Distance = 51'			103	5070
640				
670	9	2946		
Exc. Distance = 51'			51	4371
650				
670	45	2375		
Exc. Distance = 51'			552	3444
650				
Sta. 905+50	540	1344		
630				

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

JEN 11-15-64 VHC 11-17-64
DJS 12-13-67 DJS 12-10-68
RSK 12-15-64

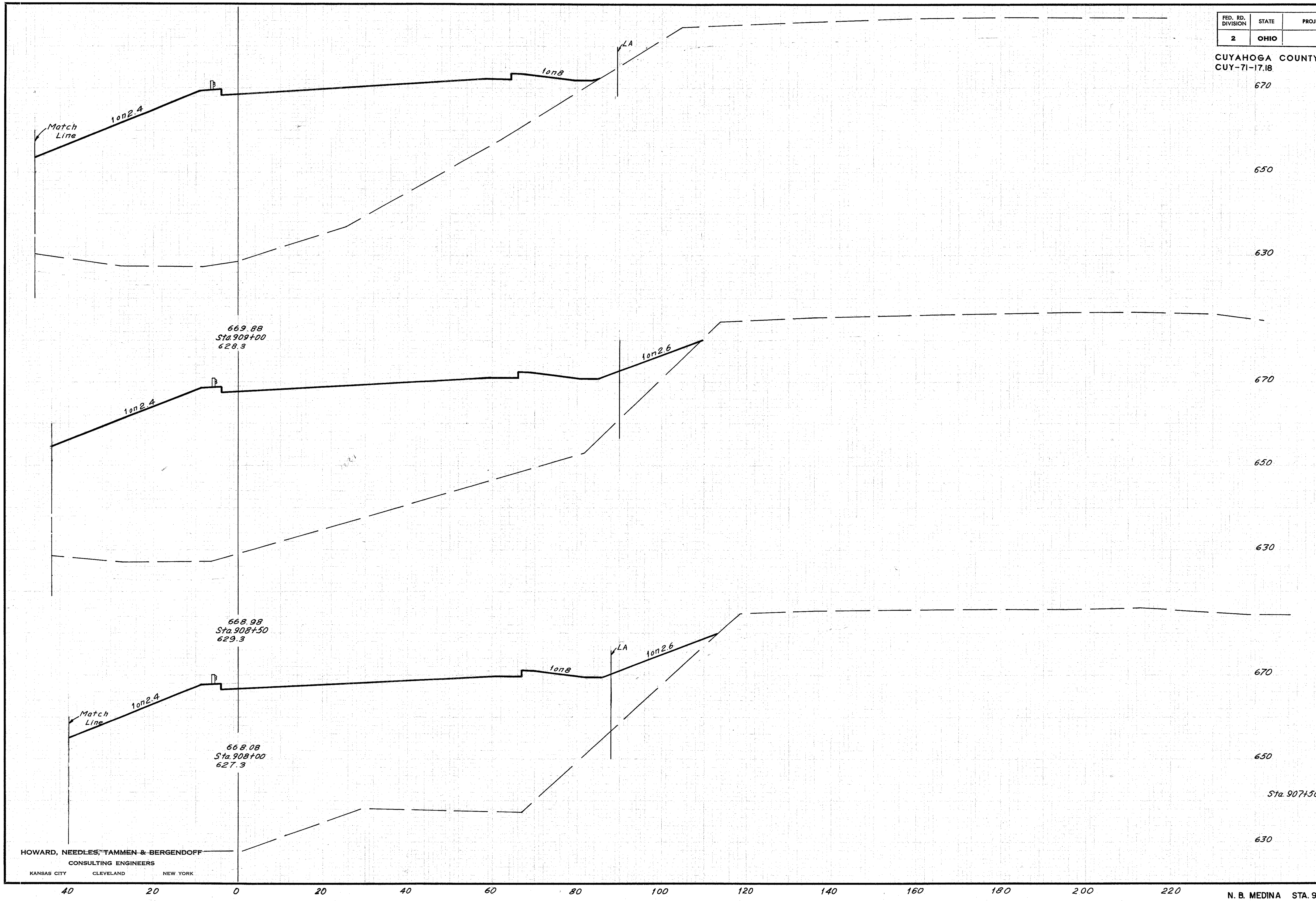
N.B. MEDINA STA. 906+00 TO STA. 907+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

82/241

23/36

CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	3665		
		0	7221
0	4133		
		0	7781
0	4270		
		0	6391
0 (Sta. 907+50)	2632		

JEN 11-16-64 VHLD 11-19-64 RJK 11-30-64 DJS 12-1-64 DJS RSK 12-16-64

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

N. B. MEDINA STA. 908+00 TO STA. 909+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

83
241

24
36

CUYAHOGA COUNTY
CUY-71-17.18

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
0	4929		
		0	8331
0	4068		
		0	7952
0	4520		
		0	7579
0	3665		

Match Line
1on2.7
1on8
LA
1on7.5
672.58
Sta 910+50
628.42
670
650
630

Match Line
1on2.7
1on8
1on4
671.68
Sta. 910+00
629.65
670
650
630

Match Line
1on2.5
1on8
LA
1on3
670.78
Sta. 909+50
628.0
670
650
630
Sta. 909+00

60 40 20 0 20 40 60 80 100 120 140 160 180 200 220

N.B. MEDINA STA. 909+50 TO STA. 910+50

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

AEK 11-6-64 ~ JLD 11-12-64
AEK 11-9-64 JLD 12-2-64
DJS 12-13-64
RS.K. 12-14-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

84
241

CUYAHOGA COUNTY
CUY-71-17.18

25
36

	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB	EXC.	EMB.
660				
640				
620	0	6653		
670				
650			0	11746
630				
670	0	6033		
			0	10164
650	0	4944		
			0	9142
Sta. 910+50	0	4929		
630				

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

N. B. MEDINA STA. 911+00 TO STA. 912+00

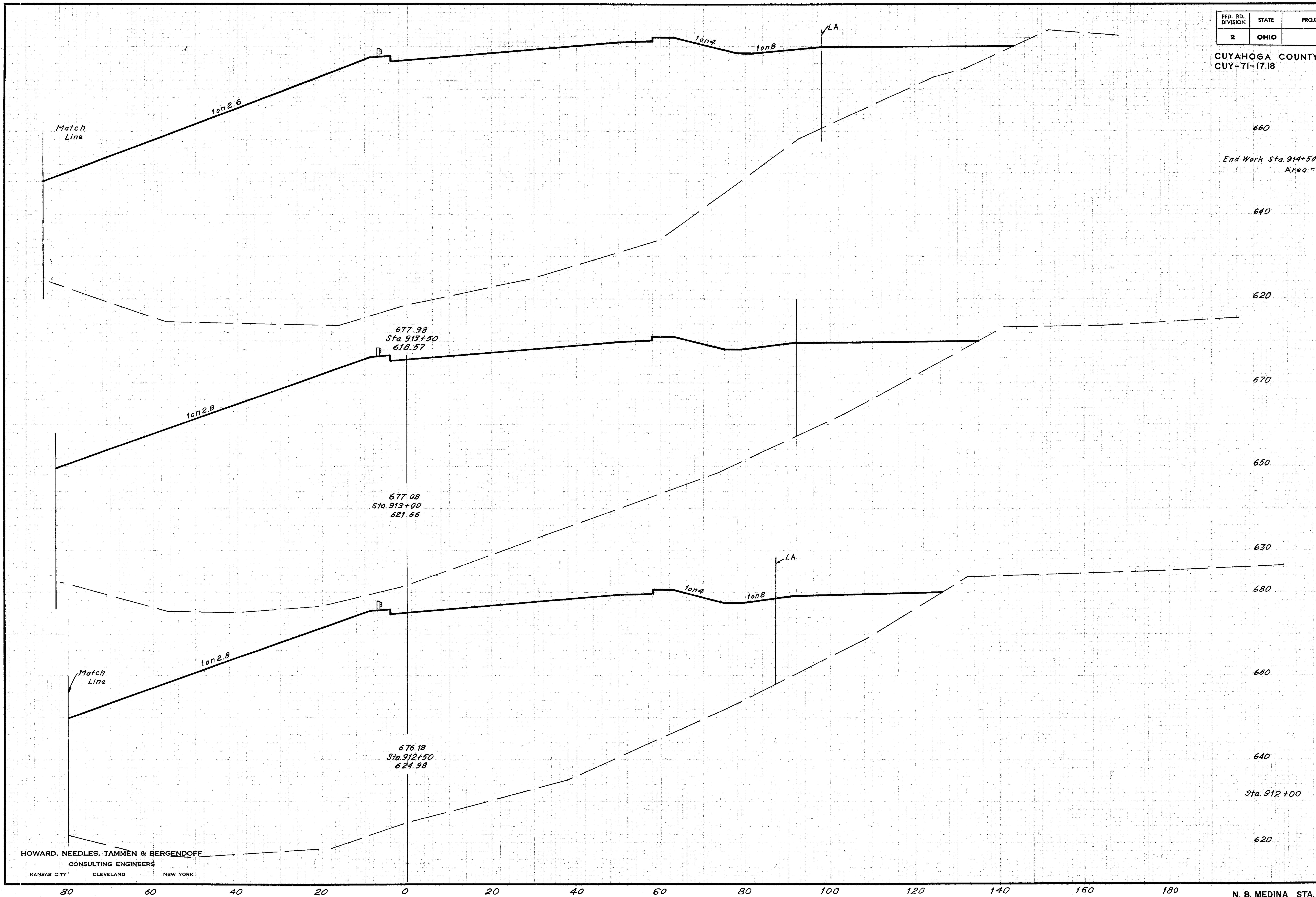
REV. 11-16-64 VOID 11-22-64
REV. 11-30-64 VOID 12-2-64
DJS 12-10-64
RS.K 12-16-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

85/241

26/36

CUYAHOGA COUNTY
CUY-71-17.18



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
End Work Sta. 914+50 Area =	0	0		
			0	16613
	0	8971		
			0	15764
	0	8054		
			0	14351
	0	7445		
			0	13054
Sta. 912+00	0	6653		

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

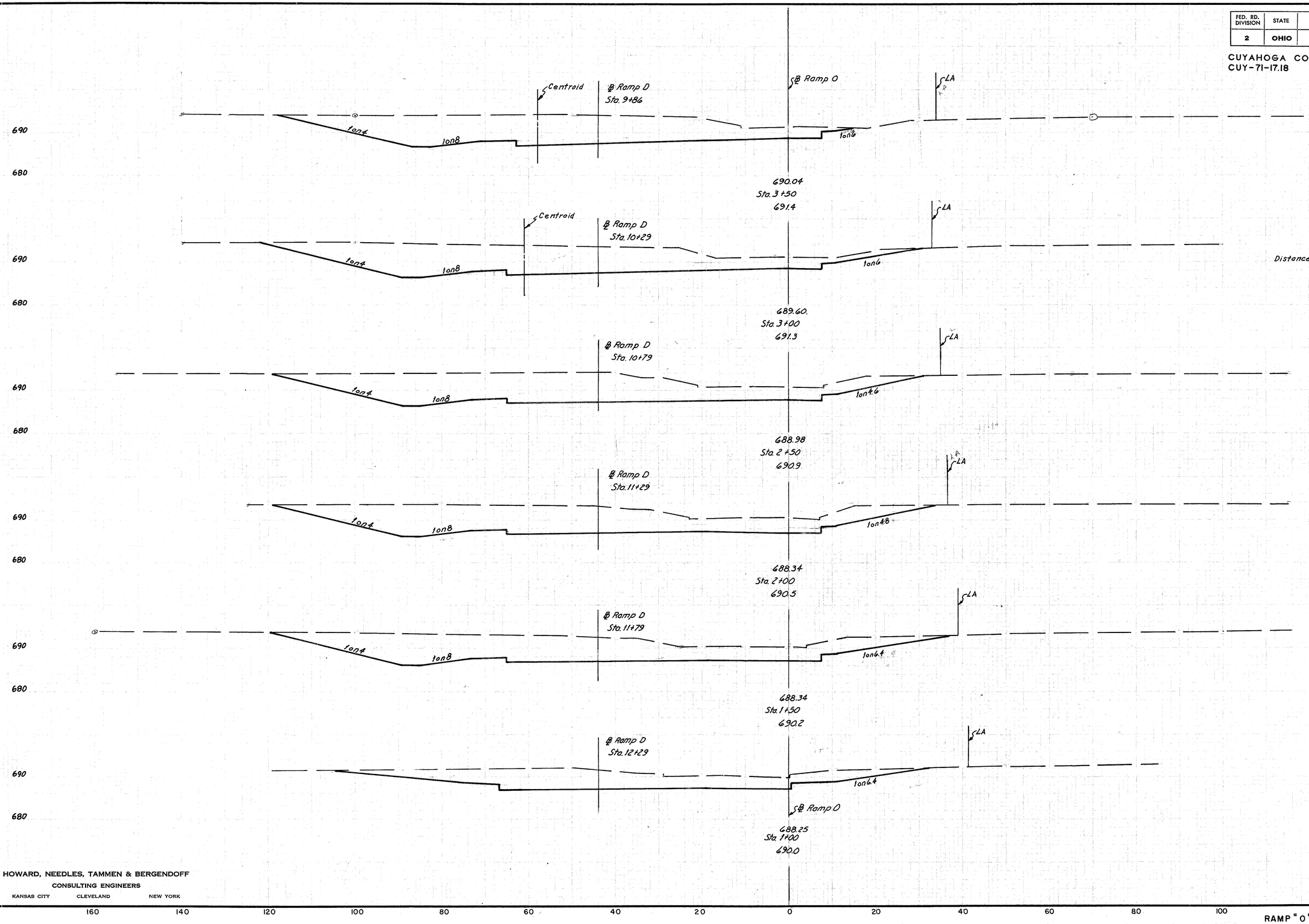
N. B. MEDINA STA. 912+50 TO STA. 913+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

86/241

CUYAHOGA COUNTY
CUY-71-17.18

27/36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
641	0		
		936	0
655	0		
		1259	0
705	0		
		1292	0
690	0		
		1243	0
652	0		
		967	0
392	0		

Distance = 39'

DJS 11-18-64 RSK 11-30-64
RSK 12-7-64 RDJ 11-30-64
DJS 12-14-64

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KANSAS CITY CLEVELAND NEW YORK

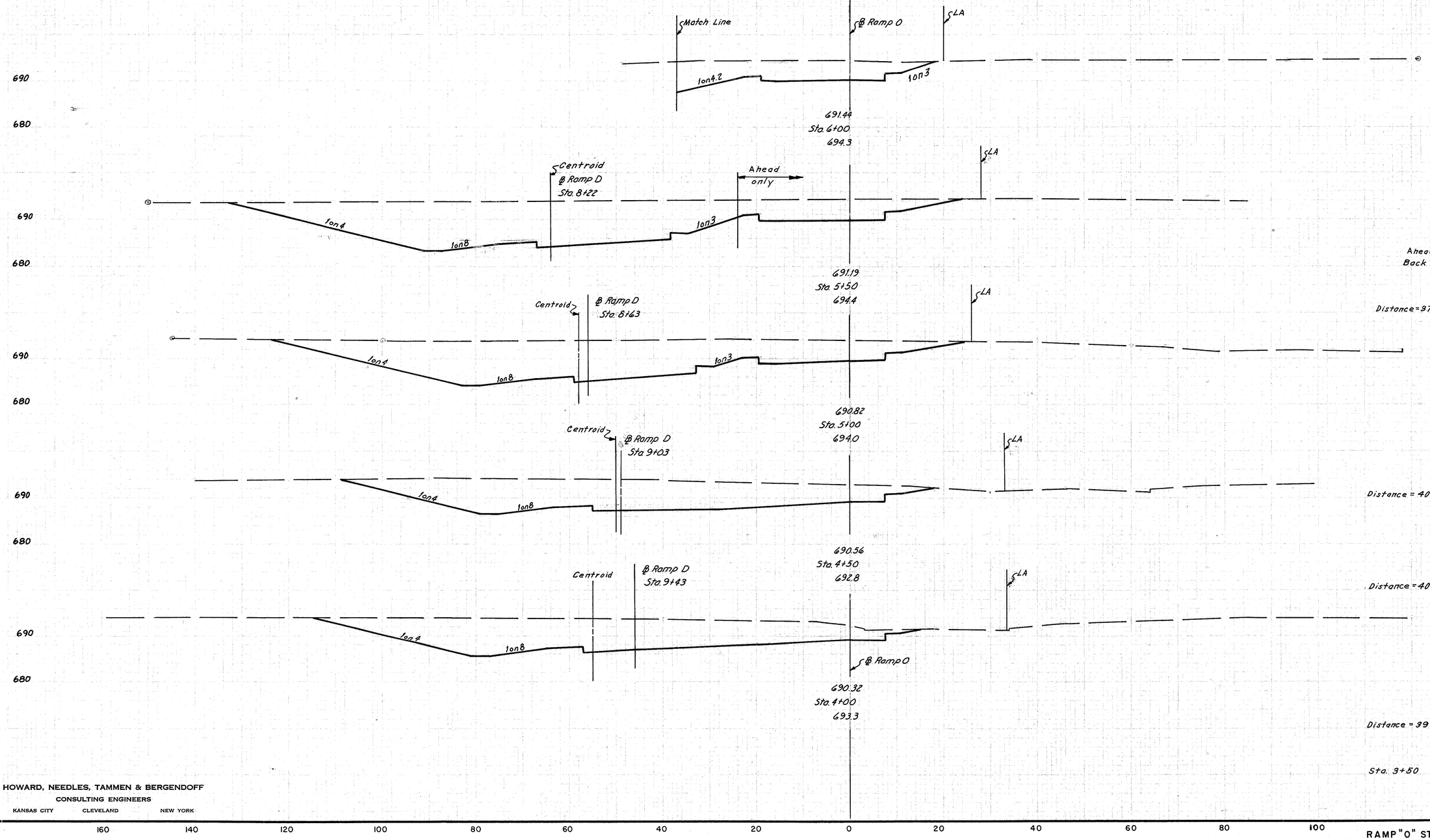
RAMP "O" STA. 1+00 TO STA. 3+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

87/241

CUYAHOGA COUNTY
CUY-71-17.18

28/36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
218	0		
		359	0
Ahead 170	0		
Back 967	0		
Distance=37'		1241	0
844	0		
Distance = 40		1088	0
625			
Distance = 40'		966	0
679			
Distance = 39'		953	0
Sta. 3+50 641			

RAMP "O" STA. 4+00 TO STA. 6+00

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

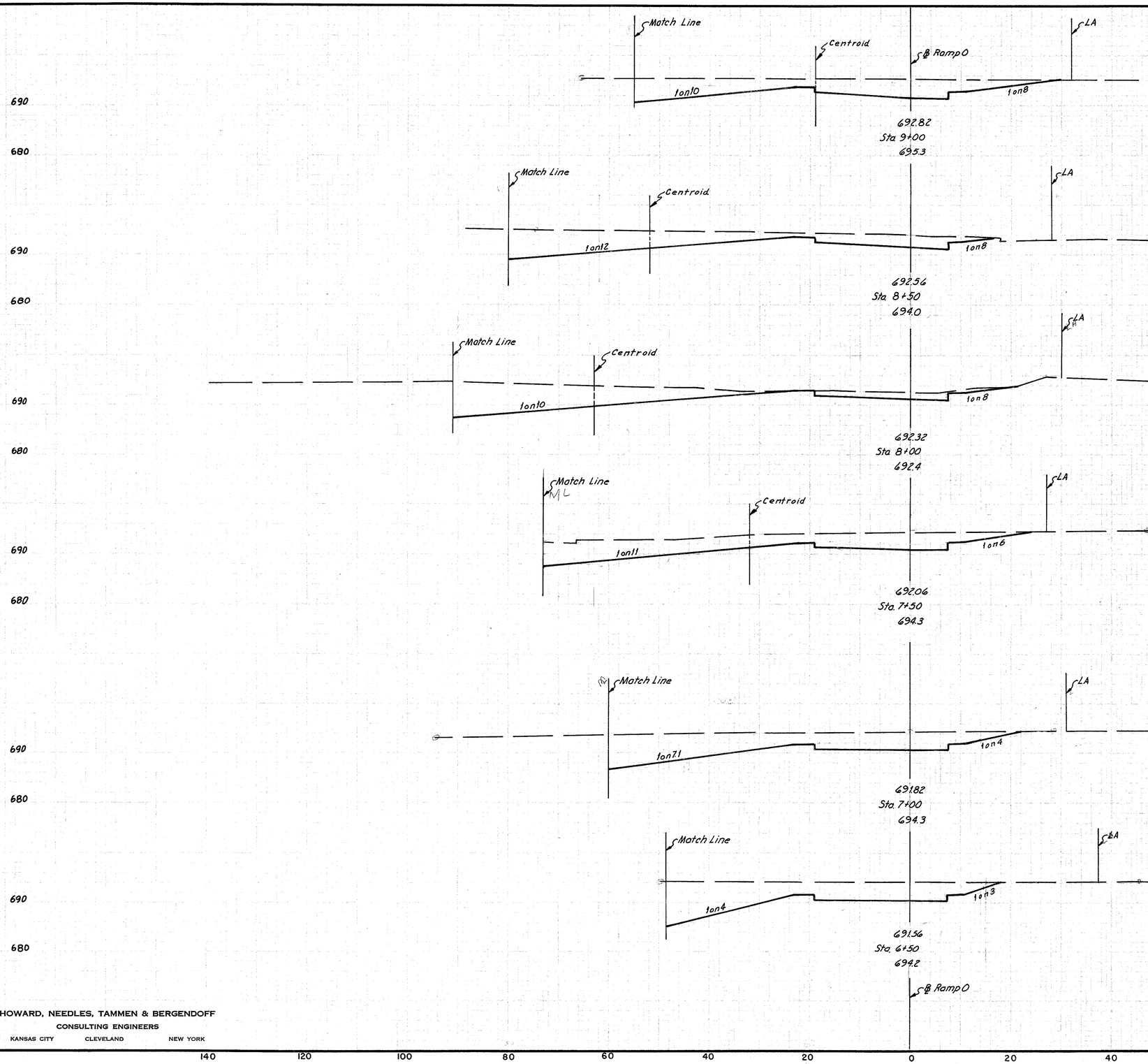
DES 11-16-64 RSK
RSK 12-7-64 RDL
RSK 12-15-64

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

88/241

CUYAHOGA COUNTY
CUY-71-17.18

29/36



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Sta. 9+10 See left half Medina Freeway Sta. 890+00				
Distance = 33'				
Area	231	0		
			280	0
	228	0		
Distance = 55'			514	0
	277	0		
Distance = 56'			578	0
	280	0		
Distance = 55'			565	0
	275	0		
			537	0
	305	0		
			547	0
	286	0		
			467	0
Sta. 6+00	218	0		

D.S. 11-18-64 R.S.H. 11-19-64
D.S. 12-4-64 R.O.W. 12-1-64
R.S.H. 12-4-64
D.S. 12-15-64

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

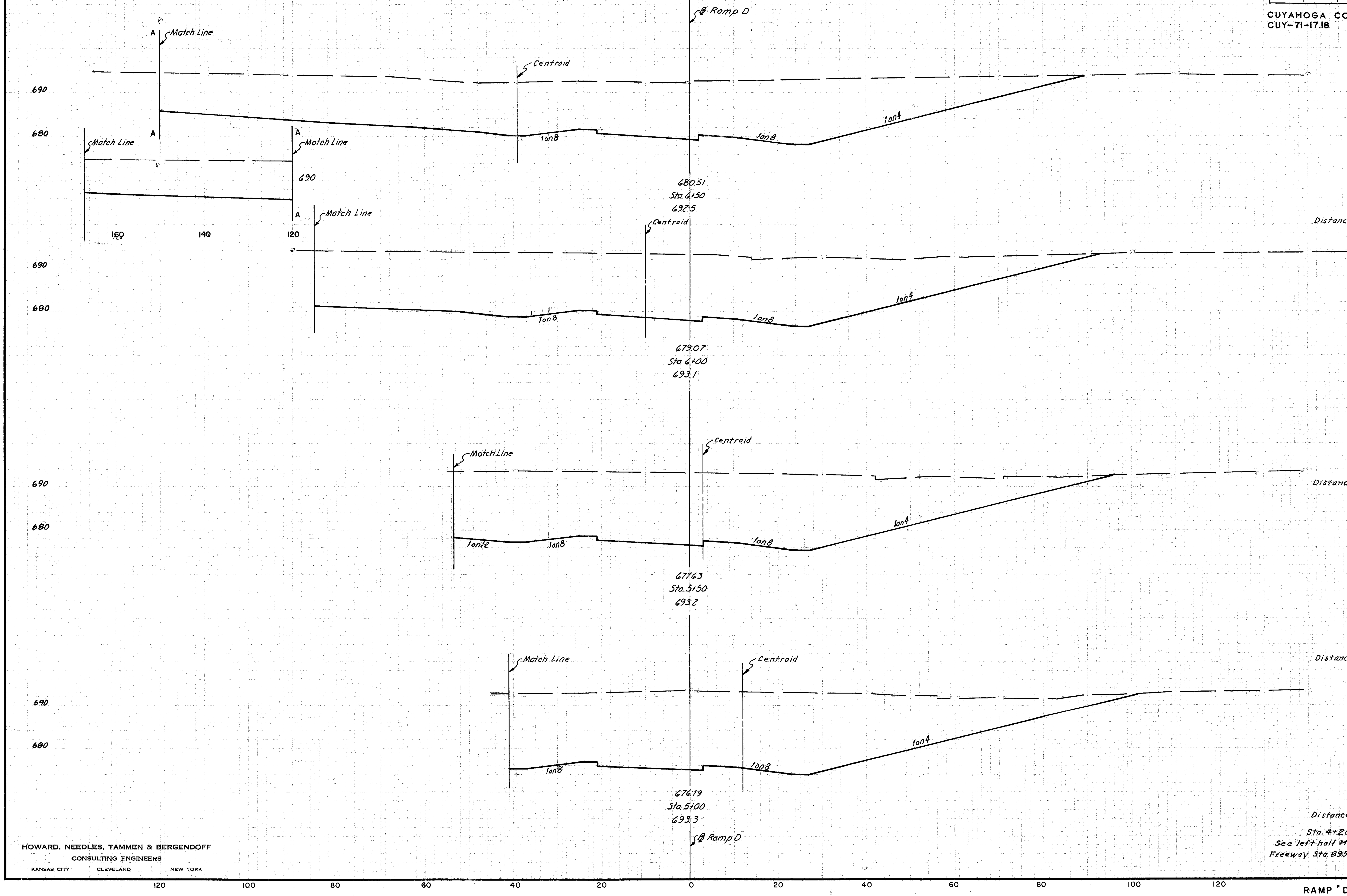
RAMP "O" STA. 6+50 TO STA. 9+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

89/241

30/36

CUYAHOGA COUNTY
CUY-71-17.18



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB
	2548	0		
Distance = 57'			4901	0
	2095	0		
Distance = 51'			3746	0
	1871	0		
Distance = 48'			3315	0
	1858	0		
Distance = 25'			1624	
Sta. 4+20 See left half Medina Freeway Sta. 895+00	1650	0		

D.J.S. 11-16-64 R.S.K. 11-17-64
DJS 11-30-64 R.D.J. 12-2-64
R.J.K. 12-4-64 D.J.S. 12-14-64

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KANSAS CITY CLEVELAND NEW YORK

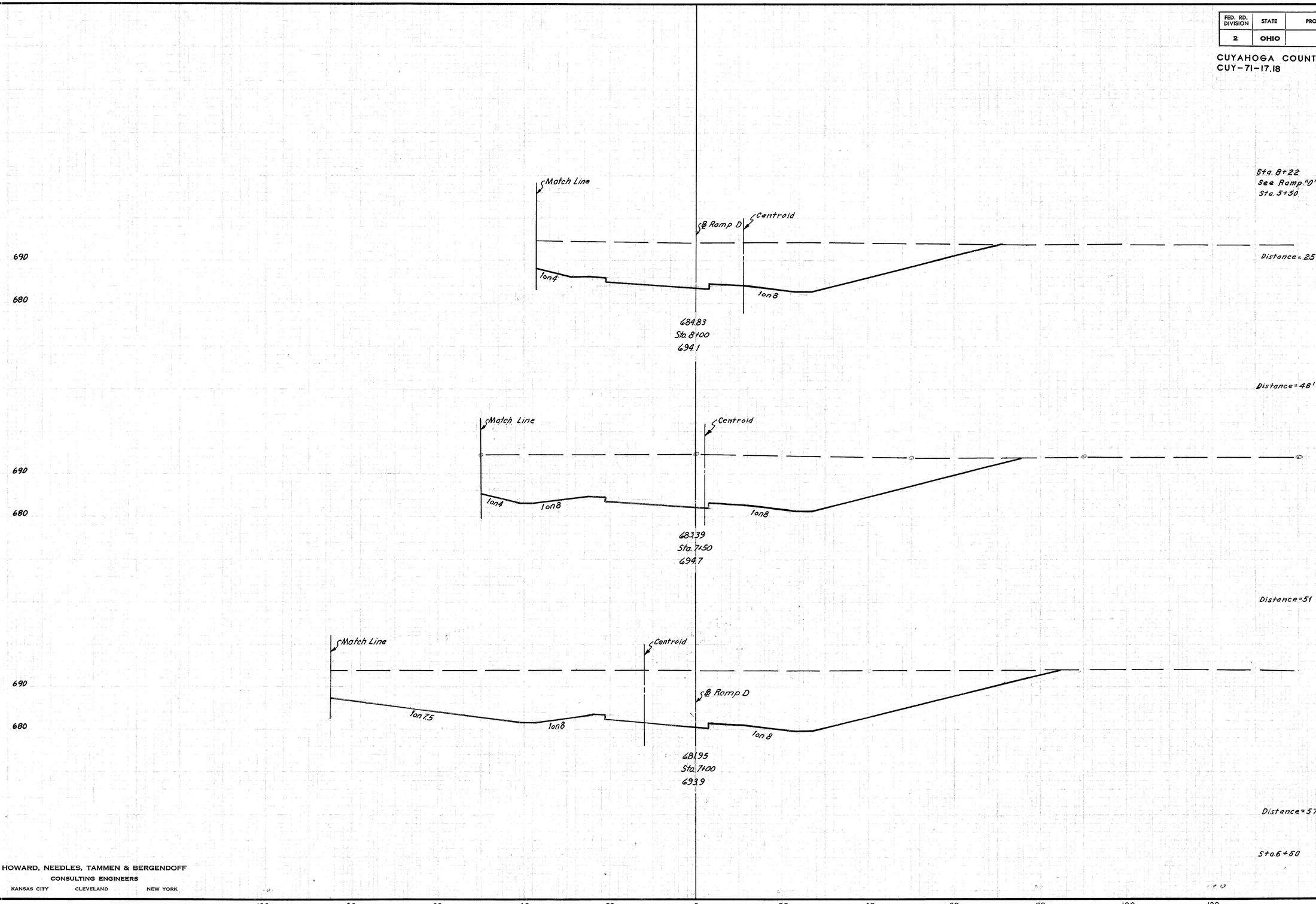
RAMP "D" STA. 5+00 TO STA. 6+50

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

90/241

CUYAHOGA COUNTY
CUY-71-17.18

91/36



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Sta. 8+22 See Ramp "O" Sta. 5+50	791	0		
Distance = 25'			772	0
	876	0		
Distance = 48'			1840	0
	1194	0		
Distance = 51			2689	0
	1653	0		
Distance = 57'			4434	0
Sta. 6+50	2548	0		

D.J.S. 11-6-64
R.S.K. 11-26-64
R.S.K. 12-7-64
D.J.S. 12-14-64

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

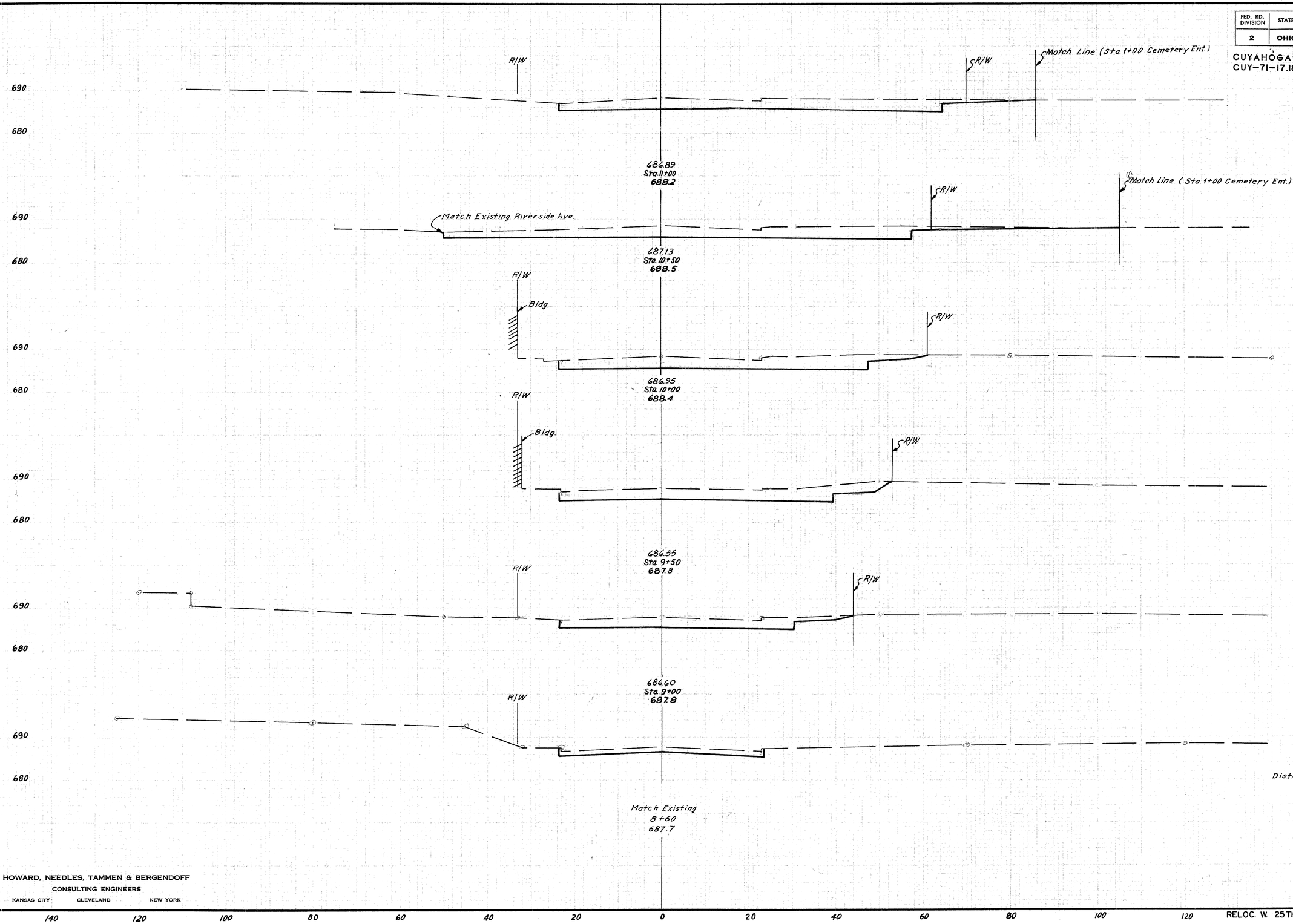
RAMP "D" STA. 7+00 TO STA. 8+00

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

91/241

CUYAHOGA COUNTY
CUY-71-17.18

32/36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
210	0	344	0
162	0		
		349	0
215	0		
		376	0
191	0		
		299	0
132	0		
		133	0
47	0		

RELOC. W. 25TH ST. STA. 8+60 TO STA. 11+00

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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

REVISED PROF. R.O.W. 12-2-69
R.S.K. 12-4-69
D.J.S. 12-15-69

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

92
241

CUYAHOGA COUNTY
CUY-71-17.18

33
36

LA

690
680

688.73
Sta. 17+50
687.7

Match Line (Sta. 898+00 Medina Freeway)

690
680

689.09
Sta. 17+00
687.8

Match
Line (Sta. 895+50 Medina Freeway)

Match
Line (Sta. 897+00 Medina Freeway)

690
680

688.01
Sta 13+00
686.6

Match Line (895+50 Medina Freeway)

R/W

690
680

687.15
Sta. 12+50
687.2

R/W

R/W

690
680

R/W

Bldg

686.86
Sta. 12+00
687.6

R/W

690
680

Sta. 11+50
687.8

W. 25th. Structure
Between Sta 13+00+17+00

42 781
391

Sta. 11+00

EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
45	0		
		10.3	1
66	1		
123	20		
		303	19
204	0		
		391	0
218	0		
		381	0
193	0		
		373	0
210	0		

RELOC. W. 25TH ST. 11+50 TO STA. 17+50

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

R.S.H. 11-21-64 DOS 11-24-64
R.S.H. 12-4-64 DOS 12-3-64
R.S.H. 12-14-64 DOS 12-15-64

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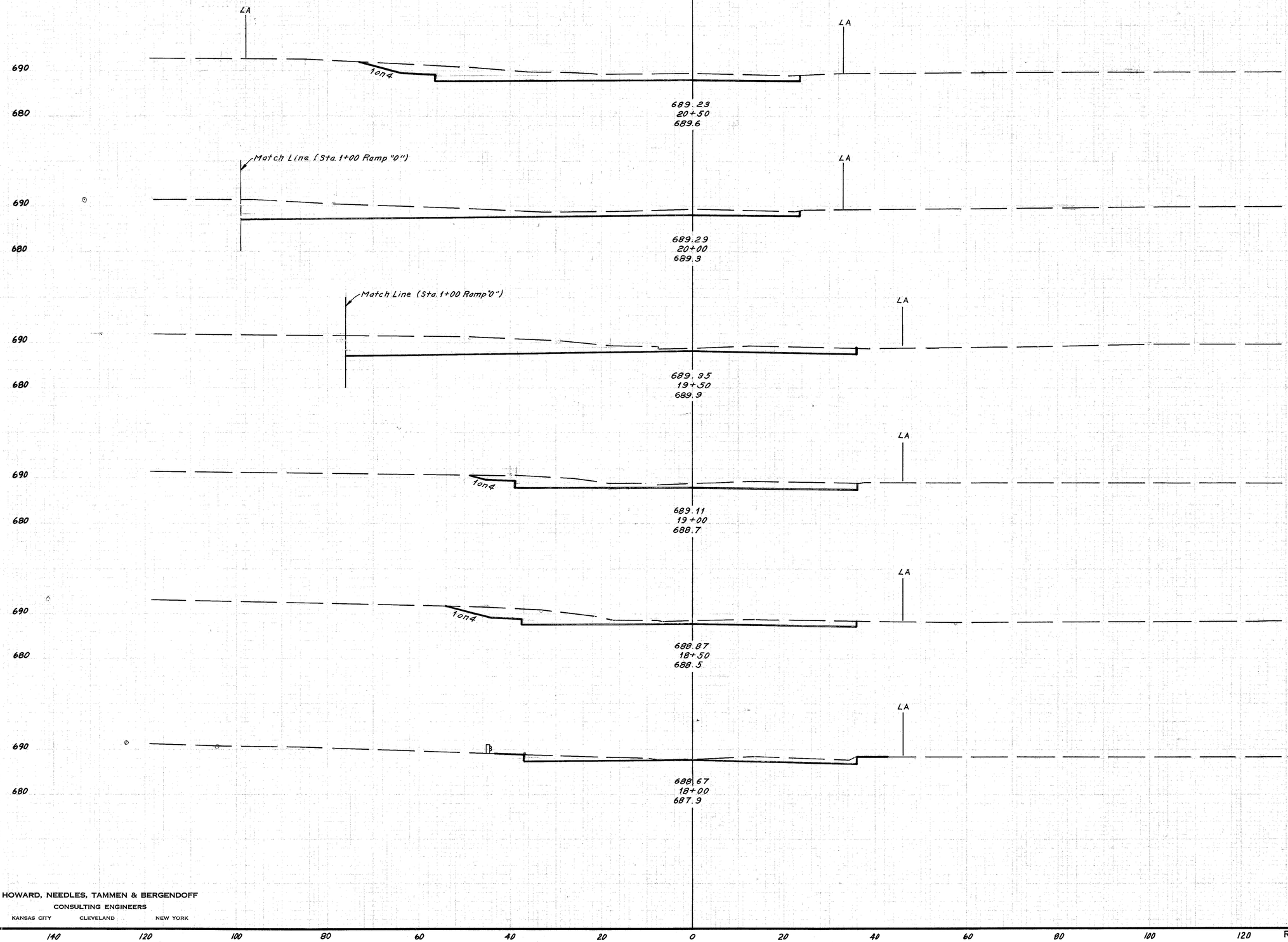
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

93
241

34
36

CUYAHOGA COUNTY
CUY-71-17.18



EARTHWORK				
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Sta. 20+50	176	0		
			384	0
	239	0		
			458	0
	256	0		
			354	0
	126	0		
			244	0
	137	0		
			181	0
	58	0		
			95	0
Sta. 17+50	45	0		

RELOC. W. 25TH ST. STA. 18+00 TO STA. 20+50

RAH 11-16-64 DJS 11-17-64
BOL 11-30-64
DJS 12-11-64 H&D 12-21-64

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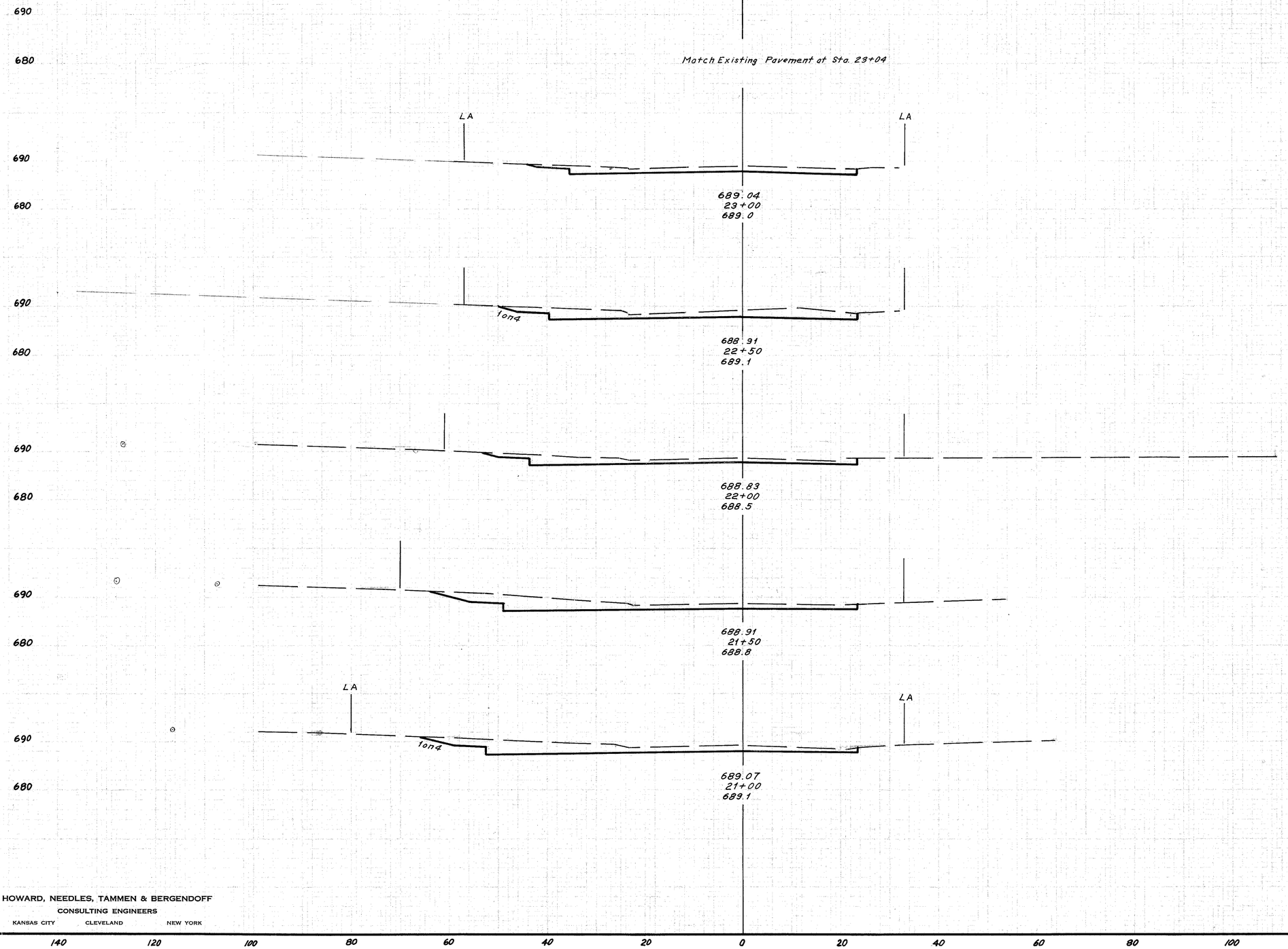
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

94
241

CUYAHOGA COUNTY
CUY-71-17.18

35
36



	EARTHWORK			
	END AREA		VOLUME	
	EXC.	EMB.	EXC.	EMB.
Sta. 23+04	72	0		
			10	0
	69	0		
			166	0
	110	0		
			171	0
	75	0		
			183	0
	123	0		
			232	0
	128	0		
			281	0
Sta. 20+50	176	0		

RELOC. W. 25TH ST. STA. 21+00 TO STA. 23+00

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

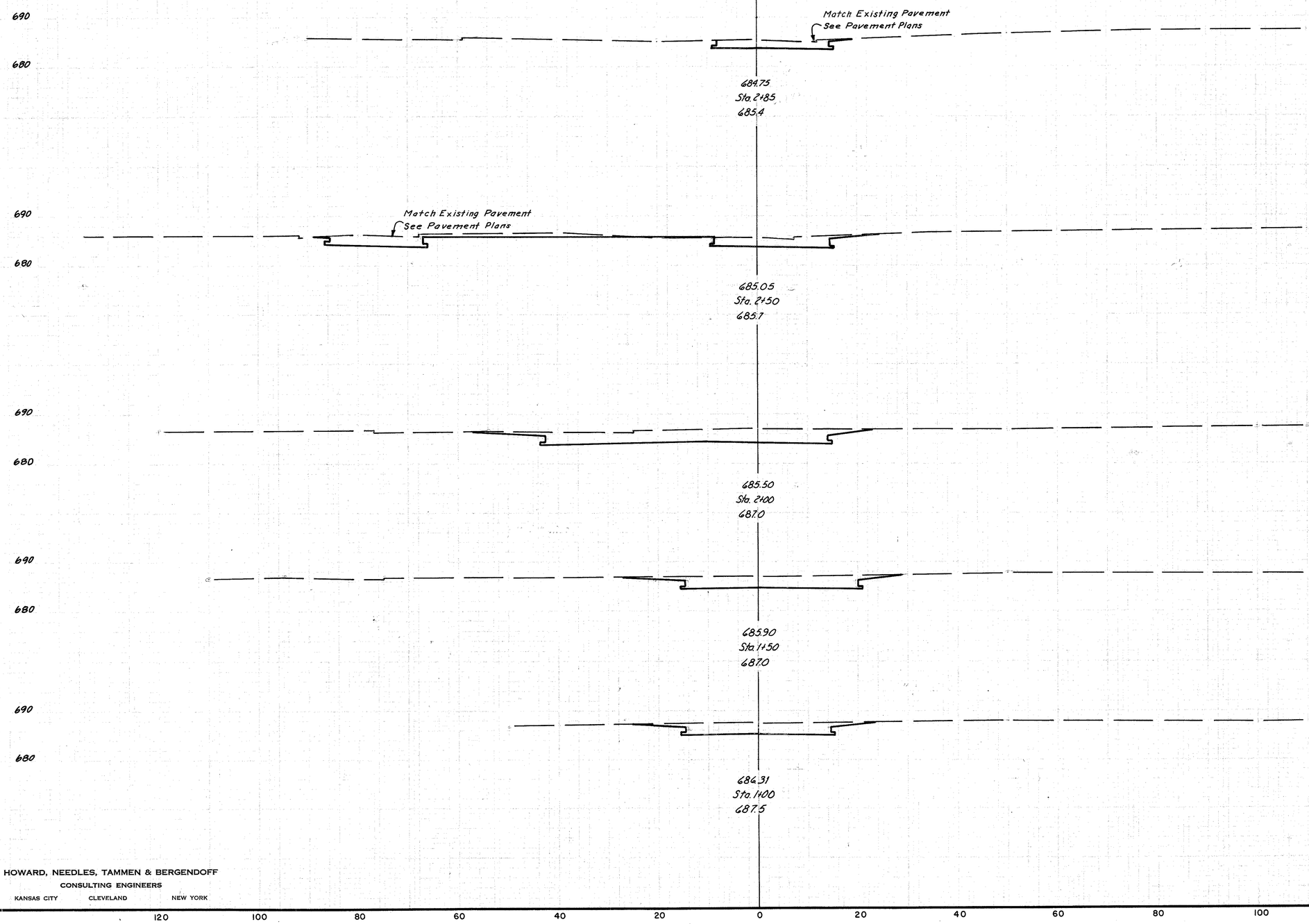
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DATE 12-15-69

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

95/241

CUYAHOGA COUNTY
CUY-71-17.18

36/36



EARTHWORK			
END AREA		VOLUME	
EXC.	EMB.	EXC.	EMB.
35	0		
		75	0
46	0		
		173	0
141	0		
		217	0
93	0		
		145	0
64	0		

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

CEMETERY ENTRANCE STA. 1+00 TO STA. 3+00

DJS 11-1964 RS-K 11-1764
DJS 12-1964 RS-K 12-1964
DJS 12-15-64

M-14

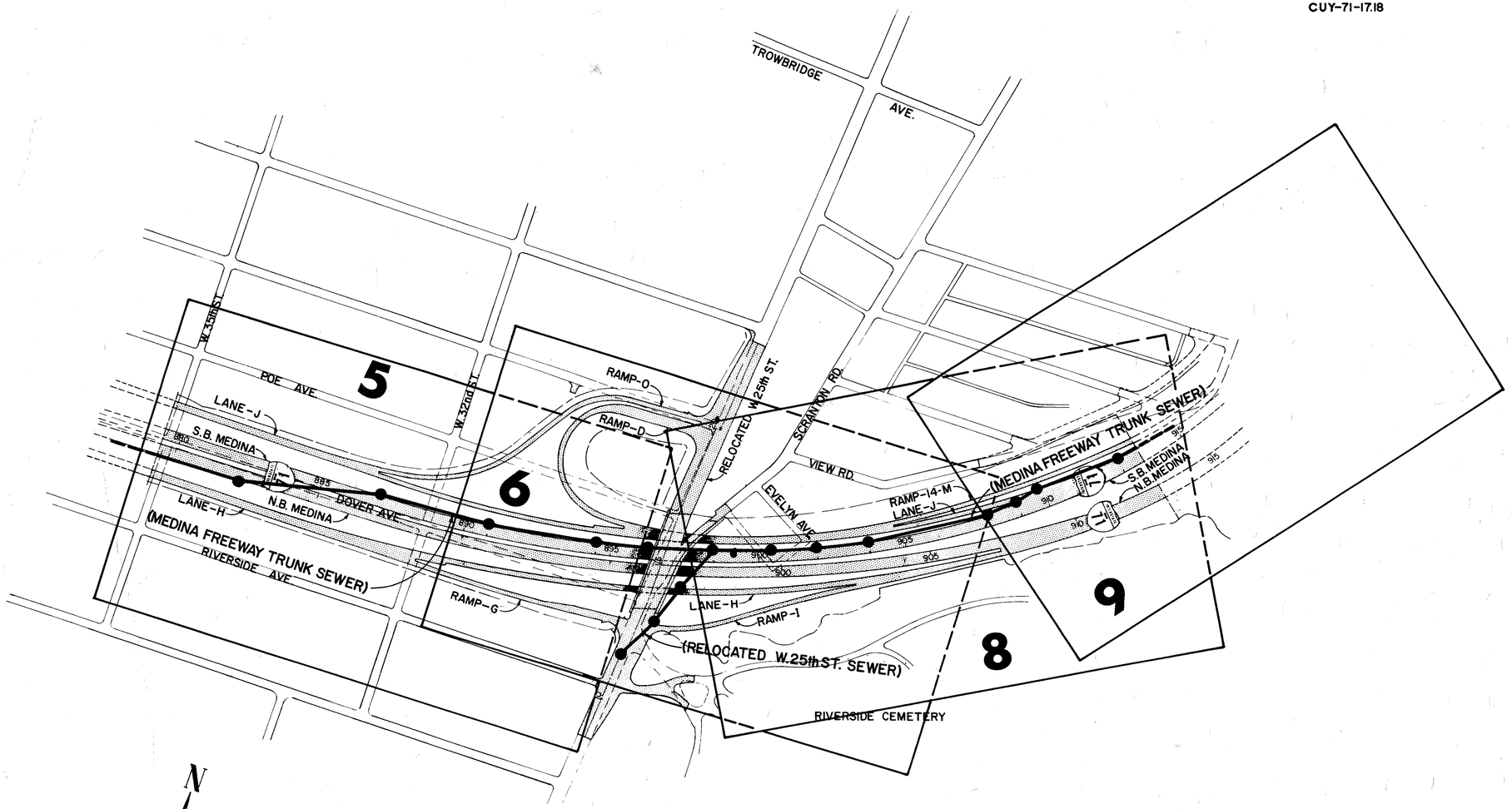
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

96/241

1/28

CUYAHOGA COUNTY
CUY-71-17.18

DRAINAGE SCHEMATIC PLAN



DRAINAGE PLAN INDEX OF SHEETS

SCALE 1"=200' MADE R.D.J. DATE 2-5-65
TRCD H.L.D. DATE 2.10.65
CKD. R.J.T. DATE 2-16-65

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

GENERAL NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

97/241

CUYAHOGA COUNTY
CUY.-71-17.18

2/28

DRAINAGE

REVIEW OF PROJECT

Before any work is started on the project, representatives of the State, the City and the Contractor shall make a visual inspection of the existing storm, sanitary, and combined sewers which are to remain in service and which are within the limits of the work. A record of the inspection shall be kept in writing by the State. All new sewers, inlets 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 the same condition as 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. The cost of making inspections and any repairing or correcting of sewers as a result of construction operations shall be included in the unit prices bid for the respective pipe items of the contract.

EXISTING UNDERDRAINS

Where existing underdrains are encountered and no provision has been made for new underdrains, they shall be connected to new inlet with 6 inch Class I-3 Pipe. A quantity of 300 feet has been provided in the General Summary to be used as directed by the Engineer for that purpose. The materials shall not be ordered by the Contractor unless prior approval is received from the Project Engineer.

UNINTERRUPTED FLOW

The Contractor shall so conduct his operations that the flow of all sewers which are to remain in service will be maintained at all times. Any additional labor or cost involved in maintaining this flow by pumping or by any other approved method found necessary for the completion of this project shall be included in the price bid for the pertinent drainage item.

When working in the area adjacent to existing sewers, the Contractor is to proceed with caution in order that no damage is done to the existing sewers. Any damage to existing sewers resulting from the Contractor's operations or negligence as determined by the Engineer shall immediately be repaired by the Contractor at no additional cost to the State.

PLASTERING SANITARY MANHOLES

The sanitary sewer manholes shall be built according to the details shown on Standard Drawing "I-8 Manhole No. 1" or "I-8 Manhole No. 2", modified as follows: In addition to the requirements of Section I-8.05 the Contractor shall be required to cover the outside of the structure with a layer of mortar of a minimum thickness of ½ inch. The mortar shall be the approved masonry mortar. The cost of this work shall be included in the unit price bid for "Item I-8, Standard No. 1 Manhole," "Item I-8, Standard No. 2 Manhole, Modified", "Item I-8, Standard No. 2 Manhole," or "Item I-8, Manhole, Adjusted to Grade."

ITEM I-1 CLASS I-3 PIPE UNDERDRAINS

In lieu of the requirements for Type 3 Backfill of Section I-1.07, backfill from a distance of 6 inches above the top of the pipe upward shall consist of Section M-2.1 sand or of Section M-3.13 granulated slag. ~~This provision shall also apply to backfill required immediately prior to the placement of the B-112 to replace contaminated backfill material~~. This material shall be used except where noted otherwise in the plans.

CITY OF CLEVELAND MANHOLE FRAME AND COVER

City of Cleveland Standard Manhole Frame and Cover as detailed on Sheet 16A shall be used in lieu of Frame and Cover Detail shown on Standard Construction Drawing I-8 M.H. No. 1 and I-8 M.H. No. 2 on all new manholes to be constructed on this project.

DRAINAGE

SEALING OF PIPE JOINTS

Where connections are made between rigid and flexible pipe sections or between pipe sections of different kind or type of end 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 Specifications, by means of a concrete collar in accordance with Standard Construction Drawing I-1.

OUTFALL SEWER

Outfall sewer at each end of this project, which is to be constructed by others, may not be in place during construction of this project.

PLUGGING PIPE

The upstream ends of all pipe or tile lines intercepted by earthwork operations shall be effectively blocked and covered. Broken pieces and portions of pipe or tile shall be removed until a whole undamaged length is encountered which shall be blocked with concrete, flat stone or brick laid in mortar, or a precast clay or concrete stopper. The Engineer will be provided with locations of sanitary service connections by the City of Cleveland prior to construction. Payment for the above work shall be included in the unit price bid for Item E-1, Roadway Excavation.

PIPE CUT-OFFS

When bell and spigot pipe is used, any necessary pipe cut-offs will be made at the spigot end of the length of pipe adjacent to the end length. When tongue and groove pipe is used, the length of pipe next to the end length shall be cut and butt joint formed with a concrete collar in accordance with Standard Construction Drawing I-1.

EROSION CONTROL

The Contractor shall place an 18 inch strip of sod along each side of each paved gutter except where adjacent to concrete and shall be compensated therefor in accordance with Item L-10, Sodding.

CONNECTIONS TO EXISTING SEWERS

When the plans provide for proposed drainage pipe to be connected to existing pipes, the Contractor shall locate the existing pipe both as to line and grade before laying the proposed sewer. The cost of this operation shall be included in the unit price bid for the pertinent pipe item.

ABANDONED SEWERS

Where previously abandoned sewers are encountered during construction, the pipes shall be cut at the limits of new construction and plugged in accordance with methods outlined in Section I-16.03. Payment for cutting and plugging shall be included in the unit price bid for Item E-1, Roadway Excavation.

MANHOLE COVERS

The Contractor shall set the frames for manhole covers at such an elevation and inclination as to place the surface of the cover in the plane of the finished surface except on slopes steeper than 1 on 6.

DRAINAGE

MANHOLES, CATCH BASINS AND INLETS

Removal and disposal of structures, not specifically removed or abandoned under Item I-16 shall be paid for under "Item E-1, Roadway Excavation".

MODIFIED MANHOLE

Manholes over 23' deep shall be built in accordance with Standard Construction Drawing "I-8 Manhole No. 2" except that No. 4 reinforcing bars shall be placed at about mid-depth of the base slab and at 8 inch centers in each direction and a 17" wall thickness shall be provided for that portion of the manhole below 20' in depth and a 21" wall thickness shall be provided for that portion of the manhole below 33' in depth. The cost of this work shall be included in the unit price bid for "Item I-8, Standard No. 2 Manhole, Modified".

The following manholes shall be constructed as per this note.

STRUCTURE CODE

SS-11
S-11
S-50
S-81
S-82

ITEM I-8 MANHOLE RECONSTRUCTED TO GRADE, AS PER PLAN

This item shall consist of the careful removal of the existing manhole to an elevation below the new grade, as required by the Engineer, and reconstruction of the manhole to the new grade, conforming as nearly as practicable to the existing dimensions and type of construction and using the salvaged manhole frame and cover. Where it is necessary to replace unsatisfactory manhole frame and cover castings, they shall be replaced with units from other removed manholes of City of Cleveland Standards. See note below under "Manholes Adjusted to Grade" regarding non-standard castings.

MANHOLES ADJUSTED TO GRADE

In the event that any of the castings on existing manholes to be adjusted to grade have frames and covers which are not City of Cleveland Standards, the Contractor will be furnished such standard castings by the City of Cleveland.

The Contractor is to pick up castings at the City's lower maintenance yard and return the castings that are not replaced.

No additional payment will be made to the Contractor for any delay, or extra cost to the Contractor resulting from this procedure.

EXISTING FRAMES, GRATES AND COVERS FROM ABANDONED STRUCTURES

Where existing manholes, catch basins, or inlets are to be removed or abandoned, the existing frames, grates, covers and other appurtenances will become the property of the Contractor and are to be disposed of outside the limits of the work at the Contractor's expense.

ITEM I-16 MANHOLE ABANDONED, ADJUSTED TO GRADE WITH REINFORCED CONCRETE SLAB

This item shall consist of the careful removal of the existing Manhole E-2 to an elevation below the top of reinforced slab Elevation 689.39 as required by the Engineer and construction of a concrete slab top 9" thick with ¾" reinforcing bars in both directions at 12" centers with 1" clearance from the bottom of slab for either row of bars. Class "C" concrete shall be used. The price bid per each shall constitute full compensation for all of the above described work.

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RJT DATE 11-2-64 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD. DDS DATE 11-4-64 KANSAS CITY CLEVELAND NEW YORK

DRAINAGE QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY.-71-17.18

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241

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28

CODE	PLAN SHEET NO.	I-1 Cl. B-1 12"	I-1 Cl. E-1 12"	I-1 Cl. B-1 15"	I-1 Cl. E-1 15"	I-1 Cl. B-1 S:M.G.6(b) 15"	I-1 Cl. B-1 18"	I-1 Cl. B-1 S:M.G.6(b) 72"	I-1 Cl. B-1 S:M.G.6(c) 72"
		Lin. Ft.							
P-1	5	16							
P-2	5	10							
P-3	5	13							
P-4	5	13							
P-5	5			150					
P-6	5			91					
P-7	5			6					
P-8	5					96			
P-9	5						55		
P-10	5						52		
P-11	6	31							
P-12	6	14							
P-13	6		6						
P-14	6	38							
P-15	6	38							
P-16	6			29					
P-17	6			24					
P-18	6			39					
P-19	6				7				
P-20	6			96					
P-21	6				5				
P-22	6	51							
P-23	6	75							
P-24	6	21							
P-25	6	16							
P-26	6	22							
P-27	6	101							
P-28	6	46							
P-29	6	23							
P-30	6	32							
P-31	6	53							
P-32	6		125						
P-33	6	58							
P-34	6		101						
P-35	6	27							
P-36	6	17							
P-37	6	16							
P-38	6	28							
P-39	6	34							
P-40	6			54					
P-41	6			52					
P-42	6			54					
P-43	6			52					
P-44	6				54				
P-45	6			79					
P-46	6			53					
P-47	6			6					
P-48	6			93					
P-49	6								152
P-50	6								145
P-51	6							156	
P-52	6		21						
P-53	6			60					
P-54	8			41					
P-55	8			127					
P-56	8			51					
P-57	8			6					
P-58	8			37					
P-59	8				22				
P-60	8				57				
P-61	8			63					
TOTAL		793	253	1263	145	96	107	156	297

CODE	PLAN SHEET NO.	I-1 Cl. E-1 S:M.G.6(c) 12"	I-1 Cl. B-1 15"	I-1 Cl. E-1 15"	I-1 Cl. B-1 S:M.G.6(b) 15"	I-1 Cl. B-1 18"	I-1 Cl. B-1 21"	I-1 Cl. E-1 21"	I-1 Cl. B-1 S:M.G.6(b) 54"	I-1 Cl. B-1 S:M.G.6(f) 54"	I-1 Cl. B-1 S:M.G.6(b) 60"	I-1 Cl. B-1 S:M.G.6(b) 84"	I-1 Cl. B-1 84"
		Lin. Ft.											
P-62	8			5									
P-63	8		63										
P-64	8			14									
P-65	8		60										
P-66	8			70									
P-67	8					54							
P-68	8		67										
P-69	8		6										
P-70	8				132								
P-71	8		55										
P-72	8			6									
P-73	8		35										
P-74	9		85										
P-75	9		90										
P-76	9						39						
P-77	9							28					
P-78	9		63										
P-79	9			23									
P-80	8	168											
P-81	8		110										
P-82	5									276			
P-83	5									489			
P-84	5 & 6									371			
P-85	6									372			
P-86	6								172				
P-87	6										214		
P-89	6 & 8											200	
P-90	8											156	
P-91	8											159	
P-92	8											429	
P-93	8												100
P-94	8												82
P-95	8 & 9												289
P-96	9												74
TOTAL		168	634	118	132	54	39	28	172	1508	214	944	545

SCALE None
MADE R.O.J. DATE 2-11-65
TRCD DATE
CKD R.J.T. DATE 2-18-65

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

DRAINAGE PIPE QUANTITIES P-1 TO P-96

DRAINAGE QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY.-71-17.18

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CODE	PLAN SHEET NO.	I-8 Std. No. 3-A C.B.	Std. No. 3-A W/Trap C.B.	Std. No. 5 C.B.	Std. No. 6 C.B.	Std. No. 1 WO/Drop M.H.	Std. No. 2 WO/Drop M.H.	Std. No. 2 (Mod.) WO/Drop M.H.	Std. No. 2 (Mod.) W/Drop M.H.	Std. No. 2-A-6 Pvd. Shld. Inlet	Std. No. 2-A-6 (Mod.) Pvd. Shld. Inlet	Std. No. 2-A-6 W/Trap Pvd. Shld. Inlet	Std. No. 2-A-8 Pvd. Shld. Inlet	Std. No. 2-A-8 (Mod.) Pvd. Shld. Inlet	Std. No. 2-A-12 Pvd. Shld. Inlet	Std. No. 2-A-14 (Mod.) Pvd. Shld. Inlet	Std. No. 2-A-16 Pvd. Shld. Inlet	Std. No. 2-A-20 Pvd. Shld. Inlet	L-120 Jute Matting Sq. Yd.
		Each																	
S-1	5		1																
S-2	5		1																
S-3	5		1																
S-4	5		1																
S-5	5													1					
S-6	5									1									
S-7	5																1		
S-8	5									1									
S-9	5																	1	
S-10	5										1								
S-11	5								1										
S-12	6		1																
S-13	6		1																
S-14	6													1					
S-15	6		1																
S-16	6		1																
S-17	6									1									
S-18	6											1							
S-19	6									1									
S-20	6											1							
S-21	6			1															125
S-22	6		1																
S-23	6		1																
S-24	6	1																	
S-25	6		1																
S-26	6		1																
S-27	6		1																
S-28	6	1																	
S-29	6		1																
S-30	6		1																
S-31	6		1																
S-32	6		1																
S-33	6	1																	
S-34	6		1																
S-35	6	1																	
S-36	6		1																
S-37	6		1																
S-38	6		1																
S-39	6		1																
S-40	6		1																
S-41	6												1						
S-42	6													1					
S-43	6												1						
S-44	6													1					
S-45	6			1															250
S-46	6				1														
S-47	6					1													
S-48	6															1			
S-49	6			1															125
S-50	6							1											
S-51	6						1												
S-52	6									1									
S-53	6													1					
S-54	8			1															125
S-55	8									1									
S-56	8												1						
S-57	8														1				
S-58	8				1														
S-59	8									1									
S-60	8									1									
S-61	8			1															125
TOTAL		4	23	5	2	1	1	1	1	8	1	2	3	5	1	1	1	1	750

CODE	PLAN SHEET NO.	I-8 Std. No. 3-A C.B	Std. No. 5 C.B.	Std. No. 6 C.B.	Std. No. 2-2-A (Mod.) C.B.	Std. No. 1 WO/Drop M.H.	Std. No. 2 WO/Drop M.H.	Std. No. 2 W/Drop M.H.	Std. No. 2 (Mod.) WO/Drop M.H.	Std. No. 2 (Mod.) W/ Drop M.H.	Std. No. 1-A (Mod.) M.H.	Std. No. 2-A-6 Pvd. Shld. Inlet	Std. No. 2-A-8 Pvd. Shld. Inlet	Std. No. 2-A-10 Pvd. Shld. Inlet	Std. No. 2-A-14 Pvd. Shld. Inlet	Std. No. 2-A-16 Pvd. Shld. Inlet	Std. No. 1 Side Ditch Inlet	Std. No. 2-2-A C.B.	L-120 Jute Matting Sq. Yd.
		Each																	
S-62	8	1																	
S-63	8			1															
S-64	8			1															
S-65	8					1													
S-66	8													1					
S-67	8					1													
S-68	8														1				
S-69	8															1			
S-70	8		1																125
S-71	8				1														
S-72	8			1															
S-73	8			1															
S-74	9												1						
S-75	9											1							
S-76	9	1																	
S-77	9																	1	
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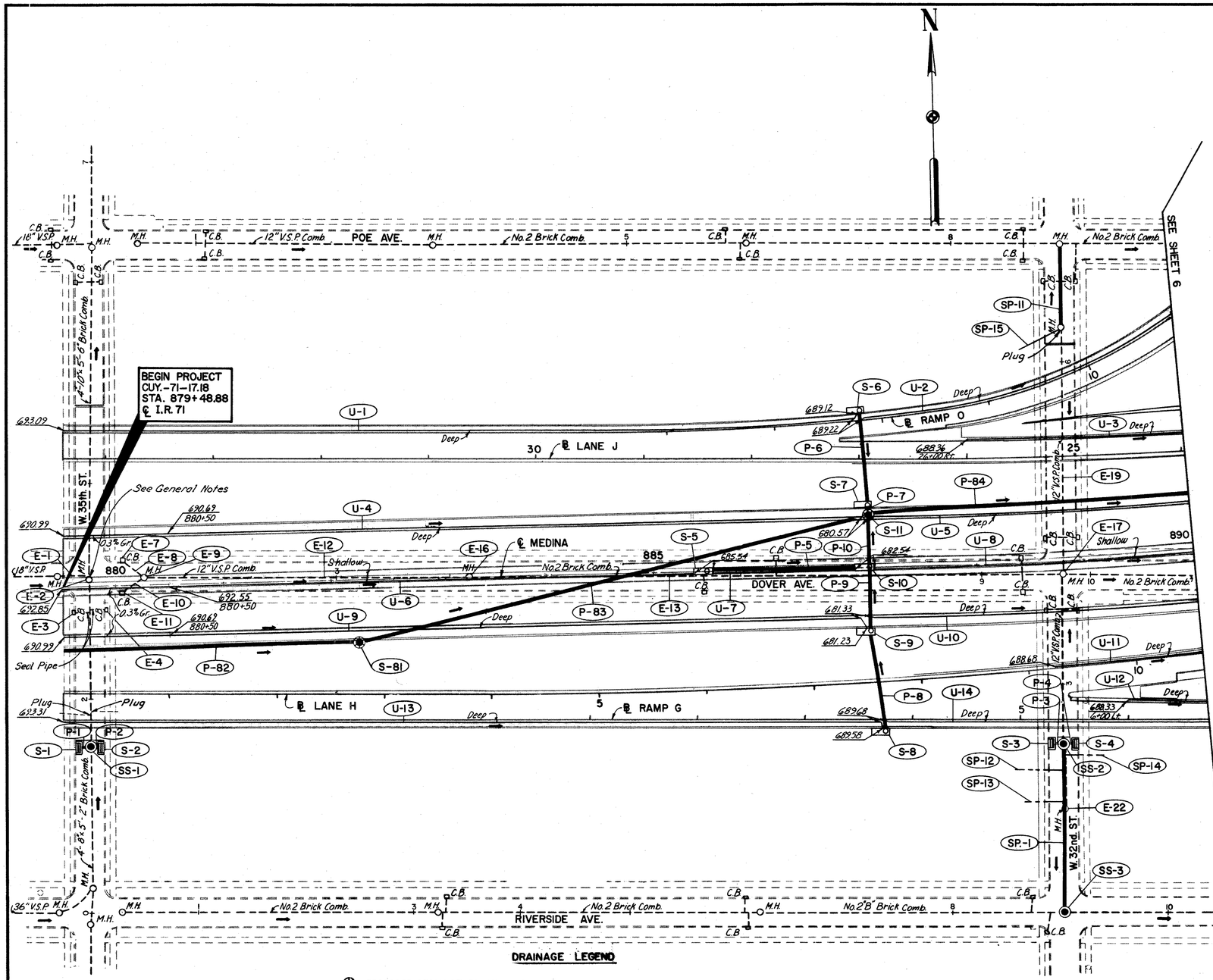
S-79	8																1		
S-80	8																	1	
S-81	5								1										
S-82	6									1									
S-83	6							1											
S-84	6							1											
S-86	6										1								
S-87	8						1												
S-88	8						1												
S-89	8						1												
S-90	8						1												
S-91	8						1												
S-92	8						1												
S-93	9						1												
TOTAL		2	1	4	2	2	7	2	1	1	1	1	1	1	1	1	1	2	125

SCALE: None
MADE: R.D.W. DATE: 2-11-65
TRCD. DATE
CKD: R.J.T. DATE: 2-18-65

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

DRAINAGE STRUCTURE QUANTITIES S-1 TO S-93



DRAINAGE LEGEND

- PROPOSED STORM SEWER MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED PAVED SHOULDER INLET
- PROPOSED DITCH CATCH BASIN
- PROPOSED PAVEMENT CATCH BASIN
- PROPOSED STORM OR SANITARY SEWER
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING STORM OR SANITARY SEWER
- JUTE MATTING
- SODDED DITCH

100 50 0 50 100
SCALE IN FEET

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RDJ DATE 2-11-65
TRCD. ____ DATE ____
CKD. RJT DATE 2-14-65
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

CODE IDENTIFICATION

- (P) STORM SEWER PIPE
- (S) STORM SEWER STRUCTURE
- (SP) SANITARY OR COMBINED SEWER PIPE
- (SS) SANITARY SEWER STRUCTURE
- (E) EXISTING STRUCTURE OR SEWER PIPE
- (U) UNDERDRAIN PIPE
- (D) DITCH PROTECTION

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY.-71-17.18

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DRAINAGE QUANTITIES

CODE	LOCATION	E-12	E-12	I-1	I-1	I-8	I-8	I-8	I-16	I-16	I-16
		Pipe Removed 15" And Under	Pipe Removed Over 15"	Cl. B-1 M 6.8(B) 6"	Cl. B-1 M 6.8(B) 12"	Std. No. 1 M.H. Mod.	Std. No. 2 M.H. Mod.	Cl. B-1 M6.8(B) Tee 6"x12"x12"	C.B. Aban.	M.H. Aban.	M.H. Aban. Adj. W/Slab
	EXISTING STRUCTURES	Lin. Ft.		Lin. Ft.		Each			Each		
E-1	Dover Ave. ℄ 0+45 to 0+70		25								
E-2	W.35th ℄ 3+11										1
E-3	W.35th Lt. 2+82								1		
E-4	W.35th Rt. 2+84								1		
E-7	Dover Ave. Lt. 1+03								1		
E-8	Dover Ave. Lt. 1+03	25									
E-9	Dover Ave. ℄ 1+20									1	
E-10	Dover Ave. Rt. 1+02	25									
E-11	Dover Ave. Rt. 1+02								1		
E-12	Dover Ave. ℄ 1+20 to 4+22	302									
E-13	Dover Ave. ℄ 4+22 to 9+95		573								
E-16	Dover Ave. ℄ 4+22									1	
E-17	Dover Ave. ℄ 9+75									1	
E-19	W.32nd St. ℄ 1+82 to 6+33	451									
E-22	W.32nd St. ℄ 1+82									1	
	SANITARY SEWERS										
SP-1					155						
SP-11					78						
SP-12	W 32nd Lt. 2+20			10				1			
SP-13	W 32nd Lt. 1+90			10				1			
SP-14	W 32nd Rt. 2+35			10				1			
SP-15	W 32nd Lt. 6+32			60				1			
SS-1						1					
SS-2							1				
SS-3							1				
	Total	823	598	90	233	2	1	4	4	4	1

DRAINAGE QUANTITIES

CODE	LOCATION	I-1	I-1	I-1	I-5	
		Cl. I-3 Deep 6"	Cl. I-3 Shallow 6"	Cl. F-4 6"	Cl. I-3 60°Bend 6"	
	UNDERDRAINS	Lin. Ft.			Each	
U-1	Ramp O Rt. 12+20 to Lane J Rt. 34+41	739		8	1	
U-2	Ramp O Rt. 9+10 to 12+17	307				
U-3	Lane J Rt. 23+95 to 26+00	205				
U-4	S.B. Medina Lt. 879+49 to 887+00	741		10		
U-5	S.B. Medina Lt. 887+04 to 890+00	296				
U-6	℄ Medina Frwy. Rt. 879+49 to 885+50		587	12		
U-7	℄ Medina Frwy. Rt. 885+54 to 887+00		134	10		
U-8	℄ Medina Frwy. Rt. 887+04 to 890+00		296			
U-9	N.B. Medina Rt. 879+49 to 887+00	746		10	1	
U-10	N.B. Medina Rt. 887+03 to 890+00	297				
U-11	Lane H Lt. 9+25 to 10+60	135				
U-12	Ramp G Lt. 6+00 to 6+75	75				
U-13	Lane H Rt. 0+00 to Ramp G Rt. 3+75	761		8	1	
U-14	Ramp G Rt. 3+78 to 6+75	297				
	Total	4599	1017	58	3	

DRAINAGE PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

101
241

6
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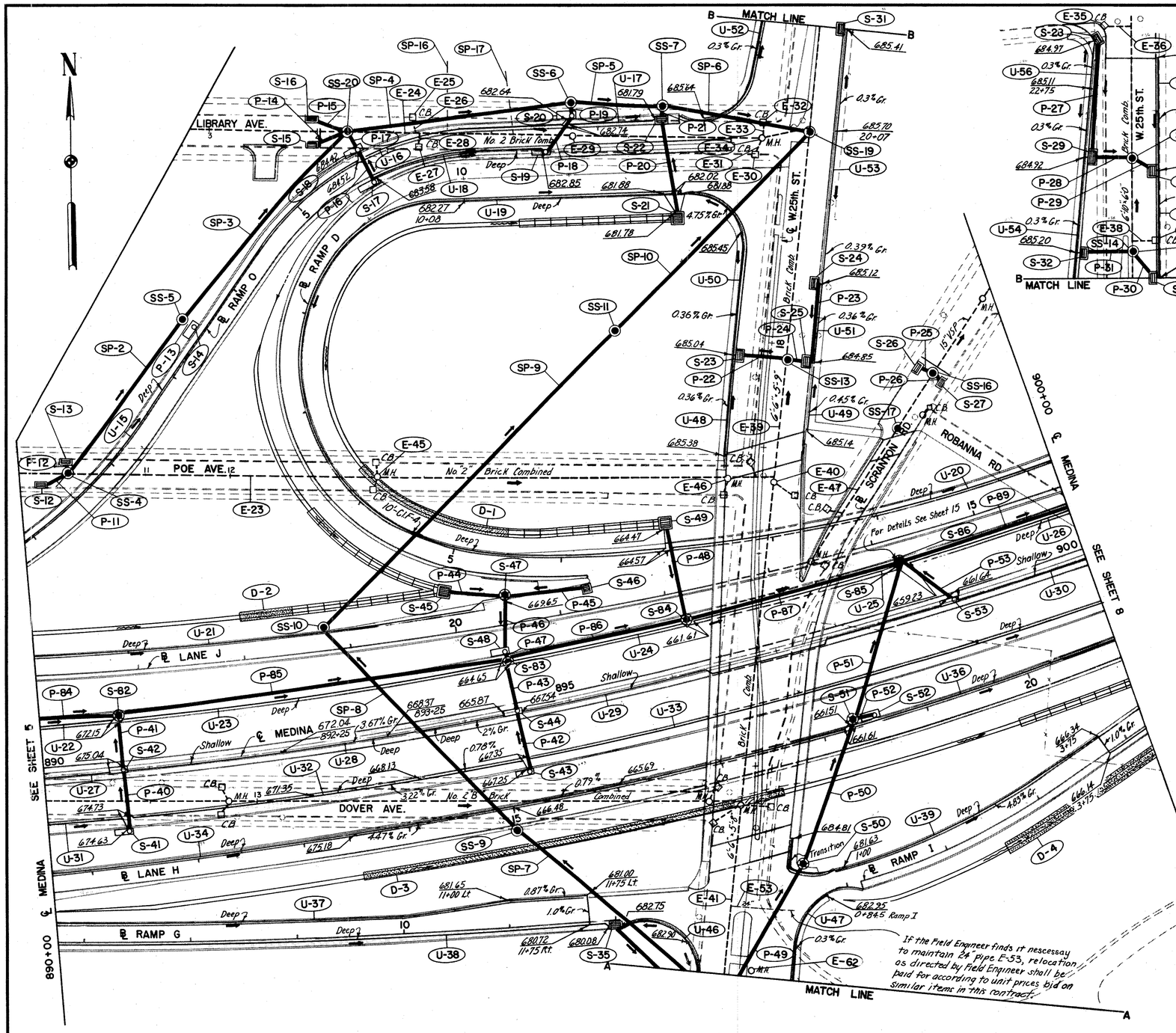
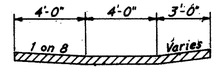
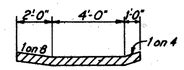
CUYAHOGA COUNTY
CUY.-71-17.18

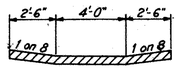




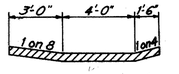
SECTION OF SODDED DITCH D-4
D-4 Sta. 2+50 to 4+15 Rt. Ramp I



SECTION OF SODDED DITCH D-3
D-3 Sta. 13+50 to 17+50 Rt. Lane H



SECTION OF SODDED DITCH D-2
D-2 Sta. 21+50 to 22+00 Rt. Lane J

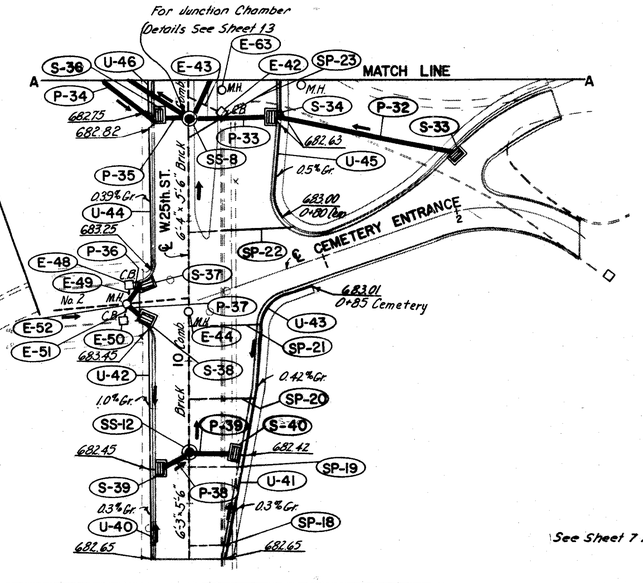


SECTION OF SODDED DITCH D-1
D-1 Sta. 4+50 to 6+25 Rt. Ramp D

M.H. ADJUSTED TO GRADE		
Ref. No.	Existing T/C Elev.	Adjusted T/C Elev.
E-44	687.33	687.15
E-52	687.55	687.19
E-62	686.1 ±	686.55
E-63	686.1 ±	686.50

DRAINAGE LEGEND

- PROPOSED STORM SEWER MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED PAVED SHOULDER INLET
- PROPOSED DITCH CATCH BASIN
- PROPOSED PAVEMENT CATCH BASIN
- PROPOSED STORM OR SANITARY SEWER
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING STORM OR SANITARY SEWER
- JUTE MATTING
- SODDED DITCH



See Sheet 7 For Quantities.

100 50 0 50 100
SCALE IN FEET

SCALE _____ MADE RDJ DATE 2-10-65 TRCD. _____ DATE _____ CKD. RJT DATE 2-12-65

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

DRAINAGE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

102 / 241

CUYAHOGA COUNTY
CUY.-71-17.18

7 / 28

DRAINAGE QUANTITIES

CODE	LOCATION	I-1 Cl. I-3 Shallow 6"	I-1 Cl. I-3 Deep 6"	I-1 Cl. F-4 6"	I-1 Cl. B-1 6"			I-5 Cl. I-3 20° Bend 6"	I-5 Cl. I-3 45° Bend 6"	I-5 Cl. I-3 60° Bend 6"	I-5 Cl. I-3 90° Bend 6"	I-5 Cl. I-3 60° Wye 6"	I-5 Cl. I-3 Tee 6"
	UNDERDRAINS	Lin. Ft.						Each					
U-15	Ramp O Rt. 4+25 to 9+10		481	8						1			
U-16	Ramp O Rt. 2+25 to 4+22		193	8						1			
U-17	Ramp O Rt. 1+40 to 2+25		82	6						1			
U-18	Ramp O Lt. 2+50 to 4+23		167	6									
U-19	Ramp D Rt. 3+00 to 12+00		918	30							1	1	
U-20	Ramp D Rt. 2+90 to Lane J Rt. 14+15		365										
U-21	Lane J Rt. 19+50 to 23+95		438	10						2			
U-22	S.B. Medina Lt. 890+00 to 890+75		65	10									
U-23	S.B. Medina Lt. 890+79 to 894+50		361	10									
U-24	S.B. Medina Lt. 894+54 to 896+25		157	10									
U-25	S.B. Medina Lt. 896+35 to 898+35		190	10									
U-26	S.B. Medina Lt. 898+39 to 900+00		161										
U-27	℄ Medina Rt. 890+00 to 890+75	63		12									
U-28	℄ Medina Rt. 890+79 to 894+50	146	213	12									
U-29	℄ Medina Rt. 894+54 to 898+75	415		12				4					
U-30	℄ Medina Rt. 898+79 to 900+00	121											
U-31	N.B. Medina Rt. 890+00 to 890+75		70	10						1			
U-32	N.B. Medina Rt. 890+78 to 894+50		367	10						1			
U-33	N.B. Medina Rt. 894+53 to 900+00		547										
U-34	Lane H Lt. 10+60 to 18+30		766	8						1			
										1			
U-36	Lane H Lt. 18+33 to 20+90		257										
U-37	Ramp G Lt. 6+75 to 11+75		500		28						1		1
U-38	Ramp G Rt. 6+95 to 12+00		523	4						1			
U-39	Rel. W. 25th Rt. 13+33 to Ramp I Lt. 4+20		410		20						2		
U-40	Rel. W. 25th Lt. 8+60 to 9+25	65											
U-41	Rel. W. 25th Rt. 8+60 to 9+35	75											
U-42	Rel. W. 25th Lt. 9+25 to 10+23	98											
U-43	Rel. W. 25th Rt. 9+35 to Rel. Cem. Ent. Rt. 0+85	145											
U-44	Rel. W. 25th Lt. 10+65 to 11+75	110											
U-45	Rel. Cem. Ent. Lt. 0+80 to Rel. W. 25th Rt. 11+75	73											
U-46	Rel. W. 25th Lt. 11+75 to Ramp G Rt. 12+00	116		10									
U-47	Rel. W. 25th Rt. 11+75 to Ramp I. Rt. 0+84.5	115											
U-48	Rel. W. 25th Lt. 16+90 to 17+85	95											
U-49	Rel. W. 25th Rt. 17+15 to 17+85	70											
U-50	Rel. W. 25th Lt. 17+85 to Ramp D Rt. 12+00	214		10						1			
U-51	Rel. W. 25th Rt. 17+85 to 18+60	75											
U-52	Ramp O Rt. 1+00 to Rel. W. 25th Lt. 21+25	147											
U-53	Rel. W. 25th Rt. 18+60 to 21+00	240											
U-54	Rel. W. 25th Lt. 21+25 to 22+13	88											
U-55	Rel. W. 25th Rt. 21+00 to 22+00	100											
U-56	Rel. W. 25th Lt. 22+13 to 23+22	109											
U-57	Rel. W. 25th Rt. 22+00 to 23+05	105											
	Total	2785	7231	196	48			4		11	4	1	1

DRAINAGE QUANTITIES

CODE	LOCATION	E-12 Pipe Removed 15" And Under	E-12 Pipe Removed Over 15"	I-1 Cl. B-1 Sec. M-6.01(b) 6"	I-1 Cl. B-1 Sec. M-6.01(b) 8"	I-1 Cl. B-1 Sec. M-6.01(b) 12"	I-1 Cl. B-1 Sec. M-6.01(b) 21"	I-1 Cl. B-4 Sec. SM-6.06 Encased 21"	I-1 Cl. E-1 Sec. M-6.01(b) 27"	I-1 Cl. B-1 Sec. M-6.01(b) 30"	I-5 Cl. I-3 Pipe Spec. Tee 8"x30"x30"	I-5 Cl. I-3 Pipe Spec. Tee 12"x30"x30"	I-8 Std. No. 1 M.H. (Mod.)	I-8 Std. No. 2 M.H. (Mod.)	I-8 M.H. Adjusted To Grade	I-8 Separation Chamber	I-8 C.B. Abandon	I-8 M.H. Abandon	L-10 Sodding
	EXISTING STRUCTURES	Lin. Ft.									Each								Sq. Yds.
E-23	Poe Ave. ℄ 10+48 to 17+12		664																
E-24	Library Ave. ℄ 4+29 to 9+65		436																
E-25	Library Ave. Lt. 4+90	13																	
E-26	Library Ave. Lt. 4+90																		
E-27	Library Ave. Rt. 4+95	13																	
E-28	Library Ave. Rt. 4+95																		
E-29	Library Ave. ℄ 6+40																		
E-30	Library Ave. Rt. 8+12																		
E-31	Library Ave. Rt. 8+12	20																	
E-32	Library Ave. Lt. 8+20																		
E-33	Library Ave. Lt. 8+20	18																	
E-34	Library Ave. ℄ 8+20																		
E-35	W. 25th St. Lt. 23+35																		
E-36	W. 25th St. Lt. 23+35	25																	
E-37	W. 25th St. Rt. 21+35																		
E-38	W. 25th St. Rt. 21+35																		
E-39	W. 25th St. ℄ 16+25 to 17+85	25	160																
E-40	W. 25th St. ℄ 16+66																		
E-41	W. 25th St. ℄ 11+72.50 to 13+50		178																
E-42	W. 25th St. Rt. 11+78																		
E-43	W. 25th St. Rt. 11+78	30																	
E-44	W. 25th St. ℄ 10+35																		
E-45	Poe Ave. ℄ 13+38																		
E-46	Poe Ave. ℄ 16+68																		
E-47	Scranton Rd. ℄ 6+50 to 7+30		80																
E-48	Riverside Ave. Lt. 9+60																		
E-49	Riverside Ave. Lt. 9+60	15																	
E-50	Riverside Ave. Rt. 9+55																		
E-51	Riverside Ave. Rt. 9+55	15																	
E-52	Riverside Ave. ℄ 9+57																		
E-53																			
E-62	W. 25th St. Rt. 12+05																		
E-63	W. 25th St. Rt. 11+92																		
	DITCH PROTECTION																		
D-1	Ramp D Rt. 4+50 to 6+25																		
D-2	Lane J Rt. 21+50 to 22+00																		
D-3	Lane H Rt. 13+50 to 17+50																		
D-4	Ramp I Rt. 2+50 to 4+15																		
	SANITARY SEWERS																		
SP-2	Poe Ave. ℄ 10+48																		
SP-3	Ramp D Rt. 6+50																		
SP-4	Library Ave. ℄ 4+29																		
SP-5	Ramp D Rt. 2+25																		
SP-6	Ramp D Rt. 1+40																		
SP-7	Rel. W. 25 St. ℄ 11+72.50																		
SP-8	Lane H Rt. 15+00																		
SP-9	Lane J Rt. 21+25																		
SP-10	Rel. W. 25th St. Lt. 18+00																		
SP-11	Library Ave. Lt. 5+23																		
SP-12	Library Ave. Lt. 5+85					10													
SP-18	W. 25th St. Rt. 8+70				10														
SP-19	W. 25th St. Rt. 9+25			5															
SP-20	W. 25th St. Rt. 9+73			15															
SP-21	W. 25th St. Rt. 10+24			25															
SP-22	W. 25th St. Rt. 10+92			30															
SP-23	W. 25th St. Rt. 11+60			75															
SS-4	Poe Ave. ℄ 10+48																		
SS-5	Ramp D Rt. 6+50																		
SS-6	Ramp D Rt. 2+25																		
SS-7	Ramp D Rt. 1+40																		
SS-8	W. 25th St. ℄ 11+72.50																		
SS-9	Lane H Rt. 15+00																		
SS-10	Lane J Rt. 21+25																		
SS-11	W. 25th St. Lt. 18+00																		
SS-12	W. 25th St. ℄ 9+35																		
SS-13	W. 25th St. Lt. 17+85																		
SS-14	W. 25th St. ℄ 21+25																		
SS-15	W. 25th St. ℄ 22+13																		
SS-16	Scranton Rd. ℄ 7+90																		
SS-17	Scranton Rd. Lt. 7+30																		
SS-18	W. 25th St. ℄ 19+99.19																		
SS-20	Library Ave. ℄ 4+29																		
	Total	174	1518	200	10	10	543	631	414	440	1	1	10	5	4	1	9	6	728

SCALE None
MADE R.D.J DATE 2-11-65
TRCD. DATE
CKD. R.J.T. DATE 2-18-65

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

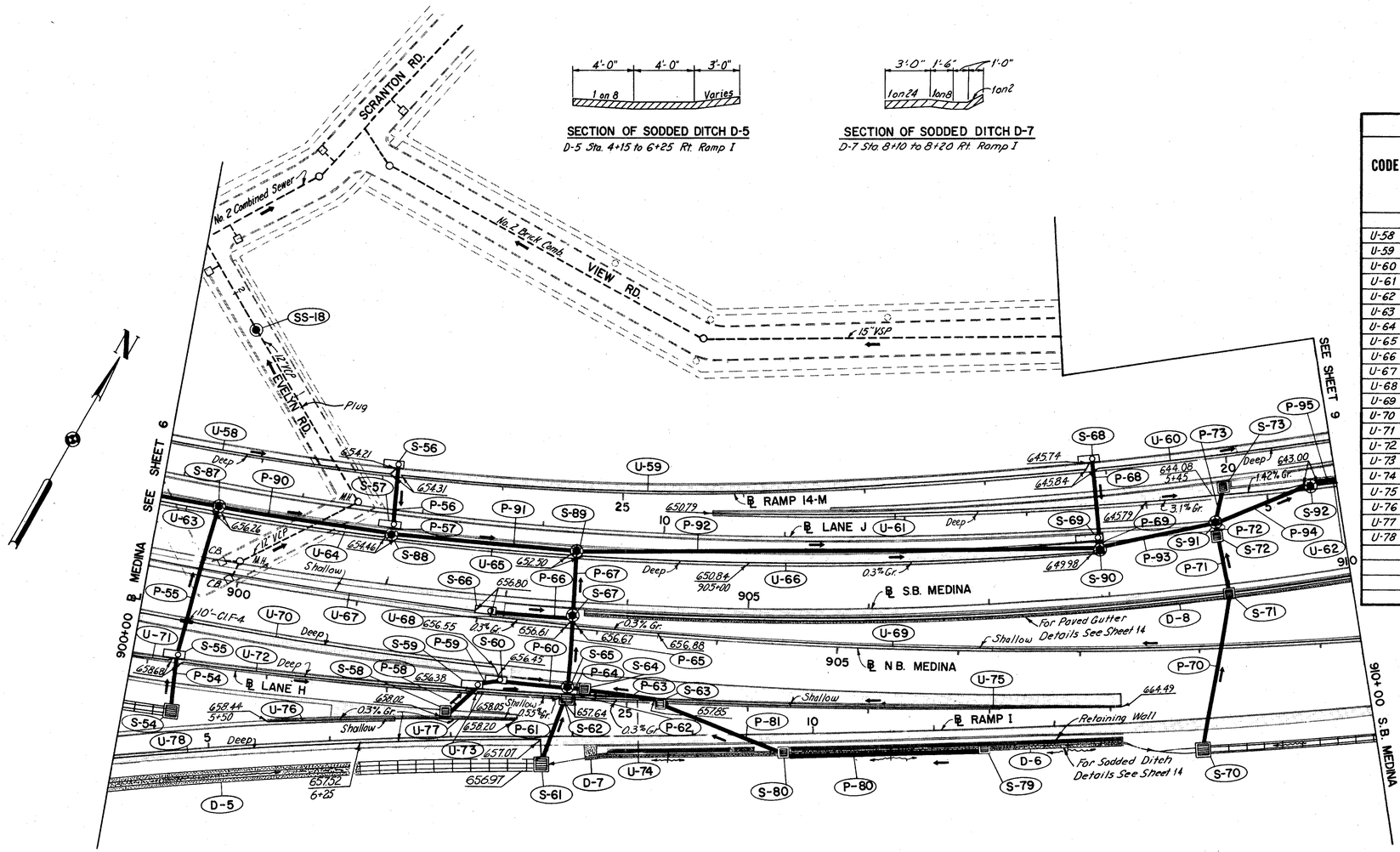
DRAINAGE PLAN (QUANTITIES)

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

10.3 / 241

CUYAHOGA COUNTY
CUY-71-17.18

8 / 28



SECTION OF SODDED DITCH D-5
D-5 Sta. 4+15 to 6+25 Rt. Ramp I

SECTION OF SODDED DITCH D-7
D-7 Sta. 8+10 to 8+20 Rt. Ramp I

DRAINAGE QUANTITIES

CODE	LOCATION	I-1 Cl. I-3 Shallow 6"	I-1 Cl. I-3 Deep 6"	I-1 Cl. F-4 6"	I-1 Cl. B-1 6"		I-5 Cl. I-3 60° Bend 6"	I-5 Cl. I-3 90° Bend 6"
	UNDERDRAINS		Lin. Ft.					Each
U-58	Ramp 14-M Rt. 26+90 to 28+75		181	8			1	
U-59	Ramp 14-M Rt. 21+10 to 26+87		573	8			1	
U-60	Ramp 14-M Rt. 19+15 to 21+07		192					
U-61	Lane J Rt. 4+65 to 9+60		485	10				
U-62	Lane J Rt. 4+40 to 4+61		21					
U-63	S.B. Medina Lt. 900+00 to 900+42		42	5			1	
U-64	S.B. Medina Lt. 900+46 to 902+00		152	5			1	
U-65	S.B. Medina Lt. 902+04 to 903+60		154	5			1	
U-66	S.B. Medina Lt. 903+64 to 907+95		429	5			1	
U-67	N.B. Medina Lt. 899+21 to 902+10	267		14				
U-68	N.B. Medina Lt. 902+14 to 902+80	62		8			1	
U-69	N.B. Medina Lt. 902+80 to 909+35	651		8			1	
U-70	N.B. Medina Rt. 899+21 to 902+25		289	20			1	
U-71	Lane H Lt. 20+90 to 21+25		32	4			1	
U-72	Lane H Lt. 21+28 to 23+75		245	4			1	
U-73	Lane H Lt. 23+75 to 24+50	75						
U-74	Lane H Lt. 24+50 to 25+25	75						
U-75	Lane H Lt. 25+25 to 29+08	383						
U-76	Ramp I Lt. 5+50 to 6+95	135		10				
U-77	Ramp I Lt. 6+95 to 7+54	49		10				
U-78	Ramp I Rt. 4+20 to 7+75		368	10				1
	Total	1697	3163	134			11	1

DRAINAGE QUANTITIES

CODE	LOCATION	L-10 Sodding		I-14 Paved Gutter Type I Mod.		I-8 Std. No. 1 M.H. Mod.
	DITCH PROTECTION	Sq. Yd.		Lin. Ft.		Each
D-5	Ramp I-Rt. 4+15 to 6+25	256				
D-6	Ramp I-Rt. 8+30 to 12+48	139				
D-7	Ramp I-Rt. 8+10 to 8+20	70				
D-8	℄ S.B. Medina-Rt. 903+65 to 910+00	106		635		
	SANITARY SEWERS					
SS-18	Evelyn Rd. ℄ 1+65					1
	Total	508		635		1

DRAINAGE LEGEND

- PROPOSED STORM SEWER MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED PAVED SHOULDER INLET
- PROPOSED DITCH CATCH BASIN
- PROPOSED PAVEMENT CATCH BASIN
- PROPOSED STORM OR SANITARY SEWER
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING STORM OR SANITARY SEWER
- JUTE MATTING
- SODDED DITCH

100 50 0 50 100
SCALE IN FEET

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.D.J DATE 2-11-65 CONSULTING ENGINEERS
TRCD. _____ DATE _____
CKD R.V.T. DATE 2-13-65 KANSAS CITY CLEVELAND NEW YORK

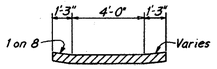
DRAINAGE PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

104
24.1

CUYAHOGA COUNTY
CUY.-71-17.18

9
28



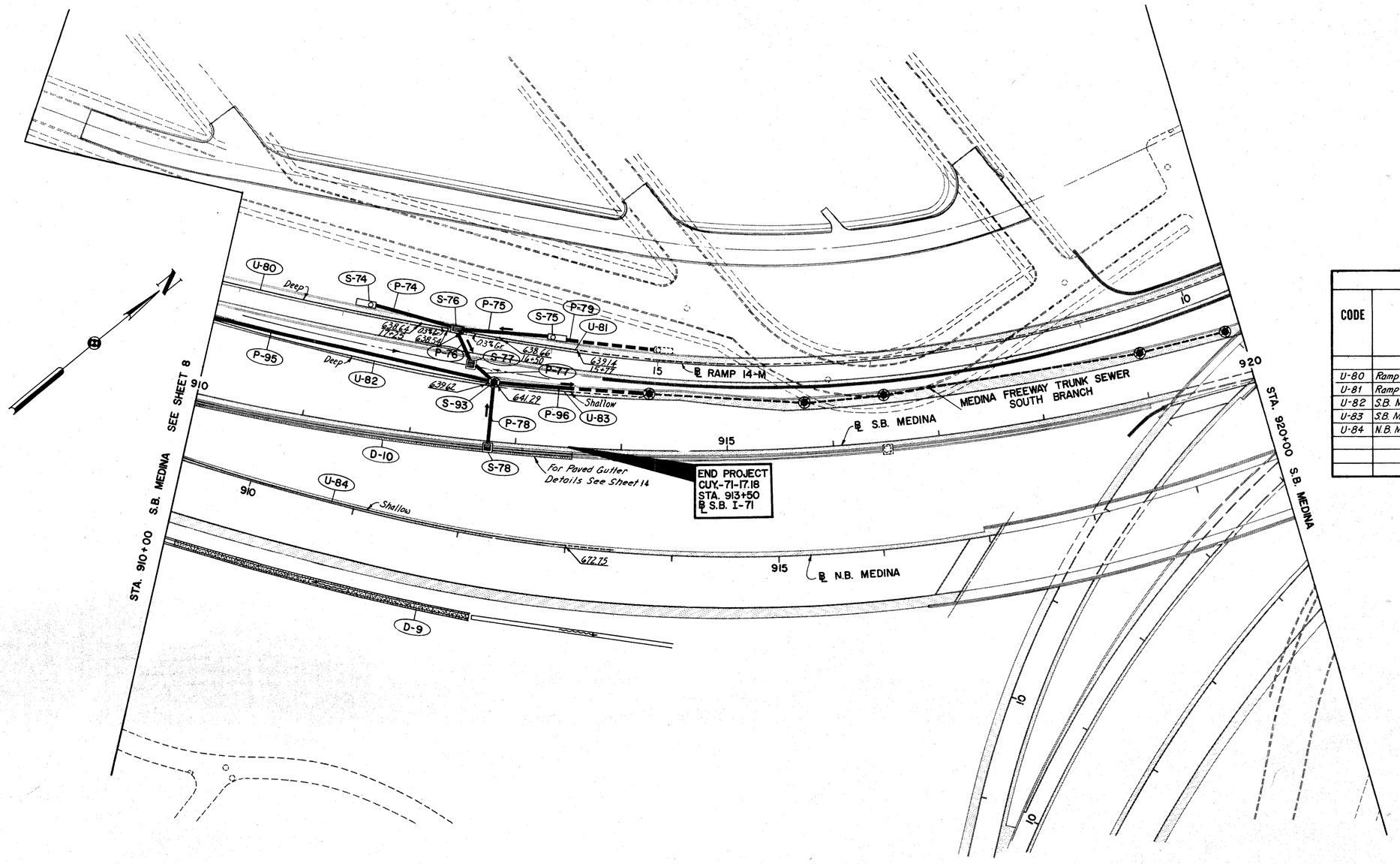
SECTION OF SODDED DITCH D-9
D-7 Sta. 909+50 to 912+25 Rt. N.B. Medina

DRAINAGE QUANTITIES

CODE	LOCATION	L-10 Sodding		I-14. Paved Gutter Type 1 Mod.
	DITCH PROTECTION	Sq. Yd.		Lin. Ft.
D-9	N.B. Medina-Rt. 909+50 to 912+25	199		
D-10	S.B. Medina-Rt. 910+00 to 913+50	58		350
	Total	257		350

DRAINAGE QUANTITIES

CODE	LOCATION	I-1 Cl. I-3 Shallow 6"	Cl. I-3 Deep 6"	Cl. F-4 6"		I-5 Cl. I-3 60° Bend 6"	
	UNDERDRAINS	Lin. Ft.				Each	
U-80	Ramp 14-M Rt. 16+90 to 19+15		220	5		1	
U-81	Ramp 14-MRt. 15+77 to 16+90		111	5		1	
U-82	S.B. Medina Lt. 910+00 to 912+75		268	10			
U-83	S.B. Medina Lt. 912+75 to 913+50	68		10			
U-84	N.B. Medina Lt. 909+35 to 913+00	365					
	Total	433	599	30		2	



DRAINAGE LEGEND

- PROPOSED STORM SEWER MANHOLE
- PROPOSED SANITARY MANHOLE
- PROPOSED PAVED SHOULDER INLET
- PROPOSED DITCH CATCH BASIN
- PROPOSED PAVEMENT CATCH BASIN
- PROPOSED STORM OR SANITARY SEWER
- EXISTING MANHOLE
- EXISTING CATCH BASIN
- EXISTING STORM OR SANITARY SEWER
- JUTE MATTING
- SODDED DITCH

SCALE ____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.D.J. DATE 2-10-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. R.J.T. DATE 2-12-65 KANSAS CITY CLEVELAND NEW YORK

100 50 0 50 100
SCALE IN FEET

DRAINAGE PLAN

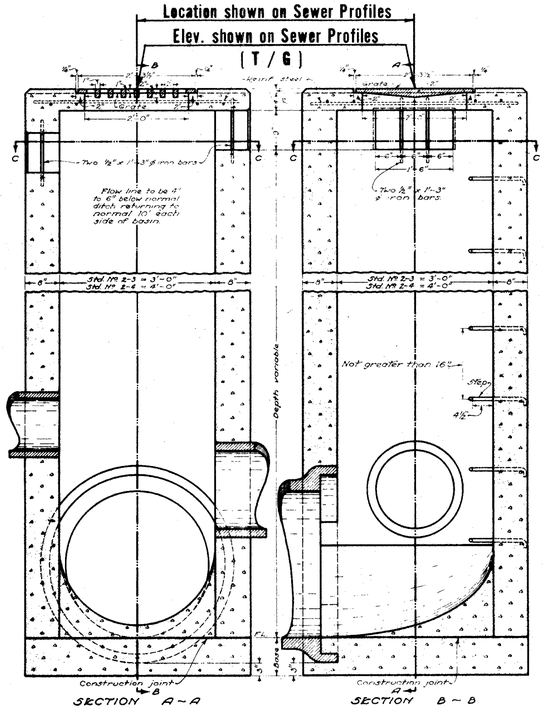
DRAINAGE STRUCTURE LOCATION DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

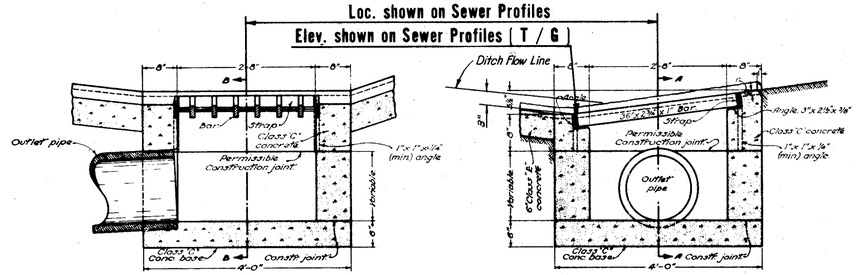
CUYAHOGA COUNTY
CUY-71-17.18

105/241

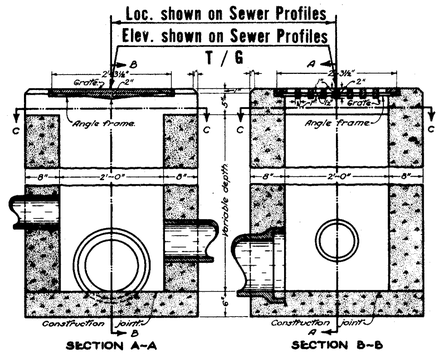
10/28



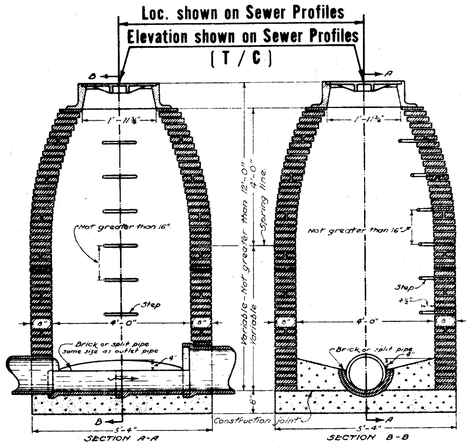
STANDARD No. 2-3 & 2-4 CATCH BASIN



STANDARD No. 5 CATCH BASIN



STANDARD No. 2-2-A CATCH BASIN



STANDARD MANHOLE

LEGEND

E.O.P.-Edge of Pavement or Paved Shoulder
N.G.-Normal Gutter Elevation at Face of Curb
T/G-Top of Catch Basin Grate Elevation
T/C-Top of Manhole Cover Elevation

MADE _____ DATE _____ TRACED _____ DATE _____
CHECKED _____ DATE _____ SCALE —

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

DRAINAGE STRUCTURE LOCATION DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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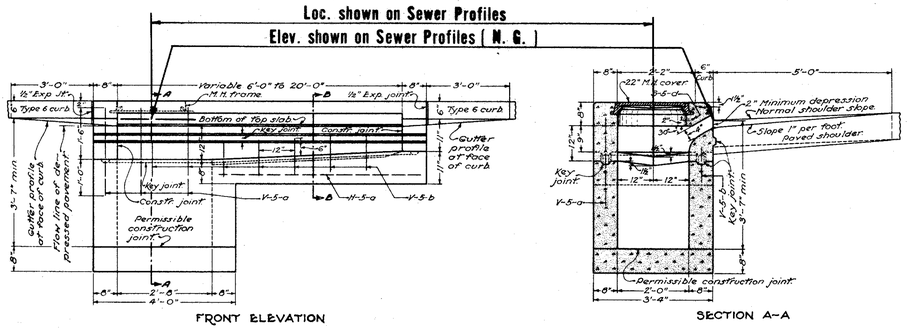
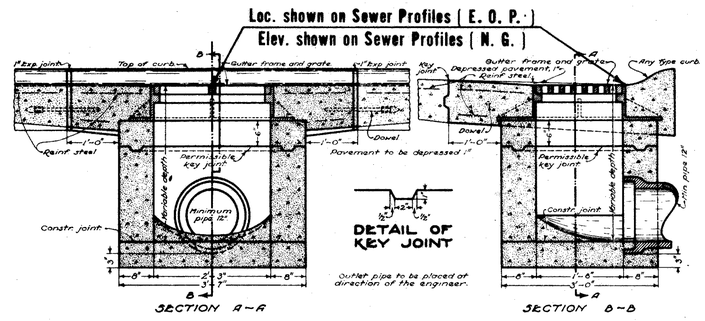
CUYAHOGA COUNTY
CUY -71-17.18

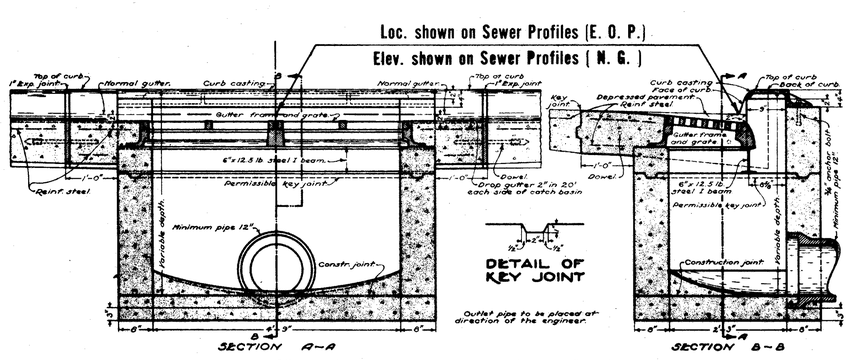
11/28



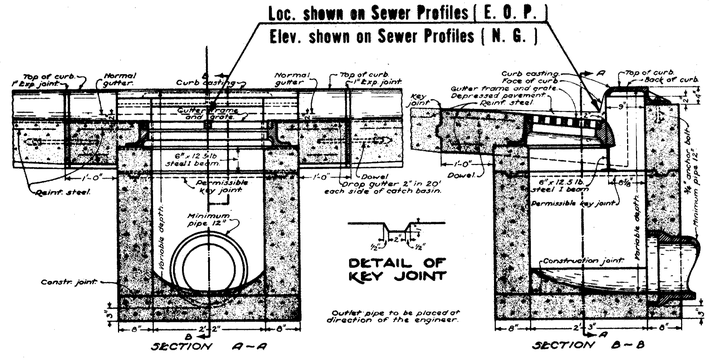
STANDARD No. 2-A PAVED SHOULDER INLETS



STANDARD No. 6 CATCH BASIN



STANDARD No. 3 CATCH BASIN



STANDARD No. 3-A CATCH BASIN

LEGEND

E.O.P.-Edge of Pavement or Paved Shoulder
N.G.-Normal Gutter Elevation at Face of Curb
T/G-Top of Catch Basin Grate Elevation
T/C-Top of Manhole Cover Elevation

MADE _____ DATE _____ TRACED _____ DATE _____
CHECKED _____ DATE _____ SCALE _____

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

107
241

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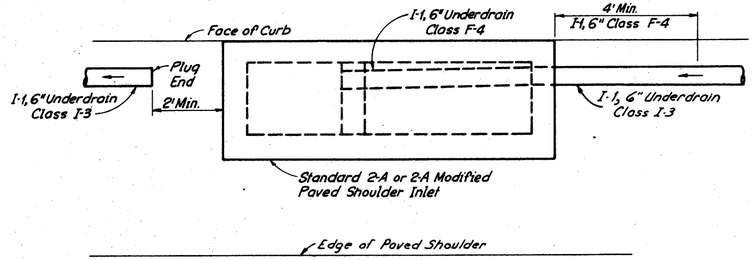
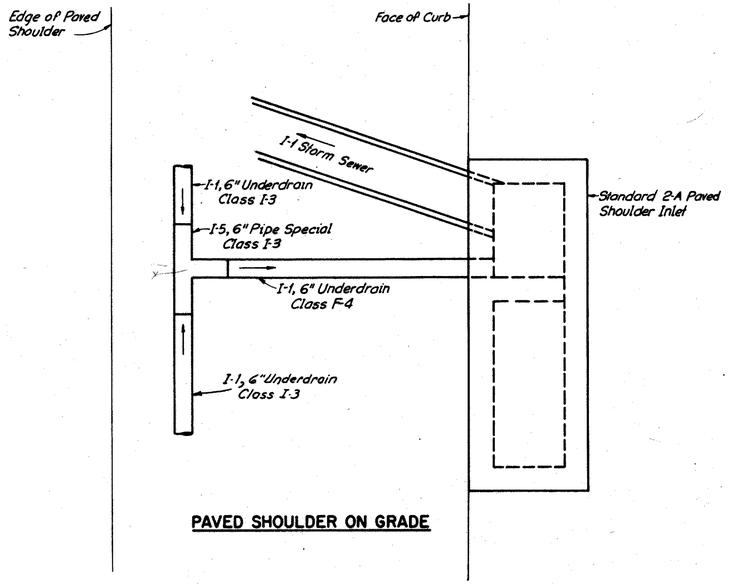
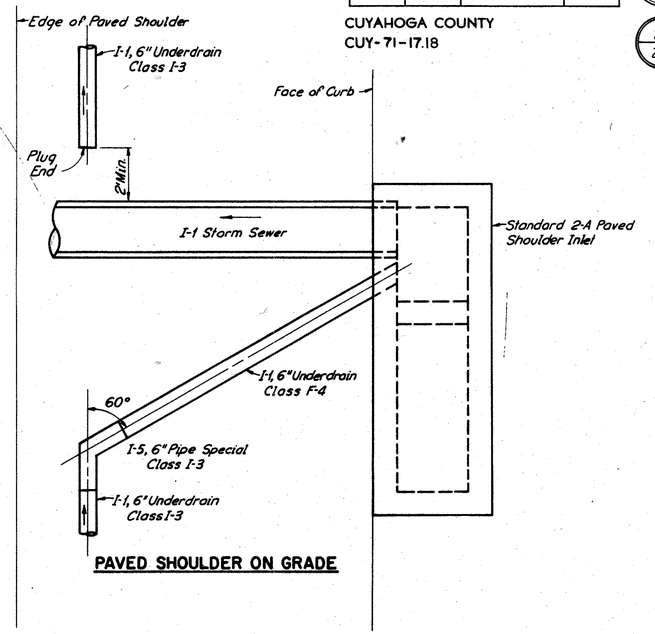


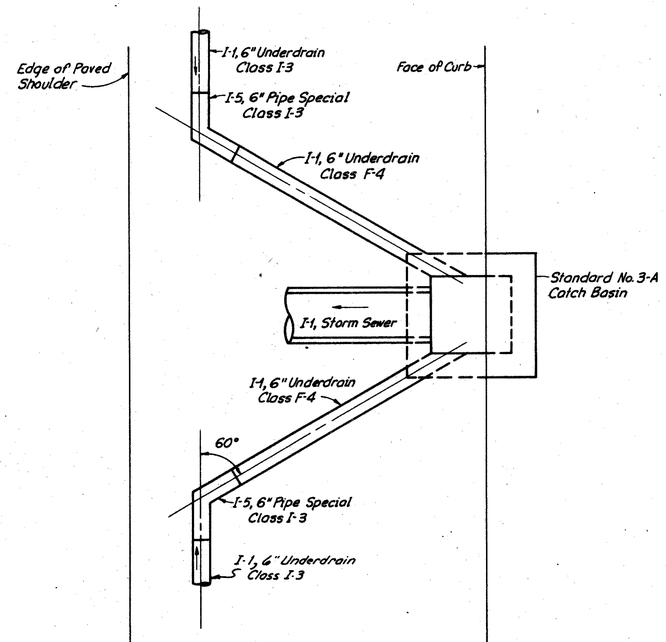
MEDIAN ON GRADE



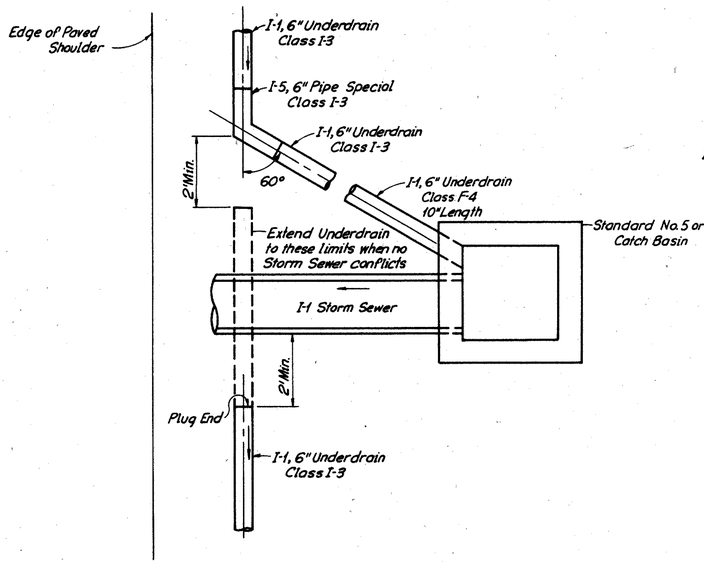
PAVED SHOULDER ON GRADE



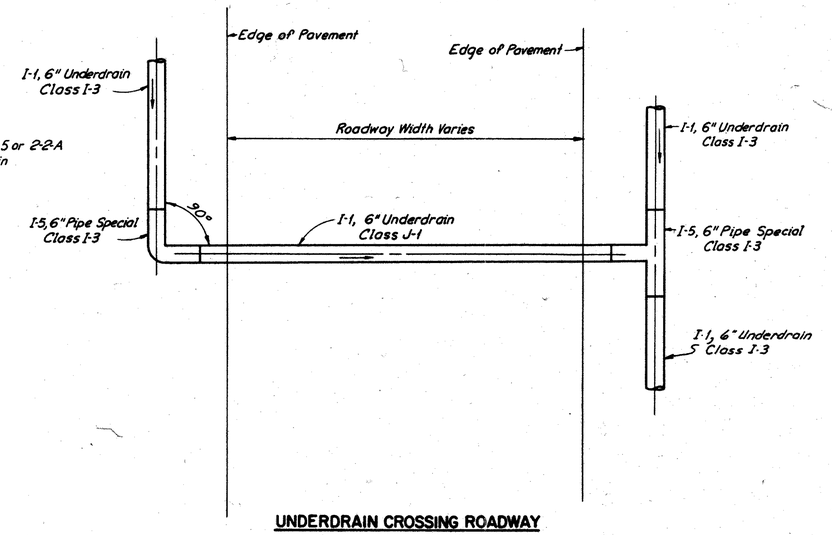
PAVED SHOULDER ON GRADE



PAVED SHOULDER LOW POINT



ROADWAY DITCH



UNDERDRAIN CROSSING ROADWAY

TYPICAL UNDERDRAIN DETAILS

MADE JEN	DATE 10-5-64	TRACED	DATE
CHECKED R.U.T.	DATE 10-12-64	SCALE None	

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KANSAS CITY CLEVELAND NEW YORK

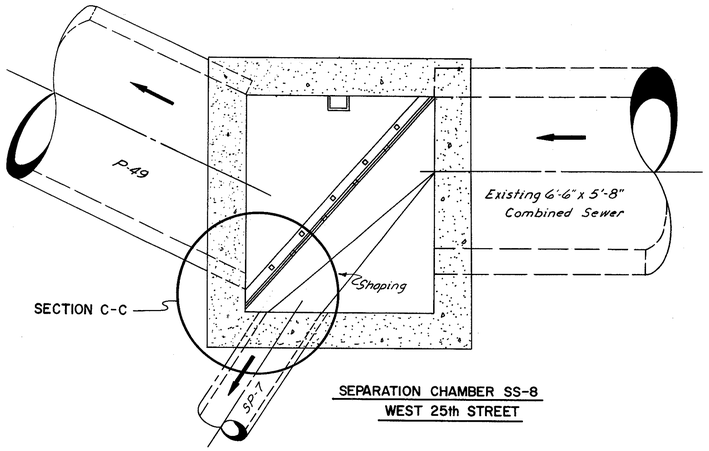
DRAINAGE DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

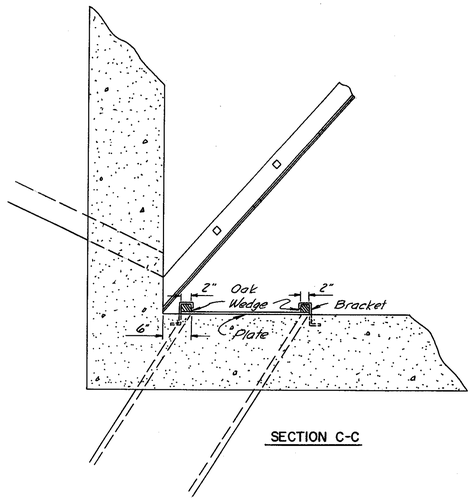
108 / 241

13 / 28

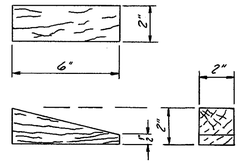
CUYAHOGA COUNTY
CUY.-71-17.18



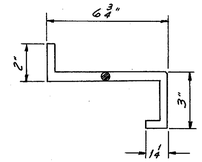
SEPARATION CHAMBER SS-8
WEST 25th STREET



SECTION C-C



OAK WEDGE
Note: Wedge to be "Creosoted."
2 Required



BRACKET
Bracket to be ⅜"ϕ "Wrought Iron."
2 Required

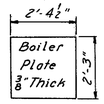
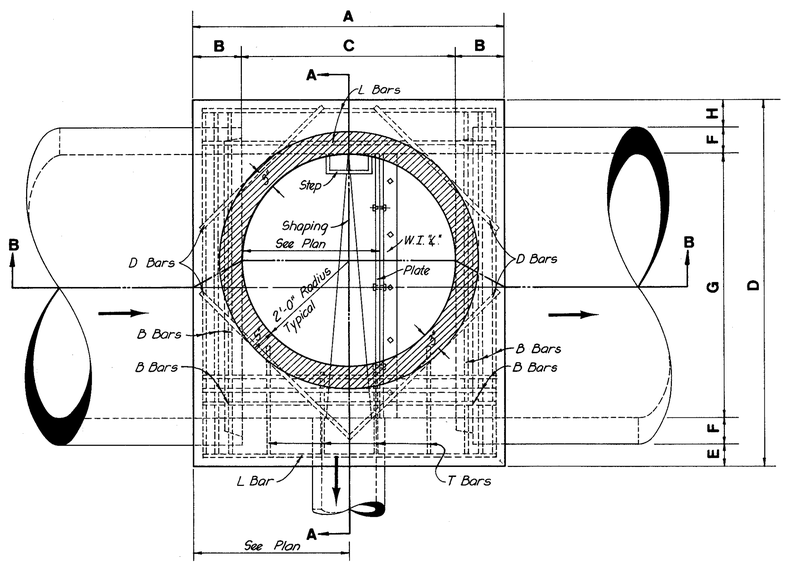


Plate to be set 7" above flow line of SP-7 sewer and to be held in place by "Oak Wedges."

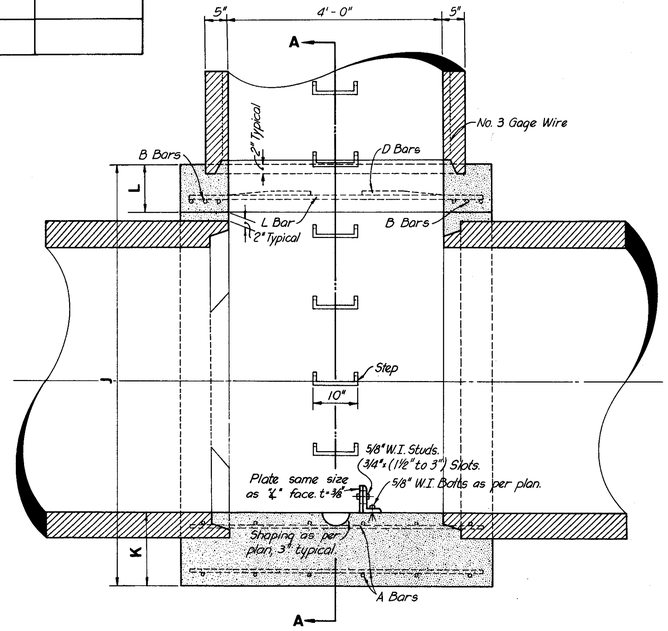
DEFLECTING PLATE

Note:
Reinforcing bars and other details not shown hereon will be as per Standard No. 1-A Manhole.

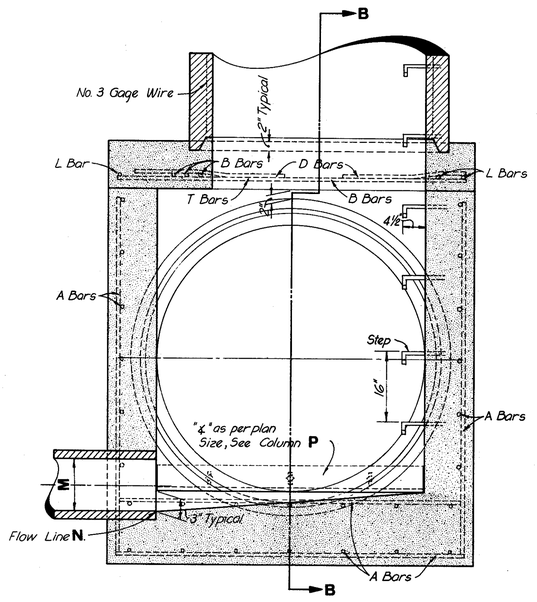
STRUCTURE	A	B	C	D	E	F	G	H	J	K	L	M	N	P
SEPARATION CHAMBER SS-8	9'-10"	1'-5"	7'-0"	10'-10"	2'-9"	12"	5'-8"	0'-5"	10'-7"	1'-9"	1'-5"	1'-9"	669.21	6" x 4" & Adjust to 10½"



TYPICAL PLAN



SECTION B-B



SECTION A-A

SCALE	No Scale
MADE	CPB DATE 12-10-64
TRCD.	CPB DATE 12-10-64
CKD.	DATE 12-12-64

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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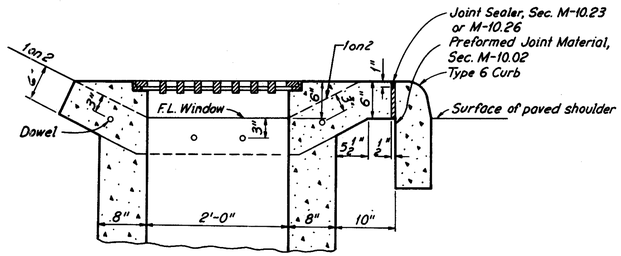
SEPARATION CHAMBERS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

109/241

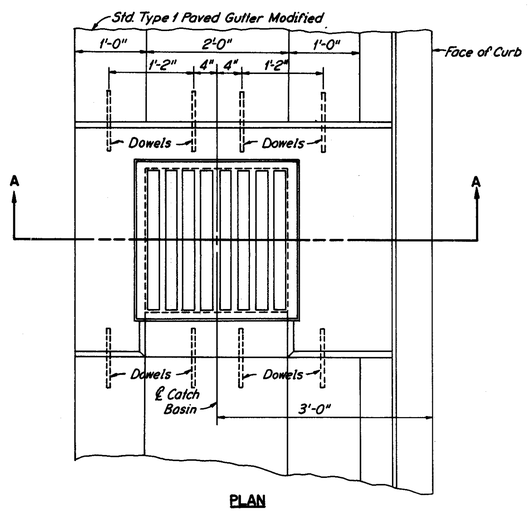
14/28

CUYAHOGA COUNTY
CUY-71-17.18



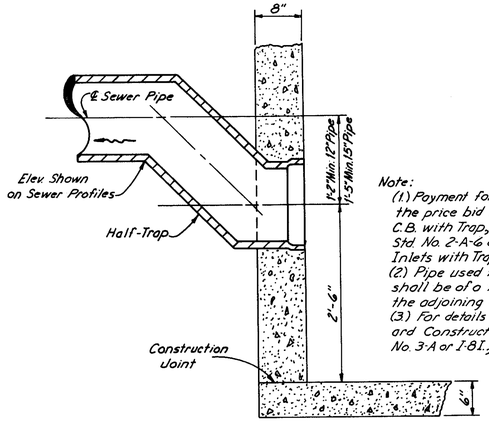
SECTION A-A

Note:
1. For details not shown see Standard Construction Drawing I-8 C.B., 2-2A.
2. Dowels to be $\frac{1}{2}$" round, smooth bars 10" long, spaced as shown hereon and greased.



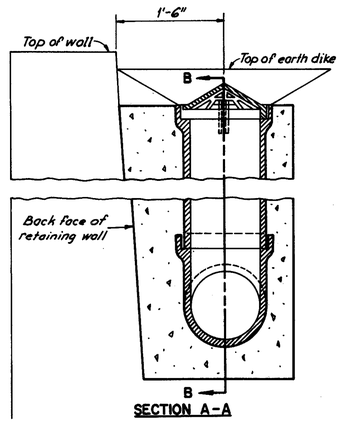
PLAN

STANDARD 2-2A CATCH BASIN MODIFIED

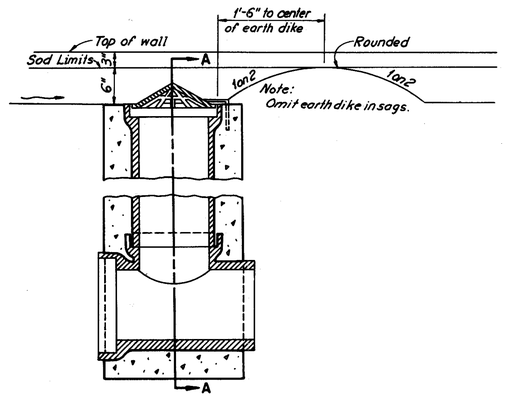


Note:
(1.) Payment for Trap to be included in the price bid for Item I-8 Std. No. 3A C.B. with Trap, as per plan or Item I-8 Std. No. 2-A-6 or 2-A-8 Paved Shoulder Inlets with Trap, as per plan.
(2.) Pipe used for construction of Trap shall be of a type of least as high as the adjoining outlet pipe.
(3.) For details not shown see Standard Construction Drawings I-8 C.B., No. 3-A or I-8 I., No 2-A.

CATCH BASIN OR INLET WITH TRAP

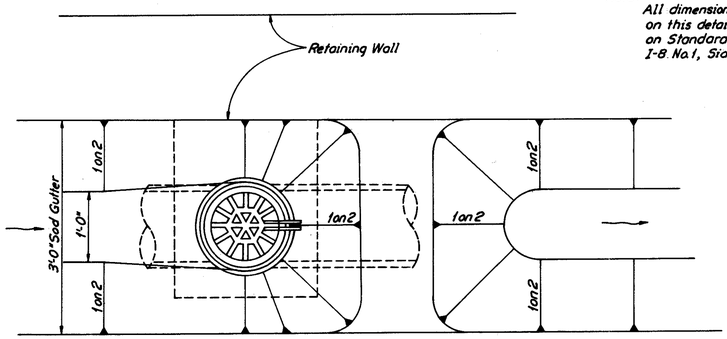


SECTION A-A



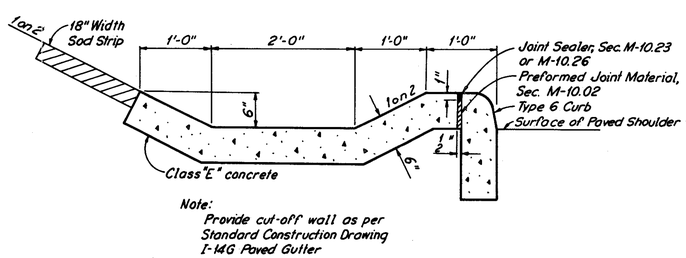
SECTION B-B

Note:
All dimensions and notes not shown on this detail shall be as shown on Standard Construction Drawings I-8 No.1, Side Ditch Inlets.



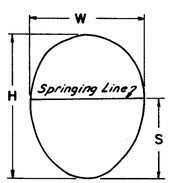
PLAN

STANDARD NO. I SIDE DITCH INLET MODIFIED



Note:
Provide cut-off wall as per Standard Construction Drawing I-14G Paved Gutter

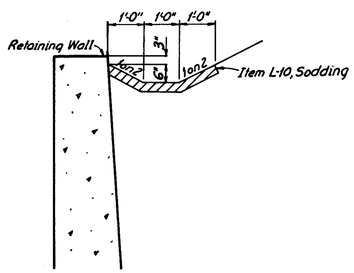
STANDARD TYPE I PAVED GUTTER MODIFIED



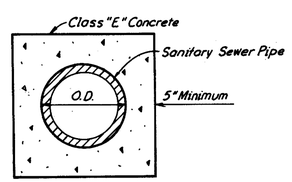
EGG SHAPE SEWERS				
NO.	H FEET	W FEET	S FEET	AREA SQ. FT.
2	2.25	1.94	1.28	3.41

TYPES OF EGG SHAPED SEWERS
"B"-(1) RING OF BRICK ALL AROUND
&(1) RING EXTRA ON ARCH

EXISTING CITY SEWER SIZES



RETAINING WALL-SODDED FLUME DETAIL
Scale: 1/2" = 1'-0"



TYPICAL SEWER PIPE ENCASEMENT
No Scale

MADE JEN	DATE 10-2-64	TRACED R.D.W.	DATE 2-2-65		
CHECKED RJT	DATE 10-12-64	SCALE 1"=1'-0" or as Noted			

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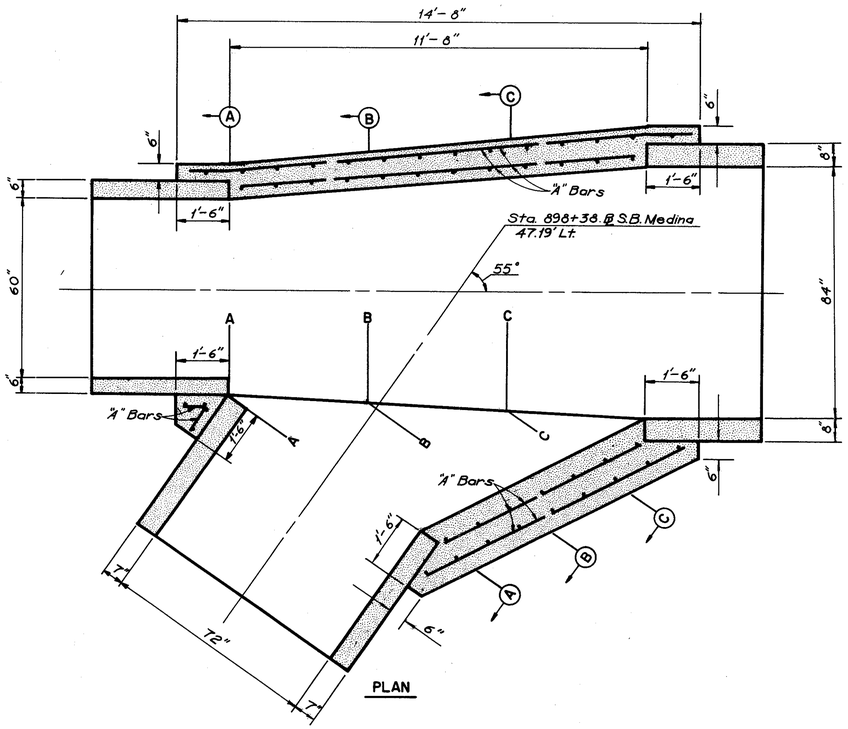
KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

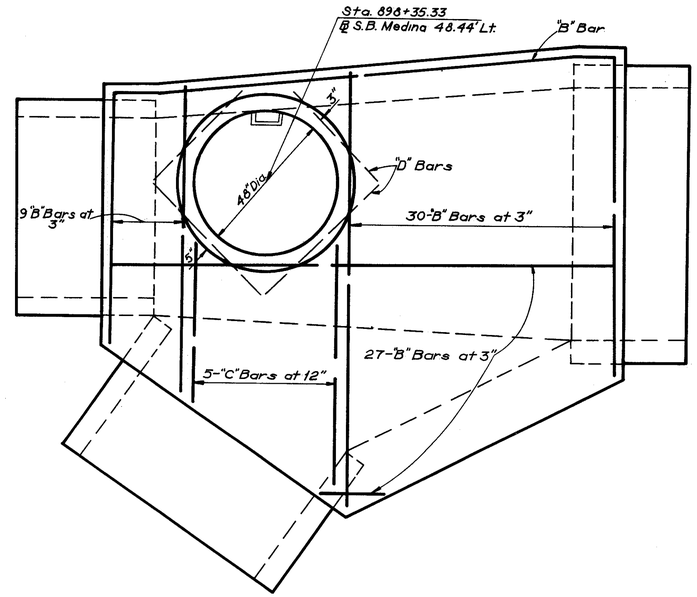
110
241

CUYAHOGA COUNTY
CUY.-71-17.18

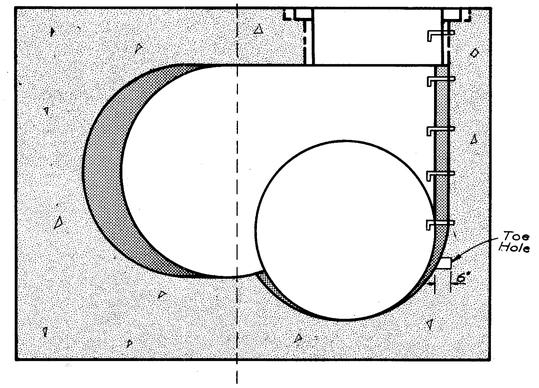
15
28



PLAN

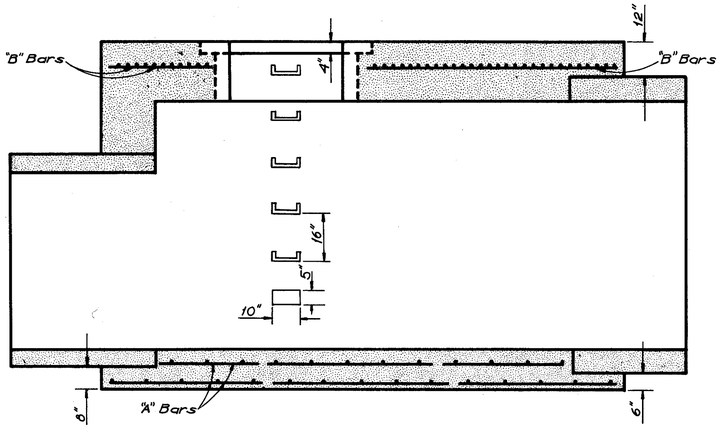


TOP VIEW

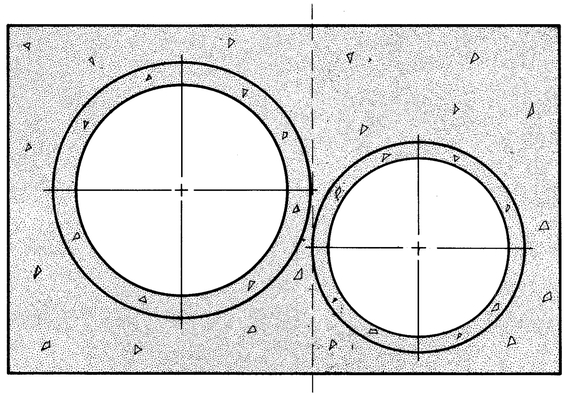


SECTION B-B

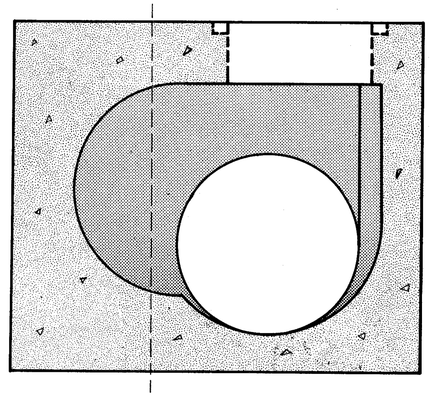
Note:
Other details not shown hereon will be as per standard No. 1-A Manhole.



ELEVATION



SECTION A - A



SECTION C - C

"A" Bars shall be spaced at 12" centers in both directions.
"B" Bars shall be spaced at 3" centers.
"C" Bars shall be spaced at 12" centers.
"A", "B" & "C" Bars - $\frac{7}{8}$ ø
"D" Bars - $\frac{5}{8}$ ø

STD. NO. 1-A MAN HOLE MOD.(S-86)

SCALE _____
MADE R.J.T. DATE 2-10-65
TRCD. R.D.J. DATE 2-12-65
CKD. J.M.O. DATE 2-14-65

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

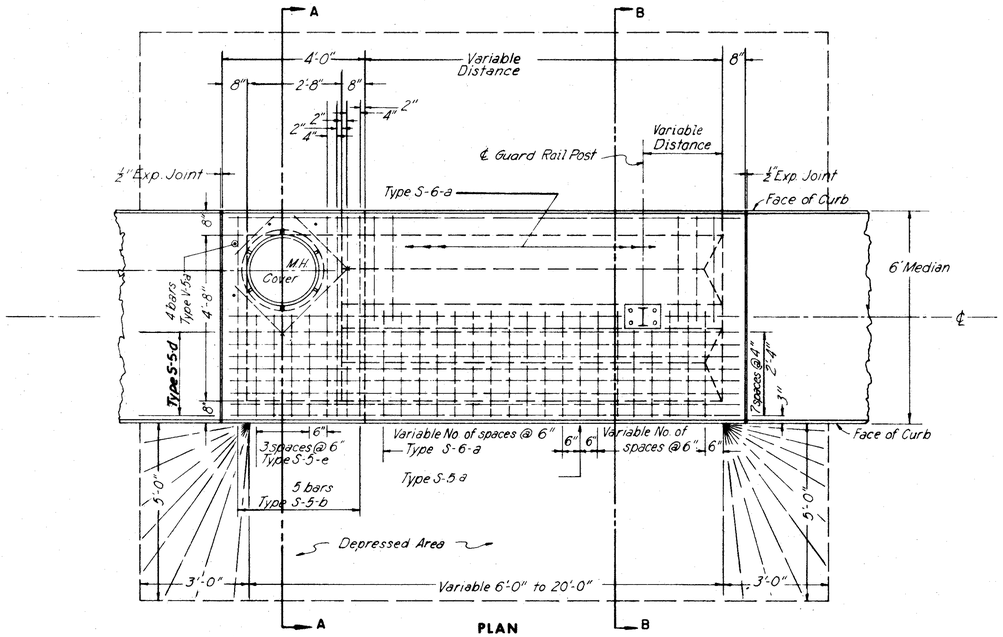
MISCELLANEOUS DRAINAGE DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

111
241

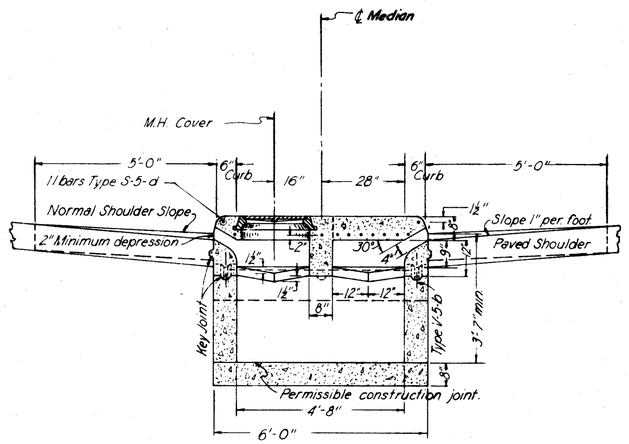
16
28

CUYAHOGA COUNTY
CUY-71-17.18

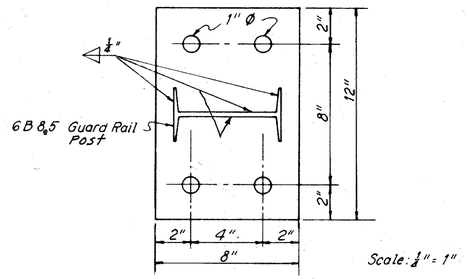


PLAN

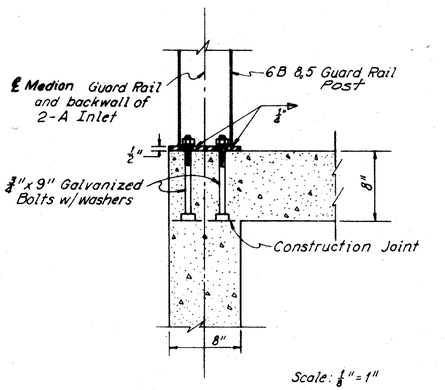
2-A MODIFIED PAVED SHOULDER INLET



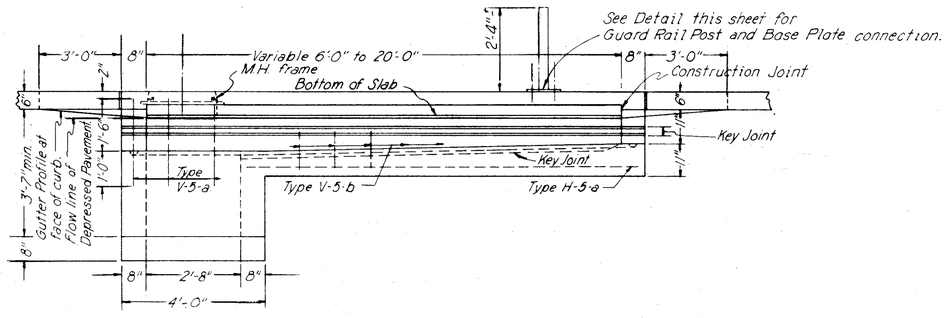
SECTION A-A



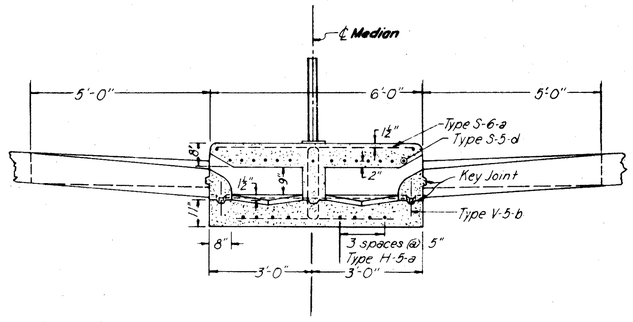
STEEL GUARDRAIL BASEPLATE



SECTION THROUGH CORNER OF 2-A PAVED SHOULDER INLET



LONGITUDINAL SECTION



SECTION B-B

Note.
All details not shown on this drawing shall be as shown on Standard Construction Drawing 1-81. No. 2-A.

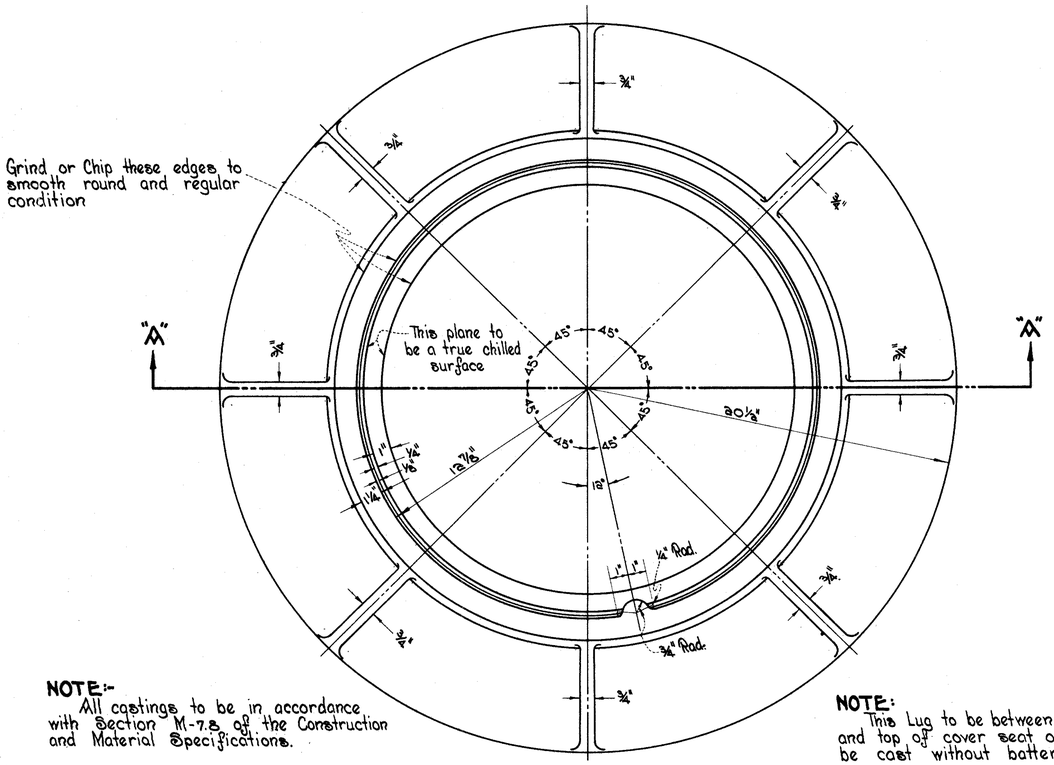
STANDARD NO. 2-A PAVED SHOULDER INLET-MODIFIED

SCALE _____ HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE _____ DATE _____ CONSULTING ENGINEERS
TRCD _____ DATE _____ KANSAS CITY CLEVELAND NEW YORK
CKD _____ DATE _____

SPECIAL MANHOLE FRAME

STANDARD CITY TYPE

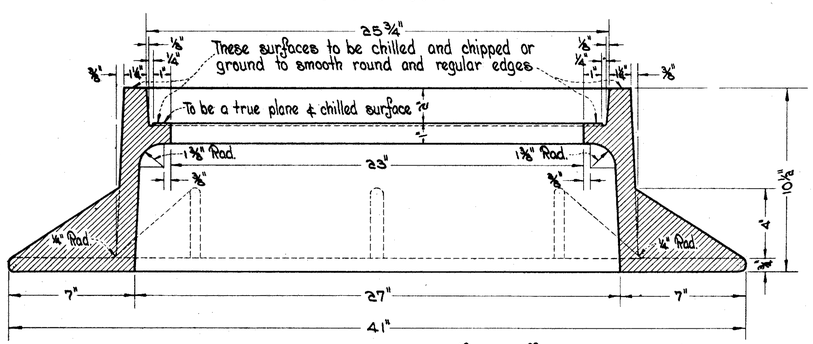
Scale 3" = 1'-0"



NOTE:-
All castings to be in accordance with Section M-7.8 of the Construction and Material Specifications.

NOTE:
This Lug to be between top of frame and top of cover seat only and shall be cast without batter.

PLAN



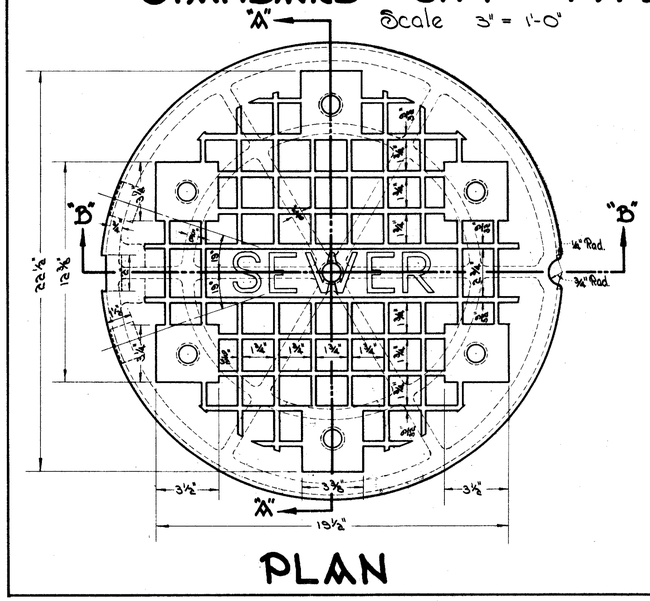
SECTION "A-A"

Weight of Frame 400 lbs. Min.

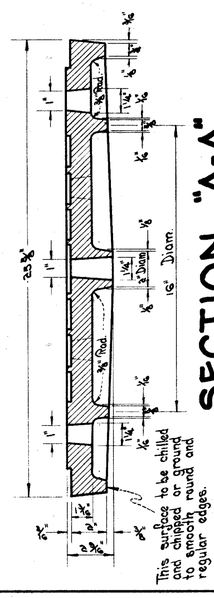
SPECIAL COVER

STANDARD CITY TYPE

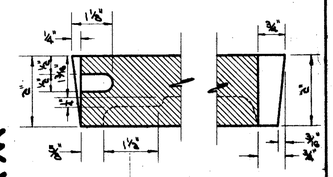
Scale 3" = 1'-0"



PLAN

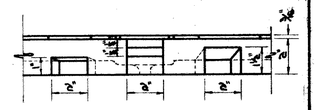


SECTION "A-A"



PART SECTION "B-B"

Scale ½" = 1"



SIDE ELEVATION OF NOTCHES

Weight of Cover 135 lbs.

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

CUYAHOGA COUNTY
CUY.-71-17.18

112
241

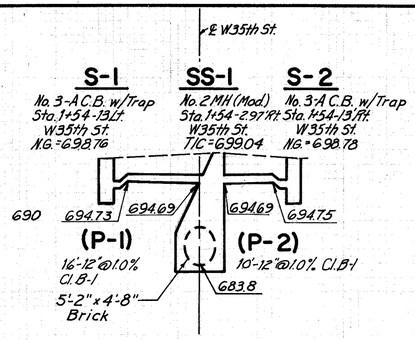
16-A
28

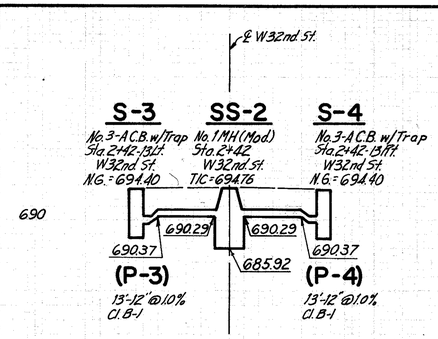
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

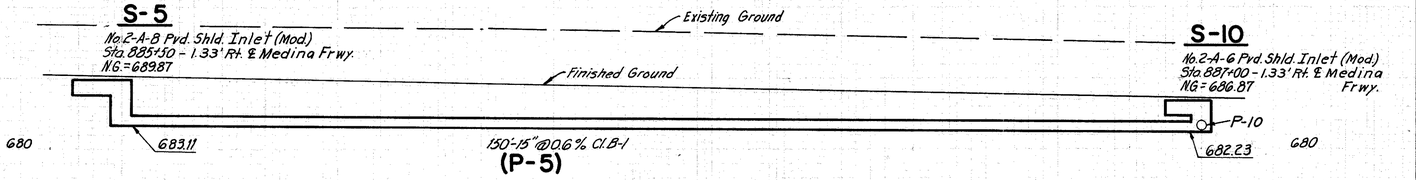
CUYAHOGA COUNTY
CUY—71—17.18

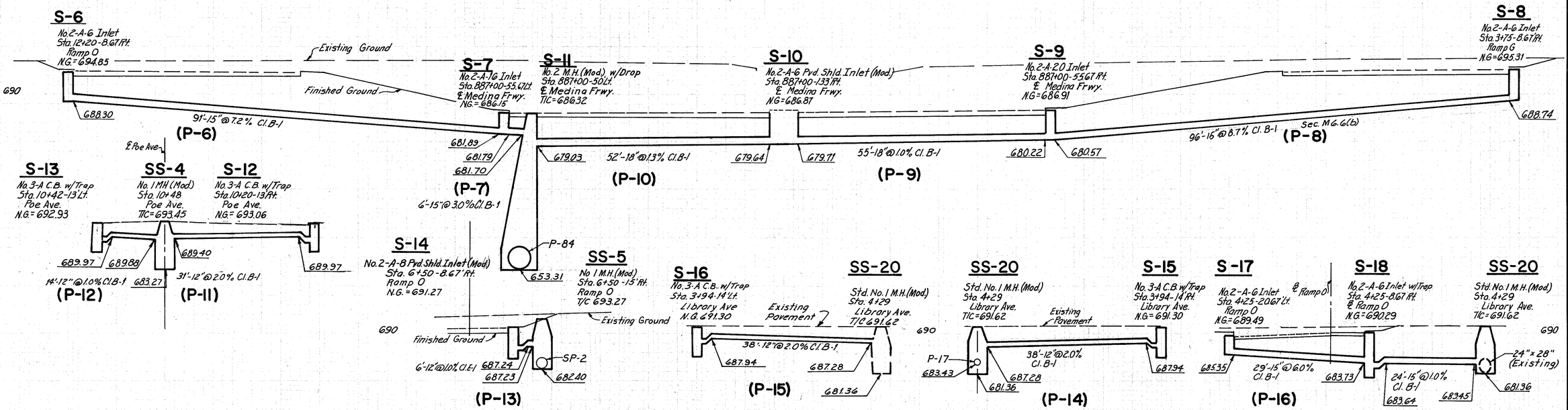
113 / 241

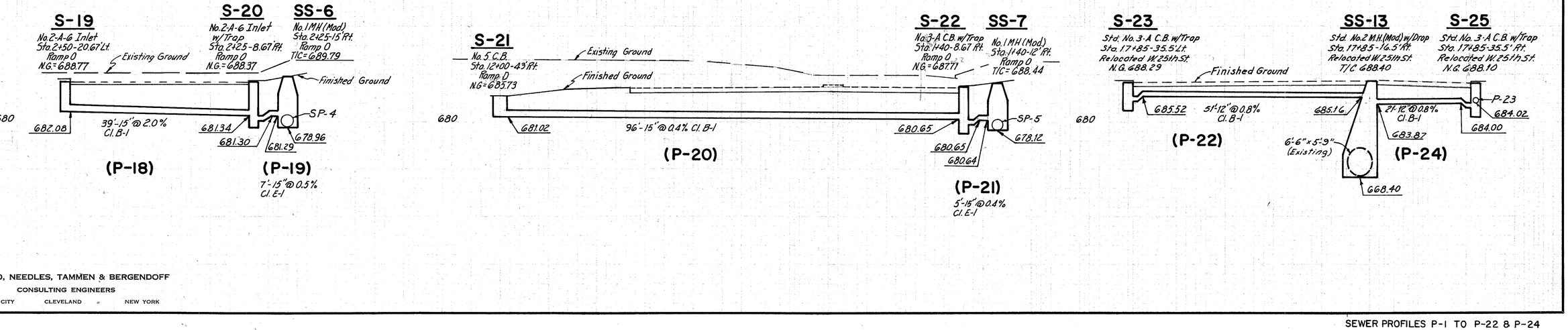
17 / 28











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KANSAS CITY CLEVELAND NEW YORK

SEWER PROFILES P-1 TO P-22 & P-24

REVISED 2-10-65 R.D.J. 1-28-65

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

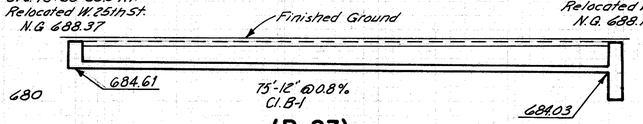
114
241

18
28

CUYAHOGA COUNTY
CUY-71-17.18

S-24

Std. No. 3-A C.B.
Sta. 18+60-35.5' Rt.
Relocated W. 25th St.
N.G. 688.37



(P-23)

S-25

Std. No. 3-A C.B. w/Trap
Sta. 17+85-35.5' Rt.
Relocated W. 25th St.
N.G. 688.10

S-26

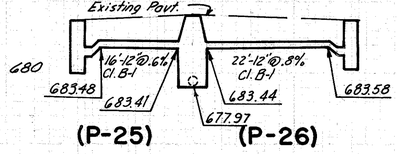
Std. No. 3-A C.B. w/Trap
Sta. 7+90-32' Lt.
Relocated Scranton Rd.
N.G. 687.50

SS-16

Std. No. 1 M.H. (Mod.)
Sta. 7+90-℄
Exist. Scranton Rd.
T/C 688.1

S-27

Std. No. 3-A C.B. w/Trap
Sta. 7+90 - ℞ Rt.
Reloc. Scranton Rd.
N.G. 687.60



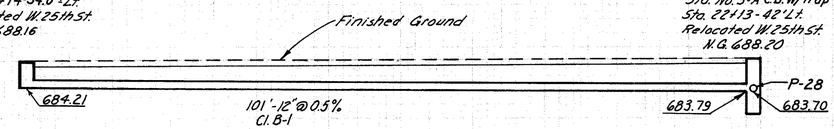
(P-25) (P-26)

S-28

Std. No. 3-A C.B.
Sta. 23+14-34.0' Lt.
Relocated W. 25th St.
N.G. 688.16

S-29

Std. No. 3-A C.B. w/Trap
Sta. 22+13-42' Lt.
Relocated W. 25th St.
N.G. 688.20



(P-27)

S-29

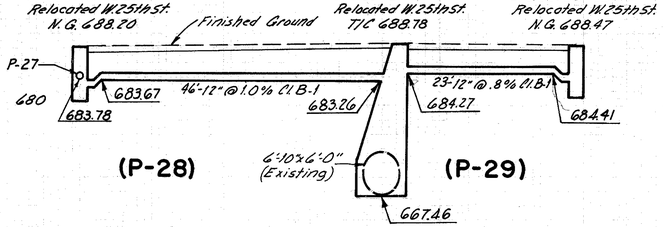
Std. No. 3-A C.B. w/Trap
Sta. 22+13-42' Lt.
Relocated W. 25th St.
N.G. 688.20

SS-15

Std. No. 2 M.H. (Mod.) w/Drop
Sta. 22+13-3.63' Rt.
Relocated W. 25th St.
T/C 688.78

S-30

Std. No. 3-A C.B. w/Trap
Sta. 22+00-23' Rt.
Relocated W. 25th St.
N.G. 688.47



(P-28) (P-29)

S-32

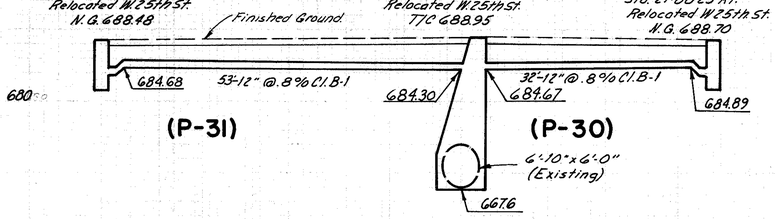
Std. No. 3-A C.B. w/Trap
Sta. 21+25-49.5' Lt.
Relocated W. 25th St.
N.G. 688.48

SS-14

Std. No. 2 M.H. (Mod.) w/Drop
Sta. 21+25-3.63' Rt.
Relocated W. 25th St.
T/C 688.95

S-31

Std. No. 3-A C.B. w/Trap
Sta. 21+00-23' Rt.
Relocated W. 25th St.
N.G. 688.70



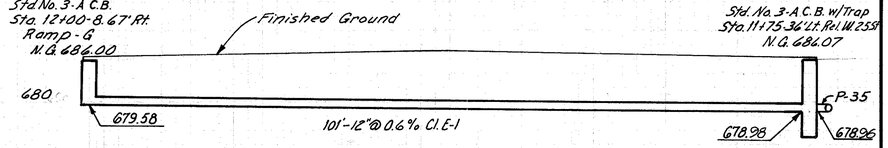
(P-31) (P-30)

S-35

Std. No. 3-A C.B.
Sta. 12+00-8.67' Rt.
Ramp - G
N.G. 686.00

S-36

Std. No. 3-A C.B. w/Trap
Sta. 11+75.36' Lt. Rel W. 25th
N.G. 684.07



(P-34)

S-36

Std. No. 3-A C.B. w/Trap
Sta. 11+75-34' Lt.
Relocated W. 25th St.
N.G. 686.07

SS-8

Separation Chamber
Sta. 11+72.50-.83' Rt.
Relocated W. 25th St.
T/C 686.44

S-34

Std. No. 3-A C.B. w/Trap
Sta. 11+75-48' Rt.
Relocated W. 25th St.
N.G. 685.88

S-33

Std. No. 3-A C.B.
Sta. 2+03-45' Lt.
Cemetery Entrance
N.G. 685.00

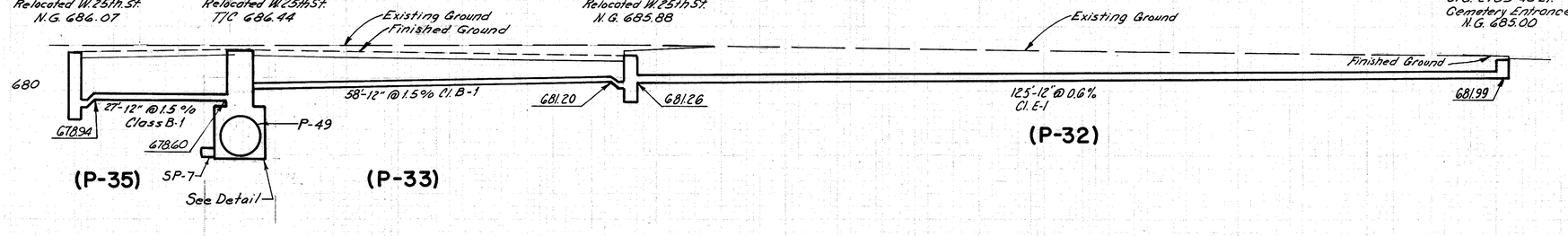
S-38

Std. No. 3-A C.B. w/Trap
Sta. 9+64-13' Rt.
Riverside Ave
N.G. 686.68

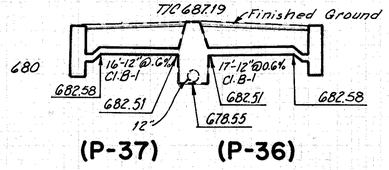
Existing M.H.
℄ Riverside Ave

S-37

Std. No. 3-A C.B. w/Trap
Sta. 9+66-13' Lt.
Riverside Ave.
N.G. 686.68



(P-35) (P-33) (P-32)



(P-37) (P-36)

S-39

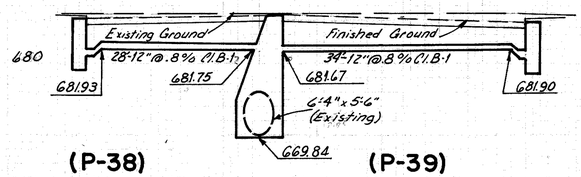
Std. No. 3-A C.B. w/Trap
Sta. 9+25-23' Lt.
Relocated W. 25th St.
N.G. 686.10

SS-12

Std. No. 2 M.H. (Mod.) w/Drop
Sta. 9+35-3.38' Rt.
Relocated W. 25th St.
T/C 686.45

S-40

Std. No. 3-A C.B. w/Trap
Sta. 9+35-36.75' Rt.
Relocated W. 25th St.
N.G. 685.90



(P-38) (P-39)

S-82

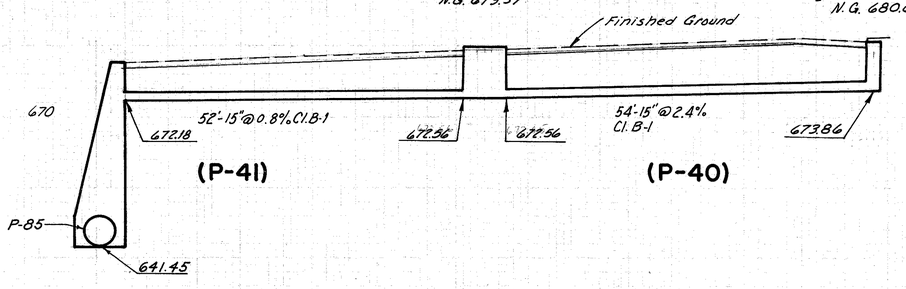
Std. No. 2 M.H. (Mod.) w/Drop
Sta. 890+75-50' Lt.
℄ Medina Freeway
T/C 677.90

S-42

No. 2-A-8 Pvd. Shld. Inlet (Mod.)
Sta. 890+75-1.33' Rt.
℄ Medina Freeway
N.G. 679.37

S-41

No. 2-A-8 Pvd. Shld. Inlet
Sta. 890+75-55.67' Rt.
℄ Medina Freeway
N.G. 680.63



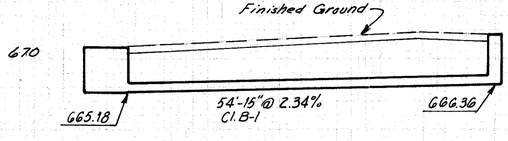
(P-41) (P-40)

S-44

No. 2-A-8 Pvd. Shld. Inlet (Mod.)
Sta. 894+50-1.33' Rt.
℄ Medina Freeway
N.G. 671.87

S-43

No. 2-A-8 Pvd. Shld. Inlet
Sta. 894+50-55.67' Rt.
℄ Medina Freeway
N.G. 673.13



(P-42)

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

SEWER PROFILES P-23 & P-25 TO P-42

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

115
241

19
28

S-83
Std. No. 2 M.H. W/Drop
Sta. 894+50-50' Lt.
℄ Medina Freeway
T/C 670.40

S-44
No. 2-A-8 Pvd. Shld. Inlet (Mod.)
Sta. 894+50-1.33' Rt.
℄ Medina Freeway
N.G. 671.87

Existing Ground
Finished Ground
670
GG 4.87
52'-15" @ 0.5% Cl. B-1
GG 5.10
P-86
649.59

(P-43)

S-47
Std. No. 1 M.H.
Sta. 19+50-26' Rt.
Lane-J
T/C 675.99

S-48
No. 2-A-14 Pvd. Shld. Inlet (Mod.)
Sta. 894+50-55.67' Lt.
℄ Medina Freeway
N.G. 670.23

S-83
Std. No. 2 M.H. W/Drop
Sta. 894+50-50' Lt.
℄ Medina Freeway
T/C 670.90

Existing Ground
Finished Ground
670
P-45
GG 7.94
53'-15" @ 2.57% Cl. B-1
GG 6.0
GG 5.94
GG 5.82
6'-15" @ 4.0% Cl. B-1
P-86
649.59

(P-46) **(P-47)**

S-45
Std. No. 5 C.B.
Sta. 5+00-39' Lt.
Ramp D
T.G. 675.11

S-47
Std. No. 1 M.H.
Sta. 19+50-26' Rt.
Lane-J
T/C 675.99

Existing Ground
Finished Ground
670
GG 7.83
54'-15" @ 1.5% Cl. E-1
GG 7.08
GG 7.38
79'-15" @ 2.0% Cl. B-1
GG 8.88

S-46
Std. No. 6 C.B.
Sta. 18+71-24.96 Rt.
Lane-J
N.G. 673.17

(P-44) **(P-45)**

S-84
Std. No. 2 M.H. W/Drop
Sta. 894+25-50' Lt.
℄ Medina Freeway
T/C 667.52

S-49
Std. No. 5 C.B.
Sta. 3+00-25' Rt.
Ramp D
T.G. 668.28

℄ Lane-J
℄ Ramp-D
Existing Ground
Finished Ground
660
GG 3.21
93'-15" @ 2.0% Cl. B-1
GG 4.99
P-86
647.06

(P-48)

SS-8
Separation Chamber
Sta. 11+72.50-.83' Rt.
Relocated W. 25th St.
T/C 686.44

S-50
Std. No. 2 M.H. (Mod.)
Sta. 13+10-50' Rt.
Relocated W. 25th St.
T/C 688.0±

Existing Ground
Finished Ground
680
670
P-35
U-39
669.38
152'-72" @ 5.15% Cl. B1 Sec. M4.6 (c)
661.62
Match Line
A

(P-49)

Match Line
A
Existing Ground
Finished Ground
670
660
℄ Lane-H
S-51
Std. No. 2 M.H.
Sta. 18+30-9.0' Lt.
Lane-H
T/C 668.03
P-52
U-33
U-29
℄ Medina Freeway
P-53
P-89
P-87
646.20
145'-72" @ 4.5% Cl. B-1 Sec. M 4.6 (c)
655.09

(P-50)

S-86
No. 1-A M.H. (Mod.)
Sta. 898+35.33
49.44' Lt.
℄ Medina Frwy.
T/C 665.00

(P-51)
154'-72" @ 5.05% Cl. B-1 Sec M4.6 (b)

Existing Ground
680
S-51
Std. No. 2 M.H.
Sta. 18+30-9.0' Lt.
Lane-H
T/C 668.03

S-52
No. 2-A-6 Pvd. Shld. Inlet
Sta. 18+50-4.67' Lt.
Lane-H
N.G. 667.13

Finished Ground
660
P-51
21'-12" @ 0.8% Cl. E-1
GG 3.12
GG 2.98
655.09

(P-52)

Existing Ground
680
S-86
No. 1-A M.H. (Mod.)
Sta. 898+35.33-49.44' Lt.
℄ Medina Freeway
T/C 665.00

S-53
No. 2-A-8 Pvd. Shld. Inlet (Mod.)
Sta. 898+75-1.23' Rt.
℄ Medina Freeway
N.G. 665.97

Finished Ground
660
650
Junction Chamber
P-89
P-87
646.20
GG 8.93
40'-15" @ 0.5% Cl. B-1
GG 9.22
P-51

(P-53)

R.D.V. 1-29-65 R.B.H. 2-11-65

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

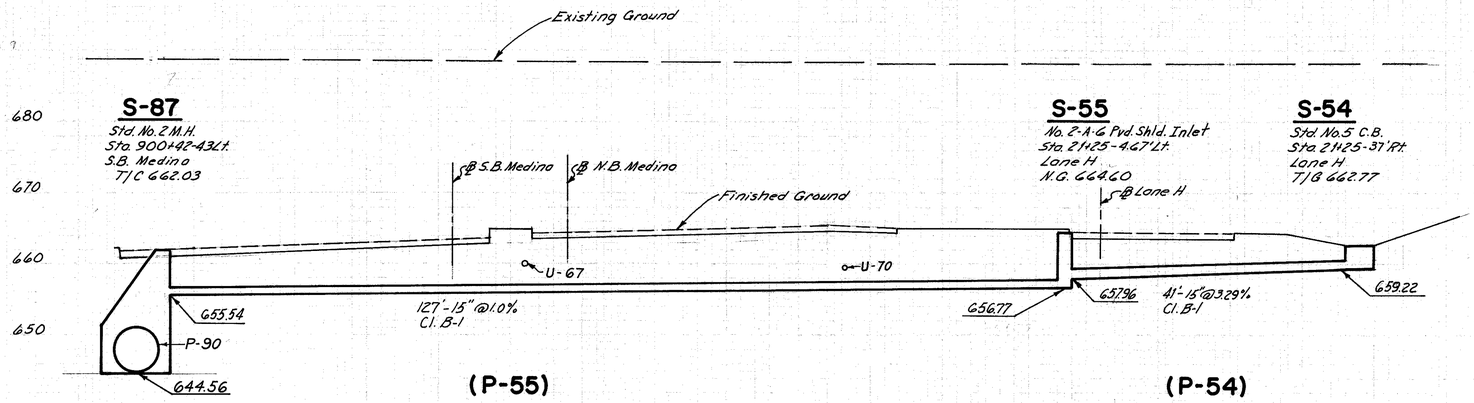
SEWER PROFILES P-43 TO P-53

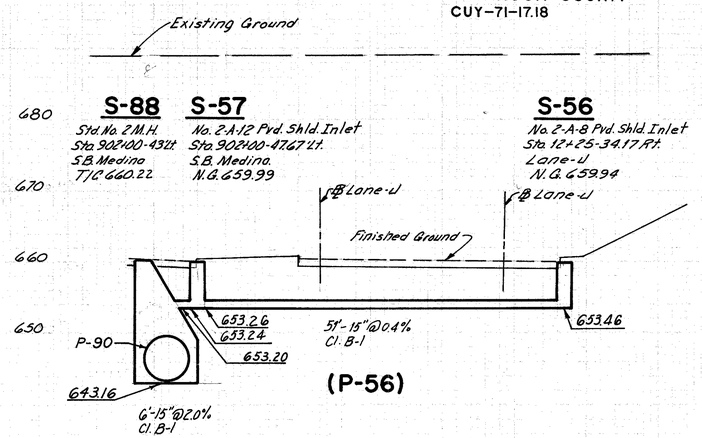
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

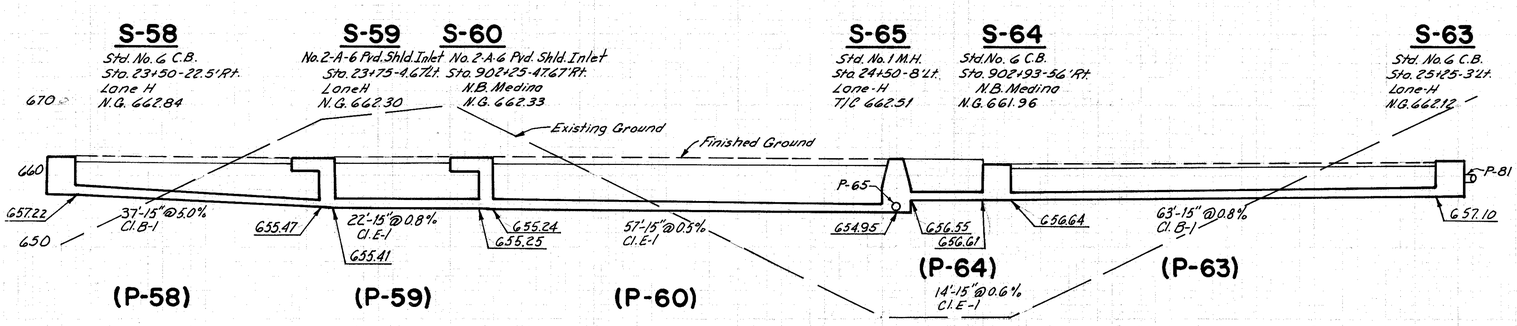
CUYAHOGA COUNTY
CUY-71-17.18

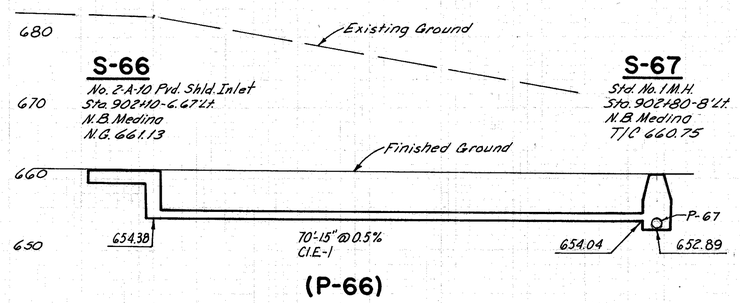
116
241

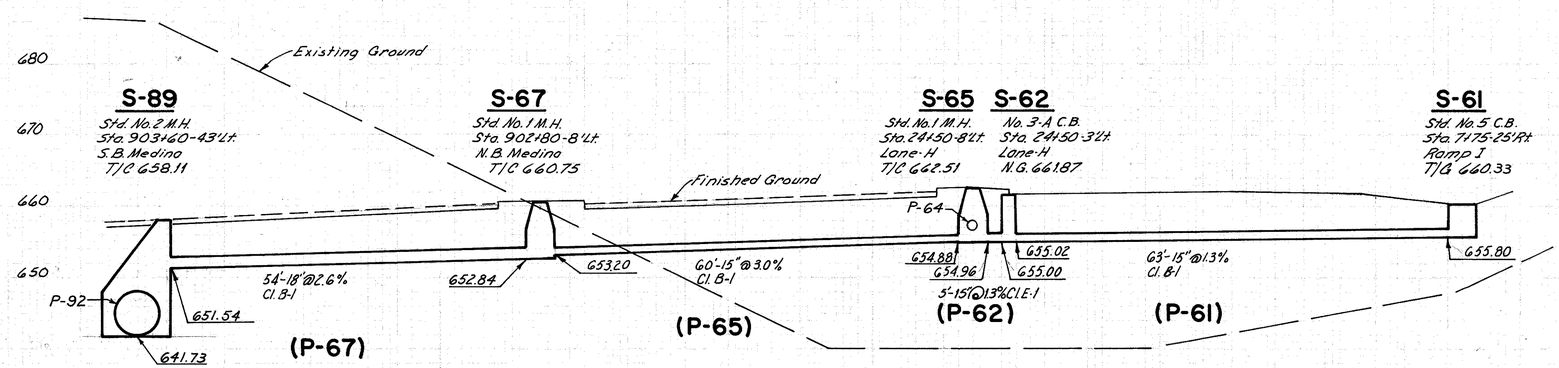
20
28

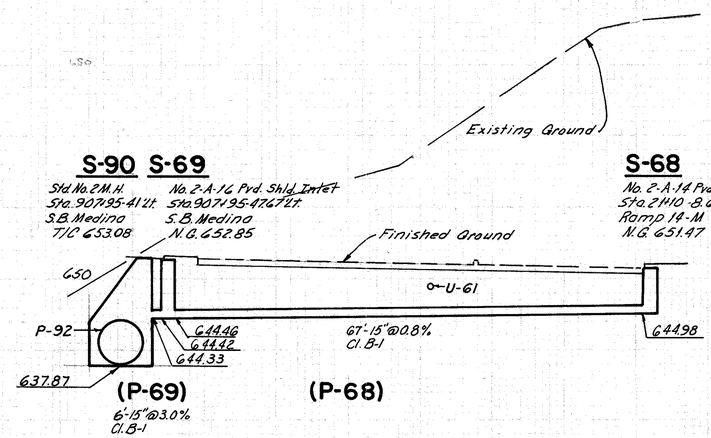












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KANSAS CITY CLEVELAND NEW YORK

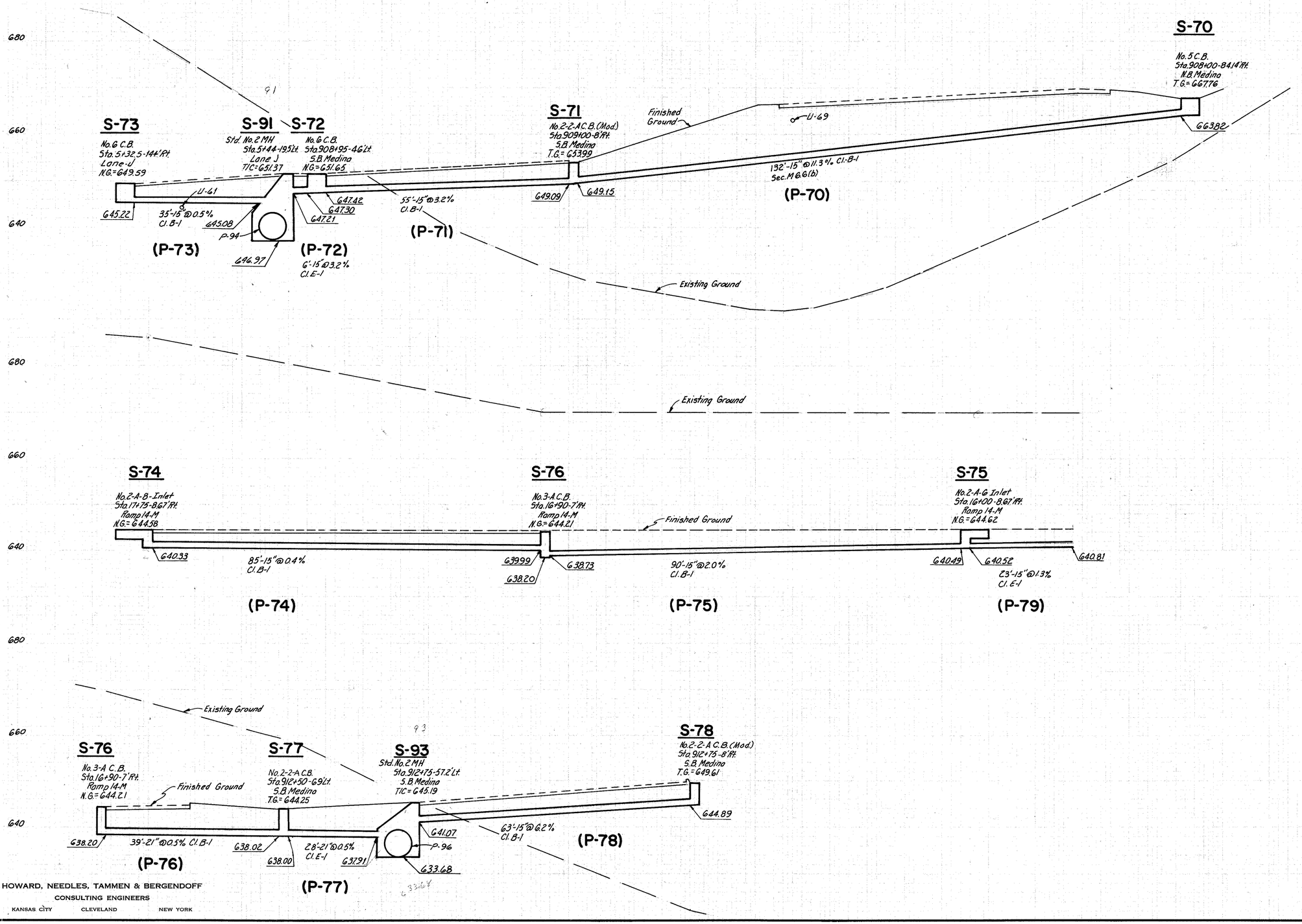
SEWER PROFILES P-54 TO P-69

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY. 71-17.18

117
241

21
28



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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

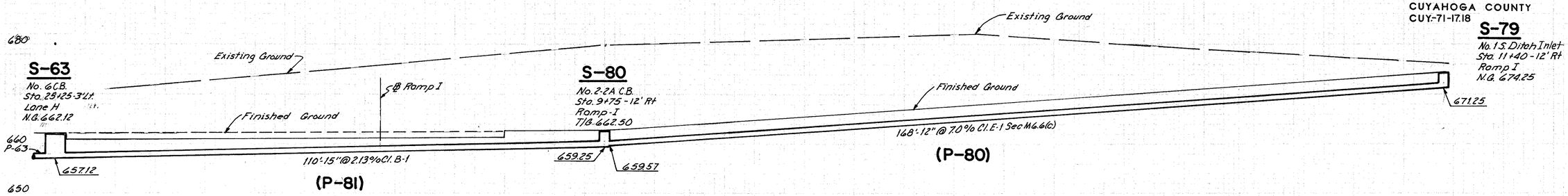
SEWER PROFILES P-70 TO P-79

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

118
241

22
28

CUYAHOGA COUNTY
CUY.-71-17.18



R.B.H. 2-12-57 R.D.J.

2945

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

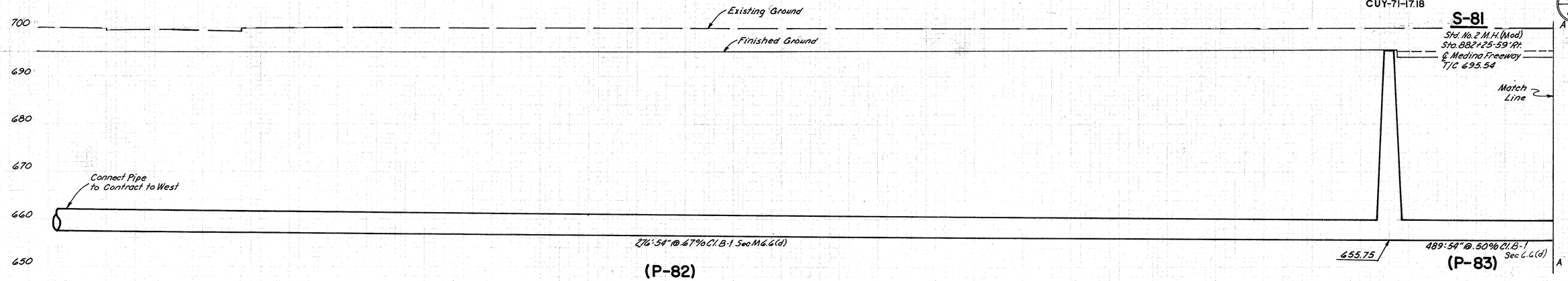
SEWER PROFILES P-80 & P-81

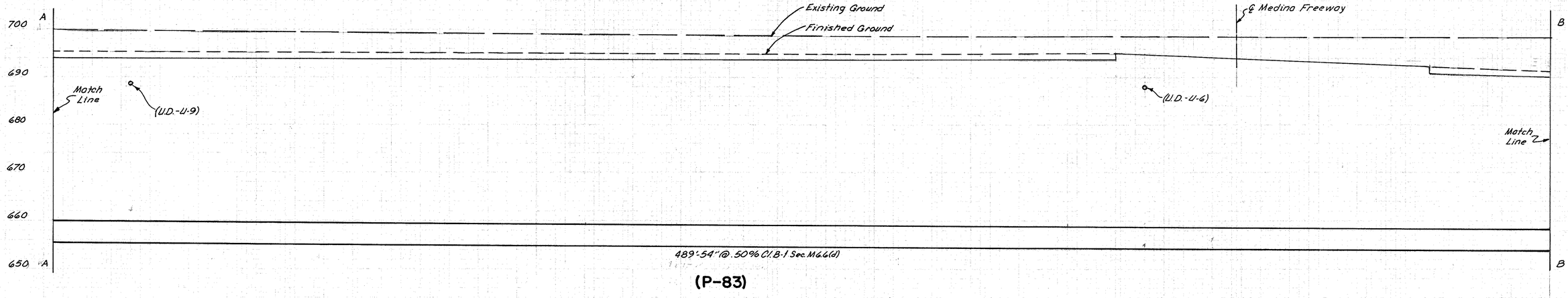
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

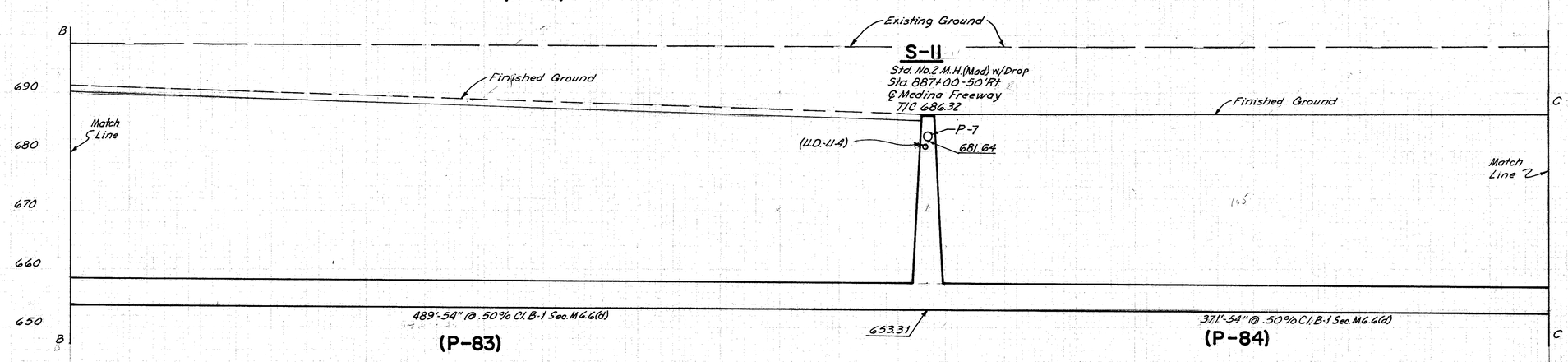
119

23
28

CUYAHOGA COUNTY
CUY-71-17.18







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CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

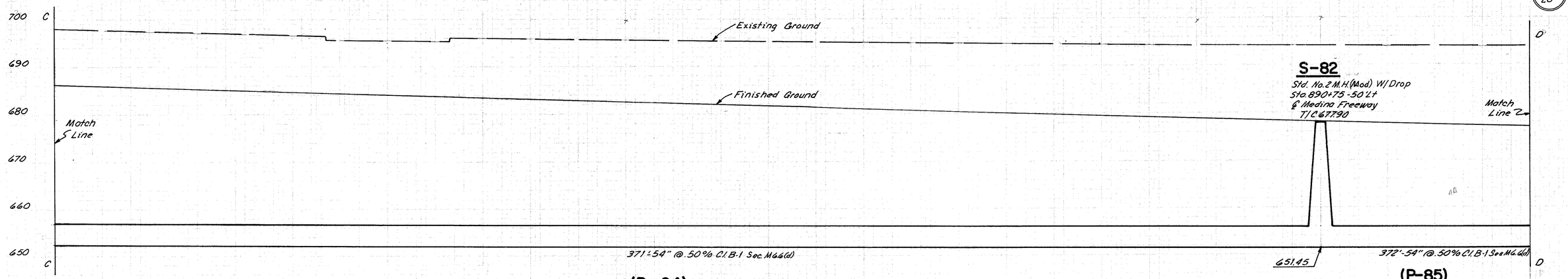
SEWER PROFILES P-82 TO P-84

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

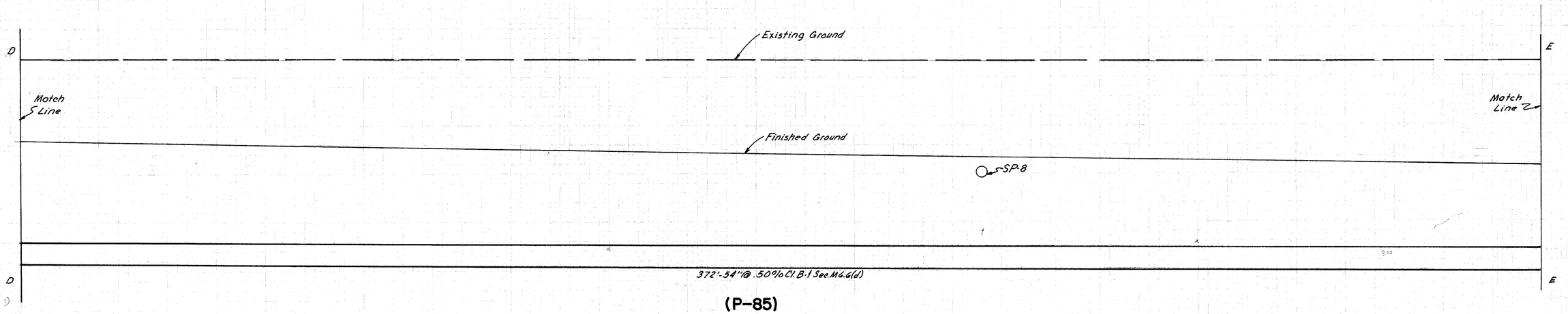
CUYAHOGA COUNTY
CUY-71-17.18

120
241

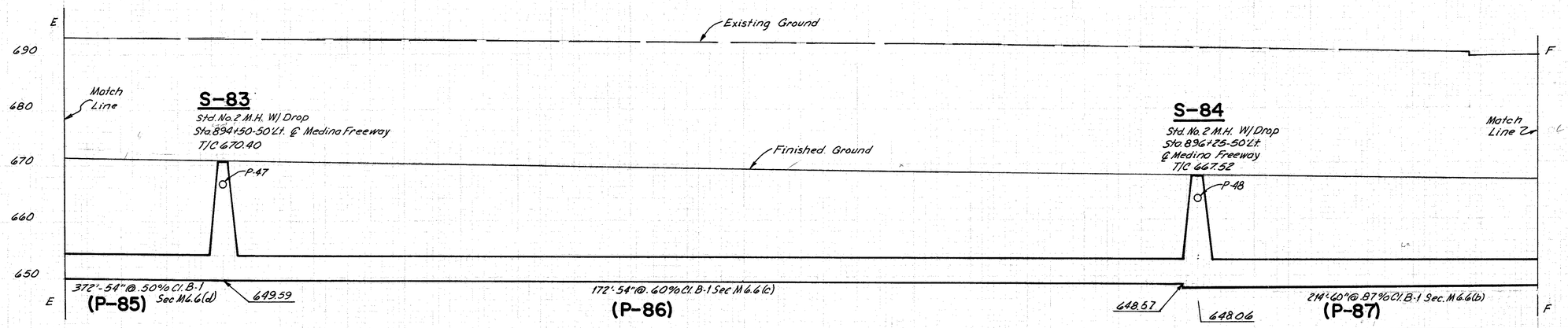
24
28



(P-84) (P-85)



(P-85)



(P-85) (P-86) (P-87)

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

2845
R34-2-11.45 R.O.J.

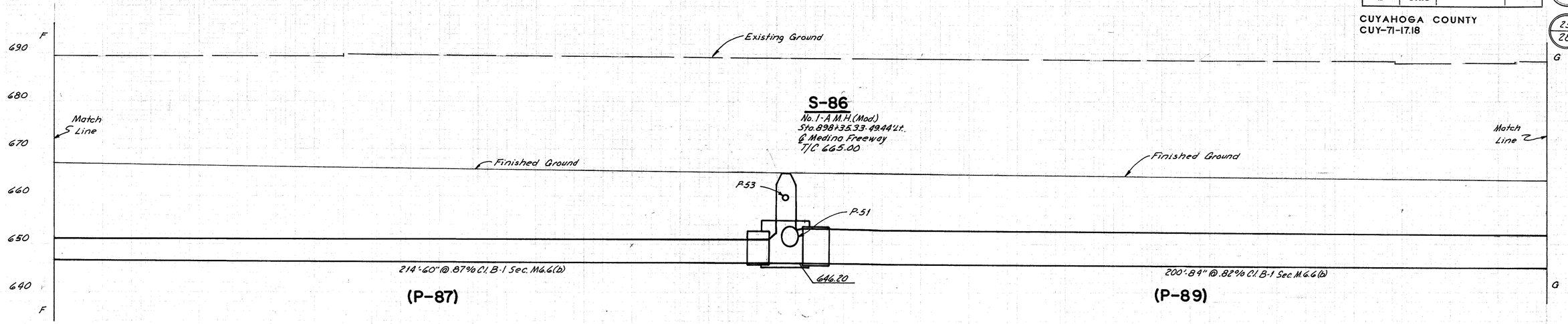
SEWER PROFILES P-84 TO P-87

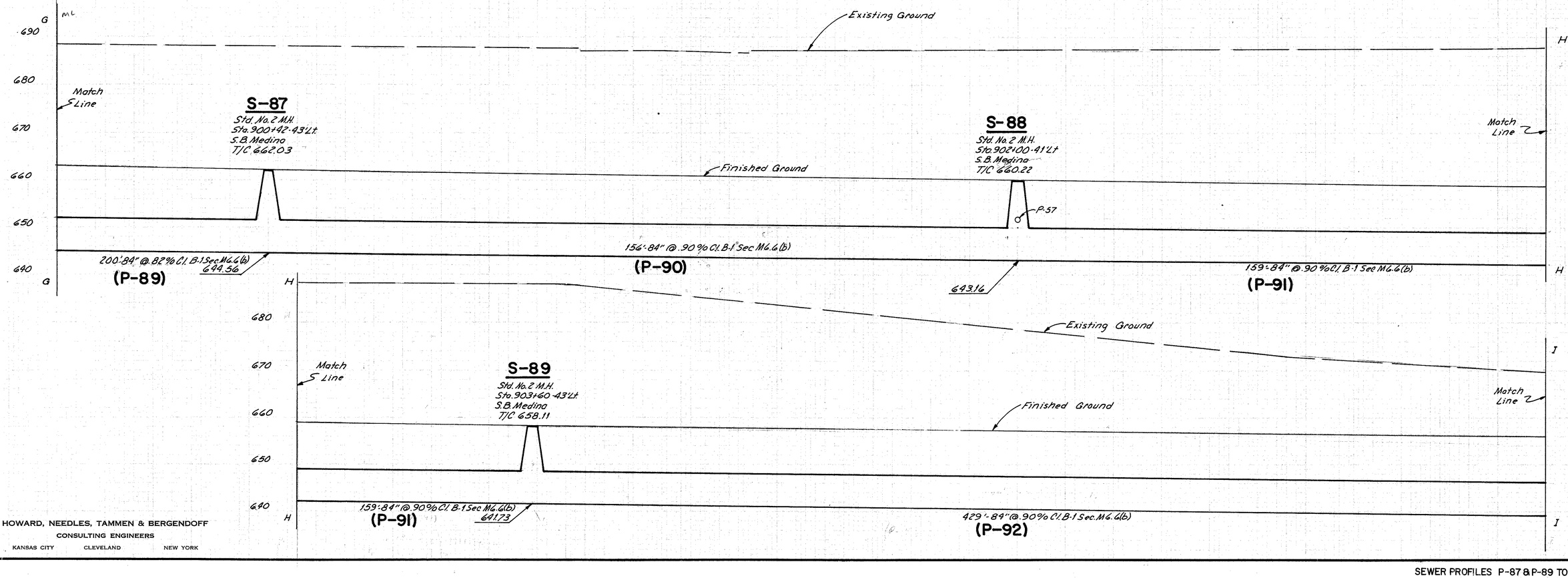
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

121
241

25
28





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

SEWER PROFILES P-87 & P-89 TO P-92

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

122/241

26/28

CUYAHOGA COUNTY
CUY-71-17.18

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

SEWER PROFILES P-94 TO P-96

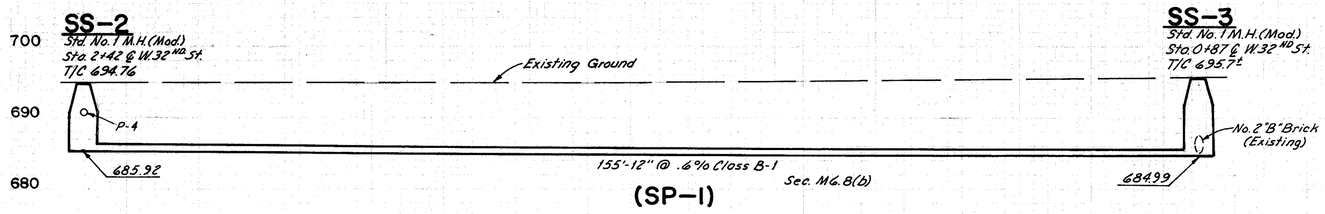
M-14

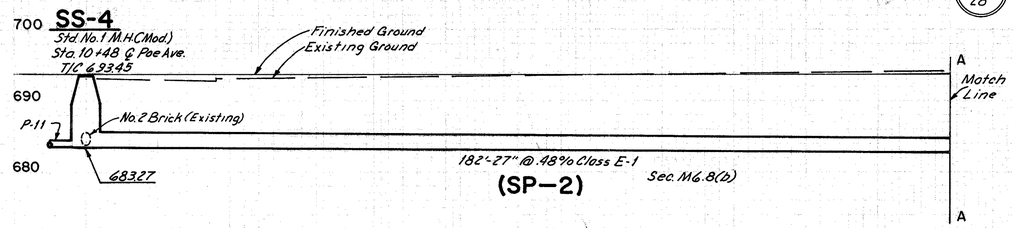
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

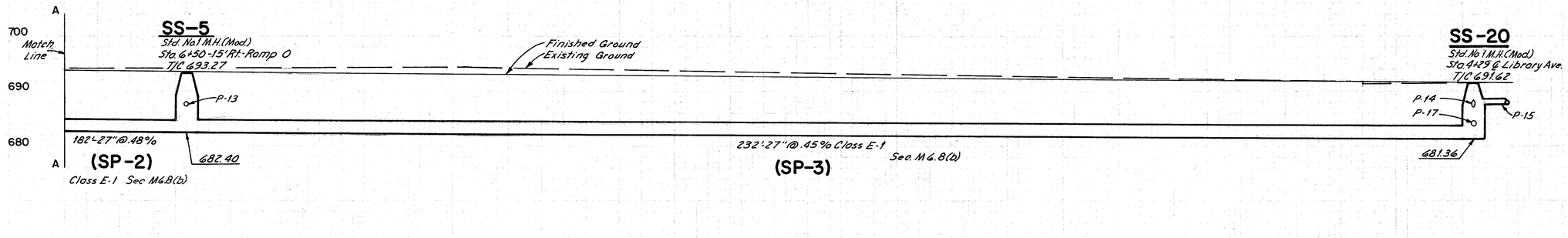
123/241

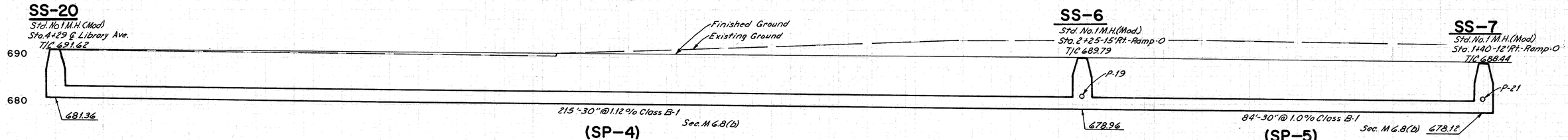
27/28

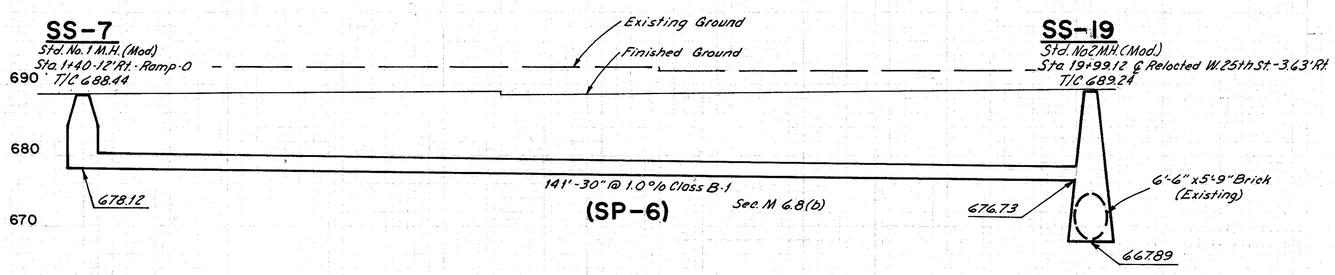
CUYAHOGA COUNTY
CUY.-71-17.18

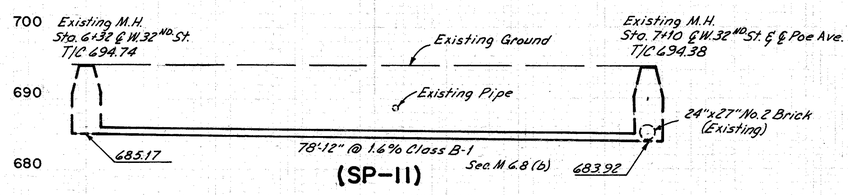












Scale: Hor. & Vert. 1"=10'

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SANITARY SEWER PROFILES SP-1 TO SP-6 & SP-11

1-28-65
R.D.H. 2-7-66 R.D.J.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

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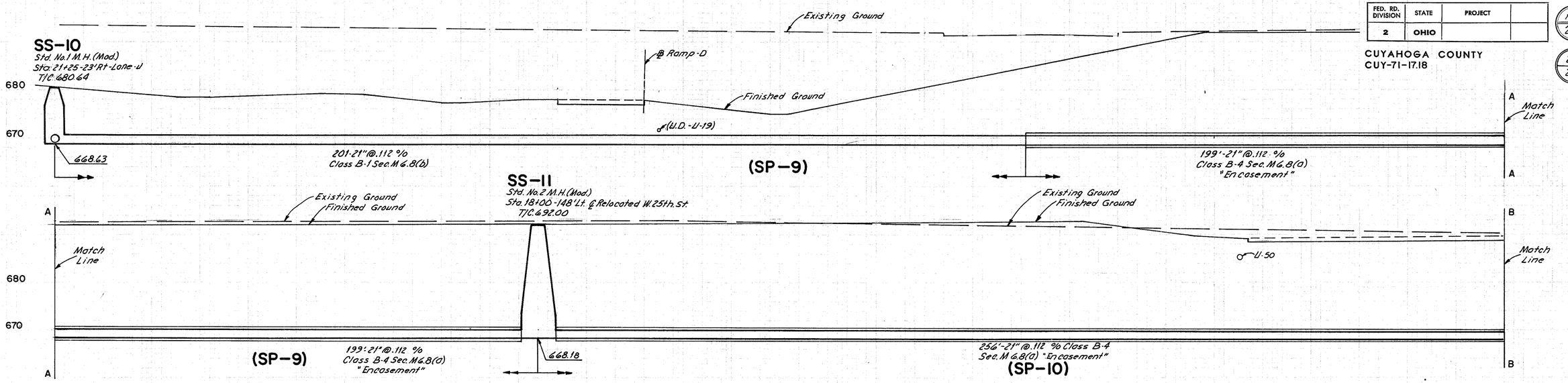

*Manhole cover shall be provided without holes

Scale: Hor. & Vert. 1"=10'

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SANITARY SEWER PROFILES SP-7 TO SP-10

1:2345
R&H 1-7-69 R.D.J

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

1. DESIGN SPECIFICATIONS

Design specifications for Highway Structures of the State of Ohio, Department of Highways, dated September 1, 1957, together with current revisions thereof. The design loading is CF 2000(57).

The classes of concrete and the grades of structural steel and reinforcing steel, together with the working stresses for each are as follows:

Concrete Class C - basic unit stress 1,333 p.s.i.
Concrete Class E - basic unit stress 1,133 p.s.i.
Structural Steel (except piling) - ASTM A36 - basic unit stress 20,000 p.s.i. (ASTM A7 and A373 steel not permitted).
Reinforcing Steel- ASTM A15, A16, A160 deformed, intermediate or hard grade with basic unit stress of 20,000 p.s.i. except spiral reinforcement may be plain, structural grade with basic unit stress 18,000 p.s.i.

2. SUPPLEMENTAL SPECIFICATIONS

Reference shall be made to Supplemental Specifications No. S-307, Examination of Welds, revised October 1, 1964 and to No. S-101, Water-Reducing, Set-Retarding Admixtures, dated July 12, 1962.

3. REFERENCE DRAWINGS

Reference shall be made to Standard Drawing Numbers RB-1-55 revised 2-2-59, AR-1-57 revised 4-2-62, SD-1-63 dated 11-12-63 (Sheets 2, 3 and 4 of 4), SD-2-64 dated 11-25-64, and to AS-1-54 revised 7-5-62.

4. DIMENSIONS

Dimensions given are measured horizontally and at 60° F. unless otherwise noted.

5. UTILITIES

Any existing privately owned utility facilities encountered at the site of the work which will interfere with portions of the finished roadways or structures shall be removed or relocated by the owner and all expenses incurred in so doing shall be borne by the owner The Contractor shall coordinate his operations with the work of the utility owners or others who may be making the relocations, and shall notify the owners of the utilities of his schedule sufficiently in advance to permit them to make the necessary alterations.

6. 12" Ø CAST-IN PLACE REINFORCED CONCRETE PILES

All piles for the Abutments shall be driven to a minimum bearing capacity of 35 tons per pile. All piles for the piers shall be driven to minimum bearing capacity of 45 tons per pile.

7. SPREAD TYPE FOOTINGS

The spread footings for the retaining walls are designed for a maximum bearing pressure of 1½ tons per square foot.

8. CONCRETE DECK

(a) The steel beams shall be fabricated with camber, as specified on the plans, to compensate for the deflections due to weight of concrete and steel and for vertical curvature of the roadway. The theoretical deflections are tabulated on the plans.

(b) The final surface of the roadway shall conform as nearly as practicable to the elevations shown on the plans. To compensate for deflections due to dead load of the concrete, the screeds used to strike off the surface of the concrete to the final desired grade line shall be adjusted by amounts equal to deflections shown for this dead load. Screeds may require further adjustments due to irregularities in the fabricated steel.

(c) The depth of concrete over each beam (top of concrete to top of flange) at the supports is given on the plans. The concrete slab shall be of uniform thickness between beams or girders, with adjustments obtained by varying the thickness of the haunches over the beams or girders.

(d) The aforementioned depth of concrete over each beam is the nominal 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 may not have the exact camber or conformation required to place it parallel to the finished grade.

(e) In order to facilitate water curihg, the placing of concrete shall progress upgrade. The slab may be placed in sections between transverse construction joints which are parallel to transverse reinforcing steel and are located near the center of any span.

(f) The deck may, at the contractor's option, be finished by the use of a finishing machine.

9. REINFORCING STEEL

(a) All bars are designated on the plans by bar numbers. The bar size is indicated by the first digit of three-digit numbers and by the first two digits of four-digit numbers.

All bar dimensions are given out to out.

All bars of a series shall vary in length by a constant increment.

(b) The clear distance between reinforcing steel and face of concrete shall be 3" at the bottom of footings, 2½" ± at bar mats under shoes and 2" elsewhere unless otherwise shown on the plans.

10. WELDING

Welds shown as field welds may, at the option of the Contractor, be made in the shop. All welds shall be Class "A" except as otherwise shown. Class "B" welds are shown thus: 

11. LIGHTING NOTES

For general notes pertaining to lighting, see sheet (205, 206, 207) of the Roadway Plans.

12. ITEMS NOT INCLUDED IN BRIDGE PLANS

The following items are not incuded in the bridge plans. See Roadway Plans for details.

(1) Curb transition at end of wingwalls.
(2) Approach grading, pavement and slab.
(3) Relocation or removal of existing utilities.
(4) Removal of existing pavements, etc.
(5) Lighting.

ESTIMATED QUANTITIES

CUY-71-1752 H.N.T.B. BRIDGE NO. 22

ITEM	TOTAL	UNIT	DESCRIPTION	ABUTMENTS	PIERS	SUPER-STRUCTURE	GENERAL		
E-2	1,575	Cu. Yd.	Unclassified Excavation	660	915				
S-1	1,307	Cu. Yd.	Class "C" Concrete, Superstructure			1,307			
S-1	380	Cu. Yd.	Class "C" Concrete, Pier Caps and Columns		380				
S-1	262	Cu. Yd.	Class "E" Concrete, Abutment (Above Footing)	262					
S-1	554	Cu. Yd.	Class "E" Concrete, Footings	197	357				
S-3	44	Lin. Ft.	Waterproofing, Premolded Sealing Strip	44					
S-4	546,653	Pounds	Reinforcing Steel	38,238	144,720	363,695			
S-7	*938,200	Pounds	Structural Steel			*938,200			
S-8	*938,200	Pounds	Field Painting of Structural Steel, as per proposal note			*938,200			
S-14	1043.82	Lin. Ft.	Railing, Type C (Aluminum Rails and Supports and Concrete Parapet)	94.86		948.96			
S-16	Lump Sum	Lump Sum	First Test Pile				Lump Sum		
S-18	5,512	Lin. Ft.	12" Ø C.I.P. Reinforced Concrete Piles	1,047	4,465				
S-25			For Lighting Quantities See Sheet 208						
S-29	88	Cu. Yd.	Porous Backfill	88					
S-29	14	Each	Scuppers, Including Supports			14			
S-29	120	Lin. Ft.	6" Ø CMP, M-6.4(h) non-perforated	120					
S-29	204	Lin. Ft.	6" Ø Perforated CMP (Including Specials), M-6.4(h)	204					
S-101	1,307	Each	Water Reducing Set Retarding Admixture			1,307			
I-10	1,336	Sq. Yd.	Crushed Aggregate Slope Protection				1,336		
I-129	4	Sets	Anchor bolts for sign support (2 bolts per set)						
Special	349	Lin. Ft.	Non-Encased, Bridge Supported 9-4" Asbestos-Cement Conduit Bank (Complete) as per Plan			349			

Note:
Retaining Wall quantities are summarized on sheet 155.

*Includes:
335 pounds required for installation of East Ohio Gas Company Line.
3,300 pounds required for installation of Cleveland Electric Illuminating Company Ducts.
These additional quantities to be paid for by the respective utility companies.

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GENERAL NOTES AND ESTIMATED QUANTITIES FOR STRUCTURES

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN C.P	TRACED	CHECKED WC	REVIEWED WCA	REVISED
DATE 3-3-65	DATE	DATE 3-19-65	DATE 3-22-65	SHEET 125

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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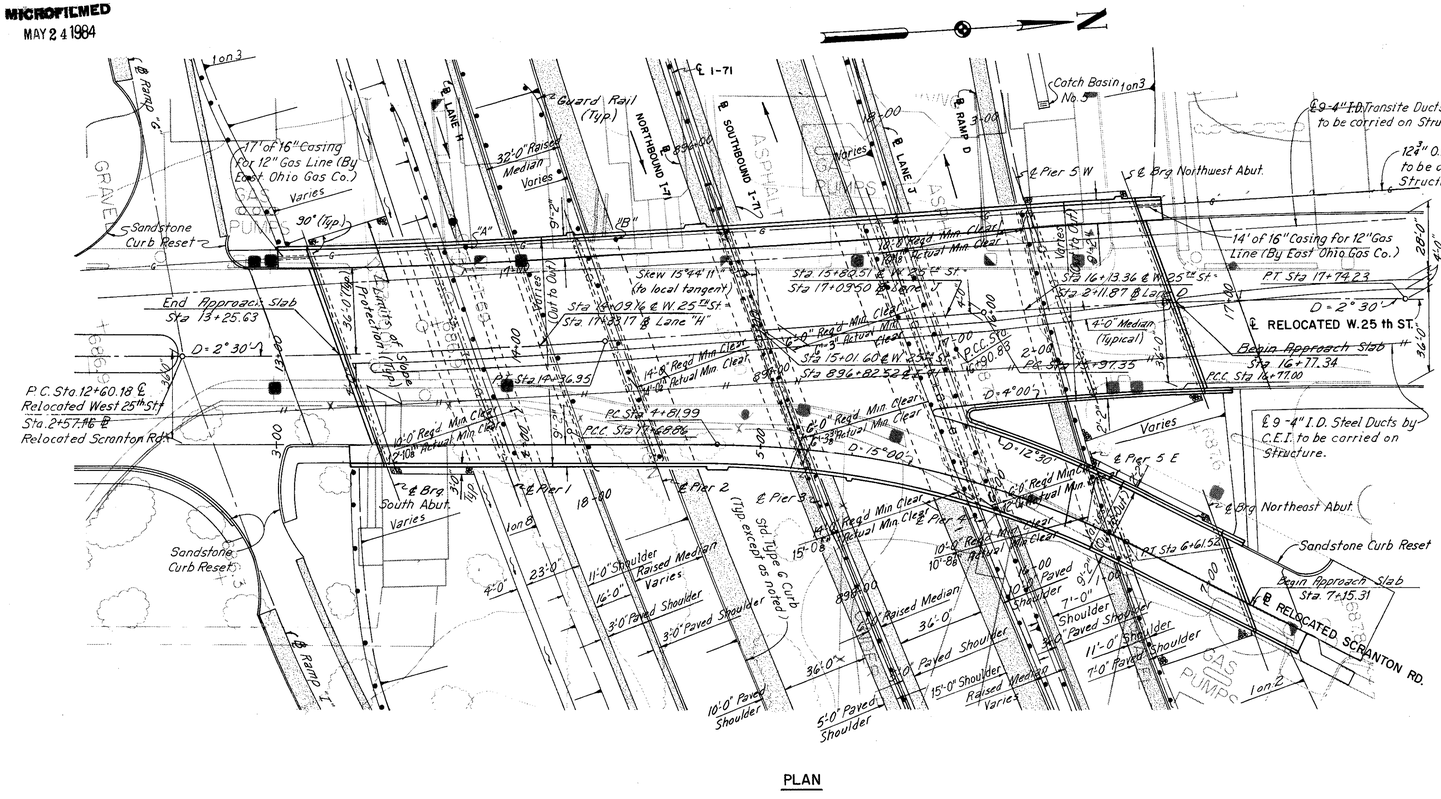
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



PLAN

Note: All piles shall be 12" ϕ C.I.P. Reinforced Concrete Piles with estimated average vertical lengths as follows:

South Abutment	14'
Pier 1	25'
Pier 2	26'
Pier 3	25'
Pier 4	26'
Pier 5W	10'
Pier 5E	10'
Northwest Abutment	15'
Northeast Abutment	14'

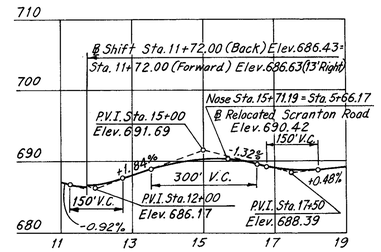
PROPOSED STRUCTURE

TYPE: Continuous steel beam with reinforced concrete deck and substructure
SPANS: 49'-4⅛", 62'-4⅛", 62'-1⅛", 63'-11⅜", 64'-0⅜", 45'-2" Measured along ℄ Relocated West 25th Street
ROADWAY: Width Varies
LOAD FREQUENCY: CF2000(57)

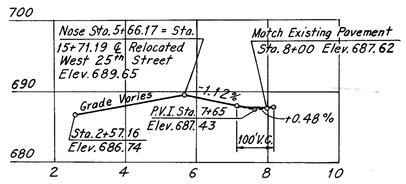
SKEW: Varies
WEARING SURFACE: 1" Monolithic Concrete
APPROACH SLABS: AS-1-54 (25'-0" long)
ALIGNMENT: 2°30'00" Curve Left, Tangent 2°30'00" Curve Right

LEGEND

Manhole
Inlet
Power Pole
Light Pole
Power and Telephone Pole
Fire Hydrant
Aggregate Slope Protection



PROFILE RELOCATED WEST 25th STREET
Scale: 1" = 200' Horz.
1" = 10' Vert.



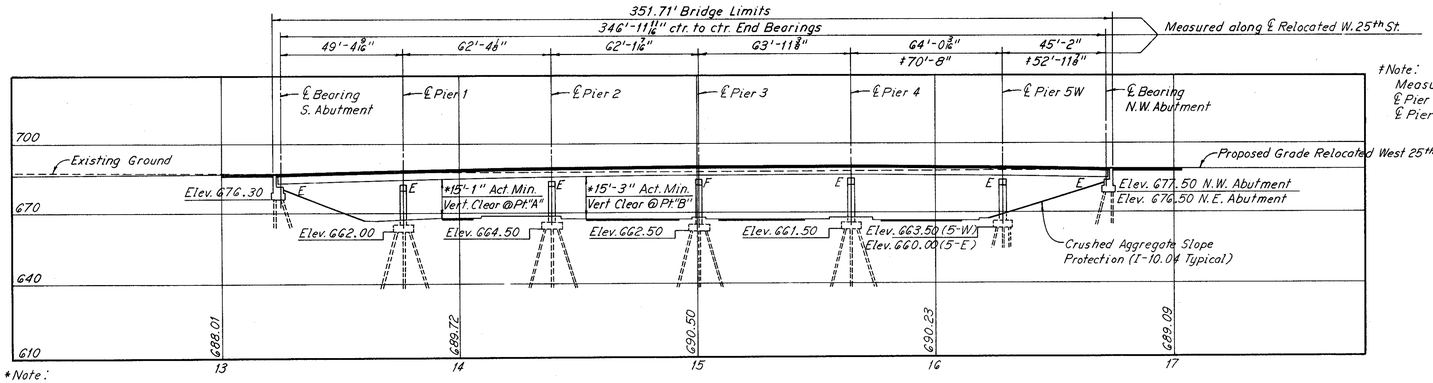
PROFILE RELOCATED SCRANTON ROAD
Scale: 1" = 200' Horz.
1" = 10' Vert.

TRAFFIC DATA

A.D.T. (1984) = Northbound -12,700
Southbound -15,400

CURVE DATA

℄ RELOC. SCRANTON	℄ I-71	RAMP D	LANE J	LANE J	LANE H	LANE H	℄ RELOC. W. 25th	℄ RELOC. W. 25th
P.I. Sta. 5+73.45	P.I. Sta. 893+83.95	P.I. Sta. 1+89.03	P.I. Sta. 21+63.71	P.I. Sta. 12+70.94	P.I. Sta. 16+11.24	P.I. Sta. 20+47.13	P.I. Sta. 13+48.61	P.I. Sta. 16+85.83
Δ = 26°55'48"	Δ = 18°20'00"	Δ = 15°02'08"	Δ = 14°06'53"	Δ = 16°55'11"	Δ = 4°31'23"	Δ = 11°05'46"	Δ = 4°25'09"	Δ = 4°25'19"
D = 15°00'00"Rt.	D = 1°28'00"Lt.	D = 4°00'00"Rt.	D = 1°30'00"Rt.	D = 2°00'00"Rt.	D = 1°26'02"Lt.	D = 2°00'00"Lt.	D = 2°30'00"Lt.	D = 2°30'00"Rt.
R = 381.97'	R = 3906.53'	R = 1432.39'	R = 3819.72'	R = 2864.79'	R = 3995.53'	R = 2864.79'	R = 2291.83'	R = 2291.83'
T = 91.46'	T = 630.38'	T = 189.03'	T = 472.88'	T = 426.09'	T = 157.78'	T = 278.27'	T = 88.43'	T = 88.48'
L = 179.53'	L = 1250.00'	L = 375.89'	L = 940.98'	L = 845.99'	L = 315.41'	L = 554.80'	L = 176.76'	L = 176.88'
E = 10.80'	E = 50.53'	E = 12.42'	E = 29.16'	E = 31.51'	E = 3.11'	E = 13.48'	E = 1.70'	E = 1.71'



ELEVATION

*Note:
15'-0" Required minimum vertical clearance
Point A occurs at West edge of West exterior beam and South edge of Lane H.
Point B occurs at West edge of West exterior beam and South edge of Northbound I-71.

†Note:
Measured along ℄ Relocated Scranton Rd.
℄ Pier 4 to ℄ Pier 5E = 70'-8"
℄ Pier 5W to ℄ Brg. N.E. Abut. = 52'-11⅞".

H.N.T.B. BRIDGE NO. 22

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SITE PLAN

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3-4-63	DATE	DATE 3-5-63	DATE 3-24-63	SHEET 126

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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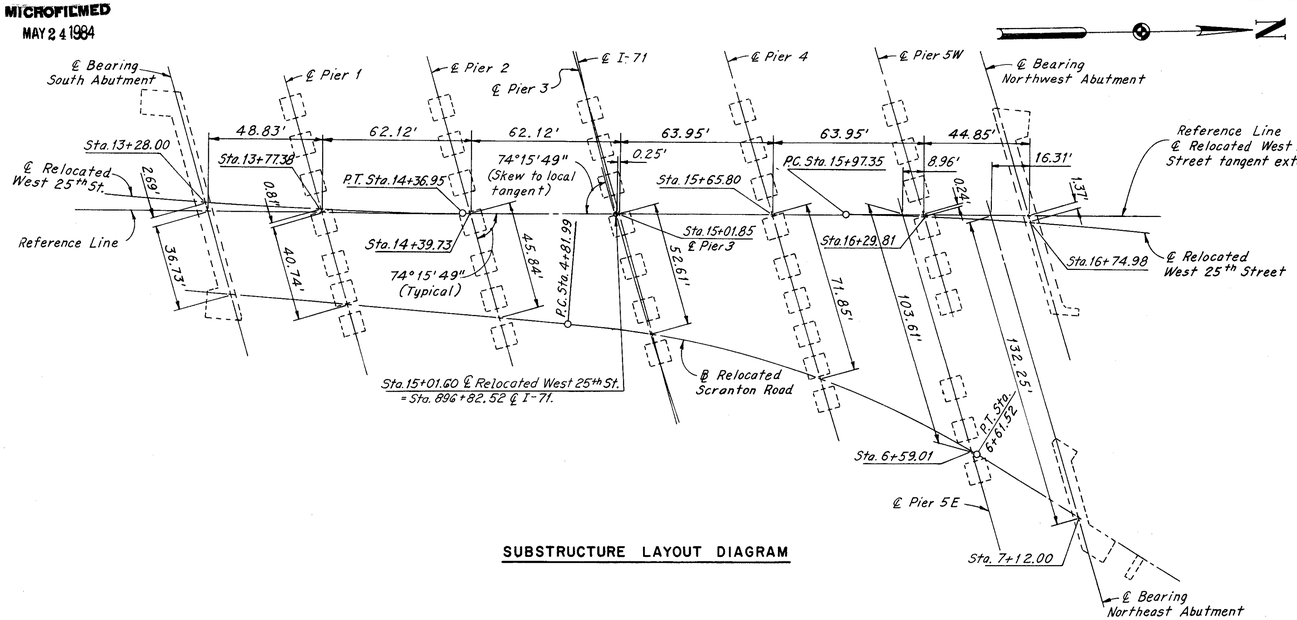
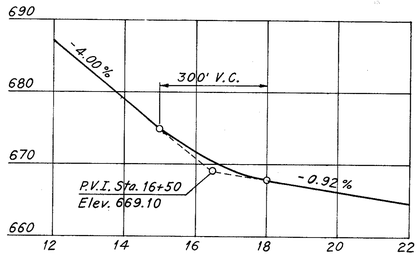
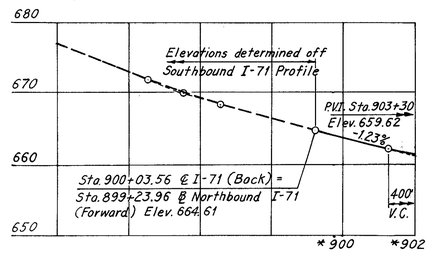
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



SUBSTRUCTURE LAYOUT DIAGRAM

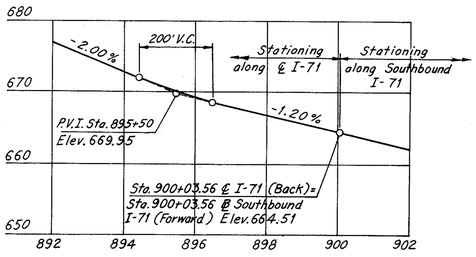


PROFILE LANE H



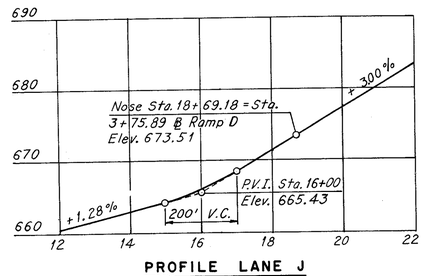
PROFILE NORTHBOUND I-71

(* Stations are measured along ℄ Northbound I-71)

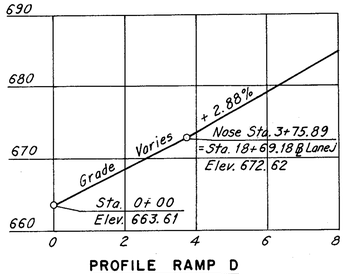


PROFILE SOUTHBOUND I-71

EXISTING UNDERGROUND UTILITIES



PROFILE LANE J



PROFILE RAMP D

PROFILES

Scale: 1" = 200' Horz.
1" = 10' Vert.

LEGEND

Water —W—W—
Gas —G—G—
Sewers
Ohio Bell Tel. —T—T—
M.E.L.P. (Underground Conduits)
C.E.I. (Underground Conduits) —||—||—

H.N.T.B. BRIDGE NO. 22

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KANSAS CITY CLEVELAND NEW YORK

BRIDGE LAYOUT DIAGRAM, PROFILES AND EXISTING UNDERGROUND UTILITIES

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 5-4-65	DATE	DATE 5-5-65	DATE 3-24-65	SHEET 127

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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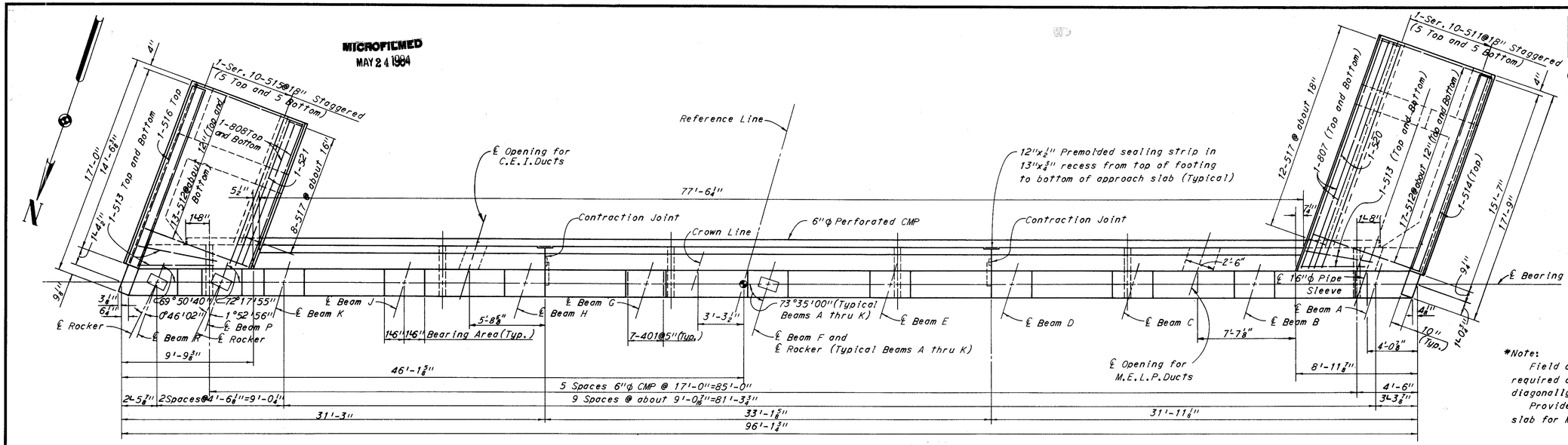
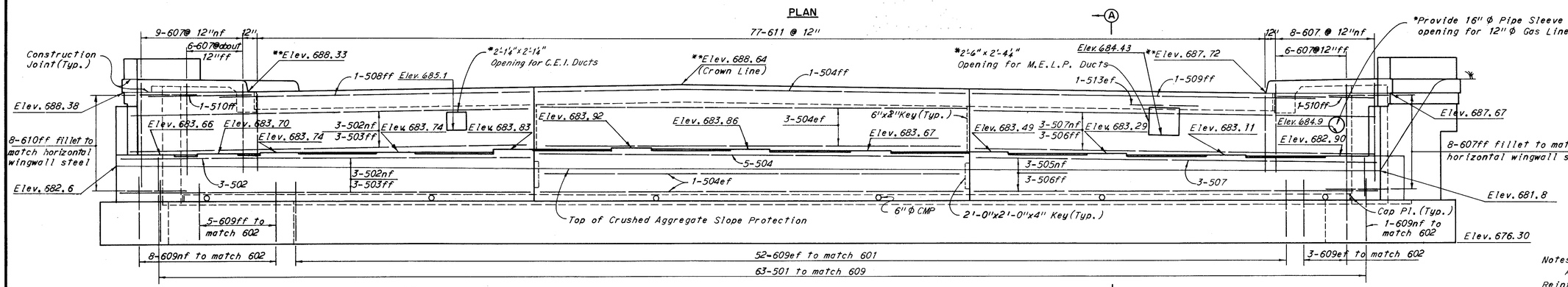
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



*Note:
Field cut reinforcement as required and place cut-offs diagonally at corners of opening. Provide notch in approach slab for M.E.L.P. Ducts.

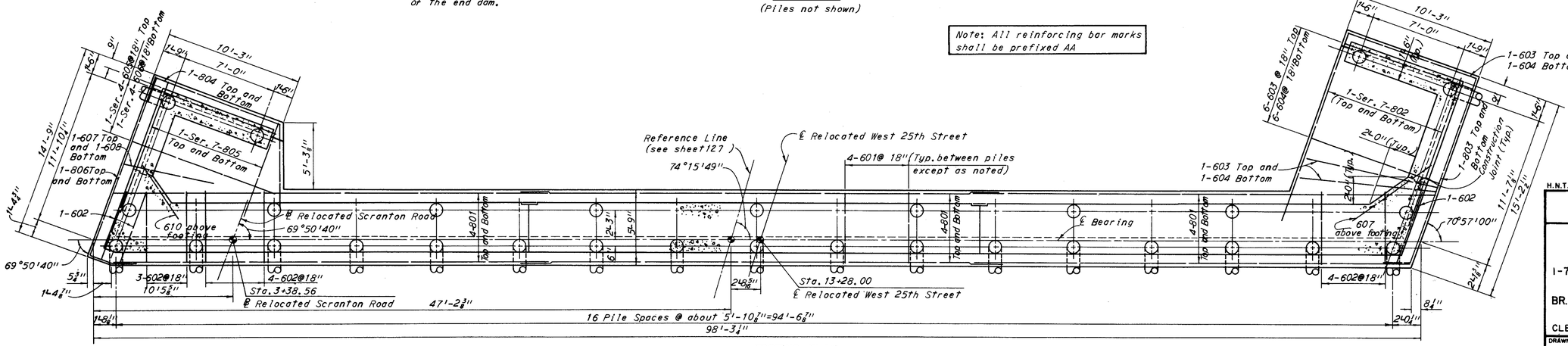
PLAN



**Note: Elevations at top of backwall are given to top of 8x4x1 angle of the end dam.

ELEVATION
(Piles not shown)

Note: All reinforcing bar marks shall be prefixed AA



FOOTING PLAN

Notes:
All piles shall be 12" ϕ C.I.P. Reinforced Concrete Piles.
For Section A-A, wingwall and counterfort details, and additional notes see sheet 129.
The following abbreviations are used:
nf = near face
ff = far face
ef = each face

H.N.T.B. BRIDGE NO. 22

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KANSAS CITY CLEVELAND NEW YORK

SOUTH ABUTMENT

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-14-63	DATE	DATE 3-16-65	DATE 3-24-65	SHEET 128

FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

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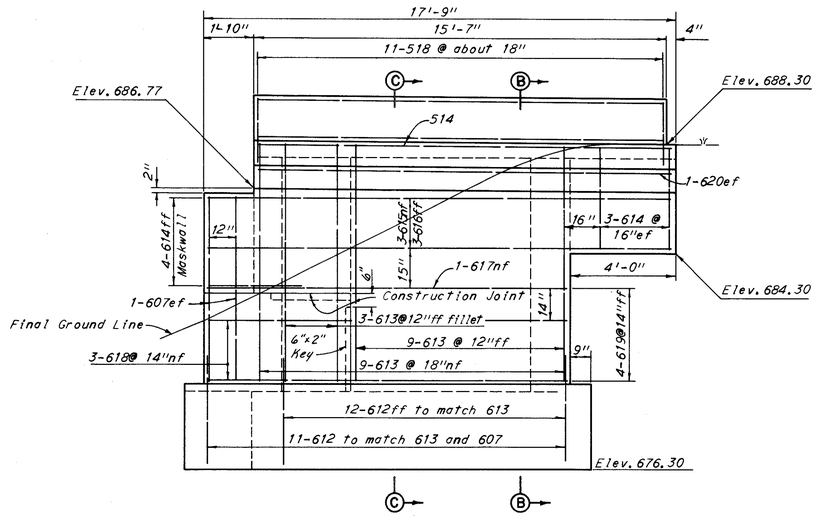
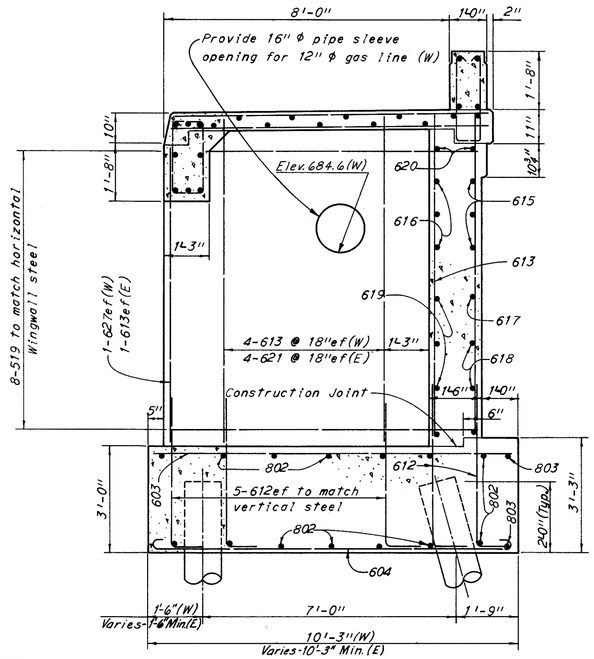
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



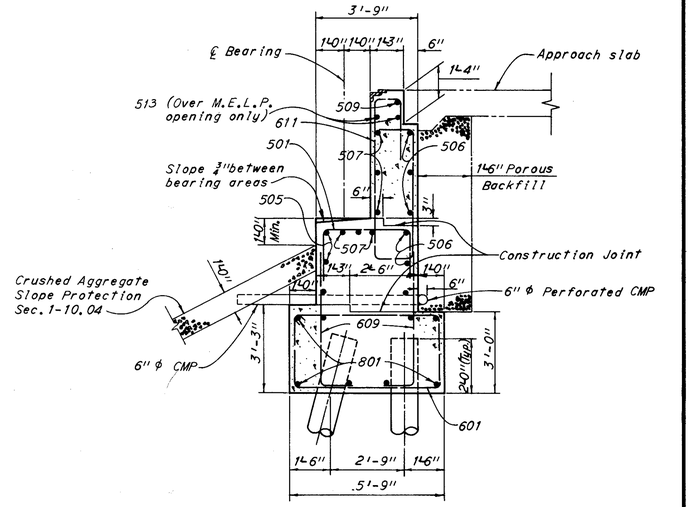
SOUTHWEST WINGWALL ELEVATION

(Piles not shown)



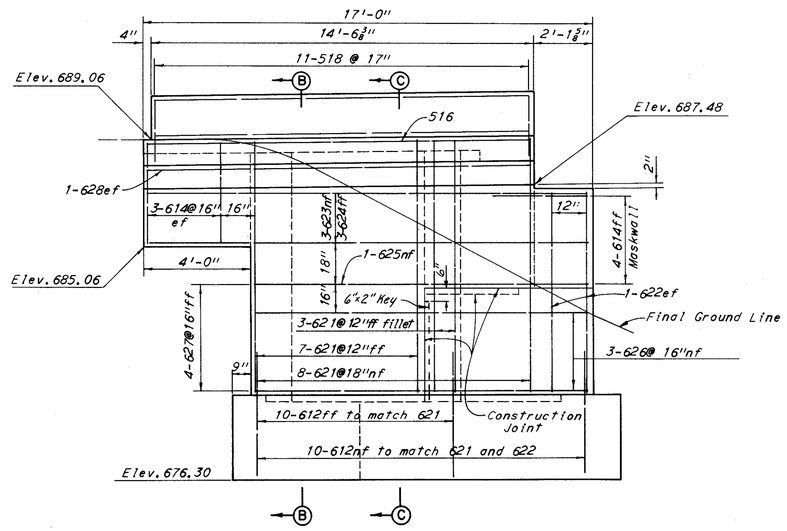
SECTION B-B
COUNTERFORT

(Southwest Wingwall shown, Southeast Wingwall similar except for bar marks and as noted.)



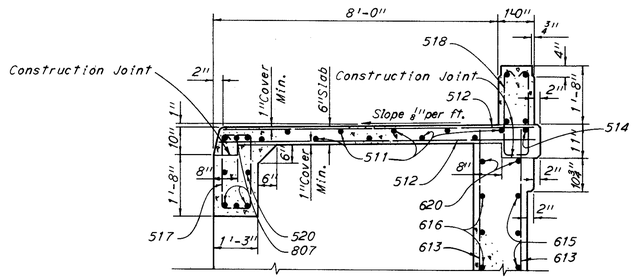
SECTION A-A

Note: All reinforcing bar marks shall be prefixed AA



SOUTHEAST WINGWALL ELEVATION

(Piles not shown)



PART SECTION C-C

(Type C Railing not shown)

(Southwest Wingwall shown, Southeast Wingwall similar except for bar marks)

Notes:

All piles shall be 12" ϕ C.I.P. Reinforced Concrete Piles.

All battered piles shall be inclined 3 in 12 in the direction shown.

Backfill under sidewalk shall be firmly compacted before sidewalk concrete is placed.

For Reinforcement Schedule and Bar Bending Diagrams see sheet 149

For longitudinal reinforcement in the parapets and railing post spacing see sheet 147.

For Type C railing details, see Ohio Standard Drawing AR-1-57.

For roadway and sidewalk end dam details see Ohio Standard Drawing SD-1-63 sheets 2 and 4 of 4.

The following abbreviations are used:
nf = near face
ff = far face
ef = each face
(W) = Southwest Counterfort
(E) = Southeast Counterfort

For location of conduits in Wingwalls see sheet 217 of the lighting plans.

H.N.T.B. BRIDGE NO. 22

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

SOUTH ABUTMENT WINGWALLS AND COUNTERFORTS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

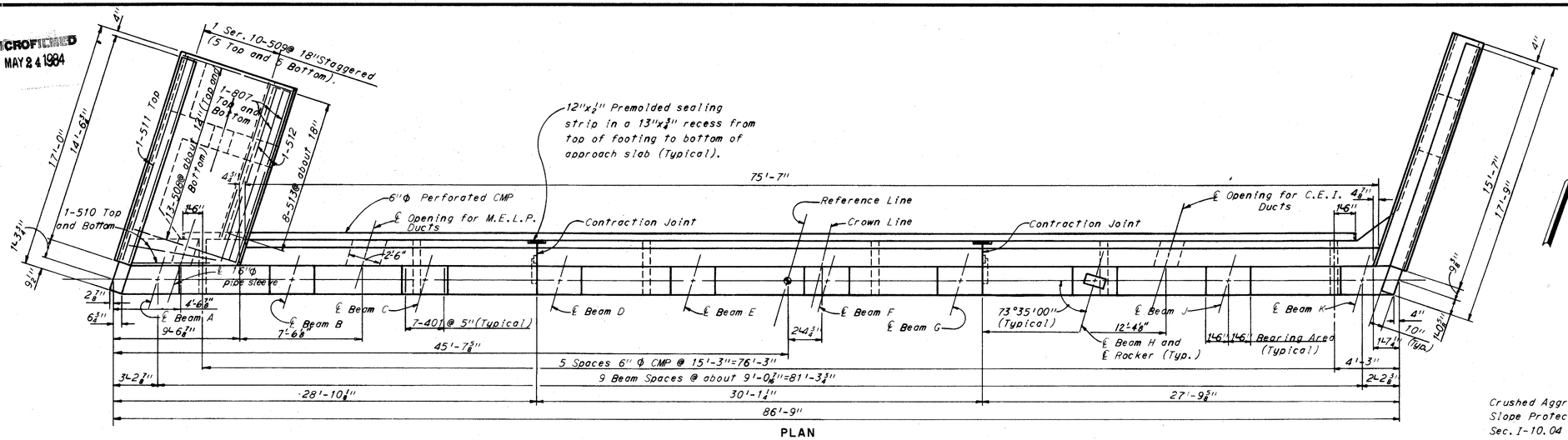
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN EWH	TRACED	CHECKED JEN	REVIEWED WC	REVISED
DATE 2-10-65	DATE	DATE 3-15-65	DATE 3-24-65	SHEET 129

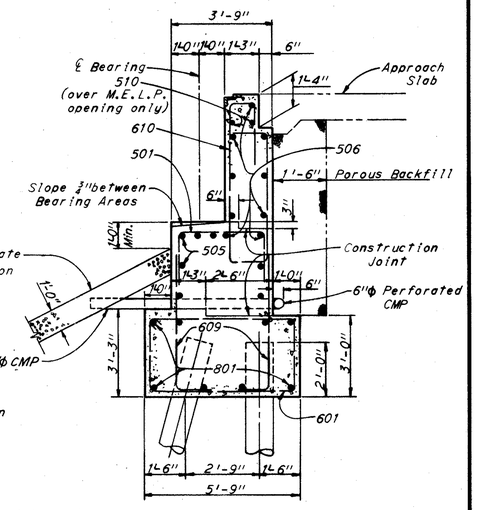
FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

130
241

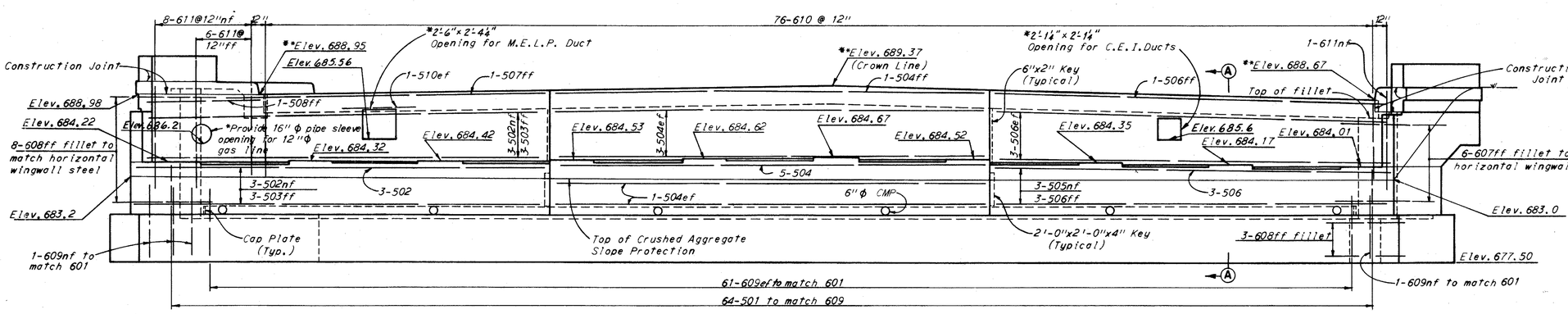
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



PLAN



SECTION A-A



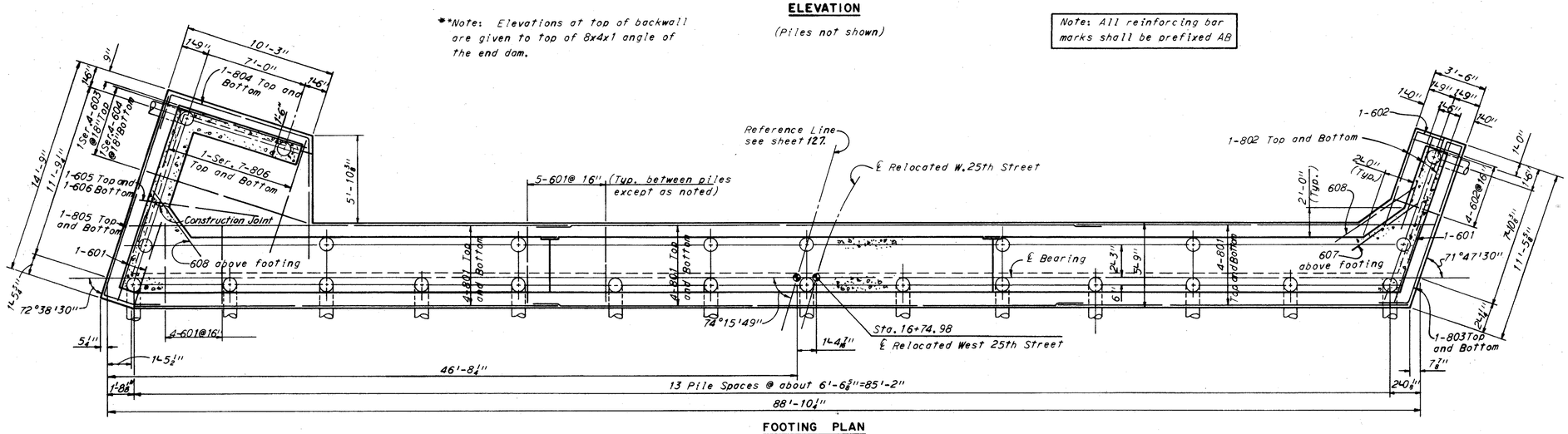
ELEVATION

(Piles not shown)

**Note: Elevations at top of backwall are given to top of 8x4x1 angle of the end dam.

Note: All reinforcing bar marks shall be prefixed AB

*Note:
Field cut reinforcement as required and place cut-offs diagonally at corners of opening.
Provide match in approach slab for M.E.L.P. Ducts.



FOOTING PLAN

Notes:
All piles shall be 12"ϕ C.I.P. Reinforced Concrete Piles.
For wingwall and counterfort details see sheet 131.
The following abbreviations are used:
nf = near face
ff = far face
ef = each face
For additional notes see sheet 129.

H.N.T.B. BRIDGE NO. 22

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

NORTHWEST ABUTMENT

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

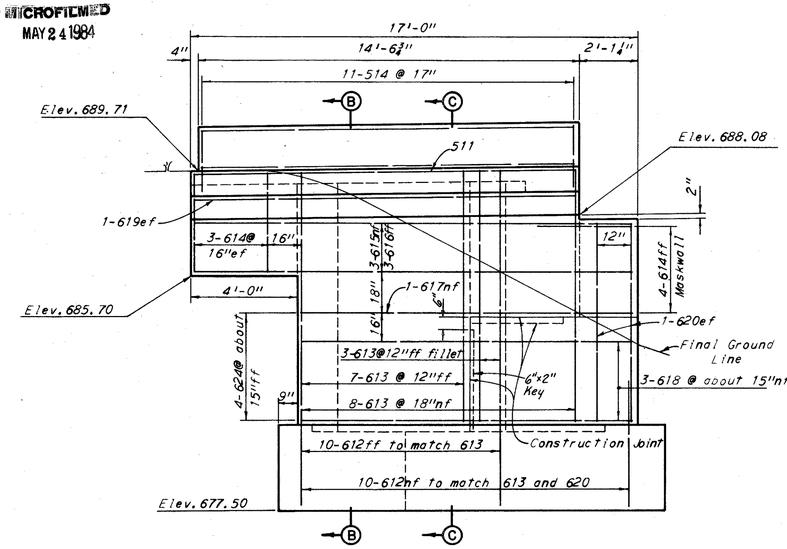
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED JEN	REVIEWED	REVISED
DATE 2-1265	DATE	DATE 3-11-65	DATE 3-2465	SHEET 130

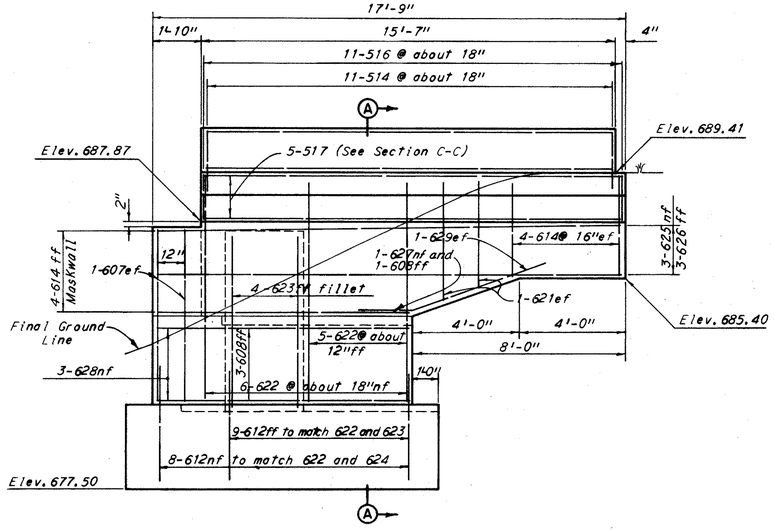
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

131
241

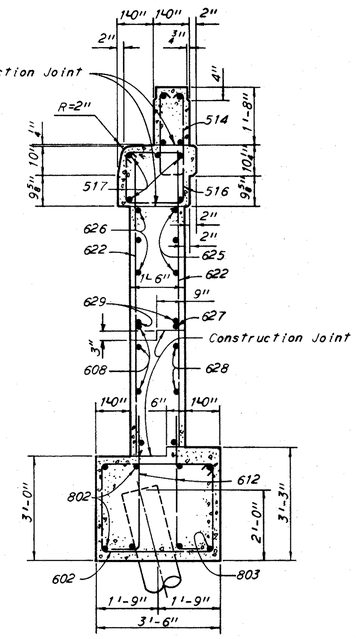
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



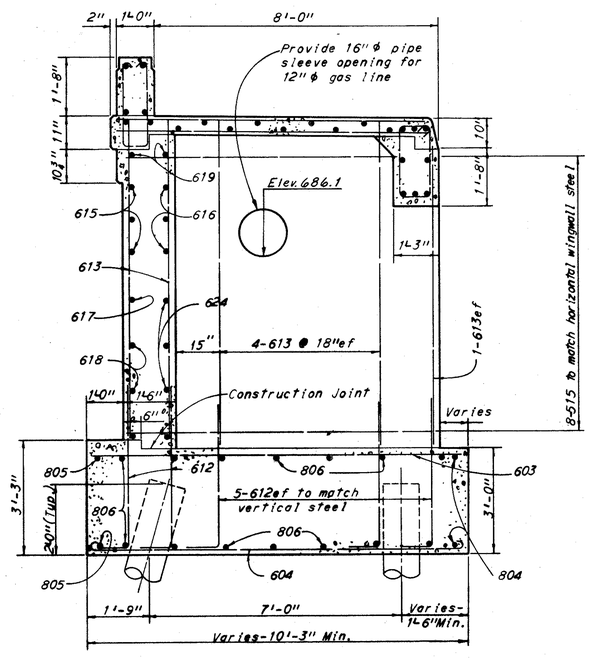
NORTHWEST WINGWALL ELEVATION
(Piles not shown)



NORTHEAST WINGWALL ELEVATION
(Piles not shown)

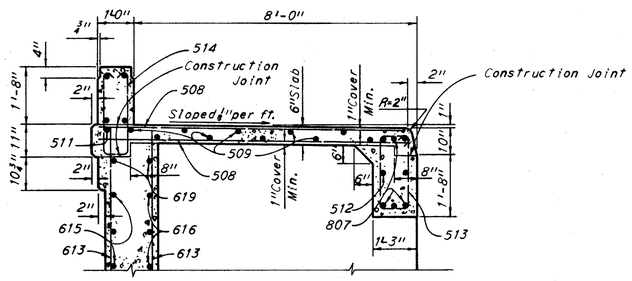


SECTION A-A
(Type "C" Railing not shown)



SECTION B-B
COUNTERFORT

Note: All reinforcing bar marks shall be prefixed AB



PART SECTION C-C
(Type "C" Railing not shown)

Notes:
All piles shall be 12" ϕ C.I.P. Reinforced Concrete Piles.
The following abbreviations are used:
nf = near face
ff = far face
ef = each face
For additional notes see sheet 129.

H.N.T.B. BRIDGE NO. 22

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

NORTHWEST ABUTMENT WINGWALLS AND COUNTERFORTS
I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

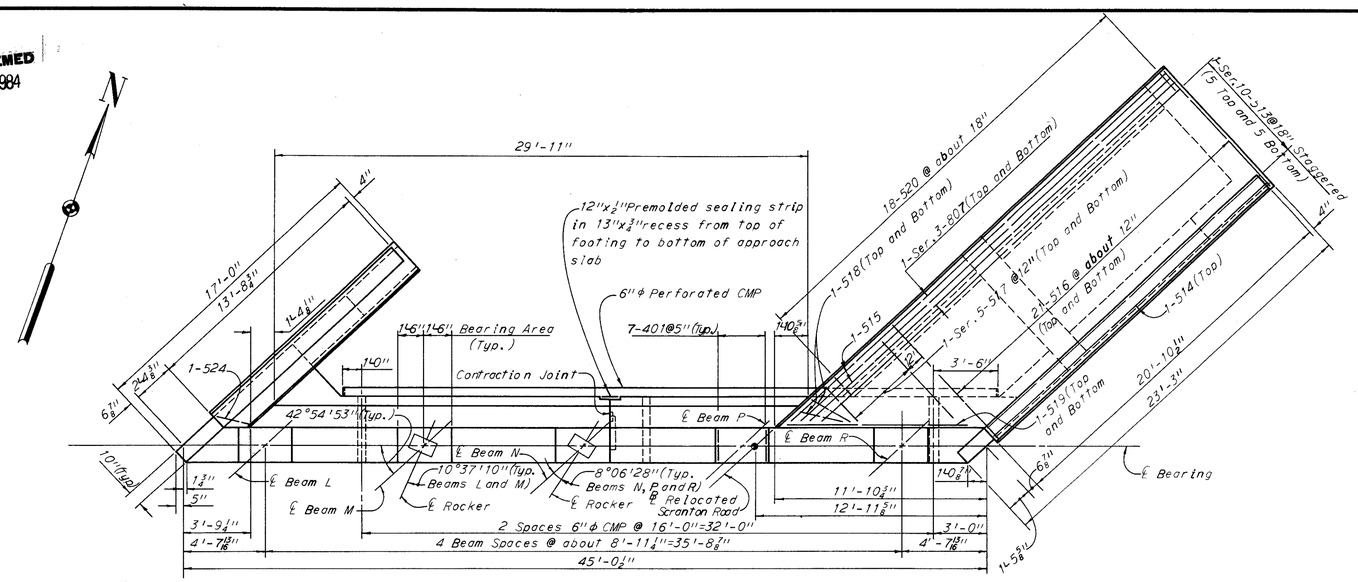
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-13-65	DATE	DATE 3-16-65	DATE 3-24-65	SHEET 131

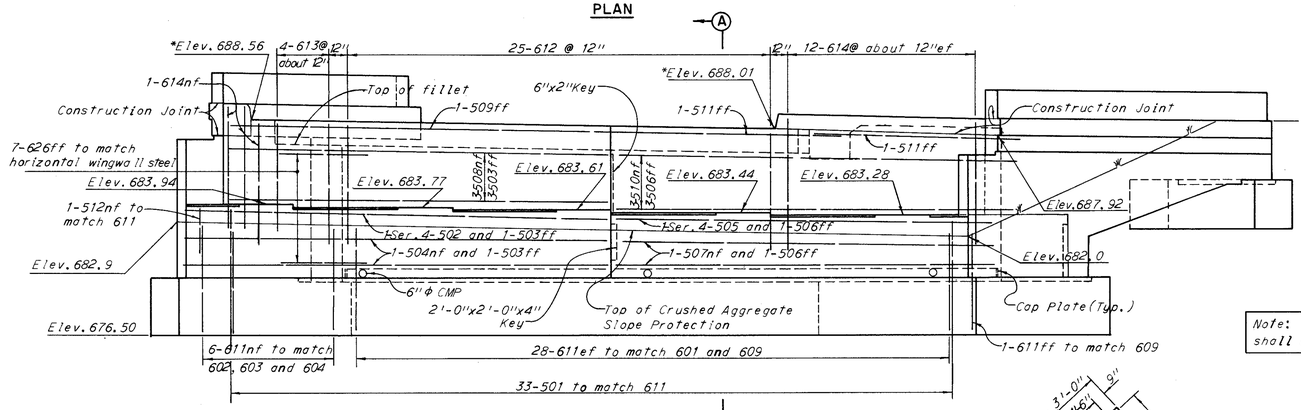
FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

132
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



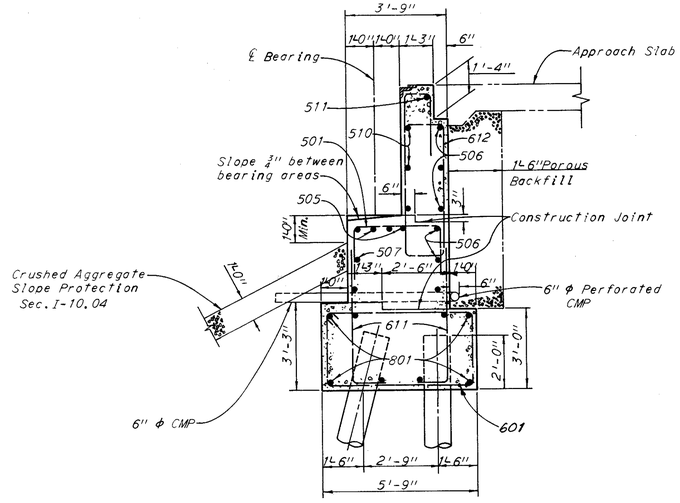
PLAN



*Note: Elevations at top of backwall are given to top of 8x4x1 angle of the end dam.

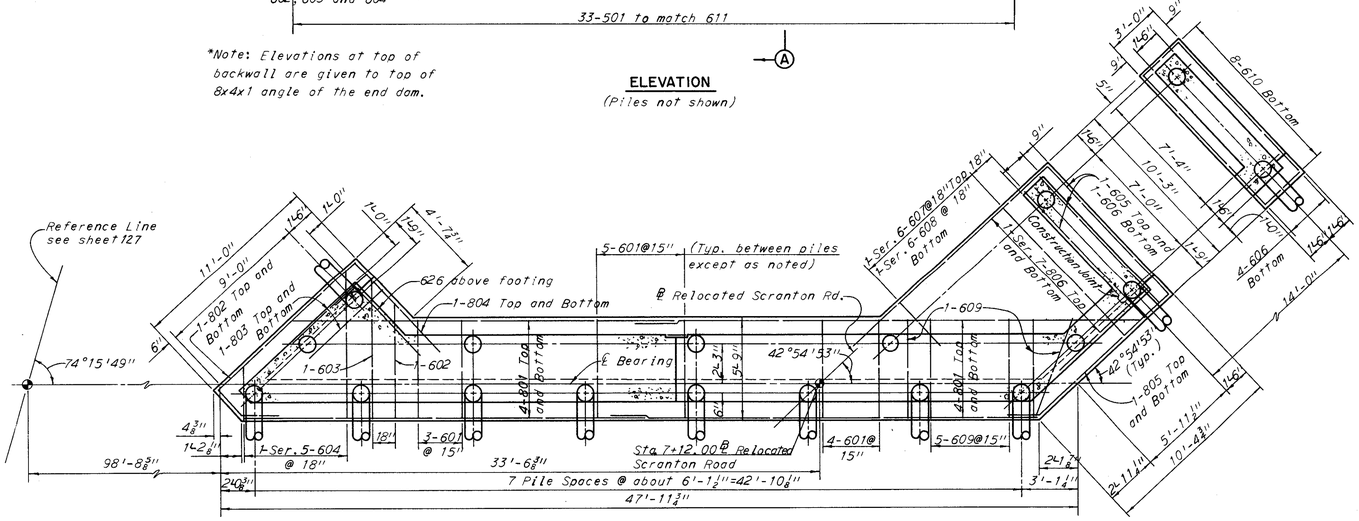
ELEVATION
(Piles not shown)

Note: All reinforcing bar marks shall be prefixed AC.



SECTION A-A

Notes:
All piles shall be 12" ϕ C.I.P. Reinforced Concrete Piles.
For Wingwall and Counterfort details see sheet 133.
The following abbreviations are used:
ef = each face
nf = near face
ff = for face
For special curb plate details at Abutment see sheet 146.
For additional notes see sheet 129.



FOOTING PLAN

H.N.T.B. BRIDGE NO. 22

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

NORTHEAST ABUTMENT

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

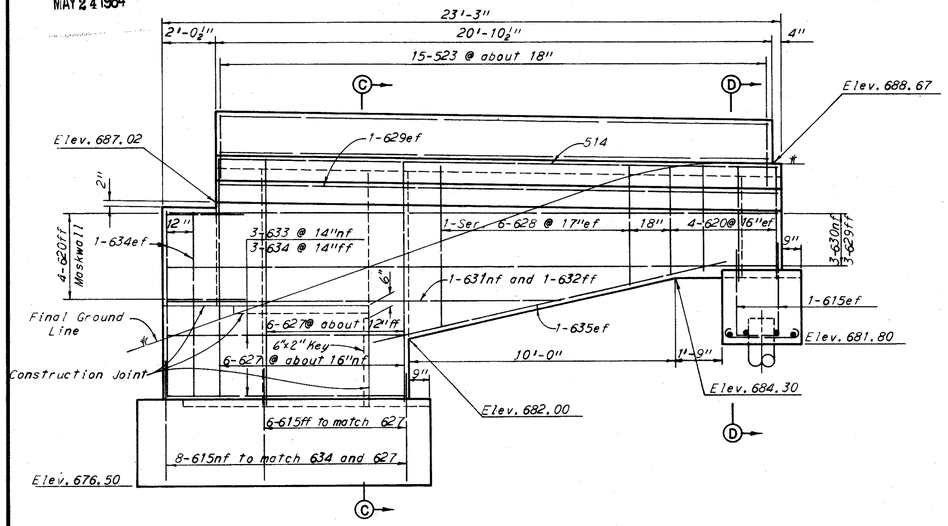
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 2-19-65	DATE	DATE 3-10-65	DATE 3-24-65	SHEET 132

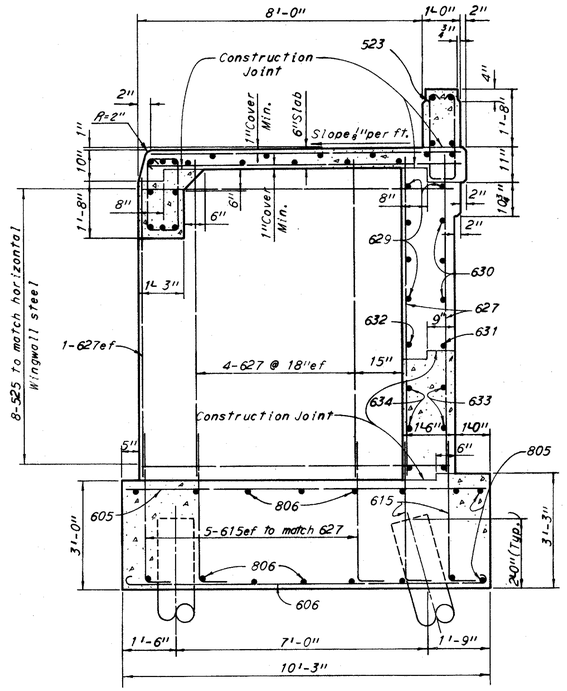
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

133
241

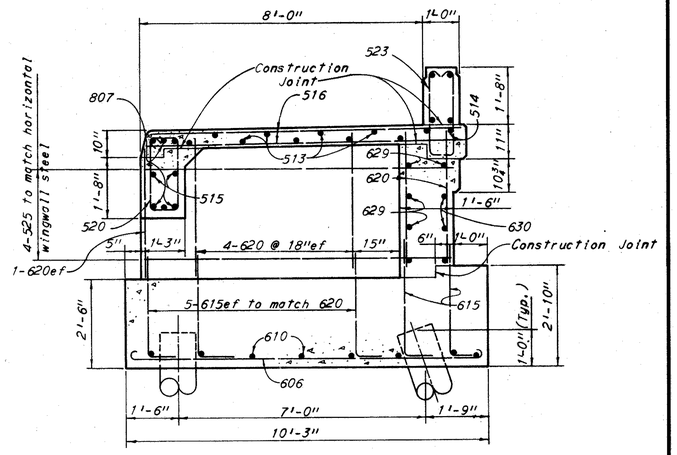
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



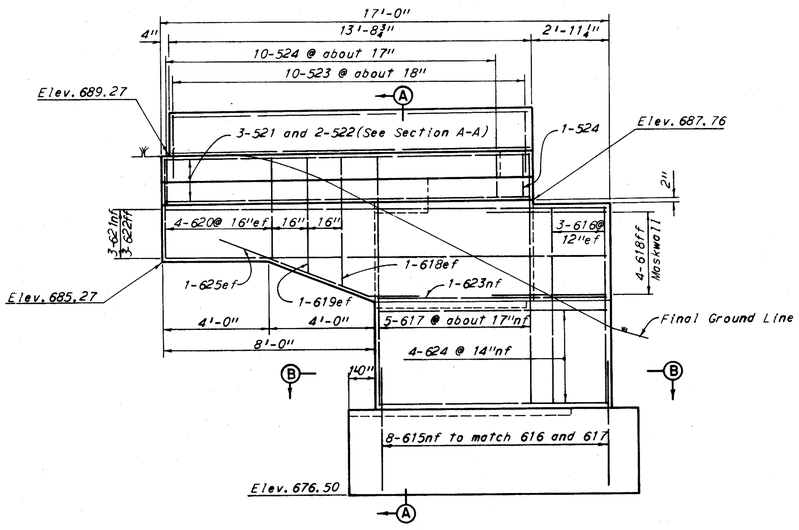
NORTHEAST WINGWALL ELEVATION
(Piles not shown)



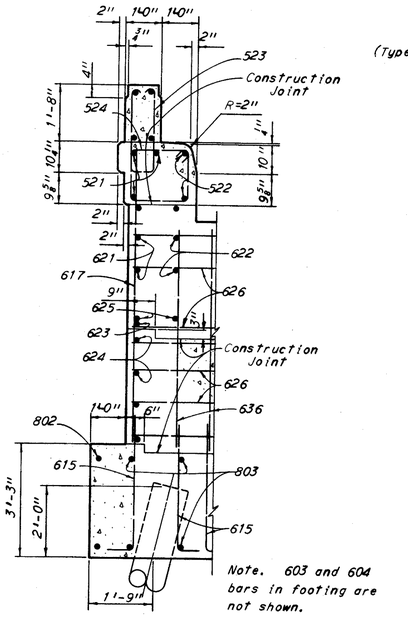
SECTION C-C
COUNTERFORT
(Type "C" Railing not shown)



SECTION D-D
COUNTERFORT
(Type "C" Railing not shown)



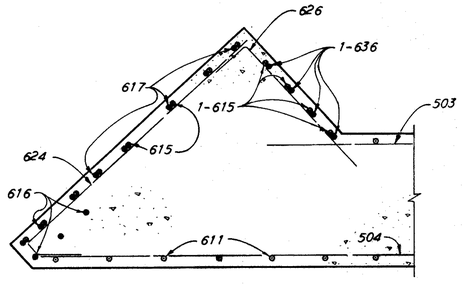
NORTHWEST WINGWALL ELEVATION
(Piles not shown)



Note. 603 and 604 bars in footing are not shown.

SECTION A-A
(Type "C" Railing not shown)

Note: All reinforcing bar marks shall be prefixed AC.



SECTION B-B

Notes:
All piles shall be 12"ϕ C.I.P. Reinforced Concrete Piles.
The following abbreviations are used:
nf = near face
ff = far face
ef = each face
For additional notes see sheet 129.

H.N.T.B. BRIDGE NO. 22

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

NORTHEAST ABUTMENT WINGWALLS AND COUNTERFORTS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

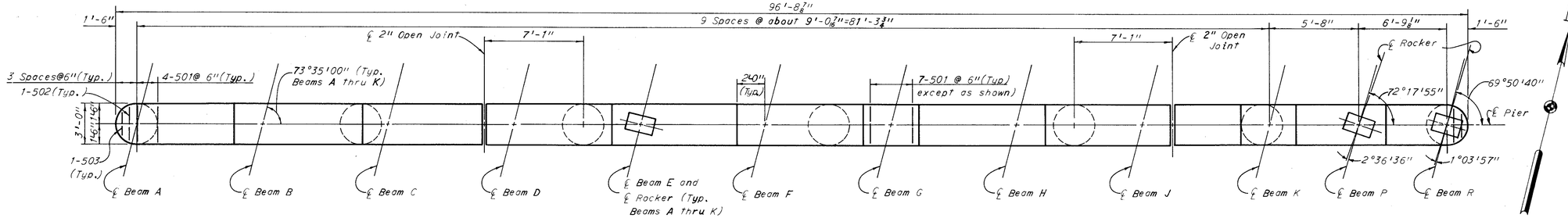
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN BWS	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-16-65	DATE	DATE 3-18-65	DATE 3-24-65	SHEET 133

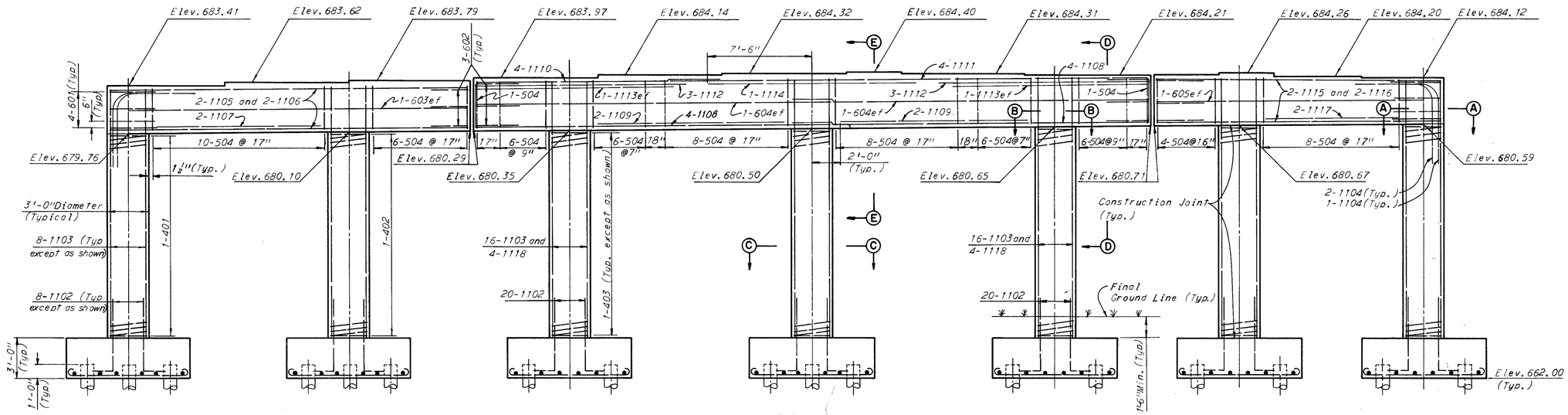
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

134
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

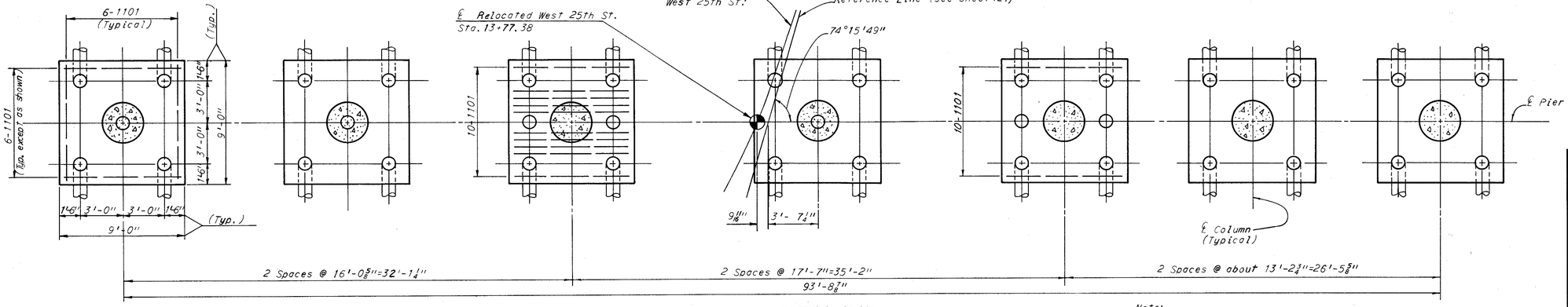


PLAN

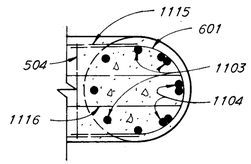


ELEVATION

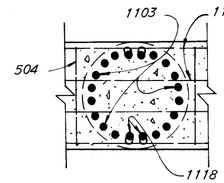
Note: All reinforcing bar marks shall be prefixed PA.



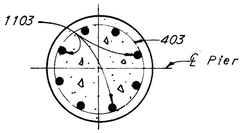
FOOTING PLAN



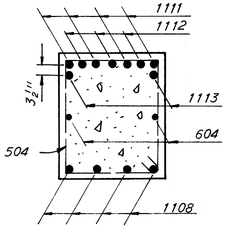
SECTION A-A



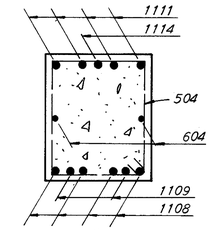
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

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

PIER I

1-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

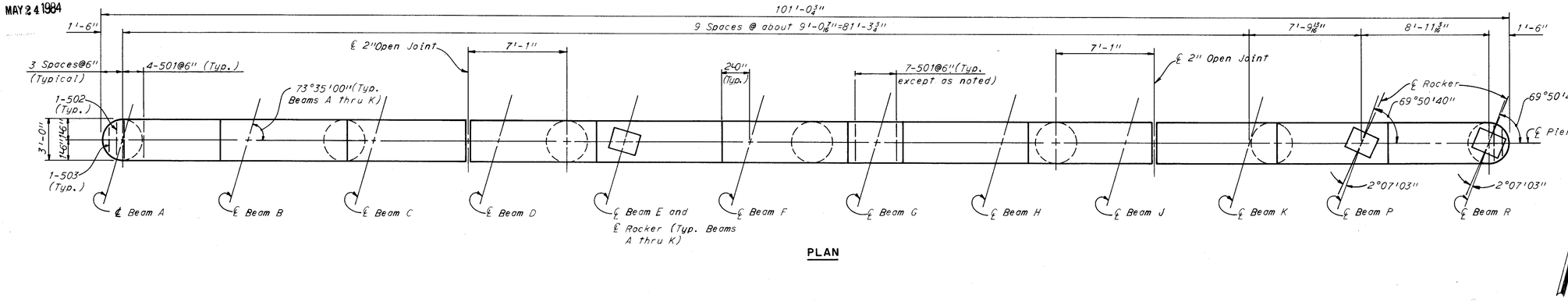
DRAWN SJE	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-19-65	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 134

Note: For notes see sheet 139

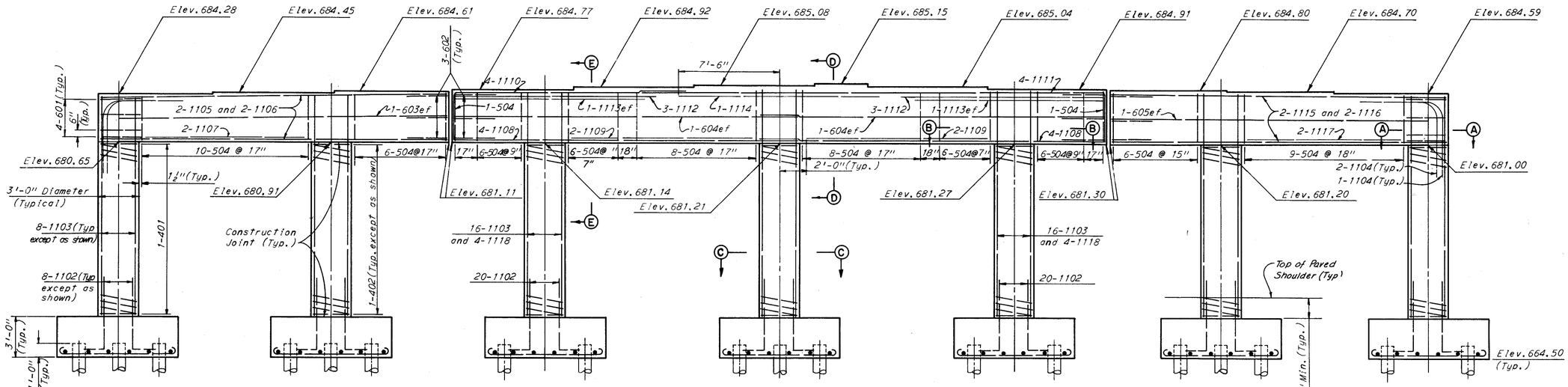
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

135
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

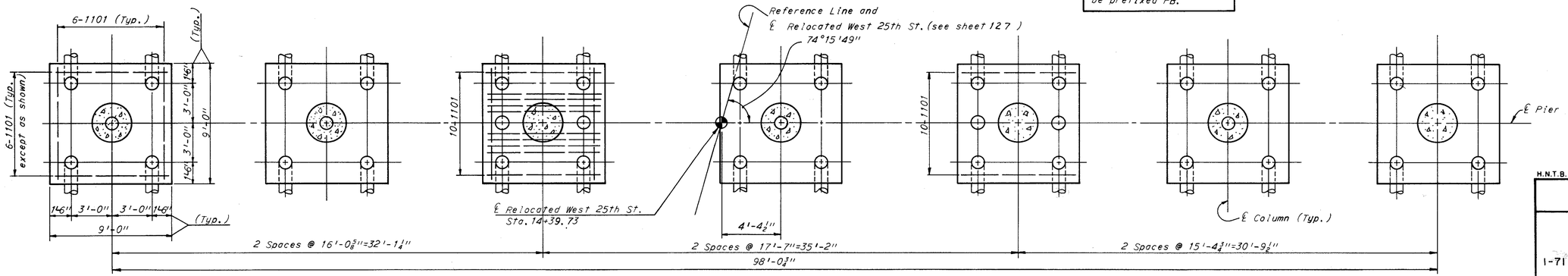


PLAN

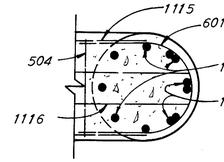


ELEVATION

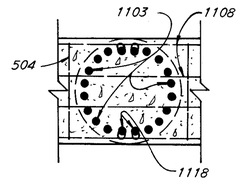
Note: All reinforcing bar marks shall be prefixed PB.



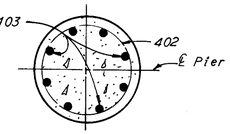
FOOTING PLAN



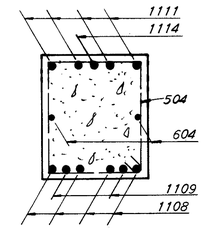
SECTION A-A



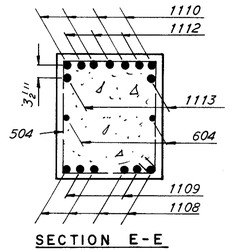
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

H.N.T.B. BRIDGE NO. 22

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

PIER 2

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

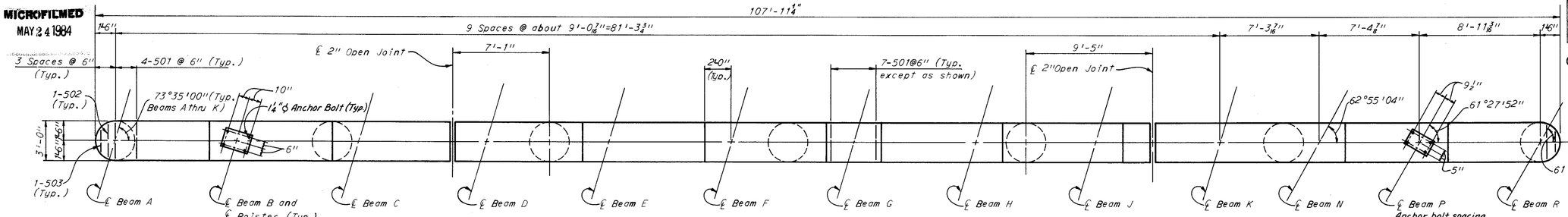
DRAWN SJE	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-19-65	DATE	DATE 3-12-65	DATE 3-26-65	SHEET 135

Note:
For notes see sheet 139.

FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

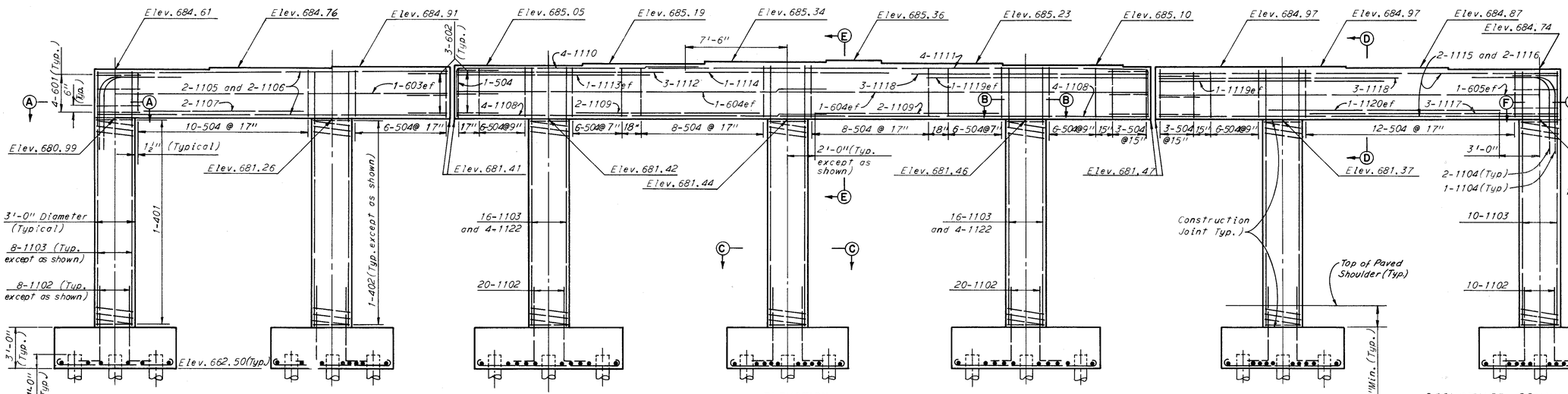
136
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



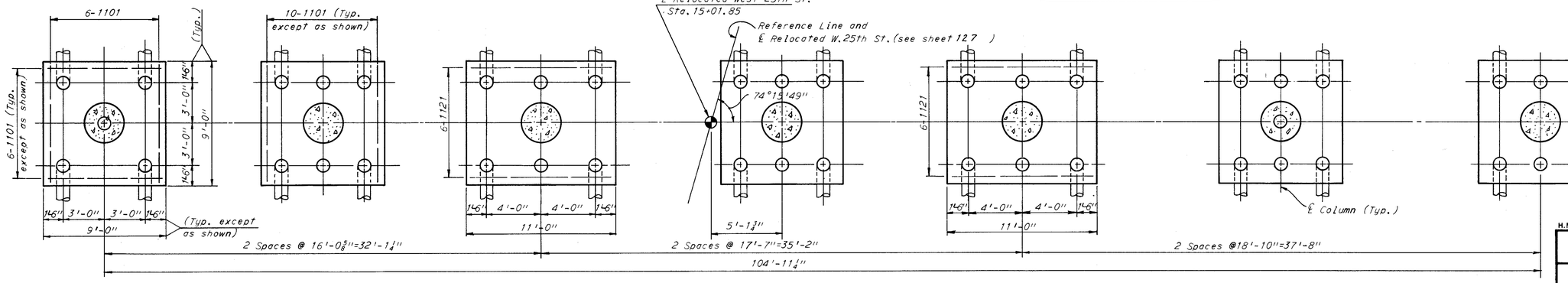
PLAN

Note: Special care shall be taken when placing reinforcing steel so as not to interfere with anchor bolt setting. For anchor bolt details see Ohio Standard Drawing RB-1-55.



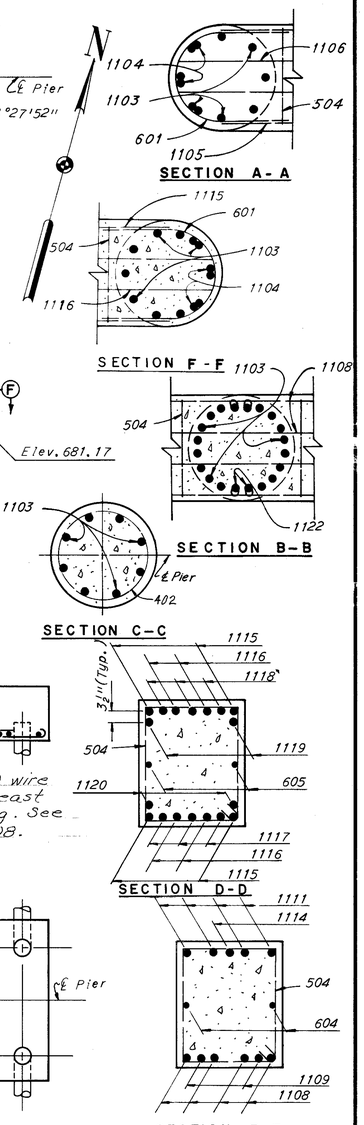
ELEVATION

Note: All reinforcing bar marks shall be prefixed PC.



FOOTING PLAN

Note: For notes see sheet 139



STRUCTURE GROUND wire extends thru cap, east column and footing. See note on sheet 208.

H.N.T.B. BRIDGE NO. 22

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

PIER 3

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

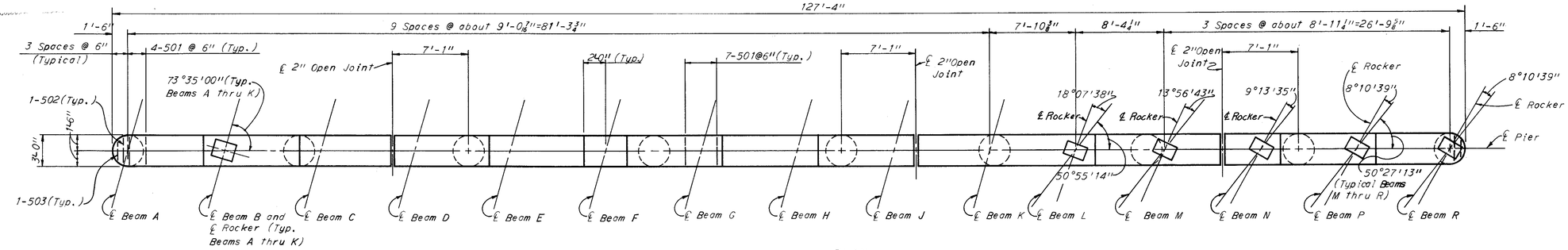
DRAWN GJE	TRACED	CHECKED JEN	REVIEWED WE	REVISED
DATE 2-19-65	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 136

NOT APPROVED
MAY 24 1984

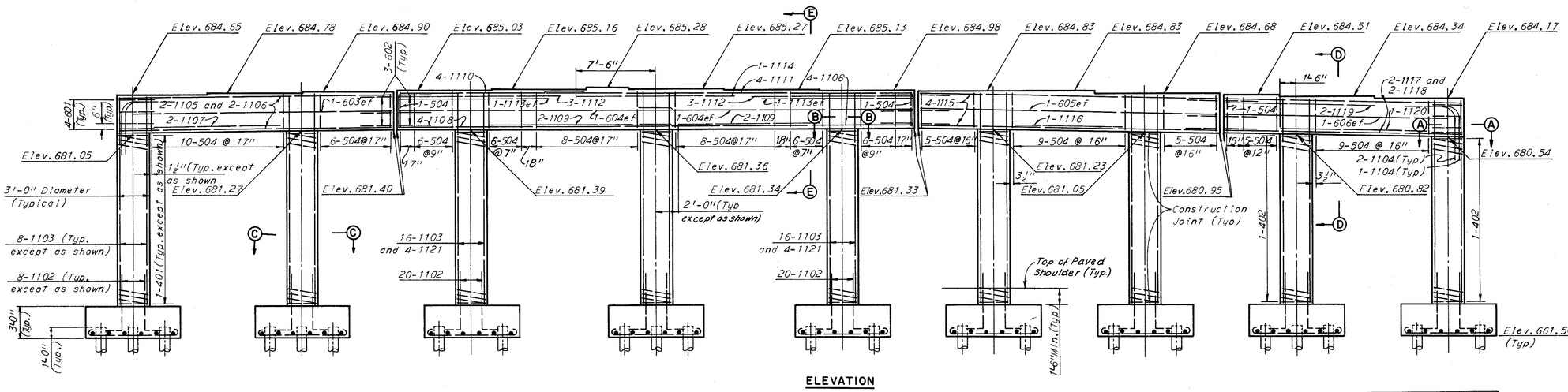
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

137
241

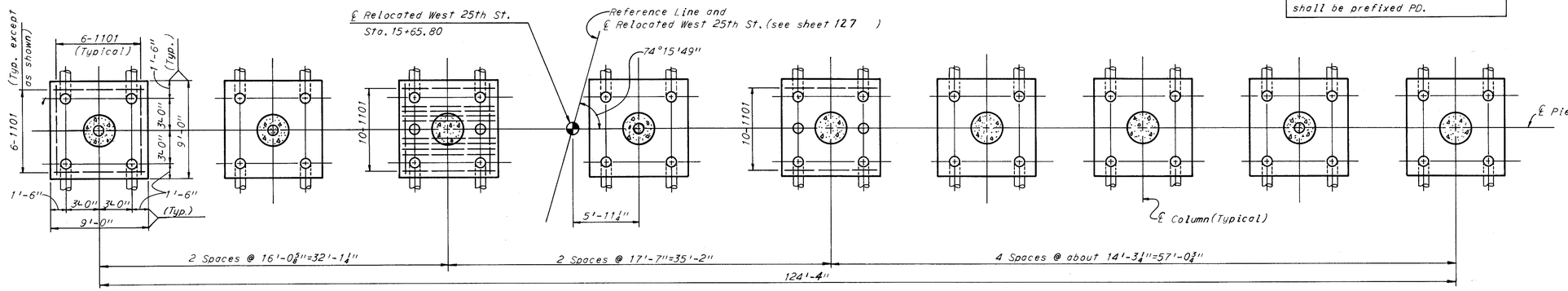
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



PLAN

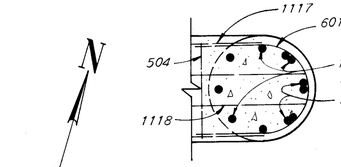


ELEVATION

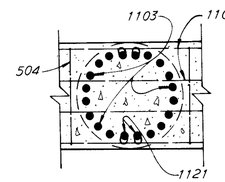


FOOTING PLAN

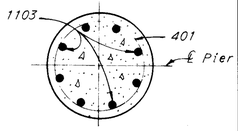
Note:
For notes see sheet 139.



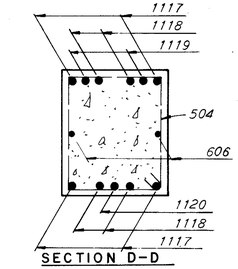
SECTION A-A



SECTION B-B



SECTION C-C



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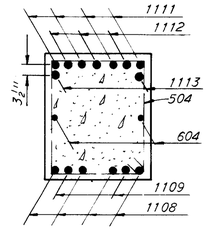

SECTION E-E

H.N.T.B. BRIDGE NO. 22

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

PIER 4

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED JEN	REVIEWED WE	REVISED
DATE 2-19-65	DATE	DATE 3-11-65	DATE 3-24-65	SHEET 137

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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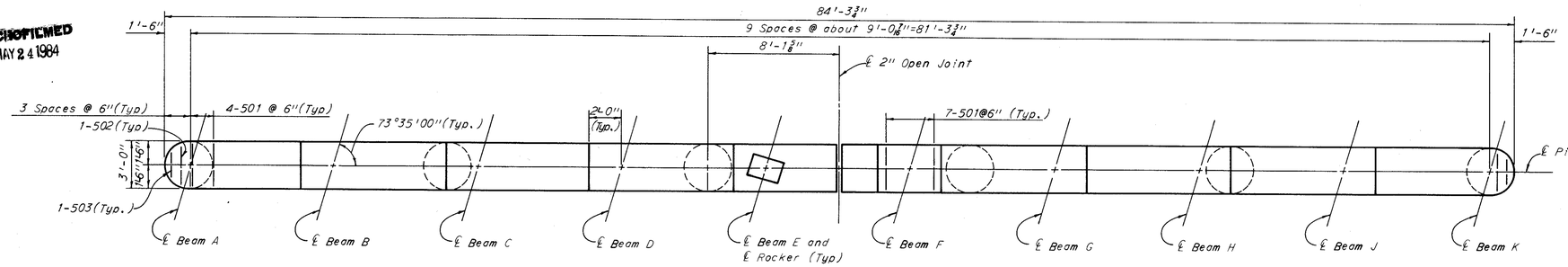
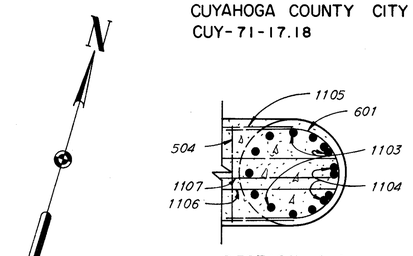
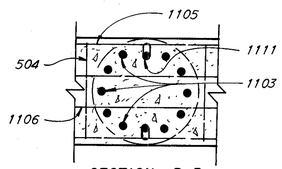
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



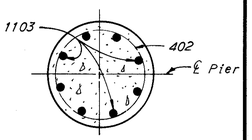
PLAN



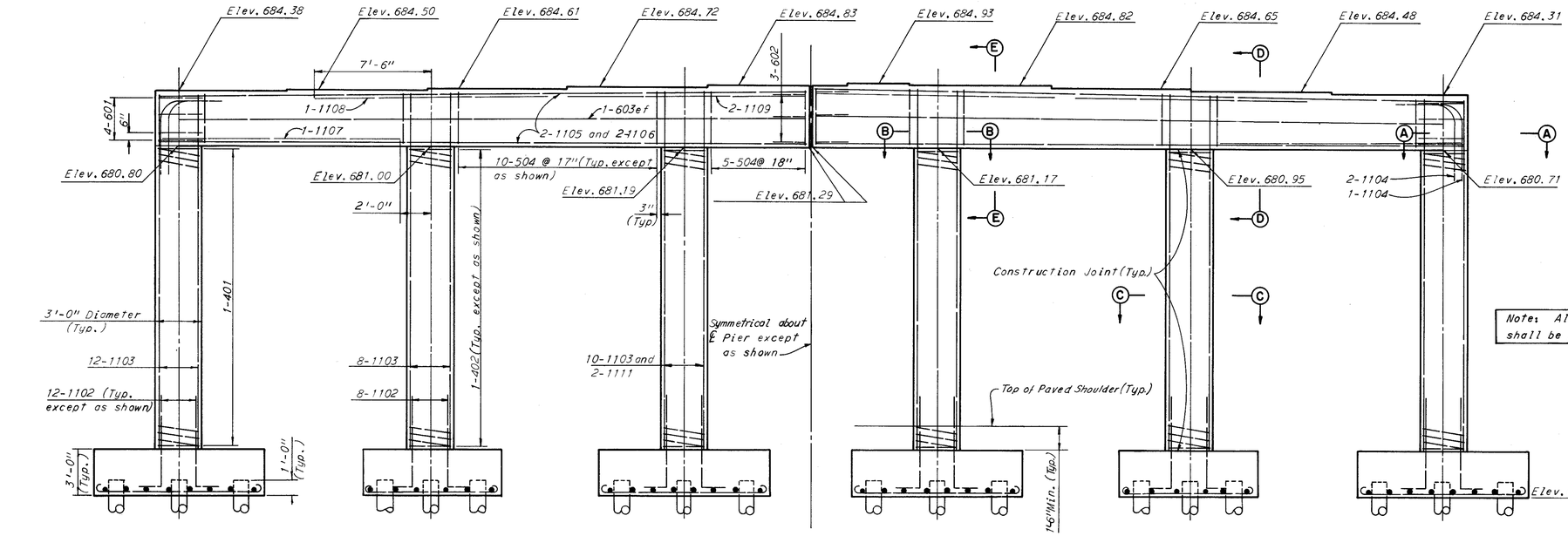
SECTION A-A



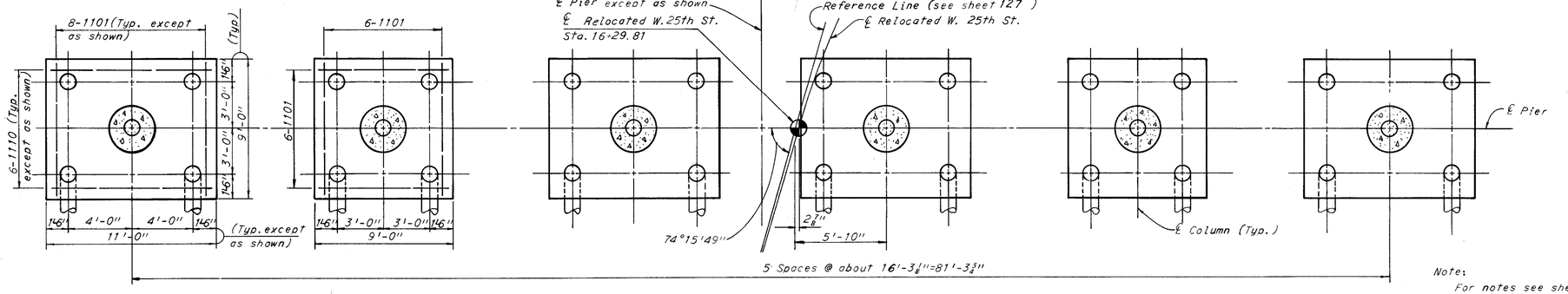
SECTION B-B



SECTION C-C



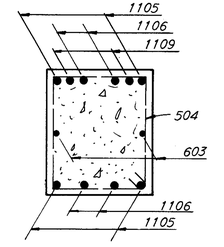
ELEVATION



FOOTING PLAN

Note: All reinforcing bar marks shall be prefixed PE.

SECTION D-D



SECTION E-E

Note:
For notes see sheet 139.

H.N.T.B. BRIDGE NO. 22

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

PIER 5W

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
S.S.E.		J.E.N.	W.C.	
DATE 2-19-65	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 138

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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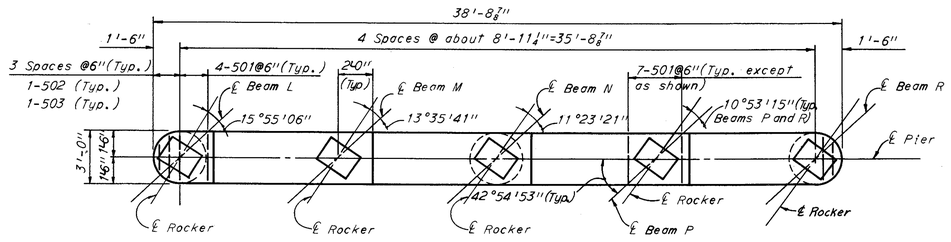
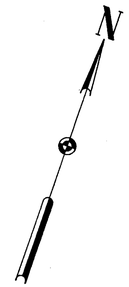
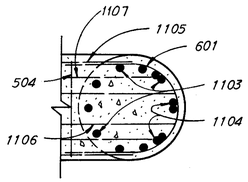
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

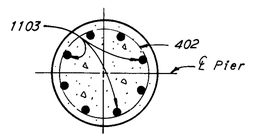


PLAN

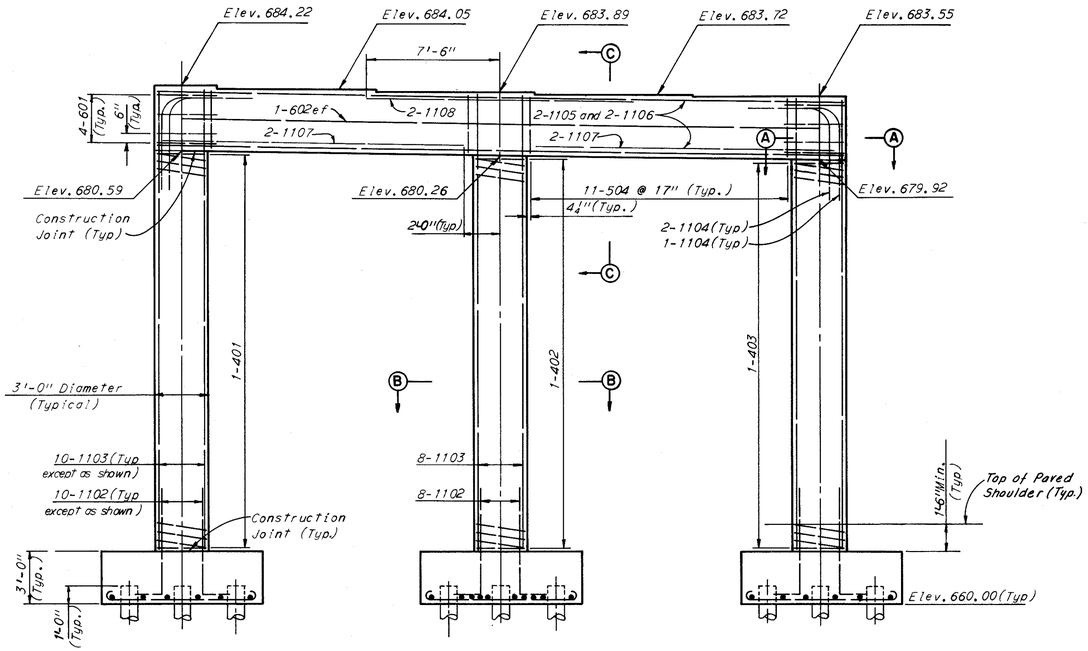




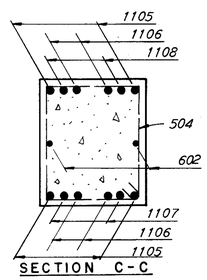
SECTION A-A



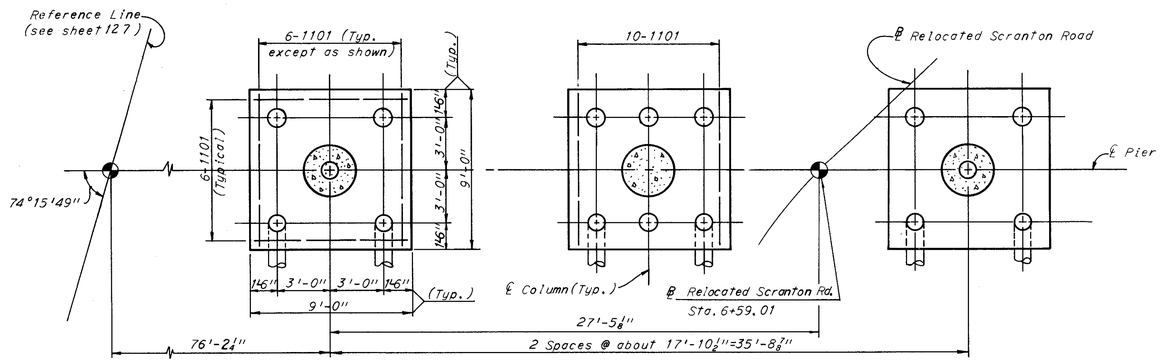
SECTION B-B



ELEVATION



SECTION C-C



FOOTING PLAN

Notes:
All piles are 12"ϕ C.I.P. Reinforced Concrete.
All battered piles shall be inclined 3 in 12 in the direction shown.
Pile layout dimensions are measured along bottom of footing.
For Reinforcement Schedule and Bar Bending Diagrams see sheet 150.
The following abbreviation is used:
ef = each face

Note: All reinforcing bar marks shall be prefixed FF.

H.N.T.B. BRIDGE NO. 22

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

PIER 5E

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN S.T.G.	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 2-19-65	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 139

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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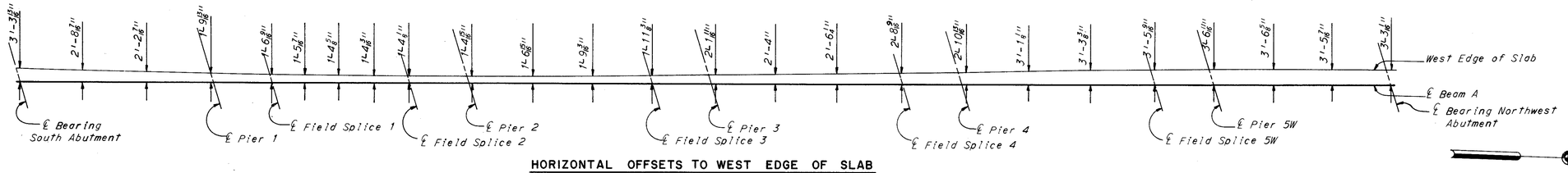
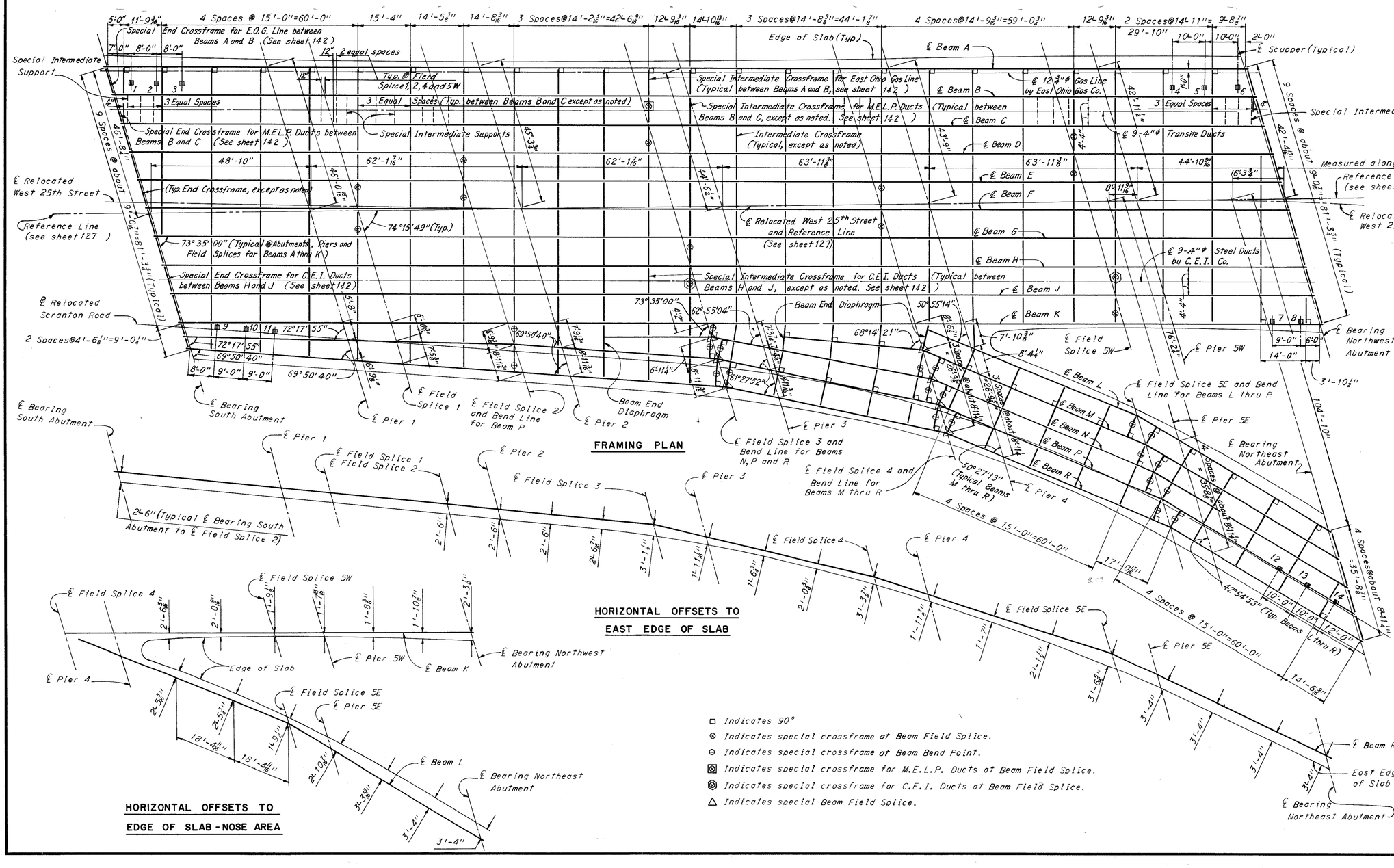
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



HORIZONTAL OFFSETS TO WEST EDGE OF SLAB



FRAMING PLAN

HORIZONTAL OFFSETS TO EAST EDGE OF SLAB

HORIZONTAL OFFSETS TO EDGE OF SLAB - NOSE AREA

- □ Indicates 90°
- ⊗ Indicates special crossframe at Beam Field Splice.
- ⊖ Indicates special crossframe at Beam Bend Point.
- ▣ Indicates special crossframe for M.E.L.P. Ducts at Beam Field Splice.
- ▣ Indicates special crossframe for C.E.I. Ducts at Beam Field Splice.
- △ Indicates special Beam Field Splice.

Note: Omit the ½" side plates on the Rockers and Bolsters at the locations shown in the table below.

SUBSTRUCTURE	BEAM
South Abut.	A, B, P and R
Pier 1	A, B, P and R
Pier 2	A, B, P and R
Pier 3	A, B, P and R
Pier 4	A, B, P and R
Pier 5	A, B, J and K
North Abut.	A, B, J and K

Notes:

For locations and details of 8 E11.5, underpass luminaire supports, see lighting Plans sheet 217. Support channel and connection angles are included with Item 5-7 for payment.

Horizontal offsets to edge of slab are measured perpendicular to ℄ Beam at quarter points between field splices or between abutment and field splice except as noted. At beam bend points the horizontal offset is measured perpendicular to the southerly beam.

For railing post and parapet joint spacing see sheet 147.

For additional details of railing, see Ohio Standard Drawing, AR-1-57.

For details of Rockers and Bolsters, see Ohio Standard Drawing, RB-1-55.

For crossframe details see sheet 142.

For special curb plate details at Northeast Abutment see sheet 146.

For additional details of end crossframes, roadway and sidewalk end dams and curb plates, see Ohio Standard Drawing SD-1-63, sheet 2 of 4 and 4 of 4.

The supporting angle shown in the "Roadway End Dam Data" table shall be increased from 6x4x⅜ to 8x4x⅜.

For reinforcement schedule and bar bending diagrams see sheet 151.

For drainage details see sheet 147.

For details of beam field splices see sheet 142.

H.N.T.B. BRIDGE NO. 22

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

FRAMING PLAN

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN LJD	TRACED	CHECKED DBS	REVIEWED WE	REVISED
DATE 3-5-65	DATE	DATE 3-9-65	DATE 3-24-65	SHEET 140

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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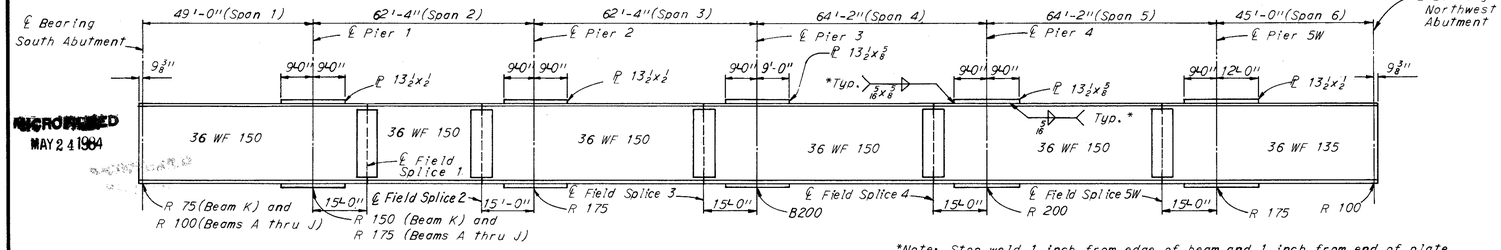
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

MICROFILMED MAY 24 1984

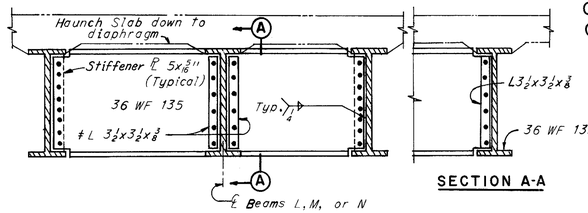
Note: Cover plate lengths and sizes shown are typical for top and bottom.



*Note: Stop weld 1 inch from edge of beam and 1 inch from end of plate.

BEAMS A THRU K

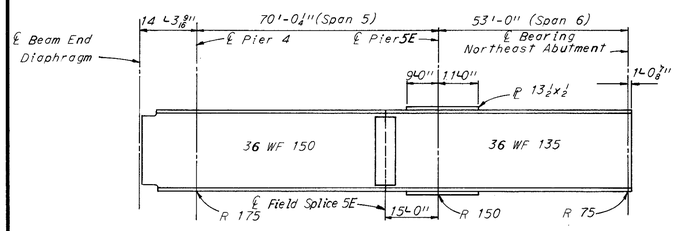
Note: Bent angles @ Beam L

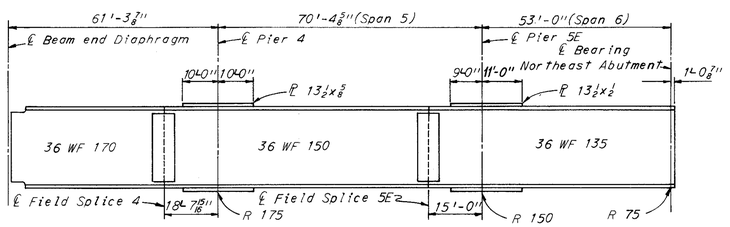


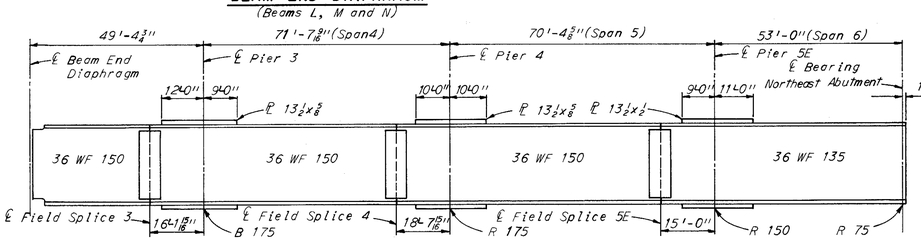
SECTION A-A

BEAM END DIAPHRAGM
(Beams L, M and N)

Note: Beam end diaphragm field connections shall be made with 7/8" ø high strength bolts.



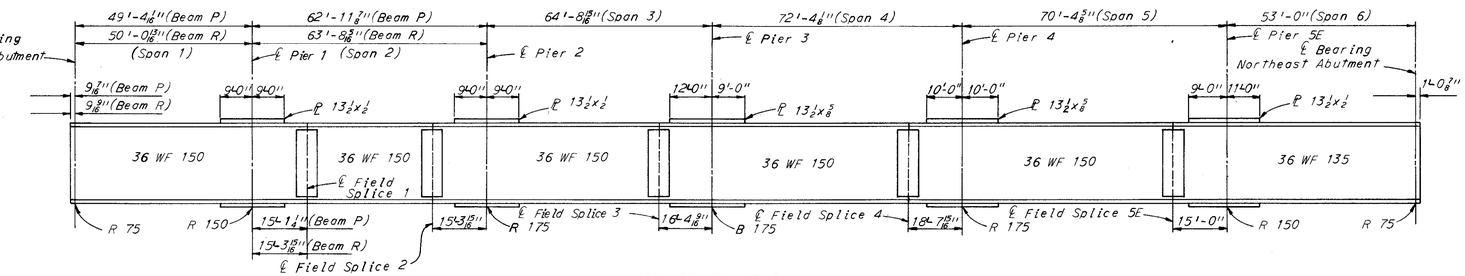




BEAM L

BEAM M

BEAM N



BEAMS P AND R

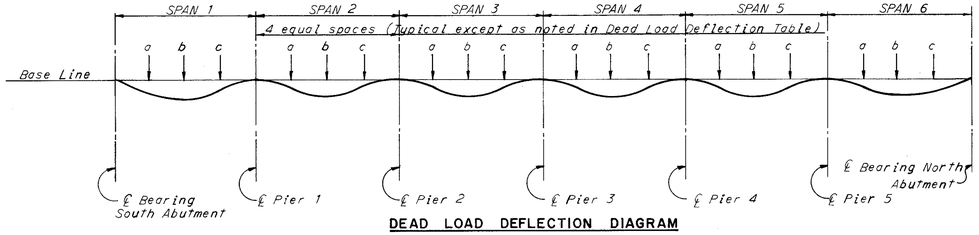
DEAD LOAD DEFLECTIONS

BEAM	SPAN 1						SPAN 2					
	a		b		c		a		b		c	
	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.
A	3/16	3/16	1/4	5/16	1/16	1/16	1/16	1/16	3/16	1/8	1/16	1/16
B thru J	3/16	1/8	3/16	5/16	1/16	1/16	1/8	1/8	1/4	3/16	1/16	1/16
K	1/8	1/8	1/8	1/8	1/16	1/16	1/8	1/16	3/16	1/16	1/16	1/16
L												
M												
N											±1/16	±1/16
P	1/8	1/8	1/8	1/8	1/16	0	1/8	1/8	1/4	3/16	1/16	1/16
R	1/8	1/8	1/8	1/8	1/16	1/16	1/8	1/8	1/4	1/4	1/8	1/8

BEAM	SPAN 3						SPAN 4					
	a		b		c		a		b		c	
	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.
A	1/16	1/16	3/16	1/8	1/16	1/16	1/8	1/8	1/4	3/16	1/16	1/16
B thru J	1/16	1/16	3/16	1/16	1/16	1/16	1/8	1/8	1/4	5/16	1/8	1/16
K	1/16	1/16	3/16	1/8	1/16	1/16	1/8	1/8	3/16	1/8	0	0
L											±1/16	±1/16
M					±1/16	±1/16	3/16	5/16	7/16	3/16	1/8	1/8
N					-1/16	-1/16	5/16	1/4	2/16	1/16	1/4	1/8
P	1/8	1/8	3/16	1/16	1/16	1/16	1/4	1/4	2/16	1/16	1/4	1/8
R	1/8	1/8	3/16	3/16	1/16	1/16	1/4	3/16	7/16	3/8	1/4	3/16

BEAM	SPAN 5						SPAN 6					
	a		b		c		a		b		c	
	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.	Tot.	Con.
A	3/16	3/16	3/8	5/16	1/4	3/16	0	0	1/8	1/8	1/8	1/8
B thru J	1/8	1/8	5/16	1/4	3/16	1/8	0	0	1/8	1/8	1/8	1/16
K	3/16	1/8	5/16	1/4	3/16	1/8	0	0	1/16	1/16	1/16	1/16
L	5/16	1/8	1/4	1/8	1/4	1/4	1/8	1/8	5/16	1/4	1/4	1/4
M	1/8	1/8	5/16	1/4	3/16	1/8	1/16	1/16	3/16	1/8	3/16	1/8
N	1/16	1/16	1/4	1/4	1/8	1/8	1/16	1/16	1/16	3/16	3/16	1/8
P	1/8	1/8	5/16	1/4	1/8	1/8	1/16	1/16	3/16	1/8	1/8	1/16
R	1/8	1/8	5/16	5/16	5/16	1/4	1/8	1/8	1/16	1/16	1/16	1/16

*Deflection at beam end diaphragm



DEAD LOAD DEFLECTION DIAGRAM

Notes:

For details of beam field splices see sheet 142.

Dead Load Deflections and Convexity Corrections are measured to nearest 1/16 inch.

Tot. denotes total deflection of concrete and steel.

Con. denotes deflections due to dead load of concrete only.

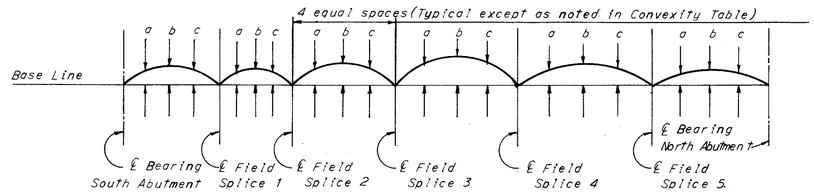
Negative values indicate convexity below the base line or deflection above the base line.

For additional notes see sheet 140.

BEAM	CONVEXITY CORRECTIONS																								
	℄ S. Abutment	a	b	c	℄ Field Splice 1	a	b	c	℄ Field Splice 2	a	b	c	℄ Field Splice 3	a	b	c	℄ Field Splice 4	a	b	c	℄ Field Splice 5	a	b	c	℄ N. Abutment
A	0	1/16	5/16	8/16	0	8/16	4/16	8/16	0	1/2	8/16	9/16	0	9/16	8/16	9/16	0	9/16	7/16	7/16	0	8/16	7/16	8/16	0
B	0	3/16	5/16	4/16	0	8/16	3/16	7/16	0	1/2	8/16	9/16	0	8/16	8/16	9/16	0	8/16	8/16	8/16	0	8/16	8/16	8/16	0
C	0	1/16	1/16	0	0	8/16	1/16	1/16	0	9/16	8/16	9/16	0	8/16	8/16	9/16	0	7/16	6/16	7/16	0	7/16	6/16	7/16	0
D	0	6/16	7/16	5/16	0	10/16	4/16	8/16	0	7/16	5/16	5/16	0	11/16	9/16	8/16	0	7/16	5/16	5/16	0	5/16	5/16	4/16	0
E	0	8/16	7/16	3/16	0	8/16	8/16	0	0	1/2	5/16	7/16	0	5/16	8/16	7/16	0	3/16	8/16	7/16	0	3/16	5/16	3/16	0
F	0	3/16	3/16	5/16	0	10/16	8/16	10/16	0	1/2	5/16	0	0	7/16	8/16	2/16	0	7/16	8/16	3/16	0	5/16	7/16	9/16	0
G	0	4/16	2/16	2/16	0	10/16	8/16	10/16	0	0/16	8/16	0/16	0	8/16	3/16	2/16	0	10/16	10/16	0/16	0	8/16	4/16	6/16	0
H	0	3/16	5/16	7/16	0	10/16	3/16	0/16	0	7/16	5/16	3/16	0	2/16	11/16	5/16	0	5/16	3/16	3/16	0	5/16	3/16	5/16	0
J	0	7/16	5/16	1/16	0	8/16	8/16	8/16	0	1/2	5/16	3/16	0	7/16	11/16	9/16	0	13/16	1	3/4	0	5/16	3/16	0/16	0
K	0	1/2	5/16	0	0	8/16	5/16	7/16	0	0/16	5/16	0/16	0	2/16	3/4	1/2	0	3/4	1	13/16	0	1/16	1/16	-1/16	0
L																		*5/16	*0	*1/16	0	0	0	1/16	-1/16	0
M																		*5/16	0	1/16	-1/16	-3/16	0	-1/16	0	-1/16	0
N																											
P	0	1/2	3/4	5/8	0	5/16	4/16	1/16	0	9/16	5/8	7/16	0	4/16	3/8	2/16	0	3/16	2/16	1/16	0	-1/16	-3/16	-4/16	0	-1/16	-1/16
R	0	1/2	1/2	1/2	0	0	3/16	1/16	0	7/16	5/16	3/16	0	3/16	1 1/16	13/16	0	-3/16	-5/16	-4/16	0	0	0	0	0	0	0

*Convexity at 1/4 points between beam end diaphragm and field splice.

**Convexity at 1/2 point between beam end diaphragm and field splice.



CONVEXITY DIAGRAM

BEAM CAMBER NOTE

Beams shall be cambered for the combined effects of total dead load deflection and convexity.

H.N.T.B. BRIDGE NO. 22

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

SUPERSTRUCTURE DETAILS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

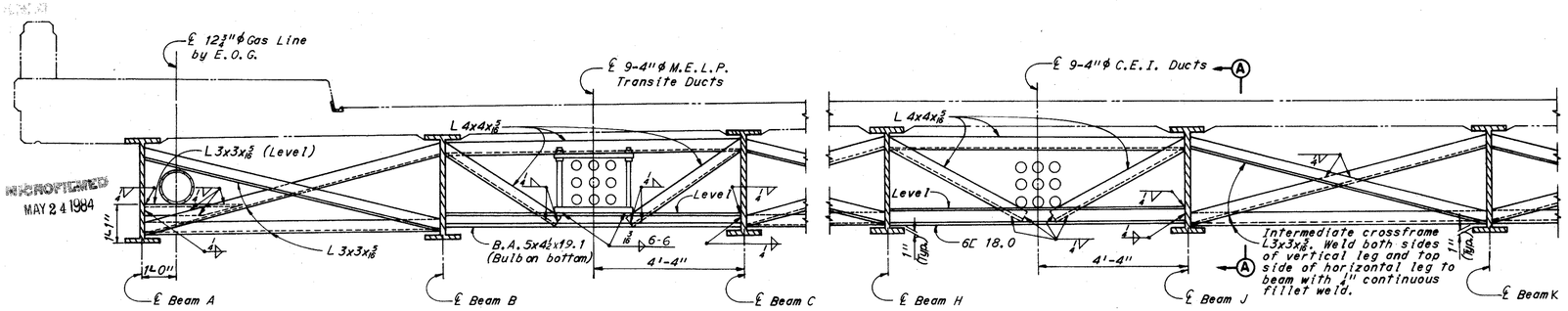
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN LJD	TRACED	CHECKED DAG	REVIEWED WLF	REVISED
DATE 3-3-65	DATE	DATE 3-9-65	DATE 3-24-65	SHEET 141

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

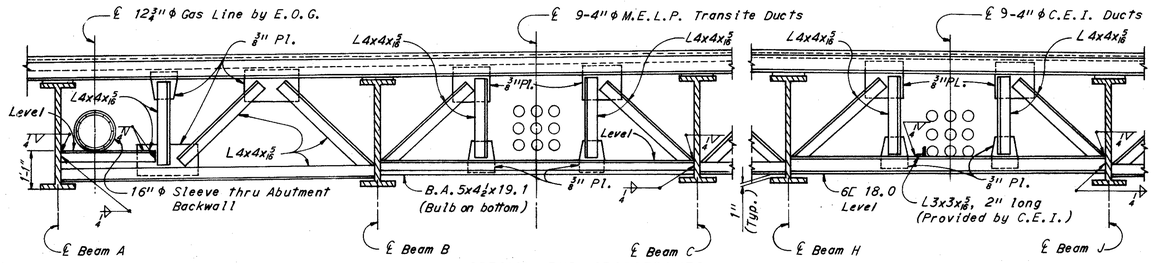
142
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



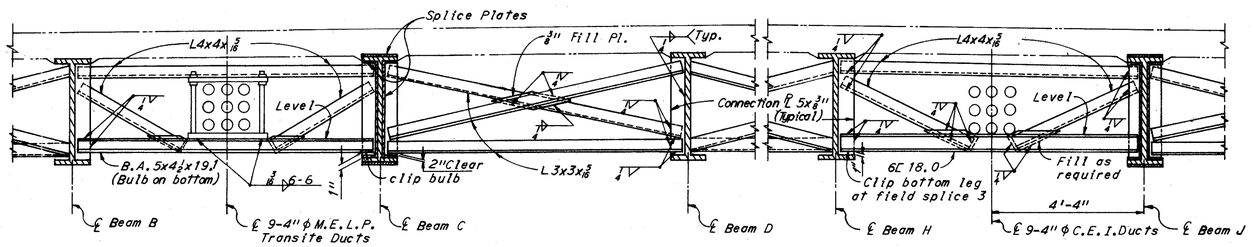
SPECIAL INTERMEDIATE CROSSFRAME | SPECIAL INTERMEDIATE CROSSFRAME | SPECIAL INTERMEDIATE CROSSFRAME | TYPICAL INTERMEDIATE CROSSFRAME

INTERMEDIATE CROSSFRAMES



SPECIAL END CROSSFRAMES

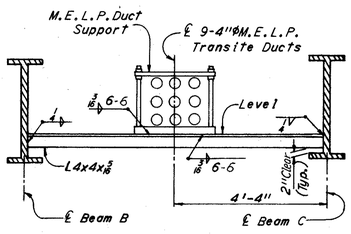
(For typical end crossframe and for additional details and welds not shown above, see Ohio Standard Drawing SD-1-63, sheet 2 of 4.



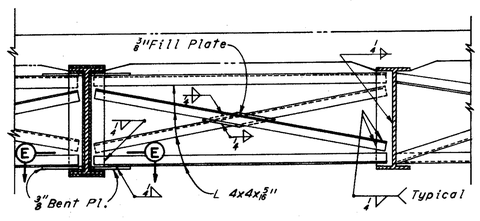
SPECIAL CROSSFRAME AT FIELD SPLICE FOR M.E.L.P. DUCTS

SPECIAL CROSSFRAME AT FIELD SPLICE
(With no direction change)

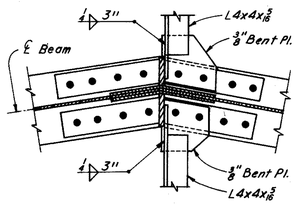
SPECIAL CROSSFRAME AT FIELD SPLICE FOR C.E.I. DUCTS



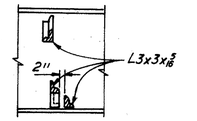
INTERMEDIATE M.E.L.P. SUPPORT



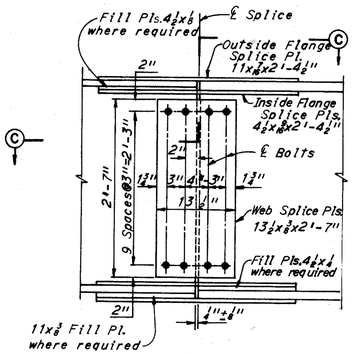
SPECIAL CROSSFRAME AT FIELD SPLICE BEND POINTS



SECTION E-E

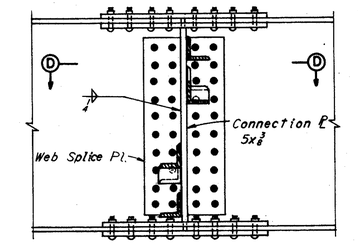


SECTION A-A

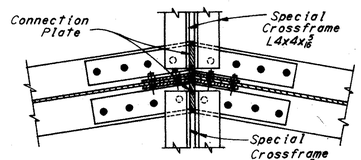


Note: Connection plate for crossframes where required not shown.

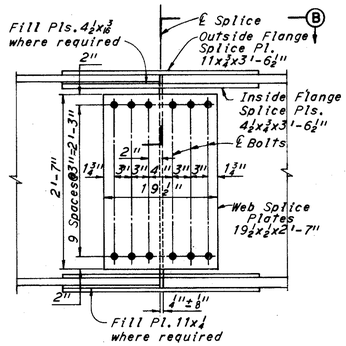
BEAM FIELD SPLICE
(Typical except as noted)



CONNECTION PLATE DETAIL AT FIELD SPLICE
(Shown at Bend Point. Detail similar at straight splices)



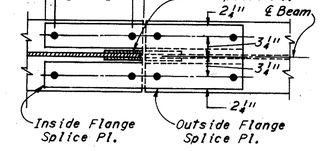
SECTION D-D



Note: Connection plate for crossframes where required not shown.

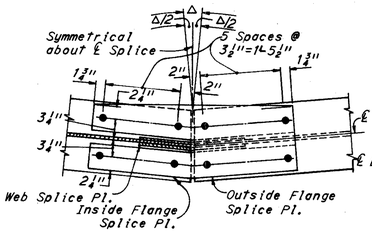
SPECIAL BEAM FIELD SPLICE DETAIL

(Beams N, P, and R at Field Splice 3 and 4 and Beam M at Field Splice 4)

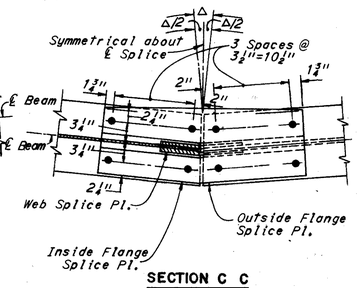


SECTION C C

Note:
For Notes pertaining to field splices see Ohio Standard Drawing SD-2-64.



SECTION B-B



SECTION C C
(Beam Splice at Bend Point)

BEAM SPLICE LOCATED AT BEND POINT

Specially cut flange splice plates and bent web splice plates will be required. The top splice plate on the top flange and the bottom splice plate on the bottom flange shall be cut without re-entrant corners.

H.N.T.B. BRIDGE NO. 22

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

SUPERSTRUCTURE DETAILS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

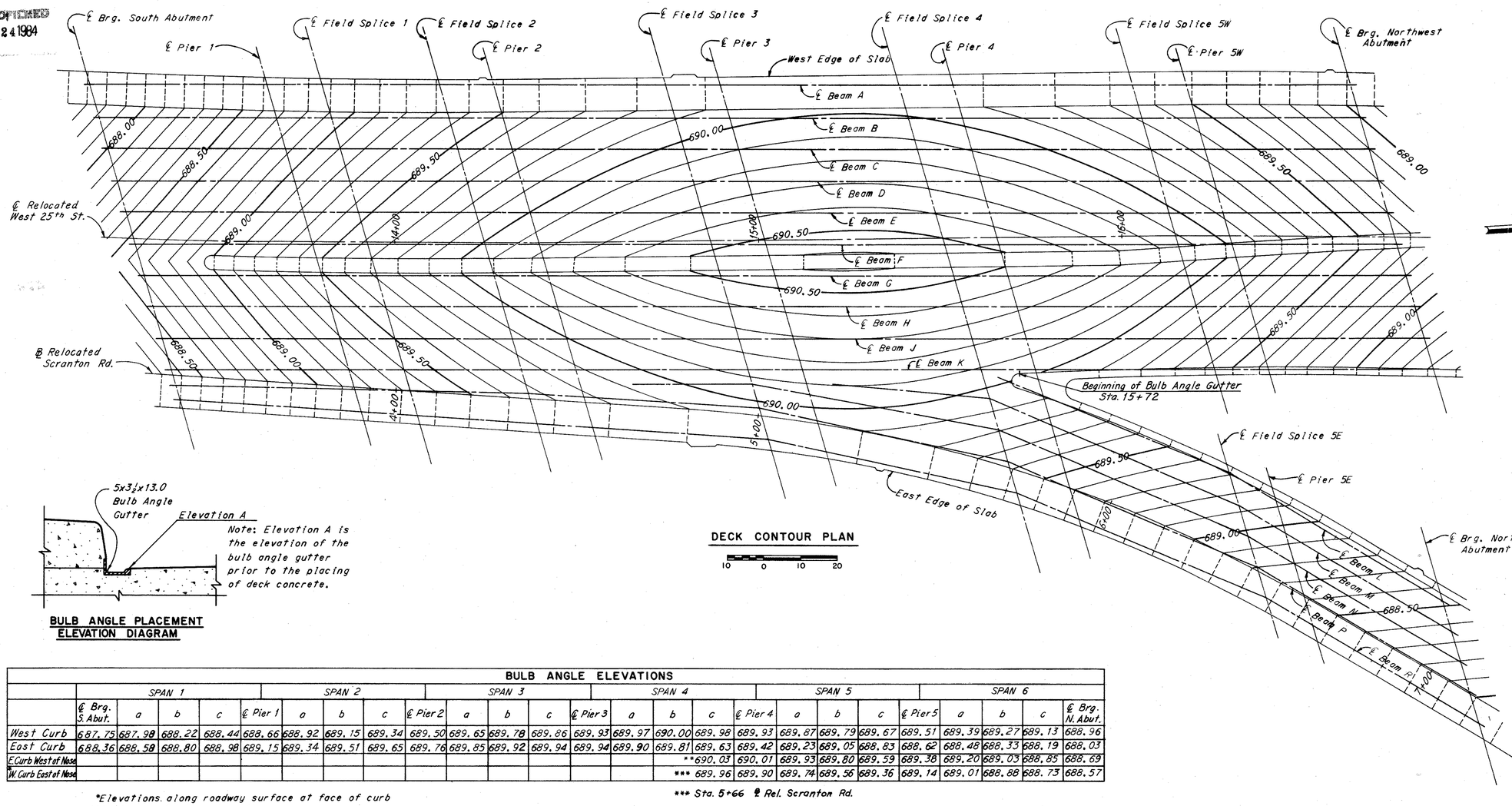
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN LJD	TRACED	CHECKED DAB	REVIEWED WF	REVISED
DATE 3-5-65	DATE	DATE 3-16-65	DATE 3-24-65	SHEET 142

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

143
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



DECK CONTOUR PLAN

10 0 10 20

Note: Elevation A is the elevation of the bulb angle gutter prior to the placing of deck concrete.

BULB ANGLE PLACEMENT ELEVATION DIAGRAM

BULB ANGLE ELEVATIONS

	SPAN 1					SPAN 2				SPAN 3				SPAN 4				SPAN 5				SPAN 6			
	℄ Brg. S. Abut.	a	b	c	℄ Pier 1	a	b	c	℄ Pier 2	a	b	c	℄ Pier 3	a	b	c	℄ Pier 4	a	b	c	℄ Pier 5	a	b	c	℄ Brg. N. Abut.
West Curb	687.75	687.98	688.22	688.44	688.66	688.92	689.15	689.34	689.50	689.65	689.78	689.86	689.93	689.97	690.00	689.98	689.93	689.87	689.79	689.67	689.51	689.39	689.27	689.13	688.96
East Curb	688.36	688.58	688.80	688.98	689.15	689.34	689.51	689.65	689.76	689.85	689.92	689.94	689.94	689.90	689.81	689.63	689.42	689.23	689.05	688.83	688.62	688.48	688.33	688.19	688.03
*E. Curb West of Nose																**690.03	690.01	689.93	689.80	689.59	689.38	689.20	689.03	688.85	688.69
*W. Curb East of Nose																*** 689.96	689.90	689.74	689.56	689.36	689.14	689.01	688.88	688.73	688.57

*Elevations along roadway surface at face of curb
**Beginning of bulb angle gutter.

*** Sta. 5+66 ℄ Rel. Scranton Rd.

TOP OF PAVEMENT ELEVATIONS

	Span 1					Span 2				Span 3				Span 4				Span 5				Span 6			
Beam	℄ Brg. S. Abut.	a	b	c	℄ Field Splice 1	a	b	c	℄ Field Splice 2	a	b	c	℄ Field Splice 3	a	b	c	℄ Field Splice 4	a	b	c	℄ Field Splice 5	a	b	c	℄ Brg. N. Abut.
A	687.61	687.90	688.20	688.47	688.74	688.86	688.98	689.08	689.18	689.36	689.51	689.64	689.73	689.81	689.85	689.88	689.87	689.83	689.77	689.68	689.57	689.43	689.27	689.10	688.90
B	687.82	688.11	688.40	688.67	688.93	689.05	689.16	689.26	689.36	689.53	689.68	689.80	689.89	689.95	690.00	690.02	690.01	689.96	689.89	689.81	689.68	689.55	689.38	689.20	689.00
C	688.00	688.29	688.59	688.85	689.10	689.22	689.33	689.43	689.53	689.70	689.83	689.95	690.03	690.10	690.14	690.15	690.14	690.09	690.02	689.92	689.80	689.66	689.49	689.30	689.10
D	688.20	688.48	688.77	689.03	689.27	689.39	689.50	689.60	689.69	689.85	689.99	690.11	690.18	690.25	690.28	690.29	690.27	690.22	690.15	690.05	689.92	689.77	689.59	689.40	689.21
E	688.38	688.66	688.95	689.20	689.45	689.56	689.66	689.75	689.85	690.01	690.14	690.25	690.33	690.38	690.42	690.42	690.40	690.34	690.26	690.16	690.03	689.88	689.69	689.50	689.30
F	688.57	688.85	689.13	689.39	689.63	689.73	689.83	689.92	690.01	690.17	690.30	690.40	690.48	690.53	690.56	690.56	690.53	690.47	690.39	690.27	690.14	689.97	689.77	689.56	689.35
G	688.63	688.92	689.21	689.48	689.71	689.82	689.91	690.00	690.09	690.23	690.35	690.45	690.51	690.56	690.58	690.56	690.52	690.45	690.36	690.23	690.06	689.87	689.65	689.42	689.20
H	688.54	688.84	689.13	689.38	689.61	689.71	689.81	689.89	689.98	690.12	690.24	690.32	690.39	690.43	690.44	690.43	690.38	690.31	690.22	690.08	689.90	689.70	689.48	689.25	689.03
J	688.45	688.75	689.03	689.28	689.50	689.60	689.69	689.78	689.86	690.00	690.11	690.19	690.26	690.29	690.30	690.28	690.23	690.17	690.06	689.91	689.72	689.53	689.30	689.07	688.85
K	688.37	688.67	688.94	689.18	689.40	689.50	689.59	689.67	689.75	689.89	689.99	690.07	690.13	690.16	690.17	690.14	690.09	690.02	689.91	689.76	689.56	689.36	689.13	688.90	688.69
L																	†690.04	‡689.88	‡689.67	‡689.49	689.30	689.11	688.92	688.72	688.53
M														‡690.11	†690.06		689.96	689.76	689.54	689.33	689.14	688.94	688.75	688.55	688.36
N									†689.93		†690.01		690.07	690.05	690.00	689.92	689.81	689.59	689.37	689.16	688.97	688.78	688.58	688.39	688.20
P	688.33	688.62	688.89	689.13	689.33	689.43	689.52	689.59	689.67	689.79	689.87	689.93	689.97	689.95	689.88	689.79	689.65	689.42	689.20	688.99	688.80	688.61	688.41	688.22	688.03
R	688.29	688.57	688.73	689.05	689.25	689.33	689.42	689.49	689.56	689.67	689.76	689.81	689.85	689.82	689.75	689.64	689.48	689.25	689.03	688.82	688.63	688.44	688.25	688.06	687.87

†Elevation at ¼ point between beam end diaphragm and ℄ Field Splice

‡Elevation at beam end diaphragm

‡Elevation at ¼ points between beam end diaphragm and ℄ Field Splice

TOP OF PAVEMENT ELEVATIONS

Beam	℄ Pier 1	℄ Pier 2	℄ Pier 3	℄ Pier 4	℄ Pier 5W	℄ Pier 5E
A	688.49	689.36	689.80	689.84	689.43	
B	688.70	689.53	689.95	689.97	689.55	
C	688.87	689.69	690.10	690.09	689.66	
D	689.05	689.85	690.24	690.22	689.77	
E	689.22	690.00	690.38	690.35	689.88	
F	689.40	690.16	690.53	690.47	689.98	
G	689.48	690.23	690.55	690.46	689.87	
H	689.39	690.12	690.42	690.32	689.70	
J	689.29	689.99	690.29	690.17	689.53	
K	689.20	689.88	690.16	690.02	689.36	
L				689.91		689.13
M				689.76		688.96
N			690.05	689.59		688.80
P	689.14	689.78	689.95	689.42		688.63
R	689.06	689.67	689.82	689.25		688.46

Notes:

Top of pavement elevations are given at ¼ points between Field Splices or Field Splices and ℄ Abutments except as noted.

When beams fall outside the roadway, the elevation given is to extended top of pavement.

When Beam F falls beneath the median, the elevation given is to the median construction joint.

Bulb angle elevations are given at ¼ span points between ℄ Piers or ℄ Piers and ℄ Abutments except as noted.

H.N.T.B. BRIDGE NO. 22

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

DECK CONTOUR PLAN & TOP OF PAVEMENT ELEVATIONS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

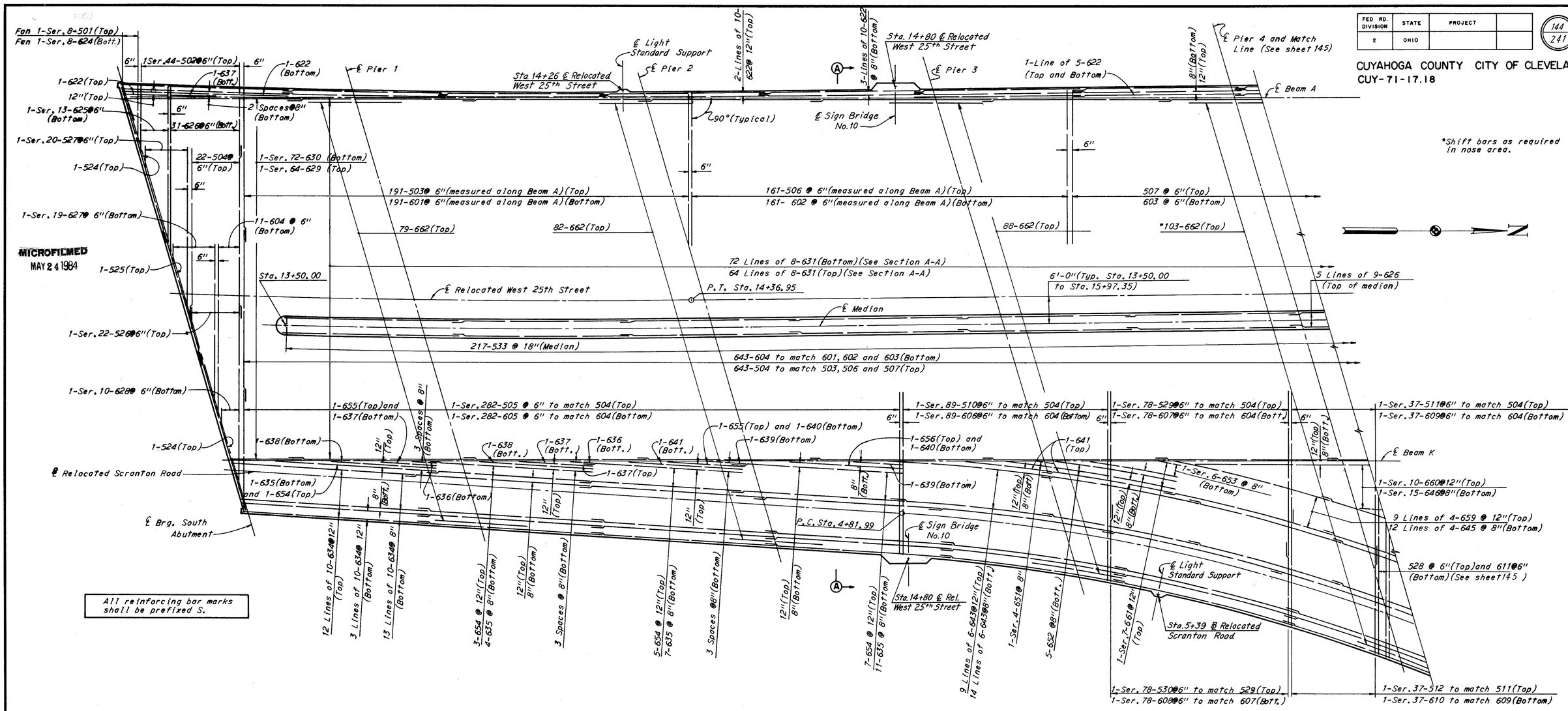
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
TLS		JEN	WF	
DATE 3-1-65	DATE	DATE 3-15-65	DATE 3-4-65	SHEET 143

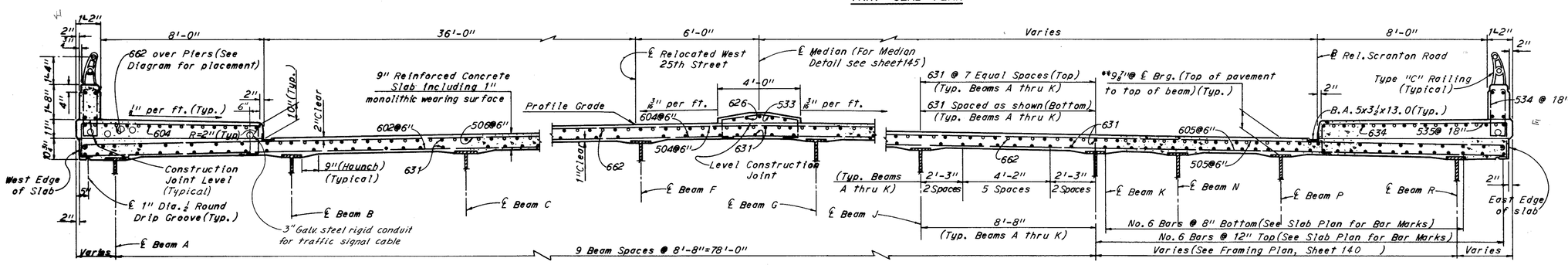
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

144
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



PART SLAB PLAN



SECTION A-A

** When beams are outside of roadway this dimension is measured from extended top of pavement. When Beam F falls under median this dimension is measured from median construction joint.

Notes:
For location and details of conduits and junction boxes in the sidewalk areas see sheets 216 and 219 of the Lighting Plans and sheet 203 of the Traffic Control Plans.
For additional notes see sheet 145.

H.N.T.B. BRIDGE NO. 22

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

PART SLAB PLAN

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

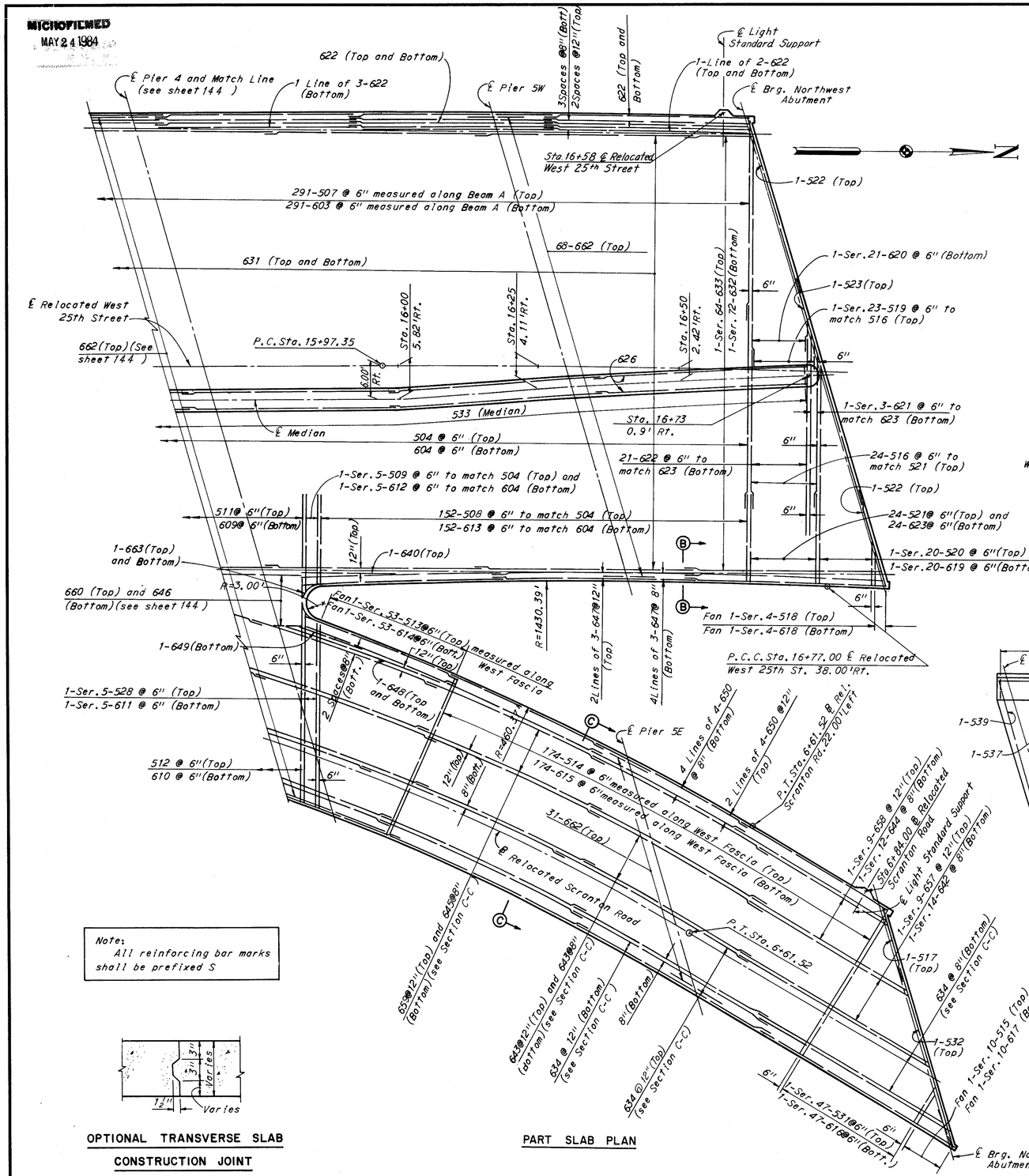
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN T.L.S.	TRACED	CHECKED J.M.C.	REVIEWED W.C.	REVISED
DATE 3-1-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 144

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

145
241

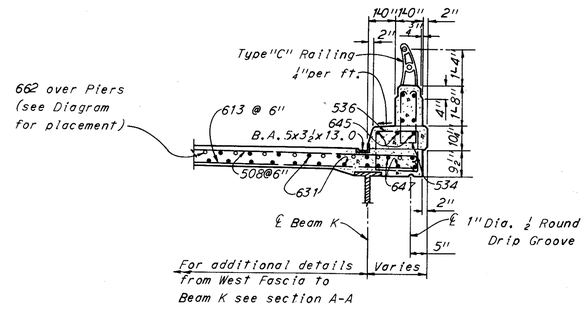
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



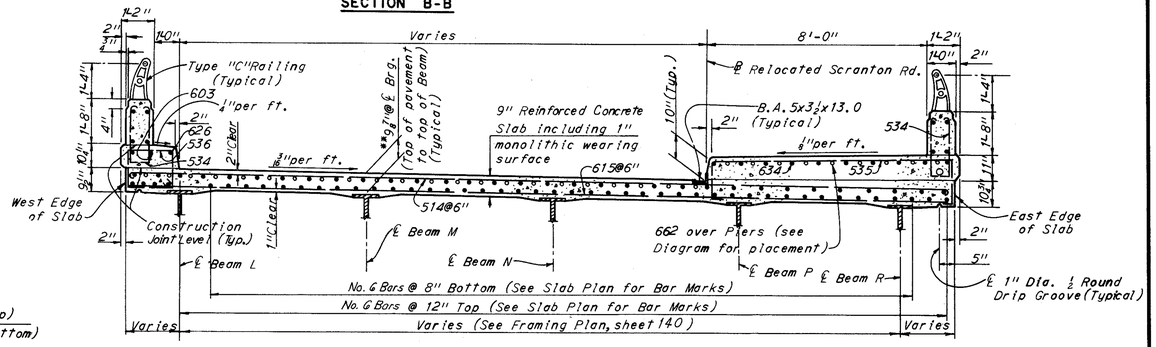
PART SLAB PLAN

Note:
All reinforcing bar marks shall be prefixed S

OPTIONAL TRANSVERSE SLAB CONSTRUCTION JOINT

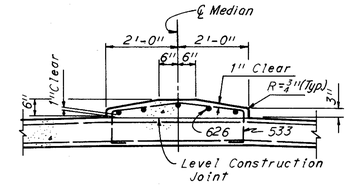


SECTION B-B

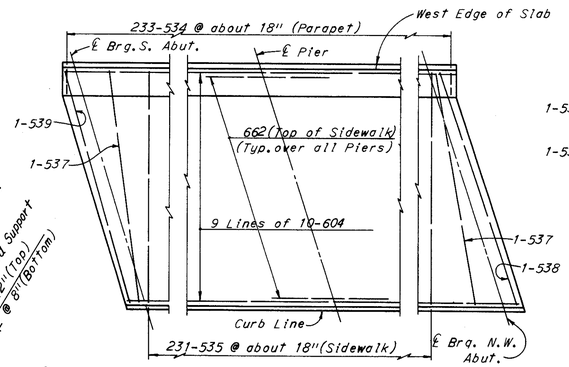


SECTION C-C

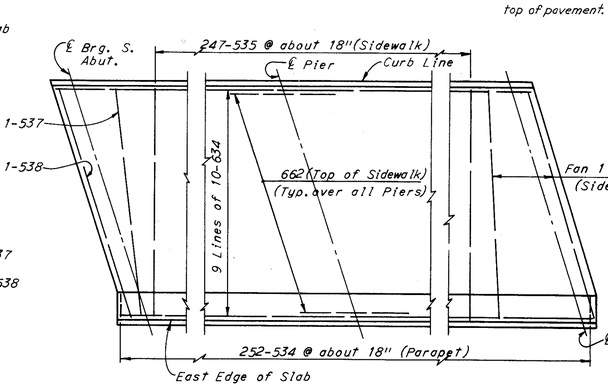
** When beams are outside of roadway this dimension is measured from extended top of pavement.



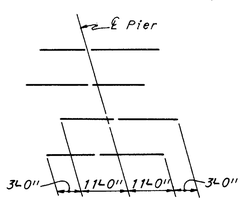
MEDIAN DETAIL



WEST PARAPET AND SIDEWALK



EAST PARAPET AND SIDEWALK



PLACEMENT OF 662 BARS OVER PIERS

Notes:
Longitudinal reinforcement shall be field bent concentric as required.
Transverse slab bars shall be field bent as required.
Additional reinforcement over piers shall be placed parallel to normal longitudinal reinforcement.
Field bending shall be included in "Item S-4, Reinforcing Steel" for payment.
For Reinforcement Schedule and Bending Diagrams see sheet 151.
For railing post and parapet joint spacing and longitudinal reinforcement in parapet see sheet 147.

H.N.T.B. BRIDGE NO. 22

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

PART SLAB PLAN

1-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN T.L.S.	TRACED	CHECKED J.M.C.	REVIEWED W.C.	REVISED
DATE 3-1-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 145

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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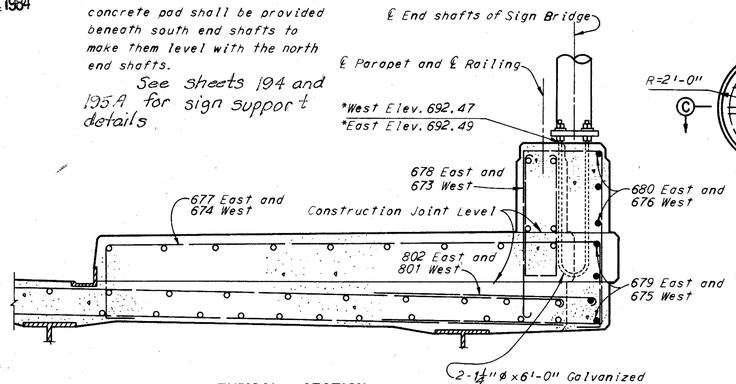
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

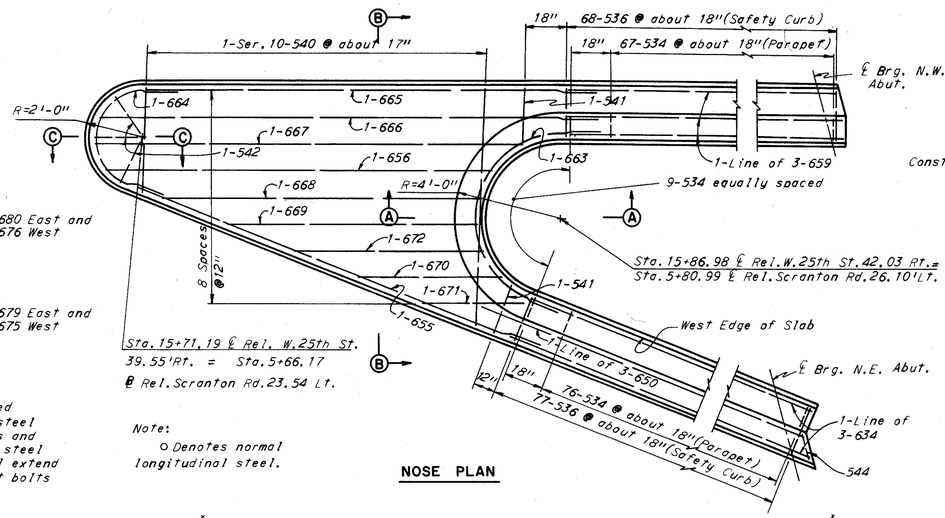
*Note: A 12"x12" monolithic concrete pad shall be provided beneath south end shafts to make them level with the north end shafts.

See sheets 194 and 195A for sign support details.



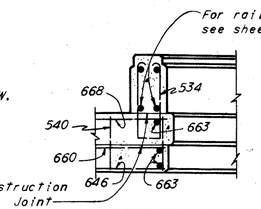
TYPICAL SECTION

Note:
All reinforcing bar marks shall be prefixed S except as noted.

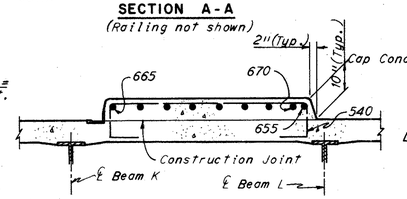


Note:
○ Denotes normal longitudinal steel.

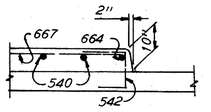
NOSE PLAN



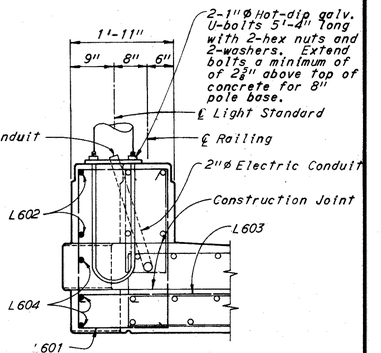
SECTION A-A
(Railing not shown)



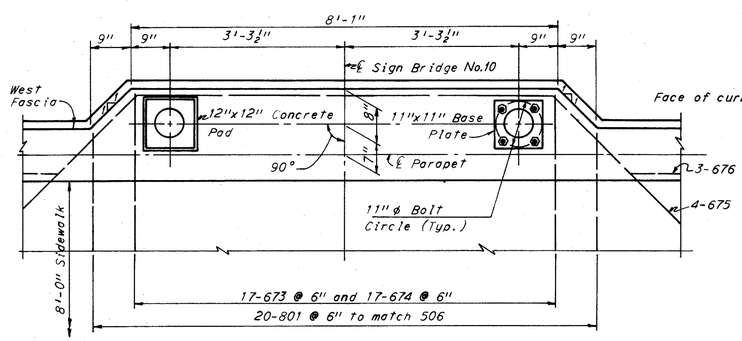
SECTION B-B



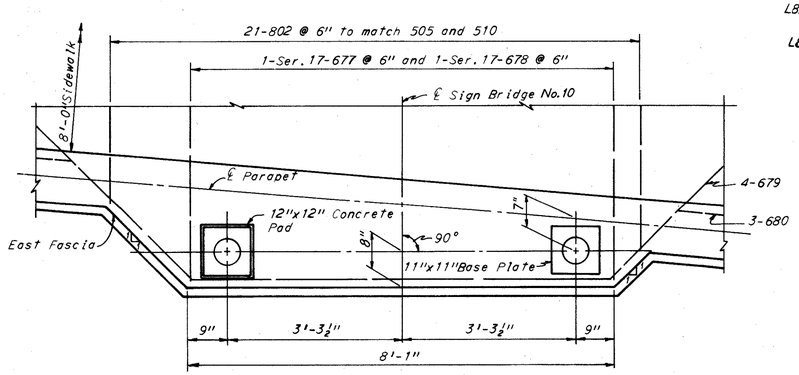
SECTION C-C



SECTION D-D

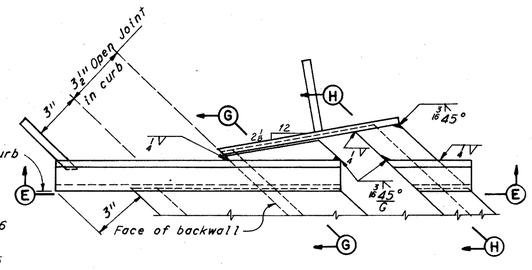


WEST CURB

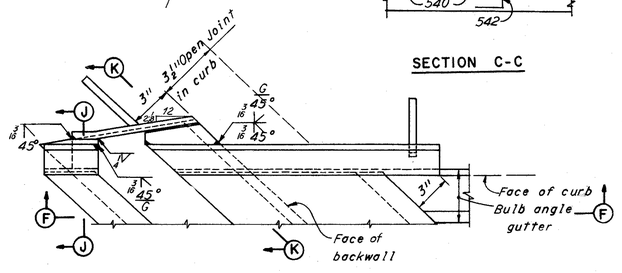


EAST CURB

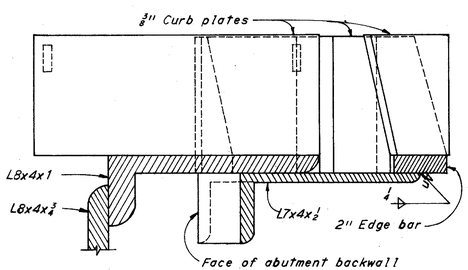
SIGN BRIDGE POST SUPPORT



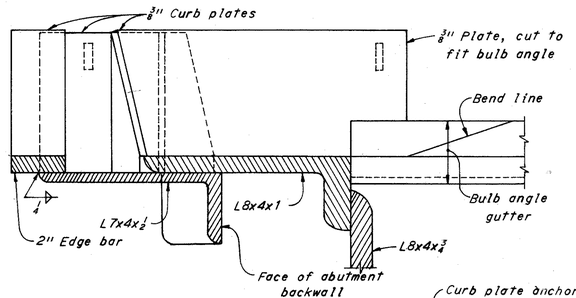
PLAN-WEST CURB



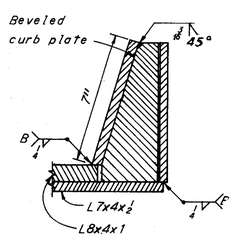
PLAN-EAST CURB



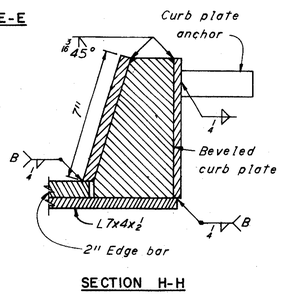
SECTION E-E



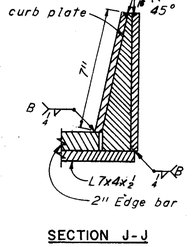
SECTION F-F



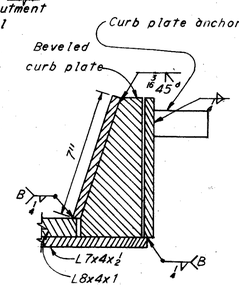
SECTION G-G



SECTION H-H



SECTION J-J



SECTION K-K

CURB PLATE DETAILS-NORTHEAST ABUTMENT

(For additional details see Ohio Standard Drawing SD-1-63.)

PLAN
LIGHT STANDARD SUPPORT

Notes:

Sign bridge support reinforcement and light standard support reinforcement is included for payment with slab reinforcement.

Sign bridge support concrete below the parapet joint and light standard support concrete below the parapet joint is included for payment with slab concrete.

Sign bridge support concrete above the parapet joint and light standard support concrete above the parapet joint is included for payment with Item S-14, "Aluminum Railing."

For location of conduit in structures, additional lighting details and summary of Item S-25, "Lighting Quantities" see Lighting Plans.

For additional notes see sheet 145.

H.N.T.B. BRIDGE NO. 22

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

SLAB DETAILS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

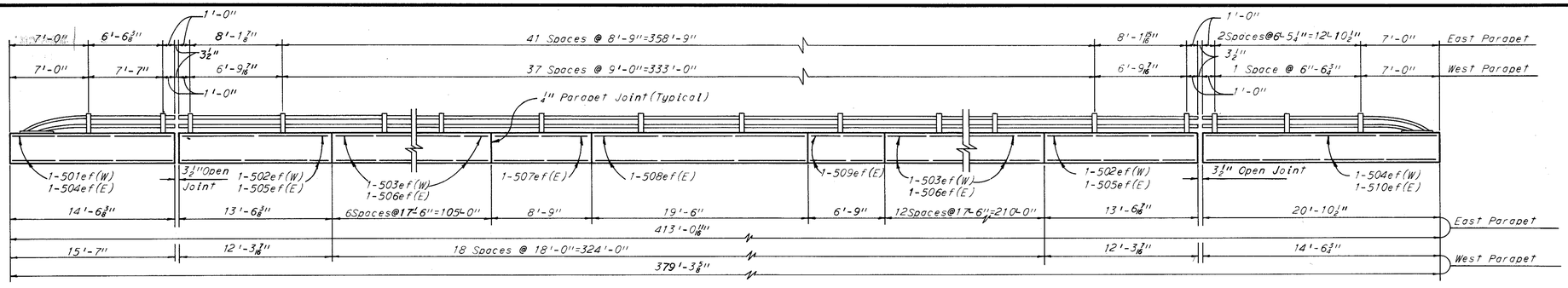
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN TLS	TRACED	CHECKED TMC	REVIEWED MF	REVISED
DATE 3-1-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 146

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

147
241

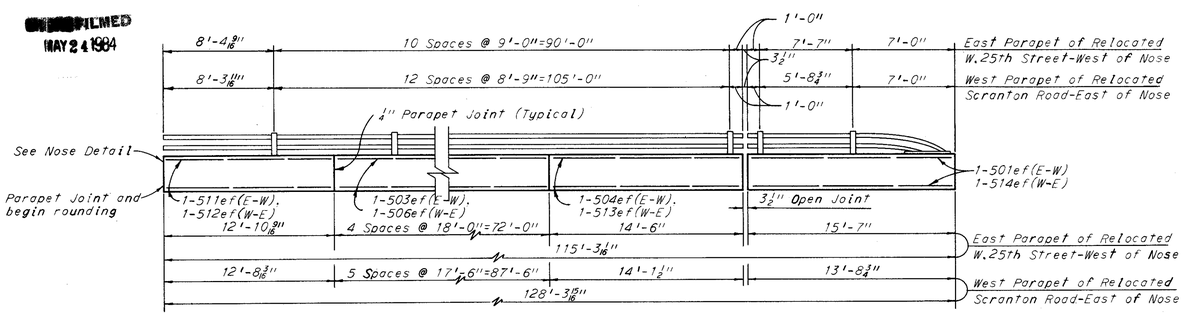
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



SOUTH ABUTMENT

NORTH ABUTMENT

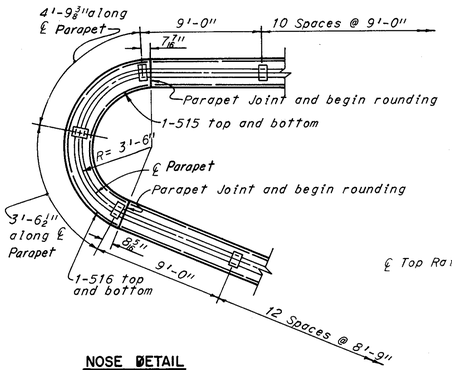
TYPE "C" RAILING



NOSE

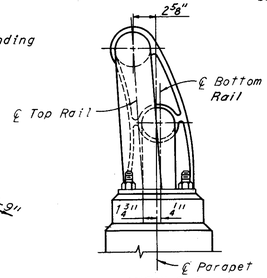
NORTH ABUTMENT

TYPE "C" RAILING - NOSE AREA



NOSE DETAIL

Note: The following abbreviations are used:
ef = each face
(E) = East Parapet
(W) = West Parapet
(E-W) = East Parapet of Relocated West 25th Street-West of Nose
(W-E) = West Parapet of Relocated Scranton Road-East of Nose

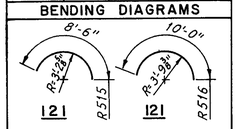


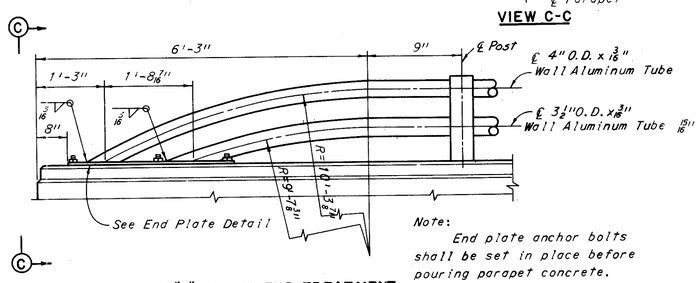
VIEW C-C

Note: All reinforcing bar marks for the longitudinal railing steel shall be prefixed R.

REINFORCEMENT SCHEDULE			
Mark	No.	Length	Type
R501	8	15'-3"	Str.
R502	8	11'-9"	Str.
R503	88	17'-6"	Str.
R504	12	14'-0"	Str.
R505	8	13'-0"	Str.
R506	92	17'-0"	Str.
R507	4	8'-3"	Str.
R508	4	19'-0"	Str.
R509	4	6'-3"	Str.
R510	4	20'-6"	Str.
R511	4	12'-6"	Str.
R512	4	12'-3"	Str.
R513	4	31'-9"	Str.
R514	4	31'-3"	Str.
R515	2	8'-6"	121
R516	2	10'-0"	121

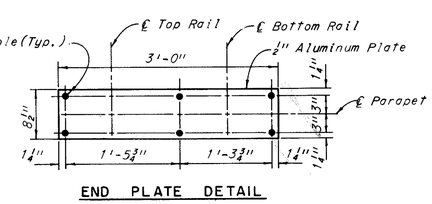
BENDING DIAGRAMS



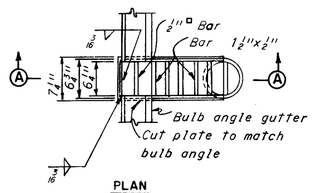


TYPE "C" RAILING END TREATMENT

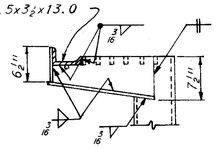
Note: End plate anchor bolts shall be set in place before pouring parapet concrete.



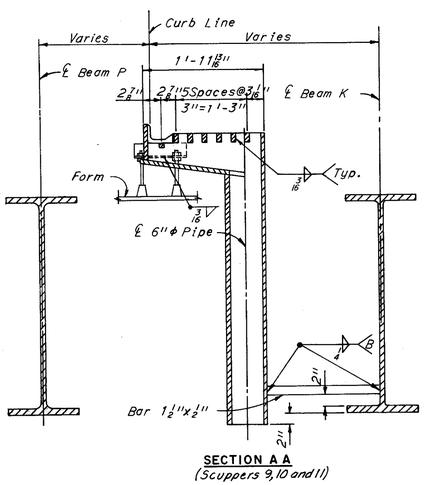
END PLATE DETAIL



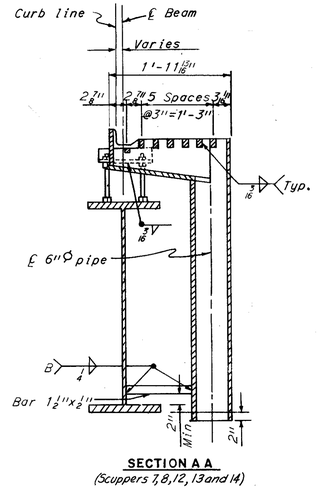
PLAN



ELEVATION

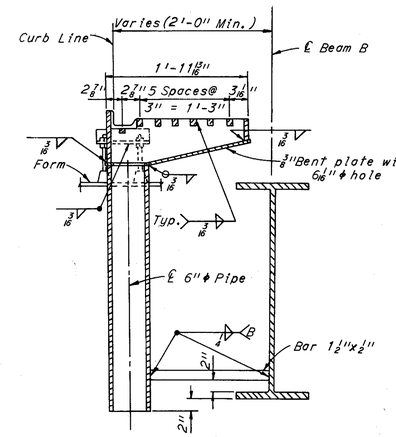


SECTION A A
(Scuppers 9, 10 and 11)



SECTION A A
(Scuppers 7, 8, 12, 13 and 14)

TYPE A SCUPPER



SECTION B B

TYPE B SCUPPER
(Scuppers 1 thru 6)

SCUPPER DETAILS

Note: Scuppers are to be made from ⅜" steel plate except as shown.

RAILING NOTE:

Railing shall be fabricated in lengths not less than three panels each unless otherwise shown, and finished railing shall be free of burrs, sharp corners and rough surfaces.

Railing posts shall be normal to grade.

Payment for railing shall be made at the contract unit price bid for "Item S-14." Pay length shall be the overall length of the parapets and shall include cost of anchor bolts, set screws, nuts, shims, etc., necessary to complete the installation of railing. Concrete, expansion joint material, and longitudinal reinforcing steel in the parapets shall be included in "Item S-14" for payment. All other reinforcing steel in the parapet shall be included in "Item S-4" for payment.

For additional details and notes regarding railing see Ohio Standard Drawing AR-1-57.

Notes: For scupper locations see Framing Plan, sheet 140.

For Scupper Details not shown and Gutter Support details see Ohio Standard Drawing SD-1-63, Sheet 3 of 4.

Bulb angle and supports are included for payment with Item S-7, Structural Steel.

Joints in bulb angle gutters, preferably at intervals of not less than 25 feet, are to be butt joints with milled ends. The support angles shall be placed 6" to 9" on each side at the joint.

The bulb angle gutters shall be adjusted accurately for alignment and grade, with allowance for dead load deflections, before concrete is placed.

H.N.T.B. BRIDGE NO. 22

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

RAILING AND DRAINAGE DETAILS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

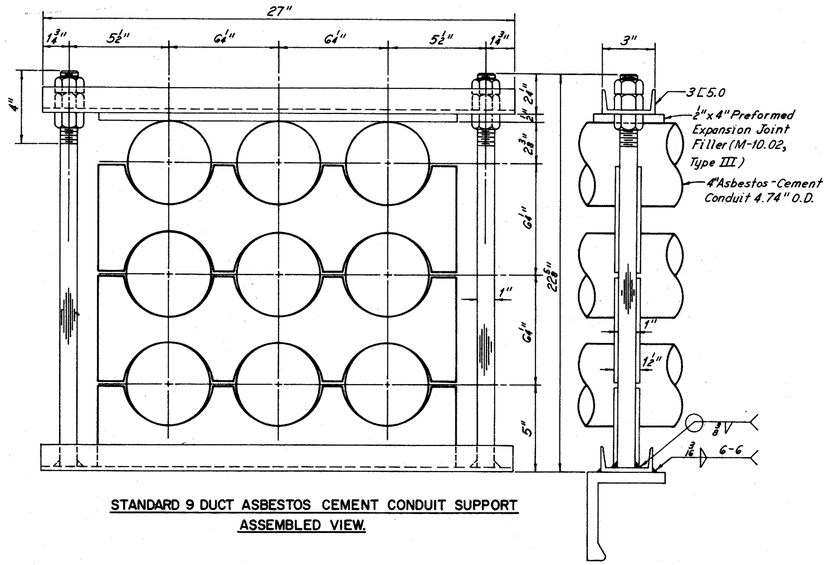
CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3-1-64	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 147

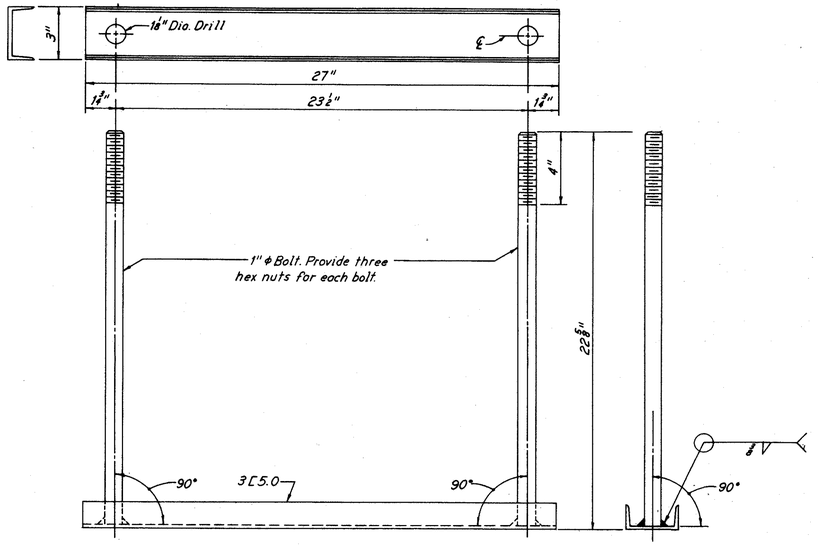
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

148
241

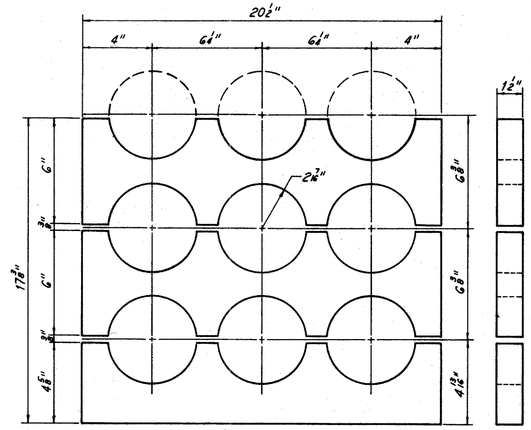
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



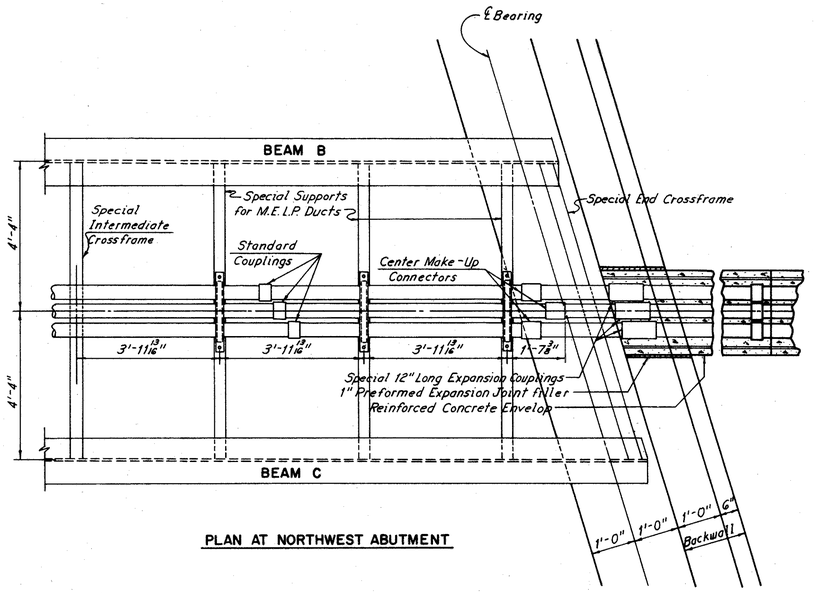
STANDARD 9 DUCT ASBESTOS CEMENT CONDUIT SUPPORT
ASSEMBLED VIEW.



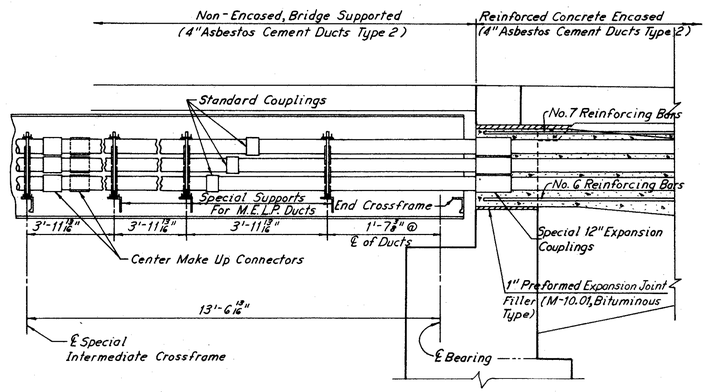
STEEL DETAIL FOR ASBESTOS CEMENT 9 DUCT SUPPORT
PAINT AS PER SPECIFICATION



ASBESTOS CEMENT 9 DUCT SUPPORT DRILLING DETAIL
ONE SET REQUIRED AS SHOWN FOR EACH SUPPORT
DRILL OR BORE ONLY FOR SQUARE SMOOTH DUCT SADDLE



PLAN AT NORTHWEST ABUTMENT



ELEVATION AT NORTHWEST ABUTMENT
Note: South Abutment Similar Except For Conduit Support Dimensions. See Framing Plan.

Note:
For notes pertaining to material and installation of M.E.L.P. ducts see sheets 156 thru 159.

H.N.T.B. BRIDGE NO. 22

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

MISCELLANEOUS DETAILS FOR M.E.L.P. DUCT SUPPORTS

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN D.L.R.	TRACED	CHECKED DAS	REVIEWED WJF	REVISED
DATE 3-17-63	DATE	DATE 3-18-63	DATE 3-22-63	SHEET 148

MICROFILMED
MAY 24 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
SOUTH ABUTMENT AND WINGWALLS					
AA401	84	3'-5"	105		192
AA501	63	8'-4"	105		547
AA502	9	30'-3"	Str.		284
AA503	6	29'-6"	Str.		185
AA504	16	32'-9"	Str.		547
AA505	3	31'-3"	Str.		98
AA506	6	32'-3"	Str.		202
AA507	6	31'-9"	Str.		199
AA508	1	22'-9"	Str.		24
AA509	1	25'-3"	Str.		26
AA510	2	7'-0"	Str.		15
AA511	1 Ser. 10	15'-6" / 17'-9"	Str.	3"	173
AA512	60	8'-9"	Str.		548
AA513	10	5'-9"	Str.		60
AA514	1	15'-6"	Str.		16
AA515	1 Ser. 10	12'-0" / 14'-6"	Str.	3 3/8"	138
AA516	1	14'-6"	Str.		15
AA517	20	6'-8"	109		139
AA518	22	5'-11"	110		136
AA519	16	19'-10"	109		331
AA520	2	17'-9"	Str.		37
AA521	2	11'-6"	Str.		24
AA601	52	16'-9"	109		1,308
AA602	14	13'-7"	105		286
AA603	9	9'-9"	Str.		132
AA604	9	11'-3"	100		152
AA605	1 Ser. 4	10'-3" / 11'-10"	Str.	6 5/8"	66
AA606	1 Ser. 4	11'-7" / 13'-2"	100	6 5/8"	74
AA607	42	7'-0"	Str.		442
AA608	1	7'-8"	101		12
AA609	124	6'-9"	104		1,257
AA610	8	5'-9"	Str.		69
AA611	77	17'-3"	112		1,995
AA612	63	5'-7"	104		528
AA613	31	8'-6"	Str.		396
AA614	20	3'-6"	Str.		105
AA615	3	17'-3"	Str.		78
AA616	3	13'-6"	Str.		61
AA617	1	13'-3"	Str.		20
AA618	3	14'-10"	108		67
AA619	4	9'-6"	Str.		57
AA620	2	15'-6"	Str.		47
AA621	26	9'-3"	Str.		361
AA622	4	7'-6"	Str.		45
AA623	3	16'-6"	Str.		74
AA624	3	12'-0"	Str.		54
AA625	1	12'-6"	Str.		19
AA626	3	14'-9"	124		66
AA627	6	8'-0"	Str.		72
AA628	2	14'-6"	Str.		44
AA801	24	34'-3"	Str.		2,195
AA802	2 Ser. 7	12'-0" / 14'-9"	Str.	5 1/2"	500
AA803	2	17'-2"	108		92
AA804	2	19'-4"	124		103
AA805	2 Ser. 7	7'-11" / 10'-10"	Str.	5 13/16"	350
AA806	2	18'-6"	124		99
AA807	6	17'-9"	Str.		284
AA808	6	11'-6"	Str.		184
		Total Weight			15,630
NORTHWEST ABUTMENT AND WINGWALLS					
AB401	70	31'-5"	105		160
AB501	64	7'-8"	105		512
AB502	9	28'-0"	Str.		263
AB503	6	27'-6"	Str.		172
AB504	16	29'-9"	Str.		496
AB505	3	27'-3"	Str.		85
AB506	13	27'-6"	Str.		373
AB507	1	20'-3"	Str.		21
AB508	27	8'-9"	Str.		246
AB509	1 Ser. 10	12'-5" / 14'-6"	Str.	2 3/4"	140
AB510	6	6'-0"	Str.		38
AB511	1	14'-6"	Str.		15
AB512	2	12'-0"	Str.		25
AB513	8	6'-8"	109		56
AB514	22	5'-11"	110		136
AB515	8	19'-10"	109		165
AB516	11	6'-4"	109		73
AB517	5	15'-6"	Str.		81
AB601	67	16'-9"	109		1,686
AB602	5	12'-3"	109		92
AB603	1 Ser. 4	10'-2" / 11'-5"	Str.	5"	65
AB604	1 Ser. 4	11'-6" / 12'-9"	100	5"	73
AB605	1	7'-6"	Str.		11
AB606	1	8'-2"	101		12
AB607	10	6'-9"	Str.		101
AB608	15	5'-9"	Str.		130
AB609	126	6'-8"	104		1,262
AB610	76	17'-3"	112		1,969
AB611	15	7'-3"	Str.		163
AB612	47	5'-7"	104		394
AB613	28	8'-9"	Str.		368
AB614	22	3'-6"	Str.		116
AB615	3	16'-6"	Str.		74
AB616	3	12'-3"	Str.		55
AB617	1	12'-6"	Str.		19
AB618	3	14'-9"	124		66
AB619	2	14'-6"	Str.		44
AB620	4	7'-0"	Str.		42
AB621	4	4'-3"	Str.		26
AB622	11	8'-6"	Str.		140
AB623	4	6'-6"	Str.		39
AB624	4	8'-3"	Str.		50
AB625	3	17'-3"	Str.		78
AB626	3	13'-9"	Str.		62
AB627	1	9'-3"	Str.		14
AB628	3	10'-10"	108		49
AB629	2	7'-9"	108		23
AB801	24	31'-6"	Str.		2,019
AB802	6	7'-0"	Str.		112
AB803	2	13'-5"	108		72
AB804	2	19'-10"	124		106
AB805	2	18'-7"	124		99
AB806	2 Ser. 7	8'-3" / 11'-0"	Str.	5 1/2"	360
AB807	6	12'-0"	Str.		192
		Total Weight			13,240
NORTHEAST ABUTMENT AND WINGWALLS					
AC401	35	3'-5"	105		80
AC501	33	7'-10"	105		269
AC502	1 Ser. 4	22'-6" / 23'-6"	Str.	4"	96
AC503	6	16'-6"	Str.		103
AC504	2	23'-6"	Str.		49
AC505	1 Ser. 4	19'-6" / 21'-6"	Str.	8"	86
AC506	6	23'-3"	Str.		145
AC507	2	19'-6"	Str.		41
AC508	3	22'-6"	Str.		70
AC509	1	20'-6"	Str.		21
AC510	3	21'-6"	Str.		67
AC511	2	12'-3"	Str.		26
AC512	1	3'-0"	Str.		3
AC513	1 Ser. 10	20'-8" / 27'-11"	Str.	9 11/16"	253
AC514	1	20'-9"	Str.		22
AC515	2	28'-3"	Str.		59
AC516	21	8'-9"	Str.		192
AC517	2 Ser. 5	3'-0" / 7'-0"	Str.	12"	52
AC518	4	2'-6"	Str.		10
AC519	2	11'-0"	Str.		23
AC520	18	6'-8"	109		125
AC521	3	13'-9"	Str.		43
AC522	2	12'-9"	Str.		27
AC523	25	5'-11"	110		154
AC524	11	6'-4"	109		73
AC525	12	19'-10"	109		248
AC601	22	16'-9"	109		553
AC602	1	18'-7"	109		28
AC603	1	21'-3"	109		32
AC604	1 Ser. 5	111'-3" / 22'-9"	109	2'-10"	128
AC605	3	9'-9"	Str.		44
AC606	7	11'-3"	100		117
AC607	1 Ser. 6	3'-3" / 9'-11"	Str.	1'-4"	59
AC608	1 Ser. 6	3'-11" / 10'-7"	101	1'-4"	65
AC609	8	13'-7"	105		162
AC610	8	4'-0"	100		48
AC611	63	6'-10"	104		646
AC612	25	17'-3"	112		647
AC613	4	15'-5"	109		92
AC614	27	7'-0"	Str.		284
AC615	50	5'-7"	104		419
AC616	6	7'-6"	Str.		68
AC617	5	9'-3"	Str.		69
AC618	6	4.-6"	Str.		41
AC619	2	4'-0"	Str.		12
AC620	30	3'-9"	Str.		169
AC621	3	16'-6"	Str.		74
AC622	3	9'-6"	Str.		43
AC623	1	8'-6"	Str.		13
AC624	4	10'-10"	124		65
AC625	2	7'-9"	108		23
AC626	7	7'-3"	104		76
AC627	22	8'-9"	Str.		289
AC628	2 Ser. 6	4'-6" / 6'-0"	Str.	3 5/8"	95
AC629	5	20'-9"	Str.		156
AC630	3	22'-9"	Str.		103
AC631	1	14'-9"	Str.		22
AC632	1	12'-9"	Str.		19
AC633	3	10'-5"	108		47
AC634	7	6'-9"	Str.		71
AC635	2	13'-6"	Str.		41
AC636	4	7'-3"	Str.		44
AC801	16	25'-3"	Str.		1,079
AC802	2	15'-0"	124		80
AC803	4	5'-9"	Str.		61
AC804	2	9'-0"	104		48
AC805	2	12'-5"	108		64
AC806	2 Ser. 7	5'-5" / 14'-11"	Str.	1-7"	379
AC807	2 Ser. 3	28'-2" / 28'-8"	Str.	6"	457
		Total Weight			9,368

BENDING DIAGRAMS

100

9'-11"	AA604, AC606
10'-3" to 11'-10"	AA606
10'-2" to 11'-5"	AB604
2'-8"	AC610

101

7'-0"	AA608
7'-6"	AB606
3'-3" to 9'-11"	AC608

110

2'-4"

AA518, AB514, AC523 — 8"

105

2'-7"	AA602, AC609
3'-5"	AC501
3'-5"	AB501
3'-5"	AA501
1'-8"	AA401, AB401, AC401

5'-8", 2'-4", 2'-3", 2'-7", 1'-0"

11" AA611, AB610, AC612

6'-5", 2'-11", 1'-4", 5'-1", 1'-5"

112

104

AC604, AC626, AC611, AB609, AA612, AB612, AC615, AA609

6'-8", 5'-6", 6'-2", 6'-0", 4'-11", 6'-1"

10", 1'-11", 2'-6"

108

Mark	Y	X
AA618	12"	4 1/8"
AA803	12"	4 1/8"
AB628	12"	4"
AB629	4 1/4"	12"
AB803	12"	4"
AC625	4"	12"
AC633	11 1/8"	12"
AC805	11 1/8"	12"

AA618, AB803, AB628, AB629, AB803, AC625, AC633, AC805: 1'-7", 2'-6", 1'-7", 1'-11", 2'-6", 1'-11", 1'-7", 2'-6"

13'-5", 14'-10", 9'-5", 5'-10", 11'-1", 5'-10", 8'-11", 10'-0"

109

6'-5"	AC613
2'-9" to 8'-5"	AC604
7'-8"	AC603
6'-4"	AC602
3'-2"	AB602
5'-5"	AB601
1'-4"	AB516, AC524
8'-6"	AB515, AC525
2'-3"	AB513
5'-5"	AA601, AC601
8'-6"	AA519
2'-3"	AA517, AC520

11", 2'-7", 1'-7", 1'-2", 10", 2'-7", 1'-2", 10"

124

2'-0", 8", 1'-10", 9'-11", 8", 8", 1'-9", 9'-11"

2'-6", 1'-7", 2'-6", 7'-9", 1'-7", 1'-7", 2'-6", 7'-3"

AC802, AC624, AB805, AB804, AB618, AA626, AA806, AA804

10'-8", 8'-8", 14'-5", 2'-6", 12'-8", 12'-8", 14'-5", 2'-6"

Mark	Y	X
AA804	4 3/8"	12"
AA806	12"	4 3/8"
AA626	12"	4 3/8"
AB618	12"	3 3/4"
AB804	3 3/4"	12"
AB805	12"	3 3/4"
AC624	11 1/8"	12"
AC802	11 1/8"	12"

Note: For Replacement Bar Schedule see sheet 151.

H.N.T.B. BRIDGE NO. 22

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

ABUTMENTS REINFORCEMENT SCHEDULE

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN D.L.R.	TRACED	CHECKED [illegible]	REVIEWED W.C.	REVISED
DATE 3-10-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 149

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
PIER 1					
PA401	1	14'-9"	150		272
PA402	1	15'-1"	150		278
PA403	5	15'-8"	150		1,454
PA501	78	4'-7"	105		373
PA502	2	4'-4"	105		9
PA503	2	3'-8"	105		8
PA504	70	12'-2"	109		888
PA601	8	7'-11"	144		95
PA602	12	6'-1"	105		110
PA603	2	24'-9"	Str.		74
PA604	4	25'-6"	Str.		153
PA605	2	19'-0"	Str.		57
PA1101	92	11'-10"	100		5,784
PA1102	80	6'-5"	104		2,727
PA1103	72	18'-3"	Str.		6,981
PA1104	6	9'-10"	123		313
PA1105	4	24'-9"	Str.		526
PA1106	4	26'-0"	Str.		553
PA1107	2	12'-0"	Str.		128
PA1108	8	26'-3"	Str.		1,116
PA1109	4	13'-6"	Str.		287
PA1110	4	20'-5"	104		434
PA1111	4	37'-9"	104		802
PA1112	6	15'-3	Str.		486
PA1113	4	14'-3"	Str.		303
PA1114	1	15'-0"	Str.		80
PA1115	4	19'-0"	Str.		404
PA1116	4	20'-3"	Str.		430
PA1117	2	9'-3"	Str.		98
PA1118	8	18'-3"	118		776
		Total Weight		=	25,998
PIER 2					
PB401	1	13'-2"	150		245
PB402	6	13'-7"	150		1,512
PB501	78	4'-7"	105		373
PB502	2	4'-4"	105		9
PB503	2	3'-8"	105		8
PB504	73	12'-2"	109		926
PB601	8	7'-11"	144		95
PB602	12	6'-1"	105		110
PB603	2	24'-9"	Str.		74
PB604	4	25'-6"	Str.		153
PB605	2	23'-3"	Str.		70
PB1101	92	11'-10"	100		5,784
PB1102	80	6'-5"	104		2,727
PB1103	72	16'-6"	Str.		6,312
PB1104	6	9'-10"	123		313
PB1105	4	24'-9"	Str.		526
PB1106	4	26'-0"	Str.		553
PB1107	2	12'-0"	Str.		128
PB1108	8	26'-3"	Str.		1,116
PB1109	4	13'-6"	Str.		287
PB1110	4	20'-5"	104		434
PB1111	4	37'-9"	104		802
PB1112	6	15'-3"	Str.		486
PB1113	4	14'-3"	Str.		303
PB1114	1	15'-0"	Str.		80
PB1115	4	23'-3"	Str.		494
PB1116	4	24'-9"	Str.		526
PB1117	2	11'-3"	Str.		120
PB1118	8	16'-6"	118		701
		Total Weight		=	25,267

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
PIER 3					
PC401	1	15'-6"	150		285
PC402	6	15'-11"	150		1,749
PC501	85	4'-7"	105		406
PC502	2	4'-4"	105		9
PC503	2	3'-8"	105		8
PC504	81	12'-2"	109		1,028
PC601	8	7'-11"	144		95
PC602	12	6'-1"	105		110
PC603	2	24'-9"	Str.		74
PC604	4	26'-9"	Str.		161
PC605	2	28'-0"	Str.		84
PC1101	96	11'-10"	100		6,036
PC1102	82	6'-5"	104		2,796
PC1103	74	18'-9"	Str.		7,372
PC1104	6	9'-10"	123		313
PC1105	4	24'-9"	Str.		526
PC1106	4	26'-0"	Str.		553
PC1107	2	12'-0"	Str.		128
PC1108	8	27'-6"	Str.		1,169
PC1109	4	13'-6"	Str.		287
PC1110	4	20'-5"	104		434
PC1111	4	40'-1"	104		852
PC1112	3	15'-3.	Str.		243
PC1113	2	14'-3"	Str.		151
PC1114	1	15'-0"	Str.		80
PC1115	4	28'-0"	Str.		595
PC1116	4	29'-3"	Str.		622
PC1117	3	14'-9"	Str.		235
PC1118	6	17'-9"	Str.		566
PC1119	4	16'-9"	Str.		356
PC1120	2	17'-0"	Str.		181
PC1121	12	13'-10"	100		882
PC1122	8	18'-9"	118		797
		Total Weight		=	29,183
PIER 4					
PD401	7	16'-9"	150		2,172
PD402	2	16'-2"	150		595
PD501	99	4'-7"	105		473
PD502	2	4'-4"	105		9
PD503	2	3'-8"	105		8
PD504	92	12'-2"	109		1,167
PD601	8	7'-11"	144		95
PD602	18	6'-1"	105		164
PD603	2	24'-9"	Str.		74
PD604	4	25'-6"	Str.		153
PD605	2	28'-0"	Str.		84
PD606	2	21'-0"	Str.		63
PD1101	116	11'-10"	100		7,293
PD1102	96	6'-5"	104		3,273
PD1103	88	19'-6"	Str.		9,117
PD1104	6	9'-10"	123		313
PD1105	4	24.-9"	Str.		526
PD1106	4	26'-0"	Str.		553
PD1107	2	12'-0"	Str.		128
PD1108	8	26'-3"	Str.		1116
PD1109	4	13'-6"	Str.		287
PD1110	4	20'-5"	104		434
PD1111	4	37'-9"	104		802
PD1112	6	15'-3"	Str.		486
PD1113	4	14'-3"	Str.		303
PD1114	1	15'-0"	Str.		80
PD1115	8	28'-0"	Str.		1,190
PD1116	1	10'-3"	Str.		54
PD1117	4	21'-0"	Str.		446
PD1118	4	22'-3"	Str.		473

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
PD1119	2	14'-6"	Str.		154
PD1120	1	13'-9"	Str.		13
PC1121	8	19'-6"	118		829
		Total Weight		=	32,987
PIER 5W					
PE401	2	14'-3"	150		530
PE402	4	14'-7"	150		1,085
PE501	64	4'-7"	105		306
PE502	2	4'-4"	105		9
PE503	2	3'-8"	105		8
PE504	50	12'-2"	109		634
PE601	8	7'-11"	144		95
PE602	6	6'-1"	105		55
PE603	4	40'-3"	Str.		242
PE1101	56	11'-10"	100		3,521
PE1102	64	6'-5"	104		2,182
PE1103	60	17'-6"	Str.		5,579
PE1104	6	9'-10"	123		313
PE1105	8	40'-3"	Str.		1,711
PE1106	8	41'-6"	Str.		1,764
PE1107	2	15'-6"	Str.		165
PE1108	2	15'-0"	Str.		159
PE1109	4	15'-6"	Str.		329
PE1110	24	13'-10"	100		1,764
PE1111	4	17'-6"	118		372
		Total Weight		=	20,823
PIER 5E					
PF401	1	17'-7"	150		324
PF402	1	17'-3"	150		317
PF403	1	16'-11"	150		311
PF501	29	4'-7"	105		139
PF502	2	4'-4"	105		9
PF503	2	3'-8"	105		8
PF504	22	12'-2"	109		279
PF601	8	7'-11"	144		95
PF602	2	35'-6"	Str.		107
PF1101	40	11'-10"	100		2,515
PF1102	28	6'-5"	104		955
PF1103	28	20'-3"	Str.		3,012
PF1104	6	9'-10"	123		313
PF1105	4	35'-6"	Str.		754
PF1106	4	38'-3"	Str.		813
PF1107	4	16'-6"	Str.		351
PF1108	2	15'-0"	Str.		159
		Total Weight		=	10,461

SPIRAL REINFORCEMENT NOTE:

The "Length" shown in the reinforcement schedule for the spiral bars is the distance from the top of the footing to the bottom of the pier cap.

Four steel channels, tee or angle spacers, weighing approximately 0.68 lbs. per linear foot of spacer, shall be provided for each spiral unit. They shall be equally spaced along the periphery of the coil. The number of pounds of these spacers, based on 0.68 lbs. per linear foot will be paid for as reinforcing steel and is included in the tabulated quantity of spiral bars.

Spiral reinforcing bars shall not have deformations but shall in other respects conform to Item S-4.

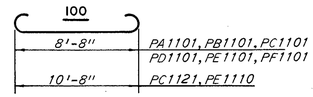
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

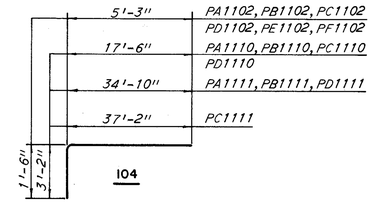
150 / 241

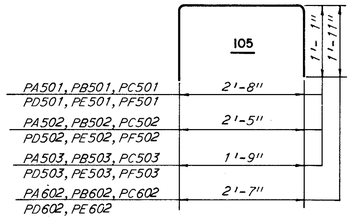
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

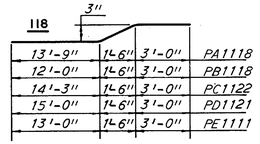
BENDING DIAGRAMS

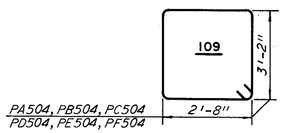
RECEIVED
MAY 24 1984

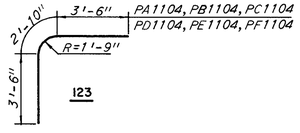


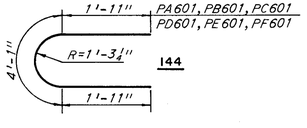


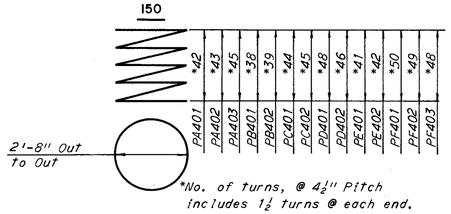












No. of turns, @ 4½" Pitch includes 1½ turns @ each end.

For Replacement Bar Schedule see sheet 151.

H.N.T.B. BRIDGE NO. 22

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

PIERS
REINFORCEMENT SCHEDULE

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

DRAWN D.L.R.	TRACED	CHECKED S.J.E.	REVIEWED W.F.	REVISED
DATE 3-1065	DATE	DATE 3-12-65	DATE 3-24-65	SHEET 150

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)	MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
S501	1-Ser. 8	6'-11" 16'-5"	101	1'-2 9/16"	93	S631	1088	39'-3"	Str.		46,141
S502	1-Ser. 44	16'-7" 17'-7"	101	4"	784	S632	1-Ser. 72	12'-0" 34'-0"	Str.	3 3/4"	2487
S503	191	33'-7"	101		6,690	S632	1-Ser. 64	12'-0" 34'-0"	Str.	4 3/16"	2,211
S504	665	36'-3"	Str.		25,143	S634	376	39'-6"	Str.		22,308
S505	1-Ser. 282	28'-10" 34'-7"	101	8"	8,885	S635	23	34'-9"	Str.		1,200
S506	161	34'-1"	101		5,723	S636	2	51'-3"	Str.		16
S507	291	35'-1"	101		10,648	S637	4	16'-0"	Str.		96
S508	152	17'-1"	101		2,708	S638	2	26'-0"	Str.		78
S509	1-Ser. 5	17'-1" 18'-10"	101	5 1/4"	94	S639	2	9'-0"	Str.		27
S510	1-Ser. 89	34'-7" 40'-4"	101	8"	3,473	S640	3	20'-0"	Str.		90
S511	1-Ser. 37	27'-6" 35'-3"	Str.	2 9/16"	1,209	S641	3	27'-6"	Str.		124
S512	1-Ser. 37	21'-11" 64'-1"	101	4"	888	S642	1-Ser. 14	34'-0" 39'-5"	Str.	5"	772
S513	1-Ser. 53	32'-2" 34'-11"	100	8"	1,852	S643	138	34'-0"	Str.		7,047
S514	174	31'-10"	100		5,777	S644	1-Ser. 12	27'-3" 33'-0"	Str.	6 1/4"	543
S515	1-Ser. 10	7'-9" 8'-4"	101	4"	84	S645	48	35'-3"	Str.		2,541
S516	24	27'-6"	Str.		688	S646	1-Ser. 15	7'-0" 42'-0"	Str.	24"	552
S517	1	18'-7"	101		19	S647	18	36'-0"	Str.		973
S518	1-Ser. 4	4'-7" 6'-7"	101	8"	23	S648	2	29'-6"	Str.		89
S519	1-Ser. 23	4'-0" 41'-0"	Str.	14 7/16"	540	S649	1	9'-0"	Str.		14
S520	1-Ser. 20	7'-10" 39'-7"	101	14 9/16"	495	S650	28	30'-9"	Str.		1,293
S521	24	16'-4"	101		405	S651	1-Ser. 4	6'-0" 24'-0"	Str.	60"	90
S522	2	26'-7"	101		55	S652	5	30'-0"	Str.		225
S523	1	32'-0"	Str.		40	S653	1-Ser. 6	6'-0" 25'-0"	Str.	31 3/8"	140
S524	2	36'-1"	101		75	S654	16	32'-3"	Str.		775
S525	1	28'-9"	Str.		30	S655	3	17'-0"	Str.		77
S526	1-Ser. 22	4'-6" 39'-6"	Str.	14-8"	505	S656	2	15'-0"	Str.		45
S527	1-Ser. 20	4'-6" 37'-0"	Str.	14 6/16"	433	S657	1-Ser. 9	34'-0" 50'-6"	Str.	6 1/4"	490
S528	1-Ser. 5	34'-8" 35'-8"	100	3"	183	S658	1-Ser. 9	26'-6" 32'-6"	Str.	9"	399
S529	1-Ser. 76	27'-6" 35'-3"	Str.	1 1/16"	2,552	S659	45	34'-6"	Str.		2,332
S530	1-Ser. 78	14'-7" 16'-4"	101	4"	1,258	S660	1-Ser. 10	4'-3" 36'-6"	Str.	34 7/16"	306
S531	1-Ser. 47	8'-7" 30'-9"	101	5 8/16"	994	S661	1-Ser. 7	6'-0" 42'-6"	Str.	6 1/16"	255
S532	1	29'-4"	101		31	S662	531	25'-0"	Str.		19,939
S533	217	6'-0"	153		1,358	S663	3	12'-8"	144		57
S534	637	51'-11"	110		3,931	S664	1	8'-6"	144		13
S535	478	12'-0"	156		5,983	S665	1	18'-0"	Str.		27
S536	145	6'-2"	109		933	S666	1	19'-6"	Str.		29
S537	3	12'-2"	156		38	S667	1	16'-0"	Str.		24
S538	2	12'-6"	156		26	S668	1	11'-6"	Str.		17
S539	1	12'-4"	156		13	S669	1	9'-0"	Str.		14
S540	1-Ser. 10	7'-0" 12'-0"	156	6 1/16"	99	S670	1	5'-0"	Str.		8
S541	2	6'-10"	109		14	S671	1	4'-0"	Str.		6
S542	3	3'-4"	126		10	S672	1	6'-9"	Str.		10
S543	1-Ser. 8	12'-1" 15'-6"	156	5 8"	115	S673	17	11'-7"	157		296
S544	1	3'-1"	105		3	S674	17	13'-0"	156		332
						S675	4	18'-1"	141		109
						S676	3	15'-7"	115		70
						S677	1-Ser. 17	13'-0" 13'-8"	156	1/2"	340
S601	191	37'-3"	Str.		10,686	S678	1-Ser. 17	12'-1" 13'-5"	157	1"	326
S602	161	38'-0"	Str.		9,189	S679	4	20'-3"	141		122
S603	291	39'-0"	Str.		17,046	S680	3	16'-4"	115		74
S604	744	36'-9"	Str.		41,067						
S605	1-Ser. 282	21'-6" 29'-6"	Str.	3"	10,801						
S606	1-Ser. 89	29'-6" 35'-6"	Str.	8"	4,345						
S607	1-Ser. 78	27'-0" 35'-6"	Str.	1 2"	3,661	S801	20	5'-5"	101		289
S608	1-Ser. 78	10'-8" 11'-11"	Str.	3"	1,328	S802	21	6'-7"	101		369
S609	1-Ser. 37	27'-6" 35'-3"	Str.	2 8"	1,744						
S610	1-Ser. 37	18'-2" 19'-11"	Str.	8"	1,058						
S611	1-Ser. 5	33'-6" 34'-6"	Str.	3"	255						
S612	1-Ser. 5	12'-3" 14'-3"	Str.	6"	100	LIGHT STANDARD SUPPORTS					
S613	152	12'-3"	Str.		2,797						
S614	1-Ser. 53	31'-0" 33'-9"	Str.	3 8"	2,577						
S615	174	30'-6"	Str.		7,971						
S616	1-Ser. 47	8'-0" 29'-8"	Str.	5 3"	1,330	L601	12	9'-11"	109		179
S617	1-Ser. 10	7'-2" 7'-9"	Str.	3"	112	L602	8	6'-10"	115		82
S618	1-Ser. 4	4'-0" 6'-0"	Str.	8"	30	L603	16	6'-3"	101		150
S619	1-Ser. 20	7'-3" 39'-0"	Str.	14 8/16"	695	L604	12	8'-4"	141		150
S620	1-Ser. 21	3'-0" 37'-0"	Str.	14 8 1/2"	631						
S621	1-Ser. 3	32'-11" 36'-0"	Str.	14 6 1/2"	155						
S622	85	36'-6"	Str.		4,660						
S623	24	11'-3"	Str.		406						
S624	1-Ser. 8	6'-4" 14'-10"	Str.	1 2 9/16"	127			Total Weight =			363,695
S625	1-Ser. 13	16'-6" 36'-6"	Str.	14-8"	517						
S626	76	38'-3"	Str.		4,366						
S627	1-Ser. 19	3'-5" 34'-5"	Str.	14 6 1/16"	540						
S628	1-Ser. 10	3'-2" 18'-0"	Str.	14 7 1/2"	159						
S629	1-Ser. 64	17'-0" 39'-0"	Str.	4 3/4"	2,692						
S630	1-Ser. 72	17'-0" 39'-0"	Str.	3 3/4"	3,028						

MICROFILMED
MAY 24 1984

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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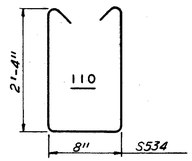
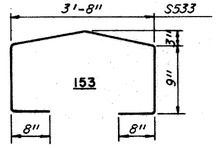
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

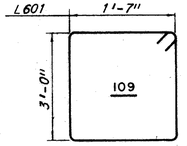
BENDING DIAGRAMS

100

31'-0" to 33'-9"	S513
30'-8"	S514
33'-6" to 34'-6"	S528

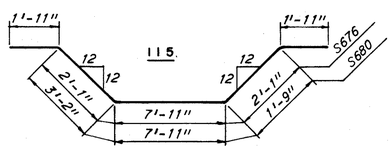


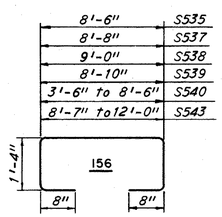


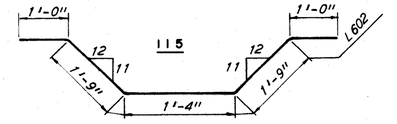


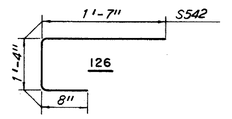
101

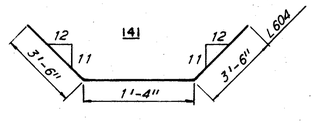
6'-4" to 14'-10"	S501
16'-0" to 17'-0"	S502
33'-0"	S503
25'-3" to 34'-0"	S505
33'-6"	S506
34'-6"	S507
16'-6"	S508
16'-6" to 18'-3"	S509
34'-0" to 39'-9"	S510
21'-4" to 23'-6"	S512
7'-2" to 7'-9"	S515
18'-0"	S517
4'-0" to 6'-0"	S518
7'-3" to 39'-0"	S520
15'-9"	S521
26'-0"	S522
35'-6"	S524
14'-0" to 15'-9"	S530
8'-0" to 29'-8"	S531
28'-9"	S532
4'-4"	S801
5'-6"	S802
5'-7"	L603

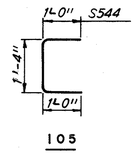


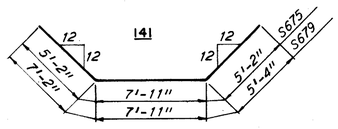


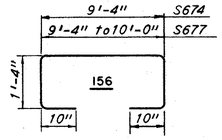






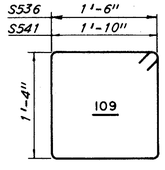


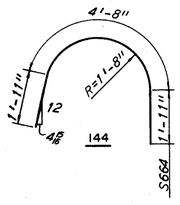


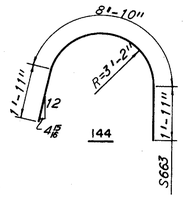


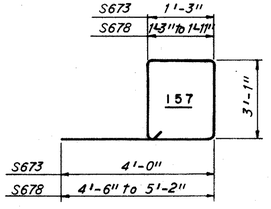
REPLACEMENT BAR SCHEDULE			
Size	No.	Length	Type
4	1	5'-3"	Str.
5	6	5'-9"	Str.
6	16	6'-0"	Str.
8	2	6'-6"	Str.
9	1	7'-0"	Str.
11	7	7'-6"	Str.

Note: Replacement bars are listed for the Bridge and Retaining Walls.









H.N.T.B. BRIDGE NO. 22

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

DECK REINFORCEMENT SCHEDULE

I-71 UNDER RELOCATED WEST 25th STREET

BR. NO. CUY-71-1752 STA. 13+25.63
STA. 16+77.34

CLEVELAND CUYAHOGA COUNTY OHIO

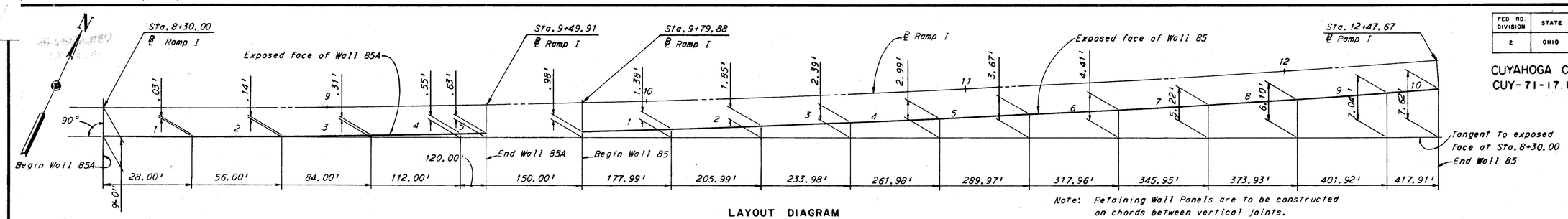
DRAWN	TRACED	CHECKED	REVIEWED	REVISED
TLS		JMC	WF	
DATE 3-15-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 151

M-14

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

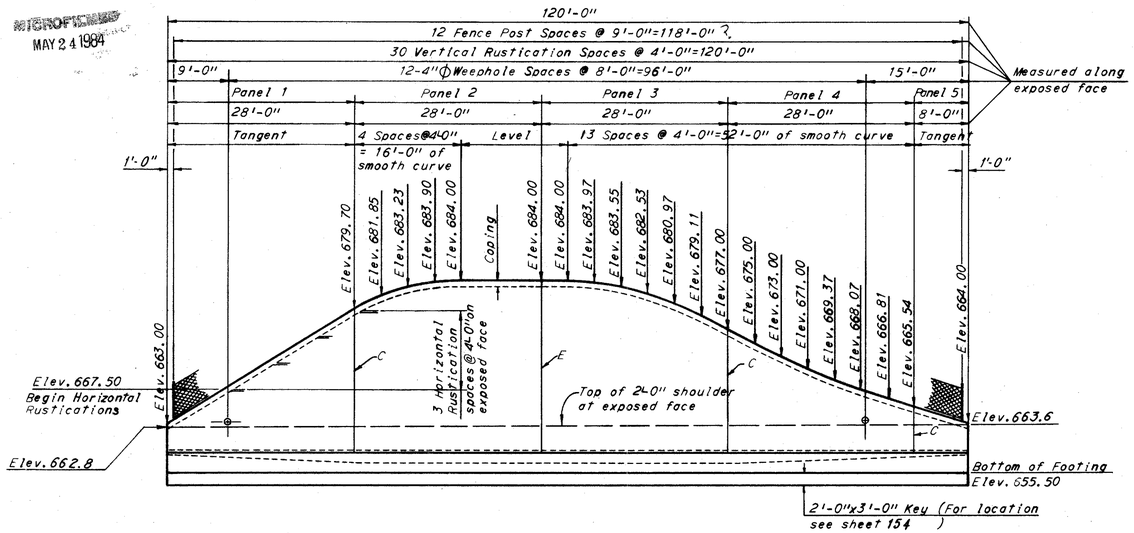
152
241

CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



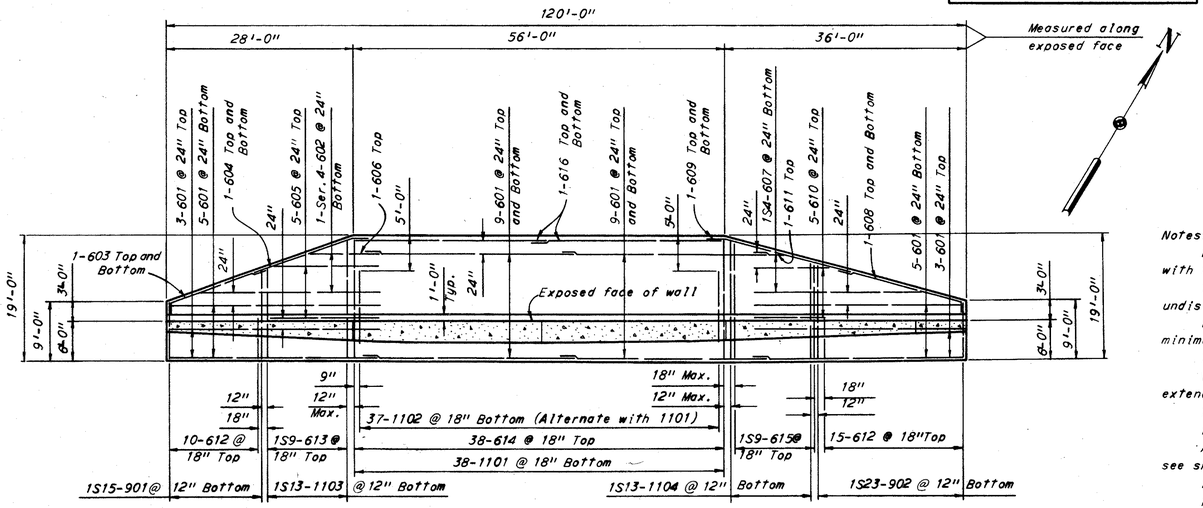
Note: Retaining Wall Panels are to be constructed on chords between vertical joints.

LAYOUT DIAGRAM

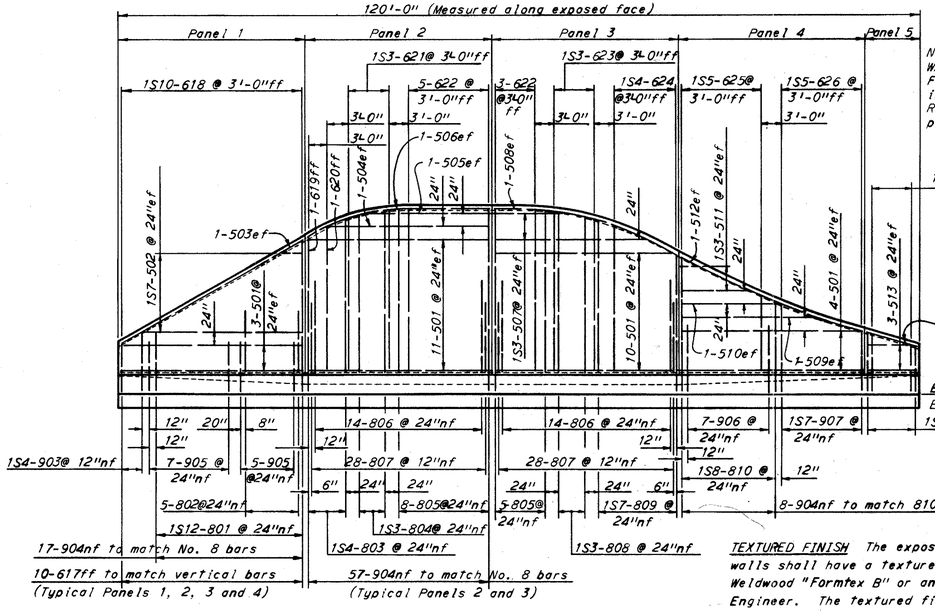


DEVELOPED ELEVATION - WALL 85A

All reinforcing bar marks for Wall 85A shall be prefixed WA



FOOTING PLAN - WALL 85A



STEM REINFORCEMENT - WALL 85A

Note: Field bend bars WA506, WA508 and WA512 as required. Field bending is to be included in "Item S-4, Reinforcing Steel" for payment.

Notes:

Backfill shall be placed on the exposed face side of the walls prior to or simultaneous with the placing of backfill behind the walls.

The 2'-0"x 3'-0" key for the footing shall be placed in a carefully made trench against undisturbed earth.

Location of construction joints in the footings are optional but shall be located a minimum of 5'-0" from wall joints.

The spread footings are designed for a maximum bearing pressure of 1½ tons per square foot.

Vertical rustications shall coincide with contraction and expansion joints and shall extend from top of footing to bottom of 2'1"x10" coping.

The elevation given to begin horizontal rustications is at the top edge of the rustication.

For details of expansion joints, contraction joints and rustications see sheet 153.

A 5'-0" Chain Link Fence shall be provided on top of the retaining walls. For detail see sheet 153.

For Wall Sections see sheet 154.

For Reinforcement Schedule and Bar Bending Diagrams see sheet 155.

The following abbreviations are used: nf = near face; ff = far face; ef = each face; C = Contraction Joint; E = Expansion Joint; S = Series

TEXTURED FINISH The exposed face of the retaining walls shall have a textured finish as produced by Weldwood "Formtex B" or an equal approved by the Engineer. The textured finish shall be uniform and shall extend from the bottom of the 2 inch by 10 inch coping to below the top of the 2'-0" paved shoulder for the entire length of the walls.

Four feet by four feet form panels shall be used where possible. The panels shall be placed with the form striations alternating horizontally and vertically between rustications.

The requirements of Section S-1.22, Grout Cleaning shall apply to all textured finish surfaces.

H.N.T.B. WALL NO. 85A & 85

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

WALLS RIGHT OF RAMP I

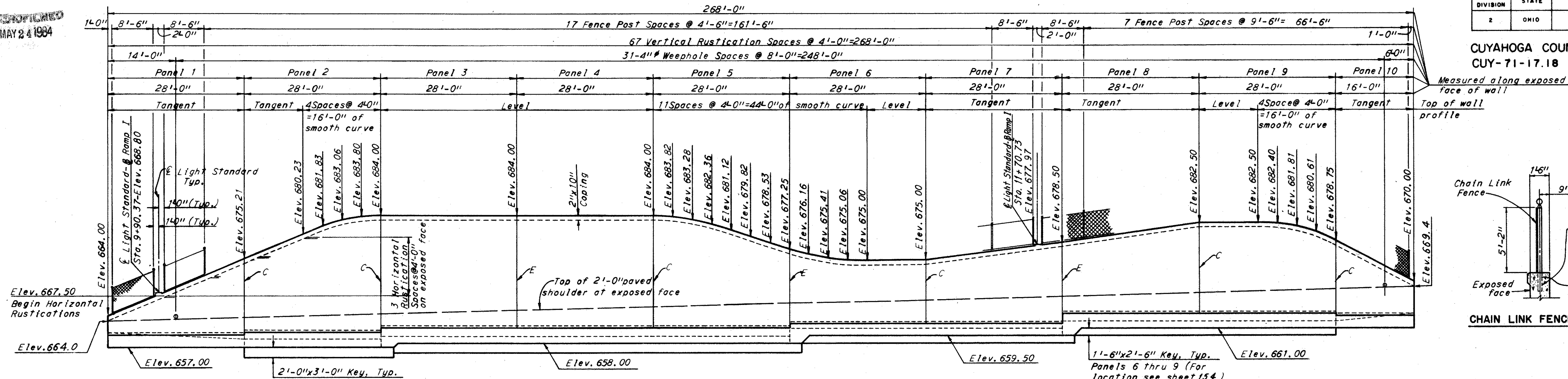
STA. 8+30.00
STA. 12+47.67

DRAWN	TRACED	CHECKED JEN	REVIEWED WF	REVISED
DATE 3-5-65	DATE	DATE 3-17-65	DATE 3-24-65	SHEET 152

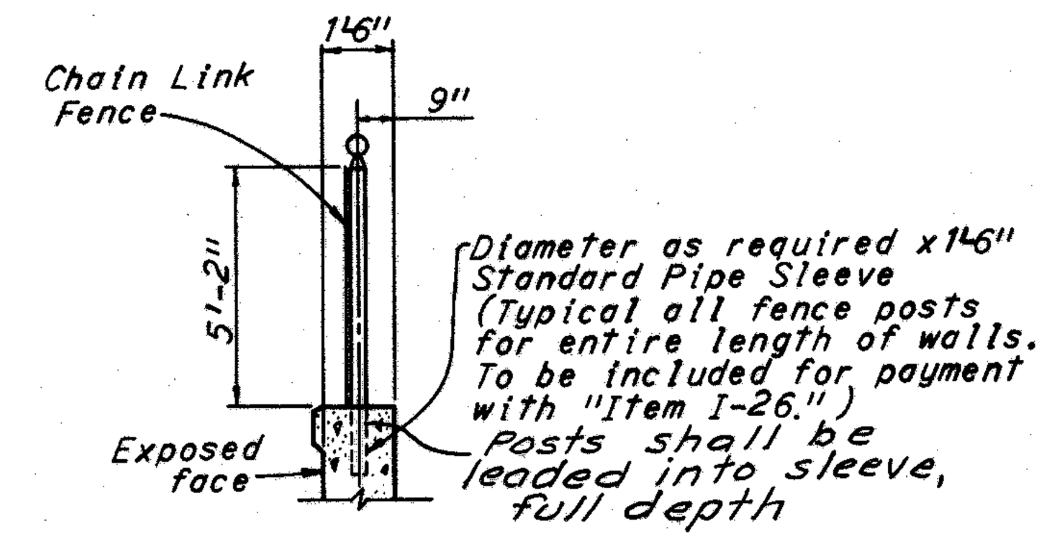
219

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

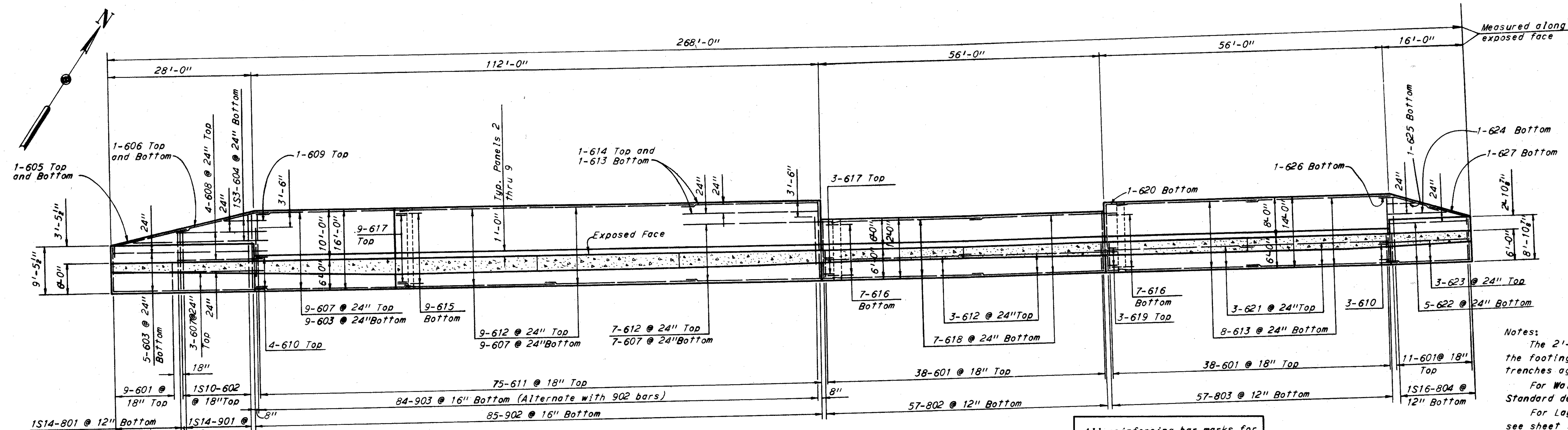
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



DEVELOPED ELEVATION - WALL 85



CHAIN LINK FENCE DETAIL



FOOTING PLAN - WALL 85

All reinforcing bar marks for Wall 85 shall be prefixed WB.

Notes:

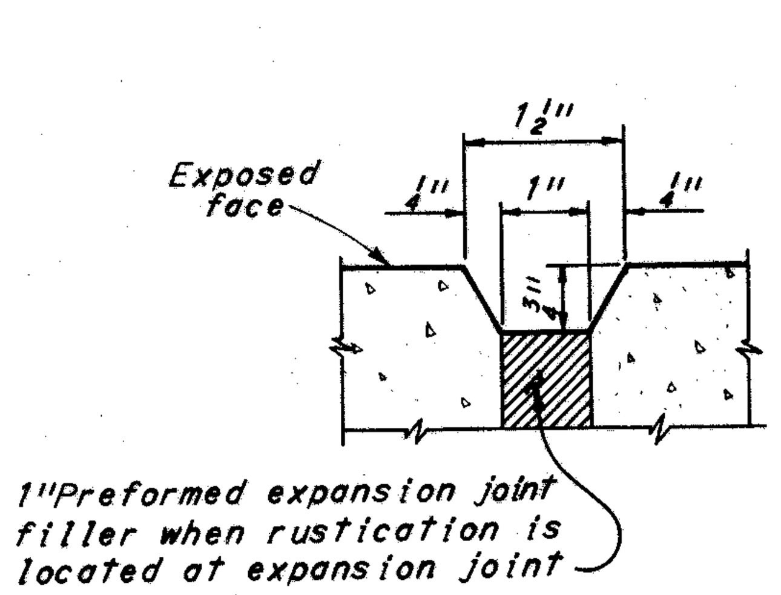
The 2'-0"x3'-0" and 1'-6"x2'-6" keys for the footings shall be placed in carefully made trenches against undisturbed earth.

For Wall 85 Stem Reinforcement and Light Standard detail see sheet 154.

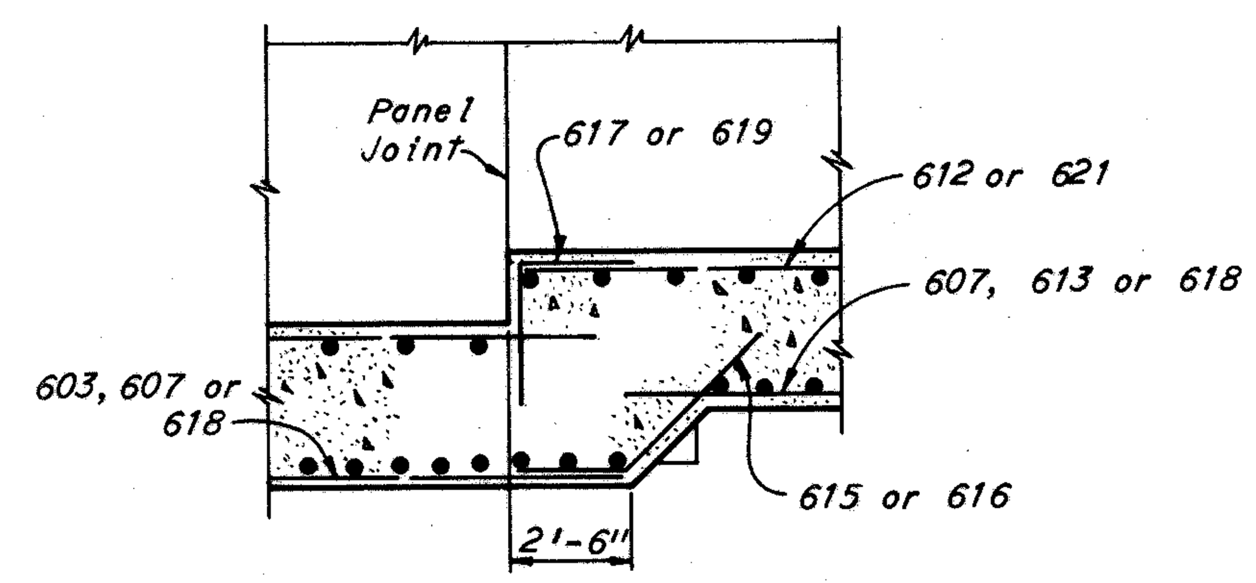
For Layout Diagram and additional notes see sheet 152.

The following abbreviations are used:

nf = near face	C= contraction joint
ff = far face	E = expansion joint
ef = each face	S = series

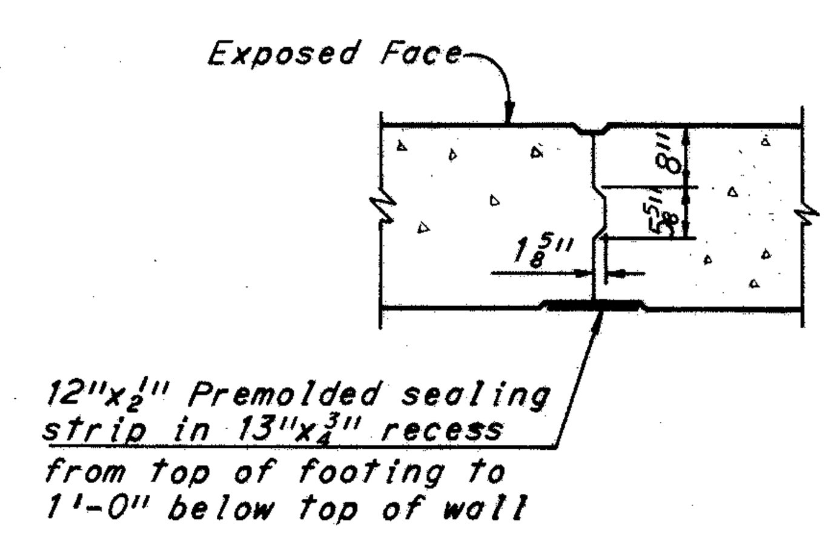


RUSTICATION DETAIL

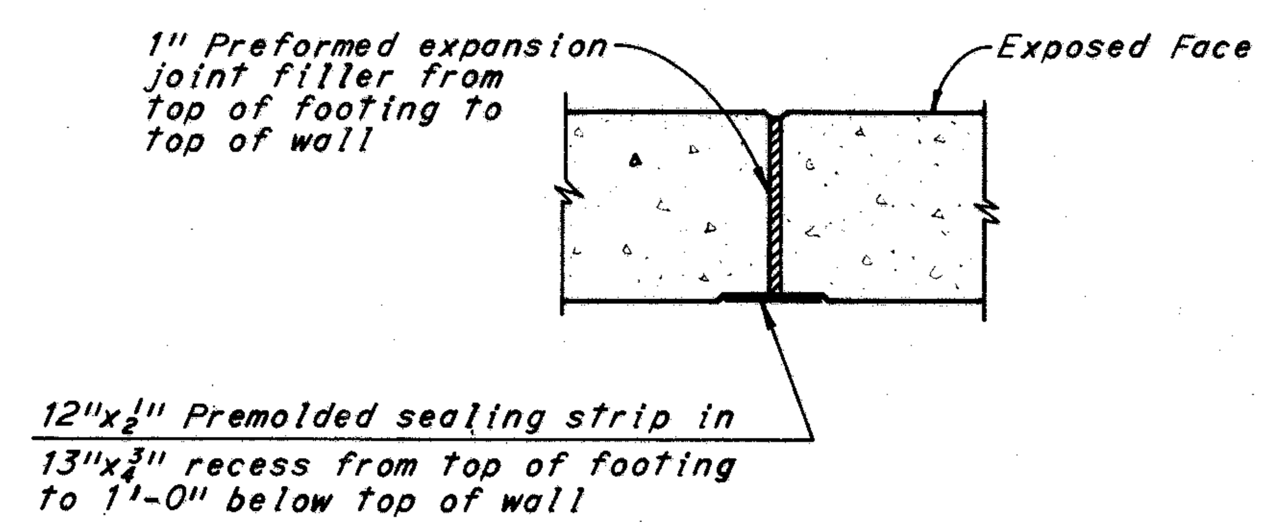


FOOTING STEP DETAIL

(Key not shown)



CONTRACTION JOINT DETAIL



EXPANSION JOINT DETAIL

H.N.T.B. WALL NO. 85A & 85

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

WALLS RIGHT OF RAMP I

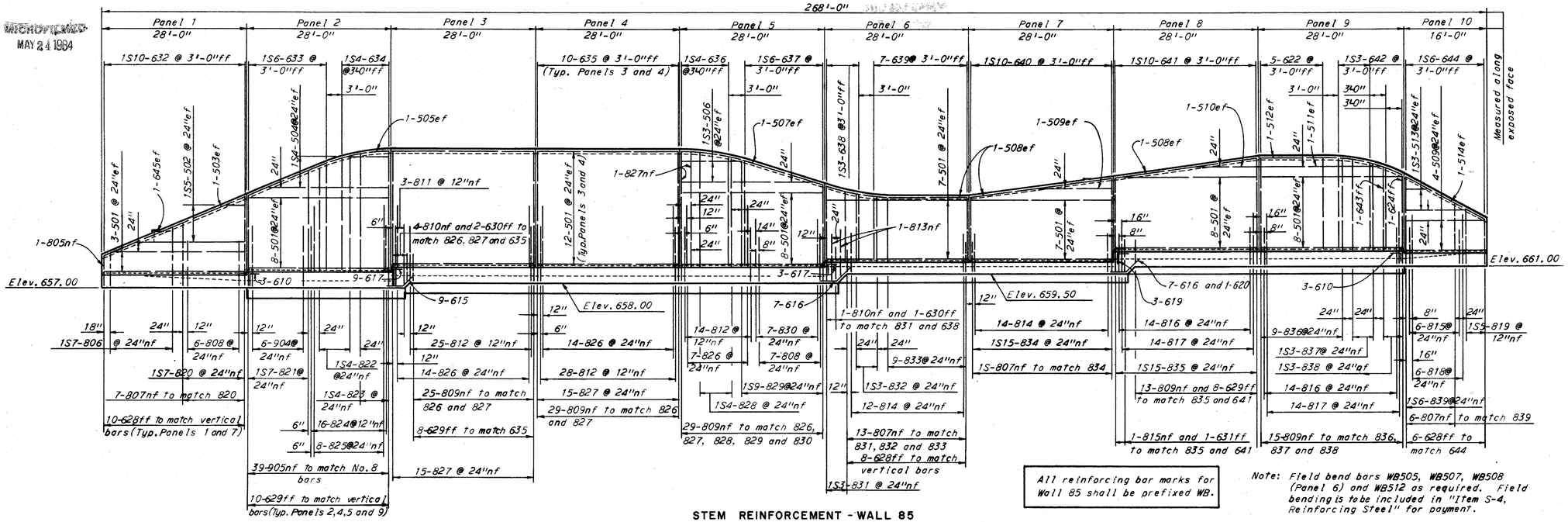
STA. 8+30
STA. 12+47.67

DRAWN	TRACED	CHECKED SJE	REVIEWED WF	REVISED
DATE 3-5-65	DATE	DATE 3-18-65	DATE 3-24-65	SHEET 153

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

154
241

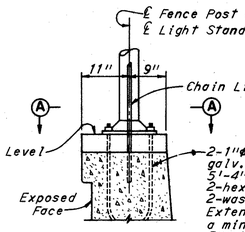
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18



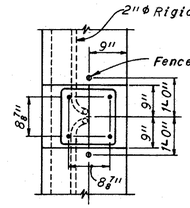
STEM REINFORCEMENT - WALL 85

All reinforcing bar marks for Wall 85 shall be prefixed WB.

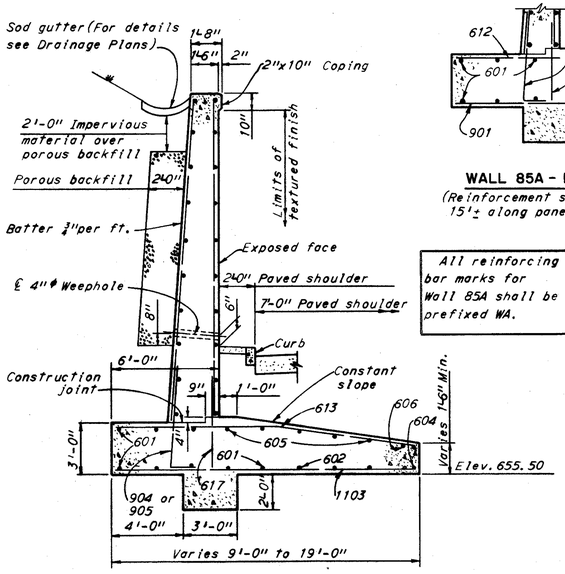
Note: Field bend bars WB505, WB507, WB508 (Panel 6) and WB512 as required. Field bending is to be included in "Item S-4, Reinforcing Steel" for payment.



LIGHT STANDARD DETAIL



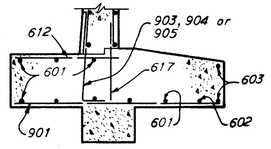
SECTION A-A



WALL 85A - PANEL 1

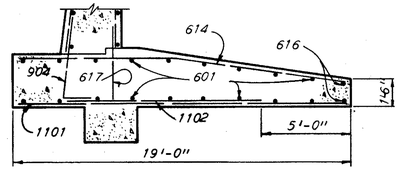
(Reinforcement shown for 15'± to 28' along panel wall.)

Note: Details dimensions and elevation shown hereon are typical for all panels of Wall 85A and Wall 85 unless otherwise shown on the panel section.

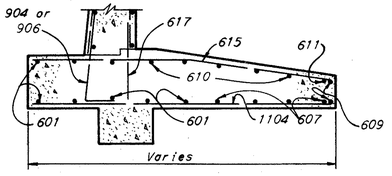


WALL 85A - PANEL 1

(Reinforcement shown for 0' to 15'± along panel wall.)

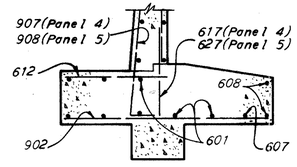


WALL 85A - PANELS 2 AND 3



WALL 85A - PANEL 4

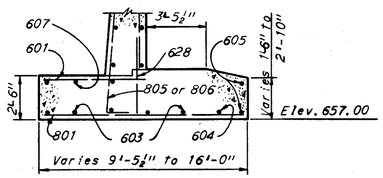
(Reinforcement shown for 0 to 15'± along panel wall.)



WALL 85A - PANELS 4 AND 5

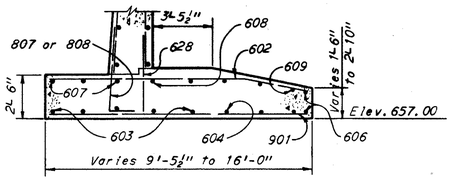
(Reinforcement shown for 15'± to 28' along Panel 4 wall and for entire length along Panel 5 wall.)

All reinforcing bar marks for Wall 85A shall be prefixed WA.



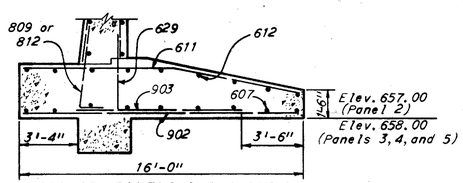
WALL 85 - PANEL 1

(Reinforcement shown for 0' to 13'± along panel wall.)



WALL 85 - PANEL 1

(Reinforcement shown for 13'± to 28' along panel wall.)



WALL 85 - PANELS 2, 3, 4 AND 5

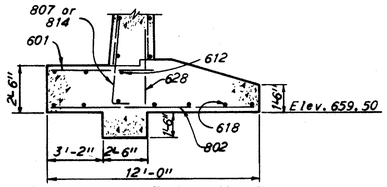
(Reinforcement shown for Panel 4)

Notes:

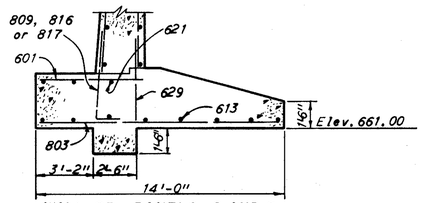
For additional notes see sheet 152.

The following abbreviations are used:

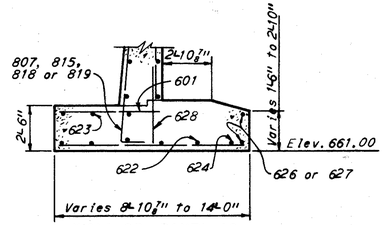
nf = near face
ff = far face
ef = each face
S = series



WALL 85 - PANELS 6 AND 7



WALL 85 - PANELS 8 AND 9



WALL 85 - PANEL 10

H.N.T.B. WALL NO. 85A & 85

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

WALLS RIGHT OF RAMP I

STA. 8+30.00
STA. 12+47.67

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
DATE 3-5-65	DATE	DATE 3-18-65	DATE 3-22-65	SHEET 154

MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)	MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)	MARK	NO.	LENGTH	TYPE	SER. INCR.	WEIGHT (LBS.)
	RETAINING WALL 85A						RETAINING WALL 85					WB818	6	10'-8"	148		171
WA501	56	27'-6"	Str.		1,606	WB501	146	27'-6"	Str.		4,188	WB819	1-Ser.5	9'-7" 11'-9"	148	6¼"	142
WA502	2-Ser.7	4'-3" 24'-6"	Str.	3'-4½"	2	WB502	2-Ser.5	2'-9" 23'-9"	Str.	5'-3"	138	WB820	1-Ser.7	10'-9" 15'-6"	Str.	9½"	245
WA503	2	32'-3"	Str.		67	WB503	2	30'-0"	Str.		63	WB821	1-Ser.7	15'-0" 20'-0"	Str.	10"	327
WA504	2	25'-3"	Str.		53	WB504	2-Ser.4	9'-6" 24'-9"	Str.	5'-1"	143	WB822	1-Ser.4	20'-9" 22'-9"	Str.	8"	232
WA505	2	20'-3"	Str.		42	WB505	2	29'-3"	Str.		61	WB823	1-Ser.4	23'-3" 23'-9"	Str.	2"	251
WA506	2	28'-6"	Str.		54	WB506	2-Ser.3	14'-3" 26'-6"	Str.	6'-1½"	128	WB824	16	9'-0"	Str.		384
WA507	2-Ser.3	13'-9" 23'-9"	Str.	5'0"	117	WB507	2	28'-6"	Str.		59	WB825	8	13'-0"	Str.		278
WA508	2	29'-0"	Str.		60	WB508	6	27'-9"	Str.		174	WB826	35	12'-0"	Str.		1,121
WA509	2	22'-9"	Str.		47	WB509	10	15'-6"	Str.		162	WB827	32	22'-9"	Str.		1,944
WA510	2	16'-9"	Str.		35	WB510	2	13'-6"	Str.		28	WB828	1-Ser.4	21'-6" 22'-6"	Str.	4"	235
WA511	2-Ser.3	3'-6" 11'-6"	Str.	4'0"	47	WB511	2	23'-9"	Str.		50	WB829	1-Ser.9	16'-0" 27'-0"	Str.	7½"	445
WA512	2	29'-9"	Str.		62	WB512	2	28'-3"	Str.		59	WB830	7	9'-6"	Str.		178
WA513	6	7'-6"	Str.		47	WB513	2-Ser.3	4'-9" 12'-0"	Str.	3'-7½"	52	WB831	1-Ser.3	14'-0" 15'-0"	Str.	6"	116
WA514	2	8'-0"	Str.		17	WB514	2	17'-9"	Str.		37	WB832	1-Ser.3	13'-0" 13'-6"	Str.	3"	106
												WB833	9	12'-9"	Str.		306
WA601	52	31'-6"	Str.		2,460	WB601	96	5'-9"	Str.		829	WB834	1-Ser.15	12'-9" 16'-3"	Str.	3"	581
WA602	1-Ser.4	10'-6" 27'-0"	Str.	5'6"	113	WB602	1-Ser.10	12'-2" 15'-4"	108	4½"	207	WB835	1-Ser.15	14'-3" 18'-3"	Str.	3½"	651
WA603	2	17'-0"	108		51	WB603	14	30'-3"	Str.		636	WB836	9	18'-3"	Str.		439
WA604	2	17'-4"	108		52	WB604	1-Ser.3	10'-0" 27'-3"	Str.	8'-7½"	84	WB837	1-Ser.3	17'-0" 18'-0"	Str.	6"	140
WA605	5	16'-0"	Str.		120	WB605	2	17'-0"	108		51	WB838	1-Ser.3	14'-6" 16'-6"	Str.	1'-4"	124
WA606	1	10'-6"	Str.		16	WB606	2	17'-1"	108		51	WB839	1-Ser.6	9'-6" 14'-9"	Str.	1'-0⅜"	194
WA607	1-Ser.4	4'-3" 25'-3"	Str.	7'0"	89	WB607	37	29'-6"	Str.		1,639						
WA608	2	20'-9"	108		62	WB608	4	16'-3"	Str.		98	WB901	1-Ser.14	12'-3" 15'-3"	Str.	2'-3"	655
WA609	2	21'-0"	108		63	WB609	1	9'-9"	Str.		15	WB902	85	15'-6"	Str.		4,479
WA610	5	11'-3"	108		84	WB610	7	3'-10"	104		40	WB903	84	9'-6"	Str.		2,713
WA611	1	4'-3"	Str.		6	WB611	75	15'-8"	108		1,765	WB904	6	12'-9"	148		260
WA612	25	5'-9"	Str.		216	WB612	31	29'-9"	Str.		1,385	WB905	39	6'-7"	148		873
WA613	1-Ser.9	14'-1" 18'-4"	108	6'3"	219	WB613	18	28'-0"	Str.		757						
WA614	38	18'-9"	108		1,070	WB614	2	27'-0"	Str.		81						
WA615	1-Ser.9	14'-10" 18'-4"	108	5¼"	224	WB615	9	4'-7"	108		62			Total Weight	=		47,404
WA616	2	30'-0"	Str.		90	WB616	14	5'-6"	108		116						
WA617	40	5'-0"	Str.		300	WB617	12	4'-4"	104		78						
WA618	1-Ser.10	4'-6" 20'-3"	Str.	1'-4'9"	186	WB618	14	29'-3"	Str.		615						
WA619	1	20'-9"	Str.		31	WB619	3	5'-4"	104		24						
WA620	1	22'-6"	Str.		34	WB620	1	5'-10"	108		9						
WA621	1-Ser.3	23'-9" 24'-9"	Str.	6"	109	WB621	6	29'-0"	Str.		261						
WA622	8	25'-0"	Str.		300	WB622	10	18'-0"	Str.		270						
WA623	1-Ser.3	23'-6" 24'-9"	Str.	7½"	109	WB623	3	17'-6"	Str.		79						
WA624	1-Ser.4	18'-3" 22'-6"	Str.	1'-5"	122	WB624	2	14'-3"	Str.		43						
WA625	1-Ser.5	11'-9" 17'-6"	Str.	1'-5½"	110	WB625	1	7'-9"	Str.		12						
WA626	1-Ser.5	6'-6" 10'-6"	Str.	1'-0"	64	WB626	1	11'-2"	108		17						
WA627	1-Ser.3	8'-3" 9'-3"	Str.	6"	39	WB627	1	11'-0"	108		17						
						WB628	34	4'-6"	Str.		230						
WA801	1-Ser.12	7'-6" 20'-9"	Str.	1'-2⅞"	453	WB629	56	5'-0"	Str.		421						
WA802	5	10'-0"	Str.		134	WB630	4	6'-0"	Str.		36						
WA803	1-Ser.4	21'-0" 23'-9"	Str.	1'1"	239	WB631	2	6'-6"	Str.		20						
WA804	1-Ser.3	24'-6" 25'-0"	Str.	3'1"	198	WB632	1-Ser.10	4'-9" 15'-0"	Str.	1'-1⅛"	148						
WA805	13	25'-3"	Str.		876	WB633	1-Ser.6	14'-9" 21'-0"	Str.	1'-4'3"	161						
WA806	28	14'-6"	Str.		1,084	WB634	1-Ser.4	22'-0" 23'-6"	Str.	6'1"	137						
WA807	56	11'-0"	Str.		1,645	WB635	20	22'-3"	Str.		668						
WA808	1-Ser.3	24'-3" 25'-0"	Str.	4½"	197	WB636	1-Ser.4	21'-3" 22'-3"	Str.	4"	131						
WA809	1-Ser.7	18'-6" 23'-9"	Str.	10½"	395	WB637	1-Ser.6	15'-9" 20'-6"	Str.	11⅛"	163						
WA810	1-Ser.8	11'-3" 18'-0"	Str.	11⅜"	312	WB638	1-Ser.3	13'-0" 14'-6"	Str.	9"	62						
						WB639	7	12'-6"	Str.		131						
WA901	1-Ser.15	8'-9" 13'-9"	Str.	4⅝"	574	WB640	1-Ser.10	12'-6" 15'-9"	Str.	4⅞"	212						
WA902	1-Ser.23	8'-9" 14'-9"	Str.	3½"	919	WB641	1-Ser.10	14'-0" 17'-9"	Str.	5"	238						
WA903	1-Ser.4	8'-1" 9'-11"	148	7⅛"	122	WB642	1-Ser.3	16'-9" 17'-9"	Str.	6"	78						
WA904	139	6'-7"	148		3,111	WB643	1	15'-9"	Str.		24						
WA905	12	8'-9"	148		357	WB644	1-Ser.6	6'-3" 14'-3"	Str.	1'-7'3"	92						
WA906	7	11'-3"	148		268	WB645	2	5'-5"	104		16						
WA907	1-Ser.7	10'-9" 14'-9"	148	8"	303												
WA908	1-Ser.5	9'-1" 10'-6"	148	4'4"	166	WB801	1-Ser.14	9'-0" 12'-0"	Str.	2'3"	392						
						WB802	57	11'-6"	Str.		1,750						
WA1101	38	18'-6"	Str.		3,735	WB803	57	13'-6"	Str.		2,055						
WA1102	37	11'-0"	Str.		2,162	WB804	1-Ser.16	8'-6" 13'-3"	Str.	3'13"	465						
WA1103	1-Ser.13	14'-0" 18'-3"	Str.	4½"	1,114	WB805	1	8'-0"	148		21						
WA1104	1-Ser.13	15'-0" 18'-3"	Str.	3½"	1,148	WB806	1-Ser.7	8'-9" 13'-2"	148	10'13"	205						
						WB807	41	5'-8"	148		620						
		Total Weight =			28,320	WB808	13	9'-8"	148		336						
						WB809	111	6'-2"	148		1,828						
						WB810	6	7'-2"	148		115						
						WB811	3	12'-8"	148		101						
						WB812	67	11'-8"	148		2,087						
						WB813	2	10'-2"	148		54						
						WB814	26	8'-8"	148		602						
						WB815	8	7'-8"	148		164						
						WB816	28	8'-2"	148		611						
						WB817	28	11'-2"	148		835						

MAY 24 1964

FED RD. DIVISION	STATE	PROJECT	
2	OHIO		

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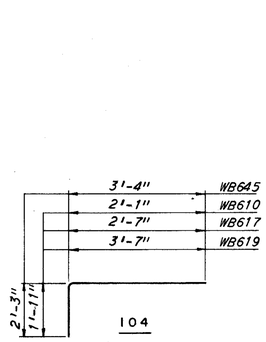
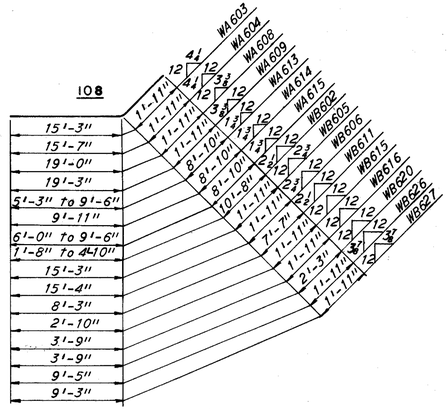
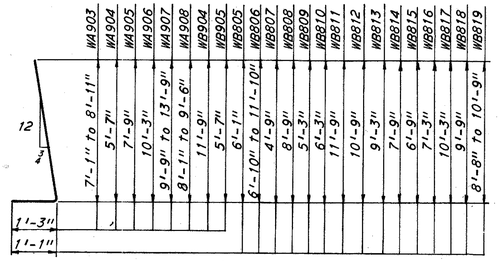
CUYAHOGA COUNTY CITY OF CLEVELAND
CUY-71-17.18

BENDING DIAGRAMS



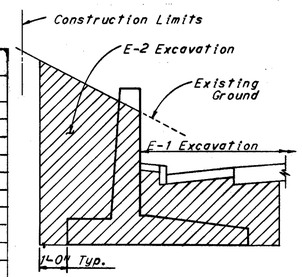




Note: For Replacement Bar Schedule see sheet 151.

ESTIMATED QUANTITIES - RETAINING WALLS TYPE CODE 7221

ITEM	TOTAL-85A	TOTAL-85	UNIT	DESCRIPTION	TOTAL
E-2	Lump Sum	Lump Sum	LumpSum	Cofferdams, Cribs and Sheeting	LUMP
E-2	980	1950	Cu. Yds.	Unclassified Excavation	2,930
S-1	224	417	Cu. Yds.	Class "E" Concrete, Retaining Walls (Footings)	641
S-1	165	355	Cu. Yds.	Class "E" Concrete, Retaining Walls (Above footings)	520
S-3	68	152	Lin. Ft.	Waterproofing, Premolded Sealing Strip	220
S-4	28,320	47,404	Lbs.	Reinforcing Steel	75,724
S-9	58	117	Sq. Ft.	1" Preformed Expansion Joint Filler	175
S-29	90	205	Cu. Yds.	Porous Backfill	295
I-26	120	264	Lin. Ft.	Chain Link Fence, as per plan	384



TYPICAL SECTION USED TO DETERMINE UNCLASSIFIED EXCAVATION QUANTITIES

H.N.T.B. WALL NO. 85A & 85

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

WALLS RIGHT OF RAMP I

STA. 8+30.00
STA. 12+47.67

DRAWN	TRACED	CHECKED	REVIEWED	REVISED
S.J.E.	C.P.		WF	
DATE 3-1-65	DATE 3-1-65	DATE 3-1965	DATE 3-24-65	SHEET 155

MELP CONDUIT NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY. 71-17.18

SCOPE OF WORK

The work contemplated under this contract comprises the furnishing and installing the following electrical power conduit banks and manholes and performing other incidental work necessary to abandon existing electrical facilities.

1. Non-encased, bridge-supported, asbestos-cement, Type II Conduit Banks (complete with support brackets)
2. Reinforced, concrete-encased, asbestos-cement, Type II, Conduit banks (complete).
3. Non-reinforced, concrete-encased, fibre Type I. Conduit banks (complete).
4. Reinforced concrete manholes.
5. Abandoning existing manholes

The Contractor shall do all the work and furnish all the labor and material necessary for the final completion of this contract in the manner and under the conditions herein specified and provided and in accordance with the contract drawings. In the case of any item not specifically mentioned in the electrical power conduit work notes, the State of Ohio, Department of Highways "Construction and Material Specifications - January 1, 1963" shall govern.

Work is required at two locations; W. 25th St. and W. 32nd St.

DEFINITIONS

Whenever in these specifications or in any documents or instructions in construction where these specifications govern, the following terms are used, (or pronouns in place of them). The intent and meaning shall be interpreted as follows:

The State

The State is the State of Ohio acting through its authorized representative.

Engineer

The Engineer is Division Deputy Director or Division Engineer, the Division Construction Engineer or the Division Maintenance Engineer, the Project Engineer assigned to administer the contract, or their duly assigned deputies, agents, or representatives.

The City, or the City of Cleveland

The City, or the City of Cleveland, is the Director, Department of Public Utilities, of the City of Cleveland.

STATUS OF CITY INSPECTOR

Inspectors as designated by the Director of Public Utilities shall be authorized to inspect all work done and materials furnished. Such inspecting may extend to all or any part of the electrical power conduit work, and to the preparation or manufacture of the materials to be used in the electrical power conduit work. The City Inspector as designated by the Director of Public Utilities shall make work instructions through the Project Engineer.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS

Figured dimensions on drawings shall take precedence over measurements by scale, and detailed drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work. If, however, any of the detailed drawings show more elaborate or expensive work then is specified and indicated by the contract drawings, notice thereof must be given to the Engineer by the Contractor within ten (10) days after the receipt of such detailed drawings in order that the drawings may be amended or the additional expense on account of such work may be adjusted and authorized. If the Engineer does not receive such notice from the Contractor within ten (10) days after detailed drawings have been received by him, it is hereby agreed that the Contractor accepts the drawing and will execute them without claim for extra compensation.

FLOODS AND FREEZING WEATHER

Proper facilities shall be provided for protecting the work from damage by flood, rain or frost, and work done in freezing weather shall be done in such manner, as the Engineer may approve.

ADDITIONAL WORK

(A) - Attention is called to the fact that the work of this contract includes certain performances as incidental to the itemized requirements hereof, though not exclusive as follows: To perform all excavation, backfilling, sheeting, shoring, temporary and final repaving. Sand backfill shall be placed under existing and proposed pavement and sidewalk. For the performances herein described and for other incidental performances of like nature, the State will make no specific or separate payment or allowance, but the cost thereof shall be included in the prices stipulated to be paid for the various items of the work to be done under this contract.

(B) - After conduits have been installed the Contractor shall clean all the ducts by pulling through a mandrel to remove solid obstructions, followed by a circular wire brush to remove any dirt, sand or concrete which may have been introduced during construction, leaving a clean conduit free from obstructions or foreign matter.

ROAD SURFACES, SIDEWALKS, DRIVEWAYS, AND CURBING

(A) - The Contractor shall remove all pavements and road surfaces within the lines of excavation. After the concrete encased conduit line has been laid, and the new manhole completed, all appurtenant work constructed and backfill completed, he shall furnish, place, and maintain wherever the pavement or road surface has been removed or damaged by him, a temporary pavement in the paved portion of streets, or a temporary road surface in the unpaved portion of streets, so as to provide a safe and passable roadway until such time as the final pavement or road surface is completed.

(B) - All pavements, road surfaces, sidewalks, driveways, or curbs which the Contractor is required to replace or to have replaced, shall, at the expiration of this contract, be in at least as good condition as of the time of awarding the contract.

(C) - Tunneling will not be permitted without permission of the Engineer. In backfilling Tunnels, sand shall be used as far as possible and balance of backfilling made with Class E concrete, rammed in place.

(D) - No specific or separate payment will be made for all of this work, but the cost thereof shall be included in the prices bid for the various items of the work to be done under this contract. Restoration as noted above will only be required in areas where the plans do not otherwise propose new construction of pavement, sidewalks, and curbs, except that temporary restoration in such areas may be required by the Engineer in order to maintain traffic or local access.

PAINTING

(A) - It is the intention of these specifications to provide that all metal work subject to corrosion shall be satisfactorily protected by a durable coating of paint or other approved material and that all metal surfaces not buried in earth, or in concrete shall be left clean and well painted at the completion of the contract. Unless otherwise specified, the protection shall be at least that given by three (3) coats of approved paint. The first coat is to be applied at the shop before the metal has rusted and after all grease, dirt and scale has been removed. Bolts and nuts shall not be shop coated, but shall receive three (3) coats of approved paint after installation.

(B) - All metal work which has not been coated before the arrival on the job shall be given a temporary protective coating of such a nature as to permit the ready adherence of future coatings. The temporary coating shall be a good grade asphaltic paint or other approved material. This temporary protection shall apply particularly to the following material, and elsewhere when in the opinion of the Engineer, such protection is necessary.

Manhole Frames and Covers.

(C) - All surfaces of metal which will be in contact after assembling shall be painted, at least one coat, before assembling. The final coat of paint on all exposed work shall be given shortly before the completion of the contract.

(D) - Where painting clauses appear hereinafter, they shall take precedence over this section, except that temporary protection herein described may be required.

(E) - All of this work shall be included in the price bid for the particular item requiring the painting.

EXCAVATION

(A) - The Contractor shall remove all existing structures, roadways, driveways and other similar materials and make to the lines and grades given, all excavation necessary for the proper construction of the concrete encased conduit line and manhole. The excavation shall include the removal, handling, rehandling and disposal of materials encountered in the work and shall include all pumping, bailing, draining, sheeting and bracing. Moreover, the Contractor must assume all responsibility for any added expense or other liability which may arise by means of quicksand, obstacles or conditions foreseen or unforeseen and encountered in the work of this contract.

(B) - Trenches shall in every case be of sufficient width to permit solid packing of refill under and around and satisfactory construction of all appurtenances and for such sheeting and shoring, pumping and draining as may be necessary.

(C) - The trench shall be dug to the alignment and depth required and only so far in advance of laying of the concrete encased conduit line as the Engineer shall permit. The trench shall be so braced and drained that workmen may work therein safely and efficiently. It is essential that the discharge from pumps be led to natural drainage channels, to drains, or to sewers.

(D) - The trench width may vary with and depend upon the depth of trench and the nature of the excavated material encountered, but in any case shall be of ample width to permit the concrete encased conduit line to be laid and jointed properly and of the backfill to be placed and compacted properly. The maximum clear width of trench shall be not more than two (2) feet greater than the outside envelope of the concrete encased conduit line. When sheeting and bracing is used, the trench width shall be increased accordingly.

(E) - The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the concrete encased conduit line is to be laid. The concrete encased conduit line shall be laid upon sound soil cut true and even, so that it will have a bearing for its full length.

(F) - Any part of the trench excavated below grade shall be corrected with approved material, thoroughly compacted.

(G) - When the uncovered trench bottom at subgrade is soft and in the opinion of the Engineer cannot support the concrete encased conduit line, a further depth and or width shall be excavated and refilled to concrete encased conduit line foundation grade as required under (F), or other approved means shall be adopted to assure a firm foundation for the concrete encased conduit line.

(H) - Ledge rock, boulders, large stones, and shale shall be removed to provide a clearance of at least six (6) inches below all parts of the concrete encased conduit line.

(I) - Excavation below subgrade in rock, shale or in boulders shall be refilled to subgrade with approved material, thoroughly compacted.

(J) - The use of excavating machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground, in which case hand methods shall be employed.

(K) - Trees, fences, poles and all other property shall be protected unless their removal is authorized. Any property damage shall be satisfactorily restored by the Contractor.

(L) - Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during the construction period.

(M) - The Contractor shall maintain all excavations in good order during the construction, so as not to hinder or injure the laying of the concrete encased conduit line and construction of the manhole, he shall take all reasonable precautions to prevent movement of the sides of such excavation, and shall remove at his own expense any material sliding into the excavation.

REMOVAL OF EXCAVATED MATERIAL

This item shall be as specified in Section E-1.06 of the State Highway Specifications.

SHEETING AND BRACING

(A) - The Contractor shall furnish and put in place such sheeting and bracing as may be required to support the sides of trenches or other excavation and shall remove such sheeting and bracings, as the trench or excavation is filled up, unless the Engineer shall order it left in place, in which case the Contractor shall cut the plank off at a height as ordered by the Engineer, or as called for on the contract drawings. That portion of the timber ordered to be left in place will be paid for at the rate of eighty dollars ($80.00) per thousand feet board measure. No payment will be made for wasted ends.

(B) - Whenever the excavations for the work herein to be done are immediately adjacent to other subsurface structures, the Contractor shall furnish and place sheeting and bracing where noted on the contract drawings and as may be necessary, so as to reduce to a minimum the possibility of injuring or damaging the same.

(C) - If the Engineer is of the opinion that at any point sufficient or proper supports, sheeting or bracings have not been provided, he may order additional supports, sheeting or bracing, at the expense of the Contractor, and the compliance with such orders by the Contractor shall not relieve or release him from his responsibility for sufficiency of such supports.

REFERENCE DRAWING	NO.	DATE	DIST	REV.	DATE	DESCRIPTION	BY	APP.

APPROVED BY:	
V. M. De Mella	DIRECTOR OF PUBLIC UTILITIES
John A. Hackett 4/21/65	COMMISSIONER OF LIGHT & POWER
Arnold Gintel 4/21/65	COMMISSIONER OF UTILITIES ENGR.
W. J. Gnaleski 4/21/65	CHIEF ELECTRICAL ENGINEER
Robert J. Allen 4/21/65	ENGINEER OF DESIGN

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

ELECTRICAL POWER CONDUIT NOTES FOR MEDINA FREEWAY-SECTION CUY-71-17.18 CLEVELAND, OHIO

DRAWING NUMBER **5257-ID**

SCALE —
MADE DJS DATE 3-15-65
TRCD — DATE
CKD DRK DATE 3-29-65

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

REFERENCE DRAWING	NO.	DATE	DIST.	REV.	DATE	DESCRIPTION	BY	APP.

MELP CONDUIT NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
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FLOATING

The Contractor shall take every precaution against the floating of the concrete encased conduit line due to water coming into the trench, or through caving in, flushing or puddling. In case of such floating the Contractor shall replace the concrete encased conduit line at his own expense, and make wholly good any injury or damage which may have resulted.

BACKFILLING

(A) - This work includes all backfilling, together with ramming, puddling and rolling, as required, the regrading of grounds; the replacing of surface and sub-surface structures; The placing and maintaining of temporary sidewalks and driveways; the furnishing of suitable material for backfill, reseeding lawns and replacing trees and shrubbery damaged by the Contractor; and all appurtenant work incidental thereto. Pavements, curbs, sidewalks and driveways within the limits of the work shall be temporarily surfaced, maintained and finally replaced or repaved as set forth under roads, surfaces, sidewalks, driveways and curbing.

(B) - Backfill, unless otherwise specified, may be made with material excavated from the trenches, providing same is satisfactory to the Engineer. If, in the opinion of the Engineer, the material excavated is unsatisfactory, then the Contractor shall furnish at his own expense other material suitable for backfill. All backfill shall be free from slag, cinders, rubbish and other objectionable material.

(C) - Before laying the concrete encased conduit line, the bottom of the trench shall be brought to the grade of the bottom of the concrete encasement. Wherever the bottom of the trench has been excavated below the bottom of the concrete encasement, the Contractor shall place sand, or other material satisfactory to the Engineer to bring the bottom of the trench to the grade of the bottom of the concrete encasement. This bed shall be thoroughly tamped before the concrete encased conduit line is laid.

(D) - Unless otherwise specified, the backfill under, around and to a depth of one (1) foot above the top of the concrete encasement, shall be made with material satisfactory to the Engineer, which material shall be free from stone and other objectionable material noted above. The Contractor must use special care in placing this portion of the backfill, so as to avoid injuring, distorting or moving the concrete encased conduit line when compacting same. Above this level the backfill shall be made with material satisfactory to the Engineer. However, where specified, sand shall be used for the entire portion of the backfill. See below.

(E) - Backfilling as noted in paragraph (D) shall be tamped in thin layers, simultaneously on each side of the concrete encasement, and thoroughly compacted so as to provide a solid backing against the external surface of the concrete encased conduit line.

(F) - Only after the backfill previously mentioned has been satisfactorily compacted, may work proceed in placing the remaining backfill which must be carefully placed and compacted by tamping, puddling, or rolling. All precautions must be taken to eliminate future settlement. The number of men tamping shall be not less than the number backfilling, and additional men shall be kept in the trench to spread the material.

(G) - Backfilling shall not be done in freezing weather, excpet by permission of the Engineer and it shall not be made with frozen material, nor shall any fill be made where the material already in the ditch is frozen.

(H) - The entire backfill shall be made with sand where permanent pavements, curbs, driveway, or sidewalks have been opened for or undercut by the excavation.

(I) - All sand to be used for backfill shall be a natural bank sand, graded from fine to coarse, not lumpy or frozen; and free from slag, cinders, ashes, rubbish, or other deleterious or objectionable material. It shall not contain a total of more than 10 per cent by weight of loam and clay, and all material must be capable of being passed through a $\frac{3}{4}$ inch sieve. Not more than 5 per cent shall remain on a No. 4 sieve.

LAYING CONDUIT

(A) - Proper inplements, tools, and facilities, satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All conduits and fittings shall be carefully lowered into the trench piece by piece, in such manner as to prevent damage to conduit, and under no circumstances shall conduit or accessories be dropped or dumped into the trench. If any defective conduit or material be discovered while conduit is being laid, a new piece shall be furnished and installed by the Contractor at the site of the work.

(B) - All foreign matter or dirt shall be removed from the inside of the conduit before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying.

(C) - Wherever necessary to deflect conduit from a straight line, either in the vertical or horizontal plane to avoid obstructions, or for other reasons, the degree of deflection shall be approved by the Engineer.

(D) - No conduit shall be laid in water, or when the trench conditions or the weather is unsuitable for such work, except by permission of the Engineer.

BRICK, PLAIN AND REINFORCED CONCRETE MASONRY

Under these items the Contractor shall furnish all necessary labor, materials, tools and equipment for the construction, complete, of all miscellaneous masonry structures, and including concrete encased conduit line and manhole and other appurtenant work together with the hauling, mixing, placing, forms, scaffolding, sheeting and bracing, grouting, plastering, curing, etc. all as specified, required or shown on the contract drawings.

BRICK AND MASONRY MATERIAL

(A) - The material furnished by the Contractor for the various kinds of masonry construction to be constructed shall conform to the following specifications:

(B) - All brick furnished and used shall be No. 2 shale brick and shall comply with the requirements for "Grade SA" A.S.T.M. designation: C32-42.

(C) - Section M-1.3 portland cement (A.S.T.M. C-150, Type 1). Portland cement shall conform to the requirements for "Type 1" of the specifications for portland cement, A.S.T.M. designation C-150.

The compressive strength requirements shall govern.

(PACKAGING AND MARKING)

When the cement is delivered in packages, the name and brand of the manufacturer shall be plainly indicated thereon. Similar information shall be provided in the shipping advices accompanying the shipment of packaged or bulk cement. A bag shall contain 94 pounds net. A barrel shall consist of 376 pounds net. All packages shall be in good condition at the time of inspection.

(D) - Section M-2.1 - Sand

1. General. The sand shall be natural composed of clean, hard, durable, uncoated particles of stone, well graded from coarse to fine, with the coarse particles predominating, free from lumps of clay and all organic matter.

2. Grading. (U. S. Standard Sieve Series). The sand shall be well graded from coarse to fine and when tested by means of laboratory sieves shall conform to the following grading:

SIEVE NO.	TOTAL PER CENT PASSING
$\frac{3}{8}$"	100
No. 4	95-100
No. 8	70-95
No. 16	45-80
No. 30	25-60
No. 50	10-30
No. 100	1-10

(E) - Section M-3.5 - Crushed Rock and Slag

1. General. The crushed rock and slag shall be clean, sound and durable, or uniform quality, and free from thin, elongated, or brittle pieces. If produced by crushing gravel, only that portion which has been retained on a screen with 2-inch or larger square openings shall be used and the largest size limited to No. 4 for concrete manhole construction and No. 46 for ductline construction.

The aggregate may include crushed limestone, crushed boulders composed of limestone, granite trap rock or rock of similar nature, or crushed slag. Aggregate furnished under this section is subject to the maximum percentage limitations of deleterious substances specified under Section M-3.1 in case of limestone; under Section M-3.6 in case of slag; and Section M-3.91 in case of gravel.

(F) - Section M-3.6 - Slag

1. General. The broken slag shall be composed of air-cooled blast furnace slag and shall be clean, sound, durable, reasonably uniform in density and free from an excess of thin, or elongated pieces.

(G) - All water shall be clean and accurately measured for each batch of concrete.

(H) - All plain concrete shall be Class "C".

(I) - All cement mortar shall be mixed in the proportion of one (1) part of cement - Two (2) parts of sand.

INSPECTION

The Engineer or his authorized assistant shall have the right to inspect the material and work done, as the interests of the City or State may require. The Engineer shall have unrestricted access to the Contractor's plant, and to all parts of work, and other places at which the preparation of the material and the construction of the different parts of the work to be done under these specifications are carried on, and he shall receive all facilities and assistance to carry out his work of inspection and testing in a manner satisfactory to the Engineer. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modifications thereof as herein provided, and work not so constructed shall be removed and made good by the Contractor at his own expense. All material must be sound and shall conform to these specifications, and any defective material which may have passed the inspector at the works, or elsewhere, shall be at all times liable to rejection when discovered, until the date of final payment under this contract.

REINFORCED CONCRETE MANHOLES

(A) Work Included

The Contractor shall furnish all materials for and shall properly construct of the locations, to the line and grade, and to the dimensions and details as shown on the plans and accordance to these specifications, all manholes complete with brick necks, frames and covers, cable pulling irons, grounding rod sleeves and sumps.

(B) Concrete

Concrete shall be Class "C". All stone or slag used for coarse aggregate shall be clean, hard and well graded from fine to coarse, free from foreign substances and shall pass a No. 4 sieve.

(C) Reinforcing Steel

Concrete reinforcing steel shall conform to A.S.T.M.-A15 specification. The steel shall be of the sizes and spacing shown on the drawings and shall be properly tied and supported in order to maintain its position when concrete is poured.

(D) Manhole Frames and Covers

All cast iron manhole frames and covers as shown on the drawings shall be furnished and installed as directed. The manhole frames and covers to be furnished and installed are shown in detail on Division of Light and Power Drawing No. 2346. Frames shall be set in place in a full bed of mortar, at such elevation as to make the top of the frame conform to the finished surfaces or final established grade. Brick masonry may be used above the top of the manhole for setting the frame to grade.

(E) Materials

All castings shall conform to the requirements of Section 0-7.81 of the "Standard Specifications for Construction of Pavements, Sidewalks, and Sewers" of the City of Cleveland dated January, 1950, except that cast iron shall be Class No. 30.

(F) Cleaning and Testing

All castings shall be thoroughly cleaned and subjected to a careful hammer test. No castings shall be coated unless clean and free from rust, and approved in these respects by the Engineer or his authorized inspector immediately before being dipped.

(G) Coating

Each casting shall be sprayed or brushed inside and out with one (1) coat of asphaltic compound varnish. The varnish shall be made of high grade asphalt fluxed and blended with properly treated drying oils and thinned to a proper consistency with a volatile solvent. The varnish shall be equal to black asphalt varnish as manufactured by the Excelsior Varnish Works Inc. - Cleveland 2, Ohio, Koppers Asphalt Varnish or approved equal. In addition to the shop coat the casting shall receive two (2) coats of approved paint.

(H) Cable Pulling Irons

Cable pulling irons shall be made from $\frac{7}{8}$ inch round steel rod shaped as shown on the drawing and tied into the reinforcing steel before concrete is poured. Pulling irons shall be hot-dip galvanized after forming.

MEASUREMENT

The manholes to be paid for will be the actual number of each, listed and estimated, completed and accepted.

PAYMENT

The work included in this item shall be paid for at the contract unit price for each manhole bid for "Item Special - Reinforced Concrete Manholes" in place completed and accepted, which price and payment shall constitute full compensation for all excavation and backfill, and for furnishing, hauling and placing all castings, reinforcing steel, concrete, brick and concrete masonry, end bells, pulling irons, ground sleeves and other material, etc., and for all labor, equipment, tools and incidentals necessary to complete this item.

APPROVED BY:	
V. M. DeMelfo	DIRECTOR OF PUBLIC UTILITIES
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Robert J. Allbach 4/21/65	ENGINEER OF DESIGN

SCALE ---
MADE DJS DATE 3-16-65
TRCD. ____ DATE ____
CKD. DRK DATE 3-29-65

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

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

ELECTRICAL POWER CONDUIT NOTES FOR MEDINA FREEWAY - SECTION CUY 71-17.18
CLEVELAND, OHIO

DRAWING NUMBER 5257-1E

MELP CONDUIT NOTES

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY. 71-17.18

NON-REINFORCED, CONCRETE-ENCASED, FIBRE CONDUIT BANKS

(A) Work Included

The Contractor shall furnish all materials for and shall properly construct and connect to manholes and to transition adaptors as shown on drawings or as directed, all non-reinforced concrete-encased fibre conduit banks as required for the proper completion of the work included under this contract.

(B) Fibre Conduit and Fittings (Four (4) inches inside diameter)

Fibre conduit for electrical purposes shall conform to Federal Specification WC 581 Type 1 for concrete encasement. Couplings shall be tapered Harrington Type. End bells at manhole entrances, 5° couplings, standard couplings, 90° bends, and plugs or caps to close unused ducts shall be made of the same fibre material as the conduit.

Spacers may be made of either fiber or plastic.

(C) Concrete

Concrete used for encasement of conduits shall be Class "C". The aggregate shall pass a No. 46 sieve in order to flow between ducts and may be crushed slag or stone.

(D) Installation

Conduit shall be installed by the built up method as follows: Necessary spacers shall be placed at not greater than (5) foot intervals to hold ducts in the configuration desired, with the duct bank braced securely to keep from shifting and floating while concrete is poured. Each section of duct with its coupling shall be tapped securely into place in the previous coupling to set up the tapered joints tight and leak proof.

Concrete shall be worked into the spaces between ducts so that the conduit bank is effectively encased in concrete without voids or empty spaces.

Conduit which is cut to fit short sections shall be tapered with a machine designed to produce the same jointing conditions as provided by factory made conduit sections.

(E) Cleaning

After conduits have been installed the Contractor shall clean all the ducts by pulling through a mandrel to remove solid obstructions, followed by a circular wire brush to remove any dirt, sand or concrete which may have been introduced during construction, leaving a clean conduit free from obstructions or foreign matter.

MEASUREMENT

The number of lineal feet of conduit bank to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the conduit line including fittings.

PAYMENT

The footage measured as provided above shall be paid for at the contract price bid per lineal foot for "ITem Special - Conduit Bank", classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling and placing the conduit, fittings, spacers, concrete, sheeting and bracing, backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item.

MANHOLES (ABANDONED)

(A) Work Included

The Contractor shall furnish all materials for and shall properly abandon as shown on drawings or as directed, all manholes as required for the proper completion of the work included under this contract.

(B) Construction Methods

Castings on manholes to be abandoned shall be carefully removed in a manner to prevent damage to the castings and placed outside the pavement area for disposal by the Division of Light and Power.

Manhole roofs shall be broken out and manhole walls shall be torn down as per State of Ohio, Department of Highway's Construction and Material Specifications Item I-16.03.

The manholes shall be backfill with suitable soil or granular material.

MEASUREMENT

The manholes to be paid for will be the actual number estimated, completed, and accepted.

PAYMENT

The work included in this item shall be paid for at the contract unit price bid for each, "Item Special - Manholes to be Abandoned", which price and payment shall constitute full compensation for removing and storing castings, excavation, removal of roof and portion of walls, backfilling, disposal of removed masonry and for furnishing and placing all the necessary materials, and for all labor, equipment, tools, and other incidentals necessary to complete this item.

NON-ENCASED, BRIDGE-SUPPORTED, ASBESTOS-CEMENT CONDUIT BANKS

(A) Work Included

The Contractor shall furnish all materials for and shall properly install and connect to expansion couplings at abutments as shown on the drawings or as directed, all non-encased, bridge-supported, asbestos-cement conduit banks as required for the proper completion of the work included under this contract.

(B) Asbestos-Cement Conduit and Fittings

Asbestos-cement conduit for electrical purposes shall conform to Federal Specification WC 571b and shall be four (4) inches inside diameter Type II-intended for use without encasement in concrete. Couplings shall be tapered Harrington Type, standard couplings, center make-up connectors, end bells, and expansion couplings shall be made of the same material as the conduit.

Spacers shall be made from 1 ¼" thick asbestos-cement board (of the same material as the conduit) to dimensions as shown on the drawings and drilled or bored to the proper radius to give a smooth saddle without burrs or rough edges,

(C) Structural Steel for Ductline Supports

Channels, headless bolts and nuts shall conform to State of Ohio, Department of Highway's Construction and Material Specifications Items S-7 Structural Steel and Sec. M-7.4(a) Structural Steel.

Channels shall be 3"-5 lb., A.S.T.M. A36 cut to length as shown on drawings.

Headless bolts shall be 1"-2.67 lb., C. F. Round Steel, AISI C1042 cut to length and threaded as shown on drawings.

(D) Preformed Expansion Joint Fillers

Expansion joint fillers shall conform to State of Ohio, Department of Highway Construction and Material Specifications Sec. M-10.02, A.A.S.H.O. designation: M 153, Type III - Standard - Moderately resilient.

(E) Installation

Conduit shall be installed as follows:

1. Duct support clamps (base channel with attached bolts) shall be properly aligned and welded to all cross members at not greater than than five (5) foot intervals as shown on drawings.
2. Necessary spacers, preformed expansion joint fillers, top channels, and nuts shall be used to hold ducts in the configuration desired.
3. Conduit shall be installed so that couplings are staggered and that no coupling comes within a support clamp. Couplings shall not be clamped down.

4a. Each length of conduit shall be lined up to form a straight line. Any piece that does not fit properly or does not make a straight line shall be rejected. Only straight pieces shall be used.

4b. Extreme caution should be exercised to nest conduit in spaced saddle without binding by rotating each length of conduit and by filing or rasping section of conduit which comes in contact with spacer.

5. Each section of conduit with its coupling shall be tapped securely into place in the previous coupling to set up the tapered joints tight and leak proof.
6. The duct support clamps shall be tightened by positioning the lower nuts to keep the conduit from being crushed when the top nuts are tightened to allow the duct line to be braced securely. If any conduit and or fitting is damaged in the conduct of clamping or setting of the ducts, the Contractor shall replace the conduit and or fitting at his own expense, and make wholly good any injury or damage which may have resulted.
7. Standard or special expansion couplings shall be installed where shown on the drawings.
8. Special care must be exercised in adjusting the expansion joints for the temperature at the time of installation to insure that the expansion required by the bridge structure can be fully obtained by the conduit bank.
9. Nominal length of conduit shall be ten (10) feet long. Conduit may be cut as required to clear support clamps and for adjustment of the center-makeup connections. Additional cuts may be ordered by the Engineer to avoid use of small pieces at the center-makeup sections. The Contractor may make additional cuts with permission from the Engineer. Conduit which is cut to fit short sections shall be tapered with a machine designed to produce the same jointing conditions as provided by factory made conduit sections.

(F) Cleaning

After conduits have been installed, the Contractor shall clean all the ducts by pulling through a mandrel to remove solid obstructions, followed by a circular wire brush to remove any foreign matter, leaving a clean duct free from obstructions.

(G) Painting

Painting of steel duct supports on bridge shall conform to the State of Ohio, Department of Highways "Construction and Material Specifications".

MEASUREMENT

The number of lineal feet of conduit bank to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the conduit line including fittings.

PAYMENT

The footage measured as provided above shall be paid for at the contract price bid per lineal foot for "Item Special - Conduit Bank", classified as to size and type, which price and payment shall constitute full compensation for furnishing, hauling and placing the conduit, fittings, spacers, support brackets, concrete, scaffolding, and for all labor, equipment, tools and incidentals necessary to complete this item.

REFERENCE DRAWING	NO.	DATE	DIST	REV.	DATE	DESCRIPTION	BY	APP.

APPROVED BY:

V. M. DeMello	DIRECTOR OF PUBLIC UTILITIES
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Robert J. Albert 4/21/65	ENGINEER OF DESIGN

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

ELECTRICAL POWER CONDUIT NOTES FOR MEDINA FREEWAY-SECTION CUY-71-17.18 CLEVELAND, OHIO

DRAWING NUMBER 5257-IF

SCALE —
MADE DJS DATE 3-15-65
TRCD. DATE
CKD. DRK DATE 3-22-65

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

MELP CONDUIT NOTES AND QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
CUY. 71-17.18

REINFORCED, CONCRETE-ENCASED, ASBESTOS-CEMENT CONDUIT BANKS

(A) Work Included

The Contractor shall furnish all materials for and shall properly install and connect to all non-encased, bridge-supported conduits and to all concrete encased conduits as shown on drawings, all reinforced concrete-encased, asbestos-cement conduit banks as required for the proper completion of the work included under this contract.

(B) Asbestos-Cement Conduit and Fittings

Asbestos-cement conduit for electrical purposes shall conform to Federal Specification WC 571 b and shall be four (4) inches inside diameter Type II. Extra length expansion couplings and adaptors for joining Type II, Asbestos-cement conduit to Type I fibre conduit shall be made of the same material as the asbestos-cement conduit.

Spacers may be made of either concrete, fibre or plastic.

(C) Preformed Expansion Joint Fillers

Expansion joint fillers (bituminous type) shall conform to State of Ohio, Department of Highway Construction and Material Specifications Sec. M-10.01, A.A.S.H.O. Designation: M33.

(D) Concrete

Concrete used for encasement of conduits shall be Class "C". The aggregate shall pass a No. 46 sieve in order to flow between ducts and may be crushed slag or stone.

(E) Reinforcing Steel

Concrete reinforcing steel shall conform to A.S.T.M.-A15 Specification. The steel shall be of the sizes and spacing shown on the drawings and shall be properly tied and supported in order to maintain its position when concrete is poured.

(F) Installation

The reinforced, concrete-encased, asbestos-cement conduit bank shall be installed as follows:

1. Conduit shall be installed by the built up method using spacers at not greater than five (5) foot intervals.
2. Special extra-length expansion couplings shall be installed at the bridge end of the abutment back wall and transition adaptor couplings shall be installed at the opposite end of the reinforced duct bank section as shown on drawings.
3. Reinforcing rods shall be installed as shown on the drawings.
4. Concrete shall be worked into the spaces between ducts so that the conduit bank is effectively encased in concrete without voids or empty spaces.
5. Preformed expansion joint fillers shall be used around the encased duct banks through abutment back walls and counterfort walls.

(G) Cleaning

After conduits have been installed the Contractor shall clean all the ducts by pulling through a mandrel to remove solid obstructions, followed by a circular wire brush to remove any dirt, sand or concrete which may have been introduced during construction, leaving a clean conduit free from obstructions and foreign matter.

MEASUREMENT

The number of lineal feet of conduit bank to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the conduit line including fittings.

PAYMENT

The footage measured as provided above shall be paid for at the contract price bid per lineal foot for "Item Special - Conduit Bank", classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling and placing the conduit, fittings, spacers, concrete, reinforcing steel, sheeting, and bracing, backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving and for all labor, equipment, tools and incidentals necessary to complete this item.

REINFORCED CONCRETE-ENCASED, FIBRE CONDUIT BANKS

(A) Work Included

The Contractor shall furnish all materials for and shall properly construct and connect to manholes as shown on drawings or as directed, all reinforced concrete-encased fibre conduit banks as required for the proper completion of the work included under this contract.

(B) Fibre Conduit and Fittings

Fibre conduit for electrical purposes shall conform to Federal Specification WC 581 and shall be five (5) inches inside diameter Type I for concrete encasement. Couplings shall be tapered Harrington type. End bells at manhole entrances and standard couplings shall be made of the same fibre material as the conduit. Spacers may be made of either concrete, fibre or plastic.

(C) Concrete

Concrete used for encasement of conduits shall be Class "C". The aggregate shall pass a No. 46 seive in order to flow between ducts and may be crushed slag or stone.

(D) Reinforcing Steel

Concrete reinforcing steel shall conform to ASTM-15 Specification. The steel shall be of the sizes and spacing shown on the drawings and shall be properly tied and supported in order to maintain its position when concrete is poured.

(E) Installation

Conduit shall be installed by the built-up method as follows: Necessary spacers shall be placed at not greater than five (5) foot intervals to hold ducts in the configuration desired, with the duct bank braced securely to keep from shifting and floating while concrete is poured. Each section of duct with its coupling shall be tapped securely into place in the previous coupling to set up the tapered joint tight and leakproof.

Reinforcing rods shall be installed as shown on drawings. Concrete shall be worked into the spaces between ducts so that the conduit bank is effectively encased in concrete without voids or empty spaces.

Conduit which us cut to fit short sections shall be tapered with a machine designed to produce the same jointing conditions as provided by factory made conduit sections.

(F) Cleaning

After conduits have been installed the Contractor shall clean all the ducts by pulling through a mandrel to remove solid obstructions, followed by a circular wire brush to remove any dirt, sand or concrete which may have been introduced during construction, leaving a clean conduit free from obstructions and foreign matter.

MEASUREMENT

The number of lineal feet of conduit bank to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the conduit line including fittings.

PAYMENT

The footage measured as provided above shall be paid for at the contract unit price bid per lineal foot for "Item Special - Conduit Bank", classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling and placing the conduit, fittings, spacers, concrete, reinforcing steel, sheeting and bracing, backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving and for all labor, equipment, tools and incidentals to complete this item.

* Carried to Bridge Summary sheet 125.

SHEET NUMBERS						TOTAL QUANT	UNIT	ITEM	DESCRIPTION
		160	161	162					TYPE CODE YOGO
			349			* 349	Lin. Ft.	Special	Non-Encased, Bridge Supported, 9-4" Asbestos-Cement Conduit Bank (Complete) as per plan
			59			59	Lin. Ft.	Special	Reinforced Concrete Encased, 9-4" Asbestos-Cement Conduit Bank (Complete) as per plan
			30	576		606	Lin. Ft.	Special	Non-Reinforced, Concrete Encased, 9-4" Fibre Conduit Bank (Complete), as per plan.
		418				418	Lin. Ft.	Special	Reinforced Concrete Encased, 12-5" Fibre Conduit Bank (Complete), as per plan.
		2	2	2		6	Each	Special	Reinforced Concrete Manhole (10'x12'x7' Headroom) (Complete) as per plan
			3	3		6	Each	Special	Existing M.E.L.P. Manholes to be Abandoned, as per plan.

REFERENCE DRAWING	NO.	DATE	DIST.

APPROVED BY:	
J. M. DeMelto	DIRECTOR OF PUBLIC UTILITIES
John A. Babbitt 4/22/65	COMMISSIONER OF LIGHT & POWER
Harold Mollica 4/16/65	COMMISSIONER OF UTILITIES ENGR.
M. T. Gonsalves 4/21/65	CHIEF ELECTRICAL ENGINEER
Robert J. Albach 4/21/65	ENGINEER OF DESIGN

REV.	DATE	DESCRIPTION	BY	APP.

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

ELECTRICAL POWER CONDUIT NOTES FOR MEDINA FREEWAY SECTION CUY 71-17.18 CLEVELAND, OHIO

DRAWING NUMBER 5257-1G

SCALE ——
MADE DJS DATE 3-15-65
TRCD. —— DATE ——
CKD. DRK DATE 3-29-65

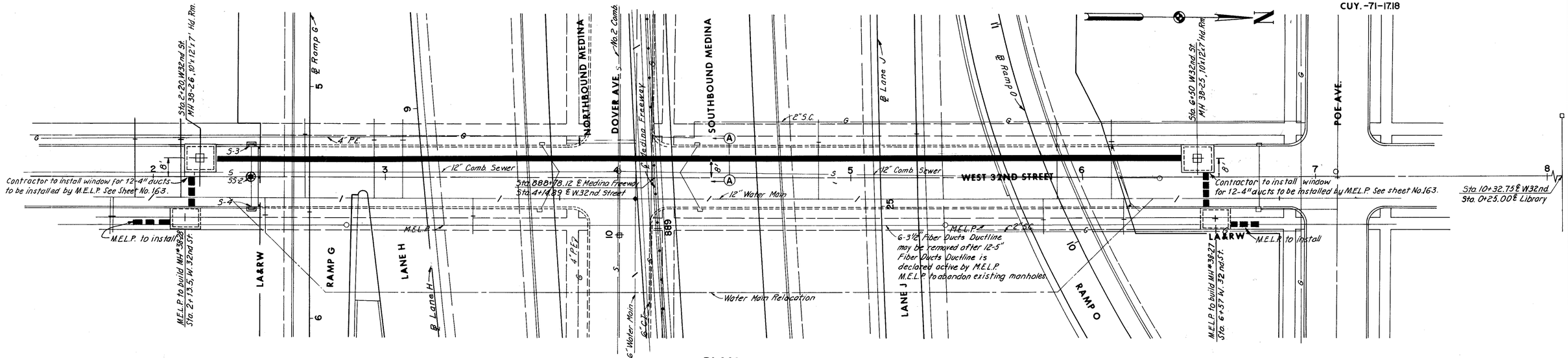
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

M E L P CONDUIT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

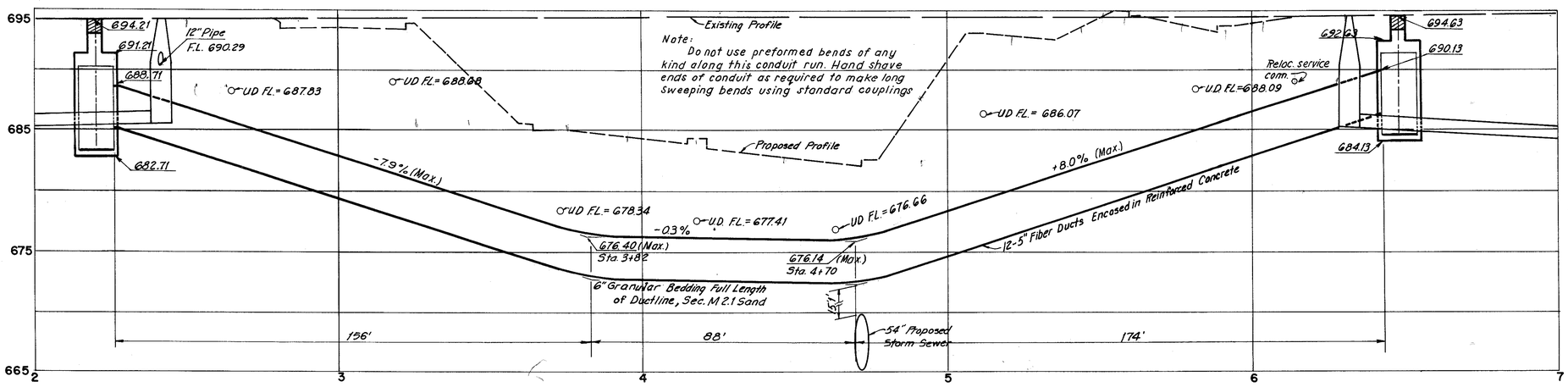
160
241

CUYAHOGA COUNTY
CUY.-71-17.18



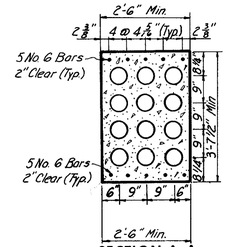
PLAN

Scale: 1"= 20'



PROFILE

Hor. Scale: 1"= 20'
Vert. Scale: 1"= 5'



SECTION A-A

12-5" Fiber Ducts Encased in Reinforced Concrete Install end bells at manholes.
Scale: ½"= 1'

REV.	DATE	DESCRIPTION	BY	APP

Manhole Details	5257-10			
Electrical Notes	5257-10-16			
REFERENCE DRAWING	NO	DATE	DIST.	

APPROVED BY:	
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Harold Miller 4/21/65	COMMISSIONER OF UTILITIES ENGR.
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Robert J. Albach 4/21/65	ENGINEER OF DESIGN

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

PROPOSED M.E.L.P DUCTLINE RELOCATION ON W. 32nd ST UNDER THE MEDINA FREEWAY

DRAWING NUMBER 5254-1

SCALE As Shown HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RBH DATE 4-18-65 CONSULTING ENGINEERS
TRCD. DATE
CKD. DRK DATE 4-1-65 KANSAS CITY CLEVELAND NEW YORK

M.E.L.P. ELECTRICAL DUCTS RELOCATION W. 32ND STREET

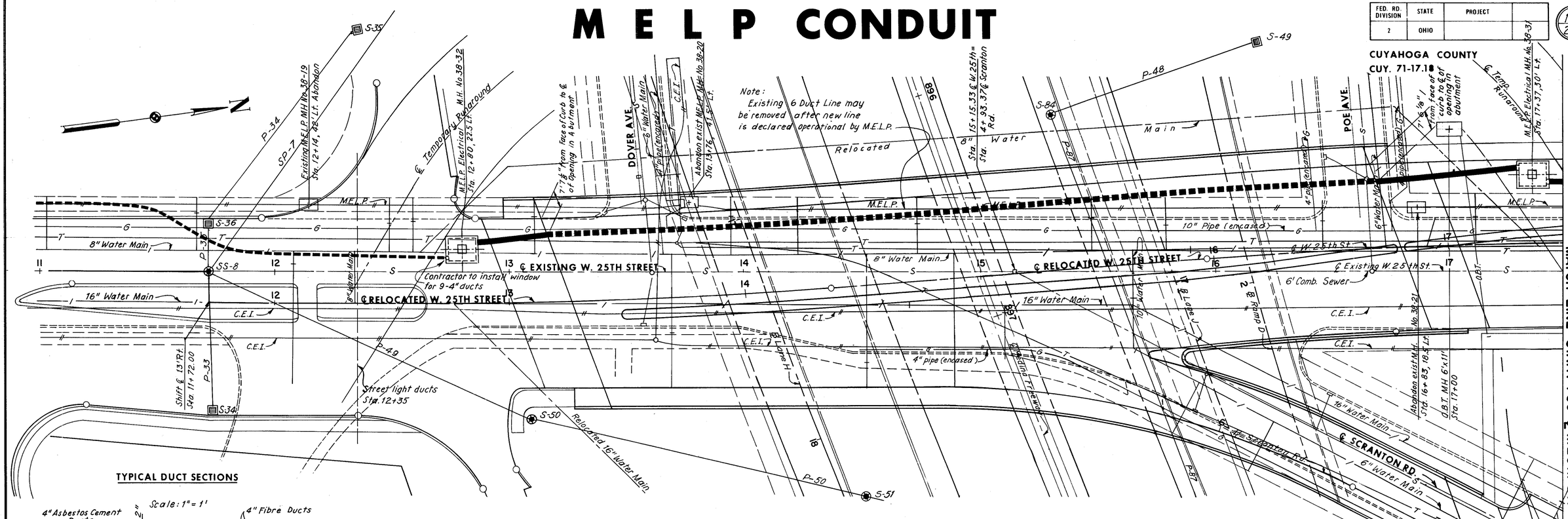
M E L P CONDUIT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

161
241

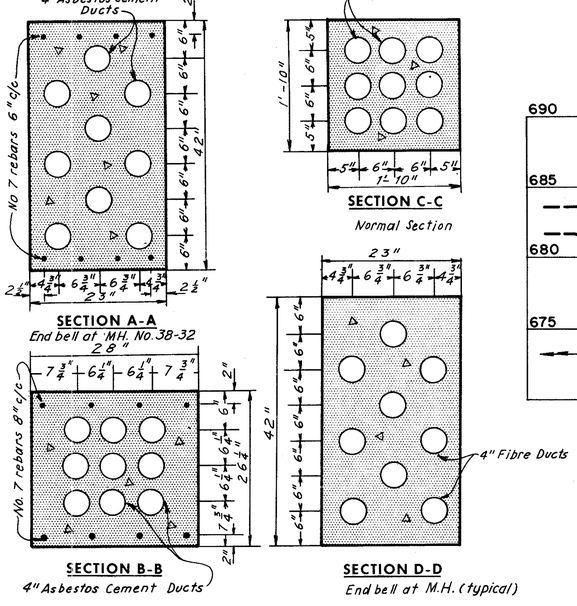
CUYAHOGA COUNTY
CUY. 71-17.18

MATCH LINE STA. 17+50 ℄ W. 25th ST.



TYPICAL DUCT SECTIONS

Scale: 1" = 1'



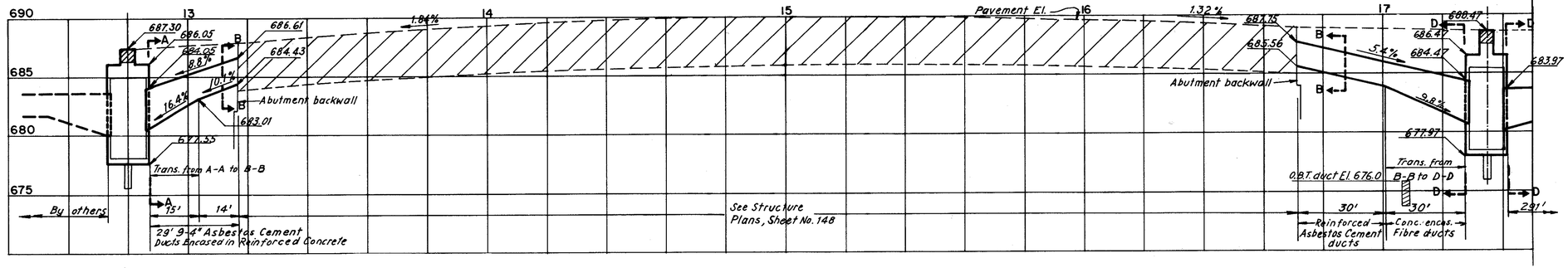
Note:
Concrete shall be Class "C" using No. 4 aggregate only

PLAN

Scale: 1" = 20'

PROFILE

Hor. Scale: 1" = 20'
Vert. Scale: 1" = 5'



REFERENCE DRAWING	NO.	DATE	DIST.
Structure Plan Sheet Cuy 71-17.18	148		
Extension of Duct Line	5257-1B		
Manhole Details	5257-1C		
Electrical Notes	5257-1D thru 1G		

APPROVED BY:

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Robert J. Albach 4/21/65	ENGINEER OF DESIGN

REV.	DATE	DESCRIPTION	BY	APP.

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

PROPOSED M.E.L.P. DUCTLINE RELOCATION ON W. 25th ST. AT THE MEDINA FREEWAY

DRAWING NUMBER 5257-1A

SCALE As shown
MADE I.M. DATE 4-1-65
TRCD. DATE
CKD. D.R.K. DATE 4-1-65

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

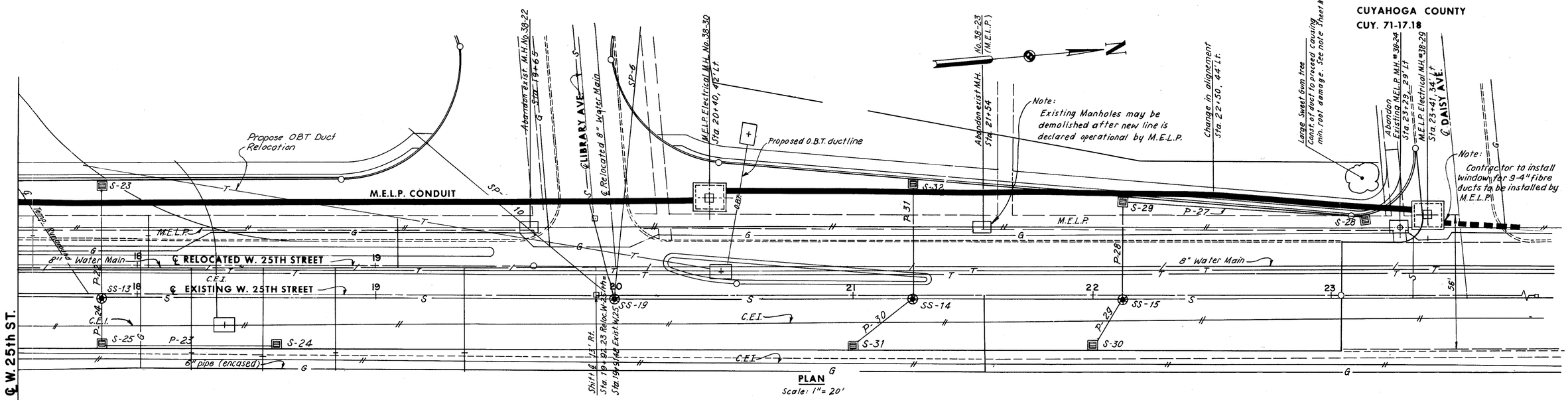
M.E.L.P. ELECTRICAL DUCTS RELOCATION W. 25TH STREET

M E L P CONDUIT

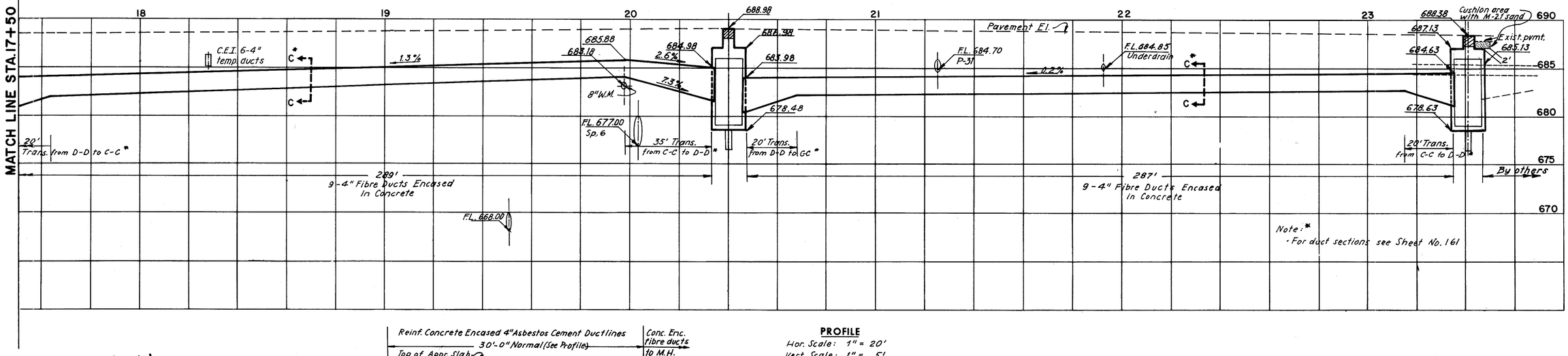
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

162
241

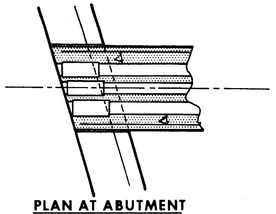
CUYAHOGA COUNTY
CUY. 71-17.18



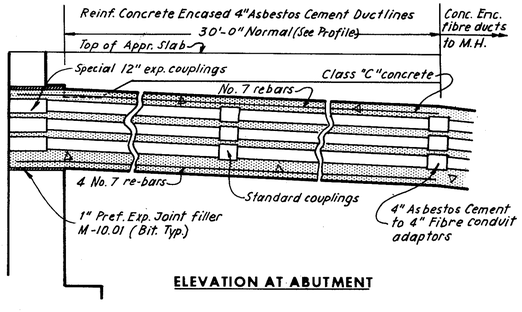
PLAN
Scale: 1" = 20'



PROFILE
Hor. Scale: 1" = 20'
Vert. Scale: 1" = 5'



PLAN AT ABUTMENT



ELEVATION AT ABUTMENT

Scale 1/2" = 1'

SCALE	As shown	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE	DJS DATE 3-15-65	CONSULTING ENGINEERS
TRCD.	DATE	KANSAS CITY CLEVELAND NEW YORK
CKD.	JM. DATE 4-1-65	

REFERENCE DRAWING	NO.	DATE	DIST	REV.	DATE	DESCRIPTION	BY	APP

APPROVED BY:	
V. M. De Mello	DIRECTOR OF PUBLIC UTILITIES
John A. Lapsett 4/21/65	COMMISSIONER OF LIGHT & POWER
Ronald Winter 4/21/65	COMMISSIONER OF UTILITIES ENGR.
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Robert J. Albach 4/21/65	ENGINEER OF DESIGN

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

PROPOSED M.E.L.P DUCTLINE RELOCATION ON W.25th ST. AT THE MEDINA FREEWAY

DRAWING NUMBER 5257-IB

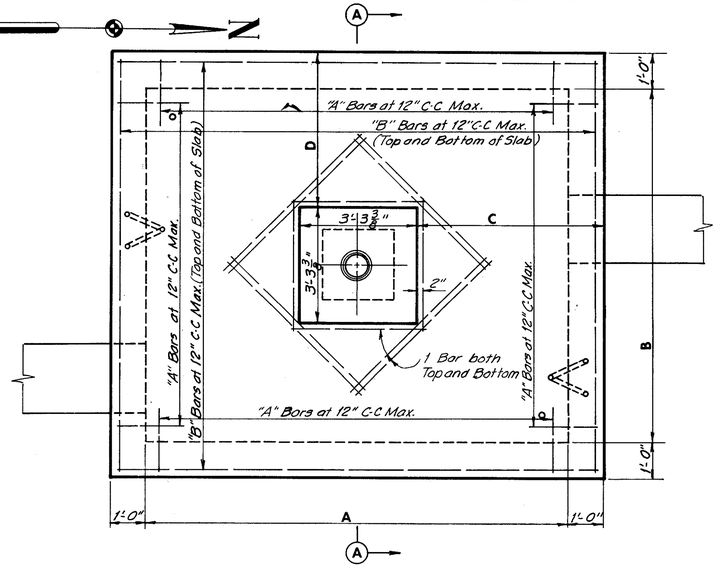
M.E.L.P. ELECTRICAL DUCTS RELOCATION W. 25 TH STREET

M E L P ELECTRICAL MANHOLE DETAILS

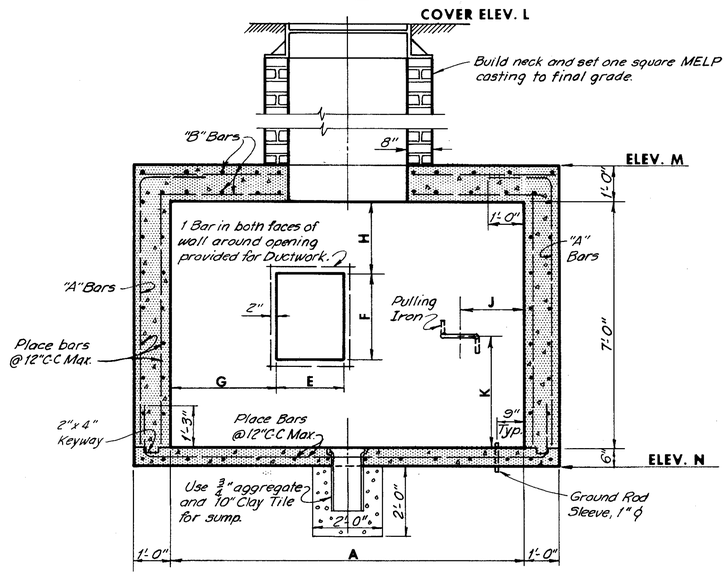
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

163 241

CUYAHOGA COUNTY
CUY.71-17.18



PLAN



SECTION A-A

Note:
North Wall shown. Other Walls similar as viewed from center of Manhole. For details of Duct openings and locations and location of Pulling Irons, see Table on this sheet.

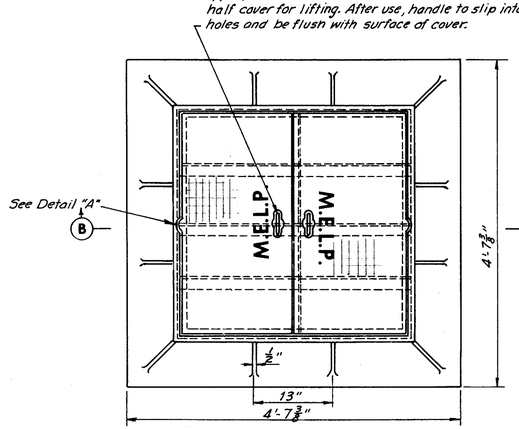
MELP ELECTRICAL MANHOLE

Scale: 1/2"=1'

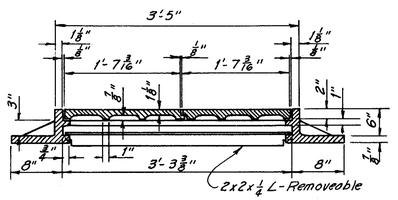
MANHOLE DETAILS

MANHOLE NO. AND LOCATION	STRUCTURE DIMENSIONS							DUCT OPENING DIMENSIONS					PULL IRON	
	A	B	C	D	L	M	N	WALL	E	F	G	H	J	K
M.H. 38-29 Sta. 23+41, Rel. W. 25th 34' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	688.38	687.13	678.63	**N	1'-11"	3'-6"	7'-2"	1'-0"	8'-2 1/2"	3'-9"
								S	1'-11"	3'-6"	7'-2"	1'-6"	8'-2 3/4"	4'-3"
								E	No Opening					
								W	No Opening					
M.H. 38-30 Sta. 20+40, Rel. W. 25th 42' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	688.98	686.98	678.48	N	1'-11"	3'-6"	0'-10"	2'-0"	1'-10 1/2"	4'-3"
								S	1'-11"	3'-6"	0'-10"	1'-0"	1'-10 1/2"	3'-3"
								E	No Opening					
								W	No Opening					
M.H. 38-31 Sta. 17+30, Rel. W. 25th 30' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	688.47	686.47	677.97	N	1'-11"	3'-6"	7'-2"	1'-6"	8'-2 1/2"	4'-3"
								S	1'-11"	3'-6"	7'-2"	1'-0"	8'-2 3/4"	3'-9"
								E	No Opening					
								W	No Opening					
M.H. 38-32 Sta. 12+80, Rel. W. 25th 22.5' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	687.30	686.05	677.55	N	1'-11"	3'-6"	0'-10"	1'-0"	1'-10 1/2"	3'-9"
								**S	1'-11"	3'-6"	0'-10"	1'-6"	1'-10 1/2"	4'-3"
								E	No Opening					
								W	No Opening					
M.H. 38-26 Sta. 2+20, ℄ W. 32nd St. 8' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	694.21	691.21	682.71	N	2'-6"	3'-7 1/2"	3'-9"	1'-6"		
								S	No Opening				5'-0"	3'-8 1/2"
								**E	3'-0"	2'-6"	8'-2"	1'-0"		
								W	No Opening				9'-8"	4'-9"
M.H. 38-25 Sta. 6+50, ℄ W. 32nd St. 8' Lt.	12'-0"	10'-0"	5'-4 5/16"	4'-4 5/16"	694.63	692.63	684.13	N	No Opening				5'-0"	3'-8 1/2"
								S	2'-6"	3'-7 5/16"	3'-9"	1'-6"		
								** E	3'-0"	2'-6"				
								W	No Opening				2'-4"	4'-9"

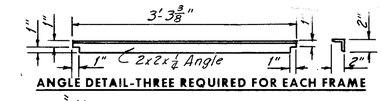
**Duct opening to be provided for duct to be built by others. Opening shall be temporarily closed with brick.



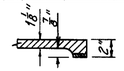
PLAN



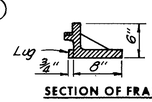
SECTION B-B (SIDEWALK TYPE FRAME AND COVER)



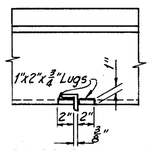
ANGLE DETAIL-THREE REQUIRED FOR EACH FRAME



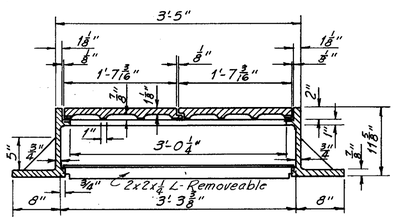
SECTION OF COVER



SECTION OF FRAME

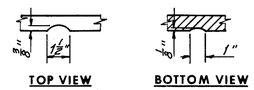


DETAILS SHOWING LUGS FOR ANGLE SUPPORTS

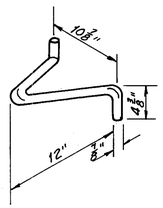


SECTION B-B (HEAVY STREET TYPE FRAME AND COVER)

DETAIL "A" COVER



DETAIL "A" FRAME
Scale: 1/4"=1"



PULLING IRON DETAIL

Notes:
1. Clearance of 2" from rod to face of Wall, inside and outside.
2. Install Pulling Irons opposite ducts entering Manhole.
3. Do not place rods between ducts.
4. Locate (1) 2'x2'x2' Slag Sump ("10" Sewer Tile) under Manhole roof opening, slope floor towards sump.
5. All steel shall be #6 reinforcing bars.
6. All steel shall conform to A.S.T.M. Specs. and shall be fabricated as shown; f_c=20,000 psi.
7. Concrete shall be Class "C" (4000 psi)
8. All covers and frames must be interchangeable. Covers for Streets and sidewalks are identical. The ribs of covers are to be sufficiently strong to prevent breakage.

MELP CASTING DETAILS

Scale: 1"=1'

REFERENCE DRAWING	NO.	DATE	DIST.

REV.	DATE	DESCRIPTION	BY	APP.

APPROVED BY:

V. M. DeMelto	DIRECTOR OF PUBLIC UTILITIES
John A. Endnell 4/22/65	COMMISSIONER OF LIGHT & POWER
Arnold Winkler 4/19/65	COMMISSIONER OF UTILITIES ENGR.
M. T. Bunalow 4/21/65	CHIEF ELECTRICAL ENGINEER
Robert J. Allach 4/21/65	ENGINEER OF DESIGN

DIVISION OF LIGHT & POWER
CITY OF CLEVELAND

PROPOSED DETAIL OF M.E.L.P. MH'S NOS 38-25, 38-26, 38-29, 38-30, 38-31, & 38-32 & STANDARD MANHOLE COVER AND FRAME

DRAWING NUMBER 5257-1C

SCALE As Shown HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DEK DATE 3-22-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____ KANSAS CITY CLEVELAND NEW YORK
CKD. ____ DATE ____

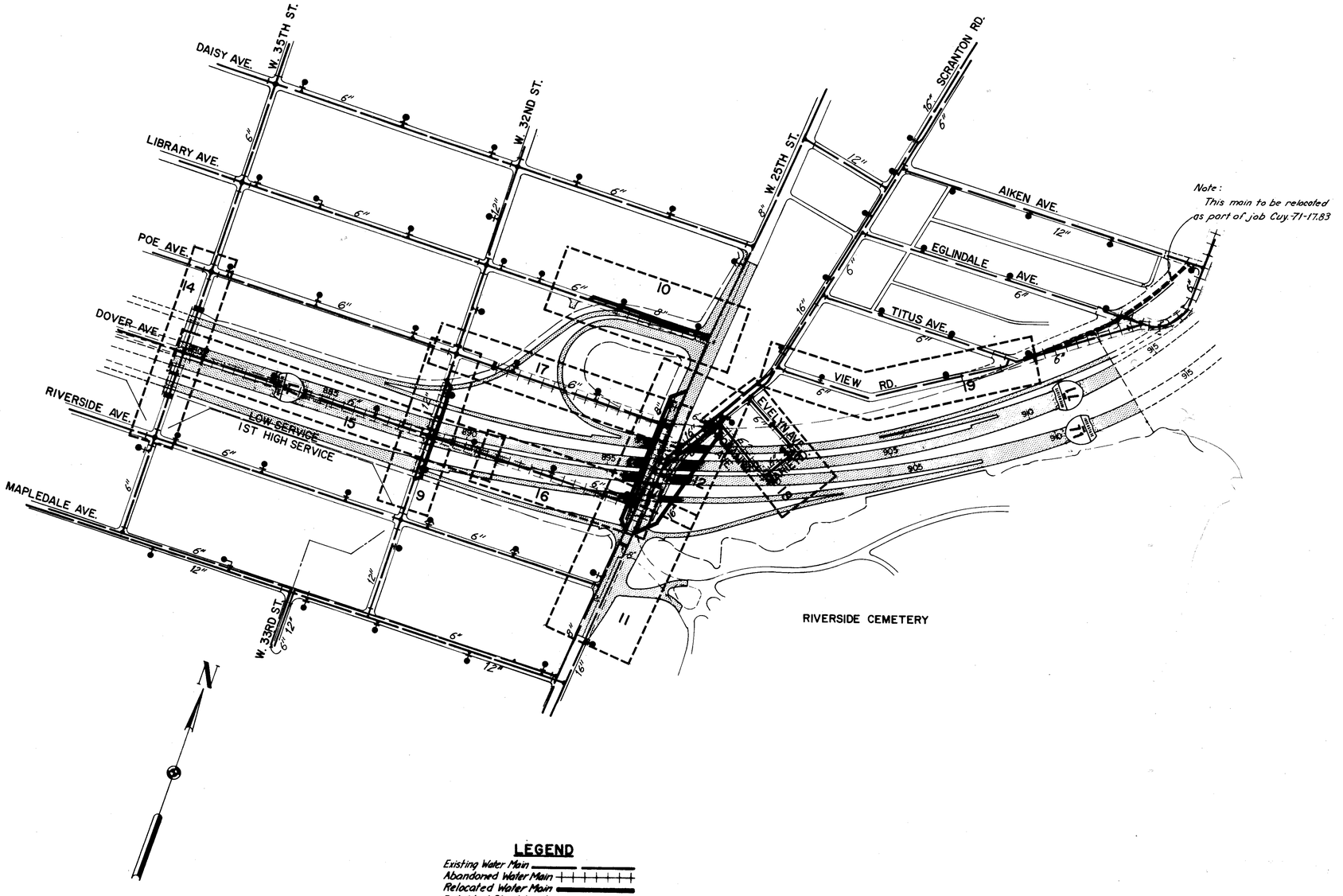
WATER LINE RELOCATION

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

164/241

1/21

CUYAHOGA COUNTY
CUY-71-17.18



SCALE 1"=200'
MADE R.D.U. DATE 1-26-65
TRCD H.L.P. DATE 8-20-68
CKD. R.H.A. DATE 1-27-65

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

WATERWORK NOTES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

165 / 247

CUYAHOGA COUNTY
CUY-71-17.18

2 / 21

GENERAL

SCOPE OF WORK

The work contemplated under this contract comprises the furnishing and installing complete with valves, fire hydrants and other appurtenances, the following water main relocations and performing other incidental work necessary to abandon existing water facilities.

1. 8" Cast Iron Pipe in Library Avenue between 32nd Street and West 25th Street.
2. 8" Cast Iron Pipe and Ductile Iron Pipe in West 25th Street between Riverside Avenue and Poe Avenue.
3. 12" Ductile Iron Pipe in West 32nd Street between Riverside Avenue and Poe Avenue.
4. 16" Cast Iron Pipe and Ductile Iron Pipe in West 25th Street and Scranton Road at Interstate 71.

The Contractor shall do all the work and furnish all the labor and material necessary for the final completion of this contract in the manner and under the conditions herein specified and provided and in accordance with the contract drawings.

DEFINITIONS

Whenever in these specifications or in any documents or instructions in construction where these specifications govern, the following terms are used, (or pronouns in place of them). The intent and meaning shall be interpreted as follows:

THE STATE
The State is the State of Ohio acting through its authorized representative.

ENGINEER
The Engineer is Division Deputy Director or Division Engineer, the Division Construction Engineer or the Division Maintenance Engineer, and the Project Engineer assigned to administer the contract.

THE CITY, OR THE CITY OF CLEVELAND
The City, or the City of Cleveland, is the Director, Department of Public Utilities, of the City of Cleveland.

STATUS OF CITY INSPECTOR

Inspectors as designated by the Director of Public Utilities shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the waterworks, and to the preparation or manufacture of the materials to be used in the waterworks. The city inspector as designated by the Director of Public Utilities shall make work instructions through the Project Engineer.

ACCESS TO WORK AND PLACE OF MANUFACTURE

The Contractor shall notify the Engineer and Director of Public Utilities, at least seven (7) days previous to the commencement of the manufacture of any materials, of the time and place where the manufacture is to commence, in order that a representative of the Engineer and Director may be present to inspect the manufacture. The Contractor shall provide, without charge or expense to the State and City, all necessary assistance to the Engineer and Director when required for inspection or verification of work done.

DIMENSIONS, DETAILED DRAWINGS AND ELEVATIONS

Figured dimensions on drawings shall take precedence over measurements by scale, and detailed drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work. If, however, any of the detailed drawings show more elaborate or expensive work than is specified and indicated by the contract drawings, notice thereof must be given to the Engineer by the Contractor within ten (10) days after the receipt of such detailed drawings in order that the drawings may be amended or the additional expense on account of such work may be adjusted and authorized. If the Engineer does not receive such notice from the Contractor within ten (10) days after detailed drawings have been received by him, it is hereby agreed that the Contractor accepts the drawings and will execute them without claim for extra compensation.

FLOODS AND FREEZING WEATHER

Proper facilities shall be provided for protecting the work from damage by flood, rain or frost, and work done in freezing weather shall be done in such manner as the Engineer may approve. Valves shall be protected from freezing until backfilled in the completed work.

ADDITIONAL WORK

(A) - Attention is called to the fact that the work of this contract includes certain performances as incidental to the itemized requirements hereof, though not exclusive as follows: To perform all excavation, backfilling, sheeting, shoring, temporary and final repaving and to test the installation. Sand backfill shall be placed under existing and proposed pavement. For the performances herein described and for other incidental performances of like nature, the State will make no specific or separate payment or allowance, but the cost thereof shall be included in the prices stipulated to be paid for the various items of the work to be done under this contract.

(B) - Preliminary flushing: Before being placed in service all dirt and foreign matter shall be removed from the new water main or extensions to existing mains by a thorough flushing through the hydrants or by other approved means. Each valved section of newly laid pipe shall be flushed independently. This shall be done after the pressure test and may be done before or after the trench shall have been backfilled.

(C) - Chlorination: Following the preliminary flushing, the newly laid water pipe shall be chlorinated. The process of chlorinating, the method of procedure, the chlorinating agent, and the rate of application shall be determined by the Engineer. The City of Cleveland will furnish the necessary labor and material required for such chlorination and install the necessary taps at the ends of the water main sections to be chlorinated. The Contractor shall pay for chlorination or sampling of the water at the rate of ten cents (10¢) per linear foot for the first thousand feet, and five cents (5¢) per foot thereafter of the water main proper, with a minimum charge of one hundred dollars ($100.00). The Contractor shall furnish the necessary labor for excavating and backfilling which will be required for the installation of taps for injecting the chlorine solution, operating pumps and flushing mains. In cases where the water main installation does not exceed 350 feet in length, the Contractor shall pay a minimum charge of thirty-five dollars ($35.00) for flushing and sampling water.

(D) - Final flushing and test: Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremities until the replacement water throughout its length shall, upon test, both chemically and bacteriologically, be proven equal to the water quality served the public from the existing water supply system.

(E) - For the performances described in paragraphs B, C and D, the State will make no specific or separate payment or allowances, but the cost thereof shall be included in the prices stipulated to be paid for each linear foot of pipe furnished and installed.

MAINTENANCE OF SERVICE AND CONNECTING RELOCATED MAINS

The Contractor shall follow strictly the sequence of construction shown on the plans. All existing fire hydrant leads and house services shall be hand tunneled using special care to avoid any damage which might require shutting down the existing main until the new main is ready to be placed in service.

When the new mains have been tested and chlorinated and are ready to be connected to the old main, the Contractor shall make such connections at a time designated by The City. Prior to shutting down the existing mains, the Contractor shall take suitable precautions to assure a minimum interruption to service, including the following:

1. Perform all necessary excavation, including bell holes exposing The existing main sufficiently for the operation of the pipe saw by the City.
2. Remove the cap or plug from the end of the new main.
3. Swab the inside of all pipes, bends and sleeves to be used in connection thoroughly with a chlorine solution of at least 100 p.p.m.
4. Make-up as much of the connection as possible outside the ditch to eliminate The need for caulking most of the necessary joints during the shutdown. By careful measurement all pipe cuts can be made by the Contractor prior to shutting down.
5. Have sufficient manpower and equipment on the site to perform the operation in a minimum of time.

PAINTING

(A) - It is the intention of these specifications to provide that all metal work subject to corrosion shall be satisfactorily protected by a durable coating of paint or other approved material and that all metal surfaces not buried in earth, or in concrete, shall be left clean and well painted at the completion of the contract. Unless otherwise specified, the protection shall be at least that given by three (3) coats of approved paint. The first coat is to be applied at the shop before the metal has rusted and after all grease, dirt and scale has been removed. Bolts and nuts shall not be shop coated, but shall receive three (3) coats of approved paint after installation.

(B) - All metal work which has not been coated before the arrival on the job shall be given a temporary protective coating of such a nature as to permit the ready adherence of future coatings. The temporary coating shall be a good grade asphaltic paint or other approved material. This temporary protection shall apply particularly to the valve boxes and covers, manhole rings and covers, ladders and ladder rungs and elsewhere when in the opinion of the Engineer, such protection is necessary.

(C) - All surfaces of metal which will be in contact after assembling shall be painted, at least one coat, before assembling. The final coat of paint on all exposed work shall be given shortly before the completion of the contract.

(D) - Where painting clauses appear hereinafter, they shall take precedence over this section, except that temporary protection herein described may be required.

(E) - All of this work shall be included in the price bid for the particular item requiring the painting.

TESTS, INSPECTION AND REPORTS

Notwithstanding the requirements of any other provisions of these specifications, the Contractor shall arrange for and pay all costs involved for shop inspection of all materials furnished, manufacture of all pipe, valves, fittings, etc., field and shop welds and welding, and furnish to the State and the City of Cleveland copies of all shop, fabrication, manufacture and other related inspection reports of materials furnished. This inspection shall be done by a recognized inspection laboratory approved by the City of Cleveland.

HANDLING PIPE AND ACCESSORIES

(A) - Unloading: Cast iron pipe, fittings, valves, hydrants, and other accessories shall, unless otherwise directed, be unloaded at the point of delivery, hauled to and distributed at the site of the project by the Contractor. They shall at all times be handled with care to avoid damage. In loading and unloading they shall be lifted by hoists or slid, or rolled on skidways in such manner as to avoid shock. Under no circumstances shall they be dropped. Pipe handled on skidways must not be skidded or rolled against pipe already on the ground.

(B) - At site of work: In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

(C) - Protection of pipe coating: Pipe shall be handled in such manner that a minimum amount of damage to the coating will result. Any cast iron pipe or fitting, the coat of which has been damaged in shipping or handling, shall have the damaged portion well cleaned and covered with an asphalt paint, approved by the Engineer, before being placed in the work. The Contractor shall thoroughly coat all exposed parts of bolts and nuts with an approved asphalt paint, after all pipe has been laid and before backfilling has been placed. All field coating shall be furnished by the Contractor.

(D) - Pipe kept clean: The interior of the pipe, fittings, and other accessories shall be kept free from dirt and foreign matter at all times.

(E) - Frost protection: Valves and hydrants before installation shall be drained and stored in a manner that will protect them from damage by freezing.

CHANGES IN WATER PIPES

(A) - Wherever it becomes necessary in the opinion of the Engineer to change the location of house connections, such changes will be made as work to be done by the City. The Contractor shall notify the City in ample time to permit the City to make such changes and avoid unnecessary delay in the completion of the work. The Contractor shall also cooperate with the City in making these changes and shall do all excavating, backfilling and repaving as may be required. The City will furnish the piping material for and make all changes required, including tapping, in the location of existing house service connections and meters. The City will charge the Contractor for materials and labor furnished in making these service connections and alterations and costs thereof shall be included in the unit price bid for "Service Connection Relocations" or "Water Meters Relocated".

(B) - Wherever it becomes necessary, in the opinion of the Engineer, to change the location or elevation of water mains and hydrants, and where connections are to be made between existing distribution mains and water mains under this contract, the Contractor shall remove and dispose of all existing water line materials required to make the connection, and shall furnish and install complete, all the cast iron or ductile iron pipe, fittings and valves to make the connections indicated, except branch sleeves and valves which will be installed by the City. The Contractor shall also furnish all necessary labor, materials, tools and equipment and make the excavation, backfill and repaving for such connections. Payment for this will be included in price bid under appropriate item for size of water main or connection to be installed. All pipes, valves, hydrants and appurtenances removed shall become the property of the Contractor.

WORK TO BE DONE BY THE CITY

(A) The City will furnish the piping material for and make all changes required, including tapping, in the location of existing house service connections and meters, but the Contractor shall do all the necessary excavation, backfilling and repaving required therefore. The City will charge the Contractor for materials and labor furnished in making these service connections and costs thereof shall be included in the unit price bid for "service connections" or "water meters relocated".

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

MADE E.C.E. DATE 11-6-64 TRACED DATE
CHECKED DATE SCALE

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

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WATERWORK NOTES

(B) The City will install all branch sleeves and valves, but the Contractor shall supply the branch sleeves and valves, lead, and do all the necessary excavation, backfilling and repaving required therefor.

To cover labor and installation costs, the City will charge the following flat rates for the installation of tapping sleeves and valves. In addition to the above requirements, the Contractor shall furnish all air compressors required for the work.

SIZE OF MAIN	LABOR AND INSTALLATION BY CITY
8"	$140.00
16"	260.00

(C) In locations shown on the plans the Contractor will be required to sleeve-in to the existing mains. To speed up this operation, it is called to the Contractor's attention that the water department has on hand at Harvard Yards Motor operated pipe cutters which are available for cutting pipe by city forces at the following rates. The prices include cost of labor, use of pipe cutting machine, and truck. The Contractor shall do all necessary excavation, backfilling and repaving and all air compressor equipment shall be furnished by the Contractor.

SIZE OF PIPE	COST PER CUT
6"	$30.00
8"	30.00
12"	30.00
16"	35.00

EXCAVATION

(A) - The Contractor shall remove all existing structures, roadways, driveways and other similar materials and make to the lines and grades given, all excavation necessary for the proper construction of the water main, pipe connections and appurtenant structures, including tunnel and shaft excavation. The excavation shall include the removal, handling, rehandling and disposal of materials encountered in the work and shall include all pumping, bailing, draining, sheeting and bracing. Moreover, the Contractor must assume all responsibility for any added expense or other liability which may arise by means of quicksand, obstacles or conditions foreseen or unforeseen and encountered in the work of this contract.

(B) - Trenches shall in every case be of sufficient width to permit solid packing of refill under and around pipes, and satisfactory construction of all appurtenances and for such sheeting and shoring, pumping and draining as may be necessary.

(C) - The trench shall be dug to the alignment and depth required and only so far in advance of pipe laying as the Engineer shall permit. The trench shall be so braced and drained that workmen may work therein safely and efficiently. It is essential that the discharge from pumps be led to natural drainage channels, to drains, or to sewers.

(D) - The trench width may vary with and depend upon the depth of trench and the nature of the excavated material encountered, but in any case shall be of ample width to permit the pipe to be laid and jointed properly and of the backfill to be placed and compacted properly. The minimum width of unsheeted trench shall be eighteen (18) inches and for pipe ten (10) inches or larger, at least twelve (12) inches larger than the outside diameter of the pipe for concrete pipe and eighteen (18) inches larger than the outside diameter of the pipe for cast iron and steel pipe, except by consent of the Engineer. The maximum clear width of trench shall be not more than two (2) feet greater than the outside pipe diameter. When sheeting and bracing is used, the trench width shall be increased accordingly.

(E) - The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil cut true and even, so that the barrel of the pipe will have a bearing for its full length.

(F) - Any part of the trench excavated below grade shall be corrected with approved material, thoroughly compacted.

(G) - When the uncovered trench bottom at subgrade is soft and in the opinion of the Engineer cannot support the pipe, a further depth and/or width shall be excavated and refilled to pipe foundation grade as required under (F), or other approved means shall be adopted to assure a firm foundation for the pipe.

(H) - Ledge rock, boulders, large stones, and shale shall be removed to provide a clearance of at least six (6) inches below all parts of the pipe, valves, or fittings, and to a clear width of six (6) inches on each side of all concrete pipe and nine (9) inches on each side of all cast iron and steel pipe shall be provided.

(I) - Excavation below subgrade in rock, shale or in boulders shall be refilled to subgrade with approved material, thoroughly compacted.

(J) - Bell holes of ample dimensions shall be dug in earth trenches at each joint to permit the jointing to be made properly. Adequate clearance for properly jointing pipe laid in rock shall be provided at bell holes.

(K) - The use of excavating machinery will be permitted except in places where operation of same will cause damage to trees, buildings, or existing structures above or below ground, in which case hand methods shall be employed.

(L) - Trees, fences, poles and all other property shall be protected unless their removal is authorized. Any property damaged shall be satisfactorily restored by the Contractor.

(M) - Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire or police call boxes, or other utility controls shall be left unobstructed and accessible during the construction period.

(N) - The Contractor shall maintain all excavations in good order during the construction, so as not to hinder or injure the pipe laying, masonry or other work. He shall take all reasonable precautions to prevent movement of the sides of such excavation, and shall remove at his own expense any material sliding into the excavation.

SHEETING AND BRACING

(A) - The Contractor shall furnish and put in place such sheeting and bracing as may be required to support the sides of trenches or other excavation and shall remove such sheetings and bracings, as the trench or excavation is filled up, unless the Engineer shall order it left in place, in which case the Contractor shall cut the plank off at a height as ordered by the Engineer, or as called for on the contract drawings. That portion of the timber ordered to be left in place will be paid for at the rate of eighty dollars ($80.00) per thousand feet board measure. No payment will be made for wasted ends.

(B) - Whenever the excavations for the work herein to be done are immediately adjacent to other subsurface structures, the Contractor shall furnish and place sheeting and bracing where noted on contract drawings and as may be necessary so as to reduce to a minimum the possibility of injuring or damaging the same.

(C) - If the Engineer is of the opinion that at any point sufficient or proper supports, sheeting, or bracings have not been provided, he may order additional supports, sheeting or bracing, at the expense of the Contractor, and the compliance with such orders by the Contractor shall not relieve or release him from his responsibility for sufficiency of such supports.

REMOVAL OF EXCAVATED MATERIAL

(A) - All surplus material and such other material as the Engineer may deem unfit for use as backfill shall be disposed of by the contractor so as to give a minimum of inconvenience to the public. In case of settlement after backfill, the Contractor shall supply sufficient material satisfactory to the Engineer to make up for the deficiency.

(B) - In the storing of excavated material, which is to be used as a backfill, the Contractor shall excercise care so as to avoid inconveniencing the public. If, in the opinion of the Engineer, It is necessary to remove this excavated material from the streets or lots, the Contractor shall be required to do so.

(C) - Any material which may spill or drip from vehicles by hauling in the streets, shall be removed and the streets cleaned by the Contractor, to the satisfaction of the Director of Public Service of the City of Cleveland or the proper officials of the municipality or township in which the work is being done.

(D) - When so directed by the Engineer, the Contractor shall immediately remove all excavated materials from the site and dispose of the same.

LAYING PIPE

(A) - Proper implements, tools, and facilities, satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient prosecution of the work. All pipe, fittings, and valves shall be carefully lowered into the trench piece by piece by means of derrick, proper slings, and other suitable tools or equipment, in such manner as to prevent damage to pipe or coating, under no circumstances shall pipe or accessories be dropped or dumped into the trench. If any defective piece be discovered while pipe is suspended or after being laid, a new piece shall be furnished and installed by the Contractor at the site of the work.

(B) - All foreign matter or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench, and it shall be kept clean by approved means during and after laying.

(C) - At times when pipe laying is not in progress, the open ends of pipe shall be closed by approved means, and no trench water shall be permitted to enter the pipe. No pipe shall be laid in water, or when the trench conditions or the weather is unsuitable for such work, except by permission of the Engineer.

(D) - Wherever necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions, to plumb stems, or for other reasons, the degree of deflection shall be approved by the Engineer.

(E) - Before laying cast iron or ductile iron pipe, all lumps, blisters and excess coal tar coating shall be removed from the bell and spigot ends of each pipe, the pipe ends shall then be kept clean until joints are made.

(F) - Before laying concrete pipe, the pipe ends shall be made smooth with emery cloth, file or other approved means, wire brushed and wiped until clean and dry. Pipe ends shall be kept clean until joints are made. After cleaning and drying, all contact surfaces of the gaskets and steel joint rings shall be coated with an approved flax soap before entering the spigot and into the socket. Immediately after the joint is pulled together the pipe shall be blocked with wood blocking. A surcingle shall be installed around the joint and the pipe shall be secured there with earth or sand as required, carefully tamped under and on each side of it up to the spring line of the pipe, including the bell holes. All blocking shall be removed when backfill has reached the spring line of the pipe.

(G) - Preparation of pipe ends for steel pipe shall be in accordance with the A.W.W.A. specifications C 201-50 and C 202-49 for, electric fusion welded steel water pipe.

FLOATING

The Contractor shall take every precaution against the floating of the pipe due to water coming into the trench, or through caving in, flushing or puddling. In case of such floating the Contractor shall replace the pipe at his own expense, and make wholly good any injury or damage which may have resulted.

APPROVED
DATE 4/2/65

DIRECTOR OF PUBLIC UTILITIES

COMMISSIONER OF WATER AND HEAT

COMMISSIONER DIVISION OF UTILITIES ENGINEERING

ENGINEER OF CONSTRUCTION AND SURVEYS

ENGINEER OF DESIGN

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

MADE ECE DATE 11-4-64 TRACED ____ DATE ____
CHECKED ____ DATE ____ SCALE ____

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

WATERWORK NOTES

WATERWORK NOTES

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TESTING MAINS

(A) - All pipes, valves, fittings, etc., shall be laid in such a manner as to leave all joints watertight. After the pipe is laid, and before backfilling is placed around the joints, such lengths of the water main as the Engineer may determine, shall be tested under a hydrostatic pressure of seventy-five (75) pounds per square inch above the static pressure, but nowhere less than 100 pounds per square inch.

(B) - The test shall be under the direction of the Engineer and Director of Public Utilities or his designate. The Contractor may obtain water for testing by observing the rules and regulations enforced in the municipalities or townships in which the work is being done. The City will furnish a pressure gage for measuring the pressure on the water main, but the Contractor shall furnish a suitable pump, pipes, test heads and all appliances , labor, fuel and other appurtenances necessary to make these tests.

(C) - The test pressure shall be maintained for a sufficient length of time to allow for a thorough examination of joints and elimination of leakage where necessary. The pipe lines shall be made absolutely tight under the test pressure.

(D) - After a section of the water main has been tested, the Contractor shall drain same. In case the drains are connected to valve or drain vaults, then the Contractor shall within reasonable time after the test has been completed pump all water out of the vaults.

(E) - In cold weather immediately after testing a section of the water main, the Contractor is to open all valves, air cocks, by-passes and drains and properly drain bonnets of all valves in the section of the water main, and take all other precautions necessary to prevent injury to water main and appurtenances due to freezing.

(F) - As an alternate for testing concrete and steel mains other than by the preceding method, the Contractor may choose the following procedure.

The water main shall be tested under the same hydrostatic pressure as previously noted. The test pressure shall be maintained for a period of two (2) hours by pumping additional water into the main, if necessary. The quantity of water thus pumped into the main multiplied by twelve (12) shall be taken as the leakage per twenty-four (24) hours.

(G) - The permitted leakage shall not exceed a rate of seventy-five (75) gallons per twenty-four (24) hours per mile of pipe per inch of nominal diameter.

(H) - In calculating leakage, the Engineer will make allowance for any leakage at the valves, the removeable bulkheads, etc.

(I) - In using this method of testing, the Contractor may backfill the pipe except at lead joints, flanged joints, victaulic couplings, and drain connections immediately following the laying and before the actual test has been made. In case the leakage exceeds the permissible amount mentioned above, the Contractor shall find the leak and make the joints tight. The Contractor shall furnish suitable means for determining the quantity of water lost by leakage during the test.

(J) - In order to be able to make proper allowances for leakage at valves, etc., previously noted, only such sections of water main may be selected for test as will have such valves, removable bulk-heads, etc., accessible.

(K) - The evaluation of actual leakage to standard pressure (150 lbs.) leakage is calculated by the application of the ratio determined from the square root of respective pressures, other factors being equal.

CLOSING VALVES

The closing of all gate valves on water mains for making connections, tests, or for any other cause, shall be done by the City of Cleveland and sufficient notice shall be given to the City, by the Contractor, so that the work may be done with a minimum of inconvenience to the public and delay to the Contractor. See charges listed herein.

PLUGGING DEAD ENDS

Standard plugs with clamps shall be inserted into the bells of all dead ends of pipes, tees, or crosses, and spigot ends capped and clamped by the Contractors, on all mains constructed by him and existing water mains where indicated in the contract drawing. Concrete piers shall be placed when called for on the contract drawings, or ordered by the Engineer. The cost of furnishing the plugs shall be included in the per linear foot price bid for the various sizes of new water mains and for size plug installed where shown on existing water main. (See pay item)

BACKFILLING

(A) - This work includes all backfilling, together with ramming, puddling, and rolling, as required, The regrading of grounds, The replacing of surface and subsurface structures, The placing and maintaining of temporary sidewalks, and driveways, The furnishing of suitable material for backfill, reseeding lawns and replacing trees and shrubbery damaged by the Contractor, and all appurtenant work incidental thereto. Pavements, curbs, sidewalk and driveways within the limits of the work shall be temporarily surfaced, maintained and finally replaced or repaved as set forth under roads, surfaces, sidewalks driveways and curbing.

(B) - Backfill, unless otherwise specified, may be made with material excavated from the trenches, providing same is satisfactory to the Engineer. If, in the opinion of the Engineer, the material excavated is unsatisfactory, then the Contractor shall furnish at his own expense other material suitable for backfill. All backfill shall be free from slag, cinders, rubbish and other objectionable material.

(C) - Before laying the pipe, the bottom of the trench shall be brought to the grade of the bottom of the pipe, except of field joints. Wherever the bottom of the trench has been excavated below the bottom of the pipe, the Contractor shall place sand, or other material satisfactory to the Engineer to bring the bottom of the trench to the grade of the bottom of the pipe. This bed shall be thoroughly tamped before the pipe is laid.

(D) - Unless otherwise specified, the backfill under, around and to a depth of one (1) foot above the top of all pipe, shall be made with material satisfactory to the Engineer, which material shall be free from stone and other objectionable material noted above. The Contractor must use special care in placing this portion of the backfill, so as to avoid injuring, distorting or moving the pipe when compacting same. Above this level the backfill shall be made with material satisfactory to the Engineer. However, where specified, sand shall be used for the entire portion of the backfill. See below.

(E) - Backfilling as noted in paragraph (D) shall be tamped in thin layers, simultaneously on each side of the pipe, and thoroughly compacted so as to provide a solid backing against the external surface of the pipe.

(F) - Only after the backfill previously mentioned has been satisfactorily compacted, may work proceed in placing the remaining backfill which must be carefully placed and compacted by tamping, puddling, or rolling. All precautions must be taken to eliminate future settlement. The number of men tamping shall be not less than the number backfilling, and additional men shall be kept in the trench to spread the material.

(G) - Backfilling shall not be done in freezing weather, except by permission of the Engineer, and it shall not be made with frozen material, nor shall any fill be made where the material already in the ditch is frozen.

(H) - The entire backfill shall be made with sand where permanent pavements, curbs, driveways, or sidewalks, have been opened for or undercut by the excavation.

(I) - All sand to be used for backfill shall be a natural bank sand, graded from fine to coarse, not lumpy or frozen, and free from slag, cinders, ashes, rubbish, or other deleterious or objectionable material. It shall not contain a total of more than 10 per cent by weight of loam and clay, and all material must be capable of being passed through a $\frac{3}{4}$ inch sieve. Not more than 5 per cent shall remain on a No. 4 sieve.

(J - Special treatment of the trench will be required where cinder excavation exceeding one foot measured from the top surface is encountered. Before laying the pipe the bottom of the trench shall be dug below grade and then brought to the grade of the pipe in the following manner, a four 4 inch layer of crushed limestone shall be placed on the entire width of the bottom of the trench followed by a filler of hydrated lime and a layer of three 3 inches of sand. The crushed limestone shall be well graded from fine to coarse and free from slag, cinders, ashes, rubbish or other objectionable material. All limestone must be capable of being passed through a $\frac{3}{4}$ inch sieve. On top of this layer of crushed stone, hydrated lime shall be supplied in the amount of $\frac{1}{2}$ of a pound per square foot of trench. This bed of crushed limestone shall be thoroughly tamped before the 3" layer of sand is placed. The backfill around and to the depth of 3" above the top of the pipe shall be made with sand. The Contractor must use special care in placing this portion of the backfill so as to avoid injuring or moving the pipe when compacting same. On top of the sand the Contractor shall place another layer of crushed limestone five 5 inches thick on the entire width of the trench. On top of the compacted layer of limestone hydrated lime shall be then applied in the amount of $\frac{1}{2}$ of a pound per square foot of trench. The remaining backfill shall be made with sand, carefully placed and compacted by tamping, puddling, or rolling. All precautions shall be taken to eliminate future settlement. The treatment of the trench bottom, previously described, may be omitted where the cinder depth, measured from the top surface does not exceed 2'-6".

ROAD SURFACES, SIDEWALKS, DRIVEWAYS, AND CURBING

(A)- The Contractor shall remove all pavements and road surfaces within the lines of excavation. After the pipe has been laid, all appurtenant work constructed and backfill completed, he shall furnish, place and maintain, wherever the pavement of road surface has been removed or damaged by him. A temporary pavement in the paved portion of streets, or a temporary road surface in the unpaved portion of streets so as to provide a safe and passable roadway until such time as the final pavement or road surface is completed.

(B) - When only a portion of the street is paved and the lines of excavation are in the unpaved portion of same the Contractor shall use the utmost care in preventing injury to the pavement. If, in making the excavation or for any other cause the pavement is removed or injured by the Contractor, he shall furnish, place and maintain a temporary pavement wherever the pavement has been removed or damaged, so as to provide a safe and passable roadway until such time as the final pavement is completed.

(C) - All final paving of road surfaces, if so noted on the contract drawings, shall be done by the Contractor to the satisfaction of the Engineer and in conformity to the City of Cleveland "Standard Specifications for Construction of Pavements, Sidewalks and Sewers," dated January, 1950. The Contractor shall bear the entire cost of the work. The base of pavement of Class 6 Concrete shall be installed on a carefully prepared bed level with the bottom of the abutting base over disturbed areas and shall be of the thickness specified, but in no case less than 7" thick. Where pavement or base of pavement has been damaged by cave-in, or by trench cut leaving a portion or portions of pavement 18" or less in width between such cut or damage to curb or other substructure, that remaining portion of pavement shall be removed and restored monolithic with the type and kind of pavement specified for the adjacent trench area. The wearing course over trench or other disturbed areas shall be restored to match existing pavement unless otherwise specified. Asphaltic concrete wearing course over such areas shall be neatly and squarely cut, not less than 3 feet wide, before the installation of a carefully toothed-in-to adjacent pavement, unless otherwise specified. Expansion joints shall be installed between brick wearing course (if ground) and curb or other substructure, where such restoration is required by these specifications.

(D) - All damaged or disolaced curb shall be renewed or reset to the satisfaction of the Engineer. No faulty curb or curb less than 30" long will be permitted for reuse.

(E) - At locations not specifically mentioned, the Contractor shall restore the same type of pavement as encountered.

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

MADE ____ DATE ____ TRACED ____ DATE ____
CHECKED ____ DATE ____ SCALE ____

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

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

(F) - If prior to the expiration of this contract, any of the pavements or road surfaces within the lines of excavation or adjacent thereto, shall have been damaged or injured, due to undermining, or for any other cause which may be attributed to the work which is being done by the Contractor, then the Contractor shall remove such damaged or injured pavements or road surfaces, foundations of same and all loose final pavement or road surface, he shall then backfill with sand properly rammed and replace the final pavement or road surface.

(G) - If any sidewalks, driveways or curbs, are removed or injured by the Contractor in the course of making excavation or handling materials, or for any other reason which may be attributed to work which has been done by the Contractor, then he shall relay same after all work, including backfilling has been completed. If any stone sidewalks, driveways, or curbs which have been removed or injured, are unfit to be relaid, then the Contractor shall furnish new material and relay same. All concrete or cement sidewalks, driveways or curbs, which are removed or injured by the Contractor shall be broken up by him and he shall furnish all labor and materials and construct new sidewalks, driveways or curbs, to replace those removed or injured. At intersecting walks, drives, etc., additional concrete slabs beyond the excavation limits shall be removed and replaced with new material, in order to avoid having more joints than in the original work. All slabs replaced shall be of full width. The Contractor shall furnish, place and maintain, wherever the sidewalk has been removed or damaged by him, a temporary sidewalk so as to provide a safe and passable sidewalk until such time as the final sidewalk is completed.

(H) - All pavements, road surfaces, sidewalks, driveways, or curbs, which the Contractor is required to replace or to have replaced, shall, at the expiration of this contract, be in at least as good condition as at the time of awarding the contract.

(I) - All work which the Contractor may do in connection with the opening up or replacing or pavements, road surfaces, sidewalks, driveways, or curbs, as well as the final repaving, shall be done at his expense, in accordance with the rules and requirements of the Street or Sidewalk Departments of the City of Cleveland, and in accordance with the additional requirements of these specifications. And the Contractor shall furnish evidence to the Engineer that the work has been completed to their satisfaction.

(J) - Tunneling will not be permitted without permission of the Engineer. In backfilling tunnels, sand shall be used as far as possible and balance of backfilling made with Class E concrete, rammed in place.

(K) - The Contractor shall make all pavement cuts by channeling machine, hand-operated pneumatic tools or by such other methods as will furnish a clean cut in the pavement and pavement base without undue shattering. The use of ball or weight to break the pavement will not be permitted.

(L) - No specific or separate payment will be made for all of this work, but the cost thereof shall be included in the prices bid for the various items of the work to be done under this contract. Restoration as noted above will only be required in areas where the plans do not otherwise propose new construction of pavement sidewalks and curbs, except that temporary restoration in such areas may be required by the Engineer in order to maintain traffic or local access per Sec. G-4.05 and G-7.07.

LIST AND INVOICES

(A) - The Contractor shall furnish the Engineer with the list in duplicate of pieces in each shipment of pipe and specials, giving the serial number and designation of each pipe and special sent at that time.

(B) - The material shall be shipped in such sections as the Engineer may order.

CAST IRON AND DUCTILE IRON PIPE AND FITTINGS

WORK INCLUDED

The Contractor shall furnish, all the materials for and shall property construct and connect in place, at the locations shown on the drawings or as directed, all cast iron or ductile iron pipe and fittings, including all excavation work, the cutting into and removal of existing pipe, backfilling, sand backfill, and repaving, all as required for the proper completion of the work included under this contract.

CAST IRON PIPE AND FITTINGS

(A) - All pit cast pipe shall be manufactured in all respects in accordance with, and shall meet the requirements of the latest "Standard Specifications for Cast Iron Pipe and Special Fittings" as adopted by the American Water Works Association which specifications except as herein modified are made a part of these specifications.

(B) - All pit cast pipe and fittings shall be cement lined and of the size and classes noted on the respective contract drawings.

(C) - In lieu of pit cast pipe above the Contractor will be permitted to furnish either centrifugal or high strength cement lined pipe. The metal shall have a modulus of rupture of not less than 40,000 pounds and a tensile strength of not less than 18,000 pounds and shall be for class noted on the contract drawings. Pipe may be furnished in 12, 16, or 18 foot lengths. The centrifugally cast pipe shall conform to the American Standard Specification A21.6-1952 and all subsequent amendments thereto.

When noted on the contract drawings ductile iron pipe shall be supplied. All ductile iron pipe shall be manufactured in accordance with A.S.A. A21.6 or federal specification WWP-421B. All ductile iron fittings shall be manufactured in accordance with A.S.A. A21.10 or AWWA C 100-08. Ductile iron shall have a minimum of 60,000 psi Ultimate tensile strength, 40,000 psi yield point and 10% elongation. The chemical analysis shall be as follows: Carbon 3% minimum, Phosphorus .08% maximum and Silicon 2.75% maximum.

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

WATERWORK NOTES

(1) - The thickness of the centrifugally cast iron pipe shall conform to the following table:

STANDARD THICKNESS OF CENTRIFUGALLY CAST IRON PIPE AND DUCTILE IRON PIPE

SIZE	WORKING PRESSURE	STANDARD THICKNESS	CLASS
6"	250	.48	25
8"	250	.52	25
10"	250	.56	25
12"	250	.60	25
16"	200	.68	25

(2) - All fittings, such as bends, tees, crosses, offsets, hydrant branches, etc., shall have bell and bell or bell and spigot ends with cast lead joints, pipe between offsets or bends and on hydrant branches, shall also be of bell and spigot type with lead joints.

(D) - All pipe shall have bell and spigot ends for cast lead joints or a slip-on type joint with compressed rubber ring inserts. All pipe and fittings shall be cement lined.

(E) - Gaskets shall be of rubber or other equally effective protection against uneven distortion of the gasket.

(F) - Where fittings are shown which are not covered by the above specifications, they in such particulars as are lacking thereon, shall conform to the dimensions and otherwise meet the specifications for the respective type which are carried in the latest revisions to the current edition of the "Handbook of Cast Iron Pipe" by the Cast Iron Pipe Research Association or which are otherwise shown on the contract drawings.

(G) - Wherever changes in line and grades of the main as shown on the drawings are not standard fitting deflections, the Contractor will be permitted to submit details using combinations of standard fittings and small deflections (not to exceed a maximum of one half (½) inch joint opening) in the adjoining lengths of pipe. Pipe to be installed with air cocks or drains shall be cast with bosses thereon, and drilled and tapped for two (2) inch connections, and plugged in the shop with cast iron threaded plugs, before shipment.

(H) - Plugs for bell and spigot pipe and caps for lugged pipe shall be furnished with two (2) plugged two (2") inch taps for drain and air cock connections.

(I) - Closure pieces shall be accurately measured and cut in the field and installed using solid type pattern sleeves as shown or as required.

(J) - Tests, inspection, reports and analyses of tests of samples for all materials shall be furnished as set forth elsewhere in these notes.

(K) - Bitumastic coating shall be applied on the exterior of all cast iron pipe and fittings in accordance with AWWA specifications.

CEMENT LINING

All cast iron or ductile iron pipe and fittings shall be given a cement mortar lining at the point or manufacture. The lining shall conform to the American Standard Specification A 21.4-1952 and all subsequent amendments thereto.

MARKING

All cast iron or ductile iron pipe and fittings shall be suitably marked to denote the manufacturer, class, date, weight and other elements of identification.

LAYING

(A) - Proper and suitable tools and appliances for the safe and convenient handling and laying of the pipes and fittings shall be used. Great care shall be taken to prevent the pipe coating from being damaged, particularly on the inside of pipes and fittings and any such damage shall be remedied as directed. All pipes and fittings shall be carefully examined by the Contractor for defects just before laying and no pipe or fitting shall be laid which is known to be defective.

(B) - If any defective pipe is discovered after having been laid, it shall be removed and replaced with a sound pipe or fitting in a satisfactory manner, by the Contractor at his own expense. All pipes and fittings shall be thoroughly cleaned before they are laid, shall be kept clean until they are used in the completed work, and, when laid, shall conform to the lines and grades given by the Engineer. Open ends of pipes shall be kept plugged with a bulkhead during construction. In no event shall any portion of the damaged pipe be permitted to remain in the line. Any approval stamps found on the pipe shall be removed or the pipe broken up for scrap.

(C) - Pipe laid in trench shall be laid to a firm and even bearing for its full length. Precautions shall be taken against floating.

(D) - It is the intention of these specifications to secure first class workmanship in the placing of pipe and accessories. In such details as are not specifically mentioned herein or called for on the drawings, the Contractor will be required to conform with the applicable sections of the latest "Standard Specifications for Laying Cast Iron Pipe" as adopted by the American Water Works Association.

CUTTING PIPE

Whenever the pipes require cutting to fit into the lines, the work shall be done in a satisfactory manner so as to leave a smooth end at right angles to the axis of the pipe. In no event shall flame cutting be used. When a piece of pipe is cut to fit into the line, no payment will be made for the portion cut off and not used in the line.

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2	OHIO		

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CUY - 71-17.18

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JOINTS

(A) - Lead joints: In jointing all bell and spigot pipe and fittings having lead joints, the spigot of each pipe shall be properly seated in the bell of the next adjacent piece and adjusted so as to give a uniform annular space. The joint shall be made with twisted hard jute and soft pig lead. Before placing the jute, it shall be sterilized either by boiling or by dipping in a concentrated solution of "HTH". The jute shall be twisted and thoroughly driven into the bell, so that the lead, after having been caulked, shall have a depth of 2½ inches.

The furnace and melting pot shall be kept near the joint to be poured and each joint shall be made with one pouring. Dross shall not be allowed to accumulate in the melting pot. The joints shall be thoroughly caulked by competent pipe joiners and in such manner as will secure a tight joint without overstraining the iron of the bell.

PAINTING

After erection, all exposed or damaged coatings and all bolts for lugged joints shall be cleaned and painted with three (3) field coats of Inertol 50 or Bitumastic 50 or equivalent.

DRAWINGS

(A) - The Contractor shall submit to the Engineer tor approval duplicate prints of all shop drawings for pit cast iron pipe and fittings and miscellaneous details which are not standard construction, and are not mentioned in the regular catalogue of the company furnishing the pipe. No work shall be done in the shop until after the drawings have been approved.

(B) - The approval of the drawings by the Engineer shall not relieve the Contractor of any of his obligations in connection with this contract.

MEASUREMENT

The number of lineal feet of cast iron pipe and ductile iron pipe line and connections to be paid for shall be the actual number of lineal feet furnished and placed in accordance with these specifications as measured along the axis of the piping including fittings and valves connected up in place. For connections between new and existing mains, measurement shall be the distance from centerline to centerline of mains and the actual length of existing main ordered to be removed to make the connection.

PAYMENT (continued on sheet No. 171

FURNISHING AND SETTING 6" HYDRANTS

WORK INCLUDED

The Contractor shall furnish all hydrants, caulking material, labor, tools and equipment for and shall properly connect at the location shown on the Contract Drawings, 6" hydrants, complete, as required for the proper completion of the work included under this contract.

HYDRANTS

The 6" hydrants shall be City of Cleveland Standard and shall conform to the City's specifications on file in Room 624 Lincoln Building, Cleveland 14, Ohio and the Hydrant Detail shown on sheet No. 184

SETTING

(A) - General Location: Hydrant shall be located in a manner to provide complete accessibility, and in such manner that the possibiliby of damage from vehicles or injury to pedestrians will be minimized. Unless otherwise directed, the setting of any hydrant shall conform to the following:

(B) - Location Regarding Curb Lines: When placed behind curb the hydrant barrel shall be set so that center of barrel will be no less than 3 feet from the gutter face of the curb, or deviate from location indicated on contract drawings, except by consent of the Engineer.

(C) - Location Regarding Sidewalk: When set in the lawn space between the curb and the sidewalk, or between the sidewalk and the property line, no portion of the hydrant or nozzle cap shall be within 6 inches of the sidewalk.

(D) - Position of Nozzles: The hydrant shall stand plumb, with the nozzles pointing toward the road and at an angle of forty-five degrees therefrom. Where hydrant branch piping is parallel with, or not at right-angles to the curb, the Contractor shall release swivel head bolts and adjust the hydrant nozzles to face the road at the proper angle. A hydrant without swivel heads will be adjusted by the City where necessary to correct the angle on nozzles. The elevation shall conform to the established grade with tops of frost casing at least four (4) inches above grade.

(E) - Connection to Main: The hydrant shall be connected to the main pipe with a cast iron branch controlled by the independent gate valve of the same size as hydrant, except as otherwise directed.

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

WATERWORK NOTES

(F) - Drainage at Hydrant: Drainage shall be provided at the base of the hydrant by filling around the elbow with coarse gravel or crushed stone to at least six (6) inches above the waste opening. Wherever a hydrant is set in rock, clay or other impervious soil, the trench shall be widened and deepened on each side of the hydrant base, which space shall be filled compactly with coarse gravel or broken stone mixed with coarse sand of sufficient quantity to absorb all water to be drained from the hydrant when the valve is closed.

(G) - Anchorage for Hydrant: The hydrant shall be set on a stone slab or similar foundation and base of hydrant and hydrant tee well braced against unexcavated earth at the end of the trench with concrete backing, or it shall be tied to the pipe with suitable rods or clamps as directed by the Engineer.

(H) - Cleaning: The hydrant shall be thoroughly cleaned of dirt or foreign matter before setting.

PAYMENT (Continued on Sheet No. 171

FIRE HYDRANTS RELOCATED

WORK INCLUDED

The Contractor shall remove the hydrants and properly set in place and connect at the locations shown on the drawings or as directed by the Engineer. This shall include all excavating, backfilling, seeding and sodding, and repaving required for the proper completion of the work included under this contract.

MATERIALS

All hydrants to be relocated must be in good condition. All other materials and appurtenances necessary for the proper completion of this Item shall be of the kind and grade called for in these notes for the particular kind of construction in which the materials are to be used.

CONSTRUCTION METHODS

The construction methods shall conform to the requirements of the Item "Furnishing and Setting 6" Hydrants", as set forth elsewhere in these notes.

PAYMENT (Continued on Sheet No. 171

FIRE HYDRANTS ABANDONED

Where fire hydrants are indicated to be abandoned (not indicated for removal), no work is required, The hydrant becomes the property of the Contractor and shall be disposed of as he sees fit. The cost of such disposal shall be included in the price for Item E-1 Roadway Excavation.

2-INCH GALVANIZED WROUGHT IRON AND BRASS PIPE FOR FLUSHING CONNECTIONS

WORK INCLUDED

The Contractor shall furnish all the materials for and shall properly connect in place at the locations shown on the drawings or as ordered, all 2-inch extra strong brass pipe and fittings, and all 2-inch extra heavy galvanized wrought iron pipe and fittings respectively, which are necessary for the proper completion of the work included under this contract.

BRASS PIPE AND FITTINGS

All brass pipe and fittings shall be extra strong, 2-inch pipe size and the pipe shall conform to A.S.T.M. Specifications B 43-42. Fittings shall be extra strong weight and shall have sound, well fitting threads.

GALVANIZED WROUGHT IRON PIPE AND FITTINGS

All galvanized wrought iron pipe, nipples and fittings shall be extra heavy genuine wrought iron pipe A.S.T.M. Designation A 72-59 T. The fittings shall be beaded, of malleable iron, extra heavy weight. All pipe and fittings shall be hot galvanized inside and outside, and shall have sound, well-fitting threads.

ERECTION

All pipe shall be carefully placed to the proper lines and grades, and shall be connected up, unless otherwise shown, with screw fittings. Screw joints shall be made tight with a graphite paste and screwed home. A liberal number of unions shall be used to permit the ready removal of any section.

VALVES

WORK INCLUDED

The Contractor shall furnish all the materials for and shall properly set in place and connect at the locations shown on the drawings or as directed. All air cocks, drain valves, and gate valves of the various sizes and types specified or ordered all as required for the proper completion of the work included under this contract.

AIR COCKS

All air cocks or air vent valves shall be 2-inch brass angle type globe valves. 2-inch air cocks shall be equal in all respects to the Farnan "Cleveland Standard" Brass Air Vent Valve No. W-4695 as manufactured by the Farnan Brass Works.

GATE VALVES

(A) Type of Valves: The gate valves shall be manufactured in full compliance with the Standard Specifications for Gate Valves for Ordinary Water Works Service of the American Water Works Association AWWA C-500-61 or latest revision thereof and in addition shall comply with the following supplementary requirements. All gate valves shall be of the non-revolving double disc parallel seat bottom wedge or side wedge type. All gate valves 20 inches and over in size shall include by-pass valves attached thereto. In opening or closing the valve, the gates shall be forced ascend or descend by reason of the thrust exerted upon them by the valve stem nut; this thrust being generated by the rotation of the valve stem. In closing the valve, the discs when opposite the ports, shall be pressed firmly against the body seats by wedges or some other device equally suitable to the Engineer.

(B) Valves with Stationary Stems: All gate valves, unless otherwise ordered, shall be made with single, non-rising stems.

(C) Hub Ends: The dimensions of the bells on valves up to and including 24 in. in diameter shall conform to those for Class D pressure fittings, as required by AWWA C100. On valves 30 in. and larger in size, the bell dimensions shall be for the classes ordered

(D) Victaulic Ends: Victaulic ends shall conform to the dimensions given on the contract drawings.

(E) Flange Ends: The end flanges of flanged gate valves shall conform in dimensions and drilling to the "American 125 pound Cast Iron Flanges Standard", unless otherwise ordered.

(F) Screw Ends: All 2-inch gate valves and under shall be made with screw ends, unless otherwise specified.

(G) Vertical and Horizontal Valves: All gate valves, 16 inches and under, shall be constructed to work vertically. Valves over 16 inch waterway shall be constructed to work horizontally.

(H) By-Passes: By-passes with gate valves shall be provided on valves 20 inches and larger. The by-passes shall be located on or below the horizontal centerline of the valves. By-pass valves shall be of the same size as the by-pass and shall conform to the requirement of these specifications for the specific valve used. The size requirements of by-passes shall be as follows: 20-inch valves shall be provided with 3-inch by-passes; valves 24 inches to 30 inches, inclusive, shall be provided with 4-inch by-passes; valves 36 inches to 42 inches, inclusive, shall be provided with 6-inch by-passes; 48 inch valves shall be provided with 8-inch by-passes.

(I) Flanges: When flanged valves are required, the flanges shall be faced and drilled. Bolt holes shall be spot faced on the back when necessary to secure an even bearing. All bolt holes shall be of the size shown on the drawings to be submitted and approved, shall be accurately drilled from templates, spaced equal distances apart and shall straddle horizontal and vertical axis, all as shown on the drawings. The dimensions and drilling of all end flanges shall conform to the spacing indicated on the drawings which shall be the American 125 pounds Cast Iron Flange Standard. Flanges shall be plain face with a smooth finish.

(J) Marking: All gate valves 3 inches and over shall have the identity of maker, size and the year when made and also the letters "C.W.D." cast upon its body or dome in raised letters.

(K) Stuffing Boxes: The stuffing box on each gate valve 3 inches or over, must be separate from the dome and fastened to it by bolts. For 2 inch valves and under, the stuffing boxes may be formed in the dome of the valve. When required by the Director, valves 16 inches and smaller, shall be furnished with "O" ring type seal plate. The seal plate shall be fitted with at least two "O" rings, the lower "O" ring serving as the pressure seal and the upper "O" ring as a combined dirt and moisture seal. The "O" rings shall be Precision Rubber Corporation Quality Compound No. 122-70, or approved equal.

(L) Seat and Gate Rings: Dimensions of the bronze seat and gate rings shall be proportioned to fit the test pressure required, and shall meet the approval of the Engineer. The rings shall be firmly secured in place by an approved device, which will prevent them from working loose, particularly when the valve is left partly open. Dimensions of the bronze seat and gate rings for gate valves shall be not less than that specified in the following tables. Body seat rings shall be made of Grade One Bronze. Gate seat rings shall be made of Grade Five Bronze.

BODY AND GATE RINGS

BOTTOM WEDGE

VALVE SIZE	BODY RINGS FACE	BODY RINGS DEPTH	BODY RINGS THICKNESS AT BASE OF THREADS	BODY RINGS FACE THICKNESS	GATE RINGS FACE	GATE RINGS FACE THICKNESS	GATE RINGS DEPTH
3"	9/16	9/16	3/16	3/16	5/8	5/32	1/4
4"	9/16	9/16	3/16	3/16	5/8	5/32	5/16
6"	11/16	9/16	3/16	5/32	11/16	5/32	5/16
8"	3/4	5/8	3/16	7/32	13/16	5/32	5/16
10"	3/4	5/8	3/16	7/32	13/16	5/32	11/32
12"	7/8	5/8	7/32	7/32	1	5/32	11/32
16"	1-1/8	3/4	1/4	9/32	1-1/4	13/16	1/2
20"	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
24"	1-3/8	1-1/8	5/16	3/8	1-3/8	3/8	5/8
30"	1-1/2	1-1/4	3/8	7/16	1-1/2	7/16	3/4

SIDE WEDGE

					ALL BRONZE DISC		
3"	13/32	1/2	3/16	3/16	1/2	5/32	21/64
4"	7/16	9/16	3/16	3/16	1/2	5/32	21/64
6"	1/2	11/16	9/32	1/4	5/8	5/32	21/64
8"	17/32	11/16	9/32	1/4	11/16	5/32	21/64
10"	5/8	13/16	3/8	5/16	13/16	5/32	21/64
12"	5/8	13/16	3/8	5/16	13/16	5/32	21/64
16"	3/4	1	15/32	3/8	7/8	3/16	13/32
20"	7/8	1-5/16	17/32	7/16	1	1/4	17/32
24"	1-1/16	1-3/8	21/32	1/2	1-3/16	5/16	19/32
30"	1-5/16	1-1/2	25/32	1/2	1-7/16	5/16	19/32

DIMENSIONS IN INCHES

(M) Valve Stem: All gate valves shall be of the single screw type. The stems shall be of Grade Three Bronze. The threads of stems and stem nuts shall be of Acme, modified Acme or one-half V Type. If requested, a manufacturer's certificate of test shall be furnished with all bronze stems. All stem collars shall be cast integral with stems. The diameters of stems at the base of the thread shall be not less than those shown below. The stem opening and thrust-bearing recess shall be Grade One, bronze bushed. The number of threads per inch shall be as given below.

SIZE OF VALVE INCHES	DIAMETER OF STEM AT BASE OF THREAD - INCHES	NO. OF THREADS PER INCH
2	0.469	4
3	0.859	4
4	0.859	3
6	1.000	3
8	1.000	3
10	1.125	3
12	1.188	3
16	1.438	3
20	1.896	3
24	1.980	2
30	2.480	2

(N) Wrench Caps: The wrench caps and retaining nuts on heads of valve stems and pinion shafts shall be of Grade Three Bronze. On valves 24 inches and over, wrench caps shall be 2 inches square and 2 inches deep. On valves 4 inches to 20 inches, inclusive, they shall be 1-3/4 inches square on top, 1-7/8 inches square at base, and 1-3/4 inches deep. On 3 inch valves and under, they shall be 1-1/4 inches square on top, 1-3/8 inches square at base and 1-1/2 inches deep. Machined wrench caps for valves 3 inches to 48 inches inclusive shall be fitted to a machined square stem or pinion shaft and held in place by a retaining nut. Wrench caps shall have a cut-away skirt to permit easy access to gland bolts.

(O) Valves to open clockwise except 2 inches and under. All gate valves 3 inches and over including by-pass valves, shall be made to open by turning in a clockwise direction. All valves to be so made that they can be easily operated.

(P) Facing of Gates. All discs or gates and threads for seat rings in the body shall be machined true and a groove or grooves shall be machined in each disc or gate for the reception of the face ring. The disc and seat rings shall be securely and rigidly attached to the discs or body seats in a manner approved by the Engineer, and the rings are to be finished to a true surface.

(Q) Rollers and Scrapers. In all valves 20 inches in diameter and larger designed to lie horizontally, each gate or disc shall be provided with two bronze rollers travelling on bronze-faced tracks and provided with suitable bronze scrapers or two stainless steel rollers travelling on stainless steel-faced tracks and provided with suitable stainless steel scrapers. The thickness of the facing of the tracks shall be not less than 1/4 inch. The bronze shall be Class 1 and the stainless steel shall be ASTM A 276-55, Type 302.

APPROVED

DATE 4/2/65

DIRECTOR OF PUBLIC UTILITIES

COMMISSIONER OF WATER AND HEAT

COMMISSIONER DIVISION OF UTILITIES ENGINEERING

ENGINEER OF CONSTRUCTION AND SURVEYS

ENGINEER OF DESIGN

MADE E.C.E. DATE 11-6-64 TRACED DATE

CHECKED DATE SCALE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

KANSAS CITY CLEVELAND NEW YORK

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LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES

DIVISION OF WATER AND HEAT

CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

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(R) Valve Guides: All valves 20 inches in diameter and larger shall be provided with guides or tracks which shall be made straight and true, and all irregularities must be machined off. The guides or tracks of horizontal valves shall be substantially faced with a minimum of 1/4 inches of Grade One Bronze, or stainless steel ASTM A 276-55, Type 302, satisfactory to the Engineer, securely fastened and planned off smooth and true.

(S) Gearing. All valves 20 inches in diameter and larger shall be equipped with enclosed cut tooth steel gears. Gears, shafts and bearings shall be such as to provide easy operation without bending or twisting.

(T) Dowel Pins. All gear valves shall have two dowel pins set in the flanges connecting the dome and body. Size of the pins to be shown in plans.

(V) Grease Cases. All valves 20 inches in diameter and larger shall have water tight grease cases installed. The grease cases shall be of the extended type and shall be made of cast iron conforming to ASTM specifications, serial designation A 126, Class B or any subsequent amendment thereto. Bearing surfaces for valve stem and pinion shaft shall be bronze bushed with Grade One Bronze. The grease cases shall be securely bolted to the valve bonnet through a heavy cast iron yoke. The yoke shall be of sufficient length to provide space for repacking valve and grease case stuffing boxes. All grease cases shall be provided with a removable cover securely bolted in place to allow easy access to the gears. There shall also be provided convenient filling and draining plugs and sufficient oil to fully submerge the pinion gear. The valves shall be delivered with the grease cases filled with the proper oil as recommended by the manufacturer.

(W) Indicators: All valves 20 inches in diameter and over, shall be equipped with indicators denoting the positions of the gate. The moving part and bearings to be of bronze or bronze-lined.

(AA) Bronze Parts: The stems, stem nuts, operating nuts, retaining nuts, disc and seat rings, shall be of solid bronze. Other parts such as wedges, glands, thrust bearings, gear spindles, roolers, scrapers and tracks, and all other parts coming together in operation, shall be of bronze, or substantially lined with bronze or stainless steel of a thickness not less than 1/4 of an inch and as shown on drawings submitted and approved. All 2 inch valves and under shall be made entirely of bronze, except handwheels which shall be of malleable iron.

(BB) Cast Iron Parts: The bodies, covers, discs, frames, etc., of all gate valves 3 inches and over, shall be of cast iron.

(CC) Waterway Opening: With the valve open, an unobstructed waterway shall be afforded, the diameter of which is not to be less than the full nominal diameter of the valve.

MATERIAL SPECIFICATIONS

(A) - Strength of Valves: The gate valve shall be designed for 150 lb. working pressure and shall withstand an internally applied hydrostatic pressure at all points of at least 300 lbs. per square inch. A factor of safety of not less than 10 shall be used on the design. Should tests develop any weakness, the valves from that design shall be rejected and a new design made.

(B) - Reinforcement at Flanges: All valve flanges shall be reinforced by fillets in accordance with the manufacturer's practice proven satisfactory in actual service.

(C) - Joints: All joints of the valves shall be faced true in a lathe or planer, and put together with a gasket of some material acceptable to the Engineer.

(D) - Bolt Holes: All bolt holes shall be accurately drilled from templates and spaced equal distances apart.

(E) - Bolts and Nuts: All bolts and nuts shall be made of silicone bronze (A.S.T.M. B 98-55, Alloy A) or stainless steel (A.S.T.M. A 276-55, Type 302).

(F) - Parts to be Interchangeable: All parts of valves of the same size and make must be perfectly interchangeable and all work done in a thorough and workmanlike manner.

(G) - Castings: All castings, whether of bronze, iron or steel, shall be sound and smooth without cold shuts, swells, lumps, scabs, blisters, sand holes or other imperfections, and shall be made in accordance with the best modern foundry practice to obtain castings of the best quality and of uniform thickness. No welding, plugging, or filling of holes or other defects will be permitted. For parts whose thickness is less than one (1) inch, casting being thinner than the specified thickness by .06 of an inch or more shall be rejected, and for parts whose thickness is one (1) inch or more, castings being thinner than specified by .08 of an inch or more shall be rejected.

(H) - Bronze Parts: (1) Bronze for parts, other than those listed below, shall be Grade One. (2) Valve stems, pinion shafts, stem nuts, wrench caps and retaining nuts shall be made of Grade Three bronze. (3) Disc rings shall be made of Grade Five bronze.

(I) - Tests of Bronze: (1) If demanded, a manufacturer's certificate of test shall be furnished with all bronze stems. (2) All stems of 16-inch gate valves and over, shall have a prolongation on one end of each stem, of the same dimensions and cross section as the stem, and of sufficient length to enable the cutting of specimens parallel with the longitudinal axis of the stem. Specimens shall be cut from prolongations one-half way between surface and central axis. Other methods of test will be considered by the Director, but must be submitted in detail with the bid. (3) For all stems of gate valves smaller than 16 inches, not less than two test pieces shall be cast from the molten metal of each heat, from which valve stems are being made. (4) All stems made from bronze showing less strength, elongation and/or ductility than above required shall be rejected. (5) Tests of valve stems, or the various parts of any valve may be made at any time before or after delivery, and if found to be deficient in strength or unsatisfactory to the Director, the whole lot or shipment may be rejected.

(J) - Cast Iron: (1) Quality: Cast Iron shall conform to ASTM Specifications A 126, Class B, or latest revision thereof. All iron castings shall be tough and without brittleness, such as may be cut drilled and chipped by hand with due ease. A blow from a hammer shall produce an indentation on the edge of the casting without flaking the metal.

(2) - Tests: Bars from the molten metal from which the valves are being made shall be tested at such time and in such manner as the Engineer may require. The requirements of A.S.T.M. Specifications A 126 shall govern testing procedures to determine the physical and chemical characteristics of the iron castings. Should the result obtained from the bar tested fail to show that the cast iron meets the requirements herein specified, the entire melt will be rejected. Test bars, however, whose failure is due to inherent defects shall not be considered. All valves made from iron showing less strength than called for in the A.S.T.M. Specifications shall be rejected.

(K) - Quality of Wrought Iron: All wrought iron shall be tough, fibrous, and uniform in character. Specimens cut from bars and broken in a testing machine shall show a tensile strength of not less than 45,000 PSI, with an elongation of 18 per cent in eight diameters.

(L) - Quality of Materials: Grade One cast bronze shall conform to the properties of A.S.T.M. B 62.

Grade Two cast bronze shall conform to the properties of A.S.T.M. B 132, Alloy A.

Grade Three cast bronze shall conform to the properties of A.S.T.M. B 132, Alloy B.

Grade Four rolled bronze shall conform to the properties of A.S.T.M. B 21, Alloy A(one-half hard).

Grade Five bronze shall be sufficiently malleable to conform to dovetailed grooves when peened or rolled, and shall have a minimum compressive strength, without deformation, of 4,000 PSI., and shall have the following chemical composition:

Copper, per cent	91.0
Tin, per cent	0.0
Zinc, per cent	5.0
Lead, per cent	4.0

Silicon Bronze - This bronze shall conform to A.S.T.M. Specification B-98, Alloy A.

Stainless Steel - The stainless steel shall conform to A.S.T.M. Specifications A-276, Type 302.

Cast Iron - The cast iron shall conform to A.S.T.M. Specification A 126, Class B.

(M) - Other Materials: All other materials used in the manufacture of these valves and not specified in the specifications shall be of the best quality of their respective kinds, and subject to inspection, tests, and approval by the Engineer.

(N) - Chemical Analysis: Chemical analysis of the material used shall be furnished by the Contractor whenever required by the Engineer.

(O) - Cleaning of Castings: All iron castings shall be thoroughly cleaned on the outside and inside surfaces, and protected from rain or moisture until they are painted.

(P) Hydrostatic Tests at Shop: All gate valves shall be tested in the shop by hydrostatic pressure, by closing the valve and applying the required test pressure in the body and dome of the valve as specified below.

3" and under	300 P.S.I. - No time requirement
4" through 12"	400 P.S.I. - No time requirement
14" through 20"	300 P.S.I. for 15 minutes, drop pressure to 150 P.S.I., then elevate again to 300 P.S.I. for 15 minutes - a total of 1/2 hour.
24" through 48"	300 P.S.I. for 1/2 hour, drop pressure to 150 P.S.I., then elevate again to 300 P.S.I. for 30 minutes - a total of 1 hour.

This is a modification of section 29 of the "Standard Specifications AWWA Designation C-500-61". All leaks, flaws of other defects developed in making these tests shall be corrected to the satisfaction of the Engineer or the entire piece shall be rejected. After testing, all valves shall be thoroughly drained. All equipment for testing and all tests shall be made at the Contractor's expense.

(Q) Performance Tests: Each valve shall be operated in the position that it will assume in service and for the full length of gate travel in both directions, to demonstrate the free and perfect functioning of all parts in the intended manner. Any defects of workmanship shall be corrected and the test repeated until satisfactory performance is demonstrated.

PLACING AND TESTING

(A) - All valves shall be set accurately and carefully to the lines and grades given. All connections to pipe shall have the necessary flanged lead or screwed ends as required under the following items: Cast iron pipe and fittings, furnishing and setting 6" (six inch) hydrants, and 2-inch galvanized wrought iron pipe and brass pipe and as shown on the valve schedule.

(B) After the valves are set in place and ready to operate, the Contractor shall test them under working pressure and conditions herein specified under the Specification "Testing Mains", and any valve found to leak shall be made water-tight and, if found to be of faulty design, shall be satisfactorily repaired or replaced by the Contractor.

PAINTING

(A) - Iron body valves shall either be dipped in asphalt paint and all bronze parts cleaned, or all iron castings shall be painted inside before assmebling with two (2) coats of an approved paint and, after passing the hydraulic test, shall be given at least two (2) coats of approved paint outside.

(B) - After erection, all exposed metal surfaces of valves except brass or bronze shall be painted with (2) field coats of coal tar pitch paint equal to Inertol 66 or Koppers Bitumastic 50.

INSPECTION

The Engineer or his authorized designate will inspect the material and work done, as the interests of the City or State may require. Such officer shall have unrestricted access to the Contractor's plant, and to all parts of the work, and other places at which the preparation of the material and the construction of the different parts of the work to be done under these specifications are carried on, and he shall receive all facilities and assistance to carry out his work of inspection and testing in a manner satisfactory to the Engineer. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modifications thereof as herein provided, and work not so constructed shall be removed and made good by the Contractor at his own expense.

DRAWINGS

(A) - Prior to the manufacture of any valves, the Contractor shall submit for the approval of the Engineer and Director of Public Utilities of the City of Cleveland, complete working, detail, and dimension drawings showing thicknesses and kinds of material, and similar information.

(B) - One print of each of the drawings submitted will be returned with the criticisms or approval of the Engineer. In case the drawings are not approved, the Contractor shall again send for approval duplicate revised prints of the drawings to take care of the criticisms noted, and after the drawings have been finally approved, the Contractor shall again furnish to the Engineer fourteen additional prints, six of which shall be furnished to the Director of Public Utilities of the City of Cleveland, of each drawing. No work shall be done in the shop until after the drawings have been finally approved.

PAYMENT

The unit price stipulated for valves shall include the furnishing, placing, testing and painting of the air cock, drain valves, check and gate valves, including by-pass valves, operating nuts and other accessories and appurtenances and the furnishing of all labor, tools, and appliances necessary to complete the work as specified or as shown.

APPROVED
DATE 4-9-65
DIRECTOR OF PUBLIC UTILITIES
T. E. Stanton M.A.M.
COMMISSIONER OF WATER AND HEAT
Arnold Pinkett
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
J. F. Conner
ENGINEER OF CONSTRUCTION AND SURVEYS
William J. Lucey
ENGINEER OF DESIGN

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

MADE E.C.E. DATE 11-6-64 TRACED _____ DATE _____
CHECKED _____ DATE _____ SCALE _____

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

WATERWORK NOTES

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WATERWORK NOTES

BRANCH SLEEVE AND VALVES

WORK INCLUDED

(A) The Contractor shall furnish the branch sleeve and valves for the locations shown on the drawings or on working drawings furnished by the Engineer or as directed of the sizes shown or required for the proper completion of the work included under this contract.

(B) In general, the work of this item contemplates the furnishing and delivery of the material to the proper location on the job. The City of Cleveland, Division of Water, will install the branch sleeves and valves, but the Contractor shall do all the necessary excavation and backfilling required therefor and repaving if so noted on the contract drawings and pay for the work in accordance with specified schedule. Where branch sleeve and valve is to be installed and tap made in prestressed concrete cylinder pipe, the Contractor shall arrange for the work with the pipe fabricator or valve supplier. The work shall be performed under the supervision of the Division of Water and Heat.

QUALITY OF VALVES

The branch sleeve and valves shall be A. P. Smith Manufacturing Company or approved equal. All sleeves shall be of the class and size as shown or as directed and shall conform for materials, tests, painting, drawings, etc., to the requirements of the item cast iron pipes and fittings, of these specifications, insofar as they apply. The valves furnished and used under this item shall comply with the requirements of the item valves of this contract, whenever the same may be pertinent. The provisions of the sections (U), (V), and (W) of the item on valves pertaining to grease cases shall apply to the branch sleeves and valves.

PAYMENT

The unit price stipulated for each branch sleeve and valve furnished under this item shall include the furnishing and delivery to the proper location, and shall include all excavation, sheeting and shoring, backfilling, sand backfilling, seeding and sodding and repaving, if so noted on the contract drawings, and the furnishing of all labor, materials, tools and appliances necessary to complete the work as specified or as shown.

VALVE BOXES

Materials and specifications shall conform to State of Ohio Specification I-6.

INSERTING VALVES

The inserting valves to be installed shall be A. P. Smith Manufacturing Company or approved equal. It shall be installed in the line by a machine and operators approved by the City. Complete shop drawings and procedures to be followed shall be approved by the City before proceeding with the work.

BRICK AND PLAIN CONCRETE MASONRY

Under these items the Contractor shall furnish all necessary labor, materials, tools and equipment for the construction, complete, of all miscellaneous masonry structures and including all water main drain and pitometer vaults, access and anchorage manholes, valve chambers, sewer manholes, catch basins, anchors, piers at pipe bends and under line valves, floors for drain and valve vaults, and other appurtenant work together with the hauling, mixing, placing, forms, scaffolding, sheeting and bracing, grouting, plastering, curing, etc., all as specified, required or shown on the contract drawings.

BRICK AND MASONRY MATERIAL

(A) The material furnished by the Contractor for the various kinds of masonry construction to be constructed shall conform to the following specifications.

(B) All brick furnished and used shall be No. 2 shale brick and shall comply with the requirements for "Grades A" ASTM designation: C 32-42.

(C) Section M-13 Portland Cement (ASTM C-150, Type I). Portland cement shall conform to the requirements for "Type I" of the specifications for portland cement, ASTM designation C 150.

The compressive strength requirements shall govern.

(PACKAGING AND MARKING)

When the cement is delivered in packages, the name and brand of the manufacturer shall be plainly indicated thereon. Similar information shall be provided in the shipping advices accompanying the shipment of packaged or bulk cement. A bag shall contain 94 pounds net. A barrel shall consist of 376 pounds net. All packages shall be in good condition at the time of inspection.

(D) Section M-2.1 - SAND

1. General. The sand shall be natural composed of clean, hard, durable, uncoated particles of stone, well graded from coarse to fine, with the coarse particles predominating, free from lumps of clay and all organic matter.

2. Grading. (U. S. Standard Sieve Series). The sand shall be well graded from coarse to fine and when tested by means of laboratory sieves shall conform to the following grading:

SIEVE NO.	TOTAL PER CENT PASSING
3/8"	100
No. 4	95-100
No. 8	70-95
No. 16	45-80
No. 30	25-60
No. 50	10-30
No. 100	1-10

(E) Section M-3.5 - CRUSHED ROCK AND SLAG

1. General. The crushed rock and slag shall be clean, sound, and durable, or uniform quality, and free from thin, elongated or brittle pieces. If produced by crushing gravel only that portion which has been retained on a screen with 2-inch or larger square openings shall be used and the largest size limited to No. 4.

The aggregate may include crushed limestone, crushed boulders, composed of limestone, granite trap rock or rock of similar nature, or crushed slag. Aggregate furnished under this section is subject to the maximum percentage limitations of deleterious substances specified under Section M-3.1 in case of limestone; under Section M-3.6 in case of slag; and Section M-3.91 in case of gravel.

(F) Section M-3.6 - SLAG

1. General. The broken slag shall be composed of air-cooled blast furnace slag and shall be clean, sound, durable, reasonably uniform in density and free from an excess of thin, or elongated pieces.

(G) All water shall be clean and accurately measured for each batch of concrete.

(H) All plain concrete shall be mixed in the proportion of one (1) part of cement. Two (2) parts of sand and four (4) parts of coarse aggregate.

(I) All cement mortar shall be mixed in the proportion of one (1) part of cement to three (3) parts of sand, except the mortar for brick catch basins and sewer manholes which shall be 1 : 2 mix.

MANHOLE CONSTRUCTION

(A) All brick manholes, brick necks and extensions shall be built in accordance with the contract drawings.

(B) The walls of manholes shall be built of No. 2 shale brick laid in 1 : 3 portland cement mortar, with brick arranged radially as headers, forming a wall nine (9) inches thick. In deep manholes, the wall shall be 13 inches thick below a point 12 feet from the surface. All of the brick composing said manholes shall be laid in full mortar beds and joints, with no mortar joints appearing on the inner surface of the manhole exceeding three-eights inches (3/8") thick.

(C) The top of the walls of manholes shall be properly leveled off with mortar so as to form a flat surface upon which the cast iron manhole ring is to rest, and said manhole shall be carried to proper height as indicated by the contract drawings.

(D) The entire outer surface of all brick manholes shall be plastered with a smooth coating of 1 : 3 portland cement mortar, at least one-half (1/2) thick.

PAYMENT

No separate payment will be made for brick or plain concrete masonry. Payment will be included in the unit price bid for the item in which it is used. Payment for concrete piers is to be included in the unit price bid for the pipe.

MISCELLANEOUS METAL WORK

WORK INCLUDED

(A) - The Contractor shall furnish and install all miscellaneous metal work which is required for the proper completion of the work included under this contract and is not specifically included under the other items of these specifications.

(B) In general, the work shall include the furnishing and installing of manhole frames and covers, manhole steps, valve boxes, extension stems and brace, structural members, bronze bolts, and other similar items required for the proper completion of the work.

MATERIALS

All castings shall conform to the requirements of Section 0-7.81 of the "Standard Specifications for Construction of Pavements, Sidewalks, and Sewers" of the City of Cleveland dated January, 1950, except that the cast iron shall be Class No. 30. Wrought iron shall meet the requirements of the A.S.T.M. Specifications A 207-39. All structural steel shall meet the requirements of the A.S.T.M. Specifications A 7-46. All bronze bolts and nuts shall conform to U.S. Standard sizes, and shall be clean cut and have well fitted threads. All bronze bolts and nuts shall be of Tobin or Manganese Bronze, or of similar approved materials.

CLEANING AND TESTING

All castings shall be thoroughly cleaned and subjected to a careful hammer test. No castings shall be coated unless clean and free from rust, and approved in these respects by the Engineer or his authorized inspector immediately before being dipped.

COATING

Each casting shall be sprayed or brushed inside and out with one coat of asphaltic compound varnish. The varnish shall be made of high grade asphalt fluxed and blended with properly treated drying oils and thinned to a proper consistency with a volatile solvent. The varnish shall be Black Asphalt Varnish as manufactured by the Excelsior Varnish Works, Inc., Cleveland 2, Ohio, Koppers Asphalt Varnish or approved equal. Other methods of coating and types of coating materials shall be subject to the approval of the Engineer, in addition to the shop coat the castings shall receive two (2) coats of approved paint.

INSPECTION

The Engineer or his authorized assistant, shall have the right to inspect the material and work done, as the interests of the City or State may require. Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the specifications, or any modification thereof, as herein provided, and work not so constructed shall be removed and made good by the Contractor, at his own expense. All manhole rings and covers must be sound and shall conform to these specifications, and any defective castings which may have passed the inspector at the works, or elsewhere, shall be at all times liable to rejection when discovered, until the date of final payment under this contract.

VALVE BOXES AND COVERS

The Contractor shall furnish and install, over each vertically set valve of the locations shown on the drawings, or as required, valve boxes and covers of the types and sizes indicated on the contract plans. These shall be carefully located over the valve nuts, and shall be set plumb and true to elevation as required.

DETAILED DRAWINGS

Complete detailed drawings of miscellaneous metal work shall be submitted to the Engineer for approval, prior to the manufacture of any work to be furnished under this item, in accordance with these specifications.

PAINTING

All miscellaneous metal work not galvanized shall be thoroughly cleaned and given three (3) field coats of coal tar pitch equal to Inertol 50 or Bitumastic 50.

STEPS AND LADDERS

Galvanized wrought iron steps and ladders of the size and shape shown on the contract drawings shall be built into the brick and concrete masonry of the manholes as indicated on the drawings.

RIMS AND COVERS

(A) All cast iron manhole rims and covers of the forms, dimensions and details shown on the contract drawings shall be furnished and installed as directed.

(B) The rims shall be properly set in place in a full bed of mortar or poured monolithic in the masonry, at such elevation as to make the top of the rim conform to the finished surfaces of the structures or the finished grade as estimated by the Engineer.

MEASUREMENT

The weight of miscellaneous metal work to be paid for shall be the number of pounds of metal work actually furnished and placed in accordance with these specifications and the detailed drawings approved by the Engineer. In computing the weights, if not determined by weighing, one (1) cubic foot of cast iron shall be assumed to weigh four hundred and fifty (450) pounds and one (1) cubic foot of steel shall be assumed to weigh four hundred and ninety (490) pounds.

PAYMENT

The unit price stipulated per pound for miscellaneous metal work shall include the furnishing, erecting, machining, fitting, adjusting, bolting, cleaning and painting of all miscellaneous metal work, and the furnishing of all labor, materials, tools and appliances necessary to complete the work as specified or as shown.

APPROVED
DATE 11/9/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

MADE ECE DATE 11-6-64 TRACED DATE
CHECKED DATE SCALE

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

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

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WATERWORK NOTES

ITEM SPECIAL - ADJUST EXISTING VALVE BOX TO GRADE

WORK INCLUDED:

The Contractor shall raise or lower the existing valve box to fit the revised grade by excavating under or tamping backfill under the valve box to insure that the box has a firm footing.

PAYMENT:

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Adjust Existing Valve Box to Grade", which price and payment shall constitute full compensation for adjusting the valve box, excavation, tamping earth under valve box, backfill, seeding and for all labor, equipment, tools and incidentals necessary to complete this item.

ITEM SPECIAL - REMOVE ABANDONED EXISTING CURB COCK AND VALVE BOX

WORK INCLUDED:

The Contractor shall either remove or leave in place the abandoned curb cock, the valve box shall either be removed or broken off at least 1' below the ground surface and backfilled. If the valve box is in a paved area, the area shall be restored to match the existing pavement.

PAYMENT:

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Remove Abandoned Existing Curb Cock and Valve Box", which price and payment shall constitute full compensation for abandoning the valve and removing the valve box, backfilling, seeding, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item.

ITEM SPECIAL - SERVICE CONNECTION RELOCATION

The City will furnish the piping material for and make all changes required in the location of existing house connections and meters from the corporation cock to the curb cock, but the Contractor shall do all the necessary excavation, backfilling and repaving required. The City will charge the Contractor for the materials and labor furnished in making these service connections and alterations. Materials to be furnished by the City include piping, corporation cock, curb cock, water meter and vault. Payment for all the above will be made at the contract unit price bid for each for "Service Connection Relocation". The City of Cleveland will charge the Contractor for the following work:

Size of Connection	Connection Only	By-Pass, Gate & Check Valves	Meter Vault	Total
¾ inch	$50.00	None	$110.00	50.00(a)
1 inch	$75.00	None	$110.00	75.00(a)

(A) Add $110.00 if meter vault is required. Charges for extending connections and resetting meters.

Size of Connection	Extending Connection	Reset Meter	Rebuild Vault
¾" Meter	$30.00	$25.00	$110.00
1" Meter	$35.00	$30.00	$110.00

ITEM SPECIAL - RETAP AND RECONNECT EXISTING SERVICE CONNECTIONS

WORK INCLUDED

The Contractor shall remove the existing service connection from the existing water main which is to be abandoned. A tap is to be made on the new water main and the existing service connection shall be reconnected to the new water main. The Contractor shall furnish a new corporation cock and all other materials necessary to reconnect, including excavation, backfilling and repaving.

PAYMENT

The actual number of "Item Special - Retap and Reconnect Existing Service Connections", shall be paid at the contract unit price. This price and payment shall constitute full compensation for performing all of the requirements of this item, furnishing all necessary materials, labor, tools, equipment, supplies and incidentals.

ITEM SPECIAL - FIRE HYDRANTS RELOCATED (Continued from sheet No. 168)

PAYMENT

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Fire Hydrants Relocated", which price and payment shall constitute removing and reconnection according to the provisions of these specifications for the particular type of construction called for on the plans, and for all excavation, backfilling, seeding and sodding and repaving, and the furnishing of all material, labor, equipment, tools and appliances necessary to complete the work as specified or as shown.

ITEM SPECIAL - FURNISHING AND SETTING 6" HYDRANTS AS PER PLAN (Continued from Sh. No. 168)

PAYMENT

(A) - The unit price stipulated to be paid for the hydrant setting shall include the furnishing, hydrant branch and valve, in accordance with respective specification set forth elsewhere in these notes, setting, testing, painting, the excavation, sheeting and shoring, backfilling, and the furnishing of all labor, material, tool and appliances necessary to complete the work as specified or as shown.

(B) - The cast iron pipe will be paid for under cast iron pipe and fittings.

(C) - The valves will be paid for under valves.

ITEM SPECIAL - HYDRANTS AND VALVES AND VALVE BOXES REMOVED

WORK INCLUDED:

The Contractor shall perform all operations necessary to the proper removal of the hydrant and valve at the locations shown on the plans. This work shall include excavating, removing, backfilling, installing plugs clamps and blocking, seeding and sodding and repaving required for the proper completion of the work included under this contract.

METHOD OF MEASUREMENT:

The pay quantities for this item shall be determined after all of the requirements of this item shall have been performed. The hydrants and valves and valve boxes removed to be paid for shall be the actual number of each removed in accordance with the requirements of this item.

BASIS OF PAYMENT:

The actual number of hydrants and valves and valve boxes measured as provided above shall be paid for at the contract unit price bid for "Hydrants and Valves Removed for Storage" or "Hydrants and Valves Removed". This price and payment shall constitute full compensation for performing all of the requirements of this item, furnishing all necessary materials, labor, tools, equipment, supplies and incidentals. All materials shall become the property of the contractor.

ITEM SPECIAL-CAST IRON AND DUCTILE IRON PIPE AND FITTINGS (Continued from sheet No. 167)

PAYMENT:

The footage measured as provided above shall be paid for at the contract price bid per linear foot for "Item Special - Water Main" classified as to size and type, which price and payment shall constitute full compensation for excavating and for furnishing, hauling, placing, cutting into and connecting the pipe, pipe bends, C.I. plug and clamps at dead ends, concrete piers, sheeting and bracing, sand backfill, water used for compaction, incidental concrete, the removal of all surplus excavation and discarded material, repaving, and for all labor, equipment, tools and incidentals necessary to complete this item, except for the items specifically listed as separate pay items.

ITEM SPECIAL - TAPPING SLEEVES AND VALVES

The Contractor shall furnish all the materials for and shall connect in place at the locations shown on the plans, including all excavation, sand backfilling, tapping existing water main and repaving, all as required for the proper completion of the work included under this contract. The tapping valves shall conform to the specifications for VALVES as shown above in these notes.

The work included in this item shall be paid for at the contract unit price bid for each "Item Special - Tapping Sleeves and Valves" and classified as to size and type, which price and payment shall constitute full compensation for all excavation and backfill and for furnishing, hauling and placing the valves, connections and other material and for all labor equipment, tools and incidentals necessary to complete this item.

ITEM SPECIAL - PLUGGING EXISTING WATER MAINS AND BRANCHES AND PLUGGING SERVICE CONNECTIONS

WORK INCLUDED:

The Contractor shall under this item, furnish all the materials, labor, tools and equipment required for the plugging of existing water mains and branches, and the plugging of service connections at the locations shown on the drawings or as ordered, including cast iron plugs or caps with clamps and concrete piers, all excavation, sand backfill, backfill, temporary repaving and permanent repaving, all as required for the proper completion of the work included under this contract.

(A) Plugging mains and branches:

When indicated on the plans or as ordered, the Contractor shall make pipe cuts and shall plug or cap mains, tees or crosses, plug connections at main or branches, shall do all the excavating, backfilling and repaving, all as required.

(B) Plugging service connections:

The Contractor shall do all necessary excavation, sheeting and shoring, sand backfilling, backfilling and repaving required for this item, but the Cleveland Water Department will plug the service connections.

The Contractor shall arrange with the Cleveland Water Department for the necessary work under this item and shall pay the Cleveland Water Department the total cost required for the work before the work is performed. The City will charge the Contractor for the material and labor furnished in plugging the service connections, and costs thereof shall be included in the unit price bid for "Plugging Service Connections".

MEASUREMENT:

The existing water mains and branches plugged or service connections plugged to be paid for shall be the actual number of each listed and estimated separately, completed and accepted.

BASIS OF PAYMENT:

The unit price stipulated for (A), plugging ends of existing water mains and branches and (B), plugging of service connections shall include the furnishing of cast iron plugs or caps, with clamps, lead, concrete piers, making pipe cuts, laying, caulking, painting, testing, the excavation, sheeting and shoring, backfilling, sand backfill, temporary repaving and permanent repaving where indicated on the plans and the furnishing of all labor, material, tools, appliances and equipment to complete the work as specified or as shown.

ITEM SPECIAL - SHEETING AND BRACING LEFT IN PLACE

The number of board feet of sheeting and bracing left in place when ordered by the Engineer, shall be paid for at the unit price of eighty dollars ($80.00) per thousand board feet of "Item Special - Sheeting and Bracing Left in Place", which price and payment shall include full compensation for all labor, equipment, tools and incidentals necessary to complete this item.

All materials consisting of pipe and fittings, valves, fire hydrants, valve boxes, and vault covers which are indicated for removal by the Contractor shall become the property of the Contractor and be disposed of by him.

APPROVED
DATE 4/2/65

DIRECTOR OF PUBLIC UTILITIES

COMMISSIONER OF WATER AND HEAT

COMMISSIONER DIVISION OF UTILITIES ENGINEERING

ENGINEER OF CONSTRUCTION AND SURVEYS

ENGINEER OF DESIGN

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK NOTES FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO.

MADE ECE DATE 11-6-64 TRACED DATE
CHECKED DATE SCALE

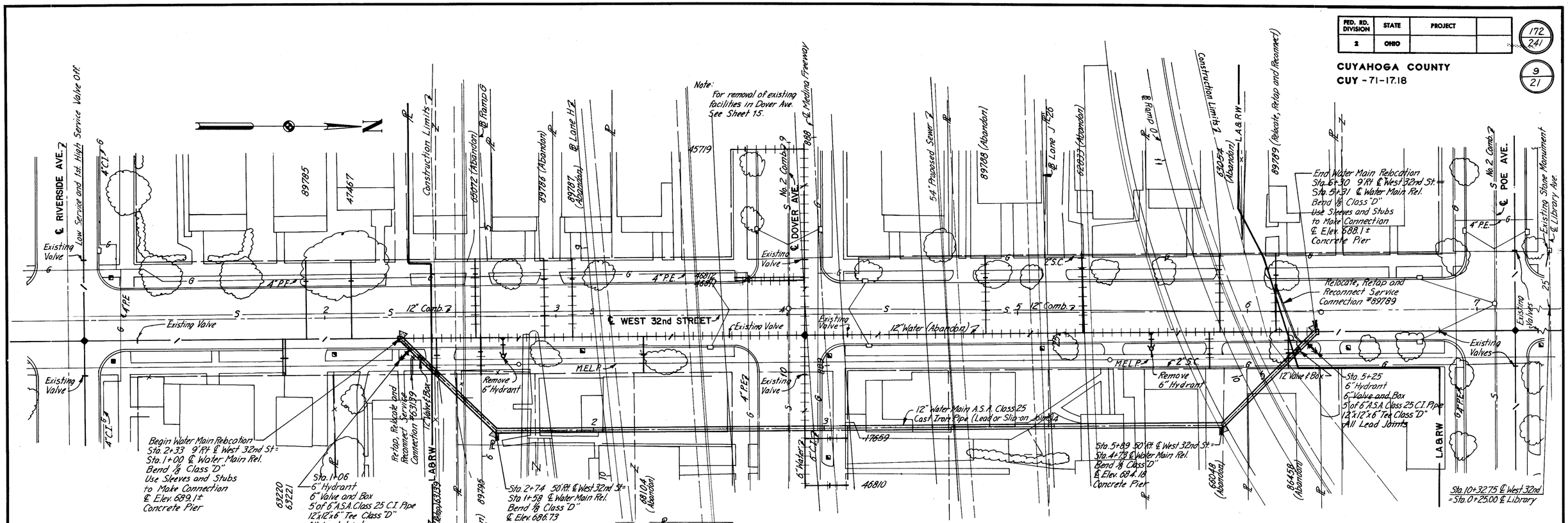
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

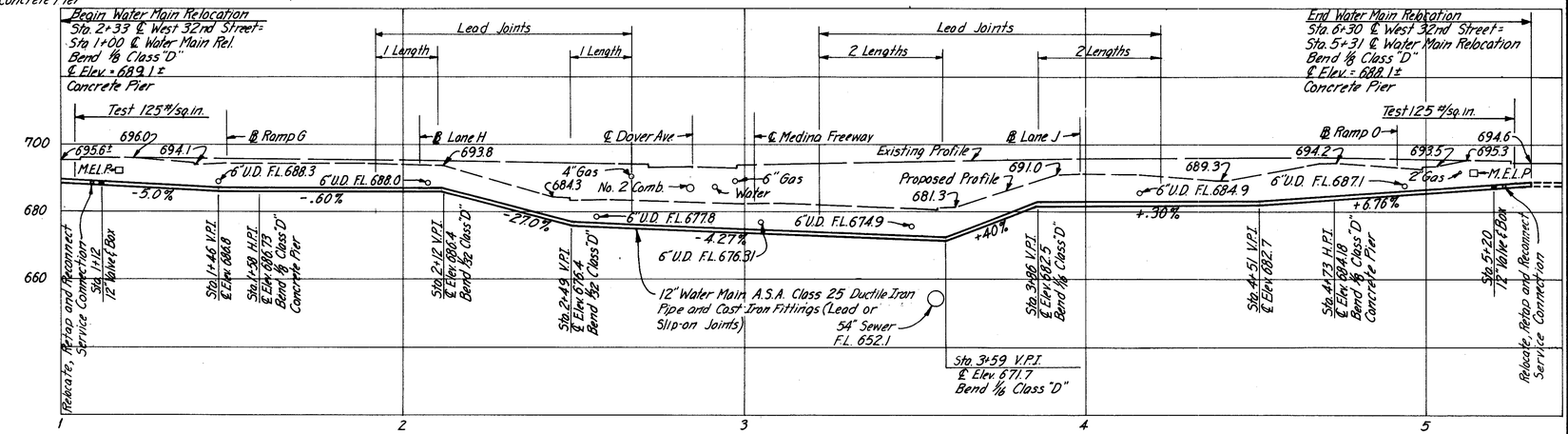
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

172/241

9/21

CUYAHOGA COUNTY
CUY - 71-17.18





Note:

The Contractor shall notify the Utilities Engineering Office three working days prior to starting water work. Call TOwer-1-4600, Line 813.

Procedure for construction of the 12" water main relocation.

1. Install permanent relocated section to points near the connections with the existing water main. Install temporary cast iron plug with clamps and properly backed up for testing.
2. Taps for chlorination to be provided after the work has begun. The Division of Water will determine the location of necessary taps.
3. After chlorination and testing, the temporary plugs can be removed and the connections made to the existing water line. The existing water main can only be closed at times designated by the City of Cleveland Water Department. Water Department personnel will close the existing valves.

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	12" Water Main A.S.A. Class 25 Ductile Iron Pipe and	
	Cast Iron Fittings (Lead or Slip-on Joints)	434 Lin. Ft.
Special	6" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined)	10 Lin. Ft.
Special	12" Valve	2 Each
Special	6" Valve	2 Each
Special	Furnishing & Setting 6" Hydrants	2 Each
Special	Test Main	1 Each
Special	Miscellaneous Metal Work	732 Lbs.
Special	Relocate, Retap and Reconnect Existing Service Connection	2 Each
Special	Hydrants & Valves and Valve Boxes Removed	2 Each

SCALE 1"=20' MADE R.H.A. DATE TRCD. R.J.K. DATE CKD. DATE

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

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 12" CAST IRON WATER MAIN RELOCATION IN WEST 32nd STREET FROM 144' NORTH OF ℄ RIVERSIDE AVENUE TO 79' SOUTH OF ℄ POE AVENUE

WATER MAIN RELOCATION-WEST 32nd STREET

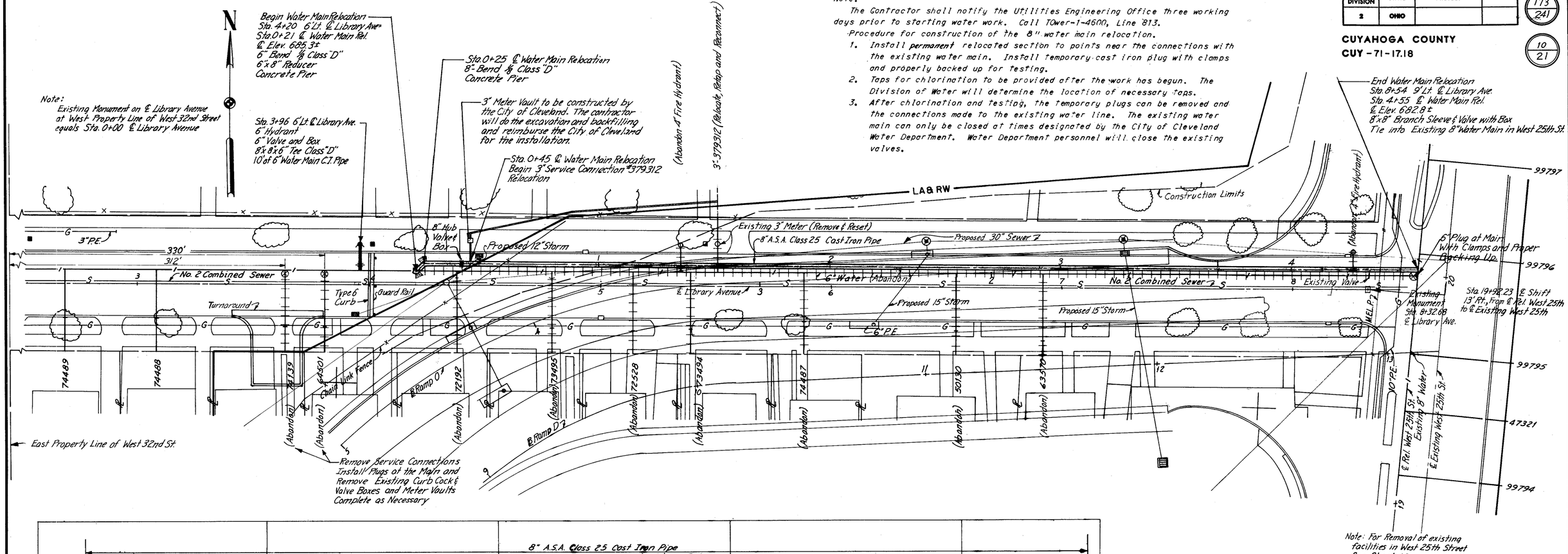
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

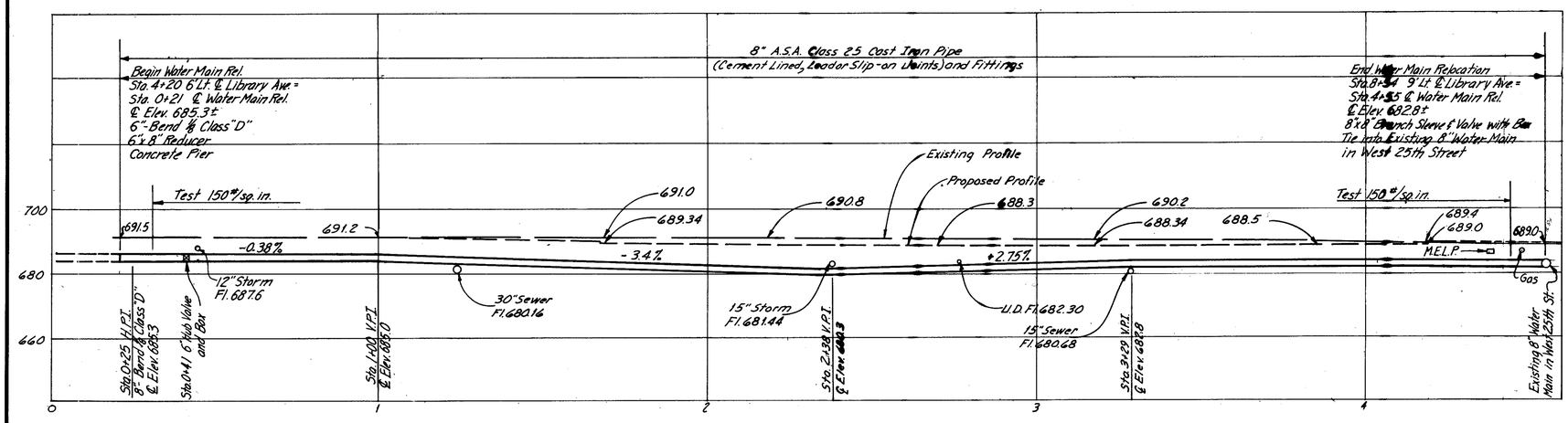
173
241

10
21

CUYAHOGA COUNTY
CUY - 71 - 17.18

Note:
The Contractor shall notify the Utilities Engineering Office three working days prior to starting water work. Call TOwer-1-4600, Line 813.
Procedure for construction of the 8" water main relocation.
1. Install **permanent** relocated section to points near the connections with the existing water main. Install temporary cast iron plug with clamps and properly backed up for testing.
2. Taps for chlorination to be provided after the work has begun. The Division of Water will determine the location of necessary taps.
3. After chlorination and testing, the temporary plugs can be removed and the connections made to the existing water line. The existing water main can only be closed at times designated by the City of Cleveland Water Department. Water Department personnel will close the existing valves.





Note: For Removal of existing facilities in West 25th Street See Sheet 12.

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	8" Water Main A.S.A. Class 25 Cast Iron Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings	434 Lin. Ft.
Special	6" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined)	10 Lin. Ft.
Special	Service Connection Plugged at Main	2 Each
Special	8" Hub Valve	1 Each
Special	Retap and Reconnect Existing Service Connection	1 Each
Special	Miscellaneous Metal Work	537 Lbs.
Special	Test Main	1 Each
Special	6" Cl. Plug, Complete with Clamps & Concrete Pier	1 Each
Special	Remove Existing Curb Cock & Valve Box	2 Each
Special	6" Valve	1 Each
Special	8"x8" Branch Sleeve and Valve	1 Each
Special	Furnishing & Setting 6" Hydrant	1 Each
Special	3" Meter Relocated	1 Each

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

SCALE 1" = 20'
MADE R.H.A. DATE
TRCD. R.W.K. DATE
CKD. DATE

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

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 8" CAST IRON WATER MAIN RELOCATION IN LIBRARY AVENUE FROM 366' WEST OF ℄ WEST 25th. STREET TO 48' WEST OF ℄ WEST 25th STREET

WATER MAIN RELOCATION - LIBRARY AVENUE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

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241

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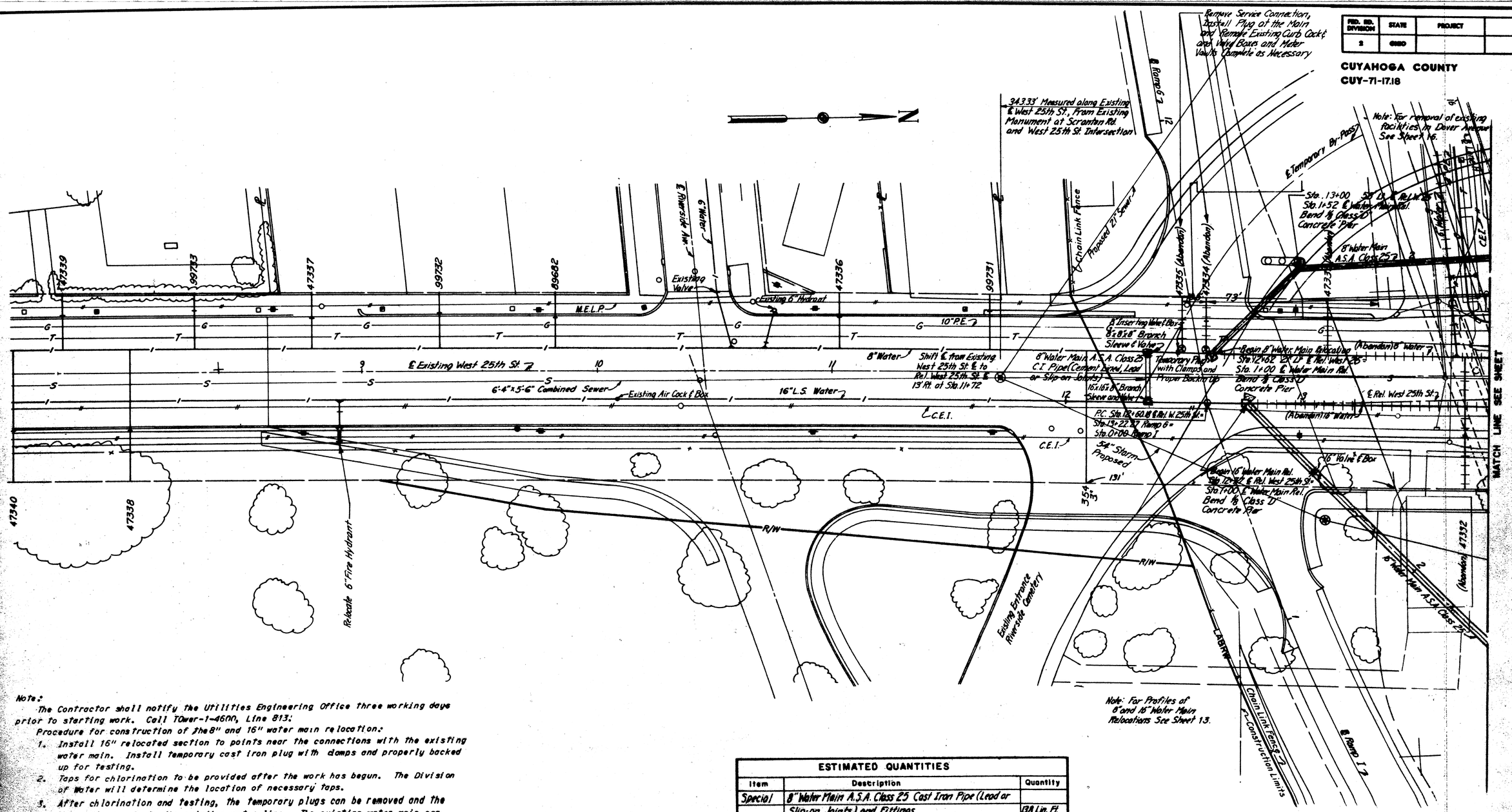
21



Note:

The Contractor shall notify the Utilities Engineering Office three working days prior to starting work. Call TOwer-1-4600, Line 813.

Procedure for construction of the 8" and 16" water main relocation:

1. Install 16" relocated section to points near the connections with the existing water main. Install temporary cast iron plug with clamps and properly backed up for testing.
2. Taps for chlorination to be provided after the work has begun. The Division of Water will determine the location of necessary taps.
3. After chlorination and testing, the temporary plugs can be removed and the connections made to the existing water line. The existing water main can only be closed at times designated by the City of Cleveland Water Department. Water Department personnel will close the existing valves.
4. Installation of 8" water main relocation shall begin after the Medina Freeway cut is made.
5. The existing 8" water main in West 25th Street is to be plugged temporarily at the two tie-in points. After the Medina Freeway cut is made and the 8" water main relocation is installed, chlorinated and tested, the temporary plugs can be removed and the connections made to the existing water line.

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	8" Water Main A.S.A. Class 25 Cast Iron Pipe (Lead or	
	Slip-on Joints) and Fittings	138 Lin. Ft.
Special	16" Water Main A.S.A. Class 25 Cast Iron Pipe (Lead or	
	Slip-on Joints) and Fittings	146 Lin. Ft.
Special	16" Valve	1 Each
Special	8"x8"x8" Branch Sleeve and Valve	1 Each
Special	8" Inserting Valve	1 Each
Special	Service Connection Plugged at Main	2 Each
Special	Miscellaneous Metal Work	724 Lbs.
Special	Test Main	2 Each
Special	16"x16"x8" Branch Sleeve and Valve	1 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined)	6 Lin. Ft.
Special	Fire Hydrant Relocated	1 Each
Special	Adjust Existing Valve Box to Grade	7 Each
Special	8" C.I. Plug, Complete with Clamps and Concrete Pier	1 Each

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

1" = 20'
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 8" & 16" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN WEST 25th STREET AND IN SCRANTON ROAD FOR INTERSTATE ROUTE 71

WATER MAIN RELOCATIONS-WEST 25th STREET AND SCRANTON

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

175 / 241

12 / 21

MATCH LINE SEE SHEET 11

Note: For removal of existing facilities in Poe Avenue See Sheet 17.

Remove Service Connections Install Plugs at the Main and Remove Existing Curb Cock & Valve Boxes and Meter Vaults Complete as Necessary

South Property Line of Library Ave.

Sta 16+80 60' Lt. & Rel. W 25th = Sta. 3+37 ℄ Water Main Rel. Bend ⅛ Class "D" Concrete Pier

Sta 17+39 45' Rt. & Rel. W 25th Install Temporary Plug with Clamps & Proper Backing Up

Sta 4+93.37 ℄ Scranton Rd.

Existing Monument

Existing Valve

Remove Hydrant

8" Valve & Box

End 8" Water Main Rel. Sta. 17+39 45' Rt. & Rel. West 25' = Sta. 0+76 ℄ Water Main Rel. Bend ⅛ Class "D" Concrete Pier

5' Comb. Sewer

Chain Link Fence

6" Fire Hydrant 6" Valve & Box 6" C.I. Pipe (Cement Lined)

L&A R.W.

Sta. 7+53 81' Rt. ℄ Scranton Rd. 6"-Bend ⅛ Class "D" Concrete Pier

End 16" Water Main Rel. Sta. 7+86.27' Lt. ℄ Scranton Rd. = Sta. 6+68 ℄ Water Main Rel. Bend ⅛ Class "D" Concrete Pier

Sta. 6+55 ℄ Water Main Relocation 16"x16"x8" Tee (Bell, Bell & Bell) 8" C.I. Pipe Cement Lined 8"- Bend ⅛ Class "D" (Bell & Spigot)-(Concrete Pier) 8"x6" Reducer (Bell Large End) 6"x6" Branch Sleeve and Valve

16" Water L.S. ℄ Existing Scranton Rd.

8" Water

Sta 2+60 ℄ Water Main Rel. Bend ⅛ Class "D" Bend ⅝ Class "D" Concrete Pier

16" Water Main A.S.A. Class 25

Storm Sewer

Sta 1+30 ℄ Water Main Rel. Bend ⅛ Class "D" Bend ⅝ Class "D" Concrete Pier

Note: For Profiles of ℄ and 16" Water Main Relocations See Sheet 13.

Note: For removal of existing facilities in Roberna Ave. See Sheet 18.

Remove Service Connection, Install Plug at the Main and Remove Existing Curb Cock & Valve Boxes and Meter Vaults Complete as Necessary

Note: For removal of existing facilities in Evelyn Ave. See Sheet 18

℄ Roberna Ave.

℄ Evelyn Ave.

Existing Valve

Construction Limits

(Abandon) 54170

(Abandon) 54172

(Abandon) 54174

(Abandon) 99720

(Abandon) 47322

(Abandon) 47324

(Abandon) 47327

(Abandon) 47330

(Abandon) 47331

(Abandon) 99726

(Abandon) 47328

(Abandon) 99725

(Abandon) 47329

(Abandon) 47320

(Abandon) 45628

47323

99733

99734

47321

53946 (Relay & Reconnect)

53950

54188

54189 (Relay & Reconnect)

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	8" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings	160 Lin.Ft.
Special	8" Water Main A.S.A. Class 25 Ductile Iron Pipe and Cast Iron Fittings (Lead or Slip-on Joints)	250 Lin.Ft.
Special	6" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined, and Fittings	47 Lin. Ft.
Special	16" Water Main A.S.A. Class 25 C.I. Pipe (Cement Lined, Lead or Slip-on Joints) and Fittings	165 Lin. Ft.
Special	16" Water Main A.S.A. Class 25 Ductile Iron Pipe and Cast Iron Fittings (Lead or Slip-on Joints)	262 Lin.Ft.
Special	8" Valve	1 Each
Special	6" Valve	1 Each
Special	Hydrants & Valves and Valve Boxes Removed	2 Each
Special	Service Connections Plugged at Main	5 Each
Special	Furnishing & Setting 6" Hydrant, as per plan	1 Each
Special	Retap & Reconnect Existing Service Connection	2 Each
Special	Miscellaneous Metal Work	724 Lbs.
Special	16" Valve	1 Each
Special	Remove Abandoned Existing Curb Cock & Valve Box	2 Each
Special	6"x6" Branch Sleeve and Valve	1 Each

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	Adjust Existing Valve Box to Grade	1 Each
Special	8" C.I. Plug, Complete with Clamps & Concrete Pier	1 Each

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

1" = 20'
DATE
DATE
DATE

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

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

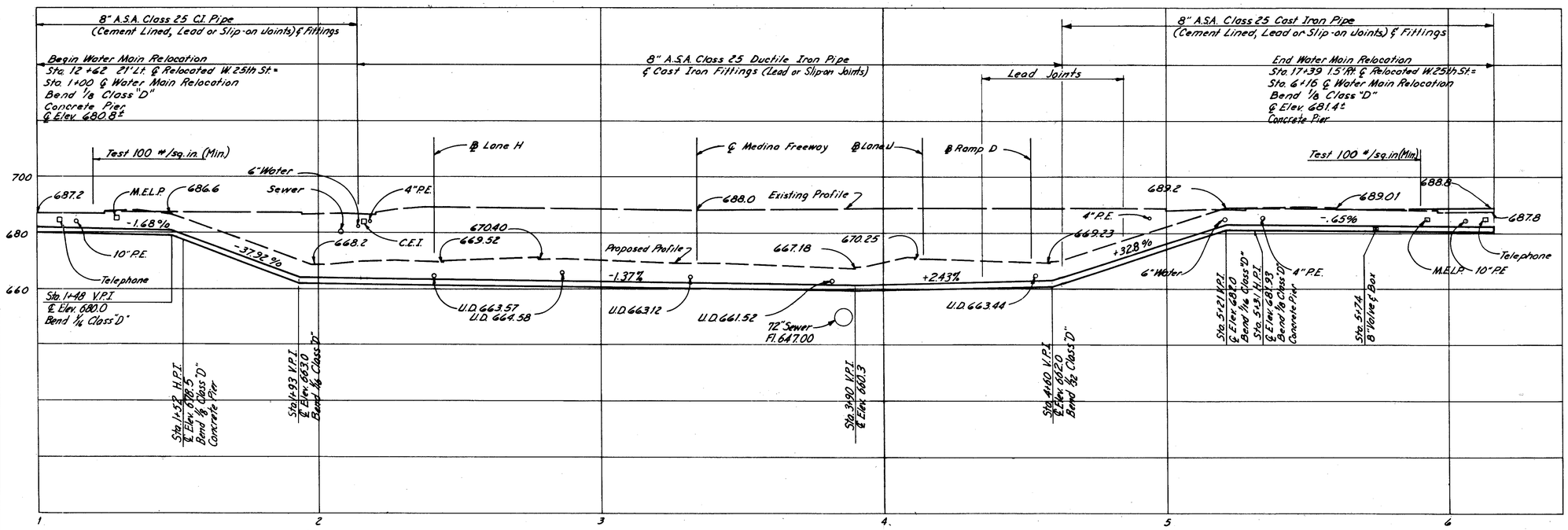
SUBJECT 8" & 16" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN WEST 25th STREET AND IN SCRANTON ROAD AT INTERSTATE ROUTE 71

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

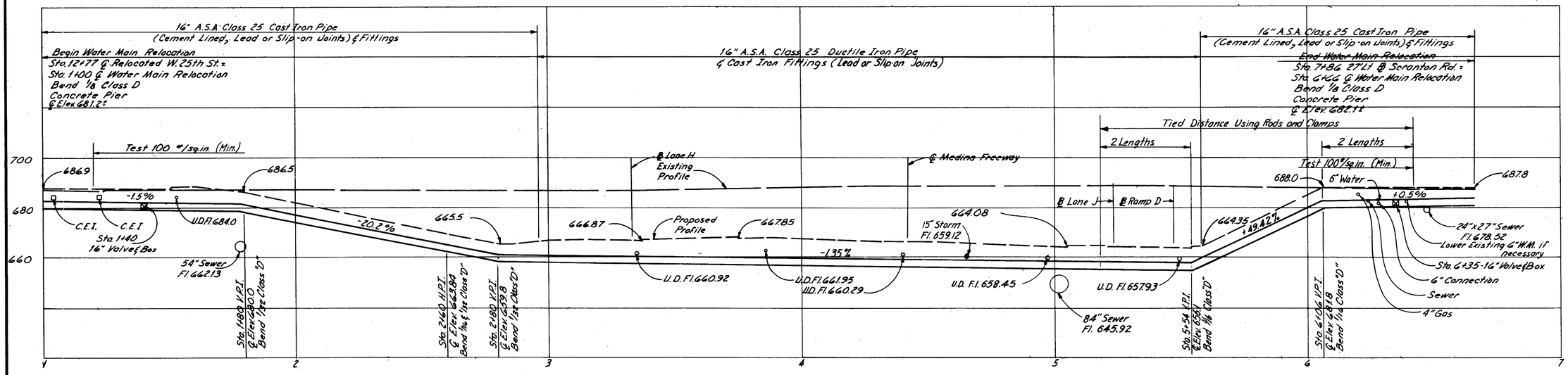
176/241

13/21

CUYAHOGA COUNTY
CUY. - 71 - 17.18



8" WATER MAIN RELOCATION



16" WATER MAIN RELOCATION

SCALE 1"=20' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.H.A. DATE 1-25-65 CONSULTING ENGINEERS
TRCD. R.D.J. DATE 1-25-65 KANSAS CITY CLEVELAND NEW YORK
CKD. _____ DATE _____

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
T. E. Stanton M. A. M.
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
J. R. Conn.
ENGINEER OF CONSTRUCTION AND SURVEYS
William J. Sweeney
ENGINEER OF DESIGN

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 8" & 16" CAST IRON AND DUCTILE IRON WATER MAIN RELOCATION IN WEST 25th STREET AND IN SCRANTON ROAD AT INTERSTATE ROUTE 71

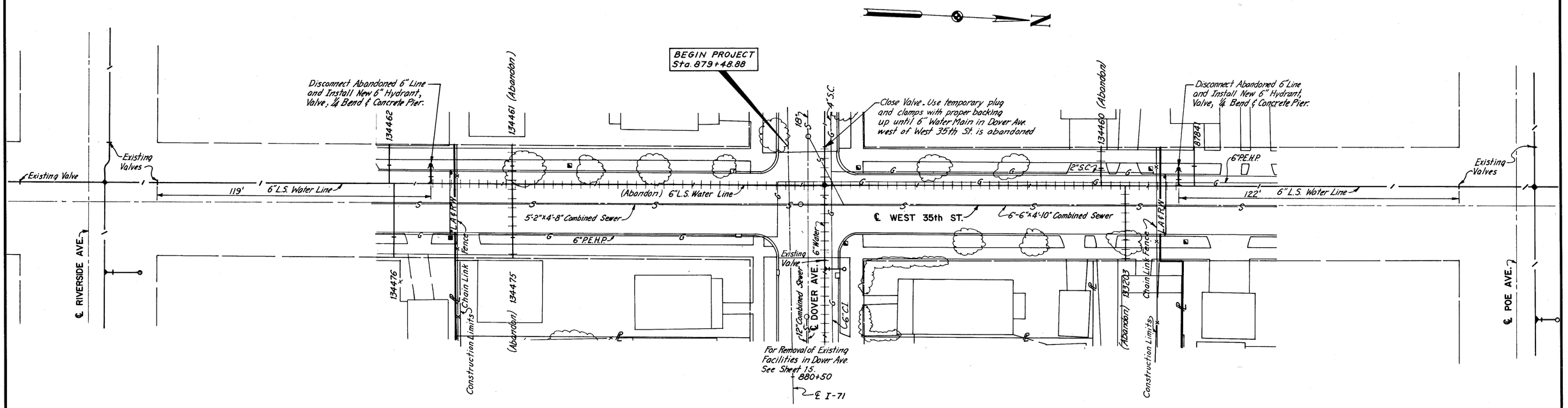
PROFILES 8" & 16" WATER MAIN RELOCATION W. 25th ST. & SCRANTON ROAD

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

177/241

14/21

CUYAHOGA COUNTY
CUY - 71-17.18



WEST 35th ST.

ESTIMATED QUANTITIES		
Item	Description	Quantity
Special	Miscellaneous Metal Work	358 Lbs.
Special	Furnishing and Setting 6" Hydrants	2 Each
Special	6" Water Main A.S.A. Class 25 C.I. Pipe, Cement Lined	
	and Fittings	16 Lin. Ft.
Special	6" Valve	2 Each

APPROVED
DATE 4/2/65

DIRECTOR OF PUBLIC UTILITIES

J. E. Stanton M.A.M.
COMMISSIONER OF WATER AND HEAT

Harold Winkler
COMMISSIONER DIVISION OF UTILITIES ENGINEERING

P. F. Connor
ENGINEER OF CONSTRUCTION AND SURVEYS

William Sweeney
ENGINEER OF DESIGN

SCALE 1"=20'
MADE R.H.A. DATE
TRCD. R.J.K. DATE
CKD. DATE

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

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT 6" WATER MAIN TO BE ABANDONED IN WEST 35th ST. FROM 149' NORTH OF ℄ RIVERSIDE AVE. TO 147' SOUTH OF ℄ POE AVE.

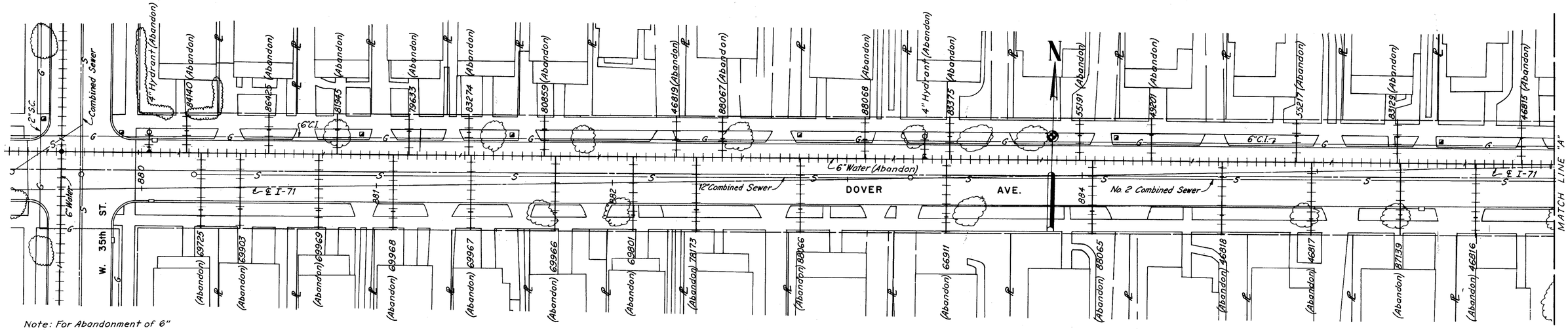
WATER LINE PLAN-WEST 35th ST.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

178
241

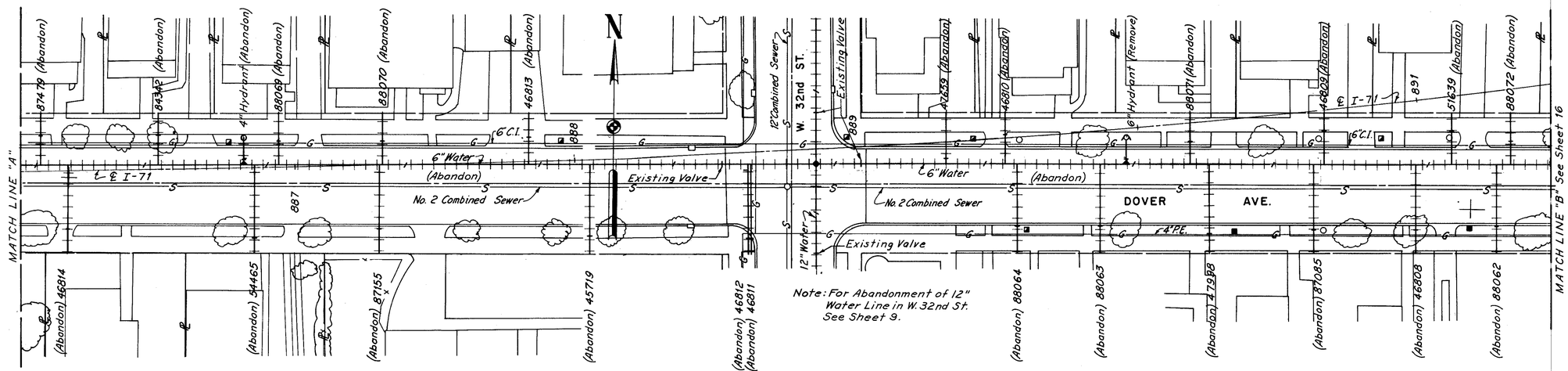
15
21

CUYAHOGA COUNTY
CUY - 71 - 17.18



Note: For Abandonment of 6" Water Line in W. 35th St. See Sheet 14.

DOVER AVE.



Note: For Abandonment of 12" Water Line in W. 32nd St. See Sheet 9.

DOVER AVE.

APPROVED
DATE 4/2/65
Eugene Fix
DIRECTOR OF PUBLIC UTILITIES
J. E. Stanton M.A.M.
COMMISSIONER OF WATER AND HEAT
Arnold Smith
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
J. R. Connor
ENGINEER OF CONSTRUCTION AND SURVEYS
William J. Searey
ENGINEER OF DESIGN

ESTIMATED QUANTITIES		
Item	Description	Quantity
Special	Hydrants & Valves and Valve Boxes Removed	1 each

SCALE 1" = 20'
MADE T.J.T. DATE
TRCD R.J.K. DATE
CKD. DATE

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

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT Abandon 6" Water Line in Dover Avenue from West 35th Street to 245' East of West 32nd Street.

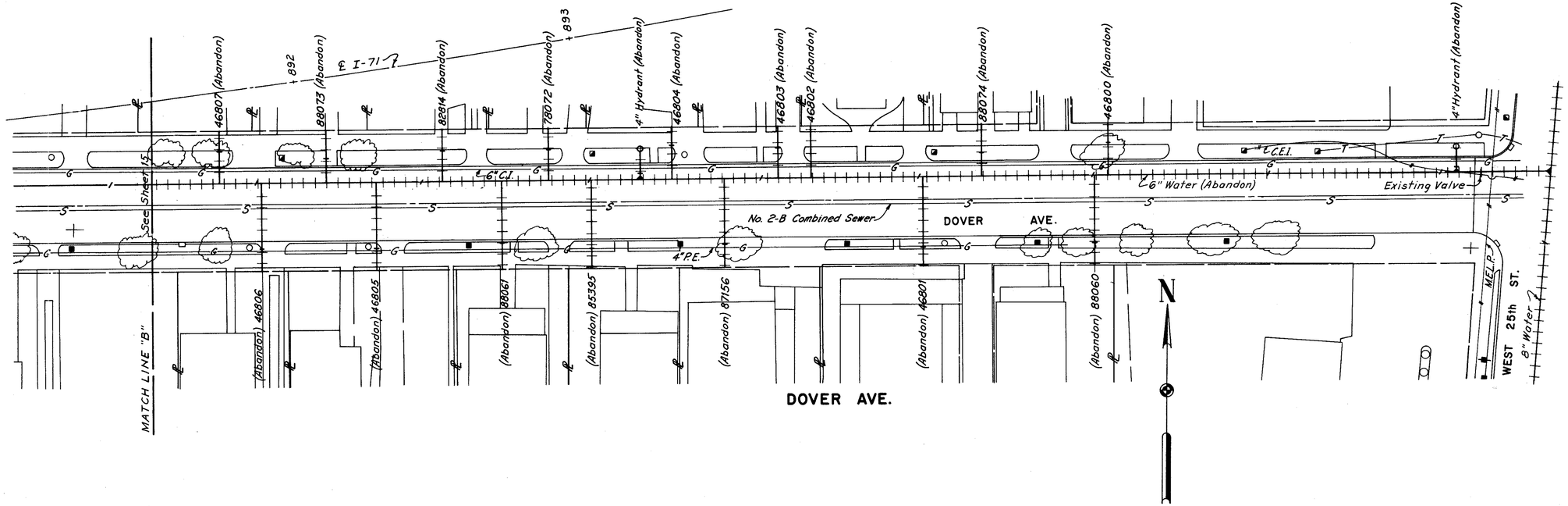
WATER LINE PLAN - DOVER AVE.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

179 / 241

16 / 21

CUYAHOGA COUNTY
CUY-71-17.18



Note: For Relocation of 8"℄16" Water Lines in W. 25th St. See Sheets 11 & 12.

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
J. E. Stanton M.A.M.
COMMISSIONER OF WATER AND HEAT
Arnold Ostler
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
J.R. Comm.
ENGINEER OF CONSTRUCTION AND SURVEYS
William J. Sweeney
ENGINEER OF DESIGN

SCALE 1"=20' MADE T.J.T. DATE
TRCD. R.J.K. DATE
CKD. DATE

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

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT Abandon 6" Water Line in Dover Avenue from 245' East of West 32nd Street to West 25th Street.

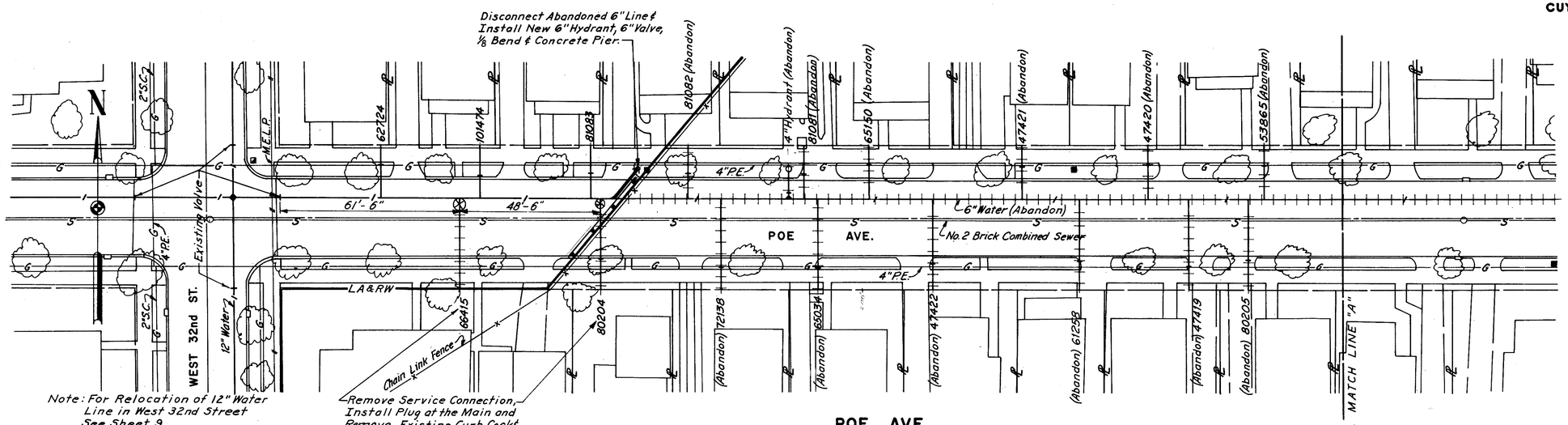
WATER LINE PLAN-DOVER AVE.

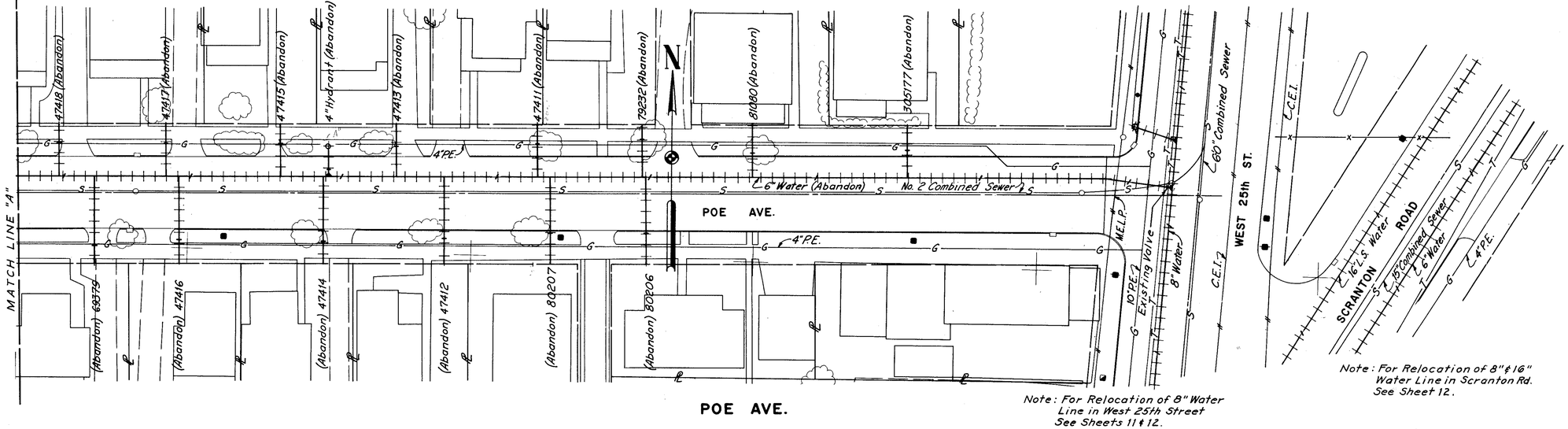
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

180
241

17
21

CUYAHOGA COUNTY
CUY - 71 - 17.18





ESTIMATED QUANTITIES

Item	Description	Quantity
Special	6" Water Main A.S.A. Class 25, Cast Iron	
	Pipe, Cement Lined and Fittings	12 Lin.Ft.
Special	Furnishing & Setting 6" Hydrants	1 Each
Special	6" Valve	1 Each
Special	Service Connection Plugged at Main	2 Each
Special	Remove Existing Curb Cock & Valve Box	2 Each
Special	Miscellaneous Metal Work	179 Lbs.

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

SCALE 1" = 20'
MADE T.J.T. DATE
TRCD. R.W.K. DATE
CKD. DATE

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

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT Abandon 6" Water Line in Poe Avenue from 110' East of West 32nd Street to West 25th Street.

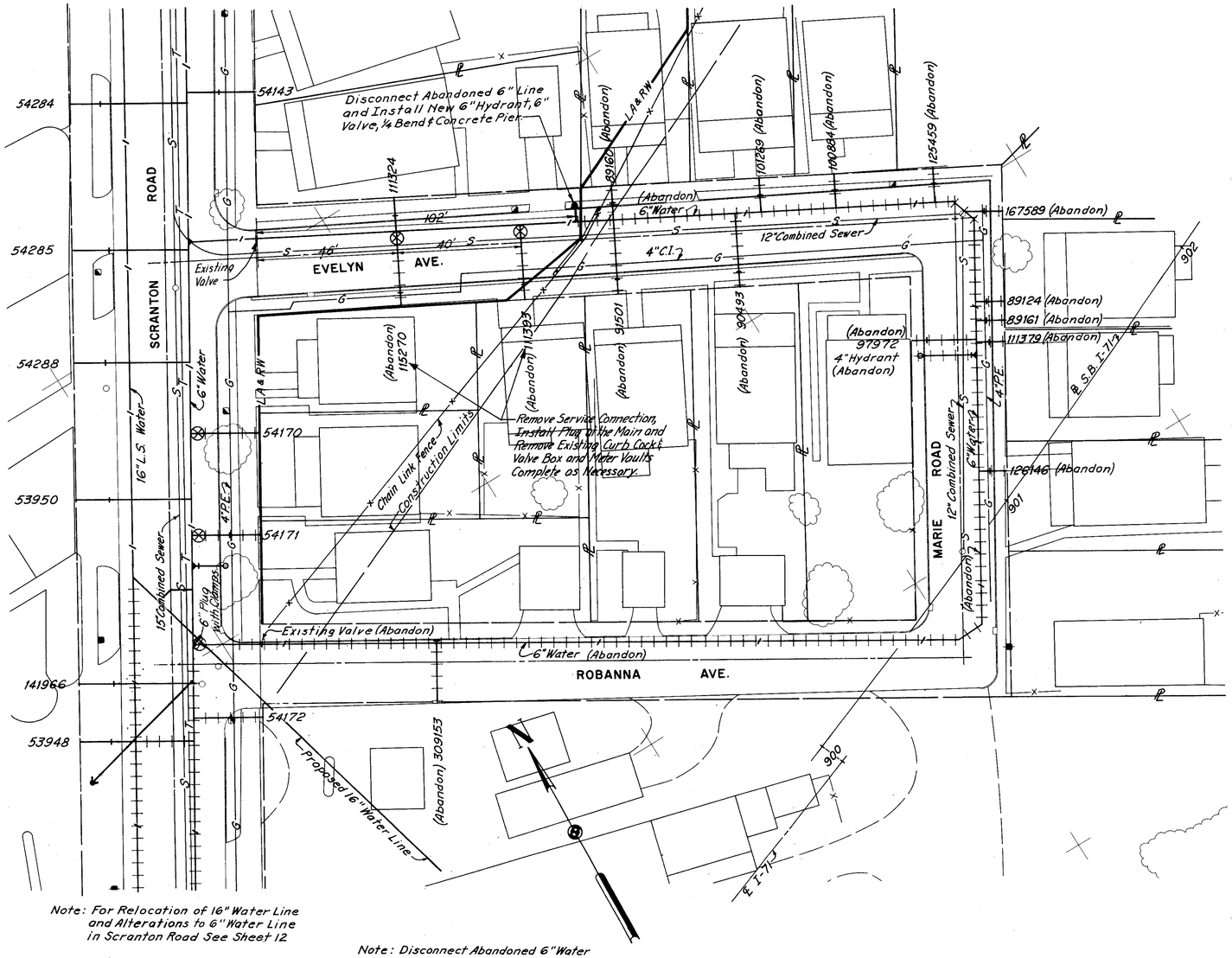
WATER LINE PLAN - POE AVE.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

181 / 241

18 / 21

CUYAHOGA COUNTY
CUY - 71-17.18



Note: For Relocation of 16" Water Line and Alterations to 6" Water Line in Scranton Road See Sheet 12

Note: Disconnect Abandoned 6" Water Line in Robanna Ave. at Tee in 6" Line in Scranton Road. Install 6" Plug with Clamps and Concrete Pier.

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
J. E. Stanton M.A.M.
COMMISSIONER OF WATER AND HEAT
Harold Bittel
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
J. A. Connor
ENGINEER OF CONSTRUCTION AND SURVEYS
William J. Sweeney
ENGINEER OF DESIGN

ESTIMATED QUANTITIES

Item	Description	Quantity
Special	Furnishing & Setting 6" Hydrant	1 Each
Special	6" Valve	1 Each
Special	6" Water Main A.S.A. Class 25, Cast Iron Pipe, Cement Lined and Fittings	5 Lin.Ft.
Special	6" C.I. Plug, Complete with Clamps and Concrete Pier	1 Each
Special	Remove Existing Curb Cock & Valve Box	2 Each
Special	Miscellaneous Metal Work	179 Lbs.
Special	Service Connection Plugged at Main	2 Each
Special	Remove Abandoned Existing 6" Valve & Box	1 Each

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT Abandon 6" Water Line in Robann Avenue and Marie Road. Abandon 6" Water Line in Evelyn Avenue from Marie Road to 105' Southeast of Scranton Road.

SCALE 1"=20' MADE T.J.T. DATE TRCD. R.J.K. DATE CK'D. DATE
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY CLEVELAND NEW YORK

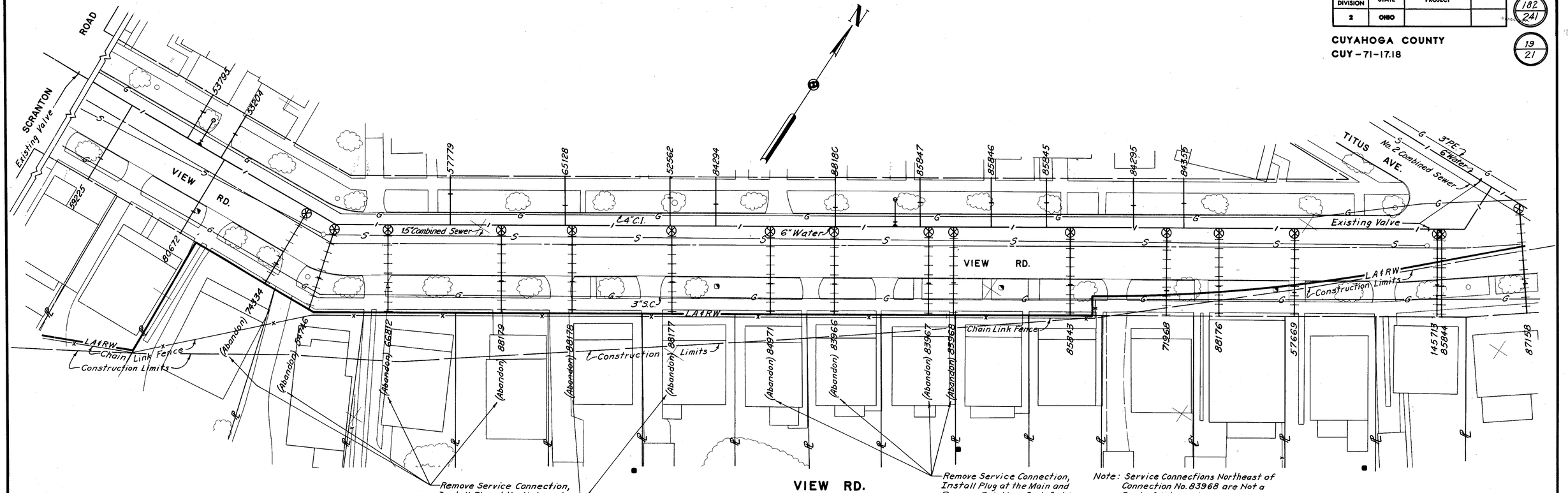
WATER LINE PLAN
ROBANNA AVE.-EVELYN AVE.-MARIE AVE.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

182
241

19
21

CUYAHOGA COUNTY
CUY – 71 – 17.18



APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
ENGINEER OF CONSTRUCTION AND SURVEYS
ENGINEER OF DESIGN

ESTIMATED QUANTITIES		
Item	Description	Quantity
Special	Service Connection Plugged at Main	10 Each
Special	Remove Existing Curb Cock & Valve Box	10 Each

SCALE 1"=20'
MADE T.J.T. DATE
TRCD R.J.K. DATE
CKD: DATE

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

LOW SERVICE DISTRICT
DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT Alterations to 6" Water Line in View Road from Titus Avenue to 299' East of Scranton Road.

WATER LINE PLAN – VIEW RD.

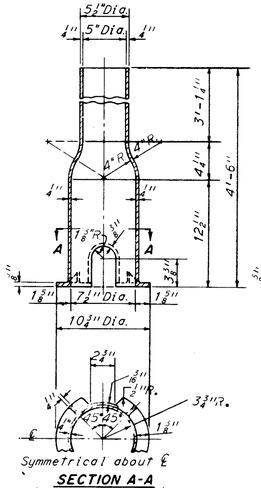
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

183
241

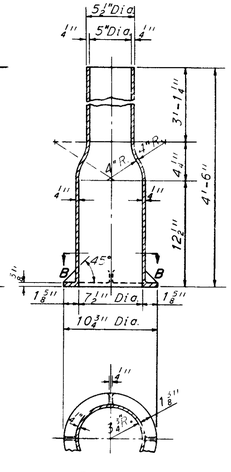
CUYAHOGA COUNTY

CUY-71-17.18

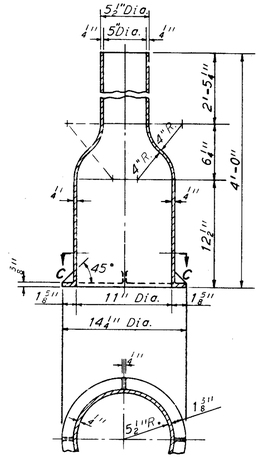
20
21



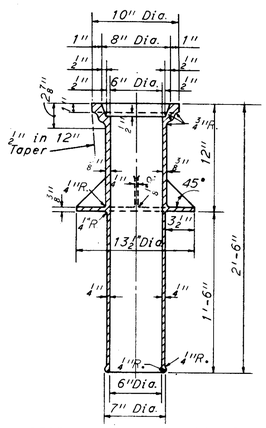
SECTION A-A
Base No. 1 for 1½" and 2" Valves
Est. Wt. 69#



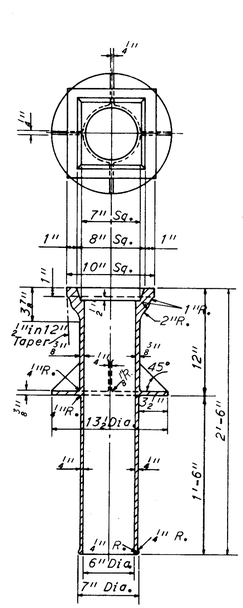
SECTION B-B
Base No. 2 and 3 for 3", 4", 6" and 8" Valves
Est. Wt. 71#



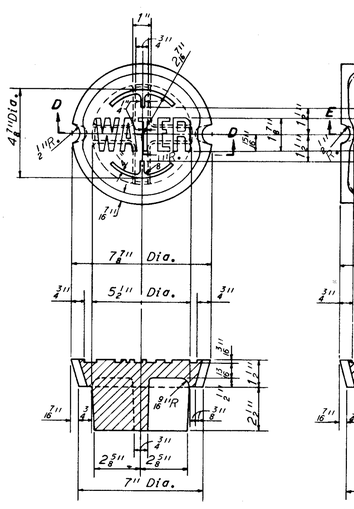
SECTION C-C
Base No. 4 for 10", 12" and 16" Valves
Est. Wt. 79#



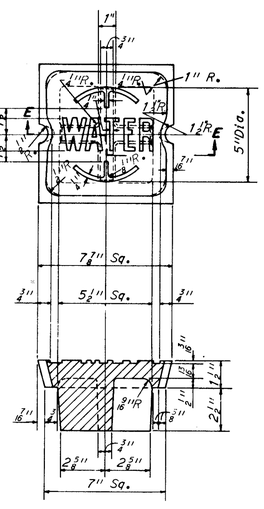
SECTION OF TOP WITH ROUND HEAD NO. 1 AND 2
Est. Wt. 73#



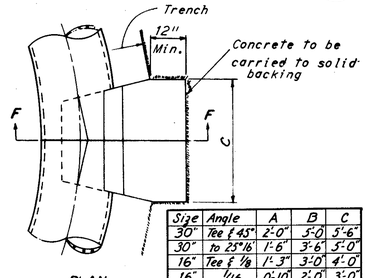
SECTION OF TOP WITH SQUARE HEAD NO. 3 AND 4
Est. Wt. 85#



SECTION D-D
Detail of round cover for No. 1 and 2 top
Est. Wt. 20#

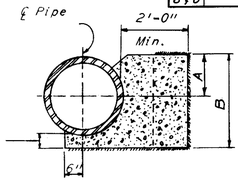


SECTION E-E
Detail of square cover for No. 3 and 4 top
Est. Wt. 23#

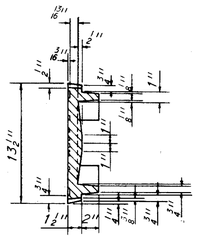


PLAN

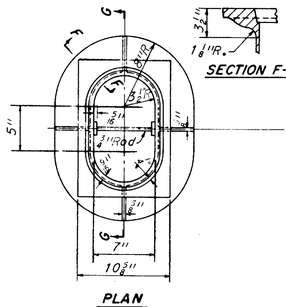
Size	Angle	A	B	C
30"	Tee ℄ 45°	2'-0"	5'-0"	5'-6"
30"	to 25°16'	1'-6"	3'-6"	5'-0"
16"	Tee ℄ 1/8	1'-3"	3'-0"	4'-0"
16"	1/16	0'-10"	2'-0"	3'-0"
10"&12"		1'-0"	2'-0"	2'-0"
6"&8"		0'-4"	1'-2"	2'-0"



SECTION-FF
CONCRETE PIER FOR BENDS
Scale ½" = 1'-0"

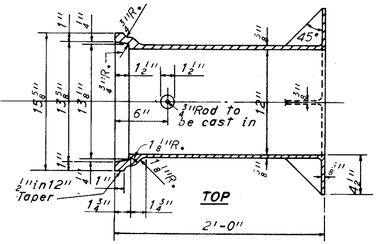


SECTION K-K
Est. Wt. 37#



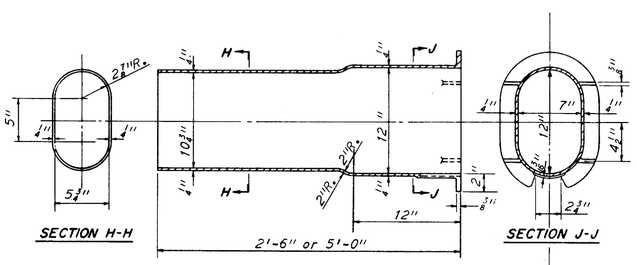
PLAN

SECTION F-F



TOP

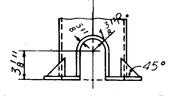
SECTION G-G
Air Cock Box No.5 is Top and Cover
Air Cock Box No.6 is Top, Base 2'-6" Long and Cover
Flushing Box No.7 is Top, Base 5'-0" Long and Cover
Est. Wt. 128#



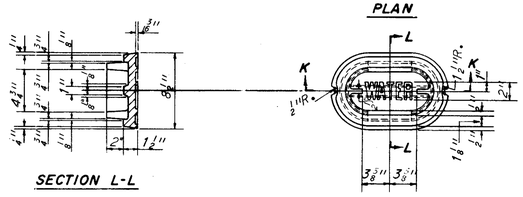
SECTION H-H

SECTION J-J

BASE
Est. Weight 2'-6" Long= 70#
Est. Weight 5'-0" Long= 126#



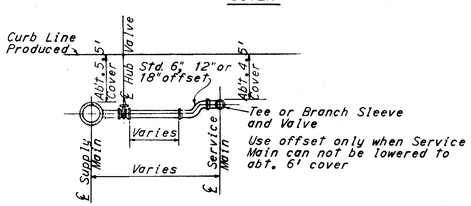
This opening to be in 5'-0" base only.



SECTION L-L

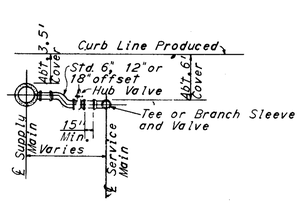
COVER

STANDARD DETAILS - VALVE AND AIR COCK BOXES



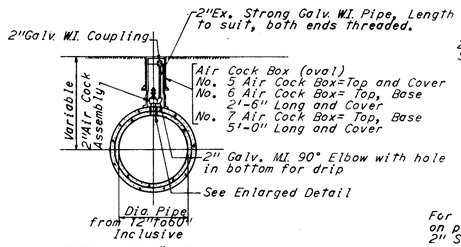
Use offset only when Service Main can not be lowered to abt. 6' cover

Typical Offset Connection Where Supply Main Is Lower Than Service Main

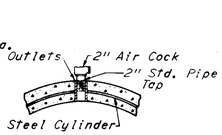


Typical Offset Connection Where Supply Main Is Higher Than Service Main

TYPICAL OFFSET CONNECTIONS



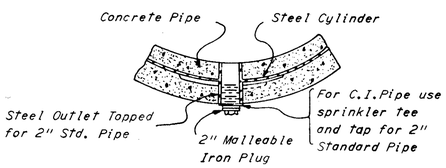
DETAIL OF 2" AIRCOCK INSTALLATION FOR CONCRETE MAINS



ENLARGED DETAIL SHOWING CONNECTION FOR AIRCOCK OR PITOMETER

For C.I. Pipe, boss will be cast on pipe and tapped at foundry for 2" Standard pipe.

For Steel Pipe, Steel forgings shall be welded to pipe and tapped for 2" Standard Pipe.



2" DRAIN CONNECTION

APPROVED

DATE 4/2/65

V. M. DeMelto
DIRECTOR OF PUBLIC UTILITIES

J. E. Slate
COMMISSIONER OF WATER AND HEAT

Harold Mitchell
COMMISSIONER DIVISION OF UTILITIES ENGINEERING

J. G. Connor
ENGINEER OF CONSTRUCTION AND SURVEYS

William S. Lawrence
ENGINEER OF DESIGN

NO. SM-1775

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK DETAILS FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO

MADE JAG DATE 12-28-64 TRACED DATE
CHECKED ECE DATE 12-28-64 SCALE

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

STANDARD DETAILS - AIR COCK AND CONNECTIONS FOR VARIOUS PIPE

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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241

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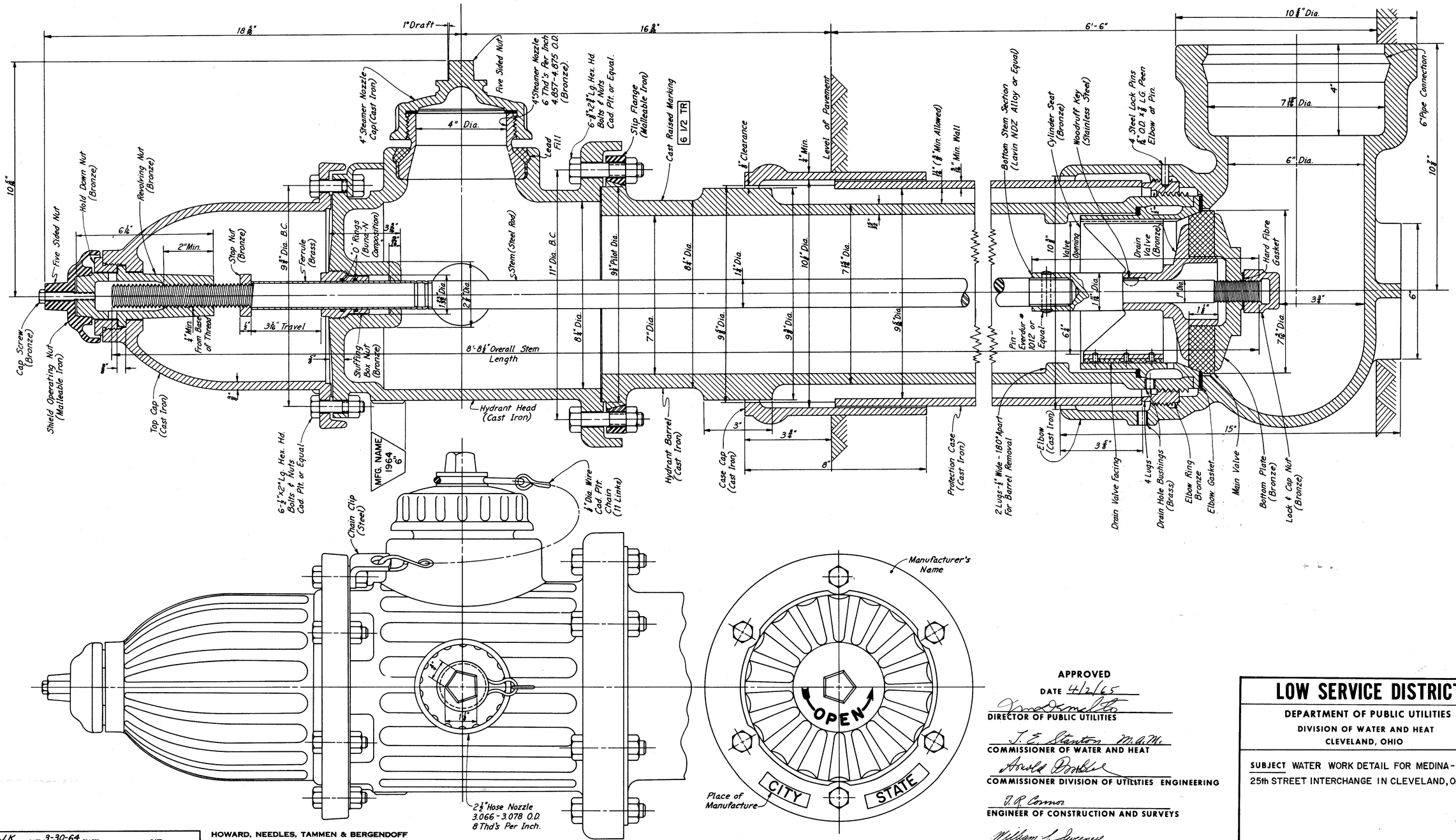
21

CUYAHOGA COUNTY
CUY-71-17.18



MADE R.J.K. DATE 3-30-64 TRACED ____ DATE ____
CHECKED ____ DATE ____ SCALE ____

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

APPROVED
DATE 4/2/65
DIRECTOR OF PUBLIC UTILITIES
J. E. Stanton M. & M.
COMMISSIONER OF WATER AND HEAT
COMMISSIONER DIVISION OF UTILITIES ENGINEERING
T. R. Connor
ENGINEER OF CONSTRUCTION AND SURVEYS
William L. Sweeney
ENGINEER OF DESIGN

LOW SERVICE DISTRICT

DEPARTMENT OF PUBLIC UTILITIES
DIVISION OF WATER AND HEAT
CLEVELAND, OHIO

SUBJECT WATER WORK DETAIL FOR MEDINA-WEST 25th STREET INTERCHANGE IN CLEVELAND, OHIO

M-14

LANDSCAPING SCHEMATIC PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY. 71-17.18

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LANDSCAPING NOTES

GENERAL

The provisions of Items L-12, L-13 and L-14 of the Construction and Material Specifications shall apply except as modified below.

LOCATION OF TREES AND PLANTS

Trees and shrubs shall be located by scaling from the plan drawings. The point of measurement shall be the center of the circle representing the plant.

When tree locations shown on the plans are in conflict with other items, they shall be shifted as approved by the Engineer.

No large trees shall be planted closer to the freeway or ramp pavements than 25 feet, shoulder pavements being excluded from this determination. Large trees shown on the plans adjacent to structures shall be planted as shown. Large trees on new city streets which are part of the new construction shall be planted as shown. The same criteria shall apply to the planting of small trees and large shrubs except that the minimum distance to edge of pavement shall be 20 feet.

MULCHING

In lieu of Sections L-12.04, L-13.04 and L-14.04, the mulching material shall be shredded tree bark and wood chips; all material shall pass a 2 inch sieve. The maximum sized pieces will be no longer than 5 inches nor wider that 1½ inches. 75% of the material by volume shall have no dimension exceeding 3 inches. At least 90% shall be retained on a ¼" sieve.

All provisions of Section L-12.23, L-13.26 and L-14.29 shall apply except that the shredded bark and wood chips shall be placed to a depth of 4 inches loose depth. The mulch material shall be carefully pulled back from all plants for a distance of 4" in all directions.

POCKET HOLES FOR VINES

All provisions of Section L-12.17 shall apply except that the spacing of plants will be as shown in the plans. Pocket holes shall have a depth and diameter of 12 inches. The term plant hole, as used in L-13.26 is synonimous with the term pocket hole, as used in L-13.21.

LANDSCAPING NOTES

DIGGING PLANTS

The "B and B" schedule shown in the plans shall be used for size of earth balls.

FORM AND SHAPE OF PLANTS

All plants shall meet the standards as set forth in the current edition on date of contract award of "American Standard for Nursery Stock" as adopted by the American Association of Nurserymen, Inc.

SEEDING AND PROTECTING

Quantities for seeding are calculated for the soil areas between the right-of-way fence lines, between the work limit lines in unfenced areas, and within the work limits for areas outside the right-of-way lines covered by easement. Vine planting areas are not included in the area to be seeded.

Seed shall be sown at the rate of three (3) pounds per 1,000 square feet, and shall be a uniform mixture in the following proportions in lieu of the mixture listed in Section L-9.11:

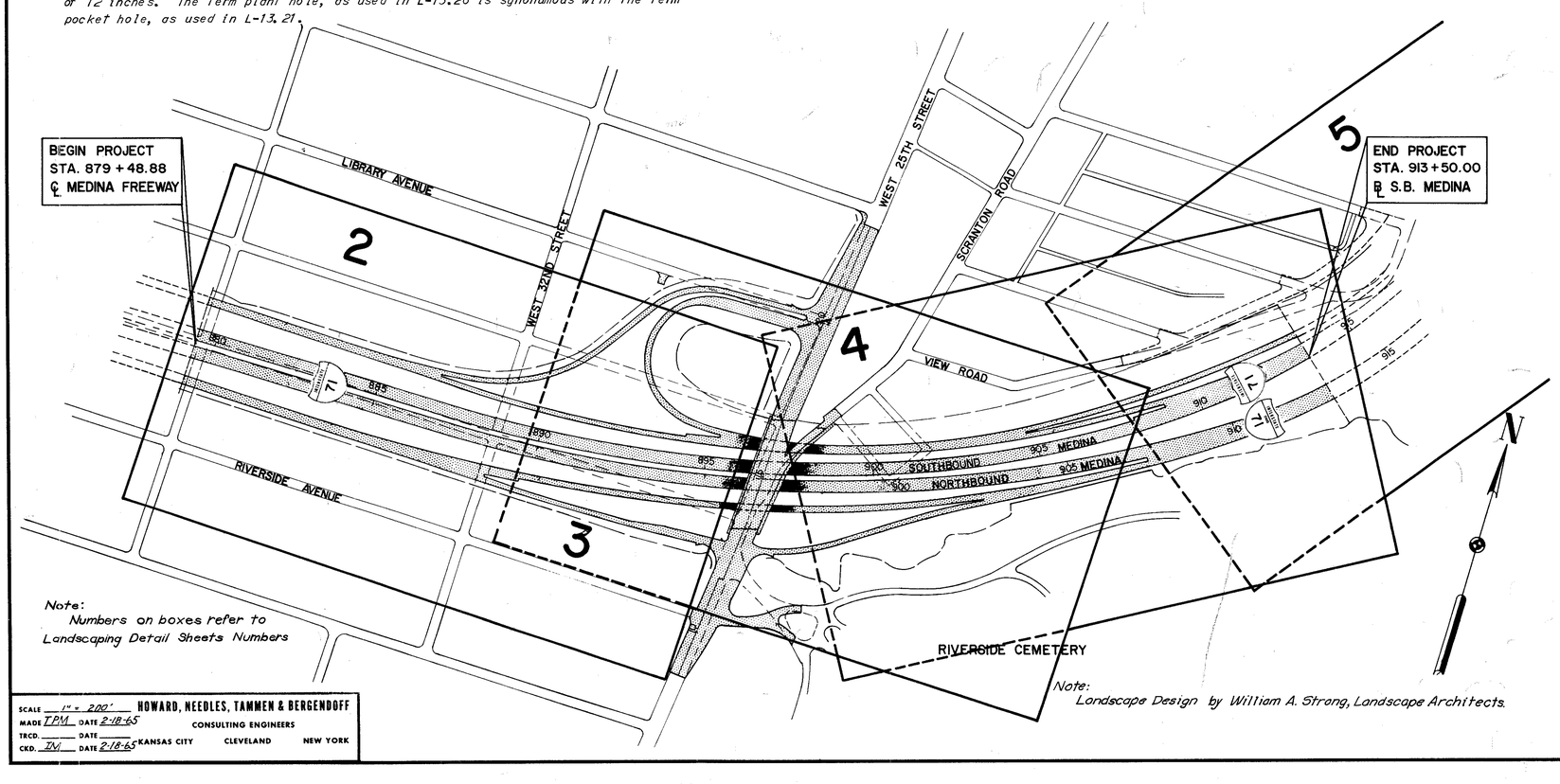
65% Creeping Red Fescue
25% Kentucky Blue Grass
10% Red Top

FERTILIZER FOR TREES AND PLANTS

Fertilizer shall be an organic fertilizer of 10-6-4 formula or as approved by the Engineer. Fertilizer shall be applied in a dry condition uniformly broadcast over the top of the pocket after the plants have been planted and always prior to spreading the mulch. The rate of application shall be as follows:

Vines:	3 ounces per vine pocket
Shrubs:	6 ounces per shrub pocket
Trees:	8 ounces per tree pocket

Payment for fertilizer used shall be included in the unit price bid for each tree, shrub or plant.



Note:
Numbers on boxes refer to Landscaping Detail Sheets Numbers

Note:
Landscape Design by William A. Strong, Landscape Architects.

SCALE 1" = 200' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE TPM DATE 2-18-65 CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. TM DATE 2-18-65 KANSAS CITY CLEVELAND NEW YORK

LANDSCAPING NOTES

AGRICULTURAL LIMING MATERIAL

The location and need for agricultural liming materials will be determined by the Engineer on the basis of laboratory tests after rough grading operations have been performed. The quantity of agricultural liming materials shown on the plans is sufficient for application to the entire exposed soil area of the contract but may be partially or completely omitted, as may be directed by the Engineer if laboratory tests indicate the item is not needed. Agricultural liming material shall be applied at the rate of 100 pounds per 1,000 square feet or surface area, except that on all surfaces of shale it shall be applied at the rate of 10 tons per acre.

The quantity of agricultural liming material is estimated and is included for use only when and in amounts as directed by the Engineer. The amount of this item and its location shall be recorded as used, and payment will be made on final measurement.

SEEDING AND SODDING

The Contractor shall water all seeded areas as directed by the Engineer to the extent necessary to promote growth of a dense, even stand of grass.

A thick uniform stand of growing grasses, satisfactory to the Engineer, will be required before seeded or sodded areas will be accepted. The Contractor shall water, mow and reseed bare areas as required by the Engineer in the period prior to date of acceptance of the project. Cost of necessary watering and repairing seeded or sodded areas shall be included in the price bid per square yard for seeding or sodding.

ITEM SPECIAL - MOWING SEEDED AND SODDED AREAS

The Contractor shall mow all seeded and sodded areas placed under this project as often as required by the Engineer so that grass height will not exceed six inches at any time during the life of this contract. Mowing shall be performed with suitable tools and equipment so that grass growth will be cut no shorter than three inches in height.

The number of acres to be paid for will be for each operation performed by the Contractor for the actual area mowed, as directed by the Engineer. An estimated quantity of 30 acres has been included in the General Summary.

The acres measured as provided above shall be paid for at the contract unit price bid per acre for "Item Special - Mowing Seeded and Sodded Areas", which price and payment shall constitute full compensation for furnishing all labor, material, tools, equipment and incidentals necessary to complete this item. The requirements for mowing will be terminated when the landscaping items have been completed and accepted.

PLANTING BEDS

All areas to be seeded shall be free of rock or other foreign material three inches or greater in any dimension and shall be satisfactorily shaped and finished as required by Sections E-1.05(e) and E-1.10 of the specifications. Areas in front of residences, between curb and sidewalk and other specified areas shall be free of all stones one inch or greater in any dimension and shall have smooth surfaces. In such areas hand raking will be required if inaccessible to machines, and may be required if machines do not provide results equivalent to hand raking.

Topsoil removed and stored, under Item E-1, shall be placed and spread to the extent available, over the following areas which are listed in the order of priority, to a depth of four inches over soils or six inches over rock areas with open voids.

(a) Interchange interiors with slopes of 1 on 3 or flatter.
(b) Turf medians.
(c) Shoulders and inslopes 1 on 3 or flatter.
(d) Backslopes 1 on 3 or flatter.

In areas where the above requirements have not been met and slopes of 1 on 3 or flatter contain visible rocks or foreign material of such quantity that raking is not practicable, the Contractor will be required to remove the upper surface to a depth sufficient to receive a soil cover. Suitable soil shall be stored or furnished, delivered and placed at the Contractor's expense to a depth of four inches over areas where rock or foreign material is intermixed with soil or fine material, or to a depth of six inches where rock or foreign material exists without fines in the voids.

Areas which are to be planted with vines, Item L-12, shall be reasonably free from large rocks in quantity, however, occasional rocks can be tolerated by varying spacing of pocket holes.

Cost of the above work shall be included in the price bid per cubic yard of Roadway Excavation, Item E-1, and no separate payment will be made.

BACKFILL

All of the provisions of L-13.24 shall apply except that the soil surrounding all plants shall be depressed regardless of the season in which they are planted.

BRACING

All plants specified to be six feet or more in height shall be braced in accordance with the applicable standard drawing or as directed by the Engineer. Plants specified to be less than six feet in height need not be staked.

PLANTING DATES

No planting of Items L-12, L-13, and L-14 shall be done between the dates of May 10 and October 1.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY. 71-17.18

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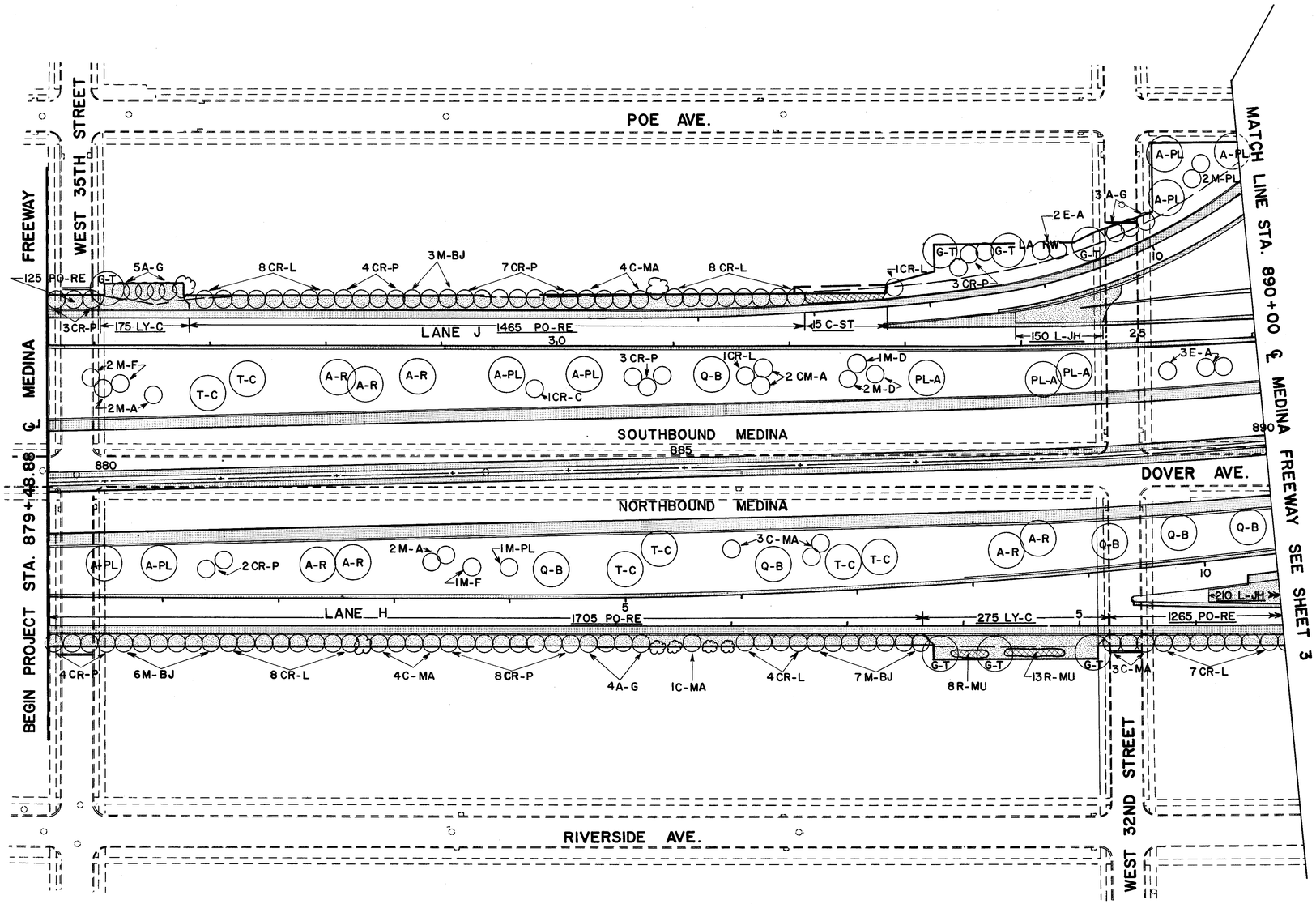

N

LEGEND

- Large Trees
- Small Trees or Large Shrubs
- Vines
- Crushed Aggregate Slope Protection (Quantities are included with Bridge Plans)
- Existing trees and/or shrubs to remain in place
- Shrubs

SCALE 1" = 50'
MADE TPM DATE 2-18-65
TRCD. ____ DATE ____
CKD. J.M. DATE 2-18-65

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

LANDSCAPING PLAN SHEET 2

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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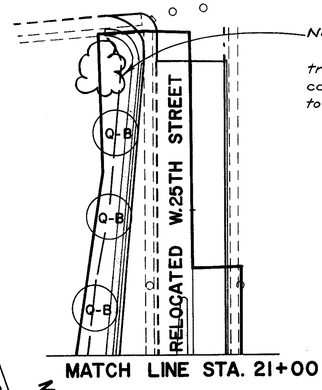
CUYAHOGA COUNTY
CUY. 71-17.18

Note:
One of the finest large sweetgum trees in Cleveland area is here. The contractor should be careful in order to protect and preserve it

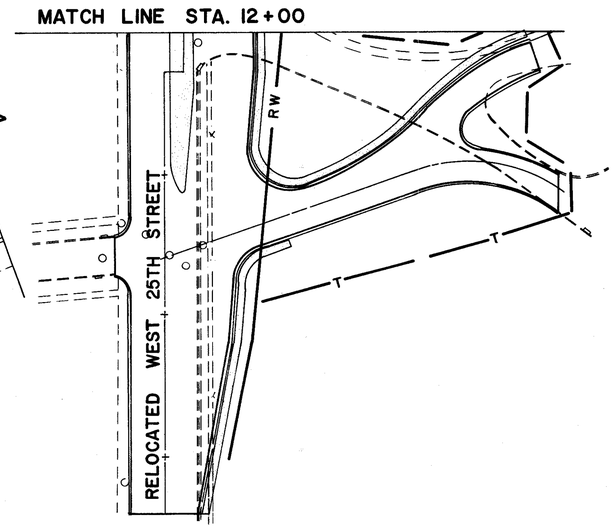


MATCH LINE STA. 21+00

N

LEGEND

- Large Trees
- Small Trees or Large Shrubs
- Vines
- Crushed Aggregate Slope Protection (Quantities are included with Bridge Plans)
- Existing trees and/or shrubs to remain in place
- Shrubs



SCALE 1"=50'
MADE TPM DATE 2-18-65
TRCD. DATE
CKD. IM DATE 2-18-65

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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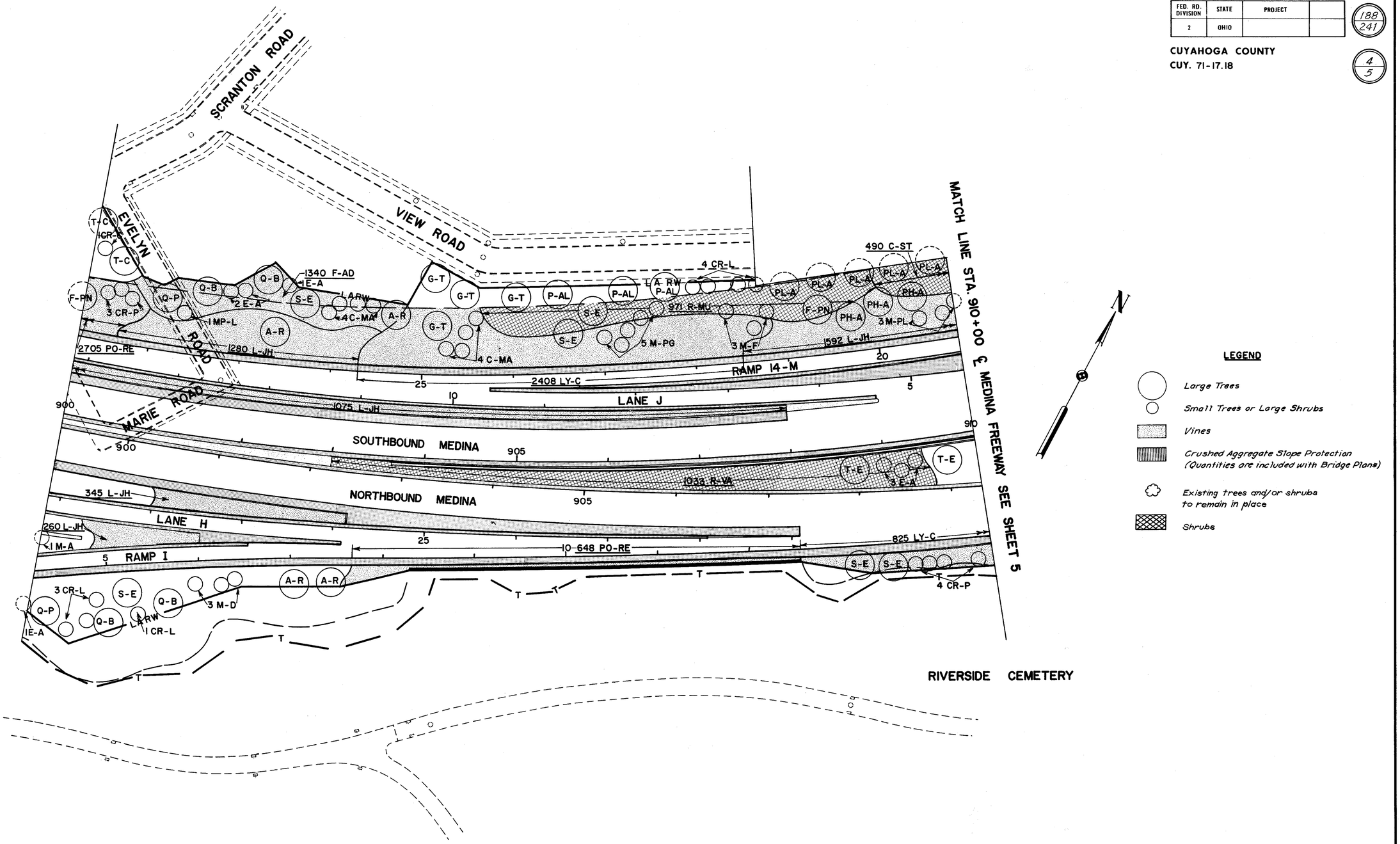
241

CUYAHOGA COUNTY
CUY. 71-17.18

4
5



LEGEND

- Large Trees
- Small Trees or Large Shrubs
- Vines
- Crushed Aggregate Slope Protection (Quantities are included with Bridge Plans)
- Existing trees and/or shrubs to remain in place
- Shrubs

SCALE 1" = 50'
MADE TPM DATE 2-18-65
TRCD. ____ DATE ____
CKD. TM DATE 2-18-65

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

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY 71-17.18

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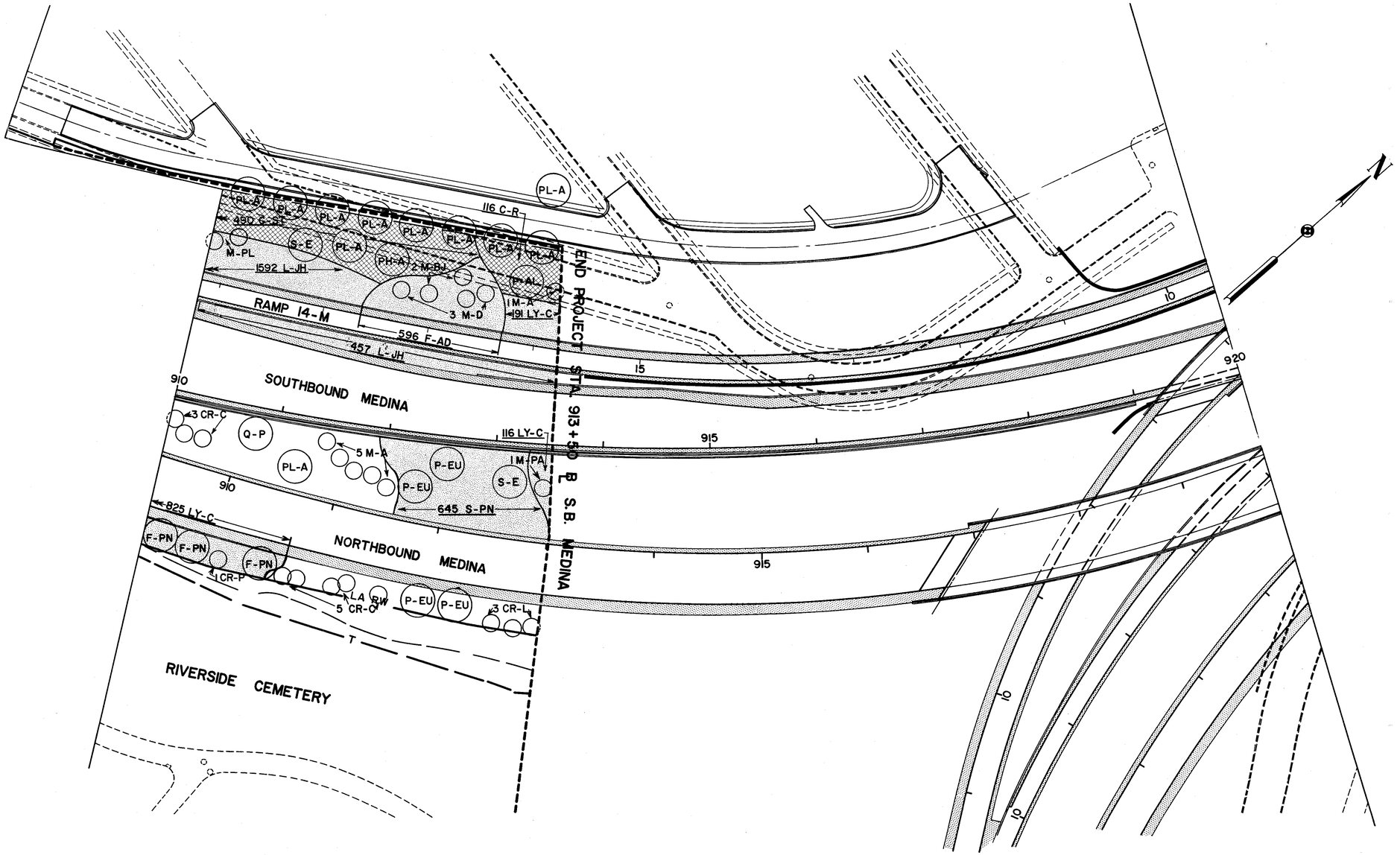

LEGEND

- Large Trees
- Small Trees or Large Shrubs
- Vines
- Crushed Aggregate Slope Protection (Quantities are included with Bridge Plans)
- Existing trees and/or shrubs to remain in place
- Shrubs

SCALE 1" = 50'
MADE TPM DATE 2-18-65
TRCD. ____ DATE ____
CKD. IM DATE 2-18-65

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

LANDSCAPING PLAN SHEET 5

SCHEMATIC SIGN PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-71-17.18

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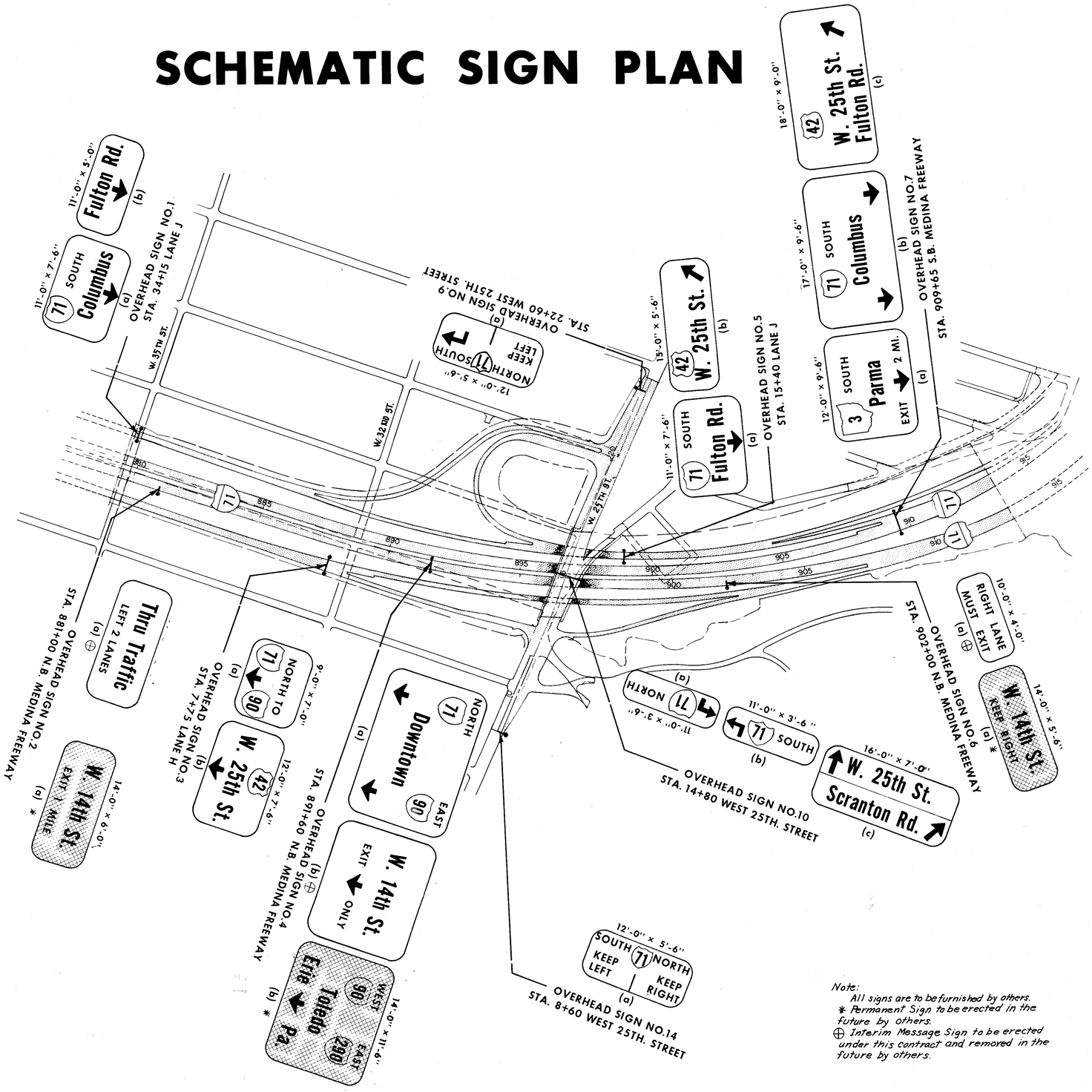
13



Note:
All signs are to be furnished by others.
** Permanent Sign to be erected in the future by others.*
⊕ Interim Message Sign to be erected under this contract and removed in the future by others.

SCALE 1"=200'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE R.O.I. DATE 1-3-65	CONSULTING ENGINEERS	
TRCD H.L.D. DATE 8-20-69	KANSAS CITY	CLEVELAND NEW YORK
CKD R.P.P. DATE 1-8-65		

SUMMARY OF ESTIMATED QUANTITIES

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUY.-71-17.18

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SIGN NUMBERS											TOTAL	UNIT	ITEM	TYPE CODE 7221 DESCRIPTION
1	2	3	4	5	6	7	9	10		14				
				1							1	Each	I-129	Overhead Sign Support Std. No. 7.3 Des. 1 Mod. 44'-0" Span
1											1	Each	I-129	Overhead Sign Support Std. No. 7.3 Des. 1 45'-0" Span
		1									1	Each	I-129	Overhead Sign Support Std. No. 7.3 Des. 1 Mod. 54'-0" Span
			1								1	Each	I-129	Overhead Sign Support Std. No. 7.5 Des. 2 Mod. 59'-0" Span
						1					1	Each	I-129	Overhead Sign Support Std. No. 7.6 Des. 4 Mod. 93'-0" Span
								1			1	Each	I-129	Overhead Sign Support Std. No. 7.4 Des. 4 Mod. 100'-8½" Span
							1			1	2	Each	I-129	Overhead Sign Support Std. No. 12.24 Des. 2 20'-0" Arm
	1				1						2	Each	I-129	Overhead Sign Support Std. No. 12.24 Des. 4 Mod. 20'-0" Arm
159.5	98	174	317.5	191	50	484.5	78	227		78	1857.5	Sq.Ft.	I-129	Sign Erection, Guide Sign Type, as per plan
8.92	3.20	8.93	9.44	8.94	3.21	12.33	2.83			2.69	60.49	Cu.Yds.	I-129	Concrete for Sign Support Foundations, as per plan
100	50	50	50		100	150					500	Lin.Ft.	I-15	Guard Rail, Steel Beam Standard Type (Deep), as per plan
1	1	1	1	1	1	1	1			1	9	Each	S-25	1" x 10'-0" Solid Wrought Iron Ground Rod and Wire Connection
1	1	1	1	1	1	1	1	1		1	10	Each	S-25	Sign Service, as per plan
1	1			1	1		1			1	6	Each	S-25	30 Amp. 600 Volt Disconnect Switch with Type Y Enclosure, as per plan
		1	1			1		1			4	Each	S-25	30 Amp. 600 Volt Disconnect Switch with Type Z Enclosure, as per plan
	1				1		1			1	4	Each	S-25	0.50 KVA 480/120 Transformer, Type II, as per plan
1				1							2	Each	S-25	0.75 KVA 480/120 Transformer, Type III, as per plan
		1									1	Each	S-25	1.00 KVA 480/120 Transformer, Type IV, as per plan
			1					1			2	Each	S-25	1.50 KVA 480/120 Transformer, Type V, as per plan
1	1	1	1	1	1	1	1	1		1	10	Each	S-25	Photo Electric Cell w/2-1 C No. 12 Wire to Safety Switch, as
2	2	2	2	1	1	3	1	3		1	18	Each	S-25	Signs Wired Complete, as per plan [per plan
1								2			3	Each	S-25	Ballast, Type A, as per plan
	1			1	1		1			1	5	Each	S-25	Ballast, Type B, as per plan
1		1		1							3	Each	S-25	Ballast, Type C, as per plan
		1	2			3		1			7	Each	S-25	Ballast, Type D, as per plan
	2			2	2		2			2	10	Each	S-25	72" Fixture with T 12/cw/ho Lamp, as per plan
		3	3			3		1			10	Each	S-25	72" Fixture with T 12/cw/sho Lamp, as per plan..
1								2			3	Each	S-25	96" Fixture with T 12/cw/ho Lamp, as per plan
1			1	1		3		1			7	Each	S-25	96" Fixture with T 12/cw/sho Lamp, as per plan
						1					1	Each	S-25	2.00 KVA 480/120 Transformer, Type VI, as per plan
														TRAFFIC SIGNAL ITEMS SEE SH. 203

SCALE None
MADE R.P.R. DATE 2-16-65
TRCD. _____ DATE _____
CKD. _____ DATE _____

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

FED. RD. DIVISION	STATE	PROJECT	
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SIGNING NOTES

CERTIFICATION AND APPROVAL OF SIGN SUPPORTS AND LIGHTING PLANS

The Contractor shall submit through proper channels the drawings, information or samples as required below:

A. Six (6) copies of the following:
Shop drawing and material list for approval
1. Overhead Sign Supports
2. Sign Lighting Details
3. Catalog Cuts, Descriptions or samples of fabricators standard items as shown in plans of their equal for approval.

B. Certifications or samples for all materials which have been approved under Item (A) shall be in possession of the Contractor prior to any purchase or installation.

MATERIALS - GENERAL

Materials to be furnished may be specified in the plans by a given manufacturer's Catalog No. or type. This is for descriptive purposes only and the Contractor may assume that approved equal materials may be furnished.

I-129 OVERHEAD SIGN SUPPORT MATERIAL

All components of the Overhead Sign Supports, I-129, shall be steel, except for aluminum truss and components for the No. 7 series which shall be aluminum.
For specifications and materials see Sheet No.195 thru 199.

I-129 TRAFFIC SIGN ERECTION

The Contractor shall erect sign panels furnished by others as noted on the Sign Details Sheet No. 190. The panels shall be mounted on the brackets or beam supports provided in the plans.

A schedule for sign erection shall be submitted to the Division Traffic Engineer and Engineer, Bureau of Traffic 450 East Town Street, Columbus, Ohio, 60 calendar days prior to the start of any scheduled erection work. The schedule shall include proposed dates, time and delivery point.

The price bid per square foot for "Item I-129, Sign Erection by Type, as per plan", shall include all necessary equipment, manpower, and tools to erect the signs noted. All sign material and accessories will be furnished and transported to a designated delivery point, on or near the subject project, by others.

The Contractor shall be responsible for the handling and storage of the sign panels and accessories from the time of arrival at the delivery point.

I-15 GUARDRAIL, STEEL BEAMS STANDARD TYPE (DEEP), AS PER PLAN

Guardrail shown at sign supports shall be type deep with post spacing of 6'-3". Details are shown on Sheet 202. (Special detail for Flaring Median Barrier Type Guard Rail is shown on Sheet 192)

S-25 SIGN SERVICE, AS PER PLAN

This item will consist of the furnishing and installation of the electrical system and components connecting from the ESNA connectors in the pull box (included within roadway lighting quantities) to the primary side of the disconnect switch.

The Contractor shall provide 2" rigid galvanized steel conduit, couplings for attaching to foundation conduit (included in cost of I-129 Supports), and 1C No. 6-600 Volt service wire from ESNA connectors to the disconnect switch.

This item shall also include the furnishing of 2" rigid galvanized steel conduit and couplings for connections from surveillance system pull box (adjacent to sign support foundation) to the second 2" galvanized conduit in sign support foundations. (See details, Sheet 201.)

Basis of payment shall be at the contract unit price per each installation which price shall include all material, labor, equipment and incidentals to furnish the complete item of work.

I-129 SWITCH ENCLOSURE MOUNTING BRACKET

Modifying S.S. I-129, Switch Enclosure Mounting Bracket including installation of mounting bolts and drilled holes shall be included in the payment for I-129 Overhead Sign Support Structures at the Contract price per support structure types.

I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS

The quantity of concrete to be paid for shall be per cubic year based on the plan dimensions rather than the plan quantity.

S-25 ELECTRICAL - GENERAL

This item shall consist of furnishing all necessary material, labor and facilities required to complete the electrical installation in accordance with the designs, dimensions and details shown in the plans and described in the specifications.

All material, workmanship and construction methods, except as modified herein, shall conform to the general requirements of the STATE OF OHIO, DEPARTMENT OF HIGHWAYS, CONSTRUCTION AND MATERIALS SPECIFICATIONS, JANUARY 1, 1963.

S-25, BALLAST TYPE

This item of work shall consist of furnishing ballast Types A through D as detailed and specified on Sheets 191 and 200.

Basis of payment for this item shall be at the Contract unit price per each furnished to the job.

S-25 FIXTURES WITH LAMP TYPE

This item of work shall consist of furnishing all light fixtures and lamp types and sizes as specified on Sheets 191, 199 and 200.

Basis of payment for this item shall be at the Contract unit price per each furnished to the job. **All light fixtures shall be mounted at the bottom (below signs), except for Signs 9, 10 & 14**

S-25 SIGNS WIRED COMPLETE, AS PER PLAN

This item shall consist of the furnishing and/or installation of the electrical sign lighting system components for each illuminated sign.

Work shall include installation of light fixtures and ballasts, and furnishing and installation of all rigid and flexible conduit, condulets, junction boxes, wire, fasteners, hardware, and all other items required to energize the sign lighting system. See details on sheets (EI-1 and 2, ES-3A), 199, 200 & 201.

Basis of payment shall be at the contract unit price per each sign wired which price shall include all labor, materials, tools, equipment, and other incidentals to provide a complete and accepted item of work.

The cost of furnishing and installing wire and necessary fasteners from the disconnect switch to the signs (or between signs) within sign support members shall be incidental to the cost of various items included in this item of work.

Illuminated signs requiring two (2) ballasts shall be considered as an equivalent of two (2) separate signs for determination of payment quantities.

Note: Payment for brackets shall be included in the unit price bid for Item I-129, "Overhead Sign Supports". **Vertical sign brackets shall be furnished for all overhead supports.**

Unit Price Bid for Item I-15, Guardrail, Steel Beam Barrier Type (Deep) shall include cost of all material and labor necessary to modify typical Median Barrier Type Guardrail to two single guardrails, by-passing overhead sign support as shown in Detail "A".

S-25 DISCONNECT SWITCH WITH TYPE "Y" or "Z" ENCLOSURE

The basis for payment for this item shall be on a unit bid basis, complete and accepted.

The item shall include furnishing of a 30 Amp. 600 volt combination disconnect switch of type and make as indicated on Sheet 201 and shall be mounted in a NEMA four (4) stainless steel enclosure Type Y or Z and attached to each sign support by means of a mounting bracket as described in detail on Sheet 201

S-25 TRANSFORMER TYPE

This item of work shall consist of furnishing and installing transformers as detailed and specified on Sheets 191 and 201.

Basis of payment for this item shall be at contract unit price per each, which shall include all labor, tools, materials and equipment required for this complete item of work.

S-25 PHOTO ELECTRIC CELL

Each overhead sign support shall have photo electric cells mounted on top of sign support pole.

For description of photo electric cell and wiring diagram, see sheet 201.

This item shall consist of furnishing and installing photo electric cell, wire and connections to sign wiring, and pole adapter at the contract unit price per each installation.

S-25 FIXTURE SUPPORT ARMS "G"

Modifying supplemental specification I-129, fixture support arms "G" with mounting holes and hardware are to be included in the cost of furnishing and installation of overhead sign supports and sign brackets. **See detail sheets 199 and 200.**

S-25 GROUND ROD AND WIRE CONNECTION

This item of work shall consist of furnishing and installing ground rod and wire as detailed and specified on Sheet 201.

Basis of payment for this item shall be at contract unit price per each, which shall include all labor, tools, materials and equipment required for the complete item of work.

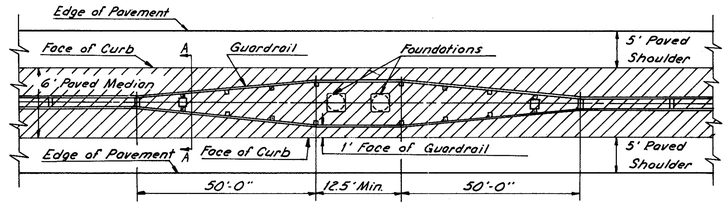
S-25 INSPECTION AND TESTING OF SIGN LIGHTING

The Contractor shall furnish all equipment necessary to demonstrate to the satisfaction of the Engineer that all circuits are free from short circuits and unspecified grounds, and are properly connected and operable before acceptance.

This demonstration shall include a meggering to show that all conductors are clear of grounds and that the resistance of the ground is not more than 15 Ohms. Voltage and amperage tests shall be made at the service pole switch and the sign support switch.

After the sign lighting system is completed, the entire system shall be operated continuously each night until seven (7) consecutive days elapse without failure or defect. The Contractor shall correct any defects which may develop at no extra cost to the State.

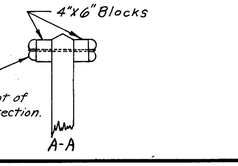
During the test period, adjustments to fixture aiming angles shall be made as directed by the Engineer to obtain maximum uniformity in sign illumination.



DETAIL "A"
MEDIAN GUARDRAIL DETAIL
(No Scale)

SIGN SUPPORT MODIFICATIONS

Sign No. 10	Support on structure
Sign Nos. 1, 3, 4, 5, and 7	Unequal shaft lengths
Sign Nos. 2 and 6	Pole length longer than standard



Note: Typical treatment of first post in flared section.

SCALE None
MADE R.P.P. DATE 1-13-65
TRCD. _____ DATE _____
CKD. _____ DATE _____

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

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CUY.-71-17.18

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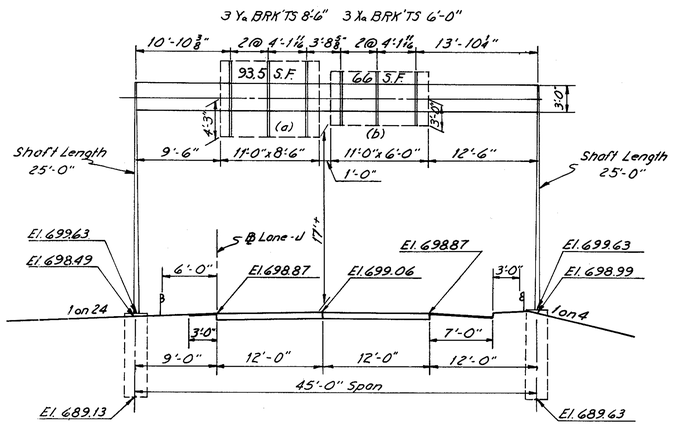
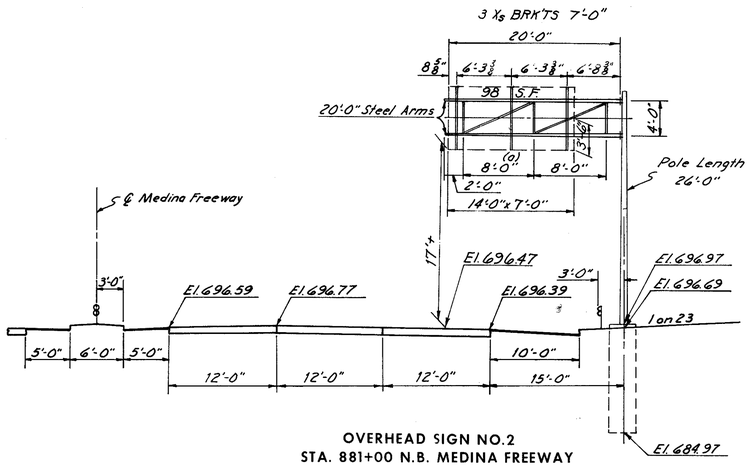
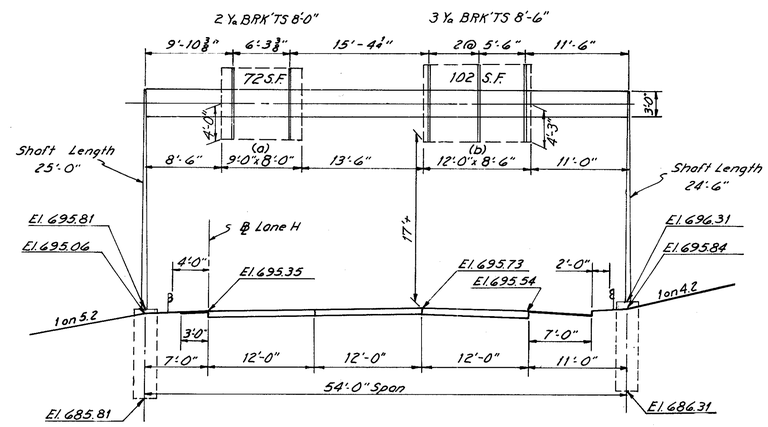
SIGN SUPPORT DETAILS



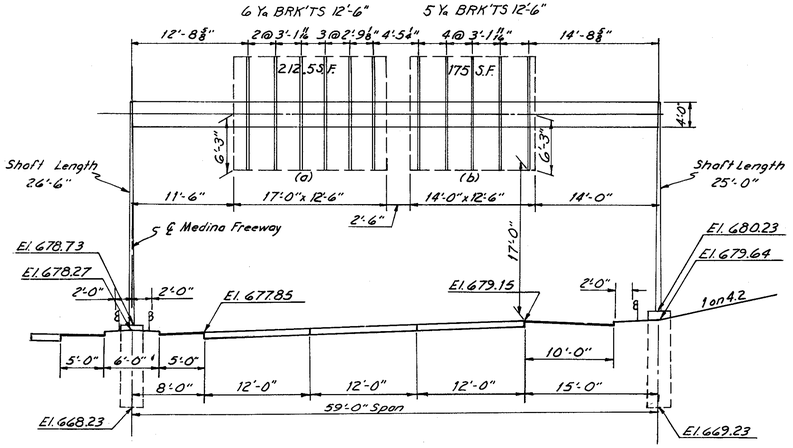
OVERHEAD SIGN NO.1
STA. 34+15 LANE J
STD. NO.7.3 — DESIGN NO.1
45'-0" SPAN



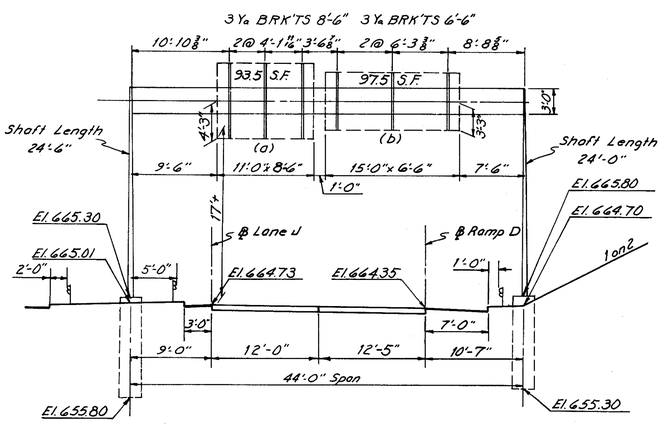
OVERHEAD SIGN NO.2
STA. 881+00 N.B. MEDINA FREEWAY
STD. NO. 12.24-DESIGN NO. 4 MOD.
20'-0" ARM



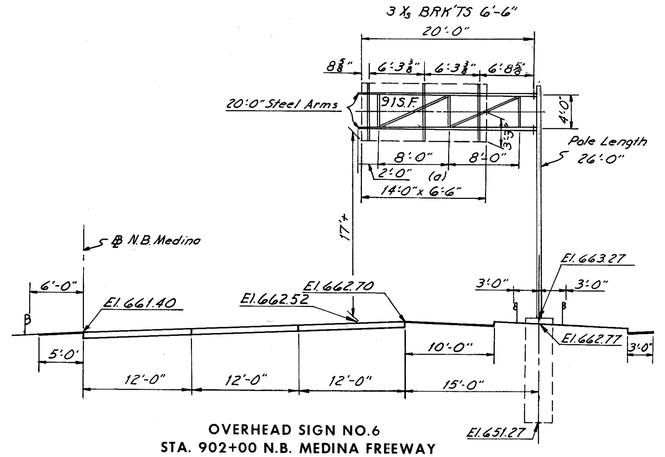
OVERHEAD SIGN NO.3
STA. 7+75 LANE H
STD. NO.7.3 — DESIGN NO.1 MOD.
54'-0" SPAN



OVERHEAD SIGN NO.4
STA. 891+60 N.B. MEDINA FREEWAY
STD. NO.7.5 — DESIGN NO.2 MOD.
59'-0" SPAN



OVERHEAD SIGN NO.5
STA. 15+40 LANE J
STD. NO. 7.3-DESIGN NO. 1 MOD.
44'-0" SPAN



OVERHEAD SIGN NO.6
STA. 902+00 N.B. MEDINA FREEWAY
STD. NO. 12.24-DESIGN NO. 4 MOD.
20'-0" ARM

Note :
Signs shown are those which will be a part of the future permanent installation.
Sizes of interim signs to be erected under this contract are not shown.
Sign sizes shown are the actual sizes and include the 1'-0" for glare shields.

SCALE 1/8"=1'-0" HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.O.J. DATE 1-15-65 CONSULTING ENGINEERS
TRCD. DATE
CKD. P.P.F. DATE 1-18-65 KANSAS CITY CLEVELAND NEW YORK

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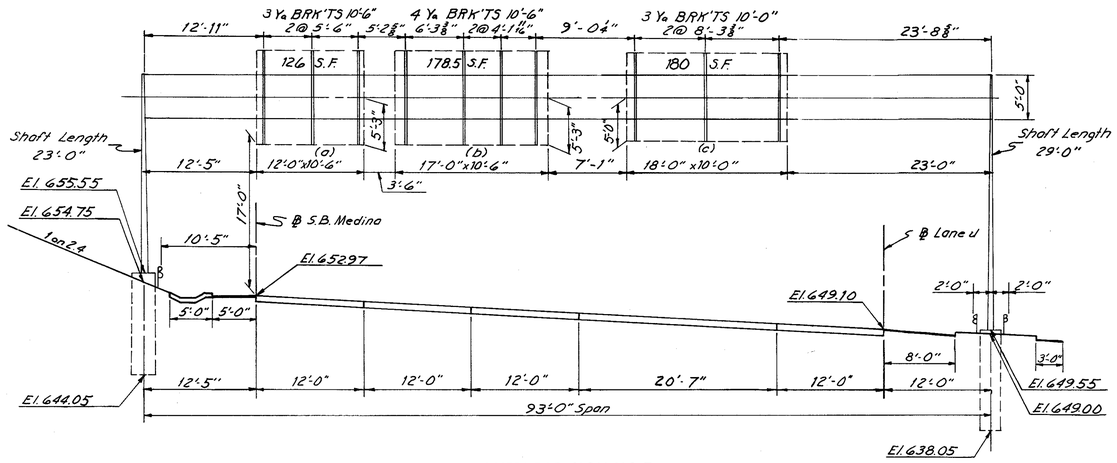
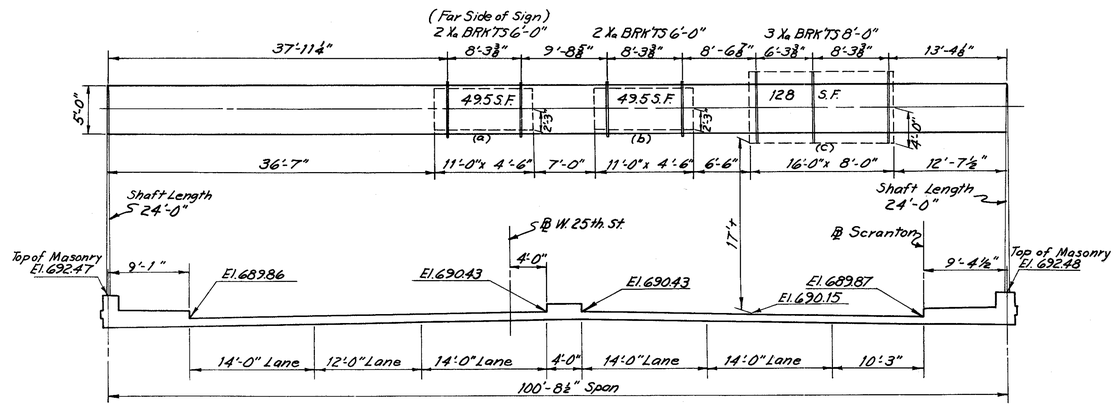
SIGN SUPPORT DETAILS

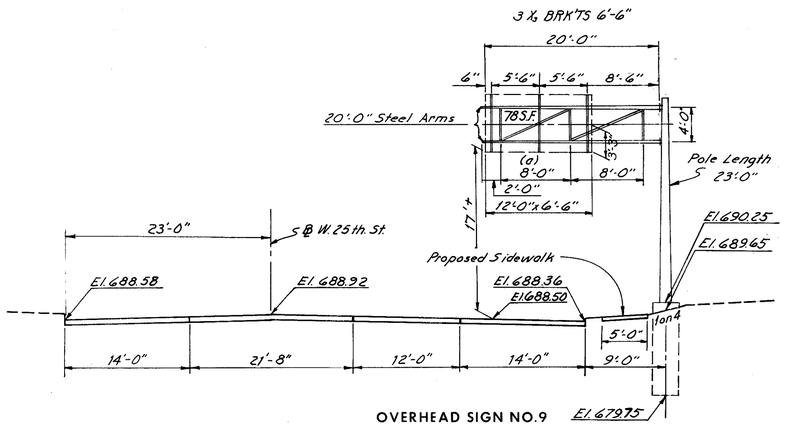


OVERHEAD SIGN NO.7
STA. 909+65 S.B. MEDINA FREEWAY
STD. NO. 7.6-DESIGN NO. 4 MOD.
93'-0" SPAN

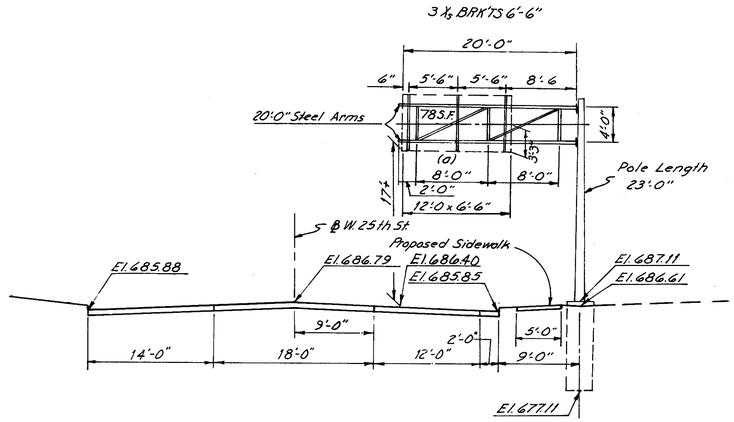


OVERHEAD SIGN NO.10
STA 14+80 WEST 25TH. STREET
STD. NO. 7.4-DESIGN NO. 4 MOD.
100'-8½" SPAN

Note: For Structural Connection Details see Sheet 146



OVERHEAD SIGN NO.9
STA. 22+60 WEST 25TH. STREET
STD. NO. 12.24-DESIGN NO.2
20'-0" ARM



OVERHEAD SIGN NO 14
STA. 8+60 WEST 25TH. STREET
STD. NO. 12.24-DESIGN NO.2
20'-0" ARM

Note: Light fixtures and support arms "G" shall be mounted at top of sign brackets of signs Nos. 9, 10 and 14. See Sheet 199

SCALE 1/8" = 1'-0" HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE R.D.J. DATE 1-15-65 CONSULTING ENGINEERS
TRCD. DATE
CKD. R.P.R. DATE 1-18-65 KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
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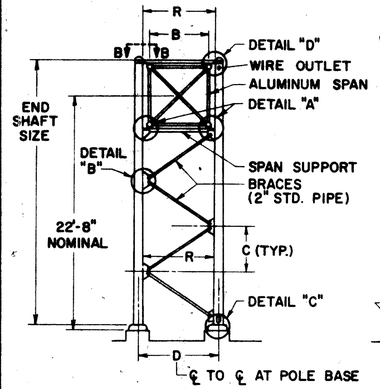
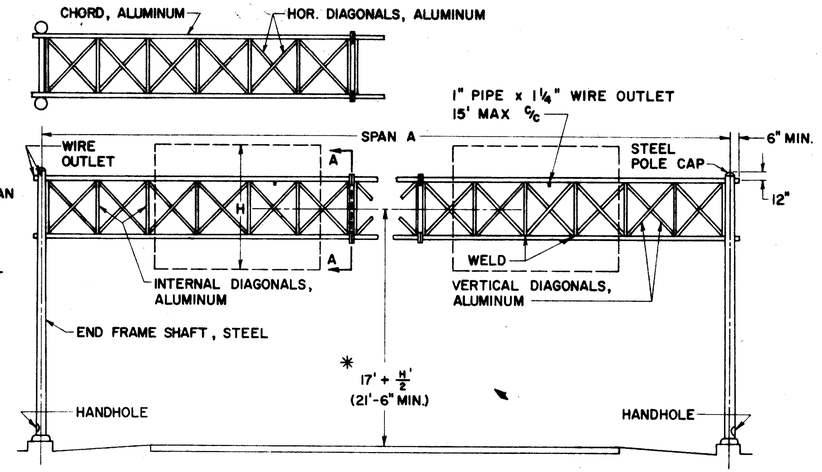
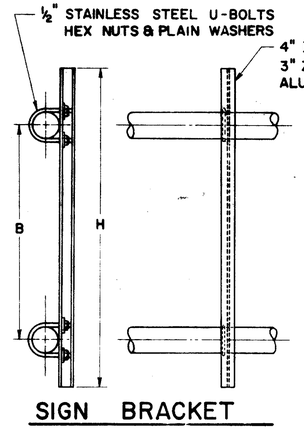
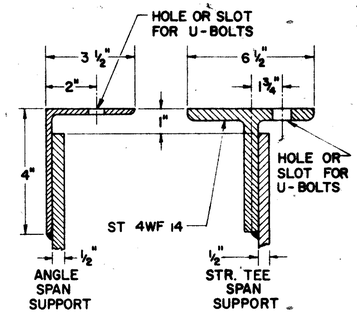


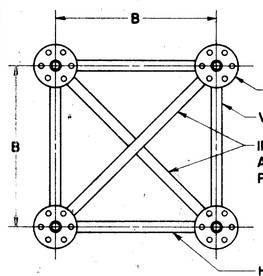




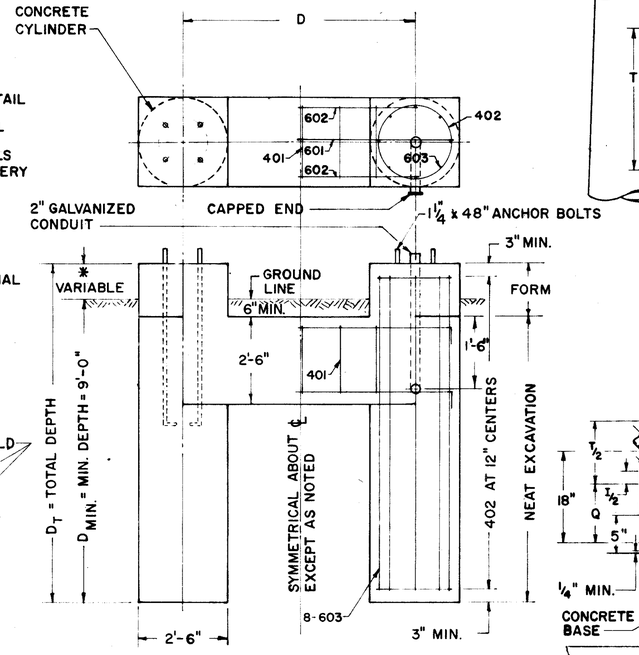
SIGN BRACKET



SECTION D-D

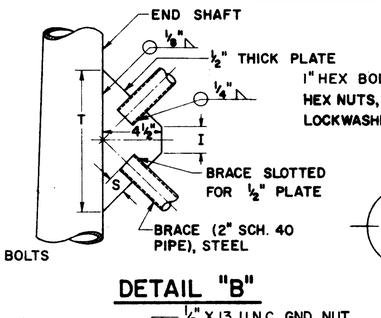


SECTION A-A

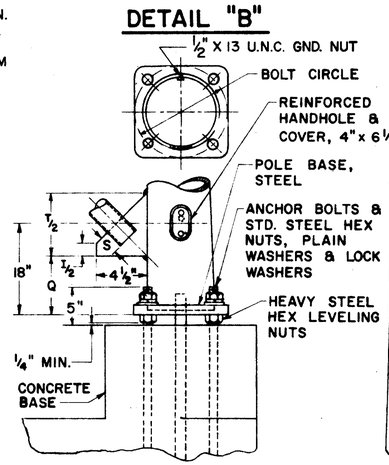


FOUNDATION DETAIL

(RIGHT HAND SHOWN - LEFT HAND OPPOSITE)

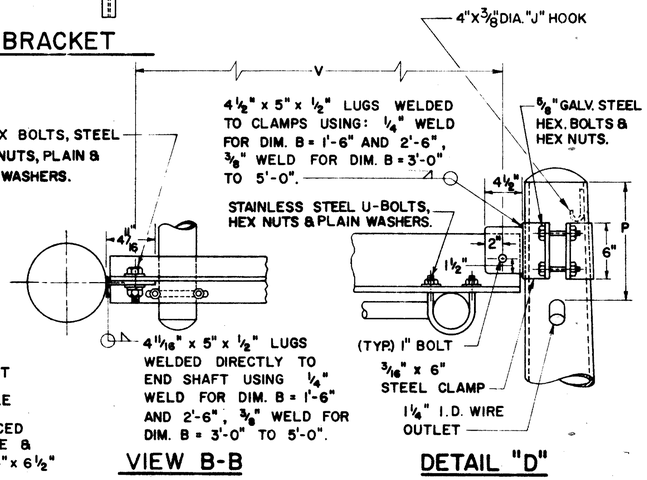


DETAIL "B"



DETAIL "C"

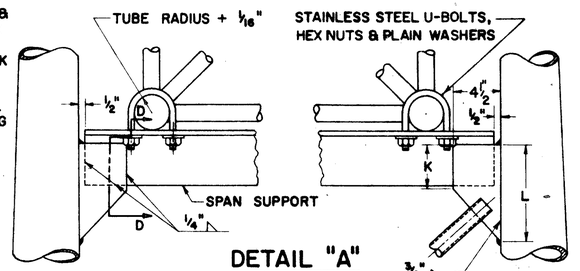
POLE BASE DETAIL



VIEW B-B

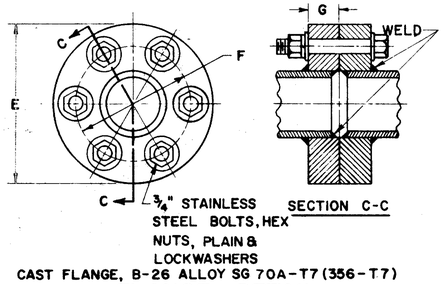
DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)



DETAIL "A"

LOWER SPAN SUPPORT



CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

FLANGE DETAIL

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION I-129 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d).

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD ¼" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

***FOUNDATION ELEVATION**

ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

CONDUIT IN FOUNDATION

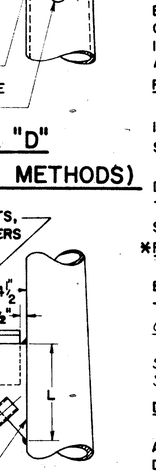
TWO 2" AND ONE ½" CONDUITS ARE REQUIRED PER SIGN SUPPORT. COST IS INCLUDED WITH I-129 SUPPORTS. SEE DETAIL SHEET 201

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50'Thru 55'	3'-0"	4'-11 3/4"	4'-5"	7"	8"x 4.5"x 25'-0",3GA	5'-10 3/16"	5½"	1¼"	3½"	4¾"	8"	12"	6⅝"	3'-9"	1½"	10"	⅝"	3'-3⅝"	11"	SPLIT TEE 3'-8"	3½" x .188"	1.660"x .140"	1.660"x .140"
2	56'Thru 80'	3'-0"	4'-11 3/4"	4'-5"	9¼"	8"x 4.5"x 25'-0",3GA	5'-10 3/16"	7 7/16"	1⅜"	3½"	4¾"	8"	12"	6⅝"	3'-9"	1½"	10"	⅝"	3'-3⅝"	11"	SPLIT TEE 3'-8"	4¾" x .188"	1.900"x .145"	1.660"x .140"
3	81'Thru 90'	4'-0"	4'-10¼"	5'-7"	9¼"	8"x6.22"x 25'-6",3GA	6'-7⅛"	7 7/16"	1⅜"	⅝"	4⅜"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5⅝"	11"	SPLIT TEE 4'-10"	4¾" x .188"	1.900"x .145"	1.900"x .145"
4	91'Thru 105'	4'-0"	4'-10¼"	5'-7"	9¼"	8"x6.22"x 25'-6",3GA	6'-7⅛"	7 7/16"	1⅜"	⅝"	4⅜"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5⅝"	11"	SPLIT TEE 4'-10"	4¾" x .188"	2"x .188"	1.900"x .145"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'-6"	102
402	12"C/C	7'-6"	103
601	4	D+ 4'-0"	101
602	8	D+ 2'-0"	101
603	32	DT - 6"	STR.



300 SQ. FT. SIGN AREA

OVERHEAD SIGN SUPPORT, I-129 NO.7.3

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS

I-129 No.7.3

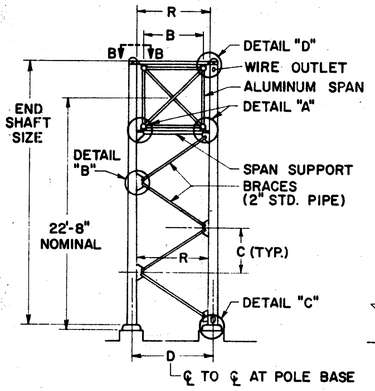
DATE 7-25-62 5-5-64 2-17-65

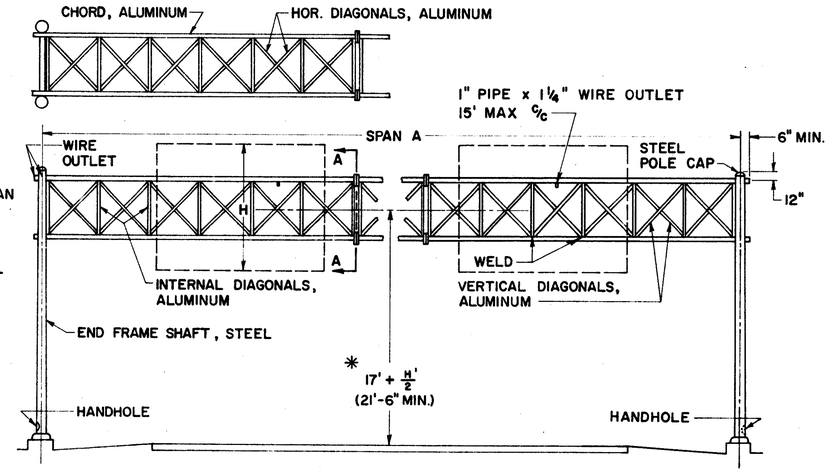
APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

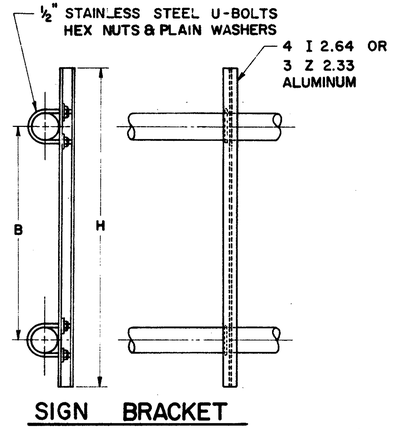
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

195A
241

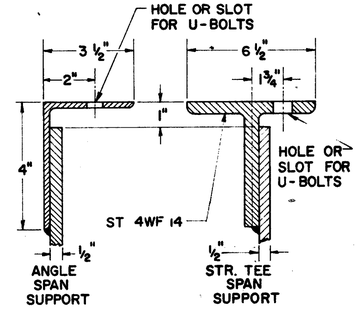
CUYAHOGA COUNTY
CUY-71-17.18







SIGN BRACKET



SECTION D-D

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION I-129 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d).

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD ¼" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS. BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

*FOUNDATION ELEVATION

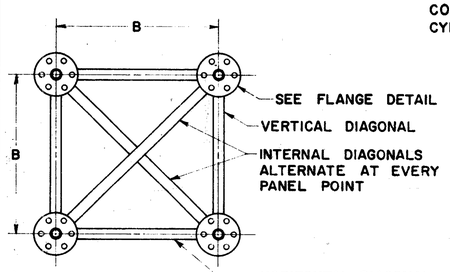
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

CONDUIT IN FOUNDATION

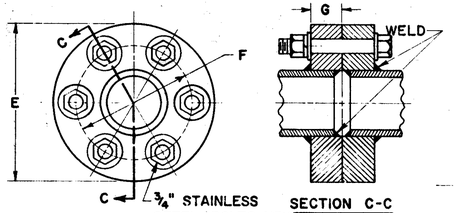
TWO 2" AND ONE ½" CONDUITS ARE REQUIRED PER SIGN SUPPORT. COST IS INCLUDED WITH I-129 SUPPORT. SEE DETAIL SHEET 201.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

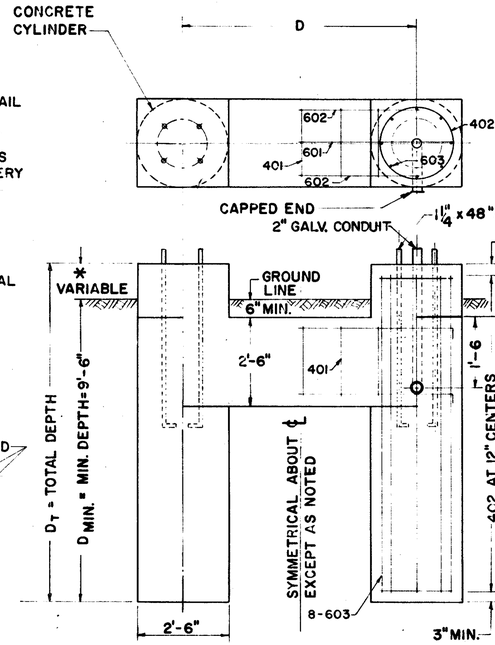


SECTION A-A

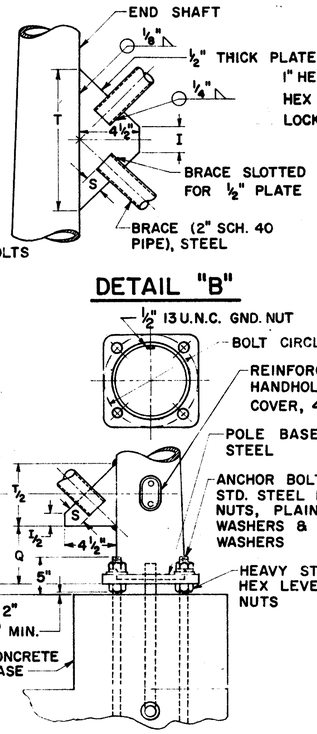


CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

FLANGE DETAIL

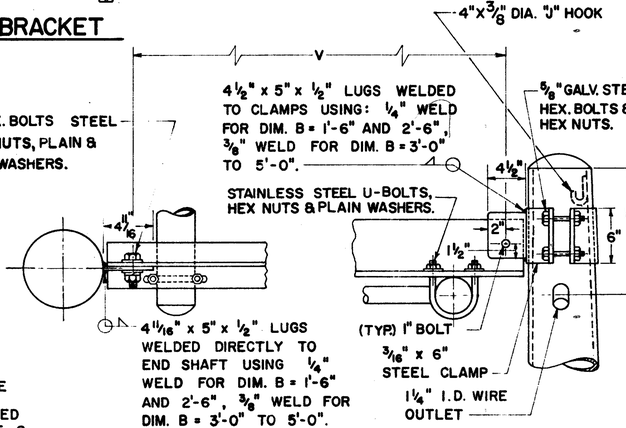


FOUNDATION DETAIL
(RIGHT HAND SHOWN — LEFT HAND OPPOSITE)



DETAIL "B"

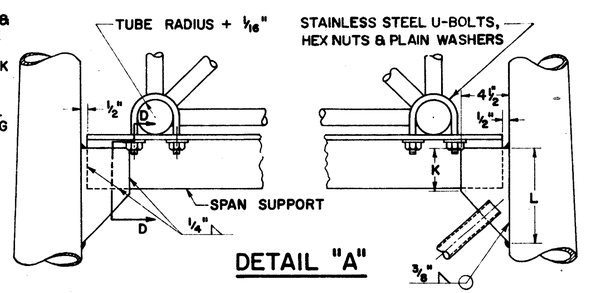
DETAIL "C"
POLE BASE DETAIL



VIEW B-B

DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)

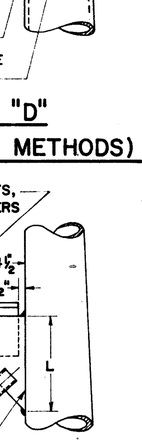


DETAIL "A"

LOWER SPAN SUPPORT

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' thru 75'	3'-0"	4'-11¾"	4'-5"	9¼"	8"x4.5"x25'-0", 3 GA.	5'-10 13/16"	7 7/16"	1⅜"	3½"	4¾"	8"	12"	6 5/8"	3'-9"	1½"	10"	⅝"	3'-3⅝"	11"	SPLIT TEE 3'-8"	4¾" x .188"	1.900" x .145"	1.660" x .140"
2	76' thru 85'	4'-0"	4'-10¼"	5'-7"	9¼"	8"X6.22"x25'-6" 3GA.	6'-7⅛"	7 7/16"	1⅜"	⅝"	4⅝"	7¾"	12'	6¼"	4'-10"	1½"	9½"	⅝"	4'-4⅝"	11"	SPLIT TEE 4'-10"	4¾" x .188"	2" x .188"	1.900" x .145"
3	86' thru 90'	4'-0"	4'-10½"	5'-7"	11"	8"X6.22"x25'-6" 3GA.	6'-7⅛"	8½"	1½"	⅝"	4⅝"	7¾"	42"	6¼"	4'-10"	1½"	9½"	⅝"	4'-4⅝"	11"	SPLIT TEE 4'-10"	5½" x .250"	2" x .188"	1.900" x .145"
4	91' thru 110'	5'-0"	4'-8½"	6'-7"	11"	8"X6.18"x26'-0", 3GA.	7'-3¼"	8½"	1½"	—	3½"	7¾"	12"	7¼"	5'-10"	1¾"	11¼"	¾"	5'-4⅝"	11"	SPLIT TEE 5'-10"	5½" x .250"	2½" x .188"	2½" x .188"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'-6"	102
402	12"C/C	7'-6"	103
601	4	D+ 4'-0"	101
602	8	D+ 2'-0"	101
603	32	D_T - 6"	STR.



BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS | I-129 No.7.4 | DATE 5-2-62, 7-25-62, 5-6-64

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

400 SQ. FT. SIGN AREA

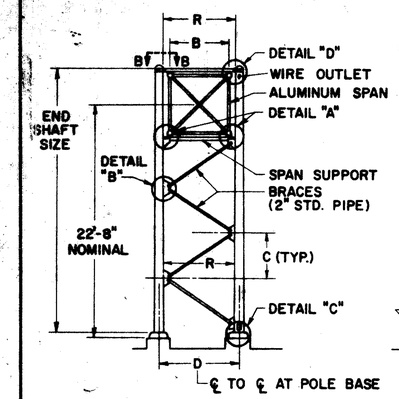
OVERHEAD SIGN SUPPORT, I-129 NO.7.4

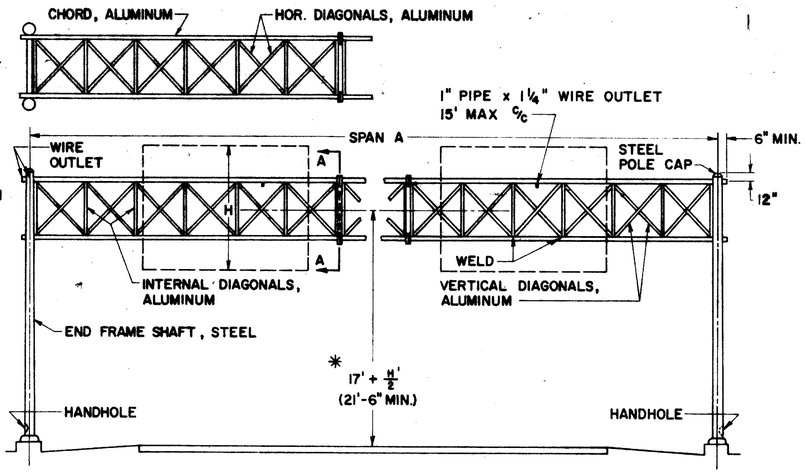
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

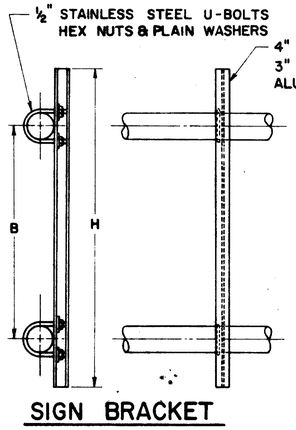
196
241

CUYAHOGA COUNTY
CUY.-71-17.18

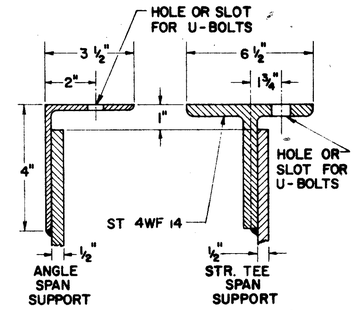
7
13



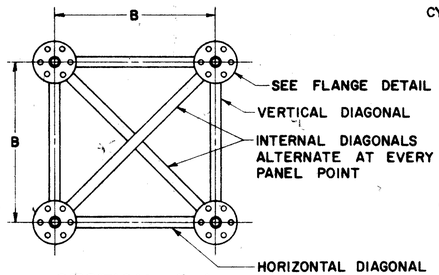




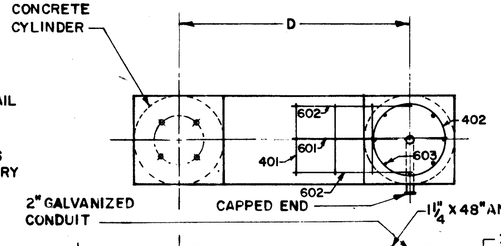
SIGN BRACKET



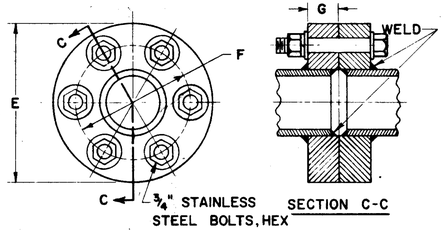
SECTION D-D



SECTION A-A

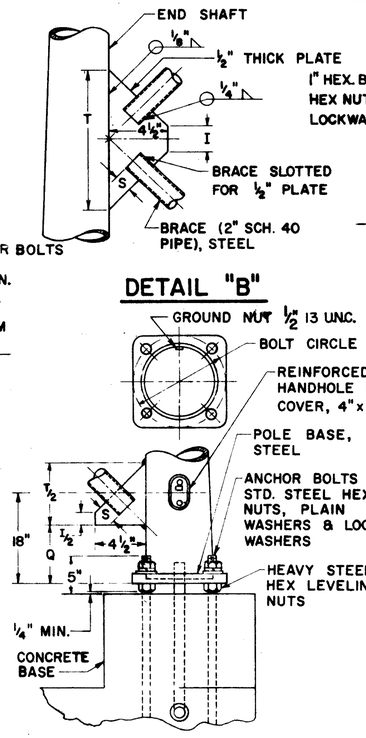


FOUNDATION DETAIL
(RIGHT HAND SHOWN — LEFT HAND OPPOSITE)



CAST FLANGE, B-26 ALLOY SG 70A-T7 (356-T7)

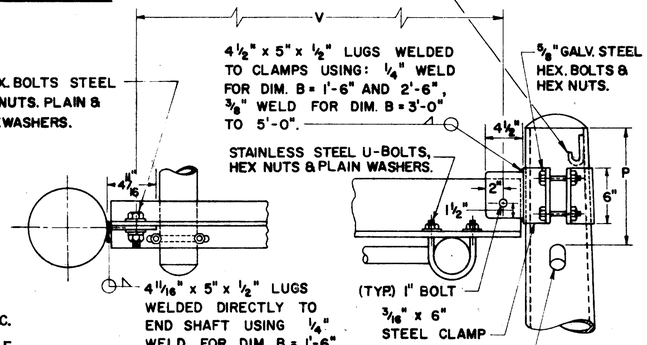
FLANGE DETAIL



DETAIL "B"

DETAIL "C"

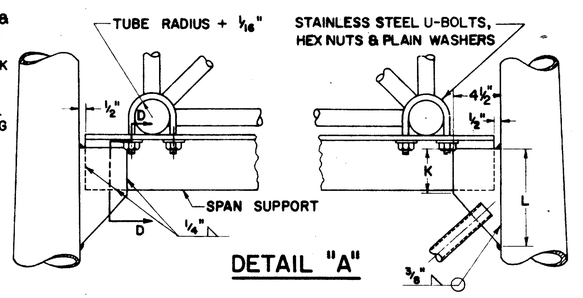
POLE BASE DETAIL



VIEW B-B

DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)



DETAIL "A"

LOWER SPAN SUPPORT

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION I-129 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d).

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD ¼" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR ARE USED, INDICATE THE BAR SIZE NUMBER.

*FOUNDATION ELEVATION

ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF PAVEMENT AND SHOULDERS.

CONDUIT IN FOUNDATION

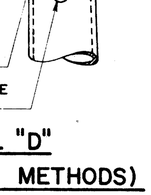
TWO 2" AND ONE 1½" CONDUITS ARE REQUIRED PER SIGN SUPPORT. COST IS INCLUDED WITH I-129 SUPPORTS. SEE DETAIL SHEET 201.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1	50' THRU 70'	3'-0"	4'-1 3/4"	4'-5"	9¼"	8"X4.5"X25'-0",3GA	5'-10 3/16"	7 7/16"	1 3/8"	3½"	4¾"	8"	12"	6 5/8"	3'-9"	1½"	10"	⅝"	3'-3 5/8"	11"	SPLIT TEE 3'—8"	4¾"X.188"	1.900"X.145"	1.660"X.140"
2	71' THRU 80'	4'-0"	4'-10¼"	5'-7"	9¼"	8"X6.22"X25'-6",3GA	6'-7 1/8"	7 7/16"	1 3/8"	⅝"	4 3/8"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5 5/8"	11"	SPLIT TEE 4'—10"	4¾"X.188"	2" X.188"	1.900"X.145"
3	81' THRU 86'	4'-0"	4'-10¼"	5'-7"	11"	8"X6.22"X25'-6",3GA	6'-7 1/8"	8½"	1½"	⅝"	4 3/8"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5 5/8"	11"	SPLIT TEE 4'—10"	5½"X.250"	2" X.188"	1.900"X.145"
4	86' THRU 110'	5'-0"	4'-8½"	6'-7"	11"	8"X6.18"X26'-0",3GA	7'-3¼"	8½"	1½"	—	3½"	7¾"	12"	7¼"	5'-11"	1¾"	11¼"	¾"	5'-5 5/8"	11"	SPLIT TEE 5'—10"	5½"X.250"	2½"X.188"	2½"X.188"

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'—6"	102
402	12"C/C	7'—6"	103
601	4	D+4'—0"	101
602	8	D+2'—0"	101
603	32	D_T—6"	STR.



BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS | I-129 No.7.5

DATE: 5-2-62, 7-25-62, 4-22-64, 2-17-65

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

500 SQ. FT. SIGN AREA

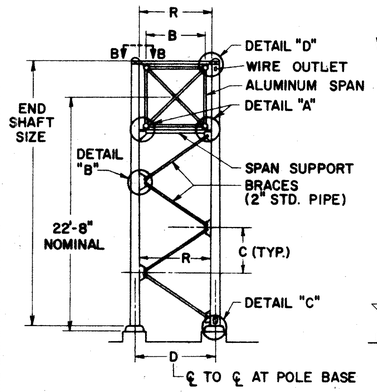
OVERHEAD SIGN SUPPORT, I-129 NO.7.5

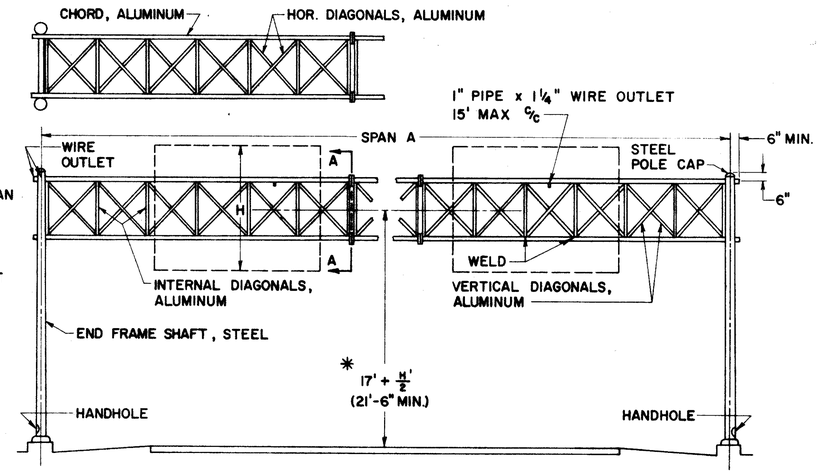
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

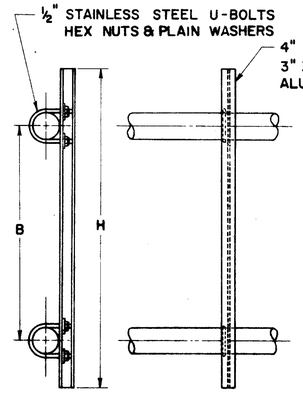
197
241

8
13

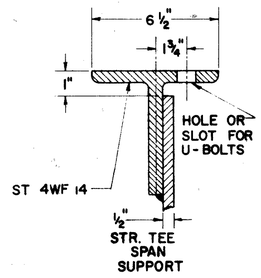
CUYAHOGA COUNTY
CUY.-71-17.18







SIGN ATTACHMENT



SECTION D-D

NOTES

MATERIALS

THE OVERHEAD SPAN TRUSS SHALL BE ALUMINUM AND THE END FRAMES SHALL BE STEEL.

SPAN TRUSS AND END FRAMES, INCLUDING HARDWARE, SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION I-129 UNLESS OTHERWISE NOTED.

STEEL POLE BASES AND GUSSETS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A-373.

AFTER FABRICATION THE TAPERED POLES SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

FABRICATION

THE ENTIRE STEEL END FRAME SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SEC. M-7.4(d).

MAXIMUM LENGTH OF SPAN SECTIONS IS 30 FT.

ERECTION

USE A MINIMUM OF 1" CAMBER IN SPAN TRUSS MEMBER FOR A 50' SPAN; ADD ¼" OF CAMBER FOR EACH 5' OF INCREASE IN SPAN OVER 50'.

PAYMENT

PAYMENT FOR THE GALVANIZED CONDUIT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS.

SOILS

THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).

FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL

COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

BAR SIZE IS INDICATED IN THE BAR MARK. THE FIRST DIGIT WHERE THREE DIGITS ARE USED AND THE FIRST TWO DIGITS WHERE FOUR DIGITS ARE USED, INDICATE THE BAR SIZE NUMBER.

***FOUNDATION ELEVATION**

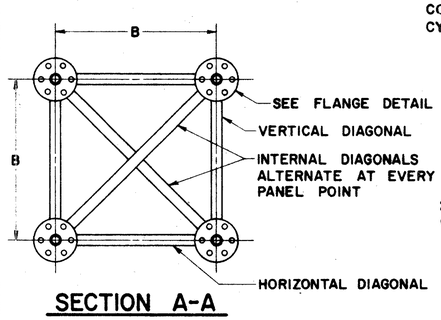
ELEVATION OF TOPS OF FOUNDATIONS SHALL BE BUILT UP SO THAT 17' CLEARANCE IS MAINTAINED OVER THE ENTIRE WIDTH OF THE PAVEMENT AND SHOULDERS.

CONDUIT IN FOUNDATION

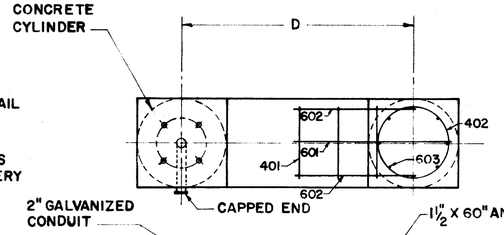
TWO 2" AND ONE ½" CONDUITS ARE REQUIRED PER SIGN SUPPORT COST IS INCLUDED WITH I-129 SUPPORTS. SEE DETAIL SHEET 201.

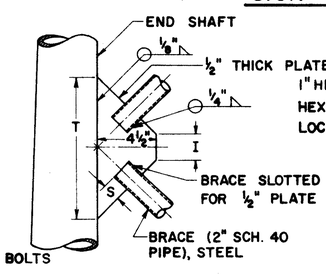
DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATION FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

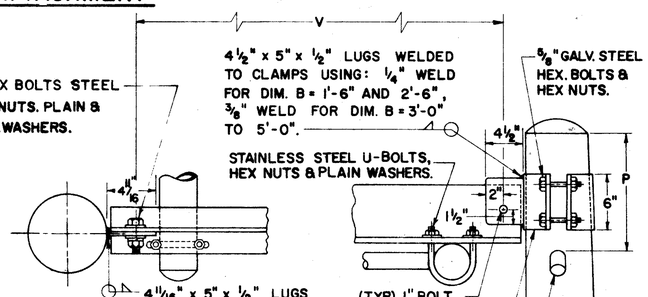


SECTION A-A





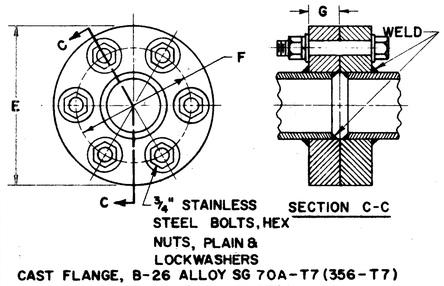
DETAIL "B"



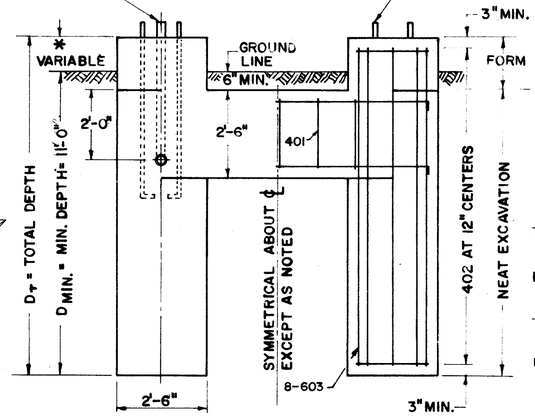
VIEW B-B

DETAIL "D"

UPPER SPAN SUPPORT (ALTERNATE METHODS)

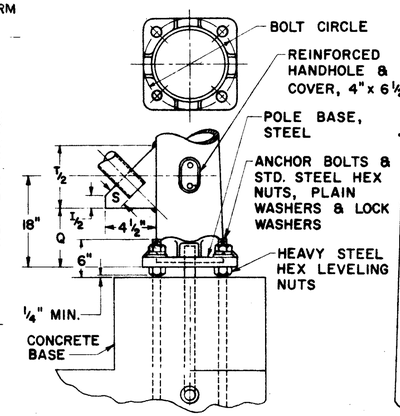


FLANGE DETAIL



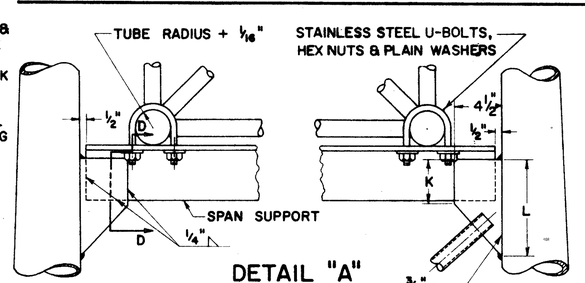
FOUNDATION DETAIL

(RIGHT HAND SHOWN—LEFT HAND OPPOSITE)



DETAIL "C"

POLE BASE DETAIL



DETAIL "A"

LOWER SPAN SUPPORT

DESIGN NO.	SPAN A	B	C	D	E	END SHAFT	BRACE LENGTH	F	G	I	K	L	P	Q	R	S	T	U BOLTS	V	BOLT CIRCLE	SPAN SUPPORT SECTION D-D	CHORDS	HORIZONTAL AND INTERNAL DIAGONAL	VERTICAL DIAGONAL
1.	50' thru 65'	3'-0"	4'-11¾"	4'-5"	9¼"	8"X4.5 X25'-0",3GA	5'-10 5/16"	7 7/16"	1⅜"	3½"	4¾"	8"	12"	6⅝"	3'-9"	1½"	10"	⅝"	3'-3⅝"	11"	Split Tee 3'-8"	4¾" X.188"	2" X.188"	1.660"X.140"
2.	70' thru 75'	4'-0"	4'-10¼"	5'-7"	9¼"	8"X6.25X25'-0",3GA	6'-7⅛"	7 7/16"	1⅜"	⅝"	4¾"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5⅝"	10"	Split Tee 4'-10"	4¾"X.188"	2' X.188"	1.900"X.145"
3.	80'	4'-0"	4'-10¼"	5'-7"	11"	8"X6.25X25'-6",3GA	6'-7⅛"	8½"	1½"	⅝"	4⅜"	7¾"	12"	6¼"	4'-11"	1½"	9½"	⅝"	4'-5⅝"	10"	Split Tee 4'-10"	5½"X.250	2½"X.188"	1.900"X.145"
4.	85' thru 110'	5'-0"	4'-8½"	6'-7"	11"	8"X6.18 X26'-0",3GA	7'-3¼"	8½"	1½"	—	3½"	7¾"	12"	7¼"	5'-11"	1¾"	11¼"	¾"	5'-5⅝"	10"	Split Tee 5'-10"	5½"X.250	2½"X.188	2½"X.188

REINFORCEMENT SCHEDULE			
MARK	NO.	LENGTH	TYPE
401	12"C/C	8'—6"	102
402	12"C/C	7"—6"	103
601	4	D+4'—0"	101
602	8	D+2'—0"	101
603	32	D_T — 6"	STR.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORTS

I-129 No.7.6

DATE 2-17-65

APPROVED _____ ENGINEER OF TRAFFIC

600 SQ. FT. SIGN AREA

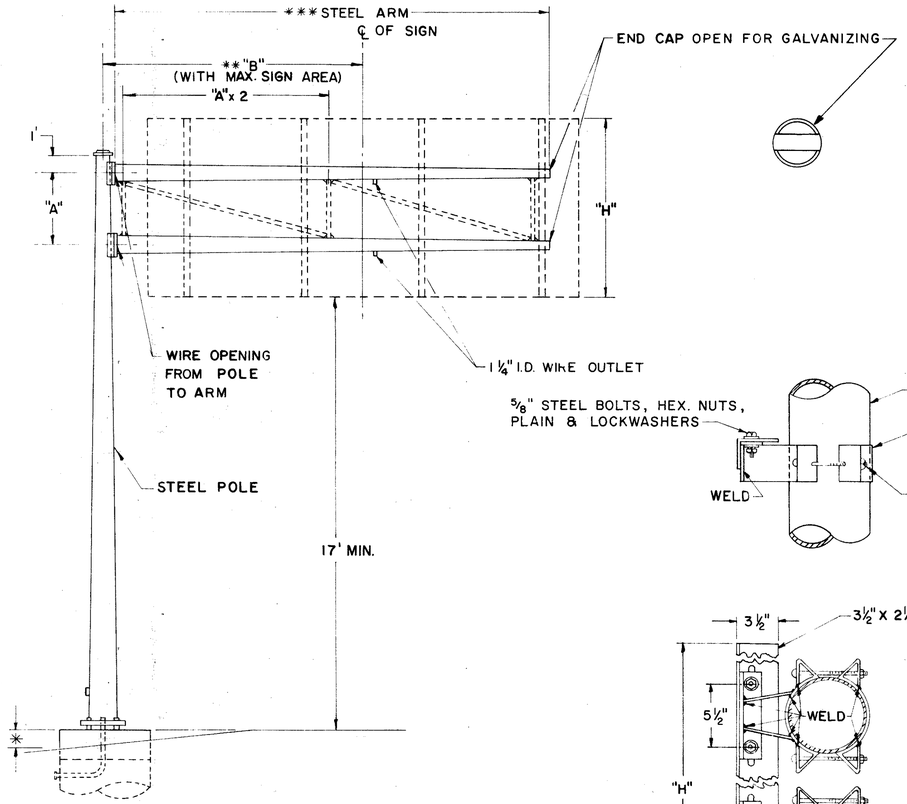
OVERHEAD SIGN SUPPORT, I-129 NO.7.6

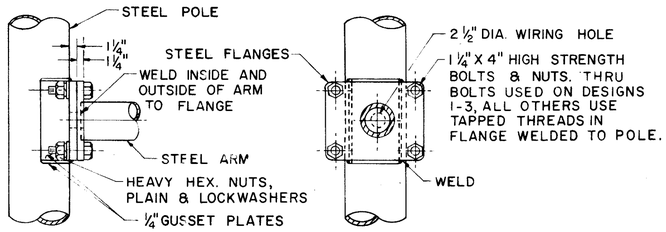
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

198
241

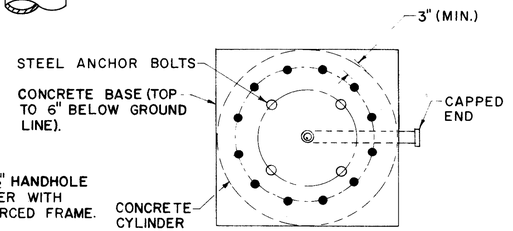
CUYAHOGA COUNTY
CUY.-71-17.18

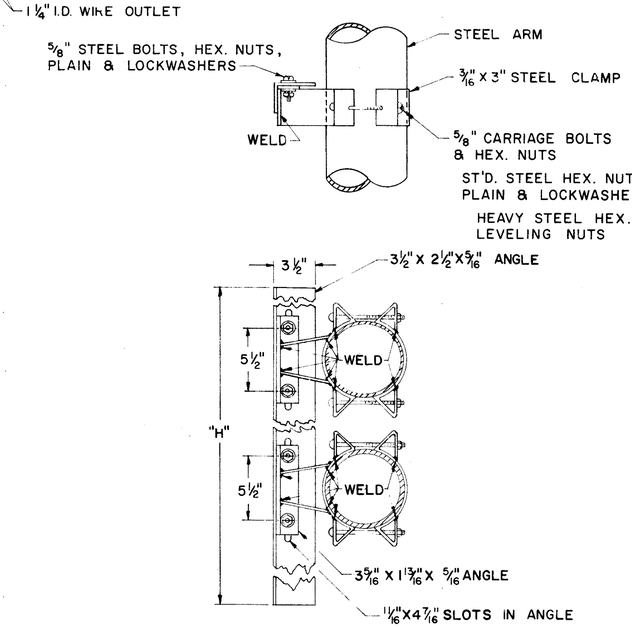
9
13

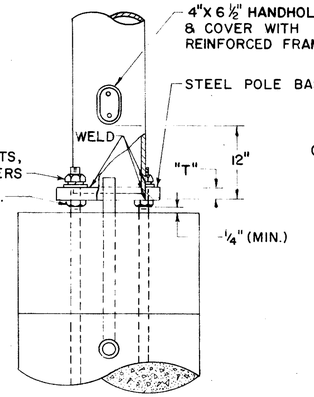


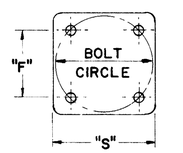


ARM ATTACHMENT





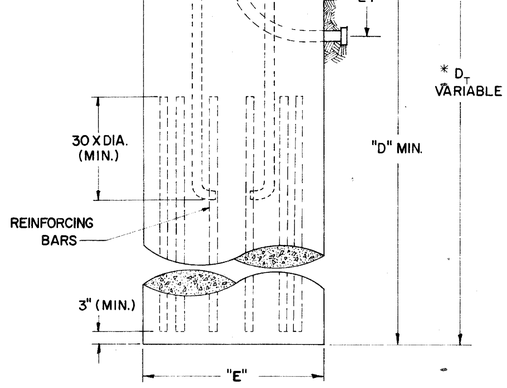




SIGN ATTACHMENT DETAIL

POLE DETAIL

DESIGN NO.	POLE SIZE	*** ARM SIZE	DIM A	DIM ** B	DIM "D" MIN.	DIM F	DIM F	DIM P	DIM S	DIM T	BOLT CIRCLE	ANCHOR BOLT SIZE	MAX SIGN AREA	REINF. BARS SIZE	REINF. BARS NO.
1	3 Ga, 12" X 8.78" X 23'-0"	7Ga, 6.9" X 4.66" X16'-0"	4'	12'	9'	3'-0"	11 5/16"	7¾"	17"	2"	16"	1¾" X 90"	80	¾"	12
2	3 Ga, 12" X 8.78" X 23'-0"	7 Ga, 8" X 5.2" X 20'-0"	4'	16'	9'	3'-0"	11 5/16"	7¾"	17"	2"	16"	1¾" X 90"	80	¾"	12
3	3 Ga, 15" X 11.5" X 25'-0"	7 Ga, 8.3" X 6.06" X16'-0"	4'	12'	11'	3'-0"	15½"	8⅜"	23"	2"	22"	2" X 96"	120	1"	12
4	3 Ga, 16" X 12.5" X 25'-0"	3 Ga, 9.2" X 6.40" X20'-0"	4'	16'	11'	3'-0"	16 5/8"	8⅜"	24½"	2"	23½"	2" X 96"	120	1"	12
5	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 11" X 7.92" X 22'-0"	6'	14'	13'	3'-0"	18"	9⅜"	26½"	2½"	25½"	2¼" X 120"	180	1⅛"	12
6	0 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 8.86" X26'-0"	6'	18'	13'	3'-0"	18"	9⅜"	26½"	2½"	25½"	2¼" X 120"	180	1⅛"	12
7	2 PLY 7 Ga, 18" X 14.36" X 26'-0"	7 Ga, 12.5" X 9.14" X 24'-0"	6'	14'	15'	3'-0"	18"	9¾"	26½"	2½"	25½"	2½" X 144"	240	1¼"	12
8	2 PLY ¼", 18" X 14.36" X 26'-0"	3 Ga, 12.5" X 8.58" X 28'-0"	6'	18'	15'	3'-0"	18"	11¼"	26½"	3"	25½"	3" X 144"	240	1¼"	12



FOUNDATION DETAIL

NOTES

FABRICATION - ALL PORTIONS OF THE SIGN SUPPORT, INCLUDING SIGN ATTACHMENTS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. DESIGNATIONS A-123 AND A-153. THE CONDUIT SHALL BE GALVANIZED IN ACCORDANCE WITH SEC. S-25.08 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OVERHEAD SIGN SUPPORTS FOR PAYMENT.

* FOUNDATION- THE TOP ELEVATION OF FOUNDATIONS SHALL BE VARIED SO AS TO MAINTAIN A MINIMUM CLEARANCE OF 17' BETWEEN THE BOTTOM OF THE SIGN AND THE HIGHWAY CROWN.

** ERECTION- VALUES OF "B" MAY BE EXCEEDED PROVIDED THE PRODUCT OF ACTUAL SIGN AREA TIMES THE DISTANCE FROM ℄ OF POLE TO ℄ OF SIGN DOES NOT EXCEED THE MAX. SIGN AREA TIMES "B".

*** ARMS 20' LONG OR LONGER ARE TO BE TRUSS TYPE WITH 3" X 3" X ⅜" ANGLES WELDED TO GUSSET PLATES.

MATERIAL- STEEL POLE BASES, FLANGES, AND END CAPS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 30 GRADE B.
HIGH STRENGTH STEEL BOLTS SHALL CONFORM TO ASTM SPECIFICATION A 193 GRADE B7
AFTER FABRICATION TAPERED POLES AND ARMS SHALL HAVE A MINIMUM YIELD STRENGTH OF 48,000 PSI.

SOILS- THE FOUNDATION DETAILS SHOWN ARE FOR AVERAGE SOIL CONDITIONS (MEDIUM CLAY, CEMENTED SAND AND GRAVEL, SANDY CLAY, OR STIFF CLAY).
FOR POOR SOIL CONDITIONS, INCREASE "D" MIN. BY: 50% IN DRY OR WET SAND, 60% IN SILTY CLAY, 100% IN SOFT CLAY, AND FROM 75% TO 150% IN WET SILT, DEPENDING ON QUICKSAND ACTION.

REINFORCING STEEL- REINFORCING STEEL AS SHOWN IN TABLE SHALL BE INSTALLED WHEN "D," EXCEEDS THE ANCHOR BOLT LENGTH BY MORE THAN 3 FT. THE COST AND PLACEMENT OF REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE FOR ITEM I-129 CONCRETE FOR SIGN SUPPORT FOUNDATIONS.

DESIGN

THE DESIGN OF OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

CONDUIT IN FOUNDATION

TWO 2" AND ONE ½" CONDUITS ARE REQUIRED PER SIGN SUPPORT. COST IS INCLUDED WITH I-129 SUPPORTS. SEE DETAIL SHEET 201.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

OVERHEAD SIGN SUPPORT

I-129
No. 12.24

DATE
8-18-61
4-11-62
2-17-65

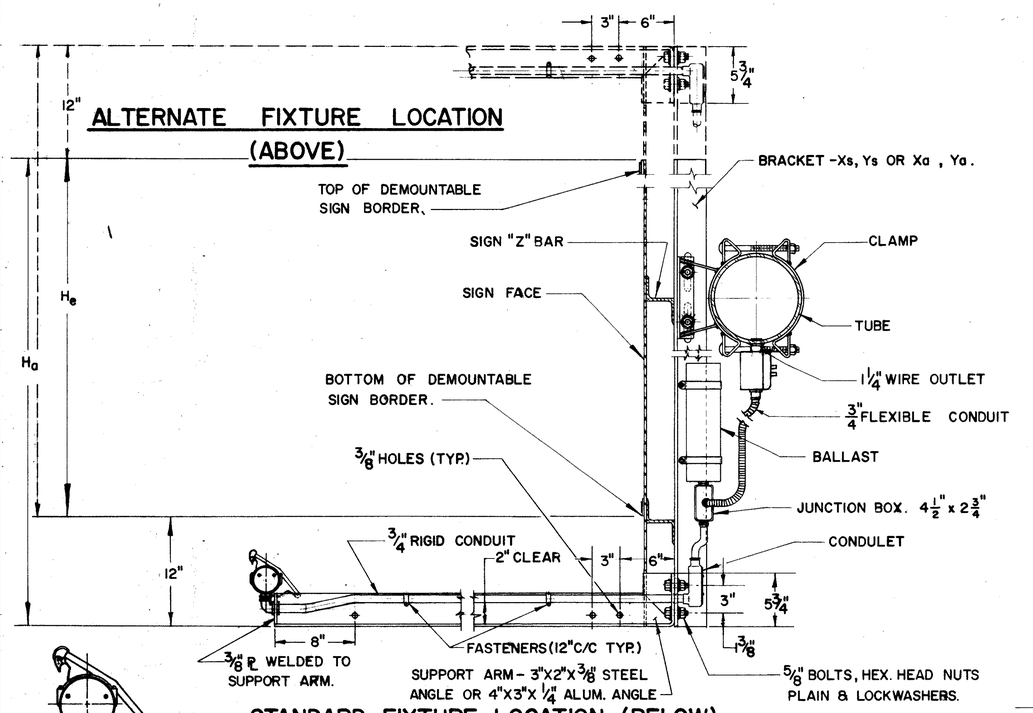
APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

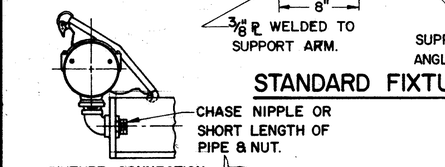
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

199/241

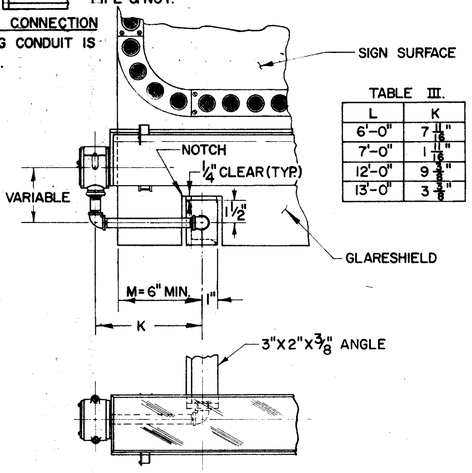
CUYAHOGA COUNTY
CUY.-71-17.18

10/13





FIXTURE CONNECTION WHERE WIRING CONDUIT IS NOT NEEDED.

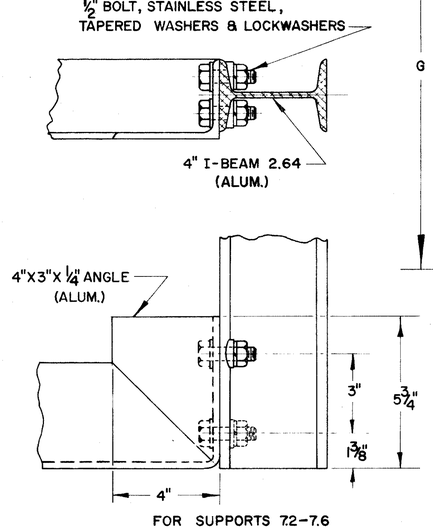


ALTERNATE FIXTURE CONNECTIONS FOR SIGN 6', 7', 12' & 13' IN LENGTH.

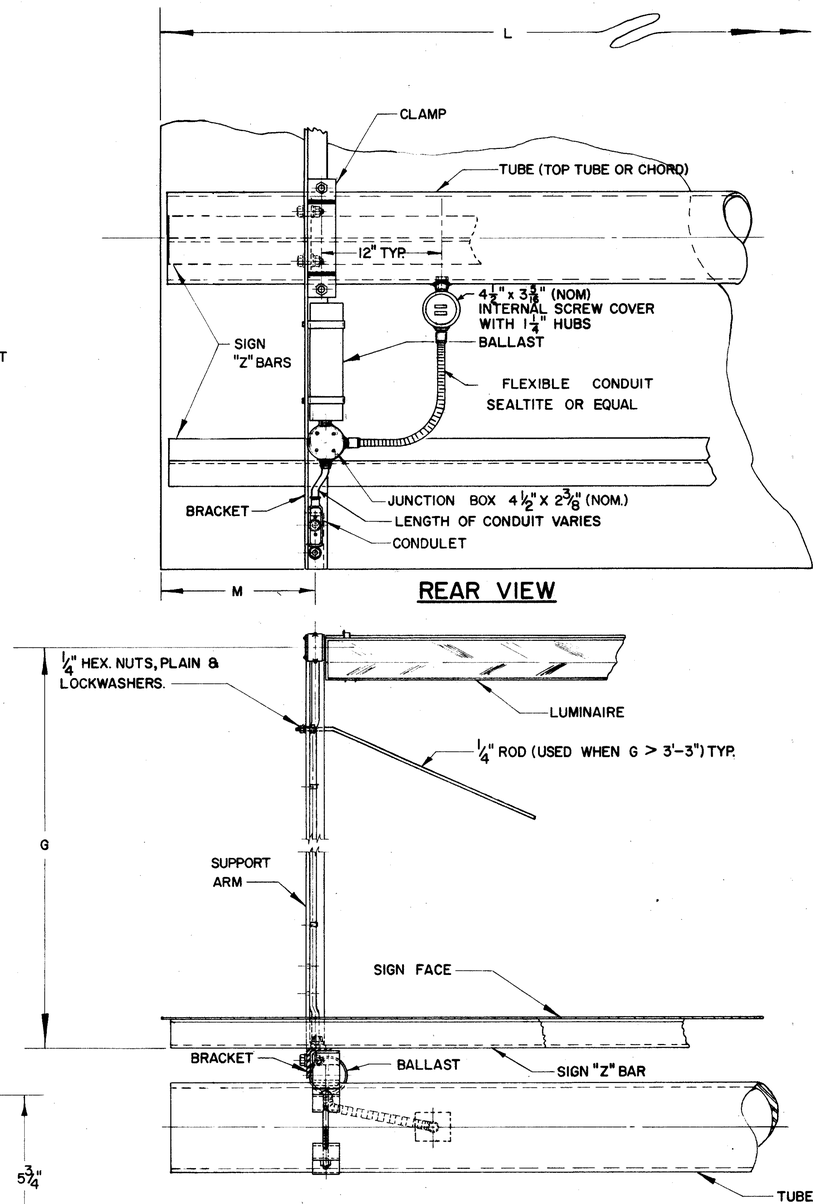
TABLE III.

L	K
6'-0"	7 11/16"
7'-0"	1 15/16"
12'-0"	9 3/16"
13'-0"	3 5/16"

DETAIL A.



DETAIL B.



FABRICATION — ALL STRUCTURAL COMPONENTS SHOWN ON THIS SHEET SHALL CONFORM TO SUPPLEMENT SPECIFICATIONS I-129.

MATERIALS — THE MATERIALS USED IN THE COMPONENTS SHOWN ON THIS SHEET SHALL BE IN CONFORMANCE WITH THE MATERIALS USED IN THE SIGN SUPPORT.

TABLE I.

"L" SIGN LENGTH A	"L" SIGN LENGTH B	NUMBER OF FIXTURES 75⅜"	NUMBER OF FIXTURES 99⅜"	"M" EDGE DISTANCE A LT.	"M" EDGE DISTANCE A RT.	"M" EDGE DISTANCE B LT.	"M" EDGE DISTANCE B RT.	NO. BALLAST
6'-0"	7'-0"	1		6"	6"	6"	6"	1
8'-0"	9'-0"	1		10 3/16"	10 1/4"	16 3/16"	16 1/4"	1
10'-0"	11'-0"		1	10 3/16"	10 1/4"	16 3/16"	16 1/4"	1
12'-0"	13'-0"	2		6"	6	6	6	1
14'-0"	15'-0"	2		8 5/16"	8 5/16"	14 5/16"	14 5/16"	1
16'-0"	17'-0"	1	1	8 5/16"	8 5/16"	14 5/16"	14 5/16"	1
18'-0"	19'-0"		2	8 5/16"	8 5/16"	14 5/16"	14 5/16"	1
20'-0"	21'-0"	3		7"	6 7/8"	13	12 7/8"	2
22'-0"	23'-0"	2	1	7"	6 7/8"	13	12 7/8"	2
24'-0"	25'-0"	1	2	7"	6 7/8"	13	12 7/8"	2
26'-0"	27'-0"		3	7"	6 7/8"	13	12 7/8"	2

Sn= Nominal Fixture Length, 72" & 96" respectively.
Sa= Actual Fixture Length, for mounting purposes, 75 3/8" and 99 3/8" respectively. (Slight variation for different manufacturers.)
M= Distance from edge of sign to ℄ of notch, min. 6". When the length of the sign minus 1'-0" is less than the sum of the actual fixture lengths, an offset "K" is used. For additional details see detail A and table III.

TABLE II

MAX. BRACKET SPACING FOR EXTERNALLY ILLUMINATED SIGNS

ACTUAL SIGN HEIGHT "Ha"	SUPPORT TYPES: 9.12, 11.08, 13.2, 7.2 — SINGLE TUBE DOUBLE TUBE LESS 36" C/C	9.24, 10.48, 12.24, 14.5, 15.8, 7.2 to 7.6 — DOUBLE TUBE C/C 36"-42"	C/C 48"-54"	C/C 60"-72"
	MAXIMUM BRACKET SPACING			
to 5'-0"	6'-4" with X 8'-4" with Y	8'-4" with X	8'-4" with X	6'-4" with X
5'-6" to 8'-0"	6'-4" with Y	4'-2" with X 6'-4" with Y	6'-4" with X 8'-4" with Y	8'-4" with X
8'-6" to 10'-0"	3'-2" with X 4'-2" with Y	6'-4" with Y	6'-4" with Y	8'-4" with Y
10'-6" to 12'-0"	———	4'-2" with Y	6'-4" with Y	6'-4" with Y
12'-6" to 14'-0"	———	3'-2" with Y	3'-2" with Y	4'-2" with Y

Ha= ACTUAL SIGN HEIGHT
He= EFFECTIVE SIGN HEIGHT
BRACKET SIZE: Xs = 3½" X 2½" X 5/16" — L @ 6.1 LB. STEEL; Ys = 4" X 3 1/16" X ¼" — Z @ 8.2 LB. STEEL } 9.12, 10.48, 11.08, 12.24, 14.5 & 15.8
Xa = 3" X 2 11/16" X ¼" — Z @ 2.33 LB. ALUM.; Ya = 4" X 2 29/32" X 3/16" — I @ 2.64 LB. ALUM. } 7.2 Thru 7.6

WHEN MAX. ALLOWABLE SPACING IS LESS THAN ACTUAL FIXTURE LENGTHS, Sa, ADDITIONAL STANDARD BRACKETS MUST BE FURNISHED, EQUAL IN HEIGHT TO "Ha".

SUPPORTS 7.2 THROUGH 7.6 SHALL HAVE AN ALUMINUM FIXTURE ARM, 4"X3"X¼" ANGLE. SEE DETAIL B. BOLTS AND ACCESSORIES SHALL BE STAINLESS STEEL.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

STRUCTURAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

EI-1

DATE 10-15-68, 5-15-69, 10-29-69

APPROVED Jack C Taylor
ENGINEER OF TRAFFIC

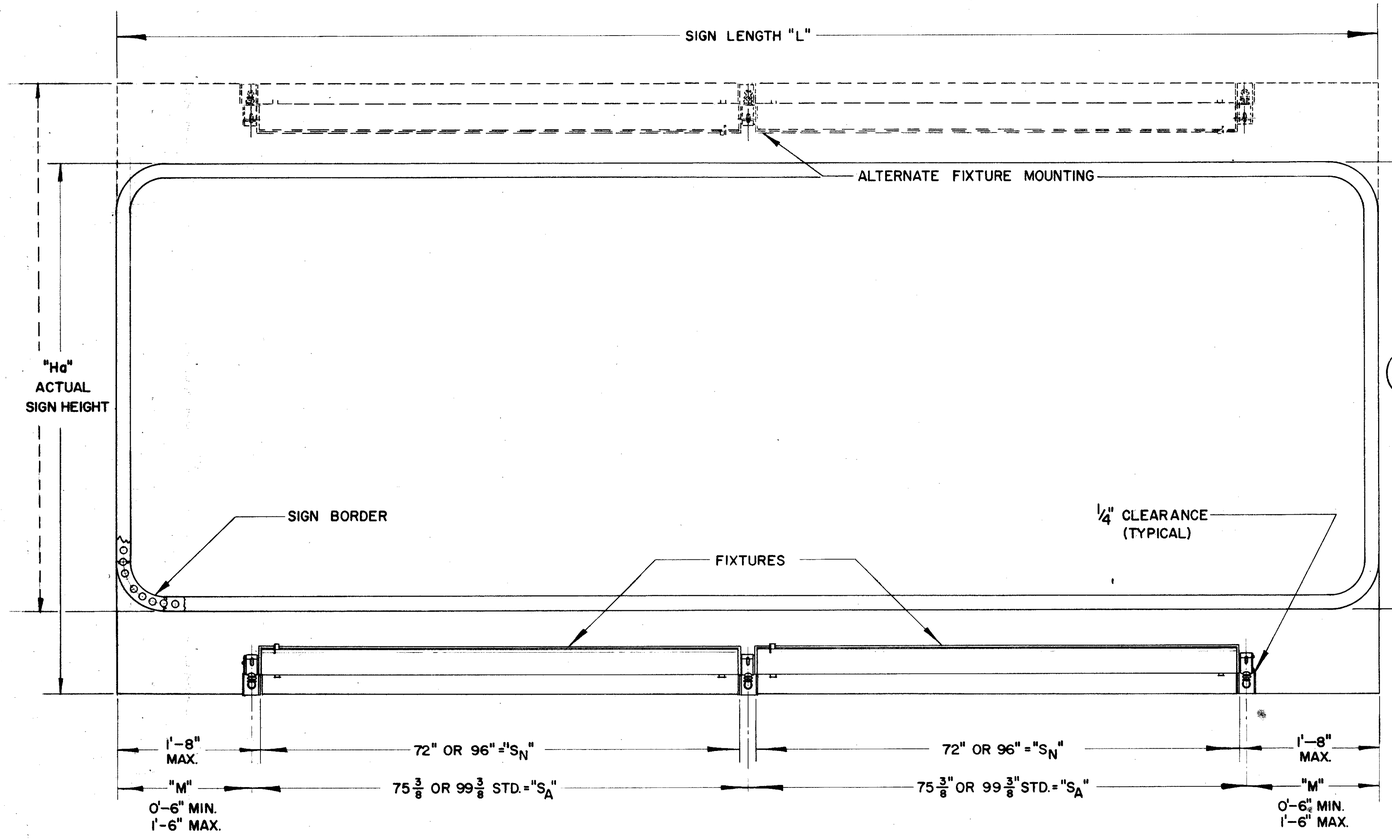
STRUCTURAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

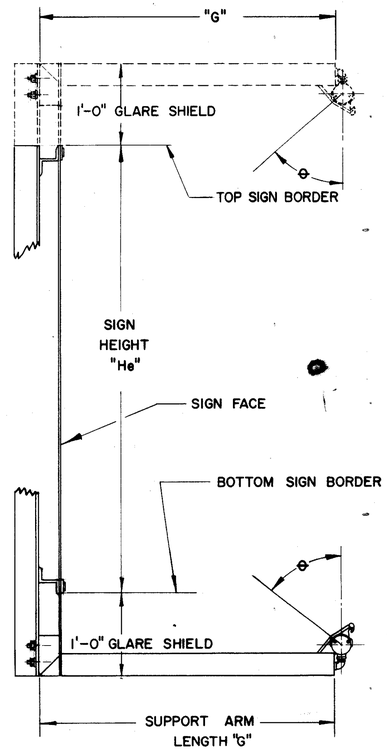
FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

200
241

14
13

CUYAHOGA COUNTY
CUY.-71-17.18
SIGN LIGHTING NOTES





SIGN ILLUMINATION

SIGN ILLUMINATION SHALL BE BY ATTACHED FLUORESCENT FIXTURES AS SHOWN ON ILLUMINATED SIGN DETAIL SHEETS.

LAMPS

LAMPS SHALL BE TYPE F72 OR F96-T12/CW/HO AS MANUFACTURED BY WESTINGHOUSE, GENERAL ELECTRIC OR APPROVED EQUAL FOR SIGNS TO A MAXIMUM HEIGHT OF 6'-6". LAMP TYPE SHALL BE F72 OR F96-T12/CW/SHO AS MANUFACTURED BY WESTINGHOUSE, F72 OR F96-P617/CW AS MANUFACTURED BY GENERAL ELECTRIC, OR APPROVED EQUAL FOR SIGNS THAT ARE 7'-0" OR GREATER IN HEIGHT.

LAMP FIXTURES

LIGHTING FIXTURES SHALL BE CONSTRUCTED OF CORROSION RESISTANT MATERIALS OR WITH HIGH QUALITY CORROSION RESISTANT FINISH. ALL FIXTURES SHALL BE SPECIFICALLY DESIGNED FOR OUTDOOR SIGN LIGHTING SERVICE. MAJOR COMPONENTS SHALL INCLUDE WEATHERPROOF CAST ALUMINUM MOUNTING HUBS DESIGNED TO SECURELY LOCK THE FIXTURES AT ANY ANGLE THROUGH 360 DEGREES. INDICATORS IN 10 DEGREE INCREMENTS SHALL BE STAMPED OR CAST INTO THE HUB TO FACILITATE PROPER AIMING OF THE FIXTURE. FINAL ADJUSTMENT OF FIXTURE SHALL BE DONE AT NIGHT UNDER THE PROJECT ENGINEER'S DIRECTION.

THE BODY DESIGN OF THE FIXTURE SHALL PROVIDE AN ASYMMETRIC SPECULAR ALZAK REFLECTOR TO GIVE A HIGH LEVEL OF UNIFORM ILLUMINATION AND SHALL PROVIDE A WIREWAY FROM END TO END. WHEN ADJACENT FIXTURES ARE WIRED TOGETHER THROUGH THE WIREWAY, WIRE BETWEEN FIXTURES SHALL BE ENTIRELY ENCLOSED.

EXTERIOR FINISH OF THE FIXTURE BODY SHALL BE INTERSTATE GREEN COLOR, HEAT RESISTANT BAKED ENAMEL AS #8950 UNIVERSAL PAINT AND VARNISH INC.*, OR APPROVED EQUAL. REFLECTOR, LAMP AND SOCKETS SHALL BE PROTECTED BY A HINGED DOOR OF CLEAR ACRYLIC PLASTIC WITH ALUMINUM OR STAINLESS STEEL FRAME AND NEOPRENE GASKETING.

*alternate fixture finish by "Midwestern Color Works"

BALLASTS

BALLASTS FOR FIXTURES SHALL BE WEATHER-PROOF OUTDOOR TYPE FOR A 120 VOLT 60 CYCLE SYSTEM AND SHALL PROVIDE LAMP STARTING AT AN AMBIENT TEMPERATURE OF -20°F. BALLASTS SHALL BE MOUNTED ON SIGN BRACKET ONLY. WIRING SHALL BE ACCOMPLISHED IN SUCH A MANNER THAT THE SIGN MAY BE REMOVED WITHOUT DISTURBING THE ELECTRICAL WIRING.

EFFECTIVE SIGN HEIGHT "H"	SUPPORT ARM LENGTH "G"	APPROX. AIMING ANGLE -θ-
3'-0" to 5'-0"	2'-9"	25°
5'-0" to 6'-6"	3'-3"	25°
7'-0" to 10'-0"	4'-3"	17°
10'-6" to 13'-0"	5'-9"	23°

"L" SIGN LENGTH	NO. OF FIXTURES			He=3'-0" to 6'-6" LAMP=T12/cw/ho			He=7'-0" to 13'-0" LAMP=T12/cw/sho		
	72	96		BALLAST NO.	BALLAST TYPE	WATTAGE PER SIGN	BALLAST NO.	BALLAST TYPE	WATTAGE PER SIGN
6'-0" to 7'-0"	1			1	A	190	1	C	250
8'-0" to 9'-0"	1			1	A	190	1	C	250
10'-0" to 11'-0"			1	1	A	190	1	C	250
12'-0" to 13'-0"	2			1	B	250	1	D	425
14'-0" to 15'-0"	2			1	B	250	1	D	425
16'-0" to 17'-0"	1	1		1	B	250	1	D	425
18'-0" to 19'-0"			2	1	B	250	1	D	425
20'-0" to 21'-0"	3			2	A&B	440	2	C&D	675
22'-0" to 23'-0"	2	1		2	A&B	440	2	C&D	675
24'-0" to 25'-0"	1	2		2	A&B	440	2	C&D	675
26'-0" to 27'-0"			3	2	A&B	440	2	C&D	675

BALLASTS

TYPE	MANUFACTURERS		WATTAGE
	G.E.	JEFFERSON	
A	GG 3583	257-151	190
B	GG 3535	257-171	250
C	GG 3585	257-231	250
D	GG 3588	257-181	425

BALLASTS SHALL BE GENERAL ELECTRIC, JEFFERSON AS SPECIFIED ABOVE OR EQUAL.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ELECTRICAL DETAILS FOR EXTERNALLY ILLUMINATED SIGNS

EI-2

DATE
10-31-63
5-6-64
10-29-64

APPROVED Fred C Yaeger
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

201
241

12
13

CUYAHOGA COUNTY
CUY.-71-17.18

NOTES

GENERAL

DETAILS OF THIS SHEET SHALL APPLY TO EACH OVERHEAD SIGN STRUCTURE TO SUPPORT EXTERNALLY ILLUMINATED SIGNS.

SERVICE

ELECTRIC SERVICE SHALL ENTER THROUGH A 2" GALVANIZED RIGID STEEL CONDUIT INSTALLED IN STRUCTURE FOUNDATION AS PER DETAIL. SIGN SERVICE OR CIRCUITRY SHALL BE CONTROLLED AS REQUIRED BY THE SYSTEM DESIGN AT THE PRIMARY SOURCE.

SERVICE CONDUCTORS SHALL BE THE SIZE AND TYPE AS SPECIFIED.

COMBINATION SWITCH AND TRANSFORMER

(TYPE Y OR Z ENCLOSURE REQUIRED AS PER SCHEDULE ON THIS SHEET)

THIS COMBINATION SHALL BE A 30 OR 60 AMPERE 600 VOLT SWITCH WITH A .25 TO 3.0 KVA TRANSFORMER. THE COMBINATION AND ENCLOSURE SHALL BE AS SQUARE D CLASS 9421, COLUMBUS ELECTRIC WORKS CLASS 101, PANALS INCORPORATED–CLASS 9400, OR APPROVED EQUAL.

TRANSFORMER

THE TRANSFORMER SHALL BE DRY TYPE SINGLE FACE 240/480 VOLT PRIMARY 120/240 VOLT SECONDARY, THE TYPE AND CAPACITY AS SPECIFIED IN DETAILED SCHEDULE ON THIS SHEET.

ENCLOSURE

THE ENCLOSURE SHALL BE NEMA #4 WATER TIGHT .063 GAGE STAINLESS STEEL ASTA 302–303. A DISCONNECT HANDLE SHALL BE FLANGE MOUNTED AND CAPABLE OF BEING LOCKED IN EITHER POSITION. THE ENCLOSURE SHALL BE EQUIPPED WITH A DOOR LOCKING MECHANISM WITH A DEFEATER THAT NECESSITATES TWO HANDS TO OPERATE MECHANISM WITH THE SWITCH IN OFF POSITION. SPACE FOR A 2" INSULATED CHASE NIPPLE SHALL BE PROVIDED APPROXIMATELY 2 1/4" ABOVE THE CENTER LINE OF THE LOWER MOUNTING SLOT. THIS ENCLOSURE AND STRUCTURE SHALL BE FIELD DRILLED AND TAPPED FOR THE REQUIRED NIPPLE AS SHOWN ON THE DETAIL ON THIS SHEET.

THIS ENCLOSURE SHALL BE FLANGE MOUNTED ON BRACKETS WITH 5/16–18×3/4" HEX HEAD CADMIUM PLATED MACHINE BOLTS. ENCLOSURES SHALL BE TYPE Y OR Z AS SPECIFIED AND DIMENSIONED ON THIS SHEET.

ENCLOSURE MOUNTING BRACKET

THE ENCLOSURE MOUNTING BRACKET SHALL BE FABRICATED THEN GALVANIZED BEFORE ASSEMBLY. THE BRACKET SHALL BE FIELD MOUNTED WITH 5/16 HEX HEAD SELF TAPPING CADMIUM PLATED SCREWS. THE SIGN SUPPORT SHALL BE FIELD DRILLED, AS PER DETAIL.

WIRE AND CABLE

ALL WIRE AND CABLE UP TO AND INCLUDING #4 SHALL COMPLY WITH FAA TYPE A SPECIFICATIONS. #2 OR LARGER WIRE OR CABLE SHALL BE G.E. 58006 OR ANACONDA AP–10711, OR EQUAL. ALL WIRE AND CABLE SHALL BE 600 VOLT.

GROUNDING

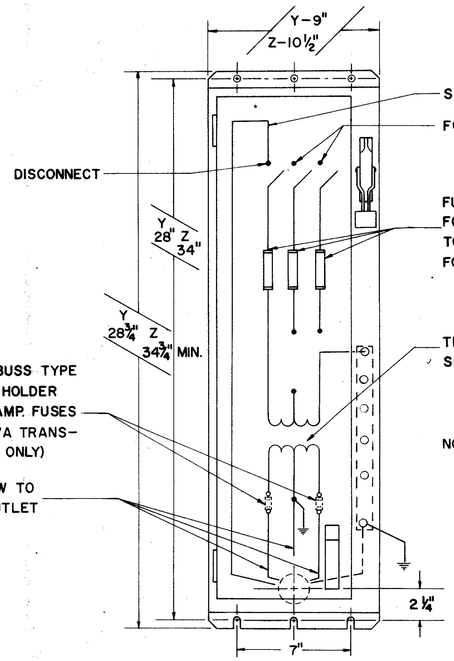
EACH SIGN SUPPORT OR STRUCTURE SHALL BE GROUNDED WITH A #4 RUBBER INSULATION AND NEOPRENE JACKETED CONDUCTOR. THE GROUNDING CONDUCTOR SHALL BE CONNECTED TO THE SWITCH THEN TO THE COMPRESSION CONNECTOR IN THE SIGN SUPPORT THEN TO A 1"×10' GALVANIZED WROUGHT IRON GROUND ROD. GROUND CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO GROUND ROD AND THEN TAPED WITH PLASTIC ELECTRICAL TAPE AT EACH EXPOSED PORTION OF CONDUCTOR. THE WELDED CONNECTION AND TAPED PORTION SHALL BE PAINTED 2 COATS OF GLYPTAL INSULATING ENAMEL.

A ONE-HALF INCH (1/2") EMT CONDUIT SHALL BE FURNISHED IN EACH SIGN SUPPORT FOUNDATION REQUIRING GROUNDING, TO HOUSE THE GROUND WIRE IN LIEU OF DETAIL SHOWN ON THIS SHEET.

PHOTOELECTRIC CELL

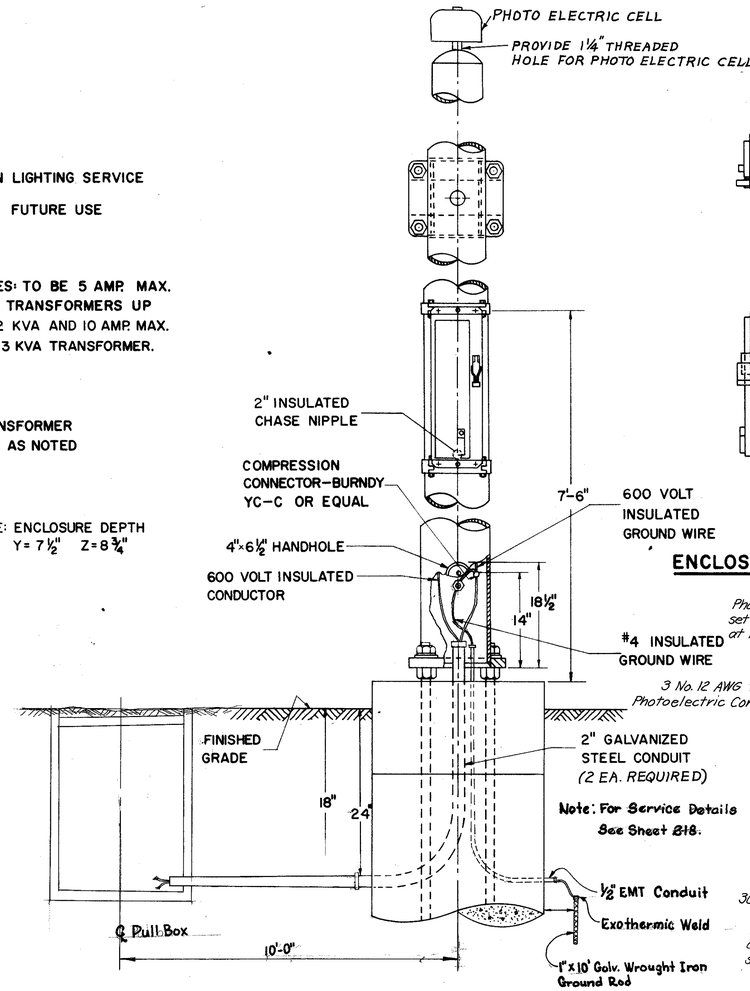
The Photoelectric Controller shall be tubeless type with cadmium sulfide photocell, and shall include pole-top mounting adaptor, sponge rubber gasket, weatherproof acrylic housing, time delay, fail safe, lightning arrestor, and shall be equal to Fisher-Pierce Series 6600 A, or equivalent by G.E., Ripley or Tork. The Contractor may mount photocells on finials provided with sign support poles by adapting with base housing assemblies in 1 1/4" ϕ holes.

Rev. By H.N.T.&B.

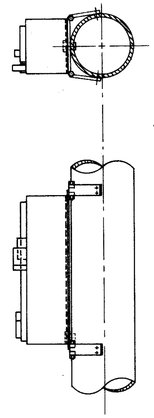


TYPICAL ENCLOSURE DETAIL

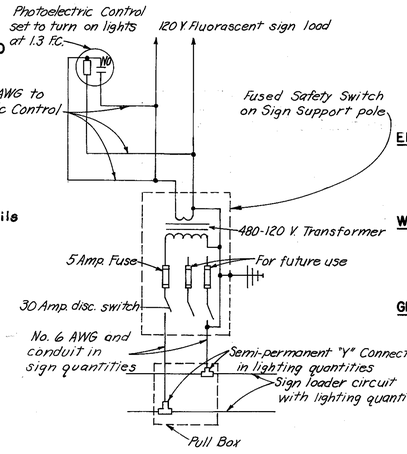
480 VOLT SIGN LIGHTING SERVICE



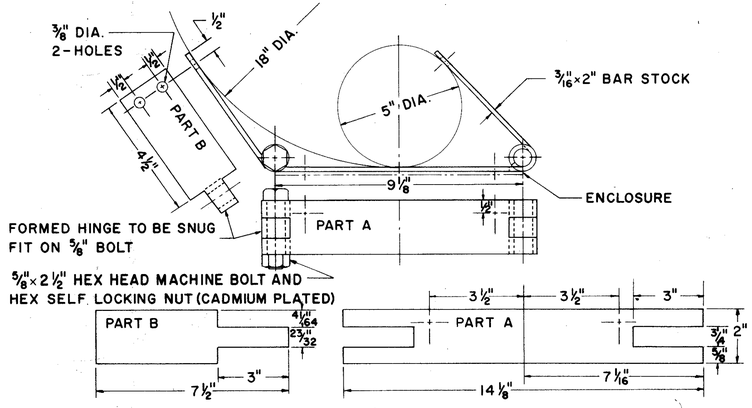
SIGN SUPPORT DETAIL FOR ILLUMINATED SIGNS



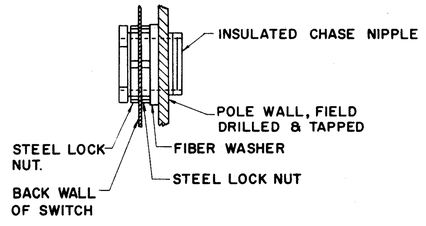
ENCLOSURE MOUNTING DETAIL



SERVICE ARRANGEMENT AT SIGNS



ENCLOSURE MOUNTING BRACKET



CHASE NIPPLE ASSEMBLY DETAIL

TRANSFORMERS

TYPE	MANUFACTURERS G.E.	MANUFACTURERS JEFFERSON	OUTPUT K.V.A.	SWITCH TRANSFORMER ENCLOSURE
I	9T51Y7	244–241	.25	Y
II	9T51Y8	244–251	.50	Y
III	9T51Y9	244–261	.75	Y
IV	9T51Y10	244–401	1.00	Z
V	9T51Y11	244–411	1.50	Z
VI	9T51Y12	244–421	2.00	Z
VII	9T51Y13	244–431	3.00	Z

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

ELECTRICAL SIGN SERVICE DETAILS 480 VOLT SYSTEM	ES–3A	DATE 6-18-64 2-17-65

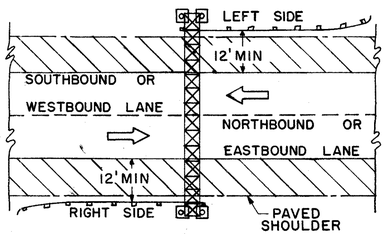
APPROVED _____
ENGINEER OF TRAFFIC

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

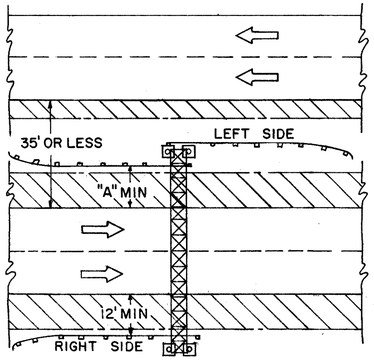
202
241

CUYAHOGA COUNTY
CUY.-71-17.18

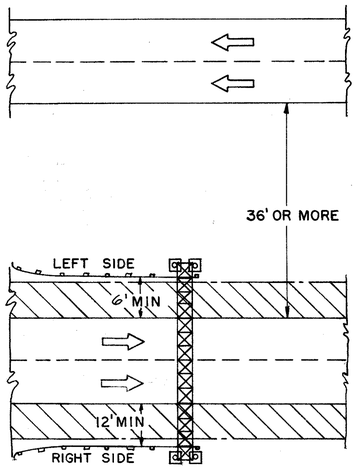
13
13



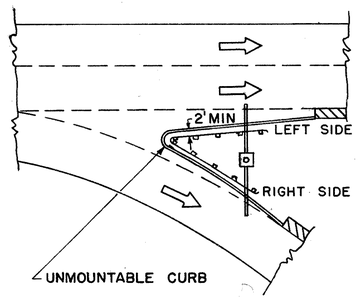
MULTIPLE LANE UNDIVIDED



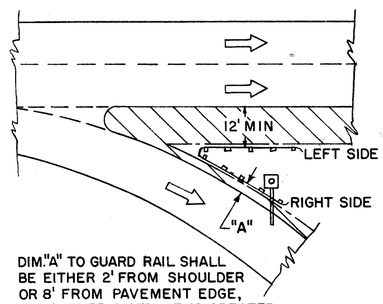
DIM. "A" TO GUARD RAIL SHALL BE EITHER 10' MIN. FROM EDGE OF PAVEMENT OR 2' MIN. FROM THE FACE OF CURB, *EXCEPT WHERE OTHERWISE SPECIFIED.*



FOUR LANE DIVIDED



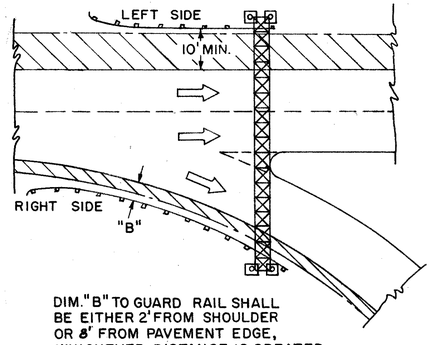
(CURB SECTION)



DIM."A" TO GUARD RAIL SHALL BE EITHER 2' FROM SHOULDER OR 8' FROM PAVEMENT EDGE, WHICHEVER DISTANCE IS GREATER.

(SHOULDER SECTION)

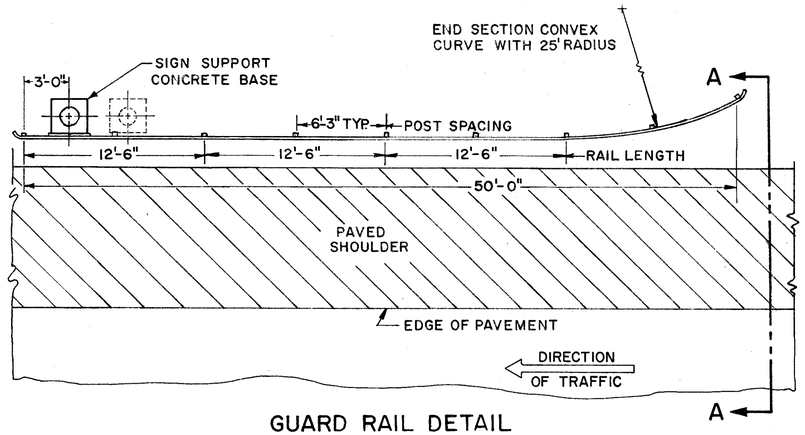
BIFURCATION
(NOT APPLICABLE)



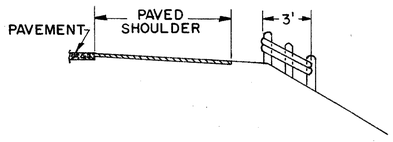
DIM."B" TO GUARD RAIL SHALL BE EITHER 2' FROM SHOULDER OR 8' FROM PAVEMENT EDGE, WHICHEVER DISTANCE IS GREATER.

(ROADWAY SPAN)

BIFURCATION



GUARD RAIL DETAIL



SECTION A-A

NOTES

GENERAL

PROTECTIVE GUARD RAIL FOR OVERHEAD SIGN STRUCTURES SHALL CONFORM TO SEC. I-15, FOR STEEL BEAM TYPE (DEEP).

AT LOCATIONS WHERE GUARD RAIL IS IN PLACE, THE SIGN SUPPORT FOUNDATIONS SHALL BE ERECTED BEHIND EXISTING GUARD RAIL.

A MINIMUM OF SIX GUARD RAIL POSTS IS REQUIRED IN ADVANCE OF THE SIGN SUPPORT.

THE LENGTH OF GUARD RAIL DEPENDS ON THE POST SPACING. (EXAMPLE: FOR A SINGLE LINE OF GUARD RAIL IN ADVANCE OF A SIGN SUPPORT, THE MINIMUM LENGTH IS 50 FT. FOR A. POST SPACING OF 6'-3", 75 FT. FOR A POST SPACING OF 12'-6".)

WHERE PROPOSED GUARD RAIL FLARES ARE CONSTRUCTED OF RAIL ELEMENTS WHICH HAVE NOT BEEN FABRICATED EXACTLY TO FIT THE CURVATURE SHOWN ON THE PLANS. THE TWO END POSTS OF EACH FLARED SECTION SHALL BE ENCASED IN A MINIMUM 4" THICKNESS OF CLASS "E" CONCRETE FOR THE FULL DEPTH OF THE POST BELOW THE GROUND LINE. PAYMENT FOR ENCASEMENT, IF REQUIRED, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE GUARD RAIL.

ADDITIONAL DETAILS

FOR MEDIAN FLARE DETAILS WHEN BARRIER GUARD RAIL IS ENCOUNTERED SEE DETAIL "A" ON SHEET 192.

GUARD RAIL SHALL BE PLACED AS SHOWN ON THE PAVEMENT DETAIL SHEETS 28 - 42, AND SUPPORT DETAIL SHEETS 193 - 194.

DESIGN

THE DESIGN OF GUARD RAIL PROTECTION FOR OVERHEAD SUPPORTS IS IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, ADOPTED JUNE 12, 1961.

BUREAU OF TRAFFIC
OHIO DEPARTMENT OF HIGHWAYS

GUARD RAIL

I-129
I-15

DATE
4-8-60
6-20-60
1-2-62
4-18-62

APPROVED Robert E. Comer
ENGINEER OF TRAFFIC

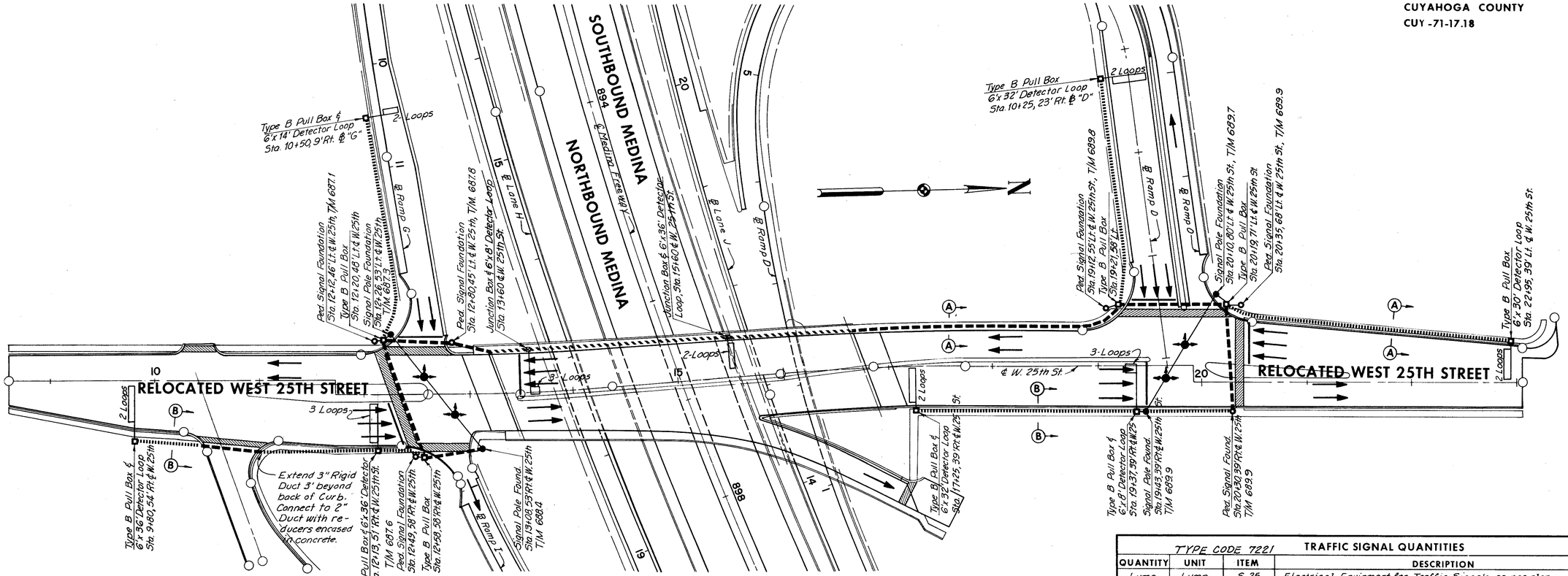
GUARD RAIL FOR OVERHEAD SIGN SUPPORTS

SIGNAL SYSTEM PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

203
241

CUYAHOGA COUNTY
CUY -71-17.18

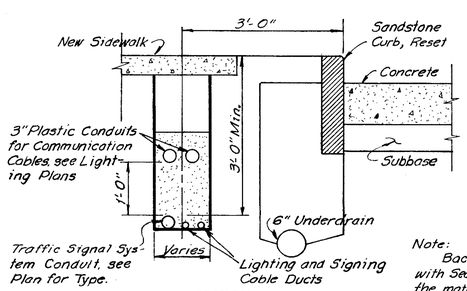


LEGEND

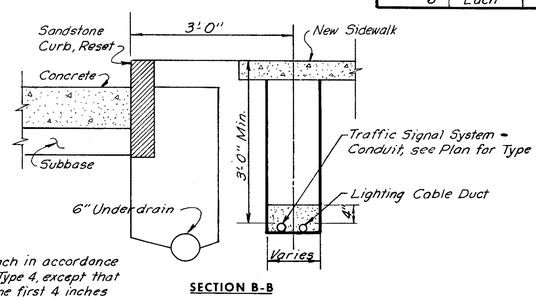
- 3" Rigid Galvanized Steel Conduit with pull wire
- 3" Rigid Galvanized Steel Conduit with pull wire (In Bridge Sidewalk, see Bridge Typical Section for location)
- 2" Rigid Galvanized Steel Conduit with pull wire
- Type B Pull Box (See Lighting Plans, Sheet No. 215 for details)
- 12" x 8" x 8" Junction Box, Cast Iron equal to Hope, Steel City or oz. (See Sheet 216 for detail)
- Pedestrian Signal Pole (Signal by others)
- Traffic Signal Pole
- Detector Loop (See Plan for dimensions)
- Crosswalk
- Traffic Signal (to be installed by others)

TYPE CODE 7221 — TRAFFIC SIGNAL QUANTITIES

QUANTITY	UNIT	ITEM	DESCRIPTION
Lump	Lump	S-25	Electrical Equipment for Traffic Signals, as per plan
9.7	Cu. Yds.	I-129	Concrete for Signal Pole Foundation
6	Each	I-129	Pedestrian Signal Pole Foundation
1,256	Lin. Ft.	S-25	No. 12 TW Solid Wire for Loop Detector, Complete and in place as per plan
4	Each	I-129	30' Traffic Signal Pole, as per plan
6	Each	I-129	6' Pedestrian Signal Pole, as per plan



SECTION A-A



SECTION B-B

Note:
Backfill trench in accordance with Sec. I-107, Type 4, except that the material in the first 4 inches above the conduit shall contain no pieces larger than 1 inch.

TRENCH DETAIL FOR SIGNAL CONDUIT

Scale: 3/4" = 1'

Note:
The Type B Pull Box shall be built as shown on Sheet 215 of the plans, except that the word "SIGNAL" shall be cast in the cover as detailed.
For location of conduit on the bridge and detail of Expansion Coupling at Bridge Expansion Joints, see Bridge Deck Typical Section, and Lighting Detail Sheet 216

SCALE 1" = 50' — HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE DJS DATE 3-16-65 — CONSULTING ENGINEERS
TRCD. ____ DATE ____
CKD. DRK DATE 4-1-65 — KANSAS CITY CLEVELAND NEW YORK

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

204
241

CUYAHOGA COUNTY
CUY.-71-17.18

SIGNAL SYSTEM DETAILS

NOTES

MATERIALS - GENERAL

Materials to be furnished may be specified in the plans by a given manufacturer's catalog number of type. This is for descriptive purposes only and the Contractor may assume that approved equal materials may be furnished.

All material, workmanship and construction methods, except as modified herein, shall conform to the general requirements of the State of Ohio, Department of Highways, Construction and Materials Specifications, January 1, 1963.

S-25 ELECTRICAL - GENERAL

This item shall consist of furnishing all necessary material, labor and facilities required to complete the electrical duct work installation in accordance with the designs, dimensions and details shown in the plans and described in the specifications.

S-25 ELECTRICAL EQUIPMENT FOR TRAFFIC SIGNALS, AS PER PLAN

This item of work shall consist of furnishing and installing all conduit (rigid and flexible type), junction boxes, pull boxes (as specified on Sheet 203) fittings, fasteners and incidentals related hereto, except for those items on structure.

Basis of payment for this item shall be at the contract lump sum price for electrical equipment for traffic signals, which payment shall include all tools, labor, materials and equipment required.

I-129 CONCRETE FOR SIGN SUPPORT AND SIGNAL POLE FOUNDATIONS

The quantity for concrete to be paid for shall be per cubic yard based on the plan dimensions rather then the plan quantity. All concrete shall be Class "C".

TRAFFIC SIGNAL POLES

Traffic Signal Poles shall be anchor base type and shall be capable of withstanding loading (applied 18' from the top) as indicated below without exceeding the permanent set and deflection (measured in inches, 18" from the top of the pole)

Length	30 ft.
Diam. at Ground Line	12 in.
Diam. at Top	7.8 in.
Bolt Circle	16 in.
Wall thickness	3 gauge
Net Weight	1020 lbs.
Load for Permanent Set	3730 lbs.
Deflection per 100 lbs.	0.39 in.
Anchor Rods (two nuts to each rod)	$1\frac{3}{4}$ in. X 96 in.
Pole Top	Ornamental
Allowable Bend Moment	106,200 ft. - lbs.
Load Yield	3730 lbs.

Rods and Nuts to be galvanized

Poles to be galvanized inside and outside.

Special Modification: Poles to have a 4 inch X $6\frac{1}{2}$ inch hand hole with reinforced frame and cover. The center of the handhole to be located approximately 12 inches from the base of the pole.

Basis of Payment for Signal Poles shall be for each pole installed complete, including anchor rods and nuts.

I-129 CONCRETE FOR PEDESTRIAN SIGNAL POLE FOUNDATION

The foundation shall be installed as per plan and be constructed of Class "C" concrete. Payment shall be for each foundation in place.

PEDESTRIAN SIGNAL POLE

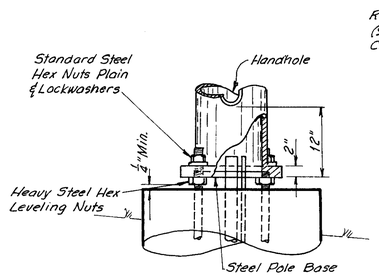
Pedestrian Signal Pole shall be Union Metal Design 50201 or Eagle UA 238 or equal. Poles to be galvanized inside and outside.

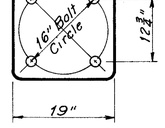
Basis of payment for signal poles shall be for each pole installed complete, including anchor rods and nuts.

LOOP DETECTOR

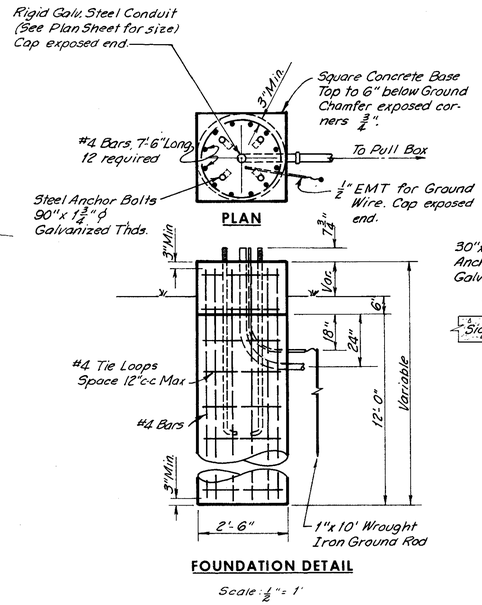
The Contractor shall supply and install the detector loop in the pavement as per detail and also the wire and conduit to the pull box for each loop detector. The roadway loops shall be insulated #12 TW solid wire and payment shall be per Lin. Ft. of wire complete and installed.

Loop detector control shall be eagle E W 50 Type or automatic signal division Model HLS-1 or equal and will be furnished and installed by others.



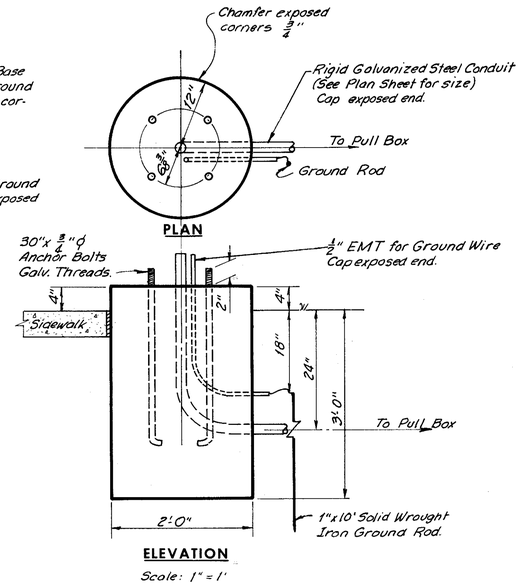


POLE BASE DETAIL



FOUNDATION DETAIL

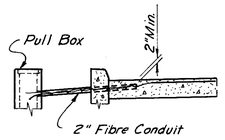
Scale: ½" = 1'



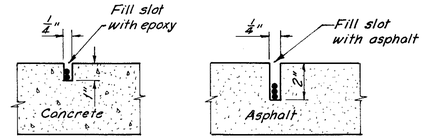
ELEVATION

Scale: 1" = 1'

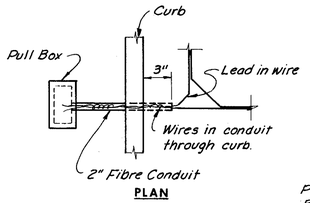
TRAFFIC SIGNAL POLE FOUNDATION DETAILS



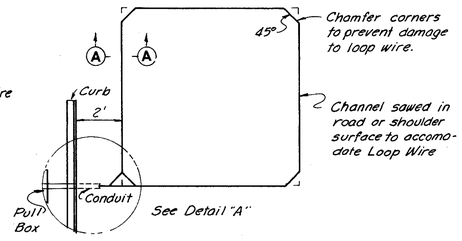
ELEVATION



SECTION A-A



PLAN



DETAIL "A"

LOOP PLAN

PEDESTRIAN SIGNAL FOUNDATION

Notes:

Soils - The foundation details shown are for average soil conditions (medium clay, cemented sand and gravel, sandy clay or stiff clay). For poor soils, increase depth to 18 feet in dry or wet sand, 19.2 feet in silty clay, 24' in soft clay, and 21 feet to 30 feet in wet silt depending on quick-sand action.

Reinforcing Steel - Reinforcing steel shown shall be installed as shown. The cost and placement shall be included in the unit price bid for Item I-129, Concrete for Sign Support Foundation.

Concrete - Shall be Class C.

DETECTOR LOOP DETAILS

SCALE As Shown
MADE DRK DATE 9-22-65
TRCD. _____ DATE _____
CKD. _____ DATE _____

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

FED RD DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

LIGHTING NOTES

GENERAL

All references herein to the "Director" refer to the Director of Highways, Ohio Department of Highways, Section G-1.03.

These notes supplement the State of Ohio's Construction and Material Specifications dated January 1, 1963, for materials used and for the installation of roadway, bridge and underpass lighting, feeders to overhead signs, and provisions for police call and traffic surveillance systems for the portion of the Cuyahoga County, City of Cleveland Medina Freeway, I-71 between West 35th Street and the interchange with the Jennings Freeway. The cable installations and provisions for future cables shall be underdeck wired in galvanized or corrosion-resisting rigid metal conduits as indicated, under-pavement wired in corrosion-resisting rigid metal conduits, and underground-wired either in plastic ducts or corrosion-resisting rigid metal conduits as indicated and required. Mercury street-lighting luminaires shall be provided with 400-watt clear lamps on lanes, freeway, ramps, streets and bridge deck, and 250-watt clear lamps in underpasses. These notes shall include the complete installation of all underground feeders to illuminated signs, all lighting units on and off structures, all mercury underpass lighting units, and all below grade provisions for the police call box and traffic surveillance systems where indicated. The work to be performed consists of furnishing all labor, supplies, equipment, materials, services, plant and transportation, and performing all operations necessary for the installation of all lighting and communications work in strict accordance with these notes, the Standard Specifications, proposal, supplemental specifications, instructions, notices, and drawings, subject to the terms and conditions of the Contract, and including such instructions as may be furnished by the Director during prosecution of the work in interpretation of said drawings and specifications. These notes, schedules and the accompanying drawings are intended to provide for all material and labor required to furnish and install the complete roadway lighting, signing circuits, and provisions for the police call and traffic surveillance systems.

The Contractor shall furnish and install all roadway and underpass lighting equipment, including lamps, ballasts, luminaires, standards, foundation bases, base castings, wiring, luminaire brackets, anchor bolts, foundation bases, pull boxes, junction boxes, mountings, conduit, ducts, cable, grounds, tests, connectors, fused disconnects, lighting transformer and panel station; all feeder circuits to overhead signs, including, cables, conduits, boxes, wiring, grounds, and the sign service panel; all underground and underdeck provisions for the police call and traffic surveillance systems, including conduits, ducts, boxes, call box foundation bases, transformers and wiring to lights on call boxes, pull wires, grounds, manhole, & all items necessary for the complete systems, installed, adjusted, regulated, inspected, tested, connected for operation, energized, operating and accepted. Materials not specifically covered shall be of the first quality and bear the Underwriters Laboratories' seal of approval. All materials, equipment and devices shall be carefully installed, adjusted and balanced by the Contractor to the complete satisfaction of the Director, the Cleveland Division of Light and Power, and the Cleveland Fire Department.

Insofar as practicable, all major items of electrical equipment, such as luminaires, cables, standards, ducts, conduits, transformers, panels, etc., installed under the Contract, shall be the same type and consist of products of the same manufacturer in order to secure uniformity, single responsibility, and most satisfactory service. Unless specifically noted otherwise, all lighting equipment shall be equal to the latest and best grade of that type of equipment as manufactured by the General Electric Company, Line Material, Westinghouse Electric Corporation, or other approved manufacturers. Throughout the plans, the use of trade names for electrical and lighting equipment is meant to be descriptive only. Comparable products of other electrical firms are acceptable if accessories and main members are compatible with one another and serve the intended purpose. Subject to the approval of the Director, equivalent materials and equipment will be allowed.

All materials furnished shall be new, shall be of the best quality and workmanship, shall be the best standard product of a manufacturer regularly engaged in the production of this type of equipment, and shall be of the manufacturer's latest approved design. The responsibility for the correct and satisfactory installation and operation of all materials and equipment required herein shall rest with the Contractor. Before any equipment is ordered or installation of the lighting system is begun, a complete schedule of materials and equipment proposed for installation shall be submitted for the approval of the Director and the Cleveland Division of Light and Power. The schedule shall initially include eight (2 for City) sets of catalog cuts, diagrams, drawings, brochures, or other such descriptive data as may be required by the Director. In the event any items of material or equipment contained in the schedule fail to comply with the specification requirements, such items will be rejected. A layout diagram showing in general the arrangement and location of the cables, conduits, and equipment is shown. This shall be considered only as illustrative, and subject to the approval of the Director, the Contractor shall modify it as necessary for complete and proper construction and operation. The locations of the branches, conduits, grounds, call box bases, pull boxes, junction boxes, cables, ducts, and roadway lighting units shown on the plans are diagrammetric only, and may be subject to slight shifting as the Director may require to conform to local conditions, subject to the maintenance of the lighting intensity indicated on the plans. The contractor will not be required to submit "As-Built" drawings of the lighting layout portion of the work. The design layout drawings will serve as working "As-Built" drawings. However, the Contractor shall submit to the Director and to the City of Cleveland Division of Light and Power complete sets of corrected prints marked up in colored pencil to show all deviations from the plans. The Director's approval shall not relieve the Contractor responsibility of furnishing and installing all items necessary for the proper functioning, as required by Section S-25.05.

All electrical materials, construction, and installation shall be in accordance with the National Electrical Code. The lighting installations, when completed, shall comply with the current applicable provisions of The I.E.E.E. Standards and Practices, American Standards, and National Electric Manufacturer's Association Standards, and shall conform to all local and special laws, codes, or ordinances of the Federal, State and Municipal Departments, commissions, etc., governing this installation, and to the special requirements herein set forth. Should the plans and detail specifications be in conflict with these requirements, through error or omission, the Contractor shall call such conflict to the attention of the Director, and the Contractor shall make the necessary corrections in the installation as he may be directed.

In order to prevent deterioration due to corrosion, all bolts, nuts, studs, washers, pins, terminals, springs and similar fastenings and fittings shall be where practicable, of an approved corrosion-resisting material such as brass or bronze, or of a material treated in an approved manner to render it adequately resistant to corrosion. Cap screws, set screws, and top bolts shall be of stainless steel, brass or bronze. Hot dip galvanizing per A.S.T.M. Specification A-153 will be considered such approved treatment for all ferrous hardware.

STANDARDS

The Contractor shall provide an ornamental pole support for each roadway and deck lighting unit. Each standard shall be installed complete with a tapered, steel pole with cast steel anchor base, steel truss-type bracket arm, pole and bracket cable, grounding lug, handhole, handhole cover, J-hook, and a pole top. The Contractor shall provide all poles and bracket arms for mounting luminaires at 35'-0" above roadway. Each roadway and deck lighting unit shall comprise a 32-foot or 29-foot-6-inch steel pole respectively, with a 10-foot, 15-foot or 18-foot steel bracket adequate for 400-watt integral ballast mercury type luminaire. Poles of custom lengths shall be provided as indicated for wall-mounted units. Light standards shall conform as nearly as possible to the Specifications and drawings of the City of Cleveland and to the notes herein, and shall be similar to the designs referenced as to general design and finish, height, base, mast arm, cross-section dimensions, and to general appearance. Standards shall be fabricated in a continuous round, true taper of approximately 0.14 inch per foot and shall be of the dimension indicated. Pole shafts shall be formed from only one length of sheet steel and welded with only one longitudinal, automatically electrically welded joint, and shall have no intermediate transverse joints or welds. The shaft material shall be hot-rolled basic open hearth corbon steel not less than No. 11 or 7 manufacturer's standard gauge as indicated. After forming and welding, each tapered shaft shall be cold-rolled or worked under sufficient pressure to flatten out the weld (eliminating need for finish grinding) to increase the elastic limit of the metal in the completed shaft (providing a minimum yield strength of 48,000 psi), and to produce a true tapered tube of uniform thickness throughout, without flat spots and a true round cross section throughout the length of the shaft. The poles, brackets and bases shall be galvanized inside and outside after fabrication in conformance with Section M-7.4(d). After erection minor scratches shall be given two coats of zinc rich base point. Apply second coat after first coat has completely dried. Standards with major damage to galvanizing will be rejected. The poles shall contain all modifications as required and called for on the plans. All pole hardware shall be bronze, galvanized or stainless steel. Pole tops shall be interchangeable with those used by agency maintaining system.

Light poles manufactured by means other than that specified above shall be made of not less than the manufacturer's standard gauge steel indicated, including the weld area with a minimum yield strength of 48,000 psi, meet the permanent set and deflection values tabulated herein and otherwise meet the requirements of these specifications. All such poles shall be shot blasted to remove scale and weld slag preparatory to galvanizing.

Light poles shall be capable of withstanding loading (applied 18" from top) as indicated in the following, without exceeding the permanent set and deflection (measured 18" from top of pole).

Pole Size	Arm	B.C.	Bolt Proj'n	Elastic Defl. Rate In. per 100 lbs.	At 2/3 Yield Load Lbs.	At 2/3 Yield Total Defl.	At 2/3 Yield Perm. Set	At Yield Load Lbs.	At Yield Total Defl.	At Yield Perm. Set
9.5x5.02x 32'-7 Ga.	18'	13"	3⅜"	1.61	1007	16.70	0.5	1512	27.30	2.74
9.0x4.52x 32'-11 Ga.	10'	12.5"	3"	2.52	605	18.17	0.5	908	29.66	3.15
9.0x4.87x 29.5'-11 Ga.	15'	12.5"	3"	2.16	659	14.73	0.5	989	24.00	2.64
8.0x3.87x 29.5'-11 Ga.	10'	11"	2⅝"	3.32	517	17.66	0.5	776	28.47	3.08

Shaft Transverse Section Configuration

1. Bid items, as shown and detailed, are for standards with shafts of circular transverse section.
2. Alternate bid items are for standards with shafts of transverse section other than circular. Specify configuration bid.
3. All shafts throughout the project shall have the same transverse sectional configuration.

Truss-type bracket arms shall be provided for standards where indicated. Upper and lower members shall be joined by vertical struts. Brackets shall be braced, with ends for luminaires formed to accommodate 2-inch slip fitters. The inner end of each bracket arm shall be continuously welded to a fabricated steel shoe, and shall be designed that it will fit over and double bolt to a forged steel plate with wire guide lip, continuously welded to the pole. Bracket arms shall be interchangeable with those now in use on adjacent expressways. Standards shall be complete with 4" by 6¼" or 4¼" by 6" reinforced handholes. Handhole covers shall be locking steel Type, and fastened to poles by No. 35 bronze or stainless steel captive choins. The openings for lighting units off structures shall be on the field side, openings for units on the structure shall be on the roadway side, 17 inches above base.

Bracket arms and their related pole attachment devices shall sustain a vertical load of 250 pounds applied within 3 inches of the luminaire end of the support without collapse or rupture of any portion of the pole assembly. The bracket arms and their related pole attachment devices shall sustain a vertical load of 100 pounds applied within 3 inches of the luminaire end of the support and with the support attached to a rigid structure. The vertical deflection shall not exceed 5% per cent of the support length. This includes a maximum allowance of ¼ of 1 per cent of the support length for testing methods and permanent set. The bracket arms and their related pole attachment devices shall sustain a transverse, horizontal load of 50 pounds applied within 3 inches of the luminaire end of the support, with the support attached to a rigid structure. The horizontal deflection shall not exceed 5 per cent of the support arm length, and the pole attachment devices shall not develop any looseness within the specified loading range. This test shall be conducted with a vertical load of 30 pounds on the support. Deflection shall be defined as the total transverse displacement of longitudinal centerline of the shaft or luminaire support at the point of test load application between its initially unloaded and fully loaded position. Permanent set is defined as the total transverse displacement of the longitudinal centerline of the shaft at the point of test load application between its initially unloaded position and the final unloaded position after application of the test loads.

Roadway lighting standards shall have welded-on cast steel bases. Each base shall be provided with four holes to receive the anchor bolts, and four holes for ventilation located in the body of the base directly behind the anchor bolt holes. Cast steel bases shall be one piece, and shall comply with the requirements of Section M-7.7. The base shall telescope the shaft and one continuous electric arc weld shall be on the inside of the base at the end of the shaft. The other similar weld on the outside at the top of the base. Welds shall be a minimum of 1½ inches apart, and connections shall develop the full strength of the adjacent shaft section. The standards shall be of such design as to make a complete wiring raceway after the standards have been assembled and erected. The bracket arms shall be normal to the edges of the roadway, and shall not be less than 2" inside diameter standard steel pipe, ASTM-120, Schedule 40. The standards shall be equipped with a "J" hook placed inside and above the bracket mounting height, to attach a cable grip in such a manner to prevent the pole and bracket cables from hanging in the pole and bracket bushing at the point of bracket attachment to pole. The light standards shall be supplied with a corrosion resistant grounding nut welded inside the base opposite the handhole, plus an accompanying corrosion resistant screw (⅜"-13 UNC) and flat washer.

Welders and welding operators shall be prequalified for class A welding according to the instructions given in "Instructions from the Laboratory, Pre-Qualification of Electric Arc Welders and Welding Operators." Welding equipment shall be of sufficient capacity of such design and in such condition as to make possible the production of first class welds. All surfaces to be welded shall be smooth, uniform and free from fins, tears, and other defects which might adversely affect the quality of the welds. Surfaces to be welded shall be free from loose scale, slag, rust, moisture, grease, paint and other foreign material. Mill scale shall be removed by power brushing, blasting or grinding.

Payment for ground mounted standards with 18-foot and 10-foot brackets, mounted on concrete bases will be made at the Contract unit price each for Item S-25, "Round Pole (9.5"x5.02"x32'-0")-18' Br.", or "Round Pole (9.0"x4.52"x32'-0")-10' Br.", completely assembled in place, completed and accepted, including steel pole for 35'-0" mounting, 7 ga. pole for 18-foot brackets, 18-foot or 10-foot bracket as required, anchor base, grounding, handhole, decal, handhole cover, captive chain, leaf covers, finial, galvanizing, J-hook, cable grip, adjustments, ground lug, connections, modifications, and all incidentals required. Payment for steel standards on structures with 15' or 10' bracket will be made at the Contract unit price each for Item S-25, "Round Pole (9.0"x4.87"x29'-6")-15' Br.", or "Round Pole (8.0"x3.87"x29'-6")-10' Br.", assembled in place, completed and accepted, including 29'-6" or custom length steel pole for 35'-0" luminaire mounting, bracket, anchor base, grounding, handhole, handhole cover, captive chain, leaf covers, finial, galvanizing, J-hook, cable grips, adjustments, ground lug, connections, decal, modifications, and all incidentals required. Alternate bids are required for poles of other-than-round cross-sections.

LUMINAIRES

Luminaires shall be provided for all roadway and deck lighting units. Luminaires shall meet the distribution patterns Type II-M-C or III-M-C with medium length classification and cut off brightness control as defined by ASA and IES, and be located as shown on the plans. The luminaires shall be complete lighting devices, and shall be supported with light centers at 35 ft. above the pavement as indicated. Each luminaire shall be end-mounted, and consist of a cast aluminum housing, main reflector, slip fitter, seals, refractor, holding ring, automatic latch, socket, horizontal lamp, 240/480-volt integral ballast, terminal board, and wiring - all wired and assembled. Luminaires shall have a natural aluminum finish. The refractor shall be high quality, diffussing, pressed clear glass of the Borosilicate type as Endural or Pyrex, well annealed and homogeneous, and free from imperfections and striation, and shall contain prisms pressed on the inside surface, on the outside surface, that are optically designed to redirect by refracting the light from the lamp and upper reflector to produce the ASA-IES type distribution curve required. The inside surface of the top section of the refractor in the driver angles of view shall contain prisms with substantially flat surfaces to be used optically in cooperation with the reflector and lamp for producing the main beam. The refractor shall be clearly embossed with designations "Street Side" and "House Side". For diffusing of the light and good appearance, a continuous pattern of adjoining diffusing flutes or configurations shall be pressed on the outside surface. The refractors shall be so contoured and of sufficient thickness for high mechanical strength to resist malicious breakage and carefully tempered to withstand sudden changes in temperature. Lamp sockets shall be heavy-duty mogul type, and shall incorporate all the latest design features available, such as center spring loaded contacts, plated parts and locking devices. The socket positions shall be adjustable vertically and horizontally, but factory set for true type II-M-C or III-M-C distributions from H33-ICD lamps. Enclosed luminaires shall be 400-watt size, and shall be Westinghouse OV-25, Line Material Unistyle 400, General Electric Form M-400, or approved equal.

The Contractor shall provide single lamp ballists for all units. Ballasts shall be of the type suitable for mounting in the luminaires. Ballasts shall be high power factor, constant wattage or regulated output type for 400-watt lamps as indicated on the plans, shall be radio interference free, and shall be designed for parallel operation from a nominal 240/480-volt circuit, with constant performance characteristics when 480-volt circuit varies between 420 and 540 volts. Power factor shall be not less than 95 per cent. The ballast secondary regulation to the lamps shall be within ± 1½ per cent.

All luminaires shall be carefully adjusted after pole erection and plumbing operations are complete. On roadway sections without grades, luminaires shall be perfectly horizontal according to the manufacturer's instructions and the design of the luminaires. All luminaires shall be horizontal transversely to the roadway, and in addition, luminaires where on grades shall be rotated on bracket pipes so as to be normal to the surface of the roadway in the longitudinal plane. The leveling of the luminaires for uniform brightness is considered an essential feature of the installation of the roadway lighting, and no perceptible variations will be accepted.

Luminaires will be paid for at the Contract unit prices paid for, "Luminaire, Type II-M-C" and "Luminaire, Type III-M-C", per each, in place, and shall include integral ballast, housing, reflector, refractor, lamp receptacle, wiring corrosion resistant fittings, latches, gaskets, terminal board, seals, leveling slip fitter, glass sleevings, and all incidentals.

SCALE None	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE LL DATE 3-10-65	CONSULTING ENGINEERS	
TRCD. GM DATE 3-11-65	KANSAS CITY	CLEVELAND NEW YORK
CKD. GJC DATE 3-12-65		

LIGHTING NOTES

FED. RD DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

UNDERPASS LIGHTING

Underpass lighting shall be provided under the bridge structure where indicated. The outdoor, weatherproof, 250-watt mercury vapor fixtures shall be installed under the deck as indicated, and connected to the branch circuit cables through conduits to the junction boxes in the bridge curbs as indicated. Units shall be complete, consisting of an optical train which includes a single piece prismatic refractor mounted in an aluminum door assembly, Type SF-2 fixture wire, an asymmetric polished aluminum reflector, an anodized aluminum visor, an integral cast guard, an integral ballast, and cast aluminum housing. Built-in regulated output ballasts shall be designed for 240-480-volt circuit, and operatedat 95 per cent or better power factor. Lamp regulation shall not exceed 1½ per cent with 13 per cent voltage variation. The refractors shall be made of molded, thermal shock-resisting borosilicate glass. Each door assembly shall be equipped with stainless steel pressure latches, stainless steel hinges, and a safety chain. The housings shall be dust, bug, and moisture resisting with captive neoprene and double felt gasketing, and shall have rear access holes in gasketed cast aluminum cover-plates and tapped conduit entries, with conduit plugs. The fixtures shall be about 16 inches width, with height and depth about 11 inches and 8 inches respectively. Refractor inner and outer surfaces shall be covered with an array of reflecting and refracting prisms and diffusing flutes which shall be designed to provide an asymmetric light distribution. Units shall have adjustable socket positions for 60 degree or 70 degree beam positions, and shall be installed with sockets in 60 degree low beam position on lanes, and on freeway in 70 degree beam position. For 60 degree position, the vertical maximum candlepower output shall occur at 64 degree through 0 degree lateral. The lateral distribution in the 64 degree cone with a 250-watt clear mercury vapor lamp shall be as follows:

0° not less than 6760 candlepower
15° not less than 6300 candlepower
25° not less than 5340 candlepower
35° not less than 4350 candlepower
45° not less than 3080 candlepower
55° not less than 2450 candlepower
65° not less than 1855 candlepower
75° not less than 2020 candlepower
85° not less than 1935 candlepower
90° not less than 1470 candlepower
105° not less than 410 candlepower

The installation work for each underpass luminaire suspended from the bridge superstructure shall include the 6-inch by 6-inch by 3-inch deep cast junction box at units, ½-inch liquid-tight flexible conduit section where indicated, mounting lugs, Type SF-2 fixture wire to junction box, and 3 amp. fuse. Install a 600-volt, high interrupting capacity fused disconnect in the junction box in the ungrounded lead to the fixture.

Item S-25, "Underpass Luminaire On Bridge", will be paid for at the Contract unit price each, in place, completed and accepted, including integral ballast, reflector, refractor, corrosion resistant fittings, guard, gaskets, latches, hinges, safety chains, mounting, junction box, flexible conduit, mounting bracket for unit, fixture wire, fixture wires to junction box, all connections and splices, mounting lugs, fastenings, and all incidentals. The 8-inch channel is included for payment with structural steel.

LAMPS

Good lamps shall be burning in all luminaires for acceptance. Lamps shall be of the mercury vapor, weather resistant type, with quartz arc tubes, having a high mean output and long economic life equal to Westinghouse "Life Guard" or General Electric "Bonus" design. The 19,500 initial lumen horizontal mercury vapor lamps for roadway and deck luminaires shall be 400-watt, clear, ASA-H33-1CD Type and shall be installed in roadway luminaires where indicated on the plans. The 10,500 initial lumen horizontal lamps in underpass units shall be 250-watt, clear, ASA-H37-5KB Type, and shall be installed in all underpass and underdeck fixtures. Lamps shall be rated for an average life in excess of 16,000 hours. The lamps shall be guaranteed by full replacement until acceptance, the unexpired manufacturers guarantee against premature lamp failure shall be transferrable to the City of Cleveland. The Contractor shall mark the bases of all lamps with month and year of installation, and advise the City of Cleveland of the name of his lamp supplier in order to obtain lamp life credit.

Item S-25, "400-W. Lamp", or "250-W. Lamp", will be paid for at the unit price each, in place, completed and accepted, including testing, adjustments, guarantee, replacement, and all incidentals.

LIGHT POLE FOUNDATIONS

The Contractor shall provide cast-in-place concrete foundation bases for the ground-mount lighting units and the police call boxes where indicated on the plans. The bases shall be complete with anchor bolts, anchor nuts, reinforcing, ground rods, ground leads, and entrance conduits. The bases shall be level and finished to the details shown. Concrete for cast-in-place pole bases shall be Class C. The four steel anchor bolts for each 7-foot deep Type "A" pole base shall be on 13-inch bolt circle with ¾-inch bolt projection, and be 1½" x 21'-0" threaded 6 inches on straight end and hotdip galvanized no more than 1 to 4 inches beyond threads, with a 6-inch "L" bend at bottom end; for Type "B", base shall be 6-feet deep and otherwise similar to Type "A" except with 12.5" bolt circle, 3-inch bolt projection and 1"x3'-4" bolts with 4" "L" bend; foundations for police call boxes shall be 20"x14"x3'-0", with 0.5 inch anchor bolts on ¾-inch by 6-inch square, and 6-inch bolt projection. The Contractor shall provide the shims for leveling and the galvanized hexagonal anchoring nuts as required. The anchor bolts shall be set in the bases, and the bases poured with concrete to The finished grade with the top surfaces level. The steel for bolts shall conform to ASTM A-107, Grade 1035 Special Quality. The tensile strength of light pole bolts shall be not less than 67,000 per square inch, with a minimum yield strength of 45,000 per square inch, the minimum yield of 0.5 in. bolts shall be 50,000 per square inch, with 70,000 per square inch ultimate. Bolt stock shall conform with ASTM Spec. A-29 and nominal bar size shall equal nominal bolt size. The anchor bolts shall be capable of resisting at yield strength stress the bending moment of the shaft at its yield strength stress. Bolts, hexagonal nuts and shims shall be hot-dipped galvanized after fabrication in conformance with the requirements of ASTM Specification Designation A-153. The Contractor shall obtain a factory certified anchor bolt setting template and shall submit same for approval before setting any bolts. The tops of the bases shall be level, anchor bolts shall be vertical, and the placement of the bolts and the projections shall be as required. Circuit cable in polyethylene ducts shall be brought through the foundations by one of the following methods:

1. Install cable duct in the foundation before pouring concrete.
2. Install 2", 90° rigid or fiber ells and pull cable duct through the ell bends.
3. Install rigid steel ells sized to match cable duct, attach cable duct to rigid conduit with liquid tight type coupling, and allow sufficient slack to provide 12-inch minimum extension beyond handholes without splices.

A 1-inch by 10-foot, solid, pointed, wrought iron ground rod shall be placed vertically in the trench outside each light pole foundation. The ground rods for police call box foundations shall be through bases as indicated. The grounding shall be not over 25 ohms resistance to absolute. Additional rods shall be driven five feet apart until 25 ohms or less is secured. The No. 4 A.W.G., 7-strand, insulated ground leads to FAA Specification L-824 Type A shall be attached to the rods by Exothermic welding, and run through foundation conduit and connected to a ground nut in the standard, using a bronze bolt and washer. One 1/16-inch and two 1/8-inch shims shall be provided for each pole.

Payment for concrete foundation bases for ground-mount lighting units will be made at the Contract unit price each for "Light Pole Foundation, Type A", "Light Pole Foundation, Type B", or "Call Box Foundation", completed and accepted, including excavations, forms, reinforcing, concrete, curing, anchor nuts, anchor bolts, setting anchor bolts, conduits in bases for wiring, grounding pole, backfilling, tamping, removing waste, 90-degree bends, bushings, grounding electrode(s), grounding tests, ground leads, clamps, welds, finishing, cleaning, grading, cable ducts through base to 2" above base where alternate selected, footings, where required, and all incidentals.

ANCHOR U-BOLTS ON STRUCTURES

The Contractor shall provide anchor U-bolts and conduits in the concrete blisters outside the handrails on the bridge and on the wall for mounting lighting units on structures where indicated on the plans. The concrete bases shall be complete with anchor U-bolts, anchor nuts, entrance conduits, and grounding. The anchor 1"ϕ U-bolts shall be furnished with threads, with two galvanized anchor nuts for each bolt. The bolts shall be as specified for bolts in light pole foundations. Extend a No. 1/0, 7-strand bare copper grounding wire from one anchor bolt of each pole on bridge to girder or beam flange, and on wall to ground rod in foundation, and connect each end by Exothermic weld.

Payment for light pole anchor U-bolts for standards to be mounted on bridge and wall structures will be made at the Contract unit price per set of two for one roadway lighting pole for Item S-25, "Pole Anchor Bolts for Structure", in place, completed and accepted, and shall include anchor U-bolts, required bolt circles(or square), required projections, hex nuts, galvanizing, setting anchor U-bolts, leveling base, No. 1/0 ground lead to outside beam or girder of structure or to ground rod on wall, rod(s), welds to anchor U-bolt and beam flange, welds to ground rod for units on wall, and all incidentals.

BOXES IN BRIDGE CURBS

Cast iron curb junction boxes shall be provided flush in the bridge walks and in walls for branches to signs, for branches to the underpass lighting units, and for conduit crossovers. Boxes shall be NEMA Type 4 watertight, and complete with bosses, wiring, grounding, conduit connections, and bushings, and shall be as shown. The 12" by 8" by 8" boxes shall be not less than ¼-inch thick. The 24" by 12" by 8" boxes shall be not less than ⅜-inch thick. Boxes shall be galvanized cast iron and shall be complete with cross-ribbed checkered sidewalk cover, reinforcing ribs, pry bar slots, mounting flanges, bosses with drilled and tapped holes, Neoprene gasket, flush stainless steel cover screws, and ¾-inch screwed galvanized conduit or pipe drain to below or out of concrete. Iron castings shall be in accordance with Section M-7.8 and ASTM Des. A48-36, Class 25. Raised identification words shall be cast into the covers. Words shall be centered. Letters shall be clean cast, sharp face, bathtub style, 1-inch high, 3/32-inch depth and width, and spaced evenly with 10 letters in about 9-1/2 inches. Word shall be "LIGHT" for boxes for power to lights and signs, word shall be "POLICE" for communication circuits in the boxes for surveillance. Boxes shall be O.Z. Type "YR", Hope, Spring City, or approved equal.

Items S-25, "Junction Box On Structure - 12"x8"x8"", and "Junction Box On Structure - 24"x12"x8"", completed and accepted, will be paid for at the Contract unit price each, which price shall be full compensation for furnishing and installing respective box and all appurtenances, bosses, conduit connections, checkered ribbed covers, galvanizing, raised words, gaskets, screws, drain, grounding, splices, and all incidentals.

PULL BOXES

Concrete pull boxes shall be provided for lighting, signing, call boxes and traffic surveillance where shown on the layouts. The construction of boxes, reinforcing mesh, slots, handles, covers and openings shall be as shown in the details. Boxes may be precast or cast-in-place. The walls shall be composed of monolithic concrete as shown. All entering conduits sleeves shall be cast or grouted in place. Reinforcing steel of No. 4 (or #1) rods at 6" centers each way shall conform to requirements of the Standard Specifications. Boxes shall be Class C concrete conforming with Section S-1.07 of the Standard Specifications, and shall be modified as required. Covers shall be seated with less than 0.5 in. total clearance each way. A 1" by 10' wrought iron ground rod shall be placed in the bottom of each Type A pull box, extending 6 inches into box.

The work under Item S-25, "Pull Box - Type A", or "Pull Box - Type B", each, furnished in place, measured as provided in the foregoing, will be paid for at the Contract price per box, which price shall be full compensation for furnishing all required materials, including excavation, forms, concrete, reinforcing steel, ground rod in Type A, cover, impressed "LIGHT" on Type B pull box or "POLICE" in cover of Type A pull boxes, handle, grouting conduits, removing waste, and all incidentals.

CALL BOX TRANSFORMER AND CABLE

Indicator lights on tops of police call boxes shall be energized from the sign feeder circuits as indicated. To energize the 120-volt lamps from the 480-volt sign feeders, the contractor shall provide 200 volt-amp., 480-120-volt, 60-cycle, dry-type molded rubber lighting transformers in adjacent curb junction boxes or pull boxes as required. Primary ungrounded connections shall be made to sign feeders through fused ESNA Style 82"Y" connectors, grounded connections shall be made through ESNA Style 83"Y" connectors. Each molded transformer shall include two minimum size No. 10 AWG secondary leads to tops of call boxes, and leads shall be attached to transformers through watertight caps and plugs. Caps and plugs shall be sealed with No. 22 electrical tape ¾-inch wide. Transformers shall be similar to ESNA No. 5150-A1, except 480-120 volt transformers, or approved equal.

The work under Item S-25, "Call Box Transformer and Cable", per each, furnished in place, will be paid for at the Contract price per transformer, which price shall include transformer, polychloroprene jacket, watertight lead connections, watertight connectors in feeders, fuse for transformer primary, grounding one secondary lead, and all incidentals. The "Y" connectors will be paid for under other S-25 items.

CABLES AND CABLE-DUCT

The lighting and signing feeder systems shall be conductors in rigid conduits or cable-duct, as indicated, wired and installed as completed multiple 460-volt systems as indicated, with ballasts for each roadway and underpass unit. Cables shall be provided where indicated on the drawings, and shall be 6 AWG, 10 AWG, or 12 AWG as indicated. Multiple cables, including grounded neutrals shall be rated for 600 volts, and shall have been manufactured less than two years prior to installation. The cables shall conform to F.A.A. Specification L-824, Type A (dated November 4, 1963) and shall be single conductor. In junction boxes, pull boxes, pole bases, and common locations where there is more than one circuit present, identify each conductor by distribution station and circuit number on plastic tags or permanent type wire markers. Identify grounded conductors by "N" following distribution station and circuit number. The pole and bracket cable for circuits between handholes and ballasts in luminaires, and where indicated, shall be, No. 12 AWG, 7-strand copper, and the conductors for underpass lighting shall be No. 10 AWG, 7-strand copper.

Polyethylene duct for cable-duct shall conform to ASTM D 2104, schedule 40, Type II Grade 3 or Type III Grade 1,2 or 3.

The minimum bending radius for 1¼ inch conduit shall be 18 inches. The conduit shall withstand impact and bending stresses incidental to transportation, handling, uncoiling and installation at temperature as low as -50° F. It shall not fracture, split or be damaged in any way by normal handling at this temperature. The assembly of cable duct may be performed by extruding the duct around the specified conductors or by pulling the conductors through the preformed duct at the factory. When assembled by the extrusion method, the Contractor shall demonstrate the freeness of the conductors by pulling one foot of the conductor from the installed cable duct. The duct shall be manufactured in continuous lengths so that it can be installed without splices between pull boxes and lighting poles. The duct shall be laid parallel to the trench prior to installation. This shall be accomplished by unreeling the duct from the bed of a slowly moving truck or by similar means. The duct needed for a particular run shall be of a length to allow for extension into pull boxes for splicing, and for extension of the conductors through the handhole in the standards for lighting. In no case shall the nominal diameter be less than 1¼" I.D. The number of conductors used in the duct and the "DUCT FILL" shall conform to the requirements of the National Electrical Code. Cable-duct and cables shall be installed in continuous lengths without splices from handhole to handhole. Splicing will be permitted only in pull boxes, junction boxes or handholes of light standards. At the terminals, cables shall be spliced to the leads in conformity with the instructions contained herein. Care shall be taken to insure watertight joints. At all terminals seal between cable and ducts with sealer not injurious to either. All splices shall be made with approved cable connector assemblies.

Item S-25, "Cable Duct 2-1/c No. 6", will be paid for at the Contract unit price per lineal foot, in place, completed and accepted, including all cable duct with two cables in conduits or direct burial, caulking underground in conduit bushings, terminals, connections, testing, and all incidentals necessary. Measurement will be made per foot of cable duct in place, each foot for payment for multiple cable-duct includes two insulated conductors. Where two cable ducts are in same trench or conduit, payment will be twice the amount for one circuit, etc.. Item S-25, "Circuit Cable, 1/c No. 6", shall include all 600-volt cable in place on structures and in 2-inch longitudinal conduits between structure and nearest sign or light base, or to pull boxes off structure, and will be paid for at the Contract unit price per lineal foot, in place, completed and accepted, including, caulking in conduit bushings, splicing, terminals, connections, testing, and all incidentals necessary. Measurement will be made per foot of single cable in place. Payment for No. 12, single-conductor pole and bracket cable will be made at the Contract unit price per lineal foot for Item S-25, "Pole and Bracket Cable, 1/c No. 12", in place, completed and accepted including all cables in poles, brackets, conduit where indicated, wiring, splices, terminals, and all incidentals. Each foot for payment includes one conductor. Payment for No. 10, single-conductor underpass cable in conduits on structure will be made at the Contract unit price per lineal foot for Item S-25, "Circuit Cable, 1/c No. 10", in place, completed and accepted, including wiring, splicing, terminals, testing, and all incidentals necessary. Each foot for payment includes one conductor.

CABLE CONNECTORS

"Y" - cable connector assemblies shall be provided for all 3-way cable connections in pole base handholes for branch taps to luminaires, in pull boxes and curb junction boxes for taps to call box transformers and underpass lighting, and for lighting feeder taps from pole bases, junction boxes, and pull boxes. In-line connectors shall be provided for all feeder in-line through splices in junction and pull boxes, and for disconnecting ungrounded leads at underpass ballasts on structure. Connectors shall be approved, field applied, waterproof type. Disconnect type connectors shall be capable of repeated quick disengagements without damage, semi-permanent type shall have ring-tongue terminals. Conducting parts shall be copper. Bodies and housings shall be of water-resistant synthetic rubber suitable for direct burial or installation in sunlight. Metal and rubber parts shall be lubricated with silicone compound "O" for easy assembly. The loadside housing of fused connectors shall be constructed to retain the fuse when disconnected, and shall be permanently marked "loadside". The "Y" insert body shall retain the second fuse contact. Fused "Y" connectors in ungrounded cables in pole bases and curb junction boxes for taps shall be similar to Type I , unfused "Y" connectors for ground neutral taps shall be similar to Type III , Semi-permanent "Y" connectors in pole bases, junction boxes and pull boxes for feeder taps shall be unfused type similar to Type IV . Insert plastic plugs in unused openings at the dead-end poles. The in-line fused disconnect in ungrounded lead to underpass fixture ballast of unit on structure shall be similar to Type I . The quantity for Type I connectors is indeterminate, and the number installed shall be as required by field conditions. Variation from estimated quantity shall not be cause for change in bid price. Fuses shall be 4-ampere, 13/32" x 1½" midget type, 600-volt, high interrupting capacity type. Fuses shall carry 110 per cent continuously and open at 135 per cent in one hour or less. Disconnect-type "Y" connectors for taps will be paid for at the contract unit price each, in place, completed and accepted, including plastic plug and fuse where required, by Item S-25, "Fused "Y" Connector, Type II ", or "Unfused "Y" Connector, Type III ". The semi-permanent type "Y" connectors for feeder taps will be paid for at the Contract unit price paid for Item S-25, "Semi-Permanent "Y" Connector, Type IV ", furnished in place, and shall include one 3-way semi-permanent feeder connection, crimp-on ring-tongue terminals, lugs, bolts, elastic stop nut, housing, insert body, water seals, silicone, instructions, and all incidentals. In-line connector assemblies used for feeder splices will be paid for at the Contract unit price paid for Item S-25, "Semi-Permanent In-line Connector, Type I ", in-line fused disconnects for the ungrounded leads to underpass fixtures will be paid for at the Contract unit price paid for Item S-25, "In-line Fused Disconnect, Type VI ", furnished in place, and shall include all applicable features required for "Y" connectors.

SCALE None	HOWARD, NEEDLES, TAMMEN & BERGENDOFF		
MADE LL DATE 3-10-65	CONSULTING ENGINEERS		
TRCD GM DATE 3-11-65	KANSAS CITY	CLEVELAND	NEW YORK
CKD. GJC DATE 3-12-65			

LIGHTING NOTES

FED RD DIVISION	STATE	PROJECT	
2	OHIO		

207
241

CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

LIGHTING NOTES

Connector kits shall be furnished with cable openings sized for the outside diameter of the respective cables connected, to provide a waterproof connection.

CONDUITS

The Contractor shall provide where indicated rigid metal conduits for the sign and lighting circuits, for the police call and traffic surveillance systems, for all circuits under pavement, and for communications circuits for call boxes. Longitudinal conduits in the walls, parapets and abutments for present and future wiring shall include drains, expansion couplings, deflection fittings and extensions to pole bases. Conduits on structures shall be placed as shown on the plans, and expansion couplings shall be of such size as to provide for up to eight inches of movement at joints. Expansion couplings on structures shall be standard factory steel type to provide for movement and vibrations. Expansion fittings on bridges shall be similar to O.Z. Type EX, Hope, Spring City, or approved equal. Deflection fittings at wall joints shall be similar to O.Z. Type DX, or equivalent by Hope or Spring City.

The materials furnished and used in this work shall meet the requirements as specified herein. Underground conduits, underpavement conduits, and exposed conduits on structures shall be rigid alloy steel or wrought iron enameled or plastic coated on the inside to provide a smooth wire raceway and shall further meet the requirements of State Supplemental Spec. M-106.11, or the Fed. Gen. Services Spec. WW-P-441c for wrought iron. Flexible conduit for connections to underpass lighting units shall be JIC approved, polyvinyl-chloride jacketed, liquid-tight type. Flexible conduit sections shall be complete with approved fittings. Metallic conduits completely embedded in concrete in structures shall conform to the requirements of ASA Specifications for Galvanized Rigid Steel Conduit, Designation C80.1, and further shall be hot-dipped galvanized inside and out after threading and provided with an approved enamel or plastic coating on the inside to provide a smooth wire raceway. Metallic conduits in structures shall be run concealed in direct lines, with long sweep bends and offsets to facilitate installation of cables without excessive pulling tensions. Conduit ends shall be cut square and accurately threaded. Threaded ends of all metallic conduits shall be swabbed with Conduit Joint Sealing Compound before the couplings are made up to make them watertight. No reaming bars shall be cut, bent, displaced or otherwise altered from the design plans, except with permission of the Engineer. All conduit runs in bridge curbs shall be installed with moisture traps in lowest areas, and shall be pitched to to drain. Traps shall be tee-type with caps and plugs, or reducers, and shall include a ¾ inch galv. steel drain to the bottom side of the parapet. Ground each metallic run by size 1/0, 7-strand, bare copper wire Exothermic welded to conduit and to top flange of adjacent beam.

This work shall consist of furnishing and installing empty 3-inch, Type II plastic conduits direct burial for the police call and traffic surveillance systems. The conduit to be furnished shall be composed of modified high impact styrene, and shall conform to industry standards and Federal Specification No. L-C-00740 (GSA-FSS). The material used in the conduit shall have a minimum deflection temperature of 65° C. minimum impact strength of 0.80 foot pound per inch of notch, minimum tensile strength of rupture of 3000 PSI and 15 per cent, respectively, minimum crush strength of 1000 pounds per linear foot, and minimum wall thickness of .110 for the three inch size conduit used. The conduits shall be installed in 30-foot lengths, and coupled with watertight, solvent weld joints. The conduits shall generally be installed with long-radius sweeps without using fittings for bends. A length of 30 or 40 per cent conductivity, No. 104 telephone line, high strength, copperclad drag wire of not less than .104 inch diameter and 1283 pounds breaking strength shall be left in each run. Conduit and fittings shall be provided by a manufacturer with a minimum of five years experience in making the type conduit. The minimum separation to be maintained between power and communication conduits is 12 inches for earth, 6 inches for solid concrete, or one in corrosion resistant steel sleeve.

Payment for rigid conduit embedded in bridges, walls, piers, structures and wingwalls, will be made at the Contract unit price per lineal foot for Item S-25, "Conduit-1"ϕ Rigid Galv. Steel", "Conduit - 1¼ϕ Rigid Galv. Steel", "Conduit - 2"ϕ Rigid Galv. Steel" or "Conduit - 3"ϕ Rigid Galv. Steel" in place, completed and accepted, and shall include all expansion couplings, deflection fittings, bonding jumpers, bushings, bends, reaming, threading, fittings, attachments, clamps, tees, plugs, joint sealer compound, adapters to flexible conduit where required, wire chairs, tamping, encasing, drains, supports, locknuts, fastenings, and all incidentals. Payment for exposed conduits on structures, conduits under pavement, and longitudinal direct burial, underground conduits off structures will be made at the Contract unit price per lineal foot for Item S-25, "Conduit - 1"ϕ Corrosion Resistant", "Conduit - 2"ϕ Corrosion Resistant", or "Conduit - 3"ϕ Corrosion Resistant", in place, completed and accepted including all alloy or wrought iron conduits for wiring from ends of bridge wingwalls to adjacent ground-mount lighting units, police call boxes, or pull boxes where indicated, all conduits off structures for communications, couplings, sealer compound, threading, fittings, fastenings, attachments, locknuts, bushings, conduit connections, grounding, approved coating inside and out after threading, and all incidentals.

Underground styrene conduits, installed in accordance with requirements, will be measured by length in direct horizontal runs between centers of terminations, and will be paid for at the contract price per linear foot for Item S-25, "Conduit - 3"ϕ Plastic", installed. This price shall be full compensation for conduits, drag wire, couplings, bends, conditioning conduits, plugging conduits, and sealing around conduits with concrete where they enter pull boxes.

MANHOLE

The work to be performed under this specification shall consist of furnishing and installing a manhole approximately where shown for terminating the police call and traffic surveillance systems. The exact location shall be determined after careful consideration has been given to the feed ducts from the City's communication system, grading, and paving. The final location shall be approved before construction is commenced. The top, walls and bottom shall be reinforced concrete except for cover, construction shall be watertight. Walls, bottom and drain shall be monolithic construction. Concrete, forms, mixing, placing, and reinforcing shall conform to the requirements of the Standard Specifications. Frame and cover shall be delivered to the job unpainted, and after inspection and approval, shall be given two coats of asphalt paint. The frame shall be anchored with at least four ¾-inch anchor bolts. Two 2"x4" creosoted planks shall be cast in flush vertically in long walls, and one in short walls for future cable hooks. A cable pulling iron shall be installed in the wall opposite each duct line entrance into the manhole. At a convenient point close to the wall, a 1-inch by 10-ft. solid, pointed wrought iron ground rod shall be driven into the earth not less than 8 ft. before the manhole floor is poured. The ground rod shall project approximately 6 inches above the manhole floor. Cables for the communications systems will be provided by others. The Contractor, however, shall provide the strips, pulling irons, pull-in wires, and ground rod. Where duct lines enter the manhole, the sections of ducts may either be cast in the concrete or enter the manhole through openings of suitable dimensions provided in the walls. Where openings are provided for the entrance of duct lines, the space between ducts and between ducts and manhole walls shall be filled to at least the wall depth with concrete. The cover shall be as indicated, and shall have "POLICE" cast in top. Conduits shall be terminated in end bells. The drain to sewer shall be 6-inch cast iron. Drain and grating shall be as indicated.

The work under Item S-25, "Manhole", furnished in place, completed and accepted, will be paid for at the contract unit price each, which price shall be full compensation for furnishing and installing the manhole and all appurtenances, including excavation, forms, concrete, reinforcing steel, ground rod, frame, cover, coating, impressed "POLICE", terminating conduits, steps, pulling irons, drain, cover, connection to sewer, strips, end bells, grouting in conduits, and all incidentals.

TRANSFORMER AND PANEL STATION

The Contractor shall provide a complete transformer and panel station for the 480-volt lighting branch circuits where indicated on the plans. The design of the station shall follow the most modern practice. The pole-mounted distribution transformer shall be furnished with all standard accessories in accordance with this specification and to the applicable NEMA and ASA Standards. The transformer shall be 75 Kva, 55C, 60 cycles, single phase, oil-immersed, self-protected. The primary-voltage windings shall be dual-rated 2400-7200 volts complete with two bushings, four rated Kv taps, (2 approx. 2½% above and 2 approx. 2½% below rated voltage), and manual tap-changer. Taps shall be accessible from the top through a removable cover. The secondary voltage windings shall be rated 480 volts with terminals for single-phase, 2-wire operation. Mounts shall be EEI-NEMA Type C. In addition to primary protection indicated, the transformer shall be furnished with internal low voltage circuit breaker, high voltage fuse, and valve-type arrester. All protective and control equipment shall be of the outdoor, weatherproof type. The primary cutout to protect the transformer shall be open-type, load-break, single-pole, 100-ampere, 7.8 Kv, 5000 AIR, complete with fuse holder and 75 amp. fuse. The lightning arrester for the protection of the primary high voltage circuit at the transformer shall be 3000 volts. The cutout and arrester shall be equal to General Electric, Westinghouse, Line Material, or approved equal.

The lighting circuits shall be switched in the secondary mains by an enclosed magnetic contactor, operated by a photoelectric relay. The controller shall include selector switch for manual on, off, and automatic positions, and a 50-volt-amp., 480-120 volt control dry-type transformer. The photoelectric relay shall be socket-mounted, of tubeless circuitry, 115-volt, 3000 W. SPSTDB contacts, normally closed, closed at night, with factory set turn-on of 5 foot candles, built-in fuse, and built-in lightning arrester. The relay shall be fail safe, and have built-in time delay to avoid erroneous operation due to transient lights. The internal pilot relay contacts shall be rhodium-plated silver. The relay shall be General Electric, Hughey and Phillips, Ripley, Tork, Fisher Pierce Model 63303-DA, or approved equal. The controller shall be attached on the pole about 20 feet above ground level, and oriented to the north as indicated. The socket and mounting bracket shall be galvanized. The on-off-automatic selector switch shall be enclosed in a general purpose case within the general enclosure, and may be similar to General Electric Type CR 2940-NA 101 D oil-tight type. The contactor shall be electrically held and enclosed with service switch in a code-gauge, waterproof, NEMA Type 3, weather resistant, galvanized, sheet steel general enclosure similar to one required for the distribution panelboard. Contactor shall be rated on the basis of 8 hours enclosed, and shall be 270 amp., 600-volt, NEMA Size 5, magnetic type as indicated.

The lighting branch distribution panelboard shall be 200-amp., as indicated, and consist of automatic short-circuit and overcurrent protective devices of the circuit-breaker type, assembled into a single interior NEMA Type 1 general purpose enclosure which in turn shall be mounted inside, separate code-gauge, waterproof, galvanized sheet steel NEMA Type 3 weather resistant enclosure, consisting of a box, gasket, copper screened drain, and lockable front designed to be mounted on two short crossarms on a pole. Hinges shall be flush. The cylinder tumbler lock shall be combination catch and lock. The panelboard shall be of the dead-front type and shall be in accordance with Underwriters Laboratories, Inc., standards for panelboards and enclosing cabinets, and so labeled. The panelboard shall be designed for connecting to a two-wire single-phase, 480-volt, A-C, one side grounded source. The mains of the panelboards shall be provided with solderless lugs only. The service connections to the panelboard shall be through service entrance switch.

The service entrance switch shall be 480-volt, 200 amp., combination devices, consisting of switch mechanism and high-interrupting-capacity current limiting fuses. The combination devices shall be capable of closing against remaining closed and safely limit interrupting shorte circuit currents up to 200,000 amperes rms symmetrical with no derating. The switch mechanism shall have load-interrupting capacity of twelve times the continuous-current rating of the combination devices. The switch mechanism shall be quick-make, quick-break type with the speed of operation in both closing and opening independent of the operator. The allowable temperature rise, for carrying rated load current of the switch and fuse shall be 55° C rise over 40° C ambient of the connecting terminal. The switch door shall be interlocked. There shall be provisions for locking the service switch open. The branch overcurrent protective devices shall be molded-case circuit breakers. The panel shall contain eight single-pole Type F molded-case, 600-volt, 50-ampere, 15,000 RMS ampere interrupting rating breakers. The branch breakers shall have quick-make and quick-break toggle mechanisms, inverse-time trip characteristics, and shall be trip-free on overload or short circuit. Automatic release is to be secured by a bimetallic thermal element releasing the mechanism latch. In addition, a magnetic armature shall be provided to trip the breaker instantly for short-circuit currents above the overload range. Automatic tripping shall be indicated by a handle position between the manual OFF and ON positions. The individual breakers shall be calibrated and sealed to eliminate tampering or unauthorized changes in calibration. Breakers shall be of the interchangeable type and capable of being operated in any position. The directory shall be typewritten and plasticized, and shall indicate clearly the City's identification and location of each branch circuit.

A time switch with 10-hour synchronous, mechanical carryover shall be included to prevent daily between 7:45 a.m. and 4:45 p.m. energization of the automatic lighting control circuit. Switch shall be single-pole, single-throw, 35-amp., be mounted in contactor enclosure, and connected as indicated. Switch shall be Sangamo Type W, or equivalent by Tork, Paragon or General Electric.

At base of wood pole, the vertical 1¼ in. rigid metal conduits on pole shall be adapted underground at the horizontal to the 1¼ in. polyethylene ducts of cable-ducts by liquid-tight type female hub connectors similar to T and B Type 5275. Cables of cable-ducts shall be extended without splices in the metal conduits up poles to panelboards.

Wiring at the station shall be installed in corrosion resistant rigid alloy steel or wrought iron conduit. Conduit fittings shall be installed as required for the watertight entrance of wiring into the conduits. Conduits shall be securely held in place on pole structures by pipe straps located at intervals not exceeding 6 feet. The neutral conductors and non-current-carrying metallic parts of all equipment of the transformer station shall be grounded to 1 inch x 10'-0" solid wrought iron ground rods for not over 25 ohms resistance. The ground conductors shall be protected by a half-round wood molding from below the ground line to a point at least 8 feet above the ground line. The distance between ground rods and pole shall be not less than 3 feet. If additional rods are installed, the distance between ground rods and pole shall not be less than 6 feet. Pole line hardware at the transformer station shall be hot-dip galvanized and shall be in accordance with the standards of the Cleveland Division of Light and Power. Suitable washers shall be installed under bolt heads and nuts on wood surfaces. Eye bolts, strain plates and clevises shall be used wherever required to adequately support and protect the pole, crossarms, guy wires and insulators. Ogee washers shall be provided wherever the bolt heads bear directly on timber.

The wood pole of the transformer station shall be 40-foot, Class 2, either Southern Pine, full-treated from bottom to top with creosote or pentachlorophenol, with a minimum retention of 6 pounds per cubic foot, or butt-treated Douglas Fir or Western Red Cedar, and shall conform to the American Standards 05.1 as to shape, condition and fiber stress. Pole shall be machine-shaved, roof-sawed, round, sound, well-proportioned from butt to top without short kinks or crooks. A butt-treated pole shall be treated by an approved process from the bottom to a point not less than one foot above the finished ground line and shall be set not less than 6'-6" deep in normal firm ground. When setting pole, the hole shall be of ample size to allow the easy entrance of the butt, and the size of the hole at the bottom shall be large enough to permit the proper use of tampers. When backfilling hole, minimum of 3 tampers shall be used for each shoveler, in order to insure that the earth is tightly packed. In no case shall the earth be thrown into a greater depth than 4 inches without being tamped hard before the next layer is deposited. The surplus earth shall be placed around the pole in a conical shape and packed tightly in order that water will drain away from the pole. The pole shall be so drilled, aligned and loaded with arms at right angle to the direction of the primary line. The vertical and longitudinal strength of crossarms, the requirements for climbing space and pin spacing shall conform to the requirements of the Cleveland Division of Light and Power. The Contractor shall retreat the pole and arms with preservative after any cutting or boring.

All construction practices and materials shall be in accordance with the usual practices of the Cleveland Division of Light and Power. The Contractor shall prepare shop drawing(s) of the transformer station he proposes to install, and shall submit same for review by the Director and the Cleveland Division of Light and Power. Approval of the shop drawing(s) shall be obtained before any materials are procured or the fabrication is begun. Drawing(s) shall include crossarms and other timber work, framing, connections, bracing, anchorage, make and type of equipment, and spacing of the equipment to be installed. The Contractor shall make all necessary arrangements for power. The initial service to the transformer station for the roadway lighting will be 2400-volt primary. The primary service will be extended overhead approximately as shown on the plans. The Power Company will provide at their cost the insulators and guy for dead-ending their lines at the station. All costs to the Contractor, other than these mentioned immediately above, in connection with the introduction of this service shall be included in the unit cost for the transformer and panel station in the proposal. The Contractor shall consult and cooperate with the Company in locating its distribution lines so that lines will be as short and direct as possible, but he will not be required to furnish, install, or make any provisions for metering.

Payment for Item S-25, "Transformer and Panel Station, 75 Kva," will be made at the lump sum price each, in place, completed and accepted, including distribution transformer, primary service and connections, primary cutout, primary fuse, insulators, primary arrester, secondary disconnect, fuse, magnetic switch, conduit on pole for feeders, conduits to underground for branches, adapters, bushings, general enclosures, cable, pothead or sealed conduit terminal fittings, excavation, backfilling, tamping, ground wires, grounding, crossarms, brackets, distribution panel, directory, branch breakers, photoelectric relay, time clock (switch) with 10-hour mechanical carryover, controller, on-off-automatic selector switch, control transformer, treated-pole, painting, locks, secondary wiring, warning sign, adjustments, joint compound, couplings, saddles, fittings, fastenings, attachments, anchor bolts, ground lugs, welds, ground rods, ground wire moulding on pole, clamps, grounding bushings, and all necessary incidentals. All costs incurred obtaining service shall be included in this item.

SIGN COMMERCIAL ELECTRIC SERVICE

The Contractor shall provide a service for signs near the transformer and panel station as indicated. Pole, switch enclosure mounting, conduits, etc. shall be as specified and/or shown for the transformer and panel station, except Class 6 pole. The fused service switch shall be type approved for service entrance, 480 volts, 60-amps., 3-pole, in NEMA 4 watertight, AISA 302 or 303 stainless steel enclosure, and with lockable flange-mounted switch handle. Conduit connections to enclosure shall be through watertight hubs. The class and type of switch and enclosure shall be as manufactured by Square D, General Electric, Columbus Electric Works; Panels, Inc.; or approved equal. Wiring shall be as indicated. Payment for Item S-25, "Sign Commercial Electric Service", will be made at the lump sum price each, in place, completed and accepted, including both secondary racks, No. 4 mains wiring, insulators, pole-mounted secondary arrester, fuses, service entrance switch, enclosure, conduit

SCALE None	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE LWL DATE 3-10-65	CONSULTING ENGINEERS	
TRCD. EG DATE 3-12-65	KANSAS CITY	CLEVELAND NEW YORK
CKD. GJC DATE 3-12-65		

LIGHTING NOTES

FED. RD. DIVISION	STATE	PROJECT	
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CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

entrance head, conduits on pole, conduits to underground, adapters to sign underground circuit cable ducts, bushings, excavation, backfilling, tamping, ground, rod(s), moulding, crossarms, treated pole, painting, lock, warning sign, identification sign, fittings, fastenings, attachments, and all incidentals.

INSPECTION AND TESTING - The Contractor shall be responsible for furnishing all personnel and equipment required to successfully perform the following tests and shall furnish 6 certified copies of complete test records to the Engineer:

(a) Ground Test - The resistance to ground for each ground rod installation shall not exceed 25 ohms. Where resistance exceeds 25 ohms, additional lengths and/or numbers of rods shall be installed per requirements of 625.10

(b) Circuit Test - The resistance to ground for each insulated multiple circuit conductor, including insulated ground, shall be not less than 10 megohms. The test shall be performed for each circuit with all ballasts disconnected from the circuit. In the case of a grounded circuit, the insulated ground return shall be tested before the circuit ground connections are made to ground rods in the handholes of standards.

(c) D-C Potential Test - Conduct the following test on each insulated conductor (including insulated ground) of each multiple light and signing circuit after installation is complete.

Before performing the Potential Test, disconnect the pole and bracket cable at the connector kits in each light standard handhole and sign, also disconnect the underpass lights, and remove the circuit protection fuses at the control panels. --- Conduct the D-C High Potential Test per the cable manufacturer's recommendation and per applicable sections of the following specifications: ASTM Designation D 470-59T and ASTM Designation D 1350-58T. --- All defective circuits shall be repaired or replaced by the contractor and the test resumed and conducted until all multiple circuit conductors meet the requirements.

(d) Performance Test - Prior To acceptance, the Contractor shall operate the lighting system, including automatic control equipment and other specified apparatus, from sunset to sunrise for seven consecutive days without interruption or failure attributable to poor workmanship or defective material, after all faults have been corrected. The Contractor shall record each fault, the method and date of correction of each, and the beginning and end of the seven day test. The Contractor shall arrange with the servicing agency to purchase electric power necessary to conduct the performance tests. Portable generating plants will not be considered as suitable sources of power for the performance tests. All costs of personnel, materials, equipment, electrical energy and incidentals required for performing the tests shall be included in the contract unit prices for the respective items tested.

STRUCTURE GROUNDING

This item shall consist of furnishing and installing a complete ground at the outside end of the fixed pier of Bridge CUY-71-1752 where indicated. Ground shall be complete, and shall consist of lead to above top of pier, and welded connection to superstructure steelwork. To ground steelwork of bridge to pile, a No. 0 bare, soft annealed copper wire shall be connected at the lower end by the Exothermic weld process to a steel pile casing. The No. 0 grounding conductors between weld to pile, to above pier top shall be as straight and direct as practicable. The connection between pile and superstructure steelwork shall be with continuous No. 0 bare copper connected by Exothermic weld to an outside superstructure girder or beam flange. Grounding shall be accomplished as soon as the steelwork to which the grounding wire is to be attached is in place. All disturbed painting shall be restored.

Ground system components for superstructure grounding will not be measured separately as items, but will be lumped into one ground system, Item S-25, "Bridge Structure Ground", in place, completed and accepted, including grounding, lead, welds, cable, restoring damaged paint, tests, and all incidentals.

QUANTITIES ON STRUCTURES

Quantities for all lighting items on structures, including luminaires, poles, cables, anchor bolts, conduits, expansion couplings, junction boxes, and the bridge electrical ground are included in and are to be paid for with quantities for the respective structures.

TRENCHING - The Contractor shall perform all excavations for installing underground cable ducts, conduits, grounds, pull boxes and foundation boxes in whatever substances encountered to the depths indicated on the drawings or as otherwise specified. The bottom of the trenches shall be accurately graded to provide uniform depth below ground surface. Backfill trenches in accordance with Sec. I-1.07, Type A, except that the material in the first 4" above cable duct shall contain no pieces larger than 1".

Item S-25 "Trenching", will be paid at the Contract unit price per linear foot for required width and depth, which price shall be full compensation for excavation for conduits and cable ducts for lighting, signing and communication circuits in whatever materials encountered, backfilling, removing waste, compacting, grading and leveling of trench bottom, and all incidentals.

ESTIMATED LIGHTING QUANTITIES

BRIDGE CUY-71-1752	ROADWAY WALL	SHEET 209	SHEET 210	SHEET 211	TOTAL	UNIT	ITEM	DESCRIPTION TYPE CODE 7221	100% City Partic.	95% State 5% City	Normal
		11	12	15	38	Each	S-25	Round Pole (9.5"x5.02"x32'-0") - 18' Br.		2	36
		11	39	11	61	Each	S-25	Round Pole (9.0"x4.52"x32'-0") - 10' Br.			61
	2				2	Each	S-25	Round Pole (9" Special) - 15' Br.			2
4						Each	S-25	Round Pole (8.0"x3.87"x29'-6") - 10' Br.			
3		11	23	5	39	Each	S-25	Luminaire, Type III-M-C		2	37
1	2	11	28	21	62	Each	S-25	Luminaire, Type II-M-C			62
17						Each	S-25	Underpass Luminaire on Bridge			
4	2	22	51	26	101	Each	S-25	400-W. Lamp		2	99
17						Each	S-25	250-W. Lamp			
		11	12	15	38	Each	S-25	Light Pole Foundation, Type A		2	36
		11	39	11	61	Each	S-25	Light Pole Foundation, Type B			61
		3	4	3	10	Each	S-25	Call Box Foundation			10
4	2				2	Set/2	S-25	Pole Anchor Bolts for Structure			2
7						Each	S-25	Junction Box on Structure - 12"x8"x8"			
1						Each	S-25	Junction Box on Structure - 24"x12"x8"			
		9	19	14	42	Each	S-25	Pull Box - Type A			42
		7	23	11	41	Each	S-25	Pull Box - Type B			41
		1			1	Each	S-25	Manhole			1
		3	4	3	10	Each	S-25	Call Box Transformer and Cable **	10**		
		5,450	12,200	5,810	23,460	Lin.Ft.	S-25	Cable Duct - 2/1 c No. 6			23460
2300	600	900	2,650	1,800	5,950	Lin.Ft.	S-25	Circuit Cable - 1/c No. 6			5950
360	160	2,150	4,875	2,580	9,765	Lin.Ft.	S-25	Pole and Bracket Cable - 1/c No. 12		210	9555
900						Lin.Ft.	S-25	Circuit Cable - 1/c No. 10			
11	2	25	55	29	111	Each	S-25	Fused "Y" Connector, Type II		2	109
11	2	25	55	29	111	Each	S-25	Unfused "Y" Connector, Type III		2	109
		6	16	6	28	Each	S-25	Semi-Permanent "Y" Connector, Type IV			28
		4	4	4	12	Each	S-25	Semi-Permanent In-Line Connector, Type I ⊗			12
34						Each	S-25	In-Line Fused Disconnect, Type VI			
340						Lin.Ft.	S-25	Conduit - 1"ϕ Rigid Galv. Steel			
60						Lin.Ft.	S-25	Conduit - 1¼"ϕ Rigid Galv. Steel			
1140	300				300	Lin.Ft.	S-25	Conduit - 2"ϕ Rigid Galv. Steel			300
4125						Lin.Ft.	S-25	Conduit - 3"ϕ Rigid Galv. Steel			
		180	240	320	740	Lin.Ft.	S-25	Conduit - 1"ϕ Corrosion Resistant			740
		60	130	300	490	Lin.Ft.	S-25	Conduit - 2"ϕ Corrosion Resistant			490
		1,350	3650	2150	7150	Lin.Ft.	S-25	Conduit - 3"ϕ Corrosion Resistant			7150
		2,550	3200	3140	8890	Lin.Ft.	S-25	Conduit - 3"ϕ Plastic	4445**		4445
			LUMP		LUMP	L.S.	S-25	Transformer and Panel Station, 75 KVA			Lump
			LUMP		LUMP	L.S.	S-25	Sign Commercial Electric Service			Lump
		4800	10550	5670	21,020	Lin.Ft.	S-25	Trenching			21,020
1						Each	S-25	Bridge Structure Ground			

ALTERNATE BID ITEMS *

		11	12	15	38	Each	S-25	Pole (9.5"x5.02"x32'-0") - 18' Br. *			
		11	39	11	61	Each	S-25	Pole (9.0"x4.52"x32'-0") - 10' Br. *			
	2				2	Each	S-25	Pole (9" Special) - 15' Br. *			
4						Each	S-25	Pole (8.0"x3.87"x29'-6") - 10' Br. *			

* Alternate Pole bid items, for Poles other than round.

⊗ Quantity indeterminate, number installed shall be as required by field conditions without affecting the unit price bid.

** 100% City Participation

SCALE	None	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE	L.L. DATE 3-10-65	CONSULTING ENGINEERS
TRCD.	E.G. DATE 3-12-65	KANSAS CITY CLEVELAND NEW YORK
CKD.	G.J.C. DATE 3-12-65	

LIGHTING NOTES AND QUANTITIES

Rev. 12-8-'65 C.E.H.

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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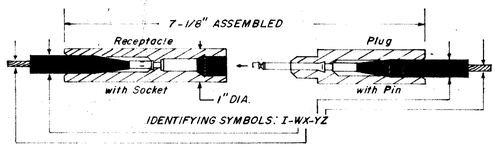
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY-71 - 17.18



TO IDENTIFY THE PROPER KIT FOR AN INSTALLATION, SELECT FROM THE TABLES BELOW THE SYMBOLS WHICH COINCIDE WITH THE REQUIREMENTS and SUBSTITUTE FOR (W,X) and (Y,Z) RESPECTIVELY.

EXAMPLE

IF THE INSTALLATION REQUIRES A RECEPTACLE FOR NO.6 STRANDED CONDUCTOR and A CABLE DIA. OF .660" and A PLUG FOR NO.8 SOLID CONDUCTOR and A CABLE DIA. OF .460", THE KIT NO. IS I-F3-E6.

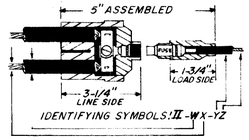
CONDUCTOR SIZE AWG NO.		SYMBOL FOR X and Z
Concentric Stranded	Solid	
10, 12	8, 10	6
8	6	4
6	4	3
4	–	2

CABLE DIA.		SYMBOL FOR W and Y
MIN.	MAX.	
.195"	.260"	B*
.250"	.330"	C*
.320"	.430"	D*
.420"	.585"	E
.575"	.785"	F
.775"	.985"	G
.975"	1.125"	H

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

* MOLDED RUBBER ADAPTERS ARE A PART OF THESE KITS FOR SMALL DIA. CABLE.

TYPE I
INLINE SELF LOCKING CONNECTOR KIT FOR PULL BOX INSTALLATION.



FOR LIGHT AT END OF A CIRCUIT, PLUG ONE OPENING WITH INSULATED PLUG HAVING SAME DIAMETER AS CABLE. ANY STANDARD MIDGET, FERRULE TYPE, FUSE MAY BE USED IN THIS CONNECTOR. A FUSE CAPABLE OF INTERUPTING THE SHORT CIRCUIT CAPACITY OF THE SUPPLY CIRCUIT MUST BE USED.

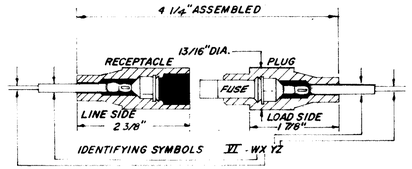
(X) CONDUCTOR SIZE (X) AWG NO.		SYMBOL FOR X	(Z) CONDUCTOR SIZE (Z) AWG NO.		SYMBOL FOR X
Concentric Stranded	Solid		Concentric Stranded	Solid	
–	8	6	14, 16	12, 14	8
8	6	4	10, 12	8, 10	6
6	4	3	8	6	4
4	–	2	6	4	3
2	–	1			
1	–	0			
1/0	–	10			
2/0	–	20			

(W) CABLE DIA. (W)		SYMBOL FOR X	(Y) CABLE DIA. (Y)		SYMBOL FOR Y
MIN.	MAX.		MIN.	MAX.	
.250"	.330"	C	.120"	.160"	S
.320"	.380"	DA	.155"	.205"	A
.370"	.430"	DB	.195"	.260"	B
.420"	.505"	EA	.250"	.330"	C
.495"	.585"	EB	.320"	.430"	D
.575"	.685"	FA			
.675"	.785"	FB			

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

TYPE II
FUSED "Y" CONNECTOR KIT FOR POLE BASE INSTALLATION.



IDENTIFY THE PROPER KIT FOR AN INSTALLATION, SELECT FROM THE TABLES THE SYMBOLS WHICH COINCIDE WITH THE REQUIREMENTS AND SUBSTITUTE FOR (W,X) and (Y,Z) RESPECTIVELY.

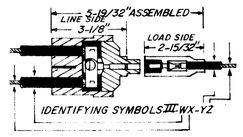
EXAMPLE: IF THE INSTALLATION REQUIRES A RECEPTACLE FOR THE LINE SIDE FOR NO.6 STRANDED CONDUCTOR AND A CABLE DIAMETER OF .42" AND A PLUG FOR THE FUSE FOR THE LOAD SIDE FOR NO.12 STRANDED CONDUCTOR AND A CABLE DIAMETER OF .29", THE KIT NO. IS VI-D3-C6.

Conductor Size AWG		Symbol for X and Z
Concentric Std.	Solid	
14, 16	12, 14	8
10, 12	8, 10	6
8	6	4
6	4	3

Cable Diameter		Symbol for Y and W
MIN.	MAX.	
.120"	.160"	S
.155	.205	A
.195	.260	B
.250	.330	C
.320	.430	D

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

TYPE VI
FUSED INLINE CONNECTOR KIT FOR JUNCTION BOX INSTALLATION.



FOR LIGHT AT END OF A CIRCUIT, PLUG ONE OPENING WITH INSULATED PLUG HAVING SAME DIAMETER. TO IDENTIFY THE PROPER KIT FOR AN INSTALLATION, SELECT FROM THE TABLES BELOW THE SYMBOLS WHICH COINCIDE WITH THE REQUIREMENTS and SUBSTITUTE FOR (W,X) and (Y,Z) RESPECTIVELY.

EXAMPLE

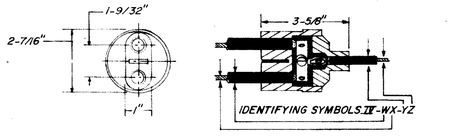
IF THE LINE SIDE CABLES ARE NO. 2 STRANDED CONDUCTOR WITH AN OUTSIDE DIAMETER OF .54", and THE LOAD SIDE CABLE IS NO. 12 STRANDED CONDUCTOR WITH AN OUTSIDE DIAMETER OF .29", THE KIT NO. IS 3-EB1-C6.

(X) CONDUCTOR SIZE(X) AWG NO.		SYMBOL FOR X	(Z) CONDUCTOR SIZE (Z) AWG NO.		SYMBOL FOR X
Concentric Stranded	Solid		Concentric Stranded	Solid	
–	8	6	14, 16	12, 14	8
8	6	4	10, 12	8, 10	6
6	4	3	8	6	4
4	–	2	6	4	3
2	–	1			
1	–	0			
1/0	–	10			
	–				

(W) CABLE DIA. (W)		SYMBOL FOR W	(Y) CABLE DIA. (Y)		SYMBOL FOR Y
MIN.	MAX.		MIN.	MAX.	
.250"	.330"	C	.120"	.160"	S
.320"	.380"	DA	.155"	.205"	A
.370"	.430"	DB	.195"	.260"	B
.420"	.505"	EA	.250"	.330"	C
.495"	.585"	EB	.320"	.430"	D
.575"	.685"	FA			
.675"	.785"	FB			

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

TYPE III
UNFUSED "Y" CONNECTOR KIT FOR POLE BASE INSTALLATION.



TO IDENTIFY THE PROPER KIT FOR AN INSTALLATION, SELECT FROM THE TABLES BELOW THE SYMBOLS WHICH COINCIDE WITH THE REQUIREMENTS and SUBSTITUTE FOR (W,X) and (Y,Z) RESPECTIVELY.

EXAMPLE

IF THE TWIN CABLES ARE NO.2 STRANDED CONDUCTOR WITH AN OUTSIDE DIA. OF .54" and THE SINGLE CABLE IS NO. STRANDED CONDUCTOR WITH AN OUTSIDE DIA. OF .29", THE KIT NO. IS 4-EB1-C6.

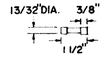
(X) CONDUCTOR SIZE(X) AWG NO.		SYMBOL FOR X	(Z) CONDUCTOR SIZE (Z) AWG NO.		SYMBOL FOR Z
Concentric Stranded	Solid		Concentric Stranded	Solid	
–	8	6	14, 16	12, 16	8
8	6	4	10, 12	8, 10	6
6	4	3	8	6	4
4	–	2	6	4	3
2	–	1	4	–	2
1	–	0	2	–	1
1/0	–	10	1	–	0
2/0	–	20			

(W) CABLE DIA. (W)		SYMBOL FOR W	(Y) CABLE DIA. (Y)		SYMBOL FOR Y
MIN.	MAX.		MIN.	MAX.	
.250"	.330"	C	.155"	.205"	A
.320"	.380"	DA	.195"	.260"	B
.370"	.430"	DB	.250"	.330"	C
.420"	.505"	EA	.320"	.430"	D
.495"	.585"	EB	.420"	.585"	E
.575"	.685"	FA	.575"	.785"	F
.675"	.785"	FB			

DIAMETERS VARY ALONG CABLE LENGTHS. TAKE SEVERAL MEASUREMENTS. SELECT A TIGHT FIT RATHER THAN A LOOSE ONE.

TYPE IV
UNFUSED "Y" CONNECTOR KIT FOR PULL BOX INSTALLATION

MIDGET SIZE FUSE



MIDGET FUSES ARE AVAILABLE IN THE FOLLOWING CAPACITIES:
600 VOLTS OR LESS, 1/10 TO 30 AMPS.
ANY STANDARD MIDGET, FERRULE TYPE FUSE, (EXCEPT GLASS TUBE) MAY BE USED IN THIS CONNECTOR.
A FUSE CAPABLE OF INTERRUPTING THE SHORT CIRCUIT CAPACITY OF THE SUPPLY CIRCUIT MUST BE USED.

FED. RD. DIVISION	STATE	PROJECT	
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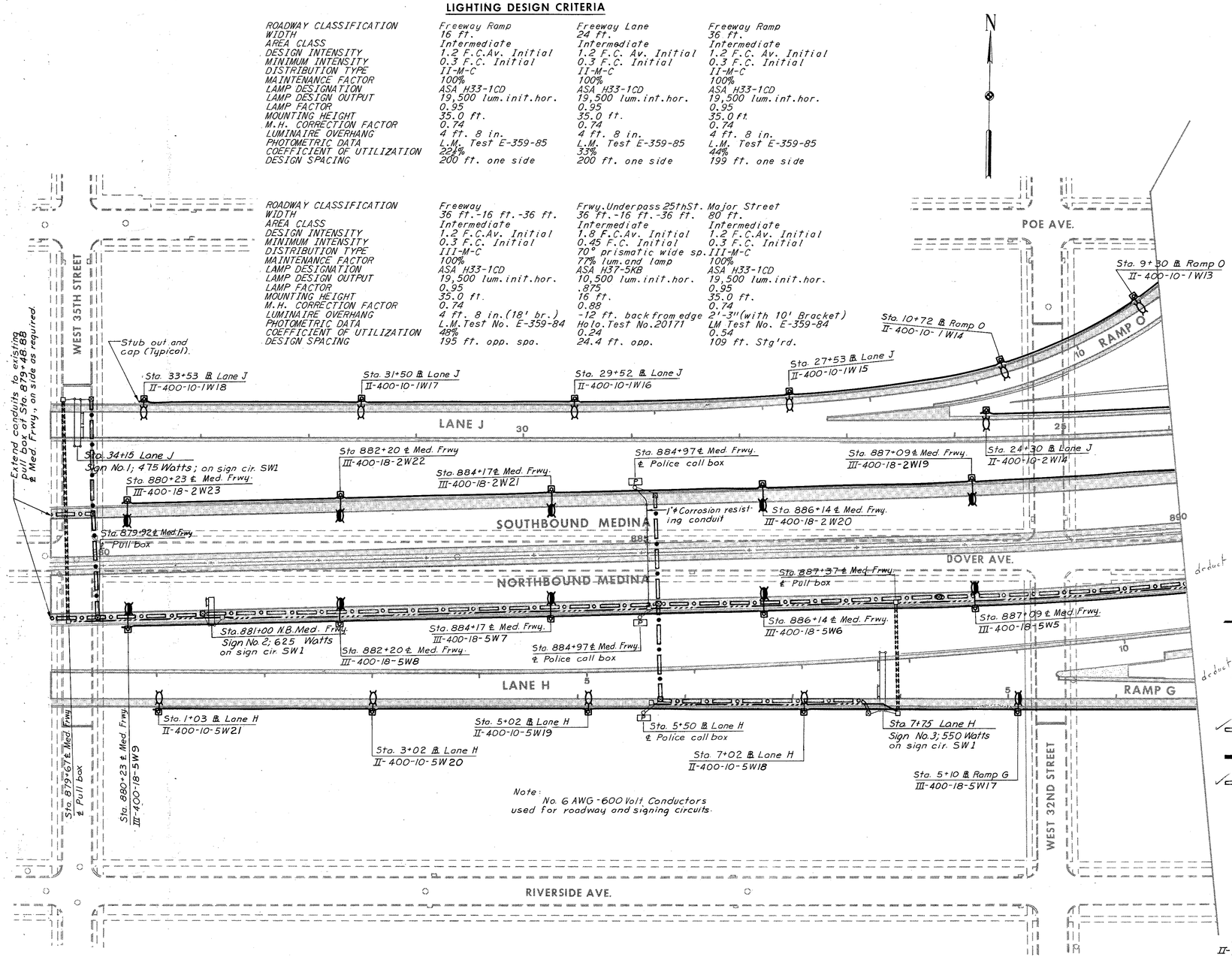
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

LIGHTING DESIGN CRITERIA

ROADWAY CLASSIFICATION	Freeway Ramp	Freeway Lane	Freeway Ramp
WIDTH	16 ft.	24 ft.	36 ft.
AREA CLASS	Intermediate	Intermediate	Intermediate
DESIGN INTENSITY	1.2 F.C.Av. Initial	1.2 F.C. Av. Initial	1.2 F.C. Av. Initial
MINIMUM INTENSITY	0.3 F.C. Initial	0.3 F.C. Initial	0.3 F.C. Initial
DISTRIBUTION TYPE	II-M-C	II-M-C	II-M-C
MAINTENANCE FACTOR	100%	100%	100%
LAMP DESIGNATION	ASA H33-1CD	ASA H33-1CD	ASA H33-1CD
LAMP DESIGN OUTPUT	19,500 lum.init.hor.	19,500 lum.int.hor.	19,500 lum.int.hor.
LAMP FACTOR	0.95	0.95	0.95
MOUNTING HEIGHT	35.0 ft.	35.0 ft.	35.0 ft.
M.H. CORRECTION FACTOR	0.74	0.74	0.74
LUMINAIRE OVERHANG	4 ft. 8 in.	4 ft. 8 in.	4 ft. 8 in.
PHOTOMETRIC DATA	L.M. Test E-359-85	L.M. Test E-359-85	L.M. Test E-359-85
COEFFICIENT OF UTILIZATION	22.8%	33%	44%
DESIGN SPACING	200 ft. one side	200 ft. one side	199 ft. one side

ROADWAY CLASSIFICATION	Freeway	Frwy.Underpass 25thSt.	Major Street
WIDTH	36 ft.-16 ft.-36 ft.	36 ft.-16 ft.-36 ft.	80 ft.
AREA CLASS	Intermediate	Intermediate	Intermediate
DESIGN INTENSITY	1.2 F.C.Av. Initial	1.8 F.C.Av. Initial	1.2 F.C.Av. Initial
MINIMUM INTENSITY	0.3 F.C. Initial	0.45 F.C. Initial	0.3 F.C. Initial
DISTRIBUTION TYPE	III-M-C	70° prismatic wide sp.	III-M-C
MAINTENANCE FACTOR	100%	77% lum. and lamp	100%
LAMP DESIGNATION	ASA H33-1CD	ASA H37-5KB	ASA H33-1CD
LAMP DESIGN OUTPUT	19,500 lum.init.hor.	10,500 lum.init.hor.	19,500 lum.init.hor.
LAMP FACTOR	0.95	.875	0.95
MOUNTING HEIGHT	35.0 ft.	16 ft.	35.0 ft.
M.H. CORRECTION FACTOR	0.74	0.88	0.74
LUMINAIRE OVERHANG	4 ft. 8 in.(18' br.)	-12 ft. back from edge	2'-3"(with 10' Bracket)
PHOTOMETRIC DATA	L.M.Test No. E-359-84	Holo.Test No.20171	LM Test No. E-359-84
COEFFICIENT OF UTILIZATION	48%	0.24	0.54
DESIGN SPACING	195 ft. opp. spa.	24.4 ft. opp.	109 ft. Stg'rd.



LIGHTING KEY

- -Typical Ground Mounted Lighting Unit: Clear Mercury Vapor Lamp, 400 watt size, ASA-IES Type II on standard.
- -Typical Ground Mounted Lighting Unit: Clear Mercury Vapor Lamp, 400 watt size, ASA-IES Type III. on standard.
- -Typical Structure Mounted Lighting Unit: ASA-IES Type II. Same as above.
- -Typical Structure Mounted Lighting Unit: ASA-IES Type III Same as above.
- -Concrete Pull Box, Type "B" for Lighting and for Signing.
- -Junction Box, galv. cast-iron, in structures, of sizes as noted.
- -Transformer Station and Service Panel for Roadway Lighting
- -Service Panel and Pole for Sign Lighting.
- -Cable Duct, directly buried for Roadway Lighting.
- -Multiple Circuits in 2" Diam. galv. rigid, conduit in structures for Roadway Lighting.
- -Multiple Circuits in 2" Diam. corrosion resistant, conduit from end of structures to nearest pull box or lighting unit directly buried for Roadway Lighting.
- 4 conduit -Multiple Circuits in 3" Diam. corrosion resistant, conduit under paved areas, for Roadway Lighting.
- -Multiple Circuits in 2" Diam, corrosion resistant, conduit from end of structures to nearest pull box, directly buried, for Sign Lighting.
- -Multiple Circuits in Cable Duct, directly buried for Sign Lighting.
- -Multiple Circuits in 2" Diam. galv., rigid, conduit in structures for Sign Lighting.
- 4 conduit 305 304 -Multiple Circuits in 3" Diam. corrosion resistant conduit under paved areas, for Sign Lighting.
- -1" Diam., corrosion resistant conduit, for power circuits to call boxes.
- 1286 -2-3" Diam., Plastic conduits for communications circuits, directly buried.
- -2-3" Diam., galv. rigid, conduits in structures, for communications circuits.
- 390 377 -2-3" Diam., corrosion resistant conduits, directly buried, for communications circuits, under paved areas.
- -Concrete Pull Box for communications circuits, Type "A".
- -Junction Box in structures, galv, cast-iron for communications circuits.
- -Call Box with a 2" Diam. corrosion resistant conduit to the nearest concrete Pull Box or junction box, as shown.
- -Bridge Ground at fixed Piers, on outside beams, as shown.
- (E) -Expansion joint in conduit (s) in structures, as shown or required.
- (D) -Drain fitting in conduit (s). in low point in conduit runs in structures, as shown.
- II-400-18-1W3 -Typical Luminaire Designation: II is ASA-IES Type, 400 is lamp wattage, 18 is the bracket length, 1 is the circuit number, W is for the service panel location at 90 ft. left of Sta. 17+77 ℄ Rel. West 25th. St, and 3 is for the pole number in the circuit.
- -Typical Mercury Vapor Underpass Lighting Unit: 250-watt clear M.V. Lamp. Mounted on structure as shown and detailed.

1350

SCALE 1"=50'
MADE LL DATE 3-10-65
TRCD. GM DATE 3-12-65
CKD. GJC DATE 3-12-65

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

LIGHTING LAYOUT

FED. RD. DIVISION	STATE	PROJECT	
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CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

Sta. 4+18 ℄ Ramp O
II-400-10-1W10
Sta. 3+03 ℄ Ramp O
II-400-10-1W9
Sta. 0+88 ℄ Ramp O
℄ Pull box
Sta. 1+03 ℄ Ramp O
II-400-10-1W8
Sta. 20+08 ℄ Rel. 25TH St.
III-400-10-2W9
LIBRARY AVE.
Sta. 5+33 ℄ Ramp O
II-400-10-1W11
Sta. 7+33 ℄ Ramp O
II-400-10-1W12
RAMP O
Sta. 11+23 ℄ Ramp D
II-400-10-2W7
Sta. 12+33 ℄ Ramp D
℄ Pull box
Sta. 9+00 ℄ Ramp D
II-400-10-2W6
Sta. 18+91 ℄ Rel. 25TH St.
III-400-10-1W3
RAMP D
RELOCATED WEST 25TH STREET
Sta. 7+85 ℄ Ramp D
II-400-10-2W5
Sta. 17+73 ℄ Rel. 25TH St.
III-400-10-2W8
Sta. 19+25 ℄ Rel. 25TH St.
℄ Pull Box
4 Cable Ducts
Sta. 6+74 ℄ Ramp D
II-400-10-2W4
Sta. 6+84 ℄ Rel. Scranton Rd.
II-400-10-4W19
Extend empty conduit and cap beyond wingwall
SCRANTON ROAD
Sta. 15+40 ℄ Lane I
Sign No. 5; 550 Watt
on sign circuit 35W
Sta. 15+15 ℄ Lane J
II-400-10-3W1
Sta. 14+58 ℄ Lane J
℄ Police call box
Sta. 5+00 ℄ Ramp D
℄ Pull box
Sta. 4+53 ℄ Ramp D
II-400-10-2W2
Sta. 16+58 ℄ Rel. 25TH St.
III-400-10-1W4
POE AVE
Sta. 5+61 ℄ Ramp D
II-400-10-2W3
Sta. 3+43 ℄ Ramp D
II-400-10-2W1
Sta. 898+09 ℄ Med. Frwy.
III-400-18-3W11
Sta. 899+87 ℄ Med. Frwy.
III-400-18-3W12
4 Ducts
2 Ducts
Sta. 22+00 ℄ Lane J
II-400-10-2W12
Sta. 20+16 ℄ Lane J
II-400-10-2W11
Sta. 23+85 ℄ Lane J
II-400-10-2W13
Sta. 895+88 ℄ Med. Frwy.
III-400-18-2W15
Sta. 5+39 ℄ Rel. Scranton Rd.
III-400-10-4W18, Set anchor bolts parallel to ℄ Rel. 25TH St.
SOUTHBOUND MEDINA
Sta. 899+68 ℄ Med. Frwy.
III-400-18-4W2
Sta. 897+67 ℄ Med. Frwy.
III-400-18-4W1
Sta. 891+98 ℄ Med. Frwy.
III-400-18-2W17
Sta. 890+02 ℄ Med. Frwy.
III-400-18-2W18
Sta. 895+00 ℄ Med Frwy.
℄ Police call box
Sta. 893+93 ℄ Med. Frwy.
III-400-18-2W16
Sta. 896+33 ℄ Frwy.
℄ Pull box
Sta. 14+26 ℄ Rel. 25TH St.
III-400-10-1W5
CUY-71-17.52
Sta. 14+80 ℄ W. 25th. Street
Sign No. 10 790 Watts
on sign cir. SW2
Sta. 20+45 ℄ Lane
II-400-10-4W9
1/4 Corrosion resisting conduit
NORTHBOUND MEDINA
Sta. 895+88 ℄ Frwy.
III-400-18-5W1
Sta. 896+00 ℄ Frwy.
℄ Pull box
Sta. 890+02 ℄ Med. Frwy.
III-400-18-5W4
Sta. 893+93 ℄ Med Frwy.
III-400-18-5W2
Sta. 891+98 ℄ Med. Frwy.
III-400-18-5W3
LOWER ROAD
LANE H
Sta. 891+60 ℄ Med. Frwy.
Sign No. 4; 1375 Watt, on sign circuit 15W
Sta. 18+40 ℄ Lane H
II-400-10-4W8
45°-0"
Manhole 8'-4"-6" by Contractor
Sta. 13+21 ℄ Rel. 25TH St.
III-400-10-4W17
Sta. 13+39 ℄ Lane H
II-400-10-5W11
Sta. 15+76 ℄ Lane H
℄ Police call box
Sta. 12+58 ℄ Lane H
II-400-10-5W12
Sta. 16+21 ℄ Lane H
II-400-10-5W10
RAMP I
Sta. 2+93 ℄ Ramp I
II-400-10-4W24
Sta. 1+18 ℄ Ramp I
II-400-10-4W23
Sta. 12+35 ℄ Rel. 25TH St.
℄ Pull box
2 Ducts
RAMP G
Sta. 16+62 ℄ Lane H
℄ Pull box & Manhole
Sta. 12+50 ℄ Ramp G
℄ Pull box
Sta. 7+12 ℄ Ramp G
II-400-10-5W16
Sta. 9+09 ℄ Ramp G
II-400-10-5W15
Sta. 11+07 ℄ Ramp G
II-400-10-5W14
Sta. 12+44 ℄ Ramp G
℄ Pull box
Sta. 10+78 ℄ Lane H
II-400-10-5W13

N

Sta. 23+19 ℄ Rel. 25TH St.
III-400-10-1W1
Sta. 22+60 ℄ Rel. W. 25TH St.
Sign No. 9, 315 Watts
on sign cir. SW2
Sta. 22+12 ℄ Rel. 25TH St.
III-400-10-2W10
RELOCATED WEST 25TH STREET
Sta. 21+09 ℄ Rel. 25TH St.
III-400-10-1W2

Sta. 11+95 ℄ Rel. 25TH St.
III-400-10-1W6
Sta. 11+18 ℄ Rel. 25TH St.
III-400-10-4W20
RIVERSIDE CEMETERY
SOUTH LANE
Sta. 1+00 ℄ South Lane
II-400-10-4W21
Sta. 10+10 ℄ Rel. 25TH St.
III-400-10-1W7
RELOCATED WEST 25TH STREET
Sta. 8+97 ℄ Rel. 25TH St.
III-400-10-4W22
Sta. 8+60 ℄ W. 25th. Street
Sign No. 14, 315 Watts
on sign cir. SW2

SCALE 1"=50'
MADE LL DATE 3-10-65
TRCD. GM DATE 3-11-65
CKD. GJC DATE 3-11-65

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

LIGHTING LAYOUT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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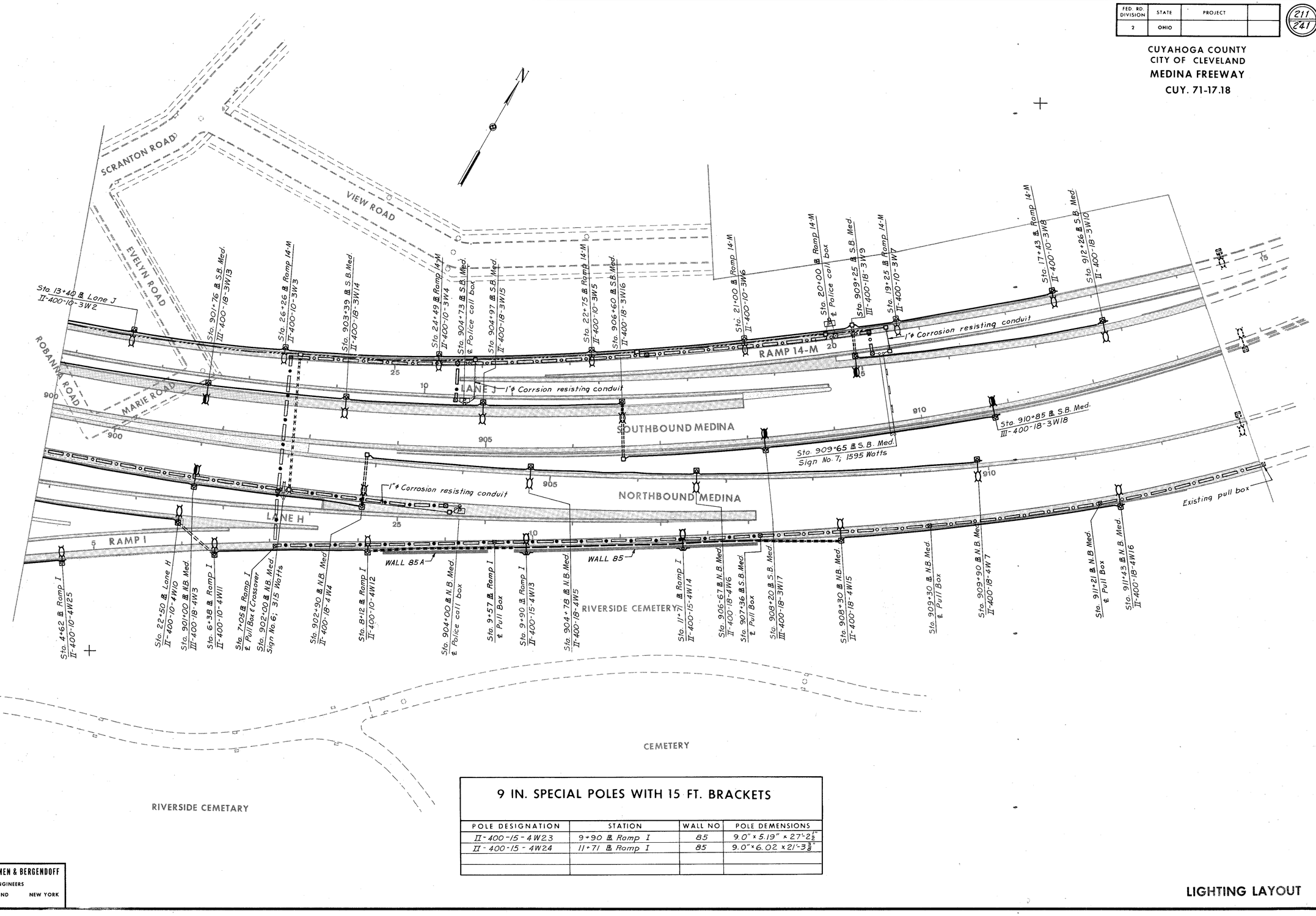
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18



9 IN. SPECIAL POLES WITH 15 FT. BRACKETS

POLE DESIGNATION	STATION	WALL NO	POLE DEMENSIONS
II-400-15-4W23	9+90 ℄ Ramp I	85	9.0" x 5.19" x 27'-2½"
II-400-15-4W24	11+71 ℄ Ramp I	85	9.0"x6.02 x21'-3⅜"

SCALE 1"=50'
MADE LL DATE 3-10-65
TRCD. GM DATE 3-11-65
CKD. GJC DATE 3-11-65

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

LIGHTING LAYOUT

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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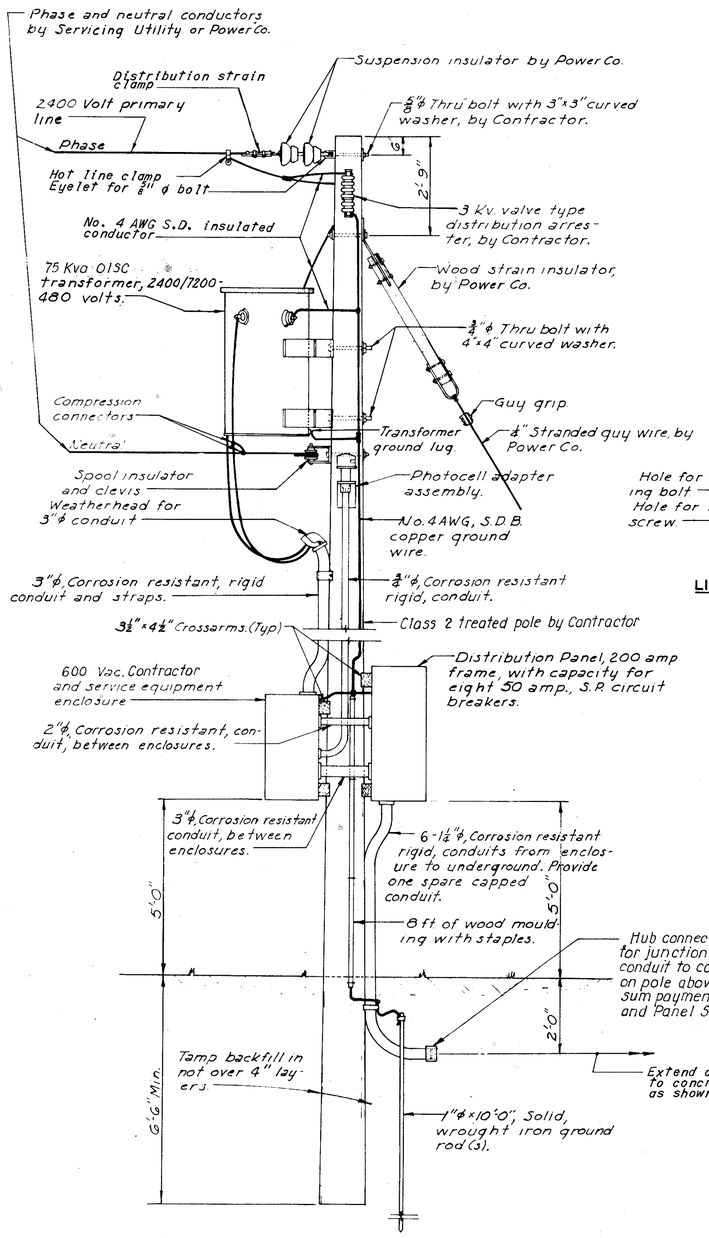
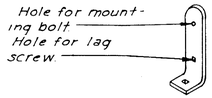
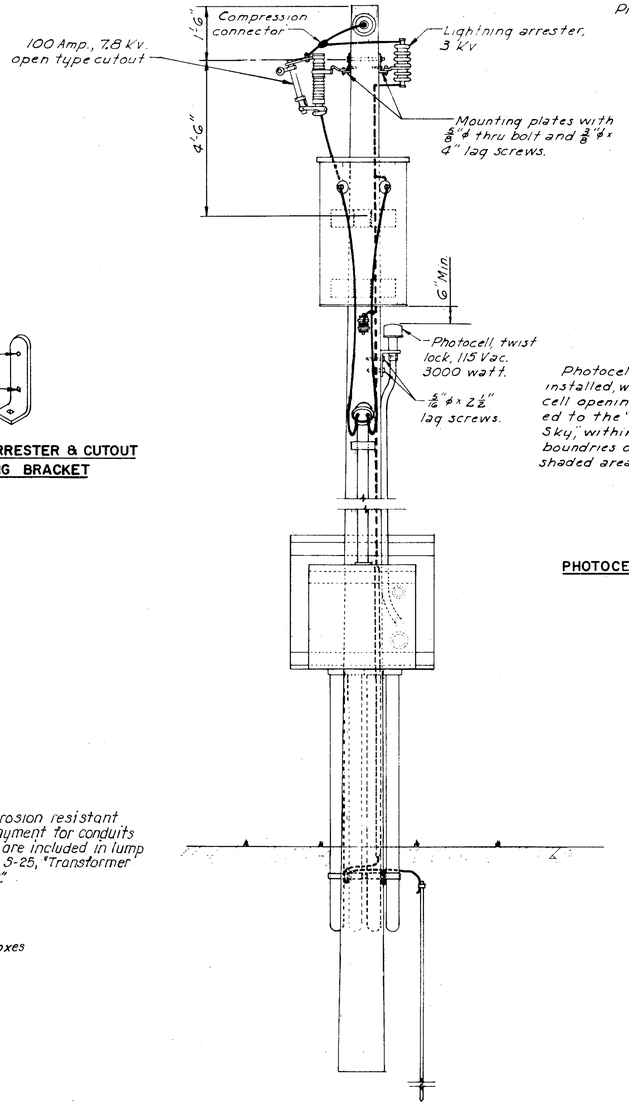
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18



SIDE ELEVATION

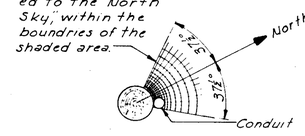


LIGHTNING ARRESTER & CUTOUT MOUNTING BRACKET



FRONT ELEVATION

TRANSFORMER AND PANEL STATION
No Scale



PHOTOCELL ORIENTATION

WIRING DIAGRAM
No Scale

SCALE	As Noted	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE	GJC DATE 3-10-65	CONSULTING ENGINEERS	
TRCD.	DATE	KANSAS CITY CLEVELAND NEW YORK	
CKD.	LL DATE 3-11-65		

TRANSFORMER STATION

FED RD DIVISION	STATE	PROJECT	
2	OHIO		

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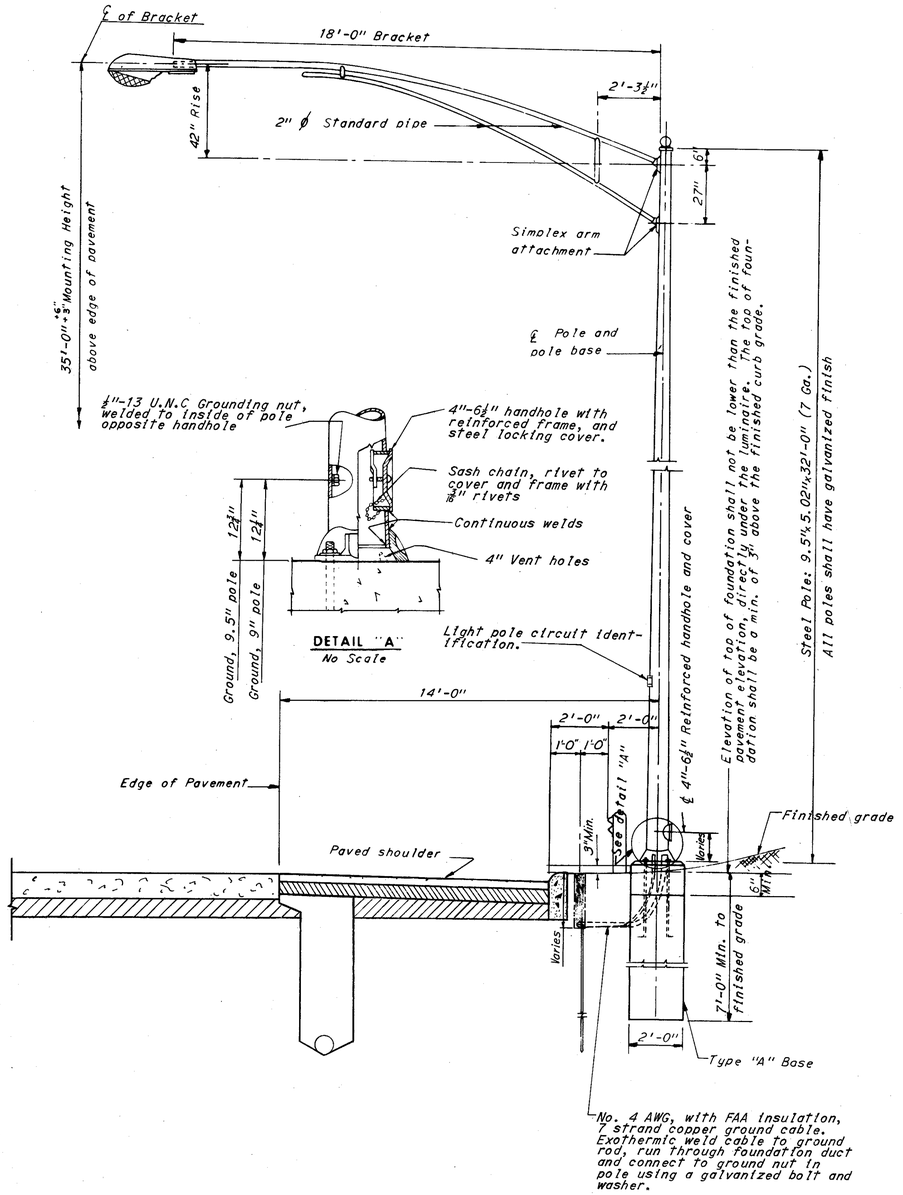
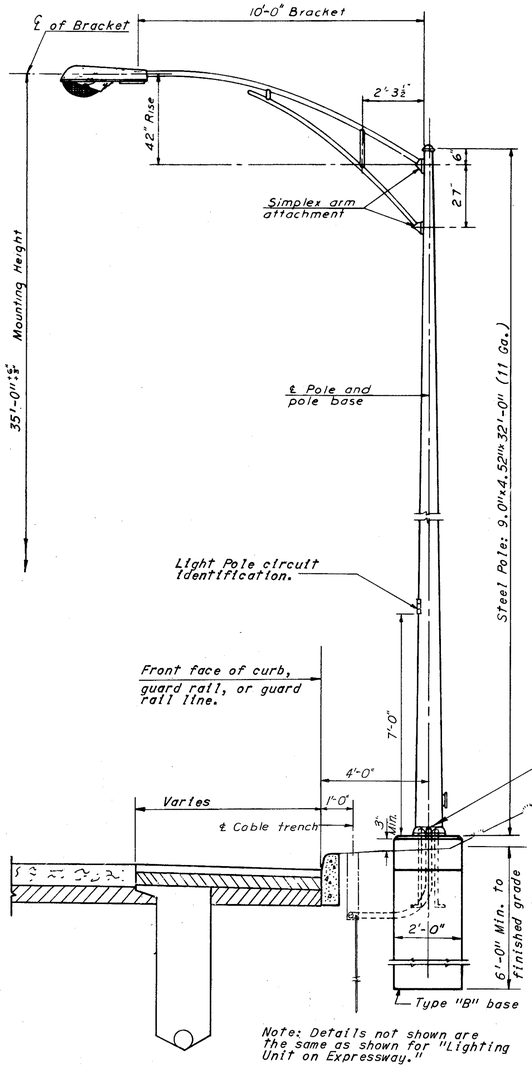
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18



LIGHTING UNIT ON EXPRESSWAYS

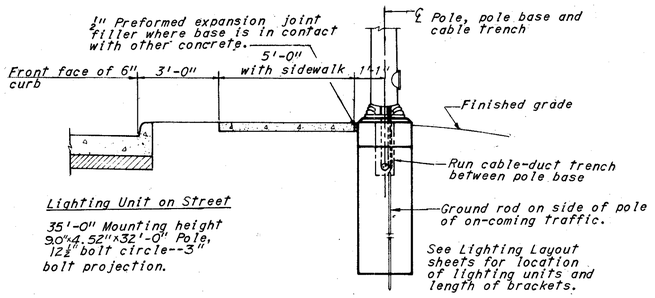
Scale: ⅜" = 1'-0"



Note: Details not shown are the same as shown for "Lighting Unit on Expressway."

LIGHTING UNIT ON LANES AND RAMPS

Scale: ⅜" = 1'-0"

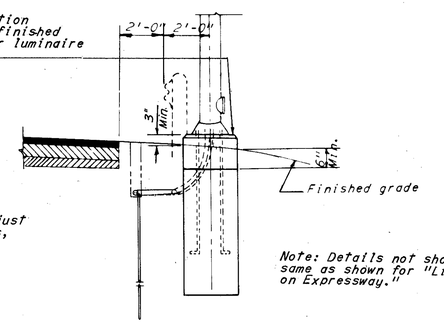


Lighting Unit on Street

35'-0" Mounting height
9.0"x4.52"x32'-0" Pole,
12½" bolt circle--3"
bolt projection.

LIGHTING UNIT WITH SIDEWALK

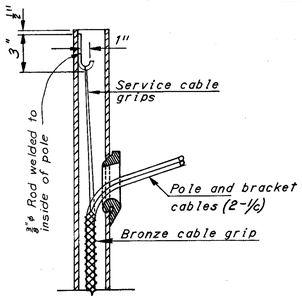
Scale: ⅜" = 1'-0"



Note: Details not shown are the same as shown for "Lighting Unit on Expressway."

LIGHTING UNIT ON EXPRESSWAYS WITHOUT CURB

Scale: ⅜" = 1'-0"



"J-HOOK" DETAIL

Scale: 1½" = 1'-0"

SCALE	3/8"=1'-0"	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE	GJC DATE 3-11-65	CONSULTING ENGINEERS
TRCD.	DATE	KANSAS CITY CLEVELAND NEW YORK
CKD.	LL DATE 3-12-65	

GROUND MOUNT LIGHTING UNITS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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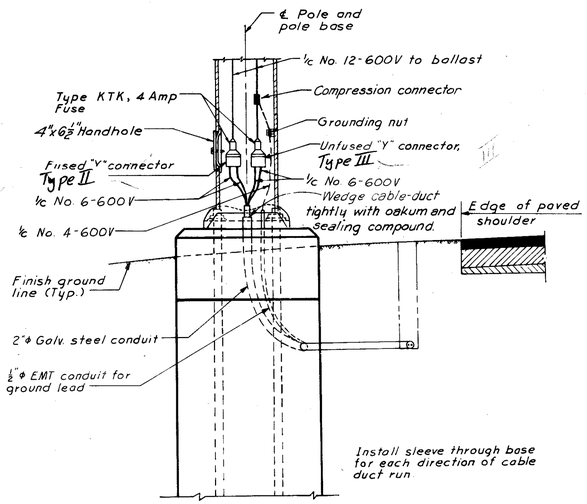
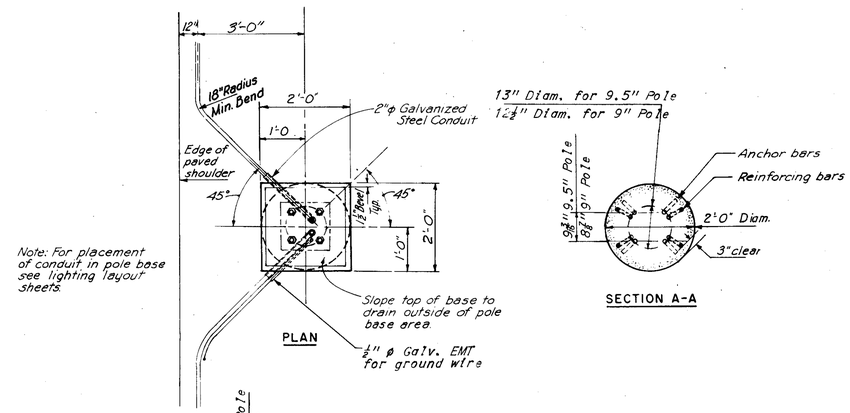
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

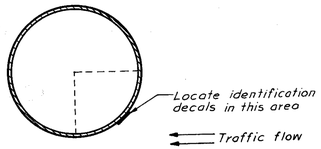


CIRCUIT CABLE CONNECTION AT LIGHT POLE
No Scale

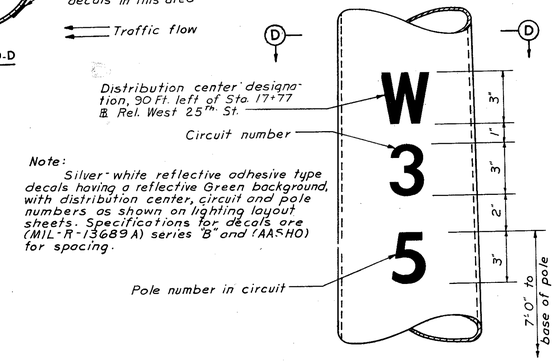


POLE BASE DETAILS
Scale: ½"=1'-0"

SECTION D-D
Scale: ½" = 1'-0"



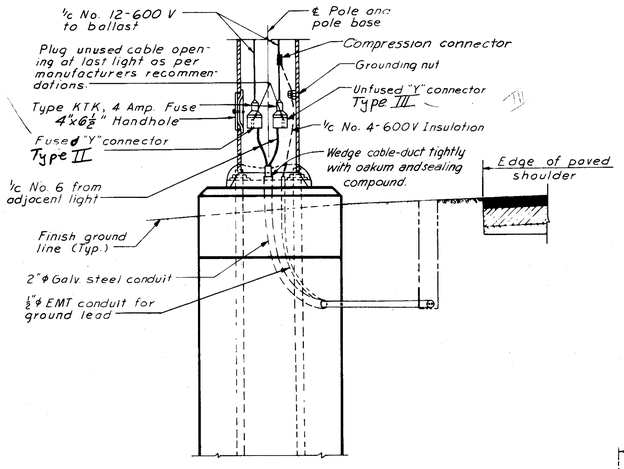
SECTION D-D



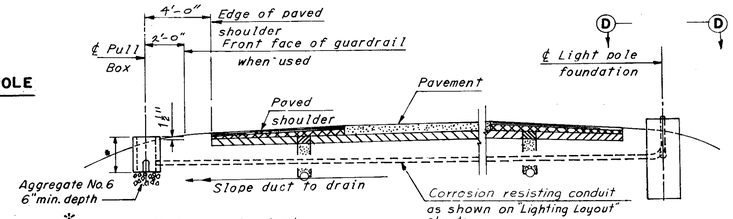
Note:
Silver-white reflective adhesive type decals having a reflective Green background, with distribution center, circuit and pole numbers as shown on lighting layout sheets. Specifications for decals are (MIL-R-13689A) series "B" and (AASHO) for spacing.

ELEVATION

LIGHT POLE CIRCUIT IDENTIFICATION
Full Scale

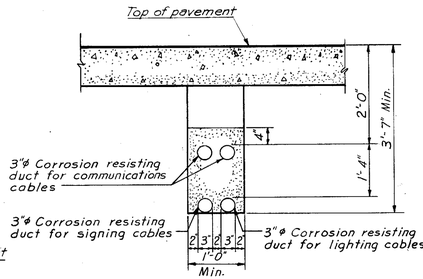


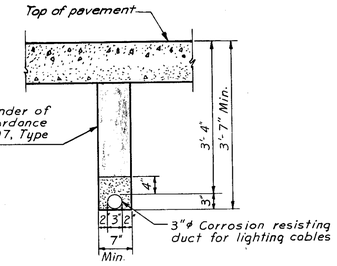
CIRCUIT CABLE CONNECTION AT LAST LIGHT POLE
No Scale



DUCT CROSSOVER SECTION
Scale: ⅛" = 1'-0"

Note: Pull boxes shall be no closer than 10'-0" to the nearest pole base.

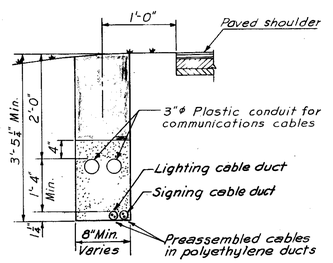


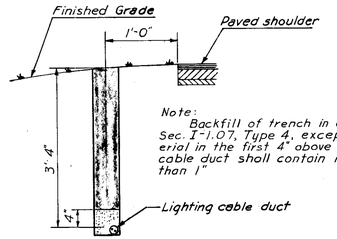


DUCT UNDER ROADWAY DETAILS
No Scale

Notes: Trench shall miss guard rail posts.

Keep cable duct on side of trench away from guard rail and inside trench in as straight a line as possible.





Note:
Backfill of trench in accordance with Sec. I-1.07, Type 4, except that the material in the first 4" above the buried cable duct shall contain no pieces larger than 1"

CABLE DUCT TRENCH DETAILS
No Scale

SCALE	As Noted	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE	LL DATE 3-11-65	CONSULTING ENGINEERS	
TRCD.	DATE	KANSAS CITY CLEVELAND NEW YORK	
CKD.	GJC DATE 3-12-65		

GENERAL LIGHTING DETAILS

FED RD DIVISION	STATE	PROJECT	
2	OHIO		

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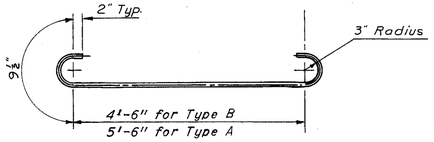
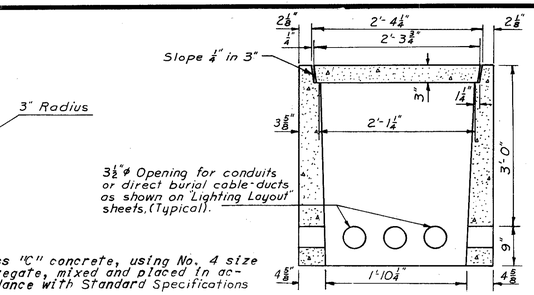
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18



NO. 6 BAR DETAIL

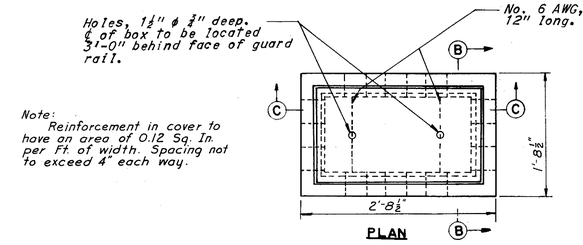


3½"ø Opening for conduits or direct burial cable-ducts as shown on "Lighting Layout" sheets.(Typical).

Class "C" concrete, using No. 4 size aggregate, mixed and placed in accordance with Standard Specifications

SECTION C-C

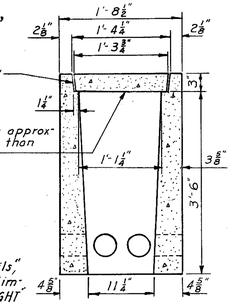
Note: Contractor to fill with grout any unused holes in sides of boxes.
Conduits or ducts shall be pitched to drain, toward boxes, a minimum of one inch per one hundred feet.



Note: Reinforcement in cover to have an area of 0.12 Sq. In. per Ft. of width. Spacing not to exceed 4" each way.

PLAN

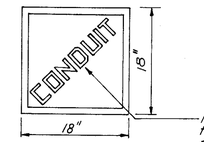
TYPE "B" PULL BOX DETAILS
No Scale



Cover shall be approximately ½" less than opening size

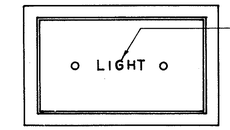
Note: See "Pull Box Cover Details," on this sheet, for size and dimensions of impressed words, LIGHT or POLICE, in pull box cover.

SECTION B-B



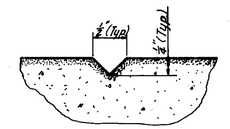
Note: Dimensions for the word "CONDUIT" are the same as dimensions for "LIGHT".

CONCRETE MARKER DETAIL
Scale: 1"=1'-0"



Impress the word "LIGHT" or "POLICE" in the pull box cover, see Detail "A".

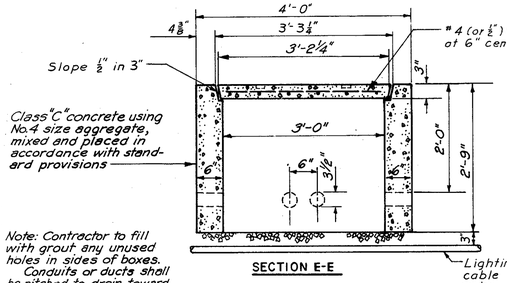
PLAN



DETAIL "A"

Note: Dimensions may vary slightly according to the Manufacturers tolerances.

SECTION THRU LETTER



"# 4 (or ½") Rods for reinforcement at 6" centers each way.

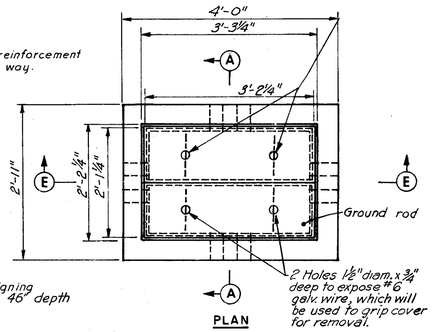
Class "C" concrete using No.4 size aggregate, mixed and placed in accordance with standard provisions

Note: Contractor to fill with grout any unused holes in sides of boxes.
Conduits or ducts shall be pitched to drain toward boxes a minimum of one inch per one hundred feet.

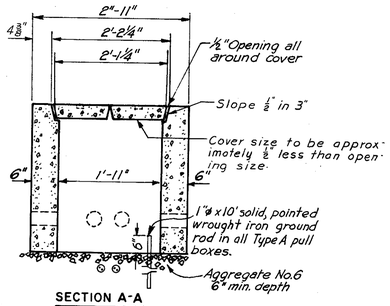
SECTION E-E

Lighting and Signing cable ducts at 46" depth under pull box.

Note: Provide ½" preformed expansion joint filler where pull box is in contact with other concrete.



PLAN

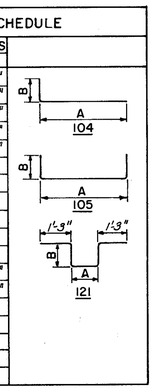


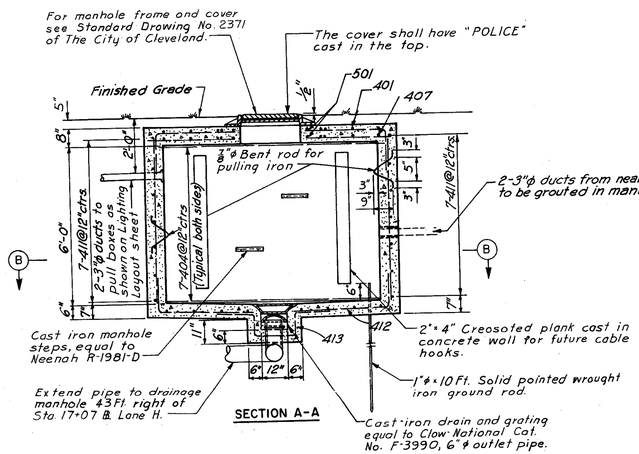
SECTION A-A

TYPE "A" PULL BOX DETAILS
Scale: ¾"=1'-0"

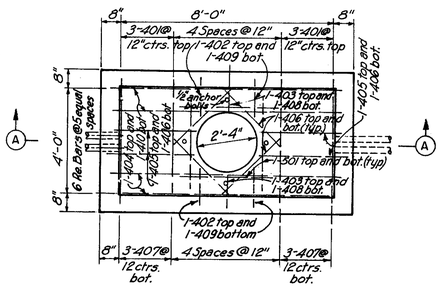
REINFORCING BAR SCHEDULE

MARK	NO.	LENGTH	TYPE	DIMENSIONS A	DIMENSIONS B
401	14	7'-9"	105	4'-9"	1'-6"
402	6	3'-6"	104	2'-0"	1'-6"
403	2	3'-0"	104	1'-6"	1'-6"
404	22	11'-8"	105	8'-8"	1'-6"
405	4	4'-9"	104	3'-3"	1'-6"
406	12	3'-3"	Str.		
407	6	4'-9"	Str.		
408	2	1'-6"	Str.		
409	4	2'-0"	Str.		
410	30	6'-3"	Str.		
411	14	5'-6"	Str.		
412	4	4'-11"	104	3'-5"	1'-6"
413	2	5'-10"	121	11"	1'-6"
501	8	3'-6"	Str.		



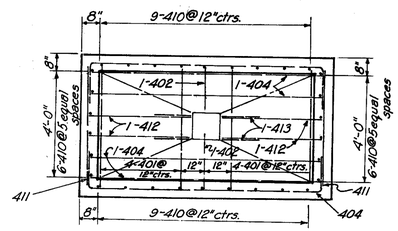


SECTION A-A



PLAN

PULL BOX COVER DETAILS
No Scale



SECTION B-B

COMMUNICATIONS MANHOLE DETAILS
Scale: ⅜"=1'-0"

SCALE: As Noted	HOWARD, NEEDLES, TAMMEN & BERGENDOFF		
MADE: GJC DATE: 3-11-65	CONSULTING ENGINEERS		
TRCD ___ DATE ___	KANSAS CITY	CLEVELAND	NEW YORK
CKD: LL DATE: 3-12-65			

GENERAL LIGHTING DETAILS

FED RD DIVISION	STATE	PROJECT	
2	OHIO		

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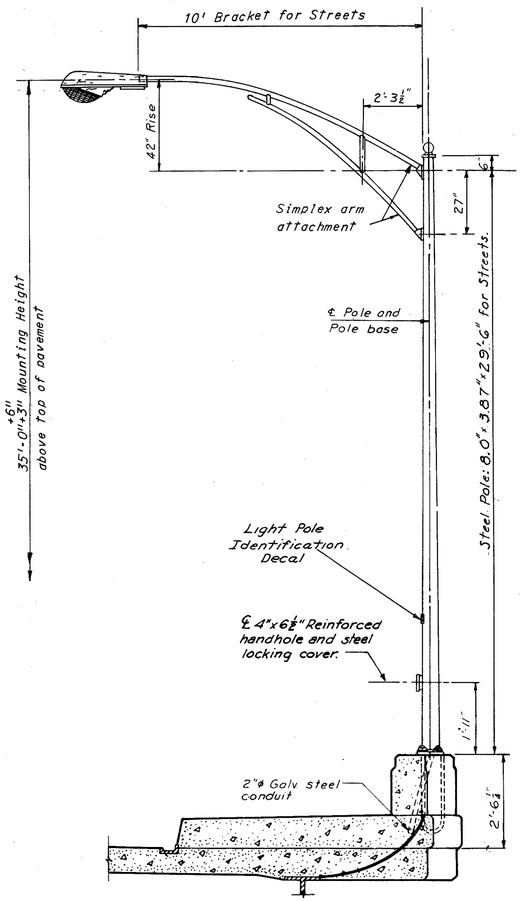
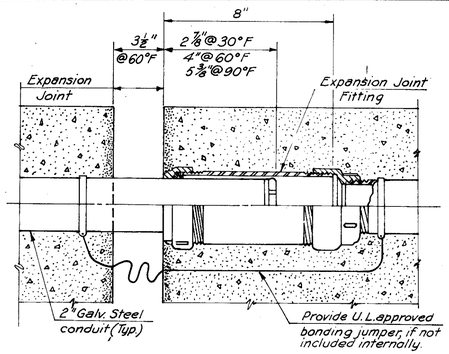
241

CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 7-1-17.18

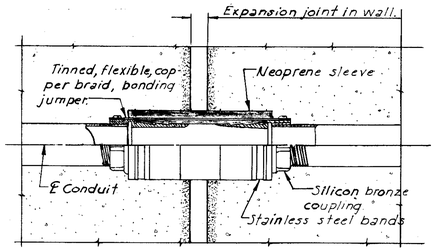


LIGHTING UNIT ON STRUCTURES
Scale: ⅜" = 1'-0"

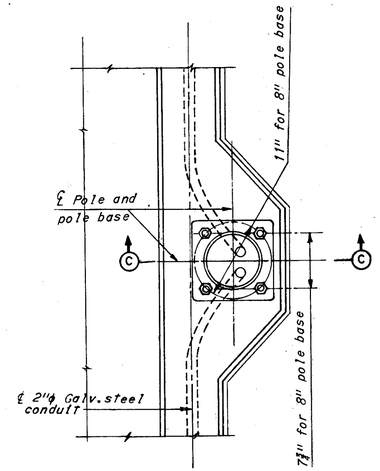


EXPANSION JOINT FITTING
No Scale

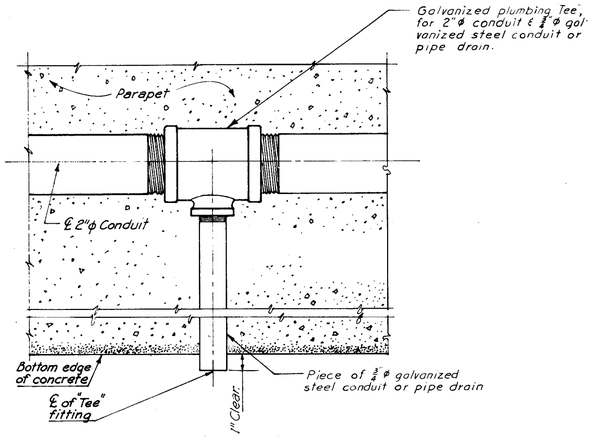
Note:
Expansion joint fitting for 3"ø Galv. Steel conduit shall be the same as shown for 2"ø Galv. Steel conduit except for size.



EXPANSION AND DEFLECTION JOINT FITTING IN WALLS
No Scale

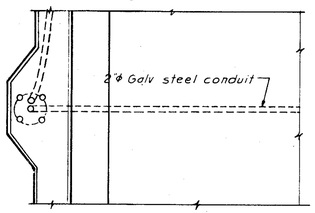


PLAN
No Scale

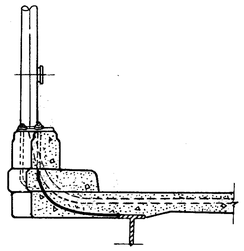


CONDUIT DRAIN FITTING
No Scale

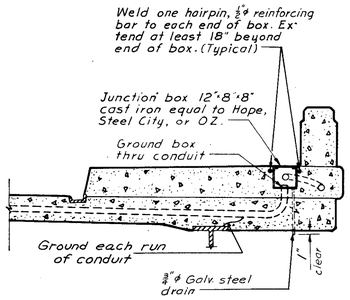
Note:
One drain is required between each pair of pole bases on structures, except where expansion joint is at the low point

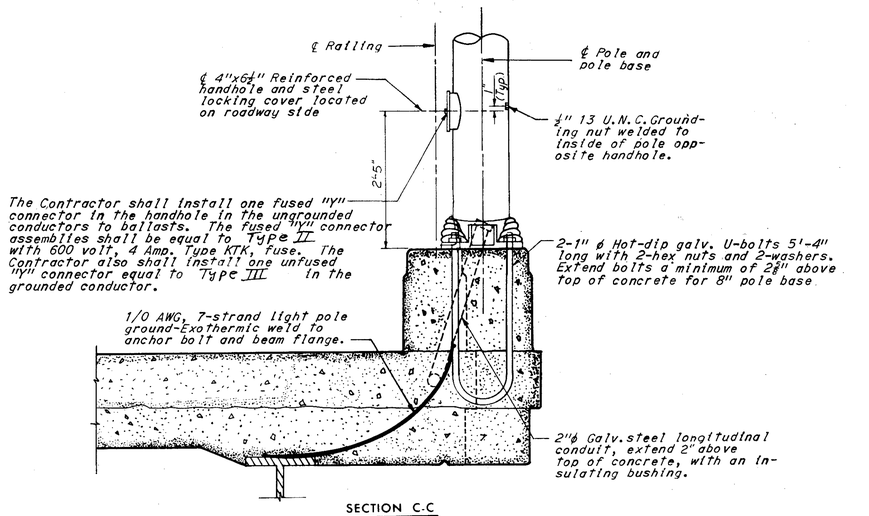


PLAN



CONDUIT CROSSOVER ON BRIDGE
Scale ½"=1'-0"





SECTION C-C
No Scale

LIGHT STANDARD SUPPORT DETAILS
No Scale

SCALE	As Noted	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE	GJC	DATE 3-12-65	CONSULTING ENGINEERS
TRCD.		DATE	
CKD.	LL	DATE 3-12-65	KANSAS CITY CLEVELAND NEW YORK

BRIDGE LIGHTING DETAILS

FED. RD DIVISION	STATE	PROJECT	
2	OHIO		

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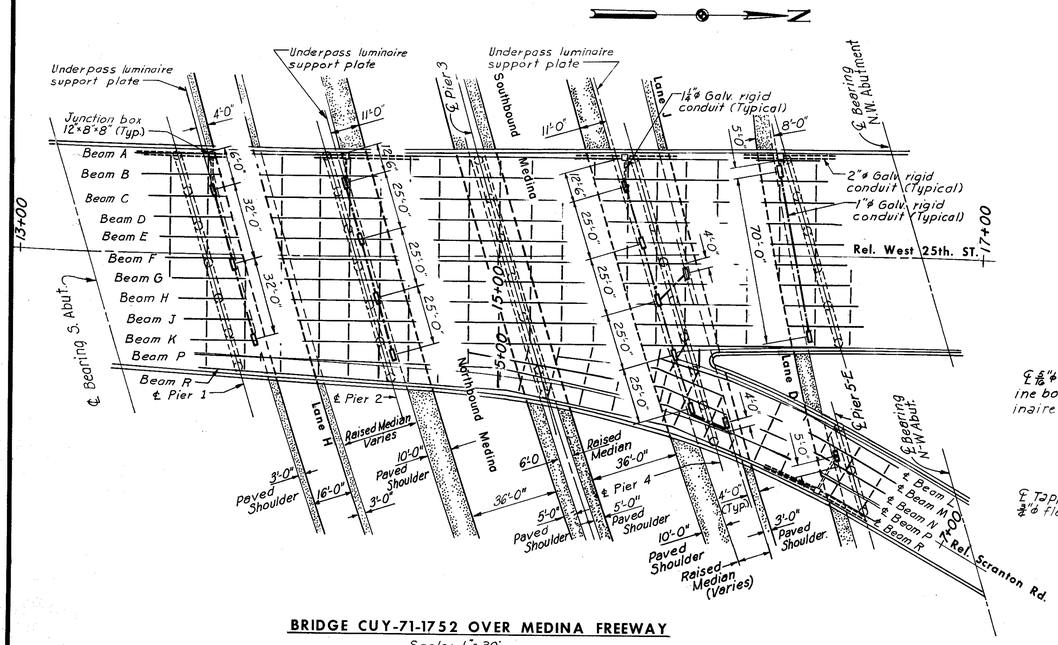
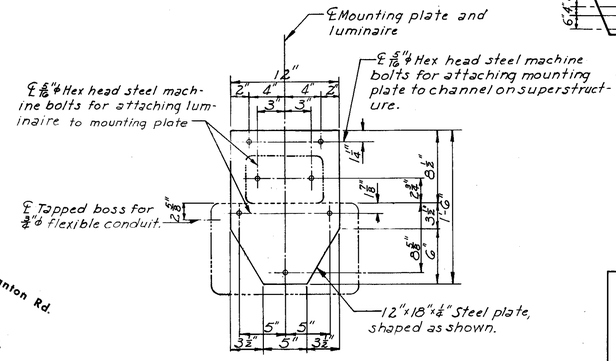
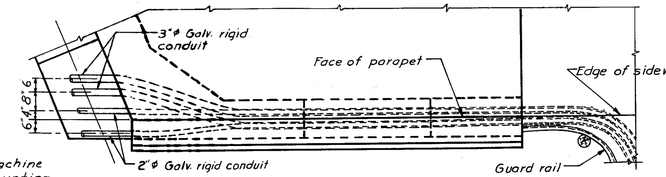
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18



BRIDGE CUY-71-1752 OVER MEDINA FREEWAY
Scale: 1"=30'

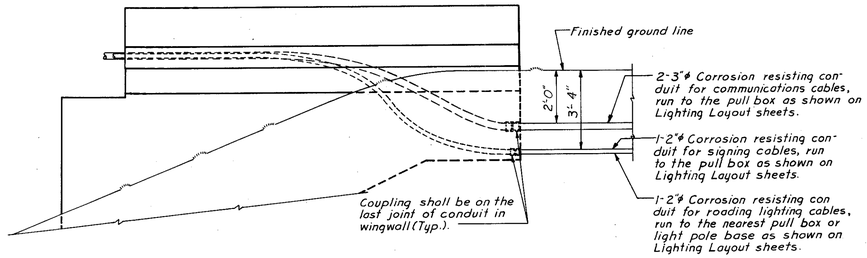


MOUNTING BRACKET UNDERPASS LIGHTING UNIT
No Scale



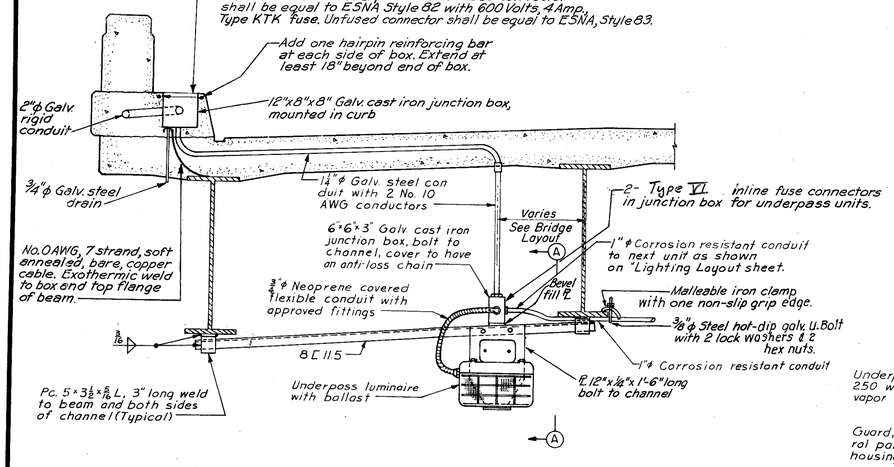
PLAN

Note:
Southwest wingwall shown, conduits in Northwest wingwall similar except as shown on Lighting Layout sheet.

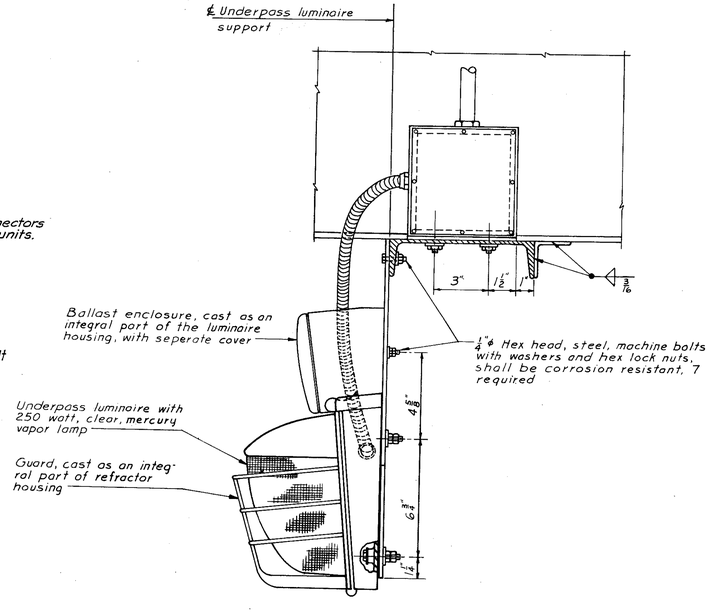


ELEVATION

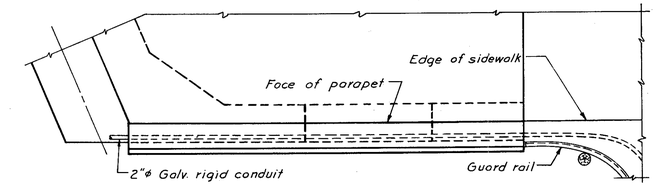
CONDUITS IN SOUTHWEST WINGWALL
Scale: ⅜"=1'-0"



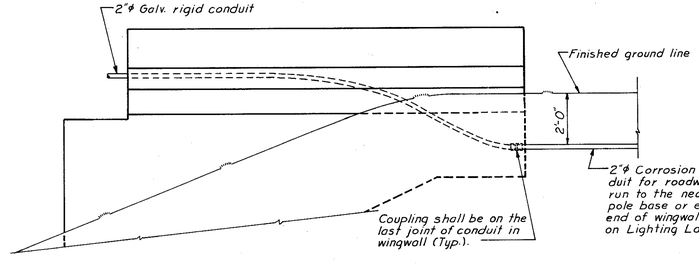
UNDERPASS LIGHTING UNIT ON SUPERSTRUCTURE
No Scale



SECTION A-A
No Scale



PLAN



ELEVATION

CONDUIT IN SOUTHEAST WINGWALL
Scale: ⅜"=1'-0"

SCALE	As Shown	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE	GJC DATE 3-12-65	CONSULTING ENGINEERS	
TRCD.	DATE		
CKD.	LL DATE 3-12-65	KANSAS CITY CLEVELAND NEW YORK	

UNDERPASS LIGHTING DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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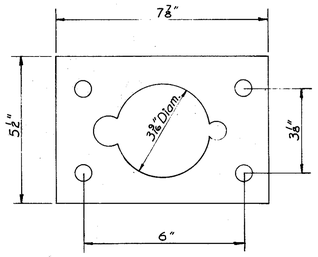
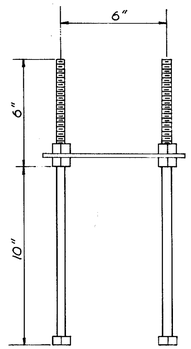
241

CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

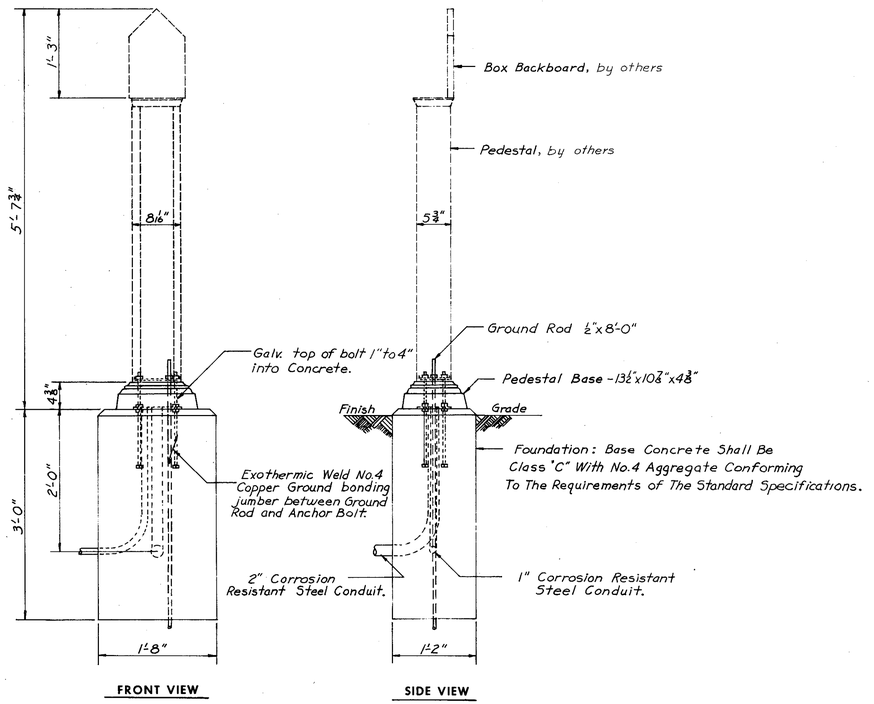


TEMPLATE
Scale: 3"= 1"

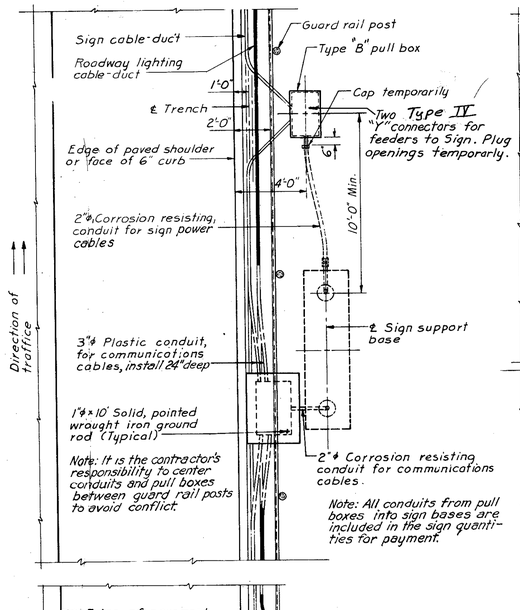


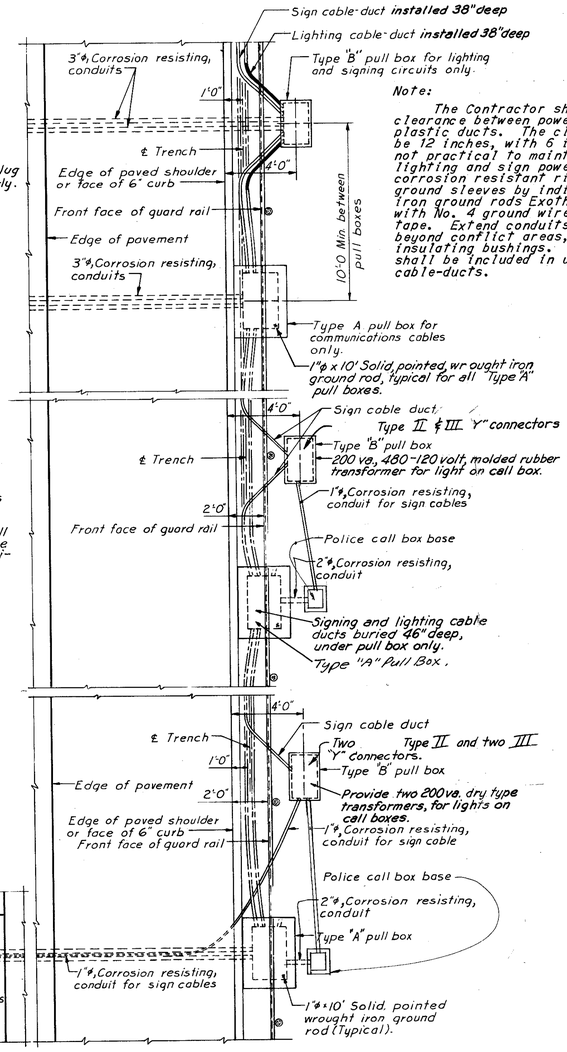
Anchor bolt steel shall have minimum yield of 50,000 psi 70,000 psi ultimate strength.

TEMPLATE AND BOLT ASSEMBLY.
Scale: 3"=1'-0"

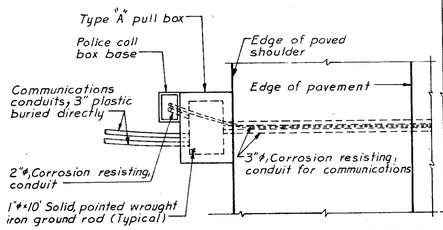


POLICE CALL BOX FOUNDATION BASE
Scale: 1"=1'-0"





Note:
The Contractor shall maintain a minimum clearance between power and communications plastic ducts. The clearance in earth shall be 12 inches, with 6 inches in concrete. If not practical to maintain clearance, install lighting and sign power cable-ducts in 2"ϕ corrosion resistant rigid conduit sleeves, and ground sleeves by individual 1"ϕx10' wrought iron ground rods Exothermically interconnected with No. 4 ground wire. Wrap welds with vinyl tape. Extend conduits a minimum of two feet beyond conflict areas, and terminate with insulating bushings. Payment for sleeves shall be included in unit prices paid for cable-ducts.



GROUND LOCATION PLAN FOR CONDUITS
Scale: ¼" = 1'-0"

SCALE As Noted
MADE LL DATE 3-12-65
TRCD: DATE
CKD. GJC DATE 3-12-65

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

GENERAL LIGHTING DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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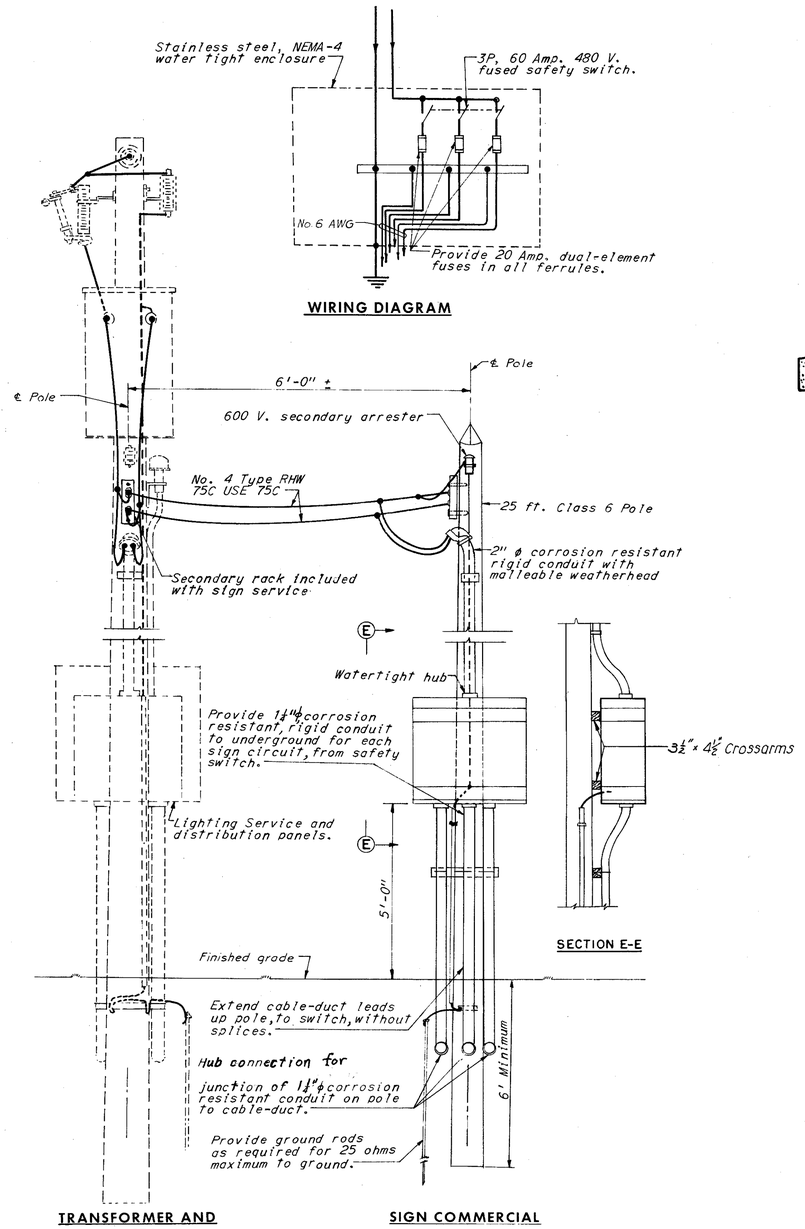
241

CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

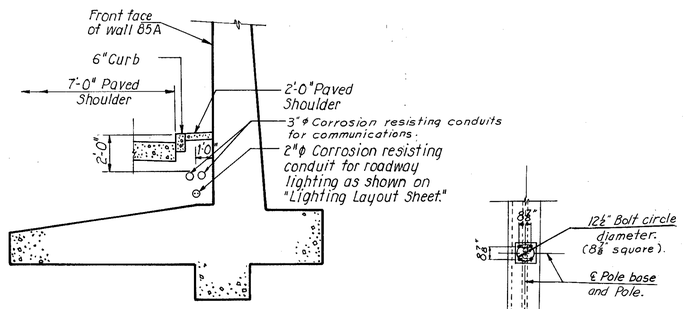


WIRING DIAGRAM

SECTION E-E

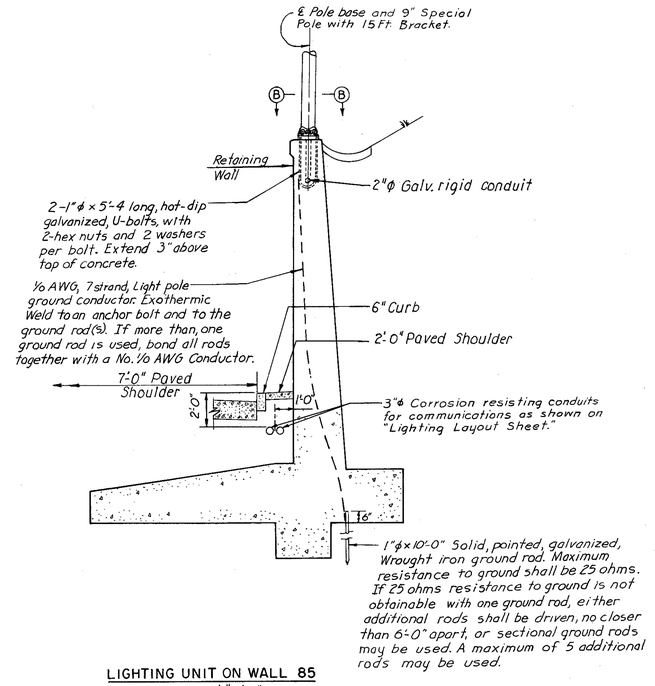
TRANSFORMER AND PANEL STATION
No Scale

SIGN COMMERCIAL ELECTRIC SERVICE
No Scale



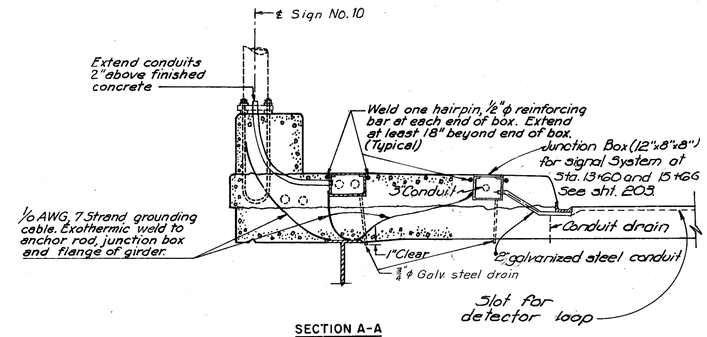
CONDUIT ALONG WALL 85A DETAIL

SECTION B-B

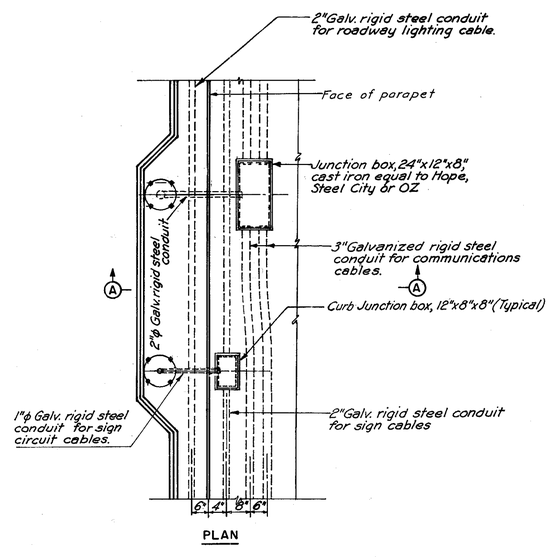


LIGHTING UNIT ON WALL 85
Scale: ¼"=1'-0"

Note:
The bridge contractor shall obtain a template or factory certified drawing giving complete information on dimensions of sign support base before setting anchor bolts. Copies of such template shall be submitted to the State Highway Division Engineer and the State Highway Signing Engineer and approval obtained before using some



SECTION A-A



PLAN

SIGN NO. 10 ON STRUCTURE DETAILS
Scale: ½"=1'-0"

SCALE	As Noted	HOWARD, NEEDLES, TAMMEN & BERGENDOFF	
MADE	LL DATE 3-10-65	CONSULTING ENGINEERS	
TRCD.	DATE	KANSAS CITY	CLEVELAND NEW YORK
CKD.	GJC DATE 3-11-65		

SIGNING-ELECTRIC SERVICE DETAILS

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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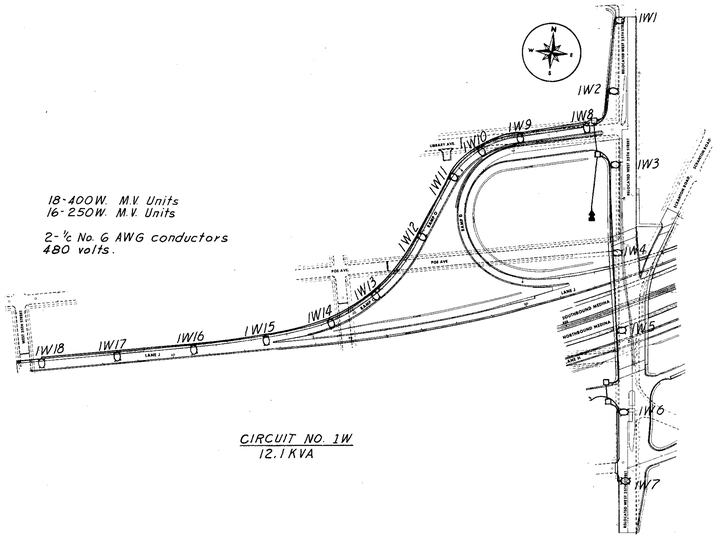
CUYAHOGA COUNTY
CITY OF CLEVELAND
MEDINA FREEWAY
CUY. 71-17.18

CIRCUIT CROSS-REFERENCE NUMBERS	
PLAN CIRCUIT NO.	M.E.L.P. * CIRCUIT NO.
1W	A33
2W	A34
3W	A35
4W	A36
5W	A37

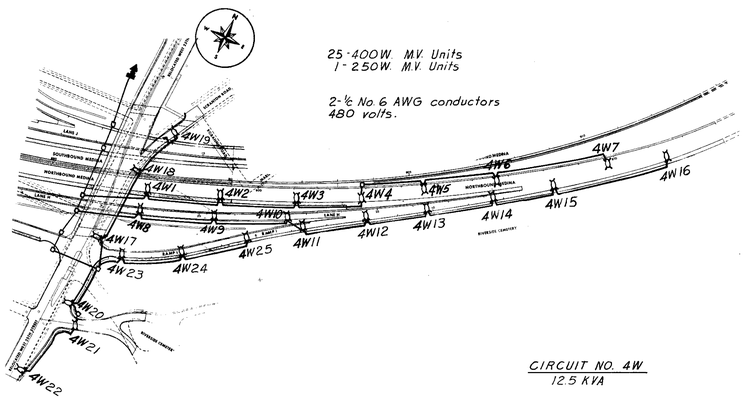
* M.E.L.P. Number on Pole Identification Decal.



18-400W. M.V. Units
16-250W. M.V. Units

2-⅛ No. 6 AWG conductors
480 volts.

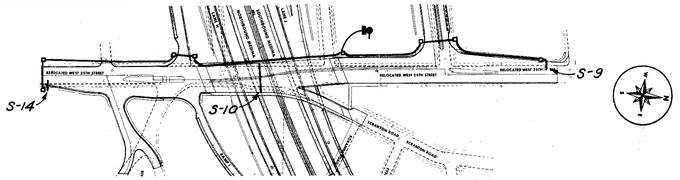
CIRCUIT NO. 1W
12.1 KVA



25-400W. M.V. Units
1-250W. M.V. Units

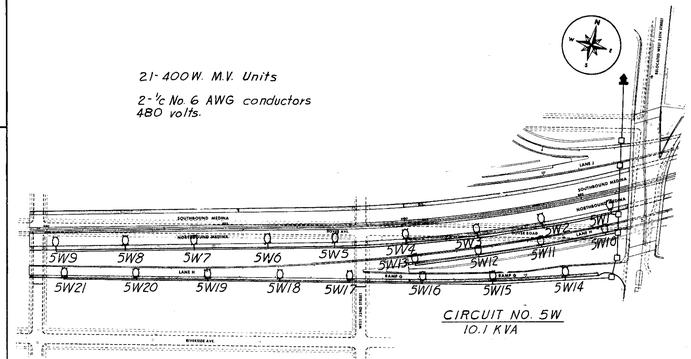
2-⅛ No. 6 AWG conductors
480 volts.

CIRCUIT NO. 4W
12.5 KVA



3 Signs
2-⅛ No. 6 AWG conductors 480 volts.

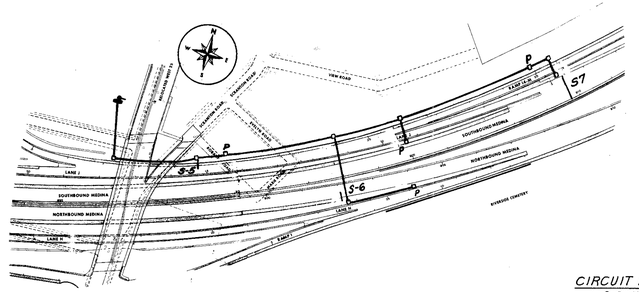
CIRCUIT NO. 2SW
1.6 KVA



21-400W. M.V. Units

2-⅛ No. 6 AWG conductors
480 volts.

CIRCUIT NO. 5W
10.1 KVA



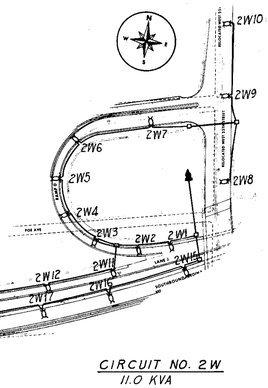
3 Signs
4 Police call boxes

2-⅛ No. 6 AWG conductors
480 volts.

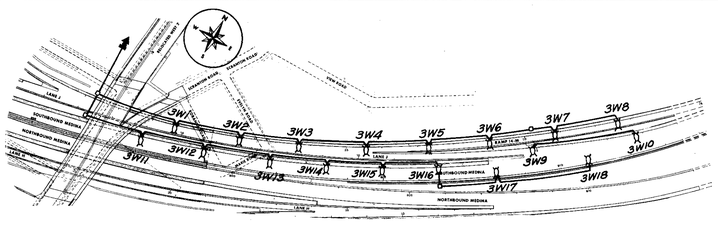
CIRCUIT NO. 3SW
2.9 KVA

14-400W. M.V. Units

2-⅛ No. 6 AWG conductors
480 volts.



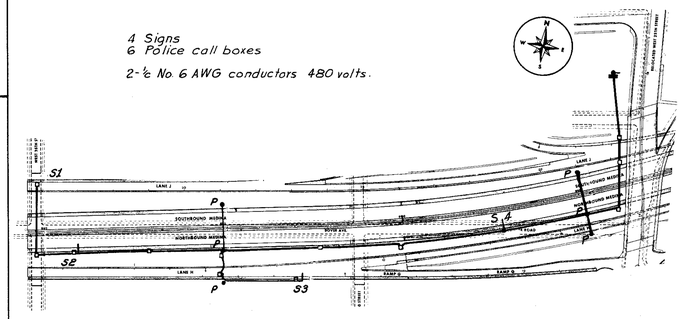
CIRCUIT NO. 2W
11.0 KVA



18-400W. M.V. Units

2-⅛ No. 6 AWG conductors
480 volts.

CIRCUIT NO. 3W
8.6 KVA



4 Signs
6 Police call boxes

2-⅛ No. 6 AWG conductors 480 volts.

CIRCUIT NO. 1SW
4.0 KVA

SCALE 1"= 200'	HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE LWL DATE 3-15-65	CONSULTING ENGINEERS
TRCD. ____ DATE ____	
CKD. GJC DATE 3-16-65	KANSAS CITY CLEVELAND NEW YORK

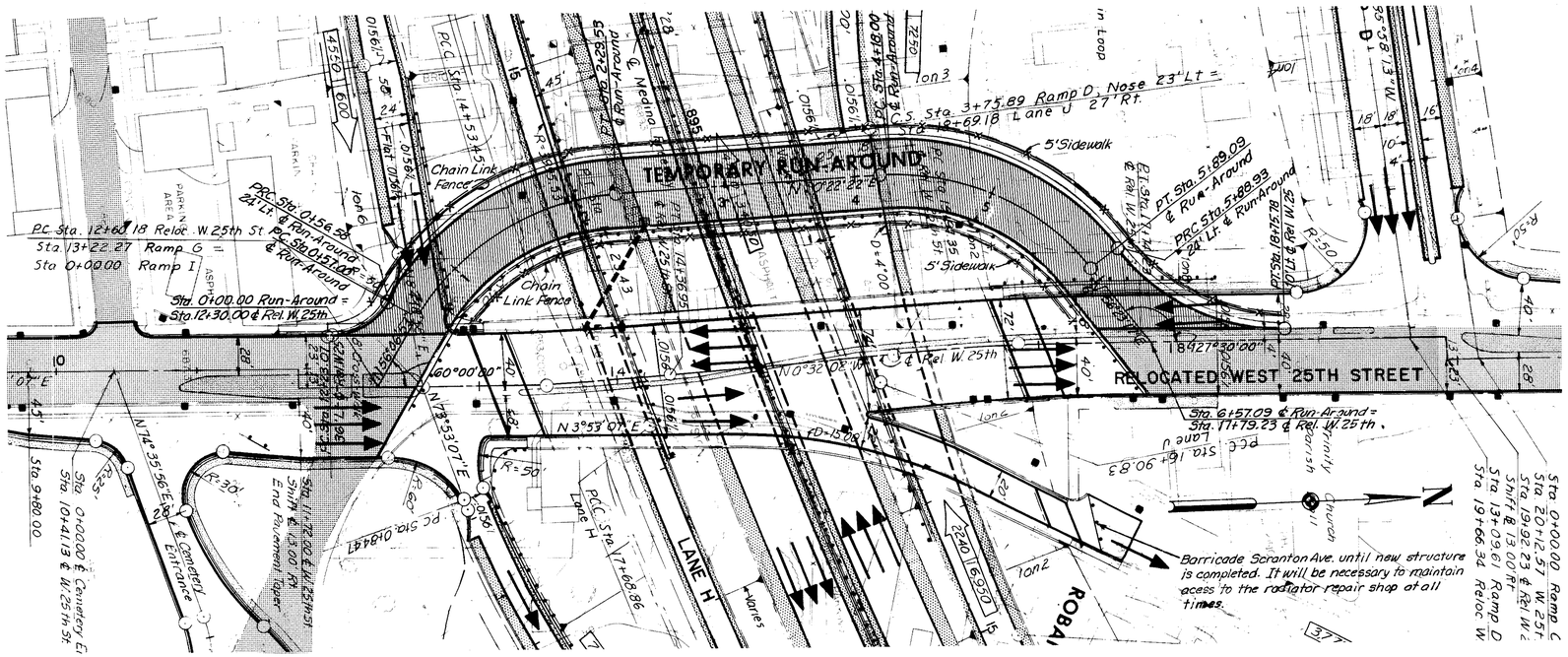
CIRCUIT MAPS

TEMPORARY RUN AROUND W 25TH STREET

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

221
241

CUYAHOGA COUNTY
CUY.71-17.18



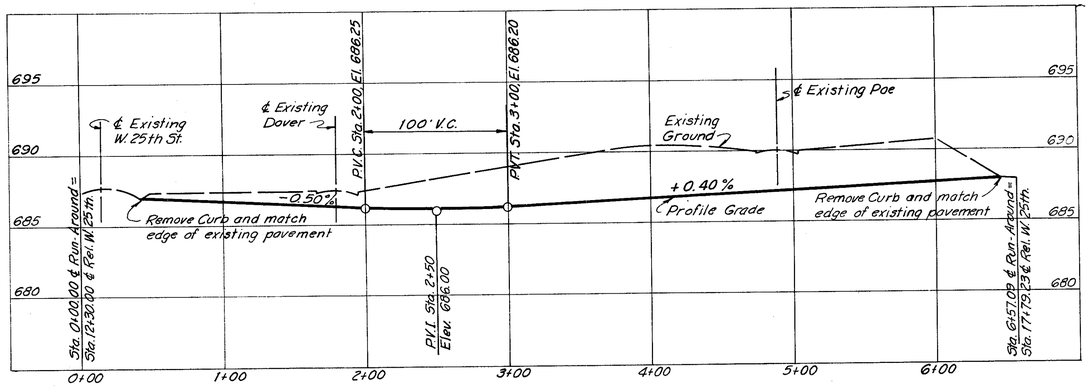
PLAN

Scale: 1"= 50'

LEGEND

New pavement for runaround

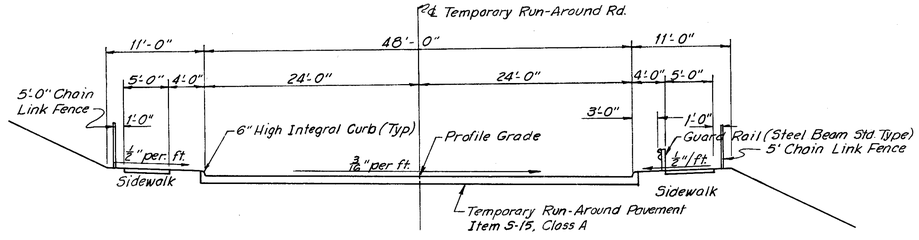
Existing pavement to remain in use.



PROFILE

Scale: Hor. 1"= 50', vert. 1"= 5'

CURVE DATA				
	Curve 1	Curve 2	Curve 3	Curve 4
P.I. Station	1+51.01	5+11.08	(W25)12+23.07	(W25)18+01.81
N. Coordinate	652,974.24	653,349.78	652,885.57	653,462.15
E. Coordinate	218,915.79	218,918.22	219,004.75	219,043.92
P.C. Station	0+57.00	4+18.00	(W25)11+94.20	5+88.93
N. Coordinate	652,921.82	653,256.70	652,856.77	653,421.20
E. Coordinate	218,993.82	218,917.62	219,002.79	218,982.32
P.T. Station	2+29.53	5+89.09	0+56.58	(W25)18+75.78
N. Coordinate	653,068.24	653,401.30	652,901.67	653,535.95
E. Coordinate	218,916.39	218,995.74	218,980.79	219,048.94
Δ	56°29'15"	56°00'55"	60°00'00"	52°30'00"
D				
R	175.00	175.00	50.00	150.00
T	94.01	93.08	28.87	73.97
L	172.53	171.09	52.36	137.44
E	23.65	23.21	7.74	17.25



TYPICAL SECTION

Scale: ⅛" = 1'

Note:
Temporary drainage as directed by the Engineer shall be provided during the useful life of the run-around. A suggested scheme is shown in the plan view.

The typical section is drawn showing concrete pavement. If asphalt is used, the section shall be adjusted as necessary to provide a finished surface as shown.

The Chain Link Fence and Steel Beam Guard Rail shown to be used on the Run-Around Road may be salvaged and incorporated into the permanent construction. No additional payment will be made for salvaging the aforementioned items.

Note:
The Temporary Run-Around Pavement shall be divided into 4 twelve foot wide lanes. The painted lane lines shall be 6 inches wide and shall be white beaded stripes applied in lengths of 15 feet separated by gaps of 25 feet. The center-line shall be a double yellow line, each line being 6 inches wide.

SCALE as shown
MADE DRK DATE 1-14-64
TRCD. ____ DATE ____
CKD. ____ DATE ____

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

71S

This improvement has been declared a limited access highway from Station 879+48.88 to Station 913+50.00 by the action of the Director of Highways and recorded in Volume Number 48, Page 333 and Volume Number 45, Page 1190 of the Directors Journal pursuant to law.

CENTER LINE SURVEY PLAT

I. R. 71 SEC. 17.18

CUYAHOGA COUNTY, OHIO

TWP. T.7, R.13, O.L. 55, 66 & 73

834307

71S

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

222
241

1
1

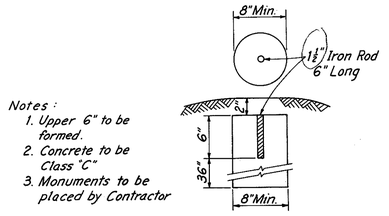
RECEIVED FOR RECORD
AT 11:47 M
OCT 16 1964
RECORDED IN CUYAHOGA COUNTY RECORDS
Vol 191 Page 27
MARK McELROY
County Recorder

Received _____ at _____
Recorded _____
Plat Book _____ Page _____
Signed _____ Recorder Cuyahoga County Ohio
Fee _____

I hearby certify that this plat is a true delineation of a survey made for the Ohio Department of Highways in Cuyahoga County.
By Henry H. Carpenter Registered Surveyor No. 4671
Date 9-21-64
Howard, Needles, Tammen & Bergendoff
Consulting Engineers

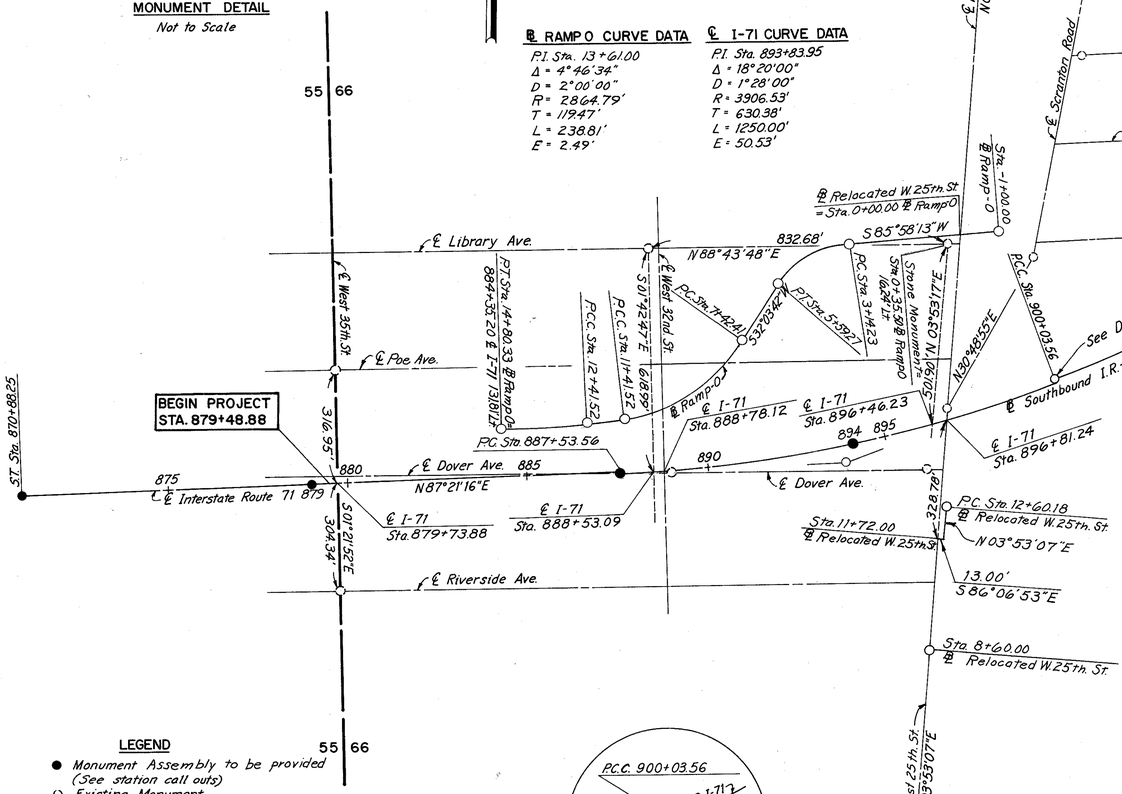
Signed Charles M. Zurick
Date 10-15-64 Division Deputy Director
Ohio Department of Highways

STATE OF OHIO
HENRY H. CARPENTER
4671
REGISTERED
SURVEYOR

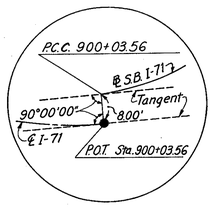


Notes:
1. Upper 6" to be formed.
2. Concrete to be Class "C"
3. Monuments to be placed by Contractor

BASE LINE REFERENCE MONUMENT DETAIL
Not to Scale



LEGEND
- ● Monument Assembly to be provided (See station call outs)
- ○ Existing Monument.



DETAIL "A"
No Scale

℄ S.B. I-71 CURVE DATA
P.I. Sta. 905+40.84
Δ = 21° 14' 41"
D = 2° 00' 00"
R = 2864.79'
T = 537.28'
L = 1062.23'
E = 49.95'

℄ S.B. I-71 CURVE DATA
P.I. Sta. 915+72.64
Δ = 29° 43' 32"
D = 3° 00' 00"
R = 1909.86'
T = 506.84'
L = 990.85'
E = 66.11'

℄ RAMP O CURVE DATA
P.I. Sta. 4+46.67
Δ = 53° 54' 31"
D = 22° 00' 00"
R = 260.44'
T = 132.44'
L = 245.04'
E = 31.74'

℄ RAMP O CURVE DATA
P.I. Sta. 9+54.46
Δ = 47° 53' 38"
D = 12° 00' 00"
R = 477.46'
T = 212.05'
L = 399.12'
E = 44.97'

℄ RAMP O CURVE DATA
P.I. Sta. 11+91.54
Δ = 4° 00' 00"
D = 4° 00' 00"
R = 1432.39'
T = 50.02'
L = 100.00'
E = 0.87'

℄ RAMP O CURVE DATA
P.I. Sta. 13+61.00
Δ = 4° 46' 34"
D = 2° 00' 00"
R = 2864.79'
T = 119.47'
L = 238.81'
E = 2.49'

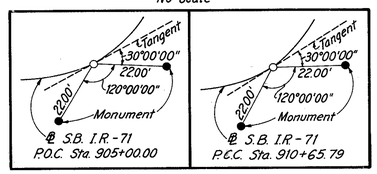
℄ I-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18° 20' 00"
D = 1° 28' 00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 50.53'

CENTER LINE REFERENCE MONUMENTS LOCATION ON CENTER LINE AT STATIONS

STATION		TYPE
870+88.25	S.T.	Standard Monument Assembly
879+00.00	P.O.T.	Standard Monument Assembly
887+53.56	P.C.	Standard Monument Assembly
894+00.00	P.O.C.	Standard Monument Assembly
900+03.56	P.O.T.	Standard Monument Assembly

Note: For Standard Monument Assembly Detail See Standard Construction Drawing R1-1

BASE LINE REFERENCE MONUMENTS
No Scale



NAME	REVISION	DATE

COMPLETION DATE _____

MADE R.P.R. DATE 5-25-64 TRACED R.J.K. DATE 6-1-64
CHECKED D.W.K. DATE 10-8-64 SCALE 1" = 200'

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

✓ EBP Oct. 14 '64

APR 14 1965 CENTER LINE SURVEY PLAT

EE-3

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

224/241

2/18

CUYAHOGA COUNTY
CUY-71-17.18

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2201WL	Richard T. Esson and M. T. Esson	10614	405	2643	2643	Yes			6	Total Taking
2202WL	Mike Hewko and Justina Hewko	9100	212	3393	3393	Yes			6	Total Taking
2203WL	Rose Stobbe and H. Fenske	8631	413	3300	3300	Yes			6	Total Taking
2204WL	Everett L. Calfee and S. Calfee	10630	389	4137	4137	Yes			6	Total Taking
2205WL	J. P. Janos and Mary Janos	4924	635	4137	4137	Yes			6	Total Taking
2206WL	Bertha Albright, et.al.	6282	159	4008	4008	Yes			6	Total Taking
		9928	607							
2207WL	Virginia Lovich, et.al.	6251	606	4008	4008	Yes			6	Total Taking
2208WL	Helen I. Hacha	10905	77	5171	5171	Yes			6	Total Taking
2209WL	John Lasorella and C. Lasorella	8479	637	6364	6364	Yes			6	Total Taking
2210WL	Mary Timonik	8693	661	5818	5818	Yes			6	Total Taking
2211WL	Harry Komarnycky and Anna Komarnycky	8269	55	5818	5818	Yes			6	Total Taking
2212WL	Clifford A. Keils	10117	68	5818	5818	Yes			6	Total Taking
2213WL	John Matier and Mary Matier	6620	594	5818	5818	Yes			6	Total Taking
2214WL	John N. Wright and Nina Wright	9767	389	6464	6464	Yes			6	Total Taking
2215WL	Katherine Melnyk	7032	41	5171	5171	Yes			6	Total Taking
		7032	43							
2216WL	Grace Kunde	6485	522	10343	10343	Yes			6, 7	Total Taking
2217WL	Agusta Krueger	5197	69	5171	5171	Yes			7	Total Taking
2218WL	Louis Kehr	3439	16	5171	5171	Yes			7	Total Taking
2219WL	Jno. Zajatz	2018	554	2888	2888	Yes			7	Total Taking
2220WL	Frank Novak and Alberta A. Novak	7252	595	3222	3222	Yes			7	Total Taking
2221WL	Elroy Schedley and Lydia Kaase, et. al.	6646	457	6055	6055	Yes			7	Total Taking
		5150	547							
2222WL	Randolph H. Banks and Mae Banks	5836	114	6041	6041	Yes			7	Total Taking
2240WL	Edward Walter	9052	590	5171	280	Yes	4891		7	Partial Taking
2240WA		5406	5						7	
2241WL	Roy E. Hooley and D. A. Hooley	6421	547	5171	280	No	4891		7	Partial Taking

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2242WL	Martha Mietz, L. and Hienz E.	8630	89	5171	540	Yes	4631		7	Partial Taking
2242WA	Radtke								7	
2243WL	Charles E. Peters, Jr. and F. J. Peters	10639	285	6027	6027	Yes			7	Total Taking
2245WL	Stanley Wojcik	6654	669	4080	50	No	4030		7	Partial Taking
2247WL	Pearl Differbrand	9052	621	5171	5171	Yes			9	Total Taking
2248WL	Andrew Bell and Zena Bell	6434	461	6587	6587	Yes			9	Total Taking
2249WL	Bernice Thoemmes	10357	29	5430	5430	Yes			9	Total Taking
2250WL	Herbert Thoemmes and Bernice Thoemmes	6474	545	6429	6429	Yes			9	Total Taking
2251WL	Vito Petitti and Aqullina Petitti	6203	71	7757	7757	Yes			9	Total Taking
2252WL	Franz Hermes and A. Hermes	8898	254	5171	5171	Yes			9	Total Taking
2253WL	Lawrence Bonomo and Vincenzo Bonomo	10627	179	6464	6464	Yes			9	Total Taking
		7289	129							
2254WL	Florence Kuttler and Roy Kuttler	6244	630	4525	4525	Yes			9	Total Taking
		6244	631							
2255WL	Donald J. Grossenbaugh and R. Grossenbaugh	9936	597	4525	4525	Yes			9	Total Taking
2256WL	Martha Doll	6045	39	5171	5171	Yes			9	Total Taking
2257WL	Ireane T. Keller	9701	392	4783	4783	Yes			9	Total Taking
2258WL	Ottilie Hoffman	4259	373	5559	5559	Yes			9	Total Taking
2259WL	Tillie Kotalik	2384	631	5746	5746	Yes			9	Total Taking
2260WL	John F. Short	10315	100	2831	2831	Yes			9	Total Taking
2261WL	Gustav A. Braun, Jr. and E. A. Braun	6241	148	2929	2929	Yes			9	Total Taking
2262WL	Cecille Weston, et.al.	9778	550	4328	4328	Yes			9	Total Taking
		10302	67							
2263WL	Andrew Sigado and Leona T. Sigado	5463	196	1492	1492	Yes			9	Total Taking
2264WL	Rudolph J. Kulik	9913	406	5171	5171	Yes			9	Total Taking
2265WL	Ted J. Kocoj and Wolburga Kocoj	7264	1	5172	5172	Yes			9	Total Taking
2266WL	Thaddeus S. Kusak	7053	578	5135	5135	Yes			9	Total Taking

FENCE LEGEND

(E) End Post
(C) Corner Post
(L) Line Post

ESTIMATED QUANTITIES-FENCE

Project	R W Sheet No. 6	7	8	9	10	11	12	13	14	15	16	17	Total Quantity	Unit	Item	Description
CUY-71-17.18	1275	690	515	95	640	155	205	260	650	815	395	510	6,205	Lin. Ft.	I-26	5 ft. Chain Link Fence
		1		1						1			3	Each	I-26	*Chain Link Fence Gate
			120			455		460					1,035	Lin. Ft.	Special	Ornamental Iron Fence, reset

Note.
*All chain link fence gates are 14' swing-type.
For Fence Abutment Connection Details see Standard Construction Drawing F-3.
Areas followed by the letter "A" are in acres; all other areas are in square feet.
Residual areas that are landlocked are followed by the letter (L).

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

MADE R.P.R. DATE 12-1-64 TRACED DATE
CHECKED DATE SCALE

NAME	REVISION	DATE

APR 14 1965

SUMMARY OF ADDITIONAL R/W REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

225/241

3/18

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

CUYAHOGA COUNTY
CUY-71-17.18

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2267WL	Michael S. Czis and R. Czis	8485	667	3878	3878	Yes			9	Total Taking
2268WL	Alexander Baranyk and N. Baranyk	8067	504	5171	5171	Yes			9	Total Taking
2269WL	Gladys Adah Wels	8484	719	5171	5171	Yes			9	Total Taking
2270WL	Clara A. Hallaver	8221	196	5171	5171	Yes			9	Total Taking
2271WL	Leslie Katona and Jeannette Katona	6437	497	5171	5171	Yes			9	Total Taking
2272WL	Rudolph J. Hlavacek and L. Hlavacek	9715	196	5171	5171	Yes			9	Total Taking
2273WL	John J. Ellis and Margaret J. Ellis	6206	313	5171	5171	Yes			9	Total Taking
2296WL	Lucy Hofhner	5039	226	4471	4471	Yes			6	Total Taking
2297WL	Robert G. Ellis, et.al.	10639	209	4253	4253	Yes			6	Total Taking
2298WL	John A. Sutkowski and Jean M. Sutkowski	8433	647	4260	4260	Yes			6	Total Taking
2299WL	Walter A. Patriski	10328	571	4266	4266	Yes			6	Total Taking
2299A-WL	Stephen J. Haky and Helen E. Haky	8824	664	4264	4264	Yes			6	Total Taking
2300WL	George M. Anderson and Margaret L. Anderson	9764	359	5455	5455	Yes			12	Total Taking
2301WL	Margaret E. Burghardt	4828	303	4258	4258	Yes			6	Total Taking
2302WL	Geroge Ponchak and Anna Ponchak	3945	298	4259	4259	Yes			6	Total Taking
2303WL	James E. Eckerfield and Irene Eckerfield	6202	114	5718	5718	Yes			6	Total Taking
2304WL	Jas. N. Moenich and Pauline A. Moenich	9445	257	5818	5818	Yes			6	Total Taking
2305WL	McRell Parker and E. Parker	8214	551	6464	6464	Yes			6	Total Taking
2306WL	Robert J. Myerski and Rose Myerski	8068	304	6464	6464	Yes			6	Total Taking
2307WL	Elsa L. Strittmatter	5406	478	6464	6464	Yes			6	Total Taking
2308WL	Tony R. Garskie and Opal Garskie	6612	318	5818	5818	Yes			6	Total Taking
2309WL	John P. Cintino and M. J. Cintino	9737	357	5818	5818	Yes			6	Total Taking
2310WL	Matthew Schaeffer and Rose Schaeffer	7209	708	6464	6464	Yes			6, 7	Total Taking
2311WL	Kenneth D. Smith and V. M. Smith	9901	301	6464	6464	Yes			7	Total Taking

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2312WL	Anna Pacula	8848	695	6464	6464	Yes			7	Total Taking
2313WL	Nicholas L. Zachea and Anna Zachea	7224 7088	164 727	7462	7462	Yes			7	Total Taking
2314WL	Russell A. Arndt and B. A. Arndt	9980	564	3729	3729	Yes			7	Total Taking
2315WL	Joseph J. Dinardo and Y. J. Dinardo	10170	638	3728	3728	Yes			7	Total Taking
2316WL	Arthur T. Lutz and A. M. Lutz	10953	619	4848	4848	Yes			7	Total Taking
2317WL	Raymond L. Acherman and B. Acherman	10337	587	3953	3953	Yes			7	Total Taking
2318WL	Elsie Blum	8226	542	3941	3941	Yes			7	Total Taking
2319WL	Andy Sovchik and E. Sovchik	7100	453	3941	3941	Yes			10	Total Taking
2320WL	Michael Badner and S. Badner	9038	175	3960	3960	Yes			10	Total Taking
2321WL	Dorothy Dominick	6693	538	5313	5313	Yes			10	Total Taking
2322WL	Ruth Lorman	6464	371	10342	10342	Yes			10	Total Taking
2324WL	Paul D. Doresky	8860	675	5171	5171	Yes			10	Total Taking
2325WL	Gerhard Wolf	8047	651	7757	7757	Yes			10	Total Taking
2326WL	Marie U. Thierolf	4853	639	5171	5171	Yes			10	Total Taking
2327WL	William F. Shula and G. R. Shula	6218	389	5171	5171	Yes			10	Total Taking
2328WL	New Apostolic Church of North America	4090	530	6463	6463	Yes			10	Total Taking
2329WL	Harold G. Leonard	7613	704	6464	6464	Yes			10	Total Taking
2330AWL	Hrihori Cykalo and Mylanka Cykalo	8071	337	6807	1216	No		5591	7, 10	Partial Taking
2330AWA	" " " " "					No			7	INSTALL SANITARY HOUSE CONNECTION.
2382WL	Standard Oil Company	9754	41	18507	18507	Yes			12	Total Taking
2383WL	Walter J. Konieczynski	7405	150	4039	4039	Yes			12	Total Taking
2384WL	Casmira Kalesnik	7240	513	2940	2940	Yes			12	Total Taking
2385WL	Veronica L. Popil	8658	370	5338	5338	Yes			12	Total Taking
2386WL &2416 WL	Ralph Witthuhn	6836	315, 316 317, 318	5096	5096	Yes			12	Total Taking, Combined
2387WL	Sun Oil Company	5868	112	10,315	10,315	Yes			10	Total Taking

Note:
Areas followed by the letter "A" are in acres, all other areas are in square feet.
Residual areas that are landlocked are followed by the letter (L).

NAME	REVISION	DATE
P.G.S.	Added Parcel 2330 AWA	10-11-65

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

MADE R.P.R. DATE 12-1-64 TRACED DATE
CHECKED DATE SCALE

APR 14 1965

SUMMARY OF ADDITIONAL R/W REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

226
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CUYAHOGA COUNTY
CUY-71-17.18

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SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2388WL	Elizabeth F. Herrick and Ruth F.	10916	435	12,048	7,630	Yes		4418	10	Partial Taking
2388S	Taylor				485				10	
2389WL	Daniel K. Yuzwa and F. O. Yuzwa	5278	691	5171	5171	Yes			8	Total Taking
2390WL	Guy W. Rostetter and L. I. Rosetter	2186	618	5171	5171	Yes			8	Total Taking
2391WL	John Schlegel and Alma Schlegel	10193	331	5171	5171	Yes			8	Total Taking
2392WL	Walter M. Brown and M. L. Brown	10102	521	5171	5171	Yes			8	Total Taking
2393WL	Linda M. Klima	3807	240	5171	5171	Yes			8	Total Taking
2394WL	Agnes Werner	10635	17	5171	5171	Yes			8	Total Taking
2395WL	Helen Mucciante, Linda Mucciante and Nancy Mucciante	6837	115	5171	5171	Yes			8	Total Taking
2396WL	Lloyd E. Klein and Irene D. Klien	6830	738	5171	5171	Yes			8	Total Taking
2397WL	David B. Pierce and Geraldine Pierce	8683	382	5171	5171	Yes			8	Total Taking
2398WL	George Knauer and J. S. Knauer	5664	597	5171	5171	Yes			8	Total Taking
2399WL	Hans-Joachim Thunig and T. Thunig	9078	389	2147	2147	Yes			12	Total Taking
2400WL	Angelo Costanzo	6255	697	2016	2016	Yes			12	Total Taking
2401WL	City of Cleveland	8402	124	2455	2455	No			12	Total Taking
2402WL	Max Marks	6853	301	6814	6814	Yes			11	Total Taking
2403WL	Elmer G. Timen	9451	555	7567	7567	Yes			11	Total Taking
2404WL	Jacob J. Poe and Donna L. Poe	4975	165	5600	5600	Yes			8	Total Taking
2405WL	Mychajlo Stazyszym and Maria Stazyszym	8802	237	5600	5600	Yes			8	Total Taking
2406WL	Mary Ann Bilodeau	6488	481	5600	5600	Yes			8	Total Taking
2407WL	Vera Smith	3858	50	5600	5600	Yes			8	Total Taking
2408WL	Rosella Juergens	7488	592	5600	5600	Yes			8	Total Taking
		8064	364							
2409WL	George G. Gray	9931	280	5520	5520	Yes			8	Total Taking
2410WL	Judith L. Wylie	10159	347	8483	8483	Yes			11	Total Taking
2411WL	Calvary Baptist Church	933	516	20,810	20,810	Yes			11	Total Taking
2412WL	Odilia B. Windau	6601	168	670	670	Yes			8, 11	Total Taking

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
2414WL	Nelson F. Walter	9409	450	5171	5171	Yes			9	Total Taking
2415WL	Ted F. Nakamura	10114	9	5171	5171	Yes			9	Total Taking
2416WL	Ralph Witthuhn								12	See 2386WL
2417WL	Elizth Kollai	5625	377	3483	3483	Yes			10	Total Taking
2435WL	Lillian P. Koch & Peter Koch	6035	710	5171	208	Yes	4963		8	Partial Taking
2435WA		6035	712						8	
2436WL	Vladislay Naschansky and Fenia	8086	176	5171	1828	Yes	3343(L)		8	Total Taking
2436WA	Naschansky								8	
2436EL	" " " "				3343				8	
2437WL	Joseph Ikawyj	8284	84	5600	5600	Yes			8	Total Taking
2438WL	Fedor Kostenko and Anna Kostenko	10196	213	5600	1400	Yes	4200		8	Partial Taking
2441WL	Jones Home for Friendless Children	565	296	4.16A	0.34A	No	3.82A		8, 11	Partial Taking
2441SA	" " " " "								11	Locate New Service
2996WL	Shell Oil Company	5650	460	5528	1443	No	4085		12	Partial Taking
2996LA	Shell Oil Company	5650	460	5528		No			11	Restricted Access
2997LA	Marie W. Bauer	4210	233	3010		No			11	Restricted Access
2998LA	Willard Arnett and Leah Arnett	5160	535	5004		No			11	Restricted Access
2999LA	Trinity Evangelical and Reformed Church	8211	104	29549		No			11	Restricted Access
3000LA	Trustees of Trinity Evangelical and Reformed Church	2166	530	16510		No			11	Restricted Access
3130WD	Frank Joseph Halada	5495	562	8528	953	Yes		7575	18	Partial Taking
3130WA									18	
3131WD	Arnold Tildin	7891	576	2879	153	No		2726	18	Partial Taking
3131WA									18	
3132WD	Emilie L. Ruetenik	5155	199	11,123	735	No		10,388	18	Partial Taking
3132T		5848	420		75	No			18	
3132T1					25	No			18	
3137WD	John M. Abohasen and Martha A.	9949	199	8490	25	No	8465		18	PARTIAL TAKING
3137T	Abohasen				50				18	

Note:
Areas followed by the letter "A" are in acres, all other areas are in square feet.
Residual areas that are landlocked are followed by the letter (L).

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

MADE R.P.P. DATE 12-1-64 TRACED DATE
CHECKED DATE SCALE

NAME	REVISION	DATE
P.G.S.	PARCEL 2436 EL ADDED	10-9-67
P.G.S.	Parcel 2441 SA Added	11-28-66
G.D.L.	3132 T WAS 3132 WA - 3132 T1 ADDED 3137 T REVISED - 3137 WD ADDED	4-23-65

APR 14 1965

SUMMARY OF ADDITIONAL R/W REQUIRED

SUMMARY OF ADDITIONAL RIGHT OF WAY REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

227
241

4-A
18

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
3003WL	Valdia Barnett and Mildred Barnett	10615	377	3675	3675	Yes			14	Total Taking
3004WL	Rose Slisz	10681	575	2450	1085	Yes			14	Total Taking B.P.R. PARTICIPATION AREAS
3004EL	" "				1365					
3005WL	Gertrude F. Baltz and Ramond Baltz	7820	600	2358	173	NO			14	Total Taking B.P.R. PARTICIPATION AREAS
3005EL	" " " " " "				2185	YES				
3006WL	Margaret A. Hoban	6207	159	2492	2492	Yes			14	Total Taking
3007WL	William J. Bryer	9751	329	3776	3776	Yes			14	Total Taking
3008WL	Anna Mary Meister	5087	331	3835	3835	Yes			14	Total Taking
3009WL	Eva Eyring	5618	529	3894	3894	Yes			14	Total Taking
3012WL	George Bumm and Antonia Bumm	4385	204	3315	875	Yes	2440(L)		14	Partial Taking
3012WA										
3013WL	Caesar Hendke and Adina Hendke	8830	305	3520	3520	Yes			14	Total Taking
3014WL	Gustav Preis and Matilda Preis	3496	304	3703	3703	Yes			14	Total Taking
3015WL	Marko Kalinic and Olga Kalinic	8075	739	6574	6574	Yes			14	Total Taking
3016WL	Wasilij Butenko and Theresia Butenko	8486	45	6764	6764	Yes			14	Total Taking
3017WL	Wasilij Butenko and Theresia Butenko	8486	45	5414	5414	Yes			14	Total Taking
3018WL	Mary Louise Sammon	6436	672	5616	5616	Yes			14	Total Taking
3019WL	John S. Swartz and Mary F. Swartz	5463	490	5818	5818	Yes			14	Total Taking
3020WL	Rudolph Heil and Ann Heil	9040	684	6286	6286	Yes			14,15	Total Taking
3021WL	Ervins Lazdins and Rita S. Lazdins	7420	669	0.53A.	0.53A.	Yes			14,15	Total Taking
3022WL	Frank Stevens and Frances A.	5801	119	14,675	350	Yes	14,325		14	Partial Taking
3022WA	Stevens									
3023WL	Carl Mehringer and Leah Mehringer	7295	469	4475	1398	Yes	3077		15	Partial Taking
3024WL	John Chipka	7007	628	4957	2465	Yes	2492		15	Partial Taking
3025WL	John A. Kolba, et.al.	9762	410	8113	6463	Yes			15	Total Taking
3025EL					1650				15	
3026WL	Peter Freskakis	10312	57	9781	9781	Yes			15	Total Taking
3027WL	Herman E. Brock and Pearl R. Brock	9431	166	10563	10563	Yes			15	Total Taking
3028WL	Bernadette A. Grosse	4511	164	7786	7786	Yes			15	Total Taking
3029WL	John F. Persanyi and Helen	9436	420	7614	7614	Yes			15	Total Taking
	Persanyi									
3030WL	Mary L. Vincik	8888	265	7441	7441	Yes			15	Total Taking

PARCEL NO.	OWNER	DEED RECORD BOOK	DEED RECORD PAGE	DEED AREA	TO BE ACQ'D. LAND	TO BE ACQ'D. BLDGS.	RESIDUE LEFT	RESIDUE RIGHT	SHEET NO.	REMARKS
3031WL	Eugen Kachanovski and Ina	8649	318	5829	5829	Yes			16	Total Taking
	Kachanovski									
3032WL	Albert Mishaga and Christine	6656	154	5718	5718	Yes			16	Total Taking
	Mishaga									
3033WL	Wincenty Spiczonek and Mike	9922	272	5608	5608	Yes			16	Total Taking
	Bielemuk									
3034WL	Jno Skelly, et.al.	6694	711	5497	5497	Yes			16	Total Taking
3035WL	Fred C. H. Zacharias and Jeannette	6873	247	5377	5377	Yes			16	Total Taking
	Zacharias									

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

MADE T.J.T. DATE 3-15-65 TRACED DATE
CHECKED R.P.R. DATE 3-15-65 SCALE

NAME	REVISION	DATE
R.S.K.	ADDED PARCEL 3025 EL	4-29-70
K.J.S.	ADDED PARCELS 3004 EL & 3005 EL	8-5-68
A.M.	Pcls 3304WL & 3305 B.P.R. Partic. areas added	3-22-66

APR 14 1965 SUMMARY OF ADDITIONAL R/W REQUIRED

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

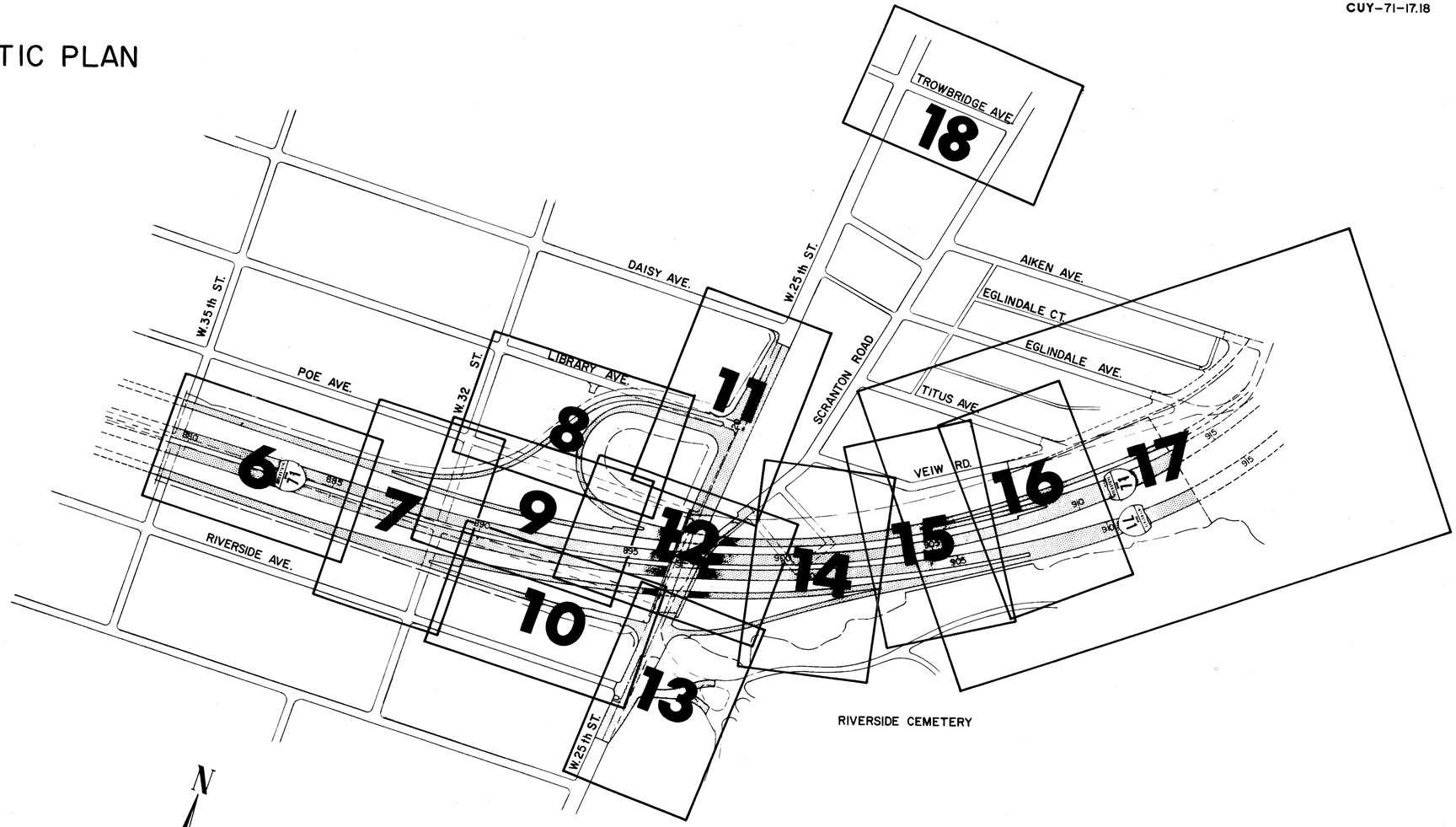
228
247

CUYAHOGA COUNTY
CUY-71-17.18

5
18

RIGHT OF WAY SCHEMATIC PLAN

MEDINA FREEWAY I-71



Note :
All Station offsets are Referenced to Southbound Medina Freeway Baseline unless otherwise noted.

SCALE 1"=200' HOWARD, NEEDLES, TAMMEN & BERGENDOFF
MADE RPR DATE 9-23-64 CONSULTING ENGINEERS
TRCD H.L.D. DATE 2-20-69 KANSAS CITY CLEVELAND NEW YORK
CKD. _____ DATE _____

APR 14 1965

RIGHT OF WAY SCHEMATIC PLAN

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

229
241

CUYAHOGA COUNTY
CUY-71-17.18

6
18

BEGIN PROJECT
STA. 879+48.88

W. 35TH. STREET

DOVER AVENUE

POE HALLE & FISH ALLOT. V5-P.34

M.J.. MCKENZIE SUBD. UNRECORDED

HEIRS OF I.W. FISH ALLOT. V.12-P.11

LANE J

LANE H

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

℄ I-71

Sta. 879+73.88

N87°21'16"E

(B Ramp O)
13+19.51
22.47'
13+19.90 (B Ramp O)
15.48'

(B Ramp O)
℄ 13+20.00
14.50'

Blk. "B"

Blk. "A"

Proposed Subd. Line

P.T. Sta. 14+80.33 Ramp O

MADE R.D.L. DATE 6-7-64 TRACED DATE
CHECKED R.P.R. DATE 9-15-64 SCALE 1"=20'

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

NAME	REVISION	DATE

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

230
241

7
18

CUYAHOGA COUNTY
CUY-71-17.18

RIVERSIDE AVENUE 60'R/W

DOVER AVENUE 50'R/W

POE AVENUE 50'R/W

W.32ND. STREET

POE HALLE & FISH ALLOT. V5 P.34

POE HALLE & FISH ALLOT. V5-P.34

℄ I-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 50.53'

℄ RAMP O CURVE DATA
P.I. Sta. 13+61.00
Δ = 4°46'34"
D = 2°00'00"
R = 2864.79'
T = 119.47'
L = 238.81'
E = 2.49'

℄ RAMP O CURVE DATA
P.I. Sta. 11+91.54
Δ = 4°00'00"
D = 4°00'00"
R = 1432.39'
T = 50.02'
L = 100.00'
E = 0.87'

℄ RAMP O CURVE DATA
P.I. Sta. 9+54.46
Δ = 47°53'38"
D = 12°00'00"
R = 477.46'
T = 212.45'
L = 399.12'
E = 44.97'

887+07.64
163.32'

887+07.40
173.08'

888+45.99
177.66

888+46.37
167.90'

888+46.50
167.00'

888+78.12

PC Sta 887+53.56

PC Sta 11+41.52

S01°42'47"E

RAMP G

LANE-H

LANE-J

RAMP O

NORTHBOUND MEDINA

SOUTHBOUND MEDINA

L.A.&W.RW

Gravel Drive

Stone Walk

Br. Ribbon Drive

Gravel & Cinder Drive

Gravel Dr. & Parking Area

Cone. & Stone Walk

Cone. Walk

Cone. Drive

Asph. Parking Area

Shed

Construction Limits

5' Chain link fence

5' Cone. Walk

5' Stone or Cone. Walk

4" P.E.

12" Water

6" Water

No. 2 Combined Sewer

No. 2 Comb. Sewer

12" Comb Sewer

M.E.L.P.

2" S.C.

Relocate San. House Connection

Steel Sign Mount Base

Monument

Gate

1 S.F. Gar.

2 ½ S.F.H.

1 S.F. Br. Gar.

2 ½ S.F. F.H.

2310 WL
2311 WL
2312 WL
2216 WL
2217 WL
2218 WL
2219 WL
2220 WL
2221 WL
2222 WL
2240 WL
2240 WA
2241 WL
2242 WA
2242 WL
2243 WL
2245 WL
2316 WL
2315 WL
2314 WL
2313 WL
2317 WL
2318 WL
2330 A-WA
2330 A-WL

NAME	REVISION	DATE
P.G.S.	Added Parcel 2330 A-WA	10-11-65

MADE R.D.J. DATE 8-3-64 TRACED DATE
CHECKED R.P.R. DATE 9-15-64 SCALE 1"=20'

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

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

231
241

8
18

CUYAHOGA COUNTY
CUY-71-17.18

LIBRARY AVENUE 60'R/W

N 88°43'48" E

Relocated Iron Picket Fence See General Notes

N 83°53'10" E 296.06'

350.00'

P.C. Sta. 3+14.23

S 85°58'13" W

(℄ Ramp O) 3+72.94 38.00'

(℄ Ramp O) 3+72.94 38.00'

(℄ Ramp O) 5+10.99 67.10'

(℄ Ramp O) 4+86.65 39.59'

(℄ Ramp O) 5+22.85 53.44'

(℄ Ramp O) 4+96.50 23.50'

(℄ Ramp O) 4+38.87 24.63'

(℄ Ramp O) 5+57.25 22.58'

(℄ Ramp O) 5+57.50 21.50'

(℄ Ramp O) 6+62.78 55.92'

(℄ Ramp O) 6+37.24 17.08'

(℄ Ramp O) 6+37.50 16.00'

(℄ Ramp O) 7+12.92 22.95'

(℄ Ramp O) 7+13.00 22.00'

(℄ Ramp O) 8+42.24 28.22'

(℄ Ramp O) 8+77.39 24.76'

(℄ Ramp O) 8+77.50 23.50'

(℄ Ramp O) 9+59.48 77.28'

L.A.B.R.W.

Construction Limits

5' Chain link Fence

gate

C 1-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18°20'00"
D = 12°8.00"
R = 390.653'
T = 63.038'
L = 125.00'
E = 5.053'

B RAMP O CURVE DATA
P.I. Sta. 9+54.46
Δ = 47°53'38"
D = 12°00'00"
R = 477.46'
T = 212.05'
L = 399.12'
E = 44.97'

B RAMP O CURVE DATA
P.I. Sta. 4+46.67
Δ = 53°54'01"
D = 22°00'00"
R = 260.44'
T = 132.44'
L = 245.04'
E = 31.73'

JONES LIBRARY ASSOC. ALLOT. V.13-P.23

POE HALLE & FISH ALLOT. V5-P.34

CARLOS R. JONES LIBRARY AVE. SUBD. NO.1 V.24-P.3

POE AVENUE 50'R/W

W. 32ND. STREET 50'R/W

Monument

M.E.L.P.

N 01°42'47" W

S 32°03'42" W

Sta. 7+42.41

2438 WL
2437 WL
2436 EL
2436 WA
2435 WA
2435 WL
2436 WL
2389 WL
2404 WL
2405 WL
2406 WL
2407 WL
2408 WL
2409 WL
2412 WL
2393 WL
2394 WL
2395 WL
2396 WL
2397 WL
2398 WL
2390 WL
2391 WL
2392 WL
2441 WL

Conc. Drive
Conc. Walk
Conc. Ribbon
Stone Ribbon
Brick Drive
Asphalt Drive
Gravel Drive
Slag Drive
Stone Walk
Cinder Drive
Parking Area
Drive & Parking Area
Conc. Drive & Parking Area
ALLEY 12' R/W

2½ S.F.H.
1½ S.F.H.
3 S.F.H.
1 S.F. Gar.
2 S.F. Barn & Gar.

5' Stone & Conc. Walk
6' Stone & Conc. Walk
5' Conc. Walk
5' Stone Walk
4" P.E.
6" P.E.
6" Water
12" Combined Sewer
No. 2 Combined Sewer
3" P.E.
2" S.C.P.

MADE	R.D.J.	DATE	6-8-64	TRACED		DATE	
CHECKED	R.P.R.	DATE	9-15-64	SCALE	1"=20'		

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

NAME	REVISION	DATE
P.G.S.	ADDED PARCEL 2436 EL	10-9-67

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

232
241

CUYAHOGA COUNTY
CUY-71-17.18

9
18

℄ RAMP O CURVE DATA
PI Sta. 9+54.46
Δ = 47°53'38"
D = 12°00'00"
R = 477.46'
T = 212.05'
L = 399.12'
E = 44.97'

P.C. Sta. 7+42.41

POE AVENUE 50'R/W

POE HALLE & FISH ALLOT. V5-P.34

W. 32ND. STREET 50'R/W

RAMP-O

RAMP-D

LANE-J

LANE-H

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

DOVER AVENUE 50'R/W

℄ I-71

℄ I-71 CURVE DATA
PI. Sta 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3904.53'
T = 630.38'
L = 1250.00'
E = 50.53'

MADE R.D.U. DATE 6-8-64 TRACED DATE
CHECKED R.P.R. DATE 9-15-64 SCALE 1"=20'

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

NAME	REVISION	DATE

APR 14 1965 RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

233/241

CUYAHOGA COUNTY
CUY-71-17.18

10/18

MADE R.D.J. DATE 6-9-64 TRACED DATE
CHECKED DATE SCALE 1"=20'

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

NAME	REVISION	DATE

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

CUYAHOGA COUNTY
CUY-71-17.18

23A / 241

11 / 18

℄ I-71 CURVE DATA
P.I Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 50.53'

POE HALLE & FISH ALLOT. V5-P.34

CARLOS R. JONES LIBRARY AVE.
SUBD. NO.1 V.24-P.3

HARLEY B. BARNETT SUBD V.47-P.10

LIBRARY AVENUE 60'R/W

DAISY AVENUE

W.25TH. STREET 66'R/W

SCRANTON ROAD 60'R/W

JONES HOME FOR CHILDREN
3S. Brick

Br. & F. Church

1S. Br. Gas Sta.

2S.F. Comm. Bldg.

1S.F & Sheet Metal Repair Gar.

1S. Stucco Church Annex

1S. Stucco Entrance

Asphalt Parking Area

1S. Br. Comm. Bldg.

1S. Br. H.

Cinder Drive & Parking Area

Brick Church

Asphalt Parking

Brickyard Drive

Brick Drive

Slag Drive

Construction Limits

Proposed Sidewalk

Relocated Iron Picket Fence See General Notes

Sta. 0+00.00 ℄ Ramp 0

Sta. -1+00.00 ℄ Ramp 0

(℄ Ramp 0) 1+16.00 110.00'

(℄ Ramp 0) 00+85.08 41.22'

(℄ Ramp 0) 00+28.59 214.23'

(℄ Ramp 0) 00+14.81 313.28'

(℄ Ramp 0 Extended) 00-19.91 143.14'

(℄ Ramp 0 Extended) 00-10.16 312.02'

(℄ Ramp 0 Extended) 00-52.59 138.60'

(℄ Ramp 0 Extended) 00-42.84 307.47'

897+93.66 194.38' Conc.

898+32.23 182.39'

899+19.26 172.62'

899+95.0 171.50'

N 14°03'12"E 182.00'

N 03°53'17"E 100.00'

S 03°53'17"W 301.29'

N 03°53'17"E 253.00'

S 88°43'48"W 350.00'

N 03°53'10"E 296.06'

S 85°58'13"W 178.04'

N 30°48'55"E 41.12'

N 03°53'17"E 33'

90.00'

63.20'

35'

49.75'

190.75'

84.50'

95.69'

95.84'

118.48'

50.70'

188.87'

MADE R.D.U.	DATE 6-9-64	TRACED	DATE
CHECKED	DATE	SCALE	1"=20'

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

NAME	REVISION	DATE
P.G.S	Parcel 2441 SA Added	11-25-66

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

235
241

12
18

CUYAHOGA COUNTY
CUY-71-17.18

P.W. WAGNER SUBDIVISION V.38-P.9

POE AVENUE 50' R/W

ROBANNA AVE. 25' R/W

SCRANTON ROAD 60' R/W

25TH. STREET 66' R/W

W. 25TH. STREET 80' R/W

WEST 27th STREET 12' R/W

DOVER AVENUE 50' R/W

POE HALLE & FISH ALLOT. V5-P.34

RAMP D

RAMP I

LANE J

LANE-H

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

RIVERSIDE CEMETERY

℄ I-71 Sta. 897+81.84

END ACQUISITION
STA. 897+33.00

Acquired Under Project Cuy-71-17.83

℄ I-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 30.53'

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

MADE R.D.J DATE 2-7-64 TRACED DATE
CHECKED R.P.R. DATE 9-9-64 SCALE 1"=20'

NAME	REVISION	DATE

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-71-17.18

POE HALLE & FISH ALLOT. V5-P.34

1 S.F. & Br. Church
Conc. Walk
Asphalt Parking Area
Conc. Block Rtg. Wall
1 S. Br. Indust. Bldg.
5' Conc. Walk
30' 30'
1 S. Br. & Conc. Bl. Indust. Bldg.
Asphalt Parking Area
1 S. Br. & Conc. Bldg. Abandon
Asphalt Drive
2 S. Br. Apt. Bldg.
Gravel Parking Area
8' Conc. Walk
895+55.50
271.50'
895+55.64
272.70'
Conc. Walk
M.E.P.
10" P.E.
8" Water
6'-4" x 5'-6" Combined Sewer
16" L.S.
C.E.I.
33'
47'
(℄ Relocated W. 25th St.) 8+60.00
Begin Relocation
Monumented Original ℄
W. 25TH. STREET
℄ Relocated W. 25th. St.
N03°53'07"E
10
11
11+72.00
Shift ℄ 13.00' Rt.
13.00'
N03°53'07"E
12
LAB RW
PC Sta. 12+60.18
(℄ Relocated W. 25th St.)
C.E.I.
6' Stone Walk
Relocated Ornamental Iron Fence See General Notes
Proposed Sidewalk
S14°16'27"W
71.46'
(℄ Relocated W. 25th) 9+07.73
47.00'
(℄ Relocated W. 25th St.) 9+78.02
59.89'
332.90'
N03°53'07"E
(℄ Relocated W. 25th) 12+40.63
34.00'
N03°53'07"E
Proposed Sidewalk
S08°38'56"W
276.61'
RW
3001 WD
Relocated Ornamental Iron Fence See General Notes
S73°55'07"W
21.04'
896+74.42
260.52'
896+94.15
260.59'
896+74.50
239.50'
Proposed Sidewalk
Stone Slab Walk
2 S.F.H.
1 S.F.H.
℄ I-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 50.53'
RIVERSIDE CEMETERY
Construction Limits
3001 T
897+25.00
(℄ I-71)
(℄ Relocated W. 25th. St.) 12+10.00
125.00'
R = 666.62'
L = 237.69'
897+60.00
(℄ I-71)
RAMP I
3001 BWL
1 S.F. Gar.
LAB RW
5' Chain link fence
2 S. Br. Gar. & Maint. Shop
Asphalt Parking Area
3001 BT
Top of Slope Elev. 684.2
Construction Limits
Gravel Drive
(℄ Relocated W. 25th. St.) 11+65.00
250.00'
(℄ Relocated W. 25th. St.) 11+25.00
250.00'
22' S. Stone H.
(℄ Relocated W. 25th. St.) 12+10.00
250.00'
(℄ Relocated W. 25th. St.) 11+75.00
260.00'
(℄ Relocated W. 25th. St.) 10+70.00
285.00'
(℄ Relocated W. 25th St.) 11+05.00
280.00'
Black Top Pavement
Black Top Pavement
4' Stone Walk
Construction Limits
3001 T

NAME	REVISION	DATE

MADE R.D.J. DATE 6-9-64 TRACED DATE
CHECKED R.P.R. DATE 9-9-64 SCALE 1"=20'

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

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-71-17.18

RIVERSIDE CEMETERY

T.N. BRAINARD ALLOT. V.23-P.9

P.W. WAGNER SUBDIVISION V.38-P.9

SCRANTON ROAD 60' R/W

EVELYN AVENUE 35' R/W

LANE J

MARIE ROAD 30' R/W

ROBANNA AVENUE 25' R/W

LANE H

RAMP I

℄ SOUTHBOUND I-71

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

Acquired Under Project Cuy 71-1183

℄ I-71 CURVE DATA
P.I. Sta. 893+83.95
Δ = 18°20'00"
D = 1°28'00"
R = 3906.53'
T = 630.38'
L = 1250.00'
E = 50.53'

℄ S.B. I-71 CURVE DATA
P.I. Sta. 905+40.84
Δ = 21°14'41"
D = 2°00'00"
R = 2864.79'
T = 537.28'
L = 1062.23'
E = 49.95'

NAME	REVISION	DATE
K.J.S.	ADDED PARCELS 3004 EL & 3005 EL	8-6-65
A.M.	Revised Participation Limits, Parcels Nº 3004 WL & 3005 WL	12-3-65

MADE R.D.J. DATE 8-3-64 TRACED DATE
CHECKED W.J.M. DATE 9-9-64 SCALE 1"=20'

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

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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CUYAHOGA COUNTY
CUY-71-17.18

RIVERSIDE CEMETERY

VIEW ROAD 60' R/W

RAMP 14-M

LANE J

T.N. BRAINARD ALLOT. V.23-P.9

℄ SOUTHBOUND I-71

NORTHBOUND MEDINA

P.W. WAGNER SUBDIVISION V.38-P.9

SOUTHBOUND MEDINA

BLK. "A"

LANE H

RAMP I

LA&RW

Conc. Walk
2½ S.F.H.
3030 WL
2½ S.F.H.
1 S.F. Gar.
Conc. Drive
3029 WL
2½ S.F.H.
1 S.F. Gar.
Conc. Drive
3028 WL
1½ S.F.H.
Stone Walk
3027 WL
1½ S.F.H.
1 S.F. Gar.
Conc. Drive
2 S.F.H.
gate
3026 WL
25' Chan Link Fence
Asphalt Drive
1 S.F. & Br. Gar.
3025 EL
2½ S.F.H.
Construction Limits
Conc. Ribbons
3025 WL
2½ S.F.H.
Conc. Drive
3024 WL
2½ S.F.H.
Cinders
1 S.F. Gar.
Slag Drive
Conc. Ribbons
3023 WL
1 S.F. Gar.
3021 WL
3020 WL
3001 AWL
3001 AT
3002 WL

30' 30'
4" C.I.
15" Combined Sewer
3" S.C.
N 56°36'28"E
5' Stone & Conc. Walk
6" Water
5' No 2 Combined Sewer
904+55.06
189.83'
904+55.00 (E)
188.50'
903+97.32
216.77'
903+71.68
167.18'
903+71.50 (C)
166.00'
55.00'
74.96'
418.29'
R = 4359'
21°42'
906
905
904
903
190.45'
N 50°22'37"E
960.50'
497.7'
120.71'
N 39°37'27"E 230.56'
437'
S 43°31'49"W
78.58' 5' Chain Link Fence
903+20.00 (C)
144.50'
903+20.88
145.82'
R = 3789.72'
L = 101.16'
99.56'
N 33°39'38"E
33.98'
R = 11469.66'
L = 425.00'
905+65.00 (℄ S.B. I-71)
Top of Slope Elev. 682'
Retaining Wall
904+70.00 (℄ S.B. I-71)
7.50'
904+20.00 (℄ S.B. I-71)
Construction Limits
903+92.12
120.97'
Top of Slope Elev. 682'

℄ S.B. I-71 CURVE DATA

P.I. Sta. 905+40.84
Δ = 2°14'41"
D = 2°00'00"
R = 2864.79'
T = 537.28'
L = 1062.23'
E = 49.95'

NAME	REVISION	DATE
R.S.K.	ADDED PARCEL 3025 EL	4-29-70

MADE R.D.J. DATE 2-7-64 TRACED ____ DATE ____
CHECKED W.J.M. DATE 9-9-64 SCALE 1"=20'

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

APR 14 1965

RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

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241

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CUYAHOGA COUNTY
CUY-71-17.18

TITUS AVENUE

RELOCATED W. 17th. STREET

VIEW ROAD 60' R/W

T.N. BRAINARD ALLOT. V.23-P-9

LANE J

RAMP 14-M

SOUTHBOUND I-71

SOUTHBOUND MEDINA

NORTHBOUND MEDINA

LANE H

RIVERSIDE CEMETERY

2 S.F.H.
2½ S.F.H.
1½ S.F.H.
Conc. Walk
Conc. Ribbon
Br. Strip
Conc.
1 S.F. Gar.
Brick Strips
Gravel Drive
Stone Walk
Shed
Conc. Drive
Construction Limits
Retaining Wall
5' Chain link fence
5' Stone Slab Walk
6" Water
No. 2 Combined Sewer
15" Comb. Sewer
4" C.I.
3" Pvt.
Top of Stone Elev. 682

(41) (40) (39) (38) (37) (36) (35) (34) (33) (32)

3039 WL · 3038 WL · 3037 WL · 3036 WL · 3035 WL · 3034 WL · 3033 WL · 3032 WL · 3031 WL · 3001 AWL · 3001 AT · 3002 WL

909+54.40
196.86'
R= 738.20'
L= 128.12'
908+18.00
195.50'
908+16.45
188.47'
908+17.50
187.50'
908+17.03
196.44'
908+71.50
139.50'
908+71.08
140.78'
908+00.46
117.11'
907+80.00
(℄ S.B. I-71)
N 50°25'37"E
92.50'
S 56°36'28"E
205.80'
S 55°04'48"W
77.49'
S 70°00'38"W

℄ S.B.I-71 CURVE DATA
P.I. Sta. 905+40.84
Δ = 21°14'41"
D = 2°00'00"
R = 2864.79'
T = 537.28'
L = 1062.23'
E = 49.95'

R = 11469.66'
L = 425.00'

MADE R.D.J. DATE 2-7-64 TRACED DATE
CHECKED W.J.M. DATE 9-9-64 SCALE 1"=20'

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

NAME	REVISION	DATE

APR 14 1965

RIGHT OF WAY

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

MADE R.D.J. DATE 6-4-64 TRACED DATE
CHECKED R.P.R. DATE 9-9-64 SCALE 1"=50'

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

240/241

CUYAHOGA COUNTY
CUY-71-17.18

17/18

NAME	REVISION	DATE

APR 14 1965

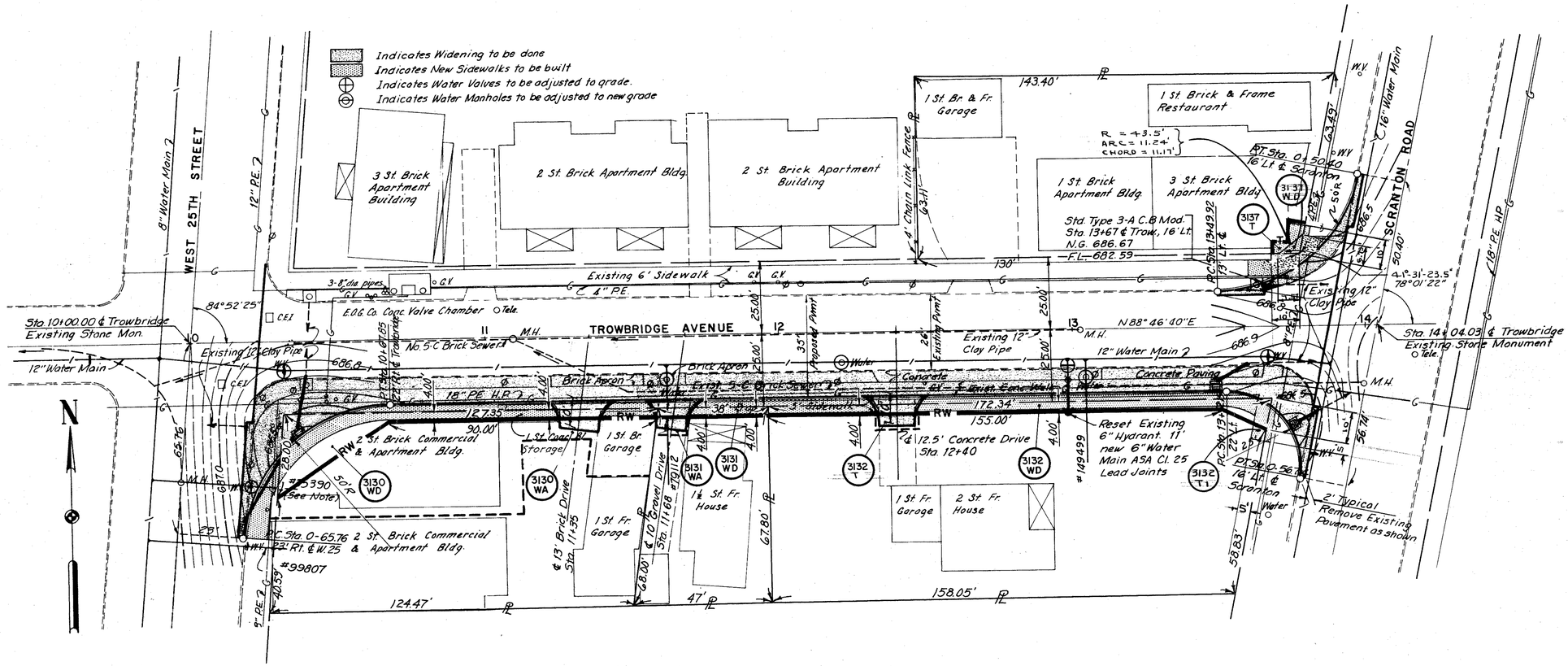
RIGHT OF WAY

FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

241
241

CUYAHOGA COUNTY
CUY - 71 - 17.18

18
18



P.I. Sta. 10+21.12, 22' Rt.
P.C. Sta. 0-65.76, 23' Rt.
P.T. Sta. 10+67.85, 22' Rt.
Δ = 84°53'30"
R = 50.00'
T = 45.73'
L = 74.08'
E. = 17.76'

P.I. Sta. 13+83.01, 22' Rt.
P.C. Sta. 13+52.15, 22' Rt.
P.T. Sta. 0-56.74, 16' Lt.
Δ = 101°58'38"
R = 25.00'
T = 30.86'
L = 44.50'
E = 14.72'

P.I. Sta. 13+90.43, 13' Lt.
P.C. Sta. 13+49.92, 13' Lt.
P.T. Sta. 0+50.40, 16' Lt.
Δ = 78°01'22"
R = 50.00'
T = 40.51'
L = 68.09'
E = 14.35'

SCALE 1" = 20'
MADE R.P.R. DATE 1-21-65
TRCD. _____ DATE _____
CKD _____ DATE _____

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

NAME	REVISION	DATE
G.D.L.	3132 T WAS 3132 WA - 3132 T1 ADDED 3137 T REVISED - 3137 WD ADDED	4-29-65

APR 14 1965

RIGHT OF WAY